FCC Test Report
(Part 27)

Report No.: RF190919D02-8

FCC ID: P27NA503S

Test Model: NA503S-4G

Serial Model: NA503S-4Gxxxxxxxx (the 1st x should be "blank" or "-"; the rest x could be 0 to 9, A to Z, "blank" or "-", for marketing purpose) (refer to item 3.1 for more details)

Received Date: Sep. 19, 2019

Test Date: Oct. 02 ~ Oct. 24, 2019 and Jan. 31, 2020

Issued Date: Feb. 03, 2020

Applicant: Sercomm Corp.

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Issued By: Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch
Lin Kou Laboratories

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Test Location: No. 19, Hwa Ya 2nd Rd., Wen Hwa Vil., Kwei Shan Dist., Taoyuan City 33383, TAIWAN

FCC Registration / Designation Number: 788550 / TW0003

Testing Laboratory
2021

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Release Control Record

Issue No.	Description	Date Issued
RF190919D02-8	Original release	Feb. 03, 2020

1 Certificate of Conformity

Product: Multiple RF Home Gateway

Brand: Craftsman

Test Model: NA503S-4G

Serial Model: NA503S-4Gxxxxxxxx (the 1st x should be "blank" or "-"; the rest x could be 0 to 9, A to Z, "blank" or "-", for marketing purpose) (refer to item 3.1 for more details)

Sample Status: Engineering sample

Applicant: Sercomm Corp.

Test Date: Oct. 02 ~ Oct. 24, 2019 and Jan. 31, 2020

Standards: FCC Part 27, Subpart C, F, H, L

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 : Celine Chou , **Date:** Feb. 03, 2020

Celine Chou / Senior Specialist

Approved by : Bruce Chen , **Date:** Feb. 03, 2020

Bruce Chen / Senior Project Engineer

2 Summary of Test Results

Applied Standard: FCC Part 27 & Part 2					
FCC Clause			Test Item	Result	Remarks
LTE B4	LTE B12	LTE B13			
2.1046 27.50(d)(4)	2.1046 27.50(c)(10)	2.1046 27.50(b)(10)	Equivalent Isotropically Radiated Power	Pass	Meet the requirement of limit.
2.1047	2.1047	2.1047	Modulation Characteristics	Pass	Meet the requirement of limit.
27.50(d)(5)	----	----	Peak To Average Ratio	Pass	Meet the requirement of limit.
2.1055 27.54	2.1055 27.54	2.1055 27.54	Frequency Stability Stay with the authorized bands of operation	Pass	Meet the requirement of limit.
2.1049 27.53(h)	2.1049	2.1049	Emission Bandwidth	Pass	Meet the requirement of limit.
27.53(h)	27.53(g)	27.53(c)	Band Edge Measurements	Pass	Meet the requirement of limit.
2.1051 27.53(h)	2.1051 27.53(g)	2.1051 27.53(c)&(f)	Conducted Spurious Emissions	Pass	Meet the requirement of limit.
2.1053 27.53(h)	2.1053 27.53(g)	2.1053 27.53(c)&(f)	Radiated Spurious Emissions	Pass	Meet the requirement of limit. Minimum passing margin is -1.0dB at 1564.00MHz.

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	3.86 dB
	200MHz ~1000MHz	3.87 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 ROHDE & SCHWARZ	ESIB7	100187	May 30, 2019	May 29, 2020
Spectrum Analyzer ROHDE & SCHWARZ	FSP40	100269	Jun. 10, 2019	Jun. 09, 2020
BILOG Antenna SCHWARZBECK	VULB9168	9168-161	Nov, 26, 2018	Nov, 25, 2019
			Nov, 08, 2019	Nov, 07, 2020
BILOG Antenna SCHWARZBECK	VULB9168	9168-171	Nov. 22, 2018	Nov. 21, 2019
			Nov. 11, 2019	Nov. 10, 2020
HORN Antenna SCHWARZBECK	9120D	209	Nov. 25, 2018	Nov. 24, 2019
			Nov. 24, 2019	Nov. 23, 2020
HORN Antenna SCHWARZBECK	BBHA 9170	BBHA9170241	Nov. 25, 2018	Nov. 24, 2019
			Nov. 24, 2019	Nov. 23, 2020
Loop Antenna TESEQ	HLA 6121	45745	Jul. 01, 2019	Jun. 30, 2020
Preamplifier Agilent (Below 1GHz)	8447D	2944A10738	Aug. 20, 2019	Aug. 19, 2020
Preamplifier Agilent (Above 1GHz)	8449B	3008A02465	Mar. 27, 2019	Mar. 26, 2020
RF Coaxial Cable WOKEN With 5dB PAD	8D-FB	Cable-CH3-01	Aug. 20, 2019	Aug. 19, 2020
RF signal cable HUBER+SUHNER	SUCOFLEX 104	Cable-CH3-03 (223653/4)	Aug. 20, 2019	Aug. 19, 2020
RF signal cable HUBER+SUHNER& EMCI	SUCOFLEX 104&EMC104-SM-S M-8000	Cable-CH3-03 (309224+170907)	Aug. 20, 2019	Aug. 19, 2020
Software BV ADT	ADT_Radiated_ V7.6.15.9.5	NA	NA	NA
Antenna Tower inn-co GmbH	MA 4000	013303	NA	NA
Antenna Tower Controller BV ADT	AT100	AT93021702	NA	NA
Turn Table BV ADT	TT100	TT93021702	NA	NA
Turn Table Controller BV ADT	SC100	SC93021702	NA	NA
Boresight Antenna Fixture	FBA-01	FBA-SIP01	NA	NA
Temperature And Humidity Chamber TERCHY	HRM-120RF	931022	Jan. 11, 2019	Jan. 10, 2020
			Dec. 24, 2019	Dec. 23, 2020
Radio Communication Analyzer Anritsu	MT8820C	6201010284	Dec. 25, 2018	Dec. 24, 2019
			Jan. 07, 2020	Jan. 06, 2021
AC Power Source EEC	6905S	1991553	NA	NA
JFW 20dB attenuation	50HF-020-SMA	NA	NA	NA
True RMS Clamp Meter Fluke	325	31130711WS	May 21, 2019	May 20, 2020

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

3 General Information

3.1 General Description of EUT

Product	Multiple RF Home Gateway			
Brand	Craftsman			
Test Model	NA503S-4G			
Serial Model	NA503S-4Gxxxxxxxx (the 1st x should be "blank" or "-"; the rest x could be 0 to 9, A to Z, "blank" or "-", for marketing purpose)			
Model Difference	Refer to note			
Sample Status	Engineering sample			
Power Supply Rating	12Vdc (Adapter)			
Modulation Type	QPSK, 16QAM			
Operating Frequency	LTE Band 4	Channel Bandwidth 1.4MHz	1710.7MHz ~ 1754.3MHz	
		Channel Bandwidth 3MHz	1711.5MHz ~ 1753.5MHz	
		Channel Bandwidth 5MHz	1712.5MHz ~ 1752.5MHz	
		Channel Bandwidth 10MHz	1715.0MHz ~ 1750.0MHz	
		Channel Bandwidth 15MHz	1717.5MHz ~ 1747.5MHz	
		Channel Bandwidth 20MHz	1720.0MHz ~ 1745.0MHz	
	LTE Band 12	Channel Bandwidth 1.4MHz	699.7MHz ~ 715.3MHz	
		Channel Bandwidth 3MHz	700.5MHz ~ 714.5MHz	
		Channel Bandwidth 5MHz	701.5MHz ~ 713.5MHz	
		Channel Bandwidth 10MHz	704.0MHz ~ 711.0MHz	
	LTE Band 13	Channel Bandwidth 5MHz	779.5MHz ~ 784.5MHz	
		Channel Bandwidth 10MHz	782.0MHz	
Max. EIRP Power			QPSK	16QAM
	LTE Band 4	Channel Bandwidth 1.4MHz	263.027mW (24.20dBm)	208.930mW (23.20dBm)
		Channel Bandwidth 3MHz	275.423mW (24.40dBm)	218.776mW (23.40dBm)
		Channel Bandwidth 5MHz	263.027mW (24.20dBm)	213.796mW (23.30dBm)
		Channel Bandwidth 10MHz	269.153mW (24.30dBm)	213.796mW (23.30dBm)
		Channel Bandwidth 15MHz	269.153mW (24.30dBm)	223.872mW (23.50dBm)
		Channel Bandwidth 20MHz	281.838mW (24.50dBm)	223.872mW (23.50dBm)

			QPSK	16QAM
Max. ERP Power	LTE Band 12	Channel Bandwidth 1.4MHz	158.489mW (22.00dBm)	141.254mW (21.50dBm)
		Channel Bandwidth 3MHz	147.911mW (21.70dBm)	125.893mW (21.00dBm)
		Channel Bandwidth 5MHz	147.911mW (21.70dBm)	128.825mW (21.10dBm)
		Channel Bandwidth 10MHz	120.226mW (20.80dBm)	104.713mW (20.20dBm)
	LTE Band 13	Channel Bandwidth 5MHz	120.226mW (20.80dBm)	104.713mW (20.20dBm)
		Channel Bandwidth 10MHz	128.825mW (21.10dBm)	114.815mW (20.60dBm)
Emission Designator			QPSK	16QAM
	LTE Band 4	Channel Bandwidth 1.4MHz	1M09G7D	1M09D7W
		Channel Bandwidth 3MHz	2M70G7D	2M70D7W
		Channel Bandwidth 5MHz	4M49G7D	4M49D7W
		Channel Bandwidth 10MHz	8M97G7D	8M98D7W
		Channel Bandwidth 15MHz	13M5G7D	13M5D7W
		Channel Bandwidth 20MHz	18M0G7D	18M0D7W
	LTE Band 12	Channel Bandwidth 1.4MHz	1M09G7D	1M09D7W
		Channel Bandwidth 3MHz	2M70G7D	2M70D7W
		Channel Bandwidth 5MHz	4M49G7D	4M49D7W
		Channel Bandwidth 10MHz	8M97G7D	8M98D7W
	LTE Band 13	Channel Bandwidth 5MHz	4M49G7D	4M50D7W
		Channel Bandwidth 10MHz	8M95G7D	8M96D7W
Antenna Type	Refer to Note as below			
Antenna Connector	Refer to Note as below			
Accessory Device	Adapter			
Cable Supplied	NA			

Note:

1. The following models are provided to this EUT.

Brand	Model	Description
Craftsman	NA503S-4G (Main test model)	the 1st x should be "blank" or "-"; the rest x could be 0 to 9, A to Z, "blank" or "-", for marketing purpose.
	NA503S-4Gxxxxxxxx	

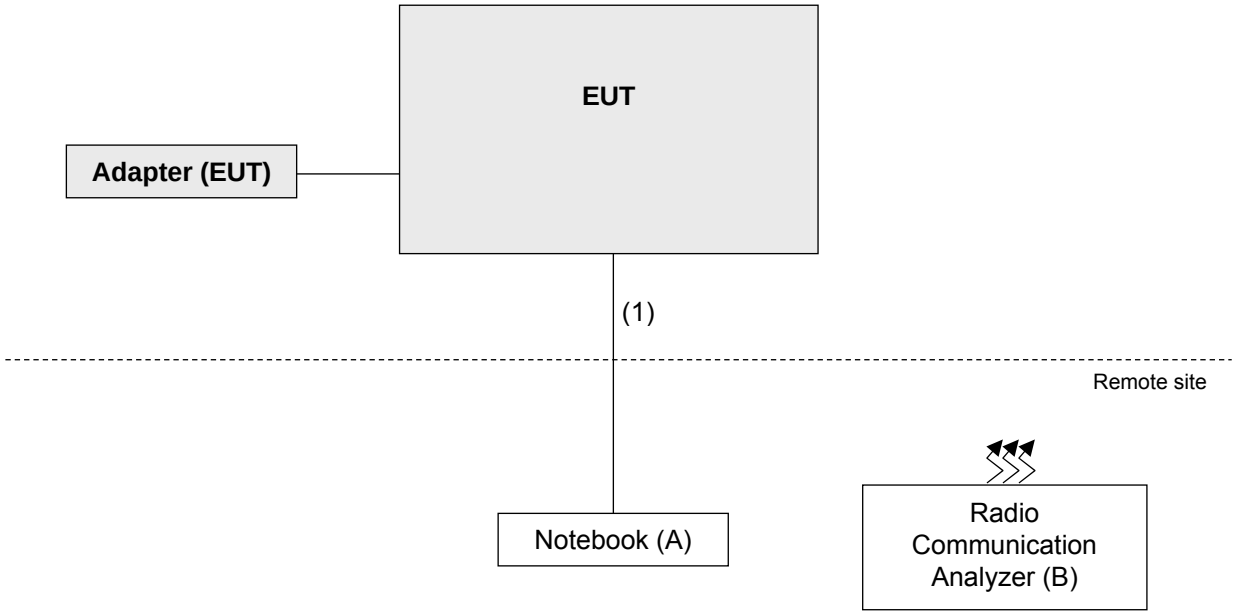
2. The EUT is powered by the following car charger and battery.

Adapter	
Brand	APD
Model	WB-24J12FU
Input Power	100-240Vac, 50-60Hz, 0.7A
Output Power	12Vdc, 2A
Power Line	1.5m non-shielded cable without core attached on adapter

3. The following antennas were provided to the EUT.

Ant. No.	Type	Connector	Gain (dBi)						
			WCDMA B2	WCDMA B5	LTE B2	LTE B4	LTE B5	LTE B12	LTE B13
1	PIFA	I-pex	3.00	-0.66	3.00	1.87	-0.66	-0.45	-0.14
2	PIFA	I-pex	2.49	0.03	2.49	2.58	0.03	-0.63	0.76

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.	Notebook	DELL	E5410	1HC2XM1	FCC DoC Approved	-
B.	Radio Communication Analyzer	Anritsu	MT8820C	6201240431	NA	-

Note:

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

ID	Descriptions	Qty.	Length (m)	Shielding (Yes/No)	Cores (Qty.)	Remarks
1.	LAN cable	1	3	N	0	RJ45, cat5e

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

LTE Band 4

EUT Configure Mode	Test Item	Available Channel	Tested Channel	Channel Bandwidth	Modulation	Mode
-	EIRP	19957 to 20393	19957 (1710.7MHz), 20175 (1732.5MHz), 20393 (1754.3MHz)	1.4MHz	QPSK / 16QAM	1 RB / 0 RB Offset
		19965 to 20385	19965 (1711.5MHz), 20175 (1732.5MHz), 20385 (1753.5MHz)	3MHz	QPSK / 16QAM	1 RB / 0 RB Offset
		19975 to 20375	19975 (1712.5MHz), 20175 (1732.5MHz), 20375 (1752.5MHz)	5MHz	QPSK / 16QAM	1 RB / 0 RB Offset
		20000 to 20350	20000 (1715.0MHz), 20175 (1732.5MHz), 20350 (1750.0MHz)	10MHz	QPSK / 16QAM	1 RB / 0 RB Offset
		20025 to 20325	20025 (1717.5MHz), 20175 (1732.5MHz), 20325 (1747.5MHz)	15MHz	QPSK / 16QAM	1 RB / 0 RB Offset
		20050 to 20300	20050 (1720.0MHz), 20175 (1732.5MHz), 20300 (1745.0MHz)	20MHz	QPSK / 16QAM	1 RB / 0 RB Offset
-	Modulation Characteristics	20050 to 20300	20175 (1732.5MHz)	20MHz	QPSK / 16QAM	100 RB / 0 RB Offset
-	Frequency Stability	19957 to 20393	19957 (1710.7MHz), 20393 (1754.3MHz)	1.4MHz	QPSK	6 RB / 0 RB Offset
		19965 to 20385	19965 (1711.5MHz), 20385 (1753.5MHz)	3MHz	QPSK	15 RB / 0 RB Offset
		19975 to 20375	19975 (1712.5MHz), 20375 (1752.5MHz)	5MHz	QPSK	25 RB / 0 RB Offset
		20000 to 20350	20000 (1715.0MHz), 20350 (1750.0MHz)	10MHz	QPSK	50 RB / 0 RB Offset
		20025 to 20325	20025 (1717.5MHz), 20325 (1747.5MHz)	15MHz	QPSK	75 RB / 0 RB Offset
		20050 to 20300	20050 (1720.0MHz), 20300 (1745.0MHz)	20MHz	QPSK	100 RB / 0 RB Offset

EUT Configure Mode	Test Item	Available Channel	Tested Channel	Channel Bandwidth	Modulation	Mode
-	Emission Bandwidth	19957 to 20393	19957 (1710.7MHz), 20175 (1732.5MHz), 20393 (1754.3MHz)	1.4MHz	QPSK / 16QAM	6 RB / 0RB Offset
		19965 to 20385	19965 (1711.5MHz), 20175 (1732.5MHz), 20385 (1753.5MHz)	3MHz	QPSK / 16QAM	15 RB / 0RB Offset
		19975 to 20375	19975 (1712.5MHz), 20175 (1732.5MHz), 20375 (1752.5MHz)	5MHz	QPSK / 16QAM	25RB / 0RB Offset
		20000 to 20350	20000 (1715.0MHz), 20175 (1732.5MHz), 20350 (1750.0MHz)	10MHz	QPSK / 16QAM	50RB / 0RB Offset
		20025 to 20325	20025 (1717.5MHz), 20175 (1732.5MHz), 20325 (1747.5MHz)	15MHz	QPSK / 16QAM	75 RB / 0 RB Offset
		20050 to 20300	20050 (1720.0MHz), 20175 (1732.5MHz), 20300 (1745.0MHz)	20MHz	QPSK / 16QAM	100 RB / 0 RB Offset
-	Band Edge	19957 to 20393	19957 (1710.7MHz), 20393 (1754.3MHz)	1.4MHz	QPSK	1 RB / 0 RB Offset 1 RB / 5 RB Offset 6 RB / 0 RB Offset
		19965 to 20385	19965 (1711.5MHz), 20385 (1753.5MHz)	3MHz	QPSK	1 RB / 0 RB Offset 1 RB / 14 RB Offset 15 RB / 0 RB Offset
		19975 to 20375	19975 (1712.5MHz), 20375 (1752.5MHz)	5MHz	QPSK	1 RB / 0 RB Offset 1 RB / 24 RB Offset 25 RB / 0 RB Offset
		20000 to 20350	20000 (1715.0MHz), 20350 (1750.0MHz)	10MHz	QPSK	1 RB / 0 RB Offset 1 RB / 49 RB Offset 50 RB / 0 RB Offset
		20025 to 20325	20025 (1717.5MHz), 20325 (1747.5MHz)	15MHz	QPSK	1 RB / 0 RB Offset 1 RB / 74 RB Offset 75 RB / 0 RB Offset
		20050 to 20300	20050 (1720.0MHz), 20300 (1745.0MHz)	20MHz	QPSK	1 RB / 0 RB Offset 1 RB / 99 RB Offset 100 RB / 0 RB Offset
-	Conducted Emission	19957 to 20393	19957 (1710.7MHz), 20175 (1732.5MHz), 20393 (1754.3MHz)	1.4MHz	QPSK	1 RB / 0 RB Offset
		19965 to 20385	19965 (1711.5MHz), 20175 (1732.5MHz), 20385 (1753.5MHz)	3MHz	QPSK	1 RB / 0 RB Offset
		19975 to 20375	19975 (1712.5MHz), 20175 (1732.5MHz), 20375 (1752.5MHz)	5MHz	QPSK	1 RB / 0 RB Offset
		20000 to 20350	20000 (1715.0MHz), 20175 (1732.5MHz), 20350 (1750.0MHz)	10MHz	QPSK	1 RB / 0 RB Offset
		20025 to 20325	20025 (1717.5MHz), 20175 (1732.5MHz), 20325 (1747.5MHz)	15MHz	QPSK	1 RB / 0 RB Offset
		20050 to 20300	20050 (1720.0MHz), 20175 (1732.5MHz), 20300 (1745.0MHz)	20MHz	QPSK	1 RB / 0 RB Offset

EUT Configure Mode	Test Item	Available Channel	Tested Channel	Channel Bandwidth	Modulation	Mode
-	Radiated Emission Below 1GHz	19957 to 20393	19957 (1710.7MHz)	1.4MHz	QPSK	1 RB / 0 RB Offset
		19975 to 20375	19975 (1712.5MHz)	5MHz	QPSK	1 RB / 0 RB Offset
		20050 to 20300	20050 (1720.0MHz)	20MHz	QPSK	1 RB / 0 RB Offset
-	Radiated Emission Above 1GHz	19957 to 20393	19957 (1710.7MHz), 20175 (1732.5MHz), 20393 (1754.3MHz)	1.4MHz	QPSK	1 RB / 0 RB Offset
		19975 to 20375	19975 (1712.5MHz), 20175 (1732.5MHz), 20375 (1752.5MHz)	5MHz	QPSK	1 RB / 0 RB Offset
		20050 to 20300	20050 (1720.0MHz), 20175 (1732.5MHz), 20300 (1745.0MHz)	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 and 16QAM, measured value of QPSK is higher than 16QAM mode. Therefore, only Modulation characteristics, occupied bandwidth and Peak to average ratio items had been tested under QPSK and 16QAM modes, the other test items were performed under QPSK mode only.

LTE Band 12

EUT Configure Mode	Test item	Available channel	Tested channel	Channel Bandwidth	Modulation	Mode
-	ERP	23017 to 23173	23017 (699.7MHz), 23095 (707.5MHz), 23173 (715.3MHz)	1.4MHz	QPSK / 16QAM	1 RB / 0 RB Offset
		23025 to 23165	23025 (700.5MHz), 23095 (707.5MHz), 23165 (714.5MHz)	3MHz	QPSK / 16QAM	1 RB / 0 RB Offset
		23035 to 23155	23035 (701.5MHz), 23095 (707.5MHz), 23155 (713.5MHz)	5MHz	QPSK / 16QAM	1 RB / 0 RB Offset
		23060 to 23130	23060 (704.0MHz), 23095 (707.5 MHz), 23130 (711.0 MHz)	10MHz	QPSK / 16QAM	1 RB / 0 RB Offset
-	Modulation Characteristics	23060 to 23130	23095 (707.5MHz)	10MHz	QPSK / 16QAM	50 RB / 0 RB Offset
-	Frequency Stability	23017 to 23173	23017 (699.7MHz), 23095 (707.5MHz), 23173 (715.3MHz)	1.4MHz	QPSK	6 RB / 0 RB Offset
		23025 to 23165	23025 (700.5MHz), 23095 (707.5MHz), 23165 (714.5MHz)	3MHz	QPSK	15 RB / 0 RB Offset
		23035 to 23155	23035 (701.5MHz), 23095 (707.5MHz), 23155 (713.5MHz)	5MHz	QPSK	25 RB / 0 RB Offset
		23060 to 23130	23060 (704.0MHz), 23095 (707.5MHz), 23130 (711.0MHz)	10MHz	QPSK	50 RB / 0 RB Offset
-	Emission Bandwidth	23017 to 23173	23017 (699.7MHz), 23095 (707.5MHz), 23173 (715.3MHz)	1.4MHz	QPSK / 16QAM	6 RB / 0 RB Offset
		23025 to 23165	23025 (700.5MHz), 23095 (707.5MHz), 23165 (714.5MHz)	3MHz	QPSK / 16QAM	15 RB / 0 RB Offset
		23035 to 23155	23035 (701.5MHz), 23095 (707.5MHz), 23155 (713.5MHz)	5MHz	QPSK / 16QAM	25 RB / 0 RB Offset
		23060 to 23130	23060 (704.0MHz), 23095 (707.5MHz), 23130 (711.0MHz)	10MHz	QPSK / 16QAM	50 RB / 0 RB Offset
-	Band Edge	23017 to 23173	23017 (699.7MHz), 23173 (715.3MHz)	1.4MHz	QPSK	1 RB / 0 RB Offset 1 RB / 5 RB Offset 6 RB / 0 RB Offset
		23025 to 23165	23025 (700.5MHz), 23165 (714.5MHz)	3MHz	QPSK	1 RB / 0 RB Offset 1 RB / 14 RB Offset 15 RB / 0 RB Offset
		23035 to 23155	23035 (701.5MHz), 23155 (713.5MHz)	5MHz	QPSK	1 RB / 0 RB Offset 1 RB / 24 RB Offset 25 RB / 0 RB Offset
		23060 to 23130	23060 (704.0MHz), 23130 (711.0MHz)	10MHz	QPSK	1 RB / 0 RB Offset 1 RB / 49 RB Offset 50 RB / 0 RB Offset

EUT Configure Mode	Test item	Available channel	Tested channel	Channel Bandwidth	Modulation	Mode
-	Peak to Average Ratio	23017 to 23173	23017 (699.7MHz), 23095 (707.5MHz), 23173 (715.3MHz)	1.4MHz	QPSK / 16QAM	1 RB / 0 RB Offset
		23025 to 23165	23025 (700.5MHz), 23095 (707.5MHz), 23165 (714.5MHz)	3MHz	QPSK / 16QAM	1 RB / 0 RB Offset
		23035 to 23155	23035 (701.5MHz), 23095 (707.5MHz), 23155 (713.5MHz)	5MHz	QPSK / 16QAM	1 RB / 0 RB Offset
		23060 to 23130	23060 (704.0MHz), 23095 (707.5MHz), 23130 (711.0MHz)	10MHz	QPSK / 16QAM	1 RB / 0 RB Offset
-	Conducted Emission	23017 to 23173	23017 (699.7MHz), 23095 (707.5MHz), 23173 (715.3MHz)	1.4MHz	QPSK	6 RB / 0 RB Offset
		23025 to 23165	23025 (700.5MHz), 23095 (707.5MHz), 23165 (714.5MHz)	3MHz	QPSK	15 RB / 0 RB Offset
		23035 to 23155	23035 (701.5MHz), 23095 (707.5MHz), 23155 (713.5MHz)	5MHz	QPSK	25 RB / 0 RB Offset
		23060 to 23130	23060 (704.0MHz), 23095 (707.5MHz), 23130 (711.0MHz)	10MHz	QPSK	50 RB / 0 RB Offset
-	Radiated Emission Below 1GHz	23017 to 23173	23017 (699.7MHz)	1.4MHz	QPSK	1 RB / 0 RB Offset
		23035 to 23155	23035 (701.5MHz)	5MHz	QPSK	1 RB / 0 RB Offset
		23060 to 23130	23060 (704.0MHz)	10MHz	QPSK	1 RB / 0 RB Offset
-	Radiated Emission Above 1GHz	23017 to 23173	23017 (699.7MHz), 23095 (707.5MHz), 23173 (715.3MHz)	1.4MHz	QPSK	1 RB / 0 RB Offset
		23035 to 23155	23035 (701.5MHz), 23095 (707.5MHz), 23155 (713.5MHz)	5MHz	QPSK	1 RB / 0 RB Offset
		23060 to 23130	23060 (704.0MHz), 23095 (707.5MHz), 23130 (711.0MHz)	10MHz	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 and 16QAM, measured value of QPSK is higher than 16QAM mode. Therefore, only Modulation characteristics, occupied bandwidth and Peak to average ratio items had been tested under QPSK and 16QAM modes, the other test items were performed under QPSK mode only.

LTE Band 13

EUT Configure Mode	Test item	Available channel	Tested channel	Channel Bandwidth	Modulation	Mode
-	ERP	23205 to 23255	23205 (779.5MHz), 23230 (782.0MHz), 23255 (784.5MHz)	5MHz	QPSK / 16QAM	1 RB / 0 RB Offset
		23230	23230 (782.0MHz)	10MHz	QPSK / 16QAM	1 RB / 0 RB Offset
-	Modulation Characteristics	23230	23230 (782.0MHz),	10MHz	QPSK / 16QAM	50 RB / 0 RB Offset
-	Frequency Stability	23205 to 23255	23205 (779.5MHz), 23255 (784.5MHz)	5MHz	QPSK / 16QAM	25 RB / 0 RB Offset
		23230	23230 (782.0MHz)	10MHz	QPSK / 16QAM	50 RB / 0 RB Offset
-	Emission Bandwidth	23205 to 23255	23205 (779.5MHz), 23230 (782.0MHz), 23255 (784.5MHz)	5MHz	QPSK / 16QAM	25 RB / 0 RB Offset
		23230	23230 (782.0MHz)	10MHz	QPSK / 16QAM	50 RB / 0 RB Offset
-	Band Edge	23205 to 23255	23205 (779.5MHz), 23255 (784.5MHz)	5MHz	QPSK	1 RB / 0 RB Offset 1 RB / 24 RB Offset 25 RB / 0 RB Offset
		23230	23230 (782.0MHz)	10MHz	QPSK	1 RB / 0 RB Offset 1 RB / 49 RB Offset 50 RB / 0 RB Offset
-	Peak to Average Ratio	23205 to 23255	23205 (779.5MHz), 23230 (782.0MHz), 23255 (784.5MHz)	5MHz	QPSK / 16QAM	1 RB / 0 RB Offset
		23230	23230 (782.0MHz)	10MHz	QPSK / 16QAM	1 RB / 0 RB Offset
-	Conducted Emission	23205 to 23255	23205 (779.5MHz), 23230 (782.0MHz), 23255 (784.5MHz)	5MHz	QPSK	1 RB / 0 RB Offset
		23230	23230 (782.0MHz)	10MHz	QPSK	1 RB / 0 RB Offset
-	Radiated Emission Below 1GHz	23205 to 23255	23205 (779.5MHz)	5MHz	QPSK	1 RB / 0 RB Offset
			23230 (782.0MHz)	10MHz	QPSK	1 RB / 0 RB Offset
-	Radiated Emission Above 1GHz	23205 to 23255	23205 (779.5MHz), 23230 (782.0MHz), 23255 (784.5MHz)	5MHz	QPSK	1 RB / 0 RB Offset
		23230	23230 (782.0MHz)	10MHz	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 the worst case for all final tests.
2. For radiated emission above 1GHz, according to 3GPP 36.521 Section 6.6.3.1.4, choose the lowest & highest channel bandwidth for final test.
3. The conducted output power for QPSK and 16QAM, measured value of QPSK is higher than 16QAM mode. Therefore, only Modulation characteristics, occupied bandwidth and Peak to average ratio items had been tested under QPSK and 16QAM modes, the other test items were performed under QPSK mode only.

Test Condition:

Test Item	Environmental Conditions	Input Power (system)	Tested By
EIRP	23deg. C, 66%RH	120Vac, 60Hz	Titan Hsu
Modulation Characteristics	24deg. C, 64%RH	120Vac, 60Hz	James Yang
Frequency Stability	24deg. C, 64%RH	120Vac, 60Hz	James Yang
Emission 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	23deg. C, 66%RH	120Vac, 60Hz	Titan Hsu

3.4 EUT Operating Conditions

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

3.5 General Description of Applied Standards

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

FCC 47 CFR Part 2

FCC 47 CFR Part 27

KDB 971168 D01 Power Meas License Digital Systems v03r01

ANSI/TIA/EIA-603-E 2016

ANSI 63.26-2015

Note: 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 1 watts e.i.r.p for LTE Band 4 and 3 watts e.r.p for LTE Band 12 & 13.

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 20MHz 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.

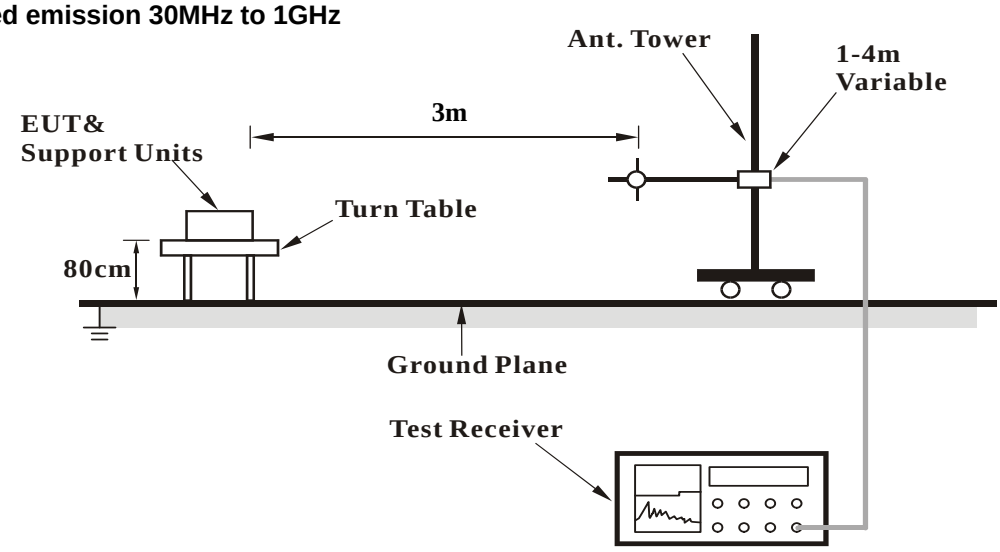
Conducted Power Measurement:

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.

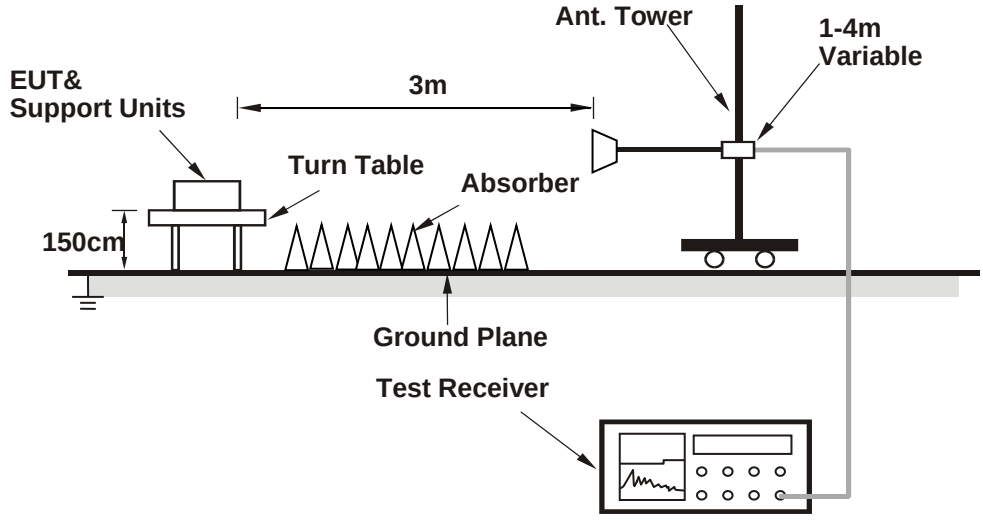
4.1.3 Test Setup

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)

Band / BW	RB Size	RB Offset	QPSK			16QAM		
			Low CH 19957	Mid CH 20175	High CH 20393	Low CH 19957	Mid CH 20175	High CH 20393
			1710.7 MHz	1732.5 MHz	1754.3 MHz	1710.7 MHz	1732.5 MHz	1754.3 MHz
4 / 1.4M	1	0	**22.73**	22.66	22.63	21.93	21.84	22.00
	1	2	22.58	22.56	22.53	21.77	21.73	21.89
	1	5	22.66	22.67	22.53	21.74	21.96	21.71
	3	0	22.72	22.68	22.59	21.61	21.55	21.53
	3	1	22.66	22.67	22.60	21.77	21.81	21.73
	3	3	22.62	22.58	22.65	21.67	21.46	21.56
	6	0	21.55	21.49	21.51	20.66	20.75	20.57
Band / BW	RB Size	RB Offset	QPSK			16QAM		
			Low CH 19965	Mid CH 20175	High CH 20385	Low CH 19965	Mid CH 20175	High CH 20385
			1711.5 MHz	1732.5 MHz	1753.5 MHz	1711.5 MHz	1732.5 MHz	1753.5 MHz
4 / 3M	1	0	**22.64**	22.56	22.50	22.13	21.76	21.65
	1	7	22.56	22.60	22.52	21.96	21.89	21.34
	1	14	22.56	22.60	22.49	22.08	21.56	21.63
	8	0	21.63	21.63	21.51	20.72	20.57	20.58
	8	3	21.60	21.62	21.56	20.71	20.71	20.51
	8	7	21.52	21.56	21.48	20.68	20.68	20.59
	15	0	21.63	21.60	21.44	20.61	20.55	20.43
Band / BW	RB Size	RB Offset	QPSK			16QAM		
			Low CH 19975	Mid CH 20175	High CH 20375	Low CH 19975	Mid CH 20175	High CH 20375
			1712.5 MHz	1732.5 MHz	1752.5 MHz	1712.5 MHz	1732.5 MHz	1752.5 MHz
4 / 5M	1	0	22.66	**22.67**	22.59	21.75	21.76	21.99
	1	12	22.56	22.63	22.44	21.95	21.89	21.64
	1	24	22.39	22.46	22.51	21.38	21.65	21.71
	12	0	21.60	21.60	21.55	20.67	20.66	20.53
	12	6	21.55	21.53	21.46	20.70	20.52	20.56
	12	13	21.46	21.48	21.49	20.59	20.47	20.61
	25	0	21.56	21.51	21.47	20.72	20.58	20.53

Band / BW	RB Size	RB Offset	QPSK			16QAM		
			Low CH 20000	Mid CH 20175	High CH 20350	Low CH 20000	Mid CH 20175	High CH 20350
			1715 MHz	1732.5 MHz	1750 MHz	1715 MHz	1732.5 MHz	1750 MHz
4 / 10M	1	0	22.72	**23.00**	22.89	22.40	22.42	22.04
	1	24	22.62	22.48	22.50	21.87	21.79	21.95
	1	49	22.38	22.56	22.48	21.41	21.60	21.85
	25	0	21.65	21.75	21.66	20.66	20.83	20.70
	25	12	21.47	21.49	21.47	20.50	20.60	20.60
	25	25	21.45	21.44	21.45	20.53	20.59	20.47
	50	0	21.56	21.65	21.47	20.69	20.61	20.51
Band / BW	RB Size	RB Offset	QPSK			16QAM		
			Low CH 20025	Mid CH 20175	High CH 20325	Low CH 20025	Mid CH 20175	High CH 20325
			1717.5 MHz	1732.5 MHz	1747.5 MHz	1717.5 MHz	1732.5 MHz	1747.5 MHz
4 / 15M	1	0	**23.14**	23.13	23.09	22.31	22.66	22.04
	1	37	22.49	22.57	22.56	21.40	21.93	21.53
	1	74	22.51	22.64	22.50	21.93	21.74	21.60
	36	0	21.75	21.82	21.78	20.88	20.97	20.88
	36	19	21.60	21.56	21.49	20.61	20.64	20.59
	36	39	21.54	21.50	21.50	20.64	20.57	20.53
	75	0	21.64	21.66	21.71	20.79	20.60	20.63
Band / BW	RB Size	RB Offset	QPSK			16QAM		
			Low CH 20050	Mid CH 20175	High CH 20300	Low CH 20050	Mid CH 20175	High CH 20300
			1720 MHz	1732.5 MHz	1745 MHz	1720 MHz	1732.5 MHz	1745 MHz
4 / 20M	1	0	**23.13**	23.12	22.96	22.21	22.23	22.16
	1	50	22.41	22.28	22.44	21.84	21.67	21.84
	1	99	22.31	22.39	22.18	21.51	21.54	21.38
	50	0	21.83	21.82	21.81	20.89	20.91	20.87
	50	25	21.44	21.50	21.56	20.62	20.50	20.59
	50	50	21.45	21.61	21.33	20.60	20.56	20.42
	100	0	21.60	21.70	21.75	20.69	20.77	20.73

Band / BW	RB Size	RB Offset	QPSK			16QAM		
			Low CH 23017	Mid CH 23095	High CH 23173	Low CH 23017	Mid CH 23095	High CH 23173
			699.7 MHz	707.5 MHz	715.3 MHz	699.7 MHz	707.5 MHz	715.3 MHz
12 / 1.4M	1	0	**23.68**	23.63	23.36	23.08	23.00	22.90
	1	2	23.59	23.48	23.38	22.59	23.06	23.00
	1	5	23.59	23.44	23.35	22.84	22.48	22.34
	3	0	23.65	23.51	23.49	21.90	22.65	22.62
	3	1	23.53	23.50	23.50	22.79	22.58	22.62
	3	3	23.64	23.55	23.45	22.82	22.52	22.49
	6	0	22.53	22.40	22.57	21.60	21.63	21.56
Band / BW	RB Size	RB Offset	QPSK			16QAM		
			Low CH 23025	Mid CH 23095	High CH 23165	Low CH 23025	Mid CH 23095	High CH 23165
			700.5 MHz	707.5 MHz	714.5 MHz	700.5 MHz	707.5 MHz	714.5 MHz
12 / 3M	1	0	**23.57**	23.37	23.51	22.70	23.08	22.64
	1	7	23.55	23.38	23.42	22.78	22.92	22.26
	1	14	23.53	23.47	23.42	22.46	22.63	22.57
	8	0	22.55	22.39	22.52	21.55	21.62	21.65
	8	3	22.64	22.47	22.47	21.70	21.64	21.57
	8	7	22.46	22.44	22.49	21.72	21.58	21.53
	15	0	22.61	22.48	22.38	21.67	21.55	21.60
Band / BW	RB Size	RB Offset	QPSK			16QAM		
			Low CH 23035	Mid CH 23095	High CH 23155	Low CH 23035	Mid CH 23095	High CH 23155
			701.5 MHz	707.5 MHz	713.5 MHz	701.5 MHz	707.5 MHz	713.5 MHz
12 / 5M	1	0	**23.63**	23.45	23.46	22.80	23.07	22.95
	1	12	23.45	23.34	23.41	23.00	22.73	22.67
	1	24	23.43	23.40	23.32	22.59	22.56	22.75
	12	0	22.58	22.53	22.56	21.78	21.59	21.64
	12	6	22.58	22.43	22.56	21.62	21.52	21.70
	12	13	22.44	22.48	22.54	21.61	21.52	21.59
	25	0	22.62	22.45	22.38	21.66	21.56	21.60
Band / BW	RB Size	RB Offset	QPSK			16QAM		
			Low CH 23060	Mid CH 23095	High CH 23130	Low CH 23060	Mid CH 23095	High CH 23130
			704 MHz	707.5 MHz	711 MHz	704 MHz	707.5 MHz	711 MHz
12 / 10M	1	0	23.54	**23.56**	23.43	22.79	22.84	23.04
	1	24	23.40	23.40	23.41	22.88	22.59	22.42
	1	49	23.37	23.48	23.26	22.58	22.98	22.56
	25	0	22.56	22.55	22.53	21.67	21.54	21.53
	25	12	22.49	22.39	22.45	21.50	21.51	21.45
	25	25	22.53	22.45	22.53	21.61	21.63	21.59
	50	0	22.48	22.46	22.45	21.57	21.49	21.62

Band / BW	RB Size	RB Offset	QPSK			16QAM		
			Low CH 23205	Mid CH 23230	High CH 23255	Low CH 23205	Mid CH 23230	High CH 23255
			779.5 MHz	782 MHz	784.5 MHz	779.5 MHz	782 MHz	784.5 MHz
13 / 5M	1	0	**23.45**	23.40	23.09	22.87	22.60	22.55
	1	12	23.37	23.18	23.13	22.66	22.17	22.37
	1	24	23.17	23.05	23.29	22.52	22.28	22.32
	12	0	22.55	22.31	22.21	21.62	21.51	21.43
	12	6	22.47	22.33	22.25	21.61	21.42	21.41
	12	13	22.32	22.24	22.27	21.43	21.35	21.35
	25	0	22.40	22.22	22.26	21.53	21.41	21.36

Band / BW	RB Size	RB Offset	QPSK	16QAM
			Mid CH 23230	Mid CH 23230
			782 MHz	782 MHz
13 / 10M	1	0	**23.18**	22.61
	1	24	23.04	22.14
	1	49	22.69	22.07
	25	0	22.46	21.57
	25	12	22.23	21.32
	25	25	22.27	21.44
	50	0	22.27	21.46

EIRP / ERP Power

Modulation Type: QPSK

LTE Band 4, Channel Bandwidth: 1.4MHz

Mode		TX channel 19957					
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	1710.70	-14.30	23.20	1.00	24.20	30.00	-5.80
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	1710.70	-19.10	19.50	1.00	20.50	30.00	-9.50

Mode		TX channel 20175					
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	1732.50	-14.70	23.00	1.00	24.00	30.00	-6.00
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	1732.50	-19.20	19.30	1.00	20.30	30.00	-9.70

Mode		TX channel 20393					
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	1754.30	-14.70	23.00	1.10	24.10	30.00	-5.90
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	1754.30	-19.60	18.70	1.10	19.80	30.00	-10.20

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

LTE Band 4, Channel Bandwidth: 3MHz

Mode		TX channel 19965					
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	1711.50	-14.20	23.40	1.00	24.40	30.00	-5.60
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	1711.50	-19.00	19.60	1.00	20.60	30.00	-9.40

Mode		TX channel 20175					
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	1732.50	-14.90	22.80	1.00	23.80	30.00	-6.20
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	1732.50	-19.10	19.40	1.00	20.40	30.00	-9.60

Mode		TX channel 20385					
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	1753.50	-14.80	22.90	1.10	24.00	30.00	-6.00
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	1753.50	-19.50	18.80	1.10	19.90	30.00	-10.10

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

LTE Band 4, Channel Bandwidth: 5MHz

Mode		TX channel 19975					
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	1712.50	-14.46	23.11	0.99	24.10	30.00	-5.90
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	1712.50	-19.10	19.50	1.00	20.50	30.00	-9.50

Mode		TX channel 20175					
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	1732.50	-14.80	22.90	1.00	23.90	30.00	-6.10
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	1732.50	-19.00	19.50	1.00	20.50	30.00	-9.50

Mode		TX channel 20375					
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	1752.50	-14.60	23.10	1.10	24.20	30.00	-5.80
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	1752.50	-19.40	18.90	1.10	20.00	30.00	-10.00

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

LTE Band 4, Channel Bandwidth: 10MHz

Mode		TX channel 20000					
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	1715.00	-14.30	23.30	1.00	24.30	30.00	-5.70
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	1715.00	-18.80	19.70	1.00	20.70	30.00	-9.30

Mode		TX channel 20175					
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	1732.50	-14.40	23.30	1.00	24.30	30.00	-5.70
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	1732.50	-18.90	19.60	1.00	20.60	30.00	-9.40

Mode		TX channel 20350					
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	1750.00	-14.40	23.20	1.10	24.30	30.00	-5.70
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	1750.00	-18.90	19.40	1.10	20.50	30.00	-9.50

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

LTE Band 4, Channel Bandwidth: 15MHz

Mode		TX channel 20025					
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	1717.50	-14.30	23.30	1.00	24.30	30.00	-5.70
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	1717.50	-18.80	19.70	1.00	20.70	30.00	-9.30

Mode		TX channel 20175					
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	1732.50	-14.50	23.20	1.00	24.20	30.00	-5.80
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	1732.50	-18.70	19.80	1.00	20.80	30.00	-9.20

Mode		TX channel 20325					
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	1747.50	-14.40	23.20	1.10	24.30	30.00	-5.70
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	1747.50	-18.10	20.20	1.10	21.30	30.00	-8.70

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

LTE Band 4, Channel Bandwidth: 20MHz

Mode		TX channel 20050					
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	1720.00	-14.20	23.40	1.00	24.40	30.00	-5.60
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	1720.00	-18.50	20.00	1.00	21.00	30.00	-9.00

Mode		TX channel 20175					
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	1732.50	-14.20	23.50	1.00	24.50	30.00	-5.50
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	1732.50	-18.60	19.90	1.00	20.90	30.00	-9.10

Mode		TX channel 20300					
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	1745.00	-14.30	23.40	1.00	24.40	30.00	-5.60
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	1745.00	-18.30	20.10	1.00	21.10	30.00	-8.90

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

LTE Band 12, Channel Bandwidth: 1.4MHz

MODE		TX channel 23017					
Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	699.70	-8.00	21.40	-0.50	20.90	34.80	-13.90
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm))	Limit (dBm)	Margin (dB)
1	699.70	-16.80	15.60	-0.50	15.10	34.80	-19.70

MODE		TX channel 23095					
Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	707.50	-8.20	21.10	-0.50	20.60	34.80	-14.20
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	707.50	-16.70	15.70	-0.50	15.20	34.80	-19.60

MODE		TX channel 23173					
Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	715.30	-7.20	22.50	-0.50	22.00	34.80	-12.80
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	715.30	-16.70	15.70	-0.50	15.20	34.80	-19.60

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

LTE Band 12, Channel Bandwidth: 3MHz

MODE		TX channel 23025					
Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	700.50	-8.10	21.30	-0.50	20.80	34.80	-14.00
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	700.50	-16.40	16.00	-0.50	15.50	34.80	-19.30

MODE		TX channel 23095					
Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	707.50	-7.90	21.50	-0.50	21.00	34.80	-13.80
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	707.50	-16.50	15.90	-0.50	15.40	34.80	-19.40

MODE		TX channel 23165					
Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	714.50	-7.50	22.20	-0.50	21.70	34.80	-13.10
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	714.50	-15.90	16.60	-0.50	16.10	34.80	-18.70

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

LTE Band 12, Channel Bandwidth: 5MHz

MODE		TX channel 23035					
Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	701.50	-8.00	21.40	-0.50	20.90	34.80	-13.90
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	701.50	-15.80	16.60	-0.50	16.10	34.80	-18.70

MODE		TX channel 23095					
Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	707.50	-8.40	21.00	-0.50	20.50	34.80	-14.30
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	707.50	-16.20	16.10	-0.50	15.60	34.80	-19.20

MODE		TX channel 23155					
Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	713.50	-7.50	22.20	-0.50	21.70	34.80	-13.10
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	713.50	-16.20	16.30	-0.50	15.80	34.80	-19.00

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

LTE Band 12, Channel Bandwidth: 10MHz

MODE		TX channel 23060					
Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	704.00	-8.50	20.90	-0.50	20.40	34.80	-14.40
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	704.00	-16.30	16.20	-0.50	15.70	34.80	-19.10

MODE		TX channel 23095					
Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	707.50	-8.20	21.20	-0.50	20.70	34.80	-14.10
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	707.50	-16.10	16.30	-0.50	15.80	34.80	-19.00

MODE		TX channel 23130					
Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	711.00	-8.20	21.30	-0.50	20.80	34.80	-14.00
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	711.00	-16.20	16.10	-0.50	15.60	34.80	-19.20

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

LTE Band 13, Channel Bandwidth: 5MHz

MODE	TX channel 23205						
Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	779.50	-9.80	21.30	-0.50	20.80	34.80	-14.00
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	779.50	-17.10	16.50	-0.50	16.00	34.80	-18.80

MODE	TX channel 23230						
Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	782.00	-10.10	21.10	-0.50	20.60	34.80	-14.20
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	782.00	-17.10	16.50	-0.50	16.00	34.80	-18.80

MODE	TX channel 23255						
Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	784.50	-10.20	21.10	-0.40	20.70	34.80	-14.10
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	784.50	-16.90	16.60	-0.40	16.20	34.80	-18.60

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

LTE Band 13, Channel Bandwidth: 10MHz

MODE	TX channel 23230						
Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	782.00	-9.60	21.60	-0.50	21.10	34.80	-13.70
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	782.00	-17.10	16.50	-0.50	16.00	34.80	-18.80

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

Modulation Type: 16QAM

LTE Band 4, Channel Bandwidth: 1.4MHz

Mode		TX channel 19957					
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	1710.70	-15.30	22.20	1.00	23.20	30.00	-6.80
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	1710.70	-20.10	18.50	1.00	19.50	30.00	-10.50

Mode		TX channel 20175					
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	1732.50	-15.70	22.00	1.00	23.00	30.00	-7.00
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	1732.50	-20.20	18.30	1.00	19.30	30.00	-10.70

Mode		TX channel 20393					
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	1754.30	-15.70	22.00	1.10	23.10	30.00	-6.90
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	1754.30	-20.30	18.00	1.10	19.10	30.00	-10.90

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

LTE Band 4, Channel Bandwidth: 3MHz

Mode		TX channel 19965					
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	1711.50	-15.20	22.40	1.00	23.40	30.00	-6.60
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	1711.50	-20.00	18.60	1.00	19.60	30.00	-10.40

Mode		TX channel 20175					
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	1732.50	-16.00	21.70	1.00	22.70	30.00	-7.30
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	1732.50	-20.08	18.39	1.01	19.40	30.00	-10.60

Mode		TX channel 20385					
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	1753.50	-15.80	21.90	1.10	23.00	30.00	-7.00
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	1753.50	-20.30	18.00	1.10	19.10	30.00	-10.90

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

LTE Band 4, Channel Bandwidth: 5MHz

Mode		TX channel 19975					
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	1712.50	-15.50	22.10	1.00	23.10	30.00	-6.90
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	1712.50	-20.10	18.50	1.00	19.50	30.00	-10.50

Mode		TX channel 20175					
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	1732.50	-15.80	21.90	1.00	22.90	30.00	-7.10
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	1732.50	-20.00	18.50	1.00	19.50	30.00	-10.50

Mode		TX channel 20375					
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	1752.50	-15.50	22.20	1.10	23.30	30.00	-6.70
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	1752.50	-20.10	18.20	1.10	19.30	30.00	-10.70

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

LTE Band 4, Channel Bandwidth: 10MHz

Mode		TX channel 20000					
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	1715.00	-15.40	22.20	1.00	23.20	30.00	-6.80
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	1715.00	-19.80	18.70	1.00	19.70	30.00	-10.30

Mode		TX channel 20175					
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	1732.50	-15.50	22.20	1.00	23.20	30.00	-6.80
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	1732.50	-19.90	18.60	1.00	19.60	30.00	-10.40

Mode		TX channel 20350					
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	1750.00	-15.40	22.20	1.10	23.30	30.00	-6.70
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	1750.00	-20.00	18.30	1.10	19.40	30.00	-10.60

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

LTE Band 4, Channel Bandwidth: 15MHz

Mode		TX channel 20025					
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	1717.50	-15.10	22.50	1.00	23.50	30.00	-6.50
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	1717.50	-19.80	18.70	1.00	19.70	30.00	-10.30

Mode		TX channel 20175					
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	1732.50	-15.50	22.20	1.00	23.20	30.00	-6.80
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	1732.50	-19.90	18.60	1.00	19.60	30.00	-10.40

Mode		TX channel 20325					
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	1747.50	-15.20	22.40	1.10	23.50	30.00	-6.50
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	1747.50	-19.40	18.90	1.10	20.00	30.00	-10.00

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

LTE Band 4, Channel Bandwidth: 20MHz

Mode		TX channel 20050					
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	1720.00	-15.20	22.40	1.00	23.40	30.00	-6.60
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	1720.00	-19.50	19.00	1.00	20.00	30.00	-10.00

Mode		TX channel 20175					
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	1732.50	-15.20	22.50	1.00	23.50	30.00	-6.50
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	1732.50	-19.60	18.90	1.00	19.90	30.00	-10.10

Mode		TX channel 20300					
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	1745.00	-15.40	22.30	1.00	23.30	30.00	-6.70
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	1745.00	-19.30	19.10	1.00	20.10	30.00	-9.90

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

LTE Band 12, Channel Bandwidth: 1.4MHz

MODE		TX channel 23017					
Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	699.70	-8.50	20.90	-0.50	20.40	34.80	-14.40
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm))	Limit (dBm)	Margin (dB)
1	699.70	-17.50	14.90	-0.50	14.40	34.80	-20.40

MODE		TX channel 23095					
Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	707.50	-8.80	20.60	-0.50	20.10	34.80	-14.70
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	707.50	-17.20	15.20	-0.50	14.70	34.80	-20.10

MODE		TX channel 23173					
Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	715.30	-7.70	22.00	-0.50	21.50	34.80	-13.30
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	715.30	-17.20	15.20	-0.50	14.70	34.80	-20.10

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

LTE Band 12, Channel Bandwidth: 3MHz

MODE		TX channel 23025					
Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	700.50	-8.70	20.70	-0.50	20.20	34.80	-14.60
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	700.50	-17.00	15.40	-0.50	14.90	34.80	-19.90

MODE		TX channel 23095					
Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	707.50	-8.50	20.90	-0.50	20.40	34.80	-14.40
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	707.50	-17.20	15.20	-0.50	14.70	34.80	-20.10

MODE		TX channel 23165					
Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	714.50	-8.20	21.50	-0.50	21.00	34.80	-13.80
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	714.50	-16.50	16.00	-0.50	15.50	34.80	-19.30

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

LTE Band 12, Channel Bandwidth: 5MHz

MODE		TX channel 23035					
Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	701.50	-8.70	20.70	-0.50	20.20	34.80	-14.60
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	701.50	-16.40	16.00	-0.50	15.50	34.80	-19.30

MODE		TX channel 23095					
Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	707.50	-9.00	20.40	-0.50	19.90	34.80	-14.90
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	707.50	-16.70	15.70	-0.50	15.20	34.80	-19.60

MODE		TX channel 23155					
Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	713.50	-8.10	21.60	-0.50	21.10	34.80	-13.70
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	713.50	-16.80	15.70	-0.50	15.20	34.80	-19.60

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

LTE Band 12, Channel Bandwidth: 10MHz

MODE		TX channel 23060					
Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	704.00	-9.10	20.30	-0.50	19.80	34.80	-15.00
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	704.00	-16.90	15.60	-0.50	15.10	34.80	-19.70

MODE		TX channel 23095					
Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	707.50	-8.70	20.70	-0.50	20.20	34.80	-14.60
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	707.50	-16.70	15.70	-0.50	15.20	34.80	-19.60

MODE		TX channel 23130					
Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	711.00	-8.80	20.70	-0.50	20.20	34.80	-14.60
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	711.00	-16.80	15.60	-0.50	15.10	34.80	-19.70

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

LTE Band 13, Channel Bandwidth: 5MHz

MODE	TX channel 23205						
Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	779.50	-10.40	20.70	-0.50	20.20	34.80	-14.60
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	779.50	-17.60	16.00	-0.50	15.50	34.80	-19.30

MODE	TX channel 23230						
Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	782.00	-10.60	20.60	-0.50	20.10	34.80	-14.70
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	782.00	-17.60	16.00	-0.50	15.50	34.80	-19.30

MODE	TX channel 23255						
Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	784.50	-10.80	20.50	-0.40	20.10	34.80	-14.70
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	784.50	-17.50	16.00	-0.40	15.60	34.80	-19.20

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

LTE Band 13, Channel Bandwidth: 10MHz

MODE	TX channel 23230						
Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	782.00	-10.10	21.10	-0.50	20.60	34.80	-14.20
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	782.00	-17.60	16.00	-0.50	15.50	34.80	-19.30

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

4.2 Modulation Characteristics Measurement

4.2.1 Limits of Modulation Characteristics

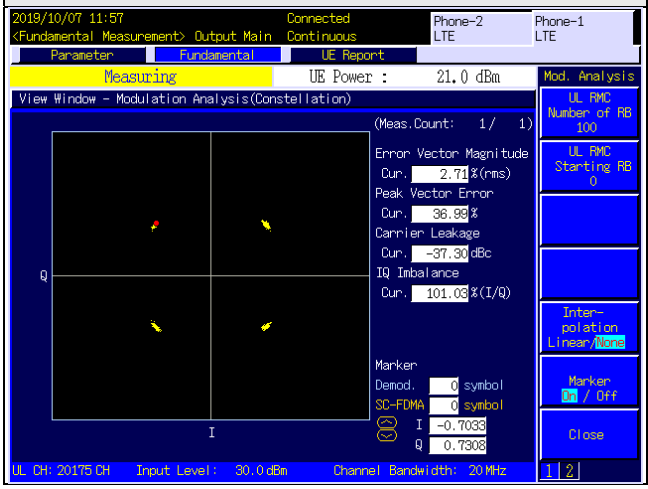
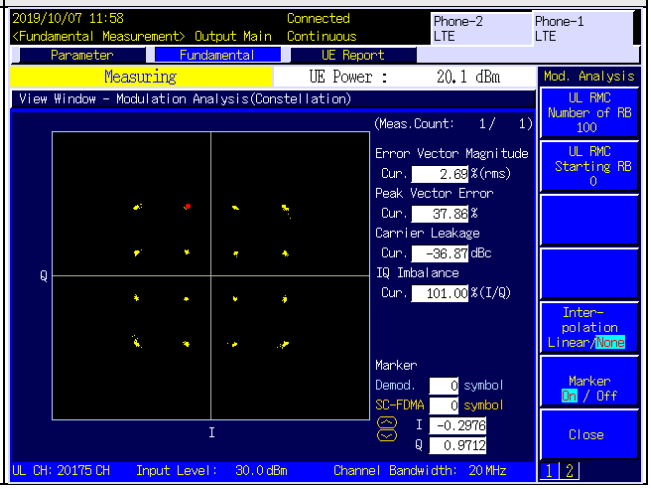
N/A

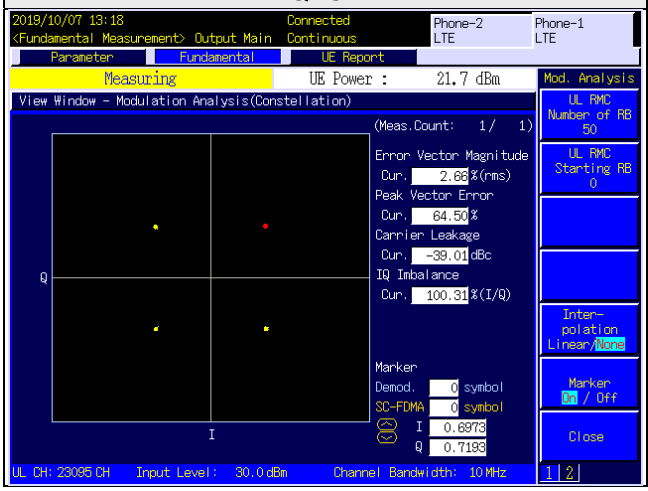
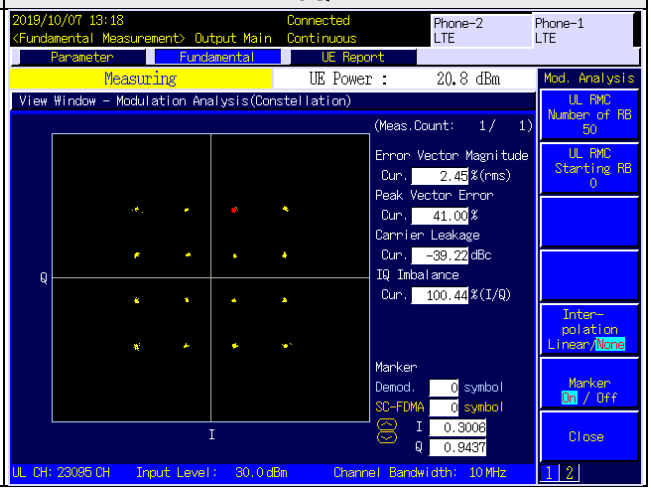
4.2.2 Test Procedure

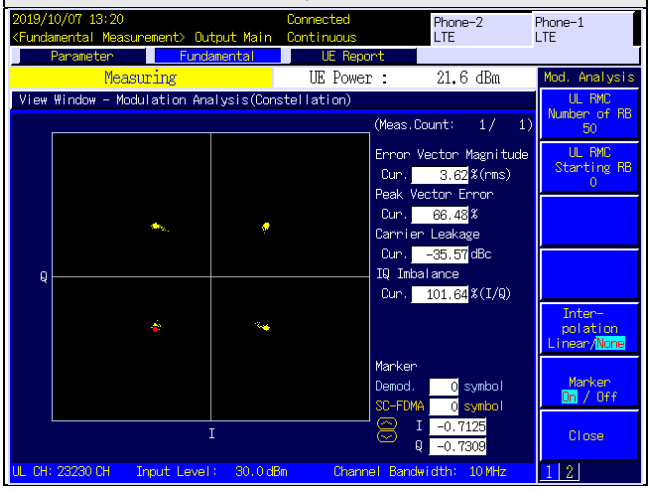
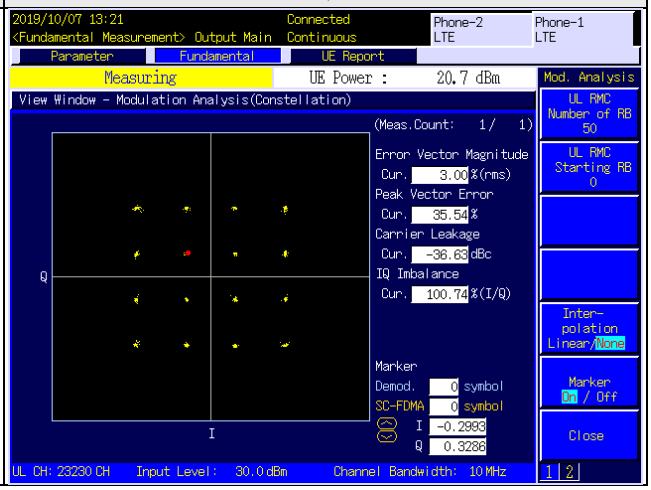
Connect the EUT to Communication Simulator via the antenna connector, The frequency band is set as EUT supported Modulation and Channels, the EUT output is matched with 50 ohm load, the waveform quality and constellation of the EUT was tested.

4.2.3 Test Setup

4.2.4 Test Results

LTE Band 4	
Spectrum Plot of Measurement Value	
Channel: 20175 / Frequency (MHz): 1732.5MHz	
QPSK	16QAM
	

LTE Band 12	
Spectrum Plot of Measurement Value	
Channel: 23095 / Frequency (MHz): 707.5 MHz	
QPSK	16QAM
	

LTE Band 13	
Spectrum Plot of Measurement Value	
Channel: 23230 / Frequency (MHz): 782.0MHz	
QPSK	16QAM
	

4.3 Frequency Stability Measurement

4.3.1 Limits of Frequency Stability Measurement

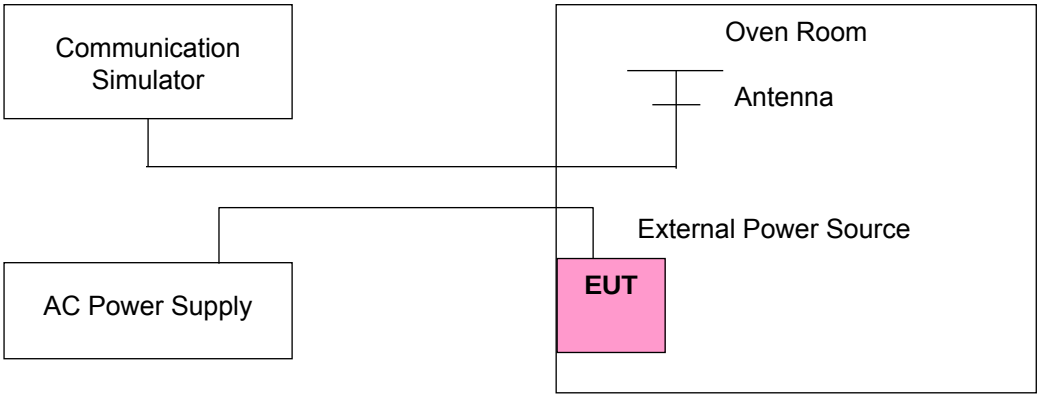
According to the FCC part 2.1055 shall be tested the frequency stability. The rule is defined that" The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block." The test extreme voltage is according to the 2.1055(d)(1) Vary primary supply voltage from 85 to 115 percent of the nominal value for other than hand carried battery equipment and the extreme temperature rule is comply with specification of EUT -30℃ ~ 50℃.

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 AC 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 4			
	Channel Bandwidth: 1.4 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
120	1710.700003	0.002	1754.300004	0.002
108	1710.700001	0.001	1754.300002	0.001
132	1710.700003	0.002	1754.300003	0.002

Note: The applicant defined the normal working voltage is from 108Vac to 132Vac.

Frequency Error vs. Temperature

Temp. (℃)	LTE Band 4			
	Channel Bandwidth: 1.4 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
0	1710.700003	0.002	1754.300002	0.001
10	1710.700004	0.002	1754.300001	0.001
20	1710.699999	-0.001	1754.299998	-0.001
30	1710.699998	-0.001	1754.299996	-0.002
40	1710.699999	-0.001	1754.299996	-0.002

Note:

1. The applicant declared that the normal operating temperature of the EUT is from 0°C to 40°C.
2. The EUT would shut down automatically as below 0°C and above 40°C.

Frequency Error vs. Voltage

Voltage (Volts)	LTE Band 4			
	Channel Bandwidth: 3 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
120	1711.500003	0.002	1753.500003	0.001
108	1711.500002	0.001	1753.500004	0.002
132	1711.500002	0.001	1753.500002	0.001

Note: The applicant defined the normal working voltage is from 108Vac to 132Vac.

Frequency Error vs. Temperature

Temp. (℃)	LTE Band 4			
	Channel Bandwidth: 3 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
0	1711.500001	0.001	1753.500001	0.001
10	1711.500002	0.001	1753.500001	0.001
20	1711.499996	-0.002	1753.499999	-0.001
30	1711.499996	-0.002	1753.499997	-0.002
40	1711.499998	-0.001	1753.499999	-0.001

Note:

1. The applicant declared that the normal operating temperature of the EUT is from 0°C to 40°C.
2. The EUT would shut down automatically as below 0°C and above 40°C.

Frequency Error vs. Voltage

Voltage (Volts)	LTE Band 4			
	Channel Bandwidth: 5 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
120	1712.500002	0.001	1752.500001	0.001
108	1712.500002	0.001	1752.500001	0.001
132	1712.500001	0.001	1752.500002	0.001

Note: The applicant defined the normal working voltage is from 108Vac to 132Vac.

Frequency Error vs. Temperature

Temp. (℃)	LTE Band 4			
	Channel Bandwidth: 5 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
0	1712.500002	0.001	1752.500003	0.002
10	1712.500003	0.002	1752.500004	0.002
20	1712.499998	-0.001	1752.499996	-0.002
30	1712.499999	-0.001	1752.499997	-0.002
40	1712.499996	-0.002	1752.499999	-0.001

Note:

1. The applicant declared that the normal operating temperature of the EUT is from 0°C to 40°C.
2. The EUT would shut down automatically as below 0°C and above 40°C.

Frequency Error vs. Voltage

Voltage (Volts)	LTE Band 4			
	Channel Bandwidth: 10 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
120	1715.000003	0.002	1750.000003	0.002
108	1715.000002	0.001	1750.000004	0.002
132	1715.000001	0.001	1750.000004	0.002

Note: The applicant defined the normal working voltage is from 108Vac to 132Vac.

Frequency Error vs. Temperature

Temp. (℃)	LTE Band 4			
	Channel Bandwidth: 10 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
0	1715.000003	0.002	1750.000004	0.002
10	1715.000001	0.001	1750.000001	0.001
20	1714.999996	-0.002	1749.999996	-0.002
30	1714.999997	-0.002	1749.999999	-0.001
40	1714.999999	-0.001	1749.999997	-0.002

Note:

1. The applicant declared that the normal operating temperature of the EUT is from 0°C to 40°C.
2. The EUT would shut down automatically as below 0°C and above 40°C.

Frequency Error vs. Voltage

Voltage (Volts)	LTE Band 4			
	Channel Bandwidth: 15 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
120	1717.500003	0.002	1747.500002	0.001
108	1717.500001	0.001	1747.500003	0.002
132	1717.500004	0.002	1747.500004	0.002

Note: The applicant defined the normal working voltage is from 108Vac to 132Vac.

Frequency Error vs. Temperature

Temp. (℃)	LTE Band 4			
	Channel Bandwidth: 15 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
0	1717.500002	0.001	1747.500002	0.001
10	1717.500002	0.001	1747.500004	0.002
20	1717.499998	-0.001	1747.499998	-0.001
30	1717.499999	-0.001	1747.499997	-0.002
40	1717.499997	-0.002	1747.499998	-0.001

Note:

1. The applicant declared that the normal operating temperature of the EUT is from 0°C to 40°C.
2. The EUT would shut down automatically as below 0°C and above 40°C.

Frequency Error vs. Voltage

Voltage (Volts)	LTE Band 4			
	Channel Bandwidth: 20 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
120	1720.000003	0.002	1745.000002	0.001
108	1720.000003	0.002	1745.000003	0.001
132	1720.000003	0.001	1745.000004	0.002

Note: The applicant defined the normal working voltage is from 108Vac to 132Vac.

Frequency Error vs. Temperature

Temp. (℃)	LTE Band 4			
	Channel Bandwidth: 20 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
0	1720.000004	0.002	1745.000001	0.001
10	1720.000001	0.001	1745.000003	0.002
20	1719.999996	-0.002	1744.999999	-0.001
30	1719.999998	-0.001	1744.999999	-0.001
40	1719.999998	-0.001	1744.999997	-0.002

Note:

1. The applicant declared that the normal operating temperature of the EUT is from 0°C to 40°C.
2. The EUT would shut down automatically as below 0°C and above 40°C.

Frequency Error vs. Voltage

Voltage (Volts)	LTE Band 12			
	Channel Bandwidth: 1.4 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
120	699.700004	0.005	715.300002	0.003
108	699.700004	0.006	715.300003	0.004
132	699.700001	0.002	715.300001	0.002

Note: The applicant defined the normal working voltage is from 108Vac to 132Vac.

Frequency Error vs. Temperature

Temp. (℃)	LTE Band 12			
	Channel Bandwidth: 1.4 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
0	699.700001	0.002	715.300002	0.003
10	699.700003	0.005	715.300003	0.004
20	699.699999	-0.002	715.299998	-0.003
30	699.699998	-0.003	715.299999	-0.002
40	699.699997	-0.004	715.299999	-0.002

Note:

1. The applicant declared that the normal operating temperature of the EUT is from 0°C to 40°C.
2. The EUT would shut down automatically as below 0°C and above 40°C.

Frequency Error vs. Voltage

Voltage (Volts)	LTE Band 12			
	Channel Bandwidth: 3 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
120	700.500001	0.001	714.500003	0.004
108	700.500002	0.002	714.500003	0.004
132	700.500003	0.005	714.500003	0.005

Note: The applicant defined the normal working voltage is from 108Vac to 132Vac.

Frequency Error vs. Temperature

Temp. (℃)	LTE Band 12			
	Channel Bandwidth: 3 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
0	700.500003	0.004	714.500003	0.005
10	700.500004	0.005	714.500002	0.003
20	700.499998	-0.003	714.499996	-0.005
30	700.499998	-0.003	714.499997	-0.004
40	700.499997	-0.004	714.499997	-0.005

Note:

1. The applicant declared that the normal operating temperature of the EUT is from 0°C to 40°C.
2. The EUT would shut down automatically as below 0°C and above 40°C.

Frequency Error vs. Voltage

Voltage (Volts)	LTE Band 12			
	Channel Bandwidth: 5 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
120	701.500004	0.005	713.500003	0.004
108	701.500002	0.002	713.500001	0.002
132	701.500004	0.005	713.500001	0.002

Note: The applicant defined the normal working voltage is from 108Vac to 132Vac.

Frequency Error vs. Temperature

Temp. (℃)	LTE Band 12			
	Channel Bandwidth: 5 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
0	701.500001	0.002	713.500003	0.004
10	701.500002	0.002	713.500002	0.003
20	701.499999	-0.002	713.499999	-0.002
30	701.499999	-0.002	713.499997	-0.005
40	701.499998	-0.003	713.499998	-0.003

Note:

1. The applicant declared that the normal operating temperature of the EUT is from 0°C to 40°C.
2. The EUT would shut down automatically as below 0°C and above 40°C.

Frequency Error vs. Voltage

Voltage (Volts)	LTE Band 12			
	Channel Bandwidth: 10 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
120	704.000004	0.005	711.000004	0.006
108	704.000001	0.001	711.000002	0.002
132	704.000004	0.005	711.000001	0.002

Note: The applicant defined the normal working voltage is from 108Vac to 132Vac.

Frequency Error vs. Temperature

Temp. (℃)	LTE Band 12			
	Channel Bandwidth: 10 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
0	704.000003	0.005	711.000002	0.003
10	704.000003	0.005	711.000001	0.002
20	703.999998	-0.003	710.999997	-0.004
30	703.999998	-0.003	710.999999	-0.002
40	703.999997	-0.004	710.999998	-0.003

Note:

1. The applicant declared that the normal operating temperature of the EUT is from 0°C to 40°C.
2. The EUT would shut down automatically as below 0°C and above 40°C.

Frequency Error vs. Voltage

Voltage (Volts)	LTE Band 13			
	Channel Bandwidth: 5 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
120	779.500004	0.005	784.500001	0.002
108	779.500003	0.004	784.500002	0.002
132	779.500002	0.003	784.500003	0.003

Note: The applicant defined the normal working voltage is from 108Vac to 132Vac.

Frequency Error vs. Temperature

Temp. (℃)	LTE Band 13			
	Channel Bandwidth: 5 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
0	779.500001	0.001	784.500001	0.001
10	779.500003	0.004	784.500001	0.001
20	779.499996	-0.005	784.499999	-0.002
30	779.499997	-0.004	784.499997	-0.004
40	779.499997	-0.004	784.499998	-0.002

Note:

1. The applicant declared that the normal operating temperature of the EUT is from 0°C to 40°C.
2. The EUT would shut down automatically as below 0°C and above 40°C.

Frequency Error vs. Voltage

Voltage (Volts)	LTE Band 13	
	Channel Bandwidth: 10 MHz	
	Mid Channel	
	Frequency (MHz)	Frequency Error (ppm)
120	782.000002	0.002
108	782.000002	0.002
132	782.000003	0.003

Note: The applicant defined the normal working voltage is from 108Vac to 132Vac.

Frequency Error vs. Temperature

Temp. (℃)	LTE Band 13	
	Channel Bandwidth: 10 MHz	
	Mid Channel	
	Frequency (MHz)	Frequency Error (ppm)
0	782.000002	0.002
10	782.000003	0.003
20	781.999998	-0.003
30	781.999998	-0.003
40	781.999996	-0.005

Note:

1. The applicant declared that the normal operating temperature of the EUT is from 0°C to 40°C.
2. The EUT would shut down automatically as below 0°C and above 40°C.

4.4 Emission Bandwidth Measurement

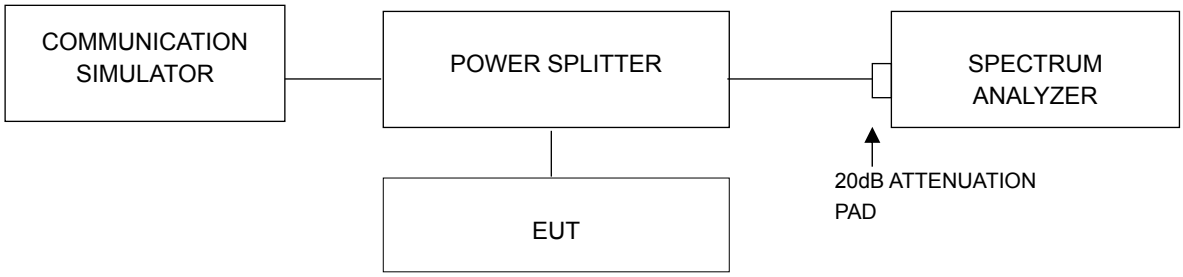
4.4.1 Limits of Emission Bandwidth Measurement

According to FCC 27.53(h)(3) specified that emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26dB below the transmitter power.

4.4.2 Test Procedure

The transmitter output was connected to the spectrum analyzer through an attenuator. The bandwidth of the fundamental frequency was measured by spectrum analyzer with RBW = 30kHz and VBW = 100kHz (Channel Bandwidth: 1.4MHz), RBW = 62kHz and VBW = 200kHz (Channel Bandwidth: 3MHz), RBW = 100kHz and VBW = 300kHz (Channel Bandwidth: 5MHz), RBW = 200kHz and VBW = 1MHz (Channel Bandwidth: 10MHz), RBW = 300kHz and VBW = 1MHz (Channel Bandwidth: 15MHz) and RBW = 430kHz and VBW = 1.3MHz (Channel Bandwidth: 20MHz).

4.4.3 Test Setup



4.4.4 Test Result

Occupied Bandwidth

LTE Band 4

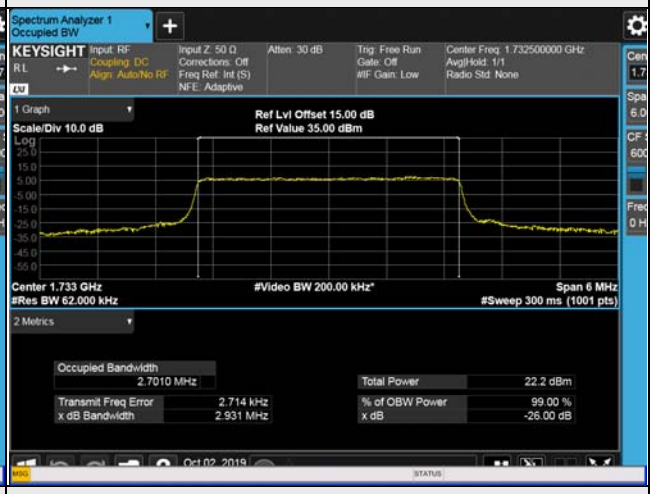
LTE Band 4, Channel Bandwidth 1.4MHz			
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	
		QPSK	16QAM
19957	1710.7	1.09	1.09
20175	1732.5	1.09	1.09
20393	1754.3	1.09	1.09
LTE Band 4, Channel Bandwidth 3MHz			
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	
		QPSK	16QAM
19965	1711.5	2.70	2.69
20175	1732.5	2.70	2.70
20385	1753.5	2.70	2.70
LTE Band 4, Channel Bandwidth 5MHz			
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	
		QPSK	16QAM
19975	1712.5	4.48	4.48
20175	1732.5	4.49	4.49
20375	1752.5	4.48	4.49
LTE Band 4, Channel Bandwidth 10MHz			
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	
		QPSK	16QAM
20000	1715.0	8.96	8.96
20175	1732.5	8.97	8.98
20350	1750.0	8.96	8.97
LTE Band 4, Channel Bandwidth 15MHz			
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	
		QPSK	16QAM
20025	1717.5	13.46	13.45
20175	1732.5	13.47	13.46
20325	1747.5	13.44	13.43

LTE Band 4, Channel Bandwidth 20MHz			
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	
		QPSK	16QAM
20050	1720.0	17.94	17.96
20175	1732.5	17.95	17.91
20300	1745.0	17.87	17.89

Spectrum Plot of Worst Value

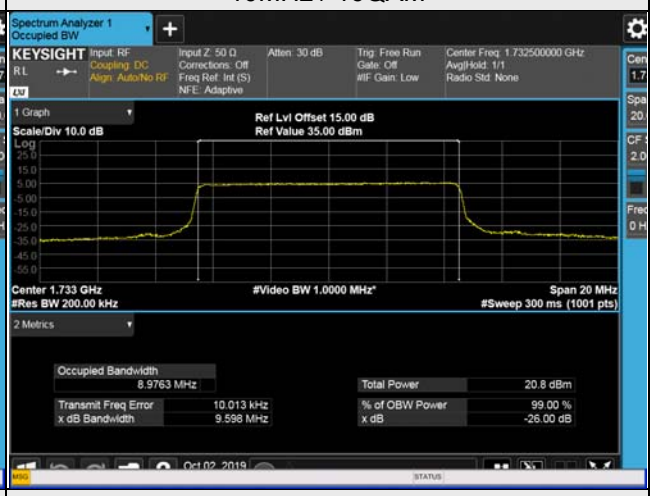
1.4MHz / 16QAM

3MHz / QPSK

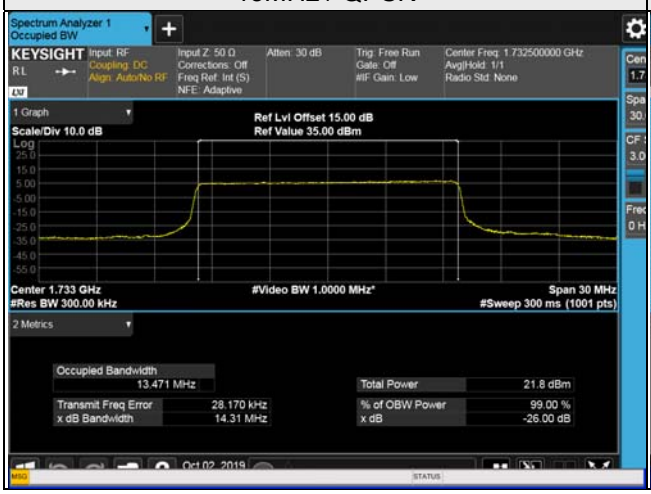


5MHz / 16QAM

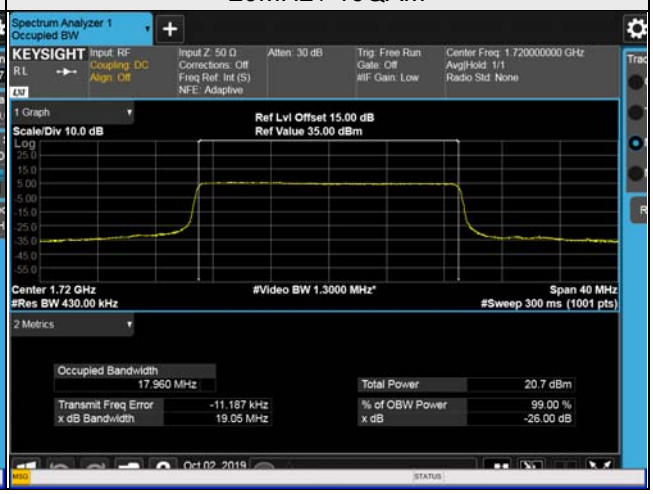
10MHz / 16QAM



15MHz / QPSK

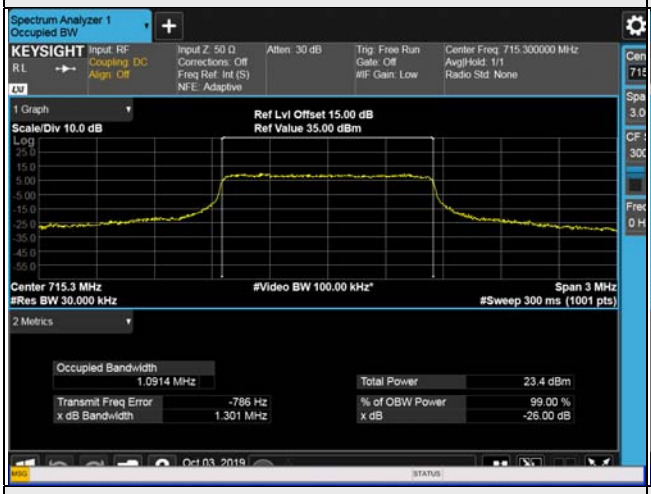


20MHz / 16QAM



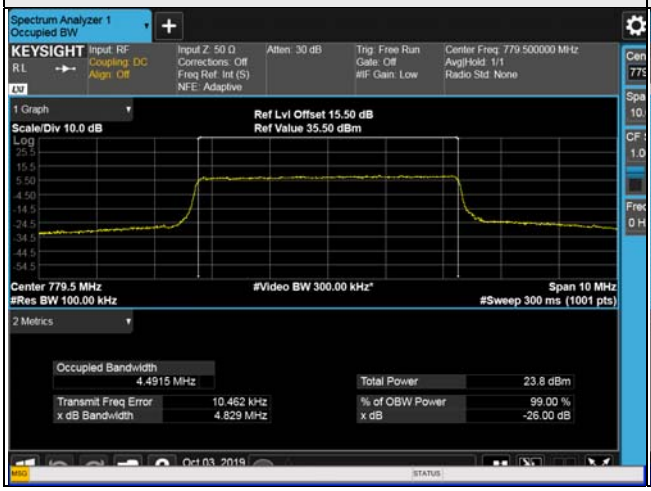
LTE Band 12

LTE Band 12, Channel Bandwidth 1.4MHz			
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	
		QPSK	16QAM
23017	699.7	1.09	1.09
23095	707.5	1.09	1.09
23173	715.3	1.09	1.09
LTE Band 12, Channel Bandwidth 3MHz			
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	
		QPSK	16QAM
23025	700.5	2.70	2.70
23095	707.5	2.70	2.70
23165	714.5	2.70	2.70
LTE Band 12, Channel Bandwidth 5MHz			
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	
		QPSK	16QAM
23035	701.5	4.48	4.49
23095	707.5	4.49	4.49
23155	713.5	4.48	4.48
LTE Band 12, Channel Bandwidth 10MHz			
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	
		QPSK	16QAM
23060	704.0	8.95	8.96
23095	707.5	8.97	8.97
23130	711.0	8.97	8.98

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

LTE Band 13

LTE Band 13, Channel Bandwidth 5MHz			
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	
		QPSK	16QAM
23205	779.5	4.49	4.50
23230	782.0	4.47	4.48
23255	784.5	4.48	4.48
LTE Band 13, Channel Bandwidth 10MHz			
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	
		QPSK	16QAM
23230	782.0	8.95	8.96

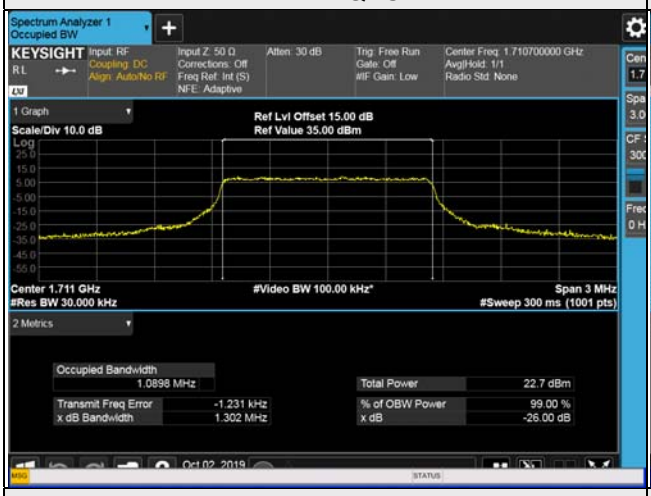
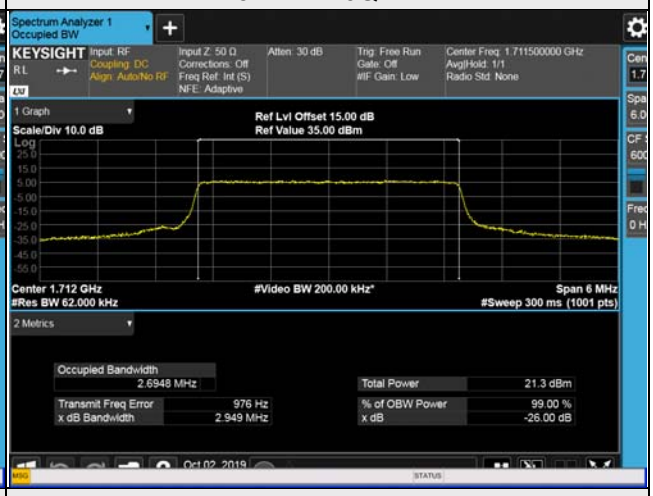
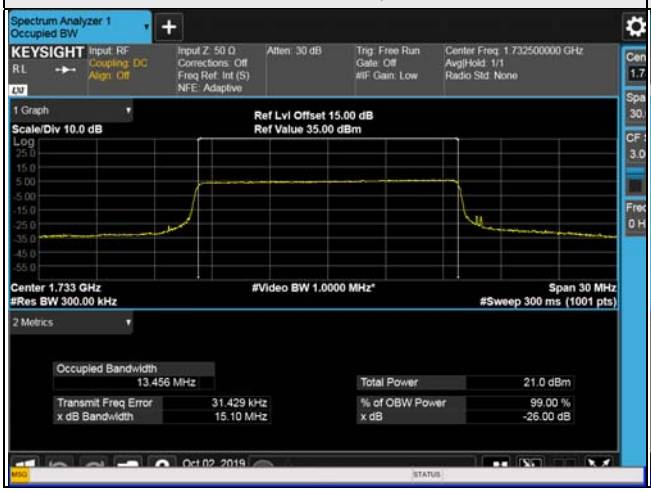
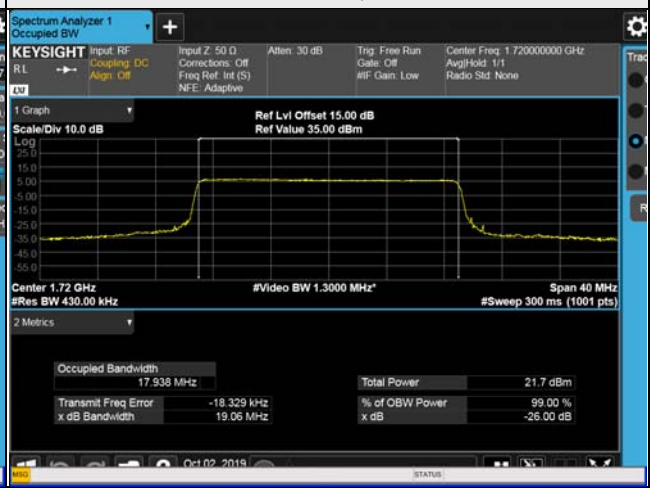
Spectrum Plot of Worst Value	
5MHz / 16QAM	10MHz / 16QAM
	

26dB Bandwidth

LTE Band 4

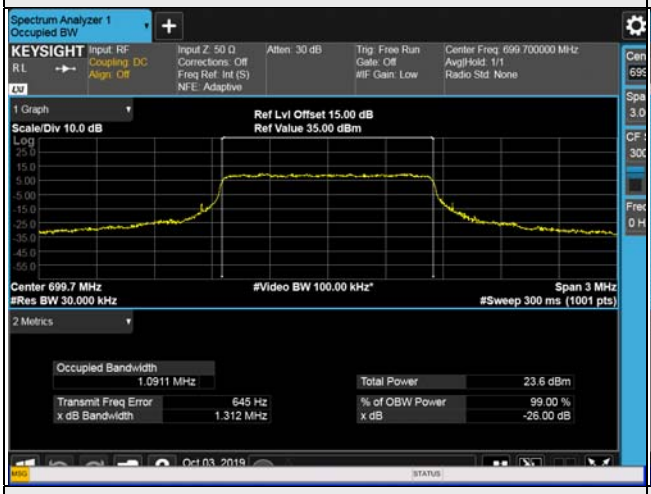
LTE Band 4, Channel Bandwidth 1.4MHz			
Channel	Frequency (MHz)	26dB Bandwidth (MHz)	
		QPSK	16QAM
19957	1710.7	1.30	1.28
20175	1732.5	1.28	1.27
20393	1754.3	1.30	1.27
LTE Band 4, Channel Bandwidth 3MHz			
Channel	Frequency (MHz)	26dB Bandwidth (MHz)	
		QPSK	16QAM
19965	1711.5	2.93	2.95
20175	1732.5	2.93	2.93
20385	1753.5	2.92	2.93
LTE Band 4, Channel Bandwidth 5MHz			
Channel	Frequency (MHz)	26dB Bandwidth (MHz)	
		QPSK	16QAM
19975	1712.5	4.81	4.79
20175	1732.5	4.85	4.79
20375	1752.5	4.82	4.83
LTE Band 4, Channel Bandwidth 10MHz			
Channel	Frequency (MHz)	26dB Bandwidth (MHz)	
		QPSK	16QAM
20000	1715.0	9.56	9.56
20175	1732.5	9.52	9.60
20350	1750.0	9.52	9.54
LTE Band 4, Channel Bandwidth 15MHz			
Channel	Frequency (MHz)	26dB Bandwidth (MHz)	
		QPSK	16QAM
20025	1717.5	14.26	14.30
20175	1732.5	14.31	15.10
20325	1747.5	14.27	14.34

LTE Band 4, Channel Bandwidth 20MHz			
Channel	Frequency (MHz)	26dB Bandwidth (MHz)	
		QPSK	16QAM
20050	1720.0	19.06	19.05
20175	1732.5	19.05	18.42
20300	1745.0	19.05	19.01

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

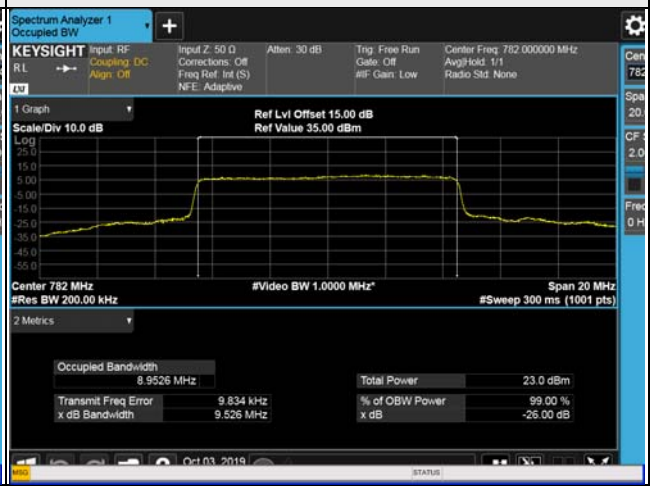
LTE Band 12

LTE Band 12, Channel Bandwidth 1.4MHz			
Channel	Frequency (MHz)	26dB Bandwidth (MHz)	
		QPSK	16QAM
23017	699.7	1.29	1.31
23095	707.5	1.31	1.29
23173	715.3	1.31	1.30
LTE Band 12, Channel Bandwidth 3MHz			
Channel	Frequency (MHz)	26dB Bandwidth (MHz)	
		QPSK	16QAM
23025	700.5	2.92	2.93
23095	707.5	2.92	2.93
23165	714.5	2.93	2.94
LTE Band 12, Channel Bandwidth 5MHz			
Channel	Frequency (MHz)	26dB Bandwidth (MHz)	
		QPSK	16QAM
23035	701.5	4.83	4.80
23095	707.5	4.82	4.82
23155	713.5	4.80	4.81
LTE Band 12, Channel Bandwidth 10MHz			
Channel	Frequency (MHz)	26dB Bandwidth (MHz)	
		QPSK	16QAM
23060	704.0	9.54	9.56
23095	707.5	9.53	9.54
23130	711.0	9.54	9.54

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

LTE Band 13

LTE Band 13, Channel Bandwidth 5MHz			
Channel	Frequency (MHz)	26dB Bandwidth (MHz)	
		QPSK	16QAM
23205	779.5	4.83	4.83
23230	782.0	4.80	4.80
23255	784.5	4.84	4.85
LTE Band 13, Channel Bandwidth 10MHz			
Channel	Frequency (MHz)	26dB Bandwidth (MHz)	
		QPSK	16QAM
23230	782.0	9.53	9.52

Spectrum Plot of Worst Value	
5MHz / 16QAM	10MHz / QPSK
	

4.5 Channel Edge Measurement

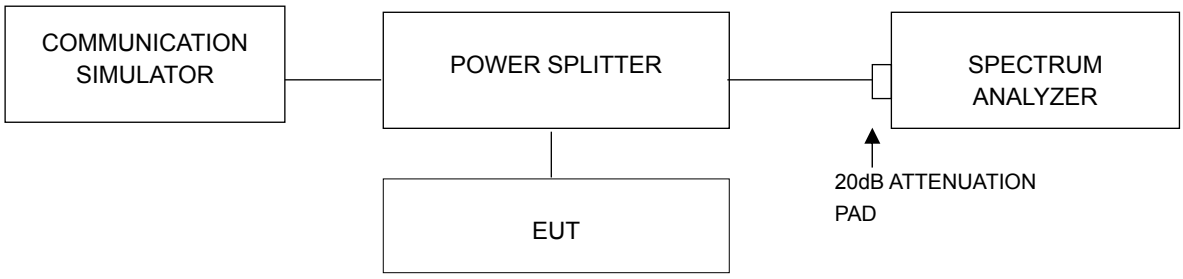
4.5.1 Limits of Band Edge Measurement

For LTE Band 4
According to FCC 27.53(h) for operations in the 1695-1710 MHz, 1710-1755 MHz, 1755-1780 MHz, 1915-1920 MHz, 1995-2000 MHz, 2000-2020 MHz, 2110-2155 MHz, 2155-2180 MHz, and 2180-2200 bands, the power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) in watts by at least 43 + 10 log (P) dB.

For LTE Band 12
According to FCC 27.53(g) for operations in the 600 MHz band and the 698-746 MHz band, the power of any emission outside a licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, by at least 43 + 10 log (P) dB. Compliance with this provision is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kilohertz or greater.

For LTE Band 13
According to FCC 27.53(c)(2) for on any frequency outside the 776-788 MHz band, the power of any emission shall be attenuated outside the band below the transmitter power (P) by at least 43 + 10 log (P) dB.

4.5.2 Test Setup



4.5.3 Test Procedures

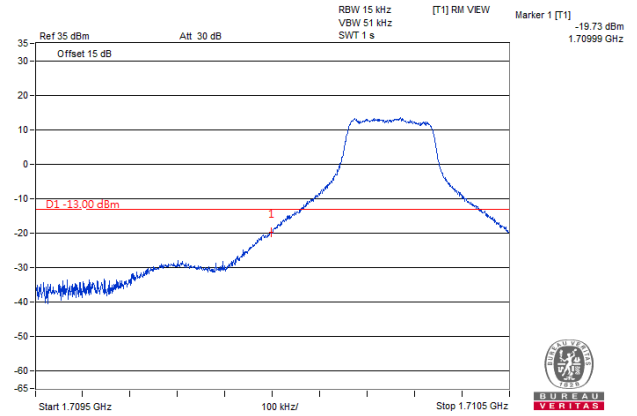
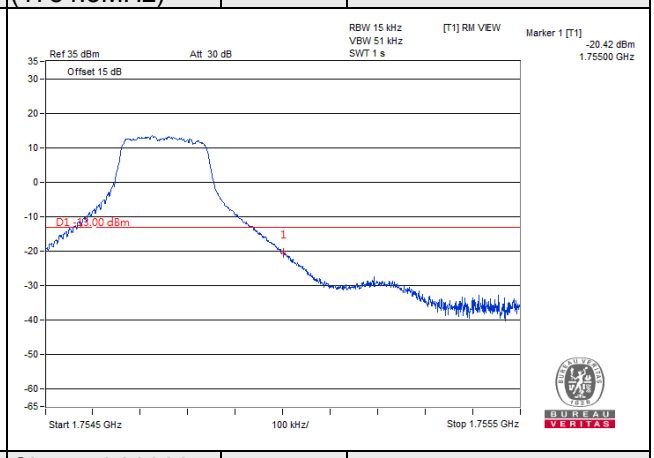
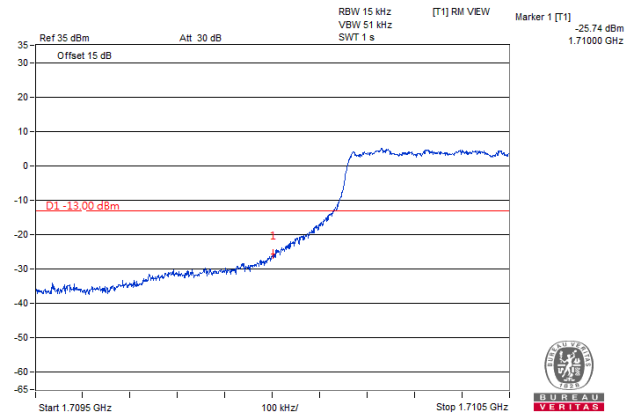
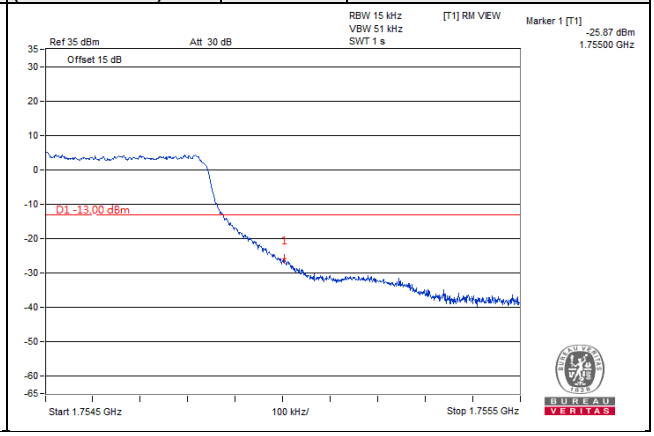
a. The EUT was set up for the rated peak power. The power was measured with Spectrum Analyzer. All measurements were done at 3 channels: low, middle and high operational frequency range.

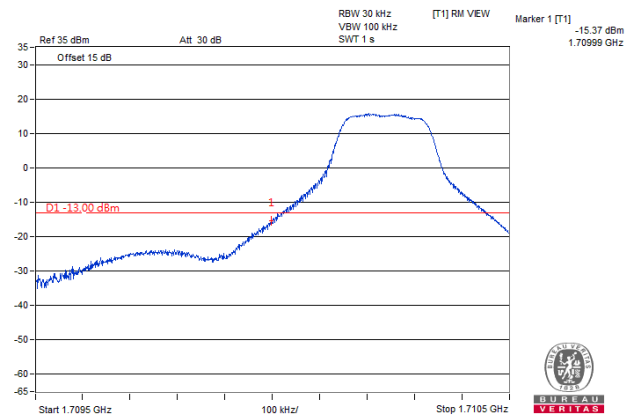
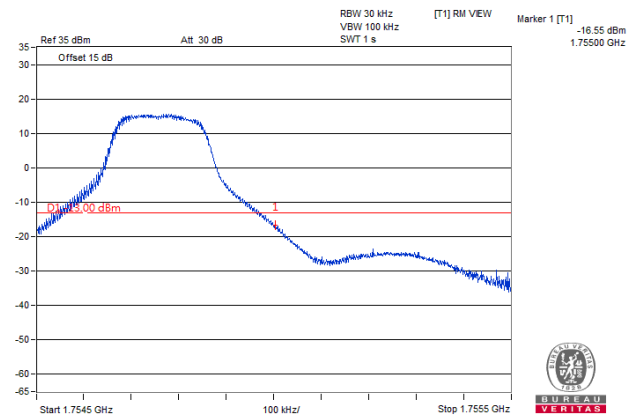
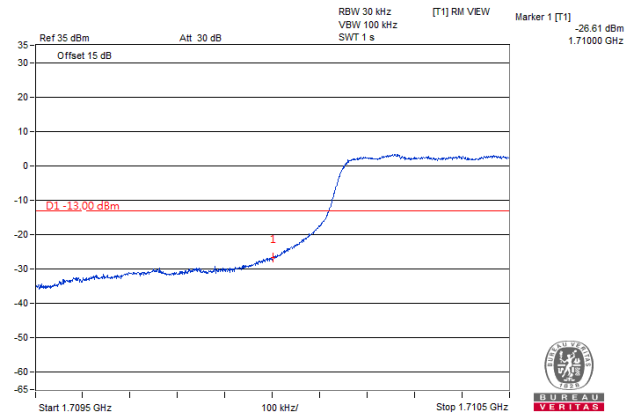
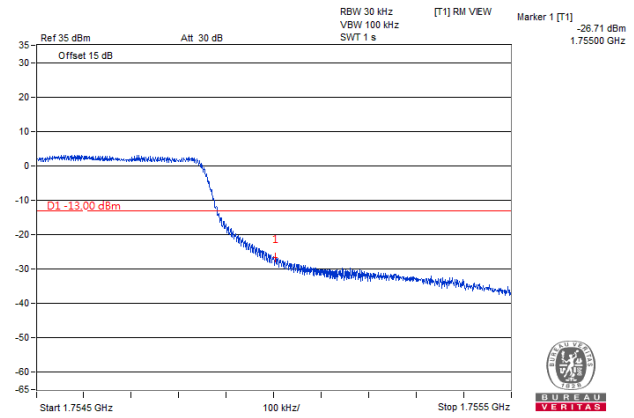
b. The center frequency of spectrum is the band edge frequency and span is 1.5MHz. RBW = 15kHz or 30kHz and VBW = 51kHz or 100kHz (Channel Bandwidth: 1.4MHz), RBW = 30kHz and VBW = 100kHz (Channel Bandwidth: 3MHz), RBW = 51kHz or 62kHz and VBW = 160kHz or 200kHz (Channel Bandwidth: 5MHz), RBW = 100kHz and VBW = 300kHz (Channel Bandwidth: 10MHz), RBW = 150kHz and VBW = 470kHz (Channel Bandwidth: 15MHz) and RBW = 200kHz and VBW = 1MHz (Channel Bandwidth: 20MHz).

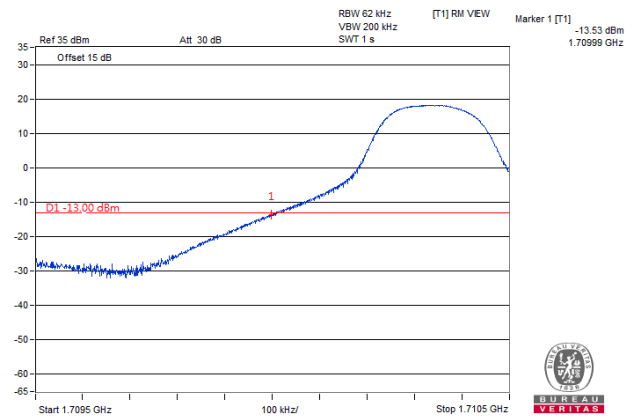
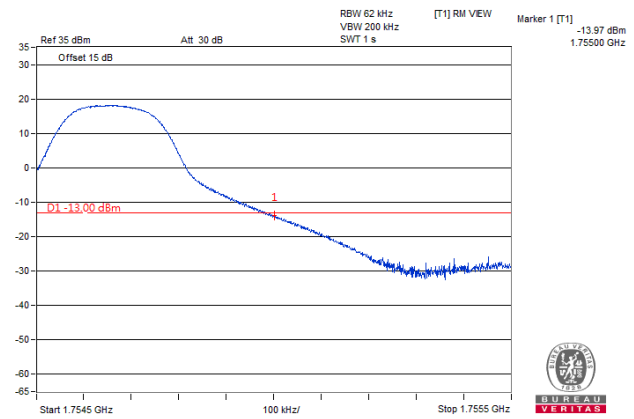
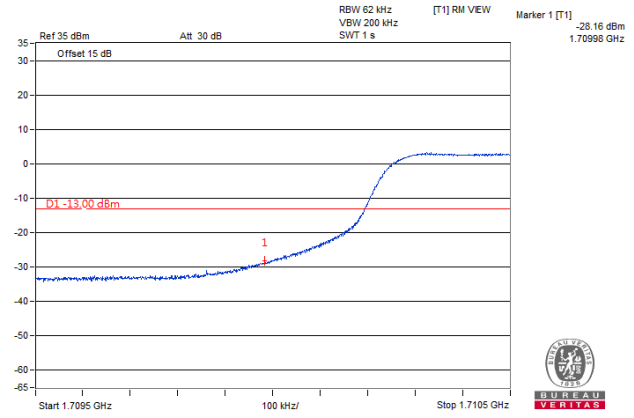
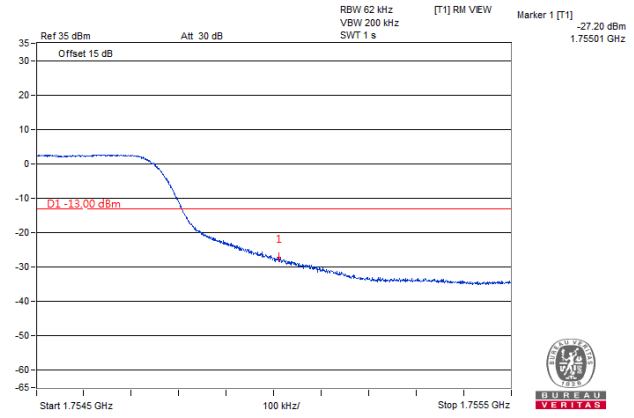
c. Record the max trace plot into the test report.

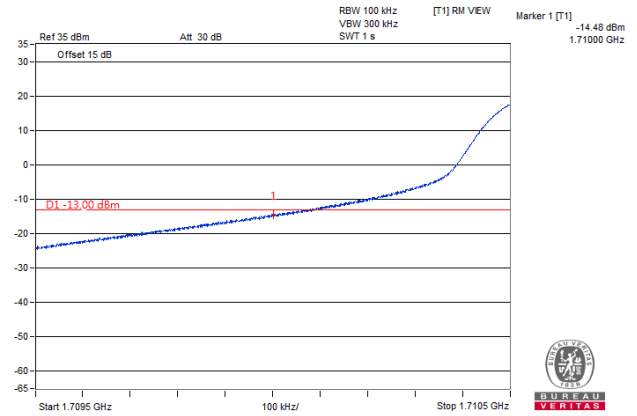
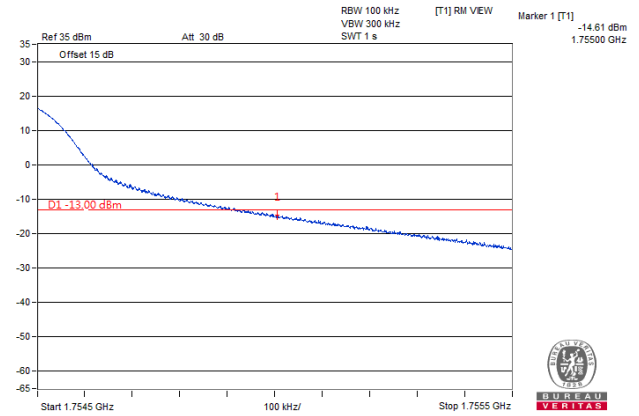
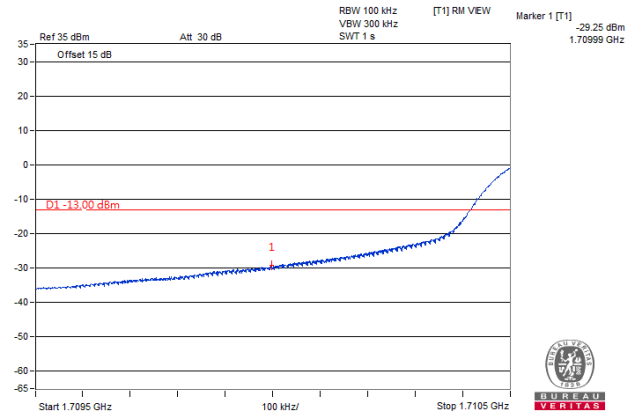
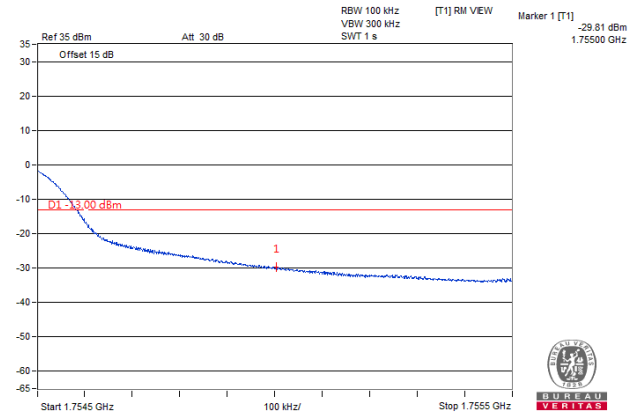
4.5.4 Test Results

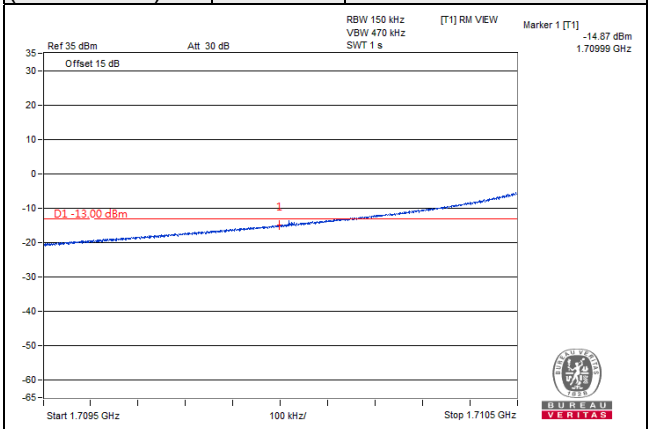
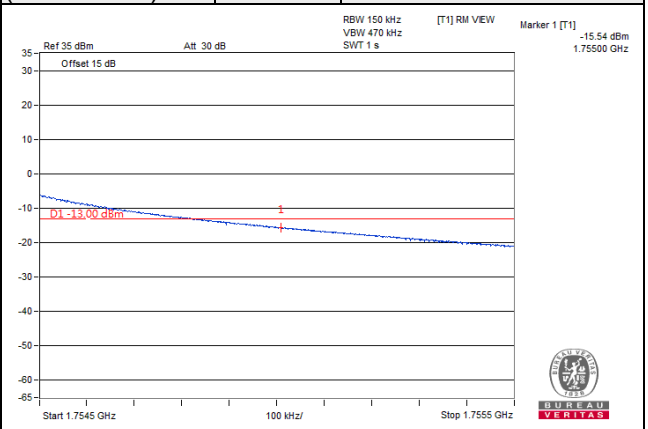
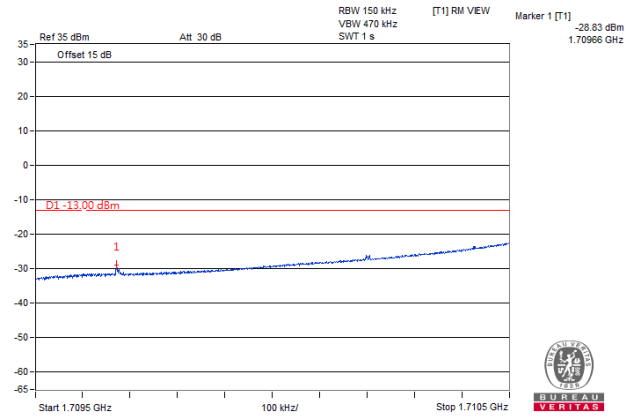
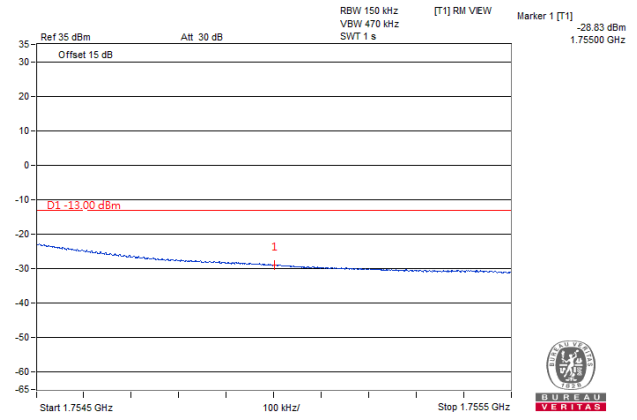
LTE Band 4

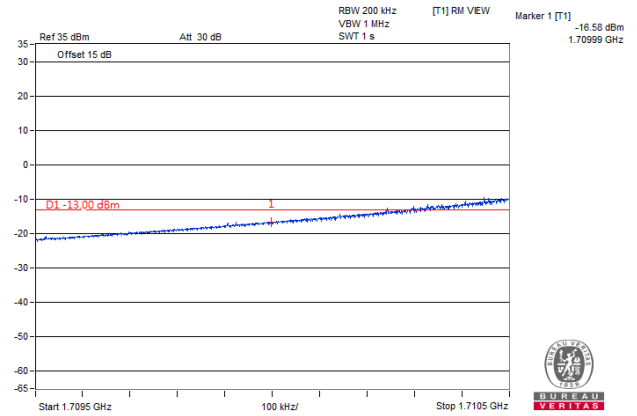
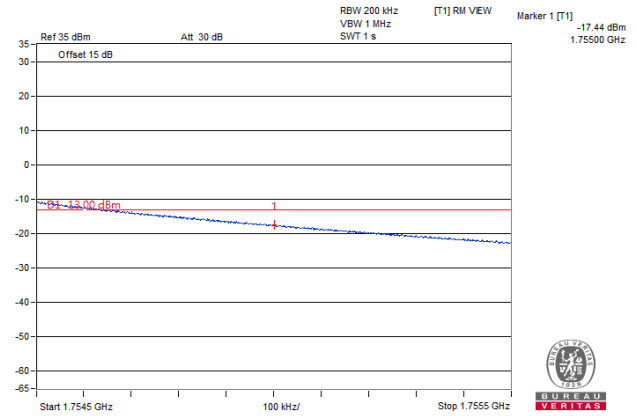
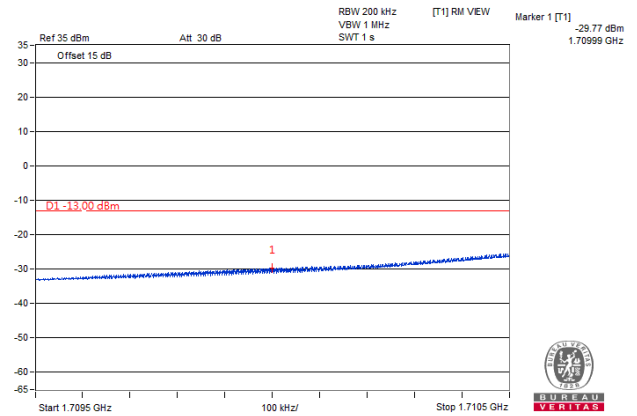
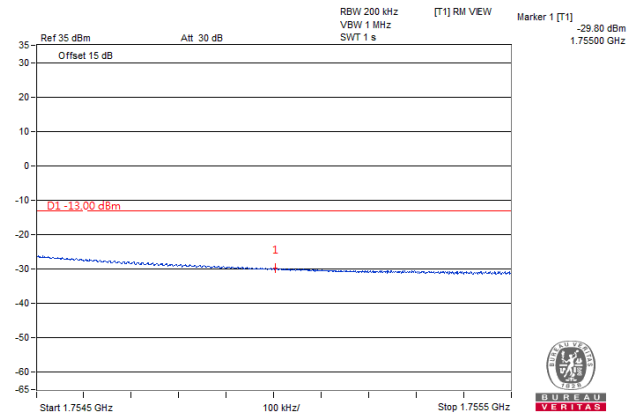
Channel Bandwidth: 1.4MHz					
Channel 19957 (1710.7MHz)	QPSK	1 RB / 0 RB Offset	Channel 20393 (1754.3MHz)	QPSK	1 RB / 5 RB Offset
					
Channel 19957 (1710.7MHz)	QPSK	6 RB / 0 RB Offset	Channel 20393 (1754.3MHz)	QPSK	6 RB / 0 RB Offset
					

Channel Bandwidth: 3MHz					
Channel 19965 (1711.5MHz)	QPSK	1 RB / 0 RB Offset	Channel 20385 (1753.5MHz)	QPSK	1 RB / 14 RB Offset
					
Channel 19965 (1711.5MHz)	QPSK	15 RB / 0 RB Offset	Channel 20385 (1753.5MHz)	QPSK	15 RB / 0 RB Offset
					

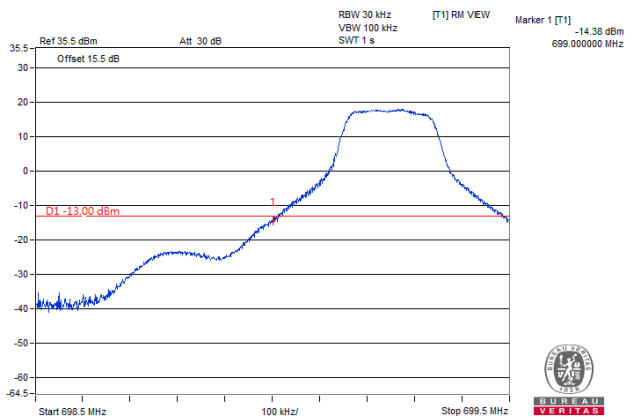
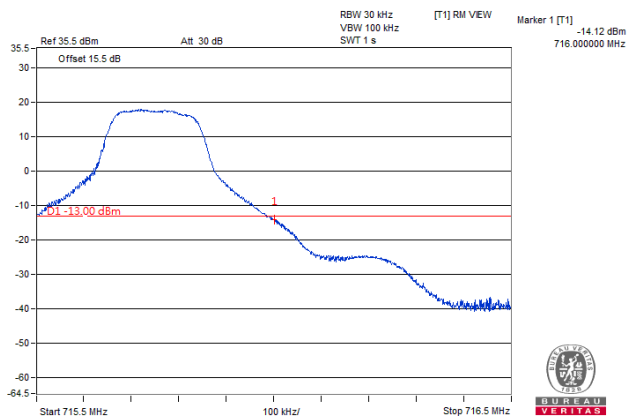
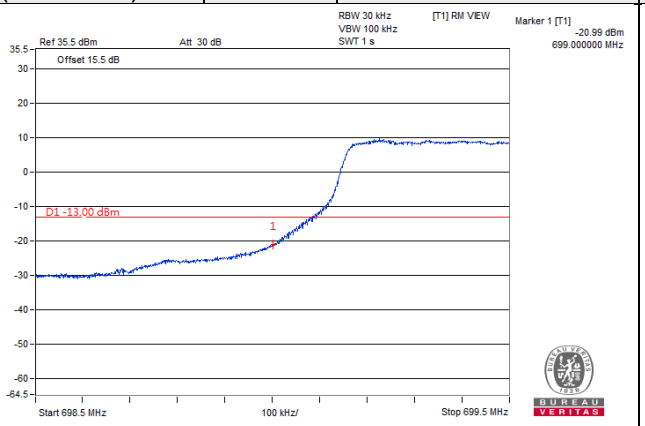
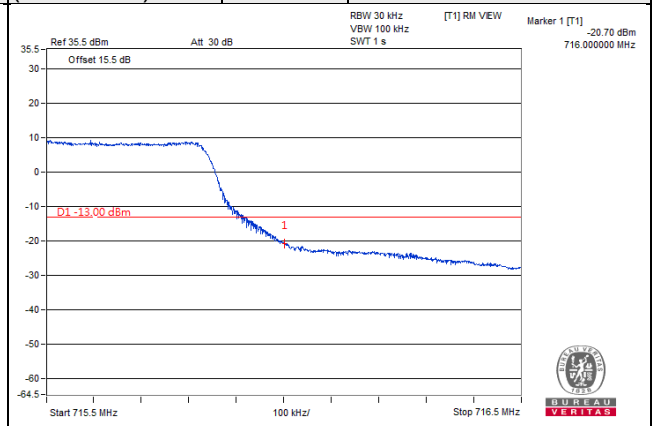
Channel Bandwidth: 5MHz					
Channel 19975 (1712.5MHz)	QPSK	1 RB / 0 RB Offset	Channel 20375 (1752.5MHz)	QPSK	1 RB / 24 RB Offset
					
Channel 19975 (1712.5MHz)	QPSK	25 RB / 0 RB Offset	Channel 20375 (1752.5MHz)	QPSK	25 RB / 0 RB Offset
					

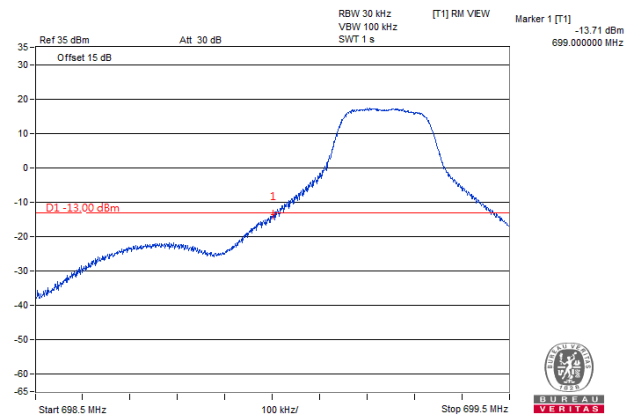
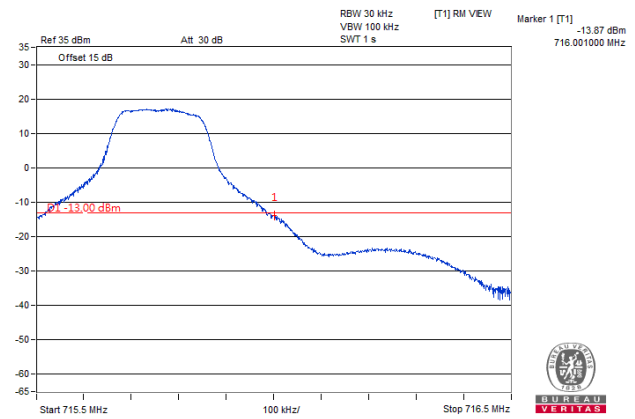
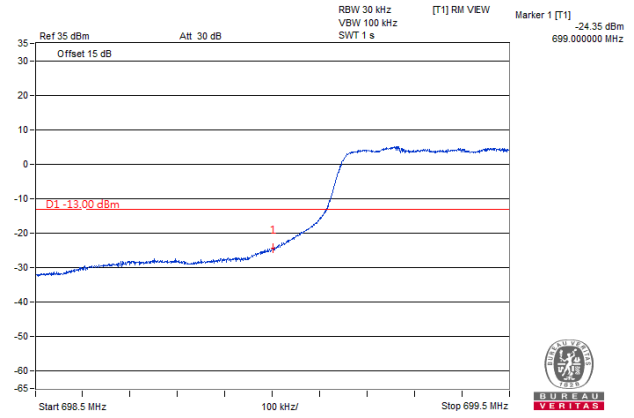
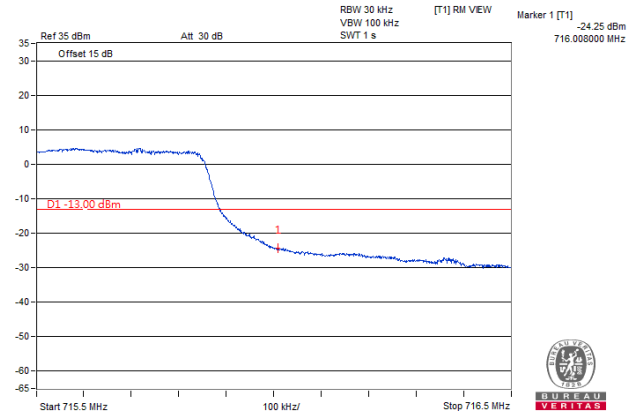
Channel Bandwidth: 10MHz					
Channel 20000 (1715.0MHz)	QPSK	1 RB / 0 RB Offset	Channel 20350 (1750.0MHz)	QPSK	1 RB / 49 RB Offset
					
Channel 20000 (1715.0MHz)	QPSK	50 RB / 0 RB Offset	Channel 20350 (1750.0MHz)	QPSK	50 RB / 0 RB Offset
					

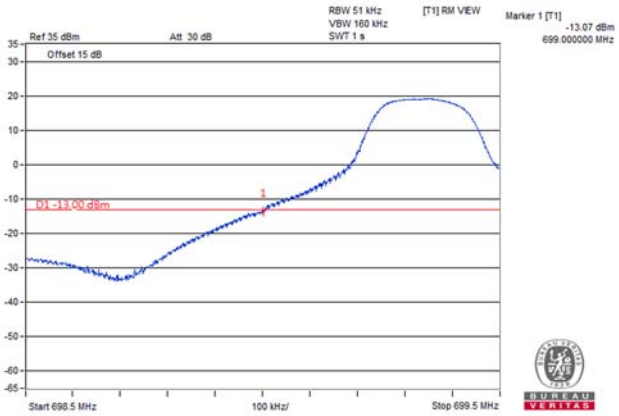
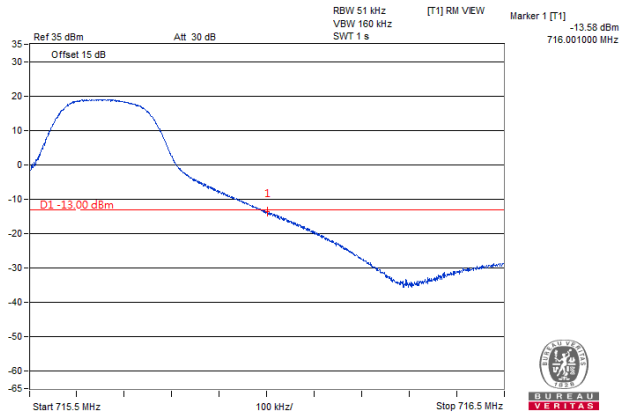
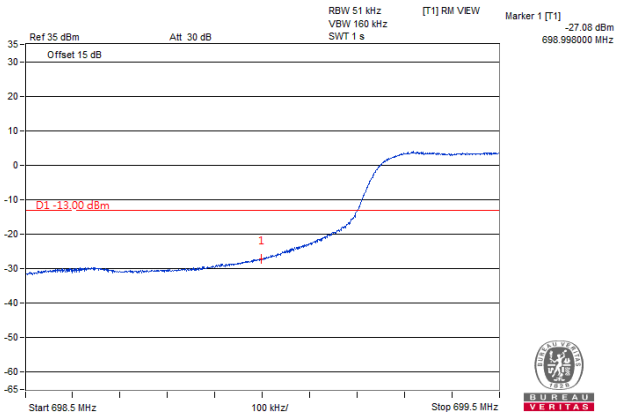
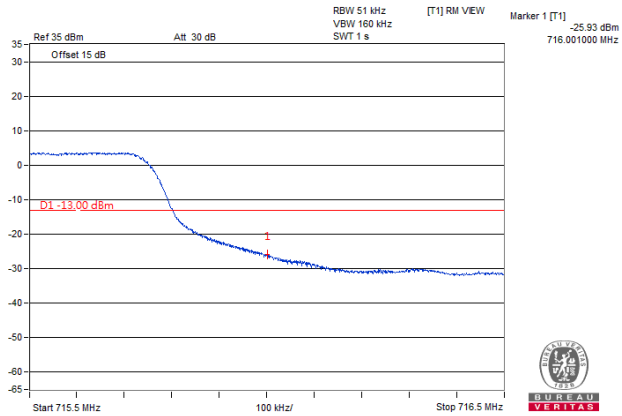
Channel Bandwidth: 15MHz					
Channel 20025 (1717.5MHz)	QPSK	1 RB / 0 RB Offset	Channel 20325 (1747.5MHz)	QPSK	1 RB / 74 RB Offset
					
Channel 20025 (1717.5MHz)	QPSK	75 RB / 0 RB Offset	Channel 20325 (1747.5MHz)	QPSK	75 RB / 0 RB Offset
					

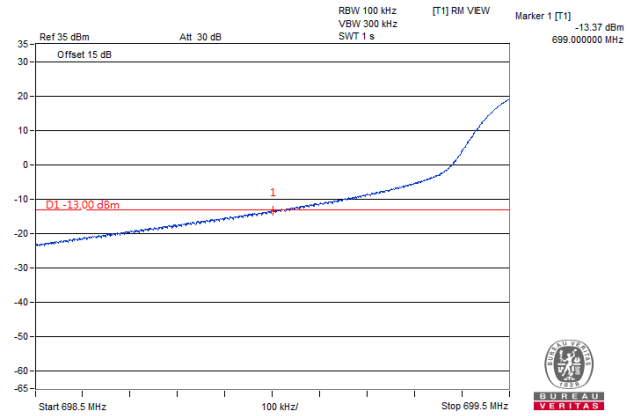
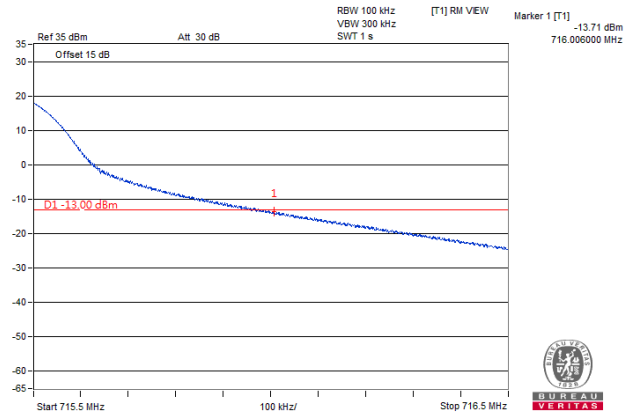
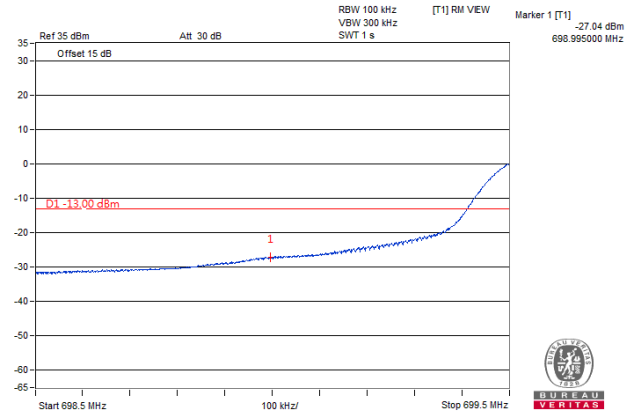
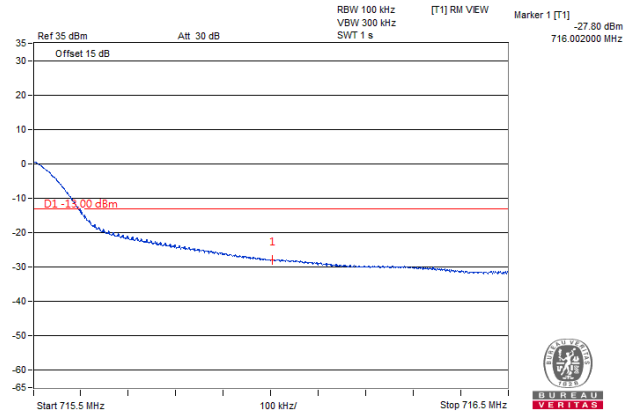
Channel Bandwidth: 20MHz					
Channel 20050 (1720.0MHz)	QPSK	1 RB / 0 RB Offset	Channel 20300 (1745.0MHz)	QPSK	1 RB / 99 RB Offset
					
Channel 20050 (1720.0MHz)	QPSK	100 RB / 0 RB Offset	Channel 20300 (1745.0MHz)	QPSK	100 RB / 0 RB Offset
					

LTE Band 12

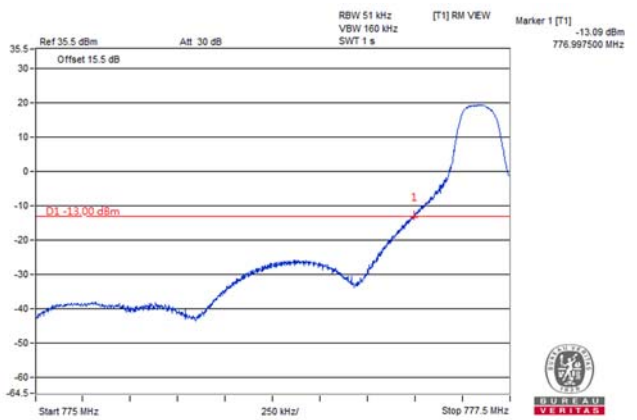
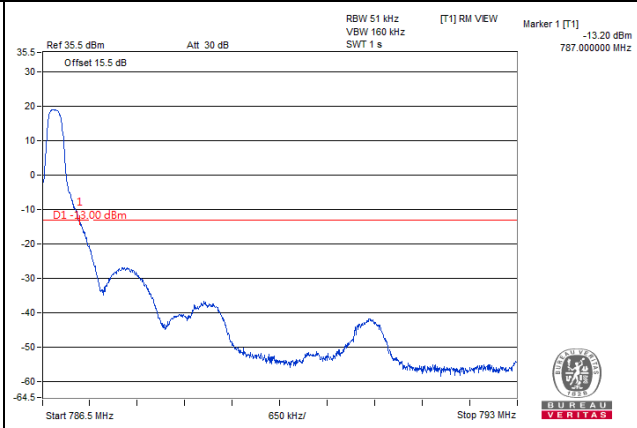
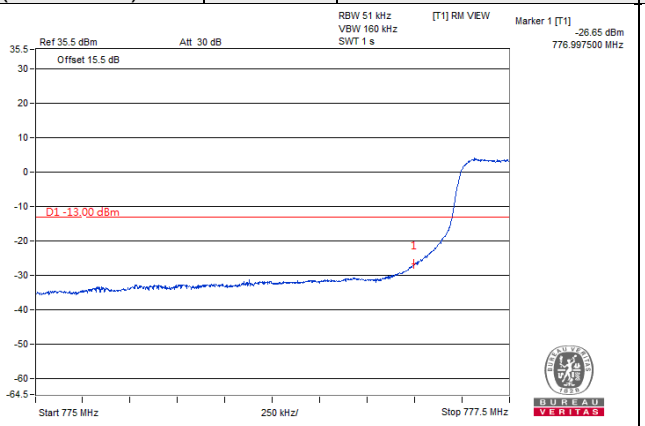
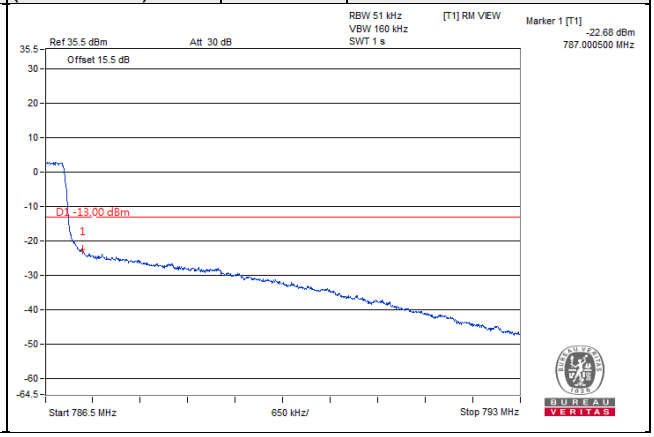
Channel Bandwidth: 1.4MHz					
Channel 23017 (699.7MHz)	QPSK	1 RB / 0 RB Offset	Channel 23173 (715.3MHz)	QPSK	1 RB / 5 RB Offset
					
Channel 23017 (699.7MHz)	QPSK	6 RB / 0 RB Offset	Channel 23173 (715.3MHz)	QPSK	6 RB / 0 RB Offset
					

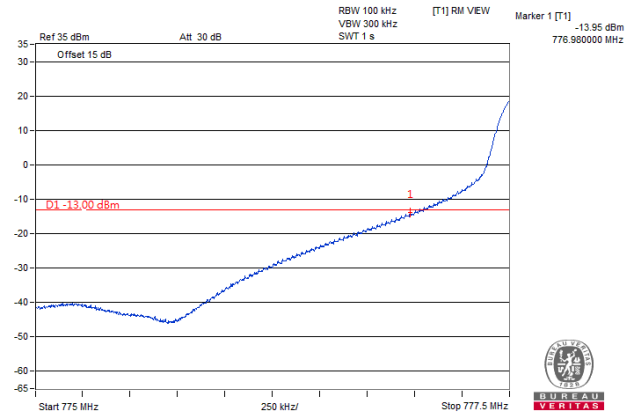
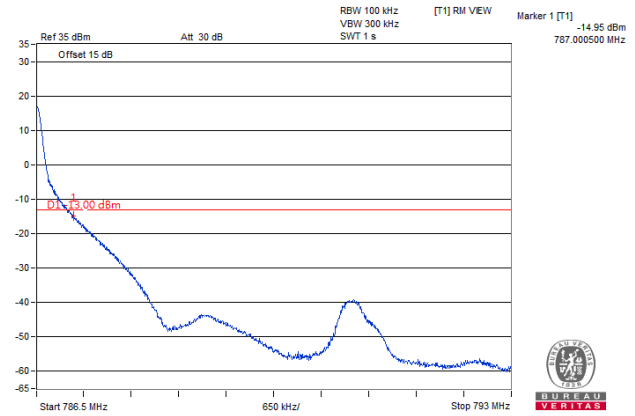
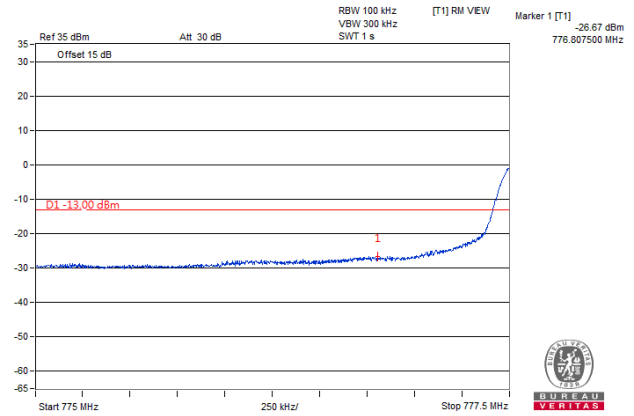
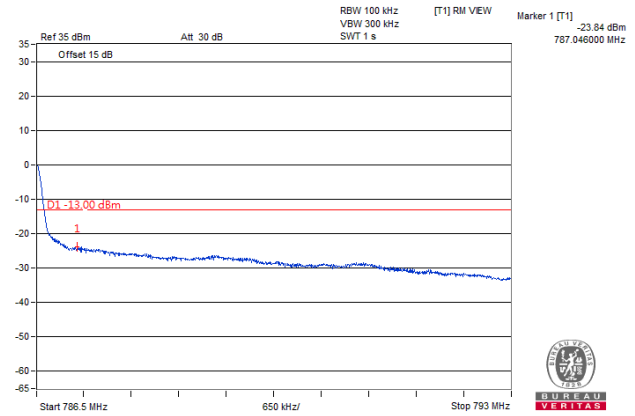
Channel Bandwidth: 3MHz					
Channel 23025 (700.5MHz)	QPSK	1 RB / 0 RB Offset	Channel 23165 (714.5MHz)	QPSK	1 RB / 14RB Offset
					
Channel 23025 (700.5MHz)	QPSK	15 RB / 0 RB Offset	Channel 23165 (714.5MHz)	QPSK	15 RB / 0 RB Offset
					

Channel Bandwidth: 5MHz					
Channel 23035 (701.5MHz)	QPSK	1 RB / 0 RB Offset	Channel 23155 (713.5MHz)	QPSK	1 RB / 24RB Offset
					
Channel 23035 (701.5MHz)	QPSK	25 RB / 0 RB Offset	Channel 23155 (713.5MHz)	QPSK	25 RB / 0 RB Offset
					

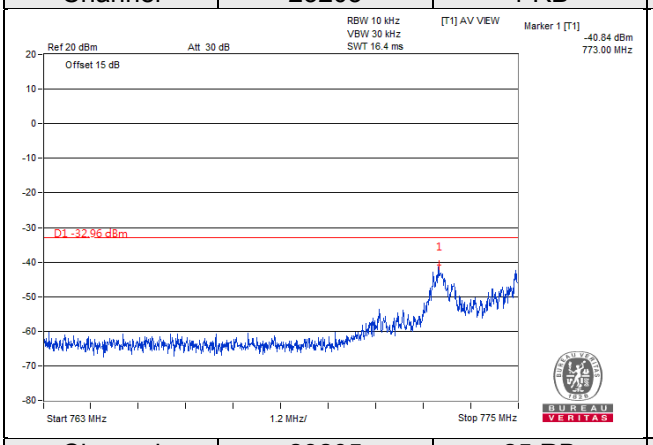
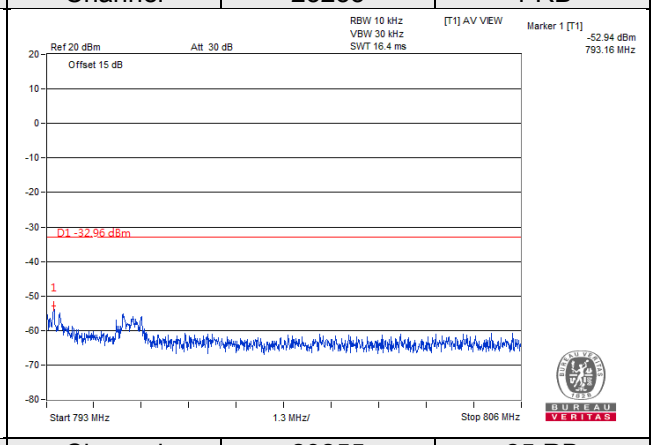
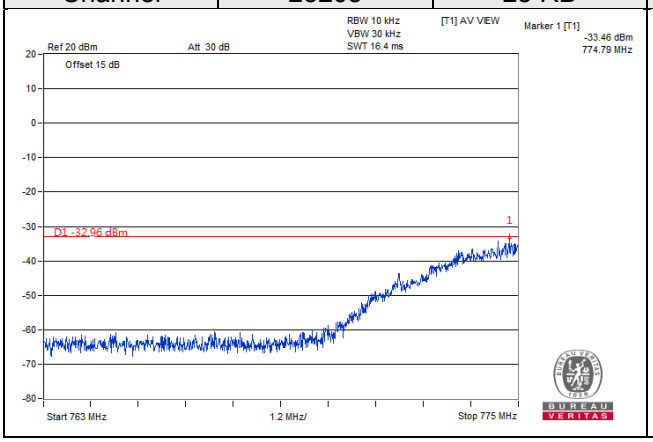
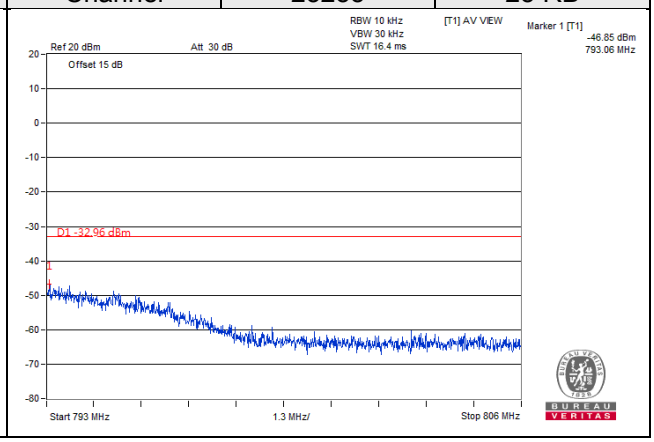
Channel Bandwidth: 10MHz					
Channel 23060 (704MHz)	QPSK	1 RB / 0 RB Offset	Channel 23130 (711MHz)	QPSK	1 RB / 24RB Offset
					
Channel 23060 (704MHz)	QPSK	50 RB / 0 RB Offset	Channel 23130 (711MHz)	QPSK	25 RB / 0 RB Offset
					

LTE Band 13

Channel Bandwidth: 5MHz					
Channel 23205 (779.5MHz)	QPSK	1 RB / 0 RB Offset	Channel 23255 (784.5MHz)	QPSK	1 RB / 24 RB Offset
					
Channel 23205 (779.5MHz)	QPSK	25 RB / 0 RB Offset	Channel 23255 (784.5MHz)	QPSK	25 RB / 0 RB Offset
					

Channel Bandwidth: 10MHz					
Channel 23230 (782.0MHz)	QPSK	1 RB / 0 RB Offset	Channel 23230 (782.0MHz)	QPSK	1 RB / 49 RB Offset
					
Channel 23230 (782.0MHz)	QPSK	50 RB / 0 RB Offset	Channel 23230 (782.0MHz)	QPSK	50 RB / 0 RB Offset
					

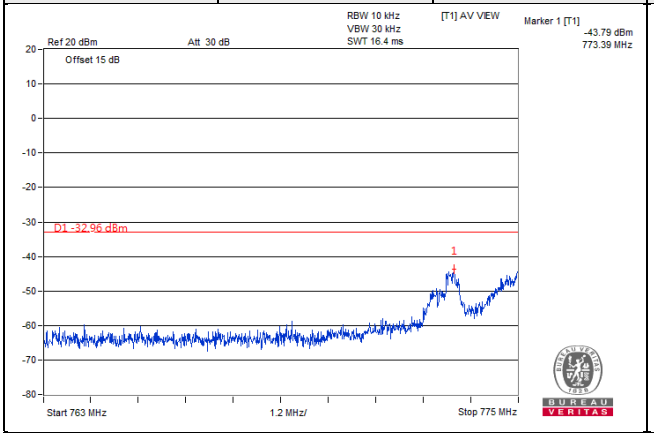
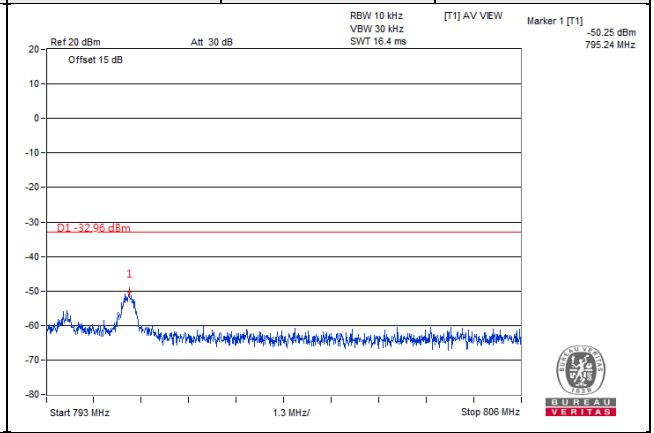
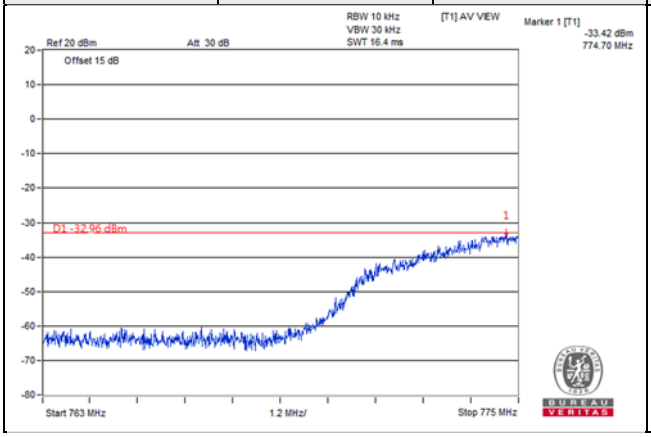
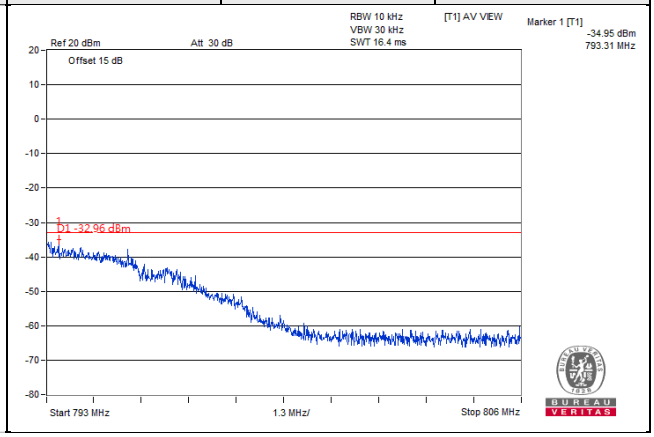
Emission Mask

LTE Band 13					
Channel Bandwidth: 5 MHz					
Channel	23205	1 RB	Channel	23255	1 RB
					
Channel	23205	25 RB	Channel	23255	25 RB
					

For the 763 - 775 MHz and 793 - 805 MHz band, the FCC limit is 65+10log(P[watt]) in a 6.25 kHz bandwidth. Since it was not possible to set the resolution bandwidth to 6.25 kHz with the available equipment, a bandwidth of 10 kHz was used instead to show compliance. By using a 10 kHz bandwidth on the spectrum analyzer.

10log(10kHz/6.25kHz) = 2.04 dB

Limit line = -35 dBm + 2.04 dB = -32.96 dBm

LTE Band 13					
Channel Bandwidth: 10 MHz					
Channel	23230	1 RB	Channel	23230	1 RB
					
Channel	23230	50 RB	Channel	23230	50 RB
					

For the 763 - 775 MHz and 793 - 805 MHz band, the FCC limit is 65+10log(P[watt]) in a 6.25 kHz bandwidth. Since it was not possible to set the resolution bandwidth to 6.25 kHz with the available equipment, a bandwidth of 10 kHz was used instead to show compliance. By using a 10 kHz bandwidth on the spectrum analyzer.

10log(10kHz/6.25kHz) = 2.04 dB

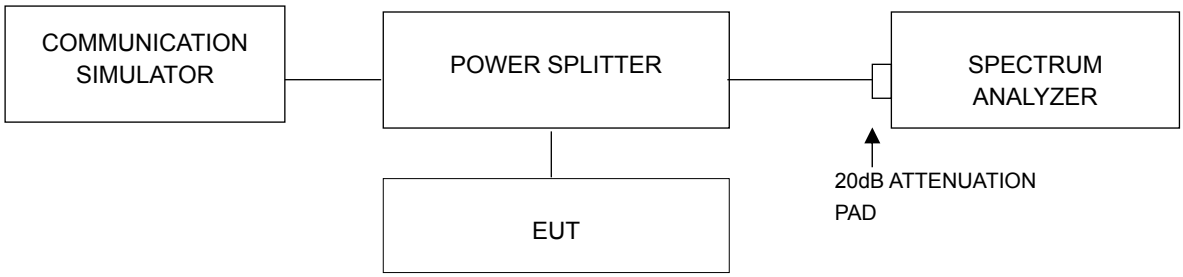
Limit line = -35 dBm + 2.04 dB =-32.96 dBm

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 4

LTE Band 4, Channel Bandwidth 1.4MHz			
Channel	Frequency (MHz)	Peak To Average Ratio (dB)	
		QPSK	16QAM
19957	1710.7	5.04	5.96
20175	1732.5	5.46	6.37
20393	1754.3	5.31	6.30
LTE Band 4, Channel Bandwidth 3MHz			
Channel	Frequency (MHz)	Peak To Average Ratio (dB)	
		QPSK	16QAM
19965	1711.5	4.92	5.83
20175	1732.5	5.37	6.23
20385	1753.5	5.06	5.92
LTE Band 4, Channel Bandwidth 5MHz			
Channel	Frequency (MHz)	Peak To Average Ratio (dB)	
		QPSK	16QAM
19975	1712.5	5.01	5.87
20175	1732.5	5.52	6.46
20375	1752.5	4.99	5.87
LTE Band 4, Channel Bandwidth 10MHz			
Channel	Frequency (MHz)	Peak To Average Ratio (dB)	
		QPSK	16QAM
20000	1715.0	4.84	5.67
20175	1732.5	5.48	6.34
20350	1750.0	4.29	5.16
LTE Band 4, Channel Bandwidth 15MHz			
Channel	Frequency (MHz)	Peak To Average Ratio (dB)	
		QPSK	16QAM
20025	1717.5	4.72	5.64
20175	1732.5	6.12	6.51
20325	1747.5	4.37	5.11

LTE Band 4, Channel Bandwidth 20MHz			
Channel	Frequency (MHz)	Peak To Average Ratio (dB)	
		QPSK	16QAM
20050	1720.0	4.71	5.54
20175	1732.5	5.61	6.26
20300	1745.0	4.66	5.56

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

LTE Band 12

LTE Band 12, Channel Bandwidth 1.4MHz			
Channel	Frequency (MHz)	Peak To Average Ratio (dB)	
		QPSK	16QAM
23017	699.7	5.31	7.61
23095	707.5	5.03	5.74
23173	715.3	3.61	4.47
LTE Band 12, Channel Bandwidth 3MHz			
Channel	Frequency (MHz)	Peak To Average Ratio (dB)	
		QPSK	16QAM
23025	700.5	5.17	6.04
23095	707.5	4.79	5.69
23165	714.5	4.18	5.05
LTE Band 12, Channel Bandwidth 5MHz			
Channel	Frequency (MHz)	Peak To Average Ratio (dB)	
		QPSK	16QAM
23035	701.5	5.28	6.10
23095	707.5	4.71	5.44
23155	713.5	5.14	5.98
LTE Band 12, Channel Bandwidth 10MHz			
Channel	Frequency (MHz)	Peak To Average Ratio (dB)	
		QPSK	16QAM
23060	704.0	5.22	6.02
23095	707.5	4.69	5.50
23130	711.0	4.89	5.63

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

LTE Band 13

LTE Band 13, Channel Bandwidth 5MHz			
Channel	Frequency (MHz)	Peak To Average Ratio (dB)	
		QPSK	16QAM
23205	779.5	4.11	4.81
23230	782.0	4.73	5.49
23255	784.5	3.89	4.61
LTE Band 13, Channel Bandwidth 10MHz			
Channel	Frequency (MHz)	Peak To Average Ratio (dB)	
		QPSK	16QAM
23230	782.0	4.35	5.11

Spectrum Plot of Worst Value	
5MHz / 16QAM	10MHz / 16QAM

4.7 Conducted Spurious Emissions

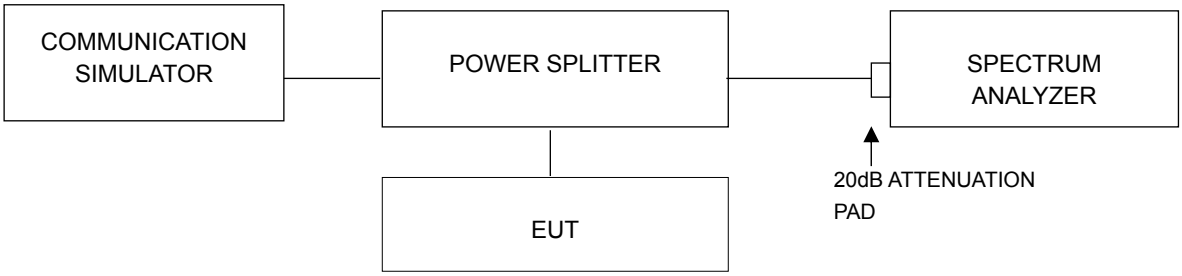
4.7.1 Limits of Conducted Spurious Emissions Measurement

For LTE Band 4
In the FCC 27.53(h)(1),On any frequency outside a licensee's frequency block, The power of any emission shall be attenuated below the transmitter power (P) by at least 43 + 10 log (P) dB. The emission limit equal to –13dBm.

For LTE Band 12
According to FCC 27.53(g), for operations in the 600 MHz band and the 698-746 MHz band, the power of any emission outside a licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, by at least 43 + 10 log (P) dB. The emission limit equal to –13dBm.

For LTE Band 13
According to FCC 27.53(c)(2) for on any frequency outside the 776-788 MHz band, the power of any emission shall be attenuated outside the band below the transmitter power (P) by at least 43 + 10 log (P) dB.
According to FCC 27.53(f), for operations in the 746-758 MHz, 775-788 MHz, and 805-806 MHz bands, emissions in the band 1559-1610 MHz shall be limited to −70 dBW/MHz. The emission limit equal to –40dBm.

4.7.2 Test Setup

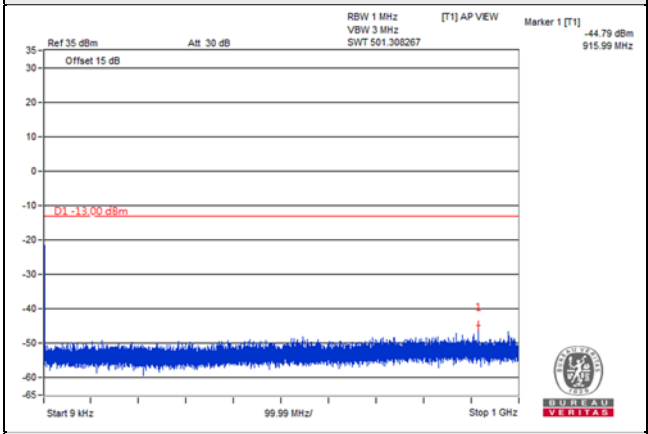
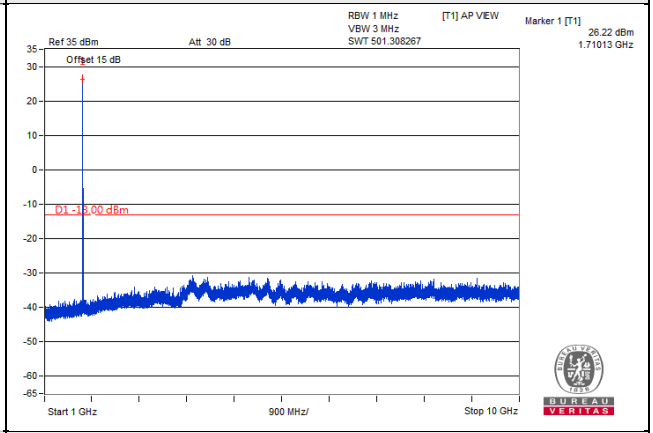
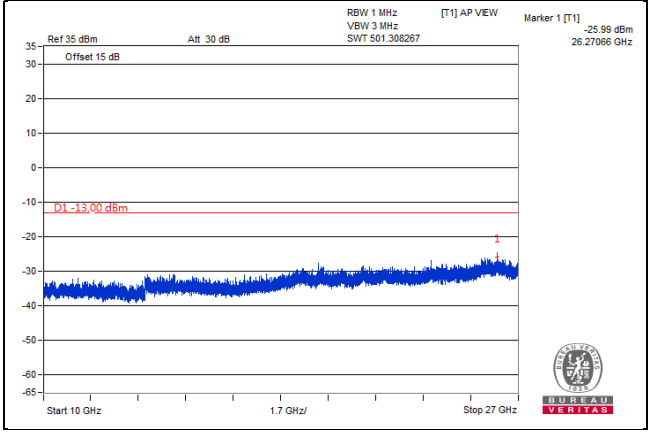


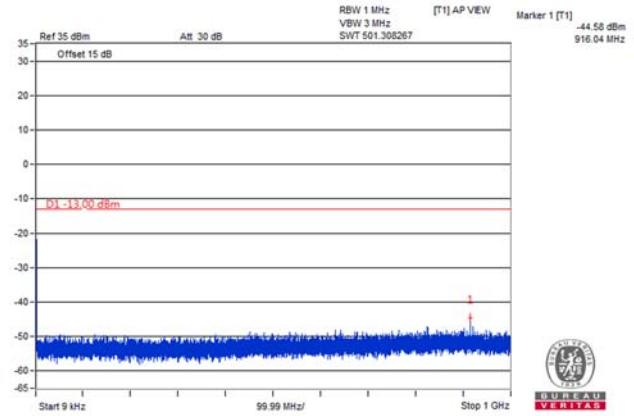
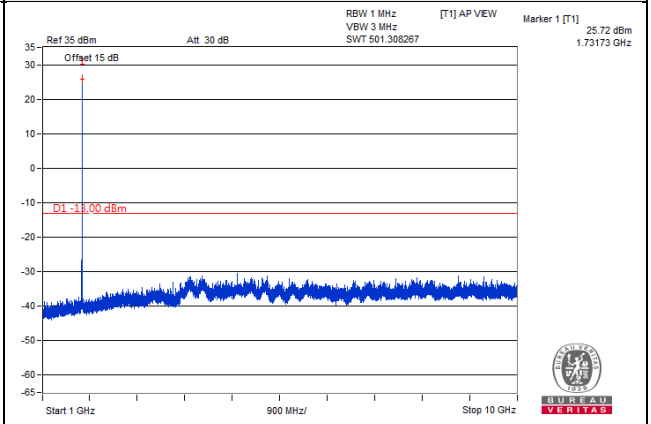
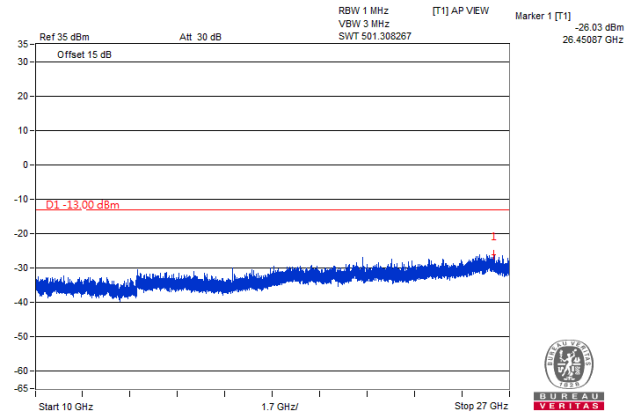
4.7.3 Test Procedure

a. All measurements were done at 3 channels: low, middle and high operational frequency range.
b. When the spectrum scanned from 9kHz to 8GHz or 27GHz, it shall be connected to the attenuator with the carried frequency.

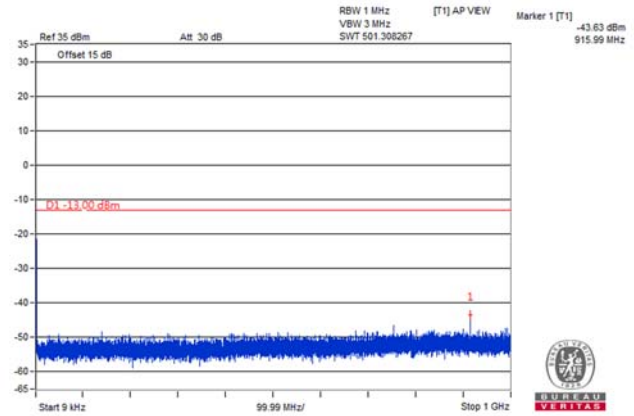
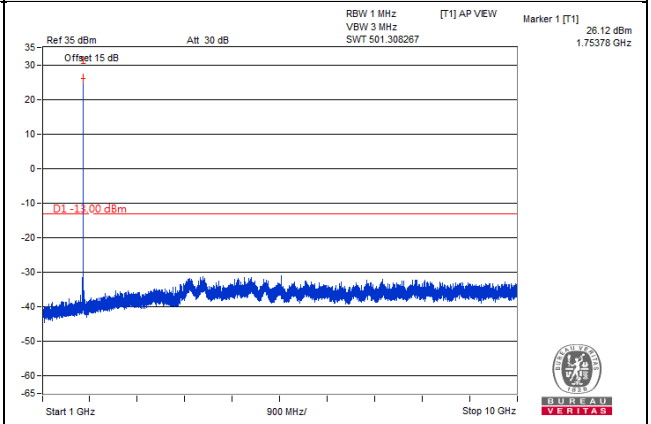
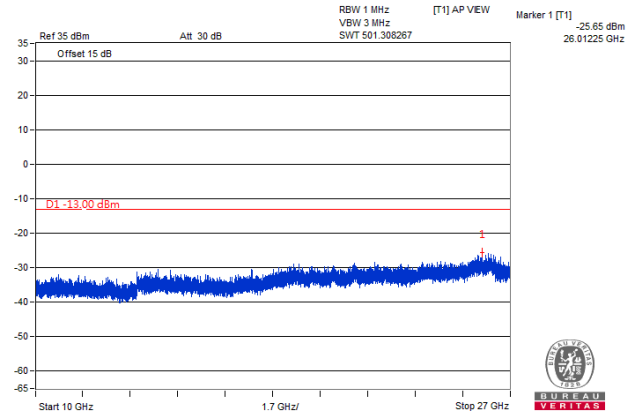
4.7.4 Test Results

LTE Band 4

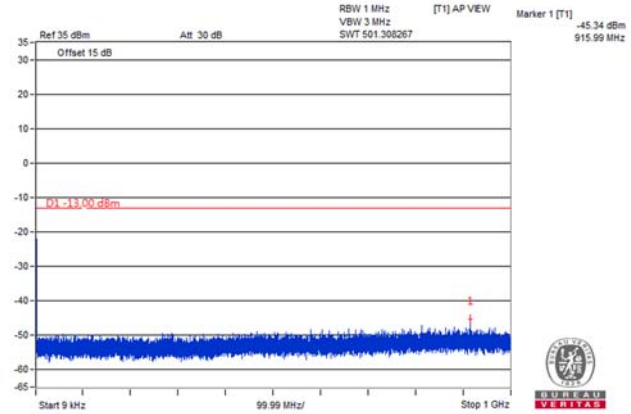
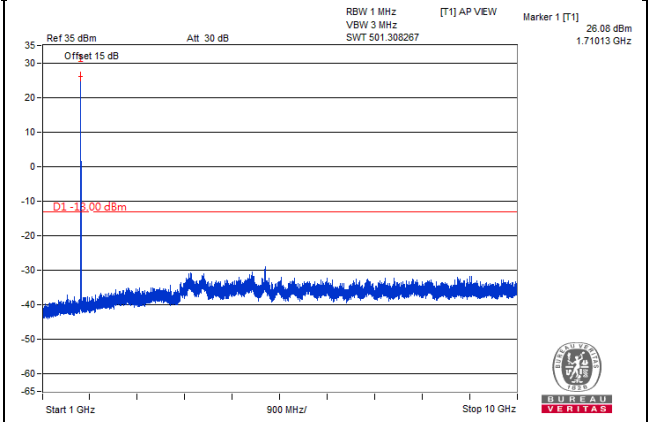
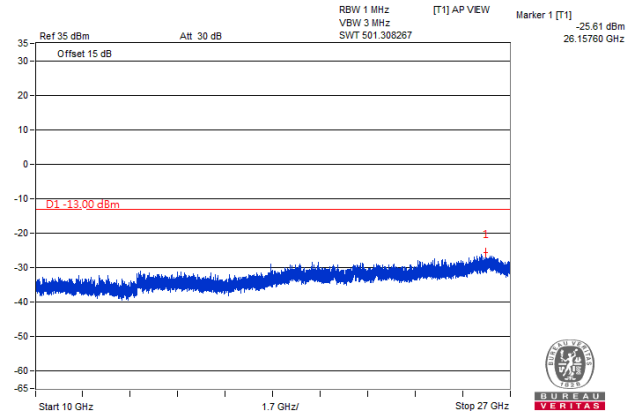
Channel Bandwidth: 1.4MHz	
Channel 19957 (1710.7MHz)	
Frequency Range : 9kHz ~ 1GHz	Frequency Range : 1GHz ~ 10GHz
	
Frequency Range : 10GHz ~ 27GHz	
	

Channel Bandwidth: 1.4MHz	
Channel 20175 (1732.5MHz)	
Frequency Range : 9kHz ~ 1GHz	Frequency Range : 1GHz ~ 10GHz
	
Frequency Range : 10GHz ~ 27GHz	
	

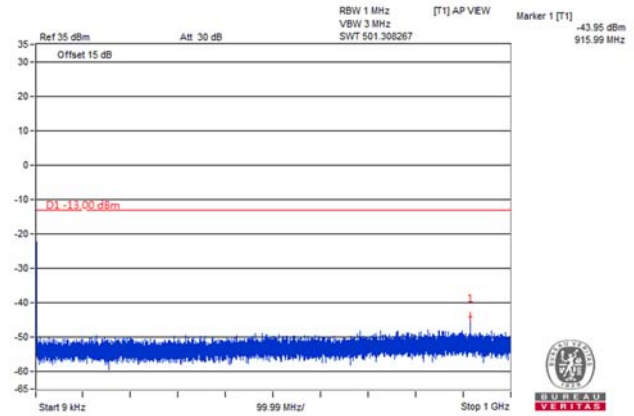
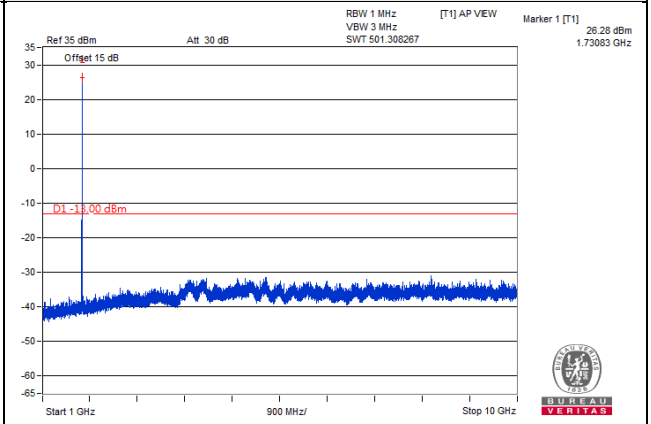
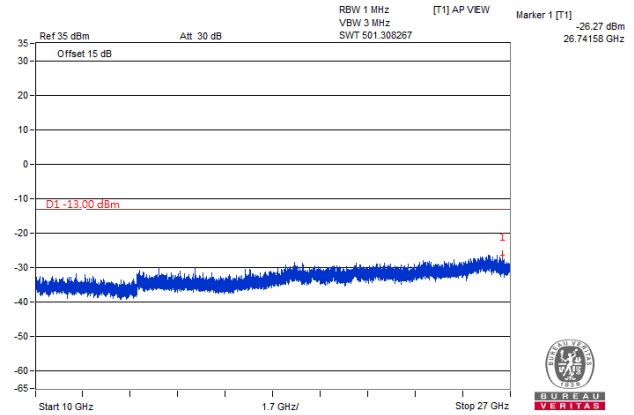
*The 9kHz signal over the limit is from Spectrum.

Channel Bandwidth: 1.4MHz	
Channel 20393 (1754.3MHz)	
Frequency Range : 9kHz ~ 1GHz	Frequency Range : 1GHz ~ 10GHz
	
Frequency Range : 10GHz ~ 27GHz	
	

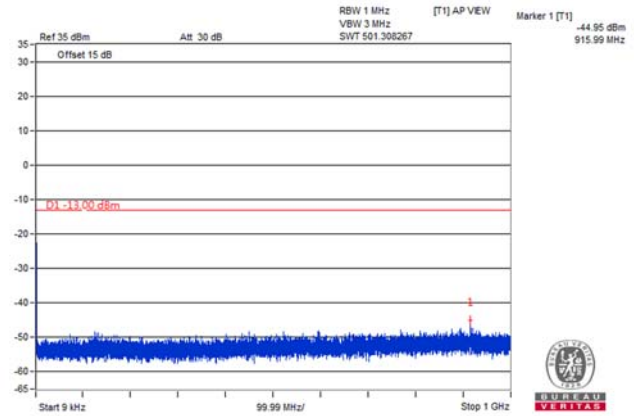
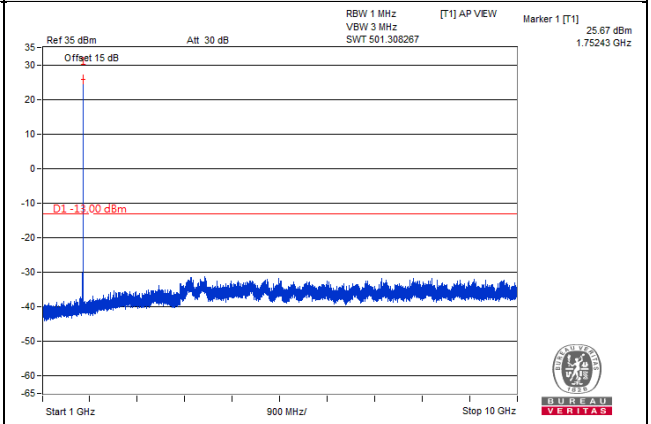
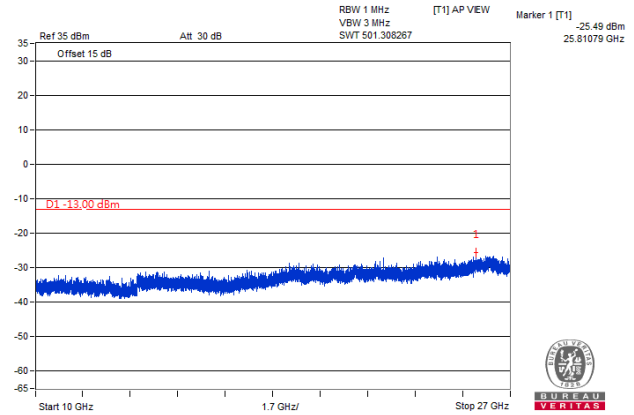
*The 9kHz signal over the limit is from Spectrum.

Channel Bandwidth: 3MHz	
Channel 19965 (1711.5MHz)	
Frequency Range : 9kHz ~ 1GHz	Frequency Range : 1GHz ~ 10GHz
	
Frequency Range : 10GHz ~ 27GHz	
	

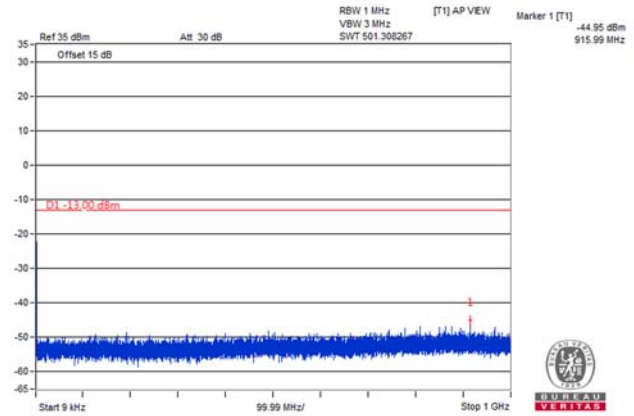
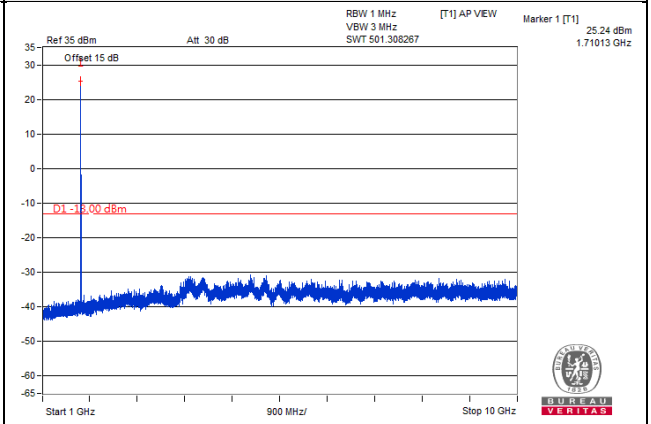
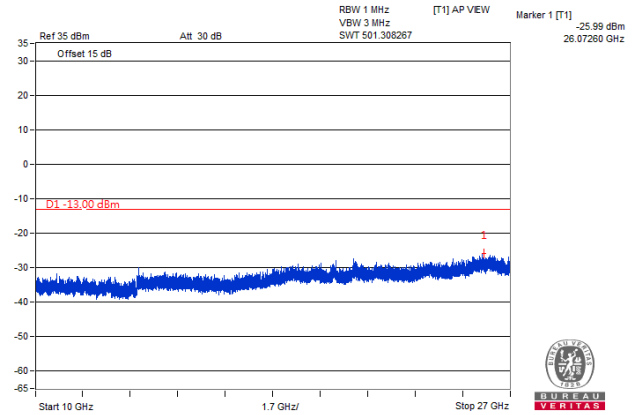
*The 9kHz signal over the limit is from Spectrum.

Channel Bandwidth: 3MHz	
Channel 20175 (1732.5MHz)	
Frequency Range : 9kHz ~ 1GHz	Frequency Range : 1GHz ~ 10GHz
	
Frequency Range : 10GHz ~ 27GHz	
	

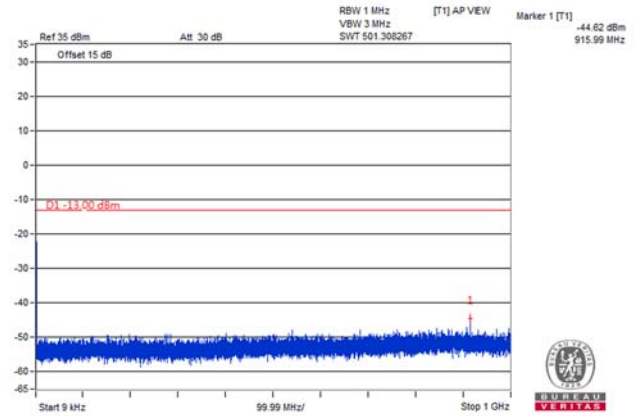
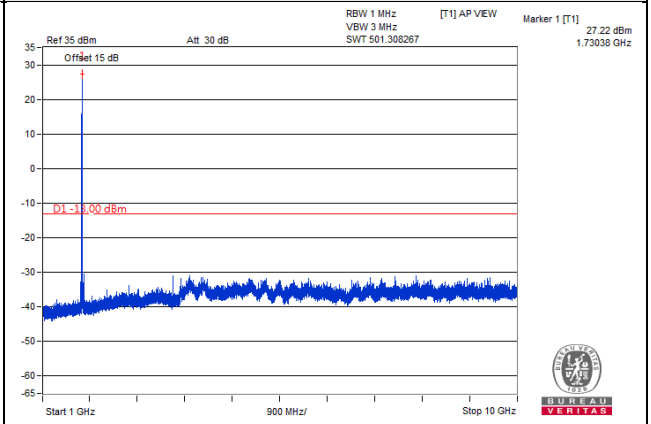
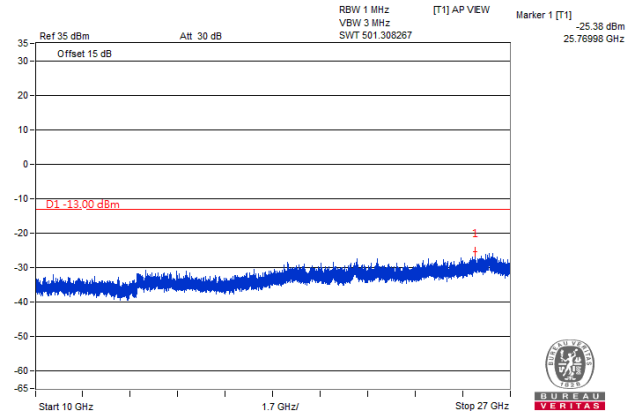
*The 9kHz signal over the limit is from Spectrum.

Channel Bandwidth: 3MHz	
Channel 20385 (1753.5MHz)	
Frequency Range : 9kHz ~ 1GHz	Frequency Range : 1GHz ~ 10GHz
	
Frequency Range : 10GHz ~ 27GHz	
	

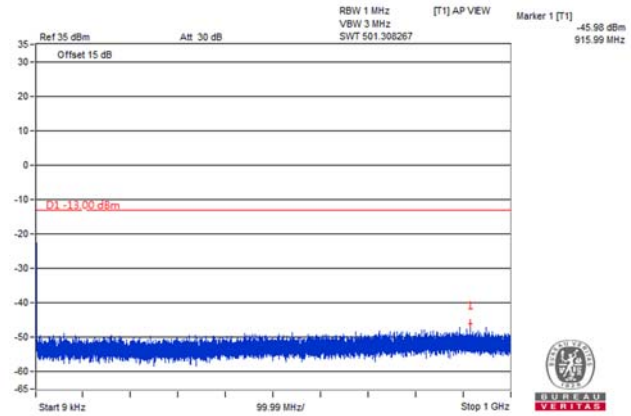
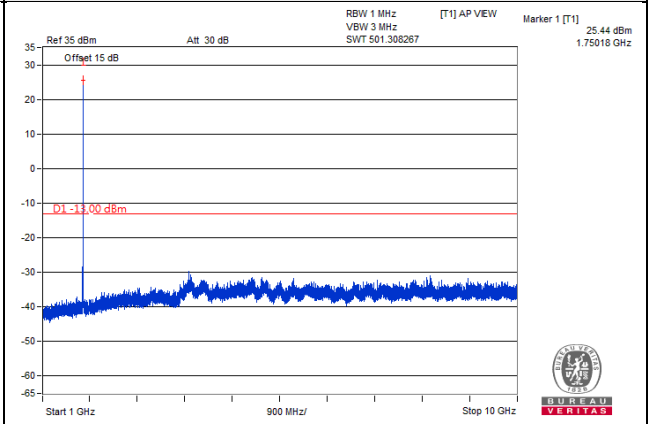
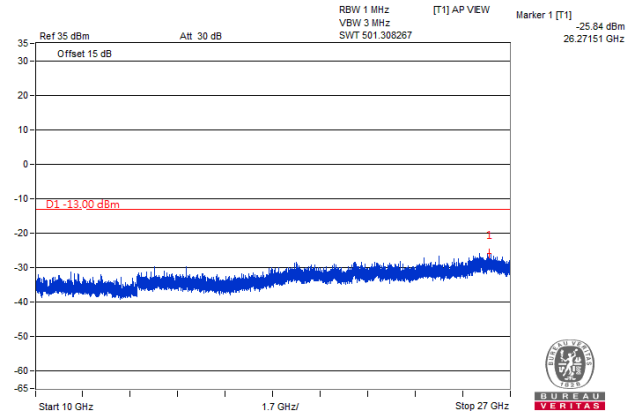
*The 9kHz signal over the limit is from Spectrum.

Channel Bandwidth: 5MHz	
Channel 19975 (1712.5MHz)	
Frequency Range : 9kHz ~ 1GHz	Frequency Range : 1GHz ~ 10GHz
	
Frequency Range : 10GHz ~ 27GHz	
	

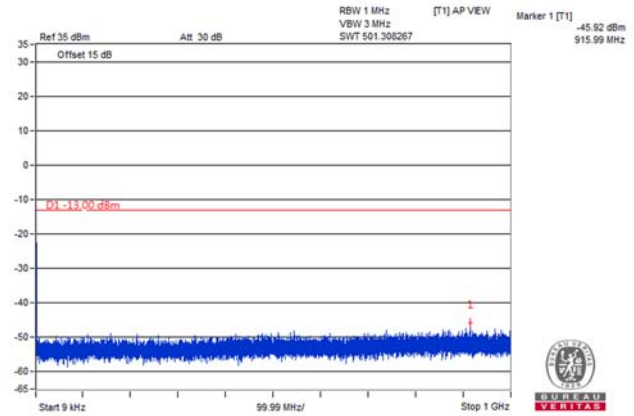
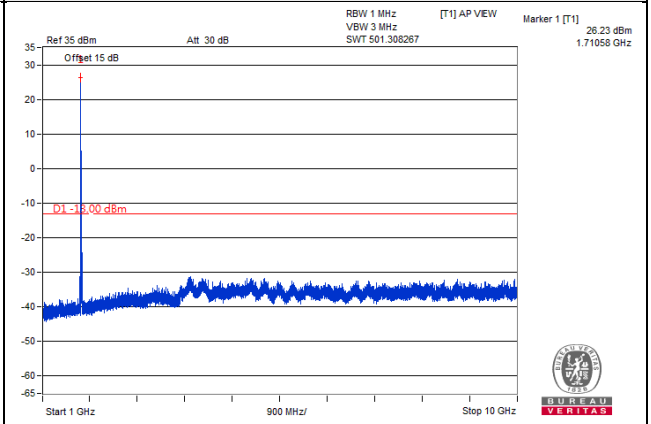
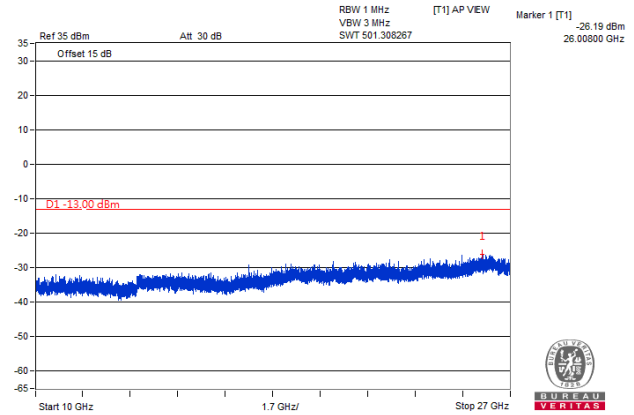
*The 9kHz signal over the limit is from Spectrum.

Channel Bandwidth: 5MHz	
Channel 20175 (1732.5MHz)	
Frequency Range : 9kHz ~ 1GHz	Frequency Range : 1GHz ~ 10GHz
	
Frequency Range : 10GHz ~ 27GHz	
	

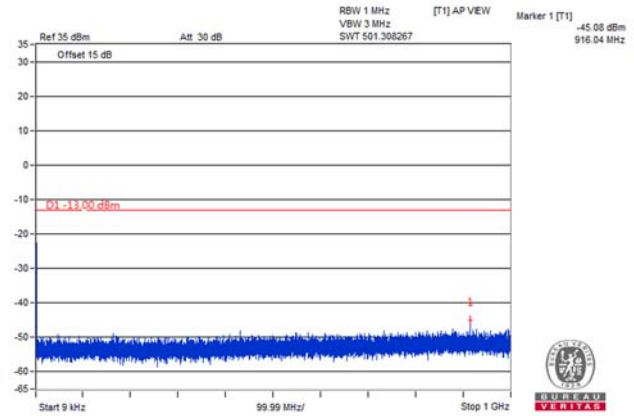
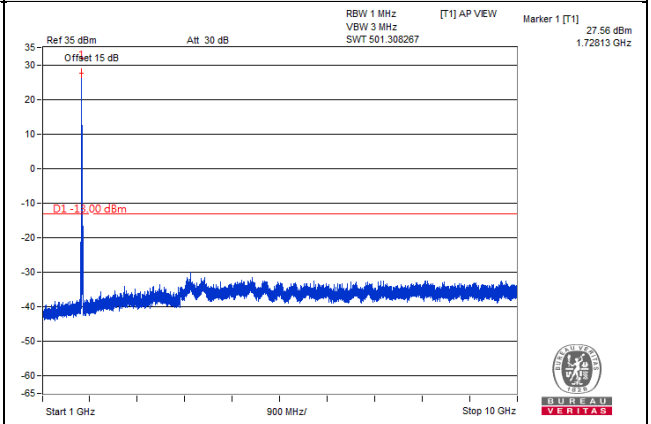
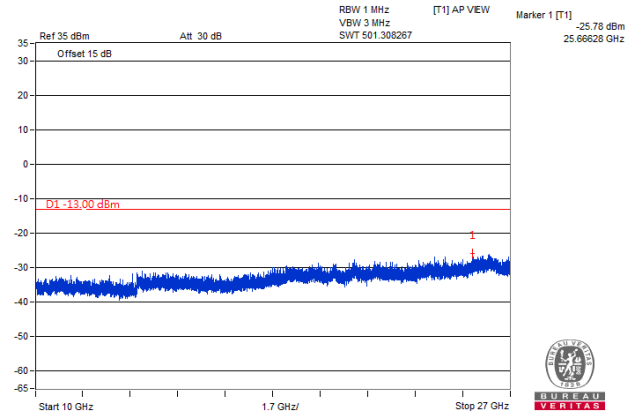
*The 9kHz signal over the limit is from Spectrum.

Channel Bandwidth: 5MHz	
Channel 20375 (1752.5MHz)	
Frequency Range : 9kHz ~ 1GHz	Frequency Range : 1GHz ~ 10GHz
	
Frequency Range : 10GHz ~ 27GHz	
	

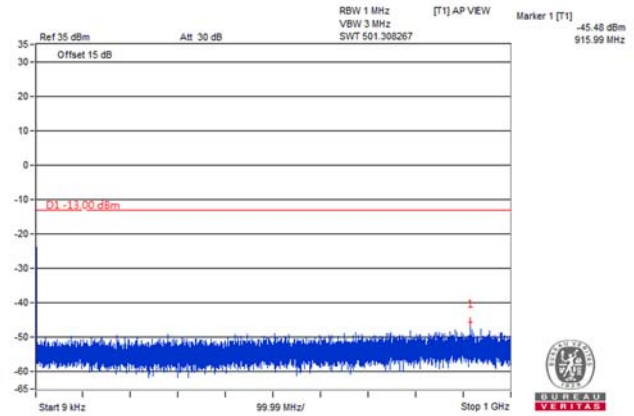
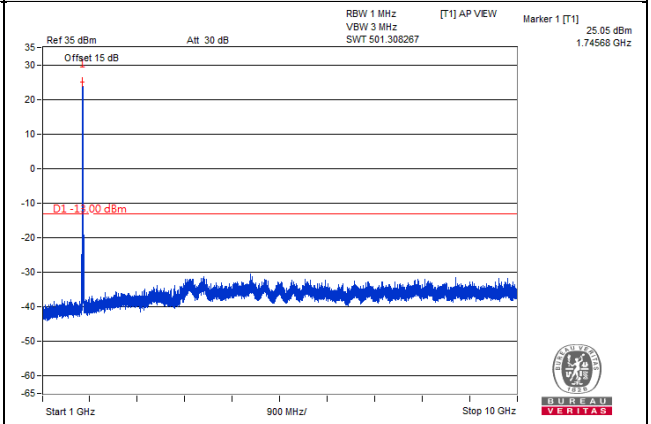
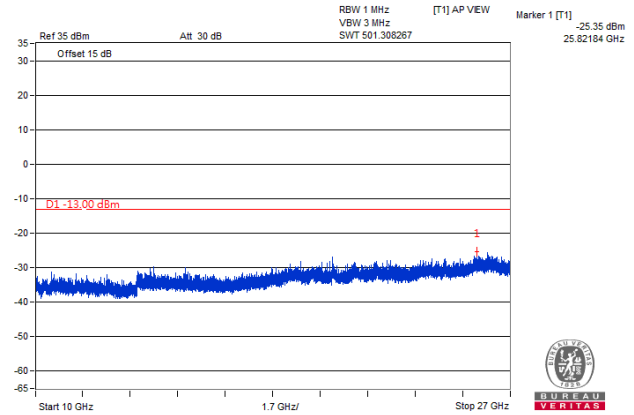
*The 9kHz signal over the limit is from Spectrum.

Channel Bandwidth: 10MHz	
Channel 20000 (1715.0MHz)	
Frequency Range : 9kHz ~ 1GHz	Frequency Range : 1GHz ~ 10GHz
	
Frequency Range : 10GHz ~ 27GHz	
	

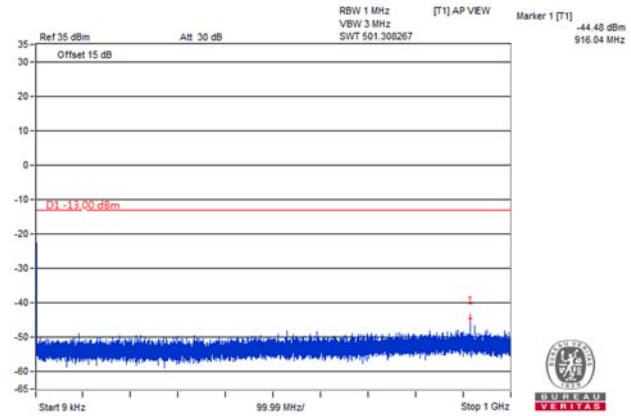
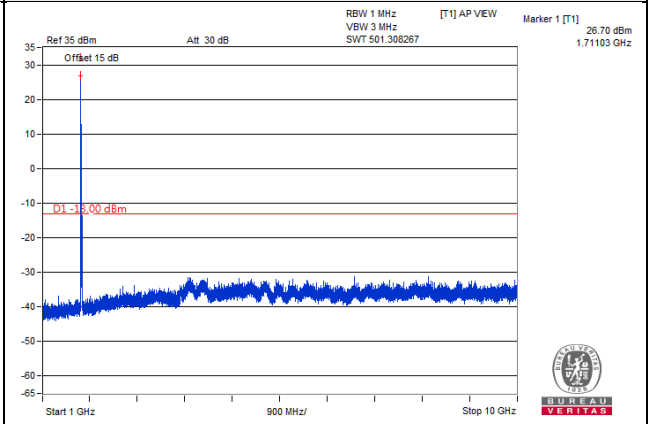
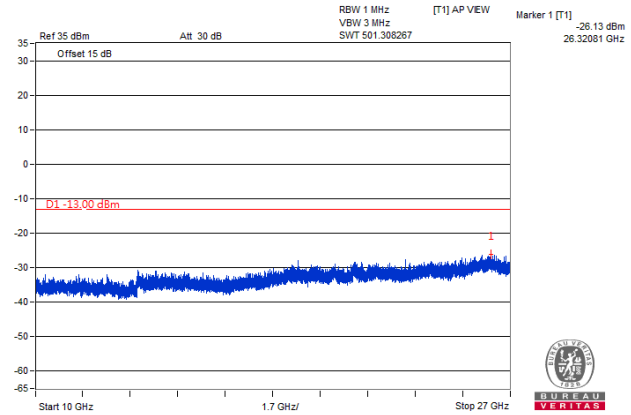
*The 9kHz signal over the limit is from Spectrum.

Channel Bandwidth: 10MHz	
Channel 20175 (1732.5MHz)	
Frequency Range : 9kHz ~ 1GHz	Frequency Range : 1GHz ~ 10GHz
	
Frequency Range : 10GHz ~ 27GHz	
	

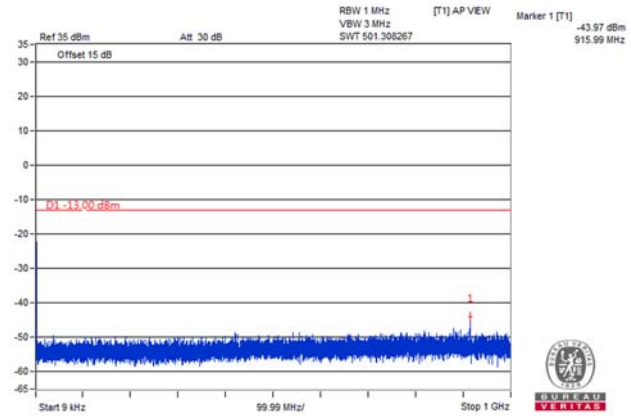
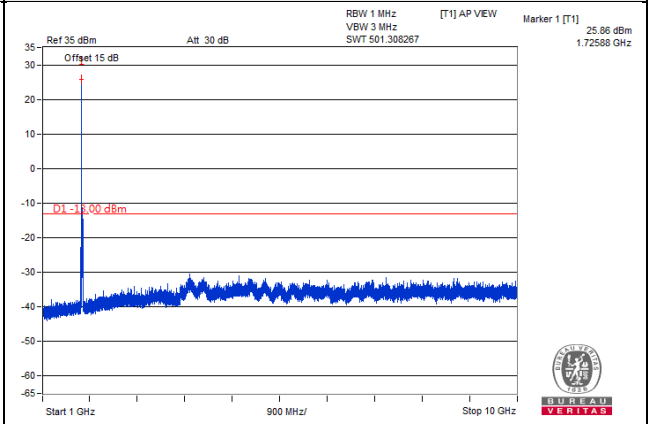
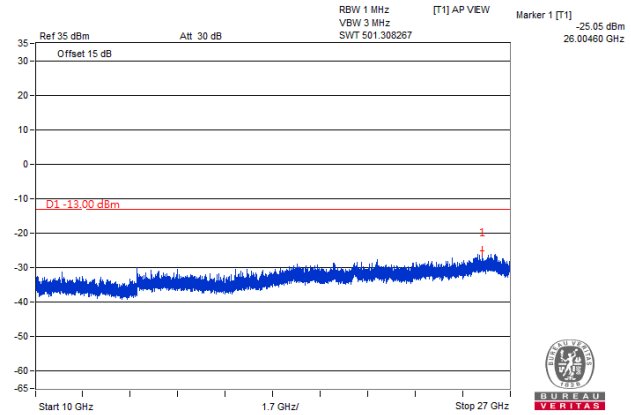
*The 9kHz signal over the limit is from Spectrum.

Channel Bandwidth: 10MHz	
Channel 20350 (1750.0MHz)	
Frequency Range : 9kHz ~ 1GHz	Frequency Range : 1GHz ~ 10GHz
	
Frequency Range : 10GHz ~ 27GHz	
	

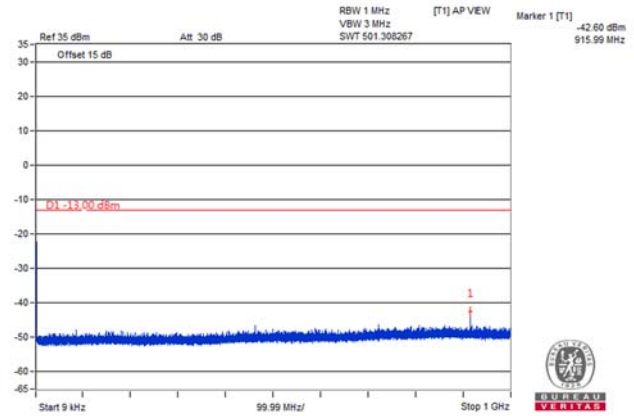
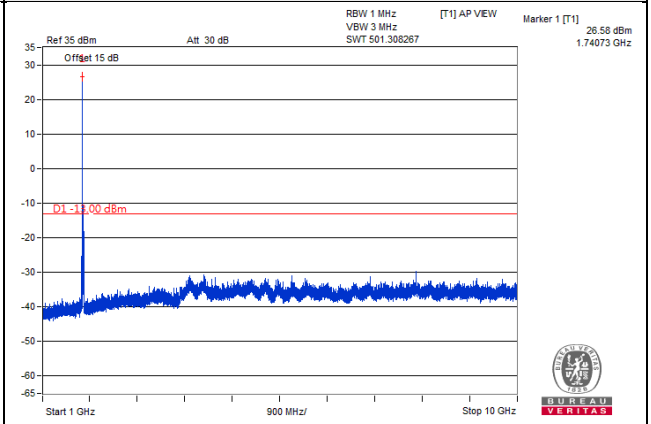
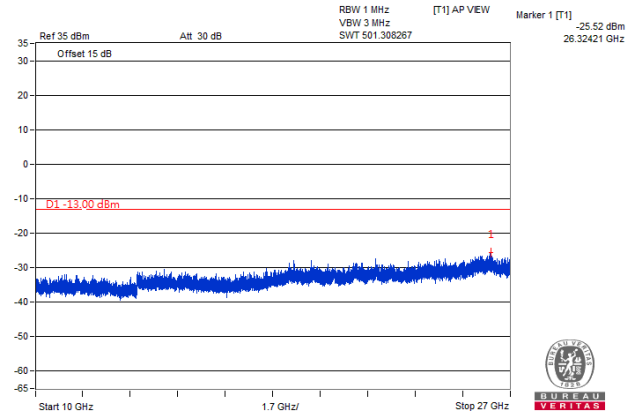
*The 9kHz signal over the limit is from Spectrum.

Channel Bandwidth: 15MHz	
Channel 20025 (1717.5MHz)	
Frequency Range : 9kHz ~ 1GHz	Frequency Range : 1GHz ~ 10GHz
	
Frequency Range : 10GHz ~ 27GHz	
	

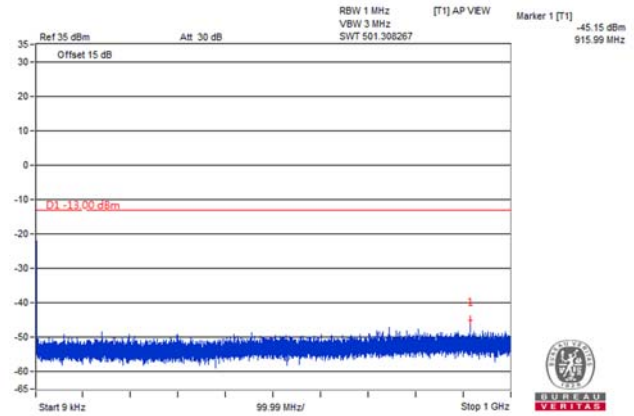
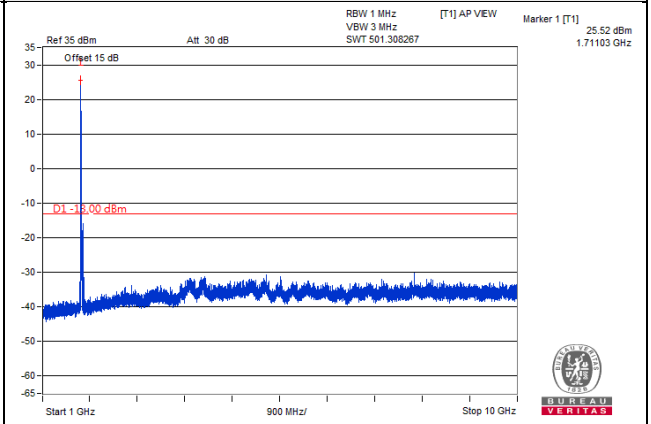
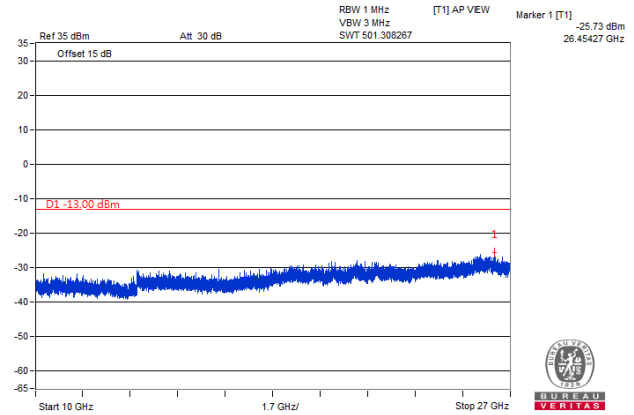
*The 9kHz signal over the limit is from Spectrum.

Channel Bandwidth: 15MHz	
Channel 20175 (1732.5MHz)	
Frequency Range : 9kHz ~ 1GHz	Frequency Range : 1GHz ~ 10GHz
	
Frequency Range : 10GHz ~ 27GHz	
	

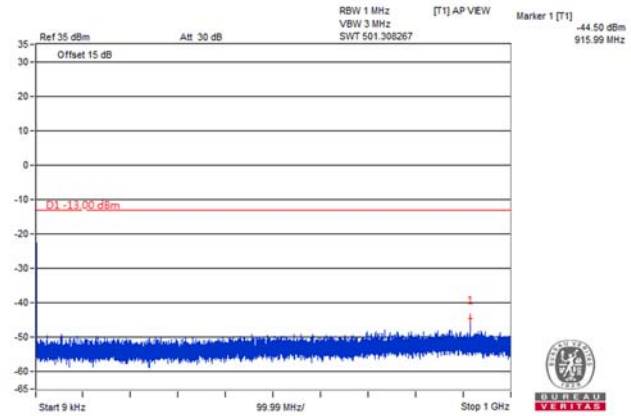
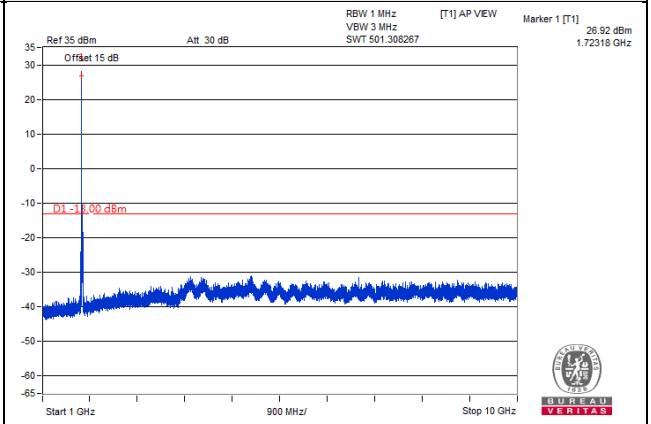
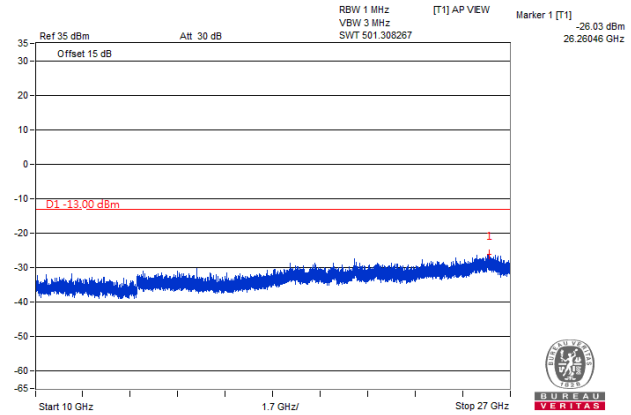
*The 9kHz signal over the limit is from Spectrum.

Channel Bandwidth: 15MHz	
Channel 20325 (1747.5MHz)	
Frequency Range : 9kHz ~ 1GHz	Frequency Range : 1GHz ~ 10GHz
	
Frequency Range : 10GHz ~ 27GHz	
	

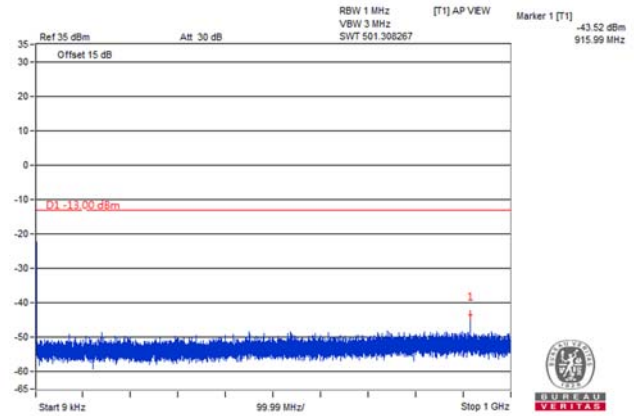
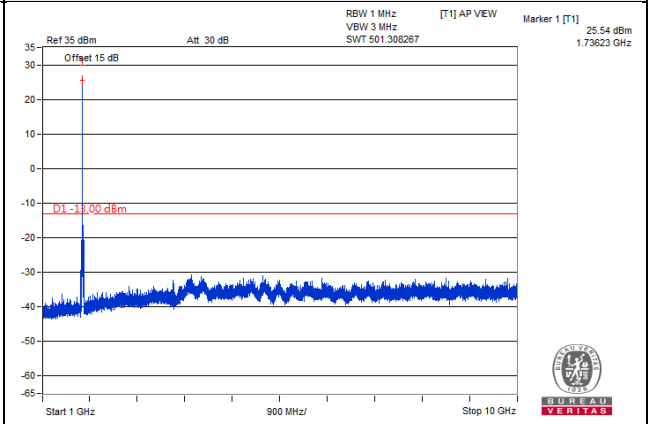
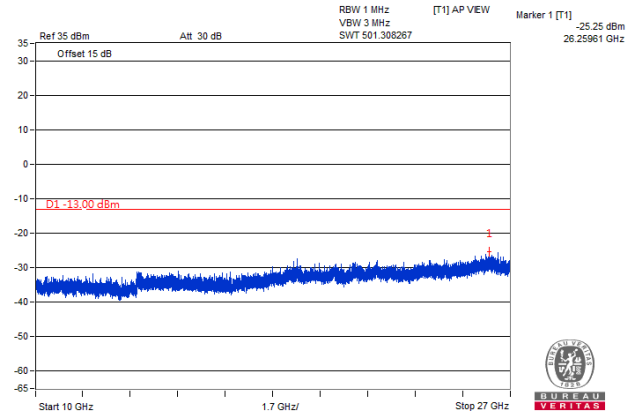
*The 9kHz signal over the limit is from Spectrum.

Channel Bandwidth: 20MHz	
Channel 20050 (1720.0MHz)	
Frequency Range : 9kHz ~ 1GHz	Frequency Range : 1GHz ~ 10GHz
	
Frequency Range : 10GHz ~ 27GHz	
	

*The 9kHz signal over the limit is from Spectrum.

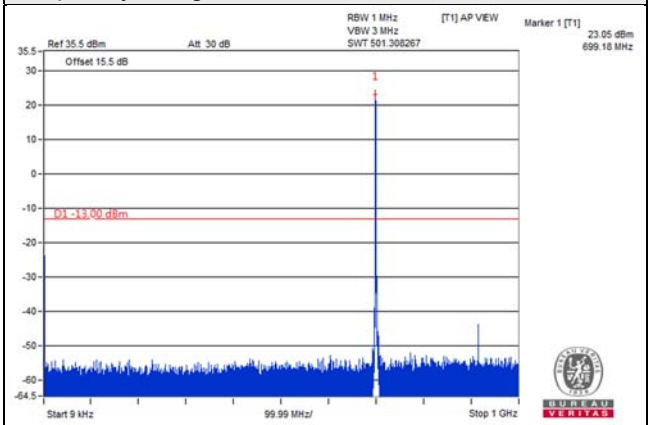
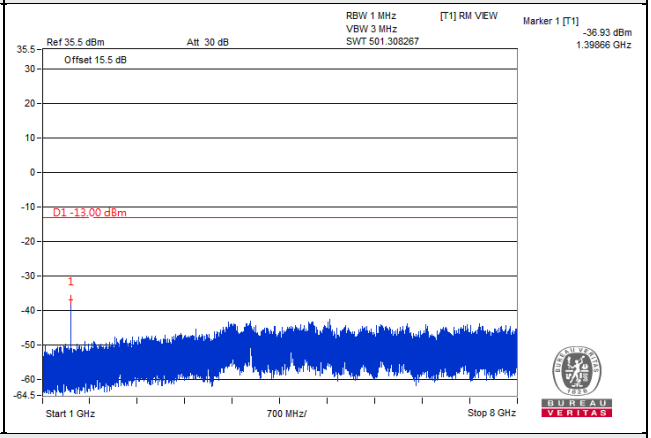
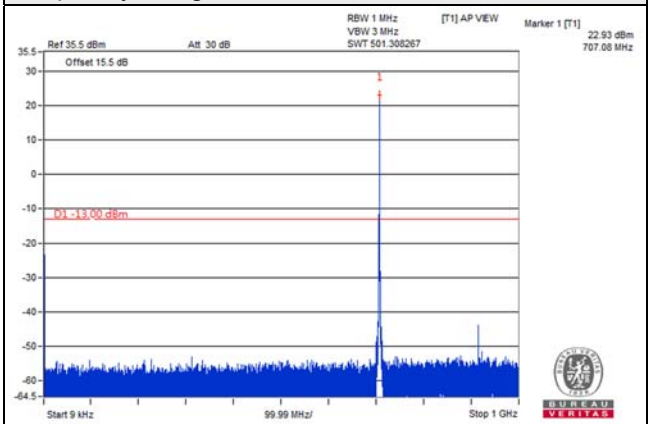
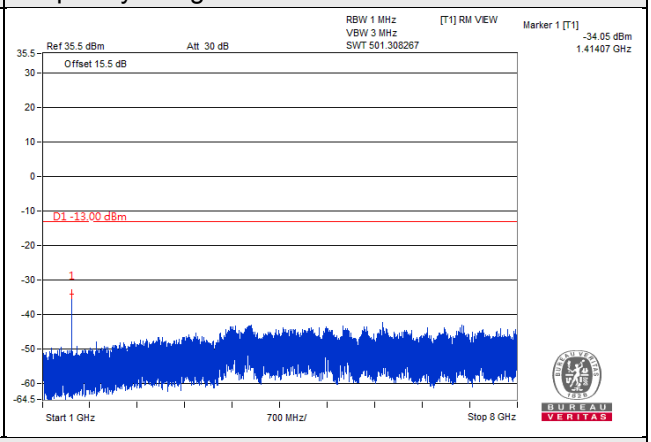
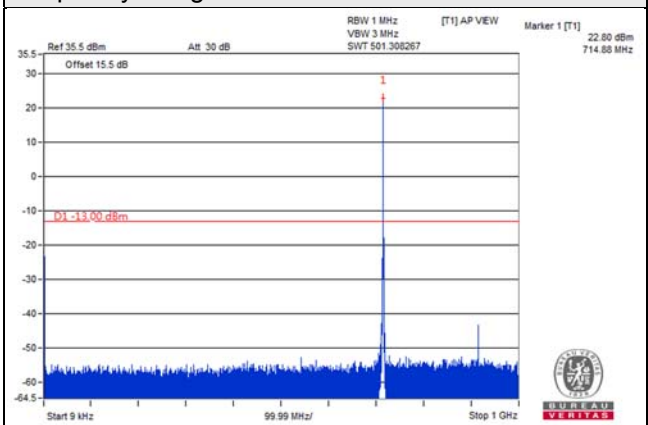
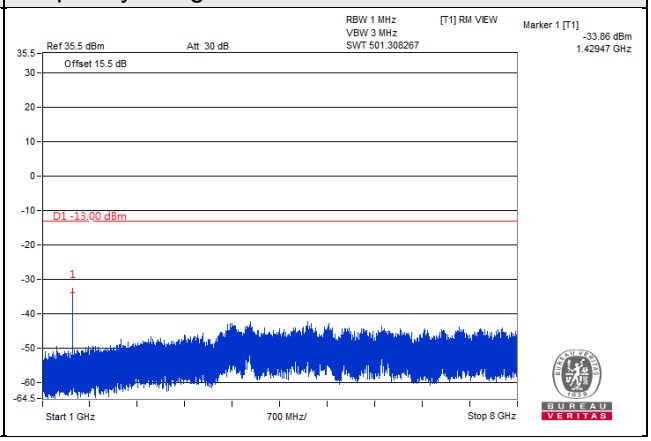
Channel Bandwidth: 20MHz	
Channel 20175 (1732.5MHz)	
Frequency Range : 9kHz ~ 1GHz	Frequency Range : 1GHz ~ 10GHz
	
Frequency Range : 10GHz ~ 27GHz	
	

*The 9kHz signal over the limit is from Spectrum.

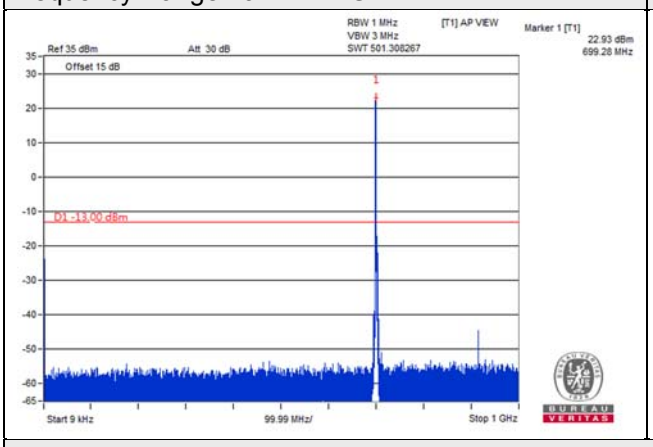
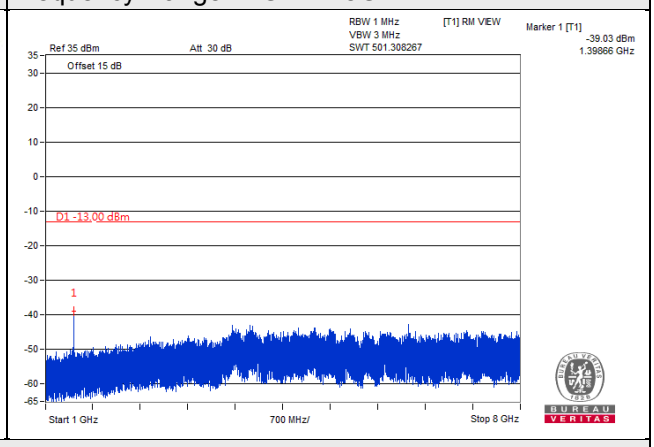
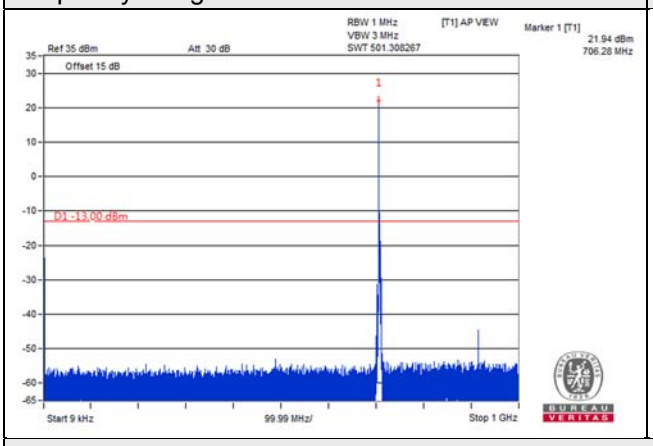
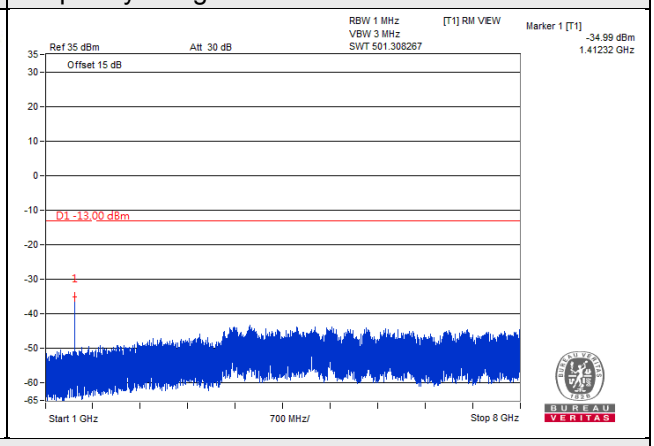
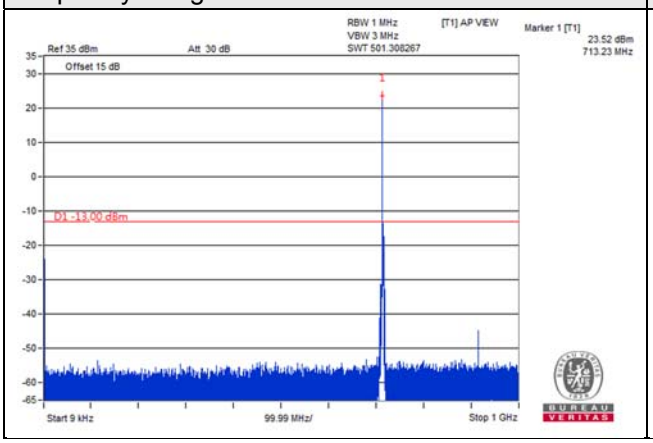
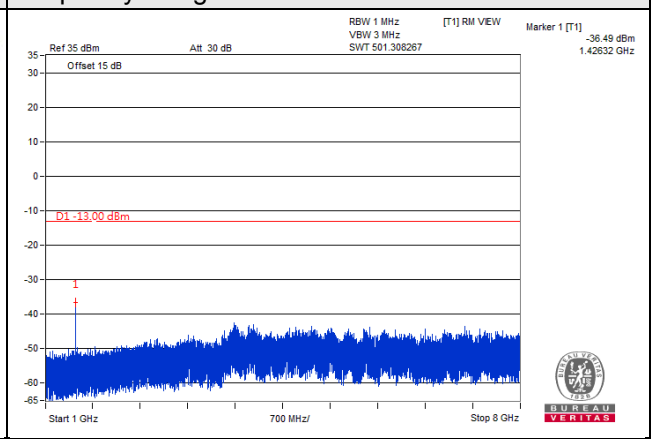
Channel Bandwidth: 20MHz	
Channel 20300 (1745.0MHz)	
Frequency Range : 9kHz ~ 1GHz	Frequency Range : 1GHz ~ 10GHz
	
Frequency Range : 10GHz ~ 27GHz	
	

*The 9kHz signal over the limit is from Spectrum.

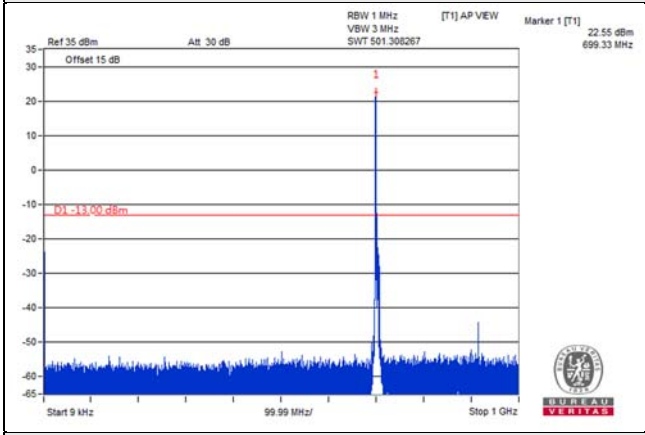
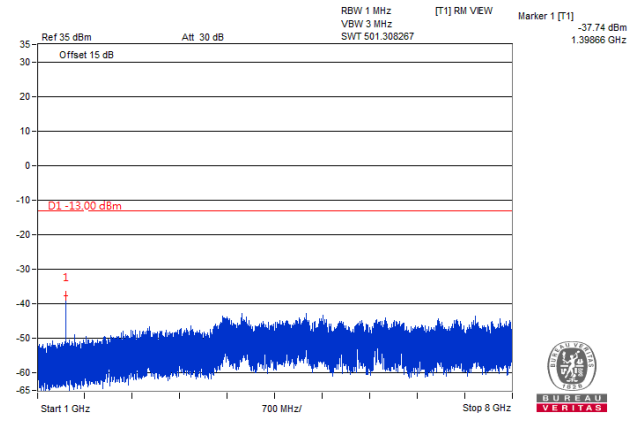
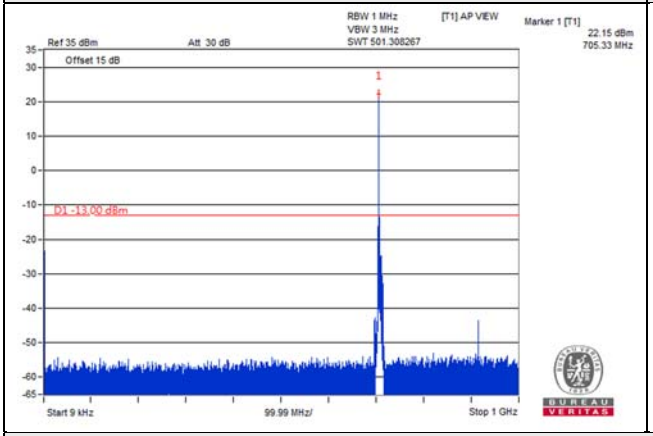
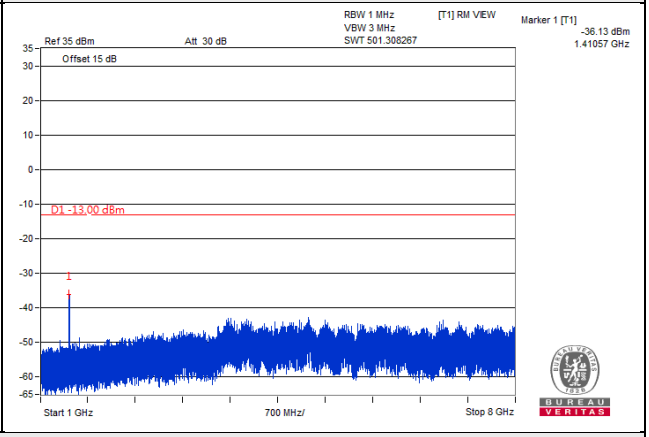
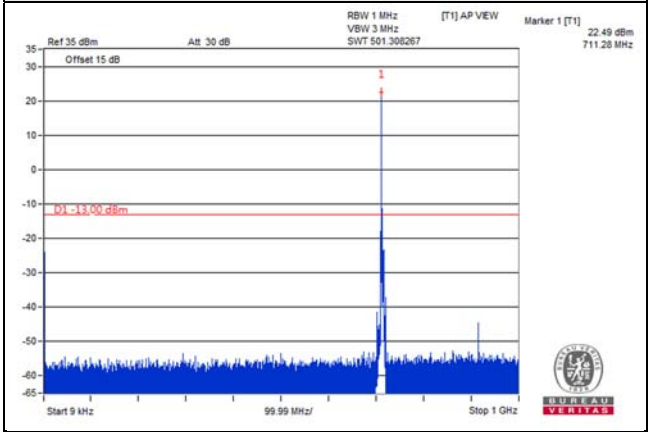
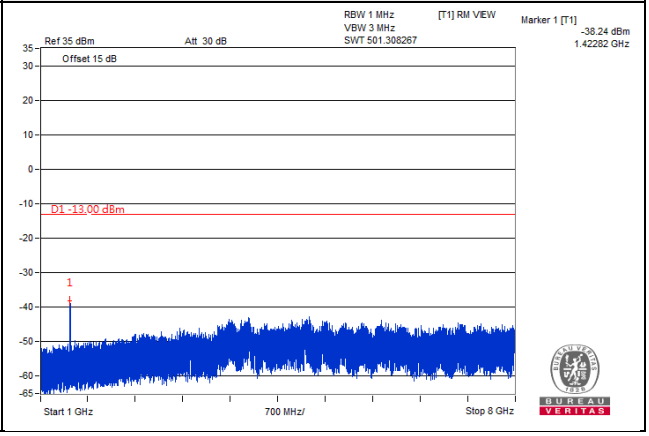
LTE Band 12

Channel Band width: 1.4MHz	
Channel 23017 (699.7MHz)	
Frequency Range : 9kHz ~ 1GHz	Frequency Range : 1GHz ~ 8GHz
	
Channel 23095 (707.5MHz)	
Frequency Range : 9kHz ~ 1GHz	Frequency Range : 1GHz ~ 8GHz
	
Channel 23173 (715.3MHz)	
Frequency Range : 9kHz ~ 1GHz	Frequency Range : 1GHz ~ 8GHz
	

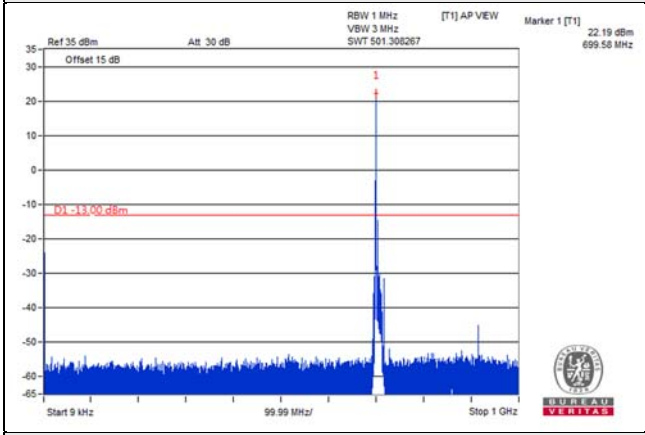
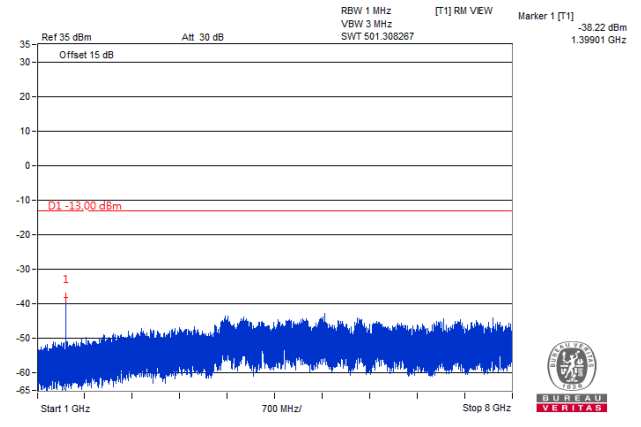
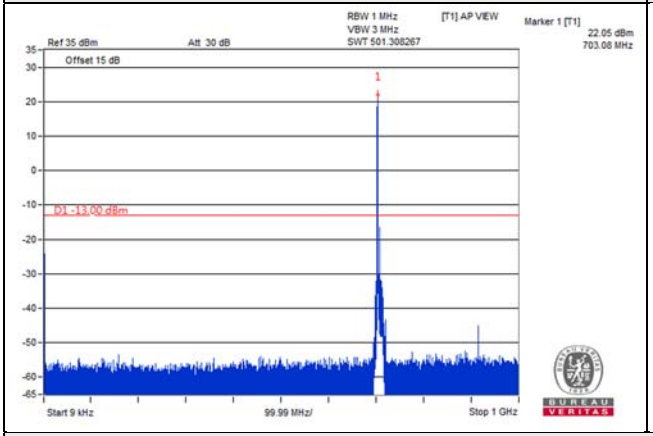
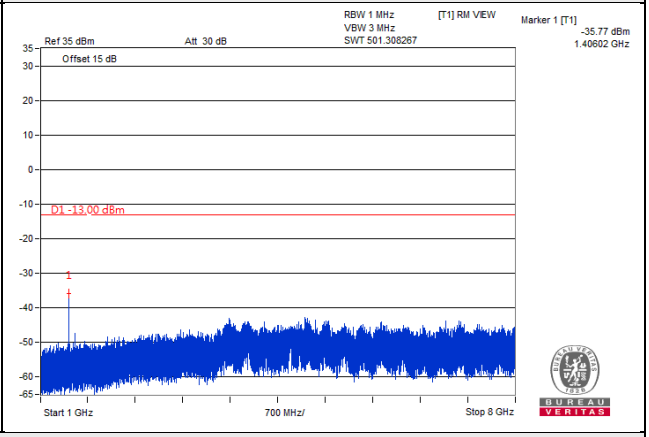
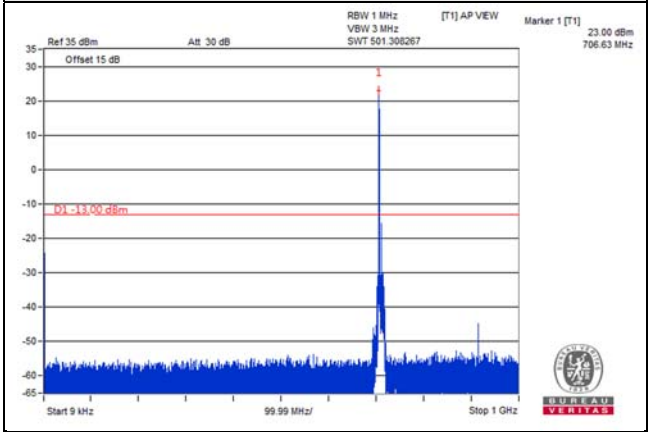
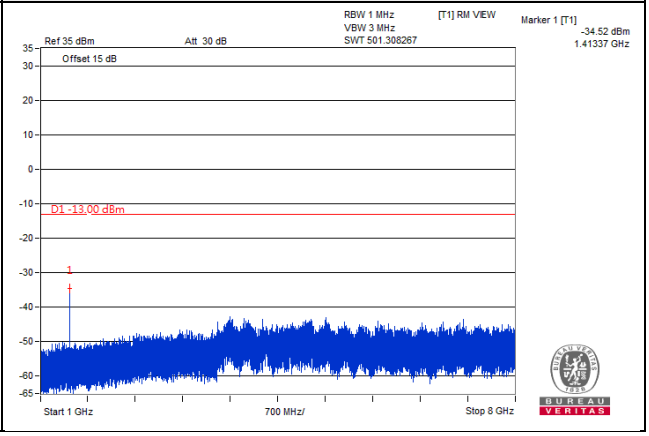
*The 9kHz signal over the limit is from Spectrum.

Channel Band width: 3MHz	
Channel 23025 (700.5MHz)	
Frequency Range : 9kHz ~ 1GHz	Frequency Range : 1GHz ~ 8GHz
	
Channel 23095 (707.5MHz)	
Frequency Range : 9kHz ~ 1GHz	Frequency Range : 1GHz ~ 8GHz
	
Channel 23165 (714.5MHz)	
Frequency Range : 9kHz ~ 1GHz	Frequency Range : 1GHz ~ 8GHz
	

*The 9kHz signal over the limit is from Spectrum.

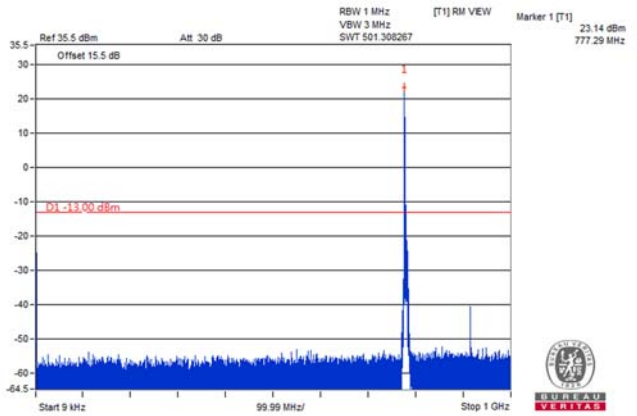
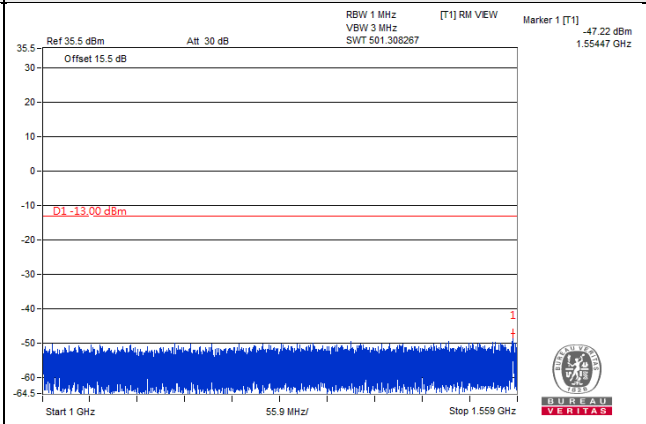
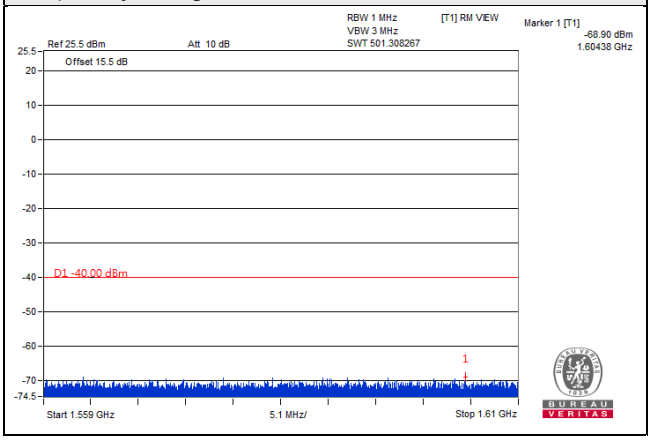
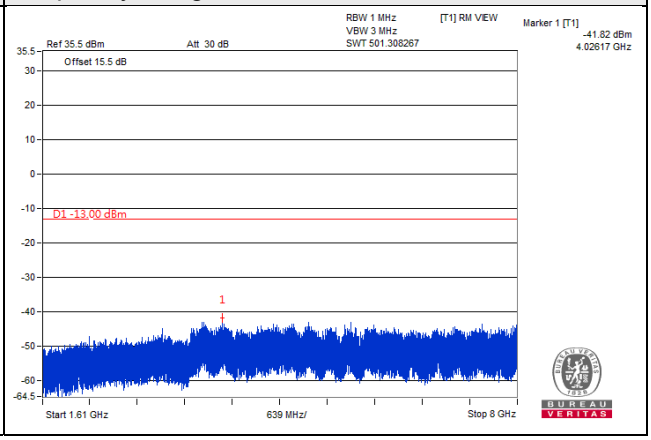
Channel Band width: 5MHz	
Channel 23035 (701.5MHz)	
Frequency Range : 9kHz ~ 1GHz	Frequency Range : 1GHz ~ 8GHz
	
Channel 23095 (707.5MHz)	
Frequency Range : 9kHz ~ 1GHz	Frequency Range : 1GHz ~ 8GHz
	
Channel 23155 (713.5MHz)	
Frequency Range : 9kHz ~ 1GHz	Frequency Range : 1GHz ~ 8GHz
	

*The 9kHz signal over the limit is from Spectrum.

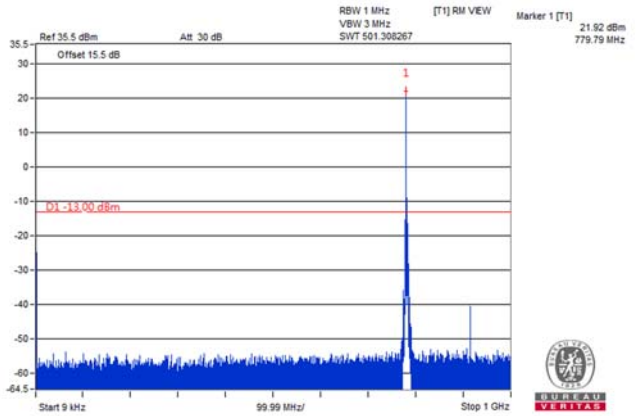
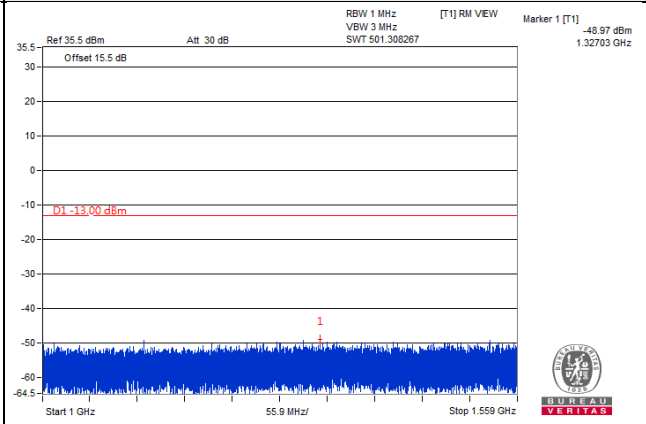
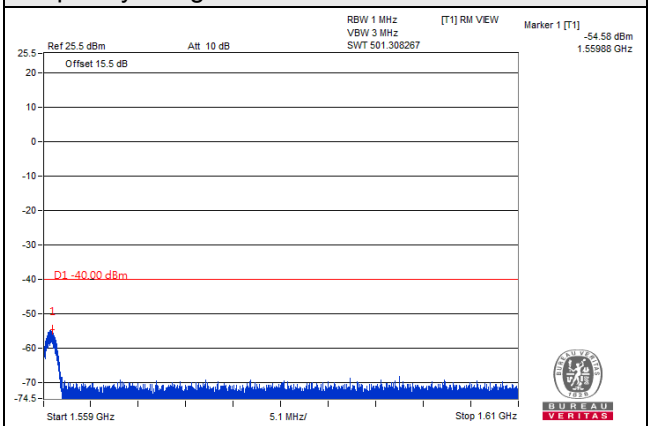
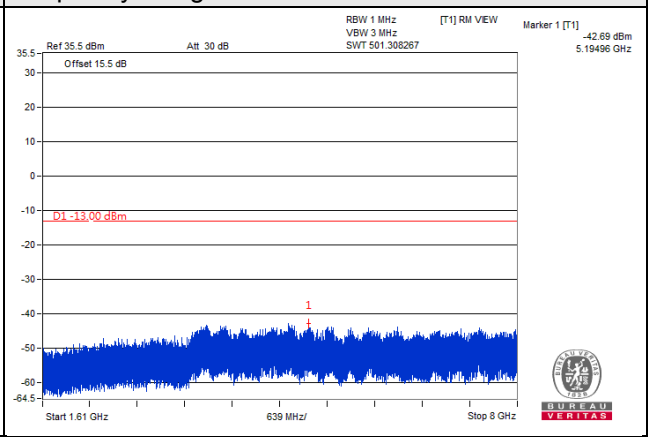
Channel Band width: 10MHz	
Channel 23060 (704MHz)	
Frequency Range : 9kHz ~ 1GHz	Frequency Range : 1GHz ~ 8GHz
	
Channel 23095 (707.5MHz)	
Frequency Range : 9kHz ~ 1GHz	Frequency Range : 1GHz ~ 8GHz
	
Channel 23130 (711MHz)	
Frequency Range : 9kHz ~ 1GHz	Frequency Range : 1GHz ~ 8GHz
	

*The 9kHz signal over the limit is from Spectrum.

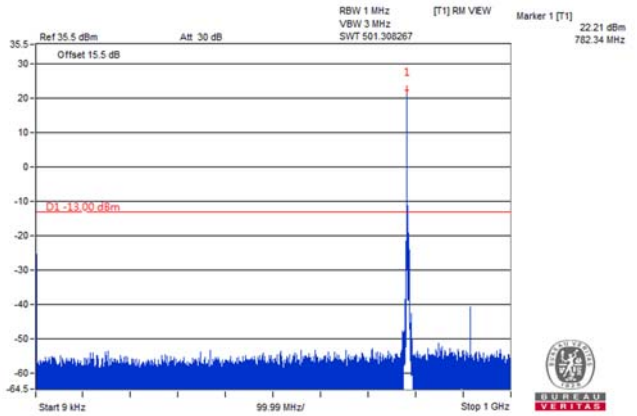
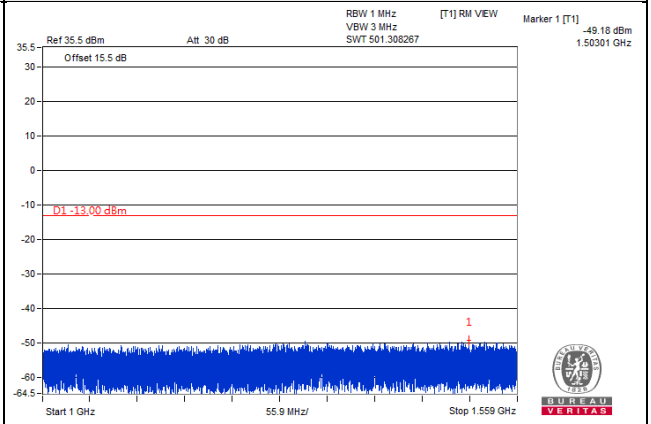
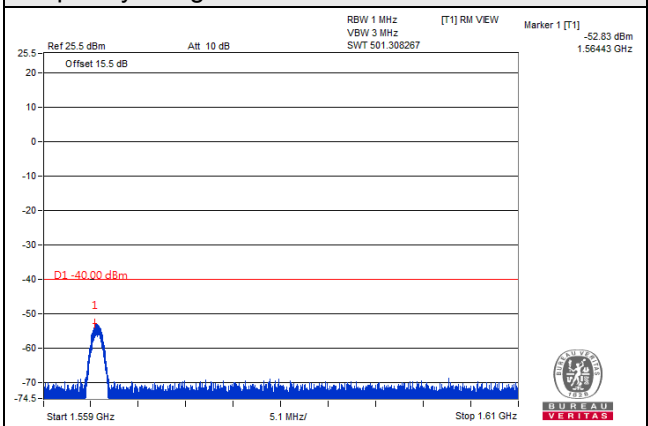
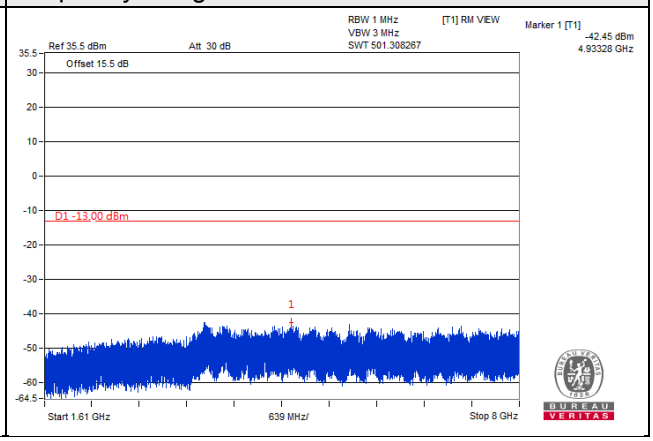
LTE Band 13

Channel Bandwidth: 5MHz	
Channel 23205 (779.5MHz)	
Frequency Range : 9kHz ~ 1GHz	Frequency Range : 1GHz ~ 1.559GHz
	
Frequency Range : 1.559GHz ~ 1.61GHz	Frequency Range : 1.61GHz ~ 8GHz
	

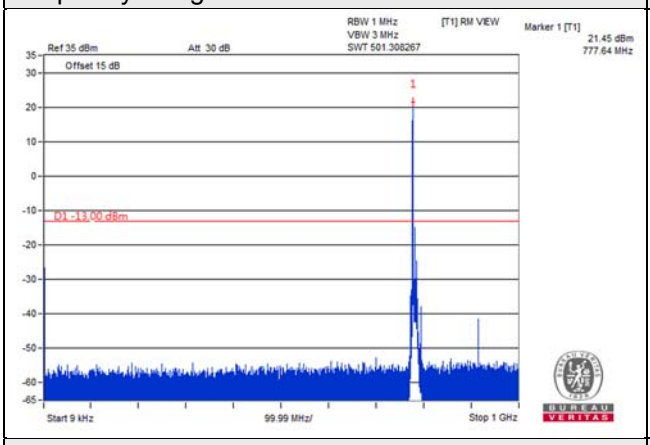
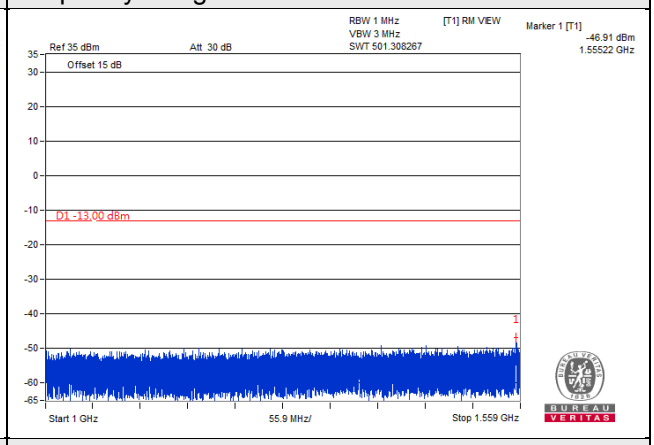
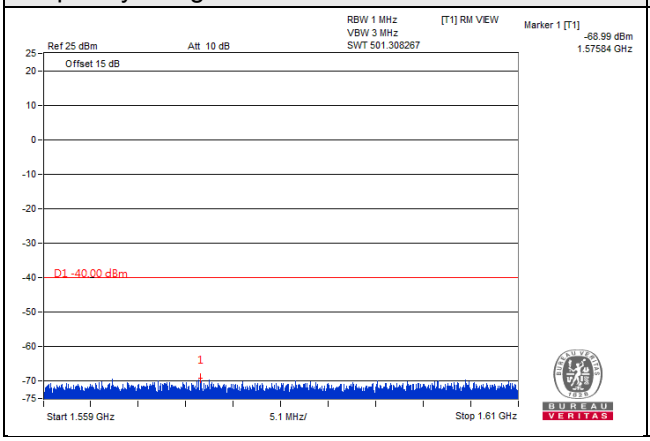
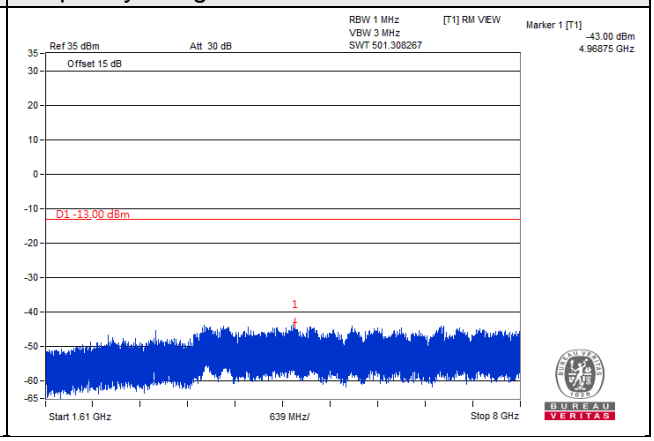
*The 9kHz signal over the limit is from Spectrum.

Channel Bandwidth: 5MHz	
Channel 23230 (782.0MHz)	
Frequency Range : 9kHz ~ 1GHz	Frequency Range : 1GHz ~ 1.559GHz
	
Frequency Range : 1.559GHz ~ 1.61GHz	Frequency Range : 1.61GHz ~ 8GHz
	

*The 9kHz signal over the limit is from Spectrum.

Channel Bandwidth: 5MHz	
Channel 23255 (784.5MHz)	
Frequency Range : 9kHz ~ 1GHz	Frequency Range : 1GHz ~ 1.559GHz
	
Frequency Range : 1.559GHz ~ 1.61GHz	Frequency Range : 1.61GHz ~ 8GHz
	

*The 9kHz signal over the limit is from Spectrum.

Channel Bandwidth: 10MHz	
Channel 23230 (782.0MHz)	
Frequency Range : 9kHz ~ 1GHz	Frequency Range : 1GHz ~ 1.559GHz
	
Frequency Range : 1.559GHz ~ 1.61GHz	Frequency Range : 1.61GHz ~ 8GHz
	

*The 9kHz signal over the limit is from Spectrum.

4.8 Radiated Emission Measurement

4.8.1 Limits of Radiated Emission Measurement

For LTE Band 4
According to FCC 27.53(h) for operations in the 1695-1710 MHz, 1710-1755 MHz, 1755-1780 MHz, 1915-1920 MHz, 1995-2000 MHz, 2000-2020 MHz, 2110-2155 MHz, 2155-2180 MHz, and 2180-2200 bands, the power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) in watts by at least 43 + 10 log10 (P) dB.

For LTE Band 12
According to FCC 27.53(g) for operations in the 600 MHz band and the 698-746 MHz band, the power of any emission outside a licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, by at least 43 + 10 log (P) dB. Compliance with this provision is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kilohertz or greater.

For LTE Band 13
According to FCC 27.53(c)(2) for on any frequency outside the 776-788 MHz band, the power of any emission shall be attenuated outside the band below the transmitter power (P) by at least 43 + 10 log (P) dB.
For operations in the 775-788 MHz, emissions in the band 1559-1610 MHz shall be limited to -70 dBW/MHz.
The limit of emissions is equal to -40 dBm

4.8.2 Test Procedure

a. The power was measured with R&S Spectrum Analyzer. All measurements were done at 3 channels (low, middle and high channel of operational frequency range.)

b. 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.

c. The substitution 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 antenna.

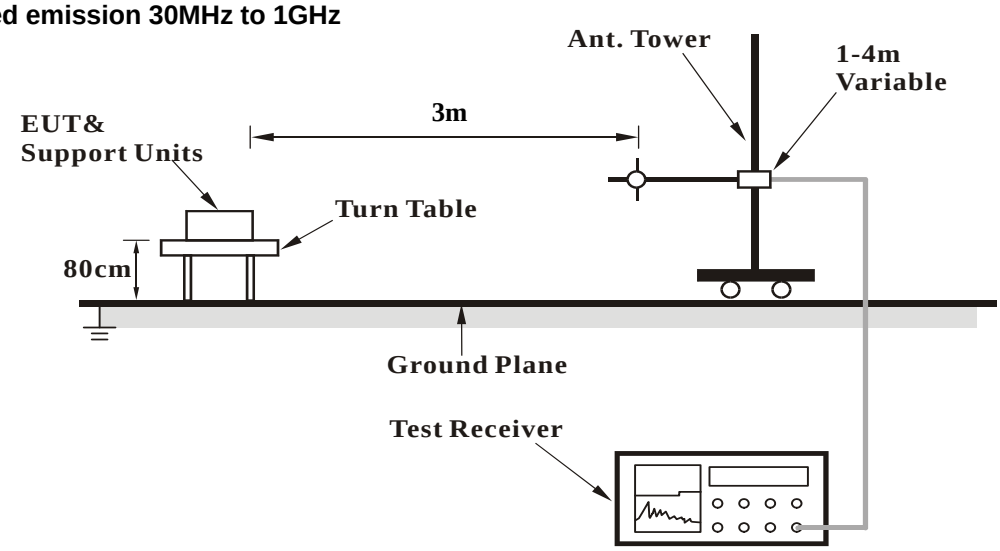
Note: The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 1MHz/3MHz.

4.8.3 Deviation from Test Standard

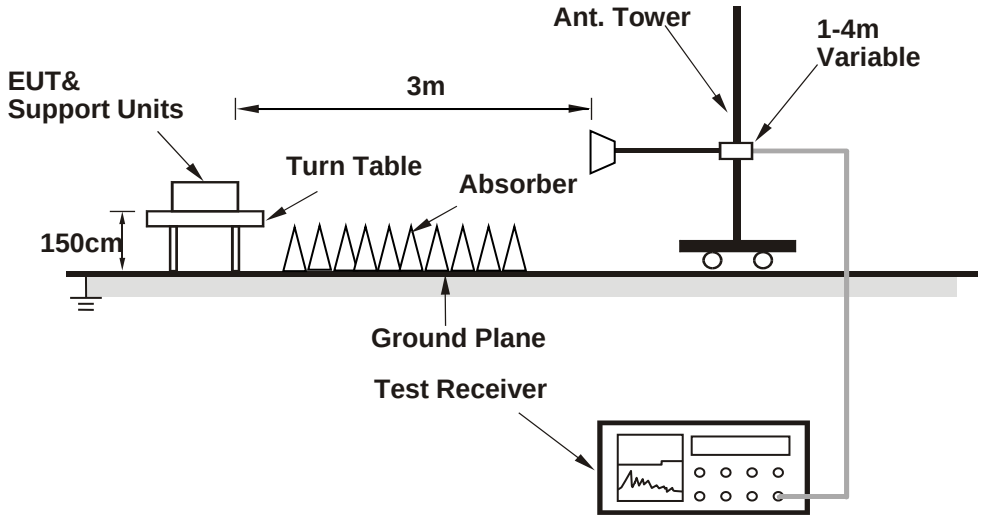
No deviation.

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).

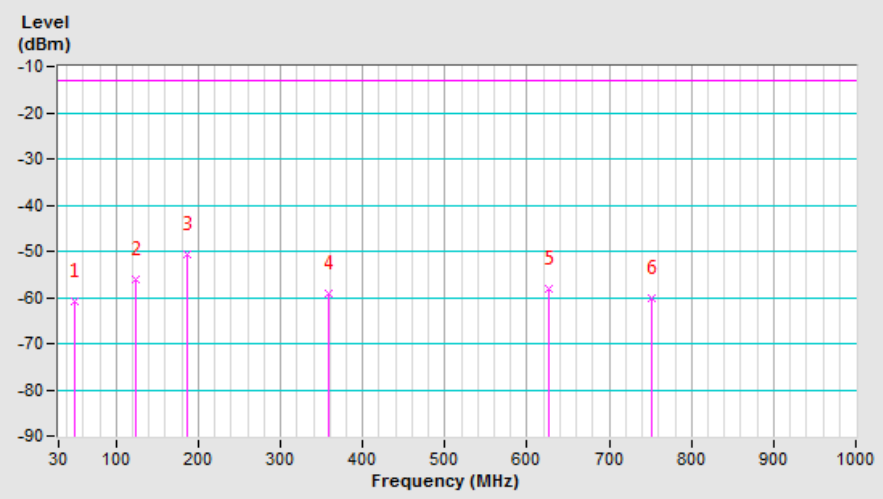
4.8.5 Test Results

Below 1GHz
LTE Band 4, Channel Bandwidth: 1.4MHz

Mode	TX channel 19957 (1710.7MHz)	Frequency Range	Below 1000 MHz
Environmental Conditions	23deg. C, 66%RH	Input Power	120Vac, 60Hz
Tested By	Titan Hsu		

Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	49.68	-61.50	-51.70	-9.30	-61.00	-13.00	-48.00
2	124.19	-48.70	-56.10	0.00	-56.10	-13.00	-43.10
3	186.04	-42.40	-54.40	3.70	-50.70	-13.00	-37.70
4	358.96	-56.70	-64.50	5.20	-59.30	-13.00	-46.30
5	626.06	-60.60	-62.90	4.70	-58.20	-13.00	-45.20
6	751.17	-64.40	-64.70	4.60	-60.10	-13.00	-47.10

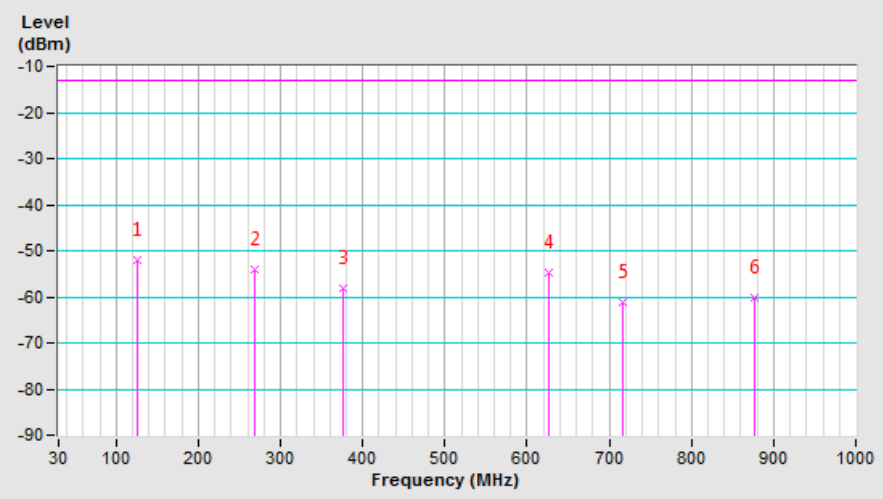
Remarks:
1. EIRP (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) + Cable Loss (dB).



Mode	TX channel 19957 (1710.7MHz)	Frequency Range	Below 1000 MHz
Environmental Conditions	23deg. C, 66%RH	Input Power	120Vac, 60Hz
Tested By	Titan Hsu		

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	125.59	-46.00	-52.10	0.00	-52.10	-13.00	-39.10
2	268.99	-55.80	-59.30	5.30	-54.00	-13.00	-41.00
3	375.83	-58.10	-63.50	5.30	-58.20	-13.00	-45.20
4	626.06	-60.10	-59.40	4.70	-54.70	-13.00	-41.70
5	716.03	-67.90	-66.30	5.00	-61.30	-13.00	-48.30
6	876.29	-68.30	-64.10	3.90	-60.20	-13.00	-47.20

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

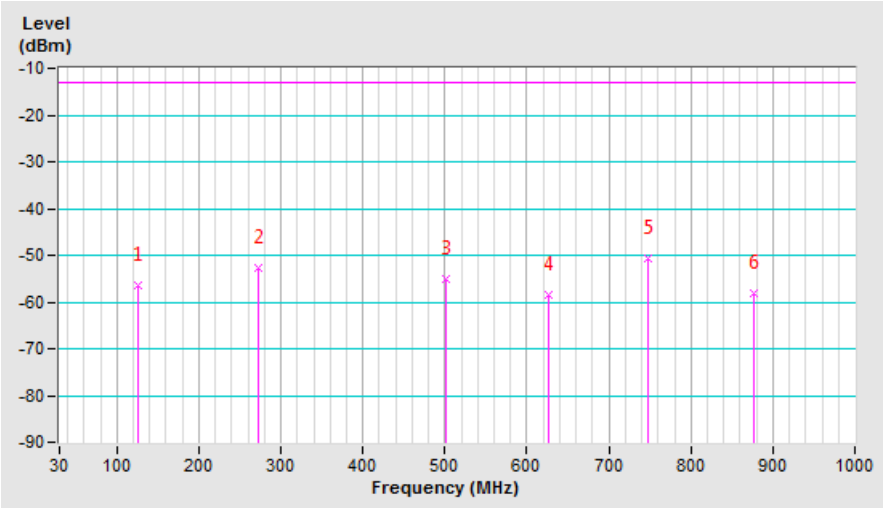


LTE Band 4, Channel Bandwidth: 5MHz

Mode	TX channel 19975 (1712.5MHz)	Frequency Range	Below 1000 MHz
Environmental Conditions	23deg. C, 66%RH	Input Power	120Vac, 60Hz
Tested By	Titan Hsu		

Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	125.59	-48.90	-56.30	0.00	-56.30	-13.00	-43.30
2	271.80	-48.80	-58.10	5.30	-52.80	-13.00	-39.80
3	500.94	-55.00	-59.90	4.90	-55.00	-13.00	-42.00
4	626.06	-60.80	-63.10	4.70	-58.40	-13.00	-45.40
5	748.36	-54.80	-55.30	4.70	-50.60	-13.00	-37.60
6	876.29	-65.70	-62.00	3.90	-58.10	-13.00	-45.10

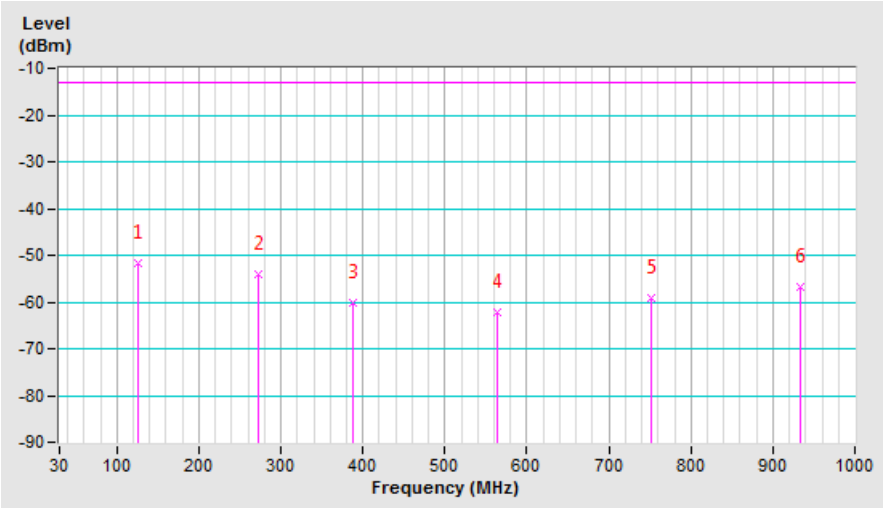
Remarks:
1. EIRP (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) + Cable Loss (dB).



Mode	TX channel 19975 (1712.5MHz)	Frequency Range	Below 1000 MHz
Environmental Conditions	23deg. C, 66%RH	Input Power	120Vac, 60Hz
Tested By	Titan Hsu		

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	125.59	-45.60	-51.70	0.00	-51.70	-13.00	-38.70
2	271.80	-56.00	-59.50	5.30	-54.20	-13.00	-41.20
3	388.48	-60.20	-65.50	5.20	-60.30	-13.00	-47.30
4	564.20	-64.70	-66.80	4.50	-62.30	-13.00	-49.30
5	751.17	-66.50	-63.70	4.60	-59.10	-13.00	-46.10
6	933.93	-66.60	-60.80	3.90	-56.90	-13.00	-43.90

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

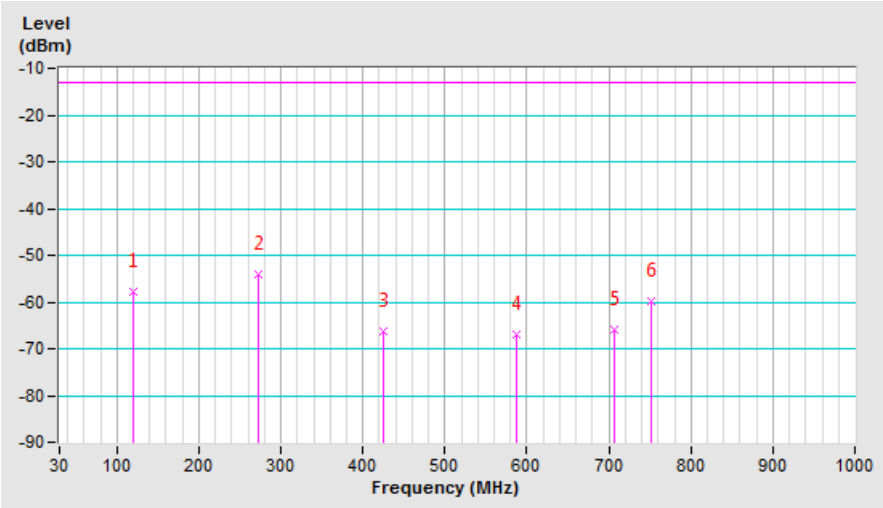


LTE Band 4, Channel Bandwidth: 20MHz

Mode	TX channel 20050 (1720.0MHz)	Frequency Range	Below 1000 MHz
Environmental Conditions	23deg. C, 66%RH	Input Power	120Vac, 60Hz
Tested By	Titan Hsu		

Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	119.97	-49.70	-57.90	0.10	-57.80	-13.00	-44.80
2	271.80	-50.10	-59.40	5.30	-54.10	-13.00	-41.10
3	425.03	-66.50	-71.50	5.20	-66.30	-13.00	-53.30
4	586.70	-68.40	-71.50	4.50	-67.00	-13.00	-54.00
5	706.19	-69.40	-70.90	5.10	-65.80	-13.00	-52.80
6	751.17	-64.00	-64.30	4.60	-59.70	-13.00	-46.70

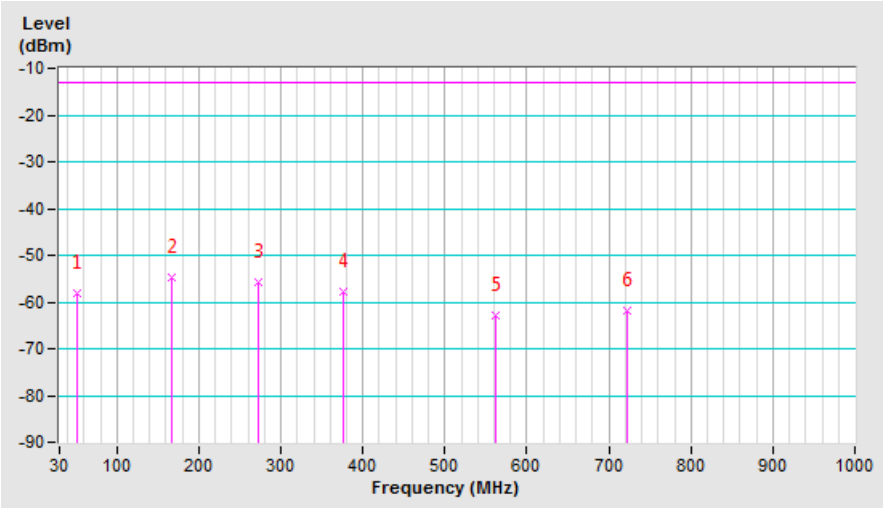
Remarks:
1. EIRP (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) + Cable Loss (dB).



Mode	TX channel 20050 (1720.0MHz)	Frequency Range	Below 1000 MHz
Environmental Conditions	23deg. C, 66%RH	Input Power	120Vac, 60Hz
Tested By	Titan Hsu		

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	51.09	-50.80	-49.00	-9.00	-58.00	-13.00	-45.00
2	166.36	-52.40	-55.90	1.20	-54.70	-13.00	-41.70
3	273.20	-57.30	-60.90	5.30	-55.60	-13.00	-42.60
4	375.83	-57.60	-63.00	5.30	-57.70	-13.00	-44.70
5	562.80	-65.30	-67.60	4.60	-63.00	-13.00	-50.00
6	723.06	-68.80	-66.90	5.00	-61.90	-13.00	-48.90

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

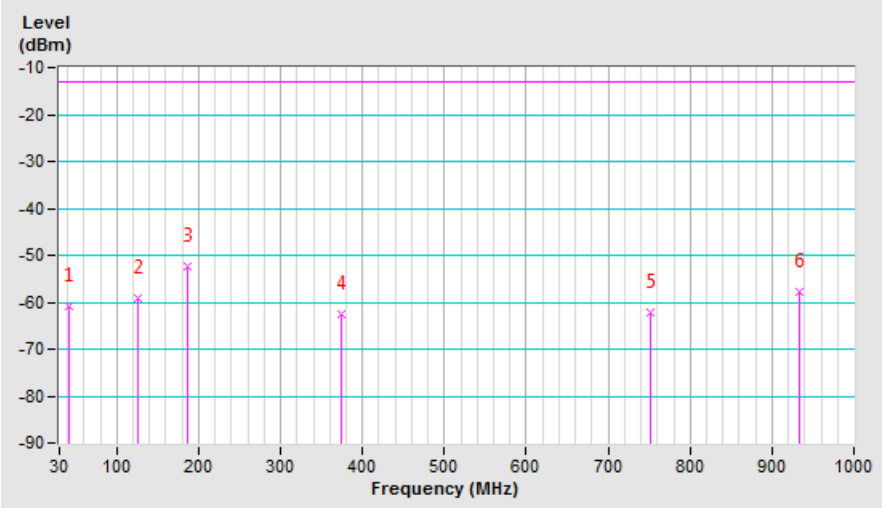


LTE Band 12, Channel Bandwidth: 1.4MHz

Mode	TX channel 23017 (699.7MHz)	Frequency Range	Below 1000 MHz
Environmental Conditions	23deg. C, 66%RH	Input Power	120Vac, 60Hz
Tested By	Titan Hsu		

Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	41.25	-61.80	-50.10	-10.70	-60.80	-13.00	-47.80
2	125.59	-49.50	-59.10	0.00	-59.10	-13.00	-46.10
3	186.04	-41.80	-56.00	3.70	-52.30	-13.00	-39.30
4	374.42	-58.20	-67.70	5.30	-62.40	-13.00	-49.40
5	751.17	-64.50	-66.90	4.60	-62.30	-13.00	-49.30
6	933.93	-64.30	-61.70	3.90	-57.80	-13.00	-44.80

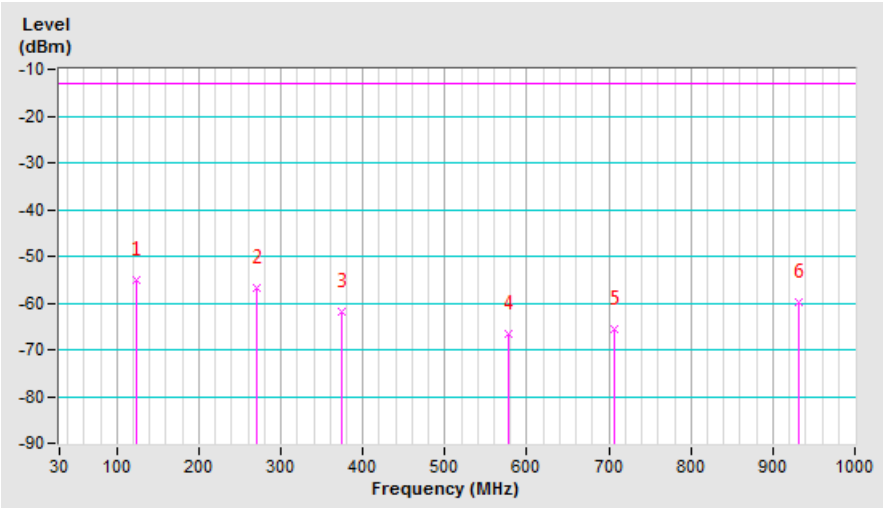
Remarks:
1. ERP (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) + Cable Loss (dB).



Mode	TX channel 23017 (699.7MHz)	Frequency Range	Below 1000 MHz
Environmental Conditions	23deg. C, 66%RH	Input Power	120Vac, 60Hz
Tested By	Titan Hsu		

Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	124.19	-47.00	-55.20	0.00	-55.20	-13.00	-42.20
2	270.39	-56.40	-62.00	5.30	-56.70	-13.00	-43.70
3	374.42	-59.40	-67.10	5.30	-61.80	-13.00	-48.80
4	576.86	-67.50	-71.20	4.50	-66.70	-13.00	-53.70
5	707.59	-69.90	-70.70	5.10	-65.60	-13.00	-52.60
6	932.52	-67.30	-63.80	3.90	-59.90	-13.00	-46.90

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

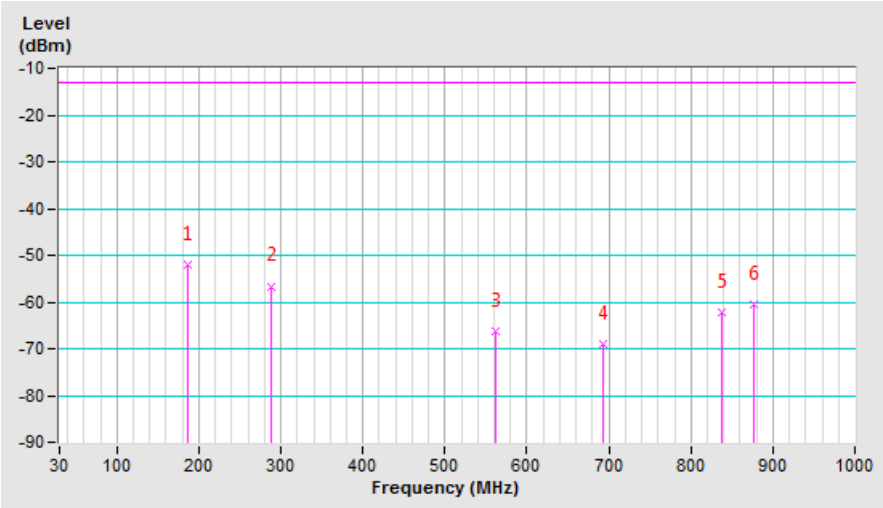


LTE Band 12, Channel Bandwidth: 5MHz

Mode	TX channel 23035 (701.5MHz)	Frequency Range	Below 1000 MHz
Environmental Conditions	23deg. C, 66%RH	Input Power	120Vac, 60Hz
Tested By	Titan Hsu		

Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	186.04	-41.60	-55.80	3.70	-52.10	-13.00	-39.10
2	287.26	-51.20	-61.80	5.20	-56.60	-13.00	-43.60
3	561.39	-65.20	-71.00	4.60	-66.40	-13.00	-53.40
4	692.13	-70.30	-74.30	5.20	-69.10	-13.00	-56.10
5	838.33	-67.50	-66.30	4.00	-62.30	-13.00	-49.30
6	876.29	-66.00	-64.40	3.90	-60.50	-13.00	-47.50

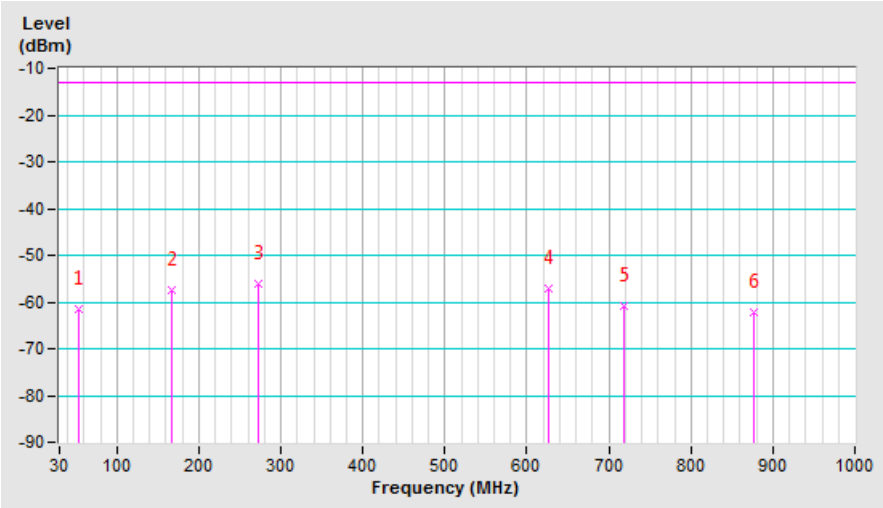
Remarks:
1. ERP (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) + Cable Loss (dB).



Mode	TX channel 23035 (701.5MHz)	Frequency Range	Below 1000 MHz
Environmental Conditions	23deg. C, 66%RH	Input Power	120Vac, 60Hz
Tested By	Titan Hsu		

Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	53.90	-52.70	-53.20	-8.40	-61.60	-13.00	-48.60
2	167.77	-52.80	-58.60	1.30	-57.30	-13.00	-44.30
3	271.80	-55.80	-61.40	5.30	-56.10	-13.00	-43.10
4	626.06	-60.50	-61.90	4.70	-57.20	-13.00	-44.20
5	718.84	-65.50	-65.90	5.00	-60.90	-13.00	-47.90
6	876.29	-68.00	-66.00	3.90	-62.10	-13.00	-49.10

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

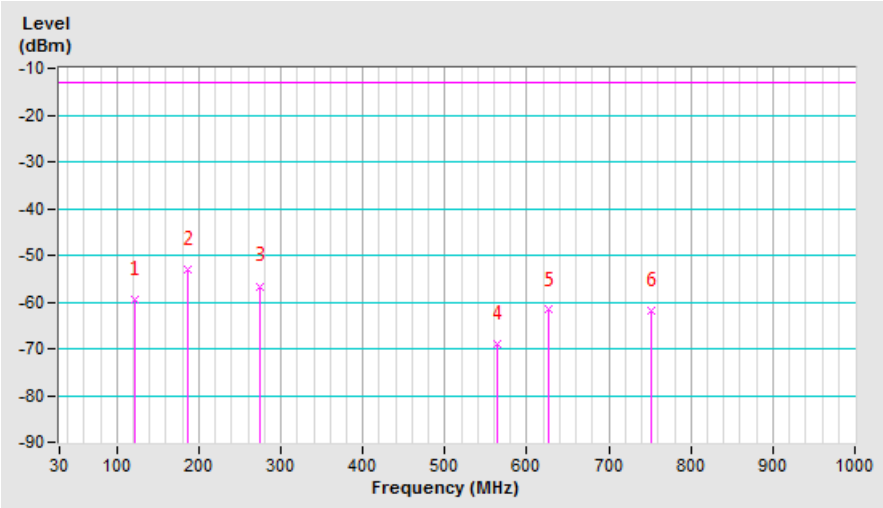


LTE Band 12, Channel Bandwidth: 10MHz

Mode	TX channel 23060 (704MHz)	Frequency Range	Below 1000 MHz
Environmental Conditions	23deg. C, 66%RH	Input Power	120Vac, 60Hz
Tested By	Titan Hsu		

Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	122.78	-49.50	-59.40	0.00	-59.40	-13.00	-46.40
2	186.04	-42.60	-56.80	3.70	-53.10	-13.00	-40.10
3	274.61	-50.50	-61.90	5.30	-56.60	-13.00	-43.60
4	564.20	-67.90	-73.60	4.50	-69.10	-13.00	-56.10
5	626.06	-62.00	-66.40	4.70	-61.70	-13.00	-48.70
6	751.17	-64.00	-66.50	4.60	-61.90	-13.00	-48.90

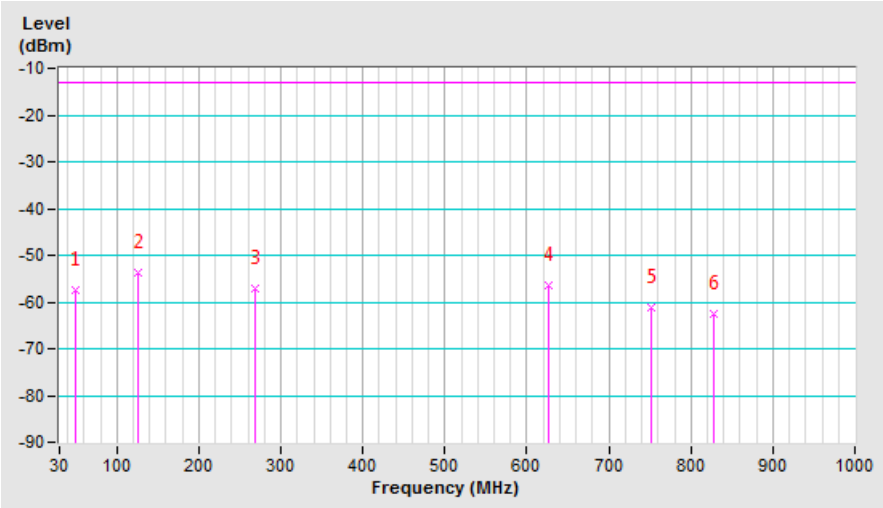
Remarks:
1. ERP (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) + Cable Loss (dB).



Mode	TX channel 23060 (704MHz)	Frequency Range	Below 1000 MHz
Environmental Conditions	23deg. C, 66%RH	Input Power	120Vac, 60Hz
Tested By	Titan Hsu		

Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	49.68	-47.90	-48.00	-9.30	-57.30	-13.00	-44.30
2	125.59	-45.50	-53.80	0.00	-53.80	-13.00	-40.80
3	268.99	-56.60	-62.30	5.30	-57.00	-13.00	-44.00
4	626.06	-59.80	-61.20	4.70	-56.50	-13.00	-43.50
5	751.17	-66.50	-65.80	4.60	-61.20	-13.00	-48.20
6	827.09	-68.80	-66.60	4.00	-62.60	-13.00	-49.60

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

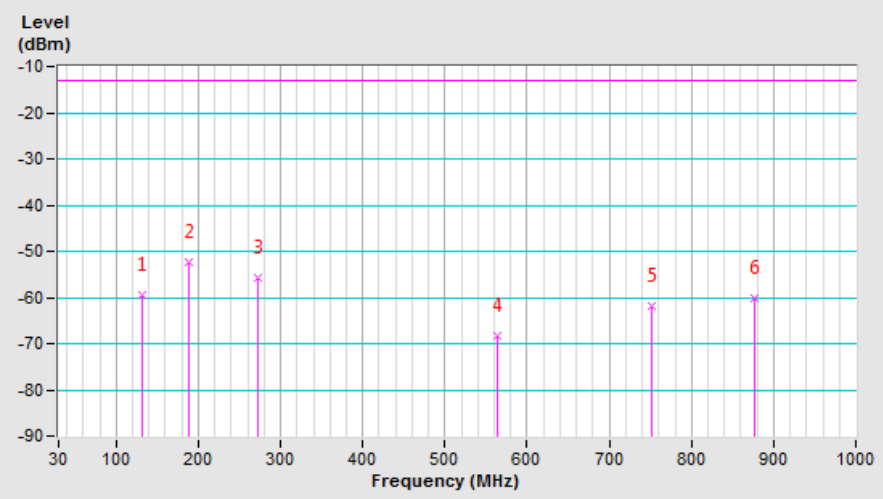


LTE Band 13, Channel Bandwidth: 5MHz

Mode	TX channel 23205 (779.5MHz)	Frequency Range	Below 1000 MHz
Environmental Conditions	23deg. C, 66%RH	Input Power	120Vac, 60Hz
Tested By	Titan Hsu		

Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	131.22	-50.60	-59.30	-0.10	-59.40	-13.00	-46.40
2	187.45	-41.90	-56.40	3.90	-52.50	-13.00	-39.50
3	273.20	-49.60	-61.00	5.30	-55.70	-13.00	-42.70
4	564.20	-67.10	-72.80	4.50	-68.30	-13.00	-55.30
5	751.17	-64.20	-66.60	4.60	-62.00	-13.00	-49.00
6	876.29	-65.80	-64.20	3.90	-60.30	-13.00	-47.30

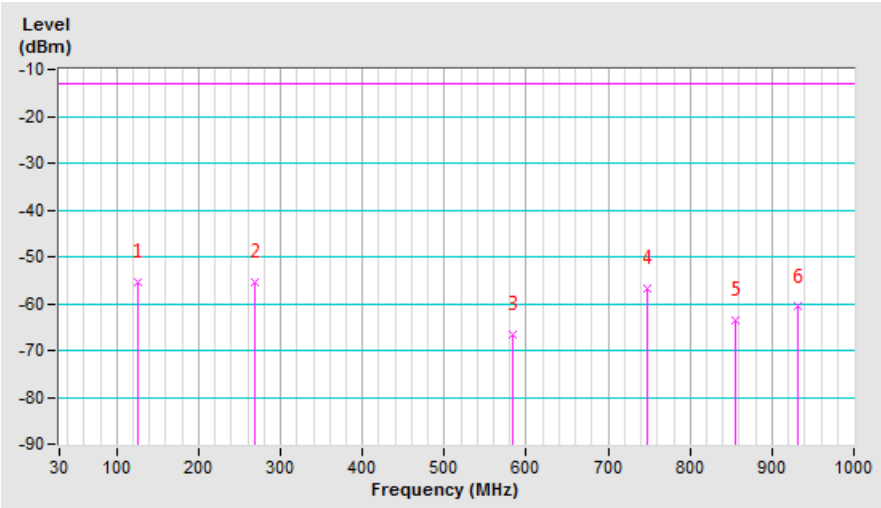
Remarks:
1. ERP (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) + Cable Loss (dB).



Mode	TX channel 23205 (779.5MHz)	Frequency Range	Below 1000 MHz
Environmental Conditions	23deg. C, 66%RH	Input Power	120Vac, 60Hz
Tested By	Titan Hsu		

Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	125.59	-47.10	-55.40	0.00	-55.40	-13.00	-42.40
2	268.99	-55.10	-60.80	5.30	-55.50	-13.00	-42.50
3	583.88	-67.80	-71.10	4.50	-66.60	-13.00	-53.60
4	746.96	-61.90	-61.40	4.70	-56.70	-13.00	-43.70
5	855.20	-69.80	-67.60	3.90	-63.70	-13.00	-50.70
6	932.52	-68.20	-64.60	3.90	-60.70	-13.00	-47.70

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

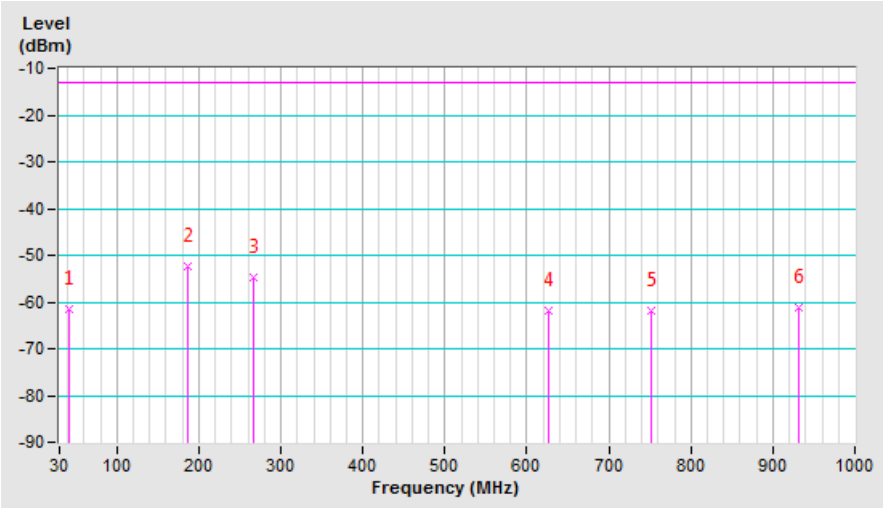


LTE Band 13, Channel Bandwidth: 10MHz

Mode	TX channel 23230 (782.0MHz)	Frequency Range	Below 1000 MHz
Environmental Conditions	23deg. C, 66%RH	Input Power	120Vac, 60Hz
Tested By	Titan Hsu		

Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	41.25	-62.40	-50.70	-10.70	-61.40	-13.00	-48.40
2	186.04	-42.00	-56.20	3.70	-52.50	-13.00	-39.50
3	267.58	-48.30	-60.10	5.30	-54.80	-13.00	-41.80
4	626.06	-62.00	-66.50	4.70	-61.80	-13.00	-48.80
5	751.17	-64.00	-66.50	4.60	-61.90	-13.00	-48.90
6	932.52	-67.80	-65.20	3.90	-61.30	-13.00	-48.30

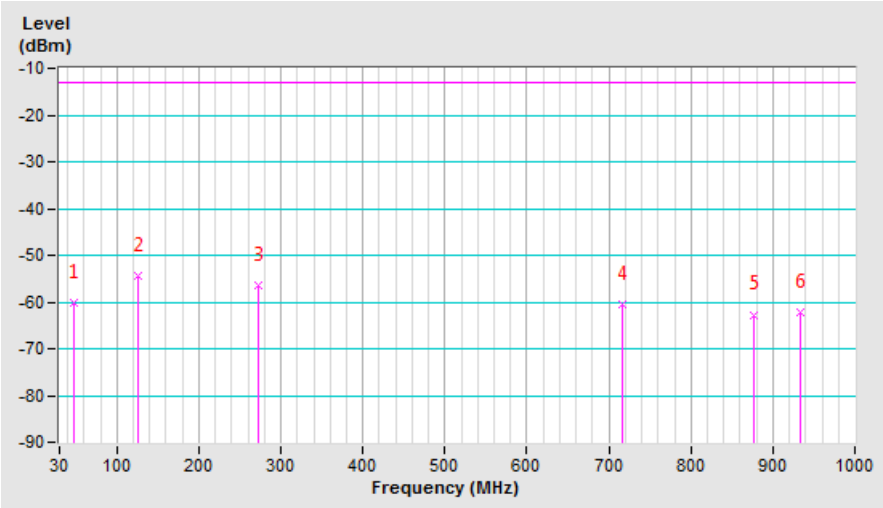
Remarks:
1. ERP (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) + Cable Loss (dB).



Mode	TX channel 23230 (782.0MHz)	Frequency Range	Below 1000 MHz
Environmental Conditions	23deg. C, 66%RH	Input Power	120Vac, 60Hz
Tested By	Titan Hsu		

Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	48.28	-50.50	-50.60	-9.50	-60.10	-13.00	-47.10
2	125.59	-46.00	-54.30	0.00	-54.30	-13.00	-41.30
3	271.80	-56.00	-61.70	5.30	-56.40	-13.00	-43.40
4	716.03	-65.00	-65.50	5.00	-60.50	-13.00	-47.50
5	876.29	-68.70	-66.60	3.90	-62.70	-13.00	-49.70
6	933.93	-69.70	-66.00	3.90	-62.10	-13.00	-49.10

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



Above 1GHz
LTE Band 4, Channel Bandwidth: 1.4MHz

Mode	TX channel 19957 (1710.7MHz)	Frequency Range	1GHz ~ 20GHz
Environmental Conditions	23deg. C, 66%RH	Input Power	120Vac, 60Hz
Tested By	Titan Hsu		

Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	3421.40	-65.60	-61.50	7.10	-54.40	-13.00	-41.40
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	3421.40	-63.30	-59.30	7.10	-52.20	-13.00	-39.20

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 20175 (1732.5MHz)	Frequency Range	1GHz ~ 20GHz
Environmental Conditions	23deg. C, 66%RH	Input Power	120Vac, 60Hz
Tested By	Titan Hsu		

Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	3465.00	-58.30	-53.80	7.10	-46.70	-13.00	-33.70
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	3465.00	-57.60	-53.10	7.10	-46.00	-13.00	-33.00

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 20393 (1754.3MHz)	Frequency Range	1GHz ~ 20GHz
Environmental Conditions	23deg. C, 66%RH	Input Power	120Vac, 60Hz
Tested By	Titan Hsu		

Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	3508.60	-63.30	-58.60	7.20	-51.40	-13.00	-38.40
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	3508.60	-63.80	-59.00	7.20	-51.80	-13.00	-38.80

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

LTE Band 4, Channel Bandwidth: 5MHz

Mode	TX channel 19975 (1712.5MHz)	Frequency Range	1GHz ~ 20GHz
Environmental Conditions	23deg. C, 66%RH	Input Power	120Vac, 60Hz
Tested By	Titan Hsu		

Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	3425.00	-65.40	-61.20	7.10	-54.10	-13.00	-41.10
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	3425.00	-62.90	-58.90	7.10	-51.80	-13.00	-38.80

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 20175 (1732.5MHz)	Frequency Range	1GHz ~ 20GHz
Environmental Conditions	23deg. C, 66%RH	Input Power	120Vac, 60Hz
Tested By	Titan Hsu		

Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	3465.00	-58.00	-53.50	7.10	-46.40	-13.00	-33.40
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	3465.00	-57.30	-52.80	7.10	-45.70	-13.00	-32.70

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 20375 (1752.5MHz)	Frequency Range	1GHz ~ 20GHz
Environmental Conditions	23deg. C, 66%RH	Input Power	120Vac, 60Hz
Tested By	Titan Hsu		

Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	3505.00	-63.00	-58.30	7.20	-51.10	-13.00	-38.10
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	3505.00	-63.50	-58.70	7.20	-51.50	-13.00	-38.50

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

LTE Band 4, Channel Bandwidth: 20MHz

Mode	TX channel 20050 (1720.0MHz)	Frequency Range	1GHz ~ 20GHz
Environmental Conditions	23deg. C, 66%RH	Input Power	120Vac, 60Hz
Tested By	Titan Hsu		

Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	3440.00	-65.10	-60.80	7.10	-53.70	-13.00	-40.70
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	3440.00	-62.70	-58.50	7.10	-51.40	-13.00	-38.40

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 20175 (1732.5MHz)	Frequency Range	1GHz ~ 20GHz
Environmental Conditions	23deg. C, 66%RH	Input Power	120Vac, 60Hz
Tested By	Titan Hsu		

Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	3465.00	-57.60	-53.10	7.10	-46.00	-13.00	-33.00
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	3465.00	-57.00	-52.50	7.10	-45.40	-13.00	-32.40

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 20300 (1745.0MHz)	Frequency Range	1GHz ~ 20GHz
Environmental Conditions	23deg. C, 66%RH	Input Power	120Vac, 60Hz
Tested By	Titan Hsu		

Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	3490.00	-62.60	-58.00	7.20	-50.80	-13.00	-37.80
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	3490.00	-63.10	-58.40	7.20	-51.20	-13.00	-38.20

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

LTE Band 12, Channel Bandwidth: 1.4MHz

Mode	TX channel 23017 (699.7MHz)	Frequency Range	1GHz ~ 10GHz
Environmental Conditions	23deg. C, 66%RH	Input Power	120Vac, 60Hz
Tested By	Titan Hsu		

Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	1399.40	-42.20	-44.20	4.70	-39.50	-13.00	-26.50
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	1399.40	-44.40	-46.30	4.70	-41.60	-13.00	-28.60

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

Mode	TX channel 23095 (707.5MHz)	Frequency Range	1GHz ~ 10GHz
Environmental Conditions	23deg. C, 66%RH	Input Power	120Vac, 60Hz
Tested By	Titan Hsu		

Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	1415.00	-39.80	-41.70	4.70	-37.00	-13.00	-24.00
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	1415.00	-41.50	-43.60	4.70	-38.90	-13.00	-25.90

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

Mode	TX channel 23173 (715.3MHz)	Frequency Range	1GHz ~ 10GHz
Environmental Conditions	23deg. C, 66%RH	Input Power	120Vac, 60Hz
Tested By	Titan Hsu		

Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	1430.60	-38.60	-40.70	4.80	-35.90	-13.00	-22.90
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	1430.60	-40.50	-42.80	4.80	-38.00	-13.00	-25.00

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

LTE Band 12, Channel Bandwidth: 5MHz

Mode	TX channel 23035 (701.5MHz)	Frequency Range	1GHz ~ 10GHz
Environmental Conditions	23deg. C, 66%RH	Input Power	120Vac, 60Hz
Tested By	Titan Hsu		

Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	1403.00	-42.00	-44.00	4.70	-39.30	-13.00	-26.30
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	1403.00	-44.10	-46.10	4.70	-41.40	-13.00	-28.40

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

Mode	TX channel 23095 (707.5MHz)	Frequency Range	1GHz ~ 10GHz
Environmental Conditions	23deg. C, 66%RH	Input Power	120Vac, 60Hz
Tested By	Titan Hsu		

Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	1415.00	-39.50	-41.50	4.70	-36.80	-13.00	-23.80
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	1415.00	-41.40	-43.40	4.70	-38.70	-13.00	-25.70

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

Mode	TX channel 23155 (713.5MHz)	Frequency Range	1GHz ~ 10GHz
Environmental Conditions	23deg. C, 66%RH	Input Power	120Vac, 60Hz
Tested By	Titan Hsu		

Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	1427.00	-38.50	-40.50	4.80	-35.70	-13.00	-22.70
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	1427.00	-40.30	-42.60	4.80	-37.80	-13.00	-24.80

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

LTE Band 12, Channel Bandwidth: 10MHz

Mode	TX channel 23060 (704MHz)	Frequency Range	1GHz ~ 10GHz
Environmental Conditions	23deg. C, 66%RH	Input Power	120Vac, 60Hz
Tested By	Titan Hsu		

Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	1408.00	-42.00	-43.90	4.70	-39.20	-13.00	-26.20
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	1408.00	-43.90	-46.00	4.70	-41.30	-13.00	-28.30

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

Mode	TX channel 23095 (707.5MHz)	Frequency Range	1GHz ~ 10GHz
Environmental Conditions	23deg. C, 66%RH	Input Power	120Vac, 60Hz
Tested By	Titan Hsu		

Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	1415.00	-39.50	-41.40	4.70	-36.70	-13.00	-23.70
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	1415.00	-41.20	-43.30	4.70	-38.60	-13.00	-25.60

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

Mode	TX channel 23130 (711MHz)	Frequency Range	1GHz ~ 10GHz
Environmental Conditions	23deg. C, 66%RH	Input Power	120Vac, 60Hz
Tested By	Titan Hsu		

Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	1422.00	-38.40	-40.40	4.80	-35.60	-13.00	-22.60
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	1422.00	-40.20	-42.50	4.80	-37.70	-13.00	-24.70

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

LTE Band 13, Channel Bandwidth: 5MHz

Mode	TX channel 23205 (779.5MHz)	Frequency Range	1GHz ~ 10GHz
Environmental Conditions	23deg. C, 66%RH	Input Power	120Vac, 60Hz
Tested By	Titan Hsu		

Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	1559.00	-46.10	-49.40	5.30	-44.10	-40.00	-4.10
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	1559.00	-49.90	-52.70	5.30	-47.40	-40.00	-7.40

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

Mode	TX channel 23230 (782.0MHz)	Frequency Range	1GHz ~ 10GHz
Environmental Conditions	23deg. C, 66%RH	Input Power	120Vac, 60Hz
Tested By	Titan Hsu		

Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	1564.00	-53.70	-57.00	5.30	-51.70	-40.00	-11.70
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	**1564.00**	**-43.50**	**-46.30**	**5.30**	**-41.00**	**-40.00**	**-1.00**

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

Mode	TX channel 23255 (784.5MHz)	Frequency Range	1GHz ~ 10GHz
Environmental Conditions	23deg. C, 66%RH	Input Power	120Vac, 60Hz
Tested By	Titan Hsu		

Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	1569.00	-50.90	-54.30	5.30	-49.00	-40.00	-9.00
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	1569.00	-45.60	-48.40	5.30	-43.10	-40.00	-3.10

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

LTE Band 13, Channel Bandwidth: 10MHz

Mode	TX channel 23230 (782.0MHz)	Frequency Range	1GHz ~ 10GHz
Environmental Conditions	23deg. C, 66%RH	Input Power	120Vac, 60Hz
Tested By	Titan Hsu		

Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	1564.00	-45.60	-48.90	5.30	-43.60	-40.00	-3.60
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	1564.00	-49.80	-52.60	5.30	-47.30	-40.00	-7.30

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

5 Pictures of Test Arrangements

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

Appendix – Information of the Testing Laboratories

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