

FCC TEST REPORT

(PART 22)

Applicant:	HMD Global Oy
Address:	Bertel Jungin aukio 9, 02600 Espoo, Finland

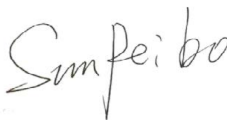
Manufacturer or Supplier:	HMD Global Oy
Address:	Bertel Jungin aukio 9, 02600 Espoo, Finland
Product:	Mobile phone
Brand Name:	HMD
Model Name:	H1715V
FCC ID	2AJOTTA-1715
Date of tests	Jan. 13, 2025 ~ Mar. 20, 2025

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

☒ **FCC PART 22, Subpart H**
☒ **ANSI/TIA/EIA-603-D**
☒ **ANSI/TIA/EIA-603-E**

☒ **FCC Part 2**
☒ **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, 2025	Date: Mar. 20, 2025

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Test Report No.: PSU-NQN2412090210RF05

RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
PSU-NQN2412090210RF05	Original release	Mar. 20, 2025



1 SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

APPLIED STANDARD: FCC Part 22 & Part 2			
STANDARD SECTION	TEST TYPE	RESULT	Test lab*
§2.1046	Conducted Output Power	Compliance	A
§22.913 (a)(5)	Equivalent Isotropic Radiated Power	Compliance	A
§2.1055 §22.355	Frequency Stability	Compliance	A
§2.1049	Occupied Bandwidth	Compliance	A
§22.913 (d)	Peak to average ratio*	Compliance	A
§2.1051 §22.917(a)	Band Edge Measurements	Compliance	A
§2.1051 §22.917(a)	Conducted Spurious Emissions	Compliance	A
§2.1053 §22.917(a)	Radiated Spurious Emissions	Compliance	A

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

*Test Lab Information Reference

Lab A:

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

Lab Address:

Tower N, Innovation Center, 88 Zuyi 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.

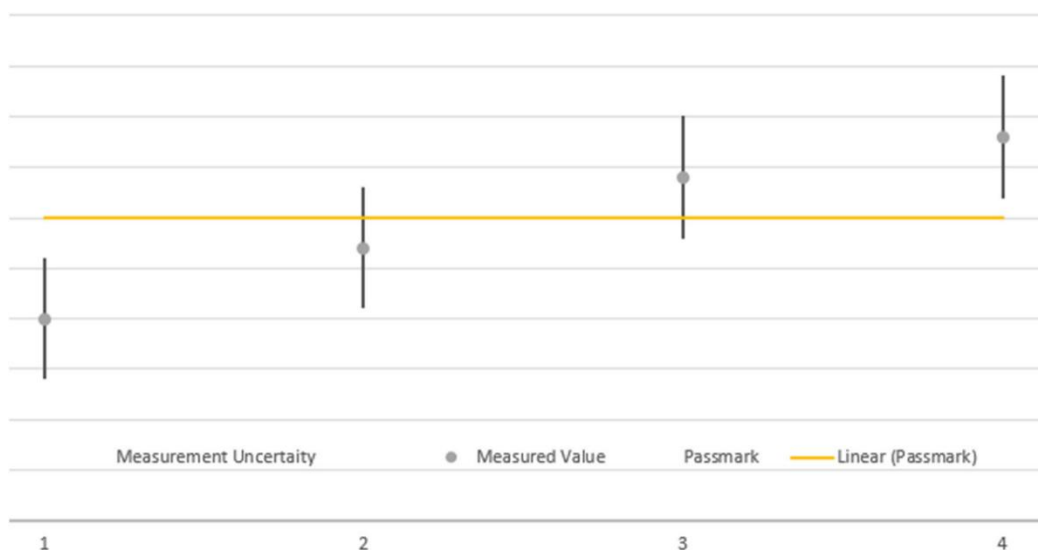


1.1 MEASUREMENT UNCERTAINTY

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
Maximum Peak Output Power	$\pm 2.06\text{dB}$
Frequency Stability	$\pm 76.97\text{Hz}$
Radiated emissions (9KHz~30MHz)	$\pm 2.68\text{dB}$
Radiated emissions (30MHz~1GHz)	$\pm 4.98\text{dB}$
Radiated emissions (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	$\pm 43.58\text{KHz}$
Band Edge Measurements	$\pm 4.70\text{dB}$
Peak to average ratio	$\pm 0.76\text{dB}$

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.29,24	Aug.28,26
Pre-Amplifier	R&S	SCU08F1	101028	Sep.15,24	Sep.14,26
Vector Signal Generator	R&S	SMBV100B	102176	Feb.15,24	Feb.14,26
Signal Generator	R&S	SMB100A	182185	Feb.15,24	Feb.14,26
3m Fully-anechoic Chamber	TDK	9m*6m*6m	HRSW-SZ-EMC-01Chamber	Nov.25,22	Nov.24,25
3m Semi-anechoic Chamber	TDK	9m*6m*6m	HRSW-SZ-EMC-02Chamber	Nov.25,22	Nov.24,25
EMI TEST Receiver	R&S	ESR26	101734	Feb.24,24	Feb.23,26
EMI TEST Receiver	R&S	ESW44	101973	Feb.24,24	Feb.23,26
Bilog Antenna	SCHWARZBECK	VULB 9163	1264	Feb.27,24	Feb.26,26
Horn Antenna	ETS-LINDGREN	3117	227836	Aug.21,24	Aug.20,26
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.21,24	Aug.20,26
Loop Antenna	SCHWARZ	HFH2-Z2/Z2E	100976	Feb.22,24	Feb.21,26
WIDEBANDRADIO COMMUNICATION TESTER	R&S	CMW500	169399	Jun.26,24	Jun.25,26
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	Sep.30,24	Sep.39,26
DC Source	HYELEC	HY3010B	551016	Aug.30,24	Aug.29,26
Hygrothermograph	DELI	20210528	SZ014	Sep.05,24	Sep.04,26
PC	LENOVO	E14	HRSW0024	N/A	N/A
TMC-AMI18843A(CABLE)	R&S	HF290-NMNM-7.00M	N/A	N/A	N/A
TMC-AMI18843A(CABLE)	R&S	HF290-NMNM-4.00M	N/A	N/A	N/A
CABLE	R&S	W13.02	N/A	Apr.26,24	Oct.25,25
CABLE	R&S	W12.14	N/A	Apr.26,24	Oct.25,25
CABLE	R&S	J12J103539-00-1	SEP-03-20-069	Apr.26,24	Oct.25,25
CABLE	R&S	J12J103539-00-1	SEP-03-20-070	Apr.26,24	Oct.25,25
Temperature Chamber	votsch	VT4002	58566078100050	May.30,24	May.29,26

NOTE:

1. The calibration interval of the above test instruments is 6 months or 12 months or 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*	Mobile phone	
BRAND NAME*	HMD	
MODEL NAME*	H1715V	
NOMINAL VOLTAGE*	3.87Vdc(Battery) 5.0Vdc(Adapter)	
MODULATION TYPE	GSM/EDGE	GMSK,8PSK
	WCDMA	BPSK, QPSK
	LTE	QPSK, 16QAM, 64QAM, 256QAM
FREQUENCY RANGE	GSM/EDGE	824.2MHz ~ 848.8MHz
	WCDMA	826.4MHz ~ 846.6MHz
	LTE Band 5 (Channel Bandwidth: 1.4MHz)	824.7MHz ~ 848.3MHz
	LTE Band 5 (Channel Bandwidth: 3MHz)	825.5MHz ~ 847.5MHz
	LTE Band 5 (Channel Bandwidth: 5MHz)	826.5MHz ~ 846.5MHz
	LTE Band 5 (Channel Bandwidth: 10MHz)	829MHz ~ 844MHz
MAX. ERP POWER	GSM850	460.26mW
	EDGE850	133.05mW
	WCDMA B5	61.94mW
	LTE Band 5 (Channel Bandwidth: 1.4MHz)	57.68mW
	LTE Band 5 (Channel Bandwidth: 3MHz)	56.36mW
	LTE Band 5 (Channel Bandwidth: 5MHz)	56.62mW
	LTE Band 5 (Channel Bandwidth: 10MHz)	58.61mW
EMISSION DESIGNATOR GGN	GSM850	246KGXW
	EDGE850	245KG7W
	WCDMA B5	4M15F9W
	LTE Band 5 (Channel Bandwidth: 1.4MHz)	QPSK: 1M10G7D
		16QAM: 1M09W7D
		64QAM: 1M10W7D
		256QAM: 1M10W7D
	LTE Band 5 (Channel Bandwidth: 3MHz)	QPSK: 2M70G7D
		16QAM: 2M71W7D
		64QAM: 2M70W7D
		256QAM: 2M70W7D
	LTE Band 5	QPSK: 4M50G7D



	(Channel Bandwidth: 5MHz)	16QAM: 4M50W7D
		64QAM: 4M50W7D
		256QAM: 4M50W7D
	LTE Band 5 (Channel Bandwidth: 10MHz)	QPSK: 8M99G7D
		16QAM: 8M97W7D
		64QAM: 8M98W7D
ANTENNA GAIN*	GSM850	256QAM: 8M97W7D
ANTENNA TYPE*	GSM850	-4.2dBi
	WCDMA V	-4.2dBi
	LTE B5	-4.2dBi
ANTENNA TYPE*	PIFA	
HW VERSION*	V1.0	
SW VERSION*	000T_0_310	
I/O PORTS*	Refer to user's manual	
CABLE SUPPLIED*	N/A	
EXTREME TEMPERATURE*	-10°C-55°C	
EXTREME VOLTAGE*	3.6V-4.45V	

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

MODULATION MODE	TX FUNCTION
GSM/EDGE	1TX/1RX
WCDMA	1TX/1RX
LTE	1TX/1RX

- For the test results, the EUT had been tested with all conditions. But only the worst case was shown in the test report.
- The power of single LTE band is larger than that in CA mode, so single LTE band can cover the RSE risk of CA part.
- The differences between the sample 1 and sample 2 as Listings below, others are the same. And only the worst case was shown in the test report.

Object	Sample 1 1 st source	Sample 2 2 nd source



	Specifications	Supplier	Specifications	Supplier
Display	JL-P067P003-05	Jinglong	Y92321	Digital
Memory (RAM) Memory (ROM)	FLXC2004G-N1	Longsys	BWCGBX32N2A-32G	Biwin
	MEMDNN064G-M1D03	Longsys	BWCTAMV11X64G	Biwin
Motor	C0830H-C138ZN-021	KunWang	CY0830-05-FPC-182	Chaoying
FPS Side fingerprint	SA-FC15X00-1470-B0	Shenao	HT.ZN-2832B	Huate
Mic	SM2718B381YR2-01	Rayking	S150B381-155	Goertek
GPS LNA	AW5005EDNR	AWINIC	WS7916DE	WILL

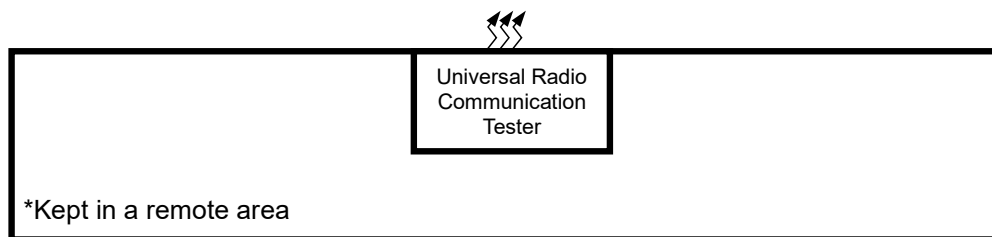
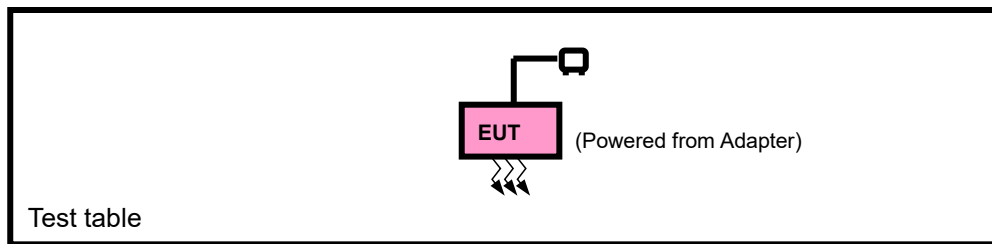
List of Accessory:

ACCESSORIES	BRAND	MANUFACTURER	MODEL	SPECIFICATION
Battery	HMD	HUNAN GAOYUAN BATTERY CO.,LTD	CH426385	Capacity: 3.87Vdc, 4000mAh
USB Cable	Saibao	Saibao (Jiangxi) Industry Co.,Ltd.	SZN-A046A	Signal Line,1.0meter
USB Cable	Juwei	Huizhou Juwei Electronics Co.,Ltd	JWUB1913-ZN01H	Signal Line,1.0meter
Adapter	HMD	Shenzhen Baijunda Electronic Co., Ltd.	HAD-010U	I/P: 100- 240 Vac, 50/60Hz, 0.35 A, O/P: 5.0 Vdc, 2.0A 10.0W



2.2 CONFIGURATION OF SYSTEM UNDER TEST

FOR RADIATION EMISSION





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	Laptop	Lenovo	ThinkPad E14	HRSW00024	N/A

NO.	SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS
1	NA

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 in ERP and radiated emission was found when positioned on X-plane for GSM /EDGE /WCDMA /LTE. Following channel(s) was (were) selected for the final test as listed below:

EUT CONFIGURE MODE	DESCRIPTION
A	EUT + Adapter with GSM or WCDMA or LTE link
B	EUT + DC Supply with GSM or WCDMA or LTE link

GSM MODE

EUT CONFIGURE MODE	TEST ITEM	Available Channel	Tested Channel	MODE
A	ERP	128 to 251	128, 189, 251	GSM,EDGE
B	FREQUENCY STABILITY	128 to 251	128, 189, 251	GSM,EDGE
A	OCCUPIED BANDWIDTH	128 to 251	128, 189, 251	GSM,EDGE
A	BAND EDGE	128 to 251	128, 251	GSM,EDGE
A	CONDUCTED EMISSION	128 to 251	128, 189, 251	GSM,EDGE
A	RADIATED EMISSION	128 to 251	128, 189, 251	GSM,EDGE
A	PEAK TO AVERAGE RATIO	128 to 251	128, 189, 251	GSM,EDGE

WCDMA MODE

EUT CONFIGURE MODE	TEST ITEM	AVAILABLE CHANNEL	TESTED CHANNEL	MODE
A	ERP	4132 to 4233	4132, 4182, 4233	WCDMA
B	FREQUENCY STABILITY	4132 to 4233	4132, 4182, 4233	WCDMA
A	OCCUPIED BANDWIDTH	4132 to 4233	4132, 4182, 4233	WCDMA
A	BAND EDGE	4132 to 4233	4132, 4233	WCDMA
A	CONDCUDED EMISSION	4132 to 4233	4132, 4182, 4233	WCDMA
A	RADIATED EMISSION	4132 to 4233	4132, 4182, 4233	WCDMA
A	PEAK TO AVERAGE RATIO	4132 to 4233	4132, 4182, 4233	WCDMA



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LTE BAND 5 MODE

EUT CONFIGURE MODE	TEST ITEM	Available Channel	Tested Channel	Channel bandwidth	modulation	mode
A	ERP	20407 to 20643	20407, 20525, 20643	1.4MHz	QPSK,16QAM, 64QAM,256QAM	1 RB / 0 RB Offset
		20415 to 20635	20415, 20525, 20635	3MHz	QPSK,16QAM, 64QAM,256QAM	1 RB / 0 RB Offset
		20425 to 20625	20425, 20525, 20625	5MHz	QPSK,16QAM, 64QAM,256QAM	1 RB / 0 RB Offset
		20450 to 20600	20450, 20525, 20600	10MHz	QPSK,16QAM, 64QAM,256QAM	1 RB / 0 RB Offset
B	FREQUENCY STABILITY	20450 to 20600	20450, 20525, 20600	10MHz	QPSK	Full RB / 0 RB Offset
A	OCCUPIED BANDWIDTH	20407 to 20643	20407, 20525, 20643	1.4MHz	QPSK,16QAM, 64QAM,256QAM	Full RB / 0 RB Offset
		20415 to 20635	20415, 20525, 20635	3MHz	QPSK,16QAM, 64QAM,256QAM	Full RB / 0 RB Offset
		20425 to 20625	20425, 20525, 20625	5MHz	QPSK,16QAM, 64QAM,256QAM	Full RB / 0 RB Offset
		20450 to 20600	20450, 20525, 20600	10MHz	QPSK,16QAM, 64QAM,256QAM	Full RB / 0 RB Offset
A	BAND EDGE	20407 to 20643	20407	1.4 MHz	QPSK,16QAM	1 RB / 0 RB Offset
						Full RB / 0 RB Offset
		20407 to 20643	20643	1.4 MHz	QPSK,16QAM	1 RB / 5 RB Offset
						Full RB / 0 RB Offset
		20415 to 20635	20415	3 MHz	QPSK,16QAM	1 RB / 0 RB Offset
						Full RB / 0 RB Offset
		20415 to 20635	20635	3 MHz	QPSK,16QAM	1 RB / 14 RB Offset
						Full RB / 0 RB Offset
		20425 to 20625	20425	5MHz	QPSK,16QAM	1 RB / 0 RB Offset
						Full RB / 0 RB Offset
		20425 to 20625	20625	5MHz	QPSK,16QAM	1 RB / 24 RB Offset
						Full RB / 0 RB Offset
		20450 to 20600	20450	10MHz	QPSK,16QAM	1 RB / 0 RB Offset
						Full RB / 0 RB Offset
		20450 to 20600	20600	10MHz	QPSK,16QAM	1 RB / 49 RB Offset
						Full RB / 0 RB Offset
A	CONDCUETED EMISSION	20407 to 20643	20407, 20525, 20643	1.4MHz	QPSK	1 RB / 0 RB Offset
		20415 to 20635	20415, 20525, 20635	3MHz	QPSK	1 RB / 0 RB Offset
		20425 to 20625	20425, 20525, 20625	5MHz	QPSK	1 RB / 0 RB Offset
		20450 to 20600	20450, 20525, 20600	10MHz	QPSK	1 RB / 0 RB Offset
A	RADIATED EMISSION	20407 to 20643	20525	1.4MHz	QPSK	1 RB / 0 RB Offset



		20415 to 20635	20525	3MHz	QPSK	1 RB / 0 RB Offset
		20425 to 20625	20525	5MHz	QPSK	1 RB / 0 RB Offset
		20450 to 20600	20450,20525,20600	10MHz	QPSK	1 RB / 0 RB Offset
A	PEAK TO AVERAGE RATIO	20450 to 20600	20450, 20525, 20600	10MHz	QPSK	1 RB / 0 RB Offset Full 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. Output power measurements were measured on QPSK,16QAM,64QAM and 256QAM modulations. And tests other than output power are performed only in worst case of QPSK and 16QAM,64QAM,256QAM modes.

TEST CONDITION			
TEST ITEM	ENVIRONMENTAL CONDITIONS	INPUT POWER	TESTED BY
ERP	23deg. C, 70%RH	DC 3.87V By Battery	Hanwen Xu
FREQUENCY STABILITY	23deg. C, 70%RH	DC 3.87V By Battery	Hanwen Xu
OCCUPIED BANDWIDTH	23deg. C, 70%RH	DC 3.87V By Battery	Hanwen Xu
BAND EDGE	23deg. C, 70%RH	DC 3.87V By Battery	Hanwen Xu
CONDCUDED EMISSION	23deg. C, 70%RH	DC 3.87V By Battery	Hanwen Xu
RADIATED EMISSION	23deg. C, 70%RH	AC 120V/60Hz	Hanwen Xu
PEAK TO AVERAGE RATIO	23deg. C, 70%RH	DC 3.87V By Battery	Hanwen Xu

2.5 EUT OPERATING CONDITIONS

The EUT makes a call to the communication simulator. The communication simulator station system controlled a EUT to export maximum output power under transmission mode and specific channel frequency

2.6 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 22

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

Mobile / Portable station are limited to 7 watts e.r.p.

3.1.2 TEST PROCEDURES

EIRP / ERP 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:

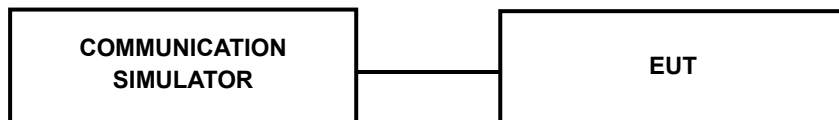
The EUT was set up for the maximum power with WCDMA link data modulation and link up with simulator. Set the EUT to transmit under low, middle and high channel and record the power level shown on simulator.



3.1.3 TEST SETUP

EIRP / ERP Measurement:

CONDUCTED POWER MEASUREMENT:



3.1.4 TEST RESULTS

CONDUCTED OUTPUT POWER (dBm):

Band	GSM850(ANT2)		
Channel	128	189	251
Frequency	824.2	836.4	848.8
GSM	32.96	32.01	32.84
GPRS 1Tx Slot	32.98	32.06	32.86
GPRS 2Tx Slot	30.98	30.11	30.50
GPRS 3Tx Slot	28.97	28.12	28.79
GPRS 4Tx Slot	26.82	26.77	27.78
EDGE 1Tx Slot	27.34	26.05	27.59
EDGE 2Tx Slot	25.55	24.44	25.93
EDGE 3Tx Slot	23.12	22.53	23.57
EDGE 4Tx Slot	21.83	21.17	22.34

Band	WCDMA V(ANT2)		
TX Channel	4132	4182	4233
Rx Channel	4357	4407	4458
Frequency	826.4	836.4	846.6
RMC 12.2K	24.24	24.26	24.27
HSDPA Subtest-1	23.24	23.24	23.23
HSDPA Subtest-2	23.32	23.32	23.22
HSDPA Subtest-3	22.68	22.70	22.74
HSDPA Subtest-4	22.73	22.75	22.64
DC-HSDPA Subtest-1	23.25	23.25	23.16
DC-HSDPA Subtest-2	23.17	23.33	23.17
DC-HSDPA Subtest-3	22.62	22.64	22.64
DC-HSDPA Subtest-4	22.60	22.50	22.62
HSUPA Subtest-1	23.28	23.22	23.21
HSUPA Subtest-2	22.68	22.75	22.74
HSUPA Subtest-3	23.17	23.24	23.17
HSUPA Subtest-4	23.26	23.33	23.20
HSUPA Subtest-5	23.25	23.27	23.26



LTE Band 5 (Ant2)

BW: 1.4M

BW	Modulation	RB Size	RB Offset	Low	Mid	High
		Channel		20407	20525	20643
		Frequency (MHz)		824.70	836.50	848.30
1.4M	QPSK	1	0	23.73	23.78	23.81
		1	2	23.80	23.72	23.85
		1	5	23.76	23.74	23.61
		3	0	23.81	23.80	23.79
		3	1	23.90	23.68	23.87
		3	3	23.90	23.96	23.75
		6	0	22.88	22.74	22.83
	16QAM	1	0	22.86	23.01	23.07
		1	2	22.98	23.11	23.10
		1	5	22.93	22.90	22.90
		3	0	22.71	22.93	22.75
		3	1	22.92	22.87	22.79
		3	3	22.85	22.80	22.92
		6	0	21.78	21.93	21.74
	64QAM	1	0	21.94	22.05	21.90
		1	2	21.92	22.02	22.02
		1	5	21.90	21.95	21.92
		3	0	21.90	21.91	21.86
		3	1	21.90	21.82	21.91
		3	3	21.98	21.90	21.86
		6	0	21.03	20.76	20.93
	256QAM	1	0	18.94	18.83	19.02
		1	2	19.09	19.10	19.13
		1	5	19.08	19.00	19.04
		3	0	19.93	20.03	19.94
		3	1	19.97	20.02	19.92
		3	3	19.98	19.91	19.88
		6	0	18.90	18.84	19.05



BW: 3M

BW	Modulation	RB Size	RB Offset	Low	Mid	High
		Channel		20415	20525	20635
		Frequency (MHz)		825.50	836.50	847.50
3M	QPSK	1	0	23.80	23.81	23.70
		1	7	23.76	23.81	23.84
		1	14	23.86	23.78	23.61
		8	0	22.85	22.72	22.79
		8	3	22.87	22.71	22.92
		8	7	22.82	22.93	22.80
		15	0	22.90	22.81	22.89
		1	0	23.00	22.97	23.05
	16QAM	1	7	22.99	23.08	23.03
		1	14	22.94	22.94	23.02
		8	0	21.75	21.84	21.80
		8	3	21.91	21.92	21.86
		8	7	21.81	21.93	21.79
		15	0	21.81	21.88	21.78
		1	0	21.83	22.08	21.94
		1	7	22.03	21.95	22.06
	64QAM	1	14	21.86	21.95	21.92
		8	0	20.88	20.92	20.87
		8	3	20.97	20.79	20.89
		8	7	20.98	20.90	20.77
		15	0	20.97	20.75	20.83
		1	0	18.90	18.94	19.02
		1	7	19.10	19.07	19.13
		1	14	19.04	19.07	19.08
	256QAM	8	0	18.98	19.01	18.91
		8	3	18.88	18.93	19.06
		8	7	19.05	18.89	18.99
		15	0	19.01	18.96	19.02

**BW: 5M**

BW	Modulation	RB Size	RB Offset	Low	Mid	High
		Channel		20425	20525	20625
		Frequency (MHz)		826.50	836.50	846.50
5M	QPSK	1	0	23.80	23.83	23.77
		1	12	23.88	23.80	23.75
		1	24	23.75	23.75	23.60
		12	0	22.94	22.81	22.83
		12	6	22.88	22.75	22.99
		12	13	22.86	22.93	22.80
		25	0	22.97	22.87	22.97
	16QAM	1	0	22.99	23.02	23.00
		1	12	23.11	23.03	23.13
		1	24	22.87	22.90	22.91
		12	0	21.77	21.85	21.82
		12	6	21.91	21.82	21.81
		12	13	21.93	21.88	21.88
		25	0	21.78	21.88	21.74
	64QAM	1	0	21.94	22.04	21.98
		1	12	22.02	22.01	22.14
		1	24	21.91	21.91	21.91
		12	0	20.88	20.92	20.80
		12	6	20.95	20.74	20.84
		12	13	20.98	20.94	20.85
		25	0	20.99	20.84	20.94
	256QAM	1	0	18.95	18.88	18.98
		1	12	19.12	19.07	19.05
		1	24	19.04	19.07	19.11
		12	0	18.99	19.13	18.93
		12	6	18.96	19.01	18.99
		12	13	19.01	18.99	18.99
		25	0	18.89	18.98	18.99

**BW: 10M**

BW	Modulation	RB Size	RB Offset	Low	Mid	High
		Channel		20450	20525	20600
		Frequency (MHz)		829	836.50	844
10M	QPSK	1	0	23.96	23.91	23.94
		1	24	24.03	23.93	23.99
		1	49	23.93	23.89	23.81
		25	0	22.97	22.96	22.95
		25	12	23.06	22.99	23.03
		25	25	23.02	22.98	22.95
		50	0	23.05	22.95	23.01
	16QAM	1	0	23.16	23.15	23.19
		1	24	23.17	23.19	23.25
		1	49	23.12	23.12	23.12
		25	0	21.99	21.99	21.98
		25	12	22.06	22.02	22.03
		25	25	22.03	22.01	22.02
		50	0	22.05	22.00	22.01
	64QAM	1	0	22.11	22.12	22.11
		1	24	22.15	22.22	22.18
		1	49	22.08	22.17	22.07
		25	0	20.99	21.01	21.00
		25	12	21.05	20.98	21.08
		25	25	21.04	21.03	20.98
		50	0	21.07	20.97	21.06
	256QAM	1	0	19.03	18.97	19.04
		1	24	19.17	19.15	19.19
		1	49	19.12	19.11	19.14
		25	0	19.00	19.15	19.05
		25	12	18.99	19.03	19.07
		25	25	19.06	19.02	19.02
		50	0	19.03	18.99	19.09



ERP POWER (dBm)

GSM 850						
Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _C (dB)	ERP (dBm)	ERP (mW)	Limit (W)
128	824.2	32.98	-4.2	26.63	460.26	7
189	836.4	32.06	-4.2	25.71	372.39	7
251	848.8	32.86	-4.2	26.51	447.71	7

EDGE 850						
Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _C (dB)	ERP (dBm)	ERP (mW)	Limit (W)
128	824.2	27.34	-4.2	20.99	125.6	7
189	836.4	26.05	-4.2	19.7	93.33	7
251	848.8	27.59	-4.2	21.24	133.05	7

WCDMA B5						
Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _C (dB)	ERP (dBm)	ERP (mW)	Limit (W)
4132	826.4	24.24	-4.2	17.89	61.52	7
4182	836.4	24.26	-4.2	17.91	61.8	7
4233	846.6	24.27	-4.2	17.92	61.94	7



LTE Band 5_Ant2							
BW [MHz] Modulation	Channel	Frequency (MHz)	Conducted Power (dBm)	Gain (dB)	ERP (dBm)	ERP (mW)	FCC Limit (W)
10M-QPSK	20450	829	24.03	-4.2	17.68	58.61	7
	20525	836.5	23.93	-4.2	17.58	57.28	7
	20600	844	23.99	-4.2	17.64	58.08	7
10M-16QAM	20450	829	23.17	-4.2	16.82	48.08	7
	20525	836.5	23.19	-4.2	16.84	48.31	7
	20600	844	23.25	-4.2	16.90	48.98	7
10M-64QAM	20450	829	22.15	-4.2	15.80	38.02	7
	20525	836.5	22.22	-4.2	15.87	38.64	7
	20600	844	22.18	-4.2	15.83	38.28	7
10M- 256QAM	20450	829	19.17	-4.2	12.82	19.14	7
	20525	836.5	19.15	-4.2	12.80	19.05	7
	20600	844	19.19	-4.2	12.84	19.23	7
BW [MHz] Modulation	Channel	Frequency (MHz)	Conducted Power (dBm)	Gain (dB)	ERP (dBm)	ERP (mW)	FCC Limit (W)
5M-QPSK	20425	826.5	23.88	-4.2	17.53	56.62	7
	20525	836.5	23.83	-4.2	17.48	55.98	7
	20625	846.5	23.77	-4.2	17.42	55.21	7
5M-16QAM	20425	826.5	23.11	-4.2	16.76	47.42	7
	20525	836.5	23.03	-4.2	16.68	46.56	7
	20625	846.5	23.13	-4.2	16.78	47.64	7
5M-64QAM	20425	826.5	22.02	-4.2	15.67	36.90	7
	20525	836.5	22.04	-4.2	15.69	37.07	7
	20625	846.5	22.14	-4.2	15.79	37.93	7
5M-256QAM	20425	826.5	19.12	-4.2	12.77	18.92	7
	20525	836.5	19.13	-4.2	12.78	18.97	7
	20625	846.5	19.11	-4.2	12.76	18.88	7
BW [MHz] Modulation	Channel	Frequency (MHz)	Conducted Power (dBm)	Gain (dB)	ERP (dBm)	ERP (mW)	FCC Limit (W)
3M-QPSK	20415	825.5	23.86	-4.2	17.51	56.36	7
	20525	836.5	23.81	-4.2	17.46	55.72	7
	20635	847.5	23.84	-4.2	17.49	56.10	7
3M-16QAM	20415	825.5	23.00	-4.2	16.65	46.24	7
	20525	836.5	23.08	-4.2	16.73	47.10	7
	20635	847.5	23.05	-4.2	16.70	46.77	7



3M-64QAM	20415	825.5	22.03	-4.2	15.68	36.98	7
	20525	836.5	22.08	-4.2	15.73	37.41	7
	20635	847.5	22.06	-4.2	15.71	37.24	7
3M-256QAM	20415	825.5	19.10	-4.2	12.75	18.84	7
	20525	836.5	19.07	-4.2	12.72	18.71	7
	20635	847.5	19.13	-4.2	12.78	18.97	7
BW [MHz] Modulation	Channel	Frequency (MHz)	Conducted Power (dBm)	Gain (dB)	ERP (dBm)	ERP (mW)	FCC Limit (W)
1.4M-QPSK	20407	824.7	23.90	-4.2	17.55	56.89	7
	20525	836.5	23.96	-4.2	17.61	57.68	7
	20643	848.3	23.87	-4.2	17.52	56.49	7
1.4M- 16QAM	20407	824.7	22.98	-4.2	16.63	46.03	7
	20525	836.5	23.11	-4.2	16.76	47.42	7
	20643	848.3	23.10	-4.2	16.75	47.32	7
1.4M- 64QAM	20407	824.7	21.98	-4.2	15.63	36.56	7
	20525	836.5	22.05	-4.2	15.70	37.15	7
	20643	848.3	22.02	-4.2	15.67	36.90	7
1.4M- 256QAM	20407	824.7	19.98	-4.2	13.63	23.07	7
	20525	836.5	20.03	-4.2	13.68	23.33	7
	20643	848.3	19.94	-4.2	13.59	22.86	7

3.2 FREQUENCY STABILITY MEASUREMENT

3.2.1 LIMITS OF FREQUENCY STABILITY MEASUREMENT

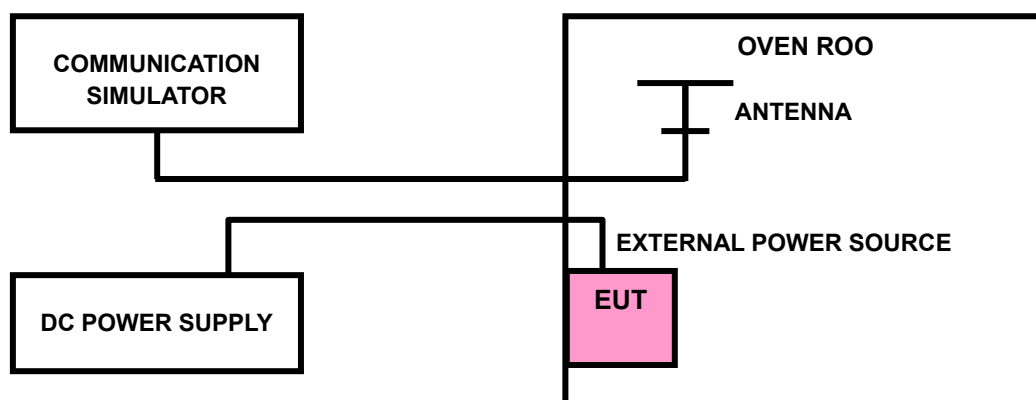
1.5 ppm is for base and fixed station. 2.5 ppm is for mobile station.

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



3.2.4 TEST RESULTS

Please Refer to Appendix of this test report.

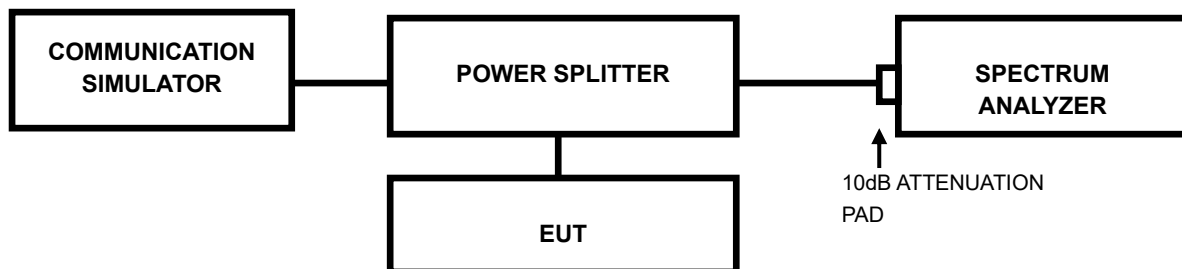


3.3 OCCUPIED BANDWIDTH MEASUREMENT

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.

3.3.4 TEST RESULTS

Please Refer to Appendix of this test report.

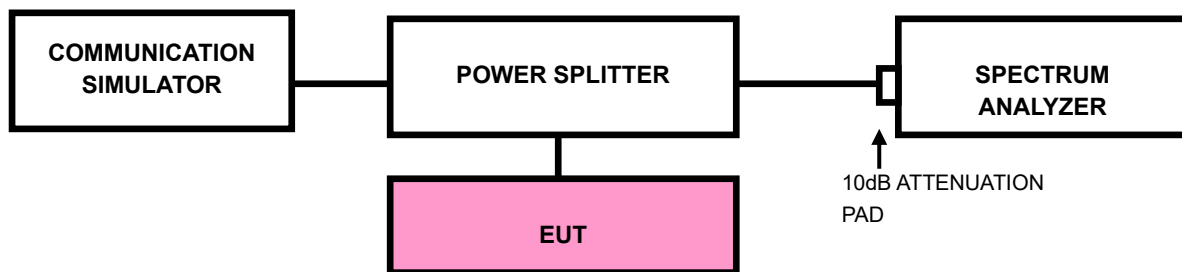


3.4 BAND EDGE MEASUREMENT

3.4.1 LIMITS OF BAND EDGE MEASUREMENT

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. 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.

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.

3.4.4 TEST RESULTS

Please Refer to Appendix of this test report.



3.5 CONDUCTED SPURIOUS EMISSIONS

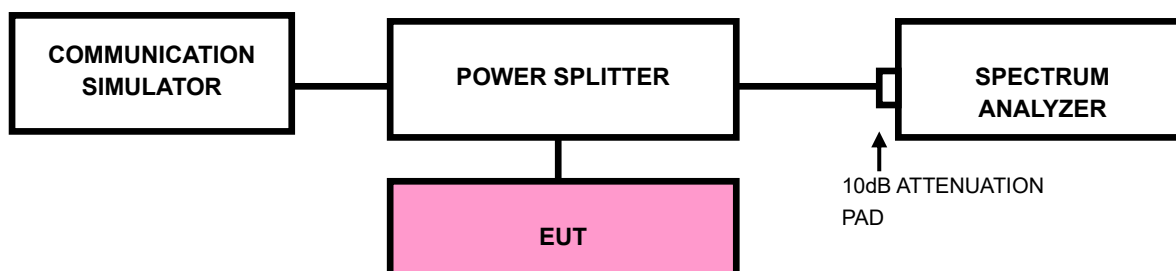
3.5.1 LIMITS OF CONDUCTED SPURIOUS EMISSIONS MEASUREMENT

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. The emission limit equal to -13dBm .

3.5.2 TEST PROCEDURE

- The EUT makes a phone call to the communication simulator. All measurements were done at low, middle and high operational frequency range.
- 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



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

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. The emission limit equal to -13dBm .

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. $\text{EIRP} = \text{Output power level of S.G} - \text{TX cable loss} + \text{Antenna gain of substitution horn}.$
- d. E.R.P power can be calculated form E.I.R.P power by subtracting the gain of dipole,
 $\text{E.R.P power} = \text{E.I.P.R power} - 2.15\text{dBi}.$

NOTE: The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 1MHz/3MHz.

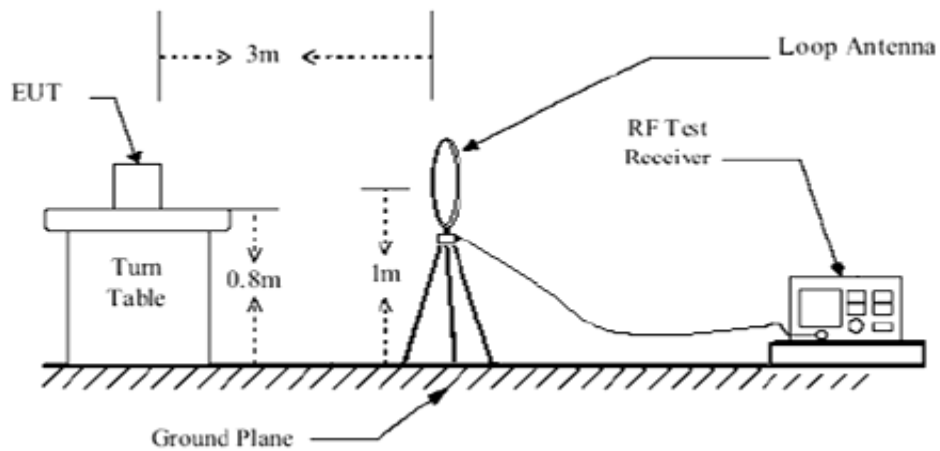
3.6.3 DEVIATION FROM TEST STANDARD

No deviation

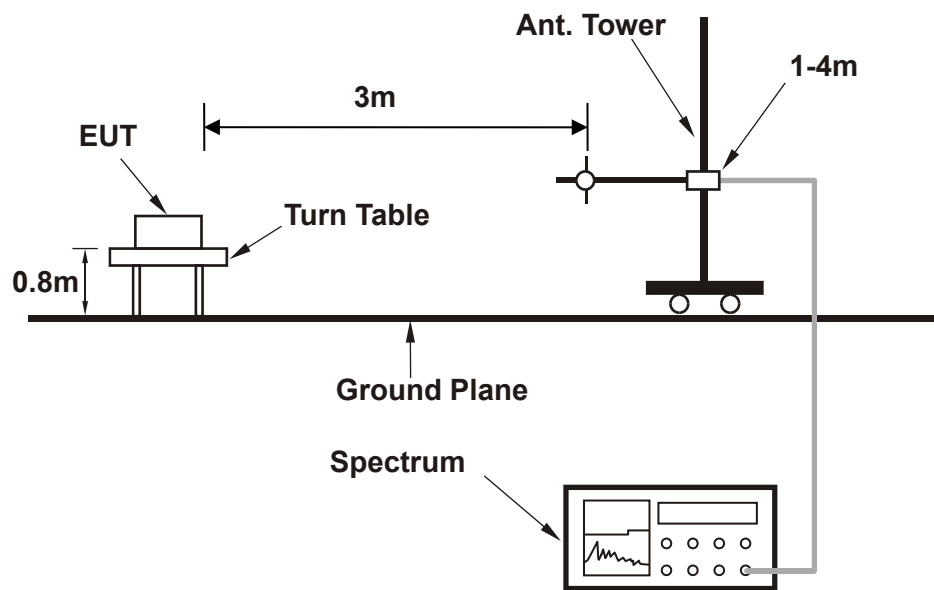


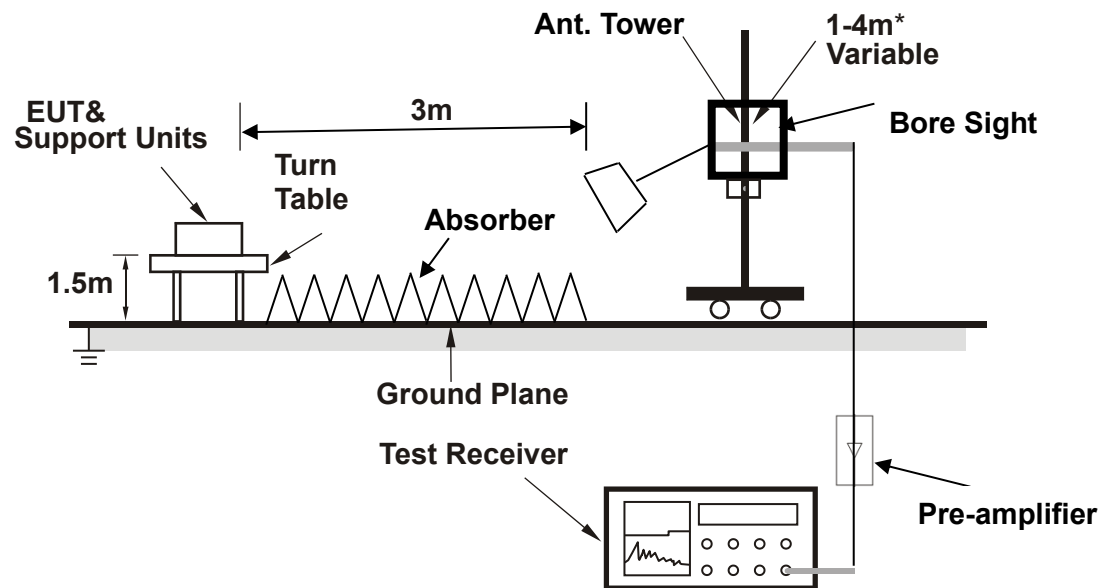
3.6.4 TEST SETUP

< Frequency Range below 30MHz >



< Frequency Range 30MHz~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

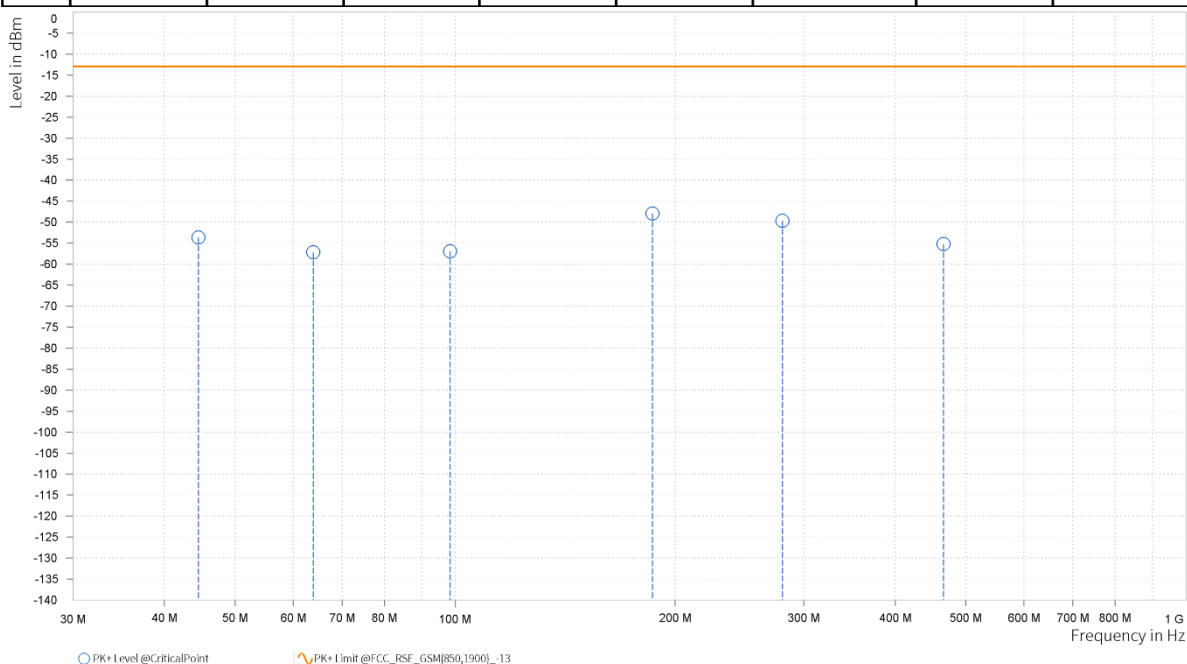
NOTE : The 9K~30MHz amplitude of spurious emissions attenuated more than 20 dB below the permissible value is not required in the report.

BELOW 1GHz WORST-CASE DATA

EDGE 850			
MODE	TX channel 128	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	44.550	-53.66	-13.00	40.66	3.00	H	359	2.00
1	63.950	-57.18	-13.00	44.18	-2.34	H	1	2.00
1	98.385	-56.91	-13.00	43.91	-6.70	H	146.7	2.00
1	186.170	-47.97	-13.00	34.97	-1.60	H	255.4	2.00
1	280.260	-49.68	-13.00	36.68	3.56	H	212	1.00
1	466.015	-55.23	-13.00	42.23	6.49	H	359	1.00

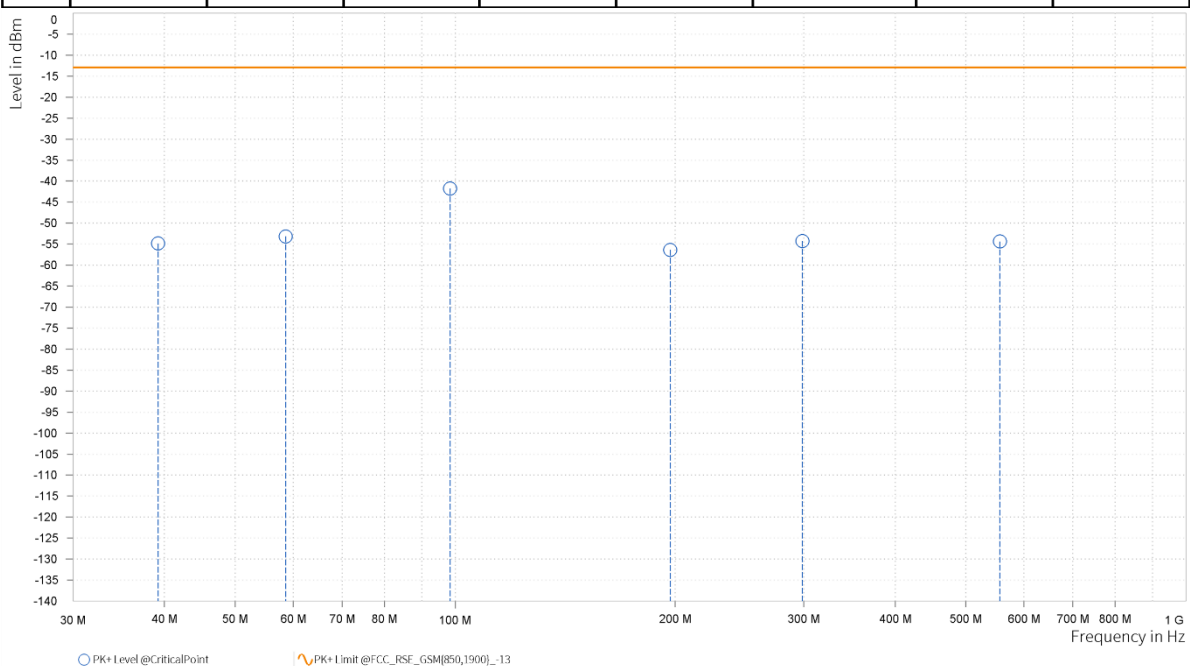




MODE	TX channel 20525	FREQUENCY RANGE	Below 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	120Vac 60HZ
TESTED BY	Hanwen Xu		

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	39.215	-54.85	-13.00	41.85	-5.26	V	212.1	1.00
1	58.615	-53.17	-13.00	40.17	0.54	V	143.1	2.00
1	98.385	-41.75	-13.00	28.75	8.92	V	4.9	1.00
1	196.840	-56.37	-13.00	43.37	-2.01	V	320.8	1.00
1	298.690	-54.24	-13.00	41.24	2.90	V	355	2.00
1	556.710	-54.40	-13.00	41.40	3.67	V	212.1	1.00





ABOVE 1GHz DATA

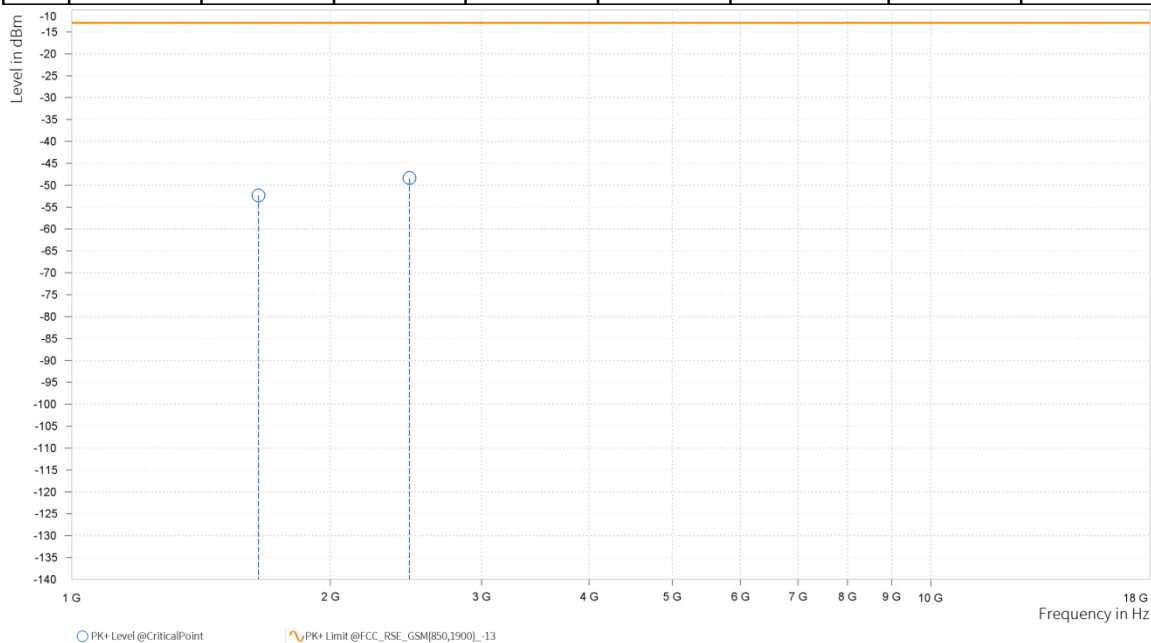
Note: For higher frequency, the emission is too low to be detected.

GSM 850

MODE	TX channel 128	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	1,648.400	-52.31	-13.00	39.31	16.68	H	272.3	2.00
3	2,472.600	-48.37	-13.00	35.37	21.67	H	199.4	2.00

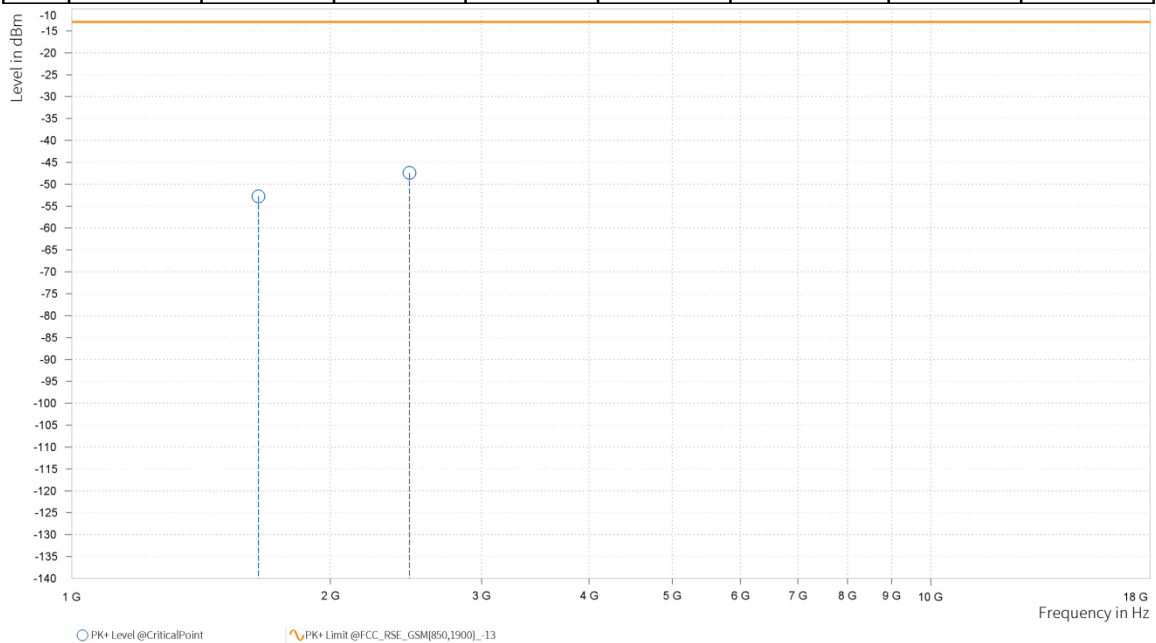




MODE	TX channel 128	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	120Vac 60HZ
TESTED BY	Hanwen Xu		

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	1,648.400	-52.76	-13.00	39.76	16.26	V	1	1.00
3	2,472.600	-47.44	-13.00	34.44	21.92	V	1	2.00

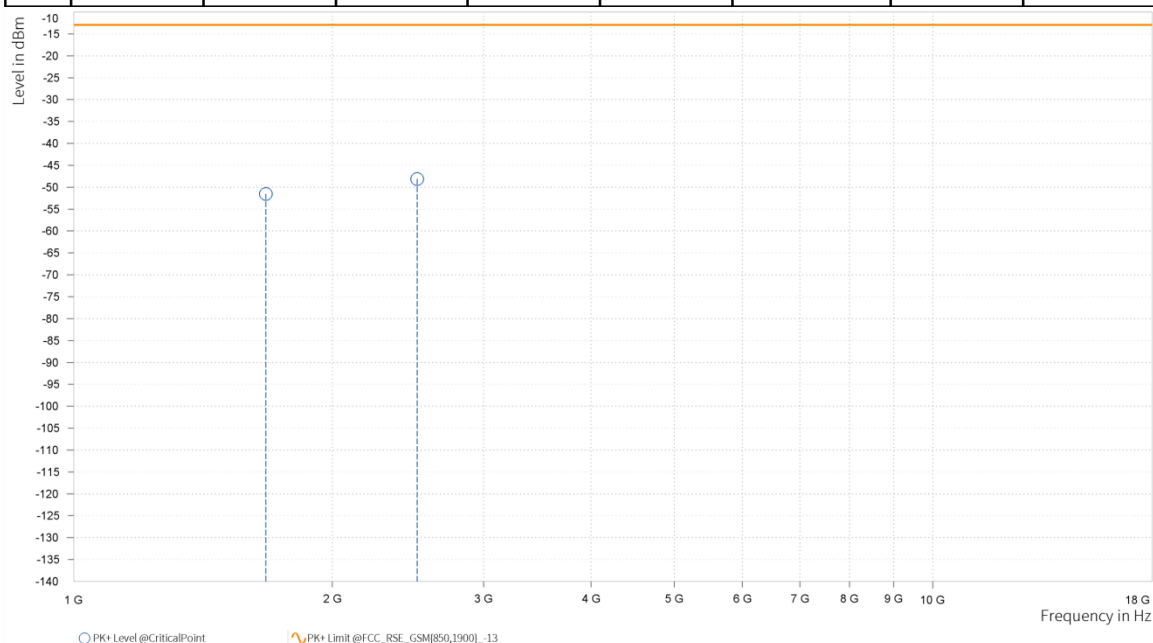




MODE	TX channel 189	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	120Vac 60HZ
TESTED BY	Hanwen Xu		

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	1,672.800	-51.53	-13.00	38.53	17.47	H	88.4	1.00
3	2,509.200	-48.12	-13.00	35.12	21.81	H	359	2.00

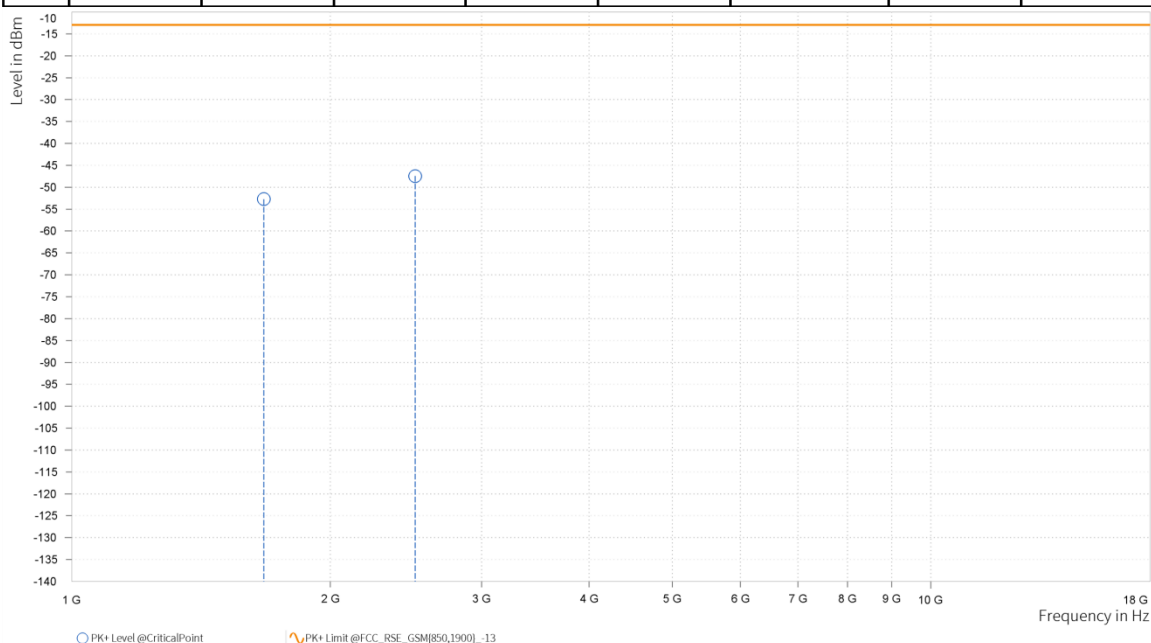




MODE	TX channel 189	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	120Vac 60HZ
TESTED BY	Hanwen Xu		

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	1,672.800	-52.73	-13.00	39.73	16.36	V	92.5	1.00
3	2,509.200	-47.47	-13.00	34.47	22.42	V	359	2.00

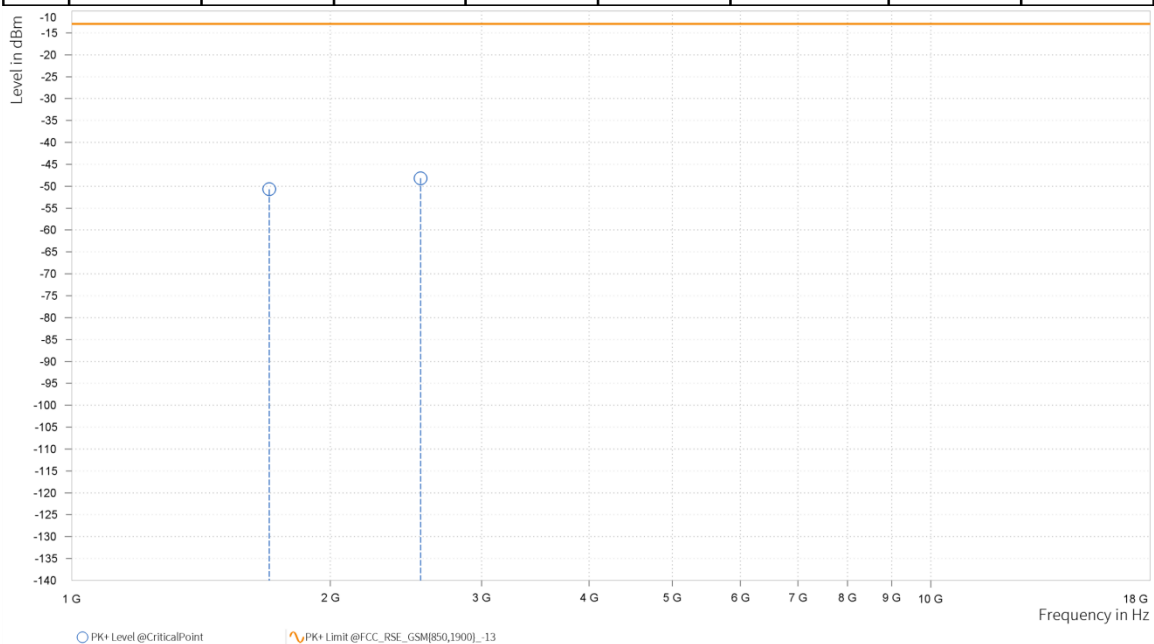




MODE	TX channel 251	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	120Vac 60HZ
TESTED BY	Hanwen Xu		

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	1,697.600	-50.68	-13.00	37.68	17.92	H	359	2.00
3	2,546.400	-48.18	-13.00	35.18	21.95	H	359	1.00

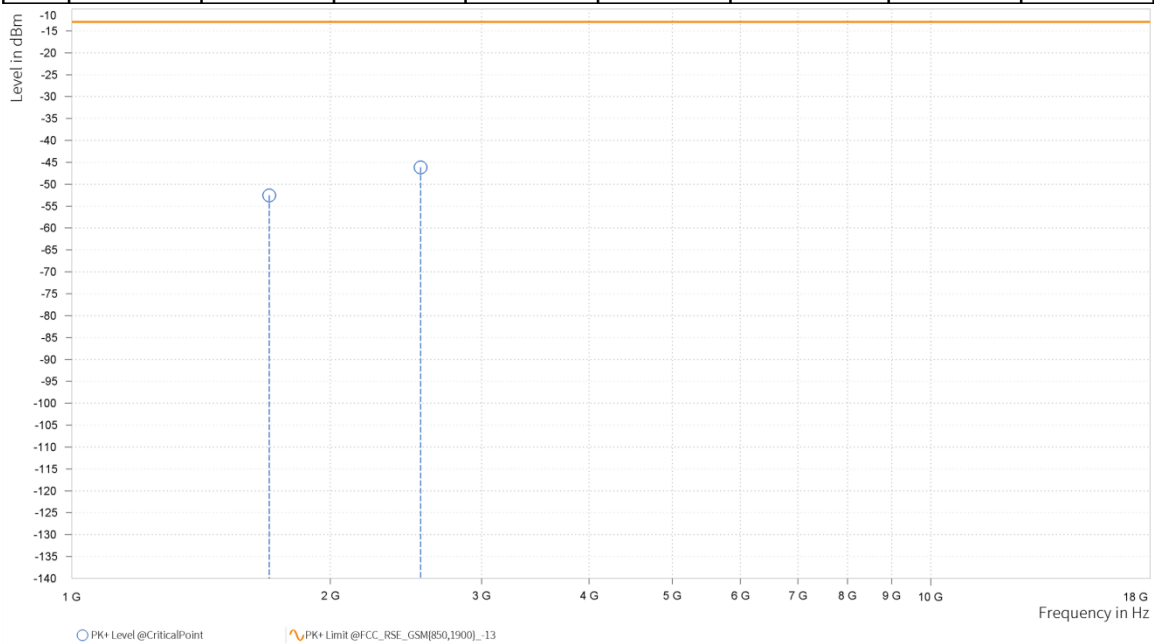


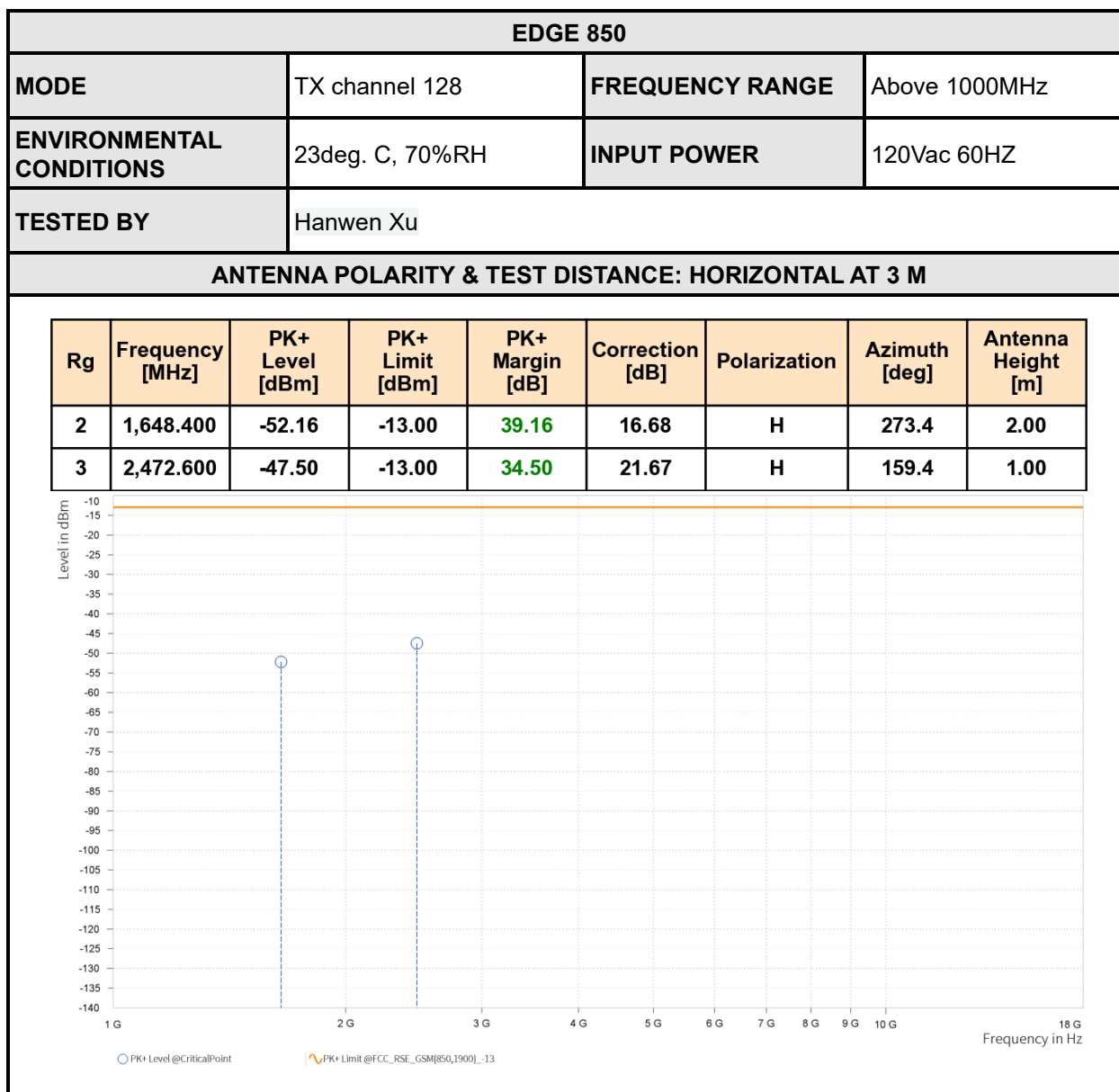


MODE	TX channel 251	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	120Vac 60HZ
TESTED BY	Hanwen Xu		

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	1,697.600	-52.55	-13.00	39.55	17.14	V	88.9	1.00
3	2,546.400	-46.14	-13.00	33.14	22.57	V	359	1.00



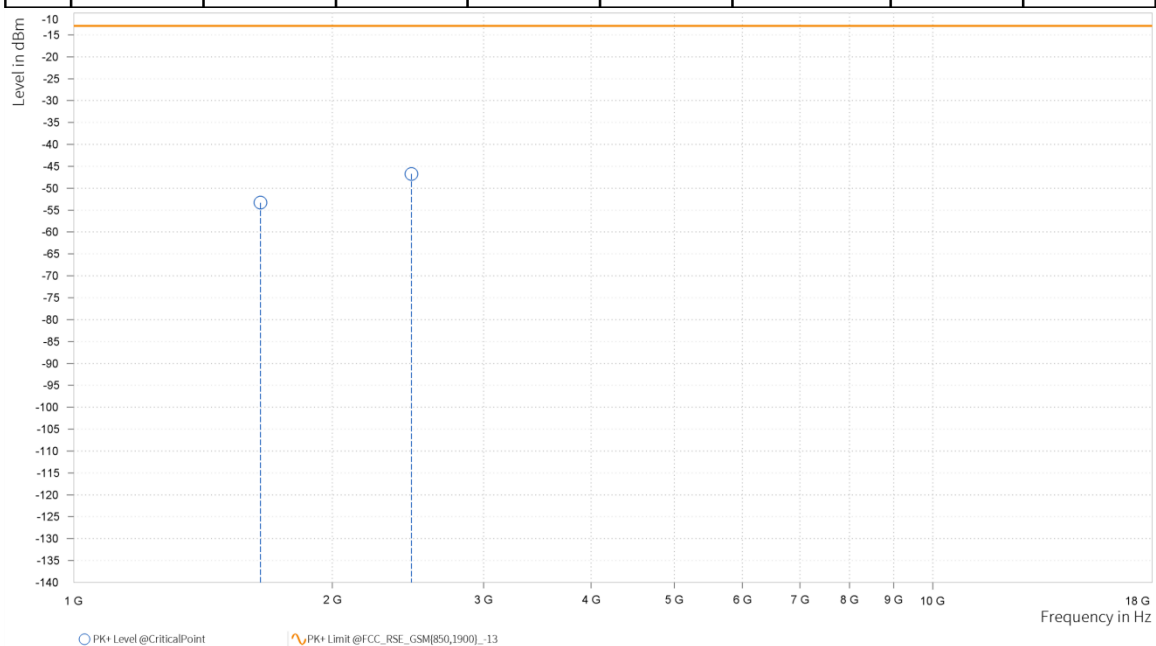




MODE	TX channel 128	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	120Vac 60HZ
TESTED BY	Hanwen Xu		

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	1,648.400	-53.29	-13.00	40.29	16.26	V	1	1.00
3	2,472.600	-46.74	-13.00	33.74	21.92	V	1	1.00

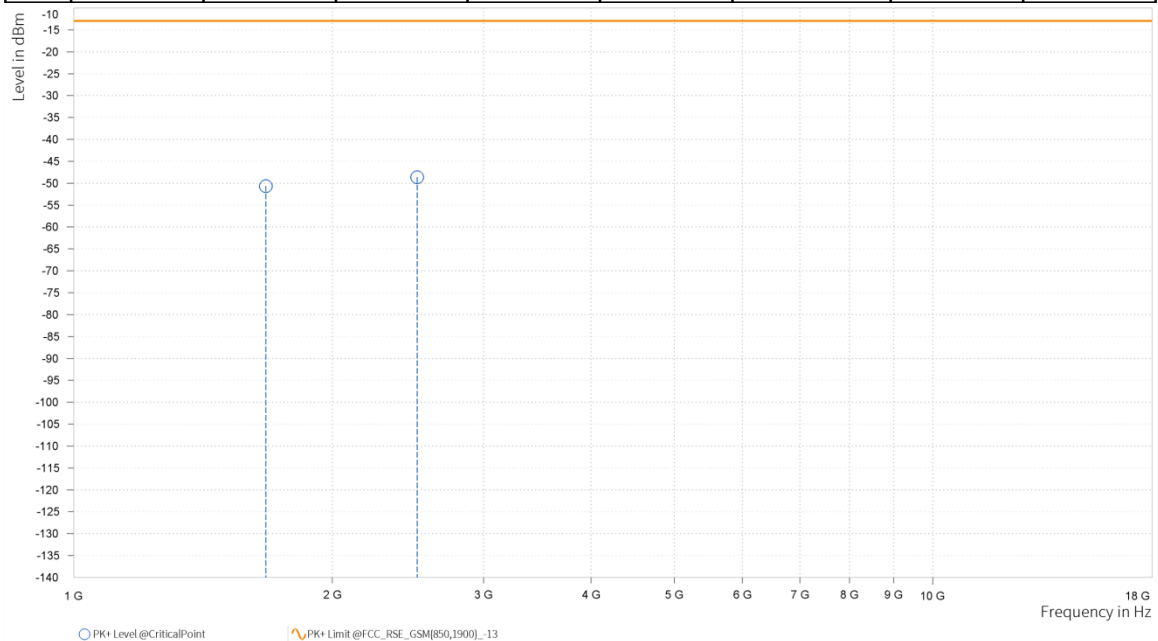




MODE	TX channel 189	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	120Vac 60HZ
TESTED BY	Hanwen Xu		

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	1,672.800	-50.66	-13.00	37.66	17.47	H	1	1.00
3	2,509.200	-48.62	-13.00	35.62	21.81	H	223.9	1.00

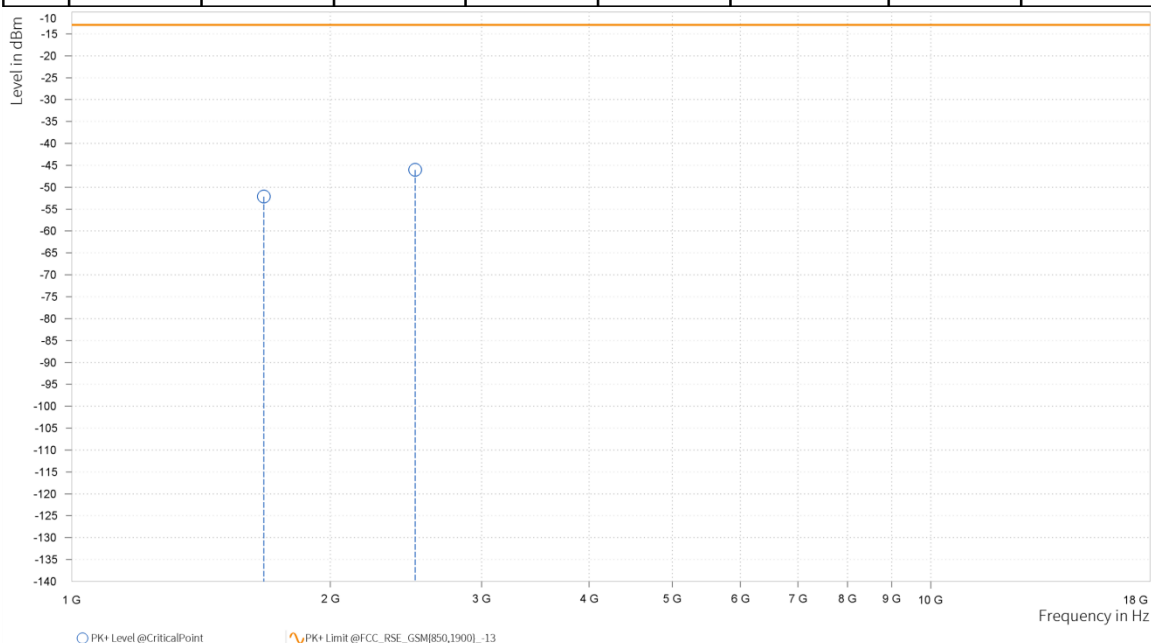




MODE	TX channel 189	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	120Vac 60HZ
TESTED BY	Hanwen Xu		

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	1,672.800	-52.13	-13.00	39.13	16.36	V	1	2.00
3	2,509.200	-46.06	-13.00	33.06	22.42	V	359	1.00

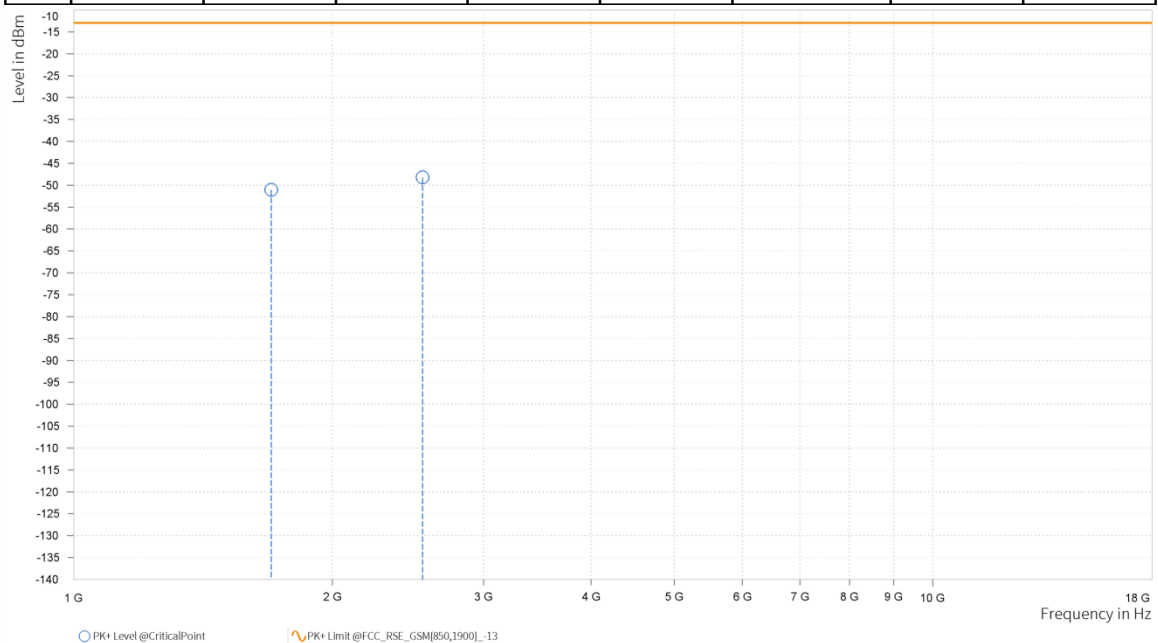




MODE	TX channel 251	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	120Vac 60HZ
TESTED BY	Hanwen Xu		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

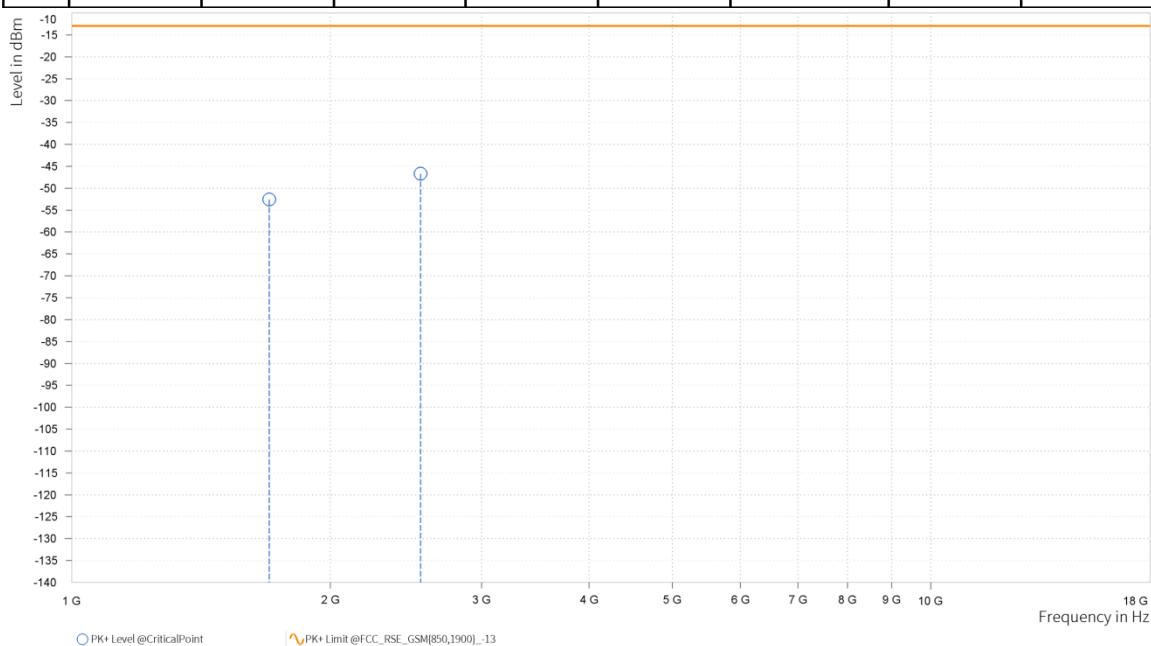
Rg	Frequency [MHz]	PK+ Level [dBm]	PK+ Limit [dBm]	PK+ Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]
2	1,697.600	-51.07	-13.00	38.07	17.92	H	1	2.00
3	2,546.400	-48.20	-13.00	35.20	21.95	H	160.6	1.00





MODE	TX channel 251	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	1,697.600	-52.58	-13.00	39.58	17.14	V	1	1.00
3	2,546.400	-46.71	-13.00	33.71	22.57	V	1	1.00

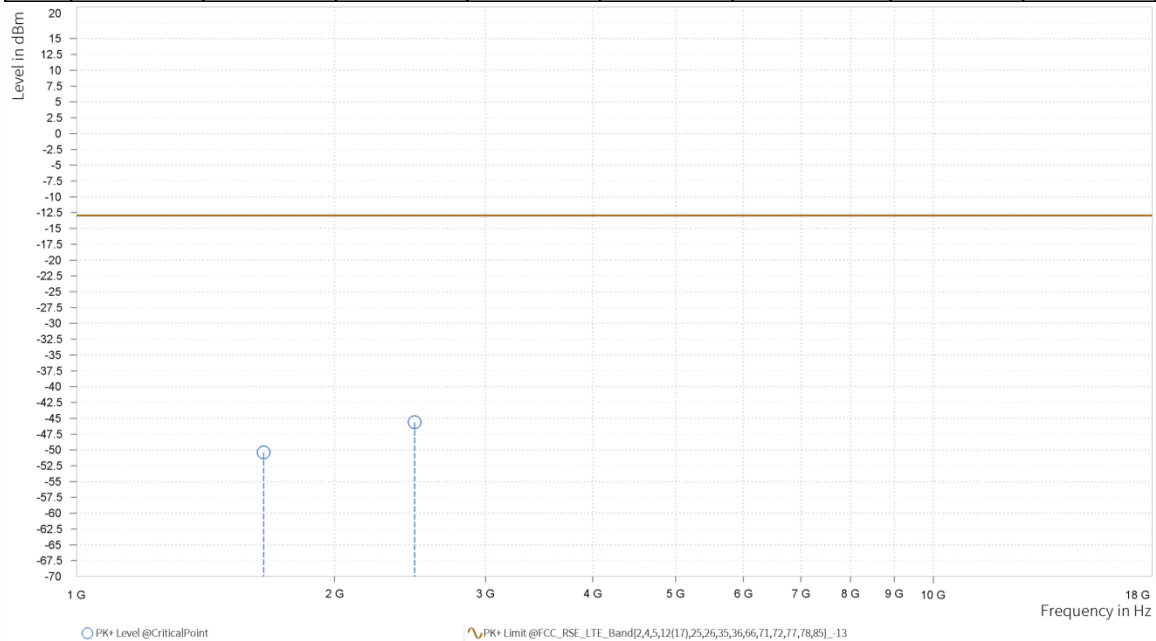




WCDMA Band V			
MODE	TX channel 4132	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	120Vac 60HZ
TESTED BY	Hanwen Xu		

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	1,652.800	-50.40	-13.00	37.40	18.89	H	1.4	2.00
3	2,479.200	-45.64	-13.00	32.64	24.36	H	214.6	2.00

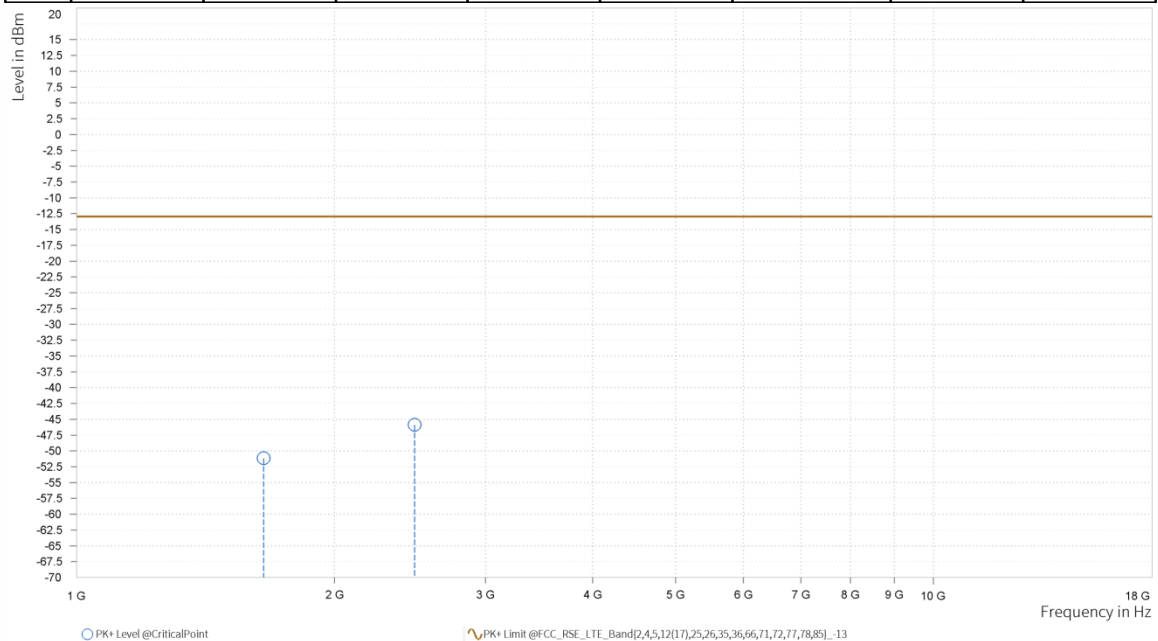




MODE	TX channel 4132	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	120Vac 60HZ
TESTED BY	Hanwen Xu		

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	1,652.800	-51.17	-13.00	38.17	18.37	V	1	2.00
3	2,479.200	-45.87	-13.00	32.87	24.04	V	218.2	2.00

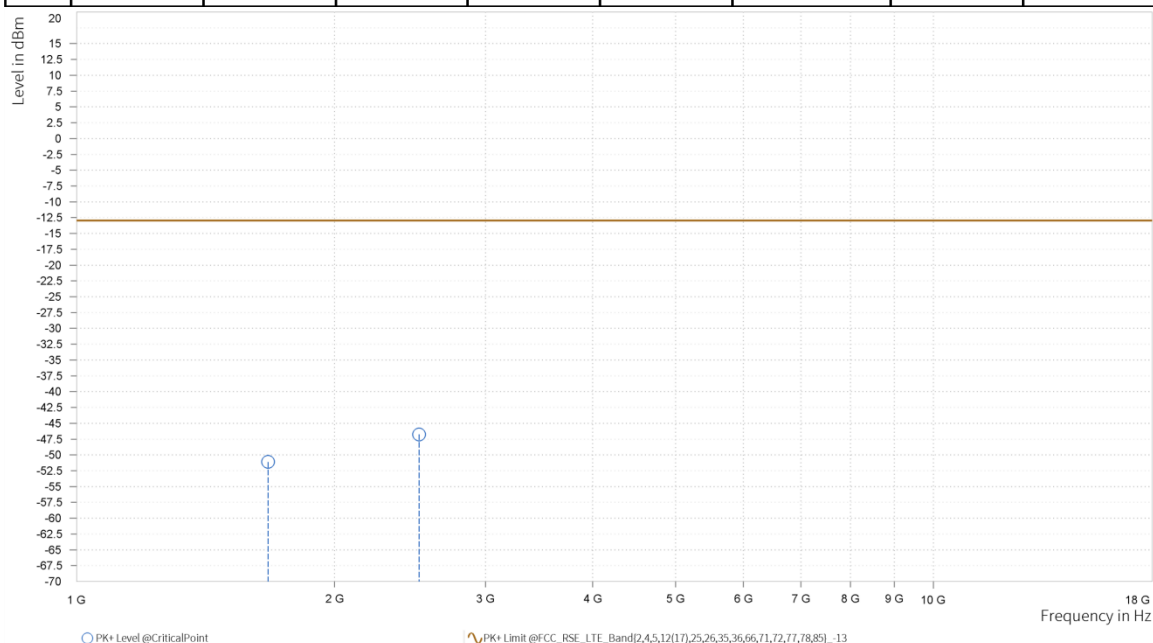




MODE	TX channel 4182	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	120Vac 60HZ
TESTED BY	Hanwen Xu		

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	1,672.800	-51.11	-13.00	38.11	19.90	H	358.3	1.00
3	2,509.200	-46.76	-13.00	33.76	23.80	H	1	1.00

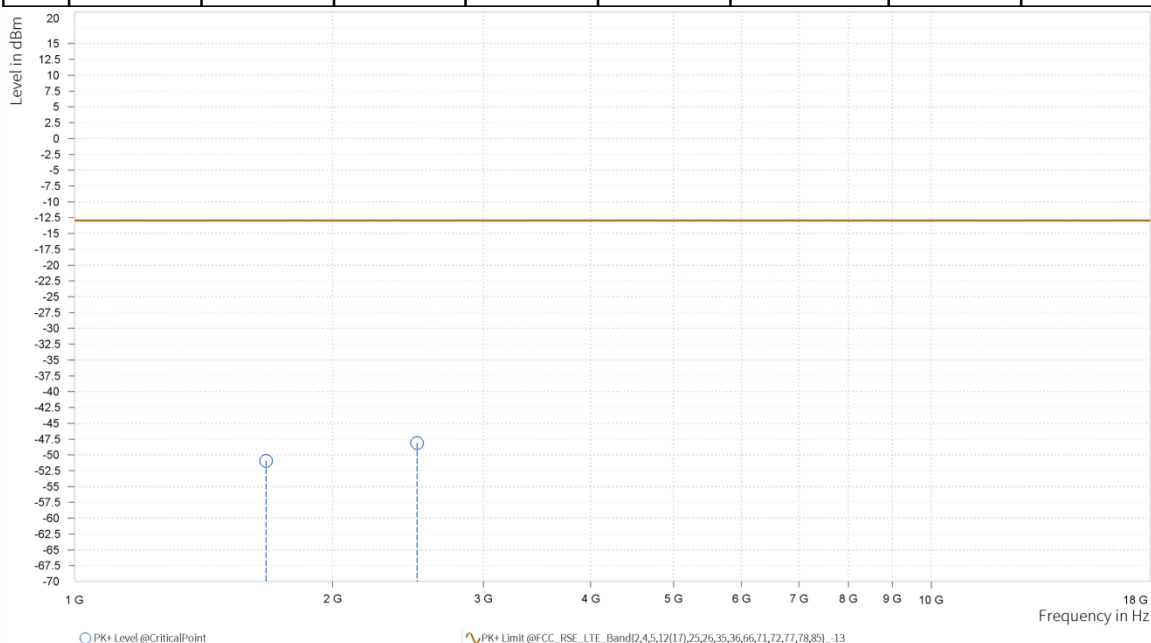




MODE	TX channel 4182	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	120Vac 60HZ
TESTED BY	Hanwen Xu		

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	1,672.800	-50.93	-13.00	37.93	19.71	V	1	1.00
3	2,509.200	-48.12	-13.00	35.12	23.47	V	135.8	1.00

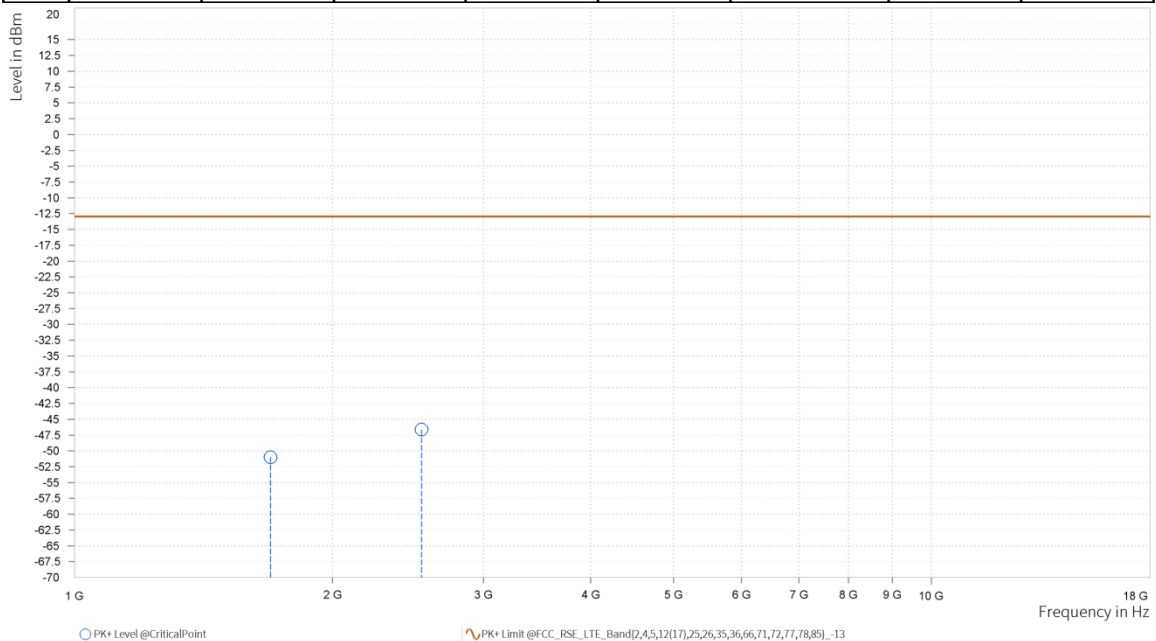




MODE	TX channel 4233	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	120Vac 60HZ
TESTED BY	Hanwen Xu		

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	1,693.200	-50.99	-13.00	37.99	20.47	H	291.1	2.00
3	2,539.800	-46.64	-13.00	33.64	23.38	H	138.2	1.00

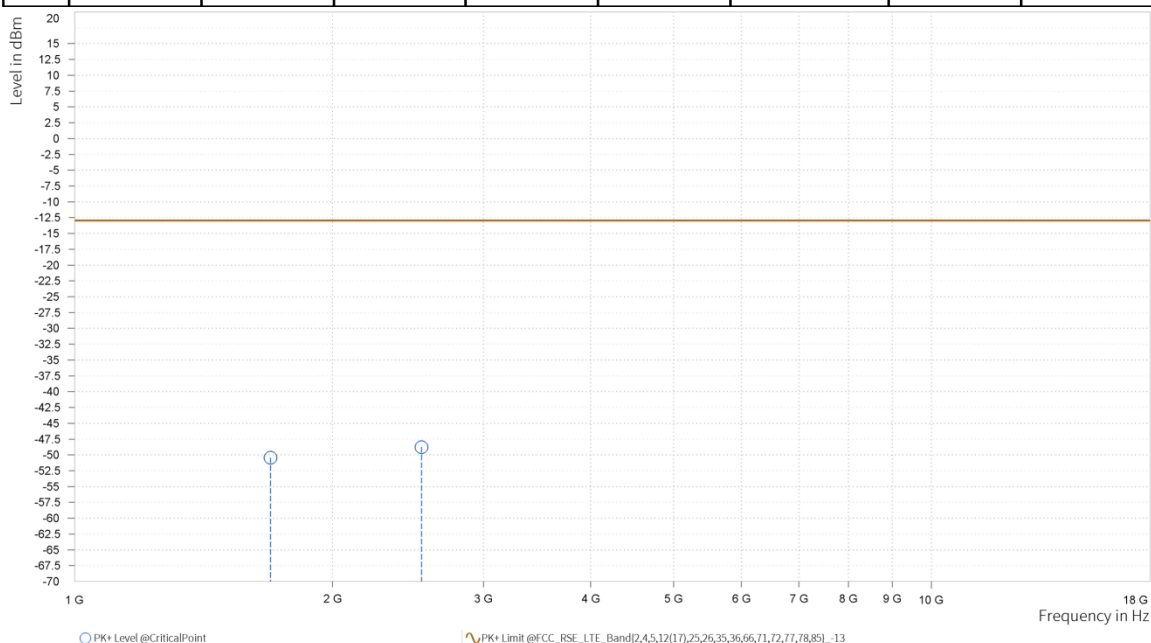




MODE	TX channel 4233	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	120Vac 60HZ
TESTED BY	Hanwen Xu		

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	1,693.200	-50.44	-13.00	37.44	20.61	V	1	1.00
3	2,539.800	-48.78	-13.00	35.78	23.15	V	359	2.00

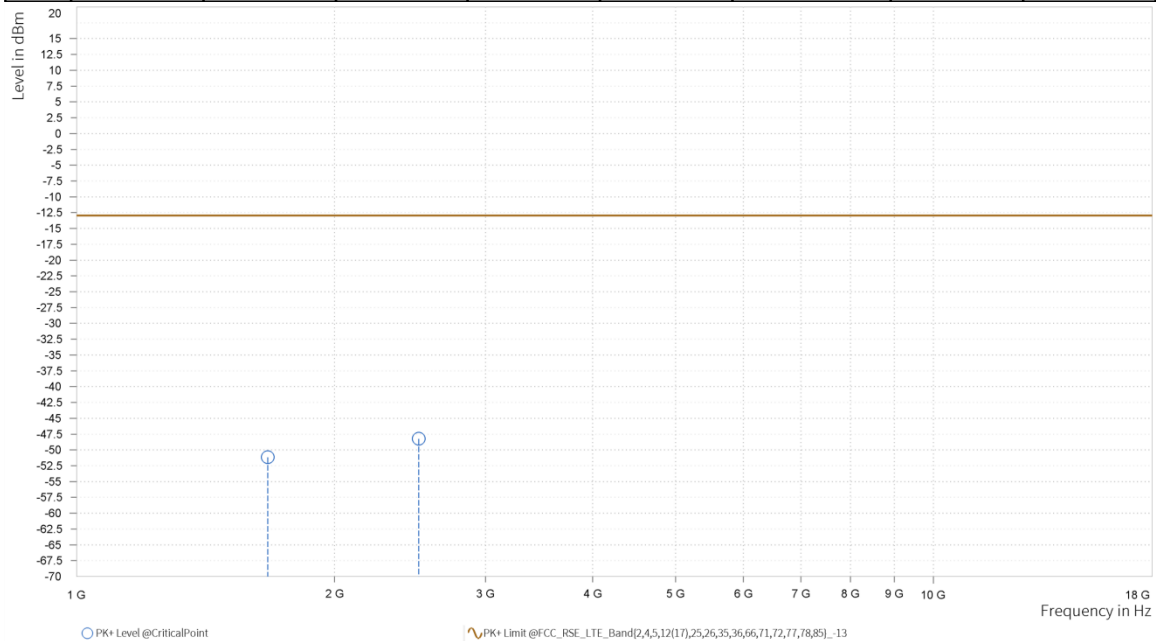




LTE Band 5			
CHANNEL BANDWIDTH	1.4MHz/QPSK	MODE	TX channel 20525
FREQUENCY RANGE	Above 1000MHz	ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH
INPUT POWER	120Vac 60HZ	TESTED BY	Hanwen Xu

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	1,671.740	-51.16	-13.00	38.16	19.62	H	359	2.00
3	2,507.610	-48.23	-13.00	35.23	23.47	H	0.9	2.00

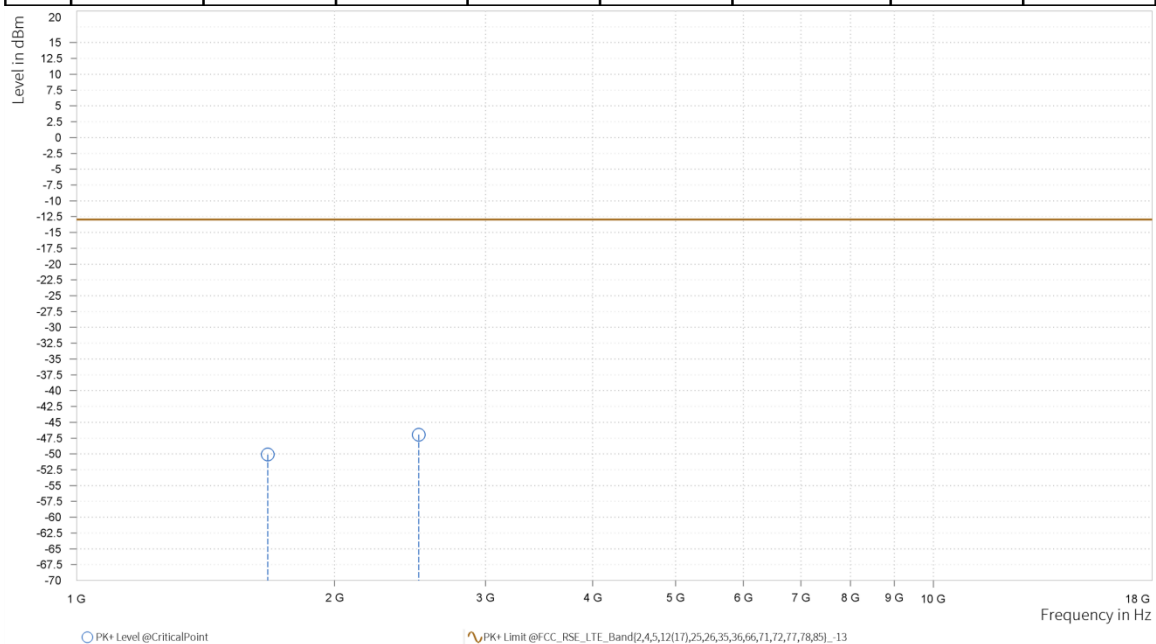




CHANNEL BANDWIDTH	1.4MHz/QPSK	MODE	TX channel 20525
FREQUENCY RANGE	Above 1000MHz	ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH
INPUT POWER	120Vac 60HZ	TESTED BY	Hanwen Xu

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	1,671.740	-50.10	-13.00	37.10	19.83	V	72.4	1.00
3	2,507.610	-46.95	-13.00	33.95	23.81	V	144.2	1.00

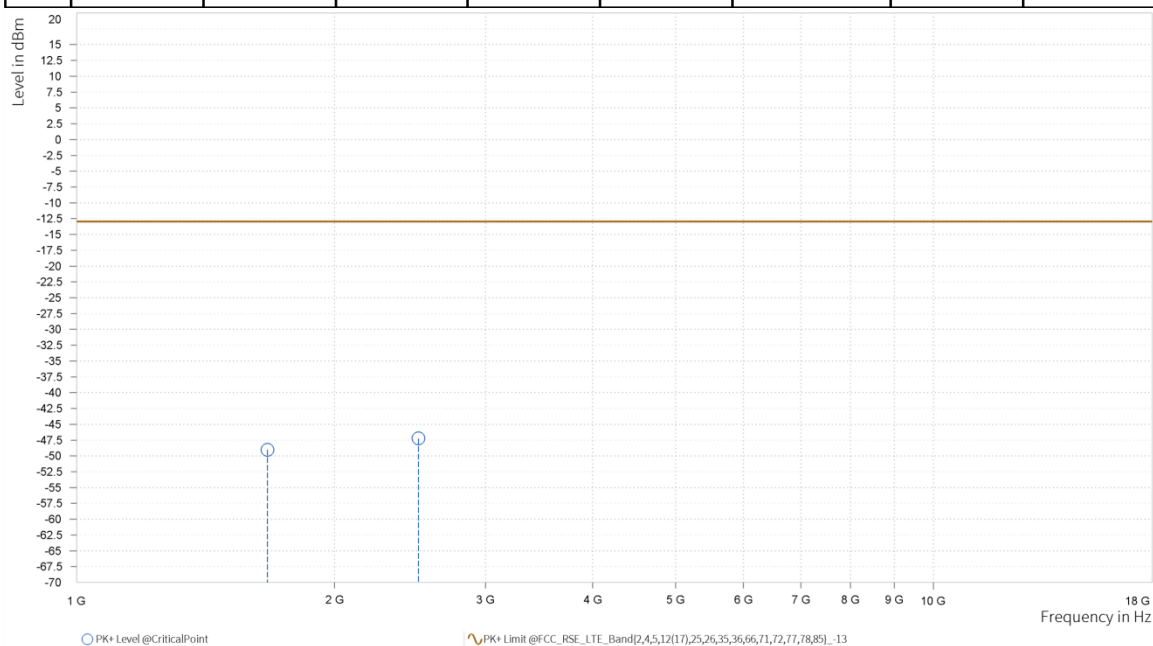




CHANNEL BANDWIDTH	3MHz/QPSK	MODE	TX channel 20525
FREQUENCY RANGE	Above 1000MHz	ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH
INPUT POWER	120Vac 60HZ	TESTED BY	Hanwen Xu

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	1,670.300	-49.01	-13.00	36.01	19.79	H	359.1	1.00
3	2,505.450	-47.24	-13.00	34.24	23.83	H	200.3	2.00

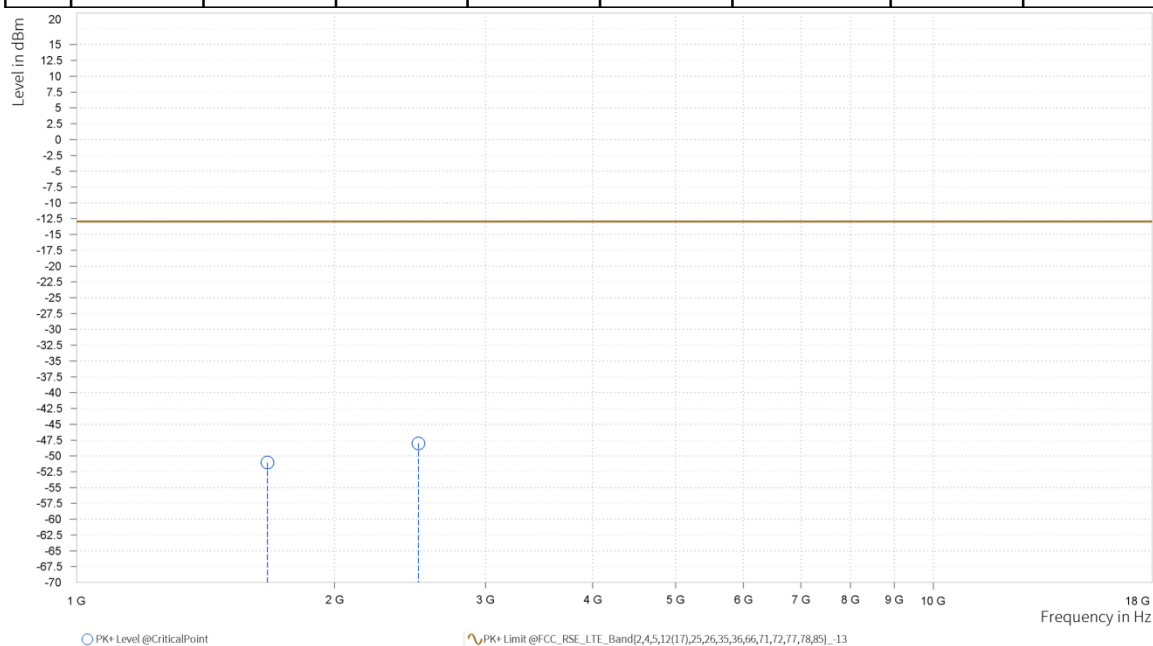




CHANNEL BANDWIDTH	3MHz/QPSK	MODE	TX channel 20525
FREQUENCY RANGE	Above 1000MHz	ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH
INPUT POWER	120Vac 60HZ	TESTED BY	Hanwen Xu

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	1,670.300	-51.05	-13.00	38.05	19.56	V	285.2	2.00
3	2,505.450	-48.00	-13.00	35.00	23.47	V	1	2.00

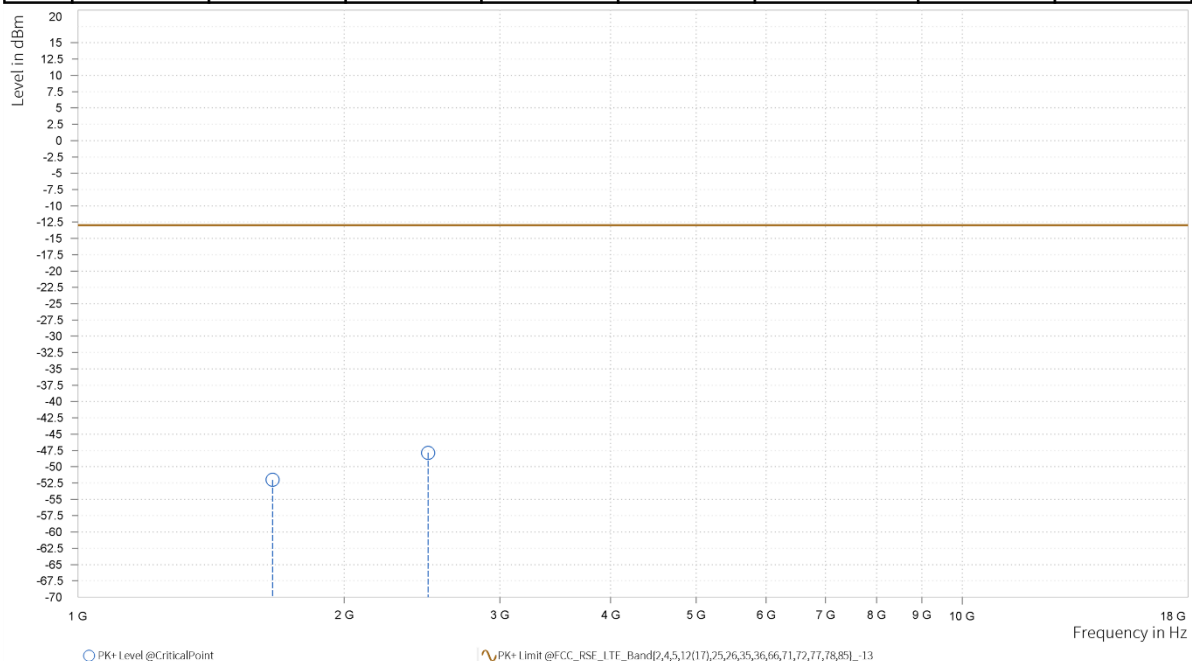




CHANNEL BANDWIDTH	5MHz/QPSK	MODE	TX channel 20525
FREQUENCY RANGE	Above 1000MHz	ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH
INPUT POWER	120Vac 60HZ	TESTED BY	Hanwen Xu

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	1,669.500	-52.00	-13.00	39.00	19.33	H	1	1.00
3	2,489.250	-47.87	-13.00	34.87	23.92	H	200.3	2.00

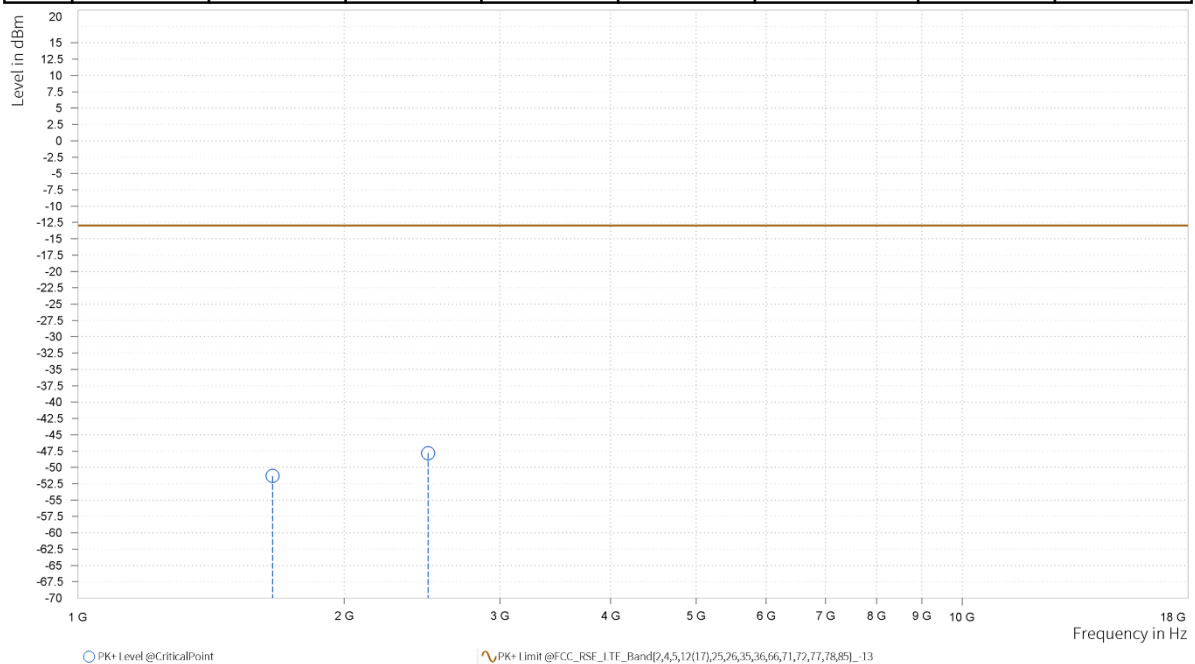




CHANNEL BANDWIDTH	5MHz/QPSK	MODE	TX channel 20525
FREQUENCY RANGE	Above 1000MHz	ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH
INPUT POWER	120Vac 60HZ	TESTED BY	Hanwen Xu

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	1,669.500	-51.32	-13.00	38.32	18.91	V	359	1.00
3	2,489.250	-47.82	-13.00	34.82	23.55	V	146.6	1.00

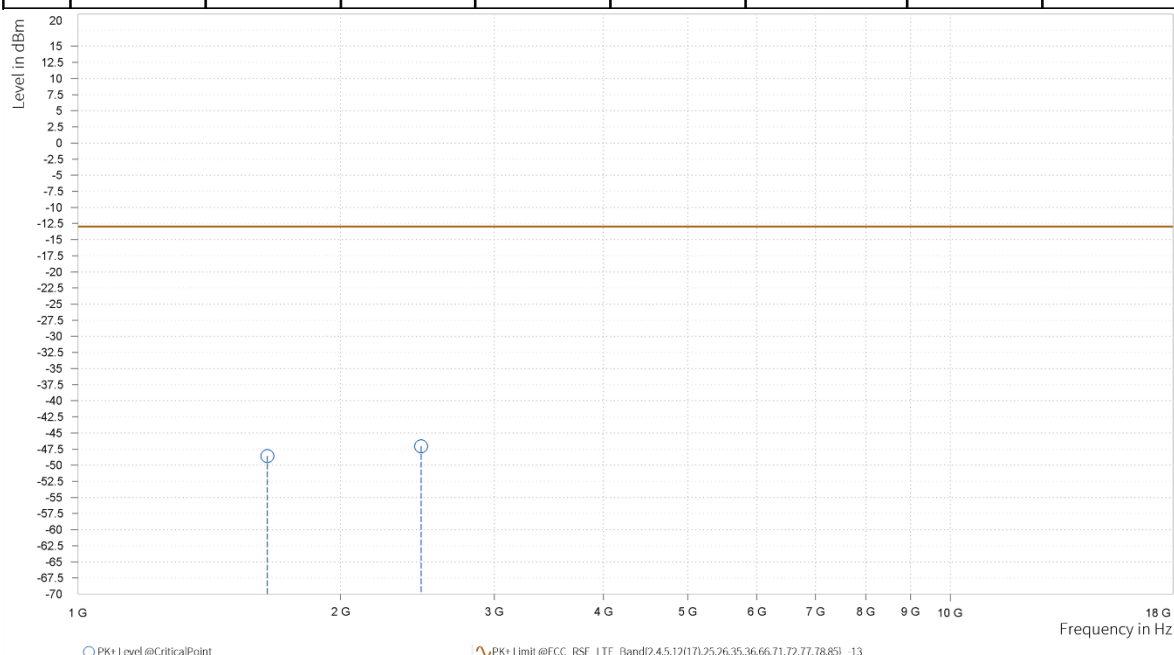


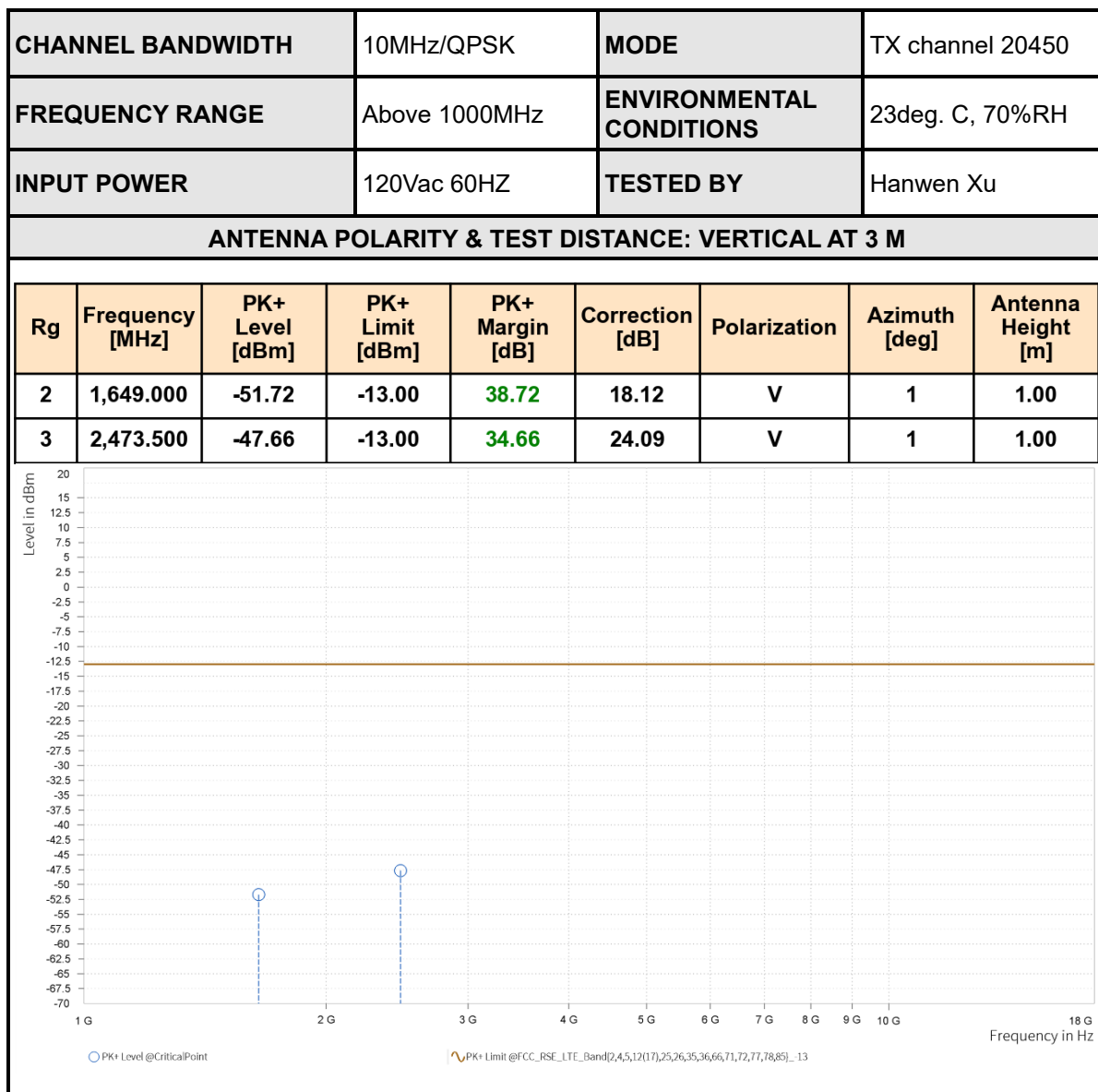


CHANNEL BANDWIDTH	10MHz/QPSK	MODE	TX channel 20450
FREQUENCY RANGE	Above 1000MHz	ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH
INPUT POWER	120Vac 60HZ	TESTED BY	Hanwen Xu

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	1,649.000	-48.56	-13.00	35.56	18.65	H	359	2.00
3	2,473.500	-47.05	-13.00	34.05	24.39	H	359	2.00



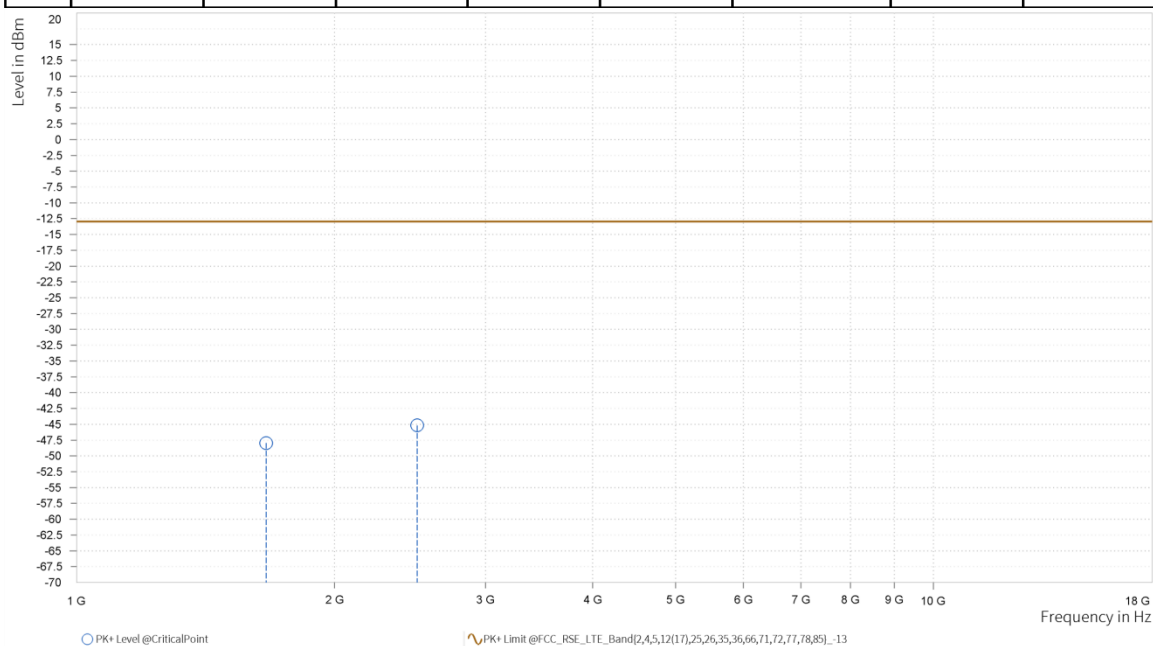




CHANNEL BANDWIDTH	10MHz/QPSK	MODE	TX channel 20525
FREQUENCY RANGE	Above 1000MHz	ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH
INPUT POWER	120Vac 60HZ	TESTED BY	Hanwen Xu

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	1,664.000	-47.95	-13.00	34.95	19.52	H	1.7	2.00
3	2,496.000	-45.17	-13.00	32.17	23.86	H	141.8	1.00

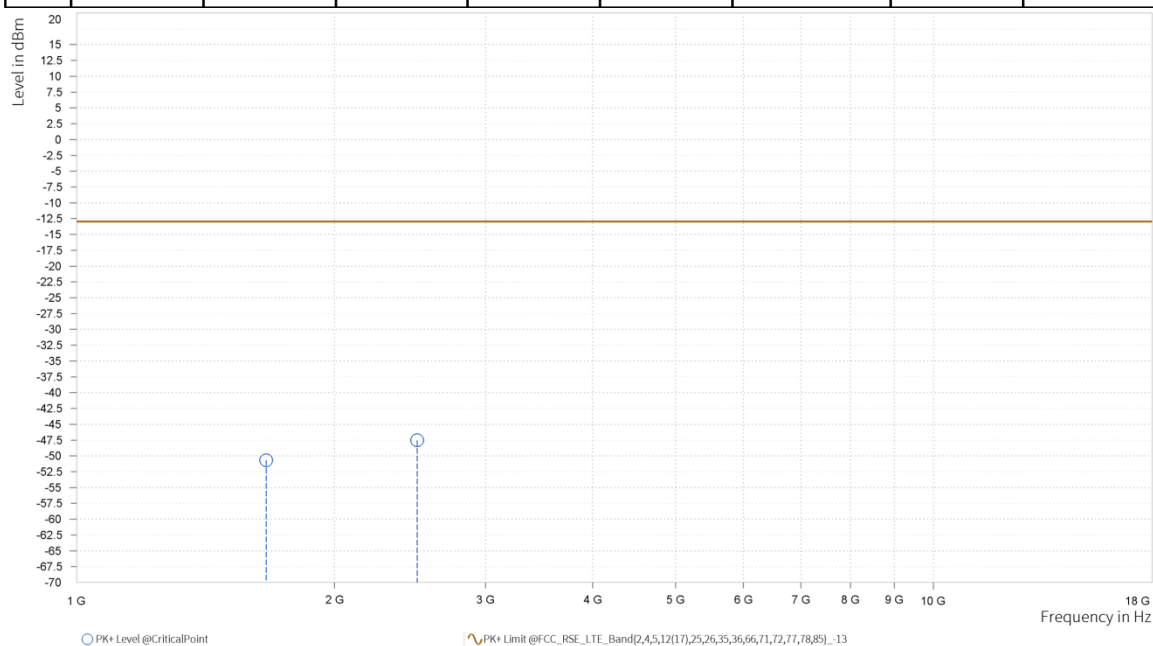




CHANNEL BANDWIDTH	10MHz/QPSK	MODE	TX channel 20525
FREQUENCY RANGE	Above 1000MHz	ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH
INPUT POWER	120Vac 60HZ	TESTED BY	Hanwen Xu

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	1,664.000	-50.68	-13.00	37.68	19.18	V	359	2.00
3	2,496.000	-47.53	-13.00	34.53	23.47	V	359	2.00

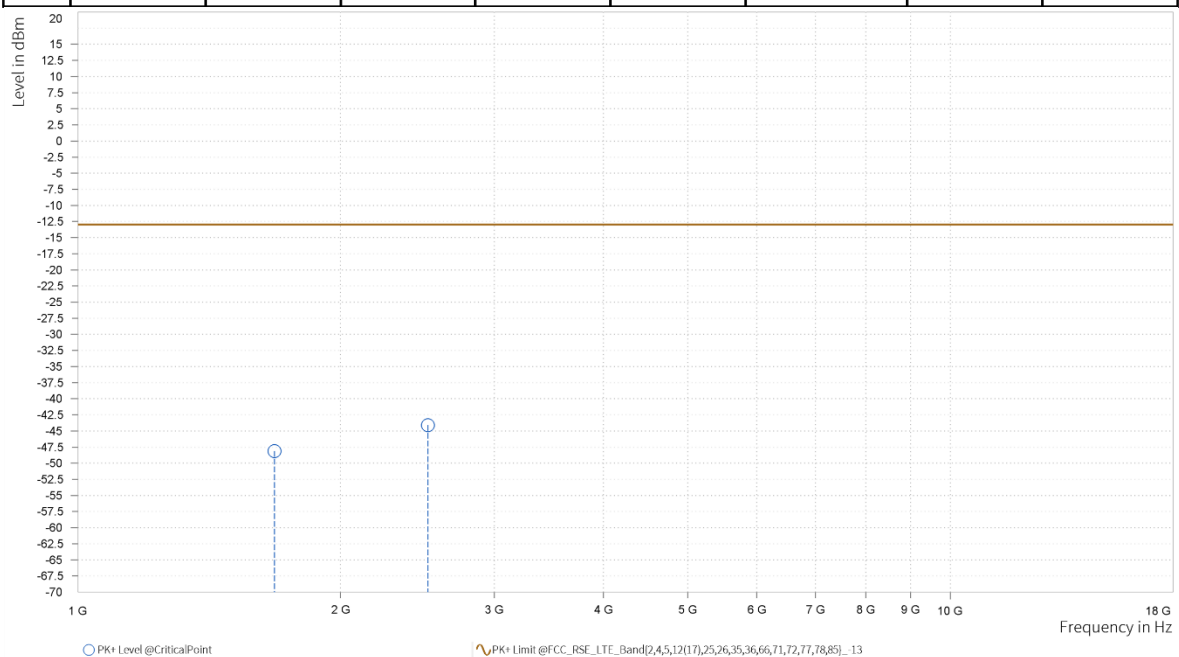


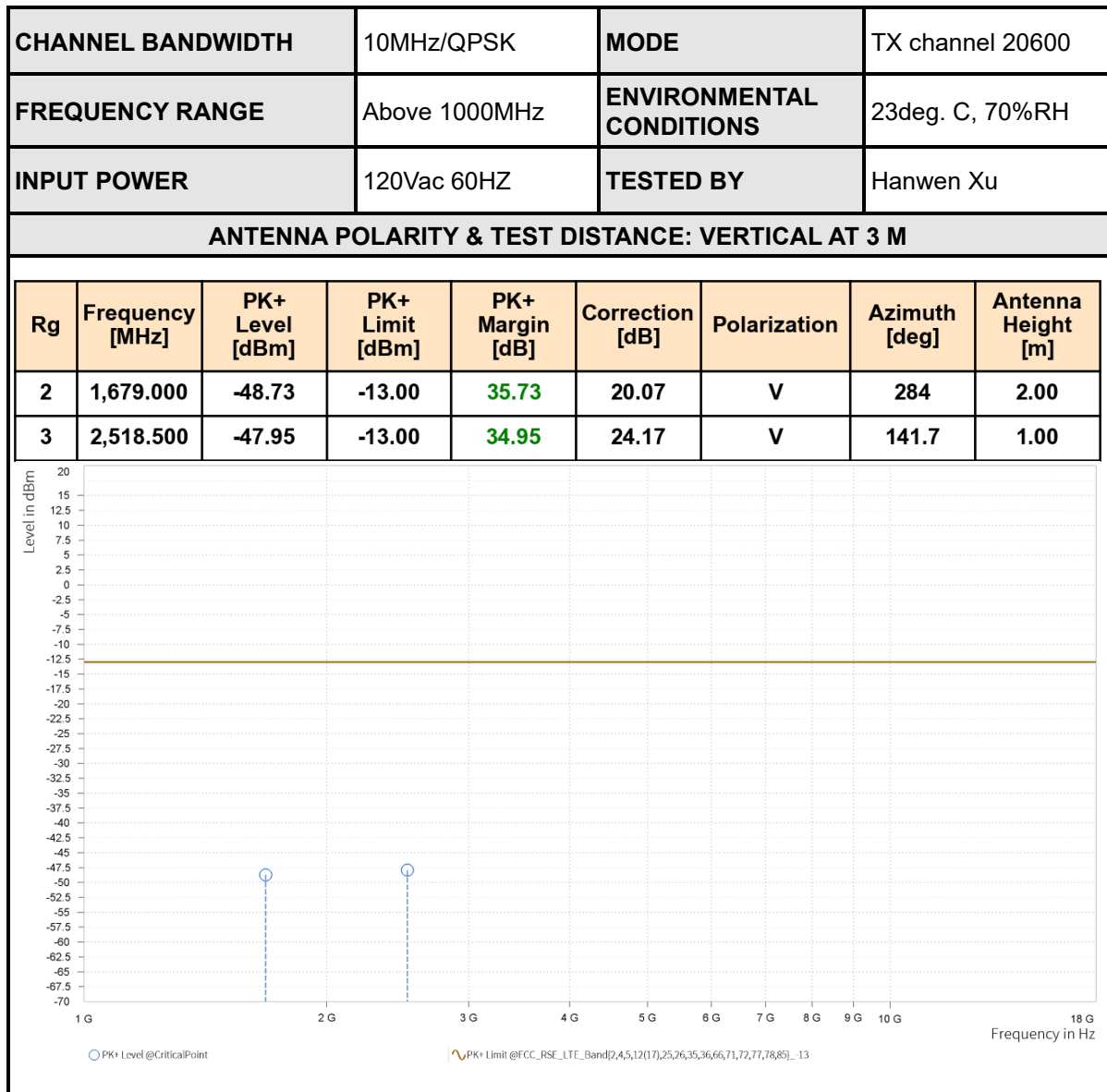


CHANNEL BANDWIDTH	10MHz/QPSK	MODE	TX channel 20600
FREQUENCY RANGE	Above 1000MHz	ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH
INPUT POWER	120Vac 60HZ	TESTED BY	Hanwen Xu

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	1,679.000	-48.12	-13.00	35.12	20.17	H	359	1.00
3	2,518.500	-44.10	-13.00	31.10	24.47	H	138.2	1.00



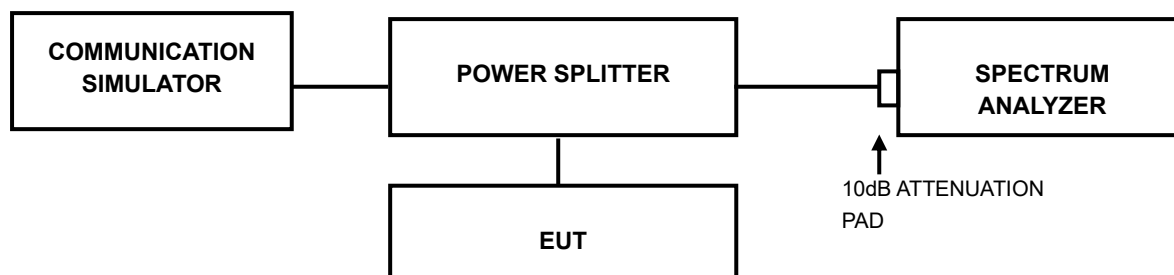


3.7 PEAK TO AVERAGE RATIO

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%.



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3.7.4 TEST RESULTS

Please Refer to Appendix of this test report.



4 PHOTOGRAPHS OF THE TEST CONFIGURATION

Please refer to the attached file (Test Setup Photo).



5 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.

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

Lab Address:

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

Accredited Test Lab Cert 6613.01

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

Suzhou EMC/RF Lab:

Tel: +86 (0557) 368 1008



6 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.



7 APPENDIX:

GSM850

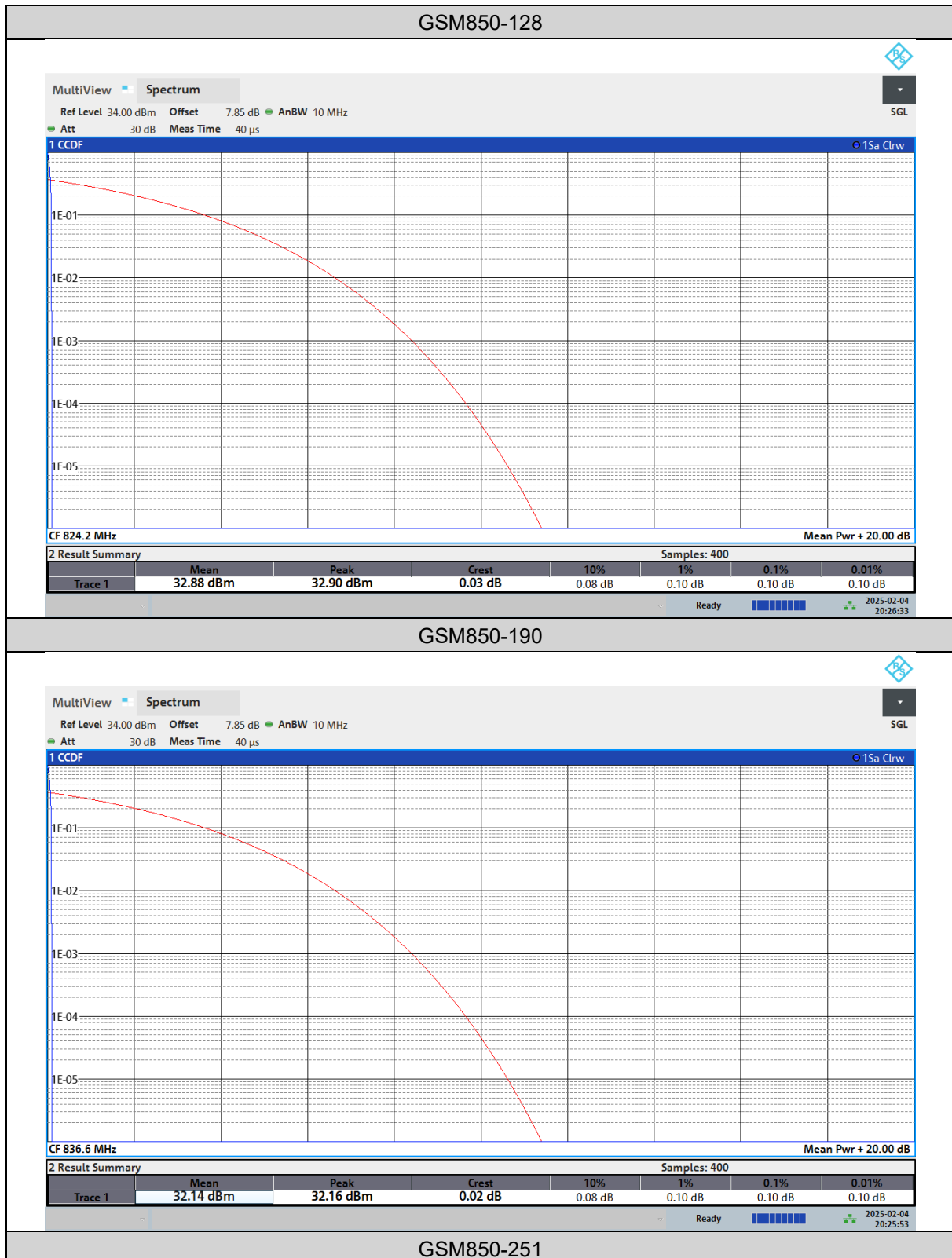
PEAK-TO-AVERAGE RATIO(CCDF)

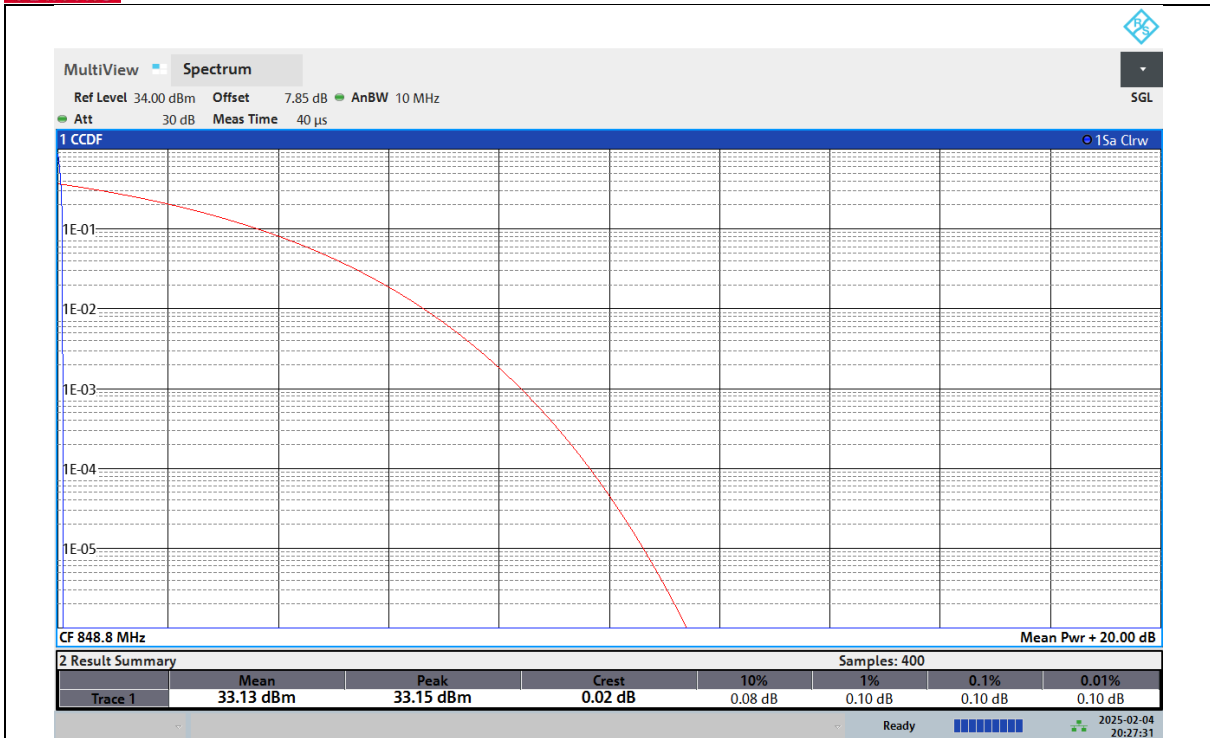
Test Result

Band	Channel	Result(dB)	Limit(dB)	Verdict
GSM850	128	0.10	13	PASS
GSM850	190	0.10	13	PASS
GSM850	251	0.10	13	PASS
GPRS850	128	0.10	13	PASS
GPRS850	190	0.10	13	PASS
GPRS850	251	0.10	13	PASS
EGPRS850	128	2.54	13	PASS
EGPRS850	190	2.82	13	PASS
EGPRS850	251	3.10	13	PASS

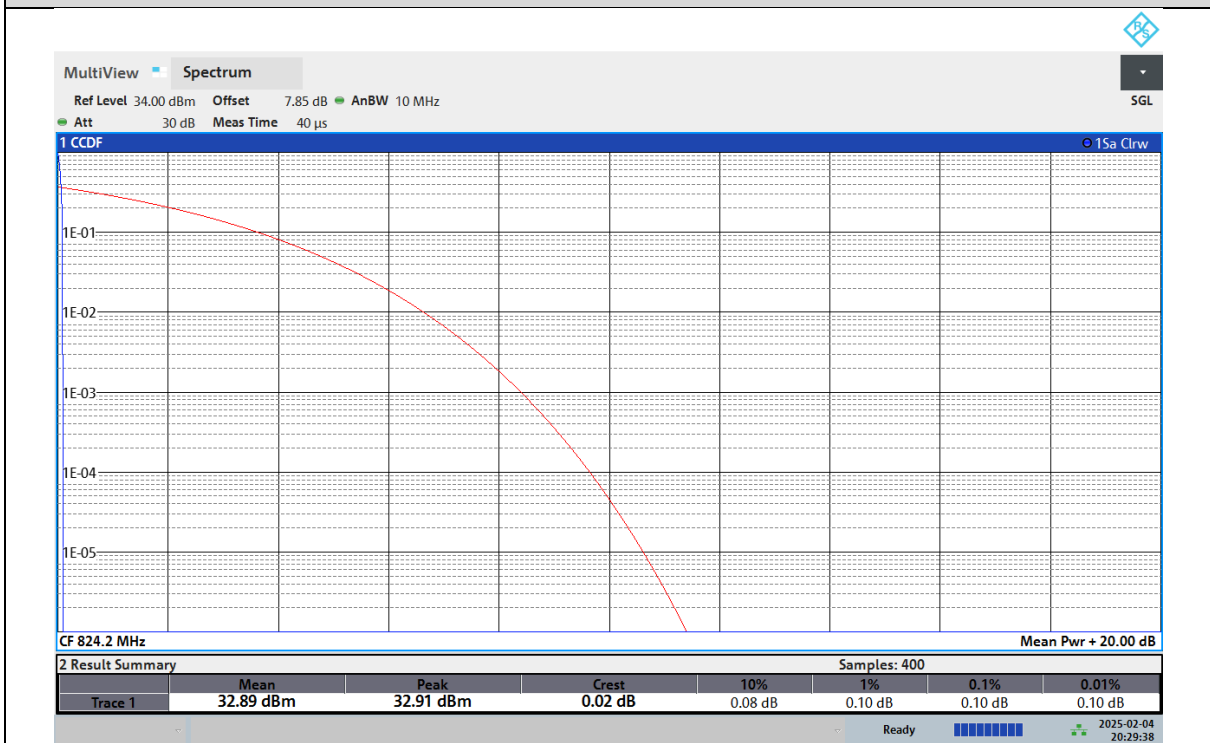


Test Graphs

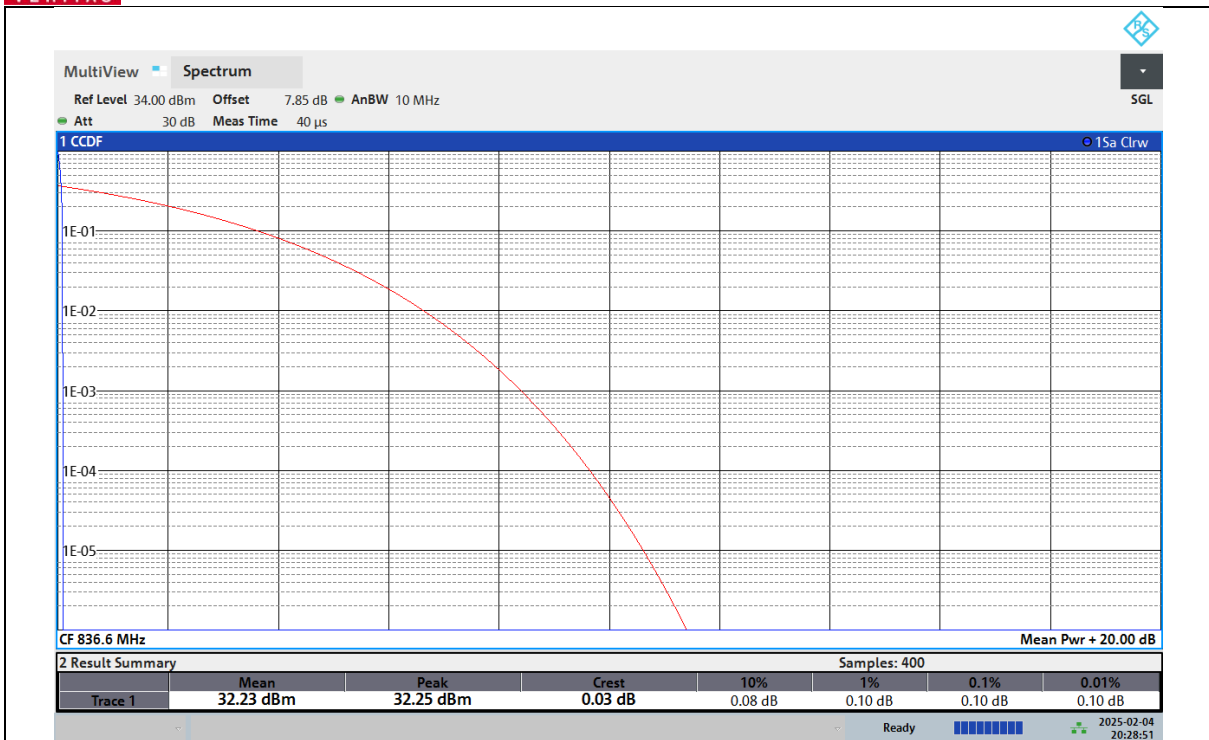




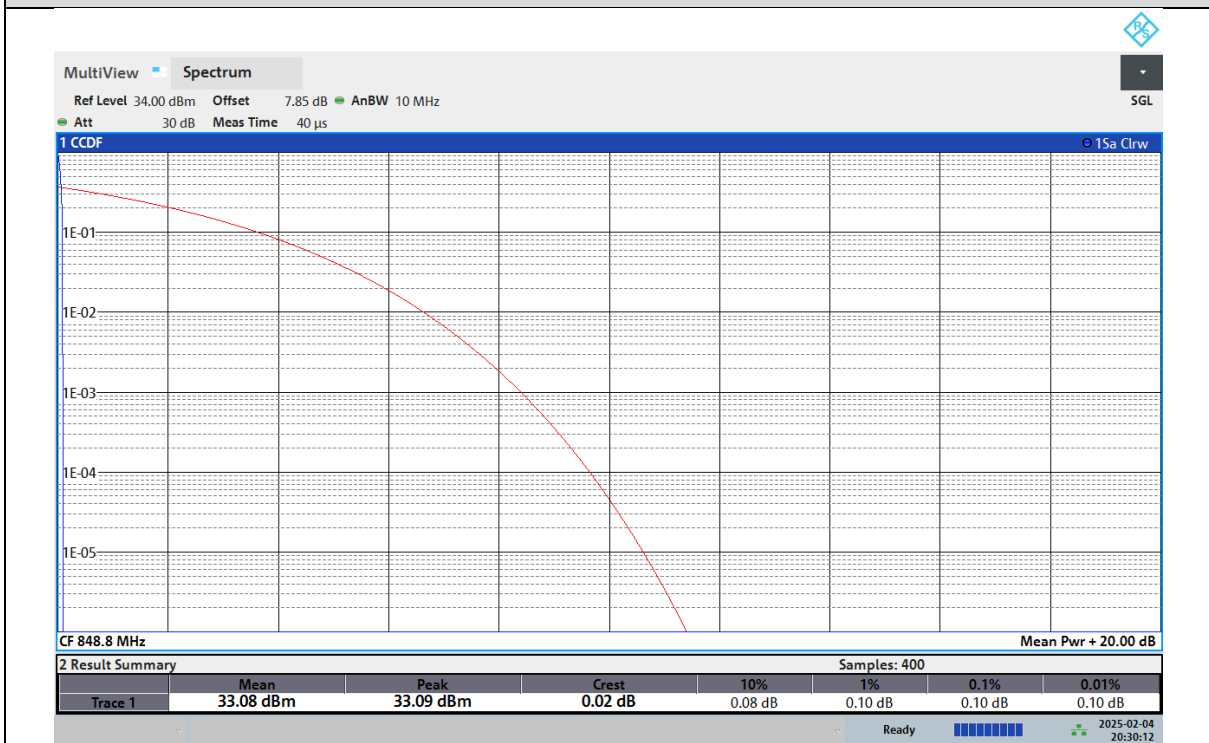
GPRS850-128



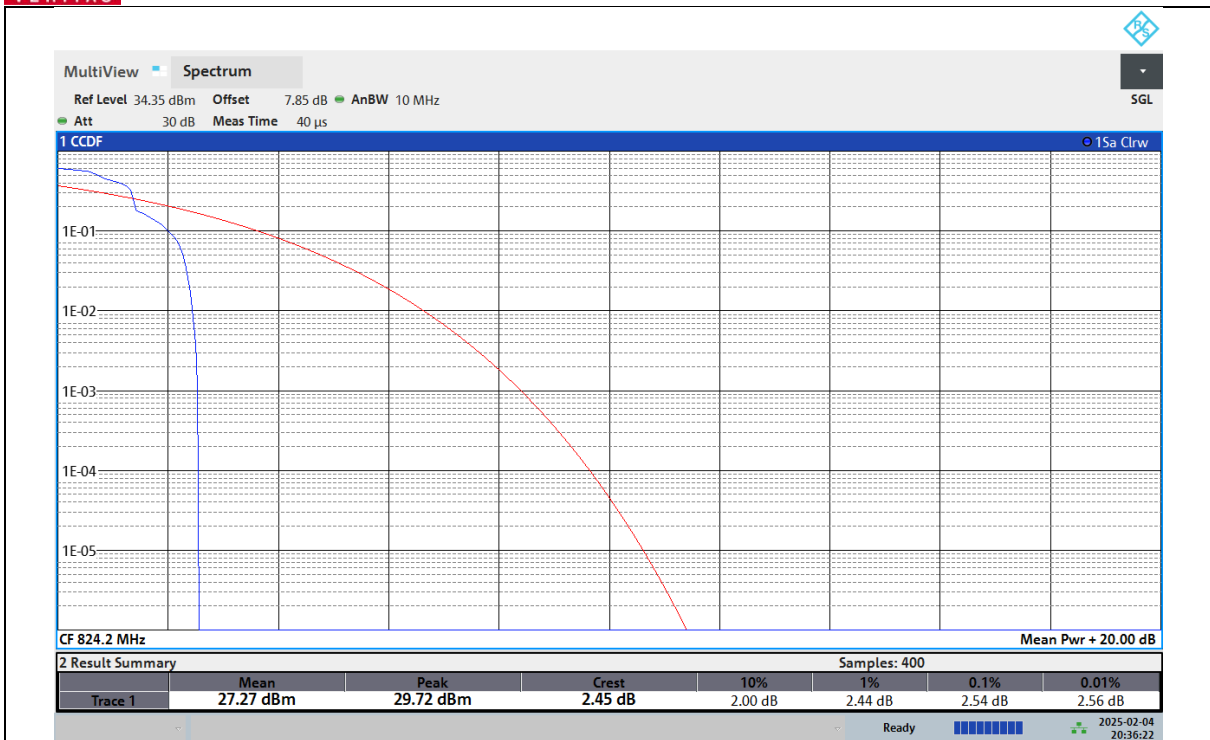
GPRS850-190



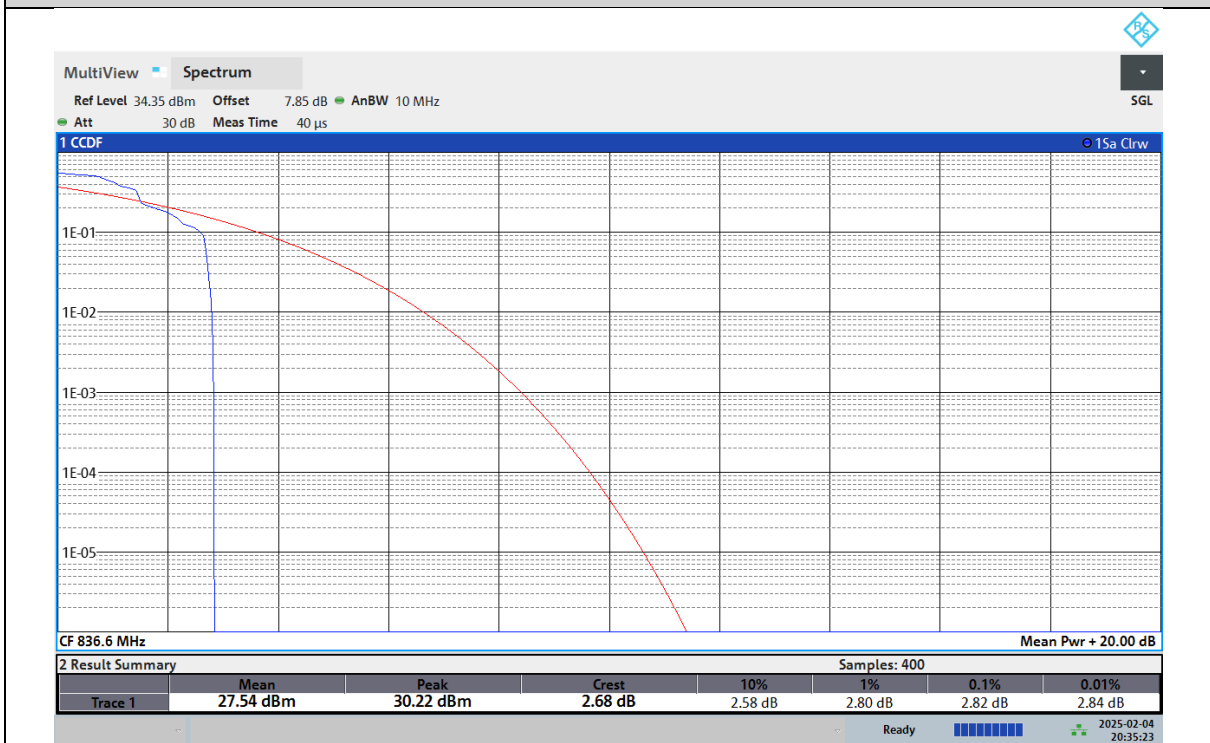
GPRS850-251



EGPRS850-128



EGPRS850-190



EGPRS850-251