

FCC TEST REPORT

(PART 27)

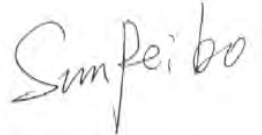
Applicant:	Power Idea Technology (Shenzhen) Co., Ltd.
Address:	4th Floor, A Section, Languang Science&technology Building, No.7 Xinxi RD, Hi-Tech Industrial Park North, Nanshan District, ShenZhen, P.R.C.

Manufacturer or Supplier:	Power Idea Technology (Shenzhen) Co., Ltd.
Address:	4th Floor, A Section, Languang Science&technology Building, No.7 Xinxi RD, Hi-Tech Industrial Park North, Nanshan District, ShenZhen, P.R.C.
Product:	Smart Phone
Brand Name:	RugGear
Model Name:	PSM03G
Marketing name:	RG880
FCC ID	ZLE-RG880
Date of tests	Dec. 20, 2023 ~Mar. 20, 2024

The tests have been carried out according to the requirements of the following standard:

☒ **FCC Part 27** ☒ **ANSI/TIA/EIA-603-D**
☒ **FCC Part 2** ☒ **ANSI/TIA/EIA-603-E** ☒ **ANSI C63.26-2015**

CONCLUSION: The submitted sample was found to COMPLY with the test requirement

Prepared by Hanwen Xu Engineer / Mobile Department	Approved by Peibo Sun Manager / Mobile Department
	
Date: Mar. 20, 2024	Date: Mar. 20, 2024

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TEST RESULT 297

TEST GRAPHS 298

FREQUENCY STABILITY 304

TEST RESULT 304



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RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
PSU-QSU2312200110RF03	Original release	Mar. 20, 2024

1 SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

APPLIED STANDARD: FCC PART 27 & PART 2			
STANDARD SECTION	TEST TYPE AND LIMIT	RESULT	TEST LAB*
§2.1046	Conducted Output Power	Compliance	A
§27.50(c)(10) §27.50(b)(10)	Effective Radiated Power (Band 12) (Band 17) (Band 13)	Compliance	A
§27.50(d)(4) §27.50(h)(2)	Equivalent Isotropically Radiated Power (WCMDA Band 4)(Band 7)	Compliance	A
§2.1055 §27.54	Frequency Stability	Compliance	A
§2.1049	Occupied Bandwidth	Compliance	A
§2.1051 §27.53(c)(2) §27.53(g) §27.53(h) §27.53(m)(4)	Conducted Band Edge Measurements (WCMDA Band 4) (Band 7) (Band 12) (Band 13) (Band 17)	Compliance	A
§2.1051 §27.53(g) §27.53(c)(2) §27.53(f) §27.53(h) §27.53(m)(4)	Conducted Spurious Emissions (WCMDA Band 4)(Band 7) (Band 12) (Band 13) (Band 17)	Compliance	A
§2.1053 §27.53(c)(2) §27.53(f) §27.53(g) §27.53(h) §27.53(m)(4)	Radiated Spurious Emissions (WCMDA Band 4)(Band 7) (Band 12) (Band 13) (Band 17)	Compliance	A
§27.50	Peak to average ratio*	Compliance	A

* Refer to KDB 971168 D01 Power Meas License Digital Systems v03r01.



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***Test Lab Information Reference**

Lab A:

Huarui 7Layers High Technology (Suzhou) Co., Ltd.

Lab Address:

Tower N, Innovation Center, 88 Zhuyi Road, High-tech District, Suzhou City, Anhui Province

Accredited Test Lab Cert 6613.01

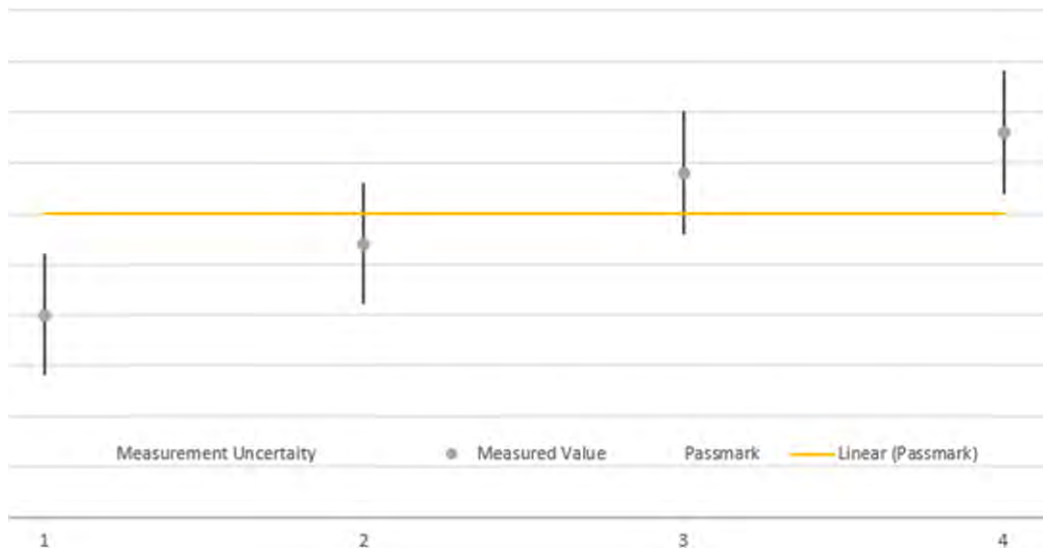
The FCC Site Registration No. is 434559; The Designation No. is CN1325.

1.1 MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2:

MEASUREMENT	UNCERTAINTY
Frequency Stability	$\pm 76.97\text{Hz}$
Radiated emissions (9KHz~30MHz)	$\pm 2.68\text{dB}$
Radiated emissions & Radiated Power (30MHz~1GHz)	$\pm 4.98\text{dB}$
Radiated emissions & Radiated Power (1GHz ~6GHz)	$\pm 4.70\text{dB}$
Radiated emissions (6GHz ~18GHz)	$\pm 4.60\text{dB}$
Radiated emissions (18GHz ~40GHz)	$\pm 4.12\text{dB}$
Conducted emissions	$\pm 4.01\text{dB}$
Occupied Channel Bandwidth	$\pm 43.58\text{KHz}$
Conducted Output power	$\pm 2.06\text{dB}$
Band Edge Measurements	$\pm 4.70\text{dB}$

This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of $k=2$.



The verdicts in this test report are given according the above diagram:

Case	Measured Value	Uncertainty Range	Verdict
1	below pass mark	below pass mark	Passed
2	below pass mark	within pass mark	Passed
3	above pass mark	within pass mark	Failed
4	above pass mark	above pass mark	Failed

That means, the laboratory applies, as decision rule (see ISO/IEC 17025:2017), the so-called shared risk principle.

1.2 TEST SITE AND INSTRUMENTS

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
Pre-Amplifier	R&S	SCU18F1	100815	Aug.30,22	Aug.29,24
Pre-Amplifier	R&S	SCU08F1	101028	Sep.16,22	Sep.15,24
Vector Signal Generator	R&S	SMBV100B	102176	Feb.16,22	Feb.15,24
Vector Signal Generator	R&S	SMBV100B	102176	Feb.15,24	Feb.14,26
Signal Generator	R&S	SMB100A	182185	Feb.16,22	Feb.15,24
Signal Generator	R&S	SMB100A	182185	Feb.15,24	Feb.14,26
3m Fully-anechoic Chamber	TDK	9m*6m*6m	HRSW-SZ-E MC-01Chamber	Nov.25,22	Nov.24,25
3m Semi-anechoic Chamber	TDK	9m*6m*6m	HRSW-SZ-E MC-02Chamber	Nov.25,22	Nov.24,25
EMI TEST Receiver	R&S	ESR26	101734	Feb.25,22	Feb.24,24
EMI TEST Receiver	R&S	ESR26	101734	Feb.24,24	Feb.23,26
EMI TEST Receiver	R&S	ESW44	101973	Feb.25,22	Feb.24,24
EMI TEST Receiver	R&S	ESW44	101973	Feb.24,24	Feb.23,26
Bilog Antenna	SCHWARZBECK	VULB 9163	1264	Feb.28,22	Feb.27,24
Bilog Antenna	SCHWARZBECK	VULB 9163	1264	Feb.27,24	Feb.26,26
Horn Antenna	ETS-LINDGREN	3117	227836	Aug.22,22	Aug.21,24
Horn Antenna (18GHz-40GHz)	Steatite Q-par Antennas	QMS 00880	23486	Feb.23,22	Feb.22,24
Horn Antenna (18GHz-40GHz)	Steatite Q-par Antennas	QMS 00880	23486	Feb.22,24	Feb.21,26
Horn Antenna	Steatite Q-par Antennas	QMS 00208	23485	Aug.22,22	Aug.21,24
Loop Antenna	SCHWARZ	HFH2-Z2/Z2E	100976	Feb.23,22	Feb.22,24
Loop Antenna	SCHWARZ	HFH2-Z2/Z2E	100976	Feb.22,24	Feb.21,26
WIDEBANDRADIO COMMUNICATION TESTER	R&S	CMW500	169399	Jun.27,22	Jun.26,24
Test Software	EMC32	EMC32	N/A	N/A	N/A
Test Software	ELEKTRA	ELEKTRA4.32	N/A	N/A	N/A
Open Switch and Control Unit	R&S	OSP220	101964	Oct.01,22	Sep.30,24
DC Source	HYELEC	HY3010B	551016	Aug.31,22	Aug.30,24
Hygrothermograph	DELI	20210528	SZ014	Sep.06,22	Sep.05,24
PC	LENOVO	E14	HRSW0024	N/A	N/A
TMC-AMI18843A(CABLE)	R&S	HF290-NMNM-7.0 OM	N/A	N/A	N/A
TMC-AMI18843A(CABLE)	R&S	HF290-NMNM-4.0 OM	N/A	N/A	N/A
CABLE	R&S	W13.02	N/A	Apr.28,23	Apr.27,24

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CABLE	R&S	W12.14	N/A	Apr.28,23	Apr.27,24
CABLE	R&S	J12J103539-00-1	SEP-03-20-069	Apr.28,23	Apr.27,24
CABLE	R&S	J12J103539-00-1	SEP-03-20-070	Apr.28,23	Apr.27,24
Temperature Chamber	votsch	VT4002	58566078100050	May.31,22	May.30,24

- NOTE:**
1. The calibration interval of the above test instruments is 12/ 24 / 36 months and the calibrations are traceable to CEPREI/CHINA, GRGT/CHINA and NIM/CHINA.
 2. The test was performed in 3m Semi-anechoic Chamber and RF Oven Room.
 3. The horn antenna is used only for the measurement of emission frequency above 1GHz if tested.
 4. The FCC Site Registration No. is 434559; The Designation No. is CN1325.

2 GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF EUT

PRODUCT*	Smart Phone	
BRAND NAME*	RugGear	
MODEL NAME*	PSM03G	
MARKETING NAME*	RG880	
NOMINAL VOLTAGE*	5.0Vdc/ 9.0Vdc/ 12.0Vdc(Adapter) 3.85Vdc (Battery)	
MODULATION TECHNOLOGY	WCDMA IV	BPSK, QPSK
	LTE	QPSK, 16QAM, 64QAM
FREQUENCY RANGE	WCDMA IV	1712.4MHz ~ 1752.6MHz
	LTE Band 7 Channel Bandwidth: 5MHz	2502.5MHz ~ 2567.5MHz
	LTE Band 7 Channel Bandwidth: 10MHz	2505MHz ~ 2565MHz
	LTE Band 7 Channel Bandwidth: 15MHz	2507.5MHz ~ 2562.5MHz
	LTE Band 7 Channel Bandwidth: 20MHz	2510MHz ~ 2560MHz
	LTE Band 12 Channel Bandwidth: 1.4MHz	699.7MHz ~ 715.3MHz
	LTE Band 12 Channel Bandwidth: 3MHz	700.5MHz ~ 714.5MHz
	LTE Band 12 Channel Bandwidth: 5MHz	701.5MHz ~ 713.5MHz
	LTE Band 12 Channel Bandwidth: 10MHz	704MHz ~ 711MHz
	LTE Band 13 Channel Bandwidth: 5MHz	779.5MHz ~ 784.5MHz
	LTE Band 13 Channel Bandwidth: 10MHz	782MHz
	LTE Band 17 Channel Bandwidth: 5MHz	706.5MHz ~ 713.5MHz
	LTE Band 17 Channel Bandwidth: 10MHz	709MHz ~ 711 MHz

MAX. ERP/EIRP POWER	WCDMA IV	252.93mW
	LTE Band 7 Channel Bandwidth: 5MHz	376.7mW
	LTE Band 7 Channel Bandwidth: 10MHz	374.11mW
	LTE Band 7 Channel Bandwidth: 15MHz	373.25mW
	LTE Band 7 Channel Bandwidth: 20MHz	378.44mW
	LTE Band 12 Channel Bandwidth: 1.4MHz	73.28mW
	LTE Band 12 Channel Bandwidth: 3MHz	75.34mW
	LTE Band 12 Channel Bandwidth: 5MHz	72.78mW
	LTE Band 12 Channel Bandwidth: 10MHz	75.51mW
	LTE Band 13 Channel Bandwidth: 5MHz	89.54mW
	LTE Band 13 Channel Bandwidth: 10MHz	92.9mW
	LTE Band 17 Channel Bandwidth: 5MHz	74.82mW
	LTE Band 17 Channel Bandwidth: 10MHz	77.27mW
EMISSION DESIGNATOR	WCDMA IV	4M22F9W
	LTE Band 7 Channel Bandwidth: 5MHz	QPSK: 4M52G7D
		16QAM: 4M52W7D
		64QAM: 4M52W7D
	LTE Band 7 Channel Bandwidth: 10MHz	QPSK: 8M99G7D
		16QAM: 8M97W7D
		64QAM: 8M98W7D
	LTE Band 7 Channel Bandwidth: 15MHz	QPSK: 13M6G7D
		16QAM: 13M5W7D
		64QAM: 13M5W7D
	LTE Band 7 Channel Bandwidth: 20MHz	QPSK: 18M0G7D
		16QAM: 18M0W7D
		64QAM: 18M0W7D

EMISSION DESIGNATOR	LTE Band 12 Channel Bandwidth: 1.4MHz	QPSK: 1M10G7D
		16QAM: 1M10W7D
		64QAM: 1M10W7D
	LTE Band 12 Channel Bandwidth: 3MHz	QPSK: 2M70G7D
		16QAM: 2M69W7D
		64QAM: 2M71W7D
	LTE Band 12 Channel Bandwidth: 5MHz	QPSK: 4M51G7D
		16QAM: 4M53W7D
		64QAM: 4M50W7D
	LTE Band 12 Channel Bandwidth: 10MHz	QPSK: 9M00G7D
		16QAM: 9M00W7D
		64QAM: 8M97W7D
	LTE Band 13 Channel Bandwidth: 5MHz	QPSK: 4M52G7D
		16QAM: 4M52W7D
		64QAM: 4M52W7D
ANTENNA TYPE*	LTE Band 13 Channel Bandwidth: 10MHz	QPSK: 9M02G7D
		16QAM: 9M01W7D
		64QAM: 9M00W7D
ANTENNA TYPE*	PIFA Antenna with -0.8dBi gain for WCDMA IV PIFA Antenna with 1.6dBi gain for LTE 7 PIFA Antenna with -2.7dBi gain for LTE12/ LTE17 PIFA Antenna with -1.9dBi gain for LTE 13	
HW VERSION*	MP619_MB_V1.02_PCB	
SW VERSION*	RG880_EEA_00.00_1_20240305	
I/O PORTS*	Refer to user's manual	
CABLE SUPPLIED*	USB cable: non-shielded cable, with w/o ferrite core, 1.0 meter	
EXTREME TEMPERATURE*	-10°C-50 °C	
EXTREME VOLTAGE*	3.6V – 4.4V	

NOTE:

- *Since the above data and/or information is provided by the client relevant results or conclusions

of this report are only made for these data and/or information , Test Lab is not responsible for the authenticity, integrity and results of the data and information and/or the validity of the conclusion.

2. For a more detailed features description, please refer to the manufacturer's specifications or the user's manual.
3. The EUT incorporates a SISO function. Physically, the EUT provides one completed transmitter and two receivers.

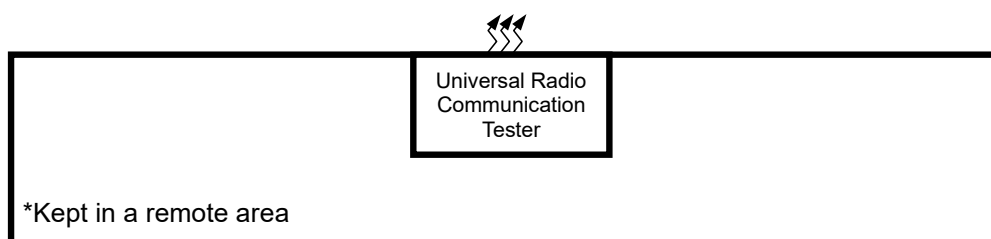
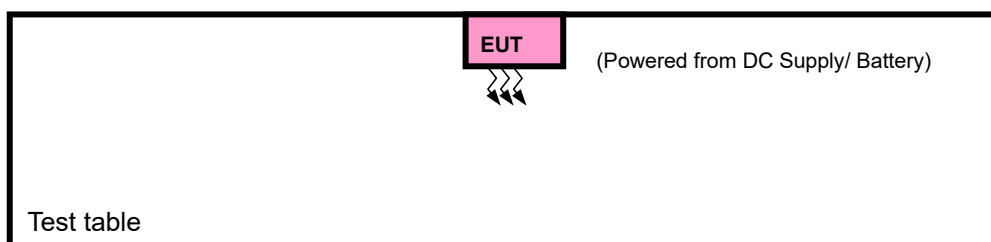
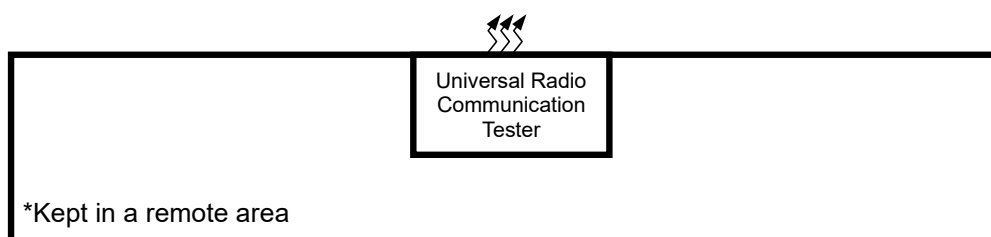
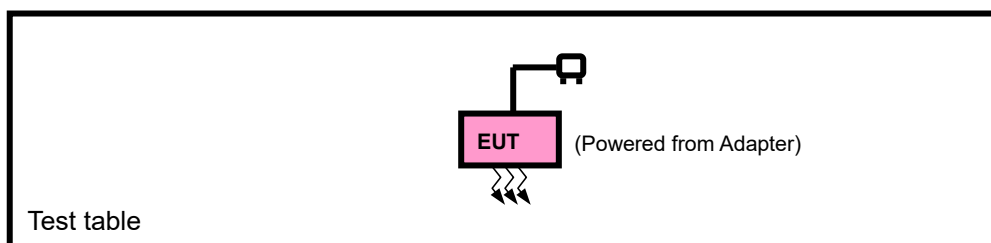
MODULATION MODE	TX FUNCTION
WCDMA	1TX/2RX
LTE	1TX/2RX

4. For the test results, the EUT had been tested with all conditions. But only the worst case was shown in the test report.

5. List of Accessory:

ACCESSORIES	BRAND	MANUFACTURER	MODEL	SPECIFICATION
CPU	QUALCOMM	N/A	SM6225	N/A
eMMC 1 (=ROM 1)	SAMSUNG	N/A	KM2L9001CM-B518	N/A
eMMC 2 (=ROM 2)	Hynix	N/A	H9QT0GECN6X145R	N/A
RAM 1	N/A	N/A	N/A	N/A
RAM 2	N/A	N/A	N/A	N/A
BT/WLAN Module	N/A	N/A	N/A	N/A
NFC chipset	NXP	N/A	N/A	N/A
Battery	N/A	N/A	BL450AGP	Power Rating: 4.4V 4500mAh
Adapter	N/A	SHENZHEN MERRYKING ELECTRONICS CO., LTD	MK-Q181US	I/P: 100-240Vac, 50/60Hz, 0.5A, O/P:5.0V 3.0A or 9.0V 2.0A or 12.0V 1.5A
USB Cable	N/A	Huizhou Huating Technology Co., Ltd	USB1.0	Signal Line,1.0meter

2.2 CONFIGURATION OF SYSTEM UNDER TEST FOR RADIATION EMISSION TEST



2.3 DESCRIPTION OF SUPPORT UNITS

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

NO.	PRODUCT	BRAND	MODEL NO.	SERIAL NO.	FCC ID
1	N/A	N/A	N/A	N/A	N/A

NO.	SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS
1	USB Line: Shielded, Detachable 1.0m;

2.4 TEST ITEM AND TEST CONFIGURATION

Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates, XYZ axis and antenna ports. The worst case was found when positioned on Y-plane for EIRP and X-axis for radiated emission. Following channel(s) was (were) selected for the final test as listed below:

EUT CONFIGURE MODE	DESCRIPTION
A	EUT + Adapter + USB Cable with WCDMA or LTE link
B	EUT + Battery with WCDMA or LTE link

WCDMA MODE

EUT CONFIGURE MODE	TEST ITEM	AVAILABLE CHANNEL	TESTED CHANNEL	MODE
A	EIRP	1312 to 1513	1312, 1413, 1513	WCDMA
B	FREQUENCY STABILITY	1312 to 1513	1312, 1413, 1513	WCDMA
A	OCCUPIED BANDWIDTH	1312 to 1513	1312, 1413, 1513	WCDMA
A	BAND EDGE	1312 to 1513	1312, 1513	WCDMA
A	PEAK TO AVERAGE RATIO	1312 to 1513	1312, 1413, 1513	WCDMA
A	CONDUCTED EMISSION	1312 to 1513	1312, 1413, 1513	WCDMA
A	RADIATED EMISSION	1312 to 1513	1312, 1413, 1513	WCDMA

LTE BAND 7 MODE

EUT CONFIGURE MODE	TEST ITEM	AVAILABLE CHANNEL	TESTED CHANNEL	CHANNEL BANDWIDT H	MODULATION	MODE
A	EIRP	20775 to 21425	20775, 21100, 21425	5MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset
		20800 to 21400	20800, 21100, 21400	10MHz	QPSK, 16QAM, 64QAM	1 RB / 0RB Offset
		20825 to 21375	20825, 21100, 21375	15MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset
		20850 to 21350	20850, 21100, 21350	20MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset
B	FREQUENCY STABILITY	20850 to 21350	20850, 21100, 21350	20MHz	QPSK, 16QAM, 64QAM	100 RB / 0 RB Offset
A	OCCUPIED BANDWIDTH	20775 to 21425	20775, 21100, 21425	5MHz	QPSK, 16QAM, 64QAM	25 RB / 0 RB Offset
		20800 to 21400	20800, 21100, 21400	10MHz	QPSK, 16QAM, 64QAM	50 RB / 0 RB Offset
		20825 to 21375	20825, 21100, 21375	15MHz	QPSK, 16QAM, 64QAM	75 RB / 0 RB Offset
		20850 to 21350	20850, 21100, 21350	20MHz	QPSK, 16QAM, 64QAM	100 RB / 0 RB Offset
A	PEAK TO AVERAGE RATIO	20850 to 21350	20850, 21100, 21350	20MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset 100 RB / 0 RB Offset
A	BAND EDGE	20775 to 21425	20775	5MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset 25 RB / 0 RB Offset
			21425	5MHz	QPSK, 16QAM, 64QAM	1 RB / 24 RB Offset 25 RB / 0 RB Offset
		20800 to 21400	20800	10MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset 50 RB / 0 RB Offset
			21400	10MHz	QPSK, 16QAM, 64QAM	1 RB / 49 RB Offset 50 RB / 0 RB Offset
		20825 to 21375	20825	15MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset 75 RB / 0 RB Offset
			21375	15MHz	QPSK, 16QAM, 64QAM	1 RB / 74 RB Offset 75 RB / 0 RB Offset
		20850 to 21350	20850	20MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset 100 RB / 0 RB Offset
			21350	20MHz	QPSK, 16QAM, 64QAM	1 RB / 99 RB Offset 100 RB / 0 RB Offset
		20775 to 21425	20775, 21100, 21425	5MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset
		20800 to 21400	20800, 21100, 21400	10MHz	QPSK, 16QAM, 64QAM	1 RB / 0RB Offset
		20825 to 21375	20825, 21100, 21375	15MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset
		20850 to 21350	20850, 21100, 21350	20MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset
A	CONDCUDE TED EMISSION	20775 to 21425	20775, 21100, 21425	5MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset
		20800 to 21400	20800, 21100, 21400	10MHz	QPSK, 16QAM, 64QAM	1 RB / 0RB Offset
		20825 to 21375	20825, 21100, 21375	15MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset
		20850 to 21350	20850, 21100, 21350	20MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset
A	RADIATED EMISSION	20775 to 21425	21100	5MHz	QPSK	1 RB / 0 RB Offset
		20800 to 21400	21100	10MHz	QPSK	1 RB / 0 RB Offset
		20825 to 21375	21100	15MHz	QPSK	1 RB / 0 RB Offset
		20850 to 21350	2085,21100, 21350	20MHz	QPSK	1 RB / 0 RB Offset

Note: This device was tested under all bandwidths, RB configurations and modulations. The worst case was found in QPSK modulation.

LTE BAND 12 MODE

EUT CONFIGURE MODE	TEST ITEM	AVAILABLE CHANNEL	TESTED CHANNEL	CHANNEL BANDWIDTH	MODULATION	MODE
A	ERP	23017 to 23173	23017, 23095 , 23173	1.4MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset
		23025 to 23165	23025, 23095 ,23165	3MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset
		23035 to 23155	23035, 23095 ,23155	5MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset
		23060 to 23130	23060, 23095 ,23130	10MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset
B	FREQUENCY STABILITY	23060 to 23130	23060, 23095 ,23130	10MHz	QPSK, 16QAM, 64QAM	50 RB / 0 RB Offset
A	OCCUPIED BANDWIDTH	23017 to 23173	23017, 23095 , 23173	1.4MHz	QPSK, 16QAM, 64QAM	6 RB / 0 RB Offset
		23025 to 23165	23025, 23095 ,23165	3MHz	QPSK, 16QAM, 64QAM	15 RB / 0 RB Offset
		23035 to 23155	23035, 23095 ,23155	5MHz	QPSK, 16QAM, 64QAM	25 RB / 0 RB Offset
		23060 to 23130	23060, 23095 ,23130	10MHz	QPSK, 16QAM, 64QAM	50 RB / 0 RB Offset
A	PEAK TO AVERAGE RATIO	23060 to 23130	23060, 23095 ,23130	10MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset 50 RB / 0 RB Offset
A	BAND EDGE	23017 to 23173	23017	1.4MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset 6 RB / 0 RB Offset
			23173	1.4MHz	QPSK, 16QAM, 64QAM	1 RB / 5 RB Offset 6 RB / 0 RB Offset
		23025 to 23165	23025	3MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset 15 RB / 0 RB Offset
			23165	3MHz	QPSK, 16QAM, 64QAM	1 RB / 14 RB Offset 15 RB / 0 RB Offset
		23035 to 23155	23035	5MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset 25 RB / 0 RB Offset
			23155	5MHz	QPSK, 16QAM, 64QAM	1 RB / 24 RB Offset 25 RB / 0 RB Offset
		23060 to 23130	23060	10MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset 50 RB / 0 RB Offset
			23130	10MHz	QPSK, 16QAM, 64QAM	1 RB / 49 RB Offset 50 RB / 0 RB Offset
A	CONDCUDED EMISSION	23017 to 23173	23017, 23095, 23173	1.4MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset
		23025 to 23165	23025, 23095 ,23165	3MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset
		23035 to 23155	23035, 23095 ,23155	5MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset
		23060 to 23130	23060, 23095 ,23130	10MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset
A	RADIATED EMISSION	23017 to 23173	23095	1.4MHz	QPSK	1 RB / 0 RB Offset
		23025 to 23165	23025,23095, 23165	3MHz	QPSK	1 RB / 0 RB Offset
		23035 to 23155	23095	5MHz	QPSK	1 RB / 0 RB Offset
		23060 to 23130	23095	10MHz	QPSK	1 RB / 0 RB Offset

Note: This device was tested under all bandwidths, RB configurations and modulations. The worst case was found in QPSK modulation.

LTE BAND 13 MODE

EUT CONFIGURE MODE	TEST ITEM	AVAILABLE CHANNEL	TESTED CHANNEL	CHANNEL BANDWIDTH	MODULATION	MODE
A	ERP	23205 to 23255	23205, 20175, 23255	5MHz	QPSK,16QAM,64QAM	1 RB / 0 RB Offset
		23230	23230	10MHz	QPSK,16QAM,64QAM	1 RB / 0 RB Offset
B	FREQUENCY STABILITY	23230	23230	10MHz	QPSK,16QAM,64QAM	50 RB / 0 RB Offset
A	OCCUPIED BANDWIDTH	23205 to 23255	23205, 20175, 23255	5MHz	QPSK,16QAM,64QAM	25 RB / 0 RB Offset
		23230	23230	10MHz	QPSK,16QAM,64QAM	50 RB / 0 RB Offset
A	PEAK TO AVERAGE RATIO	23230	23230	10MHz	QPSK,16QAM,64QAM	1 RB / 0 RB Offset 50 RB / 0 RB Offset
A	BAND EDGE	23205 to 23255	23205	5MHz	QPSK,16QAM, 64QAM	1 RB / 0 RB Offset 25 RB / 0 RB Offset
						1 RB / 24 RB Offset 25 RB / 0 RB Offset
			23255	5MHz	QPSK,16QAM, 64QAM	1 RB / 0 RB Offset 25 RB / 0 RB Offset
						1 RB / 24 RB Offset 25 RB / 0 RB Offset
		23230	23230	10MHz	QPSK,16QAM, 64QAM	1 RB / 0 RB Offset 1 RB / 49 RB Offset
						50 RB / 0 RB Offset
A	CONDCUDED EMISSION	23205 to 23255	23205, 20175, 23255	5MHz	QPSK,16QAM,64QAM	1 RB / 0 RB Offset
		23230	23230	10MHz	QPSK,16QAM,64QAM	1 RB / 0 RB Offset
A	RADIATED EMISSION	23205 to 23255	23205,23230, 23255	5MHz	QPSK	1 RB / 0 RB Offset
		23230	23230	10MHz	QPSK	1 RB / 0 RB Offset

Note: This device was tested under all bandwidths, RB configurations and modulations. The worst case was found in QPSK modulation.

LTE BAND 17 MODE

EUT CONFIGURE MODE	TEST ITEM	AVAILABLE CHANNEL	TESTED CHANNEL	CHANNEL BANDWIDTH	MODULATION	MODE
A	ERP	23755 to 23825	23755, 23790, 23825	5MHz	QPSK,16QAM,64QAM	1 RB / 0 RB Offset
		23780 to 23800	23780, 23790, 23800	10MHz	QPSK,16QAM,64QAM	1 RB / 0 RB Offset

Note:

- 1.This device was tested under all bandwidths, RB configurations and modulations. The worst case was found in QPSK modulation.
2. LTE Band 17 are covered by LTE Band 12, Because it is a subset of LTE Band 12 with the same output power and supported bandwidths, So the conducted test data and RSE test data please refer to LTE Band 12

TEST CONDITION:

TEST ITEM	ENVIRONMENTAL CONDITIONS	INPUT POWER	TESTED BY
ERP&EIRP	23deg. C, 70%RH	DC 5.0V/ 9.0V/ 12.0V By Adapter	Hanwen Xu
FREQUENCY STABILITY	23deg. C, 70%RH	DC 3.6V/ 3.85V/ 4.4V By Battery	Hanwen Xu
OCCUPIED BANDWIDTH	23deg. C, 70%RH	DC 5.0V/ 9.0V/ 12.0V By Adapter	Hanwen Xu
BAND EDGE	23deg. C, 70%RH	DC 5.0V/ 9.0V/ 12.0V By Adapter	Hanwen Xu
CONDCUDED EMISSION	23deg. C, 70%RH	DC 5.0V/ 9.0V/ 12.0V By Adapter	Hanwen Xu
RADIATED EMISSION	23deg. C, 70%RH	DC 5.0V/ 9.0V/ 12.0V By Adapter	Hanwen Xu
PEAK TO AVERAGE RATIO	23deg. C, 70%RH	DC 5.0V/ 9.0V/ 12.0V By Adapter	Hanwen Xu

2.5 GENERAL DESCRIPTION OF APPLIED STANDARDS

The EUT is a RF product. According to the specifications of the manufacturer, it must comply with the requirements of the following standards:

FCC 47 CFR Part 2

FCC 47 CFR Part 27

KDB 971168 D01 Power Meas License Digital Systems v03r01

ANSI/TIA/EIA-603-D

ANSI/TIA/EIA-603-E

ANSI C63.26-2015

NOTE: All test items have been performed and recorded as per the above standards.

3 TEST TYPES AND RESULTS

3.1 OUTPUT POWER MEASUREMENT

3.1.1 LIMITS OF OUTPUT POWER MEASUREMENT

The radiated peak output power shall be according to the specific rule Part 27.50(h)(2) that “User stations are limited to 2 watts” and 27.50(i) specific that “Peak transmit power must be measure over any interval of continuous transmission using instrumentation calibration in terms of rms-equivalent voltage.”

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.

According to the specific rule Part 27.50(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.

Part 27.50(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.

3.1.2 TEST PROCEDURES

EIRP MEASUREMENT:

Per KDB 971168 D01 Power Meas License Digital Systems v03r01 or subclause 5.2.5.5 of ANSI C63.26-2015, the relevant equation for determining the ERP or EIRP from the conducted RF output power measured using the guidance provided above is:

$$\text{ERP or EIRP} = P_{\text{Meas}} + G_{\text{T}} - L_{\text{C}}$$

Where:

ERP or EIRP = effective radiated power or equivalent isotropically radiated power, respectively
(expressed in the same units as P_{Meas} , typically dBW or dBm);

P_{Meas} = measured transmitter output power or PSD, in dBm or dBW;

G_{T} = gain of the transmitting antenna, in dBd (ERP) or dBi (EIRP);

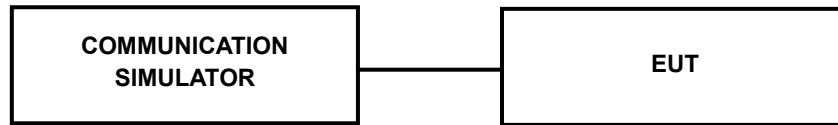
L_{C} = signal attenuation in the connecting cable between the transmitter and antenna, in dB.

CONDUCTED POWER MEASUREMENT:

- The EUT was set up for the maximum power with LTE link data modulation and link up with simulator.
- Set the EUT to transmit under low, middle and high channel and record the power level shown on simulator.

3.1.3 TEST SETUP

CONDUCTED POWER MEASUREMENT:



For the actual test configuration, please refer to the attached file (Test Setup Photo).

3.1.4 TEST RESULTS

CONDUCTED OUTPUT POWER (dBm)

Band	WCDMA IV		
TX Channel	1312	1413	1513
Rx Channel	1537	1638	1738
Frequency	1712.4	1732.6	1752.6
RMC 12.2K	24.80	24.83	24.75
HSDPA Subtest-1	23.91	24.05	23.89
HSDPA Subtest-2	23.90	23.99	23.88
HSDPA Subtest-3	23.53	23.55	23.39
HSDPA Subtest-4	23.45	23.50	23.39
DC-HSDPA Subtest-1	23.89	23.98	23.79
DC-HSDPA Subtest-2	23.92	23.98	23.81
DC-HSDPA Subtest-3	23.51	23.39	23.33
DC-HSDPA Subtest-4	23.46	23.43	23.36
HSUPA Subtest-1	23.97	24.01	23.92
HSUPA Subtest-2	22.90	22.88	22.88
HSUPA Subtest-3	23.36	23.47	23.37
HSUPA Subtest-4	22.95	22.91	22.80
HSUPA Subtest-5	23.87	23.98	23.79

LTE Band 7

Band/BW	Modulation	RB Size	RB Offset	Low CH 20775	Mid CH 21100	High CH 21425
				Frequency 2502.5 MHz	Frequency 2535 MHz	Frequency 2567.5 MHz
7/5	QPSK	1	0	24.04	23.97	24.06
		1	12	24.02	24.16	24.08
		1	24	23.70	23.74	23.82
		12	0	23.06	23.03	23.07
		12	6	23.09	23.14	23.22
		12	13	23.01	22.95	23.06
		25	0	22.97	22.90	23.01
	16QAM	1	0	23.06	23.11	22.98
		1	12	23.02	23.46	23.17
		1	24	22.68	22.89	22.20
		12	0	22.34	21.85	22.11
		12	6	22.14	22.17	22.13
		12	13	22.08	21.91	22.07
		25	0	22.07	21.97	22.15
	64QAM	1	0	21.91	22.04	21.79
		1	12	22.19	22.03	21.90
		1	24	21.96	22.05	21.76
		12	0	20.91	20.62	20.52
		12	6	20.74	20.93	20.53
		12	13	20.52	20.72	20.47
		25	0	20.70	20.67	20.46

Band/BW	Modulation	RB Size	RB Offset	Low CH 20800	Mid CH 21100	High CH 21400
				Frequency 2505 MHz	Frequency 2535 MHz	Frequency 2565 MHz
7/ 10	QPSK	1	0	24.02	24.02	23.94
		1	24	24.04	24.06	24.13
		1	49	23.60	23.73	23.73
		25	0	23.07	23.03	23.10
		25	12	23.17	23.15	23.16
		25	25	22.94	22.92	22.94
		50	0	22.96	22.82	23.06
	16QAM	1	0	23.02	22.98	23.01
		1	24	22.95	23.46	23.20
		1	49	22.68	22.84	22.16
		25	0	22.27	21.88	22.17
		25	12	22.16	22.20	22.15
		25	25	21.95	21.97	22.11
		50	0	22.13	22.01	22.11
	64QAM	1	0	21.94	21.94	21.87
		1	24	22.22	22.05	21.92
		1	49	22.01	22.08	21.69
		25	0	20.88	20.64	20.53
		25	12	20.77	20.90	20.51
		25	25	20.63	20.65	20.59
		50	0	20.63	20.63	20.50

Band/BW	Modulation	RB Size	RB Offset	Low CH 20825	Mid CH 21100	High CH 21375
				Frequency 2507.5 MHz	Frequency 2535 MHz	Frequency 2562.5 MHz
7/ 15	QPSK	1	0	23.94	23.90	24.00
		1	37	24.12	23.96	24.05
		1	74	23.73	23.82	23.80
		36	0	23.04	23.22	23.09
		36	19	23.14	23.07	23.17
		36	39	22.96	22.89	23.02
		75	0	23.02	22.89	23.00
	16QAM	1	0	23.10	22.99	22.93
		1	37	23.08	23.39	23.22
		1	74	22.68	22.83	22.22
		36	0	22.30	21.83	22.16
		36	19	22.13	22.14	22.25
		36	39	21.99	22.01	22.15
		75	0	22.15	21.96	22.15
	64QAM	1	0	21.92	22.01	21.74
		1	37	22.18	22.03	21.94
		1	74	21.98	22.07	21.65
		36	0	20.91	20.70	20.59
		36	19	20.87	20.88	20.60
		36	39	20.55	20.66	20.55
		75	0	20.73	20.68	20.53

Band/BW	Modulation	RB Size	RB Offset	Low CH 20850	Mid CH 21100	High CH 21350
				Frequency 2510 MHz	Frequency 2535 MHz	Frequency 2560 MHz
7/ 20	QPSK	1	0	24.05	24.05	24.09
		1	50	24.15	24.11	24.18
		1	99	23.75	23.87	23.88
		50	0	23.19	23.16	23.18
		50	25	23.22	23.18	23.25
		50	50	23.05	23.01	23.09
		100	0	23.07	22.93	23.14
	16QAM	1	0	23.14	23.13	23.08
		1	50	23.10	23.51	23.30
		1	99	22.77	22.97	22.24
		50	0	22.39	21.91	22.21
		50	25	22.27	22.23	22.28
		50	50	22.09	22.02	22.16
		100	0	22.16	22.11	22.23
	64QAM	1	0	22.01	22.05	21.89
		1	50	22.28	22.12	21.99
		1	99	22.02	22.17	21.77
		50	0	20.98	20.75	20.67
		50	25	20.89	20.97	20.64
		50	50	20.64	20.79	20.61
		100	0	20.75	20.75	20.54

LTE Band 12

Band/BW	Modulation	RB Size	RB Offset	Low CH 23017	Mid CH 23095	High CH 23173
				Frequency 699.7 MHz	Frequency 707.5 MHz	Frequency 715.3 MHz
12/ 1.4	QPSK	1	0	23.50	23.50	23.43
		1	2	23.01	23.32	22.99
		1	5	23.18	23.41	23.22
		3	0	23.16	23.29	23.11
		3	1	23.10	23.25	23.13
		3	3	23.16	23.24	22.91
		6	0	22.46	22.52	22.52
	16QAM	1	0	22.51	22.68	22.61
		1	2	22.48	22.61	22.35
		1	5	22.47	22.63	22.34
		3	0	22.21	22.33	22.23
		3	1	22.15	22.33	22.24
		3	3	22.18	22.27	22.21
		6	0	21.40	21.43	21.44
	64QAM	1	0	21.52	21.67	21.62
		1	2	21.48	21.74	21.44
		1	5	21.54	21.51	21.12
		3	0	21.23	21.45	21.04
		3	1	21.14	21.30	21.25
		3	3	21.09	21.37	21.22
		6	0	20.42	20.49	20.36

Band/BW	Modulation	RB Size	RB Offset	Low CH 23025	Mid CH 23095	High CH 23165
				Frequency 700.5 MHz	Frequency 707.5 MHz	Frequency 714.5 MHz
12/ 3	QPSK	1	0	23.41	23.62	23.46
		1	7	23.15	23.32	23.03
		1	14	23.18	23.45	23.25
		8	0	22.54	22.52	22.31
		8	3	22.37	22.40	22.36
		8	7	22.26	22.36	22.04
		15	0	22.42	22.54	22.43
	16QAM	1	0	22.45	22.68	22.68
		1	7	22.41	22.59	22.46
		1	14	22.52	22.63	22.35
		8	0	21.49	21.48	21.43
		8	3	21.33	21.53	21.49
		8	7	21.34	21.42	21.33
		15	0	21.36	21.42	21.40
	64QAM	1	0	21.59	21.65	21.67
		1	7	21.56	21.70	21.37
		1	14	21.41	21.48	21.09
		8	0	20.40	20.56	20.15
		8	3	20.42	20.46	20.40
		8	7	20.29	20.54	20.40
		15	0	20.39	20.55	20.40

Band/BW	Modulation	RB Size	RB Offset	Low CH 23035	Mid CH 23095	High CH 23155
				Frequency 701.5 MHz	Frequency 707.5 MHz	Frequency 713.5 MHz
12/ 5	QPSK	1	0	23.42	23.44	23.47
		1	12	23.09	23.31	23.03
		1	24	23.24	23.44	23.29
		12	0	22.43	22.42	22.34
		12	6	22.51	22.45	22.27
		12	13	22.31	22.36	22.07
		25	0	22.36	22.49	22.51
	16QAM	1	0	22.45	22.59	22.64
		1	12	22.36	22.55	22.41
		1	24	22.52	22.61	22.42
		12	0	21.47	21.47	21.36
		12	6	21.41	21.51	21.48
		12	13	21.34	21.37	21.31
		25	0	21.41	21.43	21.40
	64QAM	1	0	21.56	21.75	21.64
		1	12	21.57	21.65	21.43
		1	24	21.53	21.50	21.12
		12	0	20.44	20.51	20.17
		12	6	20.34	20.47	20.38
		12	13	20.34	20.50	20.41
		25	0	20.47	20.56	20.33

Band/BW	Modulation	RB Size	RB Offset	Low CH 23060	Mid CH 23095	High CH 23130
				Frequency 704 MHz	Frequency 707.5 MHz	Frequency 711 MHz
12/ 10	QPSK	1	0	23.52	23.63	23.56
		1	24	23.16	23.45	23.14
		1	49	23.27	23.53	23.30
		25	0	22.45	22.58	22.43
		25	12	22.42	22.55	22.41
		25	25	22.35	22.47	22.10
		50	0	22.47	22.56	22.54
	16QAM	1	0	22.56	22.69	22.71
		1	24	22.51	22.68	22.48
		1	49	22.57	22.70	22.44
		25	0	21.50	21.62	21.47
		25	12	21.47	21.64	21.51
		25	25	21.45	21.50	21.44
		50	0	21.51	21.54	21.48
	64QAM	1	0	21.62	21.78	21.68
		1	24	21.60	21.79	21.52
		1	49	21.56	21.62	21.14
		25	0	20.51	20.65	20.23
		25	12	20.44	20.57	20.47
		25	25	20.41	20.62	20.48
		50	0	20.51	20.63	20.41

LTE Band 13

Band/BW	Modulation	RB Size	RB Offset	Low CH 23205	Mid CH 23230	High CH 23255
				Frequency 779.5 MHz	Frequency 782.0 MHz	Frequency 784.5 MHz
13/ 5	QPSK	1	0	23.50	23.28	23.36
		1	12	23.32	23.23	23.33
		1	24	23.23	23.57	23.36
		12	0	22.50	22.46	22.45
		12	6	22.51	22.49	22.41
		12	13	22.39	22.41	22.34
		25	0	22.33	22.50	22.47
	16QAM	1	0	22.49	22.64	22.49
		1	12	22.47	22.50	22.66
		1	24	22.52	22.68	22.79
		12	0	21.46	21.37	21.40
		12	6	21.45	21.49	21.47
		12	13	21.39	21.53	21.43
		25	0	21.44	21.51	21.42
	64QAM	1	0	21.72	21.48	21.64
		1	12	21.54	21.56	21.74
		1	24	21.40	21.84	21.69
		12	0	20.48	20.44	20.39
		12	6	20.52	20.36	20.47
		12	13	20.38	20.40	20.51
		25	0	20.27	20.47	20.46

Band/BW	Modulation	RB Size	RB Offset	/	Mid CH 23230	/
				/	Frequency 782.0 MHz	/
13/ 10	QPSK	1	0	/	23.49	/
		1	24	/	23.73	/
		1	49	/	23.46	/
		25	0	/	22.54	/
		25	12	/	22.48	/
		25	25	/	22.44	/
		50	0	/	22.51	/
	16QAM	1	0	/	22.88	/
		1	24	/	22.62	/
		1	49	/	22.67	/
		25	0	/	21.74	/
		25	12	/	21.56	/
		25	25	/	21.39	/
		50	0	/	21.42	/
	64QAM	1	0	/	21.92	/
		1	24	/	21.63	/
		1	49	/	21.82	/
		25	0	/	20.61	/
		25	12	/	20.43	/
		25	25	/	20.38	/
		50	0	/	20.47	/

LTE Band 17

Band/BW	Modulation	RB Size	RB Offset	Low CH 23755	Mid CH 23790	High CH 23825
				Frequency 706.5 MHz	Frequency 710 MHz	Frequency 713.5 MHz
17/ 5	QPSK	1	0	23.53	23.52	23.59
		1	12	23.46	23.32	23.41
		1	24	23.48	23.31	23.51
		12	0	22.59	22.52	22.55
		12	6	22.57	22.58	22.51
		12	13	22.55	22.46	22.51
		25	0	22.62	22.59	22.54
	16QAM	1	0	22.72	22.53	22.75
		1	12	22.55	22.39	22.50
		1	24	22.62	22.36	22.69
		12	0	21.34	21.38	21.41
		12	6	21.45	21.25	21.67
		12	13	21.65	21.51	21.53
		25	0	21.68	21.59	21.68
	64QAM	1	0	21.46	21.42	21.50
		1	12	21.58	21.59	21.40
		1	24	21.59	21.39	21.56
		12	0	20.58	20.50	20.46
		12	6	20.35	20.24	20.47
		12	13	20.56	20.55	20.56
		25	0	20.67	20.55	20.62

Band/BW	Modulation	RB Size	RB Offset	Low CH 23780	Mid CH 23790	High CH 23800
				Frequency 709 MHz	Frequency 710 MHz	Frequency 711 MHz
17/ 10	QPSK	1	0	23.73	23.61	23.66
		1	24	23.56	23.41	23.52
		1	49	23.62	23.43	23.53
		25	0	22.69	22.65	22.63
		25	12	22.65	22.64	22.61
		25	25	22.66	22.56	22.59
		50	0	22.70	22.62	22.69
	16QAM	1	0	22.84	22.64	22.80
		1	24	22.68	22.53	22.55
		1	49	22.66	22.49	22.76
		25	0	21.46	21.45	21.50
		25	12	21.58	21.40	21.69
		25	25	21.67	21.58	21.63
		50	0	21.72	21.63	21.76
	64QAM	1	0	21.51	21.47	21.59
		1	24	21.69	21.64	21.54
		1	49	21.63	21.54	21.61
		25	0	20.62	20.59	20.49
		25	12	20.41	20.35	20.55
		25	25	20.65	20.61	20.58
		50	0	20.68	20.60	20.69

ERP /EIRP

WCDMA IV

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
1312	1712.4	24.8	-0.8	24	251.19	1
1413	1732.6	24.83	-0.8	24.03	252.93	1
1513	1752.6	24.75	-0.8	23.95	248.31	1

LTE BAND 7

CHANNEL BANDWIDTH: 5MHz QPSK

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
20775	2502.5	24.04	1.6	25.64	366.44	2
21100	2535	24.16	1.6	25.76	376.7	2
21425	2567.5	24.08	1.6	25.68	369.83	2

CHANNEL BANDWIDTH: 5MHz 16QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
20775	2502.5	23.06	1.6	24.66	292.42	2
21100	2535	23.46	1.6	25.06	320.63	2
21425	2567.5	23.17	1.6	24.77	299.92	2

CHANNEL BANDWIDTH: 5MHz 64QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
20775	2502.5	22.19	1.6	23.79	239.33	2
21100	2535	22.05	1.6	23.65	231.74	2
21425	2567.5	21.9	1.6	23.5	223.87	2

CHANNEL BANDWIDTH: 10MHz QPSK

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
20800	2505	24.04	1.6	25.64	366.44	2
21100	2535	24.06	1.6	25.66	368.13	2
21400	2565	24.13	1.6	25.73	374.11	2

CHANNEL BANDWIDTH: 10MHz 16QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
20800	2505	23.02	1.6	24.62	289.73	2
21100	2535	23.46	1.6	25.06	320.63	2
21400	2565	23.2	1.6	24.8	302	2

CHANNEL BANDWIDTH: 10MHz 64QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
20800	2505	22.22	1.6	23.82	240.99	2
21100	2535	22.08	1.6	23.68	233.35	2
21400	2565	21.92	1.6	23.52	224.91	2

CHANNEL BANDWIDTH: 15MHz QPSK

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
20825	2507.5	24.12	1.6	25.72	373.25	2
21100	2535	23.96	1.6	25.56	359.75	2
21375	2562.5	24.05	1.6	25.65	367.28	2

CHANNEL BANDWIDTH: 15MHz 16QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
20825	2507.5	23.1	1.6	24.7	295.12	2
21100	2535	23.39	1.6	24.99	315.5	2
21375	2562.5	23.22	1.6	24.82	303.39	2

CHANNEL BANDWIDTH: 15MHz 64QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
20825	2507.5	22.18	1.6	23.78	238.78	2
21100	2535	22.07	1.6	23.67	232.81	2
21375	2562.5	21.94	1.6	23.54	225.94	2

CHANNEL BANDWIDTH: 20MHz QPSK

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
20850	2510	24.15	1.6	25.75	375.84	2
21100	2535	24.11	1.6	25.71	372.39	2
21350	2560	24.18	1.6	25.78	378.44	2

CHANNEL BANDWIDTH: 20MHz 16QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
20850	2510	23.14	1.6	24.74	297.85	2
21100	2535	23.51	1.6	25.11	324.34	2
21350	2560	23.3	1.6	24.9	309.03	2

CHANNEL BANDWIDTH: 20MHz 64QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
20850	2510	22.28	1.6	23.88	244.34	2
21100	2535	22.17	1.6	23.77	238.23	2
21350	2560	21.99	1.6	23.59	228.56	2

LTE BAND 12

CHANNEL BANDWIDTH: 1.4MHz QPSK

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	ERP (dBm)	ERP (mW)	Limit (W)
23017	699.7	23.5	-2.7	18.65	73.28	3
23095	707.5	23.5	-2.7	18.65	73.28	3
23173	715.3	23.43	-2.7	18.58	72.11	3

CHANNEL BANDWIDTH: 1.4MHz 16QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	ERP (dBm)	ERP (mW)	Limit (W)
23017	699.7	22.51	-2.7	17.66	58.34	3
23095	707.5	22.68	-2.7	17.83	60.67	3
23173	715.3	22.61	-2.7	17.76	59.7	3

CHANNEL BANDWIDTH: 1.4MHz 64QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	ERP (dBm)	ERP (mW)	Limit (W)
23017	699.7	21.54	-2.7	16.69	46.67	3
23095	707.5	21.74	-2.7	16.89	48.87	3
23173	715.3	21.62	-2.7	16.77	47.53	3

CHANNEL BANDWIDTH: 3MHz QPSK

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	ERP (dBm)	ERP (mW)	Limit (W)
23025	700.5	23.41	-2.7	18.56	71.78	3
23095	707.5	23.62	-2.7	18.77	75.34	3
23165	714.5	23.46	-2.7	18.61	72.61	3

CHANNEL BANDWIDTH: 3MHz 16QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	ERP (dBm)	ERP (mW)	Limit (W)
23025	700.5	22.52	-2.7	17.67	58.48	3
23095	707.5	22.68	-2.7	17.83	60.67	3
23165	714.5	22.68	-2.7	17.83	60.67	3

CHANNEL BANDWIDTH: 3MHz 64QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	ERP (dBm)	ERP (mW)	Limit (W)
23025	700.5	21.59	-2.7	16.74	47.21	3
23095	707.5	21.7	-2.7	16.85	48.42	3
23165	714.5	21.67	-2.7	16.82	48.08	3

CHANNEL BANDWIDTH: 5MHz QPSK

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	ERP (dBm)	ERP (mW)	Limit (W)
23035	701.5	23.42	-2.7	18.57	71.94	3
23095	707.5	23.44	-2.7	18.59	72.28	3
23155	713.5	23.47	-2.7	18.62	72.78	3

CHANNEL BANDWIDTH: 5MHz 16QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	ERP (dBm)	ERP (mW)	Limit (W)
23035	701.5	22.52	-2.7	17.67	58.48	3
23095	707.5	22.61	-2.7	17.76	59.7	3
23155	713.5	22.64	-2.7	17.79	60.12	3

CHANNEL BANDWIDTH: 5MHz 64QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	ERP (dBm)	ERP (mW)	Limit (W)
23035	701.5	21.57	-2.7	16.72	46.99	3
23095	707.5	21.75	-2.7	16.9	48.98	3
23155	713.5	21.64	-2.7	16.79	47.75	3

CHANNEL BANDWIDTH: 10MHz QPSK

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	ERP (dBm)	ERP (mW)	Limit (W)
23060	704	23.52	-2.7	18.67	73.62	3
23095	707.5	23.63	-2.7	18.78	75.51	3
23130	711	23.56	-2.7	18.71	74.3	3

CHANNEL BANDWIDTH: 10MHz 16QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	ERP (dBm)	ERP (mW)	Limit (W)
23060	704	22.57	-2.7	17.72	59.16	3
23095	707.5	22.7	-2.7	17.85	60.95	3
23130	711	22.71	-2.7	17.86	61.09	3

CHANNEL BANDWIDTH: 10MHz 64QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	ERP (dBm)	ERP (mW)	Limit (W)
23060	704	21.62	-2.7	16.77	47.53	3
23095	707.5	21.79	-2.7	16.94	49.43	3
23130	711	21.68	-2.7	16.83	48.19	3

REMARKS: ERP Output Power (dBm) = EIRP (dBm) -2.15(dB).

LTE BAND 13

CHANNEL BANDWIDTH: 5MHz QPSK

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	ERP (dBm)	ERP (mW)	Limit (W)
23205	779.5	23.5	-1.9	19.45	88.1	3
23230	782	23.57	-1.9	19.52	89.54	3
23255	784.5	23.36	-1.9	19.31	85.31	3

CHANNEL BANDWIDTH: 5MHz 16QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	ERP (dBm)	ERP (mW)	Limit (W)
23205	779.5	22.52	-1.9	18.47	70.31	3
23230	782	22.68	-1.9	18.63	72.95	3
23255	784.5	22.79	-1.9	18.74	74.82	3

CHANNEL BANDWIDTH: 5MHz 64QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	ERP (dBm)	ERP (mW)	Limit (W)
23205	779.5	21.72	-1.9	17.67	58.48	3
23230	782	21.84	-1.9	17.79	60.12	3
23255	784.5	21.74	-1.9	17.69	58.75	3

CHANNEL BANDWIDTH: 10MHz QPSK

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	ERP (dBm)	ERP (mW)	Limit (W)
23230	782	23.73	-1.9	19.68	92.9	3

CHANNEL BANDWIDTH: 10MHz 16QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	ERP (dBm)	ERP (mW)	Limit (W)
23230	782	22.88	-1.9	18.83	76.38	3

CHANNEL BANDWIDTH: 10MHz 64QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	ERP (dBm)	ERP (mW)	Limit (W)
23230	782	21.92	-1.9	17.87	61.24	3

REMARKS: ERP Output Power (dBm) = EIRP (dBm) -2.15(dB).

LTE BAND 17

CHANNEL BANDWIDTH: 5MHz QPSK

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	ERP (dBm)	ERP (mW)	Limit (W)
23755	706.5	23.53	-2.7	18.68	73.79	3
23790	710	23.52	-2.7	18.67	73.62	3
23825	713.5	23.59	-2.7	18.74	74.82	3

CHANNEL BANDWIDTH: 5MHz 16QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	ERP (dBm)	ERP (mW)	Limit (W)
23755	706.5	22.72	-2.7	17.87	61.24	3
23790	710	22.53	-2.7	17.68	58.61	3
23825	713.5	22.75	-2.7	17.9	61.66	3

CHANNEL BANDWIDTH: 5MHz 64QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	ERP (dBm)	ERP (mW)	Limit (W)
23755	706.5	21.59	-2.7	16.74	47.21	3
23790	710	21.59	-2.7	16.74	47.21	3
23825	713.5	21.56	-2.7	16.71	46.88	3

CHANNEL BANDWIDTH: 10MHz QPSK

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	ERP (dBm)	ERP (mW)	Limit (W)
23780	709	23.73	-2.7	18.88	77.27	3
23790	710	23.61	-2.7	18.76	75.16	3
23800	711	23.66	-2.7	18.81	76.03	3

CHANNEL BANDWIDTH: 10MHz 16QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	ERP (dBm)	ERP (mW)	Limit (W)
23780	709	22.84	-2.7	17.99	62.95	3
23790	710	22.64	-2.7	17.79	60.12	3
23800	711	22.8	-2.7	17.95	62.37	3

CHANNEL BANDWIDTH: 10MHz 64QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	ERP (dBm)	ERP (mW)	Limit (W)
23780	709	21.69	-2.7	16.84	48.31	3
23790	710	21.64	-2.7	16.79	47.75	3
23800	711	21.61	-2.7	16.76	47.42	3

REMARKS: ERP Output Power (dBm) = EIRP (dBm) -2.15(dB).

3.2 FREQUENCY STABILITY MEASUREMENT

3.2.1 LIMITS OF FREQUENCY STABILITY MEASUREMENT

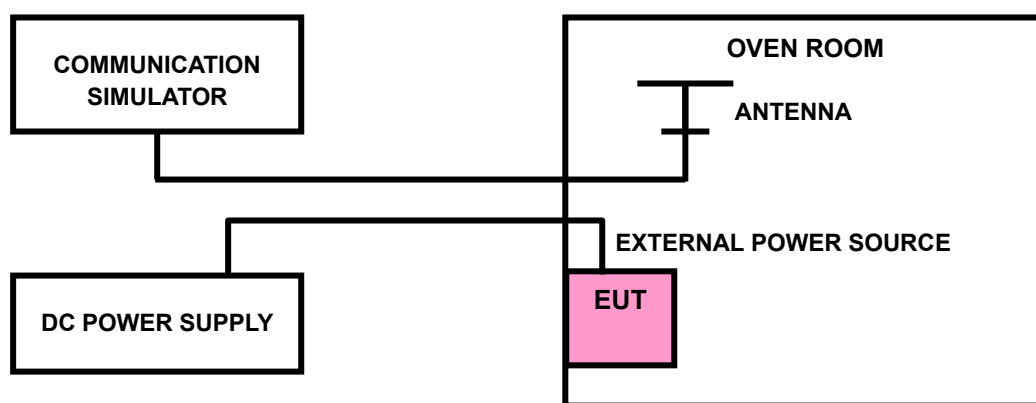
The frequency stability shall be sufficient to ensure that the fundamental emissions stay within the authorized bands of operation.

3.2.2 TEST PROCEDURE

- Device is placed at the oven room. The oven room could control the temperatures and humidity. Power warm up is at least 15 min and power applied should perform before recording frequency error.
- EUT is connected the external power supply to control the DC input power. The test voltage range is from minimum to maximum working voltage. Each step shall be record the frequency error rate.
- The temperature range step is 10 degrees in this test items. All temperature levels shall be hold the $\pm 0.5^{\circ}\text{C}$ during the measurement testing. The each temperature step shall be at least 0.5 hours, consider the EUT could be test under the stability condition.

NOTE: The frequency error was recorded frequency error from the communication simulator.

3.2.3 TEST SETUP





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3.2.4 TEST RESULTS

Please Refer to Appendix Of this test report.

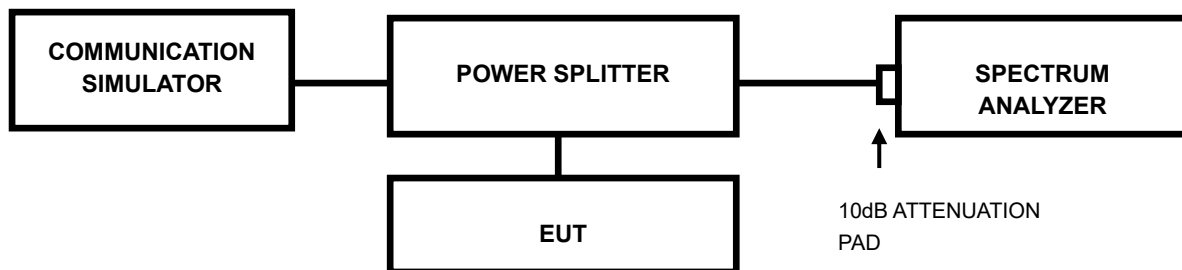
Note: VL = Low voltage(3.6V); VN/NV = Normal voltage(3.85V); VH = High voltage(4.4V);
NT = Normal temperature (25°C)

3.3 OCCUPIED BANDWIDTH MEASUREMENT

3.3.1 LIMITS OF OCCUPIED BANDWIDTH MEASUREMENT

The width of a frequency band such that, below the lower and above the upper frequency limits, the mean powers emitted are each equal to a specified percentage 0.5 % of the total mean power of a given emission.

3.3.2 TEST SETUP



3.3.3 TEST PROCEDURES

- The conducted occupied bandwidth used the power splitter via EUT RF power connector between simulation base station and spectrum analyzer.
- Use OBW measurement function of Spectrum analyzer to measure 99 % occupied bandwidth.



Test Report No.: PSU-QSU2312200110RF03

3.3.4 TEST RESULTS

Please Refer to Appendix Of this test report.

3.4 BAND EDGE MEASUREMENT

3.4.1 LIMITS OF BAND EDGE MEASUREMENT

According to FCC 27.53(g) specified that 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. 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.

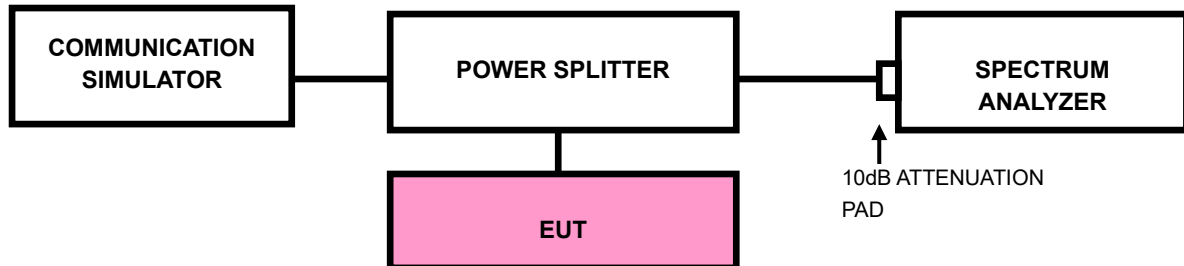
According to FCC 27.53(h) specified that For operations in the 1710-1755 MHz band, the power of any emission outside a licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, by at least $43 + 10 \log (P)$ dB. However, in the 1 megahertz bands immediately outside and adjacent to the licensee's frequency block, a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed.

According to FCC 27.53(m)(4) specified that 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 that $43 + 10 \log (P)$ 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. For mobile digital stations, in the 1-megahertz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least two percent may be employed.

47 CFR 27.53(c)(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;

47 CFR 27.53(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.

3.4.2 TEST SETUP



3.4.3 TEST PROCEDURES

- a) All measurements were done at low and high operational frequency range
- b) Connect the transmitter to the spectrum analyzer via coaxial cable while ensuring proper impedance matching.
- c) Tune the analyzer to the nominal center frequency of the emission bandwidth
(EBW)
- d) .Set the resolution bandwidth (RBW) $\geq 1\%$ EBW in the 1MHz band immediately outside and adjacent to the band edge.
- e) Beyond the 1MHz band from the band edge, RBW=1MHz was used.
- f) Set the video bandwidth (VBW) to $\geq 3 \times$ RBW.
- g) Select the average power (RMS) display detector.
- h) Set the number of measurement points to ≥ 1001 .
- i) Use auto-coupled sweep time.
- j) Perform the measurement over an interval of time when the transmission is continuous and at its maximum power level.
- k) The RF fundamental frequency should be excluded against the limit line in the operating frequency band and use RBW is 10KHz or 100KHz.
- l) Record the max trace plot into the test report.



Test Report No.: PSU-QSU2312200110RF03

3.4.4 TEST RESULTS

Please Refer to Appendix Of this test report.

3.5 CONDUCTED SPURIOUS EMISSIONS

3.5.1 LIMITS OF CONDUCTED SPURIOUS EMISSIONS MEASUREMENT

According to FCC 27.53(g) specified that 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. 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.

According to FCC 27.53(h) specified that For operations in the 1710-1755 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. However, in the 1 megahertz bands immediately outside and adjacent to the licensee's frequency block, a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed.

According to FCC 27.53(m)(4) specified that 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 that $43 + 10 \log (P)$ 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. For mobile digital stations, in the 1-megahertz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least two percent may be employed.

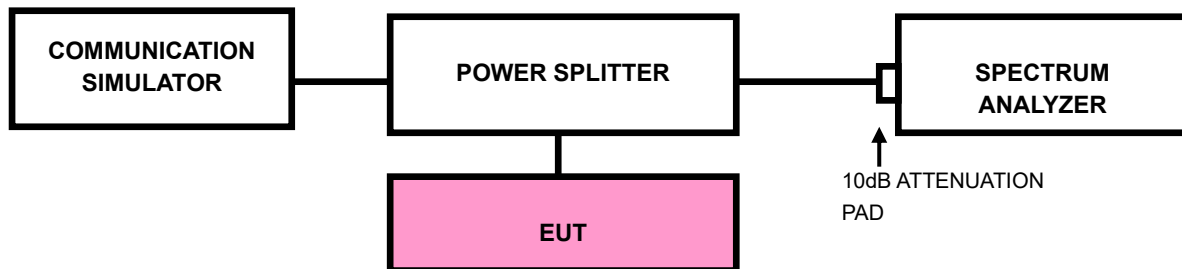
47 CFR 27.53(c)(2) : On any frequency outside the 776–788 MHz band, the power of any emission shall be attenuated outside the band below the transmitter power (P) by at least $43 + 10 \log (P)$ dB;

47 CFR 27.53(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.

3.5.2 TEST PROCEDURE

- a. The EUT makes a phone call to the communication simulator. All measurements were done at low, middle and high operational frequency range.
- b. Measuring frequency range is from 9kHz up to a frequency including its 10th harmonic. 10dB attenuation pad is connected with spectrum. RBW=1MHz and VBW=3MHz is used for conducted emission measurement.

3.5.3 TEST SETUP





Test Report No.: PSU-QSU2312200110RF03

3.5.4 TEST RESULTS

NOTE : The 9K~30MHz amplitude of spurious emissions attenuated more than 20 dB below the permissible value is not required in the report.

Please Refer to Appendix Of this test report.

3.6 RADIATED EMISSION MEASUREMENT

3.6.1 LIMITS OF RADIATED EMISSION MEASUREMENT

According to FCC 27.53(g) specified that 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. 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.

According to FCC 27.53(h) specified that For operations in the 1710-1755 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. However, in the 1 megahertz bands immediately outside and adjacent to the licensee's frequency block, a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed.

According to FCC 27.53(m)(4) specified that 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. For mobile digital stations, in the 1-megahertz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least two percent may be employed.

47 CFR 27.53(c)(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;

47 CFR 27.53(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.

3.6.2 TEST PROCEDURES

- a. Substitution method is used for E.I.R.P measurement. In the semi-anechoic chamber, EUT placed on the 0.8m height of Turn Table, rotated the table around 360 degrees to search the maximum radiation power and receiver antenna shall be rotated vertical and horizontal polarization and moved height from 1m to 4m to find the maximum polar radiated power. The “Read Value” is the spectrum reading the maximum power value.
- b. The substitution horn antenna is substituted for EUT at the same position and signals generator export the CW signal to the substitution antenna via a TX cable. Rotated the Turn Table and moved receiving antenna to find the maximum radiation power. Adjust output power level of S.G to get a Value of spectrum reading equal to “Read Value “ of step a. Record the power level of S.G.
- c. $EIRP = \text{Output power level of S.G} - \text{TX cable loss} + \text{Antenna gain of substitution horn}.$
- d. E.R.P power can be calculated form E.I.R.P power by subtracting the gain of dipole,
 $E.R.P \text{ power} = E.I.P.R \text{ power} - 2.15dBi.$

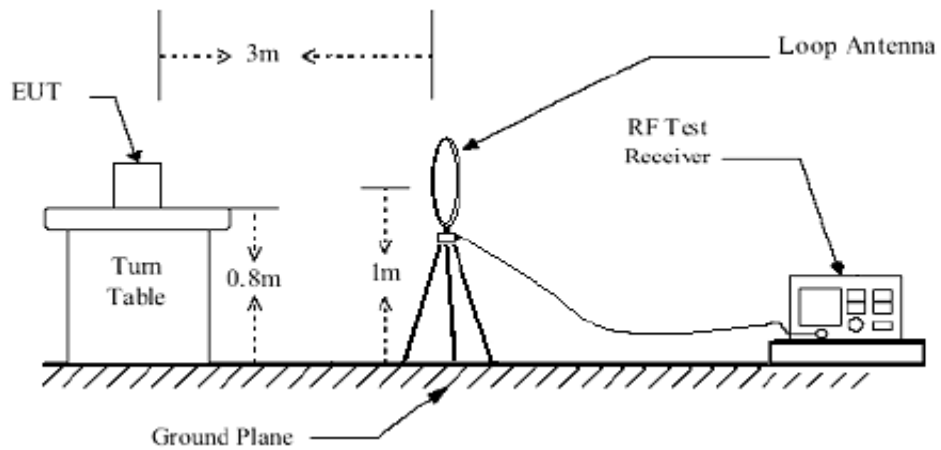
NOTE: The resolution bandwidth of spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz.

3.6.3 DEVIATION FROM TEST STANDARD

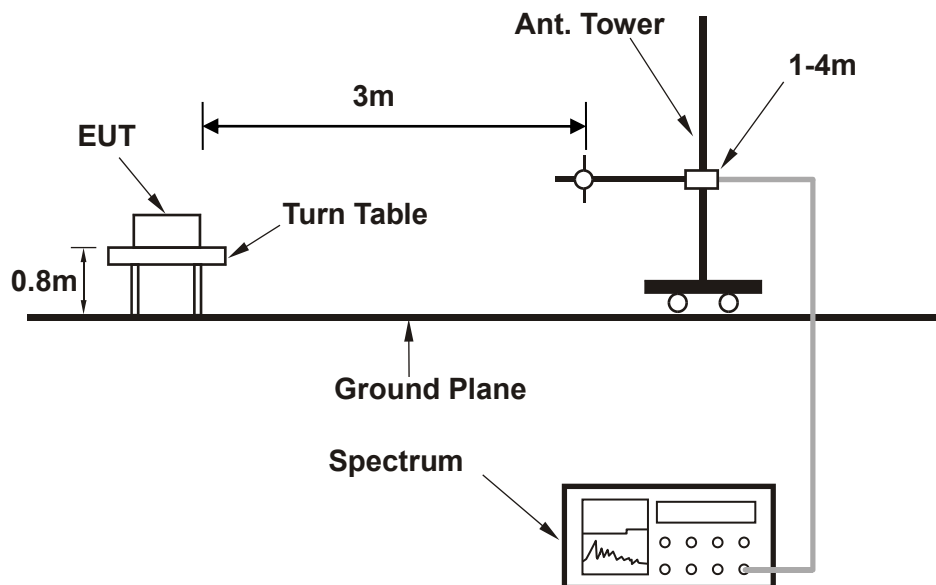
No deviation

3.6.4 TEST SETUP

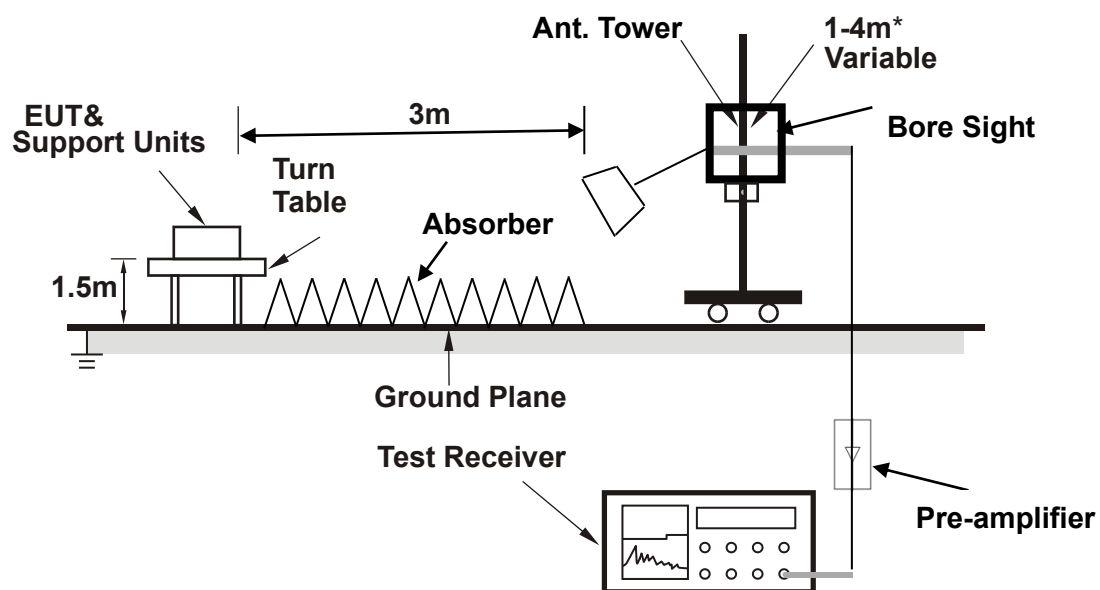
< Frequency Range below 30MHz >



< Frequency Range 30MHz~1GHz >



<Frequency Range above 1GHz>



Note: Above 1G is a directional antenna depends on the EUT height and the antenna 3dB beamwidth both, refer to section 7.3 of CISPR 16-2-3.

For the actual test configuration, please refer to the attached file (Test Setup Photo).

3.6.5 TEST RESULTS

NOTE : The 9K~30MHz amplitude of spurious emissions attenuated more than 20 dB below the permissible value is not required in the report.

BELOW 1GHz WORST-CASE DATA

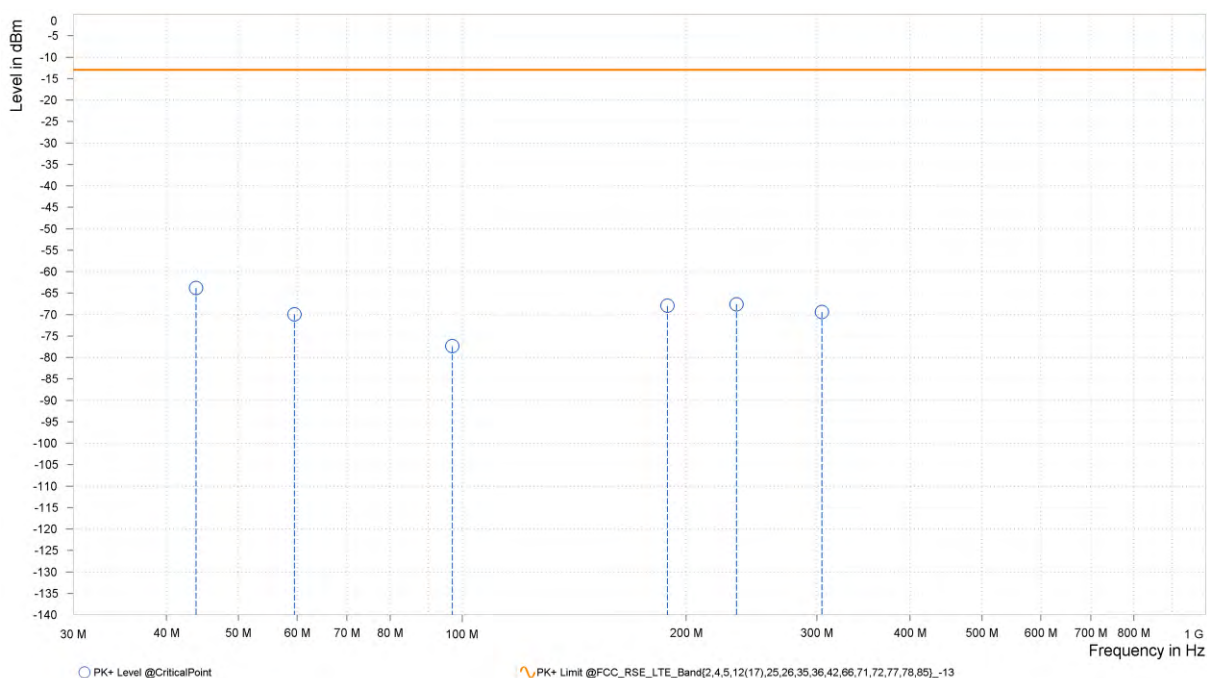
30 MHz – 1GHz data:

LTE Band 13

CHANNEL BANDWIDTH: 5MHz / QPSK

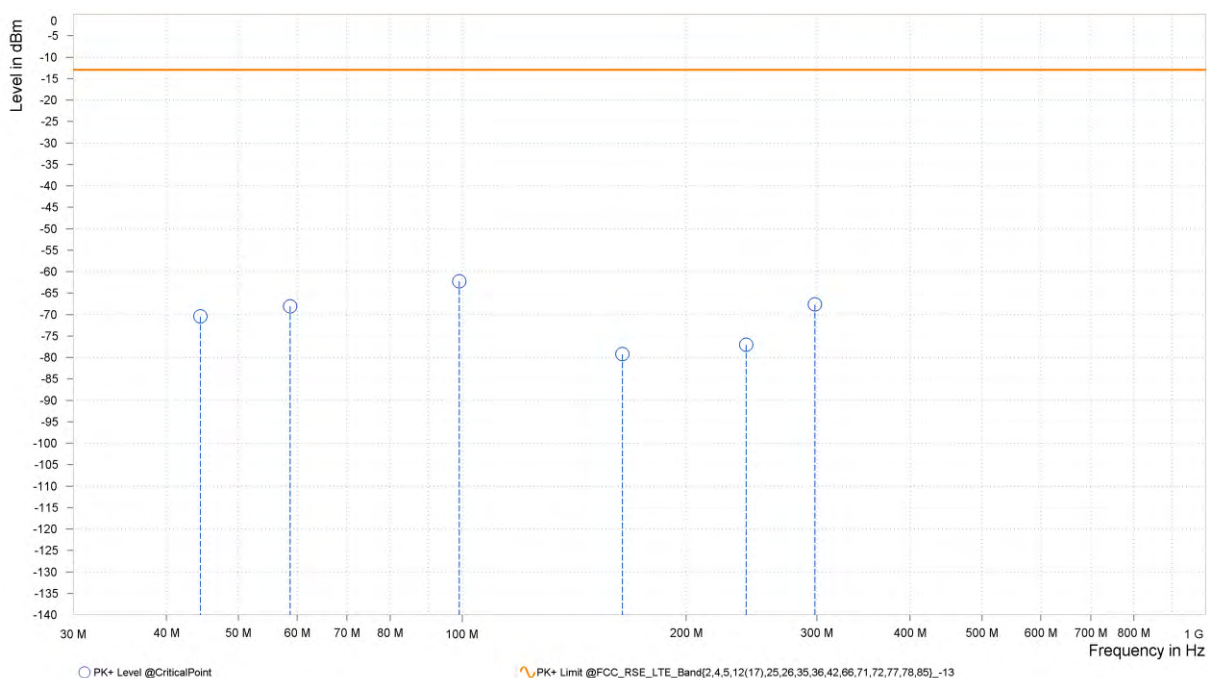
MODE	TX channel 21100	FREQUENCY RANGE	Below 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	120Vac 60HZ
TESTED BY	Hanwen Xu		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

Rg	Frequency [MHz]	PK+ Level [dBm]	PK+ Limit [dBm]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
1	43.850	-63.84	-13.00	50.84	5.42	H	25.9	2.00
1	59.500	-69.95	-13.00	56.95	2.28	H	181	1.00
1	96.950	-77.38	-13.00	64.38	-4.79	H	268.3	1.00
1	188.850	-67.94	-13.00	54.94	1.25	H	79.4	1.00
1	233.800	-67.59	-13.00	54.59	8.29	H	153.8	2.00
1	304.500	-69.39	-13.00	56.39	2.24	H	222.9	1.00



MODE	TX channel 21100	FREQUENCY RANGE	Below 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	120Vac 60HZ
TESTED BY	Hanwen Xu		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

Rg	Frequency [MHz]	PK+ Level [dBm]	PK+ Limit [dBm]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
1	44.450	-70.45	-13.00	57.45	-0.15	V	358	1.00
1	58.700	-68.09	-13.00	55.09	2.91	V	174.1	2.00
1	99.100	-62.23	-13.00	49.23	11.69	V	311.3	1.00
1	164.150	-79.26	-13.00	66.26	-4.33	V	135.9	2.00
1	240.900	-77.07	-13.00	64.07	0.40	V	1	1.00
1	298.100	-67.65	-13.00	54.65	4.45	V	108.1	1.00



ABOVE 1GHz

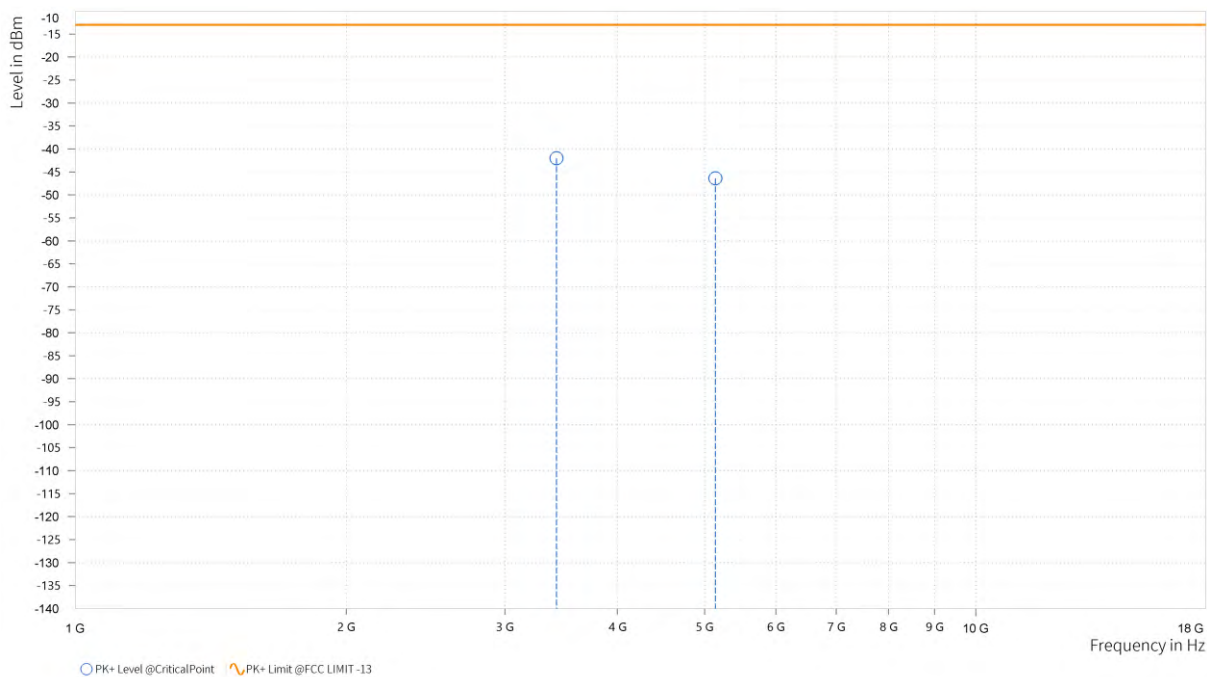
Note: For higher frequency, the emission is too low to be detected.

WCDMA Band IV:

CH 1312

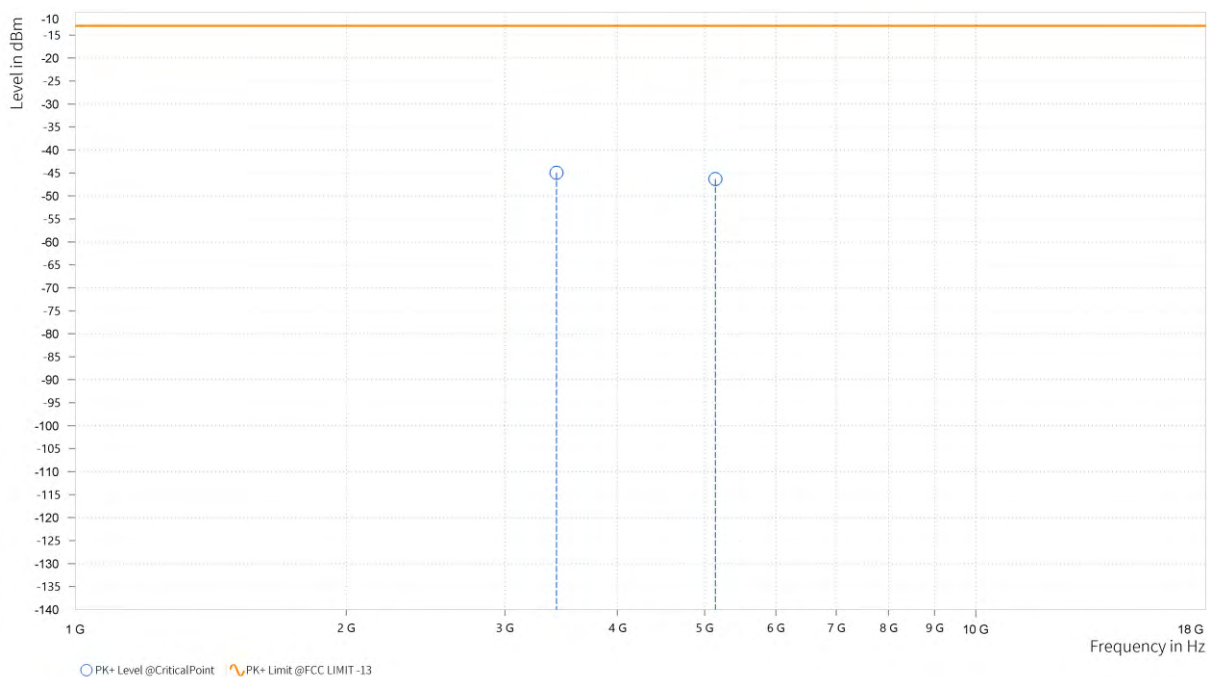
MODE	TX channel 1312	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	120Vac 60HZ
TESTED BY	Hanwen Xu		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

Rg	Frequency [MHz]	PK+ Level [dBm]	PK+ Limit [dBm]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
4	3,423.500	-42.03	-13.00	29.03	25.19	H	150.1	2
4	5,138.000	-46.38	-13.00	33.38	26.85	H	150.1	2



MODE	TX channel 1312	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	120Vac 60HZ
TESTED BY	Hanwen Xu		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

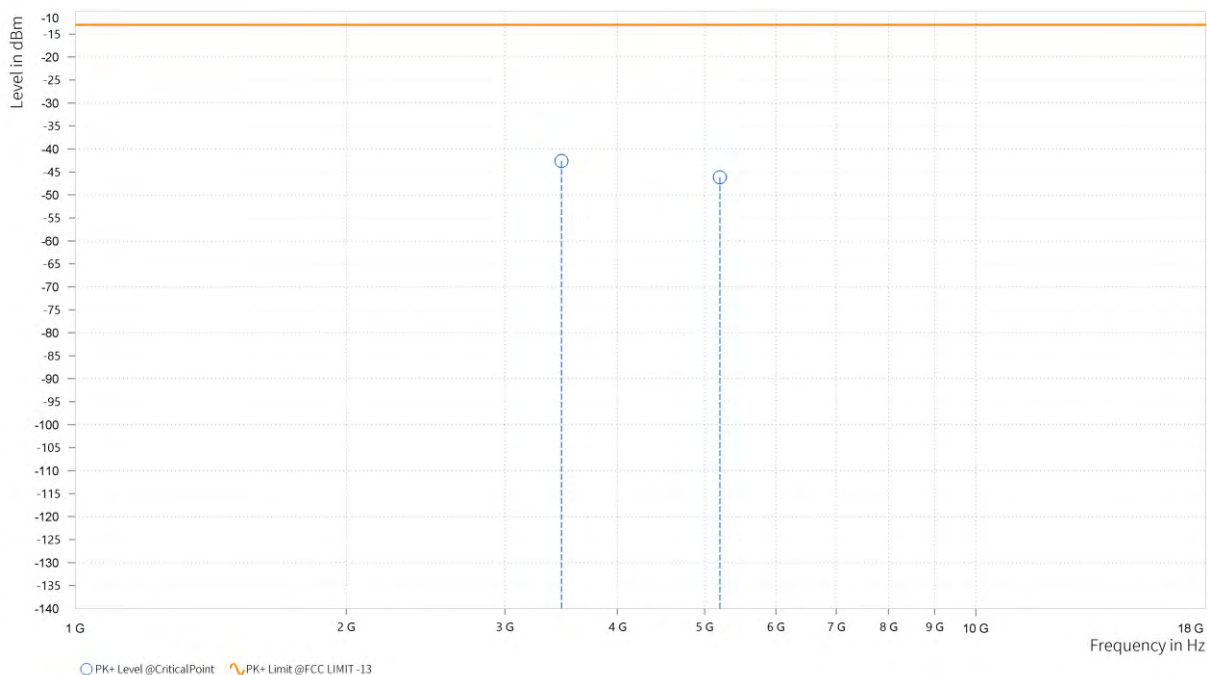
Rg	Frequency [MHz]	PK+ Level [dBm]	PK+ Limit [dBm]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
4	3,423.500	-44.98	-13.00	31.98	24.98	V	359.1	1
4	5,137.000	-46.33	-13.00	33.33	26.72	V	1	1



CH 1413

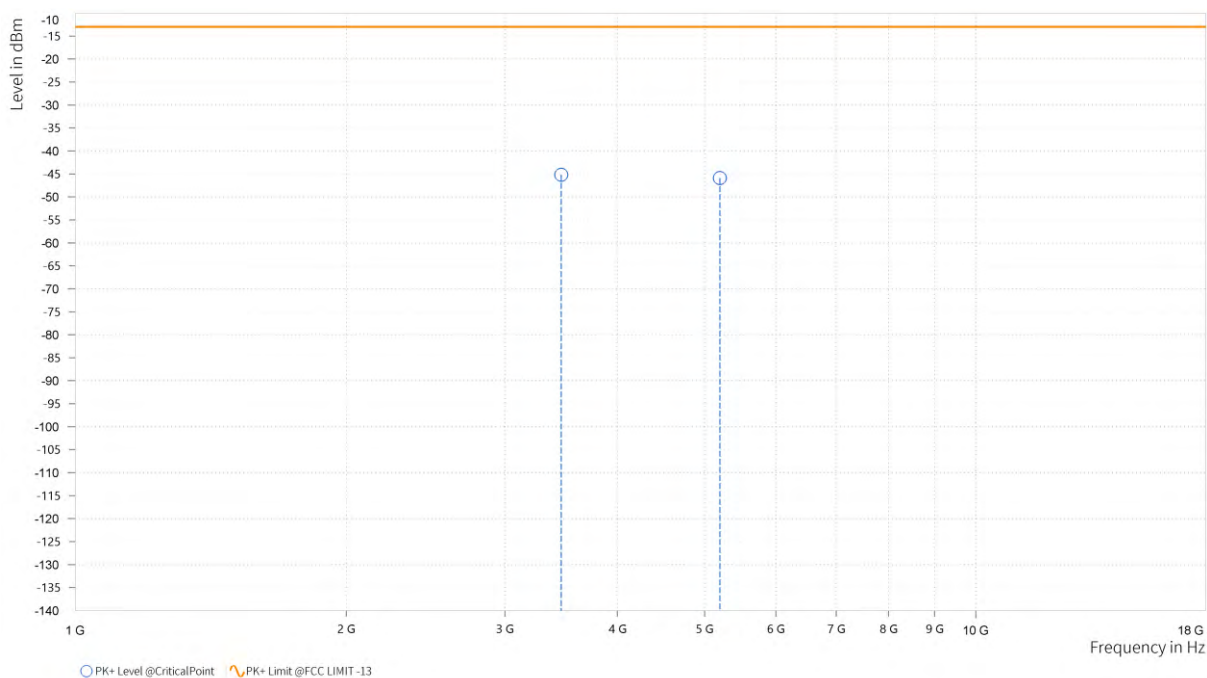
MODE	TX channel 1413	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	120Vac 60HZ
TESTED BY	Hanwen Xu		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

Rg	Frequency [MHz]	PK+ Level [dBm]	PK+ Limit [dBm]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
4	3,466.500	-42.62	-13.00	29.62	24.70	H	152.6	2
4	5,198.500	-46.15	-13.00	33.15	27.27	H	359	2



MODE	TX channel 1413	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	120Vac 60HZ
TESTED BY	Hanwen Xu		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

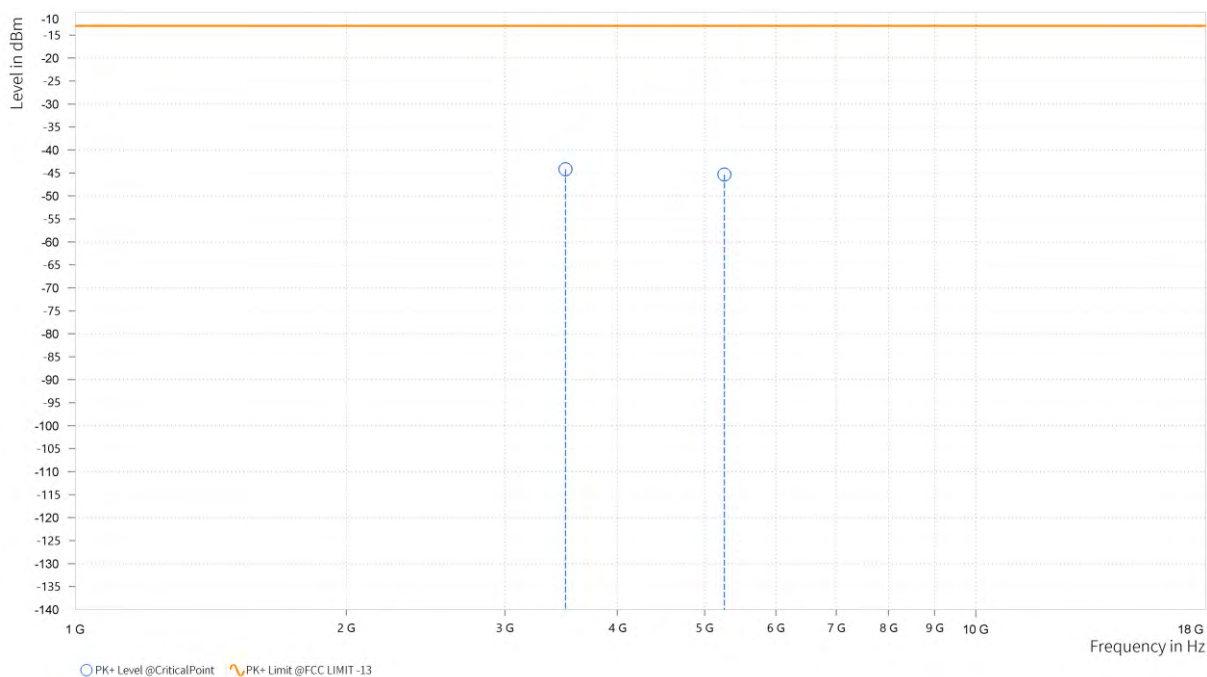
Rg	Frequency [MHz]	PK+ Level [dBm]	PK+ Limit [dBm]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
4	3,465.000	-45.20	-13.00	32.20	24.47	V	151.4	2
4	5,197.500	-45.91	-13.00	32.91	27.22	V	211.1	1



CH 1513

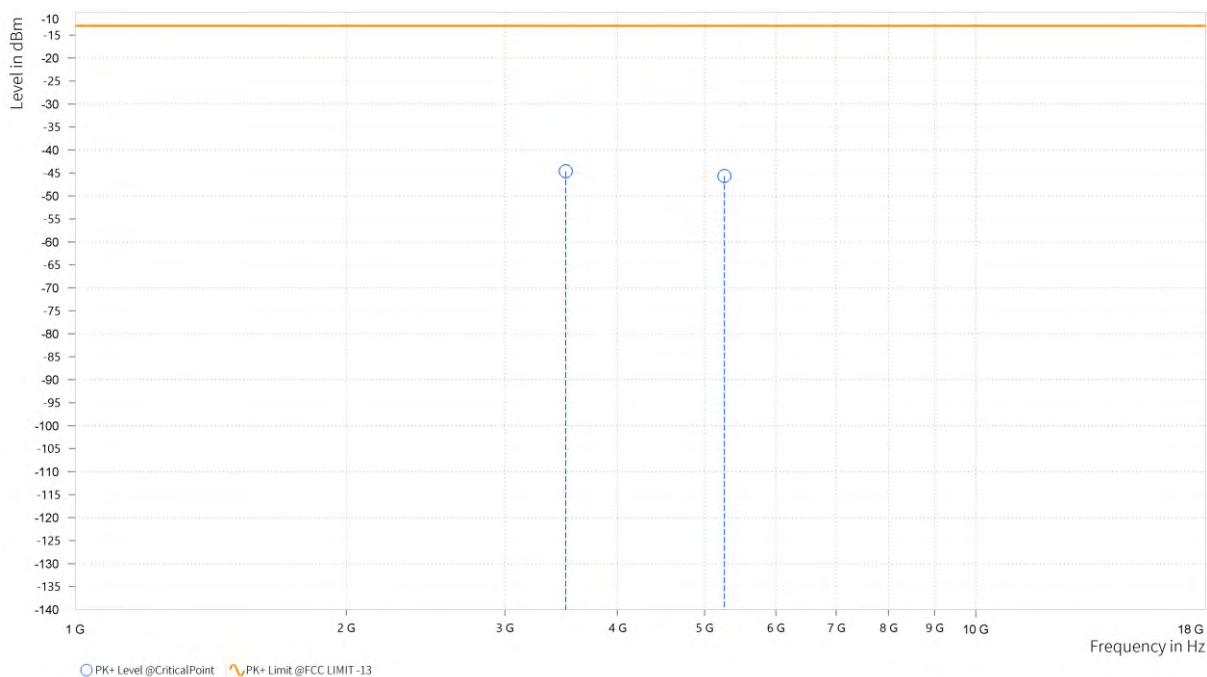
MODE	TX channel 1513	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	120Vac 60HZ
TESTED BY	Hanwen Xu		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

Rg	Frequency [MHz]	PK+ Level [dBm]	PK+ Limit [dBm]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
4	3,504.000	-44.22	-13.00	31.22	25.72	H	195.5	1
4	5,257.000	-45.37	-13.00	32.37	27.23	H	359	1



MODE	TX channel 1513	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	120Vac 60HZ
TESTED BY	Hanwen Xu		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

Rg	Frequency [MHz]	PK+ Level [dBm]	PK+ Limit [dBm]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
4	3,505.500	-44.63	-13.00	31.63	25.55	V	165.7	2
4	5,257.500	-45.67	-13.00	32.67	27.17	V	165.7	2

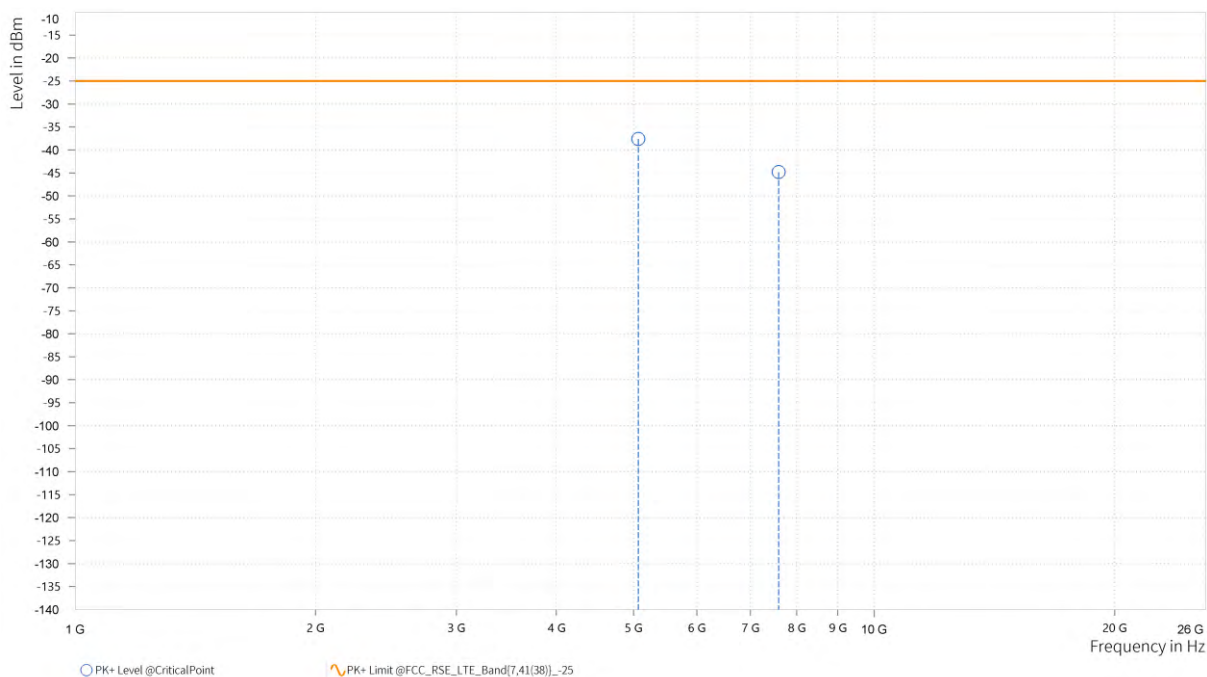


LTE Band 7

CHANNEL BANDWIDTH: 5MHz / QPSK

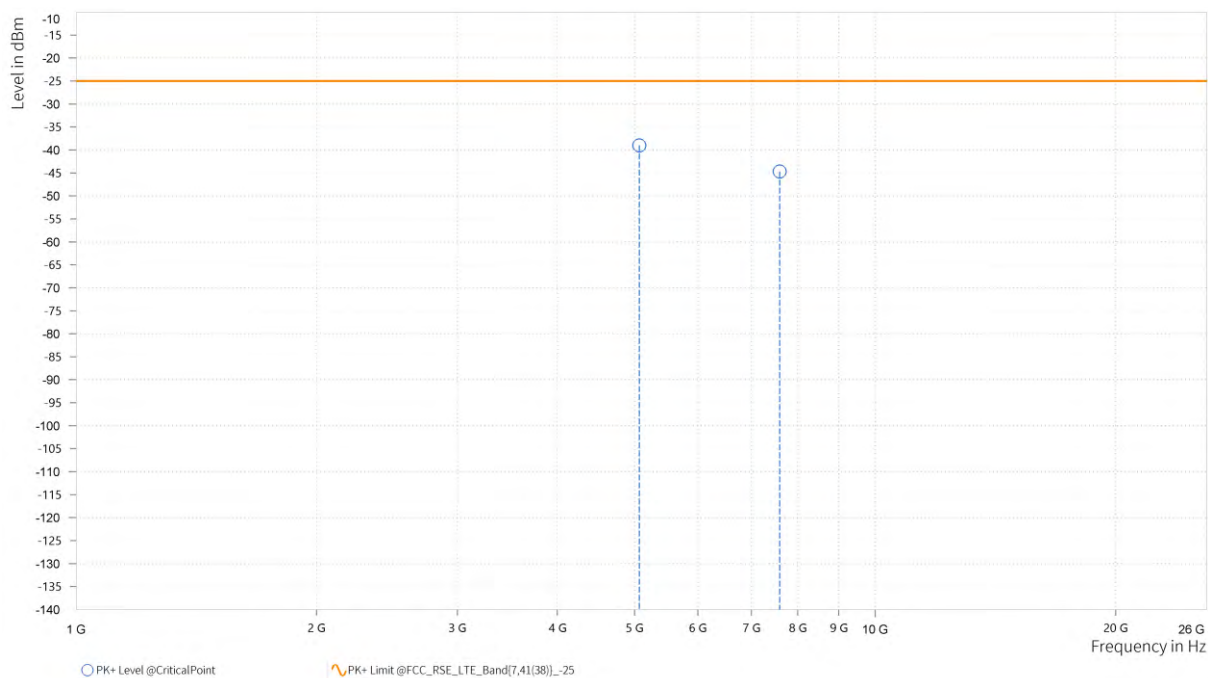
MODE	TX channel 21100	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	120Vac 60HZ
TESTED BY	Hanwen Xu		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

Rg	Frequency [MHz]	PK+ Level [dBm]	PK+ Limit [dBm]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
4	5,067.500	-37.61	-25.00	12.61	26.43	H	174	2
5	7,598.250	-44.81	-25.00	19.81	29.01	H	0.9	2



MODE	TX channel 21100	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	120Vac 60HZ
TESTED BY	Hanwen Xu		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

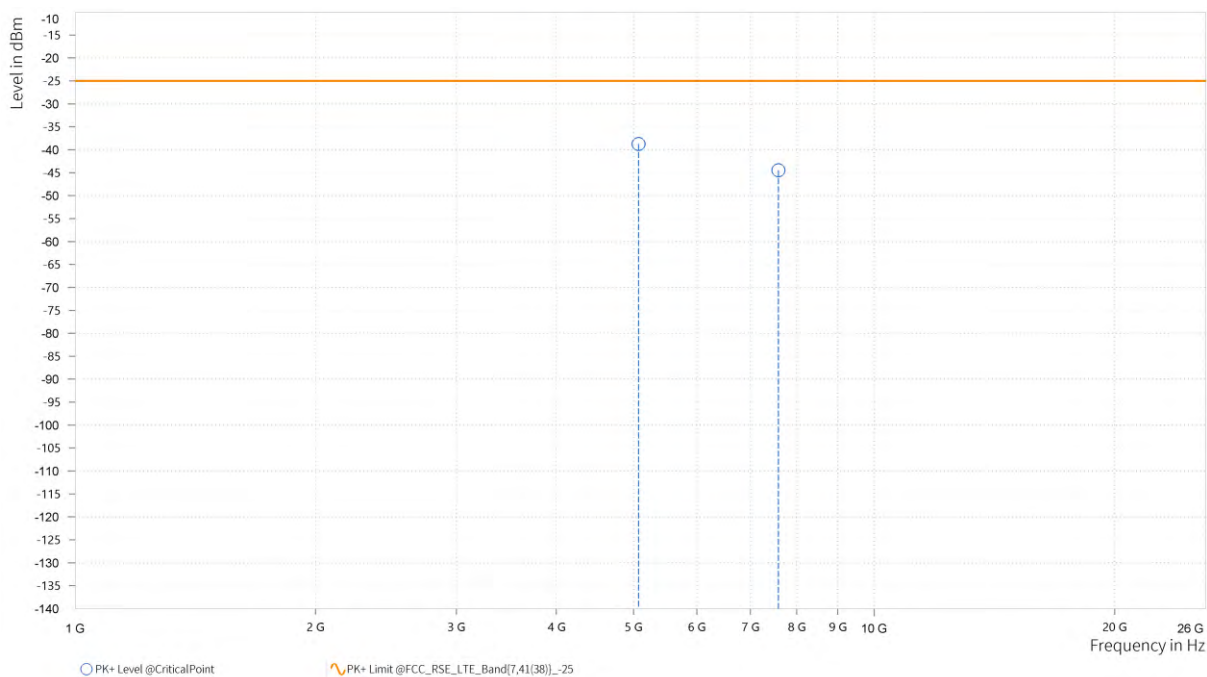
Rg	Frequency [MHz]	PK+ Level [dBm]	PK+ Limit [dBm]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
4	5,068.000	-39.01	-25.00	14.01	26.21	V	359	1
5	7,598.250	-44.72	-25.00	19.72	29.03	V	1	2



CHANNEL BANDWIDTH: 10MHz / QPSK

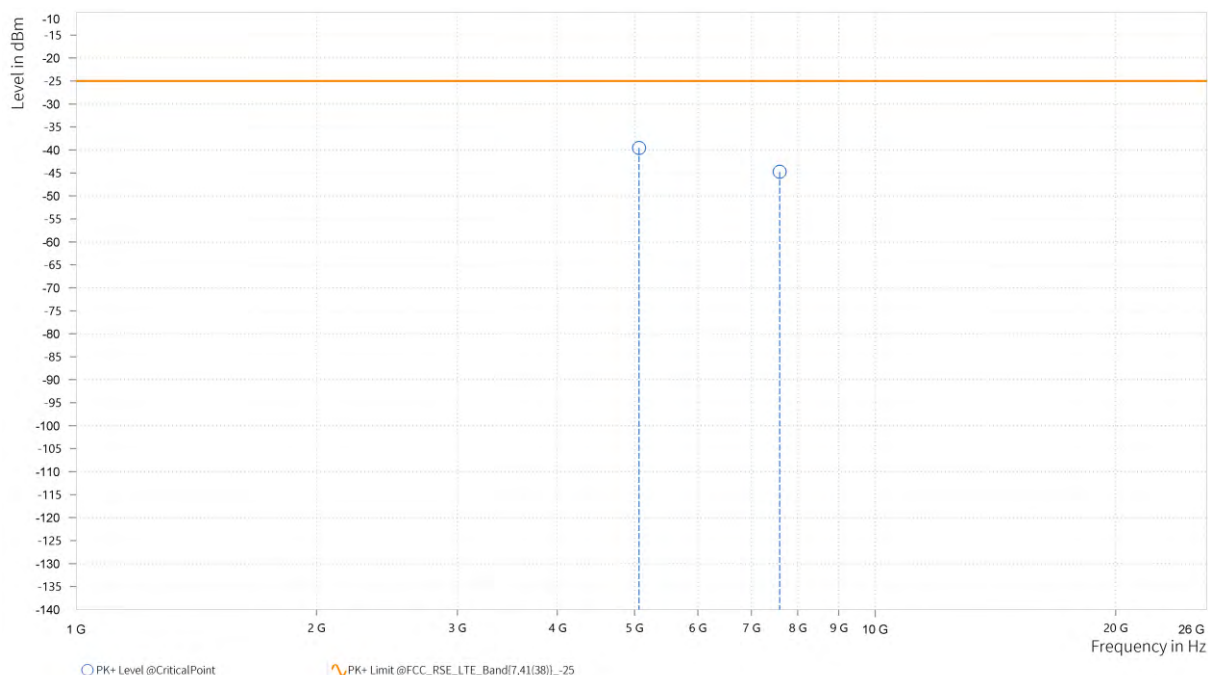
MODE	TX channel 21100	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	120Vac 60HZ
TESTED BY	Hanwen Xu		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

Rg	Frequency [MHz]	PK+ Level [dBm]	PK+ Limit [dBm]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
4	5,070.000	-38.76	-25.00	13.76	26.45	H	171.6	2
5	7,591.500	-44.50	-25.00	19.50	29.00	H	1	2



MODE	TX channel 21100	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	120Vac 60HZ
TESTED BY	Hanwen Xu		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

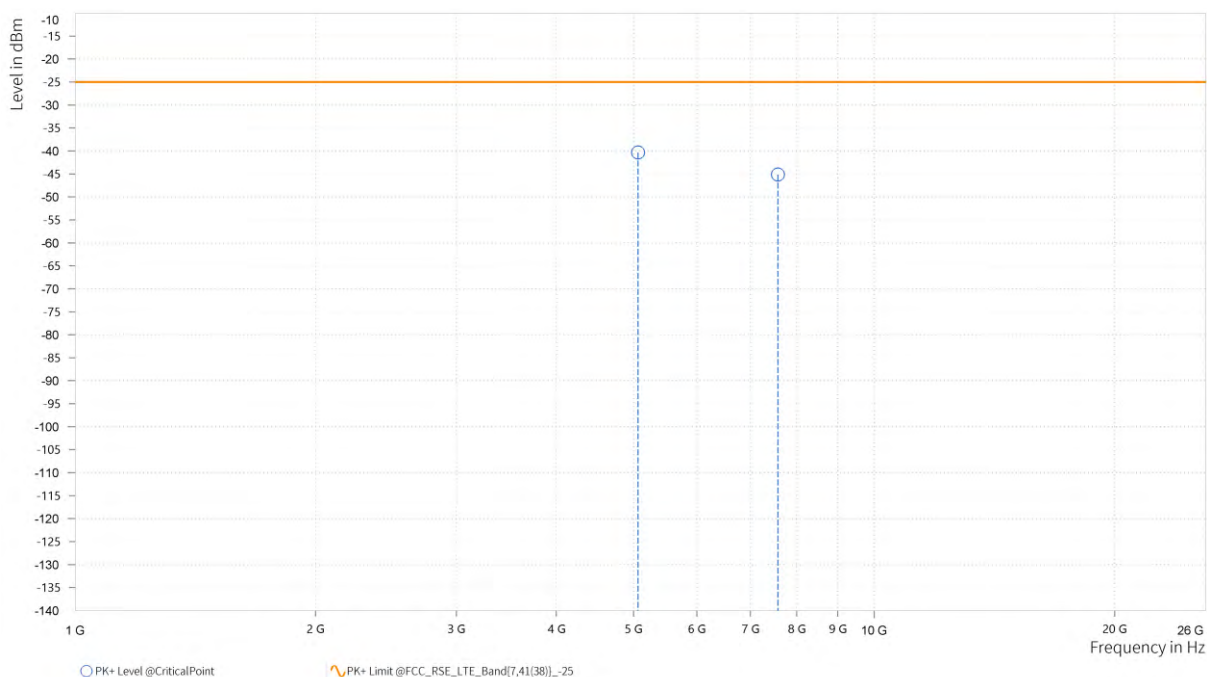
Rg	Frequency [MHz]	PK+ Level [dBm]	PK+ Limit [dBm]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
4	5,065.500	-39.56	-25.00	14.56	26.19	V	1	1
5	7,591.500	-44.73	-25.00	19.73	29.03	V	1	1



CHANNEL BANDWIDTH: 15MHz / QPSK

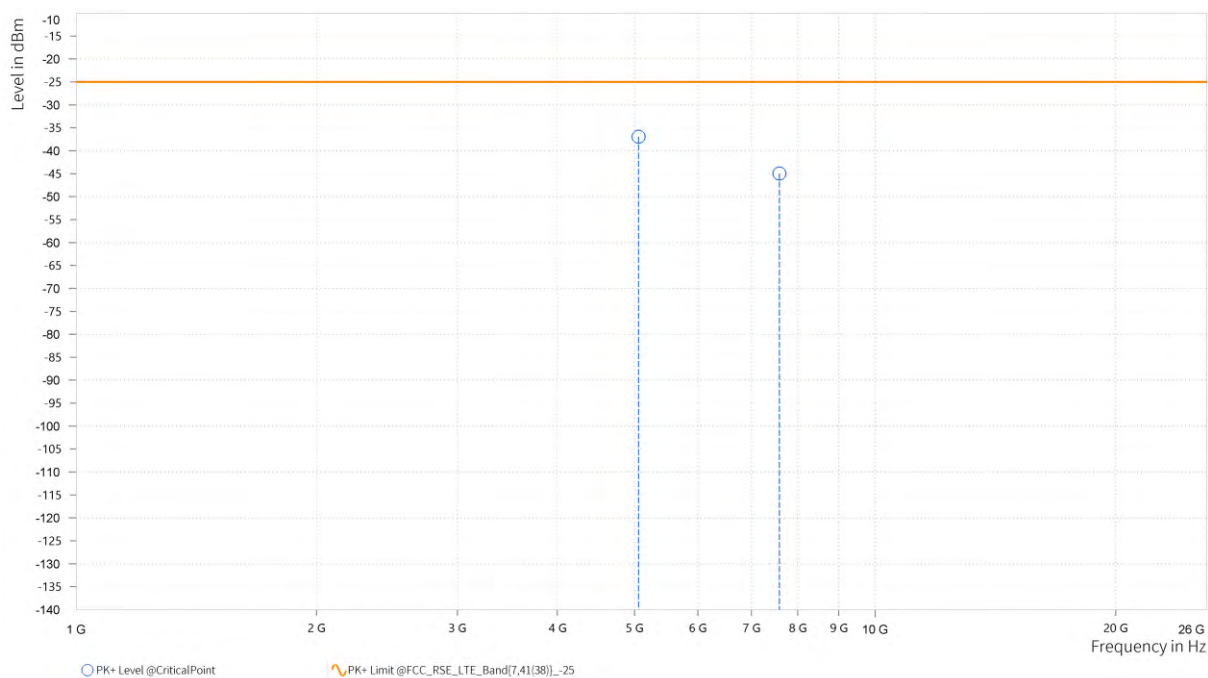
MODE	TX channel 21100	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	120Vac 60HZ
TESTED BY	Hanwen Xu		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

Rg	Frequency [MHz]	PK+ Level [dBm]	PK+ Limit [dBm]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
4	5,063.500	-40.34	-25.00	15.34	26.41	H	174.1	2
5	7,584.250	-45.11	-25.00	20.11	28.99	H	89.2	2



MODE	TX channel 21100	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	120Vac 60HZ
TESTED BY	Hanwen Xu		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

Rg	Frequency [MHz]	PK+ Level [dBm]	PK+ Limit [dBm]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
4	5,056.500	-36.96	-25.00	11.96	26.10	V	359.1	1
5	7,584.750	-44.95	-25.00	19.95	29.04	V	359.1	1

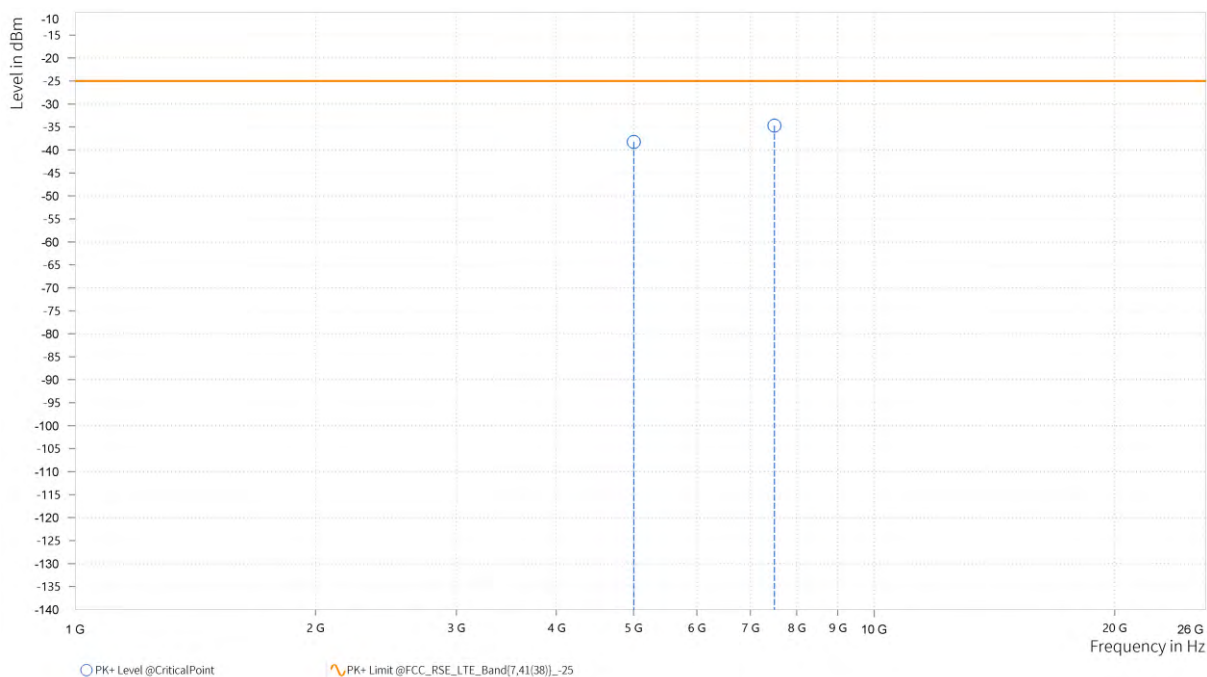


CHANNEL BANDWIDTH: 20MHz / QPSK

CH:20850

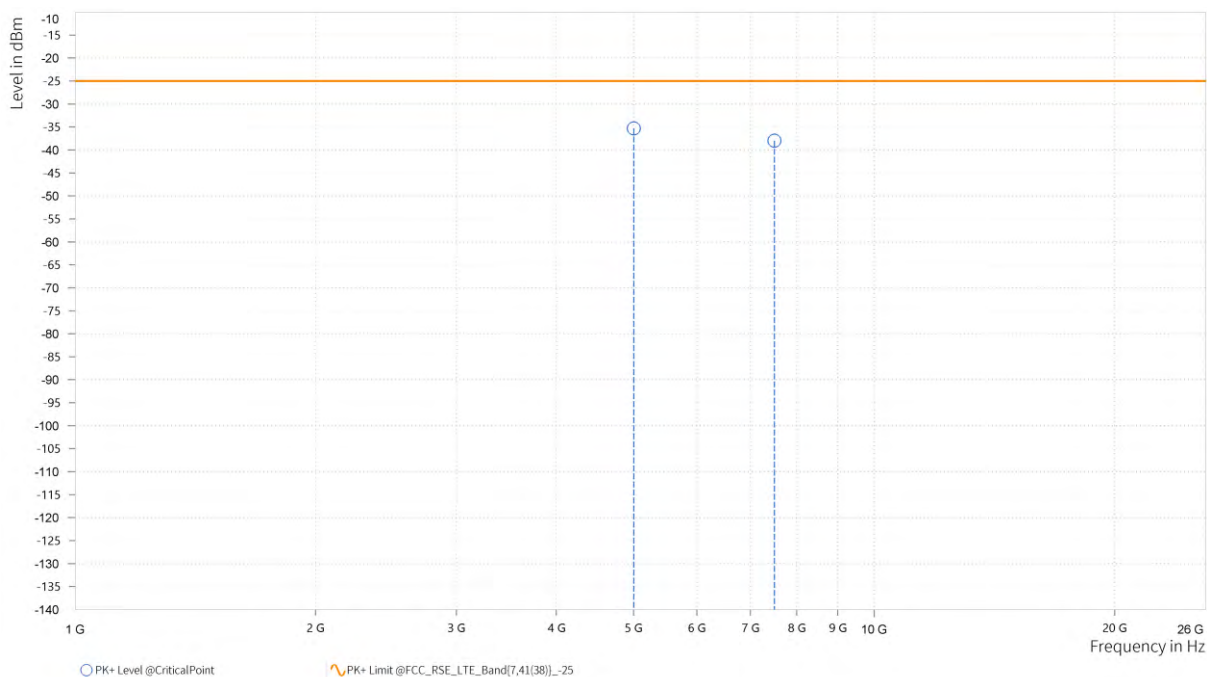
MODE	TX channel 20850	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	120Vac 60HZ
TESTED BY	Hanwen Xu		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

Rg	Frequency [MHz]	PK+ Level [dBm]	PK+ Limit [dBm]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
2	5,002.000	-38.26	-25.00	13.26	16.78	H	359	2
2	7,503.500	-34.71	-25.00	9.71	22.06	H	359.1	1



MODE	TX channel 20850	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	120Vac 60HZ
TESTED BY	Hanwen Xu		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

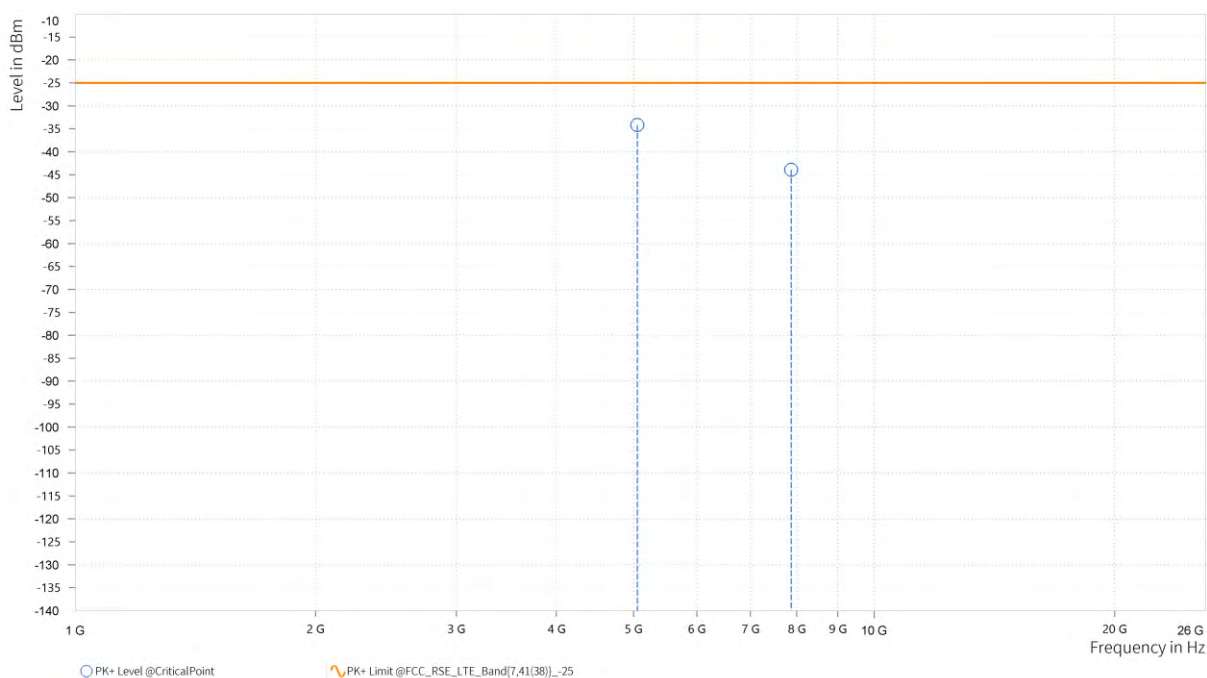
Rg	Frequency [MHz]	PK+ Level [dBm]	PK+ Limit [dBm]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
2	5,002.500	-35.29	-25.00	10.29	16.64	V	1	1
2	7,503.500	-37.96	-25.00	12.96	22.23	V	0.9	2



CH:21100

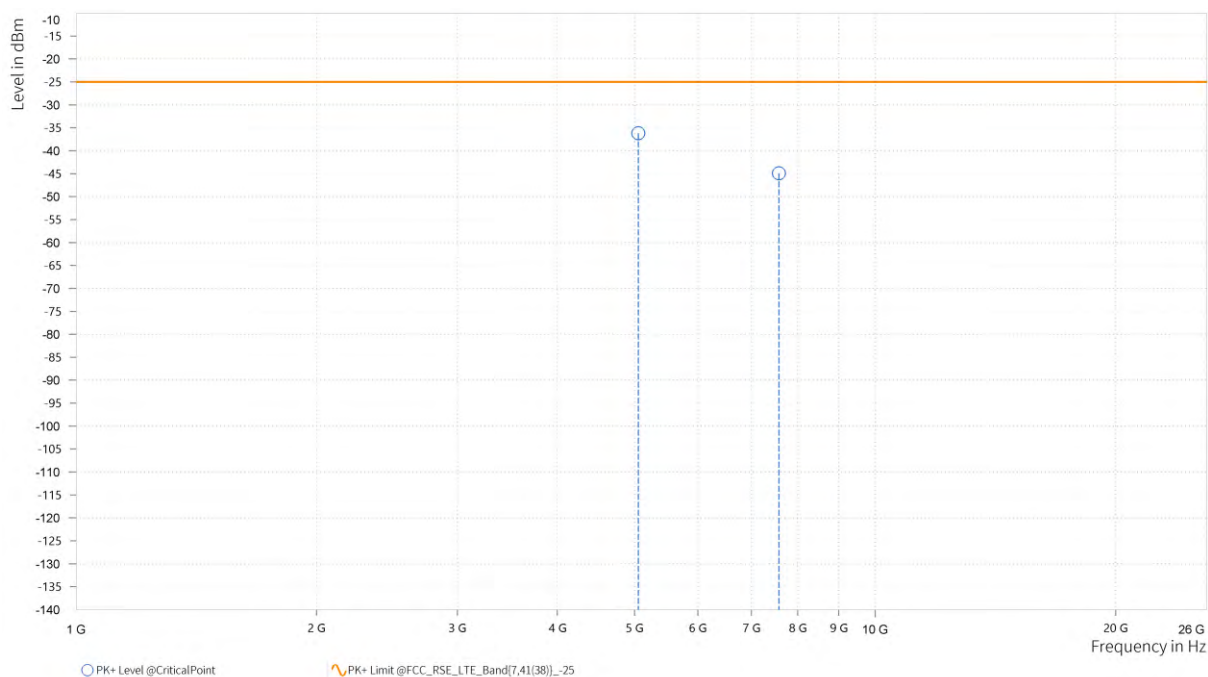
MODE	TX channel 21100	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	120Vac 60HZ
TESTED BY	Hanwen Xu		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

Rg	Frequency [MHz]	PK+ Level [dBm]	PK+ Limit [dBm]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
4	5,052.000	-34.18	-25.00	9.18	26.26	H	172.9	2
5	7,875.000	-43.92	-25.00	18.92	29.29	H	88	2



MODE	TX channel 21100	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	120Vac 60HZ
TESTED BY	Hanwen Xu		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

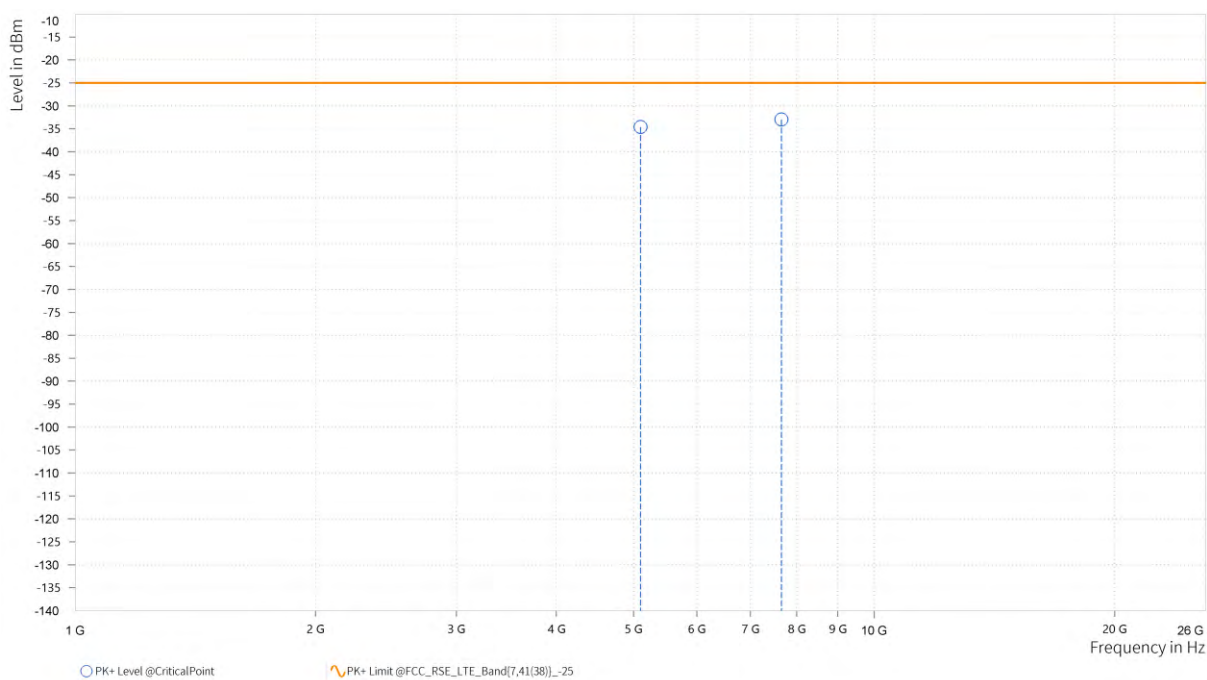
Rg	Frequency [MHz]	PK+ Level [dBm]	PK+ Limit [dBm]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
4	5,052.000	-36.19	-25.00	11.19	26.04	V	1	1
5	7,578.000	-44.89	-25.00	19.89	29.04	V	294.8	1



CH:21350

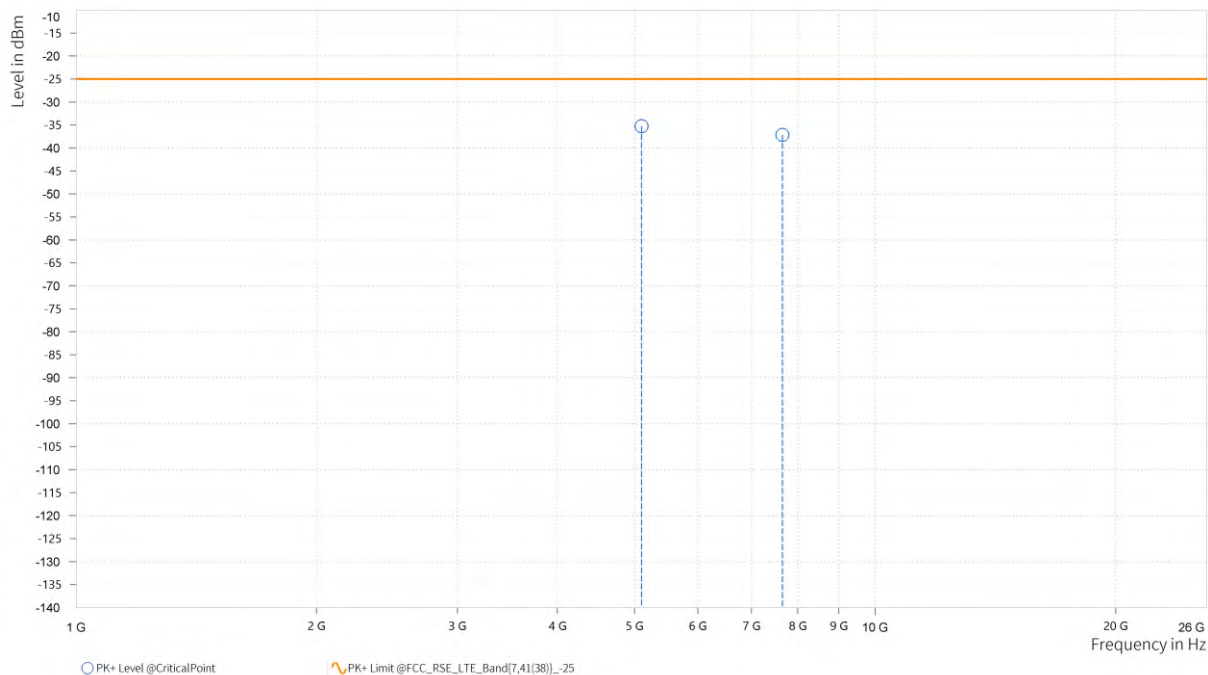
MODE	TX channel 21350	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	120Vac 60HZ
TESTED BY	Hanwen Xu		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

Rg	Frequency [MHz]	PK+ Level [dBm]	PK+ Limit [dBm]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
2	5,102.000	-34.63	-25.00	9.63	17.22	H	94.1	1
2	7,653.500	-32.98	-25.00	7.98	22.34	H	94.1	1



MODE	TX channel 21350	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	120Vac 60HZ
TESTED BY	Hanwen Xu		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

Rg	Frequency [MHz]	PK+ Level [dBm]	PK+ Limit [dBm]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
2	5,102.000	-35.27	-25.00	10.27	17.04	V	1	1
2	7,653.000	-37.17	-25.00	12.17	22.28	V	359	2

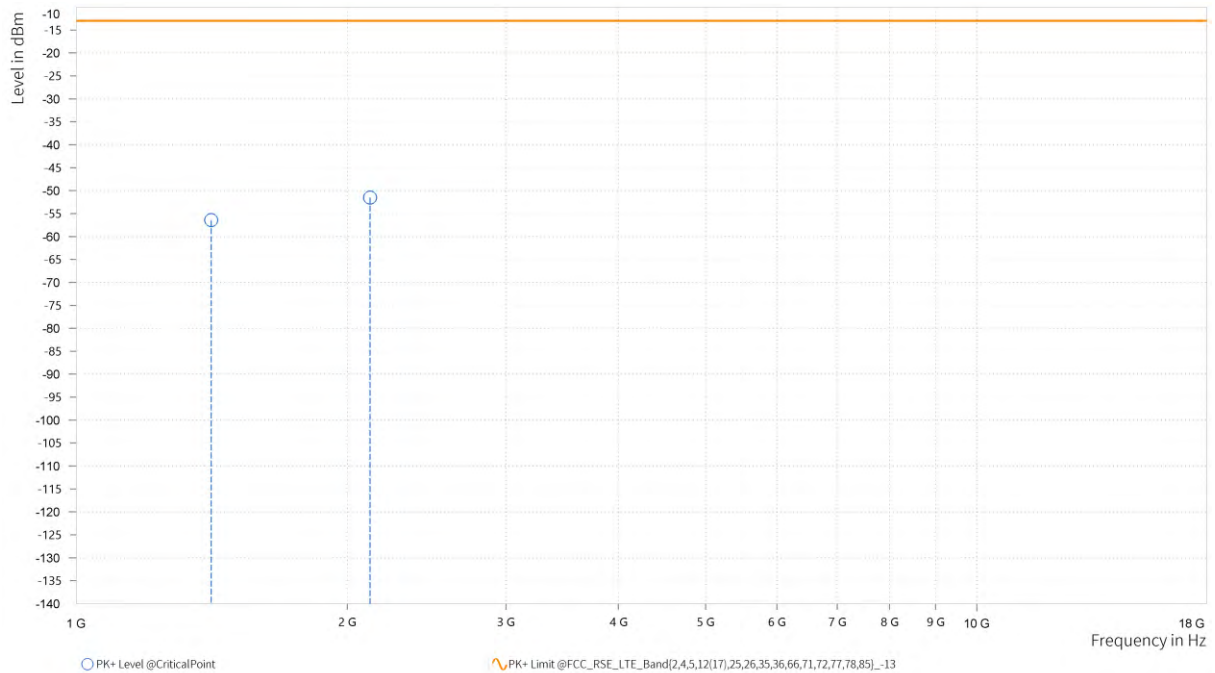


LTE BAND 12

CHANNEL BANDWIDTH: 1.4MHz / QPSK

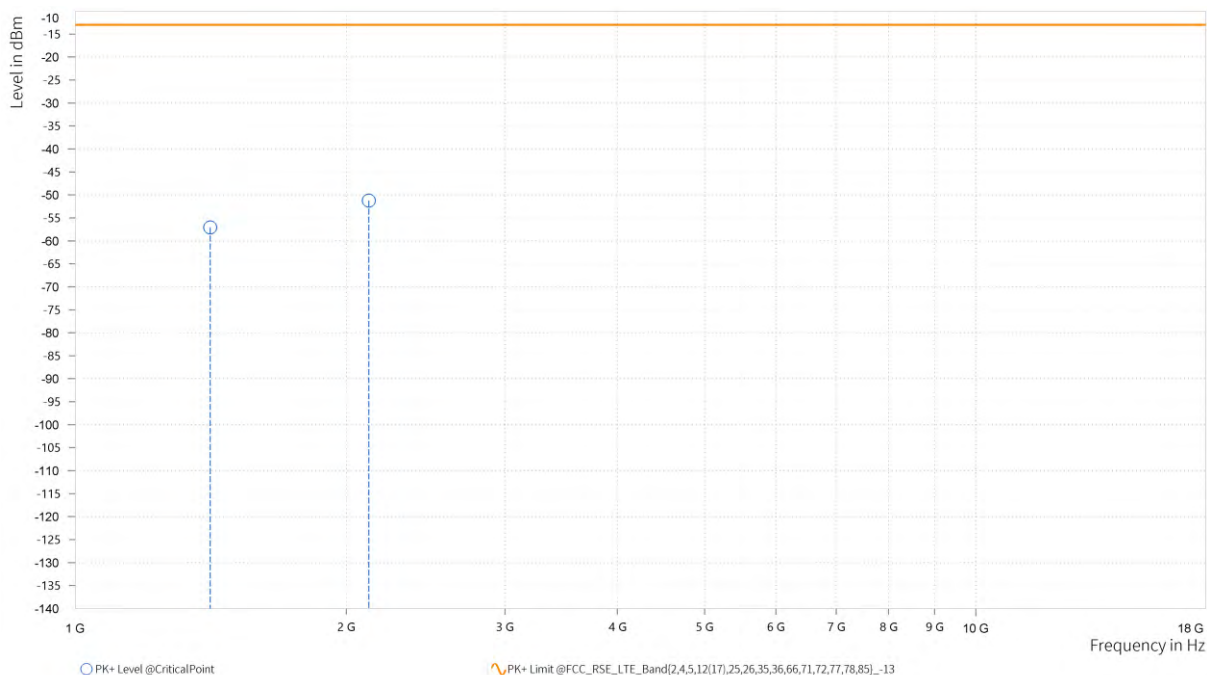
MODE	TX channel 23095	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	120Vac 60HZ
TESTED BY	Hanwen Xu		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

Rg	Frequency [MHz]	PK+ Level [dBm]	PK+ Limit [dBm]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
1	1,412.500	-56.44	-13.00	43.44	3.05	H	1	2
1	2,120.000	-51.49	-13.00	38.49	10.87	H	5.1	2



MODE	TX channel 23095	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	120Vac 60HZ
TESTED BY	Hanwen Xu		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

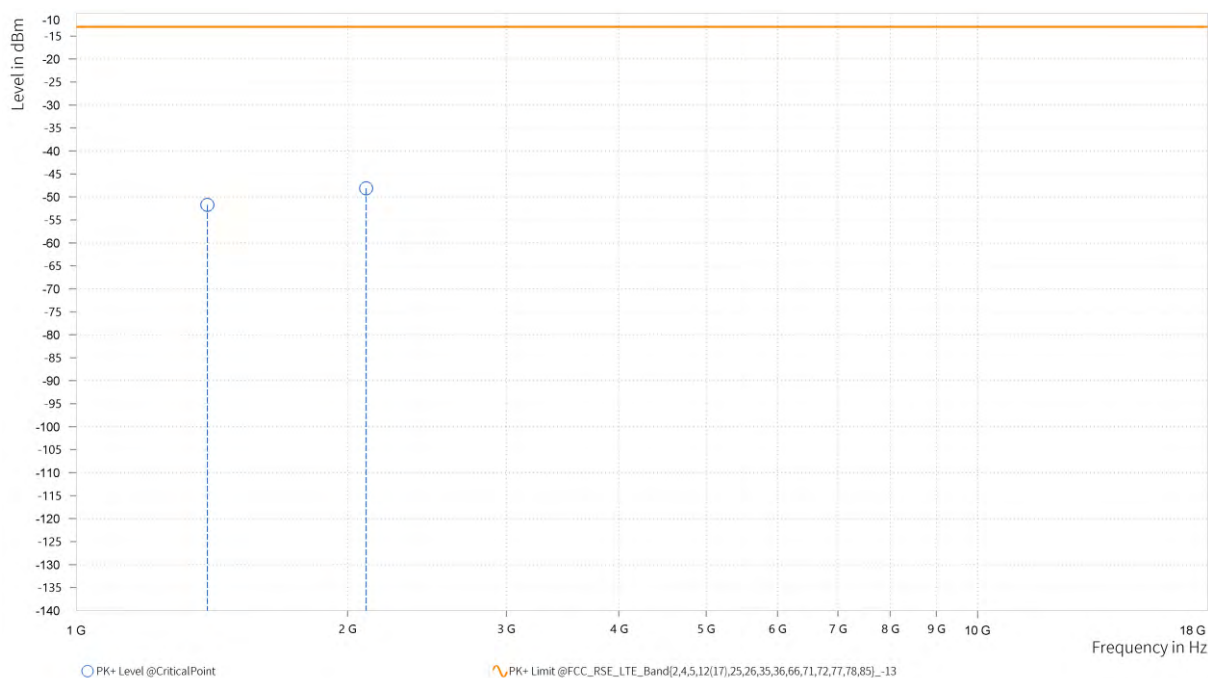
Rg	Frequency [MHz]	PK+ Level [dBm]	PK+ Limit [dBm]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
1	1,412.500	-57.10	-13.00	44.10	2.96	V	243.4	1.999
1	2,119.500	-51.22	-13.00	38.22	10.50	V	1	1.999



**CHANNEL BANDWIDTH: 3MHz / QPSK
CH23025**

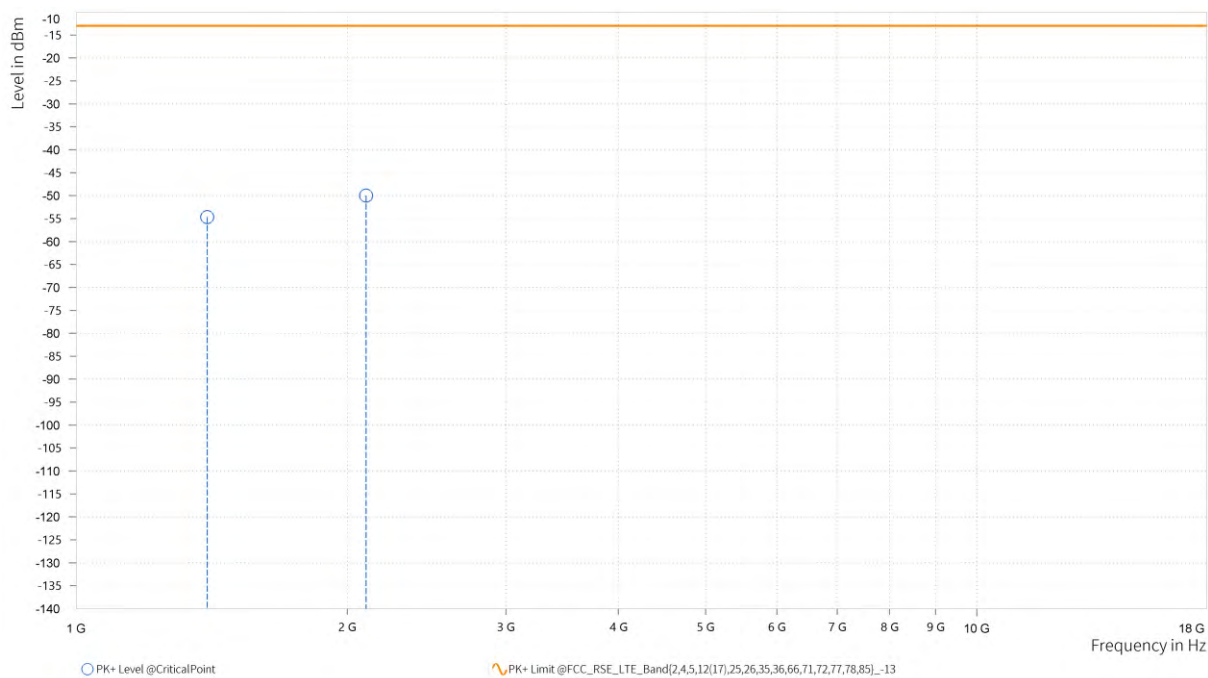
MODE	TX channel 23025	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	120Vac 60HZ
TESTED BY	Hanwen Xu		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

Rg	Frequency [MHz]	PK+ Level [dBm]	PK+ Limit [dBm]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
1	1,398.500	-51.71	-13.00	38.71	5.04	H	4.6	2
1	2,097.500	-48.13	-13.00	35.13	9.91	H	1	2



MODE	TX channel 23025	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	120Vac 60HZ
TESTED BY	Hanwen Xu		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

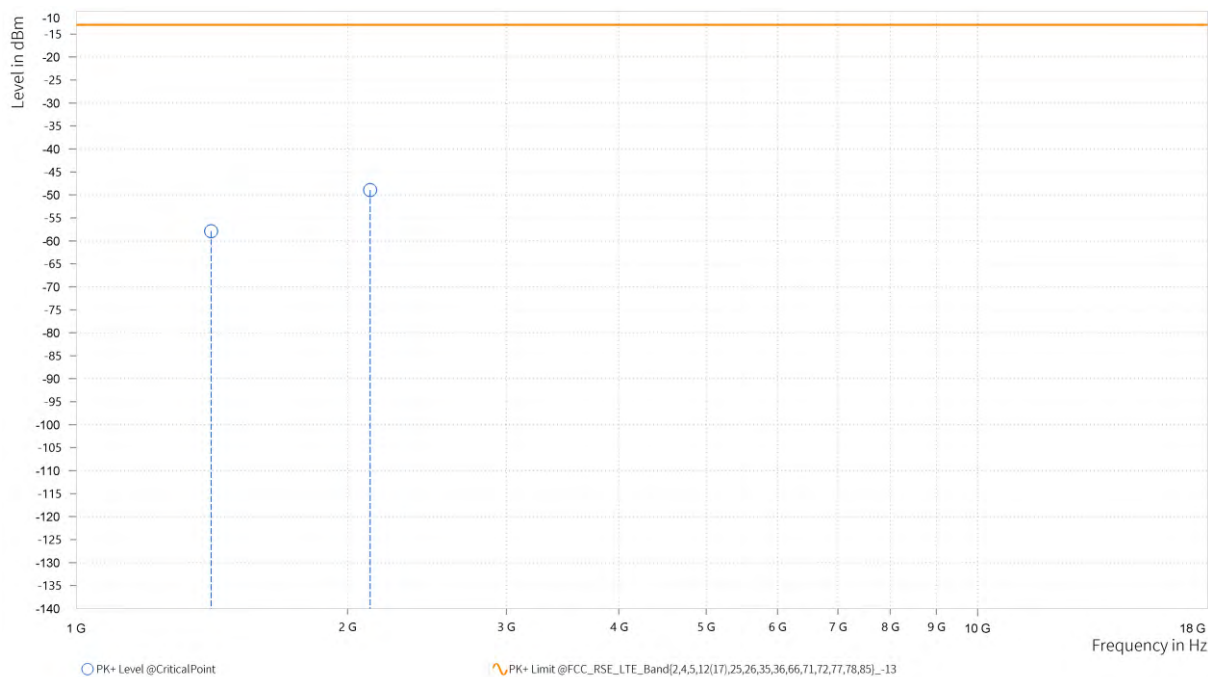
Rg	Frequency [MHz]	PK+ Level [dBm]	PK+ Limit [dBm]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
1	1,398.000	-54.68	-13.00	41.68	5.11	V	224.3	2
1	2,098.000	-50.01	-13.00	37.01	9.83	V	5.1	2



CH23095

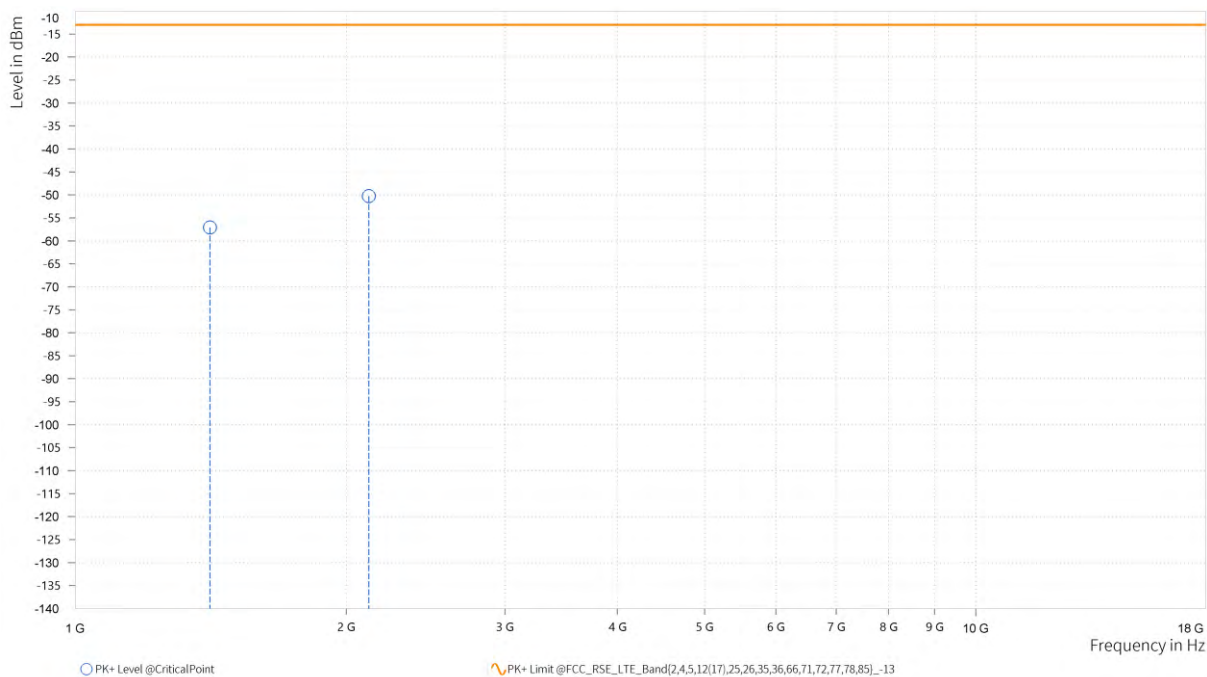
04-20000			
MODE	TX channel 23095	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	120Vac 60HZ
TESTED BY	Hanwen Xu		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

Rg	Frequency [MHz]	PK+ Level [dBm]	PK+ Limit [dBm]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
1	1,411.500	-57.92	-13.00	44.92	3.20	H	358.8	1.999
1	2,118.500	-48.96	-13.00	35.96	10.80	H	1	1.999



MODE	TX channel 23095	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	120Vac 60HZ
TESTED BY	Hanwen Xu		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

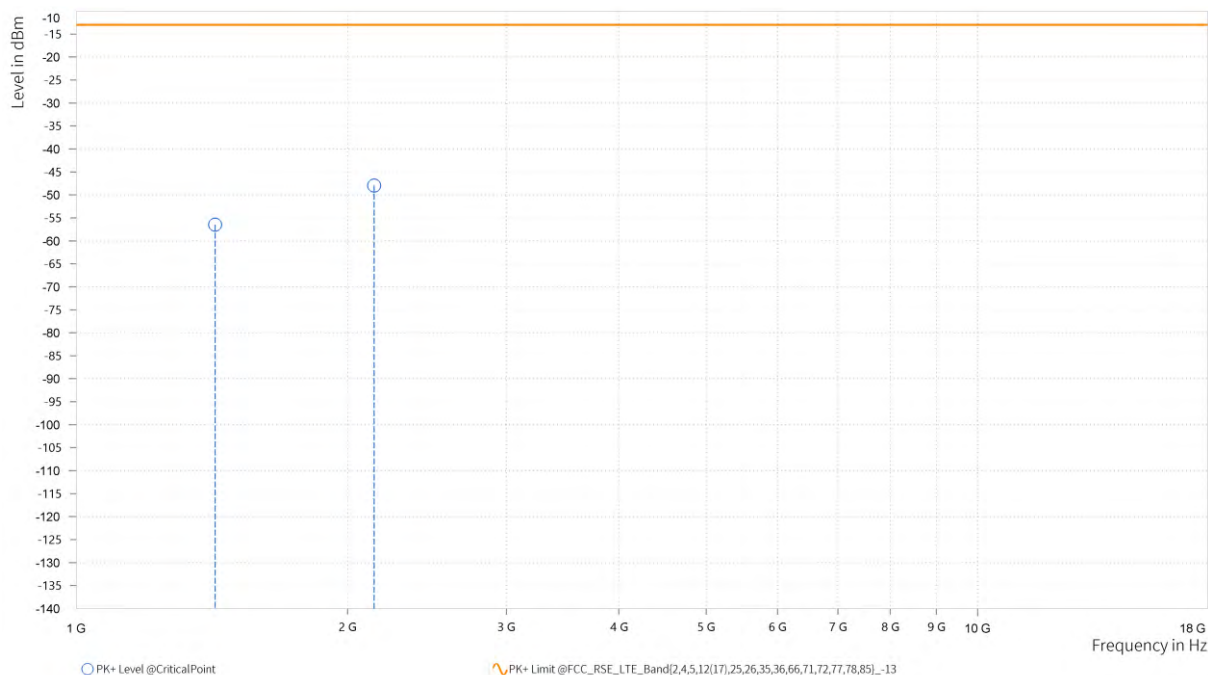
Rg	Frequency [MHz]	PK+ Level [dBm]	PK+ Limit [dBm]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
1	1,411.500	-57.07	-13.00	44.07	3.11	V	224.3	1.999
1	2,118.500	-50.28	-13.00	37.28	10.47	V	1	1.999



CH23165

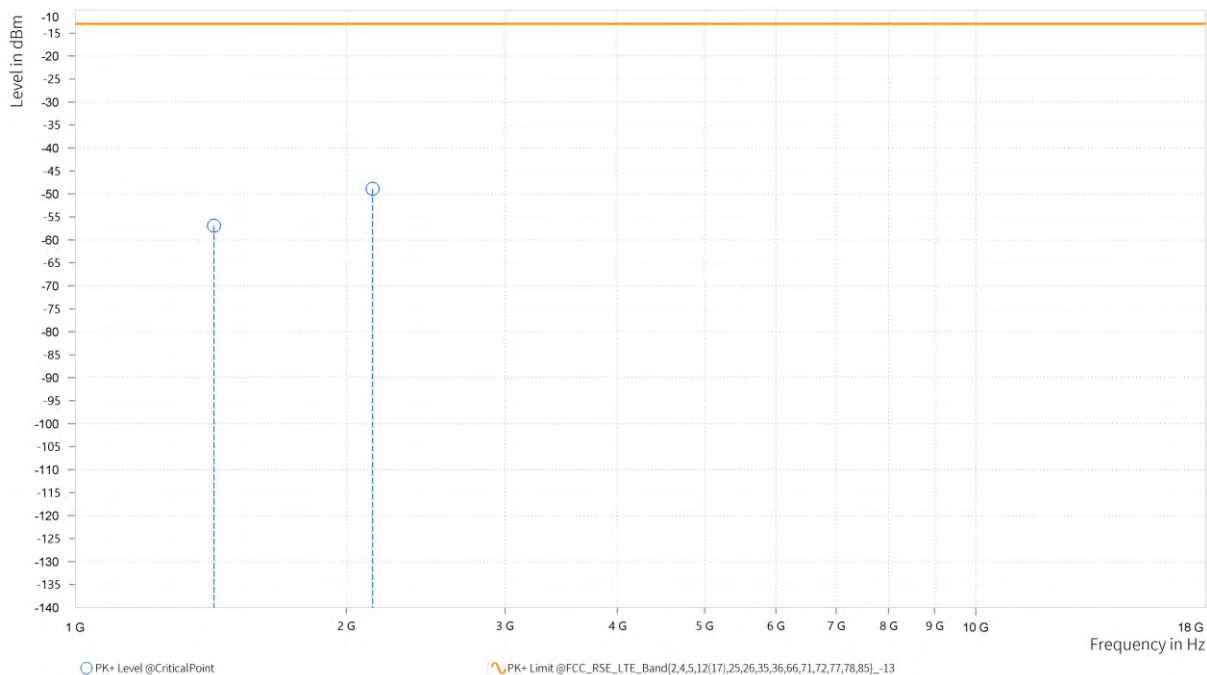
04/20/19			
MODE	TX channel 23165	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	120Vac 60HZ
TESTED BY	Hanwen Xu		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

Rg	Frequency [MHz]	PK+ Level [dBm]	PK+ Limit [dBm]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
1	1,426.000	-56.47	-13.00	43.47	1.52	H	4.6	2
1	2,140.500	-47.95	-13.00	34.95	11.73	H	355.8	2



MODE	TX channel 23165	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	120Vac 60HZ
TESTED BY	Hanwen Xu		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

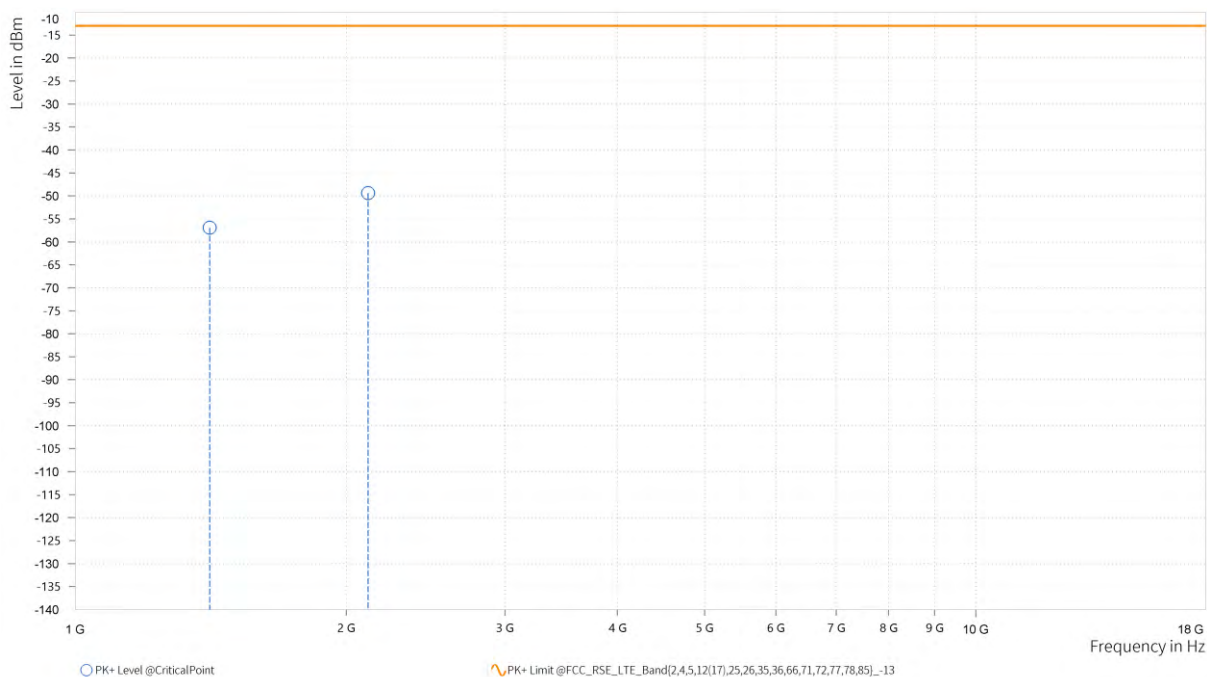
Rg	Frequency [MHz]	PK+ Level [dBm]	PK+ Limit [dBm]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
1	1,426.000	-56.92	-13.00	43.92	1.35	V	1	2
1	2,140.000	-48.92	-13.00	35.92	11.13	V	1	2



CHANNEL BANDWIDTH: 5MHz / QPSK

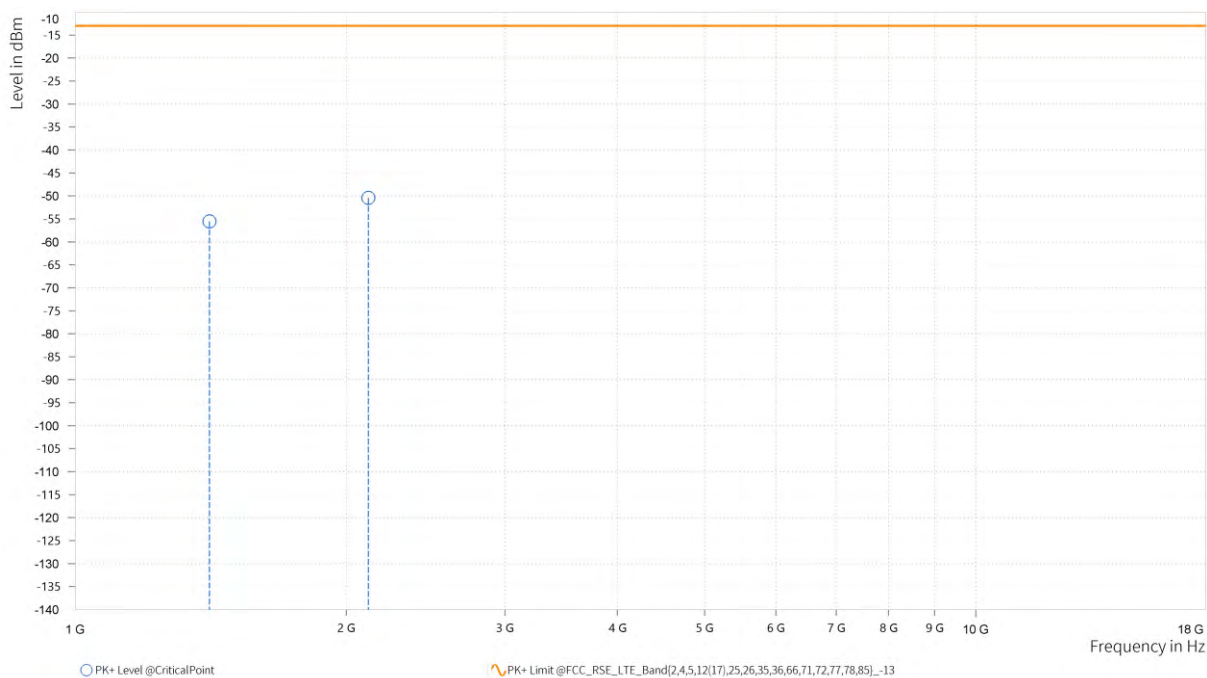
MODE	TX channel 23095	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	120Vac 60HZ
TESTED BY	Hanwen Xu		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

Rg	Frequency [MHz]	PK+ Level [dBm]	PK+ Limit [dBm]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
1	1,410.500	-56.91	-13.00	43.91	3.34	H	356.1	1.999
1	2,115.000	-49.36	-13.00	36.36	10.65	H	4.5	1.999



MODE	TX channel 23095	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	120Vac 60HZ
TESTED BY	Hanwen Xu		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

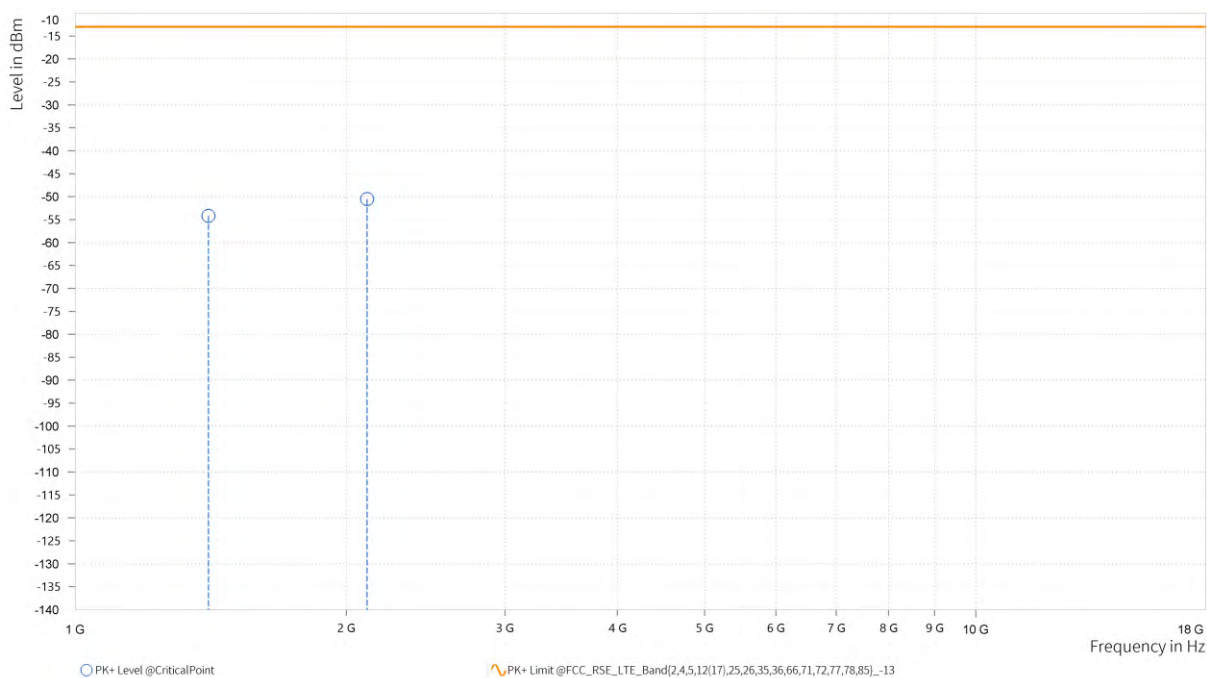
Rg	Frequency [MHz]	PK+ Level [dBm]	PK+ Limit [dBm]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
1	1,410.000	-55.53	-13.00	42.53	3.33	V	4.6	2
1	2,116.000	-50.40	-13.00	37.40	10.39	V	273.3	2



CHANNEL BANDWIDTH: 10MHz / QPSK

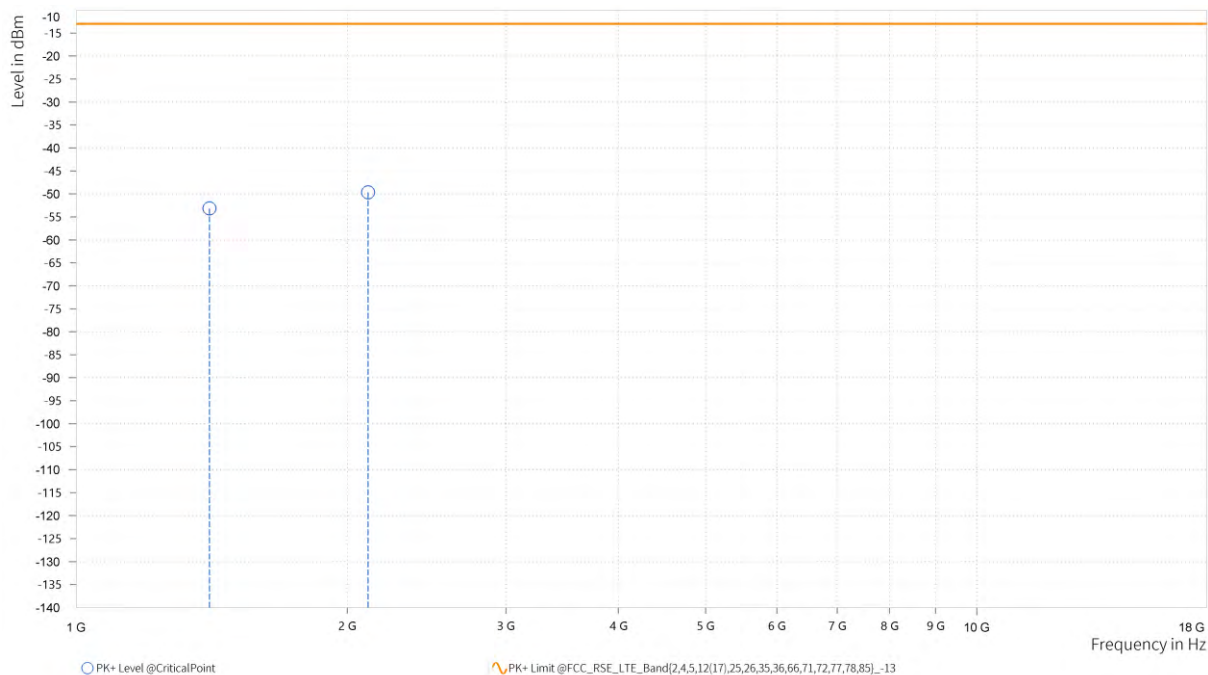
MODE	TX channel 23095	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	120Vac 60HZ
TESTED BY	Hanwen Xu		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

Rg	Frequency [MHz]	PK+ Level [dBm]	PK+ Limit [dBm]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
1	1,406.000	-54.20	-13.00	41.20	3.97	H	5.2	1
1	2,109.000	-50.52	-13.00	37.52	10.40	H	3.9	2



MODE	TX channel 23095	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	120Vac 60HZ
TESTED BY	Hanwen Xu		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

Rg	Frequency [MHz]	PK+ Level [dBm]	PK+ Limit [dBm]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
1	1,406.000	-53.15	-13.00	40.15	3.92	V	5.8	1
1	2,109.000	-49.65	-13.00	36.65	10.17	V	359	2



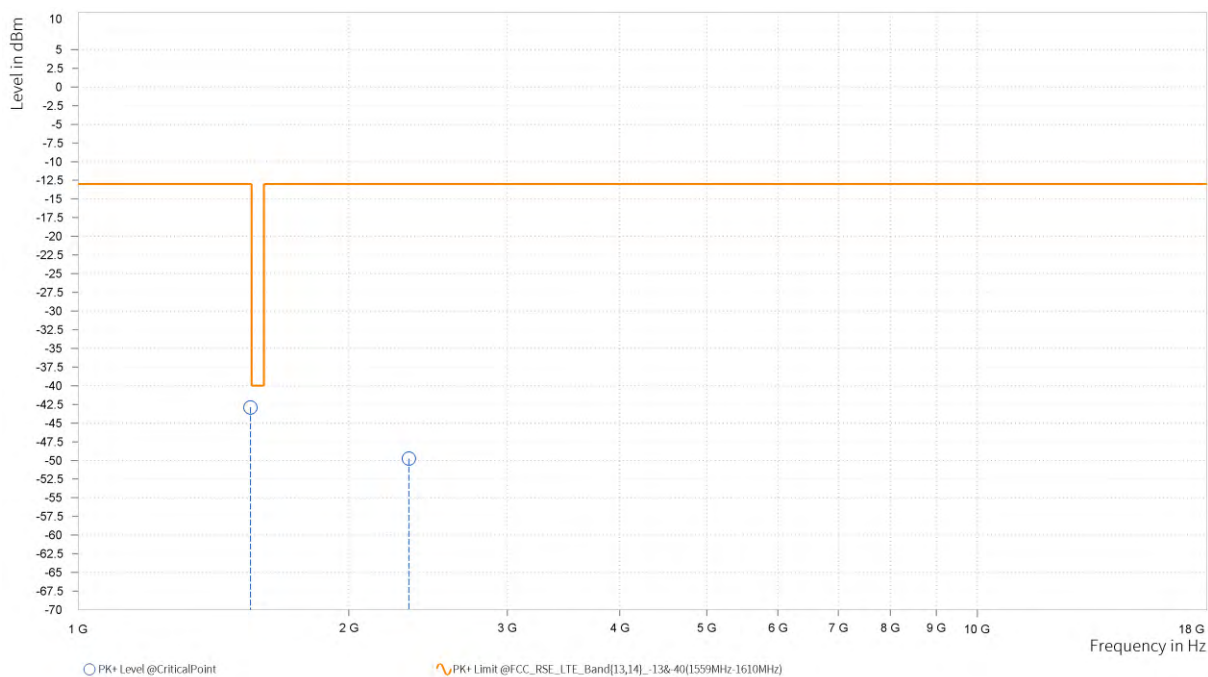
LTE B13

CHANNEL BANDWIDTH: 5MHz / QPSK

CH23205

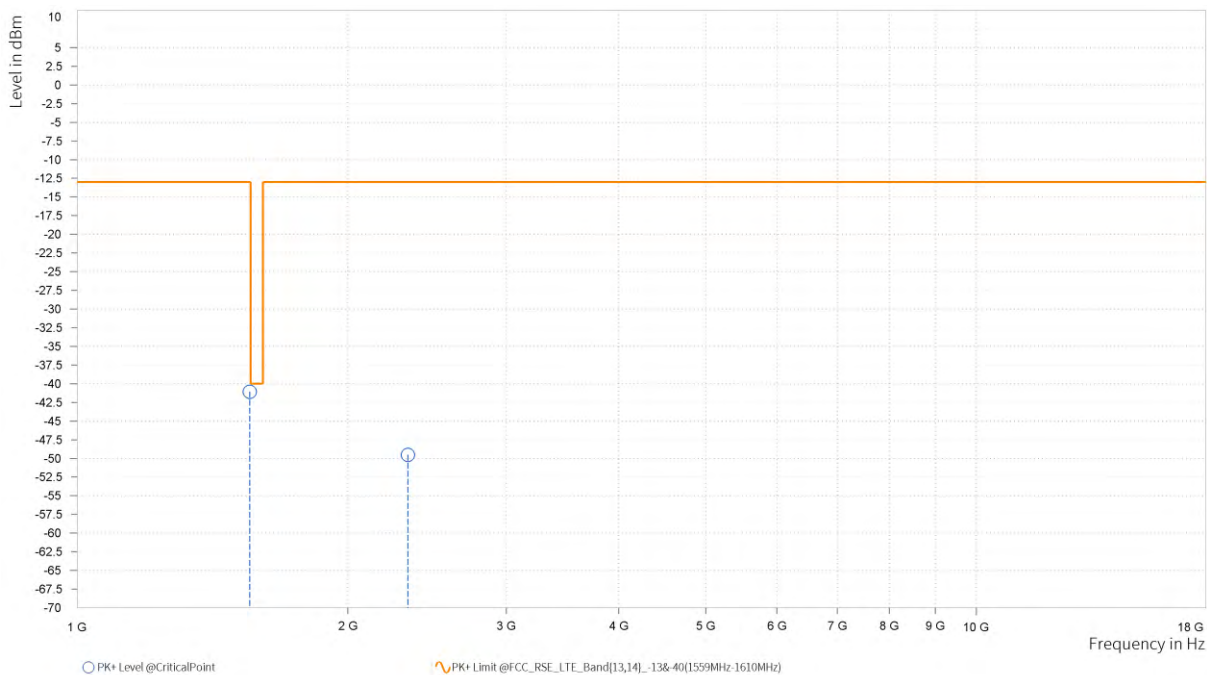
MODE	TX channel 23205	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	AC 120V/60HZ
TESTED BY	Hanwen Xu		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

Rg	Frequency [MHz]	PK+ Level [dBm]	PK+ Limit [dBm]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
1	1,554.500	-42.90	-13.00	29.90	5.29	H	34.3	1.00
1	2,331.750	-49.77	-13.00	36.77	13.06	H	1	2.00



MODE	TX channel 23205	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	AC 120V/60HZ
TESTED BY	Hanwen Xu		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

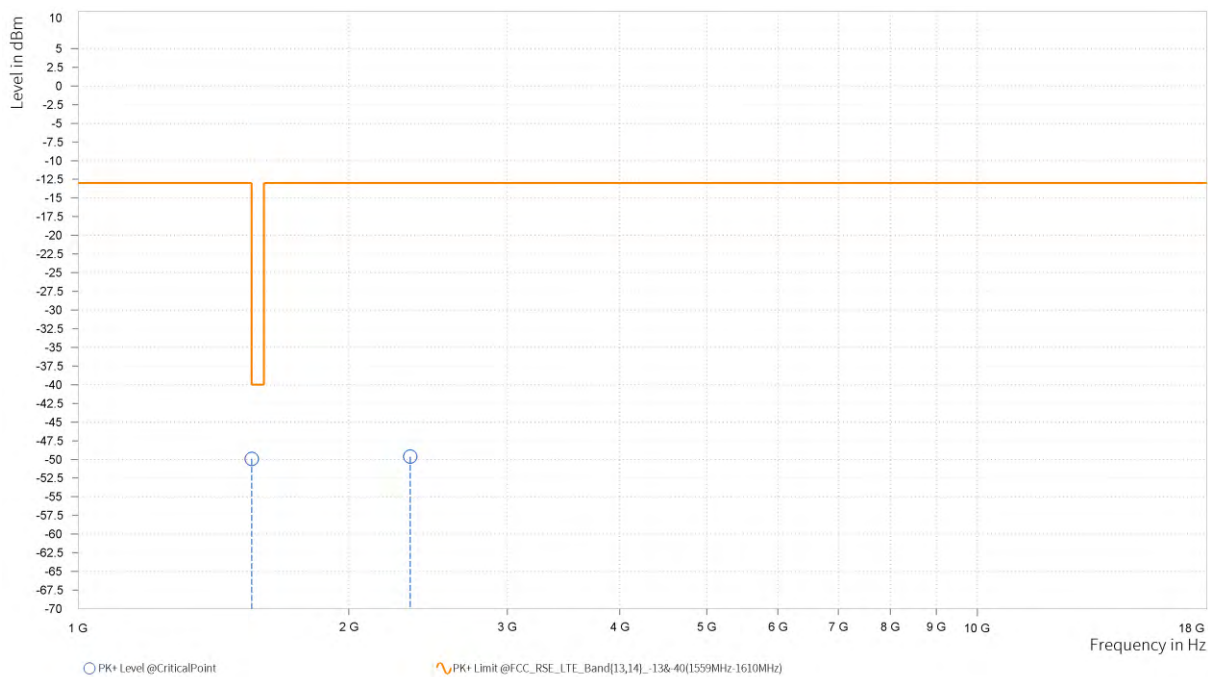
Rg	Frequency [MHz]	PK+ Level [dBm]	PK+ Limit [dBm]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
1	1,555.000	-41.07	-13.00	28.07	4.95	V	5.2	1.00
1	2,331.750	-49.52	-13.00	36.52	12.57	V	102.4	2.00



CH23230

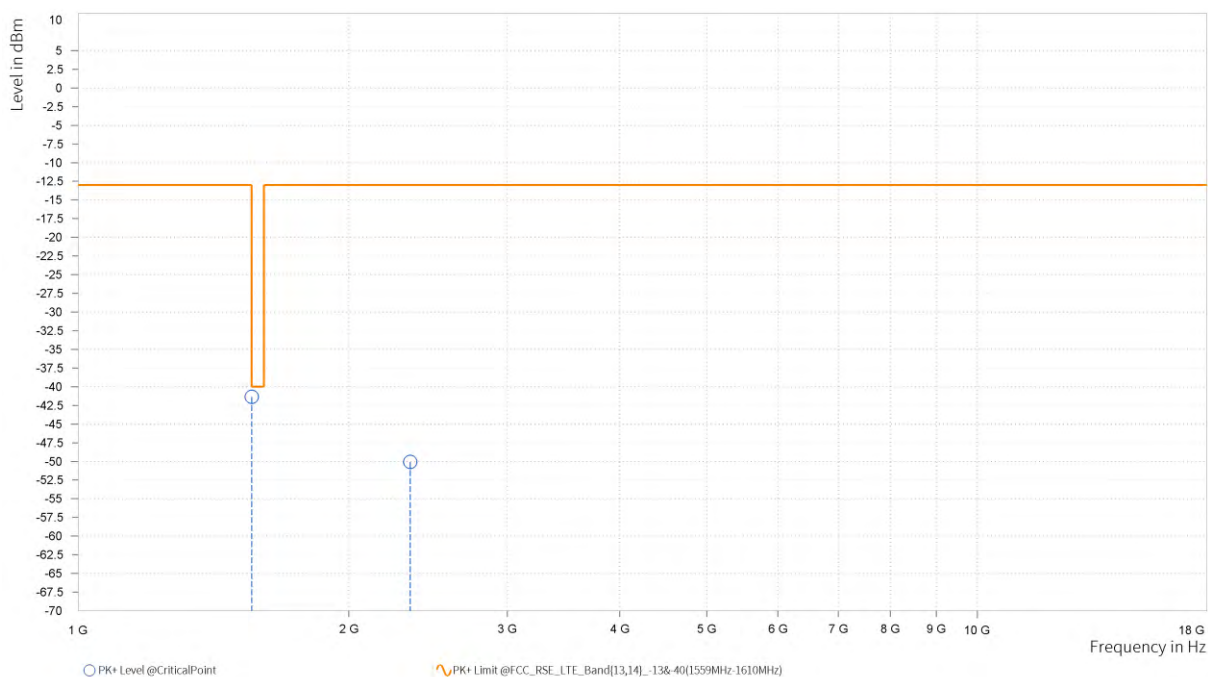
MODE	TX channel 23230	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	AC 120V/60HZ
TESTED BY	Hanwen Xu		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

Rg	Frequency [MHz]	PK+ Level [dBm]	PK+ Limit [dBm]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
1	1,559.500	-49.93	-40.00	9.93	5.35	H	2.3	2.00
1	2,339.250	-49.63	-13.00	36.63	13.06	H	1	1.00



MODE	TX channel 23230	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	AC 120V/60HZ
TESTED BY	Hanwen Xu		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

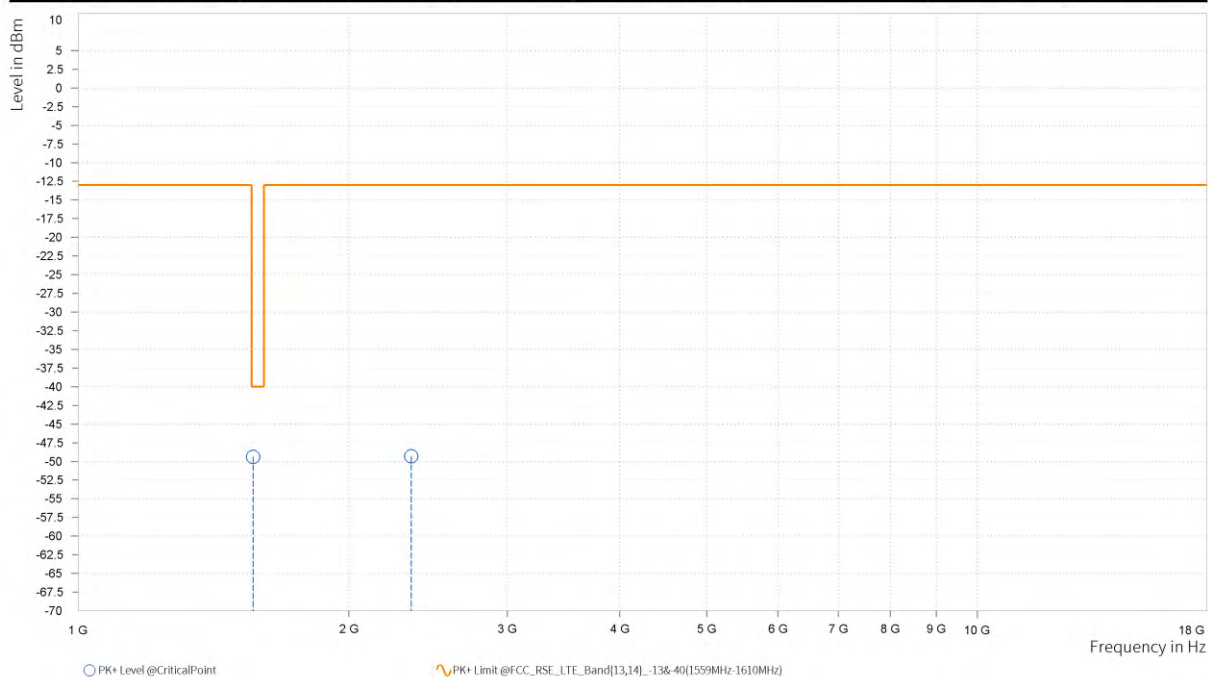
Rg	Frequency [MHz]	PK+ Level [dBm]	PK+ Limit [dBm]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
1	1,559.500	-41.37	-40.00	1.37	5.02	V	6.6	1.00
1	2,339.250	-50.07	-13.00	37.07	12.62	V	1	2.00



CH23255

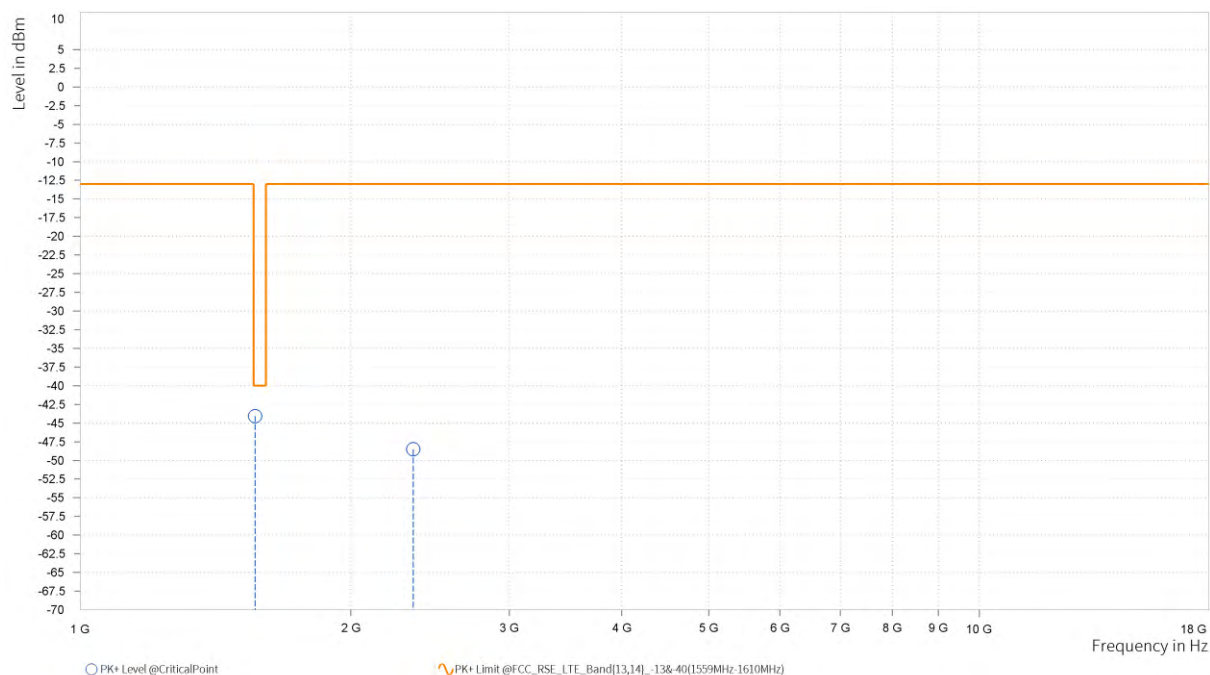
MODE	TX channel 23255	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	AC 120V/60HZ
TESTED BY	Hanwen Xu		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

Rg	Frequency [MHz]	PK+ Level [dBm]	PK+ Limit [dBm]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
1	1,564.500	-49.38	-40.00	9.38	5.33	H	355.5	2.00
1	2,346.750	-49.32	-13.00	36.32	13.06	H	1	1.00



MODE	TX channel 23255	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	AC 120V/60HZ
TESTED BY	Hanwen Xu		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

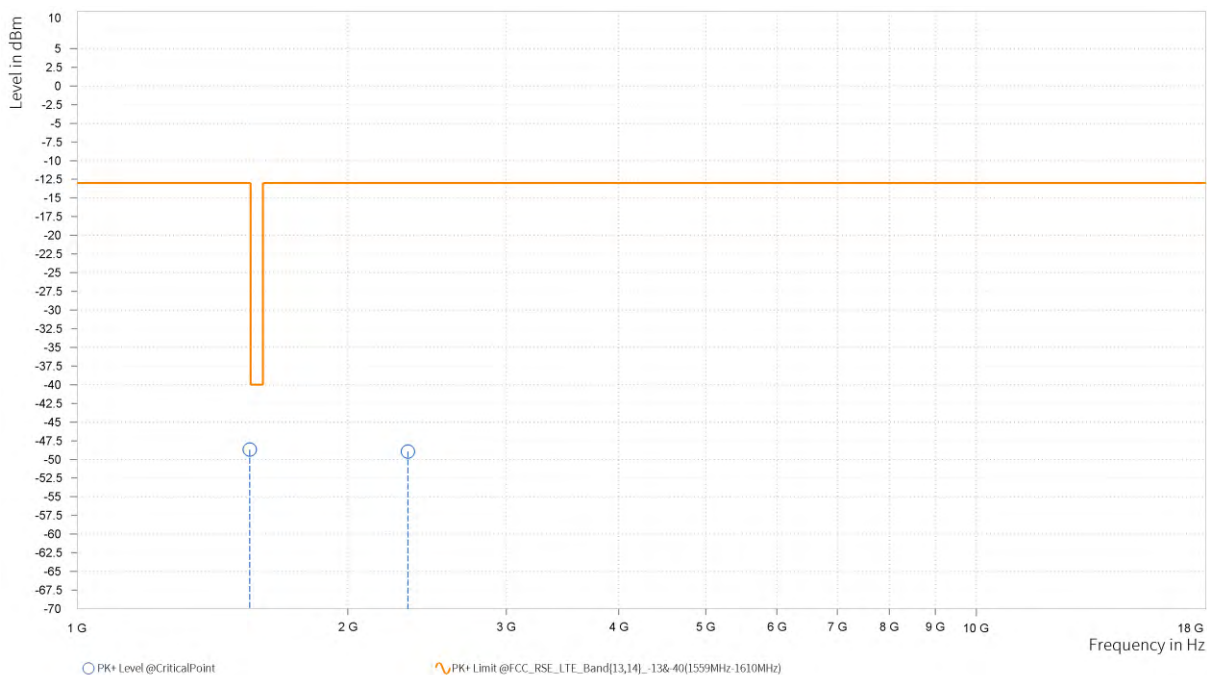
Rg	Frequency [MHz]	PK+ Level [dBm]	PK+ Limit [dBm]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
1	1,564.500	-44.07	-40.00	4.07	5.04	V	5.2	1.00
1	2,346.750	-48.52	-13.00	35.52	12.66	V	1	1.00



CHANNEL BANDWIDTH: 10MHz /QPSK

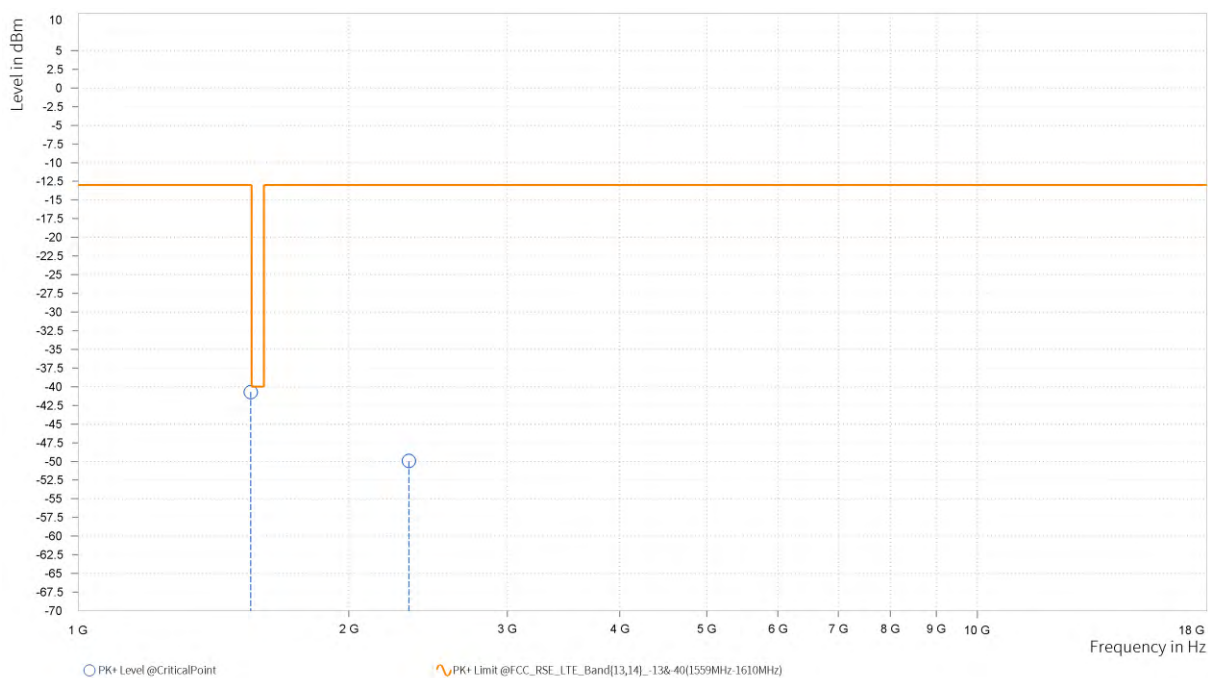
MODE	TX channel 23230	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	AC 120V/60HZ
TESTED BY	Hanwen Xu		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

Rg	Frequency [MHz]	PK+ Level [dBm]	PK+ Limit [dBm]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
1	1,555.000	-48.70	-13.00	35.70	5.31	H	354.9	2.00
1	2,332.500	-48.94	-13.00	35.94	13.06	H	132.2	2.00



MODE	TX channel 23230	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	AC 120V/60HZ
TESTED BY	Hanwen Xu		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

Rg	Frequency [MHz]	PK+ Level [dBm]	PK+ Limit [dBm]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
1	1,555.500	-40.71	-13.00	27.71	4.97	V	5.2	1.00
1	2,332.500	-49.95	-13.00	36.95	12.58	V	125	2.00

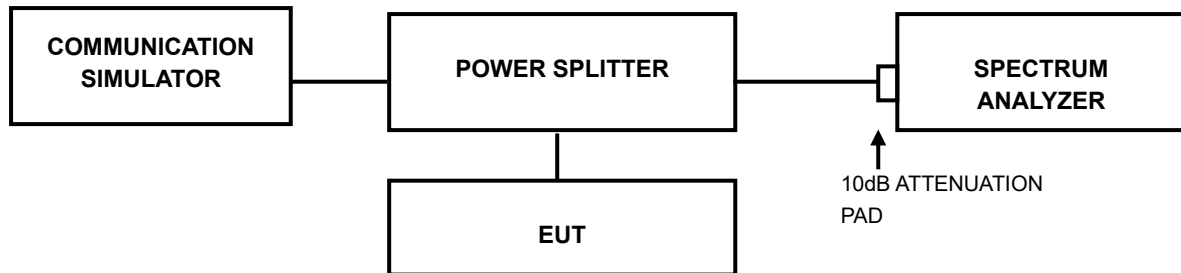


3.7 PEAK TO AVERAGE RATIO

3.7.1 LIMITS OF PEAK TO AVERAGE RATIO MEASUREMENT

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

3.7.2 TEST SETUP



3.7.3 TEST PROCEDURES

1. Set resolution/measurement bandwidth $\geq$ signal's occupied bandwidth;
2. Set the number of counts to a value that stabilizes the measured CCDF curve;
3. Record the maximum PAPR level associated with a probability of 0.1%.



Test Report No.: PSU-QSU2312200110RF03

3.7.4 TEST RESULTS

Please Refer to Appendix Of this test report.



Test Report No.: PSU-QSU2312200110RF03

4 INFORMATION ON THE TESTING LABORATORIES

We, Huarui 7layers High Technology (Suzhou) Co., Ltd. ,were founded in 2020 to provide our best service in EMC, Radio, Telecom and Safety consultation. Our laboratories are accredited and approved according to ISO/IEC 17025.

If you have any comments, please feel free to contact us at the following:

Suzhou EMC/RF Lab:

Tel: +86 (0557) 368 1008



Test Report No.: PSU-QSU2312200110RF03

5 MODIFICATIONS RECORDERS FOR ENGINEERING CHANGES TO THE EUT BY THE LAB

No any modifications are made to the EUT by the lab during the test.

6 Appendix

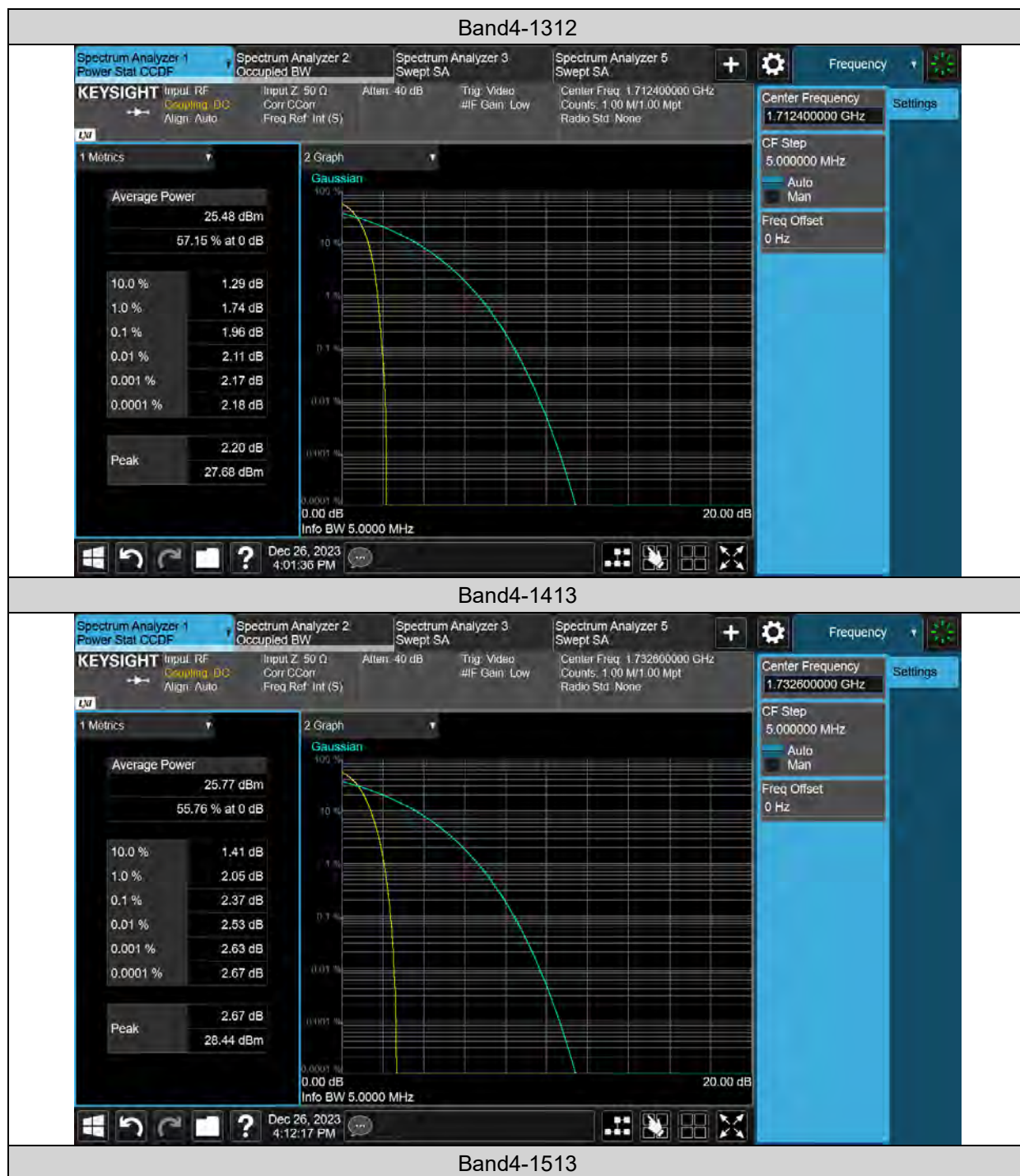
WCDMA BAND4

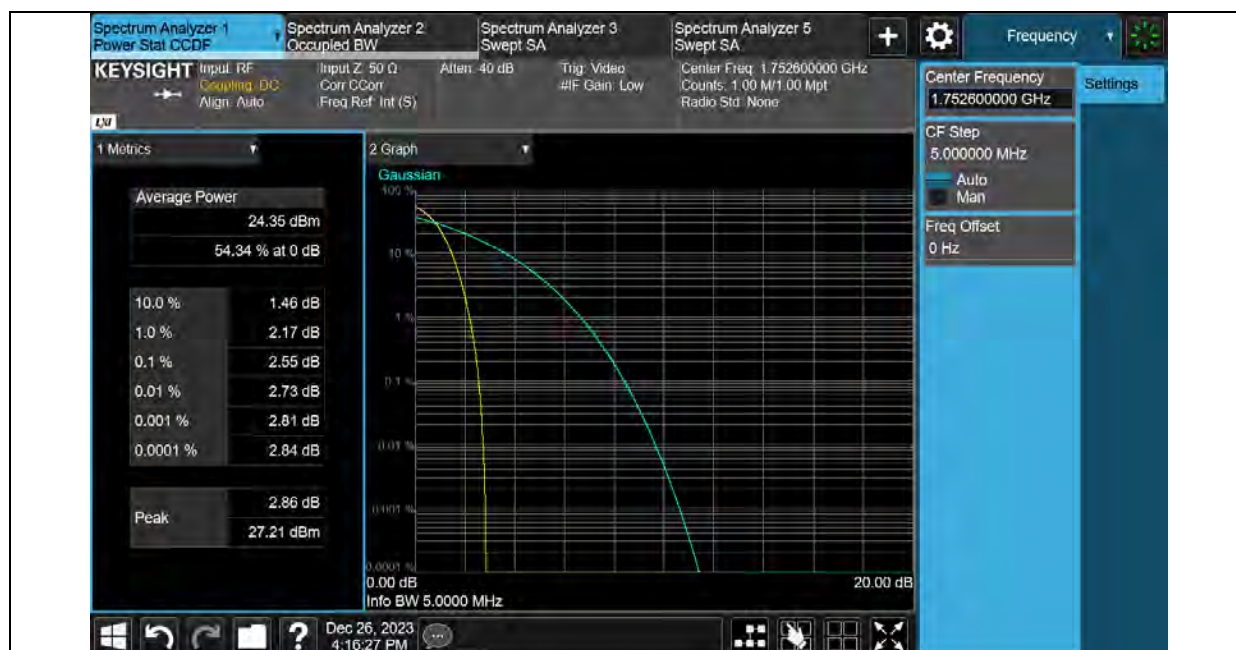
PEAK-TO-AVERAGE RATIO

Test Result

Band	Channel	Peak-to-Average Ratio(dB)	Limit(dBm)	Verdict
Band4	1312	1.96	13	PASS
Band4	1413	2.37	13	PASS
Band4	1513	2.55	13	PASS

Test Graphs





26DB BANDWIDTH AND OCCUPIED BANDWIDTH

Test Result

Band	Channel	Occupied Bandwidth (MHz)	26dB Bandwidth (MHz)	Limit(kHz)	Verdict
Band4	1312	See graph	See graph	---	PASS
Band4	1413	See graph	See graph	---	PASS
Band4	1513	See graph	See graph	---	PASS