FCC Test Report

(PART 27)

Report No.:	RFBGSN-WTW-P20070580-2
FCC ID:	2AX8C-3544
Test Model:	FL44TE
Received Date:	Jul. 29, 2020
Test Date:	Aug. 05, 2020 ~ Nov. 27, 2020
Issued Date:	Nov. 30, 2020
Applicant:	Amazon.com Services LLC
Address:	410 Terry Ave N Seattle, WA 98109 650 694 8333
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

Testing Laboratory
2021

Table of Contents

Release Control Record

Issue No.	Description	Date Issued
RFBGSN-WTW-P20070580-2	Original Release	Nov. 30, 2020

1 Certificate of Conformity

Product:	Fleet Edge
Brand:	N/A
Test Model:	FL44TE
Sample Status:	Engineering Sample
Applicant:	Amazon.com Services LLC
Test Date:	Aug. 05, 2020 ~ Nov. 27, 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 : Vera Huang , **Date:** Nov. 30, 2020

Vera Huang / Specialist

Approved by : , **Date:** Nov. 30, 2020

Dylan Chiou / Senior Project Engineer

2 Summary of Test Results

Applied Standard: FCC Part 27 & Part 2 (WCDMA)			
FCC Clause	**Test Item**	**Result**	**Remarks**
2.1046 27.50(d)(4)	Equivalent Isotropic Radiated 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 -15.70 dB at 45.52 MHz.

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 -12.92 dB at 71.71 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 -27.19 dB at 57.16 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 -4.28 dB at 41.64 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 -15.99 dB at 171.62 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
HORN Antenna SCHWARZBECK	BBHA 9120D	9120D-969	Nov. 24, 2019	Nov. 23, 2020
			Nov. 22, 2020	Nov. 21, 2021
BILOG Antenna SCHWARZBECK	VULB 9168	9168-472	Nov. 08, 2019	Nov. 07, 2020
			Nov. 06, 2020	Nov. 05, 2021
Fixed Attenuator WOKEN	MDCS18N-10	MDCS18N-10-01	Apr. 14, 2020	Apr. 13, 2021
BILOG Antenna SCHWARZBECK	VULB 9168	9168-160	Nov. 07, 2019	Nov. 06, 2020
			Nov. 06, 2020	Nov. 05, 2021
HORN Antenna SCHWARZBECK	9120D	9120D-1169	Nov. 24, 2019	Nov. 23, 2020
			Nov. 22, 2020	Nov. 21, 2021
MXG Vector signal generator Agilent	N5182B	MY53050162	Jan. 14, 2020	Jan. 14, 2021
Preamplifier EMCI	EMC001340	980201	Oct. 14, 2019	Oct. 13, 2020
			Oct. 21, 2020	Oct. 20, 2021
Preamplifier EMCI	EMC 012645	980115	Oct. 08, 2019	Oct. 07, 2020
			Oct. 07, 2020	Oct. 06, 2021
Preamplifier EMCI	EMC 330H	980112	Oct. 08, 2019	Oct. 07, 2020
			Oct. 07, 2020	Oct. 06, 2021
RF Coaxial Cable EMCI	EMC104-SM-SM-8000	180409	Jan. 18, 2020	Jan. 17, 2021
RF Coaxial Cable HUBER+SUHNNER	SUCOFLEX 104	EMC104-SM-SM-1000(140807)	Oct. 08, 2019	Oct. 07, 2020
			Oct. 07, 2020	Oct. 06, 2021
RF Coaxial Cable WOKEN	8D-FB	Cable-Ch10-01	Oct. 08, 2019	Oct. 07, 2020
			Oct. 07, 2020	Oct. 06, 2021
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	6201462755	Feb. 13, 2020	Feb. 12, 2021
Radio Communication Analyzer Anritsu	MT8820C	6201300640	Aug. 19, 2019	Aug. 18, 2021
Temperature & Humidity Chamber GIANT FORCE	GTH-120-40-CP-AR	MAA1306-019	Sep. 09, 2020	Sep. 08, 2021
DC power supply Keysight	U8002A	MY56330015	NA	NA
Digital Multimeter Fluke	87-III	70360742	Jun. 23, 2020	Jun. 22, 2021

Note: 1. The calibration interval of the above test instruments is 12 / 24 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	Fleet Edge	
Brand	N/A	
Test Model	FL44TE	
Status of EUT	Engineering Sample	
Power Supply Rating	12 Vdc (Power Supply)	
Modulation Type	WCDMA	QPSK
	LTE	QPSK, 16QAM
Frequency Range	WCDMA	1712.4 ~ 1752.6 MHz
	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

Emission Designator	WCDMA	4M16F9W
	LTE Band 4 (Channel Bandwidth: 1.4 MHz)	1M09D7W
	LTE Band 4 (Channel Bandwidth: 3 MHz)	2M70G7D
	LTE Band 4 (Channel Bandwidth: 5 MHz)	4M49D7W
	LTE Band 4 (Channel Bandwidth: 10 MHz)	8M97G7D
	LTE Band 4 (Channel Bandwidth: 15 MHz)	13M5G7D
	LTE Band 4 (Channel Bandwidth: 20 MHz)	18M0D7W
	LTE Band 12 (Channel Bandwidth: 1.4 MHz)	1M09D7W
	LTE Band 12 (Channel Bandwidth: 3 MHz)	2M70G7D
	LTE Band 12 (Channel Bandwidth: 5 MHz)	4M50D7W
	LTE Band 12 (Channel Bandwidth: 10 MHz)	9M00D7W
	LTE Band 13 (Channel Bandwidth: 5 MHz)	4M49D7W
	LTE Band 13 (Channel Bandwidth: 10 MHz)	8M96D7W
	LTE Band 66 (Channel Bandwidth: 1.4 MHz)	1M09D7W
	LTE Band 66 (Channel Bandwidth: 3 MHz)	2M70G7D
	LTE Band 66 (Channel Bandwidth: 5 MHz)	4M49G7D
	LTE Band 66 (Channel Bandwidth: 10 MHz)	8M97G7D
	LTE Band 66 (Channel Bandwidth: 15 MHz)	13M5G7D
	LTE Band 66 (Channel Bandwidth: 20 MHz)	18M0D7W
Max. ERP Power	LTE Band 12 (Channel Bandwidth: 1.4 MHz)	89.13 mW
	LTE Band 12 (Channel Bandwidth: 3 MHz)	90.99 mW
	LTE Band 12 (Channel Bandwidth: 5 MHz)	92.47 mW
	LTE Band 12 (Channel Bandwidth: 10 MHz)	93.54 mW
	LTE Band 13 (Channel Bandwidth: 5 MHz)	81.85 mW
	LTE Band 13 (Channel Bandwidth: 10 MHz)	89.95 mW
Max. EIRP Power	WCDMA	293.76 mW
	LTE Band 4 (Channel Bandwidth: 1.4 MHz)	250.61 mW
	LTE Band 4 (Channel Bandwidth: 3 MHz)	254.68 mW
	LTE Band 4 (Channel Bandwidth: 5 MHz)	258.82 mW
	LTE Band 4 (Channel Bandwidth: 10 MHz)	263.63 mW
	LTE Band 4 (Channel Bandwidth: 15 MHz)	268.53 mW
	LTE Band 4 (Channel Bandwidth: 20 MHz)	272.90 mW
	LTE Band 66 (Channel Bandwidth: 1.4 MHz)	246.60 mW
	LTE Band 66 (Channel Bandwidth: 3 MHz)	250.03 mW
	LTE Band 66 (Channel Bandwidth: 5 MHz)	252.93 mW
	LTE Band 66 (Channel Bandwidth: 10 MHz)	257.63 mW
	LTE Band 66 (Channel Bandwidth: 15 MHz)	263.03 mW
	LTE Band 66 (Channel Bandwidth: 20 MHz)	267.30 mW
Antenna Type	Refer to Note as below	
Accessory Device	N/A	
Data Cable Supplied	N/A	

Note:

1. The information of module collocated in this EUT is listed as below.

Product	Brand	Model
BT/WLAN Module	Intel	9560NGW
WWAN Module	Quectel	EM06-A

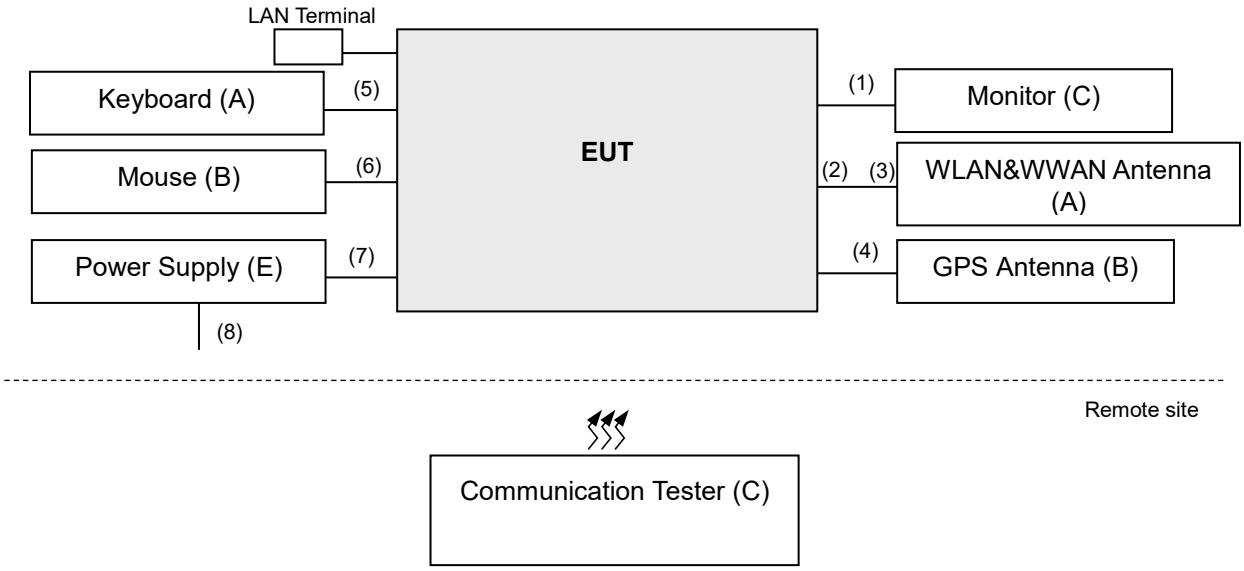
2. The antenna information is listed as below.

Ant.	Brand	Model	Antenna Type	Remark
1	TAOGLAS	MA491.A.BICG.005.gb	Multiband Antennas	Main Antenna
2	TAOGLAS	MA491.A.BICG.005.gb	Multiband Antennas	Diversity Antenna

WWAN Antenna					
Band		WCDMA 4 / LTE 4	LTE 12	LTE 13	LTE 66
Gain (dBi)	Ant. 1	1.4	-1.4	-1.4	1.4
	Ant. 2	1.2	-0.9	-0.9	1.2

3. 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.
4. 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.

ID	Product	Brand	Model No.	Serial No.	FCC ID	Remarks
A	Keyboard	DELL	RT7D50	CN-0J4624-37172-44T-000M	FCC DOC Approved	--
B	Mouse	DELL	MS111-L	N/A	N/A	--
C	Monitor	ViewSonic	VX2457-MHD	UG0182942333	N/A	--
D	Communication Tester	R&S	CMU200	123295	N/A	For WCDMA
		ANRITSU	MT8821C	6201502978	NA	For LTE
E	Power Supply	NA	NA	NA	NA	--
F	WLAN&WWAN Antenna	TAOGLAS	MA491.A.BICG.005.gb	NA	NA	Provided by client
G	GPS Antenna	NA	NA	NA	NA	Provided by client

Note:

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

ID	Descriptions	Qty.	Length (m)	Shielding (Yes/No)	Cores (Qty.)	Remarks
1.	HDMI Cable	1	2	N	0	-
2.	RF Cable	1	0.5	N	0	-
3.	RF Cable	1	0.5	N	0	-
4.	RF Cable	1	0.5	N	0	-
5.	USB Cable	1	2.4	N	0	-
6.	USB Cable	1	2.2	N	0	-
7.	DC power Cable	1	1.2	N	0	-
8.	Power Cord	1	1.8	N	0	-

3.3 Test Mode Applicability and Tested Channel Detail

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

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

Band	ERP / EIRP	Radiated Emission
WCDMA	X-plane	X-plane
LTE Band 4	Y-plane	Y-plane
LTE Band 12	X-plane	X-plane
LTE Band 13	X-plane	X-plane
LTE Band 66	Y-plane	Y-plane

WCDMA

EUT Configure Mode	Test Item	Available Channel	Tested Channel	Mode
-	EIRP	1312 to 1513	1312, 1413, 1513	WCDMA
-	Modulation Characteristics	1312 to 1513	1413	WCDMA
-	Frequency Stability	1312 to 1513	1312, 1513	WCDMA
-	Occupied Bandwidth	1312 to 1513	1312, 1413, 1513	WCDMA
-	Band Edge	1312 to 1513	1312, 1513	WCDMA
-	Peak to Average Ratio	1312 to 1513	1312, 1413, 1513	WCDMA
-	Conducted Emission	1312 to 1513	1312, 1413, 1513	WCDMA
-	Radiated Emission	1312 to 1513	1312, 1413, 1513	WCDMA

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

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 / 0 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	20050 to 20300	20175	20 MHz	QPSK, 16QAM	100 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	15 RB / 0 RB Offset
		19975 to 20375	19975, 20375	5 MHz	QPSK	25 RB / 0 RB Offset
		20000 to 20350	20000, 20350	10 MHz	QPSK	50 RB / 0 RB Offset
		20025 to 20325	20025, 20325	15 MHz	QPSK	75 RB / 0 RB Offset
		20050 to 20300	20050, 20300	20 MHz	QPSK	100 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	15 RB / 0 RB Offset
		19975 to 20375	19975, 20175, 20375	5 MHz	QPSK, 16QAM	25 RB / 0 RB Offset
		20000 to 20350	20000, 20175, 20350	10 MHz	QPSK, 16QAM	50 RB / 0 RB Offset
		20025 to 20325	20025, 20175, 20325	15 MHz	QPSK, 16QAM	75 RB / 0 RB Offset
		20050 to 20300	20050, 20175, 20300	20 MHz	QPSK, 16QAM	100 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 / 0 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
						15 RB / 0 RB Offset
			20385	3 MHz	QPSK	1 RB / 14 RB Offset
						15 RB / 0 RB Offset
		19975 to 20375	19975	5 MHz	QPSK	1 RB / 0 RB Offset
						25 RB / 0 RB Offset
			20375	5 MHz	QPSK	1 RB / 24 RB Offset
						25 RB / 0 RB Offset
		20000 to 20350	20000	10 MHz	QPSK	1 RB / 0 RB Offset
						50 RB / 0 RB Offset
			20350	10 MHz	QPSK	1 RB / 49 RB Offset
						50 RB / 0 RB Offset
		20025 to 20325	20025	15 MHz	QPSK	1 RB / 0 RB Offset
						75 RB / 0 RB Offset
			20325	15 MHz	QPSK	1 RB / 74 RB Offset
						75 RB / 0 RB Offset
		20050 to 20300	20050	20 MHz	QPSK	1 RB / 0 RB Offset
						100 RB / 0 RB Offset
			20300	20 MHz	QPSK	1 RB / 99 RB Offset
						100 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 / 0 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 / 0 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 (above 1GHz) 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 / 0 RB Offset
-	Modulation Characteristics	23060 to 23130	23095	10 MHz	QPSK, 16QAM	50 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	15 RB / 0 RB Offset
		23035 to 23155	23035, 23155	5 MHz	QPSK	25 RB / 0 RB Offset
		23060 to 23130	23060, 23130	10 MHz	QPSK	50 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	15 RB / 0 RB Offset
		23035 to 23155	23035, 23095, 23155	5 MHz	QPSK, 16QAM	25 RB / 0 RB Offset
		23060 to 23130	23060, 23095, 23130	10 MHz	QPSK, 16QAM	50 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 / 0 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
						15 RB / 0 RB Offset
			23165	3 MHz	QPSK	1 RB / 14 RB Offset
						15 RB / 0 RB Offset
		23035 to 23155	23035	5 MHz	QPSK	1 RB / 0 RB Offset
						25 RB / 0 RB Offset
			23155	5 MHz	QPSK	1 RB / 24 RB Offset
						25 RB / 0 RB Offset
		23060 to 23130	23060	10 MHz	QPSK	1 RB / 0 RB Offset
						50 RB / 0 RB Offset
			23130	10 MHz	QPSK	1 RB / 49 RB Offset
						50 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 / 0 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 / 0 RB Offset

Note:

1. This device was tested under all bandwidths, RB configurations and modulations. The worst case was found in QPSK modulation. Therefore, only ERP, modulation characteristics, occupied bandwidth and peak to average ratio items had been tested under QPSK, 16QAM 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 (above 1GHz) 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 / 12 RB Offset
		23230	23230	10 MHz	QPSK, 16QAM	1 RB / 0 RB Offset
-	Modulation Characteristics	23230	23230	10 MHz	QPSK, 16QAM	50 RB / 0 RB Offset
-	Frequency Stability	23205 to 23255	23205, 23255	5 MHz	QPSK	25 RB / 0 RB Offset
		23230	23230	10 MHz	QPSK	50 RB / 0 RB Offset
-	Occupied Bandwidth	23205 to 23255	23205, 23230, 23255	5 MHz	QPSK, 16QAM	25 RB / 0 RB Offset
		23230	23230	10 MHz	QPSK, 16QAM	50 RB / 0 RB Offset
-	Peak to Average Ratio	23205 to 23255	23205, 23230, 23255	5 MHz	QPSK, 16QAM	1 RB / 12 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
						25 RB / 0 RB Offset
			23255	5 MHz	QPSK	1 RB / 24 RB Offset
						25 RB / 0 RB Offset
		23230	23230	10 MHz	QPSK	1 RB / 0 RB Offset
						50 RB / 0 RB Offset
			23230	10 MHz	QPSK	1 RB / 49 RB Offset
						50 RB / 0 RB Offset
-	Conducted Emission	23205 to 23255	23205, 23230, 23255	5 MHz	QPSK	1 RB / 12 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 / 12 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 ERP, 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 (above 1GHz) 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 / 0 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	1 RB / 0 RB Offset
		132072 to 132572	132072, 132322, 132572	20 MHz	QPSK, 16QAM	1 RB / 0 RB Offset
-	Modulation Characteristics	132072 to 132572	132322	20 MHz	QPSK, 16QAM	100 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	15 RB / 0 RB Offset
		131997 to 132647	131997, 132647	5 MHz	QPSK	25 RB / 0 RB Offset
		132022 to 132622	132022, 132622	10 MHz	QPSK	50 RB / 0 RB Offset
		132047 to 132597	132047, 132597	15 MHz	QPSK	75 RB / 0 RB Offset
		132072 to 132572	132072, 132572	20 MHz	QPSK	100 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	15 RB / 0 RB Offset
		131997 to 132647	131997, 132322, 132647	5 MHz	QPSK, 16QAM	25 RB / 0 RB Offset
		132022 to 132622	132022, 132322, 132622	10 MHz	QPSK, 16QAM	50 RB / 0 RB Offset
		132047 to 132597	132047, 132322, 132597	15 MHz	QPSK, 16QAM	75 RB / 0 RB Offset
		132072 to 132572	132072, 132322, 132572	20 MHz	QPSK, 16QAM	100 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 / 0 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	1 RB / 0 RB Offset
		132072 to 132572	132072, 132322, 132572	20 MHz	QPSK, 16QAM	1 RB / 0 RB Offset
-	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
						15 RB / 0 RB Offset
			132657	3 MHz	QPSK	1 RB / 14 RB Offset
						15 RB / 0 RB Offset
		131997 to 132647	131997	5 MHz	QPSK	1 RB / 0 RB Offset
						25 RB / 0 RB Offset
			132647	5 MHz	QPSK	1 RB / 24 RB Offset
						25 RB / 0 RB Offset
		132022 to 132622	132022	10 MHz	QPSK	1 RB / 0 RB Offset
						50 RB / 0 RB Offset
			132622	10 MHz	QPSK	1 RB / 49 RB Offset
						50 RB / 0 RB Offset
		132047 to 132597	132047	15 MHz	QPSK	1 RB / 0 RB Offset
						75 RB / 0 RB Offset
			132597	15 MHz	QPSK	1 RB / 74 RB Offset
						75 RB / 0 RB Offset
		132072 to 132572	132072	20 MHz	QPSK	1 RB / 0 RB Offset
						100 RB / 0 RB Offset
			132572	20 MHz	QPSK	1 RB / 99 RB Offset
						100 RB / 0 RB Offset

EUT Configure Mode	Test Item	Available Channel	Tested Channel	Channel Bandwidth	Modulation	Mode
-	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 / 0 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	1 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:

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 (above 1GHz) for final testing.

Test Condition:

Test Item	Environmental Conditions	Input Power	Tested By
ERP / EIRP	25 deg. C, 65 % RH	12 Vdc	Cyril Chen / Getaz Yang
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	120 Vac, 60 Hz	Cyril Chen / Getaz Yang

3.4 EUT Operating Conditions

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

3.5 General Description of Applied Standards and references

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

Test Standard:
FCC 47 CFR Part 2
FCC 47 CFR Part 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. (For WCDMA, LTE band 4 and LTE band 66)

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 (For band 13)

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. (For band 12)

4.1.2 Test Procedures

EIRP / ERP Measurement:

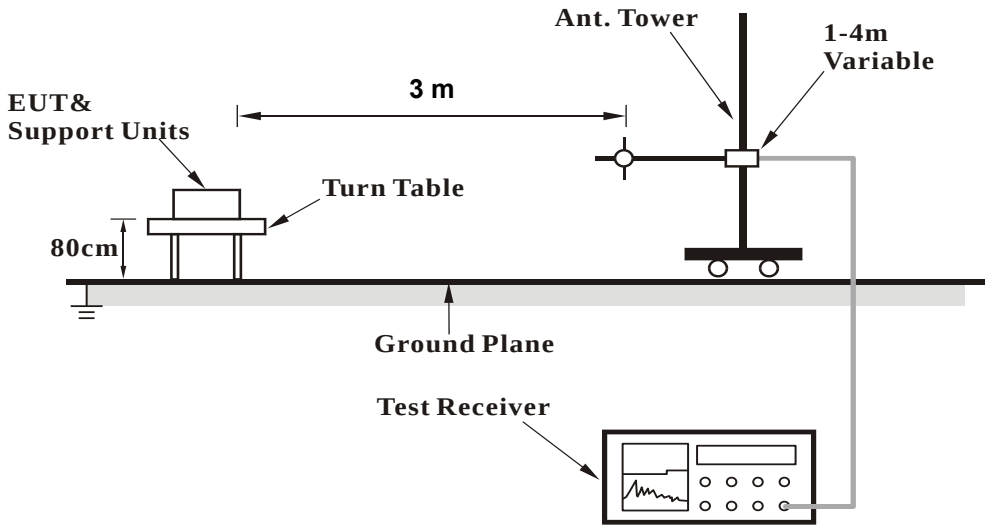
a. All measurements were done at low, middle and high operational frequency range. RBW is 5 MHz for WCDMA and 1.4 MHz、3 MHz、5 MHz、10 MHz、15 MHz、 20 MHz for LTE mode, and VBW ≥ 3 x RBW.
b. Substitution method is used for E.I.R.P measurement. In the semi-anechoic chamber, EUT placed on the 0.8 m (below 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. 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.
d. Correction Factor (includes EIRP and ERP unit conversion factor) = Antenna gain of substitution horn. – Tx cable loss. Measurement method refers to ANSI C63.26 section 5.2.7 & 5.2.4.

Conducted Power Measurement:

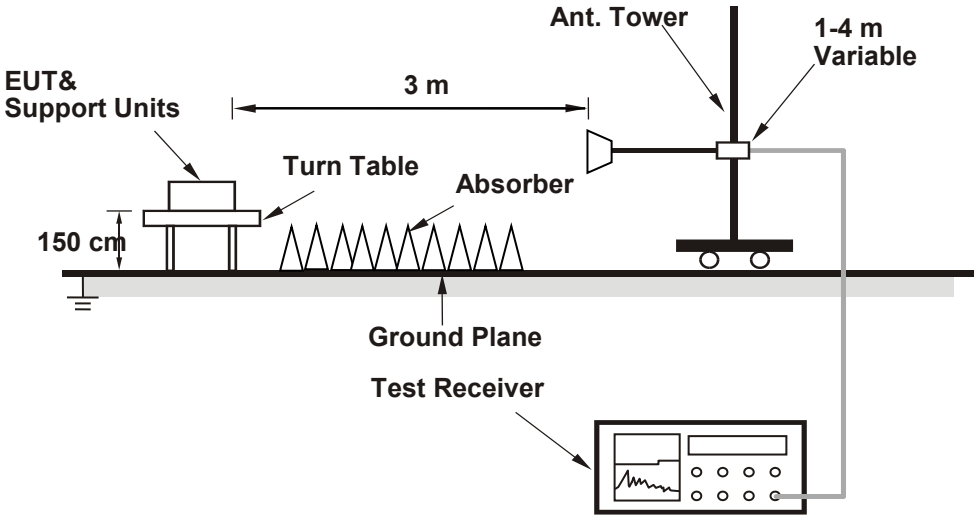
a. The EUT was set up for the maximum power with WCDMA and LTE link data modulation and link up with simulator.
b. Set the EUT to transmit under low, middle and high channel and record the power level shown on simulator.

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)

Band	WCDMA IV		
Channel	1312	1413	1513
Frequency (MHz)	1712.4	1732.6	1752.6
RMC 12.2K	23.45	23.82	23.33

LTE Band 4

BW	MCS Index	RB Size	RB Offset	Low	Mid	High	3GPP MPR (dB)	BW	MCS Index	RB Size	RB Offset	Low	Mid	High	3GPP MPR (dB)
		Channel		20050	20175	20300				Channel		20025	20175	20325	
		Frequency (MHz)		1720.0	1732.5	1745.0				Frequency (MHz)		1717.5	1732.5	1747.5	
20M	QPSK	1	0	22.87	22.72	23.35	0	15M	QPSK	1	0	22.79	22.66	23.32	0
		1	50	22.74	22.57	23.20	0			1	37	22.71	22.50	23.14	0
		1	99	22.57	22.43	23.09	0			1	74	22.51	22.39	23.01	0
		50	0	21.74	21.56	22.20	1			36	0	21.69	21.52	22.13	1
		50	25	21.53	21.37	21.98	1			36	19	21.46	21.34	21.91	1
		50	50	21.47	21.28	21.93	1			36	39	21.40	21.20	21.88	1
		100	0	21.73	21.52	22.24	1			75	0	21.69	21.48	22.16	1
	16QAM	1	0	21.85	21.63	22.29	1		16QAM	1	0	21.75	21.64	22.23	1
		1	50	21.65	21.50	22.17	1			1	37	21.70	21.41	22.07	1
		1	99	21.54	21.40	22.02	1			1	74	21.42	21.36	21.99	1
		50	0	20.60	20.52	21.05	2			36	0	20.55	20.46	20.95	2
		50	25	20.49	20.30	20.95	2			36	19	20.42	20.31	20.90	2
		50	50	20.45	20.20	20.90	2			36	39	20.36	20.12	20.85	2
		100	0	20.70	20.51	21.23	2			75	0	20.68	20.44	21.15	2
BW	MCS Index	RB Size	RB Offset	Low	Mid	High	3GPP MPR (dB)	BW	MCS Index	RB Size	RB Offset	Low	Mid	High	3GPP MPR (dB)
		Channel		20000	20175	20350				Channel		19975	20175	20375	
		Frequency (MHz)		1715.0	1732.5	1750.0				Frequency (MHz)		1712.5	1732.5	1752.5	
10M	QPSK	1	0	22.71	22.59	23.24	0	5M	QPSK	1	0	22.64	22.52	23.19	0
		1	24	22.66	22.46	23.11	0			1	12	22.60	22.38	23.03	0
		1	49	22.47	22.35	22.98	0			1	24	22.43	22.29	22.95	0
		25	0	21.62	21.44	22.06	1			12	0	21.57	21.38	21.99	1
		25	12	21.41	21.26	21.87	1			12	6	21.36	21.20	21.84	1
		25	25	21.32	21.17	21.83	1			12	13	21.26	21.13	21.78	1
		50	0	21.62	21.41	22.12	1			25	0	21.55	21.37	22.04	1
	16QAM	1	0	21.70	21.51	22.15	1		16QAM	1	0	21.62	21.50	22.14	1
		1	24	21.58	21.41	22.03	1			1	12	21.55	21.36	21.98	1
		1	49	21.38	21.31	21.96	1			1	24	21.34	21.26	21.86	1
		25	0	20.48	20.22	21.00	2			12	0	20.44	20.34	20.96	2
		25	12	20.39	20.20	20.83	2			12	6	20.34	20.17	20.82	2
		25	25	20.27	20.10	20.82	2			12	13	20.22	20.12	20.70	2
		50	0	20.55	20.33	21.10	2			25	0	20.45	20.22	20.99	2
BW	MCS Index	RB Size	RB Offset	Low	Mid	High	3GPP MPR (dB)	BW	MCS Index	RB Size	RB Offset	Low	Mid	High	3GPP MPR (dB)
		Channel		19965	20175	20385				Channel		19957	20175	20393	
		Frequency (MHz)		1711.5	1732.5	1753.5				Frequency (MHz)		1710.7	1732.5	1754.3	
3M	QPSK	1	0	22.61	22.47	23.15	0	1.4M	QPSK	1	0	22.56	22.42	23.09	0
		1	7	22.56	22.34	22.98	0			1	2	22.52	22.34	23.02	0
		1	14	22.40	22.26	22.90	0			1	5	22.48	22.28	22.95	0
		8	0	21.51	21.30	21.94	1			3	0	22.45	22.20	22.92	0
		8	3	21.33	21.15	21.79	1			3	1	22.39	22.12	22.84	0
		8	7	21.22	21.06	21.74	1			3	3	22.34	22.09	22.76	0
		15	0	21.47	21.34	21.96	1			6	0	21.39	21.30	21.88	1
	16QAM	1	0	21.57	21.41	22.12	1		16QAM	1	0	21.50	21.39	22.00	1
		1	7	21.47	21.28	21.89	1			1	2	21.45	21.29	21.96	1
		1	14	21.38	21.24	21.81	1			1	5	21.42	21.23	21.94	1
		8	0	20.45	20.27	20.82	2			3	0	21.40	21.11	21.89	1
		8	3	20.31	20.13	20.75	2			3	1	21.36	21.05	21.76	1
		8	7	20.14	20.01	20.66	2			3	3	21.30	21.05	21.69	1
		15	0	20.46	20.25	20.87	2			6	0	20.36	20.23	20.80	2

LTE Band 12

BW	MCS Index	RB Size	RB Offset	Low	Mid	High	3GPP MPR (dB)	BW	MCS Index	RB Size	RB Offset	Low	Mid	High	3GPP MPR (dB)
		Channel		23060	23095	23130				Channel		23035	23095	23155	
		Frequency (MHz)		704.0	707.5	711.0				Frequency (MHz)		701.5	707.5	713.5	
10M	QPSK	1	0	23.32	23.29	23.21	0	5M	QPSK	1	0	23.29	23.23	23.17	0
		1	24	23.20	23.10	23.16	0			1	12	23.16	23.02	23.08	0
		1	49	23.05	22.90	22.97	0			1	24	22.99	22.83	22.93	0
		25	0	22.22	22.09	22.08	1			12	0	22.15	22.01	22.02	1
		25	12	22.01	21.96	21.90	1			12	6	21.96	21.88	21.82	1
		25	25	21.92	21.87	21.79	1			12	13	21.84	21.84	21.75	1
		50	0	22.19	22.09	22.15	1			25	0	22.11	22.02	22.07	1
	16QAM	1	0	22.27	22.20	22.14	1		16QAM	1	0	22.26	22.20	22.10	1
		1	24	22.16	22.08	22.13	1			1	12	22.09	21.93	22.04	1
		1	49	21.97	21.85	21.95	1			1	24	21.93	21.77	21.88	1
		25	0	21.00	21.01	20.90	2			12	0	21.04	20.82	20.81	2
		25	12	20.92	20.90	20.88	2			12	6	20.95	20.82	20.74	2
		25	25	20.85	20.79	20.73	2			12	13	20.80	20.79	20.66	2
		50	0	21.16	21.06	21.11	2			25	0	21.08	20.82	20.88	2
BW	MCS Index	RB Size	RB Offset	Low	Mid	High	3GPP MPR (dB)	BW	MCS Index	RB Size	RB Offset	Low	Mid	High	3GPP MPR (dB)
		Channel		23025	23095	23165				Channel		23017	23095	23173	
		Frequency (MHz)		700.5	707.5	714.5				Frequency (MHz)		699.7	707.5	715.3	
3M	QPSK	1	0	23.25	23.17	23.13	0	1.4M	QPSK	1	0	23.20	23.12	23.08	0
		1	7	23.12	22.97	23.02	0			1	2	23.17	23.05	23.00	0
		1	14	22.94	22.76	22.86	0			1	5	23.10	23.02	22.93	0
		8	0	22.11	21.96	21.95	1			3	0	23.06	22.97	22.88	0
		8	3	21.93	21.83	21.74	1			3	1	23.03	22.92	22.82	0
		8	7	21.77	21.81	21.70	1			3	3	23.00	22.84	22.79	0
		15	0	22.08	21.94	22.04	1			6	0	22.00	21.88	22.00	1
	16QAM	1	0	22.22	22.16	22.05	1		16QAM	1	0	22.12	22.05	22.02	1
		1	7	22.10	21.92	21.97	1			1	2	22.08	22.03	21.94	1
		1	14	21.85	21.75	21.85	1			1	5	22.09	21.98	21.91	1
		8	0	21.08	20.75	20.79	2			3	0	22.03	21.91	21.82	1
		8	3	20.84	20.74	20.65	2			3	1	22.02	21.88	21.77	1
		8	7	20.70	20.72	20.66	2			3	3	21.93	21.81	21.77	1
		15	0	20.91	20.78	21.01	2			6	0	20.94	20.86	20.91	2

LTE Band 13

BW	MCS Index	RB Size	RB Offset		Mid		3GPP MPR (dB)	BW	MCS Index	RB Size	RB Offset	Low	Mid	High	3GPP MPR (dB)
		Channel			23230					Channel		23205	23230	23225	
		Frequency (MHz)			782.0					Frequency (MHz)		779.5	782.0	784.5	
10M	QPSK	1	0		23.15		0	5M	QPSK	1	0	22.46	22.31	22.30	0
		1	24		23.12		0			1	12	23.22	23.05	23.07	0
		1	49		22.88		0			1	24	22.97	22.80	22.84	0
		25	0		22.17		1			12	0	22.10	22.08	22.05	1
		25	12		21.99		1			12	6	21.95	21.86	21.89	1
		25	25		21.85		1			12	13	21.87	21.85	21.76	1
		50	0		22.1		1			25	0	22.07	22.12	21.98	1
	16QAM	1	0		22.10		1		16QAM	1	0	21.45	21.30	21.26	1
		1	24		22.03		1			1	12	22.15	22.00	22.04	1
		1	49		21.85		1			1	24	21.90	21.77	21.83	1
		25	0		21.09		2			12	0	20.89	20.95	20.89	2
		25	12		20.97		2			12	6	20.86	20.85	20.88	2
		25	25		20.76		2			12	13	20.79	20.78	20.67	2
		50	0		21.07		2			25	0	21.00	21.03	20.95	2

LTE Band 66															
BW	MCS Index	RB Size	RB Offset	Low	Mid	High	3GPP MPR (dB)	BW	MCS Index	RB Size	RB Offset	Low	Mid	High	3GPP MPR (dB)
		Channel		132072	132322	132572				Channel		132047	132322	132597	
		Frequency (MHz)		1720.0	1745.0	1770.0				Frequency (MHz)		1717.5	1745.0	1772.5	
20M	QPSK	1	0	23.22	23.06	23.08	0	15M	QPSK	1	0	23.17	22.98	23.00	0
		1	50	23.07	22.92	22.93	0			1	37	23.05	22.91	22.89	0
		1	99	22.93	22.68	22.72	0			1	74	22.91	22.72	22.70	0
		50	0	22.10	21.96	21.97	1			36	0	22.05	21.89	21.88	1
		50	25	21.93	21.79	21.78	1			36	19	21.82	21.74	21.72	1
		50	50	21.86	21.72	21.74	1			36	39	21.74	21.60	21.59	1
		100	0	22.05	21.87	21.92	1			75	0	22.02	21.89	21.89	1
	16QAM	1	0	22.16	22.00	22.01	1		16QAM	1	0	22.09	21.90	21.97	1
		1	50	22.06	21.89	21.91	1			1	37	21.97	21.84	21.87	1
		1	99	21.92	21.60	21.70	1			1	74	21.88	21.68	21.61	1
		50	0	20.97	20.85	20.95	2			36	0	21.03	20.74	20.75	2
		50	25	20.85	20.76	20.70	2			36	19	20.81	20.69	20.71	2
		50	50	20.83	20.66	20.72	2			36	39	20.68	20.56	20.55	2
		100	0	20.99	20.86	20.83	2			75	0	20.95	20.87	20.81	2
BW	MCS Index	RB Size	RB Offset	Low	Mid	High	3GPP MPR (dB)	BW	MCS Index	RB Size	RB Offset	Low	Mid	High	3GPP MPR (dB)
		Channel		132022	132322	132622				Channel		131997	132322	132647	
		Frequency (MHz)		1715.0	1745.0	1775.0				Frequency (MHz)		1712.5	1745.0	1777.5	
10M	QPSK	1	0	23.12	22.93	22.98	0	5M	QPSK	1	0	23.01	22.93	22.88	0
		1	24	23.00	22.81	22.83	0			1	12	22.92	22.75	22.76	0
		1	49	22.82	22.68	22.70	0			1	24	22.85	22.56	22.55	0
		25	0	22.02	21.83	21.83	1			12	0	21.99	21.76	21.79	1
		25	12	21.74	21.61	21.63	1			12	6	21.77	21.56	21.56	1
		25	25	21.70	21.49	21.55	1			12	13	21.75	21.50	21.47	1
		50	0	21.89	21.88	21.86	1			25	0	21.90	21.82	21.69	1
	16QAM	1	0	22.04	21.90	21.93	1		16QAM	1	0	21.96	21.89	21.81	1
		1	24	21.99	21.73	21.77	1			1	12	21.83	21.66	21.74	1
		1	49	21.74	21.64	21.64	1			1	24	21.84	21.55	21.47	1
		25	0	20.96	20.62	20.73	2			12	0	20.77	20.63	20.76	2
		25	12	20.67	20.55	20.58	2			12	6	20.70	20.50	20.53	2
		25	25	20.66	20.42	20.51	2			12	13	20.69	20.48	20.40	2
		50	0	20.80	20.87	20.83	2			25	0	20.76	20.76	20.68	2
BW	MCS Index	RB Size	RB Offset	Low	Mid	High	3GPP MPR (dB)	BW	MCS Index	RB Size	RB Offset	Low	Mid	High	3GPP MPR (dB)
		Channel		131987	132322	132657				Channel		131979	132322	132665	
		Frequency (MHz)		1711.5	1745.5	1778.5				Frequency (MHz)		1710.7	1745.0	1779.3	
3M	QPSK	1	0	22.98	22.88	22.82	0	1.4M	QPSK	1	0	22.95	22.79	22.87	0
		1	7	22.84	22.70	22.72	0			1	2	22.90	22.74	22.81	0
		1	14	22.74	22.56	22.58	0			1	5	22.86	22.66	22.73	0
		8	0	21.85	21.66	21.78	1			3	0	22.82	22.61	22.65	0
		8	3	21.70	21.50	21.61	1			3	1	22.77	22.53	22.62	0
		8	7	21.52	21.39	21.48	1			3	3	22.71	22.45	22.57	0
		15	0	21.79	21.66	21.76	1			6	0	21.72	21.72	21.69	1
	16QAM	1	0	21.94	21.79	21.74	1		16QAM	1	0	21.87	21.74	21.79	1
		1	7	21.75	21.61	21.70	1			1	2	21.81	21.67	21.76	1
		1	14	21.69	21.48	21.53	1			1	5	21.83	21.64	21.68	1
		8	0	20.74	20.44	20.69	2			3	0	21.73	21.54	21.56	1
		8	3	20.64	20.49	20.59	2			3	1	21.74	21.47	21.59	1
		8	7	20.48	20.37	20.39	2			3	3	21.67	21.42	21.52	1
		15	0	20.71	20.48	20.58	2			6	0	20.63	20.64	20.67	2

ERP Power (dBm)

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	-10.86	30.36	19.50	89.13	H
	23095	707.5	-10.81	30.17	19.36	86.30	
	23173	715.3	-10.95	30.17	19.22	83.56	
	23017	699.7	-17.32	32.03	14.71	29.58	V
	23095	707.5	-17.38	31.98	14.60	28.84	
	23173	715.3	-17.69	32.06	14.37	27.35	
Channel Bandwidth: 1.4 MHz / 16QAM							
X	23017	699.7	-11.91	30.36	18.45	69.98	H
	23095	707.5	-11.98	30.17	18.19	65.92	
	23173	715.3	-12.16	30.17	18.01	63.24	
	23017	699.7	-18.41	32.03	13.62	23.01	V
	23095	707.5	-18.59	31.98	13.39	21.83	
	23173	715.3	-18.84	32.06	13.22	20.99	

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

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	-10.58	30.17	19.59	90.99	H
	23095	707.5	-10.76	30.17	19.41	87.30	
	23165	714.5	-10.89	30.18	19.29	84.92	
	23025	700.5	-17.17	31.96	14.79	30.13	V
	23095	707.5	-17.30	31.98	14.68	29.38	
	23165	714.5	-17.60	32.03	14.43	27.73	
Channel Bandwidth: 3 MHz / 16QAM							
X	23025	700.5	-11.66	30.17	18.51	70.96	H
	23095	707.5	-11.88	30.17	18.29	67.45	
	23165	714.5	-12.08	30.18	18.10	64.57	
	23025	700.5	-18.25	31.96	13.71	23.50	V
	23095	707.5	-18.52	31.98	13.46	22.18	
	23165	714.5	-18.72	32.03	13.31	21.43	

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

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	-10.51	30.17	19.66	92.47	H
	23095	707.5	-10.69	30.17	19.48	88.72	
	23155	713.5	-10.81	30.18	19.37	86.50	
	23035	701.5	-17.09	31.96	14.87	30.69	V
	23095	707.5	-17.25	31.98	14.73	29.72	
	23155	713.5	-17.51	32.03	14.52	28.31	
Channel Bandwidth: 5 MHz / 16QAM							
X	23035	701.5	-11.58	30.17	18.59	72.28	H
	23095	707.5	-11.81	30.17	18.36	68.55	
	23155	713.5	-11.97	30.18	18.21	66.22	
	23035	701.5	-18.15	31.96	13.81	24.04	V
	23095	707.5	-18.44	31.98	13.54	22.59	
	23155	713.5	-18.62	32.03	13.41	21.93	

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

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	-10.46	30.17	19.71	93.54	H
	23095	707.5	-10.64	30.17	19.53	89.74	
	23130	711.0	-10.76	30.18	19.42	87.50	
	23060	704.0	-17.01	31.96	14.95	31.26	V
	23095	707.5	-17.17	31.98	14.81	30.27	
	23130	711.0	-17.43	32.03	14.60	28.84	
Channel Bandwidth: 10 MHz / 16QAM							
X	23060	704.0	-11.51	30.17	18.66	73.45	H
	23095	707.5	-11.75	30.17	18.42	69.50	
	23130	711.0	-11.88	30.18	18.30	67.61	
	23060	704.0	-18.08	31.96	13.88	24.43	V
	23095	707.5	-18.37	31.98	13.61	22.96	
	23130	711.0	-18.54	32.03	13.49	22.34	

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

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	-13.11	32.24	19.13	81.85	H
	23230	782.0	-13.15	32.17	19.02	79.80	
	23255	784.5	-13.21	32.11	18.90	77.62	
	23205	779.5	-17.26	32.43	15.17	32.89	V
	23230	782.0	-17.41	32.42	15.01	31.70	
	23255	784.5	-17.55	32.46	14.91	30.97	
Channel Bandwidth: 5 MHz / 16QAM							
X	23205	779.5	-14.17	32.24	18.07	64.12	H
	23230	782.0	-14.23	32.17	17.94	62.23	
	23255	784.5	-14.25	32.11	17.86	61.09	
	23205	779.5	-18.51	32.43	13.92	24.66	V
	23230	782.0	-18.62	32.42	13.80	23.99	
	23255	784.5	-18.85	32.46	13.61	22.96	

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

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	-12.63	32.17	19.54	89.95	H
	23230	782.0	-16.94	32.42	15.48	35.32	V
Channel Bandwidth: 10 MHz / 16QAM							
X	23230	782.0	-13.66	32.17	18.51	70.96	H
	23230	782.0	-18.05	32.42	14.37	27.35	V

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

EIRP Power (dBm)

WCDMA							
Plane	Channel	Frequency (MHz)	Reading (dBm)	Correction Factor (dB)	EIRP (dBm)	EIRP (mW)	Polarization (H/V)
X	1312	1712.4	-12.16	36.29	24.13	258.82	H
	1413	1732.6	-12.01	36.69	24.68	293.76	
	1513	1752.6	-12.51	36.98	24.47	279.90	
	1312	1712.4	-17.95	37.11	19.16	82.41	V
	1413	1732.6	-17.72	37.60	19.88	97.27	
	1513	1752.6	-18.04	37.65	19.61	91.41	

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

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)
Y	19957	1710.7	-12.99	36.45	23.46	221.82	H
	20175	1732.5	-13.48	36.80	23.32	214.78	
	20393	1754.3	-12.95	36.94	23.99	250.61	
	19957	1710.7	-17.87	37.28	19.41	87.30	V
	20175	1732.5	-18.37	37.63	19.26	84.33	
	20393	1754.3	-17.80	37.64	19.84	96.38	
Channel Bandwidth: 1.4 MHz / 16QAM							
Y	19957	1710.7	-13.99	36.45	22.46	176.20	H
	20175	1732.5	-14.54	36.80	22.26	168.27	
	20393	1754.3	-14.00	36.94	22.94	196.79	
	19957	1710.7	-18.91	37.28	18.37	68.71	V
	20175	1732.5	-19.34	37.63	18.29	67.45	
	20393	1754.3	-18.74	37.64	18.90	77.62	

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)
Y	19965	1711.5	-12.91	36.45	23.54	225.94	H
	20175	1732.5	-13.39	36.80	23.41	219.28	
	20385	1753.5	-12.88	36.94	24.06	254.68	
	19965	1711.5	-17.78	37.28	19.50	89.13	V
	20175	1732.5	-18.32	37.63	19.31	85.31	
	20385	1753.5	-17.72	37.64	19.92	98.17	
Channel Bandwidth: 3 MHz / 16QAM							
Y	19965	1711.5	-13.92	36.45	22.53	179.06	H
	20175	1732.5	-14.48	36.80	22.32	170.61	
	20385	1753.5	-13.91	36.94	23.03	200.91	
	19965	1711.5	-18.80	37.28	18.48	70.47	V
	20175	1732.5	-19.28	37.63	18.35	68.39	
	20385	1753.5	-18.66	37.64	18.98	79.07	

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)
Y	19975	1712.5	-12.83	36.45	23.62	230.14	H
	20175	1732.5	-13.30	36.80	23.50	223.87	
	20375	1752.5	-12.81	36.94	24.13	258.82	
	19975	1712.5	-17.71	37.28	19.57	90.57	V
	20175	1732.5	-18.24	37.63	19.39	86.90	
	20375	1752.5	-17.65	37.64	19.99	99.77	
Channel Bandwidth: 5 MHz / 16QAM							
Y	19975	1712.5	-13.84	36.45	22.61	182.39	H
	20175	1732.5	-14.39	36.80	22.41	174.18	
	20375	1752.5	-13.83	36.94	23.11	204.64	
	19975	1712.5	-18.69	37.28	18.59	72.28	V
	20175	1732.5	-19.20	37.63	18.43	69.66	
	20375	1752.5	-18.59	37.64	19.05	80.35	

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)
Y	20000	1715.0	-12.95	36.64	23.69	233.88	H
	20175	1732.5	-13.25	36.80	23.55	226.46	
	20350	1750.0	-12.59	36.80	24.21	263.63	
	20000	1715.0	-17.81	37.44	19.63	91.83	V
	20175	1732.5	-18.18	37.63	19.45	88.10	
	20350	1750.0	-17.58	37.64	20.06	101.39	
Channel Bandwidth: 10 MHz / 16QAM							
Y	20000	1715.0	-13.94	36.64	22.70	186.21	H
	20175	1732.5	-14.29	36.80	22.51	178.24	
	20350	1750.0	-13.61	36.80	23.19	208.45	
	20000	1715.0	-18.76	37.44	18.68	73.79	V
	20175	1732.5	-19.13	37.63	18.50	70.79	
	20350	1750.0	-18.53	37.64	19.11	81.47	

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)
Y	20025	1717.5	-12.65	36.45	23.80	239.88	H
	20175	1732.5	-13.14	36.80	23.66	232.27	
	20325	1747.5	-12.65	36.94	24.29	268.53	
	20025	1717.5	-17.57	37.28	19.71	93.54	V
	20175	1732.5	-18.10	37.63	19.53	89.74	
	20325	1747.5	-17.49	37.64	20.15	103.51	
Channel Bandwidth: 15 MHz / 16QAM							
Y	20025	1717.5	-13.66	36.45	22.79	190.11	H
	20175	1732.5	-14.20	36.80	22.60	181.97	
	20325	1747.5	-13.67	36.94	23.27	212.32	
	20025	1717.5	-18.52	37.28	18.76	75.16	V
	20175	1732.5	-19.05	37.63	18.58	72.11	
	20325	1747.5	-18.43	37.64	19.21	83.37	

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)
Y	20050	1720.0	-12.59	36.45	23.86	243.22	H
	20175	1732.5	-13.10	36.80	23.70	234.42	
	20300	1745.0	-12.58	36.94	24.36	272.90	
	20050	1720.0	-17.51	37.28	19.77	94.84	V
	20175	1732.5	-18.03	37.63	19.60	91.20	
	20300	1745.0	-17.42	37.64	20.22	105.20	
Channel Bandwidth: 20 MHz / 16QAM							
Y	20050	1720.0	-13.60	36.45	22.85	192.75	H
	20175	1732.5	-14.13	36.80	22.67	184.93	
	20300	1745.0	-13.61	36.94	23.33	215.28	
	20050	1720.0	-18.46	37.28	18.82	76.21	V
	20175	1732.5	-18.99	37.63	18.64	73.11	
	20300	1745.0	-18.37	37.64	19.27	84.53	

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)
Y	131979	1710.7	-12.53	36.45	23.92	246.60	H
	132322	1745.0	-13.29	36.80	23.51	224.39	
	132665	1779.3	-13.28	36.94	23.66	232.27	
	131979	1710.7	-17.86	37.28	19.42	87.50	V
	132322	1745.0	-18.45	37.63	19.18	82.79	
	132665	1779.3	-18.37	37.64	19.27	84.53	
Channel Bandwidth: 1.4 MHz / 16QAM							
Y	131979	1710.7	-13.63	36.45	22.82	191.43	H
	132322	1745.0	-14.33	36.80	22.47	176.60	
	132665	1779.3	-14.39	36.94	22.55	179.89	
	131979	1710.7	-18.86	37.28	18.42	69.50	V
	132322	1745.0	-19.48	37.63	18.15	65.31	
	132665	1779.3	-19.43	37.64	18.21	66.22	

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)
Y	131987	1711.5	-12.47	36.45	23.98	250.03	H
	132322	1745.0	-13.19	36.80	23.61	229.61	
	132657	1778.5	-13.20	36.94	23.74	236.59	
	131987	1711.5	-17.74	37.28	19.54	89.95	V
	132322	1745.0	-18.37	37.63	19.26	84.33	
	132657	1778.5	-18.26	37.64	19.38	86.70	
Channel Bandwidth: 3 MHz / 16QAM							
Y	131987	1711.5	-13.54	36.45	22.91	195.43	H
	132322	1745.0	-14.26	36.80	22.54	179.47	
	132657	1778.5	-14.31	36.94	22.63	183.23	
	131987	1711.5	-18.77	37.28	18.51	70.96	V
	132322	1745.0	-19.42	37.63	18.21	66.22	
	132657	1778.5	-19.35	37.64	18.29	67.45	

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)
Y	131997	1712.5	-12.42	36.45	24.03	252.93	H
	132322	1745.0	-13.11	36.80	23.69	233.88	
	132647	1777.5	-13.12	36.94	23.82	240.99	
	131997	1712.5	-17.67	37.28	19.61	91.41	V
	132322	1745.0	-18.32	37.63	19.31	85.31	
	132647	1777.5	-18.23	37.64	19.41	87.30	
Channel Bandwidth: 5 MHz / 16QAM							
Y	131997	1712.5	-13.46	36.45	22.99	199.07	H
	132322	1745.0	-14.17	36.80	22.63	183.23	
	132647	1777.5	-14.19	36.94	22.75	188.36	
	131997	1712.5	-18.71	37.28	18.57	71.94	V
	132322	1745.0	-19.36	37.63	18.27	67.14	
	132647	1777.5	-19.28	37.64	18.36	68.55	

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)
Y	132022	1715.0	-12.53	36.64	24.11	257.63	H
	132322	1745.0	-12.99	36.80	23.81	240.44	
	132622	1775.0	-12.88	36.80	23.92	246.60	
	132022	1715.0	-17.75	37.44	19.69	93.11	V
	132322	1745.0	-18.23	37.63	19.40	87.10	
	132622	1775.0	-18.15	37.64	19.49	88.92	
Channel Bandwidth: 10 MHz / 16QAM							
Y	132022	1715.0	-13.59	36.64	23.05	201.84	H
	132322	1745.0	-14.09	36.80	22.71	186.64	
	132622	1775.0	-13.94	36.80	22.86	193.20	
	132022	1715.0	-18.78	37.44	18.66	73.45	V
	132322	1745.0	-19.30	37.63	18.33	68.08	
	132622	1775.0	-19.17	37.64	18.47	70.31	

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)
Y	132047	1717.5	-12.25	36.45	24.20	263.03	H
	132322	1745.0	-12.91	36.80	23.89	244.91	
	132597	1772.5	-12.95	36.94	23.99	250.61	
	132047	1717.5	-17.53	37.28	19.75	94.41	V
	132322	1745.0	-18.15	37.63	19.48	88.72	
	132597	1772.5	-18.07	37.64	19.57	90.57	
Channel Bandwidth: 15 MHz / 16QAM							
Y	132047	1717.5	-13.33	36.45	23.12	205.12	H
	132322	1745.0	-13.96	36.80	22.84	192.31	
	132597	1772.5	-13.98	36.94	22.96	197.70	
	132047	1717.5	-18.52	37.28	18.76	75.16	V
	132322	1745.0	-19.20	37.63	18.43	69.66	
	132597	1772.5	-19.09	37.64	18.55	71.61	

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)
Y	132072	1720.0	-12.18	36.45	24.27	267.30	H
	132322	1745.0	-12.85	36.80	23.95	248.31	
	132572	1770.0	-12.87	36.94	24.07	255.27	
	132072	1720.0	-17.44	37.28	19.84	96.38	V
	132322	1745.0	-18.07	37.63	19.56	90.36	
	132572	1770.0	-17.96	37.64	19.68	92.90	
Channel Bandwidth: 20 MHz / 16QAM							
Y	132072	1720.0	-13.27	36.45	23.18	207.97	H
	132322	1745.0	-13.89	36.80	22.91	195.43	
	132572	1770.0	-13.93	36.94	23.01	199.99	
	132072	1720.0	-18.46	37.28	18.82	76.21	V
	132322	1745.0	-19.13	37.63	18.50	70.79	
	132572	1770.0	-18.98	37.64	18.66	73.45	

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

4.2 Modulation Characteristics Measurement

4.2.1 Limits of Modulation Characteristics

N/A

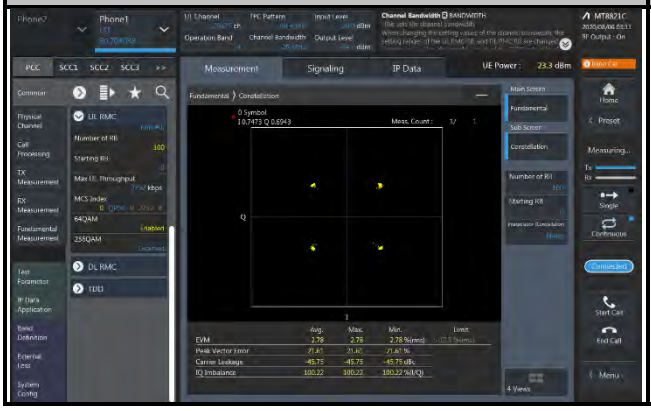
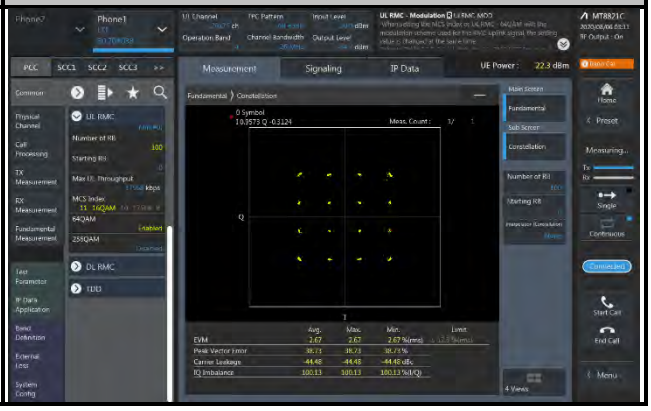
4.2.2 Test Setup

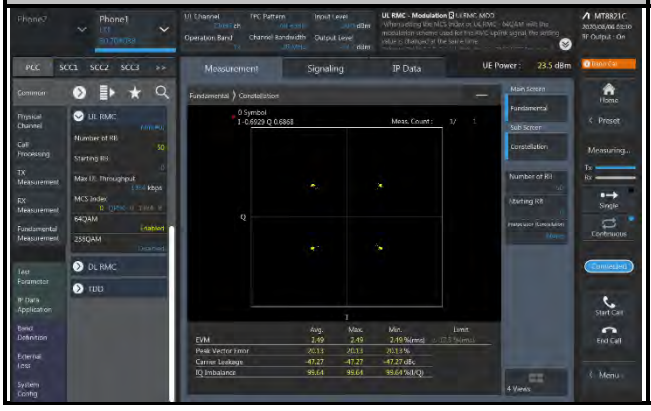
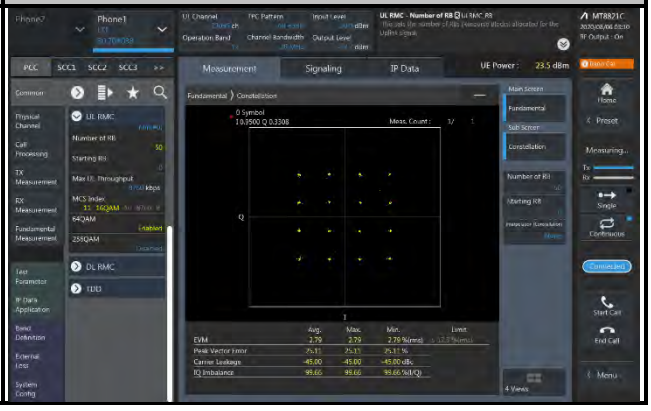
4.2.3 Test Procedure

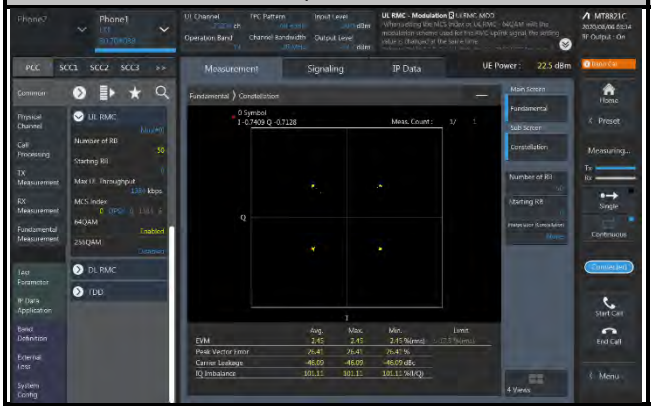
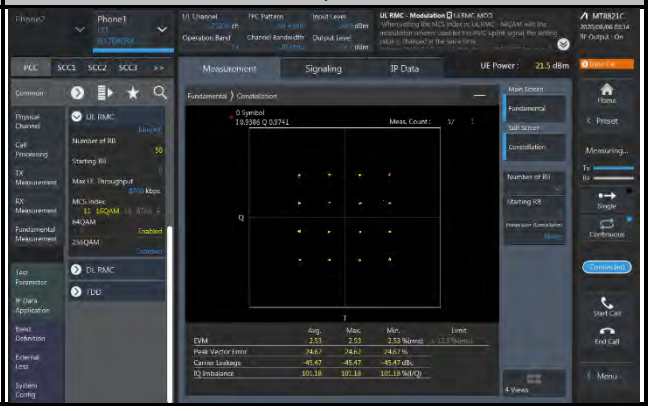
Connect the EUT to Communication Simulator via the antenna connector. The frequency band is set as EUT supported Modulation and Channels, the EUT output is matched with 50 ohm load, the waveform quality and constellation of the EUT was tested.

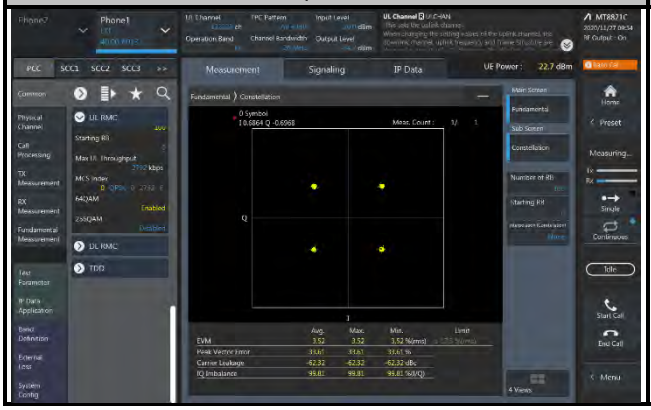
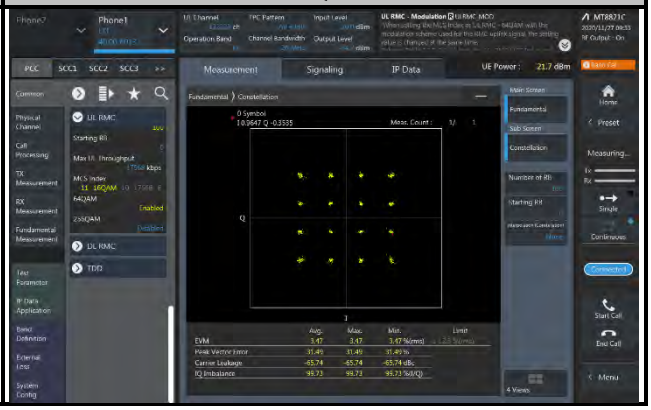
4.2.4 Test Results

Spectrum Plot of Measurement
WCDMA
Channel 1413

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
	

4.3 Frequency Stability Measurement

4.3.1 Limits of Frequency Stability Measurement

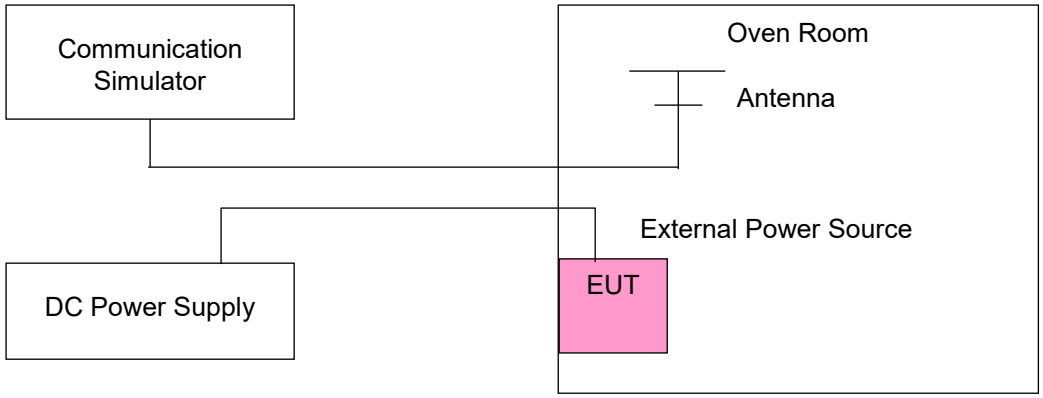
The frequency stability shall be sufficient to ensure that the fundamental emissions stay within the authorized bands of operation.

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

Frequency Error vs. Voltage

Voltage (Volts)	WCDMA			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
12	1712.400003	0.002	1752.600004	0.002
10.2	1712.400004	0.002	1752.600003	0.002
13.8	1712.400003	0.002	1752.600003	0.001

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

Frequency Error vs. Temperature

Temp. (℃)	WCDMA			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
-30	1712.400003	0.002	1752.600001	0.001
-20	1712.400002	0.001	1752.600003	0.002
-10	1712.400002	0.001	1752.600002	0.001
0	1712.400003	0.002	1752.600003	0.002
10	1712.399997	-0.002	1752.599997	-0.002
20	1712.399998	-0.001	1752.599998	-0.001
30	1712.399999	-0.001	1752.599997	-0.002
40	1712.399996	-0.002	1752.599998	-0.001
50	1712.399996	-0.002	1752.599997	-0.002
60	1712.399996	-0.002	1752.599997	-0.002
70	1712.399997	-0.002	1752.599997	-0.001
80	1712.399997	-0.002	1752.599998	-0.001

Note:

1. The applicant declared that the normal operating temperature of the EUT is from -30˚C to 80˚C.
2. The EUT would shut down automatically as below -30˚C.

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)
12	1710.700002	0.001	1754.299997	-0.002
10.2	1710.700002	0.001	1754.299997	-0.002
13.8	1710.700001	0.001	1754.299997	-0.002

Note: The applicant defined the normal working voltage of the battery 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	1754.300002	0.001
-20	1710.700003	0.002	1754.300004	0.002
-10	1710.700001	0.001	1754.300002	0.001
0	1710.700003	0.002	1754.300003	0.002
10	1710.699998	-0.001	1754.300002	0.001
20	1710.699997	-0.002	1754.300002	0.001
30	1710.699999	-0.001	1754.300001	0.001
40	1710.699998	-0.001	1754.299998	-0.001
50	1710.699998	-0.001	1754.299997	-0.002
60	1710.699996	-0.002	1754.299997	-0.002
70	1710.699999	-0.001	1754.299998	-0.001
80	1710.699998	-0.001	1754.299996	-0.002

Note:

1. The applicant declared that the normal operating temperature of the EUT is from -30˚C to 80˚C.
2. The EUT would shut down automatically as below -30˚C.

Frequency Error vs. Voltage

Voltage (Volts)	LTE Band 4			
	Channel Bandwidth: 3 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
12	1711.500001	0.001	1753.499998	-0.001
10.2	1711.500002	0.001	1753.499997	-0.002
13.8	1711.500004	0.002	1753.499997	-0.002

Note: The applicant defined the normal working voltage of the battery 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	1711.500003	0.002	1753.500003	0.002
-20	1711.500003	0.002	1753.500002	0.001
-10	1711.500003	0.002	1753.500004	0.002
0	1711.500003	0.002	1753.500004	0.002
10	1711.499998	-0.001	1753.500004	0.002
20	1711.499997	-0.002	1753.500003	0.001
30	1711.499999	-0.001	1753.500002	0.001
40	1711.499997	-0.002	1753.499999	-0.001
50	1711.499998	-0.001	1753.499998	-0.001
60	1711.499996	-0.002	1753.499998	-0.001
70	1711.499998	-0.001	1753.499999	-0.001
80	1711.499997	-0.002	1753.499999	-0.001

Note:

1. The applicant declared that the normal operating temperature of the EUT is from -30˚C to 80˚C.
2. The EUT would shut down automatically as below -30˚C.

Frequency Error vs. Voltage

Voltage (Volts)	LTE Band 4			
	Channel Bandwidth: 5 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
12	1712.500003	0.002	1752.499996	-0.002
10.2	1712.500004	0.002	1752.499998	-0.001
13.8	1712.500003	0.001	1752.499998	-0.001

Note: The applicant defined the normal working voltage of the battery 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	1712.500002	0.001	1752.500002	0.001
-10	1712.500004	0.002	1752.500001	0.001
0	1712.500003	0.002	1752.500003	0.001
10	1712.499998	-0.001	1752.500002	0.001
20	1712.499999	-0.001	1752.500002	0.001
30	1712.499999	-0.001	1752.500003	0.002
40	1712.499996	-0.002	1752.499996	-0.002
50	1712.499998	-0.001	1752.499999	-0.001
60	1712.499998	-0.001	1752.499999	-0.001
70	1712.499999	-0.001	1752.499996	-0.002
80	1712.499996	-0.002	1752.499997	-0.002

Note:

1. The applicant declared that the normal operating temperature of the EUT is from -30˚C to 80˚C.
2. The EUT would shut down automatically as below -30˚C.

Frequency Error vs. Voltage

Voltage (Volts)	LTE Band 4			
	Channel Bandwidth: 10 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
12	1715.000002	0.001	1749.999997	-0.002
10.2	1715.000002	0.001	1749.999998	-0.001
13.8	1715.000004	0.002	1749.999998	-0.001

Note: The applicant defined the normal working voltage of the battery 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	1715.000004	0.002	1750.000002	0.001
-20	1715.000004	0.002	1750.000004	0.002
-10	1715.000001	0.001	1750.000002	0.001
0	1715.000001	0.001	1750.000003	0.002
10	1714.999997	-0.002	1750.000004	0.002
20	1714.999998	-0.001	1750.000004	0.002
30	1714.999996	-0.002	1750.000002	0.001
40	1714.999998	-0.001	1749.999996	-0.002
50	1714.999997	-0.002	1749.999998	-0.001
60	1714.999996	-0.002	1749.999999	-0.001
70	1714.999998	-0.001	1749.999999	-0.001
80	1714.999996	-0.002	1749.999999	-0.001

Note:

1. The applicant declared that the normal operating temperature of the EUT is from -30˚C to 80˚C.
2. The EUT would shut down automatically as below -30˚C.

Frequency Error vs. Voltage

Voltage (Volts)	LTE Band 4			
	Channel Bandwidth: 15 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
12	1717.500002	0.001	1747.499998	-0.001
10.2	1717.500002	0.001	1747.499999	-0.001
13.8	1717.500001	0.001	1747.499997	-0.002

Note: The applicant defined the normal working voltage of the battery 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	1717.500003	0.001	1747.500002	0.001
-20	1717.500003	0.002	1747.500003	0.002
-10	1717.500003	0.002	1747.500001	0.001
0	1717.500002	0.001	1747.500003	0.002
10	1717.499999	-0.001	1747.500004	0.002
20	1717.499998	-0.001	1747.500004	0.002
30	1717.499998	-0.001	1747.500002	0.001
40	1717.499997	-0.002	1747.499996	-0.002
50	1717.499999	-0.001	1747.499996	-0.002
60	1717.499999	-0.001	1747.499998	-0.001
70	1717.499997	-0.002	1747.499997	-0.002
80	1717.499998	-0.001	1747.499999	-0.001

Note:

1. The applicant declared that the normal operating temperature of the EUT is from -30˚C to 80˚C.
2. The EUT would shut down automatically as below -30˚C.

Frequency Error vs. Voltage

Voltage (Volts)	LTE Band 4			
	Channel Bandwidth: 20 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
12	1720.000002	0.001	1744.999997	-0.002
10.2	1720.000001	0.001	1744.999999	-0.001
13.8	1720.000002	0.001	1744.999997	-0.002

Note: The applicant defined the normal working voltage of the battery 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	1745.000003	0.002
-20	1720.000001	0.001	1745.000002	0.001
-10	1720.000002	0.001	1745.000003	0.002
0	1720.000002	0.001	1745.000002	0.001
10	1719.999998	-0.001	1745.000002	0.001
20	1719.999998	-0.001	1745.000003	0.002
30	1719.999997	-0.002	1745.000004	0.002
40	1719.999999	-0.001	1744.999997	-0.002
50	1719.999998	-0.001	1744.999998	-0.001
60	1719.999999	-0.001	1744.999998	-0.001
70	1719.999996	-0.002	1744.999998	-0.001
80	1719.999999	-0.001	1744.999998	-0.001

Note:

1. The applicant declared that the normal operating temperature of the EUT is from -30˚C to 80˚C.
2. The EUT would shut down automatically as below -30˚C.

Frequency Error vs. Voltage

Voltage (Volts)	LTE Band 12			
	Channel Bandwidth: 1.4 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
12	699.700002	0.003	715.299999	-0.002
10.2	699.700003	0.004	715.299998	-0.003
13.8	699.700004	0.006	715.299996	-0.005

Note: The applicant defined the normal working voltage of the battery 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	715.300003	0.005
-20	699.700001	0.002	715.300004	0.005
-10	699.700004	0.005	715.300002	0.003
0	699.700002	0.003	715.300002	0.003
10	699.699996	-0.005	715.300004	0.006
20	699.699996	-0.005	715.300002	0.003
30	699.699996	-0.006	715.300002	0.003
40	699.699998	-0.003	715.299998	-0.003
50	699.699998	-0.002	715.299998	-0.003
60	699.699999	-0.002	715.299998	-0.003
70	699.699998	-0.003	715.299997	-0.004
80	699.699996	-0.005	715.299997	-0.004

Note:

1. The applicant declared that the normal operating temperature of the EUT is from -30˚C to 80˚C.
2. The EUT would shut down automatically as below -30˚C.

Frequency Error vs. Voltage

Voltage (Volts)	LTE Band 12			
	Channel Bandwidth: 3 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
12	700.500003	0.004	714.499999	-0.001
10.2	700.500002	0.003	714.499999	-0.002
13.8	700.500002	0.003	714.499997	-0.004

Note: The applicant defined the normal working voltage of the battery 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	700.500002	0.002	714.500003	0.004
-20	700.500003	0.004	714.500003	0.004
-10	700.500003	0.005	714.500001	0.002
0	700.500001	0.002	714.500004	0.005
10	700.499996	-0.006	714.500003	0.003
20	700.499996	-0.006	714.500003	0.004
30	700.499997	-0.005	714.500003	0.004
40	700.499996	-0.006	714.499998	-0.003
50	700.499998	-0.003	714.499996	-0.005
60	700.499997	-0.005	714.499999	-0.002
70	700.499997	-0.004	714.499998	-0.002
80	700.499997	-0.005	714.499999	-0.002

Note:

1. The applicant declared that the normal operating temperature of the EUT is from -30˚C to 80˚C.
2. The EUT would shut down automatically as below -30˚C.

Frequency Error vs. Voltage

Voltage (Volts)	LTE Band 12			
	Channel Bandwidth: 5 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
12	701.500002	0.003	713.499996	-0.006
10.2	701.500002	0.002	713.499997	-0.005
13.8	701.500002	0.003	713.499996	-0.005

Note: The applicant defined the normal working voltage of the battery 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	701.500004	0.006	713.500001	0.001
-20	701.500001	0.002	713.500002	0.003
-10	701.500002	0.003	713.500002	0.003
0	701.500001	0.002	713.500002	0.003
10	701.499998	-0.002	713.500002	0.003
20	701.499999	-0.002	713.500001	0.002
30	701.499997	-0.005	713.500002	0.003
40	701.499999	-0.001	713.499997	-0.004
50	701.499998	-0.003	713.499996	-0.005
60	701.499998	-0.004	713.499999	-0.002
70	701.499998	-0.003	713.499998	-0.003
80	701.499997	-0.004	713.499998	-0.003

Note:

1. The applicant declared that the normal operating temperature of the EUT is from -30˚C to 80˚C.
2. The EUT would shut down automatically as below -30˚C.

Frequency Error vs. Voltage

Voltage (Volts)	LTE Band 12			
	Channel Bandwidth: 10 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
12	704.000001	0.002	710.999999	-0.002
10.2	704.000003	0.005	710.999997	-0.005
13.8	704.000002	0.003	710.999999	-0.002

Note: The applicant defined the normal working voltage of the battery 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	711.000001	0.002
-20	704.000001	0.002	711.000002	0.002
-10	704.000003	0.004	711.000001	0.002
0	704.000003	0.004	711.000003	0.005
10	703.999996	-0.005	711.000003	0.004
20	703.999997	-0.005	711.000002	0.002
30	703.999998	-0.003	711.000002	0.002
40	703.999996	-0.006	710.999997	-0.005
50	703.999997	-0.004	710.999998	-0.002
60	703.999996	-0.005	710.999997	-0.004
70	703.999998	-0.003	710.999999	-0.002
80	703.999997	-0.005	710.999997	-0.005

Note:

1. The applicant declared that the normal operating temperature of the EUT is from -30˚C to 80˚C.
2. The EUT would shut down automatically as below -30˚C.

Frequency Error vs. Voltage

Voltage (Volts)	LTE Band 13			
	Channel Bandwidth: 5 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
12	779.500001	0.002	784.499997	-0.004
10.2	779.500002	0.003	784.499996	-0.005
13.8	779.500002	0.002	784.499997	-0.003

Note: The applicant defined the normal working voltage of the battery 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	0.002	784.500003	0.003
-20	779.500001	0.002	784.500004	0.005
-10	779.500003	0.004	784.500001	0.001
0	779.500001	0.001	784.500004	0.005
10	779.499998	-0.003	784.500003	0.003
20	779.499999	-0.002	784.500003	0.003
30	779.499998	-0.002	784.500004	0.005
40	779.499999	-0.002	784.499999	-0.002
50	779.499997	-0.004	784.499997	-0.004
60	779.499997	-0.004	784.499996	-0.005
70	779.499997	-0.004	784.499997	-0.004
80	779.499997	-0.004	784.499997	-0.004

Note:

1. The applicant declared that the normal operating temperature of the EUT is from -30˚C to 80˚C.
2. The EUT would shut down automatically as below -30˚C.

Frequency Error vs. Voltage

Voltage (Volts)	LTE Band 13	
	Channel Bandwidth: 10 MHz	
	Frequency (MHz)	Frequency Error (ppm)
12	782.000003	0.004
10.2	782.000003	0.004
13.8	782.000003	0.003

Note: The applicant defined the normal working voltage of the battery 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	782.000004	0.005
-10	782.000003	0.004
0	782.000004	0.005
10	781.999998	-0.003
20	781.999996	-0.005
30	781.999996	-0.005
40	781.999997	-0.004
50	781.999998	-0.002
60	781.999997	-0.003
70	781.999996	-0.005
80	781.999997	-0.004

Note:

1. The applicant declared that the normal operating temperature of the EUT is from -30˚C to 80˚C.
2. The EUT would shut down automatically as below -30˚C.

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)
12	1710.700001	0.001	1779.299999	-0.001
10.2	1710.700003	0.002	1779.299998	-0.001
13.8	1710.700003	0.001	1779.299998	-0.001

Note: The applicant defined the normal working voltage of the battery 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	1779.300002	0.001
-20	1710.700003	0.002	1779.300001	0.001
-10	1710.700002	0.001	1779.300004	0.002
0	1710.700002	0.001	1779.300002	0.001
10	1710.699997	-0.002	1779.300002	0.001
20	1710.699997	-0.002	1779.300003	0.002
30	1710.699997	-0.002	1779.300001	0.001
40	1710.699998	-0.001	1779.299997	-0.002
50	1710.699997	-0.002	1779.299996	-0.002
60	1710.699999	-0.001	1779.299999	-0.001
70	1710.699998	-0.001	1779.299998	-0.001
80	1710.699999	-0.001	1779.299997	-0.002

Note:

1. The applicant declared that the normal operating temperature of the EUT is from -30˚C to 80˚C.
2. The EUT would shut down automatically as below -30˚C.

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)
12	1711.500002	0.001	1778.499999	-0.001
10.2	1711.500001	0.001	1778.499999	-0.001
13.8	1711.500002	0.001	1778.499997	-0.002

Note: The applicant defined the normal working voltage of the battery 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	1711.500004	0.002	1778.500002	0.001
-20	1711.500001	0.001	1778.500003	0.001
-10	1711.500004	0.002	1778.500003	0.002
0	1711.500003	0.001	1778.500003	0.002
10	1711.499999	-0.001	1778.500002	0.001
20	1711.499998	-0.001	1778.500002	0.001
30	1711.499998	-0.001	1778.500003	0.002
40	1711.499997	-0.002	1778.499996	-0.002
50	1711.499998	-0.001	1778.499998	-0.001
60	1711.499997	-0.002	1778.499998	-0.001
70	1711.499997	-0.002	1778.499997	-0.002
80	1711.499998	-0.001	1778.499999	-0.001

Note:

1. The applicant declared that the normal operating temperature of the EUT is from -30˚C to 80˚C.
2. The EUT would shut down automatically as below -30˚C.

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)
12	1712.500003	0.001	1777.499999	-0.001
10.2	1712.500001	0.001	1777.499999	-0.001
13.8	1712.500003	0.002	1777.499998	-0.001

Note: The applicant defined the normal working voltage of the battery 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	1712.500004	0.002	1777.500004	0.002
-10	1712.500002	0.001	1777.500003	0.002
0	1712.500002	0.001	1777.500002	0.001
10	1712.499998	-0.001	1777.500001	0.001
20	1712.499998	-0.001	1777.500003	0.002
30	1712.499996	-0.002	1777.500003	0.002
40	1712.499997	-0.002	1777.499997	-0.002
50	1712.499999	-0.001	1777.499998	-0.001
60	1712.499999	-0.001	1777.499999	-0.001
70	1712.499999	-0.001	1777.499996	-0.002
80	1712.499998	-0.001	1777.499997	-0.002

Note:

1. The applicant declared that the normal operating temperature of the EUT is from -30˚C to 80˚C.
2. The EUT would shut down automatically as below -30˚C.

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)
12	1715.000002	0.001	1774.999997	-0.002
10.2	1715.000001	0.001	1774.999997	-0.002
13.8	1715.000003	0.002	1774.999998	-0.001

Note: The applicant defined the normal working voltage of the battery 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	1715.000003	0.002	1775.000002	0.001
-20	1715.000002	0.001	1775.000004	0.002
-10	1715.000004	0.002	1775.000004	0.002
0	1715.000001	0.001	1775.000003	0.001
10	1714.999997	-0.002	1775.000003	0.002
20	1714.999996	-0.002	1775.000002	0.001
30	1714.999996	-0.002	1775.000001	0.001
40	1714.999998	-0.001	1774.999997	-0.002
50	1714.999999	-0.001	1774.999996	-0.002
60	1714.999997	-0.002	1774.999998	-0.001
70	1714.999998	-0.001	1774.999999	-0.001
80	1714.999998	-0.001	1774.999999	-0.001

Note:

1. The applicant declared that the normal operating temperature of the EUT is from -30˚C to 80˚C.
2. The EUT would shut down automatically as below -30˚C.

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)
12	1717.500004	0.002	1772.499999	-0.001
10.2	1717.500004	0.002	1772.499998	-0.001
13.8	1717.500001	0.001	1772.499997	-0.002

Note: The applicant defined the normal working voltage of the battery 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	1717.500003	0.001	1772.500004	0.002
-20	1717.500004	0.002	1772.500003	0.002
-10	1717.500003	0.001	1772.500003	0.002
0	1717.500003	0.002	1772.500003	0.001
10	1717.499999	-0.001	1772.500002	0.001
20	1717.499999	-0.001	1772.500003	0.002
30	1717.499997	-0.002	1772.500004	0.002
40	1717.499999	-0.001	1772.499996	-0.002
50	1717.499998	-0.001	1772.499998	-0.001
60	1717.499999	-0.001	1772.499997	-0.002
70	1717.499998	-0.001	1772.499996	-0.002
80	1717.499997	-0.002	1772.499996	-0.002

Note:

1. The applicant declared that the normal operating temperature of the EUT is from -30˚C to 80˚C.
2. The EUT would shut down automatically as below -30˚C.

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)
12	1720.000004	0.002	1769.999998	-0.001
10.2	1720.000004	0.002	1769.999996	-0.002
13.8	1720.000003	0.002	1769.999998	-0.001

Note: The applicant defined the normal working voltage of the battery 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	1720.000003	0.002	1770.000002	0.001
-20	1720.000004	0.002	1770.000002	0.001
-10	1720.000001	0.001	1770.000004	0.002
0	1720.000001	0.001	1770.000004	0.002
10	1719.999999	-0.001	1770.000001	0.001
20	1719.999999	-0.001	1770.000004	0.002
30	1719.999998	-0.001	1770.000001	0.001
40	1719.999998	-0.001	1769.999997	-0.002
50	1719.999997	-0.002	1769.999999	-0.001
60	1719.999997	-0.002	1769.999998	-0.001
70	1719.999998	-0.001	1769.999996	-0.002
80	1719.999996	-0.002	1769.999997	-0.002

Note:

1. The applicant declared that the normal operating temperature of the EUT is from -30˚C to 80˚C.
2. The EUT would shut down automatically as below -30˚C.

4.4 Occupied Bandwidth Measurement

4.4.1 Limits of Occupied Bandwidth Measurement

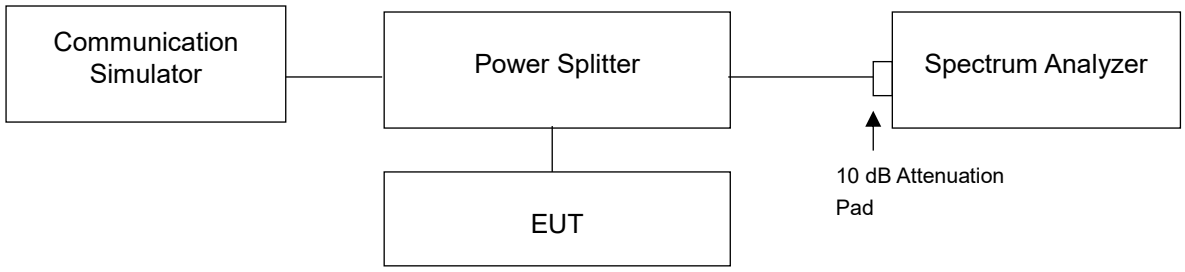
The width of a frequency band such that, below the lower and above the upper frequency limits, the mean powers emitted are each equal to a specified percentage 0.5 % of the total mean power of a given emission.

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. Measurement method, please refer to section 5.4.4 of ANSI C63.26.

For the 26dBc bandwidth measurement method, please refer to section 5.4.3 of ANSI C63.26.

4.4.3 Test Setup

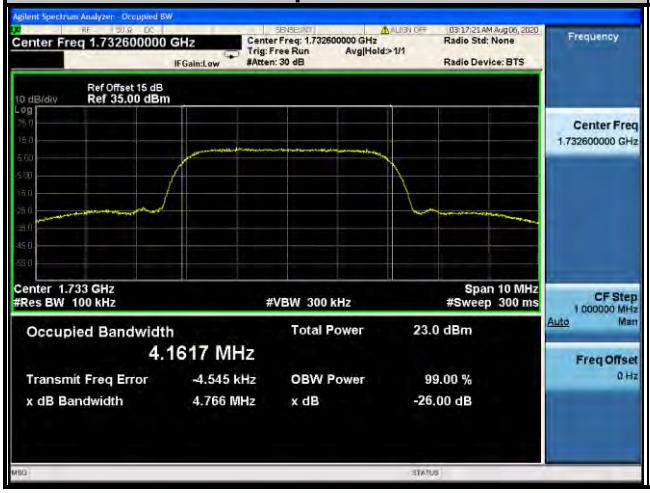


4.4.4 Test Result

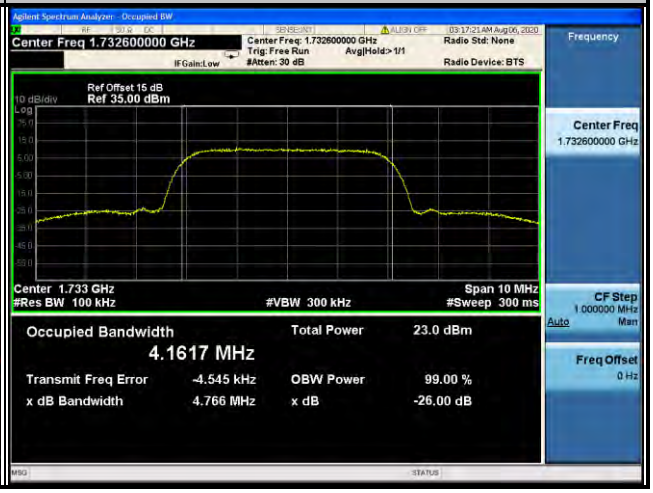
WCDMA			
Channel	**Frequency (MHz)**	**99 % Occupied Bandwidth (MHz)**	**26 dB Bandwidth (MHz)**
1312	1712.4	4.15	4.75
1413	1732.6	4.16	4.77
1513	1752.6	4.15	4.73

Spectrum Plot of Worst Value

99 % Occupied Bandwidth



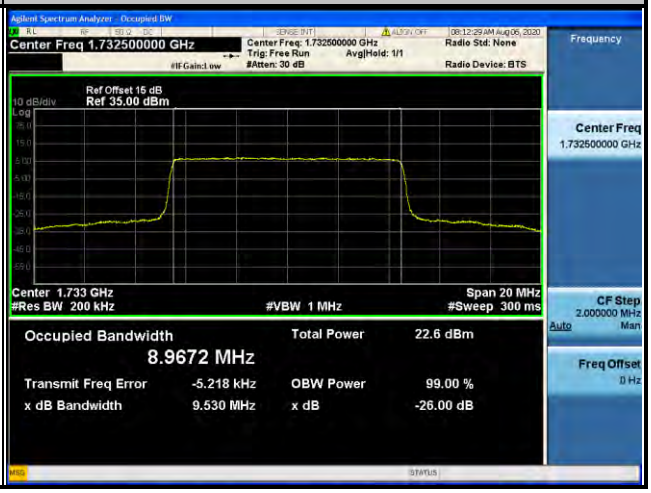
26 dB Bandwidth



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	1.09	1.09	1.22	1.22
20175	1732.5	1.09	1.09	1.22	1.22
20393	1754.3	1.09	1.09	1.22	1.21
Channel Bandwidth: 3 MHz					
Channel	Frequency (MHz)	99 % Occupied Bandwidth (MHz)		26 dB Bandwidth (MHz)	
		QPSK	16QAM	QPSK	16QAM
19965	1711.5	2.70	2.70	2.94	2.94
20175	1732.5	2.70	2.70	2.94	2.94
20385	1753.5	2.70	2.69	2.91	2.93

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

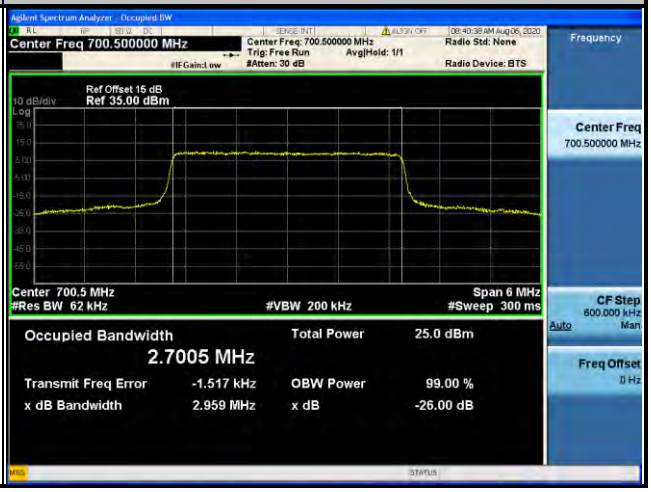
LTE Band 4					
Channel Bandwidth: 5 MHz					
Channel	Frequency (MHz)	99 % Occupied Bandwidth (MHz)		26 dB Bandwidth (MHz)	
		QPSK	16QAM	QPSK	16QAM
19975	1712.5	4.49	4.49	4.79	4.80
20175	1732.5	4.49	4.49	4.81	4.81
20375	1752.5	4.49	4.49	4.80	4.81
Channel Bandwidth: 10 MHz					
Channel	Frequency (MHz)	99 % Occupied Bandwidth (MHz)		26 dB Bandwidth (MHz)	
		QPSK	16QAM	QPSK	16QAM
20000	1715.0	8.97	8.97	9.52	9.52
20175	1732.5	8.97	8.97	9.52	9.53
20350	1750.0	8.96	8.97	9.51	9.51

Spectrum Plot of Worst Value	
99 % Occupied Bandwidth	26 dB Bandwidth
5 MHz / 16QAM	5 MHz / QPSK
	
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	13.48	13.47	14.25	14.26
20175	1732.5	13.46	13.45	14.28	14.25
20325	1747.5	13.47	13.46	14.26	14.26
Channel Bandwidth: 20 MHz					
Channel	**Frequency (MHz)**	**99 % Occupied Bandwidth (MHz)**		**26 dB Bandwidth (MHz)**	
		QPSK	**16QAM**	**QPSK**	**16QAM**
20050	1720.0	17.94	17.96	19.04	19.02
20175	1732.5	17.92	17.94	19.03	19.01
20300	1745.0	17.96	17.97	19.05	19.04

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

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	1.09	1.09	1.23	1.24
23095	707.5	1.09	1.09	1.21	1.21
23173	715.3	1.09	1.09	1.22	1.22
Channel Bandwidth: 3 MHz					
Channel	Frequency (MHz)	99 % Occupied Bandwidth (MHz)		26 dB Bandwidth (MHz)	
		QPSK	16QAM	QPSK	16QAM
23025	700.5	2.70	2.70	2.96	2.96
23095	707.5	2.70	2.70	2.91	2.93
23165	714.5	2.70	2.70	2.92	2.93

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

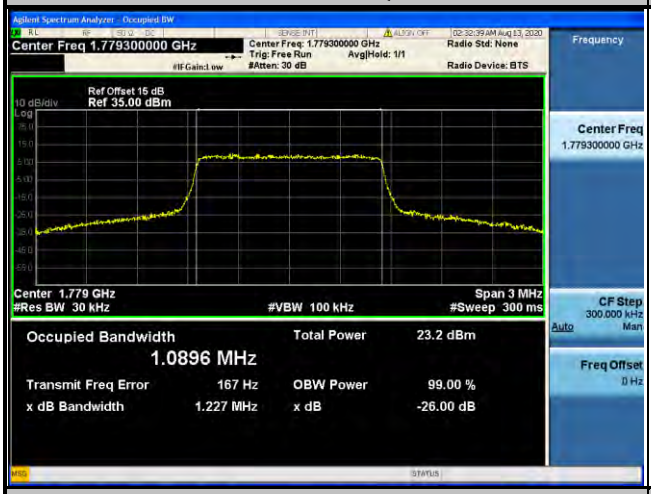
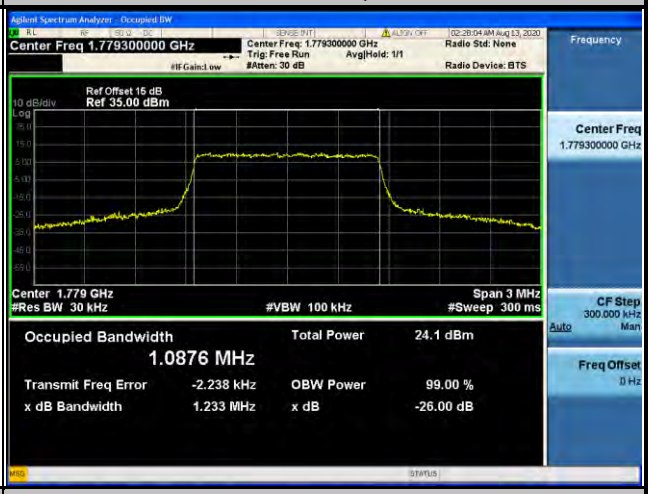
LTE Band 12					
Channel Bandwidth: 5 MHz					
Channel	Frequency (MHz)	99 % Occupied Bandwidth (MHz)		26 dB Bandwidth (MHz)	
		QPSK	16QAM	QPSK	16QAM
23035	701.5	4.49	4.50	4.81	4.83
23095	707.5	4.48	4.49	4.80	4.81
23155	713.5	4.49	4.50	4.81	4.81
Channel Bandwidth: 10 MHz					
Channel	Frequency (MHz)	99 % Occupied Bandwidth (MHz)		26 dB Bandwidth (MHz)	
		QPSK	16QAM	QPSK	16QAM
23060	704.0	8.99	9.00	9.53	9.55
23095	707.5	8.95	8.96	9.50	9.51
23130	711.0	8.94	8.94	9.49	9.49

Spectrum Plot of Worst Value	
99 % Occupied Bandwidth	26 dB Bandwidth
5 MHz / 16QAM	5 MHz / 16QAM
	
10 MHz / 16QAM	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	4.48	4.48	4.81	4.81
23230	782.0	4.49	4.48	4.80	4.80
23255	784.5	4.49	4.49	4.81	4.81
Channel Bandwidth: 10 MHz					
Channel	Frequency (MHz)	99 % Occupied Bandwidth (MHz)		26 dB Bandwidth (MHz)	
		QPSK	16QAM	QPSK	16QAM
23230	782.0	8.95	8.96	9.51	9.50

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

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	1.09	1.09	1.22	1.21
132322	1745.0	1.09	1.09	1.22	1.21
132665	1779.3	1.09	1.09	1.23	1.23
Channel Bandwidth: 3 MHz					
Channel	Frequency (MHz)	99 % Occupied Bandwidth (MHz)		26 dB Bandwidth (MHz)	
		QPSK	16QAM	QPSK	16QAM
131987	1711.5	2.70	2.70	2.93	2.93
132322	1745.0	2.70	2.70	2.93	2.93
132657	1778.5	2.70	2.70	2.95	2.94

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

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	4.49	4.49	4.80	4.81
132322	1745.0	4.49	4.49	4.81	4.81
132647	1777.5	4.49	4.49	4.82	4.82
Channel Bandwidth: 10 MHz					
Channel	Frequency (MHz)	99 % Occupied Bandwidth (MHz)		26 dB Bandwidth (MHz)	
		QPSK	16QAM	QPSK	16QAM
132022	1715.0	8.97	8.97	9.52	9.51
132322	1745.0	8.97	8.96	9.52	9.53
132622	1775.0	8.97	8.97	9.53	9.51

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

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	13.48	13.46	14.26	14.25
132322	1745.0	13.48	13.46	14.27	14.26
132597	1772.5	13.47	13.45	14.26	14.26
Channel Bandwidth: 20 MHz					
Channel	**Frequency (MHz)**	**99 % Occupied Bandwidth (MHz)**		**26 dB Bandwidth (MHz)**	
		QPSK	**16QAM**	**QPSK**	**16QAM**
132072	1720.0	17.95	17.96	19.03	19.01
132322	1745.0	17.96	17.97	19.03	19.02
132572	1770.0	17.93	17.94	19.04	19.02

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

4.5 Band Edge Measurement

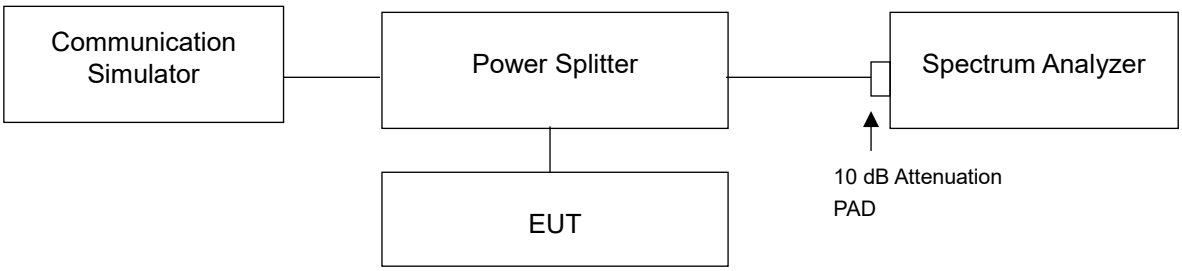
4.5.1 Limits of Band Edge Measurement

For operations in the 600MHz and 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 and 1755-1780 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

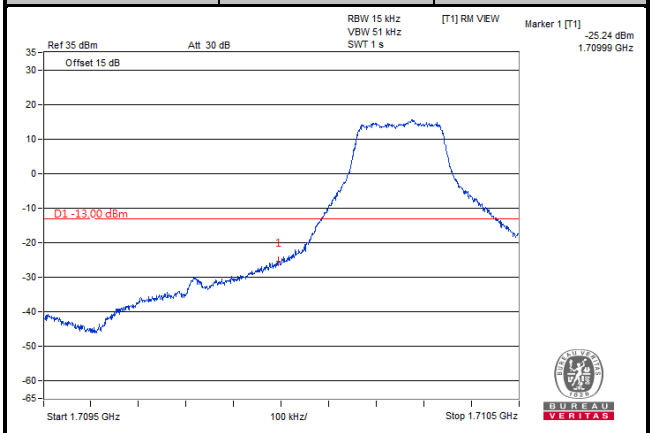
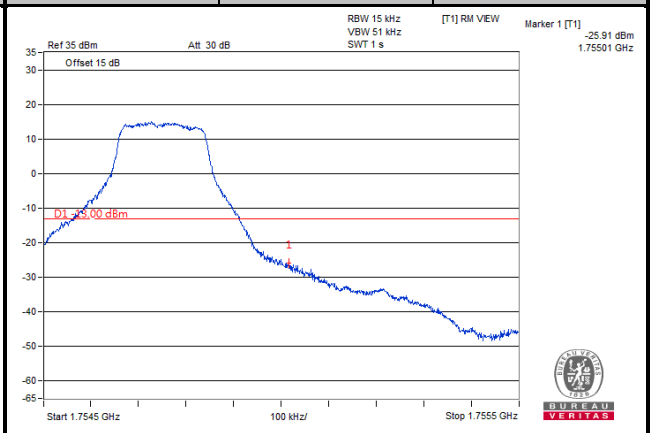
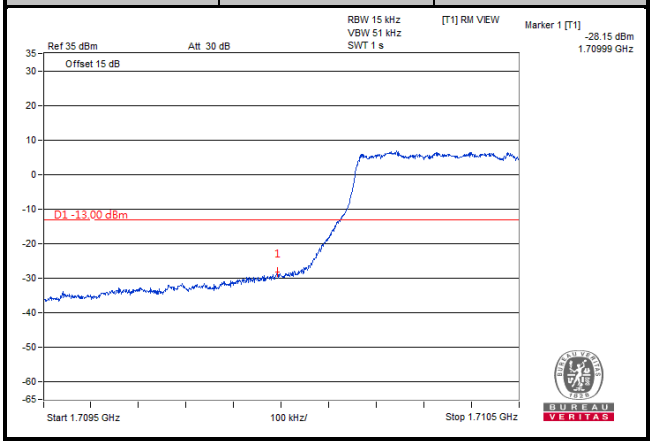
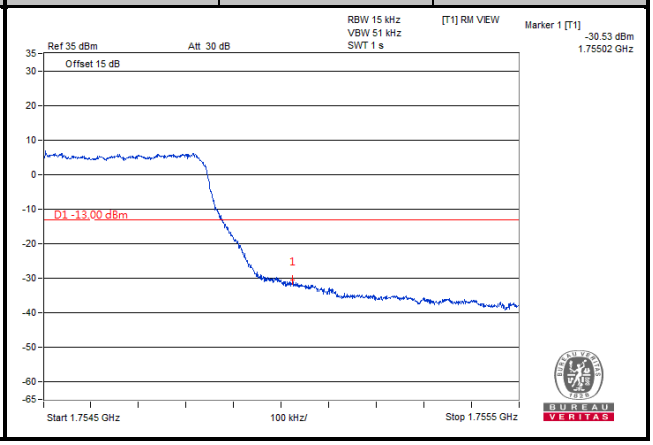


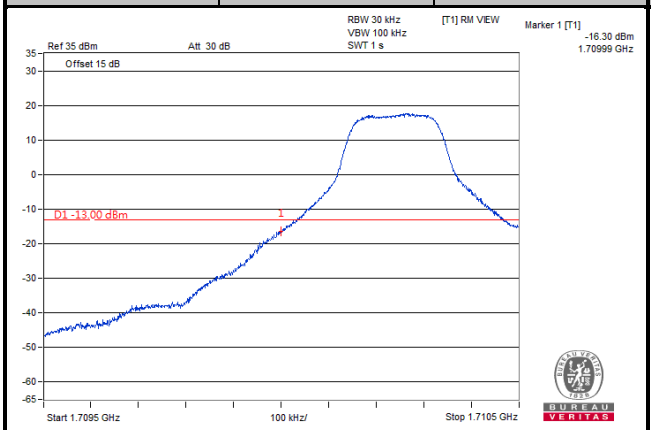
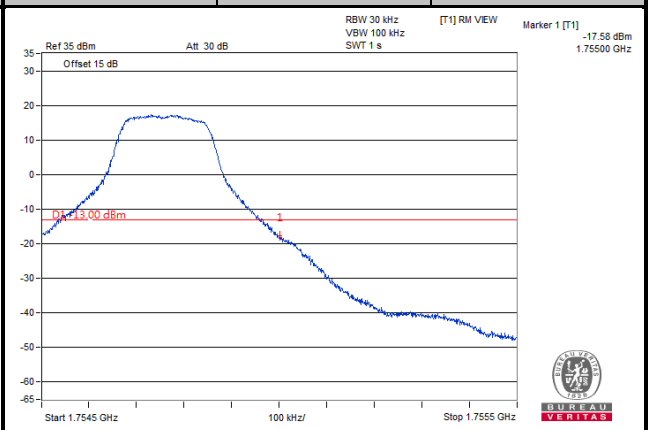
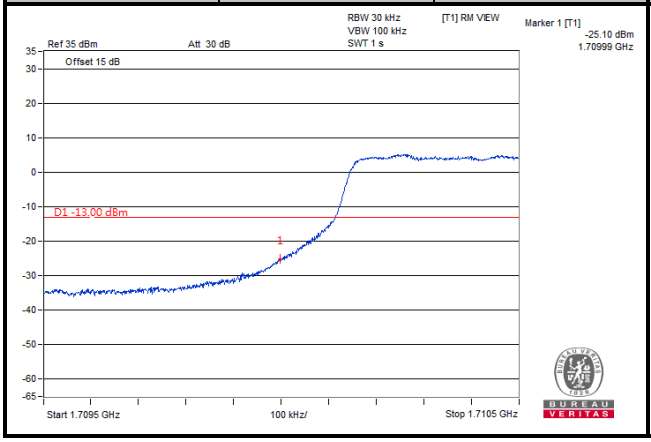
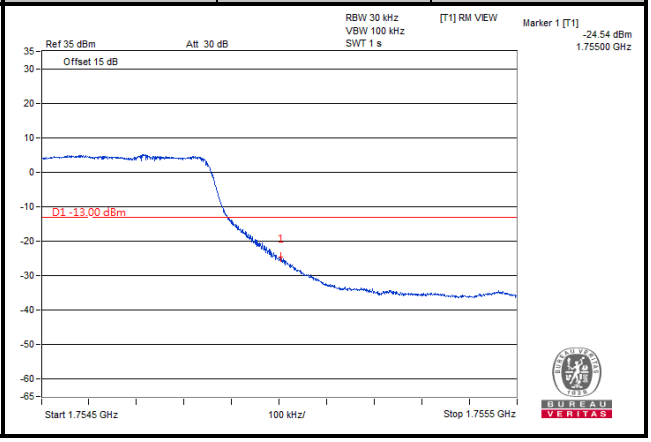
4.5.3 Test Procedures

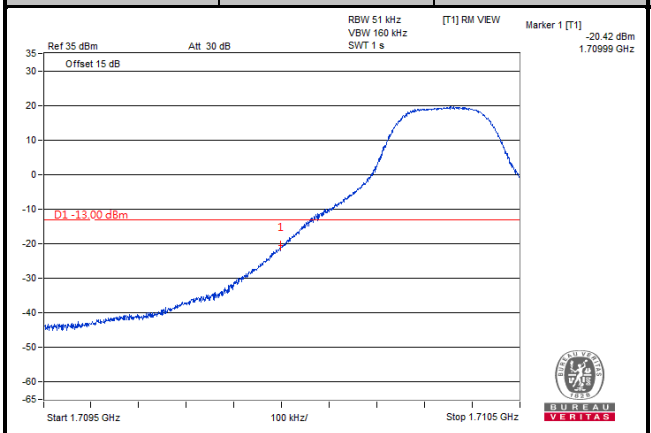
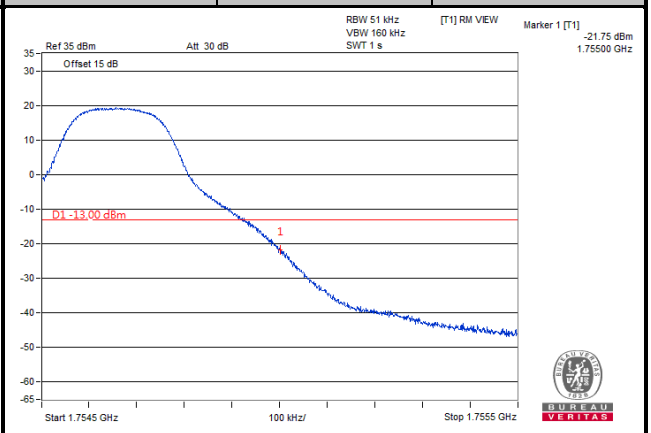
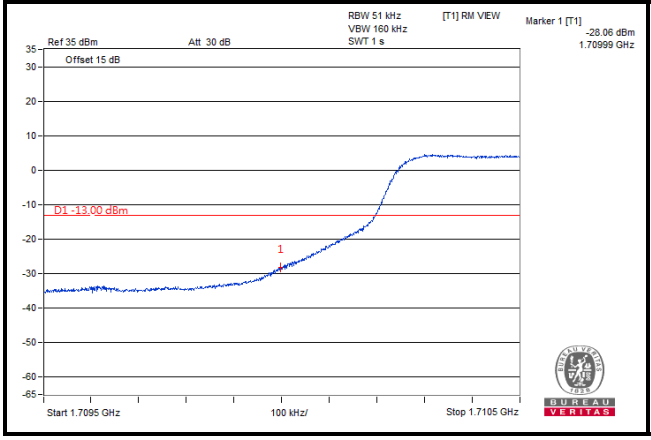
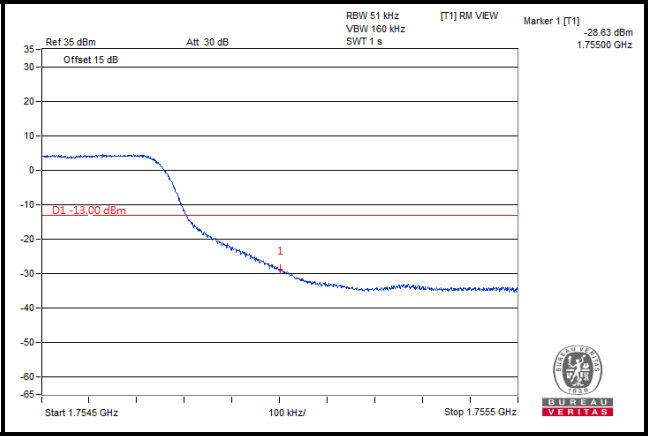
a. All measurements were done at low and high operational frequency range.
b. The center frequency of spectrum is the band edge frequency and span is 5 MHz. RB of the spectrum is 51 kHz and VB of the spectrum is 160 kHz (WCDMA).
c. The center frequency of spectrum is the band edge frequency and span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

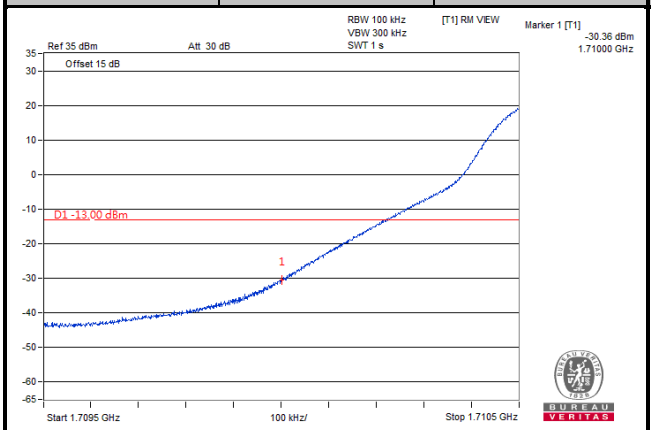
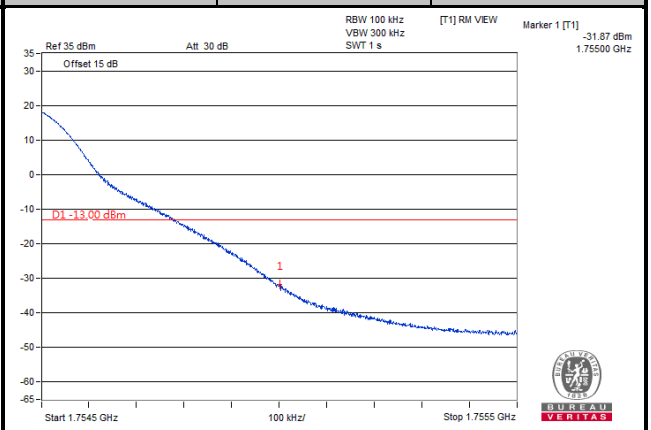
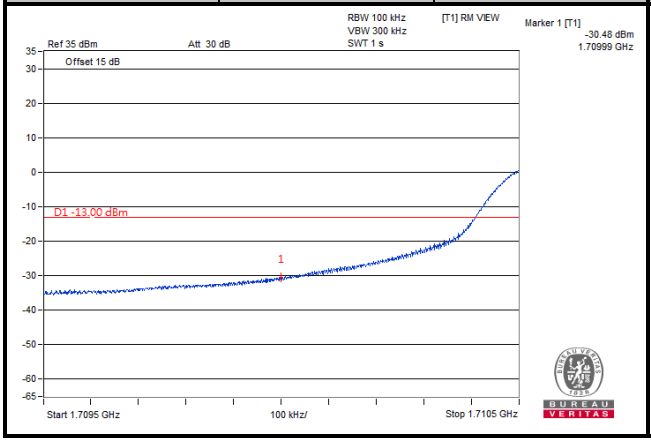
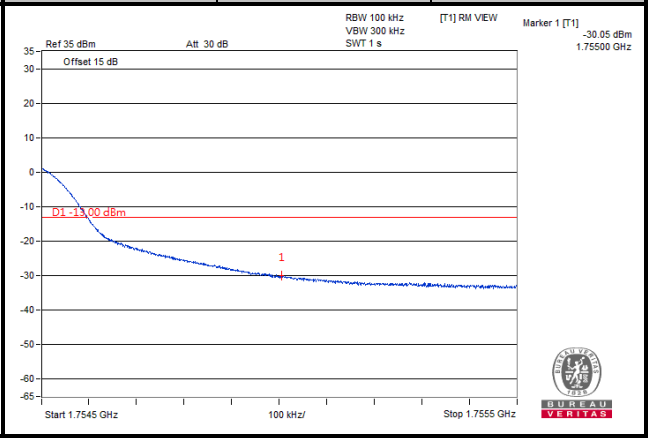
4.5.4 Test Results

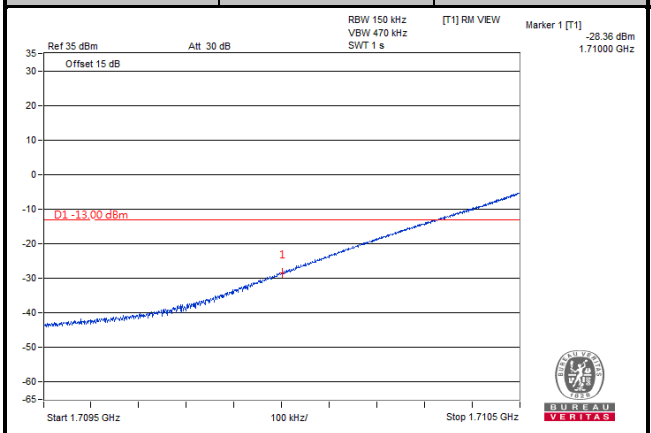
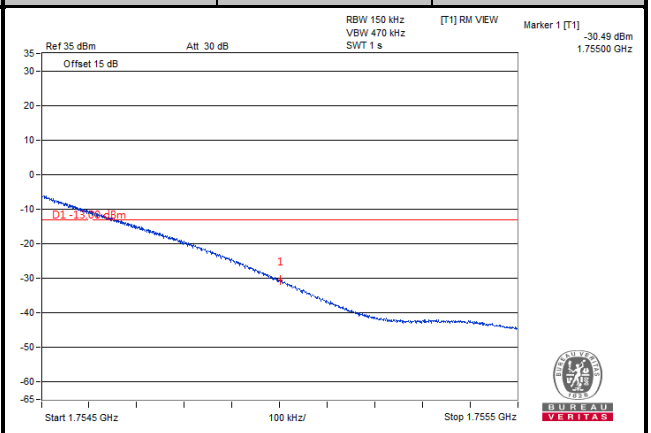
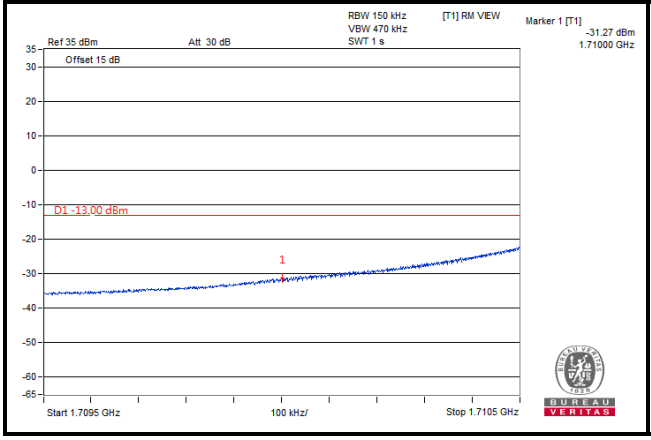
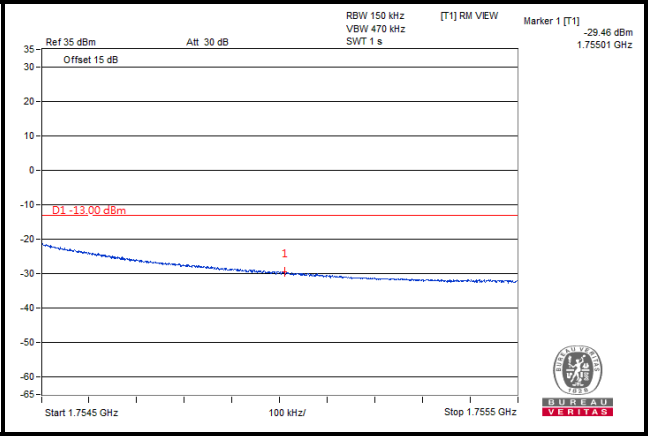
WCDMA			
Channel	1312	Channel	1513
			

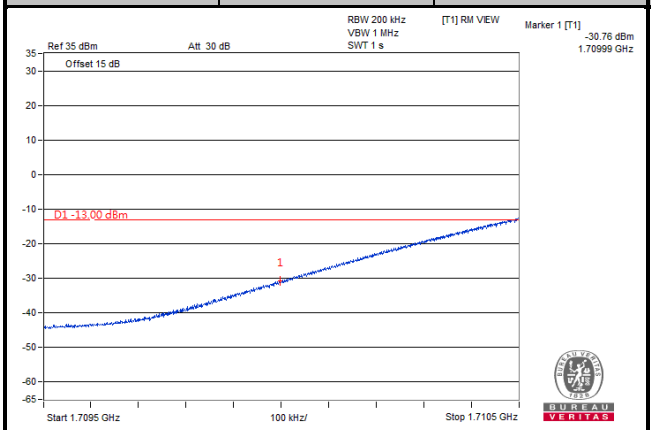
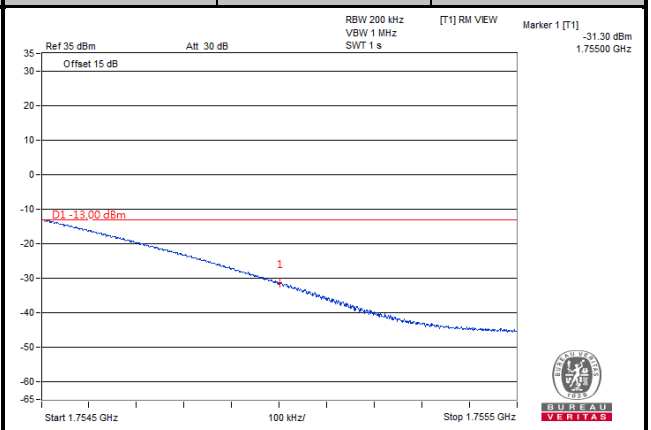
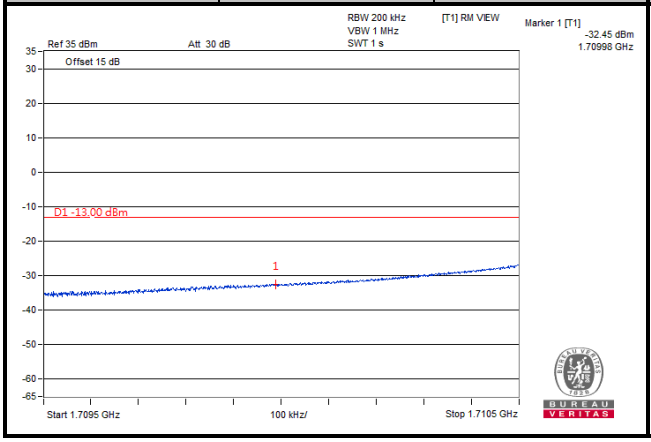
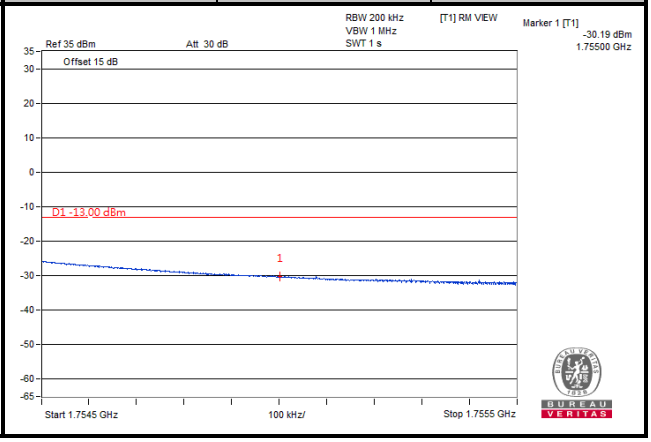
LTE Band 4					
Channel Bandwidth: 1.4 MHz					
Channel	19957	1 RB	Channel	20393	1 RB
					
Channel	19957	6 RB	Channel	20393	6 RB
					

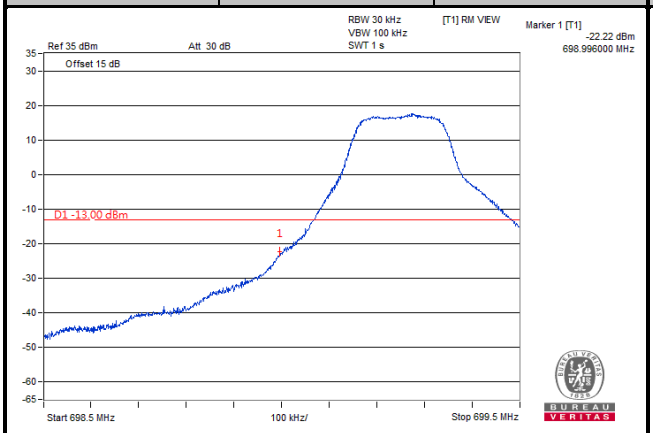
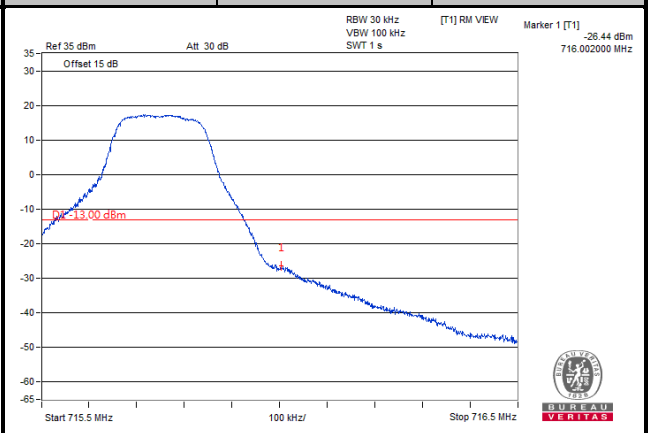
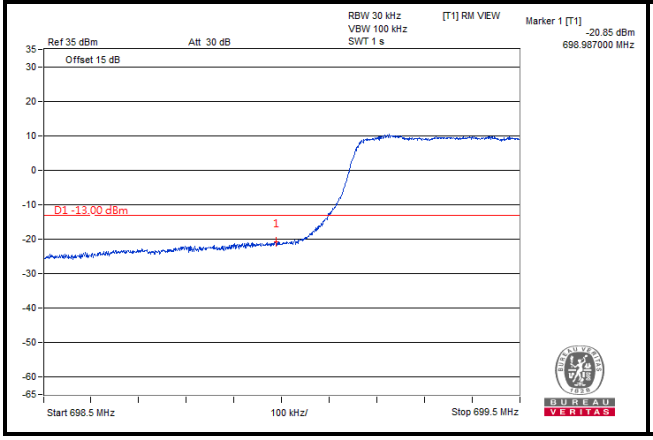
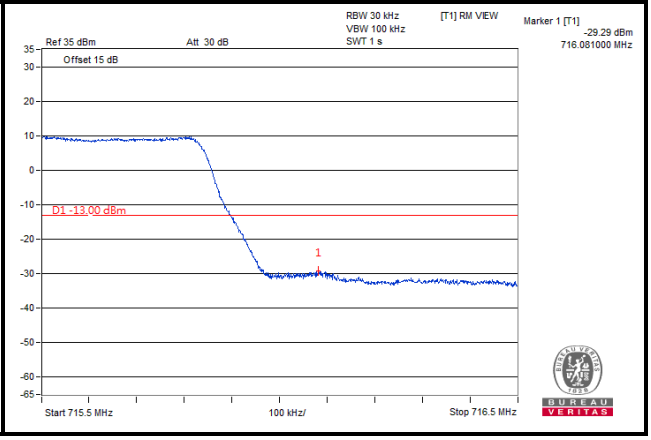
LTE Band 4					
Channel Bandwidth: 3 MHz					
Channel	19965	1 RB	Channel	20385	1 RB
					
Channel	19965	15 RB	Channel	20385	15 RB
					

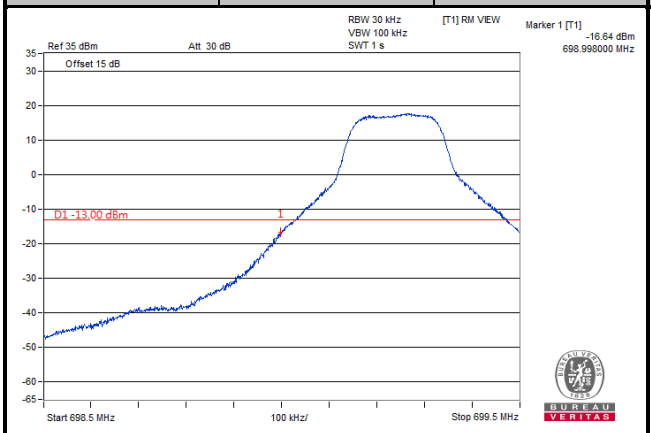
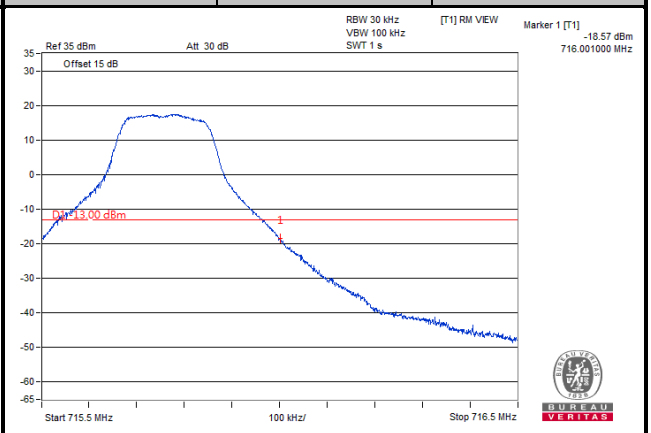
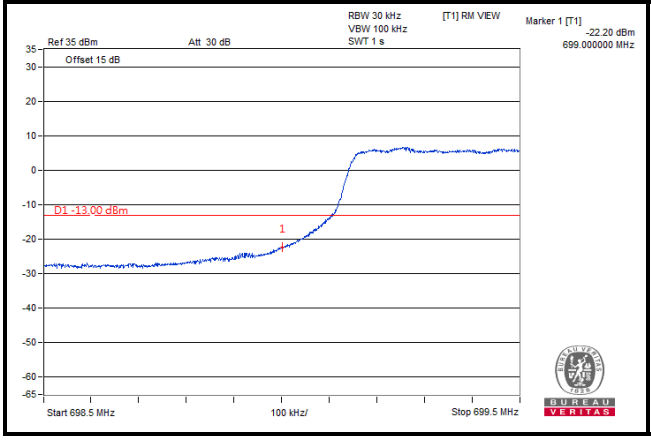
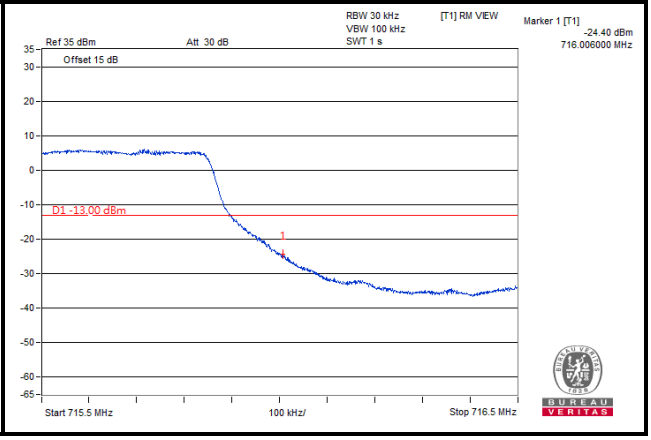
LTE Band 4					
Channel Bandwidth: 5 MHz					
Channel	19975	1 RB	Channel	20375	1 RB
					
Channel	19975	25 RB	Channel	20375	25 RB
					

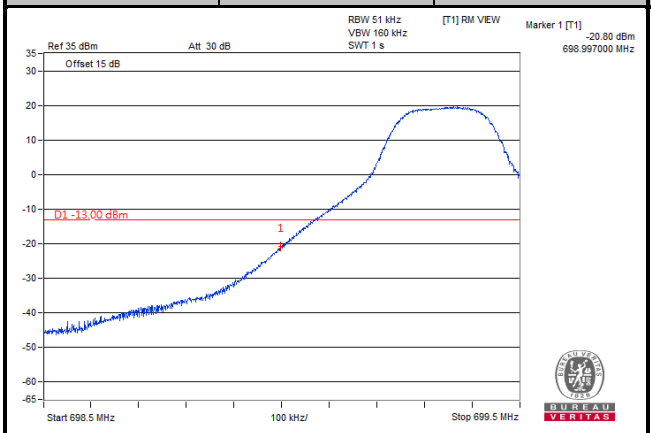
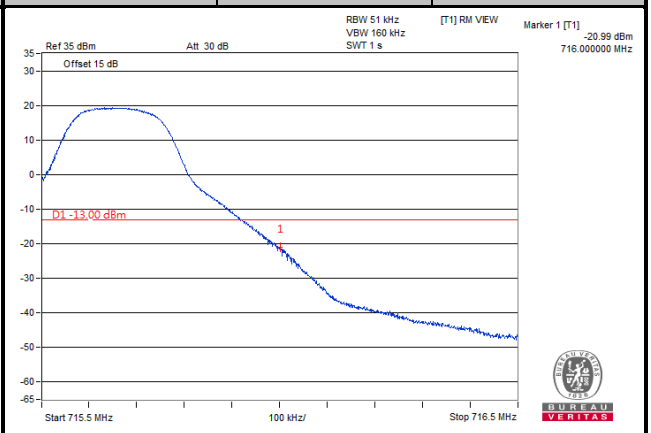
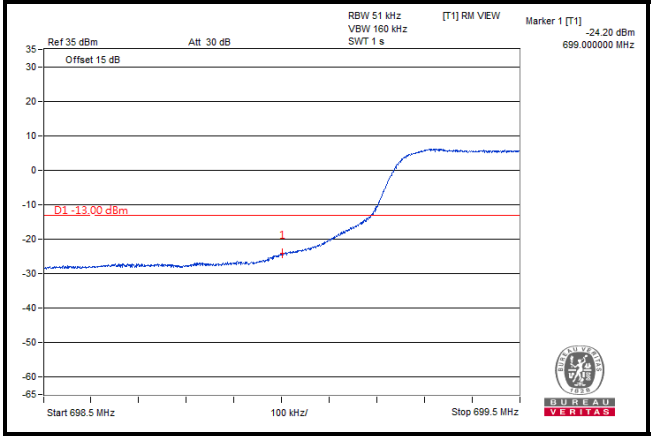
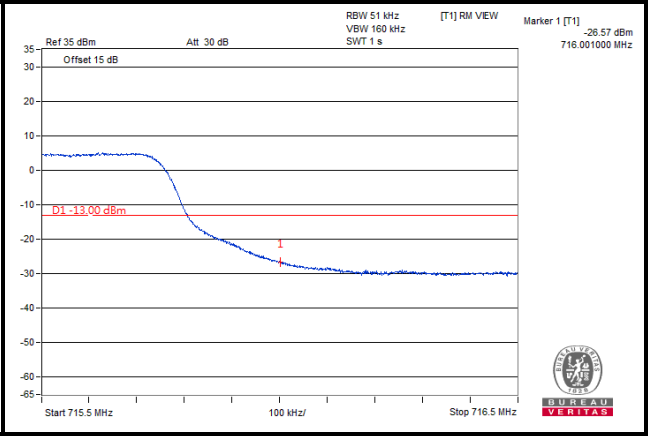
LTE Band 4					
Channel Bandwidth: 10 MHz					
Channel	20000	1 RB	Channel	20350	1 RB
					
Channel	20000	50 RB	Channel	20350	50 RB
					

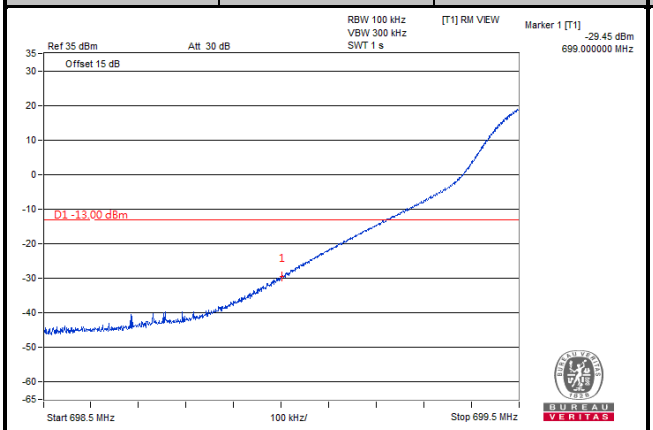
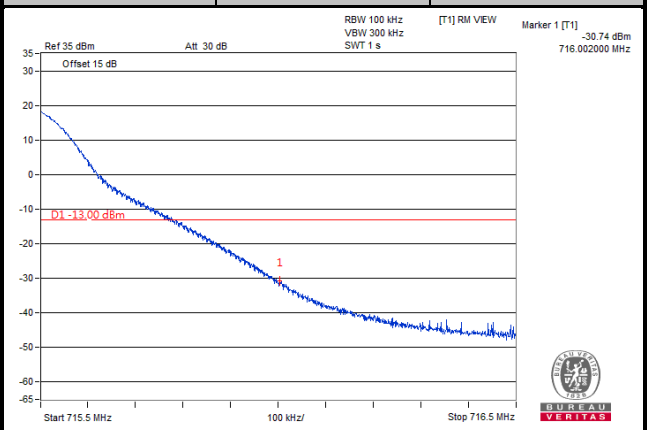
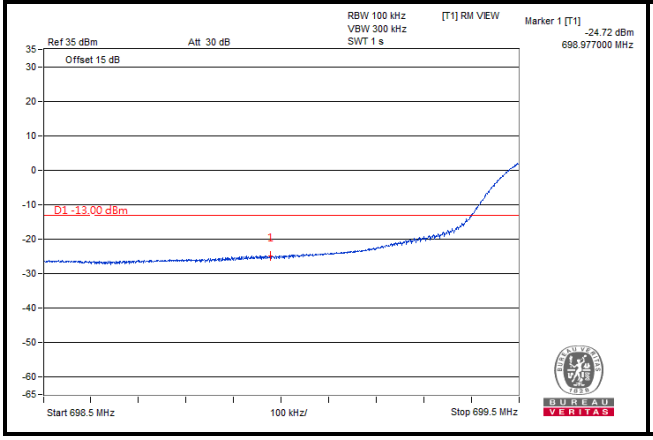
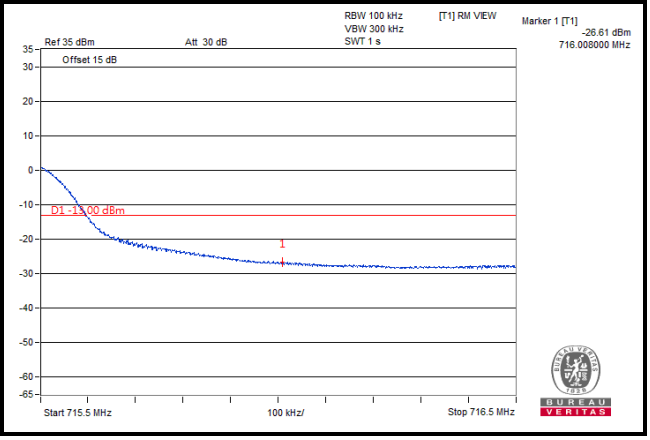
LTE Band 4					
Channel Bandwidth: 15 MHz					
Channel	20025	1 RB	Channel	20325	1 RB
					
Channel	20025	75 RB	Channel	20325	75 RB
					

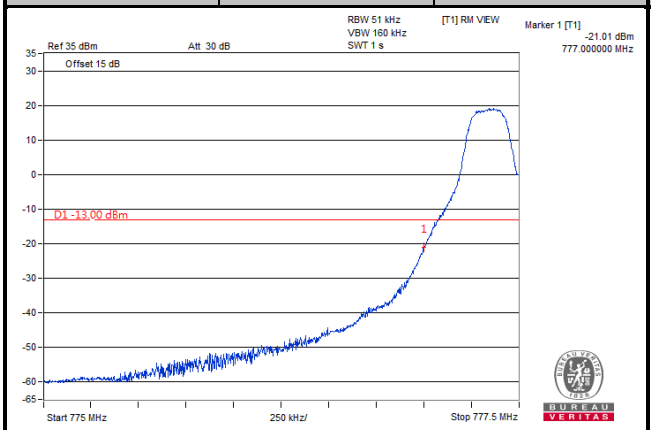
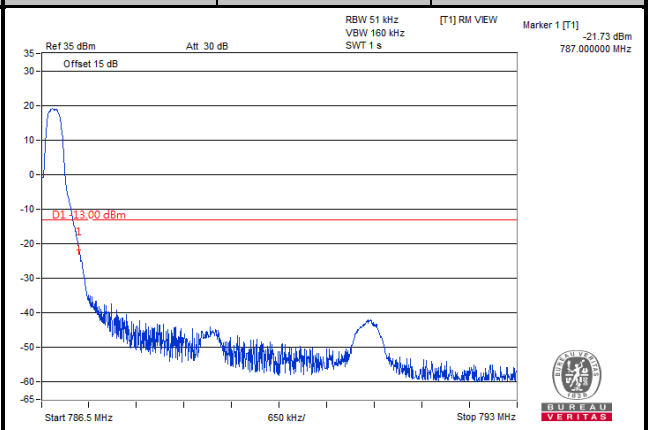
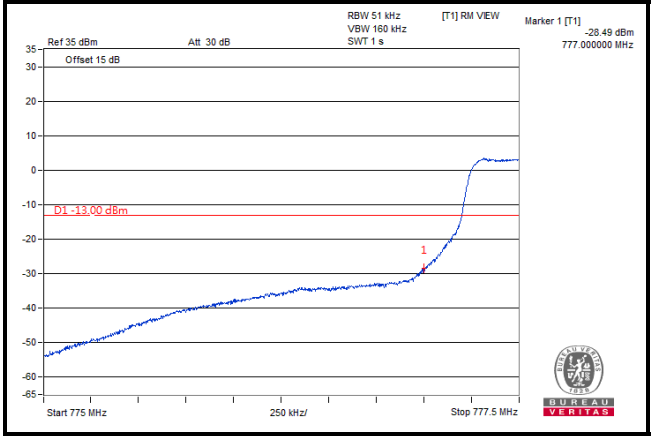
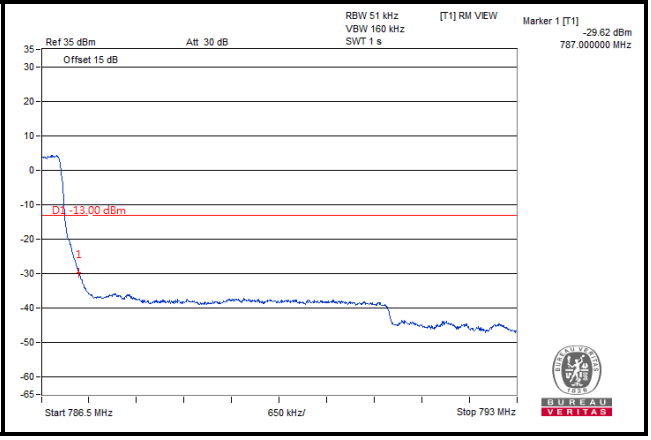
LTE Band 4					
Channel Bandwidth: 20 MHz					
Channel	20050	1 RB	Channel	20300	1 RB
					
Channel	20050	100 RB	Channel	20300	100 RB
					

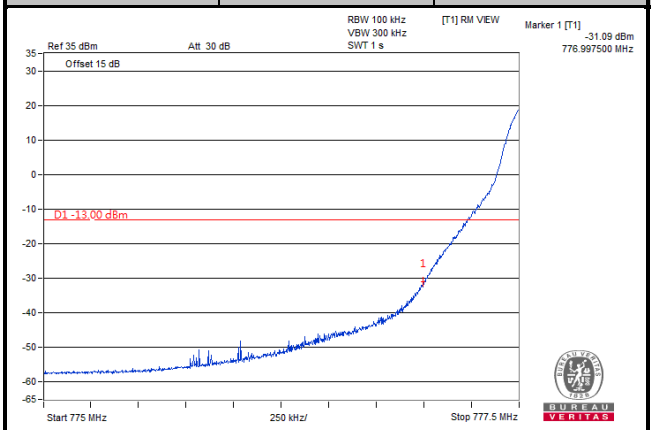
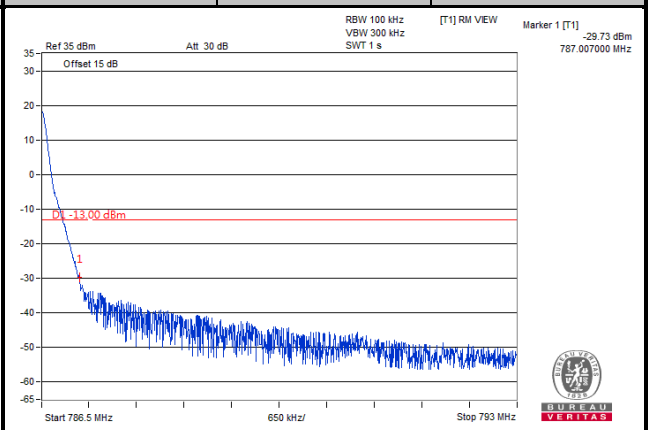
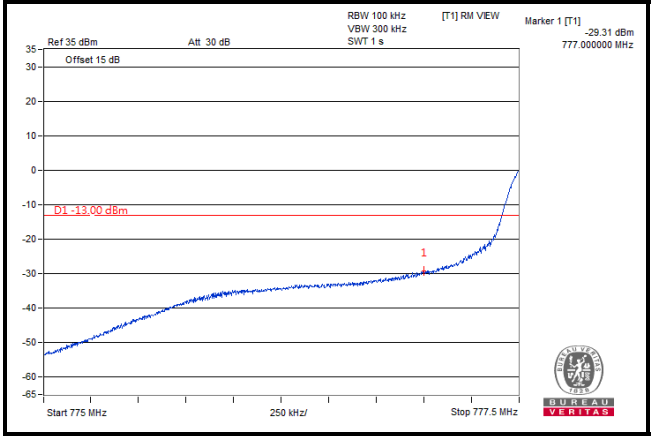
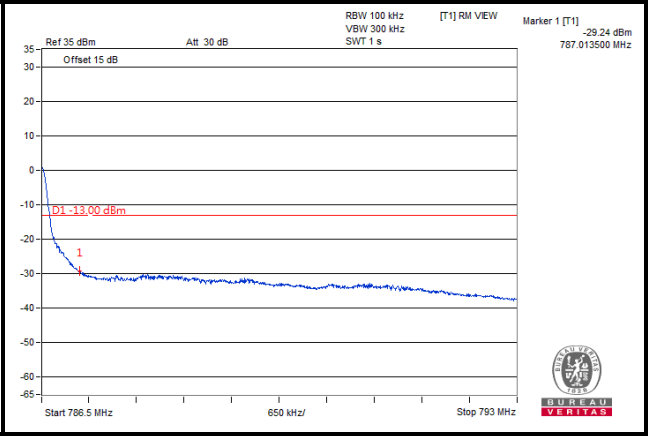
LTE Band 12					
Channel Bandwidth: 1.4 MHz					
Channel	23017	1 RB	Channel	23173	1 RB
					
Channel	23017	6 RB	Channel	23173	6 RB
					

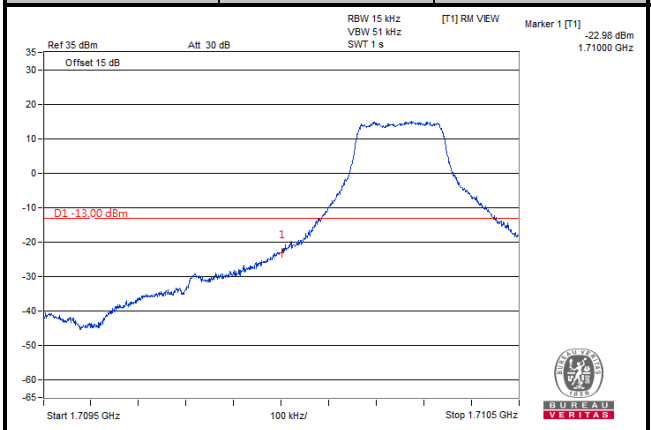
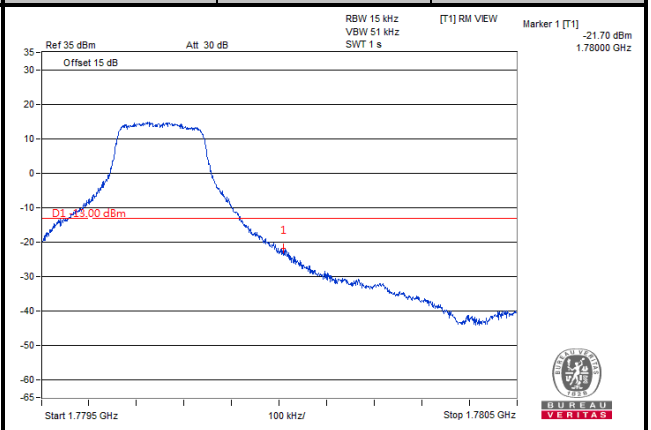
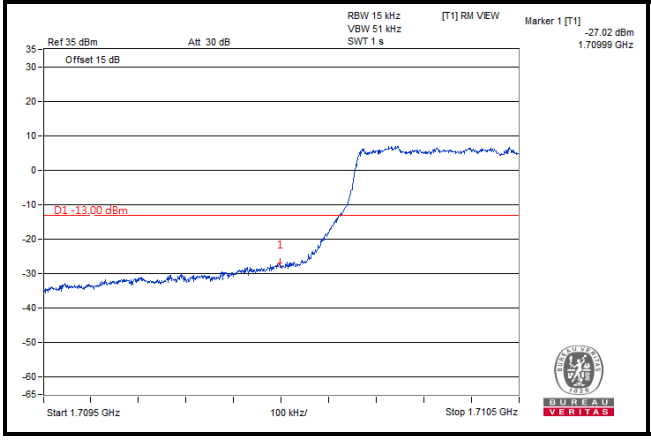
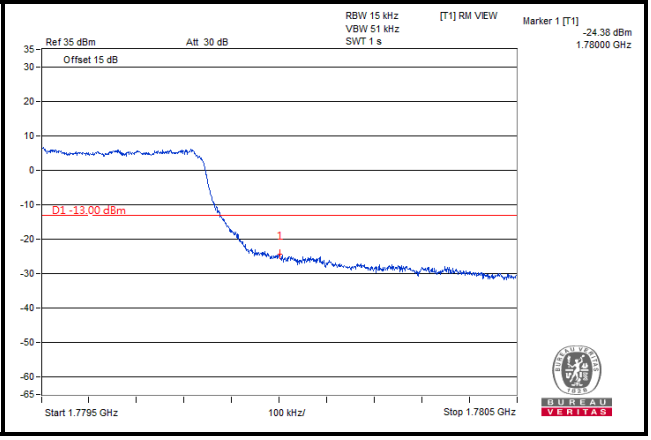
LTE Band 12					
Channel Bandwidth: 3 MHz					
Channel	23025	1 RB	Channel	23165	1 RB
					
Channel	23025	15 RB	Channel	23165	15 RB
					

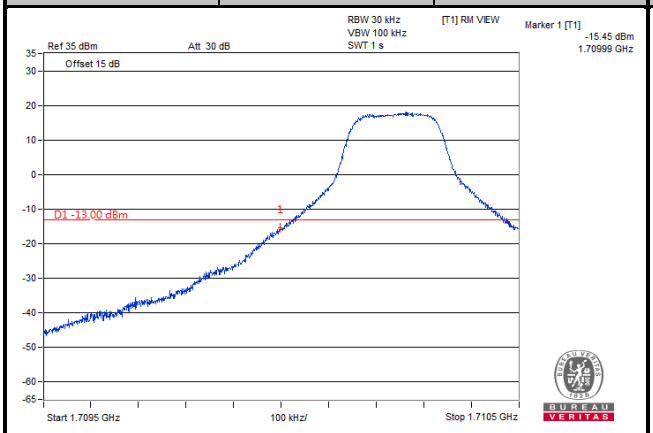
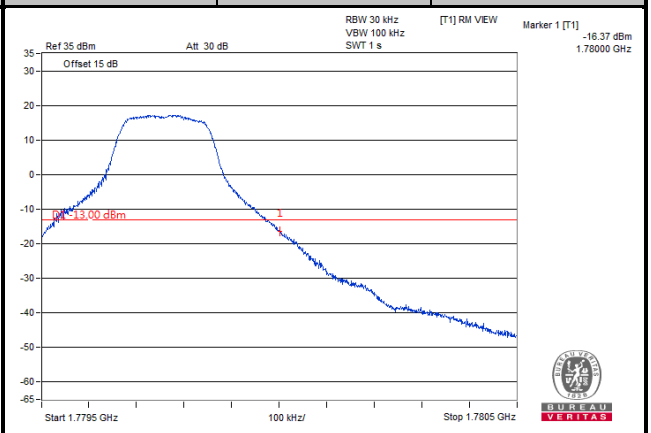
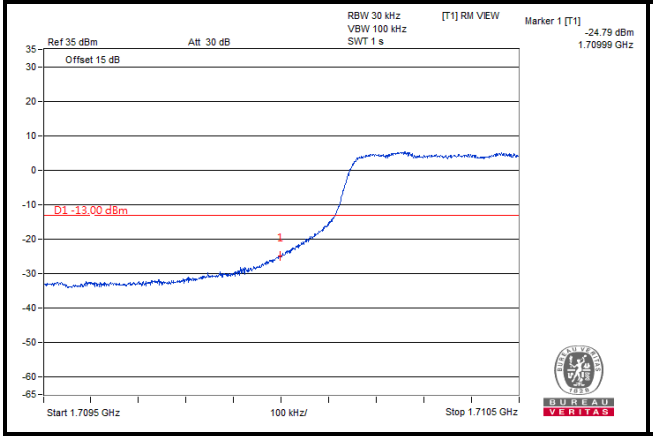
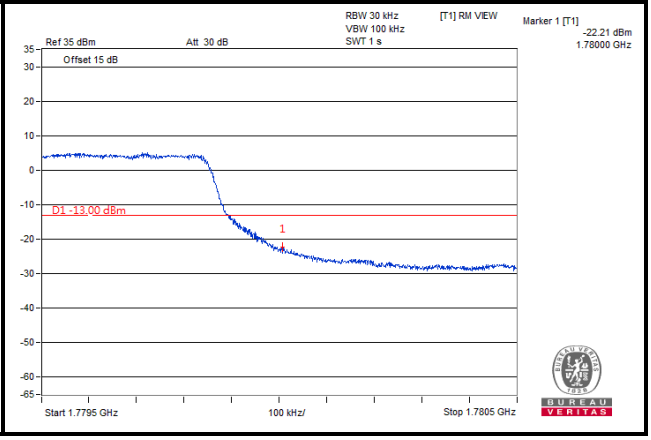
LTE Band 12					
Channel Bandwidth: 5 MHz					
Channel	23035	1 RB	Channel	23155	1 RB
					
Channel	23035	25 RB	Channel	23155	25 RB
					

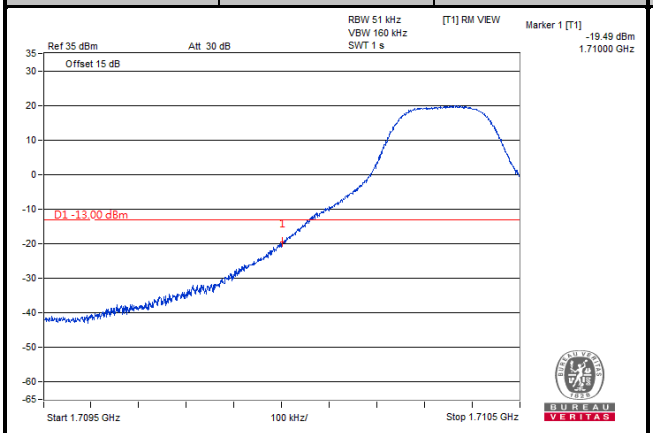
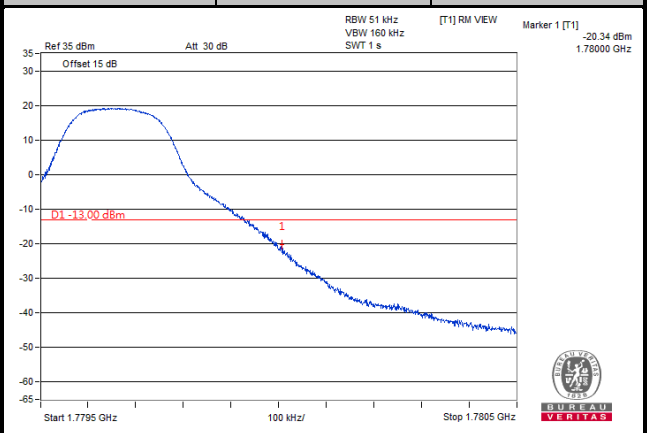
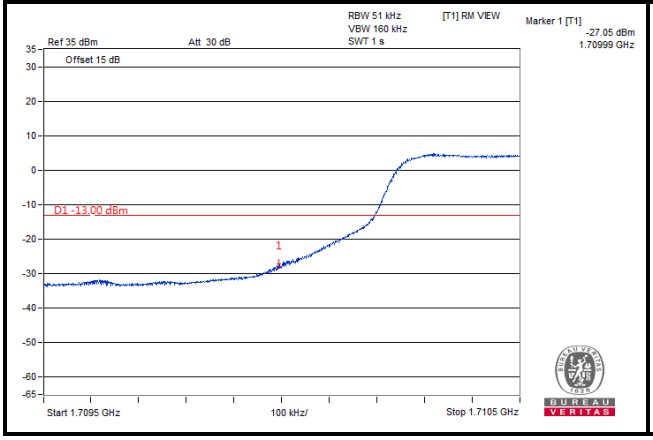
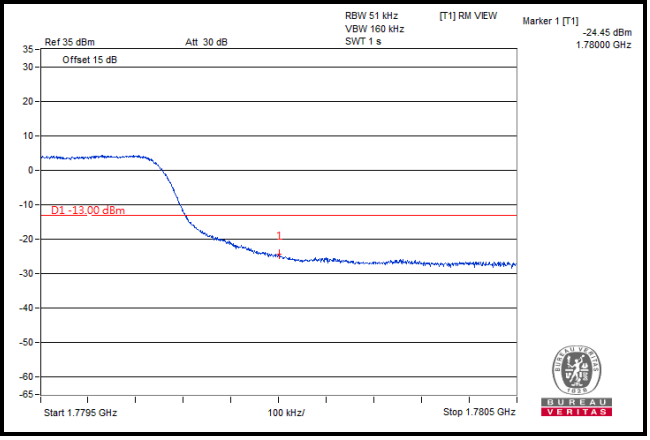
LTE Band 12					
Channel Bandwidth: 10 MHz					
Channel	23060	1 RB	Channel	23130	1 RB
					
Channel	23060	50 RB	Channel	23130	50 RB
					

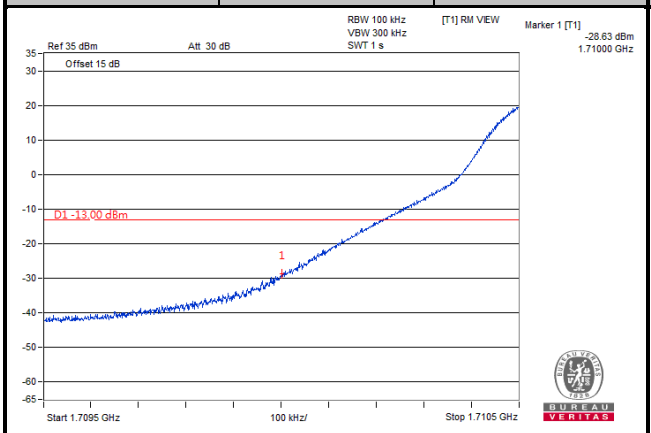
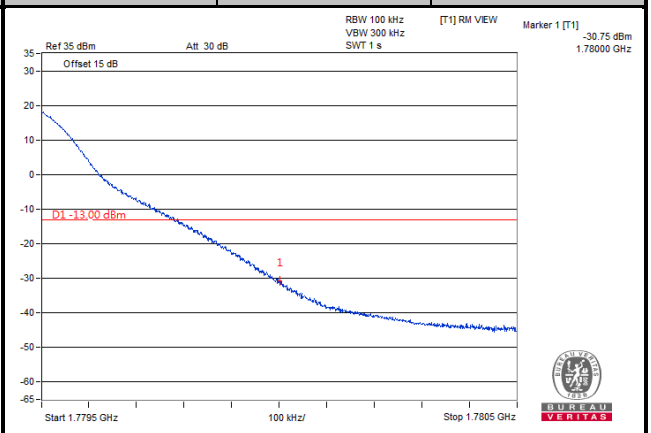
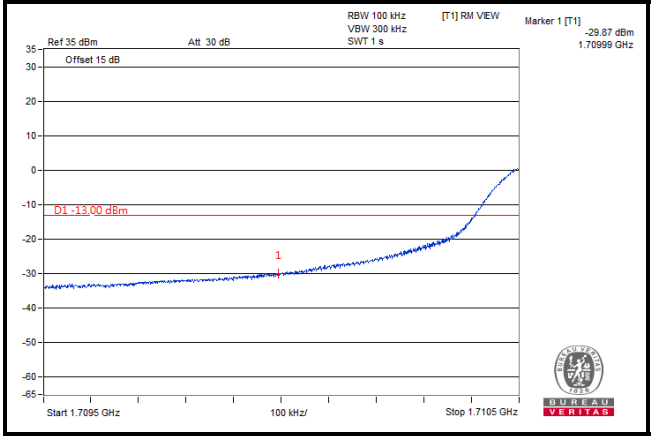
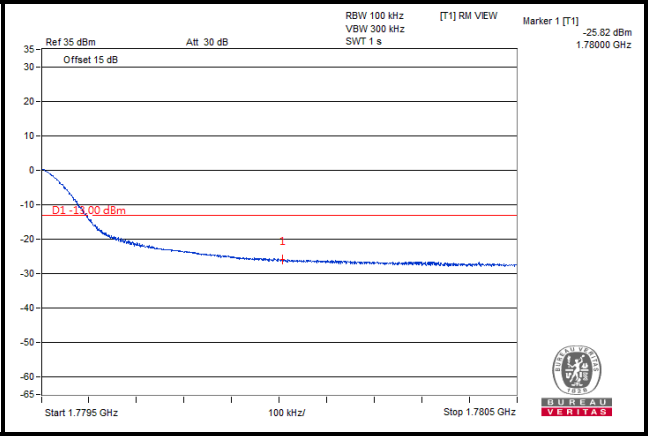
LTE Band 13					
Channel Bandwidth: 5 MHz					
Channel	23205	1 RB	Channel	23255	1 RB
					
Channel	23205	25 RB	Channel	23255	25 RB
					

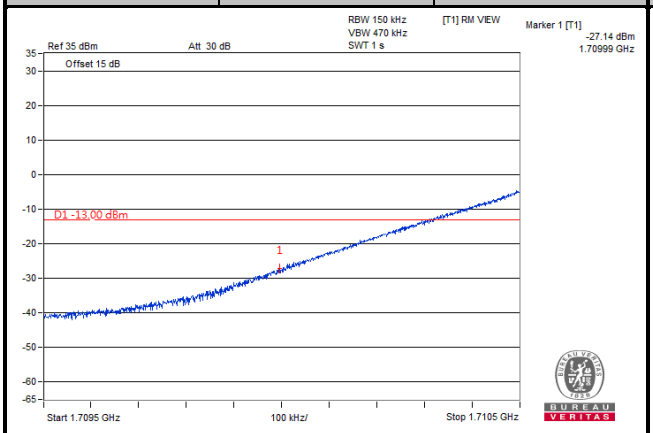
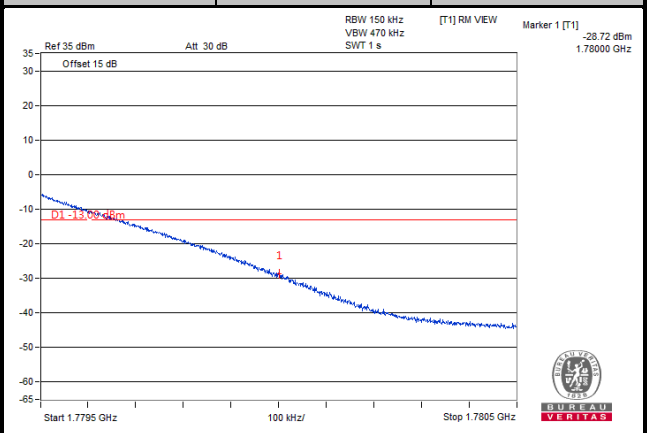
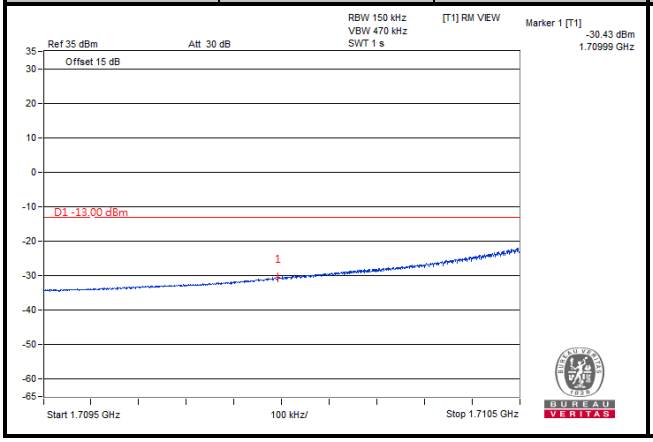
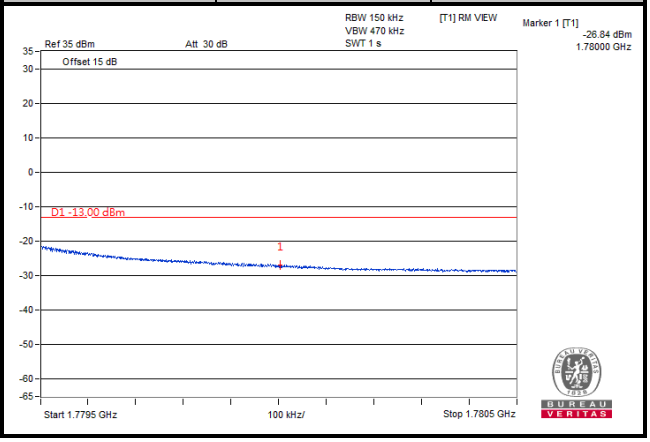
LTE Band 13					
Channel Bandwidth: 10 MHz					
Channel	23230	1 RB	Channel	23230	1 RB
					
Channel	23230	50 RB	Channel	23230	50 RB
					

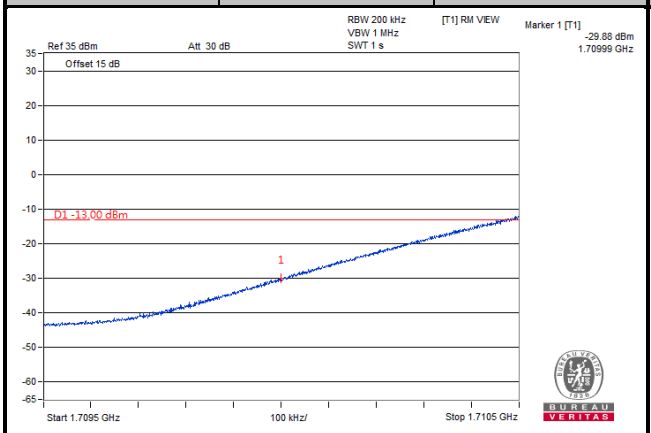
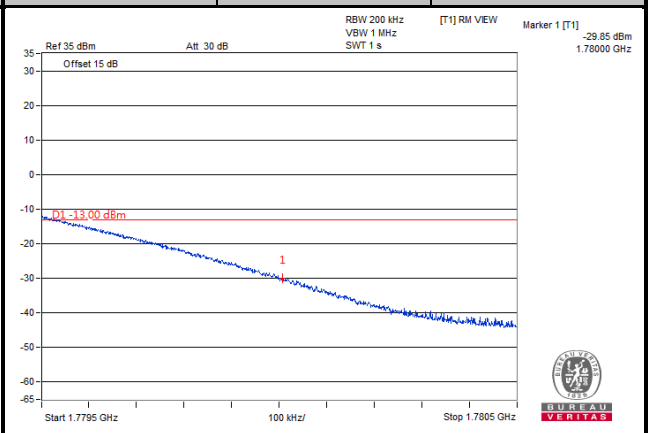
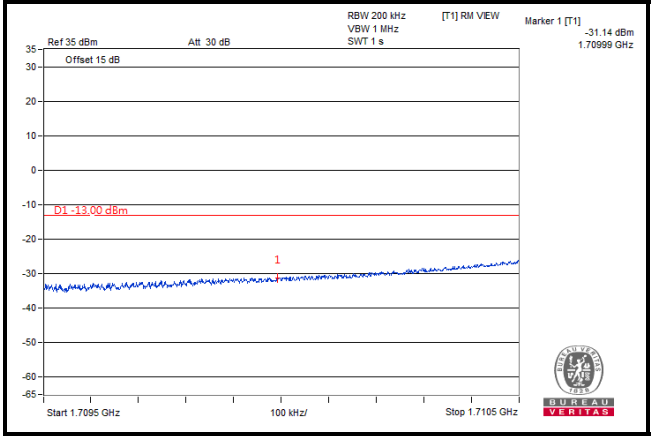
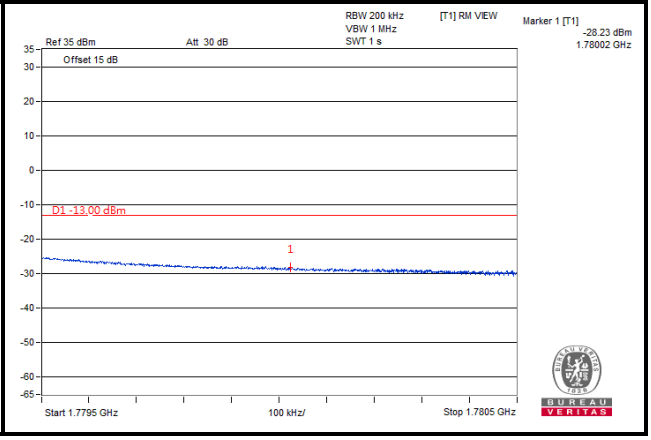
LTE Band 66					
Channel Bandwidth: 1.4 MHz					
Channel	131979	6 RB	Channel	132665	6 RB
					
Channel	131979	25 RB	Channel	132665	25 RB
					

LTE Band 66					
Channel Bandwidth: 3 MHz					
Channel	131987	1 RB	Channel	132657	1 RB
					
Channel	131987	15 RB	Channel	132657	15 RB
					

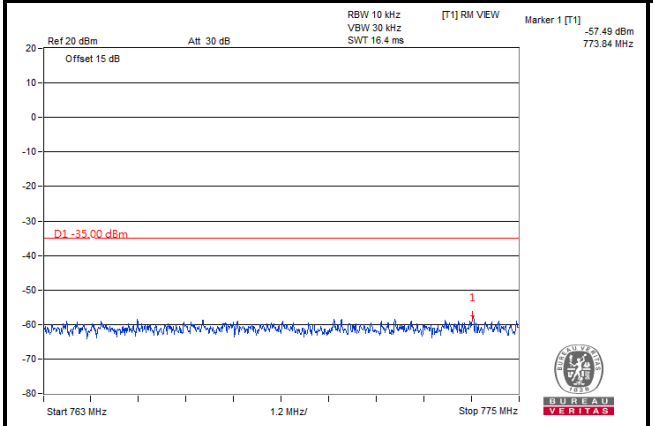
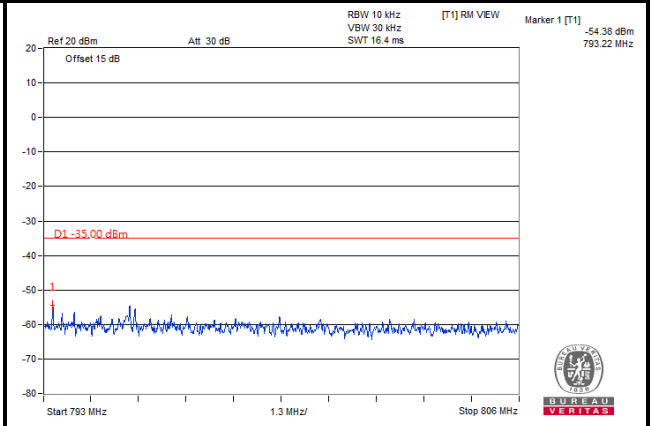
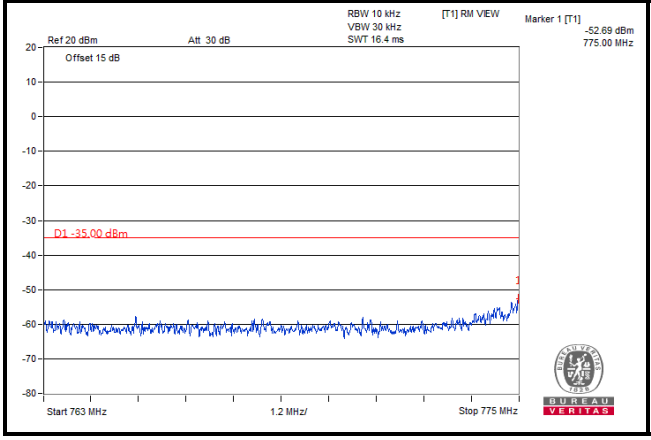
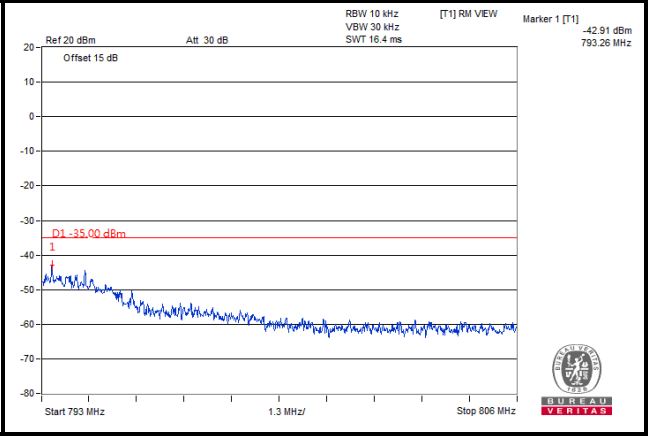
LTE Band 66					
Channel Bandwidth: 5 MHz					
Channel	131997	1 RB	Channel	132647	1 RB
					
Channel	131997	25 RB	Channel	132647	25 RB
					

LTE Band 66					
Channel Bandwidth: 10 MHz					
Channel	132022	1 RB	Channel	132622	1 RB
					
Channel	132022	50 RB	Channel	132622	50 RB
					

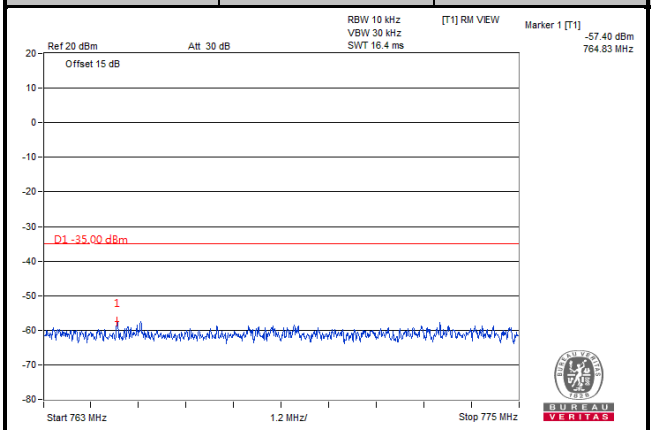
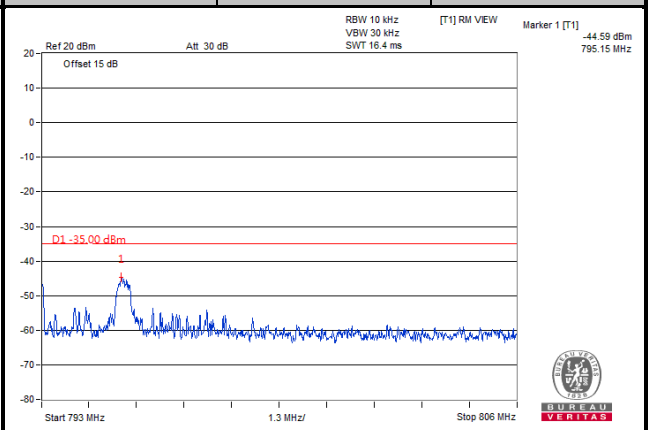
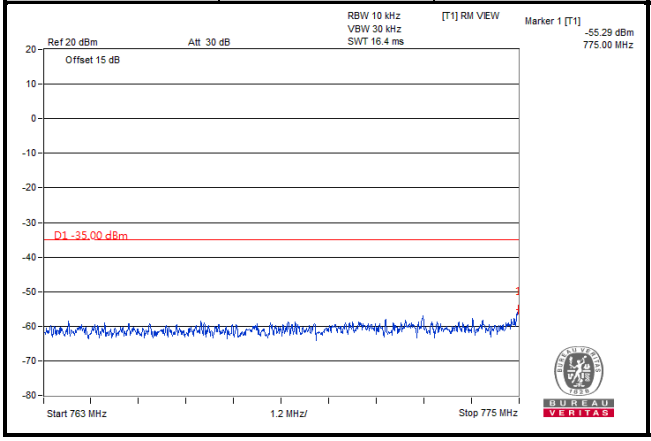
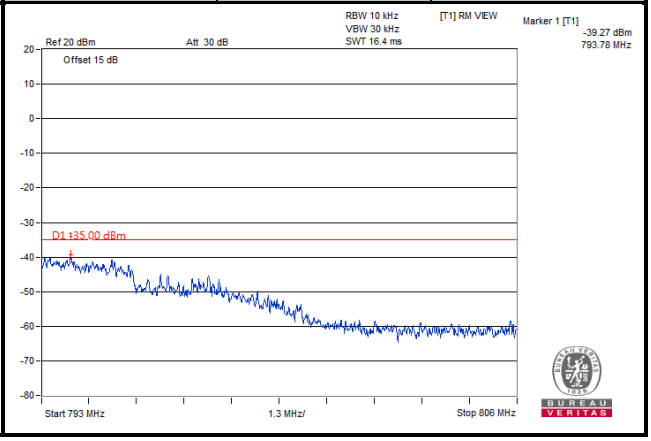
LTE Band 66					
Channel Bandwidth: 15 MHz					
Channel	132047	1 RB	Channel	132597	1 RB
					
Channel	132047	75 RB	Channel	132597	75 RB
					

LTE Band 66					
Channel Bandwidth: 20 MHz					
Channel	132072	1 RB	Channel	132572	1 RB
					
Channel	132072	100 RB	Channel	132572	100 RB
					

Emission Mask

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

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

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

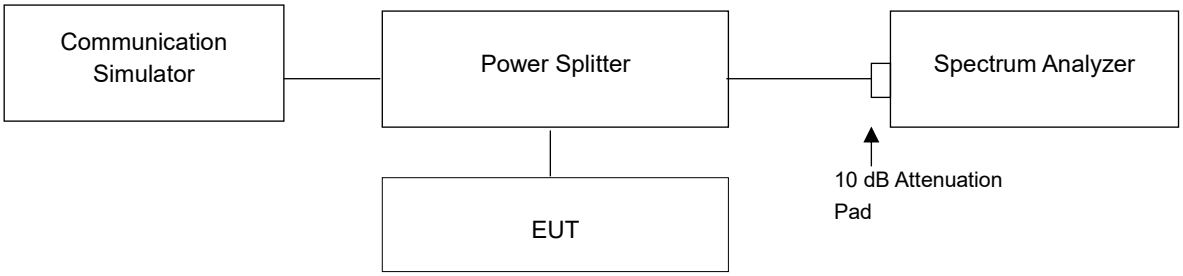
For the 763 - 775 MHz and 793 - 805 MHz band, the FCC limit is 65+10log(P[watt]) in a 6.25 kHz bandwidth. Since it was not possible to set the resolution bandwidth to 6.25 kHz with the available equipment, a bandwidth of 10 kHz was used instead to show compliance, and the correction factor is compensated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

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

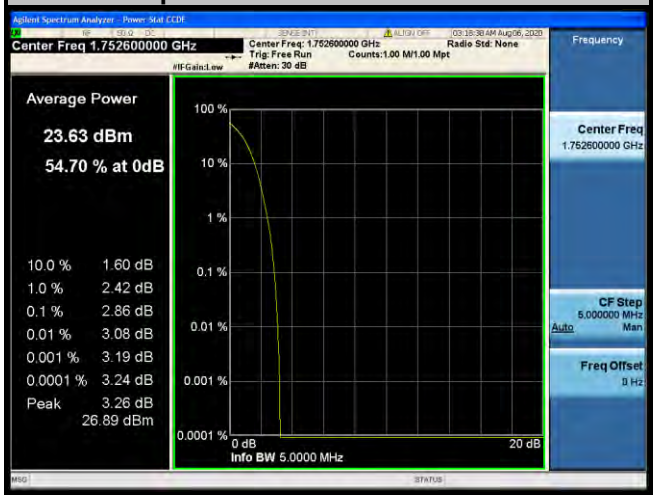


4.6.3 Test Procedures

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

WCDMA		
Channel	**Frequency (MHz)**	**Peak to Average Ratio (dB)**
1312	1712.4	2.79
1413	1732.6	2.59
1513	1752.6	2.86

Spectrum Plot of Worst Value


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	3.63	4.41	19965	1711.5	3.42	4.20
20175	1732.5	3.44	4.20	20175	1732.5	3.22	4.02
20393	1754.3	3.80	4.54	20385	1753.5	3.55	4.36

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	3.30	4.13	20000	1715.0	3.25	3.99
20175	1732.5	3.24	4.00	20175	1732.5	3.32	4.01
20375	1752.5	3.40	4.16	20350	1750.0	3.37	3.97

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

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	3.29	3.91	20050	1720.0	3.32	4.03
20175	1732.5	3.25	4.01	20175	1732.5	3.45	4.18
20325	1747.5	3.13	3.85	20300	1745.0	3.18	3.86

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	3.23	3.68	23025	700.5	3.05	3.52
23095	707.5	3.81	4.50	23095	707.5	3.67	4.40
23173	715.3	3.77	4.26	23165	714.5	3.41	4.01

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	3.03	3.46	23060	704.0	3.05	3.52
23095	707.5	3.70	4.38	23095	707.5	3.54	4.15
23155	713.5	3.17	3.74	23130	711.0	3.53	4.40

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	3.32	4.09	23230	782.0	3.40	4.03
23230	782.0	3.31	4.14				
23255	784.5	3.35	4.09				

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

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	3.85	4.60	131987	1711.5	3.69	4.47
132322	1745.0	4.04	4.79	132322	1745.0	3.84	4.63
132665	1779.3	3.69	4.42	132657	1778.5	3.49	4.34

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	3.56	4.48	132022	1715.0	3.40	4.29
132322	1745.0	3.82	4.60	132322	1745.0	3.56	4.38
132647	1777.5	3.40	4.41	132622	1775.0	3.54	4.45

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	3.49	4.06	132072	1720.0	3.75	4.42
132322	1745.0	3.55	4.14	132322	1745.0	3.88	4.55
132597	1772.5	3.69	4.48	132572	1770.0	4.17	4.91

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

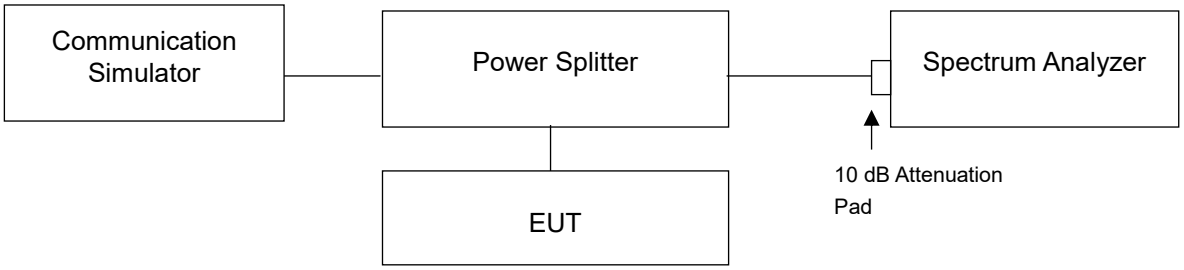
4.7 Conducted Spurious Emissions

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.

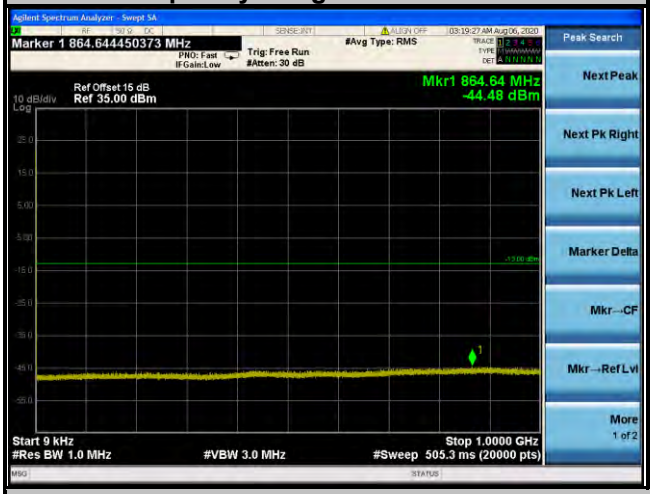
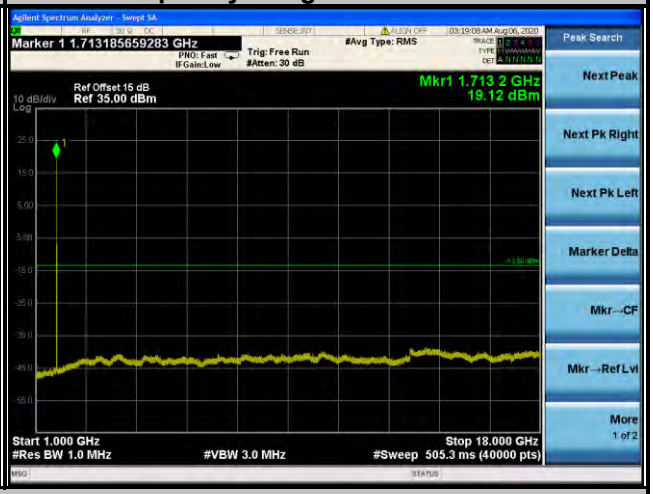
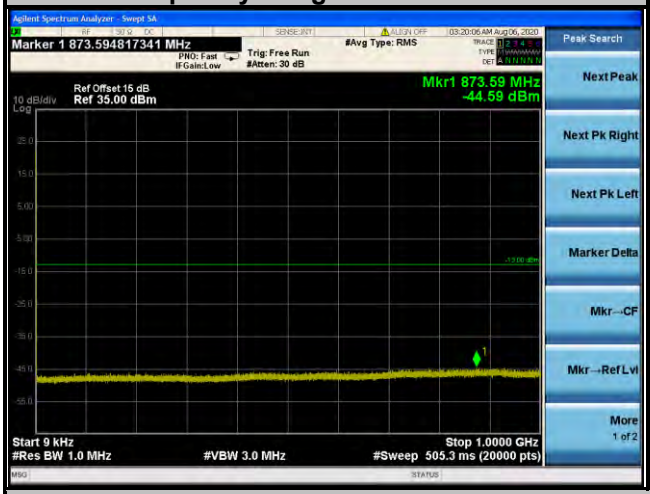
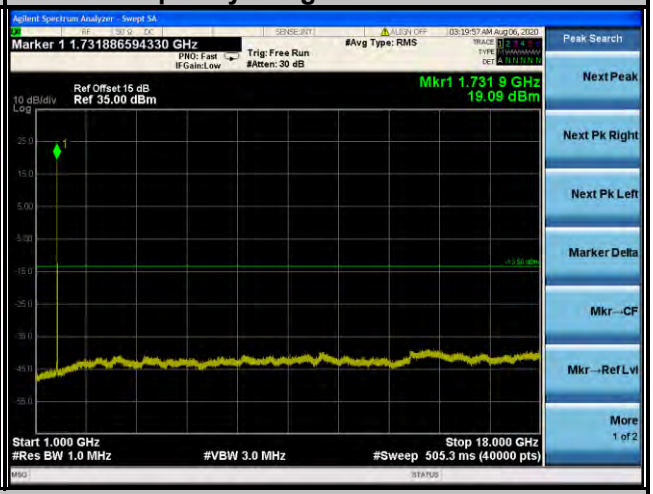
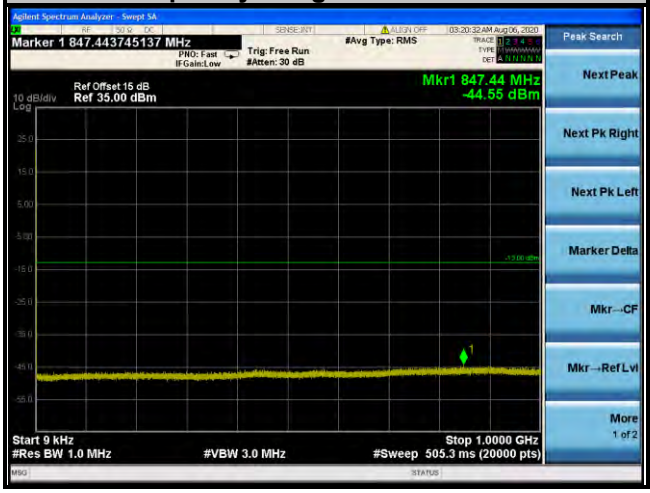
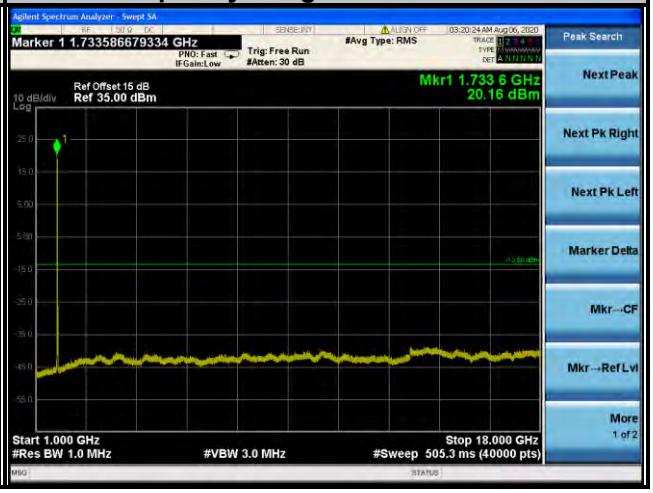
4.7.2 Test Setup



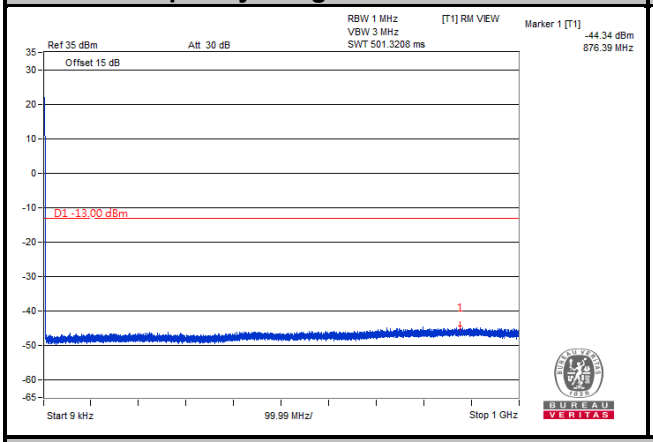
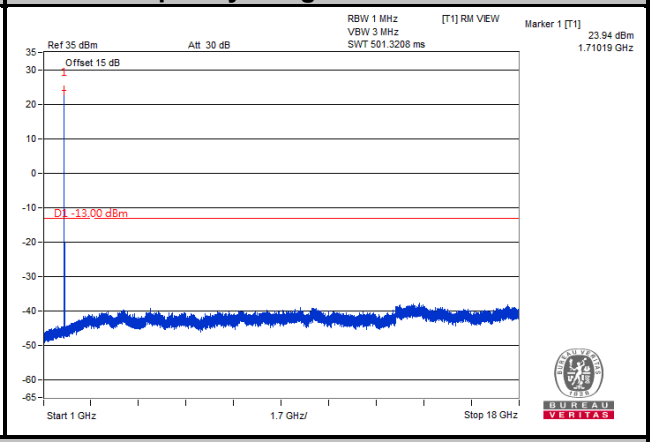
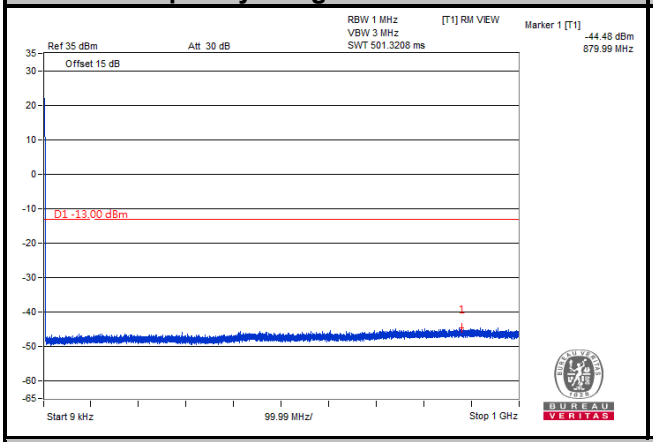
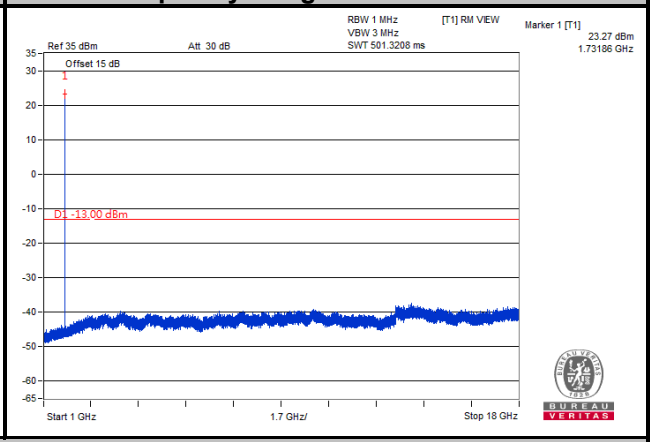
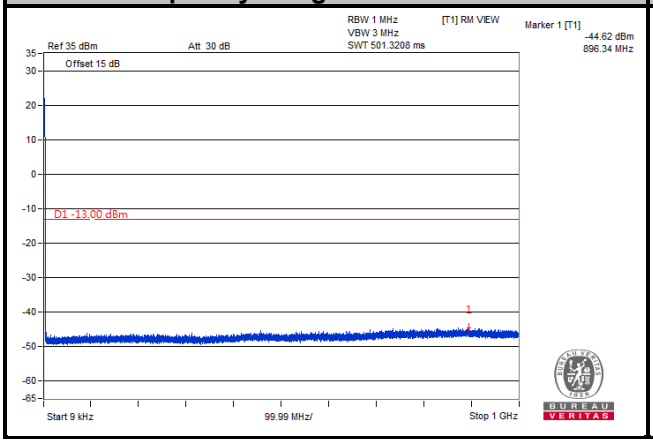
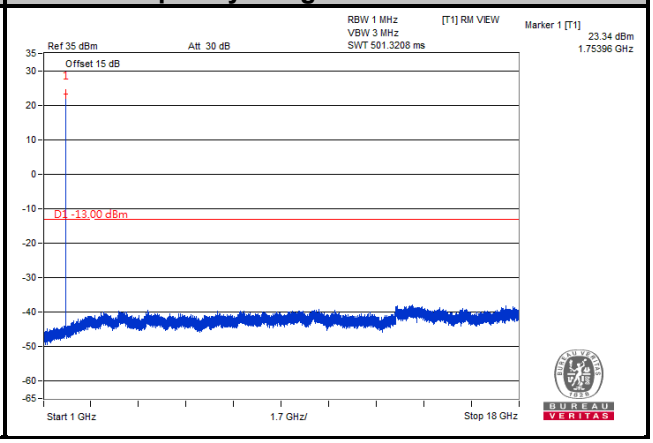
4.7.3 Test Procedure

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 = 1 MHz and VBW = 3 MHz for WCDMA 4/LTE 4/LTE 66, RBW = 100 kHz and VBW = 300 kHz for LTE 12/LTE 13 is used for 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.

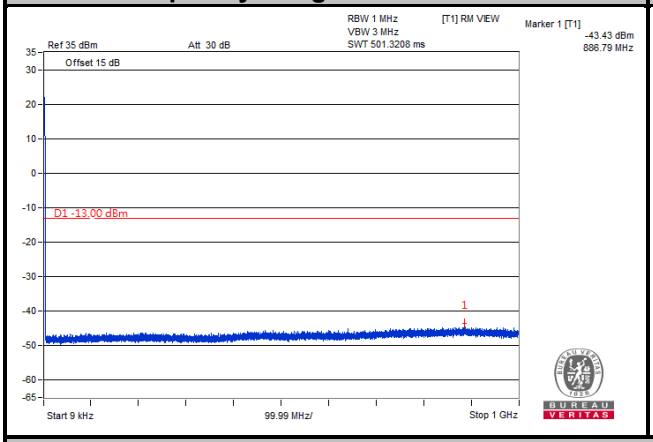
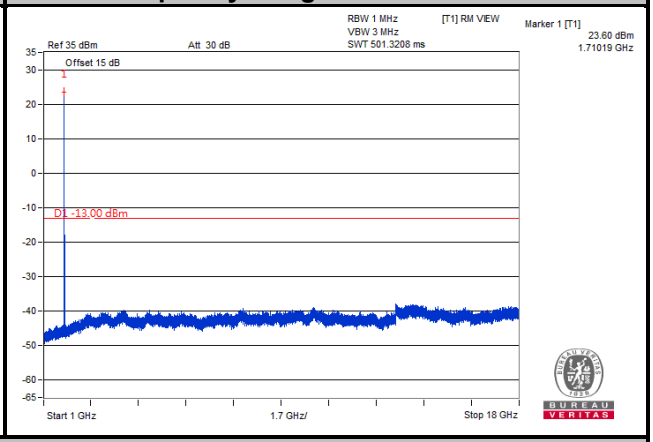
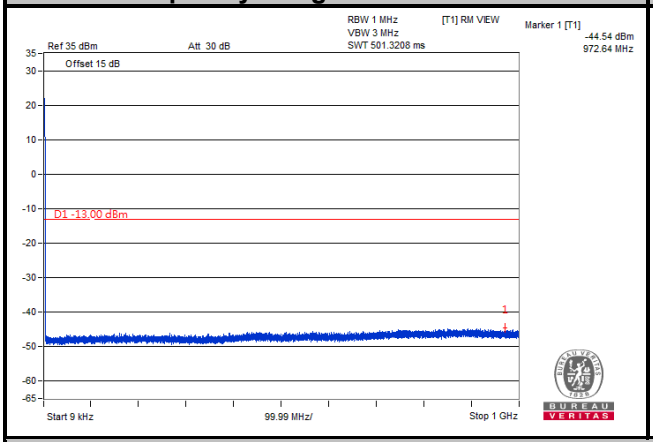
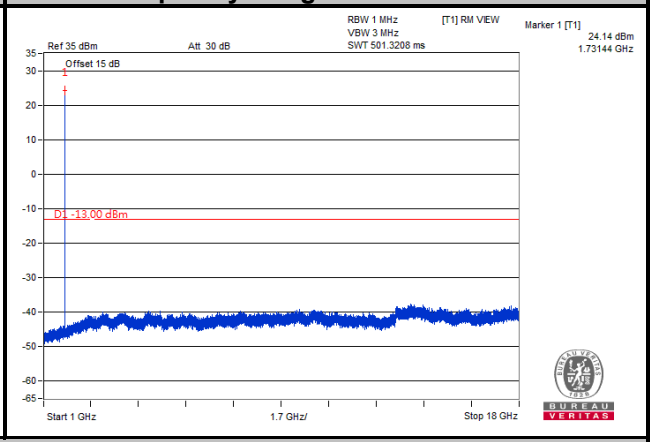
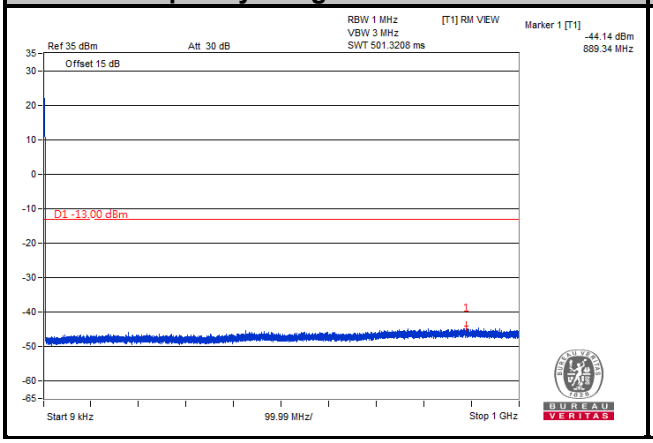
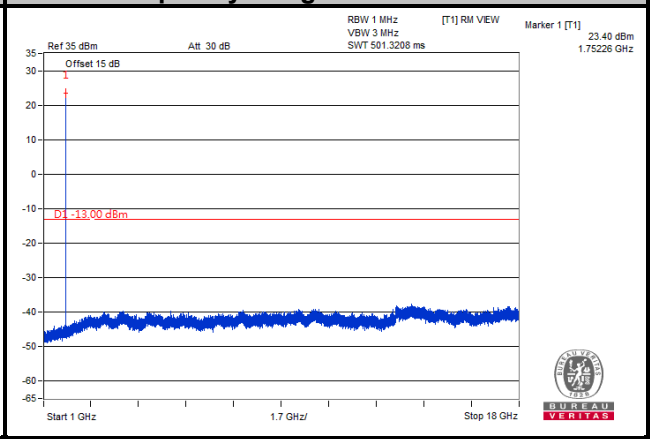
4.7.4 Test Results

WCDMA	
Channel 1312	
Frequency Range: 9 kHz ~ 1 GHz	Frequency Range: 1 GHz ~ 18 GHz
	
Channel 1413	
Frequency Range: 9 kHz ~ 1 GHz	Frequency Range: 1 GHz ~ 18 GHz
	
Channel 1513	
Frequency Range: 9 kHz ~ 1 GHz	Frequency Range: 1 GHz ~ 18 GHz
	

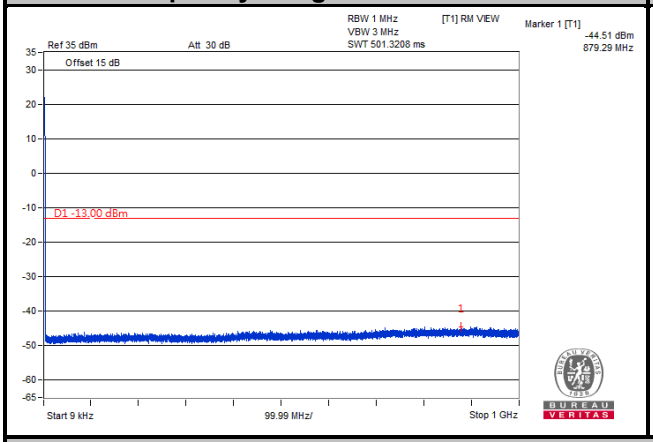
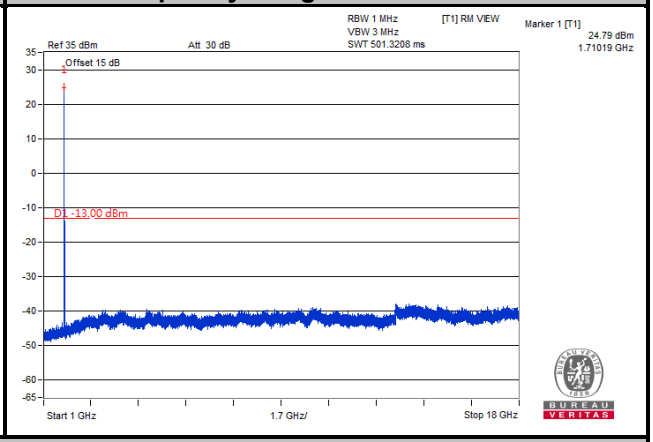
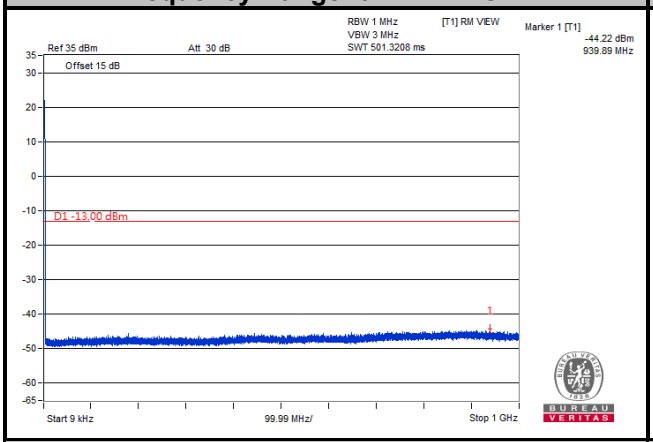
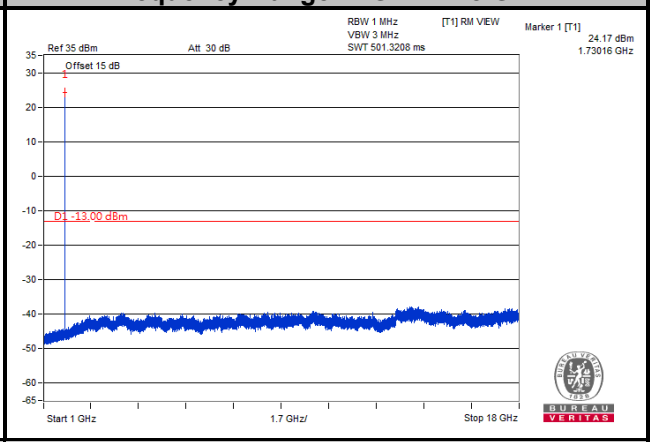
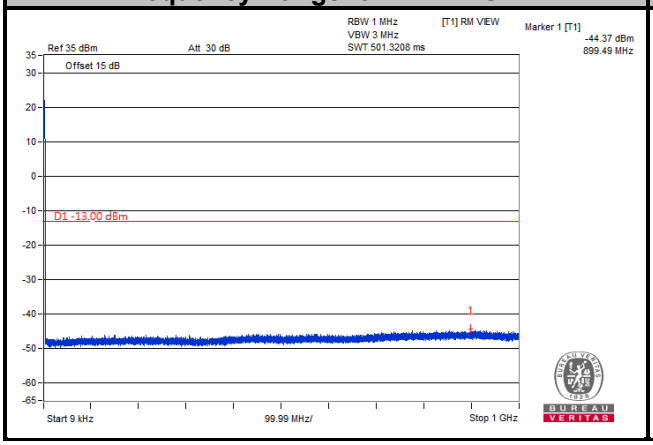
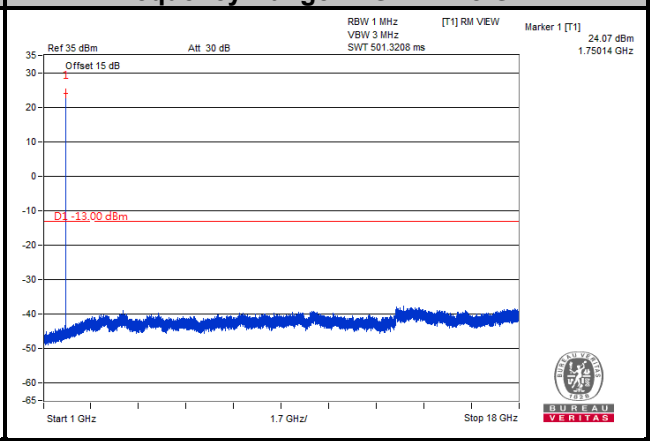
Note: The signal over the limit in 9 kHz is from spectrum analyzer.

LTE Band 4	
Channel Bandwidth: 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
	

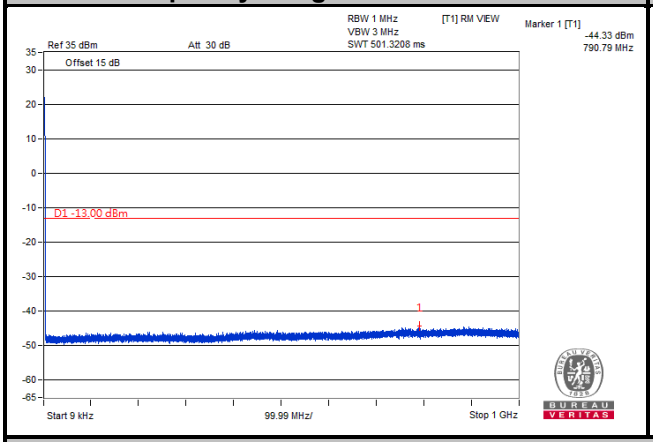
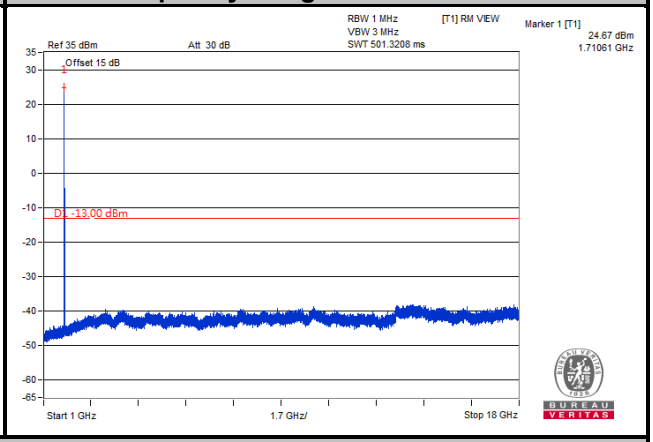
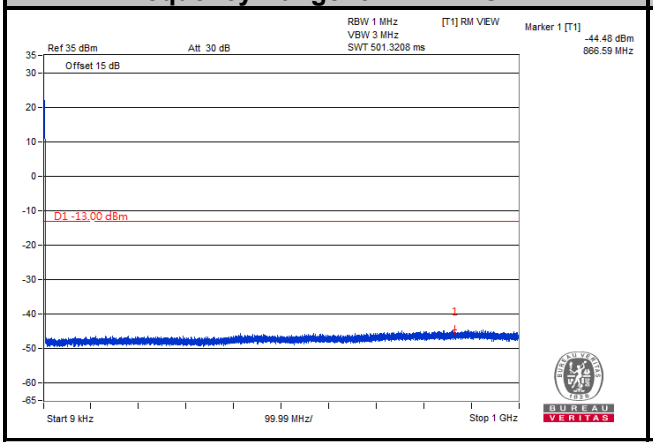
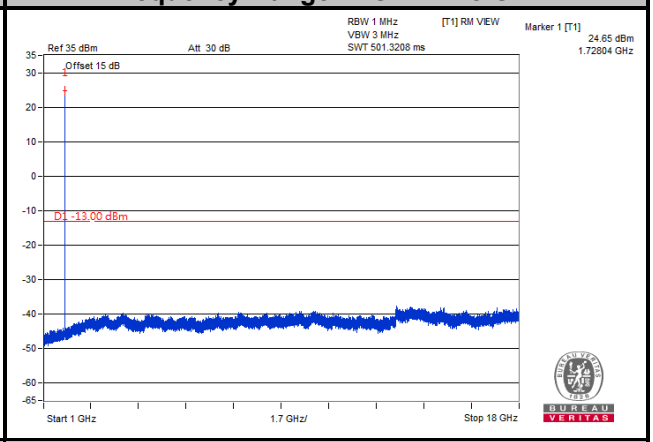
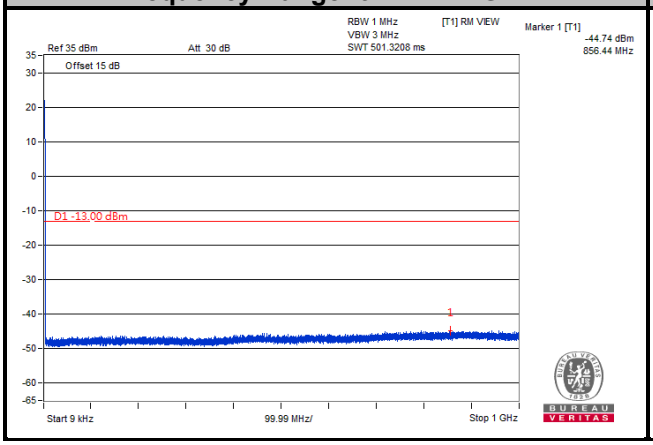
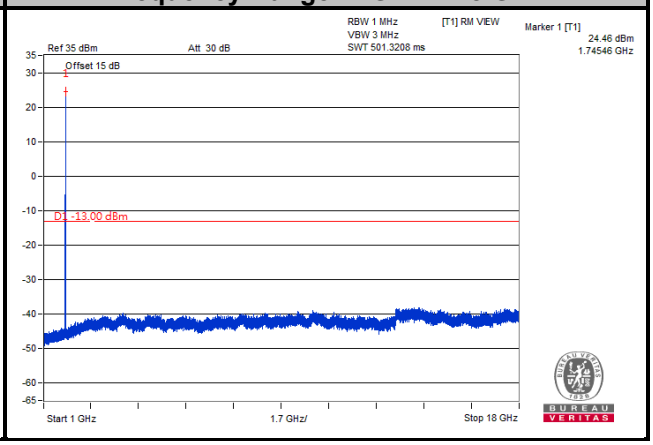
Note: The signal over the limit in 9 kHz is from spectrum analyzer.

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
	

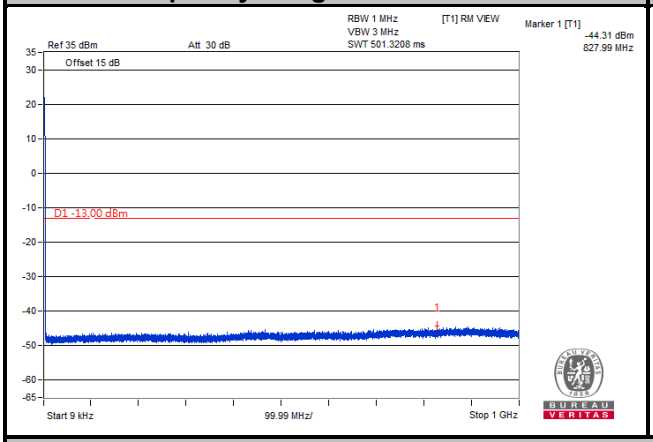
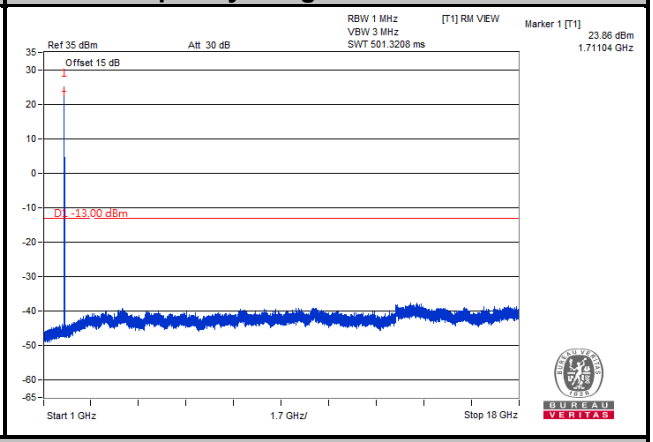
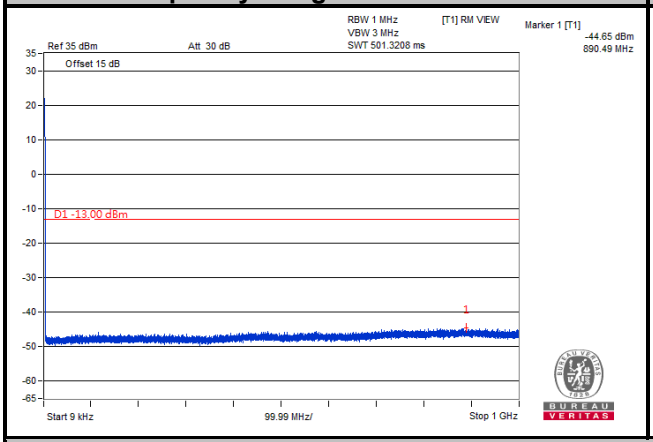
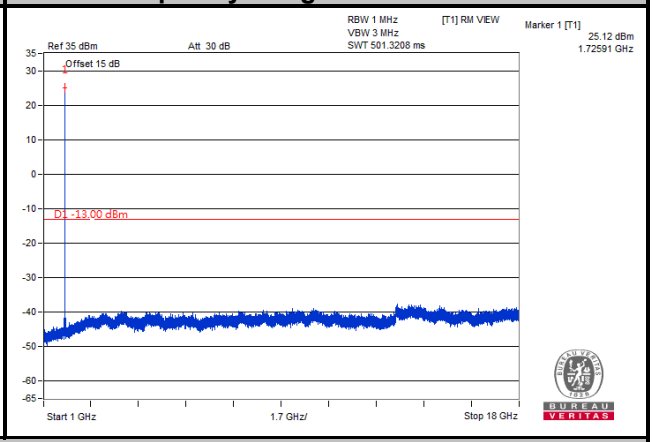
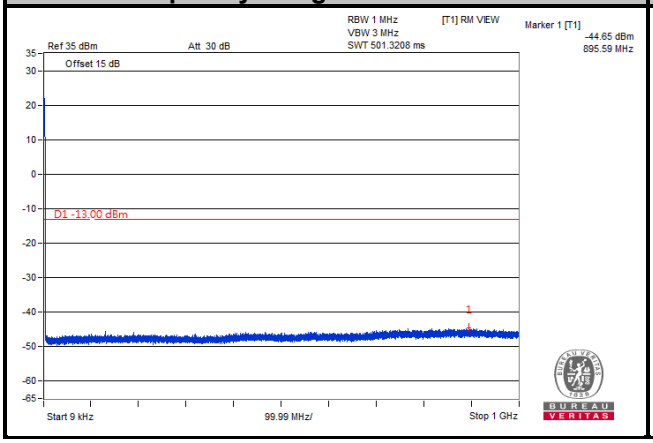
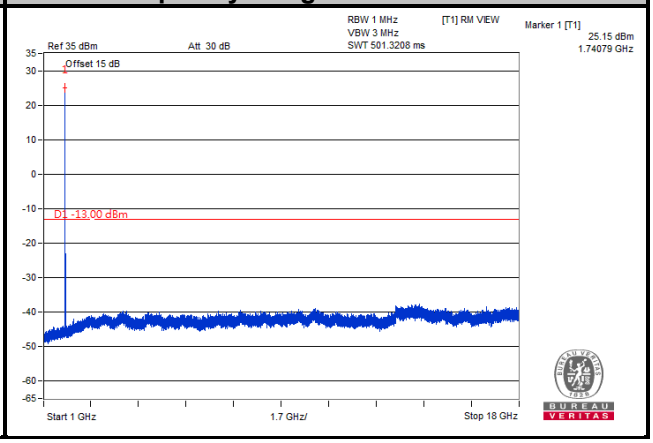
Note: The signal over the limit in 9 kHz is from spectrum analyzer.

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
	

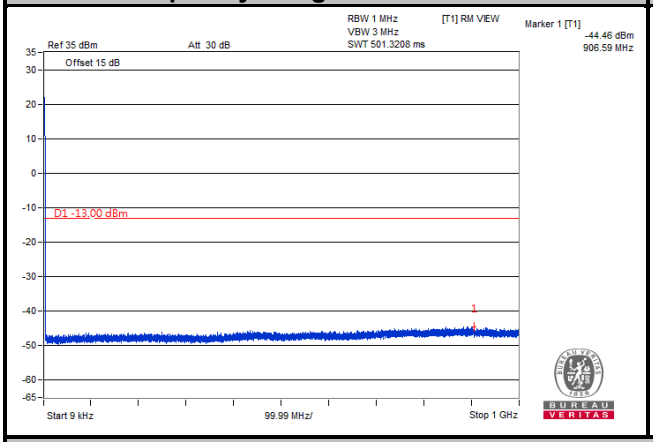
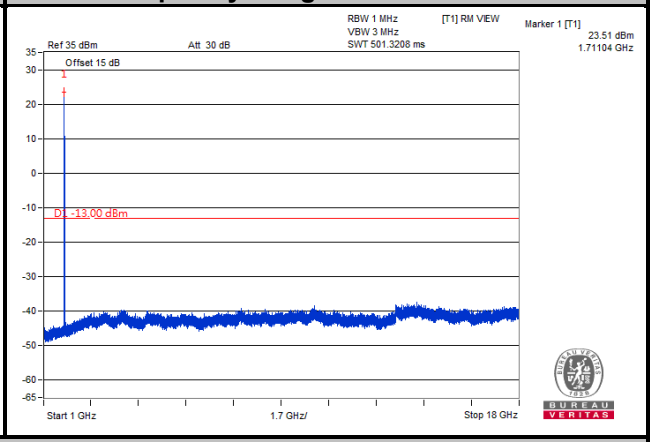
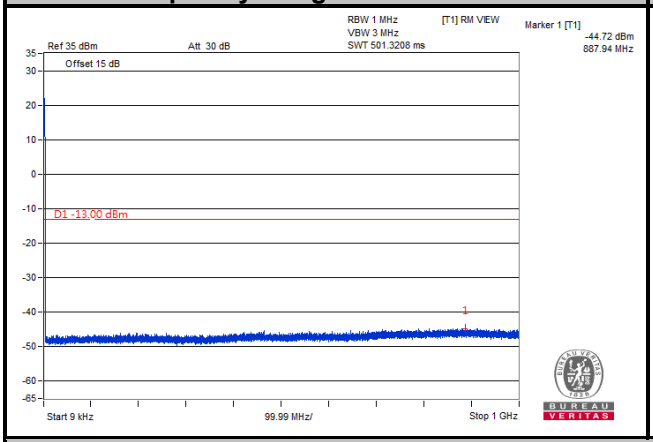
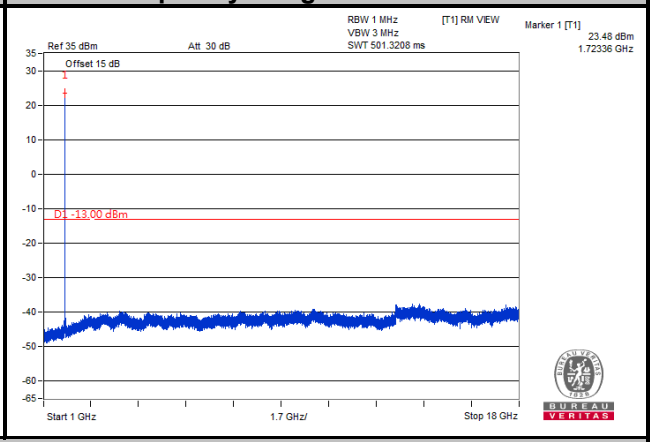
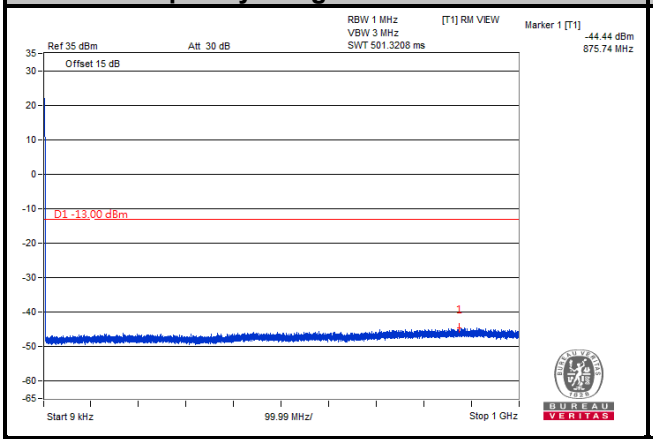
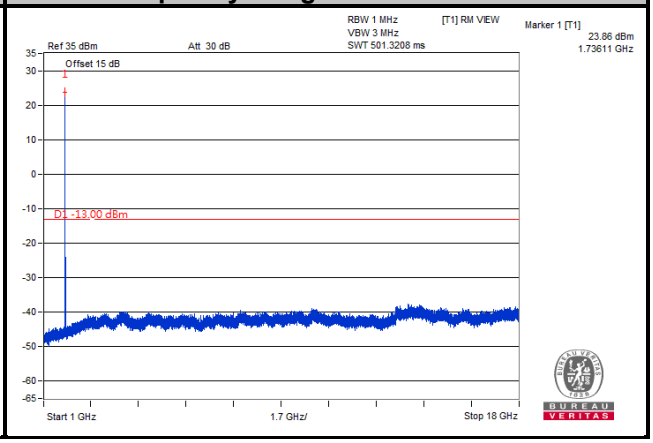
Note: The signal over the limit in 9 kHz is from spectrum analyzer.

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
	

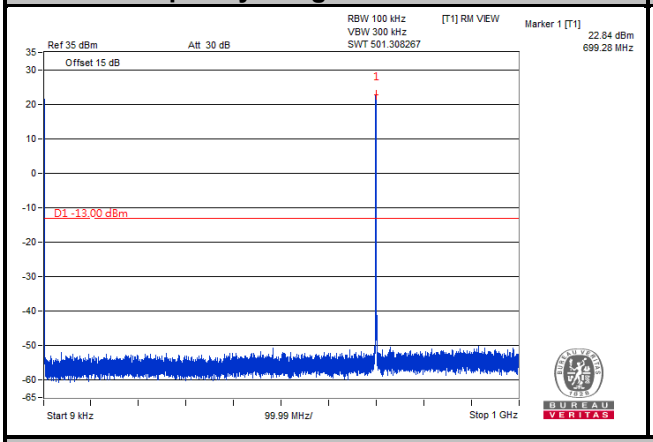
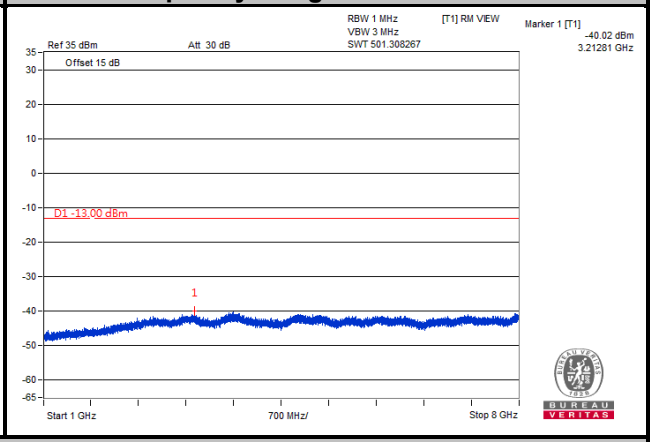
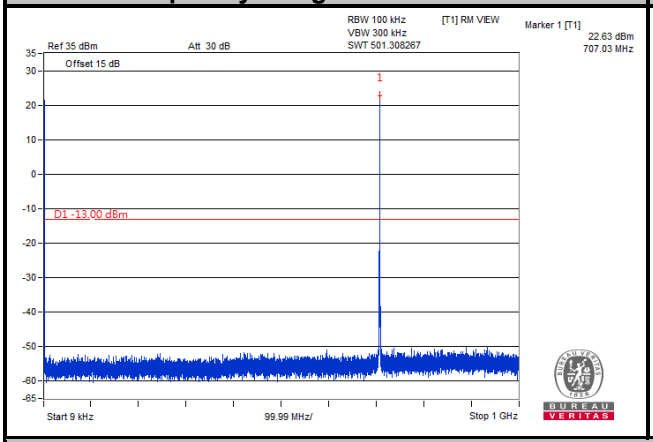
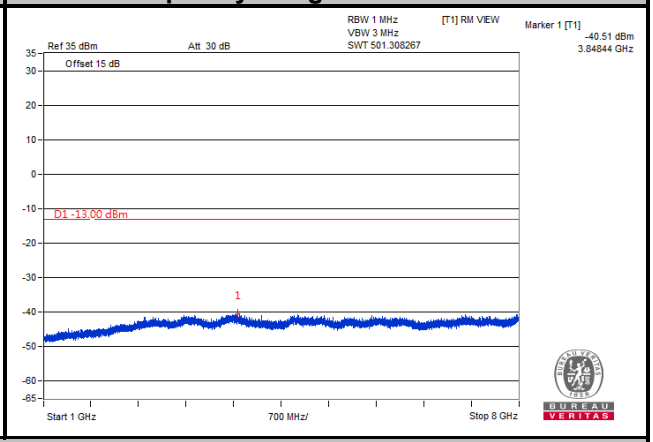
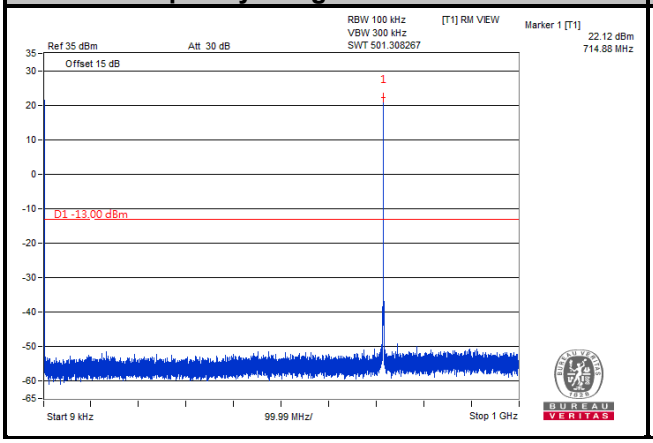
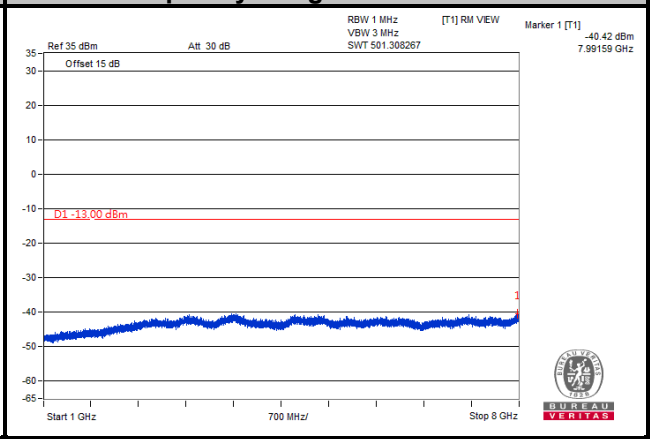
Note: The signal over the limit in 9 kHz is from spectrum analyzer.

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
	

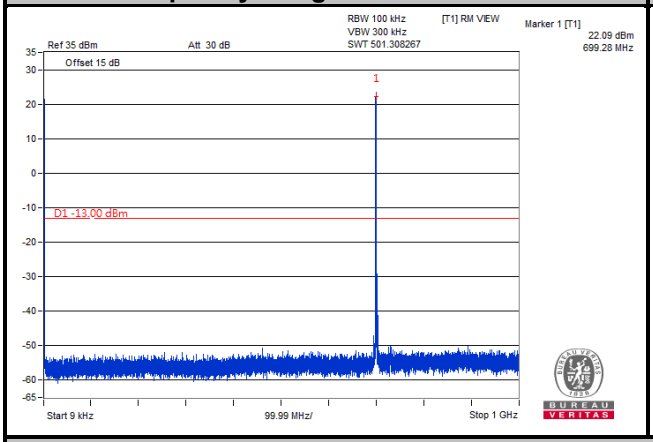
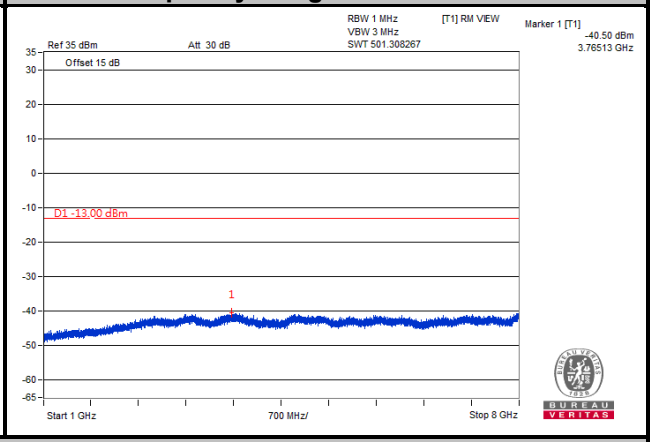
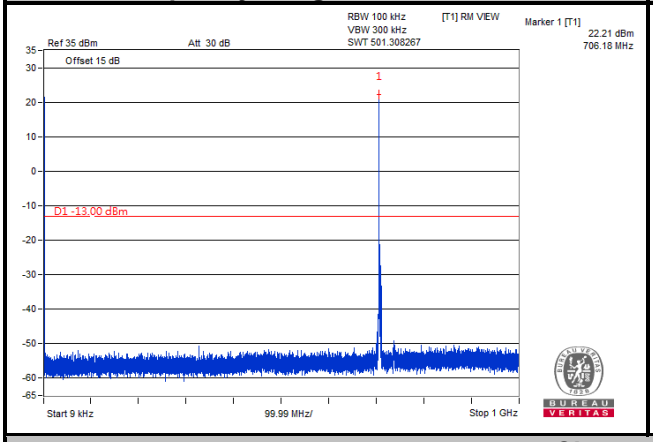
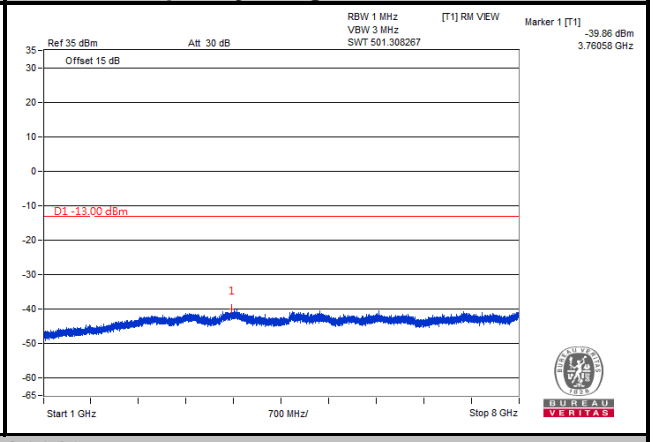
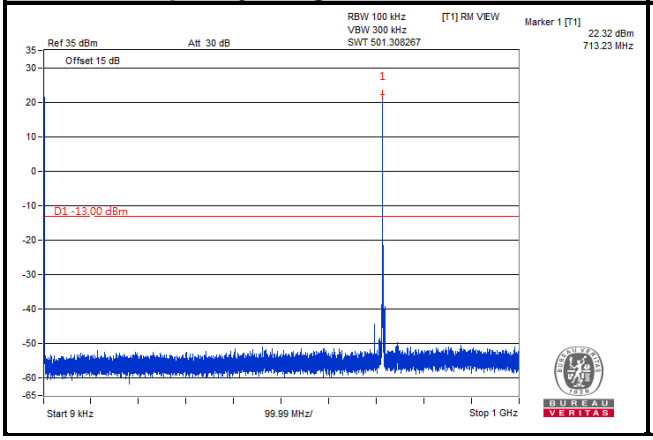
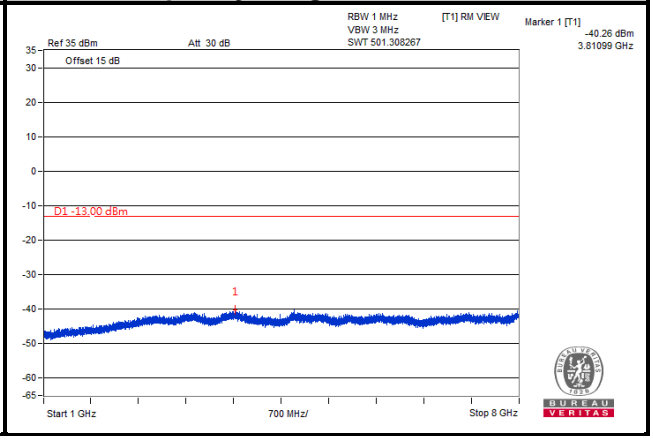
Note: The signal over the limit in 9 kHz is from spectrum analyzer.

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
	

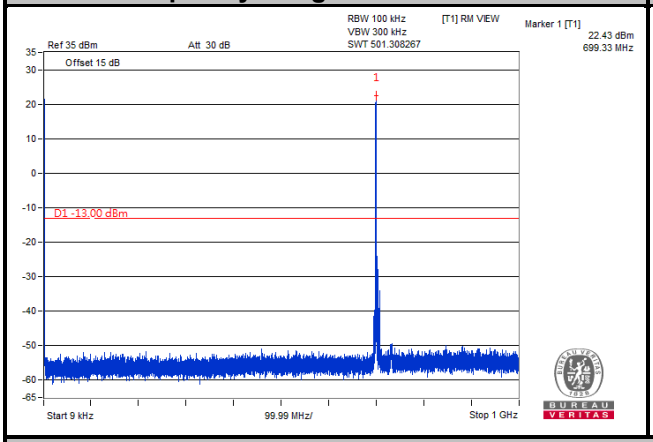
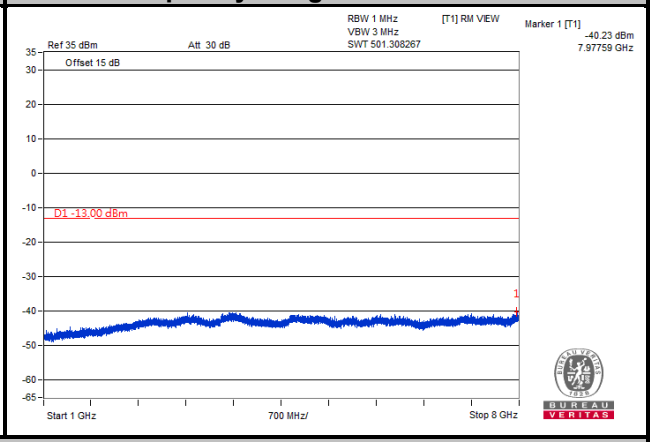
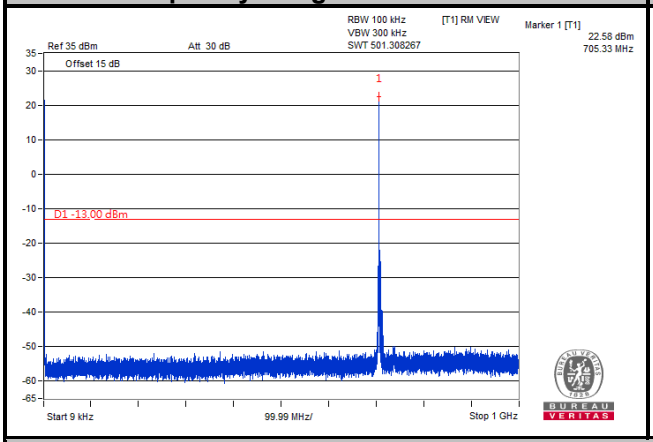
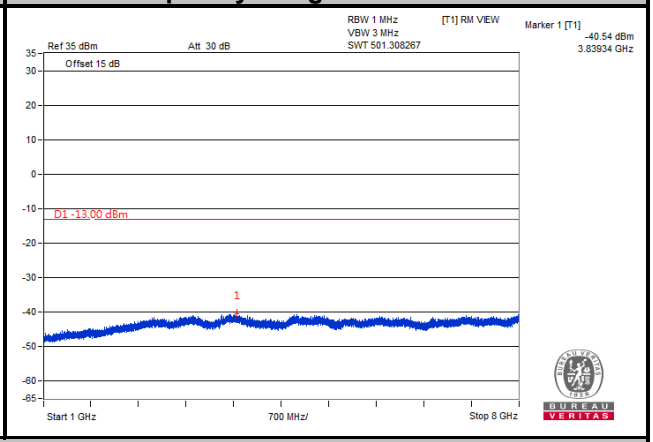
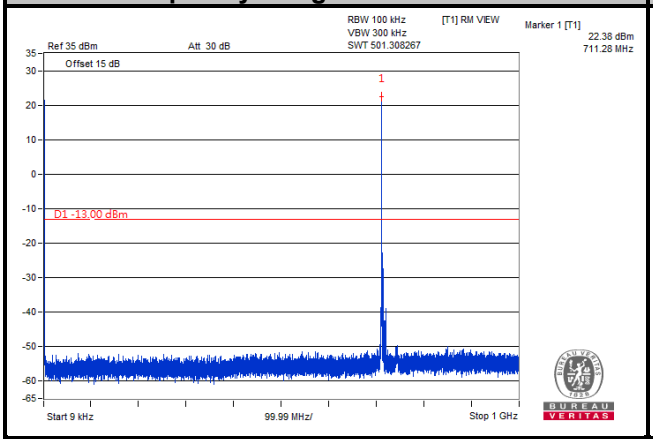
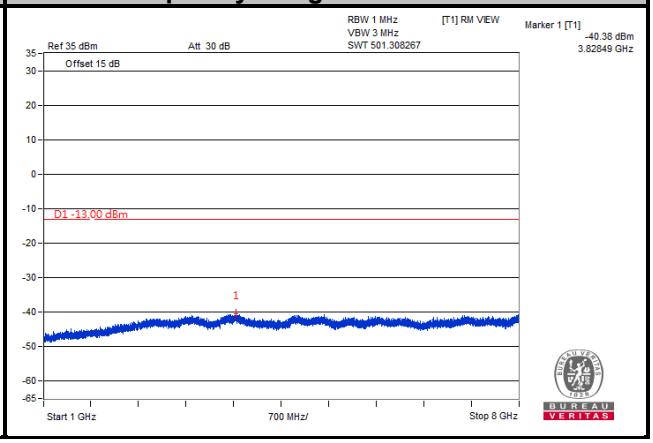
Note: The signal over the limit in 9 kHz is from spectrum analyzer.

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
	

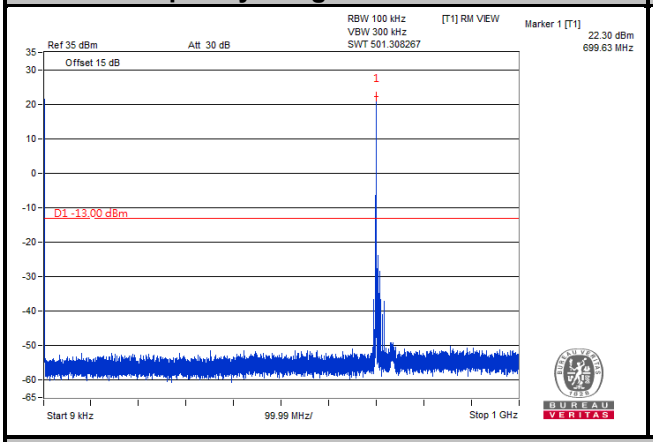
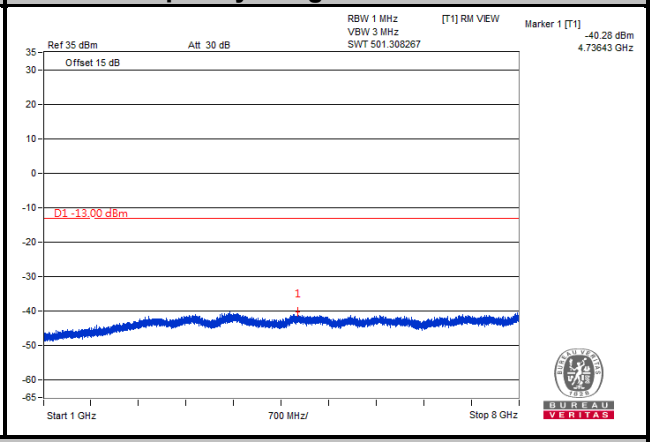
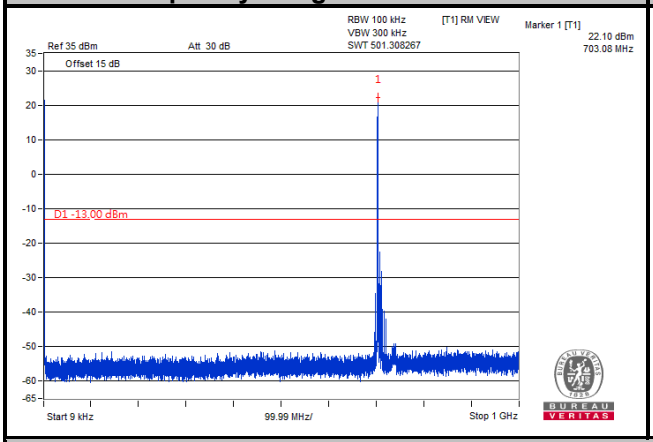
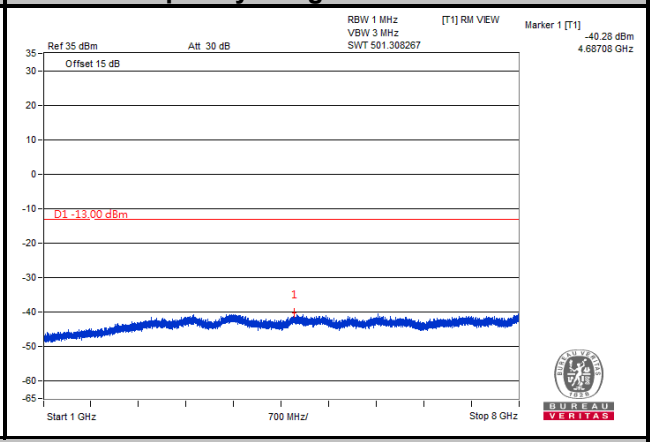
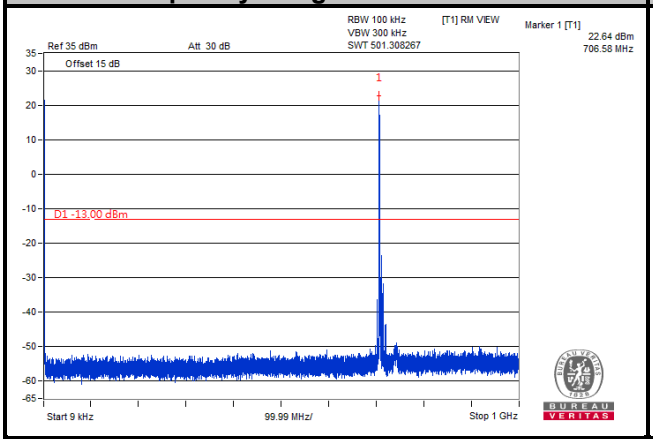
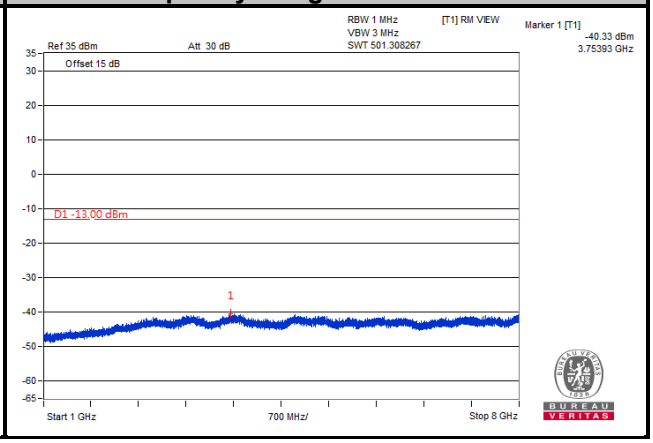
Note: The signal over the limit in 9 kHz is from spectrum analyzer.

LTE Band 12	
Channel Bandwidth: 3 MHz	
Channel 23025	
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 23165	
Frequency Range: 9 kHz ~ 1 GHz	Frequency Range: 1 GHz ~ 8 GHz
	

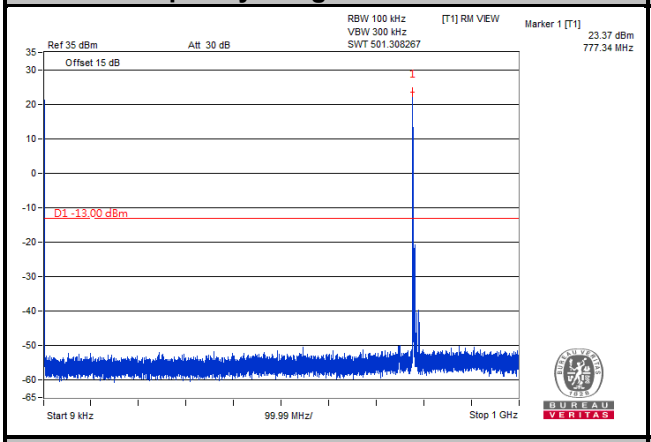
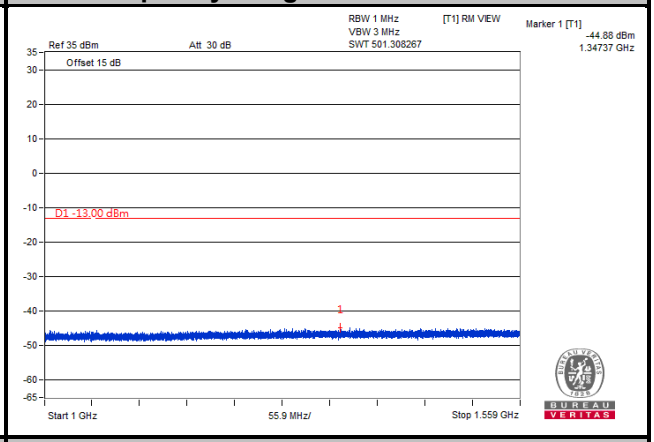
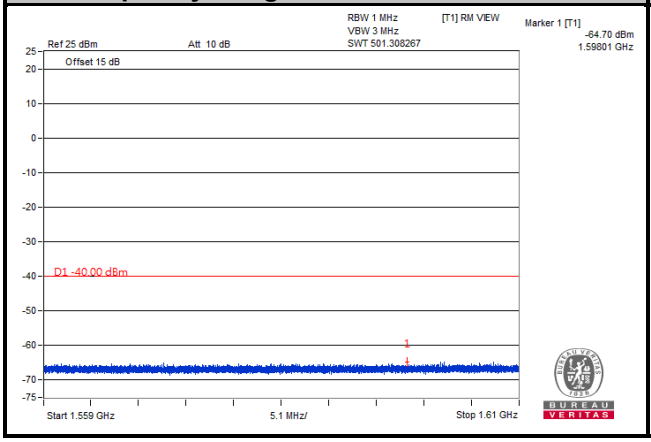
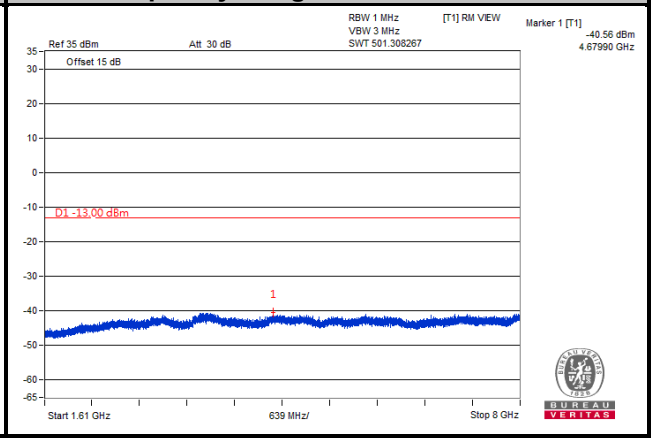
Note: The signal over the limit in 9 kHz is from spectrum analyzer.

LTE Band 12	
Channel Bandwidth: 5 MHz	
Channel 23035	
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 23155	
Frequency Range: 9 kHz ~ 1 GHz	Frequency Range: 1 GHz ~ 8 GHz
	

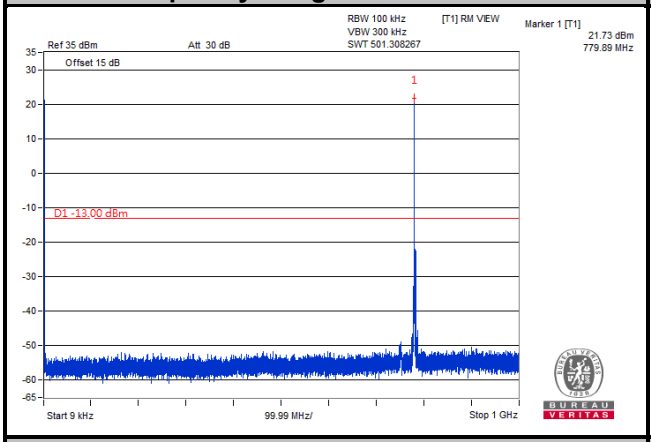
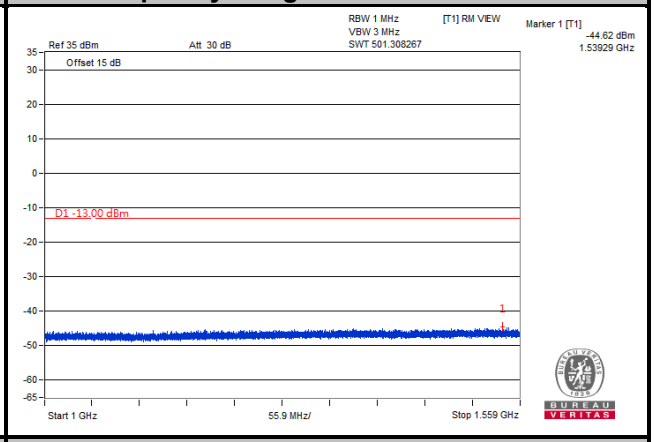
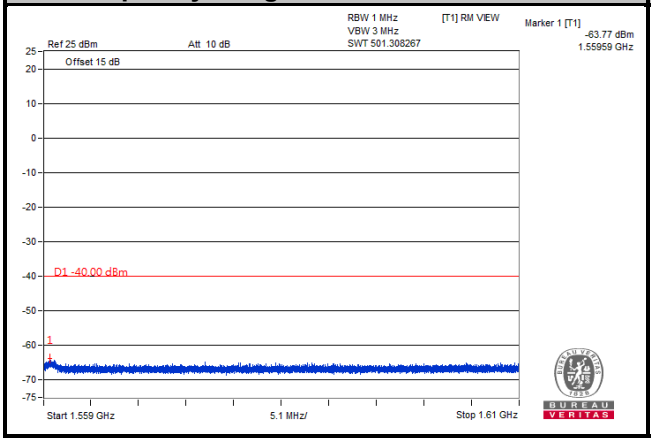
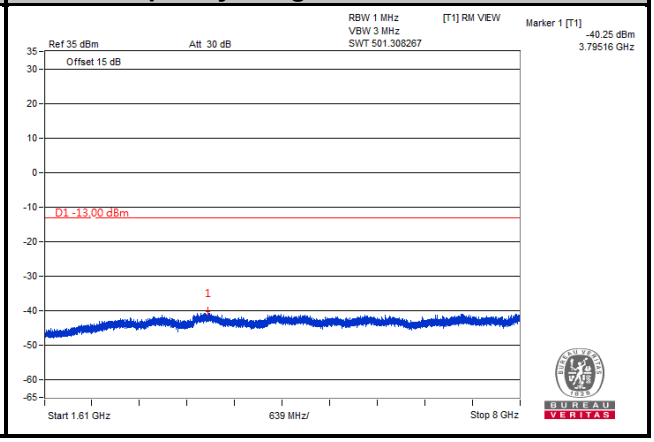
Note: The signal over the limit in 9 kHz is from spectrum analyzer.

LTE Band 12	
Channel Bandwidth: 10 MHz	
Channel 23060	
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 23130	
Frequency Range: 9 kHz ~ 1 GHz	Frequency Range: 1 GHz ~ 8 GHz
	

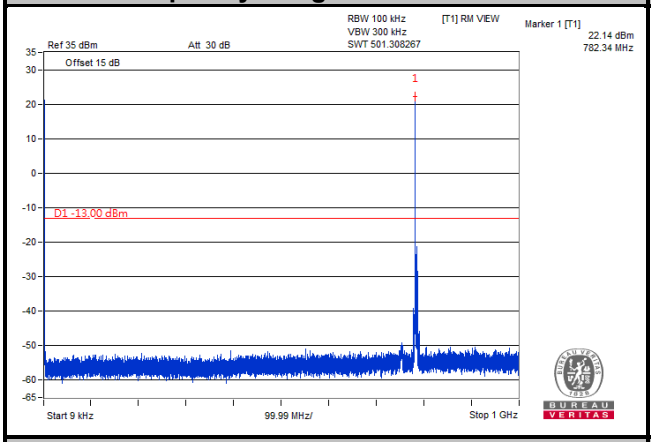
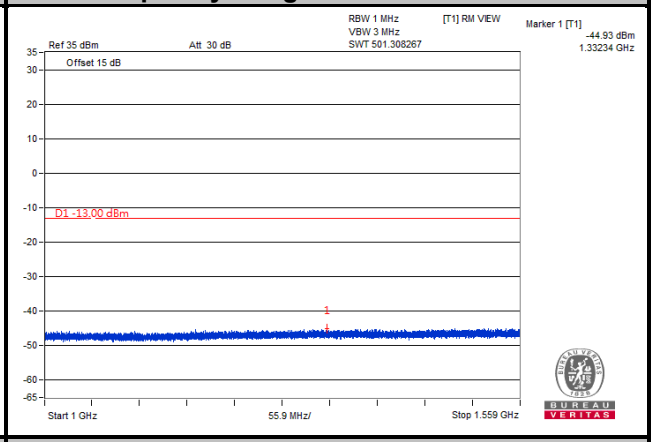
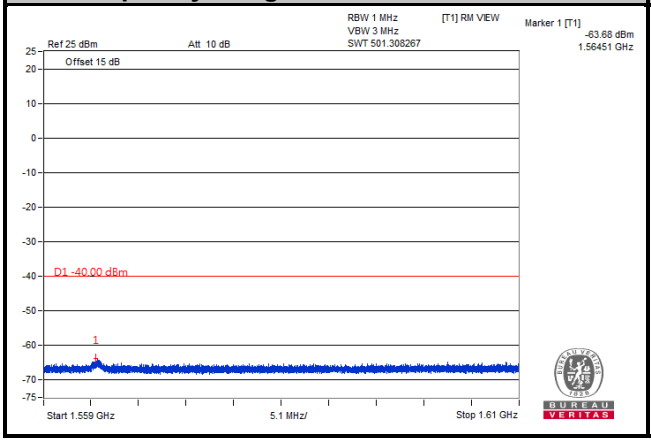
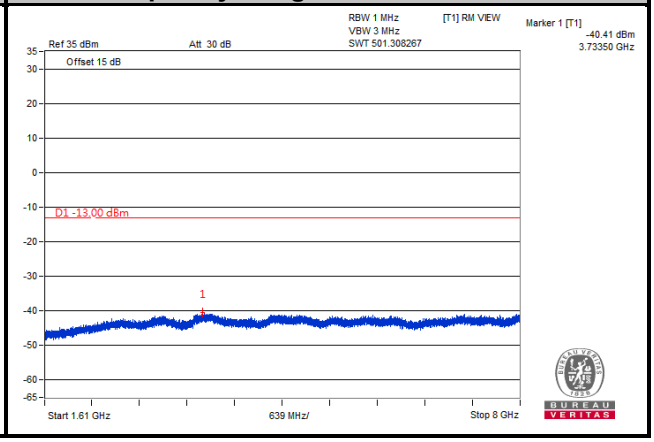
Note: The signal over the limit in 9 kHz is from spectrum analyzer.

LTE Band 13	
Channel Bandwidth: 5 MHz	
Channel 23205	
Frequency Range: 9 kHz ~ 1 GHz	Frequency Range: 1 GHz ~ 1.559 GHz
	
Frequency Range: 1.559 GHz ~ 1.61 GHz	Frequency Range: 1.61 GHz ~ 8 GHz
	

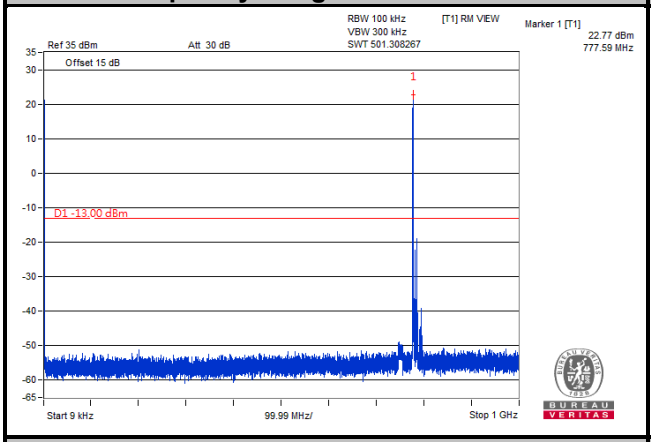
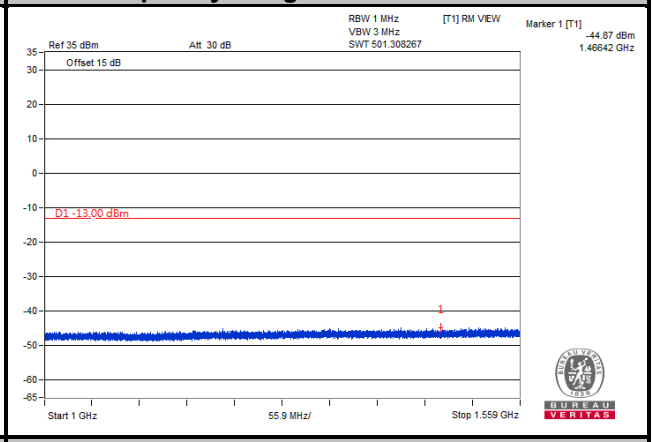
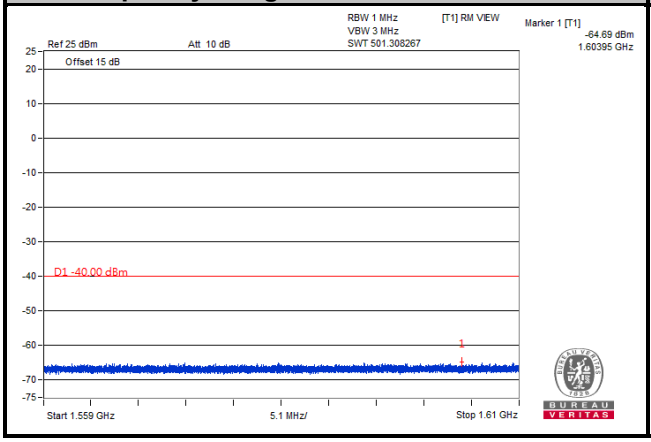
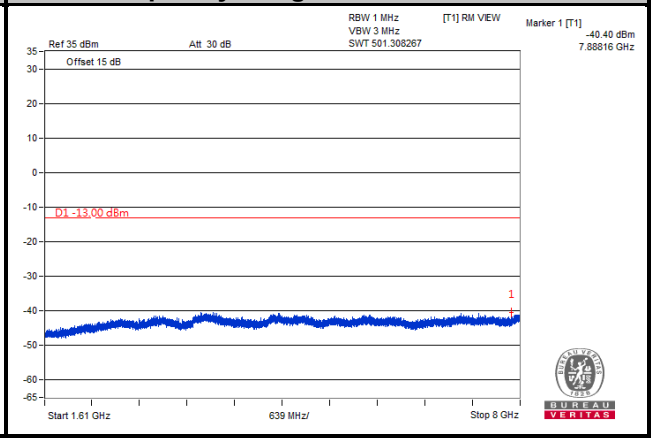
Note: The signal over the limit in 9 kHz is from spectrum analyzer.

LTE Band 13	
Channel Bandwidth: 5 MHz	
Channel 23230	
Frequency Range: 9 kHz ~ 1 GHz	Frequency Range: 1 GHz ~ 1.559 GHz
	
Frequency Range: 1.559 GHz ~ 1.61 GHz	Frequency Range: 1.61 GHz ~ 8 GHz
	

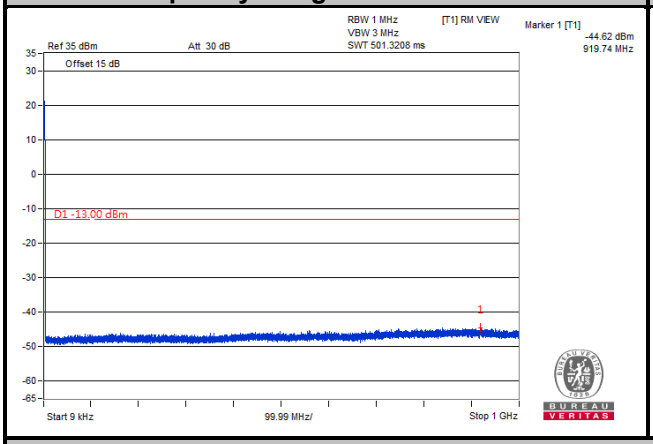
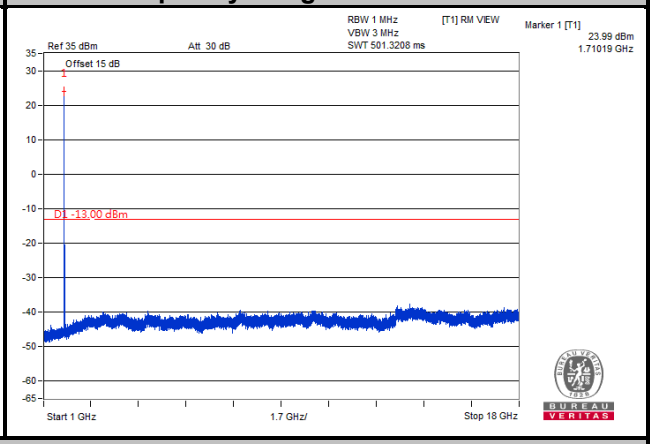
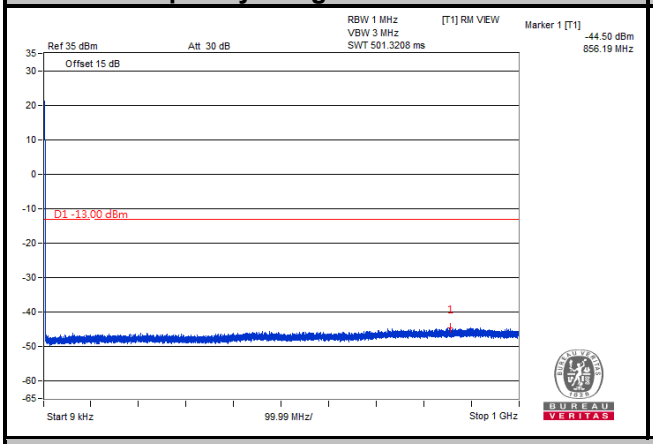
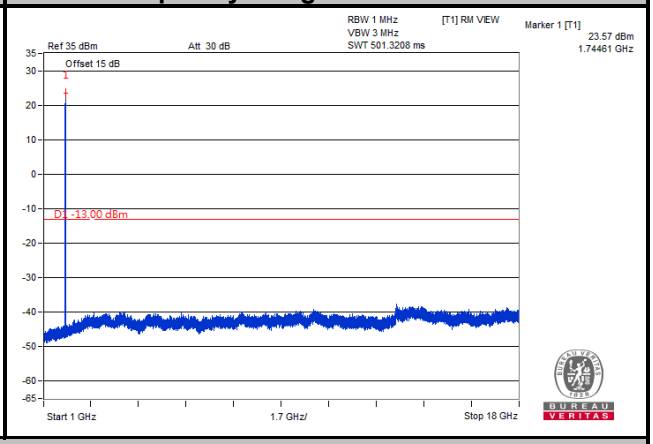
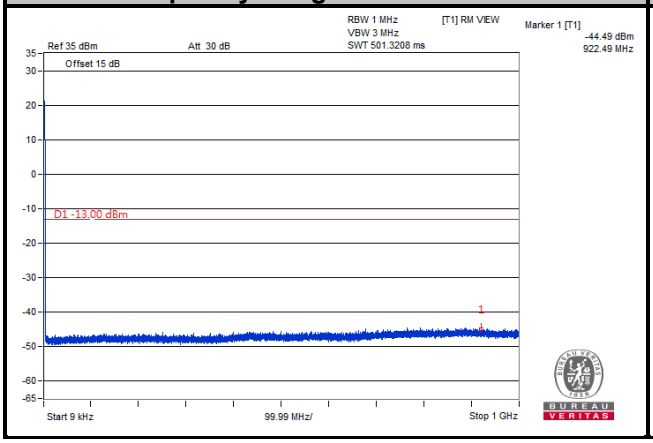
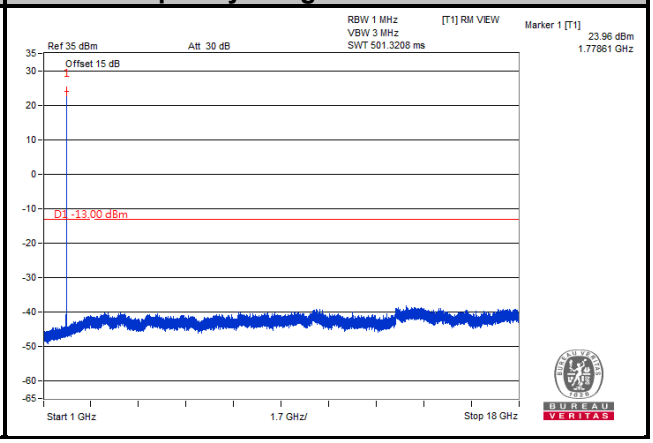
Note: The signal over the limit in 9 kHz is from spectrum analyzer.

LTE Band 13	
Channel Bandwidth: 5 MHz	
Channel 23255	
Frequency Range: 9 kHz ~ 1 GHz	Frequency Range: 1 GHz ~ 1.559 GHz
	
Frequency Range: 1.559 GHz ~ 1.61 GHz	Frequency Range: 1.61 GHz ~ 8 GHz
	

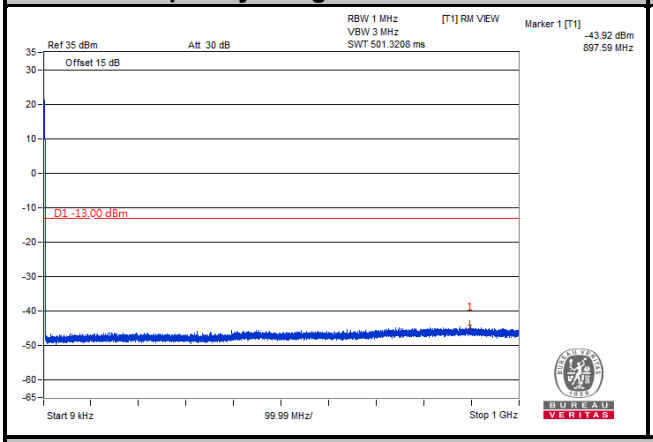
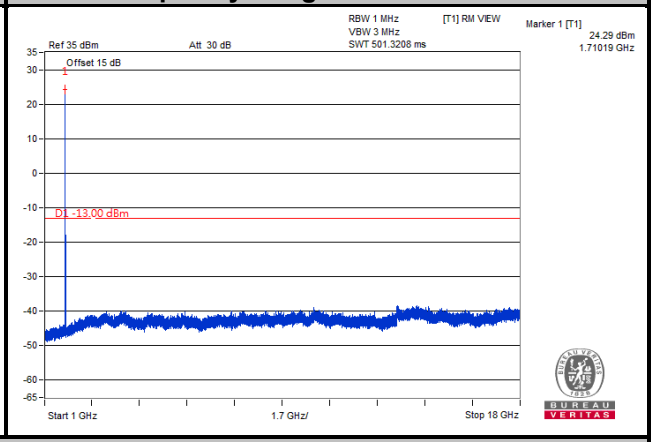
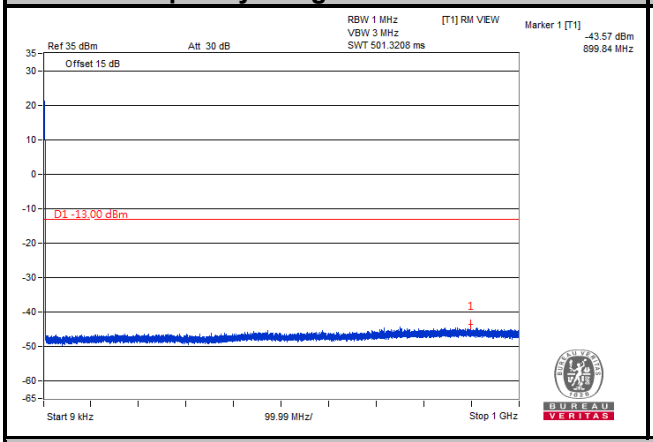
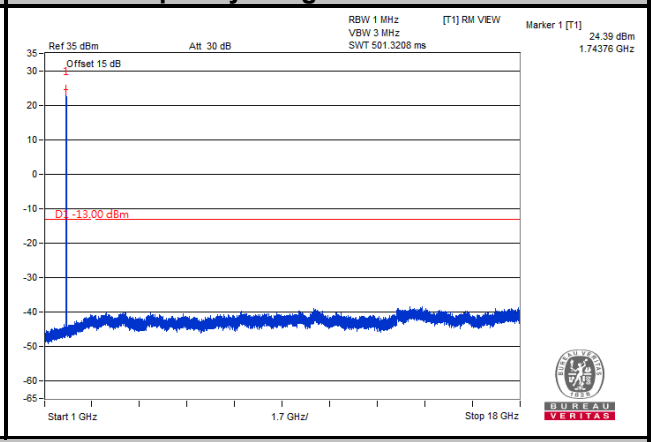
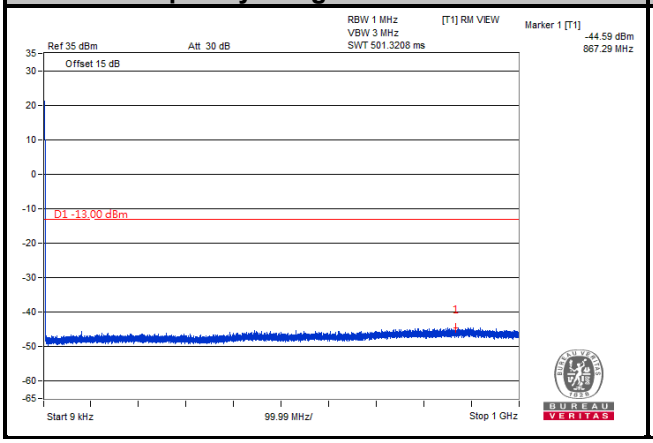
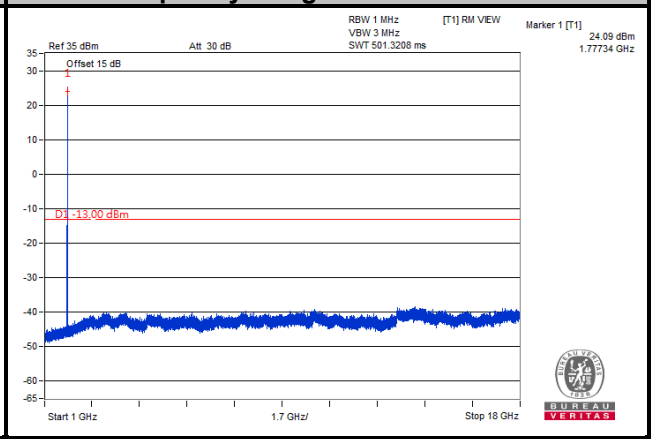
Note: The signal over the limit in 9 kHz is from spectrum analyzer.

LTE Band 13	
Channel Bandwidth: 10 MHz	
Channel 23230	
Frequency Range: 9 kHz ~ 1 GHz	Frequency Range: 1 GHz ~ 1.559 GHz
	
Frequency Range: 1.559 GHz ~ 1.61 GHz	Frequency Range: 1.61 GHz ~ 8 GHz
	

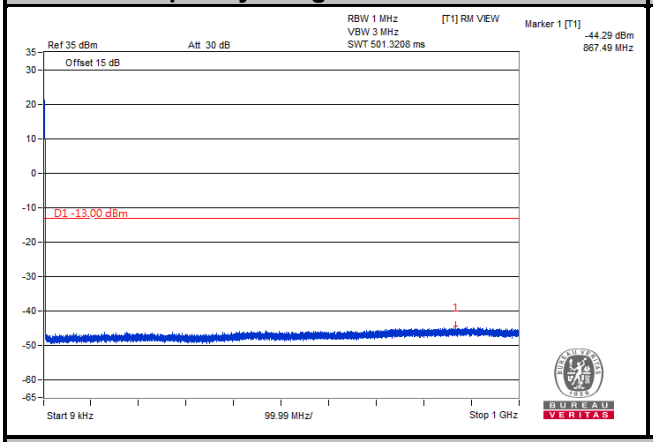
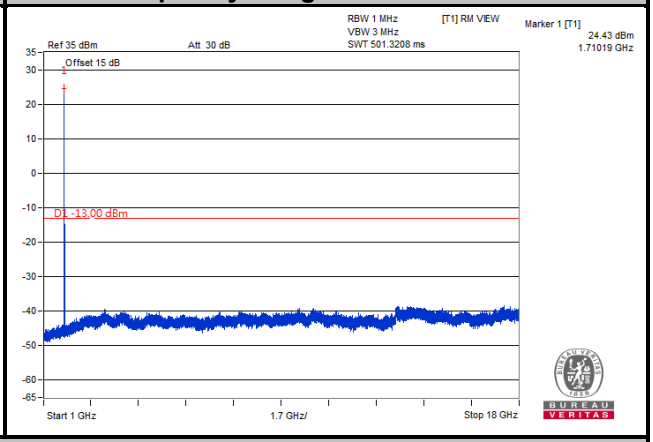
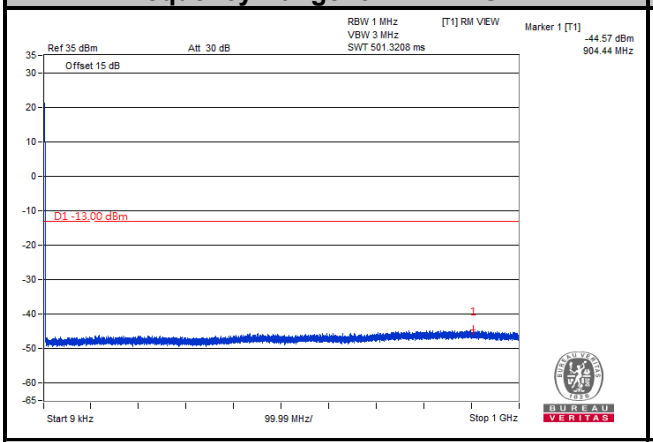
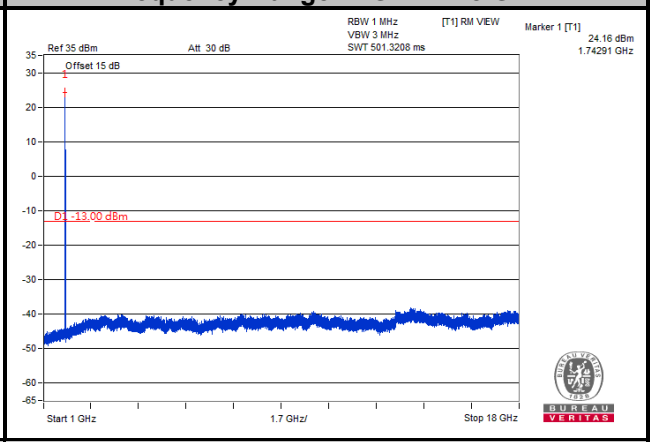
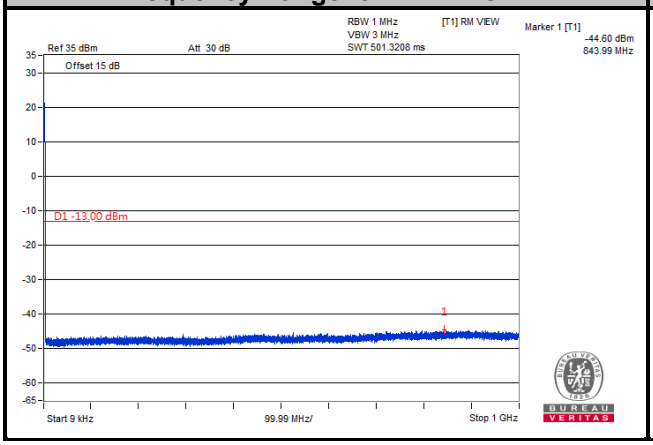
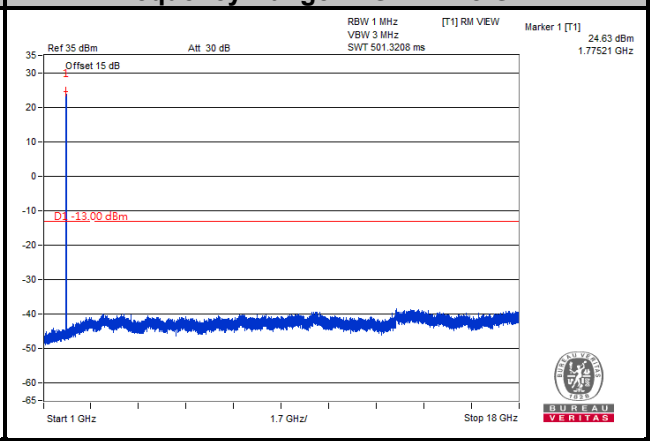
Note: The signal over the limit in 9 kHz is from spectrum analyzer.

LTE Band 66	
Channel Bandwidth: 1.4 MHz	
Channel 131979	
Frequency Range: 9 kHz ~ 1 GHz	Frequency Range: 1 GHz ~ 18 GHz
	
Channel 132322	
Frequency Range: 9 kHz ~ 1 GHz	Frequency Range: 1 GHz ~ 18 GHz
	
Channel 132665	
Frequency Range: 9 kHz ~ 1 GHz	Frequency Range: 1 GHz ~ 18 GHz
	

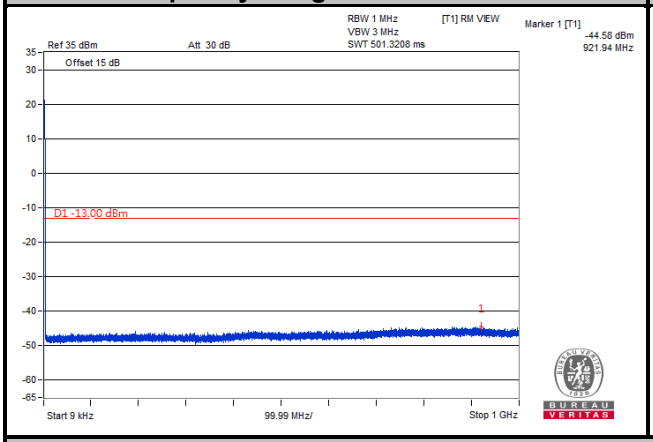
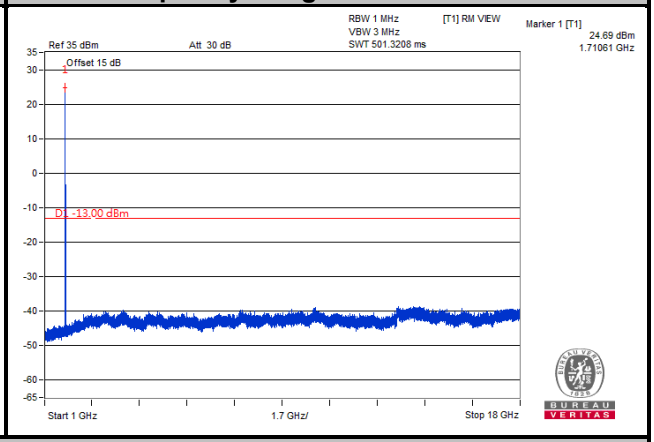
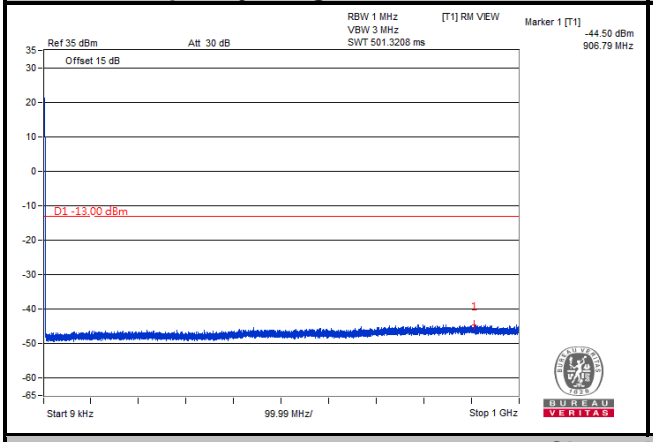
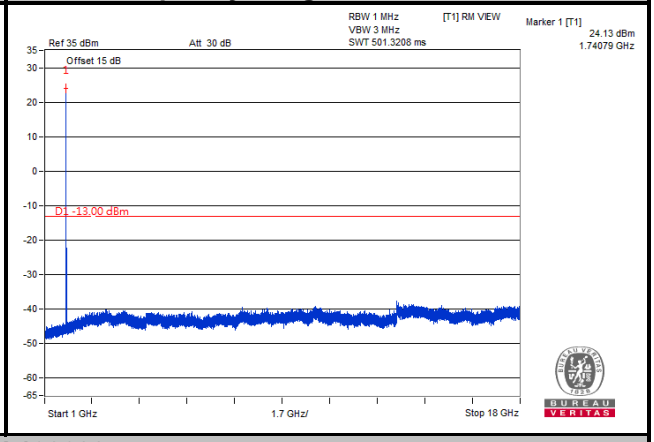
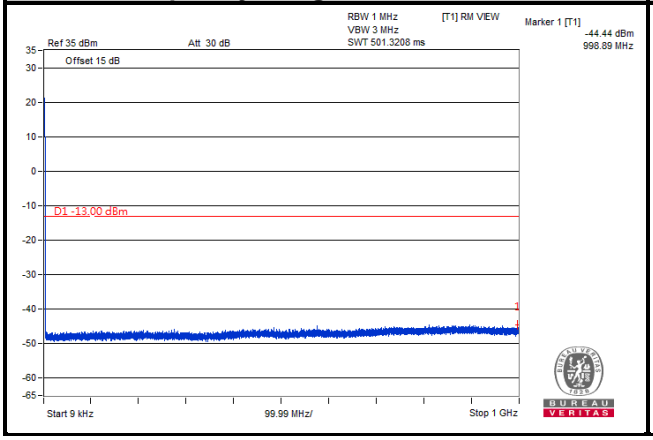
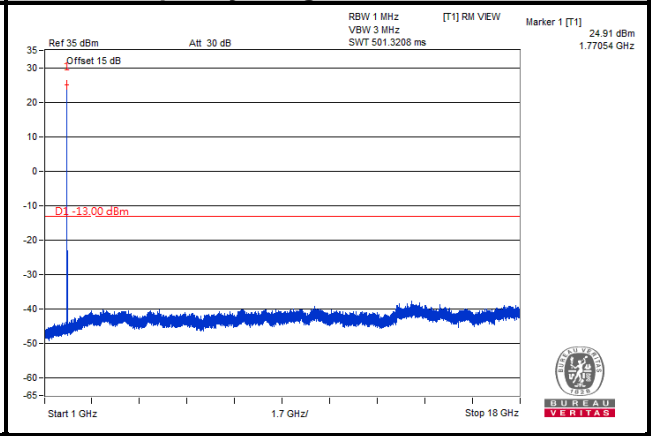
Note: The signal over the limit in 9 kHz is from spectrum analyzer.

LTE Band 66	
Channel Bandwidth: 3 MHz	
Channel 131987	
Frequency Range: 9 kHz ~ 1 GHz	Frequency Range: 1 GHz ~ 18 GHz
	
Channel 132322	
Frequency Range: 9 kHz ~ 1 GHz	Frequency Range: 1 GHz ~ 18 GHz
	
Channel 132657	
Frequency Range: 9 kHz ~ 1 GHz	Frequency Range: 1 GHz ~ 18 GHz
	

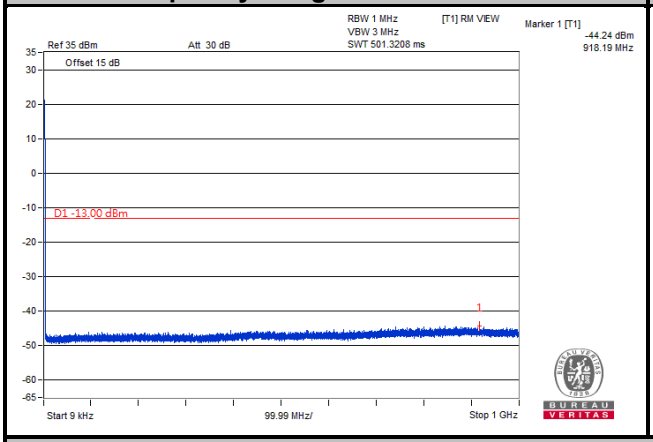
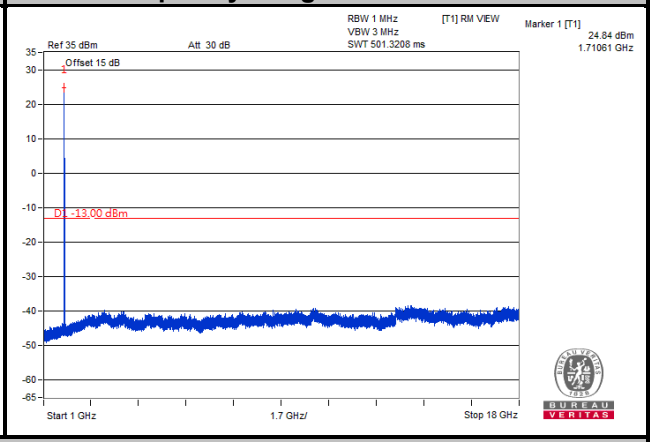
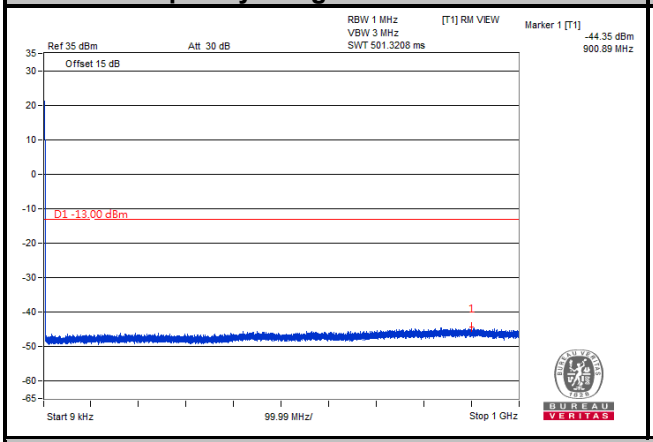
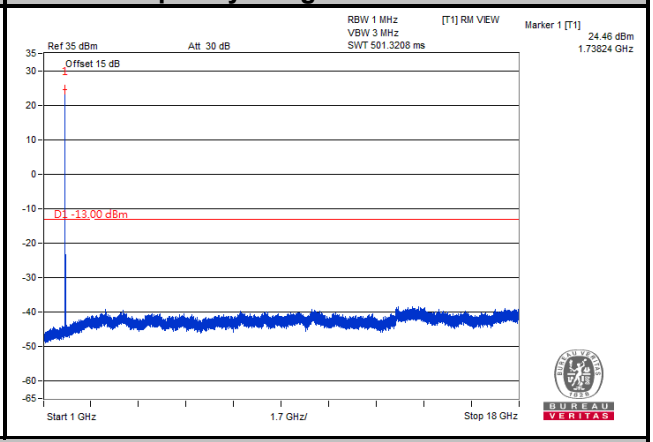
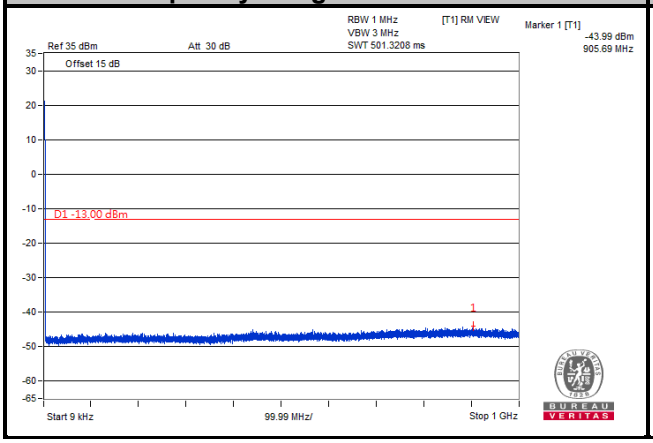
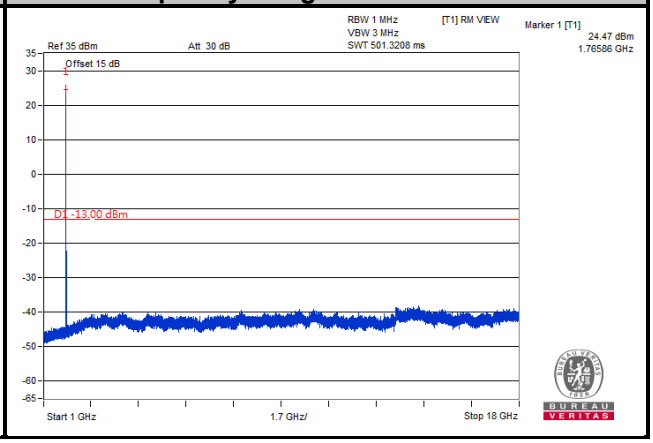
Note: The signal over the limit in 9 kHz is from spectrum analyzer.

LTE Band 66	
Channel Bandwidth: 5 MHz	
Channel 131997	
Frequency Range: 9 kHz ~ 1 GHz	Frequency Range: 1 GHz ~ 18 GHz
	
Channel 132322	
Frequency Range: 9 kHz ~ 1 GHz	Frequency Range: 1 GHz ~ 18 GHz
	
Channel 132647	
Frequency Range: 9 kHz ~ 1 GHz	Frequency Range: 1 GHz ~ 18 GHz
	

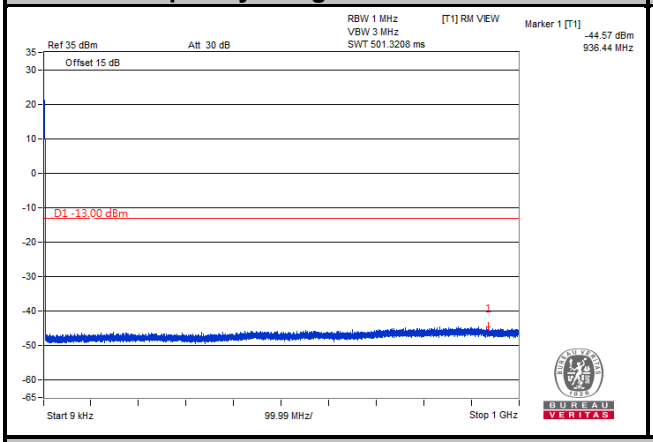
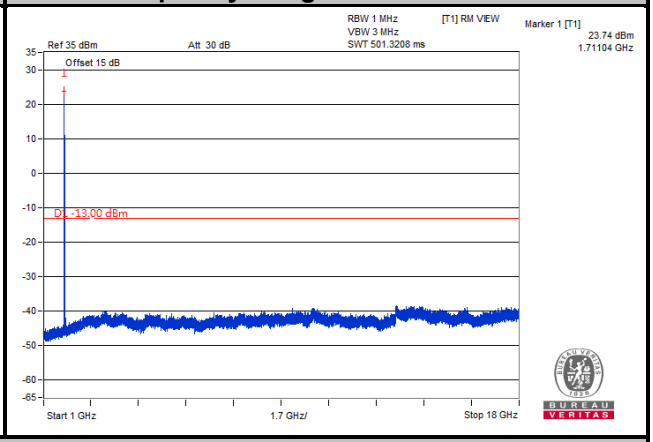
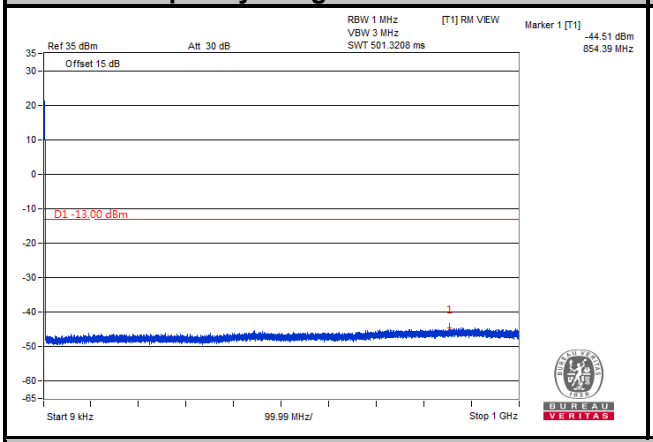
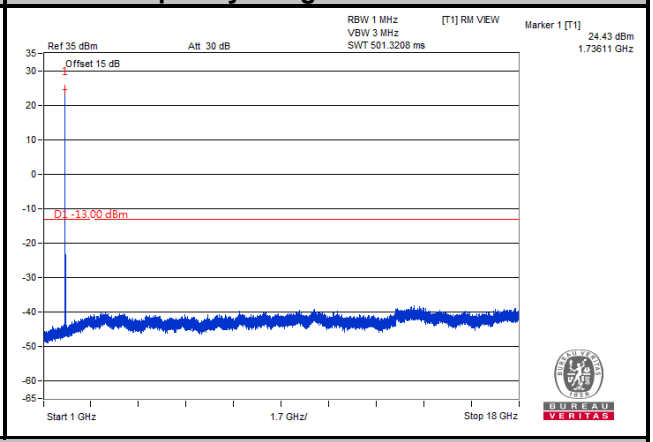
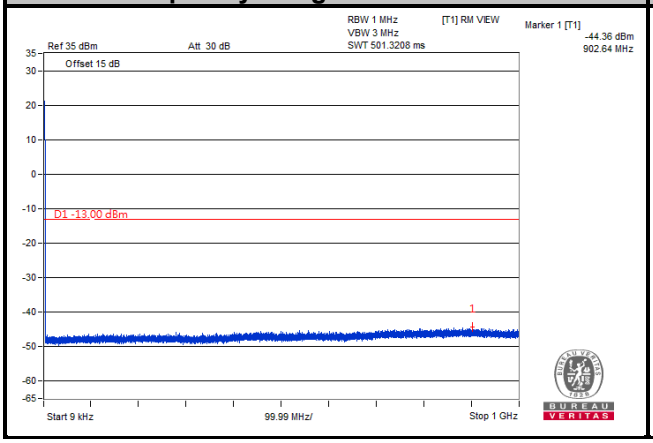
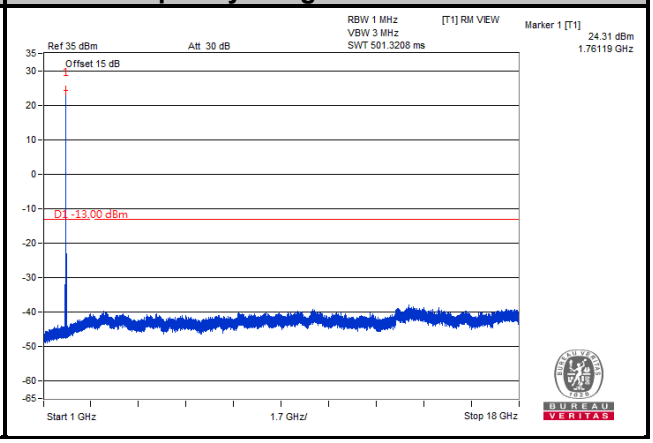
Note: The signal over the limit in 9 kHz is from spectrum analyzer.

LTE Band 66	
Channel Bandwidth: 10 MHz	
Channel 132022	
Frequency Range: 9 kHz ~ 1 GHz	Frequency Range: 1 GHz ~ 18 GHz
	
Channel 132322	
Frequency Range: 9 kHz ~ 1 GHz	Frequency Range: 1 GHz ~ 18 GHz
	
Channel 132622	
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 66	
Channel Bandwidth: 15 MHz	
Channel 132047	
Frequency Range: 9 kHz ~ 1 GHz	Frequency Range: 1 GHz ~ 18 GHz
	
Channel 132322	
Frequency Range: 9 kHz ~ 1 GHz	Frequency Range: 1 GHz ~ 18 GHz
	
Channel 132597	
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 66	
Channel Bandwidth: 20 MHz	
Channel 132072	
Frequency Range: 9 kHz ~ 1 GHz	Frequency Range: 1 GHz ~ 18 GHz
	
Channel 132322	
Frequency Range: 9 kHz ~ 1 GHz	Frequency Range: 1 GHz ~ 18 GHz
	
Channel 132572	
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.

4.8 Radiated Emission Measurement

4.8.1 Limits of Radiated Emission Measurement

a. 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.
b. For operations in the 775-788 MHz, emissions in the band 1559-1610 MHz shall be limited to -70 dBW/MHz. The limit of emissions is equal to -40 dBm.

4.8.2 Test Procedure

a. Substitution method is used for E.I.R.P measurement. In the semi-anechoic chamber, EUT placed on the 0.8 m (below or equal 1 GHz) and/or 1.5 m (above 1 GHz) height of Turn Table, rotated the table around 360 degrees to search the maximum radiation power and receiver antenna shall be rotated vertical and horizontal polarization and moved height from 1 m to 4 m to find the maximum polar radiated power. The “Read Value” is the spectrum reading the maximum power value.
b. EIRP = Output power level of S.G – TX cable loss + Antenna gain of substitution horn. Correction Factor (includes EIRP and ERP unit conversion factor) = Antenna gain of substitution horn. – Tx cable loss. Measurement method refers to ANSI C63.26 section 5.5.3.2
c. E.R.P power can be calculated form E.I.R.P power by subtracting the gain of dipole, E.R.P power = E.I.R.P power - 2.15 dB.

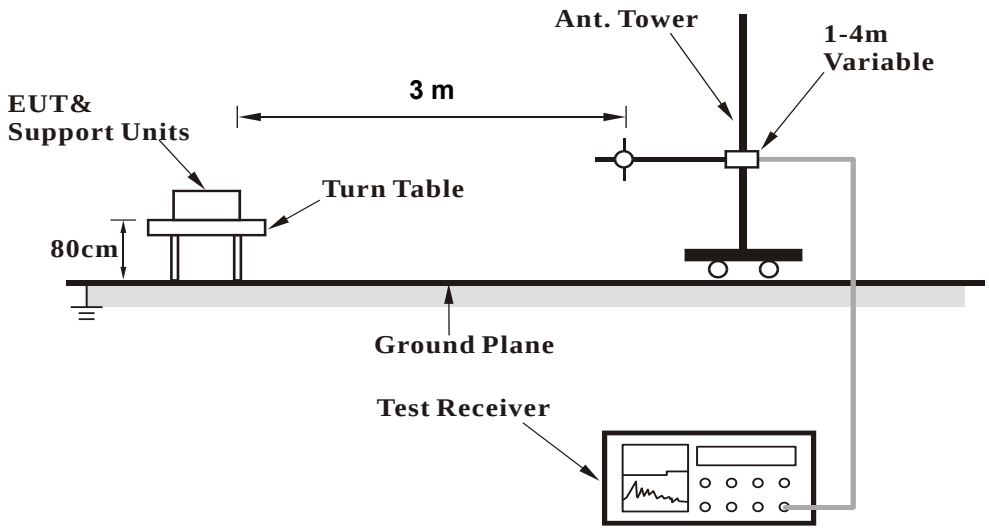
Note: The resolution bandwidth of spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz.

4.8.3 Deviation from Test Standard

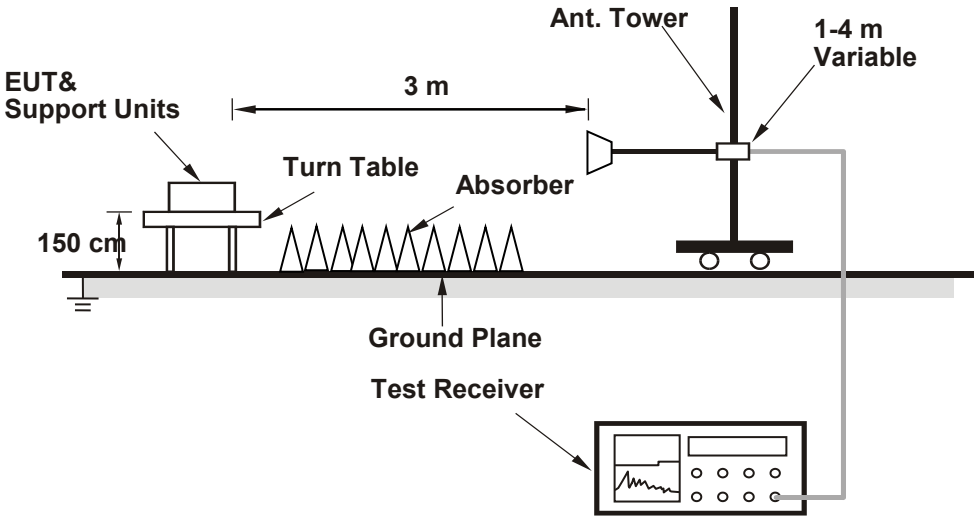
No deviation.

4.8.4 Test Setup

<Radiated Emission below or equal 1 GHz>



<Radiated Emission above 1 GHz>



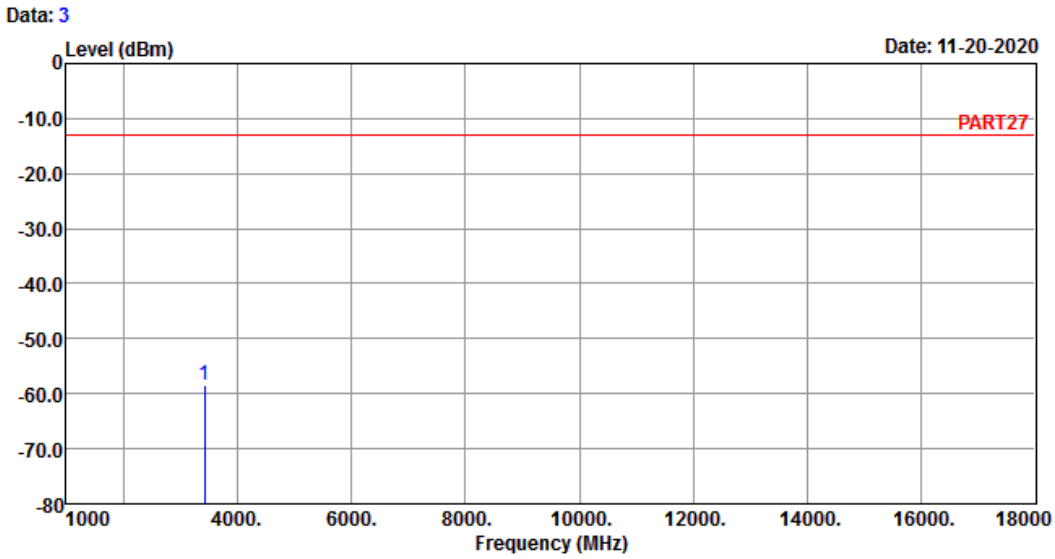
For the actual test configuration, please refer to the attached file (Test Setup Photo).

4.8.5 Test Results

WCDMA:

Low Channel

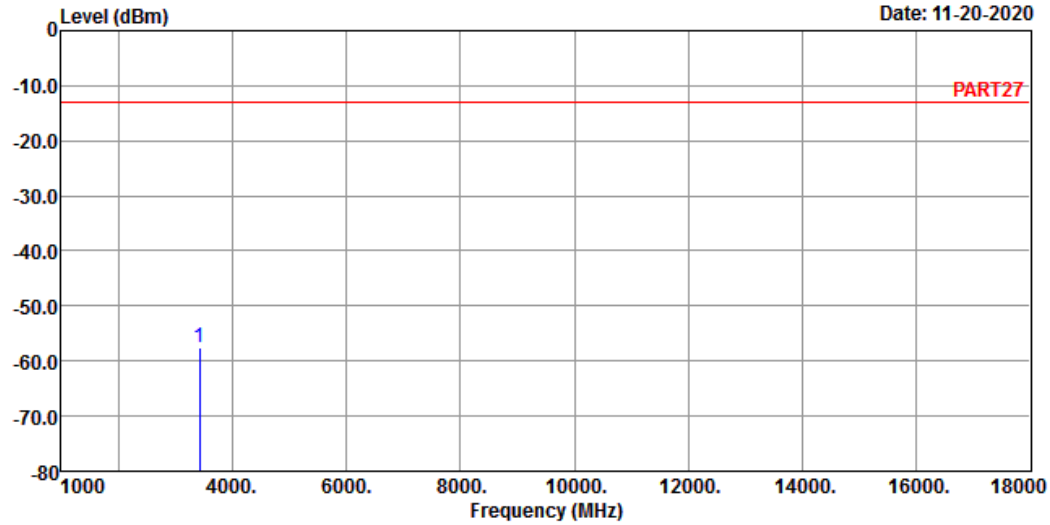
Bureau Veritas Consumer Products Services Ltd.,Taoyuan Branch



Site : 966 Chamber 5
Condition: PART27 HORIZONTAL
Remak : WCDMA B4 Link_L-CH
Tested by: Cyril Chen

	Freq	Level	Read Level	Limit Line	Factor	Over Limit	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1 pp	3424.80	-58.36	-50.02	-13.00	-8.34	-45.36	Peak

Data: 4

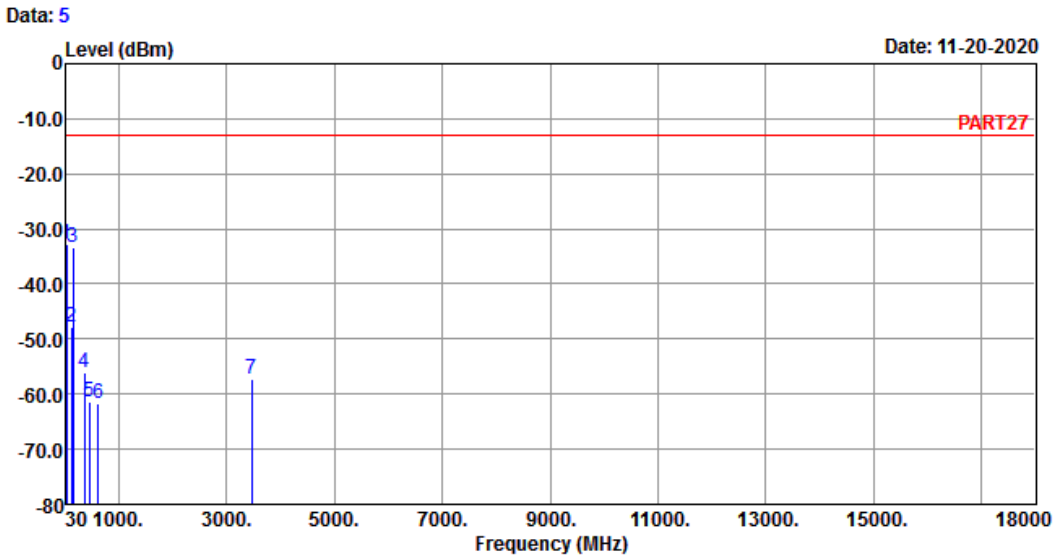


Site : 966 Chamber 5
Condition: PART27 VERTICAL
Remak : WCDMA B4 Link_L-CH
Tested by: Cyril Chen

	Freq	Level	Read Level	Limit Line	Factor	Over Limit	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1 pp	3424.80	-57.43	-49.09	-13.00	-8.34	-44.43	Peak

Middle Channel

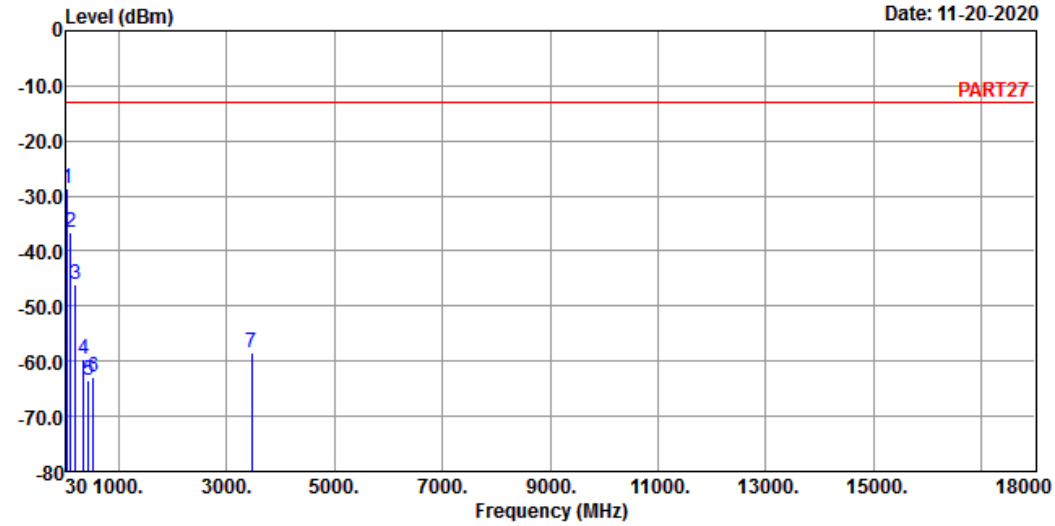
Bureau Veritas Consumer Products Services Ltd.,Taoyuan Branch



Site : 966 Chamber 5
Condition: PART27 HORIZONTAL
Remak : WCDMA B4 Link_M-CH
Tested by: Cyril Chen

	Freq	Level	Read Level	Limit Line	Factor	Over Limit	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1 pp	40.67	-32.75	-32.87	-13.00	0.12	-19.75	Peak
2	124.09	-47.76	-38.37	-13.00	-9.39	-34.76	Peak
3	161.92	-33.45	-28.47	-13.00	-4.98	-20.45	Peak
4	362.71	-56.10	-49.94	-13.00	-6.16	-43.10	Peak
5	460.68	-61.49	-56.14	-13.00	-5.35	-48.49	Peak
6	620.73	-61.70	-60.89	-13.00	-0.81	-48.70	Peak
7	3465.20	-57.37	-49.49	-13.00	-7.88	-44.37	Peak

Data: 6

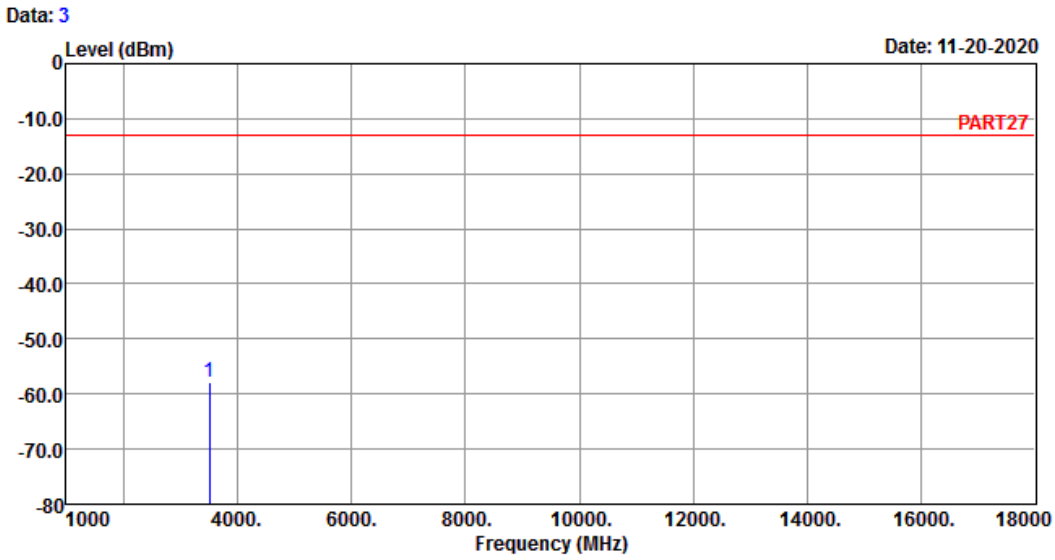


Site : 966 Chamber 5
Condition: PART27 VERTICAL
Remak : WCDMA B4 Link_M-CH
Tested by: Cyril Chen

	Freq	Level	Read Level	Limit Line	Factor	Over Limit	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1 pp	45.52	-28.70	-26.20	-13.00	-2.50	-15.70	Peak
2	108.57	-36.60	-26.25	-13.00	-10.35	-23.60	Peak
3	192.96	-46.19	-38.82	-13.00	-7.37	-33.19	Peak
4	345.25	-59.60	-53.29	-13.00	-6.31	-46.60	Peak
5	441.28	-63.46	-57.84	-13.00	-5.62	-50.46	Peak
6	528.58	-62.76	-59.15	-13.00	-3.61	-49.76	Peak
7	3465.20	-58.42	-50.54	-13.00	-7.88	-45.42	Peak

High Channel

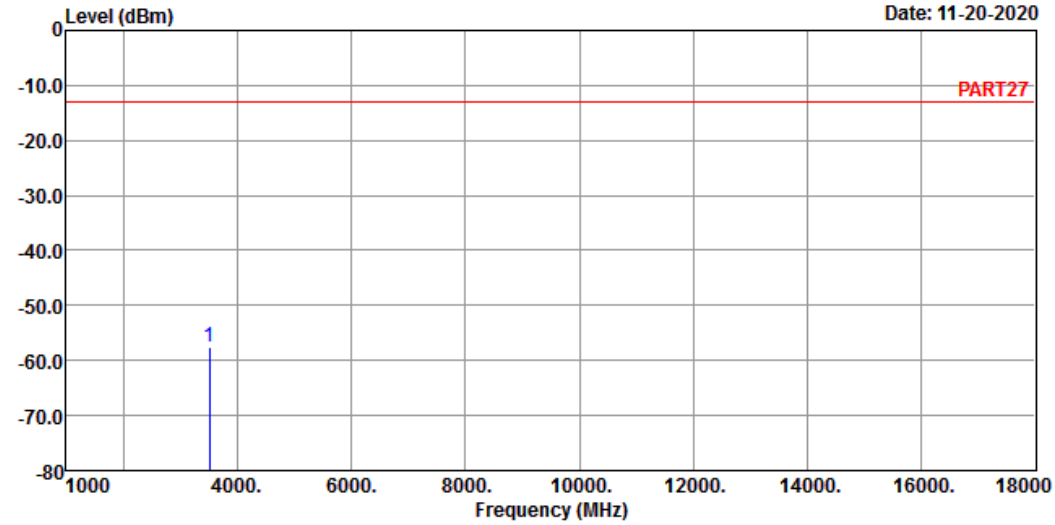
Bureau Veritas Consumer Products Services Ltd.,Taoyuan Branch



Site : 966 Chamber 5
Condition: PART27 HORIZONTAL
Remak : WCDMA B4 Link_H-CH
Tested by: Cyril Chen

	Freq	Level	Read Level	Limit Line	Factor	Over Limit	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1 pp	3505.20	-57.85	-50.40	-13.00	-7.45	-44.85	Peak

Data: 4

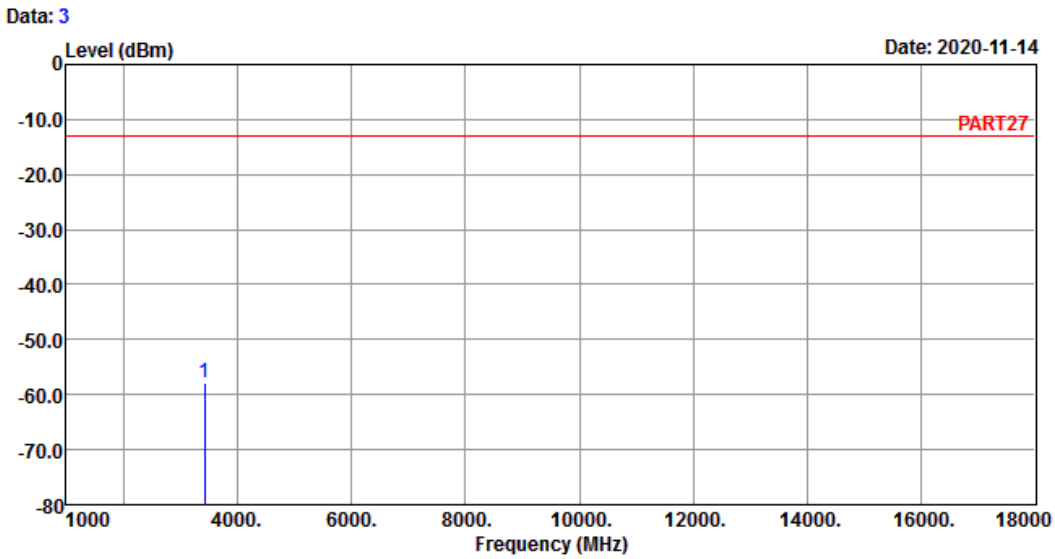


Site : 966 Chamber 5
Condition: PART27 VERTICAL
Remak : WCDMA B4 Link_H-CH
Tested by: Cyril Chen

	Freq	Level	Read Level	Limit Line	Factor	Over Limit	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1 pp	3505.20	-57.46	-50.01	-13.00	-7.45	-44.46	Peak

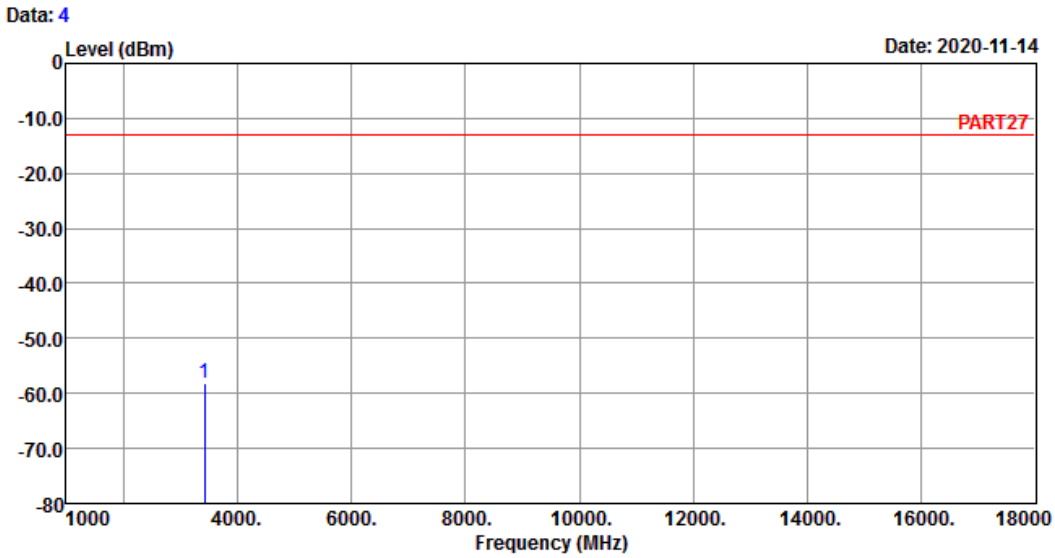
LTE Band 4
Channel Bandwidth: 1.4 MHz / QPSK
Low Channel

Bureau Veritas Consumer Products Services Ltd.,Taoyuan Branch



Site : 966 Chamber 5
Condition: PART27 HORIZONTAL
Remak : LTE Band 4 QPSK_1.4M Link_L-CH
Tested by: Getaz Yang

	Freq	Level	Read Level	Limit Line	Factor	Over Limit	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1 pp	3421.40	-57.86	-49.52	-13.00	-8.34	-44.86	Peak

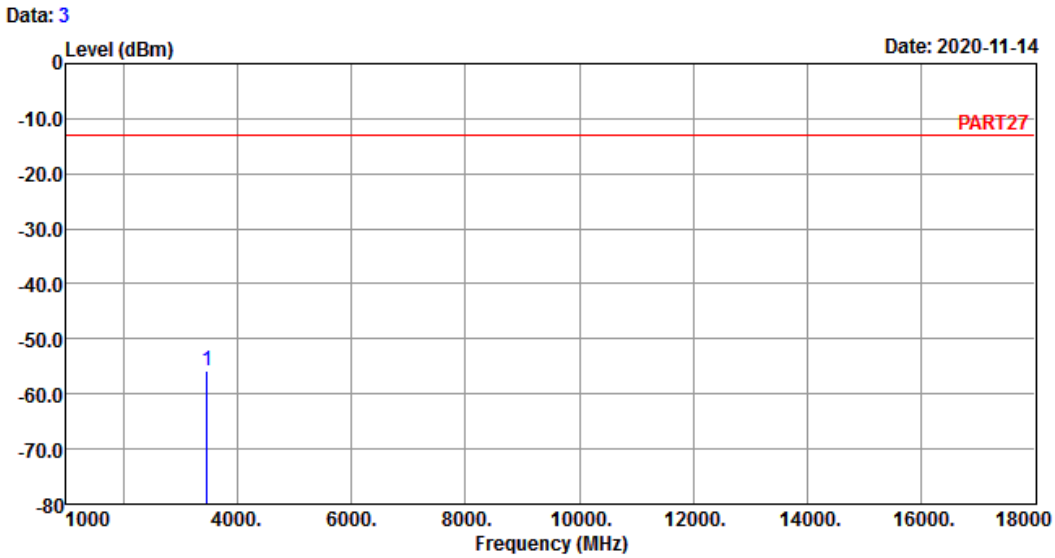


Site : 966 Chamber 5
Condition: PART27 VERTICAL
Remak : LTE Band 4 QPSK_1.4M Link_L-CH
Tested by: Getaz Yang

	Freq	Level	Read Level	Limit Line	Factor	Over Limit	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1 pp	3421.40	-58.09	-49.75	-13.00	-8.34	-45.09	Peak

Middle Channel

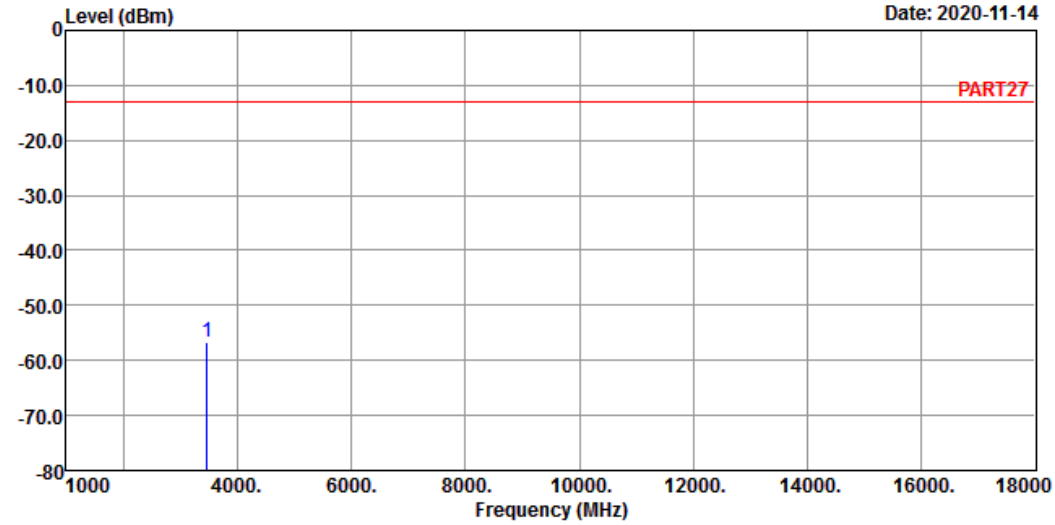
Bureau Veritas Consumer Products Services Ltd.,Taoyuan Branch



Site : 966 Chamber 5
Condition: PART27 HORIZONTAL
Remak : LTE Band 4 QPSK_1.4M Link_M-CH
Tested by: Getaz Yang

	Freq	Level	Read Level	Limit Line	Factor	Over Limit	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1 pp	3465.00	-55.89	-48.01	-13.00	-7.88	-42.89	Peak

Data: 4

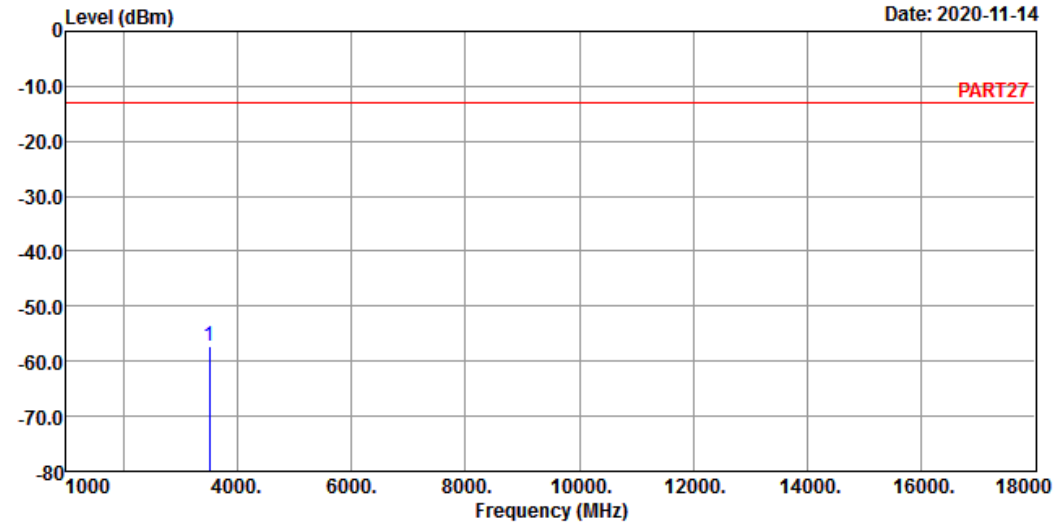


Site : 966 Chamber 5
Condition: PART27 VERTICAL
Remak : LTE Band 4 QPSK_1.4M Link_M-CH
Tested by: Getaz Yang

	Freq	Level	Read Level	Limit Line	Factor	Over Limit	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1 pp	3465.00	-56.73	-48.85	-13.00	-7.88	-43.73	Peak

High Channel

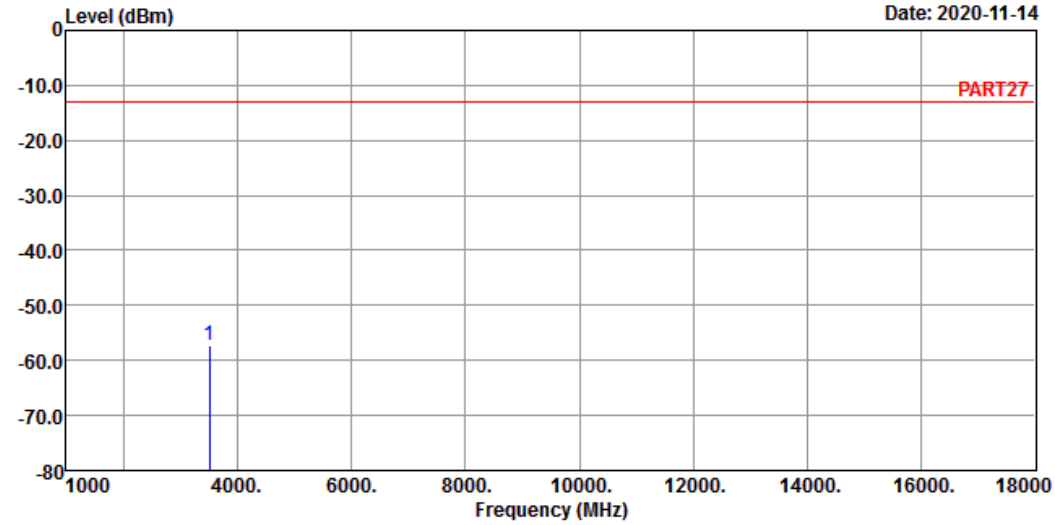
Bureau Veritas Consumer Products Services Ltd.,Taoyuan Branch



Site : 966 Chamber 5
Condition: PART27 HORIZONTAL
Remak : LTE Band 4 QPSK_1.4M Link_H-CH
Tested by: Getaz Yang

	Freq	Level	Read Level	Limit Line	Factor	Over Limit	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1 pp	3508.60	-57.16	-49.71	-13.00	-7.45	-44.16	Peak

Data: 4

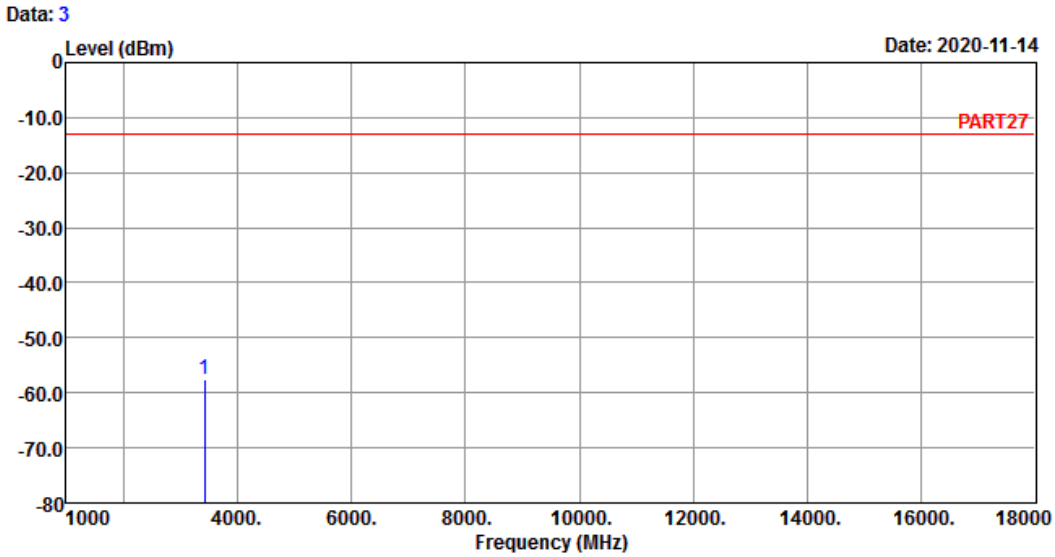


Site : 966 Chamber 5
Condition: PART27 VERTICAL
Remak : LTE Band 4 QPSK_1.4M Link_H-CH
Tested by: Getaz Yang

	Freq	Level	Read Level	Limit Line	Factor	Over Limit	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1 pp	3508.60	-57.21	-49.76	-13.00	-7.45	-44.21	Peak

Channel Bandwidth: 5 MHz / QPSK
Low Channel

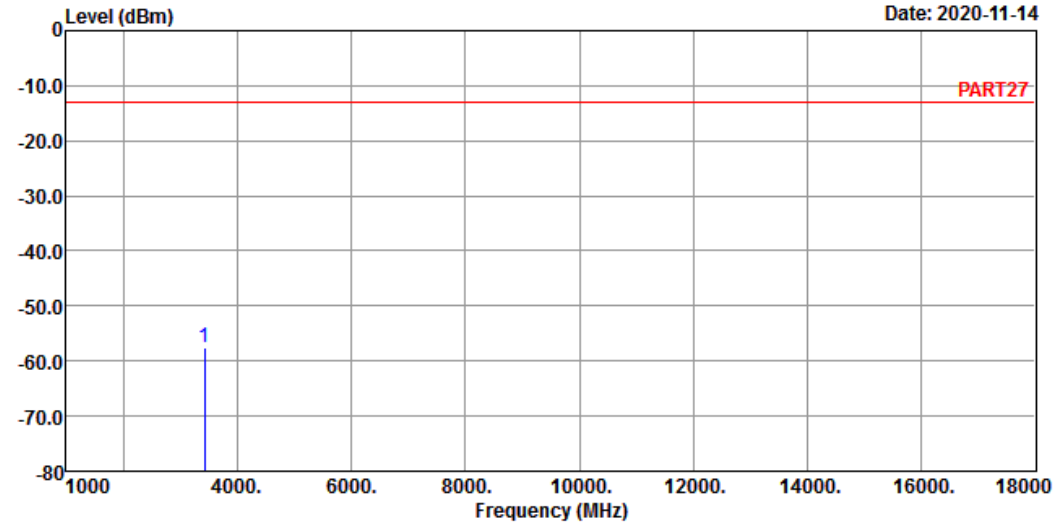
Bureau Veritas Consumer Products Services Ltd.,Taoyuan Branch



Site : 966 Chamber 5
Condition: PART27 HORIZONTAL
Remak : LTE Band 4 QPSK_5M Link_L-CH
Tested by: Getaz Yang

	Freq	Level	Read Level	Limit Line	Factor	Over Limit	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1 pp	3425.00	-57.54	-49.20	-13.00	-8.34	-44.54	Peak

Data: 4

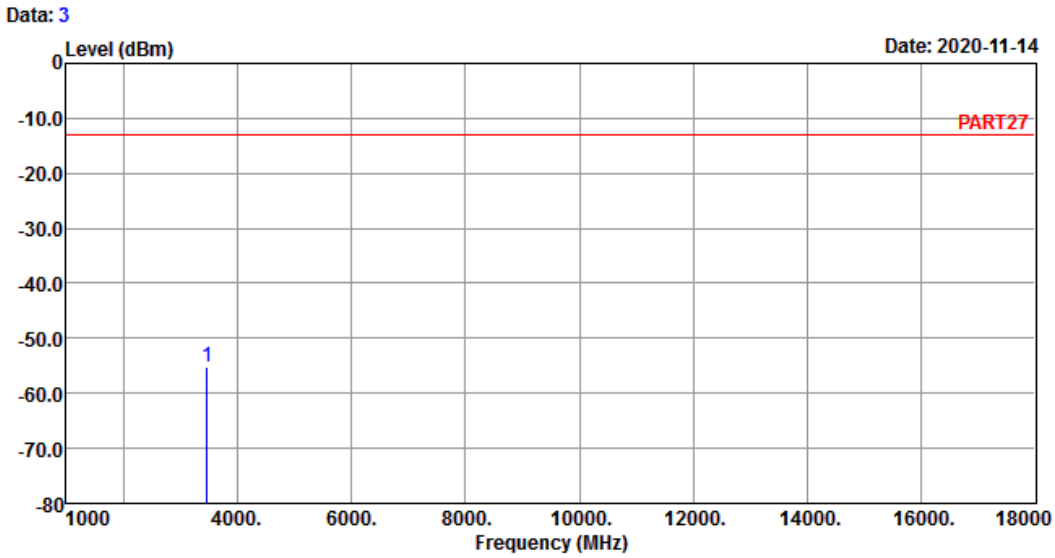


Site : 966 Chamber 5
Condition: PART27 VERTICAL
Remak : LTE Band 4 QPSK_5M Link_L-CH
Tested by: Getaz Yang

	Freq	Level	Read Level	Limit Line	Factor	Over Limit	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1 pp	3425.00	-57.58	-49.24	-13.00	-8.34	-44.58	Peak

Middle Channel

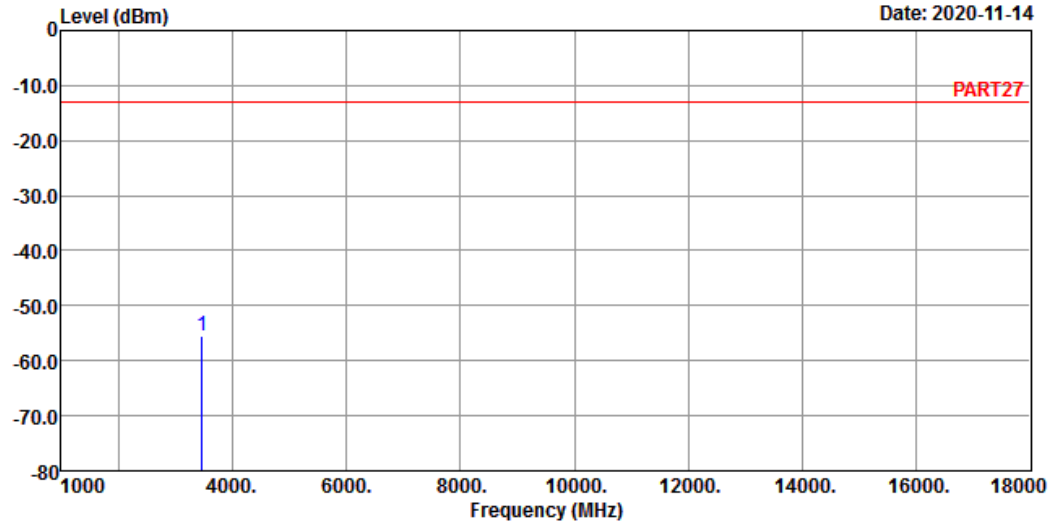
Bureau Veritas Consumer Products Services Ltd.,Taoyuan Branch



Site : 966 Chamber 5
Condition: PART27 HORIZONTAL
Remak : LTE Band 4 QPSK_5M Link_M-CH
Tested by: Getaz Yang

	Freq	Level	Read Level	Limit Line	Factor	Over Limit	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1 pp	3465.00	-55.28	-47.40	-13.00	-7.88	-42.28	Peak

Data: 4

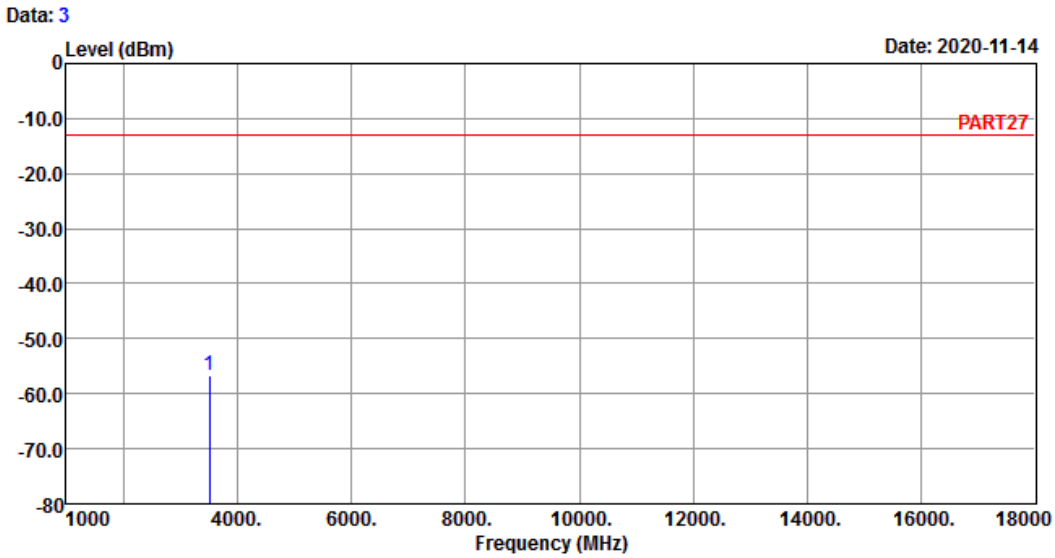


Site : 966 Chamber 5
Condition: PART27 VERTICAL
Remak : LTE Band 4 QPSK_5M Link_M-CH
Tested by: Getaz Yang

	Freq	Level	Read Level	Limit Line	Factor	Over Limit	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1 pp	3465.00	-55.54	-47.66	-13.00	-7.88	-42.54	Peak

High Channel

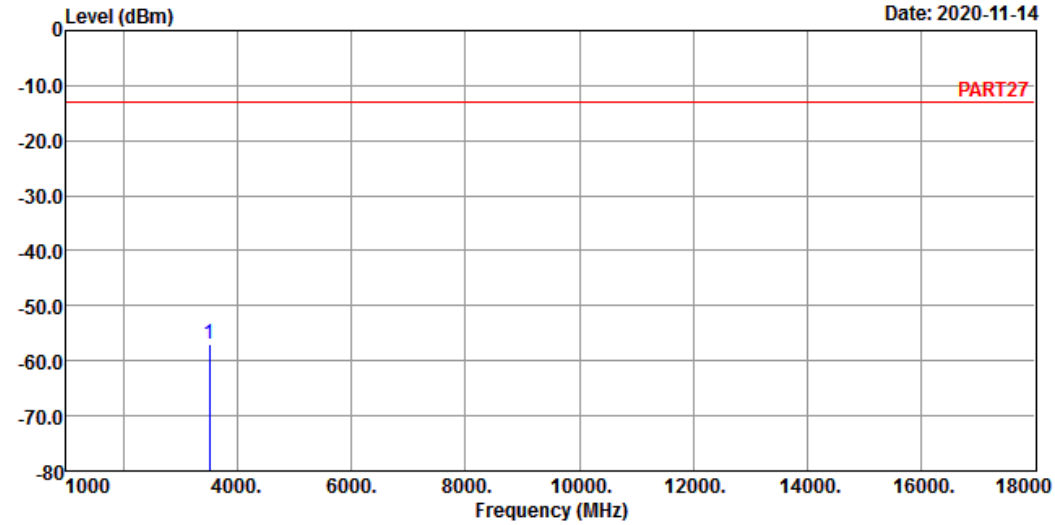
Bureau Veritas Consumer Products Services Ltd.,Taoyuan Branch



Site : 966 Chamber 5
Condition: PART27 HORIZONTAL
Remak : LTE Band 4 QPSK_5M Link_H-CH
Tested by: Getaz Yang

	Freq	Level	Read Level	Limit Line	Factor	Over Limit	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1 pp	3505.00	-56.69	-49.24	-13.00	-7.45	-43.69	Peak

Data: 4

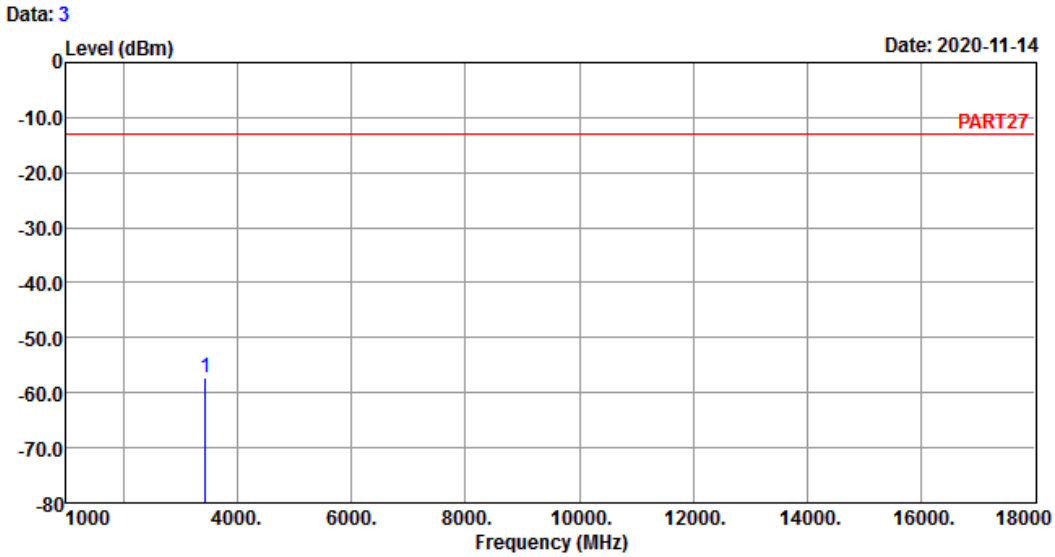


Site : 966 Chamber 5
Condition: PART27 VERTICAL
Remak : LTE Band 4 QPSK_5M Link_H-CH
Tested by: Getaz Yang

	Freq	Level	Read Level	Limit Line	Factor	Over Limit	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1 pp	3505.00	-56.87	-49.42	-13.00	-7.45	-43.87	Peak

Channel Bandwidth: 20 MHz / QPSK
Low Channel

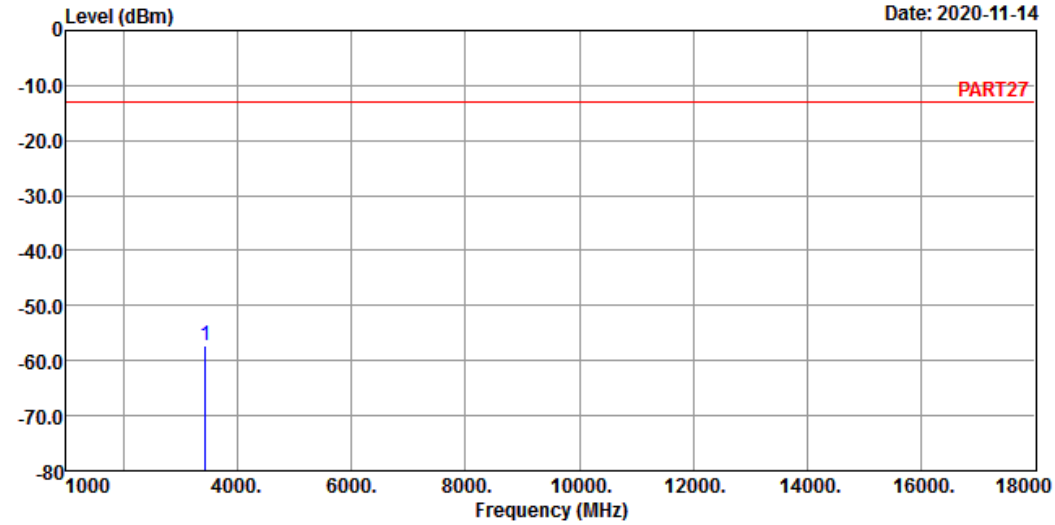
Bureau Veritas Consumer Products Services Ltd.,Taoyuan Branch



Site : 966 Chamber 5
Condition: PART27 HORIZONTAL
Remak : LTE Band 4 QPSK_20M Link_L-CH
Tested by: Getaz Yang

	Freq	Level	Read Level	Limit Line	Factor	Over Limit	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1 pp	3440.00	-57.28	-49.06	-13.00	-8.22	-44.28	Peak

Data: 4

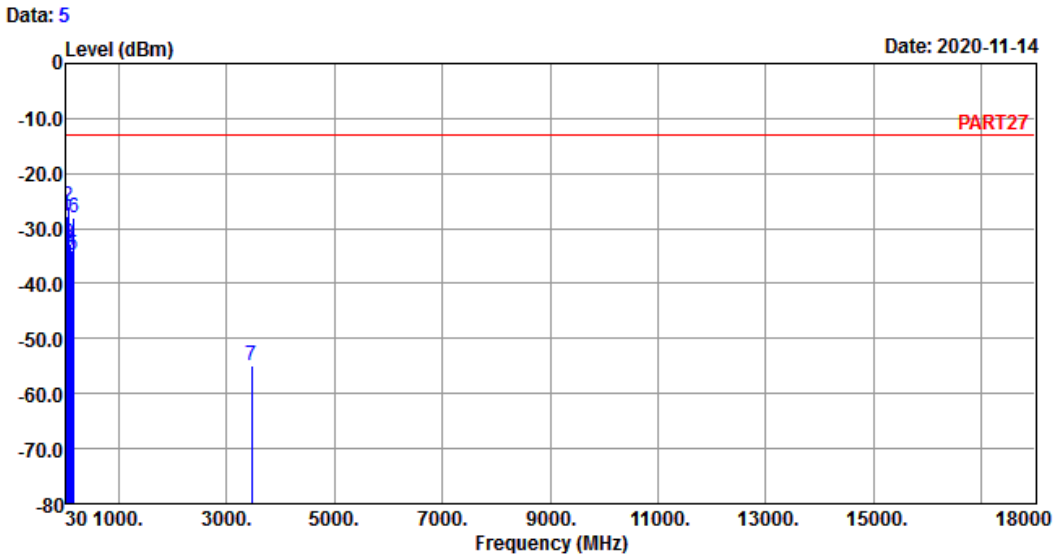


Site : 966 Chamber 5
Condition: PART27 VERTICAL
Remak : LTE Band 4 QPSK_20M Link_L-CH
Tested by: Getaz Yang

	Freq	Level	Read Level	Limit Line	Factor	Over Limit	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1 pp	3440.00	-57.30	-49.08	-13.00	-8.22	-44.30	Peak

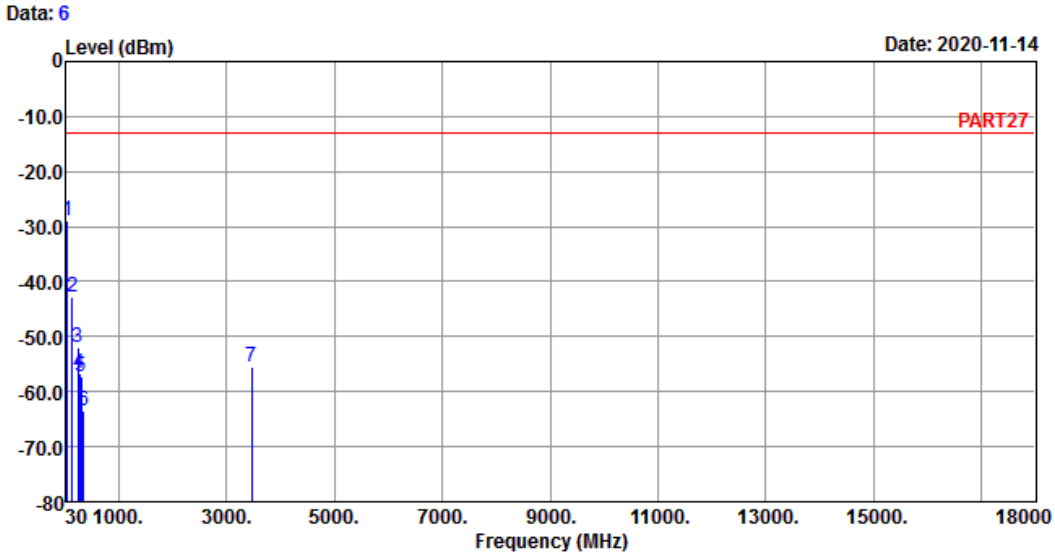
Middle Channel

Bureau Veritas Consumer Products Services Ltd.,Taoyuan Branch



Site : 966 Chamber 5
Condition: PART27 HORIZONTAL
Remak : LTE Band 4 QPSK_20M Link_M-CH
Tested by: Getaz Yang

	Freq	Level	Read Level	Limit Line	Factor	Over Limit	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1	35.82	-27.80	-26.27	-13.00	-1.53	-14.80	Peak
2 pp	71.71	-25.92	-17.07	-13.00	-8.85	-12.92	Peak
3	97.90	-32.86	-22.19	-13.00	-10.67	-19.86	Peak
4	120.21	-34.07	-24.22	-13.00	-9.85	-21.07	Peak
5	143.49	-34.70	-26.44	-13.00	-8.26	-21.70	Peak
6	169.68	-27.93	-22.40	-13.00	-5.53	-14.93	Peak
7	3465.00	-54.80	-46.92	-13.00	-7.88	-41.80	Peak

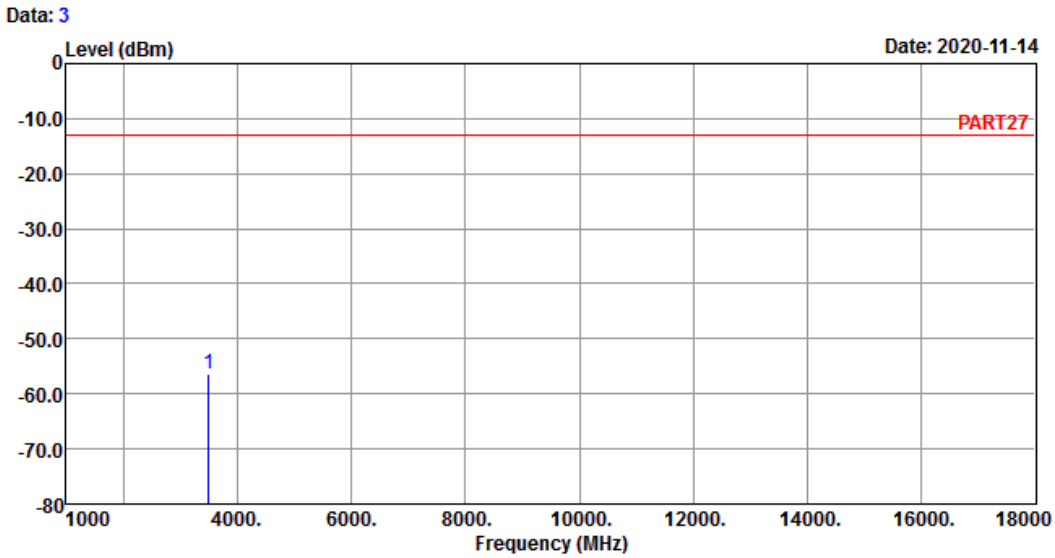


Site : 966 Chamber 5
Condition: PART27 VERTICAL
Remak : LTE Band 4 QPSK_20M Link_M-CH
Tested by: Getaz Yang

	Freq	Level	Read Level	Limit Line	Factor	Over Limit	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1 pp	45.52	-29.03	-26.53	-13.00	-2.50	-16.03	Peak
2	141.55	-42.89	-34.43	-13.00	-8.46	-29.89	Peak
3	246.31	-52.09	-45.94	-13.00	-6.15	-39.09	Peak
4	277.35	-56.67	-50.12	-13.00	-6.55	-43.67	Peak
5	305.48	-57.38	-50.46	-13.00	-6.92	-44.38	Peak
6	351.07	-63.48	-57.25	-13.00	-6.23	-50.48	Peak
7	3465.00	-55.39	-47.51	-13.00	-7.88	-42.39	Peak

High Channel

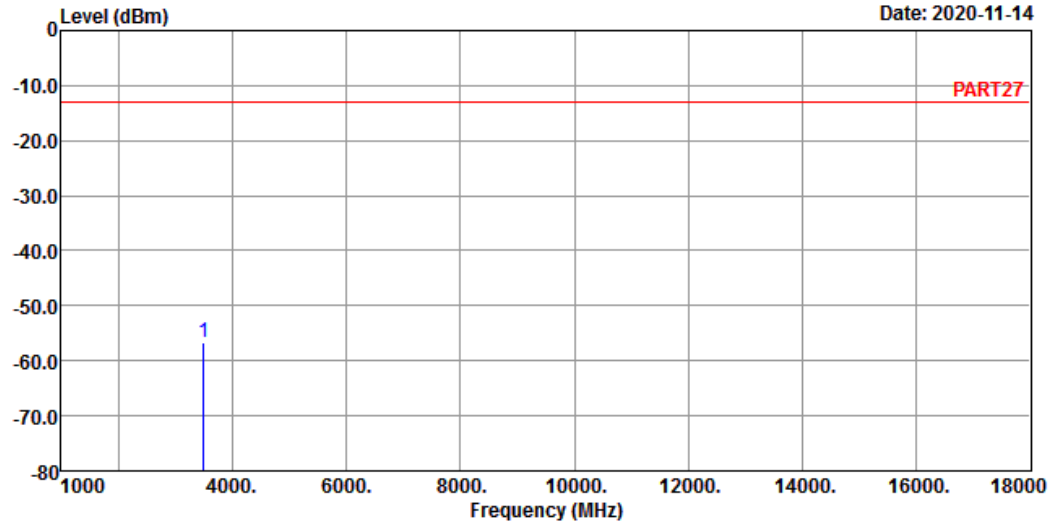
Bureau Veritas Consumer Products Services Ltd.,Taoyuan Branch



Site : 966 Chamber 5
Condition: PART27 HORIZONTAL
Remak : LTE Band 4 QPSK_20M Link_H-CH
Tested by: Getaz Yang

	Freq	Level	Read Level	Limit Line	Factor	Over Limit	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1 pp	3490.00	-56.40	-48.75	-13.00	-7.65	-43.40	Peak

Data: 4

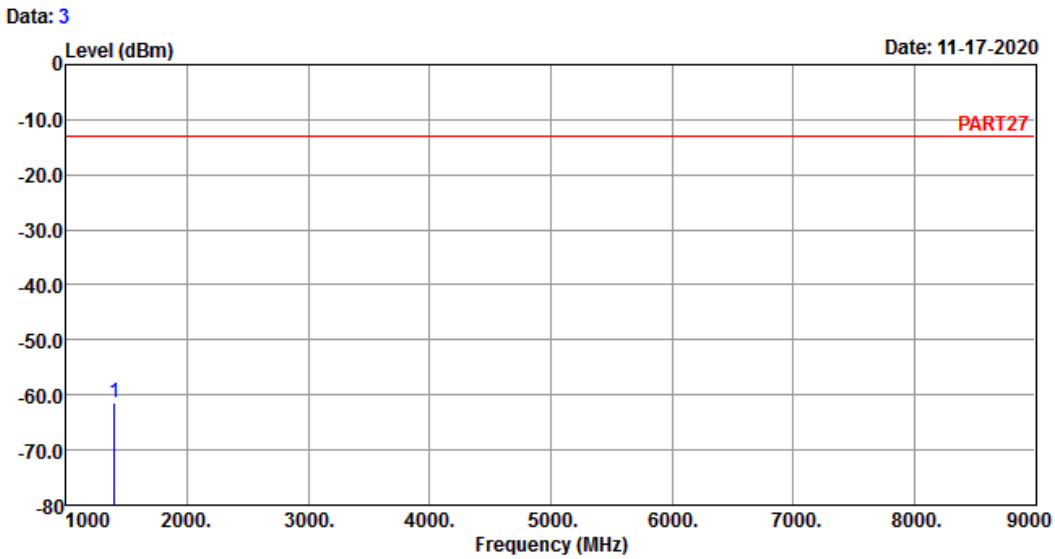


Site : 966 Chamber 5
Condition: PART27 VERTICAL
Remak : LTE Band 4 QPSK_20M Link_H-CH
Tested by: Getaz Yang

	Freq	Level	Read Level	Limit Line	Factor	Over Limit	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1 pp	3490.00	-56.57	-48.92	-13.00	-7.65	-43.57	Peak

LTE Band 12
Channel Bandwidth: 1.4 MHz / QPSK
Low Channel

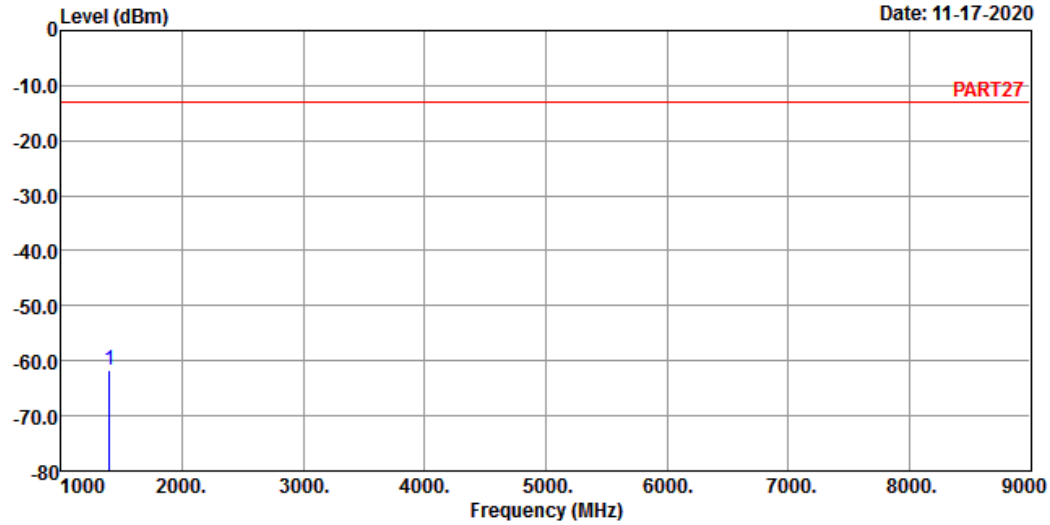
Bureau Veritas Consumer Products Services Ltd.,Taoyuan Branch




```
Site     : 966 Chamber 5
Condition: PART27 HORIZONTAL
Remak    : LTE Band 12 QPSK_1.4M Link_L-CH
Tested by: Cyril Chen
```

	Freq	Level	Read Level	Limit Line	Factor	Over Limit	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1 pp	1399.40	-61.55	-49.70	-13.00	-11.85	-48.55	Peak

Data: 4

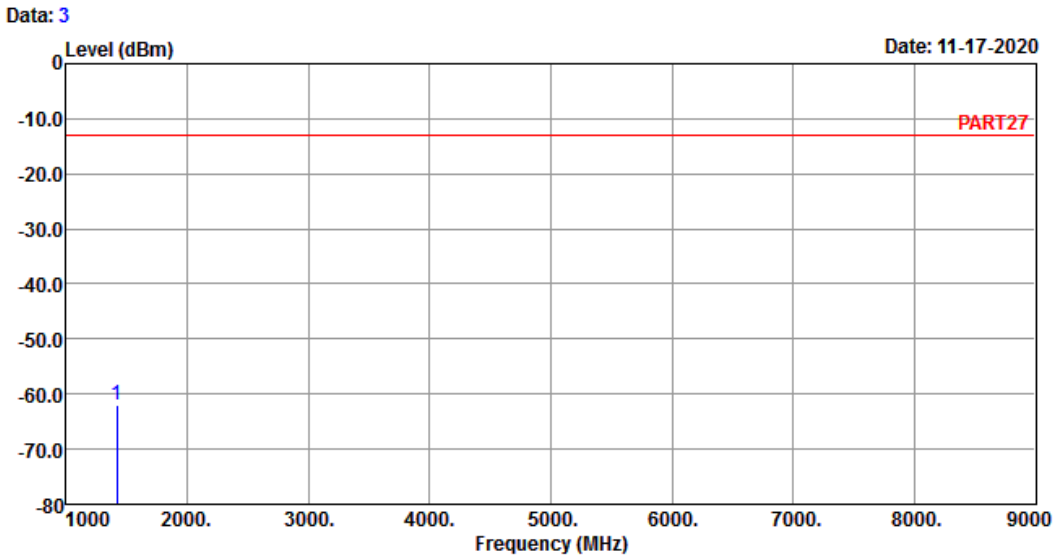


Site : 966 Chamber 5
Condition: PART27 VERTICAL
Remak : LTE Band 12 QPSK_1.4M Link_L-CH
Tested by: Cyril Chen

	Freq	Level	Read Level	Limit Line	Factor	Over Limit	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1 pp	1399.40	-61.62	-49.77	-13.00	-11.85	-48.62	Peak

Middle Channel

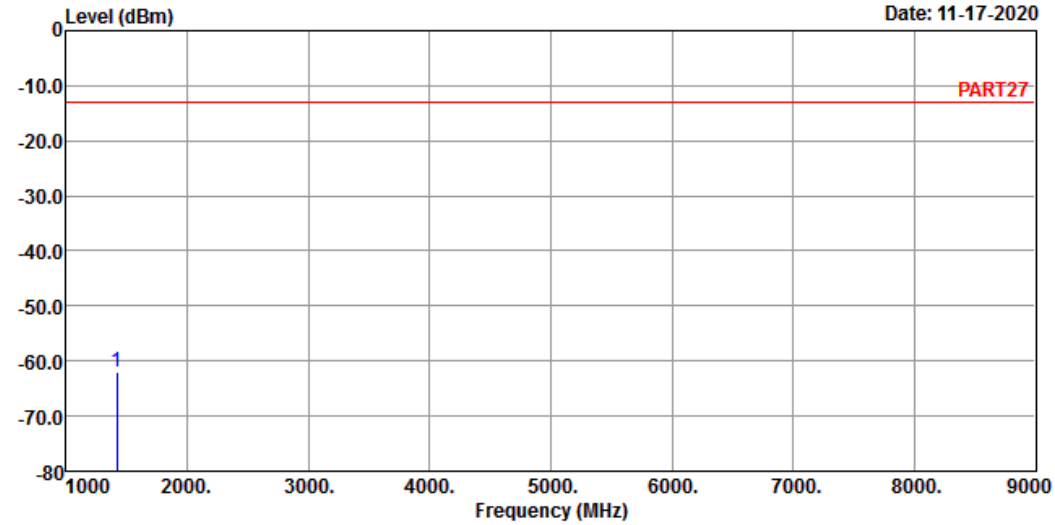
Bureau Veritas Consumer Products Services Ltd.,Taoyuan Branch



Site : 966 Chamber 5
Condition: PART27 HORIZONTAL
Remak : LTE Band 12 QPSK_1.4M Link_M-CH
Tested by: Cyril Chen

	Freq	Level	Read Level	Limit Line	Factor	Over Limit	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1 pp	1415.00	-61.92	-49.84	-13.00	-12.08	-48.92	Peak

Data: 4

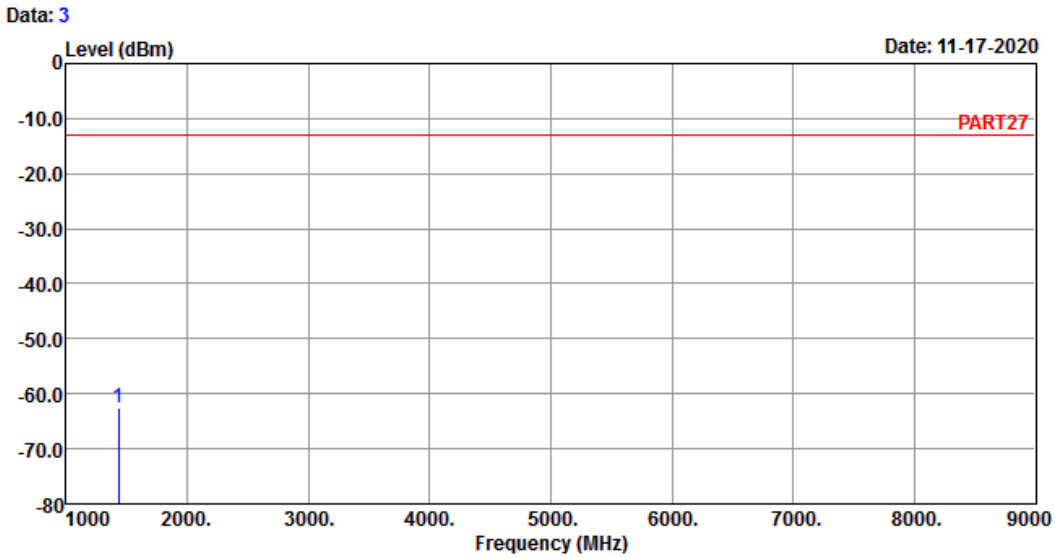


Site : 966 Chamber 5
Condition: PART27 VERTICAL
Remak : LTE Band 12 QPSK_1.4M Link_M-CH
Tested by: Cyril Chen

	Freq	Level	Read Level	Limit Line	Factor	Over Limit	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1 pp	1415.00	-61.89	-49.81	-13.00	-12.08	-48.89	Peak

High Channel

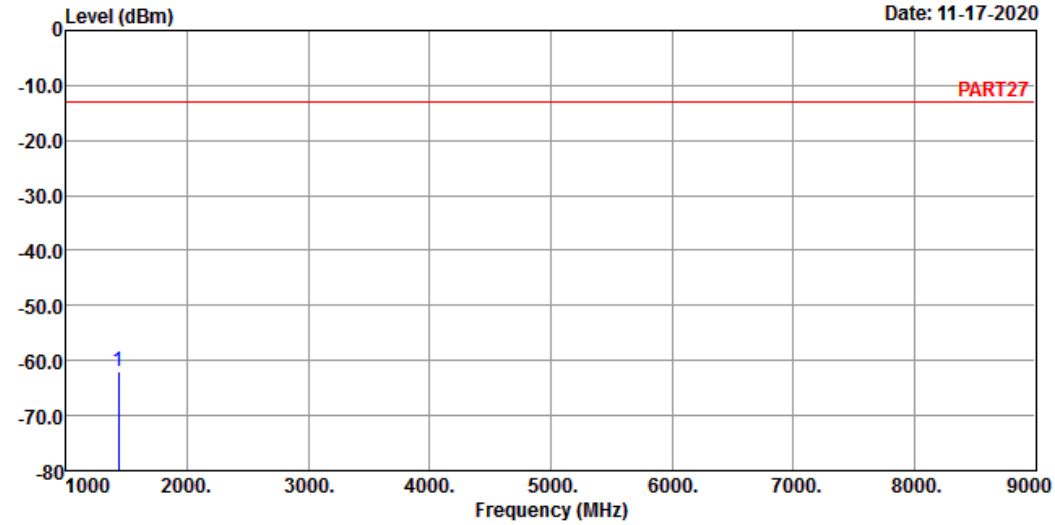
Bureau Veritas Consumer Products Services Ltd.,Taoyuan Branch



Site : 966 Chamber 5
Condition: PART27 HORIZONTAL
Remak : LTE Band 12 QPSK_1.4M Link_H-CH
Tested by: Cyril Chen

	Freq	Level	Read Level	Limit Line	Factor	Over Limit	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1 pp	1430.60	-62.47	-50.16	-13.00	-12.31	-49.47	Peak

Data: 4

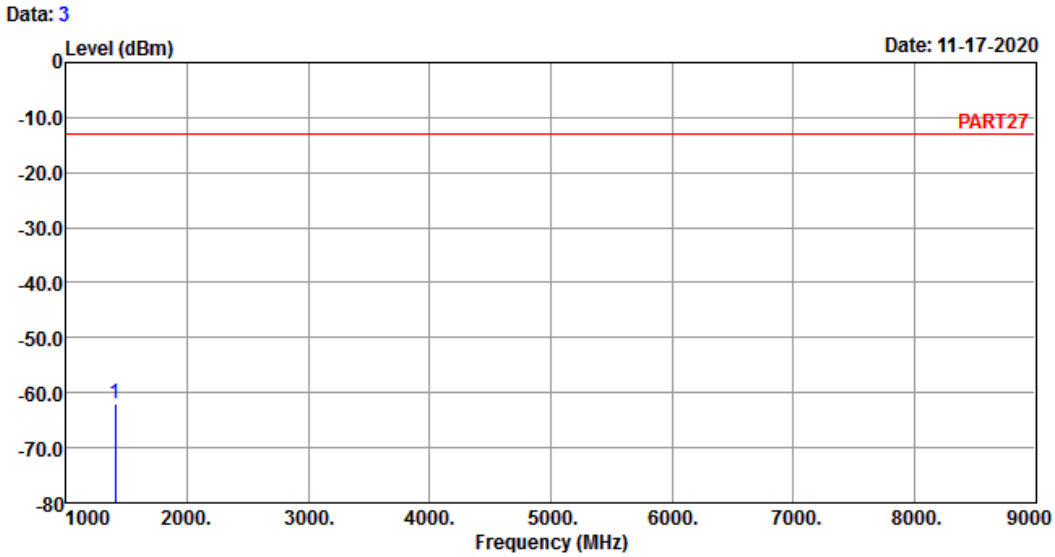


Site : 966 Chamber 5
Condition: PART27 VERTICAL
Remak : LTE Band 12 QPSK_1.4M Link_H-CH
Tested by: Cyril Chen

	Freq	Level	Read Level	Limit Line	Factor	Over Limit	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1 pp	1430.60	-61.88	-49.57	-13.00	-12.31	-48.88	Peak

Channel Bandwidth: 5 MHz / QPSK
Low Channel

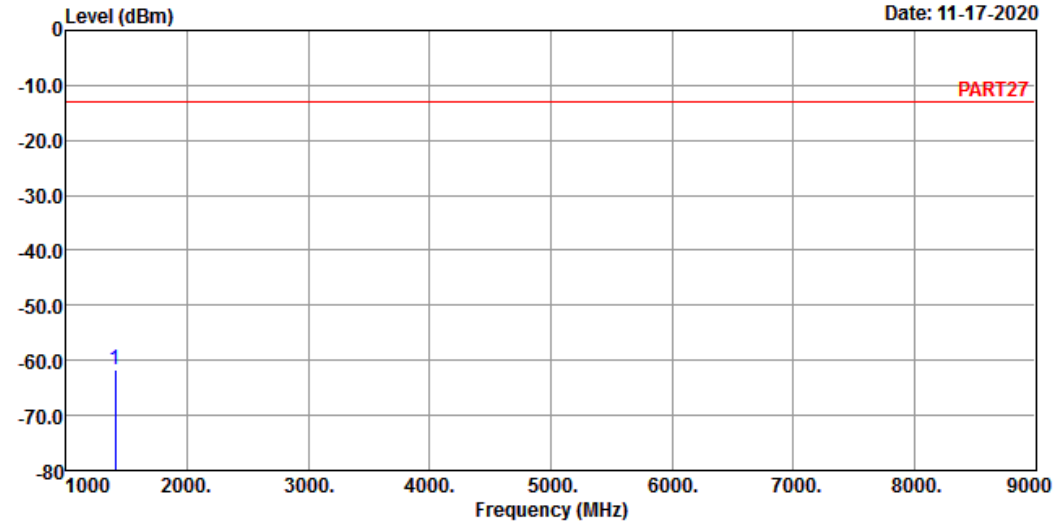
Bureau Veritas Consumer Products Services Ltd.,Taoyuan Branch



Site : 966 Chamber 5
Condition: PART27 HORIZONTAL
Remak : LTE Band 12 QPSK_5M Link_L-CH
Tested by: Cyril Chen

	Freq	Level	Read Level	Limit Line	Factor	Over Limit	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1 pp	1403.00	-61.93	-50.02	-13.00	-11.91	-48.93	Peak

Data: 4



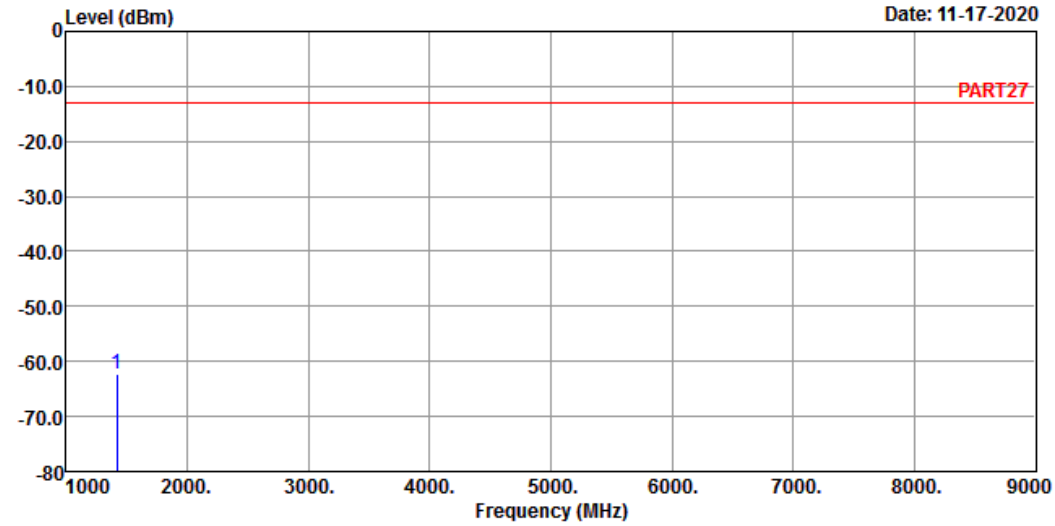
Site : 966 Chamber 5
Condition: PART27 VERTICAL
Remak : LTE Band 12 QPSK_5M Link_L-CH
Tested by: Cyril Chen

	Freq	Level	Read Level	Limit Line	Factor	Over Limit	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1 pp	1403.00	-61.83	-49.92	-13.00	-11.91	-48.83	Peak

Middle Channel

Bureau Veritas Consumer Products Services Ltd.,Taoyuan Branch

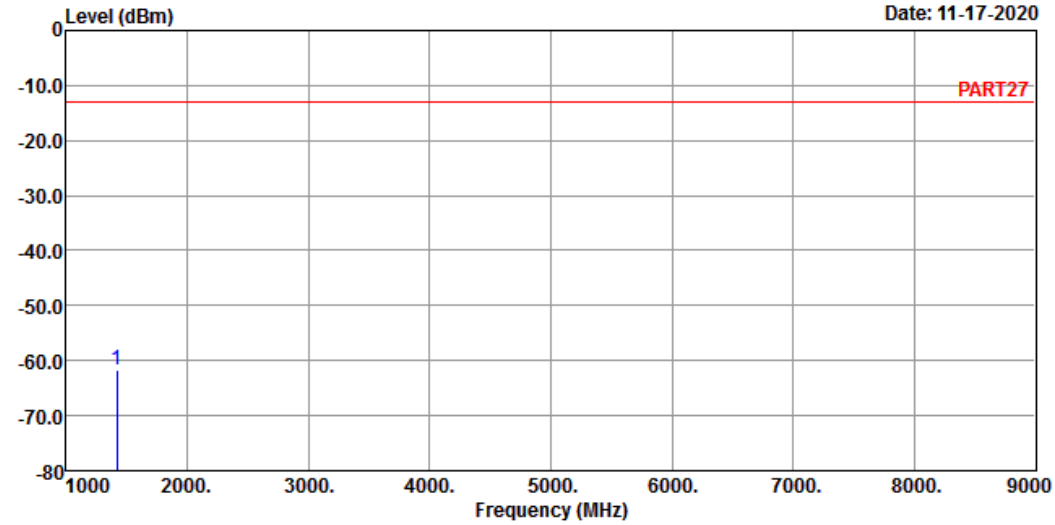
Data: 3



Site : 966 Chamber 5
Condition: PART27 HORIZONTAL
Remak : LTE Band 12 QPSK_5M Link_M-CH
Tested by: Cyril Chen

	Freq	Level	Read Level	Limit Line	Factor	Over Limit	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1 pp	1415.00	-62.28	-50.20	-13.00	-12.08	-49.28	Peak

Data: 4

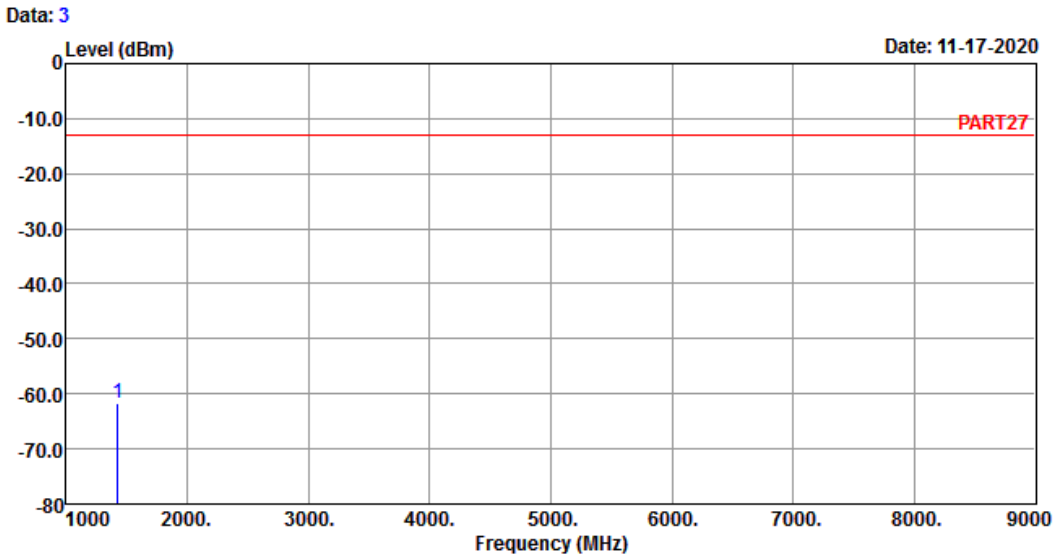


Site : 966 Chamber 5
Condition: PART27 VERTICAL
Remak : LTE Band 12 QPSK_5M Link_M-CH
Tested by: Cyril Chen

	Freq	Level	Read Level	Limit Line	Factor	Over Limit	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1 pp	1415.00	-61.63	-49.55	-13.00	-12.08	-48.63	Peak

High Channel

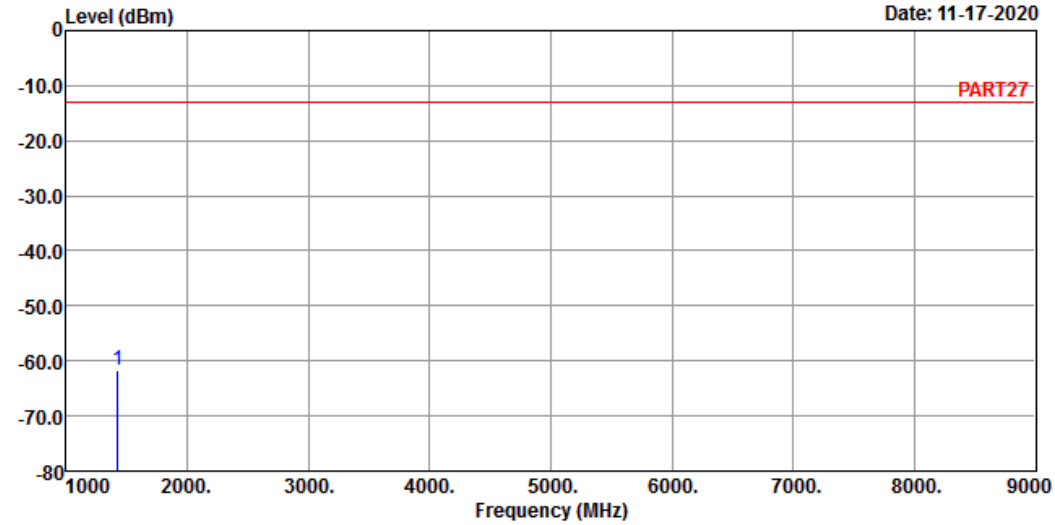
Bureau Veritas Consumer Products Services Ltd.,Taoyuan Branch



Site : 966 Chamber 5
Condition: PART27 HORIZONTAL
Remak : LTE Band 12 QPSK_5M Link_H-CH
Tested by: Cyril Chen

	Freq	Level	Read Level	Limit Line	Factor	Over Limit	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1 pp	1427.00	-61.62	-49.37	-13.00	-12.25	-48.62	Peak

Data: 4



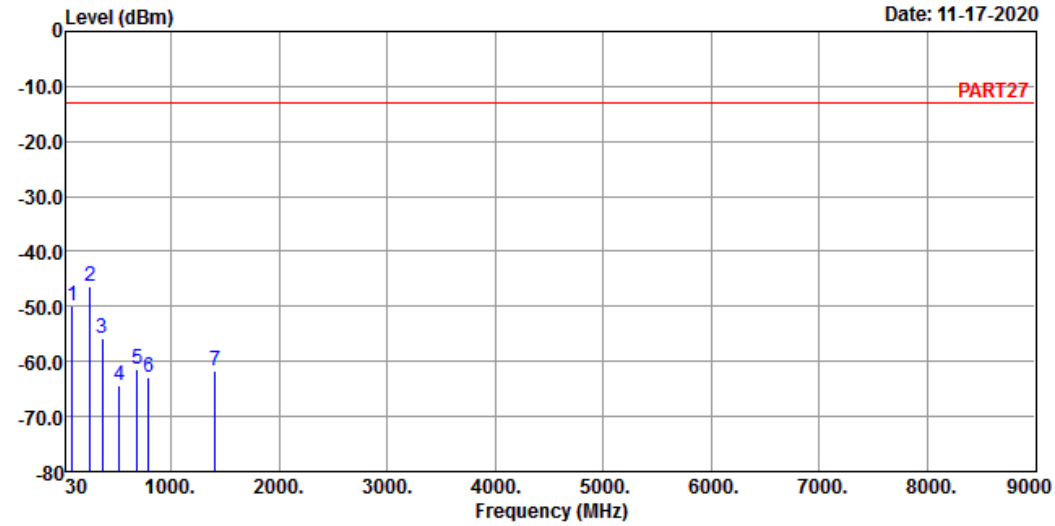
Site : 966 Chamber 5
Condition: PART27 VERTICAL
Remak : LTE Band 12 QPSK_5M Link_H-CH
Tested by: Cyril Chen

	Freq	Level	Read Level	Limit Line	Factor	Over Limit	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1 pp	1427.00	-61.64	-49.39	-13.00	-12.25	-48.64	Peak

Channel Bandwidth: 10 MHz / QPSK
Low Channel

Bureau Veritas Consumer Products Services Ltd.,Taoyuan Branch

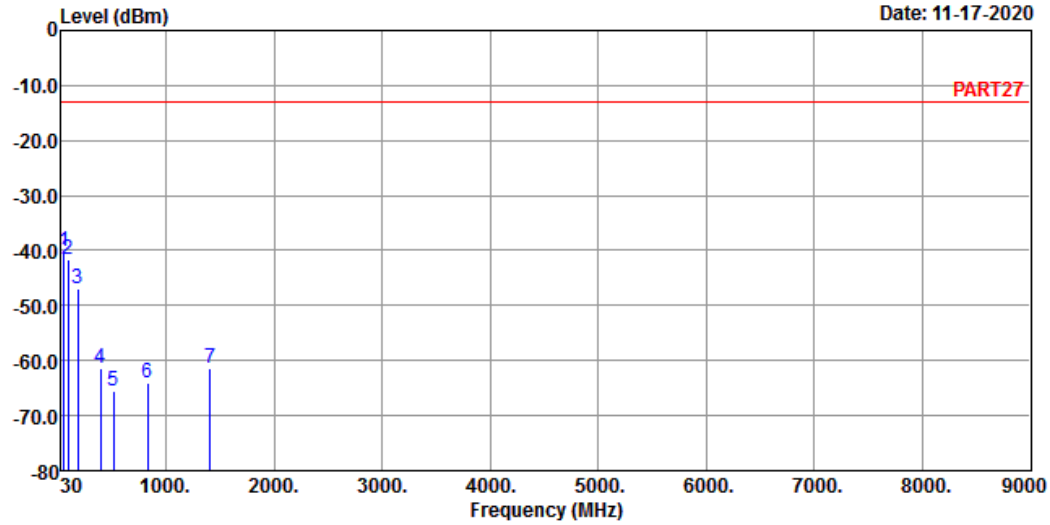
Data: 5



Site : 966 Chamber 5
Condition: PART27 HORIZONTAL
Remak : LTE Band 12 QPSK_10M Link_L-CH
Tested by: Cyril Chen

	Freq	Level	Read Level	Limit Line	Factor	Over Limit	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1	82.38	-49.86	-38.93	-13.00	-10.93	-36.86	Peak
2 pp	252.13	-46.46	-40.43	-13.00	-6.03	-33.46	Peak
3	365.62	-55.67	-49.52	-13.00	-6.15	-42.67	Peak
4	523.73	-64.25	-60.47	-13.00	-3.78	-51.25	Peak
5	685.72	-61.30	-60.97	-13.00	-0.33	-48.30	Peak
6	791.45	-63.01	-63.77	-13.00	0.76	-50.01	Peak
7	1408.00	-61.81	-49.85	-13.00	-11.96	-48.81	Peak

Data: 6



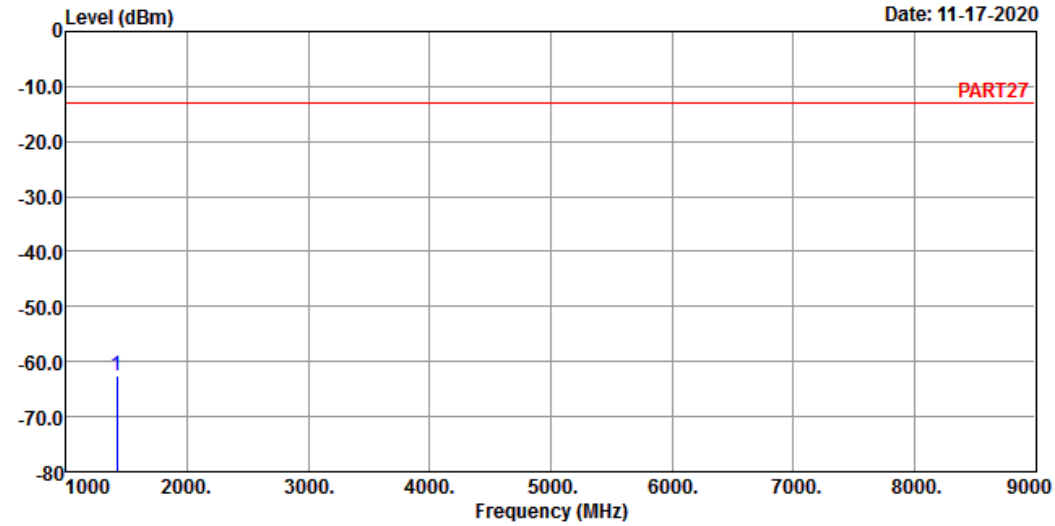
Site : 966 Chamber 5
Condition: PART27 VERTICAL
Remak : LTE Band 12 QPSK_10M Link_L-CH
Tested by: Cyril Chen

	Freq	Level	Read Level	Limit Line	Factor	Over Limit	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1 pp	57.16	-40.19	-33.32	-13.00	-6.87	-27.19	Peak
2	94.99	-41.75	-30.91	-13.00	-10.84	-28.75	Peak
3	180.35	-47.05	-39.65	-13.00	-7.40	-34.05	Peak
4	395.69	-61.27	-55.30	-13.00	-5.97	-48.27	Peak
5	511.12	-65.67	-61.44	-13.00	-4.23	-52.67	Peak
6	826.37	-64.16	-64.66	-13.00	0.50	-51.16	Peak
7	1408.00	-61.27	-49.31	-13.00	-11.96	-48.27	Peak

Middle Channel

Bureau Veritas Consumer Products Services Ltd.,Taoyuan Branch

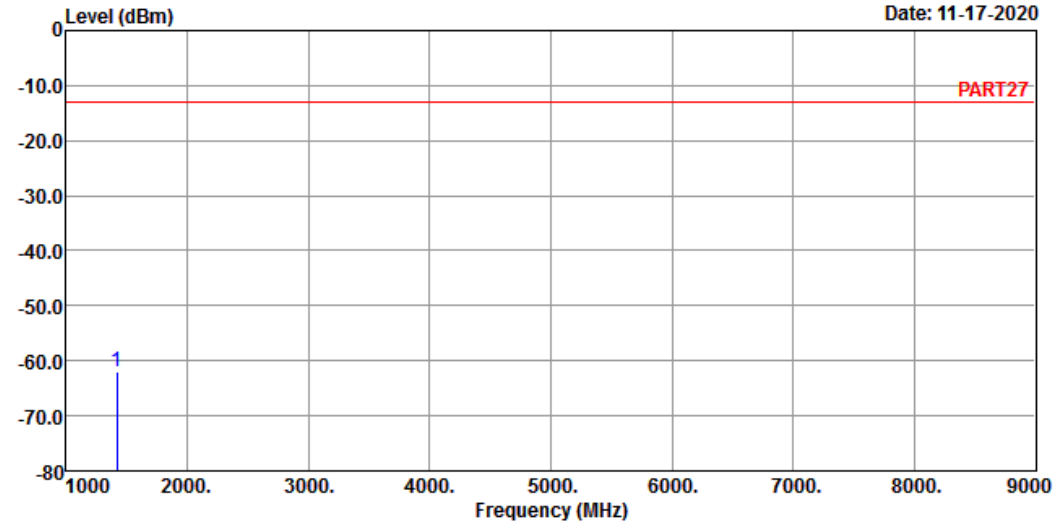
Data: 3



Site : 966 Chamber 5
Condition: PART27 HORIZONTAL
Remak : LTE Band 12 QPSK_10M Link_M-CH
Tested by: Cyril Chen

	Freq	Level	Read Level	Limit Line	Factor	Over Limit	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1 pp	1415.00	-62.44	-50.36	-13.00	-12.08	-49.44	Peak

Data: 4

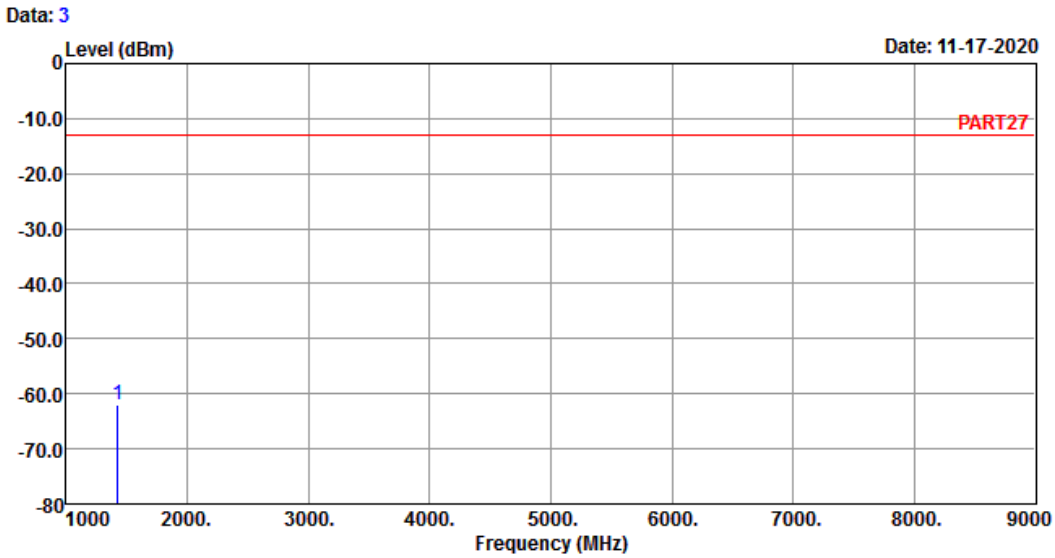


Site : 966 Chamber 5
Condition: PART27 VERTICAL
Remak : LTE Band 12 QPSK_10M Link_M-CH
Tested by: Cyril Chen

	Freq	Level	Read Level	Limit Line	Factor	Over Limit	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1 pp	1415.00	-62.07	-49.99	-13.00	-12.08	-49.07	Peak

High Channel

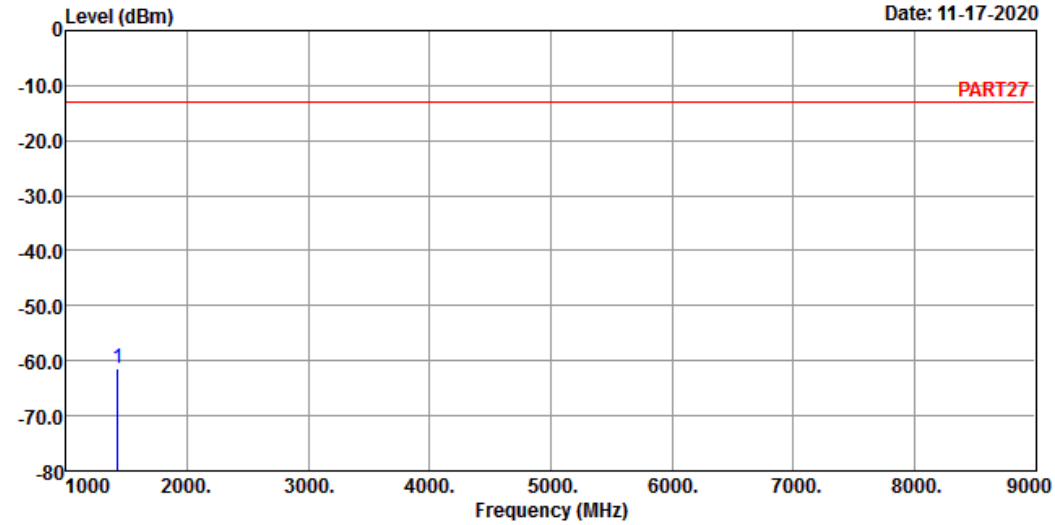
Bureau Veritas Consumer Products Services Ltd.,Taoyuan Branch



Site : 966 Chamber 5
Condition: PART27 HORIZONTAL
Remak : LTE Band 12 QPSK_10M Link_H-CH
Tested by: Cyril Chen

	Freq	Level	Read Level	Limit Line	Factor	Over Limit	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1 pp	1422.00	-61.89	-49.70	-13.00	-12.19	-48.89	Peak

Data: 4

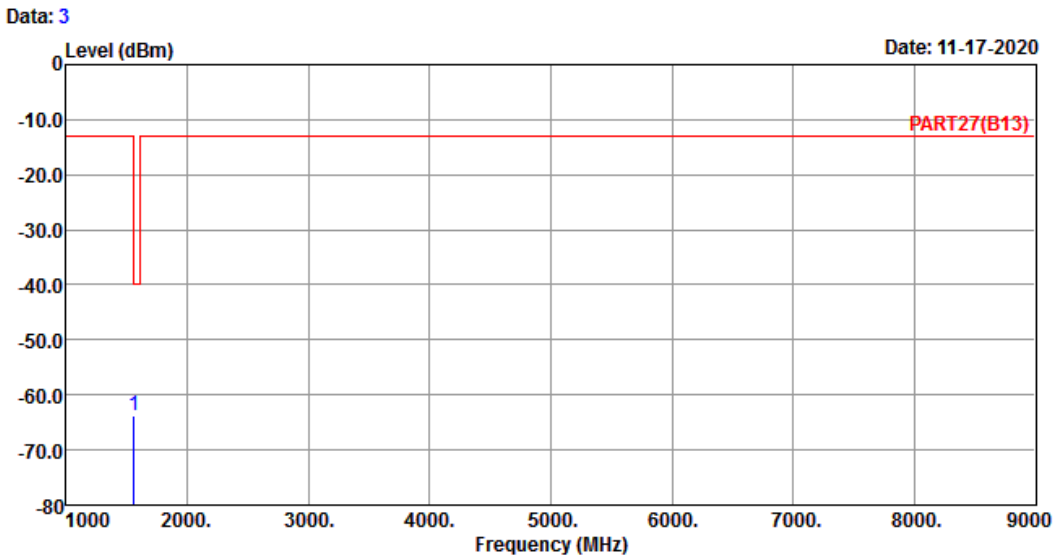


Site : 966 Chamber 5
Condition: PART27 VERTICAL
Remak : LTE Band 12 QPSK_10M Link_H-CH
Tested by: Cyril Chen

	Freq	Level	Read Level	Limit Line	Factor	Over Limit	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1 pp	1422.00	-61.30	-49.11	-13.00	-12.19	-48.30	Peak

LTE Band 13
Channel Bandwidth: 5 MHz / QPSK
Low Channel

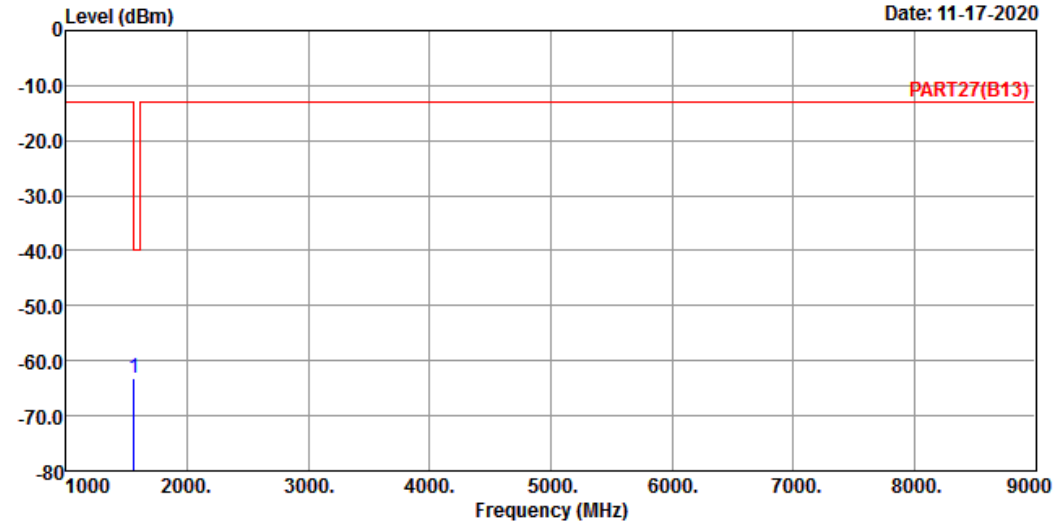
Bureau Veritas Consumer Products Services Ltd.,Taoyuan Branch



Site : 966 Chamber 5
Condition: PART27(B13) HORIZONTAL
Remak : LTE Band 13 QPSK_5M Link_L-CH
Tested by: Cyril Chen

	Freq	Level	Read Level	Limit Line	Factor	Over Limit	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1 pp	1559.00	-63.81	-50.49	-40.00	-13.32	-23.81	Peak

Data: 4



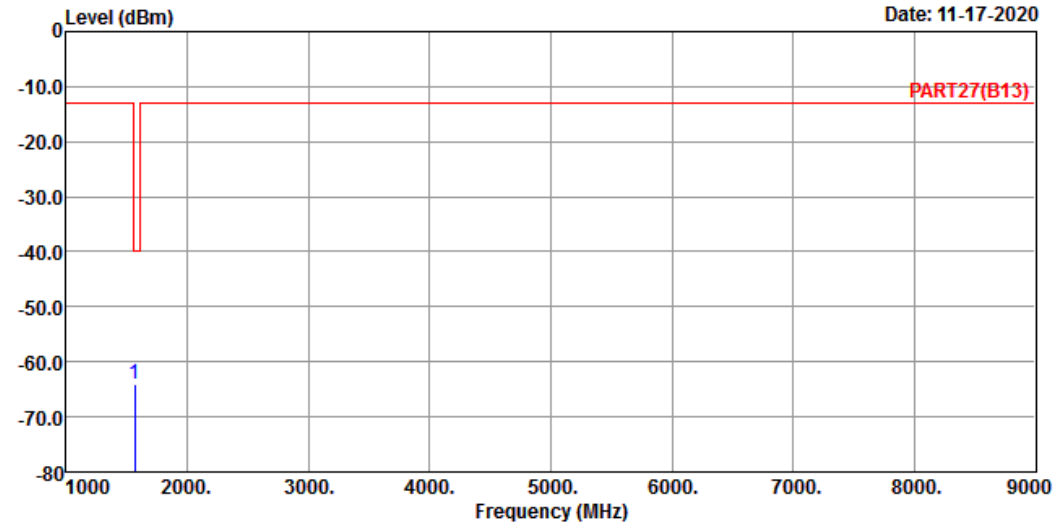
Site : 966 Chamber 5
Condition: PART27(B13) VERTICAL
Remak : LTE Band 13 QPSK_5M Link_L-CH
Tested by: Cyril Chen

	Freq	Level	Read Level	Limit Line	Factor	Over Limit	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1 pp	1559.00	-63.25	-49.93	-40.00	-13.32	-23.25	Peak

Middle Channel

Bureau Veritas Consumer Products Services Ltd.,Taoyuan Branch

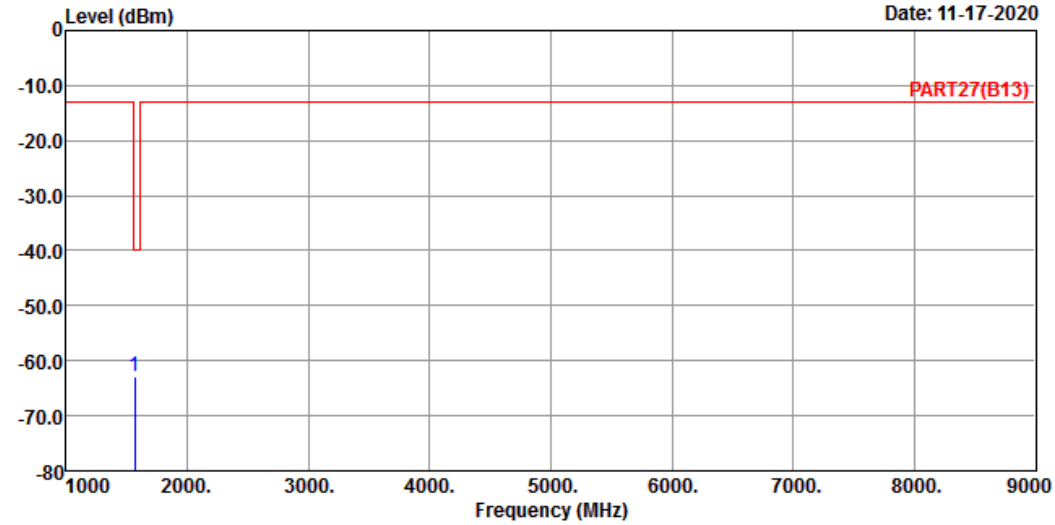
Data: 3



Site : 966 Chamber 5
Condition: PART27(B13) HORIZONTAL
Remak : LTE Band 13 QPSK_5M Link_M-CH
Tested by: Cyril Chen

	Freq	Level	Read Level	Limit Line	Factor	Over Limit	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1 pp	1564.00	-63.96	-50.62	-40.00	-13.34	-23.96	Peak

Data: 4

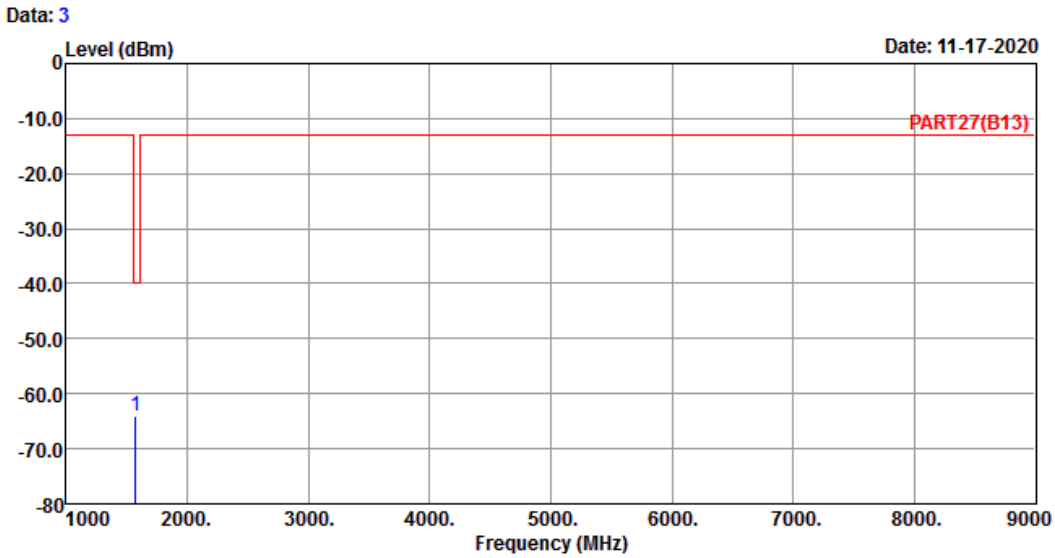


Site : 966 Chamber 5
Condition: PART27(B13) VERTICAL
Remak : LTE Band 13 QPSK_5M Link_M-CH
Tested by: Cyril Chen

	Freq	Level	Read Level	Limit Line	Factor	Over Limit	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1 pp	1564.00	-62.78	-49.44	-40.00	-13.34	-22.78	Peak

High Channel

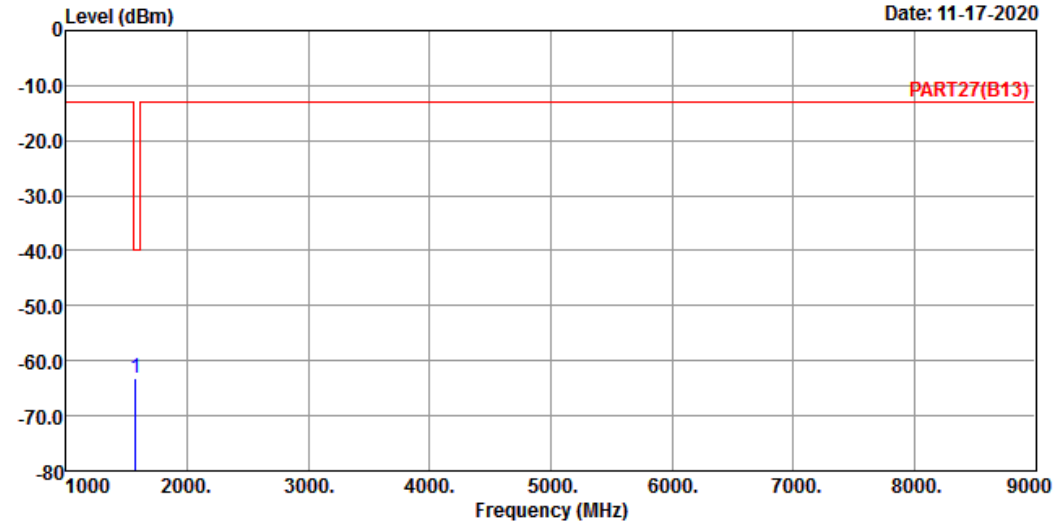
Bureau Veritas Consumer Products Services Ltd.,Taoyuan Branch



Site : 966 Chamber 5
Condition: PART27(B13) HORIZONTAL
Remak : LTE Band 13 QPSK_5M Link_H-CH
Tested by: Cyril Chen

	Freq	Level	Read Level	Limit Line	Factor	Over Limit	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1 pp	1569.00	-63.98	-50.63	-40.00	-13.35	-23.98	Peak

Data: 4

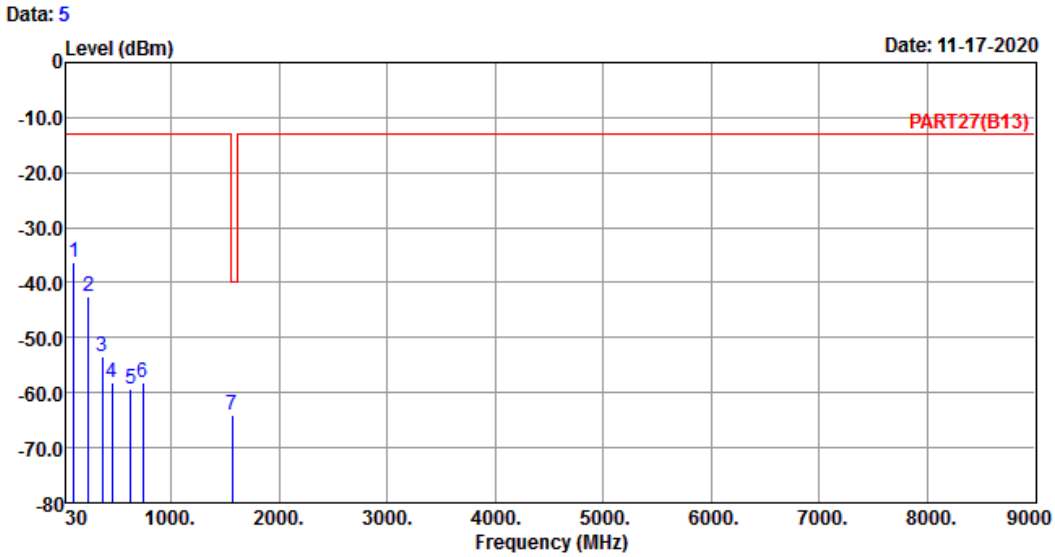


Site : 966 Chamber 5
Condition: PART27(B13) VERTICAL
Remak : LTE Band 13 QPSK_5M Link_H-CH
Tested by: Cyril Chen

	Freq	Level	Read Level	Limit Line	Factor	Over Limit	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1 pp	1569.00	-63.21	-49.86	-40.00	-13.35	-23.21	Peak

Channel Bandwidth: 10 MHz / QPSK
Middle Channel

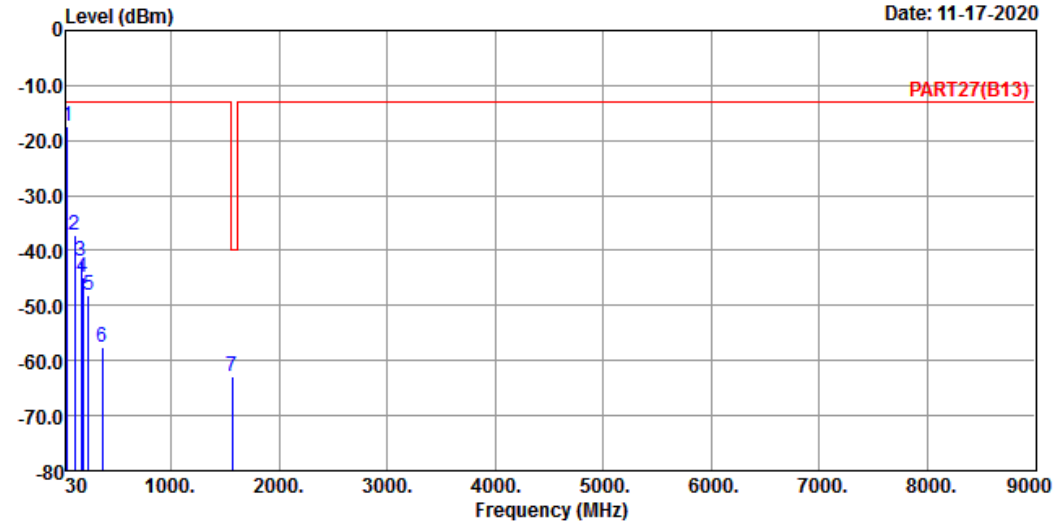
Bureau Veritas Consumer Products Services Ltd.,Taoyuan Branch



Site : 966 Chamber 5
Condition: PART27(B13) HORIZONTAL
Remak : LTE Band 13 QPSK_10M Link_M-CH
Tested by: Cyril Chen

	Freq	Level	Read Level	Limit Line	Factor	Over Limit	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1 pp	98.87	-36.23	-25.61	-13.00	-10.62	-23.23	Peak
2	237.58	-42.64	-36.14	-13.00	-6.50	-29.64	Peak
3	365.62	-53.36	-47.21	-13.00	-6.15	-40.36	Peak
4	452.92	-58.20	-52.70	-13.00	-5.50	-45.20	Peak
5	623.64	-59.36	-58.54	-13.00	-0.82	-46.36	Peak
6	741.01	-58.10	-58.81	-13.00	0.71	-45.10	Peak
7	1564.00	-64.16	-50.82	-40.00	-13.34	-24.16	Peak

Data: 6

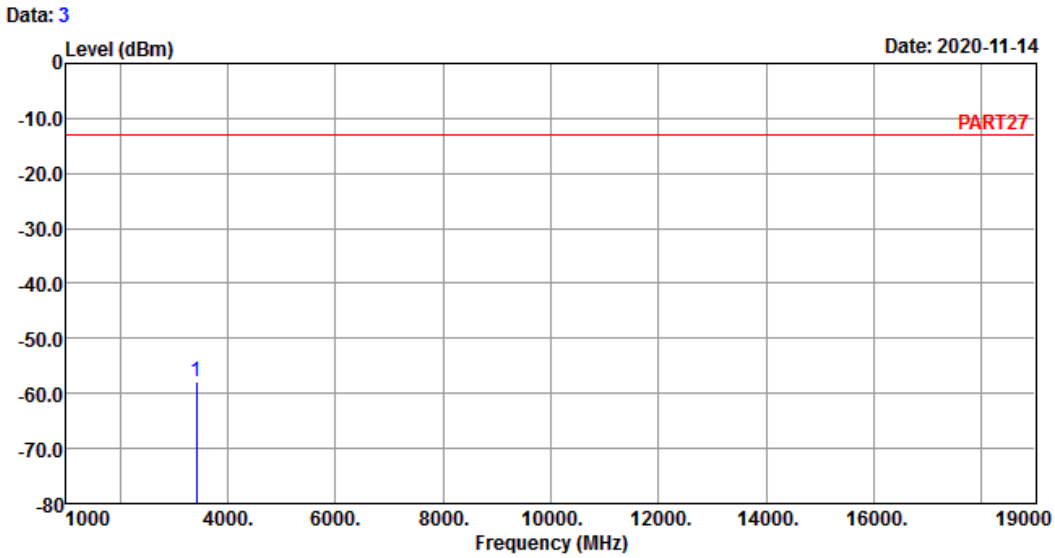


Site : 966 Chamber 5
Condition: PART27(B13) VERTICAL
Remak : LTE Band 13 QPSK_10M Link_M-CH
Tested by: Cyril Chen

	Freq	Level	Read Level	Limit Line	Factor	Over Limit	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1 pp	41.64	-17.28	-16.87	-13.00	-0.41	-4.28	Peak
2	108.57	-37.20	-26.85	-13.00	-10.35	-24.20	Peak
3	164.83	-41.85	-36.66	-13.00	-5.19	-28.85	Peak
4	186.17	-44.78	-37.57	-13.00	-7.21	-31.78	Peak
5	234.67	-48.24	-41.62	-13.00	-6.62	-35.24	Peak
6	364.65	-57.50	-51.35	-13.00	-6.15	-44.50	Peak
7	1564.00	-62.85	-49.51	-40.00	-13.34	-22.85	Peak

LTE Band 66:
Channel Bandwidth: 1.4 MHz / QPSK
Low Channel

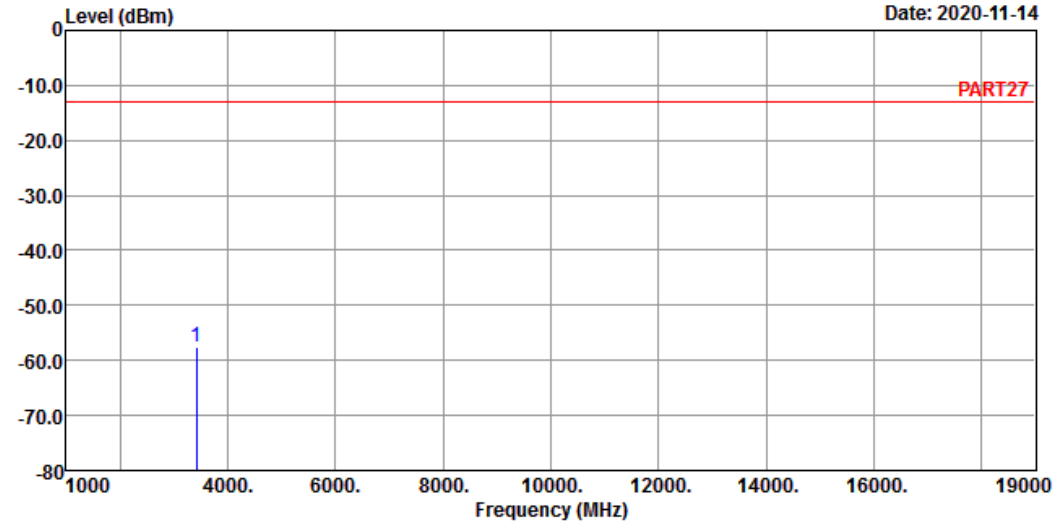
Bureau Veritas Consumer Products Services Ltd.,Taoyuan Branch



Site : 966 Chamber 5
Condition: PART27 HORIZONTAL
Remak : LTE Band 66 QPSK_1.4M Link_L-CH
Tested by: Getaz Yang

	Freq	Level	Read Level	Limit Line	Factor	Over Limit	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1 pp	3421.40	-57.76	-49.42	-13.00	-8.34	-44.76	Peak

Data: 4

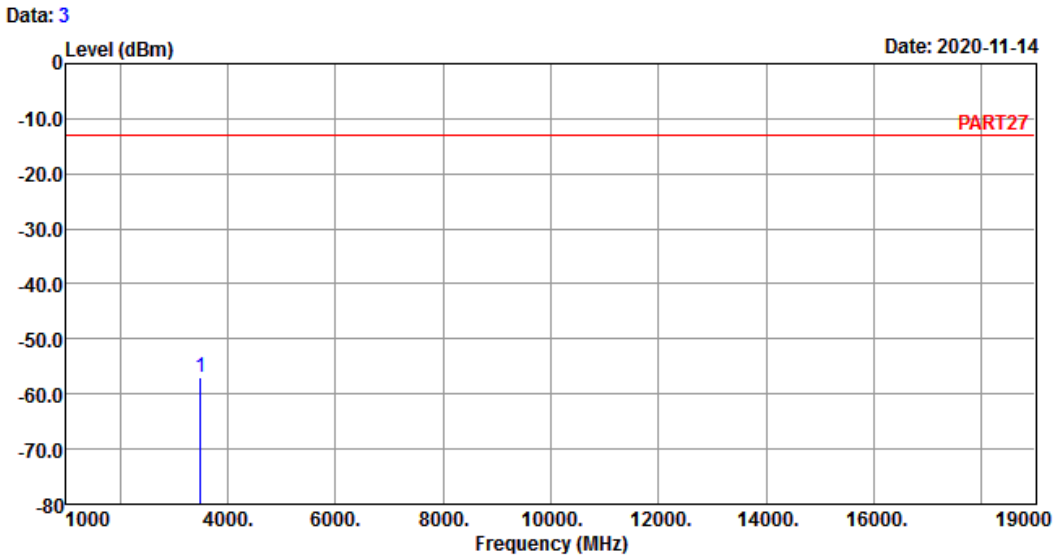


Site : 966 Chamber 5
Condition: PART27 VERTICAL
Remak : LTE Band 66 QPSK_1.4M Link_L-CH
Tested by: Getaz Yang

	Freq	Level	Read Level	Limit Line	Factor	Over Limit	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1 pp	3421.40	-57.49	-49.15	-13.00	-8.34	-44.49	Peak

Middle Channel

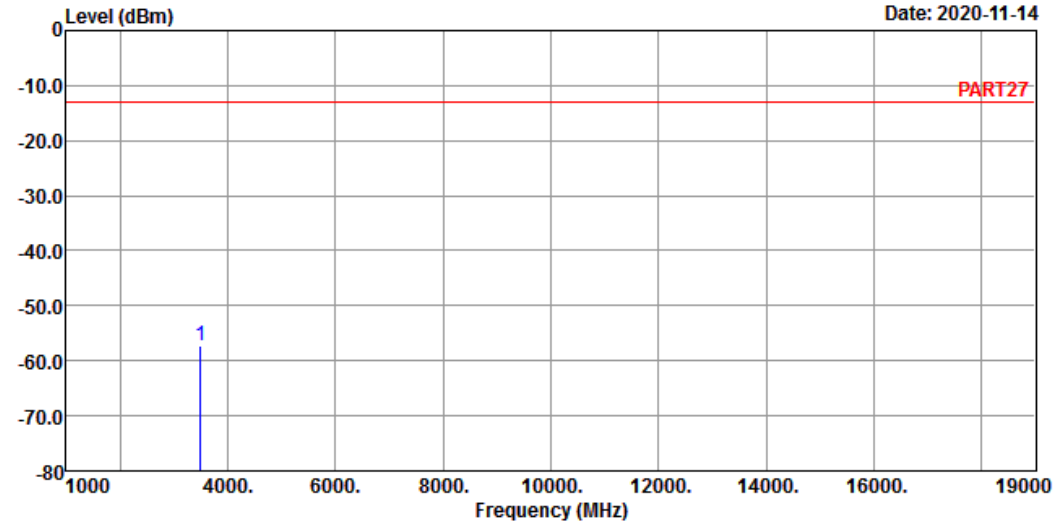
Bureau Veritas Consumer Products Services Ltd.,Taoyuan Branch



Site : 966 Chamber 5
Condition: PART27 HORIZONTAL
Remak : LTE Band 66 QPSK_1.4M Link_M-CH
Tested by: Getaz Yang

	Freq	Level	Read Level	Limit Line	Factor	Over Limit	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1 pp	3490.00	-57.05	-49.40	-13.00	-7.65	-44.05	Peak

Data: 4



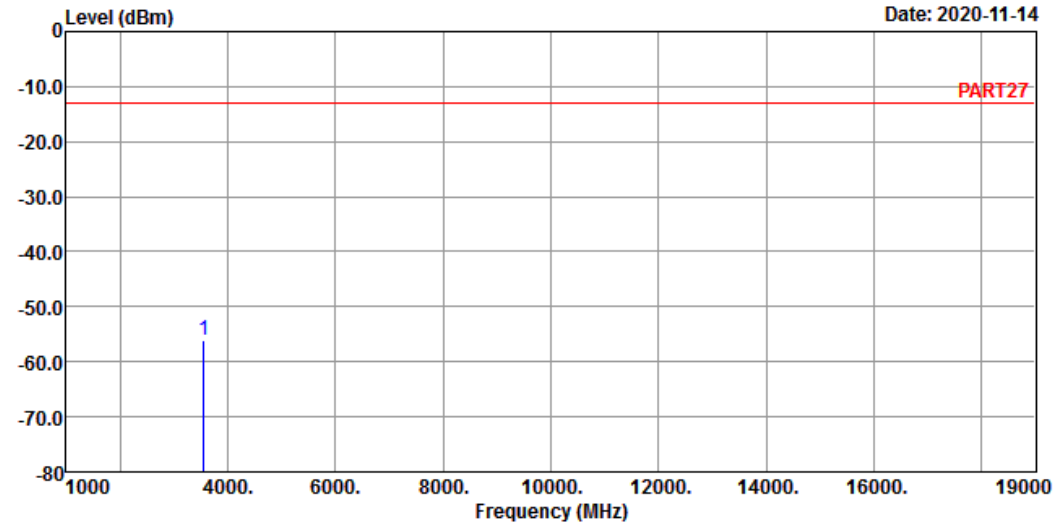
Site : 966 Chamber 5
Condition: PART27 VERTICAL
Remak : LTE Band 66 QPSK_1.4M Link_M-CH
Tested by: Getaz Yang

	Freq	Level	Read Level	Limit Line	Factor	Over Limit	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1 pp	3490.00	-57.21	-49.56	-13.00	-7.65	-44.21	Peak

High Channel

Bureau Veritas Consumer Products Services Ltd.,Taoyuan Branch

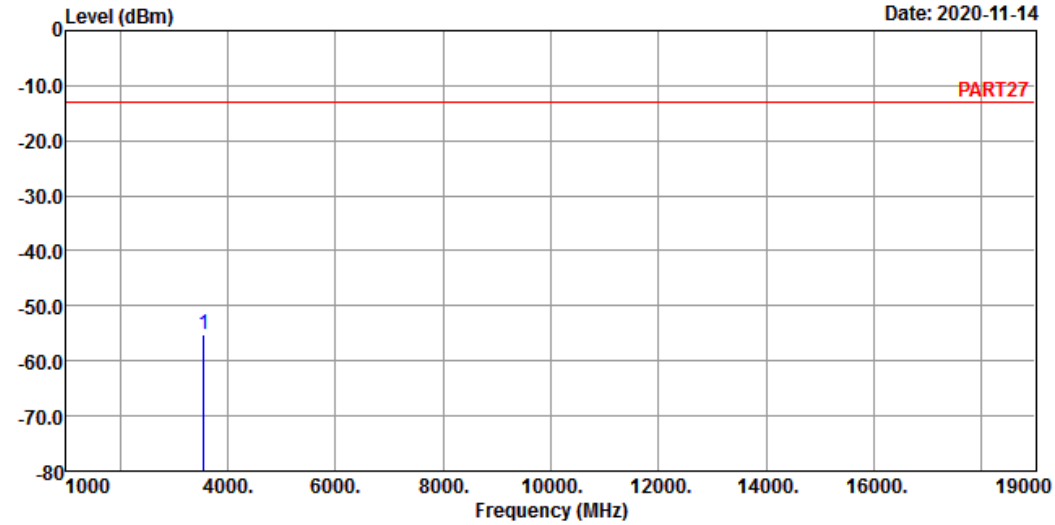
Data: 3



Site : 966 Chamber 5
Condition: PART27 HORIZONTAL
Remak : LTE Band 66 QPSK_1.4M Link_H-CH
Tested by: Getaz Yang

	Freq	Level	Read Level	Limit Line	Factor	Over Limit	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1 pp	3558.60	-56.01	-48.94	-13.00	-7.07	-43.01	Peak

Data: 4



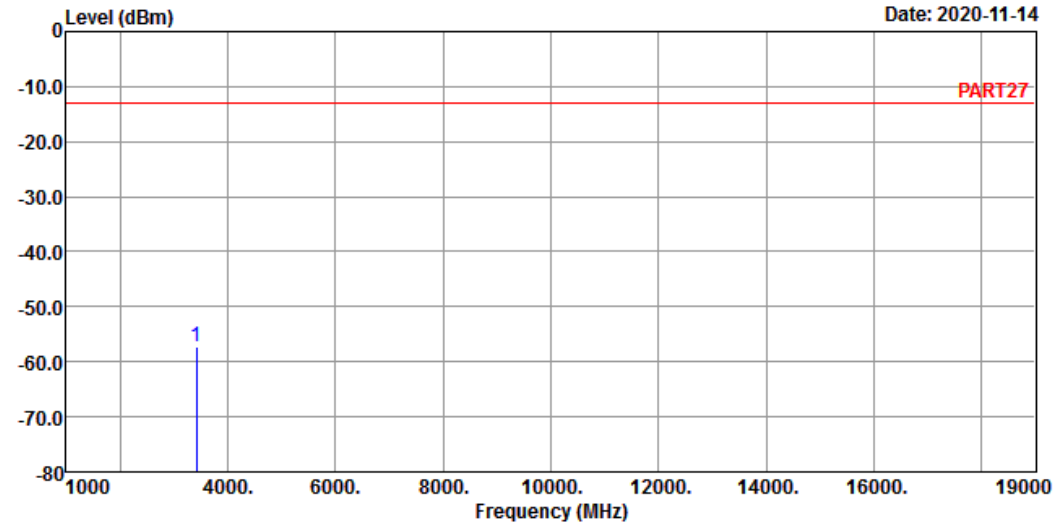
Site : 966 Chamber 5
Condition: PART27 VERTICAL
Remak : LTE Band 66 QPSK_1.4M Link_H-CH
Tested by: Getaz Yang

	Freq	Level	Read Level	Limit Line	Factor	Over Limit	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1 pp	3558.60	-55.11	-48.04	-13.00	-7.07	-42.11	Peak

Channel Bandwidth: 5 MHz / QPSK
Low Channel

Bureau Veritas Consumer Products Services Ltd.,Taoyuan Branch

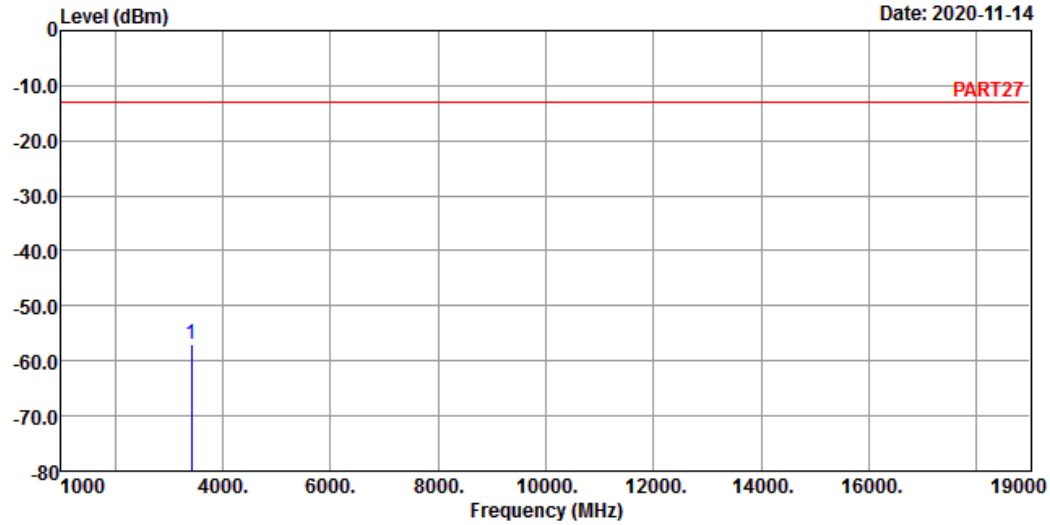
Data: 3



Site : 966 Chamber 5
Condition: PART27 HORIZONTAL
Remak : LTE Band 66 QPSK_5M Link_L-CH
Tested by: Getaz Yang

	Freq	Level	Read Level	Limit Line	Factor	Over Limit	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1 pp	3425.00	-57.37	-49.03	-13.00	-8.34	-44.37	Peak

Data: 4

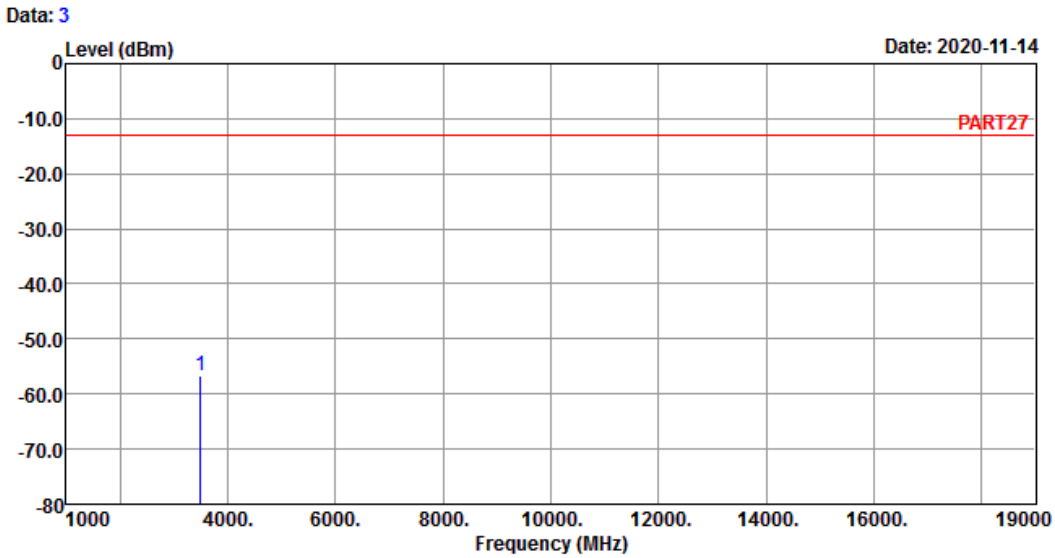


Site : 966 Chamber 5
Condition: PART27 VERTICAL
Remak : LTE Band 66 QPSK_5M Link_L-CH
Tested by: Getaz Yang

	Freq	Level	Read Level	Limit Line	Factor	Over Limit	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1 pp	3425.00	-57.04	-48.70	-13.00	-8.34	-44.04	Peak

Middle Channel

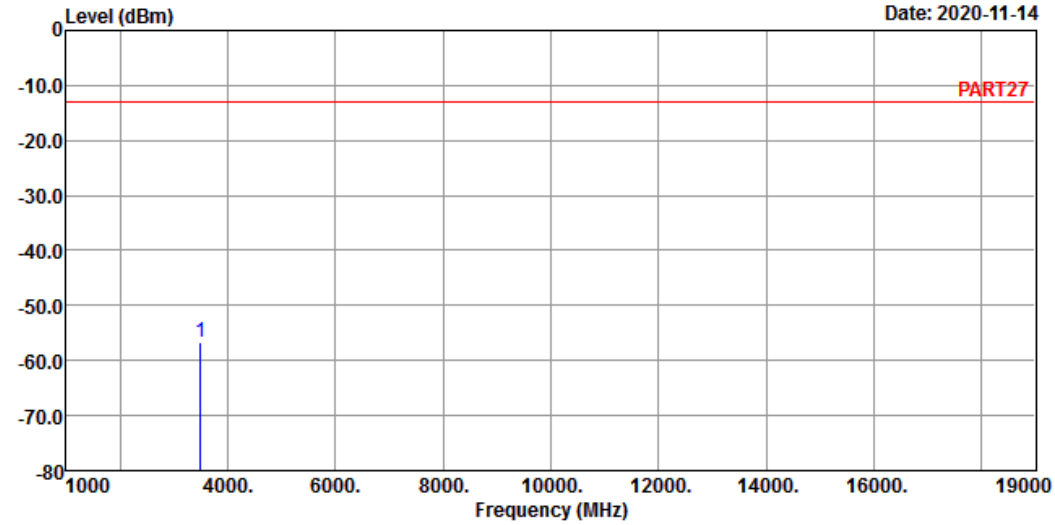
Bureau Veritas Consumer Products Services Ltd.,Taoyuan Branch



Site : 966 Chamber 5
Condition: PART27 HORIZONTAL
Remak : LTE Band 66 QPSK_5M Link_M-CH
Tested by: Getaz Yang

	Freq	Level	Read Level	Limit Line	Factor	Over Limit	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1 pp	3490.00	-56.77	-49.12	-13.00	-7.65	-43.77	Peak

Data: 4



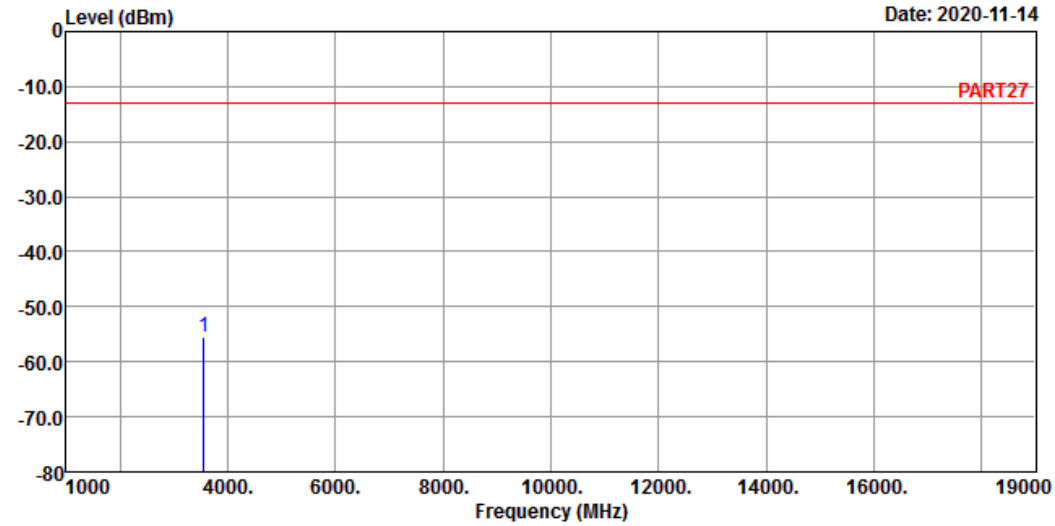
Site : 966 Chamber 5
Condition: PART27 VERTICAL
Remak : LTE Band 66 QPSK_5M Link_M-CH
Tested by: Getaz Yang

	Freq	Level	Read Level	Limit Line	Factor	Over Limit	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1 pp	3490.00	-56.72	-49.07	-13.00	-7.65	-43.72	Peak

High Channel

Bureau Veritas Consumer Products Services Ltd.,Taoyuan Branch

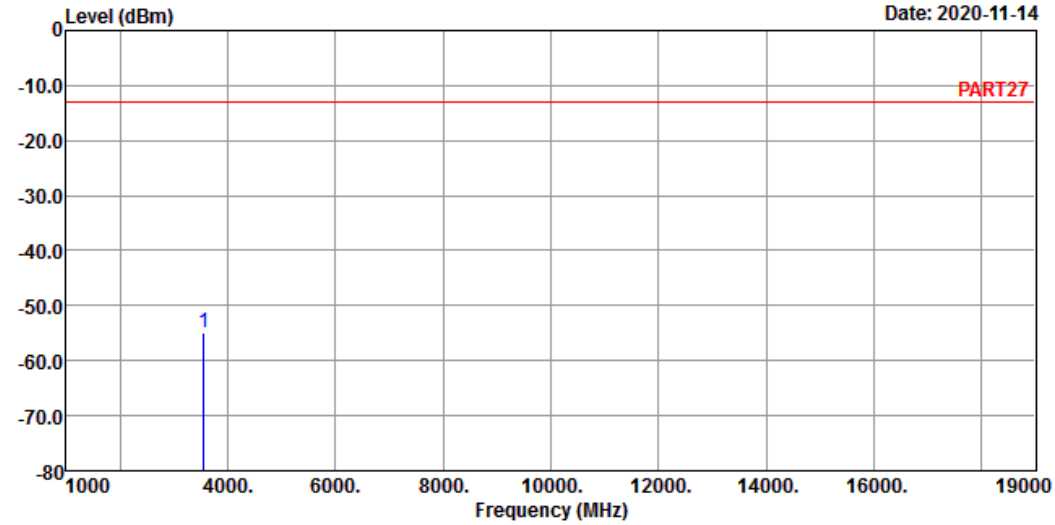
Data: 3



Site : 966 Chamber 5
Condition: PART27 HORIZONTAL
Remak : LTE Band 66 QPSK_5M Link_H-CH
Tested by: Getaz Yang

	Freq	Level	Read Level	Limit Line	Factor	Over Limit	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1 pp	3555.00	-55.62	-48.47	-13.00	-7.15	-42.62	Peak

Data: 4

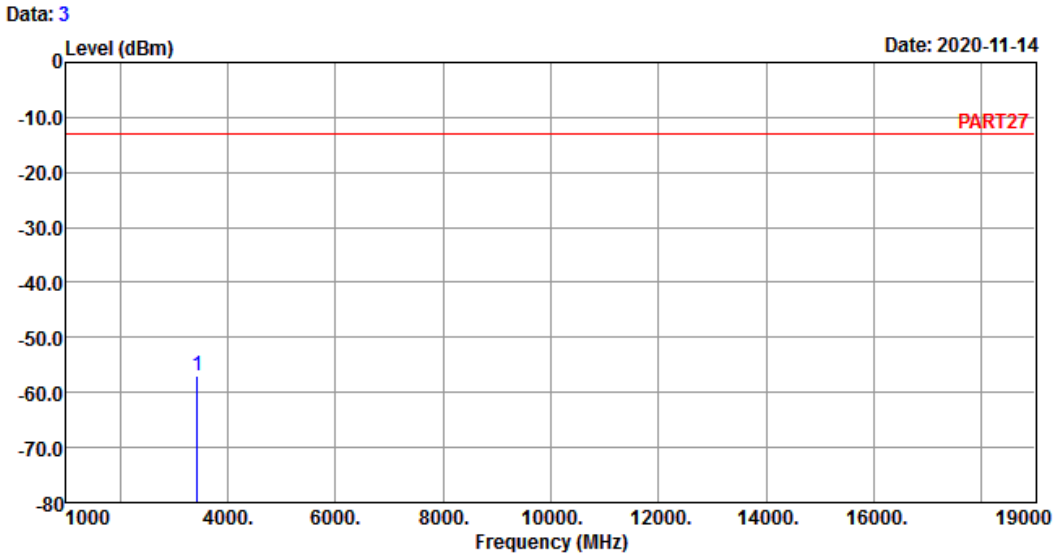


Site : 966 Chamber 5
Condition: PART27 VERTICAL
Remak : LTE Band 66 QPSK_5M Link_H-CH
Tested by: Getaz Yang

	Freq	Level	Read Level	Limit Line	Factor	Over Limit	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1 pp	3555.00	-54.81	-47.66	-13.00	-7.15	-41.81	Peak

Channel Bandwidth: 20 MHz / QPSK
Low Channel

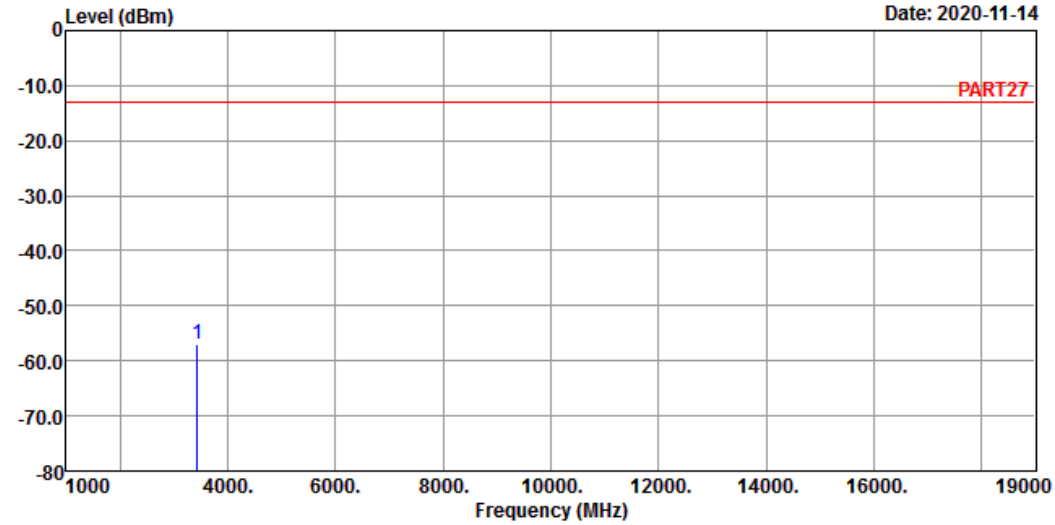
Bureau Veritas Consumer Products Services Ltd.,Taoyuan Branch



Site : 966 Chamber 5
Condition: PART27 HORIZONTAL
Remak : LTE Band 66 QPSK_20M Link_L-CH
Tested by: Getaz Yang

	Freq	Level	Read Level	Limit Line	Factor	Over Limit	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1 pp	3440.00	-56.84	-48.62	-13.00	-8.22	-43.84	Peak

Data: 4

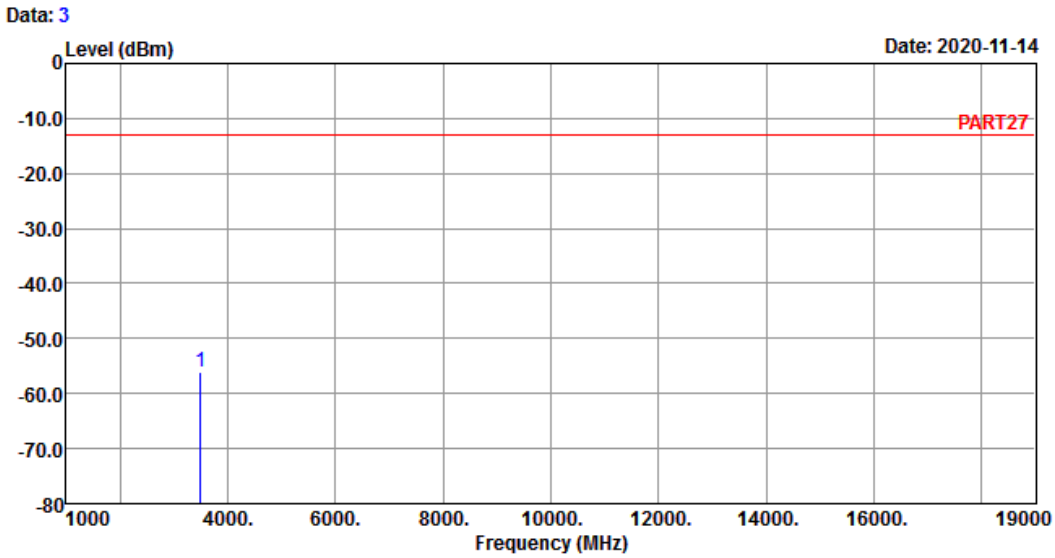


Site : 966 Chamber 5
Condition: PART27 VERTICAL
Remak : LTE Band 66 QPSK_20M Link_L-CH
Tested by: Getaz Yang

	Freq	Level	Read Level	Limit Line	Factor	Over Limit	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1 pp	3440.00	-56.93	-48.71	-13.00	-8.22	-43.93	Peak

Middle Channel

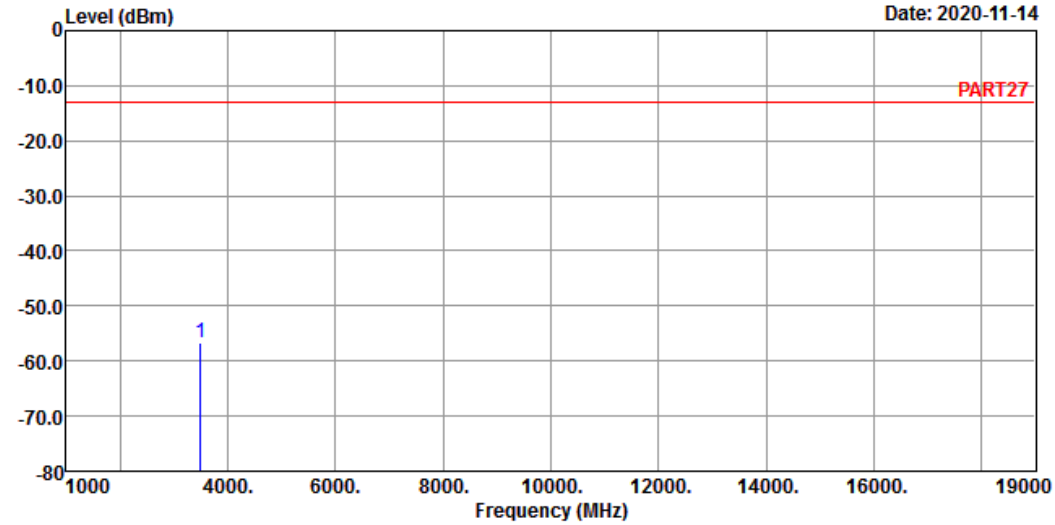
Bureau Veritas Consumer Products Services Ltd.,Taoyuan Branch



Site : 966 Chamber 5
Condition: PART27 HORIZONTAL
Remak : LTE Band 66 QPSK_20M Link_M-CH
Tested by: Getaz Yang

	Freq	Level	Read Level	Limit Line	Factor	Over Limit	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1 pp	3490.00	-56.17	-48.52	-13.00	-7.65	-43.17	Peak

Data: 4

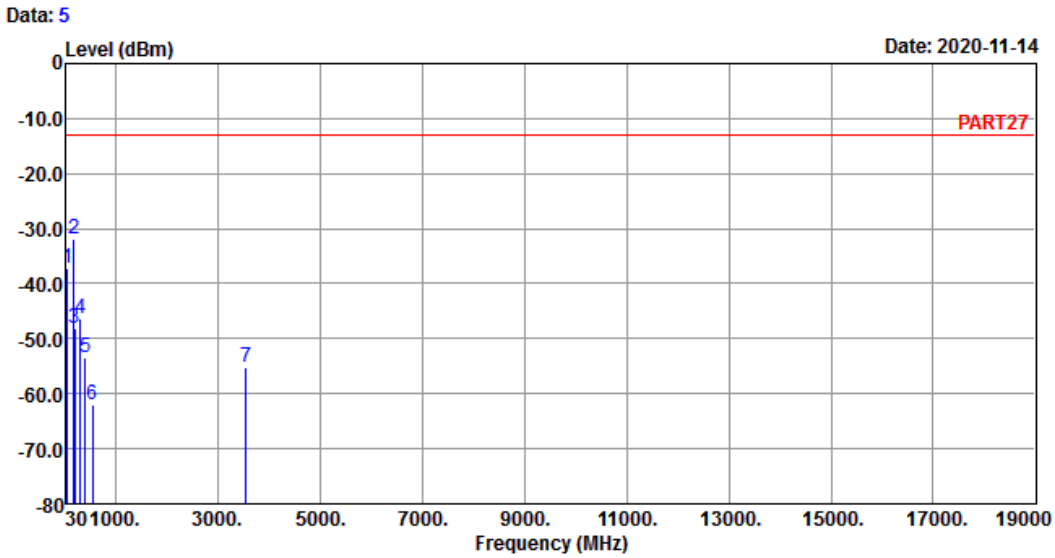


Site : 966 Chamber 5
Condition: PART27 VERTICAL
Remak : LTE Band 66 QPSK_20M Link_M-CH
Tested by: Getaz Yang

	Freq	Level	Read Level	Limit Line	Factor	Over Limit	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1 pp	3490.00	-56.56	-48.91	-13.00	-7.65	-43.56	Peak

High Channel

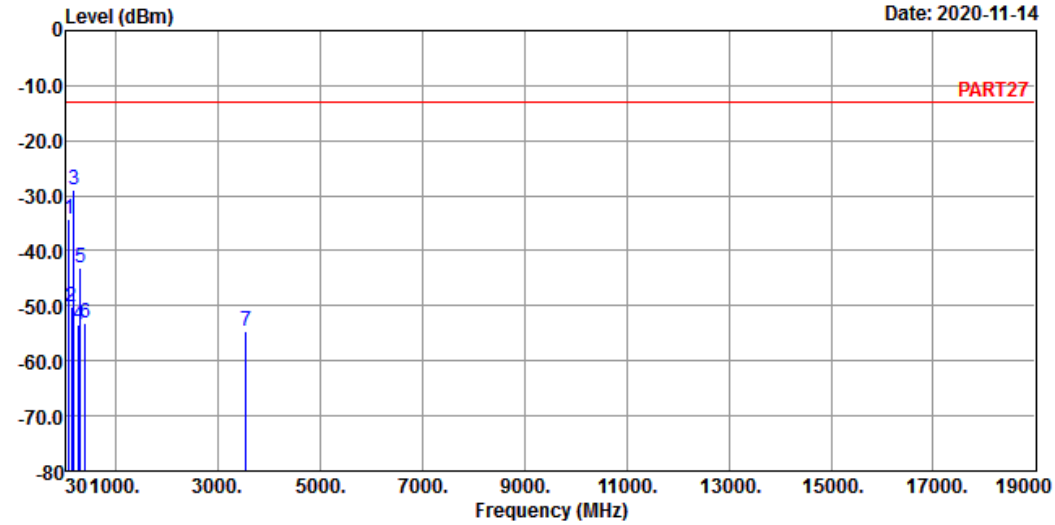
Bureau Veritas Consumer Products Services Ltd.,Taoyuan Branch



Site : 966 Chamber 5
Condition: PART27 HORIZONTAL
Remak : LTE Band 66 QPSK_20M Link_H-CH
Tested by: Getaz Yang

	Freq	Level	Read Level	Limit Line	Factor	Over Limit	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1	45.52	-37.09	-34.59	-13.00	-2.50	-24.09	Peak
2 pp	171.62	-31.99	-26.12	-13.00	-5.87	-18.99	Peak
3	197.81	-47.99	-40.16	-13.00	-7.83	-34.99	Peak
4	303.54	-46.47	-39.52	-13.00	-6.95	-33.47	Peak
5	402.48	-53.36	-47.43	-13.00	-5.93	-40.36	Peak
6	549.92	-62.14	-59.29	-13.00	-2.85	-49.14	Peak
7	3540.00	-55.16	-47.94	-13.00	-7.22	-42.16	Peak

Data: 6



Site : 966 Chamber 5
Condition: PART27 VERTICAL
Remak : LTE Band 66 QPSK_20M Link_H-CH
Tested by: Getaz Yang

	Freq	Level	Read Level	Limit Line	Factor	Over Limit	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1	74.62	-34.10	-24.57	-13.00	-9.53	-21.10	Peak
2	127.97	-50.33	-41.41	-13.00	-8.92	-37.33	Peak
3 pp	171.62	-28.99	-23.12	-13.00	-5.87	-15.99	Peak
4	265.71	-53.44	-47.13	-13.00	-6.31	-40.44	Peak
5	306.45	-43.00	-36.09	-13.00	-6.91	-30.00	Peak
6	399.57	-53.05	-47.10	-13.00	-5.95	-40.05	Peak
7	3540.00	-54.51	-47.29	-13.00	-7.22	-41.51	Peak

5 Pictures of Test Arrangements

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

Appendix – Information of the Testing Laboratories

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

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

Lin Kou EMC/RF Lab
Tel: 886-2-26052180
Fax: 886-2-26051924

Hsin Chu EMC/RF/Telecom Lab
Tel: 886-3-6668565
Fax: 886-3-6668323

Hwa Ya EMC/RF/Safety Lab
Tel: 886-3-3183232
Fax: 886-3-3270892

Email: service.adt@tw.bureauveritas.com
Web Site: www.bureauveritas-adt.com

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

--- END ---