

FCC Test Report

Report No.: RWAZ202300122E

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: Three Anti-Tablet

Product Model: MT15

Multiple Models: N/A

Trade Mark: UMIDIGI

FCC ID: 2ATZ4-ACTIVET1PRO

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

Test Data: 2024/01/18~2024/01/20

Test Result: Complied

Issue Date: 2024/01/29

Reviewed by:

Frank Yin

Approved by:

Jacob Kong

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Revision History

Version No.	Issued Date	Description
00	29,Jan,2024	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 Three Anti-Tablet that contains classic Bluetooth (BDR/EDR), BLE, 2.4G/5G WLAN and GSM/GPRS/EGPRS/WCDMA/LTE radios, this report covers the full testing of the GSM/GPRS/EGPRS/WCDMA/LTE radio.

Sample Serial number	35-2 for RE test, 35-1 for RF test conducted test (assigned by WATC)				
Sample Received Date	2024-01-15				
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	29.80	1.66
Antenna Gain	PCS1900	1850-1910	1930-1990	27.72	1.28
	WCDMA B2	1850-1910	1930-1990	18.32	1.28
	WCDMA B5	824-849	869-894	19.46	1.66
	LTE B2	1850-1910	1930-1990	18.99	1.28
	LTE B5	824-849	869-894	19.63	1.66
	LTE B7	2500-2570	2620-2690	18.57	0.56
	LTE B12	699-716	729-746	19.52	-0.69
	LTE B41	2535-2655	2535-2655	18.59	0.37
Modulation Technology	GSM/GPRS: GMSK,8PSK WCDMA: BPSK,QPSK,16QAM LTE: QPSK,16QAM				
Power Supply	DC 3.87V from Battery or DC 5/9/11/12/15/20V from Adapter				
Operating temperature [#]	-10 deg.C to +45deg.C				
Adapter Information	Model: HJ-PD66W-US Input: AC100-240V, 50/60Hz, 1.5A Output: DC 5.0V, 3.0A, 15.0W or 9.0V, 3.0A, 27.0W or 12.0V, 3.0A, 36.0W or 15.0V, 3.0A, 45.0W or 20.0V, 3.25A, 65W or 11.0V, 6.0A, 66.0W MAX				
Modification	Sample No Modification by the test lab				

1.3 Related Submittal(s)/Grant(s)

FCC Part 15, Subpart C, Equipment Class: DSS, FCC ID: 2ATZ4-ACTIVET1PRO
 FCC Part 15, Subpart C, Equipment Class: DTS, FCC ID: 2ATZ4-ACTIVET1PRO
 FCC Part 15, Subpart E, Equipment Class: NII, FCC ID: 2ATZ4-ACTIVET1PRO

1.4 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.)

1.5 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.

1.6 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 971168 D02 Misc Rev Approv License Devices v02r02

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	2537.5	2595	2652.5
	10	2540	2595	2650
	15	2542.5	2595	2647.5
	20	2545	2595	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.

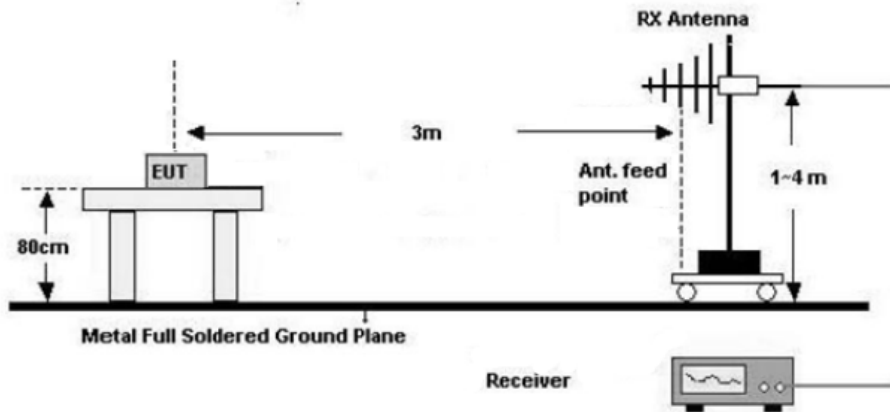
2.3 Test Auxiliary Equipment

Manufacturer	Description	Model	Serial Number
Unknown	Socket	Unknown	Unknown
Unknown	Earphone	Unknown	Unknown

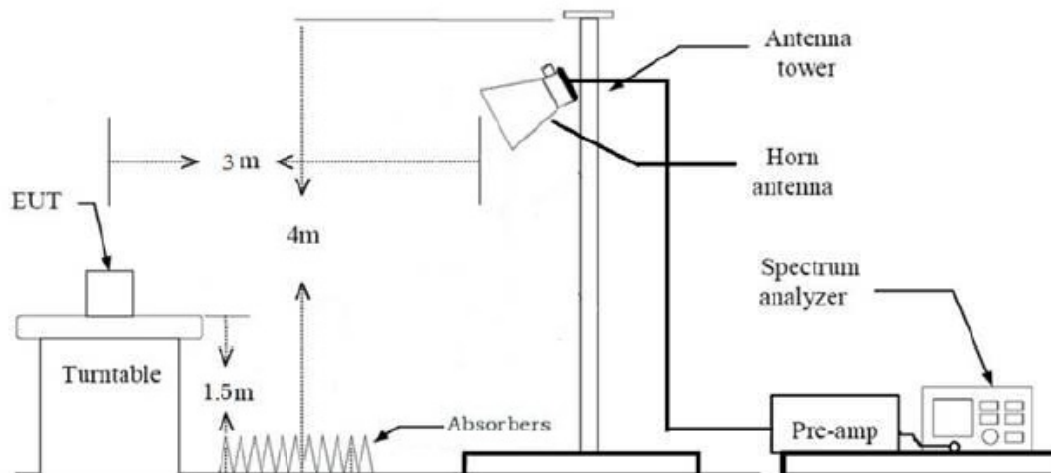
2.4 Test Setup

1) Radiated emission measurement:

30MHz-1GHz (3m SAC)

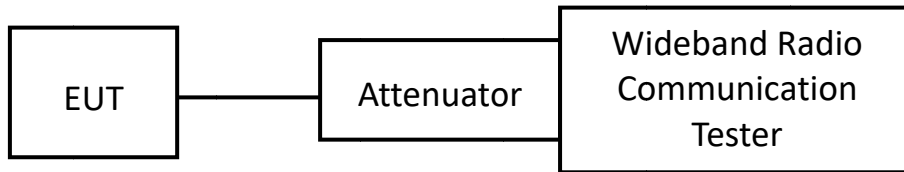


Above 1GHz (3m FAC)

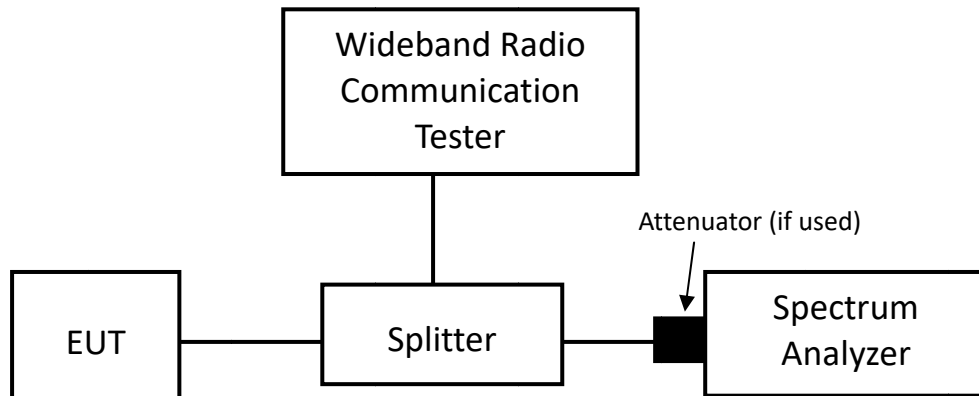


2) RF Conducted Test

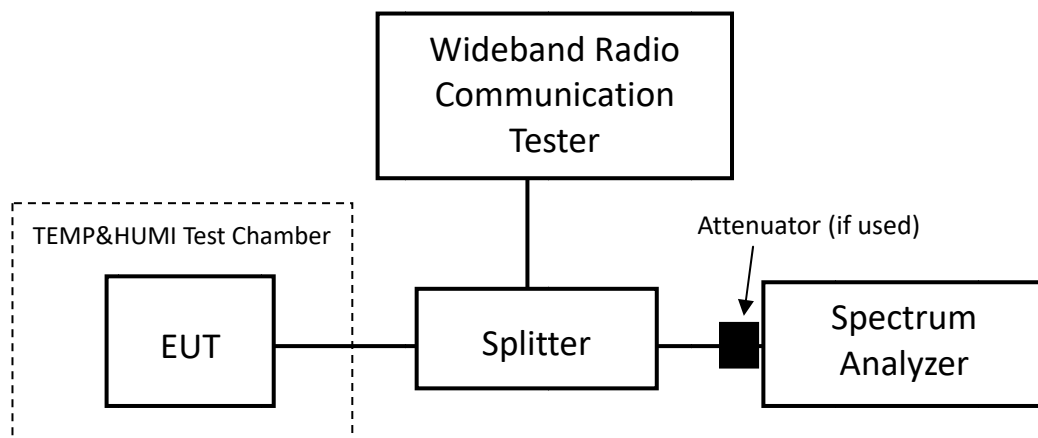
For RF Output Power test



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 Splitter, Attenuator and RF cable.
2. The cable assembly insertion loss of 11dB (including 6.0 dB Splitter, 3.0dB attenuator and 2.0 dB cable) was entered as an offset in the Wideband Radio Communication Tester or Spectrum analyzer. Note: Actual cable loss was unavailable at the time of testing, therefore a loss of 2.0dB 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
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
Oulitong	Band Reject Filter	OBSF-824-849-N	OE02103127	/	/
Oulitong	Band Reject Filter	OBSF-1850-1910-N	OE02103123	/	/
Oulitong	Band Reject Filter	OBSF-2500-2570-5 OS	OE02104363	/	/
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
ROHDE& SCHWARZ	SPECTRUM ANALYZER	FSV40	101419	2023/9/12	2024/9/11
WEINSCHEL	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	FCC §22.913: (a)(5) The ERP of mobile transmitters and auxiliary test transmitters must not exceed 7watts. (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: (1) A Commission-approved average power technique (see FCC Laboratory's Knowledge Database); or (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.																																
Unwanted Emissions (Out of band emission and spurious)	FCC §22.917: (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. (b) Measurement procedure. Compliance with these rules is based on the use of measurement instrumentation employing a reference bandwidth as follows: (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. (2) In the spectrum above 1 GHz, instrumentation should employ a reference bandwidth of 1 MHz																																
Frequency stability	FCC §22.355: 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. <table><caption>Table C-1—Frequency Tolerance for Transmitters in the Public Mobile Services</caption><tr><th>Frequency range (MHz)</th><th>Base, fixed (ppm)</th><th>Mobile >3 watts (ppm)</th><th>Mobile ≤3 watts (ppm)</th></tr><tr><td>25 to 50</td><td>20.0</td><td>20.0</td><td>50.0</td></tr><tr><td>50 to 450</td><td>5.0</td><td>5.0</td><td>50.0</td></tr><tr><td>450 to 512</td><td>2.5</td><td>5.0</td><td>5.0</td></tr><tr><td>821 to 896</td><td>1.5</td><td>2.5</td><td>2.5</td></tr><tr><td>928 to 929</td><td>5.0</td><td>n/a</td><td>n/a</td></tr><tr><td>929 to 960</td><td>1.5</td><td>n/a</td><td>n/a</td></tr><tr><td>2110 to 2220</td><td>10.0</td><td>n/a</td><td>n/a</td></tr></table>	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	FCC §24.232: (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. (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.
Unwanted Emissions (Out of band emission and spurious)	FCC §24.238: The rules in this section govern the spectral characteristics of emissions in the Broadband Personal Communications Service. (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. (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. (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. (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.
Frequency stability	FCC §24.235: The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block.

Test items	Limit
RF Output Power	FCC §27.50: (a)(3) Mobile and portable stations. (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. (ii) Mobile and portable stations are not permitted to transmit in the 2315-2320 MHz and 2345-2350 MHz bands. (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. (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. (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. (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. (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. (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.

Unwanted Emissions (Out of band emission and spurious)	FCC §27.53: (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: (4) For mobile and portable stations operating in the 2305-2315 MHz and 2350-2360 MHz bands: (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; (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; (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. (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: (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; (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; (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; (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; (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; (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.
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	(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. (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. (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. (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.
Frequency stability	FCC §27.54: The frequency stability shall be sufficient to ensure that the fundamental emissions stay within the authorized bands of operation.

Test items	Limit
RF Output Power	FCC §90.635 (b) The maximum output power of the transmitter for mobile stations is 100 watts (20 dBw).
Unwanted Emissions (Out of band emission and spurious)	FCC §90.691 (a) Out-of-band emission requirement shall apply only to the “outer” channels included in an EA license and to spectrum adjacent to interior channels used by incumbent licensees. The emission limits are as follows: (1) For any frequency removed from the EA licensee's frequency block by up to and including 37.5 kHz, the power of any emission shall be attenuated below the transmitter power (P) in watts by at least $116 \log_{10}(f/6.1)$ decibels or $50 + 10 \log_{10}(P)$ decibels or 80 decibels, whichever is the lesser attenuation, where f is the frequency removed from the center of the outer channel in the block in kilohertz and where f is greater than 12.5 kHz. (2) For any frequency removed from the EA licensee's frequency block greater than 37.5 kHz, the power of any emission shall be attenuated below the transmitter power (P) in watts by at least $43 + 10 \log_{10}(P)$ decibels or 80 decibels, whichever is the lesser attenuation, where f is the frequency removed from the center of the outer channel in the block in kilohertz and where f is greater than 37.5 kHz. (b) When an emission outside of the authorized bandwidth causes harmful interference, the Commission may, at its discretion, require greater attenuation than specified in this section.
Frequency stability	FCC §90.213 809-824 MHz band, 2.5ppm for 2W or less output power.

3.3 RF Conducted Test Data

Test Date:	2024-01-18~2024-01-20	Test By:	Baylor Li
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	29.41	/	/	/	28.42	/	/	/
	M	29.72	/	/	/	28.73	/	/	/
	H	29.79	/	/	/	28.80	/	/	/
GPRS	L	29.41	27.45	25.27	24.1	28.42	26.46	24.28	23.11
	M	29.73	27.79	25.59	24.48	28.74	26.80	24.60	23.49
	H	29.80	27.91	25.67	24.6	28.81	26.92	24.68	23.61
EGPRS	L	27.19	25.09	23.07	21.96	26.20	24.10	22.08	20.97
	M	27.09	24.97	22.95	21.86	26.10	23.98	21.96	20.87
	H	26.79	24.66	22.68	21.52	25.80	23.67	21.69	20.53
Note: ERP(dBm) = Conducted Power(dBm) + Antenna Gain(dBd) - Cable loss(dB) For GSM850 / WCDMA Band5: Antenna Gain = 1.66dBi = -0.49dBd (0dBd=2.15dBi) 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		19.46	19.41	19.39	18.47	18.42	18.40
	HSDPA	1	16.89	16.71	16.93	15.90	15.72	15.94
		2	16.77	16.63	16.91	15.78	15.64	15.92
		3	16.65	16.55	16.76	15.66	15.56	15.77
		4	16.44	16.49	16.65	15.45	15.50	15.66
	HSUPA	1	16.89	16.39	16.02	15.90	15.40	15.03
		2	16.84	16.27	15.95	15.85	15.28	14.96
		3	16.72	16.09	15.87	15.73	15.10	14.88
		4	16.59	15.95	15.81	15.60	14.96	14.82
		5	16.41	15.91	15.48	15.42	14.92	14.49
	HSPA+	1	16.22	15.98	15.53	15.23	14.99	14.54
Note: ERP(dBm) = Conducted Power(dBm) + Antenna Gain(dBd) - Cable loss(dB) For GSM850 / WCDMA Band5: Antenna Gain = 1.66dBi = -0.49dBd (0dBd=2.15dBi) Cable Loss=0.5dB* (provided by the applicant) Limit: ERP≤38.45dBm								

PCS Band

Mode	Channel	Average Output Power (dBm)				EIRP(dBm)			
		1 slot	2 slots	3 slots	4 slots	1 slot	2 slots	3 slots	4 slots
GSM	512	26.97	/	/	/	27.45	/	/	/
	661	27.60	/	/	/	28.08	/	/	/
	810	27.72	/	/	/	28.20	/	/	/
GPRS	512	27.49	25.61	23.30	22.68	27.97	26.09	23.78	23.16
	661	27.12	26.28	24.04	23.35	27.60	26.76	24.52	23.83
	810	27.31	26.53	24.36	23.72	27.79	27.01	24.84	24.20
EGPRS	512	25.73	23.71	21.75	20.53	26.21	24.19	22.23	21.01
	661	25.80	23.82	21.88	20.69	26.28	24.30	22.36	21.17
	810	25.56	23.41	21.54	20.69	26.04	23.89	22.02	21.17
Note: EIRP(dBm) = Conducted Power(dBm) + Antenna Gain(dBi) - Cable loss(dB) For PCS1900 / WCDMA Band2: Antenna Gain = 1.28dBi Cable Loss=0.8dB*(provided by the applicant) Limit: EIRP≤33dBm									

Mode	Test Mode	3GPP Sub Test	Average Output Power (dBm)			EIRP(dBm)		
			Low	Mid	High	Low	Mid	High
WCDMA (Band 2)	RMC12.2k		18.05	18.32	18.32	18.53	18.80	18.80
	HSDPA	1	16.94	16.78	16.88	17.42	17.26	17.36
		2	16.75	16.74	16.81	17.23	17.22	17.29
		3	16.49	16.39	16.44	16.97	16.87	16.92
		4	16.33	16.32	16.35	16.81	16.80	16.83
	HSUPA	1	15.94	15.89	16.41	16.42	16.37	16.89
		2	15.91	15.77	16.11	16.39	16.25	16.59
		3	15.85	15.61	15.93	16.33	16.09	16.41
		4	15.74	15.59	15.84	16.22	16.07	16.32
		5	15.65	15.44	15.81	16.13	15.92	16.29
	HSPA+	1	15.77	15.82	15.69	16.25	16.30	16.17
Note: EIRP(dBm) = Conducted Power(dBm) + Antenna Gain(dBi) - Cable loss(dB) For PCS1900 / WCDMA Band2: Antenna Gain = 1.28dBi 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	18.77	18.74	18.79	19.25	19.22	19.27
		RB1#3	18.85	18.82	18.87	19.33	19.30	19.35
		RB1#5	18.78	18.77	18.80	19.26	19.25	19.28
		RB3#0	18.83	18.88	18.87	19.31	19.36	19.35
		RB3#3	18.84	18.87	18.82	19.32	19.35	19.30
		RB6#0	17.92	17.94	17.33	18.40	18.42	17.81
	16QAM	RB1#0	17.71	17.69	17.83	18.19	18.17	18.31
		RB1#3	17.81	17.79	17.96	18.29	18.27	18.44
		RB1#5	17.73	17.74	17.83	18.21	18.22	18.31
		RB3#0	17.85	18.01	17.80	18.33	18.49	18.28
		RB3#3	17.86	18.08	17.81	18.34	18.56	18.29
		RB6#0	16.83	16.97	16.99	17.31	17.45	17.47
3.0	QPSK	RB1#0	18.63	18.62	18.61	19.11	19.10	19.09
		RB1#8	18.76	18.73	18.71	19.24	19.21	19.19
		RB1#14	18.67	18.61	18.64	19.15	19.09	19.12
		RB6#0	17.80	17.77	17.85	18.28	18.25	18.33
		RB6#9	17.83	17.81	17.82	18.31	18.29	18.30
		RB15#0	17.78	17.83	17.82	18.26	18.31	18.30
	16QAM	RB1#0	17.67	17.58	18.16	18.15	18.06	18.64
		RB1#8	17.81	17.75	18.22	18.29	18.23	18.70
		RB1#14	17.76	17.62	18.03	18.24	18.10	18.51
		RB6#0	16.78	16.72	16.89	17.26	17.20	17.37
		RB6#9	16.86	16.74	16.81	17.34	17.22	17.29
		RB15#0	16.71	16.17	16.86	17.19	16.65	17.34
5.0	QPSK	RB1#0	18.81	18.88	18.85	19.29	19.36	19.33
		RB1#13	18.28	18.41	18.54	18.76	18.89	19.02
		RB1#24	18.90	18.84	18.86	19.38	19.32	19.34
		RB15#0	17.87	17.92	17.89	18.35	18.40	18.37
		RB15#10	17.94	17.92	17.95	18.42	18.40	18.43
		RB25#0	17.82	17.87	17.91	18.30	18.35	18.39
	16QAM	RB1#0	17.63	17.91	17.74	18.11	18.39	18.22
		RB1#13	18.22	18.03	17.85	18.70	18.51	18.33
		RB1#24	18.12	17.90	17.71	18.60	18.38	18.19
		RB15#0	16.80	16.97	16.95	17.28	17.45	17.43
		RB15#10	16.89	16.95	16.98	17.37	17.43	17.46
		RB25#0	18.41	18.68	18.57	18.89	19.16	19.05
10.0	QPSK	RB1#0	18.95	18.94	18.37	19.43	19.42	18.85
		RB1#25	18.41	18.47	18.50	18.89	18.95	18.98

		RB1#49	18.86	18.94	18.61	19.34	19.42	19.09
		RB25#0	17.82	17.85	17.93	18.30	18.33	18.41
		RB25#25	17.92	17.95	17.96	18.40	18.43	18.44
		RB50#0	17.90	17.93	17.95	18.38	18.41	18.43
	16QAM	RB1#0	18.36	18.06	17.94	18.84	18.54	18.42
		RB1#25	18.46	18.10	17.96	18.94	18.58	18.44
		RB1#49	18.38	18.09	17.91	18.86	18.57	18.39
		RB25#0	16.88	16.93	17.05	17.36	17.41	17.53
		RB25#25	16.98	16.99	17.07	17.46	17.47	17.55
		RB50#0	16.93	16.92	16.99	17.41	17.40	17.47
15.0	QPSK	RB1#0	18.92	18.89	18.85	19.40	19.37	19.33
		RB1#38	18.44	18.36	18.82	18.92	18.84	19.30
		RB1#74	18.22	18.91	18.95	18.70	19.39	19.43
		RB36#0	17.87	17.96	17.93	18.35	18.44	18.41
		RB36#39	18.06	17.98	18.01	18.54	18.46	18.49
		RB75#0	18.12	18.03	18.05	18.60	18.51	18.53
	16QAM	RB1#0	18.26	17.99	18.31	18.74	18.47	18.79
		RB1#38	18.53	18.12	18.42	19.01	18.60	18.90
		RB1#74	18.63	18.03	18.35	19.11	18.51	18.83
		RB36#0	17.02	16.93	16.87	17.50	17.41	17.35
		RB36#39	17.18	17.00	16.99	17.66	17.48	17.47
		RB75#0	17.19	16.97	16.98	17.67	17.45	17.46
20.0	QPSK	RB1#0	18.99	18.89	18.82	19.47	19.37	19.30
		RB1#50	18.62	18.32	18.31	19.10	18.80	18.79
		RB1#99	18.84	18.91	18.90	19.32	19.39	19.38
		RB50#0	17.69	17.87	17.87	18.17	18.35	18.35
		RB50#50	17.93	18.03	17.87	18.41	18.51	18.35
		RB100#0	17.92	17.97	17.84	18.40	18.45	18.32
	16QAM	RB1#0	17.36	18.04	18.01	17.84	18.52	18.49
		RB1#50	18.44	18.76	18.69	18.92	19.24	19.17
		RB1#99	18.43	18.05	18.11	18.91	18.53	18.59
		RB50#0	16.78	16.92	16.81	17.26	17.40	17.29
		RB50#50	17.01	17.05	16.89	17.49	17.53	17.37
		RB100#0	17.13	16.93	16.86	17.61	17.41	17.34
Note: EIRP(dBm) = Conducted Power(dBm) + Antenna Gain(dBi) - Cable Loss(dB) For Band2: Antenna Gain = 1.28dBi Cable Loss=0.8dB*(provided by the applicant) Limit: EIRP≤33dBm								

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	19.23	19.26	19.28	18.24	18.27	18.29
		RB1#3	19.27	19.30	19.31	18.28	18.31	18.32
		RB1#5	19.27	19.25	19.28	18.28	18.26	18.29
		RB3#0	19.31	19.35	19.28	18.32	18.36	18.29
		RB3#3	19.32	19.33	19.27	18.33	18.34	18.28
		RB6#0	18.41	18.43	18.39	17.42	17.44	17.40
	16QAM	RB1#0	18.20	18.32	18.19	17.21	17.33	17.20
		RB1#3	18.23	18.40	18.13	17.24	17.41	17.14
		RB1#5	18.27	18.33	18.16	17.28	17.34	17.17
		RB3#0	18.46	18.27	18.28	17.47	17.28	17.29
		RB3#3	18.49	18.29	18.24	17.50	17.30	17.25
		RB6#0	17.42	17.46	17.30	16.43	16.47	16.31
3.0	QPSK	RB1#0	19.18	19.15	19.23	18.19	18.16	18.24
		RB1#8	19.26	19.24	19.28	18.27	18.25	18.29
		RB1#14	19.13	19.07	19.22	18.14	18.08	18.23
		RB6#0	18.37	18.27	18.13	17.38	17.28	17.14
		RB6#9	18.35	18.31	18.26	17.36	17.32	17.27
		RB15#0	18.29	18.28	18.34	17.30	17.29	17.35
	16QAM	RB1#0	18.22	18.11	18.17	17.23	17.12	17.18
		RB1#8	18.36	18.25	18.54	17.37	17.26	17.55
		RB1#14	18.25	18.12	18.10	17.26	17.13	17.11
		RB6#0	17.29	17.22	17.33	16.30	16.23	16.34
		RB6#9	17.39	17.22	17.46	16.40	16.23	16.47
		RB15#0	17.22	17.31	17.08	16.23	16.32	16.09
5.0	QPSK	RB1#0	19.35	19.36	19.42	18.36	18.37	18.43
		RB1#13	19.49	19.48	19.53	18.50	18.49	18.54
		RB1#24	19.34	19.33	19.38	18.35	18.34	18.39
		RB15#0	18.36	18.38	18.54	17.37	17.39	17.55
		RB15#10	18.38	18.40	18.26	17.39	17.41	17.27
		RB25#0	18.34	18.36	18.53	17.35	17.37	17.54
	16QAM	RB1#0	18.19	18.61	18.73	17.20	17.62	17.74
		RB1#13	18.33	18.77	18.54	17.34	17.78	17.55
		RB1#24	18.27	18.53	18.64	17.28	17.54	17.65
		RB15#0	17.38	17.35	17.49	16.39	16.36	16.50
		RB15#10	17.39	17.35	17.26	16.40	16.36	16.27
		RB25#0	17.43	17.38	17.31	16.44	16.39	16.32
10.0	QPSK	RB1#0	19.47	19.45	19.58	18.48	18.46	18.59
		RB1#25	19.48	19.49	19.44	18.49	18.50	18.45

		RB1#49	19.42	19.44	19.63	18.43	18.45	18.64
		RB25#0	18.39	18.28	18.34	17.40	17.29	17.35
		RB25#25	18.35	18.34	18.49	17.36	17.35	17.50
		RB50#0	18.38	18.32	18.44	17.39	17.33	17.45
	16QAM	RB1#0	18.57	18.42	18.34	17.58	17.43	17.35
		RB1#25	18.58	18.42	18.54	17.59	17.43	17.55
		RB1#49	18.52	18.37	18.62	17.53	17.38	17.63
		RB25#0	17.42	17.43	17.52	16.43	16.44	16.53
		RB25#25	17.39	17.42	17.28	16.40	16.43	16.29
		RB50#0	17.37	17.30	17.29	16.38	16.31	16.30

Note: ERP(dBm) = Conducted Power(dBm) + Antenna Gain(dBd) - Cable Loss(dB)

For Band5: Antenna Gain =1.66dBi = -0.49dBd (0dBd=2.15dBi)

Cable Loss=0.5dB* (provided by the applicant)

Limit: ERP≤38.45dBm

LTE Band 7

Bandwidth (MHz)	Modulation	RB size/ RB Offset	Conducted Average Output Power (dBm)			EIRP(dBm)		
			Low	Mid	High	Low	Mid	High
5.0	QPSK	RB1#0	18.31	18.30	18.35	18.07	18.06	18.11
		RB1#13	18.44	18.41	18.50	18.20	18.17	18.26
		RB1#24	18.29	18.32	18.36	18.05	18.08	18.12
		RB15#0	17.29	17.37	17.39	17.05	17.13	17.15
		RB15#10	17.32	17.33	17.42	17.08	17.09	17.18
		RB25#0	17.29	17.33	17.39	17.05	17.09	17.15
	16QAM	RB1#0	17.25	17.14	17.33	17.01	16.90	17.09
		RB1#13	17.37	17.24	17.45	17.13	17.00	17.21
		RB1#24	17.25	17.11	17.38	17.01	16.87	17.14
		RB15#0	16.28	16.34	16.40	16.04	16.10	16.16
		RB15#10	16.31	16.27	16.41	16.07	16.03	16.17
		RB25#0	16.27	16.35	16.39	16.03	16.11	16.15
10.0	QPSK	RB1#0	18.40	18.48	18.51	18.16	18.24	18.27
		RB1#25	18.49	18.44	18.49	18.25	18.20	18.25
		RB1#49	18.47	18.48	18.48	18.23	18.24	18.24
		RB25#0	17.24	17.34	17.41	17.00	17.10	17.17
		RB25#25	17.35	17.34	17.42	17.11	17.10	17.18
		RB50#0	17.31	17.36	17.39	17.07	17.12	17.15
	16QAM	RB1#0	17.32	17.88	17.51	17.08	17.64	17.27
		RB1#25	17.37	17.77	17.56	17.13	17.53	17.32
		RB1#49	17.30	17.76	17.54	17.06	17.52	17.30
		RB25#0	16.30	16.37	16.41	16.06	16.13	16.17
		RB25#25	16.42	16.33	16.42	16.18	16.09	16.18
		RB50#0	16.30	16.31	16.39	16.06	16.07	16.15
15.0	QPSK	RB1#0	18.35	18.43	18.51	18.11	18.19	18.27
		RB1#38	18.51	18.49	18.56	18.27	18.25	18.32
		RB1#74	18.43	18.47	18.48	18.19	18.23	18.24
		RB36#0	17.35	17.43	17.54	17.11	17.19	17.30
		RB36#39	17.44	17.51	17.44	17.20	17.27	17.20
		RB75#0	17.42	17.52	17.54	17.18	17.28	17.30
	16QAM	RB1#0	17.76	17.49	17.55	17.52	17.25	17.31
		RB1#38	17.79	17.55	17.73	17.55	17.31	17.49
		RB1#74	17.77	17.41	17.68	17.53	17.17	17.44
		RB36#0	16.30	16.41	16.40	16.06	16.17	16.16
		RB36#39	16.37	16.38	16.40	16.13	16.14	16.16
		RB75#0	16.37	16.43	16.39	16.13	16.19	16.15
20.0	QPSK	RB1#0	18.31	18.35	18.48	18.07	18.11	18.24
		RB1#50	18.47	18.49	18.57	18.23	18.25	18.33

		RB1#99	18.31	18.38	18.37	18.07	18.14	18.13
		RB50#0	17.24	17.33	17.40	17.00	17.09	17.16
		RB50#50	17.33	17.28	17.42	17.09	17.04	17.18
		RB100#0	17.25	17.26	17.38	17.01	17.02	17.14
	16QAM	RB1#0	17.51	17.55	17.36	17.27	17.31	17.12
		RB1#50	17.64	17.66	17.59	17.40	17.42	17.35
		RB1#99	17.50	17.44	17.45	17.26	17.20	17.21
		RB50#0	16.16	16.30	16.31	15.92	16.06	16.07
		RB50#50	16.28	16.22	16.35	16.04	15.98	16.11
		RB100#0	16.21	16.27	16.32	15.97	16.03	16.08

Note: EIRP(dBm) = Conducted Power(dBm) + Antenna Gain(dBi) - Cable Loss(dB)

For Band7: Antenna Gain = 0.56dBi

Cable Loss=0.8dB*(provided by the applicant)

Limit: EIRP≤33dBm

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	19.30	19.27	19.36	15.96	15.93	16.02
		RB1#3	19.40	19.32	19.42	16.06	15.98	16.08
		RB1#5	19.30	19.27	19.31	15.96	15.93	15.97
		RB3#0	19.09	19.16	19.07	15.75	15.82	15.73
		RB3#3	19.11	19.13	19.07	15.77	15.79	15.73
		RB6#0	18.30	18.35	18.40	14.96	15.01	15.06
	16QAM	RB1#0	18.02	18.18	18.05	14.68	14.84	14.71
		RB1#3	18.08	18.22	18.07	14.74	14.88	14.73
		RB1#5	18.01	18.13	18.05	14.67	14.79	14.71
		RB3#0	18.14	18.02	17.99	14.80	14.68	14.65
		RB3#3	18.19	18.00	18.00	14.85	14.66	14.66
		RB6#0	17.18	17.26	17.13	13.84	13.92	13.79
3.0	QPSK	RB1#0	19.12	19.14	19.13	15.78	15.80	15.79
		RB1#8	19.27	19.29	19.3	15.93	15.95	15.96
		RB1#14	19.17	19.20	19.17	15.83	15.86	15.83
		RB6#0	18.23	18.21	18.25	14.89	14.87	14.91
		RB6#9	18.23	18.30	18.31	14.89	14.96	14.97
		RB15#0	18.19	18.13	18.16	14.85	14.79	14.82
	16QAM	RB1#0	18.00	17.89	18.33	14.66	14.55	14.99
		RB1#8	18.14	18.04	18.41	14.80	14.70	15.07
		RB1#14	18.08	17.97	18.21	14.74	14.63	14.87
		RB6#0	17.09	17.05	17.20	13.75	13.71	13.86
		RB6#9	17.17	17.09	17.08	13.83	13.75	13.74
		RB15#0	16.99	17.13	17.03	13.65	13.79	13.69
5.0	QPSK	RB1#0	19.15	19.21	19.18	15.81	15.87	15.84
		RB1#13	19.31	19.38	19.43	15.97	16.04	16.09
		RB1#24	19.30	19.19	19.41	15.96	15.85	16.07
		RB15#0	18.14	18.06	18.27	14.80	14.72	14.93
		RB15#10	18.17	18.18	18.20	14.83	14.84	14.86
		RB25#0	18.06	18.05	18.18	14.72	14.71	14.84
	16QAM	RB1#0	18.07	17.89	18.30	14.73	14.55	14.96
		RB1#13	18.16	18.04	18.43	14.82	14.70	15.09
		RB1#24	18.11	17.93	18.33	14.77	14.59	14.99
		RB15#0	17.10	16.97	17.19	13.76	13.63	13.85
		RB15#10	17.04	17.08	17.08	13.70	13.74	13.74
		RB25#0	17.04	17.07	17.15	13.70	13.73	13.81
10.0	QPSK	RB1#0	19.32	19.40	19.39	15.98	16.06	16.05
		RB1#25	19.50	19.40	19.27	16.16	16.06	15.93

		RB1#49	19.41	19.35	19.52	16.07	16.01	16.18
		RB25#0	18.11	17.97	18.08	14.77	14.63	14.74
		RB25#25	18.23	18.05	18.08	14.89	14.71	14.74
		RB50#0	18.16	18.02	18.09	14.82	14.68	14.75
	16QAM	RB1#0	18.09	18.49	18.24	14.75	15.15	14.90
		RB1#25	18.16	18.56	18.28	14.82	15.22	14.94
		RB1#49	18.15	18.63	18.33	14.81	15.29	14.99
		RB25#0	17.12	16.92	17.05	13.78	13.58	13.71
		RB25#25	17.24	17.05	17.04	13.90	13.71	13.70
		RB50#0	17.12	16.96	17.00	13.78	13.62	13.66

Note: ERP(dBm) = Conducted Power(dBm) + Antenna Gain(dBd) - Cable Loss(dB)

For Band12: Antenna Gain = -0.69dBi = -2.84dBd (0dBd=2.15dBi)

Cable Loss=0.5dB* (provided by the applicant)

Limit: ERP≤34.77dBm

LTE Band 41

Bandwidth (MHz)	Modulation	RB size/ RB Offset	Conducted Average Output Power (dBm)			EIRP(dBm)		
			Low	Mid	High	Low	Mid	High
5.0	QPSK	RB1#0	18.30	18.31	18.46	17.87	17.88	18.03
		RB1#13	18.42	18.44	18.59	17.99	18.01	18.16
		RB1#24	18.30	18.33	18.46	17.87	17.90	18.03
		RB15#0	17.34	17.35	17.42	16.91	16.92	16.99
		RB15#10	17.38	17.32	17.42	16.95	16.89	16.99
		RB25#0	17.28	17.33	17.40	16.85	16.90	16.97
	16QAM	RB1#0	17.25	17.32	17.58	16.82	16.89	17.15
		RB1#13	17.39	17.46	17.67	16.96	17.03	17.24
		RB1#24	17.28	17.35	17.60	16.85	16.92	17.17
		RB15#0	16.21	16.31	16.41	15.78	15.88	15.98
		RB15#10	16.28	16.30	16.41	15.85	15.87	15.98
		RB25#0	16.33	16.35	16.37	15.90	15.92	15.94
10.0	QPSK	RB1#0	18.41	18.43	18.42	17.98	18.00	17.99
		RB1#25	18.43	18.50	18.48	18.00	18.07	18.05
		RB1#49	18.41	18.45	18.48	17.98	18.02	18.05
		RB25#0	17.25	17.35	17.41	16.82	16.92	16.98
		RB25#25	17.37	17.33	17.42	16.94	16.90	16.99
		RB50#0	17.35	17.34	17.46	16.92	16.91	17.03
	16QAM	RB1#0	17.27	17.49	17.55	16.84	17.06	17.12
		RB1#25	17.29	17.53	17.62	16.86	17.10	17.19
		RB1#49	17.27	17.49	17.58	16.84	17.06	17.15
		RB25#0	16.27	16.36	16.39	15.84	15.93	15.96
		RB25#25	16.39	16.35	16.40	15.96	15.92	15.97
		RB50#0	16.31	16.37	16.42	15.88	15.94	15.99
15.0	QPSK	RB1#0	18.39	18.32	18.40	17.96	17.89	17.97
		RB1#38	18.47	18.41	18.53	18.04	17.98	18.10
		RB1#74	18.39	18.35	18.48	17.96	17.92	18.05
		RB36#0	17.31	17.37	17.45	16.88	16.94	17.02
		RB36#39	17.41	17.39	17.49	16.98	16.96	17.06
		RB75#0	17.36	17.41	17.48	16.93	16.98	17.05
	16QAM	RB1#0	17.49	17.45	17.27	17.06	17.02	16.84
		RB1#38	17.61	17.60	17.40	17.18	17.17	16.97
		RB1#74	17.51	17.48	17.31	17.08	17.05	16.88
		RB36#0	16.33	16.31	16.37	15.90	15.88	15.94
		RB36#39	16.41	16.34	16.42	15.98	15.91	15.99
		RB75#0	16.32	16.31	16.43	15.89	15.88	16.00
20.0	QPSK	RB1#0	18.28	18.20	18.27	17.85	17.77	17.84
		RB1#50	18.46	18.42	18.49	18.03	17.99	18.06

		RB1#99	18.29	18.28	18.41	17.86	17.85	17.98
		RB50#0	17.11	17.30	17.37	16.68	16.87	16.94
		RB50#50	17.31	17.29	17.42	16.88	16.86	16.99
		RB100#0	17.23	17.3	17.41	16.80	16.87	16.98
	16QAM	RB1#0	17.41	17.22	17.21	16.98	16.79	16.78
		RB1#50	17.61	17.44	17.44	17.18	17.01	17.01
		RB1#99	17.48	17.33	17.31	17.05	16.90	16.88
		RB50#0	16.12	16.24	16.42	15.69	15.81	15.99
		RB50#50	16.32	16.27	16.46	15.89	15.84	16.03
		RB100#0	16.21	16.28	16.40	15.78	15.85	15.97

Note: EIRP(dBm) = Conducted Power(dBm) + Antenna Gain(dBi) - Cable Loss(dB)

For Band 41: Antenna Gain = 0.37dBi

Cable Loss=0.8dB* (provided by the applicant)

Limit: EIRP≤3dBm

3.3.2 Peak-to-average ratio (PAR)

Cellular Band

Mode	Channel	PAR (dB)	Limit (dB)
GSM	Low	3.54	13
	Middle	3.62	13
	High	3.71	13
EGPRS	Low	3.66	13
	Middle	3.71	13
	High	3.98	13

Mode	Channel	PAR (dB)	Limit (dB)
RMC (BPSK)	Low	3.62	13
	Middle	3.41	13
	High	3.11	13
HSDPA (16QAM)	Low	4.46	13
	Middle	4.62	13
	High	4.52	13
HSUPA (BPSK)	Low	5.64	13
	Middle	5.54	13
	High	5.77	13
HSPA+	Low	3.61	13
	Middle	3.48	13
	High	3.88	13

PCS Band

Mode	Channel	PAR (dB)	Limit (dB)
GSM	Low	3.97	13
	Middle	3.86	13
	High	3.92	13
EGPRS	Low	3.54	13
	Middle	3.78	13
	High	3.66	13

Mode	Channel	PAR (dB)	Limit (dB)
RMC (BPSK)	Low	2.98	13
	Middle	3.17	13
	High	3.08	13
HSDPA (16QAM)	Low	4.65	13
	Middle	4.42	13
	High	4.33	13
HSUPA (BPSK)	Low	5.32	13
	Middle	5.58	13
	High	5.71	13
HSPA+	Low	3.59	13
	Middle	3.47	13
	High	3.51	13

LTE Band 2 20MHz Bandwidth

Modulation	Low channel (dB)	Middle channel (dB)	High channel (dB)	PAR Limit (dB)	Result
QPSK (1RB Size)	4.06	4.38	4.20	13	Pass
QPSK (100RB Size)	4.78	5.07	4.96	13	Pass
16QAM (1RB Size)	4.99	5.39	4.96	13	Pass
16QAM (100RB Size)	5.74	6.00	5.91	13	Pass

LTE Band 5 10MHz Bandwidth

Modulation	Low channel (dB)	Middle channel (dB)	High channel (dB)	PAR Limit (dB)	Result
QPSK (1RB Size)	5.32	4.49	3.97	13	Pass
QPSK (50RB Size)	5.32	5.45	5.26	13	Pass
16QAM (1RB Size)	4.81	5.58	4.84	13	Pass
16QAM (50RB Size)	6.22	6.31	6.22	13	Pass

LTE Band 7 20MHz Bandwidth

Modulation	Low channel (dB)	Middle channel (dB)	High channel (dB)	PAR Limit (dB)	Result
QPSK (1RB Size)	3.80	4.23	2.43	13	Pass
QPSK (100RB Size)	4.58	4.61	4.49	13	Pass
16QAM (1RB Size)	4.78	5.36	3.39	13	Pass
16QAM (100RB Size)	5.54	5.62	5.48	13	Pass

LTE Band 12 10MHz Bandwidth

Modulation	Low channel (dB)	Middle channel (dB)	High channel (dB)	PAR Limit (dB)	Result
QPSK (1RB Size)	2.50	1.83	1.79	13	Pass
QPSK (50RB Size)	4.81	4.94	4.74	13	Pass
16QAM (1RB Size)	3.37	2.85	3.01	13	Pass
16QAM (50RB Size)	5.64	5.83	5.67	13	Pass

LTE Band 41 20MHz Bandwidth

Modulation	Low channel (dB)	Middle channel (dB)	High channel (dB)	PAR Limit (dB)	Result
QPSK (1RB Size)	8.46	8.58	8.38	13	Pass
QPSK (100RB Size)	8.90	8.99	8.75	13	Pass
16QAM (1RB Size)	9.42	9.28	9.22	13	Pass
16QAM (100RB Size)	9.77	9.88	9.68	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)	836.6	0.246	0.315
EGPRS(8PSK)	836.6	0.244	0.298

Mode	Frequency (MHz)	Occupied Bandwidth (kHz)	26 dB Emission Bandwidth (kHz)
RMC	836.6	4.16	4.72
HSDPA	836.6	4.18	4.71
HSUPA	836.6	4.18	4.71

PCS Band

Mode	Frequency (MHz)	99% Occupied Bandwidth (kHz)	26 dB Emission Bandwidth (kHz)
GSM(GMSK)	1880.0	0.246	0.314
EGPRS(8PSK)	1880.0	0.241	0.302

Mode	Frequency (MHz)	Occupied Bandwidth (kHz)	26 dB Emission Bandwidth (kHz)
RMC	1880.0	4.15	4.71
HSDPA	1880.0	4.16	4.70
HSUPA	1880.0	4.17	4.69

LTE Band 2:

Bandwidth	Modulation	Middle channel	
		OBW (MHz)	26dB EBW (MHz)
1.4 MHz	QPSK	1.104	1.302
	16QAM	1.098	1.278
3 MHz	QPSK	2.676	2.940
	16QAM	2.688	2.952
5 MHz	QPSK	4.52	4.94
	16QAM	4.54	4.96
10 MHz	QPSK	8.96	9.60
	16QAM	8.96	9.60
15 MHz	QPSK	13.50	14.76
	16QAM	13.56	14.82
20 MHz	QPSK	18.00	19.20
	16QAM	18.00	19.36

LTE Band 5:

Bandwidth	Modulation	Middle channel	
		OBW (MHz)	26dB EBW (MHz)
1.4 MHz	QPSK	1.110	1.302
	16QAM	1.092	1.278
3 MHz	QPSK	2.688	2.940
	16QAM	2.688	2.940
5 MHz	QPSK	4.52	4.92
	16QAM	4.52	4.94
10 MHz	QPSK	9.00	9.56
	16QAM	9.00	9.56

LTE Band 7:

Bandwidth	Modulation	Middle channel	
		OBW (MHz)	26dB EBW (MHz)
5 MHz	QPSK	4.52	4.96
	16QAM	4.52	4.94
10 MHz	QPSK	9.00	9.68
	16QAM	8.96	9.60
15 MHz	QPSK	13.56	14.82
	16QAM	13.56	14.76
20 MHz	QPSK	18.00	19.28
	16QAM	18.00	19.44

LTE Band 12:

Bandwidth	Modulation	Middle channel	
		OBW (MHz)	26dB EBW (MHz)
1.4 MHz	QPSK	1.11	1.416
	16QAM	1.104	1.302
3 MHz	QPSK	2.688	2.928
	16QAM	2.676	2.964
5 MHz	QPSK	4.54	4.96
	16QAM	4.52	4.94
10 MHz	QPSK	8.96	9.68
	16QAM	8.96	9.60

LTE Band 41

Bandwidth	Modulation	Middle channel	
		OBW (MHz)	26dB EBW (MHz)
5 MHz	QPSK	4.52	5.00
	16QAM	4.50	4.96
10 MHz	QPSK	8.96	9.60
	16QAM	8.96	10.04
15 MHz	QPSK	13.56	14.82
	16QAM	13.56	15.36
20 MHz	QPSK	18.00	19.36
	16QAM	18.00	20.32

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 Band 2	Refer test plot	Refer test plot	Pass
LTE Band 5	Refer test plot	Refer test plot	Pass
LTE Band 7	Refer test plot	Refer test plot	Pass
LTE Band 12	Refer test plot	Refer test plot	Pass
LTE Band 41	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 Band 2	Refer test plot	Refer test plot	Pass
LTE Band 5	Refer test plot	Refer test plot	Pass
LTE Band 7	Refer test plot	Refer test plot	Pass
LTE Band 12	Refer test plot	Refer test plot	Pass
LTE Band 41	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	3.87	15.49	0.019	2.5
-20		8.37	0.010	2.5
-10		11.93	0.014	2.5
0		17.24	0.021	2.5
10		2.77	0.003	2.5
20		9.46	0.011	2.5
30		3.32	0.004	2.5
40		16.29	0.019	2.5
50		0.93	0.001	2.5
20	3.4	-0.46	-0.001	2.5
	4.45	17.76	0.021	2.5

EDGE Mode

Middle Channel, $f_o = 836.6\text{MHz}$				
Temperature (°C)	Voltage Supplied (V _{DC})	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
-30	3.87	20.32	0.024	2.5
-20		24.42	0.029	2.5
-10		15.59	0.019	2.5
0		21.9	0.026	2.5
10		17.31	0.021	2.5
20		16.24	0.019	2.5
30		11.09	0.013	2.5
40		16.63	0.020	2.5
50		15.4	0.018	2.5
20	3.4	21.41	0.026	2.5
	4.45	24.53	0.029	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	3.87	9.54	0.011	2.5
-20		6.87	0.008	2.5
-10		11.22	0.013	2.5
0		12.12	0.014	2.5
10		7.83	0.009	2.5
20		10.08	0.012	2.5
30		10.86	0.013	2.5
40		8.1	0.010	2.5
50		6.63	0.008	2.5
20	3.4	6.99	0.008	2.5
	4.45	9.03	0.011	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	3.87	1850.0578	1909.9827	1850	1910
-20		1850.0687	1909.9875	1850	1910
-10		1850.0591	1909.9843	1850	1910
0		1850.0617	1909.9861	1850	1910
10		1850.0565	1909.9857	1850	1910
20		1850.0498	1909.9798	1850	1910
30		1850.0378	1909.9891	1850	1910
40		1850.0287	1909.9847	1850	1910
50		1850.0478	1909.9832	1850	1910
20	3.4	1850.0612	1909.9897	1850	1910
	4.45	1850.0552	1909.9818	1850	1910

EDGE Mode

Temperature (°C)	Power Supplied (V _{DC})	F _L (MHz)	F _H (MHz)	F _L Limit (MHz)	F _H Limit (MHz)
-30	3.87	1850.0921	1909.9054	1850	1910
-20		1850.0837	1909.9047	1850	1910
-10		1850.0995	1909.9021	1850	1910
0		1850.0817	1909.9037	1850	1910
10		1850.0875	1909.9002	1850	1910
20		1850.0847	1909.9102	1850	1910
30		1850.0672	1909.9114	1850	1910
40		1850.0812	1909.9098	1850	1910
50		1850.0947	1909.9064	1850	1910
20	3.4	1850.0912	1909.9103	1850	1910
	4.45	1850.0879	1909.9051	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	3.87	1850.1654	1909.8174	1850	1910
-20		1850.1475	1909.8102	1850	1910
-10		1850.1345	1909.8137	1850	1910
0		1850.1574	1909.8078	1850	1910
10		1850.1602	1909.8164	1850	1910
20		1850.1574	1909.8123	1850	1910
30		1850.1604	1909.8146	1850	1910
40		1850.1671	1909.8171	1850	1910
50		1850.1589	1909.8098	1850	1910
20	3.4	1850.1432	1909.8032	1850	1910
	4.45	1850.1572	1909.8074	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	3.87	1851.0234	1908.9875	1850	1910
-20		1851.0742	1908.9827	1850	1910
-10		1851.0124	1908.9816	1850	1910
0		1851.0247	1908.9745	1850	1910
10		1850.9875	1908.9762	1850	1910
20		1851.0247	1908.9754	1850	1910
30		1851.0312	1908.9812	1850	1910
40		1851.0415	1908.9789	1850	1910
50		1851.0234	1908.9871	1850	1910
20	3.4	1851.0271	1908.9347	1850	1910
	4.45	1851.0348	1908.9274	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	3.87	1.12	0.0013	2.5
-20		-9.47	-0.0113	2.5
-10		8.02	0.0096	2.5
0		-5.80	-0.0069	2.5
10		7.23	0.0086	2.5
20		9.28	0.0111	2.5
30		8.99	0.0107	2.5
40		-5.37	-0.0064	2.5
50		-5.34	-0.0064	2.5
20	3.4	7.95	0.0095	2.5
	4.45	-5.62	-0.0067	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	3.87	2500.8756	2569.9851	2500	2570
-20		2500.8742	2569.9942	2500	2570
-10		2500.8752	2569.9854	2500	2570
0		2500.8784	2569.9762	2500	2570
10		2500.7937	2569.9825	2500	2570
20		2500.7872	2569.9421	2500	2570
30		2500.7753	2569.9331	2500	2570
40		2500.7654	2569.9922	2500	2570
50		2500.7541	2569.9872	2500	2570
20	3.4	2500.7526	2569.9834	2500	2570
	4.45	2500.7432	2569.9745	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	3.87	699.9636	715.8862	699	716
-20		699.9642	715.7724	699	716
-10		699.4525	715.7454	699	716
0		699.4422	715.7631	699	716
10		699.3233	715.5412	699	716
20		699.4421	715.5241	699	716
30		699.2284	715.6324	699	716
40		699.3343	715.6316	699	716
50		699.4242	715.5455	699	716
20	3.4	699.3376	715.5671	699	716
	4.45	699.3345	715.5547	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	3.87	2535.9753	2654.9873	2535	2655
-20		2535.8672	2654.8853	2535	2655
-10		2535.7567	2654.7761	2535	2655
0		2535.6424	2654.6652	2535	2655
10		2535.5327	2654.5557	2535	2655
20		2535.4222	2654.4433	2535	2655
30		2535.3156	2654.3354	2535	2655
40		2535.2154	2654.2236	2535	2655
50		2535.2931	2654.1065	2535	2655
20	3.4	2535.8621	2654.0037	2535	2655
	4.45	2535.8527	2654.0016	2535	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	3.87	1851.1247	1908.8247	1850	1910
-20		1851.1451	1908.8175	1850	1910
-10		1851.1357	1908.8295	1850	1910
0		1851.1412	1908.8247	1850	1910
10		1851.1324	1908.8174	1850	1910
20		1851.1512	1908.8198	1850	1910
30		1851.1427	1908.8211	1850	1910
40		1851.1288	1908.8203	1850	1910
50		1851.1291	1908.8249	1850	1910
20	3.4	1851.1309	1908.8147	1850	1910
	4.45	1851.1246	1908.8206	1850	1910

Band 5:

10.0 MHz Middle Channel, $f_o = 836.5\text{MHz}$				
Temperature (°C)	Voltage Supplied (V _{DC})	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
-30	3.87	1.60	0.0019	2.5
-20		-8.58	-0.0103	2.5
-10		6.44	0.0077	2.5
0		-9.33	-0.0112	2.5
10		7.00	0.0084	2.5
20		-6.58	-0.0079	2.5
30		5.12	0.0061	2.5
40		-7.14	-0.0085	2.5
50		-8.32	-0.0099	2.5
20	3.4	6.71	0.0080	2.5
	4.45	7.62	0.0091	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	3.87	2500.8459	2569.8373	2500	2570
-20		2500.8421	2569.8555	2500	2570
-10		2500.7642	2569.8421	2500	2570
0		2500.7254	2569.8534	2500	2570
10		2500.6326	2569.8283	2500	2570
20		2500.6231	2569.7824	2500	2570
30		2500.6352	2569.7833	2500	2570
40		2500.6226	2569.8425	2500	2570
50		2500.6224	2569.8456	2500	2570
20	3.4	2500.6235	2569.8352	2500	2570
	4.45	2500.6143	2569.8231	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	3.87	699.3123	715.7364	699	716
-20		699.3133	715.6223	699	716
-10		699.3012	715.5952	699	716
0		699.2911	715.6127	699	716
10		699.1724	715.3903	699	716
20		699.2914	715.3771	699	716
30		699.0785	715.4812	699	716
40		699.1836	715.3914	699	716
50		699.2734	715.3943	699	716
20	3.4	699.1853	715.4161	699	716
	4.45	699.1861	715.4174	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	3.87	2535.9434	2654.9652	2535	2655
-20		2535.8445	2654.8583	2535	2655
-10		2535.7371	2654.7484	2535	2655
0		2535.6262	2654.6373	2535	2655
10		2535.5136	2654.5287	2535	2655
20		2535.4173	2654.4182	2535	2655
30		2535.2981	2654.3583	2535	2655
40		2535.1889	2654.1981	2535	2655
50		2535.1824	2654.1883	2535	2655
20	3.4	2535.1615	2654.0762	2535	2655
	4.45	2535.0574	2654.0341	2535	2655

3.4 Radiated Spurious emission Test Data

Test Date:	2024-01-18~2024-01-19	Test By:	Bard Huang
Environment condition:	Temperature: 23.5~24.1°C; Relative Humidity:57~60%; ATM Pressure: 100.9~101.2kPa		

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
GSM850 (30MHz-10GHz)									
Low Channel									
1648.4	49.46	Horizontal	-2.55	46.91	-95.2	-48.29	-13	-35.29	Peak
1648.4	50.95	Vertical	-2.55	48.4	-95.2	-46.8	-13	-33.8	Peak
2472.6	55.59	Horizontal	-1.76	53.83	-95.2	-41.37	-13	-28.37	Peak
2472.6	48.91	Vertical	-1.76	47.15	-95.2	-48.05	-13	-35.05	Peak
3296.8	49.87	Horizontal	-1.85	48.02	-95.2	-47.18	-13	-34.18	Peak
3296.8	49.05	Vertical	-1.85	47.2	-95.2	-48	-13	-35	Peak
Middle Channel									
1673.2	64.26	Horizontal	-2.46	61.8	-95.2	-33.4	-13	-20.4	Peak
1673.2	63.86	Vertical	-2.46	61.4	-95.2	-33.8	-13	-20.8	Peak
2509.8	62.84	Horizontal	-1.74	61.1	-95.2	-34.1	-13	-21.1	Peak
2509.8	63.34	Vertical	-1.74	61.6	-95.2	-33.6	-13	-20.6	Peak
3346.4	49.2	Horizontal	-1.8	47.4	-95.2	-47.8	-13	-34.8	Peak
3346.4	48.4	Vertical	-1.8	46.6	-95.2	-48.6	-13	-35.6	Peak
High Channel									
1697.6	64.27	Horizontal	-2.37	61.9	-95.2	-33.3	-13	-20.3	Peak
1697.6	63.87	Vertical	-2.37	61.5	-95.2	-33.7	-13	-20.7	Peak
2546.4	63.17	Horizontal	-1.77	61.4	-95.2	-33.8	-13	-20.8	Peak
2546.4	63.37	Vertical	-1.77	61.6	-95.2	-33.6	-13	-20.6	Peak
3395.2	49.55	Horizontal	-1.75	47.8	-95.2	-47.4	-13	-34.4	Peak
3395.2	49.15	Vertical	-1.75	47.4	-95.2	-47.8	-13	-34.8	Peak
PCS1900(30MHz-20GHz)									
Low Channel									
3700.4	57.48	Horizontal	-1.58	55.9	-95.2	-39.3	-13	-26.3	Peak
3700.4	58.88	Vertical	-1.58	57.3	-95.2	-37.9	-13	-24.9	Peak
5550.6	54.58	Horizontal	1.72	56.3	-95.2	-38.9	-13	-25.9	Peak
5550.6	55.28	Vertical	1.72	57	-95.2	-38.2	-13	-25.2	Peak
Middle Channel									
3760	58.45	Horizontal	-1.75	56.7	-95.2	-38.5	-13	-25.5	Peak
3760	59.65	Vertical	-1.75	57.9	-95.2	-37.3	-13	-24.3	Peak
5640	58.09	Horizontal	1.91	60	-95.2	-35.2	-13	-22.2	Peak

5640	58.79	Vertical	1.91	60.7	-95.2	-34.5	-13	-21.5	Peak
High Channel									
3819.6	60.59	Horizontal	-1.89	58.7	-95.2	-36.5	-13	-23.5	Peak
3819.6	60.29	Vertical	-1.89	58.4	-95.2	-36.8	-13	-23.8	Peak
5729.4	57.46	Horizontal	2.04	59.5	-95.2	-35.7	-13	-22.7	Peak
5729.4	58.56	Vertical	2.04	60.6	-95.2	-34.6	-13	-21.6	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 (30MHz-20GHz)									
Low Channel									
3704.8	60.59	Horizontal	-1.59	59	-95.2	-36.2	-13	-23.2	Peak
3704.8	60.09	Vertical	-1.59	58.5	-95.2	-36.7	-13	-23.7	Peak
5557.2	50.95	Horizontal	1.75	52.7	-95.2	-42.5	-13	-29.5	Peak
5557.2	50.05	Vertical	1.75	51.8	-95.2	-43.4	-13	-30.4	Peak
Middle Channel									
3760	62.35	Horizontal	-1.75	60.6	-95.2	-34.6	-13	-21.6	Peak
3760	60.75	Vertical	-1.75	59	-95.2	-36.2	-13	-23.2	Peak
5640	49.79	Horizontal	1.91	51.7	-95.2	-43.5	-13	-30.5	Peak
5640	48.79	Vertical	1.91	50.7	-95.2	-44.5	-13	-31.5	Peak
High Channel									
3815.2	63.39	Horizontal	-1.89	61.5	-95.2	-33.7	-13	-20.7	Peak
3815.2	62.29	Vertical	-1.89	60.4	-95.2	-34.8	-13	-21.8	Peak
5722.8	52.27	Horizontal	2.03	54.3	-95.2	-40.9	-13	-27.9	Peak
5722.8	51.47	Vertical	2.03	53.5	-95.2	-41.7	-13	-28.7	Peak
WCDMA 850 (30MHz-10GHz)									
Low Channel									
1652.8	49.22	Horizontal	-2.52	46.7	-95.2	-48.5	-13	-35.5	Peak
1652.8	49.52	Vertical	-2.52	47	-95.2	-48.2	-13	-35.2	Peak
2479.2	52.95	Horizontal	-1.75	51.2	-95.2	-44	-13	-31	Peak
2479.2	52.45	Vertical	-1.75	50.7	-95.2	-44.5	-13	-31.5	Peak
3305.6	48.64	Horizontal	-1.84	46.8	-95.2	-48.4	-13	-35.4	Peak
3815.2	48.19	Vertical	-1.89	46.3	-95.2	-48.9	-13	-35.9	Peak
Middle Channel									
1673.2	49.96	Horizontal	-2.46	47.5	-95.2	-47.7	-13	-34.7	Peak
1673.2	49.86	Vertical	-2.46	47.4	-95.2	-47.8	-13	-34.8	Peak
2509.8	53.65	Horizontal	-1.75	51.9	-95.2	-43.3	-13	-30.3	Peak
2509.8	52.75	Vertical	-1.75	51	-95.2	-44.2	-13	-31.2	Peak
3346.4	48.9	Horizontal	-1.8	47.1	-95.2	-48.1	-13	-35.1	Peak
3346.4	48.5	Vertical	-1.8	46.7	-95.2	-48.5	-13	-35.5	Peak
High Channel									
1693.2	50.59	Horizontal	-2.39	48.2	-95.2	-47	-13	-34	Peak
1693.2	51.19	Vertical	-2.39	48.8	-95.2	-46.4	-13	-33.4	Peak
2539.8	54.56	Horizontal	-1.76	52.8	-95.2	-42.4	-13	-29.4	Peak
2539.8	53.66	Vertical	-1.76	51.9	-95.2	-43.3	-13	-30.3	Peak

3386.4	48.75	Horizontal	-1.75	47	-95.2	-48.2	-13	-35.2	Peak
3386.4	48.35	Vertical	-1.75	46.6	-95.2	-48.6	-13	-35.6	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 2 (30MHz-20GHz)									
Low Channel									
3701.4	69.18	Horizontal	-1.58	67.6	-95.2	-27.6	-13	-14.6	Peak
3701.4	68.48	Vertical	-1.58	66.9	-95.2	-28.3	-13	-15.3	Peak
5552.1	54.58	Horizontal	1.72	56.3	-95.2	-38.9	-13	-25.9	Peak
5552.1	53.18	Vertical	1.72	54.9	-95.2	-40.3	-13	-27.3	Peak
Middle Channel									
3760	70.45	Horizontal	-1.75	68.7	-95.2	-26.5	-13	-13.5	Peak
3760	69.45	Vertical	-1.75	67.7	-95.2	-27.5	-13	-14.5	Peak
5640	53.59	Horizontal	1.91	55.5	-95.2	-39.7	-13	-26.7	Peak
5640	52.59	Vertical	1.91	54.5	-95.2	-40.7	-13	-27.7	Peak
High Channel									
3818.6	72.1	Horizontal	-1.9	70.2	-95.2	-25	-13	-12	Peak
3818.6	71.1	Vertical	-1.9	69.2	-95.2	-26	-13	-13	Peak
5727.9	54.76	Horizontal	2.04	56.8	-95.2	-38.4	-13	-25.4	Peak
5727.9	53.66	Vertical	2.04	55.7	-95.2	-39.5	-13	-26.5	Peak
LTE B5 (30MHz-10GHz)									
Low Channel									
1649.4	51.22	Horizontal	-2.52	48.7	-95.2	-46.5	-13	-33.5	Peak
1649.4	51.82	Vertical	-2.52	49.3	-95.2	-45.9	-13	-32.9	Peak
2474.1	57.75	Horizontal	-1.75	56	-95.2	-39.2	-13	-26.2	Peak
2474.1	58.65	Vertical	-1.75	56.9	-95.2	-38.3	-13	-25.3	Peak
3298.8	49.84	Horizontal	-1.84	48	-95.2	-47.2	-13	-34.2	Peak
3298.8	49.44	Vertical	-1.84	47.6	-95.2	-47.6	-13	-34.6	Peak
Middle Channel									
1673	51.96	Horizontal	-2.46	49.5	-95.2	-45.7	-13	-32.7	Peak
1673	52.66	Vertical	-2.46	50.2	-95.2	-45	-13	-32	Peak
2509.5	58.15	Horizontal	-1.75	56.4	-95.2	-38.8	-13	-25.8	Peak
2509.5	58.95	Vertical	-1.75	57.2	-95.2	-38	-13	-25	Peak
3346	49.3	Horizontal	-1.8	47.5	-95.2	-47.7	-13	-34.7	Peak
3346	48.7	Vertical	-1.8	46.9	-95.2	-48.3	-13	-35.3	Peak
High Channel									
1696.6	52.79	Horizontal	-2.39	50.4	-95.2	-44.8	-13	-31.8	Peak
1696.6	53.39	Vertical	-2.39	51	-95.2	-44.2	-13	-31.2	Peak
2544.9	58.96	Horizontal	-1.76	57.2	-95.2	-38	-13	-25	Peak
2544.9	59.96	Vertical	-1.76	58.2	-95.2	-37	-13	-24	Peak

3393.2	50.95	Horizontal	-1.75	49.2	-95.2	-46	-13	-33	Peak
3393.2	50.75	Vertical	-1.75	49	-95.2	-46.2	-13	-33.2	Peak
LTE Band 7 (30MHz-26.5GHz)									
Low Channel									
5005	48.58	Horizontal	1.22	49.8	-95.2	-45.4	-25	-20.4	Peak
5005	48.78	Vertical	1.22	50	-95.2	-45.2	-25	-20.2	Peak
7507.5	51.37	Horizontal	3.23	54.6	-95.2	-40.6	-25	-15.6	Peak
7507.5	51.17	Vertical	3.23	54.4	-95.2	-40.8	-25	-15.8	Peak
Middle Channel									
5070	48.13	Horizontal	1.37	49.5	-95.2	-45.7	-25	-20.7	Peak
5070	48.23	Vertical	1.37	49.6	-95.2	-45.6	-25	-20.6	Peak
7605	51.09	Horizontal	3.31	54.4	-95.2	-40.8	-25	-15.8	Peak
7605	51.19	Vertical	3.31	54.5	-95.2	-40.7	-25	-15.7	Peak
High Channel									
5135	48.37	Horizontal	1.53	49.9	-95.2	-45.3	-25	-20.3	Peak
5135	48.27	Vertical	1.53	49.8	-95.2	-45.4	-25	-20.4	Peak
7702.5	51.9	Horizontal	3.8	55.7	-95.2	-39.5	-25	-14.5	Peak
7702.5	52.1	Vertical	3.8	55.9	-95.2	-39.3	-25	-14.3	Peak
LTE B12 (30MHz-10GHz)									
Low Channel									
1399.4	56.95	Horizontal	-3.95	53	-95.2	-42.2	-13	-29.2	Peak
1399.4	55.35	Vertical	-3.95	51.4	-95.2	-43.8	-13	-30.8	Peak
2099.1	58.26	Horizontal	-2.76	55.5	-95.2	-39.7	-13	-26.7	Peak
2099.1	59.16	Vertical	-2.76	56.4	-95.2	-38.8	-13	-25.8	Peak
2798.8	48.99	Horizontal	-1.39	47.6	-95.2	-47.6	-13	-34.6	Peak
2798.8	48.49	Vertical	-1.39	47.1	-95.2	-48.1	-13	-35.1	Peak
Middle Channel									
1415	57.46	Horizontal	-3.86	53.6	-95.2	-41.6	-13	-28.6	Peak
1415	55.96	Vertical	-3.86	52.1	-95.2	-43.1	-13	-30.1	Peak
2122.5	58.49	Horizontal	-2.69	55.8	-95.2	-39.4	-13	-26.4	Peak
2122.5	59.49	Vertical	-2.69	56.8	-95.2	-38.4	-13	-25.4	Peak
2830	50.33	Horizontal	-1.43	48.9	-95.2	-46.3	-13	-33.3	Peak
2830	48.83	Vertical	-1.43	47.4	-95.2	-47.8	-13	-34.8	Peak
High Channel									
1430.6	58.58	Horizontal	-3.78	54.8	-95.2	-40.4	-13	-27.4	Peak
1430.6	56.68	Vertical	-3.78	52.9	-95.2	-42.3	-13	-29.3	Peak
2145.9	59.42	Horizontal	-2.62	56.8	-95.2	-38.4	-13	-25.4	Peak
2145.9	60.32	Vertical	-2.62	57.7	-95.2	-37.5	-13	-24.5	Peak

2861.2	48.1	Horizontal	-1.5	46.6	-95.2	-48.6	-13	-35.6	Peak
2861.2	49.4	Vertical	-1.5	47.9	-95.2	-47.3	-13	-34.3	Peak
LTE Band 41(30MHz-27GHz)									
Low Channel									
5075	49.23	Horizontal	1.37	50.6	-95.2	-44.6	-25	-19.6	Peak
5075	49.03	Vertical	1.37	50.4	-95.2	-44.8	-25	-19.8	Peak
7612.5	51.49	Horizontal	3.31	54.8	-95.2	-40.4	-25	-15.4	Peak
7612.5	51.29	Vertical	3.31	54.6	-95.2	-40.6	-25	-15.6	Peak
Middle Channel									
5190	48.85	Horizontal	1.65	50.5	-95.2	-44.7	-25	-19.7	Peak
5190	48.85	Vertical	1.65	50.5	-95.2	-44.7	-25	-19.7	Peak
7785	51.52	Horizontal	3.78	55.3	-95.2	-39.9	-25	-14.9	Peak
7785	51.72	Vertical	3.78	55.5	-95.2	-39.7	-25	-14.7	Peak
High Channel									
5305	49.21	Horizontal	1.49	50.7	-95.2	-44.5	-25	-19.5	Peak
5305	48.81	Vertical	1.49	50.3	-95.2	-44.9	-25	-19.9	Peak
7957.5	52.11	Horizontal	4.09	56.2	-95.2	-39	-25	-14	Peak
7957.5	52.21	Vertical	4.09	56.3	-95.2	-38.9	-25	-13.9	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 radiated spurious emission data of below 1GHz is 20dB below the limit which was not recorded.

4 Test Setup Photo

Please refer to the attachment RWAZ202300122E Test Setup photo.

5 E.U.T Photo

Please refer to the attachment RWAZ202300122 External photo and RWAZ202300122 Internal photo.

---End of Report---