FCC Test Report
(Part 24)

Report No.:	RF190530C17B-7
FCC ID:	H8NCDR8011
Test Model:	CDR8010-DBB1
Serial Model:	CDR8011-DBA1, CDR8011-DDA1, CDR8011-DDB1, CDR8011-SBA1, CDR8011-SBB1, CDR8011-SDA1, CDR8011-SDB1 (refer to item 3.1 for more details)
Received Date:	Feb. 25, 2019
Test Date:	Jun. 19 ~ Aug. 28, 2019
Issued Date:	Sep. 03, 2019
Applicant:	ASKEY COMPUTER CORP.
Address:	10F, NO. 119, JIANKANG RD., ZHONGHE DIST., NEW TAIPEI CITY 23585, TAIWAN, R.O.C.
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 (R.O.C.)
Test Location:	No. 19, Hwa Ya 2nd Rd., Wen Hwa Vil., Kwei Shan Dist., Taoyuan City 33383, TAIWAN (R.O.C.)
FCC Registration / Designation Number:	788550 / TW0003

Testing Laboratory
2021

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The report must not be used by the client to claim product certification, approval, or endorsement by TAF or any government agencies

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Release Control Record

Issue No.	Description	Date Issued
RF190530C17B-7	Original release	Sep. 03, 2019

1 Certificate of Conformity

Product: iDVR800

Brand: ASKEY

Test Model: CDR8010-DBB1

Serial Model: CDR8011-DBA1, CDR8011-DDA1, CDR8011-DDB1, CDR8011-SBA1, CDR8011-SBB1, CDR8011-SDA1, CDR8011-SDB1 (refer to item 3.1 for more details)

Sample Status: Engineering sample

Applicant: ASKEY COMPUTER CORP.

Test Date: Jun. 19 ~ Aug. 28, 2019

Standards: FCC Part 24, Subpart E

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 : Pettie Chen , **Date:** Sep. 03, 2019

Pettie Chen / Senior Specialist

Approved by : Bruce Chen , **Date:** Sep. 03, 2019

Bruce Chen / Senior Project Engineer

2 Summary of Test Results

Applied Standard: FCC Part 24 & Part 2			
FCC Clause	Test Item	Result	Remarks
2.1046 24.232	Effective radiated power	Pass	Meet the requirement of limit.
2.1046 24.232(d)	Peak To Average Ratio	Pass	Meet the requirement of limit.
2.1047	Modulation Characteristics	Pass	Meet the requirement
2.1055 24.235	Frequency Stability	Pass	Meet the requirement of limit.
2.1049	Occupied Bandwidth	Pass	Meet the requirement of limit.
24.238	Band Edge Measurements	Pass	Meet the requirement of limit.
2.1051 24.238	Conducted Spurious Emissions	Pass	Meet the requirement of limit.
2.1053 24.238	Radiated Spurious Emissions	Pass	Meet the requirement of limit. Minimum passing margin is -23.6dB at 31.41MHz.

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	9kHz ~ 30MHz	3.04 dB
	30MHz ~ 200MHz	3.59 dB
	200MHz ~1000MHz	3.60 dB
Radiated Emissions above 1 GHz	1GHz ~ 18GHz	2.29 dB
	18GHz ~ 40GHz	2.29 dB

2.2 Test Site and Instruments

Description & Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Due
Test Receiver KEYSIGHT	N9038A	MY55420137	Apr. 15, 2019	Apr. 14, 2020
Spectrum Analyzer ROHDE & SCHWARZ	FSP40	100269	Jun. 04, 2019	Jun. 03, 2020
BILOG Antenna SCHWARZBECK	VULB9168	9168-160	Nov. 21, 2018	Nov. 20, 2019
HORN Antenna SCHWARZBECK	BBHA 9120 D	9120D-1169	Nov. 25, 2018	Nov. 24, 2019
HORN Antenna SCHWARZBECK	BBHA 9170	BBHA9170241	Nov. 25, 2018	Nov. 24, 2019
Preamplifier Agilent (Below 1GHz)	8447D	2944A10638	Aug. 08, 2018	Aug. 07, 2019
			Jul. 11, 2019	Jul. 10, 2020
Preamplifier Agilent (Above 1GHz)	8449B	3008A02367	Feb. 19, 2019	Feb. 18, 2020
RF signal cable HUBER+SUHNER&EMCI	SUCOFLEX 104 & EMC104-SM-SM8000	CABLE-CH9-02 (248780+171006)	Jan. 19, 2019	Jan. 18, 2020
RF signal cable HUBER+SUHNER	SUCOFLEX 104	CABLE-CH9-(250795/4)	Aug. 08, 2018	Aug. 07, 2019
			Jul. 11, 2019	Jul. 10, 2020
RF signal cable Woken	8D-FB	Cable-CH9-01	Jul. 31, 2018	Jul. 30, 2019
			Jul. 30, 2019	Jul. 29, 2020
Software BV ADT	ADT_Radiated_ V7.6.15.9.5	NA	NA	NA
Antenna Tower EMCO	2070/2080	512.835.4684	NA	NA
Turn Table EMCO	2087-2.03	NA	NA	NA
Antenna Tower &Turn BV ADT	AT100	AT93021705	NA	NA
Turn Table BV ADT	TT100	TT93021705	NA	NA
Turn Table Controller BV ADT	SC100	SC93021705	NA	NA
Boresight Antenna Fixture	FBA-01	FBA-SIP01	NA	NA
Pre-amplifier (18GHz-40GHz) EMC	EMC184045B	980175	Nov. 14, 2018	Nov. 13, 2019
WIT Standard Temperature And Humidity Chamber	TH-4S-C	W981030	Jun. 03, 2019	Jun. 02, 2020
JFW 20dB attenuation	50HF-020-SMA	NA	NA	NA

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 9.

3 General Information

3.1 General Description of EUT

Product	iDVR800		
Brand	ASKEY		
Test Model	CDR8010-DBB1		
Serial Model	CDR8011-DBA1, CDR8011-DDA1, CDR8011-DDB1, CDR8011-SBA1, CDR8011-SBB1, CDR8011-SDA1, CDR8011-SDB1		
Model Difference	Refer to Note		
Sample Status	Engineering sample		
Power Supply Rating	12Vdc / 24Vdc (Car Charger) 3.7Vdc (Battery)		
Modulation Type	QPSK, 16QAM		
Operating Frequency	LTE Band 2 (Channel Bandwidth 1.4MHz)	1850.7~1909.3MHz	
	LTE Band 2 (Channel Bandwidth 3MHz)	1851.5~1908.5MHz	
	LTE Band 2 (Channel Bandwidth 5MHz)	1852.5~1907.5MHz	
	LTE Band 2 (Channel Bandwidth 10MHz)	1855.0~1905.0MHz	
	LTE Band 2 (Channel Bandwidth 15MHz)	1857.5~1902.5MHz	
	LTE Band 2 (Channel Bandwidth 20MHz)	1860.0~1900.0MHz	
Max. EIRP Power		QPSK	16QAM
	LTE Band 2 (Channel Bandwidth 1.4MHz)	346.737mW (25.4dBm)	281.838mW (24.5dBm)
	LTE Band 2 (Channel Bandwidth 3MHz)	354.813mW (25.5dBm)	295.121mW (24.7dBm)
	LTE Band 2 (Channel Bandwidth 5MHz)	338.844mW (25.3dBm)	269.153mW (24.3dBm)
	LTE Band 2 (Channel Bandwidth 10MHz)	338.844mW (25.3dBm)	275.423mW (24.4dBm)
	LTE Band 2 (Channel Bandwidth 15MHz)	354.813mW (25.5dBm)	275.423mW (24.4dBm)
	LTE Band 2 (Channel Bandwidth 20MHz)	346.737mW (25.4dBm)	269.153mW (24.3dBm)
Emission Designator		QPSK	16QAM
	LTE Band 2 (Channel Bandwidth 1.4MHz)	1M08G7D	1M09D7W
	LTE Band 2 (Channel Bandwidth 3MHz)	2M70G7D	2M69D7W
	LTE Band 2 (Channel Bandwidth 5MHz)	4M48G7D	4M48D7W
	LTE Band 2 (Channel Bandwidth 10MHz)	8M95G7D	8M95D7W
	LTE Band 2 (Channel Bandwidth 15MHz)	13M4G7D	13M4D7W
	LTE Band 2 (Channel Bandwidth 20MHz)	17M9G7D	17M9D7W
Antenna Type	Refer to Note as below		
Antenna Connector	Refer to Note as below		
Accessory Device	Car charger, SD Card		
Cable Supplied	NA		

Note:

1. All models are listed as below. Model CDR8010-DBB1 is the representative for final test.

Model	PCB	Camera	NFC	Fan	eSIM	RAM
CDR8010-DBB1	Same PCB	Dual	Yes	Yes	N/A	3GB
CDR8011-DBA1			Yes	Yes		N/A
CDR8011-DDA1			Yes	No		N/A
CDR8011-DDB1			Yes	No		3GB
CDR8011-SBA1		Single	Yes	Yes		N/A
CDR8011-SBB1			Yes	Yes		3GB
CDR8011-SDA1			Yes	No		N/A
CDR8011-SDB1			Yes	No		3GB

2. The EUT is powered by the following car charger and battery.

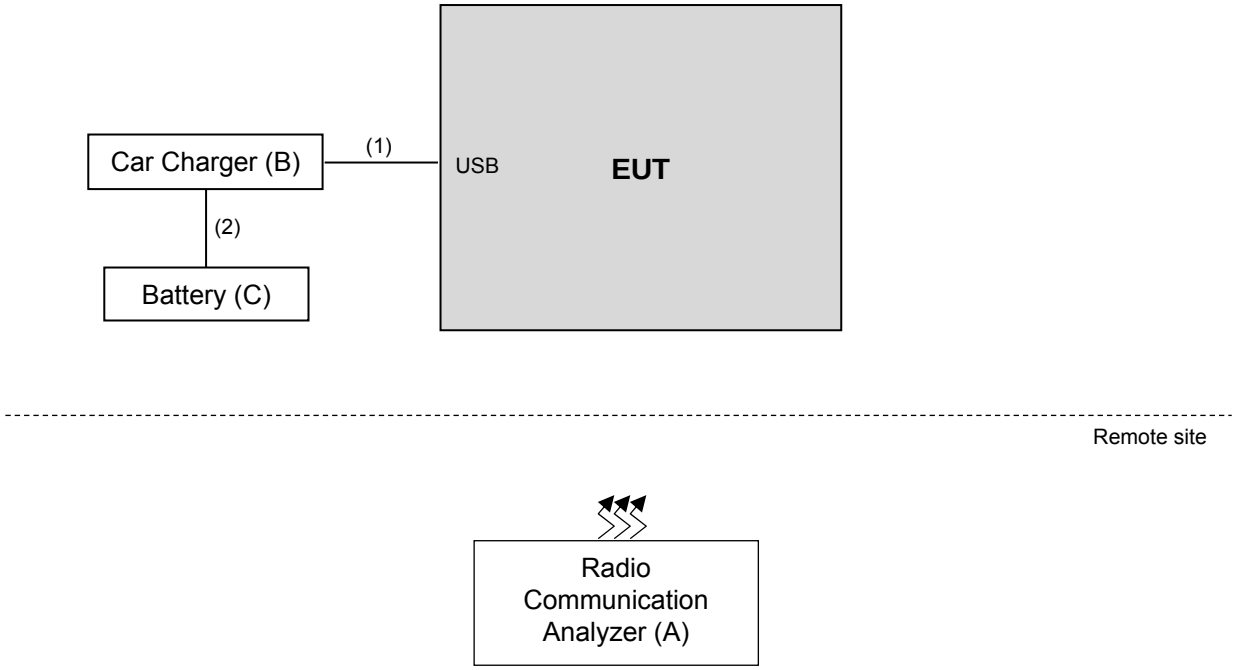
Car charger	
Brand	Sunny
Model	SYD1202-1005
Input Power	12Vdc / 24Vdc, 1.5A
Output Power	5Vdc, 2.1A
Power Line	5.1m cable with USB Type C connector

Battery	
Brand	FUJI ELECTRONICS(SHENZHEN)CO., LTD
Model	ICP463048XS
Rating	3.7Vdc, 750mA

3. The following antennas were provided to the EUT.

Ant. No.	Type	Connector	Gain (dBi)
			LTE B2
Main	PIFA	I-PEX	2.04
Aux. (RX only)	PIFA	I-PEX	-1.79

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. The following support units or accessories were used to form a representative test configuration during the tests.

ID	Product	Brand	Model No.	Serial No.	FCC ID	Remarks
A.	Radio Communication Analyzer	Anritsu	MT8860C	1702001	NA	-
B.	Car Charger	Sunny	SYD1202-1005	NA	NA	Accessory of EUT
C.	Battery	YUASA	ST-CLN126-6S	NA	NA	-

Note:

1. All power cords of the above support units are non-shielded (1.8m).
2. Item A acted as a communication partner to transfer data.

ID	Descriptions	Qty.	Length (m)	Shielding (Yes/No)	Cores (Qty.)	Remarks
1.	Type C to car charger	1	5.1	N	0	Accessory of EUT
2.	DC cable	1	1	N	0	-

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 on Y-plane. Following channel(s) was (were) selected for the final test as listed below.

LTE Band 2

EUT Configure Mode	Test item	Available channel	Tested Channel	Channel Bandwidth	Modulation	Mode
-	EIRP	18607 to 19193	18607 (1850.70MHz), 18900 (1880.00MHz), 19193 (1909.30MHz)	1.4MHz	QPSK / 16QAM	1 RB / 0 RB Offset
		18615 to 19185	18615 (1851.50MHz), 18900 (1880.00MHz), 19185 (1908.50MHz)	3MHz	QPSK / 16QAM	1 RB / 0 RB Offset
		18625 to 19175	18625 (1852.50MHz), 18900 (1880.00MHz), 19175 (1907.50MHz)	5MHz	QPSK / 16QAM	1 RB / 0 RB Offset
		18650 to 19150	18650 (1855.00MHz), 18900 (1880.00MHz), 19150 (1905.00MHz)	10MHz	QPSK / 16QAM	1 RB / 0 RB Offset
		18675 to 19125	18675 (1857.50MHz), 18900 (1880.00MHz), 19125 (1902.50MHz)	15MHz	QPSK / 16QAM	1 RB / 0 RB Offset
		18700 to 19100	18700 (1860.00MHz), 18900 (1880.00MHz), 19100 (1900.00MHz)	20MHz	QPSK / 16QAM	1 RB / 0 RB Offset
-	Modulation Characteristics	18700 to 19100	18900 (1880.00MHz)	20MHz	QPSK / 16QAM	100 RB / 0 RB Offset
-	Frequency Stability	18607 to 19193	18607 (1850.70MHz), 19193 (1909.30MHz)	1.4MHz	QPSK	1 RB / 0 RB Offset
		18615 to 19185	18615 (1851.50MHz), 19185 (1908.50MHz)	3MHz	QPSK	1 RB / 0 RB Offset
		18625 to 19175	18625 (1852.50MHz), 19175 (1907.50MHz)	5MHz	QPSK	1 RB / 0 RB Offset
		18650 to 19150	18650 (1855.00MHz), 19150 (1905.00MHz)	10MHz	QPSK	1 RB / 0 RB Offset
		18675 to 19125	18675 (1857.50MHz), 19125 (1902.50MHz)	15MHz	QPSK	1 RB / 0 RB Offset
		18700 to 19100	18700 (1860.00MHz), 19100 (1900.00MHz)	20MHz	QPSK	1 RB / 0 RB Offset
-	Occupied Bandwidth	18607 to 19193	18607 (1850.70MHz), 18900 (1880.00MHz), 19193 (1909.30MHz)	1.4MHz	QPSK / 16QAM	6 RB / 0RB Offset
		18615 to 19185	18615 (1851.50MHz), 18900 (1880.00MHz), 19185 (1908.50MHz)	3MHz	QPSK / 16QAM	15 RB / 0RB Offset
		18625 to 19175	18625 (1852.50MHz), 18900 (1880.00MHz), 19175 (1907.50MHz)	5MHz	QPSK / 16QAM	25RB / 0RB Offset
		18650 to 19150	18650 (1855.00MHz), 18900 (1880.00MHz), 19150 (1905.00MHz)	10MHz	QPSK / 16QAM	50RB / 0RB Offset
		18675 to 19125	18675 (1857.50MHz), 18900 (1880.00MHz), 19125 (1902.50MHz)	15MHz	QPSK / 16QAM	75 RB / 0 RB Offset
		18700 to 19100	18700 (1860.00MHz), 18900 (1880.00MHz), 19100 (1900.00MHz)	20MHz	QPSK / 16QAM	100 RB / 0 RB Offset

EUT Configure Mode	Test item	Available channel	Tested Channel	Channel Bandwidth	Modulation	Mode
-	Band Edge	18607 to 19193	18607 (1850.70MHz), 19193 (1909.30MHz)	1.4MHz	QPSK	1 RB / 0 RB Offset 1 RB / 5 RB Offset 6 RB / 0 RB Offset
		18615 to 19185	18615 (1851.50MHz), 19185 (1908.50MHz)	3MHz	QPSK	1 RB / 0 RB Offset 1 RB / 14 RB Offset 15 RB / 0 RB Offset
		18625 to 19175	18625 (1852.50MHz), 19175 (1907.50MHz)	5MHz	QPSK	1 RB / 0 RB Offset 1 RB / 24 RB Offset 25 RB / 0 RB Offset
		18650 to 19150	18650 (1855.00MHz), 19150 (1905.00MHz)	10MHz	QPSK	1 RB / 0 RB Offset 1 RB / 49 RB Offset 50 RB / 0 RB Offset
		18675 to 19125	18675 (1857.50MHz), 19125 (1902.50MHz)	15MHz	QPSK	1 RB / 0 RB Offset 1 RB / 74 RB Offset 75 RB / 0 RB Offset
		18700 to 19100	18700 (1860.00MHz), 19100 (1900.00MHz)	20MHz	QPSK	1 RB / 0 RB Offset 1 RB / 99 RB Offset 100 RB / 0 RB Offset
-	Peak to Average Ratio	18607 to 19193	18607 (1850.70MHz), 18900 (1880.00MHz), 19193 (1909.30MHz)	1.4MHz	QPSK / 16QAM	1 RB / 0 RB Offset
		18615 to 19185	18615 (1851.50MHz), 18900 (1880.00MHz), 19185 (1908.50MHz)	3MHz	QPSK / 16QAM	1 RB / 0 RB Offset
		18625 to 19175	18625 (1852.50MHz), 18900 (1880.00MHz), 19175 (1907.50MHz)	5MHz	QPSK / 16QAM	1 RB / 0 RB Offset
		18650 to 19150	18650 (1855.00MHz), 18900 (1880.00MHz), 19150 (1905.00MHz)	10MHz	QPSK / 16QAM	1 RB / 0 RB Offset
		18675 to 19125	18675 (1857.50MHz), 18900 (1880.00MHz), 19125 (1902.50MHz)	15MHz	QPSK / 16QAM	1 RB / 0 RB Offset
		18700 to 19100	18700 (1860.00MHz), 18900 (1880.00MHz), 19100 (1900.00MHz)	20MHz	QPSK / 16QAM	1 RB / 0 RB Offset
-	Conducted Emission	18607 to 19193	18607 (1850.70MHz), 18900 (1880.00MHz), 19193 (1909.30MHz)	1.4MHz	QPSK	1 RB / 0 RB Offset
		18615 to 19185	18615 (1851.50MHz), 18900 (1880.00MHz), 19185 (1908.50MHz)	3MHz	QPSK	1 RB / 0 RB Offset
		18625 to 19175	18625 (1852.50MHz), 18900 (1880.00MHz), 19175 (1907.50MHz)	5MHz	QPSK	1 RB / 0 RB Offset
		18650 to 19150	18650 (1855.00MHz), 18900 (1880.00MHz), 19150 (1905.00MHz)	10MHz	QPSK	1 RB / 0 RB Offset
		18675 to 19125	18675 (1857.50MHz), 18900 (1880.00MHz), 19125 (1902.50MHz)	15MHz	QPSK	1 RB / 0 RB Offset
		18700 to 19100	18700 (1860.00MHz), 18900 (1880.00MHz), 19100 (1900.00MHz)	20MHz	QPSK	1 RB / 0 RB Offset

EUT Configure Mode	Test item	Available channel	Tested Channel	Channel Bandwidth	Modulation	Mode
-	Radiated Emission Below 1GHz	18607 to 19193	18607 (1850.70MHz)	1.4MHz	QPSK	1 RB / 0 RB Offset
		18625 to 19175	18625 (1852.50MHz)	5MHz	QPSK	1 RB / 0 RB Offset
		18700 to 19100	18700 (1860.00MHz)	20MHz	QPSK	1 RB / 0 RB Offset
-	Radiated Emission Above 1GHz	18607 to 19193	18607 (1850.70MHz), 18900 (1880.00MHz), 19193 (1909.30MHz)	1.4MHz	QPSK	1 RB / 0 RB Offset
		18625 to 19175	18625 (1852.50MHz), 18900 (1880.00MHz), 19175 (1907.50MHz)	5MHz	QPSK	1 RB / 0 RB Offset
		18700 to 19100	18700 (1860.00MHz), 18900 (1880.00MHz), 19100 (1900.00MHz)	20MHz	QPSK	1 RB / 0 RB Offset

Note:

1. For radiated emission below 1GHz, low, mid and high channels were pre-tested in chamber. Low channel was found to be the worst case and therefore had been chosen for all final tests.
2. For radiated emission above 1GHz, according to 3GPP 36.521 Section 6.6.3.1.4, choose the lowest, 5MHz & highest channel bandwidth for final test.
3. The conducted output power for QPSK, 16QAM, measured value of QPSK is higher than 16QAM mode. Therefore, only occupied bandwidth and Peak to average ratio items had been tested under QPSK, 16QAM modes, the other test items were performed under QPSK mode only.

Test Condition:

Test Item	Environmental Conditions	Input Power (system)	Tested By
EIRP	22deg. C, 68%RH	120Vac, 60Hz	Greg Lin
Modulation Characteristics	24deg. C, 64%RH	120Vac, 60Hz	James Yang
Frequency Stability	24deg. C, 64%RH	3.7Vdc	James Yang
Occupied Bandwidth	24deg. C, 64%RH	120Vac, 60Hz	James Yang
Band Edge	24deg. C, 64%RH	120Vac, 60Hz	James Yang
Peak To Average Ratio	24deg. C, 64%RH	120Vac, 60Hz	James Yang
Conducted Emission	24deg. C, 64%RH	120Vac, 60Hz	James Yang
Radiated Emission	22deg. C, 68%RH 24deg. C, 68%RH	120Vac, 60Hz	Greg Lin

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

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

FCC 47 CFR Part 2

FCC 47 CFR Part 24

KDB 971168 D01 Power Meas License Digital Systems v03r01

ANSI/TIA/EIA-603-E 2016

ANSI 63.26-2015

ANSI 63.2-2016

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

4 Test Types and Results

4.1 Output Power Measurement

4.1.1 Limits of Output Power Measurement

Mobile / Portable station are limited to 2 watts e.i.r.p.

4.1.2 Test Procedures

EIRP / ERP Measurement:

a. All measurements were done at low, middle and high operational frequency range. RBW and VBW is 10MHz for LTE mode.

b. Substitution method is used for E.I.R.P measurement. In the semi-anechoic chamber, EUT placed on the 0.8m(below or equal 1GHz) and/or 1.5m(above 1GHz) height of Turn Table, rotated the table around 360 degrees to search the maximum radiation power and receiver antenna shall be rotated vertical and horizontal polarization and moved height from 1m to 4m to find the maximum polar radiated power. The "Read Value" is the spectrum reading the maximum power value.

c. The substitution horn antenna is substituted for EUT at the same position and signals generator export the CW signal to the substitution antenna via a TX cable. Rotated the Turn Table and moved receiving antenna to find the maximum radiation power. Adjust output power level of S.G to get a Value of spectrum reading equal to "Read Value" of step b. Record the power level of S.G

d. 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 - 2.15dBi.

Where:

$ERP/EIRP = P_{Meas} + G_T - L_C$

P_{Meas} : Measure transmitter output power.
G_T : Gain of the transmitting antenna.
L_C : signal attenuation in the connecting cable between the transmitter and antenna.

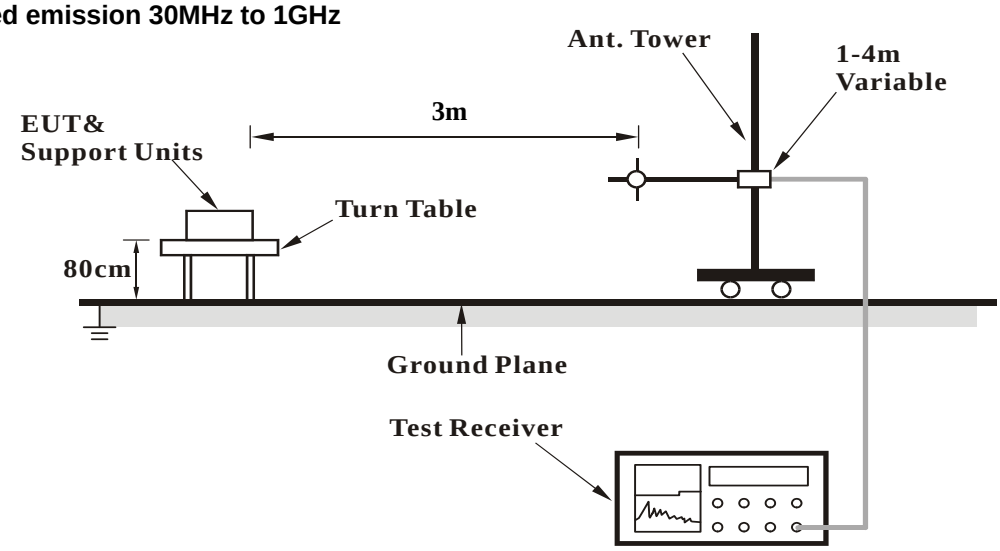
Conducted Power Measurement:

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

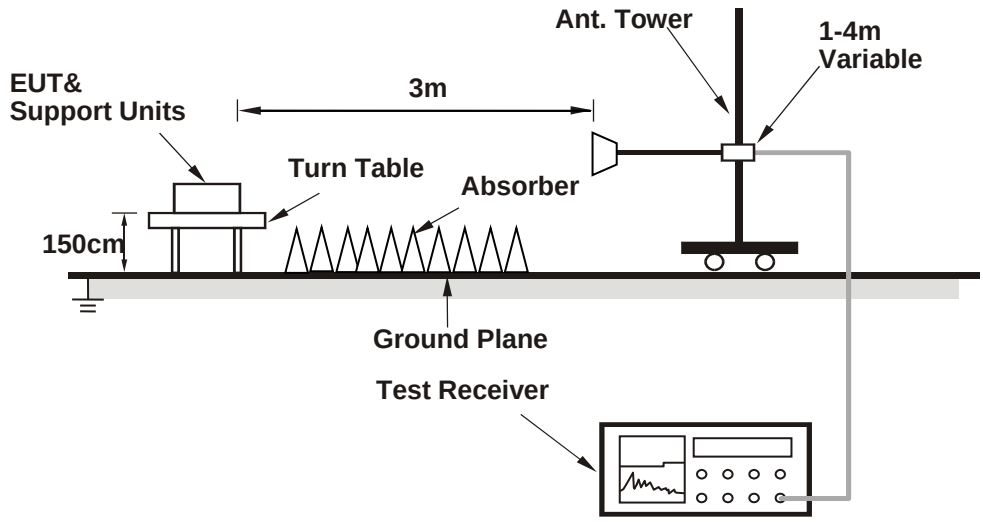
4.1.3 Test Setup

EIRP / ERP Measurement:

For radiated emission 30MHz to 1GHz



For radiated emission above 1GHz



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

Conducted Power Measurement:

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

4.1.4 Test Results

Conducted Output Power (dBm)

LTE Band 2							
BW	MCS Index	RB Size	RB Offset	Low	Mid	High	3GPP MPR (dB)
		Channel		18607	18900	19193	
		Frequence (MHz)		1850.7	1880	1909.3	
1.4M	QPSK	1	0	23.97	23.91	23.63	0
		1	2	23.75	23.78	23.44	0
		1	5	23.86	23.77	23.53	0
		3	0	23.83	23.78	23.70	0
		3	1	23.90	23.81	23.74	0
		3	3	23.83	23.88	23.57	0
		6	0	22.74	22.76	22.47	1
	16QAM	1	0	22.97	22.88	22.39	1
		1	2	22.63	22.59	22.29	1
		1	5	22.65	22.62	22.39	1
		3	0	22.82	22.79	22.59	1
		3	1	22.82	22.82	22.79	1
		3	3	22.83	22.82	22.69	1
		6	0	21.83	21.74	21.39	2

LTE Band 2							
BW	MCS Index	RB Size	RB Offset	Low	Mid	High	3GPP MPR (dB)
		Channel		18615	18900	19185	
		Frequence (MHz)		1851.5	1880	1908.5	
3M	QPSK	1	0	24.08	23.84	23.71	0
		1	7	24.01	23.79	23.64	0
		1	14	24.00	23.68	23.60	0
		8	0	22.78	22.79	22.59	1
		8	3	22.88	22.81	22.60	1
		8	7	22.90	22.85	22.59	1
		15	0	22.87	22.80	22.66	1
	16QAM	1	0	23.15	22.55	22.36	1
		1	7	22.66	22.26	22.24	1
		1	14	23.09	22.56	22.27	1
		8	0	22.03	21.80	21.65	2
		8	3	21.89	21.81	21.64	2
		8	7	22.03	21.85	21.43	2
		15	0	21.60	21.75	21.36	2

LTE Band 2							
BW	MCS Index	RB Size	RB Offset	Low	Mid	High	3GPP MPR (dB)
		Channel		18625	18900	19175	
		Frequence (MHz)		1852.5	1880	1907.5	
5M	QPSK	1	0	23.89	23.79	23.65	0
		1	12	23.81	23.71	23.59	0
		1	24	23.53	23.61	23.20	0
		12	0	22.77	22.69	22.69	1
		12	6	22.85	22.74	22.57	1
		12	13	22.68	22.91	22.48	1
		25	0	22.77	22.73	22.52	1
	16QAM	1	0	22.65	22.41	22.34	1
		1	12	22.64	22.41	22.25	1
		1	24	22.17	22.55	22.18	1
		12	0	21.73	21.61	21.17	2
		12	6	21.79	21.44	21.23	2
		12	13	21.74	21.53	21.35	2
		25	0	21.69	21.64	21.48	2

LTE Band 2							
BW	MCS Index	RB Size	RB Offset	Low	Mid	High	3GPP MPR (dB)
		Channel		18650	18900	19150	
		Frequence (MHz)		1855	1880	1905	
10M	QPSK	1	0	23.70	23.69	23.38	0
		1	24	23.60	23.63	23.38	0
		1	49	23.64	23.43	23.34	0
		25	0	22.94	22.85	22.68	1
		25	12	22.85	22.77	22.62	1
		25	25	22.66	22.84	22.61	1
		50	0	22.90	22.77	22.58	1
	16QAM	1	0	22.64	22.39	22.62	1
		1	24	22.51	22.34	22.61	1
		1	49	22.38	22.31	22.26	1
		25	0	21.94	21.85	21.59	2
		25	12	21.98	21.88	21.57	2
		25	25	22.09	21.63	21.55	2
		50	0	21.84	21.72	21.55	2

LTE Band 2							
BW	MCS Index	RB Size	RB Offset	Low	Mid	High	3GPP MPR (dB)
		Channel		18675	18900	19125	
		Frequence (MHz)		1857.5	1880	1902.5	
15M	QPSK	1	0	23.77	23.74	23.72	0
		1	37	23.64	23.67	23.67	0
		1	74	23.63	23.58	23.43	0
		36	0	22.85	22.75	22.37	1
		36	19	22.83	22.72	22.49	1
		36	39	22.74	22.63	22.55	1
		75	0	22.83	22.89	22.61	1
	16QAM	1	0	22.31	22.26	22.12	1
		1	37	22.27	22.15	21.85	1
		1	74	22.11	21.98	21.82	1
		36	0	21.76	21.78	21.28	2
		36	19	21.75	21.57	21.32	2
		36	39	21.66	21.49	21.45	2
		75	0	21.84	21.82	21.53	2

LTE Band 2							
BW	MCS Index	RB Size	RB Offset	Low	Mid	High	3GPP MPR (dB)
		Channel		18700	18900	19100	
		Frequence (MHz)		1860	1880	1900	
20M	QPSK	1	0	23.87	23.84	23.78	0
		1	50	23.86	23.80	23.77	0
		1	99	23.71	23.37	23.24	0
		50	0	22.75	22.81	22.73	1
		50	25	22.75	22.77	22.58	1
		50	50	22.75	22.77	22.55	1
		100	0	22.77	22.85	22.58	1
	16QAM	1	0	22.37	22.31	22.28	1
		1	50	22.36	22.30	22.23	1
		1	99	22.15	22.06	21.98	1
		50	0	21.73	21.88	21.80	2
		50	25	21.85	21.84	21.56	2
		50	50	21.72	21.65	21.46	2
		100	0	21.68	21.67	21.52	2

EIRP Power

Modulation Type: QPSK

LTE Band 2, Channel Bandwidth 1.4MHz

Mode		TX channel 18607					
Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	1850.70	-15.1	25.1	0.1	25.2	33.0	-7.8
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	1850.70	-17.6	22.8	0.1	22.9	33.0	-10.1

Mode		TX channel 18900					
Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	1880.00	-15.4	25.1	0.0	25.1	33.0	-7.9
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	1880.00	-18.0	22.6	0.0	22.6	33.0	-10.4

Mode		TX channel 19193					
Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	1909.30	-15.2	25.5	-0.1	25.4	33.0	-7.6
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	1909.30	-17.9	22.9	-0.1	22.8	33.0	-10.2

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

LTE Band 2, Channel Bandwidth 3MHz

Mode		TX channel 18615					
Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	1851.50	-15.4	24.8	0.1	24.9	33.0	-8.1
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	1851.50	-18.3	22.1	0.1	22.2	33.0	-10.8

Mode		TX channel 18900					
Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	1880.00	-15.3	25.2	0.0	25.2	33.0	-7.8
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	1880.00	-18.1	22.5	0.0	22.5	33.0	-10.5

Mode		TX channel 19185					
Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	1908.50	-15.1	25.6	-0.1	25.5	33.0	-7.5
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	1908.50	-17.8	23.0	-0.1	22.9	33.0	-10.1

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

LTE Band 2, Channel Bandwidth 5MHz

Mode		TX channel 18625					
Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	1852.50	-15.8	24.4	0.1	24.5	33.0	-8.5
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	1852.50	-17.6	22.8	0.1	22.9	33.0	-10.1

Mode		TX channel 18900					
Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	1880.00	-15.2	25.3	0.0	25.3	33.0	-7.7
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	1880.00	-18.1	22.5	0.0	22.5	33.0	-10.5

Mode		TX channel 19175					
Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	1907.50	-15.8	24.9	-0.1	24.8	33.0	-8.2
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	1907.50	-18.4	22.4	-0.1	22.3	33.0	-10.7

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

LTE Band 2, Channel Bandwidth 10MHz

Mode		TX channel 18650					
Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	1855.00	-15.5	24.8	0.0	24.8	33.0	-8.2
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	1855.00	-17.7	22.8	0.0	22.8	33.0	-10.2

Mode		TX channel 18900					
Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	1880.00	-15.6	24.9	0.0	24.9	33.0	-8.1
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	1880.00	-17.9	22.7	0.0	22.7	33.0	-10.3

Mode		TX channel 19150					
Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	1905.00	-15.3	25.4	-0.1	25.3	33.0	-7.7
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	1905.00	-17.6	23.2	-0.1	23.1	33.0	-9.9

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

LTE Band 2, Channel Bandwidth 15MHz

Mode		TX channel 18675					
Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	1857.50	-15.6	24.7	0.0	24.7	33.0	-8.3
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	1857.50	-18.3	22.2	0.0	22.2	33.0	-10.8

Mode		TX channel 18900					
Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	1880.00	-15.3	25.2	0.0	25.2	33.0	-7.8
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	1880.00	-18.2	22.4	0.0	22.4	33.0	-10.6

Mode		TX channel 19125					
Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	1902.50	-15.1	25.6	-0.1	25.5	33.0	-7.5
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	1902.50	-17.8	23.0	-0.1	22.9	33.0	-10.1

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

LTE Band 2, Channel Bandwidth 20MHz

Mode		TX channel 18700					
Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	1860.00	-15.6	24.7	0.0	24.7	33.0	-8.3
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	1860.00	-18.3	22.2	0.0	22.2	33.0	-10.8

Mode		TX channel 18900					
Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	1880.00	-15.7	24.8	0.0	24.8	33.0	-8.2
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	1880.00	-18.2	22.4	0.0	22.4	33.0	-10.6

Mode		TX channel 19100					
Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	1900.00	-15.2	25.5	-0.1	25.4	33.0	-7.6
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	1900.00	-18.1	22.7	-0.1	22.6	33.0	-10.4

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

Modulation Type: 16QAM

LTE Band 2, Channel Bandwidth 1.4MHz

Mode		TX channel 18607					
Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	1850.70	-16.0	24.2	0.1	24.3	33.0	-8.7
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	1850.70	-18.5	21.9	0.1	22.0	33.0	-11.0

Mode		TX channel 18900					
Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	1880.00	-16.4	24.1	0.0	24.1	33.0	-8.9
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	1880.00	-18.9	21.7	0.0	21.7	33.0	-11.3

Mode		TX channel 19193					
Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	1909.30	-16.1	24.6	-0.1	24.5	33.0	-8.5
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	1909.30	-18.9	21.9	-0.1	21.8	33.0	-11.2

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

LTE Band 2, Channel Bandwidth 3MHz

Mode		TX channel 18615					
Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	1851.50	-16.4	23.8	0.1	23.9	33.0	-9.1
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	1851.50	-19.3	21.1	0.1	21.2	33.0	-11.8

Mode		TX channel 18900					
Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	1880.00	-16.1	24.4	0.0	24.4	33.0	-8.6
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	1880.00	-19.0	21.6	0.0	21.6	33.0	-11.4

Mode		TX channel 19185					
Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	1908.50	-15.9	24.8	-0.1	24.7	33.0	-8.3
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	1908.50	-18.7	22.1	-0.1	22.0	33.0	-11.0

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

LTE Band 2, Channel Bandwidth 5MHz

Mode		TX channel 18625					
Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	1852.50	-16.7	23.5	0.1	23.6	33.0	-9.4
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	1852.50	-18.5	21.9	0.1	22.0	33.0	-11.0

Mode		TX channel 18900					
Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	1880.00	-16.2	24.3	0.0	24.3	33.0	-8.7
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	1880.00	-19.2	21.4	0.0	21.4	33.0	-11.6

Mode		TX channel 19175					
Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	1907.50	-16.8	23.9	-0.1	23.8	33.0	-9.2
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	1907.50	-19.5	21.3	-0.1	21.2	33.0	-11.8

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

LTE Band 2, Channel Bandwidth 10MHz

Mode		TX channel 18650					
Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	1855.00	-16.4	23.9	0.0	23.9	33.0	-9.1
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	1855.00	-18.7	21.8	0.0	21.8	33.0	-11.2

Mode		TX channel 18900					
Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	1880.00	-16.5	24.0	0.0	24.0	33.0	-9.0
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	1880.00	-18.8	21.8	0.0	21.8	33.0	-11.2

Mode		TX channel 19150					
Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	1905.00	-16.2	24.5	-0.1	24.4	33.0	-8.6
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	1905.00	-18.5	22.3	-0.1	22.2	33.0	-10.8

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

LTE Band 2, Channel Bandwidth 15MHz

Mode		TX channel 18675					
Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	1857.50	-16.6	23.7	0.0	23.7	33.0	-9.3
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	1857.50	-19.3	21.2	0.0	21.2	33.0	-11.8

Mode		TX channel 18900					
Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	1880.00	-16.1	24.4	0.0	24.4	33.0	-8.6
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	1880.00	-19.1	21.5	0.0	21.5	33.0	-11.5

Mode		TX channel 19125					
Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	1902.50	-16.2	24.5	-0.1	24.4	33.0	-8.6
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	1902.50	-18.9	21.9	-0.1	21.8	33.0	-11.2

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

LTE Band 2, Channel Bandwidth 20MHz

Mode		TX channel 18700					
Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	1860.00	-16.6	23.7	0.0	23.7	33.0	-9.3
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	1860.00	-19.4	21.1	0.0	21.1	33.0	-11.9

Mode		TX channel 18900					
Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	1880.00	-16.6	23.9	0.0	23.9	33.0	-9.1
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	1880.00	-19.3	21.3	0.0	21.3	33.0	-11.7

Mode		TX channel 19100					
Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	1900.00	-16.3	24.4	-0.1	24.3	33.0	-8.7
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	1900.00	-19.2	21.6	-0.1	21.5	33.0	-11.5

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

4.2 Modulation Characteristics Measurement

4.2.1 Limits of Modulation Characteristics

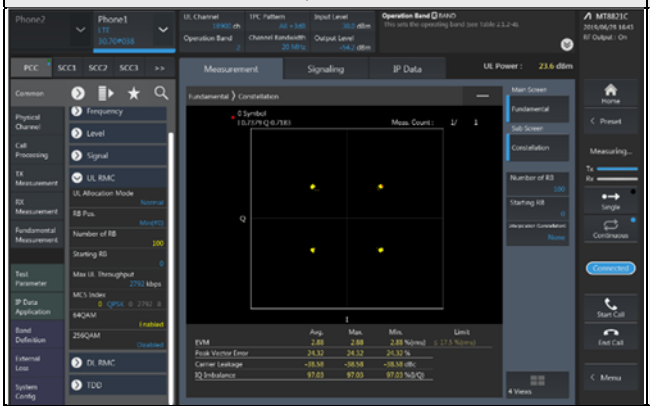
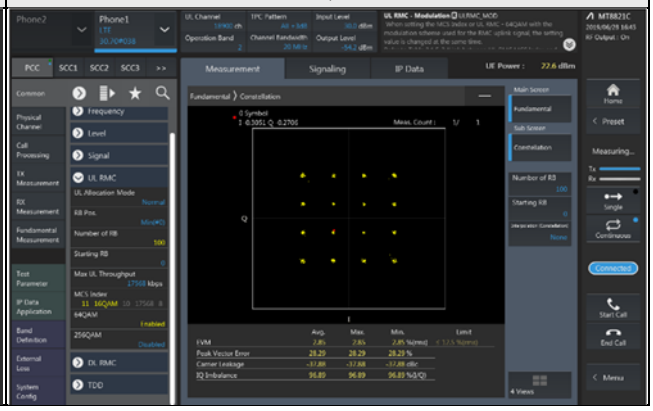
N/A

4.2.2 Test 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.

4.2.3 Test Setup

4.2.4 Test Results

LTE Band 2	
Spectrum Plot of Measurement Value	
Channel: 18900 / Frequency (MHz): 1880.0MHz	
QPSK	16QAM
	

4.3 Frequency Stability Measurement

4.3.1 Limits of Frequency Stabiliity Measurement

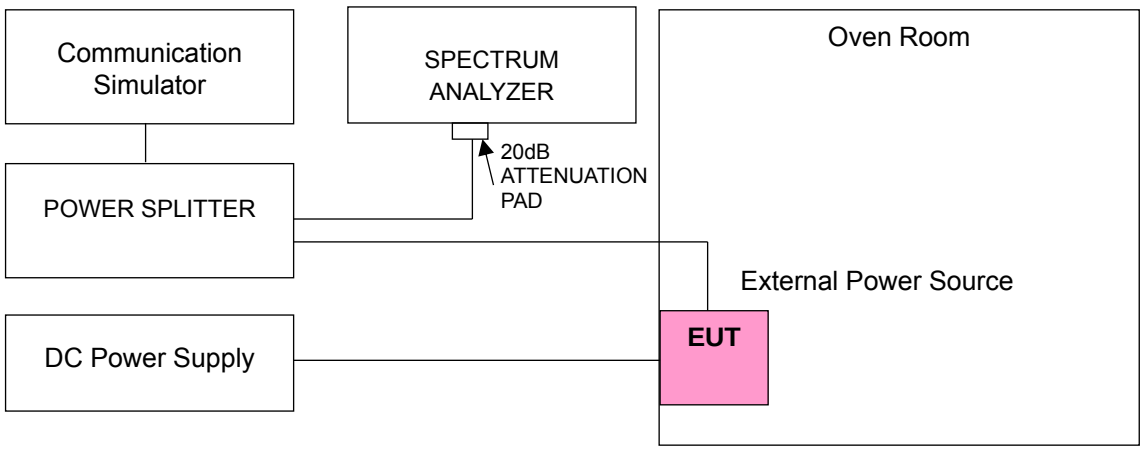
The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block.

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 Conducted Setup



4.3.4 Test Results

Frequency Error vs. Voltage

Voltage (Volts)	LTE Band 2			
	Channel Bandwidth: 1.4 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
3.70	1850.700001	0.001	1909.300000	0.001
3.15	1850.700003	0.001	1909.300003	0.001
4.26	1850.700004	0.002	1909.300001	0.001

Note: The applicant defined the normal working voltage is from 3.15Vdc to 4.26Vdc.

Frequency Error vs. Temperature

Temp. (℃)	LTE Band 2			
	Channel Bandwidth: 1.4 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
-30	1850.700004	0.002	1909.300003	0.001
-20	1850.700004	0.002	1909.300002	0.001
-10	1850.700004	0.002	1909.300002	0.001
0	1850.700002	0.001	1909.300002	0.001
10	1850.700003	0.001	1909.300004	0.002
20	1850.699996	-0.002	1909.299999	-0.001
30	1850.699998	-0.001	1909.299999	-0.001
40	1850.699998	-0.001	1909.299997	-0.001
50	1850.699996	-0.002	1909.299999	-0.001
60	1850.699997	-0.002	1909.299999	-0.001

Frequency Error vs. Voltage

Voltage (Volts)	LTE Band 2			
	Channel Bandwidth: 3 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
3.70	1851.500004	0.002	1908.500004	0.002
3.15	1851.500003	0.002	1908.500002	0.001
4.26	1851.500003	0.002	1908.500002	0.001

Note: The applicant defined the normal working voltage is from 3.15Vdc to 4.26Vdc.

Frequency Error vs. Temperature

Temp. (℃)	LTE Band 2			
	Channel Bandwidth: 3 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
-30	1851.500002	0.001	1908.500004	0.002
-20	1851.500002	0.001	1908.500004	0.002
-10	1851.500002	0.001	1908.500004	0.002
0	1851.500002	0.001	1908.500003	0.001
10	1851.500004	0.002	1908.500004	0.002
20	1851.499997	-0.002	1908.499997	-0.002
30	1851.499999	-0.001	1908.499997	-0.002
40	1851.499998	-0.001	1908.499998	-0.001
50	1851.499998	-0.001	1908.499998	-0.001
60	1851.499996	-0.002	1908.499999	-0.001

Frequency Error vs. Voltage

Voltage (Volts)	LTE Band 2			
	Channel Bandwidth: 5 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
3.70	1852.500002	0.001	1907.500001	0.001
3.15	1852.500002	0.001	1907.500004	0.002
4.26	1852.500003	0.002	1907.500003	0.001

Note: The applicant defined the normal working voltage is from 3.15Vdc to 4.26Vdc.

Frequency Error vs. Temperature

Temp. (℃)	LTE Band 2			
	Channel Bandwidth: 5 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
-30	1852.500003	0.002	1907.500003	0.002
-20	1852.500002	0.001	1907.500004	0.002
-10	1852.500003	0.002	1907.500003	0.002
0	1852.500002	0.001	1907.500004	0.002
10	1852.500002	0.001	1907.500003	0.001
20	1852.499999	-0.001	1907.499999	-0.001
30	1852.499996	-0.002	1907.499998	-0.001
40	1852.499997	-0.002	1907.499997	-0.002
50	1852.499998	-0.001	1907.499999	-0.001
60	1852.499997	-0.002	1907.499997	-0.001

Frequency Error vs. Voltage

Voltage (Volts)	LTE Band 2			
	Channel Bandwidth: 10 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
3.70	1855.000004	0.002	1905.000003	0.001
3.15	1855.000001	0.001	1905.000003	0.002
4.26	1855.000003	0.002	1905.000001	0.001

Note: The applicant defined the normal working voltage is from 3.15Vdc to 4.26Vdc.

Frequency Error vs. Temperature

Temp. (℃)	LTE Band 2			
	Channel Bandwidth: 10 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
-30	1855.000004	0.002	1905.000004	0.002
-20	1855.000002	0.001	1905.000002	0.001
-10	1855.000002	0.001	1905.000004	0.002
0	1855.000003	0.001	1905.000003	0.001
10	1855.000002	0.001	1905.000003	0.002
20	1854.999998	-0.001	1904.999998	-0.001
30	1854.999997	-0.002	1904.999998	-0.001
40	1854.999996	-0.002	1904.999998	-0.001
50	1854.999997	-0.002	1904.999997	-0.001
60	1854.999999	-0.001	1904.999998	-0.001

Frequency Error vs. Voltage

Voltage (Volts)	LTE Band 2			
	Channel Bandwidth: 15 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
3.70	1857.500003	0.001	1902.500004	0.002
3.15	1857.500003	0.002	1902.500001	0.001
4.26	1857.500002	0.001	1902.500003	0.001

Note: The applicant defined the normal working voltage is from 3.15Vdc to 4.26Vdc.

Frequency Error vs. Temperature

Temp. (℃)	LTE Band 2			
	Channel Bandwidth: 15 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
-30	1857.500002	0.001	1902.500001	0.001
-20	1857.500003	0.001	1902.500002	0.001
-10	1857.500001	0.001	1902.500003	0.002
0	1857.500002	0.001	1902.500002	0.001
10	1857.500001	0.001	1902.500002	0.001
20	1857.499998	-0.001	1902.499997	-0.001
30	1857.499999	-0.001	1902.499997	-0.001
40	1857.499997	-0.002	1902.499998	-0.001
50	1857.499998	-0.001	1902.499998	-0.001
60	1857.499996	-0.002	1902.499998	-0.001

Frequency Error vs. Voltage

Voltage (Volts)	LTE Band 2			
	Channel Bandwidth: 20 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
3.70	1860.000003	0.001	1900.000002	0.001
3.15	1860.000003	0.001	1900.000002	0.001
4.26	1860.000001	0.001	1900.000002	0.001

Note: The applicant defined the normal working voltage is from 3.15Vdc to 4.26Vdc.

Frequency Error vs. Temperature

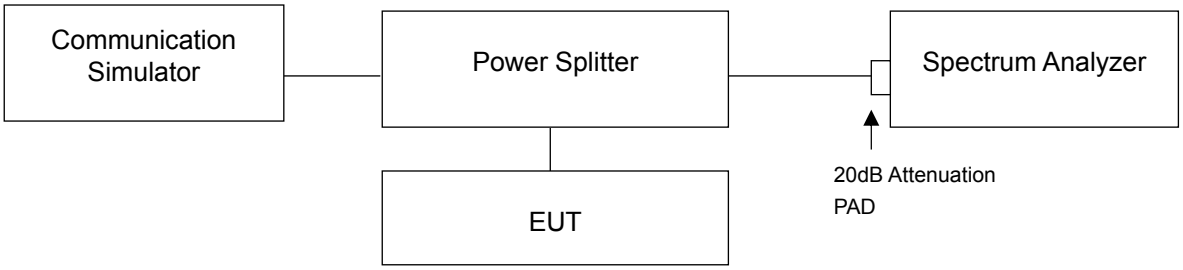
Temp. (℃)	LTE Band 2			
	Channel Bandwidth: 20 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
-30	1860.000003	0.002	1900.000002	0.001
-20	1860.000002	0.001	1900.000002	0.001
-10	1860.000002	0.001	1900.000002	0.001
0	1860.000002	0.001	1900.000003	0.002
10	1860.000003	0.001	1900.000003	0.002
20	1859.999998	-0.001	1899.999996	-0.002
30	1859.999998	-0.001	1899.999999	-0.001
40	1859.999997	-0.002	1899.999997	-0.001
50	1859.999998	-0.001	1899.999998	-0.001
60	1859.999998	-0.001	1899.999999	-0.001

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

Occupied Bandwidth

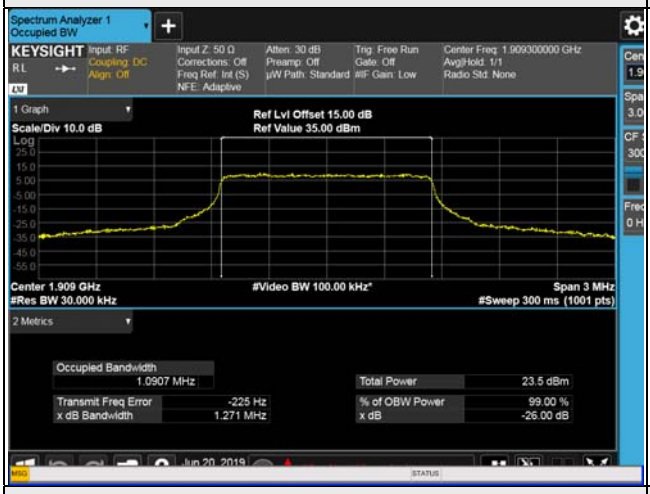
LTE Band 2

LTE Band 2, Channel Bandwidth 1.4MHz			
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	
		QPSK	16QAM
18607	1850.7	1.08	1.08
18900	1880.0	1.08	1.08
19193	1909.3	1.08	1.09
LTE Band 2, Channel Bandwidth 3MHz			
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	
		QPSK	16QAM
18615	1851.5	2.70	2.69
18900	1880.0	2.69	2.69
19185	1908.5	2.69	2.69
LTE Band 2, Channel Bandwidth 5MHz			
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	
		QPSK	16QAM
18625	1852.5	4.48	4.48
18900	1880.0	4.48	4.48
19175	1907.5	4.47	4.48
LTE Band 2, Channel Bandwidth 10MHz			
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	
		QPSK	16QAM
18650	1855.0	8.95	8.95
18900	1880.0	8.94	8.95
19150	1905.0	8.93	8.94
LTE Band 2, Channel Bandwidth 15MHz			
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	
		QPSK	16QAM
18675	1857.5	13.41	13.40
18900	1880.0	13.41	13.40
19125	1902.5	13.40	13.39

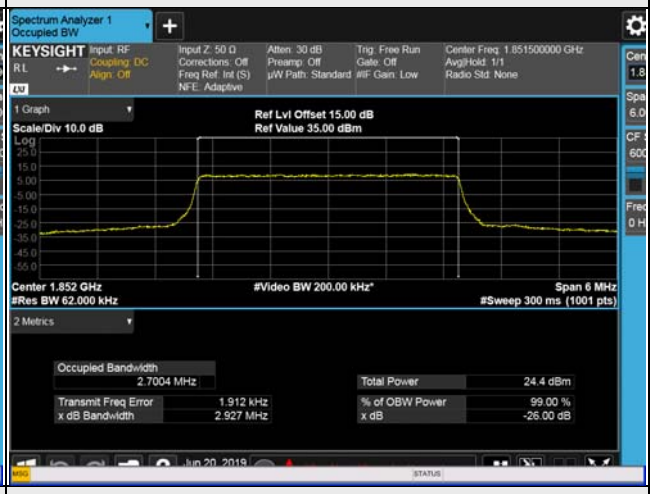
LTE Band 2, Channel Bandwidth 20MHz			
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	
		QPSK	16QAM
18700	1860.0	17.86	17.88
18900	1880.0	17.88	17.90
19100	1900.0	17.87	17.89

Spectrum Plot of Worst Value

1.4MHz / 16QAM



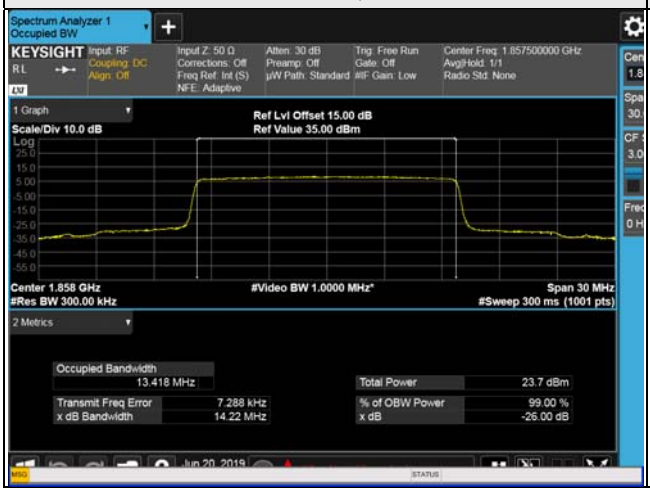
3MHz / QPSK



5MHz / QPSK

10MHz / QPSK

15MHz / QPSK

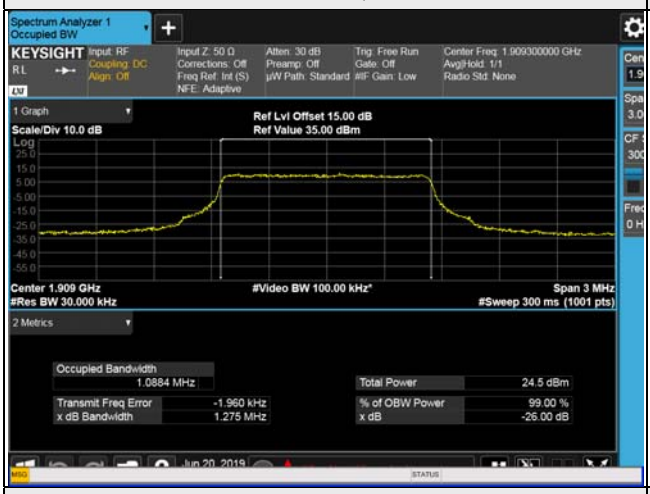
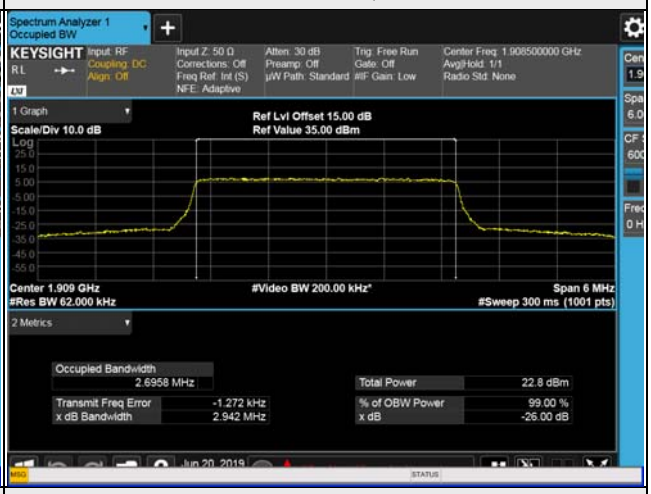
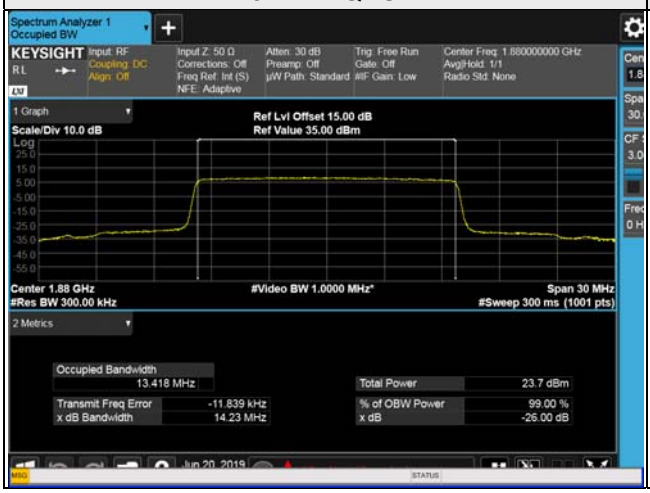
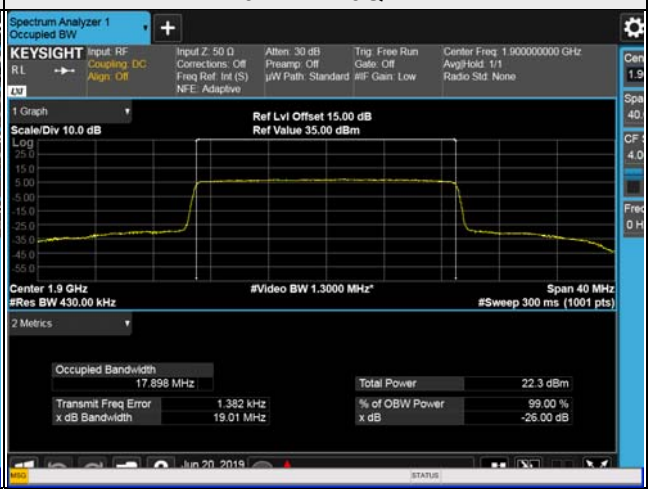


20MHz / 16QAM

26dB Bandwidth

LTE Band 2, Channel Bandwidth 1.4MHz			
Channel	Frequency (MHz)	26dB Bandwidth (MHz)	
		QPSK	16QAM
18607	1850.7	1.26	1.27
18900	1880.0	1.26	1.26
19193	1909.3	1.27	1.27
LTE Band 2, Channel Bandwidth 3MHz			
Channel	Frequency (MHz)	26dB Bandwidth (MHz)	
		QPSK	16QAM
18615	1851.5	2.92	2.93
18900	1880.0	2.92	2.93
19185	1908.5	2.92	2.94
LTE Band 2, Channel Bandwidth 5MHz			
Channel	Frequency (MHz)	26dB Bandwidth (MHz)	
		QPSK	16QAM
18625	1852.5	4.80	4.82
18900	1880.0	4.81	4.82
19175	1907.5	4.80	4.81
LTE Band 2, Channel Bandwidth 10MHz			
Channel	Frequency (MHz)	26dB Bandwidth (MHz)	
		QPSK	16QAM
18650	1855.0	9.51	9.52
18900	1880.0	9.50	9.50
19150	1905.0	9.49	9.50
LTE Band 2, Channel Bandwidth 15MHz			
Channel	Frequency (MHz)	26dB Bandwidth (MHz)	
		QPSK	16QAM
18675	1857.5	14.22	14.21
18900	1880.0	14.23	14.21
19125	1902.5	14.21	14.21

LTE Band 2, Channel Bandwidth 20MHz			
Channel	Frequency (MHz)	26dB Bandwidth (MHz)	
		QPSK	16QAM
18700	1860.0	18.98	19.00
18900	1880.0	18.99	18.99
19100	1900.0	18.99	19.01

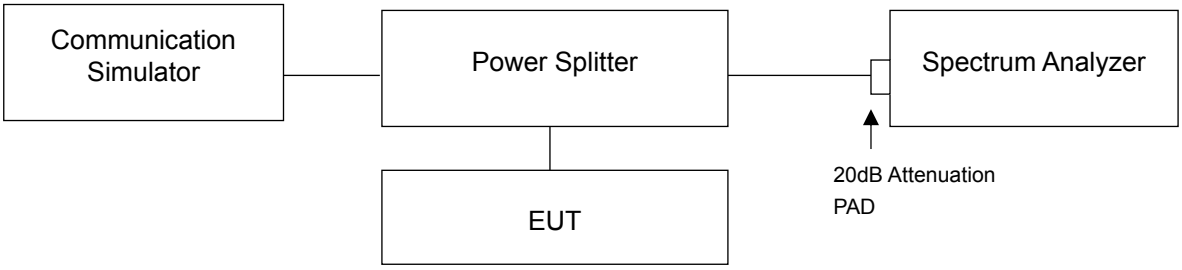
Spectrum Plot of Worst Value	
1.4MHz / QPSK	3MHz / 16QAM
	
5MHz / 16QAM	10MHz / 16QAM
15MHz / QPSK	20MHz / 16QAM
	

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.

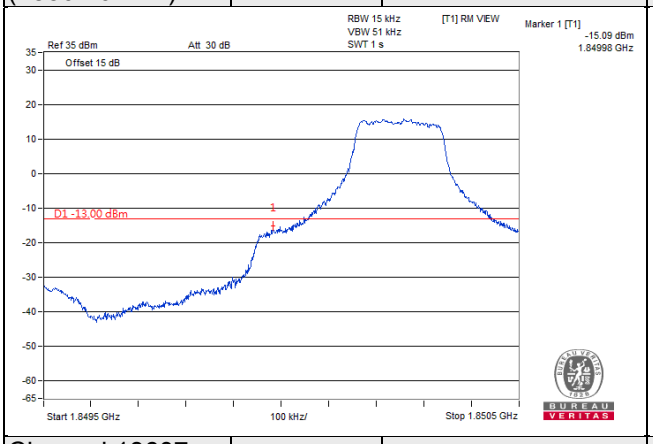
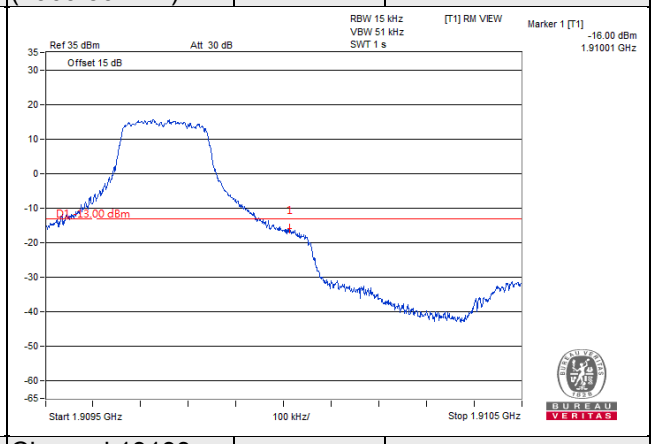
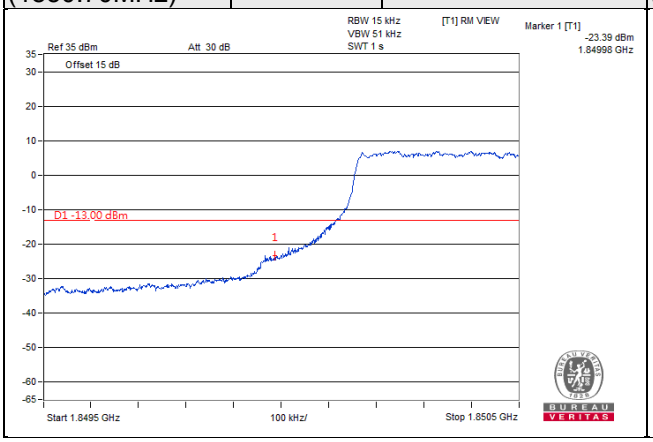
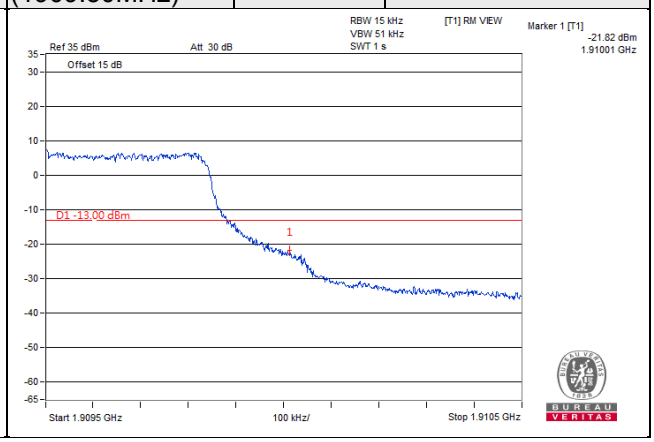
4.5.2 Test Setup

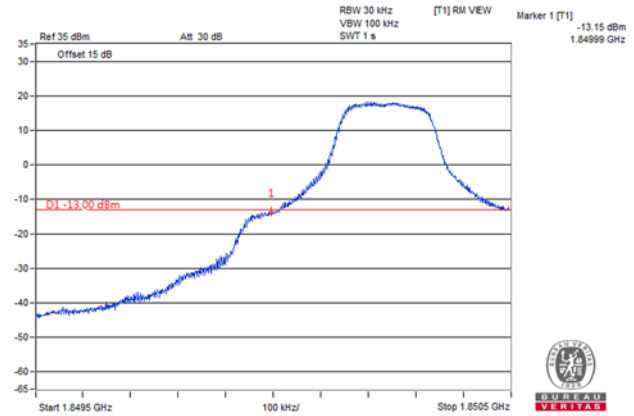
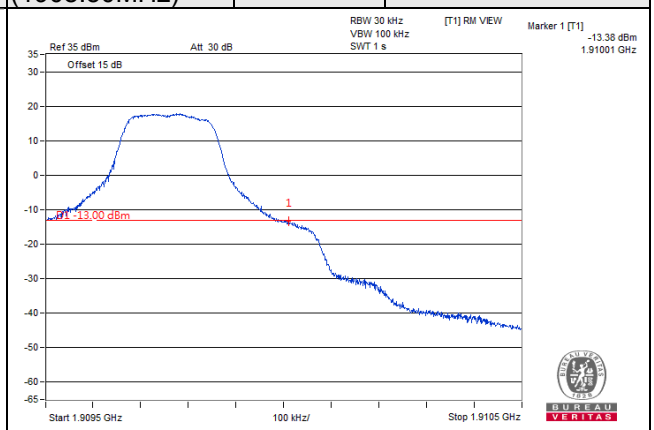
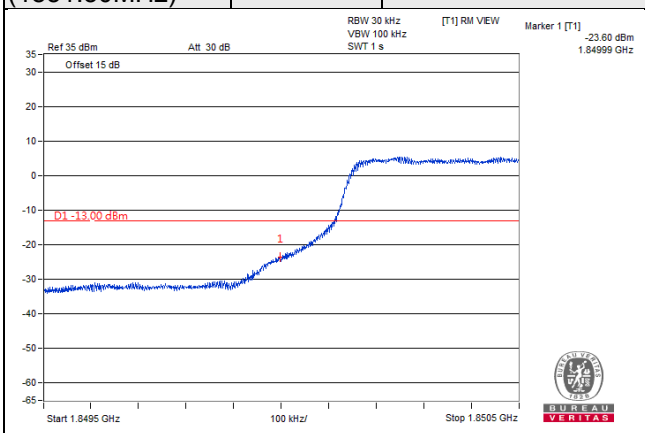
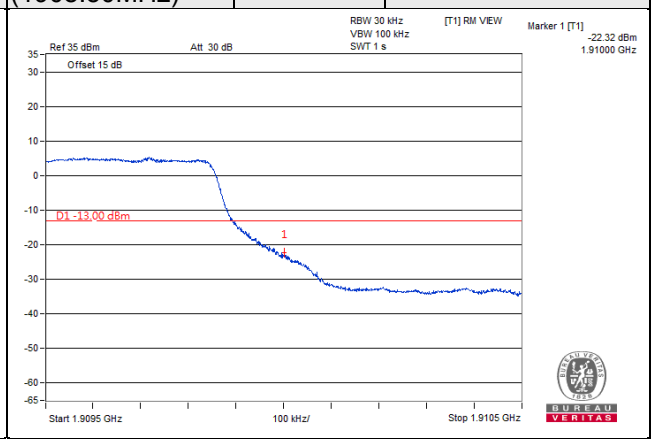


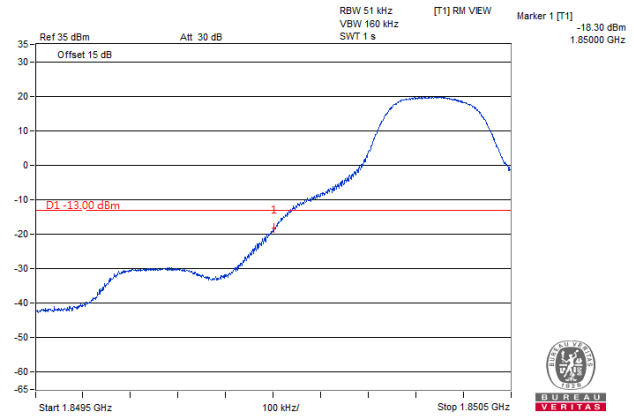
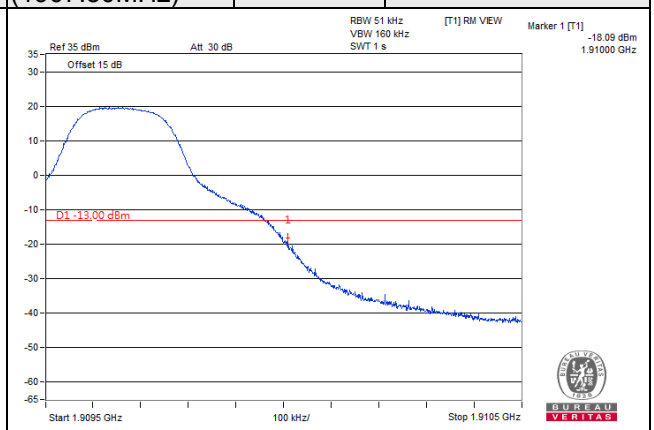
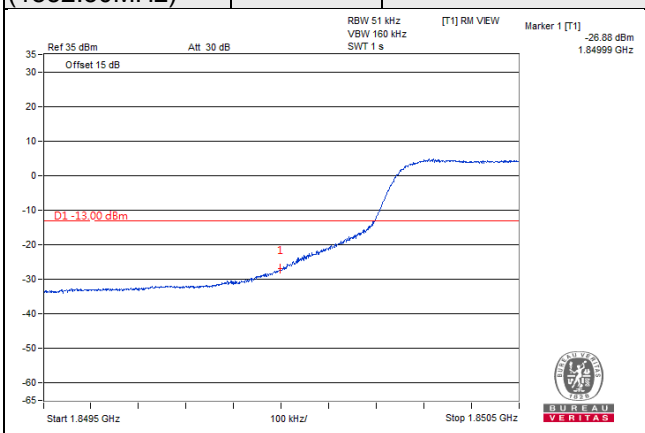
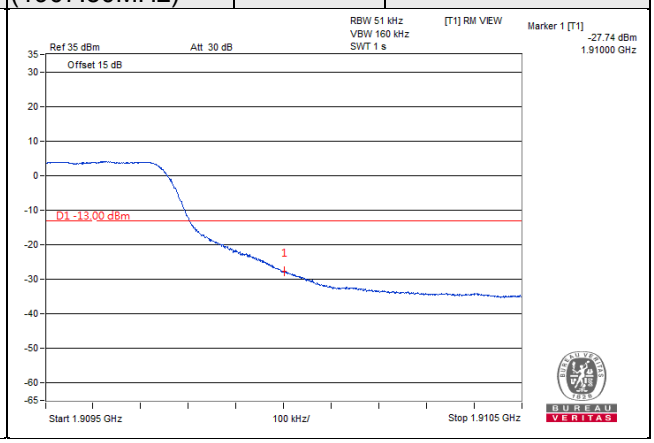
4.5.3 Test Procedures

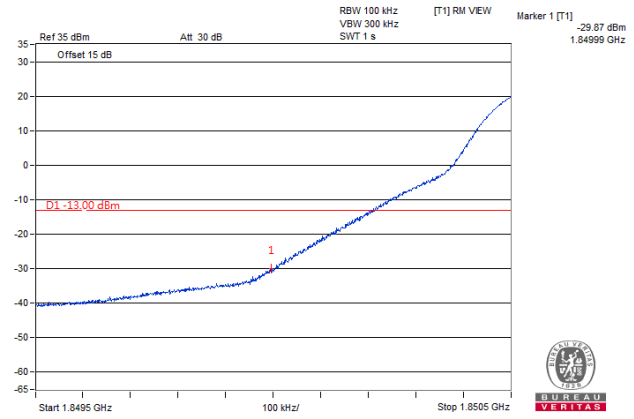
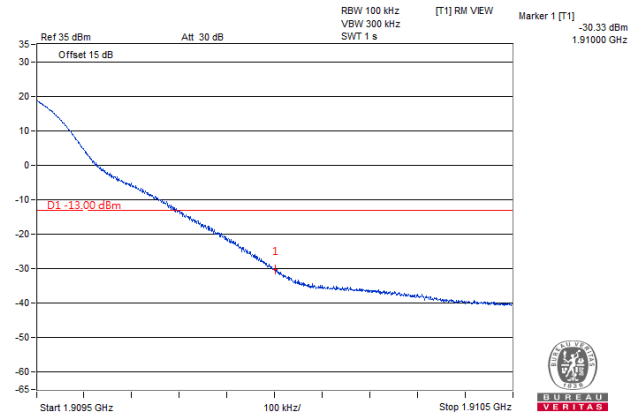
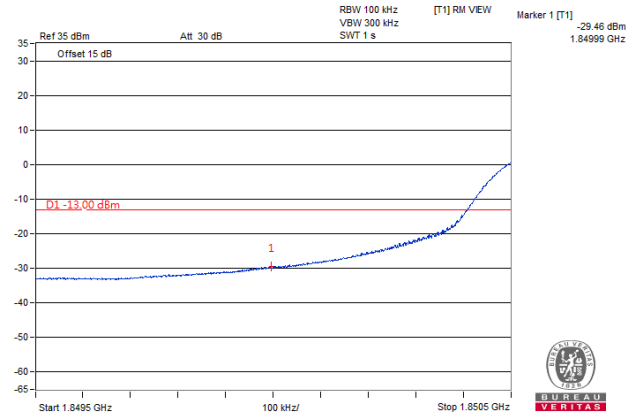
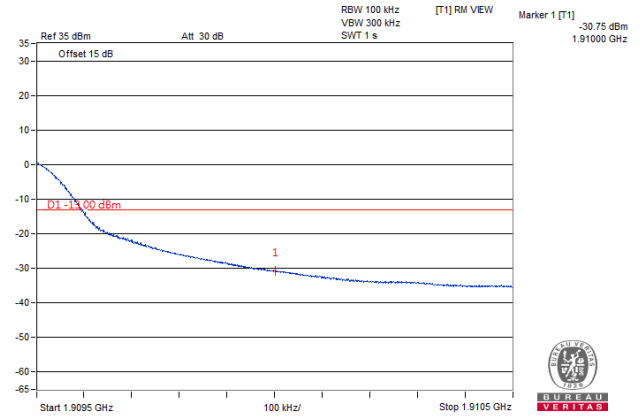
a. All measurements were done at low and high operational frequency range.
b. The center frequency of spectrum is the band edge frequency and span is 1MHz. RB of the spectrum is 15kHz and VB of the spectrum is 51kHz (LTE Channel Bandwidth 1.4MHz).
c. The center frequency of spectrum is the band edge frequency and span is 1MHz. RB of the spectrum is 30kHz and VB of the spectrum is 100kHz (LTE Channel Bandwidth 3MHz).
d. The center frequency of spectrum is the band edge frequency and span is 1MHz. RB of the spectrum is 51kHz and VB of the spectrum is 160kHz (LTE Channel Bandwidth 5MHz).
e. The center frequency of spectrum is the band edge frequency and span is 1MHz. RB of the spectrum is 100kHz and VB of the spectrum is 300kHz (LTE Channel Bandwidth 10MHz).
f. The center frequency of spectrum is the band edge frequency and span is 1MHz. RB of the spectrum is 150kHz and VB of the spectrum is 470kHz (LTE Channel Bandwidth 15MHz).
g. The center frequency of spectrum is the band edge frequency and span is 1MHz. RB of the spectrum is 200kHz and VB of the spectrum is 1MHz (LTE Channel Bandwidth 20MHz).
h. Record the max trace plot into the test report.

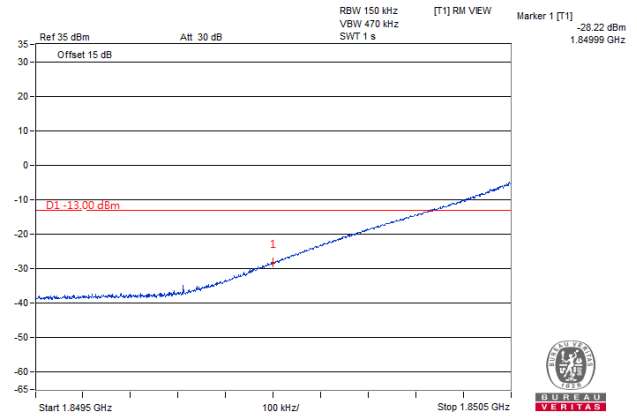
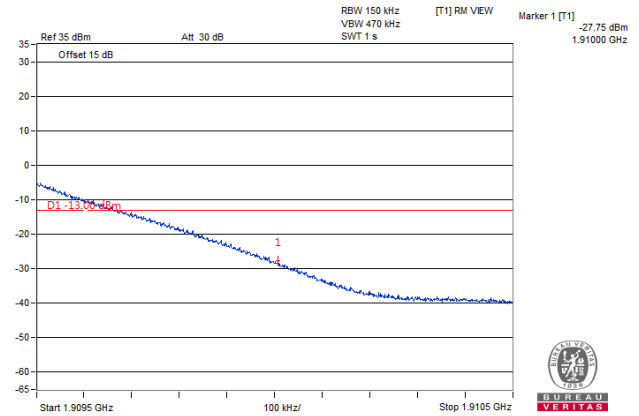
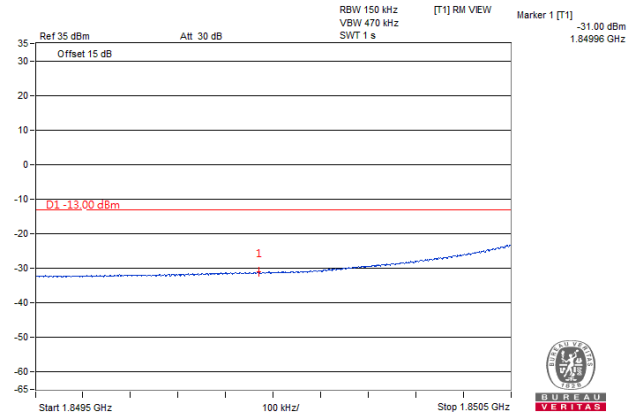
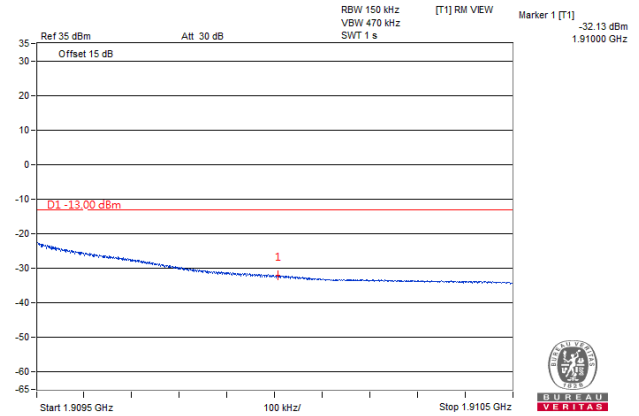
4.5.4 Test Results

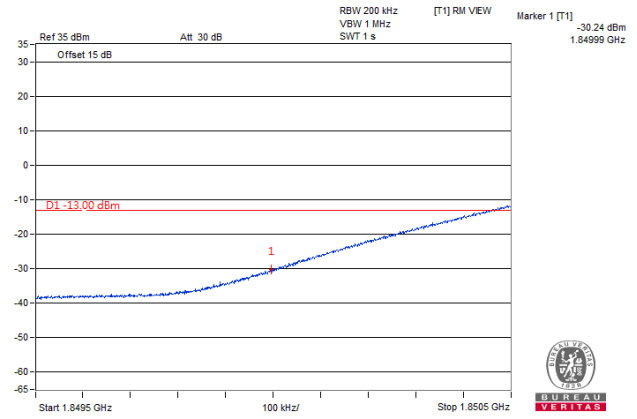
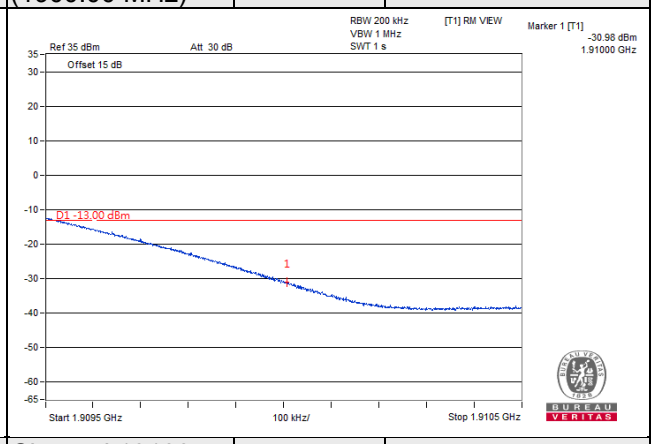
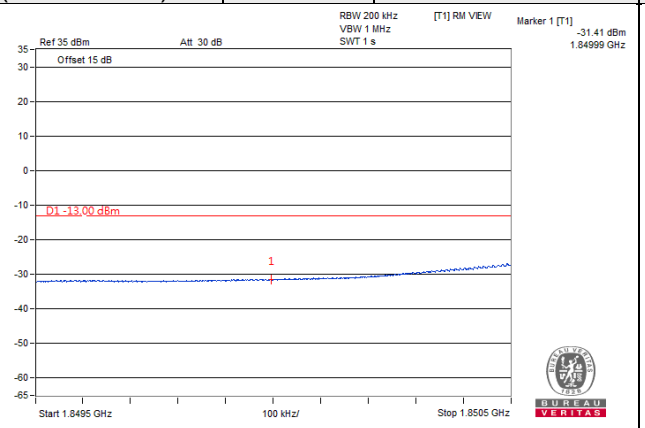
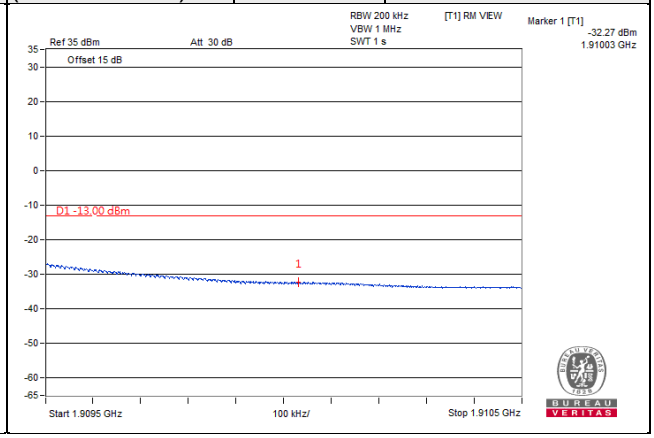
LTE Band 2, Channel Bandwidth 1.4MHz					
Channel 18607 (1850.70MHz)	QPSK	1 RB / 0 RB Offset	Channel 19193 (1909.30MHz)	QPSK	1 RB / 5 RB Offset
					
Channel 18607 (1850.70MHz)	QPSK	6 RB / 0 RB Offset	Channel 19193 (1909.30MHz)	QPSK	6 RB / 0 RB Offset
					

LTE Band 2, Channel Bandwidth 3MHz					
Channel 18615 (1851.50MHz)	QPSK	1 RB / 0 RB Offset	Channel 19185 (1908.50MHz)	QPSK	1 RB / 14 RB Offset
					
Channel 18615 (1851.50MHz)	QPSK	15 RB / 0 RB Offset	Channel 19185 (1908.50MHz)	QPSK	15 RB / 0 RB Offset
					

LTE Band 2, Channel Bandwidth 5MHz					
Channel 18625 (1852.50MHz)	QPSK	1 RB / 0 RB Offset	Channel 19175 (1907.50MHz)	QPSK	1 RB / 24 RB Offset
					
Channel 18625 (1852.50MHz)	QPSK	25 RB / 0 RB Offset	Channel 19175 (1907.50MHz)	QPSK	25 RB / 0 RB Offset
					

LTE Band 2, Channel Bandwidth 10MHz					
Channel 18650 (1855.00MHz)	QPSK	1 RB / 0 RB Offset	Channel 19150 (1905.00MHz)	QPSK	1 RB / 49 RB Offset
					
Channel 18650 (1855.00MHz)	QPSK	50 RB / 0 RB Offset	Channel 19150 (1905.00MHz)	QPSK	50 RB / 0 RB Offset
					

LTE Band 2, Channel Bandwidth 15MHz					
Channel 18675 (1857.50MHz)	QPSK	1 RB / 0 RB Offset	Channel 19125 (1902.50MHz)	QPSK	1 RB / 74 RB Offset
					
Channel 18675 (1857.50MHz)	QPSK	75 RB / 0 RB Offset	Channel 19125 (1902.50MHz)	QPSK	75 RB / 0 RB Offset
					

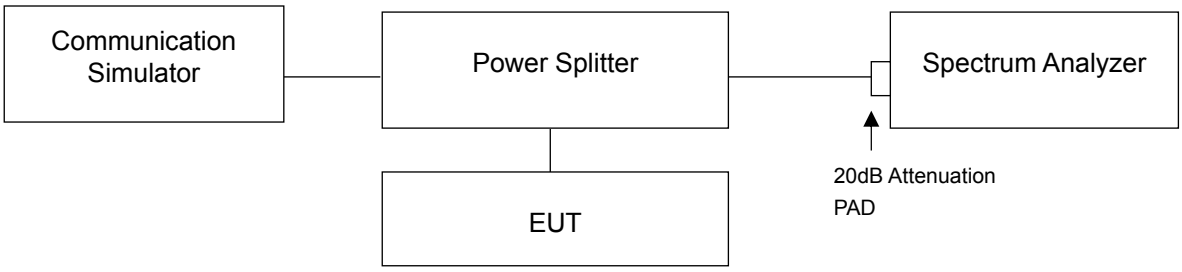
LTE Band 2, Channel Bandwidth 20MHz					
Channel 18700 (1860.00MHz)	QPSK	1 RB / 0 RB Offset	Channel 19100 (1900.00 MHz)	QPSK	1 RB / 99 RB Offset
					
Channel 18700 (1860.00MHz)	QPSK	100 RB / 0 RB Offset	Channel 19100 (1900.00 MHz)	QPSK	100 RB / 0 RB Offset
					

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



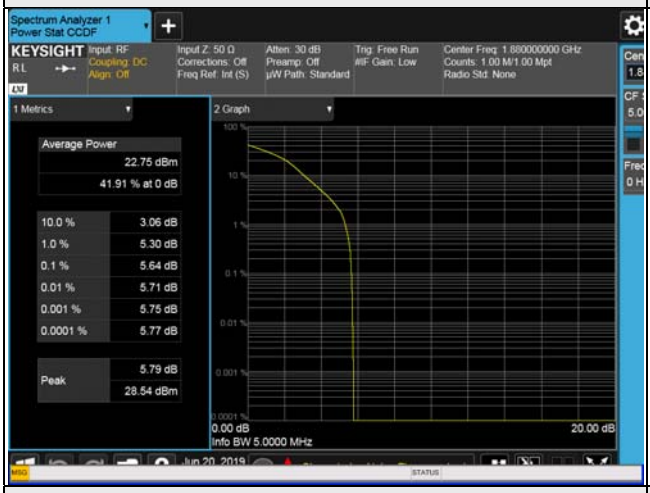
4.6.3 Test Procedures

a. Set resolution/measurement bandwidth ≥ signal's occupied bandwidth;
b. Set the number of counts to a value that stabilizes the measured CCDF curve;
c. Record the maximum PAPR level associated with a probability of 0.1%.

4.6.4 Test Results

LTE Band 2

LTE Band 2, Channel Bandwidth 1.4MHz			
Channel	Frequency (MHz)	Peak To Average Ratio (dB)	
		QPSK	16QAM
18607	1850.7	4.32	5.32
18900	1880.0	4.62	5.63
19193	1909.3	3.99	5.25
LTE Band 2, Channel Bandwidth 3MHz			
Channel	Frequency (MHz)	Peak To Average Ratio (dB)	
		QPSK	16QAM
18615	1851.5	4.03	5.39
18900	1880.0	4.77	5.69
19185	1908.5	4.48	5.39
LTE Band 2, Channel Bandwidth 5MHz			
Channel	Frequency (MHz)	Peak To Average Ratio (dB)	
		QPSK	16QAM
18625	1852.5	4.48	5.40
18900	1880.0	4.76	5.64
19175	1907.5	4.57	5.46
LTE Band 2, Channel Bandwidth 10MHz			
Channel	Frequency (MHz)	Peak To Average Ratio (dB)	
		QPSK	16QAM
18650	1855.0	4.37	5.33
18900	1880.0	4.67	5.59
19150	1905.0	4.56	5.50
LTE Band 2, Channel Bandwidth 15MHz			
Channel	Frequency (MHz)	Peak To Average Ratio (dB)	
		QPSK	16QAM
18675	1857.5	4.44	5.40
18900	1880.0	4.68	5.57
19125	1902.5	4.64	5.63
LTE Band 2, Channel Bandwidth 20MHz			
Channel	Frequency (MHz)	Peak To Average Ratio (dB)	
		QPSK	16QAM
18700	1860.0	4.37	5.37
18900	1880.0	4.73	5.58
19100	1900.0	4.82	5.68

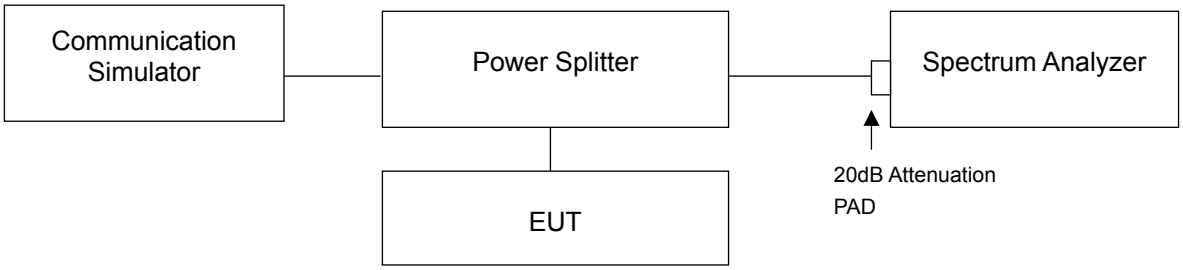
Spectrum Plot of Worst Value	
1.4MHz / 16QAM	3MHz / 16QAM
5MHz / 16QAM	10MHz / 16QAM
	
15MHz / 16QAM	20MHz / 16QAM

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 –13dBm.

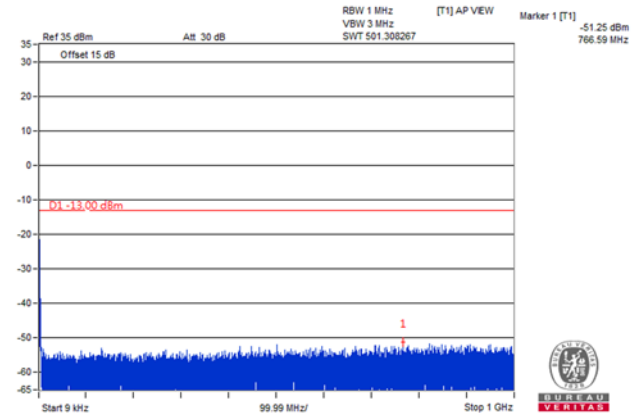
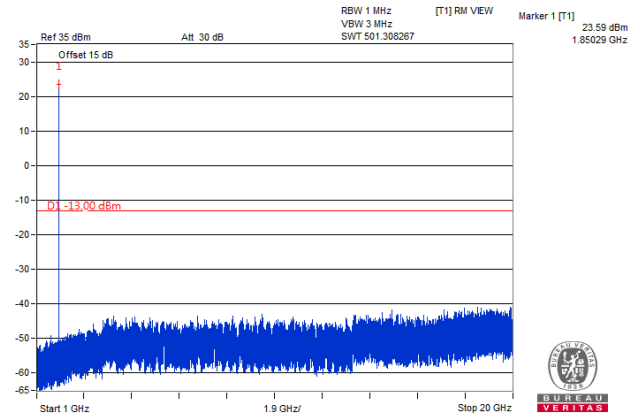
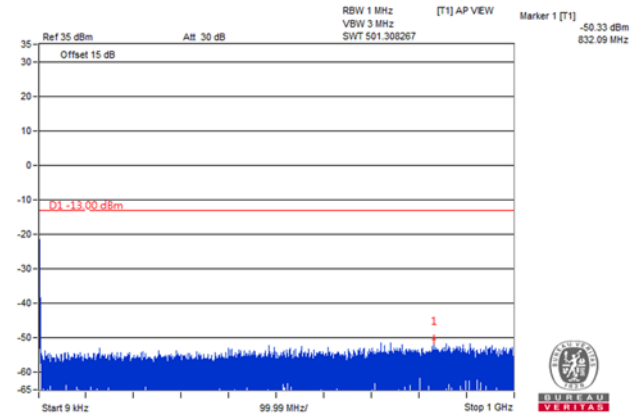
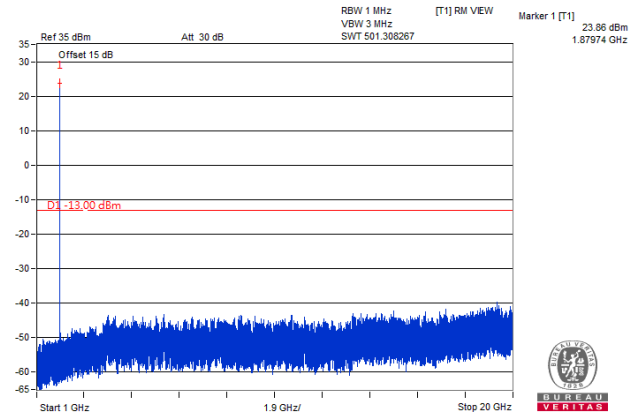
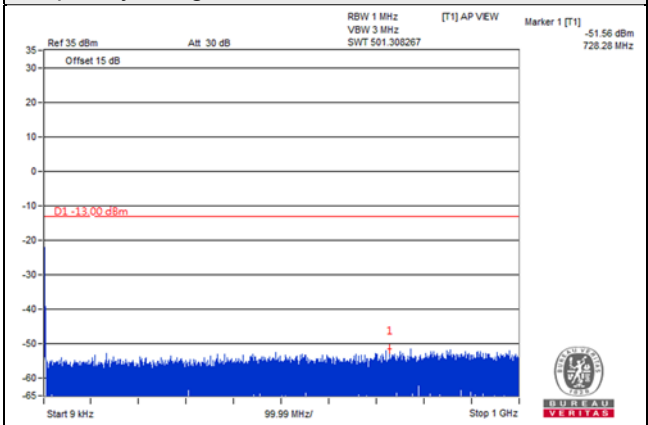
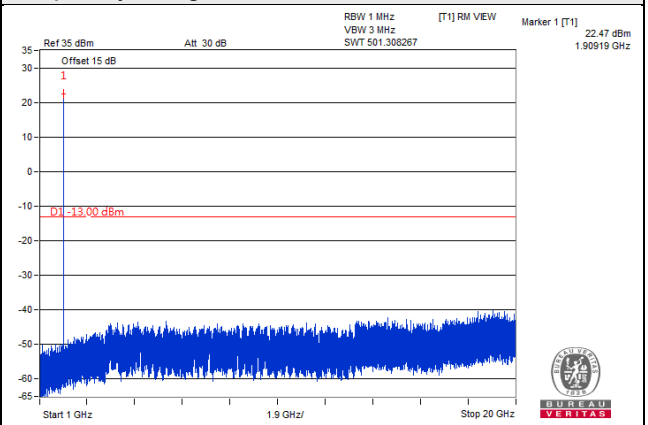
4.7.2 Test Setup

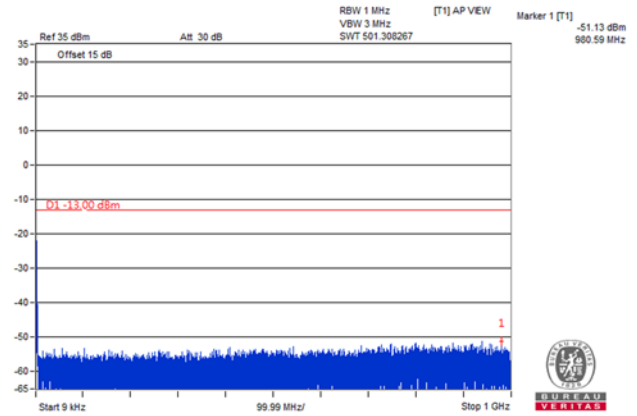
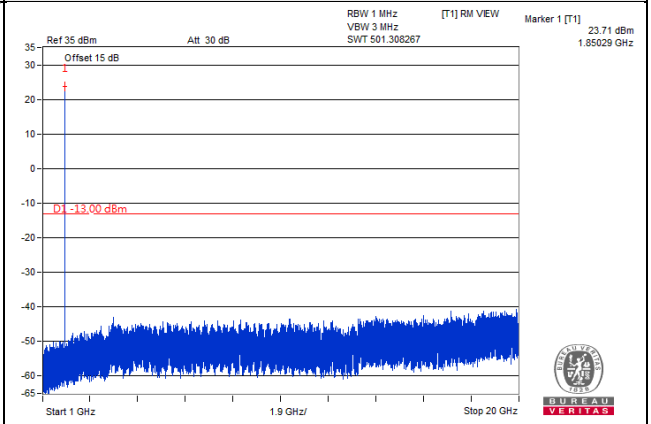
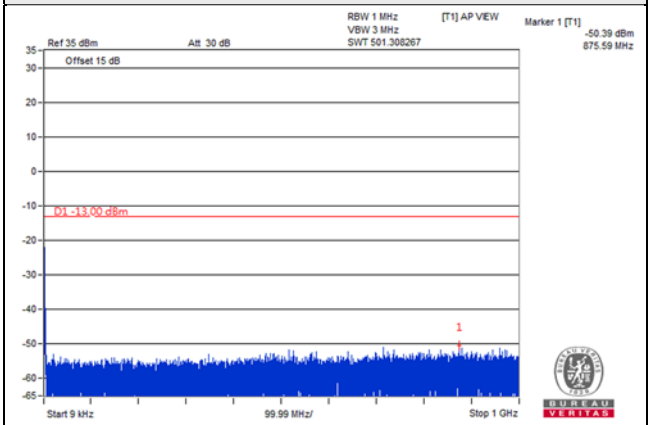
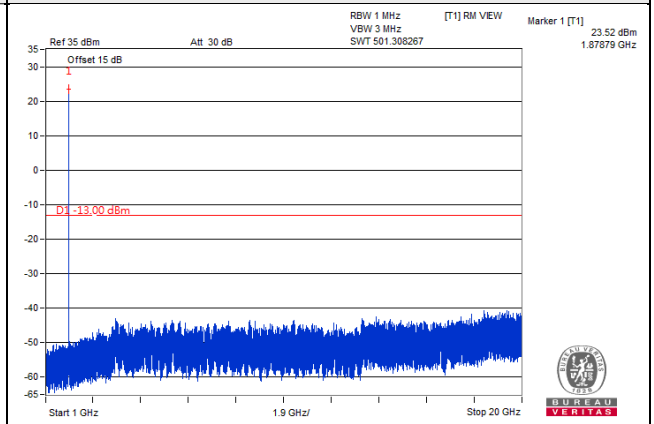
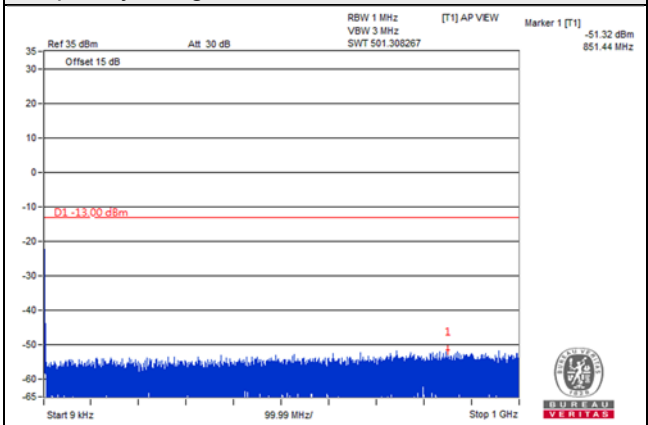
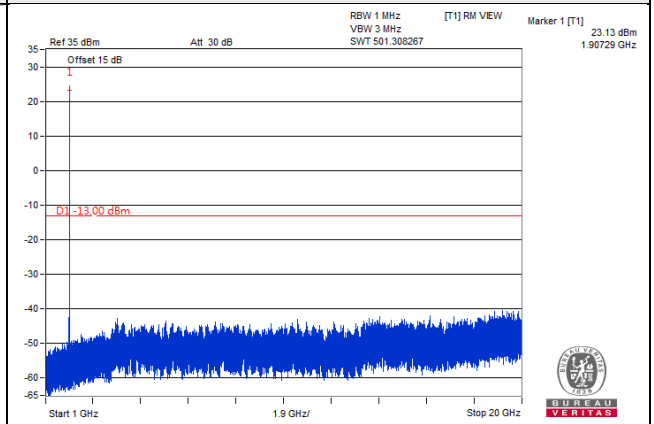


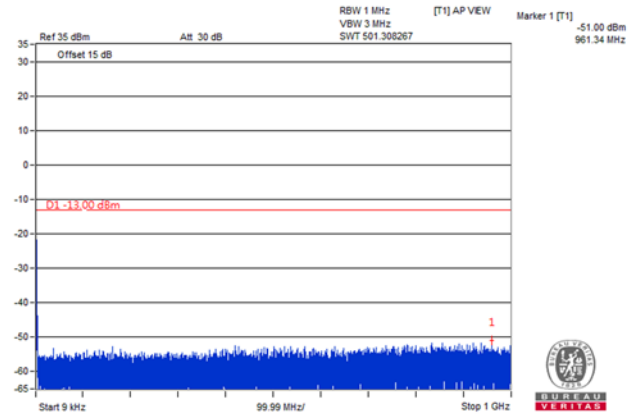
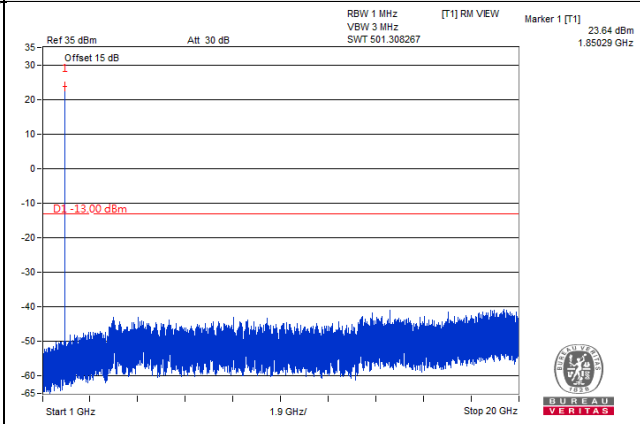
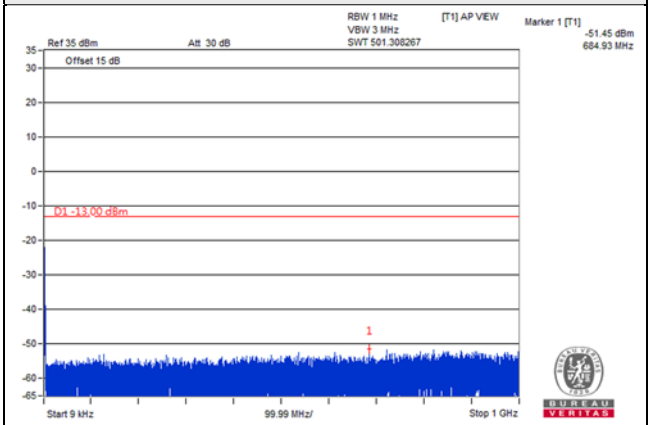
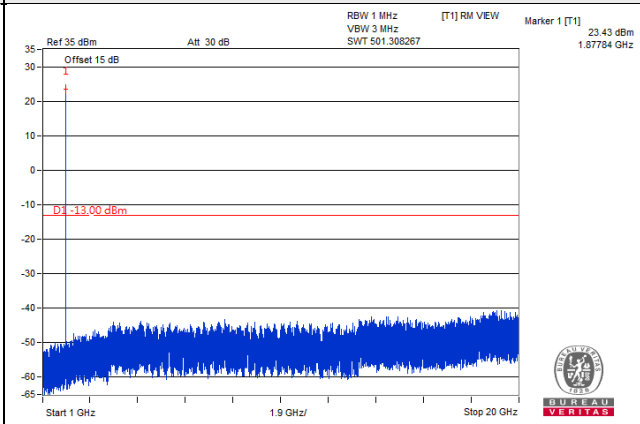
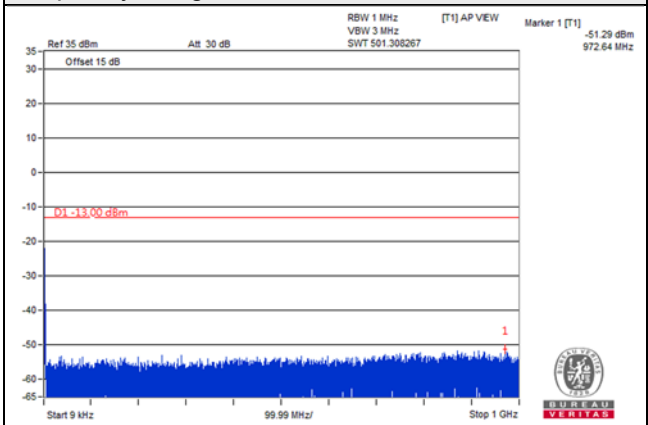
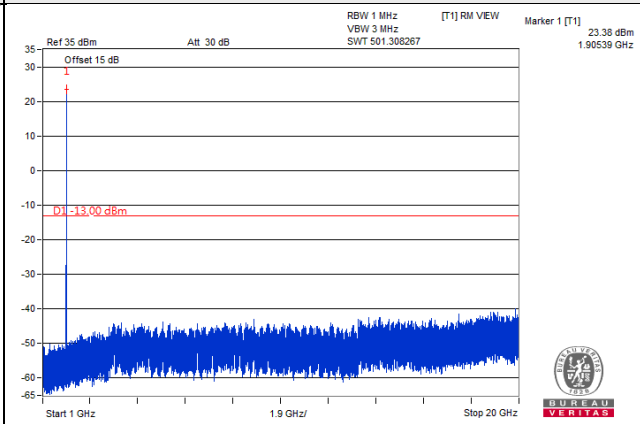
4.7.3 Test Procedure

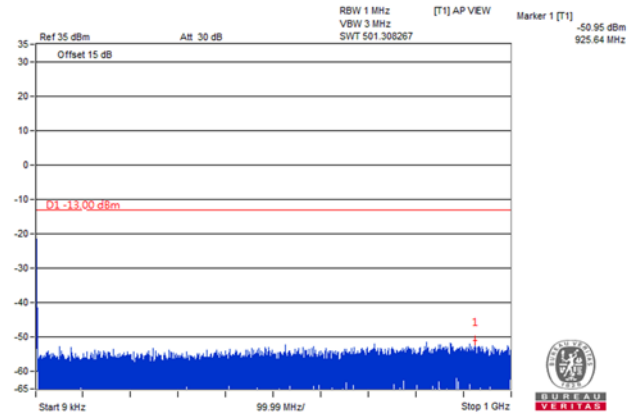
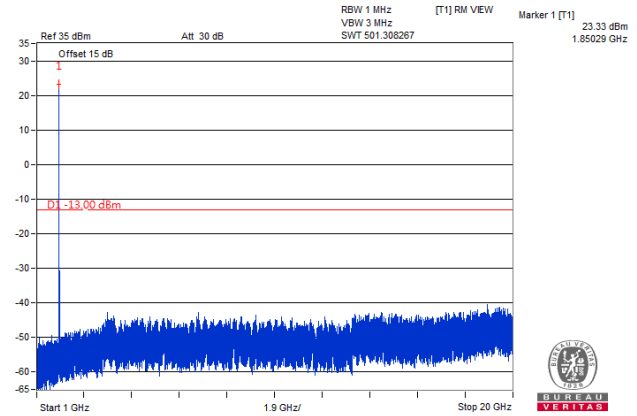
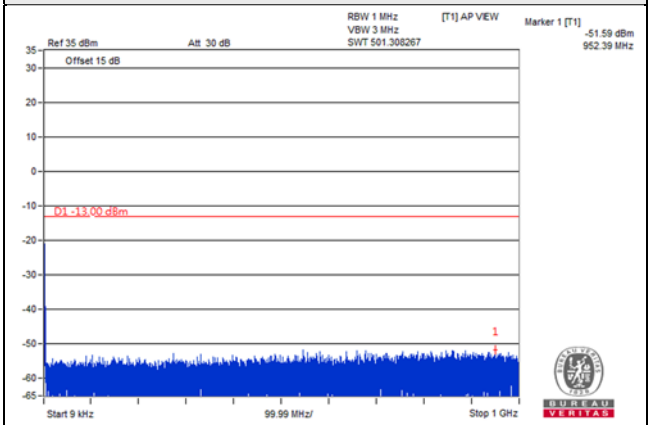
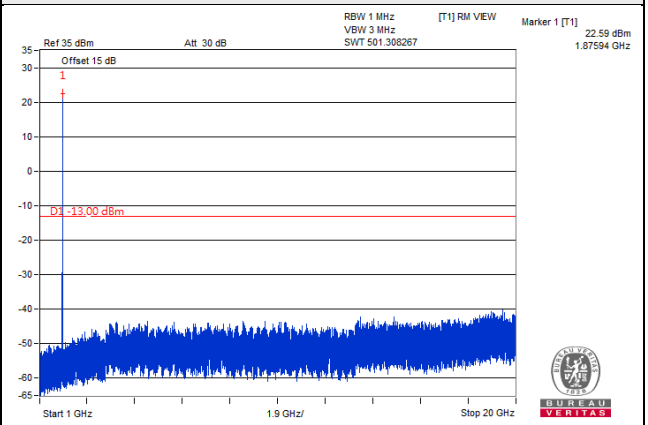
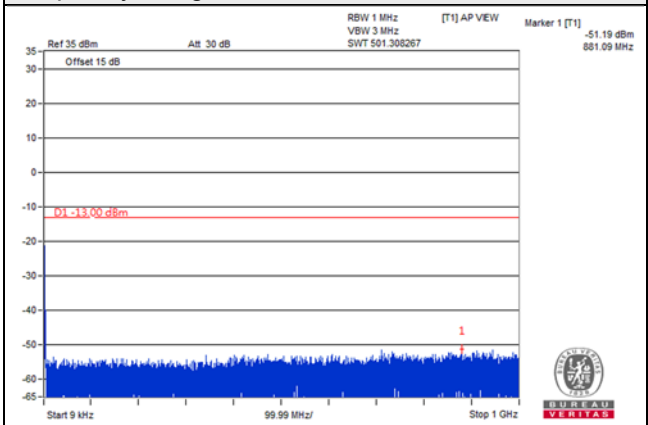
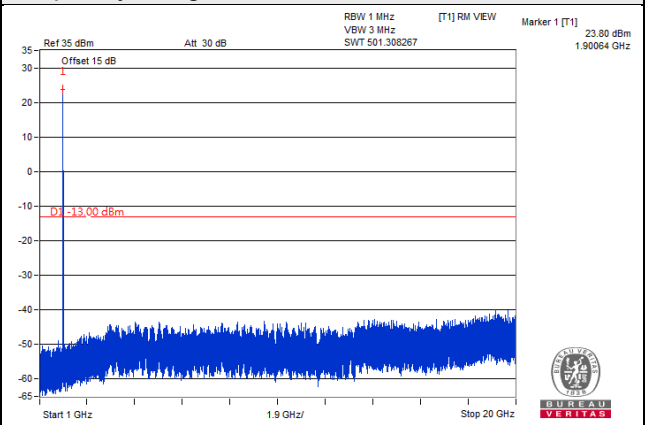
a. The EUT makes a phone call to the communication simulator. All measurements were done at low, middle and high operational frequency range.
b. Measuring frequency range is from 9 kHz to 1GHz. 20dB attenuation pad is connected with spectrum. RBW=1MHz and VBW=3MHz is used for conducted emission measurement.
c. Measuring frequency range is from 1GHz to 20GHz or 27GHz. 20dB attenuation pad is connected with spectrum. RBW=1MHz and VBW=3MHz is used for conducted emission measurement.
d. Spectrum RBW settings are referenced to ANSI 63.2-1996 section 8.2.2.

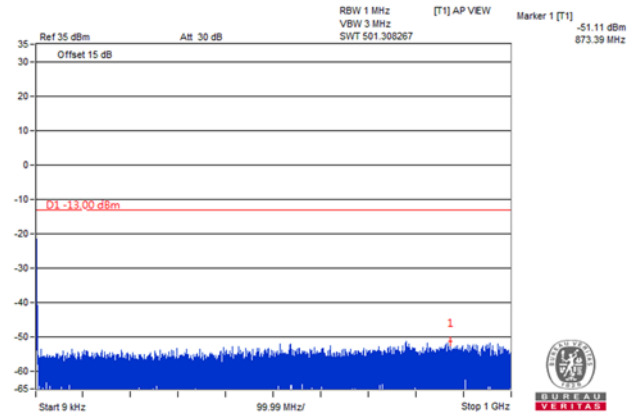
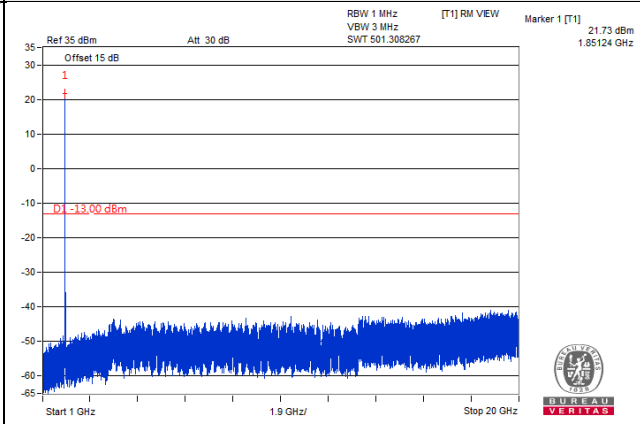
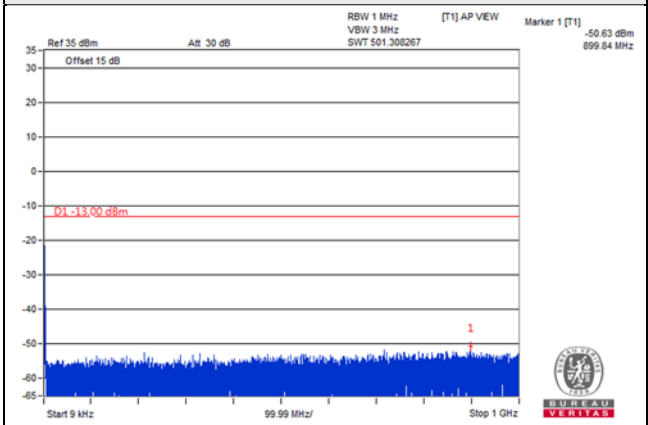
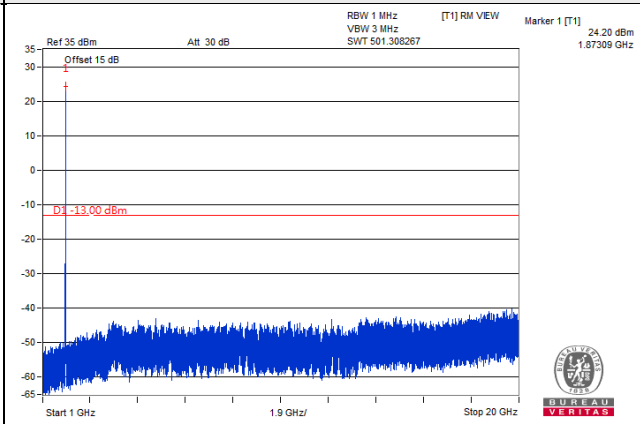
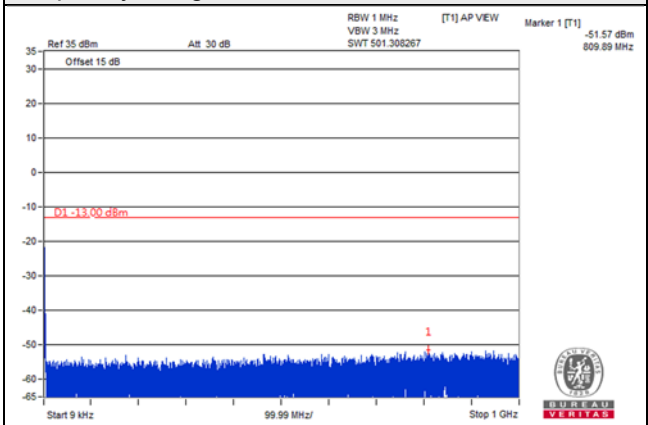
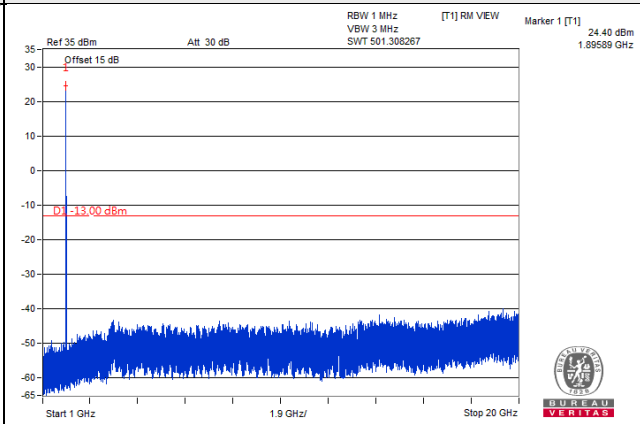
4.7.4 Test Results

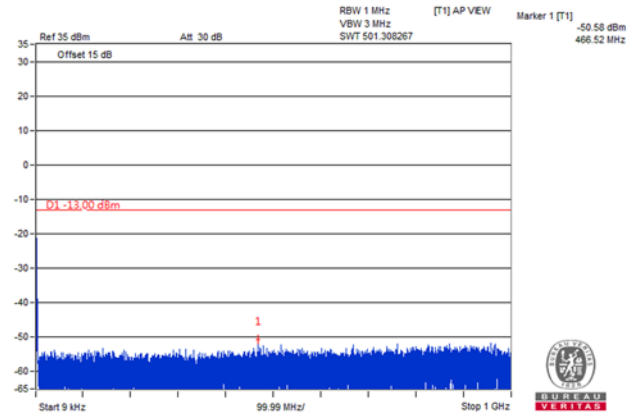
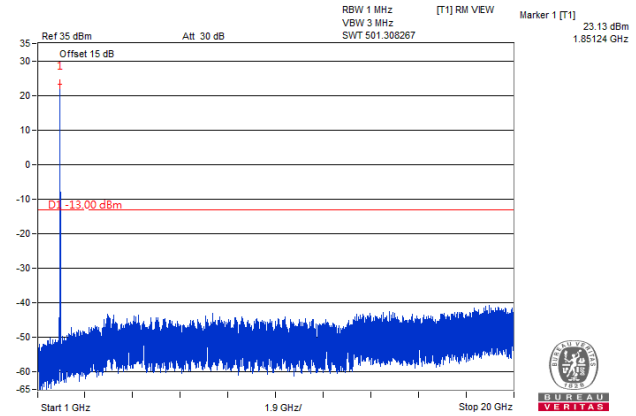
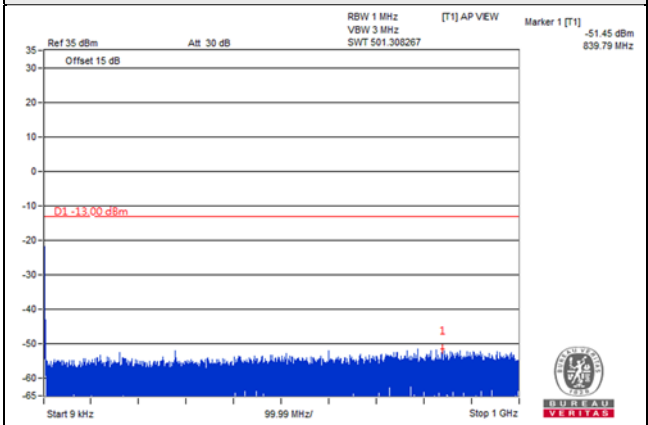
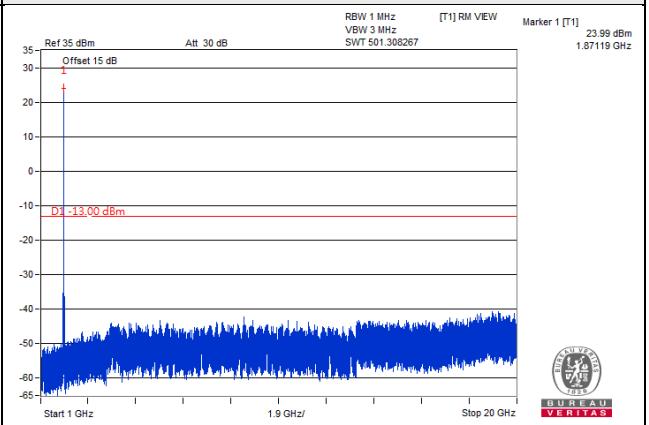
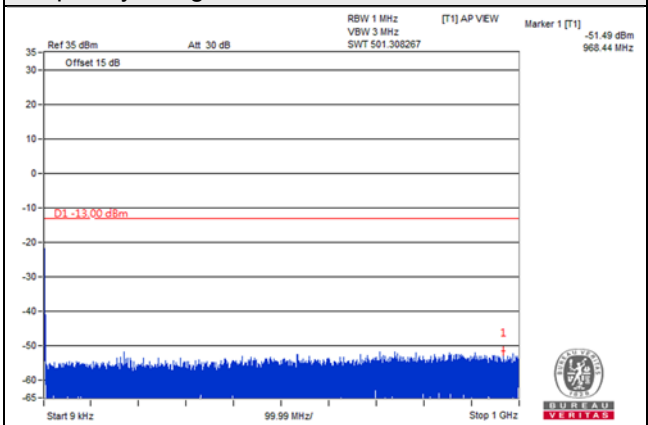
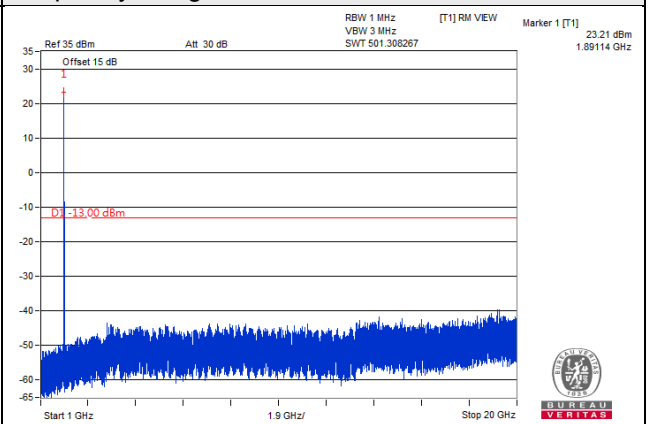
LTE Band 2, Channel Bandwidth 1.4MHz	
Channel 18607 (1850.70MHz)	
Frequency Range : 9kHz~1GHz	Frequency Range : 1GHz~20GHz
	
Channel 18900 (1880.00MHz)	
Frequency Range : 9kHz~1GHz	Frequency Range : 1GHz~20GHz
	
Channel 19193 (1909.30MHz)	
Frequency Range : 9kHz~1GHz	Frequency Range : 1GHz~20GHz
	

LTE Band 2, Channel Bandwidth 3MHz	
Channel 18615 (1851.50MHz)	
Frequency Range : 9kHz~1GHz	Frequency Range : 1GHz~20GHz
	
Channel 18900 (1880.00MHz)	
Frequency Range : 9kHz~1GHz	Frequency Range : 1GHz~20GHz
	
Channel 19185 (1908.50MHz)	
Frequency Range : 9kHz~1GHz	Frequency Range : 1GHz~20GHz
	

LTE Band 2, Channel Bandwidth 5MHz	
Channel 18625 (1852.50MHz)	
Frequency Range : 9kHz~1GHz	Frequency Range : 1GHz~20GHz
	
Channel 18900 (1880.00MHz)	
Frequency Range : 9kHz~1GHz	Frequency Range : 1GHz~20GHz
	
Channel 19175 (1907.50MHz)	
Frequency Range : 9kHz~1GHz	Frequency Range : 1GHz~20GHz
	

LTE Band 2, Channel Bandwidth 10MHz	
Channel 18650 (1855.00MHz)	
Frequency Range : 9kHz~1GHz	Frequency Range : 1GHz~20GHz
	
Channel 18900 (1880.00MHz)	
Frequency Range : 9kHz~1GHz	Frequency Range : 1GHz~20GHz
	
Channel 19150 (1905.00MHz)	
Frequency Range : 9kHz~1GHz	Frequency Range : 1GHz~20GHz
	

LTE Band 2, Channel Bandwidth 15MHz	
Channel 18675 (1857.50MHz)	
Frequency Range : 9kHz~1GHz	Frequency Range : 1GHz~20GHz
	
Channel 18900 (1880.00MHz)	
Frequency Range : 9kHz~1GHz	Frequency Range : 1GHz~20GHz
	
Channel 19125 (1902.50MHz)	
Frequency Range : 9kHz~1GHz	Frequency Range : 1GHz~20GHz
	

LTE Band 2, Channel Bandwidth 20MHz	
Channel 18700 (1860.00MHz)	
Frequency Range : 9kHz~1GHz	Frequency Range : 1GHz~20GHz
	
Channel 18900 (1880.00MHz)	
Frequency Range : 9kHz~1GHz	Frequency Range : 1GHz~20GHz
	
Channel 19100 (1900.00MHz)	
Frequency Range : 9kHz~1GHz	Frequency Range : 1GHz~20GHz
	

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 equal to –13dBm.

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

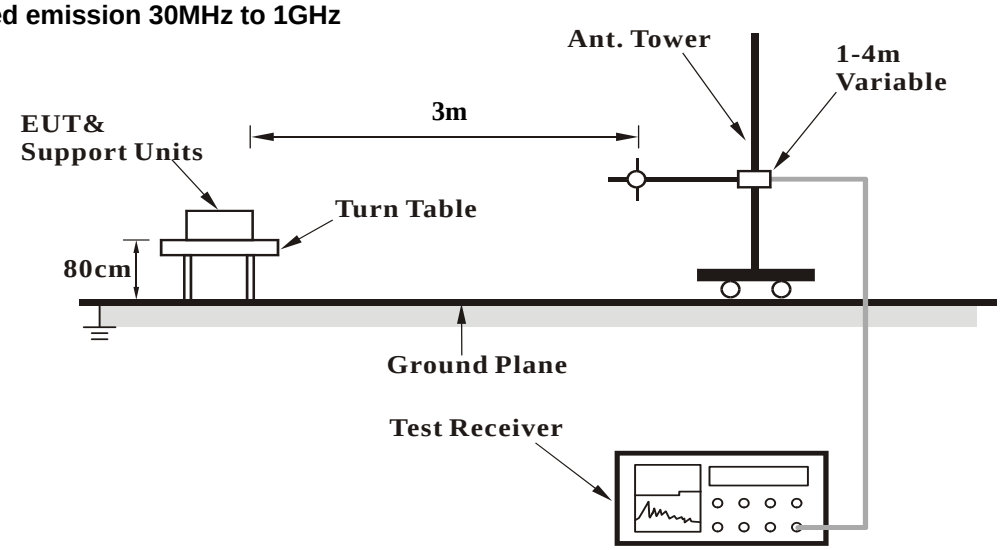
NOTE: The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 1MHz/3MHz.

4.8.3 Deviation from Test Standard

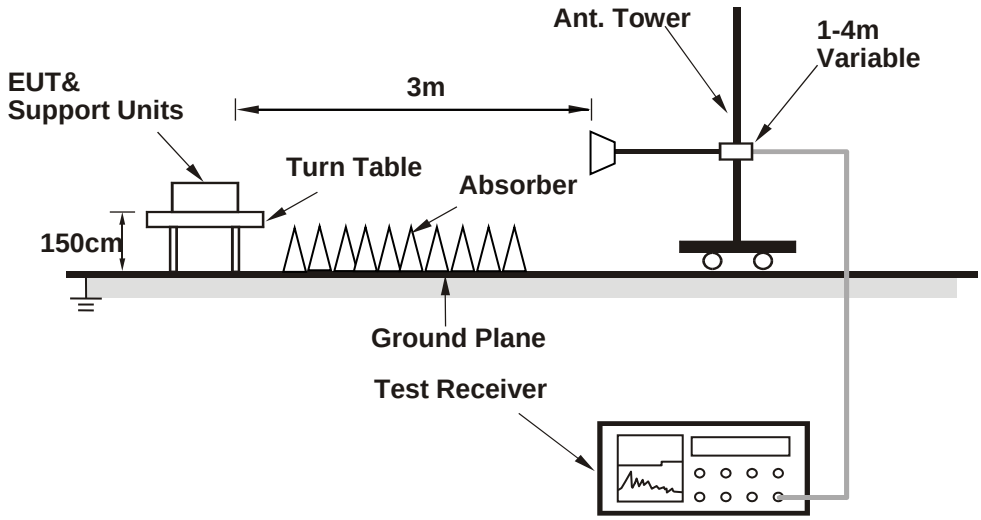
No deviation.

4.8.4 Test Setup

For radiated emission 30MHz to 1GHz



For radiated emission above 1GHz



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

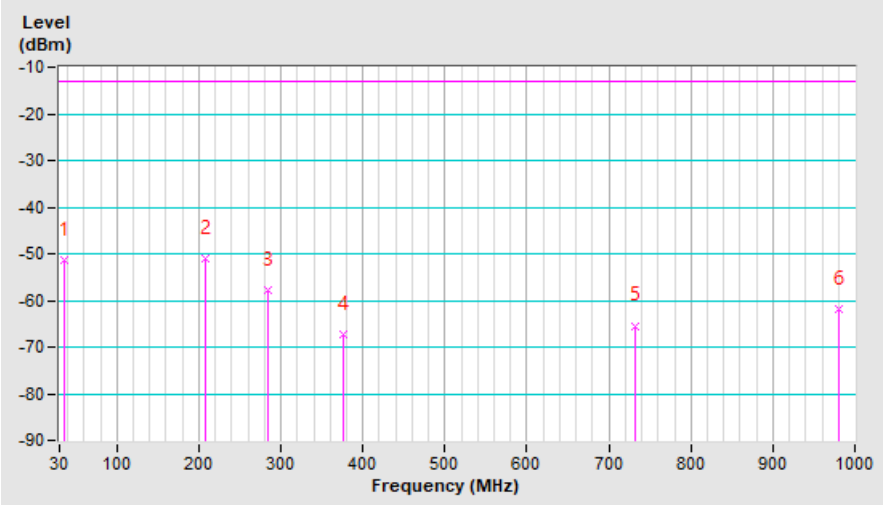
4.8.5 Test Results

Below 1GHz
LTE Band 2, Channel Bandwidth: 1.4MHz

Mode	TX channel 18607 (1850.70MHz)	Frequency Range	Below 1000 MHz
Environmental Conditions	22deg. C, 68%RH	Input Power	120Vac, 60Hz
Tested By	Greg Lin		

Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	35.62	-54.6	-35.2	-16.0	-51.2	-13.0	-38.2
2	208.54	-42.7	-49.1	-2.0	-51.1	-13.0	-38.1
3	284.45	-53.8	-56.1	-1.6	-57.7	-13.0	-44.7
4	375.83	-65.4	-70.9	3.7	-67.2	-13.0	-54.2
5	732.90	-69.5	-69.0	3.6	-65.4	-13.0	-52.4
6	980.32	-70.8	-65.5	3.5	-62.0	-13.0	-49.0

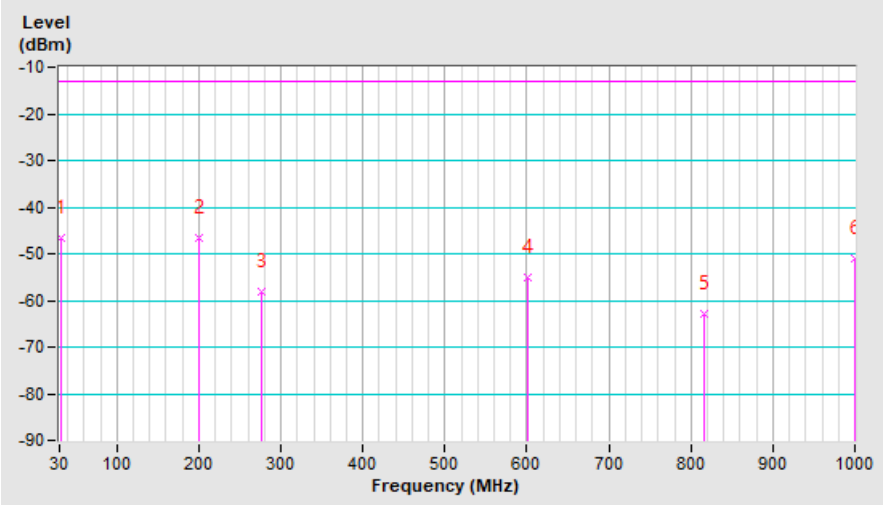
Remarks:
1. EIRP (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) + Cable Loss (dB).



Mode	TX channel 18607 (1850.70MHz)	Frequency Range	Below 1000 MHz
Environmental Conditions	22deg. C, 68%RH	Input Power	120Vac, 60Hz
Tested By	Greg Lin		

Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	32.81	-36.0	-28.8	-17.8	-46.6	-13.0	-33.6
2	200.10	-45.5	-44.3	-2.4	-46.7	-13.0	-33.7
3	276.01	-61.4	-56.5	-1.6	-58.1	-13.0	-45.1
4	600.75	-58.7	-58.8	3.8	-55.0	-13.0	-42.0
5	815.84	-69.8	-66.7	3.9	-62.8	-13.0	-49.8
6	1000.00	-61.2	-54.4	3.3	-51.1	-13.0	-38.1

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

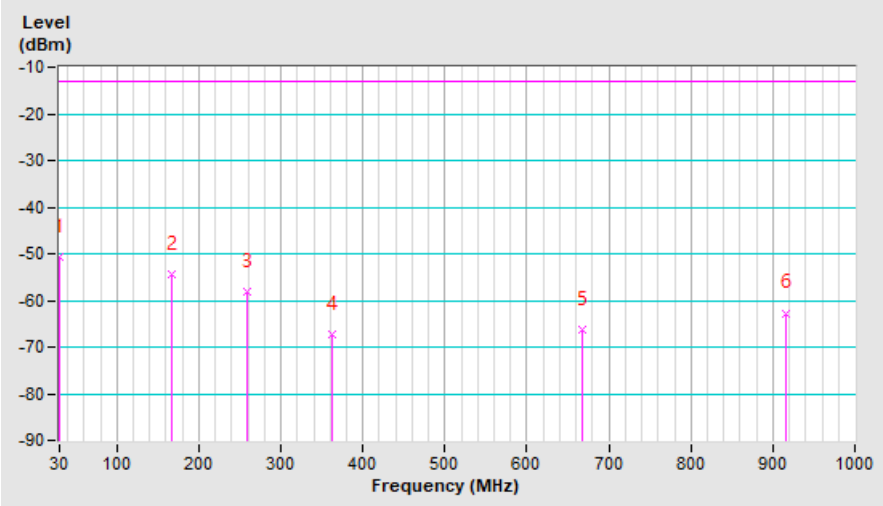


LTE Band 2, Channel Bandwidth: 5MHz

Mode	TX channel 18625 (1852.50MHz)	Frequency Range	Below 1000 MHz
Environmental Conditions	22deg. C, 68%RH	Input Power	120Vac, 60Hz
Tested By	Greg Lin		

Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	30.00	-54.6	-31.2	-19.4	-50.6	-13.0	-37.6
2	166.36	-47.8	-51.6	-2.9	-54.5	-13.0	-41.5
3	259.14	-53.2	-56.6	-1.5	-58.1	-13.0	-45.1
4	361.77	-64.6	-71.0	3.8	-67.2	-13.0	-54.2
5	666.83	-68.9	-70.0	3.6	-66.4	-13.0	-53.4
6	915.65	-70.6	-66.3	3.6	-62.7	-13.0	-49.7

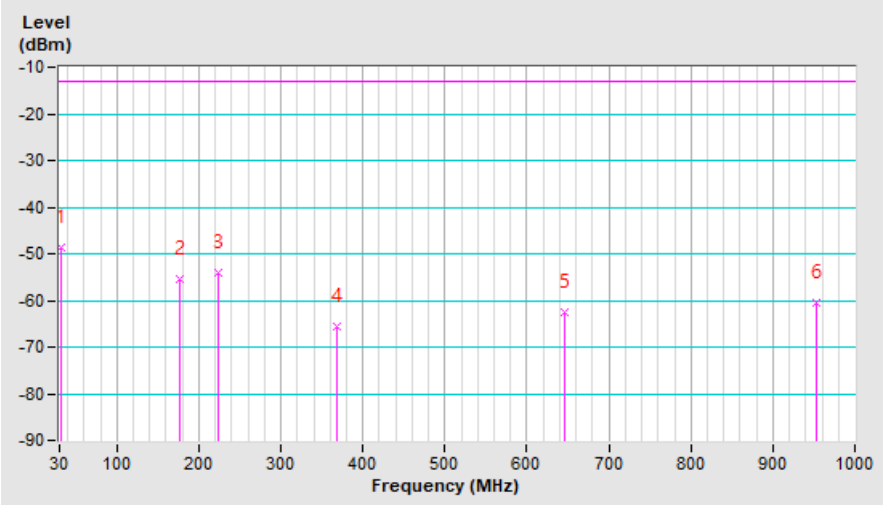
Remarks:
1. EIRP (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) + Cable Loss (dB).



Mode	TX channel 18625 (1852.50MHz)	Frequency Range	Below 1000 MHz
Environmental Conditions	22deg. C, 68%RH	Input Power	120Vac, 60Hz
Tested By	Greg Lin		

Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	31.41	-38.4	-30.1	-18.6	-48.7	-13.0	-35.7
2	176.20	-51.6	-52.4	-2.9	-55.3	-13.0	-42.3
3	224.00	-49.7	-52.0	-2.1	-54.1	-13.0	-41.1
4	367.39	-65.2	-69.4	3.8	-65.6	-13.0	-52.6
5	645.74	-68.0	-66.1	3.6	-62.5	-13.0	-49.5
6	952.20	-69.8	-64.2	3.8	-60.4	-13.0	-47.4

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

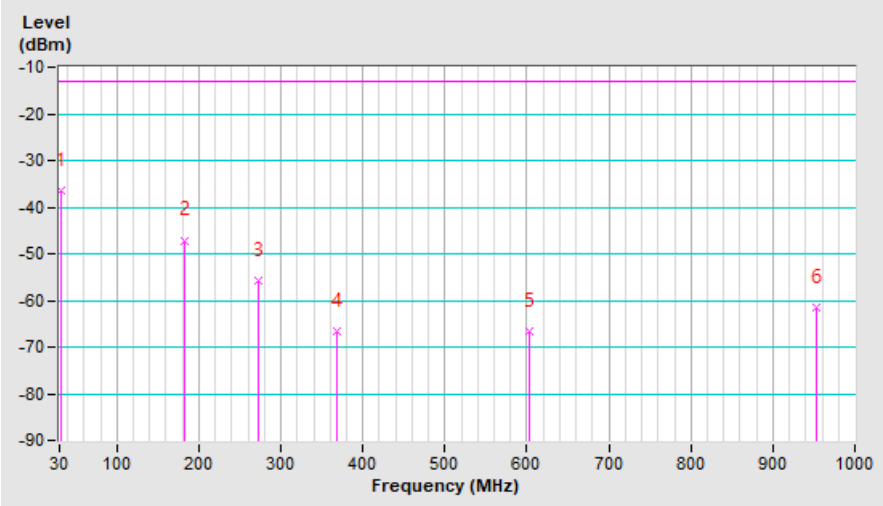


LTE Band 2, Channel Bandwidth: 20MHz

Mode	TX channel 18700 (1860.00MHz)	Frequency Range	Below 1000 MHz
Environmental Conditions	22deg. C, 68%RH	Input Power	120Vac, 60Hz
Tested By	Greg Lin		

Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	**31.41**	**-40.2**	**-18.0**	**-18.6**	**-36.6**	**-13.0**	**-23.6**
2	183.23	-38.7	-44.1	-3.0	-47.1	-13.0	-34.1
3	273.20	-51.4	-54.3	-1.5	-55.8	-13.0	-42.8
4	368.80	-64.4	-70.5	3.8	-66.7	-13.0	-53.7
5	602.16	-68.1	-70.2	3.7	-66.5	-13.0	-53.5
6	953.61	-69.8	-65.2	3.8	-61.4	-13.0	-48.4

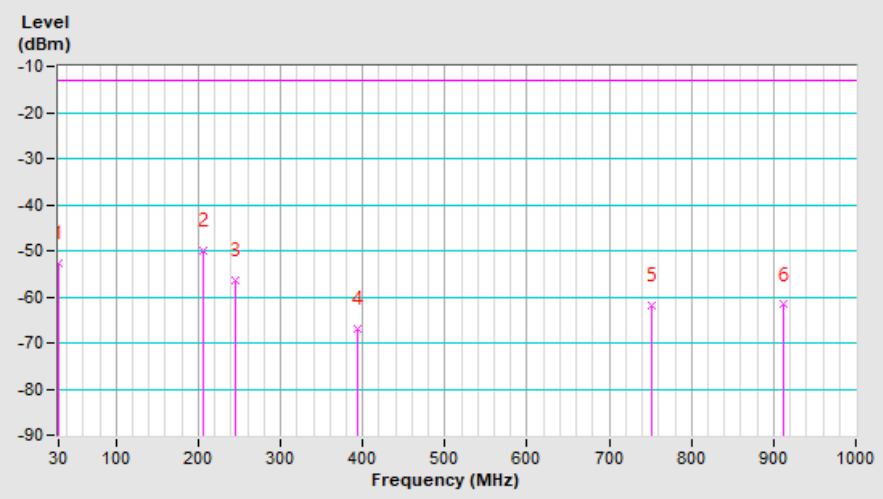
Remarks:
1. EIRP (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) + Cable Loss (dB).



Mode	TX channel 18700 (1860.00MHz)	Frequency Range	Below 1000 MHz
Environmental Conditions	22deg. C, 68%RH	Input Power	120Vac, 60Hz
Tested By	Greg Lin		

Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	30.00	-42.9	-33.4	-19.4	-52.8	-13.0	-39.8
2	205.72	-47.7	-47.9	-2.0	-49.9	-13.0	-36.9
3	245.09	-55.3	-55.1	-1.5	-56.6	-13.0	-43.6
4	394.10	-66.4	-70.4	3.3	-67.1	-13.0	-54.1
5	752.58	-69.0	-65.8	3.9	-61.9	-13.0	-48.9
6	912.84	-70.1	-65.3	3.6	-61.7	-13.0	-48.7

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



Above 1GHz
LTE Band 2, Channel Bandwidth 1.4MHz

Mode	TX channel 18607 (1850.70MHz)	Frequency Range	1GHz ~ 20GHz
Environmental Conditions	24deg. C, 68%RH	Input Power	120Vac, 60Hz
Tested By	Greg Lin		

Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	3701.40	-58.5	-50.0	1.4	-48.6	-13.0	-35.6
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	3701.40	-62.3	-54.1	1.4	-52.7	-13.0	-39.7

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

Mode	TX channel 18900 (1880.00MHz)	Frequency Range	1GHz ~ 20GHz
Environmental Conditions	24deg. C, 68%RH	Input Power	120Vac, 60Hz
Tested By	Greg Lin		

Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	3760.00	-58.1	-49.6	1.3	-48.3	-13.0	-35.3
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	3760.00	-62.1	-53.8	1.3	-52.5	-13.0	-39.5

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

Mode	TX channel 19193 (1909.30MHz)	Frequency Range	1GHz ~ 20GHz
Environmental Conditions	24deg. C, 68%RH	Input Power	120Vac, 60Hz
Tested By	Greg Lin		

Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	3818.60	-58.6	-50.3	1.4	-48.9	-13.0	-35.9
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	3818.60	-61.5	-53.3	1.4	-51.9	-13.0	-38.9

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

LTE Band 2, Channel Bandwidth 5MHz

Mode	TX channel 18625 (1852.50MHz)	Frequency Range	1GHz ~ 20GHz
Environmental Conditions	24deg. C, 68%RH	Input Power	120Vac, 60Hz
Tested By	Greg Lin		

Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	3705.00	-58.2	-49.7	1.4	-48.3	-13.0	-35.3
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	3705.00	-61.3	-53.1	1.4	-51.7	-13.0	-38.7

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

Mode	TX channel 18900 (1880.00MHz)	Frequency Range	1GHz ~ 20GHz
Environmental Conditions	24deg. C, 68%RH	Input Power	120Vac, 60Hz
Tested By	Greg Lin		

Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	3760.00	-58.6	-50.1	1.3	-48.8	-13.0	-35.8
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	3760.00	-61.8	-53.5	1.3	-52.2	-13.0	-39.2

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

Mode	TX channel 19175 (1907.50MHz)	Frequency Range	1GHz ~ 20GHz
Environmental Conditions	24deg. C, 68%RH	Input Power	120Vac, 60Hz
Tested By	Greg Lin		

Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	3815.00	-58.3	-50.0	1.4	-48.6	-13.0	-35.6
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	3815.00	-61.9	-53.7	1.4	-52.3	-13.0	-39.3

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

LTE Band 2, Channel Bandwidth 20MHz

Mode	TX channel 18700 (1860.00MHz)	Frequency Range	1GHz ~ 20GHz
Environmental Conditions	24deg. C, 68%RH	Input Power	120Vac, 60Hz
Tested By	Greg Lin		

Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	3720.00	-58.8	-50.3	1.4	-48.9	-13.0	-35.9
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	3720.00	-61.6	-53.4	1.4	-52.0	-13.0	-39.0

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

Mode	TX channel 18900 (1880.00MHz)	Frequency Range	1GHz ~ 20GHz
Environmental Conditions	24deg. C, 68%RH	Input Power	120Vac, 60Hz
Tested By	Greg Lin		

Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	3760.00	-58.9	-50.4	1.3	-49.1	-13.0	-36.1
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	3760.00	-61.3	-53.0	1.3	-51.7	-13.0	-38.7

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

Mode	TX channel 19100 (1900.00MHz)	Frequency Range	1GHz ~ 20GHz
Environmental Conditions	24deg. C, 68%RH	Input Power	120Vac, 60Hz
Tested By	Greg Lin		

Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	3800.00	-58.6	-50.2	1.3	-48.9	-13.0	-35.9
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	3800.00	-62.1	-53.9	1.3	-52.6	-13.0	-39.6

Remarks:
1. EIRP (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 and approved according to ISO/IEC 17025.

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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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