

FCC Test Report

Report No.: RWAY202300049E
Applicant: Shenzhen Youmi Intelligent Technology Co., Ltd.
Address: 406-407 Jinqi Zhigu Building, 4/F, 1 Tangling Road, Nanshan District, Shenzhen City, China
Product Name: Smart Tablet
Product Model: MT13
Multiple Models: N/A
Trade Mark: UMIDIGI
FCC ID: 2ATZ4-G3TABULTRA
Standards: FCC CFR Title 47 Part 2, 22H, 24E, 27
Test Date: 2023-11-25~2024-02-02
Test Result: Complied
Issue Date: 2024-02-02

Reviewed by:

Abel chen

Approved by:

Jacob Kong

Abel Chen
Project Engineer

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Revision History

Version No.	Issued Date	Description
00	2024-02-02	Original

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1 General Information

1.1 Client Information

Applicant:	Shenzhen Youmi Intelligent Technology Co., Ltd.
Address:	406-407 Jinqi Zhigu Building, 4/F, 1 Tangling Road, Nanshan District, Shenzhen City, China
Manufacturer:	Shenzhen Youmi Intelligent Technology Co., Ltd.
Address:	406-407 Jinqi Zhigu Building, 4/F, 1 Tangling Road, Nanshan District, Shenzhen City, China

1.2 Product Description of EUT

The EUT is Smart Tablet that contains Classic Bluetooth(BDR/EDR), BLE, 2.4G/5G WLAN, GSM/GPRS/WCDMA/LTE radios, this report covers the full testing of the BLE radio GSM/GPRS/WCDMA/LTE radios.

Sample Serial number	2Y-2 for CE&RE test, 2Y-1 for RF test conducted test (assigned by WATC)				
Sample Received Date	2023-11-20				
Sample Status	Good Condition				
Frequency Range	Band	TX Frequency (MHz)	RX Frequency (MHz)	Max. Conducted Power (dBm)	Antenna Gain [#] (dBi)
Maximum Conducted Power	GSM850	824-849	869-894	29.83	-0.76
Antenna Gain	PCS1900	1850-1910	1920-1980	27.39	1.14
	WCDMA B2	1850-1910	1920-1980	19.18	1.14
	WCDMA B5	824-849	869-894	19.53	-0.76
	LTE B2	1850-1910	1920-1980	19.20	1.14
	LTE B5	824-849	869-894	19.52	-0.76
	LTE B7	2500-2570	2620-2690	19.18	1.05
	LTE B12	699-716	729-746	19.52	-2.37
	LTE B41	2555-2655	2555-2655	19.26	1.81
Modulation Technology	GMSK, BPSK, QPSK, 16QAM				
Power Supply	DC 3.80V from Battery or 5V from Adapter				
Operating temperature [#]	-10 deg.C to +45 deg.C				
Adapter Information	Model: HJ-0502000W2-US Input: AC 100-240V~50/60Hz, 0.3A Output: DC 5V, 2A				
Modification	Sample No Modification by the test lab				

1.3 Measurement Uncertainty

Parameter		Expanded Uncertainty (Confidence of 95%(U = 2Uc(y)))
Emissions, Radiated	Below 30MHz	±2.78dB
	Below 1GHz	±4.84dB
	Above 1GHz	±5.44dB

Emissions, Conducted	1.75dB
Conducted Power	0.74dB
Frequency Error	150Hz
Bandwidth	0.34%

Note 1: The extended uncertainty given in this report is obtained by combining the standard uncertainty times the coverage factor K with the 95% confidence interval. Otherwise required by the applicant or Product Regulations, Decision Rule in this report did not consider the uncertainty.

Note 2: The Decision Rule is based on simple acceptance with ISO Guide 98-4:2012 Clause 8.2 (Measurement uncertainty is not taken into account when stating conformity with a specified requirement.)

1.4 Laboratory Location

World Alliance Testing and Certification (Shenzhen) Co., Ltd

No. 1002, East Block, Laobing Building, Xingye Road 3012, Xixiang street, Bao'an District, Shenzhen, Guangdong, People's Republic of China

Tel: +86-755-29691511, Email: qa@watc.com.cn

The lab has been recognized as the FCC accredited lab under the KDB 974614 D01 and is listed in the FCC Public Access Link (PAL) database, FCC Registration No. : 463912, the FCC Designation No. : CN5040.

The lab has been recognized by Innovation, Science and Economic Development Canada to test to Canadian radio equipment requirements, the CAB identifier: CN0160.

1.5 Test Methodology

FCC CFR Title 47 Part 2, 22H, 24E, 27

ANSI C63.26-2015

FCC KDB 971168 D01 Power Meas License Digital Systems v03r01

FCC KDB 412172 D01 Determining ERP and EIRP v01r01

2 Description of Measurement

2.1 Test Frequency of Low/Middle/High Channels

Band	Bandwidth (MHz)	Low Channel (MHz)	Middle Channel (MHz)	High Channel (MHz)
GSM850	0.2	824.2	836.6	848.8
PCS1900	0.2	1850.2	1880	1909.8
WCDMA B2	4.8	1852.4	1880	1907.6
WCDMA B5	4.8	826.4	836.6	846.6
LTE B2	1.4	1850.7	1880	1909.3
	3	1851.5	1880	1908.5
	5	1852.5	1880	1907.5
	10	1855	1880	1905
	15	1857.5	1880	1902.5
	20	1860	1880	1900
LTE B5	1.4	824.7	836.5	848.3
	3	825.5	836.5	847.5
	5	826.5	836.5	846.5
	10	829	836.5	844
LTE B7	5	2502.5	2535	2567.5
	10	2505	2535	2565
	15	2507.5	2535	2562.5
	20	2510	2535	2560
LTE B12	1.4	699.7	707.5	715.3
	3	700.5	707.5	714.5
	5	701.5	707.5	713.5
	10	704	707.5	711
LTE B41	5	2557.5	2605	2652.5
	10	2560	2605	2650
	15	2562.5	2605	2647.5
	20	2565	2605	2645

2.2 Test Configuration for LTE bands

Test Items	Band	Bandwidth (MHz)						Modulation		RB#			Test Channel		
		1.4	3	5	10	15	20	QPSK	16QAM	1	Half	Full	L	M	H
RF Output Power ERP/EIRP	2	√	√	√	√	√	√	√	√	√	√	√	√	√	√
	5	√	√	√	√	-	-	√	√	√	√	√	√	√	√
	7	-	-	√	√	√	√	√	√	√	√	√	√	√	√
	12	√	√	√	√	-	-	√	√	√	√	√	√	√	√
	41	-	-	√	√	√	√	√	√	√	√	√	√	√	√
Peak-to-Average Ratio	2						√	√	√	√		√	√	√	√
	5				√	-	-	√	√	√		√	√	√	√
	7	-	-				√	√	√	√		√	√	√	√
	12				√	-	-	√	√	√		√	√	√	√
	41	-	-				√	√	√	√	√		√	√	√
26dB and 99% Bandwidth	2	√	√	√	√	√	√	√	√			√	√	√	√
	5	√	√	√	√	-	-	√	√			√	√	√	√
	7	-	-	√	√	√	√	√	√			√	√	√	√
	12	√	√	√	√	-	-	√	√			√	√	√	√
	41	-	-	√	√	√	√	√	√			√	√	√	√

Band Edge	2	√	√	√	√	√	√	√	√	√	√	√	√	√	√
	5	√	√	√	√	-	-	√	√	√	√	√	√	√	√
	7	-	-	√	√	√	√	√	√	√	√	√	√	√	√
	12	√	√	√	√	-	-	√	√	√	√	√	√	√	√
	41	-	-	√	√	√	√	√	√	√	√	√	√	√	√
Conducted Spurious Emission	2	√	√	√	√	√	√	√	√	√	√	√	√	√	√
	5	√	√	√	√	-	-	√	√	√	√	√	√	√	√
	7	-	-	√	√	√	√	√	√	√	√	√	√	√	√
	12	√	√	√	√	-	-	√	√	√	√	√	√	√	√
	41	-	-	√	√	√	√	√	√	√	√	√	√	√	√
Frequency Stability	2				√			√	√			√	√		√
	5				√	-	-	√	√			√		√	
	7	-	-		√			√	√			√	√		√
	12				√	-	-	√	√			√	√		√
	41	-	-		√			√	√			√	√		√
Radiated Spurious Emission	2	√						√		√			√	√	√
	5	√				-	-	√		√			√	√	√
	7	-	-	√				√		√			√	√	√
	12	√				-	-	√		√			√	√	√
	41	-	-	√				√		√			√	√	√

Note:

1. "√" means the configuration was chosen for testing
2. "-" means the not support the bandwidth

Worst-Case Configuration:

For radiated emissions, EUT was investigated in three orthogonal orientation, the worst-case orientation was recorded in report

For radiated emissions, measurement was investigated from 30MHz to 10 times of fundamental, the worst case bandwidth, RB size and modulation test data was recorded.

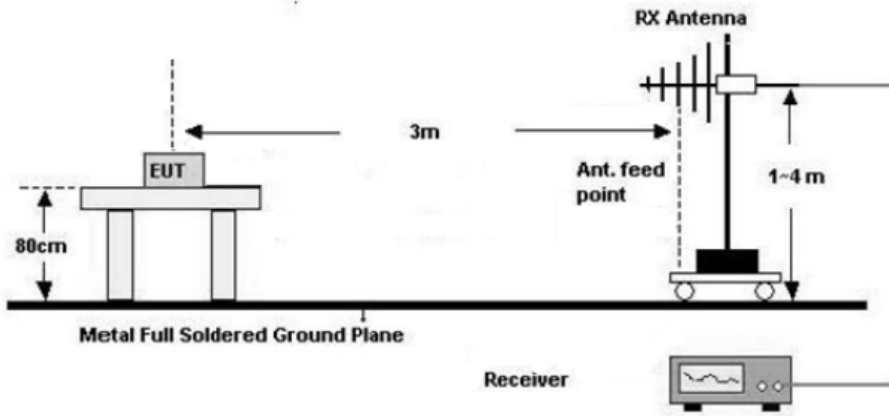
2.3 Test Auxiliary Equipment

Manufacturer	Description	Model	Serial Number
/	/	/	/

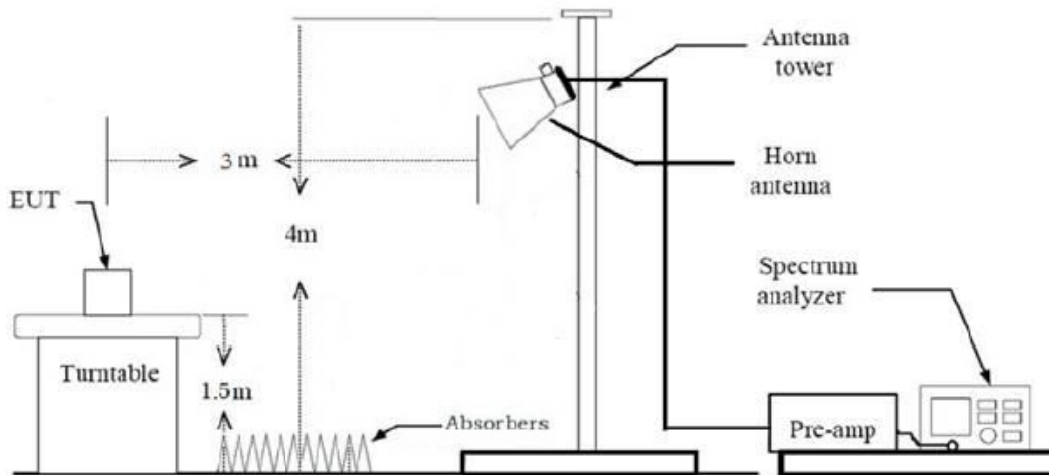
2.4 Test Setup

1) Radiated emission measurement:

30MHz-1GHz (3m SAC)

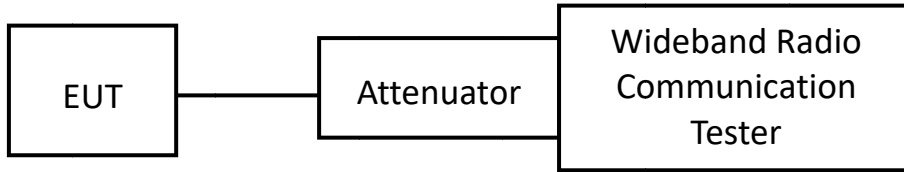


Above 1GHz (3m FAC)

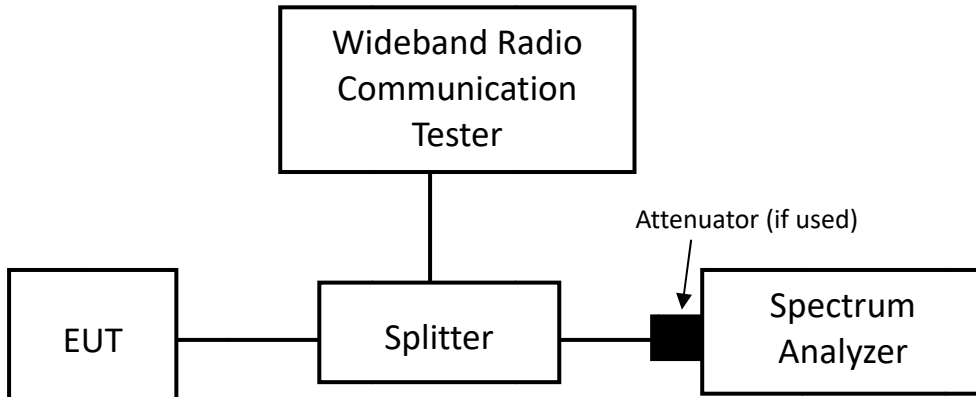


2) RF Conducted Test

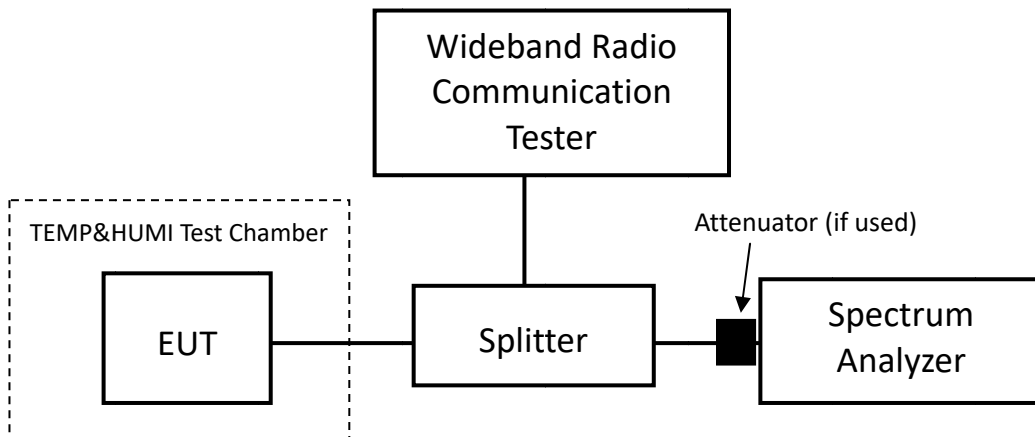
For RF Output Power test



For Bandwidth/Band edge/ PAR/Conducted spurious emissions Test



For Frequency Stability test



2.5 Test Procedure

Radiated Emission Procedure:

a) For 30MHz-1GHz:

1. The EUT was placed on the tabletop of a rotating table 0.8 m the ground at a 3 m semi anechoic chamber. The measurement distance from the EUT to the receiving antenna is 3 m.
2. EUT works in each mode of operation that needs to be tested. The highest signal levels relative to the limit shall be determined by rotating the EUT from 0° to 360° and with varying the measurement antenna height between 1 m and 4 m in vertical and horizontal polarizations.

b) For above 1GHz:

1. The EUT was placed on the tabletop of a rotating table 1.5 m the ground at a 3 m fully anechoic room. The measurement distance from the EUT to the receiving antenna is 3 m.
2. EUT works in each mode of operation that needs to be tested, and having the EUT continuously working. The highest signal levels relative to the limit shall be determined by rotating the EUT from 0° to 360° and with varying the measurement antenna height between 1 m and 4 m in vertical and horizontal polarizations.
3. Open the test software to control the test antenna and test turntable. Perform the test, save the test results, and export the test data.

RF Conducted Test:

1. The antenna port of EUT was connected to the RF port of the test equipment (Wideband Radio Communication Tester or Spectrum analyzer) through Attenuator and RF cable.
2. The cable assembly insertion loss of 11dB (including Splitter, attenuator and 1.0 dB cable) was entered as an offset in the power meter. Note: Actual cable loss was unavailable at the time of testing, therefore a loss of 1.0dB was assumed as worst case. This was later verified to be true by laboratory. (if the RF cable provided by client, the cable loss declared by client)
3. The EUT is keeping in continuous transmission mode and tested in all modulation modes.

2.6 Measurement Method

Description of Test	Measurement Method
RF Output Power	ANSI C63.26-2015 section 5.2
ERP/EIRP	ANSI C63.26-2015 section 5.2.5.5
Peak-to-Average Ratio	ANSI C63.26-2015 section 5.2.3.4
26dB and 99% Bandwidth	ANSI C63.26-2015 section 5.4
Band Edge	ANSI C63.26-2015 section 5.7.3
Conducted Spurious Emissions	ANSI C63.26-2015 section 5.7.4
Frequency Stability	ANSI C63.26-2015 section 5.6
Radiated Spurious Emissions	ANSI C63.26-2015 section 5.5.4

2.7 Measurement Equipment

Manufacturer	Description	Model	Management No.	Calibration Date	Calibration Due Date
Radiated Emission Test					
R&S	EMI test receiver	ESR3	102758	2023/7/3	2024/7/2
ROHDE& SCHWARZ	SPECTRUM ANALYZER	FSV40-N	101608	2023/7/3	2024/7/2
SONOMA INSTRUMENT	Low frequency amplifier	310	186014	2023/7/12	2024/7/11
COM-POWER	preamplifier	PAM-118A	18040152	2023/8/21	2024/8/20
COM-POWER	Amplifier	PAM-840A	461306	2023/8/8	2024/8/7
ETS	Passive Loop Antenna	6512	29604	2023/7/7	2024/7/6
SCHWARZBECK	Log - periodic wideband antenna	VULB 9163	9163-872	2023/7/7	2024/7/6
Astro Antenna Ltd	Horn antenna	AHA-118S	3015	2023/7/6	2024/7/5
Ducommun technologies	Horn Antenna	ARH-4223-02	1007726-03	2023/7/10	2024/7/9
Ducommun technologies	Horn Antenna	ARH-2823-02	1007726-03	2023/7/10	2024/7/9
N/A	Coaxial Cable	N/A	NO.9	2023/8/8	2024/8/7
N/A	Coaxial Cable	N/A	NO.10	2023/8/8	2024/8/7
N/A	Coaxial Cable	N/A	NO.11	2023/8/8	2024/8/7
Audix	Test Software	E3	191218 V9	/	/
RF Conducted Test					
R&S	Sepctrum Analyzer	FSU	200982	2023/10/25	2024/10/24
WEINSCHL	3dB Attenuator	Unknown	F-03-EM220	2023/10/25	2024/10/24
R&S	Wideband Radio Communication tester	CMW500	146520	2023/10/25	2024/10/24
HP	Power Splitter	11667A	1610A	2023/7/26	2024/7/25
BACL	TEMP&HUMI Test Chamber	BTH-150	30022	2023/7/12	2024/7/11
FLUKE	Digital Multimeter	15B+	N/A	2023/7/12	2024/7/11

Note: All equipment is calibrated with valid calibrations. Each measurement data is traceable to the national or International standards.

3 Test Results

3.1 Test Summary

FCC Rules	Description of Test	Result
FCC§2.1046; § 22.913; § 24.232; §27.50	RF Output Power	Compliance
FCC§ 2.1047	Modulation Characteristics	Compliance
FCC§ 2.1049; § 22.905; § 22.917; § 24.238; §27.53;	26dB and 99% Bandwidth	Compliance
FCC§ 2.1051; § 22.917; § 24.238; §27.53	Conducted Spurious Emissions	Compliance
FCC§ 22.917; § 24.238; §27.53	Out of band emission, Band Edge	Compliance
FCC§ 2.1055; § 22.355; § 24.235; §27.54	Frequency stability	Compliance
FCC§ 2.1053; § 22.917; § 24.238; §27.53	Radiated Spurious Emissions	Compliance

3.2 Limit

Test items	Limit																																
RF Output Power	<p>FCC §22.913:</p> <p>(a)(5) The ERP of mobile transmitters and auxiliary test transmitters must not exceed 7watts.</p> <p>(d) Power measurement. Measurement of the ERP of Cellular base transmitters and repeaters must be made using an average power measurement technique. The peak-to average ratio (PAR) of the transmission must not exceed 13 dB. Power measurements for base transmitters and repeaters must be made in accordance with either of the following:</p> <p>(1) A Commission-approved average power technique (see FCC Laboratory's Knowledge Database); or</p> <p>(2) For purposes of this section, peak transmit power must be measured over an interval of continuous transmission using instrumentation calibrated in terms of an rms equivalent voltage. The measurement results shall be properly adjusted for any instrument limitations, such as detector response times, limited resolution bandwidth capability when compared to the emission bandwidth, sensitivity, etc., so as to obtain a true peak measurement for the emission in question over the full bandwidth of the channel.</p>																																
Unwanted Emissions (Out of band emission and spurious)	<p>FCC §22.917:</p> <p>(a) Out of band emissions. The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + 10 \log(P)$ dB.</p> <p>(b) Measurement procedure. Compliance with these rules is based on the use of measurement instrumentation employing a reference bandwidth as follows:</p> <p>(1) In the spectrum below 1 GHz, instrumentation should employ a reference bandwidth of 100 kHz or greater. In the 1 MHz bands immediately outside and adjacent to the frequency block, a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed. A narrower resolution bandwidth is permitted in all cases to improve measurement accuracy, provided that the measured power is integrated over the full required reference bandwidth (i.e., 100 kHz or 1 percent of emission bandwidth, as specified). The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.</p> <p>(2) In the spectrum above 1 GHz, instrumentation should employ a reference bandwidth of 1 MHz</p>																																
Frequency stability	<p>FCC §22.355:</p> <p>Except as otherwise provided in this part, the carrier frequency of each transmitter in the Public Mobile Services must be maintained within the tolerances given in Table C-1 of this section.</p> <div style="border: 1px solid #ccc; padding: 5px; margin: 10px 0;"> <p style="text-align: center; font-size: small;">Table C-1—Frequency Tolerance for Transmitters in the Public Mobile Services</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: center;">Frequency range (MHz)</th> <th style="text-align: center;">Base, fixed (ppm)</th> <th style="text-align: center;">Mobile >3 watts (ppm)</th> <th style="text-align: center;">Mobile ≤3 watts (ppm)</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">25 to 50</td> <td style="text-align: center;">20.0</td> <td style="text-align: center;">20.0</td> <td style="text-align: center;">50.0</td> </tr> <tr> <td style="text-align: center;">50 to 450</td> <td style="text-align: center;">5.0</td> <td style="text-align: center;">5.0</td> <td style="text-align: center;">50.0</td> </tr> <tr> <td style="text-align: center;">450 to 512</td> <td style="text-align: center;">2.5</td> <td style="text-align: center;">5.0</td> <td style="text-align: center;">5.0</td> </tr> <tr> <td style="text-align: center;">821 to 896</td> <td style="text-align: center;">1.5</td> <td style="text-align: center;">2.5</td> <td style="text-align: center;">2.5</td> </tr> <tr> <td style="text-align: center;">928 to 929</td> <td style="text-align: center;">5.0</td> <td style="text-align: center;">n/a</td> <td style="text-align: center;">n/a</td> </tr> <tr> <td style="text-align: center;">929 to 960</td> <td style="text-align: center;">1.5</td> <td style="text-align: center;">n/a</td> <td style="text-align: center;">n/a</td> </tr> <tr> <td style="text-align: center;">2110 to 2220</td> <td style="text-align: center;">10.0</td> <td style="text-align: center;">n/a</td> <td style="text-align: center;">n/a</td> </tr> </tbody> </table> </div>	Frequency range (MHz)	Base, fixed (ppm)	Mobile >3 watts (ppm)	Mobile ≤3 watts (ppm)	25 to 50	20.0	20.0	50.0	50 to 450	5.0	5.0	50.0	450 to 512	2.5	5.0	5.0	821 to 896	1.5	2.5	2.5	928 to 929	5.0	n/a	n/a	929 to 960	1.5	n/a	n/a	2110 to 2220	10.0	n/a	n/a
Frequency range (MHz)	Base, fixed (ppm)	Mobile >3 watts (ppm)	Mobile ≤3 watts (ppm)																														
25 to 50	20.0	20.0	50.0																														
50 to 450	5.0	5.0	50.0																														
450 to 512	2.5	5.0	5.0																														
821 to 896	1.5	2.5	2.5																														
928 to 929	5.0	n/a	n/a																														
929 to 960	1.5	n/a	n/a																														
2110 to 2220	10.0	n/a	n/a																														

Test items	Limit
RF Output Power	<p>FCC §24.232:</p> <p>(c) Mobile and portable stations are limited to 2 watts EIRP and the equipment must employ a means for limiting power to the minimum necessary for successful communications.</p> <p>(d) Power measurements for transmissions by stations authorized under this section may be made either in accordance with a Commission-approved average power technique or in compliance with paragraph (e) of this section. In both instances, equipment employed must be authorized in accordance with the provisions of § 24.51. In measuring transmissions in this band using an average power technique, the peak-to-average ratio (PAR) of the transmission may not exceed 13 dB.</p>
Unwanted Emissions (Out of band emission and spurious)	<p>FCC §24.238:</p> <p>The rules in this section govern the spectral characteristics of emissions in the Broadband Personal Communications Service.</p> <p>(a) Out of band emissions. The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + 10 \log(P)$ dB.</p> <p>(b) Measurement procedure. Compliance with these rules is based on the use of measurement instrumentation employing a resolution bandwidth of 1 MHz or greater. However, in the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed. A narrower resolution bandwidth is permitted in all cases to improve measurement accuracy provided the measured power is integrated over the full required measurement bandwidth (i.e. 1 MHz or 1 percent of emission bandwidth, as specified). The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.</p> <p>(c) Alternative out of band emission limit. Licensees in this service may establish an alternative out of band emission limit to be used at specified band edge(s) in specified geographical areas, in lieu of that set forth in this section, pursuant to a private contractual arrangement of all affected licensees and applicants. In this event, each party to such contract shall maintain a copy of the contract in their station files and disclose it to prospective assignees or transferees and, upon request, to the FCC.</p> <p>(d) Interference caused by out of band emissions. If any emission from a transmitter operating in this service results in interference to users of another radio service, the FCC may require a greater attenuation of that emission than specified in this section.</p>
Frequency stability	<p>FCC §24.235:</p> <p>The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block.</p>

Test items	Limit
RF Output Power	<p>FCC §27.50:</p> <p>(a)(3) Mobile and portable stations.</p> <p>(i) For mobile and portable stations transmitting in the 2305-2315 MHz band or the 2350-2360 MHz band, the average EIRP must not exceed 50 milliwatts within any 1 megahertz of authorized bandwidth, except that for mobile and portable stations compliant with 3GPP LTE standards or another advanced mobile broadband protocol that avoids concentrating energy at the edge of the operating band the average EIRP must not exceed 250 milliwatts within any 5 megahertz of authorized bandwidth but may exceed 50 milliwatts within any 1 megahertz of authorized bandwidth. For mobile and portable stations using time division duplexing (TDD) technology, the duty cycle must not exceed 38 percent in the 2305-2315 MHz and 2350-2360 MHz bands. Mobile and portable stations using FDD technology are restricted to transmitting in the 2305-2315 MHz band. Power averaging shall not include intervals in which the transmitter is off.</p> <p>(ii) Mobile and portable stations are not permitted to transmit in the 2315-2320 MHz and 2345-2350 MHz bands.</p> <p>(iii) Automatic transmit power control. Mobile and portable stations transmitting in the 2305-2315 MHz band or in the 2350-2360 MHz band must employ automatic transmit power control when operating so the stations operate with the minimum power necessary for successful communications.</p> <p>(iv) Prohibition on external vehicle-mounted antennas. The use of external vehicle-mounted antennas for mobile and portable stations transmitting in the 2305-2315 MHz band or the 2350-2360 MHz band is prohibited.</p> <p>(b)(10) Portable stations (hand-held devices) transmitting in the 746-757 MHz, 776-788 MHz, and 805-806 MHz bands are limited to 3 watts ERP.</p> <p>(c)(10) Portable stations (hand-held devices) in the 600 MHz uplink band and the 698-746 MHz band, and fixed and mobile stations in the 600 MHz uplink band are limited to 3 watts ERP.</p> <p>(d)(4) Fixed, mobile, and portable (hand-held) stations operating in the 1710-1755 MHz band and mobile and portable stations operating in the 1695-1710 MHz and 1755-1780 MHz bands are limited to 1 watt EIRP. Fixed stations operating in the 1710-1755 MHz band are limited to a maximum antenna height of 10 meters above ground. Mobile and portable stations operating in these bands must employ a means for limiting power to the minimum necessary for successful communications.</p> <p>(h) The following power limits shall apply in the BRS and EBS: (2) Mobile and other user stations. Mobile stations are limited to 2.0 watts EIRP. All user stations are limited to 2.0 watts transmitter output power.</p>

<p>Unwanted Emissions (Out of band emission and spurious)</p>	<p>FCC §27.53:</p> <p>(a) For operations in the 2305-2320 MHz band and the 2345-2360 MHz band, the power of any emission outside a licensee's frequency band(s) of operation shall be attenuated below the transmitter power P (with averaging performed only during periods of transmission) within the licensed band(s) of operation, in watts, by the following amounts:</p> <p>(4) For mobile and portable stations operating in the 2305-2315 MHz and 2350-2360 MHz bands:</p> <p>(i) By a factor of not less than: $43 + 10 \log (P)$ dB on all frequencies between 2305 and 2320 MHz and on all frequencies between 2345 and 2360 MHz that are outside the licensed band(s) of operation, not less than $55 + 10 \log (P)$ dB on all frequencies between 2320 and 2324 MHz and on all frequencies between 2341 and 2345 MHz, not less than $61 + 10 \log (P)$ dB on all frequencies between 2324 and 2328 MHz and on all frequencies between 2337 and 2341 MHz, and not less than $67 + 10 \log (P)$ dB on all frequencies between 2328 and 2337 MHz;</p> <p>(ii) By a factor of not less than $43 + 10 \log (P)$ dB on all frequencies between 2300 and 2305 MHz, $55 + 10 \log (P)$ dB on all frequencies between 2296 and 2300 MHz, $61 + 10 \log (P)$ dB on all frequencies between 2292 and 2296 MHz, $67 + 10 \log (P)$ dB on all frequencies between 2288 and 2292 MHz, and $70 + 10 \log (P)$ dB below 2288 MHz;</p> <p>(iii) By a factor of not less than $43 + 10 \log (P)$ dB on all frequencies between 2360 and 2365 MHz, and not less than $70 + 10 \log (P)$ dB above 2365 MHz.</p> <p>(c) For operations in the 746-758 MHz band and the 776-788 MHz band, the power of any emission outside the licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, in accordance with the following:</p> <p>(1) On any frequency outside the 746-758 MHz band, the power of any emission shall be attenuated outside the band below the transmitter power (P) by at least $43 + 10 \log (P)$ dB;</p> <p>(2) On any frequency outside the 776-788 MHz band, the power of any emission shall be attenuated outside the band below the transmitter power (P) by at least $43 + 10 \log (P)$ dB;</p> <p>(3) On all frequencies between 763-775 MHz and 793-805 MHz, by a factor not less than $76 + 10 \log (P)$ dB in a 6.25 kHz band segment, for base and fixed stations;</p> <p>(4) On all frequencies between 763-775 MHz and 793-805 MHz, by a factor not less than $65 + 10 \log (P)$ dB in a 6.25 kHz band segment, for mobile and portable stations;</p> <p>(5) Compliance with the provisions of paragraphs (c)(1) and (c)(2) of this section is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kHz or greater. However, in the 100 kHz bands immediately outside and adjacent to the frequency block, a resolution bandwidth of at least 30 kHz may be employed;</p> <p>(6) Compliance with the provisions of paragraphs (c)(3) and (c)(4) of this section is based on the use of measurement instrumentation such that the reading taken with any resolution bandwidth setting should be adjusted to indicate spectral energy in a 6.25 kHz segment.</p>
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	<p>(f) For operations in the 746-758 MHz, 775-788 MHz, and 805-806 MHz bands, emissions in the band 1559-1610 MHz shall be limited to -70 dBW/MHz equivalent isotropically radiated power (EIRP) for wideband signals, and -80 dBW EIRP for discrete emissions of less than 700 Hz bandwidth. For the purpose of equipment authorization, a transmitter shall be tested with an antenna that is representative of the type that will be used with the equipment in normal operation.</p> <p>(g) For operations in the 600 MHz band and the 698-746 MHz band, the power of any emission outside a licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, by at least $43 + 10 \log (P)$ dB. Compliance with this provision is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kilohertz or greater. However, in the 100 kilohertz bands immediately outside and adjacent to a licensee's frequency block, a resolution bandwidth of at least 30 kHz may be employed.</p> <p>(h) AWS emission limits (1) <i>General protection levels.</i> Except as otherwise specified below, for operations in the 1695-1710 MHz, 1710-1755 MHz, 1755-1780 MHz, 1915-1920 MHz, 1995-2000 MHz, 2000-2020 MHz, 2110-2155 MHz, 2155-2180 MHz, and 2180-2200 bands, the power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) in watts by at least $43 + 10 \log_{10} (P)$ dB.</p> <p>(m)(4) For mobile digital stations, the attenuation factor shall be not less than $40 + 10 \log (P)$ dB on all frequencies between the channel edge and 5 megahertz from the channel edge, $43 + 10 \log (P)$ dB on all frequencies between 5 megahertz and X megahertz from the channel edge, and $55 + 10 \log (P)$ dB on all frequencies more than X megahertz from the channel edge, where X is the greater of 6 megahertz or the actual emission bandwidth as defined in paragraph (m)(6) of this section. In addition, the attenuation factor shall not be less than $43 + 10 \log (P)$ dB on all frequencies between 2490.5 MHz and 2496 MHz and $55 + 10 \log (P)$ dB at or below 2490.5 MHz. Mobile Satellite Service licensees operating on frequencies below 2495 MHz may also submit a documented interference complaint against BRS licensees operating on channel BRS Channel 1 on the same terms and conditions as adjacent channel BRS or EBS licensees.</p>
<p>Frequency stability</p>	<p>FCC §27.54:</p> <p>The frequency stability shall be sufficient to ensure that the fundamental emissions stay within the authorized bands of operation.</p>

3.3 RF Conducted Test Data

Test Date:	2023-12-01~2024-02-02	Test By:	Frank Yin
Environment condition:	Temperature: 24-25°C; Relative Humidity: 52-53%; ATM Pressure: 101kPa		

3.3.1 RF Output Power&ERP/EIRP

Cellular Band

Mode	Channel	Average Output Power (dBm)				ERP(dBm)			
		1 slot	2 slots	3 slots	4 slots	1 slot	2 slots	3 slots	4 slots
GSM	L	29.65	/	/	/	26.24	/	/	/
	M	29.79	/	/	/	26.38	/	/	/
	H	29.74	/	/	/	26.33	/	/	/
GPRS	L	29.70	28.94	27.05	25.75	26.29	25.53	23.64	22.34
	M	29.83	28.05	27.18	25.98	26.42	24.64	23.77	22.57
	H	29.74	28.97	27.03	25.82	26.33	25.56	23.62	22.41

Note: ERP(dBm) = Conducted Power(dBm) + Antenna Gain(dBd) - Cable loss(dB)
 For GSM850 / WCDMA Band5: Antenna Gain = -0.76dBi = -2.91dBd (0dBd=2.15dBi)
 For 700-960MHz, Cable Loss=0.5dB* (provided by the applicant)
 Limit: ERP≤38.45dBm

Mode	Test Mode	3GPP Sub Test	Average Output Power (dBm)			ERP(dBm)		
			Low	Mid	High	Low	Mid	High
WCDMA (Band 5)	RMC12.2k		19.53	19.43	19.33	16.12	16.02	15.92
	HSDPA	1	18.92	18.99	18.96	15.51	15.58	15.55
		2	19.06	18.96	18.73	15.65	15.55	15.32
		3	19.00	18.86	18.95	15.59	15.45	15.54
		4	18.89	18.61	19.20	15.48	15.20	15.79
	HSUPA	1	19.16	18.95	18.73	15.75	15.54	15.32
		2	19.13	18.94	18.58	15.72	15.53	15.17
		3	19.21	19.15	18.74	15.80	15.74	15.33
		4	18.62	19.06	19.02	15.21	15.65	15.61
		5	18.94	18.80	18.89	15.53	15.39	15.48
HSPA+	1	19.16	18.95	18.73	15.75	15.54	15.32	

Note: ERP(dBm) = Conducted Power(dBm) + Antenna Gain(dBd) - Cable loss(dB)
 For GSM850 / WCDMA Band5: Antenna Gain = -0.76dBi = -2.91dBd (0dBd=2.15dBi)
 For 700-960MHz, Cable Loss=0.5dB* (provided by the applicant)
 Limit: ERP≤38.45dBm

PCS Band

Mode	Channel	Average Output Power (dBm)				ERP(dBm)			
		1 slot	2 slots	3 slots	4 slots	1 slot	2 slots	3 slots	4 slots
GSM	512	27.39	/	/	/	27.73	/	/	/
	661	27.17	/	/	/	27.51	/	/	/
	810	27.14	/	/	/	27.48	/	/	/
GPRS	1850.2	27.35	26.52	24.59	23.39	27.69	26.86	24.93	23.73
	1880.0	27.16	26.28	24.38	23.17	27.50	26.62	24.72	23.51
	1909.8	27.13	26.26	24.38	23.14	27.47	26.60	24.72	23.48

Note: EIRP(dBm) = Conducted Power(dBm) + Antenna Gain(dBi) - Cable loss(dB)
For PCS1900 / WCDMA Band2: Antenna Gain = 1.14dBi
For 1700-2000MHz, Cable Loss=0.8dB*(provided by the applicant)
Limit: EIRP≤33dBm

Mode	Test Mode	3GPP Sub Test	Average Output Power (dBm)			ERP(dBm)		
			Low	Mid	High	Low	Mid	High
WCDMA (Band 2)	RMC12.2k		19.11	19.08	19.09	19.45	19.42	19.43
	HSDPA	1	18.41	18.76	19.03	18.75	19.10	19.37
		2	18.56	18.64	19.12	18.90	18.98	19.46
		3	18.21	18.85	18.97	18.55	19.19	19.31
		4	18.48	18.44	18.47	18.82	18.78	18.81
	HSUPA	1	18.91	18.41	19.14	19.25	18.75	19.48
		2	19.15	18.39	18.95	19.49	18.73	19.29
		3	19.11	18.44	19.18	19.45	18.78	19.52
		4	18.91	18.47	18.88	19.25	18.81	19.22
		5	18.84	18.45	18.90	19.18	18.79	19.24
HSPA+	1	18.91	18.41	19.14	19.25	18.75	19.48	

Note: EIRP(dBm) = Conducted Power(dBm) + Antenna Gain(dBi) - Cable loss(dB)
For PCS1900 / WCDMA Band2: Antenna Gain = 1.14dBi
For 1700-2000MHz, Cable Loss=0.8dB*(provided by the applicant)
Limit: EIRP≤33dBm

LTE Band 2

Bandwidth (MHz)	Modulation	RB size/ RB Offset	Conducted Average Output Power (dBm)			EIRP(dBm)		
			Low	Mid	High	Low	Mid	High
1.4	QPSK	RB1#0	18.80	18.92	18.88	19.14	19.26	19.22
		RB1#3	18.66	18.84	18.82	19.00	19.18	19.16
		RB1#5	18.83	18.91	18.88	19.17	19.25	19.22
		RB3#0	18.74	19.20	18.78	19.08	19.54	19.12
		RB3#3	18.58	18.72	18.31	18.92	19.06	18.65
		RB6#0	16.59	18.10	18.25	16.93	18.44	18.59
	16QAM	RB1#0	16.59	18.03	18.33	16.93	18.37	18.67
		RB1#3	16.59	17.93	18.28	16.93	18.27	18.62
		RB1#5	16.58	18.08	18.31	16.92	18.42	18.65
		RB3#0	16.96	18.61	18.30	17.30	18.95	18.64
		RB3#3	16.96	18.60	18.33	17.30	18.94	18.67
		RB6#0	15.80	15.98	15.93	16.14	16.32	16.27
3.0	QPSK	RB1#0	18.85	18.93	18.84	19.19	19.27	19.18
		RB1#8	18.79	18.91	18.94	19.13	19.25	19.28
		RB1#14	18.89	18.85	18.91	19.23	19.19	19.25
		RB6#0	16.59	18.31	18.33	16.93	18.65	18.67
		RB6#9	16.66	18.33	18.27	17.00	18.67	18.61
		RB15#0	16.83	18.55	18.55	17.17	18.89	18.89
	16QAM	RB1#0	16.55	18.74	18.41	16.89	19.08	18.75
		RB1#8	16.66	18.62	18.32	17.00	18.96	18.66
		RB1#14	16.64	18.68	18.36	16.98	19.02	18.70
		RB6#0	15.83	16.06	16.07	16.17	16.40	16.41
		RB6#9	15.88	16.06	16.08	16.22	16.40	16.42
		RB15#0	16.14	16.28	16.17	16.48	16.62	16.51
5.0	QPSK	RB1#0	18.72	18.90	18.80	19.06	19.24	19.14
		RB1#13	18.83	18.93	18.93	19.17	19.27	19.27
		RB1#24	18.82	18.91	18.82	19.16	19.25	19.16
		RB15#0	16.64	18.44	18.42	16.98	18.78	18.76

		RB15#10	16.75	18.48	18.41	17.09	18.82	18.75
		RB25#0	16.75	18.37	18.37	17.09	18.71	18.71
	16QAM	RB1#0	16.85	18.13	18.00	17.19	18.47	18.34
		RB1#13	16.97	18.14	18.05	17.31	18.48	18.39
		RB1#24	18.42	18.08	18.01	18.76	18.42	18.35
		RB15#0	15.90	16.00	16.04	16.24	16.34	16.38
		RB15#10	15.99	16.03	15.99	16.33	16.37	16.33
		RB25#0	16.04	16.04	16.07	16.38	16.38	16.41
10.0	QPSK	RB1#0	18.72	18.81	18.83	19.06	19.15	19.17
		RB1#25	18.73	18.80	18.80	19.07	19.14	19.14
		RB1#49	18.75	18.93	18.78	19.09	19.27	19.12
		RB25#0	16.60	18.30	18.41	16.94	18.64	18.75
		RB25#25	18.39	18.37	18.31	18.73	18.71	18.65
		RB50#0	18.36	18.41	18.44	18.70	18.75	18.78
	16QAM	RB1#0	16.67	18.06	18.74	17.01	18.40	19.08
		RB1#25	18.11	18.00	18.61	18.45	18.34	18.95
		RB1#49	18.22	18.15	18.59	18.56	18.49	18.93
		RB25#0	15.92	16.03	16.19	16.26	16.37	16.53
		RB25#25	16.06	16.12	16.10	16.40	16.46	16.44
		RB50#0	16.01	16.09	16.13	16.35	16.43	16.47
15.0	QPSK	RB1#0	18.80	18.77	18.88	19.14	19.11	19.22
		RB1#38	18.77	18.79	18.82	19.11	19.13	19.16
		RB1#74	18.74	18.87	18.88	19.08	19.21	19.22
		RB36#0	18.11	18.18	18.16	18.45	18.52	18.50
		RB36#39	18.04	18.30	18.24	18.38	18.64	18.58
		RB75#0	18.15	18.28	18.24	18.49	18.62	18.58
	16QAM	RB1#0	16.98	18.62	18.33	17.32	18.96	18.67
		RB1#38	18.49	18.47	18.22	18.83	18.81	18.56
		RB1#74	17.00	18.67	18.23	17.34	19.01	18.57
		RB36#0	15.81	15.83	15.89	16.15	16.17	16.23
		RB36#39	15.84	15.93	15.89	16.18	16.27	16.23
		RB75#0	15.82	15.90	15.87	16.16	16.24	16.21
20.0	QPSK	RB1#0	18.71	18.66	18.85	19.05	19.00	19.19

		RB1#50	18.74	18.78	18.78	19.08	19.12	19.12
		RB1#99	18.73	18.82	18.85	19.07	19.16	19.19
		RB50#0	18.39	18.38	18.50	18.73	18.72	18.84
		RB50#50	16.67	18.52	18.46	17.01	18.86	18.80
		RB100#0	18.33	18.41	18.46	18.67	18.75	18.80
	16QAM	RB1#0	16.76	18.55	18.43	17.10	18.89	18.77
		RB1#50	18.30	18.50	18.44	18.64	18.84	18.78
		RB1#99	18.27	18.70	18.40	18.61	19.04	18.74
		RB50#0	15.99	15.97	16.15	16.33	16.31	16.49
		RB50#50	16.00	16.13	16.12	16.34	16.47	16.46
		RB100#0	15.96	16.05	16.17	16.30	16.39	16.51
	<p>Note: EIRP(dBm) = Conducted Power(dBm) + Antenna Gain(dBi) - Cable Loss(dB) For Band2: Antenna Gain = 1.14dBi 1GHz-2GHz : Cable Loss=0.8dB*(provided by the applicant) Limit: EIRP≤33dBm</p>							

LTE Band 5

Bandwidth (MHz)	Modulation	RB size/ RB Offset	Conducted Average Output Power (dBm)			ERP(dBm)		
			Low	Mid	High	Low	Mid	High
1.4	QPSK	RB1#0	19.19	19.17	18.94	15.78	15.76	15.53
		RB1#3	19.11	19.14	18.90	15.70	15.73	15.49
		RB1#5	19.14	19.17	18.87	15.73	15.76	15.46
		RB3#0	19.52	19.48	19.17	16.11	16.07	15.76
		RB3#3	19.44	19.46	19.16	16.03	16.05	15.75
		RB6#0	18.48	18.40	18.13	15.07	14.99	14.72
	16QAM	RB1#0	18.41	18.47	18.12	15.00	15.06	14.71
		RB1#3	18.34	18.52	18.04	14.93	15.11	14.63
		RB1#5	18.35	18.50	18.17	14.94	15.09	14.76
		RB3#0	18.80	18.53	18.46	15.39	15.12	15.05
		RB3#3	18.80	18.61	18.48	15.39	15.20	15.07
		RB6#0	16.20	16.2	15.87	12.79	12.79	12.46
3.0	QPSK	RB1#0	19.22	19.26	19.04	15.81	15.85	15.63
		RB1#8	19.07	19.18	18.90	15.66	15.77	15.49
		RB1#14	19.18	19.16	18.89	15.77	15.75	15.48
		RB6#0	18.51	18.52	18.36	15.10	15.11	14.95
		RB6#9	18.47	18.53	18.25	15.06	15.12	14.84
		RB15#0	18.71	18.77	18.46	15.30	15.36	15.05
	16QAM	RB1#0	18.61	18.42	18.71	15.20	15.01	15.30
		RB1#8	18.46	18.42	18.61	15.05	15.01	15.20
		RB1#14	18.50	18.45	18.59	15.09	15.04	15.18
		RB6#0	16.24	16.18	16.12	12.83	12.77	12.71
		RB6#9	16.23	16.20	16.01	12.82	12.79	12.60
		RB15#0	16.35	16.44	16.25	12.94	13.03	12.84
5.0	QPSK	RB1#0	19.42	19.29	19.15	16.01	15.88	15.74
		RB1#13	19.36	19.40	19.23	15.95	15.99	15.82
		RB1#24	19.42	19.26	19.05	16.01	15.85	15.64
		RB15#0	18.82	18.80	18.70	15.41	15.39	15.29
		RB15#10	18.82	18.80	18.51	15.41	15.39	15.10

		RB25#0	18.81	18.80	18.62	15.40	15.39	15.21
	16QAM	RB1#0	18.69	18.29	18.61	15.28	14.88	15.20
		RB1#13	18.57	18.50	18.65	15.16	15.09	15.24
		RB1#24	18.57	18.37	18.56	15.16	14.96	15.15
		RB15#0	16.52	16.49	16.33	13.11	13.08	12.92
		RB15#10	16.46	16.49	16.15	13.05	13.08	12.74
		RB25#0	16.51	16.54	16.28	13.10	13.13	12.87
10.0	QPSK	RB1#0	19.38	19.43	19.27	15.97	16.02	15.86
		RB1#25	19.38	19.29	19.16	15.97	15.88	15.75
		RB1#49	19.49	19.25	19.05	16.08	15.84	15.64
		RB25#0	18.78	18.78	18.68	15.37	15.37	15.27
		RB25#25	18.84	18.76	18.55	15.43	15.35	15.14
		RB50#0	18.83	18.83	18.67	15.42	15.42	15.26
	16QAM	RB1#0	18.58	19.01	18.69	15.17	15.60	15.28
		RB1#25	18.52	19.00	18.40	15.11	15.59	14.99
		RB1#49	18.52	19.02	18.41	15.11	15.61	15.00
		RB25#0	16.49	16.51	16.40	13.08	13.10	12.99
		RB25#25	16.53	16.51	16.21	13.12	13.10	12.80
		RB50#0	16.52	16.48	16.32	13.11	13.07	12.91
	<p>Note: ERP(dBm) = Conducted Power(dBm) + Antenna Gain(dBd) - Cable Loss(dB) For Band5: Antenna Gain = -0.76dBi = -2.91dBd (0dBd=2.15dBi) < 1GHz: Cable Loss=0.5dB* (provided by the applicant) Limit: ERP≤38.45dBm</p>							

LTE Band 7

Bandwidth h (MHz)	Modulation	RB size/ RB Offset	Conducted Average Output Power (dBm)			EIRP(dBm)		
			Low	Mid	High	Low	Mid	High
5.0	QPSK	RB1#0	17.26	18.79	18.80	17.51	19.04	19.05
		RB1#13	17.28	18.81	18.79	17.53	19.06	19.04
		RB1#24	17.24	18.79	18.88	17.49	19.04	19.13
		RB15#0	16.55	16.63	16.44	16.80	16.88	16.69
		RB15#10	16.62	16.56	16.37	16.87	16.81	16.62
		RB25#0	16.56	16.56	16.39	16.81	16.81	16.64
	16QAM	RB1#0	16.47	16.30	16.59	16.72	16.55	16.84
		RB1#13	16.52	16.33	16.52	16.77	16.58	16.77
		RB1#24	16.50	16.30	16.48	16.75	16.55	16.73
		RB15#0	15.84	15.88	15.62	16.09	16.13	15.87
		RB15#10	15.88	15.85	15.55	16.13	16.10	15.80
RB25#0	15.84	15.84	15.68	16.09	16.09	15.93		
10.0	QPSK	RB1#0	17.25	18.06	18.07	17.50	18.31	18.32
		RB1#25	17.28	18.87	18.88	17.53	19.12	19.13
		RB1#49	17.46	19.01	19.11	17.71	19.26	19.36
		RB25#0	16.59	16.71	16.63	16.84	16.96	16.88
		RB25#25	16.69	16.64	16.49	16.94	16.89	16.74
		RB50#0	16.70	16.69	16.59	16.95	16.94	16.84
	16QAM	RB1#0	16.53	17.11	16.73	16.78	17.36	16.98
		RB1#25	16.49	17.05	16.51	16.74	17.30	16.76
		RB1#49	16.66	17.07	16.50	16.91	17.32	16.75
		RB25#0	15.94	15.99	15.92	16.19	16.24	16.17
		RB25#25	16.04	15.94	15.74	16.29	16.19	15.99
RB50#0	15.97	15.98	15.83	16.22	16.23	16.08		
15.0	QPSK	RB1#0	17.34	18.11	19.18	17.59	18.36	19.43
		RB1#38	17.40	18.87	18.85	17.65	19.12	19.10
		RB1#74	18.41	18.06	18.06	18.66	18.31	18.31
		RB36#0	16.55	16.61	16.68	16.80	16.86	16.93
		RB36#39	16.79	16.54	16.48	17.04	16.79	16.73
		RB75#0	16.71	16.63	16.6	16.96	16.88	16.85
	16QAM	RB1#0	16.83	17.04	16.71	17.08	17.29	16.96
		RB1#38	16.91	17.00	16.56	17.16	17.25	16.81
		RB1#74	17.02	17.03	16.43	17.27	17.28	16.68
RB36#0	15.74	15.84	15.84	15.99	16.09	16.09		

		RB36#39	15.94	15.77	15.66	16.19	16.02	15.91
		RB75#0	15.88	15.84	15.81	16.13	16.09	16.06
20.0	QPSK	RB1#0	17.29	19.01	19.09	17.54	19.26	19.34
		RB1#50	17.48	18.80	18.92	17.73	19.05	19.17
		RB1#99	18.31	18.97	18.02	18.56	19.22	18.27
		RB50#0	16.62	16.72	16.71	16.87	16.97	16.96
		RB50#50	16.83	16.63	16.50	17.08	16.88	16.75
		RB100#0	16.73	16.68	16.61	16.98	16.93	16.86
	16QAM	RB1#0	16.69	17.04	16.83	16.94	17.29	17.08
		RB1#50	16.80	17.02	16.80	17.05	17.27	17.05
		RB1#99	16.91	17.03	16.59	17.16	17.28	16.84
		RB50#0	15.87	15.94	15.98	16.12	16.19	16.23
		RB50#50	16.05	15.89	15.68	16.30	16.14	15.93
		RB100#0	15.94	15.91	15.84	16.19	16.16	16.09
<p>Note: EIRP(dBm) = Conducted Power(dBm) + Antenna Gain(dBi) - Cable Loss(dB) For Band7: Antenna Gain = 1.05dBi 1GHz-2GHz : Cable Loss=0.8dB*(provided by the applicant) Limit: EIRP≤33dBm</p>								

LTE Band 12

Bandwidth (MHz)	Modulation	RB size/ RB Offset	Conducted Average Output Power (dBm)			ERP(dBm)		
			Low	Mid	High	Low	Mid	High
1.4	QPSK	RB1#0	19.29	18.87	19.26	14.27	13.85	14.24
		RB1#3	19.06	18.81	19.28	14.04	13.79	14.26
		RB1#5	19.03	18.88	19.50	14.01	13.86	14.48
		RB3#0	19.32	19.06	19.23	14.30	14.04	14.21
		RB3#3	19.14	19.04	19.29	14.12	14.02	14.27
		RB6#0	18.32	18.11	18.50	13.30	13.09	13.48
	16QAM	RB1#0	18.30	18.09	18.23	13.28	13.07	13.21
		RB1#3	18.14	18.10	18.25	13.12	13.08	13.23
		RB1#5	18.08	18.13	18.43	13.06	13.11	13.41
		RB3#0	18.60	18.20	18.35	13.58	13.18	13.33
		RB3#3	18.48	18.18	18.44	13.46	13.16	13.42
		RB6#0	16.02	15.85	16.04	11.00	10.83	11.02
3.0	QPSK	RB1#0	19.26	18.79	18.88	14.24	13.77	13.86
		RB1#8	18.83	18.86	19.23	13.81	13.84	14.21
		RB1#14	18.60	18.92	19.50	13.58	13.90	14.48
		RB6#0	18.38	18.13	18.24	13.36	13.11	13.22
		RB6#9	16.43	18.18	18.62	11.41	13.16	13.60
		RB15#0	18.35	18.33	18.48	13.33	13.31	13.46
	16QAM	RB1#0	18.78	18.07	17.95	13.76	13.05	12.93
		RB1#8	18.34	18.13	18.18	13.32	13.11	13.16
		RB1#14	16.64	18.17	18.46	11.62	13.15	13.44
		RB6#0	16.06	15.77	15.78	11.04	10.75	10.76
		RB6#9	15.67	15.86	16.05	10.65	10.84	11.03
		RB15#0	15.94	15.86	16.14	10.92	10.84	11.12
5.0	QPSK	RB1#0	19.30	18.80	18.90	14.28	13.78	13.88
		RB1#13	18.76	19.07	19.10	13.74	14.05	14.08
		RB1#24	18.76	18.99	19.48	13.74	13.97	14.46
		RB15#0	18.35	18.42	18.41	13.33	13.40	13.39

		RB15#10	16.53	18.48	18.55	11.51	13.46	13.53
		RB25#0	18.24	18.36	18.38	13.22	13.34	13.36
	16QAM	RB1#0	18.60	18.00	17.91	13.58	12.98	12.89
		RB1#13	16.75	18.23	18.05	11.73	13.21	13.03
		RB1#24	16.73	18.16	18.35	11.71	13.14	13.33
		RB15#0	15.89	16.00	16.04	10.87	10.98	11.02
		RB15#10	15.75	16.05	16.11	10.73	11.03	11.09
		RB25#0	15.93	16.00	16.08	10.91	10.98	11.06
10.0	QPSK	RB1#0	19.35	18.76	18.97	14.33	13.74	13.95
		RB1#25	18.77	18.97	18.99	13.75	13.95	13.97
		RB1#49	19.13	19.05	19.52	14.11	14.03	14.50
		RB25#0	18.21	18.30	18.40	13.19	13.28	13.38
		RB25#25	18.31	18.38	18.39	13.29	13.36	13.37
		RB50#0	18.34	18.39	18.39	13.32	13.37	13.37
	16QAM	RB1#0	18.38	16.97	18.19	13.36	11.95	13.17
		RB1#25	16.54	18.61	18.18	11.52	13.59	13.16
		RB1#49	18.22	18.53	18.59	13.20	13.51	13.57
		RB25#0	15.91	15.92	16.07	10.89	10.90	11.05
		RB25#25	16.03	16.07	15.98	11.01	11.05	10.96
		RB50#0	15.92	15.97	16.03	10.90	10.95	11.01
<p>Note: ERP(dBm) = Conducted Power(dBm) + Antenna Gain(dBd) - Cable Loss(dB) For Band12: Antenna Gain = -2.37dBi = -4.52dBd (0dBd=2.15dBi) <1GHz: Cable Loss=0.5dB* (provided by the applicant) Limit: ERP≤34.77dBm</p>								

LTE Band 41:

Bandwidth h (MHz)	Modulation	RB size/ RB Offset	Conducted Average Output Power (dBm)			EIRP(dBm)		
			Low	Mid	High	Low	Mid	High
5.0	QPSK	RB1#0	19.08	18.95	18.25	20.09	19.96	19.26
		RB1#13	19.09	18.91	18.22	20.10	19.92	19.23
		RB1#24	19.07	18.84	18.15	20.08	19.85	19.16
		RB15#0	16.85	16.66	16.01	17.86	17.67	17.02
		RB15#10	16.83	16.61	15.96	17.84	17.62	16.97
		RB25#0	16.83	16.59	15.99	17.84	17.60	17.00
	16QAM	RB1#0	16.96	16.50	15.94	17.97	17.51	16.95
		RB1#13	16.99	16.54	15.93	18.00	17.55	16.94
		RB1#24	16.95	16.47	15.86	17.96	17.48	16.87
		RB15#0	16.13	15.81	15.27	17.14	16.82	16.28
		RB15#10	16.10	15.74	15.22	17.11	16.75	16.23
		RB25#0	16.05	15.88	15.30	17.06	16.89	16.31
10.0	QPSK	RB1#0	19.20	19.01	18.41	20.21	20.02	19.42
		RB1#25	19.15	18.82	18.31	20.16	19.83	19.32
		RB1#49	19.17	18.92	18.27	20.18	19.93	19.28
		RB25#0	16.84	16.69	16.11	17.85	17.70	17.12
		RB25#25	16.82	16.62	15.99	17.83	17.63	17.00
		RB50#0	16.90	16.69	16.10	17.91	17.70	17.11
	16QAM	RB1#0	16.89	16.76	15.94	17.90	17.77	16.95
		RB1#25	16.91	16.69	15.89	17.92	17.70	16.90
		RB1#49	16.89	16.72	15.82	17.90	17.73	16.83
		RB25#0	16.17	15.89	15.40	17.18	16.90	16.41
		RB25#25	16.14	15.84	15.29	17.15	16.85	16.30
		RB50#0	16.17	15.90	15.38	17.18	16.91	16.39
15.0	QPSK	RB1#0	19.26	19.11	18.48	20.27	20.12	19.49
		RB1#38	19.12	18.91	18.24	20.13	19.92	19.25
		RB1#74	19.26	18.92	18.28	20.27	19.93	19.29
		RB36#0	16.85	16.73	16.07	17.86	17.74	17.08
		RB36#39	16.82	16.62	15.94	17.83	17.63	16.95
		RB75#0	16.87	16.69	16.02	17.88	17.70	17.03
	16QAM	RB1#0	16.99	16.77	16.04	18.00	17.78	17.05
		RB1#38	16.99	16.73	15.92	18.00	17.74	16.93
		RB1#74	16.98	16.68	15.82	17.99	17.69	16.83
		RB36#0	16.13	15.89	15.28	17.14	16.90	16.29

		RB36#39	16.10	15.79	15.14	17.11	16.80	16.15
		RB75#0	16.02	15.83	15.22	17.03	16.84	16.23
20.0	QPSK	RB1#0	19.19	19.10	18.45	20.20	20.11	19.46
		RB1#50	19.13	18.97	18.22	20.14	19.98	19.23
		RB1#99	19.19	18.87	18.19	20.20	19.88	19.20
		RB50#0	16.86	16.73	16.22	17.87	17.74	17.23
		RB50#50	16.83	16.57	16.04	17.84	17.58	17.05
		RB100#0	16.88	16.64	16.14	17.89	17.65	17.15
		RB1#0	17.05	16.60	16.10	18.06	17.61	17.11
	16QAM	RB1#50	17.07	16.60	15.98	18.08	17.61	16.99
		RB1#99	17.03	16.47	15.87	18.04	17.48	16.88
		RB50#0	16.13	15.95	15.58	17.14	16.96	16.59
		RB50#50	16.11	15.80	15.34	17.12	16.81	16.35
		RB100#0	16.09	15.84	15.41	17.10	16.85	16.42
	<p>Note: ERP(dBm) = Conducted Power(dBm) + Antenna Gain(dBd) - Cable Loss(dB) For Band 41: Antenna Gain = 1.81dBi = -0.34dBd (0dBd=2.15dBi) <1GHz: Cable Loss=0.8dB* (provided by the applicant) Limit: ERP≤33dBm</p>							

3.3.2 Peak-to-average ratio (PAR)

Cellular Band

Mode	Channel	PAR (dB)	Limit (dB)
GSM	Low	3.02	13
	Middle	2.87	13
	High	2.91	13
EGPRS	Low	3.61	13
	Middle	3.72	13
	High	3.93	13

Mode	Channel	PAR (dB)	Limit (dB)
RMC (BPSK)	Low	2.37	13
	Middle	3.01	13
	High	2.98	13
HSDPA (16QAM)	Low	4.84	13
	Middle	4.65	13
	High	4.94	13
HSUPA (BPSK)	Low	5.38	13
	Middle	5.80	13
	High	5.58	13
HSPA+	Low	3.62	13
	Middle	3.47	13
	High	3.82	13

PCS Band

Mode	Channel	PAR (dB)	Limit (dB)
GSM	Low	3.25	13
	Middle	3.81	13
	High	3.94	13
EGPRS	Low	3.56	13
	Middle	3.72	13
	High	3.61	13

Mode	Channel	PAR (dB)	Limit (dB)
RMC (BPSK)	Low	3.04	13
	Middle	2.88	13
	High	2.92	13
HSDPA (16QAM)	Low	5.38	13
	Middle	4.65	13
	High	6.38	13
HSUPA (BPSK)	Low	5.61	13
	Middle	6.44	13
	High	5.77	13
HSPA+	Low	3.52	13
	Middle	3.43	13
	High	3.54	13

LTE Band 2 20MHz Bandwidth

Modulation	Low channel (dB)	Middle channel (dB)	High channel (dB)	PAR Limit (dB)	Result
QPSK (1RB Size)	4.46	4.96	5.01	13	Pass
QPSK (100RB Size)	5.3	4.49	5.1	13	Pass
16QAM (1RB Size)	6.09	5.42	5.88	13	Pass
16QAM (100RB Size)	6.52	6	6.49	13	Pass

LTE Band 5 10MHz Bandwidth

Modulation	Low channel (dB)	Middle channel (dB)	High channel (dB)	PAR Limit (dB)	Result
QPSK (1RB Size)	4.1	3.37	4.42	13	Pass
QPSK (50RB Size)	5.1	5.22	5.29	13	Pass
16QAM (1RB Size)	4.87	4.23	5.00	13	Pass
16QAM (50RB Size)	6.25	6.41	6.38	13	Pass

LTE Band 7 20MHz Bandwidth

Modulation	Low channel (dB)	Middle channel (dB)	High channel (dB)	PAR Limit (dB)	Result
QPSK (1RB Size)	4.14	2.72	2.72	13	Pass
QPSK (100RB Size)	4.58	4.93	4.75	13	Pass
16QAM (1RB Size)	4.99	4.78	4.87	13	Pass
16QAM (100RB Size)	5.45	5.8	5.68	13	Pass

LTE Band 12 10MHz Bandwidth

Modulation	Low channel (dB)	Middle channel (dB)	High channel (dB)	PAR Limit (dB)	Result
QPSK (1RB Size)	2.69	3.37	3.21	13	Pass
QPSK (50RB Size)	4.94	4.94	5.00	13	Pass
16QAM (1RB Size)	3.56	5.19	4.13	13	Pass
16QAM (50RB Size)	6.15	6.19	6.19	13	Pass

LTE Band 41 20MHz Bandwidth

Modulation	Low channel (dB)	Middle channel (dB)	High channel (dB)	PAR Limit (dB)	Result
QPSK (1RB Size)	6.7	6.72	7.65	13	Pass
QPSK (100RB Size)	8.55	8.55	9.04	13	Pass
16QAM (1RB Size)	8.81	8.64	9.39	13	Pass
16QAM (100RB Size)	9.39	9.42	9.86	13	Pass

3.3.3 26dB and 99% Bandwidth

Cellular Band

Mode	Frequency (MHz)	99% Occupied Bandwidth (kHz)	26 dB Emission Bandwidth (kHz)
GSM(GMSK)	824.2	0.244	0.31
	836.6	0.246	0.312
	848.8	0.245	0.312

Mode	Frequency (MHz)	99% Occupied Bandwidth (kHz)	26 dB Emission Bandwidth (kHz)
RMC	826.4	4.17	4.74
	836.6	4.16	4.72
	846.6	4.17	4.72
HSDPA	826.4	4.16	4.67
	836.6	4.17	4.69
	846.6	4.17	4.71
HSUPA	826.4	4.18	4.71
	836.6	4.18	4.71
	846.6	4.17	4.68

PCS Band

Mode	Frequency (MHz)	99% Occupied Bandwidth (kHz)	26 dB Emission Bandwidth (kHz)
GSM(GMSK)	1850.2	0.245	0.312
	1880.0	0.246	0.313
	1909.8	0.244	0.304

Mode	Frequency (MHz)	99% Occupied Bandwidth (kHz)	26 dB Emission Bandwidth (kHz)
RMC	1852.4	4.16	4.71
	1880.0	4.17	4.71
	1907.6	4.18	4.72
HSDPA	1852.4	4.18	4.70
	1880.0	4.19	4.71
	1907.6	4.19	4.70
HSUPA	1852.4	4.20	4.69
	1880.0	4.19	4.68
	1907.6	4.18	4.72

LTE Band 2:

Bandwidth	Modulation	Low channel		Middle channel		High channel	
		OBW (MHz)	26dB EBW (MHz)	OBW (MHz)	26dB EBW (MHz)	OBW (MHz)	26dB EBW (MHz)
1.4 MHz	QPSK	1.104	1.104	1.104	1.284	1.296	1.302
	16QAM	1.098	1.11	1.104	1.290	1.30	1.278
3 MHz	QPSK	2.687	2.687	2.687	2.928	2.904	2.928
	16QAM	2.676	2.687	2.687	2.928	2.940	2.952
5 MHz	QPSK	4.5	4.52	4.52	4.9	4.94	4.92
	16QAM	4.5	4.52	4.52	4.9	4.96	4.92
10 MHz	QPSK	8.96	8.96	8.96	9.60	9.68	9.52
	16QAM	8.96	8.96	8.96	9.60	9.56	9.60
15 MHz	QPSK	13.5	13.560	13.5	14.8	14.760	14.8
	16QAM	13.5	13.5	13.5	14.8	14.7	14.8
20 MHz	QPSK	18	17.92	17.92	19	19.28	19.44
	16QAM	17.84	18	18	19.28	19	19

LTE Band 5:

Bandwidth	Modulation	Low channel		Middle channel		High channel	
		OBW (MHz)	26dB EBW (MHz)	OBW (MHz)	26dB EBW (MHz)	OBW (MHz)	26dB EBW (MHz)
1.4 MHz	QPSK	1.104	1.104	1.104	1.302	1.284	1.296
	16QAM	1.098	1.098	1.11	1.284	1.284	1.30
3 MHz	QPSK	2.7	2.7	2.687	2.9	2.9	2.952
	16QAM	2.676	2.687	2.687	2.952	2.940	2.940
5 MHz	QPSK	4.5	4.54	4.52	4.9	4.92	4.96
	16QAM	4.52	4.52	4.52	4.96	4.92	4.92
10 MHz	QPSK	8.96	8.96	8.96	9.68	9.56	9.60
	16QAM	8.96	8.96	8.92	9.56	9.52	9.56

LTE Band 7:

Bandwidth	Modulation	Low channel		Middle channel		High channel	
		OBW (MHz)	26dB EBW (MHz)	OBW (MHz)	26dB EBW (MHz)	OBW (MHz)	26dB EBW (MHz)
1.4 MHz	QPSK	4.52	4.5	4.54	4.94	4.9	4.94
	16QAM	4.52	4.52	4.52	4.92	4.94	4.94
3 MHz	QPSK	9	8.96	8.96	10	9.52	9.60
	16QAM	9	8.96	8.96	10	9.60	9.56
5 MHz	QPSK	13.560	13.5	13.560	14.880	14.8	14.760
	16QAM	13.560	13.560	13.560	14.760	14.760	14.760
10 MHz	QPSK	18	17.92	17.92	19	19.44	19.36
	16QAM	18.08	17.92	18	19.36	19.36	19

LTE Band 12:

Bandwidth	Modulation	Low channel		Middle channel		High channel	
		OBW (MHz)	26dB EBW (MHz)	OBW (MHz)	26dB EBW (MHz)	OBW (MHz)	26dB EBW (MHz)
1.4 MHz	QPSK	1.104	1.11	1.104	1.314	1.30	1.344
	16QAM	1.098	1.098	1.11	1.278	1.290	1.30
3 MHz	QPSK	2.687	2.676	2.687	2.928	2.952	2.964
	16QAM	2.687	2.687	2.687	2.952	2.952	2.940
5 MHz	QPSK	4.52	4.52	4.52	4.92	4.92	4.96
	16QAM	4.54	4.52	4.52	4.94	4.92	4.92
10 MHz	QPSK	8.96	8.96	8.96	9.60	9.52	9.64
	16QAM	8.96	8.96	8.96	9.56	9.60	9.56

LTE Band 41

Bandwidth	Modulation	Low channel		Middle channel		High channel	
		OBW (MHz)	26dB EBW (MHz)	OBW (MHz)	26dB EBW (MHz)	OBW (MHz)	26dB EBW (MHz)
5 MHz	QPSK	4.5	4.5	4.54	5.1	4.9	5.00
	16QAM	4.5	4.52	4.52	4.9	4.96	5.04
10 MHz	QPSK	8.96	8.96	8.96	9.60	9.52	9.60
	16QAM	8.96	8.96	8.96	9.56	9.92	9.56
15 MHz	QPSK	13.5	13.5	13.5	15.1	15.1	15.1
	16QAM	13.560	13.5	13.560	15.300	14.3	14.880
20 MHz	QPSK	17.92	17.92	18	19.44	19.44	19
	16QAM	18	17.92	17.92	19	19.36	19.36

Note: Test Plots of 26dB and 99% bandwidth please refer Appendix A

3.3.4 Conducted Spurious Emissions

Band	Result	Limit	Verdict
GSM850	Refer test plot	Refer test plot	Pass
PCS1900	Refer test plot	Refer test plot	Pass
WCDMA B2	Refer test plot	Refer test plot	Pass
WCDMA B4	Refer test plot	Refer test plot	Pass
LTE B2	Refer test plot	Refer test plot	Pass
LTE B5	Refer test plot	Refer test plot	Pass
LTE B7	Refer test plot	Refer test plot	Pass
LTE B12	Refer test plot	Refer test plot	Pass
LTE B41	Refer test plot	Refer test plot	Pass

Note: Test Plots of Conducted Spurious Emissions please refer Appendix B

3.3.5 Out of band emission, Band Edge

Band	Result	Limit	Verdict
GSM850	Refer test plot	Refer test plot	Pass
PCS1900	Refer test plot	Refer test plot	Pass
WCDMA B2	Refer test plot	Refer test plot	Pass
WCDMA B4	Refer test plot	Refer test plot	Pass
LTE B2	Refer test plot	Refer test plot	Pass
LTE B5	Refer test plot	Refer test plot	Pass
LTE B7	Refer test plot	Refer test plot	Pass
LTE B12	Refer test plot	Refer test plot	Pass
LTE B41	Refer test plot	Refer test plot	Pass

Note: Test Plots of Band Edge please refer Appendix C

3.3.6 FREQUENCY STABILITY

Cellular Band

GSM Mode

Middle Channel, $f_o = 836.6\text{MHz}$				
Temperature (°C)	Voltage Supplied (V_{DC})	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
-30	3.8	1	0.0012	2.5
-20		4	0.0048	2.5
-10		3	0.0036	2.5
0		2	0.0024	2.5
10		6	0.0072	2.5
20		0	0.0000	2.5
30		3	0.0036	2.5
40		4	0.0048	2.5
50		3	0.0036	2.5
20		3.5	2	0.0024
	4.35	5	0.0060	2.5

WCDMA Mode

Middle Channel, $f_o = 836.6\text{MHz}$				
Temperature (°C)	Voltage Supplied (V_{DC})	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
-30	3.8	1.11	0.0013	2.5
-20		1.25	0.0015	2.5
-10		1.31	0.0016	2.5
0		1.24	0.0015	2.5
10		1.41	0.0017	2.5
20		1.08	0.0013	2.5
30		1.22	0.0015	2.5
40		1.26	0.0015	2.5
50		1.54	0.0018	2.5
20		3.5	1.39	0.0017
	4.35	1.44	0.0017	2.5

**PCS Band
GSM Mode**

Temperature (°C)	Power Supplied (V _{DC})	F _L (MHz)	F _H (MHz)	F _L Limit (MHz)	F _H Limit (MHz)
-30	3.8	1850.032	1909.981	1850	1910
-20		1850.029	1909.972	1850	1910
-10		1850.021	1909.946	1850	1910
0		1850.022	1909.958	1850	1910
10		1850.048	1909.938	1850	1910
20		1850.071	1909.947	1850	1910
30		1850.045	1909.962	1850	1910
40		1850.062	1909.973	1850	1910
50		1850.023	1909.989	1850	1910
20	3.5	1850.074	1909.992	1850	1910
	4.35	1850.081	1909.974	1850	1910

WCDMA Mode

Temperature (°C)	Power Supplied (V _{DC})	F _L (MHz)	F _H (MHz)	F _L Limit (MHz)	F _H Limit (MHz)
-30	3.8	1850.041	1909.975	1850	1910
-20		1850.047	1909.968	1850	1910
-10		1850.062	1909.954	1850	1910
0		1850.043	1909.932	1850	1910
10		1850.021	1909.974	1850	1910
20		1850.028	1909.926	1850	1910
30		1850.041	1909.957	1850	1910
40		1850.036	1909.962	1850	1910
50		1850.033	1909.914	1850	1910
20	3.5	1850.071	1909.908	1850	1910
	4.35	1850.029	1909.939	1850	1910

LTE:

QPSK:

Band 2:

10 MHz Bandwidth					
Temperature (°C)	Power Supplied (V _{DC})	F _L (MHz)	F _H (MHz)	F _L Limit (MHz)	F _H Limit (MHz)
-30	3.8	1850.142	1909.847	1850	1910
-20		1850.138	1909.812	1850	1910
-10		1850.192	1909.826	1850	1910
0		1850.201	1909.843	1850	1910
10		1850.189	1909.856	1850	1910
20		1850.168	1909.871	1850	1910
30		1850.154	1909.842	1850	1910
40		1850.171	1909.836	1850	1910
50		1850.181	1909.857	1850	1910
20		3.5	1850.164	1909.872	1850
	4.35	1850.159	1909.881	1850	1910

Band 5:

10.0 MHz Middle Channel, f ₀ =836.5MHz				
Temperature (°C)	Voltage Supplied (V _{DC})	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
-30	3.8	2.23	0.0027	2.5
-20		-8.52	-0.0102	2.5
-10		8.11	0.0097	2.5
0		-5.76	-0.0069	2.5
10		6.33	0.0076	2.5
20		7.28	0.0087	2.5
30		5.68	0.0068	2.5
40		-4.27	-0.0051	2.5
50		-3.36	-0.0040	2.5
20		3.5	5.85	0.0070
	4.35	-5.11	-0.0076	2.5

Band 7:

10 MHz Bandwidth					
Temperature (°C)	Power Supplied (V _{DC})	F _L (MHz)	F _H (MHz)	F _L Limit (MHz)	F _H Limit (MHz)
-30	3.8	2500.2796	2569.1862	2500	2570
-20		2500.2792	2569.1842	2500	2570
-10		2500.2788	2569.1856	2500	2570
0		2500.2786	2569.1834	2500	2570
10		2500.2787	2569.1858	2500	2570
20		2500.2779	2569.1833	2500	2570
30		2500.2757	2569.1849	2500	2570
40		2500.2756	2569.1838	2500	2570
50		2500.2762	2569.1827	2500	2570
20		3.5	2500.2728	2569.1826	2500
	4.35	2500.2731	2569.1854	2500	2570

Band 12:

10 MHz Bandwidth					
Temperature (°C)	Power Supplied (V _{DC})	F _L (MHz)	F _H (MHz)	F _L Limit (MHz)	F _H Limit (MHz)
-30	3.8	699.2633	715.7772	699	716
-20		699.2641	715.7728	699	716
-10		699.2623	715.7758	699	716
0		699.2627	715.7732	699	716
10		699.2632	715.7717	699	716
20		699.2621	715.7784	699	716
30		699.2689	715.7623	699	716
40		699.2647	715.7614	699	716
50		699.2632	715.7654	699	716
20		3.5	699.2672	715.7672	699
	4.35	699.2674	715.7678	699	716

Band 41:

10 MHz Bandwidth					
Temperature (°C)	Power Supplied (V _{DC})	F _L (MHz)	F _H (MHz)	F _L Limit (MHz)	F _H Limit (MHz)
-30	3.8	2555.189	2654.814	2555	2655
-20		2555.147	2654.842	2555	2655
-10		2555.201	2654.853	2555	2655
0		2555.214	2654.847	2555	2655
10		2555.189	2654.836	2555	2655
20		2555.167	2654.857	2555	2655
30		2555.174	2654.817	2555	2655
40		2555.127	2654.842	2555	2655
50		2555.202	2654.857	2555	2655
20		3.5	2555.187	2654.863	2555
	4.35	2555.149	2654.872	2555	2655

16QAM:

Band 2:

10 MHz Bandwidth					
Temperature (°C)	Power Supplied (V _{DC})	F _L (MHz)	F _H (MHz)	F _L Limit (MHz)	F _H Limit (MHz)
-30	3.8	1850.198	1909.812	1850	1910
-20		1850.143	1909.829	1850	1910
-10		1850.168	1909.831	1850	1910
0		1850.215	1909.857	1850	1910
10		1850.198	1909.859	1850	1910
20		1850.202	1909.861	1850	1910
30		1850.187	1909.846	1850	1910
40		1850.179	1909.831	1850	1910
50		1850.175	1909.851	1850	1910
20		3.5	1850.156	1909.874	1850
	4.35	1850.151	1909.886	1850	1910

Band 5:

10.0 MHz Middle Channel, f _o = 836.5MHz				
Temperature (°C)	Voltage Supplied (V _{DC})	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
-30	3.8	-4.86	-0.0058	2.5
-20		8.31	0.0099	2.5
-10		5.30	0.0063	2.5
0		9.41	0.0112	2.5
10		-7.45	-0.0089	2.5
20		9.54	0.0114	2.5
30		6.52	0.0078	2.5
40		-9.16	-0.0110	2.5
50		-5.19	-0.0062	2.5
20		3.5	-6.04	-0.0072
	4.35	7.84	0.0094	2.5

Band 7:

10 MHz Bandwidth					
Temperature (°C)	Power Supplied (V _{DC})	F _L (MHz)	F _H (MHz)	F _L Limit (MHz)	F _H Limit (MHz)
-30	3.8	2500.2456	2569.8376	2500	2570
-20		2500.2428	2569.8351	2500	2570
-10		2500.2441	2569.8325	2500	2570
0		2500.2455	2569.8337	2500	2570
10		2500.2426	2569.8385	2500	2570
20		2500.2439	2569.8329	2500	2570
30		2500.2451	2569.8336	2500	2570
40		2500.2427	2569.8326	2500	2570
50		2500.2426	2569.8357	2500	2570
20		3.5	2500.2435	2569.8352	2500
	4.35	2500.2444	2569.8338	2500	2570

Band 12:

10 MHz Bandwidth					
Temperature (°C)	Power Supplied (V _{DC})	F _L (MHz)	F _H (MHz)	F _L Limit (MHz)	F _H Limit (MHz)
-30	3.8	699.3125	715.7364	699	716
-20		699.3133	715.7325	699	716
-10		699.3115	715.7354	699	716
0		699.3119	715.7324	699	716
10		699.3124	715.7309	699	716
20		699.3113	715.7376	699	716
30		699.3181	715.7315	699	716
40		699.3139	715.7306	699	716
50		699.3134	715.7346	699	716
20		3.5	699.3164	715.7364	699
	4.35	699.3166	715.7376	699	716

Band 41:

10 MHz Bandwidth					
Temperature (°C)	Power Supplied (V _{DC})	F _L (MHz)	F _H (MHz)	F _L Limit (MHz)	F _H Limit (MHz)
-30	3.8	2555.147	2654.824	2555	2655
-20		2555.120	2654.831	2555	2655
-10		2555.198	2654.846	2555	2655
0		2555.124	2654.851	2555	2655
10		2555.132	2654.861	2555	2655
20		2555.141	2654.872	2555	2655
30		2555.125	2654.847	2555	2655
40		2555.143	2654.853	2555	2655
50		2555.102	2654.848	2555	2655
20		3.5	2555.147	2654.856	2555
	4.35	2555.121	2654.871	2555	2655

3.4 Radiated Spurious emission Test Data

Test Date:	2023-11-25~2023-11-27	Test By:	Luke Li
Environment condition:	Temperature: 22.7-23.3°C; Relative Humidity:50-53%; ATM Pressure: 101-101.2kPa		

Frequency (MHz)	Reading level (dBμV)	Polar (H/V)	Corrected Factor (dB/m)	Corrected Amplitude (dBμV/m)	EIRP CF	Corrected Reading (dBm)	Limit (dBm)	Margin (dB)	Remark
GSM 850									
Low Channel									
1648.4	54.45	Horizontal	-2.55	51.9	-95.2	-43.3	-13	-30.3	Peak
1648.4	55.45	Vertical	-2.55	52.9	-95.2	-42.3	-13	-29.3	Peak
2472.6	72.76	Horizontal	-1.76	71.0	-95.2	-24.2	-13	-11.2	Peak
2472.6	74.56	Vertical	-1.76	72.8	-95.2	-22.4	-13	-9.4	Peak
3296.8	50.45	Horizontal	-1.85	48.6	-95.2	-46.6	-13	-33.6	Peak
3296.8	51.75	Vertical	-1.85	49.9	-95.2	-45.3	-13	-32.3	Peak
Middle Channel									
1673.2	54.26	Horizontal	-2.46	51.8	-95.2	-43.4	-13	-30.4	Peak
1673.2	54.96	Vertical	-2.46	52.5	-95.2	-42.7	-13	-29.7	Peak
2509.8	75.64	Horizontal	-1.74	73.9	-95.2	-21.3	-13	-8.3	Peak
2509.8	77.24	Vertical	-1.74	75.5	-95.2	-19.7	-13	-6.7	Peak
3346.4	52.7	Horizontal	-1.8	50.9	-95.2	-44.3	-13	-31.3	Peak
3346.4	51.9	Vertical	-1.8	50.1	-95.2	-45.1	-13	-32.1	Peak
High Channel									
1697.6	54.97	Horizontal	-2.37	52.6	-95.2	-42.6	-13	-29.6	Peak
1697.6	55.67	Vertical	-2.37	53.3	-95.2	-41.9	-13	-28.9	Peak
2546.4	77.07	Horizontal	-1.77	75.3	-95.2	-19.9	-13	-6.9	Peak
2546.4	75.27	Vertical	-1.77	73.5	-95.2	-21.7	-13	-8.7	Peak
3395.2	52.45	Horizontal	-1.75	50.7	-95.2	-44.5	-13	-31.5	Peak
3395.2	51.45	Vertical	-1.75	49.7	-95.2	-45.5	-13	-32.5	Peak

Frequency (MHz)	Reading level (dB μ V)	Polar (H/V)	Corrected Factor (dB/m)	Corrected Amplitude (dB μ V/m)	EIRP CF	Corrected Reading (dBm)	Limit (dBm)	Margin (dB)	Remark
PCS 1900									
Low Channel									
3700.4	60.98	Horizontal	-1.58	59.4	-95.2	-35.8	-13	-22.8	Peak
3700.4	62.48	Vertical	-1.58	60.9	-95.2	-34.3	-13	-21.3	Peak
5550.6	58.88	Horizontal	1.72	60.6	-95.2	-34.6	-13	-21.6	Peak
5550.6	58.38	Vertical	1.72	60.1	-95.2	-35.1	-13	-22.1	Peak
Middle Channel									
3760	62.45	Horizontal	-1.75	60.7	-95.2	-34.5	-13	-21.5	Peak
3760	64.05	Vertical	-1.75	62.3	-95.2	-32.9	-13	-19.9	Peak
5640	59.59	Horizontal	1.91	61.5	-95.2	-33.7	-13	-20.7	Peak
5640	59.89	Vertical	1.91	61.8	-95.2	-33.4	-13	-20.4	Peak
High Channel									
3819.6	63.29	Horizontal	-1.89	61.4	-95.2	-33.8	-13	-20.8	Peak
3819.6	64.79	Vertical	-1.89	62.9	-95.2	-32.3	-13	-19.3	Peak
5729.4	56.96	Horizontal	2.04	59.0	-95.2	-36.2	-13	-23.2	Peak
5729.4	58.36	Vertical	2.04	60.4	-95.2	-34.8	-13	-21.8	Peak

Frequency (MHz)	Reading level (dBμV)	Polar (H/V)	Corrected Factor (dB/m)	Corrected Amplitude (dBμV/m)	EIRP CF	Corrected Reading (dBm)	Limit (dBm)	Margin (dB)	Remark
WCDMA 1900									
Low Channel									
3704.8	50.29	Horizontal	-1.59	48.7	-95.2	-46.5	-13	-33.5	Peak
3704.8	51.59	Vertical	-1.59	50.0	-95.2	-45.2	-13	-32.2	Peak
5557.2	73.65	Horizontal	1.75	75.4	-95.2	-19.8	-13	-6.8	Peak
5557.2	74.75	Vertical	1.75	76.5	-95.2	-18.7	-13	-5.7	Peak
Middle Channel									
3760	51.05	Horizontal	-1.75	49.3	-95.2	-45.9	-13	-32.9	Peak
3760	52.45	Vertical	-1.75	50.7	-95.2	-44.5	-13	-31.5	Peak
5640	73.69	Horizontal	1.91	75.6	-95.2	-19.6	-13	-6.6	Peak
5640	74.79	Vertical	1.91	76.7	-95.2	-18.5	-13	-5.5	Peak
High Channel									
3815.2	52.79	Horizontal	-1.89	50.9	-95.2	-44.3	-13	-31.3	Peak
3815.2	54.09	Vertical	-1.89	52.2	-95.2	-43	-13	-30.0	Peak
5722.8	75.57	Horizontal	2.03	77.6	-95.2	-17.6	-13	-4.6	Peak
5722.8	76.57	Vertical	2.03	78.6	-95.2	-16.6	-13	-3.6	Peak

Frequency (MHz)	Reading level (dB μ V)	Polar (H/V)	Corrected Factor (dB/m)	Corrected Amplitude (dB μ V/m)	EIRP CF	Corrected Reading (dBm)	Limit (dBm)	Margin (dB)	Remark
WCDMA 850									
Low Channel									
1652.8	48.82	Horizontal	-2.52	46.3	-95.2	-48.9	-13	-35.9	Peak
1652.8	48.62	Vertical	-2.52	46.1	-95.2	-49.1	-13	-36.1	Peak
2479.2	62.35	Horizontal	-1.75	60.6	-95.2	-34.6	-13	-21.6	Peak
2479.2	60.75	Vertical	-1.75	59	-95.2	-36.2	-13	-23.2	Peak
3305.6	48.54	Horizontal	-1.84	46.7	-95.2	-48.5	-13	-35.5	Peak
3815.2	49.59	Vertical	-1.89	47.7	-95.2	-47.5	-13	-34.5	Peak
Middle Channel									
1673.2	48.06	Horizontal	-2.46	45.6	-95.2	-49.6	-13	-36.6	Peak
1673.2	48.96	Vertical	-2.46	46.5	-95.2	-48.7	-13	-35.7	Peak
2509.8	67.05	Horizontal	-1.75	65.3	-95.2	-29.9	-13	-16.9	Peak
2509.8	65.75	Vertical	-1.75	64	-95.2	-31.2	-13	-18.2	Peak
3346.4	48.70	Horizontal	-1.8	46.9	-95.2	-48.3	-13	-35.3	Peak
3346.4	48.60	Vertical	-1.8	46.8	-95.2	-48.4	-13	-35.4	Peak
High Channel									
1693.2	50.39	Horizontal	-2.39	48.0	-95.2	-47.2	-13	-34.2	Peak
1693.2	51.19	Vertical	-2.39	48.8	-95.2	-46.4	-13	-33.4	Peak
2539.8	68.76	Horizontal	-1.76	67.0	-95.2	-28.2	-13	-15.2	Peak
2539.8	70.06	Vertical	-1.76	68.3	-95.2	-26.9	-13	-13.9	Peak
3386.4	48.45	Horizontal	-1.75	46.7	-95.2	-48.5	-13	-35.5	Peak
3386.4	48.05	Vertical	-1.75	46.3	-95.2	-48.9	-13	-35.9	Peak

Frequency (MHz)	Reading level (dB μ V)	Polar (H/V)	Corrected Factor (dB/m)	Corrected Amplitude (dB μ V/m)	EIRP CF	Corrected Reading (dBm)	Limit (dBm)	Margin (dB)	Remark
LTE Band 2									
Low Channel									
3701.4	57.68	Horizontal	-1.58	56.1	-95.2	-39.1	-13	-26.1	Peak
3701.4	58.88	Vertical	-1.58	57.3	-95.2	-37.9	-13	-24.9	Peak
5552.1	71.28	Horizontal	1.72	73.0	-95.2	-22.2	-13	-9.2	Peak
5552.1	73.48	Vertical	1.72	75.2	-95.2	-20.0	-13	-7.0	Peak
Middle Channel									
3760	59.05	Horizontal	-1.75	57.3	-95.2	-37.9	-13	-24.9	Peak
3760	60.35	Vertical	-1.75	58.6	-95.2	-36.6	-13	-23.6	Peak
5640	71.99	Horizontal	1.91	73.9	-95.2	-21.3	-13	-8.3	Peak
5640	73.49	Vertical	1.91	75.4	-95.2	-19.8	-13	-6.8	Peak
High Channel									
3818.6	60.00	Horizontal	-1.9	58.1	-95.2	-37.1	-13	-24.1	Peak
3818.6	61.40	Vertical	-1.9	59.5	-95.2	-35.7	-13	-22.7	Peak
5727.9	73.56	Horizontal	2.04	75.6	-95.2	-19.6	-13	-6.6	Peak
5727.9	75.26	Vertical	2.04	77.3	-95.2	-17.9	-13	-4.9	Peak

Frequency (MHz)	Reading level (dB μ V)	Polar (H/V)	Corrected Factor (dB/m)	Corrected Amplitude (dB μ V/m)	EIRP CF	Corrected Reading (dBm)	Limit (dBm)	Margin (dB)	Remark
LTE B5									
Low Channel									
1652.8	58.72	Horizontal	-2.52	56.2	-95.2	-39.0	-13	-26.0	Peak
1652.8	59.92	Vertical	-2.52	57.4	-95.2	-37.8	-13	-24.8	Peak
2479.2	69.95	Horizontal	-1.75	68.2	-95.2	-27.0	-13	-14.0	Peak
2479.2	72.05	Vertical	-1.75	70.3	-95.2	-24.9	-13	-11.9	Peak
3305.6	49.94	Horizontal	-1.84	48.1	-95.2	-47.1	-13	-34.1	Peak
3305.6	49.04	Vertical	-1.84	47.2	-95.2	-48.0	-13	-35.0	Peak
Middle Channel									
1673.2	59.76	Horizontal	-2.46	57.3	-95.2	-37.9	-13	-24.9	Peak
1673.2	60.76	Vertical	-2.46	58.3	-95.2	-36.9	-13	-23.9	Peak
2509.8	70.95	Horizontal	-1.75	69.2	-95.2	-26.0	-13	-13.0	Peak
2509.8	72.65	Vertical	-1.75	70.9	-95.2	-24.3	-13	-11.3	Peak
3346.4	50.50	Horizontal	-1.8	48.7	-95.2	-46.5	-13	-33.5	Peak
3346.4	50.00	Vertical	-1.8	48.2	-95.2	-47	-13	-34.0	Peak
High Channel									
1693.2	60.89	Horizontal	-2.39	58.5	-95.2	-36.7	-13	-23.7	Peak
1693.2	61.89	Vertical	-2.39	59.5	-95.2	-35.7	-13	-22.7	Peak
2539.8	71.86	Horizontal	-1.76	70.1	-95.2	-25.1	-13	-12.1	Peak
2539.8	73.66	Vertical	-1.76	71.9	-95.2	-23.3	-13	-10.3	Peak
3386.4	51.65	Horizontal	-1.75	49.9	-95.2	-45.3	-13	-32.3	Peak
3386.4	51.15	Vertical	-1.75	49.4	-95.2	-45.8	-13	-32.8	Peak

Frequency (MHz)	Reading level (dB μ V)	Polar (H/V)	Corrected Factor (dB/m)	Corrected Amplitude (dB μ V/m)	EIRP CF	Corrected Reading (dBm)	Limit (dBm)	Margin (dB)	Remark
LTE Band 7									
Low Channel									
5005	49.08	Horizontal	1.22	50.3	-95.2	-44.9	-25	-19.9	Peak
5005	50.58	Vertical	1.22	51.8	-95.2	-43.4	-25	-18.4	Peak
7507.5	58.47	Horizontal	3.23	61.7	-95.2	-33.5	-25	-8.5	Peak
7507.5	58.97	Vertical	3.23	62.2	-95.2	-33	-25	-8.0	Peak
Middle Channel									
5070	49.83	Horizontal	1.37	51.2	-95.2	-44	-25	-19.0	Peak
5070	51.13	Vertical	1.37	52.5	-95.2	-42.7	-25	-17.7	Peak
7605	59.19	Horizontal	3.31	62.5	-95.2	-32.7	-25	-7.7	Peak
7605	59.59	Vertical	3.31	62.9	-95.2	-32.3	-25	-7.3	Peak
High Channel									
5135	50.37	Horizontal	1.53	51.9	-95.2	-43.3	-25	-18.3	Peak
5135	51.57	Vertical	1.53	53.1	-95.2	-42.1	-25	-17.1	Peak
7702.5	59.80	Horizontal	3.8	63.6	-95.2	-31.6	-25	-6.6	Peak
7702.5	60.20	Vertical	3.8	64.0	-95.2	-31.2	-25	-6.2	Peak

Frequency (MHz)	Reading level (dB μ V)	Polar (H/V)	Corrected Factor (dB/m)	Corrected Amplitude (dB μ V/m)	EIRP CF	Corrected Reading (dBm)	Limit (dBm)	Margin (dB)	Remark
LTE B12									
Low Channel									
1399.4	63.75	Horizontal	-3.95	59.8	-95.2	-35.4	-13	-22.4	Peak
1399.4	64.95	Vertical	-3.95	61.0	-95.2	-34.2	-13	-21.2	Peak
2099.1	74.06	Horizontal	-2.76	71.3	-95.2	-23.9	-13	-10.9	Peak
2099.1	74.96	Vertical	-2.76	72.2	-95.2	-23.0	-13	-10.0	Peak
2798.8	58.89	Horizontal	-1.39	57.5	-95.2	-37.7	-13	-24.7	Peak
2798.8	60.89	Vertical	-1.39	59.5	-95.2	-35.7	-13	-22.7	Peak
Middle Channel									
1415	64.76	Horizontal	-3.86	60.9	-95.2	-34.3	-13	-21.3	Peak
1415	65.86	Vertical	-3.86	62.0	-95.2	-33.2	-13	-20.2	Peak
2122.5	74.99	Horizontal	-2.69	72.3	-95.2	-22.9	-13	-9.9	Peak
2122.5	75.99	Vertical	-2.69	73.3	-95.2	-21.9	-13	-8.9	Peak
2830	60.83	Horizontal	-1.43	59.4	-95.2	-35.8	-13	-22.8	Peak
2830	62.73	Vertical	-1.43	61.3	-95.2	-33.9	-13	-20.9	Peak
High Channel									
1430.6	65.88	Horizontal	-3.78	62.1	-95.2	-33.1	-13	-20.1	Peak
1430.6	66.58	Vertical	-3.78	62.8	-95.2	-32.4	-13	-19.4	Peak
2145.9	76.12	Horizontal	-2.62	73.5	-95.2	-21.7	-13	-8.7	Peak
2145.9	77.42	Vertical	-2.62	74.8	-95.2	-20.4	-13	-7.4	Peak
2861.2	62.30	Horizontal	-1.5	60.8	-95.2	-34.4	-13	-21.4	Peak
2861.2	63.90	Vertical	-1.5	62.4	-95.2	-32.8	-13	-19.8	Peak

Frequency (MHz)	Reading level (dBμV)	Polar (H/V)	Corrected Factor (dB/m)	Corrected Amplitude (dBμV/m)	EIRP CF	Corrected Reading (dBm)	Limit (dBm)	Margin (dB)	Remark
LTE Band 41									
Low Channel									
5115	50.72	Horizontal	1.48	52.2	-95.2	-43.0	-25	-18.0	Peak
5115	50.62	Vertical	1.48	52.1	-95.2	-43.1	-25	-18.1	Peak
7672.5	56.22	Horizontal	3.68	59.9	-95.2	-35.3	-25	-10.3	Peak
7672.5	56.52	Vertical	3.68	60.2	-95.2	-35.0	-25	-10.0	Peak
Middle Channel									
5210	50.94	Horizontal	1.66	52.6	-95.2	-42.6	-25	-17.6	Peak
5210	50.74	Vertical	1.66	52.4	-95.2	-42.8	-25	-17.8	Peak
7815	56.69	Horizontal	3.81	60.5	-95.2	-34.7	-25	-9.7	Peak
7815	57.29	Vertical	3.81	61.1	-95.2	-34.1	-25	-9.1	Peak
High Channel									
5305	52.42	Horizontal	1.38	53.8	-95.2	-41.4	-25	-16.4	Peak
5305	52.22	Vertical	1.38	53.6	-95.2	-41.6	-25	-16.6	Peak
7957.5	58.22	Horizontal	3.88	62.1	-95.2	-33.1	-25	-8.1	Peak
7957.5	58.72	Vertical	3.88	62.6	-95.2	-32.6	-25	-7.6	Peak

Remark:

Corrected Amplitude= Reading level + corrected Factor

Corrected Factor = Antenna factor + Cable loss – Amplifier gain

Margin = Corrected Reading – Limit

According to ANSI C63.26-2.15 section 5.2.7:

$EIRP (dBm) = E (dB\mu V/m) + 20\log(D) - 104.8$; where D is the measurement distance (in the far field region) in m.

Test was performed on 3meters distance, so

Corrected Reading = Corrected Amplitude + $20\log(3) - 104.8$

= Corrected Amplitude - 95.2

The emission levels of other frequencies that were lower than the limit 20dB, not show in test report.

4 Test Setup Photo

Please refer to the attachment RWAY202300049E Test Setup photo.

5 E.U.T Photo

Please refer to the attachment RWAY202300049 External photo and RWAY202300049 Internal photo.

---End of Report---