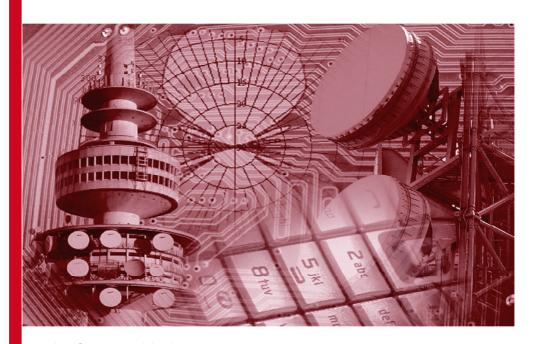# Review of Type Approval Technical Standards and Procedures

Part 2 Report
Version 2.1

Prepared for

The Chief Executive

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Executive Summary

This section of the project contains a general review of Type Approval Procedures as practiced in a number of comparison countries and it considers approaches to Telecommunications and Broadcasting type approval, Fee structure, Equipment labelling and Training. It considers and summarises the comparison countries' requirements and makes recommendations for changes to the existing process in Botswana to align with current accepted practices.

As a result of our analysis, specific changes are recommended in the following sectors:

Broadcast Type approval

- It is recommended that the type approval procedure recommended for Telecommunication equipment also be applied to Broadcast equipment.

- Broadcast Type approval will be applicable to the broadcast equipment standards as listed in section 2 of this document.

Type approval (general)

- It is recommended that the submission of test reports, declarations of conformity, and brief technical standards/product sheet, be compulsory with type approval applications..

- It is recommended that BOCRA consider the acceptance of electronic labelling for products with integral display screens.

- BOCRA consider implementing a system whereby manufacturers are issued with a unique identifier number which would align with other countries such as USA, Canada and Japan.

- It is recommended that test reports only be accepted from suitably accredited laboratories and without exception.

Type approval fees

- We recommend that BOCRA consider moving to a "lifetime until product changes" fee structure, with fees changed to be 2000-3000 Pula.

- It is recommended that BOCRA consider using a portion of the Type Approval fee to fund market surveillance activities, including testing costs where required.

Labelling

- Botswana retains the current labelling requirement.

- The marking may be placed on the product or on the packaging – this allows the validity to be checked at the point of sale

- BOCRA consider removing the option to display a notice in lieu of marking as it does not aid traceability of certified equipment.

- There should be an additional requirement for the product to be labelled with the manufacturer's Name, Model or Type Number, and Serial Number – this aligns the requirement with other major regions.

- It is recommended that BOCRA allow e-labelling of products provided that the physical label is available at the time of purchase and which may also be on the product pack.

Postal equipment

- There is no requirement for BOCRA to implement a regime for the type approval of postal equipment, however it may be beneficial to consult with postal providers to see whether there

is benefit in implementing any of the quality or service standards used in other countries (particularly the EU).

As part of this task we have reviewed a number of documents and wish to provide some additional recommendations:

▪ Guidelines for Type Approval[1] such as Technical Specifications should be updated to provide version numbers or publication dates for all referenced standards. This clarifies not only the version of the standard with which the manufacturer must show compliance but also confirms to BOCRA the version of the standard which should be applied whilst reviewing Type Approvals applications and during market surveillance activities.

▪ It is noted that documents such as Type Approvals Guidelines are dated on the 1st page, but this is not repeated on subsequent pages. Guidelines and all other documents should be given document and version numbers and this information should be repeated on the footer of each page.

▪ It may be that more than one version of a standard is considered to be acceptable, so they could all be listed or noted as "EN mnnnn: 20nn or later" or "ETSI nnn nnn Vn.n.n or later" or similar.

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[1]http://www.bocra.org.bw/documents-and-legislation?field_document_group_tid=18&title=&items_per_page=All&=Apply

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1 Revision of Type Approval Guidelines

The revision of the type approval standards to incorporate the latest international standards has been completed and is presented in the Part 1 report. This section will detail any issues arising from the public stakeholder workshop and any changes to the standards, practices or other matters that are modified as a result.

In addition, the concept and implementation of E-labelling will be clarified following the stakeholder workshop once it has been identified whether they are keen to adopt such a solution.

2   Incorporate Broadcast Equipment

An investigation has been performed into the type approval of broadcast equipment as well as the format of the type approval processes.

Item	Description	Countries Investigated						
		Botswana	Equatorial Guinea	Gabon	Jordan	Mauritius	Namibia	South Africa
1	Telecommunication Equipment Type Approval Process	Yes	Yes	Yes	Yes	Yes	Yes	Yes
2	Broadcast Equipment Type Approval Process	Yes	Unclear	Yes	No info available	Yes	No (silent on Broadcast equipment)	Yes
3	Type approval for broadcast and telecommunication equipment similar?	Yes	Unclear	Yes	No	Yes	No	Yes

We have found that most countries that apply type approval for broadcast devices follow the same type approval process as per the telecommunication devices.

With respect to the types of broadcast devices that should be covered by the type approval system in Botswana, we propose the following list of technologies for which approval should apply. Note that for some systems, there are no on-air services and hence the likelihood of there being produces for sale is small.

It is also notable that for some older technologies, it is common practice to specify only the transmission equipment, whereas for modern digital technologies, both transmission and reception equipment are specified in detail.

As such, the following (older) technologies are typically only specified for transmission equipment:

- FM Broadcasting & Ancillary Services (RDS) (a BOCRA standard already exists for transmission and ancillary equipment)

- Radio HF/MF(AM) (for MF, BOCRA already has a standard for transmission and ancillary equipment)

- Analogue Television PAL(I)

Of the three technologies listed above;

- HF broadcasting is not currently covered by a BOCRA standard and the modification of the existing MF (AM) standard by changing the frequency range covered would be sufficient to encompass HF as well.

- the Analogue Television PAL(I) standard was generated afresh.

In the case of newer, digital technologies, it is necessary to specify both the transmission equipment and the receiver equipment. In the case of the receiver equipment, the purpose of this

is to ensure that the equipment entering the marketplace is capable of receiving the specific variant of the transmission standard that is being used. As such, where a technology is not currenty being transmitted from Botswana (or potentially, to Botswana in the case of international broadcasting) there is currently no specific receiver characteristics that can be specified, other than the generic standards.

Due to the extent and format of DVB standards, transmission and receiver standard are presented as separate standards for both terrestrial and satellite technologies whilst ISDB, DAB and DRM receiver standards are integral and incorporated in the technology standard documents.

The digital technologies for broadcasting which we have identified that transmission and reception standards should be developed for are:

- DAB Plus

- DRM

- ISDB-T (including the Botswana specific characteristics)

- DVB-S and DVB-S2

- DVB-T2

A set of standards for these technologies was prepared and integrated with the existing technical standards with a numbering range for Broadcasting Standards starting at TS0100 .

3 Selection of comparison countries

A number of factors needed to be considered when selecting comparison countries so that the resultant recommendations are fair to both the regulator responsible for enforcement of the rules and for manufacturers looking to enter national markets.

The following five factors were considered and each is discussed in more detail below.

- Geographic and topographic similarity (e.g. size, population, location)

- Level of economic development (e.g. GDP per capita)

- Level of development of the type approval scheme (e.g. how up-to-date are the processes)

- Similar regulatory environment (e.g. a converged regulator similar to BOCRA)

- Availability of information (e.g. English language, published processes)

3.1 Geographic and topographic similarity

Many multinational businesses, particularly those in North America, divide the world into several groups [2] for the purpose of sales, marketing and business structure. Botswana falls within EMEA or Europe, Middle East and Africa.

Europe has a Single Market covering regulatory requirements and product approvals which is applicable to all countries in the European Economic Area, EEA[3]. Whilst this area covers a number of countries of different size and economic development, they share a common set of regulations. Within the EEA, all products that fall under CE marking Directives must be CE marked by the manufacturer before being placed on the market and whilst the end result appears to be a simple label there is a range of requirements that must be applied depending on the directive(s) that are applicable to the product. CE marking is not discussed further within this document.

The area for further consideration therefore is the Middle East and Africa.

Is it noted that Botswana is part of the Southern Africa Customs Union, SACU[4], so additional consideration will be given to countries within that organisation. SACU has a number of aims and objectives, the most relevant one of which is "*to develop common policies and strategies for areas such as trade facilitation; effective customs controls; and competition*"[5]

The size of the Botswanan economy was compared to other countries within Africa and the Middle East.

The 2014 GDP of Botswana[6] is reported at USD15, 813 million, which ranks it at 118 out of the 194 countries that are ranked.

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[2] Examples: https://csacongress.org/, http://www.toshiba.eu/eu/Countries/Toshiba-EMEA/ , https://en.wikipedia.org/wiki/Europe,_the_Middle_East_and_Africa

[3] http://ec.europa.eu/growth/single-market/ce-marking/index_en.htm

[4] http://www.sacu.int/

[5] http://www.sacu.int/show.php?id=395

[6] http://databank.worldbank.org/data/download/GDP.pdf

3.2   Level of economic development

As noted above, we are looking for comparison countries in the Middle East and Africa. The choice of comparison countries is further refined using the following criteria:

GDP per capita = 50-200% that of Botswana

GDP total = 33 – 300 % that of Botswana.

Country	GDP per Capita (PPP) US$	GDP US$ billion	Population[7] (millions)
Namibia	9,650	13.4	2.4
Tunisia	10,600	47.0	11.0
Jordan	11,910	35.8	6.6
Botswana	**16,030**	**15.8**	**2.2**
Libya	16,170	41.1	6.3
Gabon	16,730	17.2	1.7
Lebanon	17,190	45.7	4.5
Mauritius	18,290	12.6	1.3
Equatorial Guinea	21,310	14.1	0.8

Table 3-1: Similarly developed within Africa and Middle East.

We need to also consider statistics for other countries within SACU

Country	GDP per Capita (PPP) US$	GDP US$ billion	Population[8] (millions)
South Africa	12,700	349.8	54.0
Lesotho	3,240	2.1	2.1
Swaziland	5,930	3.4	1.3

Table 3-2: Other countries within SACU.

Lesotho and Swaziland show a much lower level of economic development than Botswana, but South Africa is Botswana's largest regional trading partner[9] so will be considered further despite having an overall economy much larger than that for Botswana.

Tunisia will no longer be considered as it is located some distance from Botswana and we have sufficient number of other countries to use for comparison purposes.

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[7] 2014 figures from http://data.worldbank.org/country

[8] 2014 figures from http://data.worldbank.org/country

[9] http://www.sacu.int/publications/trade_statistics/2012/merchandise_trade_statistics.pdf

3.3   Level of development of the type approval scheme and type of regulator

When looking at Type Approvals regimes in other countries we should consider not only how recently the relevant requirements were updated but also whether experience shows that the regimes are actually being followed. This second point is particularly important as we wish to look at schemes have not only been written, but have been implemented and put into operation.

Country	Type Approval regime		Converged Regulator[10]	Last update
	Telecoms equipment	Radio equipment		
Botswana	Yes	Yes	Yes http://www.bocra.org.bw/	Being updated now
Equatorial Guinea	Yes	Yes	Not currently http://www.ortel-ge.org/en/	Over 5 years ago
Gabon	Yes	Yes	Not currently http://www.arcep.ga/	Current regulations are from 2001
Jordan	Yes	Yes	Yes http://trc.gov.jo/	2011
Lebanon	Yes	Yes	Not currently http://www.tra.gov.lb	2009, but not yet in force
Libya	Yes	Yes	Don't know http://cim.gov.ly/	2010
Mauritius	Yes	Yes	Yes https://www.icta.mu/home/	At least 5 years ago
Namibia	Yes	Yes	Yes http://www.cran.na/	January 2015
South Africa	Yes	Yes	Yes https://www.icasa.org.za/	August 2013

Table 3-3: Status of development and application of type approval regimes

With the exception of Lebanon, the most recent Type Approvals regime is the one currently in operation.

A number of regulators, including Botswana, are converged regulators and provide a similar regulatory environment to one another.

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[10] A "converged regulator" is one who is responsible for both broadcasting and telecommunications. A more formal definition is provided by The International Telecommunications Union ('ITU') that describes convergence as 'the technological, market, legal or regulatory capability to integrate across previously separated technologies, markets or politically defined industry structures. Convergence also involves an important international component, as many services and information sources that were traditionally controlled on a domestic level are being provided on a global basis'.

3.4   Rules applicable in selected comparison countries

In order to make comparisons between different approvals regimes we have examined the following aspects of the approvals regimes:

- Who can apply for type approval and how?

- What documentation is required?

- What is the fee?

- Validity and revocation

- What are the marking requirements?

- Exemptions

- Which laboratories are accepted?

- Responsibilities of the different parties

- Monitoring and surveillance

These aspects are discussed in greater detail in the sections below.

4 Comparison of requirement in Botswana and comparison countries

Further to the considerations above, the following six countries have been selected as appropriate for comparison purposes:

- Equatorial Guinea
- Gabon
- Jordan
- Mauritius
- Namibia
- South Africa

Whilst the comparison has been done with the above countries, where it is helpful comparison has also been made with requirements for EU and USA.

4.1 Who can apply for type approval and how

The Type approval applications might be made by one or more economic operators[11] in the supply chain, the table below summaries requirements in comparison countries

Country	Applicant
Botswana	No restrictions for approval holder but the equipment must be registered by a citizen of Botswana or a company incorporated in Botswana
Equatorial Guinea	No restrictions for approval holder but application can be submitted only by a local representative
Gabon	Certificates are issued in the name of the manufacturer, however only local companies can apply
Jordan	Anyone, but application must be submitted by a technically qualified local agent
Mauritius	Type approval may be requested by: • A company/individual holding a valid Dealer's Licence issued by the ICT Authority, in order to market the equipment in Mauritius. • A holder of a valid licence other than a Dealer's licence to import equipment for its own use. • An individual/company willing to import radio communication or telecommunication equipment for his own use, after having sought the approval of the ICT Authority. • The manufacturer of the equipment
Namibia	Anyone can apply
South Africa	Type Approval Certificates will only be granted to South African companies registered with ICASA

Table 4-1: Organisations that can apply for type approval

4.1.1 Recommendation

We recommend that there is no change to existing requirements as they are similar to those of other countries.

4.2 What documentation is required

Granting Type Approval for a product requires the regulatory authority to make a decision as to whether the product complies with the applicable requirements. In order to do this a number of factors need to be considered which can only be done if appropriate documentation is provided.

This section reviews what documentation is required and makes recommendations for future requirements.

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[11] The terms 'economic operator' is taken from most recent European Directives and means "the manufacturer, the authorised representative, the importer and the distributor".

Country	Documentation requirements
Botswana	- Type Approval form. - Technical data sheet - List of standards applied - Signed 'declaration of conformity'12 - Proof of payment (application fee). - Type approval certificate mainly from region 1/ and or other region where there is proof of compatibility with region1 - Test reports from ILAC member accredited laboratory
Equatorial Guinea	- Application form - Test Reports - Certificate of Conformity - Technical Spec. - Foreign Certificate
Gabon	- Technical description - Declaration of Conformity - EU test reports - User manual - Authorization letters
Jordan	- Application form, - Test reports (ETSI/CENELEC) for RF, Telecom, EMC, SAR and Safety, - Technical specification
Mauritius	- Application form, - Test reports for RF, Telecom, EMC, SAR and Safety, - Technical specification
Namibia	- Application form 2x colour photographs of equipment submitted for type approval - A functional description of the equipment, and block diagram - Operating instructions - Certified copy of declaration of conformity by applicant, manufacturer or supplier of telecommunications equipment - Test reports, issued by accredited test laboratories, covering radio, EMC and safety - Receipt issued by CRAN as per applicable fees - Physical sample equipment if type approval of untested equipment is requested - Technical, physical, operational, installation and user information - Software and firmware numbers

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[12] The manufacturer must have a detailed Technical file to support Declaration of Conformity, but it need not be submitted as part of the application.

South Africa	• Application form, • EU (ETSI/CENELEC) test reports for RF/Telecom, EMC and Safety, • Technical spec.

Table 4-2: Documentation required for type approval

4.2.1 Recommendation

We recommend that **test reports, declarations of conformity, and brief technical standards/product sheet**, **should be required** to be submitted and that these should be from suitably accredited laboratories.

Having reviewed the documents and legislation section of the BOCRA website[13] there appears to be a potential for confusion over what is required.

▪ The Type Approval Application form, BOCRA/RF/30[14] suggests that a test report needs to be submitted:

Radio equipment

5. Approval based on test report

Enclosed test report No……………………………….Carried out by……………………………..

6. Approval based on certificate (equipments with harmonized standard and frequency)

Enclosing certificate No………………………….Issued by…………………………………….

▪ The Type Approval Guidelines[15] section 10 says that reports are not required to be submitted:

Test results should not be included with the application unless specifically requested by BTA. However, the equipment must be tested for compliance with BTA's requirements and reference to such compliance must be included in the declaration of conformity (see section 11) submitted with the application.

Test reports and any other test results must be retained in the supporting documentation (see section 13).

▪ The draft type approvals procedure specifies that test reports should be submitted.

4.3 Type Approval fee, validity and revocation

The cost of Type Approvals is typically a combination of the size of the approval fee and the frequency with which it must be paid.

4.3.1 Fee

A type approval regime costs the regulating authority money to administer, but also costs the manufacturer or applicant wishing to sell regulated products.

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[13] http://www.bocra.org.bw/documents-and-legislation

[14] http://www.bocra.org.bw/sites/default/files/documents/Type%20Approval%20Application.pdf

[15] http://www.bocra.org.bw/sites/default/files/documents/Type%20Approval%20Guidelines.pdf

Fees may be fixed or may depend on the type and/or complexity of the product being certified.

Country	Fee			Fee (US$)[16]
	PMR radio	**Smartphone**	**PBX**	
Botswana	500 Pula	1000 Pula	500-2500 Pula	50 - 250
Equatorial Guinea	1040 US$			1040
Gabon	250000-550000 XOF			430 – 950
Jordan	45 JD			65
Mauritius	No charge			0
Namibia	450 N$	450 N$	1500 N$	20 - 225
South Africa	ZAR 4000 for both radio/telco ZAR 2000 for variants in the same product family			300 150

Table 4-3: Fees for equipment type approval

4.3.2 Validity and revocation

Country	Lifetime of approval or certification
Botswana	1 year, Annual renewal
Equatorial Guinea	3 years
Gabon	2 years
Jordan	1 year
Mauritius	Until product changes
Namibia	3 years or until product changes
South Africa	Until product changes

Table 4-4: Validity of type approval certification

4.3.3 Recommendation:

Based on the above analysis, we recommend that BOCRA consider moving to a single "product lifetime until it changes" certification fee.

Large infrastructure items such as PBXs and radio base-stations often have lives of a number of years, but many consumer products are only sold for 12-24 months before being replaced.

Maintaining a list of products to be sold into a given country places a large administrative burden on both the regulator and the manufacturer:

- Manufacturer deciding whether to continue selling a product into a country

- Regulator to check whether a product is being sold into a country.

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[16] Currency converted by http://www.xe.com/ on 12th October 2015 and rounded to nearest 5

Moving to a "one fee until the product changes" approach would align Botswanan requirements with those of number of other markets such as Mauritius and neighbouring South Africa as well as more distant markets such as Europe, USA, Canada, Australia, Japan and Korea.

It would seem reasonable to bring fees into the 2000-3000 Pula / USD200-300 bracket.

4.4   What are the marking and labelling requirements

The placing of a certification mark on a product and/or its packaging may be required for one or more reasons:

- Provides information to consumers
- Provides information to enforcement officials such as customs and trading standards officers.
- Provides information to employers where equipment is provided to employees

A certification or declaration mark often provides all of the above, but it is likely to carry a higher level of trust where a recognised 3rd party had overseen the process in some way. A certification mark should also be properly specified and easily differentiated from other marks so as to avoid confusion[17].

Country	Marking and labelling
Botswana	BOCRA REGISTERED No: nnnnnn Or Notice of Registration to be placed next to product at point of sale.
Equatorial Guinea	Approval number plus certificate date must be affixed to the product
Gabon	No marking requirements.
Jordan	TRC type approval's number. Product must also be labelled with the manufacturer's Name, Model or Type Number, Serial Number
Mauritius	No marking requirements.
Namibia	No marking requirements at this time.
South Africa	All approved equipment must be clearly marked with ICASA logo + license number as issued by ICASA. E-labelling is allowed.

Table 4-5: Type approval labelling requirements

4.4.1   Recommendations

Based on the above analysis we recommend that:

- Botswana maintains the current labelling requirement.
- The marking may be placed on the product or on the packaging – this allows the validity to be more easily checked directly at the point of sale.
- BOCRA consider removing the option to display a notice in lieu of marking as it does not aid traceability of certified equipment.

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[17] Incorrect "CE" mark labelling led some people to believe that there was a China Export mark and not a Conformity European mark, http://www.europarl.europa.eu/sides/getAllAnswers.do?reference=P-2007-5938&language=EN

- There should be an additional requirement for the product to be labelled with manufacturer's Name, Model or Type Number, Serial Number – this aligns requirement with other major regions.
- BOCRA look to accept E-labelling of suitable products.

4.5   Exemptions

Sometimes products are exempt from Type Approval requirements when they meet certain requirements such as being imported in very limited numbers, or only being used for purposes of national security.

Our investigation of comparison countries has not found any exemptions of note.

Country	Exemptions
Botswana	None stated
Equatorial Guinea	None stated
Gabon	None stated
Jordan	None stated
Mauritius	None stated
Namibia	Telecommunications equipment that is temporarily imported into Namibia for re-export does not require type approval.
South Africa	None stated

Table 4-6: Exemptions from Type Approval

4.5.1   Recommendation

We recommend that there is no change to the current practices in Botswana, i.e. that there are no stated exemptions to the requirement for type approval.

4.6   Which laboratories are accepted

Demonstration of compliance with requirements standards is done via testing.

CE marking within the European Union does not require testing by accredited labs, indeed a number of directives do not actually require testing[18], that being said, products are generally tested.

Looking for a moment at the USA, the Federal Communication Commission has recently changed its rules[19] so that test laboratories must be accredited to ISO17025 – this is a tightening of the rules that previously allowed for accredited laboratories but did not make them mandatory.

The requirements for accreditation of test facilities in comparison countries is summarised below:

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[18] Directive such as EMC and R&TTE require standards to be "applied" and whilst this is typically done by testing, it is not mandatory within the legislation.

[19] 47CFR2.948 subject to transition period in 47CFR2.950

Country	Requirements for laboratory performing the testing
Botswana	Any test lab accredited by ILAC[20] member or test laboratory on the list of BOCRA recognised/preferred laboratories
Equatorial Guinea	US or EU reports from accredited laboratories
Gabon	Any test lab accredited by ILAC member
Jordan	EU reports from accredited laboratories
Mauritius	Test reports issued by either manufacturer or accredited independent laboratories
Namibia	Any laboratory accredited by its own national accreditation body or another recognised accreditation body in terms of International Organisation for Standardisation/ International Electro technical Commission(ISO/IEC) requirements.
South Africa	ICASA will accept only test reports that are issued by any Accredited Test Laboratory, meaning any laboratory accredited by its own national accreditation body and/or other recognized accreditation body in terms of ISO/IEC 17025 requirements.

Table 4-7: Requirements on testing laboratories

4.6.1 Recommendation:

We recommend that there is no change to the current requirements for laboratory testing.

4.7   Responsibilities of the different parties

There are various different parties involved in the type approval process, from manufacturers to suppliers, importers to retailers and the regulator themselves. The table below identifies the responsibility of the various partiers as they currently exist in the various countries under consideration.

Country	Responsibilities
Botswana	The manufacturer or importer may apply Suppliers and distributors must be licensed
Equatorial Guinea	No information
Gabon	No information
Jordan	Importers need Import Approval in addition to the Type Approval
Mauritius	A Dealer's License is also applicable to local companies wishing to commercialize type approved radiocommunication/ telecommunication equipment

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[20] ILAC is the international organisation for accreditation bodies operating in accordance with ISO/IEC 17011, http://ilac.org/

| Namibia | "The exclusive right to use the registration number for type approved |
| South Africa | Telecommunications equipment belongs to the person or entity to whom a type approval certificate is issued |

Table 4-8: Responsibilities of the different parties

4.7.1 Recommendation:

We recommend that there is no change to the current situation.

4.8 Monitoring and surveillance

Any Type Approvals regime requires its participants, manufacturers and regulators, to play their part in ensuring its success.

The monitoring regime must not be too expensive to run, but should be sufficiently robust as to encourage compliance with the rules rather than avoidance. Without appropriate surveillance and monitoring, there is little incentive for manufacturers and others to implement the type approval processes, hence this is a very important element of the overall process.

Country	Monitoring and Surveillance
Botswana	The Type Approvals guidelines state that is will be performed, and that the cost of nay required testing is borne by the holder of the registration.
Equatorial Guinea	Penalties for non-compliance: Products without approval are considered illegal, manufacturers will have to pay a fine and the products won't be allowed to be imported into the country. Manufacturer will be reported to ITU
Gabon	Up to 10,000,000 XOF penalty for distributing non-approved products
Jordan	Penalties for non-compliance: The TRC will impose fines depending on the product's nature of use and withdraw all non-approved products from the Jordanian market. The importer is held liable, and generally all companies follow the law.
Mauritius	Penalties for non-compliance: fine not exceeding 1,000,000 rupees and imprisonment term not exceeding 5 years. While the importer is held liable for all penalties, many companies ignore the law and just send the products.
Namibia	"The Authority may perform market surveillance activities from time to time in accordance with the provisions of Chapter X of the Act.
South Africa	ICASA may conduct Market Surveillance on all Equipment that requires Type Approval under the following conditions: (a) In the event that a complaint is made by a consumer or other competent body; and/or (b) As a part of a random audit conducted by ICASA to ensure compliance Costs of surveillance and testing borne by ICASA Penalties are separated into two types: • A supplier labelling a product that is not Type Approved are may be penalised with a fine of up to R1m and prison sentences of six months. • A supplier distributing type approved equipment without a label may be fined up to R100,000

Table 4-9: Surveillance and monitoring practices

4.8.1 Recommendation:

We recommend that that cost of market surveillance should be borne by BOCRA, but that BOCRA could look to the example of the process for USA where the certification fee includes an amount to fund the cost of market surveillance required under Title 47 part §2.962 of the rules.

Guidance on the application of market surveillance is given in FCC KDB 610077[21].

Alternatively, fines could be imposed on any non-compliant suppliers or manufacturers, however such fines are notably difficult to enforce.

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[21] https://apps.fcc.gov/oetcf/kdb/forms/FTSSearchResultPage.cfm?id=20540&switch=P

5 Labelling

The current product labelling requirements appear to be appropriate and in line with requirements of similar countries.

It is noted that:

- BOCRA would like to look at the use of tamperproof labelling that may include security features such as holograms.
- BOCRA is seeking to identify a procedure that ensures that only type approved equipment can be fitted with the labels.

5.1 Comparison with other countries

5.1.1 Labelling

None of the chosen comparison country has any requirements for specified security features on labels and the author has not been able to find any other country that has such as requirement.

The use of security features on labels such as holograms is not without precedent, but is not typical and has been phased out for Type Approval labels.

Country	Marking and labelling
Botswana	BOCRA REGISTERED No: nnnnnn Or Notice of Registration to be placed next to product at point of sale.
Equatorial Guinea	Approval number plus certificate date must be affixed to the product
Gabon	No marking requirements.
Jordan	TRC type approval's number. Product must also be labelled with the manufacturer's Name, Model or Type Number, Serial Number
Mauritius	No marking requirements.
Namibia	No marking requirements at this time.
South Africa	All approved equipment must be clearly marked with ICASA logo + license number as issued by ICASA. E-labelling is allowed.

Table 5-1: Labelling requirements

5.1.2 Identification of type approved equipment

Regulators and product certification companies have to deal with the current and real threat of false certificates and false labelling.

The issue of security labelling is not just limited to dealing with the manufacturer, but requires education of all other economic operators so that they can correctly differentiate between properly approved equipment and falsely labelled equipment.

The use of labels that are country specific in a physical way presents many difficulties to manufacturers in ensuring that potentially expensive labels are only fitted to product that need them.

5.1.3 Discussion of security labelling experiences

The use of prescribed labels is not widely specified, but two examples known to the author are discussed below:

Example of where the use of Hologram labels has been mandated:

> Underwriters Laboratories, UL, the US National Recognised Test Laboratory (NRTL), has implemented a requirement for hologram labelling[22] for a very select few products covered by their certification scheme and for a slightly wider range of products that are manufactured in China. It should be noted that UL is a private company who operate a number of product certification schemes and whilst they are probably the largest NRTL, there are a number of other companies with similar remit and function who do not require security labelling.

> This labelling scheme was introduced to combat fraudulent use of the UL mark on products that were not only not certified but actually unsafe.

> It is noted that the vast majority of recognised and listed products are labelled by the manufacturer using standard labelling techniques and do not require the use of special hologram labels.

Example where use of specified labels is being removed from the requirements:

> A press release[23] on 24th February 2015 from the Malaysian Communications and Multimedia Commission noted the following:

- The new certification mark shall replace the present labelling programme which requires the certified products to be affixed with physical labels (in the form of stickers) controlled and issued by SIRIM QAS International.

- The (current) process of course is tedious, time consuming and also costly. Maybe for these reasons, many products in the market are not labelled.

- It is estimated that in the last two years:
    - Only 30% to 40% of communications equipment are properly labelled
    - That between 3% and 24% of products is affixed with wrong labels.

5.2 Alternative approach to ensuring validity of certification marks

As discussed above, none of the chosen comparison countries require the use of special labels and some other countries have recently removed their requirement for it.

We would recommend that an alternative approach to improving the security of the marking scheme is the publication of a list of approved products or a Certified Products Listing.

If we look at the chosen comparison countries, we see that some have already implemented such a scheme in some format:

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[22] http://ul.com/offerings/manufacturers/anti-counterfeiting-operations/ul-marks-and-labels/

[23] http://www.skmm.gov.my/skmmgovmy/media/General/pdf/Self-labelling-ProgramSLP_1.pdf

Country	Certified Products Listing	Comment
Botswana	No listing on http://www.bocra.org.bw/	Labels carry certification number but no easy way to check that number is valid
Equatorial Guinea	No listing on http://www.ortel-ge.org/en/	Labels carry certification number but no easy way to check that number is valid
Gabon	No listing on http://www.arcep.ga/	No marking requirement
Jordan	Approved Telecom Terminal Equipment	Label must carry number and the validity of the number can be easily checked. Search may be performed by category and/or manufacturer. Results list Manufacture, model name and model number
Mauritius	List of type approved Radiocommunication / Telecommunication Equipment	Whilst the product does not have to carry a specific certification number, the validity of the approval can be easily checked. Searchable. Lists: • Type approval reference • Type of equipment • Manufacturer • Model Appears to be current – 843 listings for 2015
Namibia	No listing on http://www.cran.na/	No marking requirement and no easy way to check validity
South Africa	List published on the ICASA website	Label must carry number and the validity of the number can be easily checked. Not always up to date but doesn't require investment in a large, searchable database Appears to be out of date s

Table 5-2: Availability of data on type approved products

Looking outside of the sample country set to see what practices are applied more widely, we find examples of higher levels of integration between the certification process and the Certified Products Listing:

Country	Certified Products Listing	Comment
USA	FCC Equipment Authorisation Search	Database Completely up to date with products appearing instantly. Multiple search terms Significant cost to create and maintain The Equipment Authorisation search is an integral part of the certification process and products are listed the moment they are certified
Canada	Radio Equipment Search	Database Completely up to date with products appearing instantly. Multiple search terms Significant cost to create and maintain Whilst certification applications are processed by 3rd party Certification Bodies, all applications are checked by Industry Canada before they are listed as being certified.
Malaysia	SIRIM Label Serial No. Enquiry Page	Database Ability to check validity of certification number. Results provide details of: Certificate holder; Brand (manufacturer); Product name; model
Egypt	Approved Wireless Equipment	Spreadsheet of approved products listing: Equipment description Brand and model Applied standards When checking on 23rd October, the document properties stated that is was last updated on 23rd June 2015
Japan	Ministry of Internal Affairs and Communications Equipment Certification search	The database in Japan is there because the government has the obligation to publish the certification numbers of certified equipment. Full RF system information for products that are listed. But a Certification Body[24] does not need to provide MIC with a copy of the application documents/certificate. So it is for reference only – in other words a product listed on it is correctly certified, but a product that is not listed may also be correctly certified, but just not listed.

Table 5-3: Extended country analysis of availability of type approval information

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[24] There are 30 organisations inside and outside of Japan that can act as certification bodies, http://www.tele.soumu.go.jp/e/sys/equ/tech/

5.2.1 Recommendation

Base on the analysis above, we recommend that in order to bring Botswana in line with the best practices of other countries:

- BOCRA do not implement security or tamperproof labelling, as this goes against the common practices in the countries considered

- BOCRA look at making available on their website a regularly updated list of certified products that allows validity of Type Approval numbers to be checked

- In the first instance this may take the form of a spreadsheet or PDF document listing certified products

- The list is updated on a monthly basis.

- BOCRA may wish to look at having the ability to search the database for a specific number.

5.3 E-labelling

Electronic (E-) labelling is a relative new field of labelling, but very popular with manufacturers of smart phones and similar devices as it allows them to keep the design looking sleek whilst ensuring that required regulatory information is available.

The principle of E-labelling is as follows: the information that would normally be provided on the label, including logo and certification number, is stored electronically in a device with a suitable integral screen. The label can then be viewed on the screen after following instructions in the manual.

Some further information of how this might work is in the South African Government Gazette is indicated below.

Looking at the rules currently being applied in a few countries:

5.3.1 South Africa

This is the only comparison country which currently allows e-labelling.

Government Gazette No. 36786[25] contains latest version of ICASA labelling regulations which permit electronic labelling, e-labelling, of products with an integral screen.

> 6. E-LABELLING
>
> (1) Subject to regulation 3(4), E-labelling may be used as an alternative method of displaying a Label.
>
> (2) In instances where e-labelling is used, the documentation accompanying the equipment must clearly explain how the user can access the label.
>
> (3) The E-labels must be displayed in at least one of the following methods:
>
> (a) During the equipment's power up sequence;
>
> (b) Under the equipment's system information page; or

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[25]

https://www.icasa.org.za/Portals/0/Regulations/Engineering%20&%20Technology/Type%20Approval/Labelling%20Regulations.pdf

(c) Under the help menu on the equipment.

5.3.2 USA

Current rules in the USA are detailed in KDB 784748 D02 e labelling v01[26] which allows for permanent labelling via electronic labelling providing that certification number is displayed on the product or packaging at point of sale.

The rules may change further and Notice of Proposed Rulemaking FCC 15-92[27] but is looks like electronic labelling is here to stay.

5.3.3 Malaysia

Malaysia used to operate a system whereby labels were issued under Malaysia's Standard and Industrial Research Institute's (SIRIM) labelling requirements but have recently moved to manufacturers labelling the product themselves or via an e-label

5.3.4 Recommendation

Whilst E-labelling is a relatively new field, BOCRA should look towards implementing a system of issuing manufacturers with a unique identifier number which would align with other countries such as USA, Canada and Japan.

We recommend that BOCRA allow e-labelling of products provided that some physical label is available at time of purchase which may be on the product packaging.

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[26]   https://apps.fcc.gov/kdb/GetAttachment.html?id=KvMvDHtHyDtJ4FB3x0mEwA%3D%3D&desc=784748 D02 e labelling v01&tracking_number=27980

[27] https://apps.fcc.gov/edocs_public/attachmatch/FCC-15-92A1.pdf

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6 Postal Equipment

6.1 Introduction

The type approval of postal equipment is not a common process and in general, is only considered in the first instance, in those countries where postal markets have been deregulated. Even in markets where the postal regulator has been separated from the (normally government-run) postal operator, the setting of standards for postal equipment is usually undertaken by the postal operator and not by the postal regulator.

6.2 Postal standards

The European Union provides probably the best model for deregulated postal markets, as under Directive 97/67/EC "Common rules for the development of the internal market of Community postal services and the improvement of quality of service" (as modified), the postal delivery market has been brought under a common regulatory and competitive framework, requiring the standardisation of certain processes and functions. It is notable, however that the majority of regulation in this sector at the regional level, relates to the interchange of mail between countries, rather than to the control of mail within the country itself.

Regulation of postal services within a country is typically concerned with two main elements:

- Price; and
- Quality of service (e.g. time to delivery)

Even in deregulated markets, the approval of postal 'technical' equipment is often handled by the postal operator themselves, with the purpose of ensuring that any mail that enters their system meets with their own internal standards. For example, in the UK, the Royal Mail publishes a document concerning the use of franking equipment[28] in which it takes responsibility for licensing and checking any devices. In this respect, it would be the purview of BotswanaPost (as the monopoly provider on reserved services) to establish the technical standards for any equipment used to 'connect' to its network, to ensure that such equipment provided it with the necessary markings, accuracy of weight or other requirements as it saw fit. Similarly any other providers (typically courier services such as DHL, FedEx and EMS) would be equally at liberty to set their own standards.

The equipment used within the postal service for the organisation and delivery of mail (e.g. sorting machines) are not type approved in the traditional sense (i.e. they are not regulated by a set of international standards, or by standards set by postal regulators), other than at a peripheral level, i.e. to ensure that they meet the necessary safety and electrical standards.

The majority of postal standardisation relates to the exchange of mail, in particular across international borders and with ensuring quality of service. The table below shows the full list of CEN standards which are currently in-force (in Europe) relating to postal services.

Standard	Title	Notes
EN13619:2002	Postal Services. Mail item processing. Optical characteristics for processing letters.	
EN13724:2013	Postal Services. Apertures of private letter boxes	

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[28] See: http://www.royalmail.com/sites/default/files/RoyalMail_FrankingScheme_2014.pdf

Standard	Title	Notes
	and letter places. Requirements and test methods	
EN13850:2012	Postal Services. Quality of service. Measurement of the transit time of end-to-end services for single piece priority mail and first class mail	*TR14709:2006 provides a guide for the implementation of EN13850*
EN14012:2008	Postal Services. Quality of service. Complaints handling principles.	
EN14142:2011	Postal Services. Address databases.	
EN14137:2003	Postal Services. Quality of service. Measurement of loss of registered mail and other types of postal service using a track and trace system	
EN14482:2010	Postal Services. Trays for international letter mail. Test methods and performance requirements.	
EN14534:2003	Postal Services. Quality of service. Measurement of the transit time of end-to-end services for bulk mail	Under revision *TR13569:2006 provides a guide for the implementation of EN14534*
EN14508:2003	Postal Services. Quality of service. Measurement of the transit time of end-to-end services for single piece non-priority mail and second class mail	Under revision
EN14615:2005	Postal Services. Digital postage marks. Applications, security and design.	

Table 6-1: List of relevant postal standards

The standards above are a part of the European Union legislation with respect to postal services (e.g. Directive 97/67/EC as modified) but are not mandatory. Very few of these standards relate to equipment that would be in the market for consumers (e.g. office weighing and franking machines) as the approval of such equipment is normally left to the postal operators. Instead these standards are largely aimed at ensuring interoperability between postal service providers both at a technical (e.g. markings) level and at a quality of service (e.g. delivery time) level.

As an example, one might consider standard EN13724 (relating to letter boxes) to pertain to consumer equipment, however it is the choice of the postal operator to decide whether or not they are willing to deliver mail to a particular property. If the letter box does not meet the necessary standards, in theory the postal operator could refuse to deliver the mail. The standard is not mandatory but covers:

- Envelope size C4 must be deliverable without bending or damage
- The internal volume must able to hold at least a 40 mm high bundle of C4 envelopes
- Aperture width of either 230–280 mm (> C4 width) or 325–400 mm (> C4 height)
- Aperture height of 30–35 mm
- Mounting height of between 0.7 and 1.7 m for the aperture
- When positioned externally, the post box should not allow more than 1% total capacity water ingress from natural precipitation or moisture causes.

- Various privacy, theft-protection, vandalism resistance and corrosion-resistance test requirements

BOCRA could therefore attempt to make this into a mandatory Botswana standard, however this may not be beneficial or indeed conducive to the postal market as:

- It could permit BotswanaPost to refuse delivery to certain properties that they might otherwise have been willing to do;

- It might impose additional costs on new and replacement letter boxes that are unnecessary;

- It does nothing to ensure quality of service (though in theory it might reduce the cost of delivery to BotswanaPost);

- It has no impact on the interchange of items between Botswana and neighbouring countries nor does it encourage competition from couriers.

There are standards for the accuracy of some elements of postal machines such as weighing equipment but these are generally published by national standards bodies (as opposed to postal regulators) and enforced through normal trade standard regimes as they apply to a wide range of weighing devices (such as those used to weight precious stones) and not just to postal equipment.

The SADC documentation concerning postal and courier services (CPC 7511 and CPC 7512) make no reference to technical standards for postal equipment and, as with the European situation, focus mainly on price, quality of service and interoperability as well as with the movement of postal services away from government ownership.

From benchmarking with African countries (Ethiopia, Ghana, South Africa, Tanzania, Zimbabwe), no standards for postal services were identified, even in countries where the regulator has responsibility for such and the power to do so if it wished.

6.3   Recommendation

As such, it is proposed that BOCRA **do not develop**, implement or apply any standards to postal equipment as this would put it at odds with international best practice. Instead, BOCRA could work with BotswanaPost and the various courier companies to ensure that, where necessary, standards that provide for quality of service or interoperability are adopted. Such requirements could be built into operating licences for these organisations.

6.4   Further information

For information only (and not as an intention for these to be in any way implemented by BOCRA), there are also a number of technical specifications (TS) and technical reports (TR) relating to postal services.

ID	Title
TS14567:2004	Postal Services. Automated processing of mail items. Address block locator
TS14442:2003	Postal Services. Automated processing of mail items. Facing identification marks
TS14631:2005	Postal Services. Automatic identification of receptacles and containers. Receptacle asset numbering.
TS14826:2004	Postal Services. Automatic identification of items. Two dimensional code symbol print quality specification or machine readable Digital Postage Marks
TR15524:2011	Postal Services. Customer-directed information including track and trace. General concepts and definitions

ID	Title
TS15130:2006	Postal Services. Digital postage mark infrastructure. Messages supporting DPM applications.
TS16735:2015	Postal Services. Extensible Common Structure and Representation for Postal Rates (EPR).
TS15121:2011	Postal Services. Hybrid mail – Secured electronic postal services (SePS) interface specification.
TS16326:2013	Postal Services. Hybrid mail. Functional specification for postal registered electronic mail.
TS14014:2015	Postal Services. Hybrid mail. XML definition of encapsulation of letters for automated postal handling.
TS15844:2010	Postal Services. ID-tagging of letter mail items
TS14441:2005	Postal Services. Mail aggregates. Creation, processing and tracking.
TS16238:2011	Postal Services. Open interface between machine control and reading coding system.
TS16316:2012	Postal Services. Open standard interface between image controller and enrichment devices
TS15873:2009	Postal Services. Open standard interface. Address data file format for OCT/VCS dictionary generation.
TR16894:2015	Postal Services. Quality of delivery: Reforwarding.
TR15735:2008	Postal Services. Quality of service. Distance to access points
TS15511:2008	Postal Services. Quality of service. Information available on postal services
TR16706:2014	Postal Services. Quality of service. Measurement of incorrect delivery. Feasibility report
TS14773:2004	Postal Services. Quality of service. Measurement of loss and substantial delay of priority and first class single piece mail using a survey of test letters
TS15525:2006	Postal Services. Standard interfaces. Interface between machine control and bar code printers
TS15523:2001	Postal services. Statement of mailing submission

Table 6-2: List of relevant postal technical reports and specifications

7 Training Programme

The following subjects will be covered during the training programme

- International standards bodies and accredited laboratories
- Best practice (using case studies of the benchmark countries)
- Changes to and proposed new type approval standards (in particular discussing the broadcasting standards)
- Labelling
- Processes
- Fees