FCC Test Report

(PART 22)

Report No.:	RF200518C05-5
FCC ID:	B94HHF135P
Test Model:	TPC-F135P
Marketing Name:	HP Bridge
Received Date:	May 18, 2020
Test Date:	Jun. 16 ~ Sep. 12, 2020
Issued Date:	Oct. 08, 2020
Applicant:	HP Inc.
Address:	3390 East Harmony Road Fort Collins, Colorado 80528 United States
Issued By:	Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch Lin Kou Laboratories
Lab Address:	No. 47-2, 14th Ling, Chia Pau Vil., Lin Kou Dist., New Taipei City, Taiwan
Test Location:	No.19, Hwa Ya 2nd Rd., Wen Hwa Vil., Kwei Shan Dist., Taoyuan City 33383, Taiwan
FCC Registration / Designation Number:	788550 / TW0003

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Release Control Record

Issue No.	Description	Date Issued
RF200518C05-5	Original Release	Oct. 08, 2020

1 Certificate of Conformity

Product:	HP tablet
Brand:	HP
Test Model:	TPC-F135P
Marketing Name:	HP Bridge
Sample Status:	Engineering Sample
Applicant:	HP Inc.
Test Date:	Jun. 16 ~ Sep. 12, 2020
Standards:	FCC Part 22, Subpart H

The above equipment has been tested by **Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch**, and found compliance with the requirement of the above standards. The test record, data evaluation & Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's RF characteristics under the conditions specified in this report.

Prepared by : Gina Liu , **Date:** Oct. 08, 2020

Gina Liu / Specialist

Approved by : , **Date:** Oct. 08, 2020

Dylan Chiou / Senior Project Engineer

2 Summary of Test Results

Applied Standard: FCC Part 22 & Part 2			
FCC Clause	**Test Item**	**Result**	**Remarks**
2.1046 22.913 (a)	Effective Radiated Power	Pass	Meet the requirement of limit.
2.1047	Modulation Characteristics	Pass	Meet the requirement.
22.913 (d)	Peak to Average Ratio	Pass	Meet the requirement of limit.
2.1055 22.355	Frequency Stability	Pass	Meet the requirement of limit.
2.1049	Occupied Bandwidth	Pass	Meet the requirement of limit.
22.917	Band Edge Measurements	Pass	Meet the requirement of limit.
2.1051 22.917	Conducted Spurious Emissions	Pass	Meet the requirement of limit.
2.1053 22.917	Radiated Spurious Emissions	Pass	Meet the requirement of limit. Minimum passing margin is -23.60 dB at 31.94 MHz.

Note: Determining compliance based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.

2.1 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	**Frequency**	**Expanded Uncertainty (k=2) (±)**
Radiated Emissions up to 1 GHz	9 kHz ~ 30 MHz	3.04 dB
	30 MHz ~ 200 MHz	3.86 dB
	200 MHz ~ 1000 MHz	3.87 dB
Radiated Emissions above 1 GHz	1 GHz ~ 18 GHz	2.29 dB
	18 GHz ~ 40 GHz	2.29 dB

2.2 Test Site and Instruments

Description & Manufacturer	Model No.	Serial No.	Date of Calibration	Due Date of Calibration
Test Receiver ROHDE & SCHWARZ	ESR3	102579	Jun. 27, 2019	Jun. 26, 2020
			Jul. 07, 2020	Jul. 06, 2021
Spectrum Analyzer ROHDE & SCHWARZ	FSP40	100269	Jun. 09, 2020	Jun. 08, 2021
Spectrum Analyzer ROHDE & SCHWARZ	FSW43	101582	Mar. 31, 2020	Mar. 30, 2021
Loop Antenna TESEQ	HLA 6121	45745	Jul. 01, 2019	Jun. 30, 2020
			Jul. 06, 2020	Jul. 05, 2021
BILOG Antenna SCHWARZBECK	VULB9168	9168-171	Nov. 11, 2019	Nov. 10, 2020
HORN Antenna SCHWARZBECK	9120D	209	Nov. 24, 2019	Nov. 23, 2020
BILOG Antenna SCHWARZBECK	VULB9168	9168-161	Nov. 08, 2019	Nov. 07, 2020
Preamplifier Agilent (Below 1GHz)	8447D	2944A10738	Aug. 20, 2019	Aug. 19, 2020
			Aug. 16, 2020	Aug. 15, 2021
Preamplifier Agilent (Above 1GHz)	8449B	3008A02465	Mar. 23, 2020	Mar. 22, 2021
RF Coaxial Cable WOKEN With 5dB PAD	8D-FB	Cable-CH3-01	Aug. 20, 2019	Aug. 19, 2020
			Aug. 16, 2020	Aug. 15, 2021
RF signal cable HUBER+SUHNER	SUCOFLEX 104	Cable-CH3-03 (223653/4)	Aug. 20, 2019	Aug. 19, 2020
			Aug. 16, 2020	Aug. 15, 2021
RF signal cable HUBER+SUHNER& EMCI	SUCOFLEX 104&EMC104-SM-SM- 8000	Cable-CH3-03 (309224+170907)	Aug. 20, 2019	Aug. 19, 2020
			Aug. 16, 2020	Aug. 15, 2021
Software BV ADT	ADT_Radiated_ V7.6.15.9.5	NA	NA	NA
Antenna Tower inn-co GmbH	MA 4000	013303	NA	NA
Antenna Tower Controller BV ADT	AT100	AT93021702	NA	NA
Turn Table BV ADT	TT100	TT93021702	NA	NA
Turn Table Controller BV ADT	SC100	SC93021702	NA	NA
Boresight Antenna Fixture	FBA-01	FBA-SIP01	NA	NA
Standard Temperature And Humidity Chamber GIANT FORCE	GTH-120-40-CP-AR	MAA1306-019	Sep. 10, 2019	Sep. 09, 2020
			Sep. 09, 2020	Sep. 08, 2021
JFW 20dB attenuation	50HF-020-SMA	NA	NA	NA
True RMS Clamp Meter Fluke	325	31130711WS	Jun 06, 2020	Jun 05, 2021
DC power supply Keysight	U8002A	MY56330015	NA	NA
Radio Communication Analyzer Anritsu	MT8820C	6201010284	Dec. 25, 2019	Dec. 24, 2020
Radio Communication Analyzer Anritsu	MT8821C	6261806803	Jan. 18, 2020	Jan. 17, 2021
MXG Vector signal generator Agilent	N5182B	MY53050430	Nov. 25, 2019	Nov. 24, 2020

Note: 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The test was performed in HwaYa Chamber 3.

3 General Information

3.1 General Description of EUT

Product	HP tablet	
Brand	HP	
Test Model	TPC-F135P	
Marketing Name	HP Bridge	
Status of EUT	Engineering Sample	
Power Supply Rating	3.8 Vdc (Li-ion battery) 5.0 / 9.0 / 12.0 Vdc (adapter)	
Modulation Type	WCDMA	QPSK
	LTE	QPSK, 16QAM, 64QAM
Frequency Range	WCDMA	826.4 ~ 846.6 MHz
	LTE 5 (Channel Bandwidth: 1.4 MHz)	824.7 ~ 848.3 MHz
	LTE 5 (Channel Bandwidth: 3 MHz)	825.5 ~ 847.5 MHz
	LTE 5 (Channel Bandwidth: 5 MHz)	826.5 ~ 846.5 MHz
	LTE 5 (Channel Bandwidth: 10 MHz)	829 ~ 844 MHz
	LTE 26 (Channel Bandwidth: 1.4 MHz)	824.7 ~ 848.3 MHz
	LTE 26 (Channel Bandwidth: 3 MHz)	825.5 ~ 847.5 MHz
	LTE 26 (Channel Bandwidth: 5 MHz)	826.5 ~ 846.5 MHz
	LTE 26 (Channel Bandwidth: 10 MHz)	829 ~ 844 MHz
	LTE 26 (Channel Bandwidth: 15 MHz)	831.5 ~ 841.5 MHz
Max. ERP Power	WCDMA	151.356 mW (21.80 dBm)
	LTE 5 (Channel Bandwidth: 1.4 MHz)	102.329 mW (20.10 dBm)
	LTE 5 (Channel Bandwidth: 3 MHz)	109.648 mW (20.40 dBm)
	LTE 5 (Channel Bandwidth: 5 MHz)	100.000 mW (20.00 dBm)
	LTE 5 (Channel Bandwidth: 10 MHz)	107.152 mW (20.30 dBm)
	LTE 26 (Channel Bandwidth: 1.4 MHz)	95.499 mW (19.80 dBm)
	LTE 26 (Channel Bandwidth: 3 MHz)	93.325 mW (19.70 dBm)
	LTE 26 (Channel Bandwidth: 5 MHz)	95.499 mW (19.80 dBm)
	LTE 26 (Channel Bandwidth: 10 MHz)	93.325 mW (19.70 dBm)
	LTE 26 (Channel Bandwidth: 15 MHz)	95.499 mW (19.80 dBm)
Emission Designator	WCDMA	4M17F9W
	LTE 5 (Channel Bandwidth: 1.4 MHz)	1M09D7W
	LTE 5 (Channel Bandwidth: 3 MHz)	2M70G7D
	LTE 5 (Channel Bandwidth: 5 MHz)	4M51D7W
	LTE 5 (Channel Bandwidth: 10 MHz)	8M98D7W
	LTE 26 (Channel Bandwidth: 1.4 MHz)	1M09D7W
	LTE 26 (Channel Bandwidth: 3 MHz)	2M70G7D
	LTE 26 (Channel Bandwidth: 5 MHz)	4M50D7W
	LTE 26 (Channel Bandwidth: 10 MHz)	8M99D7W
	LTE 26 (Channel Bandwidth: 15 MHz)	13M5G7D
Antenna Type	PIFA Antenna with -3.29 dBi gain	
Accessory Device	Refer to Note as below	
Data Cable Supplied	Refer to Note as below	

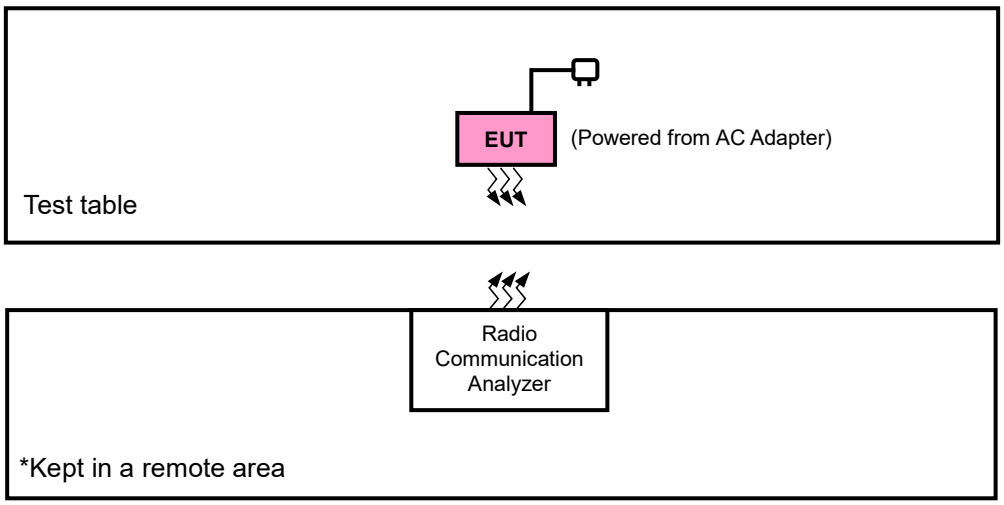
Note:

1. The EUT contains following accessory devices.

Product	Brand	Model	Description
Adapter	HP	DSA-18QFE FUS A	I/P: 100-240 Vac, 50/60 Hz, 0.5 A O/P: 5.0 Vdc, 3 A, 15.0 W; +9.0 Vdc, 2.0 A ,18.0 W; 12.0 Vdc, 1.5A, 18 W
Battery	HP	HSP 1CP5/34/77	3.8 Vdc, 1500 mAh, 5.7 Wh
BT/WLAN Module	Qualcomm	SDM660-3	--
USB Cable	HP	WU-0093-00	1.47 m shielded cable w/o core
Holster	HP	HP Bridge Holster	HP holster Marketing Name: HP Bridge Holster

2. The above Antenna information is declared by manufacturer and for more detailed features description, please refer to the manufacturer's specifications, the laboratory shall not be held responsible.
3. The above EUT information is declared by manufacturer and for more detailed features description, please refers to the manufacturer's specifications or user's manual.

3.2 Configuration of System under Test



3.2.1 Description of Support Units

The EUT has been tested as an independent unit together with other necessary accessories or support units.

3.3 Test Mode Applicability and Tested Channel Detail

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 as the table below. Following channel(s) was (were) selected for the final test as listed below:

Band	ERP	Radiated Emission
WCDMA	X-plane	X-axis
LTE Band 5	X-plane	X-axis
LTE Band 26	X-plane	X-axis

WCDMA

EUT Configure Mode	Test Item	Available Channel	Tested Channel	Mode
-	ERP	4132 to 4233	4132, 4182, 4233	WCDMA
-	Modulation Characteristics	4132 to 4233	4182	WCDMA
-	Frequency Stability	4132 to 4233	4132, 4233	WCDMA
-	Occupied Bandwidth	4132 to 4233	4132, 4182, 4233	WCDMA
-	Band Edge	4132 to 4233	4132, 4233	WCDMA
-	Peak to Average Ratio	4132 to 4233	4132, 4182, 4233	WCDMA
-	Conducted Emission	4132 to 4233	4132, 4182, 4233	WCDMA
-	Radiated Emission	4132 to 4233	4132, 4182, 4233	WCDMA

Note: For radiated emissions below 1 GHz, select the worst radiated emission channel for final testing.

LTE Band 5

EUT Configure Mode	Test Item	Available Channel	Tested Channel	Channel Bandwidth	Modulation	Mode
-	ERP	20407 to 20643	20407, 20525, 20643	1.4 MHz	QPSK, 16QAM, 64QAM	3 RB / 0 RB Offset
		20415 to 20635	20415, 20525, 20635	3 MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset
		20425 to 20625	20425, 20525, 20625	5 MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset
		20450 to 20600	20450, 20525, 20600	10 MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset
-	Modulation Characteristics	20450 to 20600	20525	10 MHz	QPSK, 16QAM, 64QAM	50 RB / 0 RB Offset
-	Frequency Stability	20407 to 20643	20407, 20643	1.4 MHz	QPSK	6 RB / 0 RB Offset
		20415 to 20635	20415, 20635	3 MHz	QPSK	15 RB / 0 RB Offset
		20425 to 20625	20425, 20625	5 MHz	QPSK	25 RB / 0 RB Offset
		20450 to 20600	20450, 20600	10 MHz	QPSK	50 RB / 0 RB Offset
-	Occupied Bandwidth	20407 to 20643	20407, 20525, 20643	1.4 MHz	QPSK, 16QAM, 64QAM	6 RB / 0 RB Offset
		20415 to 20635	20415, 20525, 20635	3 MHz	QPSK, 16QAM, 64QAM	15 RB / 0 RB Offset
		20425 to 20625	20425, 20525, 20625	5 MHz	QPSK, 16QAM, 64QAM	25 RB / 0 RB Offset
		20450 to 20600	20450, 20525, 20600	10 MHz	QPSK, 16QAM, 64QAM	50 RB / 0 RB Offset
-	Band Edge	20407 to 20643	20407	1.4MHz	QPSK	1 RB / 0 RB Offset
						6 RB / 0 RB Offset
			20643	1.4MHz	QPSK	1 RB / 5 RB Offset
						6 RB / 0 RB Offset
		20415 to 20635	20415	3 MHz	QPSK	1 RB / 0 RB Offset
						15 RB / 0 RB Offset
			20635	3 MHz	QPSK	1 RB / 14 RB Offset
						15 RB / 0 RB Offset
		20425 to 20625	20425	5 MHz	QPSK	1 RB / 0 RB Offset
						25 RB / 0 RB Offset
			20625	5 MHz	QPSK	1 RB / 24 RB Offset
						25 RB / 0 RB Offset
		20450 to 20600	20450	10 MHz	QPSK	1 RB / 0 RB Offset
						50 RB / 0 RB Offset
			20600	10 MHz	QPSK	1 RB / 49 RB Offset
						50 RB / 0 RB Offset
-	Peak to Average Ratio	20407 to 20643	20407, 20525, 20643	1.4 MHz	QPSK, 16QAM, 64QAM	3 RB / 0 RB Offset
		20415 to 20635	20415, 20525, 20635	3 MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset
		20425 to 20625	20425, 20525, 20625	5 MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset
		20450 to 20600	20450, 20525, 20600	10 MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset

EUT Configure Mode	Test Item	Available Channel	Tested Channel	Channel Bandwidth	Modulation	Mode
-	Conducted Emission	20407 to 20643	20407, 20525, 20643	1.4 MHz	QPSK	3 RB / 0 RB Offset
		20415 to 20635	20415, 20525, 20635	3 MHz	QPSK	1 RB / 0 RB Offset
		20425 to 20625	20425, 20525, 20625	5 MHz	QPSK	1 RB / 0 RB Offset
		20450 to 20600	20450, 20525, 20600	10 MHz	QPSK	1 RB / 0 RB Offset
-	Radiated Emission	20407 to 20643	20407, 20525, 20643	1.4 MHz	QPSK	3 RB / 0 RB Offset
		20425 to 20625	20425, 20525, 20625	5 MHz	QPSK	1 RB / 0 RB Offset
		20450 to 20600	20450, 20525, 20600	10 MHz	QPSK	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. Therefore, only ERP, modulation characteristics, occupied bandwidth and peak to average ratio items had been tested under QPSK, 16QAM, 64QAM mode, the other items were performed under QPSK mode only.
2. For radiated emission above 1 GHz, according to 3GPP 36.521 Section 6.6.3.1.4, choose the lowest, 5 MHz & highest channel bandwidth for final test.
3. For radiated emissions below 1 GHz, select the worst radiated emission channel for final testing.

LTE Band 26

EUT Configure Mode	Test Item	Available Channel	Tested Channel	Channel Bandwidth	Modulation	Mode
-	ERP	26797 to 27033	26797, 26915, 27033	1.4 MHz	QPSK, 16QAM, 64QAM	3 RB / 0 RB Offset
		26805 to 27025	26805, 26915, 27025	3 MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset
		26815 to 27015	26815, 26915, 27015	5 MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset
		26840 to 26990	26840, 26915, 26990	10 MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset
		26865 to 26965	26865, 26915, 26965	15 MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset
-	Modulation Characteristics	26840 to 26990	26915	10 MHz	QPSK, 16QAM, 64QAM	50 RB / 0 RB Offset
-	Frequency Stability	26797 to 27033	26797, 27033	1.4 MHz	QPSK	6 RB / 0 RB Offset
		26805 to 27025	26805, 27025	3 MHz	QPSK	15 RB / 0 RB Offset
		26815 to 27015	26815, 27015	5 MHz	QPSK	25 RB / 0 RB Offset
		26840 to 26990	26840, 26990	10 MHz	QPSK	50 RB / 0 RB Offset
		26865 to 26965	26865, 26965	15 MHz	QPSK	75 RB / 0 RB Offset
-	Occupied Bandwidth	26797 to 27033	26797, 26915, 27033	1.4 MHz	QPSK, 16QAM, 64QAM	6 RB / 0 RB Offset
		26805 to 27025	26805, 26915, 27025	3 MHz	QPSK, 16QAM, 64QAM	15 RB / 0 RB Offset
		26815 to 27015	26815, 26915, 27015	5 MHz	QPSK, 16QAM, 64QAM	25 RB / 0 RB Offset
		26840 to 26990	26840, 26915, 26990	10 MHz	QPSK, 16QAM, 64QAM	50 RB / 0 RB Offset
		26865 to 26965	26865, 26915, 26965	15 MHz	QPSK, 16QAM, 64QAM	75 RB / 0 RB Offset

EUT Configure Mode	Test Item	Available Channel	Tested Channel	Channel Bandwidth	Modulation	Mode
-	Band Edge	26797 to 27033	26797	1.4 MHz	QPSK	1 RB / 0 RB Offset
						6 RB / 0 RB Offset
			27033	1.4 MHz	QPSK	1 RB / 5 RB Offset
						6 RB / 0 RB Offset
		26805 to 27025	26805	3 MHz	QPSK	1 RB / 0 RB Offset
						15 RB / 0 RB Offset
			27025	3 MHz	QPSK	1 RB / 14 RB Offset
						15 RB / 0 RB Offset
		26815 to 27015	26815	5 MHz	QPSK	1 RB / 0 RB Offset
						25 RB / 0 RB Offset
			27015	5 MHz	QPSK	1 RB / 24 RB Offset
						25 RB / 0 RB Offset
		26840 to 26990	26840	10 MHz	QPSK	1 RB / 0 RB Offset
						50 RB / 0 RB Offset
			26990	10 MHz	QPSK	1 RB / 49 RB Offset
						50 RB / 0 RB Offset
		26865 to 26965	26865	15 MHz	QPSK	1 RB / 0 RB Offset
						75 RB / 0 RB Offset
			26965	15 MHz	QPSK	1 RB / 74 RB Offset
						75 RB / 0 RB Offset
-	Peak to Average Ratio	26797 to 27033	26797, 26915, 27033	1.4 MHz	QPSK, 16QAM, 64QAM	3 RB / 0 RB Offset
		26805 to 27025	26805, 26915, 27025	3 MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset
		26815 to 27015	26815, 26915, 27015	5 MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset
		26840 to 26990	26840, 26915, 26990	10 MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset
		26865 to 26965	26865, 26915, 26965	15 MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset
-	Conducted Emission	26797 to 27033	26797, 26915, 27033	1.4 MHz	QPSK	3 RB / 0 RB Offset
		26805 to 27025	26805, 26915, 27025	3 MHz	QPSK	1 RB / 0 RB Offset
		26815 to 27015	26815, 26915, 27015	5 MHz	QPSK	1 RB / 0 RB Offset
		26840 to 26990	26840, 26915, 26990	10 MHz	QPSK	1 RB / 0 RB Offset
		26865 to 26965	26865, 26915, 26965	15 MHz	QPSK	1 RB / 0 RB Offset
-	Radiated Emission	26797 to 27033	26797, 26915, 27033	1.4 MHz	QPSK	3 RB / 0 RB Offset
		26815 to 27015	26815, 26915, 27015	5 MHz	QPSK	1 RB / 0 RB Offset
		26865 to 26965	26865, 26915, 26965	15 MHz	QPSK	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. Therefore, only ERP, modulation characteristics, occupied bandwidth and peak to average ratio items had been tested under QPSK, 16QAM, 64QAM mode, the other items were performed under QPSK mode only.
2. For radiated emission above 1 GHz, according to 3GPP 36.521 Section 6.6.3.1.4, choose the lowest, 5 MHz & highest channel bandwidth for final test.
3. For radiated emissions below 1 GHz, select the worst radiated emission channel for final testing.

Test Condition:

Test Item	Environmental Conditions	Input Power	Tested By
ERP	25 deg. C, 65 % RH	120 Vac, 60 Hz	Adair Peng, Noah Chang
Modulation Characteristics	25 deg. C, 65 % RH	120 Vac, 60 Hz	Gavin Wu, Getaz Yang
Frequency Stability	25 deg. C, 65 % RH	3.8Vdc	Gavin Wu, Getaz Yang
Occupied Bandwidth	25 deg. C, 65 % RH	120 Vac, 60 Hz	Gavin Wu, Getaz Yang
Band Edge	25 deg. C, 65 % RH	120 Vac, 60 Hz	Gavin Wu, Getaz Yang
Peak to Average Ratio	25 deg. C, 65 % RH	120 Vac, 60 Hz	Gavin Wu, Getaz Yang
Conducted Emission	25 deg. C, 65 % RH	120 Vac, 60 Hz	Gavin Wu, Getaz Yang
Radiated Emission	25 deg. C, 65 % RH	120 Vac, 60 Hz	Luis Lee, Noah Chang, Titan Hsu

3.4 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.

3.5 General Description of Applied Standards and references

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

Test Standard:
FCC 47 CFR Part 2
FCC 47 CFR Part 22
ANSI 63.26-2015

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

References Test Guidance:
KDB 971168 D01 Power Meas License Digital Systems v03r01
ANSI/TIA/EIA-603-E 2016
3GPP TS 36.521-1 V16.3.0 (2019-12)

Note: All test items have been performed as a reference to the above KDB test guidance.

4 Test Types and Results

4.1 Output Power Measurement

4.1.1 Limits of Output Power Measurement

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

4.1.2 Test Procedures

EIRP / ERP Measurement:

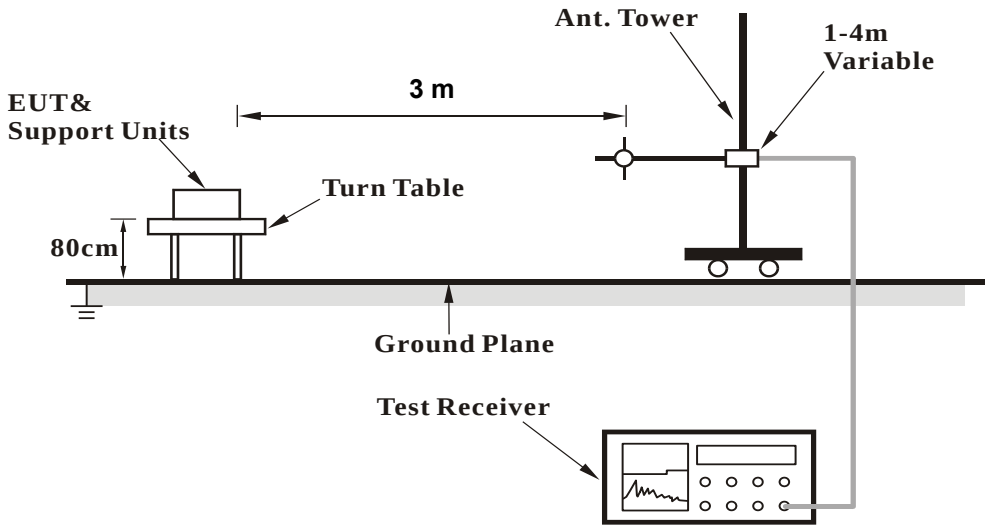
a. All measurements were done at low, middle and high operational frequency range. RBW is 5 MHz for WCDMA, and 5 MHz、10 MHz、15 MHz for LTE mode, VBW ≥ 3 x RBW.
b. Substitution method is used for E.I.R.P measurement. In the semi-anechoic chamber, EUT placed on the 0.8 m (below or equal 1 GHz) and/or 1.5 m (above 1 GHz) 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 1 m to 4 m to find the maximum polar radiated power. The “Read Value” is the spectrum reading the maximum power value.
c. EIRP = Output power level of S.G – TX cable loss + Antenna gain of substitution horn. E.R.P power can be calculated form E.I.R.P power by subtracting the gain of dipole, E.R.P power = E.I.R.P power - 2.15 dB.

Conducted Power Measurement:

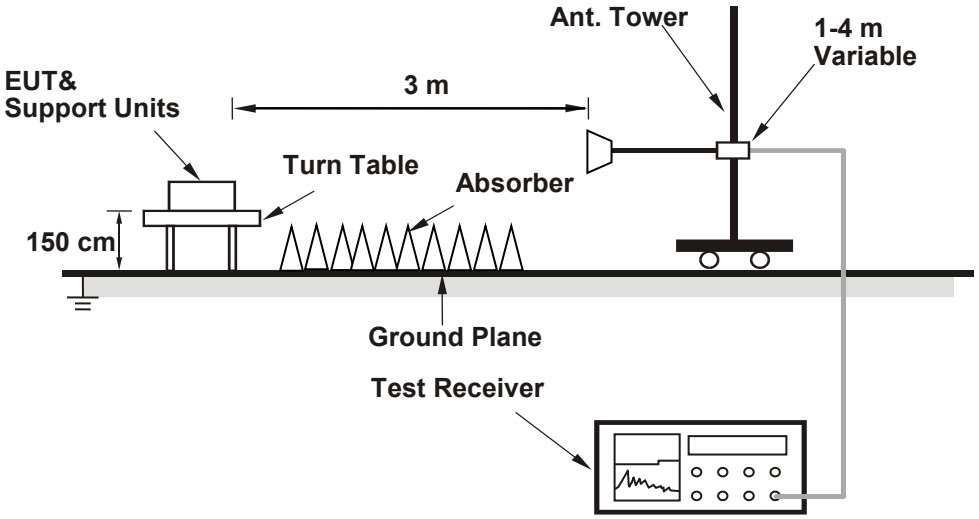
The EUT was set up for the maximum power with WCDMA, and LTE link data modulation and link up with simulator. Set the EUT to transmit under low, middle and high channel and record the power level shown on simulator.

4.1.3 Test Setup

EIRP / ERP Measurement:
<Radiated Emission below or equal 1 GHz>



<Radiated Emission above 1 GHz>



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

Conducted Power Measurement:



4.1.4 Test Results

Conducted Output Power (dBm)

Band	WCDMA V		
Channel	4132	4182	4233
Frequency (MHz)	826.4	836.4	846.6
RMC 12.2K	24.67	24.74	24.59
HSDPA Subtest-1	23.62	23.63	23.53
HSDPA Subtest-2	23.63	23.68	23.54
HSDPA Subtest-3	23.07	23.18	23.04
HSDPA Subtest-4	23.03	23.12	23.02
DC-HSDPA Subtest-1	23.48	23.59	23.41
DC-HSDPA Subtest-2	23.50	23.61	23.48
DC-HSDPA Subtest-3	22.96	23.04	22.93
DC-HSDPA Subtest-4	22.96	23.04	22.90
HSUPA Subtest-1	23.67	23.66	23.60
HSUPA Subtest-2	21.65	21.67	21.54
HSUPA Subtest-3	22.58	22.61	22.48
HSUPA Subtest-4	21.57	21.62	21.49
HSUPA Subtest-5	23.63	23.75	23.58

LTE Band 5

BW	MCS Index	RB Size	RB Offset	Low	Mid	High	3GPP MPR (dB)	BW	MCS Index	RB Size	RB Offset	Low	Mid	High	3GPP MPR (dB)
		Channel		20450	20525	20600				Channel		20425	20525	20625	
		Frequency (MHz)		829.0	836.5	844.0				Frequency (MHz)		826.5	836.5	846.5	
10M	QPSK	1	0	23.43	23.45	23.59	0	5M	QPSK	1	0	23.36	23.43	23.50	0
		1	24	23.37	23.40	23.53	0			1	12	23.27	23.30	23.50	0
		1	49	23.38	23.41	23.54	0			1	24	23.30	23.35	23.50	0
		25	0	22.50	22.53	22.66	1			12	0	22.42	22.43	22.59	1
		25	12	22.47	22.50	22.63	1			12	6	22.43	22.47	22.58	1
		25	25	22.40	22.43	22.56	1			12	13	22.33	22.40	22.47	1
		50	0	22.46	22.49	22.62	1			25	0	22.40	22.44	22.57	1
	16QAM	1	0	22.69	22.72	22.85	1		16QAM	1	0	22.67	22.68	22.84	1
		1	24	22.79	22.82	22.95	1			1	12	22.72	22.75	22.95	1
		1	49	22.75	22.78	22.91	1			1	24	22.73	22.73	22.88	1
		25	0	21.65	21.68	21.81	2			12	0	21.64	21.58	21.74	2
		25	12	21.63	21.66	21.79	2			12	6	21.63	21.63	21.72	2
		25	25	21.52	21.55	21.68	2			12	13	21.42	21.52	21.58	2
		50	0	21.59	21.62	21.75	2			25	0	21.57	21.58	21.66	2
	64QAM	1	0	21.51	21.54	21.71	2		64QAM	1	0	21.53	21.55	21.66	2
		1	24	21.61	21.66	21.77	2			1	12	21.70	21.65	21.94	2
		1	49	21.71	21.71	21.81	2			1	24	21.59	21.67	21.79	2
		25	0	20.60	20.53	20.62	3			12	0	20.57	20.49	20.76	3
		25	12	20.59	20.59	20.61	3			12	6	20.59	20.53	20.71	3
		25	25	20.35	20.50	20.52	3			12	13	20.49	20.51	20.46	3
		50	0	20.55	20.47	20.71	3			25	0	20.55	20.55	20.64	3

BW	MCS Index	RB Size	RB Offset	Low	Mid	High	3GPP MPR (dB)	BW	MCS Index	RB Size	RB Offset	Low	Mid	High	3GPP MPR (dB)
		Channel		20415	20525	20635				Channel		20407	20525	20643	
		Frequency (MHz)		825.5	836.5	847.5				Frequency (MHz)		824.7	836.5	848.3	
3M	QPSK	1	0	23.27	23.45	23.47	0	1.4M	QPSK	1	0	23.24	23.38	23.56	0
		1	7	23.29	23.29	23.37	0			1	2	23.17	23.23	23.37	0
		1	14	23.25	23.34	23.37	0			1	5	23.33	23.31	23.48	0
		8	0	22.33	22.32	22.57	1			3	0	23.36	23.45	23.56	0
		8	3	22.34	22.41	22.45	1			3	1	23.24	23.25	23.38	0
		8	7	22.30	22.27	22.36	1			3	3	23.27	23.21	23.37	0
		15	0	22.34	22.42	22.46	1			6	0	22.42	22.40	22.50	1
	16QAM	1	0	22.61	22.56	22.72	1		16QAM	1	0	22.53	22.65	22.83	1
		1	7	22.71	22.76	22.76	1			1	2	22.57	22.70	22.74	1
		1	14	22.64	22.56	22.79	1			1	5	22.55	22.58	22.77	1
		8	0	21.57	21.61	21.75	2			3	0	22.45	22.38	22.47	1
		8	3	21.43	21.52	21.73	2			3	1	22.28	22.35	22.40	1
		8	7	21.41	21.33	21.49	2			3	3	22.38	22.43	22.52	1
		15	0	21.40	21.53	21.66	2			6	0	21.53	21.53	21.57	2
	64QAM	1	0	21.50	21.57	21.75	2		64QAM	1	0	21.57	21.55	21.78	2
		1	7	21.77	21.68	21.80	2			1	2	21.58	21.71	21.88	2
		1	14	21.51	21.76	21.70	2			1	5	21.60	21.61	21.80	2
		8	0	20.58	20.60	20.76	3			3	0	21.51	21.62	21.71	2
		8	3	20.49	20.61	20.67	3			3	1	21.57	21.51	21.58	2
		8	7	20.43	20.48	20.54	3			3	3	21.34	21.46	21.59	2
		15	0	20.54	20.45	20.64	3			6	0	20.54	20.42	20.69	3

LTE Band 26

BW	MCS Index	RB Size	RB Offset	Low	Mid	High	3GPP MPR (dB)	BW	MCS Index	RB Size	RB Offset	Low	Mid	High	3GPP MPR (dB)
		Channel		26865	26915	26965				Channel		26840	26915	26990	
		Frequency (MHz)		831.5	836.5	841.5				Frequency (MHz)		829.0	836.5	844.0	
15M	QPSK	1	0	22.73	22.65	22.66	0	10M	QPSK	1	0	22.69	22.61	22.58	0
		1	37	22.67	22.65	22.59	0			1	24	22.65	22.57	22.49	0
		1	74	22.71	22.65	22.63	0			1	49	22.68	22.51	22.59	0
		36	0	21.80	21.80	21.72	1			25	0	21.65	21.67	21.66	1
		36	19	21.78	21.74	21.70	1			25	12	21.66	21.67	21.64	1
		36	39	21.66	21.66	21.58	1			25	25	21.56	21.62	21.58	1
		75	0	21.75	21.69	21.67	1			50	0	21.75	21.57	21.62	1
	16QAM	1	0	22.14	22.11	22.06	1		16QAM	1	0	22.02	22.09	22.03	1
		1	37	22.11	22.03	22.03	1			1	24	22.02	21.99	22.03	1
		1	74	22.03	22.00	21.95	1			1	49	21.91	22.00	21.89	1
		36	0	20.90	20.90	20.82	2			25	0	20.76	20.78	20.80	2
		36	19	20.83	20.78	20.75	2			25	12	20.71	20.64	20.67	2
		36	39	20.77	20.67	20.69	2			25	25	20.69	20.67	20.68	2
		75	0	20.85	20.75	20.77	2			50	0	20.85	20.65	20.67	2
	64QAM	1	0	21.08	21.02	21.01	2		64QAM	1	0	21.00	20.95	20.88	2
		1	37	21.11	21.06	20.94	2			1	24	21.00	20.95	20.95	2
		1	74	20.95	20.90	20.86	2			1	49	20.80	20.88	20.82	2
		36	0	19.80	19.76	19.75	3			25	0	19.75	19.67	19.76	3
		36	19	19.74	19.73	19.70	3			25	12	19.61	19.64	19.72	3
		36	39	19.75	19.65	19.61	3			25	25	19.67	19.54	19.63	3
		75	0	19.79	19.74	19.71	3			50	0	19.68	19.63	19.62	3

BW	MCS Index	RB Size	RB Offset	Low	Mid	High	3GPP MPR (dB)	BW	MCS Index	RB Size	RB Offset	Low	Mid	High	3GPP MPR (dB)
		Channel		26815	26915	27015				Channel		26805	26915	27025	
		Frequency (MHz)		826.5	836.5	846.5				Frequency (MHz)		825.5	836.5	847.5	
5M	QPSK	1	0	22.65	22.57	22.51	0	3M	QPSK	1	0	22.58	22.50	22.48	1
		1	12	22.65	22.54	22.44	0			1	7	22.44	22.35	22.36	1
		1	24	22.62	22.42	22.57	0			1	14	22.43	22.49	22.56	1
		12	0	21.64	21.61	21.54	1			8	0	21.59	21.64	21.61	3
		12	6	21.63	21.54	21.54	1			8	3	21.61	21.62	21.46	3
		12	13	21.43	21.62	21.39	1			8	7	21.55	21.56	21.43	3
		25	0	21.69	21.51	21.50	1			15	0	21.56	21.62	21.31	6
	16QAM	1	0	21.95	21.95	21.90	1		16QAM	1	0	22.04	21.93	21.94	1
		1	12	21.88	21.95	21.92	1			1	7	21.99	22.02	21.98	1
		1	24	21.86	21.95	21.79	1			1	14	21.90	21.87	21.85	1
		12	0	20.75	20.68	20.69	2			8	0	20.73	20.78	20.63	2
		12	6	20.58	20.58	20.64	2			8	3	20.52	20.62	20.59	2
		12	13	20.67	20.65	20.53	2			8	7	20.65	20.54	20.52	2
		25	0	20.73	20.61	20.66	2			15	0	20.54	20.63	20.69	2
	64QAM	1	0	20.85	20.95	20.87	2		64QAM	1	0	20.94	20.84	20.83	2
		1	12	20.89	20.89	20.90	2			1	7	20.91	20.87	20.93	2
		1	24	20.72	20.78	20.81	2			1	14	20.86	20.67	20.85	2
		12	0	19.60	19.63	19.72	3			8	0	19.57	19.63	19.67	3
		12	6	19.61	19.54	19.57	3			8	3	19.61	19.62	19.60	3
		12	13	19.65	19.40	19.56	3			8	7	19.53	19.53	19.50	3
		25	0	19.58	19.53	19.63	3			15	0	19.55	19.57	19.72	3

BW	MCS Index	RB Size	RB Offset	Low	Mid	High	3GPP MPR (dB)
		Channel		26797	26915	27033	
		Frequency (MHz)		824.7	836.5	848.3	
1.4M	QPSK	1	0	22.60	22.46	22.54	0
		1	2	22.42	22.39	22.44	0
		1	5	22.43	22.50	22.47	0
		3	0	22.63	22.59	22.50	0
		3	1	22.61	22.60	22.64	0
		3	3	22.49	22.51	22.57	0
		6	0	21.49	21.54	21.44	1
	16QAM	1	0	22.06	21.96	21.99	1
		1	2	21.86	21.95	21.83	1
		1	5	21.86	21.88	21.80	1
		3	0	21.68	21.72	21.77	1
		3	1	21.55	21.57	21.68	1
		3	3	21.61	21.62	21.65	1
		6	0	20.53	20.59	20.71	2
	64QAM	1	0	20.84	20.79	20.95	2
		1	2	20.95	20.88	21.03	2
		1	5	20.75	20.77	20.91	2
		3	0	20.56	20.68	20.81	2
		3	1	20.55	20.62	20.73	2
		3	3	20.49	20.59	20.54	2
		6	0	19.52	19.62	19.69	3

ERP Power (dBm)

WCDMA Band 5

MODE		TX channel 4132, 4182, 4233					
Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	826.40	-10.60	21.70	0.00	21.70	38.50	-16.80
2	836.40	-10.80	21.60	0.20	21.80	38.50	-16.70
3	846.60	-10.60	21.10	0.40	21.50	38.50	-17.00
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	826.40	-16.90	16.50	0.00	16.50	38.50	-22.00
2	836.40	-17.00	16.20	0.20	16.40	38.50	-22.10
3	846.60	-16.80	15.90	0.40	16.30	38.50	-22.20

Note: ERP (dBm) = S.G Power Value (dBm) + Correction Factor (dB).

Modulation Type: QPSK

LTE Band 5, Channel Bandwidth: 1.4MHz

MODE		TX channel 20407, 20525, 20643					
Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	824.70	-12.70	19.70	0.00	19.70	38.50	-18.80
2	836.50	-12.40	19.90	0.20	20.10	38.50	-18.40
3	848.30	-12.10	19.50	0.50	20.00	38.50	-18.50
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	824.70	-19.80	13.60	0.00	13.60	38.50	-24.90
2	836.50	-20.10	13.10	0.20	13.30	38.50	-25.20
3	848.30	-20.40	12.20	0.50	12.70	38.50	-25.80

Note: ERP (dBm) = S.G Power Value (dBm) + Correction Factor (dB).

LTE Band 5, Channel Bandwidth: 3MHz

MODE		TX channel 20415, 20525, 20635					
Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	825.50	-11.90	20.40	0.00	20.40	38.50	-18.10
2	836.50	-12.70	19.60	0.20	19.80	38.50	-18.70
3	847.50	-11.80	19.90	0.40	20.30	38.50	-18.20
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	825.50	-19.80	13.60	0.00	13.60	38.50	-24.90
2	836.50	-20.70	12.50	0.20	12.70	38.50	-25.80
3	847.50	-20.30	12.40	0.40	12.80	38.50	-25.70

Note: ERP (dBm) = S.G Power Value (dBm) + Correction Factor (dB).

LTE Band 5, Channel Bandwidth: 5MHz

MODE		TX channel 20425, 20525, 20625					
Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	826.50	-12.60	19.70	0.00	19.70	38.50	-18.80
2	836.50	-12.50	19.80	0.20	20.00	38.50	-18.50
3	846.50	-12.60	19.10	0.40	19.50	38.50	-19.00
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	826.50	-20.20	13.10	0.00	13.10	38.50	-25.40
2	836.50	-20.10	13.10	0.20	13.30	38.50	-25.20
3	846.50	-19.90	12.80	0.40	13.20	38.50	-25.30

Note: ERP (dBm) = S.G Power Value (dBm) + Correction Factor (dB).

LTE Band 5, Channel Bandwidth: 10MHz

MODE		TX channel 20450, 20525, 20600					
Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	829.00	-12.90	19.50	0.10	19.60	38.50	-18.90
2	836.50	-12.20	20.10	0.20	20.30	38.50	-18.20
3	844.00	-12.70	19.40	0.40	19.80	38.50	-18.70
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	829.00	-19.80	13.50	0.10	13.60	38.50	-24.90
2	836.50	-20.10	13.10	0.20	13.30	38.50	-25.20
3	844.00	-19.90	13.10	0.40	13.50	38.50	-25.00

Note: ERP (dBm) = S.G Power Value (dBm) + Correction Factor (dB).

Modulation Type: 16QAM

LTE Band 5, Channel Bandwidth: 1.4MHz

MODE	TX channel 20407, 20525, 20643						
Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	824.70	-13.50	18.90	0.00	18.90	38.50	-19.60
2	836.50	-13.30	19.00	0.20	19.20	38.50	-19.30
3	848.30	-12.90	18.70	0.50	19.20	38.50	-19.30
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	824.70	-21.00	12.40	0.00	12.40	38.50	-26.10
2	836.50	-21.20	11.90	0.20	12.10	38.50	-26.40
3	848.30	-21.10	11.50	0.50	12.00	38.50	-26.50

Note: ERP (dBm) = S.G Power Value (dBm) + Correction Factor (dB).

LTE Band 5, Channel Bandwidth: 3MHz

MODE	TX channel 20415, 20525, 20635						
Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	825.50	-12.90	19.30	0.00	19.30	38.50	-19.20
2	836.50	-13.60	18.70	0.20	18.90	38.50	-19.60
3	847.50	-13.00	18.70	0.40	19.10	38.50	-19.40
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	825.50	-20.70	12.70	0.00	12.70	38.50	-25.80
2	836.50	-21.40	11.80	0.20	12.00	38.50	-26.50
3	847.50	-21.20	11.50	0.40	11.90	38.50	-26.60

Note: ERP (dBm) = S.G Power Value (dBm) + Correction Factor (dB).

LTE Band 5, Channel Bandwidth: 5MHz

MODE	TX channel 20425, 20525, 20625						
Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	826.50	-13.60	18.60	0.00	18.60	38.50	-19.90
2	836.50	-13.60	18.70	0.20	18.90	38.50	-19.60
3	846.50	-13.60	18.10	0.40	18.50	38.50	-20.00
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	826.50	-21.20	12.20	0.00	12.20	38.50	-26.30
2	836.50	-21.20	11.90	0.20	12.10	38.50	-26.40
3	846.50	-20.80	11.90	0.40	12.30	38.50	-26.20

Note: ERP (dBm) = S.G Power Value (dBm) + Correction Factor (dB).

LTE Band 5, Channel Bandwidth: 10MHz

MODE	TX channel 20450, 20525, 20600						
Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	829.00	-13.80	18.60	0.10	18.70	38.50	-19.80
2	836.50	-13.40	18.90	0.20	19.10	38.50	-19.40
3	844.00	-13.50	18.60	0.40	19.00	38.50	-19.50
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	829.00	-20.90	12.40	0.10	12.50	38.50	-26.00
2	836.50	-21.20	11.90	0.20	12.10	38.50	-26.40
3	844.00	-21.00	12.00	0.40	12.40	38.50	-26.10

Note: ERP (dBm) = S.G Power Value (dBm) + Correction Factor (dB).

Modulation Type: 64QAM

LTE Band 5, Channel Bandwidth: 1.4MHz

MODE	TX channel 20407, 20525, 20643						
Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	824.70	-14.00	18.40	0.00	18.40	38.50	-20.10
2	836.50	-13.80	18.50	0.20	18.70	38.50	-19.80
3	848.30	-13.30	18.30	0.50	18.80	38.50	-19.70
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	824.70	-21.40	12.00	0.00	12.00	38.50	-26.50
2	836.50	-21.90	11.30	0.20	11.50	38.50	-27.00
3	848.30	-21.70	10.90	0.50	11.40	38.50	-27.10

Note: ERP (dBm) = S.G Power Value (dBm) + Correction Factor (dB).

LTE Band 5, Channel Bandwidth: 3MHz

MODE	TX channel 20415, 20525, 20635						
Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	825.50	-13.60	18.70	0.00	18.70	38.50	-19.80
2	836.50	-14.20	18.10	0.20	18.30	38.50	-20.20
3	847.50	-13.50	18.20	0.40	18.60	38.50	-19.90
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	825.50	-21.10	12.30	0.00	12.30	38.50	-26.20
2	836.50	-22.10	11.10	0.20	11.30	38.50	-27.20
3	847.50	-21.80	10.90	0.40	11.30	38.50	-27.20

Note: ERP (dBm) = S.G Power Value (dBm) + Correction Factor (dB).

LTE Band 5, Channel Bandwidth: 5MHz

MODE	TX channel 20425, 20525, 20625						
Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	826.50	-14.10	18.20	0.00	18.20	38.50	-20.30
2	836.50	-14.20	18.10	0.20	18.30	38.50	-20.20
3	846.50	-14.00	17.70	0.40	18.10	38.50	-20.40
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	826.50	-21.80	11.60	0.00	11.60	38.50	-26.90
2	836.50	-21.70	11.50	0.20	11.70	38.50	-26.80
3	846.50	-21.30	11.40	0.40	11.80	38.50	-26.70

Note: ERP (dBm) = S.G Power Value (dBm) + Correction Factor (dB).

LTE Band 5, Channel Bandwidth: 10MHz

MODE	TX channel 20450, 20525, 20600						
Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	829.00	-14.20	18.20	0.10	18.30	38.50	-20.20
2	836.50	-13.80	18.50	0.20	18.70	38.50	-19.80
3	844.00	-13.90	18.20	0.40	18.60	38.50	-19.90
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	829.00	-21.40	11.90	0.10	12.00	38.50	-26.50
2	836.50	-21.70	11.50	0.20	11.70	38.50	-26.80
3	844.00	-21.40	11.60	0.40	12.00	38.50	-26.50

Note: ERP (dBm) = S.G Power Value (dBm) + Correction Factor (dB).

Modulation Type: QPSK

LTE Band 26, Channel Bandwidth 1.4MHz

MODE	TX channel 26797, 26915, 27033						
Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	824.70	-11.30	19.80	0.00	19.80	38.50	-18.70
2	836.50	-12.00	19.20	0.20	19.40	38.50	-19.10
3	848.30	-11.80	18.70	0.50	19.20	38.50	-19.30
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	824.70	-18.10	13.80	0.00	13.80	38.50	-24.70
2	836.50	-18.00	13.80	0.20	14.00	38.50	-24.50
3	848.30	-17.70	13.70	0.50	14.20	38.50	-24.30

Note: ERP (dBm) = S.G Power Value (dBm) + Correction Factor (dB).

LTE Band 26, Channel Bandwidth 3MHz

MODE	TX channel 26805, 26915, 27025						
Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	825.50	-11.40	19.70	0.00	19.70	38.50	-18.80
2	836.50	-12.40	18.80	0.20	19.00	38.50	-19.50
3	847.50	-11.70	18.90	0.40	19.30	38.50	-19.20
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	825.50	-18.20	13.70	0.00	13.70	38.50	-24.80
2	836.50	-18.50	13.30	0.20	13.50	38.50	-25.00
3	847.50	-17.90	13.50	0.40	13.90	38.50	-24.60

Note: ERP (dBm) = S.G Power Value (dBm) + Correction Factor (dB).

LTE Band 26, Channel Bandwidth 5MHz

MODE	TX channel 26815, 26915, 27015						
Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	826.50	-11.80	19.40	0.00	19.40	38.50	-19.10
2	836.50	-12.40	18.80	0.20	19.00	38.50	-19.50
3	846.50	-11.10	19.40	0.40	19.80	38.50	-18.70
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	826.50	-18.20	13.70	0.00	13.70	38.50	-24.80
2	836.50	-18.00	13.80	0.20	14.00	38.50	-24.50
3	846.50	-18.10	13.10	0.40	13.50	38.50	-25.00

Note: ERP (dBm) = S.G Power Value (dBm) + Correction Factor (dB).

LTE Band 26, Channel Bandwidth 10MHz

MODE		TX channel 26840, 26915, 26990					
Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	829.00	-11.80	19.30	0.10	19.40	38.50	-19.10
2	836.50	-11.70	19.50	0.20	19.70	38.50	-18.80
3	844.00	-11.70	18.90	0.40	19.30	38.50	-19.20
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	829.00	-17.90	13.90	0.10	14.00	38.50	-24.50
2	836.50	-18.60	13.20	0.20	13.40	38.50	-25.10
3	844.00	-18.20	13.20	0.40	13.60	38.50	-24.90

Note: ERP (dBm) = S.G Power Value (dBm) + Correction Factor (dB).

LTE Band 26, Channel Bandwidth 15MHz

MODE		TX channel 26865, 26915, 26965					
Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	831.50	-11.80	19.30	0.10	19.40	38.50	-19.10
2	836.50	-12.20	18.90	0.20	19.10	38.50	-19.40
3	841.50	-11.30	19.50	0.30	19.80	38.50	-18.70
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	831.50	-17.90	13.70	0.10	13.80	38.50	-24.70
2	836.50	-17.80	14.00	0.20	14.20	38.50	-24.30
3	841.50	-18.20	13.40	0.30	13.70	38.50	-24.80

Note: ERP (dBm) = S.G Power Value (dBm) + Correction Factor (dB).

Modulation Type: 16QAM

LTE Band 26, Channel Bandwidth 1.4MHz

MODE		TX channel 26797, 26915, 27033					
Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	824.70	-12.20	18.90	0.00	18.90	38.50	-19.60
2	836.50	-12.90	18.30	0.20	18.50	38.50	-20.00
3	848.30	-12.30	18.20	0.50	18.70	38.50	-19.80
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	824.70	-19.00	12.90	0.00	12.90	38.50	-25.60
2	836.50	-19.00	12.80	0.20	13.00	38.50	-25.50
3	848.30	-18.70	12.70	0.50	13.20	38.50	-25.30

Note: ERP (dBm) = S.G Power Value (dBm) + Correction Factor (dB).

LTE Band 26, Channel Bandwidth 3MHz

MODE		TX channel 26805, 26915, 27025					
Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	825.50	-12.50	18.60	0.00	18.60	38.50	-19.90
2	836.50	-13.40	17.80	0.20	18.00	38.50	-20.50
3	847.50	-12.50	18.10	0.40	18.50	38.50	-20.00
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	825.50	-19.10	12.80	0.00	12.80	38.50	-25.70
2	836.50	-19.60	12.20	0.20	12.40	38.50	-26.10
3	847.50	-18.90	12.40	0.40	12.80	38.50	-25.70

Note: ERP (dBm) = S.G Power Value (dBm) + Correction Factor (dB).

LTE Band 26, Channel Bandwidth 5MHz

MODE		TX channel 26815, 26915, 27015					
Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	826.50	-12.80	18.40	0.00	18.40	38.50	-20.10
2	836.50	-13.40	17.80	0.20	18.00	38.50	-20.50
3	846.50	-12.10	18.40	0.40	18.80	38.50	-19.70
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	826.50	-19.10	12.80	0.00	12.80	38.50	-25.70
2	836.50	-19.00	12.80	0.20	13.00	38.50	-25.50
3	846.50	-19.00	12.20	0.40	12.60	38.50	-25.90

Note: ERP (dBm) = S.G Power Value (dBm) + Correction Factor (dB).

LTE Band 26, Channel Bandwidth 10MHz

MODE		TX channel 26840, 26915, 26990					
Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	829.00	-12.60	18.40	0.10	18.50	38.50	-20.00
2	836.50	-12.70	18.50	0.20	18.70	38.50	-19.80
3	844.00	-12.80	17.80	0.40	18.20	38.50	-20.30
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	829.00	-18.70	13.10	0.10	13.20	38.50	-25.30
2	836.50	-18.70	13.10	0.20	13.30	38.50	-25.20
3	844.00	-18.40	13.10	0.40	13.50	38.50	-25.00

Note: ERP (dBm) = S.G Power Value (dBm) + Correction Factor (dB).

LTE Band 26, Channel Bandwidth 15MHz

MODE		TX channel 26865, 26915, 26965					
Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	831.50	-12.80	18.30	0.10	18.40	38.50	-20.10
2	836.50	-13.40	17.80	0.20	18.00	38.50	-20.50
3	841.50	-12.40	18.40	0.30	18.70	38.50	-19.80
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	831.50	-18.90	12.80	0.10	12.90	38.50	-25.60
2	836.50	-19.00	12.80	0.20	13.00	38.50	-25.50
3	841.50	-19.10	12.50	0.30	12.80	38.50	-25.70

Note: ERP (dBm) = S.G Power Value (dBm) + Correction Factor (dB).

Modulation Type: 64QAM

LTE Band 26, Channel Bandwidth 1.4MHz

MODE	TX channel 26797, 26915, 27033						
Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	824.70	-13.30	17.80	0.00	17.80	38.50	-20.70
2	836.50	-13.80	17.40	0.20	17.60	38.50	-20.90
3	848.30	-13.50	17.00	0.50	17.50	38.50	-21.00
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	824.70	-20.00	11.90	0.00	11.90	38.50	-26.60
2	836.50	-19.80	12.00	0.20	12.20	38.50	-26.30
3	848.30	-19.80	11.60	0.50	12.10	38.50	-26.40

Note: ERP (dBm) = S.G Power Value (dBm) + Correction Factor (dB).

LTE Band 26, Channel Bandwidth 3MHz

MODE	TX channel 26805, 26915, 27025						
Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	825.50	-13.40	17.70	0.00	17.70	38.50	-20.80
2	836.50	-14.40	16.80	0.20	17.00	38.50	-21.50
3	847.50	-13.60	17.00	0.40	17.40	38.50	-21.10
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	825.50	-20.00	11.90	0.00	11.90	38.50	-26.60
2	836.50	-20.60	11.20	0.20	11.40	38.50	-27.10
3	847.50	-20.40	10.90	0.40	11.30	38.50	-27.20

Note: ERP (dBm) = S.G Power Value (dBm) + Correction Factor (dB).

LTE Band 26, Channel Bandwidth 5MHz

MODE	TX channel 26815, 26915, 27015						
Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	826.50	-13.50	17.60	0.00	17.60	38.50	-20.90
2	836.50	-14.20	16.90	0.20	17.10	38.50	-21.40
3	846.50	-13.20	17.30	0.40	17.70	38.50	-20.80
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	826.50	-20.10	11.80	0.00	11.80	38.50	-26.70
2	836.50	-20.00	11.80	0.20	12.00	38.50	-26.50
3	846.50	-19.90	11.30	0.40	11.70	38.50	-26.80

Note: ERP (dBm) = S.G Power Value (dBm) + Correction Factor (dB).

LTE Band 26, Channel Bandwidth 10MHz

MODE		TX channel 26840, 26915, 26990					
Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	829.00	-13.40	17.60	0.10	17.70	38.50	-20.80
2	836.50	-14.00	17.20	0.20	17.40	38.50	-21.10
3	844.00	-13.90	16.70	0.40	17.10	38.50	-21.40
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	829.00	-19.50	12.30	0.10	12.40	38.50	-26.10
2	836.50	-20.00	11.80	0.20	12.00	38.50	-26.50
3	844.00	-19.70	11.80	0.40	12.20	38.50	-26.30

Note: ERP (dBm) = S.G Power Value (dBm) + Correction Factor (dB).

LTE Band 26, Channel Bandwidth 15MHz

MODE		TX channel 26865, 26915, 26965					
Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	831.50	-13.50	17.50	0.10	17.60	38.50	-20.90
2	836.50	-14.40	16.80	0.20	17.00	38.50	-21.50
3	841.50	-13.30	17.50	0.30	17.80	38.50	-20.70
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	831.50	-19.90	11.80	0.10	11.90	38.50	-26.60
2	836.50	-19.90	11.90	0.20	12.10	38.50	-26.40
3	841.50	-20.10	11.50	0.30	11.80	38.50	-26.70

Note: ERP (dBm) = S.G Power Value (dBm) + Correction Factor (dB).

4.2 Modulation Characteristics Measurement

4.2.1 Limits of Modulation Characteristics

N/A

4.2.2 Test Setup

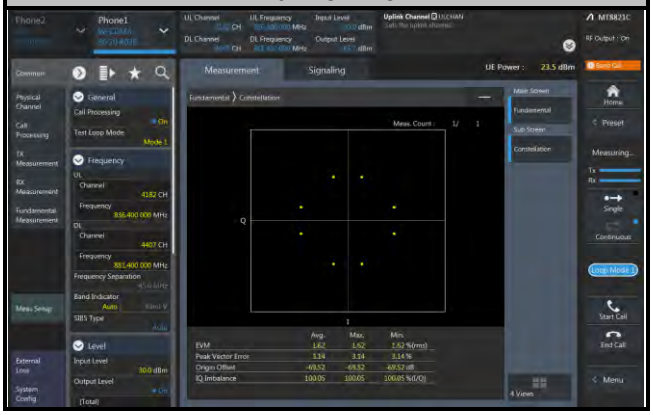


4.2.3 Test Procedure

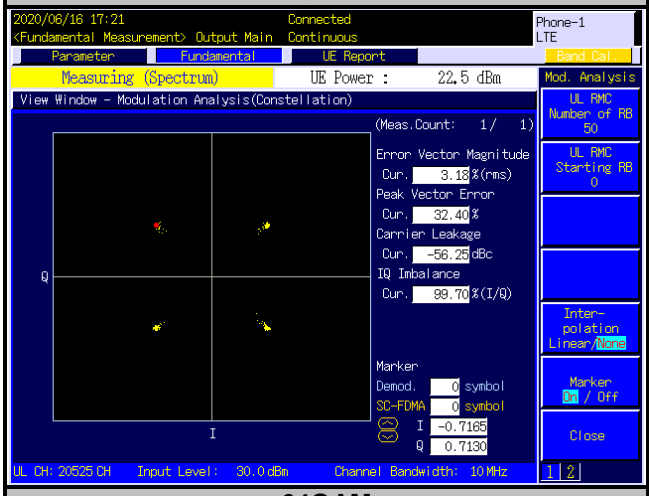
Connect the EUT to Communication Simulator via the antenna connector. The frequency band is set as EUT supported Modulation and Channels, the EUT output is matched with 50 ohm load, the waveform quality and constellation of the EUT was tested.

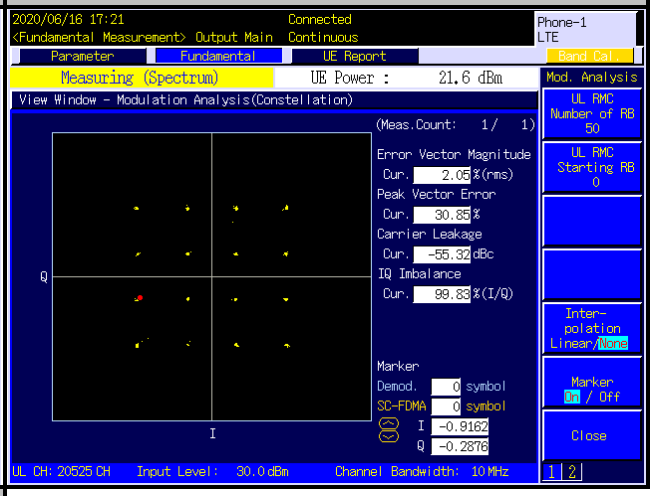
4.2.4 Test Results

Spectrum Plot of Measurement
WCDMA
Channel 4182

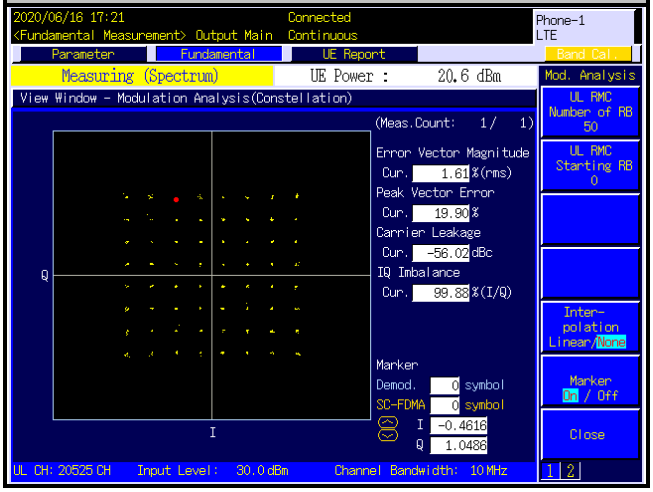


Spectrum Plot of Measurement	
LTE Band 5	
Channel 20525	
QPSK	16QAM





64QAM



Spectrum Plot of Measurement
LTE Band 26
Channel 26915

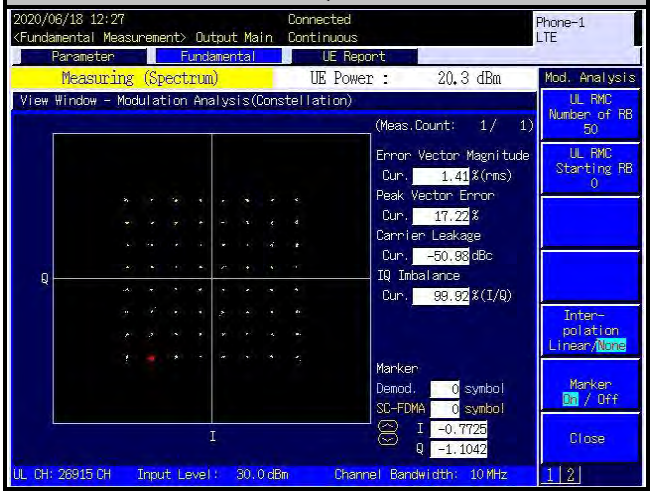
QPSK



16QAM



64QAM



4.3 Frequency Stability Measurement

4.3.1 Limits of Frequency Stability Measurement

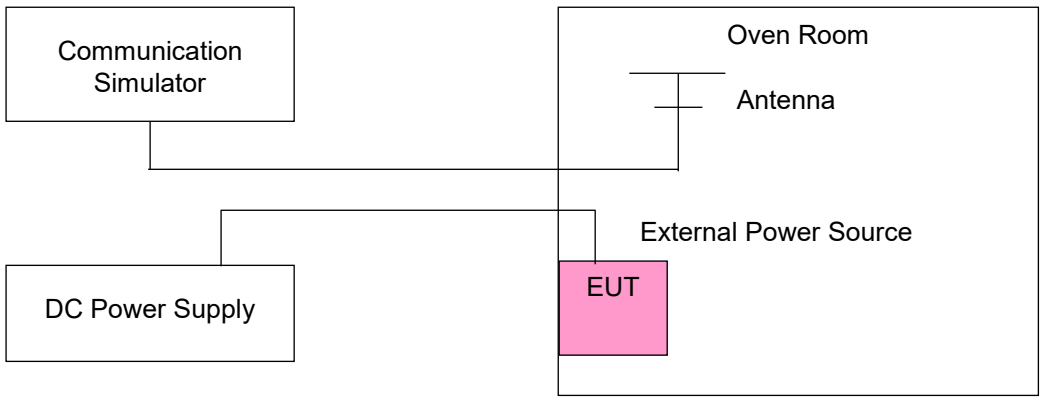
1.5 ppm is for base and fixed station. 2.5 ppm is for mobile station.

4.3.2 Test Procedure

a. 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.
b. 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.
c. The temperature range step is 10 degrees in this test items. All temperature levels shall be hold the ±0.5 ℃ 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.

4.3.3 Test Setup



4.3.4 Test Results

Frequency Error vs. Voltage

Voltage (Volts)	WCDMA				Limit (ppm)
	Low Channel		High Channel		
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
3.8	826.400002	0.002	846.600002	0.003	2.5
3.23	826.400003	0.004	846.600004	0.004	2.5
4.37	826.400002	0.003	846.600002	0.002	2.5

Note: The applicant defined the normal working voltage is from 3.23 Vdc to 4.37 Vdc.

Frequency Error vs. Temperature

Temp. (℃)	WCDMA				Limit (ppm)
	Low Channel		High Channel		
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
-30	826.400002	0.002	846.600003	0.004	2.5
-20	826.400002	0.002	846.600003	0.004	2.5
-10	826.400002	0.002	846.600002	0.002	2.5
0	826.399998	-0.002	846.599998	-0.002	2.5
10	826.399997	-0.004	846.599999	-0.002	2.5
20	826.399997	-0.004	846.599998	-0.003	2.5
30	826.399998	-0.003	846.599997	-0.004	2.5
40	826.399996	-0.004	846.599997	-0.004	2.5
50	826.399997	-0.003	846.599997	-0.003	2.5

Frequency Error vs. Voltage

Voltage (Volts)	LTE Band 5				Limit (ppm)
	Channel Bandwidth: 1.4 MHz				
	Low Channel		High Channel		
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
3.8	824.700002	0.003	848.300003	0.003	2.5
3.23	824.700001	0.001	848.300004	0.004	2.5
4.37	824.700001	0.002	848.300003	0.004	2.5

Note: The applicant defined the normal working voltage is from 3.23 Vdc to 4.37 Vdc.

Frequency Error vs. Temperature

Temp. (℃)	LTE Band 5				Limit (ppm)
	Channel Bandwidth: 1.4 MHz				
	Low Channel		High Channel		
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
-30	824.700002	0.002	848.300002	0.002	2.5
-20	824.700002	0.002	848.300002	0.002	2.5
-10	824.700003	0.003	848.300004	0.005	2.5
0	824.700003	0.003	848.300003	0.003	2.5
10	824.699998	-0.002	848.299996	-0.005	2.5
20	824.699998	-0.003	848.299996	-0.004	2.5
30	824.699998	-0.003	848.299997	-0.003	2.5
40	824.699998	-0.003	848.299996	-0.004	2.5
50	824.699996	-0.004	848.299999	-0.001	2.5

Frequency Error vs. Voltage

Voltage (Volts)	LTE Band 5				Limit (ppm)
	Channel Bandwidth: 3 MHz				
	Low Channel		High Channel		
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
3.8	825.500003	0.004	847.500004	0.005	2.5
3.23	825.500002	0.003	847.500003	0.003	2.5
4.37	825.500002	0.002	847.500003	0.004	2.5

Note: The applicant defined the normal working voltage is from 3.23 Vdc to 4.37 Vdc.

Frequency Error vs. Temperature

Temp. (℃)	LTE Band 5				Limit (ppm)
	Channel Bandwidth: 3 MHz				
	Low Channel		High Channel		
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
-30	825.500003	0.004	847.500004	0.005	2.5
-20	825.500001	0.001	847.500003	0.004	2.5
-10	825.500004	0.005	847.500002	0.002	2.5
0	825.500003	0.004	847.500002	0.002	2.5
10	825.499996	-0.005	847.499997	-0.004	2.5
20	825.499996	-0.005	847.499998	-0.002	2.5
30	825.499996	-0.005	847.499999	-0.001	2.5
40	825.499999	-0.002	847.499998	-0.003	2.5
50	825.499997	-0.004	847.499997	-0.003	2.5

Frequency Error vs. Voltage

Voltage (Volts)	LTE Band 5				Limit (ppm)
	Channel Bandwidth: 5 MHz				
	Low Channel		High Channel		
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
3.8	826.500002	0.002	846.500001	0.001	2.5
3.23	826.500004	0.005	846.500002	0.003	2.5
4.37	826.500002	0.002	846.500001	0.001	2.5

Note: The applicant defined the normal working voltage is from 3.23 Vdc to 4.37 Vdc.

Frequency Error vs. Temperature

Temp. (℃)	LTE Band 5				Limit (ppm)
	Channel Bandwidth: 5 MHz				
	Low Channel		High Channel		
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
-30	826.500003	0.003	846.500002	0.003	2.5
-20	826.500002	0.003	846.500003	0.004	2.5
-10	826.500002	0.003	846.500003	0.004	2.5
0	826.500001	0.001	846.500004	0.004	2.5
10	826.499998	-0.003	846.499998	-0.003	2.5
20	826.499998	-0.002	846.499998	-0.003	2.5
30	826.499999	-0.001	846.499997	-0.004	2.5
40	826.499998	-0.002	846.499998	-0.003	2.5
50	826.499997	-0.004	846.499998	-0.002	2.5

Frequency Error vs. Voltage

Voltage (Volts)	LTE Band 5				Limit (ppm)
	Channel Bandwidth: 10 MHz				
	Low Channel		High Channel		
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
3.8	829.000003	0.003	844.000002	0.002	2.5
3.23	829.000004	0.005	844.000001	0.002	2.5
4.37	829.000001	0.002	844.000004	0.005	2.5

Note: The applicant defined the normal working voltage is from 3.23 Vdc to 4.37 Vdc.

Frequency Error vs. Temperature

Temp. (℃)	LTE Band 5				Limit (ppm)
	Channel Bandwidth: 10 MHz				
	Low Channel		High Channel		
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
-30	829.000003	0.004	844.000003	0.003	2.5
-20	829.000003	0.004	844.000004	0.005	2.5
-10	829.000002	0.002	844.000004	0.005	2.5
0	829.000003	0.004	844.000003	0.003	2.5
10	828.999997	-0.003	843.999998	-0.003	2.5
20	828.999998	-0.003	843.999998	-0.002	2.5
30	828.999998	-0.002	843.999997	-0.003	2.5
40	828.999998	-0.003	843.999997	-0.003	2.5
50	828.999997	-0.004	843.999998	-0.002	2.5

Frequency Error vs. Voltage

Voltage (Volts)	LTE Band 26				Limit (ppm)
	Channel Bandwidth: 1.4 MHz				
	Low Channel		High Channel		
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
3.8	824.700002	0.003	848.300000	0.003	2.5
3.23	824.700004	0.005	848.300000	0.003	2.5
4.37	824.700002	0.003	848.300000	0.002	2.5

Note: The applicant defined the normal working voltage is from 3.23 Vdc to 4.37 Vdc.

Frequency Error vs. Temperature

Temp. (℃)	LTE Band 26				Limit (ppm)
	Channel Bandwidth: 1.4 MHz				
	Low Channel		High Channel		
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
-30	824.700004	0.004	848.300000	0.002	2.5
-20	824.700003	0.003	848.300000	0.003	2.5
-10	824.700004	0.005	848.300000	0.004	2.5
0	824.700002	0.003	848.300000	0.005	2.5
10	824.699998	-0.003	848.300000	-0.003	2.5
20	824.699998	-0.003	848.300000	-0.003	2.5
30	824.699999	-0.001	848.300000	-0.003	2.5
40	824.699997	-0.004	848.300000	-0.001	2.5
50	824.699999	-0.002	848.300000	-0.003	2.5

Frequency Error vs. Voltage

Voltage (Volts)	LTE Band 26				Limit (ppm)
	Channel Bandwidth: 3 MHz				
	Low Channel		High Channel		
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
3.8	825.500003	0.004	847.500000	0.002	2.5
3.23	825.500003	0.003	847.500000	0.004	2.5
4.37	825.500004	0.005	847.500000	0.002	2.5

Note: The applicant defined the normal working voltage is from 3.23 Vdc to 4.37 Vdc.

Frequency Error vs. Temperature

Temp. (℃)	LTE Band 26				Limit (ppm)
	Channel Bandwidth: 3 MHz				
	Low Channel		High Channel		
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
-30	825.500004	0.005	847.500000	0.003	2.5
-20	825.500003	0.003	847.500000	0.003	2.5
-10	825.500002	0.002	847.500000	0.004	2.5
0	825.500001	0.002	847.500000	0.005	2.5
10	825.499998	-0.003	847.500000	-0.002	2.5
20	825.499996	-0.005	847.500000	-0.002	2.5
30	825.499997	-0.003	847.500000	-0.001	2.5
40	825.499998	-0.002	847.500000	-0.004	2.5
50	825.499998	-0.003	847.500000	-0.004	2.5

Frequency Error vs. Voltage

Voltage (Volts)	LTE Band 26				Limit (ppm)
	Channel Bandwidth: 5 MHz				
	Low Channel		High Channel		
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
3.8	826.500002	0.002	846.500004	0.004	2.5
3.23	826.500001	0.002	846.500004	0.005	2.5
4.37	826.500002	0.002	846.500003	0.003	2.5

Note: The applicant defined the normal working voltage is from 3.23 Vdc to 4.37 Vdc.

Frequency Error vs. Temperature

Temp. (℃)	LTE Band 26				Limit (ppm)
	Channel Bandwidth: 5 MHz				
	Low Channel		High Channel		
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
-30	826.500002	0.002	846.500001	0.001	2.5
-20	826.500002	0.003	846.500003	0.004	2.5
-10	826.500003	0.004	846.500003	0.003	2.5
0	826.500002	0.002	846.500002	0.002	2.5
10	826.499999	-0.002	846.499998	-0.003	2.5
20	826.499998	-0.003	846.499996	-0.004	2.5
30	826.499996	-0.004	846.499997	-0.003	2.5
40	826.499997	-0.003	846.499998	-0.002	2.5
50	826.499997	-0.003	846.499999	-0.001	2.5

Frequency Error vs. Voltage

Voltage (Volts)	LTE Band 26				Limit (ppm)
	Channel Bandwidth: 10 MHz				
	Low Channel		High Channel		
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
3.8	829.000003	0.003	844.000003	0.004	2.5
3.23	829.000002	0.002	844.000002	0.002	2.5
4.37	829.000003	0.003	844.000002	0.003	2.5

Note: The applicant defined the normal working voltage is from 3.23 Vdc to 4.37 Vdc.

Frequency Error vs. Temperature

Temp. (℃)	LTE Band 26				Limit (ppm)
	Channel Bandwidth: 10 MHz				
	Low Channel		High Channel		
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
-30	829.000003	0.003	844.000003	0.003	2.5
-20	829.000001	0.001	844.000003	0.004	2.5
-10	829.000004	0.005	844.000001	0.001	2.5
0	829.000001	0.001	844.000004	0.005	2.5
10	828.999997	-0.003	843.999998	-0.002	2.5
20	828.999996	-0.004	843.999996	-0.005	2.5
30	828.999998	-0.002	843.999997	-0.004	2.5
40	828.999997	-0.004	843.999997	-0.004	2.5
50	828.999997	-0.004	843.999998	-0.003	2.5

Frequency Error vs. Voltage

Voltage (Volts)	LTE Band 26				Limit (ppm)
	Channel Bandwidth: 15 MHz				
	Low Channel		High Channel		
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
3.8	831.500001	0.002	841.500003	0.003	2.5
3.23	831.500003	0.004	841.500004	0.004	2.5
4.37	831.500003	0.004	841.500003	0.004	2.5

Note: The applicant defined the normal working voltage is from 3.23 Vdc to 4.37 Vdc.

Frequency Error vs. Temperature

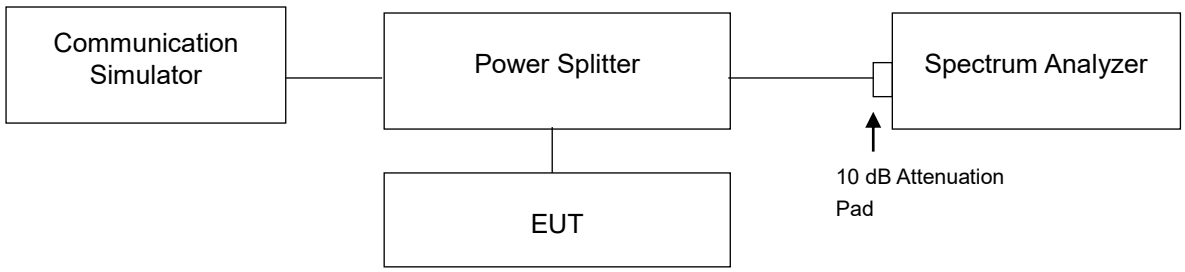
Temp. (℃)	LTE Band 26				Limit (ppm)
	Channel Bandwidth: 15 MHz				
	Low Channel		High Channel		
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
-30	831.500004	0.005	841.500001	0.002	2.5
-20	831.500003	0.003	841.500003	0.003	2.5
-10	831.500001	0.001	841.500002	0.003	2.5
0	831.500002	0.003	841.500001	0.001	2.5
10	831.499997	-0.004	841.499998	-0.002	2.5
20	831.499996	-0.005	841.499998	-0.003	2.5
30	831.499998	-0.002	841.499998	-0.002	2.5
40	831.499998	-0.003	841.499996	-0.005	2.5
50	831.499997	-0.003	841.499998	-0.002	2.5

4.4 Occupied Bandwidth Measurement

4.4.1 Test Procedure

The EUT makes a call to the communication simulator. All measurements were done at low, middle and high operational frequency range. The communication simulator station system controlled a EUT to export maximum output power under transmission mode and specific channel frequency. Use OBW measurement function of Spectrum analyzer to measure 99 % occupied bandwidth.

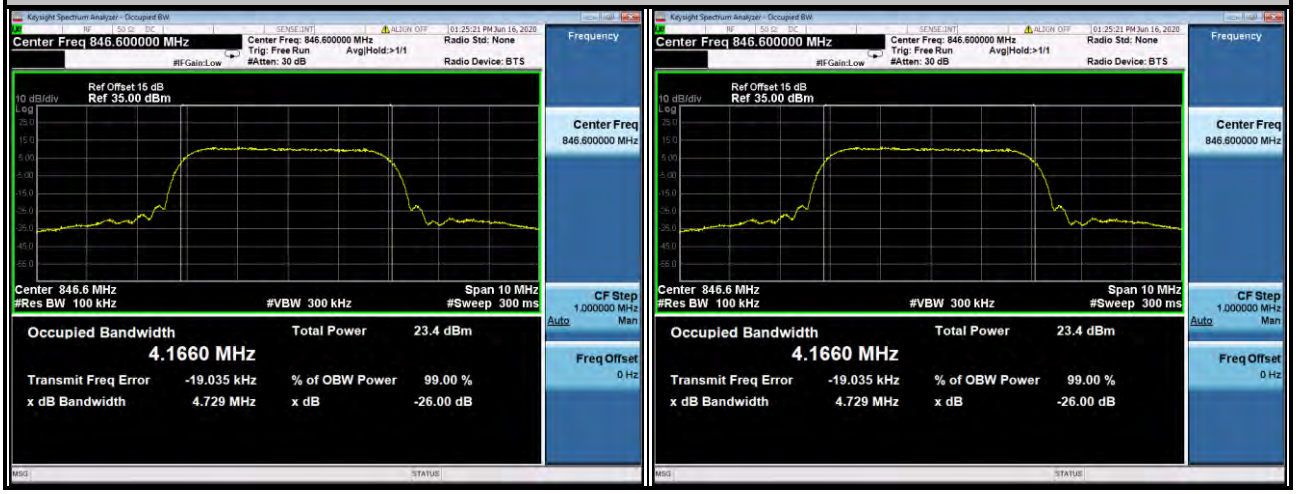
4.4.2 Test Setup



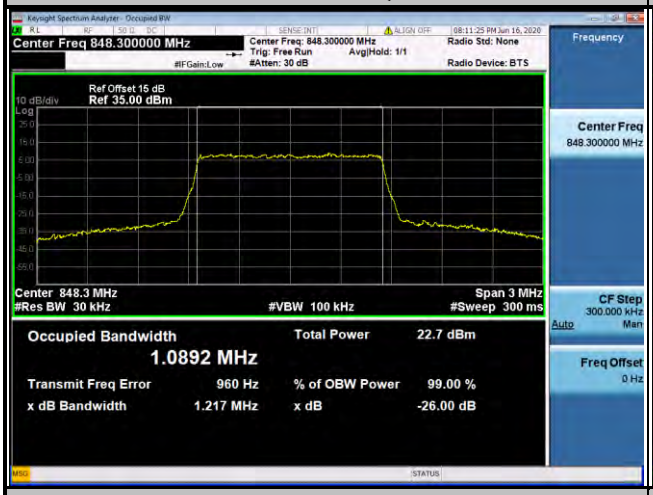
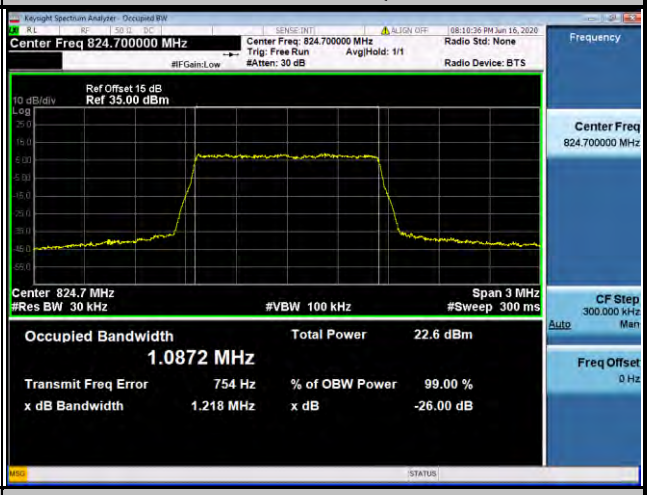
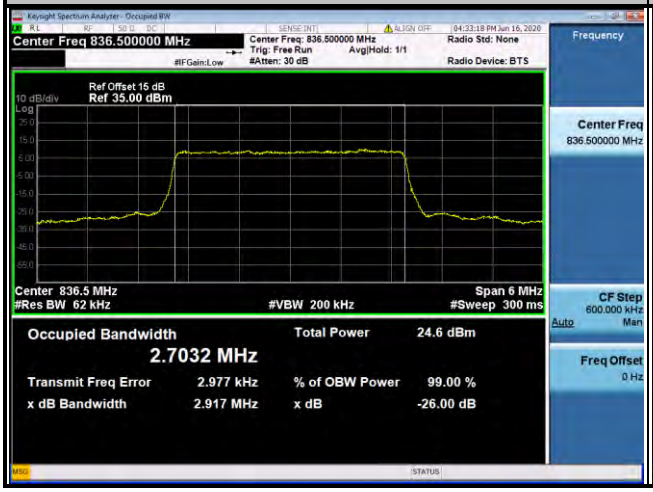
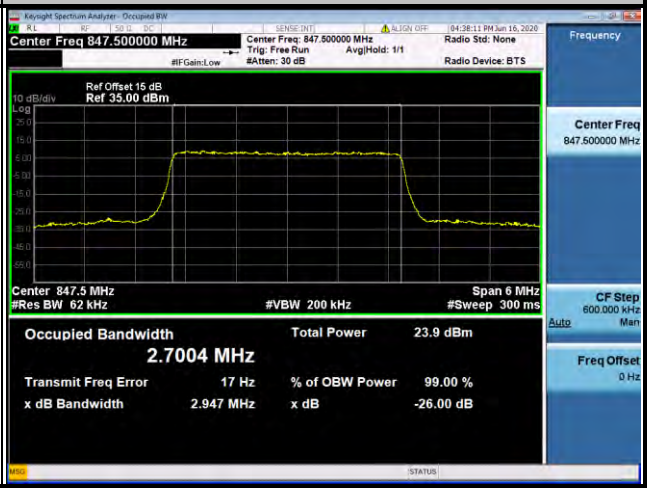
4.4.3 Test Result

WCDMA			
Channel	**Frequency (MHz)**	**99 % Occupied Bandwidth (MHz)**	**26 dB Bandwidth (MHz)**
4132	826.4	4.1449	4.727
4182	836.4	4.1535	4.716
4233	846.6	4.1660	4.729

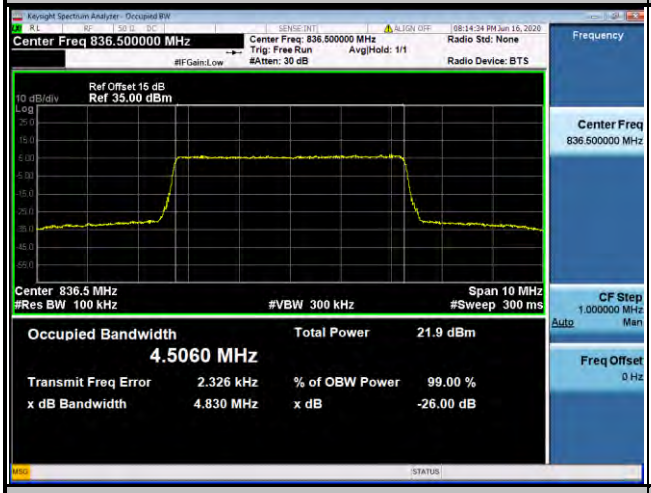
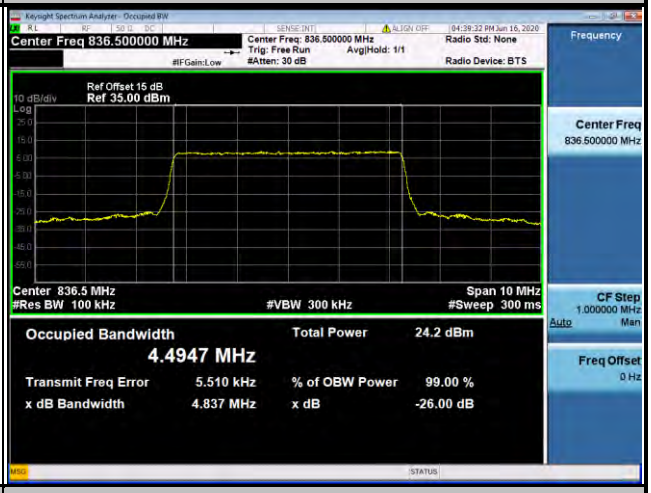
Spectrum Plot of Worst Value	
99 % Occupied Bandwidth	**26 dB Bandwidth**
WCDMA	



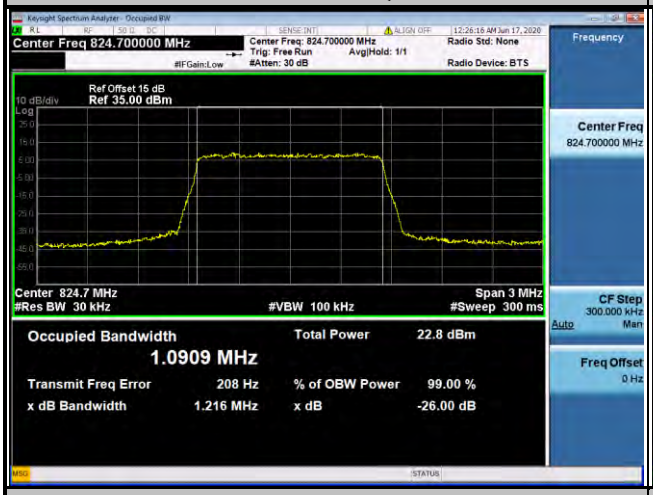
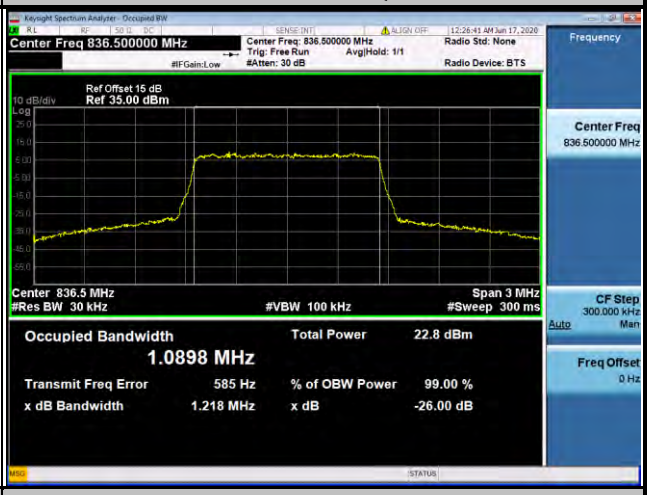
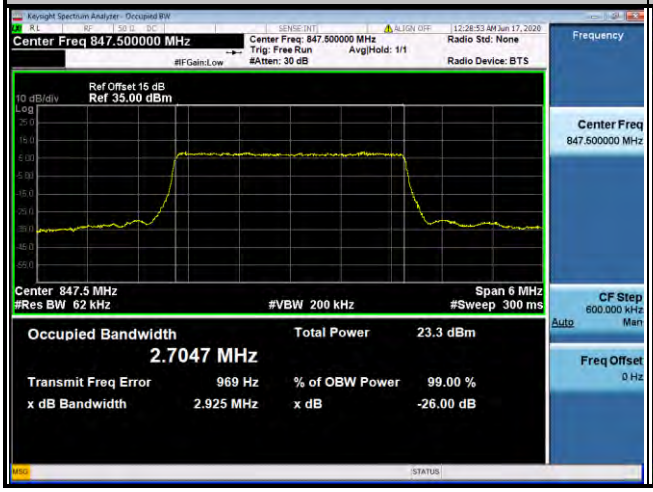
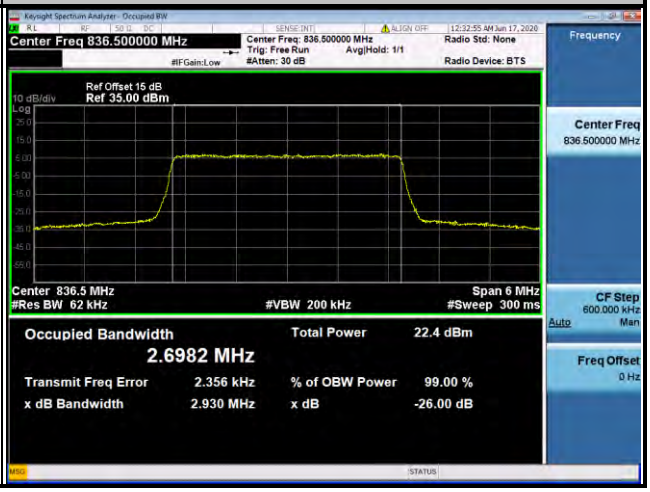
LTE Band 5							
Channel Bandwidth: 1.4 MHz							
Channel	Frequency (MHz)	99 % Occupied Bandwidth (MHz)			26 dB Bandwidth (MHz)		
		QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
20407	824.7	1.0862	1.0889	1.0872	1.217	1.215	1.218
20525	836.5	1.0863	1.0891	1.0885	1.212	1.218	1.214
20643	848.3	1.0873	1.0887	1.0892	1.216	1.216	1.217
Channel Bandwidth: 3 MHz							
Channel	Frequency (MHz)	99 % Occupied Bandwidth (MHz)			26 dB Bandwidth (MHz)		
		QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
20415	825.5	2.6988	2.6970	2.6961	2.932	2.927	2.909
20525	836.5	2.7032	2.6998	2.6988	2.917	2.934	2.908
20635	847.5	2.7030	2.7004	2.6993	2.938	2.947	2.908

Spectrum Plot of Worst Value	
99 % Occupied Bandwidth	26 dB Bandwidth
1.4 MHz / 64QAM	1.4 MHz / 64QAM
	
3 MHz / QPSK	3 MHz / 16QAM
	

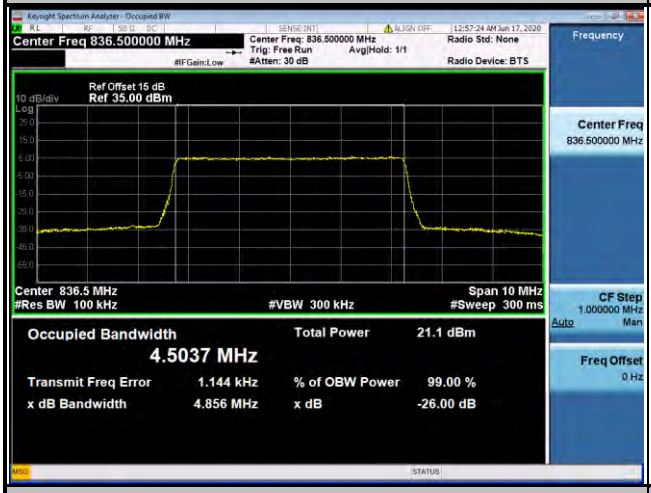
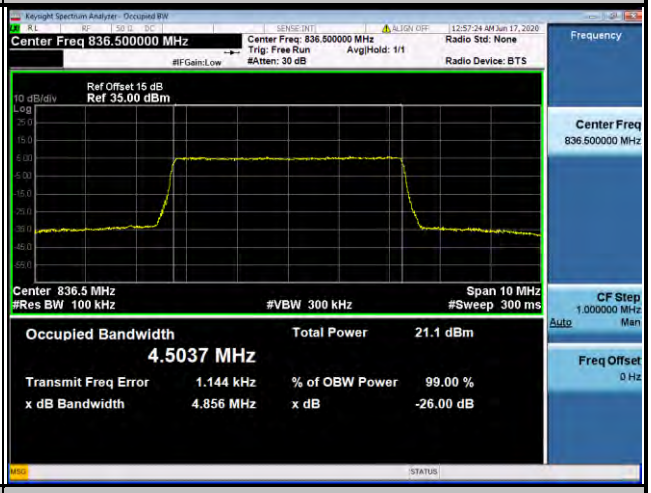
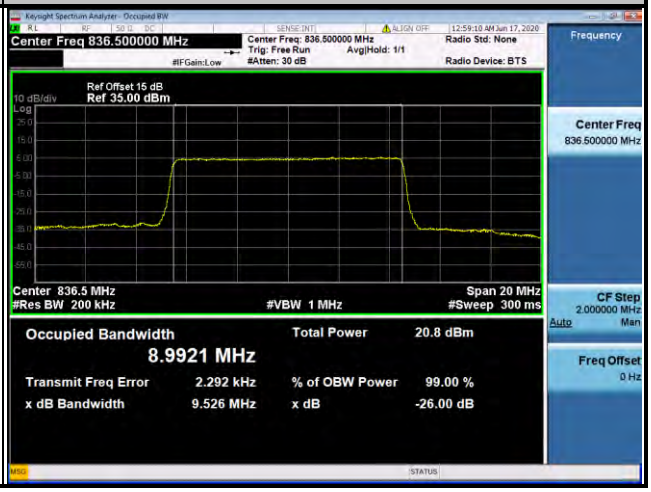
LTE Band 5							
Channel Bandwidth: 5 MHz							
Channel	Frequency (MHz)	99 % Occupied Bandwidth (MHz)			26 dB Bandwidth (MHz)		
		QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
20425	826.5	4.4889	4.4899	4.4988	4.819	4.807	4.829
20525	836.5	4.4947	4.4969	4.5060	4.837	4.807	4.830
20625	846.5	4.4955	4.4960	4.5049	4.825	4.808	4.821
Channel Bandwidth: 10 MHz							
Channel	Frequency (MHz)	99 % Occupied Bandwidth (MHz)			26 dB Bandwidth (MHz)		
		QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
20450	829.0	8.9654	8.9606	8.9659	9.515	9.508	9.512
20525	836.5	8.9797	8.9836	8.9845	9.523	9.508	9.523
20600	844.0	8.9445	8.9435	8.9511	9.503	9.498	9.509

Spectrum Plot of Worst Value	
99 % Occupied Bandwidth	26 dB Bandwidth
5 MHz / 64QAM	5 MHz / QPSK
	
10 MHz / 64QAM	10 MHz / QPSK
	

LTE Band 26							
Channel Bandwidth: 1.4 MHz							
Channel	Frequency (MHz)	99 % Occupied Bandwidth (MHz)			26 dB Bandwidth (MHz)		
		QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
26797	824.7	1.0856	1.0909	1.0883	1.216	1.216	1.210
26915	836.5	1.0872	1.0898	1.0887	1.212	1.218	1.218
27033	848.3	1.0873	1.0890	1.0880	1.216	1.213	1.216
Channel Bandwidth: 3 MHz							
Channel	Frequency (MHz)	99 % Occupied Bandwidth (MHz)			26 dB Bandwidth (MHz)		
		QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
26805	825.5	2.7006	2.6960	2.6964	2.920	2.918	2.907
26915	836.5	2.7036	2.6982	2.6977	2.924	2.930	2.905
27025	847.5	2.7047	2.6993	2.6992	2.925	2.924	2.902

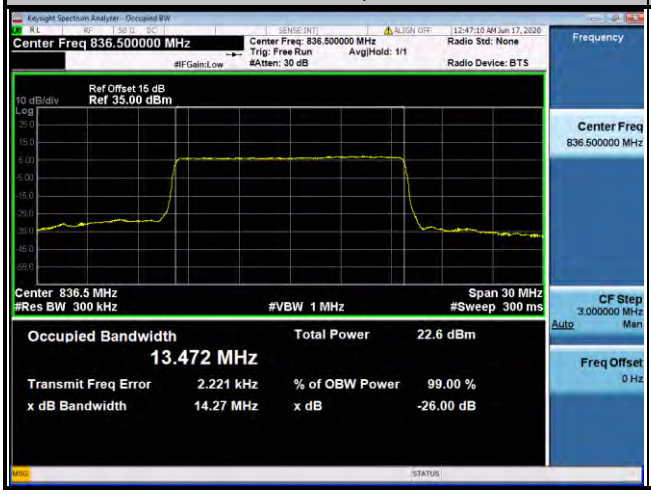
Spectrum Plot of Worst Value	
99 % Occupied Bandwidth	26 dB Bandwidth
1.4 MHz / 16QAM	1.4 MHz / 16QAM
	
3 MHz / QPSK	3 MHz / 16QAM
	

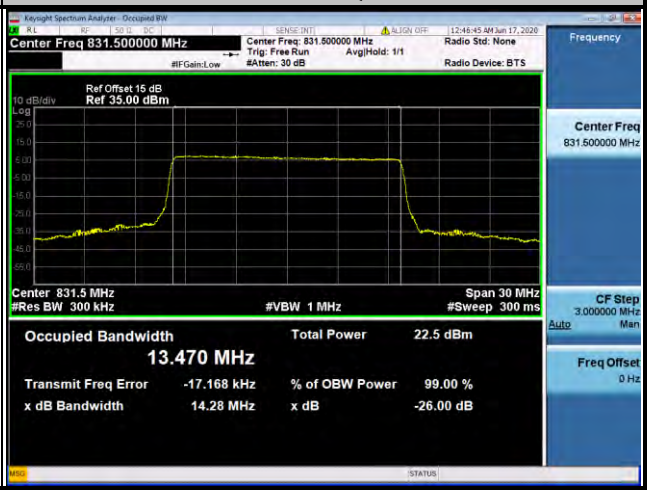
LTE Band 26							
Channel Bandwidth: 5 MHz							
Channel	Frequency (MHz)	99 % Occupied Bandwidth (MHz)			26 dB Bandwidth (MHz)		
		QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
26815	826.5	4.4895	4.4896	4.4966	4.811	4.805	4.835
26915	836.5	4.4951	4.4965	4.5037	4.834	4.808	4.856
27015	846.5	4.4968	4.4966	4.5022	4.806	4.794	4.827
Channel Bandwidth: 10 MHz							
Channel	Frequency (MHz)	99 % Occupied Bandwidth (MHz)			26 dB Bandwidth (MHz)		
		QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
26840	829.0	8.9634	8.9642	8.9693	9.511	9.501	9.514
26915	836.5	8.9798	8.9837	8.9921	9.522	9.511	9.526
26990	844.0	8.9460	8.9484	8.9484	9.503	9.483	9.511

Spectrum Plot of Worst Value	
99 % Occupied Bandwidth	26 dB Bandwidth
5 MHz / 64QAM	5 MHz / 64QAM
	
10 MHz / 64QAM	10 MHz / 64QAM
	

LTE Band 26							
Channel Bandwidth: 15 MHz							
Channel	Frequency (MHz)	99 % Occupied Bandwidth (MHz)			26 dB Bandwidth (MHz)		
		QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
26865	831.5	13.470	13.461	13.453	14.28	14.24	14.23
26915	836.5	13.472	13.456	13.452	14.27	14.25	14.24
26965	841.5	13.395	13.379	13.378	14.21	14.19	14.20

Spectrum Plot of Worst Value	
99 % Occupied Bandwidth	26 dB Bandwidth
15 MHz / QPSK	15 MHz / QPSK



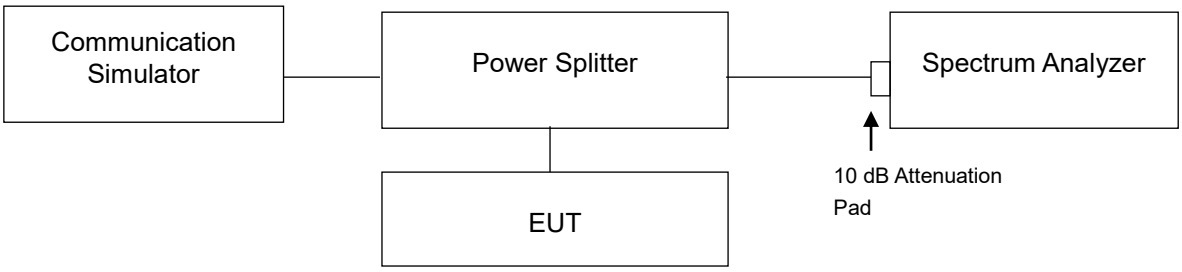


4.5 Band Edge Measurement

4.5.1 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.

4.5.2 Test Setup

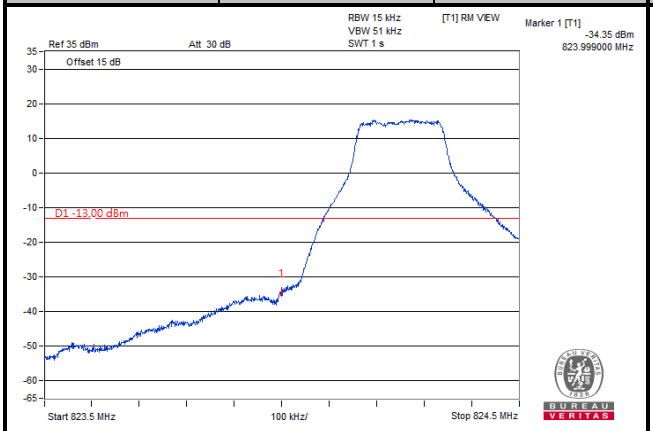
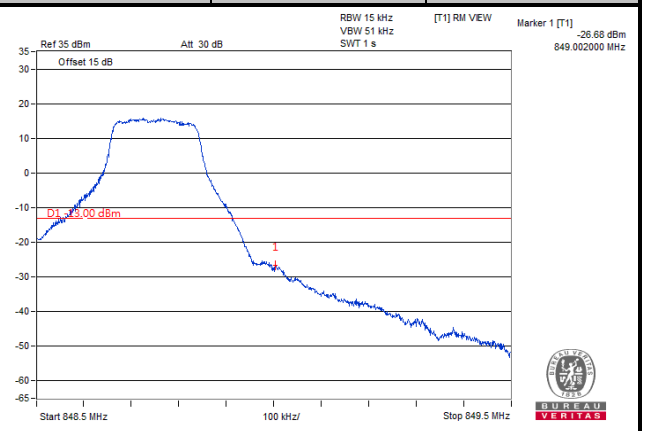
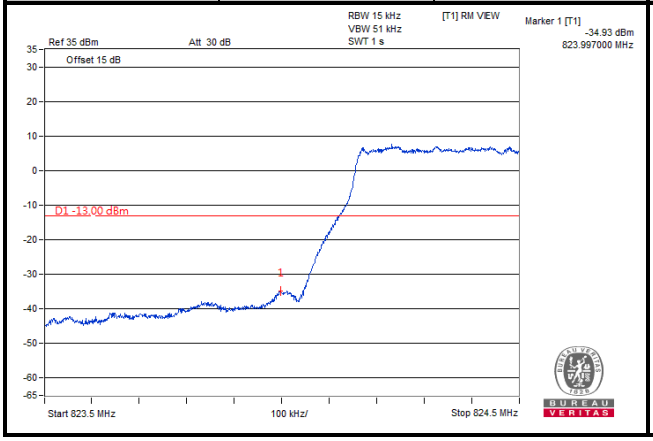
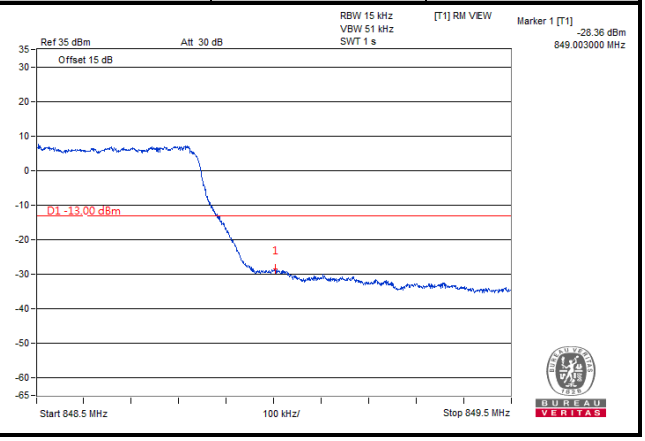


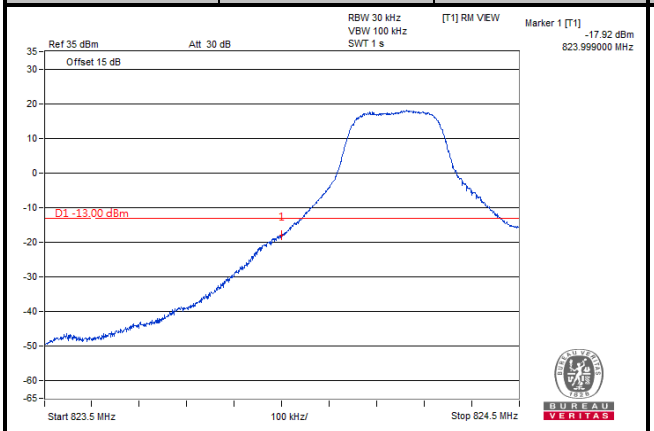
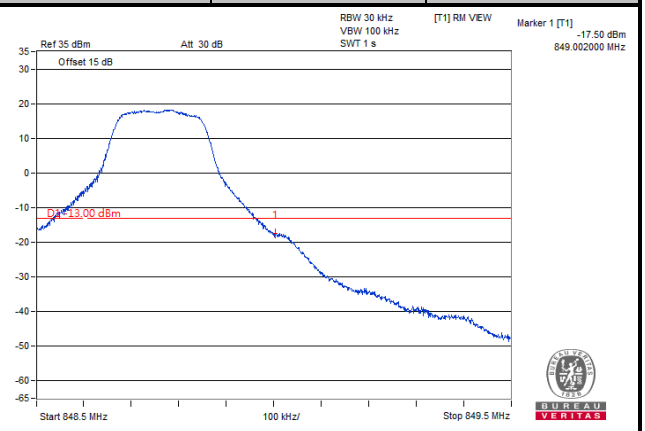
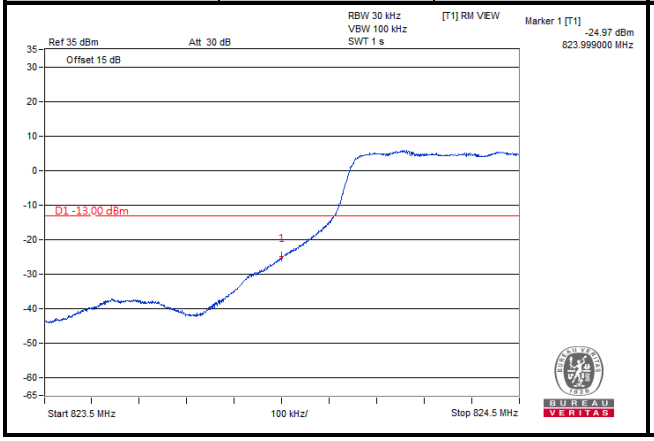
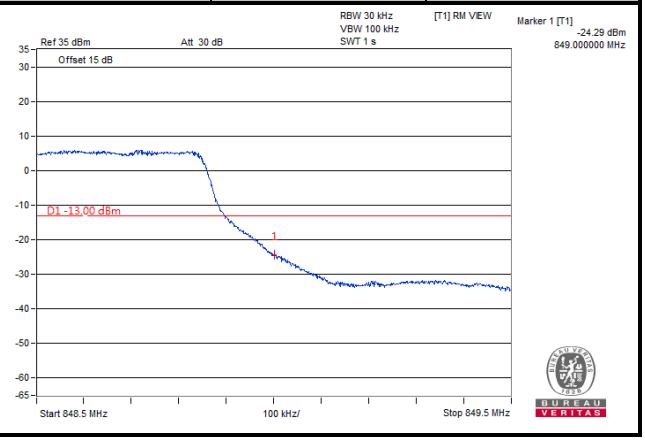
4.5.3 Test Procedures

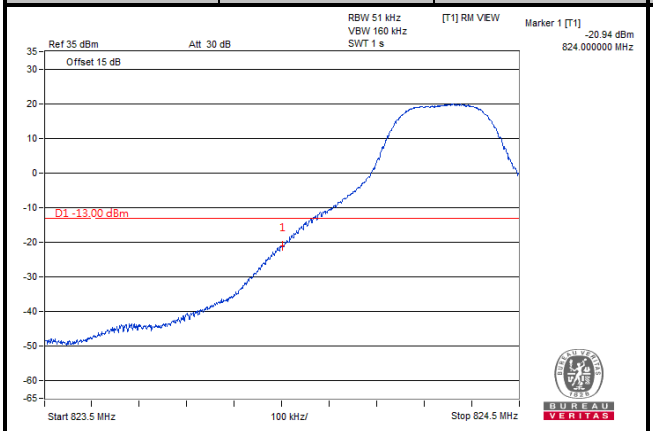
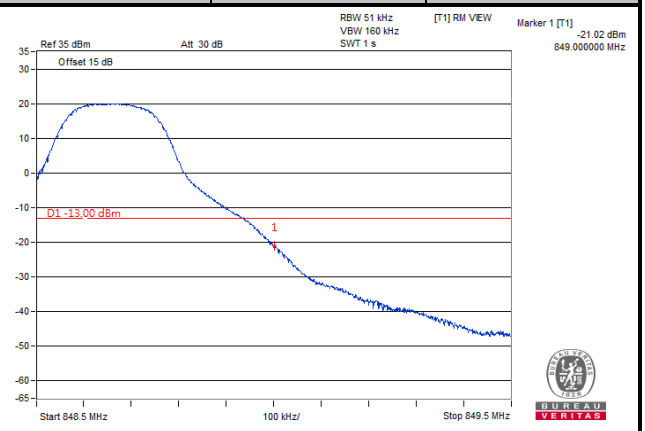
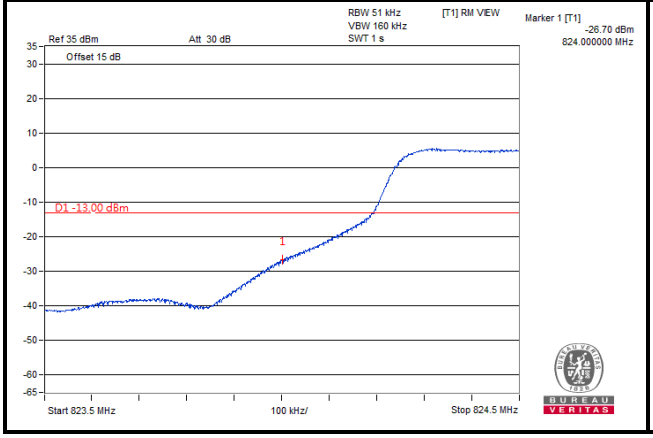
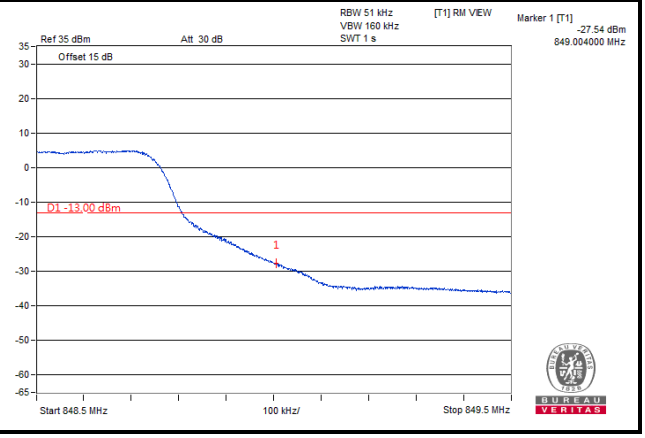
a. All measurements were done at low and high operational frequency range.
b. The center frequency of spectrum is the band edge frequency and span is 5 MHz. RB of the spectrum is 51 kHz and VB of the spectrum is 160 kHz (WCDMA).
c. The center frequency of spectrum is the band edge frequency and span is 1 MHz. RB of the spectrum is 15 kHz and VB of the spectrum is 51 kHz (LTE Bandwidth 1.4 MHz).
d. The center frequency of spectrum is the band edge frequency and span is 1 MHz. RB of the spectrum is 30 kHz and VB of the spectrum is 100 kHz (LTE Bandwidth 3 MHz).
e. The center frequency of spectrum is the band edge frequency and span is 1 MHz. RB of the spectrum is 51 kHz and VB of the spectrum is 160 kHz (LTE Bandwidth 5 MHz).
f. The center frequency of spectrum is the band edge frequency and span is 1 MHz. RB of the spectrum is 100 kHz and VB of the spectrum is 300 kHz (LTE Bandwidth 10 MHz).
g. The center frequency of spectrum is the band edge frequency and span is 1 MHz. RB of the spectrum is 150 kHz and VB of the spectrum is 470 kHz (LTE Bandwidth 15 MHz).
h. Record the max trace plot into the test report.

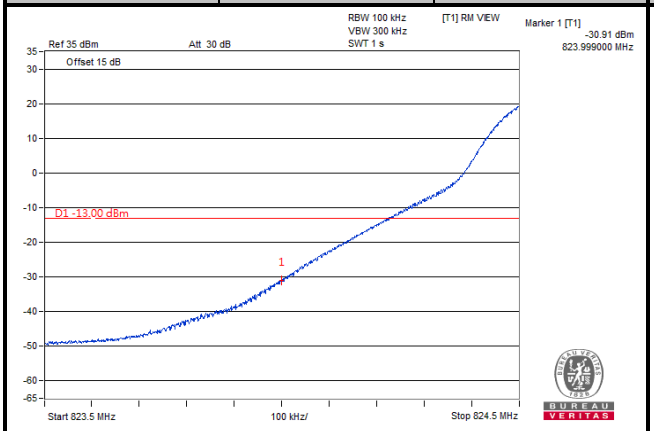
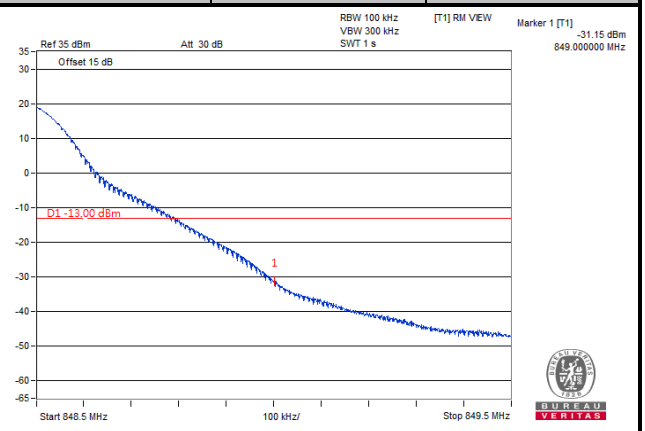
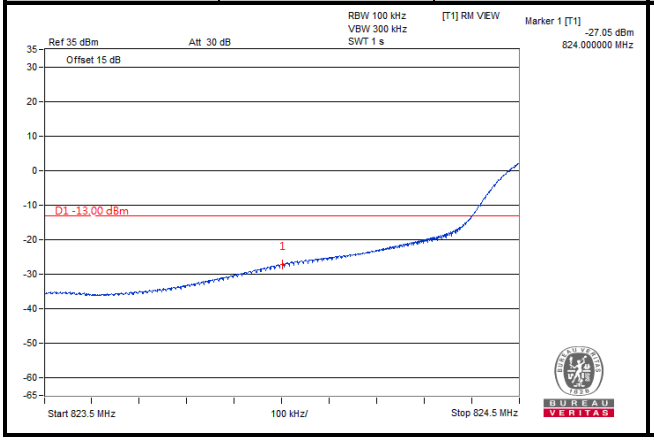
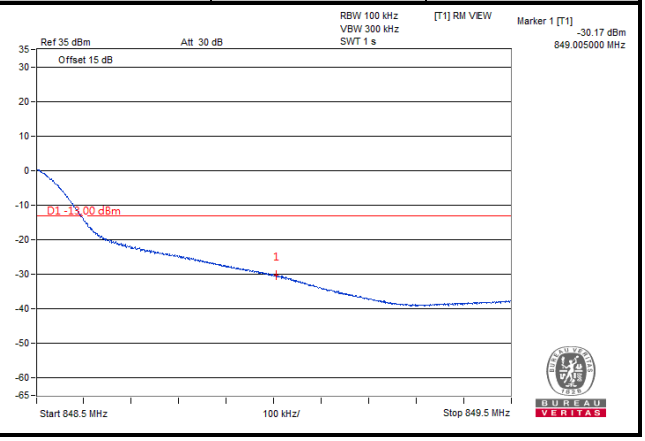
4.5.4 Test Results

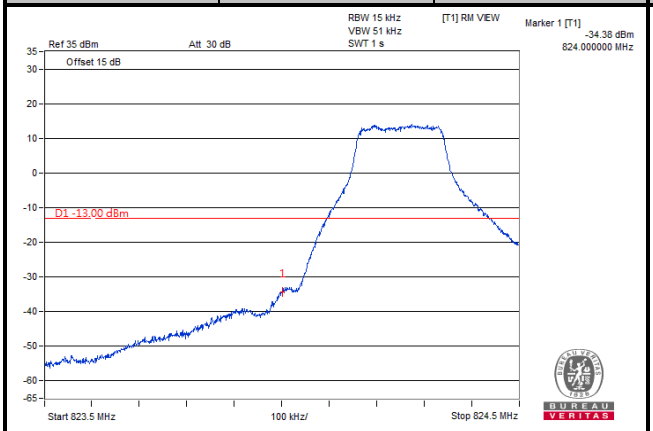
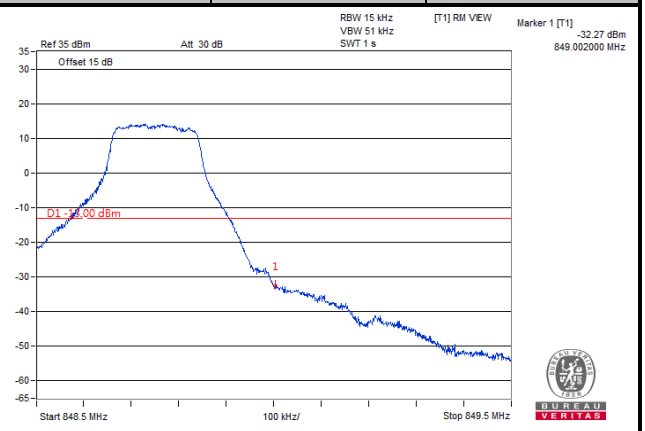
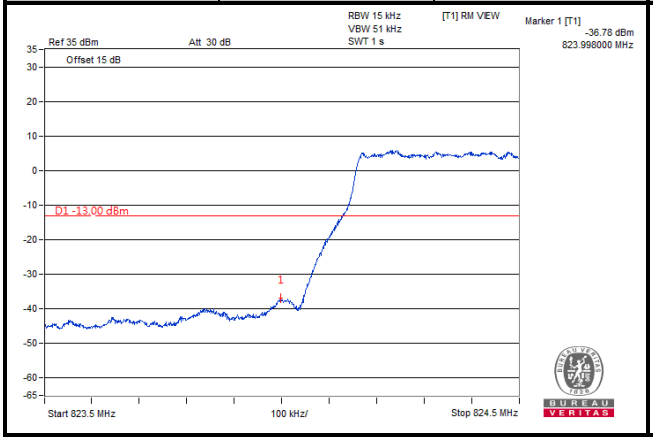
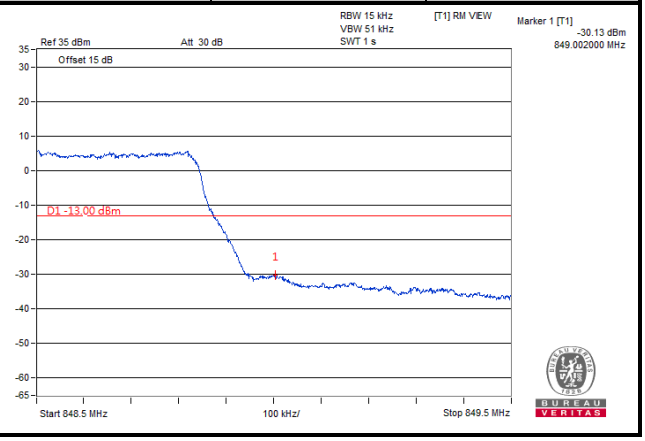
WCDMA			
Channel	4132	Channel	4233
			

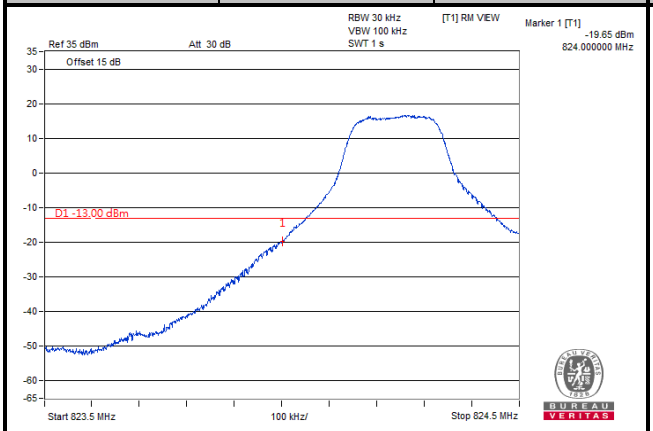
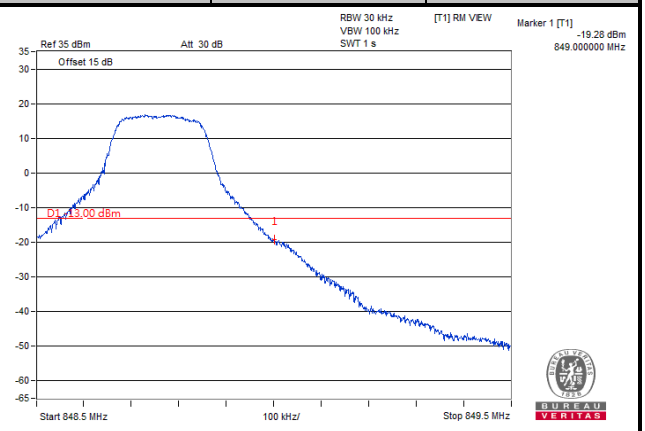
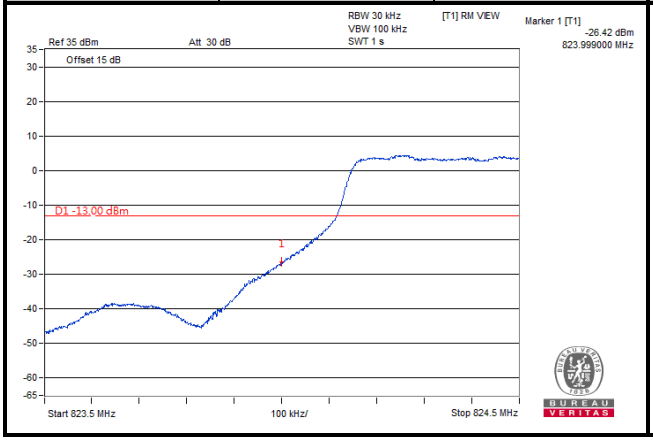
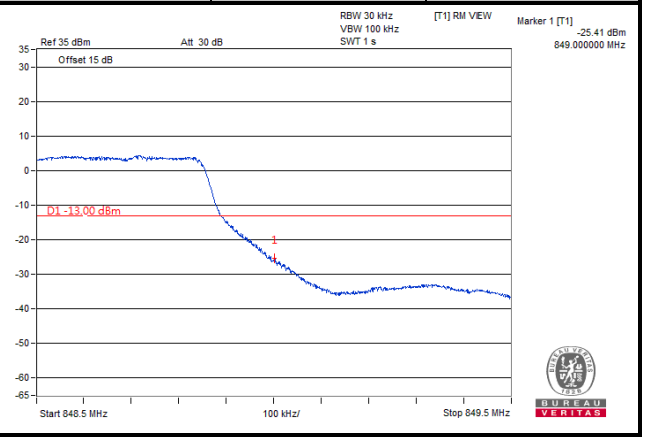
LTE Band 5					
Channel Bandwidth: 1.4 MHz					
Channel	20407	1 RB	Channel	20643	1 RB
					
Channel	20407	6 RB	Channel	20643	6 RB
					

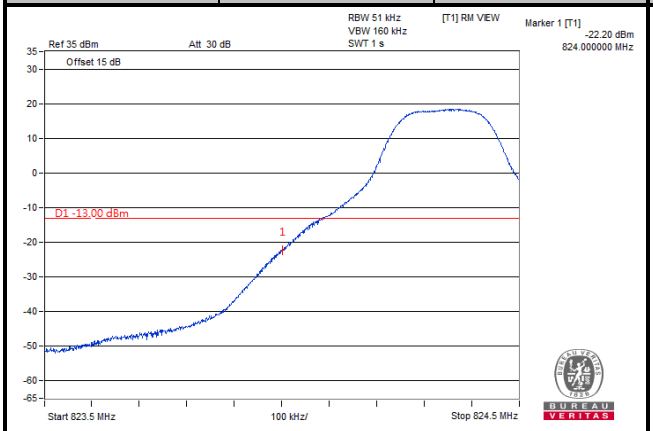
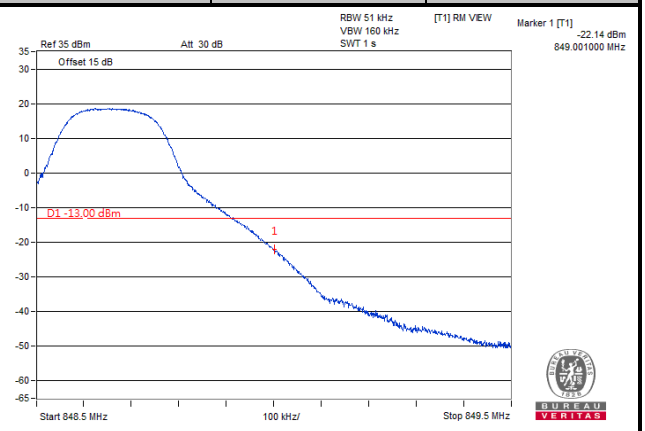
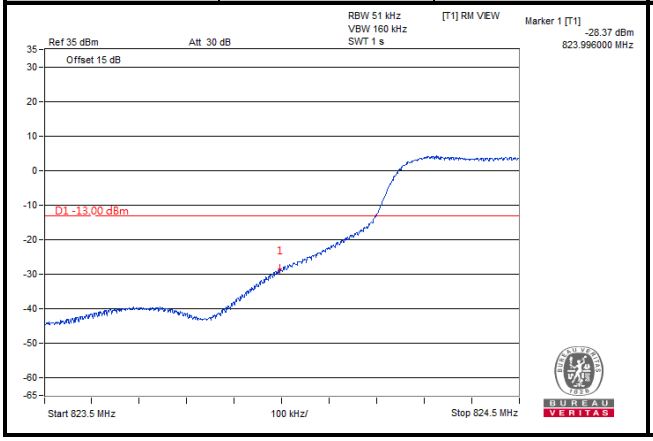
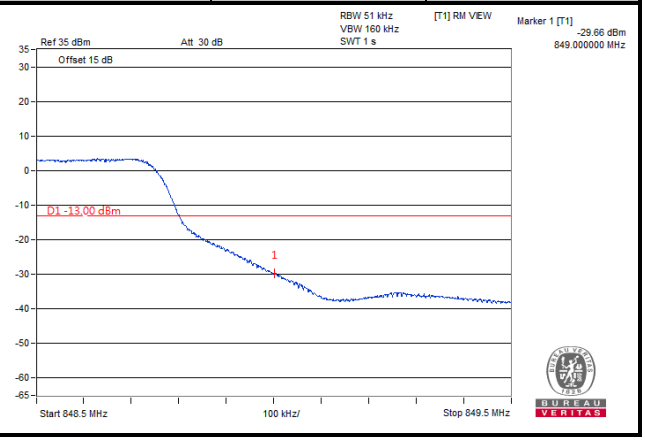
LTE Band 5					
Channel Bandwidth: 3 MHz					
Channel	20415	1 RB	Channel	20635	1 RB
					
Channel	20415	15 RB	Channel	20635	15 RB
					

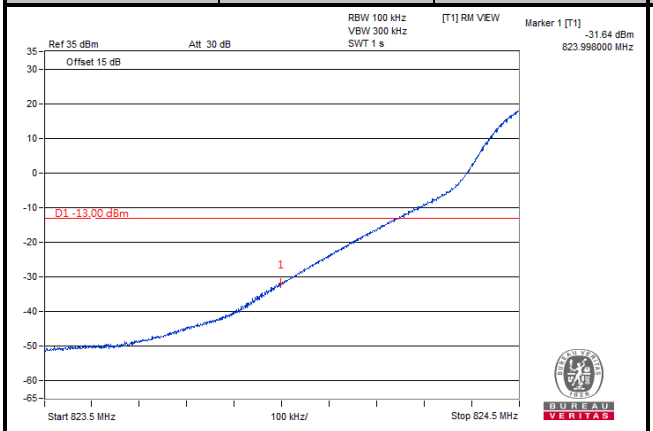
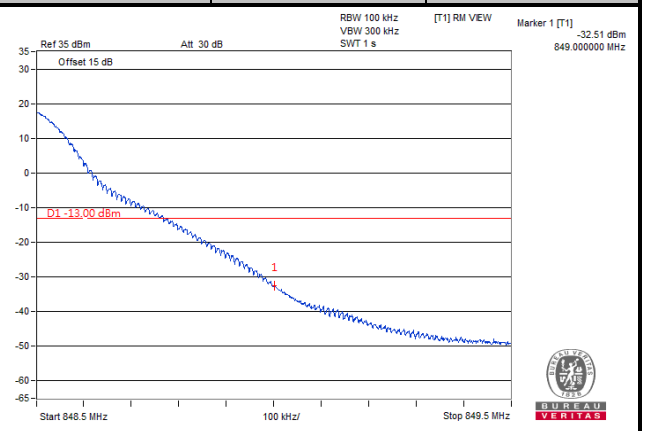
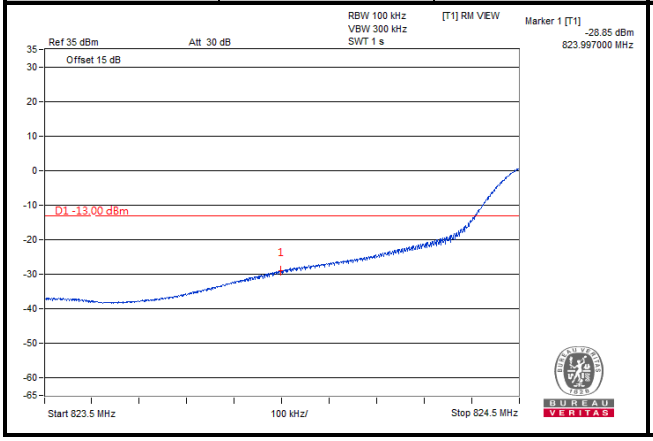
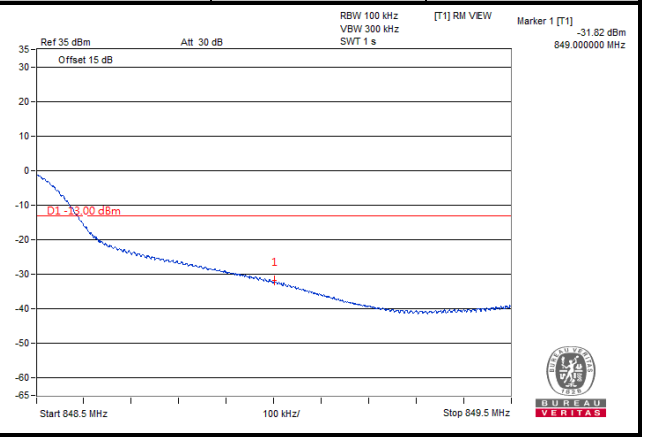
LTE Band 5					
Channel Bandwidth: 5 MHz					
Channel	20425	1 RB	Channel	20625	1 RB
					
Channel	20425	25 RB	Channel	20625	25 RB
					

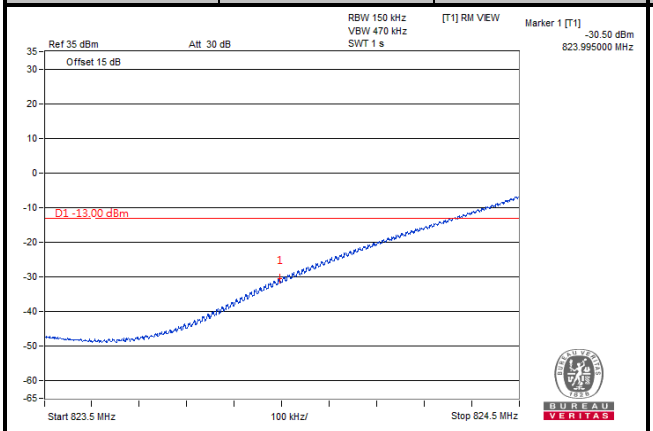
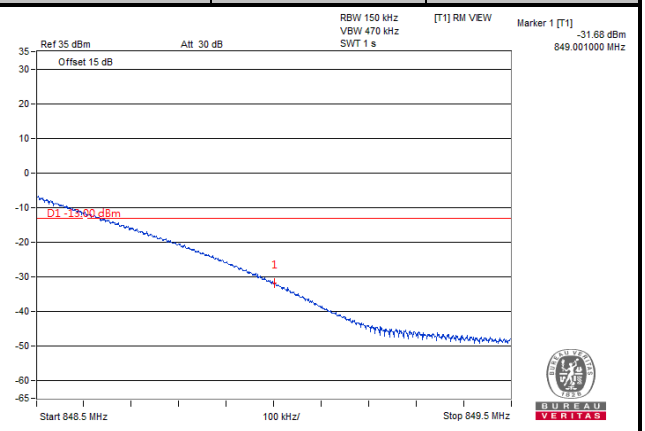
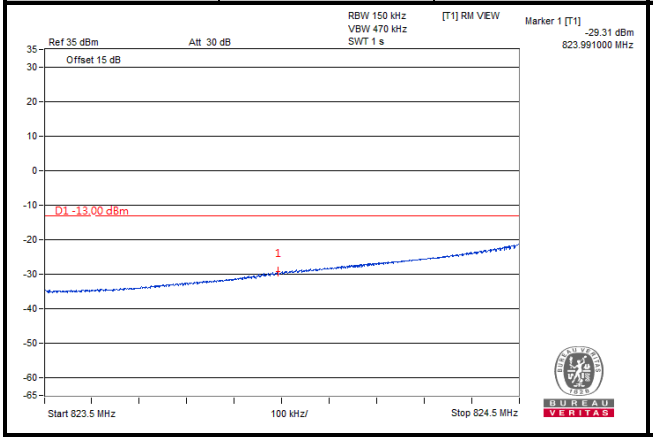
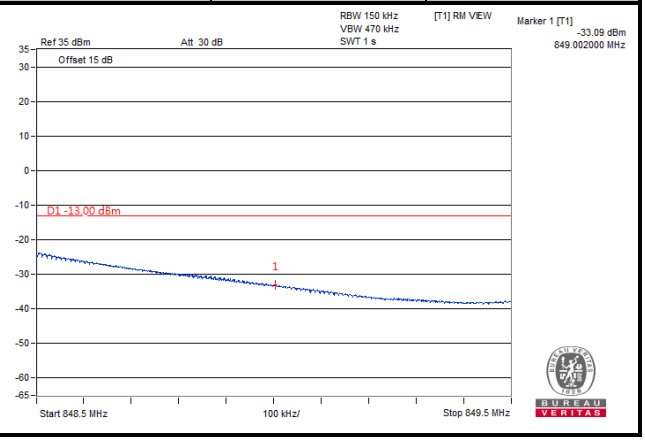
LTE Band 5					
Channel Bandwidth: 10 MHz					
Channel	20450	1 RB	Channel	20600	1 RB
					
Channel	20450	50 RB	Channel	20600	50 RB
					

LTE Band 26					
Channel Bandwidth: 1.4 MHz					
Channel	26797	1 RB	Channel	27033	1 RB
					
Channel	26797	6 RB	Channel	27033	6 RB
					

LTE Band 26					
Channel Bandwidth: 3 MHz					
Channel	26805	1 RB	Channel	27025	1 RB
					
Channel	26805	15 RB	Channel	27025	6 RB
					

LTE Band 26					
Channel Bandwidth: 5 MHz					
Channel	26815	1 RB	Channel	27015	1 RB
					
Channel	26815	25 RB	Channel	27015	25 RB
					

LTE Band 26					
Channel Bandwidth: 10 MHz					
Channel	26840	1 RB	Channel	26990	1 RB
					
Channel	26840	50 RB	Channel	26990	50 RB
					

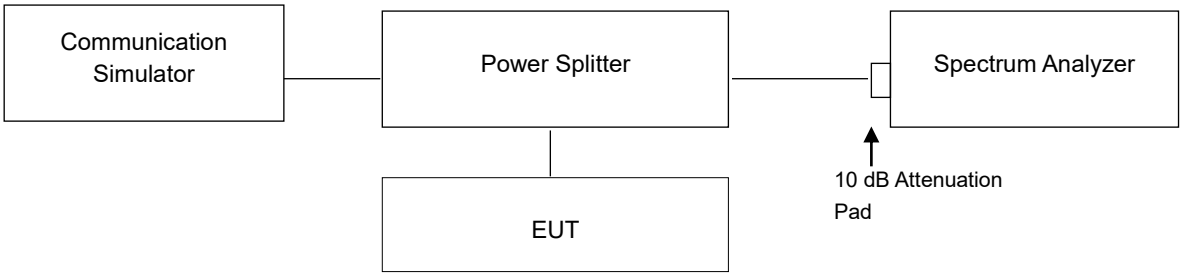
LTE Band 26					
Channel Bandwidth: 15 MHz					
Channel	26865	1 RB	Channel	26965	1 RB
					
Channel	26865	75 RB	Channel	26965	75 RB
					

4.6 Peak to Average Ratio

4.6.1 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.

4.6.2 Test Setup



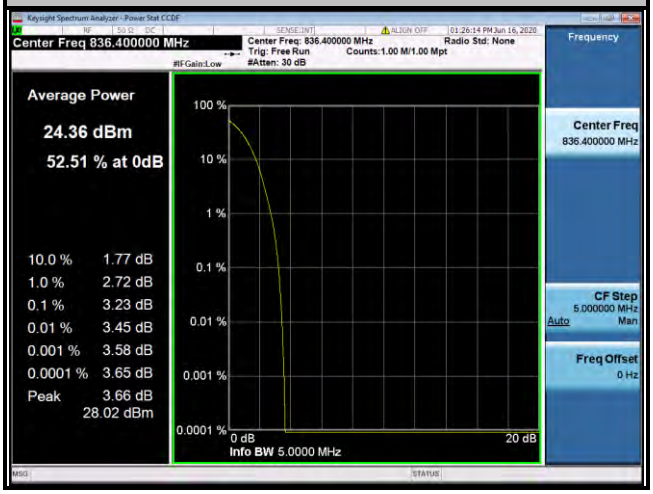
4.6.3 Test Procedures

1. Set resolution/measurement bandwidth ≥ 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 %.

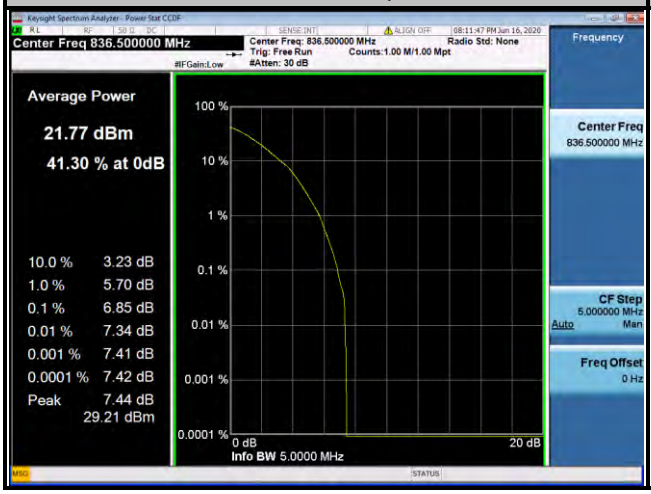
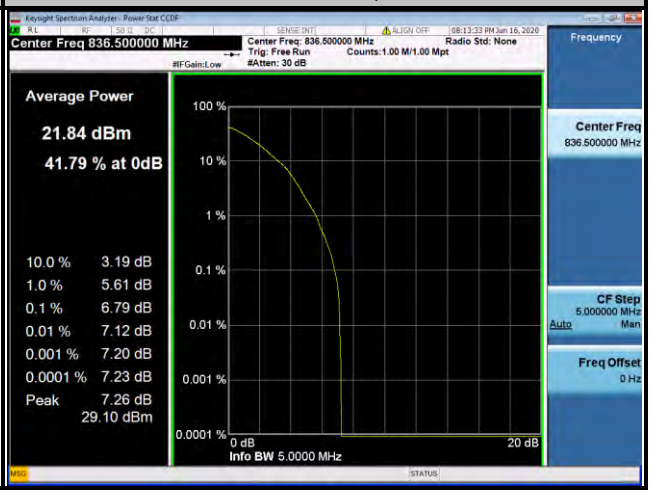
4.6.4 Test Results

Channel	Frequency (MHz)	Peak to Average Ratio (dB)
		WCDMA
4132	826.4	3.08
4182	836.4	3.23
4233	846.6	2.99

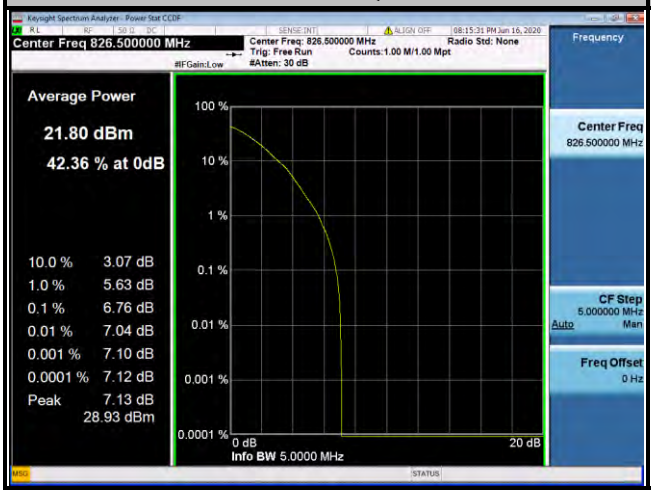
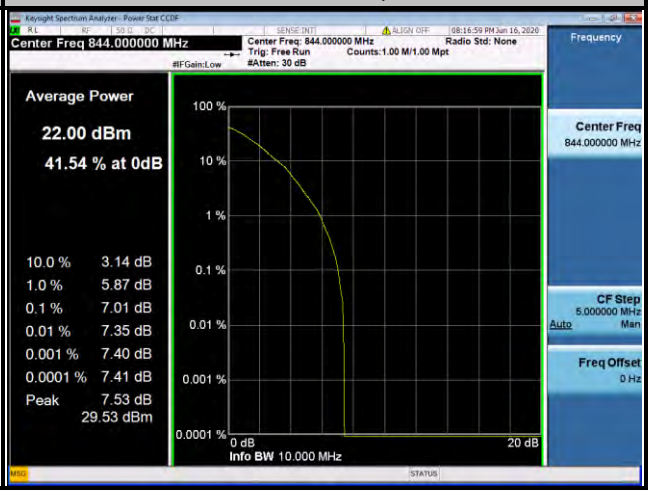
Spectrum Plot of Worst Value
WCDMA



LTE Band 5									
Channel Bandwidth: 1.4 MHz					Channel Bandwidth: 3 MHz				
Channel	Frequency (MHz)	Peak to Average Ratio (dB)			Channel	Frequency (MHz)	Peak to Average Ratio (dB)		
		QPSK	16QAM	64QAM			QPSK	16QAM	64QAM
20407	824.7	3.90	5.37	6.78	20415	825.5	3.70	5.22	6.77
20525	836.5	4.00	5.56	6.85	20525	836.5	3.79	5.34	6.79
20643	848.3	3.74	5.21	6.39	20635	847.5	3.27	4.66	6.03

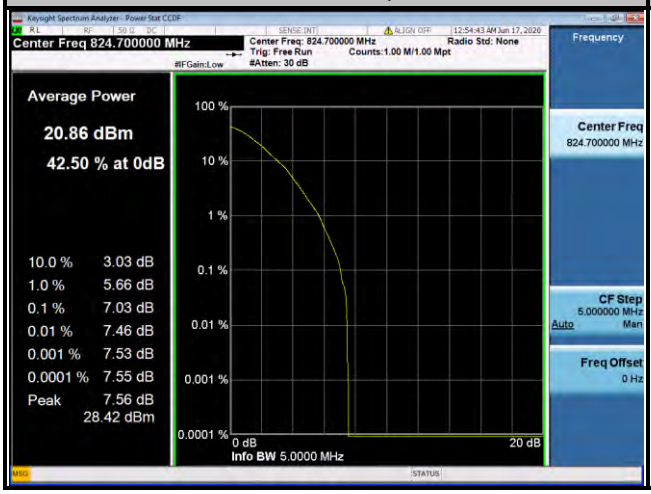
Spectrum Plot of Worst Value	
1.4 MHz / 64QAM	3 MHz / 64QAM
	

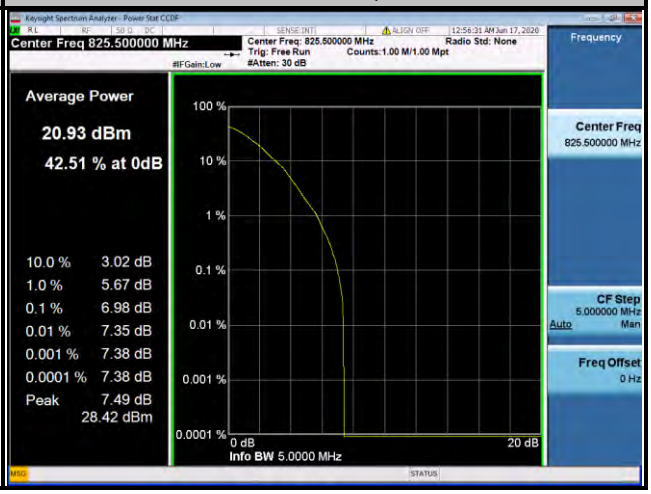
LTE Band 5									
Channel Bandwidth: 5 MHz					Channel Bandwidth: 10 MHz				
Channel	Frequency (MHz)	Peak to Average Ratio (dB)			Channel	Frequency (MHz)	Peak to Average Ratio (dB)		
		QPSK	16QAM	64QAM			QPSK	16QAM	64QAM
20425	826.5	3.72	5.24	6.76	20450	829.0	3.63	5.10	6.64
20525	836.5	3.68	5.18	6.59	20525	836.5	3.46	4.92	6.29
20625	846.5	3.28	4.65	6.07	20600	844.0	3.85	5.43	7.01

Spectrum Plot of Worst Value	
5 MHz / 64QAM	10 MHz / 64QAM
	

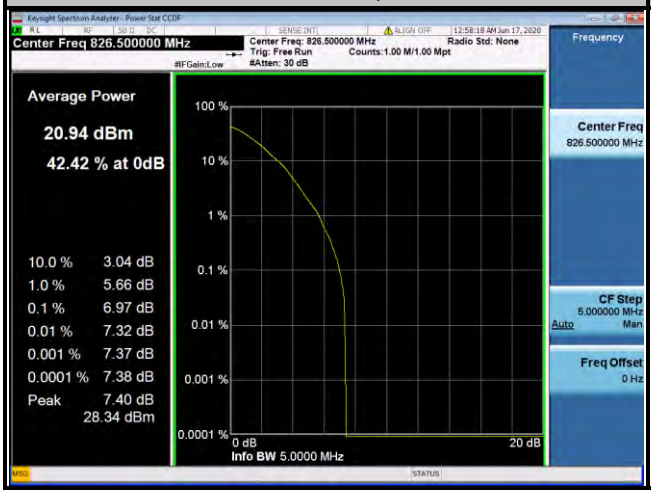
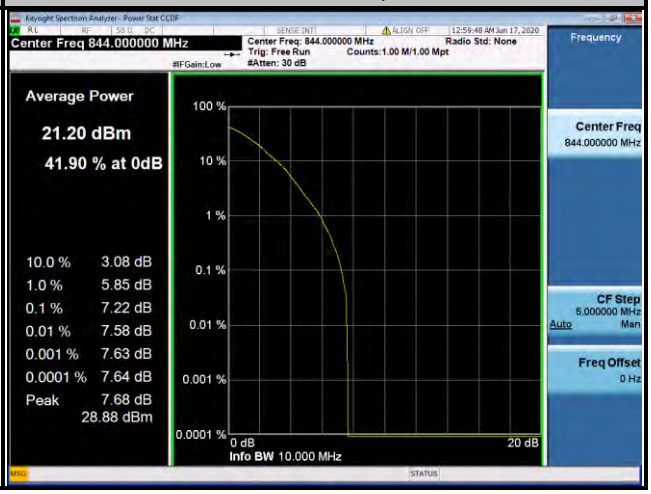
LTE Band 26									
Channel Bandwidth: 1.4 MHz					Channel Bandwidth: 3 MHz				
Channel	Frequency (MHz)	Peak to Average Ratio (dB)			Channel	Frequency (MHz)	Peak to Average Ratio (dB)		
		QPSK	16QAM	64QAM			QPSK	16QAM	64QAM
26797	824.7	4.01	5.63	7.03	26805	825.5	3.77	5.46	6.98
26915	836.5	4.11	5.73	6.98	26915	836.5	3.87	5.51	6.95
27033	848.3	3.95	5.46	6.77	27025	847.5	3.55	5.02	6.38

Spectrum Plot of Worst Value	
1.4 MHz / 64QAM	3 MHz / 64QAM



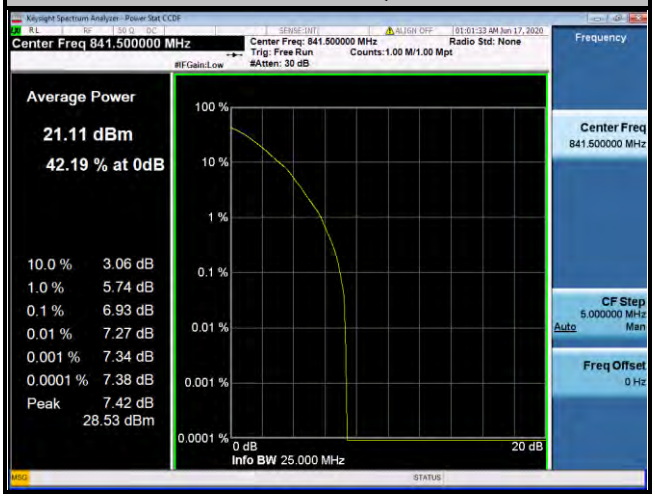


LTE Band 26									
Channel Bandwidth: 5 MHz					Channel Bandwidth: 10 MHz				
Channel	Frequency (MHz)	Peak to Average Ratio (dB)			Channel	Frequency (MHz)	Peak to Average Ratio (dB)		
		QPSK	16QAM	64QAM			QPSK	16QAM	64QAM
26815	826.5	3.80	5.53	6.97	26840	829.0	3.69	5.40	6.93
26915	836.5	3.82	5.39	6.79	26915	836.5	3.63	5.13	6.52
27015	846.5	3.56	4.95	6.34	26990	844.0	3.92	5.66	7.22

Spectrum Plot of Worst Value	
5 MHz / 64QAM	10 MHz / 64QAM
	

LTE Band 26				
Channel Bandwidth: 15 MHz				
Channel	Frequency (MHz)	Peak to Average Ratio (dB)		
		QPSK	16QAM	64QAM
26865	831.5	3.66	5.30	6.82
26915	836.5	3.48	4.93	6.33
26965	841.5	3.74	5.38	6.93

Spectrum Plot of Worst Value
15 MHz / 64QAM

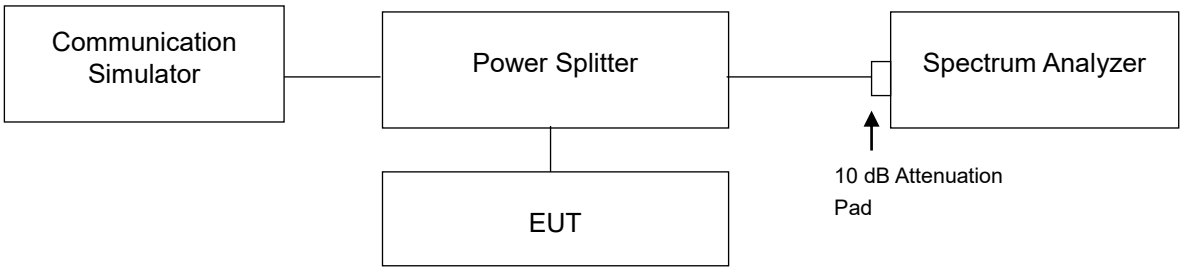


4.7 Conducted Spurious Emissions

4.7.1 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 -13 dBm.

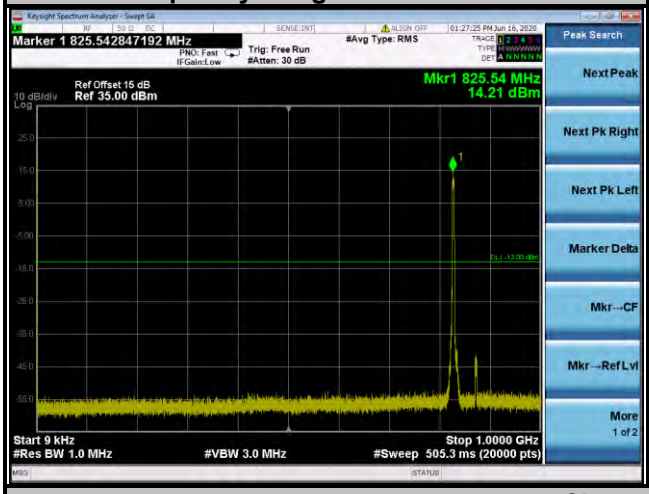
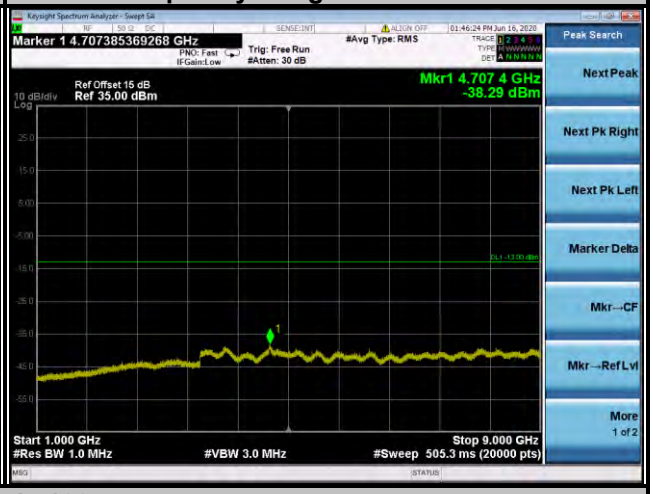
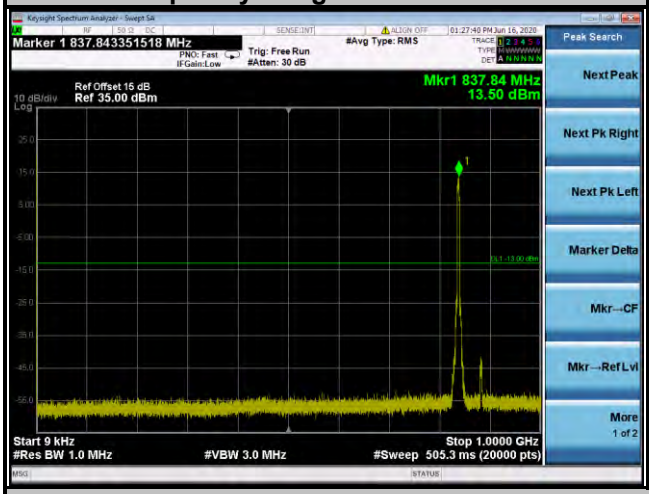
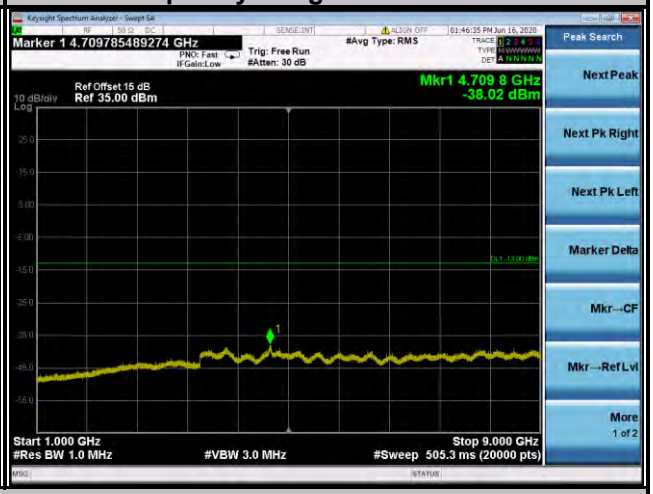
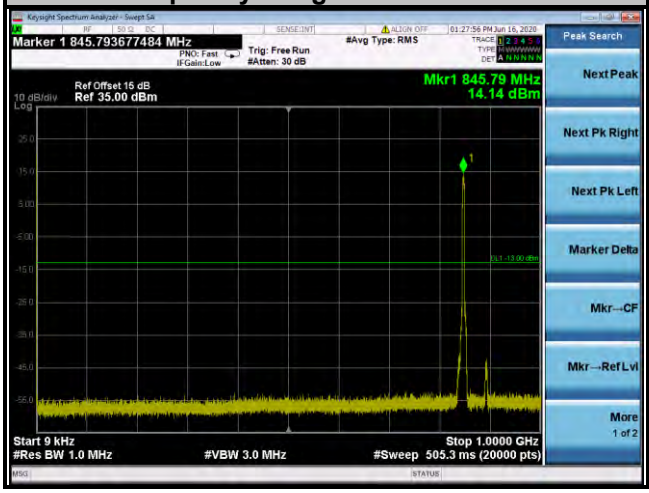
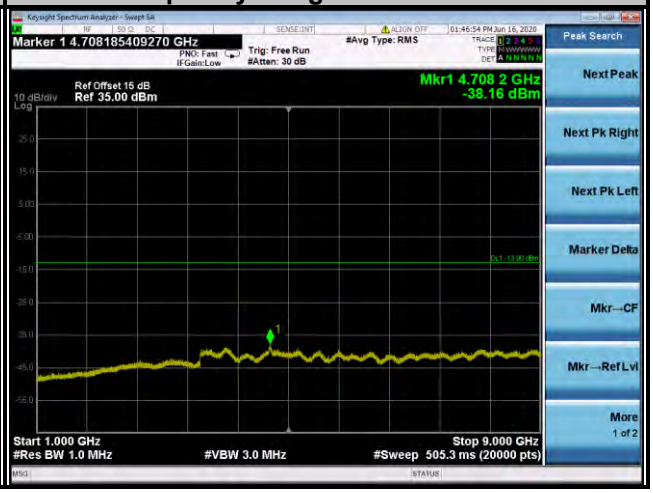
4.7.2 Test Setup



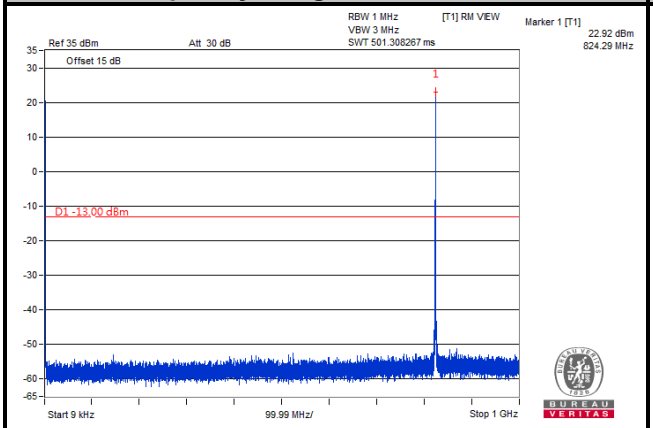
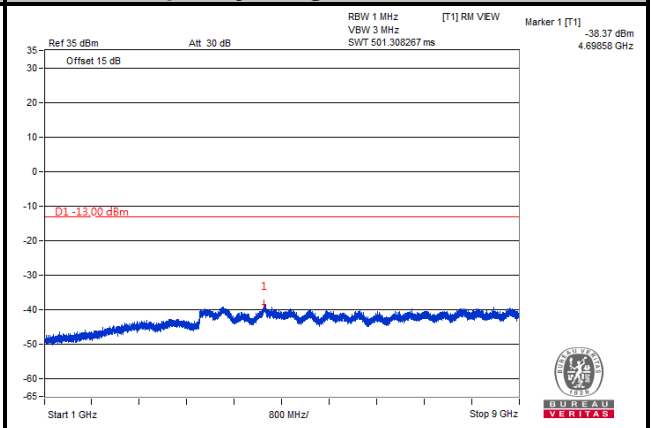
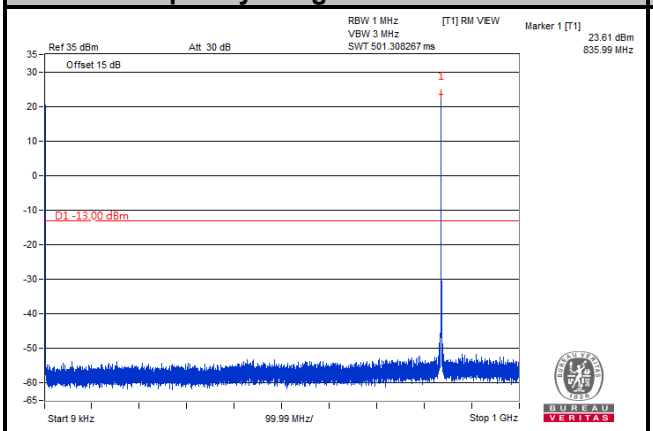
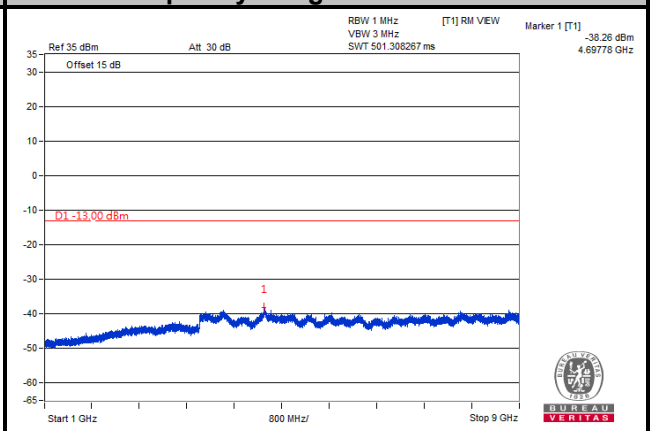
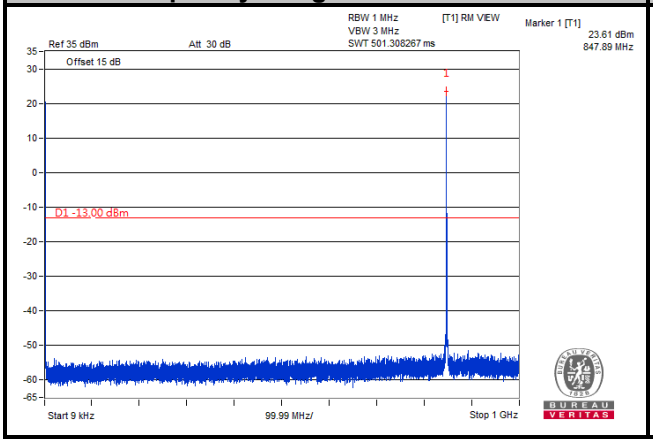
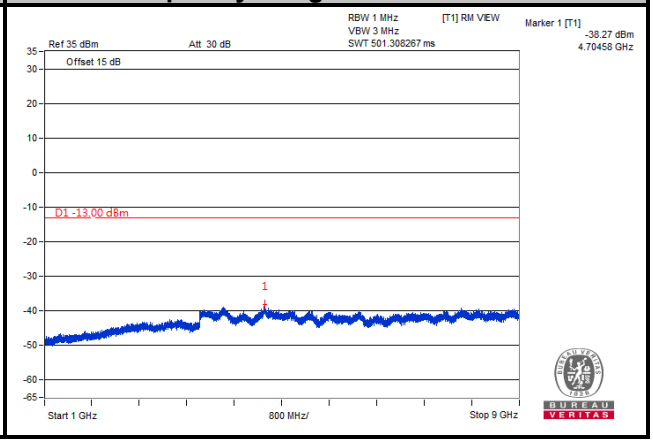
4.7.3 Test Procedure

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 9 kHz to 1 GHz. 10 dB attenuation pad is connected with spectrum. RBW = 1 MHz and VBW = 3 MHz is used for conducted emission measurement.
c. Measuring frequency range is from 1 GHz to 9 GHz. 10 dB attenuation pad is connected with spectrum. RBW = 1 MHz and VBW = 3 MHz is used for conducted emission measurement.

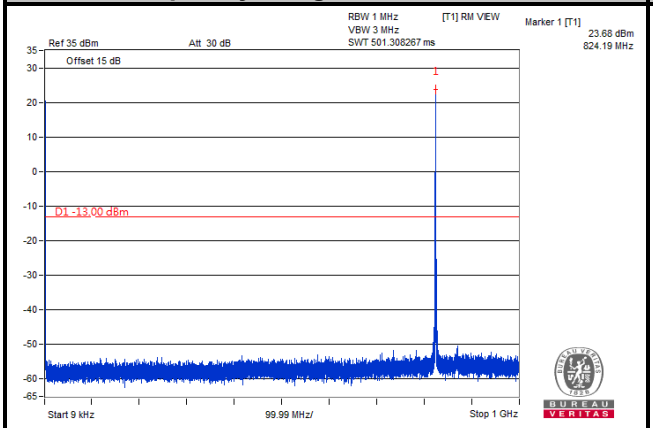
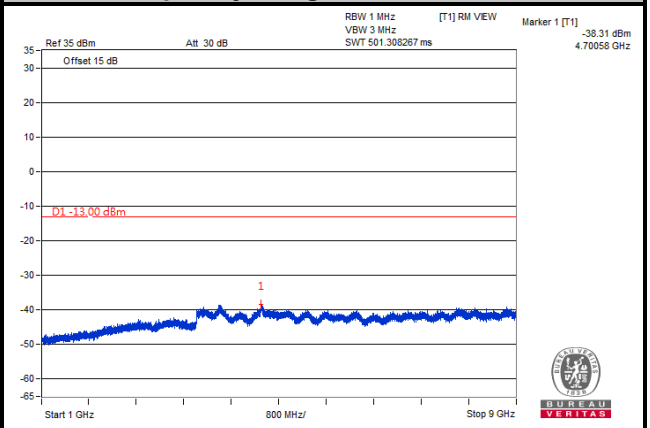
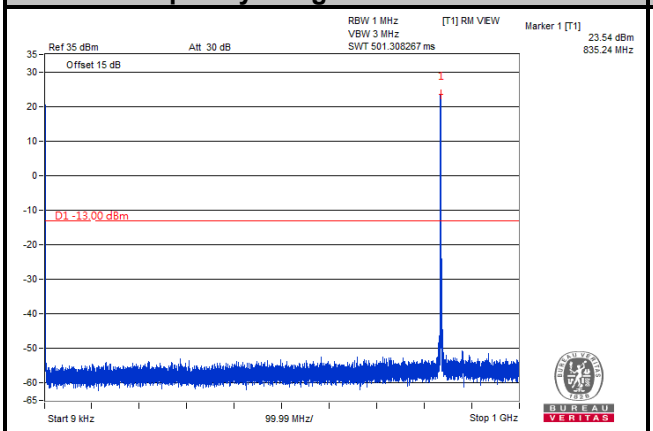
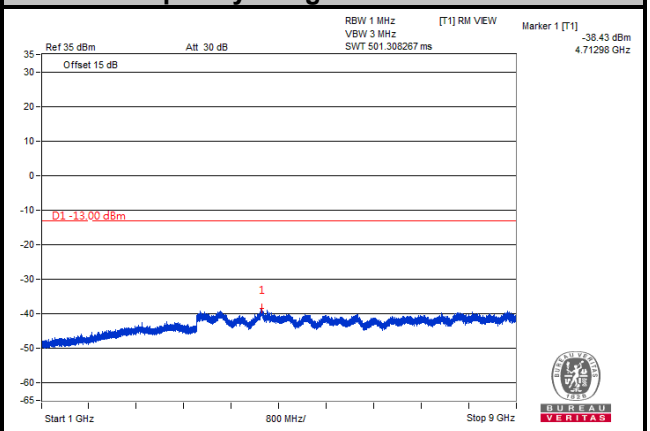
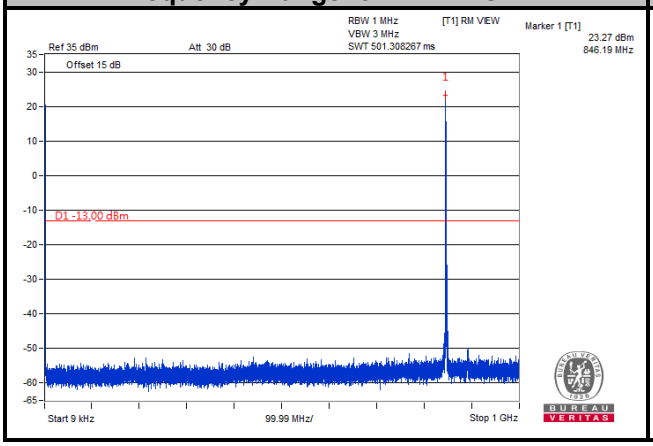
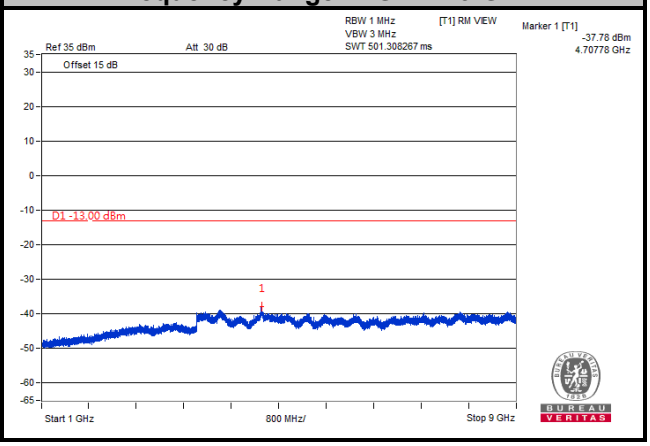
4.7.4 Test Results

WCDMA	
Channel 4132	
Frequency Range: 9 kHz ~ 1 GHz	Frequency Range: 1 GHz ~ 9 GHz
	
Channel 4182	
Frequency Range: 9 kHz ~ 1 GHz	Frequency Range: 1 GHz ~ 9 GHz
	
Channel 4233	
Frequency Range: 9 kHz ~ 1 GHz	Frequency Range: 1 GHz ~ 9 GHz
	

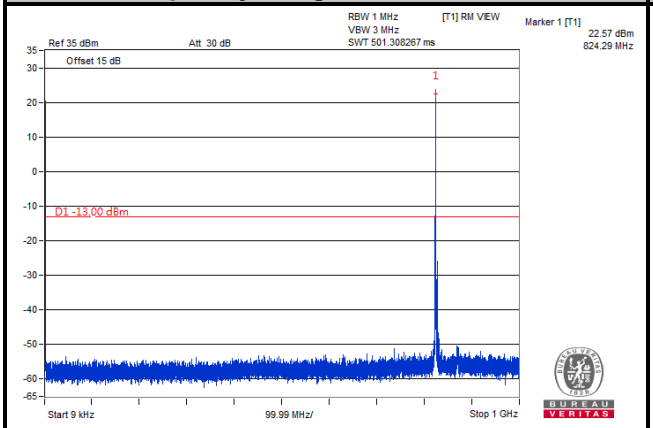
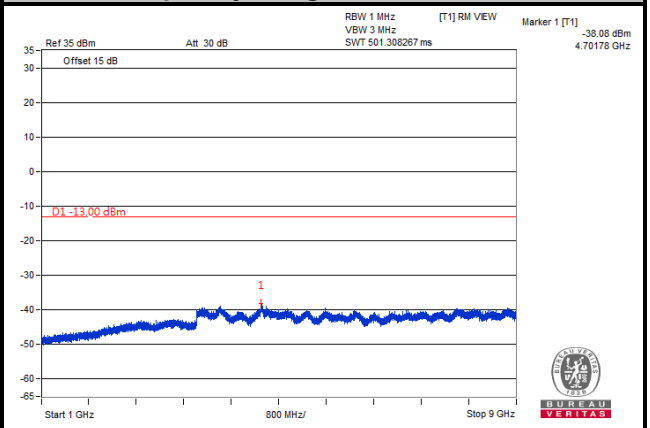
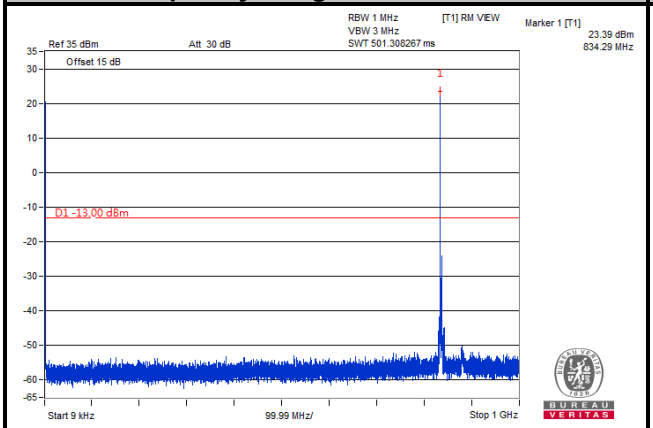
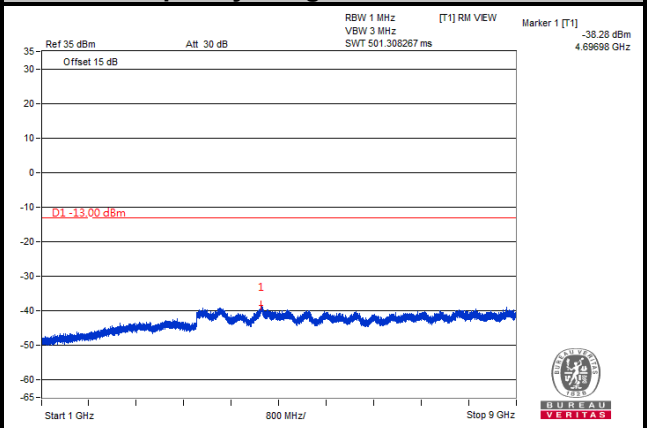
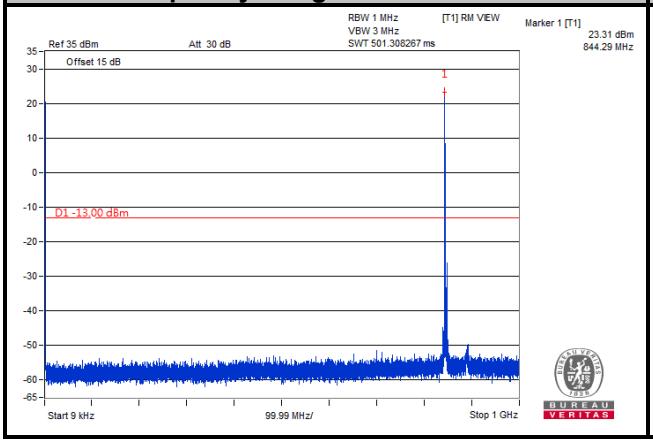
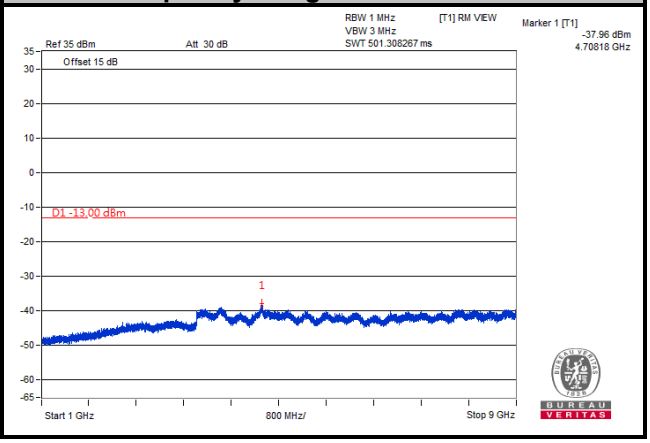
Note: The signal over the limit in 9 kHz is from spectrum analyzer.

LTE Band 5	
Channel Bandwidth: 1.4 MHz	
Channel 20407	
Frequency Range: 9 kHz ~ 1 GHz	Frequency Range: 1 GHz ~ 9 GHz
	
Channel 20525	
Frequency Range: 9 kHz ~ 1 GHz	Frequency Range: 1 GHz ~ 9 GHz
	
Channel 20643	
Frequency Range: 9 kHz ~ 1 GHz	Frequency Range: 1 GHz ~ 9 GHz
	

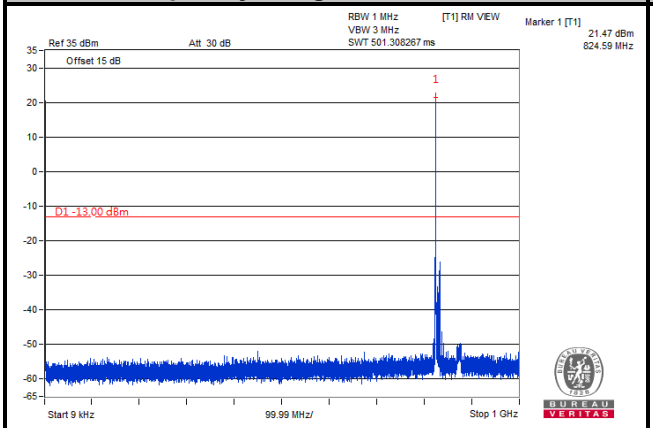
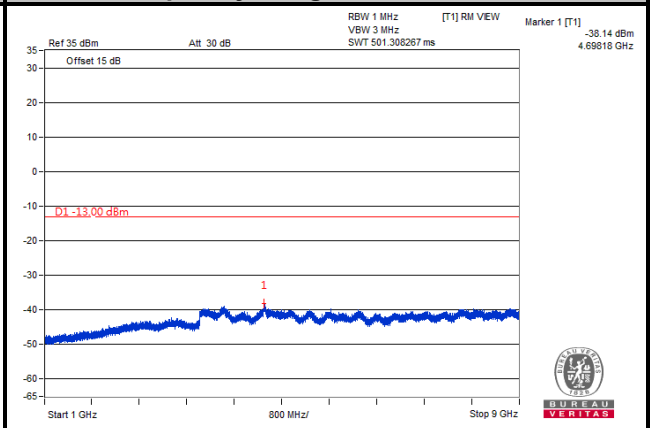
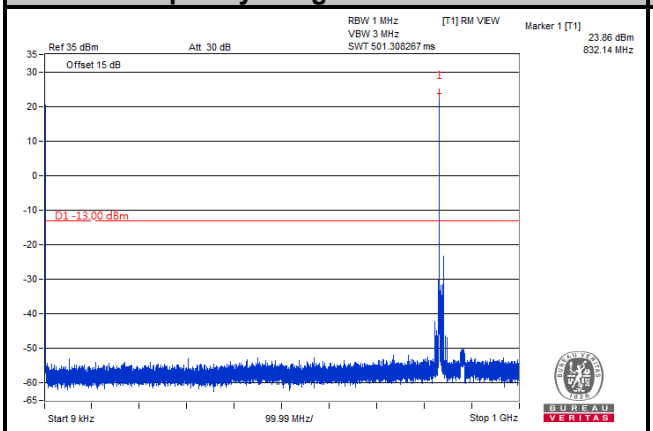
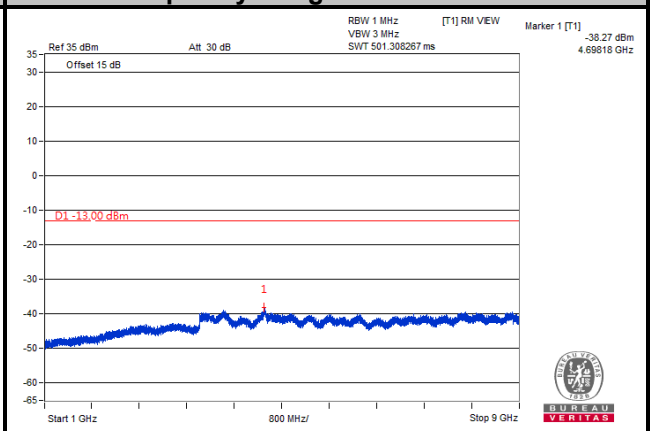
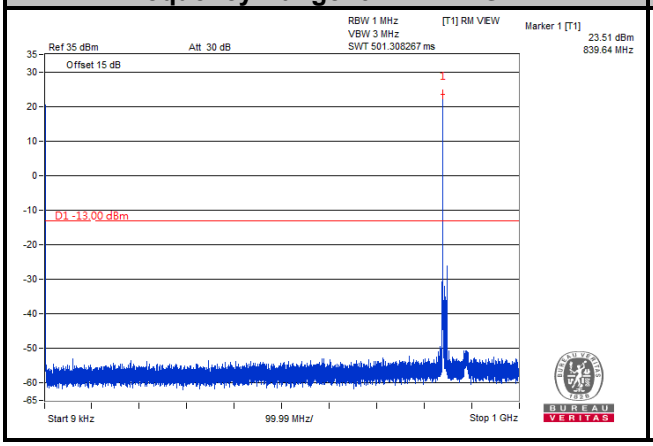
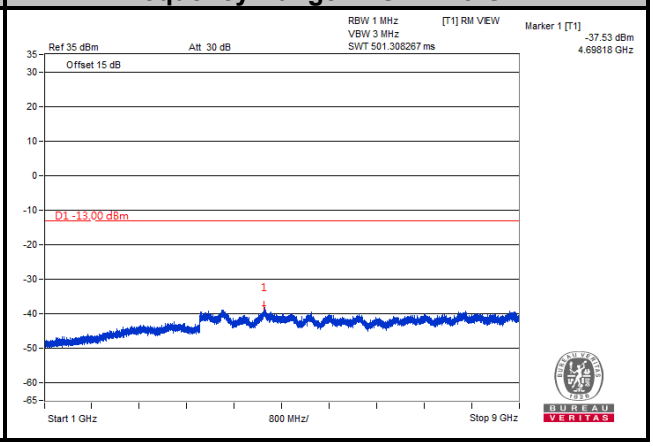
Note: The signal over the limit in 9 kHz is from spectrum analyzer.

LTE Band 5	
Channel Bandwidth: 3 MHz	
Channel 20415	
Frequency Range: 9 kHz ~ 1 GHz	Frequency Range: 1 GHz ~ 9 GHz
	
Channel 20525	
Frequency Range: 9 kHz ~ 1 GHz	Frequency Range: 1 GHz ~ 9 GHz
	
Channel 20635	
Frequency Range: 9 kHz ~ 1 GHz	Frequency Range: 1 GHz ~ 9 GHz
	

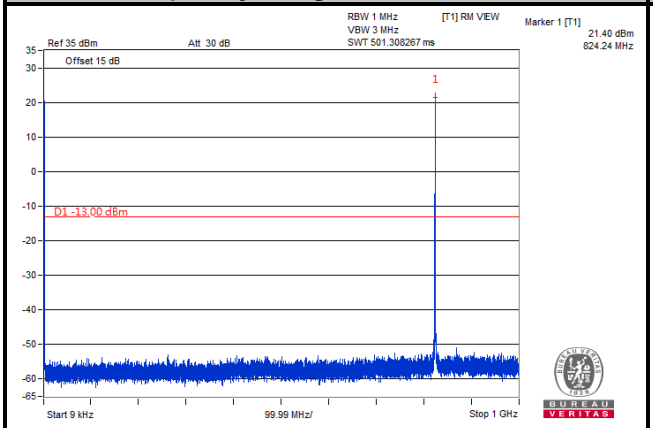
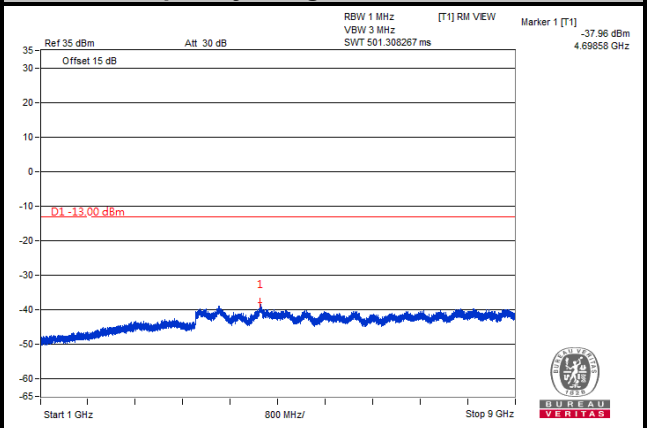
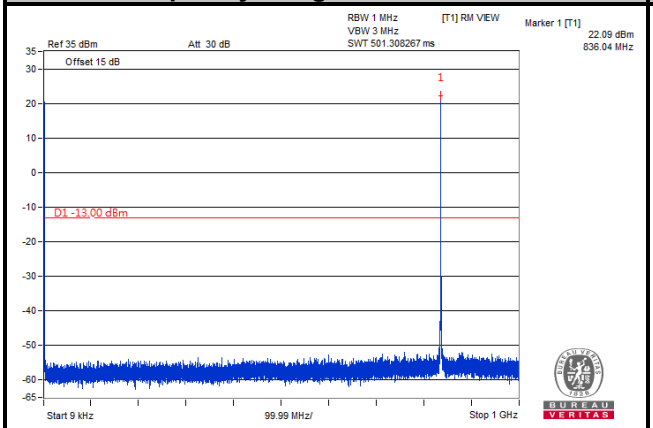
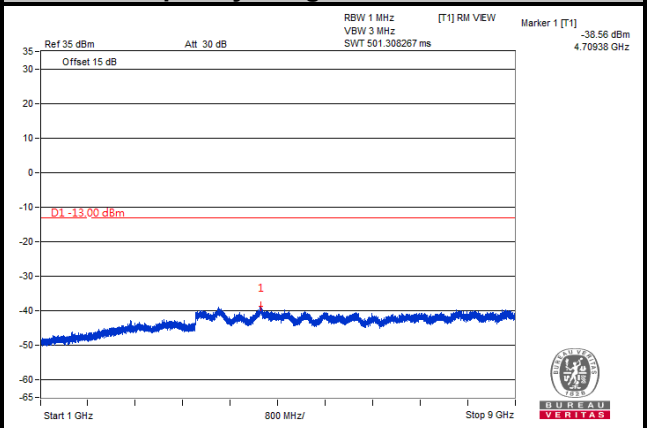
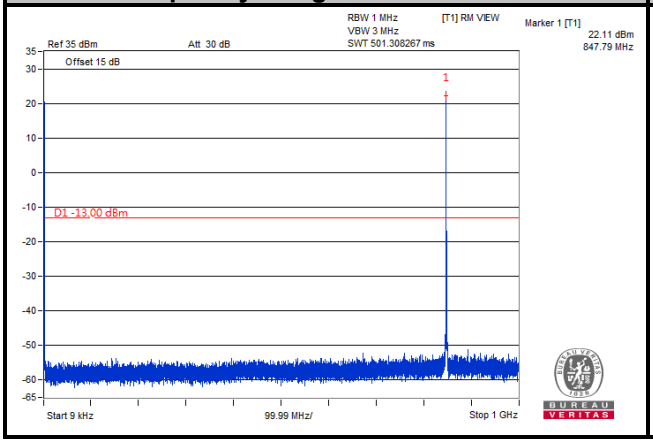
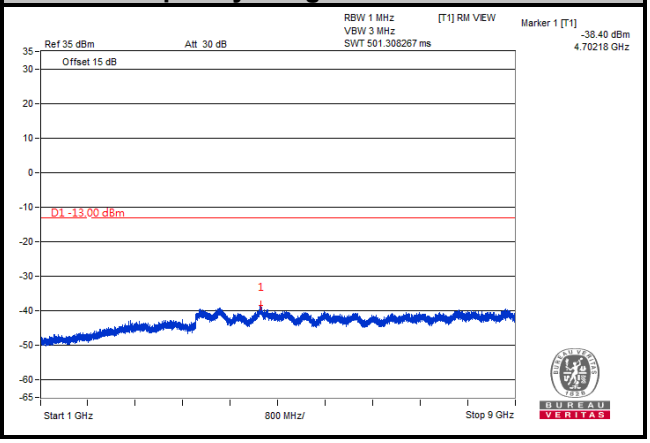
Note: The signal over the limit in 9 kHz is from spectrum analyzer.

LTE Band 5	
Channel Bandwidth: 5 MHz	
Channel 20425	
Frequency Range: 9 kHz ~ 1 GHz	Frequency Range: 1 GHz ~ 9 GHz
	
Channel 20525	
Frequency Range: 9 kHz ~ 1 GHz	Frequency Range: 1 GHz ~ 9 GHz
	
Channel 20625	
Frequency Range: 9 kHz ~ 1 GHz	Frequency Range: 1 GHz ~ 9 GHz
	

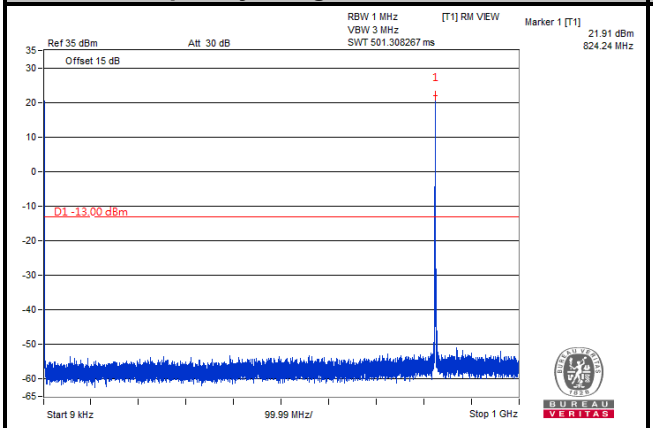
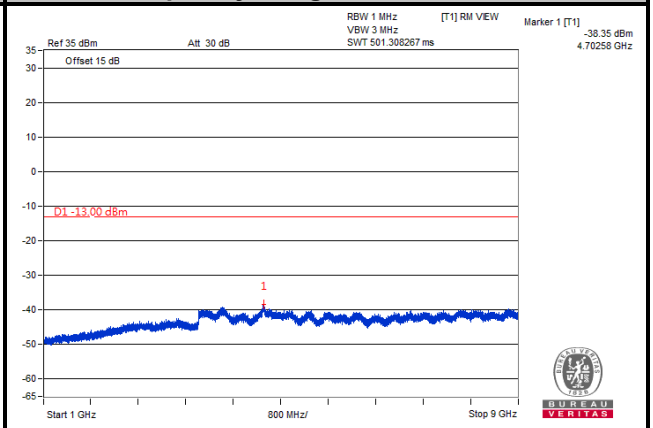
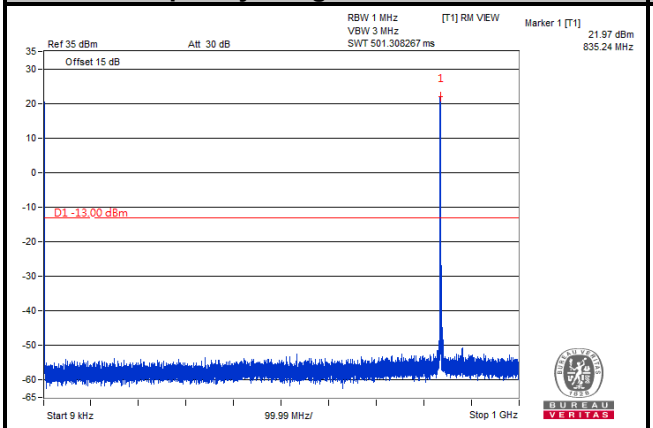
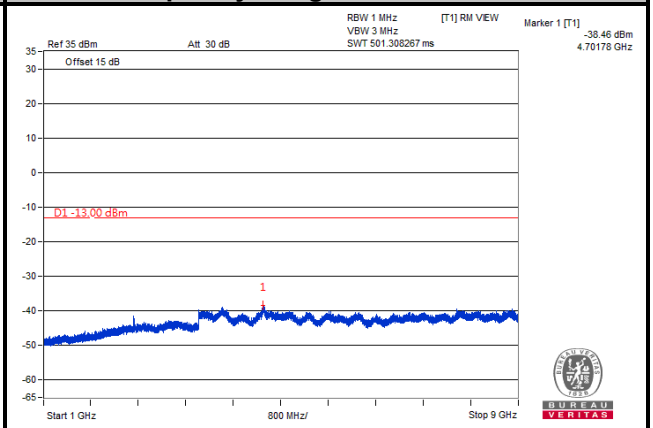
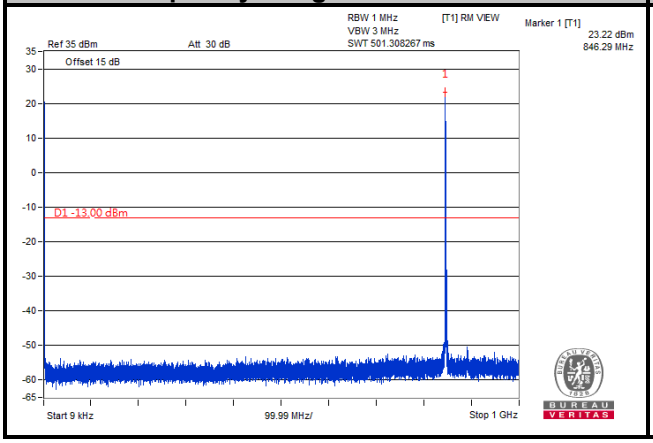
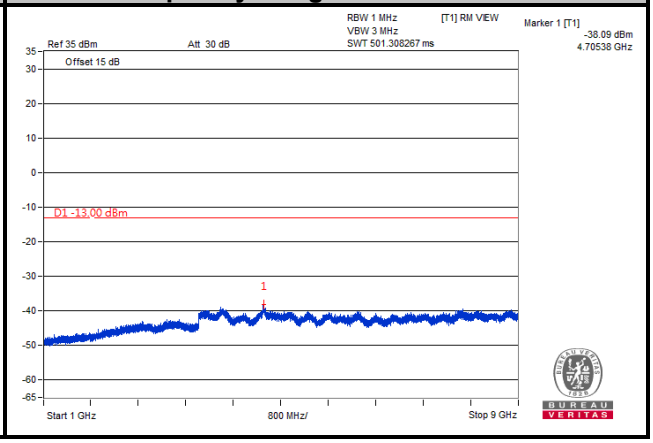
Note: The signal over the limit in 9 kHz is from spectrum analyzer.

LTE Band 5	
Channel Bandwidth: 10 MHz	
Channel 20450	
Frequency Range: 9 kHz ~ 1 GHz	Frequency Range: 1 GHz ~ 9 GHz
	
Channel 20525	
Frequency Range: 9 kHz ~ 1 GHz	Frequency Range: 1 GHz ~ 9 GHz
	
Channel 20600	
Frequency Range: 9 kHz ~ 1 GHz	Frequency Range: 1 GHz ~ 9 GHz
	

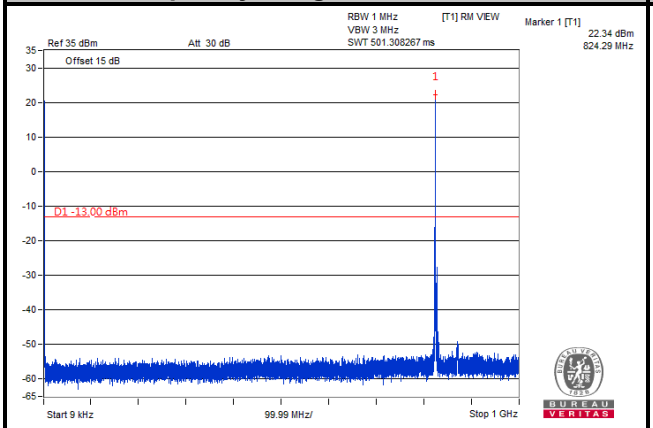
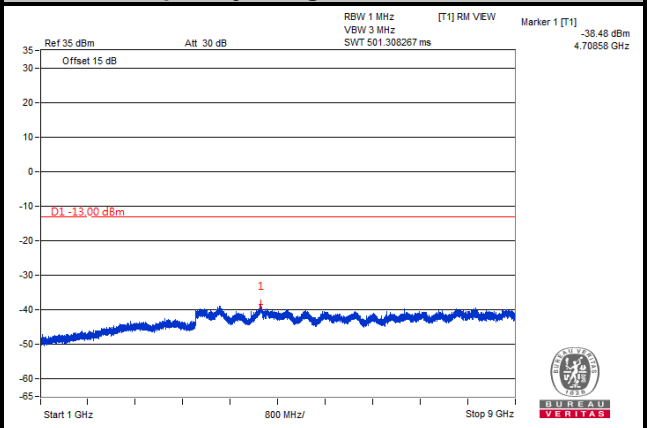
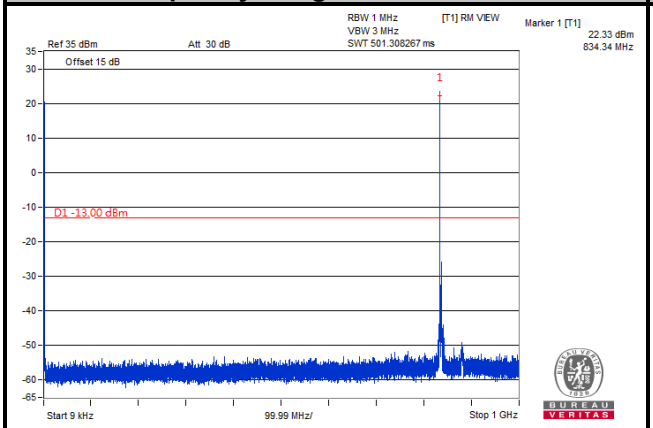
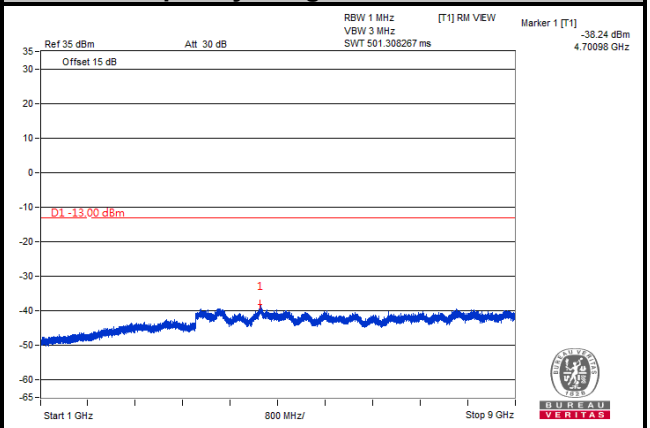
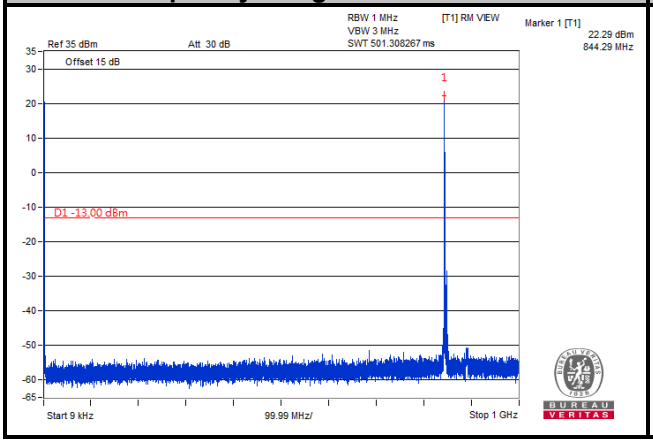
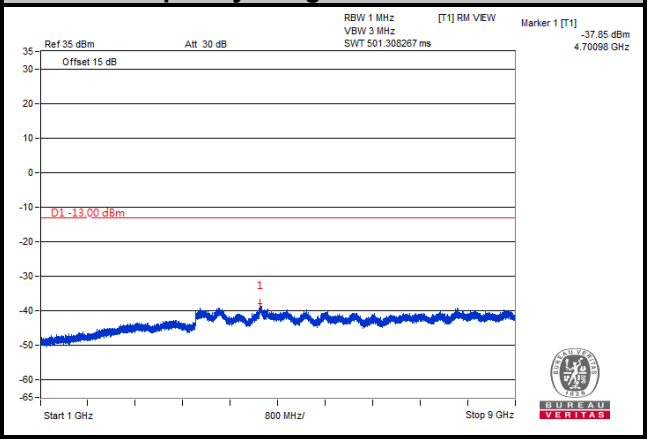
Note: The signal over the limit in 9 kHz is from spectrum analyzer.

LTE Band 26	
Channel Bandwidth: 1.4 MHz	
Channel 26797	
Frequency Range: 9 kHz ~ 1 GHz	Frequency Range: 1 GHz ~ 9 GHz
	
Channel 26915	
Frequency Range: 9 kHz ~ 1 GHz	Frequency Range: 1 GHz ~ 9 GHz
	
Channel 27033	
Frequency Range: 9 kHz ~ 1 GHz	Frequency Range: 1 GHz ~ 9 GHz
	

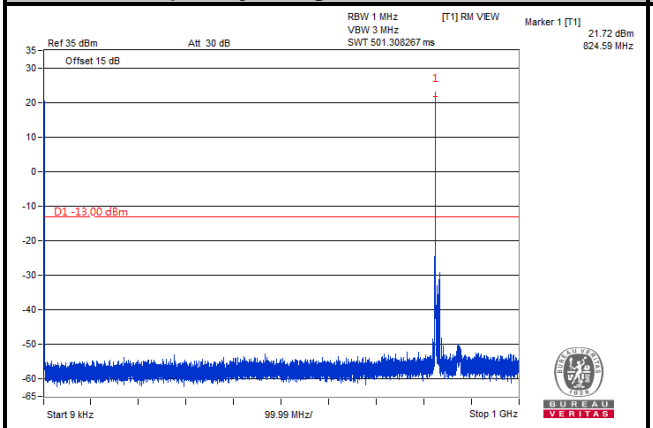
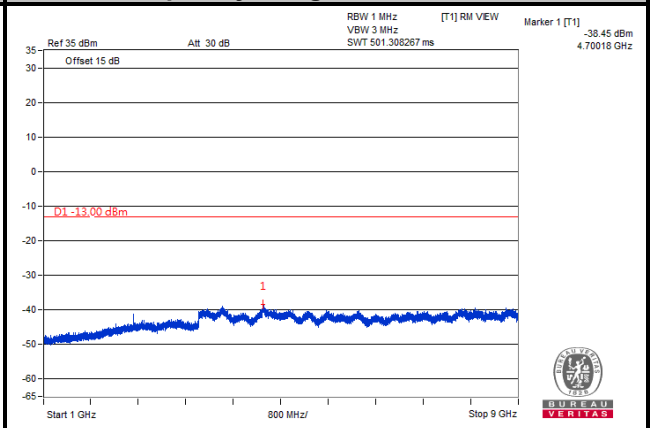
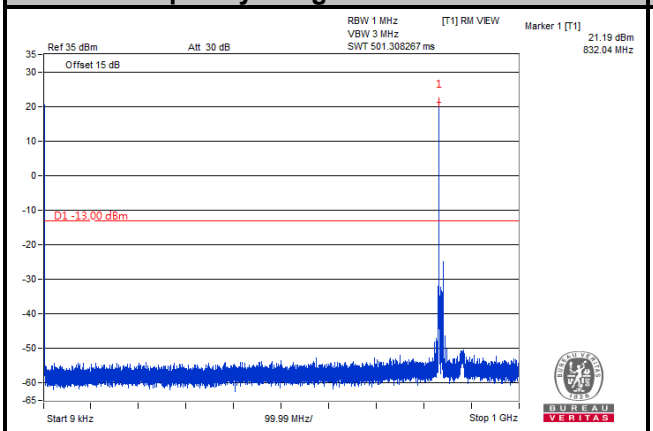
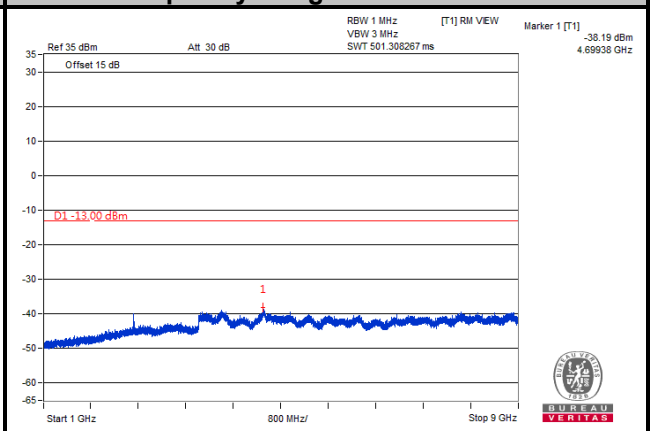
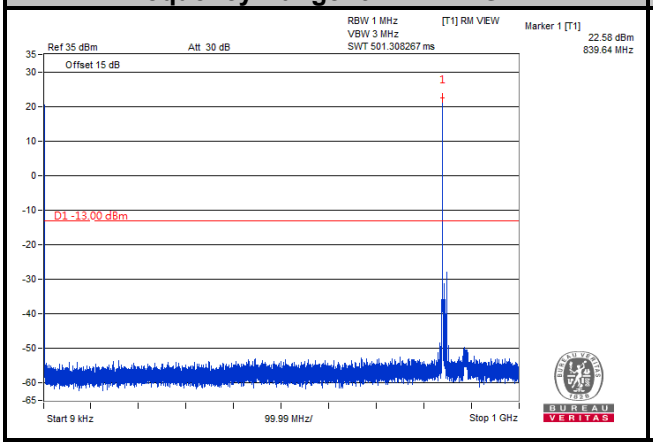
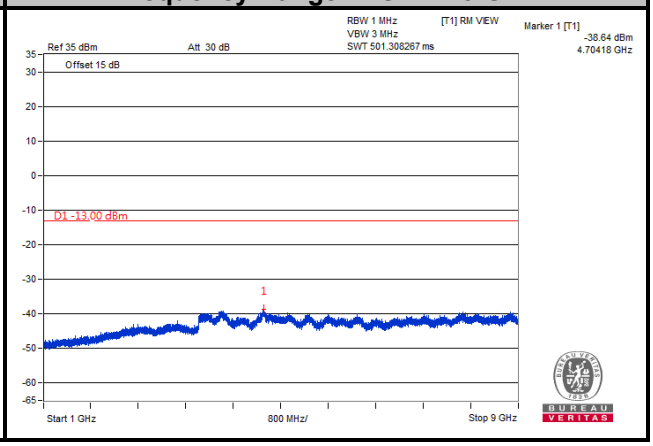
Note: The signal over the limit in 9 kHz is from spectrum analyzer.

LTE Band 26	
Channel Bandwidth: 3 MHz	
Channel 26805	
Frequency Range: 9 kHz ~ 1 GHz	Frequency Range: 1 GHz ~ 9 GHz
	
Channel 26915	
Frequency Range: 9 kHz ~ 1 GHz	Frequency Range: 1 GHz ~ 9 GHz
	
Channel 27025	
Frequency Range: 9 kHz ~ 1 GHz	Frequency Range: 1 GHz ~ 9 GHz
	

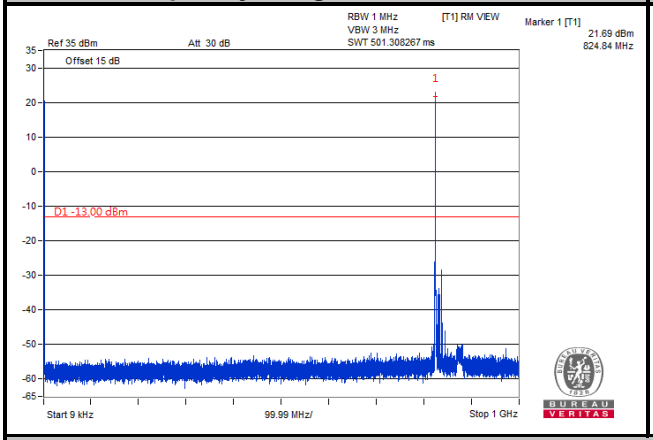
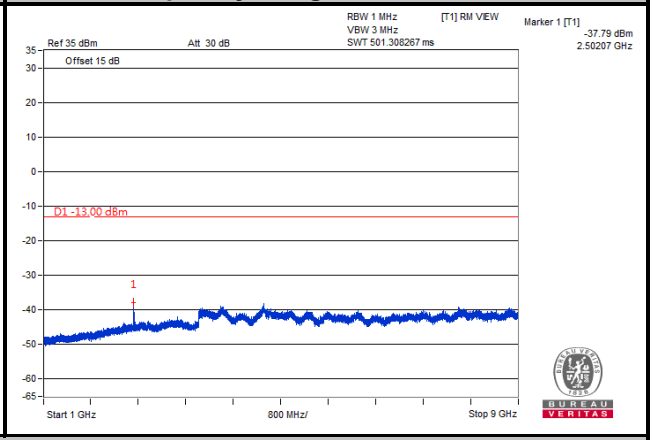
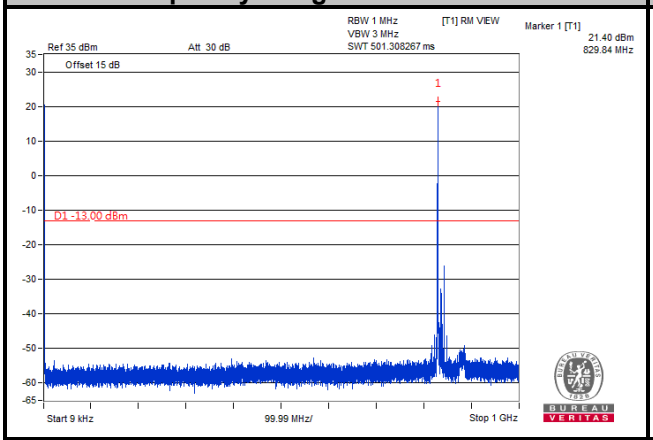
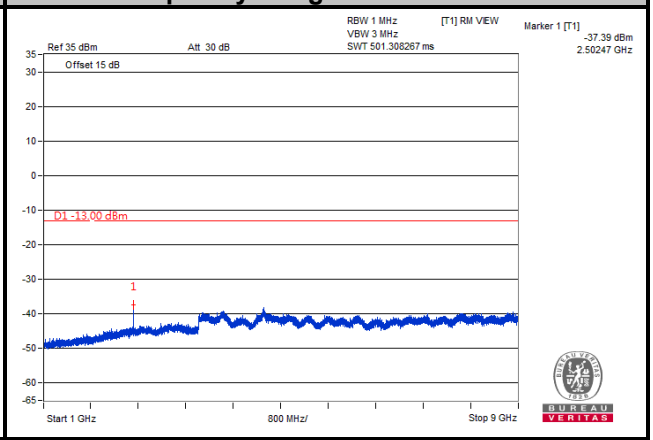
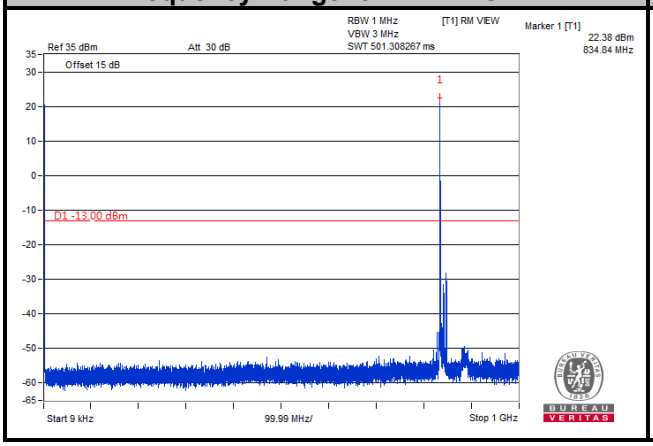
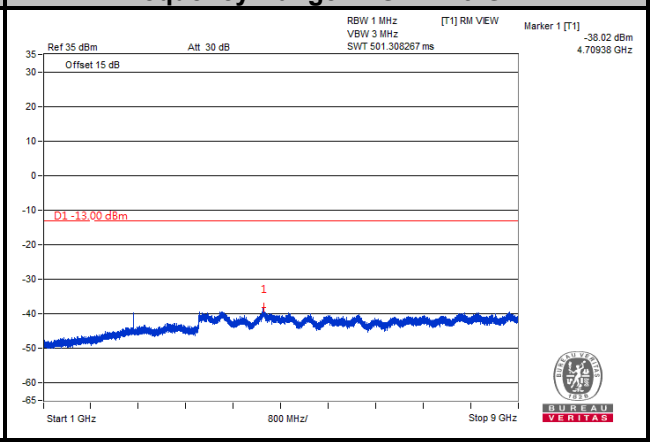
Note: The signal over the limit in 9 kHz is from spectrum analyzer.

LTE Band 26	
Channel Bandwidth: 5 MHz	
Channel 26815	
Frequency Range: 9 kHz ~ 1 GHz	Frequency Range: 1 GHz ~ 9 GHz
	
Channel 26915	
Frequency Range: 9 kHz ~ 1 GHz	Frequency Range: 1 GHz ~ 9 GHz
	
Channel 27015	
Frequency Range: 9 kHz ~ 1 GHz	Frequency Range: 1 GHz ~ 9 GHz
	

Note: The signal over the limit in 9 kHz is from spectrum analyzer.

LTE Band 26	
Channel Bandwidth: 10 MHz	
Channel 26840	
Frequency Range: 9 kHz ~ 1 GHz	Frequency Range: 1 GHz ~ 9 GHz
	
Channel 26915	
Frequency Range: 9 kHz ~ 1 GHz	Frequency Range: 1 GHz ~ 9 GHz
	
Channel 26990	
Frequency Range: 9 kHz ~ 1 GHz	Frequency Range: 1 GHz ~ 9 GHz
	

Note: The signal over the limit in 9 kHz is from spectrum analyzer.

LTE Band 26	
Channel Bandwidth: 15 MHz	
Channel 26865	
Frequency Range: 9 kHz ~ 1 GHz	Frequency Range: 1 GHz ~ 9 GHz
	
Channel 26915	
Frequency Range: 9 kHz ~ 1 GHz	Frequency Range: 1 GHz ~ 9 GHz
	
Channel 26965	
Frequency Range: 9 kHz ~ 1 GHz	Frequency Range: 1 GHz ~ 9 GHz
	

Note: The signal over the limit in 9 kHz is from spectrum analyzer.

4.8 Radiated Emission Measurement

4.8.1 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 is equal to -13 dBm.

4.8.2 Test Procedure

a. Substitution method is used for E.I.R.P measurement. In the semi-anechoic chamber, EUT placed on the 0.8 m (below or equal 1 GHz) and/or 1.5 m (above 1 GHz) 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 1 m to 4 m to find the maximum polar radiated power. The “Read Value” is the spectrum reading the maximum power value.
b. EIRP = Output power level of S.G – TX cable loss + Antenna gain of substitution horn.
c. E.R.P power can be calculated form E.I.R.P power by subtracting the gain of dipole, E.R.P power = E.I.R.P power - 2.15 dB.

NOTE:

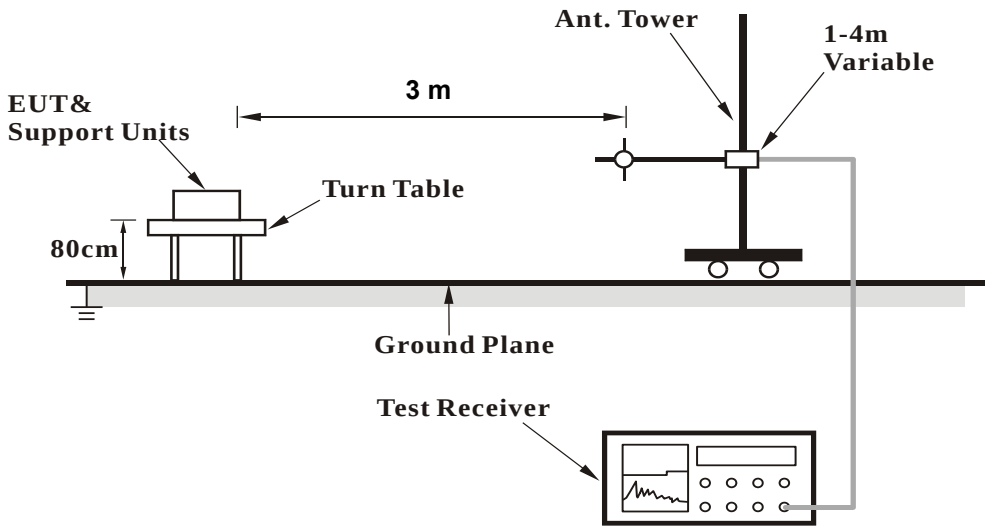
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 1 MHz/3 MHz.
2. The emission levels were against the limit of frequency range 9 kHz ~ 30 MHz:
   The amplitude of spurious emissions attenuated more than 20 dB below the permissible value is not required to be report.

4.8.3 Deviation from Test Standard

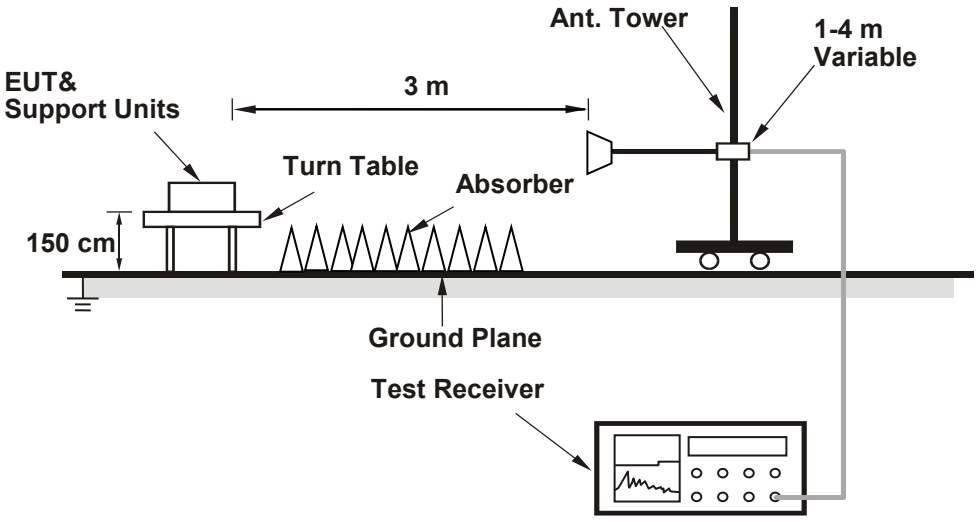
No deviation.

4.8.4 Test Setup

<Radiated Emission below or equal 1 GHz>



<Radiated Emission above 1 GHz>



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

4.8.5 Test Results

Below 1GHz

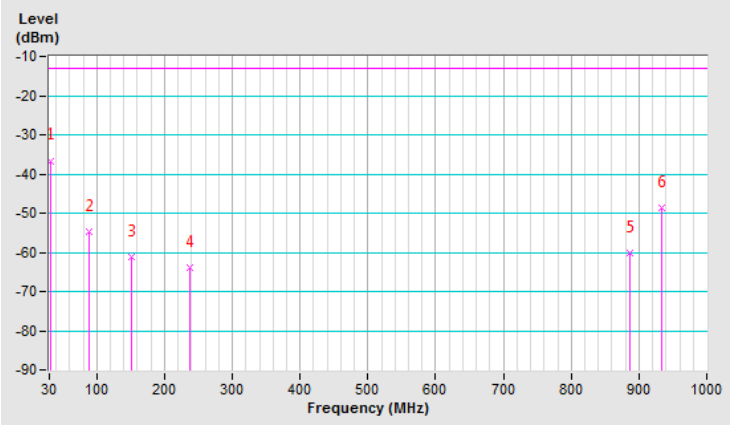
WCDMA Band 5

Mode	TX channel 4182 (836.4MHz)	Frequency Range	Below 1000 MHz
Environmental Conditions	25deg. C, 70%RH	Input Power	120Vac, 60Hz
Tested By	Luis Lee		

Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	**31.94**	**-38.10**	**-24.70**	**-11.90**	**-36.60**	**-13.00**	**-23.60**
2	88.20	-45.20	-55.40	0.60	-54.80	-13.00	-41.80
3	152.22	-54.80	-61.20	0.00	-61.20	-13.00	-48.20
4	237.58	-53.30	-69.30	5.40	-63.90	-13.00	-50.90
5	887.48	-64.80	-64.20	3.90	-60.30	-13.00	-47.30
6	934.04	-53.50	-52.50	3.90	-48.60	-13.00	-35.60

Remarks:

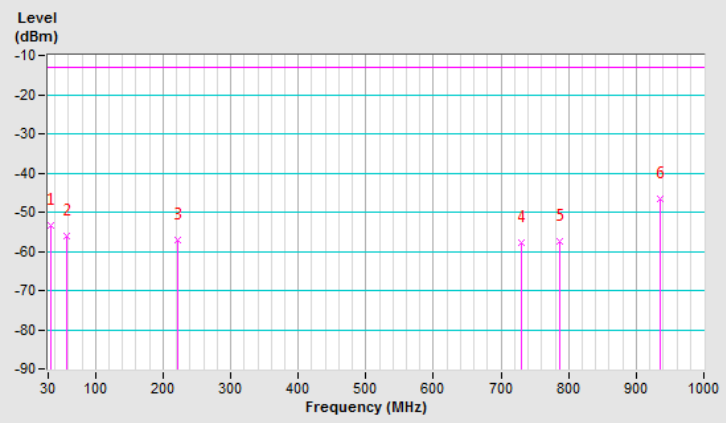
1. ERP (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) - Cable Loss (dB).



Mode	TX channel 4182 (836.4MHz)	Frequency Range	Below 1000 MHz
Environmental Conditions	25deg. C, 70%RH	Input Power	120Vac, 60Hz
Tested By	Luis Lee		

Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	33.88	-41.50	-41.60	-11.70	-53.30	-13.00	-40.30
2	57.16	-46.90	-48.00	-8.20	-56.20	-13.00	-43.20
3	222.06	-54.10	-62.50	5.40	-57.10	-13.00	-44.10
4	730.34	-61.20	-62.60	4.90	-57.70	-13.00	-44.70
5	786.60	-61.50	-61.60	4.20	-57.40	-13.00	-44.40
6	935.98	-53.00	-50.40	3.90	-46.50	-13.00	-33.50

Remarks:
1. ERP (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) - Cable Loss (dB).

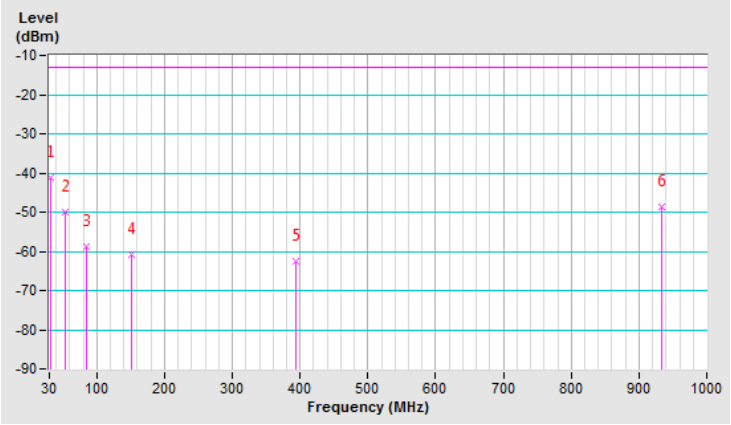


LTE Band 5, Channel Bandwidth: 5MHz

Mode	TX channel 20625 (846.5MHz)	Frequency Range	Below 1000 MHz
Environmental Conditions	25deg. C, 70%RH	Input Power	120Vac, 60Hz
Tested By	Luis Lee		

Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	31.94	-42.80	-29.40	-11.90	-41.30	-13.00	-28.30
2	53.28	-46.10	-41.40	-8.50	-49.90	-13.00	-36.90
3	84.32	-50.20	-58.30	-0.50	-58.80	-13.00	-45.80
4	150.28	-54.10	-60.90	-0.10	-61.00	-13.00	-48.00
5	392.78	-59.60	-67.90	5.20	-62.70	-13.00	-49.70
6	934.04	-53.80	-52.70	3.90	-48.80	-13.00	-35.80

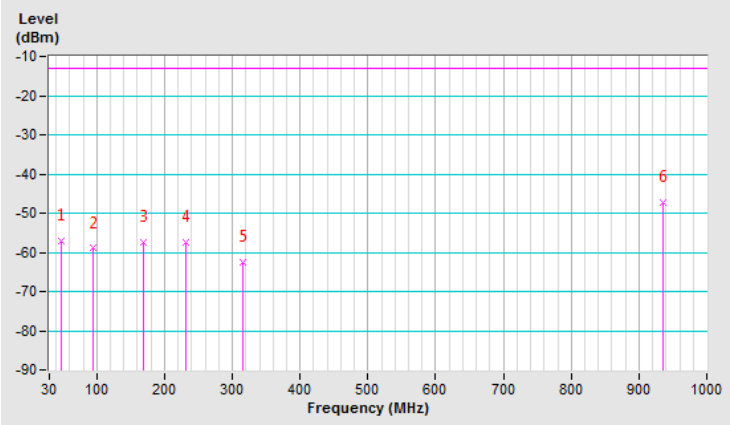
Remarks:
1. ERP (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) - Cable Loss (dB).



Mode	TX channel 20625 (846.5MHz)	Frequency Range	Below 1000 MHz
Environmental Conditions	25deg. C, 70%RH	Input Power	120Vac, 60Hz
Tested By	Luis Lee		

Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	47.46	-49.10	-47.50	-9.70	-57.20	-13.00	-44.20
2	94.02	-51.50	-60.00	1.00	-59.00	-13.00	-46.00
3	169.68	-55.80	-59.20	1.60	-57.60	-13.00	-44.60
4	231.76	-54.80	-62.80	5.40	-57.40	-13.00	-44.40
5	315.18	-59.60	-67.70	5.20	-62.50	-13.00	-49.50
6	935.98	-53.80	-51.10	3.90	-47.20	-13.00	-34.20

Remarks:
1. ERP (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) - Cable Loss (dB).

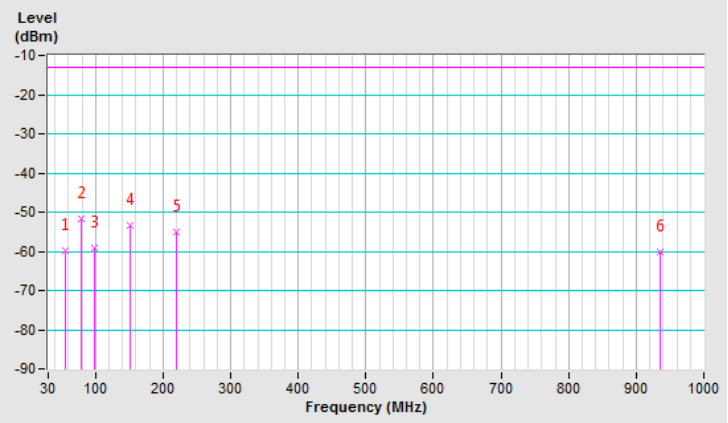


LTE Band 26, Channel Bandwidth 15MHz

Mode	TX channel 26965 (841.5MHz)	Frequency Range	Below 1000 MHz
Environmental Conditions	25deg. C, 70%RH	Input Power	120Vac, 60Hz
Tested By	Luis Lee		

Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	55.22	-55.40	-51.00	-8.70	-59.70	-13.00	-46.70
2	78.50	-43.90	-49.60	-2.20	-51.80	-13.00	-38.80
3	97.90	-49.60	-60.20	1.00	-59.20	-13.00	-46.20
4	152.22	-47.00	-53.40	0.00	-53.40	-13.00	-40.40
5	220.12	-45.20	-60.50	5.40	-55.10	-13.00	-42.10
6	935.98	-65.00	-64.00	3.90	-60.10	-13.00	-47.10

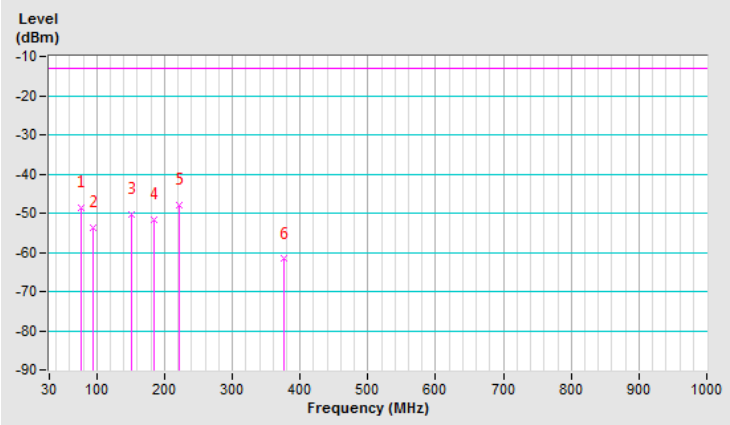
Remarks:
1. ERP (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) - Cable Loss (dB).



Mode	TX channel 26965 (841.5MHz)	Frequency Range	Below 1000 MHz
Environmental Conditions	25deg. C, 70%RH	Input Power	120Vac, 60Hz
Tested By	Luis Lee		

Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	76.56	-42.00	-45.70	-2.80	-48.50	-13.00	-35.50
2	94.02	-46.30	-54.80	1.00	-53.80	-13.00	-40.80
3	152.22	-47.00	-50.50	0.00	-50.50	-13.00	-37.50
4	185.20	-47.60	-55.20	3.60	-51.60	-13.00	-38.60
5	222.06	-45.10	-53.50	5.40	-48.10	-13.00	-35.10
6	375.32	-58.20	-67.00	5.30	-61.70	-13.00	-48.70

Remarks:
1. ERP (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) - Cable Loss (dB).



Above 1GHz

WCDMA Band 5

Mode	TX channel 4132 (826.4MHz)	Frequency Range	1GHz ~ 10GHz
Environmental Conditions	23deg. C, 66%RH	Input Power	120Vac, 60Hz
Tested By	Titan Hsu		

Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	1652.80	-53.90	-57.40	5.50	-51.90	-13.00	-38.90
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	1652.80	-56.80	-59.00	5.50	-53.50	-13.00	-40.50

Remarks:
1. ERP (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) - Cable Loss (dB).

Mode	TX channel 4182 (836.4MHz)	Frequency Range	1GHz ~ 10GHz
Environmental Conditions	23deg. C, 66%RH	Input Power	120Vac, 60Hz
Tested By	Titan Hsu		

Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	1672.80	-53.10	-56.40	5.50	-50.90	-13.00	-37.90
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	1672.80	-56.10	-58.10	5.50	-52.60	-13.00	-39.60

Remarks:
1. ERP (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) - Cable Loss (dB).

Mode	TX channel 4233 (846.6MHz)	Frequency Range	1GHz ~ 10GHz
Environmental Conditions	23deg. C, 66%RH	Input Power	120Vac, 60Hz
Tested By	Titan Hsu		

Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	1693.20	-53.50	-56.60	5.60	-51.00	-13.00	-38.00
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	1693.20	-56.20	-58.20	5.60	-52.60	-13.00	-39.60

Remarks:
1. ERP (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) - Cable Loss (dB).

LTE Band 5, Channel Bandwidth: 1.4MHz

Mode	TX channel 20407 (824.7MHz)	Frequency Range	1GHz ~ 10GHz
Environmental Conditions	25deg. C, 68%RH	Input Power	120Vac, 60Hz
Tested By	Noah Chang		

Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	1649.40	-54.20	-57.50	5.50	-52.00	-13.00	-39.00
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	1649.40	-59.00	-60.10	5.50	-54.60	-13.00	-41.60

Remarks:
1. ERP (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) - Cable Loss (dB).

Mode	TX channel 20525 (836.5MHz)	Frequency Range	1GHz ~ 10GHz
Environmental Conditions	25deg. C, 68%RH	Input Power	120Vac, 60Hz
Tested By	Noah Chang		

Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	1673.00	-53.90	-56.90	5.50	-51.40	-13.00	-38.40
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	1673.00	-59.40	-60.10	5.50	-54.60	-13.00	-41.60

Remarks:
1. ERP (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) - Cable Loss (dB).

Mode	TX channel 20643 (848.3MHz)	Frequency Range	1GHz ~ 10GHz
Environmental Conditions	25deg. C, 68%RH	Input Power	120Vac, 60Hz
Tested By	Noah Chang		

Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	1696.60	-54.40	-57.20	5.60	-51.60	-13.00	-38.60
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	1696.60	-58.80	-59.40	5.60	-53.80	-13.00	-40.80

Remarks:
1. ERP (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) - Cable Loss (dB).

LTE Band 5, Channel Bandwidth: 5MHz

Mode	TX channel 20425 (826.5MHz)	Frequency Range	1GHz ~ 10GHz
Environmental Conditions	25deg. C, 68%RH	Input Power	120Vac, 60Hz
Tested By	Noah Chang		

Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	1653.00	-53.50	-56.70	5.50	-51.20	-13.00	-38.20
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	1653.00	-59.20	-60.30	5.50	-54.80	-13.00	-41.80

Remarks:
1. ERP (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) - Cable Loss (dB).

Mode	TX channel 20525 (836.5MHz)	Frequency Range	1GHz ~ 10GHz
Environmental Conditions	25deg. C, 68%RH	Input Power	120Vac, 60Hz
Tested By	Noah Chang		

Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	1673.00	-54.60	-57.60	5.50	-52.10	-13.00	-39.10
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	1673.00	-58.80	-59.50	5.50	-54.00	-13.00	-41.00

Remarks:
1. ERP (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) - Cable Loss (dB).

Mode	TX channel 20625 (846.5MHz)	Frequency Range	1GHz ~ 10GHz
Environmental Conditions	25deg. C, 68%RH	Input Power	120Vac, 60Hz
Tested By	Noah Chang		

Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	1693.00	-53.20	-56.10	5.60	-50.50	-13.00	-37.50
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	1693.00	-58.20	-58.80	5.60	-53.20	-13.00	-40.20

Remarks:
1. ERP (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) - Cable Loss (dB).

LTE Band 5, Channel Bandwidth: 10MHz

Mode	TX channel 20450 (829.0MHz)	Frequency Range	1GHz ~ 10GHz
Environmental Conditions	25deg. C, 68%RH	Input Power	120Vac, 60Hz
Tested By	Noah Chang		

Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	1658.00	-53.40	-56.50	5.50	-51.00	-13.00	-38.00
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	1658.00	-59.50	-60.50	5.50	-55.00	-13.00	-42.00

Remarks:
1. ERP (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) - Cable Loss (dB).

Mode	TX channel 20525 (836.5MHz)	Frequency Range	1GHz ~ 10GHz
Environmental Conditions	25deg. C, 68%RH	Input Power	120Vac, 60Hz
Tested By	Noah Chang		

Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	1673.00	-53.50	-56.50	5.50	-51.00	-13.00	-38.00
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	1673.00	-59.90	-60.60	5.50	-55.10	-13.00	-42.10

Remarks:
1. ERP (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) - Cable Loss (dB).

Mode	TX channel 20600 (844.0MHz)	Frequency Range	1GHz ~ 10GHz
Environmental Conditions	25deg. C, 68%RH	Input Power	120Vac, 60Hz
Tested By	Noah Chang		

Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	1688.00	-54.00	-56.90	5.50	-51.40	-13.00	-38.40
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	1688.00	-58.80	-59.30	5.50	-53.80	-13.00	-40.80

Remarks:
1. ERP (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) - Cable Loss (dB).

LTE Band 26, Channel Bandwidth 1.4MHz

Mode	TX channel 26797 (824.7MHz)	Frequency Range	1GHz ~ 10GHz
Environmental Conditions	25deg. C, 66%RH	Input Power	120Vac, 60Hz
Tested By	Titan Hsu		

Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	1649.40	-55.50	-59.00	5.50	-53.50	-13.00	-40.50
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	1649.40	-60.50	-62.70	5.50	-57.20	-13.00	-44.20

Remarks:
1. ERP (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) - Cable Loss (dB).

Mode	TX channel 26915 (836.5MHz)	Frequency Range	1GHz ~ 10GHz
Environmental Conditions	25deg. C, 66%RH	Input Power	120Vac, 60Hz
Tested By	Titan Hsu		

Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	1673.00	-56.40	-59.60	5.50	-54.10	-13.00	-41.10
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	1673.00	-57.90	-59.90	5.50	-54.40	-13.00	-41.40

Remarks:
1. ERP (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) - Cable Loss (dB).

Mode	TX channel 27033 (848.3MHz)	Frequency Range	1GHz ~ 10GHz
Environmental Conditions	25deg. C, 66%RH	Input Power	120Vac, 60Hz
Tested By	Titan Hsu		

Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	1696.60	-57.90	-61.00	5.60	-55.40	-13.00	-42.40
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	1696.60	-59.60	-61.50	5.60	-55.90	-13.00	-42.90

Remarks:
1. ERP (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) - Cable Loss (dB).

LTE Band 26, Channel Bandwidth 5MHz

Mode	TX channel 26815 (826.5MHz)	Frequency Range	1GHz ~ 10GHz
Environmental Conditions	25deg. C, 66%RH	Input Power	120Vac, 60Hz
Tested By	Titan Hsu		

Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	1653.00	-59.20	-62.70	5.50	-57.20	-13.00	-44.20
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	1653.00	-59.40	-61.60	5.50	-56.10	-13.00	-43.10

Remarks:
1. ERP (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) - Cable Loss (dB).

Mode	TX channel 26915 (836.5MHz)	Frequency Range	1GHz ~ 10GHz
Environmental Conditions	25deg. C, 66%RH	Input Power	120Vac, 60Hz
Tested By	Titan Hsu		

Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	1673.00	-55.00	-58.20	5.50	-52.70	-13.00	-39.70
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	1673.00	-57.90	-59.90	5.50	-54.40	-13.00	-41.40

Remarks:
1. ERP (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) - Cable Loss (dB).

Mode	TX channel 27015 (846.5MHz)	Frequency Range	1GHz ~ 10GHz
Environmental Conditions	25deg. C, 66%RH	Input Power	120Vac, 60Hz
Tested By	Titan Hsu		

Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	1693.00	-56.20	-59.30	5.60	-53.70	-13.00	-40.70
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	1693.00	-60.00	-62.00	5.60	-56.40	-13.00	-43.40

Remarks:
1. ERP (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) - Cable Loss (dB).

LTE Band 26, Channel Bandwidth 15MHz

Mode	TX channel 26865 (831.5MHz)	Frequency Range	1GHz ~ 10GHz
Environmental Conditions	25deg. C, 66%RH	Input Power	120Vac, 60Hz
Tested By	Titan Hsu		

Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	1663.00	-55.80	-59.20	5.60	-53.60	-13.00	-40.60
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	1663.00	-59.60	-61.80	5.60	-56.20	-13.00	-43.20

Remarks:
1. ERP (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) - Cable Loss (dB).

Mode	TX channel 26915 (836.5MHz)	Frequency Range	1GHz ~ 10GHz
Environmental Conditions	25deg. C, 66%RH	Input Power	120Vac, 60Hz
Tested By	Titan Hsu		

Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	1673.00	-56.00	-59.30	5.50	-53.80	-13.00	-40.80
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	1673.00	-58.90	-60.90	5.50	-55.40	-13.00	-42.40

Remarks:
1. ERP (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) - Cable Loss (dB).

Mode	TX channel 26965 (841.5MHz)	Frequency Range	1GHz ~ 10GHz
Environmental Conditions	25deg. C, 66%RH	Input Power	120Vac, 60Hz
Tested By	Titan Hsu		

Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	1683.00	-54.80	-57.90	5.50	-52.40	-13.00	-39.40
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	1683.00	-58.40	-60.40	5.50	-54.90	-13.00	-41.90

Remarks:
1. ERP (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) - Cable Loss (dB).

5 Pictures of Test Arrangements

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

Appendix – Information of the Testing Laboratories

We, Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch, were founded in 1988 to provide our best service in EMC, Radio, Telecom and Safety consultation. Our laboratories are FCC recognized accredited test firms and accredited according to ISO/IEC 17025.

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

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The address and road map of all our labs can be found in our web site also.

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