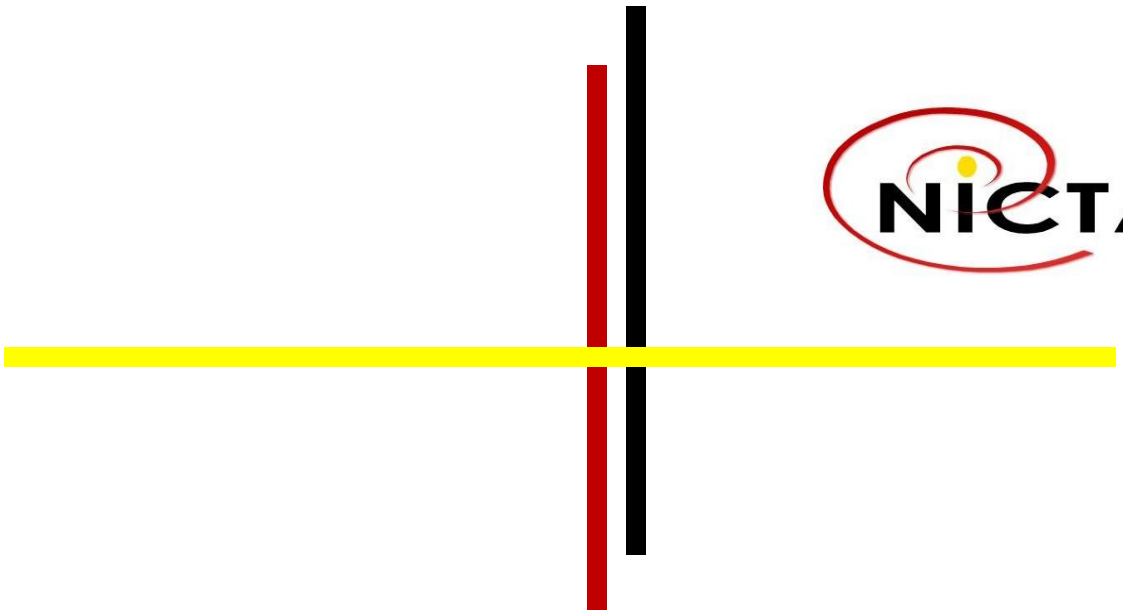

TR 449

TYPE APPROVAL SPECIFICATION
For
FM Radio Broadcasting Studio-To-Transmitter Link Equipment

Document Ref. 1419.03

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1 Introduction

1.1 National Information and Communications Technology Authority (NICTA) has developed this technical standard under section 30 of the NICT (Radio Spectrum) Regulation, 2010. This technical specification shall be cited as TR 449 Doc Ref: 1419.03.

2 Scope

2.1 This specification outlines the minimum operational requirements for type approval and inspections of Frequency/Phase Modulation (FM) Radio Broadcasting Studio-To-Transmitter Link (STL) radiocommunication systems deployed in Papua New Guinea.

3 Type Approval

3.1 Please contact NICTAs' Type Approvals section (email: typeapprovals@nicta.gov.pg) to arrange for the type approval of your equipment or system which falls under the Compulsory Approval Scheme.

3.2 All holders of STL spectrum license are to ensure that all their operational STL equipment and yet to be installed STL equipment are type approved for operation in the country.

3.3 Under normal circumstances, all the equipment that constitute the STL radiocommunication link and are necessary for NICTA in carrying out type approval must be submitted together with the application form. These include the transmitter and receiver, power supply, antenna and accessories.

4 Test Conditions and Measurement Methodologies

4.1 The measurement methods are equivalent to those described in PART 2 of the document titled "Interim Measurement Methods Applicable in the Analogue FM Sound Broadcasting at VHF/UHF Bands" developed by NICTA and adopted from the ITU-R recommendations.

4.2 Test conditions and measurement methods other than the ones previously prescribed may be applied as deemed necessary by NICTA or by a recognized test house in line with the scope of this specification.

5 Testable Parameters and Requirements

5.1 Where necessary the distinction will be made for levels that are unique to mono and composite or stereo transmitters respectively.

5.2 Hereafter are the required levels;

TABLE 1.0: Table of STL Transmitter and Receiver Required Levels of Operation

Transmitter	
Parameter	**Required Level**
Effective Radiated Power (ERP)	≤10 W; NICTA may allow the use of ≤20 W strictly on non-interference basis and away from overly crowded radiocommunication transmitter/repeater sites.
Operating Frequency	In the 400 MHz band the transmitter must transmit between 471.275 to 472.15 MHz and between 478.325 to 479.2 MHz. This is a communal site arrangement
	In the 900 MHz band the transmitter must transmit between 850.0625 to 851.4375 MHz.
	In the 960 MHz to 12 GHz band the transmitter must transmit between 1690.0625 to 1691.4375 MHz.
Carrier Frequency Stability	>0.0001% or 1 ppm. at - 20 Deg C to + 50 Deg C
Deviation (100% modulation)	Mono: ± 75 kHz; Stereo: ± 67.5 kHz
Spurious and Harmonic Emission	≥60 dB below the maximum carrier level. It is calculated as, *43 + 10 log P (dB)* where P is the forward power.
Receiver	
Parameter	**Required Level**
Signal-to-Noise Ratio	≥75 dB with 50μsec de-emphasis at maximum deviation (or PPL) reference to 1kHz or typical program material.
Selectivity	Some dB at some bandwidth in +/-kHz taking into account wide & narrow bandwidth – Perhaps Tony and Messach could provide appropriate values here
Total Harmonic Distortion (THD)	≥0.2% with 50 μsec at maximum deviation (or PPL) de-emphasis at 40 Hz – 15 kHz or typical program material.

6 Safety

6.1 This specification does not cover the radiation limits of radio emissions required for safety and health. NICTA strongly recommends that owners of equipment declare when applying for type approval that their equipment complies with one (1) or more applicable radiation safety standards specifying limits of exposure to radio (non-ionising) radiation such as:

(a) *Verband Deutscher Elektrolngenieure (VDE) DIN-0848;*

(b) *Directives of the European Community, Directorate General V in Matters of Radio Frequency Electromagnetic Energy;*

(c) *National Radiological Protection Board of the United Kingdom DOCS.NRPB, 4,No.5 (1999);*

(d) *Institute of Electrical and Electronic Engineers, IEEE C95.1-1999; and*

(e) *National Council on Radiation Protection and Measurements (NCRP) Report 86*

6.2 Compliance with the above radiation safety standards does not in itself confer immunity from legal obligations and requirements imposed by national health and or safety authorities.

7 Revisions

7.1 NICTA will review this paper from time to time in keeping with Government laws and policies and with the trends in the telecommunications industry.

7.2 NICTA will inform the licensees and other concerned parties of the revisions in a reasonable manner.

8 Contact Details

Any comments or queries regarding the content of this document should be forwarded in writing to the following address;

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