FCC Test Report

(PART 22)

Report No.:	RF181126C15
FCC ID:	N7NHL78
Test Model:	HL7800
Received Date:	Nov. 26, 2018
Test Date:	Jun. 29 ~ Jul. 05, 2018 (Cat-M1) Dec. 06, 2018 ~ May 17, 2019 (NB-IoT)
Issued Date:	May 30, 2019
Applicant:	Sierra Wireless Inc.
Address:	13811 Wireless Way, Richmond, BC, Canada V6V3A4
Issued By:	Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch
Lab Address:	No. 47-2, 14th Ling, Chia Pau Vil., Lin Kou Dist., New Taipei City, Taiwan (R.O.C)
Test Location:	No. 19, Hwa Ya 2nd Rd, Wen Hwa Vil, Kwei Shan Dist., Taoyuan City 33383, Taiwan (R.O.C)
FCC Registration / Designation Number:	788550 / TW0003

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Release Control Record

Issue No.	Description	Date Issued
RF181126C15	Original Release	May 30, 2019

1 Certificate of Conformity

Product:	Embedded Module
Brand:	AirPrime
Test Model:	HL7800
Sample Status:	Engineering Sample
Applicant:	Sierra Wireless Inc.
Test Date:	Jun. 29 ~ Jul. 05, 2018 (Cat-M1) Dec. 06, 2018 ~ May 17, 2019 (NB-IoT)
Standards:	FCC Part 22, Subpart H

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

Prepared by : _____ , **Date:** May 30, 2019

Ivonne Wu / Supervisor

Approved by : _____ , **Date:** May 30, 2019

Dylan Chiou / Project Engineer

2 Summary of Test Results

Applied Standard: FCC Part 22 & Part 2			
FCC Clause	**Test Item**	**Result**	**Remarks**
2.1046 22.913 (a)	Effective Radiated Power	Pass	Meet the requirement of limit.
2.1047	Modulation Characteristics	Pass	Meet the requirement.
2.1046 22.913 (d)	Peak to Average Ratio	Pass	Meet the requirement of limit.
2.1055 22.355	Frequency Stability	Pass	Meet the requirement of limit.
2.1049	Occupied Bandwidth	Pass	Meet the requirement of limit.
22.917	Band Edge Measurements	Pass	Meet the requirement of limit.
2.1051 22.917	Conducted Spurious Emissions	Pass	Meet the requirement of limit.
2.1053 22.917	Radiated Spurious Emissions	Pass	Meet the requirement of limit. Minimum passing margin is -31.73 dB at 2544.90 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

Test Date: Jun. 29 ~ Jul. 05, 2018

Description & Manufacturer	Model No.	Serial No.	Date of Calibration	Due Date of Calibration
Test Receiver Agilent	N9038A	MY51210203	Mar. 16, 2018	Mar. 15, 2019
Spectrum Analyzer Agilent	N9010A	MY52220314	Nov. 24, 2017	Nov. 23, 2018
Spectrum Analyzer ROHDE & SCHWARZ	FSU43	101261	Jan. 11, 2018	Jan. 10, 2019
Double Ridge Guide Horn Antenna EMCO	3115	5619	Nov. 30, 2017	Nov. 29, 2018
BILOG Antenna SCHWARZBECK	VULB 9168	9168-153	Dec. 06, 2017	Dec. 05, 2018
Radio Communication Analyzer Anritsu	MT8820C	6201300640	Aug. 16, 2017	Aug. 15, 2019
Preamplifier EMCI	EMC 012645	980115	Oct. 20, 2017	Oct. 19, 2018
Preamplifier EMCI	EMC 184045	980116	Oct. 20, 2017	Oct. 19, 2018
Preamplifier EMCI	EMC 330H	980112	Oct. 13, 2017	Oct. 12, 2018
Power Meter Anritsu	ML2495A	1012010	Aug. 15, 2017	Aug. 14, 2018
Power Sensor Anritsu	MA2411B	1315050	Aug. 15, 2017	Aug. 14, 2018
RF Coaxial Cable HUBER+SUHNNER	EMC104-SM-SM-8000&3000	140811+170717	Oct. 20, 2017	Oct. 19, 2018
RF Coaxial Cable HUBER+SUHNNER	SUCOFLEX 104	EMC104-SM-SM-1000(140807)	Oct. 20, 2017	Oct. 19, 2018
RF Coaxial Cable Worken	8D-FB	Cable-Ch10-01	Oct. 20, 2017	Oct. 19, 2018
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
DC Power Supply Topward	33010D	807748	Oct. 25, 2016	Oct. 24, 2018
STANDARD TEMPERATURE &HUMIDITY CHAMBER TERCHY	MHU-225AU	920842	Jun. 01, 2018	May 30, 2019

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.

Test Date: Dec. 06, 2018 ~ May 17, 2019

Description & Manufacturer	Model No.	Serial No.	Date of Calibration	Due Date of Calibration
Test Receiver Agilent	N9038A	MY52260177	Aug. 20, 2018	Aug. 19, 2019
Spectrum Analyzer Keysight	N9010A	MY56070348	Sep. 06, 2018	Sep. 05, 2019
Spectrum Analyzer ROHDE & SCHWARZ	FSW26	102023	Oct. 11, 2018	Oct. 10, 2019
HORN Antenna SCHWARZBECK	BBHA 9120 D	9120D-969	Nov. 25, 2018	Nov. 24, 2019
BILOG Antenna SCHWARZBECK	VULB9168	9168-472	Nov. 23, 2018	Nov. 22, 2019
Double Ridge Guide Horn Antenna EMCO	3115	5619	Nov. 25, 2018	Nov. 24, 2019
BILOG Antenna SCHWARZBECK	VULB 9168	9168-153	Nov. 23, 2018	Nov. 22, 2019
Fixed Attenuator Mini-Circuits	MDCS18N-10	MDCS18N-10-01	Apr. 16, 2018	Apr. 15, 2019
			Apr. 15, 2019	Apr. 14, 2020
MXG Vector signal generator Agilent	N5182B	MY53050430	Nov. 19, 2018	Nov. 18, 2019
Preamplifier EMCI	EMC 012645	980115	Oct. 12, 2018	Oct. 11, 2019
Preamplifier EMCI	EMC 330H	980112	Oct. 12, 2018	Oct. 11, 2019
RF Coaxial Cable HUBER+SUHNNER	EMC104-SM-SM-8000&3000	140811+170717	Oct. 12, 2018	Oct. 11, 2019
RF Coaxial Cable HUBER+SUHNNER	SUCOFLEX 104	EMC104-SM-SM-1000(140807)	Oct. 12, 2018	Oct. 11, 2019
RF Coaxial Cable WOKEN	8D-FB	Cable-Ch10-01	Oct. 12, 2018	Oct. 11, 2019
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	6201664741	Jul. 04, 2018	Jul. 03, 2019
Temperature & Humidity Chamber	GTH-120-40-CP-AR	MAA1306-019	Sep. 05, 2018	Sep. 04, 2019
DC Power Supply Topward	33010D	807748	NA	NA

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	Embedded Module		
Brand	AirPrime		
Test Model	HL7800		
Status of EUT	Engineering Sample		
Power Supply Rating	5.0 Vdc (host equipment) 12.0 Vdc (adapter)		
Modulation Type	**Cat-M1**	QPSK, 16QAM	
	NB-IoT	BPSK, QPSK	
Frequency Range	**Cat-M1**	LTE 5 (Channel Bandwidth: 1.4 MHz)	824.7 ~ 848.3 MHz
		LTE 5 (Channel Bandwidth: 3 MHz)	825.5 ~ 847.5 MHz
		LTE 5 (Channel Bandwidth: 5 MHz)	826.5 ~ 846.5 MHz
		LTE 5 (Channel Bandwidth: 10 MHz)	829 ~ 844 MHz
		LTE 26 (Channel Bandwidth: 1.4 MHz)	824.7 ~ 848.3 MHz
		LTE 26 (Channel Bandwidth: 3 MHz)	825.5 ~ 847.5 MHz
		LTE 26 (Channel Bandwidth: 5 MHz)	826.5 ~ 846.5 MHz
		LTE 26 (Channel Bandwidth: 10 MHz)	829 ~ 844 MHz
		LTE 26 (Channel Bandwidth: 15 MHz)	831.5 ~ 841.5 MHz
	NB-IoT	LTE 5	824.1 ~ 848.9 MHz
		LTE 26	824.1 ~ 848.9 MHz
Max. ERP Power	**Cat-M1**	LTE 5 (Channel Bandwidth: 1.4 MHz)	314.77 mW
		LTE 5 (Channel Bandwidth: 3 MHz)	292.42 mW
		LTE 5 (Channel Bandwidth: 5 MHz)	274.16 mW
		LTE 5 (Channel Bandwidth: 10 MHz)	254.10 mW
		LTE 26 (Channel Bandwidth: 1.4 MHz)	263.63 mW
		LTE 26 (Channel Bandwidth: 3 MHz)	248.89 mW
		LTE 26 (Channel Bandwidth: 5 MHz)	233.88 mW
		LTE 26 (Channel Bandwidth: 10 MHz)	217.77 mW
		LTE 26 (Channel Bandwidth: 15 MHz)	204.64 mW
	NB-IoT	LTE 5	161.06 mW (BPSK) 188.80 mW (QPSK)
		LTE 26	147.23 mW (BPSK) 178.24 mW (QPSK)

Emission Designator	**Cat-M1**	LTE 5 (Channel Bandwidth: 1.4 MHz)	1M09G7D
		LTE 5 (Channel Bandwidth: 3 MHz)	1M09G7D
		LTE 5 (Channel Bandwidth: 5 MHz)	1M08G7D
		LTE 5 (Channel Bandwidth: 10 MHz)	1M09G7D
		LTE 26 (Channel Bandwidth: 1.4 MHz)	1M09G7D
		LTE 26 (Channel Bandwidth: 3 MHz)	1M09G7D
		LTE 26 (Channel Bandwidth: 5 MHz)	1M08G7D
		LTE 26 (Channel Bandwidth: 10 MHz)	1M09G7D
		LTE 26 (Channel Bandwidth: 15 MHz)	1M09G7D
	NB-IoT	LTE 5	1K94G7D
		LTE 26	1K91G7D
Antenna Type	Dipole Antenna with 2 dBi gain		
Accessory Device	Refer to Note as below		
Data Cable Supplied	Refer to Note as below		

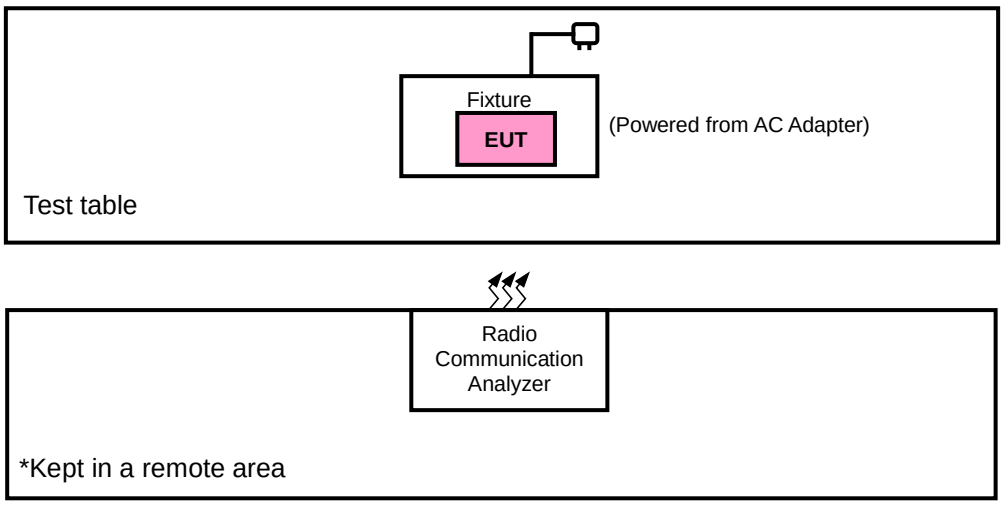
Note:

1. This report is issued as a supplementary report to BV CPS report no.: RF180425C07A. The difference compared with original report is enabled NB-IoT function via software (as listed below). All the test items for NB-IoT were tested. For Cat-M1, only the worst case of radiated spurious emissions for LTE B4/B14 and effective radiated power for LTE B12/B25 in the original report were verified, and the other test data from the original report are kept in this report.

Report No.	FCC ID	Model	Difference
RF180425C07A	N7NHL78M	HL7800-M	Support Cat-M1
RF181126C15	N7NHL78	HL7800	Support Cat-M1 and NB-IoT

2. The above EUT information is declared by manufacturer and for more detailed features description, please refers to the manufacturer's specifications or user's manual.

3.2 Configuration of System under Test



3.2.1 Description of Support Units

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

No.	Product	Brand	Model No.	Serial No.	FCC ID
1.	Adapter	N/A	N/A	N/A	N/A

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

Note:

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

3.3 Test Mode Applicability and Tested Channel Detail

Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates, XYZ axis, and antenna ports.
The worst case was found when positioned as the table below. Following channel(s) was (were) selected for the final test as listed below:

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

Cat-M1

LTE Band 5

EUT Configure Mode	Test Item	Available Channel	Tested Channel	Channel Bandwidth	Modulation	Mode
-	ERP	20407 to 20643	20407, 20525, 20643	1.4 MHz	QPSK, 16QAM	1 RB / 2 RB Offset
		20415 to 20635	20415, 20525, 20635	3 MHz	QPSK, 16QAM	1 RB / 7 RB Offset
		20425 to 20625	20425, 20525, 20625	5 MHz	QPSK, 16QAM	1 RB / 12 RB Offset
		20450 to 20600	20450, 20525, 20600	10 MHz	QPSK, 16QAM	1 RB / 24 RB Offset
-	Modulation characteristics	20425 to 20625	20525	5 MHz	QPSK, 16QAM	5 RB / 0 RB Offset
-	Frequency Stability	20407 to 20643	20407, 20643	1.4 MHz	QPSK	1 RB / 2 RB Offset
		20415 to 20635	20415, 20635	3 MHz	QPSK	1 RB / 7 RB Offset
		20425 to 20625	20425, 20625	5 MHz	QPSK	1 RB / 12 RB Offset
		20450 to 20600	20450, 20600	10 MHz	QPSK	1 RB / 24 RB Offset
-	Occupied Bandwidth	20407 to 20643	20407, 20525, 20643	1.4 MHz	QPSK, 16QAM	6 RB / 0 RB Offset
		20415 to 20635	20415, 20525, 20635	3 MHz	QPSK, 16QAM	15 RB / 0 RB Offset
		20425 to 20625	20425, 20525, 20625	5 MHz	QPSK, 16QAM	25 RB / 0 RB Offset
		20450 to 20600	20450, 20525, 20600	10 MHz	QPSK, 16QAM	50 RB / 0 RB Offset
-	Band Edge	20407 to 20643	20407	1.4MHz	QPSK	1 RB / 0 RB Offset
						6 RB / 0 RB Offset
			20643	1.4MHz	QPSK	1 RB / 5 RB Offset
						6 RB / 0 RB Offset
		20415 to 20635	20415	3 MHz	QPSK	1 RB / 0 RB Offset
						15 RB / 0 RB Offset
			20635	3 MHz	QPSK	1 RB / 14 RB Offset
						15 RB / 0 RB Offset
		20425 to 20625	20425	5 MHz	QPSK	1 RB / 0 RB Offset
						25 RB / 0 RB Offset
			20625	5 MHz	QPSK	1 RB / 24 RB Offset
						25 RB / 0 RB Offset
		20450 to 20600	20450	10 MHz	QPSK	1 RB / 0 RB Offset
						50 RB / 0 RB Offset
			20600	10 MHz	QPSK	1 RB / 49 RB Offset
						50 RB / 0 RB Offset

EUT Configure Mode	Test Item	Available Channel	Tested Channel	Channel Bandwidth	Modulation	Mode
-	Peak to Average Ratio	20407 to 20643	20407, 20525, 20643	1.4 MHz	QPSK, 16QAM	6 RB / 0 RB Offset
		20415 to 20635	20415, 20525, 20635	3 MHz	QPSK, 16QAM	15 RB / 0 RB Offset
		20425 to 20625	20425, 20525, 20625	5 MHz	QPSK, 16QAM	25 RB / 0 RB Offset
		20450 to 20600	20450, 20525, 20600	10 MHz	QPSK, 16QAM	50 RB / 0 RB Offset
-	Conducted Emission	20407 to 20643	20407, 20525, 20643	1.4 MHz	QPSK	1 RB / 2 RB Offset
		20415 to 20635	20415, 20525, 20635	3 MHz	QPSK	1 RB / 7 RB Offset
		20425 to 20625	20425, 20525, 20625	5 MHz	QPSK	1 RB / 12 RB Offset
		20450 to 20600	20450, 20525, 20600	10 MHz	QPSK	1 RB / 24 RB Offset
-	Radiated Emission	20407 to 20643	20407, 20525, 20643	1.4 MHz	QPSK	1 RB / 2 RB Offset
		20425 to 20625	20425, 20525, 20625	5 MHz	QPSK	1 RB / 12 RB Offset
		20450 to 20600	20450, 20525, 20600	10 MHz	QPSK	1 RB / 24 RB Offset

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

LTE Band 26

EUT Configure Mode	Test Item	Available Channel	Tested Channel	Channel Bandwidth	Modulation	Mode
-	ERP	26797 to 27033	26797, 26915, 27033	1.4 MHz	QPSK, 16QAM	1 RB / 5 RB Offset
		26805 to 27025	26805, 26915, 27025	3 MHz	QPSK, 16QAM	1 RB / 14 RB Offset
		26815 to 27015	26815, 26915, 27015	5 MHz	QPSK, 16QAM	1 RB / 24 RB Offset
		26840 to 26990	26840, 26915, 26990	10 MHz	QPSK, 16QAM	1 RB / 49 RB Offset
		26865 to 26965	26865, 26915, 26965	15 MHz	QPSK, 16QAM	1 RB / 49 RB Offset
-	Modulation characteristics	26815 to 27015	26915	5 MHz	QPSK, 16QAM	5 RB / 0 RB Offset
-	Frequency Stability	26797 to 27033	26797, 27033	1.4 MHz	QPSK	1 RB / 5 RB Offset
		26805 to 27025	26805, 27025	3 MHz	QPSK	1 RB / 14 RB Offset
		26815 to 27015	26815, 27015	5 MHz	QPSK	1 RB / 24 RB Offset
		26840 to 26990	26840, 26990	10 MHz	QPSK	1 RB / 49 RB Offset
		26865 to 26965	26865, 26965	15 MHz	QPSK	1 RB / 49 RB Offset
-	Occupied Bandwidth	26797 to 27033	26797, 26915, 27033	1.4 MHz	QPSK, 16QAM	6 RB / 0 RB Offset
		26805 to 27025	26805, 26915, 27025	3 MHz	QPSK, 16QAM	15 RB / 0 RB Offset
		26815 to 27015	26815, 26915, 27015	5 MHz	QPSK, 16QAM	25 RB / 0 RB Offset
		26840 to 26990	26840, 26915, 26990	10 MHz	QPSK, 16QAM	50 RB / 0 RB Offset
		26865 to 26965	26865, 26915, 26965	15 MHz	QPSK, 16QAM	75 RB / 0 RB Offset

EUT Configure Mode	Test Item	Available Channel	Tested Channel	Channel Bandwidth	Modulation	Mode
-	Band Edge	26797 to 27033	26797	1.4 MHz	QPSK	1 RB / 0 RB Offset
						6 RB / 0 RB Offset
			27033	1.4 MHz	QPSK	1 RB / 5 RB Offset
						6 RB / 0 RB Offset
		26805 to 27025	26805	3 MHz	QPSK	1 RB / 0 RB Offset
						15 RB / 0 RB Offset
			27025	3 MHz	QPSK	1 RB / 14 RB Offset
						15 RB / 0 RB Offset
		26815 to 27015	26815	5 MHz	QPSK	1 RB / 0 RB Offset
						25 RB / 0 RB Offset
			27015	5 MHz	QPSK	1 RB / 24 RB Offset
						25 RB / 0 RB Offset
		26840 to 26990	26840	10 MHz	QPSK	1 RB / 0 RB Offset
						50 RB / 0 RB Offset
			26990	10 MHz	QPSK	1 RB / 49 RB Offset
						50 RB / 0 RB Offset
		26865 to 26965	26865	15 MHz	QPSK	1 RB / 0 RB Offset
						75 RB / 0 RB Offset
			26965	15 MHz	QPSK	1 RB / 74 RB Offset
						75 RB / 0 RB Offset
-	Peak to Average Ratio	26797 to 27033	26797, 26915, 27033	1.4 MHz	QPSK, 16QAM	1 RB / 0 RB Offset
		26805 to 27025	26805, 26915, 27025	3 MHz	QPSK, 16QAM	15 RB / 0 RB Offset
		26815 to 27015	26815, 26915, 27015	5 MHz	QPSK, 16QAM	25 RB / 0 RB Offset
		26840 to 26990	26840, 26915, 26990	10 MHz	QPSK, 16QAM	50 RB / 0 RB Offset
		26865 to 26965	26865, 26915, 26965	15 MHz	QPSK, 16QAM	75 RB / 0 RB Offset
-	Conducted Emission	26797 to 27033	26797, 26915, 27033	1.4 MHz	QPSK	1 RB / 0 RB Offset
		26805 to 27025	26805, 26915, 27025	3 MHz	QPSK	15 RB / 0 RB Offset
		26815 to 27015	26815, 26915, 27015	5 MHz	QPSK	25 RB / 0 RB Offset
		26840 to 26990	26840, 26915, 26990	10 MHz	QPSK	1 RB / 0 RB Offset
		26865 to 26965	26865, 26915, 26965	15 MHz	QPSK	25 RB / 0 RB Offset
-	Radiated Emission	26797 to 27033	26797, 26915, 27033	1.4 MHz	QPSK	1 RB / 0 RB Offset
		26815 to 27015	26815, 26915, 27015	5 MHz	QPSK	25 RB / 0 RB Offset
		26865 to 26965	26865, 26915, 26965	15 MHz	QPSK	25 RB / 0 RB Offset

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

Cat-M1

LTE Band 5

EUT Configure Mode	Test Item	Available Channel	Tested Channel	Sub-carrier Bandwidth	Modulation	N_{tones}
-	ERP	20401 to 20649	20401, 20525, 20649	3.75 kHz	BPSK	1@0
				15 kHz	QPSK	3@3
-	Modulation Characteristics	20401 to 20649	20525	3.75 kHz	BPSK	1@0
				15 kHz	QPSK	1@0
-	Frequency Stability	20401 to 20649	20401, 20649	15 kHz	QPSK	3@3
-	Occupied Bandwidth	20401 to 20649	20401	3.75 kHz	BPSK	1@0
				15 kHz	QPSK	1@0
						3@3
						12@0
			20525	3.75 kHz	BPSK	1@0
				15 kHz	QPSK	1@0
						3@3
						12@0
			20649	3.75 kHz	BPSK	1@47
				15 kHz	QPSK	1@11
						3@3
						12@0
-	Band Edge	20401 to 20649	20401	3.75 kHz	BPSK	1@0
				15 kHz	QPSK	1@0
						3@3
						12@0
			20649	3.75 kHz	BPSK	1@47
				15 kHz	QPSK	1@11
						3@3
						12@0
-	Peak to Average Ratio	20401 to 20649	20525	3.75 kHz	BPSK	1@0
				15 kHz	QPSK	1@0
						3@3
-	Conducted Emission	20401 to 20649	20401, 20525, 20643	15 kHz	QPSK	3@3
-	Radiated Emission	20401 to 20649	20401, 20525, 20643	15 kHz	QPSK	3@3

Note:

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

LTE Band 26

EUT Configure Mode	Test Item	Available Channel	Tested Channel	Sub-carrier Bandwidth	Modulation	N_{tones}
-	ERP	26791 to 27039	26791, 26915, 27039	3.75 kHz	BPSK	1@0
				15 kHz	QPSK	3@3
-	Modulation Characteristics	26791 to 27039	26915	3.75 kHz	BPSK	1@0
				15 kHz	QPSK	1@0
-	Frequency Stability	26791 to 27039	26791, 27039	15 kHz	QPSK	3@3
-	Occupied Bandwidth	26791 to 27039	26791	3.75 kHz	BPSK	1@0
				15 kHz	QPSK	1@0
						3@3
						12@0
			26915	3.75 kHz	BPSK	1@0
				15 kHz	QPSK	1@0
						3@3
						12@0
			27039	3.75 kHz	BPSK	1@47
				15 kHz	QPSK	1@11
						3@3
						12@0
-	Band Edge	26791 to 27039	26791	3.75 kHz	BPSK	1@0
				15 kHz	QPSK	1@0
						3@3
						12@0
			27039	3.75 kHz	BPSK	1@47
				15 kHz	QPSK	1@11
						3@3
						12@0
-	Peak to Average Ratio	26791 to 27039	26915	3.75 kHz	BPSK	1@0
				15 kHz	QPSK	1@0
						3@3
-	Conducted Emission	26791 to 27039	26791, 26915, 27039	15 kHz	QPSK	1@0
-	Radiated Emission	26791 to 27039	26791, 26915, 27039	15 kHz	QPSK	1@0

Note:

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

Test Condition:

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

3.4 EUT Operating Conditions

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

3.5 General Description of Applied Standards

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

FCC 47 CFR Part 2
FCC 47 CFR Part 22
KDB 971168 D01 Power Meas License Digital Systems v03r01
ANSI/TIA/EIA-603-E 2016
ANSI 63.26-2015

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

4 Test Types and Results

4.1 Output Power Measurement

4.1.1 Limits of Output Power Measurement

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

4.1.2 Test Procedures

EIRP / ERP Measurement:

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

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

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

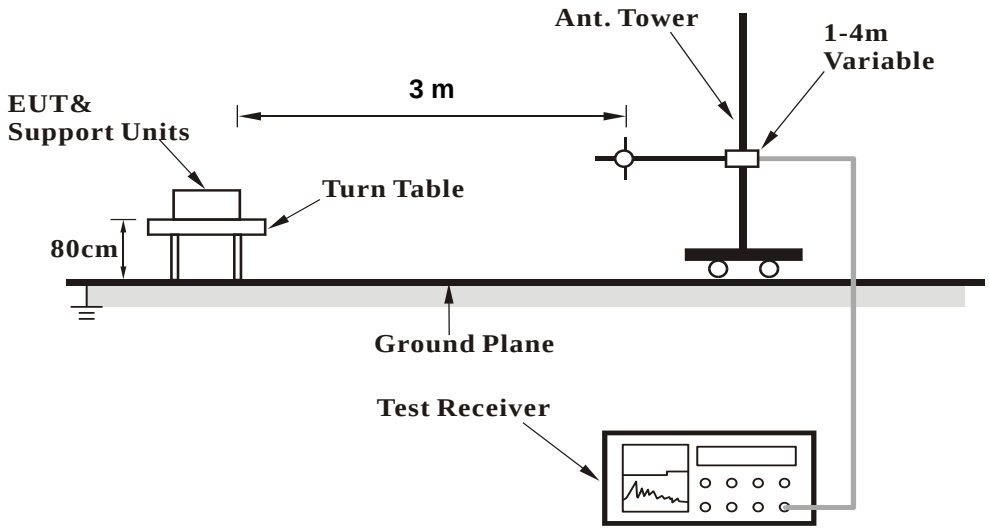
d. EIRP = Output power level of S.G – TX cable loss + Antenna gain of substitution horn. E.R.P power can be calculated form E.I.R.P power by subtracting the gain of dipole, E.R.P power = E.I.R.P power - 2.15 dB.

Conducted Power Measurement:

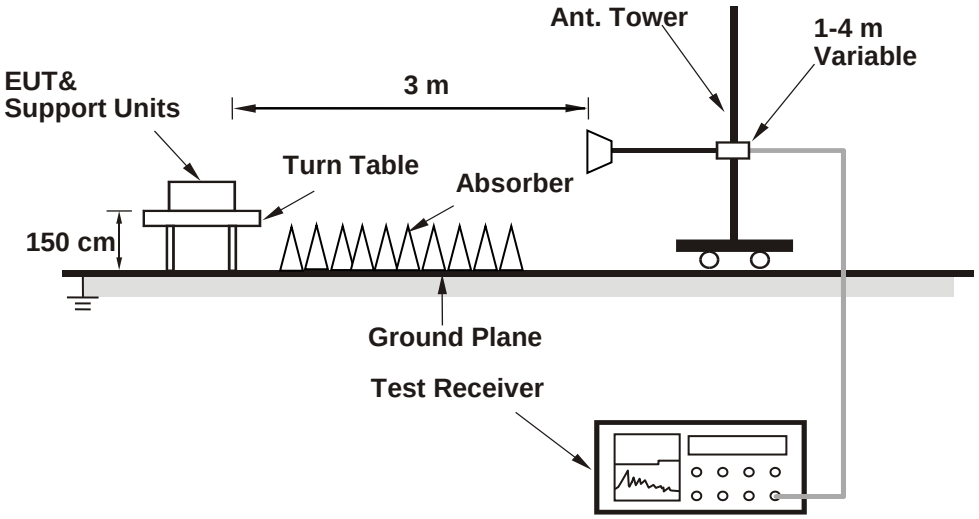
The EUT was set up for the maximum power with LTE link data modulation and link up with simulator. Set the EUT to transmit under low, middle and high channel and record the power level shown on simulator.

4.1.3 Test Setup

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



<Radiated Emission above 1 GHz>



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

Conducted Power Measurement:

4.1.4 Test Results

Conducted Output Power (dBm)

Cat-M1

LTE Band 5								
BW (MHz): 1.4								
Test Frequency ID	N_{UL}	Frequency of Uplink (MHz)	Test Configuration Initial of Power				EUT	
			Modulation	RB Size	RB Offset	Narrowband Index	Cell Power (dBm/15 kHz)	Power (dBm)
Low Range	20407	824.7	QPSK	1	0	0	-85	23.98
			QPSK	1	5	0	-85	23.43
			QPSK	3	3	0	-85	21.81
			QPSK	6	0	0	-85	21.01
			16QAM	1	0	0	-85	21.38
			16QAM	1	5	0	-85	21.53
			16QAM	3	0	0	-85	20.78
			16QAM	6	0	0	-85	20.69
Mid. Range	20525	836.5	QPSK	1	0	0	-85	23.89
			QPSK	1	5	0	-85	23.44
			QPSK	3	3	0	-85	21.77
			QPSK	6	0	0	-85	20.97
			16QAM	1	0	0	-85	21.35
			16QAM	1	5	0	-85	21.42
			16QAM	3	0	0	-85	20.74
			16QAM	5	0	0	-85	20.4
High Range	20643	848.3	QPSK	1	0	0	-85	23.88
			QPSK	1	5	0	-85	23.43
			QPSK	3	3	0	-85	21.84
			QPSK	6	0	0	-85	20.99
			16QAM	1	0	0	-85	21.37
			16QAM	1	5	0	-85	21.47
			16QAM	3	0	0	-85	20.69
			16QAM	6	0	0	-85	20.44

LTE Band 5								
BW (MHz): 3								
Test Frequency ID	N_{UL}	Frequency of Uplink (MHz)	Test Configuration Initial of Power				EUT	
			Modulation	RB Size	RB Offset	Narrowband Index	Cell Power (dBm/15 kHz)	Power (dBm)
Low Range	20415	825.5	QPSK	1	0	0	-85	22.87
			QPSK	1	5	0	-85	22.76
			QPSK	1	0	1	-85	22.79
			QPSK	1	5	1	-85	22.69
			QPSK	3	3	0	-85	21.65
			QPSK	3	3	1	-85	21.57
			QPSK	6	0	0	-85	20.66
			QPSK	6	0	1	-85	20.58
			16QAM	1	0	0	-85	22.75
			16QAM	1	5	0	-85	22.65
			16QAM	1	0	1	-85	22.67
			16QAM	1	5	1	-85	22.58
			16QAM	3	0	0	-85	21.59
			16QAM	3	3	1	-85	21.62
			16QAM	5	0	0	-85	21.57
			16QAM	5	0	1	-85	21.49
Mid. Range	20525	836.5	QPSK	1	0	0	-85	22.76
			QPSK	1	5	0	-85	22.59
			QPSK	1	0	1	-85	22.87
			QPSK	1	5	1	-85	22.74
			QPSK	3	3	0	-85	21.62
			QPSK	3	3	1	-85	21.65
			QPSK	6	0	0	-85	20.71
			QPSK	6	0	1	-85	20.78
			16QAM	1	0	0	-85	22.57
			16QAM	1	5	0	-85	22.73
			16QAM	1	0	1	-85	22.93
			16QAM	1	5	1	-85	22.67
			16QAM	3	0	0	-85	21.68
			16QAM	3	3	1	-85	21.71
			16QAM	5	0	0	-85	21.66
			16QAM	5	0	1	-85	21.61
High Range	20635	2063.5	QPSK	1	0	0	-85	22.81
			QPSK	1	5	0	-85	22.73
			QPSK	1	0	1	-85	22.77
			QPSK	1	5	1	-85	22.69
			QPSK	3	3	0	-85	21.62
			QPSK	3	3	1	-85	21.56
			QPSK	6	0	0	-85	20.68
			QPSK	6	0	1	-85	20.55
			16QAM	1	0	0	-85	22.64
			16QAM	1	5	0	-85	22.54
			16QAM	1	0	1	-85	22.49
			16QAM	1	5	1	-85	22.63
			16QAM	3	0	0	-85	21.67
			16QAM	3	3	1	-85	21.73
			16QAM	5	0	0	-85	21.7
			16QAM	5	0	1	-85	21.68

LTE Band 5								
BW (MHz): 5								
Test Frequency ID	N_{UL}	Frequency of Uplink (MHz)	Test Configuration Initial of Power				EUT	
			Modulation	RB Size	RB Offset	Narrowband Index	Cell Power (dBm/15 kHz)	Power (dBm)
Low Range	20425	826.5	QPSK	1	0	0	-85	22.82
			QPSK	1	5	0	-85	22.81
			QPSK	1	0	1	-85	22.79
			QPSK	1	5	1	-85	22.77
			QPSK	1	0	3	-85	22.78
			QPSK	1	5	3	-85	22.71
			QPSK	3	0	0	-85	21.98
			QPSK	3	3	3	-85	21.77
			QPSK	6	0	0	-85	21.99
			QPSK	6	0	1	-85	21.92
			QPSK	6	0	3	-85	21.97
			16QAM	1	0	0	-85	22.62
			16QAM	1	5	0	-85	22.69
			16QAM	1	0	1	-85	22.67
			16QAM	1	5	1	-85	22.68
			16QAM	1	0	3	-85	22.64
			16QAM	1	5	3	-85	22.66
			16QAM	3	0	0	-85	21.77
			16QAM	3	3	3	-85	21.79
			16QAM	5	0	0	-85	21.81
			16QAM	5	0	1	-85	21.83
			16QAM	5	0	3	-85	21.82
Mid. Range	20525	836.5	QPSK	1	0	0	-85	22.69
			QPSK	1	5	0	-85	22.64
			QPSK	1	0	1	-85	22.66
			QPSK	1	5	1	-85	22.45
			QPSK	1	0	3	-85	22.67
			QPSK	1	5	3	-85	22.56
			QPSK	3	0	0	-85	21.81
			QPSK	3	3	3	-85	21.64
			QPSK	6	0	0	-85	21.84
			QPSK	6	0	1	-85	21.87
			QPSK	6	0	3	-85	21.79
			16QAM	1	0	0	-85	22.49
			16QAM	1	5	0	-85	22.47
			16QAM	1	0	1	-85	22.57
			16QAM	1	5	1	-85	22.53
			16QAM	1	0	3	-85	22.55
			16QAM	1	5	3	-85	22.46
			16QAM	3	0	0	-85	21.69
			16QAM	3	3	3	-85	21.67
			16QAM	5	0	0	-85	21.73
			16QAM	5	0	1	-85	21.66
			16QAM	5	0	3	-85	21.68

LTE Band 5								
BW (MHz): 5								
Test Frequency ID	N_{UL}	Frequency of Uplink (MHz)	Test Configuration Initial of Power				EUT	
			Modulation	RB Size	RB Offset	Narrowband Index	Cell Power (dBm/15 kHz)	Power (dBm)
High Range	20625	846.5	QPSK	1	0	0	-85	22.69
			QPSK	1	5	0	-85	22.63
			QPSK	1	0	1	-85	22.91
			QPSK	1	5	1	-85	22.78
			QPSK	1	0	3	-85	22.59
			QPSK	1	5	3	-85	22.51
			QPSK	3	0	0	-85	21.71
			QPSK	3	3	3	-85	21.59
			QPSK	6	0	0	-85	21.71
			QPSK	6	0	1	-85	22.1
			QPSK	6	0	3	-85	21.77
			16QAM	1	0	0	-85	22.42
			16QAM	1	5	0	-85	22.31
			16QAM	1	0	1	-85	22.82
			16QAM	1	5	1	-85	22.75
			16QAM	1	0	3	-85	22.42
			16QAM	1	5	3	-85	22.35
			16QAM	3	0	0	-85	21.47
			16QAM	3	3	3	-85	21.58
			16QAM	5	0	0	-85	21.61
			16QAM	5	0	1	-85	21.97
			16QAM	5	0	3	-85	21.69

LTE Band 5								
BW (MHz): 10								
Test Frequency ID	N_{UL}	Frequency of Uplink (MHz)	Test Configuration Initial of Power				EUT	
			Modulation	RB Size	RB Offset	Narrowband Index	Cell Power (dBm/15 kHz)	Power (dBm)
Low Range	20450	829	QPSK	1	0	0	-85	22.75
			QPSK	1	5	0	-85	22.67
			QPSK	1	0	3	-85	22.63
			QPSK	1	5	3	-85	22.61
			QPSK	1	0	7	-85	22.61
			QPSK	1	5	7	-85	22.57
			QPSK	4	0	0	-85	22.71
			QPSK	4	2	7	-85	22.91
			QPSK	6	0	0	-85	21.74
			QPSK	6	0	7	-85	21.69
			16QAM	1	0	0	-85	22.76
			16QAM	1	5	0	-85	22.71
			16QAM	1	0	3	-85	22.71
			16QAM	1	5	3	-85	22.65
			16QAM	1	0	7	-85	22.61
			16QAM	1	5	7	-85	22.56
			16QAM	4	2	0	-85	22.75
			16QAM	4	2	7	-85	22.71
			16QAM	5	0	0	-85	21.76
			16QAM	5	0	7	-85	21.77
Mid. Range	20525	836.5	QPSK	1	0	0	-85	22.72
			QPSK	1	5	0	-85	22.66
			QPSK	1	0	3	-85	22.62
			QPSK	1	5	3	-85	22.68
			QPSK	1	0	7	-85	22.51
			QPSK	1	5	7	-85	22.46
			QPSK	4	0	0	-85	22.71
			QPSK	4	2	7	-85	22.71
			QPSK	6	0	0	-85	21.88
			QPSK	6	0	7	-85	21.64
			16QAM	1	0	0	-85	22.72
			16QAM	1	5	0	-85	22.67
			16QAM	1	0	3	-85	22.77
			16QAM	1	5	3	-85	22.69
			16QAM	1	0	7	-85	22.57
			16QAM	1	5	7	-85	22.49
			16QAM	4	2	0	-85	22.85
			16QAM	4	2	7	-85	22.74
			16QAM	5	0	0	-85	21.79
			16QAM	5	0	7	-85	21.678
High Range	20600	844	QPSK	1	0	0	-85	22.57
			QPSK	1	5	0	-85	22.58
			QPSK	1	5	7	-85	22.87
			QPSK	1	0	3	-85	22.87
			QPSK	1	5	3	-85	22.81
			QPSK	1	0	7	-85	22.94
			QPSK	4	0	0	-85	22.55
			QPSK	4	2	7	-85	22.89
			QPSK	6	0	0	-85	21.53
			QPSK	6	0	7	-85	21.99
			16QAM	1	0	0	-85	22.67
			16QAM	1	5	0	-85	22.55
			16QAM	1	0	3	-85	22.79
			16QAM	1	5	3	-85	22.59
			16QAM	1	0	7	-85	22.96
			16QAM	1	5	7	-85	22.82
			16QAM	4	2	0	-85	22.61
			16QAM	4	2	7	-85	22.73
			16QAM	5	0	0	-85	21.67
			16QAM	5	0	7	-85	21.96

LTE Band 26								
BW (MHz): 1.4								
Test Frequency ID	N_{UL}	Frequency of Uplink (MHz)	Test Configuration Initial of Power				EUT	
			Modulation	RB Size	RB Offset	Narrowband Index	Cell Power (dBm/15 kHz)	Power (dBm)
Low Range	26797	824.7	QPSK	1	0	0	-85	23.62
			QPSK	1	5	0	-85	23.64
			QPSK	3	3	0	-85	22.19
			QPSK	6	0	0	-85	21.37
			16QAM	1	0	0	-85	23.24
			16QAM	1	5	0	-85	23.15
			16QAM	3	0	0	-85	22.36
			16QAM	5	0	0	-85	22.12
Mid. Range	26915	836.5	QPSK	1	0	0	-85	23.41
			QPSK	1	5	0	-85	23.51
			QPSK	3	3	0	-85	22.14
			QPSK	6	0	0	-85	21.41
			16QAM	1	0	0	-85	23.27
			16QAM	1	5	0	-85	23.18
			16QAM	3	0	0	-85	22.43
			16QAM	5	0	0	-85	22.22
High Range	27033	848.3	QPSK	1	0	0	-85	23.79
			QPSK	1	5	0	-85	23.75
			QPSK	3	3	0	-85	22.27
			QPSK	6	0	0	-85	21.44
			16QAM	1	0	0	-85	23.33
			16QAM	1	5	0	-85	23.34
			16QAM	3	0	0	-85	22.46
			16QAM	5	0	0	-85	22.28

LTE Band 26								
BW (MHz): 3								
Test Frequency ID	N_{UL}	Frequency of Uplink (MHz)	Test Configuration Initial of Power				EUT	
			Modulation	RB Size	RB Offset	Narrowband Index	Cell Power (dBm/15 kHz)	Power (dBm)
Low Range	26805	825.5	QPSK	1	0	0	-85	23.25
			QPSK	1	5	0	-85	23.46
			QPSK	1	0	1	-85	23.37
			QPSK	1	5	1	-85	23.48
			QPSK	3	3	0	-85	22.15
			QPSK	3	3	1	-85	22.12
			QPSK	6	0	0	-85	21.27
			QPSK	6	0	1	-85	21.19
			16QAM	1	0	0	-85	23.19
			16QAM	1	5	0	-85	23.01
			16QAM	1	0	1	-85	23.41
			16QAM	1	5	1	-85	23.43
			16QAM	3	0	0	-85	22.49
			16QAM	3	3	1	-85	22.14
			16QAM	5	0	0	-85	22.24
			16QAM	5	0	1	-85	22.37
Mid. Range	26915	836.5	QPSK	1	0	0	-85	23.41
			QPSK	1	5	0	-85	23.33
			QPSK	1	0	1	-85	23.42
			QPSK	1	5	1	-85	23.41
			QPSK	3	3	0	-85	23.39
			QPSK	3	3	1	-85	22.26
			QPSK	6	0	0	-85	21.18
			QPSK	6	0	1	-85	21.28
			16QAM	1	0	0	-85	23.22
			16QAM	1	5	0	-85	23.12
			16QAM	1	0	1	-85	23.21
			16QAM	1	5	1	-85	23.14
			16QAM	3	0	0	-85	22.42
			16QAM	3	3	1	-85	22.37
			16QAM	5	0	0	-85	22.34
			16QAM	5	0	1	-85	22.36
High Range	27025	847.5	QPSK	1	0	0	-85	23.55
			QPSK	1	5	0	-85	23.41
			QPSK	1	0	1	-85	23.35
			QPSK	1	5	1	-85	23.44
			QPSK	3	3	0	-85	22.29
			QPSK	3	3	1	-85	22.36
			QPSK	6	0	0	-85	21.32
			QPSK	6	0	1	-85	21.24
			16QAM	1	0	0	-85	23.26
			16QAM	1	5	0	-85	23.24
			16QAM	1	0	1	-85	23.51
			16QAM	1	5	1	-85	23.49
			16QAM	3	0	0	-85	22.52
			16QAM	3	3	1	-85	22.35
			16QAM	5	0	0	-85	22.43
			16QAM	5	0	1	-85	22.42

LTE Band 26								
BW (MHz): 5								
Test Frequency ID	N_{UL}	Frequency of Uplink (MHz)	Test Configuration Initial of Power				EUT	
			Modulation	RB Size	RB Offset	Narrowband Index	Cell Power (dBm/15 kHz)	Power (dBm)
Low Range	26815	826.5	QPSK	1	0	0	-85	23.17
			QPSK	1	5	0	-85	23.18
			QPSK	1	0	1	-85	23.11
			QPSK	1	5	1	-85	23.17
			QPSK	1	0	3	-85	23.27
			QPSK	1	5	3	-85	23.32
			QPSK	3	0	0	-85	22.47
			QPSK	3	3	3	-85	22.18
			QPSK	6	0	0	-85	22.19
			QPSK	6	0	1	-85	22.42
			QPSK	6	0	3	-85	22.27
			16QAM	1	0	0	-85	23.17
			16QAM	1	5	0	-85	23.18
			16QAM	1	0	1	-85	23.14
			16QAM	1	5	1	-85	23.02
			16QAM	1	0	3	-85	23.21
			16QAM	1	5	3	-85	23.14
			16QAM	3	0	0	-85	22.36
			16QAM	3	3	3	-85	22.34
			16QAM	5	0	0	-85	22.37
			16QAM	5	0	1	-85	22.34
			16QAM	5	0	3	-85	22.37
Mid. Range	26915	836.5	QPSK	1	0	0	-85	23.31
			QPSK	1	5	0	-85	23.26
			QPSK	1	0	1	-85	23.27
			QPSK	1	5	1	-85	23.36
			QPSK	1	0	3	-85	23.25
			QPSK	1	5	3	-85	23.31
			QPSK	3	0	0	-85	22.67
			QPSK	3	3	3	-85	22.15
			QPSK	6	0	0	-85	22.25
			QPSK	6	0	1	-85	22.54
			QPSK	6	0	3	-85	22.21
			16QAM	1	0	0	-85	23.15
			16QAM	1	5	0	-85	23.14
			16QAM	1	0	1	-85	23.17
			16QAM	1	5	1	-85	23.21
			16QAM	1	0	3	-85	23.23
			16QAM	1	5	3	-85	23.11
			16QAM	3	0	0	-85	22.51
			16QAM	3	3	3	-85	22.43
			16QAM	5	0	0	-85	22.38
			16QAM	5	0	1	-85	22.31
			16QAM	5	0	3	-85	22.27

LTE Band 26								
BW (MHz): 5								
Test Frequency ID	N_{UL}	Frequency of Uplink (MHz)	Test Configuration Initial of Power				EUT	
			Modulation	RB Size	RB Offset	Narrowband Index	Cell Power (dBm/15 kHz)	Power (dBm)
High Range	27015	846.5	QPSK	1	0	0	-85	23.27
			QPSK	1	5	0	-85	23.55
			QPSK	1	0	1	-85	23.33
			QPSK	1	5	1	-85	23.41
			QPSK	1	0	3	-85	23.22
			QPSK	1	5	3	-85	23.24
			QPSK	3	0	0	-85	22.87
			QPSK	3	3	3	-85	22.66
			QPSK	6	0	0	-85	22.47
			QPSK	6	0	1	-85	22.35
			QPSK	6	0	3	-85	22.11
			16QAM	1	0	0	-85	23.51
			16QAM	1	5	0	-85	23.47
			16QAM	1	0	1	-85	23.19
			16QAM	1	5	1	-85	23.32
			16QAM	1	0	3	-85	23.24
			16QAM	1	5	3	-85	23.15
			16QAM	3	0	0	-85	22.63
			16QAM	3	3	3	-85	22.55
			16QAM	5	0	0	-85	22.64
			16QAM	5	0	1	-85	22.33
			16QAM	5	0	3	-85	22.56

LTE Band 26								
BW (MHz): 10								
Test Frequency ID	N_{UL}	Frequency of Uplink (MHz)	Test Configuration Initial of Power				EUT	
			Modulation	RB Size	RB Offset	Narrowband Index	Cell Power (dBm/15 kHz)	Power (dBm)
Low Range	26840	829	QPSK	1	0	0	-85	23.02
			QPSK	1	5	0	-85	23.16
			QPSK	1	0	3	-85	23.17
			QPSK	1	5	3	-85	23.14
			QPSK	1	0	7	-85	23.25
			QPSK	1	5	7	-85	23.29
			QPSK	4	0	0	-85	23.17
			QPSK	4	2	7	-85	23.38
			QPSK	6	0	0	-85	22.25
			QPSK	6	0	7	-85	22.67
			16QAM	1	0	0	-85	23.44
			16QAM	1	5	0	-85	23.1
			16QAM	1	0	3	-85	23.15
			16QAM	1	5	3	-85	23.14
			16QAM	1	0	7	-85	23.41
			16QAM	1	5	7	-85	23.34
			16QAM	4	2	0	-85	23.12
			16QAM	4	2	7	-85	23.39
			16QAM	5	0	0	-85	22.28
			16QAM	5	0	7	-85	22.47
Mid. Range	26915	836.5	QPSK	1	0	0	-85	23.02
			QPSK	1	5	0	-85	23.19
			QPSK	1	0	3	-85	23.18
			QPSK	1	5	3	-85	23.13
			QPSK	1	0	7	-85	23.31
			QPSK	1	5	7	-85	23.34
			QPSK	4	0	0	-85	23.18
			QPSK	4	2	7	-85	23.41
			QPSK	6	0	0	-85	22.47
			QPSK	6	0	7	-85	22.77
			16QAM	1	0	0	-85	23.48
			16QAM	1	5	0	-85	23.13
			16QAM	1	0	3	-85	23.13
			16QAM	1	5	3	-85	23.34
			16QAM	1	0	7	-85	23.51
			16QAM	1	5	7	-85	23.36
			16QAM	4	2	0	-85	23.16
			16QAM	4	2	7	-85	23.05
			16QAM	5	0	0	-85	22.45
			16QAM	5	0	7	-85	22.44
High Range	26990	844	QPSK	1	0	0	-85	23.12
			QPSK	1	5	0	-85	23.16
			QPSK	1	5	7	-85	23.23
			QPSK	1	0	3	-85	23.22
			QPSK	1	5	3	-85	23.25
			QPSK	1	0	7	-85	23.36
			QPSK	4	0	0	-85	23.11
			QPSK	4	2	7	-85	23.52
			QPSK	6	0	0	-85	22.47
			QPSK	6	0	7	-85	22.56
			16QAM	1	0	0	-85	23.43
			16QAM	1	5	0	-85	23.25
			16QAM	1	0	3	-85	23.11
			16QAM	1	5	3	-85	23.15
			16QAM	1	0	7	-85	23.2
			16QAM	1	5	7	-85	23.26
			16QAM	4	2	0	-85	23.21
			16QAM	4	2	7	-85	23.09
			16QAM	5	0	0	-85	22.37
			16QAM	5	0	7	-85	22.43

LTE Band 26								
BW (MHz): 15								
Test Frequency ID	N_{UL}	Frequency of Uplink (MHz)	Test Configuration Initial of Power				EUT	
			Modulation	RB Size	RB Offset	Narrowband Index	Cell Power (dBm/15 kHz)	Power (dBm)
Low Range	26865	831.5	QPSK	1	0	0	-85	23.15
			QPSK	1	5	0	-85	23.25
			QPSK	1	0	5	-85	23.13
			QPSK	1	5	5	-85	23.26
			QPSK	1	0	11	-85	23.18
			QPSK	1	5	11	-85	23.17
			QPSK	3	0	0	-85	23.36
			QPSK	3	3	11	-85	23.13
			QPSK	6	0	0	-85	23.11
			QPSK	6	0	11	-85	23.24
			16QAM	1	0	0	-85	23.31
			16QAM	1	5	0	-85	23.26
			16QAM	1	0	5	-85	23.33
			16QAM	1	5	5	-85	23.19
			16QAM	1	0	11	-85	23.02
			16QAM	1	5	11	-85	23.15
			16QAM	3	0	0	-85	23.17
			16QAM	3	3	11	-85	23.21
			16QAM	5	0	0	-85	23.12
			16QAM	5	0	11	-85	23.15
Mid. Range	26915	836.5	QPSK	1	0	0	-85	23.25
			QPSK	1	5	0	-85	23.22
			QPSK	1	0	5	-85	23.26
			QPSK	1	5	5	-85	23.24
			QPSK	1	0	11	-85	23.07
			QPSK	1	5	11	-85	23.09
			QPSK	3	0	0	-85	23.32
			QPSK	3	3	11	-85	23.02
			QPSK	6	0	0	-85	23.17
			QPSK	6	0	11	-85	23.18
			16QAM	1	0	0	-85	23.33
			16QAM	1	5	0	-85	23.19
			16QAM	1	0	5	-85	23.37
			16QAM	1	5	5	-85	23.41
			16QAM	1	0	11	-85	23.15
			16QAM	1	5	11	-85	23.24
			16QAM	3	0	0	-85	23.28
			16QAM	3	3	11	-85	23.15
			16QAM	5	0	0	-85	23.22
			16QAM	5	0	11	-85	23.22
High Range	26965	841.5	QPSK	1	0	0	-85	23.22
			QPSK	1	5	11	-85	23.31
			QPSK	1	0	5	-85	23.48
			QPSK	1	5	5	-85	23.44
			QPSK	1	0	11	-85	23.52
			QPSK	1	5	11	-85	23.45
			QPSK	3	0	0	-85	23.21
			QPSK	3	3	11	-85	23.43
			QPSK	6	0	0	-85	23.19
			QPSK	6	0	11	-85	23.17
			16QAM	1	0	0	-85	23.39
			16QAM	1	5	0	-85	23.25
			16QAM	1	0	5	-85	23.46
			16QAM	1	5	5	-85	23.44
			16QAM	1	0	11	-85	23.39
			16QAM	1	5	11	-85	23.38
			16QAM	3	0	0	-85	23.23
			16QAM	3	3	11	-85	23.27
			16QAM	5	0	0	-85	23.27
			16QAM	5	0	11	-85	23.18

NB-IoT

LTE Band 5							
Stand-alone							
N_{UL}	M_{UL}	Frequency of Uplink (MHz)	Test Configuration Initial of Power			EUT	
			Modulation	N_{tones}	Sub-carrier Spacing (kHz)	Cell Power (dBm/15 kHz)	Power (dBm)
20401	0	824.1	BPSK	1@0	3.75	-110	21.66
			QPSK	1@0	15	-110	21.81
			QPSK	3@3	15	-110	22.02
			QPSK	12@0	15	-110	20.67
20525	0	836.5	BPSK	1@0	3.75	-110	23.46
			BPSK	1@47	3.75	-110	23.42
			QPSK	1@0	15	-110	23.55
			QPSK	1@11	15	-110	23.4
			QPSK	3@3	15	-110	23.72
			QPSK	12@0	15	-110	23.41
20649	0	848.9	BPSK	1@47	3.75	-110	22.35
			QPSK	1@11	15	-110	22.21
			QPSK	3@3	15	-110	22.75
			QPSK	12@0	15	-110	20.68

LTE Band 5							
In-Band	**BW (MHz): 3**						
N_{UL}	M_{UL}	Frequency of Uplink (MHz)	Test Configuration Initial of Power			EUT	
			Modulation	N_{tones}	Sub-carrier Spacing (kHz)	Cell Power (dBm/15 kHz)	Power (dBm)
20406	0	824.6	BPSK	1@0	3.75	-110	23.43
			QPSK	1@0	15	-110	23.51
			QPSK	3@3	15	-110	23.67
			QPSK	12@0	15	-110	23.29
20516	0	835.6	BPSK	1@0	3.75	-110	23.43
			BPSK	1@47	3.75	-110	23.42
			QPSK	1@0	15	-110	23.59
			QPSK	1@11	15	-110	23.51
			QPSK	3@3	15	-110	23.72
			QPSK	12@0	15	-110	23.52
20644	0	848.4	BPSK	1@47	3.75	-110	23.57
			QPSK	1@11	15	-110	23.56
			QPSK	3@3	15	-110	23.75
			QPSK	12@0	15	-110	23.58

LTE Band 5							
In-Band	**BW (MHz): 10**	**NB-IoT PRB: 30**					
N_{UL}	M_{UL}	Frequency of Uplink (MHz)	Test Configuration Initial of Power			EUT	
			Modulation	N_{tones}	Sub-carrier Spacing (kHz)	Cell Power (dBm/15 kHz)	Power (dBm)
20460	-2	829.99	BPSK	1@0	3.75	-110	23.43
			QPSK	1@0	15	-110	23.52
			QPSK	3@3	15	-110	23.67
			QPSK	12@0	15	-110	23.45
20535	-2	837.49	BPSK	1@0	3.75	-110	23.44
			BPSK	1@47	3.75	-110	23.42
			QPSK	1@0	15	-110	23.55
			QPSK	1@11	15	-110	23.47
			QPSK	3@3	15	-110	23.71
			QPSK	12@0	15	-110	23.35
20610	-2	844.99	BPSK	1@47	3.75	-110	23.55
			QPSK	1@11	15	-110	23.61
			QPSK	3@3	15	-110	23.72
			QPSK	12@0	15	-110	23.55

LTE Band 5							
In-Band	BW (MHz): 10	NB-IoT PRB: 35					
N_{UL}	M_{UL}	Frequency of Uplink (MHz)	Test Configuration Initial of Power			EUT	
			Modulation	N_{tones}	Sub-carrier Spacing (kHz)	Cell Power (dBm/15 kHz)	Power (dBm)
20469	-2	830.89	BPSK	1@0	3.75	-110	23.47
			QPSK	1@0	15	-110	23.22
			QPSK	3@3	15	-110	23.59
			QPSK	12@0	15	-110	23.32
20544	-2	838.39	BPSK	1@0	3.75	-110	23.45
			BPSK	1@47	3.75	-110	23.48
			QPSK	1@0	15	-110	23.44
			QPSK	1@11	15	-110	23.56
			QPSK	3@3	15	-110	23.72
			QPSK	12@0	15	-110	23.64
20619	-2	845.89	BPSK	1@47	3.75	-110	23.57
			QPSK	1@11	15	-110	23.61
			QPSK	3@3	15	-110	23.72
			QPSK	12@0	15	-110	23.46

LTE Band 5							
Guard-Band	BW (MHz): 5						
N_{UL}	M_{UL}	Frequency of Uplink (MHz)	Test Configuration Initial of Power			EUT	
			Modulation	N_{tones}	Sub-carrier Spacing (kHz)	Cell Power (dBm/15 kHz)	Power (dBm)
20401	0	824.1	BPSK	1@0	3.75	-110	23.38
			QPSK	1@0	15	-110	23.55
			QPSK	3@3	15	-110	23.62
			QPSK	12@0	15	-110	23.35
20501	0	834.1	BPSK	1@0	3.75	-110	23.57
			BPSK	1@47	3.75	-110	23.53
			QPSK	1@0	15	-110	23.64
			QPSK	1@11	15	-110	23.61
			QPSK	3@3	15	-110	23.71
			QPSK	12@0	15	-110	23.67
20649	0	848.9	BPSK	1@47	3.75	-110	23.56
			QPSK	1@11	15	-110	23.57
			QPSK	3@3	15	-110	23.73
			QPSK	12@0	15	-110	23.45

LTE Band 26							
Stand-alone							
N_{UL}	M_{UL}	Frequency of Uplink (MHz)	Test Configuration Initial of Power			EUT	
			Modulation	N_{tones}	Sub-carrier Spacing (kHz)	Cell Power (dBm/15 kHz)	Power (dBm)
26791	0	824.1	BPSK	1@0	3.75	-110	22.79
			QPSK	1@0	15	-110	22.71
			QPSK	3@3	15	-110	22.83
			QPSK	12@0	15	-110	20.68
26915	0	836.5	BPSK	1@0	3.75	-110	23.23
			BPSK	1@47	3.75	-110	23.27
			QPSK	1@0	15	-110	23.34
			QPSK	1@11	15	-110	23.21
			QPSK	3@3	15	-110	23.29
			QPSK	12@0	15	-110	23.09
27039	0	848.9	BPSK	1@47	3.75	-110	21.67
			QPSK	1@11	15	-110	21.78
			QPSK	3@3	15	-110	21.87
			QPSK	12@0	15	-110	20.58

LTE Band 26							
In-Band	BW (MHz): 3						
N_{UL}	M_{UL}	Frequency of Uplink (MHz)	Test Configuration Initial of Power			EUT	
			Modulation	N_{tones}	Sub-carrier Spacing (kHz)	Cell Power (dBm/15 kHz)	Power (dBm)
26796	0	824.6	BPSK	1@0	3.75	-110	23.07
			QPSK	1@0	15	-110	23.06
			QPSK	3@3	15	-110	23.11
			QPSK	12@0	15	-110	23.04
26906	0	835.6	BPSK	1@0	3.75	-110	23.16
			BPSK	1@47	3.75	-110	23.14
			QPSK	1@0	15	-110	23.15
			QPSK	1@11	15	-110	23.11
			QPSK	3@3	15	-110	23.22
			QPSK	12@0	15	-110	23.14
27034	0	848.4	BPSK	1@47	3.75	-110	23.16
			QPSK	1@11	15	-110	23.26
			QPSK	3@3	15	-110	23.28
			QPSK	12@0	15	-110	23.13

LTE Band 26							
In-Band	BW (MHz): 10	NB-IoT PRB: 30					
N_{UL}	M_{UL}	Frequency of Uplink (MHz)	Test Configuration Initial of Power			EUT	
			Modulation	N_{tones}	Sub-carrier Spacing (kHz)	Cell Power (dBm/15 kHz)	Power (dBm)
26850	-2	829.99	BPSK	1@0	3.75	-110	23.1
			QPSK	1@0	15	-110	22.69
			QPSK	3@3	15	-110	23.14
			QPSK	12@0	15	-110	23.11
26925	-2	837.49	BPSK	1@0	3.75	-110	22.98
			BPSK	1@47	3.75	-110	23.01
			QPSK	1@0	15	-110	23.11
			QPSK	1@11	15	-110	23.08
			QPSK	3@3	15	-110	23.16
			QPSK	12@0	15	-110	23.02
27000	-2	844.99	BPSK	1@47	3.75	-110	23.11
			QPSK	1@11	15	-110	23.16
			QPSK	3@3	15	-110	23.21
			QPSK	12@0	15	-110	23.11

LTE Band 26							
In-Band	BW (MHz): 10	NB-IoT PRB: 35					
N_{UL}	M_{UL}	Frequency of Uplink (MHz)	Test Configuration Initial of Power			EUT	
			Modulation	N_{tones}	Sub-carrier Spacing (kHz)	Cell Power (dBm/15 kHz)	Power (dBm)
26859	-2	830.89	BPSK	1@0	3.75	-110	23.02
			QPSK	1@0	15	-110	23.04
			QPSK	3@3	15	-110	23.13
			QPSK	12@0	15	-110	23.02
26934	-2	838.39	BPSK	1@0	3.75	-110	23.11
			BPSK	1@47	3.75	-110	23.12
			QPSK	1@0	15	-110	23.12
			QPSK	1@11	15	-110	23.11
			QPSK	3@3	15	-110	23.13
			QPSK	12@0	15	-110	23.06
27009	-2	845.89	BPSK	1@47	3.75	-110	23.2
			QPSK	1@11	15	-110	23.11
			QPSK	3@3	15	-110	23.24
			QPSK	12@0	15	-110	23.13

LTE Band 26							
Guard-Band	BW (MHz): 5						
N_{UL}	M_{UL}	Frequency of Uplink (MHz)	Test Configuration Initial of Power			EUT	
			Modulation	N_{tones}	Sub-carrier Spacing (kHz)	Cell Power (dBm/15 kHz)	Power (dBm)
26791	0	824.1	BPSK	1@0	3.75	-110	22.97
			QPSK	1@0	15	-110	22.95
			QPSK	3@3	15	-110	23
			QPSK	12@0	15	-110	22.96
26891	0	834.1	BPSK	1@0	3.75	-110	23.15
			BPSK	1@47	3.75	-110	23.19
			QPSK	1@0	15	-110	23.12
			QPSK	1@11	15	-110	23.22
			QPSK	3@3	15	-110	23.31
			QPSK	12@0	15	-110	23.04
27039	0	848.9	BPSK	1@47	3.75	-110	23.14
			QPSK	1@11	15	-110	23.13
			QPSK	3@3	15	-110	23.24
			QPSK	12@0	15	-110	23.18

ERP Power (dBm)

Cat-M1

LTE Band 5							
Channel Bandwidth: 1.4 MHz / QPSK							
Plane	**Channel**	**Frequency (MHz)**	**Reading (dBm)**	**Correction Factor (dB)**	**ERP (dBm)**	**ERP (mW)**	**Polarization (H/V)**
X	20407	824.7	-5.76	32.62	24.71	295.80	H
	20525	836.5	-5.39	32.52	24.98	314.77	
	20643	848.3	-5.91	32.65	24.59	287.74	
	20407	824.7	-12.30	32.76	18.31	67.76	V
	20525	836.5	-11.72	32.39	18.52	71.12	
	20643	848.3	-12.38	32.54	18.01	63.24	
Channel Bandwidth: 1.4 MHz / 16QAM							
X	20407	824.7	-6.75	32.62	23.72	235.50	H
	20525	836.5	-6.38	32.52	23.99	250.61	
	20643	848.3	-6.90	32.65	23.60	229.09	
	20407	824.7	-13.29	32.76	17.32	53.95	V
	20525	836.5	-12.71	32.39	17.53	56.62	
	20643	848.3	-13.37	32.54	17.02	50.35	

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

LTE Band 5							
Channel Bandwidth: 3 MHz / QPSK							
Plane	**Channel**	**Frequency (MHz)**	**Reading (dBm)**	**Correction Factor (dB)**	**ERP (dBm)**	**ERP (mW)**	**Polarization (H/V)**
X	20415	825.5	-6.08	32.62	24.39	274.79	H
	20525	836.5	-5.71	32.52	24.66	292.42	
	20635	847.5	-6.23	32.65	24.27	267.30	
	20415	825.5	-12.62	32.76	17.99	62.95	V
	20525	836.5	-12.04	32.39	18.20	66.07	
	20635	847.5	-12.70	32.54	17.69	58.75	
Channel Bandwidth: 3 MHz / 16QAM							
X	20415	825.5	-7.07	32.62	23.40	218.78	H
	20525	836.5	-6.70	32.52	23.67	232.81	
	20635	847.5	-7.22	32.65	23.28	212.81	
	20415	825.5	-13.61	32.76	17.00	50.12	V
	20525	836.5	-13.03	32.39	17.21	52.60	
	20635	847.5	-13.69	32.54	16.70	46.77	

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

LTE Band 5							
Channel Bandwidth: 5 MHz / QPSK							
Plane	Channel	Frequency (MHz)	Reading (dBm)	Correction Factor (dB)	ERP (dBm)	ERP (mW)	Polarization (H/V)
X	20425	826.5	-6.36	32.62	24.11	257.63	H
	20525	836.5	-5.99	32.52	24.38	274.16	
	20625	846.5	-6.51	32.65	23.99	250.61	
	20425	826.5	-12.90	32.76	17.71	59.02	V
	20525	836.5	-12.32	32.39	17.92	61.94	
	20625	846.5	-12.98	32.54	17.41	55.08	
Channel Bandwidth: 5 MHz / 16QAM							
X	20425	826.5	-7.39	32.62	23.08	203.24	H
	20525	836.5	-7.02	32.52	23.35	216.27	
	20625	846.5	-7.54	32.65	22.96	197.70	
	20425	826.5	-13.93	32.76	16.68	46.56	V
	20525	836.5	-13.35	32.39	16.89	48.87	
	20625	846.5	-14.01	32.54	16.38	43.45	

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

LTE Band 5							
Channel Bandwidth: 10 MHz / QPSK							
Plane	Channel	Frequency (MHz)	Reading (dBm)	Correction Factor (dB)	ERP (dBm)	ERP (mW)	Polarization (H/V)
X	20450	829.0	-6.69	32.62	23.78	238.78	H
	20525	836.5	-6.32	32.52	24.05	254.10	
	20600	844.0	-6.84	32.65	23.66	232.27	
	20450	829.0	-13.23	32.76	17.38	54.70	V
	20525	836.5	-12.65	32.39	17.59	57.41	
	20600	844.0	-13.31	32.54	17.08	51.05	
Channel Bandwidth: 10 MHz / 16QAM							
X	20425	826.5	-7.71	32.62	22.76	188.80	H
	20525	836.5	-7.34	32.52	23.03	200.91	
	20625	846.5	-7.86	32.65	22.64	183.65	
	20425	826.5	-14.25	32.76	16.36	43.25	V
	20525	836.5	-13.67	32.39	16.57	45.39	
	20625	846.5	-14.33	32.54	16.06	40.36	

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

LTE Band 26							
Channel Bandwidth: 1.4 MHz / QPSK							
Plane	Channel	Frequency (MHz)	Reading (dBm)	Correction Factor (dB)	ERP (dBm)	ERP (mW)	Polarization (H/V)
X	26797	824.7	-6.39	32.62	24.08	255.86	H
	26915	836.5	-6.38	32.52	23.99	250.61	
	27033	848.3	-6.29	32.65	24.21	263.63	
	26797	824.7	-11.92	32.76	18.69	73.96	V
	26915	836.5	-11.76	32.39	18.48	70.47	
	27033	848.3	-11.40	32.54	18.99	79.25	
Channel Bandwidth: 1.4 MHz / 16QAM							
X	26797	824.7	-7.40	32.62	23.07	202.77	H
	26915	836.5	-7.39	32.52	22.98	198.61	
	27033	848.3	-7.30	32.65	23.20	208.93	
	26797	824.7	-12.93	32.76	17.68	58.61	V
	26915	836.5	-12.77	32.39	17.47	55.85	
	27033	848.3	-12.41	32.54	17.98	62.81	

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

LTE Band 26							
Channel Bandwidth: 3 MHz / QPSK							
Plane	Channel	Frequency (MHz)	Reading (dBm)	Correction Factor (dB)	ERP (dBm)	ERP (mW)	Polarization (H/V)
X	26805	825.5	-6.64	32.62	23.83	241.55	H
	26915	836.5	-6.63	32.52	23.74	236.59	
	27025	847.5	-6.54	32.65	23.96	248.89	
	26805	825.5	-12.17	32.76	18.44	69.82	V
	26915	836.5	-12.01	32.39	18.23	66.53	
	27025	847.5	-11.65	32.54	18.74	74.82	
Channel Bandwidth: 3 MHz / 16QAM							
X	26805	825.5	-7.63	32.62	22.84	192.31	H
	26915	836.5	-7.62	32.52	22.75	188.36	
	27025	847.5	-7.53	32.65	22.97	198.15	
	26805	825.5	-13.16	32.76	17.45	55.59	V
	26915	836.5	-13.00	32.39	17.24	52.97	
	27025	847.5	-12.64	32.54	17.75	59.57	

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

LTE Band 26							
Channel Bandwidth: 5 MHz / QPSK							
Plane	Channel	Frequency (MHz)	Reading (dBm)	Correction Factor (dB)	ERP (dBm)	ERP (mW)	Polarization (H/V)
X	26815	826.5	-6.91	32.62	23.56	226.99	H
	26915	836.5	-6.90	32.52	23.47	222.33	
	27015	846.5	-6.81	32.65	23.69	233.88	
	26815	826.5	-12.44	32.76	18.17	65.61	V
	26919	836.5	-12.28	32.39	17.96	62.52	
	27015	846.5	-11.92	32.54	18.47	70.31	
Channel Bandwidth: 5 MHz / 16QAM							
X	26815	826.5	-7.89	32.62	22.58	181.13	H
	26915	836.5	-7.88	32.52	22.49	177.42	
	27015	846.5	-7.79	32.65	22.71	186.64	
	26815	826.5	-13.42	32.76	17.19	52.36	V
	26919	836.5	-13.26	32.39	16.98	49.89	
	27015	846.5	-12.90	32.54	17.49	56.10	

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

LTE Band 26							
Channel Bandwidth: 10 MHz / QPSK							
Plane	Channel	Frequency (MHz)	Reading (dBm)	Correction Factor (dB)	ERP (dBm)	ERP (mW)	Polarization (H/V)
X	26840	829.0	-7.22	32.62	23.25	211.35	H
	26915	836.5	-7.21	32.52	23.16	207.01	
	26990	844.0	-7.12	32.65	23.38	217.77	
	26840	829.0	-12.75	32.76	17.86	61.09	V
	26919	836.5	-12.59	32.39	17.65	58.21	
	26990	844.0	-12.23	32.54	18.16	65.46	
Channel Bandwidth: 10 MHz / 16QAM							
X	26840	829.0	-8.24	32.62	22.23	167.11	H
	26915	836.5	-8.23	32.52	22.14	163.68	
	26990	844.0	-8.14	32.65	22.36	172.19	
	26840	829.0	-13.77	32.76	16.84	48.31	V
	26919	836.5	-13.61	32.39	16.63	46.03	
	26990	844.0	-13.25	32.54	17.14	51.76	

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

LTE Band 26							
Channel Bandwidth: 15 MHz / QPSK							
Plane	**Channel**	**Frequency (MHz)**	**Reading (dBm)**	**Correction Factor (dB)**	**ERP (dBm)**	**ERP (mW)**	**Polarization (H/V)**
X	26865	831.5	-7.49	32.62	22.98	198.61	H
	26915	836.5	-7.48	32.52	22.89	194.54	
	26965	841.5	-7.39	32.65	23.11	204.64	
	26865	831.5	-13.02	32.76	17.59	57.41	V
	26915	836.5	-12.86	32.39	17.38	54.70	
	26965	841.5	-12.50	32.54	17.89	61.52	
Channel Bandwidth: 15 MHz / 16QAM							
X	26865	831.5	-8.50	32.62	21.97	157.40	H
	26915	836.5	-8.49	32.52	21.88	154.17	
	26965	841.5	-8.40	32.65	22.10	162.18	
	26865	831.5	-14.03	32.76	16.58	45.50	V
	26915	836.5	-13.87	32.39	16.37	43.35	
	26965	841.5	-13.51	32.54	16.88	48.75	

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

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LTE Band 5							
Modulation: BPSK							
Plane	**Channel**	**Frequency (MHz)**	**Reading (dBm)**	**Correction Factor (dB)**	**ERP (dBm)**	**ERP (mW)**	**Polarization (H/V)**
X	20401	824.1	-8.58	32.62	21.89	154.53	H
	20525	836.5	-8.42	32.52	21.95	156.68	
	20649	848.9	-8.43	32.65	22.07	161.06	
	20401	824.1	-11.85	32.76	18.76	75.16	V
	20525	836.5	-14.39	32.39	15.85	38.46	
	20649	848.9	-14.46	32.54	15.93	39.17	
Modulation: QPSK							
X	20401	824.1	-7.86	32.62	22.61	182.39	H
	20525	836.5	-7.69	32.52	22.68	185.35	
	20649	848.9	-7.74	32.65	22.76	188.80	
	20401	824.1	-14.26	32.76	16.35	43.15	V
	20525	836.5	-13.82	32.39	16.42	43.85	
	20649	848.9	-13.88	32.54	16.51	44.77	

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

LTE Band 26							
Modulation: BPSK							
Plane	**Channel**	**Frequency (MHz)**	**Reading (dBm)**	**Correction Factor (dB)**	**ERP (dBm)**	**ERP (mW)**	**Polarization (H/V)**
X	26791	824.1	-8.90	32.62	21.57	143.55	H
	26915	836.5	-8.69	32.52	21.68	147.23	
	27039	848.9	-9.04	32.65	21.46	139.96	
	26791	824.1	-15.55	32.76	15.06	32.06	V
	26915	836.5	-15.09	32.39	15.15	32.73	
	27039	848.9	-15.38	32.54	15.01	31.70	
Modulation: QPSK							
X	26791	824.1	-8.03	32.62	22.44	175.39	H
	26915	836.5	-7.86	32.52	22.51	178.24	
	27039	848.9	-8.14	32.65	22.36	172.19	
	26791	824.1	-14.82	32.76	15.79	37.93	V
	26915	836.5	-14.36	32.39	15.88	38.73	
	27039	848.9	-14.72	32.54	15.67	36.90	

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

4.2 Modulation Characteristics Measurement

4.2.1 Limits of Modulation Characteristics

N/A

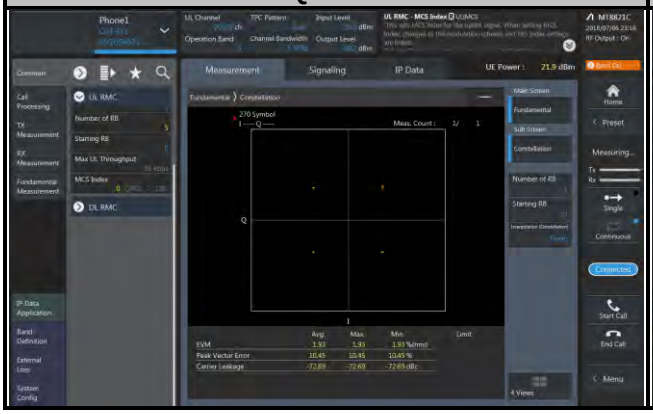
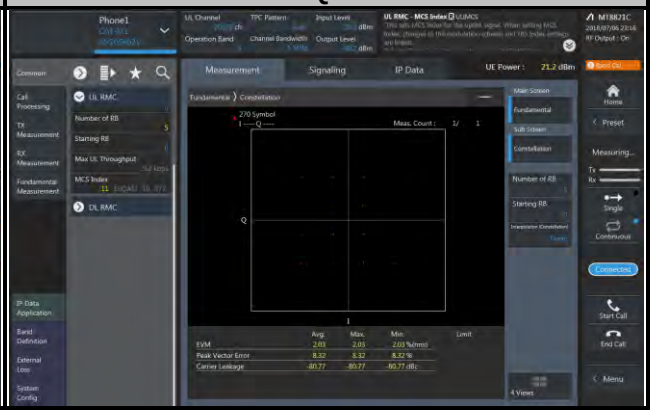
4.2.2 Test Setup

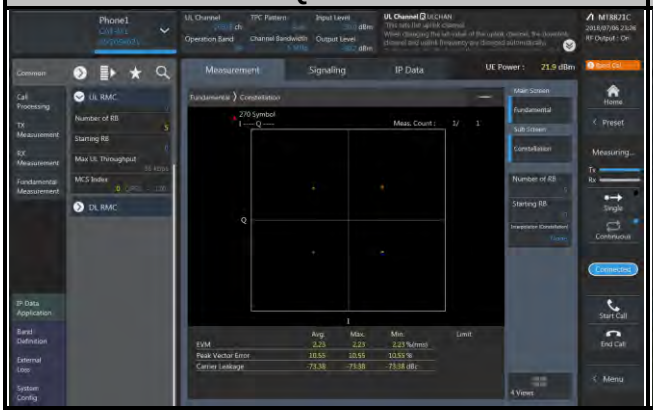
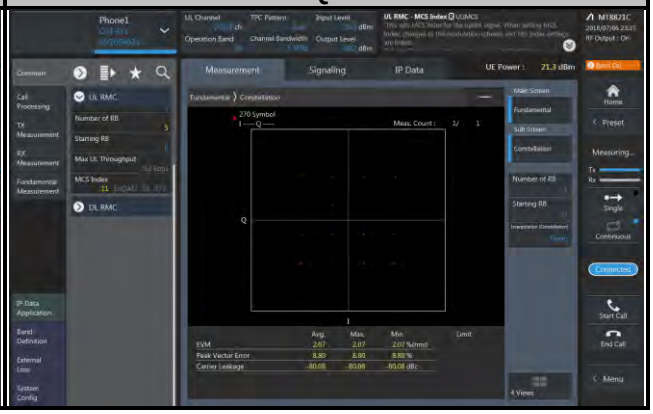
4.2.3 Test Procedure

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

4.2.4 Test Results

Cat-M1

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

Spectrum Plot of Measurement	
LTE Band 26	
Channel 26915	
QPSK	16QAM
	

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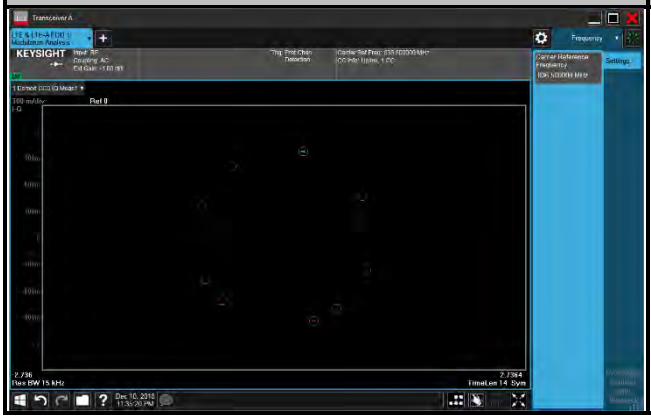
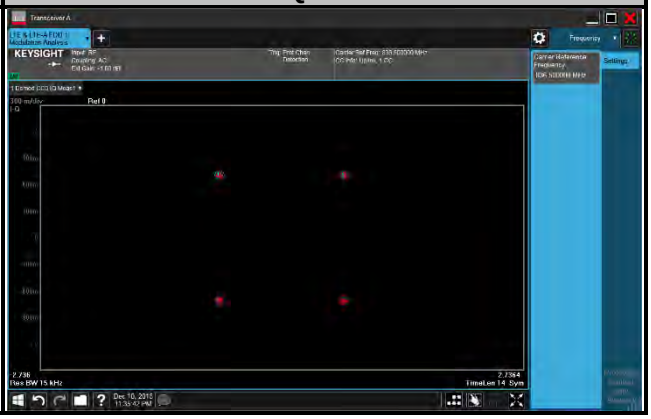
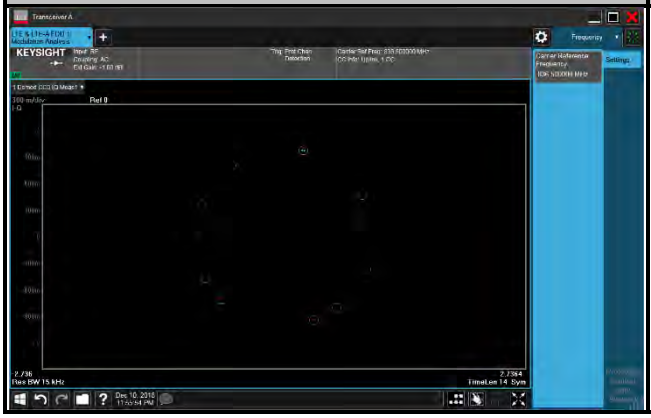
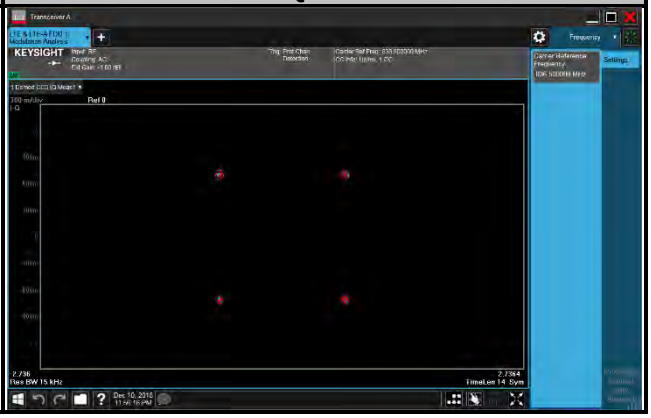
Spectrum Plot of Measurement	
LTE Band 5	
Channel 20525	
BPSK	QPSK
	

Spectrum Plot of Measurement	
LTE Band 26	
Channel 26915	
BPSK	QPSK
	

4.3 Frequency Stability Measurement

4.3.1 Limits of Frequency Stability Measurement

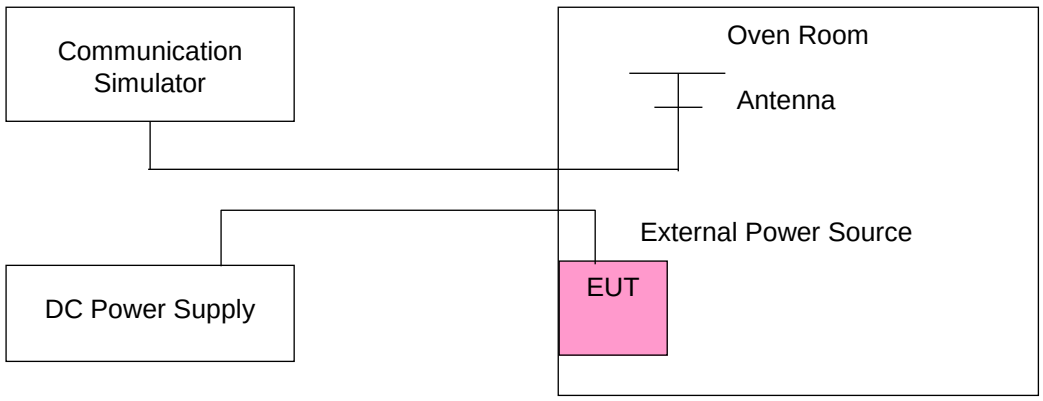
1.5 ppm is for base and fixed station. 2.5 ppm is for mobile station.

4.3.2 Test Procedure

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

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

4.3.3 Test Setup



4.3.4 Test Results

Cat-M1

Voltage (Volts)	LTE Band 5				Limit (ppm)
	Channel Bandwidth: 1.4 MHz				
	Low Channel		High Channel		
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
12	824.700003	0.003	848.300002	0.002	2.5
10.2	824.700004	0.004	848.300003	0.004	2.5
13.8	824.700003	0.003	848.300003	0.004	2.5

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

Frequency Error vs. Temperature

Temp. (℃)	LTE Band 5				Limit (ppm)
	Channel Bandwidth: 1.4 MHz				
	Low Channel		High Channel		
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
-30	824.700003	0.004	848.300001	0.002	2.5
-20	824.700001	0.001	848.300003	0.003	2.5
-10	824.700004	0.004	848.300004	0.005	2.5
0	824.700002	0.002	848.300001	0.001	2.5
10	824.700002	0.002	848.300002	0.003	2.5
20	824.700001	0.001	848.300004	0.005	2.5
30	824.699997	-0.004	848.299999	-0.001	2.5
40	824.699999	-0.002	848.299996	-0.004	2.5
50	824.699998	-0.003	848.299999	-0.002	2.5
60	824.699998	-0.003	848.299998	-0.003	2.5
70	824.699999	-0.001	848.299999	-0.002	2.5
80	824.699998	-0.002	848.299998	-0.002	2.5
85	824.699998	-0.003	848.299999	-0.002	2.5

Frequency Error vs. Voltage

Voltage (Volts)	LTE Band 5				Limit (ppm)
	Channel Bandwidth: 3 MHz				
	Low Channel		High Channel		
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
12	825.500002	0.003	847.500003	0.004	2.5
10.2	825.500004	0.005	847.500003	0.003	2.5
13.8	825.500002	0.002	847.500002	0.002	2.5

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

Frequency Error vs. Temperature

Temp. (℃)	LTE Band 5				Limit (ppm)
	Channel Bandwidth: 3 MHz				
	Low Channel		High Channel		
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
-30	825.500003	0.004	847.500002	0.002	2.5
-20	825.500003	0.004	847.500003	0.003	2.5
-10	825.500001	0.001	847.500004	0.005	2.5
0	825.500004	0.004	847.500002	0.003	2.5
10	825.500002	0.002	847.500001	0.002	2.5
20	825.500003	0.004	847.499997	-0.003	2.5
30	825.499999	-0.002	847.499996	-0.004	2.5
40	825.499996	-0.004	847.499997	-0.004	2.5
50	825.499996	-0.005	847.499998	-0.003	2.5
60	825.499997	-0.004	847.499996	-0.004	2.5
70	825.499998	-0.002	847.499998	-0.003	2.5
80	825.499998	-0.003	847.499998	-0.003	2.5
85	825.499997	-0.004	847.499996	-0.004	2.5

Frequency Error vs. Voltage

Voltage (Volts)	LTE Band 5				Limit (ppm)
	Channel Bandwidth: 5 MHz				
	Low Channel		High Channel		
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
12	826.500002	0.002	846.500002	0.003	2.5
10.2	826.500003	0.004	846.500003	0.004	2.5
13.8	826.500002	0.002	846.500001	0.001	2.5

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

Frequency Error vs. Temperature

Temp. (℃)	LTE Band 5				Limit (ppm)
	Channel Bandwidth: 5 MHz				
	Low Channel		High Channel		
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
-30	826.500003	0.004	846.500002	0.002	2.5
-20	826.500002	0.002	846.500002	0.002	2.5
-10	826.500004	0.004	846.500002	0.002	2.5
0	826.500002	0.002	846.500002	0.003	2.5
10	826.500002	0.002	846.500001	0.002	2.5
20	826.499996	-0.005	846.499998	-0.003	2.5
30	826.499997	-0.004	846.499999	-0.001	2.5
40	826.499999	-0.002	846.499996	-0.004	2.5
50	826.499997	-0.004	846.499996	-0.004	2.5
60	826.499998	-0.003	846.499997	-0.004	2.5
70	826.499997	-0.004	846.499996	-0.004	2.5
80	826.499997	-0.004	846.499996	-0.004	2.5
85	826.499998	-0.003	846.499997	-0.004	2.5

Frequency Error vs. Voltage

Voltage (Volts)	LTE Band 5				Limit (ppm)
	Channel Bandwidth: 10 MHz				
	Low Channel		High Channel		
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
12	829.000004	0.005	844.000001	0.002	2.5
10.2	829.000001	0.002	844.000004	0.005	2.5
13.8	829.000004	0.004	844.000004	0.005	2.5

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

Frequency Error vs. Temperature

Temp. (℃)	LTE Band 5				Limit (ppm)
	Channel Bandwidth: 10 MHz				
	Low Channel		High Channel		
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
-30	829.000002	0.002	844.000004	0.005	2.5
-20	829.000004	0.004	844.000003	0.004	2.5
-10	829.000003	0.003	844.000004	0.004	2.5
0	829.000003	0.004	844.000004	0.005	2.5
10	829.000002	0.002	844.000003	0.004	2.5
20	828.999999	-0.002	843.999998	-0.002	2.5
30	828.999999	-0.002	843.999999	-0.001	2.5
40	828.999997	-0.004	843.999997	-0.004	2.5
50	828.999998	-0.003	843.999998	-0.003	2.5
60	828.999998	-0.002	843.999998	-0.002	2.5
70	828.999998	-0.003	843.999998	-0.003	2.5
80	828.999998	-0.003	843.999998	-0.003	2.5
85	828.999998	-0.002	843.999998	-0.002	2.5

Frequency Error vs. Voltage

Voltage (Volts)	LTE Band 26				Limit (ppm)
	Channel Bandwidth: 1.4 MHz				
	Low Channel		High Channel		
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
12	824.700003	0.003	848.300002	0.002	2.5
10.2	824.700004	0.004	848.300003	0.004	2.5
13.8	824.700002	0.002	848.300003	0.004	2.5

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

Frequency Error vs. Temperature

Temp. (℃)	LTE Band 26				Limit (ppm)
	Channel Bandwidth: 1.4 MHz				
	Low Channel		High Channel		
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
-30	824.700002	0.002	848.300001	0.001	2.5
-20	824.700002	0.002	848.300004	0.005	2.5
-10	824.700003	0.003	848.300004	0.004	2.5
0	824.700002	0.002	848.300002	0.002	2.5
10	824.700002	0.003	848.300002	0.003	2.5
20	824.699997	-0.004	848.299999	-0.001	2.5
30	824.699997	-0.004	848.299997	-0.004	2.5
40	824.699998	-0.003	848.299998	-0.003	2.5
50	824.699997	-0.003	848.299998	-0.003	2.5
60	824.699998	-0.003	848.299998	-0.003	2.5
70	824.699997	-0.003	848.299998	-0.003	2.5
80	824.699997	-0.003	848.299998	-0.003	2.5
85	824.699998	-0.003	848.299998	-0.003	2.5

Frequency Error vs. Voltage

Voltage (Volts)	LTE Band 26				Limit (ppm)
	Channel Bandwidth: 3 MHz				
	Low Channel		High Channel		
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
12	825.500002	0.003	847.500002	0.002	2.5
10.2	825.500001	0.001	847.500002	0.003	2.5
13.8	825.500003	0.004	847.500002	0.002	2.5

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

Frequency Error vs. Temperature

Temp. (℃)	LTE Band 26				Limit (ppm)
	Channel Bandwidth: 3 MHz				
	Low Channel		High Channel		
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
-30	825.500004	0.004	847.500003	0.004	2.5
-20	825.500002	0.003	847.500001	0.001	2.5
-10	825.500003	0.004	847.500003	0.004	2.5
0	825.500003	0.004	847.500002	0.003	2.5
10	825.500003	0.004	847.500002	0.002	2.5
20	825.499997	-0.003	847.499998	-0.003	2.5
30	825.500003	0.004	847.500002	0.003	2.5
40	825.500003	0.004	847.500002	0.002	2.5
50	825.499997	-0.003	847.499998	-0.003	2.5
60	825.499997	-0.004	847.499998	-0.002	2.5
70	825.499996	-0.005	847.499999	-0.001	2.5
50	825.499999	-0.002	847.499999	-0.002	2.5
85	825.499998	-0.003	847.499998	-0.002	2.5

Frequency Error vs. Voltage

Voltage (Volts)	LTE Band 26				Limit (ppm)
	Channel Bandwidth: 5 MHz				
	Low Channel		High Channel		
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
12	826.500001	0.001	846.500004	0.004	2.5
10.2	826.500003	0.004	846.500003	0.004	2.5
13.8	826.500003	0.004	846.500003	0.004	2.5

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

Frequency Error vs. Temperature

Temp. (℃)	LTE Band 26				Limit (ppm)
	Channel Bandwidth: 5 MHz				
	Low Channel		High Channel		
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
-30	826.500003	0.003	846.500001	0.002	2.5
-20	826.500001	0.001	846.500001	0.001	2.5
-10	826.500001	0.001	846.500004	0.005	2.5
0	826.500002	0.002	846.500004	0.005	2.5
10	826.500003	0.003	846.500002	0.002	2.5
20	826.499999	-0.001	846.499999	-0.002	2.5
30	826.500002	0.002	846.500004	0.005	2.5
40	826.500003	0.003	846.500002	0.002	2.5
50	826.499999	-0.001	846.499999	-0.002	2.5
60	826.499998	-0.003	846.499997	-0.004	2.5
70	826.499998	-0.002	846.499997	-0.004	2.5
50	826.499998	-0.002	846.499997	-0.004	2.5
85	826.499997	-0.004	846.499998	-0.003	2.5

Frequency Error vs. Voltage

Voltage (Volts)	LTE Band 26				Limit (ppm)
	Channel Bandwidth: 10 MHz				
	Low Channel		High Channel		
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
12	829.000003	0.004	844.000003	0.003	2.5
10.2	829.000002	0.003	844.000002	0.003	2.5
13.8	829.000002	0.003	844.000002	0.003	2.5

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

Frequency Error vs. Temperature

Temp. (℃)	LTE Band 26				Limit (ppm)
	Channel Bandwidth: 10 MHz				
	Low Channel		High Channel		
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
-30	829.000004	0.005	844.000001	0.001	2.5
-20	829.000001	0.001	844.000004	0.005	2.5
-10	829.000002	0.003	844.000002	0.003	2.5
0	829.000002	0.003	844.000002	0.002	2.5
10	829.000004	0.004	844.000001	0.002	2.5
20	828.999996	-0.004	843.999998	-0.002	2.5
30	829.000002	0.003	844.000002	0.002	2.5
40	829.000004	0.004	844.000001	0.002	2.5
50	828.999996	-0.004	843.999998	-0.002	2.5
60	828.999998	-0.003	843.999997	-0.004	2.5
70	828.999998	-0.002	843.999999	-0.002	2.5
50	828.999999	-0.001	843.999999	-0.001	2.5
85	828.999998	-0.002	843.999996	-0.004	2.5

Frequency Error vs. Voltage

Voltage (Volts)	LTE Band 26				Limit (ppm)
	Channel Bandwidth: 15 MHz				
	Low Channel		High Channel		
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
12	831.500004	0.005	841.500002	0.002	2.5
10.2	831.500004	0.005	841.500002	0.003	2.5
13.8	831.500004	0.005	841.500002	0.002	2.5

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

Frequency Error vs. Temperature

Temp. (℃)	LTE Band 26				Limit (ppm)
	Channel Bandwidth: 15 MHz				
	Low Channel		High Channel		
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
-30	831.500003	0.004	841.500002	0.002	2.5
-20	831.500001	0.001	841.500003	0.003	2.5
-10	831.500002	0.003	841.500001	0.001	2.5
0	831.500002	0.002	841.500002	0.002	2.5
10	831.500001	0.001	841.500004	0.005	2.5
20	831.499998	-0.002	841.499996	-0.005	2.5
30	831.500002	0.002	841.500002	0.002	2.5
40	831.500001	0.001	841.500004	0.005	2.5
50	831.499998	-0.002	841.499996	-0.005	2.5
60	831.499996	-0.005	841.499998	-0.002	2.5
70	831.499997	-0.004	841.499998	-0.002	2.5
50	831.499996	-0.005	841.499998	-0.003	2.5
85	831.499998	-0.002	841.499998	-0.002	2.5

NB-IoT

Frequency Error vs. Voltage

Voltage (Volts)	LTE Band 5				Limit (ppm)
	Low Channel		High Channel		
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
12	824.100003	0.004	848.900004	0.005	2.5
10.2	824.100002	0.002	848.900004	0.005	2.5
13.8	824.100001	0.002	848.900001	0.001	2.5

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

Frequency Error vs. Temperature

Temp. (℃)	LTE Band 5				Limit (ppm)
	Low Channel		High Channel		
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
-30	824.100003	0.004	848.900004	0.004	2.5
-20	824.100003	0.003	848.900003	0.003	2.5
-10	824.100002	0.002	848.900002	0.002	2.5
0	824.100004	0.005	848.900003	0.004	2.5
10	824.100004	0.004	848.900003	0.004	2.5
20	824.099997	-0.003	848.899997	-0.003	2.5
30	824.099997	-0.003	848.899999	-0.002	2.5
40	824.099996	-0.005	848.899997	-0.004	2.5
50	824.099998	-0.002	848.899998	-0.003	2.5
60	824.099998	-0.002	848.899997	-0.004	2.5
70	824.099996	-0.005	848.899997	-0.003	2.5
80	824.099996	-0.004	848.899996	-0.004	2.5
85	824.099997	-0.004	848.899997	-0.004	2.5

Frequency Error vs. Voltage

Voltage (Volts)	LTE Band 26				Limit (ppm)
	Low Channel		High Channel		
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
12	824.100002	0.002	848.900002	0.002	2.5
10.2	824.100003	0.004	848.900004	0.004	2.5
13.8	824.100001	0.002	848.900001	0.002	2.5

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

Frequency Error vs. Temperature

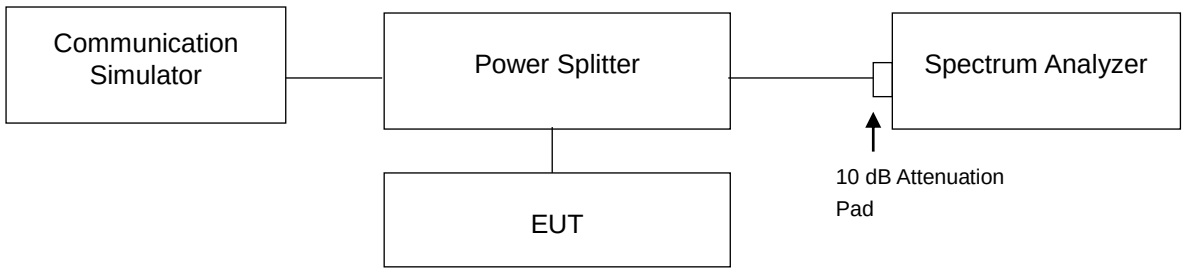
Temp. (℃)	LTE Band 26				Limit (ppm)
	Low Channel		High Channel		
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
-30	824.100002	0.002	848.900001	0.002	2.5
-20	824.100002	0.003	848.900004	0.004	2.5
-10	824.100003	0.003	848.900002	0.002	2.5
0	824.100003	0.004	848.900002	0.003	2.5
10	824.100003	0.004	848.900003	0.003	2.5
20	824.099998	-0.003	848.899997	-0.003	2.5
30	824.099999	-0.001	848.899997	-0.004	2.5
40	824.099996	-0.005	848.899998	-0.003	2.5
50	824.099997	-0.004	848.899996	-0.005	2.5
60	824.099996	-0.005	848.899999	-0.001	2.5
70	824.099998	-0.003	848.899999	-0.002	2.5
80	824.099999	-0.001	848.899998	-0.003	2.5
85	824.099998	-0.002	848.899997	-0.003	2.5

4.4 Occupied Bandwidth Measurement

4.4.1 Test Procedure

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

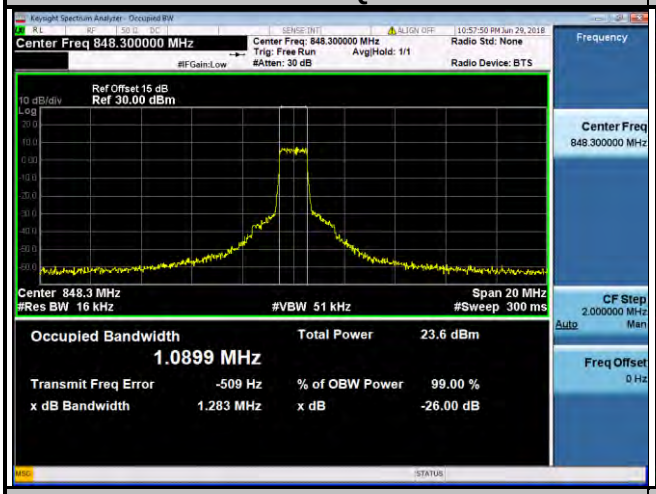
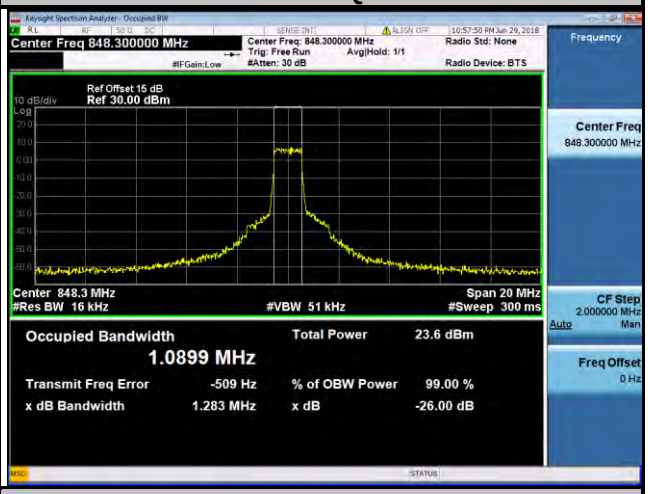
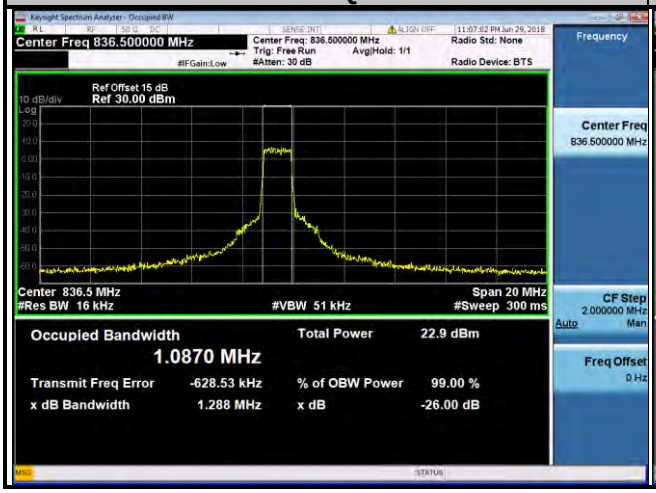
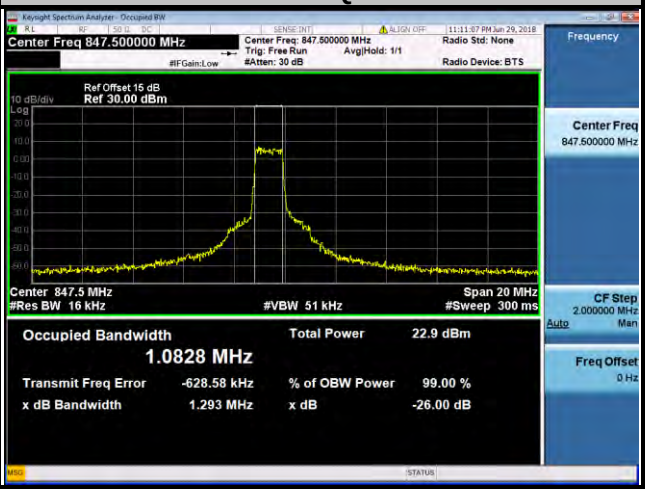
4.4.2 Test Setup



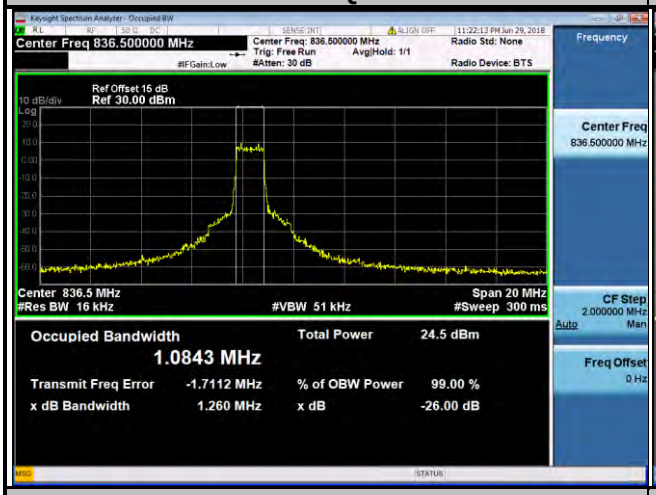
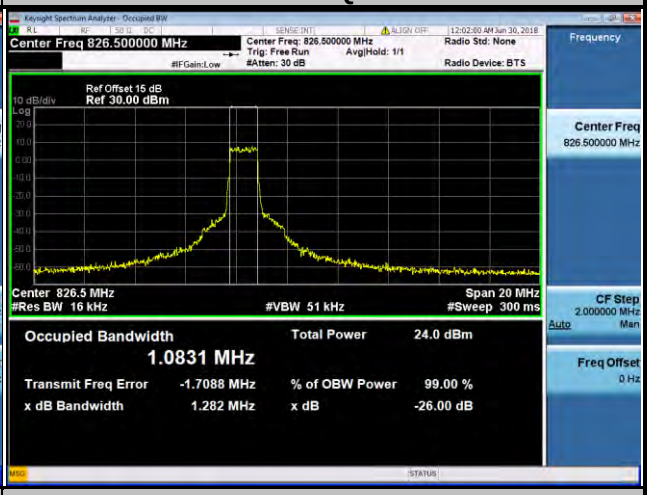
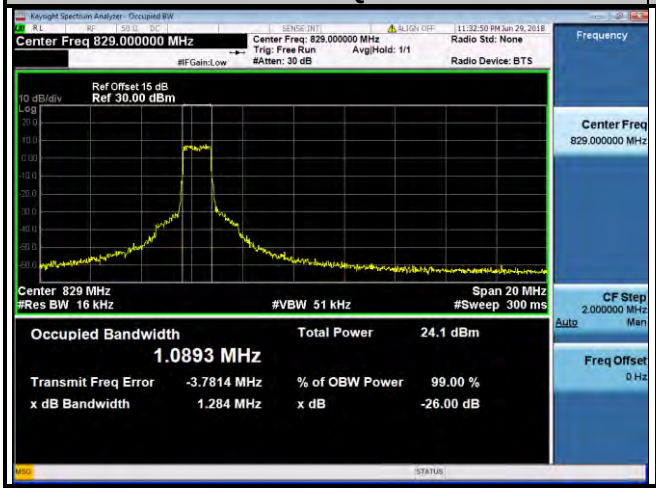
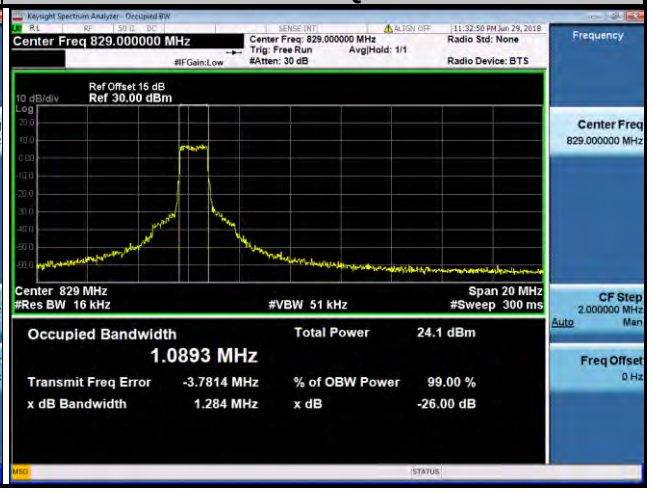
4.4.3 Test Result

Cat-M1

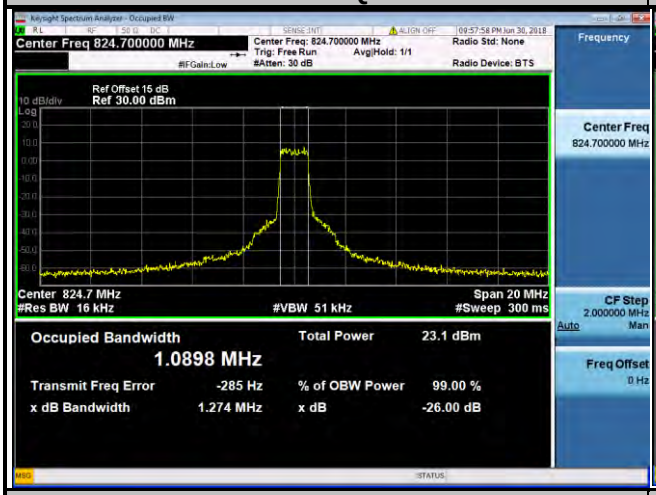
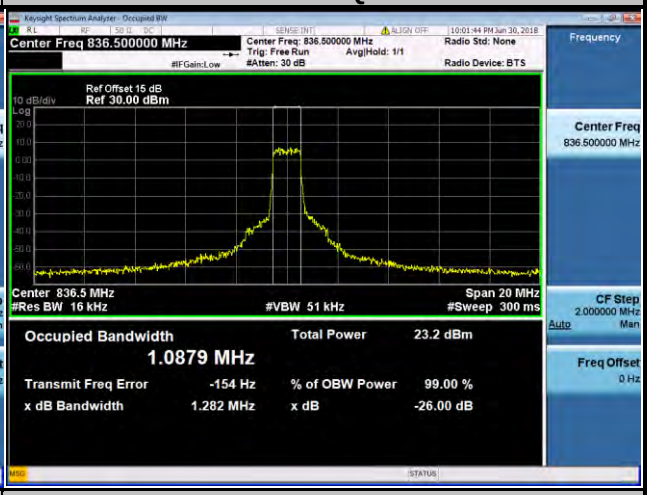
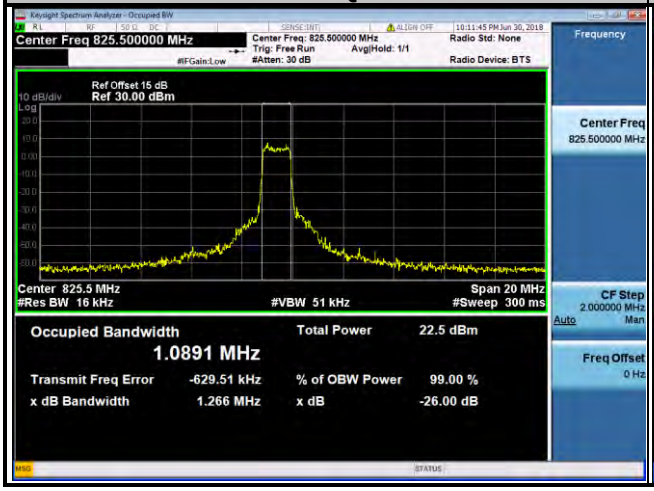
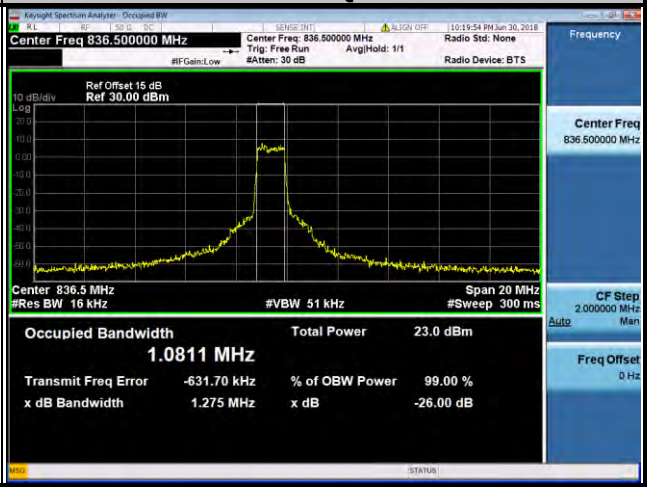
LTE Band 5					
Channel Bandwidth: 1.4 MHz					
Channel	**Frequency (MHz)**	**99 % Occupied Bandwidth (MHz)**		**26 dB Bandwidth (MHz)**	
		QPSK	**16QAM**	**QPSK**	**16QAM**
20407	824.7	1.0884	0.9152	1.264	1.216
20525	836.5	1.0883	0.9126	1.271	1.236
20643	848.3	1.0899	0.9120	1.283	1.240
Channel Bandwidth: 3 MHz					
Channel	**Frequency (MHz)**	**99 % Occupied Bandwidth (MHz)**		**26 dB Bandwidth (MHz)**	
		QPSK	**16QAM**	**QPSK**	**16QAM**
20415	825.5	1.0846	0.9018	1.259	1.218
20525	836.5	1.0870	0.9172	1.288	1.221
20635	847.5	1.0828	0.9145	1.293	1.222

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

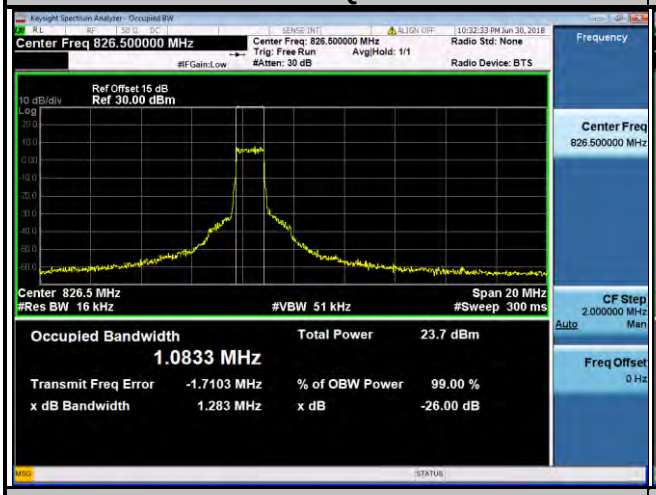
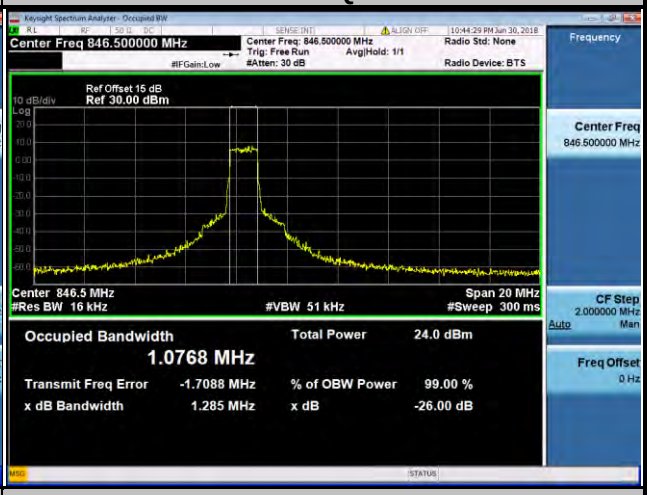
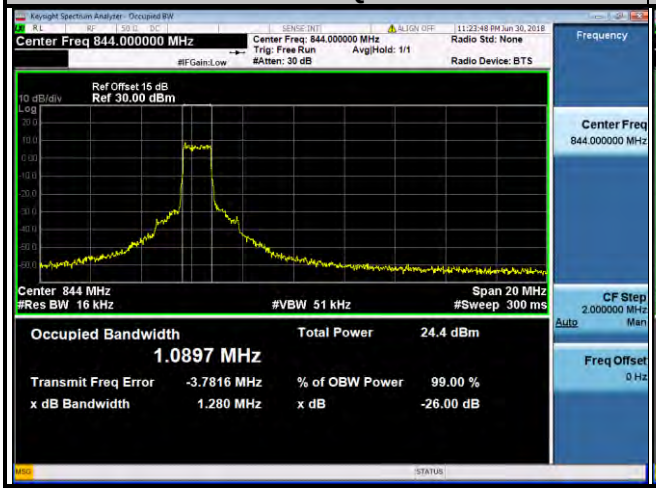
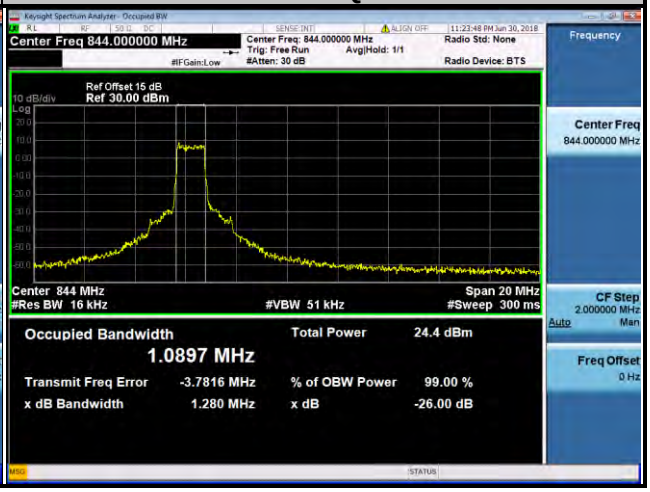
LTE Band 5					
Channel Bandwidth: 5 MHz					
Channel	Frequency (MHz)	99 % Occupied Bandwidth (MHz)		26 dB Bandwidth (MHz)	
		QPSK	16QAM	QPSK	16QAM
20425	826.5	1.0831	0.9147	1.282	1.237
20525	836.5	1.0843	0.9118	1.260	1.238
20625	846.5	1.0791	0.9123	1.268	1.227
Channel Bandwidth: 10 MHz					
Channel	Frequency (MHz)	99 % Occupied Bandwidth (MHz)		26 dB Bandwidth (MHz)	
		QPSK	16QAM	QPSK	16QAM
20450	829.0	1.0893	0.9139	1.284	1.207
20525	836.5	1.0857	0.9105	1.274	1.218
20600	844.0	1.0874	0.9142	1.270	1.243

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 26					
Channel Bandwidth: 1.4 MHz					
Channel	Frequency (MHz)	99 % Occupied Bandwidth (MHz)		26 dB Bandwidth (MHz)	
		QPSK	16QAM	QPSK	16QAM
26797	824.7	1.0898	0.9140	1.274	1.218
26915	836.5	1.0879	0.9113	1.282	1.245
27033	848.3	1.0873	0.9098	1.276	1.223
Channel Bandwidth: 3 MHz					
Channel	Frequency (MHz)	99 % Occupied Bandwidth (MHz)		26 dB Bandwidth (MHz)	
		QPSK	16QAM	QPSK	16QAM
26805	825.5	1.0891	0.9167	1.266	1.230
26915	836.5	1.0811	0.9182	1.275	1.217
27025	847.5	1.0830	0.9037	1.269	1.233

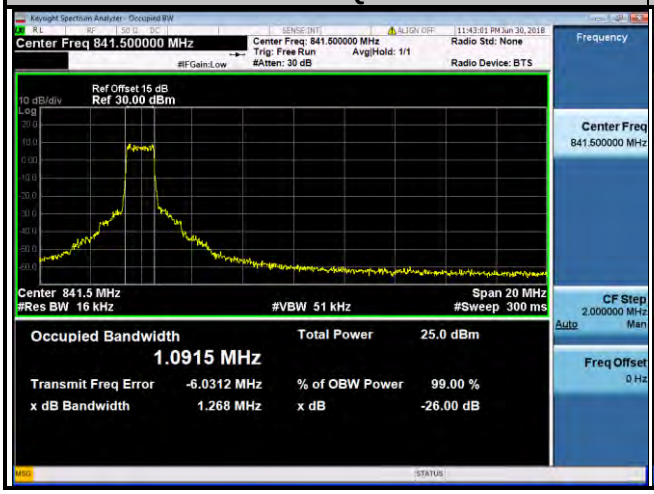
Spectrum Plot of Worst Value	
99 % Occupied Bandwidth	26 dB Bandwidth
1.4 MHz / QPSK	1.4 MHz / QPSK
	
3 MHz / QPSK	3 MHz / QPSK
	

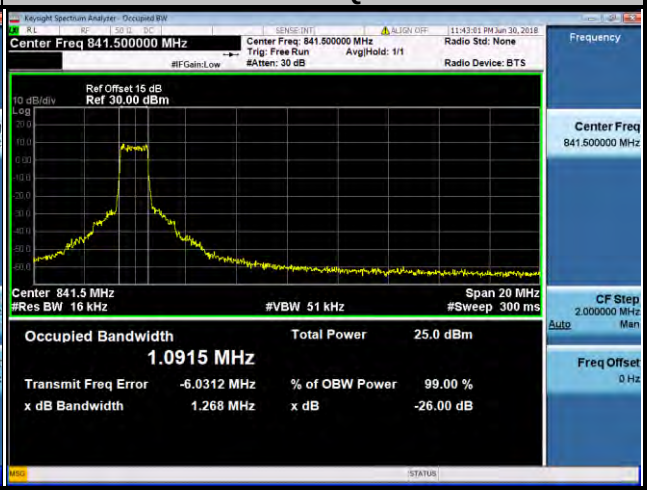
LTE Band 26					
Channel Bandwidth: 5 MHz					
Channel	Frequency (MHz)	99 % Occupied Bandwidth (MHz)		26 dB Bandwidth (MHz)	
		QPSK	16QAM	QPSK	16QAM
26815	826.5	1.0833	0.9068	1.283	1.231
26915	836.5	1.0777	0.9101	1.280	1.198
27015	846.5	1.0768	0.9107	1.285	1.203
Channel Bandwidth: 10 MHz					
Channel	Frequency (MHz)	99 % Occupied Bandwidth (MHz)		26 dB Bandwidth (MHz)	
		QPSK	16QAM	QPSK	16QAM
26840	829.0	1.0836	0.9139	1.274	1.216
26915	836.5	1.0872	0.9121	1.252	1.170
26990	844.0	1.0897	0.9127	1.280	1.203

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 26					
Channel Bandwidth: 15 MHz					
Channel	Frequency (MHz)	99 % Occupied Bandwidth (MHz)		26 dB Bandwidth (MHz)	
		QPSK	16QAM	QPSK	16QAM
26865	831.5	1.0845	0.9135	1.263	1.183
26915	836.5	1.0795	0.9242	1.263	1.218
26965	841.5	1.0915	0.9194	1.268	1.236

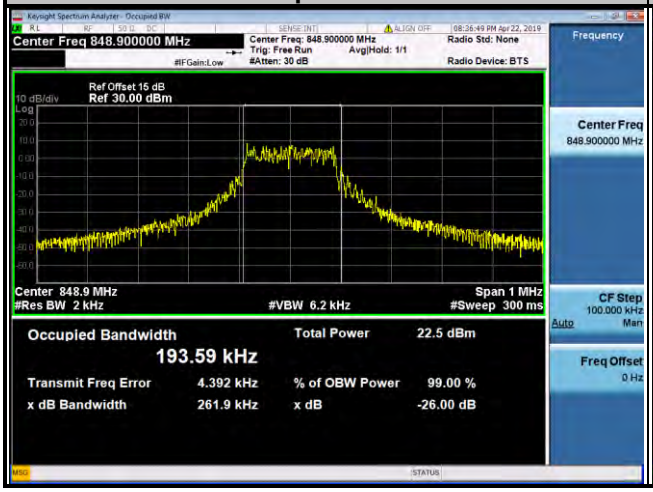
Spectrum Plot of Worst Value	
99 % Occupied Bandwidth	26 dB Bandwidth
15 MHz / QPSK	15 MHz / QPSK





NB-IoT

LTE Band 5						
Channel	**Frequency (MHz)**	**Modulation**	**N_{tones}**	**Sub-carrier Spacing (kHz)**	**99 % Occupied Bandwidth (kHz)**	**26 dB Bandwidth (kHz)**
24041	824.1	BPSK	1@0	3.75	56.09	37.83
		QPSK	1@0	15	95.14	110.80
		QPSK	3@3	15	101.76	156.20
		QPSK	12@0	15	190.99	251.20
20525	836.5	BPSK	1@0	3.75	53.57	37.63
		QPSK	1@0	15	90.13	99.89
		QPSK	3@3	15	103.26	152.70
		QPSK	12@0	15	189.79	262.70
20649	848.9	BPSK	1@47	3.75	53.66	37.18
		QPSK	1@11	15	94.14	113.90
		QPSK	3@3	15	99.68	168.10
		QPSK	12@0	15	193.59	261.90

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

LTE Band 26						
Channel	**Frequency (MHz)**	**Modulation**	**N_{tones}**	**Sub-carrier Spacing (kHz)**	**99 % Occupied Bandwidth (kHz)**	**26 dB Bandwidth (kHz)**
26791	824.1	BPSK	1@0	3.75	56.91	37.64
		QPSK	1@0	15	94.19	111.20
		QPSK	3@3	15	100.75	181.30
		QPSK	12@0	15	186.66	261.90
26915	836.5	BPSK	1@0	3.75	51.42	37.51
		QPSK	1@0	15	94.92	113.60
		QPSK	3@3	15	111.46	166.90
		QPSK	12@0	15	187.48	264.50
27039	848.9	BPSK	1@47	3.75	53.79	37.52
		QPSK	1@11	15	94.27	113.40
		QPSK	3@3	15	101.11	181.20
		QPSK	12@0	15	191.48	271.90

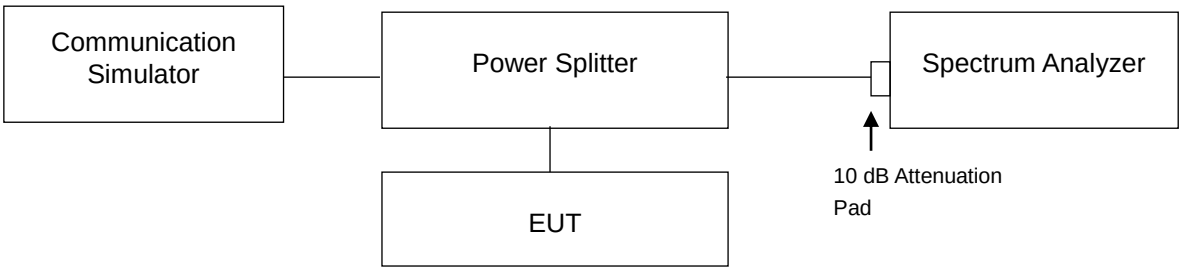
Spectrum Plot of Worst Value	
99 % Occupied Bandwidth	**26 dB Bandwidth**
	

4.5 Band Edge Measurement

4.5.1 Limits of Band Edge Measurement

Power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log(P) dB. In the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed.

4.5.2 Test Setup

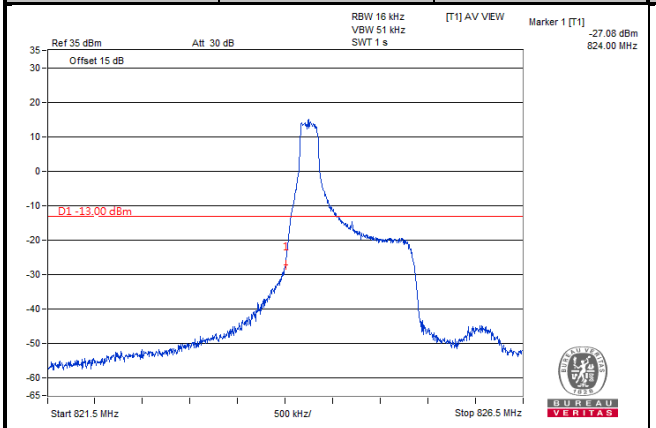
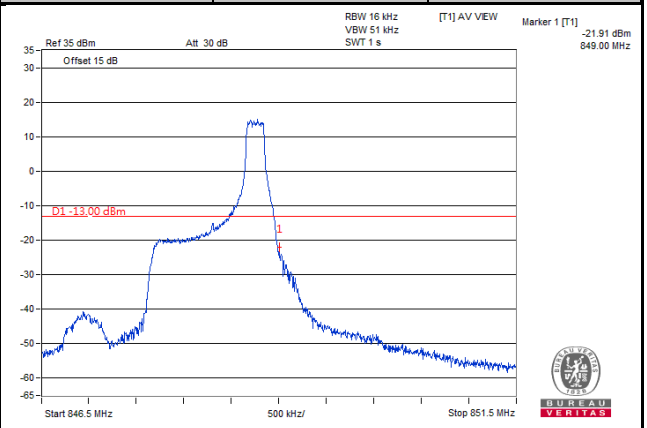
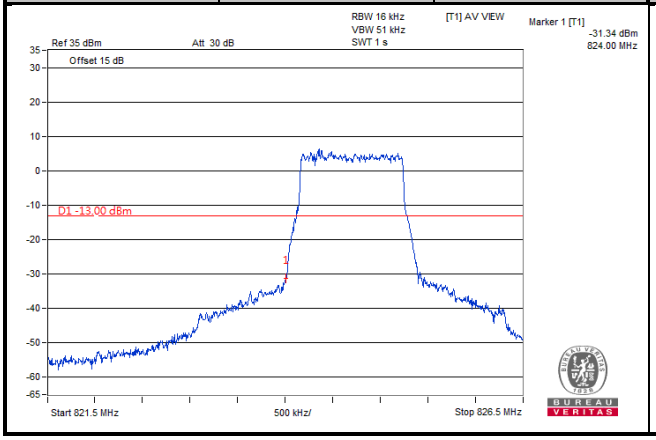
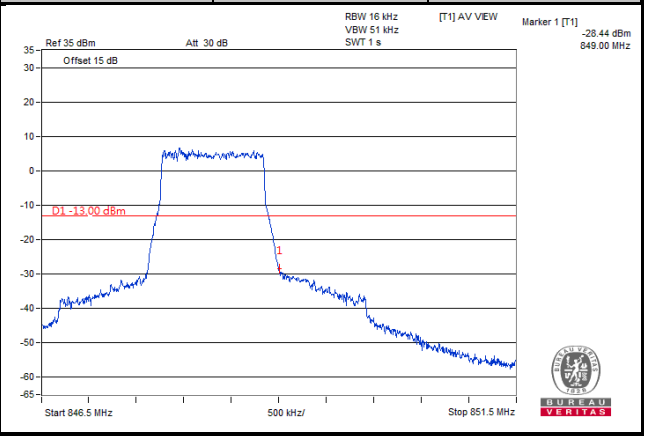


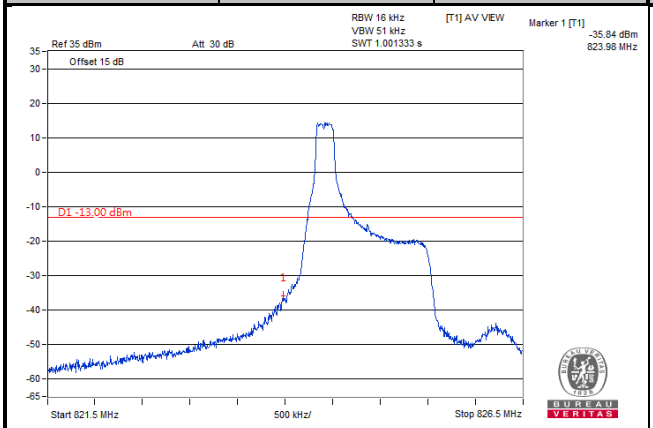
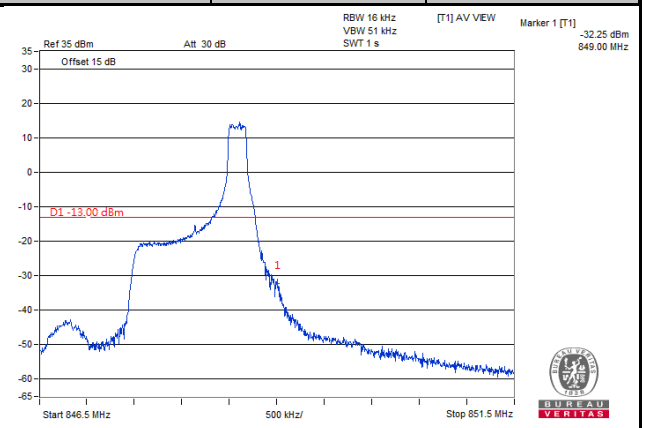
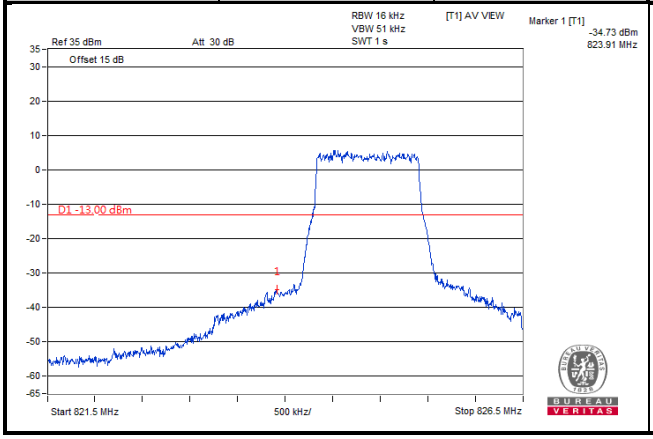
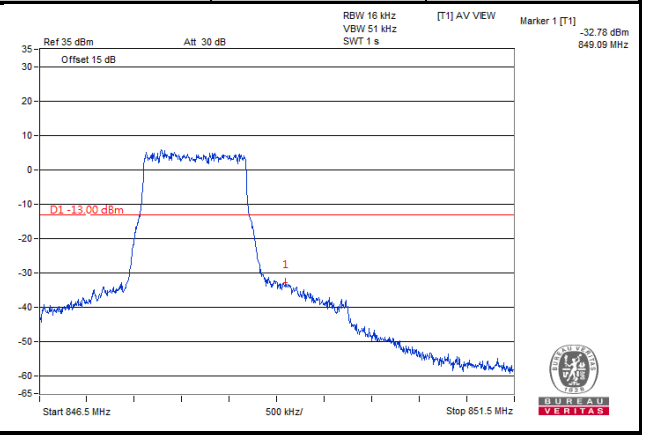
4.5.3 Test Procedures

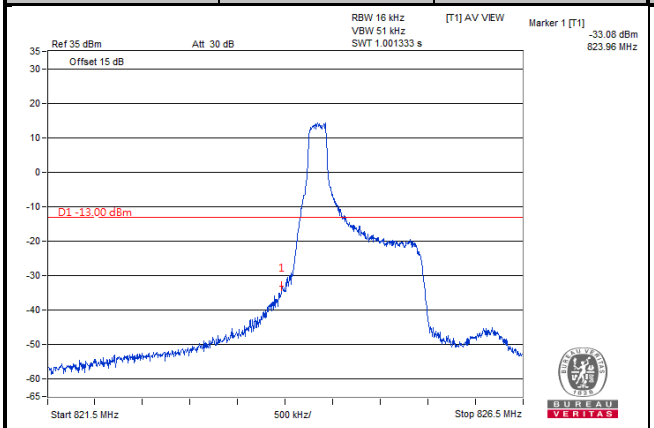
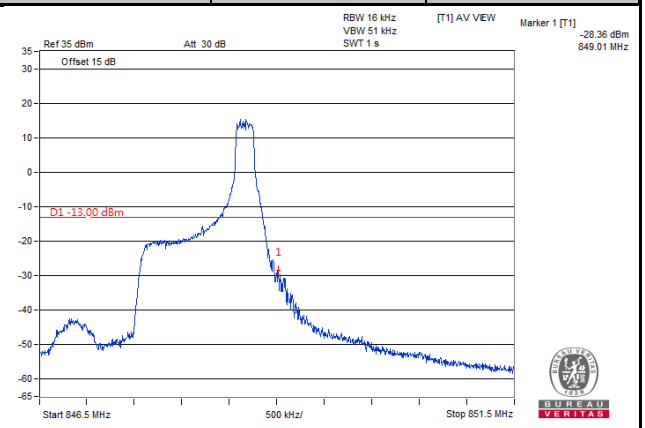
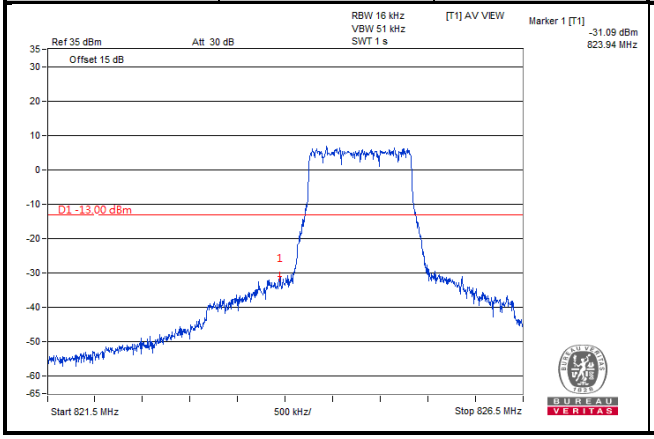
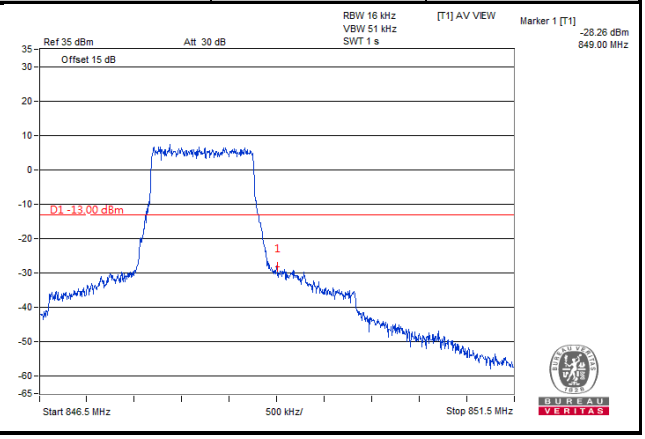
a. All measurements were done at low and high operational frequency range.
b. The center frequency of spectrum is the band edge frequency and span is 1 MHz. RB of the spectrum is 30 kHz and VB of the spectrum is 100 kHz (LTE Bandwidth 1.4 MHz) for Cat-M1.
c. The center frequency of spectrum is the band edge frequency and span is 1 MHz. RB of the spectrum is 62 kHz and VB of the spectrum is 200 kHz (LTE Bandwidth 3 MHz) for Cat-M1.
d. 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 5 MHz) for Cat-M1.
e. 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 10 MHz) for Cat-M1.
f. The center frequency of spectrum is the band edge frequency and span is 1 MHz. RB of the spectrum is 300 kHz and VB of the spectrum is 1 MHz (LTE Bandwidth 15 MHz) for Cat-M1.
g. The center frequency of spectrum is the band edge frequency and span is 1 MHz. RB of the spectrum is 51 Hz and VB of the spectrum is 160 Hz (BPSK) for NB-IoT.
h. The center frequency of spectrum is the band edge frequency and span is 1 MHz. RB of the spectrum is 200 Hz or 2 kHz and VB of the spectrum is 620 Hz or 6.2 kHz (QPSK) for NB-IoT.
i. Record the max trace plot into the test report.

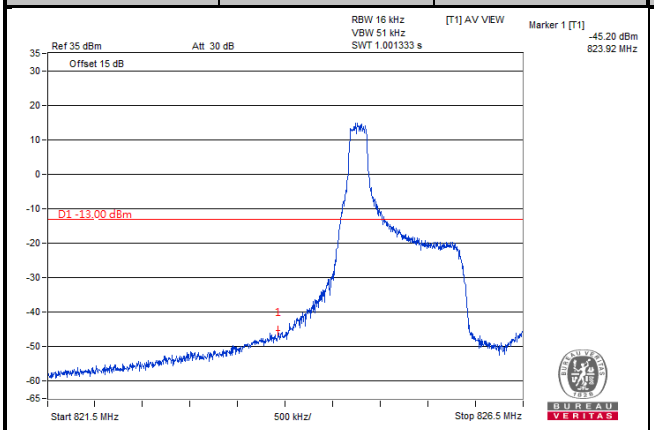
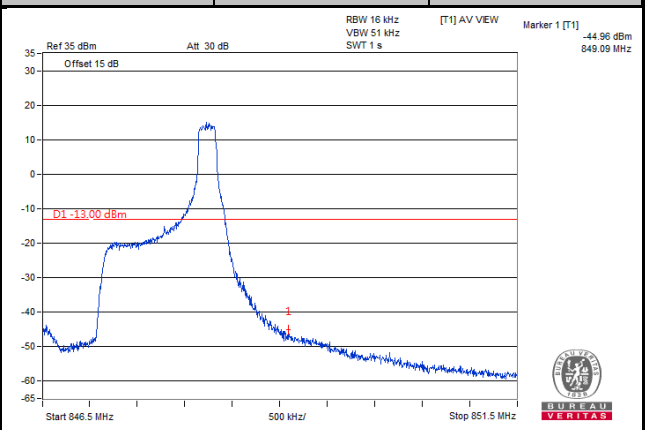
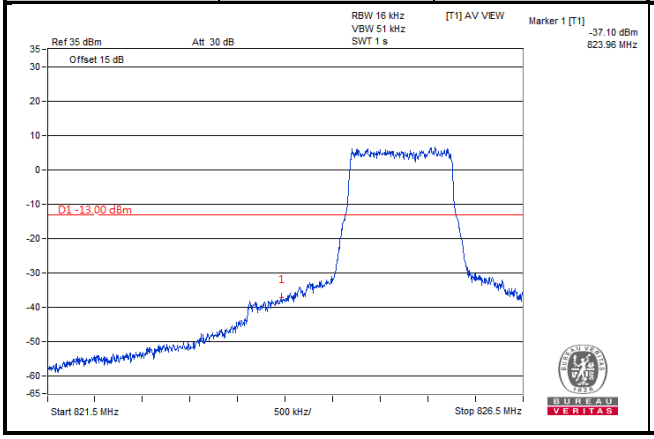
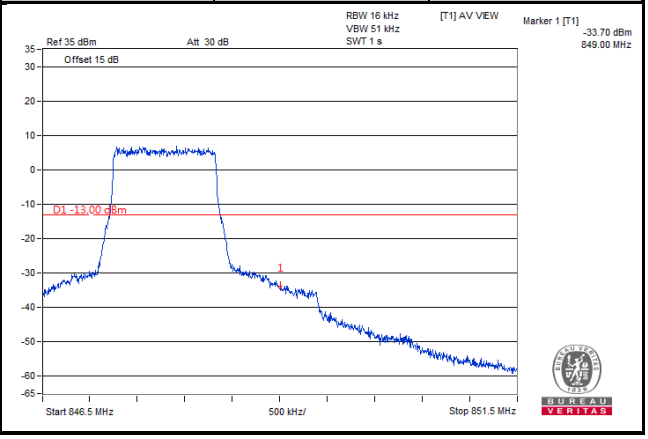
4.5.4 Test Results

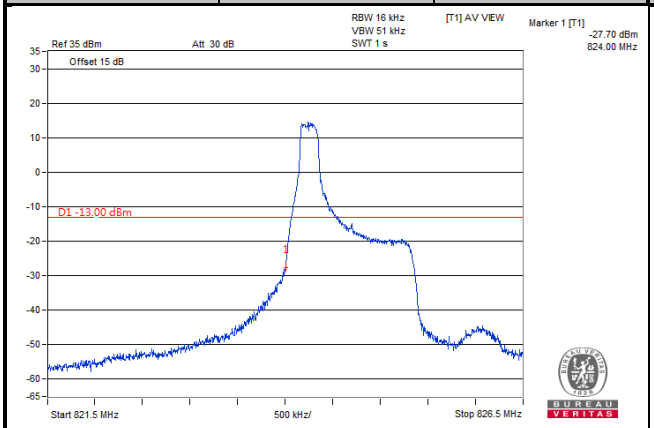
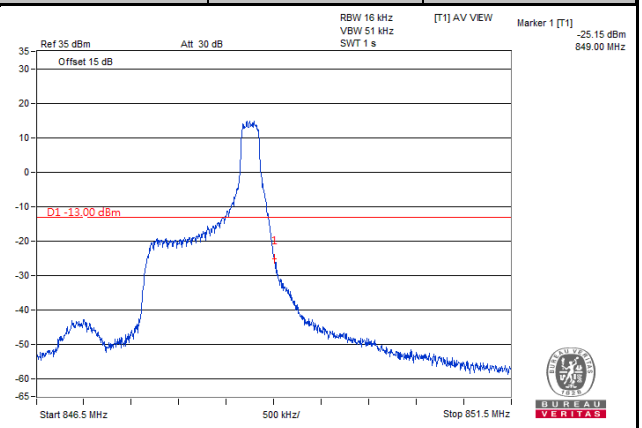
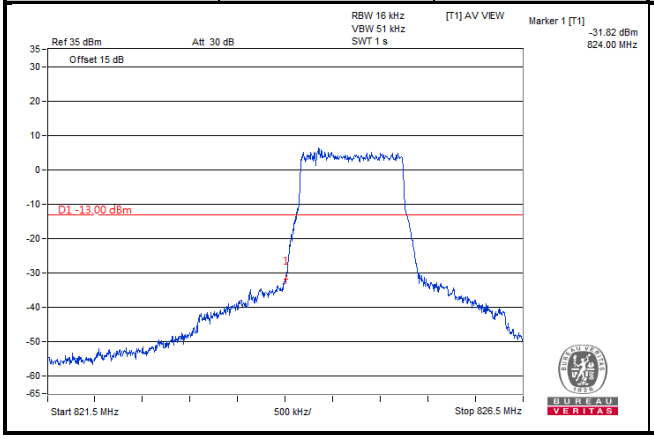
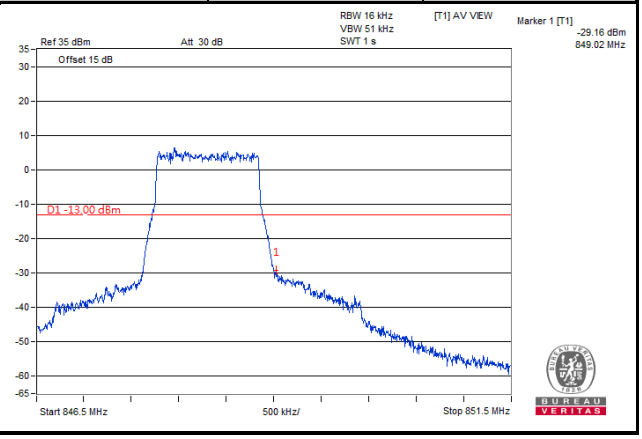
Cat-M1

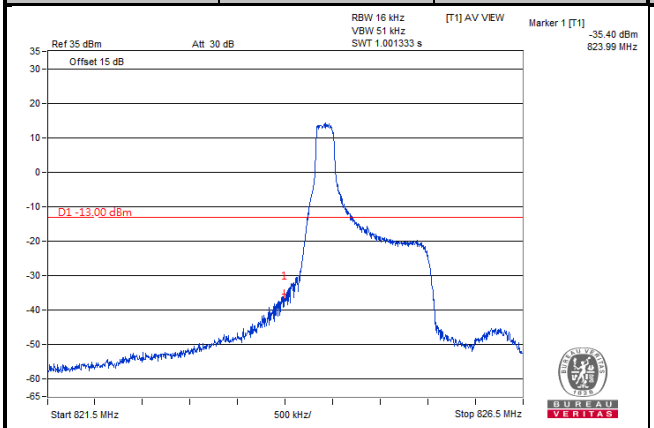
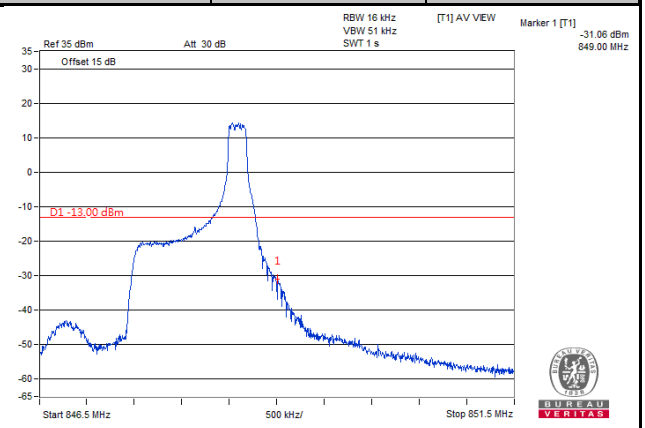
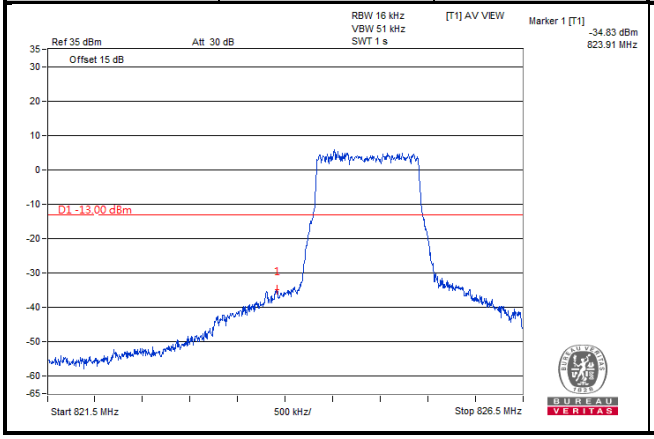
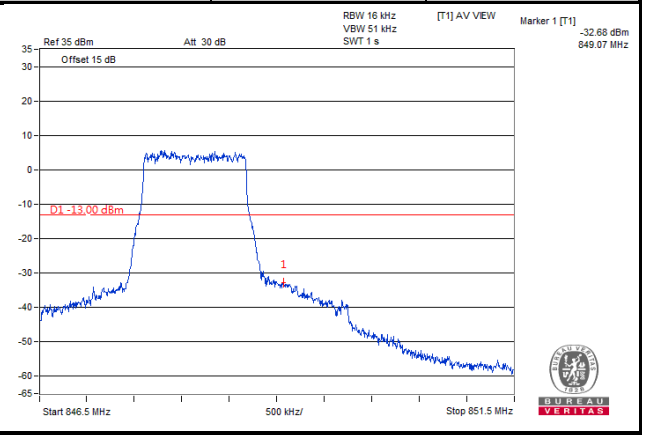
LTE Band 5					
Channel Bandwidth: 1.4 MHz					
Channel	20407	1 RB	Channel	20643	1 RB
					
Channel	20407	6 RB	Channel	20643	6 RB
					

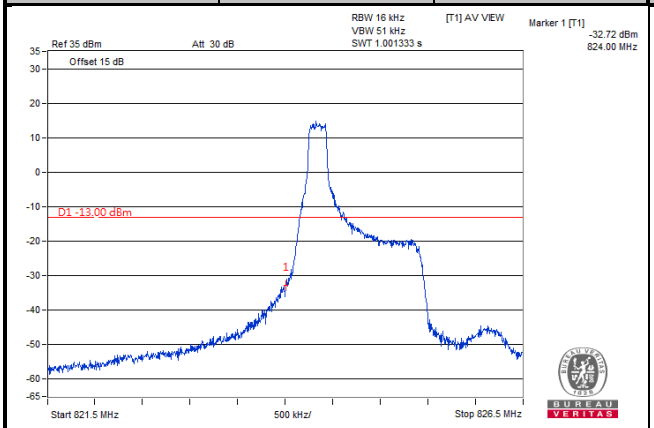
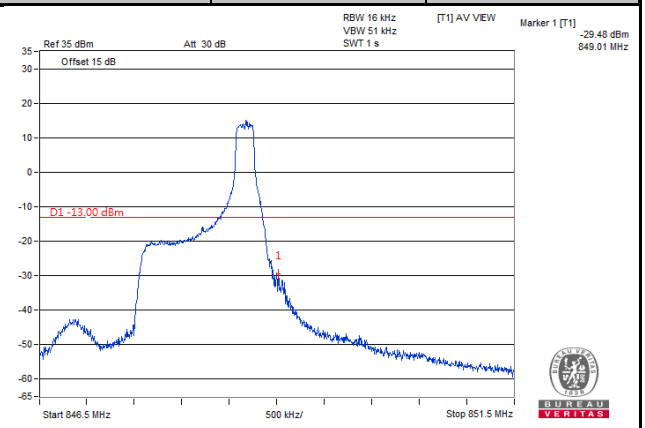
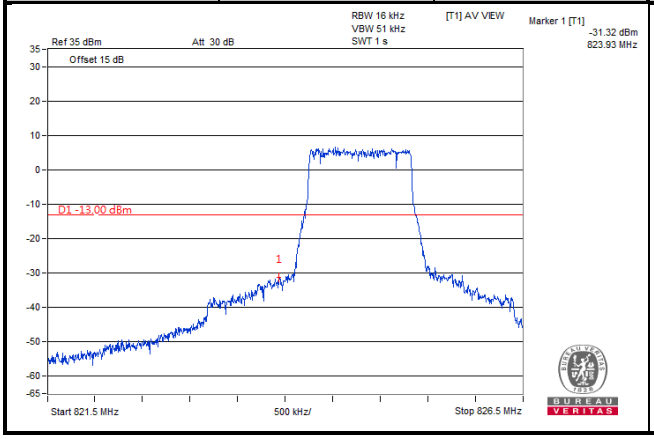
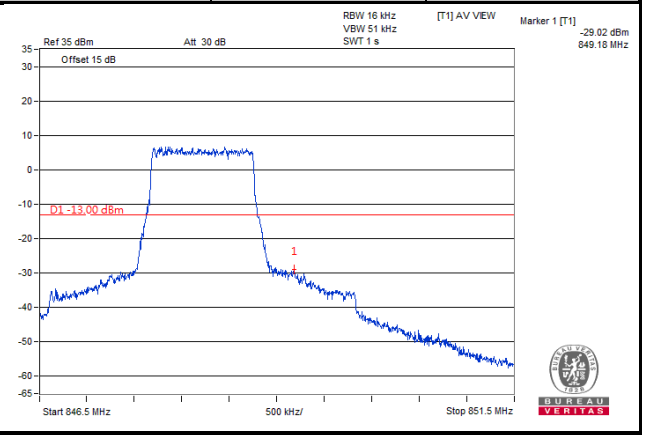
LTE Band 5					
Channel Bandwidth: 3 MHz					
Channel	20415	1 RB	Channel	20635	1 RB
					
Channel	20415	15 RB	Channel	20635	15 RB
					

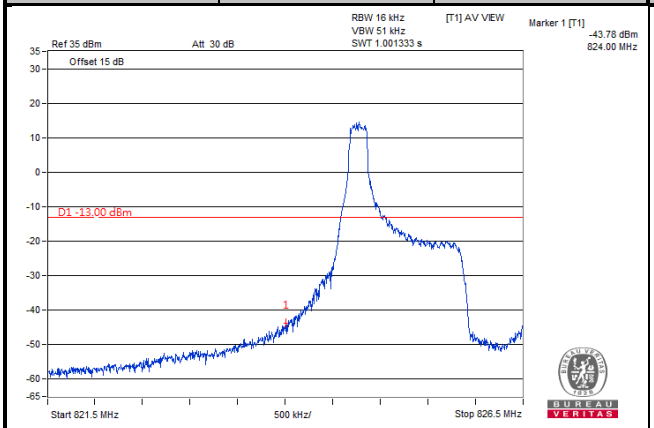
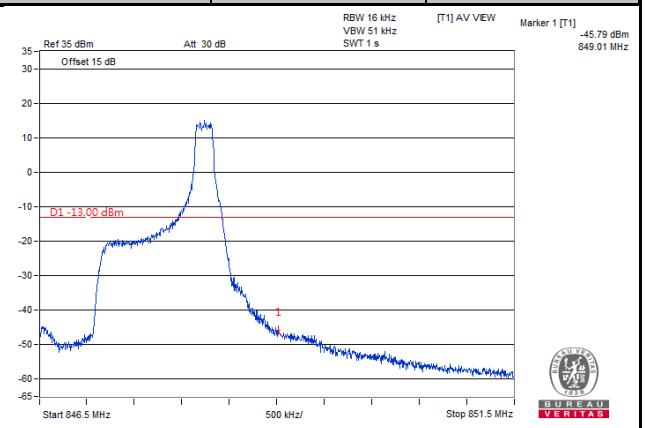
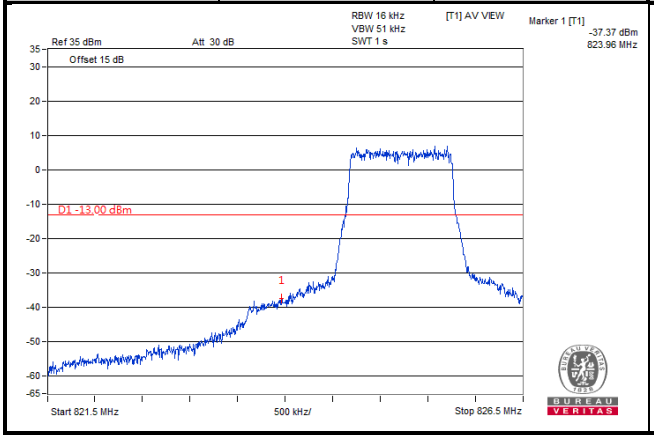
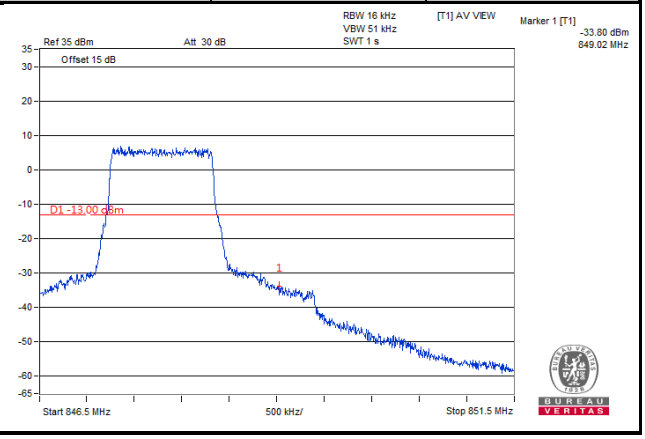
LTE Band 5					
Channel Bandwidth: 5 MHz					
Channel	20425	1 RB	Channel	20625	1 RB
					
Channel	20425	25 RB	Channel	20625	25 RB
					

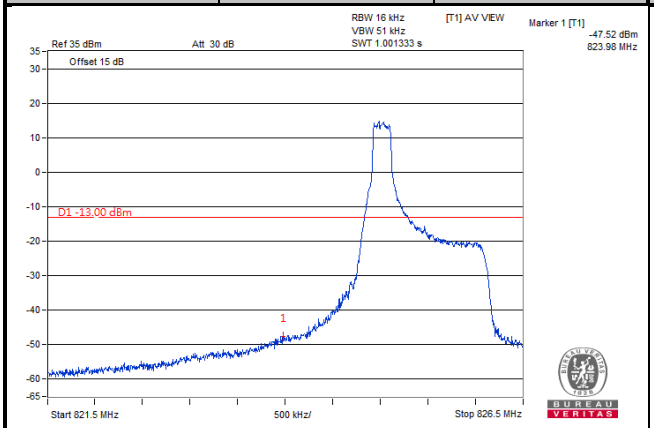
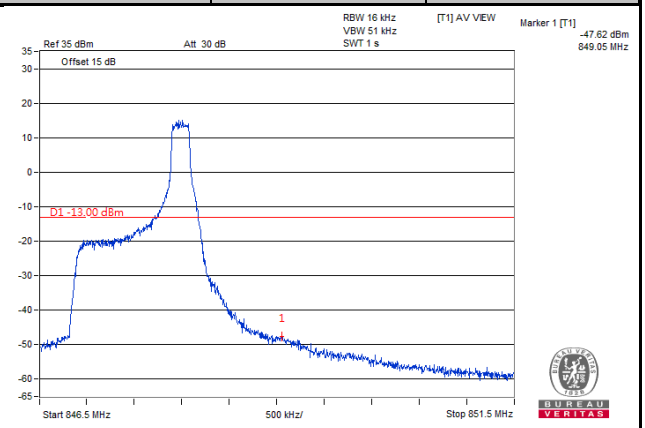
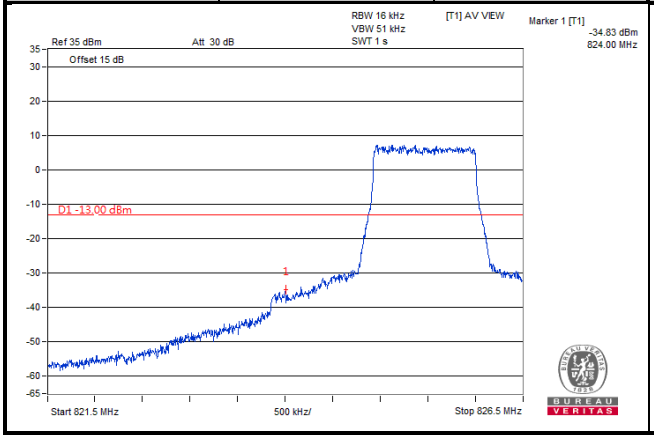
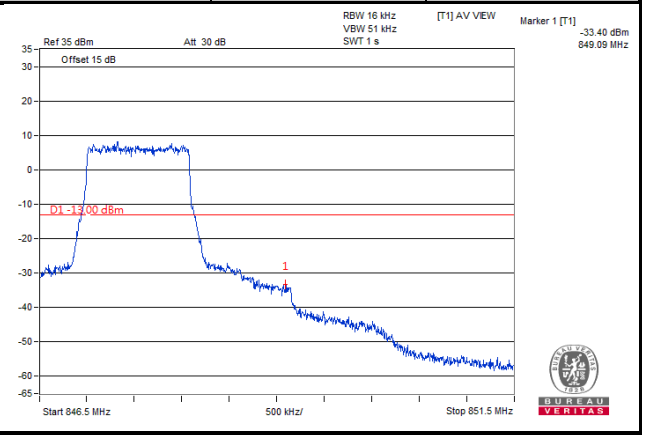
LTE Band 5					
Channel Bandwidth: 10 MHz					
Channel	20450	1 RB	Channel	20600	1 RB
					
Channel	20450	50 RB	Channel	20600	50 RB
					

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

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

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

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

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

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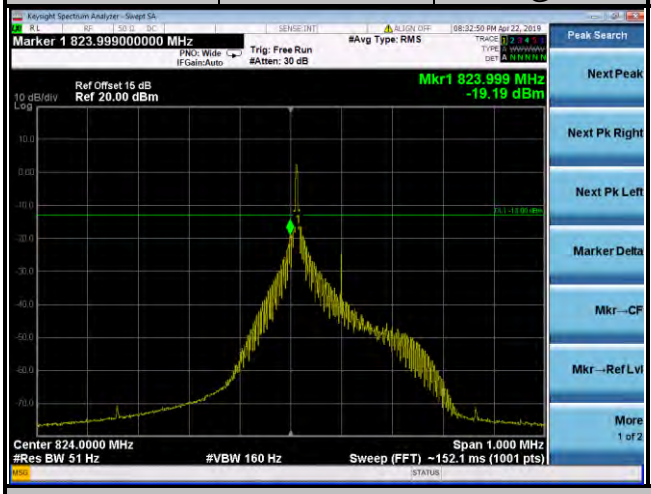
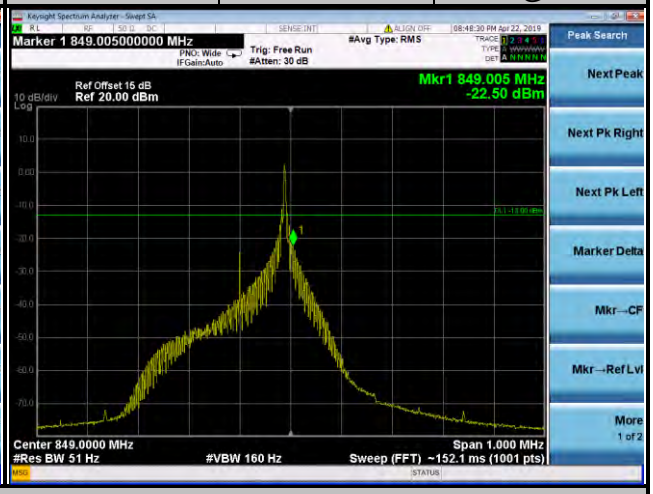
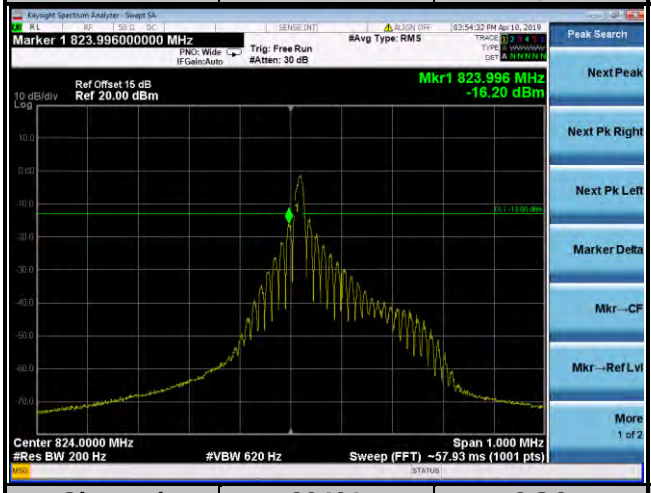
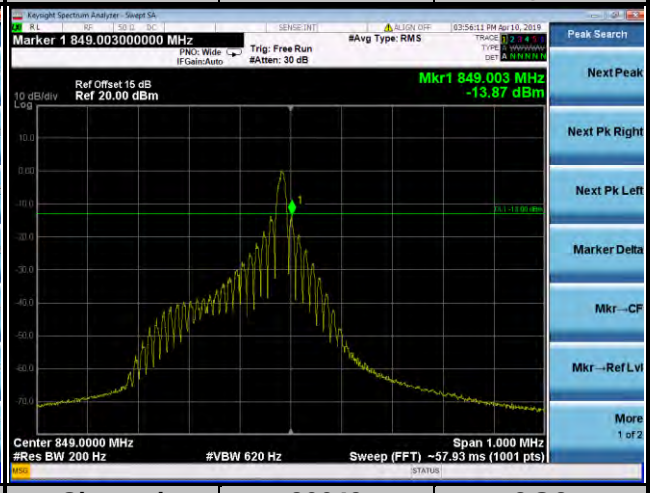
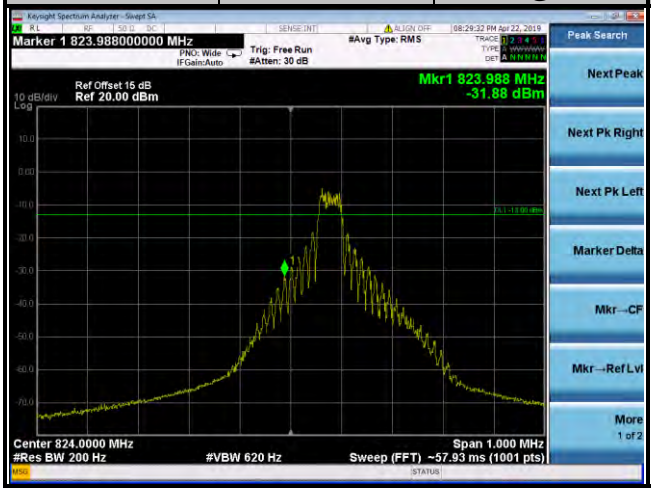
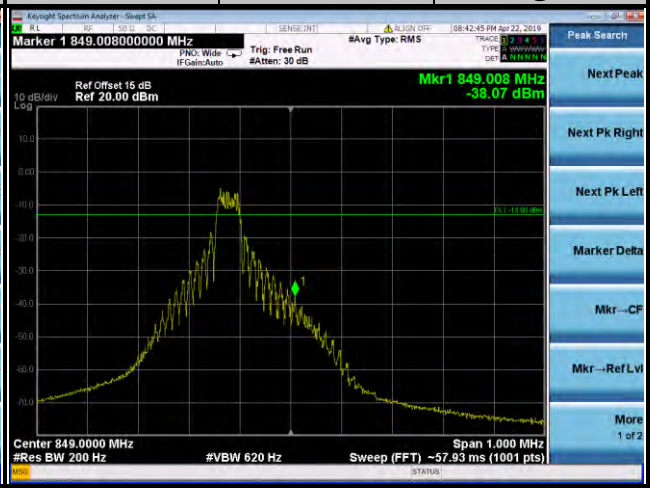
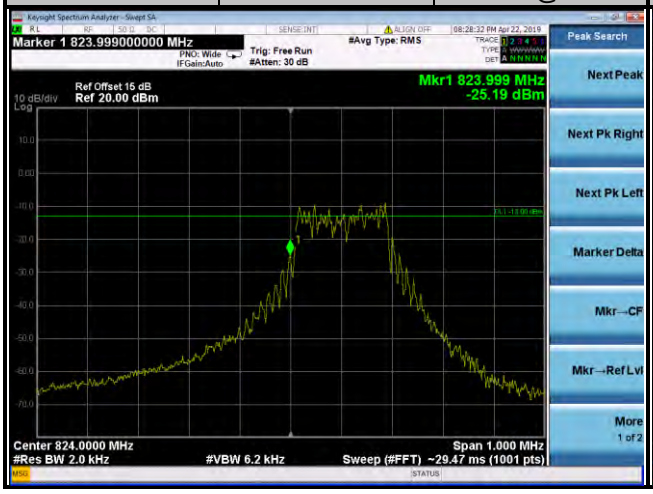
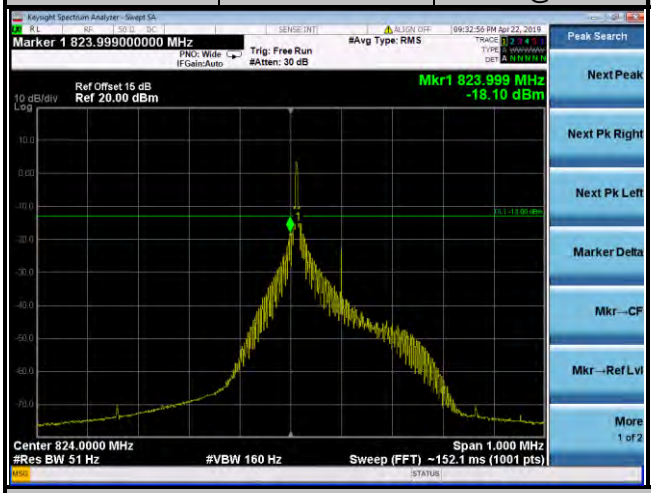
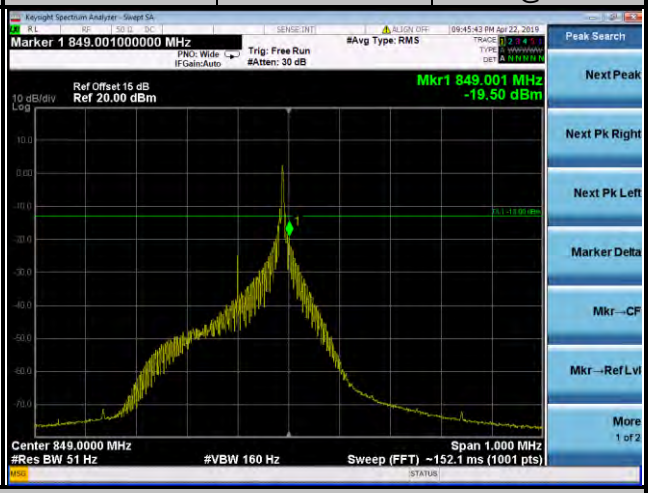
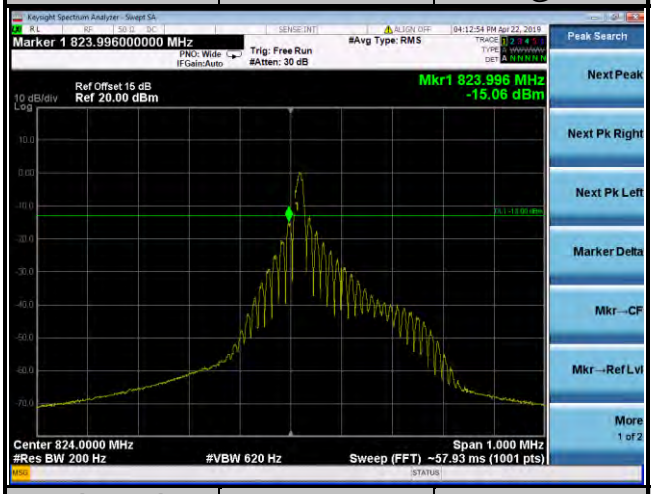
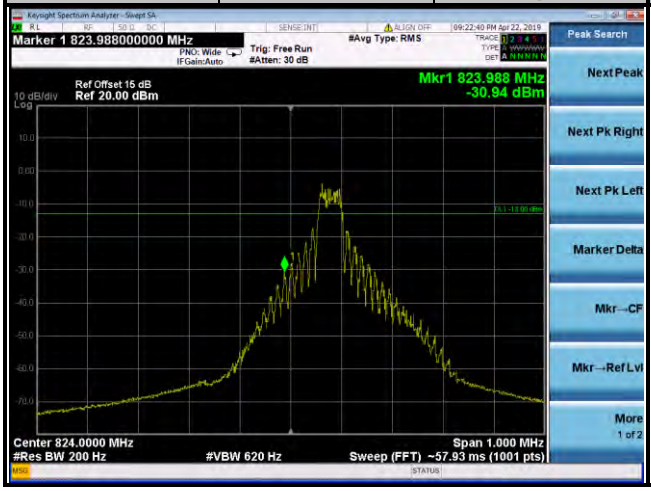
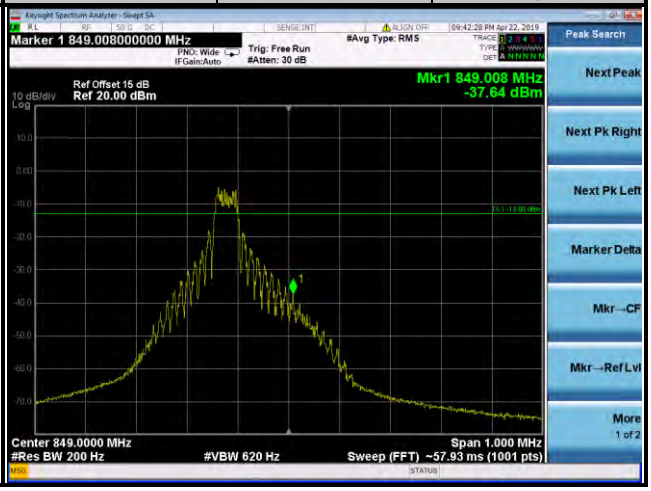
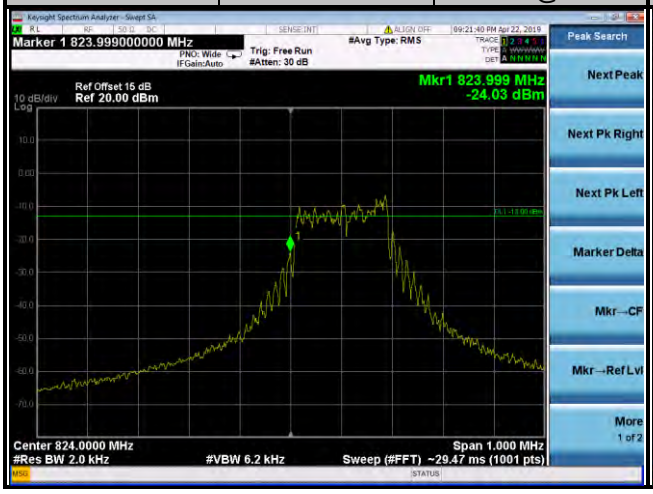
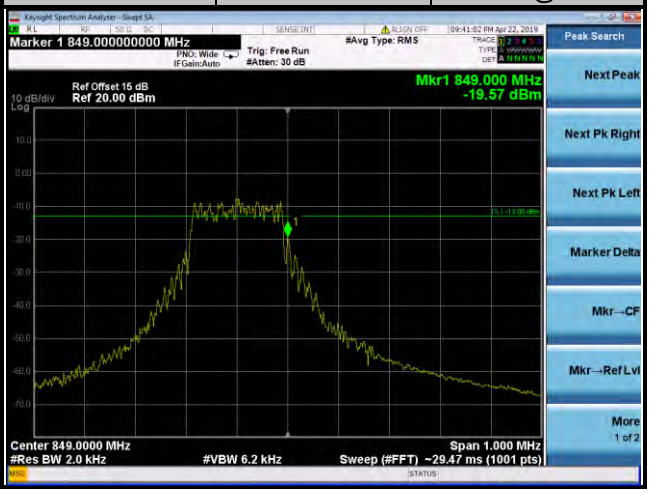
LTE Band 5					
BPSK					
Channel	20401	1@0	Channel	20649	1@47
					
QPSK					
Channel	20401	1@0	Channel	20649	1@11
					
Channel	20401	3@3	Channel	20649	3@3
					

LTE Band 5					
QPSK					
Channel	20401	12@0	Channel	20649	12@0
					

LTE Band 26					
BPSK					
Channel	26791	1@0	Channel	27039	1@47
					
QPSK					
Channel	26791	1@0	Channel	27039	1@11
					
Channel	26791	3@3	Channel	27039	3@3
					

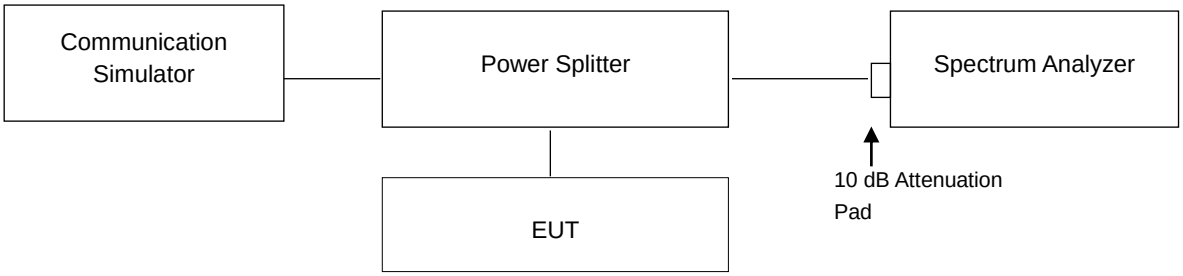
LTE Band 26					
QPSK					
Channel	26791	12@0	Channel	27039	12@0
					

4.6 Peak to Average Ratio

4.6.1 Limits of Peak to Average Ratio Measurement

In measuring transmissions in this band using an average power technique, the peak to-average ratio (PAR) of the transmission may not exceed 13 dB.

4.6.2 Test Setup



4.6.3 Test Procedures

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

4.6.4 Test Results

Cat-M1

LTE Band 5							
Channel Bandwidth: 1.4 MHz				Channel Bandwidth: 3 MHz			
Channel	Frequency (MHz)	Peak to Average Ratio (dB)		Channel	Frequency (MHz)	Peak to Average Ratio (dB)	
		QPSK	16QAM			QPSK	16QAM
20407	824.7	6.42	6.39	20415	825.5	6.45	6.30
20525	836.5	6.45	6.42	20525	836.5	6.48	6.41
20643	848.3	6.37	6.37	20635	847.5	6.61	6.63

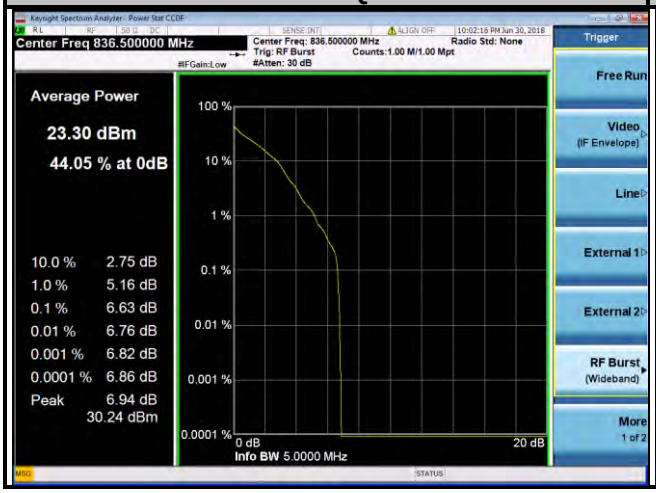
Spectrum Plot of Worst Value	
1.4 MHz / QPSK	3 MHz / 16QAM

LTE Band 5							
Channel Bandwidth: 5 MHz				Channel Bandwidth: 10 MHz			
Channel	Frequency (MHz)	Peak to Average Ratio (dB)		Channel	Frequency (MHz)	Peak to Average Ratio (dB)	
		QPSK	16QAM			QPSK	16QAM
20425	826.5	6.30	6.48	20450	829.0	6.51	6.75
20525	836.5	6.42	6.45	20525	836.5	6.75	6.68
20625	846.5	6.44	6.65	20600	844.0	6.56	6.77

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

LTE Band 26							
Channel Bandwidth: 1.4 MHz				Channel Bandwidth: 3 MHz			
Channel	Frequency (MHz)	Peak to Average Ratio (dB)		Channel	Frequency (MHz)	Peak to Average Ratio (dB)	
		QPSK	16QAM			QPSK	16QAM
26797	824.7	6.60	6.26	26805	825.5	6.62	6.26
26915	836.5	6.63	6.38	26915	836.5	6.62	6.37
27033	848.3	6.61	6.47	27025	847.5	6.88	6.48

Spectrum Plot of Worst Value	
1.4 MHz / QPSK	3 MHz / QPSK



LTE Band 26							
Channel Bandwidth: 5 MHz				Channel Bandwidth: 10 MHz			
Channel	Frequency (MHz)	Peak to Average Ratio (dB)		Channel	Frequency (MHz)	Peak to Average Ratio (dB)	
		QPSK	16QAM			QPSK	16QAM
26815	826.5	6.34	6.42	26840	829.0	7.11	6.94
26915	836.5	6.72	6.89	26915	836.5	7.58	6.80
27015	846.5	6.76	6.85	26990	844.0	7.79	7.81

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

LTE Band 26			
Channel Bandwidth: 15 MHz			
Channel	Frequency (MHz)	Peak to Average Ratio (dB)	
		QPSK	16QAM
26865	831.5	8.16	8.37
26915	836.5	7.72	6.77
26965	841.5	7.42	7.96

Spectrum Plot of Worst Value
15 MHz / 16QAM

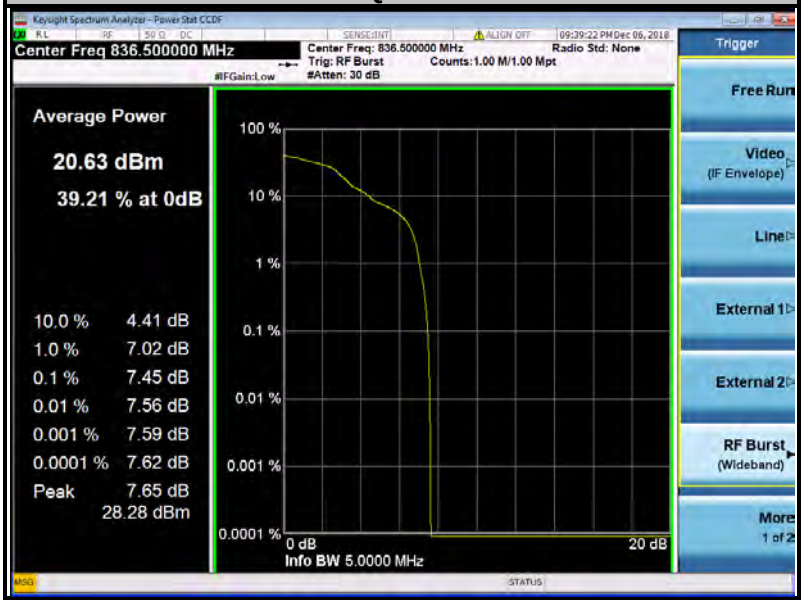
NB-IoT

LTE Band 5					
Channel	Frequency (MHz)	Modulation	N_{tones}	Sub-carrier Spacing (kHz)	PAPR (dB)
20525	836.5	BPSK	1@0	3.75	1.72
20525	836.5	QPSK	1@0	15	2.58
20525	836.5	QPSK	3@3	15	7.35

Spectrum Plot of Worst Value
QPSK

LTE Band 26					
Channel	Frequency (MHz)	Modulation	N_{tones}	Sub-carrier Spacing (kHz)	PAPR (dB)
26915	836.5	BPSK	1@0	3.75	1.69
26915	836.5	QPSK	1@0	15	2.57
26915	836.5	QPSK	3@3	15	7.45

Spectrum Plot of Worst Value
QPSK

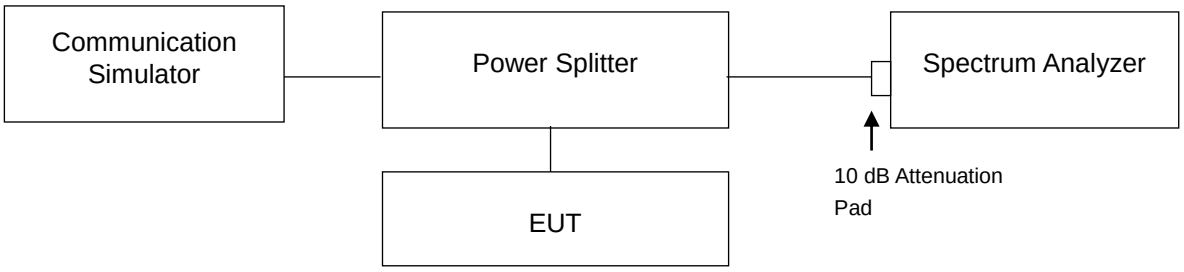


4.7 Conducted Spurious Emissions

4.7.1 Limits of Conducted Spurious Emissions Measurement

The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log(P) dB. The emission limit equal to -13 dBm.

4.7.2 Test Setup

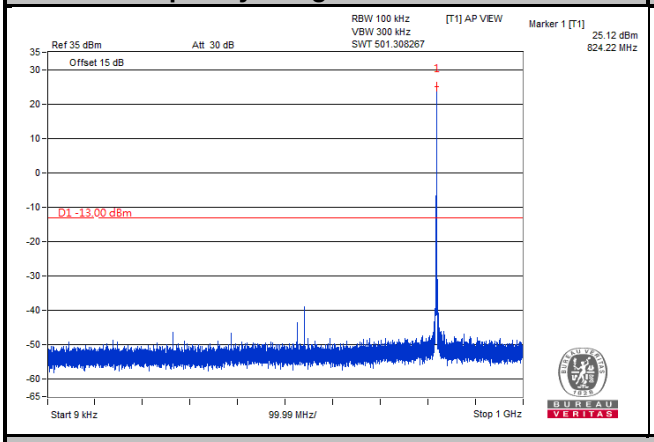
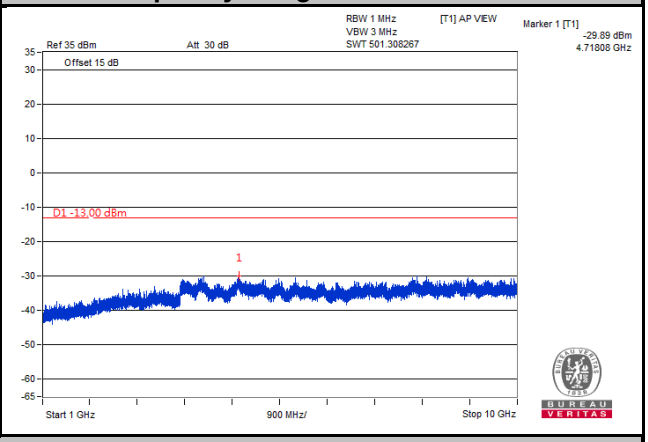
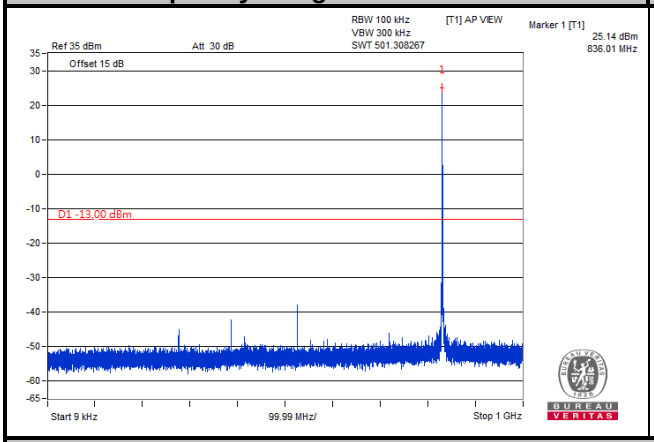
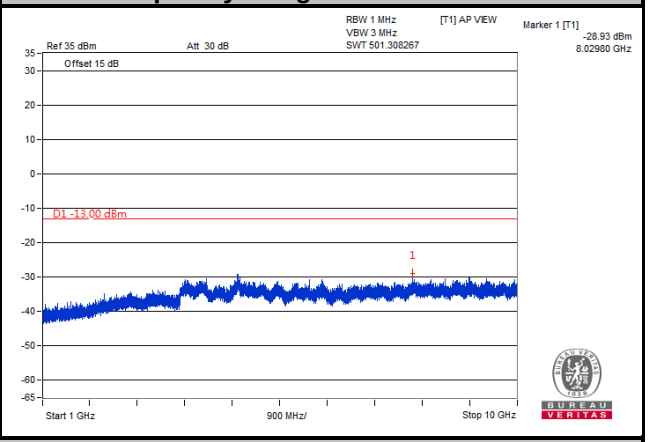
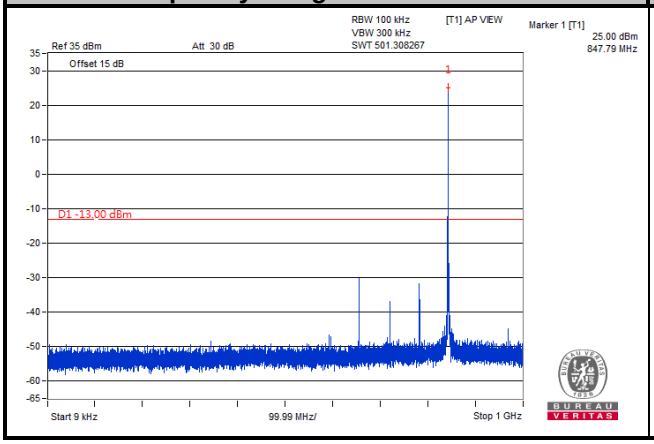
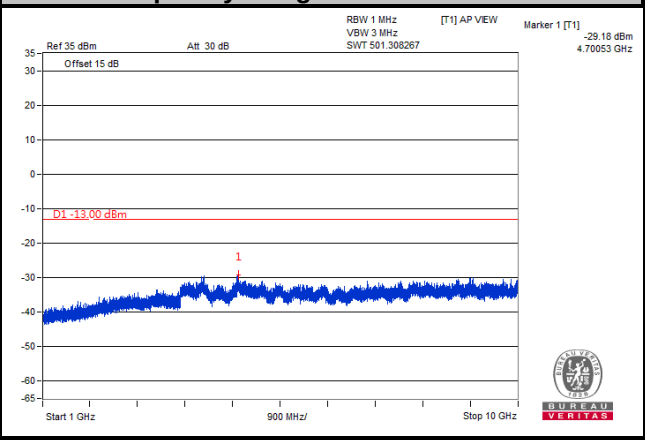


4.7.3 Test Procedure

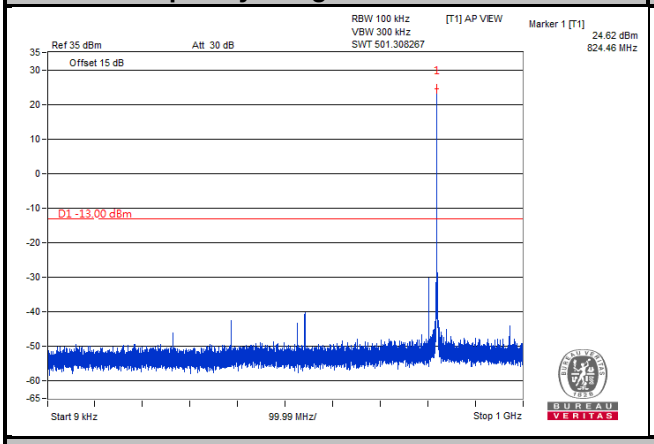
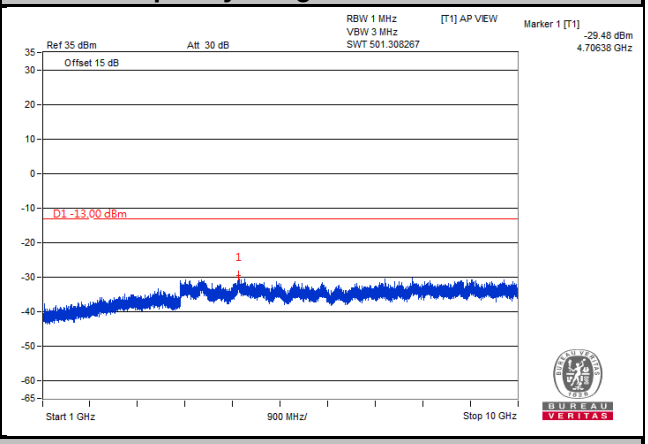
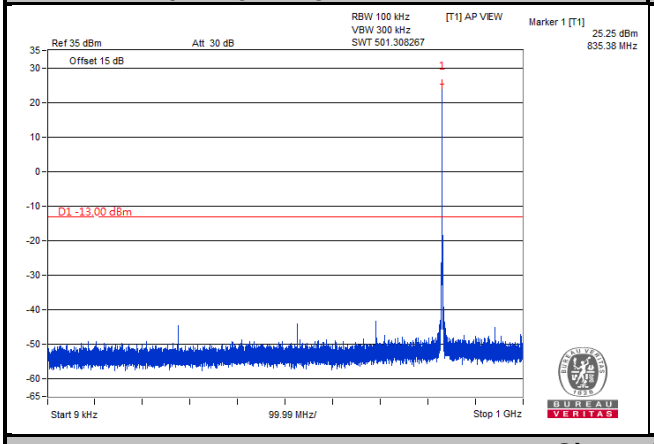
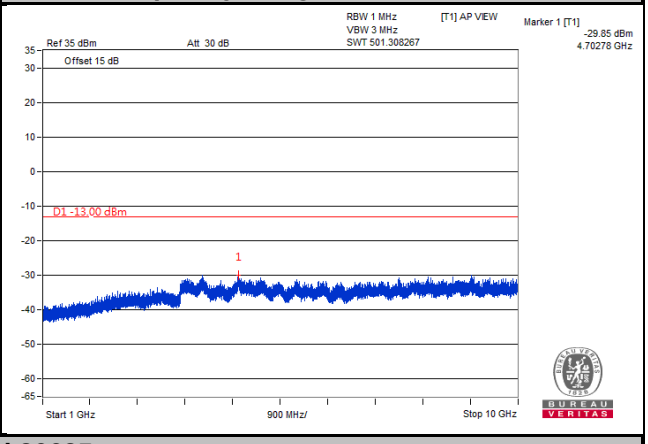
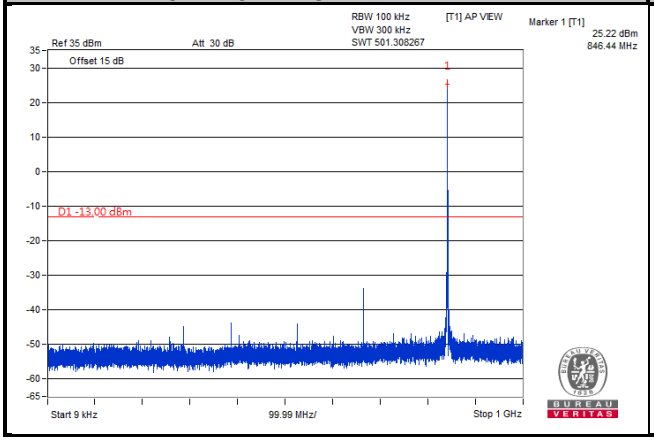
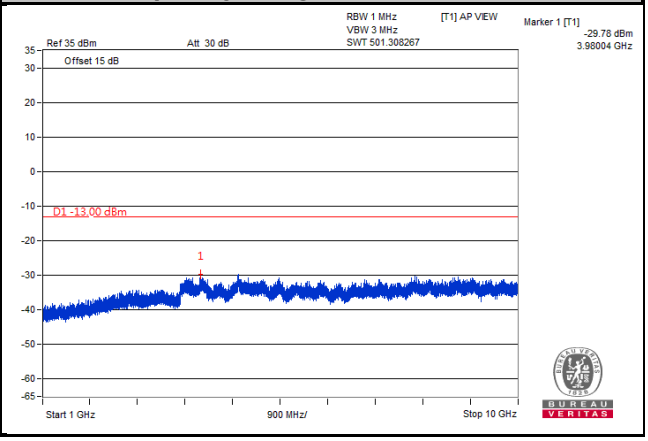
a. The EUT makes a phone call to the communication simulator. All measurements were done at low, middle and high operational frequency range.
b. Measuring frequency range is from 9 kHz to 1 GHz. 10 dB attenuation pad is connected with spectrum. RBW = 100 kHz and VBW = 300 kHz is used for conducted emission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

4.7.4 Test Results

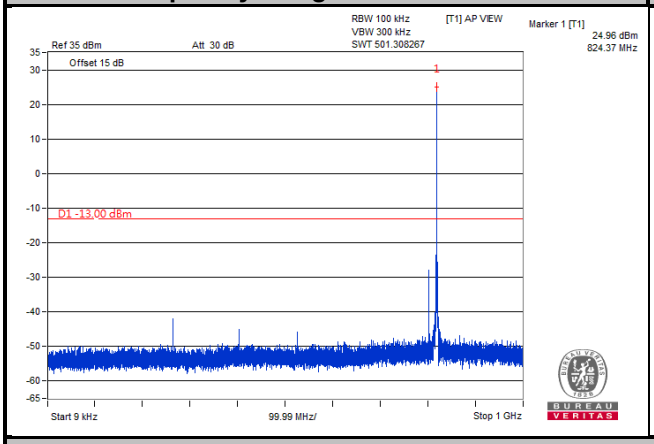
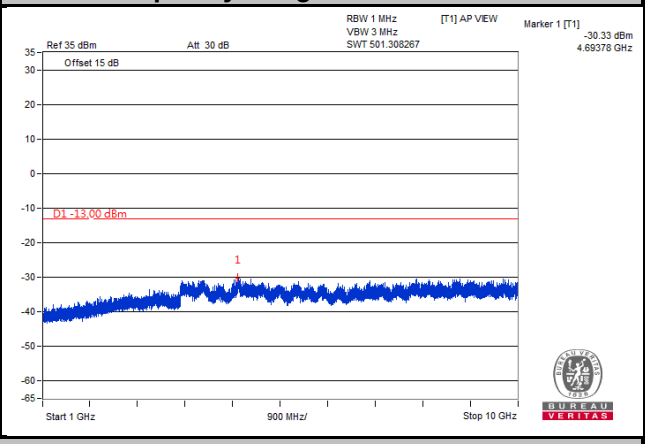
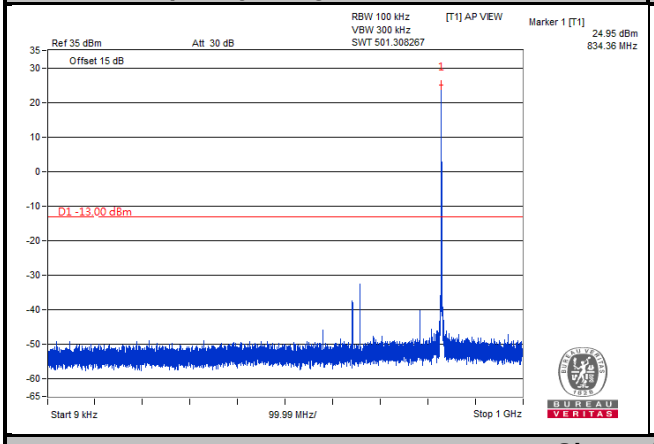
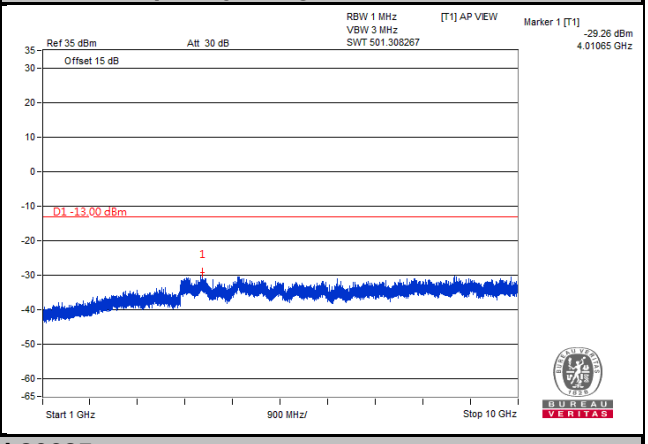
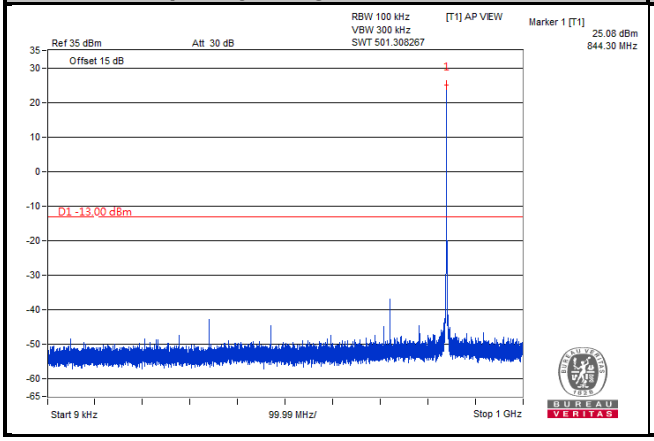
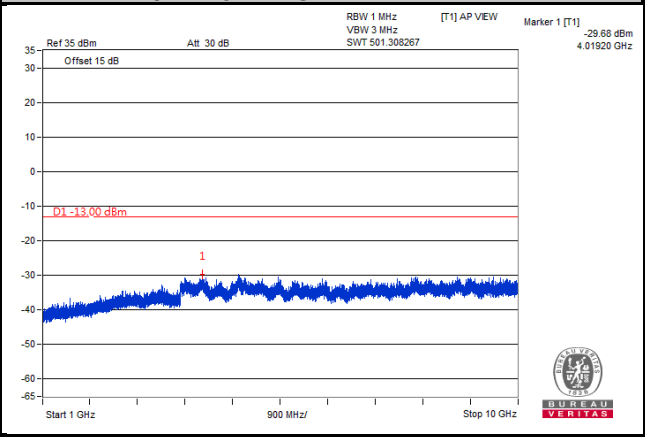
Cat-M1

LTE Band 5	
Channel Bandwidth: 1.4 MHz	
Channel 20407	
Frequency Range: 9 kHz ~ 1 GHz	Frequency Range: 1 GHz ~ 10 GHz
	
Channel 20525	
Frequency Range: 9 kHz ~ 1 GHz	Frequency Range: 1 GHz ~ 10 GHz
	
Channel 20643	
Frequency Range: 9 kHz ~ 1 GHz	Frequency Range: 1 GHz ~ 10 GHz
	

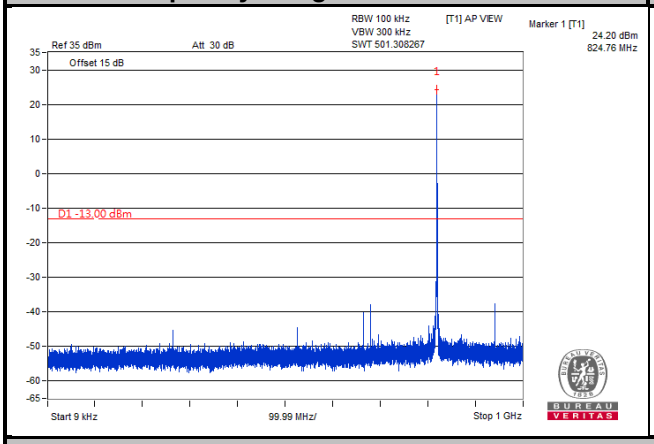
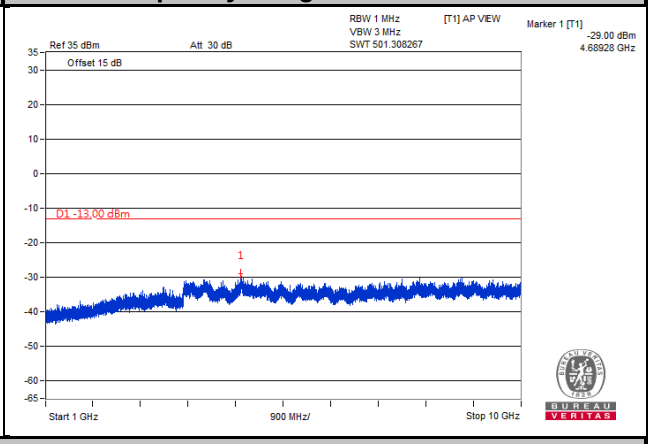
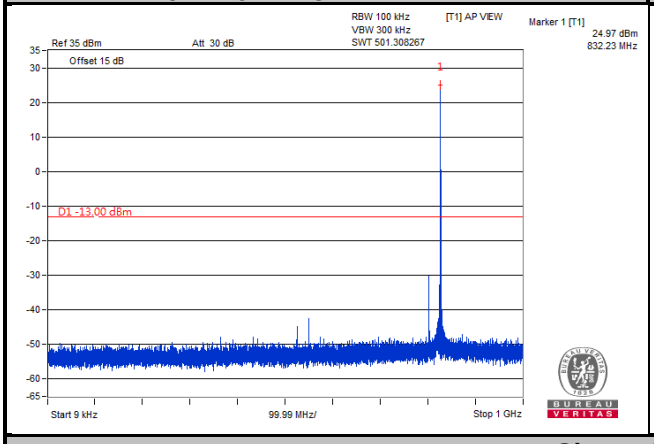
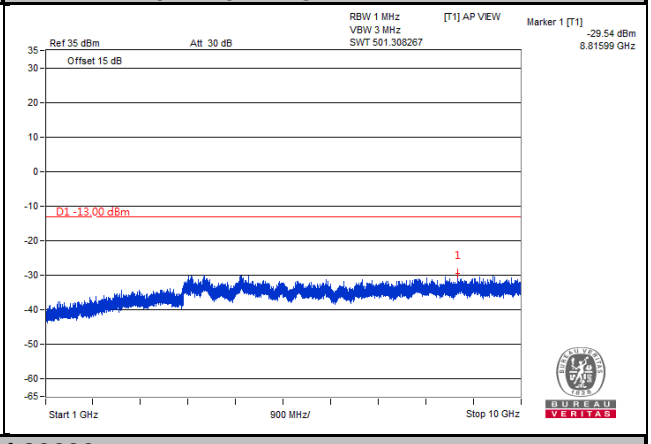
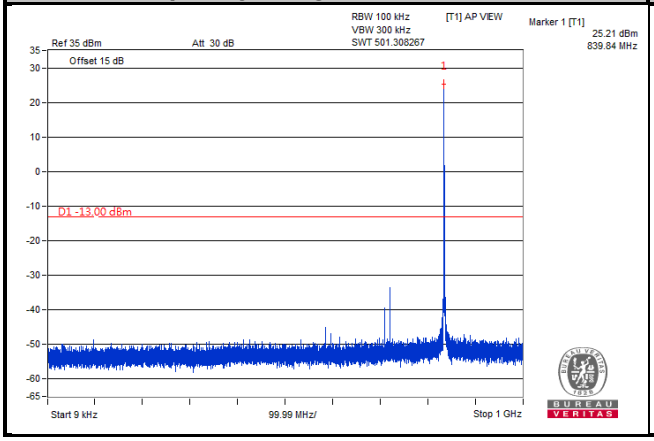
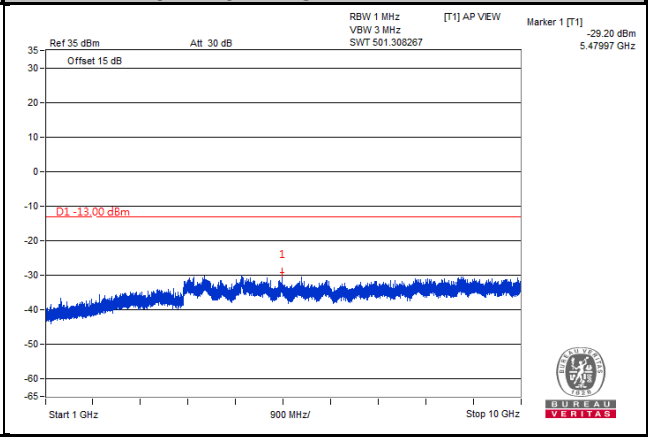
Note: The signal over the limit in 9 kHz is from spectrum analyzer.

LTE Band 5	
Channel Bandwidth: 3 MHz	
Channel 20415	
Frequency Range: 9 kHz ~ 1 GHz	Frequency Range: 1 GHz ~ 10 GHz
	
Channel 20525	
Frequency Range: 9 kHz ~ 1 GHz	Frequency Range: 1 GHz ~ 10 GHz
	
Channel 20635	
Frequency Range: 9 kHz ~ 1 GHz	Frequency Range: 1 GHz ~ 10 GHz
	

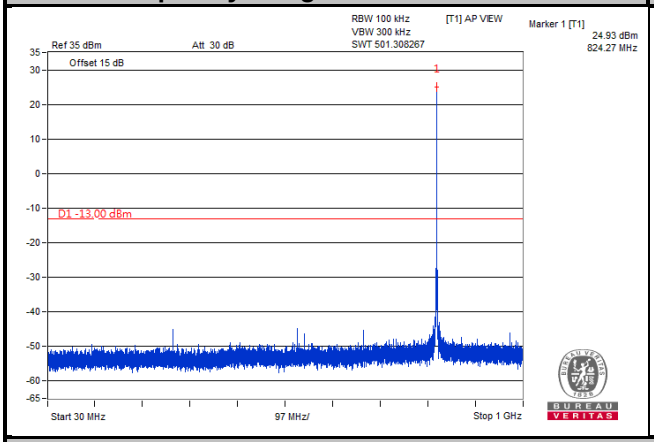
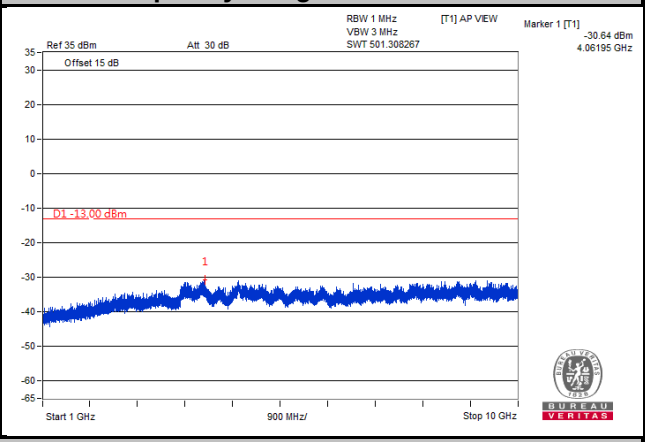
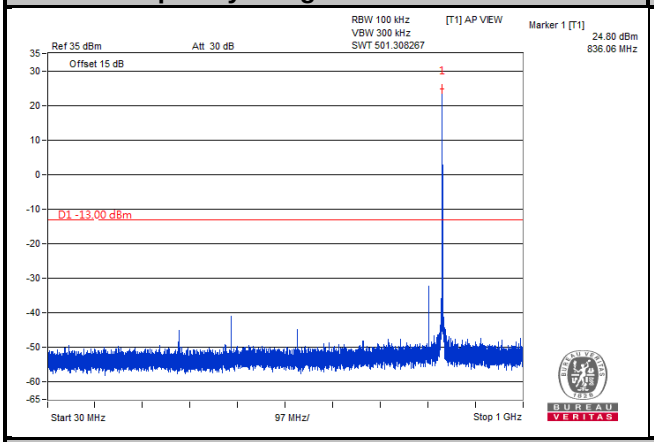
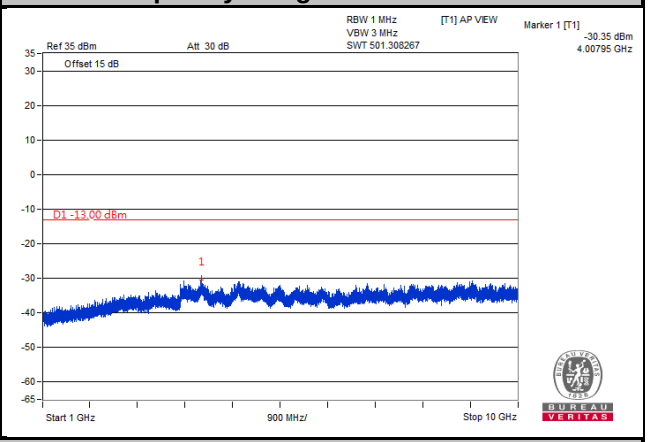
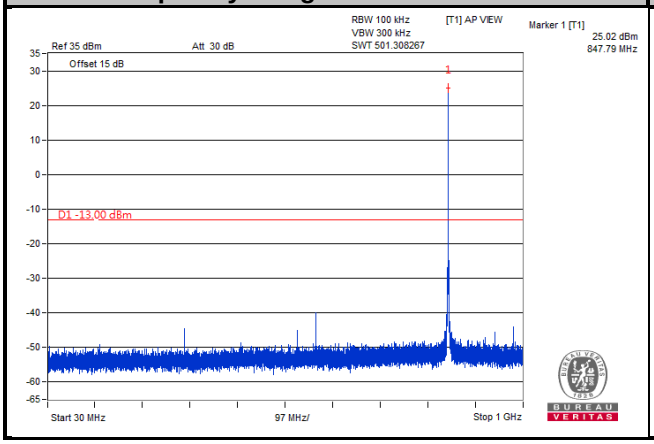
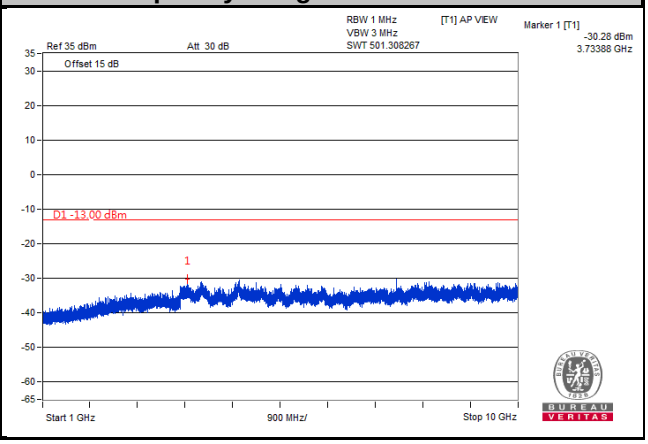
Note: The signal over the limit in 9 kHz is from spectrum analyzer.

LTE Band 5	
Channel Bandwidth: 5 MHz	
Channel 20425	
Frequency Range: 9 kHz ~ 1 GHz	Frequency Range: 1 GHz ~ 10 GHz
	
Channel 20525	
Frequency Range: 9 kHz ~ 1 GHz	Frequency Range: 1 GHz ~ 10 GHz
	
Channel 20625	
Frequency Range: 9 kHz ~ 1 GHz	Frequency Range: 1 GHz ~ 10 GHz
	

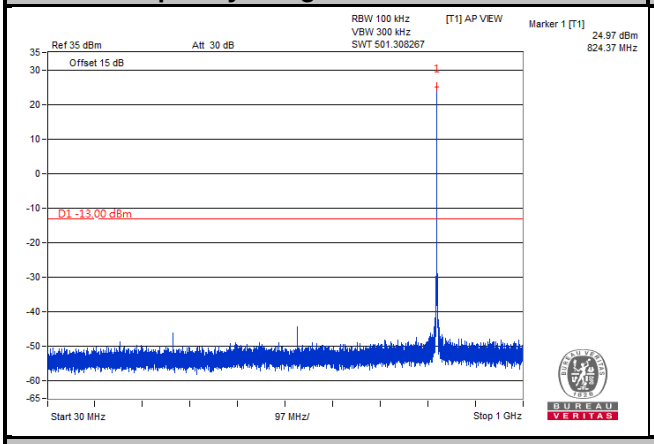
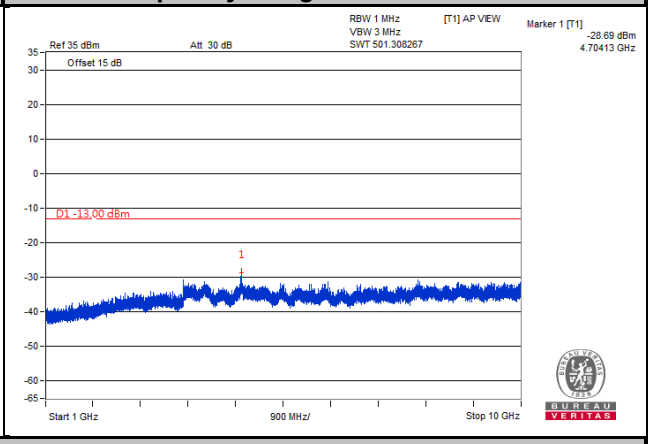
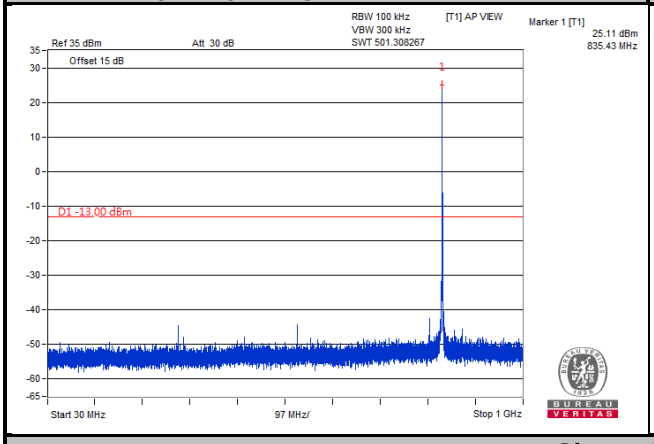
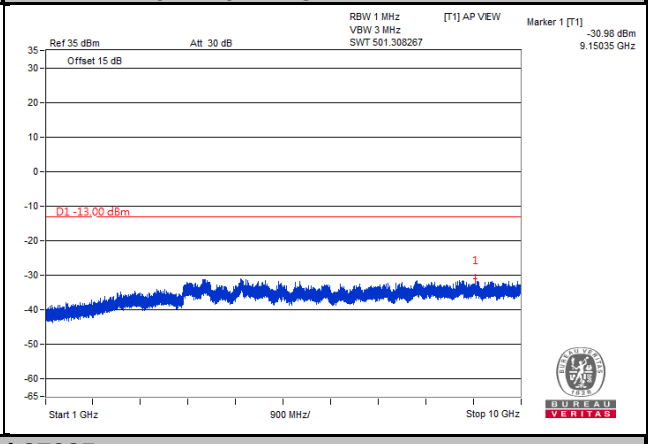
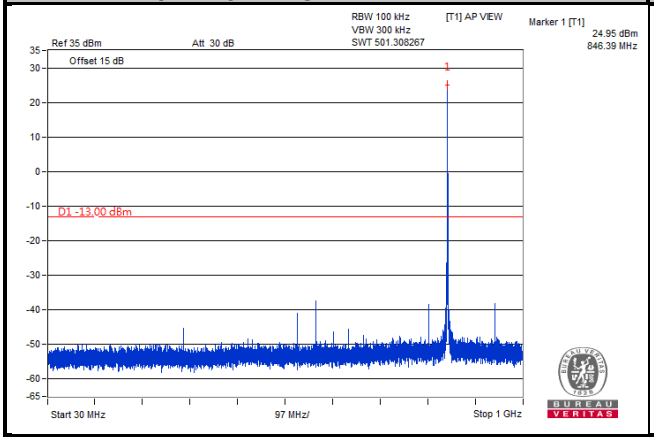
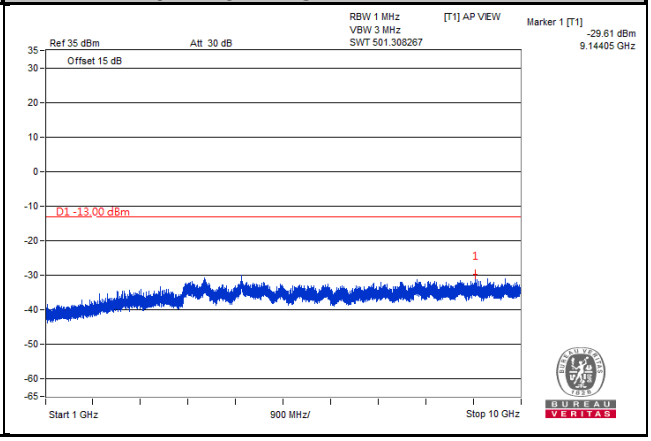
Note: The signal over the limit in 9 kHz is from spectrum analyzer.

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

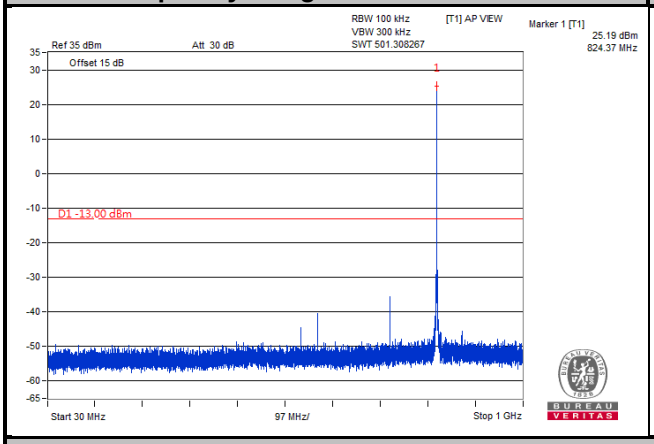
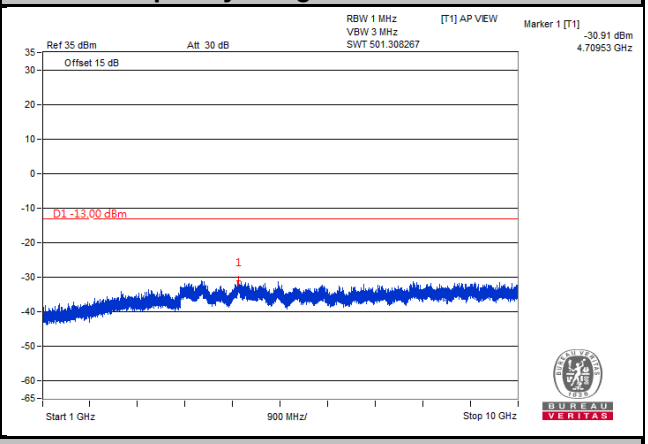
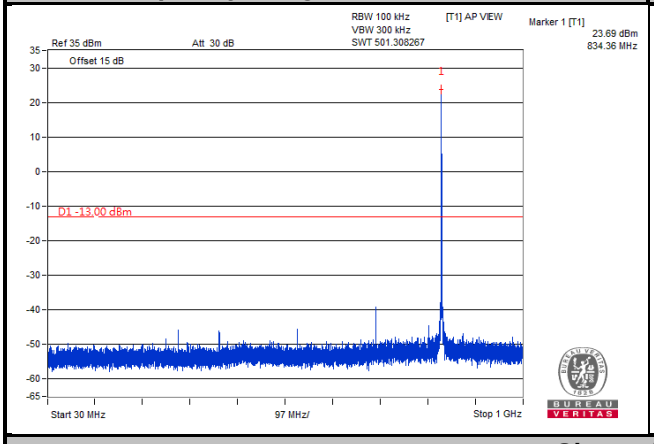
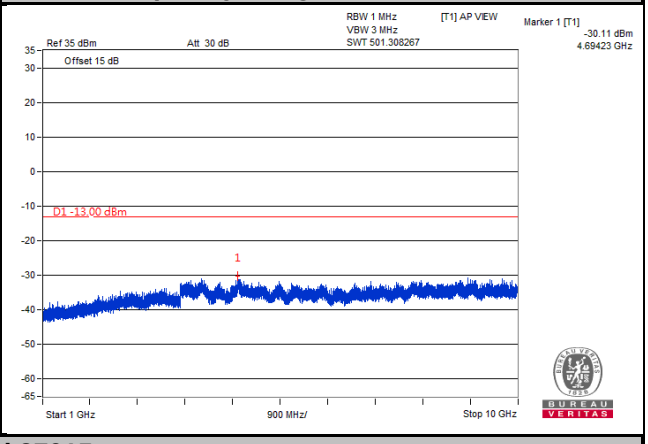
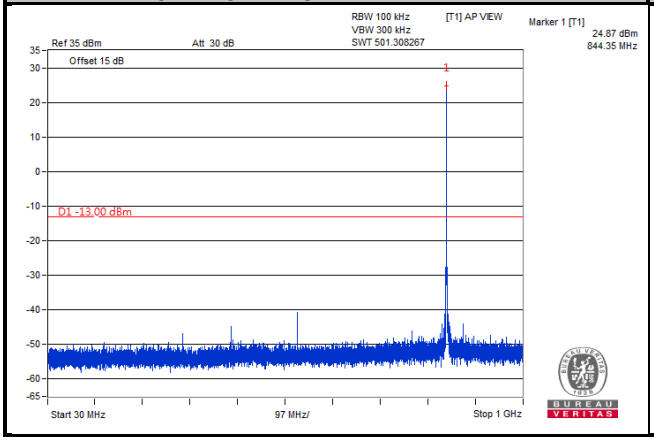
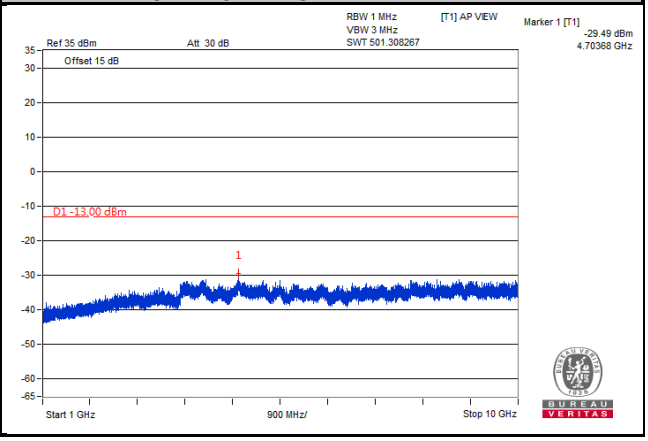
Note: The signal over the limit in 9 kHz is from spectrum analyzer.

LTE Band 26	
Channel Bandwidth: 1.4 MHz	
Channel 26797	
Frequency Range: 30 MHz ~ 1 GHz	Frequency Range: 1 GHz ~ 10 GHz
	
Channel 26915	
Frequency Range: 30 MHz ~ 1 GHz	Frequency Range: 1 GHz ~ 10 GHz
	
Channel 27033	
Frequency Range: 30 MHz ~ 1 GHz	Frequency Range: 1 GHz ~ 10 GHz
	

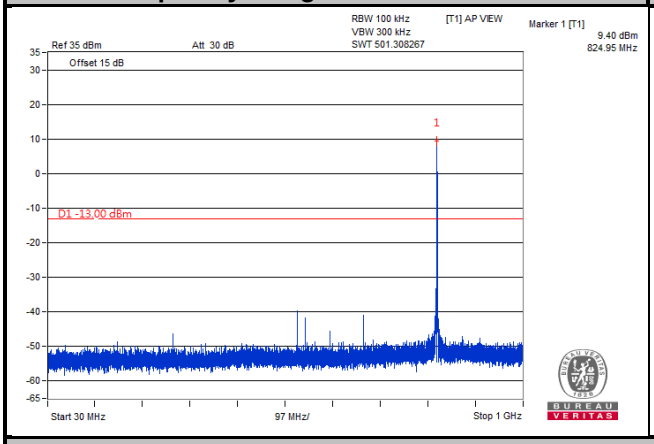
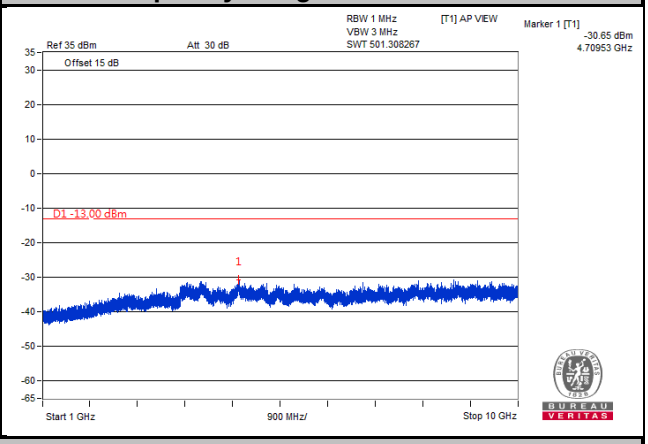
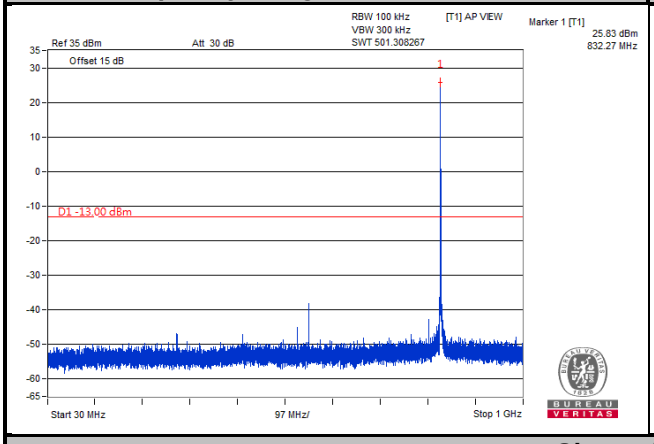
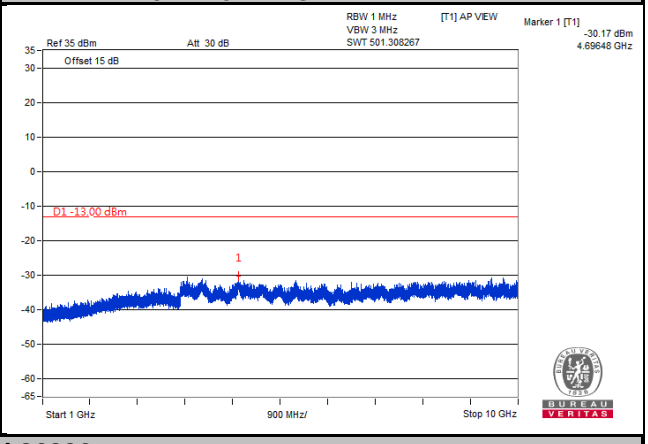
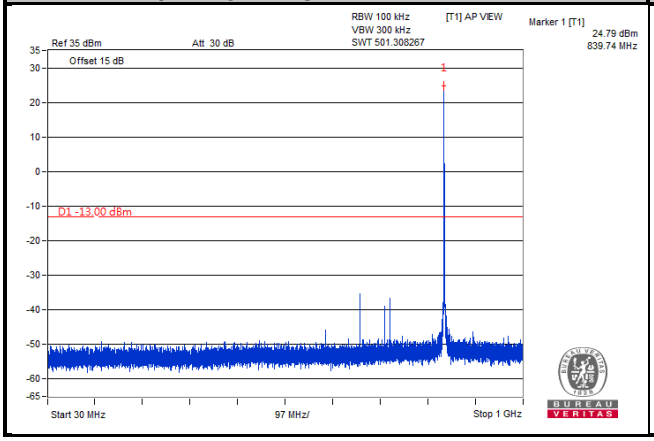
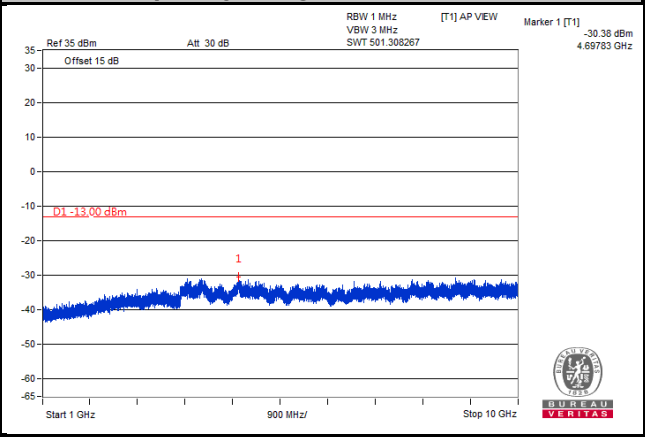
Note: The signal over the limit in 9 kHz is from spectrum analyzer.

LTE Band 26	
Channel Bandwidth: 3 MHz	
Channel 26805	
Frequency Range: 30 MHz ~ 1 GHz	Frequency Range: 1 GHz ~ 10 GHz
	
Channel 26915	
Frequency Range: 30 MHz ~ 1 GHz	Frequency Range: 1 GHz ~ 10 GHz
	
Channel 27025	
Frequency Range: 30 MHz ~ 1 GHz	Frequency Range: 1 GHz ~ 10 GHz
	

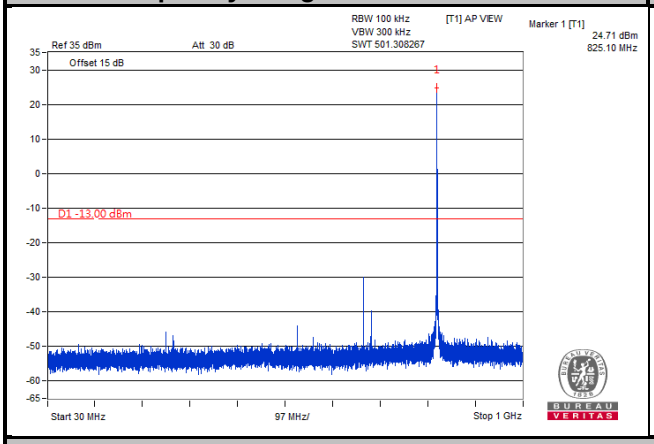
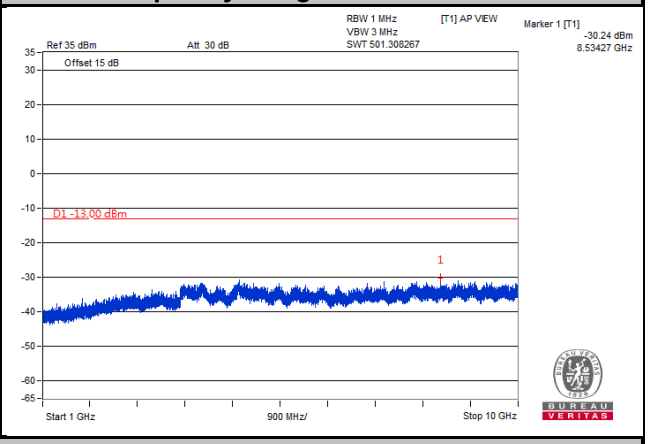
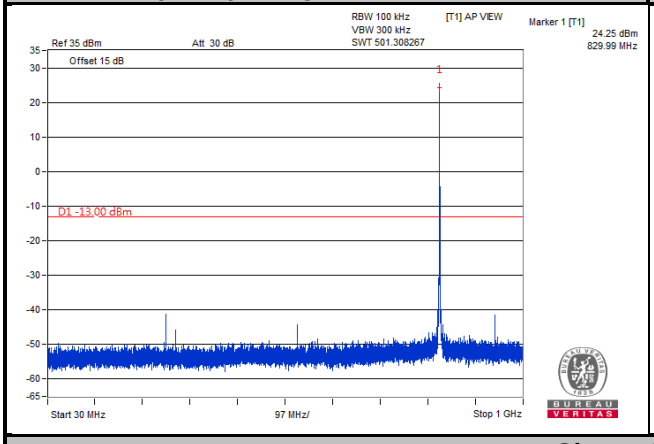
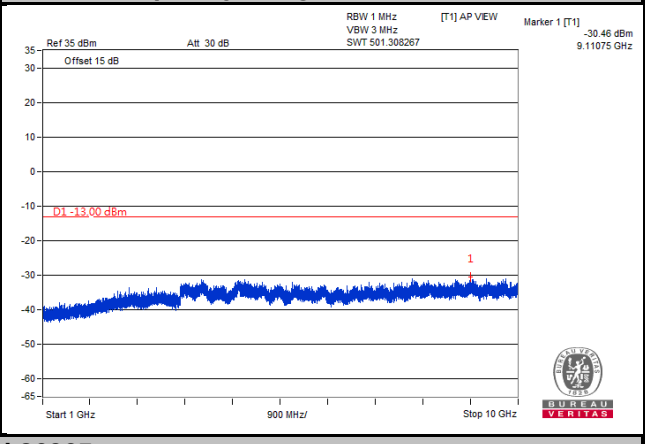
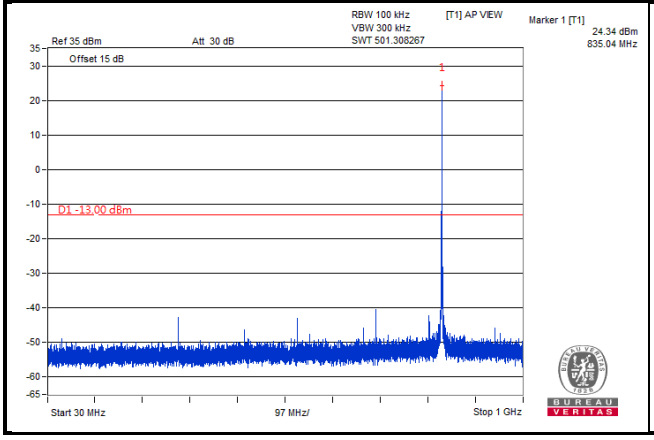
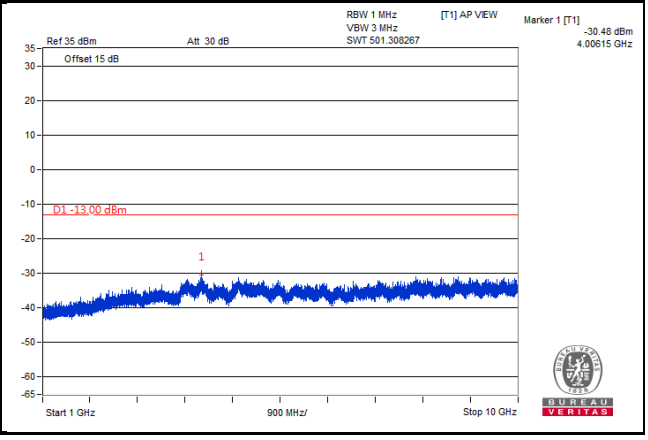
Note: The signal over the limit in 9 kHz is from spectrum analyzer.

LTE Band 26	
Channel Bandwidth: 5 MHz	
Channel 26815	
Frequency Range: 30 MHz ~ 1 GHz	Frequency Range: 1 GHz ~ 10 GHz
	
Channel 26915	
Frequency Range: 30 MHz ~ 1 GHz	Frequency Range: 1 GHz ~ 10 GHz
	
Channel 27015	
Frequency Range: 30 MHz ~ 1 GHz	Frequency Range: 1 GHz ~ 10 GHz
	

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

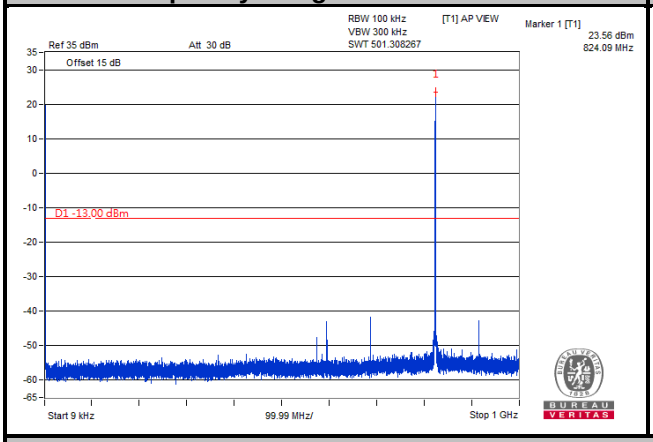
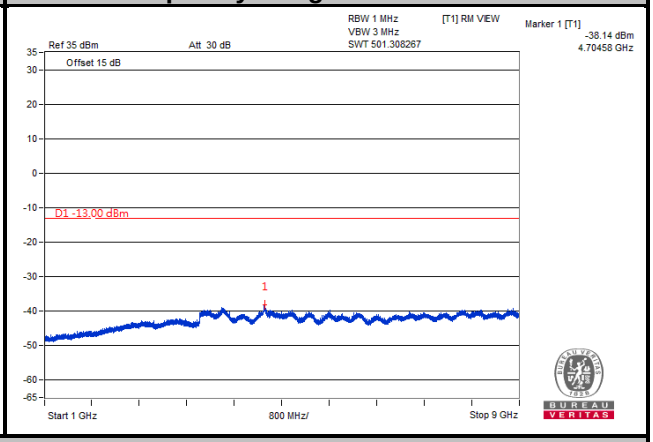
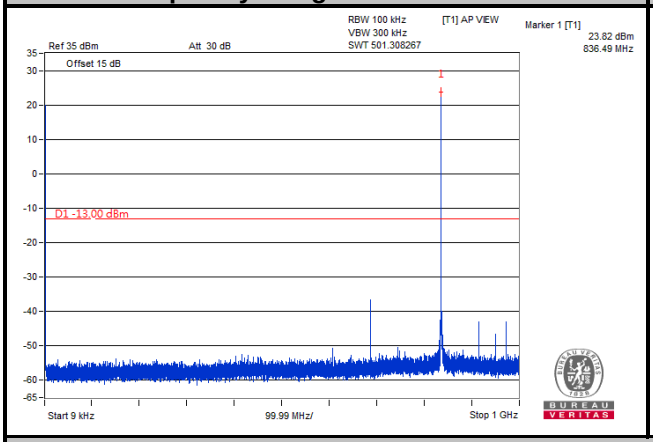
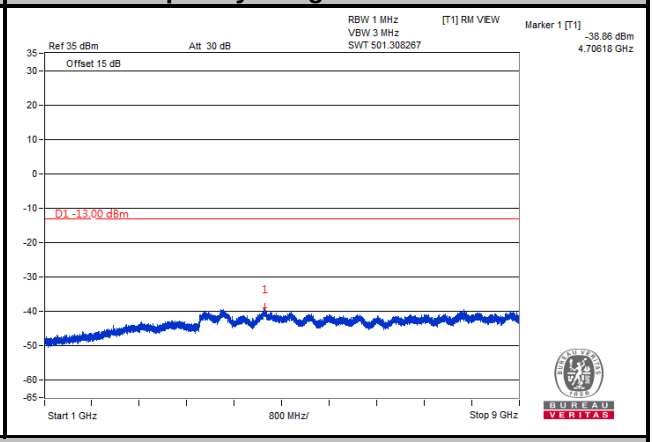
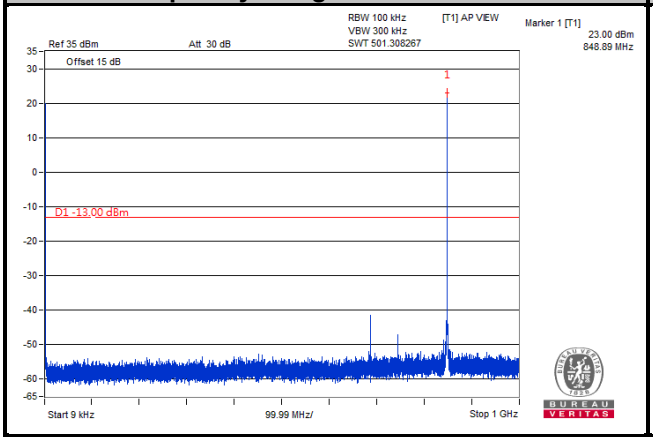
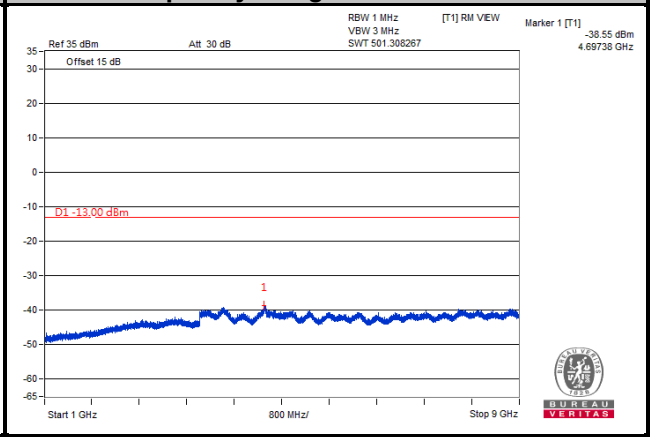
LTE Band 26	
Channel Bandwidth: 10 MHz	
Channel 26840	
Frequency Range: 30 MHz ~ 1 GHz	Frequency Range: 1 GHz ~ 10 GHz
	
Channel 26915	
Frequency Range: 30 MHz ~ 1 GHz	Frequency Range: 1 GHz ~ 10 GHz
	
Channel 26990	
Frequency Range: 30 MHz ~ 1 GHz	Frequency Range: 1 GHz ~ 10 GHz
	

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

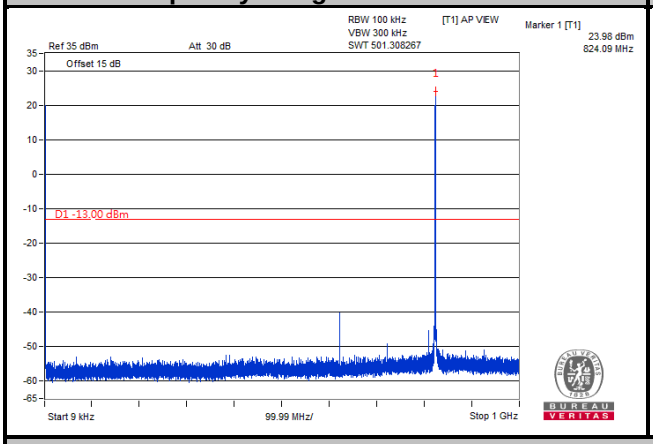
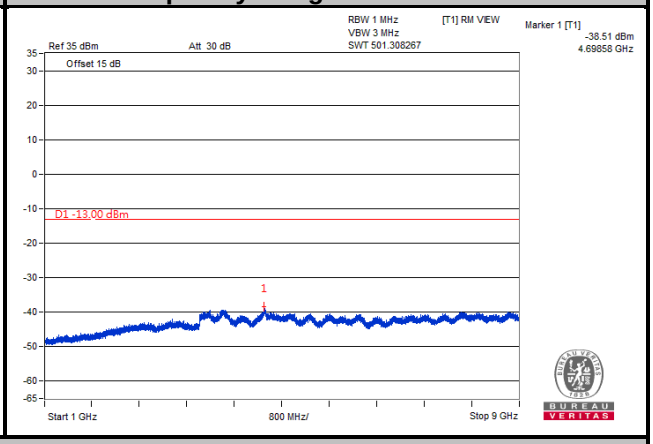
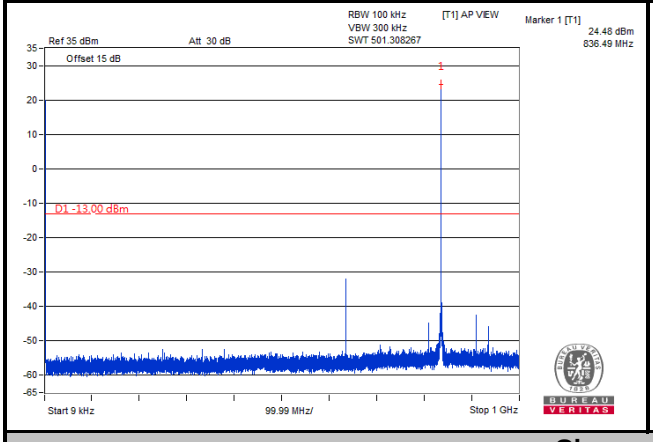
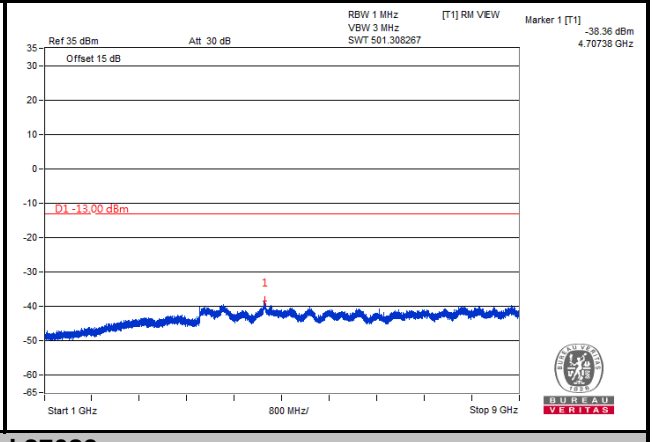
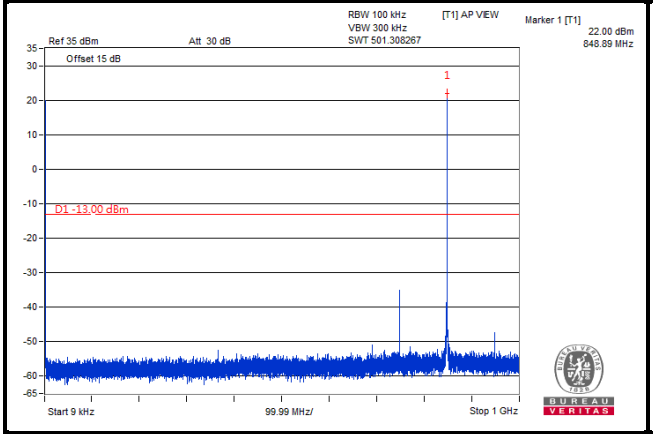
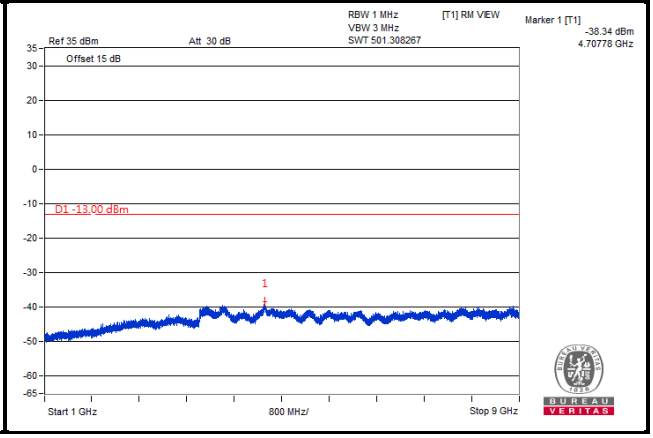
LTE Band 26	
Channel Bandwidth: 15 MHz	
Channel 26865	
Frequency Range: 30 MHz ~ 1 GHz	Frequency Range: 1 GHz ~ 10 GHz
	
Channel 26915	
Frequency Range: 30 MHz ~ 1 GHz	Frequency Range: 1 GHz ~ 10 GHz
	
Channel 26965	
Frequency Range: 30 MHz ~ 1 GHz	Frequency Range: 1 GHz ~ 10 GHz
	

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

NB-IoT

LTE Band 5	
Channel 20401	
Frequency Range: 9 kHz ~ 1 GHz	Frequency Range: 1 GHz ~ 9 GHz
	
Channel 20525	
Frequency Range: 9 kHz ~ 1 GHz	Frequency Range: 1 GHz ~ 9 GHz
	
Channel 20649	
Frequency Range: 9 kHz ~ 1 GHz	Frequency Range: 1 GHz ~ 9 GHz
	

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

LTE Band 26	
Channel 26791	
Frequency Range: 9 kHz ~ 1 GHz	Frequency Range: 1 GHz ~ 9 GHz
	
Channel 26915	
Frequency Range: 9 kHz ~ 1 GHz	Frequency Range: 1 GHz ~ 9 GHz
	
Channel 27039	
Frequency Range: 9 kHz ~ 1 GHz	Frequency Range: 1 GHz ~ 9 GHz
	

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

4.8 Radiated Emission Measurement

4.8.1 Limits of Radiated Emission Measurement

The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log(P) dB. The emission limit is equal to -13 dBm.

4.8.2 Test Procedure

a. Substitution method is used for E.I.R.P measurement. In the semi-anechoic chamber, EUT placed on the 0.8 m (below or equal 1 GHz) and/or 1.5 m (above 1 GHz) height of Turn Table, rotated the table around 360 degrees to search the maximum radiation power and receiver antenna shall be rotated vertical and horizontal polarization and moved height from 1 m to 4 m to find the maximum polar radiated power. The “Read Value” is the spectrum reading the maximum power value.
b. The substitution horn antenna is substituted for EUT at the same position and signals generator export the CW signal to the substitution antenna via a TX cable. Rotated the Turn Table and moved receiving antenna to find the maximum radiation power. Adjust output power level of S.G to get a Value of spectrum reading equal to “Read Value” of step a. Record the power level of S.G
c. EIRP = Output power level of S.G – TX cable loss + Antenna gain of substitution horn.
d. E.R.P power can be calculated form E.I.R.P power by subtracting the gain of dipole, E.R.P power = E.I.R.P power - 2.15 dB.

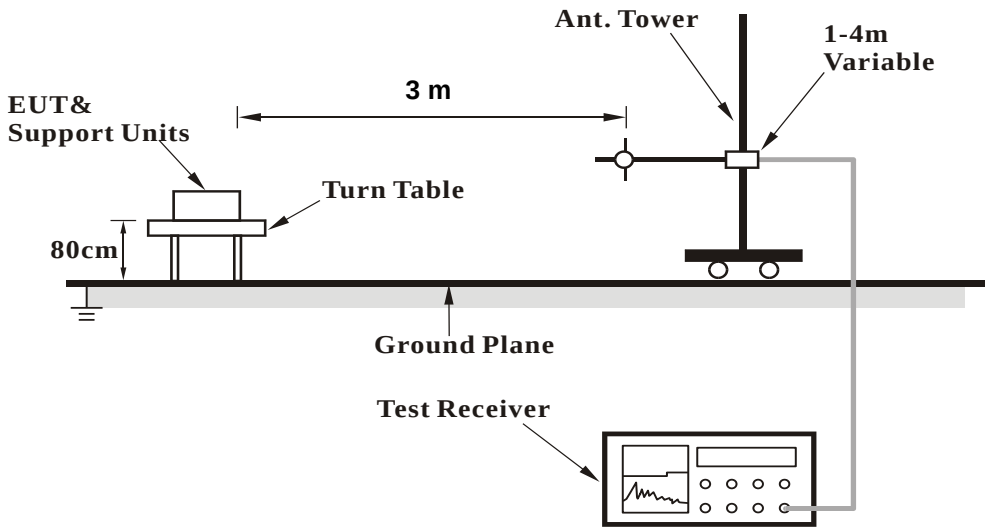
NOTE: The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 1 MHz/3 MHz.

4.8.3 Deviation from Test Standard

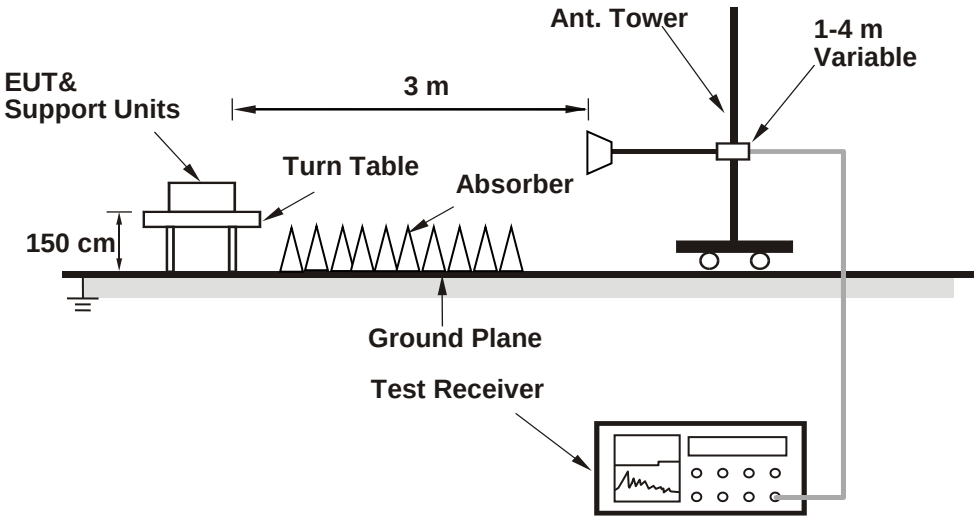
No deviation.

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

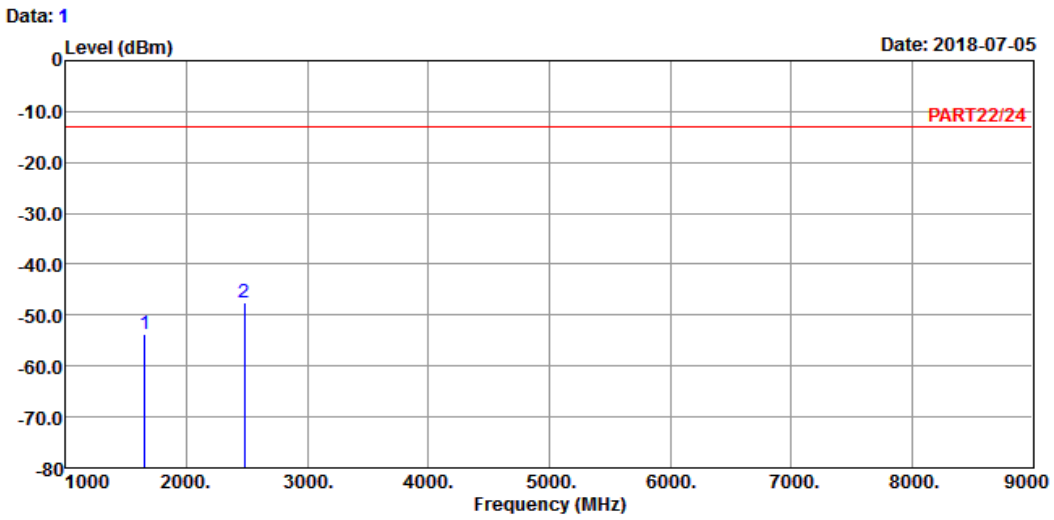
Cat-M1

LTE Band 5

Channel Bandwidth: 1.4 MHz / QPSK

Low Channel

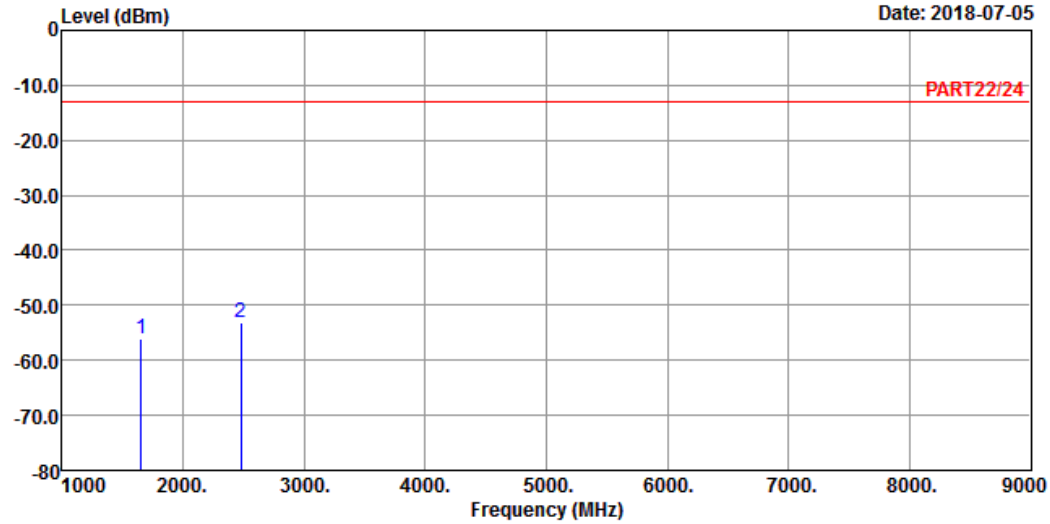
Bureau Veritas Consumer Products Services Ltd.,Taoyuan Branch




```
Site      : 966 Chamber 5
Condition: PART22/24 HORIZONTAL
Remak     : Cat-M1 Band 5 QPSK_1.4M Link_L-CH
Tested by: Jisyong Wang
```

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1	1649.40	-53.62	-39.88	-13.00	-40.62	-13.74	Peak
2 pp	2474.10	-47.57	-37.55	-13.00	-34.57	-10.02	Peak

Data: 2

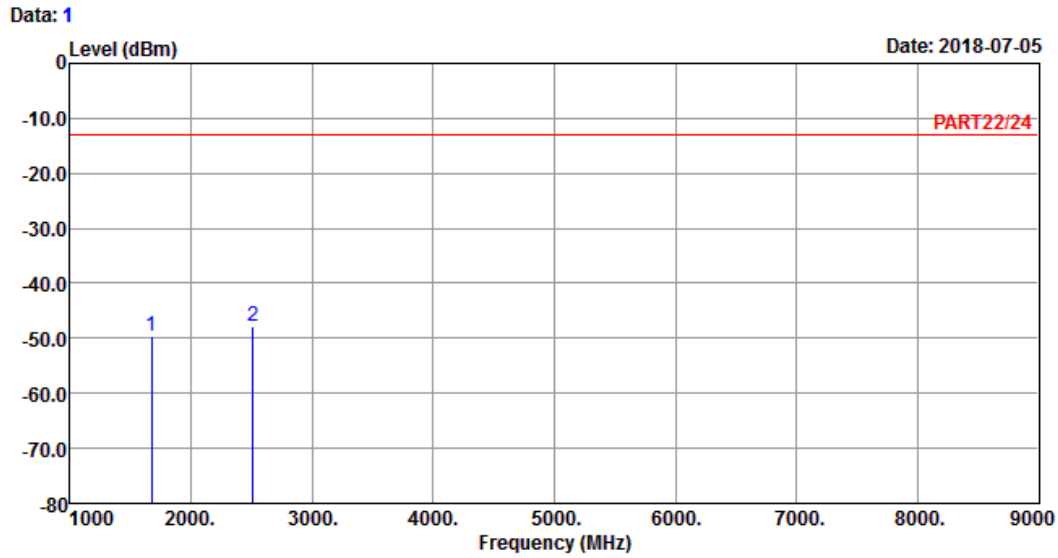


Site : 966 Chamber 5
Condition: PART22/24 VERTICAL
Remak : Cat-M1 Band 5 QPSK_1.4M Link_L-CH
Tested by: Jisyong Wang

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1	1649.40	-56.14	-42.40	-13.00	-43.14	-13.74	Peak
2 pp	2474.10	-53.01	-42.99	-13.00	-40.01	-10.02	Peak

Middle Channel

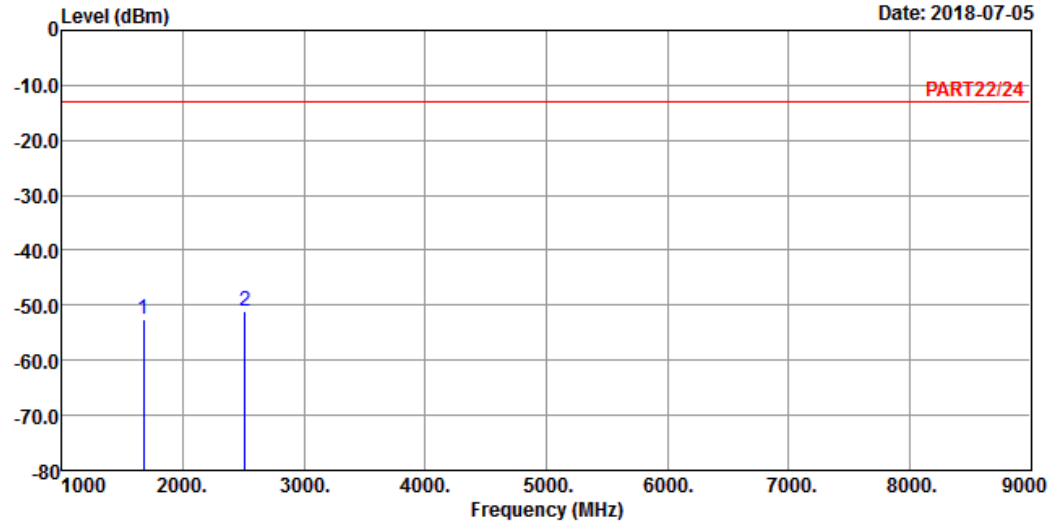
Bureau Veritas Consumer Products Services Ltd.,Taoyuan Branch



Site : 966 Chamber 5
Condition: PART22/24 HORIZONTAL
Remak : Cat-M1 Band 5 QPSK_1.4M Link_M-CH
Tested by: Jisyong Wang

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1	1673.00	-49.52	-35.62	-13.00	-36.52	-13.90	Peak
2 pp	2509.50	-47.85	-37.77	-13.00	-34.85	-10.08	Peak

Data: 2

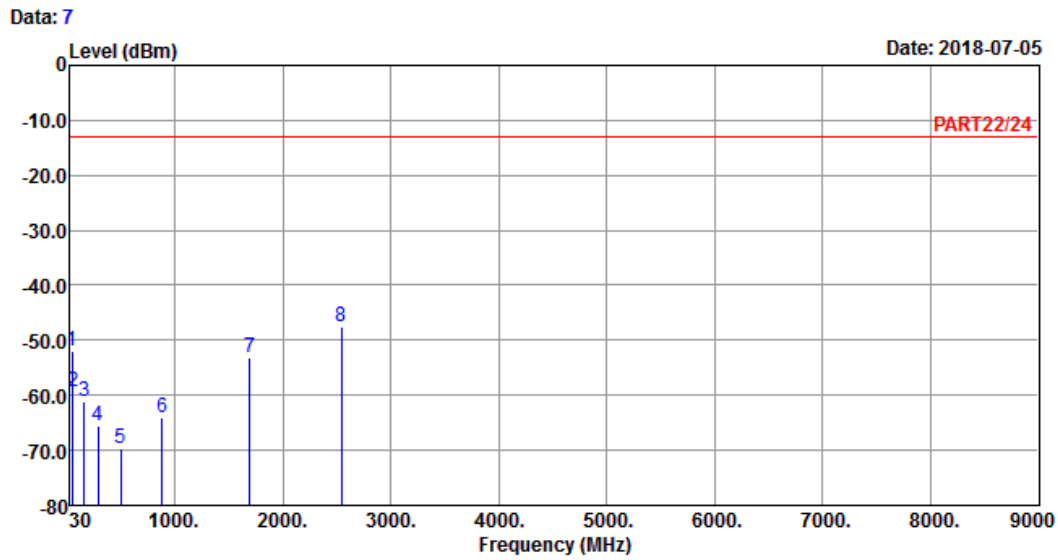


Site : 966 Chamber 5
Condition: PART22/24 VERTICAL
Remak : Cat-M1 Band 5 QPSK_1.4M Link_M-CH
Tested by: Jisyong Wang

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1	1673.00	-52.52	-38.62	-13.00	-39.52	-13.90	Peak
2 pp	2509.50	-51.05	-40.97	-13.00	-38.05	-10.08	Peak

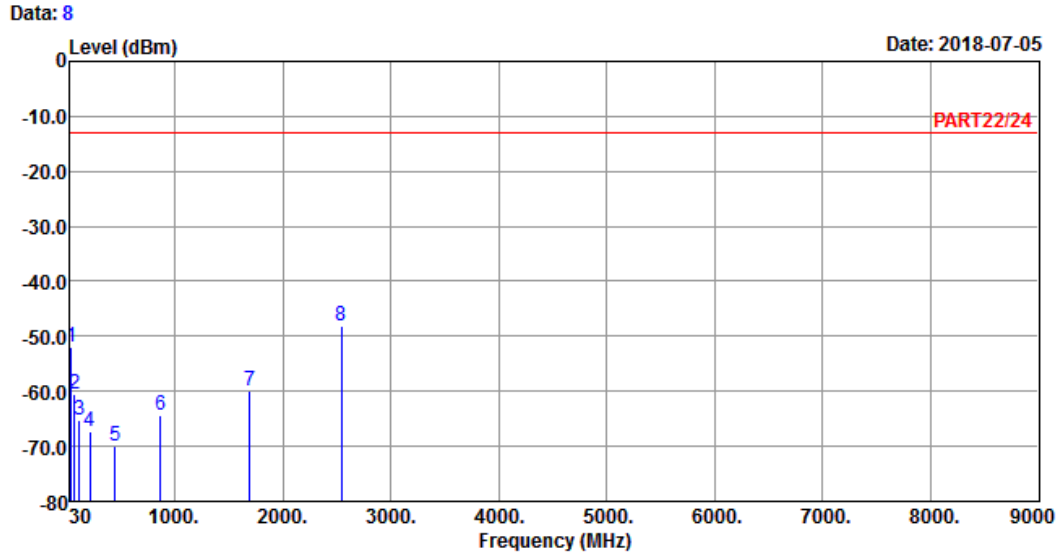
High Channel

Bureau Veritas Consumer Products Services Ltd.,Taoyuan Branch



Site : 966 Chamber 5
Condition: PART22/24 HORIZONTAL
Remak : Cat-M1 Band 5 QPSK_1.4M Link_H-CH
Tested by: Jisyong Wang

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1	43.77	-51.99	-50.52	-13.00	-38.99	-1.47	Peak
2	54.30	-59.20	-53.13	-13.00	-46.20	-6.07	Peak
3	163.38	-61.00	-55.88	-13.00	-48.00	-5.12	Peak
4	286.23	-65.49	-58.76	-13.00	-52.49	-6.73	Peak
5	498.10	-69.66	-65.01	-13.00	-56.66	-4.65	Peak
6	878.90	-64.18	-64.63	-13.00	-51.18	0.45	Peak
7	1696.60	-53.25	-39.23	-13.00	-40.25	-14.02	Peak
8 pp	2544.90	-47.52	-37.46	-13.00	-34.52	-10.06	Peak

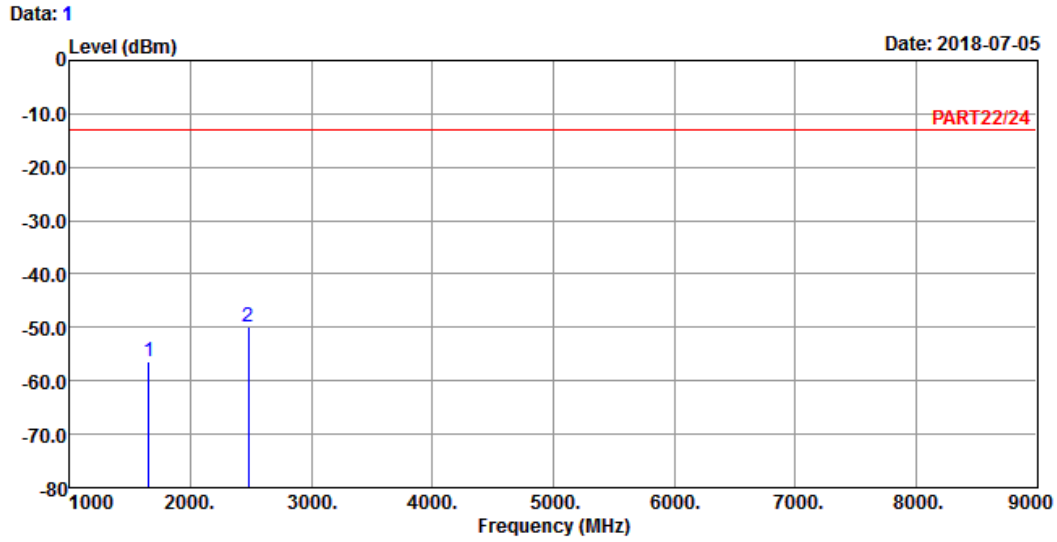


Site : 966 Chamber 5
Condition: PART22/24 VERTICAL
Remak : Cat-M1 Band 5 QPSK_1.4M Link_H-CH
Tested by: Jisyong Wang

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1	42.96	-51.99	-51.05	-13.00	-38.99	-0.94	Peak
2	68.34	-60.64	-52.32	-13.00	-47.64	-8.32	Peak
3	113.43	-65.39	-55.24	-13.00	-52.39	-10.15	Peak
4	209.55	-67.28	-59.65	-13.00	-54.28	-7.63	Peak
5	447.70	-70.06	-64.49	-13.00	-57.06	-5.57	Peak
6	866.30	-64.28	-64.66	-13.00	-51.28	0.38	Peak
7	1696.60	-60.01	-45.99	-13.00	-47.01	-14.02	Peak
8 pp	2544.90	-48.01	-37.95	-13.00	-35.01	-10.06	Peak

Channel Bandwidth: 5 MHz / QPSK
Low Channel

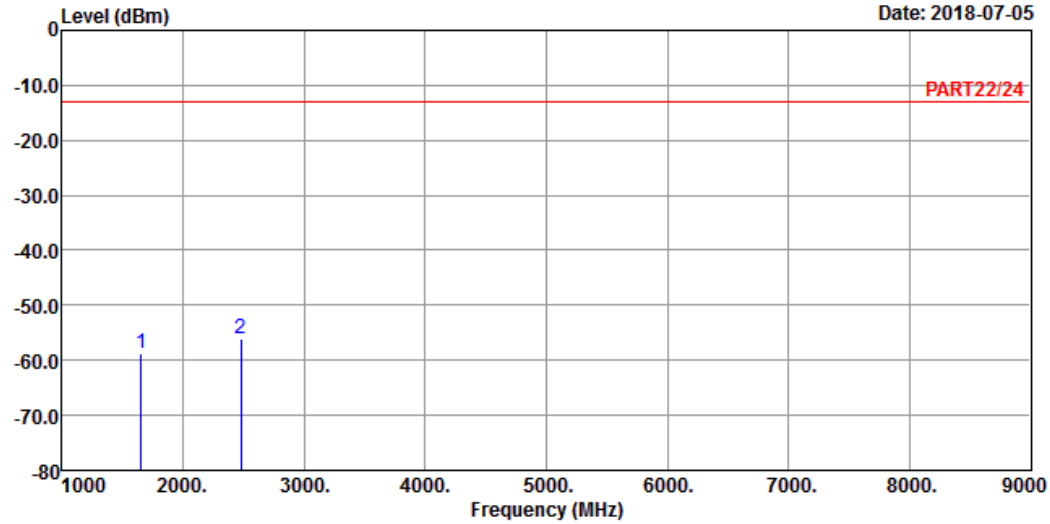
Bureau Veritas Consumer Products Services Ltd.,Taoyuan Branch



Site : 966 Chamber 5
Condition: PART22/24 HORIZONTAL
Remak : Cat-M1 Band 5 QPSK_5M Link_L-CH
Tested by: Jisyong Wang

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1	1653.00	-56.52	-42.75	-13.00	-43.52	-13.77	Peak
2 pp	2479.50	-49.98	-39.95	-13.00	-36.98	-10.03	Peak

Data: 2

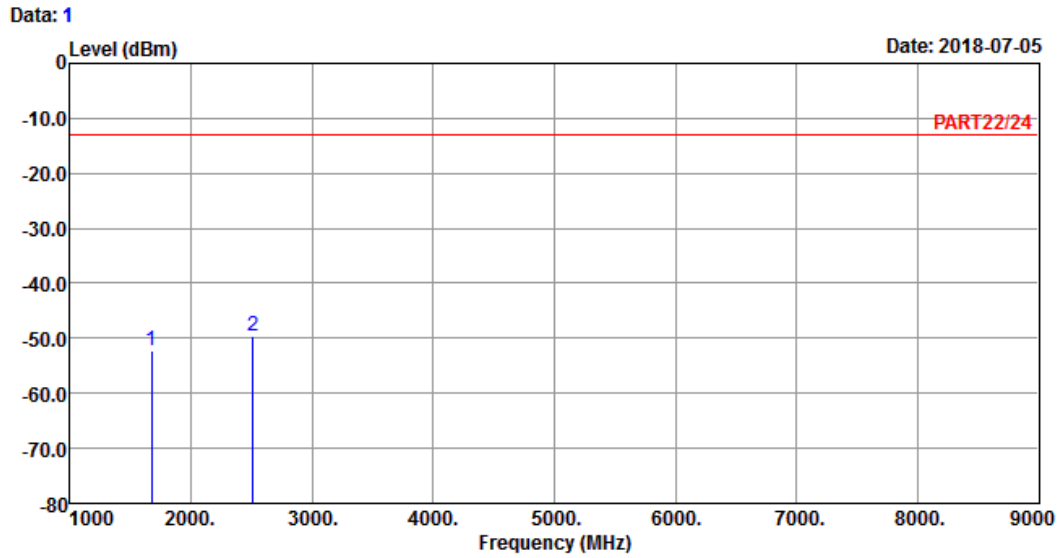


Site : 966 Chamber 5
Condition: PART22/24 VERTICAL
Remak : Cat-M1 Band 5 QPSK_5M Link_L-CH
Tested by: Jisyong Wang

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1	1653.00	-58.63	-44.86	-13.00	-45.63	-13.77	Peak
2 pp	2479.50	-55.96	-45.93	-13.00	-42.96	-10.03	Peak

Middle Channel

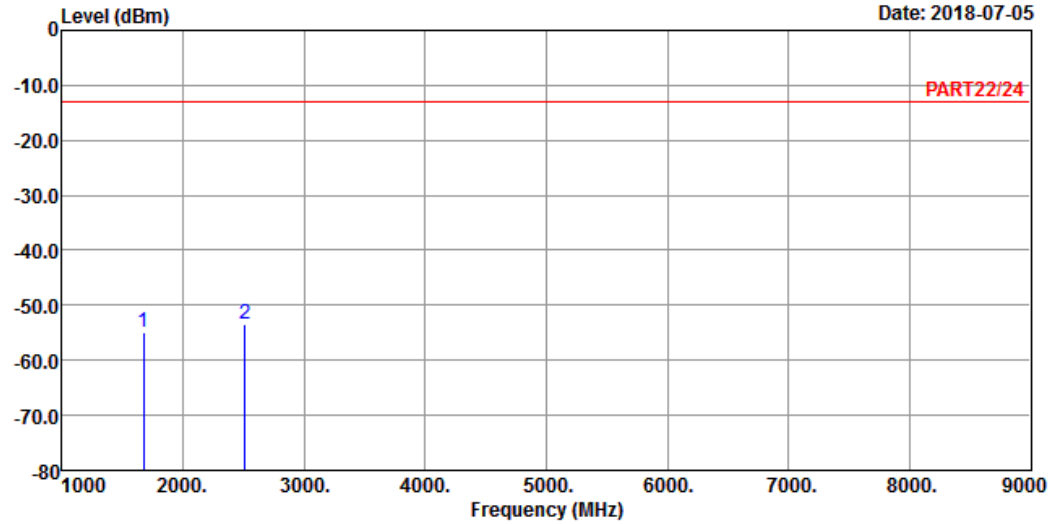
Bureau Veritas Consumer Products Services Ltd.,Taoyuan Branch



Site : 966 Chamber 5
Condition: PART22/24 HORIZONTAL
Remak : Cat-M1 Band 5 QPSK_5M Link_M-CH
Tested by: Jisyong Wang

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1	1673.00	-52.25	-38.35	-13.00	-39.25	-13.90	Peak
2 pp	2509.50	-49.52	-39.44	-13.00	-36.52	-10.08	Peak

Data: 2

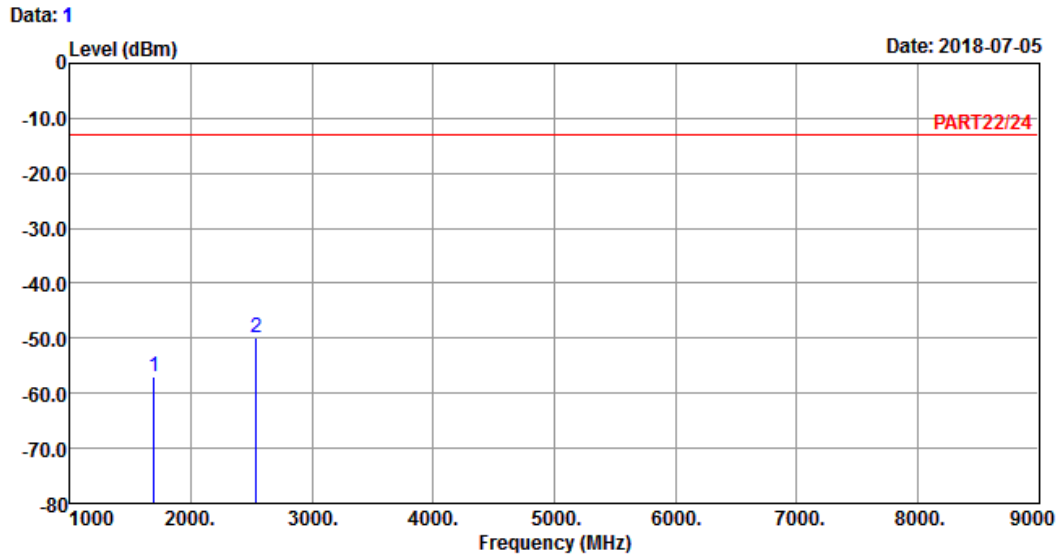


Site : 966 Chamber 5
Condition: PART22/24 VERTICAL
Remak : Cat-M1 Band 5 QPSK_5M Link_M-CH
Tested by: Jisyong Wang

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1	1673.00	-55.01	-41.11	-13.00	-42.01	-13.90	Peak
2 pp	2509.50	-53.52	-43.44	-13.00	-40.52	-10.08	Peak

High Channel

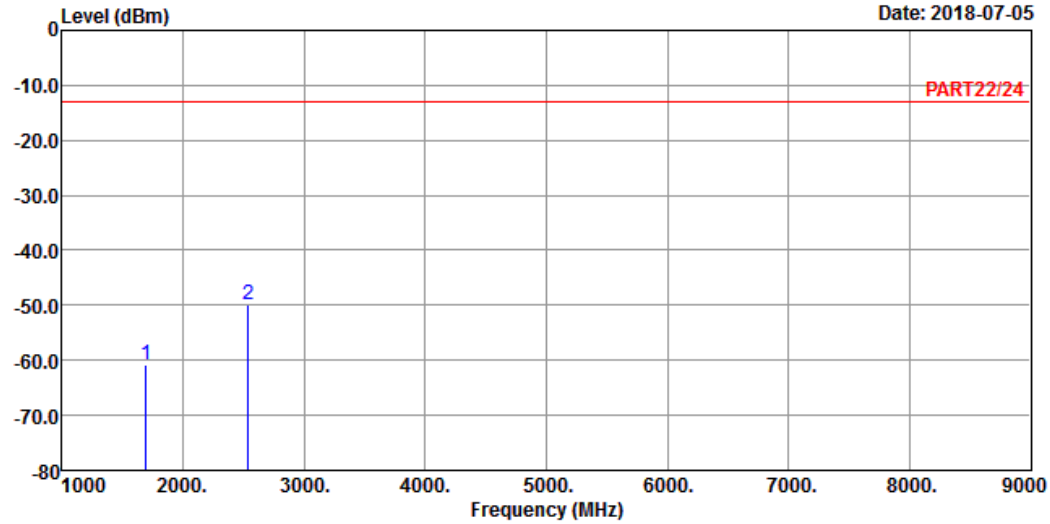
Bureau Veritas Consumer Products Services Ltd.,Taoyuan Branch



Site : 966 Chamber 5
Condition: PART22/24 HORIZONTAL
Remak : Cat-M1 Band 5 QPSK_5M Link_H-CH
Tested by: Jisyong Wang

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1	1693.00	-56.85	-42.83	-13.00	-43.85	-14.02	Peak
2 pp	2539.50	-49.98	-39.92	-13.00	-36.98	-10.06	Peak

Data: 2

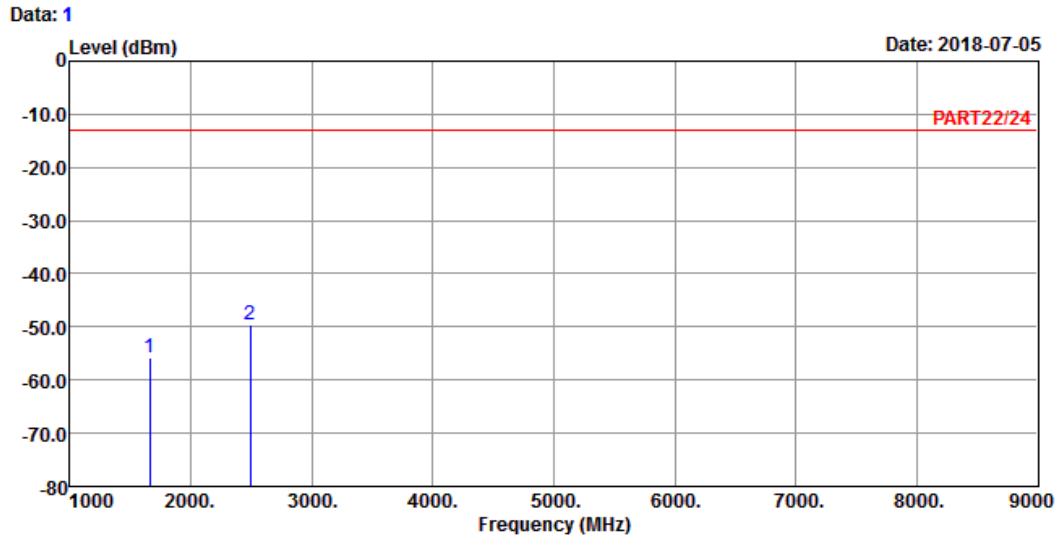


Site : 966 Chamber 5
Condition: PART22/24 VERTICAL
Remak : Cat-M1 Band 5 QPSK_5M Link_H-CH
Tested by: Jisyong Wang

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1	1693.00	-60.85	-46.83	-13.00	-47.85	-14.02	Peak
2 pp	2539.50	-49.85	-39.79	-13.00	-36.85	-10.06	Peak

Channel Bandwidth: 10 MHz / QPSK
Low Channel

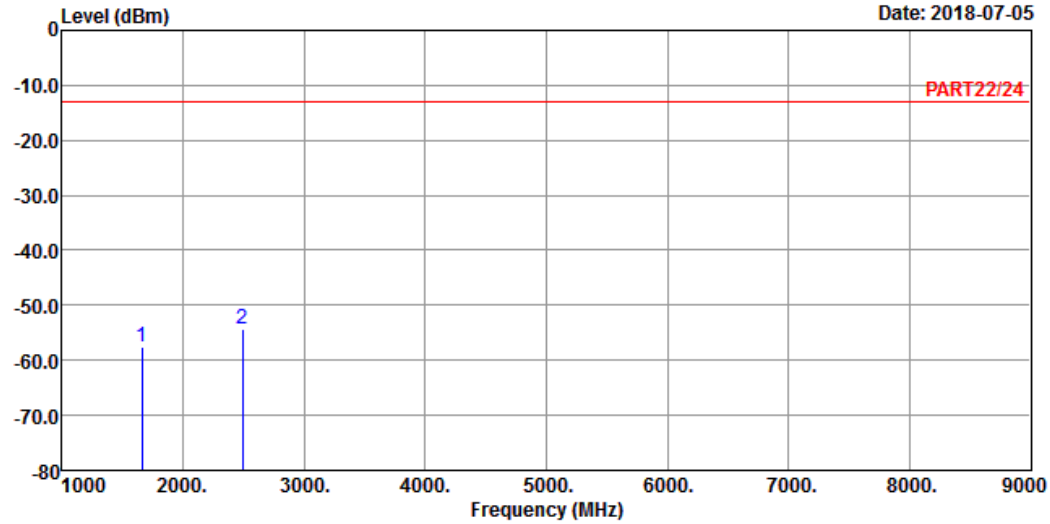
Bureau Veritas Consumer Products Services Ltd.,Taoyuan Branch



Site : 966 Chamber 5
Condition: PART22/24 HORIZONTAL
Remak : Cat-M1 Band 5 QPSK_10M Link_L-CH
Tested by: Jisyong Wang

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1	1658.00	-55.83	-42.03	-13.00	-42.83	-13.80	Peak
2 pp	2487.00	-49.47	-39.42	-13.00	-36.47	-10.05	Peak

Data: 2

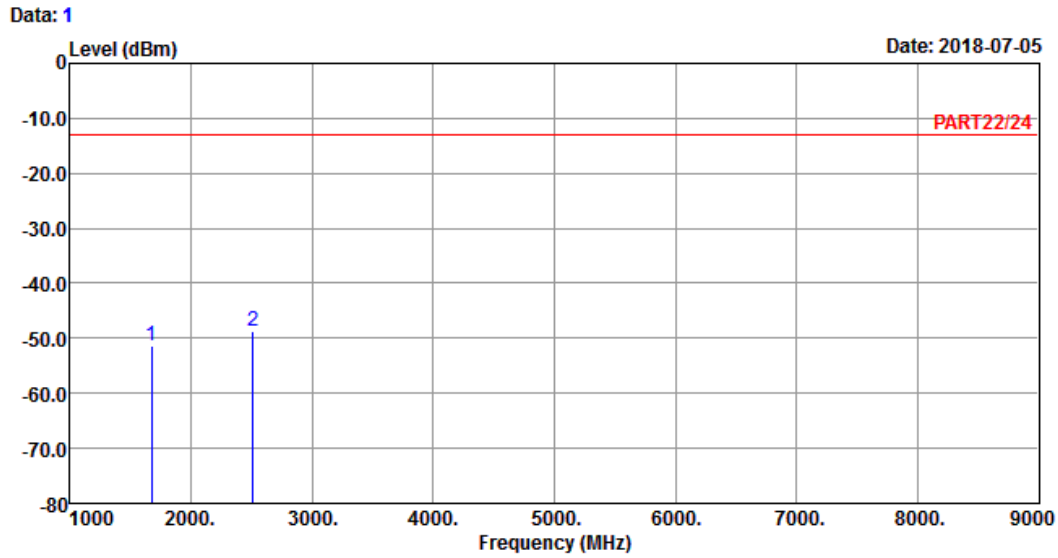


Site : 966 Chamber 5
Condition: PART22/24 VERTICAL
Remak : Cat-M1 Band 5 QPSK_10M Link_L-CH
Tested by: Jisyong Wang

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1	1658.00	-57.65	-43.85	-13.00	-44.65	-13.80	Peak
2 pp	2487.00	-54.41	-44.36	-13.00	-41.41	-10.05	Peak

Middle Channel

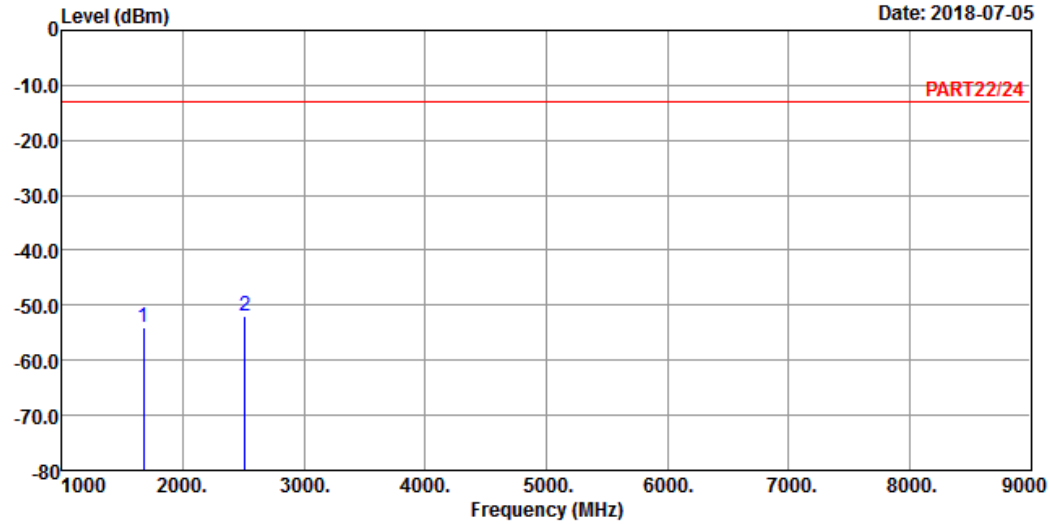
Bureau Veritas Consumer Products Services Ltd.,Taoyuan Branch



Site : 966 Chamber 5
Condition: PART22/24 HORIZONTAL
Remak : Cat-M1 Band 5 QPSK_10M Link_M-CH
Tested by: Jisyong Wang

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1	1673.00	-51.49	-37.59	-13.00	-38.49	-13.90	Peak
2 pp	2509.50	-48.83	-38.75	-13.00	-35.83	-10.08	Peak

Data: 2

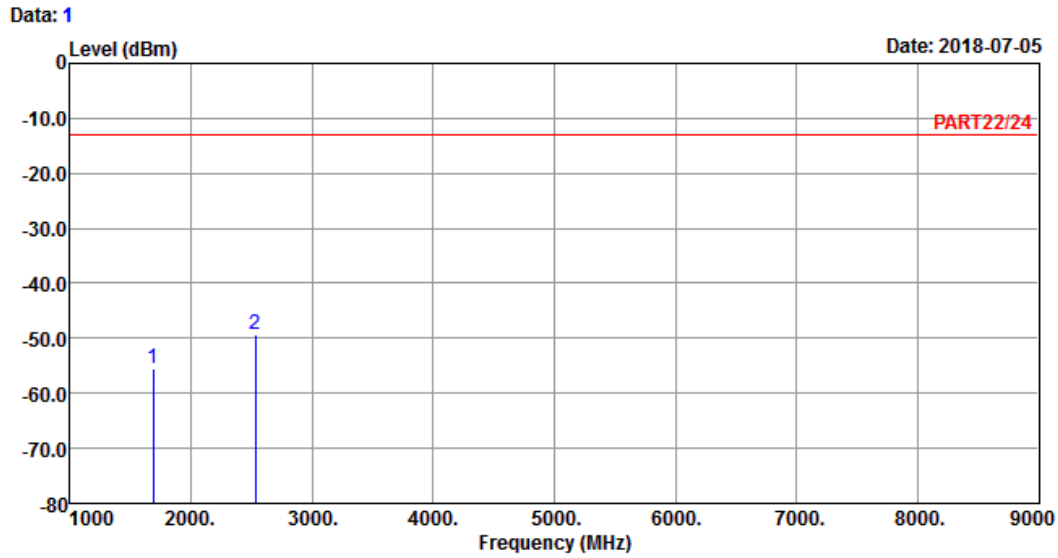


Site : 966 Chamber 5
Condition: PART22/24 VERTICAL
Remak : Cat-M1 Band 5 QPSK_10M Link_M-CH
Tested by: Jisyong Wang

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1	1673.00	-54.09	-40.19	-13.00	-41.09	-13.90	Peak
2 pp	2509.50	-52.00	-41.92	-13.00	-39.00	-10.08	Peak

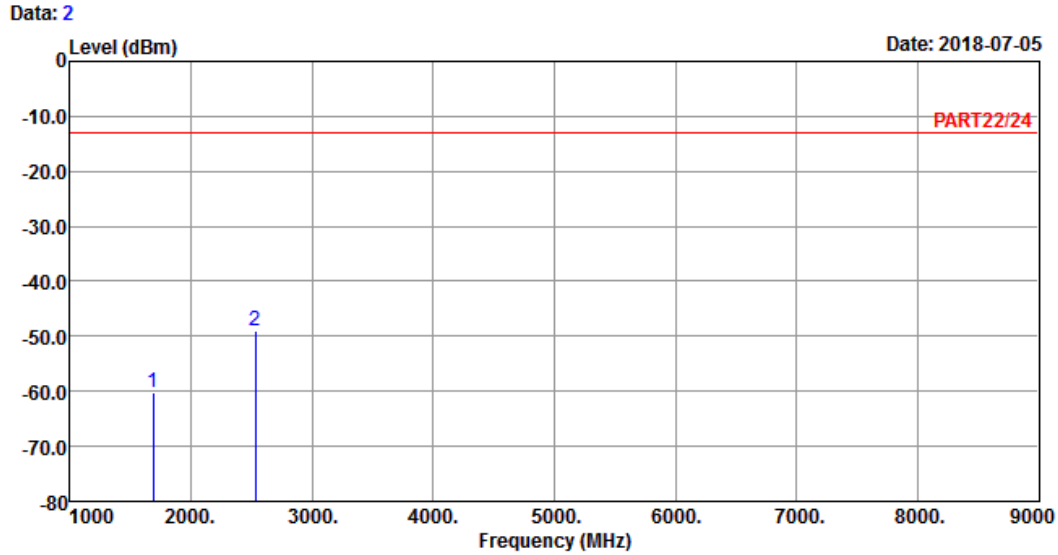
High Channel

Bureau Veritas Consumer Products Services Ltd.,Taoyuan Branch



Site : 966 Chamber 5
Condition: PART22/24 HORIZONTAL
Remak : Cat-M1 Band 5 QPSK_10M Link_H-CH
Tested by: Jisyong Wang

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1	1688.00	-55.49	-41.50	-13.00	-42.49	-13.99	Peak
2 pp	2532.00	-49.38	-39.31	-13.00	-36.38	-10.07	Peak

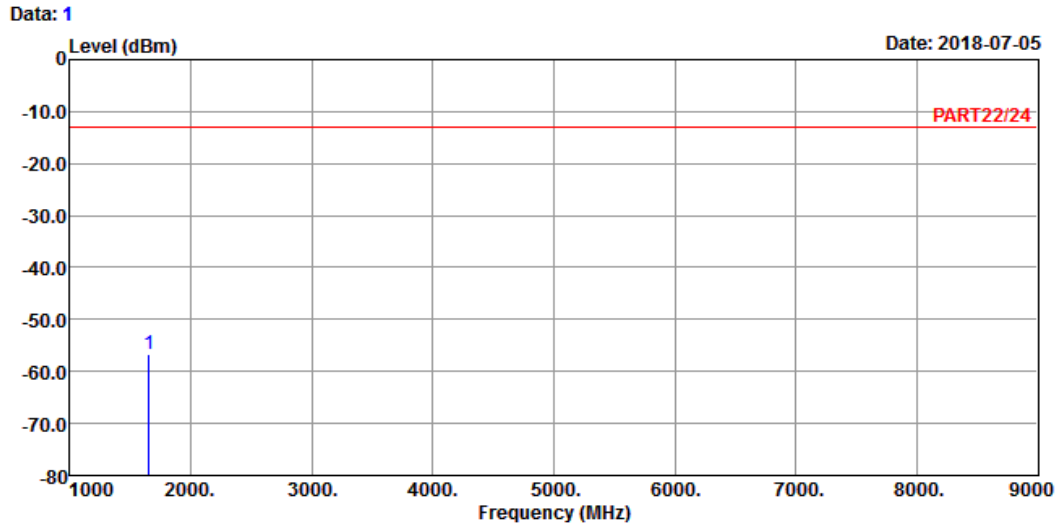


Site : 966 Chamber 5
Condition: PART22/24 VERTICAL
Remak : Cat-M1 Band 5 QPSK_10M Link_H-CH
Tested by: Jisyong Wang

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1	1688.00	-60.22	-46.23	-13.00	-47.22	-13.99	Peak
2 pp	2532.00	-49.08	-39.01	-13.00	-36.08	-10.07	Peak

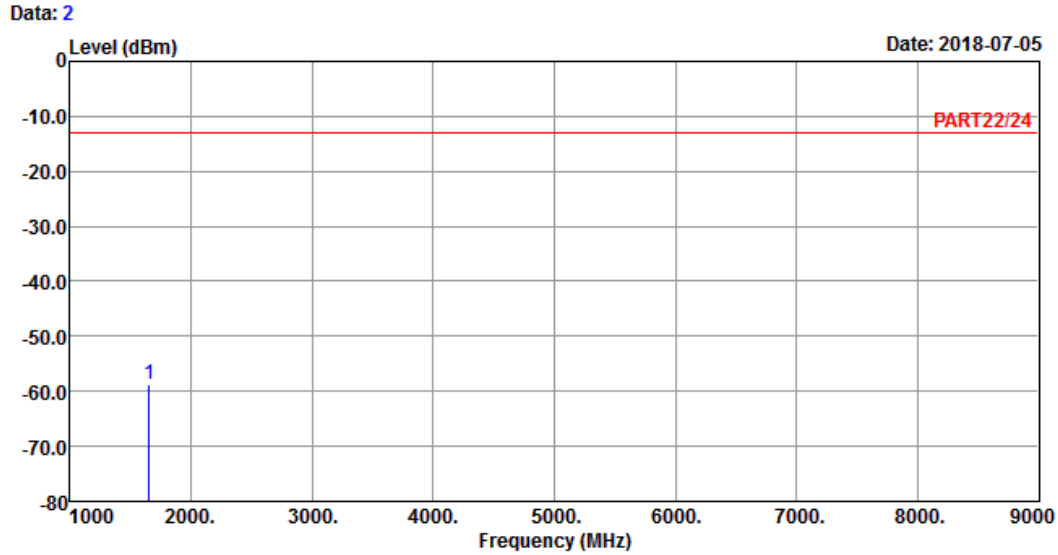
LTE Band 26
Channel Bandwidth: 1.4 MHz / QPSK
Low Channel

Bureau Veritas Consumer Products Services Ltd.,Taoyuan Branch



Site : 966 Chamber 5
Condition: PART22/24 HORIZONTAL
Remak : Cat-M1 Band 26 QPSK_1.4M Link_L-CH
Tested by: Thomas Wei

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1 pp	1649.40	-56.55	-42.81	-13.00	-43.55	-13.74	Peak

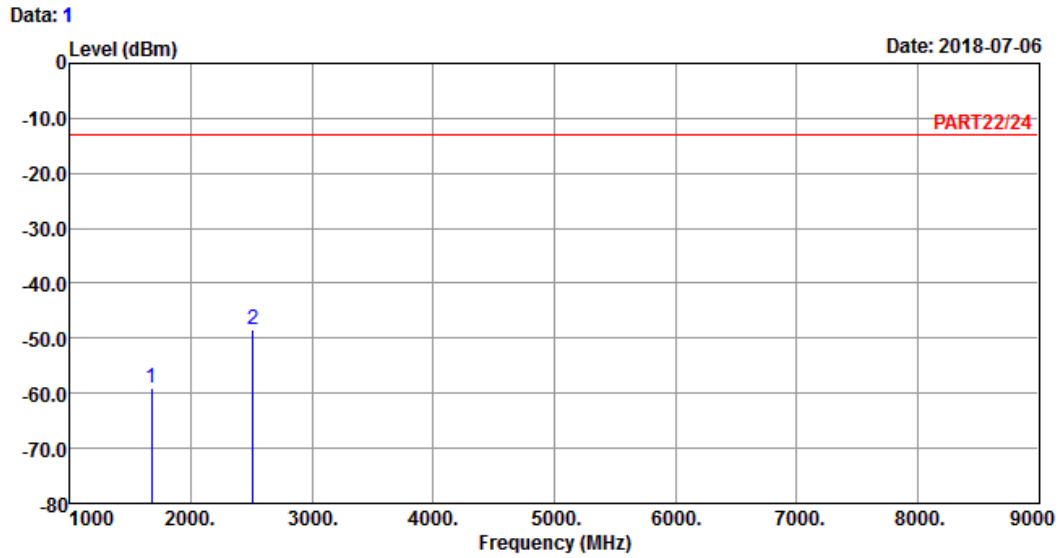


Site : 966 Chamber 5
Condition: PART22/24 VERTICAL
Remak : Cat-M1 Band 26 QPSK_1.4M Link_L-CH
Tested by: Thomas Wei

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1 pp	1649.40	-58.69	-44.95	-13.00	-45.69	-13.74	Peak

Middle Channel

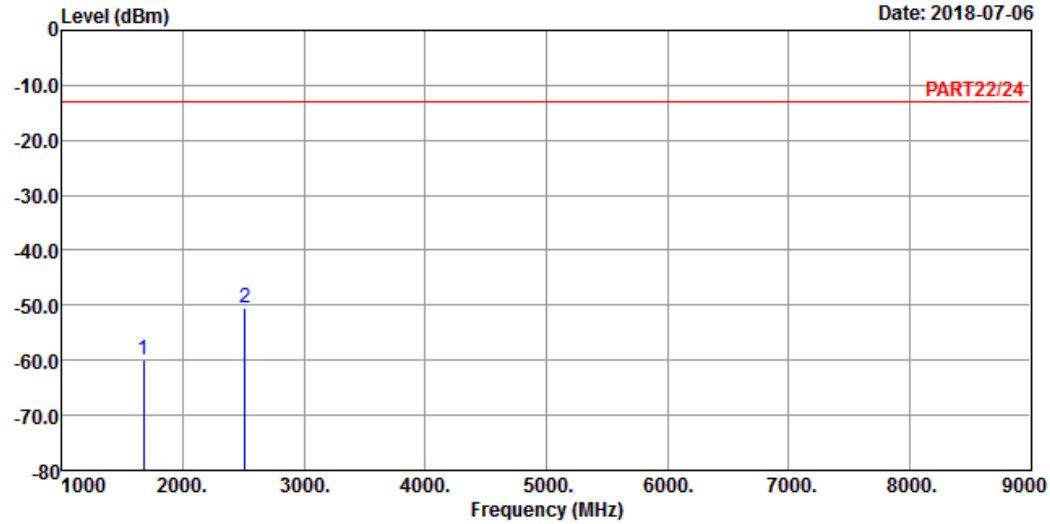
Bureau Veritas Consumer Products Services Ltd.,Taoyuan Branch



Site : 966 Chamber 5
Condition: PART22/24 HORIZONTAL
Remak : Cat-M1 Band 26 QPSK_1.4M Link_M-CH
Tested by: Thomas Wei

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1	1673.00	-59.02	-45.12	-13.00	-46.02	-13.90	Peak
2 pp	2509.50	-48.54	-38.46	-13.00	-35.54	-10.08	Peak

Data: 2

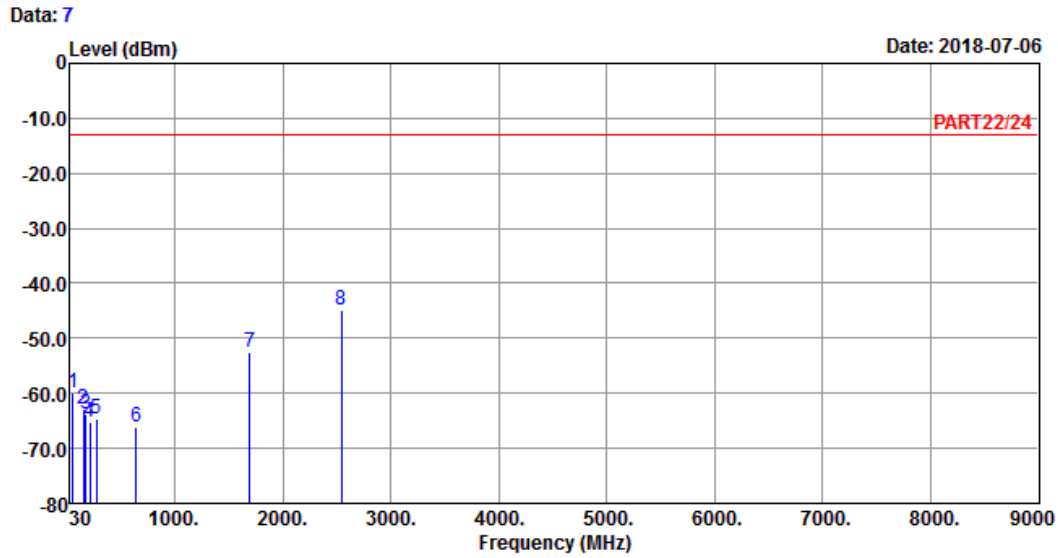


Site : 966 Chamber 5
Condition: PART22/24 VERTICAL
Remak : Cat-M1 Band 26 QPSK_1.4M Link_M-CH
Tested by: Thomas Wei

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1	1673.00	-59.90	-46.00	-13.00	-46.90	-13.90	Peak
2 pp	2509.50	-50.47	-40.39	-13.00	-37.47	-10.08	Peak

High Channel

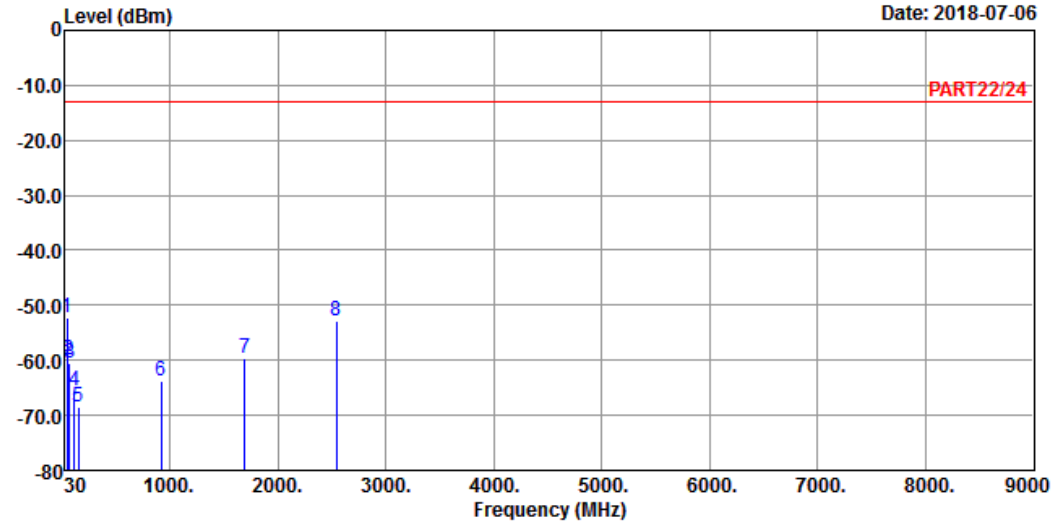
Bureau Veritas Consumer Products Services Ltd.,Taoyuan Branch



Site : 966 Chamber 5
Condition: PART22/24 HORIZONTAL
Remak : Cat-M1 Band 26 QPSK_1.4M Link_H-CH
Tested by: Thomas Wei

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1	54.57	-60.05	-53.98	-13.00	-47.05	-6.07	Peak
2	153.66	-63.00	-56.24	-13.00	-50.00	-6.76	Peak
3	171.75	-63.72	-57.85	-13.00	-50.72	-5.87	Peak
4	215.49	-65.29	-57.89	-13.00	-52.29	-7.40	Peak
5	273.00	-64.78	-58.31	-13.00	-51.78	-6.47	Peak
6	640.20	-65.99	-65.13	-13.00	-52.99	-0.86	Peak
7	1696.60	-52.61	-38.59	-13.00	-39.61	-14.02	Peak
8 pp	2544.90	-44.73	-34.67	-13.00	-31.73	-10.06	Peak

Data: 8

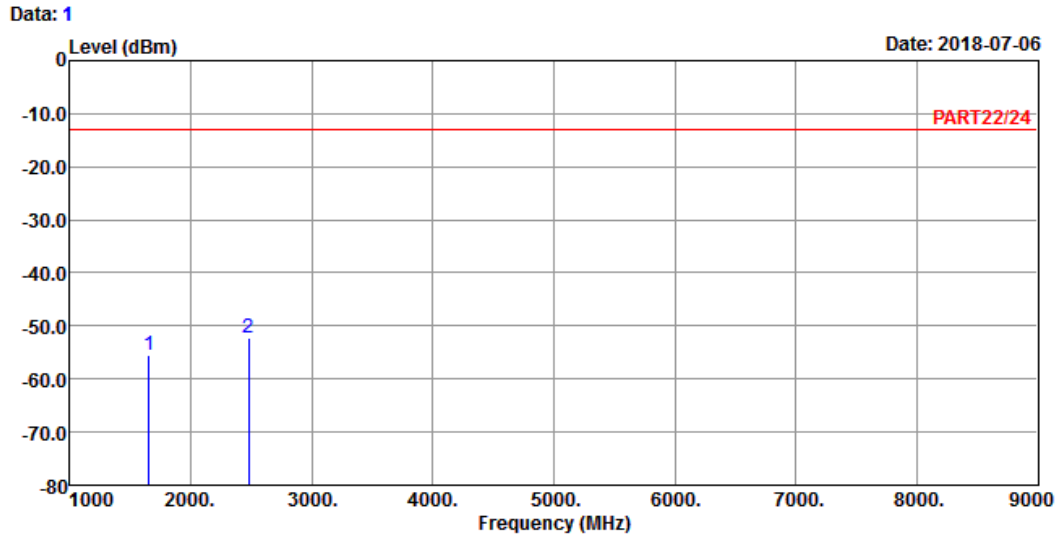


Site : 966 Chamber 5
Condition: PART22/24 VERTICAL
Remak : Cat-M1 Band 26 QPSK_1.4M Link_H-CH
Tested by: Thomas Wei

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1 pp	43.77	-52.14	-50.67	-13.00	-39.14	-1.47	Peak
2	54.30	-59.91	-53.84	-13.00	-46.91	-6.07	Peak
3	68.34	-60.64	-52.32	-13.00	-47.64	-8.32	Peak
4	112.35	-65.41	-55.21	-13.00	-52.41	-10.20	Peak
5	154.74	-68.57	-62.36	-13.00	-55.57	-6.21	Peak
6	919.50	-63.84	-64.89	-13.00	-50.84	1.05	Peak
7	1696.60	-59.51	-45.49	-13.00	-46.51	-14.02	Peak
8	2544.90	-52.70	-42.64	-13.00	-39.70	-10.06	Peak

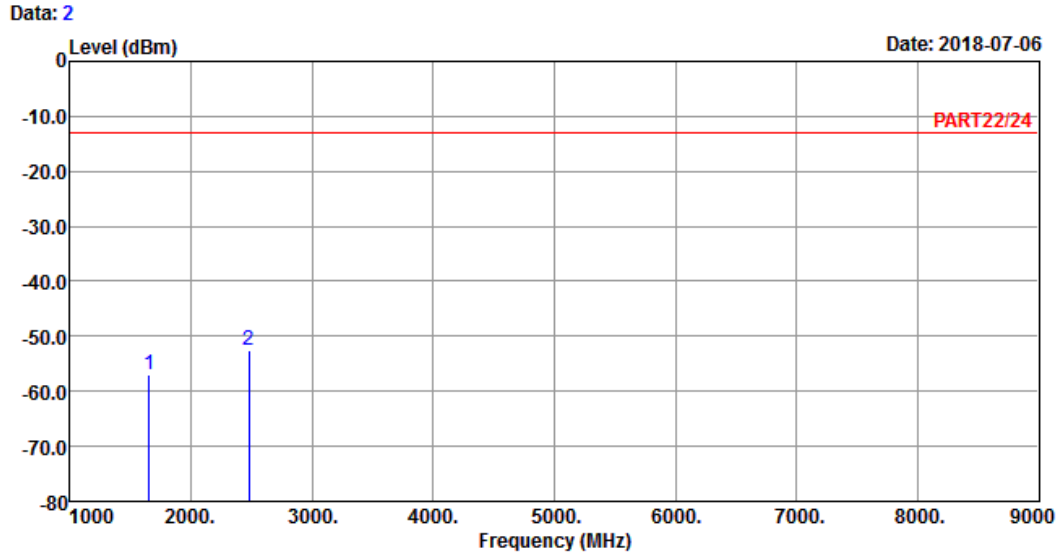
Channel Bandwidth: 5 MHz / QPSK
Low Channel

Bureau Veritas Consumer Products Services Ltd.,Taoyuan Branch



Site : 966 Chamber 5
Condition: PART22/24 HORIZONTAL
Remak : Cat-M1 Band 26 QPSK_5M Link_L-CH
Tested by: Thomas Wei

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1	1653.00	-55.51	-41.74	-13.00	-42.51	-13.77	Peak
2 pp	2479.50	-52.19	-42.16	-13.00	-39.19	-10.03	Peak

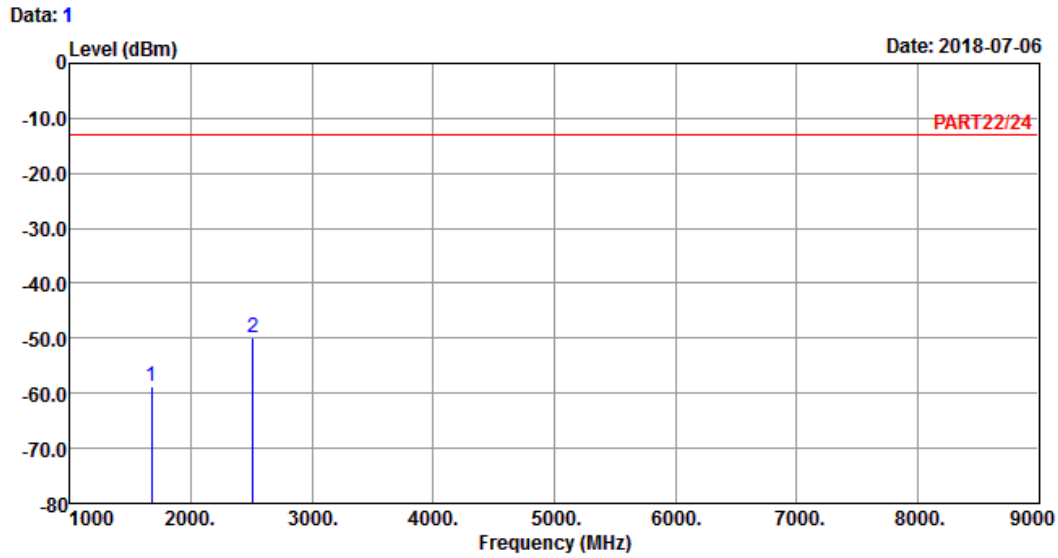


Site : 966 Chamber 5
Condition: PART22/24 VERTICAL
Remak : Cat-M1 Band 26 QPSK_5M Link_L-CH
Tested by: Thomas Wei

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1	1653.00	-56.85	-43.08	-13.00	-43.85	-13.77	Peak
2 pp	2479.50	-52.60	-42.57	-13.00	-39.60	-10.03	Peak

Middle Channel

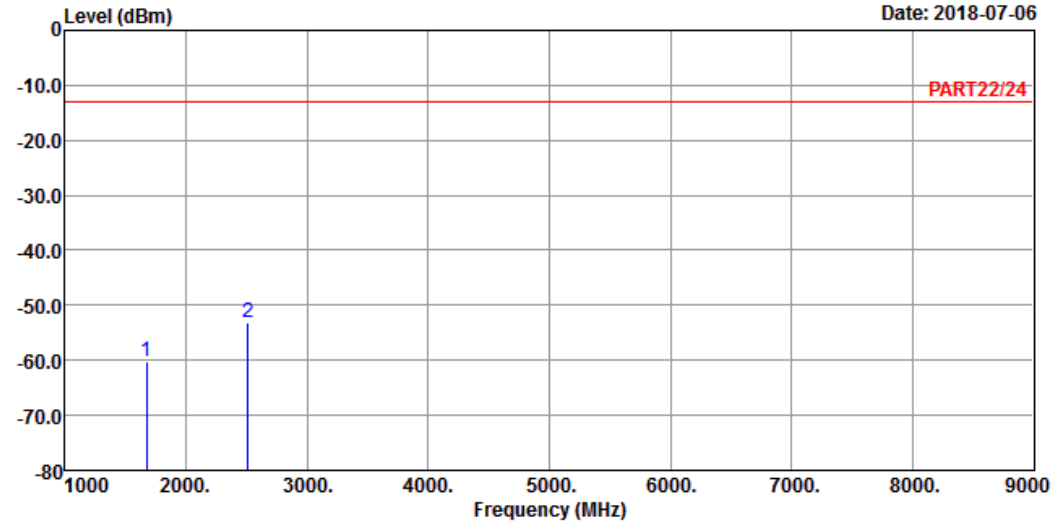
Bureau Veritas Consumer Products Services Ltd.,Taoyuan Branch



Site : 966 Chamber 5
Condition: PART22/24 HORIZONTAL
Remak : Cat-M1 Band 26 QPSK_5M Link_M-CH
Tested by: Thomas Wei

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1	1673.00	-58.88	-44.98	-13.00	-45.88	-13.90	Peak
2 pp	2509.50	-49.92	-39.84	-13.00	-36.92	-10.08	Peak

Data: 2

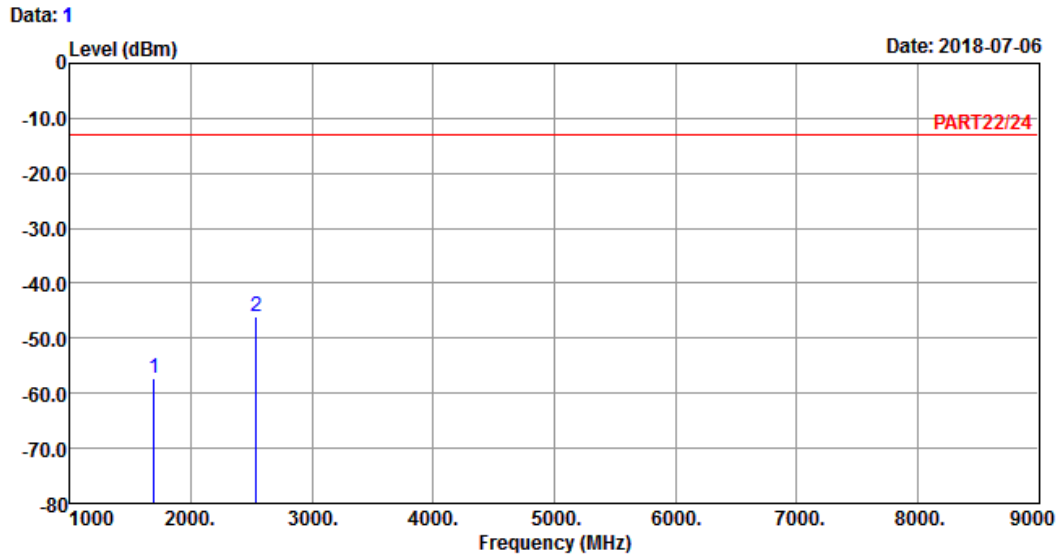


Site : 966 Chamber 5
Condition: PART22/24 VERTICAL
Remak : Cat-M1 Band 26 QPSK_5M Link_M-CH
Tested by: Thomas Wei

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1	1673.00	-60.17	-46.27	-13.00	-47.17	-13.90	Peak
2 pp	2509.50	-53.07	-42.99	-13.00	-40.07	-10.08	Peak

High Channel

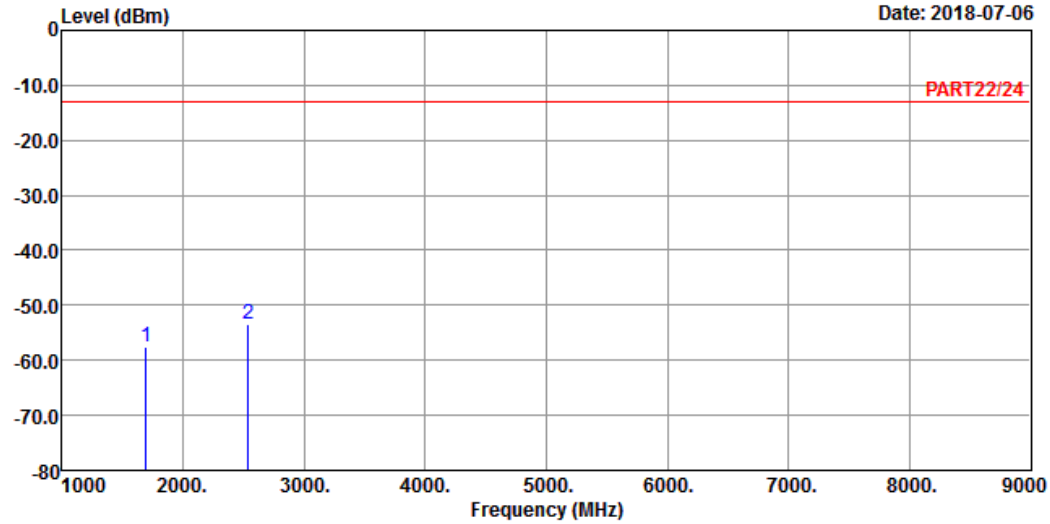
Bureau Veritas Consumer Products Services Ltd.,Taoyuan Branch



Site : 966 Chamber 5
Condition: PART22/24 HORIZONTAL
Remak : Cat-M1 Band 26 QPSK_5M Link_H-CH
Tested by: Thomas Wei

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1	1693.00	-57.24	-43.22	-13.00	-44.24	-14.02	Peak
2 pp	2539.50	-45.99	-35.93	-13.00	-32.99	-10.06	Peak

Data: 2

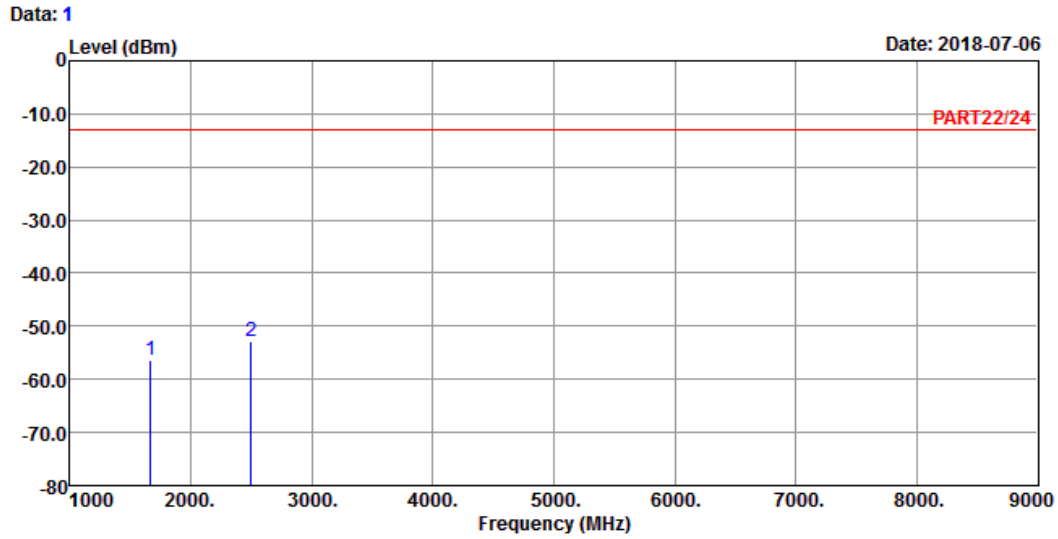


Site : 966 Chamber 5
Condition: PART22/24 VERTICAL
Remak : Cat-M1 Band 26 QPSK_5M Link_H-CH
Tested by: Thomas Wei

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1	1693.00	-57.44	-43.42	-13.00	-44.44	-14.02	Peak
2 pp	2539.50	-53.50	-43.44	-13.00	-40.50	-10.06	Peak

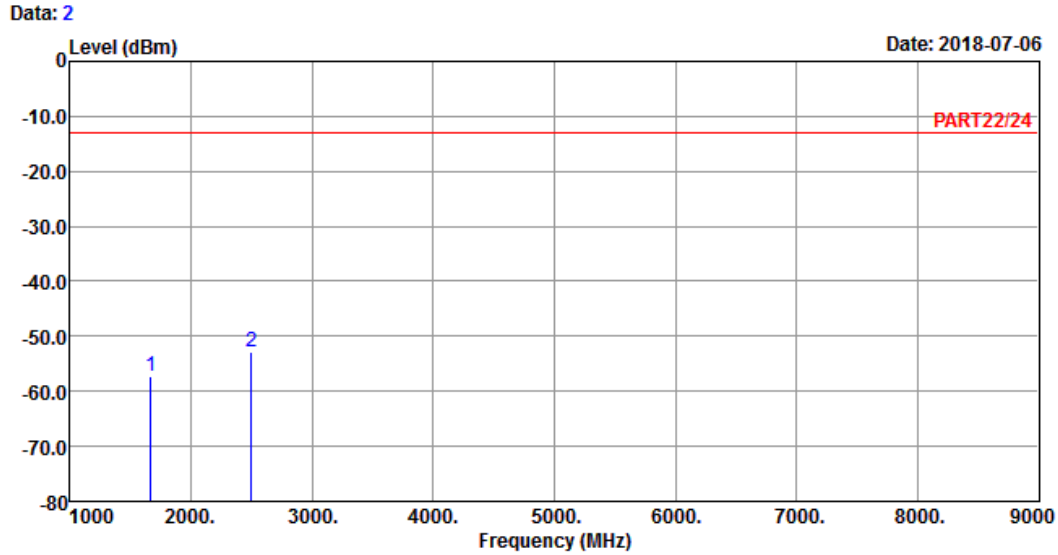
Channel Bandwidth: 15 MHz / QPSK
Low Channel

Bureau Veritas Consumer Products Services Ltd.,Taoyuan Branch



Site : 966 Chamber 5
Condition: PART22/24 HORIZONTAL
Remak : Cat-M1 Band 26 QPSK_15M Link_L-CH
Tested by: Thomas Wei

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1	1663.00	-56.28	-42.51	-13.00	-43.28	-13.77	Peak
2 pp	2494.50	-52.77	-42.74	-13.00	-39.77	-10.03	Peak

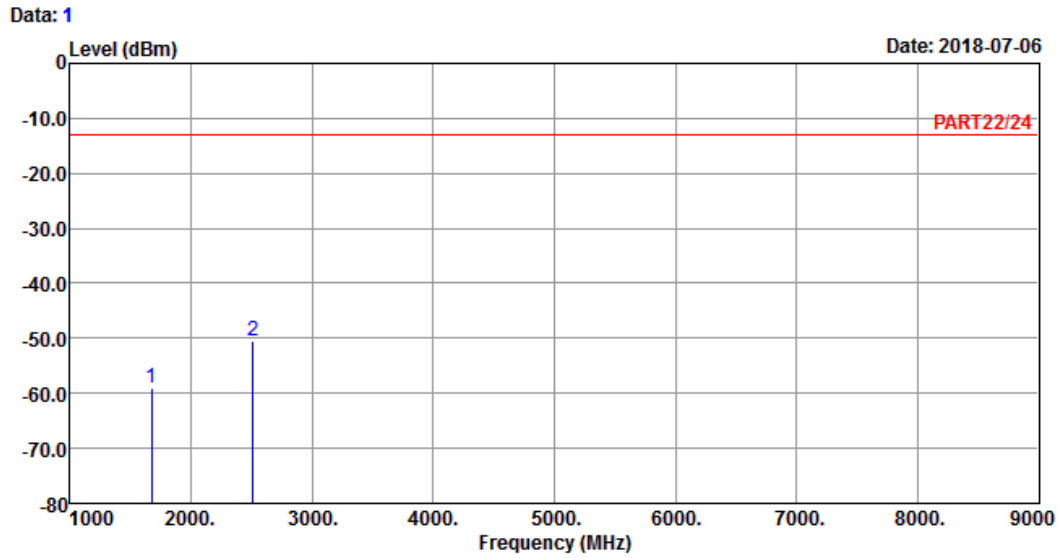


Site : 966 Chamber 5
Condition: PART22/24 VERTICAL
Remak : Cat-M1 Band 26 QPSK_15M Link_L-CH
Tested by: Thomas Wei

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1	1663.00	-57.33	-43.56	-13.00	-44.33	-13.77	Peak
2 pp	2494.50	-52.91	-42.88	-13.00	-39.91	-10.03	Peak

Middle Channel

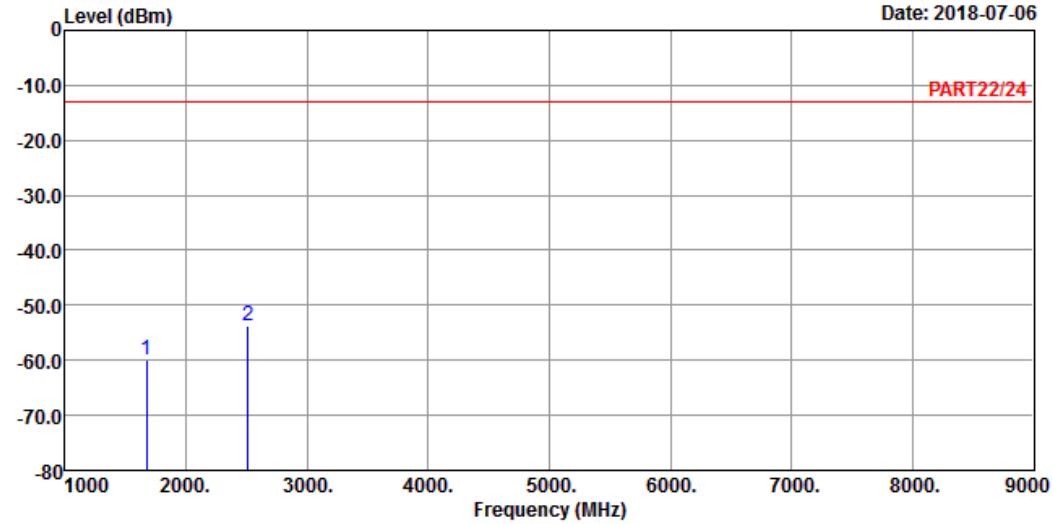
Bureau Veritas Consumer Products Services Ltd.,Taoyuan Branch



Site : 966 Chamber 5
Condition: PART22/24 HORIZONTAL
Remak : Cat-M1 Band 26 QPSK_15M Link_M-CH
Tested by: Thomas Wei

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1	1673.00	-59.11	-45.21	-13.00	-46.11	-13.90	Peak
2 pp	2509.50	-50.34	-40.26	-13.00	-37.34	-10.08	Peak

Data: 2

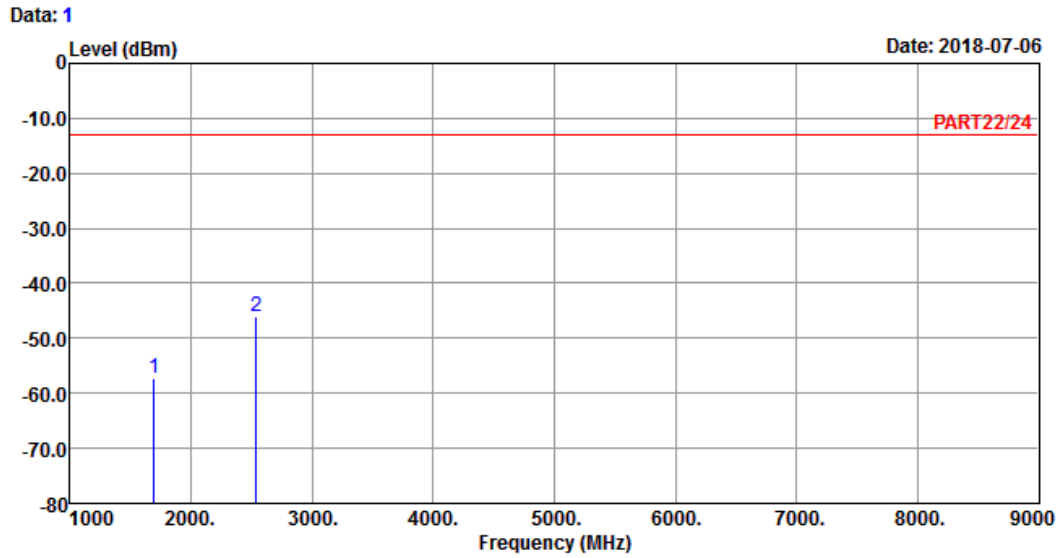


Site : 966 Chamber 5
Condition: PART22/24 VERTICAL
Remak : Cat-M1 Band 26 QPSK_15M Link_M-CH
Tested by: Thomas Wei

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1	1673.00	-59.88	-45.98	-13.00	-46.88	-13.90	Peak
2 pp	2509.50	-53.72	-43.64	-13.00	-40.72	-10.08	Peak

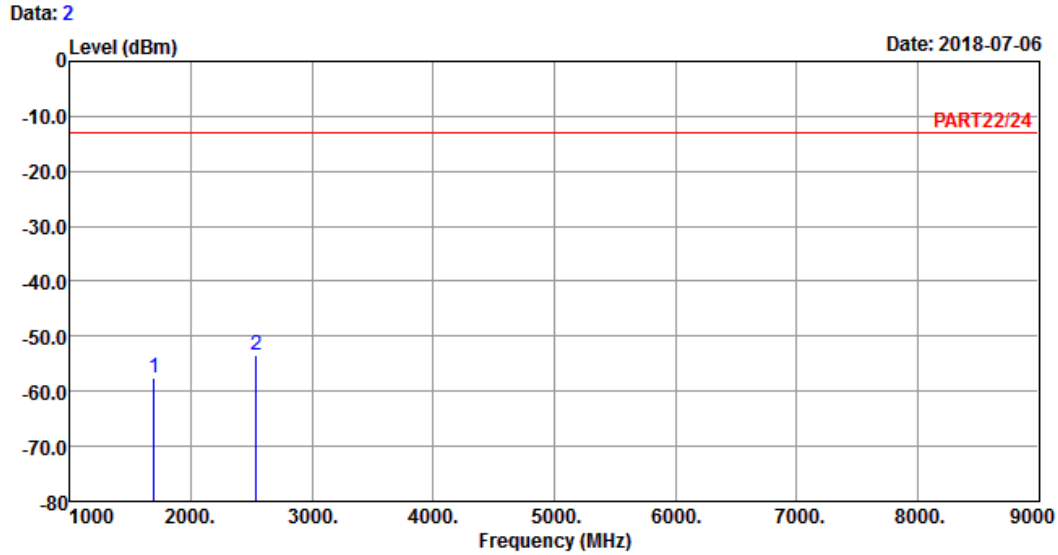
High Channel

Bureau Veritas Consumer Products Services Ltd.,Taoyuan Branch



Site : 966 Chamber 5
Condition: PART22/24 HORIZONTAL
Remak : Cat-M1 Band 26 QPSK_5M Link_H-CH
Tested by: Thomas Wei

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1	1693.00	-57.24	-43.22	-13.00	-44.24	-14.02	Peak
2 pp	2539.50	-45.99	-35.93	-13.00	-32.99	-10.06	Peak



Site : 966 Chamber 5
Condition: PART22/24 VERTICAL
Remak : Cat-M1 Band 26 QPSK_5M Link_H-CH
Tested by: Thomas Wei

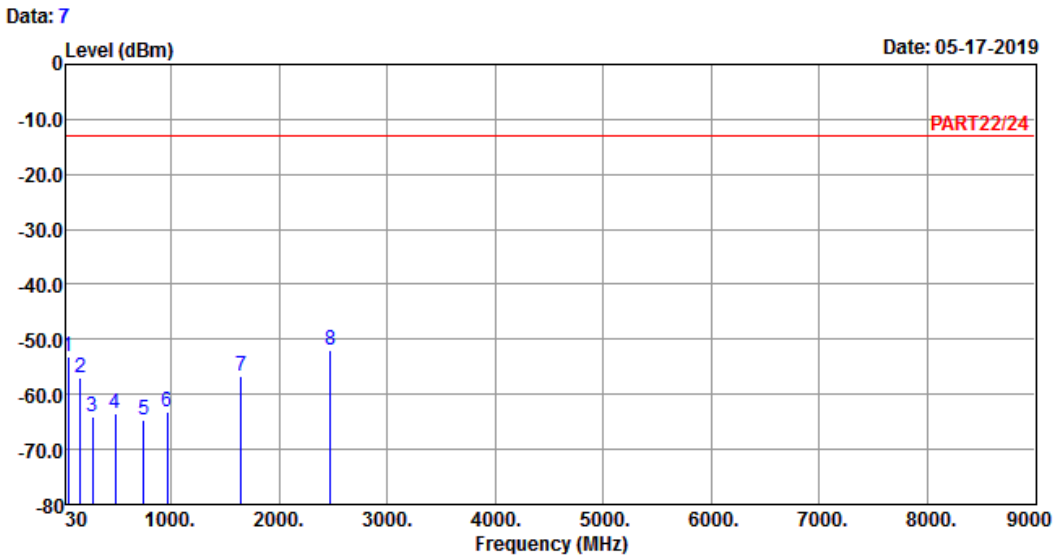
	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1	1693.00	-57.44	-43.42	-13.00	-44.44	-14.02	Peak
2 pp	2539.50	-53.50	-43.44	-13.00	-40.50	-10.06	Peak

NB-IoT

LTE Band 5

Low Channel

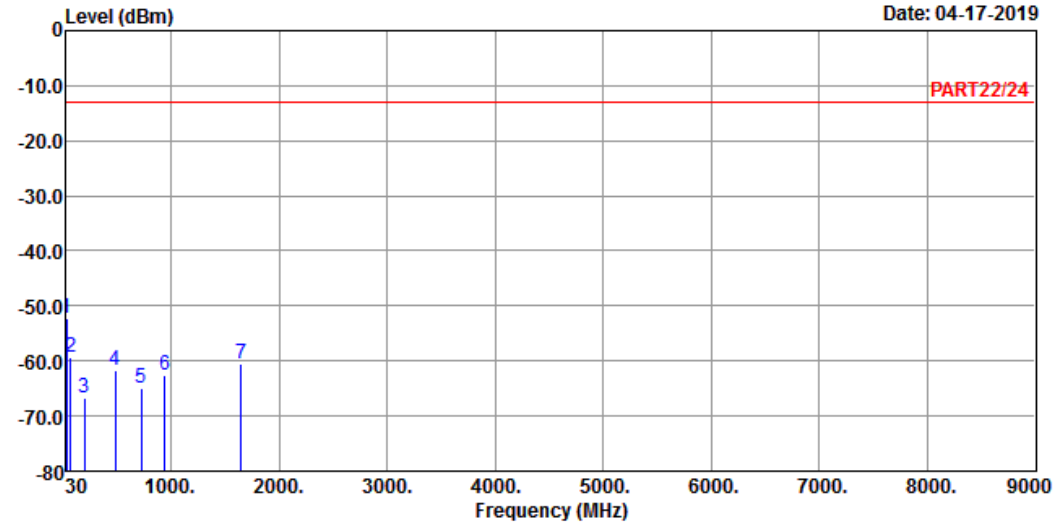
Bureau Veritas Consumer Products Services Ltd.,Taoyuan Branch



Site : 966 Chamber 5
Condition: PART22/24 HORIZONTAL
Remak : NB-IOT Band 5 Stand-alone_Link_L-Ch
Tested by: Thomas Wei

	Freq	Level	Read Level	Limit Line	Factor	Over Limit	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1	43.58	-53.23	-51.76	-13.00	-1.47	-40.23	Peak
2	160.95	-57.05	-52.14	-13.00	-4.91	-44.05	Peak
3	273.47	-63.93	-57.46	-13.00	-6.47	-50.93	Peak
4	481.05	-63.41	-58.44	-13.00	-4.97	-50.41	Peak
5	745.86	-64.71	-65.51	-13.00	0.80	-51.71	Peak
6	961.20	-63.18	-65.39	-13.00	2.21	-50.18	Peak
7	1648.20	-56.68	-42.94	-13.00	-13.74	-43.68	Peak
8 pp	2472.30	-51.88	-41.86	-13.00	-10.02	-38.88	Peak

Data: 8

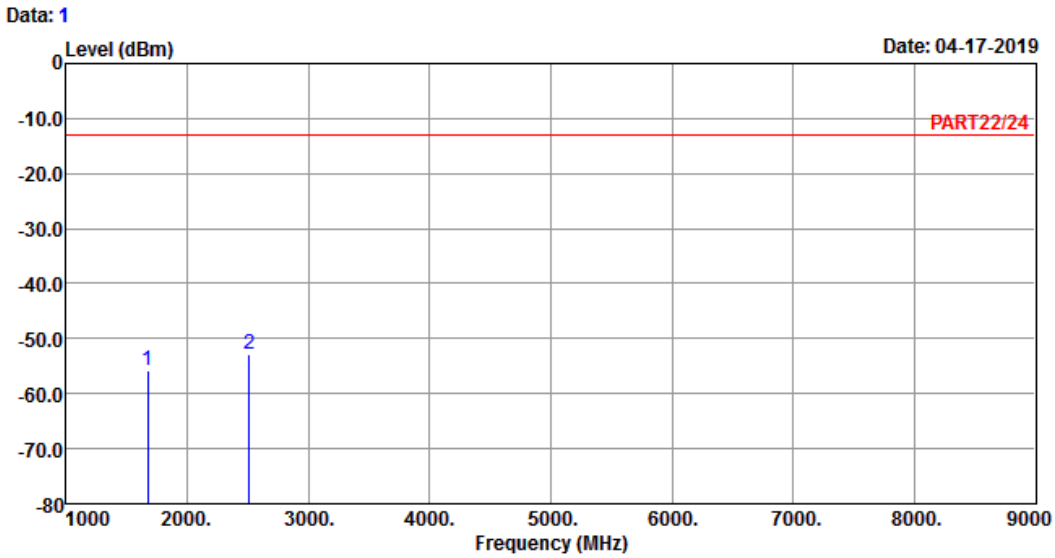


Site : 966 Chamber 5
Condition: PART22/24 VERTICAL
Remak : NB-IOT Band 5 Stand-alone_Link_L-Ch
Tested by: Thomas Wei

	Freq	Level	Read Level	Limit Line	Factor	Over Limit	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1 pp	30.97	-52.24	-52.13	-13.00	-0.11	-39.24	Peak
2	68.80	-59.44	-51.12	-13.00	-8.32	-46.44	Peak
3	196.84	-66.64	-58.90	-13.00	-7.74	-53.64	Peak
4	481.05	-61.65	-56.68	-13.00	-4.97	-48.65	Peak
5	724.52	-64.90	-65.28	-13.00	0.38	-51.90	Peak
6	941.80	-62.70	-64.31	-13.00	1.61	-49.70	Peak
7	1648.20	-60.65	-46.91	-13.00	-13.74	-47.65	Peak

Middle Channel

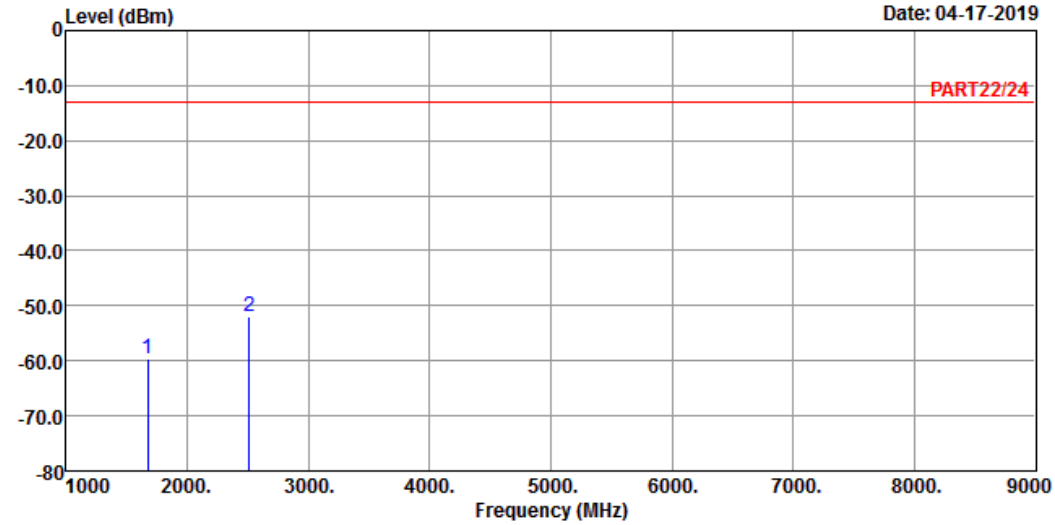
Bureau Veritas Consumer Products Services Ltd.,Taoyuan Branch



Site : 966 Chamber 5
Condition: PART22/24 HORIZONTAL
Remak : NB-IOT Band 5 Stand-alone_Link_M-Ch
Tested by: Thomas Wei

	Freq	Level	Read Level	Limit Line	Factor	Over Limit	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1	1673.00	-55.81	-41.91	-13.00	-13.90	-42.81	Peak
2 pp	2509.50	-52.80	-42.72	-13.00	-10.08	-39.80	Peak

Data: 2

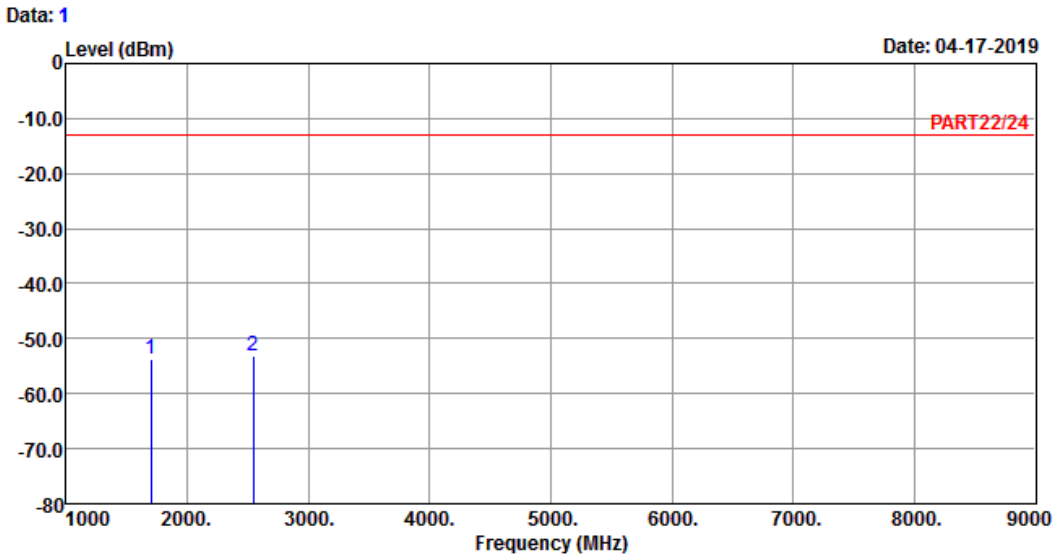


Site : 966 Chamber 5
Condition: PART22/24 VERTICAL
Remak : NB-IOT Band 5 Stand-alone_Link_M-Ch
Tested by: Thomas Wei

	Freq	Level	Read Level	Limit Line	Factor	Over Limit	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1	1673.00	-59.56	-45.66	-13.00	-13.90	-46.56	Peak
2 pp	2509.50	-52.09	-42.01	-13.00	-10.08	-39.09	Peak

High Channel

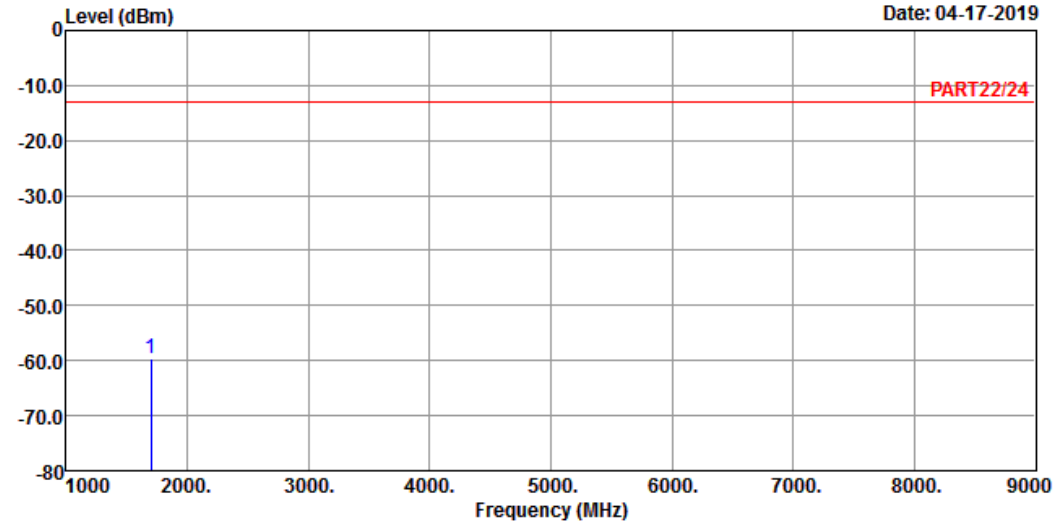
Bureau Veritas Consumer Products Services Ltd.,Taoyuan Branch



Site : 966 Chamber 5
Condition: PART22/24 HORIZONTAL
Remak : NB-IOT Band 5 Stand-alone_Link_H-Ch
Tested by: Thomas Wei

	Freq	Level	Read Level	Limit Line	Factor	Over Limit	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1	1697.80	-53.86	-39.81	-13.00	-14.05	-40.86	Peak
2 pp	2546.70	-53.15	-43.09	-13.00	-10.06	-40.15	Peak

Data: 2

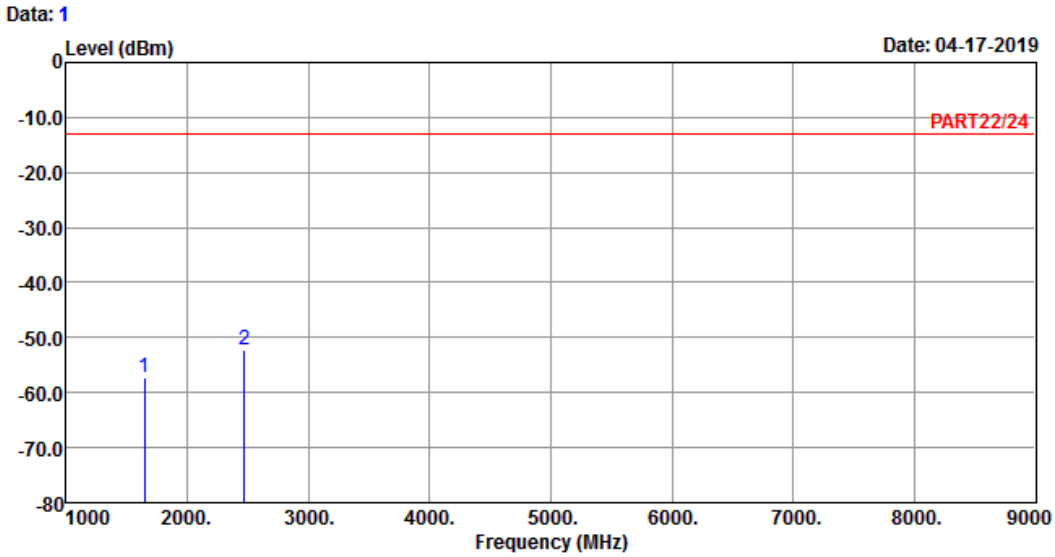


Site : 966 Chamber 5
Condition: PART22/24 VERTICAL
Remak : NB-IOT Band 5 Stand-alone_Link_H-Ch
Tested by: Thomas Wei

	Freq	Level	Read Level	Limit Line	Factor	Over Limit	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1 pp	1697.80	-59.49	-45.44	-13.00	-14.05	-46.49	Peak

LTE Band 26
Low Channel

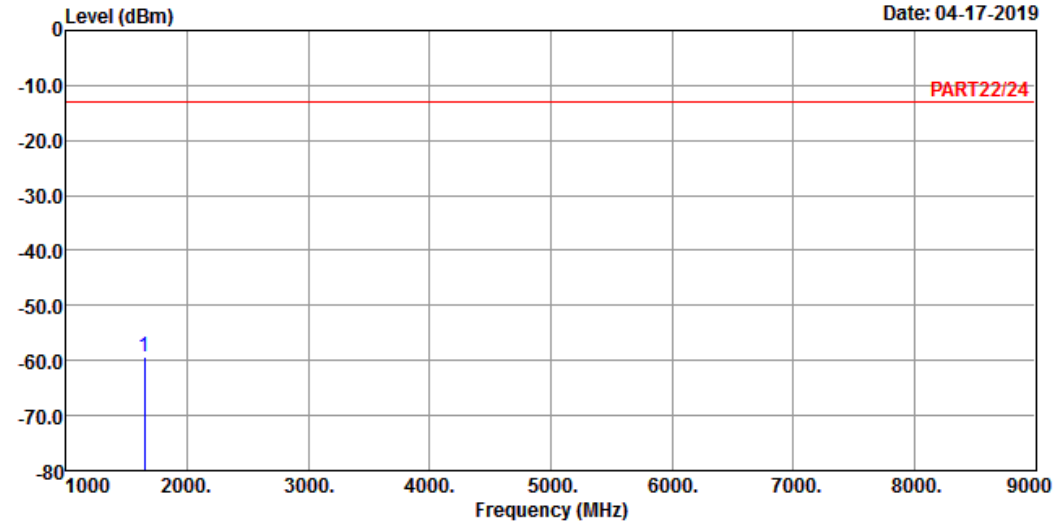
Bureau Veritas Consumer Products Services Ltd.,Taoyuan Branch



Site : 966 Chamber 5
Condition: PART22/24 HORIZONTAL
Remak : NB-IOT Band 26 Stand-alone_Link_L-Ch
Tested by: Thomas Wei

	Freq	Level	Read Level	Limit Line	Factor	Over Limit	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1	1648.20	-57.18	-43.44	-13.00	-13.74	-44.18	Peak
2 pp	2472.30	-52.11	-42.09	-13.00	-10.02	-39.11	Peak

Data: 2

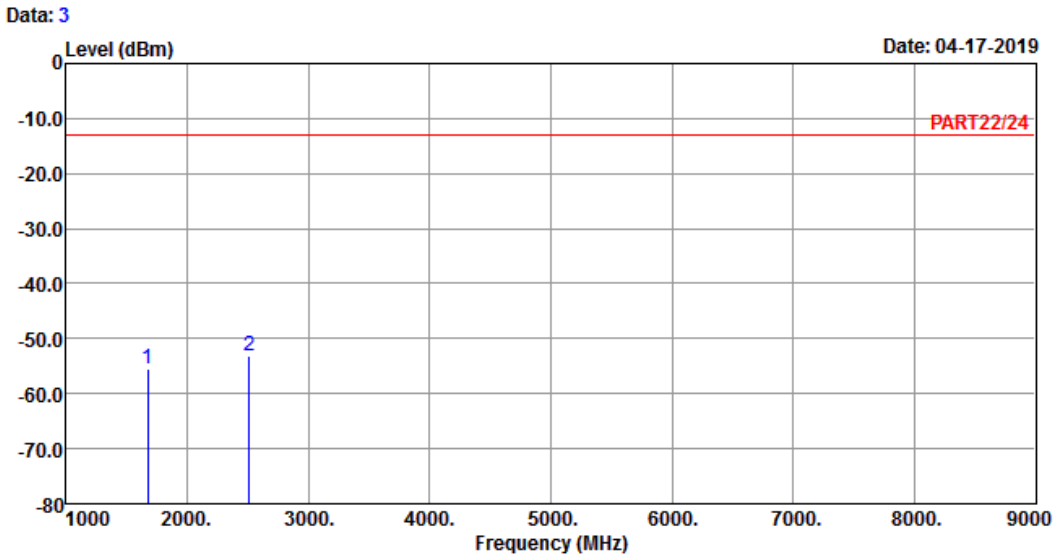


Site : 966 Chamber 5
Condition: PART22/24 VERTICAL
Remak : NB-IOT Band 26 Stand-alone_Link_L-Ch
Tested by: Thomas Wei

	Freq	Level	Read Level	Limit Line	Factor	Over Limit	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1 pp	1648.20	-59.33	-45.59	-13.00	-13.74	-46.33	Peak

Middle Channel

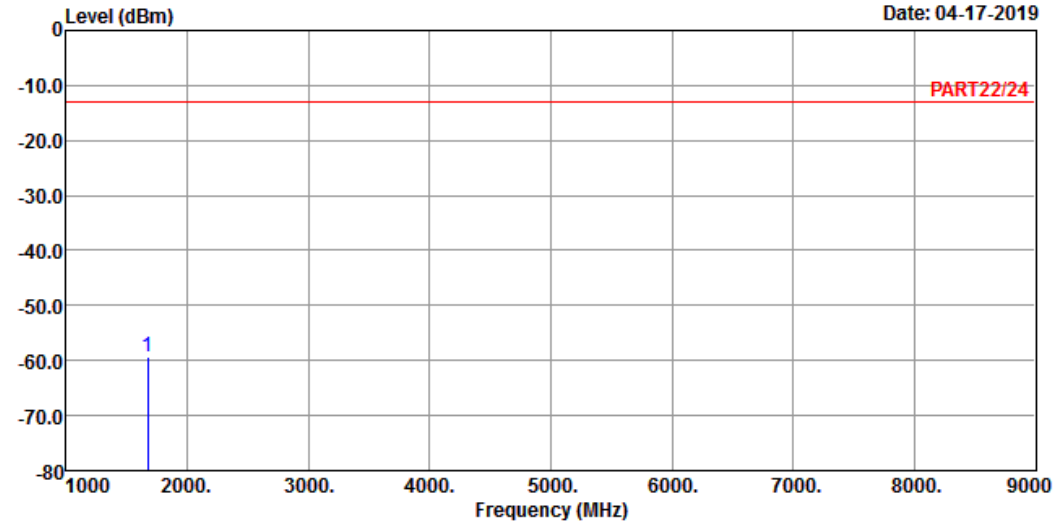
Bureau Veritas Consumer Products Services Ltd.,Taoyuan Branch



Site : 966 Chamber 5
Condition: PART22/24 HORIZONTAL
Remak : NB-IOT Band 26 Stand-alone_Link_M-Ch
Tested by: Thomas Wei

	Freq	Level	Read Level	Limit Line	Factor	Over Limit	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1	1673.00	-55.48	-41.58	-13.00	-13.90	-42.48	Peak
2 pp	2509.50	-53.18	-43.10	-13.00	-10.08	-40.18	Peak

Data: 4

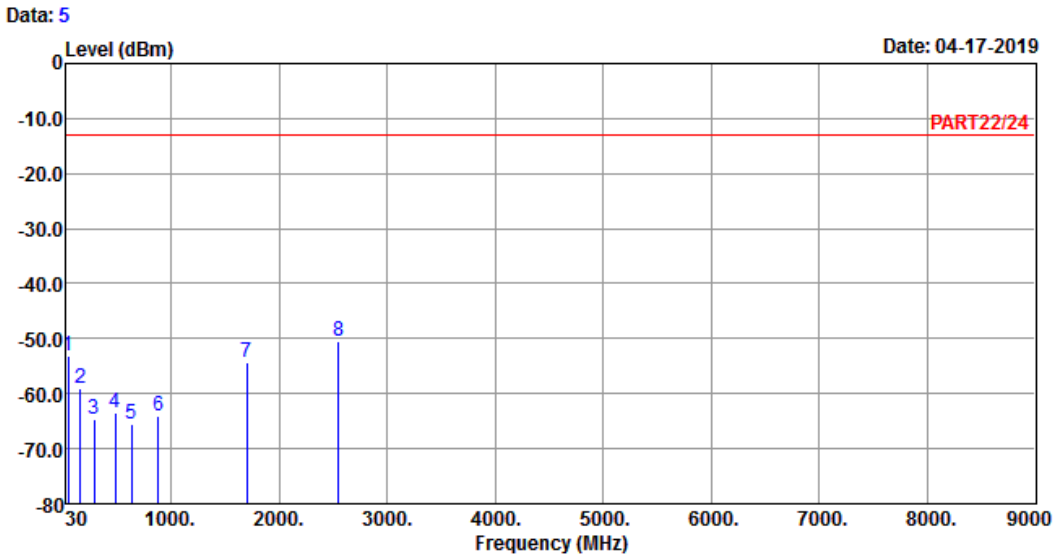


Site : 966 Chamber 5
Condition: PART22/24 VERTICAL
Remak : NB-IOT Band 26 Stand-alone_Link_M-Ch
Tested by: Thomas Wei

	Freq	Level	Read Level	Limit Line	Factor	Over Limit	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1 pp	1673.00	-59.19	-45.29	-13.00	-13.90	-46.19	Peak

High Channel

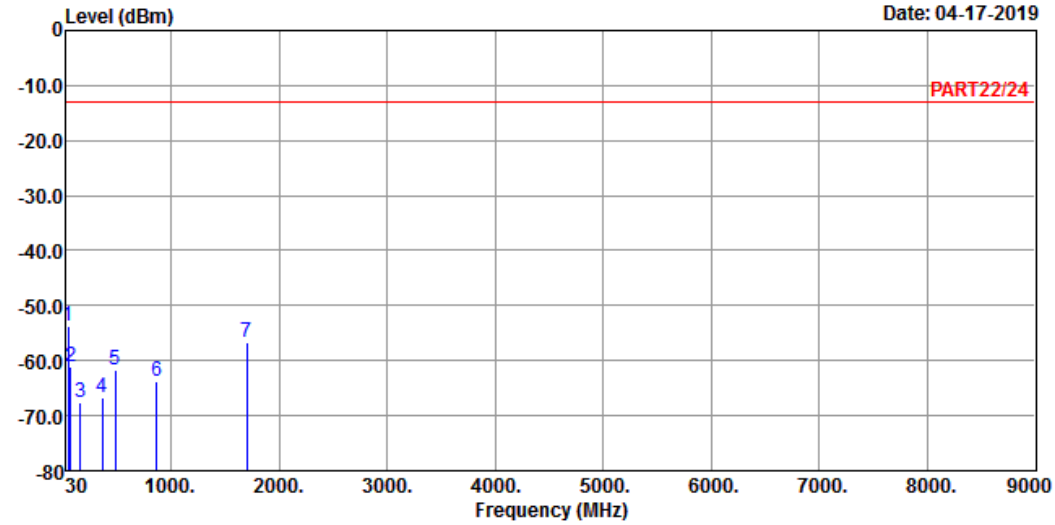
Bureau Veritas Consumer Products Services Ltd.,Taoyuan Branch



Site : 966 Chamber 5
Condition: PART22/24 HORIZONTAL
Remak : NB-IOT Band 26 Stand-alone_Link_H-Ch
Tested by: Thomas Wei

	Freq	Level	Read Level	Limit Line	Factor	Over Limit	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1	43.58	-53.20	-51.73	-13.00	-1.47	-40.20	Peak
2	162.89	-58.92	-53.87	-13.00	-5.05	-45.92	Peak
3	286.08	-64.75	-58.02	-13.00	-6.73	-51.75	Peak
4	481.05	-63.52	-58.55	-13.00	-4.97	-50.52	Peak
5	635.28	-65.42	-64.57	-13.00	-0.85	-52.42	Peak
6	882.63	-64.17	-64.64	-13.00	0.47	-51.17	Peak
7	1697.80	-54.18	-40.13	-13.00	-14.05	-41.18	Peak
8 pp	2546.70	-50.44	-40.38	-13.00	-10.06	-37.44	Peak

Data: 6



Site : 966 Chamber 5
Condition: PART22/24 VERTICAL
Remak : NB-IOT Band 26 Stand-alone_Link_H-Ch
Tested by: Thomas Wei

	Freq	Level	Read Level	Limit Line	Factor	Over Limit	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1 pp	43.58	-53.65	-52.18	-13.00	-1.47	-40.65	Peak
2	68.80	-61.04	-52.72	-13.00	-8.32	-48.04	Peak
3	161.92	-67.61	-62.63	-13.00	-4.98	-54.61	Peak
4	360.77	-66.69	-60.51	-13.00	-6.18	-53.69	Peak
5	482.02	-61.80	-56.85	-13.00	-4.95	-48.80	Peak
6	866.14	-63.66	-64.04	-13.00	0.38	-50.66	Peak
7	1697.80	-56.71	-42.66	-13.00	-14.05	-43.71	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.

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