Technical Specification

for

Amateur Radio Equipment

IDA TS AR
Issue 1 Rev 1, May 2011

Infocomm Development Authority of Singapore
Resource Management & Standards
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Contents

NOTICE

This Specification is subject to review and revision.

1 General Requirements

1.1 Scope of Specification

1.1.1 This Specification defines the minimum technical requirements for amateur radio equipment to be used in Singapore.

1.1.2 Details of the authorised frequency bands for radio amateur service are shown in clause 2.1 of this Specification and in the booklet `The Radio Amateur Licensing Handbook'.

1.2 Design of Equipment

1.2.1 Amateur radio equipment shall be marked with the manufacturer's identification mark and model or type reference. The markings required shall be legible, indelible and readily visible.

1.2.2 The amateur radio equipment shall not be constructed with any external or readily accessible control which permits the adjustment if its operation in a manner that is inconsistent with this Specification.

2 Technical Requirements

2.1 Authorised Frequency Bands, Emissions and Transmitter Power Limits

(a)	HF Band (MHz)	Class of Emission	Power
	160m: 1.8 – 2.0	A1A, A1B, A2A, A2B, A3E, R3E, H3E & J3E	Input 150 Watts (for CW) and 400 Watts (PEP) for SSB
	80m : 3.5 – 3.9		
	40m : 7.0 – 7.1		
	30m : 10.1 – 10.15		
	20m : 14.0 – 14.35		
	17m : 18.068 – 18.168		
	15m : 21.0 – 21.45		
	12m : 24.890 – 24.990		
	10m : 28.0 – 29.7		

(b)	VHF Band (144 – 146 MHz)	Mode	Power
	144.000 - 146.000	CW, SSB, SSTV RTTY, FAX	10 Watts (ERP)

(c)	UHF (430 - 440 MHz)	Mode	Power
	432.000 - 432.150	CW	10 Watts (ERP)
	432.150 - 432.500	CW, SSB	
	432.500 - 432.800	RTTY, FAX	
	433.375 - 434.600	FM Simplex	

Note:
Peak Envelope Power (PEP) is the power supplied to the antenna feeder during one radio frequency cycle at the highest crest of the modulation envelope.

2.2 Transmitter Frequency Tolerance

The frequency tolerance is the maximum permissible departure of the transmitter output frequency from the reference frequency which shall be the nominal carrier frequency. The frequency tolerance shall not exceed the following:

(a) HF: The frequency drift shall not be more than 100 Hz over any

period of 15 minutes, after 30 minutes of warm up period.

(b) VHF: ± 0.001 % (10 ppm)

(c) UHF: ± 0.0005 % (5 ppm)

2.3 Transmitter Modulation / Deviation

The modulation level shall be within the following limits:

(a) HF: Between 50 % to 100 % (AM)

(b) VHF/UHF: ± 5 KHz (25 kHz channel spacing)

2.4 Transmitter Bandwidth

(a) HF: 6 kHz at -32 dBc (DSB)
3 kHz at -32 dBc (SSB Full Carrier)

(b) VHF/UHF: 16 kHz at -26 dBc (25 kHz channel spacing)

2.5 Transmitter Spurious Emissions

The level of the spurious emissions shall be:

(a) HF: - 40 dBc (below 30 MHz)

(b) VHF/UHF: - 70 dBc

2.6 Receiver Operating Frequency

(a) HF: The receiver shall operate on the same frequency bands as the transmitter [clause 2.1 (a)]. Synthesized receiver operating in the frequency bands between 150 kHz and 30 MHz may be used.

(b) VHF/UHF: The receiver shall operate within the frequency bands given in paragraph 2.1 (b) and (c).

2.7 Receiver Sensitivity

(a) HF: 0.25 μV at 10 dB S/N

(b) VHF/UHF: 0.5 μV at 12 dB SINAD

3 Compliance with Technical Requirements

3.1 Suppliers shall demonstrate that the amateur radio equipment has been tested to comply with the power and emission limits, and the permitted frequency bands stated in clause 2.1 this Specification. Measurement methods of the testing shall be in accordance with the relevant FCC Part 97 rules or the radio tests given in the ETSI EN 300 783-1.

3.2 Where appropriate, suppliers shall demonstrate the amateur radio equipment has been tested according to measurement methods and limits for:

(a) EMC emissions from the DC power or AC mains power input/output ports defined in ETSI EN 301 489-1 or IEC CISPR 22; and

(b) Electrical safety defined in the IEC 60950-1

4 Radiation Hazards

4.1 Where appropriate, amateur radio equipment shall comply with the International Commission on Non-Ionising Radiation Protection (ICNIRP) guidelines for limiting exposure to time-varying EMFs in the frequency range up to 300 GHz.

4.2 It should be noted that compliance with any radiation safety standard does not by itself confer immunity from legal obligations and requirements imposed by national health or safety authorities.

Annex A: Corrigendum / Addendum

Page	TS Ref.	Items Changed	Effective Date
Changes to IDA TS AR Issue 1, Jul 05			
		Change of IDA's address at cover page to Mapletree Business City.	1 May 11
Changes to IDA TS 2, Issue 1 Rev 3, Dec 99			
–	–	Title of Specification has been renamed as "Technical Specification for Amateur Radio Equipment" (IDA TS AR Issue 1). Changes are mainly editorial in nature. The essential technical requirements for conformity assessment remain unchanged.	21 Jul 05