



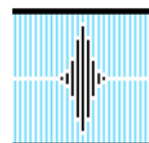
ANNEX 3

TYPE APPROVAL TECHNICAL SPECIFICATIONS

REVIEWED BY

ICT Consultants (Pty) Ltd

27 FEB 2023



1. Safety and EMC Requirements Equipment

Our Ref.	Specification Description	Scope	Applicable Standards for Type Approval Reference Standards (Latest version)		Comments
			EMC, SAR, Safety Radio ERM	Additional requirement	
TS0001	Safety and EMC Requirements of Radio and Telecommunications Terminal Equipment	<p>Safety and EMC Specification applies to any radio and telecommunications terminal Equipment.</p> <p>Where equipment supports more than one interface type, each interface must meet the requirements or ref to additional specifications.</p>	<p><u>SAFETY</u> EN 60950 or IEC 60950</p> <p><u>RADIO and SAR:</u> EN 50360 EN 50364 EN 50371 EN 60215</p> <p><u>OPTICAL & LASER:</u> EN 60825-1 or IEC 60825-1 EN 60825-2 or IEC 60825-2</p> <p><u>EMC</u> EN 55032 or CISPR 32 EN 55035 or CISPR 35 EN300 386 ETSI EN 300 386-2 EN 61000-3-2 IEC 61000-3-2 EN 61000-3-3 IEC 61000-3-3 EN 61000-3-11 or IEC 61000-3-11 EN 61000-6-1 or IEC 61000-6-1 EN 61000-6-2 or IEC 61000-6-2 EN 61000-6-3 or IEC 61000-6-3 EN 61000-6-4 or IEC 61000-6-4</p>	The latest issue or published version of the standard should be used for testing and conformity assessment	<p>The Safety and EMC Specifications has been reviewed and it is recommended that EN 55022 or CISPR 22 should be replaced with EN 55032 or CISPR 32</p> <p>EN 55024 or CISPR also it is recommended it should be replaced with EN 55035 or CISPR 35</p>



2. Public Access Mobile

Our Ref.	Equipment Description	Scope	Frequency Band	Applicable Standards for Type Approval Reference Standards (Latest Version)		Comments
				EMC, SAR, Safety Radio ERM	Additional requirement	
TS0002	GSM Handsets, Terminals & ancillary Equipment (2G)	Specification applies GSM interface equipment, including handsets, terminals, WLL terminals	880-915MHz 925-960MHz 1705-1785MHz 1805-1880MHz	TS0001: Safety & EMC Specification applies. ETSI EN 301 511 ETSI EN 301 489-1 ETSI EN 301 489-7	Mobile Terminal shall be allocated a unique 'IMEI. Manufacturer shall ensure security measures to protect IMEI against duplication, unauthorised removal, or change.	The latest issue or published version of the standard should be used for testing and conformity assessment
TS 0003	GSM Base Station and Ancillary equipment (2G)	Specification applies GSM Base Station and ancillary equipment	880-915MHz 925-960MHz 1705-1785MHz 1805-1880MHz	TS0001: Safety & EMC Specification applies. ETSI EN 300 609-4 ETSI EN 301 489-1 ETSI EN 301 489-8 ETSI EN 301 489-50 ETSI EN 301 502 ETSI EN 301 908-18	BOCRA cellular Licence required to operate in this band	The latest issue or published version of the standard should be used for testing and conformity assessment
TS0022	UMTS Radio Base Stations (3G) and related equipment	Specification applies UMTS (3G) radio base stations	1920-1970 MHz 1970-1980 MHz	TS0001: Safety & EMC Specification applies. ETSI EN 301 489-1	BOCRA cellular Licence required to operate in this band	The latest issue or published version of the standard

		interface equipment, including handsets, terminals	2010-2025 MHz 2025-2110 MHz 2110-2120 MHz 2120-2160 MHz 2160-2170 MHz 2500-2570 MHz 2620-2690 MHz	ETSI EN 301 489-23 ETSI EN 301 489-50 ETSI EN 301 908-1 ETSI EN 301 908-3 ETSI EN 301 908-7 ETSI EN 301 908-11 ETSI EN 301 908-18		should be used for testing and conformity assessment
TS0023	UMTS handsets and related equipment (3G)	Specification applies UMTS (3G) radio base stations interface equipment, including handsets, terminals	3400-3600 MHz	TS0001: Safety & EMC Specification applies. ETSI EN 301 489-1 ETSI EN 301 489-24 ETSI EN 301 908-1 ETSI EN 301 908-2 ETSI EN 301 908-6	Mobile Terminal shall be allocated a unique 'IMEI. Manufacturer shall ensure security measures to protect IMEI against duplication, unauthorised removal, or change.	The latest issue or published version of the standard should be used for testing and conformity assessment
TS0047	LTE Handsets and related equipment (4G)	Specification applies LTE handsets and related equipment	1920-1970 MHz 1970-1980 MHz 2010-2025 MHz 2025-2110 MHz 2110-2120 MHz 2120-2160 MHz 2160-2170 MHz 2500-2570 MHz 2620-2690 MHz	TS0001: Safety & EMC Specification applies. ETSI EN 301 489-1 ETSI EN 301 489-24 ETSI EN 301 908-1 ETSI EN 301 908-1	Mobile Terminal shall be allocated a unique 'IMEI. Manufacturer shall ensure security measures to protect IMEI against duplication, unauthorised removal, or change.	The latest issue or published version of the standard should be used for testing and conformity assessment
TS0046	LTE Radio Base Stations and Ancillary equipment (4G)	Specification applies LTE Radio Base Stations and Ancillary Equipment	3400-3600 MHz	TS0001: Safety & EMC Specification applies. ETSI EN 301 489-1 ETSI EN 301 489-23	BOCRA cellular Licence required to operate in this band	The latest issue or published version of the standard should be used for testing and conformity assessment

				ETSI EN 301 489-50 ETSI EN 301 908-15 ETSI EN 301 908-18 ETSI EN 301 908-1		
TS0059	IMT 2020 handsets and related equipment (5G)	Specifies the standard for the 5G user equipment (UE)	1920-1970 MHz 1970-1980 MHz 2010-2025 MHz 2025-2110 MHz 2110-2120 MHz 2120-2160 MHz 2160-2170 MHz 2500-2570 MHz 2620-2690 MHz	TS0001: Safety & EMC Specification applies. ETSI TS 138 522 ETSI TS 138 533 ETSI TR 138 903 ETSI TS 138 521-1	Mobile Terminal shall be allocated a unique 'IMEI. Manufacturer shall ensure security measures to protect IMEI against duplication, unauthorised removal, or change.	The latest issue or published version of the standard should be used for testing and conformity assessment
TS0060	IMT 2020 Radio Base Stations (5G)	Specification applies IMT 2022 Radio Base stations and Ancillary Equipment	3400-3600 MHz	TS0001: Safety & EMC Specification applies. ETSI TS 123 041 ETSI TS 136 523-2 ETSI TS 136 508 ETSI TS 137 571-2	BOCRA cellular Licence required to operate in this band	The latest issue or published version of the standard should be used for testing and conformity assessment

3. Private Mobile Radio

Our Ref.	Equipment Description	Scope	Frequency Band	Applicable Standards for Type Approval Reference Standards (Latest Version)		Comments
				EMC, SAR, Safety Radio ERM	Additional requirement	
TS0004	Analogue PMR handsets and ancillary equipment	This specification applies to all Analogue PMR handsets and ancillary equipment to be used in Botswana.	Various HF/VHF/UHF frequency bands allocated in the National Radio Frequency Plan for the PMR	TS0001: Safety & EMC applies. ETSI EN 300 086-1 ETSI EN 300 086-2 ETSI EN 300 113-2 ETSI EN 300 296-1 ETSI EN 300 296-2 ETSI EN 301 166-1 ETSI EN 301 166-2 ETSI EN 302 561 ETSI EN 303 039 ETSI EN 300 390-1 ETSI EN 300 390-2 ETSI EN 300 471-1 ETSI EN 300 471-2 ETSI EN 301 489-1 ETSI EN 301 489-5 ETSI EN 300 793	A radio licence is required for the analogue PMR unless the exempted in accordance with the Communication Regulations. The licence will provide additional requirements for the PMR handsets.	Refer to the Communications Regulations for the exempted radio equipment.

				ANSI/TIA/EIA 603		
TS0005	Analogue PMR Base Stations and ancillary equipment	This specification applies to all Analogue PMR base stations and ancillary equipment to be used in Botswana.	Various HF/VHF/UHF frequency bands allocated in the National Radio Frequency Plan for the PMR	<p>TS0001: Safety & EMC Specification applies.</p> <p>ETSI EN 300 086-1 ETSI EN 300 086-2 ETSI EN 300 113-1 ETSI EN 300 113-2 ETSI EN 300 4 71-1 ETSI EN 300 471-2 ETSI EN 301 489-16 ETSI EN 301 489-1 ETSI EN 301 489-5 ETSI EN 300 793</p>	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.	
TS0006	TETRA Handsets and ancillary equipment	This specification applies to all TETRA handsets and ancillary equipment to be used in Botswana.	<p>380 - 390 MHz 390 - 400 MHz 410 – 420 MHz 420 – 430 MHz</p>	<p>TS0001: Safety & EMC Specification applies.</p> <p>ETSI EN 303 035-1 ETSI EN 303 035-2 ETSI EN 300 394-1 ETSI EN 301 489-1 ETSI EN 301 489-18</p>	A radio licence is required for the TETRA radios. The licence will provide additional requirements for the TETRA handsets.	

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TS0007	TETRA Base Stations and ancillary equipment	This specification applies to all TETRA base stations and ancillary equipment to be used in Botswana	380.000-389.900 MHz	<p>TS0001: Safety & EMC Specification applies.</p> <p>ETSI EN 300 394-1 ETSI EN 301 489-1 ETSI EN 301 489-18 ETSI EN 301 489-50 ETSI EN 303 035-1 ETSI EN 303 035-2</p>	A radio licence is required for the TETRA radios. The licence will provide additional requirements for the TETRA base stations.	
TS0008	Citizens' Band Radio and ancillary equipment	This specification applies to all citizens' band radio and ancillary equipment to be used in Botswana.	26.960 - 27.410 MHz	<p>TS0001: Safety & EMC Specification applies.</p> <p>ETSI EN 300 433-1 ETSI EN 300 433-2 ETSI EN 301 489-1 ETSI EN 301 489-13</p>	Additional requirements 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.	
TS009	Amateur Radio and ancillary equipment	This specification applies to all citizens' band radio and ancillary equipment to be used in Botswana.	Various frequency bands have been allocated for use by amateur radios.	<p>TS0001: Safety & EMC Specification applies.</p> <p>ETSI EN 301 783-1 ETSI EN 301 783-2 ETSI EN 301 489-1 ETSI EN 301 489-15</p>	Additional requirements exist for the use of amateur radio and ancillary equipment. An Amateur Radio licence is required.	Refer to the ITU Radio Regulations for additional information about the use of the Amateur frequencies.

4. Fixed/Broadband Wireless Access

Our Ref.	Equipment Description	Scope	Frequency Band	Applicable Standards for Type Approval Reference Standards (Latest Version)		Comments
				EMC, SAR, Safety Radio ERM	Additional requirement	
TS0015	Radio Fixed Links	This specification applies to all radio fixed links to be used in Botswana.	1350-1400 MHz 1427-1518 MHz 2300-2450 MHz 5925-6700 MHz 6700-8025 MHz 8025-8500 MHz 12.75-13.25 GHz 14.80-15.35 GHz 17.70-19.70 GHz 22-27 GHz 27.50-29.50 GHz 37-39.50 GHz 51.40-52.6 GHz 55.78-59 GHz	TS0001: Safety & EMC Specification applies. ETSI EN 301 489-1 ETSI EN 301 489-4 ETSI EN 302 217-1 ETSI EN 302 217-2-1 ETSI EN 302 217-2-2 ETSI EN 302 217-3 ETSI EN 302 217-4-2 ETSI EN 302 326-1 ETSI EN 302 326-2 ETSI EN 302 326-3	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.	Applicants are required to apply for the frequency assignment before carrying out the Type Approval of the equipment.
TS0019	Wi-Fi/RLAN/Bluetooth 2.4 GHz and ancillary equipment	This specification applies to all Wi-Fi/RLAN/Bluetooth 2.4 GHz and 5 GHz equipment and ancillary	2.4 GHz 5.7 GHz	TS0001: Safety & EMC Specification applies. ETSI EN 300 328 ETSI EN 300 440-1 ETSI EN 300 440-2 ETSI EN 301 489-1 ETSI EN 301 489-17	In Botswana the radio which operates in the ISM bands also requires Radio Licence unless they are exempted in the Communications Regulations.	The Wi-Fi and RLAN operates on the ISM bands on non-interference basis.

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TS0020	HIPERLAN 5.2 - 5.8 GHz and ancillary equipment	This specification applies to all HIPERLAN 5.2-5.8 GHz and ancillary equipment to be used in Botswana.	5150 – 5350 MHz and 5470-5725 MHz	TS0001: Safety & EMC Specification applies. ETSI EN 301 489-1 ETSI EN 301 489-17 ETSI EN 301 893 ETSI EN 302 502	A licence must be obtained before equipment of this type can be used to offer public access or "hotspots" in Botswana.	
TS0045	Broadband wireless technologies	This specification applies to any equipment usable in Broadband Radio Access Networks.	2495-2690 MHz 3400-3600 MHz 24.45-25.50 GHz 25.50-27 GHz	TS0001: Safety & EMC Specification applies: ETSI EN 301 908-13 ETSI EN 301 908-14 ETSI EN 302 502 ETSI EN 302 567	A radio licence must be obtained before equipment of this type	
TS0053	Point to Multi-Point (PMP) Base Stations	This specification applies to any equipment PMP base stations		TS0001: Safety & EMC Specification applies. ETSI EN 301 908-20 ETSI EN 301 908-22		
TS0054	Point to Multi-Point (PMP) End user Equipment	This specification applies to any user equipment for PMP equipment.		TS0001: Safety & EMC Specification applies. ETSI EN 301 908-19 ETSI EN 301 908-21		
TS0055	Wireless Video Link Services	This specification applies to any user equipment for wireless video link services.		TS0001: Safety & EMC Specification applies. ETSI EN 301 489-28 ETSI EN 302 064-1 ETSI EN 302 064-2		

5. Satellite Systems

Our Ref.	Equipment Description	Scope	Frequency	Applicable Standards for Type Approval Reference Standards (Latest Version)		Comments
				EMC, SAR, Safety Radio ERM	Additional requirement	
TS0010	V-SAT and ancillary equipment	This specification applies to all V-SAT and ancillary equipment to be used in Botswana.	Various frequency bands are allocated to the satellite services in the National Radio Frequency Plan in accordance with ITU Radio Regulations	TS0001: Safety & EMC Specification applies. ETSI EN 301 443 ETSI EN 301 428 ETSI EN 301 489-1 ETSI EN 301 489-12	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.	Frequencies are assigned on an individual licence basis for all V-SAT and ancillary equipment in Botswana.

TS0011	Mobile Earth Stations (MES), Satellite News Gathering (SNG) and ancillary equipment	This specification applies to all Mobile Earth Station (MES), Satellite News Gathering (SNG) and ancillary equipment to be used in Botswana.	Various frequency bands are allocated to the satellite services in the National Radio Frequency Plan in accordance with ITU Radio Regulations	<p>TS0001: Safety & EMC Specification applies.</p> <p>ETSI EN 301 426 ETSI EN 301 427 ETSI EN 301 430 ETSI EN 301 441 ETSI EN 301 442 ETSI EN 301 444 ETSI EN 301 489-1 ETSI EN 301 489-19 ETSI EN 301 489-20 ETSI EN 301 681 ETSI EN 301 721 ETSI EN 302 574-1 ETSI EN 302 574-2 ETSI EN 302 574-3 ETSI EN 302 977 ETSI EN 303 978</p>	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	Frequencies are assigned on an individual licence basis for all Satellite News Gathering (SNG) equipment in Botswana.
TS0012	Fixed Earth Stations and ancillary equipment	This specification applies to all fixed earth stations and ancillary equipment to be used in Botswana.	Various frequency bands are allocated to the satellite services in the National Radio Frequency Plan in accordance with ITU Radio Regulations	<p>TS0001: Safety & EMC Specification applies.</p> <p>ETSI EN 301 459 ETSI EN 301 360 ETSI EN 301 489-1</p>		Frequencies are assigned on an individual licence basis for all fixed earth stations and ancillary equipment in Botswana.

6. Short-Range Devices

Our Ref.	Equipment Description	Scope	Frequency Band	Applicable Standards for Type Approval Reference Standards (Latest Version)		Comments
				EMC, SAR, Safety Radio ERM	Additional requirement	
TS0016	DECT Cordless Telephone Handsets and Ancillary Equipment	This specification applies to all DECT Cordless Telephone Handsets and ancillary equipment to be used in Botswana.	1880 - 1900 MHz	TS0001: Safety & EMC Specification applies. ETSI EN 301 406 ETSI EN 301 489-1 ETSI EN 301 489-6		
TS0017	DECT Base Stations and Ancillary Equipment	This specification applies to all DECT base stations and ancillary equipment to be used in Botswana.	1880 - 1900 MHz	TS0001: Safety & EMC Specification applies. ETSI EN 301 406 ETSI EN 301 489-1 ETSI EN 301 489-6 ETSI EN 301 908-10		
TS0018	Radio Microphones/In-Ear Monitoring and Ancillary Equipment	This specification applies to all radio microphones/in-ear monitoring and ancillary equipment to be used 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	TS0001: Safety & EMC Specification applies. ETSI EN 300 220-1 ETSI EN 300 220-2 ETSI EN 300 220-3 ETSI EN 300 440-1 ETSI EN 300 440-2 ETSI EN 300 422-1	Additional requirements may exist for the use of radio microphones	

			In-Ear Monitoring: 862.000 -- 870.000 MHz	ETSI EN 300 422-2 ETSI EN 301 357-1 ETSI EN 301 357-2 ETSI EN 301 489-1 ETSI EN 301 489-9		
TS0038	Short Range Radio and Related Equipment	This specification applies to all short-range PPR and citizen radios and related equipment.	446.000 - 446.100 MHz and 29.710-27.985 MHz	TS0001: Safety & EMC Specification applies. ETSI EN 301 489-1 ETSI EN 300 390-1 ETSI EN 300 390-2		The PPR are exempted from the radio licence requirement
TS0039	Cordless Telephone (Analogue) Handsets and Related Equipment	This specification applies to all cordless telephone (analogue) handsets and related equipment to be used in Botswana.	39.750 - 40.250 MHz and 49.670 -49.970 MHz	TS0001: Safety & EMC Specification applies. ETSI EN 301 489-1 ETSI EN 300 220-1 ETSI EN 300 220-2 ETSI EN 300 220-3		It is recommended should be discontinued taking into consideration the analogue cordless telephones no longer exist.
TS0040	Cordless Telephone (Analogue) Base Stations and Related Equipment	This specification applies to all cordless telephone (analogue) base stations and related equipment to be used in Botswana.	30.050 -30.325 / 31.025 - 31.225 MHz and 46.670 - 46.970 MHz	TS0001: Safety & EMC Specification applies. ETSI EN 301 489-1 ETSI EN 300 220-1 ETSI EN 300 220-2 ETSI EN 300 220-3		It is recommended should be discontinued taking into consideration the analogue cordless telephones no longer exist.
TS0041	Radio Detection of Movement Applications and Related Equipment	This specification applies all radio detection of	2400 - 2483.5 MHz and 24050 -24250 MHz	TS0001: Safety & EMC Specification applies.		

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		movement applications and related equipment to be used in Botswana.		ETSI EN 300 440-1 ETSI EN 300 440-2 ETSI EN 301 489-1 ETSI EN 301 489-3		
TS0042	Road Transport Telematics and Related Equipment	This specification applies all road transport telematics and related equipment to be used in Botswana.	76000 - 77000 MHz	TS0001: Safety & EMC Specification applies. ETSI EN 300 440-1 ETSI EN 300 440-2 ETSI EN 300 674-1 ETSI EN 300 674-2-1 ETSI EN 300 674-2-2 ETSI EN 301 091-1 ETSI EN 301 091-2 ETSI EN 301 489-1 ETSI EN 301 489-3 ETSI EN 302 264-1 ETSI EN 302 264-2		
TS0043	Inductive Applications and Related Equipment	This specification applies all inductive applications and related equipment to be used in Botswana.	6.765- 6.795 MHz and 13.553-13.567 MHz	TS0001: Safety & EMC Specification applies. ETSI EN 300 440-1 ETSI EN 300 440-2 ETSI EN 300 330-1 ETSI EN 300 330-2 ETSI EN 301 489-1 ETSI EN 301 489-3 ETSI EN 302 291-1		

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TS0044	Non-Specific Short-Range Devices and Related Equipment	This specification applies all non-specific short-range devices and related equipment to be used 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	<p>ETSI EN 302 291-2</p> <p>TS0001: Safety & EMC Specification applies.</p> <p>ETSI EN 300 220-1 ETSI EN 300 220-2 ETSI EN 300 220-3 ETSI EN 300 330-1 ETSI EN 300 330-2 ETSI EN 300 440-1 ETSI EN 300 440-2 ETSI EN 301 489-1 ETSI EN 301 489-3 ETSI EN 302 536-1 ETSI EN 302 536-2 ETSI EN 305 550-1 ETSI EN 305 550-2</p>		
TS0050	On-Site Paging Services	This specification applies to any equipment for on-site paging applications.	N/A	<p>TS0001: Safety & EMC Specification applies.</p> <p>ETSI EN 300 224-1 ETSI EN 300 224-2 ETSI EN 301 489-2</p>		
TS0056	Short Range Devices	This specification applies to any		<p>TS0001: Safety & EMC Specification applies.</p>		

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		transmitting equipment used for Short Range Devices.		<p>ETSI EN 301 489-33 ETSI EN 302 066-1 ETSI EN 302 066-2 ETSI EN 302 208-1 ETSI EN 302 208-2 ETSI EN 302 372-1 ETSI EN 302 372-2 ETSI EN 302 729-1 ETSI EN 302 729-2 ETSI EN 303 204-2</p>		
TS0048	Medical Applications	This specification applies to any equipment for medical applications.		<p>TS0001: Safety & EMC Specification applies.</p> <p>ETSI EN 301 489-27 ETSI EN 301 489-29 ETSI EN 301 489-31 ETSI EN 301 489-35 ETSI EN 301 559-1 ETSI EN 301 559-2 ETSI EN 301 839-1 ETSI EN 301 839-2 ETSI EN 302 195-1 ETSI EN 302 195-2 ETSI EN 302 510-1 ETSI EN 302 510-2 ETSI EN 302 537-1 ETSI EN 302 537-2</p>		

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TS0049	Meteorological Aids	This specification applies to any equipment for meteorological applications.		<p>TS0001: Safety & EMC Specification applies.</p> <p>ETSI EN 302 054-1 ETSI EN 302 054-2 ETSI EN 302 454-1 ETSI EN 302 454-2</p>		
TS0051	Ultra-Wide Band Services	This specification applies to any equipment for ultra-wide band applications.		<p>TS0001: Safety & EMC Specification applies.</p> <p>ETSI EN 301 489-33 ETSI EN 302 065-1 ETSI EN 302 065-2 ETSI EN 302 065-3 ETSI EN 302 065 ETSI EN 302 435-1 ETSI EN 302 435-2 ETSI EN 302 498-1 ETSI EN 302 498-2 ETSI EN 302 500-1 ETSI EN 302 500-2</p>		
TS0052	Wide Band Audio Services	This specification applies to any equipment for wide band audio applications.		<p>TS0001: Safety & EMC Specification applies.</p> <p>ETSI EN 300 454-1 ETSI EN 300 454-2</p>		

7. Broadcasting Equipment

Our Ref.	Equipment Description	Scope	Frequency Band	Applicable Standards for Type Approval Reference Standards (Latest Version)		Comments
				EMC, SAR, Safety Radio ERM	Additional requirement	
TS0100	RADIO MF/HF (AM) BROADCAST EQUIPMENT	This specification applies to all radio MF (AM) broadcast equipment to be used in Botswana	150 ~ 285 kHz 525 ~ 605 kHz	TS0001: Safety & EMC Specification applies. ETSI EN 301 489-11 ETSI EN 302 017 ETSI EN 302 017-1 ETSI EN 302 017-2	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	
TS0101	Radio VHF (FM) Broadcast and Ancillary Services (RDS)	This specification applies to all radio VHF (FM) broadcasting equipment and ancillary services (RDS) to be used in Botswana.	87.5 MHz to 108.0 MHz	TS0001: Safety & EMC Specification applies. ETSI ETS 300 384/A1 ed.1 ETSI EN 301 489-11 ETSI EN 302 018-1 ETSI EN 302 018-2	requirements which must be met.	
TS0102	Television Analogue PAL I VHF and UHF Broadcast Services	This specification applies to all Television Analogue PAL I VHF and UHF Broadcasting equipment to be used in Botswana	VHF: 174 to 230 MHz, UHF: 470 to 862 MHz	TS0001: Safety & EMC Specification applies. ETSI EN 301 489-14 ETSI EN 302 297		

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TS0103	Digital Terrestrial Television Broadcasting System (DVB-T2)	This specification applies to all digital terrestrial television broadcasting systems (DVB-T2) to be used in Botswana	VHF: 174 to 230 MHz, UHF: 470 to 862 MHz	TS0001: Safety & EMC Specification applies. EN 300 429 EN 300 468 EN 300 744 EN 301 489-14 EN 302 296 EN 302 296-2 EN 302 755 ISO-IEC 13818-1 TS 101 162 TS 102 773 TS 102 992 ISO/IEC 13818-1 ISO/IEC 14496		
TS0104	Digital Television Broadcasting Receiver System (DVB-T2)	This specification applies to all digital television satellite receiver broadcasting system (DVB-T2) to be used in Botswana.	VHF: 174 to 230 MHz, UHF: 470 to 862 MHz	TS0001: Safety & EMC Specification applies. EN 300 468 EN 300 472 EN 300 706 EN 300 743 EN 300 744 ETSI ES 202 184 IEC 60728-2 IEC 60728-5 ISO-IEC 13818-2 TR 101 211 T-REC-H.222.0	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.	

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				TS 101 154 TS 102 006 TS 102 366		
TS0105	Radio Broadcasting Systems; ORM	This specification applies to all ORM systems to be used in Botswana.	n/a	TS0001: Safety & EMC Specification applies. ETSI EN 301 489-11 ETSI EN 302 245 ETSI ES 201 980		DRM30 transmitters operating in the harmonized LF, MF and HF terrestrial sound broadcast bands. ORM+ to operate in the FM terrestrial sound broadcast band and beyond. (Not yet included in the current broadcast frequency plan)
TS0106	Digital Television Broadcasting System (DVB-S2)	This specification applies to all digital television broadcasting systems (DVB-S2) to be used in Botswana.	10.7 - 12.75 GHz	TS0001: Safety & EMC Specification applies. ETSI EN 300 468 ETSI EN 301 192 ETSI EN 301 210 ETSI EN 301 790 ETSI EN 302 307-2 ETSI TS 101 545-1 ETSI TS 102 606 ETS 300 801 ETS 300 802 ETSI ES 200 800 ISO/IEC 13818-1 ISO/IEC 14496		Frequency band as per ITU Region 1 (Europe, Russia and Africa) and as further qualified in the Botswana radio frequency Plan Recommendation SNG.770-2 (01/2012 replaces the suspended standards)
TS0107	Digital Television Broadcasting System (DVB-S2)	This specification applies to all digital terrestrial television	VHF: 174 to 230 MHz,	TS0001: Safety & EMC Specification applies. ETSI EN 300 468		According to IEC, IEC 60169-2 standard is

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		broadcasting systems (DVB-S2) to be used in Botswana.	UHF: 470 to 862 MHz	ETSI EN 300 472 ETSI EN 300 706 ETSI EN 300 743 ETSI EN 302 307 ETSI EN 302 755 ETSI ES 202 184 ETS 300 421 ETS 300 743 ETSI TR 101 162 ETSI TR 101 198 ETSI TR 101 211 ETSI TS 101 135 ETSI TS 101 154 ETSI TS 102 006 ETSI TS 102 366 IEC 61169-2:2001 ISO/IEC 3166-1 ISO/IEC 8859 ISO/IEC 13818-3 ISO/IEC 14496-3 ISO/IEC 13818-1 ISO/IEC 14496-10 ITU-R Rec. BT.653-3		"Withdrawn" and replaced by IEC 61169-2:2001
TS0108	Digital Television Broadcasting System (ISDB-T)	This specification applies to all digital television broadcasting	VHF: 174 to 230 MHz, UHF: 470 to 862 MHz	TS0001: Safety & EMC Specification applies. ARIB STD-B21 ARIB STD-B24	Additional requirements exist for the use of the Digital	

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		systems (ISDB-T) to be used in Botswana.		<p>ARIB STD-B31 ARIB STD-B32 ETSI EN 301 489-14 ETSI EN 302 296 ETSI EN 302 296-2 BT.2140-13 BT.709.6 BT.601-7 BT.1306-8 BT.1206-3 IEC 61169-2</p>	<p>terrestrial television broadcasting system (ISDB-T) currently. 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.</p>	
TS0109	T-DAB Broadcast Services	This specification applies to T-DAB Broadcast equipment to be used in Botswana.	<p>174 to 230 MHz; Block 11A-D, Block 12A-D. 230 to 238 MHz; Block 13A-C 236 to 254 MHz; Block 13D-F</p>	<p>TS0001: Safety & EMC Specification applies. ETSI EN 300 401 ETSI EN 300 797 ETSI EN 300 798 ETSI EN 301 234 ETSI EN 301 700 ETSI EN 302 077-1 ETSI EN 302 077-2 ETSI ES 201 735 ETSI ES 201 736</p>	<p>Additional requirements exist for the use of T-DAB Broadcast services currently. A licence must be obtained before equipment of this type can be used</p>	<p>ETSI TS 101 758 has been withdrawn</p>

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				ETSI ES 201 737 ETSI TR 101 495 ETSI TR 101 496-1 ETSI TR 101 496-2 ETSI TR 101 496-3 ETSI TS 101 498-1 ETSI TS 101 498-2 ETSI TS 101 498-3 ETSI TS 101 499 ETSI TS 101 756 ETSI TS 101 757 ETSI TS 101 759 ETSI TS 101 860 ETSI TS 101 993 ETSI TS 102 367 ETSI TS 102 368 ETSI TS 102 371 ETSI TS 102 427 ETSI TS 102 428 ETSI TS 102 563 ETSI TS 102 632 ETSI TS 102 635-1 ETSI TS 102 635-2 ETSI TS 102 652 ETSI TS 102 693 ETSI TS 102 818 ETSI TS 102 978 ETSI TS 102 979	in Botswana. This licence will detail conditions of use and any additional requirements which must be met.	
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				ETSI TS 103 176 ETSI TS 103 177		
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8. Telecommunications Terminal Equipment

Our Ref.	Equipment Description	Scope	Frequency Band	Applicable Standards for Type Approval Reference Standards (Latest Version)		Comments
				EMC, SAR, Safety Radio ERM	Additional requirement	
TS0024	Equipment Connecting to Analogue Public Switched Telephone Network (PSTN)	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.		TS0001: Safety & EMC Specification applies. ETSI ES 203 021-1 ETSI ES 203 021-2 ETSI ES 203 021-3	PULSE DIALING ETSI ES 201 187 ANALOGUE VOICE ETSI EN 300 659-2 ETSI ES 200 778-2 ETSI ES 201 235-3 ETSI ES 201 912 Caller Line Identification ETSI ES 201 235-1 ETSI ES 203 021-1 ETSI ES 203 021-2 ETSI ES 203 021-3	ETSI TBR 021 ed.1 (1998-01) – HISTORICAL (NO REPLACEMENT) ANALOGUE VOICE ETSI TBR 038 ed.1 (1998-05) – Historical

TS0025	Equipment connecting to Analogue Leased Line Services	Specification applies to any equipment which offers an interface that may connect to public 2 or 4 wire Analogue Leased Lines.		TS0001: Safety & EMC Specification applies. ETSI TBR 015 ed.1 ETSI TBR 017 ed.1 ETSI ES 203 021-1 ETSI ES 203 021-2 ETSI ES 203 021-3		
TS0026	Equipment Connecting to ADSL Services	This specification applies to any equipment which offers an interface that may be connected to public ADSL services in Botswana.		TS0001: Safety & EMC Specification applies. ETSI TS 101 135 ETSI ETR 152 ed.3 ETSI ES 202 913 ETSI TS 101 952-1 ETSI TS 101 952-2 ETSI TS 101 952-3 ETSI TS 101 952-4	ETSI TS 101 388 ITU-T Recommendation G.992.1	ADSL equipment should not affect the performance of the analogue PSTN. Reference should also be made to BTA specification TS0024
TS0027	Equipment Connecting to 2.048 Mbit/s digital Leased line Services.	Specification applies to any equipment which offers an interface that may connect public 2.048Mb/s Digital Leased Lines. This specification assumes that E1 terminal equipment will always connect behind a network		TS0001: Safety & EMC Specification applies. ETSI TBR 012/A1 ed. 1 ETSI TBR 012 ed. 1 (Recommend replacing with amendment above) ETSI TBR 013 ed. 1 ETSI EN 300 248 ETSI EN 300 420 ACIF/ACA 50016	ITU-T G.703. Section 9.4	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.

		termination unit (NTU).				
TS0028	Equipment Connecting to 34 Mbit/s Digital Leased Line Services	This specification applies to any equipment which offers an interface that may be connected to public 34Mbit/s Digital Leased Lines in Botswana.		TS0001: Safety & EMC Specification applies. ETSI EN 300 689 ETSI TBR 024 ed. 1 ACIF/ACA S0016 Section 5.5		
TS0029	Equipment Connecting to Co-Directional G.703 Digital Leased Line Services	This specification applies to any equipment which offers an interface that may be connected to public co-directional digital leased lines in Botswana.		TS0001: Safety & EMC Specification applies. ITU-T Recommendation G.703		
TS0030	Equipment Connecting to X.25 Packet Switched Networks	This specification applies to any equipment that may be connected to public X.25 packet switched networks in Botswana.		TS0001: Safety & EMC Specification applies. ETSI TBR 002 ed. 1 ITU-T recommendation X.25 ITU-T recommendation X.21	ITU-T recommendation V.36 ITU-T Recommendation V.37	

				ITU-T recommendation X.21 bis	ITU-T recommendation V.24	
TS0031	Equipment Connecting to High-Speed Serial Interfaces (HSSI)	This specification applies to any equipment that may be connected to public HSSI services in Botswana.		TS0001: Safety & EMC Specification applies. Was EIA/TIA-612		
TS0032	Equipment Connecting to 64 Kb/s Services.	This specification applies to any equipment which offers an interface that may be directly connected to public 64Kbit/s services in Botswana.		TS0001: Safety & EMC Specification applies. ITU-T REC H.323 ITU-T REC H.244 ETSI TBR 014 ed.1 ETSI TBR 014/A1 ed.1 ETSI EN 300 290		
TS0033	Equipment Connecting to X.21 Services	This specification applies to any equipment which offers an interface that may be connected to public X.21 services in Botswana.		TS0001: Safety & EMC Specification applies. ETSI ETS 300 103 ed.1 ITU-T Recommendation X.21 ITU-T Recommendation X.21 bis		

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TS0034	Equipment Connecting to HDSL Services	This specification applies to any equipment which offers an interface that may be connected to public HDSL services in Botswana.		TS0001: Safety & EMC Specification applies. ETSI ETR 152 ed.3 ETSI TS 101 135		
TS0035	Equipment Connecting to Basic Rate ISDN Services at SIT interfaces.	This specification applies to any equipment which offers an interface that may be connected to public Basic Rate ISDN Services at SI T interfaces in Botswana.		TS0001: Safety & EMC Specification applies. ETSI TBR 003/A1 ed.1 ETSI TBR 008 ed.2/ C1 ed. 1/ C2 ed. 2		
TS0036	Equipment Connecting to Basic Rate ISDN Services at the U Interfaces	This specification applies to any equipment which offers an interface that may be directly connected to public Basic Rate ISDN Services at the U		TS0001: Safety & EMC Specification applies. ITU-T recommendation G.961 ETSI ETR 080 ed.2	ITU-T recommendation I.430	

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		Interface in Botswana.				
TS0037	Equipment Connecting to Primary Rate ISDN Services	This specification applies to any equipment which offers an interface that may be connected to public Primary Rate ISDN Services in Botswana.		TS0001: Safety & EMC Specification applies. ETSI TBR 004/A1 ed.1 ETSI TBR 008 ed. 2 /C1 ed.1 /C2 ed.1 ETSI ETR 082 ed.1		