



## **ANNEX B-RADIO EQUIPMENT TECHNICAL SPECIFICATIONS**

**REVIEW OF TYPE APPROVAL TECHNICAL STANDARDS AND  
PROCEDURES**

**ISSUED BY**

**BOTSWANA COMMUNICATIONS REGULATORY AUTHORITY**

**Date: 14 March 2016**



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# **TECHNICAL SPECIFICATION**

**FOR**

**GSM HANDSETS, TERMINALS AND ANCILLARY  
EQUIPMENT**

**ISSUED BY**

**BOTSWANA COMMUNICATIONS REGULATORY  
AUTHORITY**

**Document Number: TS0002**  
**Revision: Original V1.1**  
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# Technical Specification for GSM Handsets, Terminals and Ancillary Equipment

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## Scope

This specification applies to any equipment which offers a GSM interface, including handsets, terminals and other related applications using the GSM air interface, for example WLL, in Botswana.

Where terminal equipment supports more than one interface type, each interface must meet the requirements applicable to it. It may therefore be necessary to make reference to additional specifications.

## Entry into Force

This specification shall enter into force on 15/01/2016.

## Document History

| <b>Description</b>                    | <b>Status</b> | <b>Date</b> |
|---------------------------------------|---------------|-------------|
| GSM Handsets, Terminals and Ancillary | Original V1.1 | 11/12/2015  |
|                                       |               |             |
|                                       |               |             |
|                                       |               |             |
|                                       |               |             |

## Health, Safety, and Generic Emissions

The following universal specifications shall be applied.

**TS0001:** Health, Safety and Generic Emissions of Radio and Telecommunications Terminal Equipment.

## Technical, Spectrum and EMC Requirements

The following specifications shall be applied.

### **ETSI EN 301 511 V12.1.1**

Global system for mobile communications (GSM); Harmonised standard for mobile stations in the GSM 900 and GSM 1800 bands covering essential requirements under Article 3.2 of the R&TTE directive (1999/5/EC)

### **ETSI EN 301 489-1 V1.9.2**

Electromagnetic compatibility and Radio spectrum Matters (ERM); ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 1: Common technical requirements

### **ETSI EN 301 489-7 V1.3.1**

Electromagnetic compatibility and Radio spectrum Matters (ERM); ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 7: Specific conditions for mobile and portable radio and ancillary equipment of digital cellular radio telecommunications systems (GSM and DCS)

**Important Note:** The revision numbers of the documents given in the approval standard are the minimum standards that apply. Should updated versions of these documents be published, the latest version will always apply. This also applies to documents where no revision number is currently quoted.

## Additional Requirements

No additional requirements exist for GSM handsets, terminals and ancillary equipment at this time.

## Obtaining Technical Standards

ETSI technical standards may be obtained free of charge for individual use from the ETSI web site. [www.etsi.org](http://www.etsi.org)

CENELEC, IEC and CISPR standards may be obtained at cost from, or through [www.cenelec.org](http://www.cenelec.org) and from [www.iec.ch](http://www.iec.ch) respectively.





## **TECHNICAL SPECIFICATION**

**FOR**

**GSM BASE STATION AND ANCILLARY EQUIPMENT**

**ISSUED BY**

**BOTSWANA COMMUNICATIONS REGULATORY  
AUTHORITY**

**Document Number: TS0003**  
**Revision: Original V1.1**  
**Date: 11 December 2015**

# Technical Specification for GSM Base Station and Ancillary Equipment

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Website: [www.bocra.org.bw](http://www.bocra.org.bw)

## Scope

This specification applies to any equipment which offers a GSM interface, including base stations and other related applications using the GSM air interface, for example WLL, in Botswana.

Where terminal equipment supports more than one interface type, each interface must meet the requirements applicable to it. It may therefore be necessary to make reference to additional specifications.

## Entry into Force

This specification shall enter into force on 15/01/2016.

## Document History

| <b>Description</b>                       | <b>Status</b> | <b>Date</b> |
|--|---------------|-------------|
| GSM Base Station and Ancillary Equipment | Original V1.1 | 11/12/2015  |
|  |               |             |
|  |               |             |
|  |               |             |

## **Spectrum Allocation**

The following frequency bands have been allocated for use by GSM base stations and ancillary equipment in Botswana: 925 – 960 MHz and 1805 – 1880 MHz.

## **Health, Safety, and Generic Emissions**

The following universal specifications shall be applied.

**TS0001:** Health, Safety and Generic Emissions of Radio and Telecommunications Terminal Equipment.

## **Technical, Spectrum and EMC Requirements**

The following specifications shall be applied.

### **ETSI EN 300 609-4 V10.2.1**

Global System for Mobile communications (GSM); Part 4: Harmonized EN for GSM Repeaters covering the essential requirements of article 3.2 of the R&TTE Directive

### **ETSI EN 301 489-1 V1.9.2**

Electromagnetic compatibility and Radio spectrum Matters (ERM); ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 1: Common technical requirements

### **ETSI EN 301 489-8 V1.2.1**

Electromagnetic compatibility and Radio spectrum Matters (ERM); ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 8: Specific conditions for GSM base stations

### **ETSI EN 301 489-50 V1.2.1**

Electromagnetic compatibility and Radio spectrum Matters (ERM); ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 50: Specific conditions for Cellular Communication Base Station (BS), repeater and ancillary equipment

### **ETSI EN 301 502 V12.1.1**

Global System for Mobile communications (GSM); Harmonized EN for Base Station Equipment covering the essential requirements of article 3.2 of the R&TTE Directive

## **ETSI EN 301 908-18 V7.1.2**

IMT cellular networks; Harmonized EN covering the essential requirements of article 3.2 of the R&TTE Directive; Part 18: E-UTRA, UTRA and GSM/EDGE Multi- Standard Radio (MSR) Base Station (BS)

**Important Note:** The revision numbers of the documents given in the approval standard are the minimum standards that apply. Should updated versions of these documents be published, the latest version will always apply. This also applies to documents where no revision number is currently quoted.

## **Additional Requirements**

Additional requirements exist for the use of GSM base stations and ancillary equipment. A licence must be obtained before equipment of this type can be used in Botswana. This licence will detail conditions of use and any additional requirements which must be met.

## **Obtaining Technical Standards**

ETSI technical standards may be obtained free of charge for individual use from the ETSI web site. [www.etsi.org](http://www.etsi.org)

CENELEC, IEC and CISPR standards may be obtained at cost from, or through [www.cenelec.org](http://www.cenelec.org) and from [www.iec.ch](http://www.iec.ch) respectively.





## **TECHNICAL SPECIFICATION**

**FOR**

**ANALOGUE PMR HANDSETS AND ANCILLARY  
EQUIPMENT**

**ISSUED BY**

**BOTSWANA COMMUNICATIONS REGULATORY  
AUTHORITY**

**Document Number: TS0004**  
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**Date: 11 December 2015**



# Technical Specification for Analogue PMR Handsets and Ancillary Equipment

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Website: [www.bocra.org.bw](http://www.bocra.org.bw)

## Scope

This specification applies to all Analogue PMR handsets and ancillary equipment to be used in Botswana.

Where terminal equipment supports more than one interface type, each interface must meet the requirements applicable to it. It may therefore be necessary to make reference to additional specifications.

## Entry into Force

This specification shall enter into force on 15/01/2016.

## Document History

| <b>Description</b>                            | <b>Status</b> | <b>Date</b> |
|---|---------------|-------------|
| Analogue PMR Handsets and Ancillary Equipment | Original V1.1 | 11/12/2015  |
|   |               |             |
|   |               |             |
|   |               |             |

## **Spectrum Allocation**

Various, VHF and UHF frequency bands are allocated for use by analogue PMR handsets and ancillary equipment in Botswana.

## **Health, Safety, and Generic Emissions**

The following universal specifications shall be applied.

**TS0001:** Health, Safety and Generic Emissions of Radio and Telecommunications Terminal Equipment.

## **Technical, Spectrum and EMC Requirements**

The following specifications shall be applied.

### **ETSI EN 300 086-1 V1.4.1**

Electromagnetic compatibility and Radio spectrum Matters (ERM); Land Mobile Service; Radio equipment with an internal or external RF connector intended primarily for analogue speech; Part 1: Technical characteristics and methods of measurement

### **ETSI EN 300 086-2 V1.3.1**

Electromagnetic compatibility and Radio spectrum Matters (ERM); Land Mobile Service; Radio equipment with an internal or external RF connector intended primarily for analogue speech; Part 2: Harmonized EN covering the essential requirements of article 3.2 of the R&TTE Directive

### **ETSI EN 300 113-1 V1.7.1**

Electromagnetic compatibility and Radio spectrum Matters (ERM); Land mobile service; Radio equipment intended for the transmission of data (and/or speech) using constant or non-constant envelope modulation and having an antenna connector; Part 1: Technical characteristics and methods of measurement

### **ETSI EN 300 113-2 V1.5.1**

Electromagnetic compatibility and Radio spectrum Matters (ERM); Land mobile service; Radio equipment intended for the transmission of data (and/or speech) using constant or non-constant envelope modulation and having an antenna connector; Part 2: Harmonized EN covering the essential requirements of article 3.2 of the R&TTE Directive

### **ETSI EN 300 296-1 V1.4.1**

Electromagnetic compatibility and Radio spectrum Matters (ERM);  
Land Mobile Service; Radio equipment using integral antennas  
intended primarily for analogue speech; Part 1: Technical  
characteristics and methods of measurement

**ETSI EN 300 296-2 V1.4.1**

Electromagnetic compatibility and Radio spectrum Matters (ERM);  
Land Mobile Service; Radio equipment using integral antennas  
intended primarily for analogue speech; Part 2: Harmonized EN  
covering the essential requirements of article 3.2 of the R&TTE  
Directive

**ETSI EN 301 166-1 V1.3.2**

Electromagnetic compatibility and Radio spectrum Matters (ERM);  
Land Mobile Service; Radio equipment for analogue and/or digital  
communication (speech and/or data) and operating on narrow band  
channels and having an antenna connector; Part 1: Technical  
characteristics and methods of measurement

**ETSI EN 301 166-2 V1.2.3**

Electromagnetic compatibility and Radio spectrum Matters (ERM);  
Land Mobile Service; Radio equipment for analogue and/or digital  
communication (speech and/or data) and operating on narrow band  
channels and having an antenna connector; Part 2: Harmonized EN  
covering essential requirements of article 3.2 of the R&TTE Directive

**ETSI EN 302 561 V1.3.2**

Electromagnetic compatibility and Radio spectrum Matters (ERM);  
Land Mobile Service; Radio equipment using constant or non-constant  
envelope modulation operating in a channel bandwidth of 25 kHz, 50  
kHz, 100 kHz or 150 kHz; Harmonized EN covering essential  
requirements of article 3.2 of the R&TTE Directive

**ETSI EN 303 039 V1.1.1**

Electromagnetic compatibility and Radio spectrum Matters (ERM);  
Land Mobile Service; Multichannel transmitter specification for the  
PMR Service; Harmonized EN covering the essential requirements of  
article 3.2 of the R&TTE Directive

**ETSI EN 300 390-1 V1.2.1**

ElectroMagnetic Compatibility and Radio Spectrum Matters (ERM);  
Land Mobile Service; Radio equipment intended for the transmission of  
data (and speech) and using an integral antenna; Part 1: Technical  
characteristics and test conditions

**ETSI EN 300 390-2 V1.1.1**

Electromagnetic compatibility and Radio spectrum Matters (ERM);  
Land Mobile Service; Radio equipment intended for the transmission of  
data (and speech) and using an integral antenna; Part 2: Harmonized  
EN covering essential requirements under article 3.2 of the R&TTE  
Directive

**ETSI EN 300 471-1 V1.2.1**

Electromagnetic Compatibility and Radio spectrum Matters (ERM);  
Land Mobile Service; Rules for Access and the Sharing of common  
used channels by equipment complying with 300 113; Part 1: Technical  
characteristics and methods of measurement

**ETSI EN 300 471-2 V1.1.1**

Electromagnetic Compatibility and Radio spectrum Matters (ERM);  
Land Mobile Service; Rules for Access and the Sharing of common  
used channels by equipment complying with EN 300 113; Part 2:  
Harmonized EN covering essential requirements under article 3.2 of  
the R&TTE Directive

**ETSI EN 301 489-1 V1.9.2**

Electromagnetic compatibility and Radio spectrum Matters (ERM);  
ElectroMagnetic Compatibility (EMC) standard for radio equipment and  
services; Part 1: Common technical requirements

**ETSI EN 301 489-5 V1.3.1**

Electromagnetic compatibility and Radio spectrum Matters (ERM);  
ElectroMagnetic Compatibility (EMC) standard for radio equipment and  
services; Part 5: Specific conditions for Private land Mobile Radio  
(PMR) and ancillary equipment (speech and non-speech)

**ETSI EN 300 793 V1.1.1**

Electromagnetic compatibility and Radio spectrum Matters (ERM);  
Land Mobile Service; Presentation of equipment for type testing

**ANSI/TIA/EIA 603 (specific to US originated equipment only)**

Land mobile FM or PM communication equipment, measurement and  
performance standards

**MPT 1327**

A signalling standard for Trunked Private Land Mobile Radio Systems

**Important Note:** The revision numbers of the documents given in the  
approval standard are the minimum standards that apply. Should  
updated versions of these documents be published, the latest version  
will always apply. This also applies to documents where no revision  
number is currently quoted.



## **Additional Requirements**

No additional requirements exist for Analogue PMR handsets and ancillary equipment at this time.

## **Obtaining Technical Standards**

ETSI technical standards may be obtained free of charge for individual use from the ETSI web site. [www.etsi.org](http://www.etsi.org)

CENELEC, IEC and CISPR standards may be obtained at cost from, or through [www.cenelec.org](http://www.cenelec.org) and from [www.iec.ch](http://www.iec.ch) respectively.



## **TECHNICAL SPECIFICATION**

**FOR**

**ANALOGUE PMR BASE STATIONS AND ANCILLARY  
EQUIPMENT**

**ISSUED BY**

**BOTSWANA COMMUNICATIONS REGULATORY  
AUTHORITY**

**Document Number: TS0005**  
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# Technical Specification for Analogue PMR Base Stations and Ancillary Equipment

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Website: [www.bocra.org.bw](http://www.bocra.org.bw)

## Scope

This specification applies to all analogue PMR base stations and ancillary equipment to be used in Botswana.

Where terminal equipment supports more than one interface type, each interface must meet the requirements applicable to it. It may therefore be necessary to make reference to additional specifications.

## Entry into Force

This specification shall enter into force on 15/01/2016.

## Document History

| <b>Description</b>                                 | <b>Status</b> | <b>Date</b> |
|--|---------------|-------------|
| Analogue PMR Base Stations and Ancillary Equipment | Original V1.1 | 11/12/2015  |
|  |               |             |
|  |               |             |
|  |               |             |

## Spectrum Allocation

Various, VHF and UHF frequency bands are allocated for use by analogue PMR base stations and ancillary equipment in Botswana.

## Health, Safety, and Generic Emissions

The following universal specifications shall be applied.

**TS0001:** Health, Safety and Generic Emissions of Radio and Telecommunications Terminal Equipment.

## Technical, Spectrum and EMC Requirements

The following specifications shall be applied.

### **ETSI EN 300 086-1 V1.4.1**

Electromagnetic compatibility and Radio spectrum Matters (ERM); Land Mobile Service; Radio equipment with an internal or external RF connector intended primarily for analogue speech; Part 1: Technical characteristics and methods of measurement

### **ETSI EN 300 086-2 V1.3.1**

Electromagnetic compatibility and Radio spectrum Matters (ERM); Land Mobile Service; Radio equipment with an internal or external RF connector intended primarily for analogue speech; Part 2: Harmonized EN covering the essential requirements of article 3.2 of the R&TTE Directive

### **ETSI EN 300 113-1 V1.7.1**

Electromagnetic compatibility and Radio spectrum Matters (ERM); Land mobile service; Radio equipment intended for the transmission of data (and/or speech) using constant or non-constant envelope modulation and having an antenna connector; Part 1: Technical characteristics and methods of measurement

### **ETSI EN 300 113-2 V1.5.1**

Electromagnetic compatibility and Radio spectrum Matters (ERM); Land mobile service; Radio equipment intended for the transmission of data (and/or speech) using constant or non-constant envelope modulation and having an antenna connector; Part 2: Harmonized EN covering the essential requirements of article 3.2 of the R&TTE Directive

**ETSI EN 300 471-1 V1.2.1**

Electromagnetic Compatibility and Radio spectrum Matters (ERM); Land Mobile Service; Rules for Access and the Sharing of common used channels by equipment complying with 300 113; Part 1: Technical characteristics and methods of measurement

**ETSI EN 300 471-2 V1.1.1**

Electromagnetic Compatibility and Radio spectrum Matters (ERM); Land Mobile Service; Rules for Access and the Sharing of common used channels by equipment complying with EN 300 113; Part 2: Harmonized EN covering essential requirements under article 3.2 of the R&TTE Directive

**ETSI EN 301 489-16 V1.2.1**

Electromagnetic compatibility and Radio spectrum Matters (ERM); ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 16: Specific conditions for analogue cellular radio communications equipment, mobile and portable

**ETSI EN 301 489-1 V1.9.2**

Electromagnetic compatibility and Radio spectrum Matters (ERM); ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 1: Common technical requirements

**ETSI EN 301 489-5 V1.3.1**

Electromagnetic compatibility and Radio spectrum Matters (ERM); ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 5: Specific conditions for Private land Mobile Radio (PMR) and ancillary equipment (speech and non-speech)

**ETSI EN 300 793 V1.1.1**

Electromagnetic compatibility and Radio spectrum Matters (ERM); Land Mobile Service; Presentation of equipment for type testing

**Important Note:** The revision numbers of the documents given in the approval standard are the minimum standards that apply. Should updated versions of these documents be published, the latest version will always apply. This also applies to documents where no revision number is currently quoted.

## Additional Requirements

Additional requirements may exist for the use of Analogue PMR base stations and ancillary equipment. A licence must be obtained before

equipment of this type can be used in Botswana. This licence will detail conditions of use and any additional requirements which must be met.

## Obtaining Technical Standards

ETSI technical standards may be obtained free of charge for individual use from the ETSI web site. [www.etsi.org](http://www.etsi.org)

CENELEC, IEC and CISPR standards may be obtained at cost from, or through [www.cenelec.org](http://www.cenelec.org) and from [www.iec.ch](http://www.iec.ch) respectively.





# **TECHNICAL SPECIFICATION**

**FOR**

**TETRA HANDSETS AND ANCILLARY EQUIPMENT**

**ISSUED BY**

**BOTSWANA COMMUNICATIONS REGULATORY  
AUTHORITY**

**Document Number: TS0006**  
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**Date: 11 December 2015**

# Technical Specification for TETRA Handsets and Ancillary Equipment

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Website: [www.bocra.org.bw](http://www.bocra.org.bw)

## Scope

This specification applies to all TETRA handsets and ancillary equipment to be used in Botswana.

Where terminal equipment supports more than one interface type, each interface must meet the requirements applicable to it. It may therefore be necessary to make reference to additional specifications.

## Entry into force

This specification shall enter into force on 15/01/2016.

## Document History

| Description                            | Status        | Date       |
|--|---------------|------------|
| TETRA Handsets and Ancillary Equipment | Original V1.1 | 11/12/2015 |
|  |               |            |
|  |               |            |
|  |               |            |
|  |               |            |

## Spectrum Allocation

The following frequency band has been allocated for use by TETRA handsets and ancillary equipment in Botswana: 390.000 – 399.900 MHz.

## Health, Safety, and Generic Emissions

The following universal specifications shall be applied.

**TS0001:** Health, Safety and Generic Emissions of Radio and Telecommunications Terminal Equipment.

## Technical, Spectrum and EMC Requirements

The following specifications shall be applied.

### **ETSI EN 303 035-1 V1.2.1**

Terrestrial Trunked Radio (TETRA); Harmonised EN for TETRA equipment covering essential requirements under article 3.2 of the R&TTE Directive; Part 1: Voice plus Data (V+D)

### **ETSI EN 303 035-2 V1.2.2**

Terrestrial Trunked Radio (TETRA); Harmonised EN for TETRA equipment covering essential requirements under article 3.2 of the R&TTE Directive;  
Part 2: Direct Mode Operation (DMO)

### **ETSI EN 300 394-1 V3.3.1**

Terrestrial Trunked Radio (TETRA); Conformance testing specification:  
Part 1: Radio

### **ETSI EN 301 489-1 V1.9.2**

Electromagnetic compatibility and Radio spectrum Matters (ERM); ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 1: Common technical requirements

### **ETSI EN 301 489-18 V1.2.1**

Electromagnetic compatibility and Radio spectrum Matters (ERM); ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 18: Specific conditions for Terrestrial Trunked Radio (TETRA) equipment

**Important Note:** The revision numbers of the documents given in the approval standard are the minimum standards that apply. Should updated versions of these documents be published, the latest version

will always apply. This also applies to documents where no revision number is currently quoted.

## **Additional Requirements**

No additional requirements exist for TETRA handsets and ancillary equipment at this time.

## **Obtaining Technical Standards**

ETSI technical standards may be obtained free of charge for individual use from the ETSI web site. [www.etsi.org](http://www.etsi.org)

CENELEC, IEC and CISPR standards may be obtained at cost from, or through [www.cenelec.org](http://www.cenelec.org) and from [www.iec.ch](http://www.iec.ch) respectively.





# **TECHNICAL SPECIFICATION**

**FOR**

**TETRA BASE STATIONS AND ANCILLARY  
EQUIPMENT**

**ISSUED BY**

**BOTSWANA COMMUNICATIONS REGULATORY  
AUTHORITY**

**Document Number: TS0007**  
**Revision: Original V1.1**  
**Date: 11 December 2015**

# Technical Specification for TETRA Base Stations and Ancillary Equipment

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## Scope

This specification applies to all TETRA base stations and ancillary equipment to be used in Botswana.

Where terminal equipment supports more than one interface type, each interface must meet the requirements applicable to it. It may therefore be necessary to make reference to additional specifications.

## Entry into Force

This specification shall enter into force on 15/01/2016.

## Document History

| <b>Description</b>                          | <b>Status</b> | <b>Date</b> |
|---|---------------|-------------|
| TETRA Base Stations and Ancillary Equipment | Original V1.1 | 11/12/2015  |
|   |               |             |
|   |               |             |
|   |               |             |
|   |               |             |

## **Spectrum Allocation**

The following frequency band has been allocated for use by TETRA base stations and ancillary equipment in Botswana: 380.000 – 389.900 MHz.

## **Health, Safety, and Generic Emissions**

The following universal specifications shall be applied.

**TS0001:** Health, Safety and Generic Emissions of Radio and Telecommunications Terminal Equipment.

## **Technical, Spectrum and EMC Requirements**

The following specifications shall be applied.

### **ETSI EN 300 394-1-V3.3.1**

Terrestrial Trunked Radio (TETRA); Conformance testing specification; Part 1: Radio

### **ETSI EN 301 489-1 v1.9.2**

Electromagnetic compatibility and Radio spectrum Matters (ERM); ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 1: Common technical requirements

### **ETSI EN 301 489-18 v1.2.1**

Electromagnetic compatibility and Radio spectrum Matters (ERM); ElectroMagnetic Compability (EMC) standard for radio equipment and services; Part 18: Specific conditions for Terrestrial Trunked Radio (TETRA) equipment

### **ETSI EN 301 489-50 V1.2.1**

Electromagnetic compatibility and Radio spectrum Matters (ERM); ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 50: Specific conditions for Cellular Communication Base Station (BS), repeater and ancillary equipment

### **ETSI EN 303 035-1 V1.2.1**

Terrestrial Trunked Radio (TETRA) harmonised EN for TETRA equipment covering essential requirements under article 3.2 of the R&TTE directive; Part 1: Voice plus Data (V+D)

## **ETSI EN 303 035-2 V1.2.2**

Terrestrial Trunked Radio (TETRA); Harmonized EN for TETRA equipment covering essential requirements under article 3.2 of the R&TTE directive; Part 2: Direct Mode Operation (DMO)

**Important Note:** The revision numbers of the documents given in the approval standard are the minimum standards that apply. Should updated versions of these documents be published, the latest version will always apply. This also applies to documents where no revision number is currently quoted.

## **Additional Requirements**

Additional requirements exist for the use of TETRA base stations and ancillary equipment. A licence must be obtained before equipment of this type can be used in Botswana. This licence will detail conditions of use and any additional requirements which must be met.

## **Obtaining Technical Standards**

ETSI technical standards may be obtained free of charge for individual use from the ETSI web site. [www.etsi.org](http://www.etsi.org)

CENELEC, IEC and CISPR standards may be obtained at cost from, or through [www.cenelec.org](http://www.cenelec.org) and from [www.iec.ch](http://www.iec.ch) respectively.





# **TECHNICAL SPECIFICATION**

**FOR**

**CITIZENS' BAND RADIO AND ANCILLARY  
EQUIPMENT**

**ISSUED BY**

**BOTSWANA COMMUNICATIONS REGULATORY  
AUTHORITY**

**Document Number: TS0008**  
**Revision: Original V1.1**  
**Date: 11 December 2015**

# Technical Specification for Citizens' Band Radio and Ancillary Equipment

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## Scope

This specification applies to all citizens' band radio and ancillary equipment to be used in Botswana.

Where terminal equipment supports more than one interface type, each interface must meet the requirements applicable to it. It may therefore be necessary to make reference to additional specifications.

## Entry into Force

This specification shall enter into force on 15/01/2016.

## Document History

| <b>Description</b>                           | <b>Status</b> | <b>Date</b> |
|--|---------------|-------------|
| Citizens' Band Radio and Ancillary Equipment | Original V1.1 | 11/12/2015  |
|  |               |             |
|  |               |             |
|  |               |             |
|  |               |             |

## Spectrum Allocation

The following frequency band has been allocated for use by citizens' band radio and ancillary equipment in Botswana: 26.960 – 27.410 MHz.

## Health, Safety, and Generic Emissions

The following universal specifications shall be applied.

**TS0001:** Health, Safety and Generic Emissions of Radio and Telecommunications Terminal Equipment.

## Technical, Spectrum and EMC Requirements

The following specifications shall be applied.

### **ETSI EN 300 433-1 V1.3.1**

Electromagnetic compatibility and Radio spectrum Matters (ERM); Citizens' Band (CB) radio equipment; Part 1: Technical characteristics and methods of measurement

### **ETSI EN 300 433-2 V1.3.1**

Electromagnetic compatibility and Radio spectrum Matters (ERM); Citizens' Band (CB) radio equipment; Part 2: Harmonized EN covering the essential requirements of article 3.2 of the R&TTE Directive

### **ETSI EN 301 489-1 v1.9.2**

Electromagnetic compatibility and Radio spectrum Matters (ERM); ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 1: Common technical requirements

### **ETSI EN 301 489-13 v1.2.1**

Electromagnetic compatibility and Radio spectrum Matters (ERM); ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 13: Specific condition for Citizens' Band (CB) radio and ancillary equipment (speech and non-speech)

**Important Note:** The revision numbers of the documents given in the approval standard are the minimum standards that apply. Should updated versions of these documents be published, the latest version will always apply. This also applies to documents where no revision number is currently quoted.

## Additional Requirements

Additional requirements may exist for the use of Citizens' Band radio and ancillary equipment. A licence must be obtained before equipment of this type can be used in Botswana. This licence will detail conditions of use and any additional requirements which must be met.

## **Obtaining Technical Standards**

ETSI technical standards may be obtained free of charge for individual use from the ETSI web site. [www.etsi.org](http://www.etsi.org)

CENELEC, IEC and CISPR standards may be obtained at cost from, or through [www.cenelec.org](http://www.cenelec.org) and from [www.iec.ch](http://www.iec.ch) respectively.





## **TECHNICAL SPECIFICATION**

**FOR**

**AMATEUR RADIO AND ANCILLARY EQUIPMENT**

**ISSUED BY**

**BOTSWANA COMMUNICATIONS REGULATORY  
AUTHORITY**

**Document Number: TS0009**  
**Revision: Original V1.1**  
**Date: 11 December 2015**

# Technical Specification for Amateur Radio and Ancillary Equipment

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## Scope

This specification applies to all amateur radio and ancillary equipment to be used in Botswana.

Where terminal equipment supports more than one interface type, each interface must meet the requirements applicable to it. It may therefore be necessary to make reference to additional specifications.

## Entry into Force

This specification shall enter into force on 15/01/2016.

## Document History

| <b>Description</b>                    | <b>Status</b> | <b>Date</b> |
|---------------------------------------|---------------|-------------|
| Amateur Radio and Ancillary Equipment | Original V1.1 | 11/12/2015  |
|                                       |               |             |
|                                       |               |             |
|                                       |               |             |

## Spectrum Allocation

Various frequency bands have been allocated for use by amateur radio and ancillary equipment in Botswana.

## Health, Safety, and Generic Emissions

The following universal specifications shall be applied.

**TS0001:** Health, Safety and Generic Emissions of Radio and Telecommunications Terminal Equipment.

## Technical, Spectrum and EMC Requirements

The following specifications shall be applied.

### **ETSI EN 301 783-1 V1.2.1**

Electromagnetic compatibility and Radio spectrum Matters (ERM); Land Mobile Service; Commercially available amateur radio equipment; Part 1: Technical characteristics and methods of measurement

### **ETSI EN 301 783-2-V1.2.1**

Electromagnetic compatibility and Radio spectrum Matters (ERM); Land Mobile Service; Commercially available amateur radio equipment; Part 2: Harmonized EN covering the essential requirements of article 3.2 of the R&TTE Directive

### **ETSI EN 301 489-1 V1.9.2**

Electromagnetic compatibility and Radio spectrum Matters (ERM); ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 1: Common technical requirements

### **ETSI EN 301 489-15 V1.2.1**

Electromagnetic compatibility and Radio spectrum Matters (ERM); ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 15: Specific conditions for commercially available amateur radio equipment

**Important Note:** The revision numbers of the documents given in the approval standard are the minimum standards that apply. Should updated versions of these documents be published, the latest version will always apply. This also applies to documents where no revision number is currently quoted.

## **Additional Requirements**

Additional requirements may exist for the use of amateur radio and ancillary equipment. A licence must be obtained before equipment of this type can be used in Botswana. This licence will detail conditions of use and any additional requirements which must be met.

## **Obtaining Technical Standards**

ETSI technical standards may be obtained free of charge for individual use from the ETSI web site. [www.etsi.org](http://www.etsi.org)

CENELEC, IEC and CISPR standards may be obtained at cost from, or through [www.cenelec.org](http://www.cenelec.org) and from [www.iec.ch](http://www.iec.ch) respectively.





# **TECHNICAL SPECIFICATION**

**FOR**

**V-SAT AND ANCILLARY EQUIPMENT**

**ISSUED BY**

**BOTSWANA COMMUNICATIONS REGULATORY  
AUTHORITY**

**Document Number: TS0010**  
**Revision: Original V1.1**  
**Date: 11 December 2015**

# Technical Specification for V-SAT and Ancillary Equipment

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## Scope

This specification applies to all V-SAT and ancillary equipment to be used in Botswana.

Where terminal equipment supports more than one interface type, each interface must meet the requirements applicable to it. It may therefore be necessary to make reference to additional specifications.

## Entry into Force

This specification shall enter into force on 15/01/2016.

## Document History

| <b>Description</b>            | <b>Status</b> | <b>Date</b> |
|-------------------------------|---------------|-------------|
| V-SAT and Ancillary Equipment | Original V1.1 | 11/12/2015  |
|                               |               |             |
|                               |               |             |
|                               |               |             |
|                               |               |             |

## Spectrum Allocation

Frequencies are assigned on an individual licence basis for all V-SAT and ancillary equipment in Botswana.

## Health, Safety, and Generic Emissions

The following universal specifications shall be applied.

**TS0001:** Health, Safety and Generic Emissions of Radio and Telecommunications Terminal Equipment.

## Technical, Spectrum and EMC Requirements

The following specifications shall be applied.

### **ETSI EN 301 443 V1.3.1**

Satellite Earth stations and Systems (SES); Harmonised EN for Very Small Aperture Terminal (VSAT); Transmit-only, transmit-and-receive, receive-only satellite earth stations operating in the 4 GHz and 6 GHz frequency bands covering essential requirements under article 3.2 of the R&TTE directive

### **ETSI EN 301 428 V1.3.1**

Satellite Earth stations and Systems (SES); Harmonised EN for Very Small Aperture Terminal (VSAT); Transmit-only, transmit/receive or receive-only satellite earth stations operating in the 11/12/14 GHz frequency bands covering essential requirements under article 3(2) of the R&TTE directive

### **ETSI EN 301 489-1 V1.9.2**

Electromagnetic compatibility and Radio spectrum Matters (ERM); ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 1: Common technical requirements

### **ETSI EN 301 489-12 V2.2.2**

Electromagnetic compatibility and Radio spectrum Matters (ERM); ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 12: Specific conditions for Very Small Aperture Terminal (VSAT), Satellite Interactive Earth Stations operated in the frequency ranges between 4GHz and 30GHz in the Fixed Satellite Service (FSS)

**Important Note:** The revision numbers of the documents given in the approval standard are the minimum standards that apply. Should updated versions of these documents be published, the latest version will always apply. This also applies to documents where no revision number is currently quoted.

## **Additional Requirements**

Additional requirements may exist for the use of V-SAT and ancillary equipment. A licence must be obtained before equipment of this type can be used in Botswana. This licence will detail conditions of use and any additional requirements which must be met.

## **Obtaining Technical Standards**

ETSI technical standards may be obtained free of charge for individual use from the ETSI web site. [www.etsi.org](http://www.etsi.org)

CENELEC, IEC and CISPR standards may be obtained at cost from, or through [www.cenelec.org](http://www.cenelec.org) and from [www.iec.ch](http://www.iec.ch) respectively.





## **TECHNICAL SPECIFICATION**

**FOR**

**MOBILE EARTH STATIONS (MES), SATELLITE NEWS  
GATHERING (SNG) AND ANCILLARY EQUIPMENT**

**ISSUED BY**

**BOTSWANA COMMUNICATIONS REGULATORY  
AUTHORITY**

**Document Number: TS0011**  
**Revision: Original V1.1**  
**Date: 11 December 2015**

# Technical Specification for Mobile Earth Stations (MES), Satellite News Gathering (SNG) and Ancillary Equipment

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## Scope

This specification applies to all Mobile Earth Stations (MES), Satellite News Gathering (SNG) and ancillary equipment to be used in Botswana.

Where terminal equipment supports more than one interface type, each interface must meet the requirements applicable to it. It may therefore be necessary to make reference to additional specifications.

## Entry into force

This specification shall enter into force on 15/01/2016.

## Document History

| <b>Description</b>  | <b>Status</b> | <b>Date</b> |
|---|---------------|-------------|
| Mobile Earth Stations (MES), Satellite News Gathering (SNG) and Ancillary Equipment | Original V1.1 | 11/12/2015  |
|   |               |             |
|   |               |             |
|   |               |             |
|   |               |             |

## **Spectrum Allocation**

Frequencies are assigned on an individual licence basis for all Satellite News Gathering (SNG) equipment in Botswana.

## **Health, Safety, and Generic Emissions**

The following universal specifications shall be applied.

**TS0001:** Health, Safety and Generic Emissions of Radio and Telecommunications Terminal Equipment.

## **Technical, Spectrum and EMC Requirements**

The following specifications shall be applied.

### **ETSI EN 301 426 V1.2.1**

Satellite Earth Stations and Systems (SES); Harmonized EN for Low data rate Land Mobile satellite Earth Stations (LMES) and Maritime Mobile satellite Earth Stations (MMES) not intended for distress and safety communications operating in the 1,5/1,6 GHz frequency bands covering essential requirements under article 3.2 of the R&TTE Directive

### **ETSI EN 301 427 V1.2.1**

Satellite Earth Stations and Systems (SES); Harmonized EN for Low data rate Mobile satellite Earth Stations (MESs) except aeronautical mobile satellite earth stations, operating in the 11/12/14 GHz frequency bands covering essential requirements under article 3.2 of the R&TTE directive

### **ETSI EN 301 430 V1.1.1**

Satellite Earth stations and Stations (SES); Harmonised EN for Satellite News Gathering Transportable Earth Stations (SNG TES) operating in the 11-12/13-14 GHz frequency bands covering essential requirements under Article 3.2 of the R&TTE Directive

### **ETSI EN 301 441 V1.1.1**

Satellite Earth Stations and Systems (SES); Harmonized EN for Mobile Earth Stations (MESs), including handheld earth stations, for Satellite Personal Communications Networks (S-PCN) in the 1,6/2,4 GHz bands under the Mobile Satellite Service (MSS) covering essential requirements under Article 3.2 of the R&TTE directive

### **ETSI EN 301 442 V1.2.1**

Satellite Earth Stations and Systems (SES); Harmonized EN for Mobile Earth Stations (MESs), including handheld earth stations, for Satellite Personal Communications Networks (S-PCN) in the 2,0 GHz bands under the Mobile Satellite Service (MSS) covering essential requirements under article 3.2 of the R&TTE directive

**ETSI EN 301 444 V1.2.2**

Satellite Earth Stations and Systems (SES); Harmonized EN for Land Mobile Earth Stations (LMES) operating in the 1,5 GHz and 1,6 GHz bands providing voice and/or data communications covering essential requirements of article 3.2 of the R&TTE directive

**ETSI EN 301 489-1 V1.9.2**

Electromagnetic compatibility and Radio spectrum Matters (ERM); ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 1: Common technical requirements

**ETSI EN 301 489-19 V1.2.1**

Electromagnetic compatibility and Radio spectrum Matters (ERM); ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 19: Specific conditions for Receive Only Mobile Earth Stations (ROMES) operating in the 1,5 GHz band providing data communication

**ETSI EN 301 489-20 V1.2.1**

Electromagnetic compatibility and Radio spectrum Matters (ERM); ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 20: Specific conditions for Mobile Earth Stations (MES) used in the Mobile Satellite Services (MSS)

**ETSI EN 301 681 V1.4.1**

Satellite Earth Stations and Systems (SES); Harmonized EN for Mobile Earth Stations (MESs) of Geostationary mobile satellite systems, including handheld earth stations, for Satellite Personal Communications Networks (S-PCN) in the 1,5/1,6 GHz bands under the Mobile Satellite Service (MSS) covering the essential requirements of article 3.2 of the R&TTE Directive

**ETSI EN 301 721 V1.2.1**

Satellite Earth Stations and Systems (SES); Harmonized EN for Mobile Earth Stations (MES) providing Low Bit Rate Data Communications (LBRDC) using Low Earth Orbiting (LEO) satellites operating below 1 GHz covering essential requirements under Article 3.2 of the R&TTE Directive

### **ETSI EN 302 574-1 V1.1.1**

Satellite Earth Stations and Systems (SES); Harmonized Standard for satellite earth stations for MSS operating in the 1 980 MHz to 2 010 MHz (earth-to-space) and 2 170 MHz to 2 200 MHz (space-to-earth) frequency bands; Part 1: Complementary Ground Component (CGC) for wideband systems: Harmonized EN covering the essential requirements of article 3.2 of the R&TTE Directive

### **ETSI EN 302 574-2 V1.1.1**

Satellite Earth Stations and Systems (SES); Harmonized Standard for satellite earth stations for MSS operating in the 1 980 MHz to 2 010 MHz (earth-to-space) and 2 170 MHz to 2 200 MHz (space-to-earth) frequency bands; Part 2: User Equipment (UE) for wideband systems: Harmonized EN covering the essential requirements of article 3.2 of the R&TTE Directive

### **ETSI EN 302 574-3 V1.1.1**

Satellite Earth Stations and Systems (SES); Harmonized Standard for satellite earth stations for MSS operating in the 1 980 MHz to 2 010 MHz (earth-to-space) and 2 170 MHz to 2 200 MHz (space-to-earth) frequency bands; Part 3: User Equipment (UE) for narrowband systems: Harmonized EN covering the essential requirements of article 3.2 of the R&TTE Directive

### **ETSI EN 302 977 V1.1.2**

Satellite Earth Stations and Systems (SES); Harmonized EN for Vehicle-Mounted Earth Stations (VMES) operating in the 14/12 GHz frequency bands covering the essential requirements of article 3.2 of the R&TTE directive

### **ETSI EN 303 978 V1.1.2**

Satellite Earth Stations and Systems (SES); Harmonized EN for Earth Stations on Mobile Platforms (ESOMP) transmitting towards satellites in geostationary orbit in the 27,5 GHz to 30,0 GHz frequency bands covering the essential requirements of article 3.2 of the R&TTE Directive

**Important Note:** The revision numbers of the documents given in the approval standard are the minimum standards that apply. Should updated versions of these documents be published, the latest version will always apply. This also applies to documents where no revision number is currently quoted.

## **Additional Requirements**

Additional requirements may exist for the operation of Mobile Earth Stations (MES), Satellite News Gathering (SNG) and ancillary

equipment. A licence must be obtained before equipment of this type can be used in Botswana. This licence will detail conditions of use and any additional requirements which must be met.

## **Obtaining Technical Standards**

ETSI technical standards may be obtained free of charge for individual use from the ETSI web site. [www.etsi.org](http://www.etsi.org)

CENELEC, IEC and CISPR standards may be obtained at cost from, or through [www.cenelec.org](http://www.cenelec.org) and from [www.iec.ch](http://www.iec.ch) respectively.





# **TECHNICAL SPECIFICATION**

**FOR**

**FIXED EARTH STATIONS AND ANCILLARY  
EQUIPMENT**

**ISSUED BY**

**BOTSWANA COMMUNICATIONS REGULATORY  
AUTHORITY**

**Document Number: TS0012**  
**Revision: Original V1.1**  
**Date: 11 December 2015**

# Technical Specification for Fixed Earth Stations and Ancillary Equipment

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## Scope

This specification applies to all fixed earth stations and ancillary equipment to be used in Botswana.

Where terminal equipment supports more than one interface type, each interface must meet the requirements applicable to it. It may therefore be necessary to make reference to additional specifications.

## Entry into Force

This specification shall enter into force on 15/01/2016.

## Document History

| <b>Description</b>                           | <b>Status</b> | <b>Date</b> |
|--|---------------|-------------|
| Fixed Earth Stations and Ancillary Equipment | Original V1.1 | 11/12/2015  |
|  |               |             |
|  |               |             |
|  |               |             |

## Spectrum Allocation

Frequencies are assigned on an individual licence basis for all fixed earth stations and ancillary equipment in Botswana.

## Health, Safety, and Generic Emissions

The following universal specifications shall be applied.

**TS0001:** Health, Safety and Generic Emissions of Radio and Telecommunications Terminal Equipment.

## Technical, Spectrum and EMC Requirements

The following specifications shall be applied.

### **ETSI EN 301 459 V1.4.1**

Satellite Earth stations and Systems (SES); Harmonised EN for Satellite Interactive Terminal (SIT) and Satellite User Terminals (SUT) transmitting towards satellites in geostationary orbit in the 29.5 – 30.0 GHz frequency bands covering essential requirements under article 3.2 of the R&TTE directive

### **ETSI EN 301 360 V1.2.1**

Satellite Earth stations and Systems (SES); Harmonised EN for Satellite Interactive Terminal (SIT) and Satellite User Terminals (SUT) transmitting towards satellites in geostationary orbit in the 27.5 – 29.5 GHz frequency bands covering essential requirements under article 3.2 of the R&TTE directive

### **ETSI EN 301 489-1 V1.9.2**

Electromagnetic compatibility and Radio spectrum Matters (ERM); ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 1: Common technical requirements

**Important Note:** The revision numbers of the documents given in the approval standard are the minimum standards that apply. Should updated versions of these documents be published, the latest version will always apply. This also applies to documents where no revision number is currently quoted.

## Additional Requirements

Additional requirements exist for the operation of fixed earth stations operating in Botswana. A licence must be obtained before equipment of this type can be used in Botswana. This licence will detail conditions of use and any additional requirements which must be met.

## **Obtaining Technical Standards**

ETSI technical standards may be obtained free of charge for individual use from the ETSI web site. [www.etsi.org](http://www.etsi.org)

CENELEC, IEC and CISPR standards may be obtained at cost from, or through [www.cenelec.org](http://www.cenelec.org) and from [www.iec.ch](http://www.iec.ch) respectively.





# **TECHNICAL SPECIFICATION**

**FOR**

**RADIO FIXED LINKS**

**ISSUED BY**

**BOTSWANA COMMUNICATIONS REGULATORY  
AUTHORITY**

**Document Number: TS0015**  
**Revision: Original V1.1**  
**Date: 11 December 2015**

# Technical Specification for Radio Fixed Links

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Website: [www.bocra.org.bw](http://www.bocra.org.bw)

## Scope

This specification applies to all radio fixed links to be used in Botswana.

Where terminal equipment supports more than one interface type, each interface must meet the requirements applicable to it. It may therefore be necessary to make reference to additional specifications.

## Entry into Force

This specification shall enter into force on 15/01/2016.

## Document History

| <b>Description</b> | <b>Status</b> | <b>Date</b> |
|--------------------|---------------|-------------|
| Radio Fixed Links  | Original V1.1 | 11/12/2015  |
|                    |               |             |
|                    |               |             |
|                    |               |             |

## **Spectrum Allocation**

Various frequency bands have been allocated for use by radio fixed links and ancillary equipment in Botswana. Spectrum is assigned on a case by case basis by BTA.

## **Health, Safety, and Generic Emissions**

The following universal specifications shall be applied.

**TS0001:** Health, Safety and Generic Emissions of Radio and Telecommunications Terminal Equipment.

## **Technical, Spectrum and EMC Requirements**

The following specifications shall be applied.

### **ETSI EN 301 489-1 V1.9.2**

Electromagnetic compatibility and Radio spectrum Matters (ERM); ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 1: Common technical requirements

### **ETSI EN 301 489-4 V2.1.1**

Electromagnetic compatibility and Radio spectrum Matters (ERM); ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 4: Specific conditions for fixed radio links and ancillary equipment

### **ETSI EN 302 217-1 V2.1.1**

Fixed Radio Systems; Characteristics and requirements for point-to-point equipment and antennas; Part 1: Overview and system-independent common characteristics

### **ETSI EN 302 217-2-2 V2.2.1**

Fixed Radio Systems; Characteristics and requirements for point-to-point equipment and antennas; Part 2-2: Digital systems operating in frequency bands where frequency coordination is applied; Harmonized EN covering the essential requirements of article 3.2 of the R&TTE Directive

### **ETSI EN 302 217-3 V2.2.1**

Fixed Radio Systems; Characteristics and requirements for point-to-point equipment and antennas; Part 3: Equipment operating in frequency bands where both frequency coordinated or uncoordinated

deployment might be applied; Harmonized EN covering the essential requirements of article 3.2 of the R&TTE Directive

**ETSI EN 302 217-4-2 V1.5.1**

Fixed Radio Systems; Characteristics and requirements for point-to-point equipment and antennas; Part 4-2: Antennas; Harmonized EN covering the essential requirements of article 3.2 of the R&TTE Directive

**ETSI EN 302 326-1 V1.2.2**

Fixed Radio Systems; Multipoint Equipment and Antennas; Part 1: Overview and Requirements for Digital Multipoint Radio Systems

**ETSI EN 302 326-2 V1.2.2**

Fixed Radio Systems; Multipoint Equipment and Antennas; Part 2: Harmonized EN covering the essential requirements of article 3.2 of the R&TTE Directive for Digital Multipoint Radio Equipment

**ETSI EN 302 326-3 V1.3.1**

Fixed Radio Systems; Multipoint Equipment and Antennas; Part 3: Harmonized EN covering the essential requirements of article 3.2 of the R&TTE Directive for Multipoint Radio Antennas

**Important Note:** The revision numbers of the documents given in the approval standard are the minimum standards that apply. Should updated versions of these documents be published, the latest version will always apply. This also applies to documents where no revision number is currently quoted.

## **Additional Requirements**

Additional requirements may exist for the use of fixed links and ancillary equipment at this time. A licence must be obtained before equipment of this type can be used in Botswana. This licence will detail conditions of use and any additional requirements which must be met.

## **Obtaining Technical Standards**

ETSI technical standards may be obtained free of charge for individual use from the ETSI web site. [www.etsi.org](http://www.etsi.org)

CENELEC, IEC and CISPR standards may be obtained at cost from, or through [www.cenelec.org](http://www.cenelec.org) and from [www.iec.ch](http://www.iec.ch) respectively.





# **TECHNICAL SPECIFICATION**

**FOR**

**DECT CORDLESS TELEPHONE HANDSETS AND  
ANCILLARY EQUIPMENT**

**ISSUED BY**

**BOTSWANA COMMUNICATIONS REGULATORY  
AUTHORITY**

**Document Number: TS0016**  
**Revision: Original V1.1**  
**Date: 11 December 2015**

# Technical Specification for DECT Cordless Telephone Handsets and Ancillary Equipment

## Contents

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## Scope

This specification applies to all DECT Cordless Telephone Handsets and ancillary equipment to be used in Botswana.

Where terminal equipment supports more than one interface type, each interface must meet the requirements applicable to it. It may therefore be necessary to make reference to additional specifications.

## Entry into Force

This specification shall enter into force on 15/01/2016.

## Document History

| <b>Description</b>                                       | <b>Status</b> | <b>Date</b> |
|--|---------------|-------------|
| DECT Cordless Telephone Handsets and Ancillary Equipment | Original V1.1 | 11/12/2015  |
|  |               |             |
|  |               |             |
|  |               |             |
|  |               |             |

## Spectrum Allocation

The following frequency band has been allocated for use by DECT cordless telephone handsets and ancillary equipment in Botswana: 1880 – 1900 MHz.

## Health, Safety, and Generic Emissions

The following universal specifications shall be applied.

**TS0001:** Health, Safety and Generic Emissions of Radio and Telecommunications Terminal Equipment.

## Technical, Spectrum and EMC Requirements

The following specifications shall be applied.

### **ETSI EN 301 406 V2.1.1**

Digital Enhanced Cordless Telecommunications (DECT); Harmonised EN for Digital Enhanced Cordless Telecommunications (DECT) covering essential requirements under Article 3.2 of the R&TTE directive; Generic radio

### **ETSI EN 301 489-1 V1.9.2**

Electromagnetic compatibility and Radio spectrum Matters (ERM); ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 1: Common technical requirements

### **ETSI EN 301 489-6 V1.4.1**

Electromagnetic compatibility and Radio spectrum Matters (ERM); ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 6: Specific conditions for Digital Enhanced Cordless Telecommunications (DECT) equipment

**Important Note:** The revision numbers of the documents given in the approval standard are the minimum standards that apply. Should updated versions of these documents be published, the latest version will always apply. This also applies to documents where no revision number is currently quoted.

## Additional Requirements

No additional requirements exist for use of DECT cordless handsets and ancillary equipment which complies with the requirements of this specification.

## Obtaining Technical Standards

ETSI technical standards may be obtained free of charge for individual use from the ETSI web site. [www.etsi.org](http://www.etsi.org)

CENELEC, IEC and CISPR standards may be obtained at cost from, or through [www.cenelec.org](http://www.cenelec.org) and from [www.iec.ch](http://www.iec.ch) respectively.





# **TECHNICAL SPECIFICATION**

**FOR**

**DECT BASE STATIONS AND ANCILLARY EQUIPMENT**

**ISSUED BY**

**BOTSWANA COMMUNICATIONS REGULATORY  
AUTHORITY**

**Document Number: TS0017**  
**Revision: Original V1.1**  
**Date: 11 December 2015**

# Technical Specification for DECT Base Stations and Ancillary Equipment

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## Scope

This specification applies to all DECT base stations and ancillary equipment to be used in Botswana.

Where terminal equipment supports more than one interface type, each interface must meet the requirements applicable to it. It may therefore be necessary to make reference to additional specifications.

## Entry into Force

This specification shall enter into force on 15/01/2016.

## Document History

| Description                                | Status        | Date       |
|--|---------------|------------|
| DECT Base Stations and Ancillary Equipment | Original V1.1 | 11/12/2015 |
|  |               |            |
|  |               |            |
|  |               |            |
|  |               |            |

## Spectrum Allocation

The following frequency band has been allocated for use by DECT base stations and ancillary equipment in Botswana: 1880 – 1900 MHz.

## Health, Safety, and Generic Emissions

The following universal specifications shall be applied.

**TS0001:** Health, Safety and Generic Emissions of Radio and Telecommunications Terminal Equipment.

## Technical, Spectrum and EMC Requirements

The following specifications shall be applied.

### **ETSI EN 301 406 V2.1.1**

Digital Enhanced Cordless Telecommunications (DECT); Harmonised EN for Digital Enhanced Cordless Telecommunications (DECT) covering essential requirements under Article 3.2 of the R&TTE directive; Generic radio

### **ETSI EN 301 489-1 V1.9.2**

Electromagnetic compatibility and Radio spectrum Matters (ERM); ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 1: Common technical requirements

### **ETSI EN 301 489-6 V1.4.1**

Electromagnetic compatibility and Radio spectrum Matters (ERM); ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 6: Specific conditions for Digital Enhanced Cordless Telecommunications (DECT) equipment

### **ETSI EN 301 908-10 V4.2.1**

Electromagnetic compatibility and Radio spectrum Matters (ERM); Base Stations (BS), Repeaters and User Equipment (UE) for IMT-2000 Third-Generation cellular networks; Part 10: Harmonized EN for IMT-2000, FDMA/TDMA (DECT) covering essential requirements of article 3.2 of the R&TTE Directive

**Important Note:** The revision numbers of the documents given in the approval standard are the minimum standards that apply. Should updated versions of these documents be published, the latest version will always apply. This also applies to documents where no revision number is currently quoted.

## **Additional Requirements**

No additional requirements exist for use of DECT base stations and ancillary equipment which complies with the requirements of this specification.

DECT base stations must also comply with the requirements applicable to its wired interfaces.

## **Obtaining Technical Standards**

ETSI technical standards may be obtained free of charge for individual use from the ETSI web site. [www.etsi.org](http://www.etsi.org)

CENELEC, IEC and CISPR standards may be obtained at cost from, or through [www.cenelec.org](http://www.cenelec.org) and from [www.iec.ch](http://www.iec.ch) respectively.





## **TECHNICAL SPECIFICATION**

**FOR**

**RADIO MICROPHONES/IN-EAR MONITORING AND  
ANCILLARY EQUIPMENT**

**ISSUED BY**

**BOTSWANA COMMUNICATIONS REGULATORY  
AUTHORITY**

**Document Number: TS0018**  
**Revision: Original V1.1**  
**Date: 11 December 2015**

# Technical Specification for Radio Microphones/In-Ear Monitoring and Ancillary Equipment

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## Scope

This specification applies to all radio microphones/in-ear monitoring and ancillary equipment to be used in Botswana.

Where terminal equipment supports more than one interface type, each interface must meet the requirements applicable to it. It may therefore be necessary to make reference to additional specifications.

## Entry into Force

This specification shall enter into force on 15/01/2016.

## Document History

| Description   | Status        | Date       |
|---|---------------|------------|
| Radio Microphones/In-Ear Monitoring and Ancillary Equipment | Original V1.1 | 11/12/2015 |
|   |               |            |
|   |               |            |
|   |               |            |

## Spectrum Allocation

The following frequency bands have been allocated for use by radio microphones/in-ear monitoring and ancillary equipment in Botswana:

Radio Microphones: 42.400 – 43.600 MHz, 53.000 – 54.000 MHz, 800.000 – 814.000 MHz and 854.000 – 862.000 MHz.

In-Ear Monitoring: 862.000 – 870.000 MHz

## Health, Safety, and Generic Emissions

The following universal specifications shall be applied.

**TS0001:** Health, Safety and Generic Emissions of Radio and Telecommunications Terminal Equipment.

## Technical, Spectrum and EMC Requirements

The following specifications shall be applied.

### **ETSI EN 300 220-1 V2.4.1**

Electromagnetic compatibility and Radio spectrum Matters (ERM); Short Range Devices (SRD); Radio equipment to be used in the 25 MHz to 1 000 MHz frequency range with power levels ranging up to 500 mW; Part 1: Technical characteristics and test methods

### **ETSI EN 300 220-2 V2.4.1**

Electromagnetic compatibility and Radio spectrum Matters (ERM); Short Range Devices (SRD); Radio equipment to be used in the 25 MHz to 1 000 MHz frequency range with power levels ranging up to 500 mW; Part 2: Harmonized EN covering essential requirements under article 3.2 of the R&TTE Directive

### **ETSI EN 300 220-3 V1.1.1**

Electromagnetic compatibility and Radio spectrum Matters (ERM); Short Range Devices (SRD); Radio equipment to be used in the 25 MHz to 1000 MHz frequency range with power levels ranging up to 500 mW; Part 3: Harmonised EN covering essential requirements under article 3.2 of the R&TTE directive

### **ETSI EN 300 440-1 V1.6.1**

Electromagnetic compatibility and Radio spectrum Matters (ERM); Short Range Devices (SRD); Radio equipment to be used in the 1GHz to 40 GHz frequency range; Part 1: Technical characteristics and test methods

**ETSI EN 300 440-2 V1.4.1**

Electromagnetic compatibility and Radio spectrum Matters (ERM);  
Short range devices; Radio equipment to be used in the 1 GHz to 40  
GHz frequency range; Part 2: Harmonized EN covering the essential  
requirements of article 3.2 of the R&TTE Directive

**ETSI EN 300 422-1 V1.5.1**

Electromagnetic compatibility and Radio spectrum Matters (ERM);  
Wireless microphones in the 25 MHz to 3 GHz frequency range; Part 1:  
Technical characteristics and methods of measurement

**ETSI EN 300 422-2 V1.4.1**

Electromagnetic compatibility and Radio spectrum Matters (ERM);  
Technical characteristics and test methods for wireless microphones in  
the 25 MHz to 3 GHz frequency range; Part 2: Harmonised EN  
covering essential requirements under the R&TTE directive

**ETSI EN 301 357-1-V1.4.1**

Electromagnetic compatibility and Radio spectrum Matters (ERM);  
Cordless audio devices in the range 25 MHz to 2 000 MHz; Part 1:  
Technical characteristics and test methods

**ETSI EN 301 357-2 V1.4.1**

Electromagnetic compatibility and Radio spectrum Matters (ERM);  
Cordless audio devices in the range 25 MHz to 2 000 MHz Part 2:  
Harmonised EN covering essential requirements of article 3.2 of the  
R&TTE directive

**ETSI EN 301 489-1 V1.9.2**

Electromagnetic compatibility and Radio spectrum Matters (ERM);  
ElectroMagnetic Compatibility (EMC) standard for radio equipment and  
services; Part 1: Common technical requirements

**ETSI EN 301 489-9 V1.4.1**

Electromagnetic compatibility and Radio spectrum Matters (ERM);  
ElectroMagnetic Compatibility (EMC) standard for radio equipment and  
services; Part 9 Specific conditions for wireless microphones, similar  
Radio Frequency (RF) audio link equipment, cordless audio and in-ear  
monitoring devices

**Important Note:** The revision numbers of the documents given in the  
approval standard are the minimum standards that apply. Should  
updated versions of these documents be published, the latest version  
will always apply. This also applies to documents where no revision  
number is currently quoted.

## **Additional Requirements**

Additional requirements may exist for the use of radio microphones/in-ear monitoring and ancillary equipment. A licence must be obtained before equipment of this type can be used in Botswana. This licence will detail conditions of use and any additional requirements which must be met.

## **Obtaining Technical Standards**

ETSI technical standards may be obtained free of charge for individual use from the ETSI web site. [www.etsi.org](http://www.etsi.org)

CENELEC, IEC and CISPR standards may be obtained at cost from, or through [www.cenelec.org](http://www.cenelec.org) and from [www.iec.ch](http://www.iec.ch) respectively.



## **TECHNICAL SPECIFICATION**

**FOR**

**WiFi/RLAN/BLUETOOTH 2.4 GHZ AND ANCILLARY  
EQUIPMENT**

**ISSUED BY**

**BOTSWANA COMMUNICATIONS REGULATORY  
AUTHORITY**

**Document Number: TS0019**  
**Revision: Original V1.1**  
**Date: 11 December 2015**

# Technical Specification for WiFi/RLAN/Bluetooth 2.4 GHz and Ancillary Equipment

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## Scope

This specification applies to all WiFi/RLAN/Bluetooth 2.4 GHz and ancillary equipment to be used in Botswana.

Where terminal equipment supports more than one interface type, each interface must meet the requirements applicable to it. It may therefore be necessary to make reference to additional specifications.

## Entry into Force

This specification shall enter into force on 15/01/2016.

## Document History

| <b>Description</b>                                  | <b>Status</b> | <b>Date</b> |
|---|---------------|-------------|
| WiFi/RLAN/Bluetooth 2.4 GHz and Ancillary Equipment | Original V1.1 | 11/12/2015  |
|   |               |             |
|   |               |             |
|   |               |             |
|   |               |             |

## Spectrum Allocation

The following frequency band has been allocated for use by WiFi/RLAN/Bluetooth 2.4 GHz and ancillary equipment in Botswana: 2400 – 2483.5 MHz.

## Health, Safety, and Generic Emissions

The following universal specifications shall be applied.

**TS0001:** Health, Safety and Generic Emissions of Radio and Telecommunications Terminal Equipment.

## Technical, Spectrum and EMC Requirements

The following specifications shall be applied.

### **ETSI EN 300 328 V1.9.1**

Electromagnetic compatibility and Radio spectrum Matters (ERM); Wideband transmission systems; Data transmission equipment operating in the 2.4 GHz ISM band and using wide band modulation techniques; Harmonized EN covering the essential requirements of article 3.2 of the R&TTE Directive

### **ETSI EN 300 440-1 V1.6.1**

Electromagnetic compatibility and Radio spectrum Matters (ERM); Short Range Devices (SRD); Radio equipment to be used in the 1 GHz to 40 GHz frequency range; Part 1: Technical characteristics and test methods

### **ETSI EN 300 440-2 V1.4.1**

Electromagnetic compatibility and Radio spectrum Matters (ERM); Short range devices; Radio equipment to be used in the 1 GHz to 40 GHz frequency range; Part 2: Harmonized EN covering the essential requirements of article 3.2 of the R&TTE Directive

### **ETSI EN 301 489-1 V1.9.2**

Electromagnetic compatibility and Radio spectrum Matters (ERM); ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 1: Common technical requirements

### **ETSI EN 301 489-17 V2.2.1**

Electromagnetic compatibility and Radio spectrum Matters (ERM); ElectroMagnetic Compatibility (EMC) standard for radio equipment; Part 17: Specific conditions for Broadband Data Transmission Systems

**Important Note:** The revision numbers of the documents given in the approval standard are the minimum standards that apply. Should updated versions of these documents be published, the latest version will always apply. This also applies to documents where no revision number is currently quoted.

## **Additional Requirements**

No additional requirements exist for the private indoor use of WiFi/RLAN/Bluetooth equipment and applications. However, a licence must be obtained before equipment of this type can be used to offer public access or “hotspots” in Botswana. This licence will detail conditions of use and any additional requirements which must be met.

## **Obtaining Technical Standards**

ETSI technical standards may be obtained free of charge for individual use from the ETSI web site. [www.etsi.org](http://www.etsi.org)

CENELEC, IEC and CISPR standards may be obtained at cost from, or through [www.cenelec.org](http://www.cenelec.org) and from [www.iec.ch](http://www.iec.ch) respectively.





# **TECHNICAL SPECIFICATION**

**FOR**

**HIPERLAN 5.2 – 5.8 GHZ AND ANCILLARY  
EQUIPMENT**

**ISSUED BY**

**BOTSWANA COMMUNICATIONS REGULATORY  
AUTHORITY**

**Document Number: TS0020**  
**Revision: Original V1.1**  
**Date: 11 December 2015**

# Technical Specification for HIPERLAN 5.2 – 5.8 GHz and Ancillary Equipment

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## Scope

This specification applies to all HIPERLAN 5.2 – 5.8 GHz and ancillary equipment to be used in Botswana.

Where terminal equipment supports more than one interface type, each interface must meet the requirements applicable to it. It may therefore be necessary to make reference to additional specifications.

## Entry into Force

This specification shall enter into force on 15/01/2016.

## Document History

| <b>Description</b>                             | <b>Status</b> | <b>Date</b> |
|--|---------------|-------------|
| HIPERLAN 5.2 – 5.8 GHz and Ancillary Equipment | Original V1.1 | 11/12/2015  |
|  |               |             |
|  |               |             |
|  |               |             |
|  |               |             |

## Spectrum Allocation

The following frequency bands have been allocated for use by HIPERLAN 5.2 – 5.8 GHz and ancillary equipment in Botswana: 5150 – 5350 MHz and 5470 – 5725 MHz.

## Health, Safety, and Generic Emissions

The following universal specifications shall be applied.

**TS0001:** Health, Safety and Generic Emissions of Radio and Telecommunications Terminal Equipment.

## Technical, Spectrum and EMC Requirements

The following specifications shall be applied.

### **ETSI EN 301 489-1 V1.9.2**

Electromagnetic compatibility and Radio spectrum Matters (ERM); ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 1: Common technical requirements

### **ETSI EN 301 489-17 V2.2.1**

Electromagnetic compatibility and Radio spectrum Matters (ERM); ElectroMagnetic Compatibility (EMC) standard for radio equipment; Part 17: Specific conditions for Broadband Data Transmission Systems

### **ETSI EN 301 893 V1.8.1**

Broadband Radio Access Networks (BRAN); 5 GHz High Performance RLAN; Harmonised EN covering essential requirements of article 3.2 of the R&TTE directive

### **ETSI EN 302 502 V1.2.1**

Broadband Radio Access Networks (BRAN); 5,8 GHz fixed broadband data transmitting systems; Harmonized EN covering the essential requirements of article 3.2 of the R&TTE Directive

**Important Note:** The revision numbers of the documents given in the approval standard are the minimum standards that apply. Should updated versions of these documents be published, the latest version will always apply. This also applies to documents where no revision number is currently quoted.

## Additional Requirements

No additional requirements exist for the private indoor use of HIPERLAN equipment and applications for indoor use. However, a licence must be obtained before equipment of this type can be used to offer public access or “hotspots” in Botswana. This licence will detail conditions of use and any additional requirements which must be met.

## **Obtaining Technical Standards**

ETSI technical standards may be obtained free of charge for individual use from the ETSI web site. [www.etsi.org](http://www.etsi.org)

CENELEC, IEC and CISPR standards may be obtained at cost from, or through [www.cenelec.org](http://www.cenelec.org) and from [www.iec.ch](http://www.iec.ch) respectively.





# **TECHNICAL SPECIFICATION**

**FOR**

**GROUND AND AIRBORNE MODEL CONTROL  
EQUIPMENT**

**ISSUED BY**

**BOTSWANA COMMUNICATIONS REGULATORY  
AUTHORITY**

**Document Number: TS0021**  
**Revision: Original V1.1**  
**Date: 11 December 2015**

# Technical Specification for Ground and Airborne Model Control Equipment

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## Scope

This specification applies to all ground and airborne model control equipment to be used in Botswana.

Where terminal equipment supports more than one interface type, each interface must meet the requirements applicable to it. It may therefore be necessary to make reference to additional specifications.

## Entry into Force

This specification shall enter into force on 15/01/2016.

## Document History

| <b>Description</b>                          | <b>Status</b> | <b>Date</b> |
|---|---------------|-------------|
| Ground and Airborne Model Control Equipment | Original V1.1 | 11/12/2015  |
|   |               |             |
|   |               |             |
|   |               |             |
|   |               |             |

## Spectrum Allocation

The following frequency bands have been allocated for use by ground and airborne model control equipment in Botswana:

Ground: 26.995 MHz, 27.045 MHz, 27.095 MHz, 27.145 MHz and 27.195 MHz.

Airborne: 35.000 – 35.250 MHz

## Health, Safety, and Generic Emissions

The following universal specifications shall be applied.

**TS0001:** Health, Safety and Generic Emissions of Radio and Telecommunications Terminal Equipment.

## Technical, Spectrum and EMC Requirements

The following specifications shall be applied.

### **ETSI EN 300 220-1 V2.4.1**

Electromagnetic compatibility and Radio spectrum Matters (ERM); Short Range Devices (SRD); Radio equipment to be used in the 25 MHz to 1000 MHz frequency range with power levels ranging up to 500 mW; Part 1: Technical characteristics and test methods

### **ETSI EN 300 220-2 V2.4.1**

Electromagnetic compatibility and Radio spectrum Matters (ERM); Short Range Devices (SRD); Radio equipment to be used in the 25 MHz to 1 000 MHz frequency range with power levels ranging up to 500 mW; Part 2: Harmonized EN covering essential requirements under article 3.2 of the R&TTE Directive

### **ETSI EN 300 220-3 V1.1.1**

Electromagnetic compatibility and Radio spectrum Matters (ERM); Short Range Devices (SRD); Radio equipment to be used in the 25 MHz to 1 000 MHz frequency range with power levels ranging up to 500 mW; Part 3: Harmonized EN covering essential requirements under article 3.2 of the R&TTE Directive

### **ETSI EN 301 489-1 V1.9.2**

Electromagnetic compatibility and Radio spectrum Matters (ERM); ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 1: Common technical requirements

### **ETSI EN 301 489-3 V1.6.1**

Electromagnetic compatibility and Radio spectrum Matters (ERM); ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 3: Specific conditions for Short Range Devices (SRD) operating on frequencies between 9 kHz and 246 GHz

**Important Note:** The revision numbers of the documents given in the approval standard are the minimum standards that apply. Should updated versions of these documents be published, the latest version will always apply. This also applies to documents where no revision number is currently quoted.

## **Additional Requirements**

Additional requirements may exist for the use of ground and airborne model control equipment. A licence must be obtained before equipment of this type can be used in Botswana. This licence will detail conditions of use and any additional requirements which must be met.

## **Obtaining Technical Standards**

ETSI technical standards may be obtained free of charge for individual use from the ETSI web site. [www.etsi.org](http://www.etsi.org)

CENELEC, IEC and CISPR standards may be obtained at cost from, or through [www.cenelec.org](http://www.cenelec.org) and from [www.iec.ch](http://www.iec.ch) respectively.





## **TECHNICAL SPECIFICATION**

**FOR**

**UMTS BASE STATIONS AND RELATED EQUIPMENT**

**ISSUED BY**

**BOTSWANA COMMUNICATIONS REGULATORY  
AUTHORITY**

**Document Number: TS0022**  
**Revision: Original V1.1**  
**Date: 11 December 2015**

# Technical Specification for UMTS Base Stations and Related Equipment

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## Scope

This specification applies to all UMTS Base Stations and related equipment to be used in Botswana.

Where terminal equipment supports more than one interface type, each interface must meet the requirements applicable to it. It may therefore be necessary to make reference to additional specifications.

## Entry into force

This specification shall enter into force on 15/01/2016.

## Document History

| Description                              | Status        | Date       |
|--|---------------|------------|
| UMTS Base Stations and Related Equipment | Original V1.1 | 11/12/2015 |
|  |               |            |
|  |               |            |
|  |               |            |
|  |               |            |

## Spectrum Allocation

The following frequency bands have been allocated for use by UMTS base stations and related equipment in Botswana: 1900 - 1920 MHz, 2110 – 2170 MHz and 2010 – 2025 MHz.

## Health, Safety, and Generic Emissions

The following universal specifications shall be applied.

**TS0001:** Health, Safety and Generic Emissions of Radio and Telecommunications Terminal Equipment.

## Technical, Spectrum and EMC Requirements

The following specifications shall be applied.

### **ETSI EN 301 489-1 V1.9.2**

Electromagnetic compatibility and Radio spectrum Matters (ERM); ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 1: Common technical requirements

### **ETSI EN 301 489-23 V1.5.1**

Electromagnetic compatibility and Radio spectrum Matters (ERM); ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 23: Specific conditions for IMT-2000 CDMA Direct Spread (UTRA) Base Station (BS) radio, repeater and ancillary equipment

### **ETSI EN 301 489-50 V1.2.1**

Electromagnetic compatibility and Radio spectrum Matters (ERM); ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 50: Specific conditions for Cellular Communication Base Station (BS), repeater and ancillary equipment

### **ETSI EN 301 908-1 V7.1.1**

IMT cellular networks; Harmonized EN covering the essential requirements of article 3.2 of the R&TTE Directive; Part 1: Introduction and common requirements

### **ETSI EN 301 908-3 V7.1.1**

IMT cellular networks; Harmonized EN covering the essential requirements of article 3.2 of the R&TTE Directive; Part 3: CDMA Direct Spread (UTRA FDD) Base Stations (BS)

**ETSI EN 301 908-7 V5.2.1**

IMT cellular networks; Harmonized EN covering the essential requirements of article 3.2 of the R&TTE Directive; Part 7: CDMA TDD (UTRA TDD) Base Stations (BS)

**ETSI EN 301 908-11 v5.2.1**

IMT cellular networks; Harmonized EN covering the essential requirements of article 3.2 of the R&TTE Directive; Part 11: CDMA Direct Spread (UTRA FDD) (Repeaters)

**ETSI EN 301 908-18 V7.1.2**

IMT cellular networks; Harmonized EN covering the essential requirements of article 3.2 of the R&TTE Directive; Part 18: E-UTRA, UTRA and GSM/EDGE Multi- Standard Radio (MSR) Base Station (BS)

**Important Note:** The revision numbers of the documents given in the approval standard are the minimum standards that apply. Should updated versions of these documents be published, the latest version will always apply. This also applies to documents where no revision number is currently quoted.

## Additional Requirements

No additional requirements exist for UMTS base stations and related equipment at this time other than the need to obtain a license from BTA for the operation of such equipment.

## Obtaining Technical Standards

ETSI technical standards may be obtained free of charge for individual use from the ETSI web site. [www.etsi.org](http://www.etsi.org)

CENELEC, IEC and CISPR standards may be obtained at cost from, or through [www.cenelec.org](http://www.cenelec.org) and from [www.iec.ch](http://www.iec.ch) respectively.





# **TECHNICAL SPECIFICATION**

**FOR**

**UMTS HANDSETS AND RELATED EQUIPMENT**

**ISSUED BY**

**BOTSWANA COMMUNICATIONS REGULATORY  
AUTHORITY**

**Document Number: TS0023**  
**Revision: Original V1.1**  
**Date: 11 December 2015**

# Technical Specification for UMTS Handsets and Related Equipment

## Contents

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## Scope

This specification applies to all UMTS handsets and related equipment to be used in Botswana.

Where terminal equipment supports more than one interface type, each interface must meet the requirements applicable to it. It may therefore be necessary to make reference to additional specifications.

## Entry into Force

This specification shall enter into force on 15/01/2016.

## Document History

| <b>Description</b>                  | <b>Status</b> | <b>Date</b> |
|-------------------------------------|---------------|-------------|
| UMTS Handsets and Related Equipment | Original V1.1 | 11/12/2015  |
|                                     |               |             |
|                                     |               |             |
|                                     |               |             |
|                                     |               |             |

## Spectrum Allocation

The following frequency bands have been allocated for use by UMTS handsets and related equipment in Botswana: 1900 – 1920 MHz, 1920 – 1980 MHz and 2010 – 2025 MHz.

## Health, Safety, and Generic Emissions

The following universal specifications shall be applied.

**TS0001:** Health, Safety and Generic Emissions of Radio and Telecommunications Terminal Equipment.

## Technical, Spectrum and EMC Requirements

The following specifications shall be applied.

### **ETSI EN 301 489-1 v1.9.2**

Electromagnetic compatibility and Radio spectrum Matters (ERM); ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 1: Common technical requirements

### **ETSI EN 301 489-24 v1.5.1**

Electromagnetic compatibility and Radio spectrum Matters (ERM); ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 24: Specific conditions for IMT-2000 CDMA Direct Spread (UTRA) for Mobile and portable (UE) radio and ancillary equipment

### **ETSI EN 301 908-1 V7.1.1**

IMT cellular networks; Harmonized EN covering the essential requirements of article 3.2 of the R&TTE Directive; Part 1: Introduction and common requirements

### **ETSI EN 301 908-2 V6.2.1**

IMT cellular networks; Harmonized EN covering the essential requirements of article 3.2 of the R&TTE Directive; Part 2: CDMA Direct Spread (UTRA FDD) User Equipment (UE)

### **ETSI EN 301 908-6 V5.2.1**

IMT cellular networks; Harmonized EN covering the essential requirements of article 3.2 of the R&TTE Directive; Part 6: CDMA TDD (UTRA TDD) User Equipment (UE)

**Important Note:** The revision numbers of the documents given in the approval standard are the minimum standards that apply. Should

updated versions of these documents be published, the latest version will always apply. This also applies to documents where no revision number is currently quoted.

## **Additional Requirements**

No additional requirements exist for UMTS handsets and related equipment at this time.

## **Obtaining Technical Standards**

ETSI technical standards may be obtained free of charge for individual use from the ETSI web site. [www.etsi.org](http://www.etsi.org)

CENELEC, IEC and CISPR standards may be obtained at cost from, or through [www.cenelec.org](http://www.cenelec.org) and from [www.iec.ch](http://www.iec.ch) respectively.

# Technical Specification for Equipment Connecting to the Analogue PSTN

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## Scope

This specification applies to any equipment which offers an interface that may be directly connected to an Analogue Public Switched Telephone Network (PSTN) interface of any public network in Botswana.

Where terminal equipment supports more than one interface type, each interface must meet the requirements applicable to it. It may therefore be necessary to make reference to additional specifications.

## Entry into Force

This specification shall enter into force on 15/01/2016.

## Document History

| Description                               | Status        | Date       |
|---|---------------|------------|
| Equipment Connecting to the Analogue PSTN | Original V1.1 | 11/12/2015 |
|   |               |            |
|   |               |            |
|   |               |            |

## Health, Safety, and Generic Emissions

The following universal specifications shall be applied.

**TS0001:** Health, Safety and Generic Emissions of Radio and Telecommunications Terminal Equipment.

## Technical, Spectrum and EMC Requirements

The following specifications shall be applied.

### **ETSI TBR 021 ed.1**

Terminal Equipment (TE); Attachment requirements for pan-European approval for connection to the analogue Public Switched Telephone Networks (PSTNs) of TE (excluding TE supporting the voice telephony service) in which network addressing, if provided, is by means of Dual Tone Multi Frequency (DTMF) signalling

Or

### **ETSI ES 203 021 –1 V.2.1.1**

Access and Terminals (AT); Harmonized basic attachment requirements for Terminals for connection to analogue interfaces of the Telephone Networks; Update of the technical contents of TBR 021, EN 301 437, TBR 015, TBR 017; Part 1: General aspects

### **ETSI ES 203 021 –2 V2.1.2**

Access and Terminals (AT); Harmonized basic attachment requirements for Terminals for connection to analogue interfaces of the Telephone Networks; Update of the technical contents of TBR 021, EN 301 437, TBR 015, TBR 017; Part 2: Basic transmission and protection of the network from harm

### **ETSI ES 203 021 –3 V2.1.2**

Access and Terminals (AT); Harmonized basic attachment requirements for Terminals for connection to analogue interfaces of the Telephone Networks; Update of the technical contents of TBR 021, EN 301 437, TBR 015, TBR 017; Part 3: Basic Interworking with the Public Telephone Networks

## Additional requirements

### Pulse Dialling

For products that offer Pulse or Loop Disconnect dialling, the performance shall be in conformance with **ETSI ES201 187**.

### **ETSI ES 201 187 V1.1.1**

2-wire analogue voice band interfaces; Loop Disconnect (LD) dialling specific requirements

### Analogue Voice

Analogue telephones and other equipment which offer analogue handset telephony such as modems or fax machines shall comply with:

### **ETSI EN 300 659-2 V1.3.1**

Access and Terminals (AT); Analogue access to the Public Switched Telephone Network (PSTN); Subscriber line protocol over the local loop for display (and related) services; Part 2: Off-hook data transmission

### **ETSI ES 200 778-2 V1.2.2**

Access and Terminals (AT); Analogue access to the Public Switched Telephone Network (PSTN); Protocol over the local loop for display and related services; Terminal equipment requirements; Part 2: Off-hook data transmission

### **ETSI ES 201 235-3 V1.3.1**

Access and Terminals (AT); Specification of Dual-Tone Multi-Frequency (DTMF) Transmitters and Receivers; Part 3: Receivers

### **ETSI ES 201 912 V1.2.1**

Access and Terminals (AT); Short Message Service (SMS) for PSTN/ISDN; Short Message Communication between a fixed network Short Message Terminal Equipment and a Short Message Service Centre

### **ETSI TBR 038 ed.1**

Public Switched Telephone Network (PSTN); Attachment requirements for a terminal equipment incorporating an analogue handset function capable of supporting the justified case service when connected to the analogue interface of the PSTN in Europe

## Caller Line Identification (CLI)

Products which offer CLI, should recognize DTMF signalling in accordance with the following standard:

### **ETSI ES 201 235-1-V1.1.1**

Specification of Dual Tone Multi-Frequency (DTMF) Transmitters and Receivers; Part 1: General

### **ETSI ES 203 021 –1 V.2.1.1**

Access and Terminals (AT); Harmonized basic attachment requirements for Terminals for connection to analogue interfaces of the Telephone Networks; Update of the technical contents of TBR 021, EN 301 437, TBR 015, TBR 017; Part 1: General aspects

### **ETSI ES 203 021 –2 V2.1.2**

Access and Terminals (AT); Harmonized basic attachment requirements for Terminals for connection to analogue interfaces of the Telephone Networks; Update of the technical contents of TBR 021, EN 301 437, TBR 015, TBR 017; Part 2: Basic transmission and protection of the network from harm

### **ETSI ES 203 021 –3 V2.1.2**

Access and Terminals (AT); Harmonized basic attachment requirements for Terminals for connection to analogue interfaces of the Telephone Networks; Update of the technical contents of TBR 021, EN 301 437, TBR 015, TBR 017; Part 3: Basic Interworking with the Public Telephone Networks

**Important Note:** The revision numbers of the documents given in the approval standard are the minimum standards that apply. Should updated versions of these documents be published, the latest version will always apply. This also applies to documents where no revision number is currently quoted.

## Obtaining Technical Standards

ETSI technical standards may be obtained free of charge for individual use from the ETSI web site. [www.etsi.org](http://www.etsi.org)

CENELEC, IEC and CISPR standards may be obtained at cost from, or through [www.cenelec.org](http://www.cenelec.org) and from [www.iec.ch](http://www.iec.ch) respectively.



## **TECHNICAL SPECIFICATION**

**FOR**

**EQUIPMENT CONNECTING TO ANALOGUE LEASED  
LINE SERVICES**

**ISSUED BY**

**BOTSWANA COMMUNICATIONS REGULATORY  
AUTHORITY**

**Document Number: TS0025**  
**Revision: Original V1.1**  
**Date: 11 December 2015**

# Technical Specification for Equipment Connecting to Analogue Leased Line Services

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## Scope

This specification applies to any equipment which offers an interface that may be connected to public 2 or 4 wire Analogue Leased Lines in Botswana.

Where terminal equipment supports more than one interface type, each interface must meet the requirements applicable to it. It may therefore be necessary to make reference to additional specifications.

Equipment covered by this specification includes, but is not limited to, the Analogue Leased Line interfaces of the following equipment types:

- PBX
- Modems
- Answering machines
- Security alarms
- Remote telemetry

## Entry into Force

This specification shall enter into force on 15/01/2016.

## Document History

| Description   | Status        | Date       |
|---|---------------|------------|
| Equipment Connecting to Analogue Leased Line Services | Original V1.1 | 11/12/2015 |
|   |               |            |
|   |               |            |
|   |               |            |

## Health, Safety, and Generic Emissions

The following universal specifications shall be applied.

**TS0001:** Health, Safety and Generic Emissions of Radio and Telecommunications Terminal Equipment.

## Technical, Spectrum and EMC Requirements

The following specifications shall be applied.

### **ETSI TBR 015 ed.1**

Business TeleCommunications (BTC); Ordinary and Special quality voice bandwidth 2-wire analogue leased lines (A2O and A2S); Attachment requirements for terminal equipment interface

### **ETSI TBR 017 ed.1**

Business TeleCommunications (BTC); Ordinary and Special quality voice bandwidth 4-wire analogue leased lines (A4O and A4S); Attachment requirements for terminal equipment interface

Or

### **ETSI ES 203 021 –1 V.2.1.1**

Access and Terminals (AT); Harmonized basic attachment requirements for Terminals for connection to analogue interfaces of the Telephone Networks; Update of the technical contents of TBR 021, EN 301 437, TBR 015, TBR 017; Part 1: General aspects

### **ETSI ES 203 021 –2 V2.1.2**

Access and Terminals (AT); Harmonized basic attachment requirements for Terminals for connection to analogue interfaces of the Telephone Networks; Update of the technical contents of TBR 021, EN 301 437, TBR 015, TBR 017; Part 2: Basic transmission and protection of the network from harm

### **ETSI ES 203 021 –3 V2.1.2**

Access and Terminals (AT); Harmonized basic attachment requirements for Terminals for connection to analogue interfaces of the Telephone Networks; Update of the technical contents of TBR 021, EN 301 437, TBR 015, TBR 017; Part 3: Basic Interworking with the Public Telephone Networks

**Important Note:** The revision numbers of the documents given in the approval standard are the minimum standards that apply. Should updated versions of these documents be published, the latest version will always apply. This also applies to documents where no revision number is currently quoted.

## **Additional Requirements**

No additional requirements exist for equipment connecting to analogue leased line services

## **Obtaining Technical Standards**

ETSI technical standards may be obtained free of charge for individual use from the ETSI web site. [www.etsi.org](http://www.etsi.org)

CENELEC, IEC and CISPR standards may be obtained at cost from, or through [www.cenelec.org](http://www.cenelec.org) and from [www.iec.ch](http://www.iec.ch) respectively.





## **TECHNICAL SPECIFICATION**

**FOR**

**EQUIPMENT CONNECTING TO ADSL SERVICES**

**ISSUED BY**

**BOTSWANA COMMUNICATIONS REGULATORY  
AUTHORITY**

**Document Number: TS0026**  
**Revision: Original V1.1**  
**Date: 11 December 2015**

# Technical Specification for Equipment Connecting to ADSL Services

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## Scope

This specification applies to any equipment which offers an interface that may be connected to public ADSL services in Botswana.

Where terminal equipment supports more than one interface type, each interface must meet the requirements applicable to it. It may therefore be necessary to make reference to additional specifications.

Equipment covered by this specification includes, but is not limited to the Analogue Leased Line interfaces of the following equipment types:

- Modems
- splitters

## Entry into Force

This specification shall enter into force on 15/01/2016.

## Document History

| <b>Description</b>                    | <b>Status</b> | <b>Date</b> |
|---------------------------------------|---------------|-------------|
| Equipment Connecting to ADSL Services | Original V1.1 | 11/12/2015  |
|                                       |               |             |
|                                       |               |             |
|                                       |               |             |
|                                       |               |             |

## Health, Safety, and Generic Emissions

The following universal specifications shall be applied.

**TS0001:** Health, Safety and Generic Emissions of Radio and Telecommunications Terminal Equipment.

## Technical, Spectrum and EMC Requirements

The following specifications shall be applied.

### **ETSI TS 101 135 V1.5.3**

Transmission and Multiplexing (TM); High bit-rate Digital Subscriber Line (HDSL) transmission systems on metallic local lines; HDSL core specification and applications for combined ISDN-BA and 2 048 kbit/s transmission

### **ETSI ETR 152 ed.3**

Transmission and Multiplexing (TM); High bit-rate Digital Subscriber Line (HDSL) transmission system on metallic local lines; HDSL core specification and applications for 2 048 kbit/s based access digital sections

### **ETSI ES 202 913 V1.2.2**

Access and Terminals (AT); POTS requirements applicable to ADSL modems when connected to an analogue presented PSTN line

### **ETSI TS 101 952-1 V1.1.1**

Access network xDSL splitters for European deployment; Part 1: Generic specification of xDSL over POTS splitters

### **ETSI TS 101 952-2 V1.1.1**

Access, Terminals, Transmission and Multiplexing (ATTM); Access network xDSL splitters for European deployment; Part 2: Generic specification of xDSL over ISDN splitters and xDSL universal splitters

### **ETSI TS 101 952-3 V1.1.1**

Access, Terminals, Transmission and Multiplexing (ATTM); Access network xDSL splitters for European deployment; Part 3: Generic specification of static distributed filters for xDSL over POTS

### **ETSI TS 101 952-4 V1.1.1**

Access, Terminals, Transmission and Multiplexing (ATTM); Access network xDSL splitters for European deployment; Part 4: Specification for dynamic distributed filters for xDSL over POTS

**Important Note:** The revision numbers of the documents given in the approval standard are the minimum standards that apply. Should

updated versions of these documents be published, the latest version will always apply. This also applies to documents where no revision number is currently quoted.

## Additional Requirements

ADSL equipment should not affect the performance of the analogue PSTN. Reference should also be made to BTA specification TS0024 "Requirement for equipment connecting to the Analogue PSTN" in order to understand any additional requirements which apply.

It is recommended that consideration should be given to the following document:

### **ETSI TS 101 388 V1.4.1**

Access Terminals Transmission and Multiplexing (ATTM); Access transmission systems on metallic access cables; Asymmetric Digital Subscriber Line (ADSL) - European specific requirements [ITU-T Recommendation G.992.1 modified]

### **ITU-T Recommendation G.992.2**

Asymmetric Digital Subscriber Line (ADSL) transceivers

## Obtaining Technical Standards

ETSI technical standards may be obtained free of charge for individual use from the ETSI web site. [www.etsi.org](http://www.etsi.org)

CENELEC, IEC and CISPR standards may be obtained at cost from, or through [www.cenelec.org](http://www.cenelec.org) and from [www.iec.ch](http://www.iec.ch) respectively.



## **TECHNICAL SPECIFICATION**

**FOR**

**EQUIPMENT CONNECTING TO 2.048 Mbit/s DIGITAL  
LEASED LINE SERVICES**

**ISSUED BY**

**BOTSWANA COMMUNICATIONS REGULATORY  
AUTHORITY**

**Document Number: TS0027**  
**Revision: Original V1.1**  
**Date: 11 December 2015**

# Technical Specification for Equipment Connecting to 2.048 Mbit/s Digital Leased Line Services

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## Scope

This specification applies to any equipment which offers an interface that may be connected to public 2.048Mb/s Digital Leased Lines in Botswana. This specification assumes that E1 terminal equipment will always connect behind a network termination unit (NTU).

Where terminal equipment supports more than one interface type, each interface must meet the requirements applicable to it. It may therefore be necessary to make reference to additional specifications.

Equipment covered by this specification includes, but is not limited to the Digital Leased Line interfaces of the following equipment types:

- PBX
- Modems
- Routers
- Remote telemetry

## Entry into Force

This specification shall enter into force on 15/01/2016.

## Document History

| Description   | Status        | Date       |
|---|---------------|------------|
| Equipment Connecting to 2.048 Mbit/s Digital Leased Line Services | Original V1.1 | 11/12/2015 |
|   |               |            |
|   |               |            |
|   |               |            |
|   |               |            |

## Health, Safety, and Generic Emissions

The following universal specifications shall be applied.

**TS0001:** Health, Safety and Generic Emissions of Radio and Telecommunications Terminal Equipment.

## Technical, Spectrum and EMC Requirements

The following specifications shall be applied.

### **ETSI TBR 012 ed.1**

Business TeleCommunications (BTC); Open Network Provision (ONP) technical requirements; 2 048 kbit/s digital unstructured leased lines (D2048U); Attachment requirements for terminal equipment interface

### **ETSI TBR 013 ed.1**

Business TeleCommunications (BTC); 2 048 kbit/s digital structured leased lines (D2048S); Attachment requirements for terminal equipment interface

### **ETSI EN 300 248 v1.2.1**

Access and Terminals (AT); 2 048 kbit/s digital unstructured leased line (D2048U); Terminal equipment interface

### **ETSI EN 300 420 V1.2.1**

Access and Terminals (AT); 2 048 kbit/s digital structured leased lines (D2048S); Terminal equipment interface

### **ACIF/ACA S0016 section 5.3**

Requirements for Customer Equipment for connection to hierarchical digital interfaces

This latter ACIF/ACA standard may be used for either 120 $\Omega$  or 75 $\Omega$  connection.

**Important Note:** The revision numbers of the documents given in the approval standard are the minimum standards that apply. Should updated versions of these documents be published, the latest version will always apply. This also applies to documents where no revision number is currently quoted.

## Additional Requirements

Terminal equipment shall provide a facility to ground the outer conductor or screen of the coaxial pair or the screen of the symmetrical pair in accordance with ITU-T G.703. Section 9.4.

#### **ITU-T G.703. Section 9.4**

Physical/electrical characteristics of hierarchical digital interfaces; Grounding of outer conductor or screen

Where it is intended that a 75Ω interface connects via a Balun to 120Ω services, testing should be carried out with the Balun in place.

### **Obtaining Technical Standards**

ETSI technical standards may be obtained free of charge for individual use from the ETSI web site. [www.etsi.org](http://www.etsi.org)

CENELEC, IEC and CISPR standards may be obtained at cost from, or through [www.cenelec.org](http://www.cenelec.org) and from [www.iec.ch](http://www.iec.ch) respectively.





## **TECHNICAL SPECIFICATION**

**FOR**

**EQUIPMENT CONNECTING TO 34 Mb/s DIGITAL  
LEASED LINE SERVICES**

**ISSUED BY**

**BOTSWANA COMMUNICATIONS REGULATORY  
AUTHORITY**

**Document Number: TS0028**  
**Revision: Original V1.1**  
**Date: 11 December 2015**

# Technical Specification for Equipment Connecting to 34 Mbit/s Digital Leased Line Services

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## Scope

This specification applies to any equipment which offers an interface that may be connected to public 34Mbit/s Digital Leased Lines in Botswana.

Where terminal equipment supports more than one interface type, each interface must meet the requirements applicable to it. It may therefore be necessary to make reference to additional specifications.

Equipment covered by this specification includes, but is not limited to the Digital Leased Line interfaces of the following equipment types:

- Routers
- Frame relay equipment
- ATM equipment

## Entry into force

This specification shall enter into force on 15/01/2016.

## Document History

| Description  | Status        | Date       |
|--|---------------|------------|
| Equipment Connecting to 34 Mbit/s Digital Leased Line Services | Original V1.1 | 11/12/2015 |
|  |               |            |
|  |               |            |
|  |               |            |
|  |               |            |

## Health, Safety, and Generic Emissions

The following universal specifications shall be applied.

**TS0001:** Health, Safety and Generic Emissions of Radio and Telecommunications Terminal Equipment.

## Technical, Spectrum and EMC Requirements

It is recognised that a number of largely equivalent specifications exist for terminal equipment offering connection to E3 34Mbs services; it is also recognised that a great number of manufacturers continue to reference older ETSI specifications such as ETSI TBR 24 for this technology. Testing should be carried out to ensure compliance with either one of the following specifications:

### **ETSI EN 300 689 v1.2.1**

Access and Terminals (AT); 34Mbit/s digital leased line (D34U and D34S) Terminal equipment interface

### **ETSI TBR 024 ed.1**

Business TeleCommunications (BTC);  
34 Mbit/s digital unstructured and structured leased lines (D34U and D34S); Attachment requirements for terminal equipment interface

### **ACIF/ACA S0016 section 5.5**

Requirements for Customer Equipment for connection to hierarchical digital interfaces

**Important Note:** The revision numbers of the documents given in the approval standard are the minimum standards that apply. Should updated versions of these documents be published, the latest version will always apply. This also applies to documents where no revision number is currently quoted.

## Additional Requirements

No additional requirements exist for equipment offering connection to analogue leased lines at this time.

## Obtaining Technical Standards

ETSI technical standards may be obtained free of charge for individual use from the ETSI web site. [www.etsi.org](http://www.etsi.org)

CENELEC, IEC and CISPR standards may be obtained at cost from, or through [www.cenelec.org](http://www.cenelec.org) and from [www.iec.ch](http://www.iec.ch) respectively.





## **TECHNICAL SPECIFICATION**

**FOR**

**EQUIPMENT CONNECTING TO CO-DIRECTIONAL  
G.703 DIGITAL LEASED LINE SERVICES**

**ISSUED BY**

**BOTSWANA COMMUNICATIONS REGULATORY  
AUTHORITY**

**Document Number: TS0029**  
**Revision: Original V1.1**  
**Date: 11 December 2015**

# Technical Specification for Equipment Connecting to Co- Directional G.703 Digital Leased Line Services

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## Scope

This specification applies to any equipment which offers an interface that may be connected to public co-directional digital leased lines in Botswana.

Where terminal equipment supports more than one interface type, each interface must meet the requirements applicable to it. It may therefore be necessary to make reference to additional specifications.

Equipment covered by this specification includes, but is not limited to the interfaces of the following equipment types:

- Routers
- Frame relay equipment

## Entry into Force

This specification shall enter into force on 15/01/2016.

## Document History

| Description   | Status        | Date       |
|---|---------------|------------|
| Equipment Connecting to Co-Directional G.703 Digital Leased Line Services | Original V1.1 | 11/12/2015 |
|   |               |            |
|   |               |            |
|   |               |            |
|   |               |            |

## Health, Safety, and Generic Emissions

The following universal specifications shall be applied.

**TS0001:** Health, Safety and Generic Emissions of Radio and Telecommunications Terminal Equipment.

## Technical, Spectrum and EMC Requirements

The following specifications shall be applied.

### **ITU-T Recommendation G.703**

Physical/Electrical characteristics of Hierarchical Digital Interfaces

**Important Note:** The revision numbers of the documents given in the approval standard are the minimum standards that apply. Should updated versions of these documents be published, the latest version will always apply. This also applies to documents where no revision number is currently quoted.

## Additional Requirements

No additional requirements exist for equipment connecting to co-directional G.703 digital leased line services

## Obtaining Technical Standards

ETSI technical standards may be obtained free of charge for individual use from the ETSI web site. [www.etsi.org](http://www.etsi.org)

CENELEC, IEC and CISPR standards may be obtained at cost from, or through [www.cenelec.org](http://www.cenelec.org) and from [www.iec.ch](http://www.iec.ch) respectively.



# **TECHNICAL SPECIFICATION**

**FOR**

**EQUIPMENT CONNECTING TO X.25 PACKET SWITCHED  
NETWORKS**

**ISSUED BY**

**BOTSWANA COMMUNICATIONS REGULATORY  
AUTHORITY**

**Document Number: TS0030**  
**Revision: Original V1.1**  
**Date: 11 December 2015**

# Technical Specification for Equipment Connecting to X.25 Packet Switched Networks

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## Scope

This specification applies to any equipment that may be connected to public X.25 packet switched networks in Botswana.

Where terminal equipment supports more than one interface type, each interface must meet the requirements applicable to it. It may therefore be necessary to make reference to additional specifications.

Equipment covered by this specification includes, but is not limited to the interfaces of the following service types:

- X.25
- Other services offering X.21 connections

## Entry into Force

This specification shall enter into force on 15/01/2016.

## Document History

| <b>Description</b>                                    | <b>Status</b> | <b>Date</b> |
|---|---------------|-------------|
| Equipment Connecting to X.25 Packet Switched Networks | Original V1.1 | 11/12/2015  |
|   |               |             |
|   |               |             |
|   |               |             |
|   |               |             |

## Health, Safety, and Generic Emissions

The following universal specifications shall be applied.

**TS0001:** Health, Safety and Generic Emissions of Radio and Telecommunications Terminal Equipment.

## Technical, Spectrum and EMC Requirements

The following specifications shall be applied.

### **ETSI TBR 002 ed.1**

Digital Terminals and Access (DTA); Attachment requirements for Data Terminal Equipment (DTE) to connect to Packet Switched Public Data Networks (PSPDNs)

for CCITT Recommendation X.25 interfaces at data signaling rates up to 1920 kbit/s utilizing interfaces derived from CCITT Recommendations X.21 and X.21bis

or

### **ITU-T recommendation X.25**

X.25 : Interface between Data Terminal Equipment (DTE) and Data Circuit-terminating Equipment (DCE) for Terminals operating in the Packet Mode and connected to Public Data Networks by Dedicated Circuit.

### **ITU-T Recommendation X.21**

X.21 : Interface between Data Terminal Equipment and Data Circuit-terminating equipment for synchronous operation on Public Data Network

### **ITU-T Recommendation X.21 bis**

X.21 : Interface between Data Terminal Equipment and Data Circuit-terminating Equipment for synchronous operation on public data networks

**Important Note: The revision numbers of the documents given in the approval standard are the minimum standards that apply. Should updated versions of these documents be published, the latest version will always apply. This also applies to documents where no revision number is currently quoted.**

## Additional Requirements

For connections to X.25 packet switched networks, the physical interface of the terminal equipment shall conform to either ITU-T Recommendation V.35 or V.24

ITU-T Recommendation V.35

V.35 : Data transmission at 48 kbit/s using 60-108 kHz group band circuits

ITU-T Recommendation V.24

V.24 : List of definitions for interchange circuits between data terminal equipment (DTE) and data circuit-terminating equipment (DCE)

Other types of interface may be provided to the customer at the discretion of network operator.

## Obtaining Technical Standards

ETSI technical standards may be obtained free of charge for individual use from the ETSI web site. [www.etsi.org](http://www.etsi.org)

CENELEC, IEC and CISPR standards may be obtained at cost from, or through [www.cenelec.org](http://www.cenelec.org) and from [www.iec.ch](http://www.iec.ch) respectively.





## **TECHNICAL SPECIFICATION**

**FOR**

**EQUIPMENT CONNECTING TO HIGH SPEED SERIAL  
INTERFACES (HSSI)**

**ISSUED BY**

**BOTSWANA COMMUNICATIONS REGULATORY  
AUTHORITY**

**Document Number: TS0031**  
**Revision: Original V1.1**  
**Date: 11 December 2015**

# Technical Specification for Equipment Connecting to High Speed Serial Interfaces (HSSI)

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## Scope

This specification applies to any equipment that may be connected to public HSSI services in Botswana.

Where terminal equipment supports more than one interface type, each interface must meet the requirements applicable to it. It may therefore be necessary to make reference to additional specifications.

Equipment covered by this specification includes, but is not limited to the interfaces of the following service types:

- X.25
- Frame relay
- Other services offering HSSI connections

## Entry into Force

This specification shall enter into force on 15/01/2016.

## Document History

| Description   | Status        | Date       |
|---|---------------|------------|
| Equipment Connecting to High Speed Serial Interfaces (HSSI) | Original V1.1 | 11/12/2015 |
|   |               |            |
|   |               |            |
|   |               |            |
|   |               |            |

## Health, Safety, and Generic Emissions

The following universal specifications shall be applied.

**TS0001:** Health, Safety and Generic Emissions of Radio and Telecommunications Terminal Equipment.

## Technical, Spectrum and EMC Requirements

The following specifications shall be applied.

### **ANSI/TIA/EIA-612**

Electrical Characteristics for an Interface at Data Signalling Rates up to 52 Mbit/s.

**Important Note:** The revision numbers of the documents given in the approval standard are the minimum standards that apply. Should updated versions of these documents be published, the latest version will always apply. This also applies to documents where no revision number is currently quoted.

## Additional Requirements

No additional requirements exist for equipment connecting to High Speed Serial Interfaces (HSSI)

## Obtaining Technical Standards

ETSI technical standards may be obtained free of charge for individual use from the ETSI web site. [www.etsi.org](http://www.etsi.org)

CENELEC, IEC and CISPR standards may be obtained at cost from, or through [www.cenelec.org](http://www.cenelec.org) and from [www.iec.ch](http://www.iec.ch) respectively.



# **TECHNICAL SPECIFICATION**

**FOR**

**EQUIPMENT CONNECTING TO 64Kbit/s SERVICES**

**ISSUED BY**

**BOTSWANA COMMUNICATIONS REGULATORY  
AUTHORITY**

**Document Number: TS0032**  
**Revision: Original V1.1**  
**Date: 11 December 2015**

# Technical Specification for Equipment Connecting to 64Kbit/s Services

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## Scope

This specification applies to any equipment which offers an interface that may be directly connected to public 64Kbit/s services in Botswana.

Where terminal equipment supports more than one interface type, each interface must meet the requirements applicable to it. It may therefore be necessary to make reference to additional specifications.

Equipment covered by this specification includes, but is not limited to the interfaces of the following service types:

- Frame relay
- N\*64kbit/s
- All other services which offer 64Kbit/s interfaces

## Entry into Force

This specification shall enter into force on 15/01/2016.

## Document History

| Description                               | Status        | Date       |
|---|---------------|------------|
| Equipment Connecting to 64Kbit/s Services | Original V1.1 | 11/12/2015 |
|   |               |            |
|   |               |            |
|   |               |            |

## Health, Safety, and Generic Emissions

The following universal specifications shall be applied.

**TS0001:** Health, Safety and Generic Emissions of Radio and Telecommunications Terminal Equipment.

## Technical, Spectrum and EMC Requirements

The following specifications shall be applied.

### **ITU-T REC H.323**

H.323 : Packet-based multimedia communications systems

### **ITU-T REC. H.244**

H.244 : Synchronized aggregation of multiple 64 or 56 kbit/s channels

### **ETSI TBR 014 ed.1**

Business TeleCommunications (BTC);64 kbit/s digital unrestricted leased line with octet integrity (D64U);Attachment requirements for terminal equipment interface

including

### **ETSI TBR 014/A1 ed.1**

Business TeleCommunications (BTC);64 kbit/s digital unrestricted leased line with octet integrity (D64U);Attachment requirements for terminal equipment interface

Or

### **ETSI EN 300 290 V1.2.1**

Access and Terminals (AT); 64 kbit/s digital unrestricted leased line with octet integrity (D64U);Terminal equipment interface

**Important Note: The revision numbers of the documents given in the approval standard are the minimum standards that apply. Should updated versions of these documents be published, the latest version will always apply. This also applies to documents where no revision number is currently quoted.**

## **Additional Requirements**

No additional requirements exist for equipment connecting to 64Kbit/s services

## **Obtaining Technical Standards**

ETSI technical standards may be obtained free of charge for individual use from the ETSI web site. [www.etsi.org](http://www.etsi.org)

CENELEC, IEC and CISPR standards may be obtained at cost from, or through [www.cenelec.org](http://www.cenelec.org) and from [www.iec.ch](http://www.iec.ch) respectively.





# **TECHNICAL SPECIFICATION**

**FOR**

**EQUIPMENT CONNECTING TO X.21 SERVICES**

**ISSUED BY**

**BOTSWANA COMMUNICATIONS REGULATORY  
AUTHORITY**

**Document Number: TS0033**  
**Revision: Original V1.1**  
**Date: 11 December 2015**

# Technical Specification for Equipment Connecting to X.21 Services

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## Scope

This specification applies to any equipment which offers an interface that may be connected to public X.21 services in Botswana.

Where terminal equipment supports more than one interface type, each interface must meet the requirements applicable to it. It may therefore be necessary to make reference to additional specifications.

Equipment covered by this specification includes, but is not limited to the interfaces of the following service types:

- Frame Relay
- X.25
- Other X.21 connections to leased lines

## Entry into Force

This specification shall enter into force on 15/01/2016.

## Document History

| <b>Description</b>                    | <b>Status</b> | <b>Date</b> |
|---------------------------------------|---------------|-------------|
| Equipment Connecting to X.21 Services | Original V1.1 | 11/12/2015  |
|                                       |               |             |
|                                       |               |             |
|                                       |               |             |

## Health, Safety, and Generic Emissions

The following universal specifications shall be applied.

**TS0001:** Health, Safety and Generic Emissions of Radio and Telecommunications Terminal Equipment.

## Technical, Spectrum and EMC Requirements

The following specifications shall be applied.

### **ETSI ETS 300 103 ed.1**

Integrated Services Digital Network (ISDN); Support of CCITT Recommendation X.21, X.21 bis and X.20 bis based Data Terminal Equipments (DTEs) by an ISDN Synchronous and asynchronous terminal adaptation functions

### **ITU-T Recommendation X.21 :**

Interface between Data Terminal Equipment and Data Circuit-terminating equipment for synchronous operation on Public Data Networks

### **ITU-T Recommendation X.21 bis :**

Interface between Data Terminal Equipment and Data Circuit-terminating Equipment for synchronous operation on public data networks

**Important Note:** The revision numbers of the documents given in the approval standard are the minimum standards that apply. Should updated versions of these documents be published, the latest version will always apply. This also applies to documents where no revision number is currently quoted.

## Additional Requirements

No additional requirements exist for equipment connecting to X.21 services

## Obtaining Technical Standards

ETSI technical standards may be obtained free of charge for individual use from the ETSI web site. [www.etsi.org](http://www.etsi.org)

CENELEC, IEC and CISPR standards may be obtained at cost from, or through [www.cenelec.org](http://www.cenelec.org) and from [www.iec.ch](http://www.iec.ch) respectively.



# **TECHNICAL SPECIFICATION**

**FOR**

**EQUIPMENT CONNECTING TO HDSL SERVICES**

**ISSUED BY**

**BOTSWANA COMMUNICATIONS REGULATORY  
AUTHORITY**

**Document Number: TS0034**  
**Revision: Original V1.1**  
**Date: 11 December 2015**

# Technical Specification for Equipment Connecting to HDSL Services

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## Scope

This specification applies to any equipment which offers an interface that may be connected to public HDSL services in Botswana.

Where terminal equipment supports more than one interface type, each interface must meet the requirements applicable to it. It may therefore be necessary to make reference to additional specifications.

## Entry into Force

This specification shall enter into force on 15/01/2016.

## Document History

| Description                           | Status        | Date       |
|---------------------------------------|---------------|------------|
| Equipment Connecting to HDSL Services | Original V1.1 | 11/12/2015 |
|                                       |               |            |
|                                       |               |            |
|                                       |               |            |
|                                       |               |            |

## Health, Safety, and Generic Emissions

The following universal specifications shall be applied.

**TS0001:** Health, Safety and Generic Emissions of Radio and Telecommunications Terminal Equipment.

## Technical, Spectrum and EMC Requirements

The following specifications shall be applied.

### **ETSI ETR 152 ed.3**

Transmission and Multiplexing (TM); High bit-rate Digital Subscriber Line (HDSL) transmission system on metallic local lines; HDSL core specification and applications for 2 048Kbit/s based access digital section

### **ETSI TS 101 135 V1.5.3**

Transmission and Multiplexing (TM); High bit-rate Digital Subscriber Line (HDSL) transmission systems on metallic local lines; HDSL core specification and applications for combined ISDN-BA and 2 048 kbit/s transmission

**Important Note:** The revision numbers of the documents given in the approval standard are the minimum standards that apply. Should updated versions of these documents be published, the latest version will always apply. This also applies to documents where no revision number is currently quoted.

## Additional Requirements

No additional requirements exist for equipment connecting to HDSL services.

## Obtaining Technical Standards

ETSI technical standards may be obtained free of charge for individual use from the ETSI web site. [www.etsi.org](http://www.etsi.org)

CENELEC, IEC and CISPR standards may be obtained at cost from, or through [www.cenelec.org](http://www.cenelec.org) and from [www.iec.ch](http://www.iec.ch) respectively.



## **TECHNICAL SPECIFICATION**

**FOR**

**EQUIPMENT CONNECTING TO BASIC RATE ISDN  
SERVICES AT S/T INTERFACES**

**ISSUED BY**

**BOTSWANA COMMUNICATIONS REGULATORY  
AUTHORITY**

**Document Number: TS0035**  
**Revision: Original V1.1**  
**Date: 11 December 2015**

# Technical Specification for Equipment Connecting to Basic Rate ISDN Services at S/T Interfaces

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## Scope

This specification applies to any equipment which offers an interface that may be connected to public Basic Rate ISDN Services at S/T interfaces in Botswana.

Where terminal equipment supports more than one interface type, each interface must meet the requirements applicable to it. It may therefore be necessary to make reference to additional specifications.

## Entry into Force

This specification shall enter into force on 15/01/2016.

## Document History

| <b>Description</b>   | <b>Status</b> | <b>Date</b> |
|--|---------------|-------------|
| Equipment Connecting to Basic Rate ISDN Services at S/T Interfaces | Original V1.1 | 11/12/2015  |
|  |               |             |
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|  |               |             |

## Health, Safety, and Generic Emissions

The following universal specifications shall be applied.

**TS0001:** Health, Safety and Generic Emissions of Radio and Telecommunications Terminal Equipment.

## Technical, Spectrum and EMC Requirements

The following specifications shall be applied.

### **ETSI TBR 003/A1 ed.1**

Integrated Services Digital Network (ISDN); Attachment requirements for terminal equipment to connect to an ISDN using ISDN basic access

### **ETSI TBR 008 ed.2 /C1 ed.1 /C2 ed.1**

Integrated Services Digital Network (ISDN); Telephony 3,1 kHz teleservice; Attachment requirements for handset terminals systems

**Important Note:** The revision numbers of the documents given in the approval standard are the minimum standards that apply. Should updated versions of these documents be published, the latest version will always apply. This also applies to documents where no revision number is currently quoted.

## Additional Requirements

No additional requirements exist for equipment connecting to basic rate ISDN services at S/T interfaces

## Obtaining Technical Standards

ETSI technical standards may be obtained free of charge for individual use from the ETSI web site. [www.etsi.org](http://www.etsi.org)

CENELEC, IEC and CISPR standards may be obtained at cost from, or through [www.cenelec.org](http://www.cenelec.org) and from [www.iec.ch](http://www.iec.ch) respectively.



# **TECHNICAL SPECIFICATION**

**FOR**

**EQUIPMENT CONNECTING TO BASIC RATE ISDN  
SERVICES AT THE U INTERFACE**

**ISSUED BY**

**BOTSWANA COMMUNICATIONS REGULATORY  
AUTHORITY**

**Document Number: TS0036**  
**Revision: Original V1.1**  
**Date: 11 December 2015**

# Technical Specification for Equipment Connecting to Basic Rate ISDN Services at the U Interface

## Contents

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## Scope

This specification applies to any equipment which offers an interface that may be directly connected to public Basic Rate ISDN Services at the U Interface in Botswana.

Where terminal equipment supports more than one interface type, each interface must meet the requirements applicable to it. It may therefore be necessary to make reference to additional specifications.

## Entry into Force

This specification shall enter into force on 15/01/2016.

## Document History

| <b>Description</b>  | <b>Status</b> | <b>Date</b> |
|---|---------------|-------------|
| Equipment Connecting to Basic Rate ISDN Services at the U Interface | Original V1.1 | 11/12/2015  |
|   |               |             |
|   |               |             |
|   |               |             |
|   |               |             |

## Health, Safety, and Generic Emissions

The following universal specifications shall be applied.

**TS0001:** Health, Safety and Generic Emissions of Radio and Telecommunications Terminal Equipment.

## Technical, Spectrum and EMC Requirements

The following specifications shall be applied.

### **ITU- T Recommendation G.961**

Digital transmission system on metallic local lines for ISDN basic rate access.

or

### **ETSI ETR 080 ed.2**

Transmission and Multiplexing (TM); Integrated Services Digital Network (ISDN) basic rate access; Digital transmission system on metallic local lines

It should be noted that ETSI ETR 80 does not include all clauses of ITU-T G.961. BTA reserves the right to request that testing against the additional clauses of ITU-T is carried out where it believes this to be appropriate.

**Important Note:** The revision numbers of the documents given in the approval standard are the minimum standards that apply. Should updated versions of these documents be published, the latest version will always apply. This also applies to documents where no revision number is currently quoted.

## Additional Requirements

At the terminal equipment side of the NT1, the interface at the S/T reference point shall conform to the network requirements of ITU-T Recommendation I.430.

### **ITU-T Recommendation I.430**

Integrated Services Digital Network (ISDN) ISDN User-Network Interfaces : Basic User-Network Interface - Layer 1 Specification, International Telecommunication Union, 1993

## Obtaining Technical Standards

ETSI technical standards may be obtained free of charge for individual use from the ETSI web site. [www.etsi.org](http://www.etsi.org)

CENELEC, IEC and CISPR standards may be obtained at cost from, or through [www.cenelec.org](http://www.cenelec.org) and from [www.iec.ch](http://www.iec.ch) respectively.





## **TECHNICAL SPECIFICATION**

**FOR**

**EQUIPMENT CONNECTING TO PRIMARY RATE ISDN  
SERVICES**

**ISSUED BY**

**BOTSWANA COMMUNICATIONS REGULATORY  
AUTHORITY**

**Document Number: TS0037**  
**Revision: Original V1.1**  
**Date: 11 December 2015**

# Technical Specification for Equipment Connecting to Primary Rate ISDN Services

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## Scope

This specification applies to any equipment which offers an interface that may be connected to public Primary Rate ISDN Services in Botswana.

Where terminal equipment supports more than one interface type, each interface must meet the requirements applicable to it. It may therefore be necessary to make reference to additional specifications.

## Entry into Force

This specification shall enter into force on 15/01/2016.

## Document History

| <b>Description</b>                                 | <b>Status</b> | <b>Date</b> |
|--|---------------|-------------|
| Equipment Connecting to Primary Rate ISDN Services | Original V1.1 | 11/12/2015  |
|  |               |             |
|  |               |             |
|  |               |             |
|  |               |             |

## Health, Safety, and Generic Emissions

The following universal specifications shall be applied.

**TS0001:** Health, Safety and Generic Emissions of Radio and Telecommunications Terminal Equipment.

## Technical, Spectrum and EMC Requirements

The following specifications shall be applied.

### **ETSI TBR 004/A1 ed.1**

Integrated Services Digital Network (ISDN); Attachment requirements for terminal equipment to connect to an ISDN using ISDN primary rate access

### **ETSI TBR 008/C1 ed.1 / C2 ed.1 / ed.2**

Integrated Services Digital Network (ISDN); Telephony 3,1 kHz teleservice; Attachment requirements for handset terminals

### **ETSI ETR 080 ed.2**

Transmission and Multiplexing (TM); Integrated Services Digital Network (ISDN) basic rate access; Digital transmission system on metallic local lines

**Important Note:** The revision numbers of the documents given in the approval standard are the minimum standards that apply. Should updated versions of these documents be published, the latest version will always apply. This also applies to documents where no revision number is currently quoted.

## Additional Requirements

No additional requirements exist for equipment connecting to primary rate ISDN services.

## Obtaining Technical Standards

ETSI technical standards may be obtained free of charge for individual use from the ETSI web site. [www.etsi.org](http://www.etsi.org)

CENELEC, IEC and CISPR standards may be obtained at cost from, or through [www.cenelec.org](http://www.cenelec.org) and from [www.iec.ch](http://www.iec.ch) respectively.



# **TECHNICAL SPECIFICATION**

**FOR**

**SHORT RANGE RADIO AND RELATED EQUIPMENT**

**ISSUED BY**

**BOTSWANA COMMUNICATIONS REGULATORY  
AUTHORITY**

**Document Number: TS0038**  
**Revision: Original V1.1**  
**Date: 11 December 2015**

# Technical Specification for Short Range Radio and Related Equipment

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## Scope

This specification applies to all short range radio and related equipment to be used in Botswana.

Where terminal equipment supports more than one interface type, each interface must meet the requirements applicable to it. It may therefore be necessary to make reference to additional specifications.

## Entry into Force

This specification shall enter into force on 15/01/2016.

## Document History

| <b>Description</b>                      | <b>Status</b> | <b>Date</b> |
|---|---------------|-------------|
| Short Range Radio and Related Equipment | Original V1.1 | 11/12/2015  |
|   |               |             |
|   |               |             |
|   |               |             |
|   |               |             |

## Spectrum Allocation

The following frequency bands have been allocated for use by short range radio and related equipment in Botswana: 446.000 – 446.100 MHz and 29.710 – 27.985 MHz

## Health, Safety, and Generic Emissions

The following universal specifications shall be applied.

**TS0001:** Health, Safety and Generic Emissions of Radio and Telecommunications Terminal Equipment.

## Technical, Spectrum and EMC Requirements

The following specifications shall be applied.

### **ETSI EN 301 489-1 V1.9.2**

Electromagnetic compatibility and Radio spectrum Matters (ERM); ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 1: Common technical requirements

### **ETSI EN 300 390-1 V1.2.1**

ElectroMagnetic Compatibility and Radio Spectrum Matters (ERM); Land Mobile Service; Radio equipment intended for the transmission of data (and speech) and using an integral antenna; Part 1: Technical characteristics and test conditions

### **ETSI EN 300 390-2 V1.1.1**

Electromagnetic compatibility and Radio spectrum Matters (ERM); Land Mobile Service; Radio equipment intended for the transmission of data (and speech) and using an integral antenna; Part 2: Harmonized EN covering essential requirements under article 3.2 of the R&TTE Directive

**Important Note:** The revision numbers of the documents given in the approval standard are the minimum standards that apply. Should updated versions of these documents be published, the latest version will always apply. This also applies to documents where no revision number is currently quoted.

## Additional Requirements

No additional requirements exist for short range radio and related equipment at this time.

## Obtaining Technical Standards

ETSI technical standards may be obtained free of charge for individual use from the ETSI web site. [www.etsi.org](http://www.etsi.org)

CENELEC, IEC and CISPR standards may be obtained at cost from, or through [www.cenelec.org](http://www.cenelec.org) and from [www.iec.ch](http://www.iec.ch) respectively.





## **TECHNICAL SPECIFICATION**

**FOR**

**CORDLESS TELEPHONE (ANALOGUE) HANDSETS  
AND RELATED EQUIPMENT**

**ISSUED BY**

**BOTSWANA COMMUNICATIONS REGULATORY  
AUTHORITY**

**Document Number: TS0039**  
**Revision: Original V1.1**  
**Date: 11 December 2015**

# Technical Specification for Cordless Telephone (Analogue) Handsets and Related Equipment

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## Scope

This specification applies to all cordless telephone (analogue) handsets and related equipment to be used in Botswana.

Where terminal equipment supports more than one interface type, each interface must meet the requirements applicable to it. It may therefore be necessary to make reference to additional specifications.

## Entry into Force

This specification shall enter into force on 15/01/2016.

## Document History

| <b>Description</b>   | <b>Status</b> | <b>Date</b> |
|--|---------------|-------------|
| Cordless Telephone (Analogue) Handsets and Related Equipment | Original V1.1 | 11/12/2015  |
|  |               |             |
|  |               |             |
|  |               |             |

## Spectrum Allocation

The following frequency bands have been allocated for use by cordless telephone (analogue) handsets and related equipment in Botswana: 39.750 – 40.250 MHz and 49.670 – 49.970 MHz.

## Health, Safety, and Generic Emissions

The following universal specifications shall be applied.

**TS0001:** Health, Safety and Generic Emissions of Radio and Telecommunications Terminal Equipment.

## Technical, Spectrum and EMC Requirements

The following specifications shall be applied.

### **ETSI EN 301 489-1 V1.9.2**

Electromagnetic compatibility and Radio spectrum Matters (ERM); ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 1: Common technical requirements

### **ETSI EN 300 220-1 V2.4.1**

Electromagnetic compatibility and Radio spectrum Matters (ERM); Short Range Devices (SRD); Radio equipment to be used in the 25 MHz to 1000 MHz frequency range with power levels ranging up to 500mW; Part 1: Technical characteristics and test methods

### **ETSI EN 300 220-2 V2.4.1**

Electromagnetic compatibility and Radio spectrum Matters (ERM); Short Range Devices (SRD); Radio equipment to be used in the 25 MHz to 1 000 MHz frequency range with power levels ranging up to 500 mW; Part 2: Harmonized EN covering essential requirements under article 3.2 of the R&TTE Directive

### **ETSI EN 300 220-3 V1.1.1**

Electromagnetic compatibility and Radio spectrum Matters (ERM); Short Range Devices (SRD); Radio equipment to be used in the 25 MHz to 1 000 MHz frequency range with power levels ranging up to 500 mW; Part 3: Harmonized EN covering essential requirements under article 3.2 of the R&TTE Directive

**Important Note:** The revision numbers of the documents given in the approval standard are the minimum standards that apply. Should updated versions of these documents be published, the latest version will always apply. This also applies to documents where no revision number is currently quoted.

## **Additional Requirements**

No additional requirements exist for cordless telephone (analogue) handsets and related equipment at this time.

## **Obtaining Technical Standards**

ETSI technical standards may be obtained free of charge for individual use from the ETSI web site. [www.etsi.org](http://www.etsi.org)

CENELEC, IEC and CISPR standards may be obtained at cost from, or through [www.cenelec.org](http://www.cenelec.org) and from [www.iec.ch](http://www.iec.ch) respectively.





# **TECHNICAL SPECIFICATION**

**FOR**

**CORDLESS TELEPHONE (ANALOGUE) BASE  
STATIONS AND RELATED EQUIPMENT**

**ISSUED BY**

**BOTSWANA COMMUNICATIONS REGULATORY  
AUTHORITY**

**Document Number: TS0040**  
**Revision: Original V1.1**  
**Date: 11 December 2015**

# Technical Specification for Cordless Telephone (Analogue) Base Stations and Related Equipment

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## Scope

This specification applies to all cordless telephone (analogue) base stations and related equipment to be used in Botswana.

Where terminal equipment supports more than one interface type, each interface must meet the requirements applicable to it. It may therefore be necessary to make reference to additional specifications.

## Entry into force

This specification shall enter into force on 15/01/2016.

## Document History

| <b>Description</b>  | <b>Status</b> | <b>Date</b> |
|---|---------------|-------------|
| Cordless Telephone (Analogue) Base Stations and Related Equipment | Original V1.1 | 11/12/2015  |
|   |               |             |
|   |               |             |
|   |               |             |
|   |               |             |

## Spectrum Allocation

The following frequency bands have been allocated for use by cordless telephone (analogue) base stations and related equipment in Botswana: 30.050 – 30.325 / 31.025 – 31.225 MHz and 46.670 – 46.970 MHz.

## Health, Safety, and Generic Emissions

The following universal specifications shall be applied.

**TS0001:** Health, Safety and Generic Emissions of Radio and Telecommunications Terminal Equipment.

## Technical, Spectrum and EMC Requirements

The following specifications shall be applied.

### **ETSI EN 301 489-1 v1.9.2**

Electromagnetic compatibility and Radio spectrum Matters (ERM); ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 1: Common technical requirements

### **ETSI EN 300 220-1 V2.4.1**

Electromagnetic compatibility and Radio spectrum Matters (ERM); Short Range Devices (SRD); Radio equipment to be used in the 25 MHz to 1000 MHz frequency range with power levels ranging up to 500mW; Part 1: Technical characteristics and test methods

### **ETSI EN 300 220-2 V2.4.1**

Electromagnetic compatibility and Radio spectrum Matters (ERM); Short Range Devices (SRD); Radio equipment to be used in the 25 MHz to 1 000 MHz frequency range with power levels ranging up to 500 mW; Part 2: Harmonized EN covering essential requirements under article 3.2 of the R&TTE Directive

### **ETSI EN 300 220-3 V1.1.1**

Electromagnetic compatibility and Radio spectrum Matters (ERM); Short Range Devices (SRD); Radio equipment to be used in the 25 MHz to 1 000 MHz frequency range with power levels ranging up to 500 mW; Part 3: Harmonized EN covering essential requirements under article 3.2 of the R&TTE Directive

**Important Note:** The revision numbers of the documents given in the approval standard are the minimum standards that apply. Should updated versions of these documents be published, the latest version

will always apply. This also applies to documents where no revision number is currently quoted.

## **Additional Requirements**

No additional requirements exist for cordless telephone (analogue) base stations and related equipment at this time.

## **Obtaining Technical Standards**

ETSI technical standards may be obtained free of charge for individual use from the ETSI web site. [www.etsi.org](http://www.etsi.org)

CENELEC, IEC and CISPR standards may be obtained at cost from, or through [www.cenelec.org](http://www.cenelec.org) and from [www.iec.ch](http://www.iec.ch) respectively.





## **TECHNICAL SPECIFICATION**

**FOR**

**RADIO DETECTION OF MOVEMENT APPLICATIONS  
AND RELATED EQUIPMENT**

**ISSUED BY**

**BOTSWANA COMMUNICATIONS REGULATORY  
AUTHORITY**

**Document Number: TS0041**  
**Revision: Original V1.1**  
**Date: 11 December 2015**

# Technical Specification for Radio Detection of Movement Applications and Related Equipment

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## Scope

This specification applies to all radio detection of movement applications and related equipment to be used in Botswana.

Where terminal equipment supports more than one interface type, each interface must meet the requirements applicable to it. It may therefore be necessary to make reference to additional specifications.

## Entry into Force

This specification shall enter into force on 15/01/2016.

## Document History

| <b>Description</b>   | <b>Status</b> | <b>Date</b> |
|--|---------------|-------------|
| Radio Detection of Movement Applications and Related Equipment | Original V1.1 | 11/12/2015  |
|  |               |             |
|  |               |             |
|  |               |             |

## Spectrum Allocation

The following frequency bands have been allocated for use by detection of movement applications and related equipment in Botswana: 2400 – 2483.5 MHz and 24050 – 24250 MHz.

## Health, Safety, and Generic Emissions

The following universal specifications shall be applied.

**TS0001:** Health, Safety and Generic Emissions of Radio and Telecommunications Terminal Equipment.

## Technical, Spectrum and EMC Requirements

The following specifications shall be applied.

### **ETSI EN 300 440-1 V1.6.1**

Electromagnetic compatibility and Radio spectrum Matters (ERM); Short Range Devices (SRD); Radio equipment to be used in the 1 GHz to 40 GHz frequency range; Part 1: Technical characteristics and test methods

### **ETSI EN 300 440-2 V1.4.1**

Electromagnetic compatibility and Radio spectrum Matters (ERM); Short range devices; Radio equipment to be used in the 1 GHz to 40 GHz frequency range; Part 2: Harmonized EN covering the essential requirements of article 3.2 of the R&TTE Directive

### **ETSI EN 301 489-1 V1.9.2**

Electromagnetic compatibility and Radio spectrum Matters (ERM); ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 1: Common technical requirements

### **ETSI EN 301 489-3 V1.6.1**

Electromagnetic compatibility and Radio spectrum Matters (ERM); ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 3: Specific conditions for Short Range Devices (SRD) operating on frequencies between 9 kHz and 246 GHz

**Important Note:** The revision numbers of the documents given in the approval standard are the minimum standards that apply. Should updated versions of these documents be published, the latest version will always apply. This also applies to documents where no revision number is currently quoted.

## **Additional Requirements**

No additional requirements exist for detection of movement applications and related equipment at this time.

## **Obtaining Technical Standards**

ETSI technical standards may be obtained free of charge for individual use from the ETSI web site. [www.etsi.org](http://www.etsi.org)

CENELEC, IEC and CISPR standards may be obtained at cost from, or through [www.cenelec.org](http://www.cenelec.org) and from [www.iec.ch](http://www.iec.ch) respectively.





## **TECHNICAL SPECIFICATION**

**FOR**

**ROAD TRANSPORT TELEMATICS AND RELATED  
EQUIPMENT**

**ISSUED BY**

**BOTSWANA COMMUNICATIONS REGULATORY  
AUTHORITY**

**Document Number: TS0042**  
**Revision: Original V1.1**  
**Date: 11 December 2015**

# Technical Specification for Road Transport Telematics and Related Equipment

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## Scope

This specification applies to all road transport telematics and related equipment to be used in Botswana.

Where terminal equipment supports more than one interface type, each interface must meet the requirements applicable to it. It may therefore be necessary to make reference to additional specifications.

## Entry into Force

This specification shall enter into force on 15/01/2016.

## Document History

| <b>Description</b>                              | <b>Status</b> | <b>Date</b> |
|---|---------------|-------------|
| Road Transport Telematics and Related Equipment | Original V1.1 | 11/12/2015  |
|   |               |             |
|   |               |             |
|   |               |             |
|   |               |             |

## Spectrum Allocation

The following frequency bands have been allocated for use by road transport telematics and related equipment in Botswana: 76000 – 77000 MHz.

## Health, Safety, and Generic Emissions

The following universal specifications shall be applied.

**TS0001:** Health, Safety and Generic Emissions of Radio and Telecommunications Terminal Equipment.

## Technical, Spectrum and EMC Requirements

The following specifications shall be applied.

### **ETSI EN 300 440-1 V1.6.1**

Electromagnetic compatibility and Radio spectrum Matters (ERM); Short Range Devices (SRD); Radio equipment to be used in the 1 GHz to 40 GHz frequency range; Part 1: Technical characteristics and test methods

### **ETSI EN 300 440-2 V1.4.1**

Electromagnetic compatibility and Radio spectrum Matters (ERM); Short range devices; Radio equipment to be used in the 1 GHz to 40 GHz frequency range; Part 2: Harmonized EN covering the essential requirements of article 3.2 of the R&TTE Directive

### **ETSI EN 300 674-1 V1.2.1**

Electromagnetic compatibility and Radio spectrum Matters (ERM); Road Traffic and Transport Telematics (RTTT)' Dedicated Short Range Communication (DSRC) transmission equipment (500 kbit/s 250 kbit/s) operating in the 5.8 GHz Industrial, Scientific and Medical (ISM) band; Part 1: General characteristics and test methods for Road Side Units (RSU) and On-Board Units (OBU)

### **ETSI EN 300 674-2-1 V1.1.1**

Electromagnetic compatibility and Radio spectrum Matters (ERM); Road Transport and Traffic Telematics (RTTT); Dedicated Short Range Communication (DSRC) transmission equipment (500 kbit/s / 250 kbit/s) operating in the 5,8 GHz Industrial, Scientific and Medical (ISM) band; Part 2: Harmonized EN under article 3.2 of the R&TTE Directive; Sub-part 1: Requirements for the Road Side Units (RSU)

**ETSI EN 300 674-2-2 V1.1.1**

Electromagnetic compatibility and Radio spectrum Matters (ERM); Road Transport and Traffic Telematics (RTTT); Dedicated Short Range Communication (DSRC) transmission equipment (500 kbit/s / 250 kbit/s) operating in the 5,8 GHz Industrial, Scientific and Medical (ISM) band; Part 2: Harmonized EN under article 3.2 of the R&TTE Directive; Sub-part 2: Requirements for the On-Board Units (OBU)

**ETSI EN 301 091-1 V1.3.3**

Electromagnetic compatibility and Radio spectrum Matters (ERM); Short Range Devices; Road Transport and Traffic Telematics (RTTT); Radar equipment operating in the 76 GHz and 24 GHz range; Part 1: Technical characteristics and test methods for radar equipment operating in the 76 GHz to 77 GHz range

**ETSI EN 301 091-2 V1.3.2**

Electromagnetic compatibility and Radio spectrum Matters (ERM); Short Range Devices; Road Transport and Traffic Telematics (RTTT); Radar equipment operating in the 76 GHz to 77 GHz; Part 2: Harmonized EN covering essential requirements of article 3.2 of the R&TTE Directive

**ETSI EN 301 489-1 V1.9.2**

Electromagnetic compatibility and Radio spectrum Matters (ERM); ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 1: Common technical requirements

**ETSI EN 301 489-3 V1.6.1**

Electromagnetic compatibility and Radio spectrum Matters (ERM); ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 3: Specific conditions for Short Range Devices (SRD) operating on frequencies between 9 kHz and 246 GHz

**ETSI EN 302 264-1 V1.1.1**

Electromagnetic compatibility and Radio spectrum Matters (ERM); Short Range Devices; Road Transport and Traffic Telematics (RTTT); Short Range Radar equipment operating in the 77 GHz to 81 GHz band; Part 1: Technical requirements and methods of measurement

**ETSI EN 302 264-2 V1.1.1**

Electromagnetic compatibility and Radio spectrum Matters (ERM); Short Range Devices; Road Transport and Traffic Telematics (RTTT); Short Range Radar equipment operating in the 77 GHz to 81 GHz band; Part 2: Harmonized EN covering the essential requirements of article 3.2 of the R&TTE Directive

**ETSI EN 302 288-1 V1.6.1**

Electromagnetic compatibility and Radio spectrum Matters (ERM);  
Short Range Devices; Road Transport and Traffic Telematics (RTTT);  
Short range radar equipment operating in the 24 GHz range; Part 1:  
Technical requirements and methods of measurement

**ETSI EN 302 288-2 V1.6.1**

Electromagnetic compatibility and Radio spectrum Matters (ERM);  
Short Range Devices; Road Transport and Traffic Telematics (RTTT);  
Short range radar equipment operating in the 24 GHz range; Part 2:  
Harmonized EN covering the essential requirements of article 3.2 of  
the R&TTE Directive

**ETSI EN 302 858-1 V1.3.1**

Electromagnetic compatibility and Radio spectrum Matters (ERM);  
Road Transport and Traffic Telematics (RTTT); Automotive radar  
equipment operating in the 24,05 GHz up to 24,25 GHz or 24,50 GHz  
frequency range; Part 1: Technical characteristics and test methods

**ETSI EN 302 858-2 V1.3.1**

Electromagnetic compatibility and Radio spectrum Matters (ERM);  
Road Transport and Traffic Telematics (RTTT); Short range radar  
equipment operating in the 24,05 GHz up to 24,25 or 24,50 GHz  
frequency range for automotive application; Part 2: Harmonized EN  
covering the essential requirements of article 3.2 of the R&TTE  
Directive

**Important Note:** The revision numbers of the documents given in the approval standard are the minimum standards that apply. Should updated versions of these documents be published, the latest version will always apply. This also applies to documents where no revision number is currently quoted.

## Additional Requirements

No additional requirements exist for road transport telematics and related equipment at this time.

## Obtaining Technical Standards

ETSI technical standards may be obtained free of charge for individual use from the ETSI web site. [www.etsi.org](http://www.etsi.org)

CENELEC, IEC and CISPR standards may be obtained at cost from, or through [www.cenelec.org](http://www.cenelec.org) and from [www.iec.ch](http://www.iec.ch) respectively.



# **TECHNICAL SPECIFICATION**

**FOR**

**INDUCTIVE APPLICATIONS AND RELATED  
EQUIPMENT**

**ISSUED BY**

**BOTSWANA COMMUNICATIONS REGULATORY  
AUTHORITY**

**Document Number: TS0043**  
**Revision: Original V1.1**  
**Date: 11 December 2015**

# Technical Specification for Inductive Applications and Related Equipment

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## Scope

This specification applies to all inductive applications and related equipment to be used in Botswana.

Where terminal equipment supports more than one interface type, each interface must meet the requirements applicable to it. It may therefore be necessary to make reference to additional specifications.

## Entry into Force

This specification shall enter into force on 15/01/2016.

## Document History

| <b>Description</b>                           | <b>Status</b> | <b>Date</b> |
|--|---------------|-------------|
| Inductive Applications and Related Equipment | Original V1.1 | 11/12/2015  |
|  |               |             |
|  |               |             |
|  |               |             |
|  |               |             |

## Spectrum Allocation

The following frequency bands have been allocated for use by inductive applications and related equipment in Botswana: 6.765 – 6.795 MHz and 13.553 – 13.567 MHz

## Health, Safety, and Generic Emissions

The following universal specifications shall be applied.

**TS0001:** Health, Safety and Generic Emissions of Radio and Telecommunications Terminal Equipment.

## Technical, Spectrum and EMC Requirements

The following specifications shall be applied.

### **ETSI EN 300 440-1 V1.6.1**

Electromagnetic compatibility and Radio spectrum Matters (ERM); Short Range Devices (SRD); Radio equipment to be used in the 1 GHz to 40 GHz frequency range; Part 1: Technical characteristics and test methods

### **ETSI EN 300 440-2 V1.4.1**

Electromagnetic compatibility and Radio spectrum Matters (ERM); Short range devices; Radio equipment to be used in the 1 GHz to 40 GHz frequency range; Part 2: Harmonized EN covering the essential requirements of article 3.2 of the R&TTE Directive

### **ETSI EN 300 330-1 V1.7.1**

Electromagnetic compatibility and Radio spectrum Matters (ERM); Short Range Devices (SRD); Radio equipment in the frequency range 9 kHz to 25 MHz and inductive loop systems in the frequency range 9 kHz to 30 MHz; Part 1: Technical characteristics and test methods

### **ETSI EN 300 330-2 V1.6.1**

Electromagnetic compatibility and Radio spectrum Matters (ERM); Short Range Devices (SRD); Radio equipment in the frequency range 9 kHz to 25 MHz and inductive loop systems in the frequency range 9 kHz to 30 MHz; Part 2: Harmonized EN covering the essential requirements of article 3.2 of the R&TTE Directive

### **ETSI EN 301 489-1 V1.9.2**

Electromagnetic compatibility and Radio spectrum Matters (ERM); ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 1: Common technical requirements

**ETSI EN 301 489-3 V1.6.1**

Electromagnetic compatibility and Radio spectrum Matters (ERM); ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 3: Specific conditions for Short Range Devices (SRD) operating on frequencies between 9 kHz and 246 GHz

**ETSI EN 302 291-1 V1.1.1**

Electromagnetic compatibility and Radio spectrum Matters (ERM); Short Range Devices (SRD); Close Range Inductive Data Communication equipment operating at 13,56 MHz; Part 1: Technical characteristics and test methods

**ETSI EN 302 291-2 V1.1.1**

Electromagnetic compatibility and Radio spectrum Matters (ERM); Short Range Devices (SRD); Close Range Inductive Data Communication equipment operating at 13,56 MHz; Part 2: Harmonized EN under article 3.2 of the R&TTE Directive

**Important Note:** The revision numbers of the documents given in the approval standard are the minimum standards that apply. Should updated versions of these documents be published, the latest version will always apply. This also applies to documents where no revision number is currently quoted.

## Additional Requirements

No additional requirements exist for inductive applications and related equipment at this time.

## Obtaining Technical Standards

ETSI technical standards may be obtained free of charge for individual use from the ETSI web site. [www.etsi.org](http://www.etsi.org)

CENELEC, IEC and CISPR standards may be obtained at cost from, or through [www.cenelec.org](http://www.cenelec.org) and from [www.iec.ch](http://www.iec.ch) respectively.





# **TECHNICAL SPECIFICATION**

**FOR**

**NON-SPECIFIC SHORT RANGE DEVICES AND  
RELATED EQUIPMENT**

**ISSUED BY**

**BOTSWANA COMMUNICATIONS REGULATORY  
AUTHORITY**

**Document Number: TS0044**  
**Revision: Original V1.1**  
**Date: 11 December 2015**

# Technical Specification for Non-Specific Short Range Devices and Related Equipment

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## Scope

This specification applies to all non-specific short range devices and related equipment to be used in Botswana.

Where terminal equipment supports more than one interface type, each interface must meet the requirements applicable to it. It may therefore be necessary to make reference to additional specifications.

## Entry into force

This specification shall enter into force on 15/01/2016.

## Document History

| <b>Description</b>                                     | <b>Status</b> | <b>Date</b> |
|--|---------------|-------------|
| Non-Specific Short Range Devices and Related Equipment | Original V1.1 | 11/12/2015  |
|  |               |             |
|  |               |             |
|  |               |             |
|  |               |             |

## Spectrum Allocation

The following frequency bands have been allocated for use by non-specific short range devices and related equipment in Botswana:  
6.765 – 6.795 MHz, 13.553 – 13.567 MHz, 26.957 – 27.283 MHz,  
40.660 – 40.700 MHz, 49.820 – 49.980 MHz, 433.050 – 434.790 MHz,  
862.000 – 870.000 MHz, 2400 – 2483.5 MHz, 5725 – 5875 MHz,  
24000 – 24250 MHz, 61000 – 61500 MHz, 122000 – 123000 MHz,  
244000 – 246000 MHz.

## Health, Safety, and Generic Emissions

The following universal specifications shall be applied.

**TS0001:** Health, Safety and Generic Emissions of Radio and Telecommunications Terminal Equipment.

## Technical, Spectrum and EMC Requirements

The following specifications shall be applied.

### **ETSI EN 300 220-1 V2.4.1**

Electromagnetic compatibility and Radio spectrum Matters (ERM); Short Range Devices (SRD); Radio equipment to be used in the 25 MHz to 1 000 MHz frequency range with power levels ranging up to 500 mW; Part 1: Technical characteristics and test methods

### **ETSI EN 300 220-2 V2.4.1**

Electromagnetic compatibility and Radio spectrum Matters (ERM); Short Range Devices (SRD); Radio equipment to be used in the 25 MHz to 1 000 MHz frequency range with power levels ranging up to 500 mW; Part 2: Harmonized EN covering essential requirements under article 3.2 of the R&TTE Directive

### **ETSI EN 300 220-3 V1.1.1**

Electromagnetic compatibility and Radio spectrum Matters (ERM); Short Range Devices (SRD); Radio equipment to be used in the 25 MHz to 1 000 MHz frequency range with power levels ranging up to 500 mW; Part 3: Harmonized EN covering essential requirements under article 3.2 of the R&TTE Directive

### **ETSI EN 300 330-1 V1.7.1**

Electromagnetic compatibility and Radio spectrum Matters (ERM); Short Range Devices (SRD); Radio equipment in the frequency range 9 kHz to 25 MHz and inductive loop systems in the frequency range 9 kHz to 30 MHz; Part 1: Technical characteristics and test methods

**ETSI EN 300 330-2 V1.6.1**

Electromagnetic compatibility and Radio spectrum Matters (ERM); Short Range Devices (SRD); Radio equipment in the frequency range 9 kHz to 25 MHz and inductive loop systems in the frequency range 9 kHz to 30 MHz; Part 2: Harmonized EN covering the essential requirements of article 3.2 of the R&TTE Directive

**ETSI EN 300 440-1 V1.6.1**

Electromagnetic compatibility and Radio spectrum Matters (ERM); Short range devices; Radio equipment to be used in the 1 GHz to 40 GHz frequency range; Part 1: Technical characteristics and test methods

**ETSI EN 300 440-2 V1.4.1**

Electromagnetic compatibility and Radio spectrum Matters (ERM); Short range devices; Radio equipment to be used in the 1 GHz to 40 GHz frequency range; Part 2: Harmonized EN covering the essential requirements of article 3.2 of the R&TTE Directive

**ETSI EN 301 489-1 V1.9.2**

Electromagnetic compatibility and Radio spectrum Matters (ERM); ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 1: Common technical requirements

**ETSI EN 301 489-3 V1.6.1**

Electromagnetic compatibility and Radio spectrum Matters (ERM); ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 3: Specific conditions for Short Range Devices (SRD) operating on frequencies between 9 kHz and 246 GHz

**ETSI EN 302 536-1 V1.1.1**

Electromagnetic compatibility and Radio spectrum Matters (ERM); Short Range Devices (SRD); Radio equipment in the frequency range 315 kHz to 600 kHz; Part 1: Technical characteristics and test methods

**ETSI EN 302 536-2 V1.1.1**

Electromagnetic compatibility and Radio spectrum Matters (ERM); Short Range Devices (SRD); Radio equipment in the frequency range 315 kHz to 600 kHz; Part 2: Harmonized EN covering essential requirements of article 3.2 of the R&TTE Directive

**ETSI EN 305 550-1 V1.2.1**

Electromagnetic compatibility and Radio spectrum Matters (ERM); Short Range Devices (SRD); Radio equipment to be used in the 40 GHz to 246 GHz frequency range; Part 1: Technical characteristics and test methods

### **ETSI EN 305 550-2 V1.2.1**

Electromagnetic compatibility and Radio spectrum Matters (ERM); Short Range Devices (SRD); Radio equipment to be used in the 40 GHz to 246 GHz frequency range; Part 2: Harmonized EN covering the essential requirements of article 3.2 of the R&TTE Directive

**Important Note:** The revision numbers of the documents given in the approval standard are the minimum standards that apply. Should updated versions of these documents be published, the latest version will always apply. This also applies to documents where no revision number is currently quoted.

## **Additional Requirements**

No additional requirements exist for non-specific short range devices and related equipment at this time.

## **Obtaining Technical Standards**

ETSI technical standards may be obtained free of charge for individual use from the ETSI web site. [www.etsi.org](http://www.etsi.org)

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# **TECHNICAL SPECIFICATION**

**FOR**

**BROADBAND RADIO ACCESS NETWORKS (BRAN)**

**ISSUED BY**

**BOTSWANA COMMUNICATIONS REGULATORY  
AUTHORITY**

**Document Number: TS0045**  
**Revision: Original V1**  
**Date: 11 December 2015**

# Technical Specification for Broadband Radio Access Networks

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## Scope

This specification applies to any equipment usable in Broadband Radio Access Networks.

Where terminal equipment supports more than one interface type, each interface must meet the requirements applicable to it. It may therefore be necessary to make reference to additional specifications.

## Entry into Force

This specification shall enter into force on 15/01/2016.

## Document History

| Description                     | Status      | Date       |
|---------------------------------|-------------|------------|
| Broadband Radio Access Networks | Original V1 | 11/12/2015 |
|                                 |             |            |
|                                 |             |            |
|                                 |             |            |
|                                 |             |            |

## Health, Safety, and Generic Emissions

The following universal specifications shall be applied.

**TS0001:** Health, Safety and Generic Emissions of Radio and Telecommunications Terminal Equipment.

## Technical, Spectrum and EMC Requirements

The following specifications shall be applied.

### **ETSI EN 301 908-13 V7.1.1**

IMT cellular networks; Harmonised EN covering the essential requirements of article 3.2 of the R&TTE Directive; Part 13: Evolved Universal Terrestrial Radio Access (E-UTRA) User Equipment (UE)

### **ETSI EN 301 908-14 V7.1.1**

IMT cellular networks; Harmonised EN covering the essential requirements of article 3.2 of the R&TTE Directive; Part 14: Evolved Universal Terrestrial Radio Access (E-UTRA) Base Stations (BS)

### **ETSI EN 302 502 V1.2.1**

Broadband Radio Access Networks (BRAN); 5,8 GHz fixed broadband data transmitting systems; Harmonized EN covering the essential requirements of article 3.2 of the R&TTE Directive

### **ETSI EN 302 567 V1.2.1**

Broadband Radio Access Networks (BRAN); 60 GHz Multiple-Gigabit WAS/RLAN Systems; Harmonized EN covering the essential requirements of article 3.2 of the R&TTE Directive

**Important Note:** The revision numbers of the documents given in the approval standard are the minimum standards that apply. Should updated versions of these documents be published, the latest version will always apply. This also applies to documents where no revision number is currently quoted.

## Obtaining Technical Standards

ETSI technical standards may be obtained free of charge for individual use from the ETSI web site. [www.etsi.org](http://www.etsi.org)

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# **TECHNICAL SPECIFICATION**

**FOR**

**LTE BASE STATIONS AND ANCILLARY EQUIPMENT**

**ISSUED BY**

**BOTSWANA COMMUNICATIONS REGULATORY  
AUTHORITY**

**Document Number: TS0046**  
**Revision: Original V1**  
**Date: 11 December 2015**

# Technical Specification for LTE Base Stations and Ancillary Equipment Contents

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## Scope

This specification applies to any transmitting equipment used for LTE base stations and ancillary equipment.

Where terminal equipment supports more than one interface type, each interface must meet the requirements applicable to it. It may therefore be necessary to make reference to additional specifications.

## Entry into Force

This specification shall enter into force on 15/01/2016.

## Document History

| Description                               | Status      | Date       |
|---|-------------|------------|
| LTE Base Stations and Ancillary Equipment | Original V1 | 11/12/2015 |
|   |             |            |
|   |             |            |
|   |             |            |
|   |             |            |

## Spectrum Allocation

LTE base stations and ancillary equipment in Botswana are dedicated to the 1800 MHz band.

## Health, Safety, and Generic Emissions

The following universal specifications shall be applied.

**TS0001:** Health, Safety and Generic Emissions of Radio and Telecommunications Terminal Equipment.

## Technical, Spectrum and EMC Requirements

The following specifications shall be applied.

### **ETSI EN 301 489-1 V1.9.2**

Electromagnetic compatibility and Radio spectrum Matters (ERM); ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 1: Common technical requirements

### **ETSI EN 301 489-23 V1.5.1**

Electromagnetic compatibility and Radio spectrum Matters (ERM); ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 23: Specific conditions for IMT-2000 CDMA, Direct Spread (UTRA and E-UTRA) Base Station (BS) radio, repeater and ancillary equipment

### **ETSI EN 301 489-50 V1.2.1**

Electromagnetic compatibility and Radio spectrum Matters (ERM); ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 50: Specific conditions for Cellular Communication Base Station (BS), repeater and ancillary equipment

### **ETSI EN 301 908-15 V5.2.1**

IMT cellular networks; Harmonized EN covering the essential requirements of article 3.2 of the R&TTE Directive; Part 15: Evolved Universal Terrestrial Radio Access (E-UTRA FDD) (Repeaters)

### **ETSI EN 301 908-18 V7.1.2**

IMT cellular networks; Harmonized EN covering the essential requirements of article 3.2 of the R&TTE Directive; Part 18: E-UTRA, UTRA and GSM/EDGE Multi- Standard Radio (MSR) Base Station (BS)

### **ETSI EN 301 908-1 V7.1.1**

IMT cellular networks; Harmonized EN covering the essential requirements of article 3.2 of the R&TTE Directive; Part 1: Introduction and common requirements

**Important Note:** The revision numbers of the documents given in the approval standard are the minimum standards that apply. Should updated versions of these documents be published, the latest version will always apply. This also applies to documents where no revision number is currently quoted.

## **Obtaining Technical Standards**

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# **TECHNICAL SPECIFICATION**

**FOR**

**LTE HANDSETS, TERMINALS AND ANCILLARY  
EQUIPMENT**

**ISSUED BY**

**BOTSWANA COMMUNICATIONS REGULATORY  
AUTHORITY**

**Document Number: TS0047**  
**Revision: Original V1**  
**Date: 11 December 2015**

# Technical Specification for LTE Handsets, Terminals and Ancillary Equipment

## Contents

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Website: [www.bocra.org.bw](http://www.bocra.org.bw)

## Scope

This specification applies to any equipment which offers a LTE interface, including handsets, terminals and other related applications using the LTE air interface, for example WLL, in Botswana.

Where terminal equipment supports more than one interface type, each interface must meet the requirements applicable to it. It may therefore be necessary to make reference to additional specifications.

## Entry into force

This specification shall enter into force on 15/01/2016.

## Document History

| Description                                     | Status      | Date       |
|---|-------------|------------|
| LTE Handsets, Terminals and Ancillary Equipment | Original V1 | 11/12/2015 |
|   |             |            |
|   |             |            |
|   |             |            |
|   |             |            |

## Health, Safety, and Generic Emissions

The following universal specifications shall be applied.

**TS0001:** Health, Safety and Generic Emissions of Radio and Telecommunications Terminal Equipment.

## Technical, Spectrum and EMC Requirements

The following specifications shall be applied.

### **ETSI EN 301 489-1 V1.9.2**

Electromagnetic compatibility and Radio spectrum Matters (ERM); ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 1: Common technical requirements

### **ETSI EN 301 489-24 V1.5.1**

Electromagnetic compatibility and Radio spectrum Matters (ERM); ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 24: Specific conditions for IMT-2000 CDMA Direct Spread (UTRA and E-UTRA) for Mobile and portable (UE) radio and ancillary equipment

### **ETSI EN 301 908-1 V6.2.1**

IMT cellular networks; Harmonized EN covering the essential requirements of article 3.2 of the R&TTE Directive; Part 13: Evolved Universal Terrestrial Radio Access (E-UTRA) User Equipment (UE)

### **ETSI EN 301 908-1 V7.1.1**

IMT cellular networks; Harmonized EN covering the essential requirements of article 3.2 of the R&TTE Directive; Part 1: Introduction and common requirements

**Important Note:** The revision numbers of the documents given in the approval standard are the minimum standards that apply. Should updated versions of these documents be published, the latest version will always apply. This also applies to documents where no revision number is currently quoted.

## Obtaining Technical standards

ETSI technical standards may be obtained free of charge for individual use from the ETSI web site. [www.etsi.org](http://www.etsi.org)

CENELEC, IEC and CISPR standards may be obtained at cost from, or through [www.cenelec.org](http://www.cenelec.org) and from [www.iec.ch](http://www.iec.ch) respectively.



# **TECHNICAL SPECIFICATION**

**FOR**

**MEDICAL APPLICATIONS**

**ISSUED BY**

**BOTSWANA COMMUNICATIONS REGULATORY  
AUTHORITY**

**Document Number: TS0048**  
**Revision: Original V1**  
**Date: 11 December 2015**

# Technical Specification for Medical Applications

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## Scope

This specification applies to any equipment for medical applications.

Where terminal equipment supports more than one interface type, each interface must meet the requirements applicable to it. It may therefore be necessary to make reference to additional specifications.

## Entry into Force

This specification shall enter into force on 15/01/2016.

## Document History

| Description          | Status      | Date       |
|----------------------|-------------|------------|
| Medical Applications | Original V1 | 11/12/2015 |
|                      |             |            |
|                      |             |            |
|                      |             |            |
|                      |             |            |

## Health, Safety, and Generic Emissions

The following universal specifications shall be applied.

**TS0001:** Health, Safety and Generic Emissions of Radio and Telecommunications Terminal Equipment.

## Technical Requirements

The following specifications shall be applied.

### **ETSI EN 301 489-27 V1.1.1**

Electromagnetic compatibility and Radio spectrum Matters (ERM); ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 27: Specific conditions for Ultra Low Power Active Medical Implants (ULP-AMI) and related peripheral devices (ULP-AMI-P)

### **ETSI EN 301 489-29 V1.1.1**

Electromagnetic compatibility and Radio spectrum Matters (ERM); ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 29: Specific conditions for Medical Data Service Devices (MEDS) operating in the 401 MHz to 402 MHz and 405 MHz to 406 MHz bands

### **ETSI EN 301 489-31 V1.1.1**

Electromagnetic compatibility and Radio spectrum Matters (ERM); ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 31: Specific conditions for equipment in the 9 kHz to 315 kHz band for Ultra Low Power Active Medical Implants (ULP-AMI) and related peripheral devices (ULP-AMI-P)

### **ETSI EN 301 489-35 V1.1.2**

Electromagnetic compatibility and Radio spectrum Matters (ERM); ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 35: Specific requirements for Low Power Active Medical Implants (LP-AMI) operating in the 2 483,5 MHz to 2 500 MHz bands

### **ETSI EN 301 559-1 V1.1.2**

Electromagnetic compatibility and Radio spectrum Matters (ERM); Short Range Devices (SRD); Low Power Active Medical Implants (LP-AMI) operating in the frequency range 2 483,5 MHz to 2 500 MHz; Part 1: Technical characteristics and test methods

### **ETSI EN 301 559-2 V1.1.2**

Electromagnetic compatibility and Radio spectrum Matters (ERM); Short Range Devices (SRD); Low Power Active Medical Implants (LP-AMI) operating in the frequency range 2 483,5 MHz to 2 500 MHz; Part

2: Harmonized EN covering the essential requirements of article 3.2 of the R&TTE Directive

**ETSI EN 301 839-1 V1.3.1**

Electromagnetic compatibility and Radio spectrum Matters (ERM); Short Range Devices (SRD); Ultra Low Power Active Medical Implants (ULP-AMI) and Peripherals (ULP-AMI-P) operating in the frequency range 402 MHz to 405 MHz; Part 1: Technical characteristics and test methods

**ETSI EN 301 839-2 V1.3.1**

Electromagnetic compatibility and Radio spectrum Matters (ERM); Short Range Devices (SRD); Ultra Low Power Active Medical Implants (ULP-AMI) and Peripherals (ULP-AMI-P) operating in the frequency range 402 MHz to 405 MHz; Part 2: Harmonized EN covering essential requirements of article 3.2 of the R&TTE Directive

**ETSI EN 302 195-1 V1.1.1**

Electromagnetic compatibility and Radio spectrum Matters (ERM); Radio equipment in the frequency range 9 kHz to 315 kHz for Ultra Low Power Active Medical Implants (ULP-AMI) and accessories; Part 1: Technical characteristics and test methods

**ETSI EN 302 195-2 V1.1.1**

Electromagnetic compatibility and Radio spectrum Matters (ERM); Radio equipment in the frequency range 9 kHz to 315 kHz for Ultra Low Power Active Medical Implants (ULP-AMI) and accessories; Part 2: Harmonized EN covering essential requirements of article 3.2 of the R&TTE Directive

**ETSI EN 302 510-1 V1.1.1**

Electromagnetic compatibility and Radio spectrum Matters (ERM); Radio equipment in the frequency range 30 MHz to 37,5 MHz for Ultra Low Power Active Medical Membrane Implants and Accessories; Part 1: Technical characteristics and test methods

**ETSI EN 302 510-2 V1.1.1**

Electromagnetic compatibility and Radio spectrum Matters (ERM); Radio equipment in the frequency range 30 MHz to 37,5 MHz for Ultra Low Power Active Medical Membrane Implants and Accessories; Part 2: Harmonized EN covering essential requirements of article 3.2 of the R&TTE Directive

**ETSI EN 302 537-1 V1.1.2**

Electromagnetic compatibility and Radio spectrum Matters (ERM); Short Range Devices (SRD); Ultra Low Power Medical Data Service Systems operating in the frequency range 401 MHz to 402 MHz and 405 MHz to 406 MHz; Part 1: Technical characteristics and test methods

**ETSI EN 302 537-2 V1.1.2**

Electromagnetic compatibility and Radio spectrum Matters (ERM); Short Range Devices (SRD); Ultra Low Power Medical Data Service Systems operating in the frequency range 401 MHz to 402 MHz and 405 MHz to 406 MHz; Part 2: Harmonized EN covering essential requirements of article 3.2 of the R&TTE Directive

**ETSI EN 303 203-2 V1.1.1**

Electromagnetic compatibility and Radio spectrum Matters (ERM); Short Range Devices (SRD); Medical Body Area Network Systems (MBANSs) operating in the 2 483,5 MHz to 2 500 MHz range; Part 2: Harmonized EN covering the essential requirements of article 3.2 of the R&TTE Directive

**Important Note:** The revision numbers of the documents given in the approval standard are the minimum standards that apply. Should updated versions of these documents be published, the latest version will always apply. This also applies to documents where no revision number is currently quoted.

## Obtaining Technical Standards

ETSI technical standards may be obtained free of charge for individual use from the ETSI web site. [www.etsi.org](http://www.etsi.org)

CENELEC, IEC and CISPR standards may be obtained at cost from, or through [www.cenelec.org](http://www.cenelec.org) and from [www.iec.ch](http://www.iec.ch) respectively.



# **TECHNICAL SPECIFICATION**

**FOR**

**METEOROLOGICAL AIDS**

**ISSUED BY**

**BOTSWANA COMMUNICATIONS REGULATORY  
AUTHORITY**

**Document Number: TS0049**  
**Revision: Original V1**  
**Date: 11 December 2015**

# Technical Specification for Meteorological Aids

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## Scope

This specification applies to any equipment for meteorological applications.

Where terminal equipment supports more than one interface type, each interface must meet the requirements applicable to it. It may therefore be necessary to make reference to additional specifications.

## Entry into force

This specification shall enter into force on 15/01/2016.

## Document History

| Description         | Status      | Date       |
|---------------------|-------------|------------|
| Meteorological Aids | Original V1 | 11/12/2015 |
|                     |             |            |
|                     |             |            |
|                     |             |            |
|                     |             |            |

## Health, Safety, and Generic Emissions

The following universal specifications shall be applied.

**TS0001:** Health, Safety and Generic Emissions of Radio and Telecommunications Terminal Equipment.

## Technical, Spectrum and EMC Requirements

The following specifications shall be applied.

### **ETSI EN 302 054-1 V1.2.1**

Electromagnetic Compatibility and Radio spectrum Matters (ERM); Meteorological Aids (Met Aids); Radiosondes to be used in the 400,15 MHz to 406 MHz frequency range with power levels ranging up to 200 mW; Part 1: Technical characteristics and test methods

### **ETSI EN 302 054-2 V1.2.1**

Electromagnetic compatibility and Radio spectrum Matters (ERM); Meteorological Aids (Met Aids); Radiosondes to be used in the 400,15 MHz to 406 MHz frequency range with power levels ranging up to 200 mW; Part 2: Harmonized EN covering essential requirements under article 3.2 of the R&TTE Directive

### **ETSI EN 302 454-1 V1.2.1**

Electromagnetic compatibility and Radio spectrum Matters (ERM); Meteorological Aids (Met Aids); Radiosondes to be used in the 1 668,4 MHz to 1 690 MHz frequency range; Part 1: Technical characteristics and test methods

### **ETSI EN 302 454-2 V1.2.1**

Electromagnetic compatibility and Radio spectrum Matters (ERM); Meteorological Aids (Met Aids); Radiosondes to be used in the 1 668,4 MHz to 1 690 MHz frequency range; Part 2: Harmonized EN covering essential requirements of article 3.2 of the R&TTE Directive

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## Obtaining Technical Standards

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# **TECHNICAL SPECIFICATION**

**FOR**

**ON-SITE PAGING SERVICES**

**ISSUED BY**

**BOTSWANA COMMUNICATIONS REGULATORY  
AUTHORITY**

**Document Number: TS0050**  
**Revision: Original V1**  
**Date: 11 December 2015**

# Technical Specification for On-Site Paging Services

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## Scope

This specification applies to any equipment for on-site paging applications.

Where terminal equipment supports more than one interface type, each interface must meet the requirements applicable to it. It may therefore be necessary to make reference to additional specifications.

## Entry into Force

This specification shall enter into force on 15/01/2016.

## Document History

| <b>Description</b>      | <b>Status</b> | <b>Date</b> |
|-------------------------|---------------|-------------|
| On-Site Paging Services | Original V1   | 11/12/2015  |
|                         |               |             |
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## Health, Safety, and Generic Emissions

The following universal specifications shall be applied.

**TS0001:** Health, Safety and Generic Emissions of Radio and Telecommunications Terminal Equipment.

## Technical, Spectrum and EMC Requirements

The following specifications shall be applied.

### **ETSI EN 300 224-1 V1.3.1**

Electromagnetic compatibility and Radio spectrum Matters (ERM); On-site paging service; Part 1: Technical and functional characteristics, including test methods

### **ETSI EN 300 224-2 V1.1.1**

Electromagnetic compatibility and Radio spectrum Matters (ERM); On-site paging service; Part 2: Harmonized EN under article 3.2 of the R&TTE Directive

### **ETSI EN 301 489-2 V1.3.1**

Electromagnetic compatibility and Radio spectrum Matters (ERM); ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 2: Specific conditions for radio paging equipment

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# **TECHNICAL SPECIFICATION**

**FOR**

**ULTRA WIDE BAND SERVICES**

**ISSUED BY**

**BOTSWANA COMMUNICATIONS REGULATORY  
AUTHORITY**

**Document Number: TS0051**  
**Revision: Original V1**  
**Date: 11 December 2015**

# Technical Specification for Ultra Wide Band Services

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## Scope

This specification applies to any equipment for ultra wide band applications.

Where terminal equipment supports more than one interface type, each interface must meet the requirements applicable to it. It may therefore be necessary to make reference to additional specifications.

## Entry into force

This specification shall enter into force on 15/01/2016.

## Document History

| Description              | Status      | Date       |
|--------------------------|-------------|------------|
| Ultra Wide Band Services | Original V1 | 11/12/2015 |
|                          |             |            |
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|                          |             |            |
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## Health, Safety, and Generic Emissions

The following universal specifications shall be applied.

**TS0001:** Health, Safety and Generic Emissions of Radio and Telecommunications Terminal Equipment.

## Technical, Spectrum and EMC Requirements

The following specifications shall be applied.

### **ETSI EN 301 489-33 V1.1.1**

Electromagnetic compatibility and Radio spectrum Matters (ERM); ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 33: Specific conditions for Ultra Wide Band (UWB) communications devices

### **ETSI EN 302 065-1 V1.3.1**

Electromagnetic compatibility and Radio spectrum Matters (ERM); Short Range Devices (SRD) using Ultra Wide Band technology (UWB); Harmonized EN covering the essential requirements of article 3.2 of the R&TTE Directive; Part 1: Requirements for Generic UWB applications

### **ETSI EN 302 065-2 V1.1.1**

Electromagnetic compatibility and Radio spectrum Matters (ERM); Short Range Devices (SRD) using Ultra Wide Band technology (UWB); Harmonized EN covering the essential requirements of article 3.2 of the R&TTE Directive; Part 2: Requirements for UWB location tracking

### **ETSI EN 302 065-3 V1.1.1**

Electromagnetic compatibility and Radio spectrum Matters (ERM); Short Range Devices (SRD) using Ultra Wide Band technology (UWB); Harmonized EN covering the essential requirements of article 3.2 of the R&TTE Directive; Part 3: Requirements for UWB devices for road and rail vehicles

### **ETSI EN 302 065 V1.2.1**

Electromagnetic compatibility and Radio spectrum Matters (ERM); Short Range Devices (SRD) using Ultra Wide Band technology (UWB) for communications purposes; Harmonized EN covering the essential requirements of article 3.2 of the R&TTE Directive

**ETSI EN 302 435-1 V1.3.1**

Electromagnetic compatibility and Radio spectrum Matters (ERM); Short Range Devices (SRD); Technical characteristics for SRD equipment using Ultra WideBand technology (UWB); Building Material Analysis and Classification equipment applications operating in the frequency band from 2,2 GHz to 8,5 GHz; Part 1: Technical characteristics and test methods

**ETSI EN 302 435-2 V1.3.1**

Electromagnetic compatibility and Radio spectrum Matters (ERM); Short Range Devices (SRD); Technical characteristics for SRD equipment using Ultra WideBand technology (UWB); Building Material Analysis and Classification equipment applications operating in the frequency band from 2,2 GHz to 8,5 GHz; Part 2: Harmonized EN covering the essential requirements of article 3.2 of the R&TTE Directive

**ETSI EN 302 498-1 V1.1.1**

Electromagnetic compatibility and Radio spectrum Matters (ERM); Short Range Devices (SRD); Technical characteristics for SRD equipment using Ultra WideBand technology (UWB); Object Discrimination and Characterization Applications for power tool devices operating in the frequency band from 2,2 GHz to 8,5 GHz; Part 1: Technical characteristics and test methods

**ETSI EN 302 498-2 V1.1.1**

Electromagnetic compatibility and Radio spectrum Matters (ERM); Short Range Devices (SRD); Technical characteristics for SRD equipment using Ultra WideBand technology (UWB); Object Discrimination and Characterization Applications for power tool devices operating in the frequency band from 2,2 GHz to 8,5 GHz; Part 2: Harmonized EN covering the essential requirements of article 3.2 of the R&TTE Directive

**ETSI EN 302 500-1 V2.1.1**

Electromagnetic compatibility and Radio spectrum Matters (ERM); Short Range Devices (SRD) using Ultra WideBand (UWB) technology; Location Tracking equipment operating in the frequency range from 6 GHz to 9 GHz; Part 1: Technical characteristics and methods of measurement

**ETSI EN 302 500-2 V2.1.1**

Electromagnetic compatibility and Radio spectrum Matters (ERM); Short Range Devices (SRD) using Ultra WideBand (UWB) technology; Location Tracking equipment operating in the frequency range from 6 GHz to 9 GHz; Part 2: Harmonized EN covering the essential requirements of article 3.2 of the R&TTE Directive

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## Obtaining Technical Standards

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# **TECHNICAL SPECIFICATION**

**FOR**

**WIDE BAND AUDIO SERVICES**

**ISSUED BY**

**BOTSWANA COMMUNICATIONS REGULATORY  
AUTHORITY**

**Document Number: TS0052**  
**Revision: Original V1**  
**Date: 11 December 2015**

# Technical Specification for Wide Band Audio Services

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## Scope

This specification applies to any equipment for wide band audio applications.

Where terminal equipment supports more than one interface type, each interface must meet the requirements applicable to it. It may therefore be necessary to make reference to additional specifications.

## Entry into Force

This specification shall enter into force on 15/01/2016.

## Document History

| Description              | Status      | Date       |
|--------------------------|-------------|------------|
| Wide Band Audio Services | Original V1 | 11/12/2015 |
|                          |             |            |
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|                          |             |            |
|                          |             |            |

## Health, Safety, and Generic Emissions

The following universal specifications shall be applied.

**TS0001:** Health, Safety and Generic Emissions of Radio and Telecommunications Terminal Equipment.

## Technical, Spectrum and EMC Requirements

The following specifications shall be applied.

### **ETSI EN 300 454-1 V1.1.2**

Electromagnetic compatibility and Radio spectrum Matters (ERM); Wideband audio links; Part 1: Technical characteristics and test methods

### **ETSI EN 300 454-2 V1.1.1**

Electromagnetic compatibility and Radio spectrum Matters (ERM); Wide band audio links; Part 2: Harmonized EN under article 3.2 of the R&TTE Directive

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# **TECHNICAL SPECIFICATION**

**FOR**

**MOBILE WIMAX BASE STATIONS**

**ISSUED BY**

**BOTSWANA COMMUNICATIONS REGULATORY  
AUTHORITY**

**Document Number: TS0053**  
**Revision: Original V1**  
**Date: 11 December 2015**

# Technical Specification for Mobile WIMAX Base Stations

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## Scope

This specification applies to any equipment for WiMax base stations.

Where terminal equipment supports more than one interface type, each interface must meet the requirements applicable to it. It may therefore be necessary to make reference to additional specifications.

## Entry into Force

This specification shall enter into force on 15/01/2016.

## Document History

| <b>Description</b>         | <b>Status</b> | <b>Date</b> |
|----------------------------|---------------|-------------|
| Mobile WIMAX Base Stations | Original V1   | 11/12/2015  |
|                            |               |             |
|                            |               |             |
|                            |               |             |
|                            |               |             |

## Health, Safety, and Generic Emissions

The following universal specifications shall be applied.

**TS0001:** Health, Safety and Generic Emissions of Radio and Telecommunications Terminal Equipment.

## Technical, Spectrum and EMC Requirements

The following specifications shall be applied.

### **ETSI EN 301 908-20 V6.2.1**

IMT cellular networks; Harmonized EN covering the essential requirements of article 3.2 of the R&TTE Directive; Part 20: OFDMA TDD WMAN (Mobile WiMAX) TDD Base Stations (BS)

### **ETSI EN 301 908-22 V5.2.1**

IMT cellular networks; Harmonized EN covering the essential requirements of article 3.2 of the R&TTE Directive; Part 22: OFDMA TDD WMAN (Mobile WiMAX) FDD Base Stations (BS)

**Important Note:** The revision numbers of the documents given in the approval standard are the minimum standards that apply. Should updated versions of these documents be published, the latest version will always apply. This also applies to documents where no revision number is currently quoted.

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# **TECHNICAL SPECIFICATION**

**FOR**

**MOBILE WIMAX USER EQUIPMENT**

**ISSUED BY**

**BOTSWANA COMMUNICATIONS REGULATORY  
AUTHORITY**

**Document Number: TS0054**  
**Revision: Original V1**  
**Date: 11 December 2015**

# Technical Specification for Mobile WIMAX Unser Equipment

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## Scope

This specification applies to any user equipment for WiMax services.

Where terminal equipment supports more than one interface type, each interface must meet the requirements applicable to it. It may therefore be necessary to make reference to additional specifications.

## Entry into Force

This specification shall enter into force on 15/01/2016.

## Document History

| Description                  | Status      | Date       |
|------------------------------|-------------|------------|
| Mobile WIMAX Unser Equipment | Original V1 | 11/12/2015 |
|                              |             |            |
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## Health, Safety, and Generic Emissions

The following universal specifications shall be applied.

**TS0001:** Health, Safety and Generic Emissions of Radio and Telecommunications Terminal Equipment.

## Technical, Spectrum and EMC Requirements

The following specifications shall be applied.

### **ETSI EN 301 908-19 V6.2.1**

IMT cellular networks; Harmonized EN covering the essential requirements of article 3.2 of the R&TTE Directive; Part 19: OFDMA TDD WMAN (Mobile WiMAX) TDD User Equipment (UE)

### **ETSI EN 301 908-21 V5.2.1**

IMT cellular networks; Harmonized EN covering the essential requirements of article 3.2 of the R&TTE Directive; Part 21: OFDMA TDD WMAN (Mobile WiMAX) FDD User Equipment (UE)

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# **TECHNICAL SPECIFICATION**

**FOR**

**WIRELESS VIDEO LINK SERVICES**

**ISSUED BY**

**BOTSWANA COMMUNICATIONS REGULATORY  
AUTHORITY**

**Document Number: TS0055**  
**Revision: Original V1**  
**Date: 11 December 2015**

# Technical Specification for Wireless Video Link Services

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## Scope

This specification applies to any user equipment for wireless video link services.

Where terminal equipment supports more than one interface type, each interface must meet the requirements applicable to it. It may therefore be necessary to make reference to additional specifications.

## Entry into Force

This specification shall enter into force on 15/01/2016.

## Document History

| <b>Description</b>           | <b>Status</b> | <b>Date</b> |
|------------------------------|---------------|-------------|
| Wireless Video Link Services | Original V1   | 11/12/2015  |
|                              |               |             |
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## Health, Safety, and Generic Emissions

The following universal specifications shall be applied.

**TS0001:** Health, Safety and Generic Emissions of Radio and Telecommunications Terminal Equipment.

## Technical, Spectrum and EMC Requirements

The following specifications shall be applied.

### **ETSI EN 301 489-28 V1.1.1**

Electromagnetic compatibility and Radio Spectrum Matters (ERM); ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 28: Specific conditions for wireless digital video links

### **ETSI EN 302 064-1 V1.1.2**

Electromagnetic compatibility and Radio spectrum Matters (ERM); Wireless Video Links (WVL) operating in the 1,3 GHz to 50 GHz frequency band; Part 1: Technical characteristics and methods of measurement

### **ETSI EN 302 064-2 V1.1.1**

Electromagnetic compatibility and Radio spectrum Matters (ERM); Wireless Video Links (WVL) operating in the 1,3 GHz to 50 GHz frequency band; Part 2: Harmonized EN under article 3.2 of the R&TTE Directive

**Important Note:** The revision numbers of the documents given in the approval standard are the minimum standards that apply. Should updated versions of these documents be published, the latest version will always apply. This also applies to documents where no revision number is currently quoted.

## Obtaining Technical Standards

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CENELEC, IEC and CISPR standards may be obtained at cost from, or through [www.cenelec.org](http://www.cenelec.org) and from [www.iec.ch](http://www.iec.ch) respectively.



# **TECHNICAL SPECIFICATION**

**FOR**

**SHORT RANGE DEVICES**

**ISSUED BY**

**BOTSWANA COMMUNICATIONS REGULATORY  
AUTHORITY**

**Document Number: TS0056**  
**Revision: Original V1**  
**Date: 11 December 2015**

# Technical Specification for Short Range Devices

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## Scope

This specification applies to any user equipment for short range devices services.

Where terminal equipment supports more than one interface type, each interface must meet the requirements applicable to it. It may therefore be necessary to make reference to additional specifications.

## Entry into Force

This specification shall enter into force on 15/01/2016.

## Document History

| Description         | Status      | Date       |
|---------------------|-------------|------------|
| Short Range Devices | Original V1 | 11/12/2015 |
|                     |             |            |
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## Health, Safety, and Generic Emissions

The following universal specifications shall be applied.

**TS0001:** Health, Safety and Generic Emissions of Radio and Telecommunications Terminal Equipment.

## Technical, Spectrum and EMC Requirements

The following specifications shall be applied.

### **ETSI EN 301 489-33 V1.1.1**

Electromagnetic compatibility and Radio spectrum Matters (ERM); ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 33: Specific conditions for Ultra Wide Band (UWB) communications devices

### **ETSI EN 302 066-1 V1.2.1**

Electromagnetic compatibility and Radio spectrum Matters (ERM); Ground- and Wall- Probing Radar applications (GPR/WPR) imaging systems; Part 1: Technical characteristics and test methods

### **ETSI EN 302 066-2 V1.2.1**

Electromagnetic compatibility and Radio spectrum Matters (ERM); Ground- and Wall- Probing Radar applications (GPR/WPR) imaging systems; Part 2: Harmonized EN covering essential requirements of article 3.2 of the R&TTE Directive

### **EN 302 208-1-V2.1.1**

Electromagnetic compatibility and Radio spectrum Matters (ERM); Radio Frequency Identification Equipment operating in the band 865 MHz to 868 MHz with power levels up to 2 W; Part 1: Technical requirements and methods of measurement

### **ETSI EN 302 208-2 V2.1.1**

Electromagnetic compatibility and Radio spectrum Matters (ERM); Radio Frequency Identification Equipment operating in the band 865 MHz to 868 MHz with power levels up to 2 W; Part 2: Harmonized EN covering the essential requirements of article 3.2 of the R&TTE Directive

### **ETSI EN 302 372-1 V1.2.1**

Electromagnetic compatibility and Radio spectrum Matters (ERM); Short Range Devices (SRD); Equipment for Detection and Movement; Tanks Level Probing Radar (TLPR) operating in the frequency bands

5,8 GHz, 10 GHz, 25 GHz, 61 GHz and 77 GHz; Part 1: Technical characteristics and test methods

**ETSI EN 302 372-2 V1.2.1**

Electromagnetic compatibility and Radio spectrum Matters (ERM); Short Range Devices (SRD); Equipment for Detection and Movement; Tanks Level Probing Radar (TLPR) operating in the frequency bands 5,8 GHz, 10 GHz, 25 GHz, 61 GHz and 77 GHz; Part 2: Harmonized EN covering the essential requirements of article 3.2 of the R&TTE Directive

**ETSI EN 302 729-1 V1.1.2**

Electromagnetic compatibility and Radio spectrum Matters (ERM); Short Range Devices (SRD); Level Probing Radar (LPR) equipment operating in the frequency ranges 6 GHz to 8,5 GHz, 24,05 GHz to 26,5 GHz, 57 GHz to 64 GHz, 75 GHz to 85 GHz; Part 1: Technical characteristics and test methods

**ETSI EN 302 729-2 V1.1.2**

Electromagnetic compatibility and Radio spectrum Matters (ERM); Short Range Devices (SRD); Level Probing Radar (LPR) equipment operating in the frequency ranges 6 GHz to 8,5 GHz, 24,05 GHz to 26,5 GHz, 57 GHz to 64 GHz, 75 GHz to 85 GHz; Part 2: Harmonized EN covering the essential requirements of article 3.2 of the R&TTE Directive

**ETSI EN 303 204-2 V1.1.1**

Electromagnetic compatibility and Radio spectrum Matters (ERM); Network Based Short Range Devices (SRD); Radio equipment to be used in the 870 MHz to 876 MHz frequency range with power levels ranging up to 500 mW; Part 2: Harmonized EN covering the essential requirements of article 3.2 of the R&TTE Directive

**Important Note:** The revision numbers of the documents given in the approval standard are the minimum standards that apply. Should updated versions of these documents be published, the latest version will always apply. This also applies to documents where no revision number is currently quoted.

## Obtaining Technical Standards

ETSI technical standards may be obtained free of charge for individual use from the ETSI web site. [www.etsi.org](http://www.etsi.org)

CENELEC, IEC and CISPR standards may be obtained at cost from, or through [www.cenelec.org](http://www.cenelec.org) and from [www.iec.ch](http://www.iec.ch) respectively.





## **TECHNICAL SPECIFICATION**

**FOR**

**EQUIPMENT CONNECTING TO 140 Mbit/s SERVICES**

**ISSUED BY**

**BOTSWANA COMMUNICATIONS REGULATORY  
AUTHORITY**

**Document Number: TS0057**  
**Revision: Original V1**  
**Date: 11 December 2015**

# Technical Specification for Equipment Connecting To 140 Mbit/s Services

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## Scope

This specification applies to any equipment connected to 140 Mbit/s services.

Where terminal equipment supports more than one interface type, each interface must meet the requirements applicable to it. It may therefore be necessary to make reference to additional specifications.

## Entry into Force

This specification shall enter into force on 15/01/2016.

## Document History

| Description                                 | Status      | Date       |
|---|-------------|------------|
| Equipment Connecting To 140 Mbit/s Services | Original V1 | 11/12/2015 |
|   |             |            |
|   |             |            |
|   |             |            |
|   |             |            |

## Health, Safety, and Generic Emissions

The following universal specifications shall be applied.

**TS0001:** Health, Safety and Generic Emissions of Radio and Telecommunications Terminal Equipment.

## Technical, Spectrum and EMC Requirements

The following specifications shall be applied.

### **ETSI EN 300 690 V1.2.1 (2001-07)**

Access and Terminals (AT); 140 Mbit/s digital leased lines (D140U and D140S); Terminal equipment interface

### **ETSI TBR 025 ed.1 (1997-07)**

Business TeleCommunications (BTC); 140 Mbit/s digital unstructured and structured leased lines (D140U and D140S); Attachment requirements for terminal equipment interface

**Important Note:** The revision numbers of the documents given in the approval standard are the minimum standards that apply. Should updated versions of these documents be published, the latest version will always apply. This also applies to documents where no revision number is currently quoted.

## Obtaining Technical Standards

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# **TECHNICAL SPECIFICATION**

**FOR**

**EQUIPMENT DIRECTLY CONNECTING TO SDH**

**ISSUED BY**

**BOTSWANA COMMUNICATIONS REGULATORY  
AUTHORITY**

**Document Number: TS0058**  
**Revision: Original V1**  
**Date: 11 December 2015**

# Technical Specification for Equipment Directly Connecting To SDH

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## Scope

This specification applies to any equipment connected to SDH devices.

Where terminal equipment supports more than one interface type, each interface must meet the requirements applicable to it. It may therefore be necessary to make reference to additional specifications.

## Entry into Force

This specification shall enter into force on 15/01/2016.

## Document History

| Description                          | Status      | Date       |
|--------------------------------------|-------------|------------|
| Equipment Directly Connecting To SDH | Original V1 | 11/12/2015 |
|                                      |             |            |
|                                      |             |            |
|                                      |             |            |
|                                      |             |            |

## Health, Safety, and Generic Emissions

The following universal specifications shall be applied.

**TS0001:** Health, Safety and Generic Emissions of Radio and Telecommunications Terminal Equipment.

## Technical, Spectrum and EMC Requirements

The following specifications shall be applied.

**ETSI ETS 300 232/A1 ed.1 (1996-03)**

Transmission and Multiplexing (TM); Optical interfaces for equipments and systems relating to the Synchronous Digital Hierarchy (SDH) [ITU-T Recommendation G.957 (1995), modified]

**ETSI ETS 300 300 ed.2 (1997-04)**

Broadband Integrated Services Digital Network (B-ISDN); Synchronous Digital Hierarchy (SDH) based user network access; Physical layer User Network Interfaces (UNI) for 155 520 kbit/s and 622 080 kbit/s Asynchronous Transfer Mode (ATM) B-ISDN applications

**ETSI ETS 300 814 ed.1 (1998-03)**

Digital Video Broadcasting (DVB); DVB interfaces to Synchronous Digital Hierarchy (SDH) networks

**Important Note:** The revision numbers of the documents given in the approval standard are the minimum standards that apply. Should updated versions of these documents be published, the latest version will always apply. This also applies to documents where no revision number is currently quoted.

## Obtaining Technical Standards

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