FCC Test Report

(PART 27)

Report No.:	RF181126C15B-2
FCC ID:	N7NHL78
Test Model:	HL7800
Received Date:	Jun. 01, 2020
Test Date:	Jun. 02 ~ Jun. 15, 2020
Issued Date:	Jul. 09, 2020
Applicant:	Sierra Wireless Inc.
Address:	13811 Wireless Way, Richmond, BC, Canada V6V3A4
Issued By:	Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch Lin Kou Laboratories
Lab Address:	No. 47-2, 14th Ling, Chia Pau Vil., Lin Kou Dist., New Taipei City, Taiwan
Test Location:	No.19, Hwa Ya 2nd Rd., Wen Hwa Vil., Kwei Shan Dist., Taoyuan City 33383, Taiwan
FCC Registration / Designation Number:	788550 / TW0003

Table of Contents

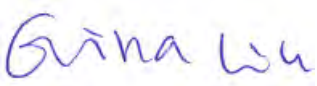
Release Control Record

Issue No.	Description	Date Issued
RF181126C15B-2	Original Release	Jul. 09, 2020

1 Certificate of Conformity

Product:	Embedded Module
Brand:	AirPrime
Test Model:	HL7800
Sample Status:	Engineering Sample
Applicant:	Sierra Wireless Inc.
Test Date:	Jun. 02 ~ Jun. 15, 2020
Standards:	FCC Part 27, Subpart C, H, F, 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 :  , **Date:** Jul. 09, 2020

Gina Liu / Specialist

Approved by :  , **Date:** Jul. 09, 2020

Dylan Chiou / Senior Project Engineer

2 Summary of Test Results

Applied Standard: FCC Part 27 & Part 2 (LTE 4)			
FCC Clause	**Test Item**	**Result**	**Remarks**
2.1046 27.50(d)(4)	Maximum Peak Output Power	Pass	Meet the requirement of limit.
2.1047	Modulation Characteristics	Pass	Meet the requirement.
2.1055 27.54	Frequency Stability	Pass	Meet the requirement of limit.
2.1049	Occupied Bandwidth	Pass	Meet the requirement of limit.
27.50(d)(5)	Peak to Average Ratio	Pass	Meet the requirement of limit.
27.53(h)	Band Edge Measurements	Pass	Meet the requirement of limit.
2.1051 27.53(h)	Conducted Spurious Emissions	Pass	Meet the requirement of limit.
2.1053 27.53(h)	Radiated Spurious Emissions	Pass	Meet the requirement of limit. Minimum passing margin is -15.65 dB at 3490.00 MHz.

Applied Standard: FCC Part 27 & Part 2 (LTE 12)			
FCC Clause	**Test Item**	**Result**	**Remarks**
2.1046 27.50(c)(10)	Maximum Peak Output Power	Pass	Meet the requirement of limit.
2.1047	Modulation Characteristics	Pass	Meet the requirement.
2.1055 27.54	Frequency Stability	Pass	Meet the requirement of limit.
2.1049	Occupied Bandwidth	Pass	Meet the requirement of limit.
---	Peak to Average Ratio	Pass	Meet the requirement of limit.
27.53(g)	Band Edge Measurements	Pass	Meet the requirement of limit.
2.1051 27.53(g)	Conducted Spurious Emissions	Pass	Meet the requirement of limit.
2.1053 27.53(g)	Radiated Spurious Emissions	Pass	Meet the requirement of limit. Minimum passing margin is -29.12 dB at 1415.00 MHz.

Applied Standard: FCC Part 27 & Part 2 (LTE 13)			
FCC Clause	**Test Item**	**Result**	**Remarks**
2.1046 27.50(b)(10)	Maximum Peak Output Power	Pass	Meet the requirement of limit.
2.1047	Modulation Characteristics	Pass	Meet the requirement.
2.1055 27.54	Frequency Stability	Pass	Meet the requirement of limit.
2.1049	Occupied Bandwidth	Pass	Meet the requirement of limit.
---	Peak to Average Ratio	Pass	Meet the requirement of limit.
27.53(c)(2)(4)	Band Edge Measurements	Pass	Meet the requirement of limit.
2.1051 27.53(c)(2)&(f)	Conducted Spurious Emissions	Pass	Meet the requirement of limit.
2.1053 27.53(c)(2)&(f)	Radiated Spurious Emissions	Pass	Meet the requirement of limit. Minimum passing margin is -11.03 dB at 1564.00 MHz.

Applied Standard: FCC Part 27 & Part 2 (LTE 66)			
FCC Clause	**Test Item**	**Result**	**Remarks**
2.1046 27.50(d)(4)	Maximum Peak Output Power	Pass	Meet the requirement of limit.
2.1047	Modulation Characteristics	Pass	Meet the requirement.
2.1055 27.54	Frequency Stability	Pass	Meet the requirement of limit.
2.1049	Occupied Bandwidth	Pass	Meet the requirement of limit.
27.50(d)(5)	Peak to Average Ratio	Pass	Meet the requirement of limit.
27.53(h)	Band Edge Measurements	Pass	Meet the requirement of limit.
2.1051 27.53(h)	Conducted Spurious Emissions	Pass	Meet the requirement of limit.
2.1053 27.53(h)	Radiated Spurious Emissions	Pass	Meet the requirement of limit. Minimum passing margin is -29.01 dB at 3490.00 MHz.

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

2.1 Measurement Uncertainty

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

Measurement	Frequency	Expanded Uncertainty (k=2) (±)
Radiated Emissions up to 1 GHz	9 kHz ~ 30 MHz	3.04 dB
	30 MHz ~ 200 MHz	2.93 dB
	200 MHz ~ 1000 MHz	2.95 dB
Radiated Emissions above 1 GHz	1 GHz ~ 18 GHz	2.26 dB
	18 GHz ~ 40 GHz	1.94 dB

2.2 Test Site and Instruments

Description & Manufacturer	Model No.	Serial No.	Date of Calibration	Due Date of Calibration
Test Receiver Agilent	N9038A	MY51210203	Mar. 18, 2020	Mar. 17, 2021
Spectrum Analyzer Agilent	N9010A	MY52220314	Dec. 12, 2019	Dec. 11, 2020
Spectrum Analyzer ROHDE & SCHWARZ	FSU43	101261	Apr. 16, 2020	Apr. 15, 2021
HORN Antenna EMCO	3115	5619	Nov. 24, 2019	Nov. 23, 2020
HORN Antenna SCHWARZBECK	BBHA 9120D	9120D-969	Nov. 24, 2019	Nov. 23, 2020
BILOG Antenna SCHWARZBECK	VULB 9168	9168-160	Nov. 07, 2019	Nov. 06, 2020
BILOG Antenna SCHWARZBECK	VULB 9168	9168-472	Nov. 08, 2019	Nov. 07, 2020
Fixed Attenuator Mini-Circuits	MDCS18N-10	MDCS18N-10-01	Apr. 14, 2020	Apr. 13, 2021
MXG Vector signal generator Agilent	N5182B	MY53050430	Oct. 25, 2019	Oct. 24, 2020
Preamplifier EMCI	EMC 012645	980115	Oct. 08, 2019	Oct. 07, 2020
Preamplifier EMCI	EMC 330H	980112	Oct. 08, 2019	Oct. 07, 2020
RF Coaxial Cable HUBER+SUHNNER	EMC104-SM-SM-8000&3000	140811+170717	Oct. 08, 2019	Oct. 07, 2020
RF Coaxial Cable HUBER+SUHNNER	SUCOFLEX 104	EMC104-SM-SM-1000(140807)	Oct. 08, 2019	Oct. 07, 2020
RF Coaxial Cable WOKEN	8D-FB	Cable-Ch10-01	Oct. 08, 2019	Oct. 07, 2020
Boresight Antenna Fixture	FBA-01	FBA-SIP01	NA	NA
Software BV ADT	E3 6.120103	NA	NA	NA
Antenna Tower MF	MFA-440H	NA	NA	NA
Turn Table MF	MFT-201SS	NA	NA	NA
Antenna Tower &Turn Table Controller MF	MF-7802	NA	NA	NA
Radio Communication Analyzer Anritsu	MT8821C	6261806803	Jan. 18, 2020	Jan. 17, 2021
Spectrum Analyzer R&S	FSW43	101582	Mar. 31, 2020	Mar. 30 2021
Temperature & Humidity Chamber	GTH-120-40-CP-AR	MAA1306-019	Sep. 10, 2019	Sep. 09, 2020
DC Power Supply Topward	33010D	807748	NA	NA
Digital Multimeter Fluke	87-III	70360742	Jun. 27, 2019 Jun. 23, 2020	Jun. 26, 2020 Jun. 22, 2021

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 10.

3 General Information

3.1 General Description of EUT

Product	Embedded Module		
Brand	AirPrime		
Test Model	HL7800		
Status of EUT	Engineering Sample		
Power Supply Rating	5.0 Vdc (host equipment) 12.0 Vdc (adapter)		
Modulation Type	**Cat-M1**	QPSK, 16QAM	
	NB-IoT	BPSK, QPSK	
Frequency Range	**Cat-M1**	LTE Band 4 (Channel Bandwidth: 1.4 MHz)	1710.7 ~ 1754.3 MHz
		LTE Band 4 (Channel Bandwidth: 3 MHz)	1711.5 ~ 1753.5 MHz
		LTE Band 4 (Channel Bandwidth: 5 MHz)	1712.5 ~ 1752.5 MHz
		LTE Band 4 (Channel Bandwidth: 10 MHz)	1715.0 ~ 1750.0 MHz
		LTE Band 4 (Channel Bandwidth: 15 MHz)	1717.5 ~ 1747.5 MHz
		LTE Band 4 (Channel Bandwidth: 20 MHz)	1720.0 ~ 1745.0 MHz
		LTE Band 12 (Channel Bandwidth: 1.4 MHz)	699.7 ~ 715.3 MHz
		LTE Band 12 (Channel Bandwidth: 3 MHz)	700.5 ~ 714.5 MHz
		LTE Band 12 (Channel Bandwidth: 5 MHz)	701.5 ~ 713.5 MHz
		LTE Band 12 (Channel Bandwidth: 10 MHz)	704.0 ~ 711.0 MHz
		LTE Band 13 (Channel Bandwidth: 5 MHz)	779.5 ~ 784.5 MHz
		LTE Band 13 (Channel Bandwidth: 10 MHz)	782.0 MHz
		LTE Band 66 (Channel Bandwidth: 1.4 MHz)	1710.7 ~ 1779.3 MHz
		LTE Band 66 (Channel Bandwidth: 3 MHz)	1711.5 ~ 1778.5 MHz
		LTE Band 66 (Channel Bandwidth: 5 MHz)	1712.5 ~ 1777.5 MHz
		LTE Band 66 (Channel Bandwidth: 10 MHz)	1715.0 ~ 1775.0 MHz
		LTE Band 66 (Channel Bandwidth: 15 MHz)	1717.5 ~ 1772.5 MHz
		LTE Band 66 (Channel Bandwidth: 20 MHz)	1720.0 ~ 1770.0 MHz
	NB-IoT	LTE Band 4	1710.2 ~ 1754.8 MHz
		LTE Band 12	699.2 ~ 715.8 MHz
		LTE Band 13	777.2 ~ 786.8 MHz
		LTE Band 66	1710.2 ~ 1779.8 MHz

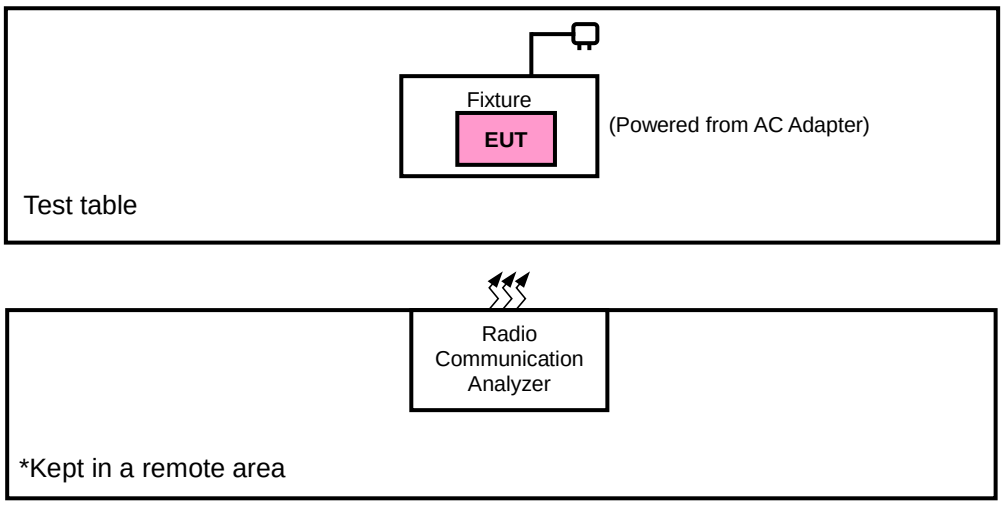
Emission Designator	**Cat-M1**	LTE Band 4 (Channel Bandwidth: 1.4 MHz)	1M09G7D
		LTE Band 4 (Channel Bandwidth: 3 MHz)	1M09G7D
		LTE Band 4 (Channel Bandwidth: 5 MHz)	1M10G7D
		LTE Band 4 (Channel Bandwidth: 10 MHz)	1M09G7D
		LTE Band 4 (Channel Bandwidth: 15 MHz)	1M10G7D
		LTE Band 4 (Channel Bandwidth: 20 MHz)	1M09G7D
		LTE Band 12 (Channel Bandwidth: 1.4 MHz)	1M09G7D
		LTE Band 12 (Channel Bandwidth: 3 MHz)	1M09G7D
		LTE Band 12 (Channel Bandwidth: 5 MHz)	1M09G7D
		LTE Band 12 (Channel Bandwidth: 10 MHz)	1M09G7D
		LTE Band 13 (Channel Bandwidth: 5 MHz)	1M09G7D
		LTE Band 13 (Channel Bandwidth: 10 MHz)	1M09G7D
		LTE Band 66 (Channel Bandwidth: 1.4 MHz)	1M09G7D
		LTE Band 66 (Channel Bandwidth: 3 MHz)	1M09G7D
		LTE Band 66 (Channel Bandwidth: 5 MHz)	1M09G7D
		LTE Band 66 (Channel Bandwidth: 10 MHz)	1M09G7D
		LTE Band 66 (Channel Bandwidth: 15 MHz)	1M10G7D
		LTE Band 66 (Channel Bandwidth: 20 MHz)	1M09G7D
	NB-IoT	LTE Band 4	205KG7D
		LTE Band 12	192KG7D
		LTE Band 13	191KG7D
		LTE Band 66	194KG7D
Max. ERP Power	**Cat-M1**	LTE Band 12 (Channel Bandwidth: 1.4 MHz)	165.58 mW
		LTE Band 12 (Channel Bandwidth: 3 MHz)	174.98 mW
		LTE Band 12 (Channel Bandwidth: 5 MHz)	185.78 mW
		LTE Band 12 (Channel Bandwidth: 10 MHz)	196.79 mW
		LTE Band 13 (Channel Bandwidth: 5 MHz)	225.9 mW
		LTE Band 13 (Channel Bandwidth: 10 MHz)	239.88 mW
	NB-IoT	LTE Band 12	208.45 mW (BPSK) 261.82 mW (QPSK)
		LTE Band 13	174.18 mW (BPSK) 218.27 mW (QPSK)

Max. EIRP Power	**Cat-M1**	LTE Band 4 (Channel Bandwidth: 1.4 MHz)	297.17 mW
		LTE Band 4 (Channel Bandwidth: 3 MHz)	312.61 mW
		LTE Band 4 (Channel Bandwidth: 5 MHz)	330.37 mW
		LTE Band 4 (Channel Bandwidth: 10 MHz)	351.56 mW
		LTE Band 4 (Channel Bandwidth: 15 MHz)	373.25 mW
		LTE Band 4 (Channel Bandwidth: 20 MHz)	396.28 mW
		LTE Band 66 (Channel Bandwidth: 1.4 MHz)	291.07 mW
		LTE Band 66 (Channel Bandwidth: 3 MHz)	308.32 mW
		LTE Band 66 (Channel Bandwidth: 5 MHz)	327.34 mW
		LTE Band 66 (Channel Bandwidth: 10 MHz)	348.34 mW
		LTE Band 66 (Channel Bandwidth: 15 MHz)	371.54 mW
		LTE Band 66 (Channel Bandwidth: 20 MHz)	399.02 mW
	NB-IoT	LTE Band 4	258.23 mW (BPSK) 324.34 mW (QPSK)
		LTE Band 66	283.79 mW (BPSK) 355.63 mW (QPSK)
Antenna Type	Dipole Antenna with 2 dBi gain		
Accessory Device	Refer to Note as below		
Data Cable Supplied	Refer to Note as below		

Note:

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

3.2 Configuration of System under Test



3.2.1 Description of Support Units

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

No.	Product	Brand	Model No.	Serial No.	FCC ID
1.	Adapter	N/A	N/A	N/A	N/A
2.	Radio Communication Analyzer	Anritsu	MT8821C	6201462755	N/A

No.	Signal Cable Description Of The Above Support Units
1.	N/A
2.	N/A

Note:

1. All power cords of the above support units are non-shielded (1.8m).
2. Item 1 was provided by client.

3.3 Test Mode Applicability and Tested Channel Detail

Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates, XYZ axis, and antenna ports

The worst case was found when positioned as the table below. Following channel(s) was (were) selected for the final test as listed below:

Band	ERP / EIRP	Radiated Emission
LTE Band 4	X-plane (Cat-M1) Z-plane (NB-IoT)	Z-axis
LTE Band 12	X-plane (Cat-M1) Z-plane (NB-IoT)	Z-axis
LTE Band 13	X-plane (Cat-M1) X-plane (NB-IoT)	Z-axis (Cat-M1) X-axis (NB-IoT)
LTE Band 66	X-plane (Cat-M1) Z-plane (NB-IoT)	Z-axis

Cat-M1

LTE Band 4

EUT Configure Mode	Test Item	Available Channel	Tested Channel	Channel Bandwidth	Modulation	Mode
-	EIRP	19957 to 20393	19957, 20175, 20393	1.4 MHz	QPSK, 16QAM	1 RB / 0 RB Offset
		19965 to 20385	19965, 20175, 20385	3 MHz	QPSK, 16QAM	1 RB / 0 RB Offset
		19975 to 20375	19975, 20175, 20375	5 MHz	QPSK, 16QAM	1 RB / 5 RB Offset
		20000 to 20350	20000, 20175, 20350	10 MHz	QPSK, 16QAM	1 RB / 0 RB Offset
		20025 to 20325	20025, 20175, 20325	15 MHz	QPSK, 16QAM	1 RB / 0 RB Offset
		20050 to 20300	20050, 20175, 20300	20 MHz	QPSK, 16QAM	1 RB / 0 RB Offset
-	Modulation characteristics	20000 to 20350	20175	10 MHz	QPSK, 16QAM	6 RB / 0 RB Offset
-	Frequency Stability	19957 to 20393	19957, 20393	1.4 MHz	QPSK	6 RB / 0 RB Offset
		19965 to 20385	19965, 20385	3 MHz	QPSK	6 RB / 0 RB Offset
		19975 to 20375	19975, 20375	5 MHz	QPSK	6 RB / 0 RB Offset
		20000 to 20350	20000, 20350	10 MHz	QPSK	6 RB / 0 RB Offset
		20025 to 20325	20025, 20325	15 MHz	QPSK	6 RB / 0 RB Offset
		20050 to 20300	20050, 20300	20 MHz	QPSK	6 RB / 0 RB Offset
-	Occupied Bandwidth	19957 to 20393	19957, 20175, 20393	1.4 MHz	QPSK, 16QAM	6 RB / 0 RB Offset
		19965 to 20385	19965, 20175, 20385	3 MHz	QPSK, 16QAM	6 RB / 0 RB Offset
		19975 to 20375	19975, 20175, 20375	5 MHz	QPSK, 16QAM	6 RB / 0 RB Offset
		20000 to 20350	20000, 20175, 20350	10 MHz	QPSK, 16QAM	6 RB / 0 RB Offset
		20025 to 20325	20025, 20175, 20325	15 MHz	QPSK, 16QAM	6 RB / 0 RB Offset
		20050 to 20300	20050, 20175, 20300	20 MHz	QPSK, 16QAM	6 RB / 0 RB Offset
-	Peak to Average Ratio	19957 to 20393	19957, 20175, 20393	1.4 MHz	QPSK, 16QAM	1 RB / 0 RB Offset
		19965 to 20385	19965, 20175, 20385	3 MHz	QPSK, 16QAM	1 RB / 0 RB Offset
		19975 to 20375	19975, 20175, 20375	5 MHz	QPSK, 16QAM	1 RB / 5 RB Offset
		20000 to 20350	20000, 20175, 20350	10 MHz	QPSK, 16QAM	1 RB / 0 RB Offset
		20025 to 20325	20025, 20175, 20325	15 MHz	QPSK, 16QAM	1 RB / 0 RB Offset
		20050 to 20300	20050, 20175, 20300	20 MHz	QPSK, 16QAM	1 RB / 0 RB Offset

EUT Configure Mode	Test Item	Available Channel	Tested Channel	Channel Bandwidth	Modulation	Mode
-	Band Edge	19957 to 20393	19957	1.4 MHz	QPSK	1 RB / 0 RB Offset
						6 RB / 0 RB Offset
			20393	1.4 MHz	QPSK	1 RB / 5 RB Offset
						6 RB / 0 RB Offset
		19965 to 20385	19965	3 MHz	QPSK	1 RB / 0 RB Offset
						6 RB / 0 RB Offset
			20385	3 MHz	QPSK	1 RB / 5 RB Offset
						6 RB / 0 RB Offset
		19975 to 20375	19975	5 MHz	QPSK	1 RB / 0 RB Offset
						6 RB / 0 RB Offset
			20375	5 MHz	QPSK	1 RB / 5 RB Offset
						6 RB / 0 RB Offset
		20000 to 20350	20000	10 MHz	QPSK	1 RB / 0 RB Offset
						6 RB / 0 RB Offset
			20350	10 MHz	QPSK	1 RB / 5 RB Offset
						6 RB / 0 RB Offset
		20025 to 20325	20025	15 MHz	QPSK	1 RB / 0 RB Offset
						6 RB / 0 RB Offset
			20325	15 MHz	QPSK	1 RB / 5 RB Offset
						6 RB / 0 RB Offset
		20050 to 20300	20050	20 MHz	QPSK	1 RB / 0 RB Offset
						6 RB / 0 RB Offset
			20300	20 MHz	QPSK	1 RB / 5 RB Offset
						6 RB / 0 RB Offset
-	Conducted Emission	19957 to 20393	19957, 20175, 20393	1.4 MHz	QPSK	1 RB / 0 RB Offset
		19965 to 20385	19965, 20175, 20385	3 MHz	QPSK	1 RB / 0 RB Offset
		19975 to 20375	19975, 20175, 20375	5 MHz	QPSK	1 RB / 5 RB Offset
		20000 to 20350	20000, 20175, 20350	10 MHz	QPSK	1 RB / 0 RB Offset
		20025 to 20325	20025, 20175, 20325	15 MHz	QPSK	1 RB / 0 RB Offset
		20050 to 20300	20050, 20175, 20300	20 MHz	QPSK	1 RB / 0 RB Offset
-	Radiated Emission	19957 to 20393	19957, 20175, 20393	1.4 MHz	QPSK	1 RB / 0 RB Offset
		19975 to 20375	19975, 20175, 20375	5 MHz	QPSK	1 RB / 5 RB Offset
		20050 to 20300	20050, 20175, 20300	20 MHz	QPSK	1 RB / 0 RB Offset

Note:

1. This device was tested under all bandwidths, RB configurations and modulations. The worst case was found in QPSK modulation. Therefore, only EIRP, modulation characteristics, occupied bandwidth and peak to average ratio items had been tested under QPSK, 16QAM mode, the other items were performed under QPSK mode only.
2. For radiated emission above 1 GHz, according to 3GPP 36.521 Section 6.6.3.1.4, choose the lowest, 5 MHz & highest channel bandwidth for final test.
3. For radiated emissions below 1 GHz, select the worst radiated emission channel for final testing.

LTE Band 12

EUT Configure Mode	Test Item	Available Channel	Tested Channel	Channel Bandwidth	Modulation	Mode
-	ERP	23017 to 23173	23017, 23095, 23173	1.4 MHz	QPSK, 16QAM	1 RB / 0 RB Offset
		23025 to 23165	23025, 23095, 23165	3 MHz	QPSK, 16QAM	1 RB / 0 RB Offset
		23035 to 23155	23035, 23095, 23155	5 MHz	QPSK, 16QAM	1 RB / 0 RB Offset
		23060 to 23130	23060, 23095, 23130	10 MHz	QPSK, 16QAM	1 RB / 5 RB Offset
-	Modulation characteristics	23060 to 23130	23095	10 MHz	QPSK, 16QAM	6 RB / 0 RB Offset
-	Frequency Stability	23017 to 23173	23017, 23173	1.4 MHz	QPSK	6 RB / 0 RB Offset
		23025 to 23165	23025, 23165	3 MHz	QPSK	6 RB / 0 RB Offset
		23035 to 23155	23035, 23155	5 MHz	QPSK	6 RB / 0 RB Offset
		23060 to 23130	23060, 23130	10 MHz	QPSK	6 RB / 0 RB Offset
-	Occupied Bandwidth	23017 to 23173	23017, 23095, 23173	1.4 MHz	QPSK, 16QAM	6 RB / 0 RB Offset
		23025 to 23165	23025, 23095, 23165	3 MHz	QPSK, 16QAM	6 RB / 0 RB Offset
		23035 to 23155	23035, 23095, 23155	5 MHz	QPSK, 16QAM	6 RB / 0 RB Offset
		23060 to 23130	23060, 23095, 23130	10 MHz	QPSK, 16QAM	6 RB / 0 RB Offset
-	Peak to Average Ratio	23017 to 23173	23017, 23095, 23173	1.4 MHz	QPSK, 16QAM	1 RB / 0 RB Offset
		23025 to 23165	23025, 23095, 23165	3 MHz	QPSK, 16QAM	1 RB / 0 RB Offset
		23035 to 23155	23035, 23095, 23155	5 MHz	QPSK, 16QAM	1 RB / 0 RB Offset
		23060 to 23130	23060, 23095, 23130	10 MHz	QPSK, 16QAM	1 RB / 5 RB Offset
-	Band Edge	23017 to 23173	23017	1.4 MHz	QPSK	1 RB / 0 RB Offset
						6 RB / 0 RB Offset
			23173	1.4 MHz	QPSK	1 RB / 5 RB Offset
						6 RB / 0 RB Offset
		23025 to 23165	23025	3 MHz	QPSK	1 RB / 0 RB Offset
						6 RB / 0 RB Offset
			23165	3 MHz	QPSK	1 RB / 5 RB Offset
						6 RB / 0 RB Offset
		23035 to 23155	23035	5 MHz	QPSK	1 RB / 0 RB Offset
						6 RB / 0 RB Offset
			23155	5 MHz	QPSK	1 RB / 5 RB Offset
						6 RB / 0 RB Offset
		23060 to 23130	23060	10 MHz	QPSK	1 RB / 0 RB Offset
						6 RB / 0 RB Offset
			23130	10 MHz	QPSK	1 RB / 5 RB Offset
						6 RB / 0 RB Offset
-	Conducted Emission	23017 to 23173	23017, 23095, 23173	1.4 MHz	QPSK	1 RB / 0 RB Offset
		23025 to 23165	23025, 23095, 23165	3 MHz	QPSK	1 RB / 0 RB Offset
		23035 to 23155	23035, 23095, 23155	5 MHz	QPSK	1 RB / 0 RB Offset
		23060 to 23130	23060, 23095, 23130	10 MHz	QPSK	1 RB / 5 RB Offset
-	Radiated Emission	23017 to 23173	23017, 23095, 23173	1.4 MHz	QPSK	1 RB / 0 RB Offset
		23035 to 23155	23035, 23095, 23155	5 MHz	QPSK	1 RB / 0 RB Offset
		23060 to 23130	23060, 23095, 23130	10 MHz	QPSK	1 RB / 5 RB Offset

Note:

1. This device was tested under all bandwidths, RB configurations and modulations. The worst case was found in QPSK modulation. Therefore, only EIRP, modulation characteristics, occupied bandwidth and peak to average ratio items had been tested under QPSK, 16QAM mode, the other items were performed under QPSK mode only.
2. For radiated emission above 1 GHz, according to 3GPP 36.521 Section 6.6.3.1.4, choose the lowest, 5 MHz & highest channel bandwidth for final test.
3. For radiated emissions below 1 GHz, select the worst radiated emission channel for final testing.

LTE Band 13

EUT Configure Mode	Test Item	Available Channel	Tested Channel	Channel Bandwidth	Modulation	Mode
-	ERP	23205 to 23255	23205, 23230, 23255	5 MHz	QPSK, 16QAM	1 RB / 0 RB Offset
		23230	23230	10 MHz	QPSK, 16QAM	1 RB / 0 RB Offset
-	Modulation characteristics	23230	23230	10 MHz	QPSK, 16QAM	6 RB / 0 RB Offset
-	Frequency Stability	23205 to 23255	23205, 23255	5 MHz	QPSK	1 RB / 0 RB Offset
		23230	23230	10 MHz	QPSK	1 RB / 0 RB Offset
-	Occupied Bandwidth	23205 to 23255	23205, 23230, 23255	5 MHz	QPSK, 16QAM	6 RB / 0 RB Offset
		23230	23230	10 MHz	QPSK, 16QAM	6 RB / 0 RB Offset
-	Peak to Average Ratio	23205 to 23255	23205, 23230, 23255	5 MHz	QPSK, 16QAM	1 RB / 0 RB Offset
		23230	23230	10 MHz	QPSK, 16QAM	1 RB / 0 RB Offset
-	Band Edge	23205 to 23255	23205	5 MHz	QPSK	1 RB / 0 RB Offset
						6 RB / 0 RB Offset
			23255	5 MHz	QPSK	1 RB / 5 RB Offset
						6 RB / 0 RB Offset
		23230	23230	10 MHz	QPSK	1 RB / 0 RB Offset
						6 RB / 0 RB Offset
			23230	10 MHz	QPSK	1 RB / 5 RB Offset
						6 RB / 0 RB Offset
-	Conducted Emission	23205 to 23255	23205, 23230, 23255	5 MHz	QPSK	1 RB / 0 RB Offset
		23230	23230	10 MHz	QPSK	1 RB / 0 RB Offset
-	Radiated Emission	23205 to 23255	23205, 23230, 23255	5 MHz	QPSK	1 RB / 0 RB Offset
		23230	23230	10 MHz	QPSK	1 RB / 0 RB Offset

Note:

1. This device was tested under all bandwidths, RB configurations and modulations. The worst case was found in QPSK modulation. Therefore, only EIRP, modulation characteristics, occupied bandwidth and peak to average ratio items had been tested under QPSK, 16QAM mode, the other items were performed under QPSK mode only.
2. For radiated emission above 1 GHz, according to 3GPP 36.521 Section 6.6.3.1.4, choose the lowest, 5 MHz & highest channel bandwidth for final test.
3. For radiated emissions below 1 GHz, select the worst radiated emission channel for final testing.

LTE Band 66

EUT Configure Mode	Test Item	Available Channel	Tested Channel	Channel Bandwidth	Modulation	Mode
-	EIRP	131979 to 132665	131979, 132322, 132665	1.4 MHz	QPSK, 16QAM	1 RB / 0 RB Offset
		131987 to 132657	131987, 132322, 132657	3 MHz	QPSK, 16QAM	1 RB / 5 RB Offset
		131997 to 132647	131997, 132322, 132647	5 MHz	QPSK, 16QAM	1 RB / 0 RB Offset
		132022 to 132622	132022, 132322, 132622	10 MHz	QPSK, 16QAM	1 RB / 0 RB Offset
		132047 to 132597	132047, 132322, 132597	15 MHz	QPSK, 16QAM	3 RB / 0 RB Offset
		132072 to 132572	132072, 132322, 132572	20 MHz	QPSK, 16QAM	1 RB / 0 RB Offset
-	Modulation characteristics	132022 to 132622	132322	10 MHz	QPSK, 16QAM	6 RB / 0 RB Offset
-	Frequency Stability	131979 to 132665	131979, 132665	1.4 MHz	QPSK	6 RB / 0 RB Offset
		131987 to 132657	131987, 132657	3 MHz	QPSK	6 RB / 0 RB Offset
		131997 to 132647	131997, 132647	5 MHz	QPSK	6 RB / 0 RB Offset
		132022 to 132622	132022, 132622	10 MHz	QPSK	6 RB / 0 RB Offset
		132047 to 132597	132047, 132597	15 MHz	QPSK	6 RB / 0 RB Offset
		132072 to 132572	132072, 132572	20 MHz	QPSK	6 RB / 0 RB Offset
-	Occupied Bandwidth	131979 to 132665	131979, 132322, 132665	1.4 MHz	QPSK, 16QAM	6 RB / 0 RB Offset
		131987 to 132657	131987, 132322, 132657	3 MHz	QPSK, 16QAM	6 RB / 0 RB Offset
		131997 to 132647	131997, 132322, 132647	5 MHz	QPSK, 16QAM	6 RB / 0 RB Offset
		132022 to 132622	132022, 132322, 132622	10 MHz	QPSK, 16QAM	6 RB / 0 RB Offset
		132047 to 132597	132047, 132322, 132597	15 MHz	QPSK, 16QAM	6 RB / 0 RB Offset
		132072 to 132572	132072, 132322, 132572	20 MHz	QPSK, 16QAM	6 RB / 0 RB Offset
-	Peak to Average Ratio	131979 to 132665	131979, 132322, 132665	1.4 MHz	QPSK, 16QAM	1 RB / 0 RB Offset
		131987 to 132657	131987, 132322, 132657	3 MHz	QPSK, 16QAM	1 RB / 5 RB Offset
		131997 to 132647	131997, 132322, 132647	5 MHz	QPSK, 16QAM	1 RB / 0 RB Offset
		132022 to 132622	132022, 132322, 132622	10 MHz	QPSK, 16QAM	1 RB / 0 RB Offset
		132047 to 132597	132047, 132322, 132597	15 MHz	QPSK, 16QAM	3 RB / 0 RB Offset
		132072 to 132572	132072, 132322, 132572	20 MHz	QPSK, 16QAM	1 RB / 0 RB Offset

EUT Configure Mode	Test Item	Available Channel	Tested Channel	Channel Bandwidth	Modulation	Mode
-	Band Edge	131979 to 132665	131979	1.4 MHz	QPSK	1 RB / 0 RB Offset
						6 RB / 0 RB Offset
			132665	1.4 MHz	QPSK	1 RB / 5 RB Offset
						6 RB / 0 RB Offset
		131987 to 132657	131987	3 MHz	QPSK	1 RB / 0 RB Offset
						6 RB / 0 RB Offset
			132657	3 MHz	QPSK	1 RB / 5 RB Offset
						6 RB / 0 RB Offset
		131997 to 132647	131997	5 MHz	QPSK	1 RB / 0 RB Offset
						6 RB / 0 RB Offset
			132647	5 MHz	QPSK	1 RB / 5 RB Offset
						6 RB / 0 RB Offset
		132022 to 132622	132022	10 MHz	QPSK	1 RB / 0 RB Offset
						6 RB / 0 RB Offset
			132622	10 MHz	QPSK	1 RB / 5 RB Offset
						6 RB / 0 RB Offset
		132047 to 132597	132047	15 MHz	QPSK	1 RB / 0 RB Offset
						6 RB / 0 RB Offset
			132597	15 MHz	QPSK	1 RB / 5 RB Offset
						6 RB / 0 RB Offset
		132072 to 132572	132072	20 MHz	QPSK	1 RB / 0 RB Offset
						6 RB / 0 RB Offset
			132572	20 MHz	QPSK	1 RB / 5 RB Offset
						6 RB / 0 RB Offset
-	Conducted Emission	131979 to 132665	131979, 132322, 132665	1.4 MHz	QPSK	1 RB / 0 RB Offset
		131987 to 132657	131987, 132322, 132657	3 MHz	QPSK	1 RB / 5 RB Offset
		131997 to 132647	131997, 132322, 132647	5 MHz	QPSK	1 RB / 0 RB Offset
		132022 to 132622	132022, 132322, 132622	10 MHz	QPSK	1 RB / 0 RB Offset
		132047 to 132597	132047, 132322, 132597	15 MHz	QPSK	3 RB / 0 RB Offset
		132072 to 132572	132072, 132322, 132572	20 MHz	QPSK	1 RB / 0 RB Offset
-	Radiated Emission	131979 to 132665	131979, 132322, 132665	1.4 MHz	QPSK	1 RB / 0 RB Offset
		131997 to 132647	131997, 132322, 132647	5 MHz	QPSK	1 RB / 0 RB Offset
		132072 to 132572	132072, 132322, 132572	20 MHz	QPSK	1 RB / 0 RB Offset

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

NB-IoT

LTE Band 4

EUT Configure Mode	Test Item	Available Channel	Tested Channel	Sub-carrier Bandwidth	Modulation	N_{tones}
-	EIRP	19952 to 20398	19952, 20175, 20398	3.75 kHz	BPSK	1@47
				15 kHz	QPSK	3@3
-	Modulation Characteristics	19952 to 20398	20175	3.75 kHz	BPSK	1@0
				15 kHz	QPSK	12@0
-	Frequency Stability	19952 to 20398	19952, 20398	15 kHz	QPSK	3@3
-	Occupied Bandwidth	19952 to 20398	19952	3.75 kHz	BPSK	1@0
				15 kHz	QPSK	1@0
						3@3
						12@0
			20195	3.75 kHz	BPSK	1@0
				15 kHz	QPSK	1@0
						3@3
						12@0
			20398	3.75 kHz	BPSK	1@47
				15 kHz	QPSK	1@11
						3@3
						12@0
-	Peak to Average Ratio	19952 to 20398	20195	3.75 kHz	BPSK	1@0
				15 kHz	QPSK	1@0
						3@3
-	Band Edge	19952 to 20398	19952	3.75 kHz	BPSK	1@0
				15 kHz	QPSK	1@0
						3@3
						12@0
			20398	3.75 kHz	BPSK	1@47
				15 kHz	QPSK	1@11
						3@3
						12@0
-	Conducted Emission	19952 to 20398	19952, 20175, 20398	15 kHz	QPSK	3@3
-	Radiated Emission	19952 to 20398	19952, 20175, 20398	15 kHz	QPSK	3@3

Note:

1. Selection is tested with Stand-alone, In-band and Guard-band, the worst case was found in Stand-alone.
2. For radiated emission and conducted emission test, pre-tested BPSK, QPSK modulation type and found QPSK was the worst, therefore chosen for the final test.
3. The emission measurement was based on the worst maximum conducted power.

LTE Band 12

EUT Configure Mode	Test Item	Available Channel	Tested Channel	Sub-carrier Bandwidth	Modulation	N_{tones}
-	ERP	23012 to 23178	23012, 23095, 23178	3.75 kHz	BPSK	1@47
				15 kHz	QPSK	3@3
-	Modulation Characteristics	23012 to 23178	23095	3.75 kHz	BPSK	1@0
				15 kHz	QPSK	12@0
-	Frequency Stability	23012 to 23178	23012, 23178	15 kHz	QPSK	3@3
-	Occupied Bandwidth	23012 to 23178	23012	3.75 kHz	BPSK	1@0
				15 kHz	QPSK	1@0
						3@3
						12@0
			23095	3.75 kHz	BPSK	1@0
				15 kHz	QPSK	1@0
						3@3
						12@0
			23178	3.75 kHz	BPSK	1@47
				15 kHz	QPSK	1@11
						3@3
						12@0
-	Band Edge	23012 to 23178	23012	3.75 kHz	BPSK	1@0
				15 kHz	QPSK	1@0
						3@3
						12@0
			23178	3.75 kHz	BPSK	1@47
				15 kHz	QPSK	1@11
						3@3
						12@0
-	Peak to Average Ratio	23012 to 23178	23095	3.75 kHz	BPSK	1@0
				15 kHz	QPSK	1@0
						3@3
-	Conducted Emission	23012 to 23178	23012, 23095, 23178	15 kHz	QPSK	3@3
-	Radiated Emission	23012 to 23178	23012, 23095, 23178	15 kHz	QPSK	3@3

Note:

1. Selection is tested with Stand-alone, In-band and Guard-band, the worst case was found in Stand-alone.
2. For radiated emission and conducted emission test, pre-tested BPSK, QPSK modulation type and found QPSK was the worst, therefore chosen for the final test.
3. The emission measurement was based on the worst maximum conducted power.

LTE Band 13

EUT Configure Mode	Test Item	Available Channel	Tested Channel	Sub-carrier Bandwidth	Modulation	N_{tones}
-	ERP	23182 to 23278	23182, 23230, 23278	3.75 kHz	BPSK	1@47
				15 kHz	QPSK	3@3
-	Modulation Characteristics	23182 to 23278	23230	3.75 kHz	BPSK	1@0
				15 kHz	QPSK	12@0
-	Frequency Stability	23182 to 23278	23182, 23278	15 kHz	QPSK	3@3
-	Occupied Bandwidth	23182 to 23278	23182	3.75 kHz	BPSK	1@0
				15 kHz	QPSK	1@0
						3@3
						12@0
			23230	3.75 kHz	BPSK	1@0
				15 kHz	QPSK	1@0
						3@3
						12@0
			23278	3.75 kHz	BPSK	1@47
				15 kHz	QPSK	1@11
						3@3
						12@0
-	Band Edge	23182 to 23278	23182	3.75 kHz	BPSK	1@0
				15 kHz	QPSK	1@0
						3@3
						12@0
			23278	3.75 kHz	BPSK	1@0
				15 kHz	QPSK	1@11
						3@3
						12@0
-	Peak to Average Ratio	23182 to 23278	23230	3.75 kHz	BPSK	1@0
				15 kHz	QPSK	1@0
						3@3
-	Conducted Emission	23182 to 23278	23182, 23230, 23278	15 kHz	QPSK	3@3
-	Radiated Emission	23182 to 23278	23182, 23230, 23278	15 kHz	QPSK	3@3

Note:

1. Selection is tested with Stand-alone, In-band and Guard-band, the worst case was found in Stand-alone.
2. For radiated emission and conducted emission test, pre-tested BPSK, QPSK modulation type and found QPSK was the worst, therefore chosen for the final test.
3. The emission measurement was based on the worst maximum conducted power.

LTE Band 66

EUT Configure Mode	Test Item	Available Channel	Tested Channel	Sub-carrier Bandwidth	Modulation	N_{tones}
-	EIRP	131972 to 132670	131972, 132322, 132670	3.75 kHz	BPSK	1@0
				15 kHz	QPSK	3@3
-	Modulation Characteristics	131972 to 132670	132322	3.75 kHz	BPSK	1@0
				15 kHz	QPSK	12@0
-	Frequency Stability	131972 to 132670	131972, 132670	15 kHz	QPSK	3@3
-	Occupied Bandwidth	131972 to 132670	131972	3.75 kHz	BPSK	1@0
				15 kHz	QPSK	1@0
						3@3
						12@0
			132322	3.75 kHz	BPSK	1@0
				15 kHz	QPSK	1@0
						3@3
						12@0
			132670	3.75 kHz	BPSK	1@47
				15 kHz	QPSK	1@11
						3@3
						12@0
-	Peak to Average Ratio	131972 to 132670	132322	3.75 kHz	BPSK	1@0
				15 kHz	QPSK	1@0
						3@3
-	Band Edge	131972 to 132670	131972	3.75 kHz	BPSK	1@0
				15 kHz	QPSK	1@0
						3@3
						12@0
			132670	3.75 kHz	BPSK	1@0
				15 kHz	QPSK	1@11
						3@3
						12@0
-	Conducted Emission	131972 to 132670	131972, 132322, 132670	15 kHz	QPSK	3@3
-	Radiated Emission	131972 to 132670	131972, 132322, 132670	15 kHz	QPSK	3@3

Note:

1. Selection is tested with Stand-alone, In-band and Guard-band, the worst case was found in Stand-alone.
2. For radiated emission and conducted emission test, pre-tested BPSK, QPSK modulation type and found QPSK was the worst, therefore chosen for the final test.
3. The emission measurement was based on the worst maximum conducted power.

Test Condition:

Test Item	Environmental Conditions	Input Power	Tested By
ERP / EIRP	25 deg. C, 65 % RH	12 Vdc	Jisyong Wang
Modulation Characteristics	25 deg. C, 65 % RH	12 Vdc	Getaz Yang
Frequency Stability	25 deg. C, 65 % RH	12 Vdc	Getaz Yang
Occupied Bandwidth	25 deg. C, 65 % RH	12 Vdc	Getaz Yang
Band Edge	25 deg. C, 65 % RH	12 Vdc	Getaz Yang
Peak to Average Ratio	25 deg. C, 65 % RH	12 Vdc	Getaz Yang
Conducted Emission	25 deg. C, 65 % RH	12 Vdc	Getaz Yang
Radiated Emission	25 deg. C, 65 % RH	12 Vdc	Jisyong Wang

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 and references:

Test Standard:
FCC 47 CFR Part 2
FCC 47 CFR Part 27
ANSI 63.26-2015

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

References Test Guidance:
KDB 971168 D01 Power Meas License Digital Systems v03r01
ANSI/TIA/EIA-603-E 2016

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

4 Test Types and Results

4.1 Output Power Measurement

4.1.1 Limits of Output Power Measurement

Fixed, mobile, and portable (hand-held) stations operating in the 1710–1755 MHz band and mobile and portable stations operating in the 1695-1710 MHz and 1755-1780 MHz bands are limited to 1 watt EIRP.

Portable stations (hand-held devices) operating in the 746-757 MHz, 776-788 MHz and 805-806 MHz band are limited to 3 watts ERP

Portable stations (hand-held device) operating in the 600 MHz uplink band and the 698-746 MHz band, and fixed and mobile stations in the 600 MHz uplink band are limited to 3 watts ERP.

4.1.2 Test Procedures

EIRP / ERP Measurement:

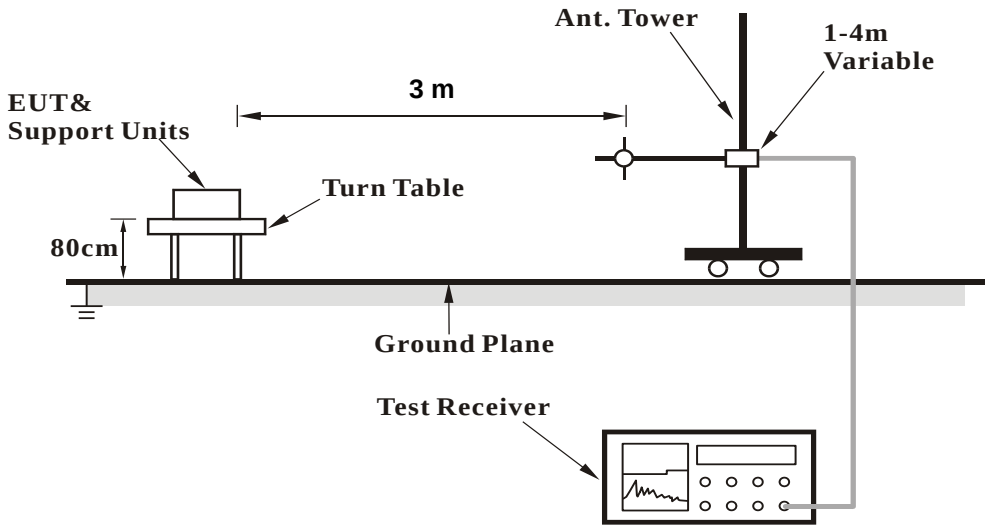
a. All measurements were done at low, middle and high operational frequency range. RBW is 10 MHz、20 MHz for LTE mode, and VBW ≥ 3 x RBW.
b. Substitution method is used for E.I.R.P measurement. In the semi-anechoic chamber, EUT placed on the 0.8 m (below or equal 1 GHz) and/or 1.5 m (above 1 GHz) height of Turn Table, rotated the table around 360 degrees to search the maximum radiation power and receiver antenna shall be rotated vertical and horizontal polarization and moved height from 1 m to 4 m to find the maximum polar radiated power. The “Read Value” is the spectrum reading the maximum power value.
c. 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 - 2.15 dB.

Conducted Power Measurement:

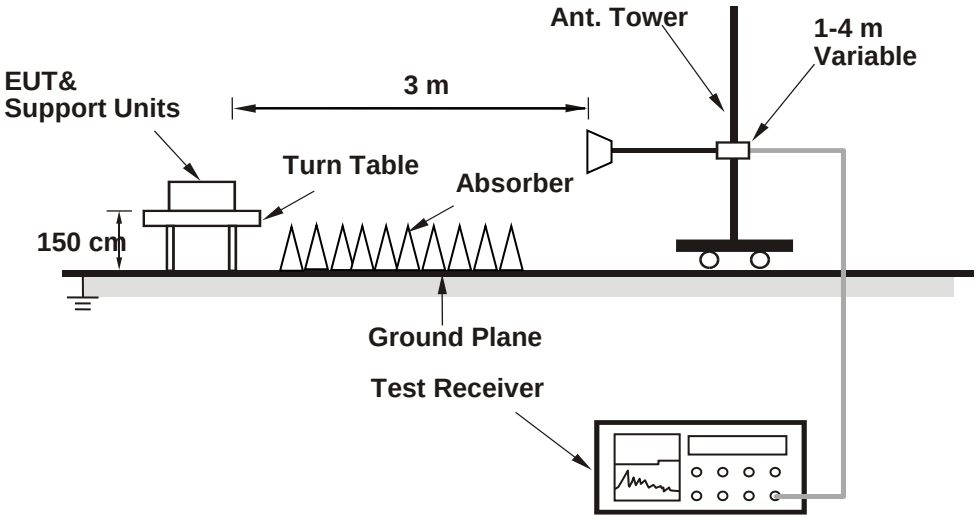
a. The EUT was set up for the maximum power with LTE link data modulation and link up with simulator.
b. Set the EUT to transmit under low, middle and high channel and record the power level shown on simulator.

4.1.3 Test Setup

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



<Radiated Emission above 1 GHz>



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

Conducted Power Measurement:

4.1.4 Test Results

Conducted Output Power (dBm)

Cat-M1

LTE Band 4								
BW (MHz): 1.4								
Test Frequency ID	N_{UL}	Frequency of Uplink (MHz)	Test Configuration Initial of Power				EUT	
			Modulation	RB Size	RB Offset	Narrowband Index	Cell Power (dBm/15 kHz)	Power (dBm)
Low Range	19957	1710.7	QPSK	1	0	0	-85	24.02
			QPSK	1	5	0	-85	23.62
			QPSK	3	3	0	-85	21.88
			QPSK	6	0	0	-85	21.03
			16QAM	1	0	0	-85	21.51
			16QAM	1	5	0	-85	21.57
			16QAM	3	0	0	-85	20.7
			16QAM	5	0	0	-85	20.35
Mid. Range	20175	1732.5	QPSK	1	0	0	-85	23.97
			QPSK	1	5	0	-85	23.54
			QPSK	3	3	0	-85	21.91
			QPSK	6	0	0	-85	21.05
			16QAM	1	0	0	-85	21.47
			16QAM	1	5	0	-85	21.56
			16QAM	3	0	0	-85	20.74
			16QAM	5	0	0	-85	20.41
High Range	20393	1754.3	QPSK	1	0	0	-85	23.79
			QPSK	1	5	0	-85	23.38
			QPSK	3	3	0	-85	21.8
			QPSK	6	0	0	-85	20.89
			16QAM	1	0	0	-85	21.3
			16QAM	1	5	0	-85	21.42
			16QAM	3	0	0	-85	20.6
			16QAM	5	0	0	-85	20.31

LTE Band 4								
BW (MHz): 3								
Test Frequency ID	N_{UL}	Frequency of Uplink (MHz)	Test Configuration Initial of Power				EUT	
			Modulation	RB Size	RB Offset	Narrowband Index	Cell Power (dBm/15 kHz)	Power (dBm)
Low Range	19965	1711.5	QPSK	1	0	0	-85	23.01
			QPSK	1	5	0	-85	23
			QPSK	1	0	1	-85	22.92
			QPSK	1	5	1	-85	22.98
			QPSK	3	3	0	-85	22.01
			QPSK	3	3	1	-85	21.88
			QPSK	6	0	0	-85	21.1
			QPSK	6	0	1	-85	21.01
			16QAM	1	0	0	-85	21.2
			16QAM	1	5	0	-85	21.21
			16QAM	1	0	1	-85	22.94
			16QAM	1	5	1	-85	22.92
			16QAM	3	0	0	-85	20.64
			16QAM	3	3	1	-85	20.62
			16QAM	5	0	0	-85	20.45
			16QAM	5	0	1	-85	20.4
Mid. Range	20175	1732.5	QPSK	1	0	0	-85	22.88
			QPSK	1	5	0	-85	22.84
			QPSK	1	0	1	-85	22.9
			QPSK	1	5	1	-85	22.9
			QPSK	3	3	0	-85	21.91
			QPSK	3	3	1	-85	21.89
			QPSK	6	0	0	-85	21.02
			QPSK	6	0	1	-85	21.03
			16QAM	1	0	0	-85	21.07
			16QAM	1	5	0	-85	21.05
			16QAM	1	0	1	-85	21.11
			16QAM	1	5	1	-85	20.9
			16QAM	3	0	0	-85	20.56
			16QAM	3	3	1	-85	20.51
			16QAM	5	0	0	-85	21.28
			16QAM	5	0	1	-85	21.19
High Range	20385	1753.5	QPSK	1	0	0	-85	22.65
			QPSK	1	5	0	-85	22.64
			QPSK	1	0	1	-85	22.75
			QPSK	1	5	1	-85	22.77
			QPSK	3	3	0	-85	21.67
			QPSK	3	3	1	-85	21.84
			QPSK	6	0	0	-85	20.84
			QPSK	6	0	1	-85	20.96
			16QAM	1	0	0	-85	20.92
			16QAM	1	5	0	-85	20.94
			16QAM	1	0	1	-85	21.02
			16QAM	1	5	1	-85	21.06
			16QAM	3	0	0	-85	20.52
			16QAM	3	3	1	-85	20.83
			16QAM	5	0	0	-85	20.38
			16QAM	5	0	1	-85	20.4

LTE Band 4								
BW (MHz): 5								
Test Frequency ID	N_{UL}	Frequency of Uplink (MHz)	Test Configuration Initial of Power				EUT	
			Modulation	RB Size	RB Offset	Narrowband Index	Cell Power (dBm/15 kHz)	Power (dBm)
Low Range	19975	1712.5	QPSK	1	0	0	-85	22.84
			QPSK	1	5	0	-85	22.82
			QPSK	1	0	1	-85	22.76
			QPSK	1	5	1	-85	22.75
			QPSK	1	0	3	-85	22.84
			QPSK	1	5	3	-85	22.87
			QPSK	3	0	0	-85	21.82
			QPSK	3	3	3	-85	22.06
			QPSK	6	0	0	-85	21.99
			QPSK	6	0	1	-85	21.88
			QPSK	6	0	3	-85	22.03
			16QAM	1	0	0	-85	23.19
			16QAM	1	5	0	-85	23.26
			16QAM	1	0	1	-85	22.41
			16QAM	1	5	1	-85	22.9
			16QAM	1	0	3	-85	22.97
			16QAM	1	5	3	-85	22.32
			16QAM	3	0	0	-85	21.78
			16QAM	3	3	3	-85	21.91
			16QAM	5	0	0	-85	20.92
			16QAM	5	0	1	-85	20.54
			16QAM	5	0	3	-85	20.67
Mid. Range	20175	1732.5	QPSK	1	0	0	-85	22.86
			QPSK	1	5	0	-85	22.9
			QPSK	1	0	1	-85	22.92
			QPSK	1	5	1	-85	22.9
			QPSK	1	0	3	-85	23.07
			QPSK	1	5	3	-85	23.03
			QPSK	3	0	0	-85	21.88
			QPSK	3	3	3	-85	21.99
			QPSK	6	0	0	-85	21.75
			QPSK	6	0	1	-85	21.82
			QPSK	6	0	3	-85	21.96
			16QAM	1	0	0	-85	23.07
			16QAM	1	5	0	-85	23.06
			16QAM	1	0	1	-85	23.07
			16QAM	1	5	1	-85	22.23
			16QAM	1	0	3	-85	23.05
			16QAM	1	5	3	-85	22.3
			16QAM	3	0	0	-85	21.84
			16QAM	3	3	3	-85	21.95
			16QAM	5	0	0	-85	20.56
			16QAM	5	0	1	-85	20.51
			16QAM	5	0	3	-85	20.5

LTE Band 4								
BW (MHz): 5								
Test Frequency ID	N_{UL}	Frequency of Uplink (MHz)	Test Configuration Initial of Power				EUT	
			Modulation	RB Size	RB Offset	Narrowband Index	Cell Power (dBm/15 kHz)	Power (dBm)
High Range	20375	1752.5	QPSK	1	0	0	-85	22.75
			QPSK	1	5	0	-85	23.04
			QPSK	1	0	1	-85	22.98
			QPSK	1	5	1	-85	22.79
			QPSK	1	0	3	-85	22.98
			QPSK	1	5	3	-85	22.74
			QPSK	3	0	0	-85	21.86
			QPSK	3	3	3	-85	22.03
			QPSK	6	0	0	-85	21.9
			QPSK	6	0	1	-85	21.87
			QPSK	6	0	3	-85	22.07
			16QAM	1	0	0	-85	22.26
			16QAM	1	5	0	-85	22.89
			16QAM	1	0	1	-85	22.23
			16QAM	1	5	1	-85	22.19
			16QAM	1	0	3	-85	22.22
			16QAM	1	5	3	-85	22.3
			16QAM	3	0	0	-85	21.65
			16QAM	3	3	3	-85	22.03
			16QAM	5	0	0	-85	20.51
			16QAM	5	0	1	-85	20.52
			16QAM	5	0	3	-85	20.51

LTE Band 4								
BW (MHz): 10								
Test Frequency ID	N_{UL}	Frequency of Uplink (MHz)	Test Configuration Initial of Power				EUT	
			Modulation	RB Size	RB Offset	Narrowband Index	Cell Power (dBm/15 kHz)	Power (dBm)
Low Range	20000	1715	QPSK	1	0	0	-85	22.82
			QPSK	1	5	0	-85	23.05
			QPSK	1	0	3	-85	23.06
			QPSK	1	5	3	-85	22.94
			QPSK	1	0	7	-85	22.88
			QPSK	1	5	7	-85	22.93
			QPSK	4	0	0	-85	22.95
			QPSK	4	2	7	-85	22.90
			QPSK	6	0	0	-85	21.87
			QPSK	6	0	7	-85	22.01
			16QAM	1	0	0	-85	23.11
			16QAM	1	5	0	-85	23.06
			16QAM	1	0	3	-85	23.07
			16QAM	1	5	3	-85	23.08
			16QAM	1	0	7	-85	23.04
			16QAM	1	5	7	-85	23.01
			16QAM	4	2	0	-85	22.24
			16QAM	4	2	7	-85	22.29
			16QAM	5	0	0	-85	21.65
			16QAM	5	0	7	-85	21.74
Mid. Range	20175	1732.5	QPSK	1	0	0	-85	23.00
			QPSK	1	5	0	-85	23.04
			QPSK	1	0	3	-85	22.97
			QPSK	1	5	3	-85	22.91
			QPSK	1	0	7	-85	22.95
			QPSK	1	5	7	-85	22.86
			QPSK	4	0	0	-85	22.96
			QPSK	4	2	7	-85	22.95
			QPSK	6	0	0	-85	22.00
			QPSK	6	0	7	-85	21.98
			16QAM	1	0	0	-85	23.04
			16QAM	1	5	0	-85	22.52
			16QAM	1	0	3	-85	23.13
			16QAM	1	5	3	-85	23.08
			16QAM	1	0	7	-85	22.13
			16QAM	1	5	7	-85	23.03
			16QAM	4	2	0	-85	22.25
			16QAM	4	2	7	-85	22.19
			16QAM	5	0	0	-85	21.63
			16QAM	5	0	7	-85	21.78
High Range	20350	1750	QPSK	1	0	0	-85	22.80
			QPSK	1	5	0	-85	22.82
			QPSK	1	5	7	-85	22.83
			QPSK	1	0	3	-85	22.79
			QPSK	1	5	3	-85	22.83
			QPSK	1	0	7	-85	22.82
			QPSK	4	0	0	-85	22.77
			QPSK	4	2	7	-85	22.84
			QPSK	6	0	0	-85	21.96
			QPSK	6	0	7	-85	21.93
			16QAM	1	0	0	-85	22.99
			16QAM	1	5	0	-85	23.02
			16QAM	1	0	3	-85	22.21
			16QAM	1	5	3	-85	22.06
			16QAM	1	0	7	-85	22.03
			16QAM	1	5	7	-85	22.05
			16QAM	4	2	0	-85	22.16
			16QAM	4	2	7	-85	23.05
			16QAM	5	0	0	-85	21.72
			16QAM	5	0	7	-85	21.63

LTE Band 4								
BW (MHz): 15								
Test Frequency ID	N_{UL}	Frequency of Uplink (MHz)	Test Configuration Initial of Power				EUT	
			Modulation	RB Size	RB Offset	Narrowband Index	Cell Power (dBm/15 kHz)	Power (dBm)
Low Range	20025	1717.5	QPSK	1	0	0	-85	22.91
			QPSK	1	5	0	-85	23.1
			QPSK	1	0	5	-85	23.13
			QPSK	1	5	5	-85	23.02
			QPSK	1	0	11	-85	22.96
			QPSK	1	5	11	-85	23
			QPSK	3	0	0	-85	22.99
			QPSK	3	3	11	-85	22.97
			QPSK	6	0	0	-85	21.97
			QPSK	6	0	11	-85	22.06
			16QAM	1	0	0	-85	23.21
			16QAM	1	5	0	-85	23.17
			16QAM	1	0	5	-85	23.19
			16QAM	1	5	5	-85	23.15
			16QAM	1	0	11	-85	23.16
			16QAM	1	5	11	-85	23.08
			16QAM	3	0	0	-85	22.33
			16QAM	3	3	11	-85	22.36
			16QAM	5	0	0	-85	21.72
			16QAM	5	0	11	-85	21.81
Mid. Range	20175	1732.5	QPSK	1	0	0	-85	23.04
			QPSK	1	5	0	-85	23.09
			QPSK	1	0	5	-85	23.04
			QPSK	1	5	5	-85	22.99
			QPSK	1	0	11	-85	23.01
			QPSK	1	5	11	-85	22.95
			QPSK	3	0	0	-85	23.02
			QPSK	3	3	11	-85	23.02
			QPSK	6	0	0	-85	22.09
			QPSK	6	0	11	-85	22.09
			16QAM	1	0	0	-85	23.11
			16QAM	1	5	0	-85	22.6
			16QAM	1	0	5	-85	23.21
			16QAM	1	5	5	-85	23.18
			16QAM	1	0	11	-85	22.19
			16QAM	1	5	11	-85	23.12
			16QAM	3	0	0	-85	22.29
			16QAM	3	3	11	-85	22.27
			16QAM	5	0	0	-85	21.69
			16QAM	5	0	11	-85	21.86
High Range	20325	1747.5	QPSK	1	0	0	-85	22.85
			QPSK	1	5	11	-85	22.92
			QPSK	1	0	5	-85	22.9
			QPSK	1	5	5	-85	22.87
			QPSK	1	0	11	-85	22.93
			QPSK	3	0	0	-85	22.85
			QPSK	3	3	11	-85	22.94
			QPSK	6	0	0	-85	22.01
			QPSK	6	0	11	-85	22.05
			16QAM	1	0	0	-85	23.05
			16QAM	1	5	0	-85	23.11
			16QAM	1	0	5	-85	22.29
			16QAM	1	5	5	-85	22.14
			16QAM	1	0	11	-85	22.12
			16QAM	1	5	11	-85	22.13
			16QAM	3	0	0	-85	22.21
			16QAM	3	3	11	-85	23.14
			16QAM	5	0	0	-85	21.8
			16QAM	5	0	11	-85	21.69

LTE Band 4								
BW (MHz): 20								
Test Frequency ID	N_{UL}	Frequency of Uplink (MHz)	Test Configuration Initial of Power				EUT	
			Modulation	RB Size	RB Offset	Narrowband Index	Cell Power (dBm/15 kHz)	Power (dBm)
Low Range	20050	1720	QPSK	1	0	0	-85	24.02
			QPSK	1	5	0	-85	23.54
			QPSK	1	0	7	-85	23.59
			QPSK	1	5	7	-85	23.56
			QPSK	1	0	15	-85	23.52
			QPSK	1	5	15	-85	23.76
			QPSK	3	0	0	-85	23.78
			QPSK	3	3	15	-85	23.7
			QPSK	6	0	0	-85	23.73
			QPSK	6	0	15	-85	23.72
			16QAM	1	0	0	-85	23.64
			16QAM	1	5	0	-85	23.7
			16QAM	1	0	7	-85	23.65
			16QAM	1	5	7	-85	23.73
			16QAM	1	0	15	-85	23.67
			16QAM	1	5	15	-85	23.87
			16QAM	3	0	0	-85	23.52
			16QAM	3	3	15	-85	23.58
			16QAM	5	0	0	-85	23.49
			16QAM	5	0	15	-85	23.69
Mid. Range	20175	1732.5	QPSK	1	0	0	-85	24.12
			QPSK	1	5	0	-85	23.48
			QPSK	1	0	7	-85	23.58
			QPSK	1	5	7	-85	23.62
			QPSK	1	0	15	-85	23.5
			QPSK	1	5	15	-85	23.45
			QPSK	3	0	0	-85	23.61
			QPSK	3	3	15	-85	23.63
			QPSK	6	0	0	-85	23.79
			QPSK	6	0	15	-85	23.73
			16QAM	1	0	0	-85	23.76
			16QAM	1	5	0	-85	23.81
			16QAM	1	0	7	-85	23.62
			16QAM	1	5	7	-85	23.75
			16QAM	1	0	15	-85	23.72
			16QAM	1	5	15	-85	23.53
			16QAM	3	0	0	-85	23.7
			16QAM	3	3	15	-85	23.77
			16QAM	5	0	0	-85	23.51
			16QAM	5	0	15	-85	23.44
High Range	20300	1745	QPSK	1	0	0	-85	24.11
			QPSK	1	5	0	-85	23.76
			QPSK	1	0	7	-85	23.53
			QPSK	1	5	7	-85	23.71
			QPSK	1	0	15	-85	23.53
			QPSK	1	5	15	-85	23.53
			QPSK	3	0	0	-85	23.67
			QPSK	3	3	15	-85	23.29
			QPSK	6	0	0	-85	23.59
			QPSK	6	0	15	-85	23.46
			16QAM	1	0	0	-85	23.72
			16QAM	1	5	0	-85	23.86
			16QAM	1	0	7	-85	23.63
			16QAM	1	5	7	-85	23.71
			16QAM	1	0	15	-85	23.19
			16QAM	1	5	15	-85	23.11
			16QAM	3	0	0	-85	23.51
			16QAM	3	3	15	-85	23.39
			16QAM	5	0	0	-85	23.58
			16QAM	5	0	15	-85	23.32

LTE Band 12								
BW (MHz): 1.4								
Test Frequency ID	N_{UL}	Frequency of Uplink (MHz)	Test Configuration Initial of Power				EUT	
			Modulation	RB Size	RB Offset	Narrowband Index	Cell Power (dBm/15 kHz)	Power (dBm)
Low Range	23017	699.7	QPSK	1	0	0	-85	23.81
			QPSK	1	5	0	-85	23.68
			QPSK	3	3	0	-85	22.08
			QPSK	6	0	0	-85	21.18
			16QAM	1	0	0	-85	23.5
			16QAM	1	5	0	-85	22.73
			16QAM	3	0	0	-85	22.05
			16QAM	5	0	0	-85	22.01
Mid. Range	23095	707.5	QPSK	1	0	0	-85	23.82
			QPSK	1	5	0	-85	23.69
			QPSK	3	3	0	-85	22.1
			QPSK	6	0	0	-85	21.19
			16QAM	1	0	0	-85	23.51
			16QAM	1	5	0	-85	23.75
			16QAM	3	0	0	-85	21.99
			16QAM	5	0	0	-85	22.03
High Range	23173	715.3	QPSK	1	0	0	-85	23.91
			QPSK	1	5	0	-85	23.59
			QPSK	3	3	0	-85	21.97
			QPSK	6	0	0	-85	21.06
			16QAM	1	0	0	-85	23.4
			16QAM	1	5	0	-85	23.64
			16QAM	3	0	0	-85	21.91
			16QAM	5	0	0	-85	21.78

LTE Band 12								
BW (MHz): 3								
Test Frequency ID	N_{UL}	Frequency of Uplink (MHz)	Test Configuration Initial of Power				EUT	
			Modulation	RB Size	RB Offset	Narrowband Index	Cell Power (dBm/15 kHz)	Power (dBm)
Low Range	23025	700.5	QPSK	1	0	0	-85	23.74
			QPSK	1	5	0	-85	23.88
			QPSK	1	0	1	-85	23.86
			QPSK	1	5	1	-85	23.9
			QPSK	3	3	0	-85	23.59
			QPSK	3	3	1	-85	23.68
			QPSK	6	0	0	-85	23.59
			QPSK	6	0	1	-85	23.05
			16QAM	1	0	0	-85	22.71
			16QAM	1	5	0	-85	22.84
			16QAM	1	0	1	-85	22.97
			16QAM	1	5	1	-85	22.74
			16QAM	3	0	0	-85	21.93
			16QAM	3	3	1	-85	21.89
			16QAM	5	0	0	-85	21.51
			16QAM	5	0	1	-85	21.53
Mid. Range	23095	707.5	QPSK	1	0	0	-85	23.75
			QPSK	1	5	0	-85	23.73
			QPSK	1	0	1	-85	23.87
			QPSK	1	5	1	-85	23.86
			QPSK	3	3	0	-85	23.58
			QPSK	3	3	1	-85	23.61
			QPSK	6	0	0	-85	23.33
			QPSK	6	0	1	-85	23.03
			16QAM	1	0	0	-85	22.64
			16QAM	1	5	0	-85	22.72
			16QAM	1	0	1	-85	22.63
			16QAM	1	5	1	-85	22.86
			16QAM	3	0	0	-85	21.87
			16QAM	3	3	1	-85	21.89
			16QAM	5	0	0	-85	21.59
			16QAM	5	0	1	-85	21.52
High Range	23165	714.5	QPSK	1	0	0	-85	23.85
			QPSK	1	5	0	-85	23.91
			QPSK	1	0	1	-85	23.92
			QPSK	1	5	1	-85	23.81
			QPSK	3	3	0	-85	23.62
			QPSK	3	3	1	-85	23.69
			QPSK	6	0	0	-85	23.35
			QPSK	6	0	1	-85	23.39
			16QAM	1	0	0	-85	22.96
			16QAM	1	5	0	-85	22.86
			16QAM	1	0	1	-85	22.76
			16QAM	1	5	1	-85	22.81
			16QAM	3	0	0	-85	21.88
			16QAM	3	3	1	-85	21.76
			16QAM	6	0	0	-85	21.62
			16QAM	6	0	1	-85	21.72

LTE Band 12								
BW (MHz): 5								
Test Frequency ID	N_{UL}	Frequency of Uplink (MHz)	Test Configuration Initial of Power				EUT	
			Modulation	RB Size	RB Offset	Narrowband Index	Cell Power (dBm/15 kHz)	Power (dBm)
Low Range	23035	701.5	QPSK	1	0	0	-85	24.09
			QPSK	1	5	0	-85	23.03
			QPSK	1	0	1	-85	23.04
			QPSK	1	5	1	-85	22.96
			QPSK	1	0	3	-85	22.93
			QPSK	1	5	3	-85	22.98
			QPSK	3	0	0	-85	21.1
			QPSK	3	3	3	-85	22.02
			QPSK	6	0	0	-85	22.05
			QPSK	6	0	1	-85	21.09
			QPSK	6	0	3	-85	22.04
			16QAM	1	0	0	-85	23.23
			16QAM	1	5	0	-85	23.08
			16QAM	1	0	1	-85	22.98
			16QAM	1	5	1	-85	23.02
			16QAM	1	0	3	-85	23.04
			16QAM	1	5	3	-85	23.02
			16QAM	3	0	0	-85	22.12
			16QAM	3	3	3	-85	22.11
			16QAM	5	0	0	-85	22.11
			16QAM	5	0	1	-85	22.11
			16QAM	5	0	3	-85	22.09
Mid. Range	23095	707.5	QPSK	1	0	0	-85	24.13
			QPSK	1	5	0	-85	22.85
			QPSK	1	0	1	-85	23.06
			QPSK	1	5	1	-85	23.03
			QPSK	1	0	3	-85	23.06
			QPSK	1	5	3	-85	22.96
			QPSK	3	0	0	-85	22.01
			QPSK	3	3	3	-85	21.97
			QPSK	6	0	0	-85	21.99
			QPSK	6	0	1	-85	21.97
			QPSK	6	0	3	-85	21.85
			16QAM	1	0	0	-85	23.04
			16QAM	1	5	0	-85	23
			16QAM	1	0	1	-85	23.02
			16QAM	1	5	1	-85	22.94
			16QAM	1	0	3	-85	22.97
			16QAM	1	5	3	-85	22.88
			16QAM	3	0	0	-85	22.02
			16QAM	3	3	3	-85	21.93
			16QAM	5	0	0	-85	22.05
			16QAM	5	0	1	-85	21.82
			16QAM	5	0	3	-85	21.87

LTE Band 12								
BW (MHz): 5								
Test Frequency ID	N_{UL}	Frequency of Uplink (MHz)	Test Configuration Initial of Power				EUT	
			Modulation	RB Size	RB Offset	Narrowband Index	Cell Power (dBm/15 kHz)	Power (dBm)
High Range	23155	713.5	QPSK	1	0	0	-85	23.99
			QPSK	1	5	0	-85	23.05
			QPSK	1	0	1	-85	23.05
			QPSK	1	5	1	-85	23.01
			QPSK	1	0	3	-85	23.01
			QPSK	1	5	3	-85	22.97
			QPSK	3	0	0	-85	22
			QPSK	3	3	3	-85	22.06
			QPSK	6	0	0	-85	21.96
			QPSK	6	0	1	-85	21.93
			QPSK	6	0	3	-85	21.9
			16QAM	1	0	0	-85	23.09
			16QAM	1	5	0	-85	23.05
			16QAM	1	0	1	-85	23.04
			16QAM	1	5	1	-85	23.04
			16QAM	1	0	3	-85	22.96
			16QAM	1	5	3	-85	22.96
			16QAM	3	0	0	-85	22.01
			16QAM	3	3	3	-85	21.94
			16QAM	6	0	0	-85	21.74
			16QAM	6	0	1	-85	21.8
			16QAM	6	0	3	-85	21.67

LTE Band 12								
BW (MHz): 10								
Test Frequency ID	N_{UL}	Frequency of Uplink (MHz)	Test Configuration Initial of Power				EUT	
			Modulation	RB Size	RB Offset	Narrowband Index	Cell Power (dBm/15 kHz)	Power (dBm)
Low Range	23060	704	QPSK	1	0	0	-85	23.11
			QPSK	1	5	0	-85	23.07
			QPSK	1	0	3	-85	23.1
			QPSK	1	5	3	-85	23.09
			QPSK	1	0	7	-85	23.08
			QPSK	1	5	7	-85	23.08
			QPSK	4	0	0	-85	22.99
			QPSK	4	2	7	-85	23.13
			QPSK	6	0	0	-85	21.98
			QPSK	6	0	7	-85	21.85
			16QAM	1	0	0	-85	23.07
			16QAM	1	5	0	-85	23.06
			16QAM	1	0	3	-85	22.97
			16QAM	1	5	3	-85	23.02
			16QAM	1	0	7	-85	23.11
			16QAM	1	5	7	-85	23.05
			16QAM	4	2	0	-85	23.09
			16QAM	4	2	7	-85	23.1
			16QAM	6	0	0	-85	22.03
			16QAM	6	0	7	-85	21.97
Mid. Range	23095	707.5	QPSK	1	0	0	-85	23.13
			QPSK	1	5	0	-85	23.11
			QPSK	1	0	3	-85	23.09
			QPSK	1	5	3	-85	23.08
			QPSK	1	0	7	-85	23.14
			QPSK	1	5	7	-85	23.08
			QPSK	4	0	0	-85	23.06
			QPSK	4	2	7	-85	23.1
			QPSK	6	0	0	-85	21.97
			QPSK	6	0	7	-85	21.84
			16QAM	1	0	0	-85	23.07
			16QAM	1	5	0	-85	23
			16QAM	1	0	3	-85	23
			16QAM	1	5	3	-85	23.09
			16QAM	1	0	7	-85	23.01
			16QAM	1	5	7	-85	23.11
			16QAM	4	2	0	-85	23.02
			16QAM	4	2	7	-85	21.76
			16QAM	6	0	0	-85	21.93
			16QAM	6	0	7	-85	21.95
High Range	23130	711	QPSK	1	0	0	-85	23.18
			QPSK	1	5	0	-85	23.2
			QPSK	1	5	7	-85	23.12
			QPSK	1	0	3	-85	23.14
			QPSK	1	5	3	-85	23.16
			QPSK	1	0	7	-85	23.06
			QPSK	4	0	0	-85	23.03
			QPSK	4	2	7	-85	23.06
			QPSK	6	0	0	-85	21.94
			QPSK	6	0	7	-85	22.08
			16QAM	1	0	0	-85	23.11
			16QAM	1	5	0	-85	23.2
			16QAM	1	0	3	-85	23.16
			16QAM	1	5	3	-85	23.07
			16QAM	1	0	7	-85	23.01
			16QAM	1	5	7	-85	23
			16QAM	4	2	0	-85	23.02
			16QAM	4	2	7	-85	23.07
			16QAM	6	0	0	-85	21.93
			16QAM	6	0	7	-85	21.86

LTE Band 13								
BW (MHz): 5								
Test Frequency ID	N_{UL}	Frequency of Uplink (MHz)	Test Configuration Initial of Power				EUT	
			Modulation	RB Size	RB Offset	Narrowband Index	Cell Power (dBm/15 kHz)	Power (dBm)
Low Range	23205	779.5	QPSK	1	0	0	-85	23.29
			QPSK	1	5	0	-85	23.31
			QPSK	1	0	1	-85	23.49
			QPSK	1	5	1	-85	23.46
			QPSK	1	0	3	-85	22.47
			QPSK	1	5	3	-85	23.24
			QPSK	3	0	0	-85	22.61
			QPSK	3	3	3	-85	22.63
			QPSK	6	0	0	-85	22.63
			QPSK	6	0	1	-85	22.67
			QPSK	6	0	3	-85	22.84
			16QAM	1	0	0	-85	22.66
			16QAM	1	5	0	-85	22.63
			16QAM	1	0	1	-85	22.67
			16QAM	1	5	1	-85	22.66
			16QAM	1	0	3	-85	22.83
			16QAM	1	5	3	-85	22.82
			16QAM	3	0	0	-85	22.41
			16QAM	3	3	3	-85	22.52
			16QAM	5	0	0	-85	21
			16QAM	5	0	1	-85	21.26
			16QAM	5	0	3	-85	21.25
Mid. Range	23230	782	QPSK	1	0	0	-85	23.38
			QPSK	1	5	0	-85	23.44
			QPSK	1	0	1	-85	23.48
			QPSK	1	5	1	-85	23.4
			QPSK	1	0	3	-85	23.32
			QPSK	1	5	3	-85	23.33
			QPSK	3	0	0	-85	22.71
			QPSK	3	3	3	-85	22.72
			QPSK	6	0	0	-85	22.69
			QPSK	6	0	1	-85	22.73
			QPSK	6	0	3	-85	22.97
			16QAM	1	0	0	-85	22.84
			16QAM	1	5	0	-85	22.68
			16QAM	1	0	1	-85	22.77
			16QAM	1	5	1	-85	22.78
			16QAM	1	0	3	-85	22.92
			16QAM	1	5	3	-85	22.92
			16QAM	3	0	0	-85	22.31
			16QAM	3	3	3	-85	22.54
			16QAM	5	0	0	-85	21.04
			16QAM	5	0	1	-85	21.14
			16QAM	5	0	3	-85	21.34

LTE Band 13								
BW (MHz): 5								
Test Frequency ID	N_{UL}	Frequency of Uplink (MHz)	Test Configuration Initial of Power				EUT	
			Modulation	RB Size	RB Offset	Narrowband Index	Cell Power (dBm/15 kHz)	Power (dBm)
High Range	23255	784.5	QPSK	1	0	0	-85	23.55
			QPSK	1	5	0	-85	23.51
			QPSK	1	0	1	-85	23.53
			QPSK	1	5	1	-85	23.48
			QPSK	1	0	3	-85	23.47
			QPSK	1	5	3	-85	23.61
			QPSK	3	0	0	-85	22.86
			QPSK	3	3	3	-85	22.67
			QPSK	6	0	0	-85	22.86
			QPSK	6	0	1	-85	22.83
			QPSK	6	0	3	-85	23
			16QAM	1	0	0	-85	22.84
			16QAM	1	5	0	-85	22.85
			16QAM	1	0	1	-85	22.9
			16QAM	1	5	1	-85	22.83
			16QAM	1	0	3	-85	23.01
			16QAM	1	5	3	-85	22.96
			16QAM	3	0	0	-85	22.5
			16QAM	3	3	3	-85	22.66
			16QAM	5	0	0	-85	21.23
			16QAM	5	0	1	-85	21.28
			16QAM	5	0	3	-85	21.55

LTE Band 13								
BW (MHz): 10								
Test Frequency ID	N_{UL}	Frequency of Uplink (MHz)	Test Configuration Initial of Power				EUT	
			Modulation	RB Size	RB Offset	Narrowband Index	Cell Power (dBm/15 kHz)	Power (dBm)
Mid. Range	23230	782	QPSK	1	0	0	-85	23.98
			QPSK	1	5	0	-85	23.5
			QPSK	1	0	3	-85	23.54
			QPSK	1	5	3	-85	23.49
			QPSK	1	0	7	-85	23.66
			QPSK	1	5	7	-85	23.83
			QPSK	4	0	0	-85	22.8
			QPSK	4	2	7	-85	22.8
			QPSK	6	0	0	-85	22.76
			QPSK	6	0	7	-85	22.81
			16QAM	1	0	0	-85	23.06
			16QAM	1	5	0	-85	22.9
			16QAM	1	0	3	-85	22.77
			16QAM	1	5	3	-85	22.84
			16QAM	1	0	7	-85	22.86
			16QAM	1	5	7	-85	22.98
			16QAM	4	2	0	-85	22.99
			16QAM	4	2	7	-85	22.4
			16QAM	5	0	0	-85	22.62
			16QAM	5	0	7	-85	21.11

LTE Band 66								
BW (MHz): 1.4								
Test Frequency ID	N_{UL}	Frequency of Uplink (MHz)	Test Configuration Initial of Power				EUT	
			Modulation	RB Size	RB Offset	Narrowband Index	Cell Power (dBm/15 kHz)	Power (dBm)
Low Range	131979	1710.7	QPSK	1	0	0	-85	23.51
			QPSK	1	5	0	-85	23.44
			QPSK	3	3	0	-85	22.24
			QPSK	6	0	0	-85	21.12
			16QAM	1	0	0	-85	21.91
			16QAM	1	5	0	-85	21.94
			16QAM	3	0	0	-85	21.6
			16QAM	5	0	0	-85	21.09
Mid. Range	132322	1745	QPSK	1	0	0	-85	23.55
			QPSK	1	5	0	-85	23.45
			QPSK	3	3	0	-85	22.37
			QPSK	6	0	0	-85	21.15
			16QAM	1	0	0	-85	23.34
			16QAM	1	5	0	-85	23.31
			16QAM	3	0	0	-85	22.27
			16QAM	5	0	0	-85	22.29
High Range	132665	1779.3	QPSK	1	0	0	-85	23.11
			QPSK	1	5	0	-85	23.12
			QPSK	3	3	0	-85	21.95
			QPSK	6	0	0	-85	20.58
			16QAM	1	0	0	-85	21.65
			16QAM	1	5	0	-85	21.79
			16QAM	3	0	0	-85	21.23
			16QAM	5	0	0	-85	20.88

LTE Band 66								
BW (MHz): 3								
Test Frequency ID	N_{UL}	Frequency of Uplink (MHz)	Test Configuration Initial of Power				EUT	
			Modulation	RB Size	RB Offset	Narrowband Index	Cell Power (dBm/15 kHz)	Power (dBm)
Low Range	131987	1711.5	QPSK	1	0	0	-85	23.11
			QPSK	1	5	0	-85	23.05
			QPSK	1	0	1	-85	23.21
			QPSK	1	5	1	-85	23.02
			QPSK	3	3	0	-85	22.06
			QPSK	3	3	1	-85	21.95
			QPSK	6	0	0	-85	20.91
			QPSK	6	0	1	-85	20.89
			16QAM	1	0	0	-85	22.09
			16QAM	1	5	0	-85	22.21
			16QAM	1	0	1	-85	22.09
			16QAM	1	5	1	-85	22.19
			16QAM	3	0	0	-85	21.74
			16QAM	3	3	1	-85	21.47
			16QAM	5	0	0	-85	20.85
			16QAM	5	0	1	-85	20.91
Mid. Range	132322	1745	QPSK	1	0	0	-85	23.2
			QPSK	1	5	0	-85	23.08
			QPSK	1	0	1	-85	23.38
			QPSK	1	5	1	-85	23.39
			QPSK	3	3	0	-85	22.07
			QPSK	3	3	1	-85	22.05
			QPSK	6	0	0	-85	20.97
			QPSK	6	0	1	-85	20.89
			16QAM	1	0	0	-85	23.09
			16QAM	1	5	0	-85	23.14
			16QAM	1	0	1	-85	23.22
			16QAM	1	5	1	-85	23.12
			16QAM	3	0	0	-85	22.27
			16QAM	3	3	1	-85	22.14
			16QAM	5	0	0	-85	22.04
			16QAM	5	0	1	-85	22.19
High Range	132657	1778.5	QPSK	1	0	0	-85	22.97
			QPSK	1	5	0	-85	23.01
			QPSK	1	0	1	-85	23.03
			QPSK	1	5	1	-85	22.97
			QPSK	3	3	0	-85	21.66
			QPSK	3	3	1	-85	21.62
			QPSK	6	0	0	-85	20.66
			QPSK	6	0	1	-85	20.5
			16QAM	1	0	0	-85	21.86
			16QAM	1	5	0	-85	21.87
			16QAM	1	0	1	-85	21.84
			16QAM	1	5	1	-85	21.41
			16QAM	3	0	0	-85	21.33
			16QAM	3	3	1	-85	21.64
			16QAM	5	0	0	-85	20.66
			16QAM	5	0	1	-85	20.52

LTE Band 66								
BW (MHz): 5								
Test Frequency ID	N_{UL}	Frequency of Uplink (MHz)	Test Configuration Initial of Power				EUT	
			Modulation	RB Size	RB Offset	Narrowband Index	Cell Power (dBm/15 kHz)	Power (dBm)
Low Range	131997	1712.5	QPSK	1	0	0	-85	23.03
			QPSK	1	5	0	-85	22.99
			QPSK	1	0	1	-85	23.01
			QPSK	1	5	1	-85	22.98
			QPSK	1	0	3	-85	21.98
			QPSK	1	5	3	-85	21.95
			QPSK	3	0	0	-85	21.86
			QPSK	3	3	3	-85	21.98
			QPSK	6	0	0	-85	21.93
			QPSK	6	0	1	-85	21.71
			QPSK	6	0	3	-85	21.63
			16QAM	1	0	0	-85	22.26
			16QAM	1	5	0	-85	23.13
			16QAM	1	0	1	-85	23.11
			16QAM	1	5	1	-85	23.08
			16QAM	1	0	3	-85	23.2
			16QAM	1	5	3	-85	23.2
			16QAM	3	0	0	-85	22.81
			16QAM	3	3	3	-85	22.93
			16QAM	5	0	0	-85	21.2
			16QAM	5	0	1	-85	21.39
			16QAM	5	0	3	-85	21.31
Mid. Range	132322	1745	QPSK	1	0	0	-85	23.16
			QPSK	1	5	0	-85	23.1
			QPSK	1	0	1	-85	23.19
			QPSK	1	5	1	-85	23.16
			QPSK	1	0	3	-85	23.2
			QPSK	1	5	3	-85	23.09
			QPSK	3	0	0	-85	22.45
			QPSK	3	3	3	-85	22.06
			QPSK	6	0	0	-85	21.9
			QPSK	6	0	1	-85	22.24
			QPSK	6	0	3	-85	22.32
			16QAM	1	0	0	-85	23.22
			16QAM	1	5	0	-85	23.22
			16QAM	1	0	1	-85	23.28
			16QAM	1	5	1	-85	23.1
			16QAM	1	0	3	-85	23.21
			16QAM	1	5	3	-85	23.19
			16QAM	3	0	0	-85	22.09
			16QAM	3	3	3	-85	22.09
			16QAM	5	0	0	-85	22.14
			16QAM	5	0	1	-85	22.22
			16QAM	5	0	3	-85	22.23

LTE Band 66								
BW (MHz): 5								
Test Frequency ID	N_{UL}	Frequency of Uplink (MHz)	Test Configuration Initial of Power				EUT	
			Modulation	RB Size	RB Offset	Narrowband Index	Cell Power (dBm/15 kHz)	Power (dBm)
High Range	132647	1777.5	QPSK	1	0	0	-85	22.99
			QPSK	1	5	0	-85	22.76
			QPSK	1	0	1	-85	22.82
			QPSK	1	5	1	-85	22.87
			QPSK	1	0	3	-85	22.75
			QPSK	1	5	3	-85	22.95
			QPSK	3	0	0	-85	21.91
			QPSK	3	3	3	-85	21.86
			QPSK	6	0	0	-85	21.88
			QPSK	6	0	1	-85	21.71
			QPSK	6	0	3	-85	21.76
			16QAM	1	0	0	-85	22.65
			16QAM	1	5	0	-85	23.08
			16QAM	1	0	1	-85	23.1
			16QAM	1	5	1	-85	23.14
			16QAM	1	0	3	-85	23.06
			16QAM	1	5	3	-85	22.99
			16QAM	3	0	0	-85	22.31
			16QAM	3	3	3	-85	22.3
			16QAM	5	0	0	-85	20.8
			16QAM	5	0	1	-85	20.72
			16QAM	5	0	3	-85	20.8

LTE Band 66								
BW (MHz): 10								
Test Frequency ID	N_{UL}	Frequency of Uplink (MHz)	Test Configuration Initial of Power				EUT	
			Modulation	RB Size	RB Offset	Narrowband Index	Cell Power (dBm/15 kHz)	Power (dBm)
Low Range	132022	1715	QPSK	1	0	0	-85	23.09
			QPSK	1	5	0	-85	23
			QPSK	1	0	3	-85	23.1
			QPSK	1	5	3	-85	23.04
			QPSK	1	0	7	-85	23.12
			QPSK	1	5	7	-85	23.02
			QPSK	4	0	0	-85	23.09
			QPSK	4	2	7	-85	23.04
			QPSK	6	0	0	-85	22.12
			QPSK	6	0	7	-85	22.01
			16QAM	1	0	0	-85	23.24
			16QAM	1	5	0	-85	23.09
			16QAM	1	0	3	-85	23.08
			16QAM	1	5	3	-85	23.06
			16QAM	1	0	7	-85	23.03
			16QAM	1	5	7	-85	22.99
			16QAM	4	2	0	-85	22.04
			16QAM	4	2	7	-85	21.96
			16QAM	6	0	0	-85	21.89
			16QAM	6	0	7	-85	21.89
Mid. Range	132322	1745	QPSK	1	0	0	-85	23.07
			QPSK	1	5	0	-85	23.04
			QPSK	1	0	3	-85	23.08
			QPSK	1	5	3	-85	23.11
			QPSK	1	0	7	-85	23.08
			QPSK	1	5	7	-85	23.12
			QPSK	4	0	0	-85	23.22
			QPSK	4	2	7	-85	23.1
			QPSK	6	0	0	-85	22
			QPSK	6	0	7	-85	22.01
			16QAM	1	0	0	-85	23.18
			16QAM	1	5	0	-85	23.28
			16QAM	1	0	3	-85	23.39
			16QAM	1	5	3	-85	23.13
			16QAM	1	0	7	-85	23.13
			16QAM	1	5	7	-85	23.09
			16QAM	4	2	0	-85	23.08
			16QAM	4	2	7	-85	23.22
			16QAM	5	0	0	-85	22.19
			16QAM	5	0	7	-85	22.11
High Range	132622	1775	QPSK	1	0	0	-85	22.75
			QPSK	1	5	0	-85	22.72
			QPSK	1	5	7	-85	22.78
			QPSK	1	0	3	-85	22.77
			QPSK	1	5	3	-85	22.75
			QPSK	1	0	7	-85	22.8
			QPSK	4	0	0	-85	23.06
			QPSK	4	2	7	-85	22.96
			QPSK	6	0	0	-85	21.3
			QPSK	6	0	7	-85	21.27
			16QAM	1	0	0	-85	22.83
			16QAM	1	5	0	-85	22.95
			16QAM	1	0	3	-85	22.75
			16QAM	1	5	3	-85	22.84
			16QAM	1	0	7	-85	22.89
			16QAM	1	5	7	-85	22.76
			16QAM	4	2	0	-85	21.1
			16QAM	4	2	7	-85	21.39
			16QAM	6	0	0	-85	21.22
			16QAM	6	0	7	-85	20.93

LTE Band 66								
BW (MHz): 15								
Test Frequency ID	N_{UL}	Frequency of Uplink (MHz)	Test Configuration Initial of Power				EUT	
			Modulation	RB Size	RB Offset	Narrowband Index	Cell Power (dBm/15 kHz)	Power (dBm)
Low Range	132047	1717.5	QPSK	1	0	0	-85	23.05
			QPSK	1	5	0	-85	23.1
			QPSK	1	0	5	-85	23.03
			QPSK	1	5	5	-85	23.1
			QPSK	1	0	11	-85	23.17
			QPSK	1	5	11	-85	23.14
			QPSK	3	0	0	-85	23.22
			QPSK	3	3	11	-85	22.96
			QPSK	6	0	0	-85	22.86
			QPSK	6	0	11	-85	22.63
			16QAM	1	0	0	-85	22.52
			16QAM	1	5	0	-85	22.23
			16QAM	1	0	5	-85	22.45
			16QAM	1	5	5	-85	22.64
			16QAM	1	0	11	-85	22.59
			16QAM	1	5	11	-85	22.54
			16QAM	3	0	0	-85	23.51
			16QAM	3	3	11	-85	22.69
			16QAM	5	0	0	-85	23.05
			16QAM	5	0	11	-85	22.51
Mid. Range	132322	1745	QPSK	1	0	0	-85	23.23
			QPSK	1	5	0	-85	23.16
			QPSK	1	0	5	-85	22.99
			QPSK	1	5	5	-85	22.99
			QPSK	1	0	11	-85	23
			QPSK	1	5	11	-85	23
			QPSK	3	0	0	-85	23.2
			QPSK	3	3	11	-85	23.01
			QPSK	6	0	0	-85	22.93
			QPSK	6	0	11	-85	23.1
			16QAM	1	0	0	-85	23.3
			16QAM	1	5	0	-85	23.28
			16QAM	1	0	5	-85	23.08
			16QAM	1	5	5	-85	23.24
			16QAM	1	0	11	-85	23.09
			16QAM	1	5	11	-85	23.19
			16QAM	3	0	0	-85	23.13
			16QAM	3	3	11	-85	23.19
			16QAM	5	0	0	-85	23.19
			16QAM	5	0	11	-85	22.74
High Range	132597	1772.5	QPSK	1	0	0	-85	22.84
			QPSK	1	5	11	-85	22.95
			QPSK	1	0	5	-85	22.98
			QPSK	1	5	5	-85	23
			QPSK	1	0	11	-85	22.94
			QPSK	1	5	11	-85	23.04
			QPSK	3	0	0	-85	23.11
			QPSK	3	3	11	-85	23.07
			QPSK	6	0	0	-85	22.92
			QPSK	6	0	11	-85	21.93
			16QAM	1	0	0	-85	23.02
			16QAM	1	5	0	-85	23.02
			16QAM	1	0	5	-85	23.02
			16QAM	1	5	5	-85	22.97
			16QAM	1	0	11	-85	22.95
			16QAM	1	5	11	-85	22.84
			16QAM	3	0	0	-85	23.08
			16QAM	3	3	11	-85	23.12
			16QAM	5	0	0	-85	22.92
			16QAM	5	0	11	-85	21.62

LTE Band 66								
BW (MHz): 20								
Test Frequency ID	N_{UL}	Frequency of Uplink (MHz)	Test Configuration Initial of Power				EUT	
			Modulation	RB Size	RB Offset	Narrowband Index	Cell Power (dBm/15 kHz)	Power (dBm)
Low Range	132072	1720	QPSK	1	0	0	-85	23.73
			QPSK	1	5	0	-85	23.62
			QPSK	1	0	7	-85	23.79
			QPSK	1	5	7	-85	23.76
			QPSK	1	0	15	-85	23.73
			QPSK	1	5	15	-85	23.66
			QPSK	3	0	0	-85	24.03
			QPSK	3	3	15	-85	23.53
			QPSK	6	0	0	-85	23.49
			QPSK	6	0	15	-85	23.63
			16QAM	1	0	0	-85	23.51
			16QAM	1	5	0	-85	23.68
			16QAM	1	0	7	-85	23.65
			16QAM	1	5	7	-85	23.64
			16QAM	1	0	15	-85	23.46
			16QAM	1	5	15	-85	23.39
			16QAM	3	0	0	-85	23.78
			16QAM	3	3	15	-85	23.9
			16QAM	5	0	0	-85	23.68
			16QAM	5	0	15	-85	23.59
Mid. Range	132322	1745	QPSK	1	0	0	-85	24.08
			QPSK	1	5	0	-85	24.02
			QPSK	1	0	7	-85	23.77
			QPSK	1	5	7	-85	23.59
			QPSK	1	0	15	-85	23.75
			QPSK	1	5	15	-85	23.51
			QPSK	3	0	0	-85	23.98
			QPSK	3	3	15	-85	23.52
			QPSK	6	0	0	-85	23.64
			QPSK	6	0	15	-85	23.56
			16QAM	1	0	0	-85	23.87
			16QAM	1	5	0	-85	23.82
			16QAM	1	0	7	-85	23.57
			16QAM	1	5	7	-85	23.57
			16QAM	1	0	15	-85	23.86
			16QAM	1	5	15	-85	23.74
			16QAM	3	0	0	-85	23.49
			16QAM	3	3	15	-85	23.82
			16QAM	5	0	0	-85	23.44
			16QAM	5	0	15	-85	23.6
High Range	132572	1770	QPSK	1	0	0	-85	23.67
			QPSK	1	5	0	-85	23.53
			QPSK	1	0	7	-85	23.65
			QPSK	1	5	7	-85	23.68
			QPSK	1	0	15	-85	23.53
			QPSK	1	5	15	-85	23.45
			QPSK	3	0	0	-85	23.48
			QPSK	3	3	15	-85	23.46
			QPSK	6	0	0	-85	23.39
			QPSK	6	0	15	-85	23.55
			16QAM	1	0	0	-85	23.64
			16QAM	1	5	0	-85	23.74
			16QAM	1	0	7	-85	23.78
			16QAM	1	5	7	-85	23.66
			16QAM	1	0	15	-85	23.73
			16QAM	1	5	15	-85	23.59
			16QAM	3	0	0	-85	23.86
			16QAM	3	3	15	-85	23.78
			16QAM	5	0	0	-85	23.41
			16QAM	5	0	15	-85	23.25

NB-IoT

LTE Band 4							
Stand-alone							
N_{UL}	**M_{UL}**	**Frequency of Uplink (MHz)**	**Test Configuration Initial of Power**			**EUT**	
			Modulation	**N_{tones}**	**Sub-carrier Spacing (kHz)**	**Cell Power (dBm/15 kHz)**	**Power (dBm)**
19952	0	1710.2	BPSK	1@0	3.75	-110	21.57
			BPSK	1@0	15	-110	21.59
			QPSK	1@0	3.75	-110	21.53
			QPSK	1@0	15	-110	21.58
			QPSK	3@3	15	-110	21.62
			QPSK	12@0	15	-110	21.59
20175	0	1732.5	BPSK	1@0	3.75	-110	22.87
			BPSK	1@0	15	-110	22.89
			BPSK	1@47	3.75	-110	22.89
			QPSK	1@0	3.75	-110	22.99
			QPSK	1@0	15	-110	22.98
			QPSK	1@11	15	-110	22.88
			QPSK	3@3	15	-110	23.16
			QPSK	12@0	15	-110	22.75
20398	0	1754.8	BPSK	1@47	3.75	-110	21.62
			BPSK	1@47	15	-110	21.66
			QPSK	1@11	3.75	-110	21.63
			QPSK	1@11	15	-110	21.68
			QPSK	3@3	15	-110	21.72
			QPSK	12@0	15	-110	21.59

LTE Band 4							
In-Band	**BW (MHz): 3**						
N_{UL}	**M_{UL}**	**Frequency of Uplink (MHz)**	**Test Configuration Initial of Power**			**EUT**	
			Modulation	**N_{tones}**	**Sub-carrier Spacing (kHz)**	**Cell Power (dBm/15 kHz)**	**Power (dBm)**
19957	0	1710.7	BPSK	1@0	3.75	-110	21.52
			QPSK	1@0	15	-110	21.5
			QPSK	3@3	15	-110	21.52
			QPSK	12@0	15	-110	21.59
20166	0	1731.6	BPSK	1@0	3.75	-110	22.76
			BPSK	1@47	3.75	-110	22.78
			QPSK	1@0	15	-110	22.86
			QPSK	1@11	15	-110	22.74
			QPSK	3@3	15	-110	23.07
			QPSK	12@0	15	-110	22.65
20393	0	1754.3	BPSK	1@47	3.75	-110	21.6
			QPSK	1@11	15	-110	21.53
			QPSK	3@3	15	-110	21.63
			QPSK	12@0	15	-110	21.58

LTE Band 4							
In-Band	**BW (MHz): 10**	**NB-IoT PRB: 30**					
N_{UL}	**M_{UL}**	**Frequency of Uplink (MHz)**	**Test Configuration Initial of Power**			**EUT**	
			Modulation	**N_{tones}**	**Sub-carrier Spacing (kHz)**	**Cell Power (dBm/15 kHz)**	**Power (dBm)**
20011	-2	1716.09	BPSK	1@0	3.75	-110	21.59
			QPSK	1@0	15	-110	21.55
			QPSK	3@3	15	-110	21.53
			QPSK	12@0	15	-110	21.5
20185	-2	1733.49	BPSK	1@0	3.75	-110	22.72
			BPSK	1@47	3.75	-110	22.75
			QPSK	1@0	15	-110	22.84
			QPSK	1@11	15	-110	22.74
			QPSK	3@3	15	-110	23.01
			QPSK	12@0	15	-110	22.61
20359	-2	1750.89	BPSK	1@47	3.75	-110	21.54
			QPSK	1@11	15	-110	21.56
			QPSK	3@3	15	-110	21.63
			QPSK	12@0	15	-110	21.51

LTE Band 4							
In-Band	BW (MHz): 10	NB-IoT PRB: 35					
N_{UL}	M_{UL}	Frequency of Uplink (MHz)	Test Configuration Initial of Power			EUT	
			Modulation	N_{tones}	Sub-carrier Spacing (kHz)	Cell Power (dBm/15 kHz)	Power (dBm)
20020	-2	1716.99	BPSK	1@0	3.75	-110	21.57
			QPSK	1@0	15	-110	21.59
			QPSK	3@3	15	-110	21.51
			QPSK	12@0	15	-110	21.56
20194	-2	1734.39	BPSK	1@0	3.75	-110	22.74
			BPSK	1@47	3.75	-110	22.78
			QPSK	1@0	15	-110	22.85
			QPSK	1@11	15	-110	22.75
			QPSK	3@3	15	-110	23.07
			QPSK	12@0	15	-110	22.61
20368	-2	1751.79	BPSK	1@47	3.75	-110	21.52
			QPSK	1@11	15	-110	21.52
			QPSK	3@3	15	-110	21.63
			QPSK	12@0	15	-110	21.5

LTE Band 4							
Guard-Band	BW (MHz): 5						
N_{UL}	M_{UL}	Frequency of Uplink (MHz)	Test Configuration Initial of Power			EUT	
			Modulation	N_{tones}	Sub-carrier Spacing (kHz)	Cell Power (dBm/15 kHz)	Power (dBm)
19952	0	1710.2	BPSK	1@0	3.75	-110	21.46
			QPSK	1@0	15	-110	21.45
			QPSK	3@3	15	-110	21.5
			QPSK	12@0	15	-110	21.49
20151	0	1730.1	BPSK	1@0	3.75	-110	22.76
			BPSK	1@47	3.75	-110	22.76
			QPSK	1@0	15	-110	22.84
			QPSK	1@11	15	-110	22.76
			QPSK	3@3	15	-110	23.07
			QPSK	12@0	15	-110	22.65
20398	0	1754.8	BPSK	1@47	3.75	-110	21.51
			QPSK	1@11	15	-110	21.57
			QPSK	3@3	15	-110	21.62
			QPSK	12@0	15	-110	21.46

LTE Band 12							
Stand-alone							
N_{UL}	M_{UL}	Frequency of Uplink (MHz)	Test Configuration Initial of Power			EUT	
			Modulation	N_{tones}	Sub-carrier Spacing (kHz)	Cell Power (dBm/15 kHz)	Power (dBm)
23012	0	699.2	BPSK	1@0	3.75	-110	22.87
			BPSK	1@0	15	-110	22.89
			QPSK	1@0	3.75	-110	22.84
			QPSK	1@0	15	-110	22.88
			QPSK	3@3	15	-110	22.97
			QPSK	12@0	15	-110	21.67
23095	0	707.5	BPSK	1@0	3.75	-110	24.16
			BPSK	1@0	15	-110	24.19
			BPSK	1@47	3.75	-110	24.33
			QPSK	1@0	3.75	-110	24.28
			QPSK	1@0	15	-110	24.32
			QPSK	1@11	15	-110	24.28
			QPSK	3@3	15	-110	24.44
			QPSK	12@0	15	-110	23.95
23178	0	715.8	BPSK	1@47	3.75	-110	22.73
			BPSK	1@47	15	-110	22.75
			QPSK	1@11	3.75	-110	22.84
			QPSK	1@11	15	-110	22.88
			QPSK	3@3	15	-110	22.92
			QPSK	12@0	15	-110	21.86

LTE Band 12							
In-Band	BW (MHz): 3						
N_{UL}	M_{UL}	Frequency of Uplink (MHz)	Test Configuration Initial of Power			EUT	
			Modulation	N_{tones}	Sub-carrier Spacing (kHz)	Cell Power (dBm/15 kHz)	Power (dBm)
23018	0	699.8	BPSK	1@0	3.75	-110	22.74
			QPSK	1@0	15	-110	22.76
			QPSK	3@3	15	-110	22.85
			QPSK	12@0	15	-110	21.54
23086	0	706.6	BPSK	1@0	3.75	-110	24
			BPSK	1@47	3.75	-110	24.2
			QPSK	1@0	15	-110	24.22
			QPSK	1@11	15	-110	24.16
			QPSK	3@3	15	-110	24.33
			QPSK	12@0	15	-110	23.81
23172	0	715.2	BPSK	1@47	3.75	-110	22.57
			QPSK	1@11	15	-110	22.73
			QPSK	3@3	15	-110	22.83
			QPSK	12@0	15	-110	21.75

LTE Band 12							
In-Band	BW (MHz): 10	NB-IoT PRB: 30					
N_{UL}	M_{UL}	Frequency of Uplink (MHz)	Test Configuration Initial of Power			EUT	
			Modulation	N_{tones}	Sub-carrier Spacing (kHz)	Cell Power (dBm/15 kHz)	Power (dBm)
23071	-2	705.09	BPSK	1@0	3.75	-110	22.75
			QPSK	1@0	15	-110	22.76
			QPSK	3@3	15	-110	22.81
			QPSK	12@0	15	-110	21.55
23105	-2	708.49	BPSK	1@0	3.75	-110	24
			BPSK	1@47	3.75	-110	24.19
			QPSK	1@0	15	-110	24.2
			QPSK	1@11	15	-110	24.19
			QPSK	3@3	15	-110	24.3
			QPSK	12@0	15	-110	23.79
23139	-2	711.89	BPSK	1@47	3.75	-110	22.61
			QPSK	1@11	15	-110	22.72
			QPSK	3@3	15	-110	22.83
			QPSK	12@0	15	-110	21.77

LTE Band 12							
In-Band	BW (MHz): 10	NB-IoT PRB: 35					
N_{UL}	M_{UL}	Frequency of Uplink (MHz)	Test Configuration Initial of Power			EUT	
			Modulation	N_{tones}	Sub-carrier Spacing (kHz)	Cell Power (dBm/15 kHz)	Power (dBm)
23080	-2	705.99	BPSK	1@0	3.75	-110	22.71
			QPSK	1@0	15	-110	22.78
			QPSK	3@3	15	-110	22.88
			QPSK	12@0	15	-110	21.54
23114	-2	709.39	BPSK	1@0	3.75	-110	24.05
			BPSK	1@47	3.75	-110	24.2
			QPSK	1@0	15	-110	24.16
			QPSK	1@11	15	-110	24.17
			QPSK	3@3	15	-110	24.28
			QPSK	12@0	15	-110	23.84
23148	-2	712.79	BPSK	1@47	3.75	-110	22.59
			QPSK	1@11	15	-110	22.75
			QPSK	3@3	15	-110	22.82
			QPSK	12@0	15	-110	21.73

LTE Band 12							
Guard-Band	BW (MHz): 5						
N_{UL}	M_{UL}	Frequency of Uplink (MHz)	Test Configuration Initial of Power			EUT	
			Modulation	N_{tones}	Sub-carrier Spacing (kHz)	Cell Power (dBm/15 kHz)	Power (dBm)
23012	0	699.2	BPSK	1@0	3.75	-110	22.72
			QPSK	1@0	15	-110	22.76
			QPSK	3@3	15	-110	22.88
			QPSK	12@0	15	-110	21.55
23071	0	705.1	BPSK	1@0	3.75	-110	24.06
			BPSK	1@47	3.75	-110	24.18
			QPSK	1@0	15	-110	24.21
			QPSK	1@11	15	-110	24.13
			QPSK	3@3	15	-110	24.31
			QPSK	12@0	15	-110	23.81
23178	0	715.8	BPSK	1@47	3.75	-110	22.58
			QPSK	1@11	15	-110	22.75
			QPSK	3@3	15	-110	22.8
			QPSK	12@0	15	-110	21.74

LTE Band 13							
Stand-alone							
N_{UL}	M_{UL}	Frequency of Uplink (MHz)	Test Configuration Initial of Power			EUT	
			Modulation	N_{tones}	Sub-carrier Spacing (kHz)	Cell Power (dBm/15 kHz)	Power (dBm)
23182	0	777.2	BPSK	1@0	3.75	-110	22.26
			BPSK	1@0	15	-110	22.29
			QPSK	1@0	3.75	-110	22.28
			QPSK	1@0	15	-110	22.32
			QPSK	3@3	15	-110	22.47
			QPSK	12@0	15	-110	21.62
23230	0	782	BPSK	1@0	3.75	-110	23.42
			BPSK	1@0	15	-110	23.45
			BPSK	1@47	3.75	-110	23.47
			QPSK	1@0	3.75	-110	23.51
			QPSK	1@0	15	-110	23.52
			QPSK	1@11	15	-110	23.48
			QPSK	3@3	15	-110	23.59
			QPSK	12@0	15	-110	22.98
23278	0	786.8	BPSK	1@47	3.75	-110	22.42
			BPSK	1@47	15	-110	22.44
			QPSK	1@11	3.75	-110	22.44
			QPSK	1@11	15	-110	22.45
			QPSK	3@3	15	-110	22.56
			QPSK	12@0	15	-110	21.78

LTE Band 13							
In-Band	BW (MHz): 5						
N_{UL}	M_{UL}	Frequency of Uplink (MHz)	Test Configuration Initial of Power			EUT	
			Modulation	N_{tones}	Sub-carrier Spacing (kHz)	Cell Power (dBm/15 kHz)	Power (dBm)
23188	0	777.8	BPSK	1@0	3.75	-110	22.14
			QPSK	1@0	15	-110	22.17
			QPSK	3@3	15	-110	22.32
			QPSK	12@0	15	-110	21.49
23221	0	781.1	BPSK	1@0	3.75	-110	23.26
			BPSK	1@47	3.75	-110	23.36
			QPSK	1@0	15	-110	23.36
			QPSK	1@11	15	-110	23.33
			QPSK	3@3	15	-110	23.47
			QPSK	12@0	15	-110	22.88
23272	0	786.2	BPSK	1@47	3.75	-110	22.33
			QPSK	1@11	15	-110	22.35
			QPSK	3@3	15	-110	22.42
			QPSK	12@0	15	-110	21.69

LTE Band 13							
In-Band	BW (MHz): 10	NB-IoT PRB: 30					
N_{UL}	M_{UL}	Frequency of Uplink (MHz)	Test Configuration Initial of Power			EUT	
			Modulation	N_{tones}	Sub-carrier Spacing (kHz)	Cell Power (dBm/15 kHz)	Power (dBm)
23241	-2	783.09	BPSK	1@0	3.75	-110	23.3
			BPSK	1@47	3.75	-110	23.37
			QPSK	1@0	15	-110	23.37
			QPSK	1@11	15	-110	23.34
			QPSK	3@3	15	-110	23.43
			QPSK	12@0	15	-110	22.82

LTE Band 13							
In-Band	BW (MHz): 10	NB-IoT PRB: 35					
N_{UL}	M_{UL}	Frequency of Uplink (MHz)	Test Configuration Initial of Power			EUT	
			Modulation	N_{tones}	Sub-carrier Spacing (kHz)	Cell Power (dBm/15 kHz)	Power (dBm)
23250	-2	783.99	BPSK	1@0	3.75	-110	23.29
			BPSK	1@47	3.75	-110	23.35
			QPSK	1@0	15	-110	23.38
			QPSK	1@11	15	-110	23.39
			QPSK	3@3	15	-110	23.47
			QPSK	12@0	15	-110	22.88

LTE Band 13							
Guard-Band	BW (MHz): 5						
N_{UL}	M_{UL}	Frequency of Uplink (MHz)	Test Configuration Initial of Power			EUT	
			Modulation	N_{tones}	Sub-carrier Spacing (kHz)	Cell Power (dBm/15 kHz)	Power (dBm)
23182	0	777.2	BPSK	1@0	3.75	-110	22.1
			QPSK	1@0	15	-110	22.22
			QPSK	3@3	15	-110	22.31
			QPSK	12@0	15	-110	21.48
23206	0	779.6	BPSK	1@0	3.75	-110	23.31
			BPSK	1@47	3.75	-110	23.33
			QPSK	1@0	15	-110	23.37
			QPSK	1@11	15	-110	23.39
			QPSK	3@3	15	-110	23.49
			QPSK	12@0	15	-110	22.88
23278	0	786.8	BPSK	1@47	3.75	-110	22.33
			QPSK	1@11	15	-110	22.33
			QPSK	3@3	15	-110	22.43
			QPSK	12@0	15	-110	21.62

LTE Band 66							
Stand-alone							
N_{UL}	M_{UL}	Frequency of Uplink (MHz)	Test Configuration Initial of Power			EUT	
			Modulation	N_{tones}	Sub-carrier Spacing (kHz)	Cell Power (dBm/15 kHz)	Power (dBm)
131974	0	1710.2	BPSK	1@0	3.75	-110	21.72
			BPSK	1@0	15	-110	21.76
			QPSK	1@0	3.75	-110	21.74
			QPSK	1@0	15	-110	21.76
			QPSK	3@3	15	-110	21.91
			QPSK	12@0	15	-110	21.63
132322	0	1745	BPSK	1@0	3.75	-110	23.11
			BPSK	1@0	15	-110	23.14
			BPSK	1@47	3.75	-110	23.1
			QPSK	1@0	3.75	-110	23.11
			QPSK	1@0	15	-110	23.15
			QPSK	1@11	15	-110	23.16
			QPSK	3@3	15	-110	23.57
			QPSK	12@0	15	-110	23.04
132671	0	1779.9	BPSK	1@47	3.75	-110	21.81
			BPSK	1@47	15	-110	21.84
			QPSK	1@11	3.75	-110	21.84
			QPSK	1@11	15	-110	21.88
			QPSK	3@3	15	-110	21.93
			QPSK	12@0	15	-110	21.72

LTE Band 66							
In-Band	BW (MHz): 3						
N_{UL}	M_{UL}	Frequency of Uplink (MHz)	Test Configuration Initial of Power			EUT	
			Modulation	N_{tones}	Sub-carrier Spacing (kHz)	Cell Power (dBm/15 kHz)	Power (dBm)
131980	0	1710.8	BPSK	1@0	3.75	-110	21.63
			QPSK	1@0	15	-110	21.6
			QPSK	3@3	15	-110	21.76
			QPSK	12@0	15	-110	21.53
132313	0	1744.1	BPSK	1@0	3.75	-110	22.96
			BPSK	1@47	3.75	-110	23
			QPSK	1@0	15	-110	23.05
			QPSK	1@11	15	-110	23
			QPSK	3@3	15	-110	23.45
			QPSK	12@0	15	-110	22.9
132665	0	1779.3	BPSK	1@47	3.75	-110	21.68
			QPSK	1@11	15	-110	21.76
			QPSK	3@3	15	-110	21.77
			QPSK	12@0	15	-110	21.6

LTE Band 66							
In-Band	BW (MHz): 10	NB-IoT PRB: 30					
N_{UL}	M_{UL}	Frequency of Uplink (MHz)	Test Configuration Initial of Power			EUT	
			Modulation	N_{tones}	Sub-carrier Spacing (kHz)	Cell Power (dBm/15 kHz)	Power (dBm)
132033	-2	1716.09	BPSK	1@0	3.75	-110	21.59
			QPSK	1@0	15	-110	21.6
			QPSK	3@3	15	-110	21.79
			QPSK	12@0	15	-110	21.47
132332	-2	1745.99	BPSK	1@0	3.75	-110	22.97
			BPSK	1@47	3.75	-110	22.95
			QPSK	1@0	15	-110	23.01
			QPSK	1@11	15	-110	23.04
			QPSK	3@3	15	-110	23.42
			QPSK	12@0	15	-110	22.91
132632	-2	1775.99	BPSK	1@47	3.75	-110	21.7
			QPSK	1@11	15	-110	21.75
			QPSK	3@3	15	-110	21.82
			QPSK	12@0	15	-110	21.56

LTE Band 66							
In-Band	BW (MHz): 10	NB-IoT PRB: 35					
N_{UL}	M_{UL}	Frequency of Uplink (MHz)	Test Configuration Initial of Power			EUT	
			Modulation	N_{tones}	Sub-carrier Spacing (kHz)	Cell Power (dBm/15 kHz)	Power (dBm)
132042	-2	1716.99	BPSK	1@0	3.75	-110	21.58
			QPSK	1@0	15	-110	21.64
			QPSK	3@3	15	-110	21.77
			QPSK	12@0	15	-110	21.47
132341	-2	1746.89	BPSK	1@0	3.75	-110	22.95
			BPSK	1@47	3.75	-110	22.95
			QPSK	1@0	15	-110	23.01
			QPSK	1@11	15	-110	23.01
			QPSK	3@3	15	-110	23.42
			QPSK	12@0	15	-110	22.92
132641	-2	1776.89	BPSK	1@47	3.75	-110	21.72
			QPSK	1@11	15	-110	21.74
			QPSK	3@3	15	-110	21.79
			QPSK	12@0	15	-110	21.6

LTE Band 66							
Guard-Band	BW (MHz): 5						
N_{UL}	M_{UL}	Frequency of Uplink (MHz)	Test Configuration Initial of Power			EUT	
			Modulation	N_{tones}	Sub-carrier Spacing (kHz)	Cell Power (dBm/15 kHz)	Power (dBm)
131974	0	1710.2	BPSK	1@0	3.75	-110	21.62
			QPSK	1@0	15	-110	21.61
			QPSK	3@3	15	-110	21.75
			QPSK	12@0	15	-110	21.48
132298	0	1742.6	BPSK	1@0	3.75	-110	22.97
			BPSK	1@47	3.75	-110	22.96
			QPSK	1@0	15	-110	23.04
			QPSK	1@11	15	-110	23.01
			QPSK	3@3	15	-110	23.42
			QPSK	12@0	15	-110	22.91
132671	0	1779.9	BPSK	1@47	3.75	-110	21.69
			QPSK	1@11	15	-110	21.74
			QPSK	3@3	15	-110	21.84
			QPSK	12@0	15	-110	21.63

ERP Power (dBm)

Cat-M1

LTE Band 12							
Channel Bandwidth: 1.4 MHz / QPSK							
Plane	**Channel**	**Frequency (MHz)**	**Reading (dBm)**	**Correction Factor (dB)**	**ERP (dBm)**	**ERP (mW)**	**Polarization (H/V)**
X	23017	699.7	-6.11	30.36	22.10	162.18	H
	23095	707.5	-5.86	30.17	22.16	164.44	
	23173	715.3	-5.83	30.17	22.19	165.58	
	23017	699.7	-12.74	32.03	17.14	51.76	V
	23095	707.5	-12.56	31.98	17.27	53.33	
	23173	715.3	-12.50	32.06	17.41	55.08	
Channel Bandwidth: 1.4 MHz / 16QAM							
X	23017	699.7	-7.14	30.36	21.07	127.94	H
	23095	707.5	-6.89	30.17	21.13	129.72	
	23173	715.3	-6.86	30.17	21.16	130.62	
	23017	699.7	-13.77	32.03	16.11	40.83	V
	23095	707.5	-13.59	31.98	16.24	42.07	
	23173	715.3	-13.53	32.06	16.38	43.45	

Note: ERP (dBm) = Reading (dBm) + Correction Factor (dB) – 2.15

LTE Band 12							
Channel Bandwidth: 3 MHz / QPSK							
Plane	**Channel**	**Frequency (MHz)**	**Reading (dBm)**	**Correction Factor (dB)**	**ERP (dBm)**	**ERP (mW)**	**Polarization (H/V)**
X	23025	700.5	-5.68	30.17	22.34	171.40	H
	23095	707.5	-5.62	30.17	22.40	173.78	
	23165	714.5	-5.60	30.18	22.43	174.98	
	23025	700.5	-12.43	31.96	17.38	54.70	V
	23095	707.5	-12.32	31.98	17.51	56.36	
	23165	714.5	-12.23	32.03	17.65	58.21	
Channel Bandwidth: 3 MHz / 16QAM							
X	23025	700.5	-6.71	30.17	21.31	135.21	H
	23095	707.5	-6.65	30.17	21.37	137.09	
	23165	714.5	-6.63	30.18	21.40	138.04	
	23025	700.5	-13.46	31.96	16.35	43.15	V
	23095	707.5	-13.35	31.98	16.48	44.46	
	23165	714.5	-13.26	32.03	16.62	45.92	

Note: ERP (dBm) = Reading (dBm) + Correction Factor (dB) – 2.15

LTE Band 12							
Channel Bandwidth: 5 MHz / QPSK							
Plane	**Channel**	**Frequency (MHz)**	**Reading (dBm)**	**Correction Factor (dB)**	**ERP (dBm)**	**ERP (mW)**	**Polarization (H/V)**
X	23035	701.5	-5.42	30.17	22.60	181.97	H
	23095	707.5	-5.36	30.17	22.66	184.50	
	23155	713.5	-5.34	30.18	22.69	185.78	
	23035	701.5	-12.17	31.96	17.64	58.08	V
	23095	707.5	-12.06	31.98	17.77	59.84	
	23155	713.5	-11.97	32.03	17.91	61.80	
Channel Bandwidth: 5 MHz / 16QAM							
X	23035	701.5	-6.45	30.17	21.57	143.55	H
	23095	707.5	-6.39	30.17	21.63	145.55	
	23155	713.5	-6.37	30.18	21.66	146.55	
	23035	701.5	-13.20	31.96	16.61	45.81	V
	23095	707.5	-13.09	31.98	16.74	47.21	
	23155	713.5	-13.00	32.03	16.88	48.75	

Note: ERP (dBm) = Reading (dBm) + Correction Factor (dB) – 2.15

LTE Band 12							
Channel Bandwidth: 10 MHz / QPSK							
Plane	**Channel**	**Frequency (MHz)**	**Reading (dBm)**	**Correction Factor (dB)**	**ERP (dBm)**	**ERP (mW)**	**Polarization (H/V)**
X	23060	704.0	-5.17	30.17	22.85	192.75	H
	23095	707.5	-5.11	30.17	22.91	195.43	
	23130	711.0	-5.09	30.18	22.94	196.79	
	23060	704.0	-11.92	31.96	17.89	61.52	V
	23095	707.5	-11.81	31.98	18.02	63.39	
	23130	711.0	-11.72	32.03	18.16	65.46	
Channel Bandwidth: 10 MHz / 16QAM							
X	23060	704.0	-6.19	30.17	21.83	152.41	H
	23095	707.5	-6.13	30.17	21.89	154.53	
	23130	711.0	-6.11	30.18	21.92	155.60	
	23060	704.0	-12.94	31.96	16.87	48.64	V
	23095	707.5	-12.83	31.98	17.00	50.12	
	23130	711.0	-12.74	32.03	17.14	51.76	

Note: ERP (dBm) = Reading (dBm) + Correction Factor (dB) – 2.15

LTE Band 13							
Channel Bandwidth: 5 MHz / QPSK							
Plane	**Channel**	**Frequency (MHz)**	**Reading (dBm)**	**Correction Factor (dB)**	**ERP (dBm)**	**ERP (mW)**	**Polarization (H/V)**
X	23205	779.5	-6.97	32.24	23.12	205.12	H
	23230	782.0	-6.48	32.17	23.54	225.94	
	23255	784.5	-6.75	32.11	23.21	209.41	
	23205	779.5	-12.25	32.43	18.03	63.53	V
	23230	782.0	-11.91	32.42	18.36	68.55	
	23255	784.5	-12.16	32.46	18.15	65.31	
Channel Bandwidth: 5 MHz / 16QAM							
X	23205	779.5	-8.00	32.24	22.09	161.81	H
	23230	782.0	-7.51	32.17	22.51	178.24	
	23255	784.5	-7.78	32.11	22.18	165.20	
	23205	779.5	-13.28	32.43	17.00	50.12	V
	23230	782.0	-12.94	32.42	17.33	54.08	
	23255	784.5	-13.19	32.46	17.12	51.52	

Note: ERP (dBm) = Reading (dBm) + Correction Factor (dB) – 2.15

LTE Band 13							
Channel Bandwidth: 10 MHz / QPSK							
Plane	**Channel**	**Frequency (MHz)**	**Reading (dBm)**	**Correction Factor (dB)**	**ERP (dBm)**	**ERP (mW)**	**Polarization (H/V)**
X	23230	782.0	-6.22	32.17	23.80	239.88	H
	23230	782.0	-11.65	32.42	18.62	72.78	V
Channel Bandwidth: 10 MHz / 16QAM							
X	23230	782.0	-7.23	32.17	22.79	190.11	H
	23230	782.0	-12.66	32.42	17.61	57.68	V

Note: ERP (dBm) = Reading (dBm) + Correction Factor (dB) – 2.15

NB-IoT

LTE Band 12							
BPSK							
Plane	Channel	Frequency (MHz)	Reading (dBm)	Correction Factor (dB)	ERP (dBm)	ERP (mW)	Polarization (H/V)
Z	23012	699.2	-11.84	30.36	16.37	43.35	H
	23095	707.5	-10.52	30.17	17.50	56.23	
	23178	715.8	-11.70	30.17	16.32	42.85	
	23012	699.2	-8.11	32.03	21.77	150.31	V
	23095	707.5	-6.64	31.98	23.19	208.45	
	23178	715.8	-8.19	32.06	21.72	148.59	
QPSK							
Z	23012	699.2	-10.85	30.36	17.36	54.45	H
	23095	707.5	-9.53	30.17	18.49	70.63	
	23178	715.8	-10.71	30.17	17.31	53.83	
	23012	699.2	-7.12	32.03	22.76	188.80	V
	23095	707.5	-5.65	31.98	24.18	261.82	
	23178	715.8	-7.20	32.06	22.71	186.64	

Note: ERP (dBm) = Reading (dBm) + Correction Factor (dB) – 2.15

LTE Band 13							
BPSK							
Plane	Channel	Frequency (MHz)	Reading (dBm)	Correction Factor (dB)	ERP (dBm)	ERP (mW)	Polarization (H/V)
X	23182	777.2	-8.80	32.24	21.29	134.59	H
	23230	782.0	-7.61	32.17	22.41	174.18	
	23278	786.8	-8.58	32.11	21.38	137.40	
	23182	777.2	-13.77	32.43	16.51	44.77	V
	23230	782.0	-12.73	32.42	17.54	56.75	
	23278	786.8	-13.60	32.46	16.71	46.88	
QPSK							
X	23182	777.2	-7.82	32.24	22.27	168.66	H
	23230	782.0	-6.63	32.17	23.39	218.27	
	23278	786.8	-7.60	32.11	22.36	172.19	
	23182	777.2	-12.79	32.43	17.49	56.10	V
	23230	782.0	-11.75	32.42	18.52	71.12	
	23278	786.8	-12.62	32.46	17.69	58.75	

Note: ERP (dBm) = Reading (dBm) + Correction Factor (dB) – 2.15

EIRP Power (dBm)

Cat-M1

LTE Band 4							
Channel Bandwidth: 1.4 MHz / QPSK							
Plane	**Channel**	**Frequency (MHz)**	**Reading (dBm)**	**Correction Factor (dB)**	**EIRP (dBm)**	**EIRP (mW)**	**Polarization (H/V)**
X	19957	1710.7	-11.85	36.45	24.60	288.40	H
	20175	1732.5	-12.07	36.80	24.73	297.17	
	20393	1754.3	-12.25	36.94	24.69	294.44	
	19957	1710.7	-20.05	37.28	17.23	52.84	V
	20175	1732.5	-20.16	37.63	17.47	55.85	
	20393	1754.3	-20.21	37.64	17.43	55.34	
Channel Bandwidth: 1.4 MHz / 16QAM							
X	19957	1710.7	-12.87	36.45	23.58	228.03	H
	20175	1732.5	-13.09	36.80	23.71	234.96	
	20393	1754.3	-13.27	36.94	23.67	232.81	
	19957	1710.7	-21.07	37.28	16.21	41.78	V
	20175	1732.5	-21.18	37.63	16.45	44.16	
	20393	1754.3	-21.23	37.64	16.41	43.75	

Note: EIRP (dBm) = Reading (dBm) + Correction Factor (dB)

LTE Band 4							
Channel Bandwidth: 3 MHz / QPSK							
Plane	**Channel**	**Frequency (MHz)**	**Reading (dBm)**	**Correction Factor (dB)**	**EIRP (dBm)**	**EIRP (mW)**	**Polarization (H/V)**
X	19965	1711.5	-11.63	36.45	24.82	303.39	H
	20175	1732.5	-11.85	36.80	24.95	312.61	
	20385	1753.5	-12.03	36.94	24.91	309.74	
	19965	1711.5	-19.83	37.28	17.45	55.59	V
	20175	1732.5	-19.94	37.63	17.69	58.75	
	20385	1753.5	-19.99	37.64	17.65	58.21	
Channel Bandwidth: 3 MHz / 16QAM							
X	19965	1711.5	-12.60	36.45	23.85	242.66	H
	20175	1732.5	-12.82	36.80	23.98	250.03	
	20385	1753.5	-13.00	36.94	23.94	247.74	
	19965	1711.5	-20.80	37.28	16.48	44.46	V
	20175	1732.5	-20.91	37.63	16.72	46.99	
	20385	1753.5	-20.96	37.64	16.68	46.56	

Note: EIRP (dBm) = Reading (dBm) + Correction Factor (dB)

LTE Band 4							
Channel Bandwidth: 5 MHz / QPSK							
Plane	**Channel**	**Frequency (MHz)**	**Reading (dBm)**	**Correction Factor (dB)**	**EIRP (dBm)**	**EIRP (mW)**	**Polarization (H/V)**
X	19975	1712.5	-11.39	36.45	25.06	320.63	H
	20175	1732.5	-11.61	36.80	25.19	330.37	
	20375	1752.5	-11.79	36.94	25.15	327.34	
	19975	1712.5	-19.59	37.28	17.69	58.75	V
	20175	1732.5	-19.70	37.63	17.93	62.09	
	20375	1752.5	-19.75	37.64	17.89	61.52	
Channel Bandwidth: 5 MHz / 16QAM							
X	19975	1712.5	-12.34	36.45	24.11	257.63	H
	20175	1732.5	-12.56	36.80	24.24	265.46	
	20375	1752.5	-12.74	36.94	24.20	263.03	
	19975	1712.5	-20.54	37.28	16.74	47.21	V
	20175	1732.5	-20.65	37.63	16.98	49.89	
	20375	1752.5	-20.70	37.64	16.94	49.43	

Note: EIRP (dBm) = Reading (dBm) + Correction Factor (dB)

LTE Band 4							
Channel Bandwidth: 10 MHz / QPSK							
Plane	**Channel**	**Frequency (MHz)**	**Reading (dBm)**	**Correction Factor (dB)**	**EIRP (dBm)**	**EIRP (mW)**	**Polarization (H/V)**
X	20000	1715.0	-11.31	36.64	25.33	341.19	H
	20175	1732.5	-11.34	36.80	25.46	351.56	
	20350	1750.0	-11.38	36.80	25.42	348.34	
	20000	1715.0	-19.48	37.44	17.96	62.52	V
	20175	1732.5	-19.43	37.63	18.20	66.07	
	20350	1750.0	-19.48	37.64	18.16	65.46	
Channel Bandwidth: 10 MHz / 16QAM							
X	20000	1715.0	-12.29	36.64	24.35	272.27	H
	20175	1732.5	-12.32	36.80	24.48	280.54	
	20350	1750.0	-12.36	36.80	24.44	277.97	
	20000	1715.0	-20.46	37.44	16.98	49.89	V
	20175	1732.5	-20.41	37.63	17.22	52.72	
	20350	1750.0	-20.46	37.64	17.18	52.24	

Note: EIRP (dBm) = Reading (dBm) + Correction Factor (dB)

LTE Band 4							
Channel Bandwidth: 15 MHz / QPSK							
Plane	Channel	Frequency (MHz)	Reading (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (mW)	Polarization (H/V)
X	20025	1717.5	-10.86	36.45	25.59	362.24	H
	20175	1732.5	-11.08	36.80	25.72	373.25	
	20325	1747.5	-11.26	36.94	25.68	369.83	
	20025	1717.5	-19.06	37.28	18.22	66.37	V
	20175	1732.5	-19.17	37.63	18.46	70.15	
	20325	1747.5	-19.22	37.64	18.42	69.50	
Channel Bandwidth: 15 MHz / 16QAM							
X	20025	1717.5	-13.53	36.45	22.92	195.88	H
	20175	1732.5	-13.97	36.80	22.83	191.87	
	20325	1747.5	-14.25	36.94	22.69	185.78	
	20025	1717.5	-20.55	37.28	16.73	47.10	V
	20175	1732.5	-21.16	37.63	16.47	44.36	
	20325	1747.5	-21.46	37.64	16.18	41.50	

Note: EIRP (dBm) = Reading (dBm) + Correction Factor (dB)

LTE Band 4							
Channel Bandwidth: 20 MHz / QPSK							
Plane	Channel	Frequency (MHz)	Reading (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (mW)	Polarization (H/V)
X	20050	1720.0	-10.60	36.45	25.85	384.59	H
	20175	1732.5	-10.82	36.80	25.98	396.28	
	20300	1745.0	-11.00	36.94	25.94	392.64	
	20050	1720.0	-18.80	37.28	18.48	70.47	V
	20175	1732.5	-18.91	37.63	18.72	74.47	
	20300	1745.0	-18.96	37.64	18.68	73.79	
Channel Bandwidth: 20 MHz / 16QAM							
X	20050	1720.0	-11.85	36.45	24.60	288.40	H
	20175	1732.5	-12.07	36.80	24.73	297.17	
	20300	1745.0	-12.25	36.94	24.69	294.44	
	20050	1720.0	-20.05	37.28	17.23	52.84	V
	20175	1732.5	-20.16	37.63	17.47	55.85	
	20300	1745.0	-20.21	37.64	17.43	55.34	

Note: EIRP (dBm) = Reading (dBm) + Correction Factor (dB)

LTE Band 66							
Channel Bandwidth: 1.4 MHz / QPSK							
Plane	**Channel**	**Frequency (MHz)**	**Reading (dBm)**	**Correction Factor (dB)**	**EIRP (dBm)**	**EIRP (mW)**	**Polarization (H/V)**
X	131979	1710.7	-12.21	36.45	24.24	265.46	H
	132322	1745.0	-12.16	36.80	24.64	291.07	
	132665	1779.3	-12.83	36.94	24.11	257.63	
	131979	1710.7	-20.62	37.28	16.66	46.34	V
	132322	1745.0	-20.58	37.63	17.05	50.70	
	132665	1779.3	-21.09	37.64	16.55	45.19	
Channel Bandwidth: 1.4 MHz / 16QAM							
X	131979	1710.7	-13.17	36.45	23.28	212.81	H
	132322	1745.0	-13.12	36.80	23.68	233.35	
	132665	1779.3	-13.79	36.94	23.15	206.54	
	131979	1710.7	-21.58	37.28	15.70	37.15	V
	132322	1745.0	-21.54	37.63	16.09	40.64	
	132665	1779.3	-22.05	37.64	15.59	36.22	

Note: EIRP (dBm) = Reading (dBm) + Correction Factor (dB)

LTE Band 66							
Channel Bandwidth: 3 MHz / QPSK							
Plane	**Channel**	**Frequency (MHz)**	**Reading (dBm)**	**Correction Factor (dB)**	**EIRP (dBm)**	**EIRP (mW)**	**Polarization (H/V)**
X	131987	1711.5	-11.96	36.45	24.49	281.19	H
	132322	1745.0	-11.91	36.80	24.89	308.32	
	132657	1778.5	-12.58	36.94	24.36	272.90	
	131987	1711.5	-20.37	37.28	16.91	49.09	V
	132322	1745.0	-20.33	37.63	17.30	53.70	
	132657	1778.5	-20.84	37.64	16.80	47.86	
Channel Bandwidth: 3 MHz / 16QAM							
X	131987	1711.5	-12.90	36.45	23.55	226.46	H
	132322	1745.0	-12.85	36.80	23.95	248.31	
	132657	1778.5	-13.52	36.94	23.42	219.79	
	131987	1711.5	-21.31	37.28	15.97	39.54	V
	132322	1745.0	-21.27	37.63	16.36	43.25	
	132657	1778.5	-21.78	37.64	15.86	38.55	

Note: EIRP (dBm) = Reading (dBm) + Correction Factor (dB)

LTE Band 66							
Channel Bandwidth: 5 MHz / QPSK							
Plane	**Channel**	**Frequency (MHz)**	**Reading (dBm)**	**Correction Factor (dB)**	**EIRP (dBm)**	**EIRP (mW)**	**Polarization (H/V)**
X	131997	1712.5	-11.70	36.45	24.75	298.54	H
	132322	1745.0	-11.65	36.80	25.15	327.34	
	132647	1777.5	-12.32	36.94	24.62	289.73	
	131997	1712.5	-20.11	37.28	17.17	52.12	V
	132322	1745.0	-20.07	37.63	17.56	57.02	
	132647	1777.5	-20.58	37.64	17.06	50.82	
Channel Bandwidth: 5 MHz / 16QAM							
X	131997	1712.5	-12.63	36.45	23.82	240.99	H
	132322	1745.0	-12.58	36.80	24.22	264.24	
	132647	1777.5	-13.25	36.94	23.69	233.88	
	131997	1712.5	-21.04	37.28	16.24	42.07	V
	132322	1745.0	-21.00	37.63	16.63	46.03	
	132647	1777.5	-21.51	37.64	16.13	41.02	

Note: EIRP (dBm) = Reading (dBm) + Correction Factor (dB)

LTE Band 66							
Channel Bandwidth: 10 MHz / QPSK							
Plane	**Channel**	**Frequency (MHz)**	**Reading (dBm)**	**Correction Factor (dB)**	**EIRP (dBm)**	**EIRP (mW)**	**Polarization (H/V)**
X	132022	1715.0	-11.62	36.64	25.02	317.69	H
	132322	1745.0	-11.38	36.80	25.42	348.34	
	132622	1775.0	-11.91	36.80	24.89	308.32	
	132022	1715.0	-20.00	37.44	17.44	55.46	V
	132322	1745.0	-19.80	37.63	17.83	60.67	
	132622	1775.0	-20.31	37.64	17.33	54.08	
Channel Bandwidth: 10 MHz / 16QAM							
X	132022	1715.0	-12.56	36.64	24.08	255.86	H
	132322	1745.0	-12.32	36.80	24.48	280.54	
	132622	1775.0	-12.85	36.80	23.95	248.31	
	132022	1715.0	-20.94	37.44	16.50	44.67	V
	132322	1745.0	-20.74	37.63	16.89	48.87	
	132622	1775.0	-21.25	37.64	16.39	43.55	

Note: EIRP (dBm) = Reading (dBm) + Correction Factor (dB)

LTE Band 66							
Channel Bandwidth: 15 MHz / QPSK							
Plane	Channel	Frequency (MHz)	Reading (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (mW)	Polarization (H/V)
X	132047	1717.5	-11.15	36.45	25.30	338.84	H
	132322	1745.0	-11.10	36.80	25.70	371.54	
	132597	1772.5	-11.77	36.94	25.17	328.85	
	132047	1717.5	-19.56	37.28	17.72	59.16	V
	132322	1745.0	-19.52	37.63	18.11	64.71	
	132597	1772.5	-20.03	37.64	17.61	57.68	
Channel Bandwidth: 15 MHz / 16QAM							
X	132047	1717.5	-12.12	36.45	24.33	271.02	H
	132322	1745.0	-12.07	36.80	24.73	297.17	
	132597	1772.5	-12.74	36.94	24.20	263.03	
	132047	1717.5	-20.53	37.28	16.75	47.32	V
	132322	1745.0	-20.49	37.63	17.14	51.76	
	132597	1772.5	-21.00	37.64	16.64	46.13	

Note: EIRP (dBm) = Reading (dBm) + Correction Factor (dB)

LTE Band 66							
Channel Bandwidth: 20 MHz / QPSK							
Plane	Channel	Frequency (MHz)	Reading (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (mW)	Polarization (H/V)
X	132072	1720.0	-10.84	36.45	25.61	363.92	H
	132322	1745.0	-10.79	36.80	26.01	399.02	
	132572	1770.0	-11.46	36.94	25.48	353.18	
	132072	1720.0	-19.25	37.28	18.03	63.53	V
	132322	1745.0	-19.21	37.63	18.42	69.50	
	132572	1770.0	-19.72	37.64	17.92	61.94	
Channel Bandwidth: 20 MHz / 16QAM							
X	132072	1720.0	-11.86	36.45	24.59	287.74	H
	132322	1745.0	-11.81	36.80	24.99	315.50	
	132572	1770.0	-12.48	36.94	24.46	279.25	
	132072	1720.0	-20.27	37.28	17.01	50.23	V
	132322	1745.0	-20.23	37.63	17.40	54.95	
	132572	1770.0	-20.74	37.64	16.90	48.98	

Note: EIRP (dBm) = Reading (dBm) + Correction Factor (dB)

NB-IoT

LTE Band 4							
BPSK							
Plane	Channel	Frequency (MHz)	Reading (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (mW)	Polarization (H/V)
Z	19952	1710.2	-19.93	36.45	16.52	44.87	H
	20175	1732.5	-19.07	36.80	17.73	59.29	
	20398	1754.8	-20.34	36.94	16.60	45.71	
	19952	1710.2	-14.69	37.28	22.59	181.55	V
	20175	1732.5	-13.51	37.63	24.12	258.23	
	20398	1754.8	-14.96	37.64	22.68	185.35	
QPSK							
Z	19952	1710.2	-18.94	36.45	17.51	56.36	H
	20175	1732.5	-18.08	36.80	18.72	74.47	
	20398	1754.8	-19.35	36.94	17.59	57.41	
	19952	1710.2	-13.70	37.28	23.58	228.03	V
	20175	1732.5	-12.52	37.63	25.11	324.34	
	20398	1754.8	-13.97	37.64	23.67	232.81	

Note: EIRP (dBm) = Reading (dBm) + Correction Factor (dB)

LTE Band 66							
BPSK							
Plane	Channel	Frequency (MHz)	Reading (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (mW)	Polarization (H/V)
Z	131972	1710.2	-19.35	36.45	17.10	51.29	H
	132322	1745.0	-19.09	36.80	17.71	59.02	
	132670	1779.8	-19.76	36.94	17.18	52.24	
	131972	1710.2	-14.40	37.28	22.88	194.09	V
	132322	1745.0	-13.10	37.63	24.53	283.79	
	132670	1779.8	-14.73	37.64	22.91	195.43	
QPSK							
Z	131972	1710.2	-18.37	36.45	18.08	64.27	H
	132322	1745.0	-18.11	36.80	18.69	73.96	
	132670	1779.8	-18.78	36.94	18.16	65.46	
	131972	1710.2	-13.42	37.28	23.86	243.22	V
	132322	1745.0	-12.12	37.63	25.51	355.63	
	132670	1779.8	-13.75	37.64	23.89	244.91	

Note: EIRP (dBm) = Reading (dBm) + Correction Factor (dB)

4.2 Modulation Characteristics Measurement

4.2.1 Limits of Modulation Characteristics

N/A

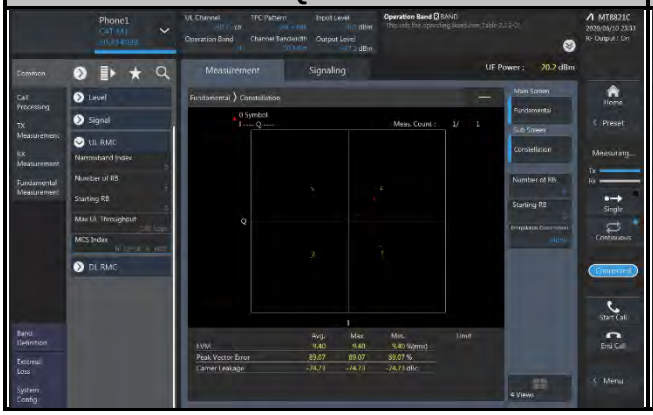
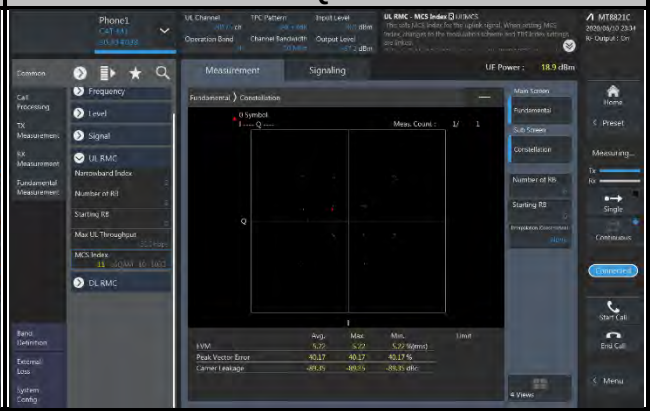
4.2.2 Test Setup

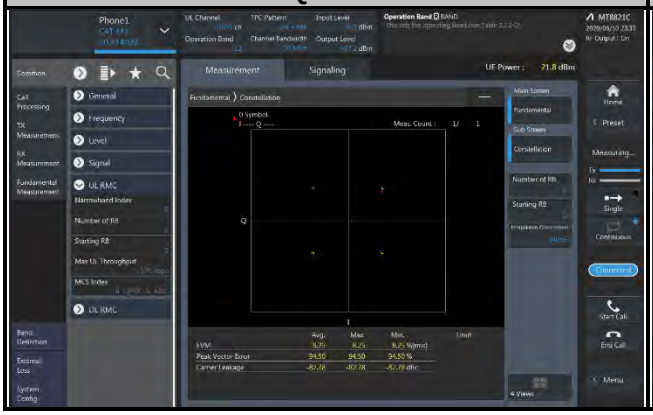
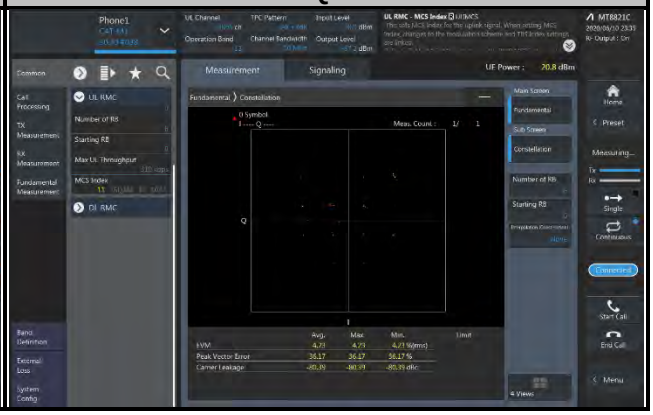
4.2.3 Test Procedure

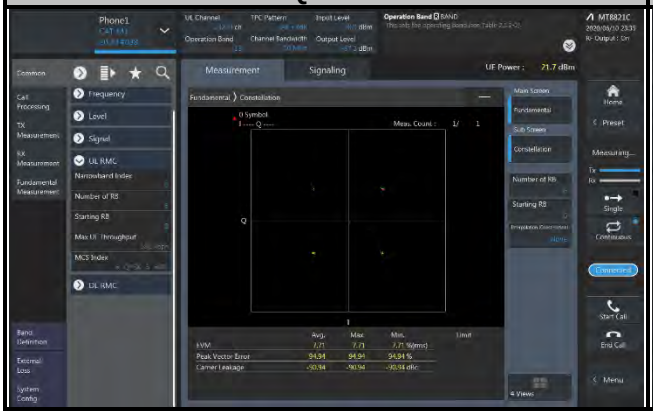
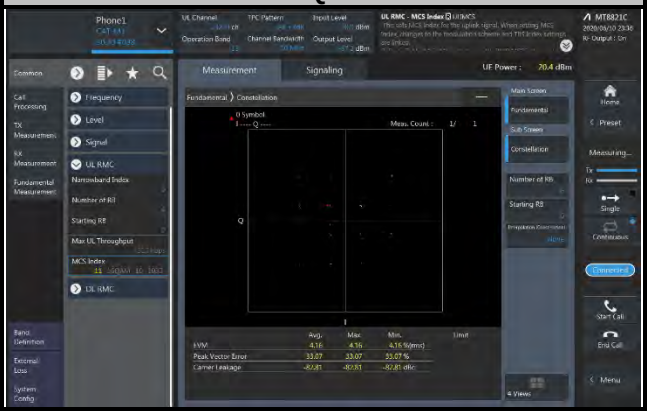
Connect the EUT to Communication Simulator via the antenna connector. The frequency band is set as EUT supported Modulation and Channels, the EUT output is matched with 50 ohm load, the waveform quality and constellation of the EUT was tested.

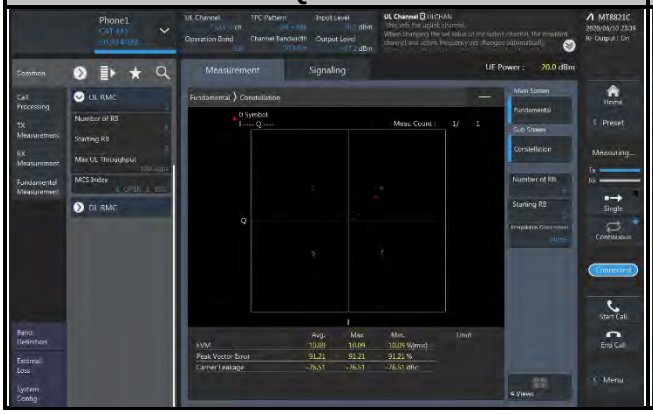
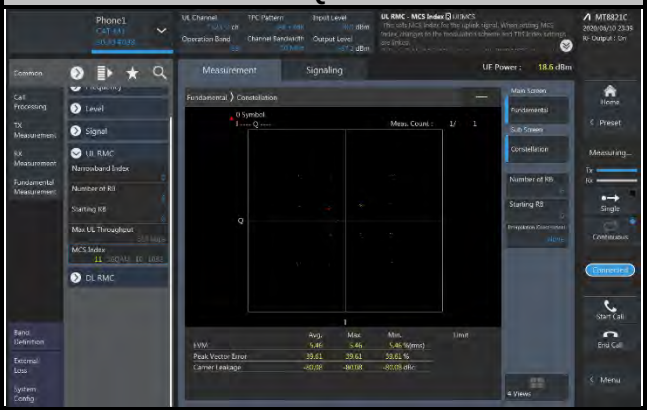
4.2.4 Test Results

Cat-M1

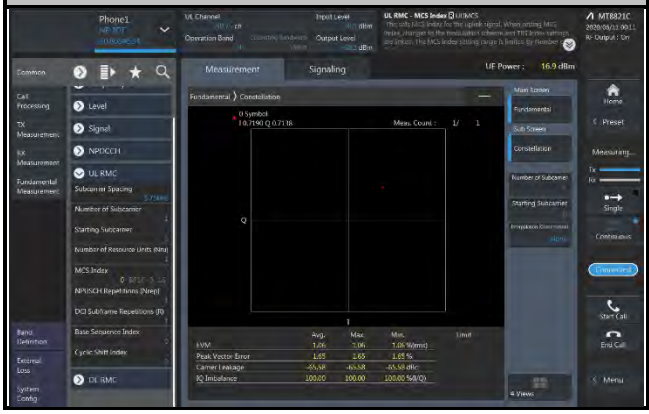
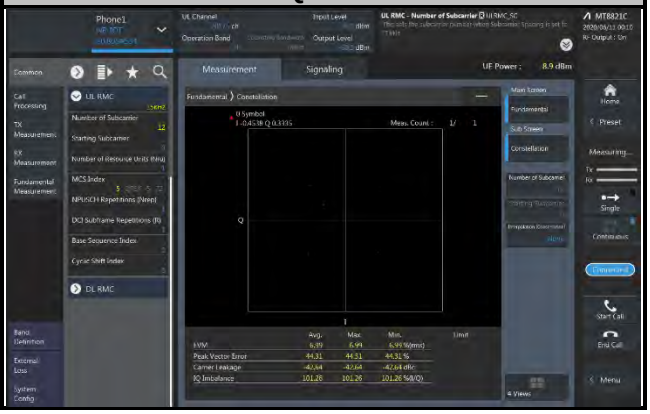
Spectrum Plot of Measurement	
LTE Band 4	
Channel 20175	
QPSK	16QAM
	

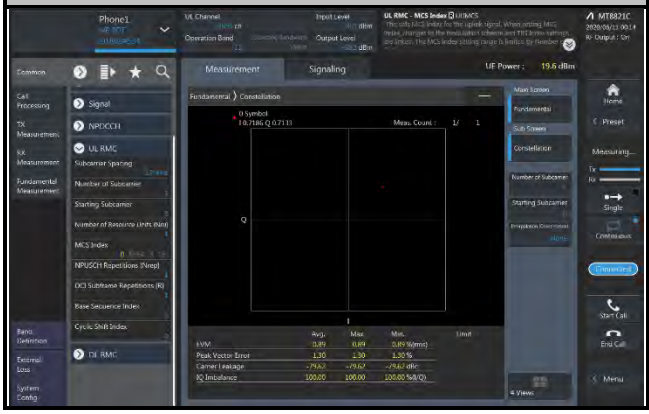
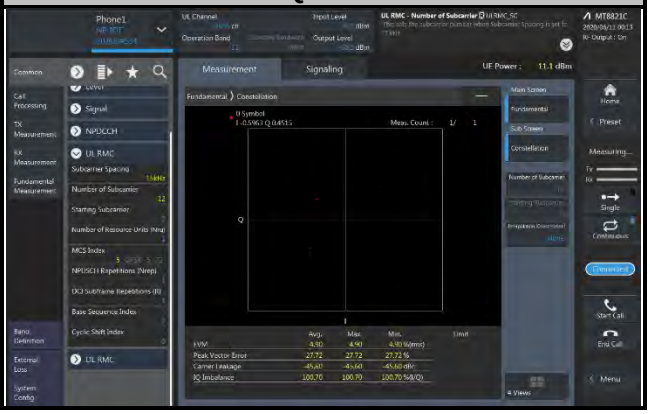
Spectrum Plot of Measurement	
LTE Band 12	
Channel 23095	
QPSK	16QAM
	

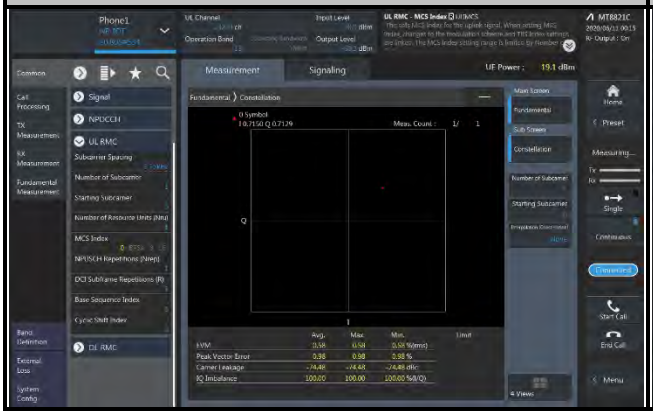
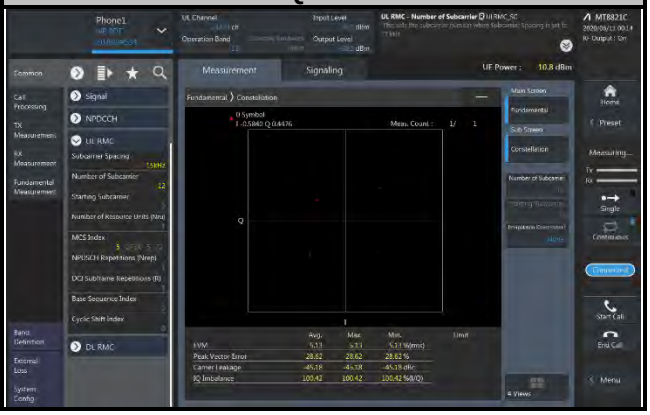
Spectrum Plot of Measurement	
LTE Band 13	
Channel 23230	
QPSK	16QAM
	

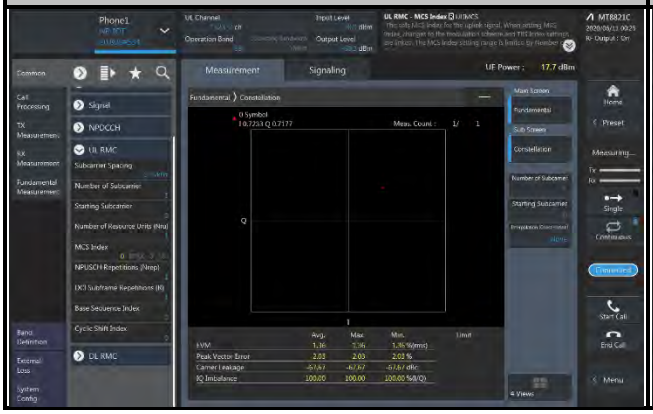
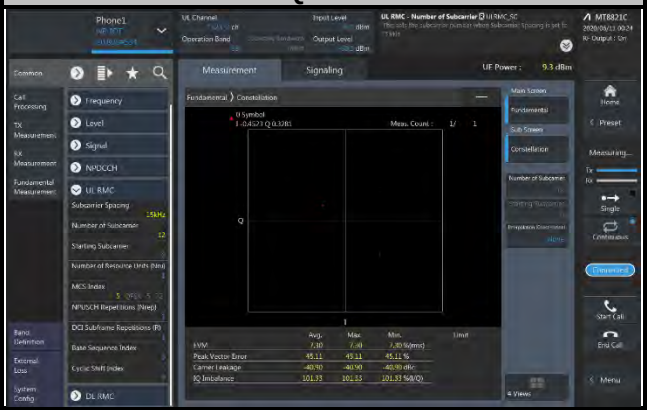
Spectrum Plot of Measurement	
LTE Band 66	
Channel 132322	
QPSK	16QAM
	

NB-IoT

Spectrum Plot of Measurement	
LTE Band 4	
Channel 20175	
BPSK	QPSK
	

Spectrum Plot of Measurement	
LTE Band 12	
Channel 23095	
BPSK	QPSK
	

Spectrum Plot of Measurement	
LTE Band 13	
Channel 23230	
BPSK	QPSK
	

Spectrum Plot of Measurement	
LTE Band 66	
Channel 132322	
BPSK	QPSK
	

4.3 Frequency Stability Measurement

4.3.1 Limits of Frequency Stability Measurement

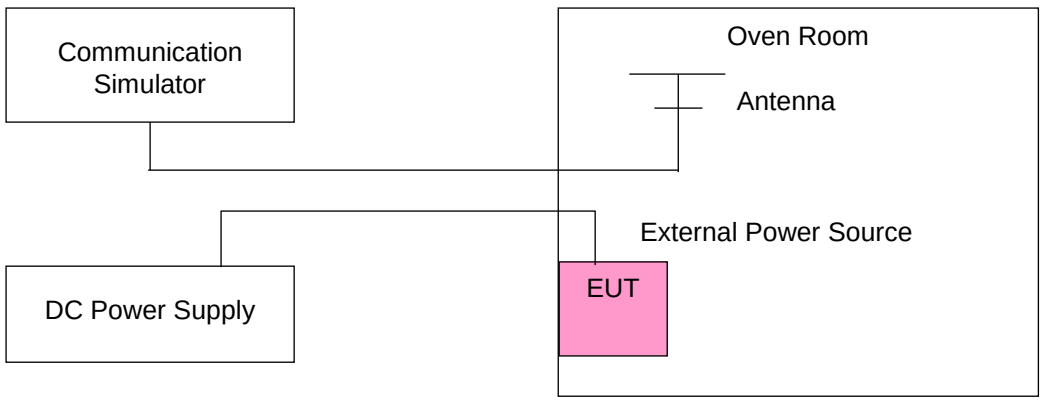
The frequency stability shall be sufficient to ensure that the fundamental emissions stay within the authorized bands of operation.

4.3.2 Test Procedure

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

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

4.3.3 Test Setup



4.3.4 Test Results

Cat-M1

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)
10.2	1710.700003	0.002	1754.300004	0.002
12	1710.700001	0.001	1754.300003	0.002
13.8	1710.700003	0.002	1754.300002	0.001

Note: The fixture defined the normal working voltage of the adapter is from 10.2 Vdc to 13.8 Vdc.

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)
-30	1710.700003	0.002	1754.300004	0.002
-20	1710.700003	0.002	1754.300001	0.001
-10	1710.700003	0.002	1754.300003	0.002
0	1710.700003	0.002	1754.300002	0.001
10	1710.700003	0.002	1754.300001	0.001
20	1710.699996	-0.002	1754.299997	-0.001
30	1710.699999	-0.001	1754.299999	-0.001
40	1710.699999	-0.001	1754.299997	-0.002
50	1710.699996	-0.002	1754.299998	-0.001
60	1710.699998	-0.001	1754.299997	-0.002
70	1710.699998	-0.001	1754.299998	-0.001
80	1710.699997	-0.002	1754.299998	-0.001
85	1710.699998	-0.001	1754.299997	-0.002

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)
10.2	1711.500002	0.001	1753.500004	0.002
12	1711.500004	0.002	1753.500002	0.001
13.8	1711.500001	0.001	1753.500002	0.001

Note: The fixture defined the normal working voltage of the adapter is from 10.2 Vdc to 13.8 Vdc.

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)
-30	1711.500002	0.001	1753.500002	0.001
-20	1711.500002	0.001	1753.500003	0.002
-10	1711.500003	0.002	1753.500001	0.001
0	1711.500002	0.001	1753.500001	0.001
10	1711.500004	0.002	1753.500004	0.002
20	1711.499998	-0.001	1753.499999	-0.001
30	1711.499998	-0.001	1753.499999	-0.001
40	1711.499998	-0.001	1753.499997	-0.002
50	1711.499997	-0.002	1753.499998	-0.001
60	1711.499996	-0.002	1753.499998	-0.001
70	1711.499999	-0.001	1753.499999	-0.001
50	1711.499996	-0.002	1753.499998	-0.001
85	1711.499999	-0.001	1753.499998	-0.001

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)
10.2	1712.500004	0.002	1752.500004	0.002
12	1712.500004	0.002	1752.500001	0.001
13.8	1712.500001	0.001	1752.500003	0.002

Note: The fixture defined the normal working voltage of the adapter is from 10.2 Vdc to 13.8 Vdc.

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)
-30	1712.500002	0.001	1752.500003	0.002
-20	1712.500004	0.002	1752.500003	0.002
-10	1712.500001	0.001	1752.500002	0.001
0	1712.500003	0.002	1752.500002	0.001
10	1712.500004	0.002	1752.500003	0.002
20	1712.499998	-0.001	1752.499999	-0.001
30	1712.499999	-0.001	1752.499998	-0.001
40	1712.499997	-0.002	1752.499996	-0.002
50	1712.499998	-0.001	1752.499996	-0.002
60	1712.499998	-0.001	1752.499997	-0.002
70	1712.499998	-0.001	1752.499996	-0.002
50	1712.499997	-0.002	1752.499998	-0.001
85	1712.499996	-0.002	1752.499997	-0.002

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)
10.2	1715.000002	0.001	1750.000002	0.001
12	1715.000001	0.001	1750.000003	0.002
13.8	1715.000003	0.001	1750.000003	0.002

Note: The fixture defined the normal working voltage of the adapter is from 10.2 Vdc to 13.8 Vdc.

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)
-30	1715.000002	0.001	1750.000001	0.001
-20	1715.000004	0.002	1750.000001	0.001
-10	1715.000003	0.002	1750.000004	0.002
0	1715.000001	0.001	1750.000003	0.002
10	1715.000003	0.002	1750.000003	0.002
20	1714.999997	-0.002	1749.999997	-0.002
30	1714.999996	-0.002	1749.999997	-0.002
40	1714.999999	-0.001	1749.999997	-0.002
50	1714.999997	-0.002	1749.999996	-0.002
60	1714.999997	-0.002	1749.999997	-0.002
70	1714.999996	-0.002	1749.999998	-0.001
50	1714.999997	-0.002	1749.999999	-0.001
85	1714.999997	-0.002	1749.999999	-0.001

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)
10.2	1717.500004	0.002	1747.500001	0.001
12	1717.500004	0.002	1747.500003	0.002
13.8	1717.500003	0.002	1747.500003	0.002

Note: The fixture defined the normal working voltage of the adapter is from 10.2 Vdc to 13.8 Vdc.

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)
-30	1717.500002	0.001	1747.500001	0.001
-20	1717.500003	0.002	1747.500002	0.001
-10	1717.500001	0.001	1747.500002	0.001
0	1717.500001	0.001	1747.500003	0.002
10	1717.500003	0.002	1747.500002	0.001
20	1717.499997	-0.002	1747.499998	-0.001
30	1717.499998	-0.001	1747.499998	-0.001
40	1717.499996	-0.002	1747.499999	-0.001
50	1717.499999	-0.001	1747.499998	-0.001
60	1717.499997	-0.002	1747.499998	-0.001
70	1717.499999	-0.001	1747.499997	-0.002
50	1717.499997	-0.002	1747.499997	-0.002
85	1717.499997	-0.002	1747.499996	-0.002

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)
10.2	1720.000002	0.001	1745.000003	0.001
12	1720.000003	0.002	1745.000004	0.002
13.8	1720.000003	0.002	1745.000001	0.001

Note: The fixture defined the normal working voltage of the adapter is from 10.2 Vdc to 13.8 Vdc.

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)
-30	1720.000003	0.002	1745.000001	0.001
-20	1720.000003	0.002	1745.000004	0.002
-10	1720.000003	0.001	1745.000003	0.001
0	1720.000002	0.001	1745.000003	0.002
10	1720.000001	0.001	1745.000003	0.002
20	1719.999996	-0.002	1744.999998	-0.001
30	1719.999997	-0.002	1744.999999	-0.001
40	1719.999998	-0.001	1744.999997	-0.002
50	1719.999997	-0.002	1744.999999	-0.001
60	1719.999998	-0.001	1744.999999	-0.001
70	1719.999997	-0.002	1744.999999	-0.001
50	1719.999998	-0.001	1744.999996	-0.002
85	1719.999997	-0.002	1744.999998	-0.001

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)
10.2	699.700004	0.005	715.300003	0.005
12	699.700002	0.002	715.300004	0.005
13.8	699.700002	0.003	715.300003	0.004

Note: The fixture defined the normal working voltage of the adapter is from 10.2 Vdc to 13.8 Vdc.

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)
-30	699.700003	0.004	715.300002	0.003
-20	699.700003	0.005	715.300003	0.004
-10	699.700003	0.005	715.300002	0.003
0	699.700002	0.003	715.300001	0.002
10	699.700001	0.002	715.300004	0.005
20	699.699998	-0.003	715.299997	-0.004
30	699.699997	-0.005	715.299998	-0.002
40	699.699998	-0.003	715.299999	-0.002
50	699.699997	-0.004	715.299998	-0.003
60	699.699998	-0.003	715.299996	-0.005
70	699.699996	-0.005	715.299998	-0.003
80	699.699998	-0.003	715.299998	-0.002
85	699.699999	-0.002	715.299998	-0.003

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)
10.2	700.500003	0.005	714.500003	0.004
12	700.500002	0.003	714.500002	0.003
13.8	700.500003	0.004	714.500002	0.003

Note: The fixture defined the normal working voltage of the adapter is from 10.2 Vdc to 13.8 Vdc.

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)
-30	700.500001	0.002	714.500004	0.005
-20	700.500002	0.003	714.500004	0.005
-10	700.500001	0.002	714.500003	0.004
0	700.500002	0.002	714.500003	0.004
10	700.500004	0.005	714.500001	0.001
20	700.499998	-0.002	714.499998	-0.003
30	700.499999	-0.002	714.499997	-0.004
40	700.499997	-0.005	714.499997	-0.004
50	700.499998	-0.004	714.499997	-0.004
60	700.499998	-0.003	714.499996	-0.005
70	700.499997	-0.005	714.499996	-0.005
50	700.499998	-0.003	714.499997	-0.004
85	700.499996	-0.006	714.499999	-0.002

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)
10.2	701.500004	0.005	713.500003	0.004
12	701.500003	0.004	713.500001	0.001
13.8	701.500003	0.004	713.500002	0.003

Note: The fixture defined the normal working voltage of the adapter is from 10.2 Vdc to 13.8 Vdc.

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)
-30	701.500001	0.002	713.500004	0.006
-20	701.500001	0.002	713.500002	0.003
-10	701.500003	0.004	713.500002	0.002
0	701.500002	0.003	713.500002	0.003
10	701.500001	0.002	713.500004	0.005
20	701.499997	-0.004	713.499996	-0.005
30	701.499997	-0.005	713.499998	-0.004
40	701.499997	-0.004	713.499998	-0.003
50	701.499998	-0.003	713.499999	-0.001
60	701.499998	-0.004	713.499998	-0.003
70	701.499998	-0.003	713.499998	-0.003
50	701.499998	-0.002	713.499997	-0.004
85	701.499996	-0.006	713.499997	-0.005

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)
10.2	704.000002	0.003	711.000002	0.002
12	704.000002	0.003	711.000003	0.004
13.8	704.000001	0.002	711.000002	0.003

Note: The fixture defined the normal working voltage of the adapter is from 10.2 Vdc to 13.8 Vdc.

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)
-30	704.000003	0.004	711.000003	0.004
-20	704.000002	0.003	711.000002	0.003
-10	704.000002	0.003	711.000001	0.002
0	704.000003	0.005	711.000002	0.003
10	704.000003	0.004	711.000002	0.003
20	703.999999	-0.002	710.999999	-0.001
30	703.999999	-0.002	710.999998	-0.002
40	703.999998	-0.003	710.999996	-0.006
50	703.999997	-0.004	710.999998	-0.003
60	703.999997	-0.004	710.999998	-0.003
70	703.999999	-0.002	710.999996	-0.005
50	703.999998	-0.003	710.999997	-0.004
85	703.999997	-0.004	710.999999	-0.002

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)
10.2	779.500001	0.002	784.500002	0.003
12	779.500003	0.003	784.500002	0.002
13.8	779.500002	0.003	784.500003	0.004

Note: The fixture defined the normal working voltage of the adapter is from 10.2 Vdc to 13.8 Vdc.

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)
-30	779.500002	0.003	784.500003	0.003
-20	779.500001	0.001	784.500001	0.002
-10	779.500004	0.005	784.500001	0.001
0	779.500002	0.003	784.500004	0.005
10	779.500004	0.004	784.500003	0.003
20	779.499997	-0.004	784.499996	-0.005
30	779.499998	-0.003	784.499996	-0.005
40	779.499997	-0.004	784.499998	-0.002
50	779.499999	-0.002	784.499997	-0.004
60	779.499997	-0.004	784.499999	-0.001
70	779.499999	-0.001	784.499996	-0.005
80	779.499999	-0.002	784.499998	-0.002
85	779.499998	-0.002	784.499997	-0.003

Frequency Error vs. Voltage

Voltage (Volts)	LTE Band 13	
	Channel Bandwidth: 10 MHz	
	Frequency (MHz)	Frequency Error (ppm)
10.2	782.000002	0.003
12	782.000002	0.002
13.8	782.000003	0.003

Note: The fixture defined the normal working voltage of the adapter is from 10.2 Vdc to 13.8 Vdc.

Frequency Error vs. Temperature

Temp. (℃)	LTE Band 13	
	Channel Bandwidth: 10 MHz	
	Frequency (MHz)	Frequency Error (ppm)
-30	782.000002	0.003
-20	782.000002	0.002
-10	782.000001	0.001
0	782.000002	0.003
10	782.000004	0.005
20	781.999998	-0.003
30	781.999998	-0.003
40	781.999997	-0.004
50	781.999997	-0.004
60	781.999996	-0.005
70	781.999996	-0.005
50	781.999997	-0.004
85	781.999999	-0.002

Frequency Error vs. Voltage

Voltage (Volts)	LTE Band 66			
	Channel Bandwidth: 1.4 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
10.2	1710.700002	0.001	1779.300002	0.001
12	1710.700003	0.002	1779.300003	0.002
13.8	1710.700001	0.001	1779.300003	0.001

Note: The fixture defined the normal working voltage of the adapter is from 10.2 Vdc to 13.8 Vdc.

Frequency Error vs. Temperature

Temp. (℃)	LTE Band 66			
	Channel Bandwidth: 1.4 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
-30	1710.700001	0.001	1779.300004	0.002
-20	1710.700004	0.002	1779.300002	0.001
-10	1710.700004	0.002	1779.300002	0.001
0	1710.700003	0.002	1779.300003	0.002
10	1710.700001	0.001	1779.300002	0.001
20	1710.699998	-0.001	1779.299998	-0.001
30	1710.699997	-0.002	1779.299997	-0.002
40	1710.699998	-0.001	1779.299998	-0.001
50	1710.699996	-0.002	1779.299997	-0.001
60	1710.699998	-0.001	1779.299998	-0.001
70	1710.699997	-0.002	1779.299998	-0.001
80	1710.699998	-0.001	1779.299997	-0.002
85	1710.699998	-0.001	1779.299998	-0.001

Frequency Error vs. Voltage

Voltage (Volts)	LTE Band 66			
	Channel Bandwidth: 3 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
10.2	1711.500002	0.001	1778.500002	0.001
12	1711.500002	0.001	1778.500003	0.002
13.8	1711.500002	0.001	1778.500002	0.001

Note: The fixture defined the normal working voltage of the adapter is from 10.2 Vdc to 13.8 Vdc.

Frequency Error vs. Temperature

Temp. (℃)	LTE Band 66			
	Channel Bandwidth: 3 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
-30	1711.500001	0.001	1778.500003	0.001
-20	1711.500002	0.001	1778.500002	0.001
-10	1711.500002	0.001	1778.500003	0.002
0	1711.500002	0.001	1778.500002	0.001
10	1711.500004	0.002	1778.500003	0.002
20	1711.499999	-0.001	1778.499997	-0.002
30	1711.499998	-0.001	1778.499996	-0.002
40	1711.499998	-0.001	1778.499996	-0.002
50	1711.499998	-0.001	1778.499999	-0.001
60	1711.499997	-0.002	1778.499998	-0.001
70	1711.499998	-0.001	1778.499997	-0.002
50	1711.499998	-0.001	1778.499997	-0.002
85	1711.499996	-0.002	1778.499997	-0.002

Frequency Error vs. Voltage

Voltage (Volts)	LTE Band 66			
	Channel Bandwidth: 5 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
10.2	1712.500001	0.001	1777.500002	0.001
12	1712.500004	0.002	1777.500003	0.002
13.8	1712.500003	0.002	1777.500002	0.001

Note: The fixture defined the normal working voltage of the adapter is from 10.2 Vdc to 13.8 Vdc.

Frequency Error vs. Temperature

Temp. (℃)	LTE Band 66			
	Channel Bandwidth: 5 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
-30	1712.500002	0.001	1777.500003	0.002
-20	1712.500003	0.002	1777.500004	0.002
-10	1712.500004	0.002	1777.500001	0.001
0	1712.500004	0.002	1777.500002	0.001
10	1712.500004	0.002	1777.500003	0.002
20	1712.499997	-0.002	1777.499998	-0.001
30	1712.499997	-0.002	1777.499997	-0.002
40	1712.499998	-0.001	1777.499998	-0.001
50	1712.499998	-0.001	1777.499998	-0.001
60	1712.499999	-0.001	1777.499997	-0.001
70	1712.499996	-0.002	1777.499996	-0.002
50	1712.499998	-0.001	1777.499998	-0.001
85	1712.499996	-0.002	1777.499997	-0.002

Frequency Error vs. Voltage

Voltage (Volts)	LTE Band 66			
	Channel Bandwidth: 10 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
10.2	1715.000001	0.001	1775.000003	0.001
12	1715.000002	0.001	1775.000003	0.002
13.8	1715.000004	0.002	1775.000003	0.002

Note: The fixture defined the normal working voltage of the adapter is from 10.2 Vdc to 13.8 Vdc.

Frequency Error vs. Temperature

Temp. (℃)	LTE Band 66			
	Channel Bandwidth: 10 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
-30	1715.000001	0.001	1775.000002	0.001
-20	1715.000003	0.002	1775.000001	0.001
-10	1715.000004	0.002	1775.000004	0.002
0	1715.000003	0.002	1775.000002	0.001
10	1715.000004	0.002	1775.000001	0.001
20	1714.999998	-0.001	1774.999998	-0.001
30	1714.999997	-0.002	1774.999997	-0.002
40	1714.999997	-0.002	1774.999996	-0.002
50	1714.999996	-0.002	1774.999998	-0.001
60	1714.999999	-0.001	1774.999997	-0.002
70	1714.999997	-0.002	1774.999997	-0.002
50	1714.999999	-0.001	1774.999998	-0.001
85	1714.999998	-0.001	1774.999997	-0.002

Frequency Error vs. Voltage

Voltage (Volts)	LTE Band 66			
	Channel Bandwidth: 15 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
10.2	1717.500002	0.001	1772.500004	0.002
12	1717.500003	0.002	1772.500002	0.001
13.8	1717.500003	0.002	1772.500003	0.002

Note: The fixture defined the normal working voltage of the adapter is from 10.2 Vdc to 13.8 Vdc.

Frequency Error vs. Temperature

Temp. (℃)	LTE Band 66			
	Channel Bandwidth: 15 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
-30	1717.500002	0.001	1772.500002	0.001
-20	1717.500002	0.001	1772.500002	0.001
-10	1717.500001	0.001	1772.500002	0.001
0	1717.500003	0.002	1772.500003	0.002
10	1717.500004	0.002	1772.500003	0.001
20	1717.499997	-0.002	1772.499997	-0.002
30	1717.499998	-0.001	1772.499999	-0.001
40	1717.499997	-0.002	1772.499997	-0.002
50	1717.499999	-0.001	1772.499997	-0.002
60	1717.499999	-0.001	1772.499997	-0.002
70	1717.499998	-0.001	1772.499997	-0.002
50	1717.499999	-0.001	1772.499998	-0.001
85	1717.499997	-0.002	1772.499996	-0.002

Frequency Error vs. Voltage

Voltage (Volts)	LTE Band 66			
	Channel Bandwidth: 20 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
10.2	1720.000002	0.001	1770.000003	0.001
12	1720.000003	0.002	1770.000004	0.002
13.8	1720.000002	0.001	1770.000002	0.001

Note: The fixture defined the normal working voltage of the adapter is from 10.2 Vdc to 13.8 Vdc.

Frequency Error vs. Temperature

Temp. (℃)	LTE Band 66			
	Channel Bandwidth: 20 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
-30	1720.000001	0.001	1770.000004	0.002
-20	1720.000004	0.002	1770.000002	0.001
-10	1720.000004	0.002	1770.000002	0.001
0	1720.000004	0.002	1770.000003	0.002
10	1720.000003	0.002	1770.000004	0.002
20	1719.999997	-0.002	1769.999997	-0.002
30	1719.999998	-0.001	1769.999998	-0.001
40	1719.999996	-0.002	1769.999996	-0.002
50	1719.999997	-0.002	1769.999998	-0.001
60	1719.999999	-0.001	1769.999997	-0.002
70	1719.999999	-0.001	1769.999997	-0.002
50	1719.999997	-0.002	1769.999997	-0.002
85	1719.999999	-0.001	1769.999996	-0.002

NB-IoT

Frequency Error vs. Voltage

Voltage (Volts)	LTE Band 4			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
10.2	1710.200003	0.002	1754.800003	0.002
12	1710.200002	0.001	1754.800004	0.002
13.8	1710.200004	0.002	1754.800003	0.001

Note: The fixture defined the normal working voltage of the adapter is from 10.2 Vdc to 13.8 Vdc.

Frequency Error vs. Temperature

Temp. (℃)	LTE Band 4			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
-30	1710.200003	0.002	1754.800002	0.001
-20	1710.200002	0.001	1754.800002	0.001
-10	1710.200002	0.001	1754.800003	0.002
0	1710.200004	0.002	1754.800003	0.002
10	1710.200003	0.002	1754.800004	0.002
20	1710.199997	-0.002	1754.799996	-0.002
30	1710.199997	-0.002	1754.799999	-0.001
40	1710.199999	-0.001	1754.799997	-0.002
50	1710.199999	-0.001	1754.799997	-0.002
60	1710.199999	-0.001	1754.799999	-0.001
70	1710.199996	-0.002	1754.799999	-0.001
80	1710.199997	-0.002	1754.799999	-0.001
85	1710.199999	-0.001	1754.799996	-0.002

Frequency Error vs. Voltage

Voltage (Volts)	LTE Band 12			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
10.2	699.200002	0.003	715.800004	0.005
12	699.200002	0.003	715.800003	0.004
13.8	699.200002	0.003	715.800004	0.005

Note: The fixture defined the normal working voltage of the adapter is from 10.2 Vdc to 13.8 Vdc.

Frequency Error vs. Temperature

Temp. (℃)	LTE Band 12			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
-30	699.200002	0.003	715.800002	0.003
-20	699.200002	0.003	715.800001	0.002
-10	699.200001	0.001	715.800004	0.006
0	699.200003	0.004	715.800004	0.006
10	699.200004	0.005	715.800002	0.003
20	699.199997	-0.004	715.799997	-0.004
30	699.199997	-0.005	715.799997	-0.004
40	699.199997	-0.004	715.799999	-0.002
50	699.199997	-0.004	715.799997	-0.004
60	699.199998	-0.003	715.799996	-0.006
70	699.199996	-0.006	715.799997	-0.005
80	699.199998	-0.004	715.799998	-0.004
85	699.199997	-0.004	715.799996	-0.006

Frequency Error vs. Voltage

Voltage (Volts)	LTE Band 13			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
10.2	777.200003	0.004	786.800003	0.003
12	777.200001	0.002	786.800004	0.004
13.8	777.200004	0.004	786.800003	0.004

Note: The fixture defined the normal working voltage of the adapter is from 10.2 Vdc to 13.8 Vdc.

Frequency Error vs. Temperature

Temp. (℃)	LTE Band 13			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
-30	777.200004	0.005	786.800002	0.003
-20	777.200003	0.004	786.800004	0.005
-10	777.200002	0.003	786.800001	0.002
0	777.200003	0.004	786.800003	0.004
10	777.200003	0.004	786.800002	0.002
20	777.199998	-0.003	786.799996	-0.005
30	777.199996	-0.005	786.799997	-0.003
40	777.199997	-0.004	786.799997	-0.004
50	777.199998	-0.002	786.799999	-0.002
60	777.199996	-0.005	786.799998	-0.002
70	777.199998	-0.002	786.799998	-0.002
80	777.199998	-0.003	786.799996	-0.005
85	777.199998	-0.003	786.799998	-0.003

Frequency Error vs. Voltage

Voltage (Volts)	LTE Band 66			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
10.2	1710.200002	0.001	1779.800003	0.002
12	1710.200003	0.002	1779.800002	0.001
13.8	1710.200003	0.002	1779.800001	0.001

Note: The fixture defined the normal working voltage of the adapter is from 10.2 Vdc to 13.8 Vdc.

Frequency Error vs. Temperature

Temp. (℃)	LTE Band 66			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
-30	1710.200001	0.001	1779.800001	0.001
-20	1710.200004	0.002	1779.800002	0.001
-10	1710.200002	0.001	1779.800003	0.001
0	1710.200004	0.002	1779.800004	0.002
10	1710.200003	0.002	1779.800003	0.002
20	1710.199996	-0.002	1779.799997	-0.001
30	1710.199998	-0.001	1779.799998	-0.001
40	1710.199999	-0.001	1779.799998	-0.001
50	1710.199998	-0.001	1779.799997	-0.002
60	1710.199996	-0.002	1779.799998	-0.001
70	1710.199998	-0.001	1779.799998	-0.001
80	1710.199997	-0.002	1779.799999	-0.001
85	1710.199998	-0.001	1779.799998	-0.001

4.4 Occupied Bandwidth Measurement

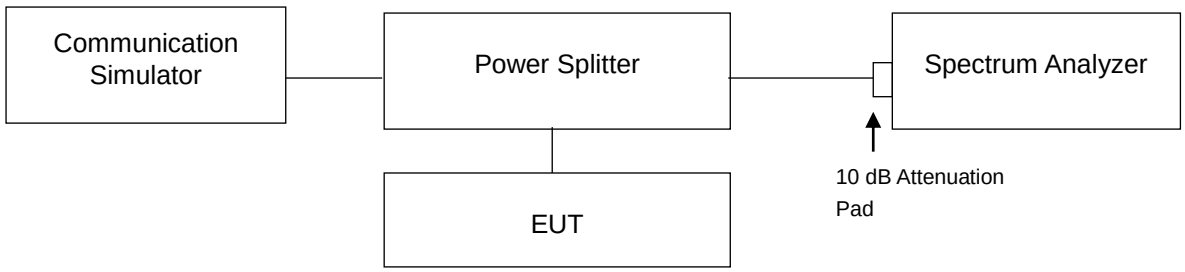
4.4.1 Limits of Occupied Bandwidth Measurement

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

4.4.2 Test Procedure

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

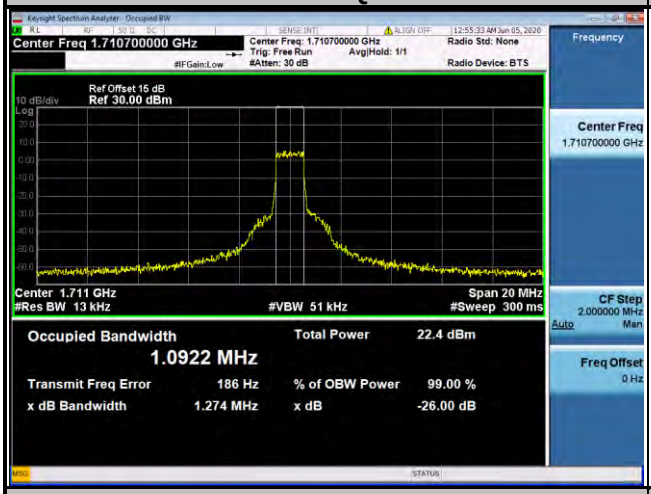
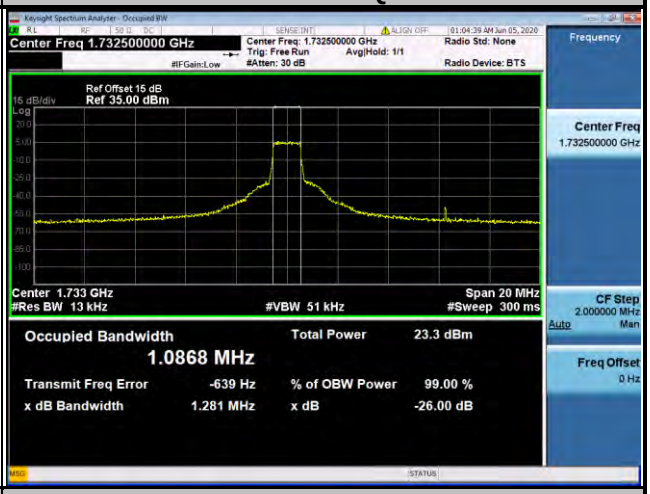
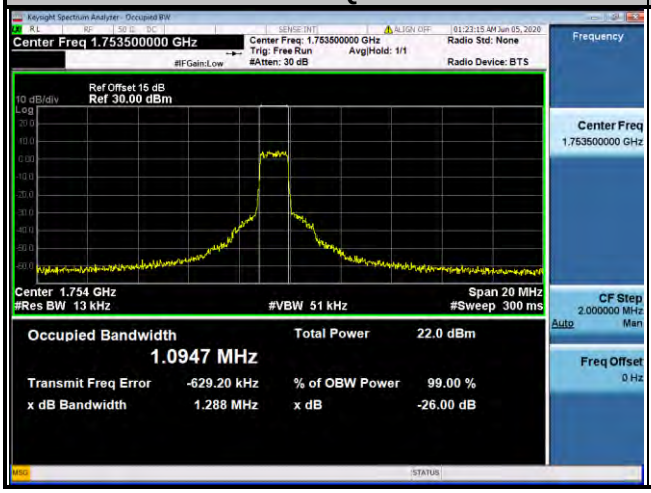
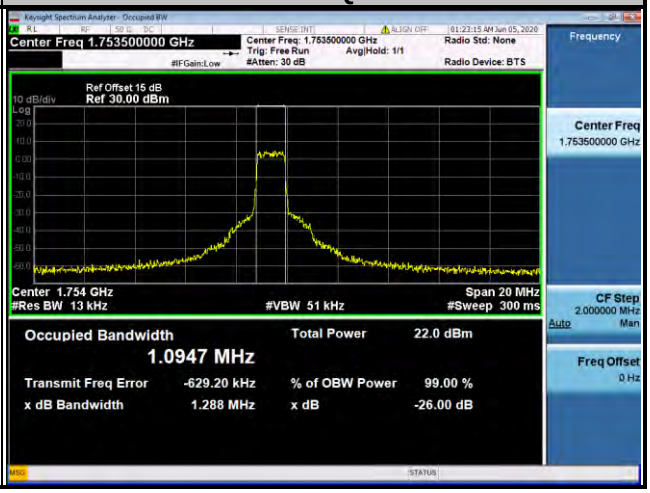
4.4.3 Test Setup



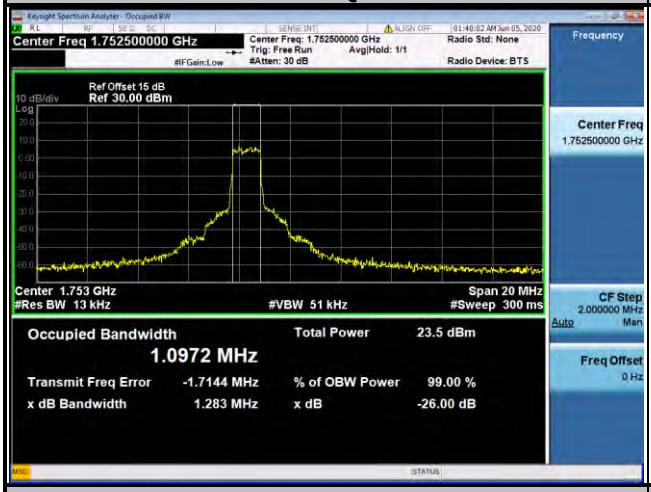
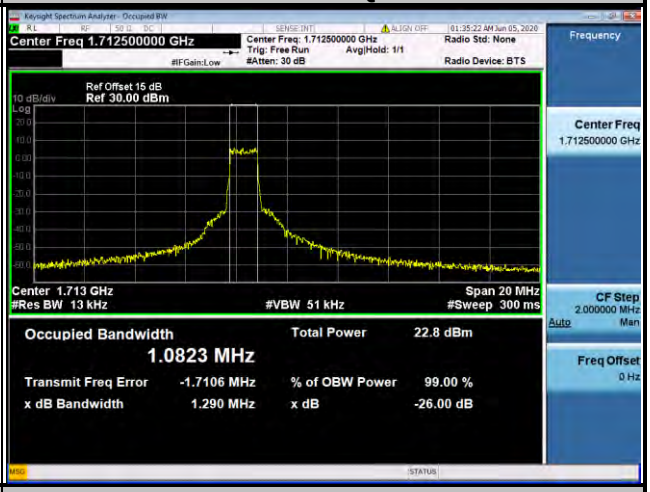
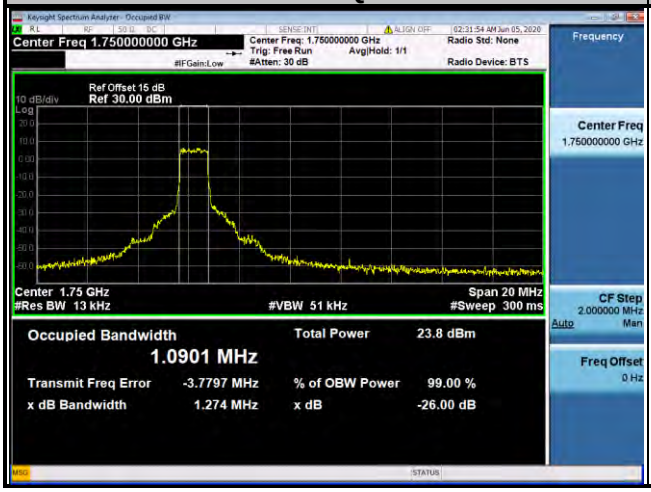
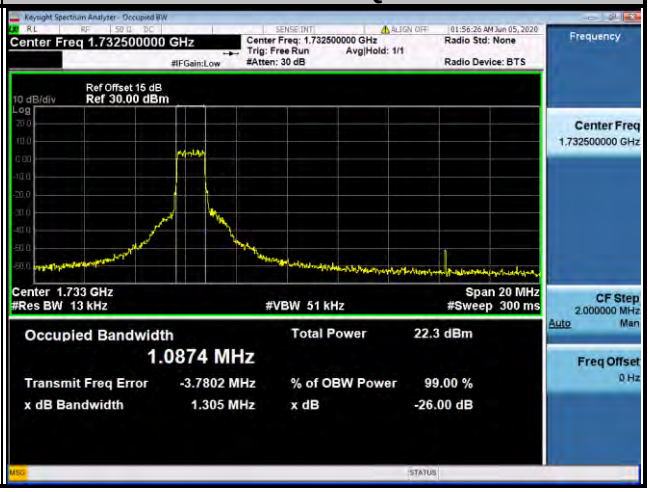
4.4.4 Test Result

Cat-M1

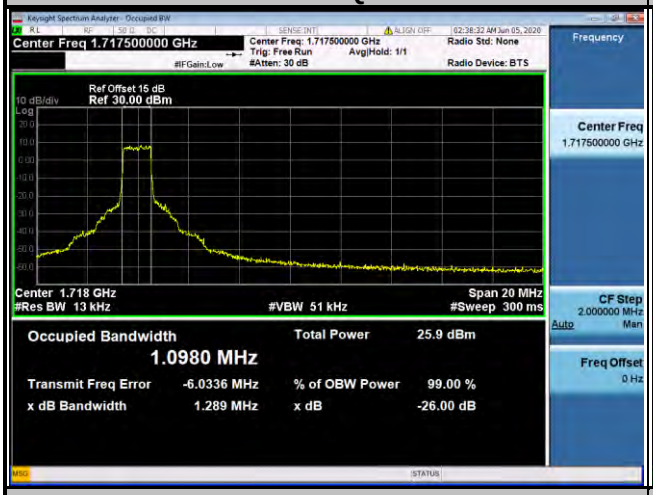
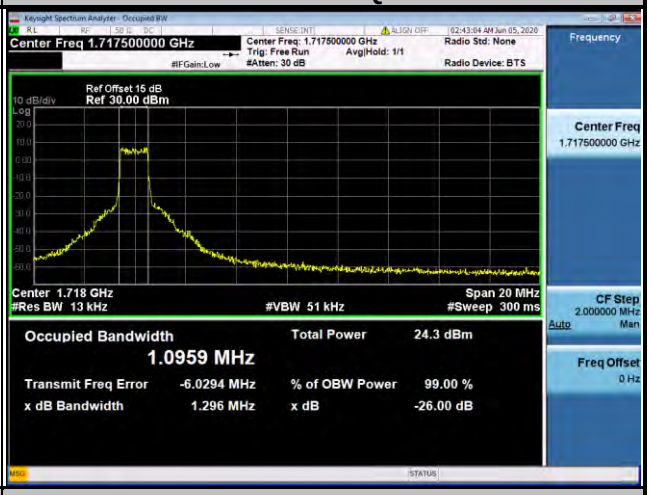
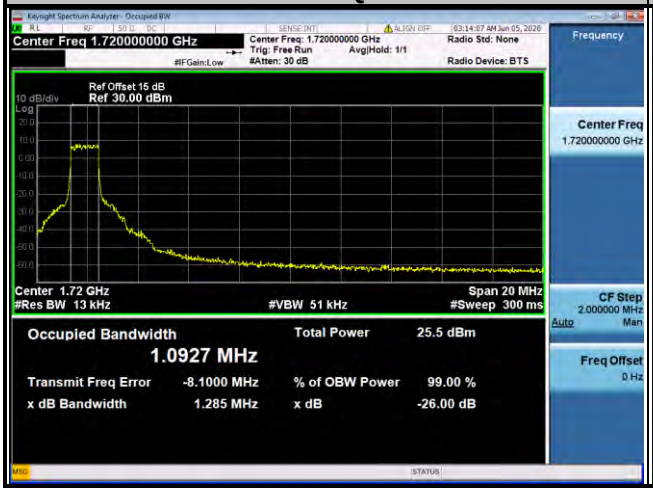
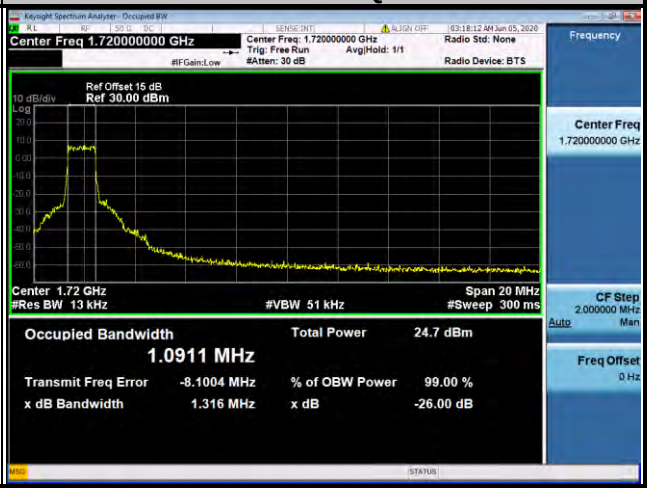
LTE Band 4					
Channel Bandwidth: 1.4 MHz					
Channel	**Frequency (MHz)**	**99 % Occupied Bandwidth (MHz)**		**26 dB Bandwidth (MHz)**	
		QPSK	**16QAM**	**QPSK**	**16QAM**
19957	1710.7	1.0922	1.0839	1.274	1.272
20175	1732.5	1.0866	1.0868	1.271	1.281
20393	1754.3	1.0907	1.0894	1.273	1.270
Channel Bandwidth: 3 MHz					
Channel	**Frequency (MHz)**	**99 % Occupied Bandwidth (MHz)**		**26 dB Bandwidth (MHz)**	
		QPSK	**16QAM**	**QPSK**	**16QAM**
19965	1711.5	1.0896	1.0824	1.284	1.264
20175	1732.5	1.0814	1.0825	1.285	1.278
20385	1753.5	1.0947	1.0767	1.288	1.267

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

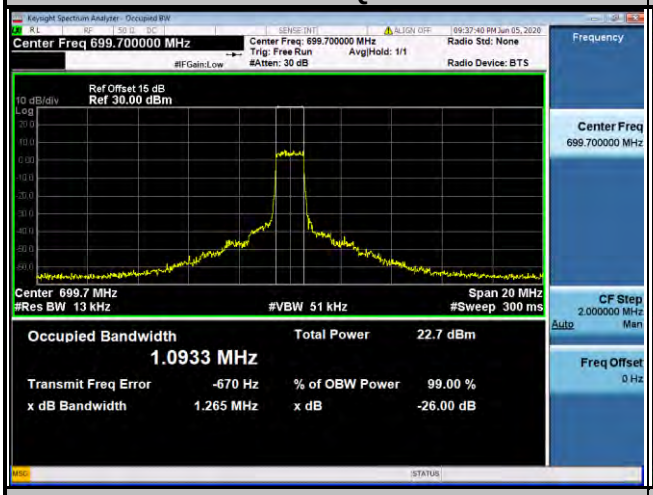
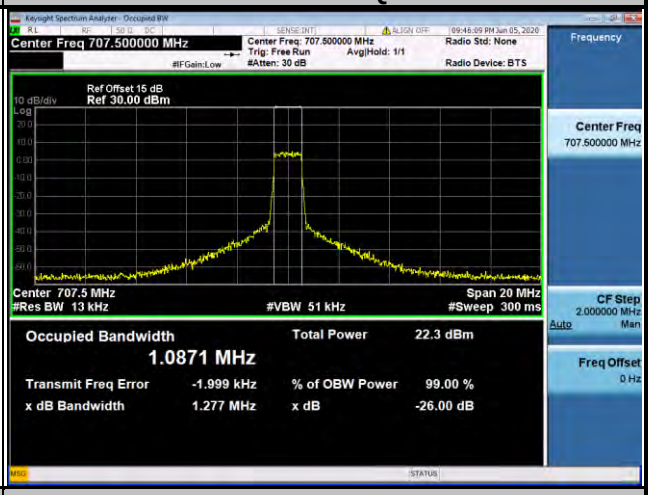
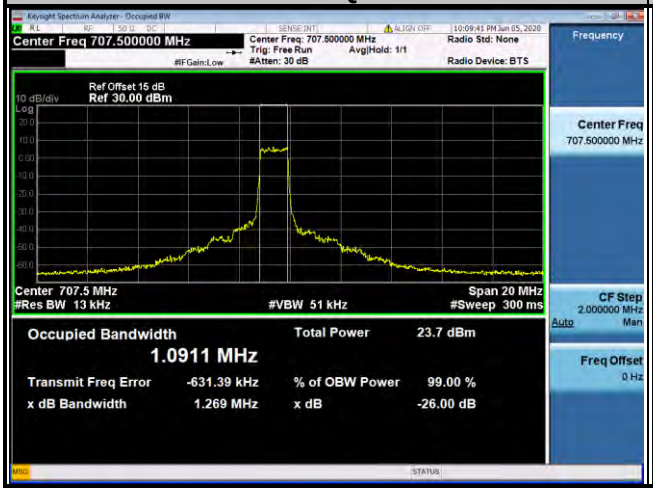
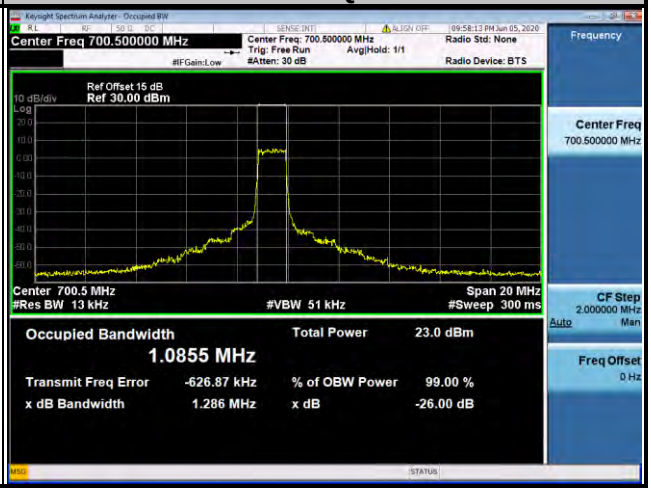
LTE Band 4					
Channel Bandwidth: 5 MHz					
Channel	**Frequency (MHz)**	**99 % Occupied Bandwidth (MHz)**		**26 dB Bandwidth (MHz)**	
		QPSK	**16QAM**	**QPSK**	**16QAM**
19975	1712.5	1.0940	1.0823	1.285	1.290
20175	1732.5	1.0906	1.0831	1.285	1.280
20375	1752.5	1.0972	1.0811	1.283	1.278
Channel Bandwidth: 10 MHz					
Channel	**Frequency (MHz)**	**99 % Occupied Bandwidth (MHz)**		**26 dB Bandwidth (MHz)**	
		QPSK	**16QAM**	**QPSK**	**16QAM**
20000	1715.0	1.0897	1.0858	1.290	1.285
20175	1732.5	1.0884	1.0874	1.280	1.305
20350	1750.0	1.0901	1.0835	1.274	1.292

Spectrum Plot of Worst Value	
99 % Occupied Bandwidth	**26 dB Bandwidth**
5 MHz / QPSK	**5 MHz / 16QAM**
	
10 MHz / QPSK	**10 MHz / 16QAM**
	

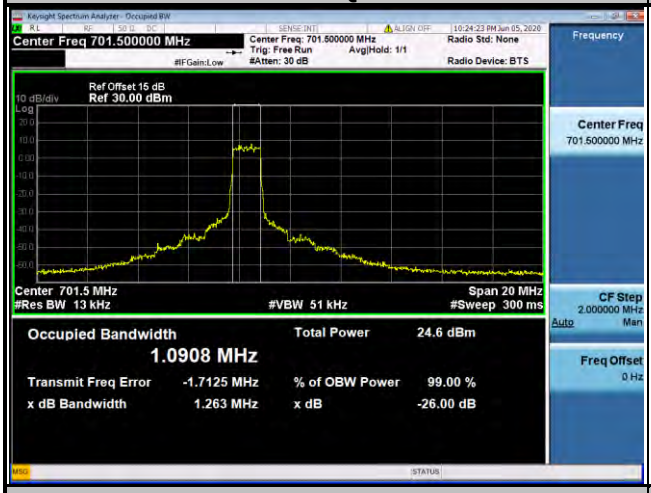
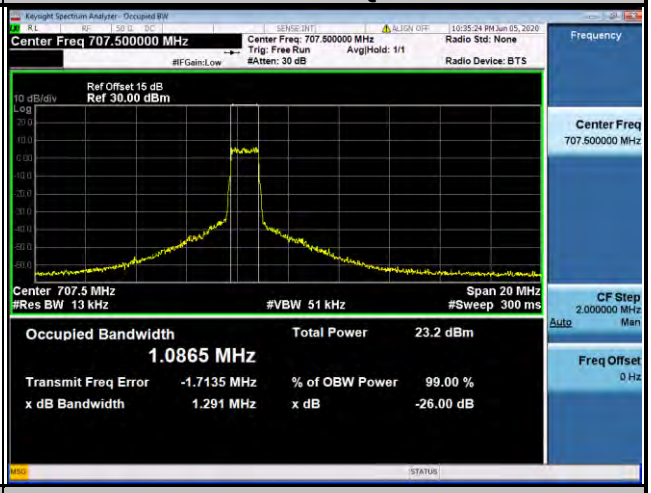
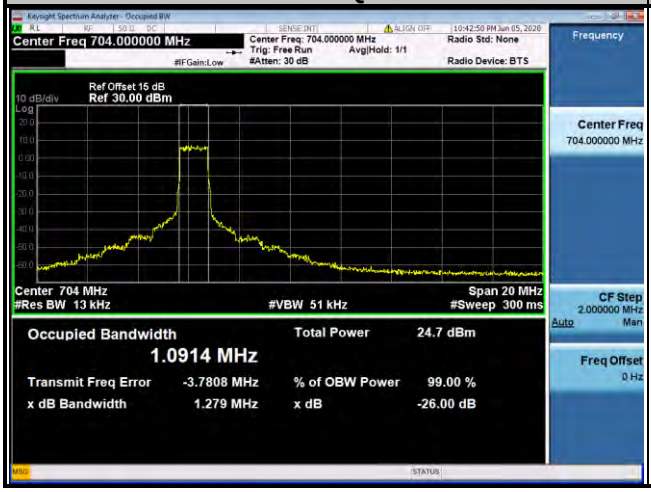
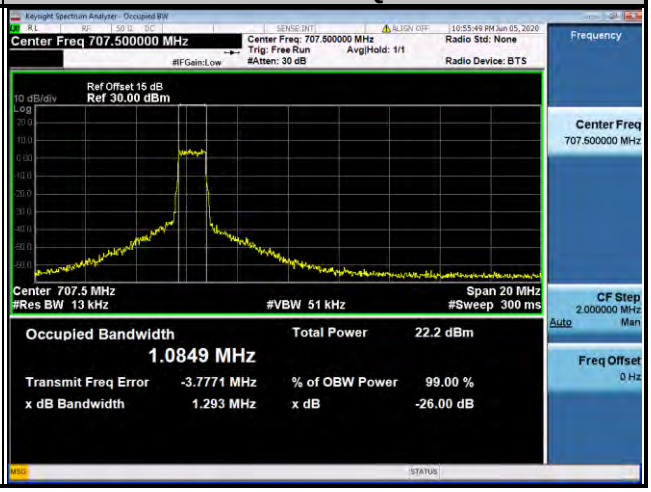
LTE Band 4					
Channel Bandwidth: 15 MHz					
Channel	Frequency (MHz)	99 % Occupied Bandwidth (MHz)		26 dB Bandwidth (MHz)	
		QPSK	16QAM	QPSK	16QAM
20025	1717.5	1.0980	1.0959	1.289	1.296
20175	1732.5	1.0959	1.0832	1.275	1.289
20325	1747.5	1.0895	1.0872	1.280	1.288
Channel Bandwidth: 20 MHz					
Channel	Frequency (MHz)	99 % Occupied Bandwidth (MHz)		26 dB Bandwidth (MHz)	
		QPSK	16QAM	QPSK	16QAM
20050	1720.0	1.0927	1.0911	1.285	1.316
20175	1732.5	1.0887	1.0911	1.280	1.306
20300	1745.0	1.0895	1.0915	1.269	1.310

Spectrum Plot of Worst Value	
99 % Occupied Bandwidth	26 dB Bandwidth
15 MHz / QPSK	15 MHz / 16QAM
	
20 MHz / QPSK	20 MHz / 16QAM
	

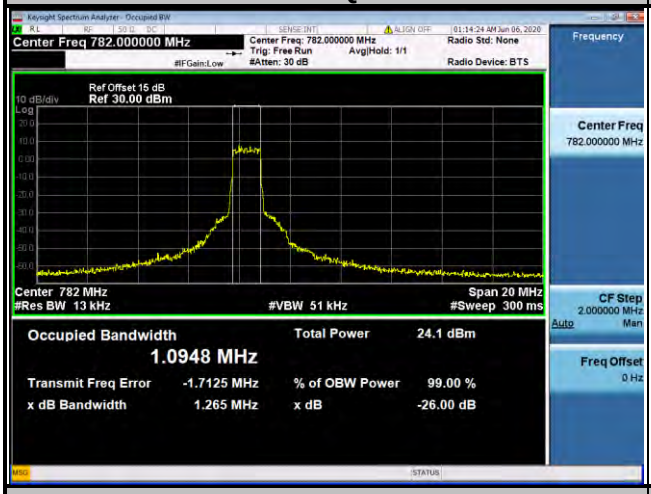
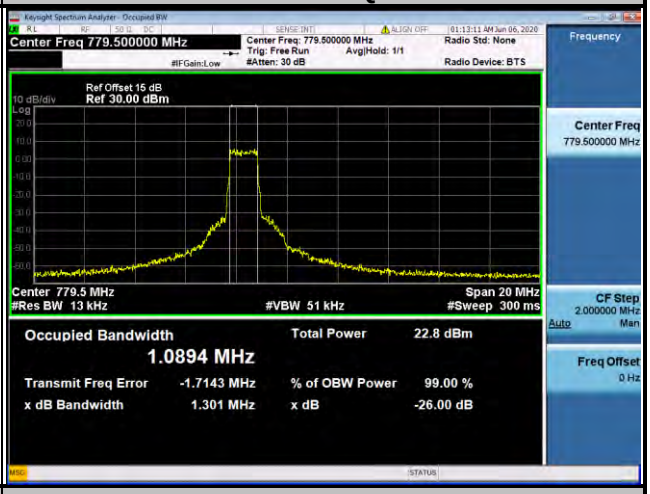
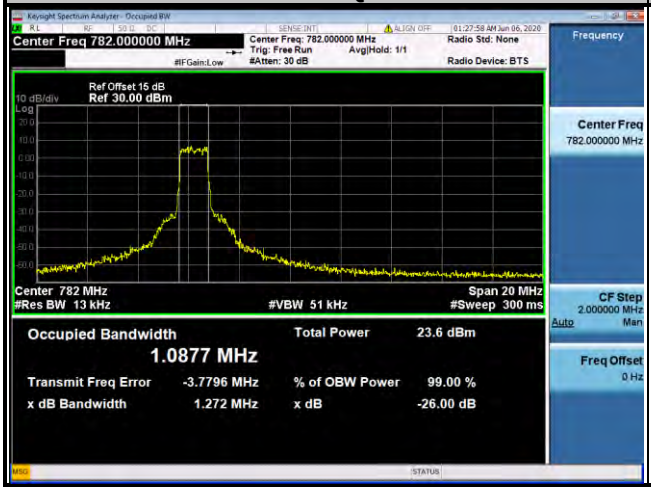
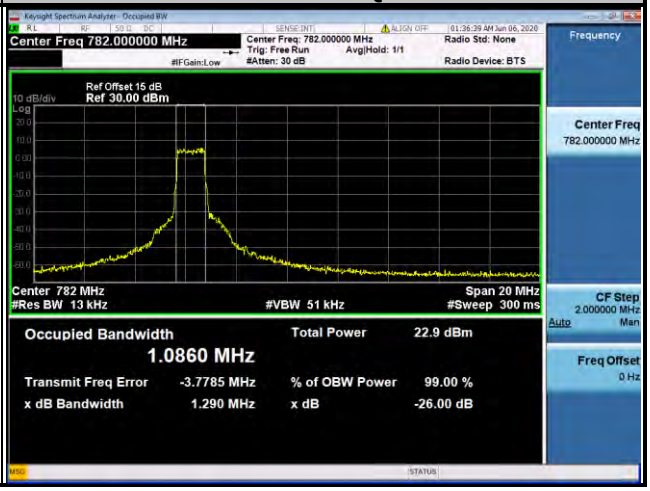
LTE Band 12					
Channel Bandwidth: 1.4 MHz					
Channel	Frequency (MHz)	99 % Occupied Bandwidth (MHz)		26 dB Bandwidth (MHz)	
		QPSK	16QAM	QPSK	16QAM
23017	699.7	1.0933	1.0864	1.265	1.261
23095	707.5	1.0902	1.0871	1.256	1.277
23173	715.3	1.0917	1.0857	1.275	1.256
Channel Bandwidth: 3 MHz					
Channel	Frequency (MHz)	99 % Occupied Bandwidth (MHz)		26 dB Bandwidth (MHz)	
		QPSK	16QAM	QPSK	16QAM
23025	700.5	1.0855	1.0779	1.286	1.264
23095	707.5	1.0911	1.0833	1.269	1.262
23165	714.5	1.0840	1.0767	1.261	1.267

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

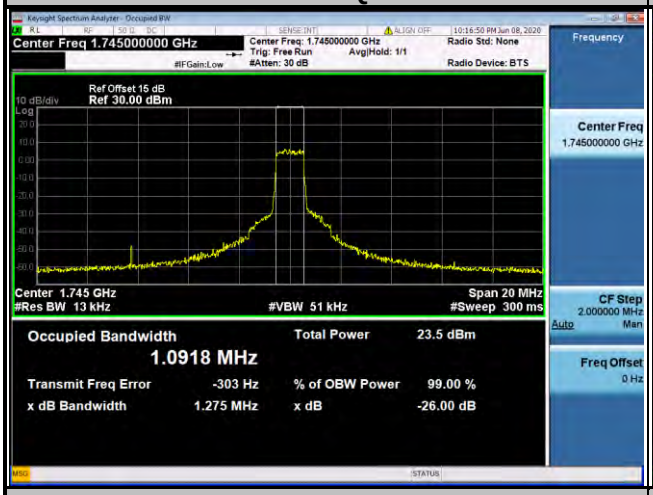
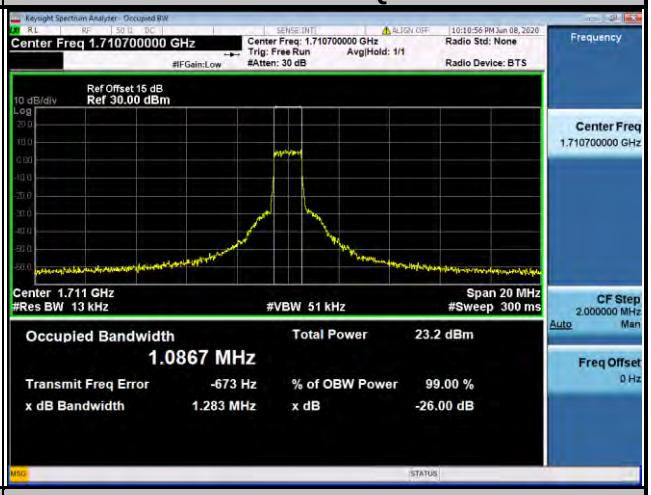
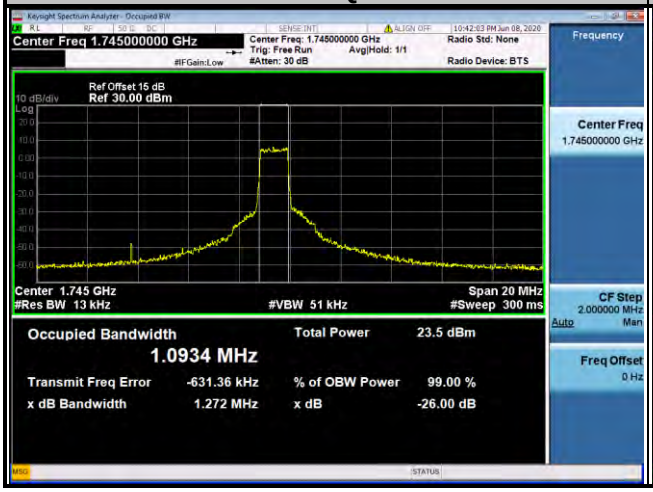
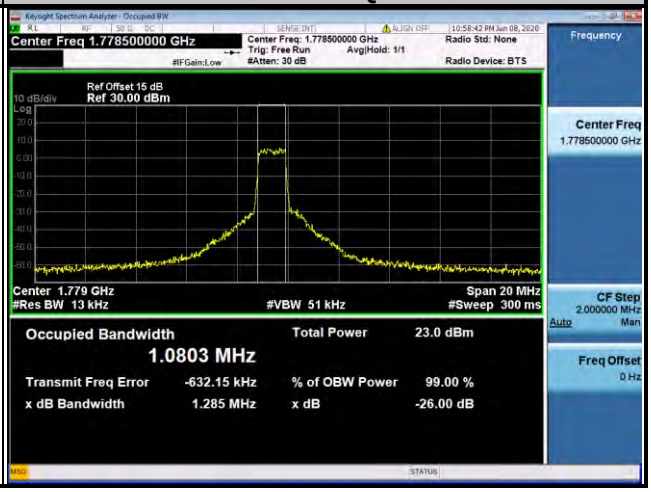
LTE Band 12					
Channel Bandwidth: 5 MHz					
Channel	Frequency (MHz)	99 % Occupied Bandwidth (MHz)		26 dB Bandwidth (MHz)	
		QPSK	16QAM	QPSK	16QAM
23035	701.5	1.0908	1.0884	1.263	1.284
23095	707.5	1.0894	1.0865	1.274	1.291
23155	713.5	1.0785	1.0897	1.270	1.289
Channel Bandwidth: 10 MHz					
Channel	Frequency (MHz)	99 % Occupied Bandwidth (MHz)		26 dB Bandwidth (MHz)	
		QPSK	16QAM	QPSK	16QAM
23060	704.0	1.0914	1.0877	1.279	1.287
23095	707.5	1.0914	1.0849	1.268	1.293
23130	711.0	1.0878	1.0860	1.254	1.284

Spectrum Plot of Worst Value	
99 % Occupied Bandwidth	26 dB Bandwidth
5 MHz / QPSK	5 MHz / 16QAM
	
10 MHz / QPSK	10 MHz / 16QAM
	

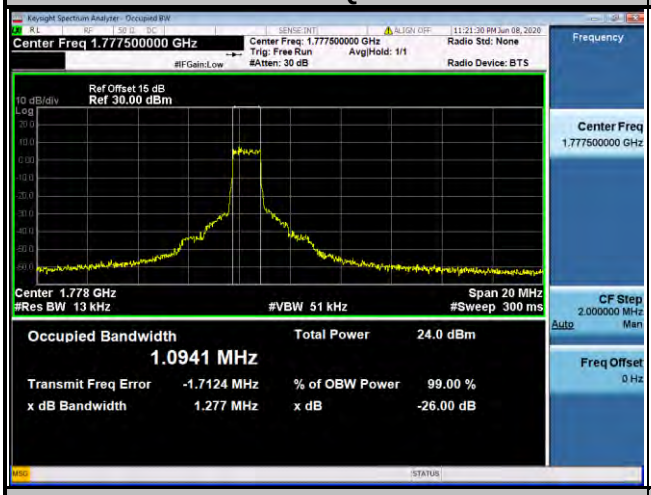
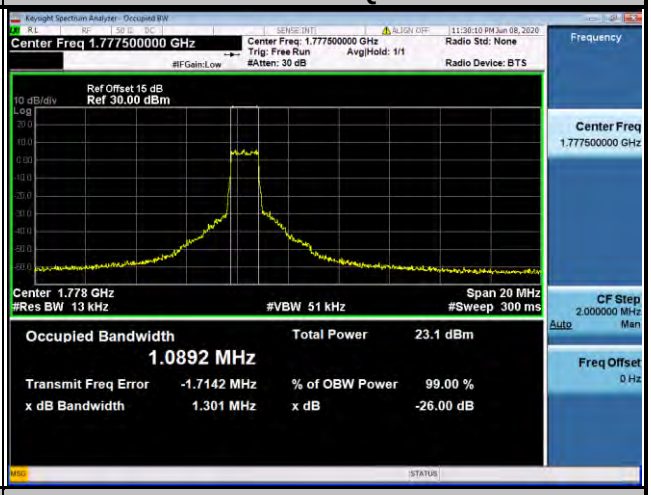
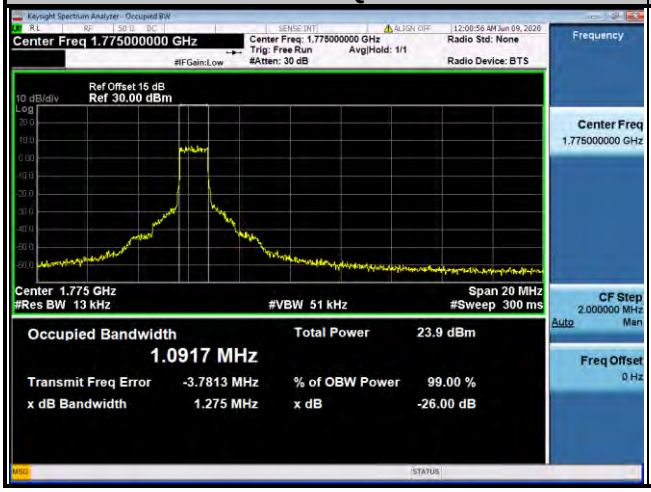
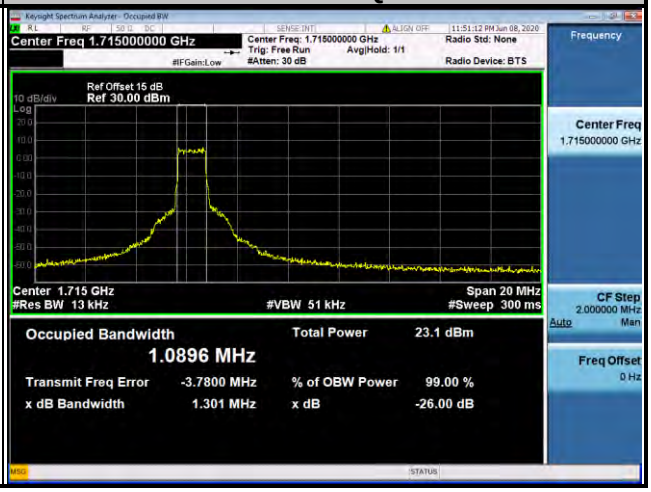
LTE Band 13					
Channel Bandwidth: 5 MHz					
Channel	Frequency (MHz)	99 % Occupied Bandwidth (MHz)		26 dB Bandwidth (MHz)	
		QPSK	16QAM	QPSK	16QAM
23205	779.5	1.0876	1.0894	1.272	1.301
23230	782.0	1.0948	1.0854	1.265	1.283
23255	784.5	1.0909	1.0845	1.273	1.284
Channel Bandwidth: 10 MHz					
Channel	Frequency (MHz)	99 % Occupied Bandwidth (MHz)		26 dB Bandwidth (MHz)	
		QPSK	16QAM	QPSK	16QAM
23230	782.0	1.0877	1.0860	1.272	1.290

Spectrum Plot of Worst Value	
99 % Occupied Bandwidth	26 dB Bandwidth
5 MHz / QPSK	5 MHz / 16QAM
	
10 MHz / QPSK	10 MHz / 16QAM
	

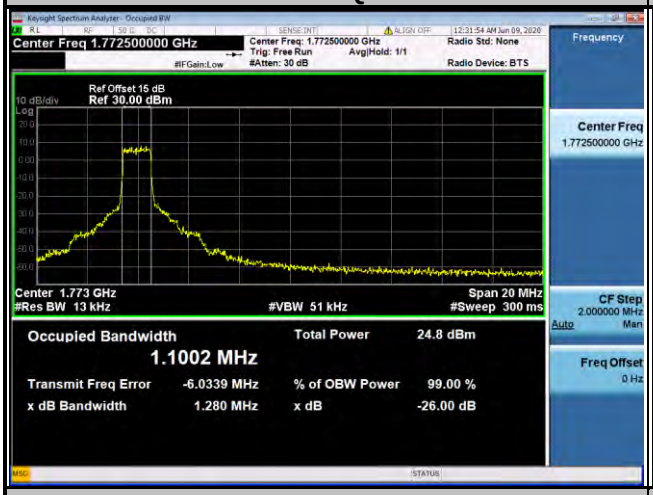
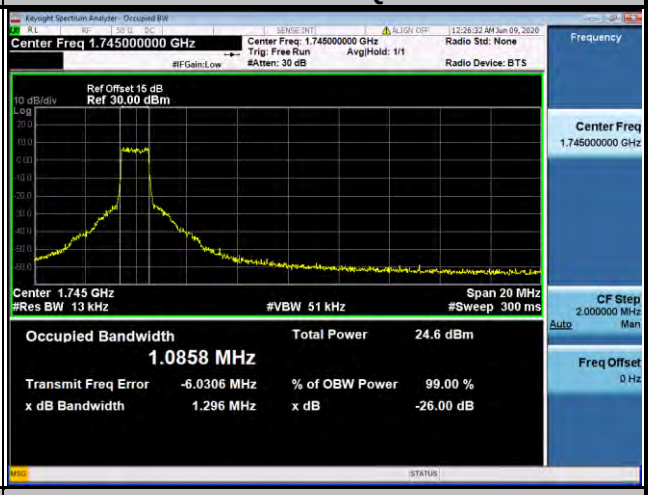
LTE Band 66					
Channel Bandwidth: 1.4 MHz					
Channel	Frequency (MHz)	99 % Occupied Bandwidth (MHz)		26 dB Bandwidth (MHz)	
		QPSK	16QAM	QPSK	16QAM
131979	1710.7	1.0907	1.0867	1.277	1.283
132322	1745.0	1.0918	1.0884	1.275	1.274
132665	1779.3	1.0897	1.0872	1.272	1.278
Channel Bandwidth: 3 MHz					
Channel	Frequency (MHz)	99 % Occupied Bandwidth (MHz)		26 dB Bandwidth (MHz)	
		QPSK	16QAM	QPSK	16QAM
131987	1711.5	1.0885	1.0817	1.280	1.276
132322	1745.0	1.0934	1.0765	1.272	1.268
132657	1778.5	1.0859	1.0803	1.259	1.285

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

LTE Band 66					
Channel Bandwidth: 5 MHz					
Channel	Frequency (MHz)	99 % Occupied Bandwidth (MHz)		26 dB Bandwidth (MHz)	
		QPSK	16QAM	QPSK	16QAM
131997	1712.5	1.0832	1.0873	1.277	1.284
132322	1745.0	1.0927	1.0873	1.275	1.295
132647	1777.5	1.0941	1.0892	1.277	1.301
Channel Bandwidth: 10 MHz					
Channel	Frequency (MHz)	99 % Occupied Bandwidth (MHz)		26 dB Bandwidth (MHz)	
		QPSK	16QAM	QPSK	16QAM
132022	1715.0	1.0889	1.0896	1.282	1.301
132322	1745.0	1.0916	1.0873	1.284	1.289
132622	1775.0	1.0917	1.0885	1.275	1.293

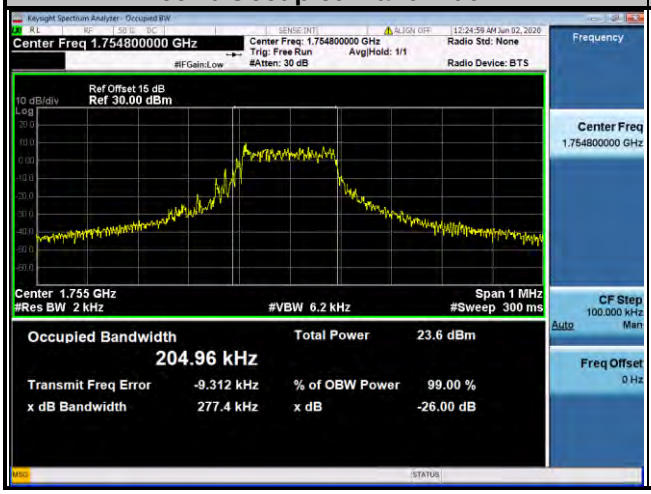
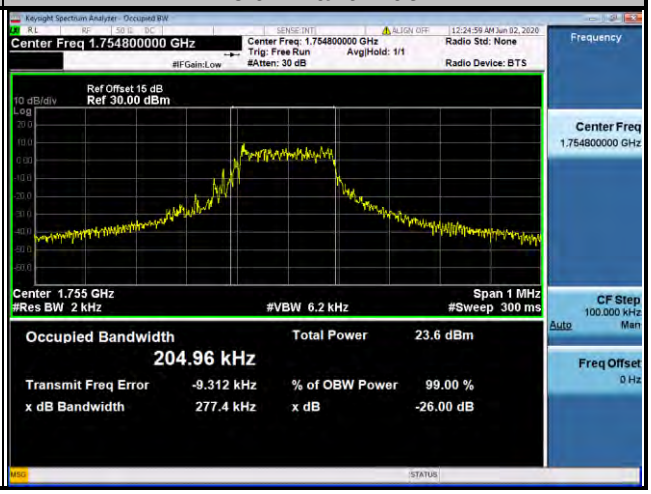
Spectrum Plot of Worst Value	
99 % Occupied Bandwidth	26 dB Bandwidth
5 MHz / QPSK	5 MHz / 16QAM
	
10 MHz / QPSK	10 MHz / 16QAM
	

LTE Band 66					
Channel Bandwidth: 15 MHz					
Channel	Frequency (MHz)	99 % Occupied Bandwidth (MHz)		26 dB Bandwidth (MHz)	
		QPSK	16QAM	QPSK	16QAM
132047	1717.5	1.0983	1.0828	1.281	1.293
132322	1745.0	1.0957	1.0858	1.283	1.296
132597	1772.5	1.1002	1.0838	1.280	1.284
Channel Bandwidth: 20 MHz					
Channel	Frequency (MHz)	99 % Occupied Bandwidth (MHz)		26 dB Bandwidth (MHz)	
		QPSK	16QAM	QPSK	16QAM
132072	1720.0	1.0924	1.0896	1.274	1.293
132322	1745.0	1.0928	1.0914	1.268	1.305
132572	1770.0	1.0920	1.0927	1.274	1.298

Spectrum Plot of Worst Value	
99 % Occupied Bandwidth	26 dB Bandwidth
15 MHz / QPSK	15 MHz / 16QAM
	
20 MHz / QPSK	20 MHz / 16QAM
	

NB-IoT

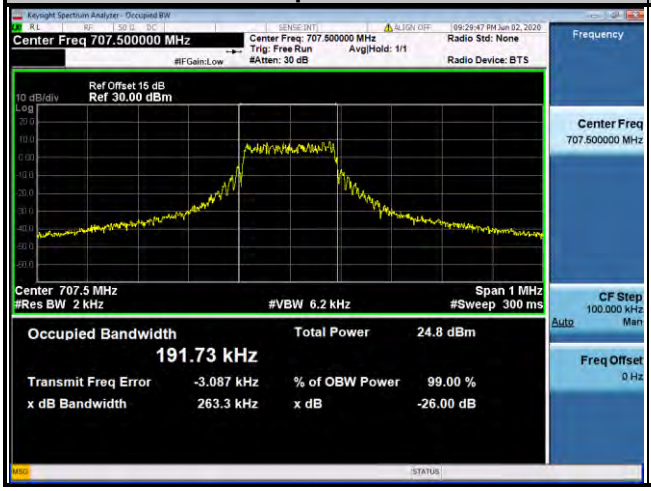
LTE Band 4						
Channel	**Frequency (MHz)**	**Modulation**	**N_{tones}**	**Sub-carrier Spacing (kHz)**	**99 % Occupied Bandwidth (kHz)**	**26 dB Bandwidth (kHz)**
19952	1710.2	BPSK	1@0	3.75	39.050	27.06
		BPSK	1@0	15	95.826	113.2
		QPSK	1@0	3.75	36.017	29.20
		QPSK	1@0	15	99.529	126.1
		QPSK	12@0	15	185.17	263.60
20175	1732.5	BPSK	1@0	3.75	57.32	43.78
		BPSK	1@0	15	98.263	100.6
		QPSK	1@0	3.75	56.816	40.76
		QPSK	1@0	15	101.45	114.0
		QPSK	12@0	15	193.97	263.20
20398	1754.8	BPSK	1@47	3.75	36.75	26.78
		BPSK	1@0	15	55.360	40.70
		QPSK	1@0	3.75	100.15	125.0
		QPSK	1@0	15	101.51	113.6
		QPSK	12@0	15	204.96	277.40

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

LTE Band 12						
Channel	**Frequency (MHz)**	**Modulation**	**N_{tones}**	**Sub-carrier Spacing (kHz)**	**99 % Occupied Bandwidth (kHz)**	**26 dB Bandwidth (kHz)**
23012	699.2	BPSK	1@0	3.75	36.96	28.42
		BPSK	1@0	15	96.579	123.8
		QPSK	1@0	3.75	33.736	28.83
		QPSK	1@0	15	93.977	122.7
		QPSK	12@0	15	185.46	258.50
23095	707.5	BPSK	1@0	3.75	56.92	36.71
		BPSK	1@0	15	101.10	136.7
		QPSK	1@0	3.75	53.781	40.71
		QPSK	1@0	15	98.811	124.1
		QPSK	12@0	15	191.73	263.30
23178	715.8	BPSK	1@47	3.75	39.85	26.79
		BPSK	1@0	15	105.50	127.2
		QPSK	1@0	3.75	53.862	44.13
		QPSK	1@0	15	100.54	113.9
		QPSK	12@0	15	191.39	273.50

Spectrum Plot of Worst Value

99 % Occupied Bandwidth

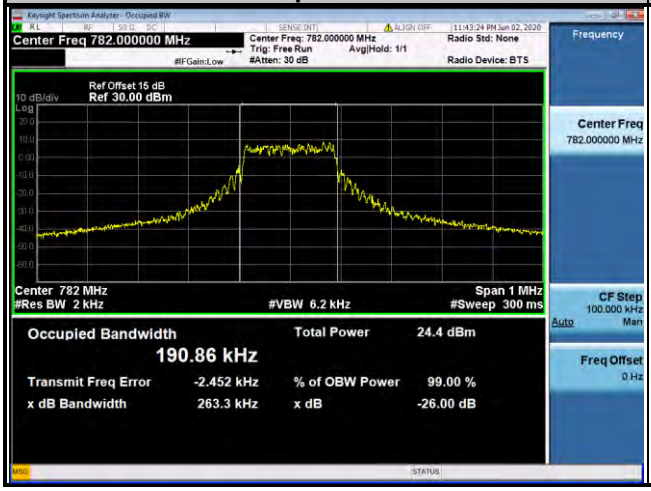


26 dB Bandwidth

LTE Band 13						
Channel	**Frequency (MHz)**	**Modulation**	**N_{tones}**	**Sub-carrier Spacing (kHz)**	**99 % Occupied Bandwidth (kHz)**	**26 dB Bandwidth (kHz)**
23182	777.2	BPSK	1@0	3.75	34.46	26.87
		BPSK	1@0	15	93.986	125.6
		QPSK	1@0	3.75	33.732	29.31
		QPSK	1@0	15	95.414	113.9
		QPSK	12@0	15	186.13	259.80
23230	782	BPSK	1@0	3.75	59.00	37.24
		BPSK	1@0	15	98.032	114.3
		QPSK	1@0	3.75	54.430	41.41
		QPSK	1@0	15	99.902	125.5
		QPSK	12@0	15	190.86	263.30
23278	786.8	BPSK	1@47	3.75	34.34	26.69
		BPSK	1@0	15	101.37	121.2
		QPSK	1@0	3.75	54.109	41.57
		QPSK	1@0	15	101.81	122.0
		QPSK	12@0	15	189.58	274.10

Spectrum Plot of Worst Value

99 % Occupied Bandwidth

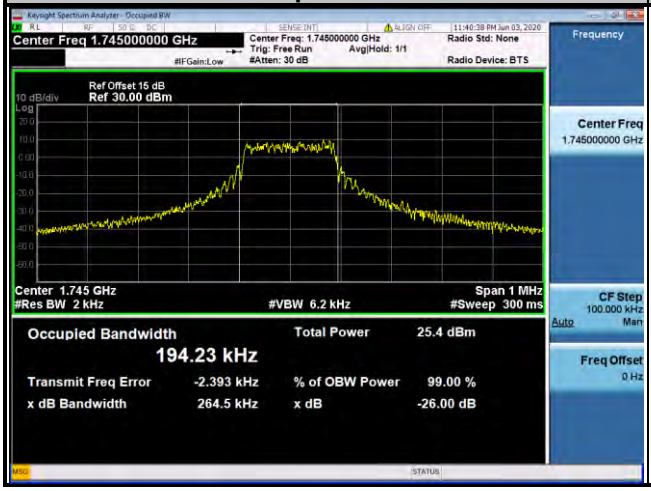


26 dB Bandwidth

LTE Band 66						
Channel	**Frequency (MHz)**	**Modulation**	**N_{tones}**	**Sub-carrier Spacing (kHz)**	**99 % Occupied Bandwidth (kHz)**	**26 dB Bandwidth (kHz)**
131972	1710.2	BPSK	1@0	3.75	36.841	28.16
		BPSK	1@0	15	95.488	120.8
		QPSK	1@0	3.75	36.758	31.95
		QPSK	1@0	15	96.579	124.1
		QPSK	12@0	15	186.13	274.30
132322	1745	BPSK	1@0	3.75	60.15	39.15
		BPSK	1@0	15	98.869	113.6
		QPSK	1@0	3.75	56.418	41.22
		QPSK	1@0	15	100.17	134.9
		QPSK	12@0	15	194.23	264.50
132670	1779.8	BPSK	1@47	3.75	34.86	26.45
		BPSK	1@0	15	99.599	136.5
		QPSK	1@0	3.75	54.684	40.57
		QPSK	1@0	15	101.47	114.9
		QPSK	12@0	15	192.67	273.90

Spectrum Plot of Worst Value

99 % Occupied Bandwidth



26 dB Bandwidth

4.5 Band Edge Measurement

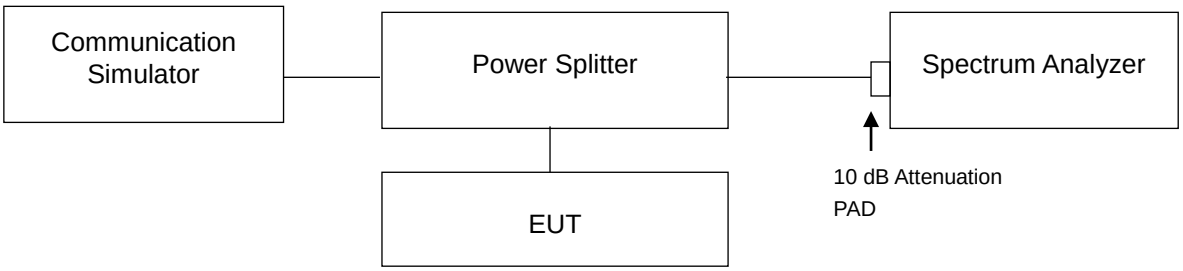
4.5.1 Limits of Band Edge Measurement

For operations in the 698-787 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.
However, in the 100 kilohertz bands immediately outside and adjacent to a licensee's frequency block, a resolution bandwidth of at least 30 kHz may be employed.

For operations in the 746-758 MHz band and the 776-788 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.
On all frequencies between 763-775 MHz and 793-805 MHz, by a factor no less than 65 + 10 log (P) dB in a 6.25 kHz band segment, for mobile and portable stations.

For operations in the 1710–1755 MHz bands, the power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) by at least 43 + 10 log (P) dB.

4.5.2 Test Setup

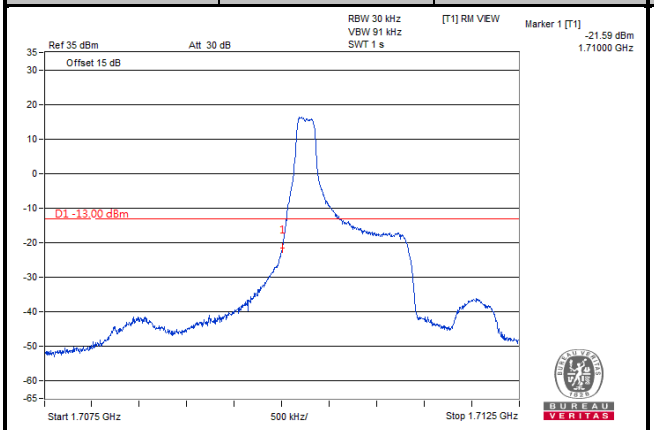
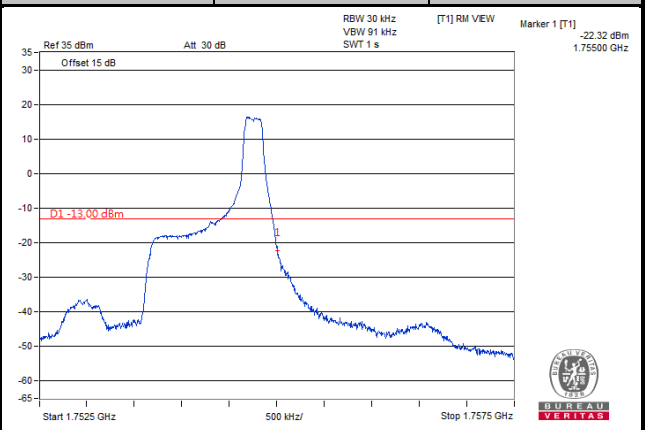
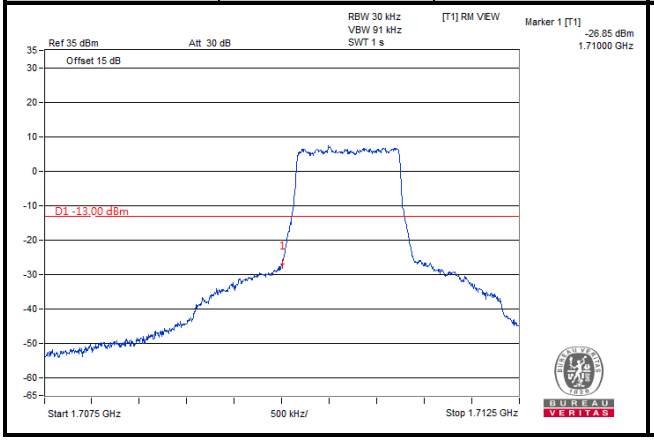
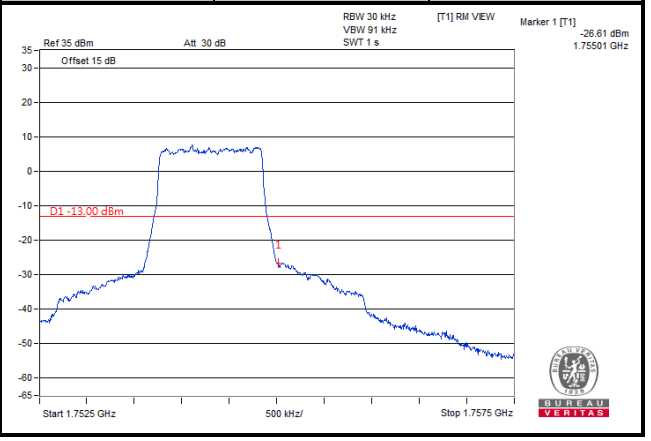


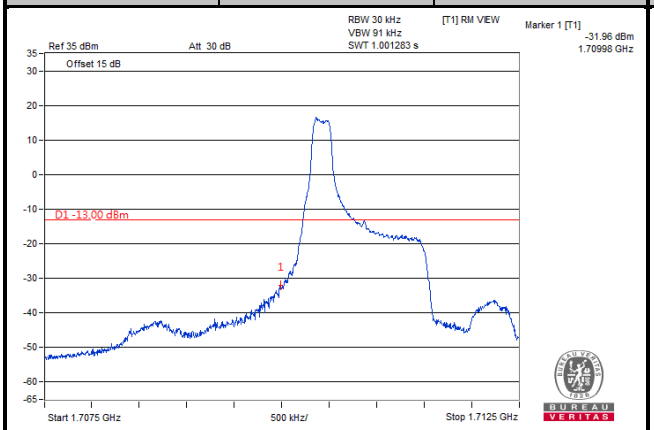
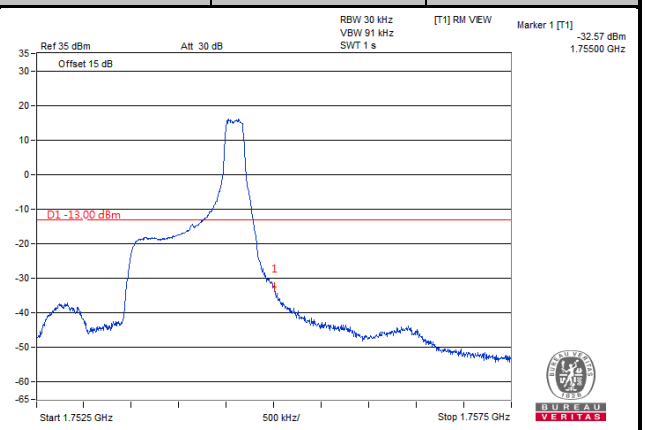
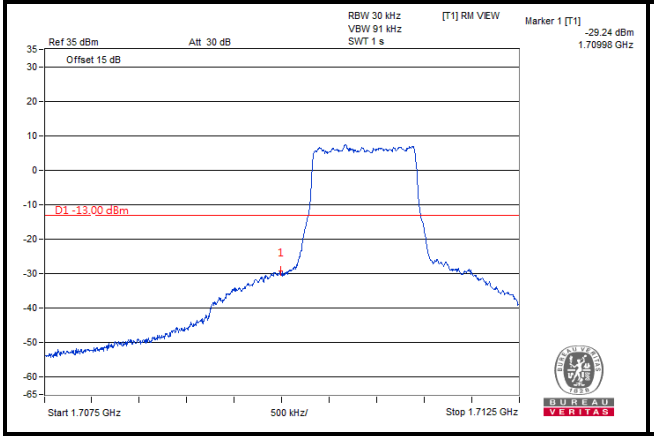
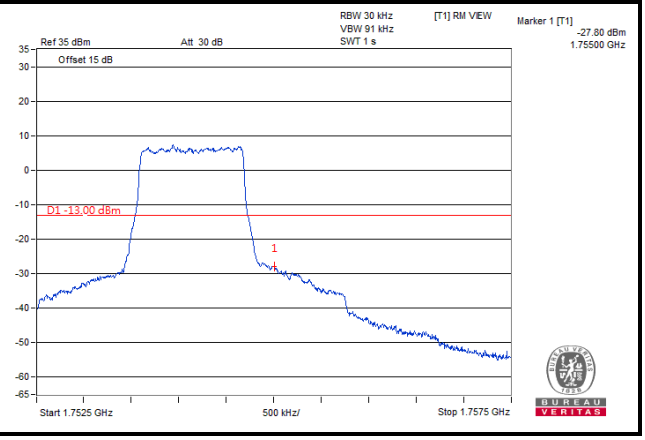
4.5.3 Test Procedures

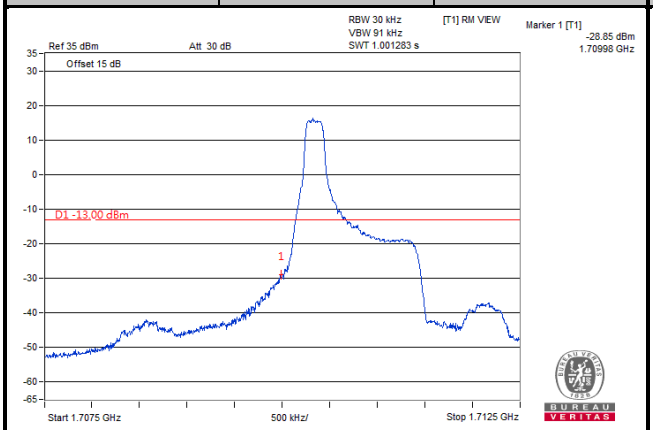
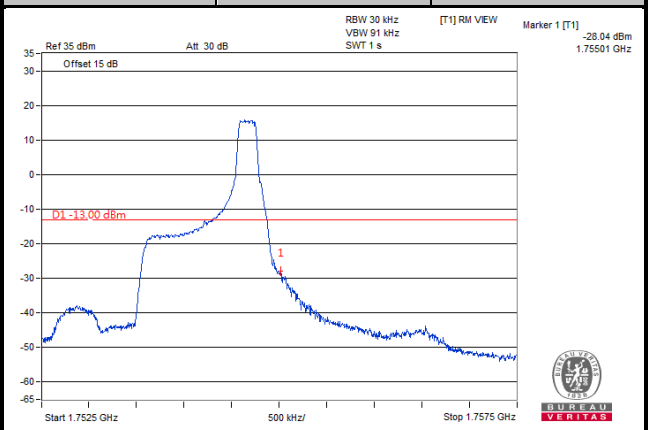
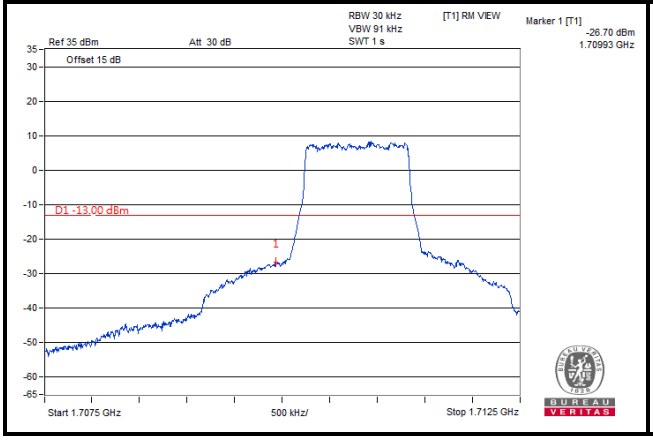
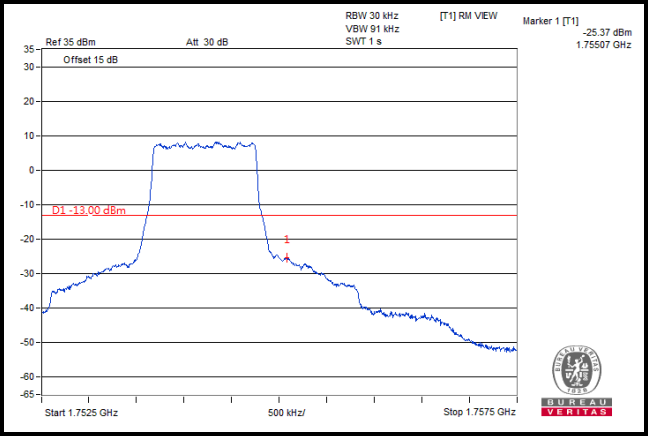
a. All measurements were done at low and high operational frequency range.
b. The center frequency of spectrum is the band edge frequency and span is 5 MHz. RB of the spectrum is 30 kHz and VB of the spectrum is 91 or 100 kHz (LTE Bandwidth 1.4 MHz) for Cat-M1.
c. The center frequency of spectrum is the band edge frequency and span is 1 MHz. RB of the spectrum is 4.3 kHz and VB of the spectrum is 2 kHz for NB-IoT.
d. Record the max trace plot into the test report.

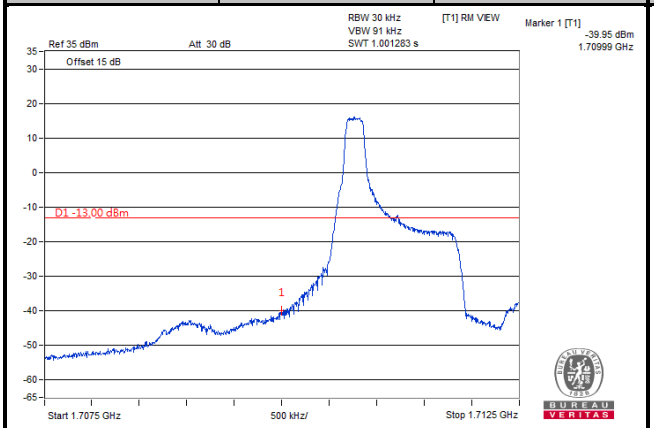
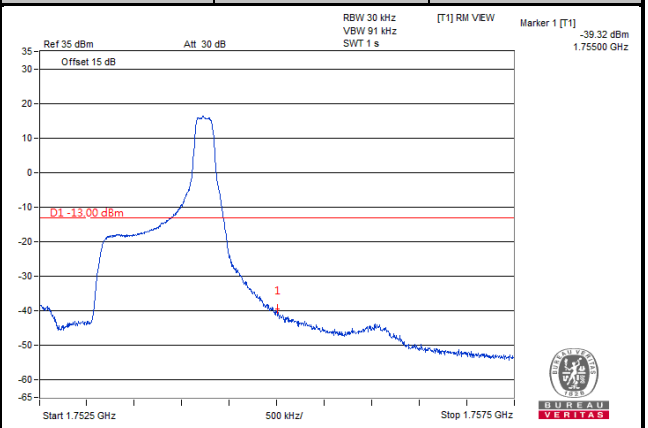
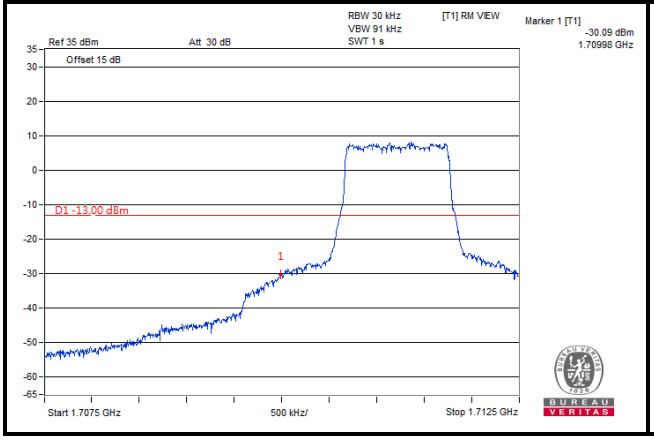
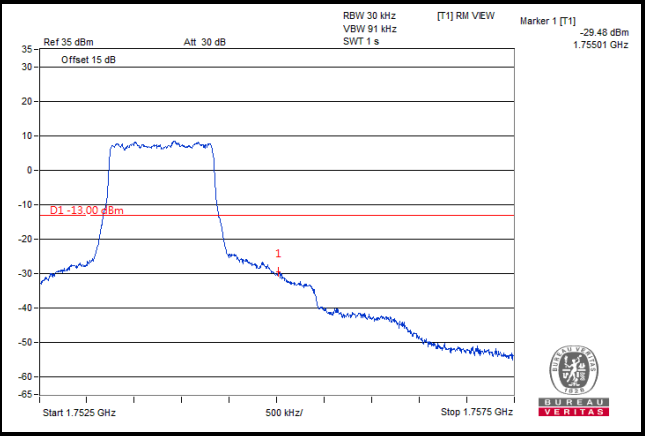
4.5.4 Test Results

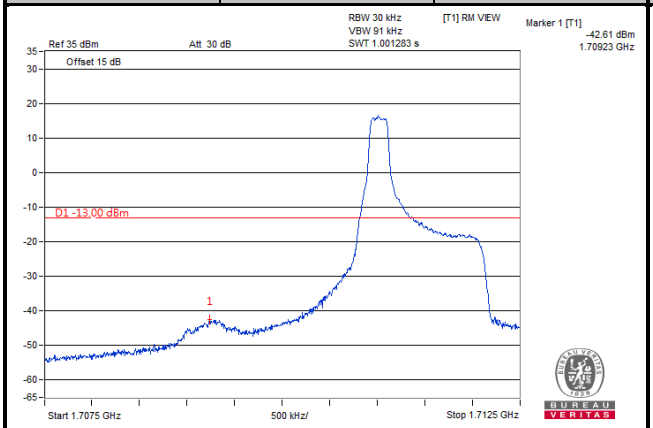
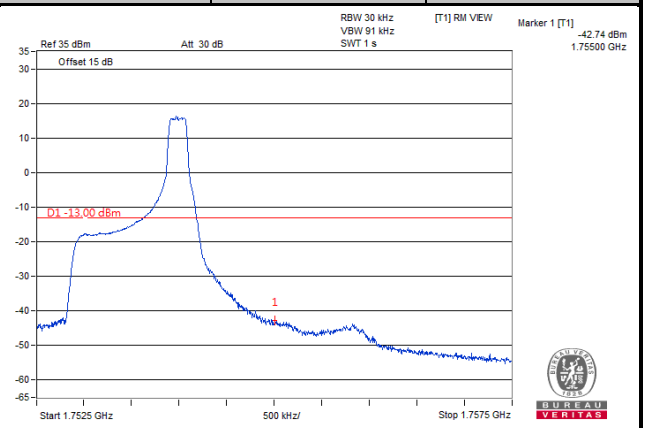
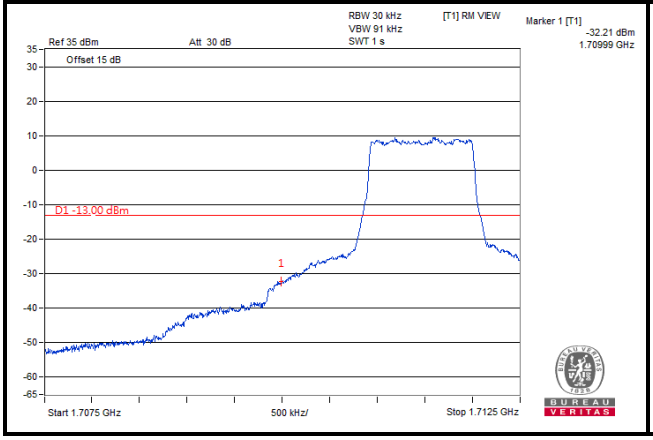
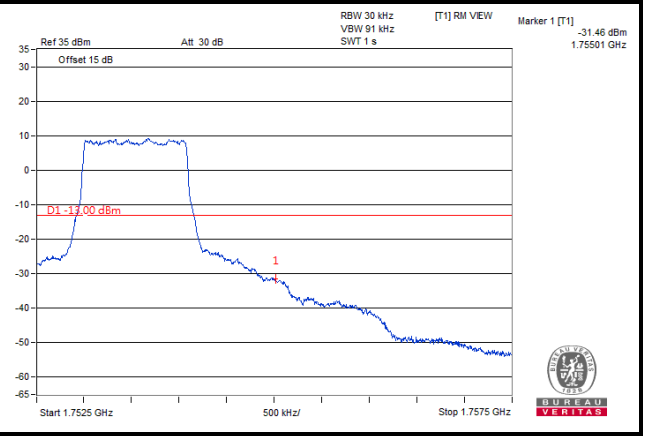
Cat-M1

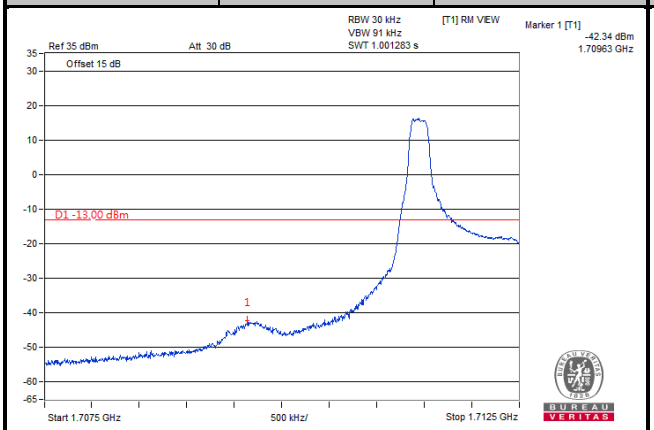
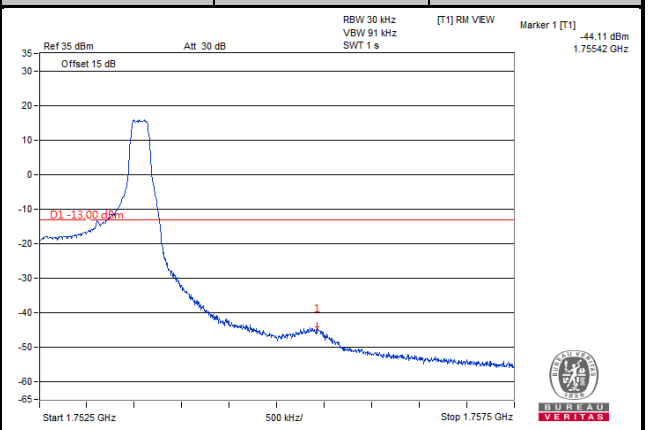
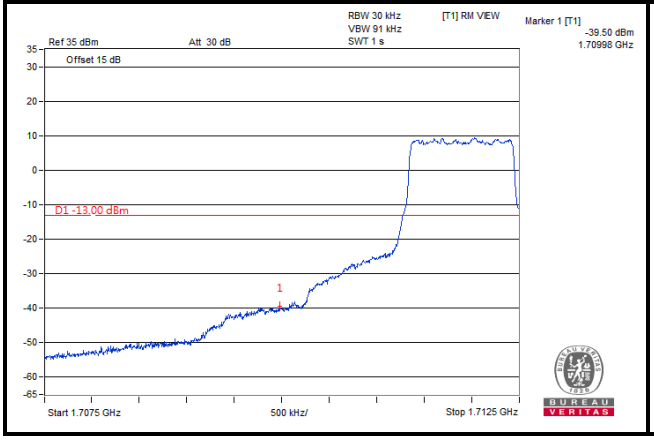
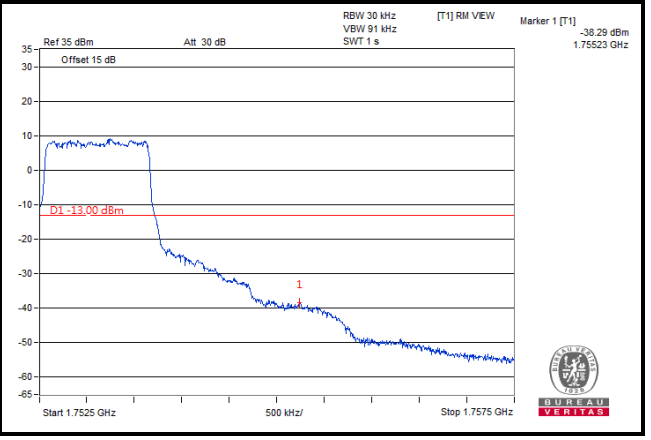
LTE Band 4					
Channel Bandwidth: 1.4 MHz					
Channel	19957	1 RB	Channel	20393	1 RB
					
Channel	19957	6 RB	Channel	20393	6 RB
					

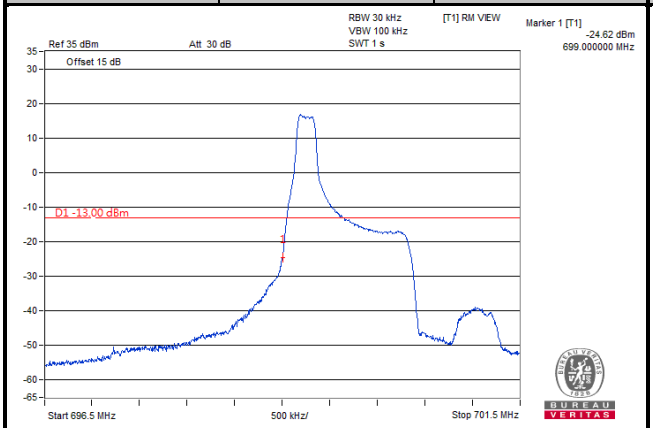
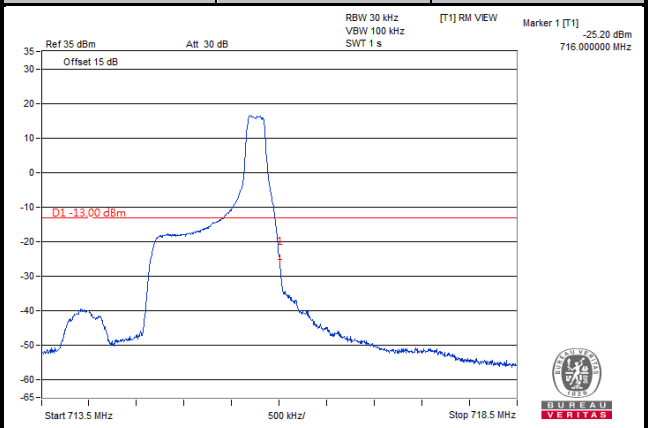
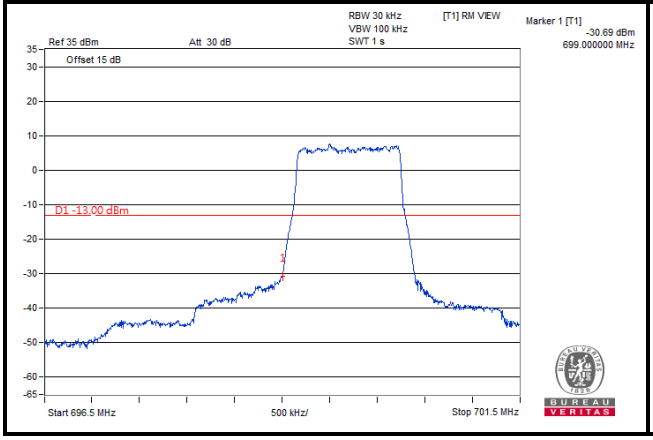
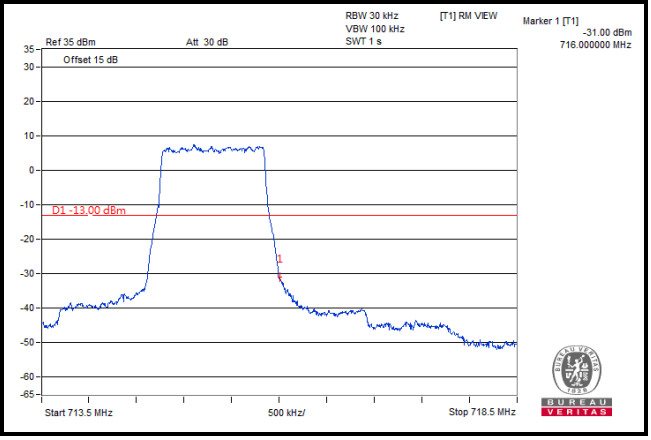
LTE Band 4					
Channel Bandwidth: 3 MHz					
Channel	19965	1 RB	Channel	20385	1 RB
					
Channel	19965	6 RB	Channel	20385	6 RB
					

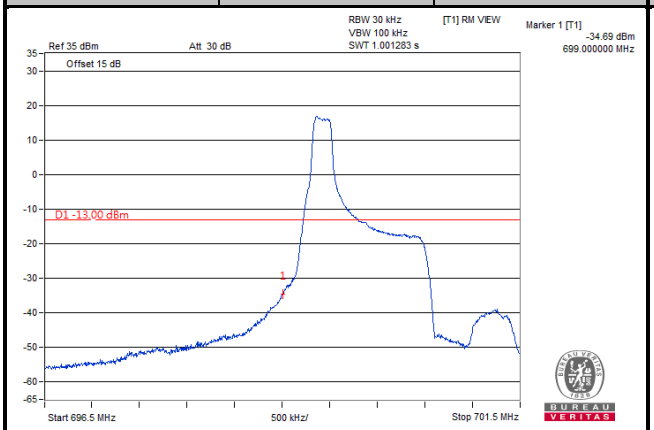
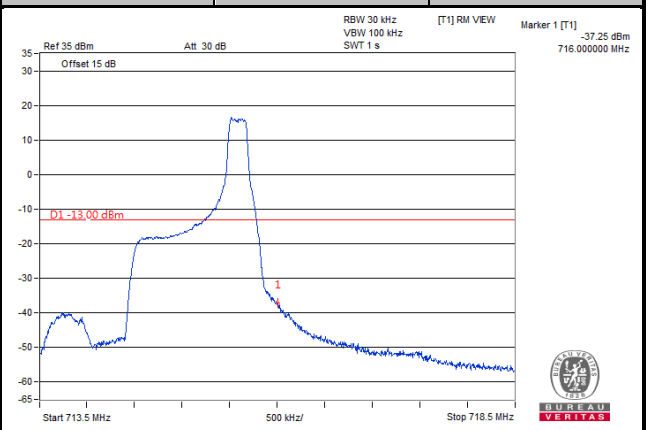
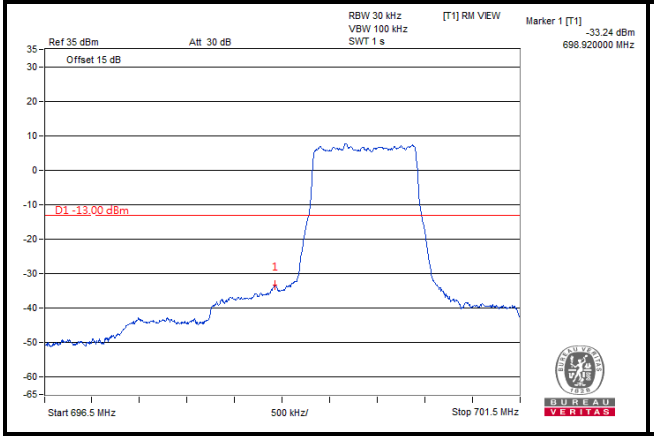
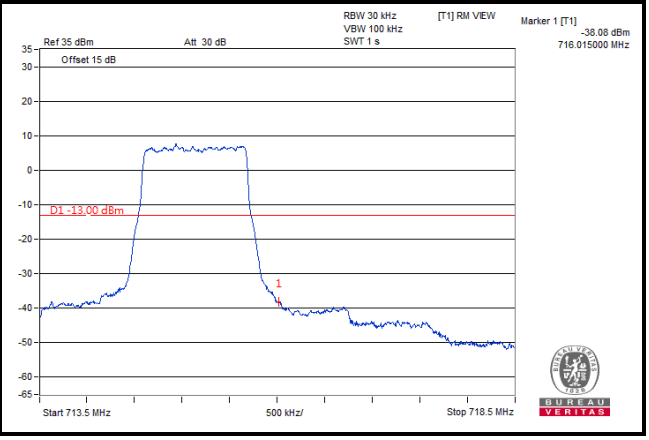
LTE Band 4					
Channel Bandwidth: 5 MHz					
Channel	19975	1 RB	Channel	20375	1 RB
					
Channel	19975	6 RB	Channel	20375	6 RB
					

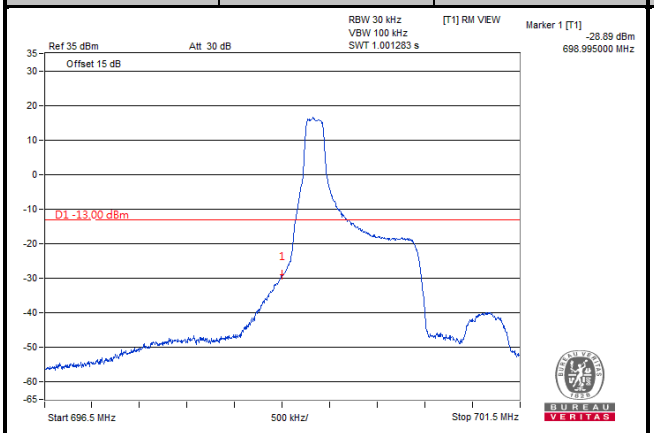
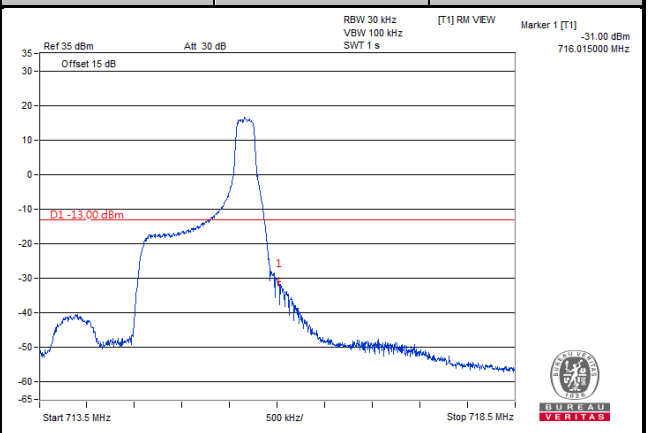
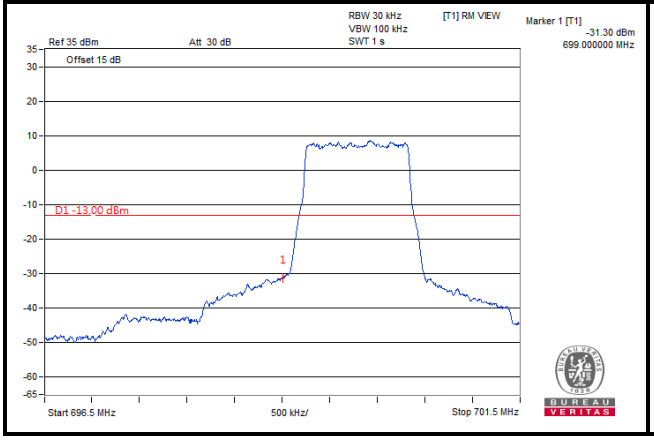
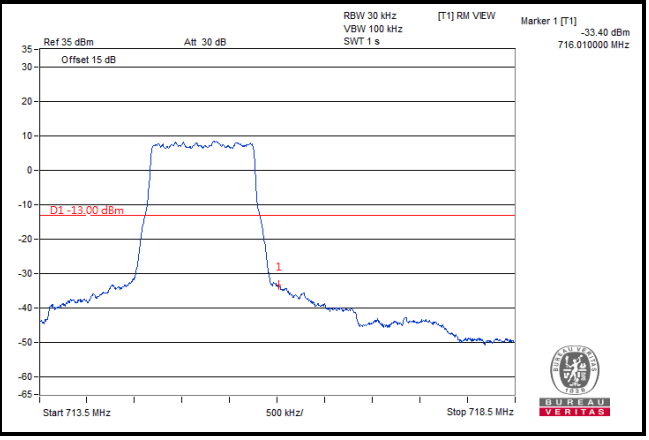
LTE Band 4					
Channel Bandwidth: 10 MHz					
Channel	20000	1 RB	Channel	20350	1 RB
					
Channel	20000	6 RB	Channel	20350	6 RB
					

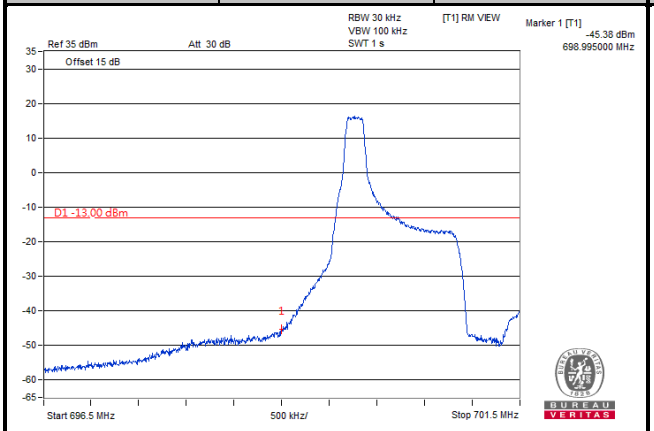
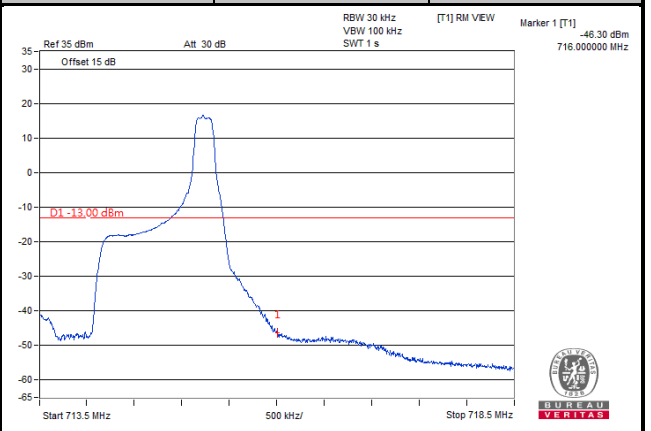
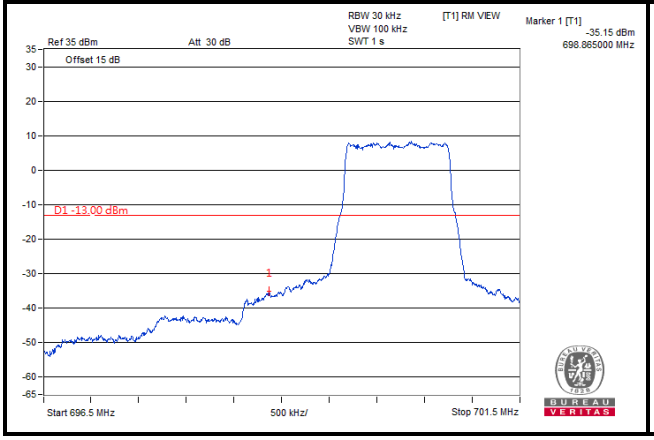
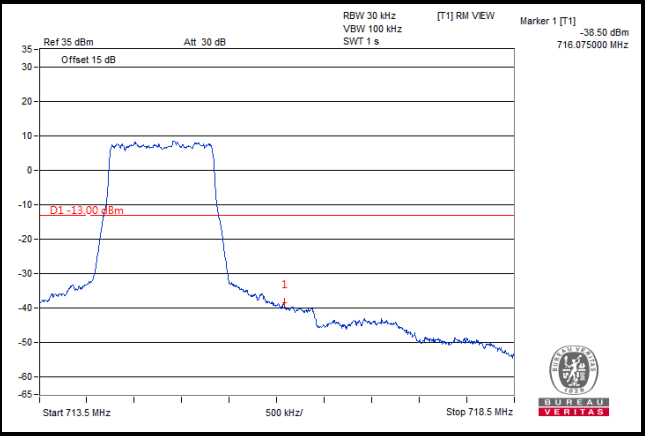
LTE Band 4					
Channel Bandwidth: 15 MHz					
Channel	20025	1 RB	Channel	20325	1 RB
					
Channel	20025	6 RB	Channel	20325	6 RB
					

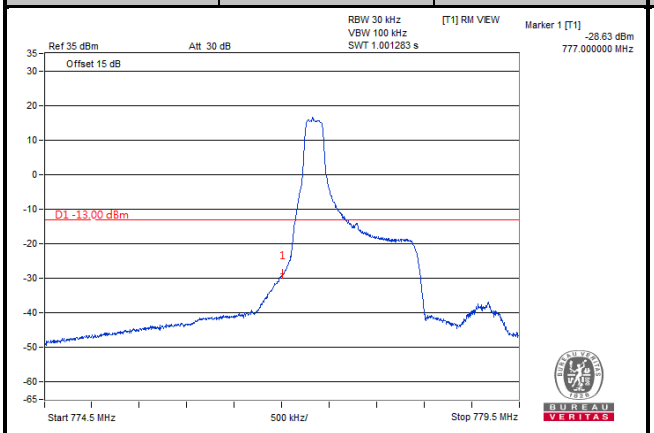
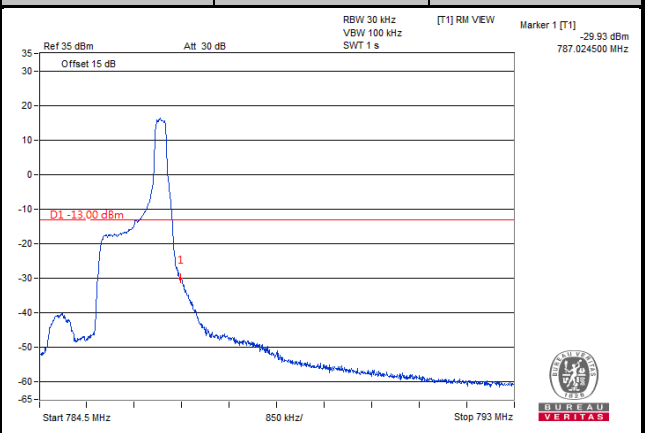
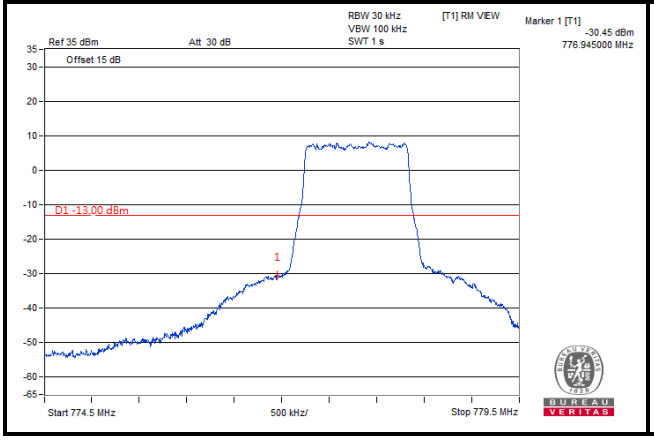
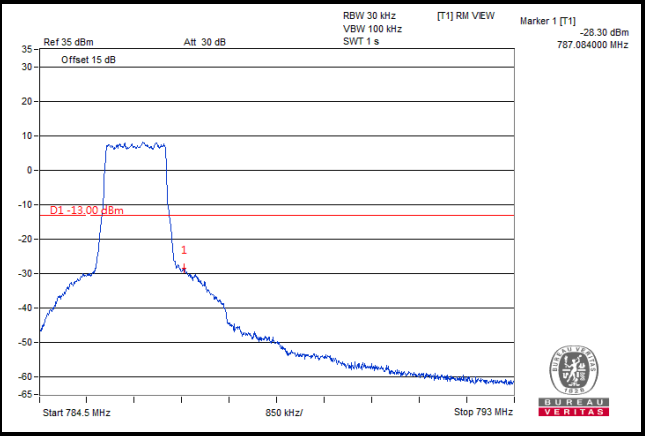
LTE Band 4					
Channel Bandwidth: 20 MHz					
Channel	20050	1 RB	Channel	20300	1 RB
					
Channel	20050	6 RB	Channel	20300	6 RB
					

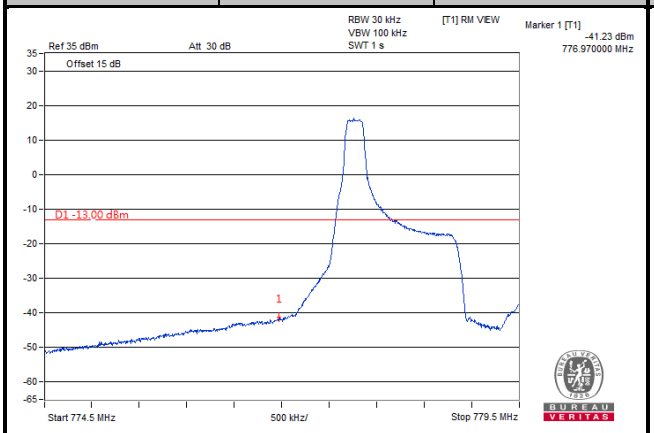
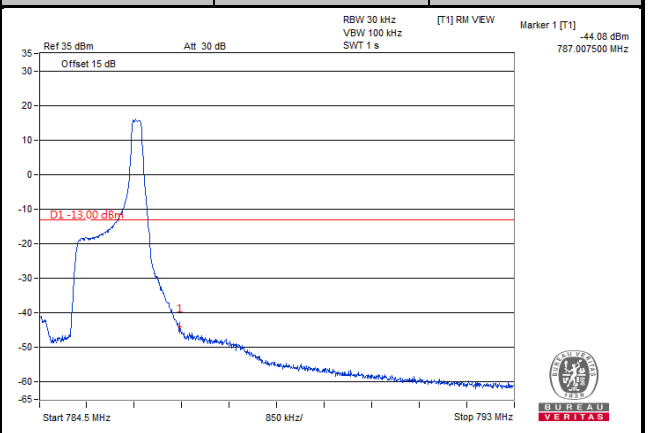
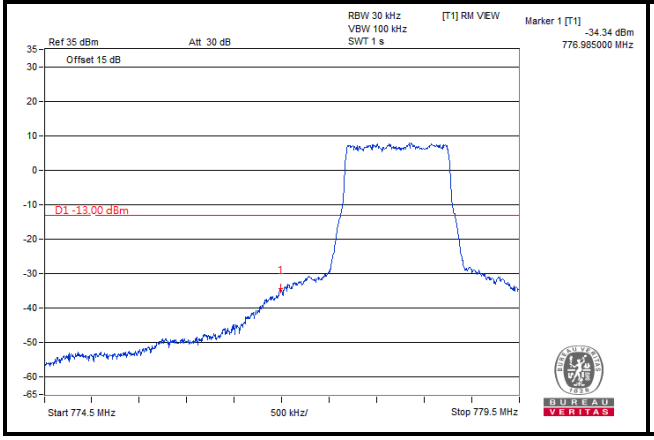
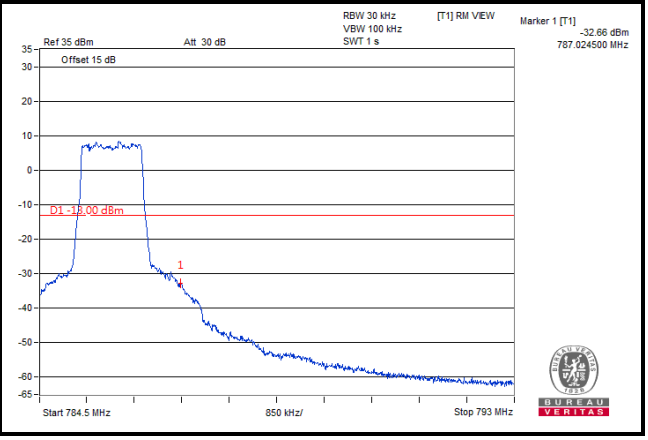
LTE Band 12					
Channel Bandwidth: 1.4 MHz					
Channel	23017	1 RB	Channel	23173	1 RB
					
Channel	23017	6 RB	Channel	23173	6 RB
					

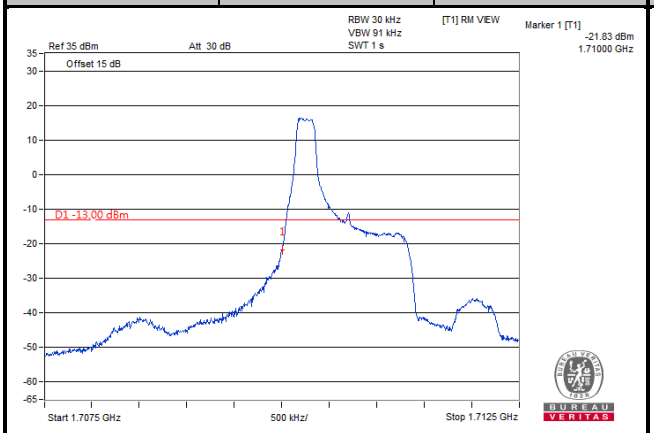
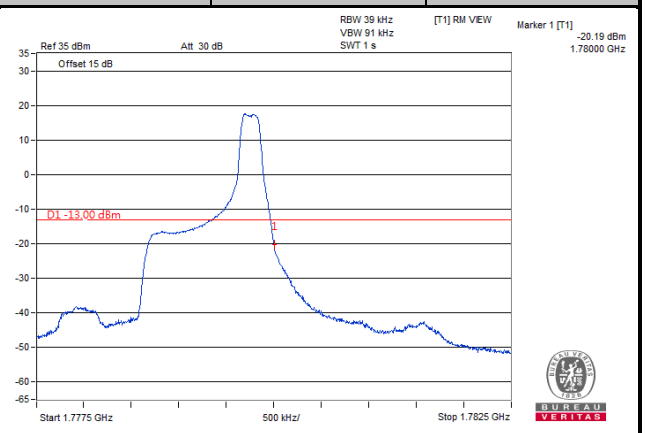
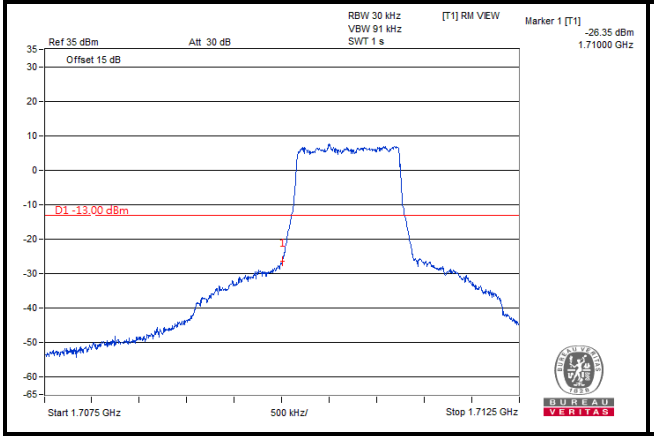
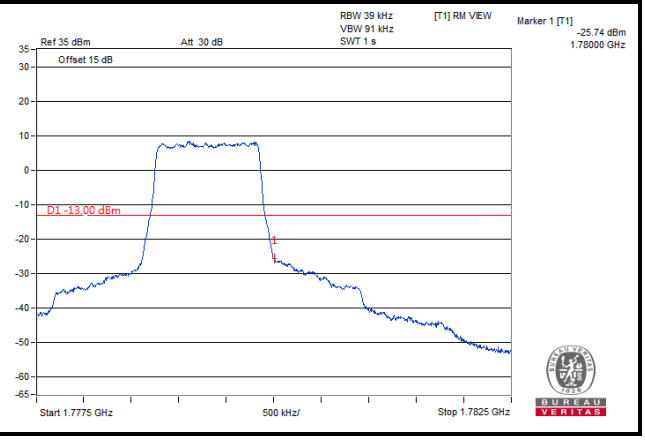
LTE Band 12					
Channel Bandwidth: 3 MHz					
Channel	23025	1 RB	Channel	23165	1 RB
					
Channel	23025	6 RB	Channel	23165	6 RB
					

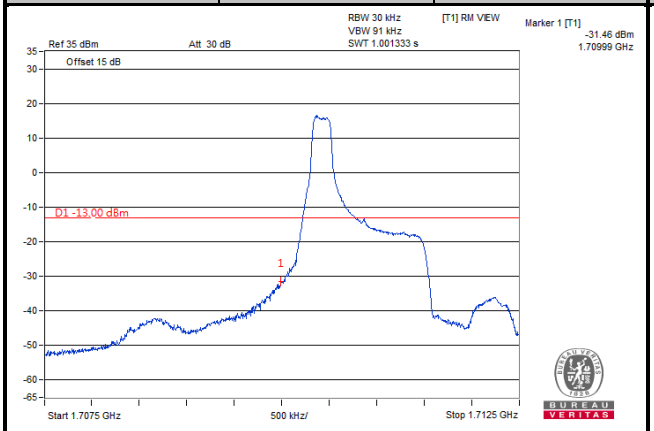
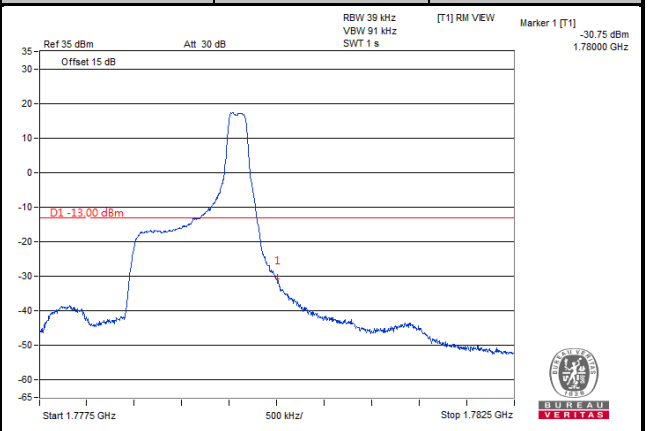
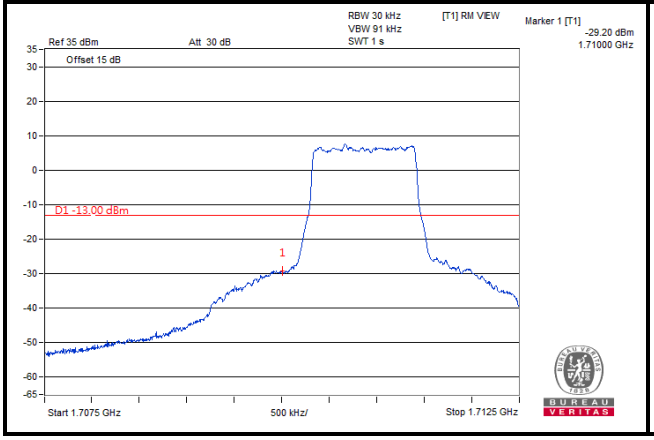
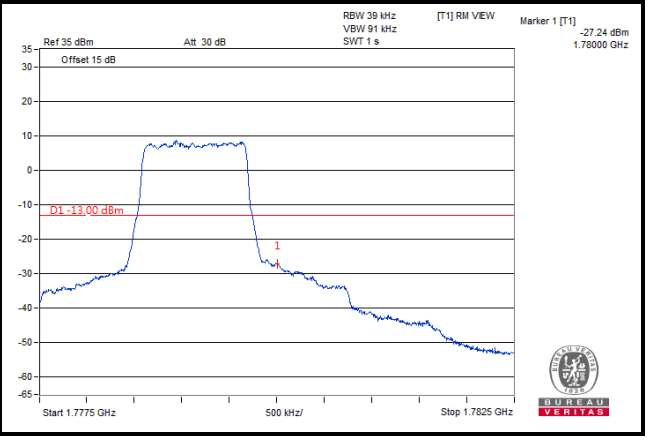
LTE Band 12					
Channel Bandwidth: 5 MHz					
Channel	23035	1 RB	Channel	23155	1 RB
					
Channel	23035	6 RB	Channel	23155	6 RB
					

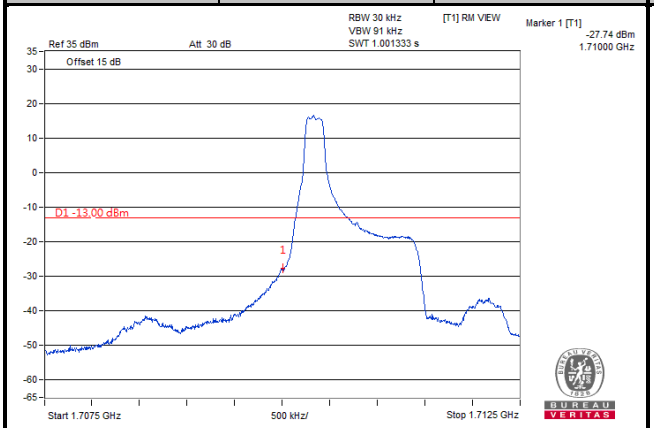
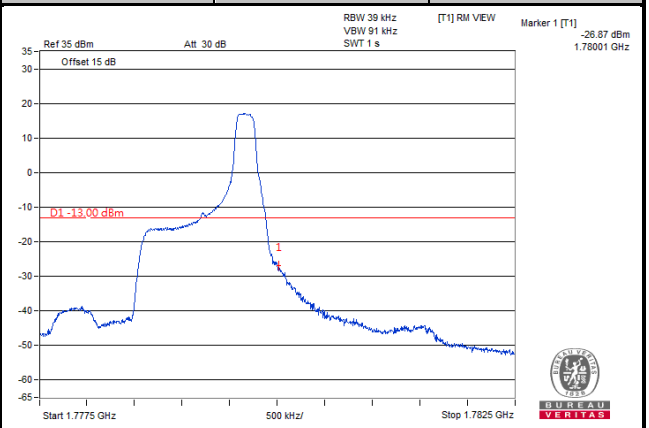
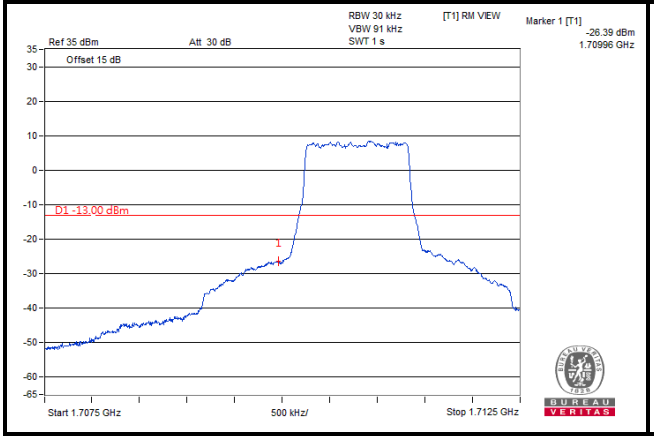
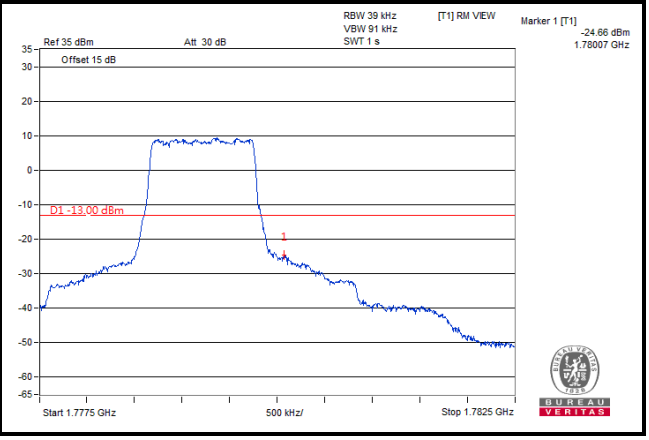
LTE Band 12					
Channel Bandwidth: 10 MHz					
Channel	23060	1 RB	Channel	23130	1 RB
					
Channel	23060	6 RB	Channel	23130	6 RB
					

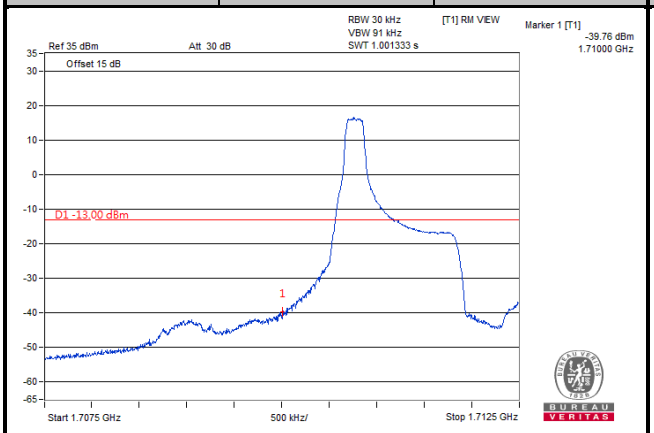
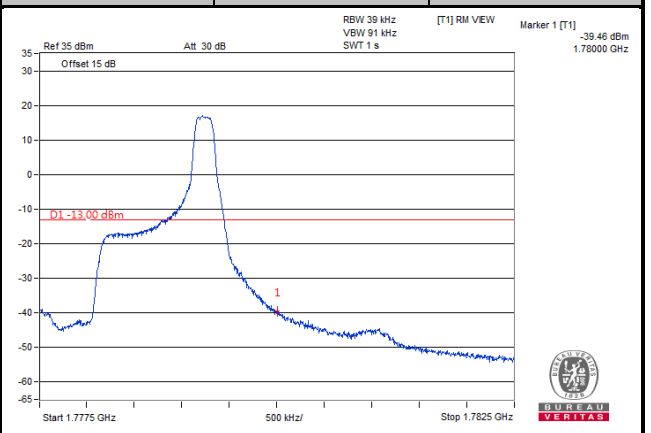
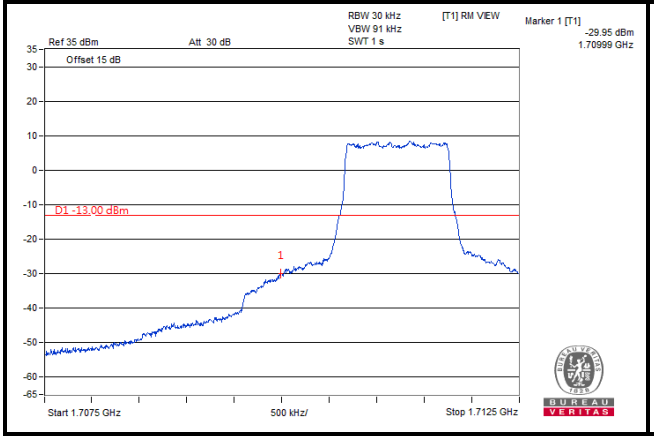
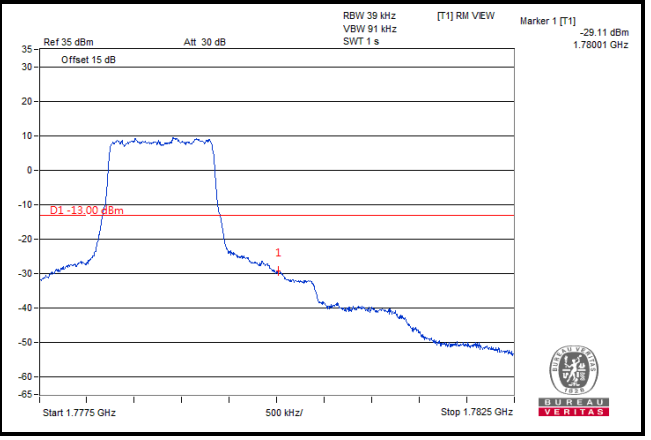
LTE Band 13					
Channel Bandwidth: 5 MHz					
Channel	23205	1 RB	Channel	23255	1 RB
					
Channel	23205	6 RB	Channel	23255	6 RB
					

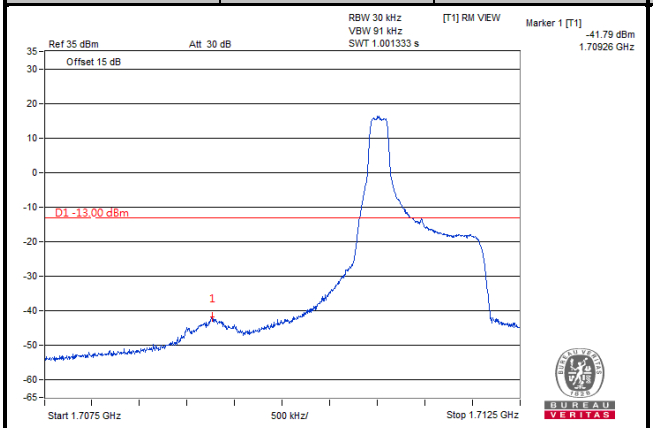
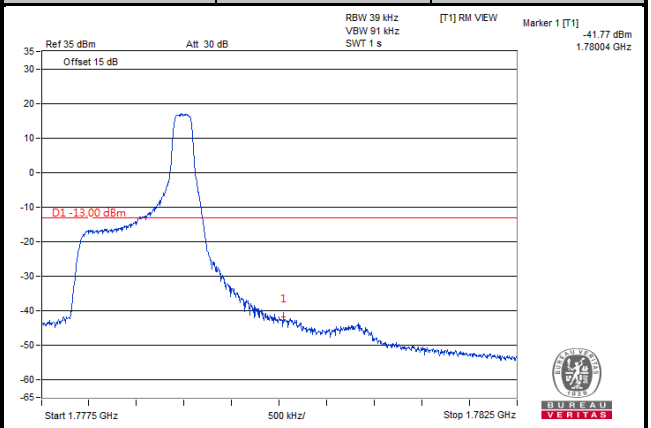
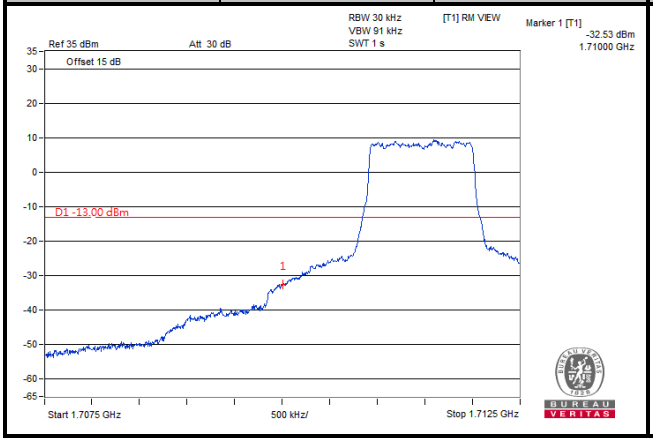
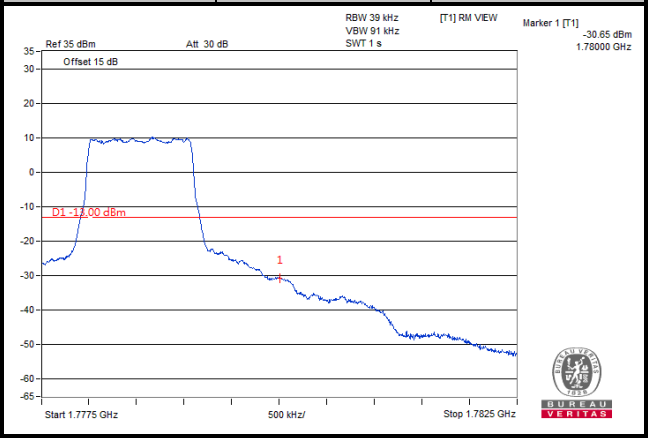
LTE Band 13					
Channel Bandwidth: 10 MHz					
Channel	23230	1 RB	Channel	23230	1 RB
					
Channel	23230	6 RB	Channel	23230	6 RB
					

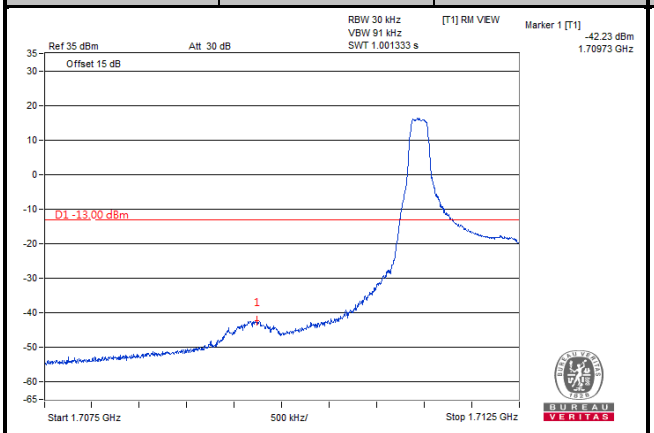
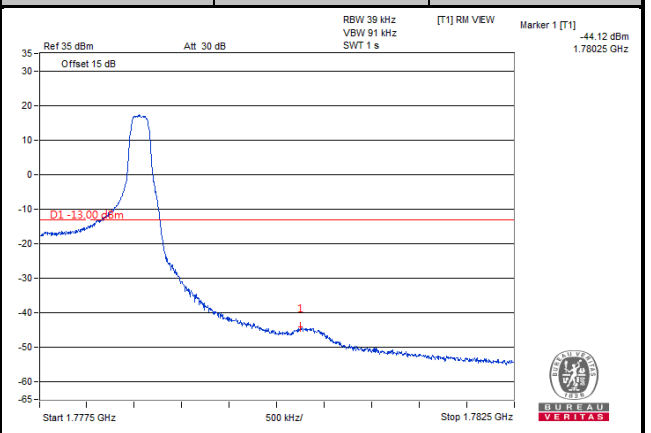
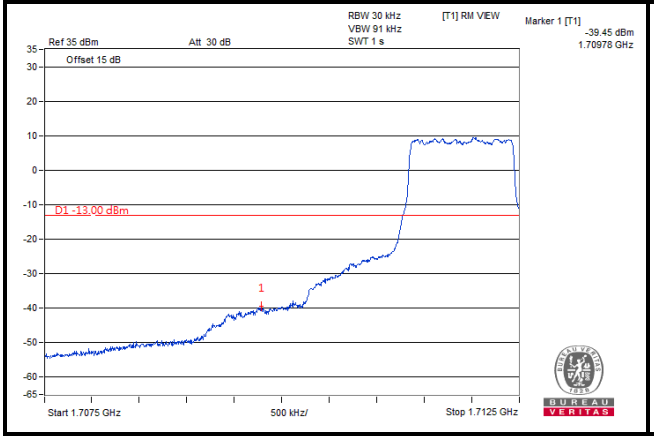
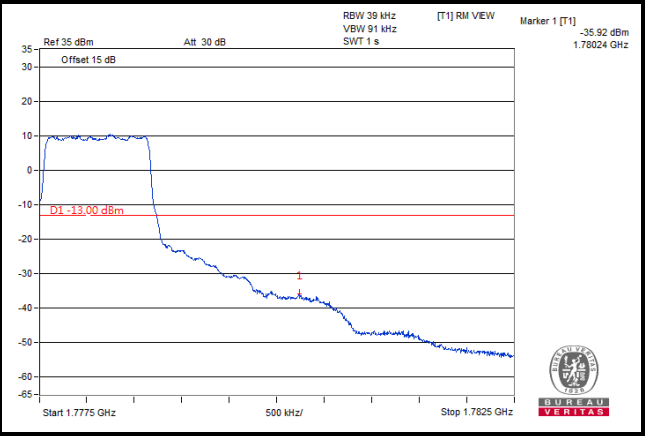
LTE Band 66					
Channel Bandwidth: 1.4 MHz					
Channel	131979	6 RB	Channel	131979	6 RB
					
Channel	131979	6 RB	Channel	131979	6 RB
					

LTE Band 66					
Channel Bandwidth: 3 MHz					
Channel	131987	1 RB	Channel	132657	1 RB
					
Channel	131987	6 RB	Channel	132657	6 RB
					

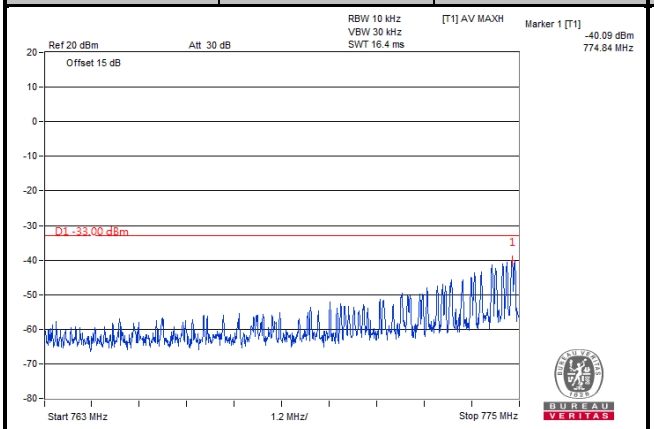
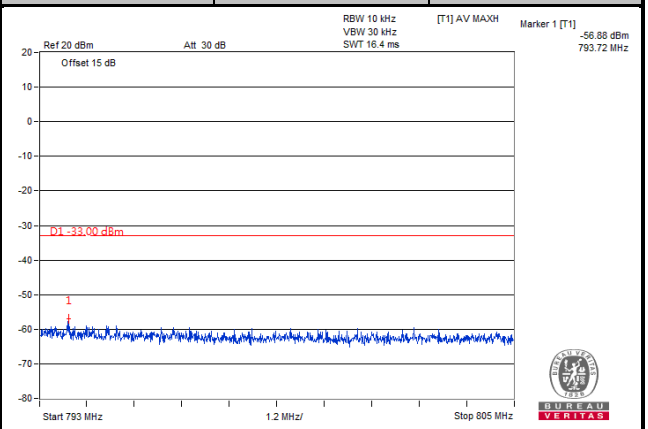
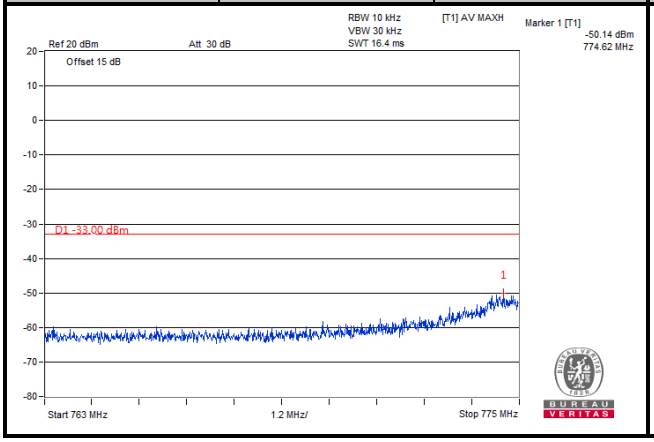
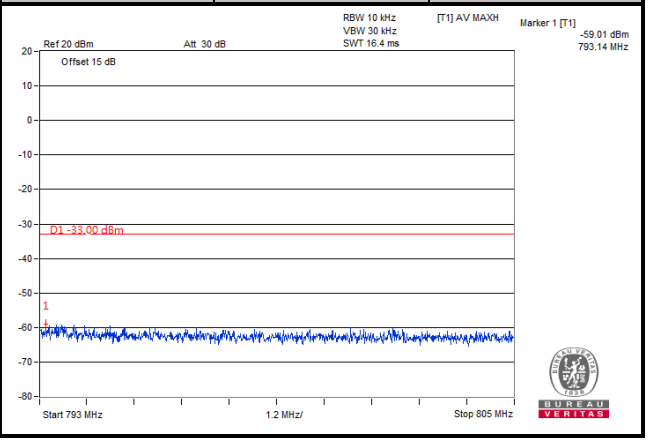
LTE Band 66					
Channel Bandwidth: 5 MHz					
Channel	131997	1 RB	Channel	132647	1 RB
					
Channel	131997	6 RB	Channel	132647	6 RB
					

LTE Band 66					
Channel Bandwidth: 10 MHz					
Channel	132022	1 RB	Channel	132622	1 RB
					
Channel	132022	6 RB	Channel	132622	6 RB
					

LTE Band 66					
Channel Bandwidth: 15 MHz					
Channel	132047	1 RB	Channel	132597	1 RB
					
Channel	132047	6 RB	Channel	132597	6 RB
					

LTE Band 66					
Channel Bandwidth: 20 MHz					
Channel	132072	1 RB	Channel	132572	1 RB
					
Channel	132072	6 RB	Channel	132572	6 RB
					

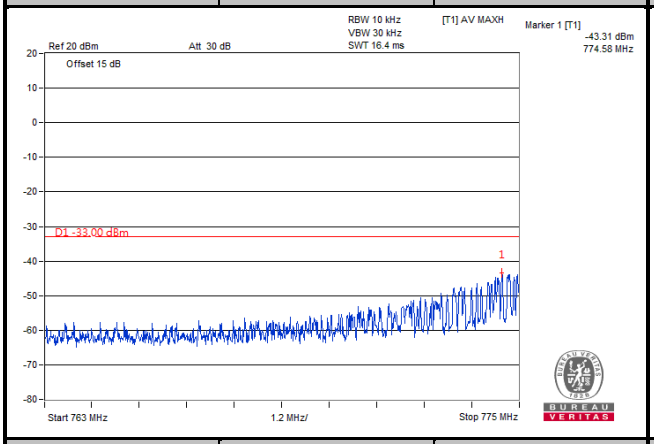
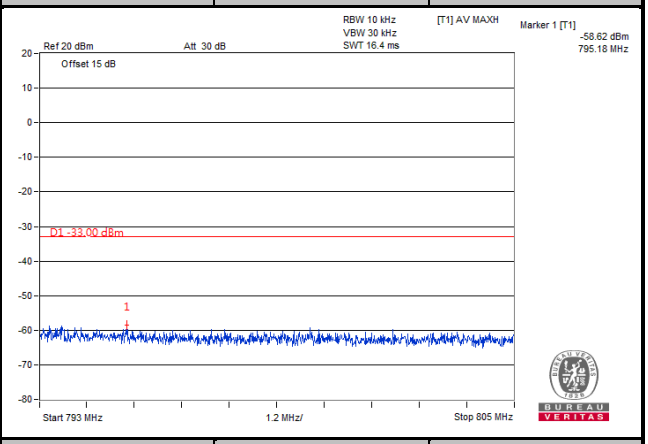
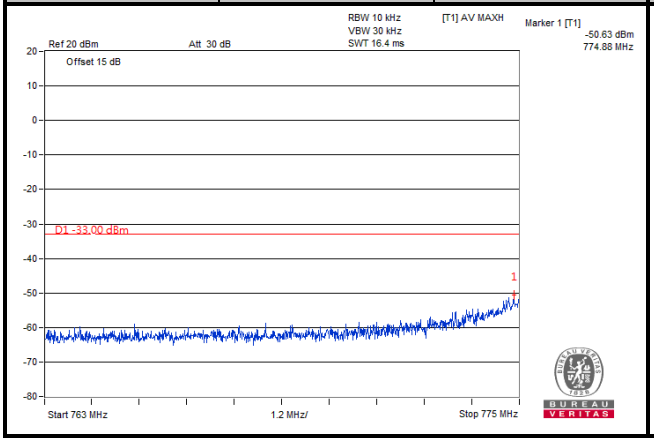
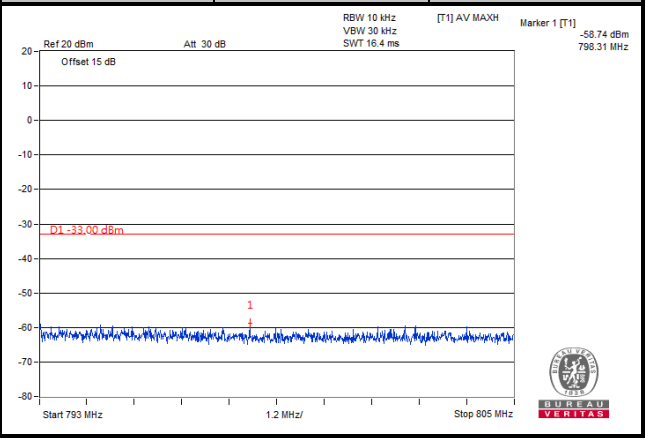
Emission Mask

LTE Band 13					
Channel Bandwidth: 5 MHz					
Channel	23205	1 RB	Channel	23255	1 RB
					
Channel	23205	6 RB	Channel	23255	6 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

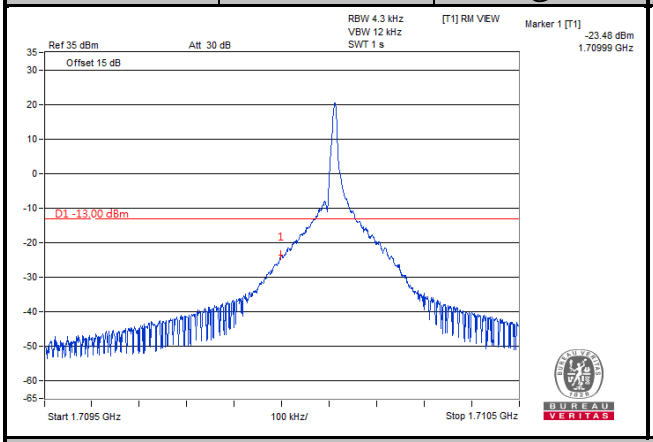
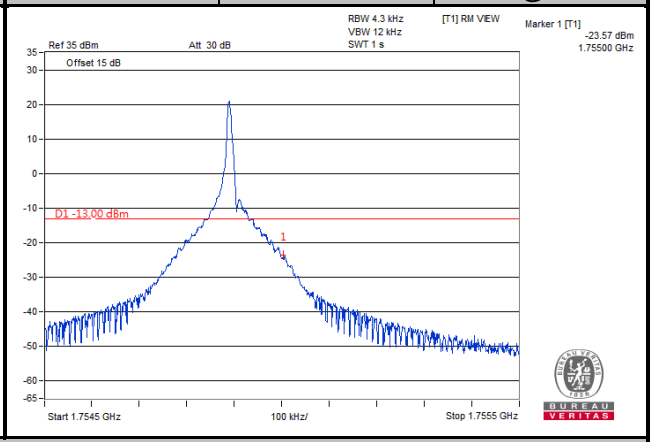
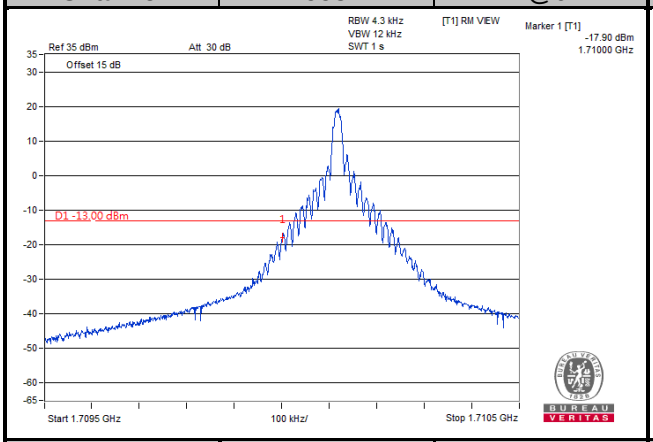
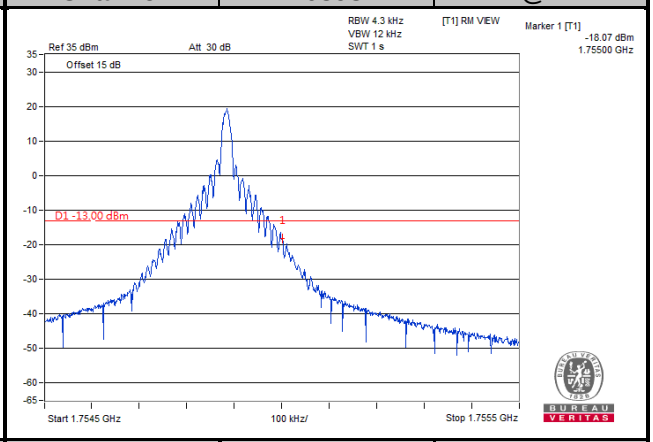
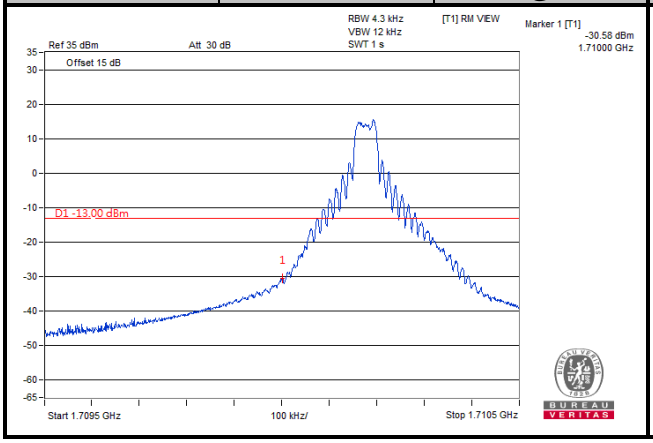
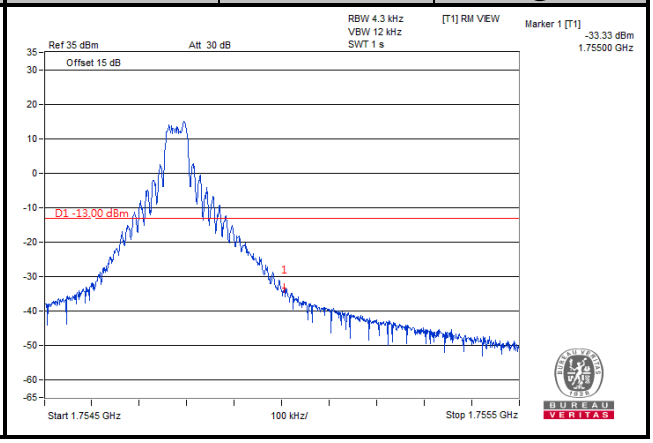
LTE Band 13					
Channel Bandwidth: 10 MHz					
Channel	23230	1 RB	Channel	23230	1 RB
					
Channel	23230	6 RB	Channel	23230	6 RB
					

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.

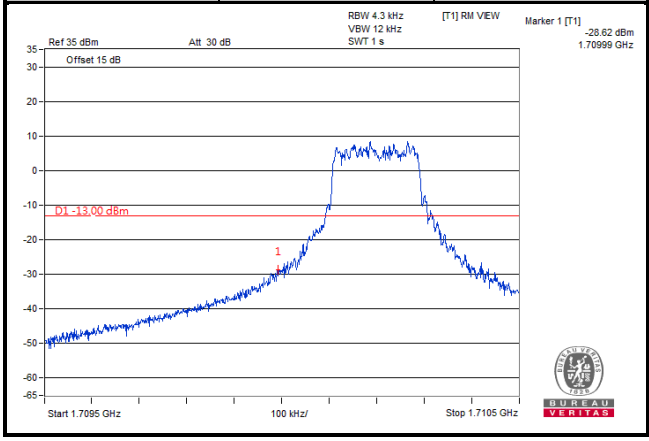
10log(10kHz/6.25kHz) = 2.04 dB

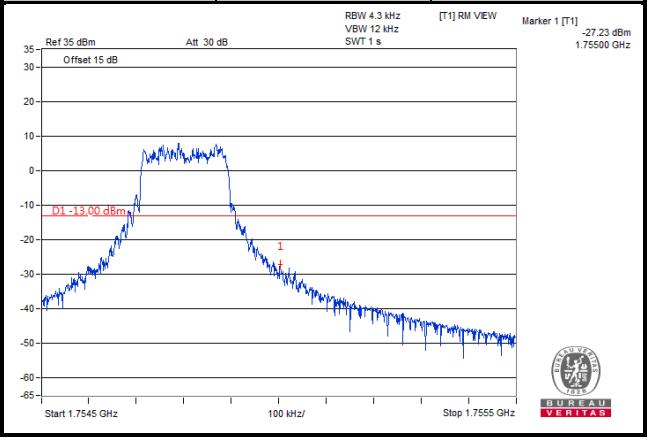
Limit line = -35 dBm + 2.04 dB =-32.96 dBm

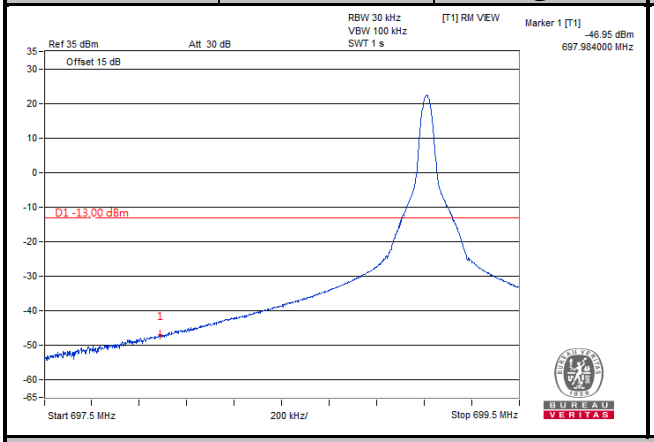
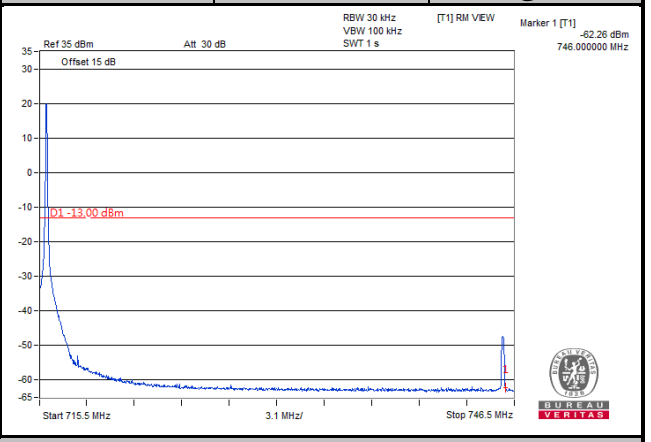
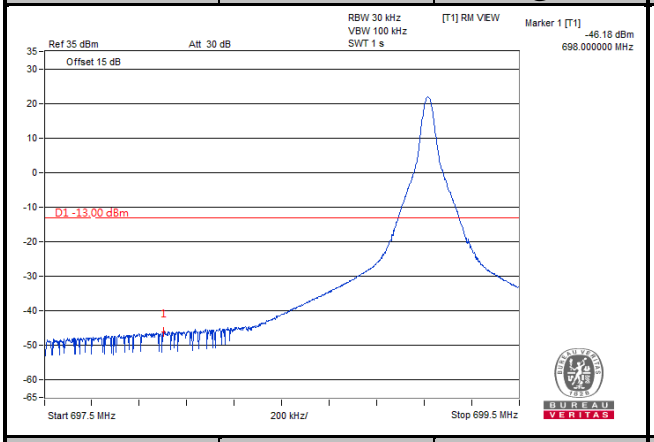
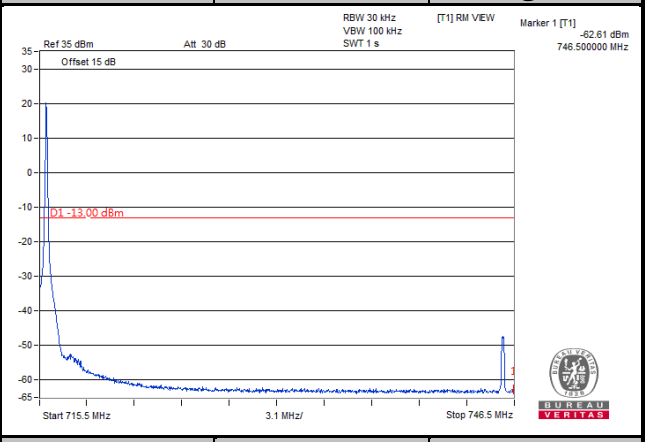
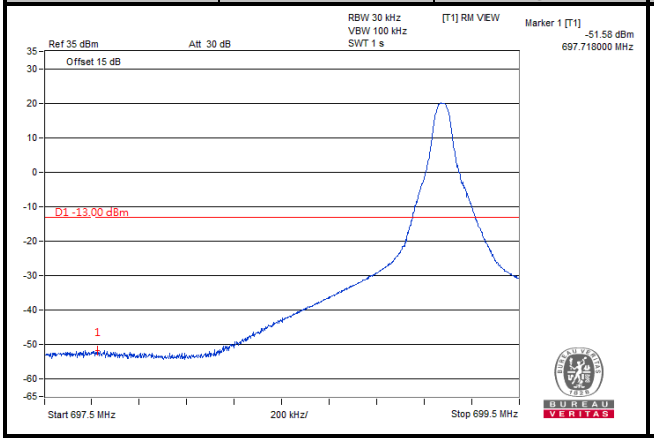
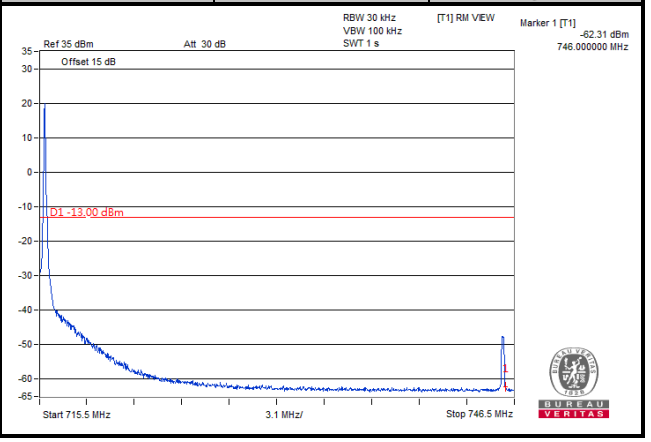
NB-IoT

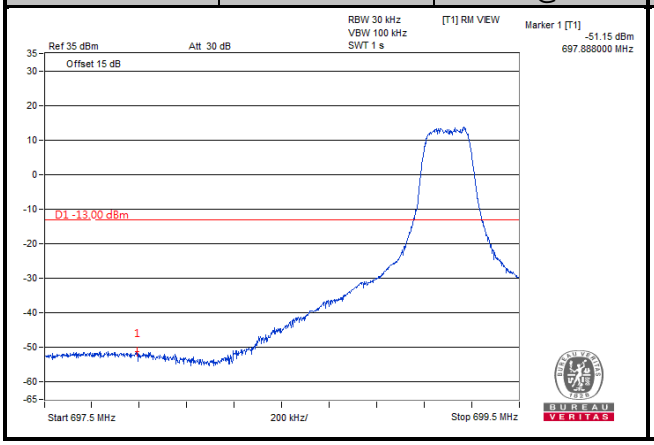
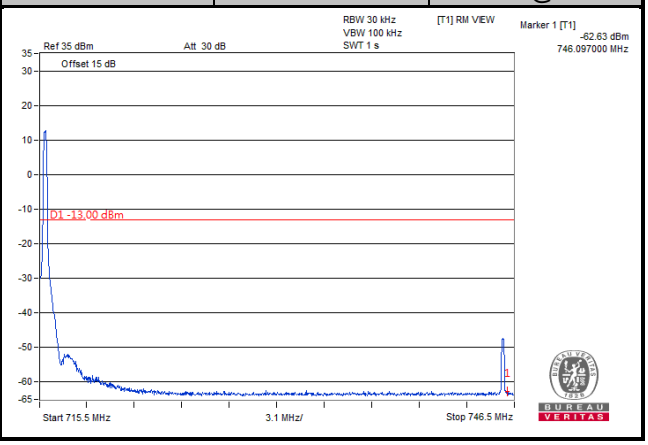
LTE Band 4					
BPSK					
Channel	**19952**	**1@0**	**Channel**	**20398**	**1@47**
					
QPSK					
Channel	**19952**	**1@0**	**Channel**	**20398**	**1@11**
					
Channel	**19952**	**3@3**	**Channel**	**20398**	**3@3**
					

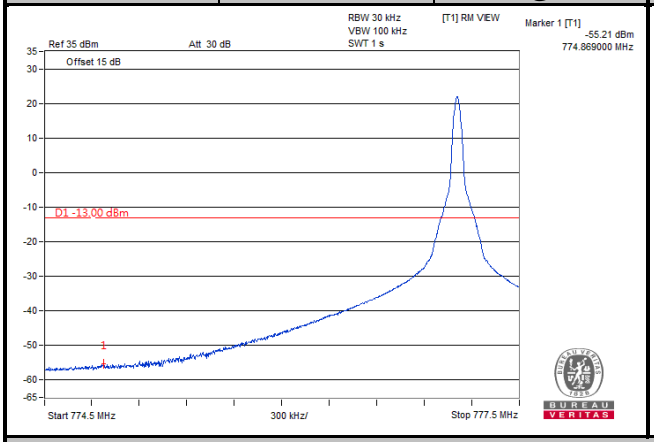
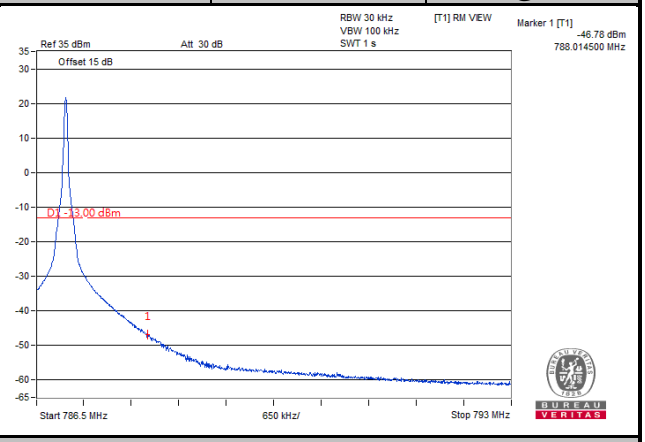
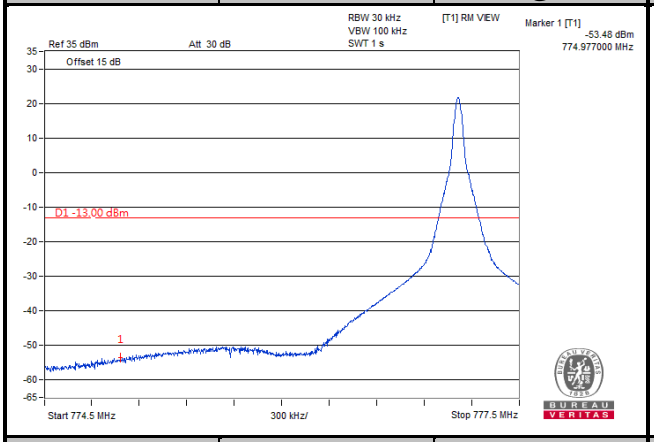
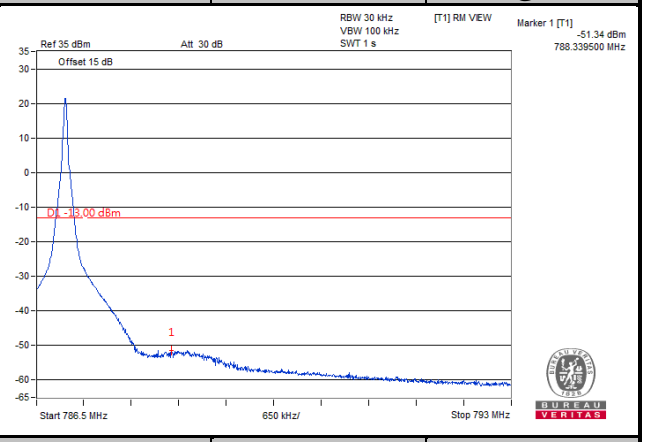
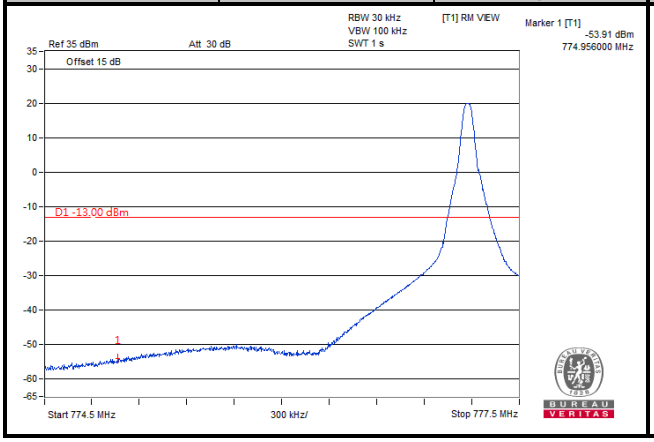
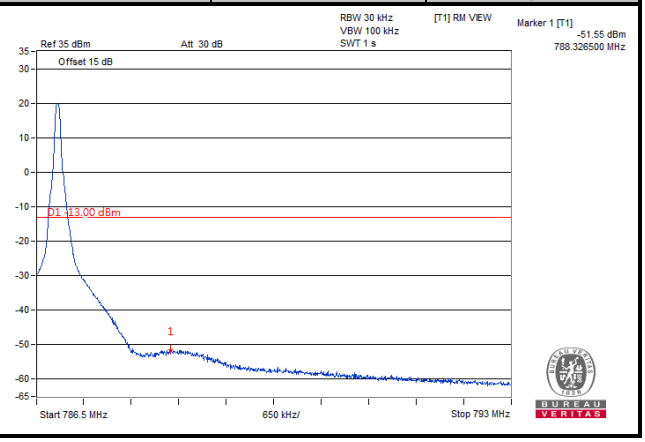
LTE Band 4					
QPSK					
Channel	19952	12@0	Channel	20398	12@0

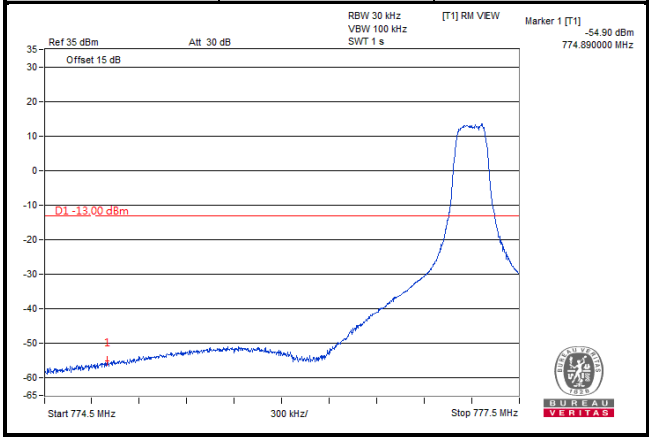
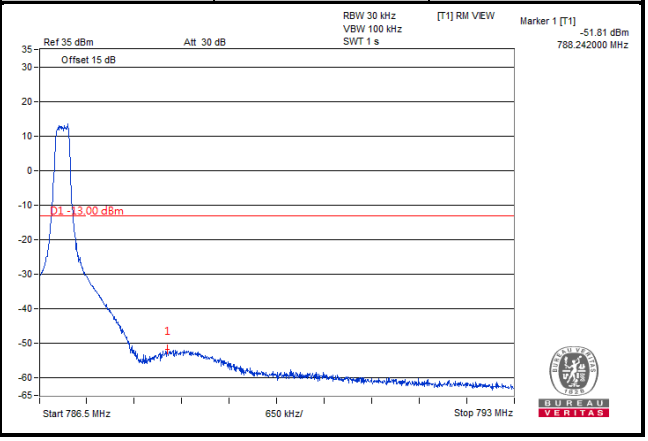


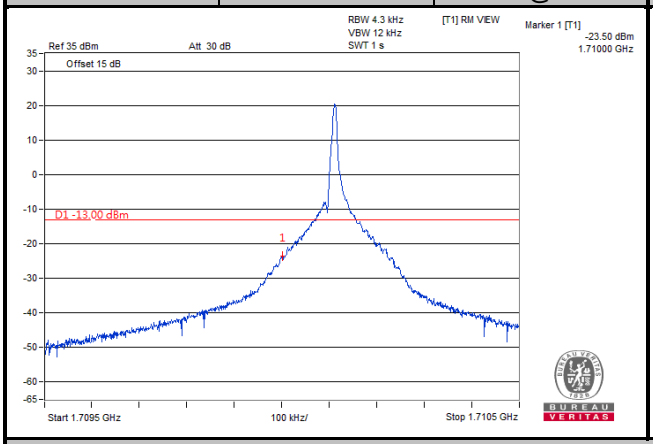
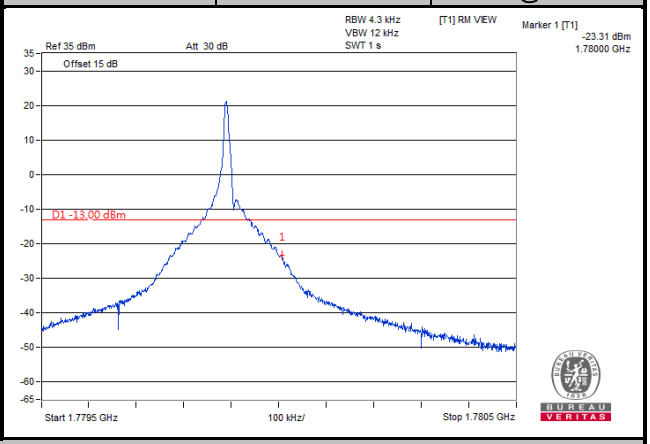
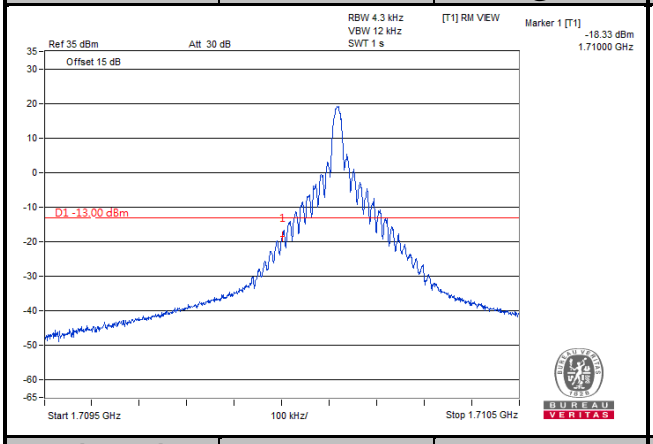
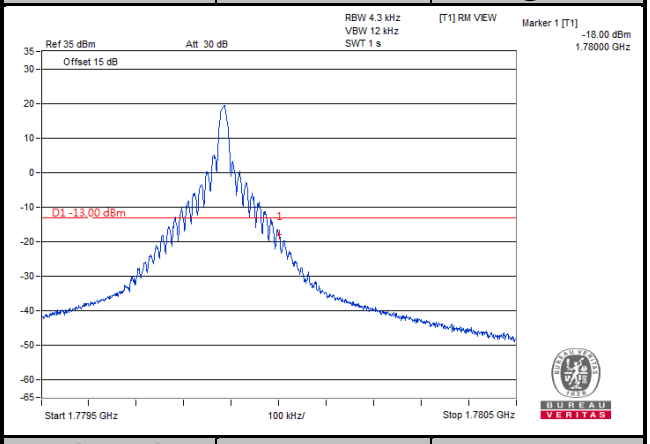
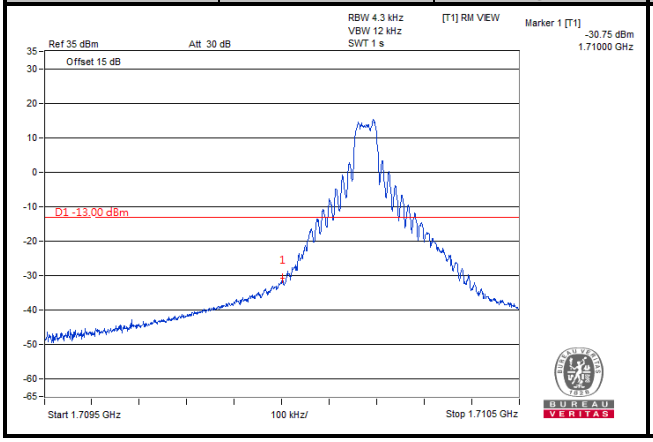
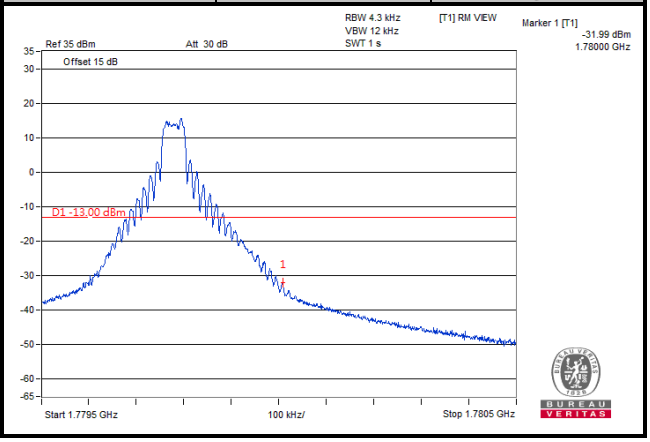


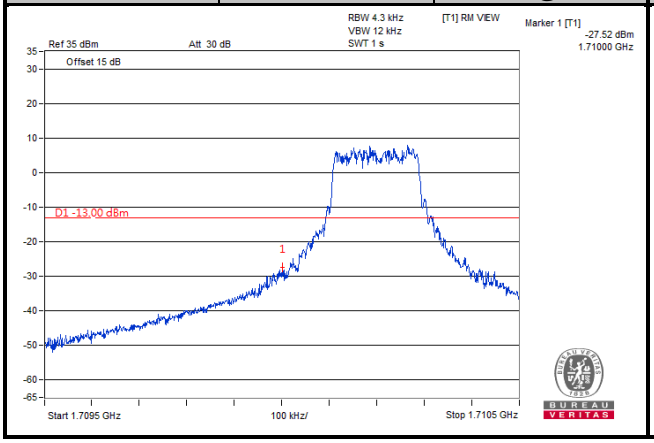
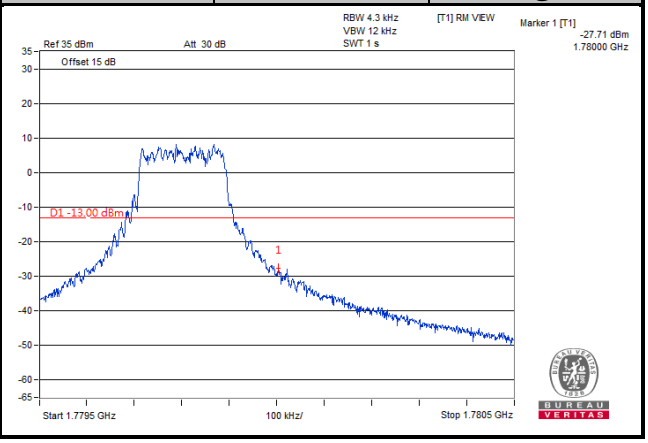
LTE Band 12					
BPSK					
Channel	23012	1@0	Channel	23178	1@47
					
QPSK					
Channel	23012	1@0	Channel	23178	1@11
					
Channel	23012	3@3	Channel	23178	3@3
					

LTE Band 12					
QPSK					
Channel	23012	12@0	Channel	23178	12@0
					

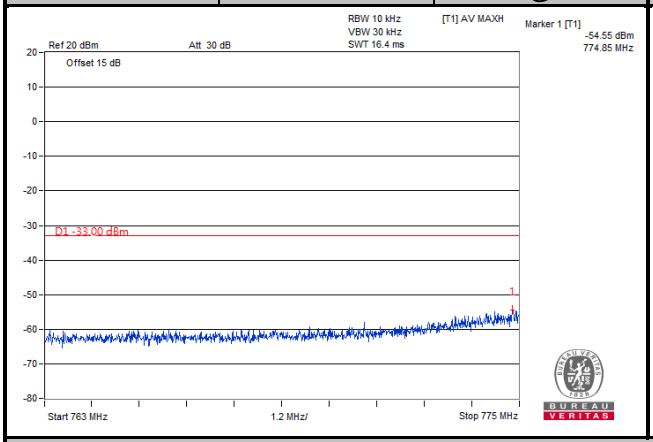
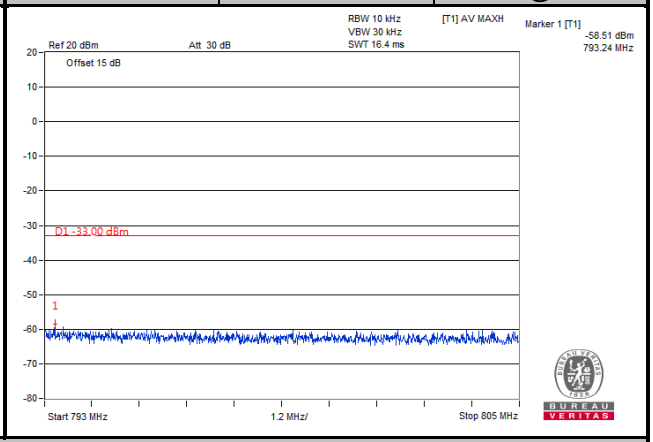
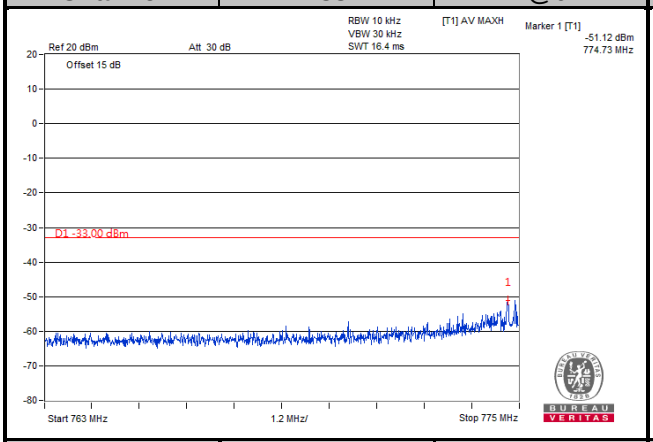
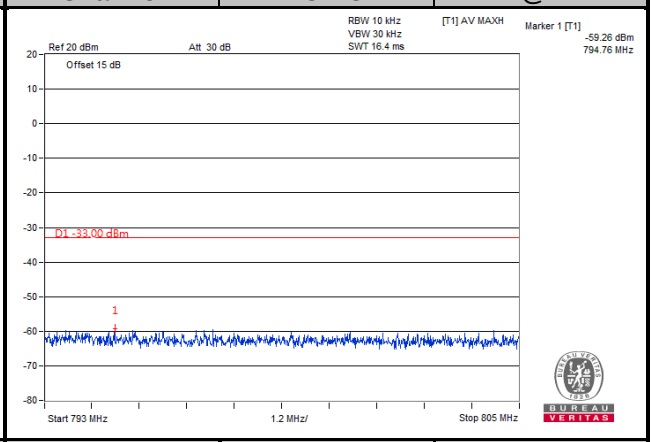
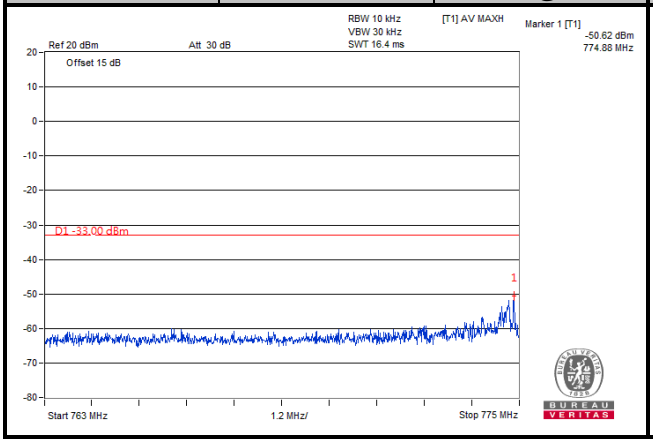
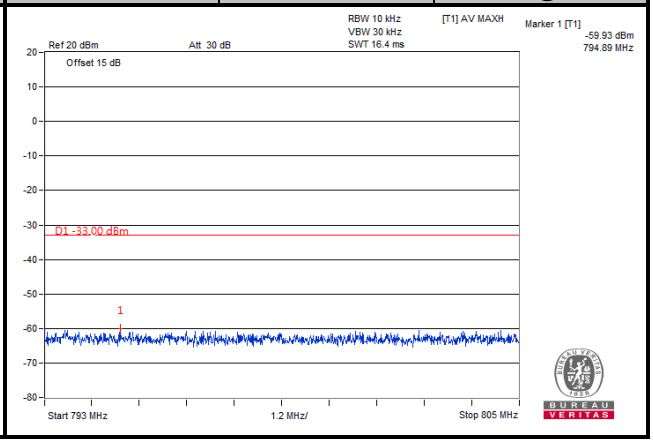
LTE Band 13					
BPSK					
Channel	21382	1@0	Channel	23278	1@47
					
QPSK					
Channel	21382	1@0	Channel	23278	1@11
					
Channel	21382	3@3	Channel	23278	3@3
					

LTE Band 13					
QPSK					
Channel	21382	12@0	Channel	23278	12@0
					

LTE Band 66					
BPSK					
Channel	131972	1@0	Channel	132670	1@47
					
QPSK					
Channel	131972	1@0	Channel	132670	1@11
					
Channel	131972	3@3	Channel	132670	3@3
					

LTE Band 66					
QPSK					
Channel	131972	12@0	Channel	132670	12@0
					

Emission Mask

LTE Band 13					
BPSK					
Channel	21382	1@0	Channel	23278	1@0
					
QPSK					
Channel	21382	1@0	Channel	23278	1@11
					
Channel	21382	12@0	Channel	23278	12@0
					

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

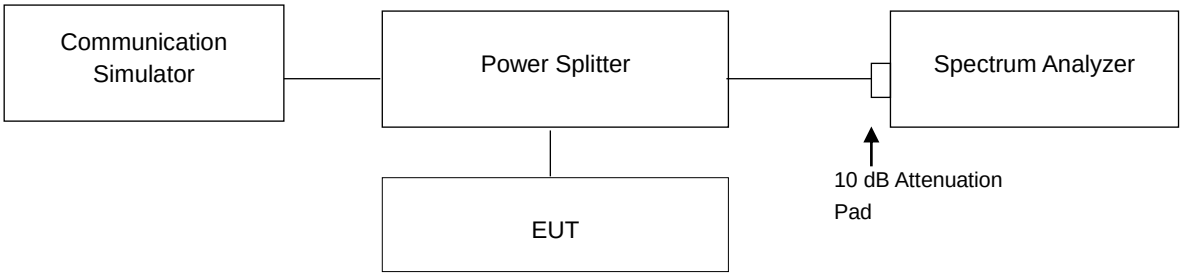
Limit line = -35 dBm + 2.04 dB = -32.96 dBm

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

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

4.6.4 Test Results

Cat-M1

LTE Band 4							
Channel Bandwidth: 1.4 MHz				Channel Bandwidth: 3 MHz			
Channel	Frequency (MHz)	Peak to Average Ratio (dB)		Channel	Frequency (MHz)	Peak to Average Ratio (dB)	
		QPSK	16QAM			QPSK	16QAM
19957	1710.7	5.99	7.16	19965	1711.5	5.84	7.41
20175	1732.5	5.75	7.06	20175	1732.5	5.70	7.09
20393	1754.3	5.60	7.27	20385	1753.5	5.63	7.08

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

LTE Band 4							
Channel Bandwidth: 5 MHz				Channel Bandwidth: 10 MHz			
Channel	Frequency (MHz)	Peak to Average Ratio (dB)		Channel	Frequency (MHz)	Peak to Average Ratio (dB)	
		QPSK	16QAM			QPSK	16QAM
19975	1712.5	6.60	6.97	20000	1715.0	6.54	6.98
20175	1732.5	6.56	6.89	20175	1732.5	7.57	7.01
20375	1752.5	6.43	6.81	20350	1750.0	6.54	6.91

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

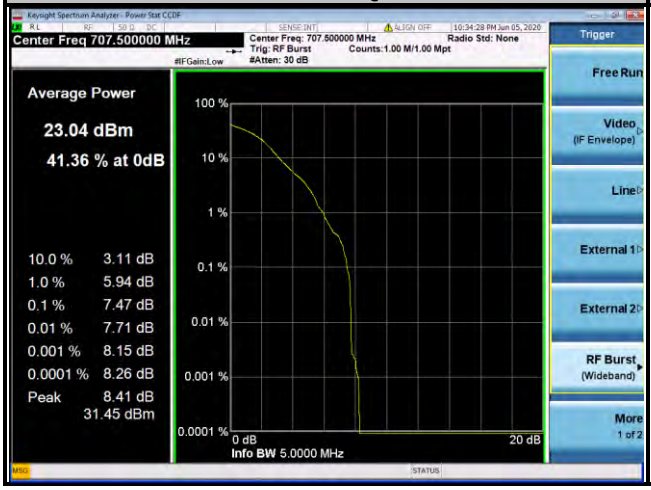
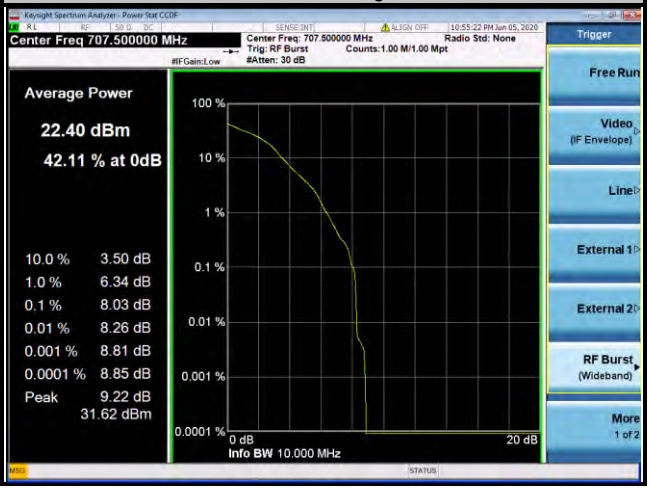
LTE Band 4							
Channel Bandwidth: 15 MHz				Channel Bandwidth: 20 MHz			
Channel	Frequency (MHz)	Peak to Average Ratio (dB)		Channel	Frequency (MHz)	Peak to Average Ratio (dB)	
		QPSK	16QAM			QPSK	16QAM
20025	1717.5	6.78	7.03	20050	1720.0	6.70	7.27
20175	1732.5	6.68	7.23	20175	1732.5	6.94	7.20
20325	1747.5	6.53	6.97	20300	1745.0	6.54	7.04

Spectrum Plot of Worst Value	
15 MHz / 16QAM	20 MHz / 16QAM
	

LTE Band 12							
Channel Bandwidth: 1.4 MHz				Channel Bandwidth: 3 MHz			
Channel	Frequency (MHz)	Peak to Average Ratio (dB)		Channel	Frequency (MHz)	Peak to Average Ratio (dB)	
		QPSK	16QAM			QPSK	16QAM
23017	699.7	5.47	6.81	23025	700.5	5.41	7.32
23095	707.5	5.47	6.83	23095	707.5	5.41	7.12
23173	715.3	5.44	6.82	23165	714.5	5.42	6.87

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

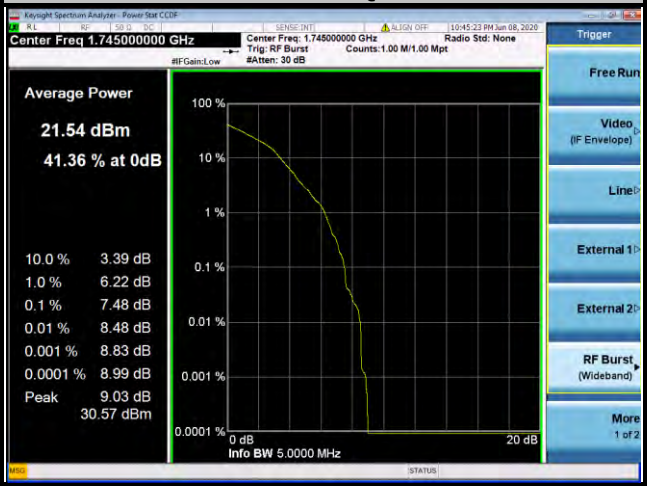
LTE Band 12							
Channel Bandwidth: 5 MHz				Channel Bandwidth: 10 MHz			
Channel	Frequency (MHz)	Peak to Average Ratio (dB)		Channel	Frequency (MHz)	Peak to Average Ratio (dB)	
		QPSK	16QAM			QPSK	16QAM
23035	701.5	6.50	7.18	23060	704.0	6.49	7.82
23095	707.5	6.48	7.47	23095	707.5	6.71	8.03
23155	713.5	6.46	7.13	23130	711.0	6.48	7.17

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

LTE Band 13							
Channel Bandwidth: 5 MHz				Channel Bandwidth: 10 MHz			
Channel	Frequency (MHz)	Peak to Average Ratio (dB)		Channel	Frequency (MHz)	Peak to Average Ratio (dB)	
		QPSK	16QAM			QPSK	16QAM
23205	779.5	6.31	6.71	23230	782.0	6.75	6.74
23230	782.0	6.32	6.73				
23255	784.5	6.32	6.72				

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

LTE Band 66							
Channel Bandwidth: 1.4 MHz				Channel Bandwidth: 3 MHz			
Channel	Frequency (MHz)	Peak to Average Ratio (dB)		Channel	Frequency (MHz)	Peak to Average Ratio (dB)	
		QPSK	16QAM			QPSK	16QAM
131979	1710.7	5.71	7.17	131987	1711.5	5.71	7.16
132322	1745.0	5.66	7.02	132322	1745.0	5.70	7.48
132665	1779.3	5.49	6.83	132657	1778.5	5.50	7.10

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

LTE Band 66							
Channel Bandwidth: 5 MHz				Channel Bandwidth: 10 MHz			
Channel	Frequency (MHz)	Peak to Average Ratio (dB)		Channel	Frequency (MHz)	Peak to Average Ratio (dB)	
		QPSK	16QAM			QPSK	16QAM
131997	1712.5	6.64	6.62	132022	1715.0	6.56	7.04
132322	1745.0	6.63	6.95	132322	1745.0	6.77	6.87
132647	1777.5	6.34	6.52	132622	1775.0	6.49	6.69

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

LTE Band 66							
Channel Bandwidth: 15 MHz				Channel Bandwidth: 20 MHz			
Channel	Frequency (MHz)	Peak to Average Ratio (dB)		Channel	Frequency (MHz)	Peak to Average Ratio (dB)	
		QPSK	16QAM			QPSK	16QAM
132047	1717.5	6.62	7.31	132072	1720.0	6.71	7.19
132322	1745.0	6.62	7.91	132322	1745.0	6.55	6.98
132597	1772.5	6.38	7.15	132572	1770.0	7.36	6.88

Spectrum Plot of Worst Value	
15 MHz / 16QAM	20 MHz / QPSK
	

NB-IoT

LTE Band 4					
Channel	Frequency (MHz)	Modulation	N_{tones}	Sub-carrier Spacing (kHz)	PAPR (dB)
20175	1732.5	BPSK	1@0	3.75	2.83
20175	1732.5	QPSK	1@0	15	5.42
20175	1732.5	QPSK	3@3	15	7.22

Spectrum Plot of Worst Value
QPSK

LTE Band 12					
Channel	Frequency (MHz)	Modulation	N_{tones}	Sub-carrier Spacing (kHz)	PAPR (dB)
23095	707.5	BPSK	1@0	3.75	2.57
23095	707.5	QPSK	1@0	15	5.15
23095	707.5	QPSK	3@3	15	6.91

Spectrum Plot of Worst Value
QPSK

LTE Band 13					
Channel	Frequency (MHz)	Modulation	N_{tones}	Sub-carrier Spacing (kHz)	PAPR (dB)
23230	782	BPSK	1@0	3.75	2.47
23230	782	QPSK	1@0	15	5.09
23230	782	QPSK	3@3	15	6.74

Spectrum Plot of Worst Value
QPSK

LTE Band 66					
Channel	Frequency (MHz)	Modulation	N_{tones}	Sub-carrier Spacing (kHz)	PAPR (dB)
132322	1745	BPSK	1@0	3.75	2.67
132322	1745	QPSK	1@0	15	5.41
132322	1745	QPSK	3@3	15	7.22

Spectrum Plot of Worst Value
QPSK

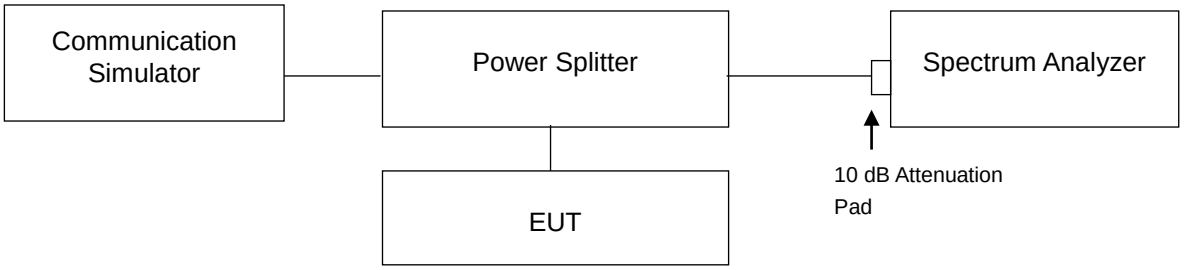
4.7 Conducted Spurious Emissions

4.7.1 Limits of Conducted Spurious Emissions Measurement

The power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) by at least 43 +10 log (P) dB. The limit of emission is equal to -13 dBm.

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.

4.7.2 Test Setup

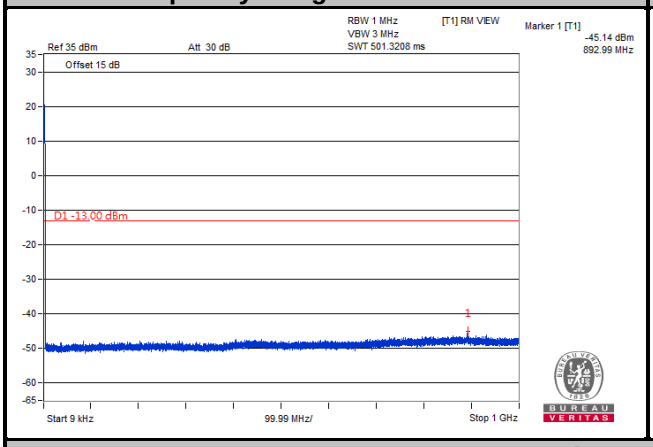
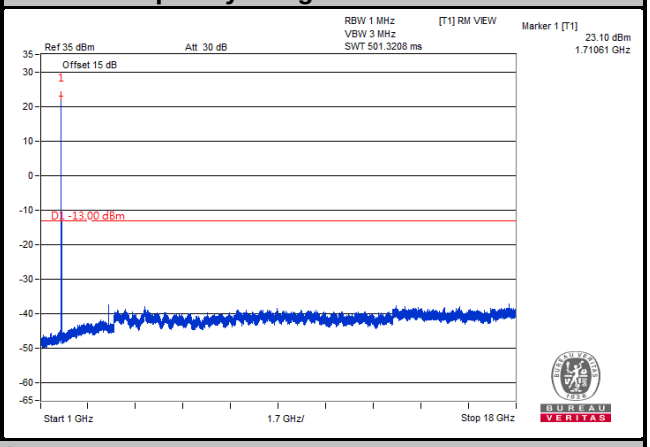
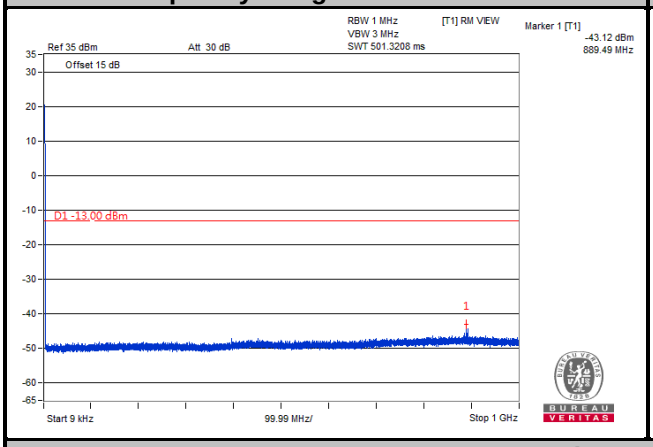
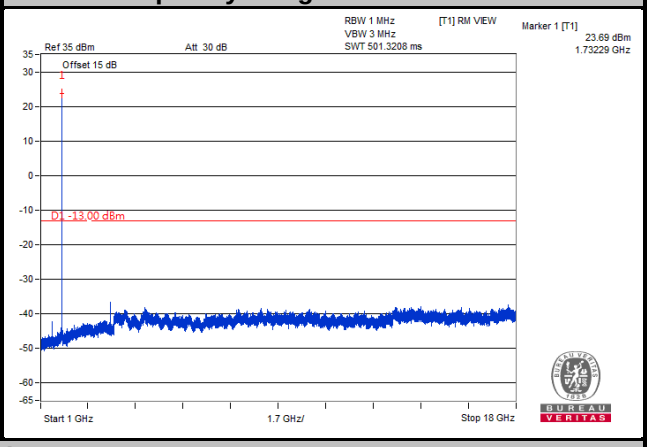
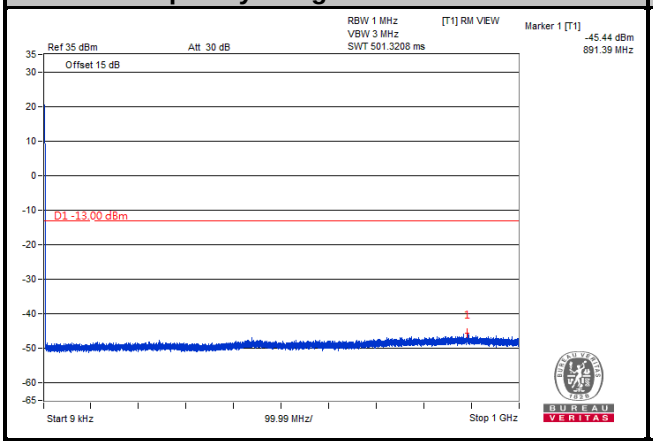
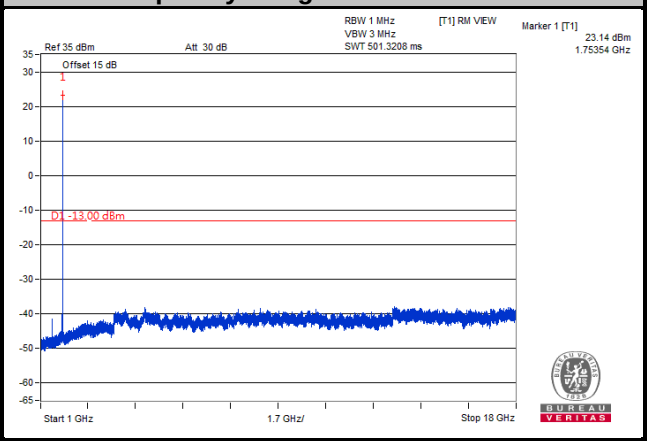


4.7.3 Test Procedure

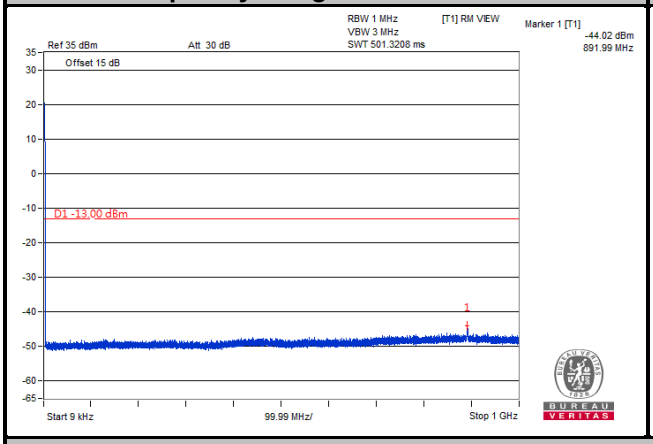
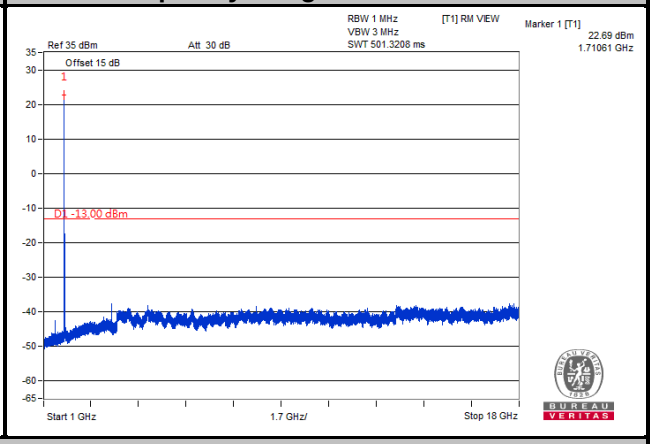
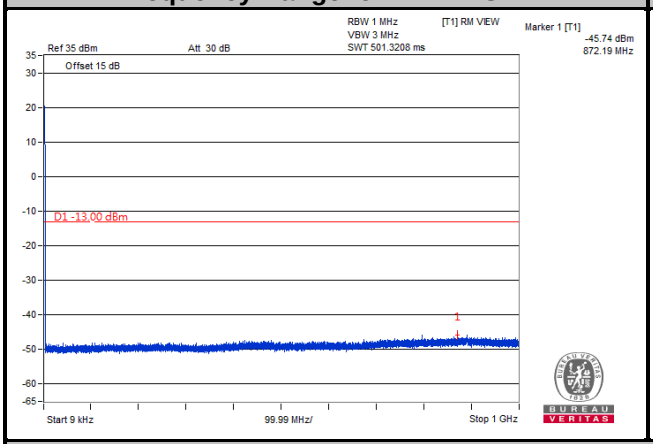
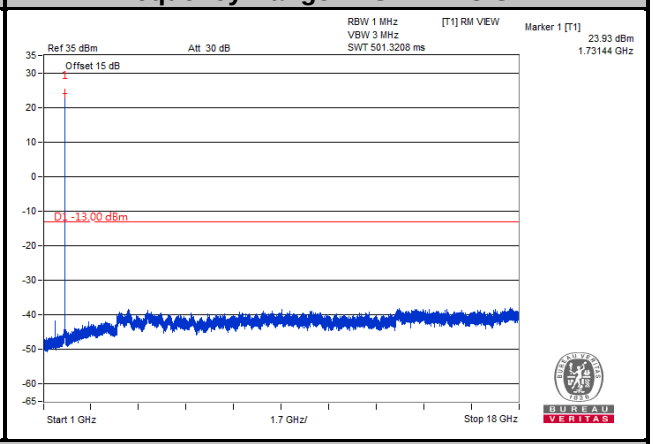
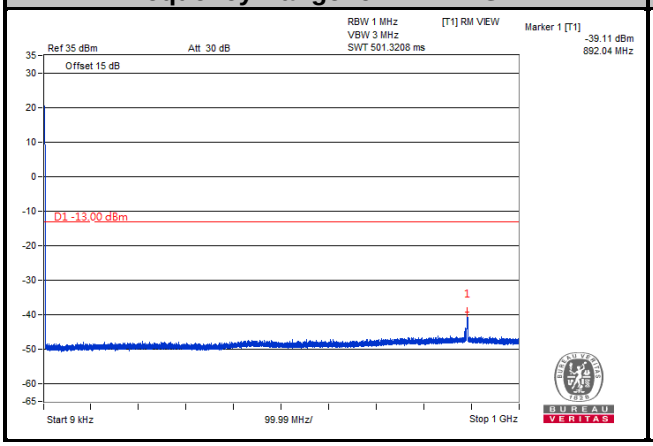
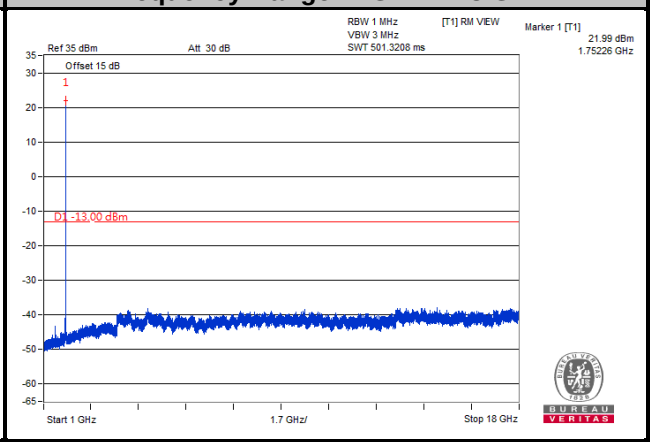
a. The EUT makes a phone call to the communication simulator. All measurements were done at low, middle and high operational frequency range.
b. Measuring frequency range is from 9 kHz to 1 GHz. 10 dB attenuation pad is connected with spectrum. RBW = 100 kHz and VBW = 300 kHz is used for LTE Band 12 and Band 13 conducted emission measurement. RBW = 1 MHz and VBW = 3 MHz is used for LTE Band 4 and Band 66 conducted emission measurement.
c. Measuring frequency range is from 1 GHz to 8 GHz / 18 GHz. 10 dB attenuation pad is connected with spectrum. RBW = 1 MHz and VBW = 3 MHz is used for conducted emission measurement.

4.7.4 Test Results

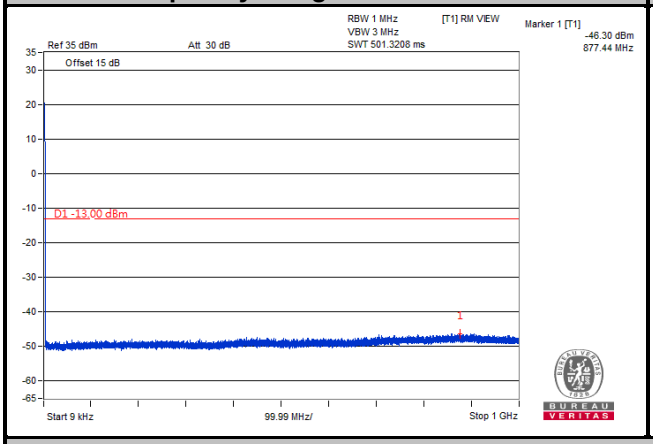
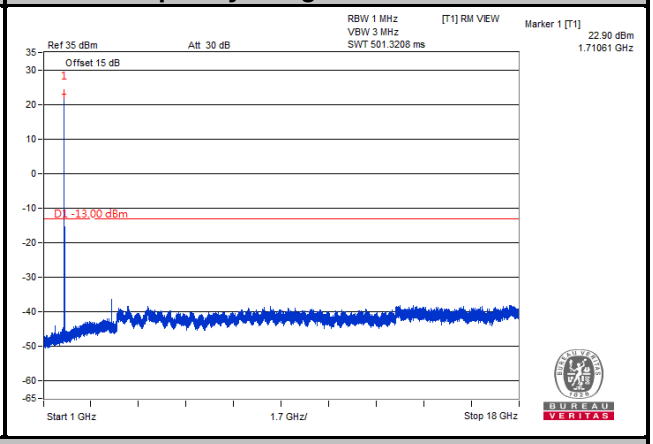
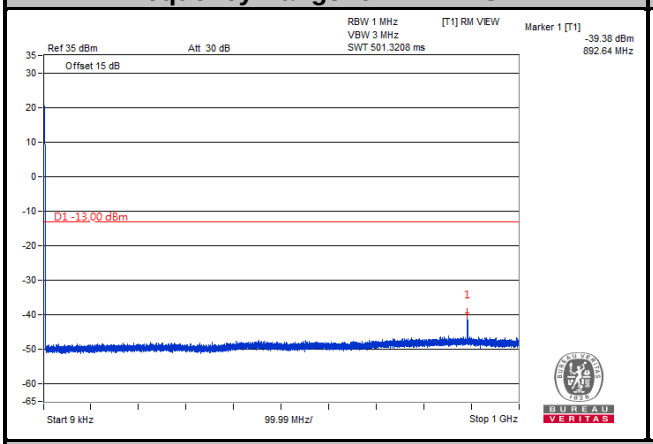
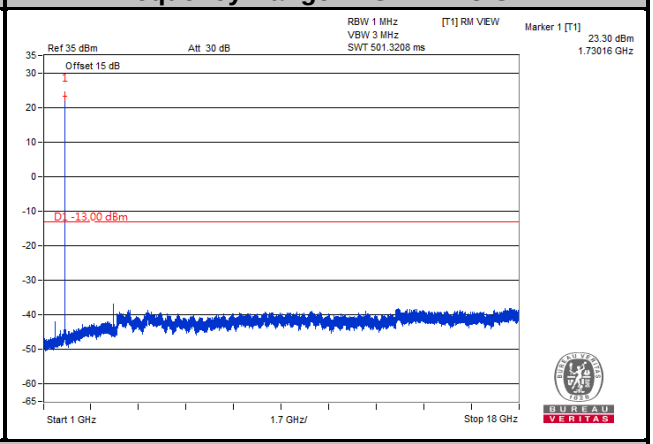
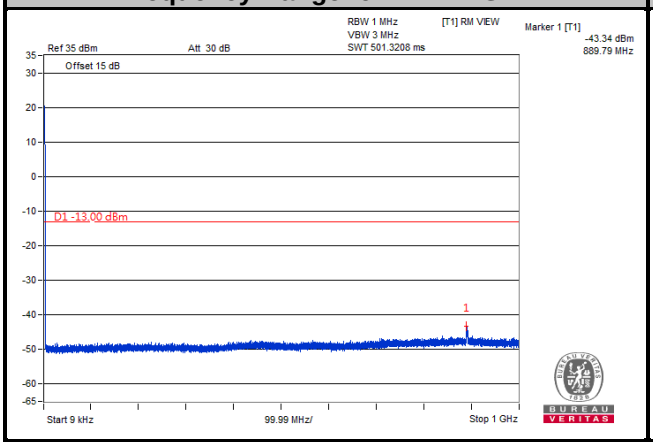
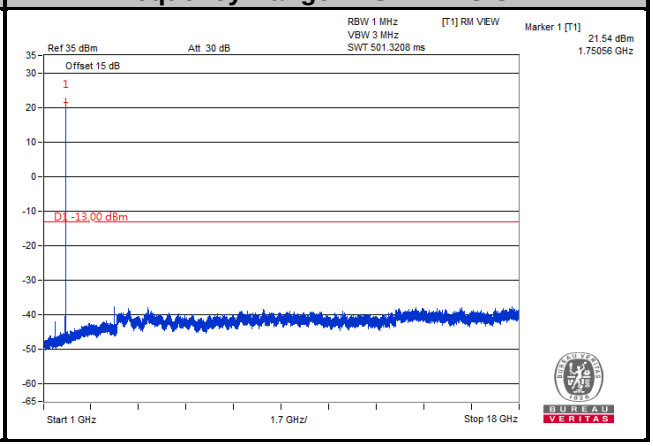
Cat-M1

LTE Band 4	
Channel Bandwidth: 1.4 MHz	
Channel 19957	
Frequency Range: 9 kHz ~ 1 GHz	Frequency Range: 1 GHz ~ 18 GHz
	
Channel 20175	
Frequency Range: 9 kHz ~ 1 GHz	Frequency Range: 1 GHz ~ 18 GHz
	
Channel 20393	
Frequency Range: 9 kHz ~ 1 GHz	Frequency Range: 1 GHz ~ 18 GHz
	

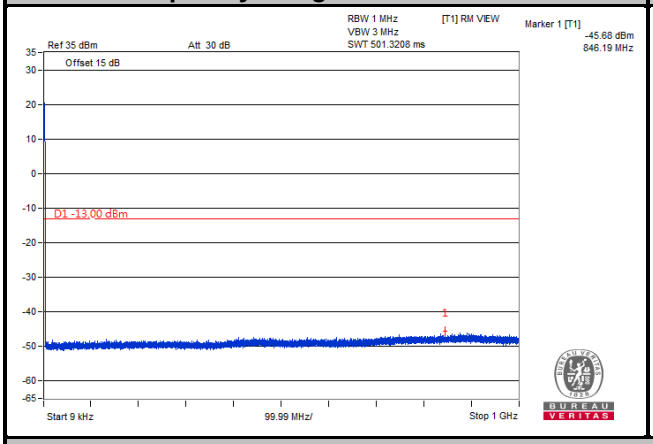
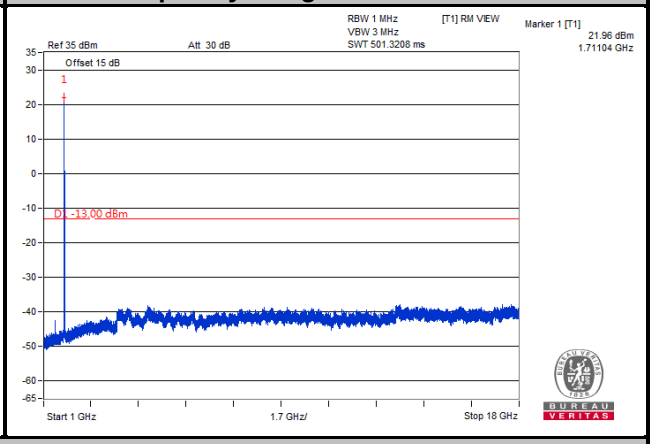
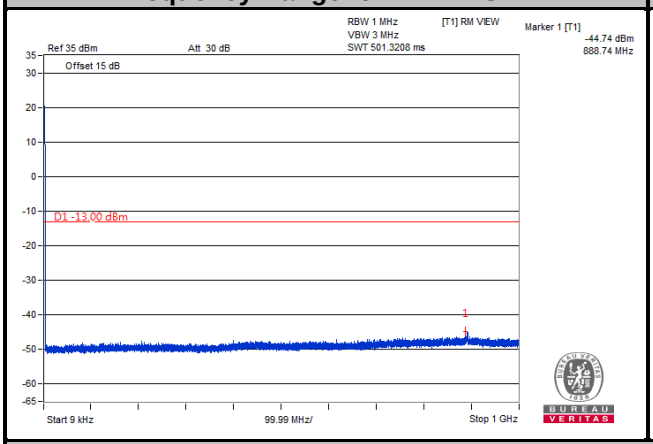
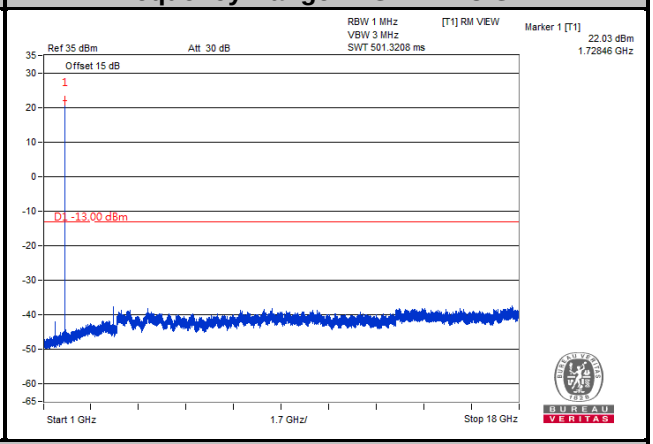
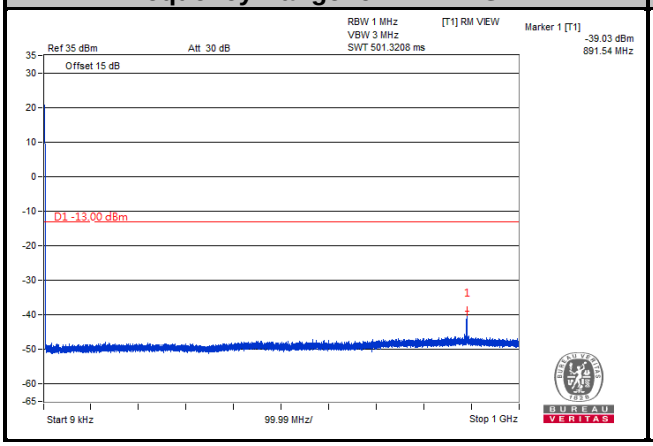
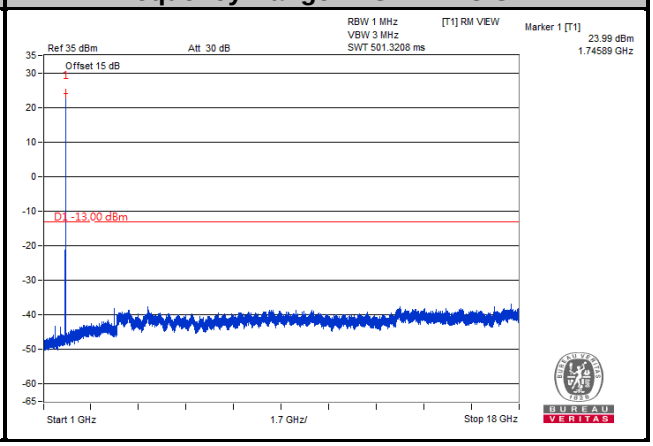
Note: The signal over the limit in 9 kHz is from spectrum analyzer.

LTE Band 4	
Channel Bandwidth: 3 MHz	
Channel 19965	
Frequency Range: 9 kHz ~ 1 GHz	Frequency Range: 1 GHz ~ 18 GHz
	
Channel 20175	
Frequency Range: 9 kHz ~ 1 GHz	Frequency Range: 1 GHz ~ 18 GHz
	
Channel 20385	
Frequency Range: 9 kHz ~ 1 GHz	Frequency Range: 1 GHz ~ 18 GHz
	

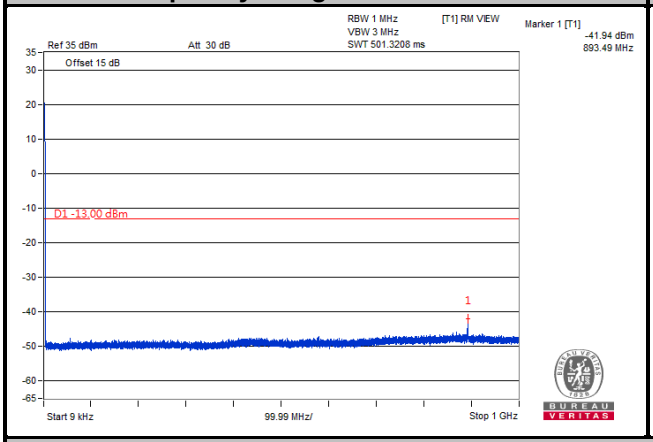
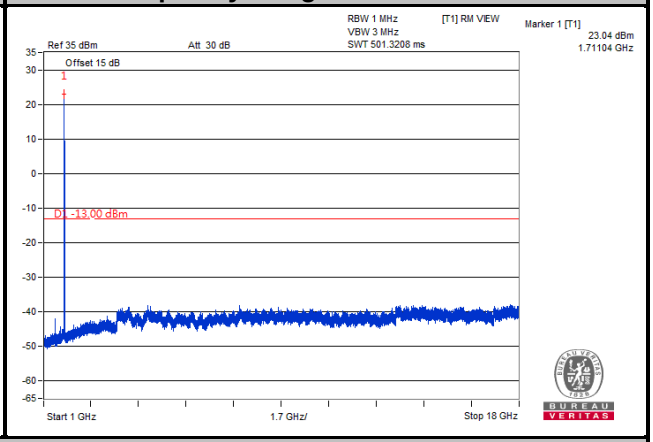
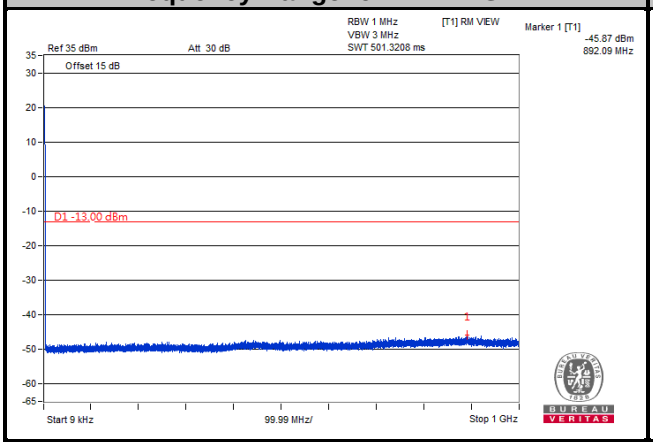
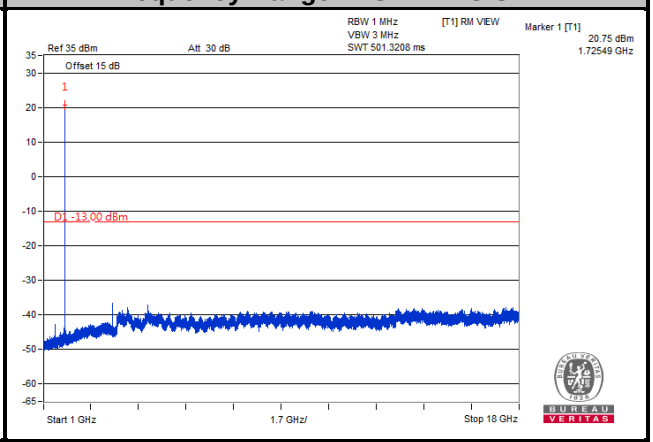
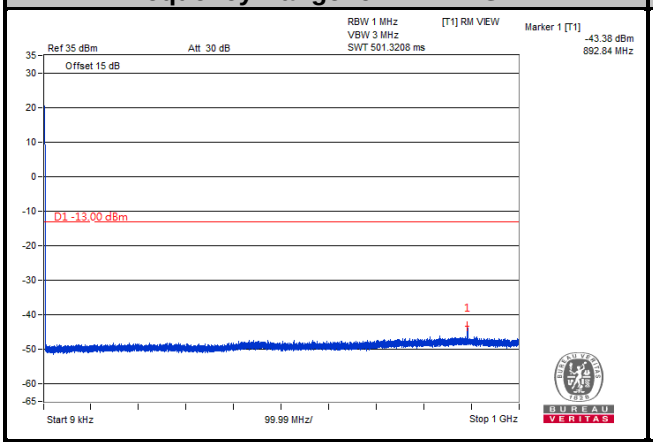
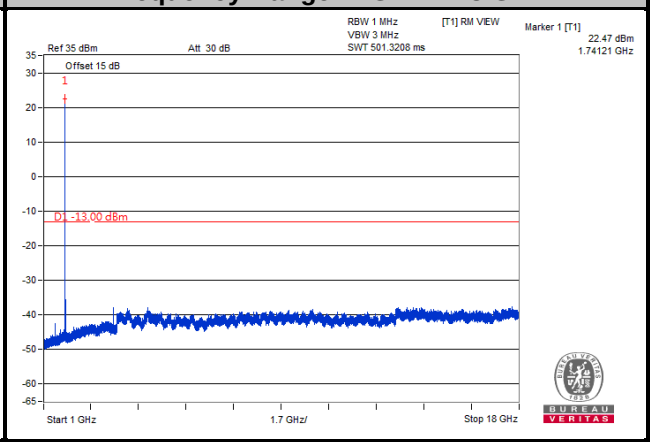
Note: The signal over the limit in 9 kHz is from spectrum analyzer.

LTE Band 4	
Channel Bandwidth: 5 MHz	
Channel 19975	
Frequency Range: 9 kHz ~ 1 GHz	Frequency Range: 1 GHz ~ 18 GHz
	
Channel 20175	
Frequency Range: 9 kHz ~ 1 GHz	Frequency Range: 1 GHz ~ 18 GHz
	
Channel 20375	
Frequency Range: 9 kHz ~ 1 GHz	Frequency Range: 1 GHz ~ 18 GHz
	

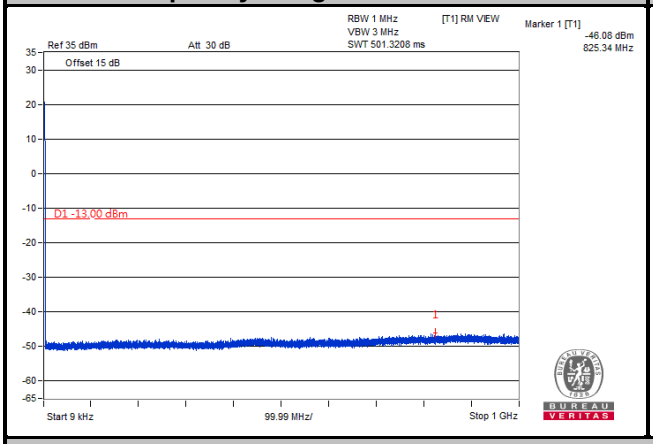
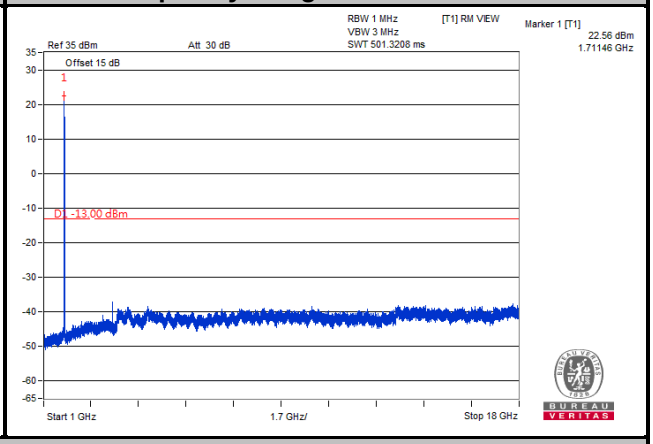
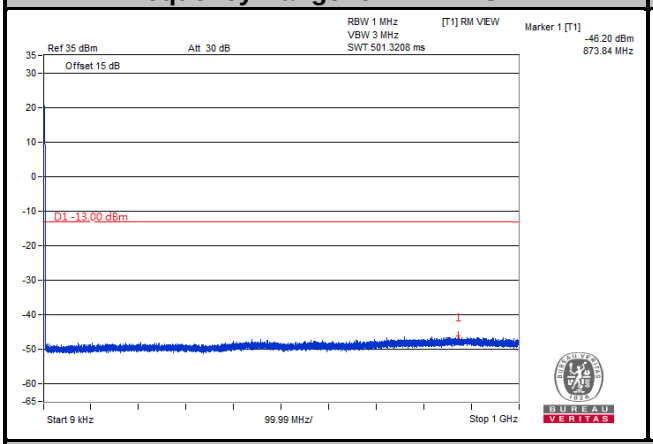
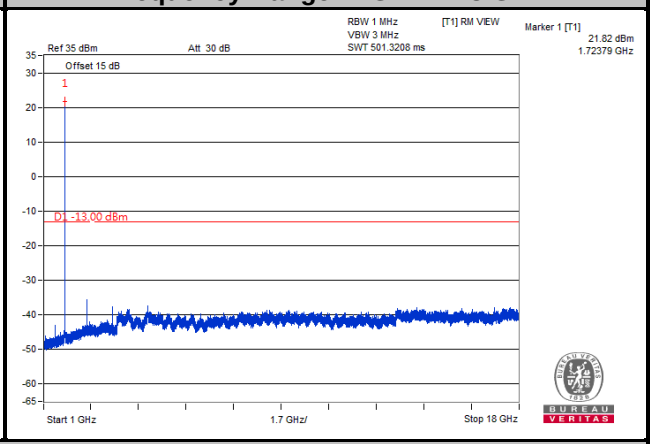
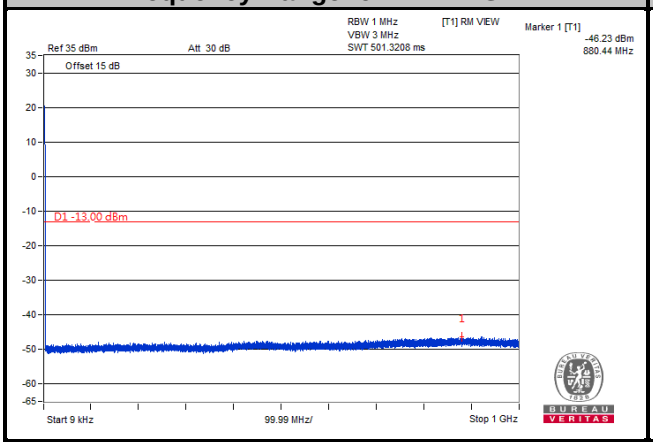
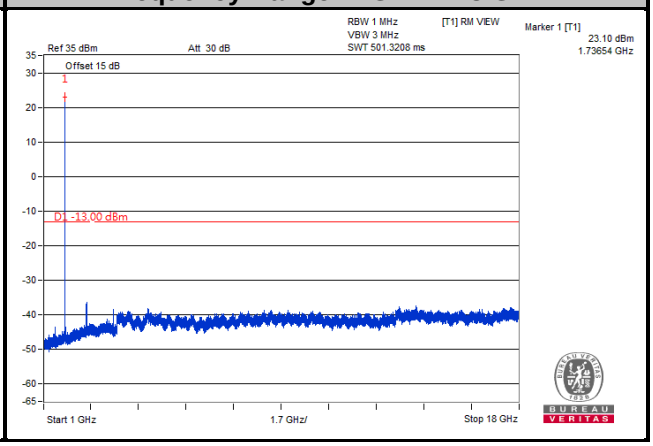
Note: The signal over the limit in 9 kHz is from spectrum analyzer.

LTE Band 4	
Channel Bandwidth: 10 MHz	
Channel 20000	
Frequency Range: 9 kHz ~ 1 GHz	Frequency Range: 1 GHz ~ 18 GHz
	
Channel 20175	
Frequency Range: 9 kHz ~ 1 GHz	Frequency Range: 1 GHz ~ 18 GHz
	
Channel 20350	
Frequency Range: 9 kHz ~ 1 GHz	Frequency Range: 1 GHz ~ 18 GHz
	

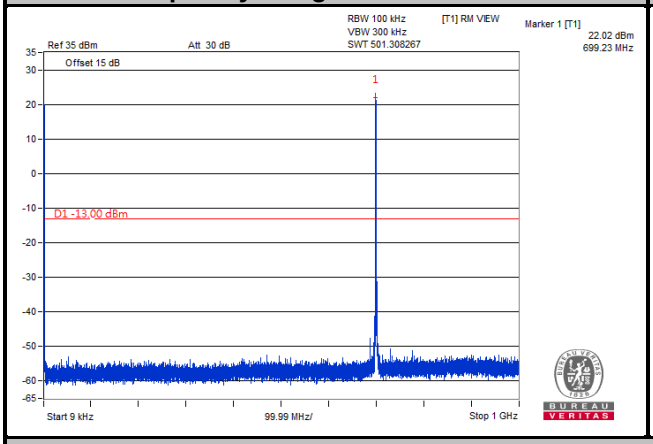
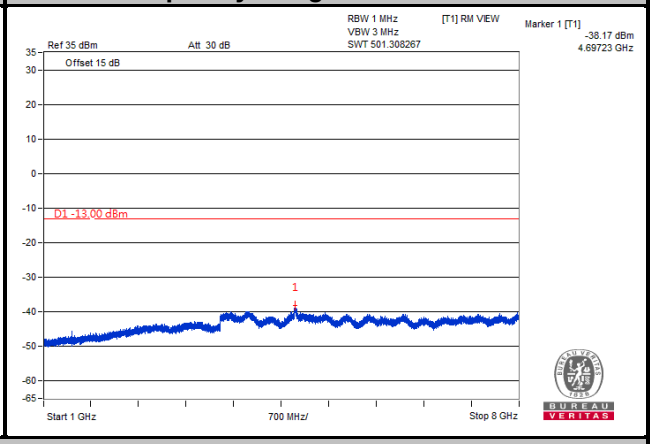
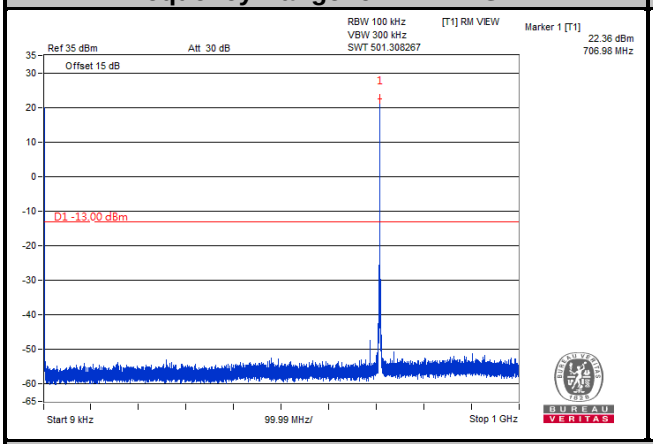
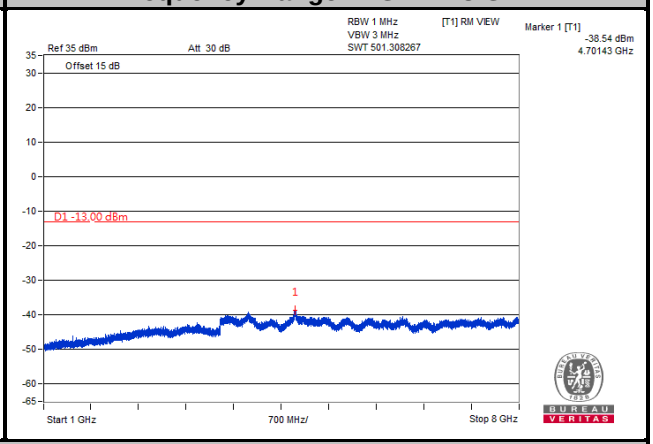
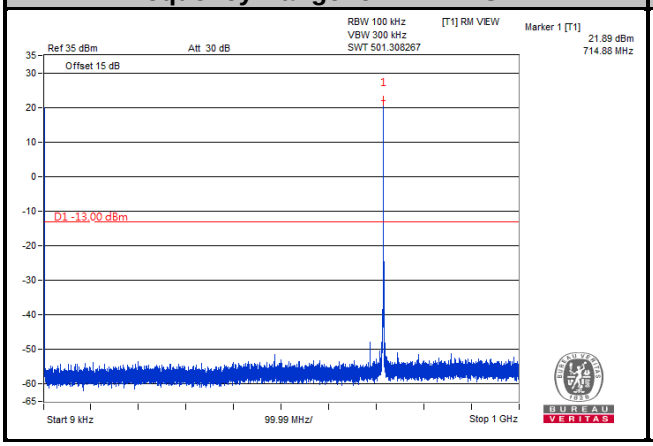
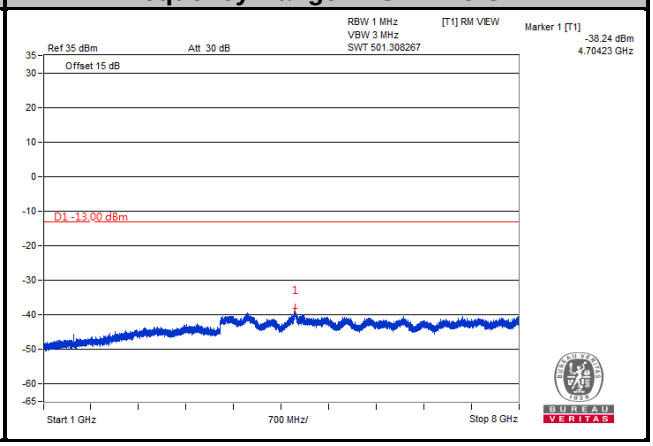
Note: The signal over the limit in 9 kHz is from spectrum analyzer.

LTE Band 4	
Channel Bandwidth: 15 MHz	
Channel 20025	
Frequency Range: 9 kHz ~ 1 GHz	Frequency Range: 1 GHz ~ 18 GHz
	
Channel 20175	
Frequency Range: 9 kHz ~ 1 GHz	Frequency Range: 1 GHz ~ 18 GHz
	
Channel 20325	
Frequency Range: 9 kHz ~ 1 GHz	Frequency Range: 1 GHz ~ 18 GHz
	

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

LTE Band 4	
Channel Bandwidth: 20 MHz	
Channel 20050	
Frequency Range: 9 kHz ~ 1 GHz	Frequency Range: 1 GHz ~ 18 GHz
	
Channel 20175	
Frequency Range: 9 kHz ~ 1 GHz	Frequency Range: 1 GHz ~ 18 GHz
	
Channel 20300	
Frequency Range: 9 kHz ~ 1 GHz	Frequency Range: 1 GHz ~ 18 GHz
	

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

LTE Band 12	
Channel Bandwidth: 1.4 MHz	
Channel 23017	
Frequency Range: 9 kHz ~ 1 GHz	Frequency Range: 1 GHz ~ 8 GHz
	
Channel 23095	
Frequency Range: 9 kHz ~ 1 GHz	Frequency Range: 1 GHz ~ 8 GHz
	
Channel 23173	
Frequency Range: 9 kHz ~ 1 GHz	Frequency Range: 1 GHz ~ 8 GHz
	

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