SKMM WTS BWA
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TECHNICAL SPECIFICATION
FOR
BROADBAND WIRELESS ACCESS (BWA) EQUIPMENT

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FOREWORD

This Technical Specification was developed under the authority of the Malaysian Communications and Multimedia Commission (SKMM) under the Communications and Multimedia Act 1998 (CMA 98) and the relevant provisions on technical regulation of Part VII of the CMA 98. It is based on recognised International Standards documents.

This Technical Specification specifies the specifications to conform for approval of telecommunications devices.

NOTICE

This Specification is subject to review and revision

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Introduction

Broadband Wireless Access (BWA) is a technology aimed at providing high-speed wireless access over a wide area for data, voice and video services to business and residential subscribers.

The term BWA equipment refers to the base stations or subscriber stations which provide the broadband wireless connectivity, as well as the fixed or mobile devices which require connectivity.

Applications may include point to multipoint backhaul (e.g. E1/T1 services for business), point to point backhaul (e.g. connecting to Internet back bone), and consumer last mile and portable wireless broadband internet connection.

According to the IEEE 802.16, broadband means having instantaneous bandwidth greater than around 1 MHz and supporting data rates greater than about 1.5 Mbit/s.

1. Scope

1.1 This specification provides the minimum technical requirements for Broadband Wireless Access (BWA) base (central) station and subscriber (terminal) stations as according to the Standard Radio System Plan (SRSP) published by Malaysian Communication and Multimedia Commission (SKMM) for the equipment operating in the following frequency band:

a) 821 MHz to 824 MHz and 866 MHz to 869 MHz;

b) 1 790 MHz to 1 800 MHz;

c) 2 300 MHz to 2 400 MHz;

d) 2 504 MHz to 2 688 MHz;

e) 3 400 MHz to 3 700 MHz; and

f) 10 150 MHz to 10 300 MHz and 10 500 MHz to 10 650 MHz.

1.2 The specification does not restrict the type of BWA technology to be employed. It mainly defines the operating frequency bands, spurious emission and output power limits, electromagnetic compatibility and electrical safety and health requirements.

2. Normative references

The following normative references are indispensable for the application of this Technical Specification. For dated references, only the edition cited applies. For undated references, the latest edition of the normative references (including any amendments) applies.

See Annex A.

3. Abbreviations

For the purposes of this standard, the following abbreviations apply:

AC	Alternating Current
BWA	Broadband Wireless Access
DC	Direct Current
ETSI	European Telecommunications Standards Institute
EIRP	Effective Isotropic Radiated Power
EMC	Electromagnetic Compatibility
FCC	Federal Communications Commission
FWA	Fixed Wireless Access
HIPERMAN	High Performance Radio Metropolitan Area Network
IEC	International Electrotechnical Commission
IEEE	Institute of Electrical and Electronic Engineers
ITU -R	International Telecommunication Union - Radio
LMR	Land Mobile Radio
MMDS	Multipoint Microwave Distribution System
RF	Radio Frequency
RPS	Radio Performance Specification
Rx	Receive
SKMM	Malaysian Communications and Multimedia Commission
SRSP	Standard Radio System Plan
Tx	Transmit
WiMAX	Worldwide Interoperability for Microwave Access

4. Requirements

4.1 General requirements

BWA equipment shall be designed to meet the following basic requirements:

a) The Radio Frequency (RF) carrier of the BWA equipment shall be tuned to operate within the frequency spectrum assigned by SKMM.

b) The BWA equipment shall not be constructed with any external or readily accessible control which permits the adjustment of its operation in a manner that is inconsistent with the specification.

4.1.1 Power supply requirements

The BWA equipment may be AC or DC powered. For AC powered equipment, the operating voltage shall be 240 V +5 %, -10 % and frequency 50 Hz ± 1 % as according to MS 406 or 230 V ± 10 % and frequency 50 Hz ± 1 % as according to MS IEC 60038 whichever is current.

Where external power supply is used, e.g AC adaptor, it shall not affect the capability of the equipment to meet this specification. Adaptor must be pre-approved by the relevant regulatory body before it can be used with the equipment.

4.1.2 Power supply cord and mains plug requirements

The equipment shall be fitted with a suitable and appropriate approved power supply cord and mains plug. Both are regulated products and must be pre-approved by the relevant regulatory body before it can be used with the equipment.

The power supply cord shall be certified as according to:

a) MS 140; or

b) BS 6500; or

c) IEC 60227-5; or

d) IEC 60245-4.

The main plug shall be certified as according to:

a) 13 A fused plugs: MS 589: Part 1 or BS 1363: Part 1; or

b) 15 A plugs: MS 1577 or BS 546; or

c) 2.5 A, 250 V, flat non-rewirable two-pole plugs: MS 1578 or BS EN 50075.

4.1.3 Interoperability and Connectivity

The BWA equipment shall comply with the minimum requirement that is specified by the regulatory body.

4.1.3.1 Interoperability

The BWA equipment shall have an ability to exchange information and to use the information that has been exchanged between two or more systems or components.

4.1.3.2 Connectivity

The BWA equipment shall have the ability to link with other programs and devices to allow interoperability.

4.1.4 Marking Requirements

The equipment shall be marked with the following information:

a) supplier/manufacturer's name or identification mark;

b) supplier/manufacturer's model or type reference; and

c) other markings as required by the relevant standards.

The markings shall be legible, indelible and readily visible. All information on the marking shall be either in Bahasa Melayu or English Language.

4.2 Technical requirements

The equipment shall comply with the following requirements:

a) Radio Frequency (RF).

b) Electromagnetic Compatibility (EMC).

c) Electrical Safety and Health.

4.2.1 Radio Frequency Requirements

The equipment shall comply with the output power and spurious emissions limits as given in Table 1 and Table 2. It shall fulfill the requirements of this requirement on all the permitted frequencies which it is intended to operate.

Table 1. Technical Specification for RF Output Power

No.	Frequency Band (MHz)	RF Power (EIRP)	Reference Standard / Document
1.	Base Station (Rx) : 821 – 824 Base Station (Tx) : 866 – 869 Subscriber Station (Tx) : 821 – 824 Subscriber Station (Rx) : 866 – 869	Base station: ≤ + 47 dBm Subscriber station: Mobile station: ≤ + 44 dBm Hand-portable station: ≤ + 37 dBm	RPS 001 RPS 003-01 SKMM WTS LMR MCMC SRSP-531 BWA
2.	1 790 to 1 800	Base station – as per Exhibit 3 of MCMC SRSP-544 BWA Subscriber station – as per Exhibit 4 of MCMC SRSP-544 BWA	MCMC SRSP-544 BWA
3.	2 300 to 2 400	Base station: ≤ + 40 dBm Subscriber station: ≤ + 40 dBm	MCMC SRSP-532 BWA
4.	2 504 to 2 688	Base station: ≤ + 44 dBm Subscriber station: ≤ + 37 dBm	MCMC SRSP-523 MMDS
5.	3 400 to 3 700	The EIRP limit for base station and subscriber station are specified in Recommendation ITU-R SF.406-8	ITU-R SF.406-8 MCMC SRSP-507a FWA
6.	10 150 to 10 300	The EIRP limit for base station and subscriber station are specified in Recommendation ITU-R SF.406-8 Note : The EIRP for frequency within the band 10.616 GHz – 10.644 GHz are as follows: Base Station: ≤ + 70 dBm Subscriber station: ≤ + 70 dBm	Rec. ITU-R SF.406-8 MCMC SRSP-507b FWA
7.	10 500 to 10 650		
8.	24 250 to 27 000 27 000 to 29 000 31 000 to 31 300	The EIRP limit for base station will be based on apparatus assignment Subscriber station: ≤ + 37 dBm	MCMC SRSP-509 LMCS Notification of Issuance of Class Assignment

Table 2. Technical Specification for Spurious Emission

No.	Frequency Band (MHz)	Spurious Emission	Reference Standard / Document
1.	Base Station (Rx) : 821 – 824 Base Station (Tx) : 866 – 869	≤ - 50 dBm for 9 kHz to 21.2 GHz	ETSI EN 301 390
	Subscriber Station (Tx) : 821 – 824 Subscriber Station (Rx) : 866 – 869		
2.	1 790 to 1 800		
3.	2 300 to 2 400		
4.	2 504 to 2 688		
5.	3 400 to 3 700		
6.	10 150 to 10 300		
7.	10 500 to 10 650		
7.	10 500 to 10 650		
8.	24 250 to 27 000 27 000 to 29 500 31 000 to 31 300		

4.3 Electromagnetic compatibility requirements

The equipment shall comply with the EMC emissions requirements as defined in the ETSI EN 301 489-1. The requirements shall cover radiated and conducted emission.

4.4 Electrical Safety and Health requirements

The equipment shall comply with the safety requirements defined in MS IEC 60950-1. The supplier shall submit full type test report of MS IEC 60950 -1 or equivalent standards.

Annex A
(normative)

Normative references

BS 1363: Part 1	13 A plugs, socket-outlets, adaptors and connection units – Part 1: Specification for rewirable and non-rewirable 13 A fused plugs
BS 6500	Electric cables Flexible cords rated up to 300/500 V, for use with appliances and equipment intended for domestic, office and similar environments
BS EN 50075	Specification for flat non-wirable two-pole plugs 2.5 A 250 V, with cord, for the connection of class II-equipment for household and similar purposes
B. U. (B 416)	Notification of Issuance of Class Assignment B. U. (B 416)
ETSI EN 301 126-1	Fixed Radio Systems, Conformance testing: Part 1: Point-to-point equipment – Definitions, general requirements and test procedures
ETSI EN 301 126-2-1	Fixed Radio Systems, Conformance testing: Part 2-1: Point-to-Multipoint equipment – Definitions, and general requirements
ETSI EN 301 126-2-2	Fixed Radio Systems, Conformance testing: Part 2-2: Point-to-Multipoint equipment – Test procedures for FDMA systems
ETSI EN 301 126-2-3	Fixed Radio Systems, Conformance testing: Part 2-3: Point-to-Multipoint equipment – Test procedures for TDMA systems
ETSI EN 301 126-2-4	Fixed Radio Systems, Conformance testing: Part 2-4: Point-to-Multipoint equipment – Test procedures for FH-CDMA systems
ETSI EN 301 126-2-5	Fixed Radio Systems, Conformance testing: Part 2-5: Point-to-Multipoint equipment – Test procedures for DS-CDMA systems
ETSI EN 301 126-2-6	Fixed Radio Systems, Conformance testing: Part 2-6: Point-to-Multipoint equipment – Test procedures for Multi Carrier Time Division Multiple Access (MC-TDMA) systems

ETSI EN 301 390	Fixed Radio Systems, Point-to-point and Multipoint Systems; – Spurious emissions and receiver immunity limits at equipment/antenna port of Digital Fixed Radio Systems
ETSI EN 301 489-1	Electromagnetic compatibility and Radio spectrum Matters (ERM); Electromagnetic Compatibility (EMC) standard fro radio equipment and services – Part 1: Common technical requirements
ETSI TS 102 177	Broadband Radio Access Networks (BRAN); HIPERMAN; Physical (PHY) Layer
ETSI TS 102 178	Broadband Radio Access Networks (BRAN); HIPERMAN: data Link Control (DLC) Layer
ETSI TS 102 210	Broadband Radio Access Networks (BRAN); HIPERMAN; System profiles
ETSI EN 300 440-1	Electromagnetic compatibility and Radio spectrum Matters (ERM); Short range devices; Radio equipment to be used in the 1 GHz to 40 GHz frequency range – Part 1: Technical characteristics and test methods
FCC Part 27	Miscellaneous Wireless Communication Services
IEC 60245-4	Rubber insulated cables – Rated voltages up to and including 450/750 V – Part 4: Cords and flexible cables
IEC 60227-5	Polyvinyl chloride insulated cables of rated voltages up to and including 450/750 V – Part 5: Flexible cables (cords)
IEEE 802.16	Standard for Telecommunications and Information Exchange between Systems – LAN/MAN Specific Requirements – Air Interface for Fixed Broadband Wireless Access Systems
MCMC SRSP-507a FWA	Requirements for Fixed Wireless Access (FWA) Systems Operating in the Frequency Band from 3400 MHz to 3700 MHz
MCMC SRSP-507b FWA	Requirements for Fixed Wireless Access (FWA) Systems Operating in the Frequency Band from 10000 MHz to 10700 MHz
MCMC SRSP-523 MMDS	Requirements for Broadband Wireless Access (BWA) Systems Operating in the Frequency band from 2504 MHz to 2688 MHz.

MCMC SRSP-531 BWA	Requirements for Broadband Wireless Access (BWA) Systems Operating in the Frequency band from 821 MHz to 824 MHz and 866 MHz to 869 MHz
MCMC SRSP-532 BWA	Requirements for Broadband Wireless Access (BWA) Systems Operating in the Frequency band from 1790 MHz to 1800 MHz
MCMC SRSP-544 BWA	Requirements for Broadband Wireless Access (BWA) Systems Operating in the Frequency band 2300 MHz to 2400 MHz
MCMC SRSP-509 LMCS	Requirements for Broadband Wireless Access (BWA) Systems Operating in the Frequency band 2300 MHz to 2400 MHz
MS 140	Specification for insulated flexible cords and cables
MS 406	Specification for voltages and frequency for alternating current transmission and distribution systems
MS 589: Part 1	Specification for 13 A plugs, socket outlets, adaptors and connection units Part 1: Specification for rewirable and non-rewirable 13 A fused plugs
MS 1578	Specification for flat non-rewirable two-pole plugs, 2.5 A, 250 V, with cord, for the connection of class II-Equipment for household and similar purposes
MS IEC 60038	IEC Standard voltages
MS IEC 60950-1	Information Technology equipment – Safety
MS IEC CISPR 22	Information Technology Equipment – Radio disturbance characteristics – Limits and methods of measurement
Rec. ITU-R SF. 406-8	Maximum equivalent isotropically radiated power of radio-relay systems transmitters operating shared with the fixed-satellite service
RPS 001	Radio Performance Specifications RPS 001
RPS 003-01	Radio Performance Specifications RPS 003-01
SKMM WTS LMR	Technical Specification for Land Mobile Radio Equipment