FCC Test Report

(PART 22)

Report No.:	RF180920C21-7
FCC ID:	A4RG020E
Test Model:	G020E
Received Date:	Sep. 21, 2018
Test Date:	Oct. 08, 2018 ~ Nov. 10, 2018
Issued Date:	Dec. 27, 2018
Applicant:	Google LLC
Address:	1600 Amphitheatre Parkway, Mountain View, CA 94043, USA
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 (1):	No. 19, Hwa Ya 2nd Rd, Wen Hwa Vil, Kwei Shan Dist., Taoyuan City 33383, Taiwan (R.O.C)
Test Location (2):	B2F., No.215, Sec. 3, Beixin Rd., Xindian Dist., New Taipei City 231, Taiwan, R.O.C
FCC Registration / Designation Number:	427177 / TW0011

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Release Control Record

Issue No.	Description	Date Issued
RF180920C21-7	Original Release	Dec. 27, 2018

1 Certificate of Conformity

Product:	Smartphone
Test Model:	G020E
Sample Status:	Identical Prototype
Applicant:	Google LLC
Test Date:	Oct. 08, 2018 ~ Nov. 10, 2018
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:** Dec. 27, 2018

Ivonne Wu / Supervisor

Approved by : _____ , **Date:** Dec. 27, 2018

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.
---	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 -36.78 dB at 1673.00 MHz.

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	Expended Uncertainty (k=2) (±)
Radiated Emissions up to 1 GHz	30 MHz ~ 200 MHz	2.0153 dB
	200 MHz ~ 1000 MHz	2.0224 dB
Radiated Emissions above 1 GHz	1 GHz ~ 18 GHz	1.0121 dB
	18 GHz ~ 40 GHz	1.1508 dB

2.2 Test Site and Instruments

Description & Manufacturer	Model No.	Serial No.	Date of Calibration	Due Date of Calibration
Test Receiver Agilent Technologies	N9038A	MY52260177	Aug. 20, 2018	Aug. 19, 2019
Spectrum Analyzer ROHDE & SCHWARZ	FSU43	101261	Jan. 11, 2018	Jan. 10, 2019
Spectrum Analyzer ROHDE & SCHWARZ	FSW26	102023	Oct. 12, 2017	Oct. 11, 2018
			Oct. 11, 2018	Oct. 10, 2019
BILOG Antenna SCHWARZBECK	VULB9168	9168-616	Dec. 14, 2017	Dec. 13, 2018
HORN Antenna ETS-Lindgren	3117	00143293	Dec. 13, 2017	Dec. 12, 2018
HORN Antenna SCHWARZBECK	BBHA 9120D	9120D-969	Dec. 12, 2017	Dec. 11, 2018
Fixed Attenuator Mini-Circuits	MDCS18N-10	MDCS18N-10-01	Apr. 16, 2018	Apr. 15, 2019
MXG Vector signal generator Agilent	N5182B	MY53052658	May 24, 2018	May 23, 2019
Preamplifier Agilent	310N	187226	Jun. 19, 2018	Jun. 18, 2019
Preamplifier Agilent	83017A	MY39501357	Jun. 19, 2018	Jun. 18, 2019
RF signal cable ETS-LINDGREN	5D-FB	Cable-CH1-01(RFC-SMS-100-SMS-120+RFC-SMS-100-SMS-400)	Jun. 19, 2018	Jun. 18, 2019
RF signal cable ETS-LINDGREN	8D-FB	Cable-CH1-02(RFC-SMS-100-SMS-24)	Jun. 19, 2018	Jun. 18, 2019
Boresight Antenna Fixture	FBA-01	FBA-SIP01	NA	NA
Software BV ADT	E3 8.130425b	NA	NA	NA
Antenna Tower MF	NA	NA	NA	NA
Turn Table MF	NA	NA	NA	NA
Antenna Tower &Turn Table Controller MF	MF-7802	NA	NA	NA
Universal Radio Communication Tester R&S	CMU200	123112	Dec. 28, 2017	Dec. 27, 2018
Radio Communication Analyzer Anritsu	MT8820C	6201300640	Aug. 16, 2017	Aug. 15, 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 HsinTien Chamber 1.
3. The horn antenna and preamplifier (model: 83017A) are used only for the measurement of emission frequency above 1 GHz if tested.
4. The IC Site Registration No. is 7450I-1.

3 General Information

3.1 General Description of EUT

Product	Smartphone	
Test Model	G020E	
Status of EUT	Identical Prototype	
Power Supply Rating	3.85 Vdc (Li-ion battery) 5.0 Vdc or 9 Vdc (adapter) 5.0 Vdc (host equipment)	
Modulation Type	GSM/GPRS	GMSK
	EDGE	GMSK, 8PSK
	WCDMA	QPSK
	CDMA	QPSK, OPQKS, HPSK
	LTE	QPSK, 16QAM, 64QAM
Frequency Range	GSM/GPRS/EDGE	824.2 ~ 848.8 MHz
	WCDMA	826.4 ~ 846.6 MHz
	CDMA	824.7 ~ 848.31 MHz
	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
Max. ERP Power	GSM/GPRS	407.19 mW
	EDGE	101.34 mW
	WCDMA	40.72 mW
	CDMA	51.78 mW
	LTE 5 (Channel Bandwidth: 1.4 MHz)	55.44 mW
	LTE 5 (Channel Bandwidth: 3 MHz)	55.95 mW
	LTE 5 (Channel Bandwidth: 5 MHz)	56.47 mW
	LTE 5 (Channel Bandwidth: 10 MHz)	56.99 mW
	LTE 26 (Channel Bandwidth: 1.4 MHz)	50.33 mW
	LTE 26 (Channel Bandwidth: 3 MHz)	50.79 mW
	LTE 26 (Channel Bandwidth: 5 MHz)	51.14 mW
	LTE 26 (Channel Bandwidth: 10 MHz)	51.50 mW
	LTE 26 (Channel Bandwidth: 15 MHz)	51.98 mW

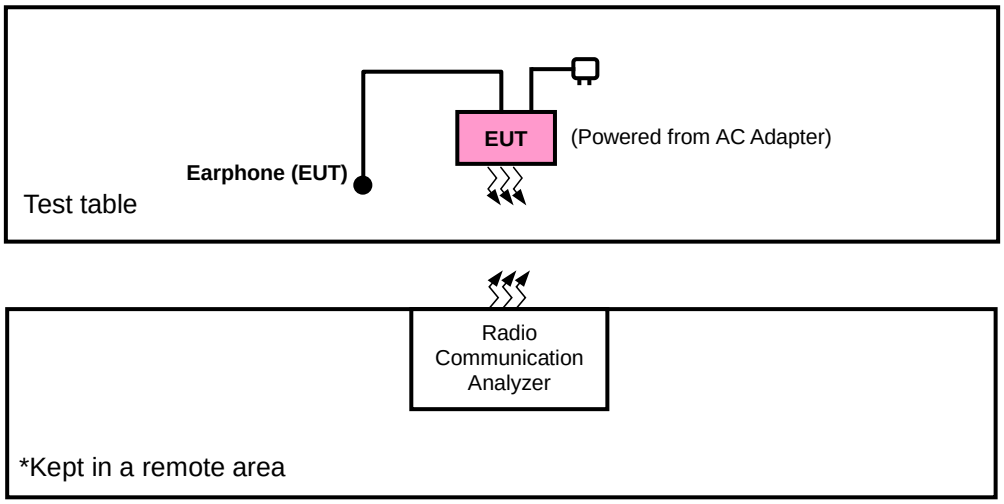
Emission Designator	GSM/GPRS	245KGXW
	EDGE	247KG7W
	WCDMA	4M16F9W
	CDMA	1M28F9W
	LTE 5 (Channel Bandwidth: 1.4 MHz)	1M09W7D
	LTE 5 (Channel Bandwidth: 3 MHz)	2M70G7D
	LTE 5 (Channel Bandwidth: 5 MHz)	4M50W7D
	LTE 5 (Channel Bandwidth: 10 MHz)	8M98W7D
	LTE 26 (Channel Bandwidth: 1.4 MHz)	1M09W7D
	LTE 26 (Channel Bandwidth: 3 MHz)	2M70G7D
	LTE 26 (Channel Bandwidth: 5 MHz)	4M50W7D
	LTE 26 (Channel Bandwidth: 10 MHz)	8M98W7D
	LTE 26 (Channel Bandwidth: 15 MHz)	13M5G7D
Antenna Type	PIFA Antenna	
Antenna Gain	GSM/GPRS	-5.1 dBi (Main) / -5 dBi (Aux.)
	EDGE	-5.1 dBi (Main) / -5 dBi (Aux.)
	WCDMA	-5.1 dBi (Main) / -5 dBi (Aux.)
	CDMA	-5.5 dBi (Main) / -5.3 dBi (Aux.)
	LTE 5	-5.1 dBi (Main) / -5 dBi (Aux.)
	LTE 26	-5.5 dBi (Main) / -5.3 dBi (Aux.)
Accessory Device	Refer to Note as below	
Data Cable Supplied	Refer to Note as below	

Note:

1. There’re 2 configurations for the EUT listed as below.
   Main Sample: EUT + Battery 1
   2nd Sample: EUT + Battery 2
   - ✧ After pre-tested with the EUT, only the worst configuration (main sample) was chosen for the final test.
2. The EUT’s accessories list refers to Ext. Pho.
3. 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

<Radiated Emission Test>



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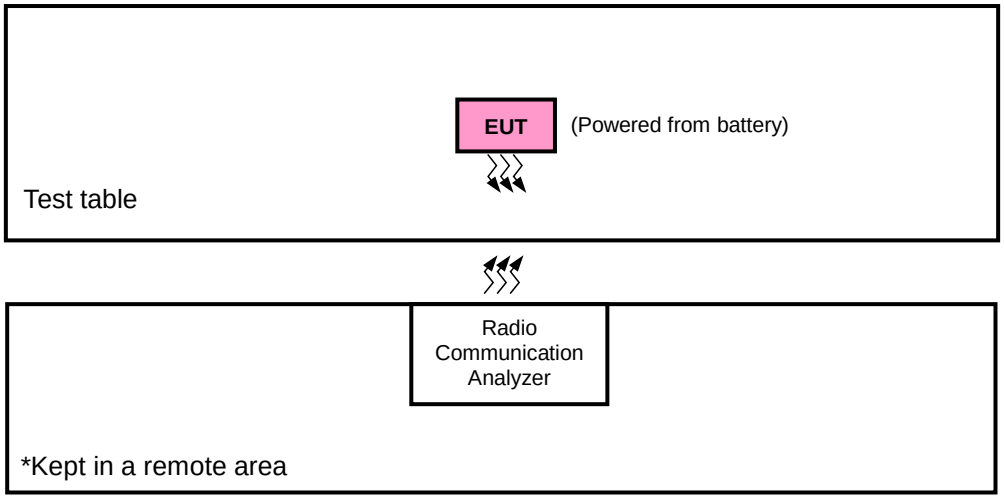


3.2.1 Description of Support Units

The EUT has been tested as an independent unit together with other necessary accessories or support units.

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
GSM	X-plane	X-axis
EDGE	X-plane	X-axis
WCDMA	X-plane	X-axis
CDMA	X-plane	Y-axis
LTE Band 5	X-plane	X-axis
LTE Band 26	X-plane	X-axis

GSM

EUT Configure Mode	Test Item	Available Channel	Tested Channel	Mode
-	ERP	128 to 251	128, 189, 251	GSM, EDGE
-	Modulation Characteristics	128 to 251	189	GSM, EDGE
-	Frequency Stability	128 to 251	128, 251	GSM, EDGE
-	Occupied Bandwidth	128 to 251	128, 189, 251	GSM, EDGE
-	Band Edge	128 to 251	128, 251	GSM, EDGE
-	Peak to Average Ratio	128 to 251	128, 189, 251	GSM, EDGE
-	Conducted Emission	128 to 251	128, 189, 251	GSM, EDGE
-	Radiated Emission	128 to 251	128, 189, 251	GSM, EDGE

WCDMA

EUT Configure Mode	Test Item	Available Channel	Tested Channel	Mode
-	ERP	4132 to 4233	4132, 4182, 4233	WCDMA
-	Modulation Characteristics	4132 to 4233	4182	WCDMA
-	Frequency Stability	4132 to 4233	4132, 4233	WCDMA
-	Occupied Bandwidth	4132 to 4233	4132, 4182, 4233	WCDMA
-	Band Edge	4132 to 4233	4132, 4233	WCDMA
-	Peak to Average Ratio	4132 to 4233	4132, 4182, 4233	WCDMA
-	Conducted Emission	4132 to 4233	4132, 4182, 4233	WCDMA
-	Radiated Emission	4132 to 4233	4132, 4182, 4233	WCDMA

CDMA

EUT Configure Mode	Test Item	Available Channel	Tested Channel	Mode
-	ERP	1013 to 777	1013, 384, 777	1xRTT
-	Modulation Characteristics	1013 to 777	384	1xRTT
-	Frequency Stability	1013 to 777	1013, 777	1xRTT
-	Occupied Bandwidth	1013 to 777	1013, 384, 777	1xRTT
-	Band Edge	1013 to 777	1013, 777	1xRTT
-	Peak to Average Ratio	1013 to 777	1013, 384, 777	1xRTT
-	Conducted Emission	1013 to 777	1013, 384, 777	1xRTT
-	Radiated Emission	1013 to 777	1013, 384, 777	1xRTT

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, 64QAM	1 RB / 0 RB Offset
		20415 to 20635	20415, 20525, 20635	3 MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset
		20425 to 20625	20425, 20525, 20625	5 MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset
		20450 to 20600	20450, 20525, 20600	10 MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset
-	Modulation Characteristics	20450 to 20600	20450	10 MHz	QPSK, 16QAM, 64QAM	50 RB / 0 RB Offset
-	Frequency Stability	20407 to 20643	20407, 20643	1.4 MHz	QPSK	1 RB / 0 RB Offset
		20415 to 20635	20415, 20635	3 MHz	QPSK	1 RB / 0 RB Offset
		20425 to 20625	20425, 20625	5 MHz	QPSK	1 RB / 0 RB Offset
		20450 to 20600	20450, 20600	10 MHz	QPSK	1 RB / 0 RB Offset
-	Occupied Bandwidth	20407 to 20643	20407, 20525, 20643	1.4 MHz	QPSK, 16QAM, 64QAM	6 RB / 0 RB Offset
		20415 to 20635	20415, 20525, 20635	3 MHz	QPSK, 16QAM, 64QAM	15 RB / 0 RB Offset
		20425 to 20625	20425, 20525, 20625	5 MHz	QPSK, 16QAM, 64QAM	25 RB / 0 RB Offset
		20450 to 20600	20450, 20525, 20600	10 MHz	QPSK, 16QAM, 64QAM	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
-	Peak to Average Ratio	20407 to 20643	20407, 20525, 20643	1.4 MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset
		20415 to 20635	20415, 20525, 20635	3 MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset
		20425 to 20625	20425, 20525, 20625	5 MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset
		20450 to 20600	20450, 20525, 20600	10 MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset

EUT Configure Mode	Test Item	Available Channel	Tested Channel	Channel Bandwidth	Modulation	Mode
-	Conducted Emission	20407 to 20643	20407, 20525, 20643	1.4 MHz	QPSK	1 RB / 0 RB Offset
		20415 to 20635	20415, 20525, 20635	3 MHz	QPSK	1 RB / 0 RB Offset
		20425 to 20625	20425, 20525, 20625	5 MHz	QPSK	1 RB / 0 RB Offset
		20450 to 20600	20450, 20525, 20600	10 MHz	QPSK	1 RB / 0 RB Offset
-	Radiated Emission	20407 to 20643	20407, 20525, 20643	1.4 MHz	QPSK	1 RB / 0 RB Offset
		20425 to 20625	20425, 20525, 20625	5 MHz	QPSK	1 RB / 0 RB Offset
		20450 to 20600	20450, 20525, 20600	10 MHz	QPSK	1 RB / 0 RB Offset

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

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, 64QAM	1 RB / 0 RB Offset
		26805 to 27025	26805, 26915, 27025	3 MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset
		26815 to 27015	26815, 26915, 27015	5 MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset
		26840 to 26990	26840, 26915, 26990	10 MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset
		26865 to 26965	26865, 26915, 26965	15 MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset
-	Modulation Characteristics	26865 to 26965	26865	15 MHz	QPSK, 16QAM, 64QAM	75 RB / 0 RB Offset
-	Frequency Stability	26797 to 27033	26797, 27033	1.4 MHz	QPSK	1 RB / 0 RB Offset
		26805 to 27025	26805, 27025	3 MHz	QPSK	1 RB / 0 RB Offset
		26815 to 27015	26815, 27015	5 MHz	QPSK	1 RB / 0 RB Offset
		26840 to 26990	26840, 26990	10 MHz	QPSK	1 RB / 0 RB Offset
		26865 to 26965	26865, 26965	15 MHz	QPSK	1 RB / 0 RB Offset
-	Occupied Bandwidth	26797 to 27033	26797, 26915, 27033	1.4 MHz	QPSK, 16QAM, 64QAM	6 RB / 0 RB Offset
		26805 to 27025	26805, 26915, 27025	3 MHz	QPSK, 16QAM, 64QAM	15 RB / 0 RB Offset
		26815 to 27015	26815, 26915, 27015	5 MHz	QPSK, 16QAM, 64QAM	25 RB / 0 RB Offset
		26840 to 26990	26840, 26915, 26990	10 MHz	QPSK, 16QAM, 64QAM	50 RB / 0 RB Offset
		26865 to 26965	26865, 26915, 26965	15 MHz	QPSK, 16QAM, 64QAM	75 RB / 0 RB Offset
-	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

EUT Configure Mode	Test Item	Available Channel	Tested Channel	Channel Bandwidth	Modulation	Mode
-	Peak to Average Ratio	26797 to 27033	26797, 26915, 27033	1.4 MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset
		26805 to 27025	26805, 26915, 27025	3 MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset
		26815 to 27015	26815, 26915, 27015	5 MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset
		26840 to 26990	26840, 26915, 26990	10 MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset
		26865 to 26965	26865, 26915, 26965	15 MHz	QPSK, 16QAM, 64QAM	1 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	1 RB / 0 RB Offset
		26815 to 27015	26815, 26915, 27015	5 MHz	QPSK	1 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	1 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	1 RB / 0 RB Offset
		26865 to 26965	26865, 26915, 26965	15 MHz	QPSK	1 RB / 0 RB Offset

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

Test Condition:

Test Item	Environmental Conditions	Input Power	Tested By
ERP	25 deg. C, 65 % RH	3.85 Vdc	Karl Lee
Modulation Characteristics	25 deg. C, 65 % RH	3.85 Vdc	Wayne Lin
Frequency Stability	25 deg. C, 65 % RH	3.85 Vdc	Wayne Lin
Occupied Bandwidth	25 deg. C, 65 % RH	3.85 Vdc	Wayne Lin
Band Edge	25 deg. C, 65 % RH	3.85 Vdc	Wayne Lin
Peak to Average Ratio	25 deg. C, 65 % RH	3.85 Vdc	Wayne Lin
Conducted Emission	25 deg. C, 65 % RH	3.85 Vdc	Wayne Lin
Radiated Emission	25 deg. C, 65 % RH	120 Vac, 60 Hz	Karl Lee / Charles Hsiao

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:

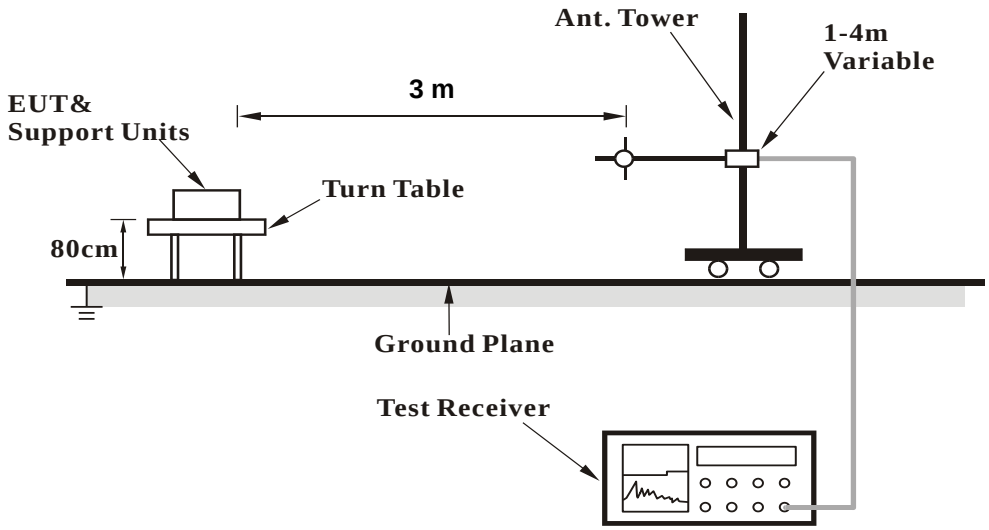
a. All measurements were done at low, middle and high operational frequency range. RBW and VBW is 1 MHz for GSM, GPRS & EDGE, and 5 MHz for WCDMA and CDMA, and 10 MHz for LTE mode.
b. Substitution method is used for E.I.R.P measurement. In the semi-anechoic chamber, EUT placed on the 0.8 m (below or 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:

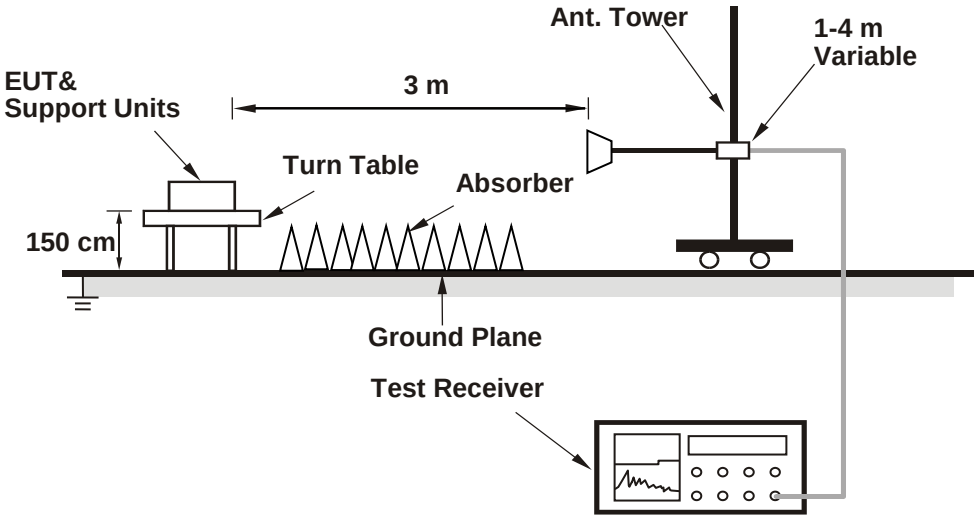
The EUT was set up for the maximum power with GSM, GPRS, EDGE, WCDMA, CDMA, and LTE link data modulation and link up with simulator. Set the EUT to transmit under low, middle and high channel and record the power level shown on simulator.

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

The worst configuration mode is presented in the report as below. Please refer to SAR test report for more detail test mode.

Band		TX Antenna	WLAN Function	Body-Worn/Hotspot
GSM	850	Ant 0	WLAN-Off	Body-Worn/Hotspot
WCDMA	B5	Ant 0	WLAN-Off	Body-Worn/Hotspot
CDMA	BC0	Ant 0	WLAN-Off	Body-Worn/Hotspot
LTE	B5	Ant 0	WLAN-Off	Body-Worn/Hotspot
	B26	Ant 0	WLAN-Off	Body-Worn/Hotspot

Conducted Output Power (dBm)

Band	GSM850		
Mode	Body-Worn / Hotspot		
Tx Antenna	Ant-0		
Channel	128	189	251
Frequency (MHz)	824.2	836.4	848.8
GSM (GMSK, 1Tx-slot)	33.20	33.19	33.12
GPRS (GMSK, 1Tx-slot)	33.19	33.18	33.11
GPRS (GMSK, 2Tx-slot)	31.55	31.54	31.47
GPRS (GMSK, 3Tx-slot)	29.31	29.30	29.23
GPRS (GMSK, 4Tx-slot)	28.23	28.22	28.15
DTM (GMSK, 2Tx-slot)	31.34	31.33	31.26
DTM (GMSK, 3Tx-slot)	28.97	28.96	28.89
EDGE (8PSK, 1Tx-slot)	26.92	26.91	26.84
EDGE (8PSK, 2Tx-slot)	26.31	26.30	26.23
EDGE (8PSK, 3Tx-slot)	24.09	24.08	24.01
EDGE (8PSK, 4Tx-slot)	21.88	21.87	21.80
DTM (8PSK, 2Tx-slot)	26.09	26.08	26.01
DTM (8PSK, 3Tx-slot)	23.98	23.97	23.90

Band	WCDMA V		
Mode	Body-Worn / Hotspot		
Tx Antenna	Ant-0		
Channel	4132	4182	4233
Frequency (MHz)	826.4	836.4	846.6
RMC 12.2K	23.04	23.02	23.06
HSDPA Subtest-1	22.06	22.04	22.08
HSDPA Subtest-2	22.04	22.02	22.06
HSDPA Subtest-3	21.57	21.55	21.59
HSDPA Subtest-4	21.56	21.54	21.58
DC-HSDPA Subtest-1	21.94	21.92	21.96
DC-HSDPA Subtest-2	21.92	21.90	21.94
DC-HSDPA Subtest-3	21.45	21.43	21.47
DC-HSDPA Subtest-4	21.44	21.42	21.46
HSUPA Subtest-1	21.99	21.97	22.01
HSUPA Subtest-2	19.98	19.96	20.00
HSUPA Subtest-3	21.00	20.98	21.02
HSUPA Subtest-4	19.98	19.96	20.00
HSUPA Subtest-5	22.00	21.98	22.02

Band	CDMA BC0		
Mode	Body-Worn / Hotspot		
Tx Antenna	Ant-0		
Channel	1013	384	777
Frequency (MHz)	824.70	836.52	848.31
RC1+SO55	24.77	24.55	24.62
RC3+SO55	24.78	24.56	24.63
RC3+SO32(+ F-SCH)	24.74	24.52	24.59
RC3+SO32(+SCH)	24.73	24.51	24.58
RTAP 153.6	24.75	24.53	24.60
RETAP 4096	24.70	24.48	24.55

LTE Band 5

Body-Worn / Hotspot

Ant-0

BW	MCS Index	RB Size	RB Offset	Low	Mid	High	3GPP MPR (dB)	BW	MCS Index	RB Size	RB Offset	Low	Mid	High	3GPP MPR (dB)
		Channel		20450	20525	20600				Channel		20425	20525	20625	
		Frequency (MHz)		829.0	836.5	844.0				Frequency (MHz)		826.5	836.5	846.5	
10M	QPSK	1	0	24.65	24.64	24.60	0	5M	QPSK	1	0	24.56	24.61	24.51	0
		1	24	24.57	24.56	24.52	0			1	12	24.49	24.46	24.50	0
		1	49	24.63	24.62	24.58	0			1	24	24.55	24.58	24.54	0
		25	0	23.66	23.65	23.61	1			12	0	23.61	23.63	23.56	1
		25	12	23.69	23.68	23.64	1			12	6	23.66	23.58	23.60	1
		25	25	23.67	23.66	23.62	1			12	13	23.57	23.58	23.60	1
		50	0	23.62	23.61	23.57	1			25	0	23.57	23.52	23.57	1
	16QAM	1	0	23.58	23.60	23.51	1		16QAM	1	0	23.55	23.48	23.54	1
		1	24	23.47	23.49	23.52	1			1	12	23.52	23.43	23.42	1
		1	49	23.62	23.53	23.55	1			1	24	23.52	23.51	23.56	1
		25	0	22.60	22.59	22.56	2			12	0	22.59	22.63	22.54	2
		25	12	22.59	22.58	22.59	2			12	6	22.63	22.51	22.54	2
		25	25	22.66	22.62	22.57	2			12	13	22.60	22.58	22.45	2
		50	0	22.61	22.53	22.56	2			25	0	22.61	22.50	22.51	2
	64QAM	1	0	22.62	22.57	22.51	2		64QAM	1	0	22.46	22.49	22.55	2
		1	24	22.54	22.51	22.47	2			1	12	22.53	22.51	22.41	2
		1	49	22.55	22.54	22.55	2			1	24	22.47	22.47	22.48	2
		25	0	21.56	21.61	21.58	3			12	0	21.58	21.58	21.47	3
		25	12	21.69	21.66	21.59	3			12	6	21.60	21.59	21.61	3
		25	25	21.64	21.63	21.62	3			12	13	21.58	21.50	21.44	3
		50	0	21.60	21.60	21.55	3			25	0	21.52	21.59	21.42	3
BW	MCS Index	RB Size	RB Offset	Low	Mid	High	3GPP MPR (dB)	BW	MCS Index	RB Size	RB Offset	Low	Mid	High	3GPP MPR (dB)
		Channel		20415	20525	20635				Channel		20407	20525	20643	
		Frequency (MHz)		825.5	836.5	847.5				Frequency (MHz)		824.7	836.5	848.3	
3M	QPSK	1	0	24.55	24.60	24.54	0	1.4M	QPSK	1	0	24.64	24.53	24.54	0
		1	7	24.45	24.51	24.43	0			1	2	24.46	24.43	24.43	0
		1	14	24.51	24.43	24.38	0			1	5	24.58	24.50	24.48	0
		8	0	23.60	23.49	23.46	1			3	0	24.44	24.42	24.48	0
		8	3	23.56	23.48	23.43	1			3	1	24.55	24.61	24.55	0
		8	7	23.56	23.46	23.46	1			3	3	24.51	24.52	24.43	0
		15	0	23.42	23.58	23.48	1			6	0	23.46	23.48	23.52	1
	16QAM	1	0	23.47	23.54	23.34	1		16QAM	1	0	23.40	23.48	23.45	1
		1	7	23.47	23.38	23.43	1			1	2	23.50	23.38	23.30	1
		1	14	23.55	23.41	23.42	1			1	5	23.38	23.53	23.35	1
		8	0	22.46	22.57	22.46	2			3	0	23.40	23.47	23.46	1
		8	3	22.51	22.41	22.52	2			3	1	23.49	23.45	23.41	1
		8	7	22.42	22.59	22.48	2			3	3	23.50	23.40	23.42	1
		15	0	22.41	22.52	22.34	2			6	0	22.46	22.50	22.44	2
	64QAM	1	0	22.52	22.44	22.43	2		64QAM	1	0	22.37	22.58	22.47	2
		1	7	22.38	22.38	22.34	2			1	2	22.39	22.29	22.37	2
		1	14	22.50	22.57	22.36	2			1	5	22.37	22.48	22.48	2
		8	0	21.35	21.51	21.48	3			3	0	22.45	22.56	22.30	2
		8	3	21.52	21.64	21.45	3			3	1	22.53	22.48	22.52	2
		8	7	21.50	21.61	21.45	3			3	3	22.48	22.55	22.46	2
		15	0	21.48	21.40	21.40	3			6	0	21.42	21.50	21.45	3

LTE Band 26
Body-Worn / Hotspot
Ant-0

BW	MCS Index	RB Size	RB Offset	Low	Mid	High	3GPP MPR (dB)
		Channel		26865	26915	26965	
		Frequency (MHz)		831.5	836.5	841.5	
15M	QPSK	1	0	24.68	24.63	24.67	0
		1	37	24.63	24.54	24.62	0
		1	74	24.56	24.49	24.55	0
		36	0	23.69	23.67	23.68	1
		36	19	23.67	23.57	23.66	1
		36	39	23.62	23.53	23.61	1
		75	0	23.59	23.57	23.58	1
	16QAM	1	0	23.59	23.55	23.65	1
		1	37	23.53	23.46	23.62	1
		1	74	23.50	23.46	23.49	1
		36	0	22.67	22.57	22.63	2
		36	19	22.58	22.48	22.62	2
		36	39	22.62	22.61	22.51	2
		75	0	22.49	22.46	22.56	2
	64QAM	1	0	22.61	22.52	22.64	2
		1	37	22.54	22.54	22.54	2
		1	74	22.47	22.47	22.52	2
		36	0	21.59	21.52	21.63	3
		36	19	21.60	21.57	21.57	3
		36	39	21.60	21.52	21.56	3
		75	0	21.55	21.50	21.57	3

BW	MCS Index	RB Size	RB Offset	Low	Mid	High	3GPP MPR (dB)
		Channel		26840	26915	26990	
		Frequency (MHz)		829.0	836.5	844.0	
10M	QPSK	1	0	24.59	24.54	24.65	0
		1	24	24.53	24.45	24.46	0
		1	49	24.44	24.46	24.48	0
		25	0	23.66	23.66	23.57	1
		25	12	23.67	23.42	23.66	1
		25	25	23.59	23.53	23.40	1
		50	0	23.55	23.43	23.56	1
	16QAM	1	0	23.47	23.43	23.45	1
		1	24	23.49	23.33	23.45	1
		1	49	23.43	23.40	23.42	1
		25	0	22.55	22.44	22.40	2
		25	12	22.46	22.37	22.50	2
		25	25	22.52	22.55	22.36	2
		50	0	22.43	22.44	22.43	2
	64QAM	1	0	22.55	22.39	22.51	2
		1	24	22.42	22.44	22.48	2
		1	49	22.45	22.39	22.29	2
		25	0	21.57	21.41	21.55	3
		25	12	21.54	21.47	21.53	3
		25	25	21.52	21.48	21.40	3
		50	0	21.54	21.37	21.35	3

BW	MCS Index	RB Size	RB Offset	Low	Mid	High	3GPP MPR (dB)
		Channel		26815	26915	27015	
		Frequency (MHz)		826.5	836.5	846.5	
5M	QPSK	1	0	24.55	24.40	24.41	0
		1	12	24.53	24.42	24.49	0
		1	24	24.42	24.46	24.42	0
		12	0	23.62	23.57	23.45	1
		12	6	23.55	23.28	23.49	1
		12	13	23.55	23.52	23.27	1
		25	0	23.43	23.33	23.52	1
	16QAM	1	0	23.36	23.34	23.38	1
		1	12	23.38	23.19	23.53	1
		1	24	23.43	23.40	23.48	1
		12	0	22.45	22.43	22.42	2
		12	6	22.43	22.36	22.51	2
		12	13	22.37	22.53	22.36	2
		25	0	22.36	22.32	22.46	2
	64QAM	1	0	22.55	22.39	22.47	2
		1	12	22.37	22.35	22.35	2
		1	24	22.39	22.31	22.41	2
		12	0	21.43	21.30	21.42	3
		12	6	21.47	21.43	21.54	3
		12	13	21.41	21.48	21.47	3
		25	0	21.39	21.26	21.29	3

BW	MCS Index	RB Size	RB Offset	Low	Mid	High	3GPP MPR (dB)
		Channel		26805	26915	27025	
		Frequency (MHz)		825.5	836.5	847.5	
3M	QPSK	1	0	24.48	24.54	24.49	1
		1	7	24.45	24.38	24.52	1
		1	14	24.43	24.42	24.47	1
		8	0	23.56	23.45	23.56	3
		8	3	23.29	23.63	23.47	3
		8	7	23.43	23.39	23.46	3
		15	0	23.37	23.55	23.46	6
	16QAM	1	0	23.43	23.33	23.57	1
		1	7	23.20	23.39	23.46	1
		1	14	23.32	23.36	23.42	1
		8	0	22.42	22.32	22.46	2
		8	3	22.35	22.36	22.52	2
		8	7	22.44	22.26	22.50	2
		15	0	22.44	22.40	22.37	2
	64QAM	1	0	22.29	22.37	22.48	2
		1	7	22.33	22.43	22.38	2
		1	14	22.38	22.14	22.37	2
		8	0	21.29	21.52	21.55	3
		8	3	21.34	21.38	21.45	3
		8	7	21.38	21.37	21.53	3
		15	0	21.35	21.31	21.39	3

BW	MCS Index	RB Size	RB Offset	Low	Mid	High	3GPP MPR (dB)
		Channel		26797	26915	27033	
		Frequency (MHz)		824.7	836.5	848.3	
1.4M	QPSK	1	0	24.44	24.53	24.64	0
		1	2	24.36	24.39	24.49	0
		1	5	24.35	24.40	24.44	0
		3	0	24.63	24.51	24.54	0
		3	1	24.27	24.65	24.49	0
		3	3	24.38	24.36	24.53	0
		6	0	23.38	23.48	23.41	1
	16QAM	1	0	23.43	23.31	23.37	1
		1	2	23.30	23.45	23.37	1
		1	5	23.30	23.31	23.44	1
		3	0	23.32	23.37	23.55	1
		3	1	23.24	23.44	23.43	1
		3	3	23.41	23.24	23.33	1
		6	0	22.39	22.36	22.43	2
	64QAM	1	0	22.26	22.42	22.43	2
		1	2	22.44	22.46	22.41	2
		1	5	22.30	22.19	22.42	2
		3	0	22.39	22.42	22.55	2
		3	1	22.42	22.38	22.44	2
		3	3	22.34	22.30	22.47	2
		6	0	21.24	21.32	21.41	3

ERP Power (dBm)

GSM							
Plane	**Channel**	**Frequency (MHz)**	**Reading (dBm)**	**Correction Factor (dB)**	**ERP (dBm)**	**ERP (mW)**	**Polarization (H/V)**
X	128	824.2	-2.96	31.208	26.10	407.19	H
	189	836.4	-3.12	31.3	26.03	400.87	
	251	848.8	-3.05	31.222	26.02	400.13	
	128	824.2	-5.25	31.504	24.10	257.28	V
	189	836.4	-4.95	31.117	24.02	252.17	
	251	848.8	-5.77	31.922	24.00	251.30	

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

EDGE							
Plane	**Channel**	**Frequency (MHz)**	**Reading (dBm)**	**Correction Factor (dB)**	**ERP (dBm)**	**ERP (mW)**	**Polarization (H/V)**
X	128	824.2	-9.00	31.208	20.06	101.34	H
	189	836.4	-9.12	31.3	20.03	100.69	
	251	848.8	-9.11	31.222	19.96	99.13	
	128	824.2	-11.26	31.504	18.09	64.48	V
	189	836.4	-10.93	31.117	18.04	63.64	
	251	848.8	-11.80	31.922	17.97	62.69	

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

WCDMA							
Plane	**Channel**	**Frequency (MHz)**	**Reading (dBm)**	**Correction Factor (dB)**	**ERP (dBm)**	**ERP (mW)**	**Polarization (H/V)**
X	4132	826.4	-12.96	31.208	16.10	40.72	H
	4182	836.4	-13.09	31.3	16.06	40.36	
	4233	846.6	-13.05	31.222	16.02	40.01	
	4132	826.4	-15.24	31.504	14.11	25.79	V
	4182	836.4	-14.92	31.117	14.05	25.39	
	4233	846.6	-15.74	31.922	14.03	25.30	

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

CDMA							
Plane	**Channel**	**Frequency (MHz)**	**Reading (dBm)**	**Correction Factor (dB)**	**ERP (dBm)**	**ERP (mW)**	**Polarization (H/V)**
X	1013	824.7	-11.98	31.208	17.08	51.03	H
	384	836.52	-12.09	31.3	17.06	50.82	
	777	848.31	-11.93	31.222	17.14	51.78	
	1013	824.7	-17.28	31.504	12.07	16.12	V
	384	836.52	-16.92	31.117	12.05	16.02	
	777	848.31	-17.66	31.922	12.11	16.26	

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

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	-11.62	31.208	17.44	55.44	H
	20525	836.5	-11.76	31.3	17.39	54.83	
	20643	848.3	-11.70	31.222	17.37	54.60	
	20407	824.7	-13.87	31.504	15.48	35.35	V
	20525	836.5	-13.55	31.117	15.42	34.81	
	20643	848.3	-14.40	31.922	15.37	34.45	
Channel Bandwidth: 1.4 MHz / 16QAM							
X	20407	824.7	-12.63	31.208	16.43	43.93	H
	20525	836.5	-12.77	31.3	16.38	43.45	
	20643	848.3	-12.71	31.222	16.36	43.27	
	20407	824.7	-14.87	31.504	14.48	28.08	V
	20525	836.5	-14.56	31.117	14.41	27.59	
	20643	848.3	-15.40	31.922	14.37	27.37	
Channel Bandwidth: 1.4 MHz / 64QAM							
X	20407	824.7	-13.63	31.208	15.43	34.90	H
	20525	836.5	-13.78	31.3	15.37	34.43	
	20643	848.3	-13.72	31.222	15.35	34.29	
	20407	824.7	-15.87	31.504	13.48	22.30	V
	20525	836.5	-15.56	31.117	13.41	21.91	
	20643	848.3	-16.41	31.922	13.36	21.69	

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	-11.58	31.208	17.48	55.95	H
	20525	836.5	-11.71	31.3	17.44	55.46	
	20635	847.5	-11.66	31.222	17.41	55.11	
	20415	825.5	-13.83	31.504	15.52	35.68	V
	20525	836.5	-13.52	31.117	15.45	35.05	
	20635	847.5	-14.37	31.922	15.40	34.69	
Channel Bandwidth: 3 MHz / 16QAM							
X	20415	825.5	-12.58	31.208	16.48	44.44	H
	20525	836.5	-12.71	31.3	16.44	44.06	
	20635	847.5	-12.67	31.222	16.40	43.67	
	20415	825.5	-14.83	31.504	14.52	28.34	V
	20525	836.5	-14.52	31.117	14.45	27.84	
	20635	847.5	-15.37	31.922	14.40	27.55	
Channel Bandwidth: 3 MHz / 64QAM							
X	20415	825.5	-13.59	31.208	15.47	35.22	H
	20525	836.5	-13.71	31.3	15.44	34.99	
	20635	847.5	-13.68	31.222	15.39	34.61	
	20415	825.5	-15.84	31.504	13.51	22.46	V
	20525	836.5	-15.53	31.117	13.44	22.06	
	20635	847.5	-16.37	31.922	13.40	21.89	

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	-11.54	31.208	17.52	56.47	H
	20525	836.5	-11.68	31.3	17.47	55.85	
	20625	846.5	-11.62	31.222	17.45	55.62	
	20425	826.5	-13.80	31.504	15.55	35.93	V
	20525	836.5	-13.48	31.117	15.49	35.38	
	20625	846.5	-14.32	31.922	15.45	35.09	
Channel Bandwidth: 5 MHz / 16QAM							
X	20425	826.5	-12.55	31.208	16.51	44.75	H
	20525	836.5	-12.68	31.3	16.47	44.36	
	20625	846.5	-12.63	31.222	16.44	44.08	
	20425	826.5	-14.81	31.504	14.54	28.47	V
	20525	836.5	-14.48	31.117	14.49	28.10	
	20625	846.5	-15.33	31.922	14.44	27.81	
Channel Bandwidth: 5 MHz / 64QAM							
X	20425	826.5	-13.55	31.208	15.51	35.55	H
	20525	836.5	-13.68	31.3	15.47	35.24	
	20625	846.5	-13.64	31.222	15.43	34.93	
	20425	826.5	-15.82	31.504	13.53	22.56	V
	20525	836.5	-15.48	31.117	13.49	22.32	
	20625	846.5	-16.33	31.922	13.44	22.09	

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	-11.50	31.208	17.56	56.99	H
	20525	836.5	-11.64	31.3	17.51	56.36	
	20600	844.0	-11.59	31.222	17.48	56.00	
	20450	829.0	-13.76	31.504	15.59	36.26	V
	20525	836.5	-13.44	31.117	15.53	35.70	
	20600	844.0	-14.29	31.922	15.48	35.33	
Channel Bandwidth: 10 MHz / 16QAM							
X	20425	826.5	-12.51	31.208	16.55	45.16	H
	20525	836.5	-12.65	31.3	16.50	44.67	
	20625	846.5	-12.59	31.222	16.48	44.48	
	20425	826.5	-14.77	31.504	14.58	28.73	V
	20525	836.5	-14.44	31.117	14.53	28.36	
	20625	846.5	-15.30	31.922	14.47	28.00	
Channel Bandwidth: 10 MHz / 64QAM							
X	20450	829.0	-13.52	31.208	15.54	35.79	H
	20525	836.5	-13.65	31.3	15.50	35.48	
	20600	844.0	-13.60	31.222	15.47	35.25	
	20450	829.0	-15.77	31.504	13.58	22.82	V
	20525	836.5	-15.45	31.117	13.52	22.48	
	20600	844.0	-16.30	31.922	13.47	22.24	

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	-12.04	31.208	17.02	50.33	H
	26915	836.5	-12.21	31.3	16.94	49.43	
	27033	848.3	-12.20	31.222	16.87	48.66	
	26797	824.7	-17.38	31.504	11.97	15.75	V
	26915	836.5	-17.07	31.117	11.90	15.48	
	27033	848.3	-17.89	31.922	11.88	15.42	
Channel Bandwidth: 1.4 MHz / 16QAM							
X	26797	824.7	-13.04	31.208	16.02	39.98	H
	26915	836.5	-13.22	31.3	15.93	39.17	
	27033	848.3	-13.21	31.222	15.86	38.57	
	26797	824.7	-18.38	31.504	10.97	12.51	V
	26915	836.5	-18.08	31.117	10.89	12.27	
	27033	848.3	-18.90	31.922	10.87	12.22	
Channel Bandwidth: 1.4 MHz / 64QAM							
X	26797	824.7	-14.04	31.208	15.02	31.75	H
	26915	836.5	-14.23	31.3	14.92	31.05	
	27033	848.3	-14.21	31.222	14.86	30.63	
	26797	824.7	-19.39	31.504	9.96	9.92	V
	26915	836.5	-19.08	31.117	9.89	9.74	
	27033	848.3	-19.91	31.922	9.86	9.69	

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	-12.00	31.208	17.06	50.79	H
	26915	836.5	-12.18	31.3	16.97	49.77	
	27025	847.5	-12.16	31.222	16.91	49.11	
	26805	825.5	-17.35	31.504	12.00	15.86	V
	26915	836.5	-17.03	31.117	11.94	15.62	
	27025	847.5	-17.85	31.922	11.92	15.57	
Channel Bandwidth: 3 MHz / 16QAM							
X	26805	825.5	-13.01	31.208	16.05	40.25	H
	26915	836.5	-13.19	31.3	15.96	39.45	
	27025	847.5	-13.16	31.222	15.91	39.01	
	26805	825.5	-18.36	31.504	10.99	12.57	V
	26915	836.5	-18.04	31.117	10.93	12.38	
	27025	847.5	-18.85	31.922	10.92	12.37	
Channel Bandwidth: 3 MHz / 64QAM							
X	26805	825.5	-14.02	31.208	15.04	31.90	H
	26915	836.5	-14.20	31.3	14.95	31.26	
	27025	847.5	-14.16	31.222	14.91	30.99	
	26805	825.5	-19.37	31.504	9.98	9.96	V
	26915	836.5	-19.05	31.117	9.92	9.81	
	27025	847.5	-19.86	31.922	9.91	9.80	

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	-11.97	31.208	17.09	51.14	H
	26915	836.5	-12.14	31.3	17.01	50.23	
	27015	846.5	-12.12	31.222	16.95	49.57	
	26815	826.5	-17.31	31.504	12.04	16.01	V
	26919	836.5	-16.99	31.117	11.98	15.77	
	27015	846.5	-17.82	31.922	11.95	15.67	
Channel Bandwidth: 5 MHz / 16QAM							
X	26815	826.5	-12.97	31.208	16.09	40.63	H
	26915	836.5	-13.15	31.3	16.00	39.81	
	27015	846.5	-13.12	31.222	15.95	39.37	
	26815	826.5	-18.32	31.504	11.03	12.69	V
	26919	836.5	-17.99	31.117	10.98	12.52	
	27015	846.5	-18.83	31.922	10.94	12.42	
Channel Bandwidth: 5 MHz / 64QAM							
X	26815	826.5	-13.97	31.208	15.09	32.27	H
	26915	836.5	-14.16	31.3	14.99	31.55	
	27015	846.5	-14.12	31.222	14.95	31.28	
	26815	826.5	-19.32	31.504	10.03	10.08	V
	26919	836.5	-18.99	31.117	9.98	9.95	
	27015	846.5	-19.84	31.922	9.93	9.84	

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	-11.94	31.208	17.12	51.50	H
	26915	836.5	-12.10	31.3	17.05	50.70	
	26990	844.0	-12.08	31.222	16.99	50.03	
	26840	829.0	-17.27	31.504	12.08	16.16	V
	26919	836.5	-16.95	31.117	12.02	15.91	
	26990	844.0	-17.79	31.922	11.98	15.78	
Channel Bandwidth: 10 MHz / 16QAM							
X	26840	829.0	-12.94	31.208	16.12	40.91	H
	26915	836.5	-13.11	31.3	16.04	40.18	
	26990	844.0	-13.08	31.222	15.99	39.74	
	26840	829.0	-18.28	31.504	11.07	12.81	V
	26919	836.5	-17.95	31.117	11.02	12.64	
	26990	844.0	-18.80	31.922	10.97	12.51	
Channel Bandwidth: 10 MHz / 64QAM							
X	26840	829.0	-13.95	31.208	15.11	32.42	H
	26915	836.5	-14.12	31.3	15.03	31.84	
	26990	844.0	-14.09	31.222	14.98	31.49	
	26840	829.0	-19.28	31.504	10.07	10.17	V
	26919	836.5	-18.95	31.117	10.02	10.04	
	26990	844.0	-19.81	31.922	9.96	9.91	

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	-11.90	31.208	17.16	51.98	H
	26915	836.5	-12.06	31.3	17.09	51.17	
	26965	841.5	-12.04	31.222	17.03	50.49	
	26865	831.5	-17.23	31.504	12.12	16.31	V
	26915	836.5	-16.91	31.117	12.06	16.06	
	26965	841.5	-17.75	31.922	12.02	15.93	
Channel Bandwidth: 15 MHz / 16QAM							
X	26865	831.5	-12.91	31.208	16.15	41.19	H
	26915	836.5	-13.06	31.3	16.09	40.64	
	26965	841.5	-13.05	31.222	16.02	40.01	
	26865	831.5	-18.24	31.504	11.11	12.92	V
	26915	836.5	-17.92	31.117	11.05	12.73	
	26965	841.5	-18.75	31.922	11.02	12.65	
Channel Bandwidth: 15 MHz / 64QAM							
X	26865	831.5	-13.92	31.208	15.14	32.64	H
	26915	836.5	-14.07	31.3	15.08	32.21	
	26965	841.5	-14.05	31.222	15.02	31.78	
	26865	831.5	-19.25	31.504	10.10	10.24	V
	26915	836.5	-18.92	31.117	10.05	10.11	
	26965	841.5	-19.76	31.922	10.01	10.03	

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

4.2 Modulation Characteristics Measurement

4.2.1 Limits of Modulation Characteristics

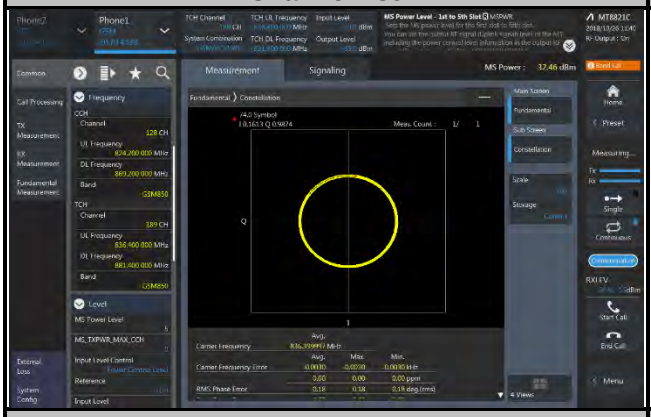
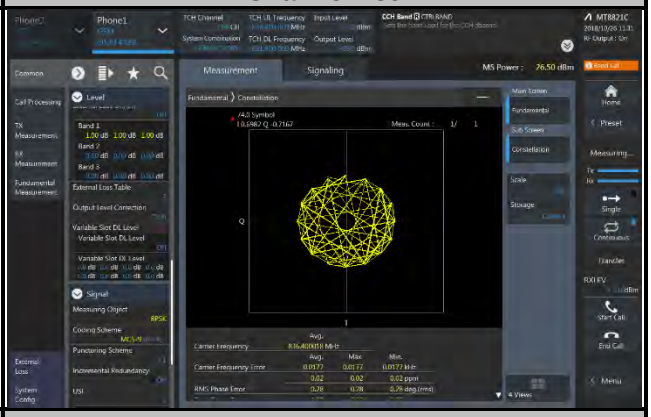
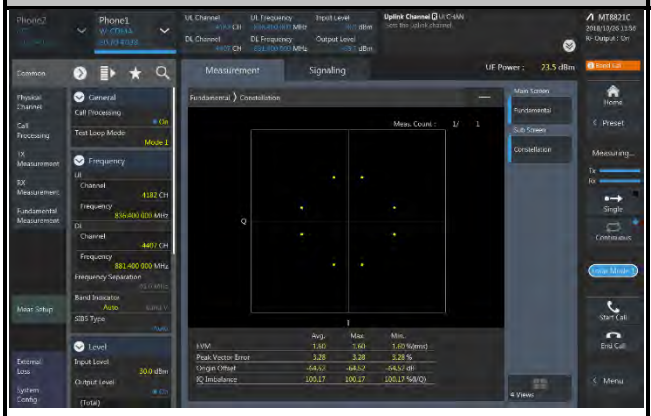
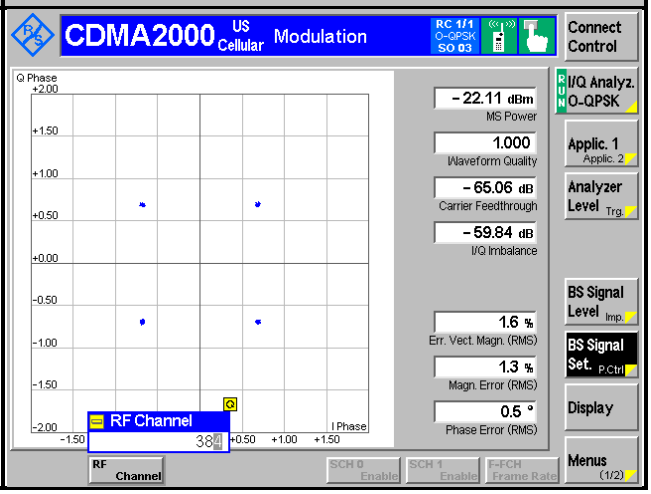
N/A

4.2.2 Test Setup

4.2.3 Test Procedure

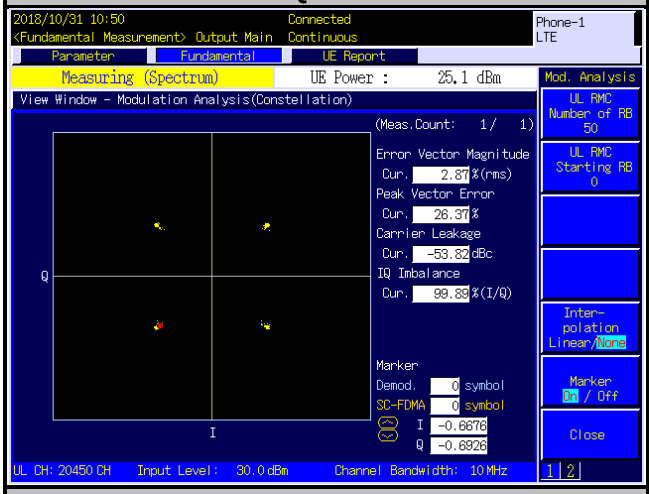
Connect the EUT to Communication Simulator via the antenna connector. The frequency band is set as EUT supported Modulation and Channels, the EUT output is matched with 50 ohm load, the waveform quality and constellation of the EUT was tested.

4.2.4 Test Results

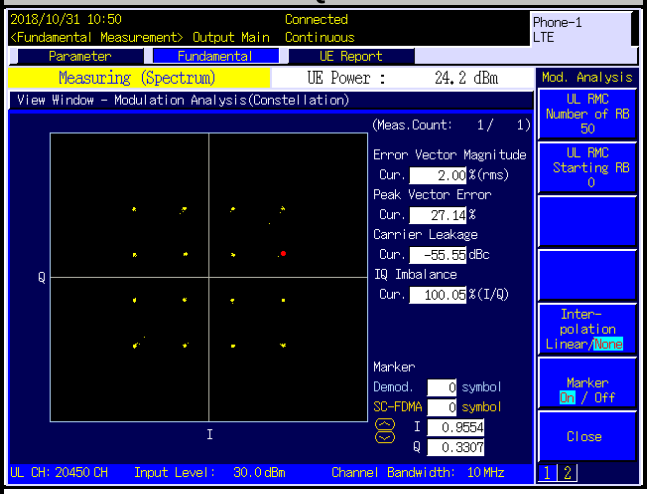
Spectrum Plot of Measurement	
GSM	**EDGE**
Channel 189	**Channel 189**
	
WCDMA	**CDMA**
Channel 4182	**Channel 384**
	

Spectrum Plot of Measurement
LTE Band 5
Channel 20450

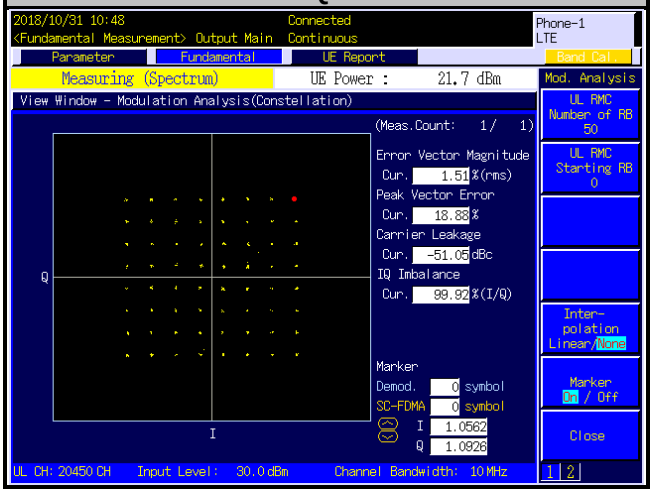
QPSK



16QAM

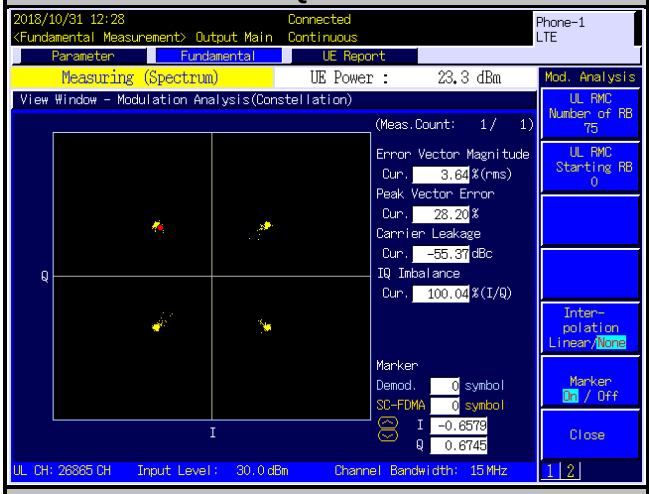


64QAM

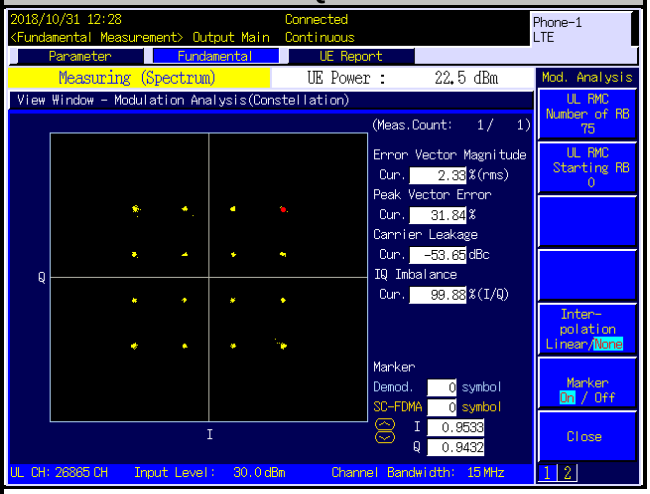


Spectrum Plot of Measurement
LTE Band 26
Channel 26865

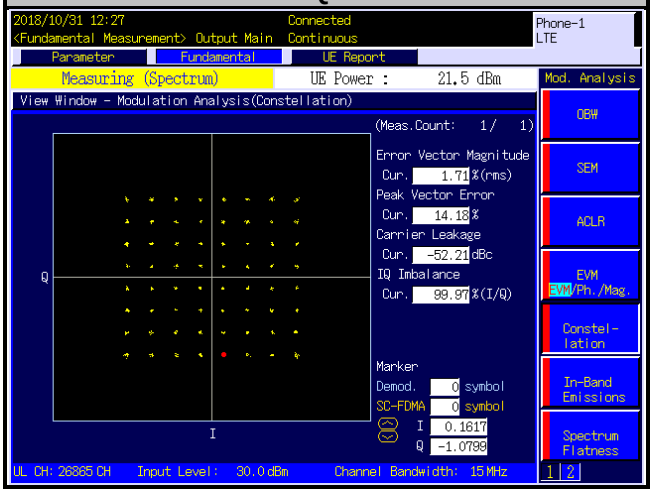
QPSK



16QAM



64QAM



4.3 Frequency Stability Measurement

4.3.1 Limits of Frequency Stability Measurement

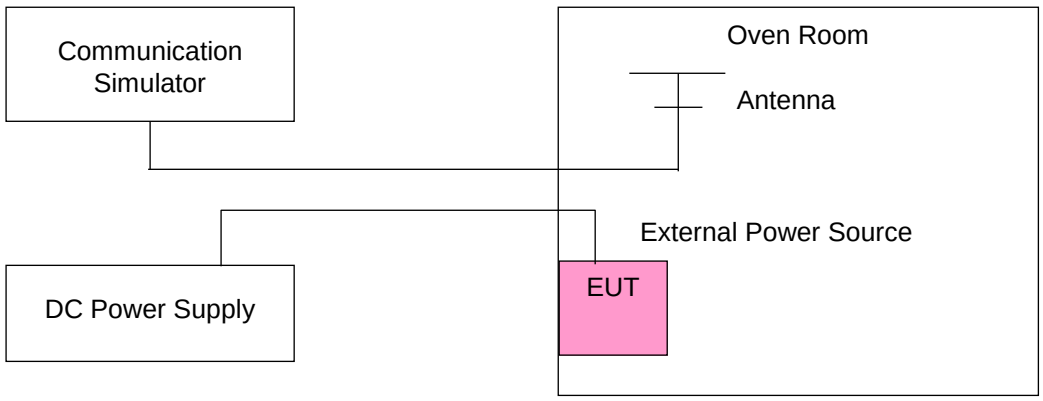
1.5 ppm is for base and fixed station. 2.5 ppm is for mobile station.

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

Frequency Error vs. Voltage

Voltage (Volts)	GSM				Limit (ppm)
	Low Channel		High Channel		
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
3.85	824.200002	0.003	848.800002	0.002	2.5
3.6	824.200003	0.004	848.800001	0.002	2.5
4.4	824.200002	0.003	848.800001	0.001	2.5

Note: The applicant defined the normal working voltage of the battery is from 3.6 Vdc to 4.4 Vdc.

Frequency Error vs. Temperature

Temp. (℃)	GSM				Limit (ppm)
	Low Channel		High Channel		
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
-30	824.200001	0.002	848.800002	0.002	2.5
-20	824.200003	0.004	848.800002	0.003	2.5
-10	824.200001	0.001	848.800002	0.002	2.5
0	824.200002	0.003	848.800002	0.002	2.5
10	824.200003	0.004	848.800002	0.002	2.5
20	824.199998	-0.003	848.799998	-0.002	2.5
30	824.199998	-0.003	848.799996	-0.005	2.5
40	824.199997	-0.004	848.799996	-0.005	2.5
50	824.199998	-0.002	848.799999	-0.001	2.5
55	824.199999	-0.002	848.799997	-0.003	2.5

Frequency Error vs. Voltage

Voltage (Volts)	EDGE				Limit (ppm)
	Low Channel		High Channel		
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
3.85	824.200002	0.002	848.800002	0.002	2.5
3.6	824.200004	0.005	848.800004	0.004	2.5
4.4	824.200004	0.004	848.800004	0.005	2.5

Note: The applicant defined the normal working voltage of the battery is from 3.6 Vdc to 4.4 Vdc.

Frequency Error vs. Temperature

Temp. (℃)	EDGE				Limit (ppm)
	Low Channel		High Channel		
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
-30	824.200003	0.003	848.800002	0.002	2.5
-20	824.200003	0.004	848.800003	0.003	2.5
-10	824.200002	0.002	848.800003	0.003	2.5
0	824.200004	0.005	848.800001	0.001	2.5
10	824.200003	0.004	848.800002	0.002	2.5
20	824.199996	-0.005	848.799997	-0.004	2.5
30	824.199997	-0.004	848.799998	-0.002	2.5
40	824.199998	-0.002	848.799998	-0.003	2.5
50	824.199998	-0.002	848.799997	-0.004	2.5
55	824.199998	-0.003	848.799998	-0.003	2.5

Frequency Error vs. Voltage

Voltage (Volts)	WCDMA				Limit (ppm)
	Low Channel		High Channel		
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
3.85	826.400002	0.003	846.600001	0.001	2.5
3.6	826.400001	0.001	846.600003	0.004	2.5
4.4	826.400002	0.003	846.600002	0.003	2.5

Note: The applicant defined the normal working voltage of the battery is from 3.6 Vdc to 4.4 Vdc.

Frequency Error vs. Temperature

Temp. (℃)	WCDMA				Limit (ppm)
	Low Channel		High Channel		
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
-30	826.400002	0.002	846.600003	0.004	2.5
-20	826.400002	0.003	846.600003	0.004	2.5
-10	826.400004	0.005	846.600002	0.003	2.5
0	826.400002	0.002	846.600003	0.003	2.5
10	826.400003	0.004	846.600003	0.004	2.5
20	826.399997	-0.004	846.599997	-0.003	2.5
30	826.399998	-0.002	846.599998	-0.003	2.5
40	826.399998	-0.002	846.599999	-0.002	2.5
50	826.399997	-0.004	846.599996	-0.004	2.5
55	826.399998	-0.003	846.599996	-0.004	2.5

Frequency Error vs. Voltage

Voltage (Volts)	CDMA				Limit (ppm)
	Low Channel		High Channel		
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
3.85	824.700001	0.002	848.310003	0.003	2.5
3.6	824.700004	0.004	848.310002	0.003	2.5
4.4	824.700002	0.003	848.310002	0.002	2.5

Note: The applicant defined the normal working voltage of the battery is from 3.6 Vdc to 4.4 Vdc.

Frequency Error vs. Temperature

Temp. (℃)	CDMA				Limit (ppm)
	Low Channel		High Channel		
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
-30	824.700003	0.004	848.310003	0.003	2.5
-20	824.700003	0.004	848.310002	0.002	2.5
-10	824.700003	0.004	848.310001	0.001	2.5
0	824.700004	0.005	848.310004	0.004	2.5
10	824.700001	0.001	848.310003	0.004	2.5
20	824.699997	-0.004	848.309998	-0.003	2.5
30	824.699997	-0.003	848.309998	-0.003	2.5
40	824.699997	-0.004	848.309998	-0.003	2.5
50	824.699998	-0.002	848.309996	-0.004	2.5
55	824.699997	-0.003	848.309997	-0.003	2.5

Frequency Error vs. Voltage

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)	
3.85	824.700002	0.003	848.300003	0.004	2.5
3.6	824.700003	0.004	848.300004	0.005	2.5
4.4	824.700003	0.004	848.300002	0.002	2.5

Note: The applicant defined the normal working voltage of the battery is from 3.6 Vdc to 4.4 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	0.001	2.5
-20	824.700001	0.001	848.300002	0.003	2.5
-10	824.700002	0.002	848.300003	0.004	2.5
0	824.700003	0.003	848.300002	0.002	2.5
10	824.700004	0.005	848.300003	0.004	2.5
20	824.699999	-0.001	848.299996	-0.005	2.5
30	824.699997	-0.003	848.299999	-0.002	2.5
40	824.699998	-0.003	848.299998	-0.002	2.5
50	824.699998	-0.003	848.299998	-0.002	2.5
55	824.699998	-0.002	848.299998	-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)	
3.85	825.500001	0.001	847.500002	0.002	2.5
3.6	825.500001	0.001	847.500002	0.003	2.5
4.4	825.500002	0.002	847.500003	0.003	2.5

Note: The applicant defined the normal working voltage of the battery is from 3.6 Vdc to 4.4 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	825.500002	0.002	847.500002	0.003	2.5
-20	825.500003	0.003	847.500004	0.005	2.5
-10	825.500004	0.005	847.500003	0.003	2.5
0	825.500001	0.001	847.500003	0.003	2.5
10	825.500002	0.002	847.500002	0.003	2.5
20	825.499997	-0.003	847.499996	-0.005	2.5
30	825.499997	-0.004	847.499999	-0.001	2.5
40	825.499998	-0.002	847.499997	-0.004	2.5
50	825.499997	-0.004	847.499999	-0.001	2.5
55	825.499996	-0.005	847.499999	-0.001	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)	
3.85	826.500003	0.003	846.500002	0.002	2.5
3.6	826.500003	0.004	846.500002	0.003	2.5
4.4	826.500003	0.003	846.500002	0.002	2.5

Note: The applicant defined the normal working voltage of the battery is from 3.6 Vdc to 4.4 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	826.500002	0.003	846.500004	0.004	2.5
-20	826.500002	0.002	846.500001	0.002	2.5
-10	826.500003	0.004	846.500002	0.002	2.5
0	826.500002	0.002	846.500004	0.004	2.5
10	826.500001	0.001	846.500002	0.002	2.5
20	826.499998	-0.002	846.499999	-0.002	2.5
30	826.499998	-0.002	846.499998	-0.003	2.5
40	826.499997	-0.004	846.499997	-0.004	2.5
50	826.499999	-0.002	846.499998	-0.002	2.5
55	826.499997	-0.004	846.499997	-0.003	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)	
3.85	829.000002	0.002	844.000002	0.002	2.5
3.6	829.000003	0.003	844.000002	0.003	2.5
4.4	829.000001	0.001	844.000002	0.002	2.5

Note: The applicant defined the normal working voltage of the battery is from 3.6 Vdc to 4.4 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	829.000001	0.002	844.000003	0.003	2.5
-20	829.000003	0.004	844.000003	0.003	2.5
-10	829.000002	0.002	844.000003	0.003	2.5
0	829.000004	0.004	844.000002	0.003	2.5
10	829.000004	0.005	844.000003	0.004	2.5
20	828.999999	-0.002	843.999996	-0.005	2.5
30	828.999996	-0.005	843.999998	-0.002	2.5
40	828.999997	-0.003	843.999998	-0.003	2.5
50	828.999998	-0.002	843.999998	-0.002	2.5
55	828.999999	-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)	
3.85	824.700002	0.002	848.300000	0.003	2.5
3.6	824.700003	0.004	848.300000	0.003	2.5
4.4	824.700001	0.002	848.300000	0.001	2.5

Note: The applicant defined the normal working voltage of the battery is from 3.6 Vdc to 4.4 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	824.700004	0.005	848.300000	0.002	2.5
-20	824.700003	0.004	848.300000	0.003	2.5
-10	824.700002	0.002	848.300000	0.004	2.5
0	824.700002	0.003	848.300000	0.002	2.5
10	824.700004	0.005	848.300000	0.005	2.5
20	824.699998	-0.003	848.300000	-0.002	2.5
30	824.699998	-0.002	848.300000	-0.004	2.5
40	824.699996	-0.005	848.300000	-0.004	2.5
50	824.699998	-0.003	848.300000	-0.002	2.5
55	824.699998	-0.002	848.300000	-0.002	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)	
3.85	825.500003	0.003	847.500000	0.002	2.5
3.6	825.500004	0.004	847.500000	0.003	2.5
4.4	825.500003	0.004	847.500000	0.003	2.5

Note: The applicant defined the normal working voltage of the battery is from 3.6 Vdc to 4.4 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	825.500002	0.003	847.500000	0.003	2.5
-20	825.500003	0.003	847.500000	0.004	2.5
-10	825.500003	0.003	847.500000	0.002	2.5
0	825.500004	0.005	847.500000	0.003	2.5
10	825.500001	0.001	847.500000	0.004	2.5
20	825.499999	-0.002	847.500000	-0.002	2.5
30	825.499997	-0.004	847.500000	-0.004	2.5
40	825.499999	-0.001	847.500000	-0.002	2.5
50	825.499998	-0.002	847.500000	-0.002	2.5
55	825.499998	-0.003	847.500000	-0.004	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)	
3.85	826.500003	0.004	846.500002	0.003	2.5
3.6	826.500002	0.003	846.500002	0.002	2.5
4.4	826.500004	0.005	846.500002	0.002	2.5

Note: The applicant defined the normal working voltage of the battery is from 3.6 Vdc to 4.4 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	846.500003	0.004	2.5
-20	826.500003	0.003	846.500003	0.003	2.5
-10	826.500003	0.003	846.500004	0.004	2.5
0	826.500001	0.001	846.500003	0.003	2.5
10	826.500002	0.002	846.500002	0.002	2.5
20	826.499996	-0.004	846.499997	-0.004	2.5
30	826.499996	-0.004	846.499996	-0.004	2.5
40	826.499998	-0.002	846.499996	-0.004	2.5
50	826.499998	-0.003	846.499999	-0.001	2.5
55	826.499996	-0.005	846.499999	-0.001	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)	
3.85	829.000003	0.003	844.000001	0.002	2.5
3.6	829.000002	0.003	844.000001	0.001	2.5
4.4	829.000003	0.004	844.000002	0.002	2.5

Note: The applicant defined the normal working voltage of the battery is from 3.6 Vdc to 4.4 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	829.000001	0.001	844.000001	0.001	2.5
-20	829.000001	0.001	844.000003	0.004	2.5
-10	829.000003	0.003	844.000002	0.002	2.5
0	829.000002	0.003	844.000003	0.003	2.5
10	829.000004	0.004	844.000003	0.004	2.5
20	828.999998	-0.002	843.999998	-0.002	2.5
30	828.999996	-0.005	843.999996	-0.005	2.5
40	828.999997	-0.003	843.999996	-0.004	2.5
50	828.999997	-0.004	843.999997	-0.004	2.5
55	828.999997	-0.004	843.999998	-0.002	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)	
3.85	831.500002	0.003	841.500004	0.005	2.5
3.6	831.500004	0.005	841.500003	0.004	2.5
4.4	831.500002	0.002	841.500002	0.002	2.5

Note: The applicant defined the normal working voltage of the battery is from 3.6 Vdc to 4.4 Vdc.

Frequency Error vs. Temperature

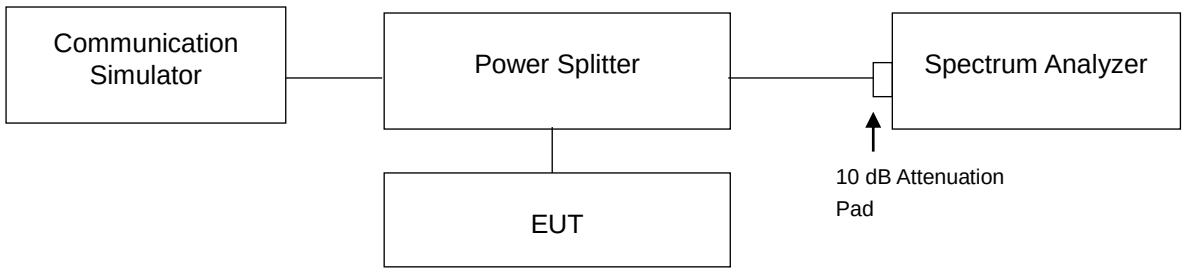
Temp. (℃)	LTE Band 26				Limit (ppm)
	Channel Bandwidth: 15 MHz				
	Low Channel		High Channel		
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
-30	831.500001	0.002	841.500003	0.004	2.5
-20	831.500003	0.003	841.500003	0.004	2.5
-10	831.500004	0.004	841.500003	0.003	2.5
0	831.500004	0.004	841.500002	0.002	2.5
10	831.500002	0.002	841.500003	0.004	2.5
20	831.499997	-0.004	841.499998	-0.003	2.5
30	831.499998	-0.003	841.499997	-0.004	2.5
40	831.499998	-0.003	841.499998	-0.002	2.5
50	831.499997	-0.004	841.499996	-0.004	2.5
55	831.499998	-0.003	841.499997	-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

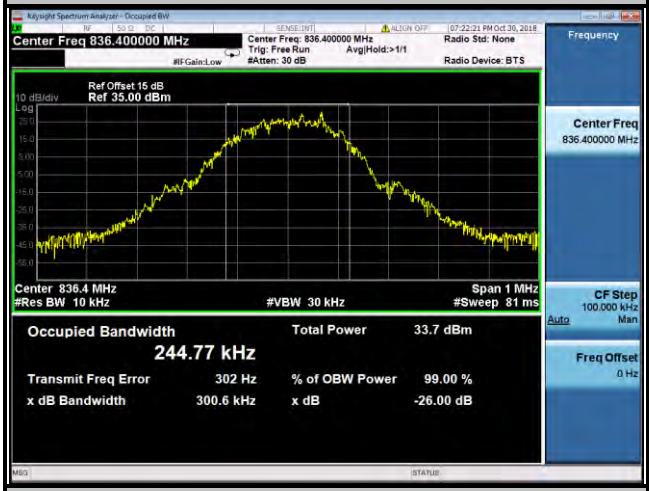
<99 % Occupied Bandwidth>

Channel	Frequency (MHz)	99 % Occupied Bandwidth (kHz)		Channel	Frequency (MHz)	99 % Occupied Bandwidth (MHz)
		GSM	EDGE			WCDMA
128	824.2	241.96	245.61	4132	826.4	4.1595
189	836.4	244.77	246.55	4182	836.4	4.1573
251	848.8	241.28	245.29	4233	846.6	4.1627

Channel	Frequency (MHz)	99 % Occupied Bandwidth (kHz)
		CDMA
1013	824.70	1.2755
384	836.52	1.2761
777	848.31	1.2773

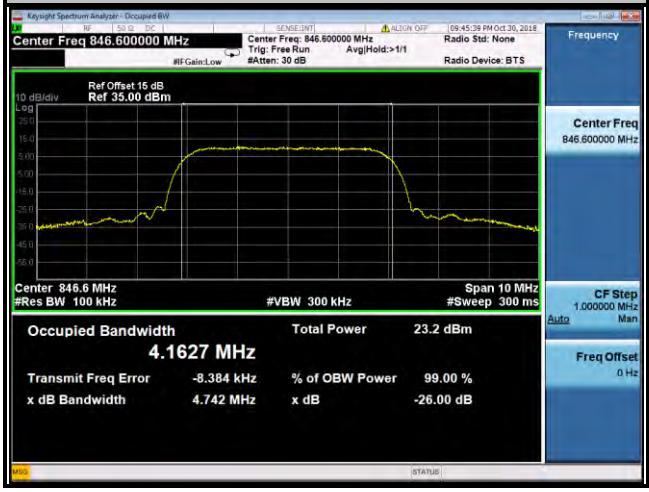
Spectrum Plot of Worst Value

GSM

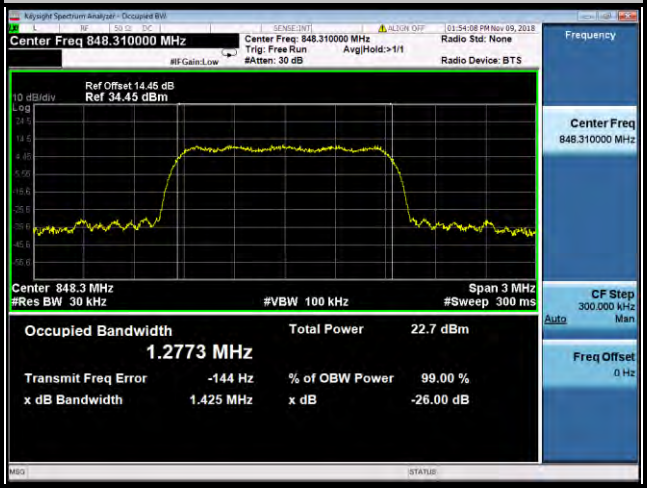


EDGE

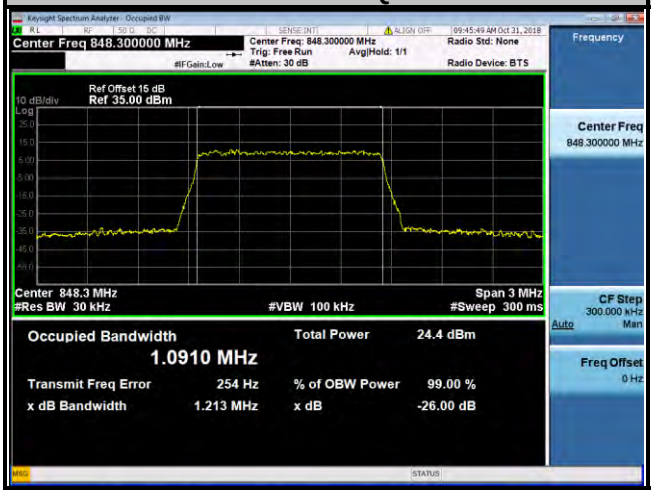
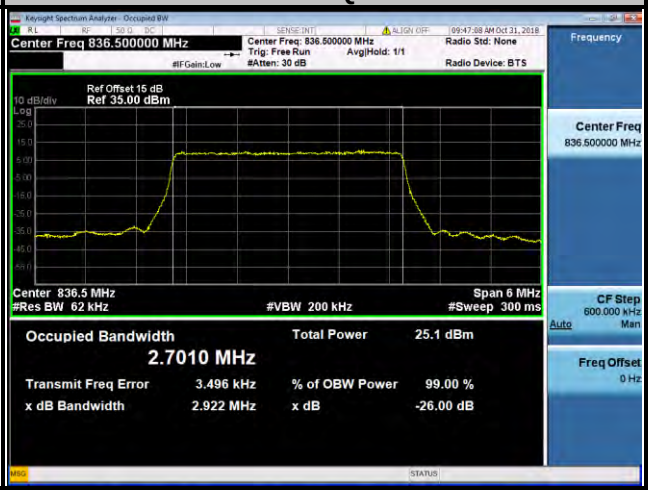
WCDMA



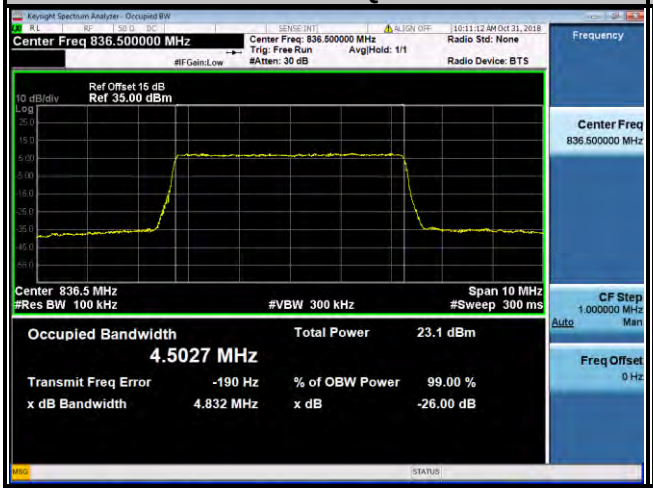
CDMA



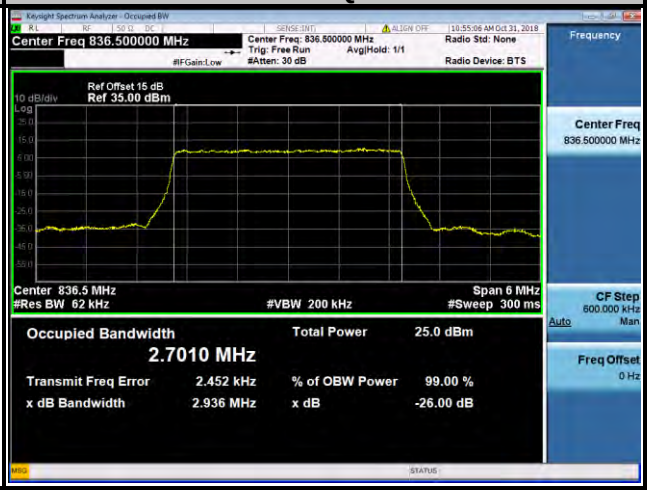
LTE Band 5									
Channel Bandwidth: 1.4 MHz					Channel Bandwidth: 3 MHz				
Channel	Frequency (MHz)	99 % Occupied Bandwidth (MHz)			Channel	Frequency (MHz)	99 % Occupied Bandwidth (MHz)		
		QPSK	16QAM	64QAM			QPSK	16QAM	64QAM
20407	824.7	1.0865	1.0901	1.0875	20415	825.5	2.6982	2.6974	2.6979
20525	836.5	1.0863	1.0893	1.0895	20525	836.5	2.7010	2.6976	2.6980
20643	848.3	1.0846	1.0910	1.0870	20635	847.5	2.7009	2.6974	2.6985

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

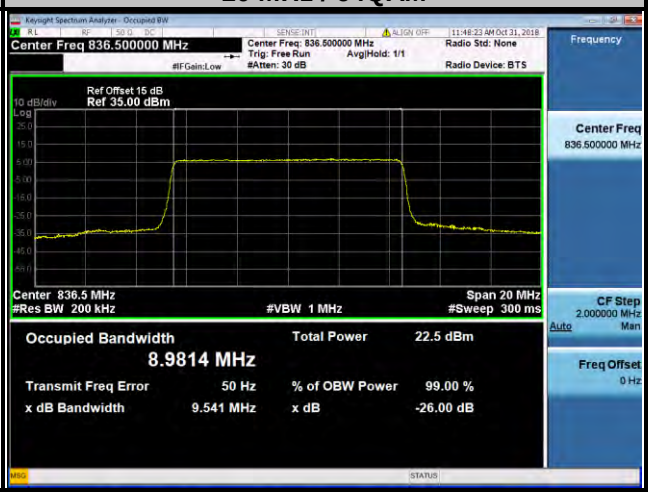
LTE Band 5									
Channel Bandwidth: 5 MHz					Channel Bandwidth: 10 MHz				
Channel	Frequency (MHz)	99 % Occupied Bandwidth (MHz)			Channel	Frequency (MHz)	99 % Occupied Bandwidth (MHz)		
		QPSK	16QAM	64QAM			QPSK	16QAM	64QAM
20425	826.5	4.4912	4.4936	4.5001	20450	829.0	8.9682	8.9711	8.9751
20525	836.5	4.4925	4.4948	4.5027	20525	836.5	8.9724	8.9755	8.9791
20625	846.5	4.4914	4.4927	4.5006	20600	844.0	8.9594	8.9609	8.9652

Spectrum Plot of Worst Value	
5 MHz / 64QAM	10 MHz / 64QAM
	

LTE Band 26									
Channel Bandwidth: 1.4 MHz					Channel Bandwidth: 3 MHz				
Channel	Frequency (MHz)	99 % Occupied Bandwidth (MHz)			Channel	Frequency (MHz)	99 % Occupied Bandwidth (MHz)		
		QPSK	16QAM	64QAM			QPSK	16QAM	64QAM
26797	824.7	1.0863	1.0878	1.0879	26805	825.5	2.6991	2.6966	2.6960
26915	836.5	1.0864	1.0879	1.0871	26915	836.5	2.7010	2.6979	2.6991
27033	848.3	1.0859	1.0874	1.0882	27025	847.5	2.7001	2.6977	2.6971

Spectrum Plot of Worst Value	
1.4 MHz / 64QAM	3 MHz / QPSK
	

LTE Band 26									
Channel Bandwidth: 5 MHz					Channel Bandwidth: 10 MHz				
Channel	Frequency (MHz)	99 % Occupied Bandwidth (MHz)			Channel	Frequency (MHz)	99 % Occupied Bandwidth (MHz)		
		QPSK	16QAM	64QAM			QPSK	16QAM	64QAM
26815	826.5	4.4925	4.4911	4.5025	26840	829.0	8.9705	8.9690	8.9767
26915	836.5	4.4916	4.4945	4.5031	26915	836.5	8.9682	8.9757	8.9814
27015	846.5	4.4930	4.4936	4.5012	26990	844.0	8.9581	8.9645	8.9675

Spectrum Plot of Worst Value	
5 MHz / 64QAM	10 MHz / 64QAM
	

LTE Band 26				
Channel Bandwidth: 15 MHz				
Channel	Frequency (MHz)	99 % Occupied Bandwidth (MHz)		
		QPSK	16QAM	64QAM
26865	831.5	13.468	13.458	13.458
26915	836.5	13.451	13.445	13.444
26965	841.5	13.425	13.415	13.414

Spectrum Plot of Worst Value
15 MHz / QPSK

<26 dB Bandwidth>

Channel	Frequency (MHz)	26 dB Bandwidth (kHz)		Channel	Frequency (MHz)	26 dB Bandwidth (MHz)
		GSM	EDGE			WCDMA
128	824.2	306.5	318.1	4132	826.4	4.747
189	836.4	300.6	310.6	4182	836.4	4.740
251	848.8	305.3	314.7	4233	846.6	4.742

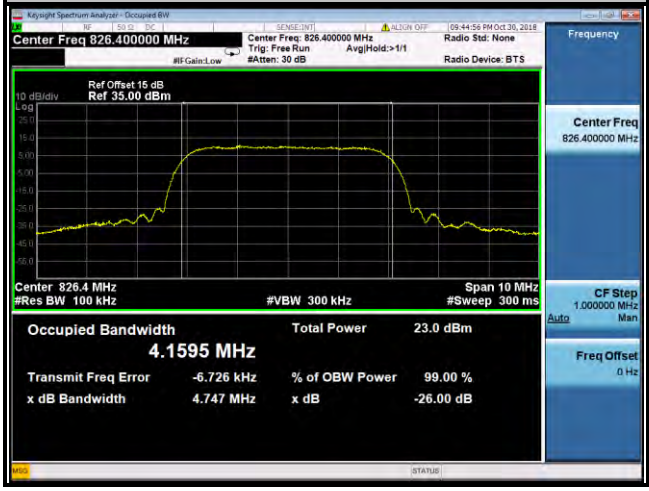
Channel	Frequency (MHz)	26 dB Bandwidth (MHz)
		CDMA
1013	824.70	1.427
384	836.52	1.424
777	848.31	1.425

Spectrum Plot of Worst Value

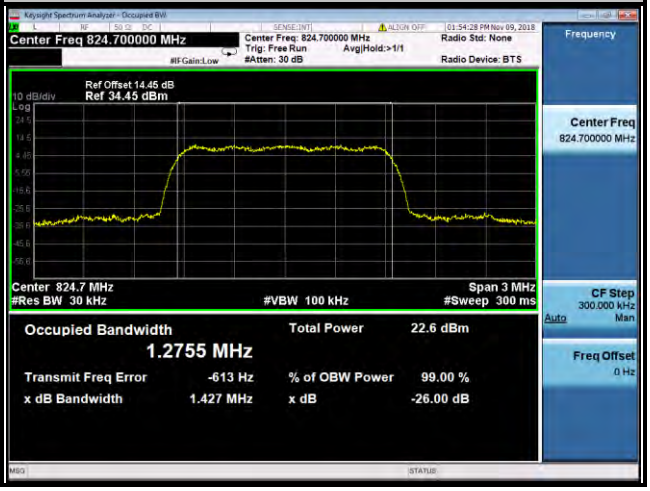
GSM

EDGE

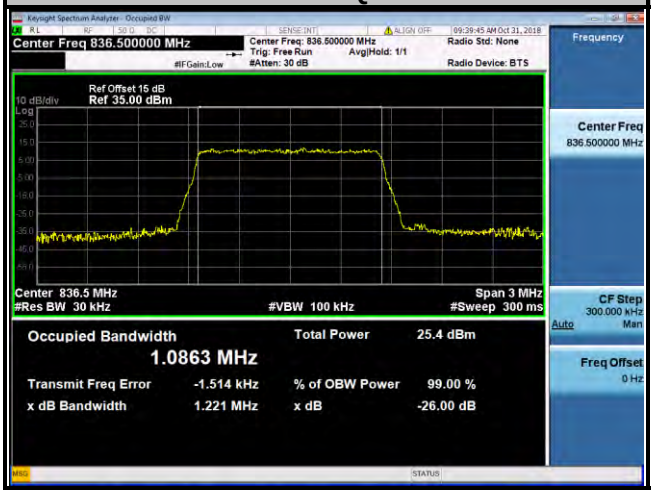
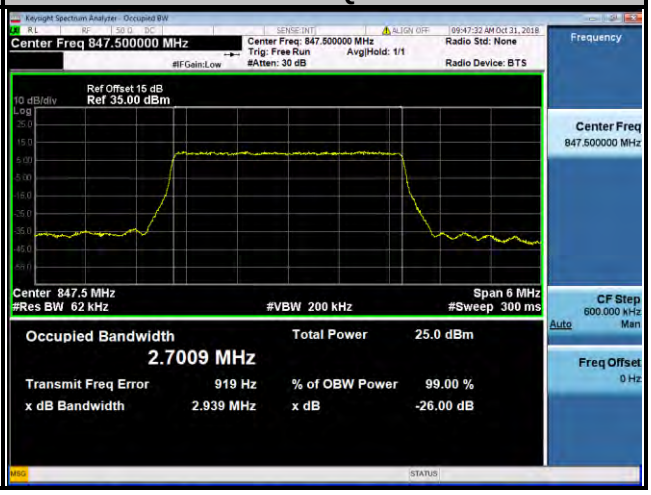
WCDMA



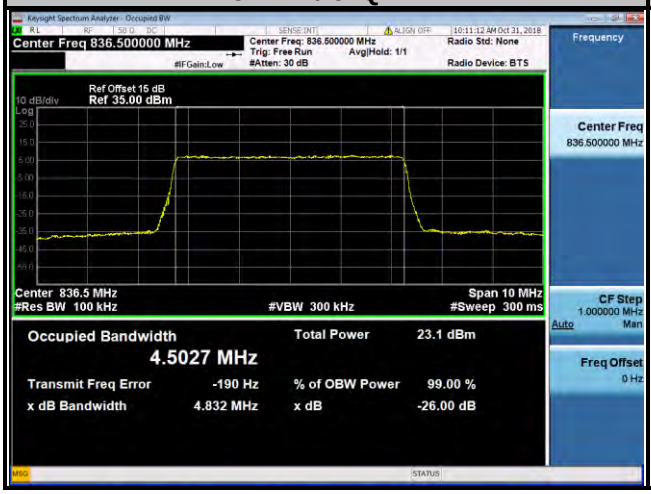
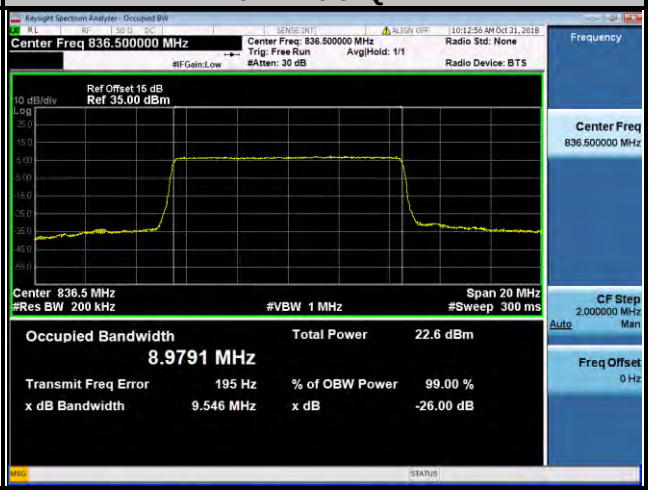
CDMA



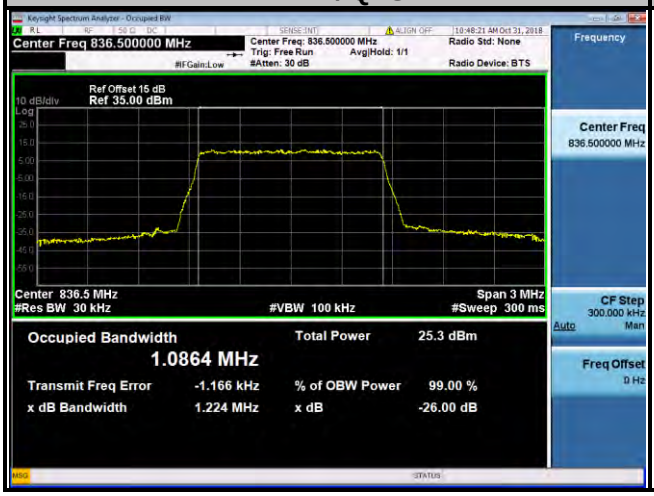
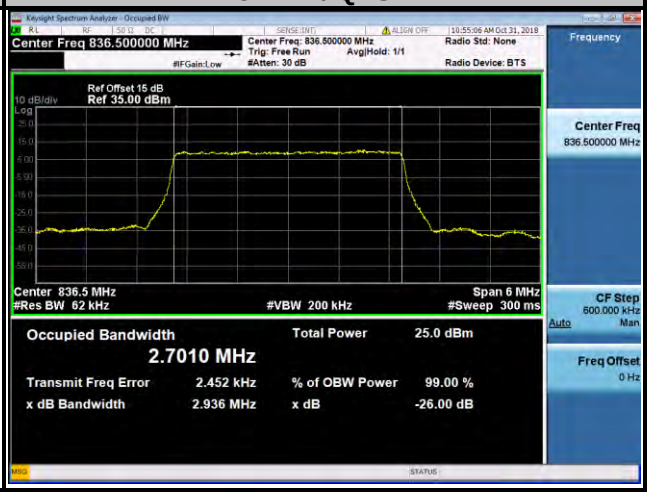
LTE Band 5									
Channel Bandwidth: 1.4 MHz					Channel Bandwidth: 3 MHz				
Channel	Frequency (MHz)	26 dB Bandwidth (MHz)			Channel	Frequency (MHz)	26 dB Bandwidth (MHz)		
		QPSK	16QAM	64QAM			QPSK	16QAM	64QAM
20407	824.7	1.211	1.214	1.216	20415	825.5	2.928	2.921	2.910
20525	836.5	1.221	1.210	1.210	20525	836.5	2.922	2.925	2.899
20643	848.3	1.220	1.213	1.212	20635	847.5	2.939	2.924	2.915

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

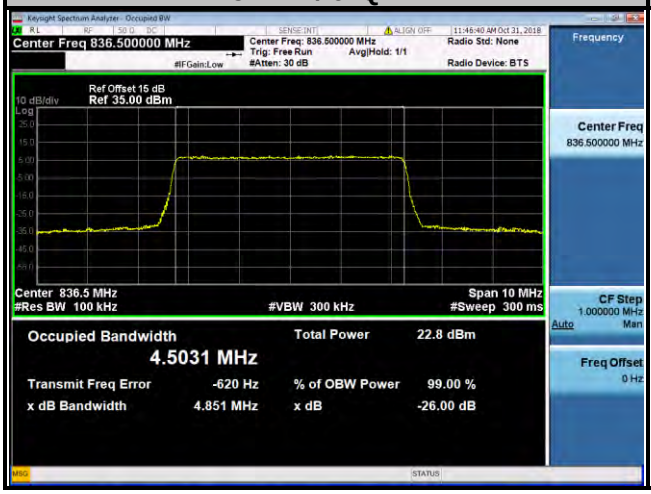
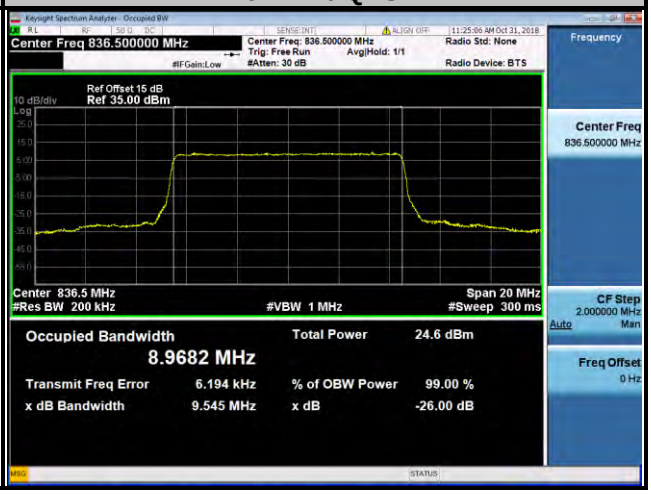
LTE Band 5									
Channel Bandwidth: 5 MHz					Channel Bandwidth: 10 MHz				
Channel	Frequency (MHz)	26 dB Bandwidth (MHz)			Channel	Frequency (MHz)	26 dB Bandwidth (MHz)		
		QPSK	16QAM	64QAM			QPSK	16QAM	64QAM
20425	826.5	4.820	4.820	4.828	20450	829.0	9.533	9.507	9.528
20525	836.5	4.822	4.808	4.832	20525	836.5	9.524	9.520	9.546
20625	846.5	4.812	4.803	4.806	20600	844.0	9.505	9.511	9.529

Spectrum Plot of Worst Value	
5 MHz / 64QAM	10 MHz / 64QAM
	

LTE Band 26									
Channel Bandwidth: 1.4 MHz					Channel Bandwidth: 3 MHz				
Channel	Frequency (MHz)	26 dB Bandwidth (MHz)			Channel	Frequency (MHz)	26 dB Bandwidth (MHz)		
		QPSK	16QAM	64QAM			QPSK	16QAM	64QAM
26797	824.7	1.218	1.215	1.216	26805	825.5	2.926	2.921	2.912
26915	836.5	1.224	1.213	1.219	26915	836.5	2.936	2.923	2.903
27033	848.3	1.222	1.215	1.214	27025	847.5	2.936	2.915	2.904

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)	26 dB Bandwidth (MHz)			Channel	Frequency (MHz)	26 dB Bandwidth (MHz)		
		QPSK	16QAM	64QAM			QPSK	16QAM	64QAM
26815	826.5	4.819	4.806	4.805	26840	829.0	9.518	9.515	9.533
26915	836.5	4.822	4.799	4.851	26915	836.5	9.545	9.522	9.541
27015	846.5	4.843	4.806	4.836	26990	844.0	9.523	9.508	9.531

Spectrum Plot of Worst Value	
5 MHz / 64QAM	10 MHz / QPSK
	

LTE Band 26				
Channel Bandwidth: 15 MHz				
Channel	Frequency (MHz)	26 dB Bandwidth (MHz)		
		QPSK	16QAM	64QAM
26865	831.5	14.27	14.25	14.25
26915	836.5	14.30	14.26	14.25
26965	841.5	14.24	14.23	14.23

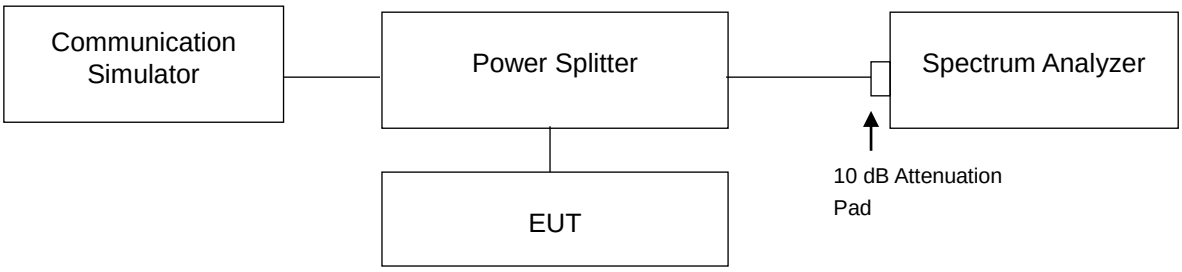
Spectrum Plot of Worst Value
15 MHz / QPSK

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.

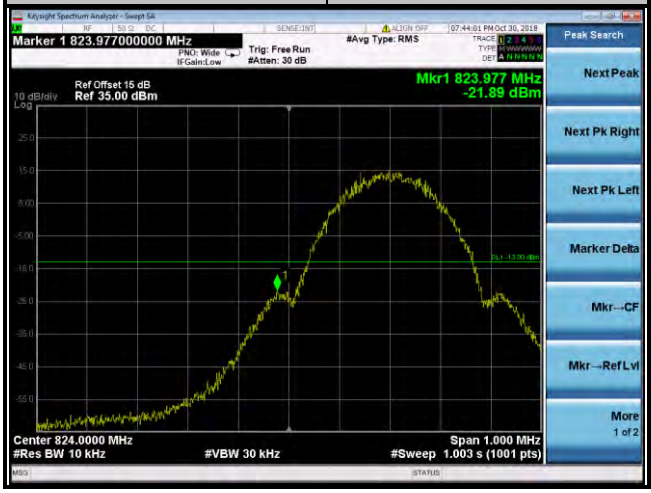
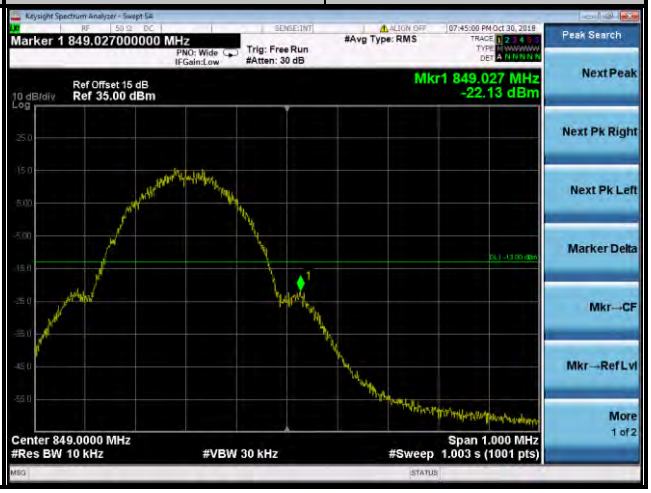
4.5.2 Test Setup

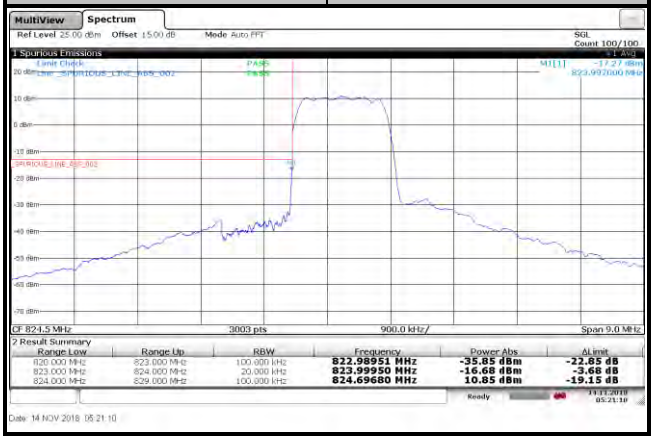
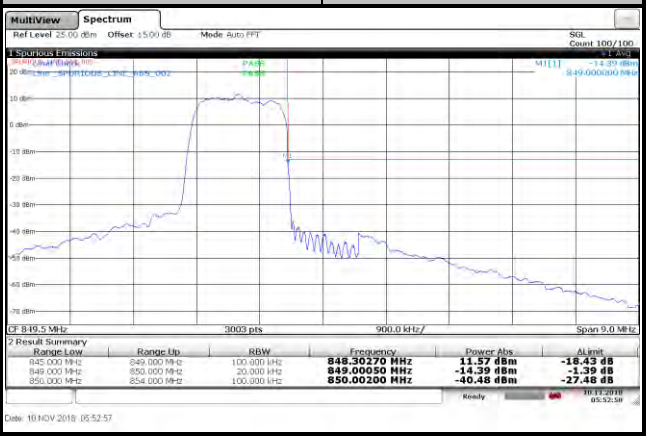


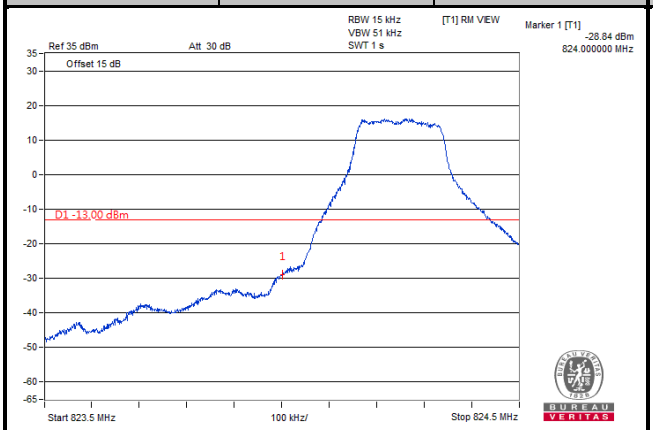
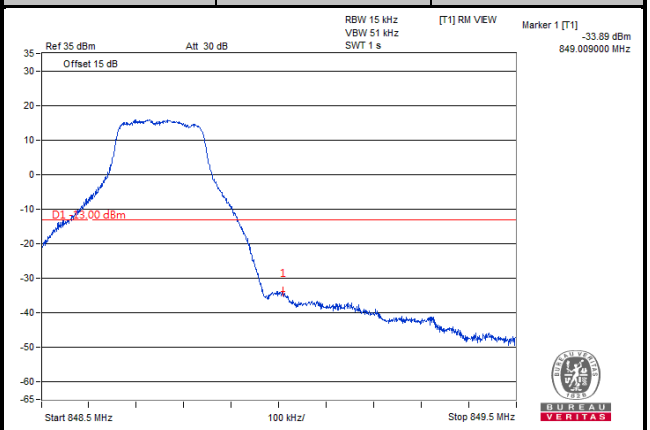
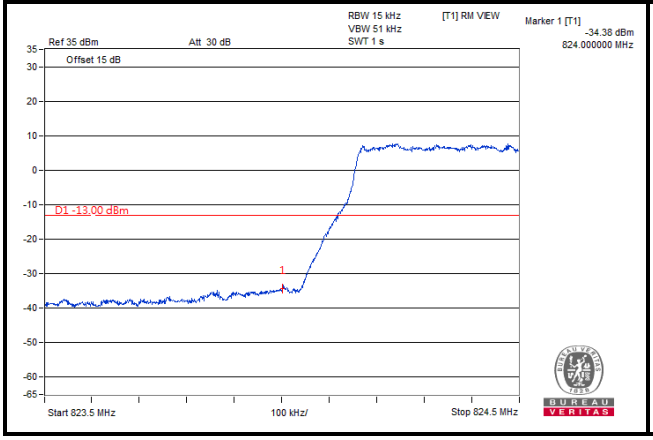
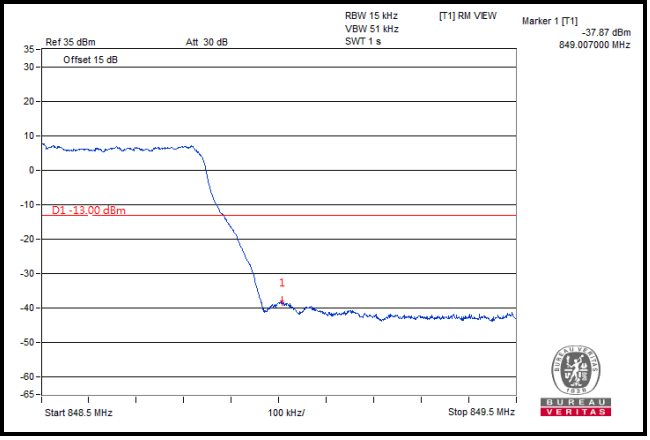
4.5.3 Test Procedures

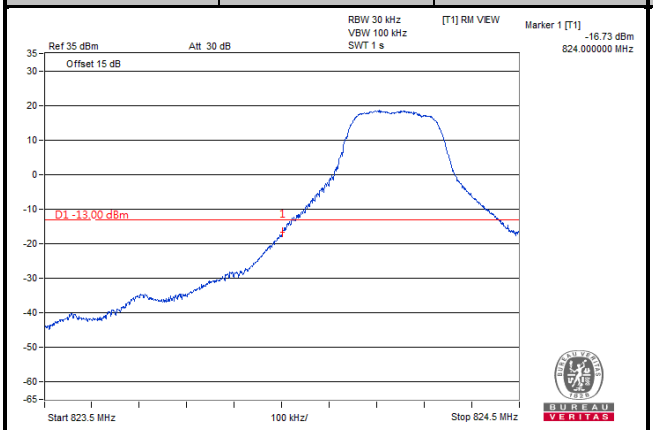
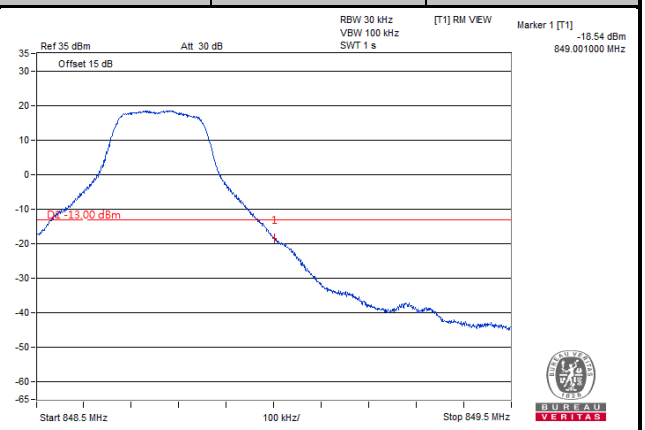
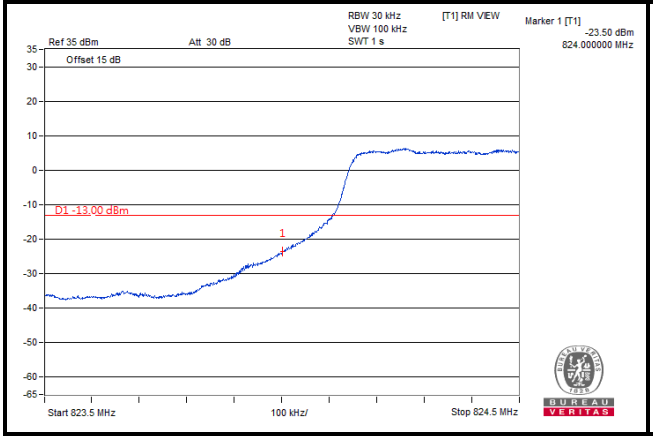
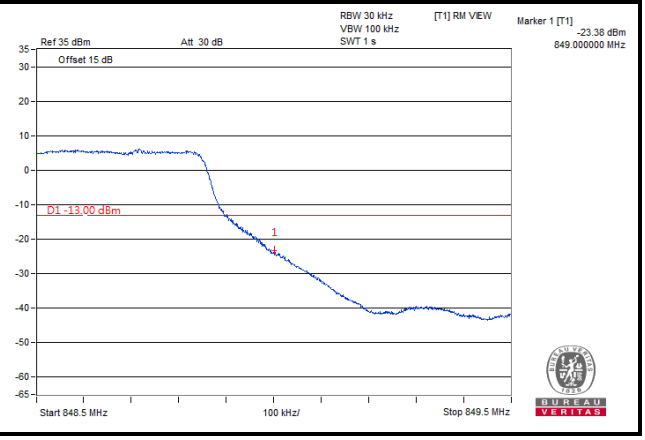
a. All measurements were done at low and high operational frequency range.
b. The center frequency of spectrum is the band edge frequency and span is 1 MHz. RB of the spectrum is 10 kHz and VB of the spectrum is 30 kHz (GSM/GPRS/EDGE).
c. The center frequency of spectrum is the band edge frequency and span is 5 MHz. RB of the spectrum is 100 kHz and VB of the spectrum is 300 kHz (WCDMA).
d. The center frequency of spectrum is the band edge frequency and span is 9 MHz. RB of the spectrum is 20 kHz and VB of the spectrum is 62 kHz (CDMA).
e. The center frequency of spectrum is the band edge frequency and span is 1 MHz. RB of the spectrum is 15 kHz and VB of the spectrum is 51 kHz (LTE Bandwidth 1.4 MHz).
f. The center frequency of spectrum is the band edge frequency and span is 1 MHz. RB of the spectrum is 30 kHz and VB of the spectrum is 100 kHz (LTE Bandwidth 3 MHz).
g. 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 5 MHz).
h. The center frequency of spectrum is the band edge frequency and span is 1 MHz. RB of the spectrum is 100 kHz and VB of the spectrum is 300 kHz (LTE Bandwidth 10 MHz).
i. The center frequency of spectrum is the band edge frequency and span is 1 MHz. RB of the spectrum is 150 kHz and VB of the spectrum is 470 kHz (LTE Bandwidth 15 MHz).
j. Record the max trace plot into the test report.

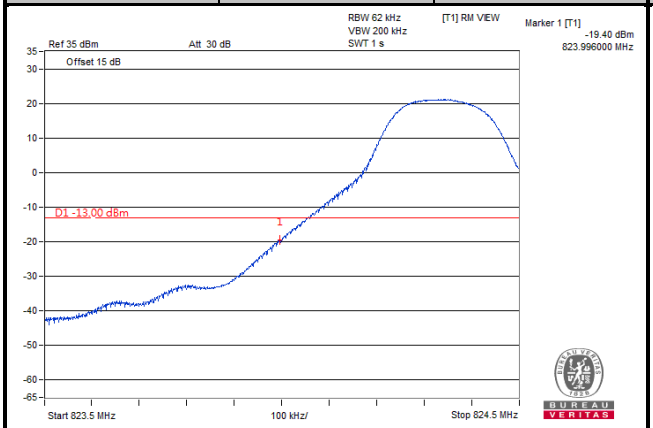
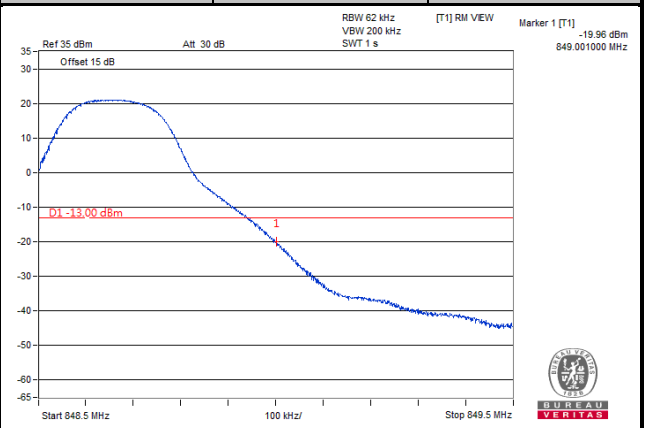
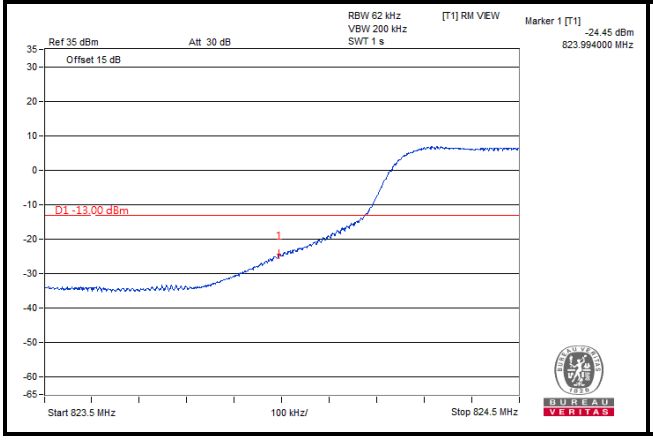
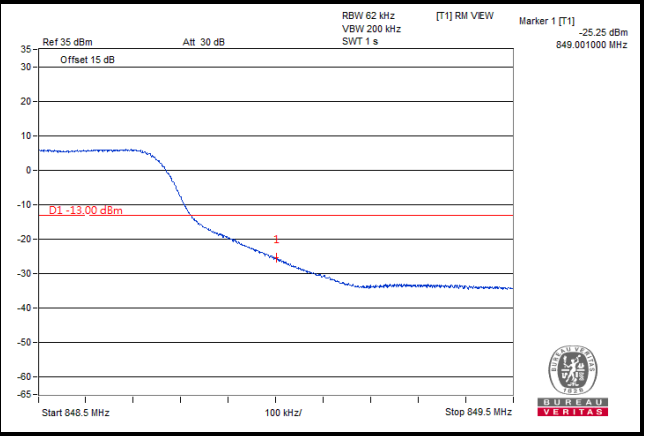
4.5.4 Test Results

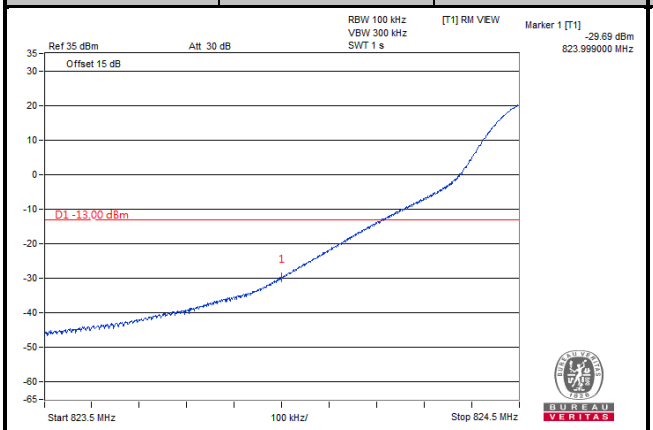
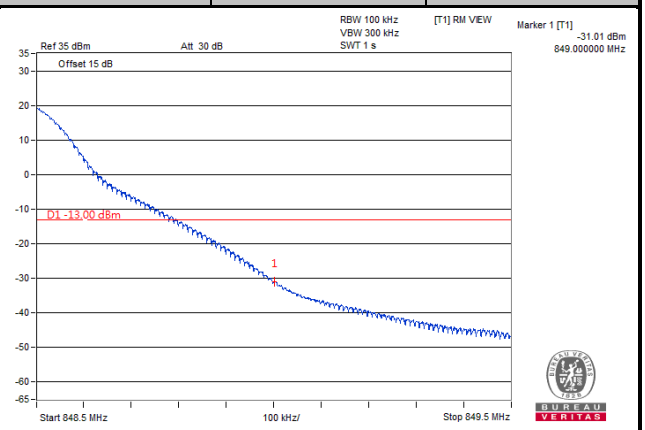
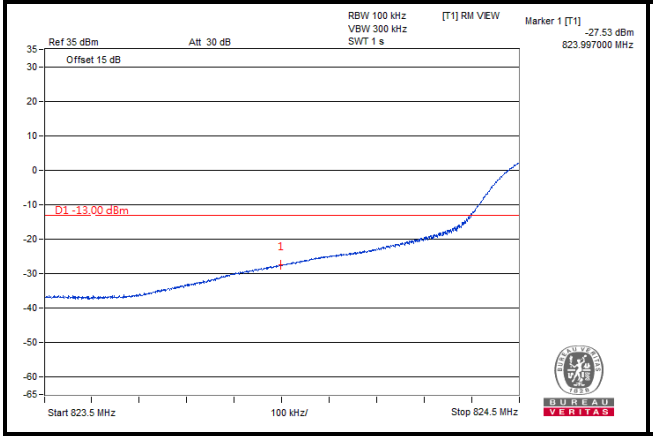
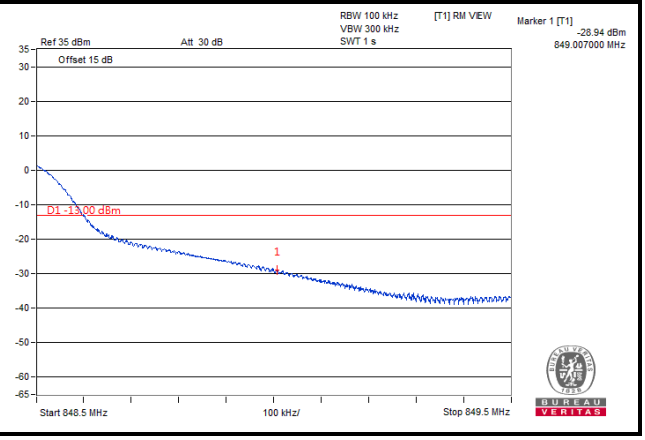
GSM			
Channel	128	Channel	251
			
EDGE			
Channel	128	Channel	251
			

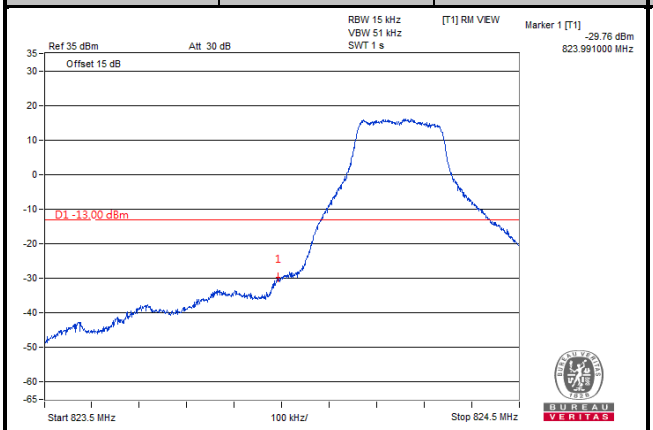
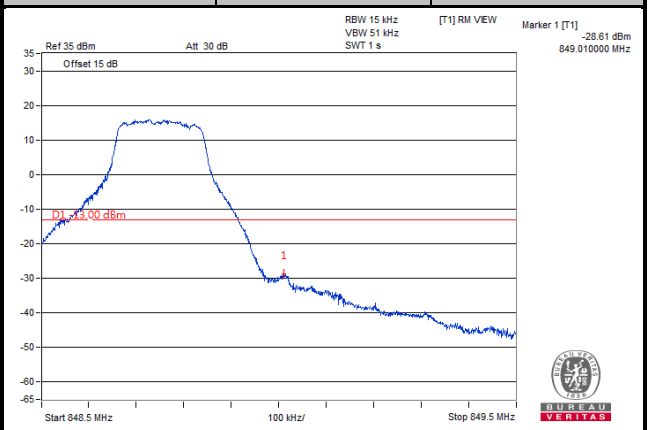
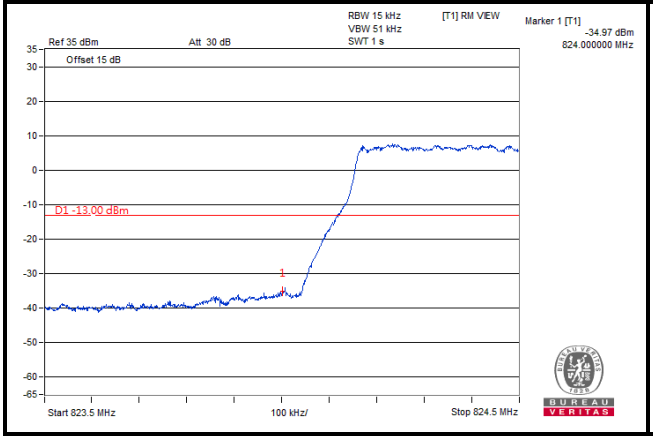
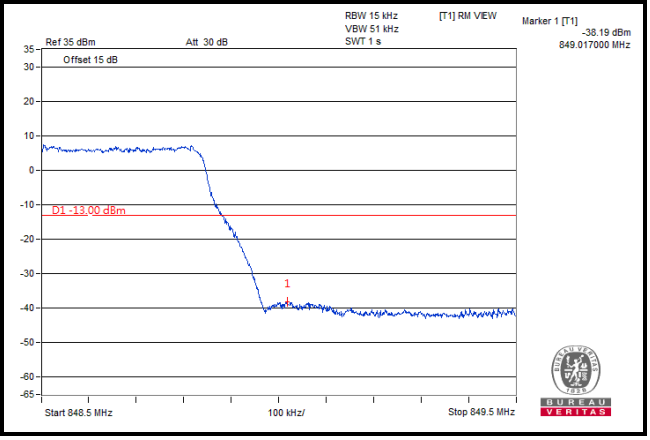
WCDMA			
Channel	4132	Channel	4233
			
CDMA			
Channel	1013	Channel	777
			

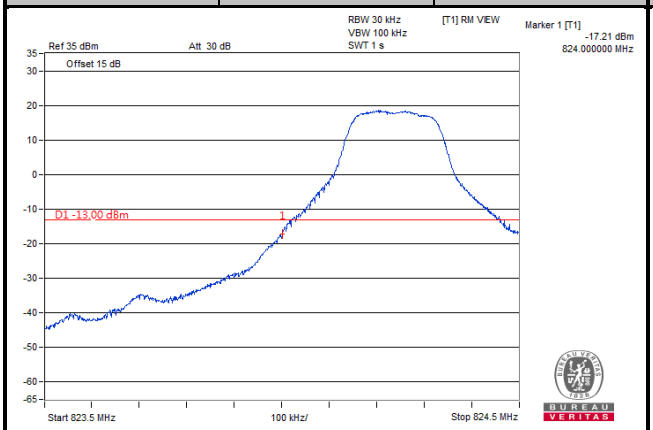
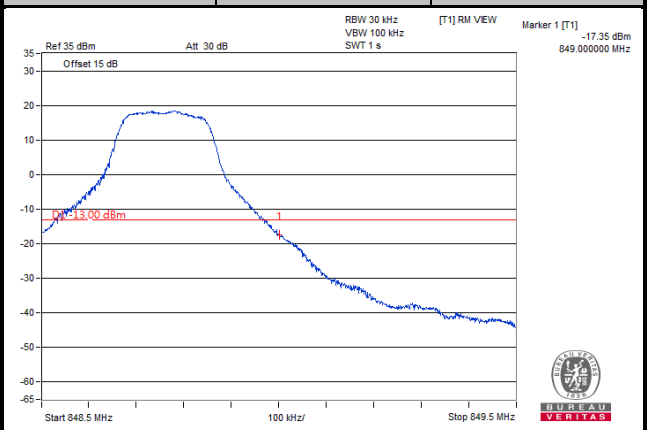
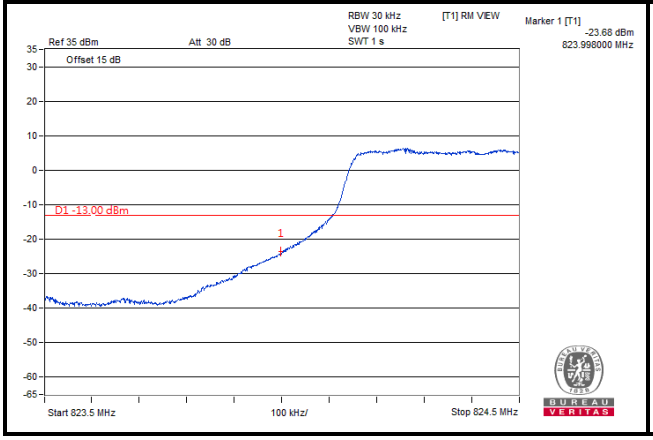
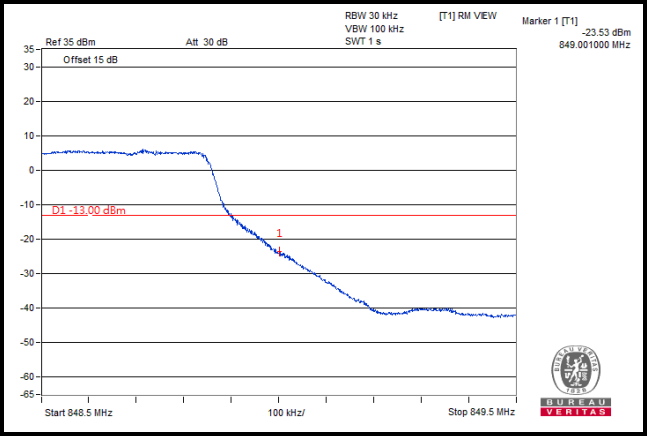
LTE Band 5					
Channel Bandwidth: 1.4 MHz					
Channel	20407	1 RB	Channel	20643	1 RB
					
Channel	20407	6 RB	Channel	20643	6 RB
					

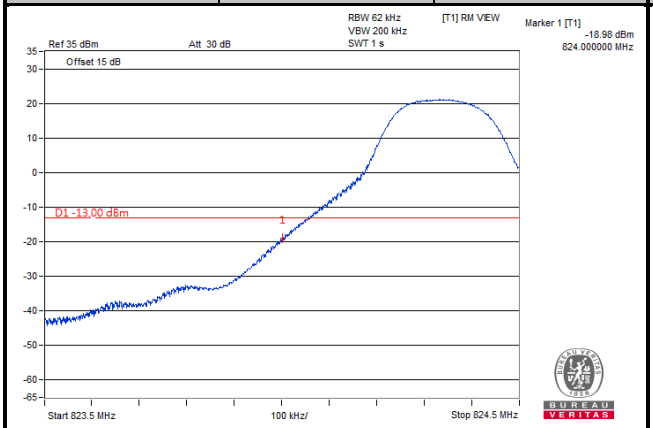
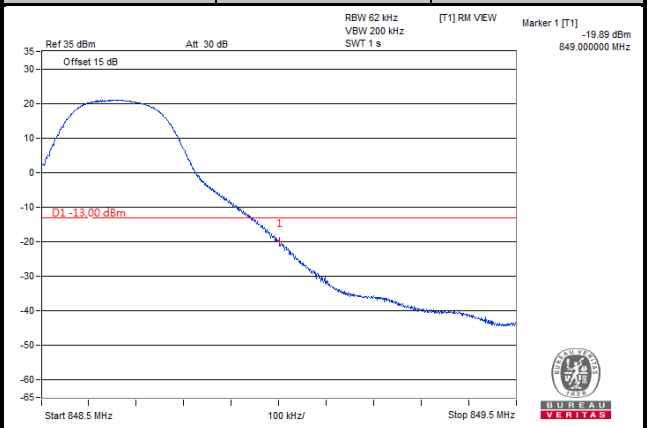
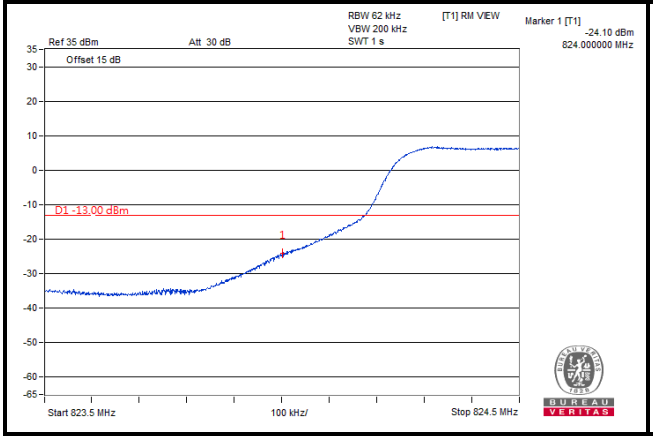
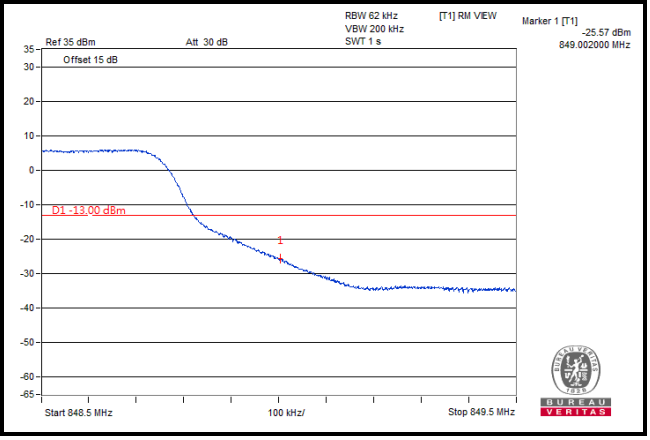
LTE Band 5					
Channel Bandwidth: 3 MHz					
Channel	20415	1 RB	Channel	20635	1 RB
					
Channel	20415	15 RB	Channel	20635	15 RB
					

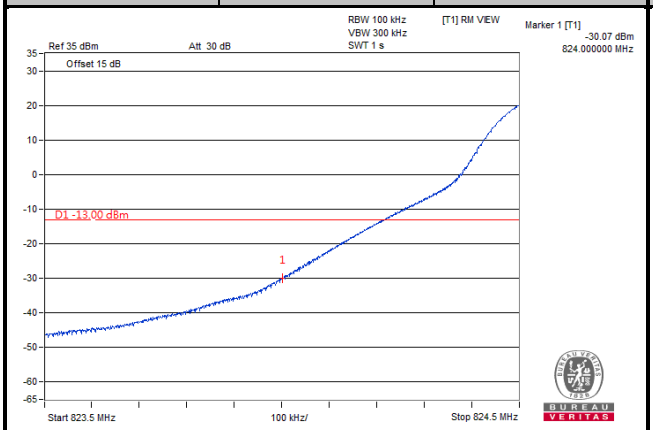
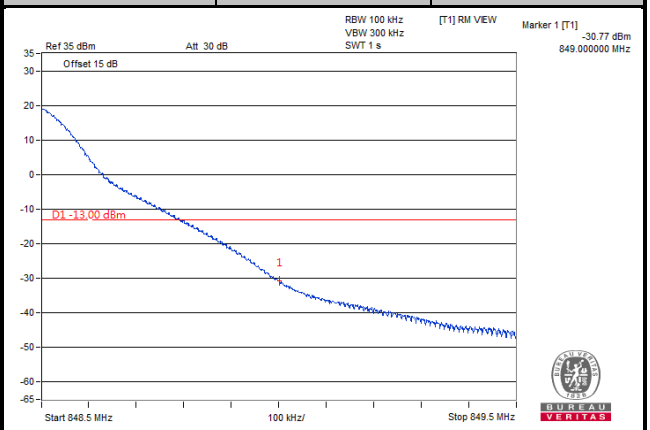
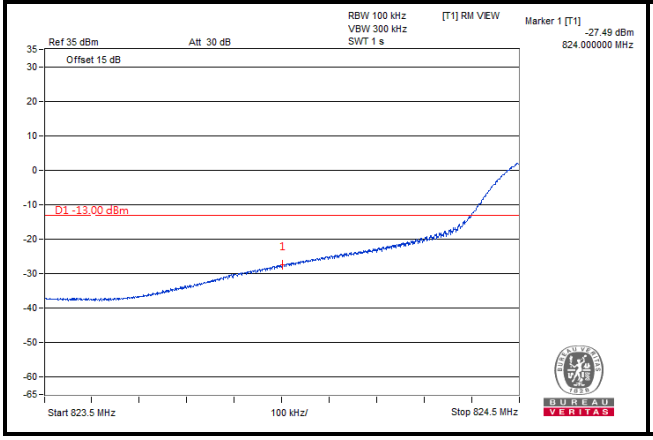
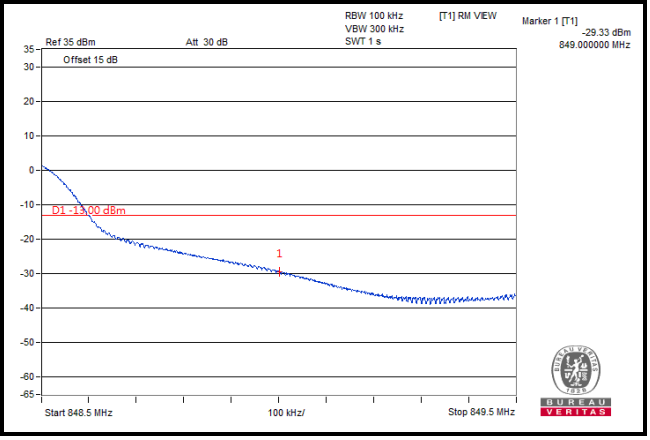
LTE Band 5					
Channel Bandwidth: 5 MHz					
Channel	20425	1 RB	Channel	20625	1 RB
					
Channel	20425	25 RB	Channel	20625	25 RB
					

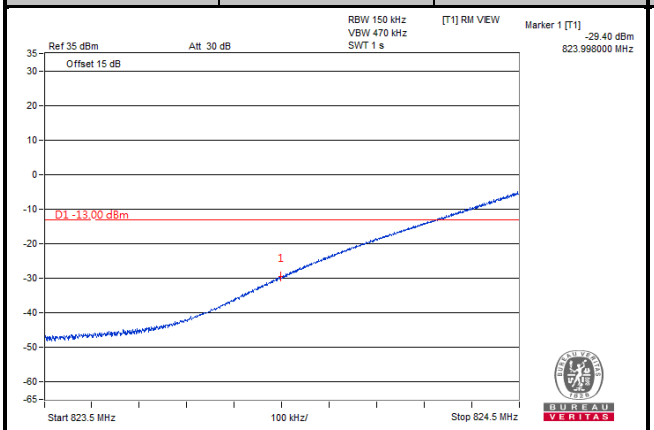
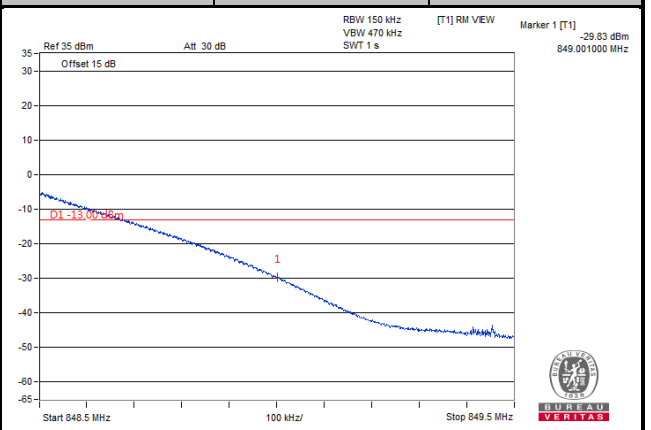
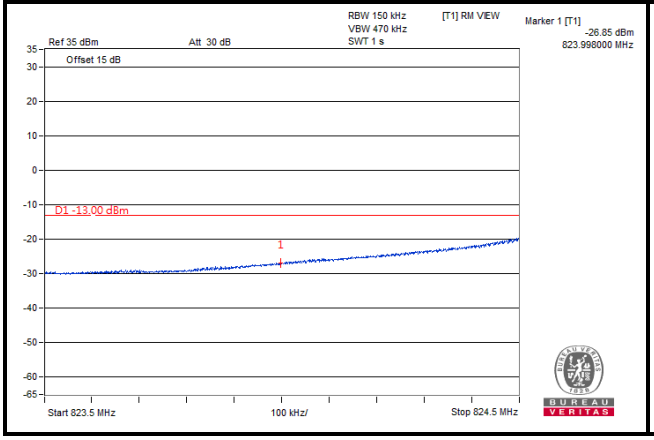
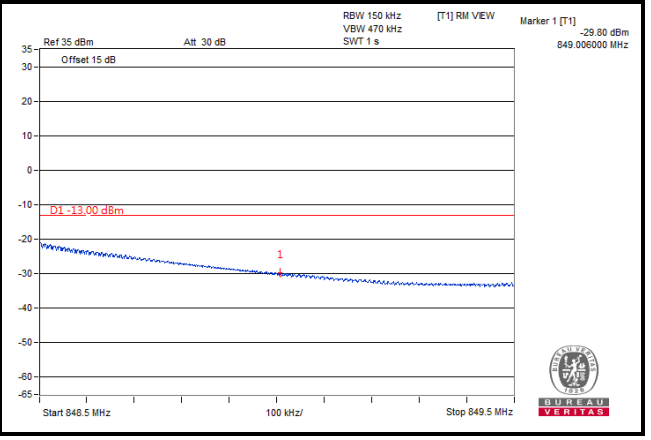
LTE Band 5					
Channel Bandwidth: 10 MHz					
Channel	20450	1 RB	Channel	20600	1 RB
					
Channel	20450	50 RB	Channel	20600	50 RB
					

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
					

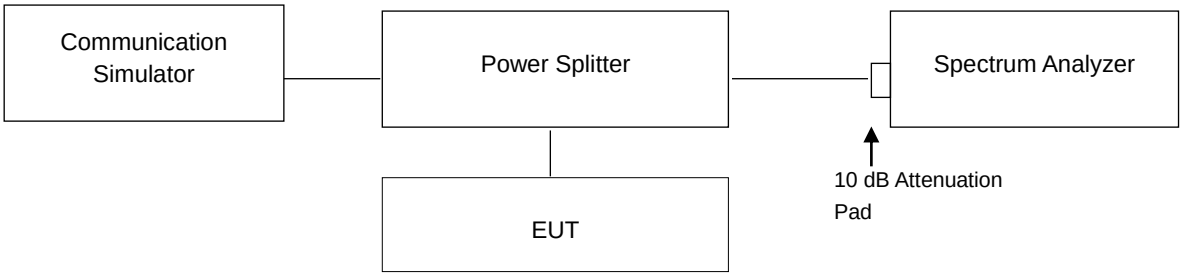
LTE Band 26					
Channel Bandwidth: 15 MHz					
Channel	26865	1 RB	Channel	26965	1 RB
					
Channel	26865	75 RB	Channel	26965	75 RB
					

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 %.

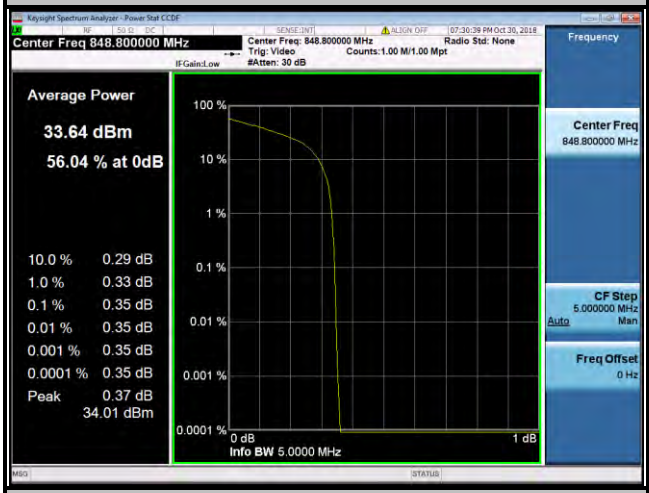
4.6.4 Test Results

Channel	Frequency (MHz)	Peak to Average Ratio (dB)		Channel	Frequency (MHz)	Peak to Average Ratio (dB)
		GSM	EDGE			WCDMA
128	824.2	0.26	3.16	4132	826.4	2.95
189	836.4	0.31	3.17	4182	836.4	3.03
251	848.8	0.35	3.23	4233	846.6	3.00

Channel	Frequency (MHz)	Peak to Average Ratio (dB)
		CDMA
1013	824.70	3.27
384	836.52	3.86
777	848.31	3.39

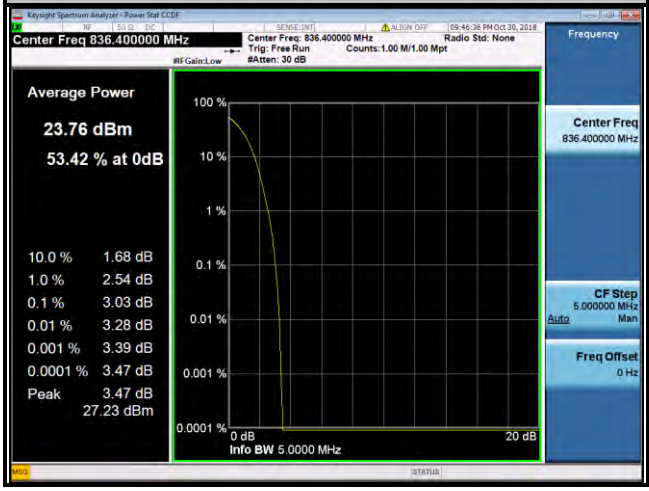
Spectrum Plot of Worst Value

GSM

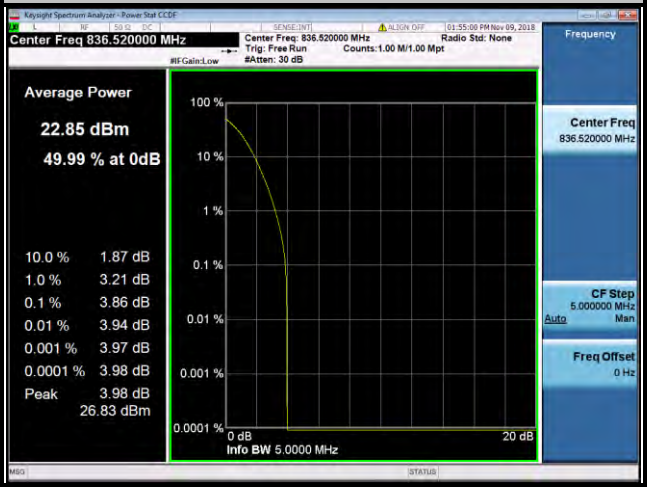


EDGE

WCDMA

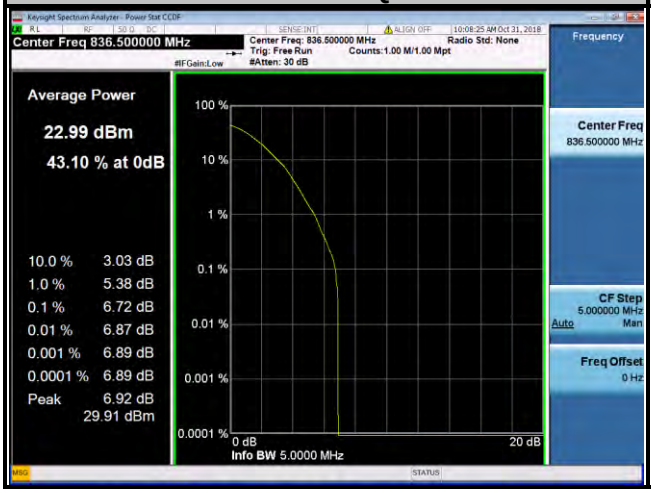


CDMA

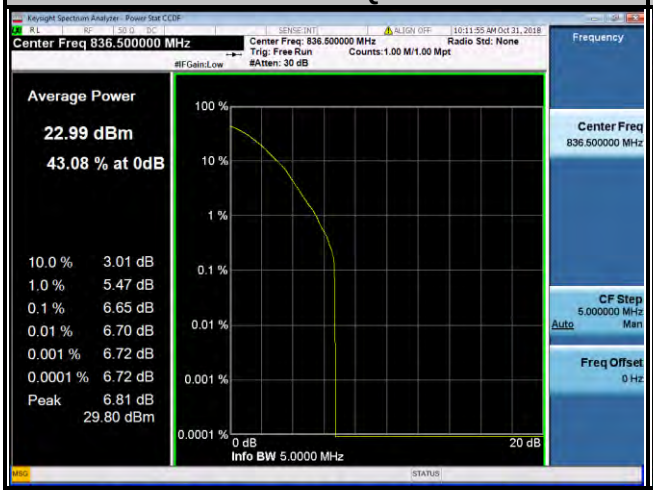
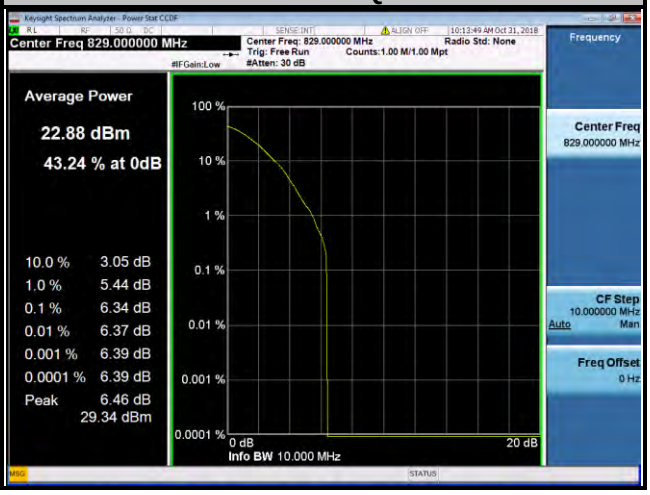


LTE Band 5									
Channel Bandwidth: 1.4 MHz					Channel Bandwidth: 3 MHz				
Channel	Frequency (MHz)	Peak to Average Ratio (dB)			Channel	Frequency (MHz)	Peak to Average Ratio (dB)		
		QPSK	16QAM	64QAM			QPSK	16QAM	64QAM
20407	824.7	3.81	5.38	6.43	20415	825.5	3.60	5.20	6.41
20525	836.5	3.82	5.52	6.72	20525	836.5	3.61	5.37	6.74
20643	848.3	3.79	5.23	6.27	20635	847.5	3.58	5.33	6.55

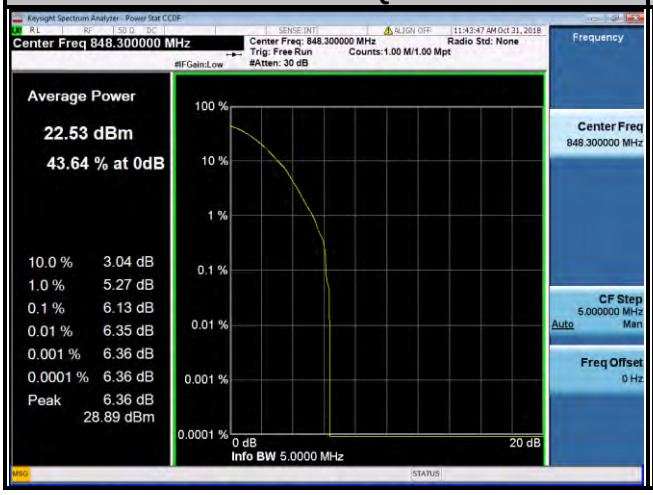
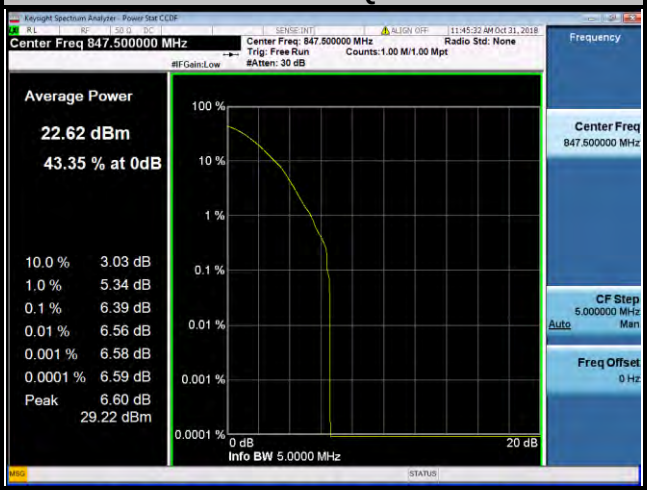
Spectrum Plot of Worst Value	
1.4 MHz / 64QAM	3 MHz / 64QAM



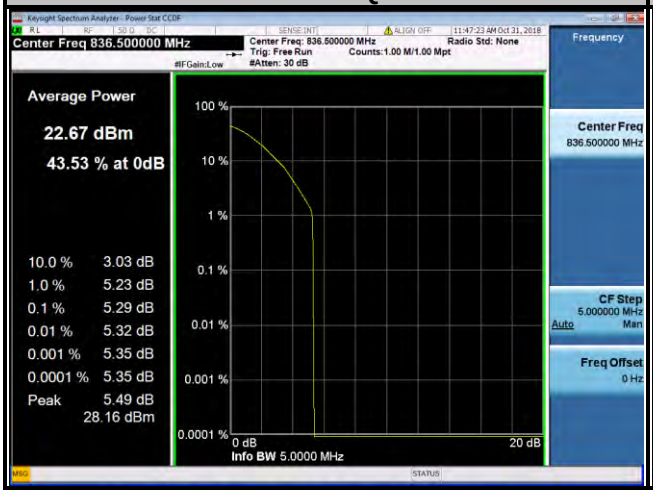
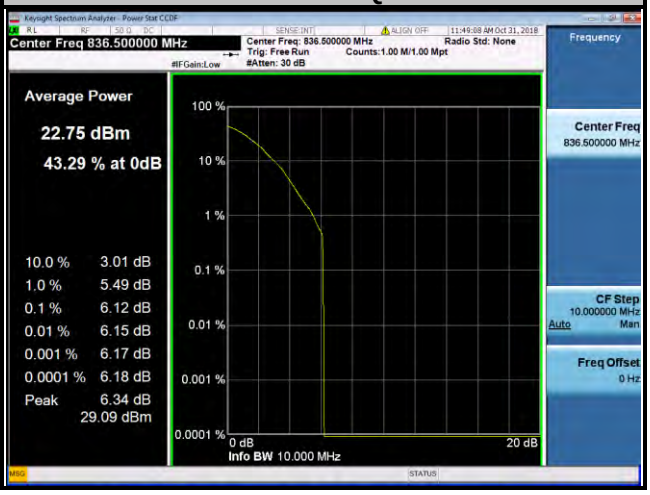
LTE Band 5									
Channel Bandwidth: 5 MHz					Channel Bandwidth: 10 MHz				
Channel	Frequency (MHz)	Peak to Average Ratio (dB)			Channel	Frequency (MHz)	Peak to Average Ratio (dB)		
		QPSK	16QAM	64QAM			QPSK	16QAM	64QAM
20425	826.5	3.59	5.24	6.49	20450	829.0	3.53	5.09	6.34
20525	836.5	3.61	5.36	6.65	20525	836.5	3.54	5.16	6.29
20625	846.5	3.60	5.25	6.53	20600	844.0	3.48	5.21	5.04

Spectrum Plot of Worst Value	
5 MHz / 64QAM	10 MHz / 64QAM
	

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	64QAM			QPSK	16QAM	64QAM
26797	824.7	3.77	5.17	5.19	26805	825.5	3.53	5.05	5.11
26915	836.5	3.71	4.52	5.60	26915	836.5	3.48	4.26	5.39
27033	848.3	3.73	4.98	6.13	27025	847.5	3.57	5.25	6.39

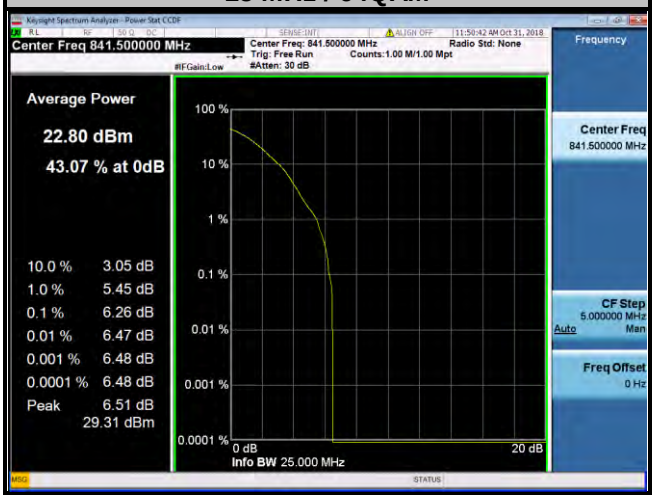
Spectrum Plot of Worst Value	
1.4 MHz / 64QAM	3 MHz / 64QAM
	

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	64QAM			QPSK	16QAM	64QAM
26815	826.5	3.55	4.07	5.14	26840	829.0	3.46	5.11	5.04
26915	836.5	3.39	4.17	5.29	26915	836.5	3.53	4.97	6.12
27015	846.5	3.55	5.27	5.10	26990	844.0	3.39	4.27	5.48

Spectrum Plot of Worst Value	
5 MHz / 64QAM	10 MHz / 64QAM
	

LTE Band 26				
Channel Bandwidth: 15 MHz				
Channel	Frequency (MHz)	Peak to Average Ratio (dB)		
		QPSK	16QAM	64QAM
26865	831.5	3.39	4.99	5.00
26915	836.5	3.48	4.82	5.86
26965	841.5	3.44	4.27	6.26

Spectrum Plot of Worst Value
15 MHz / 64QAM

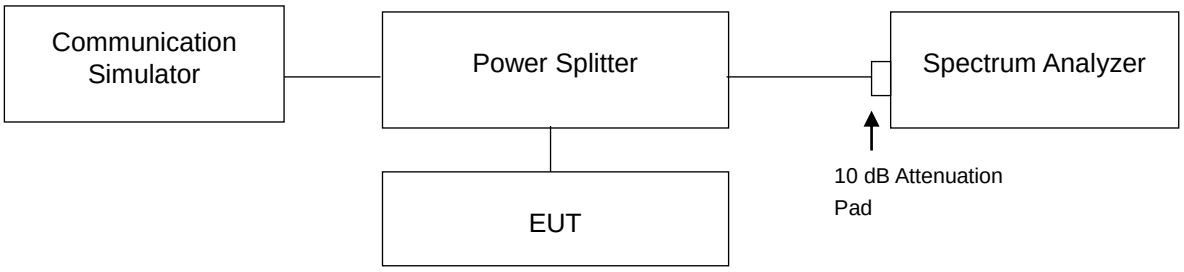


4.7 Conducted Spurious Emissions

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.

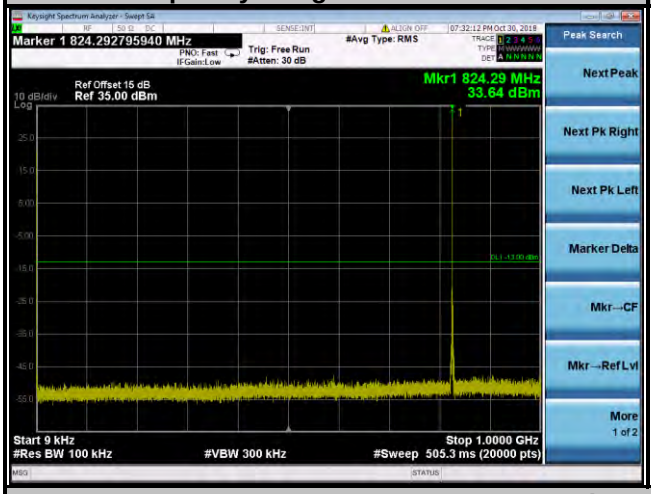
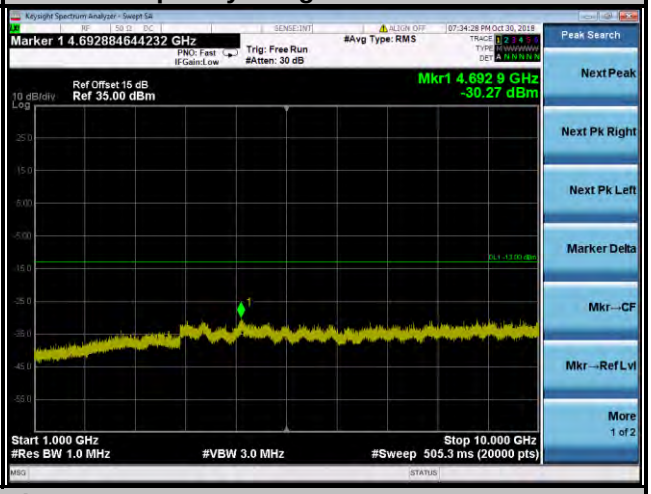
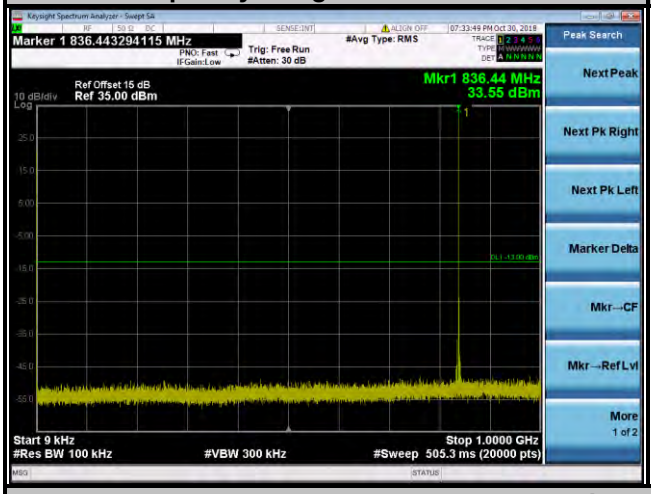
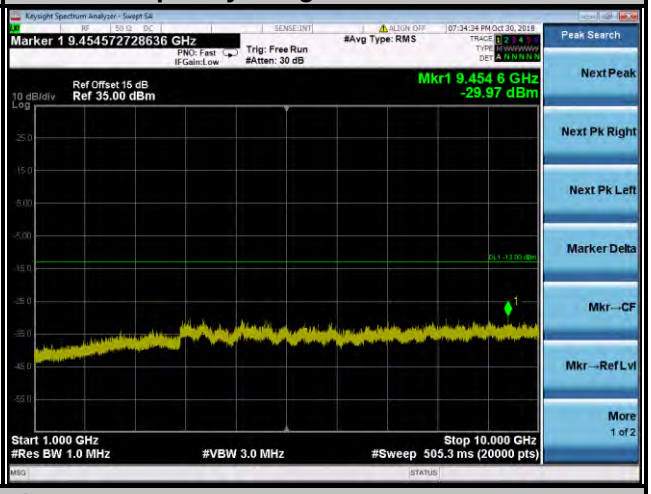
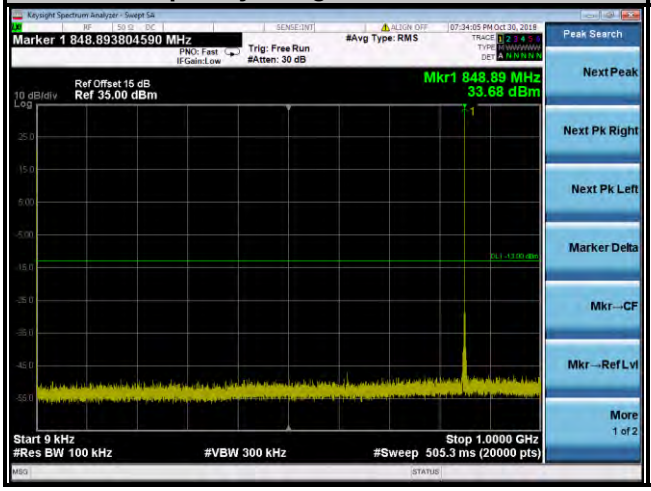
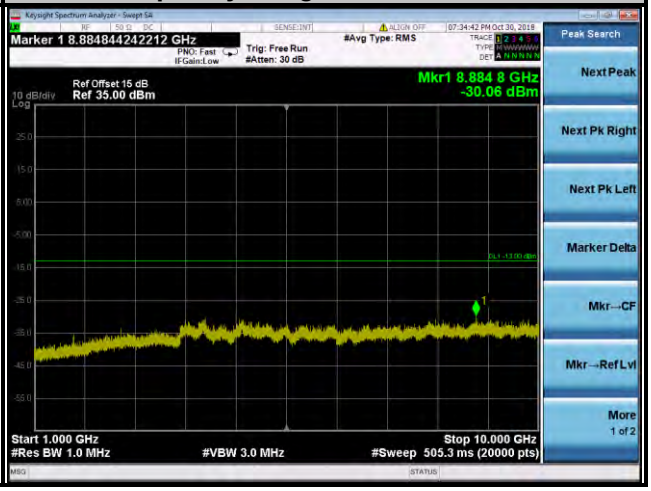
4.7.2 Test Setup



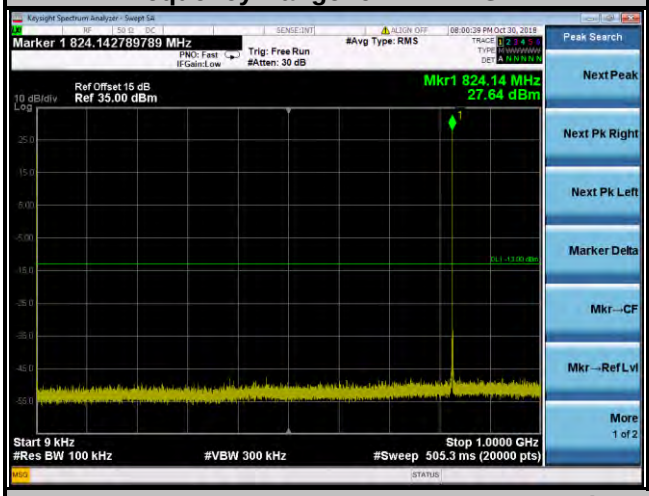
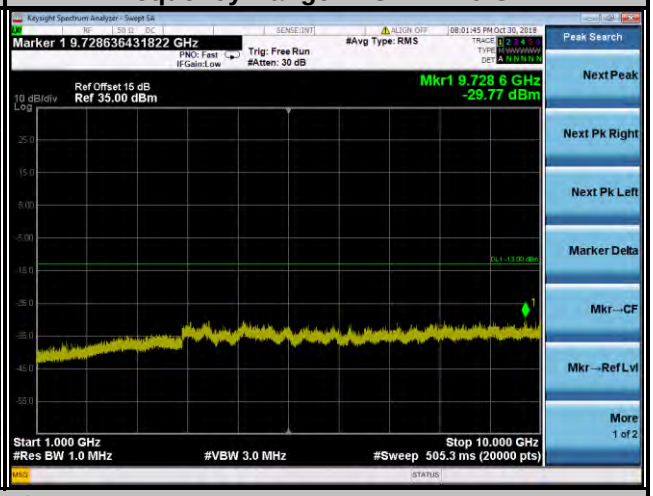
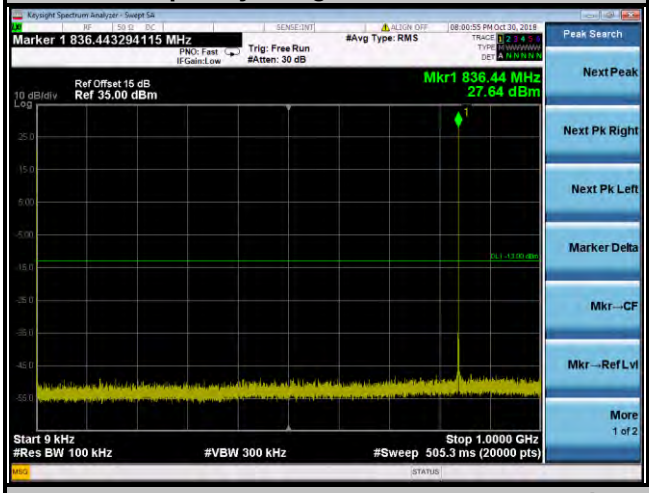
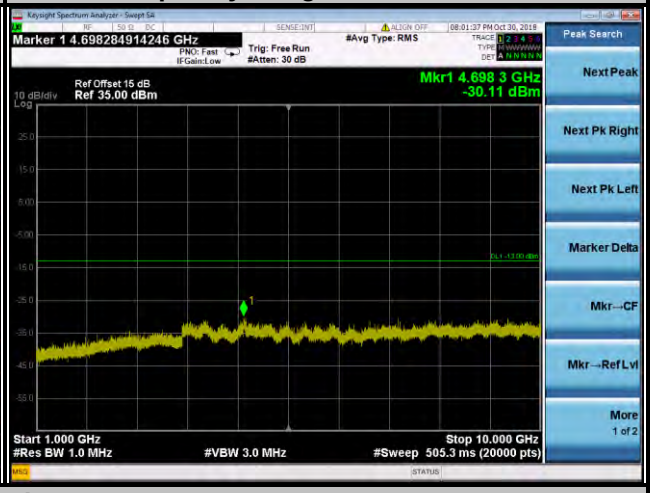
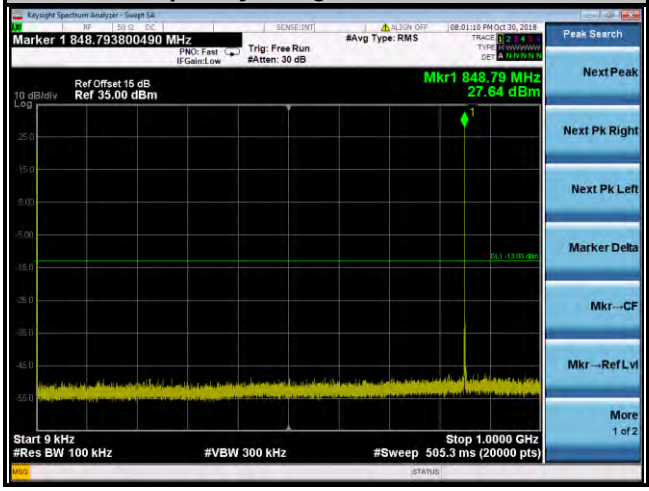
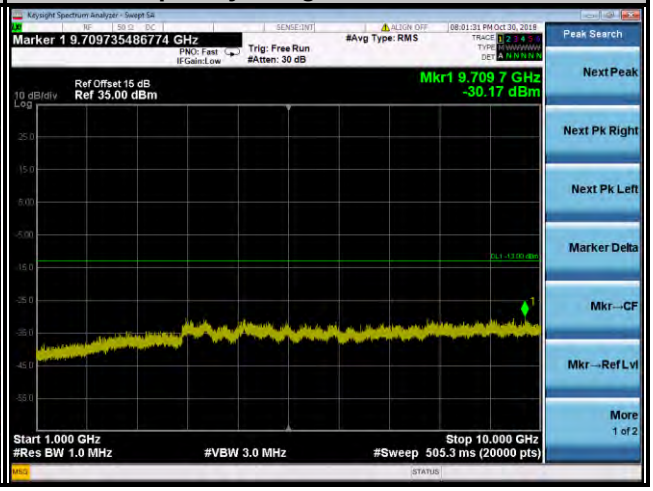
4.7.3 Test Procedure

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 10 GHz. 10 dB attenuation pad is connected with spectrum. RBW = 1 MHz and VBW = 3 MHz is used for conducted emission measurement.

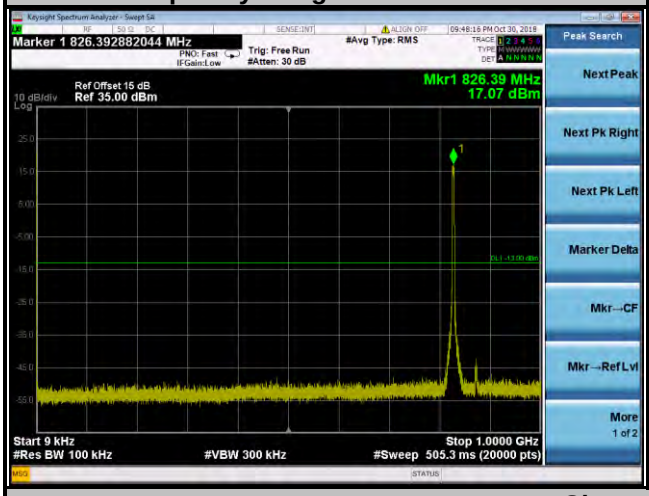
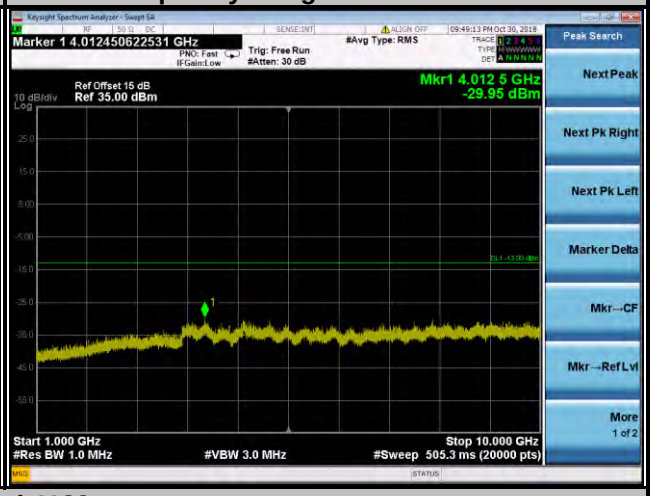
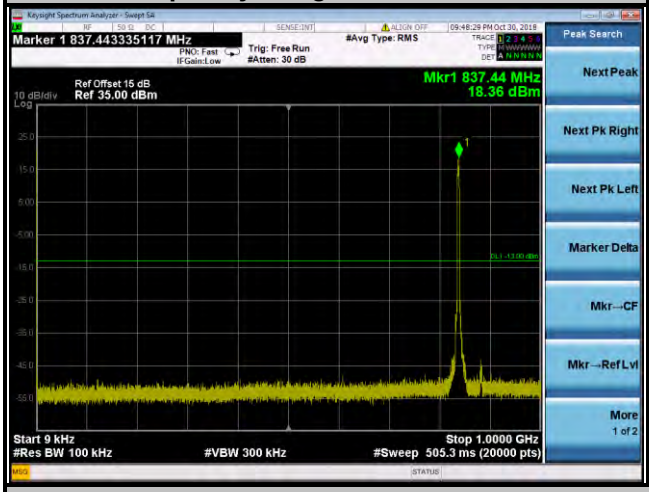
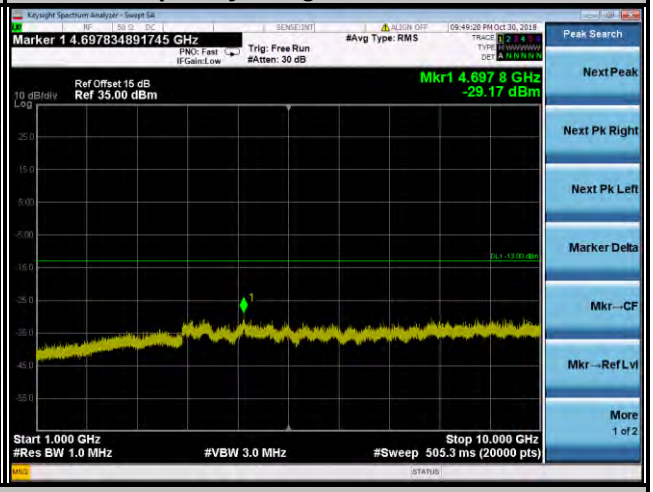
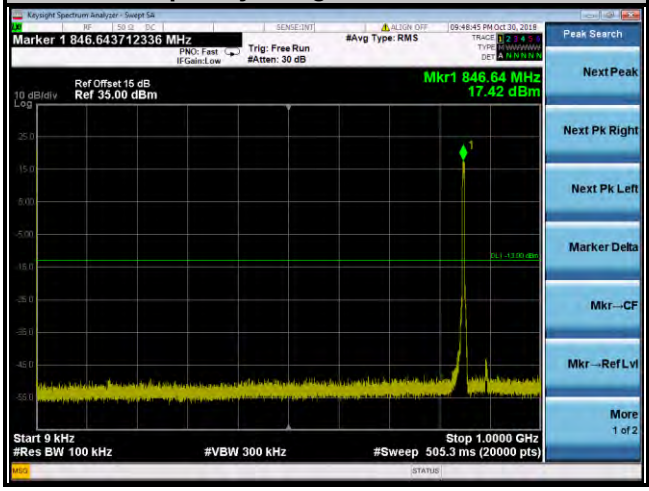
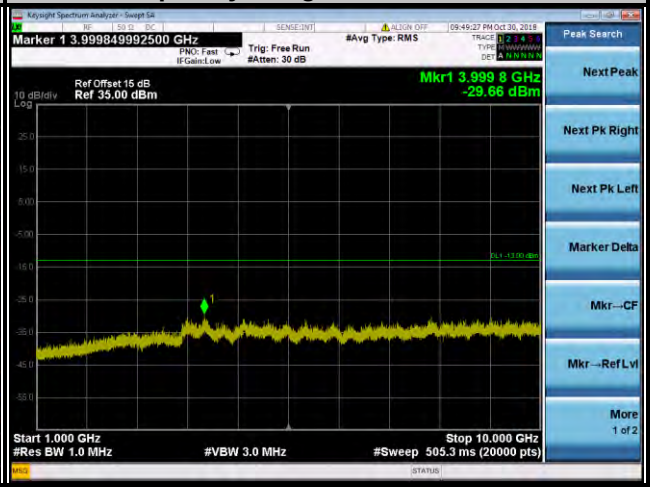
4.7.4 Test Results

GSM	
Channel 128	
Frequency Range: 9 kHz ~ 1 GHz	Frequency Range: 1 GHz ~ 10 GHz
	
Channel 189	
Frequency Range: 9 kHz ~ 1 GHz	Frequency Range: 1 GHz ~ 10 GHz
	
Channel 251	
Frequency Range: 9 kHz ~ 1 GHz	Frequency Range: 1 GHz ~ 10 GHz
	

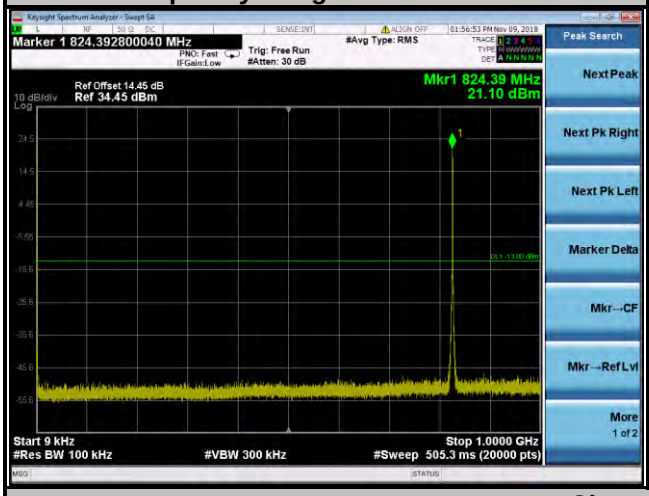
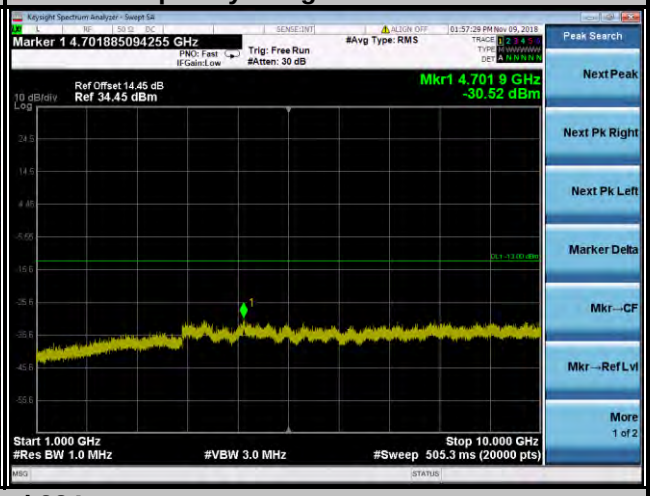
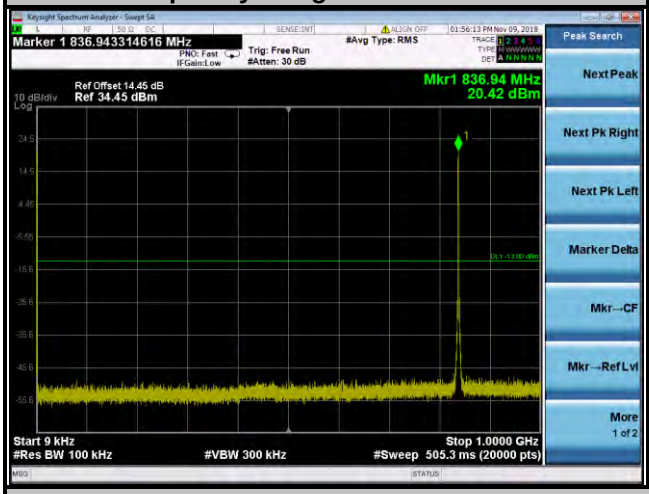
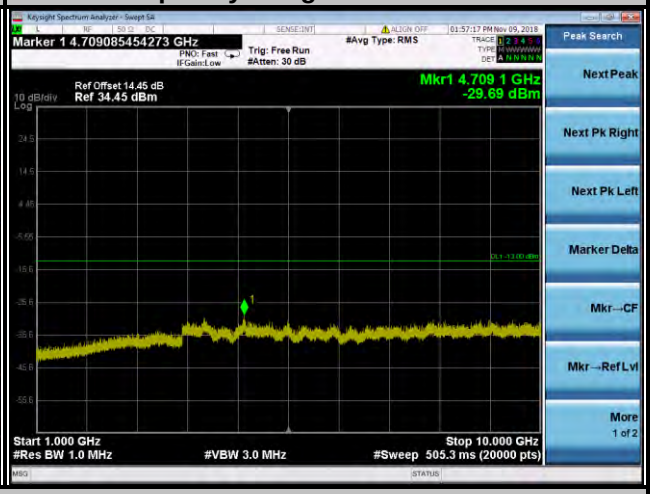
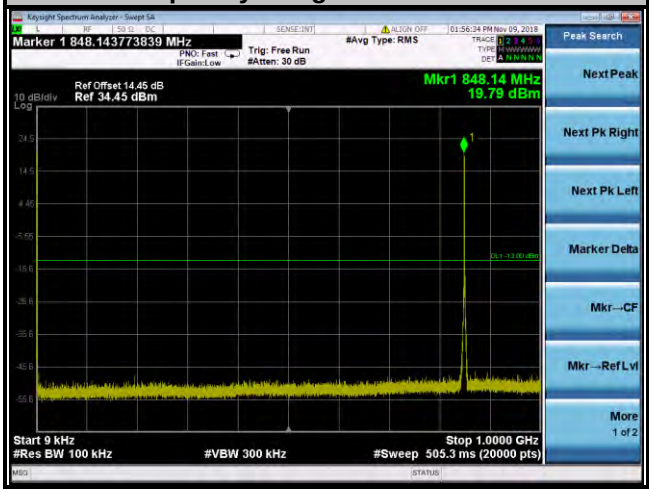
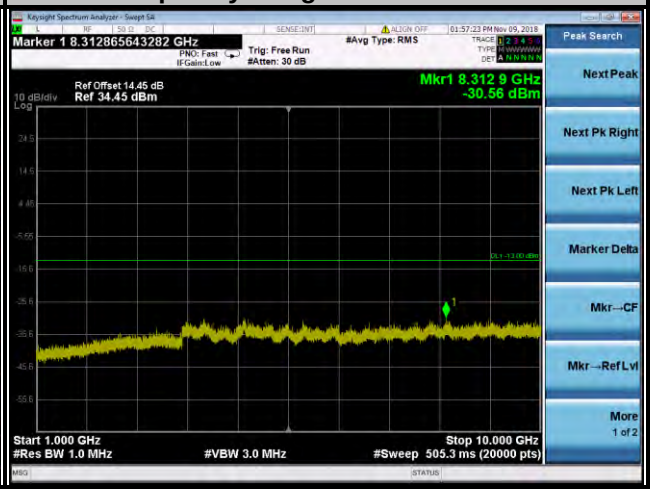
Note: The signal over the limit in 9 kHz is from spectrum analyzer.

EDGE	
Channel 128	
Frequency Range: 9 kHz ~ 1 GHz	Frequency Range: 1 GHz ~ 10 GHz
	
Channel 189	
Frequency Range: 9 kHz ~ 1 GHz	Frequency Range: 1 GHz ~ 10 GHz
	
Channel 251	
Frequency Range: 9 kHz ~ 1 GHz	Frequency Range: 1 GHz ~ 10 GHz
	

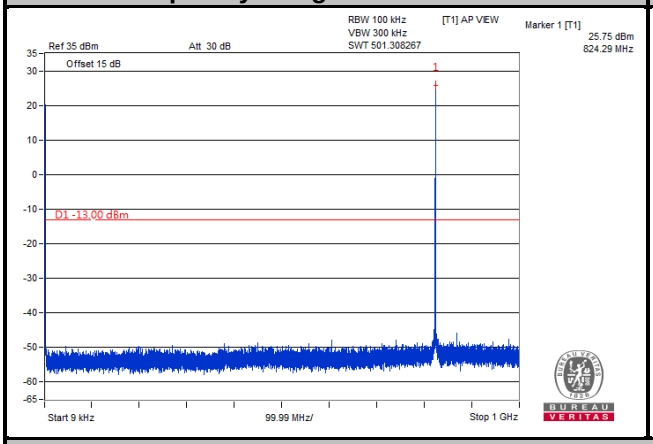
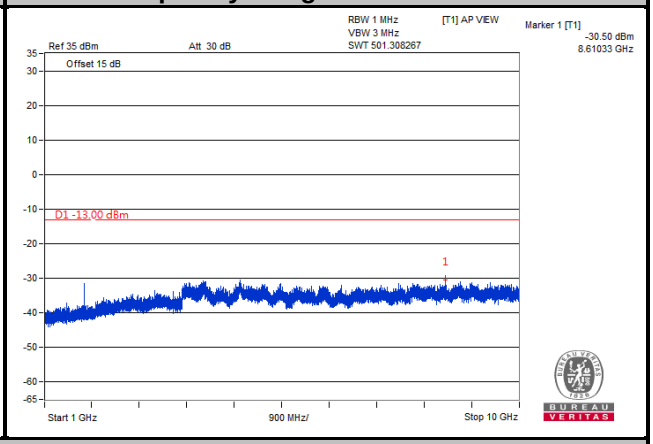
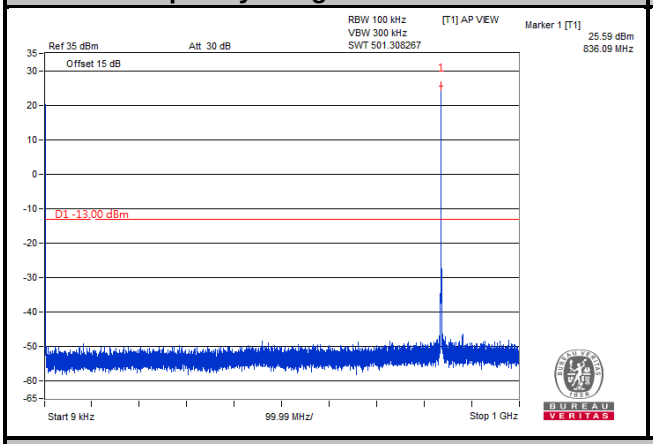
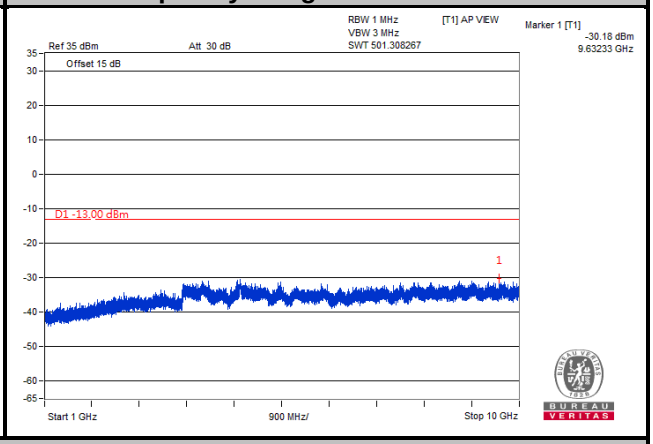
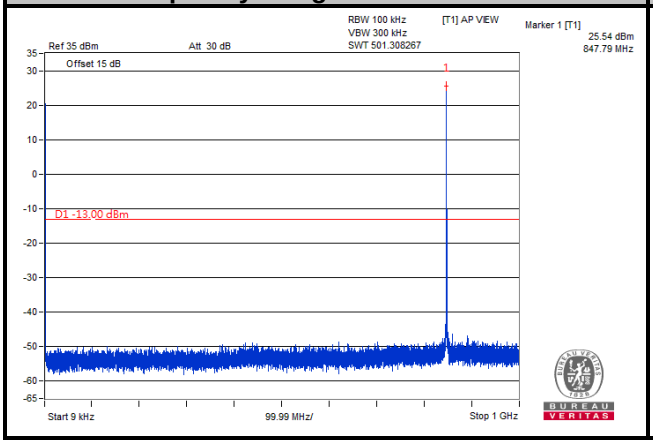
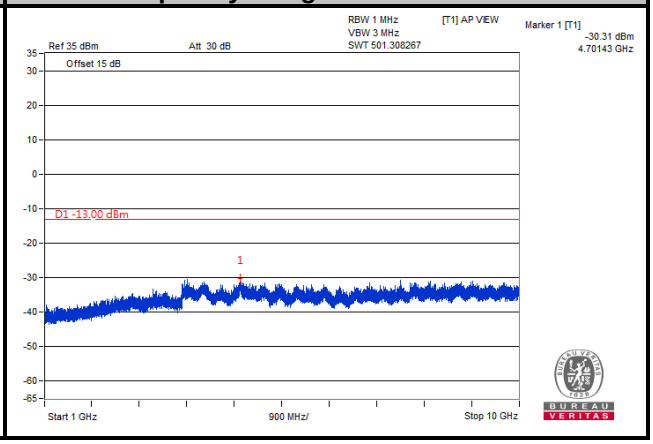
Note: The signal over the limit in 9 kHz is from spectrum analyzer.

WCDMA	
Channel 4132	
Frequency Range: 9 kHz ~ 1 GHz	Frequency Range: 1 GHz ~ 10 GHz
	
Channel 4182	
Frequency Range: 9 kHz ~ 1 GHz	Frequency Range: 1 GHz ~ 10 GHz
	
Channel 4233	
Frequency Range: 9 kHz ~ 1 GHz	Frequency Range: 1 GHz ~ 10 GHz
	

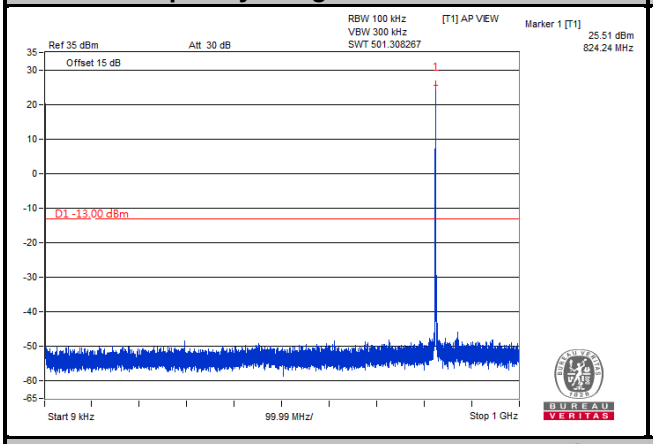
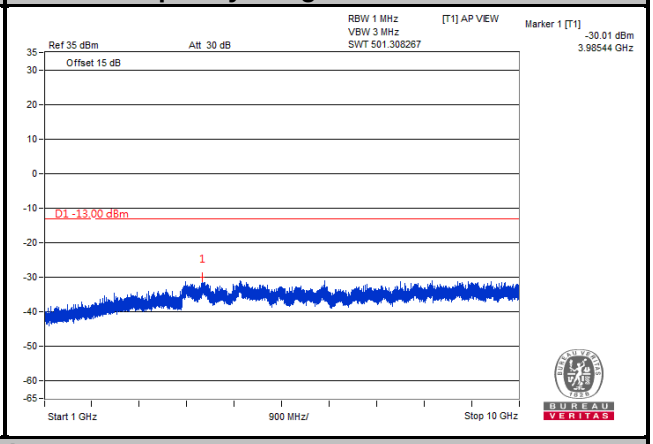
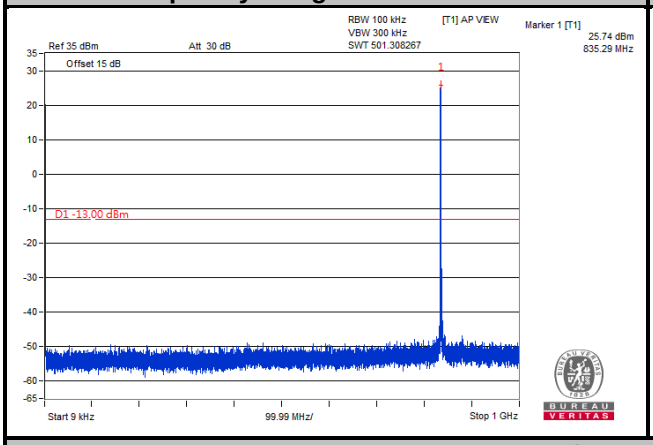
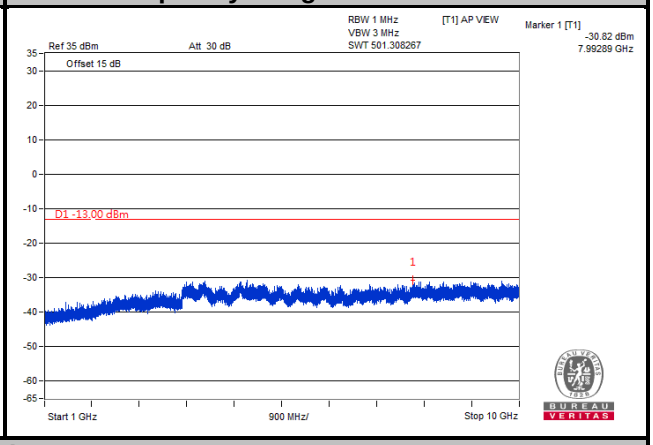
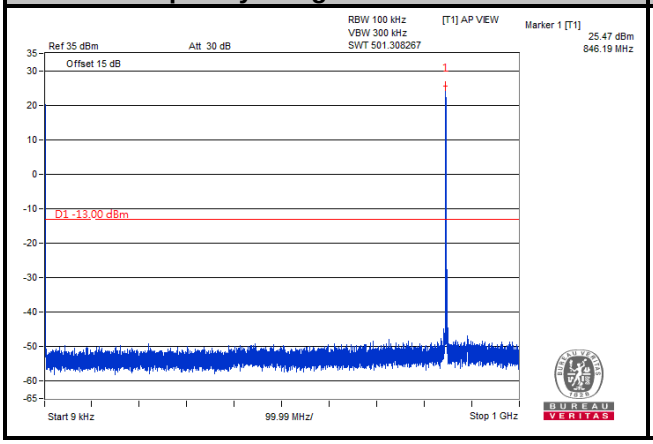
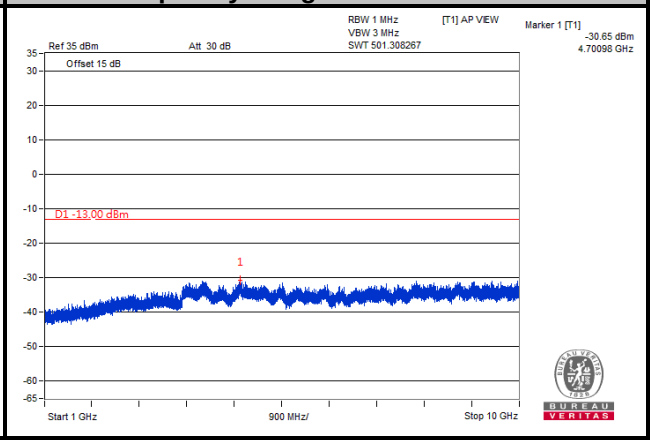
Note: The signal over the limit in 9 kHz is from spectrum analyzer.

CDMA	
Channel 1013	
Frequency Range: 9 kHz ~ 1 GHz	Frequency Range: 1 GHz ~ 10 GHz
	
Channel 384	
Frequency Range: 9 kHz ~ 1 GHz	Frequency Range: 1 GHz ~ 10 GHz
	
Channel 777	
Frequency Range: 9 kHz ~ 1 GHz	Frequency Range: 1 GHz ~ 10 GHz
	

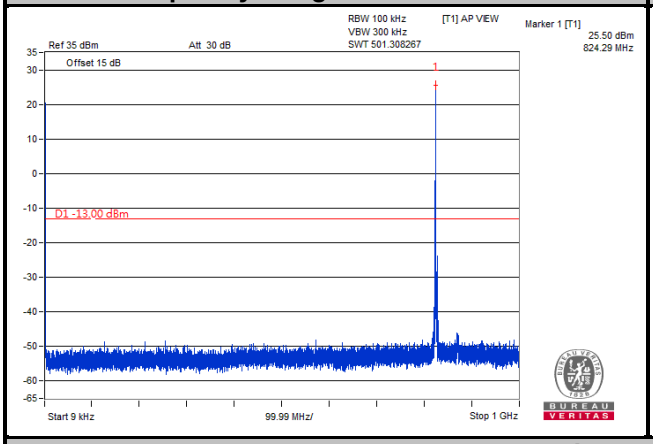
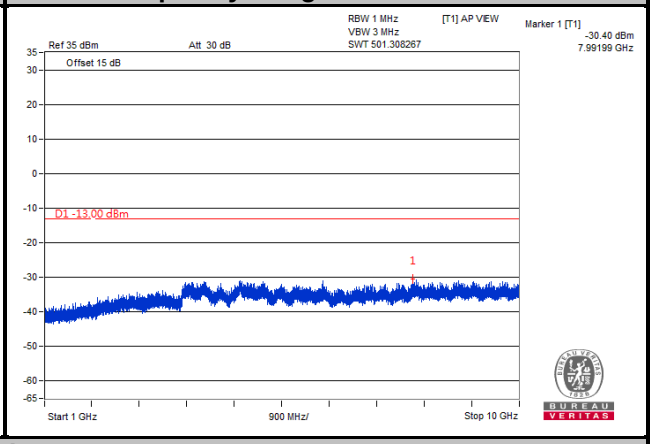
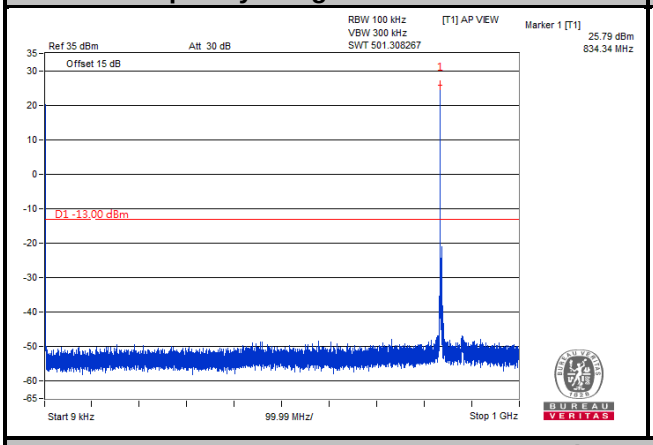
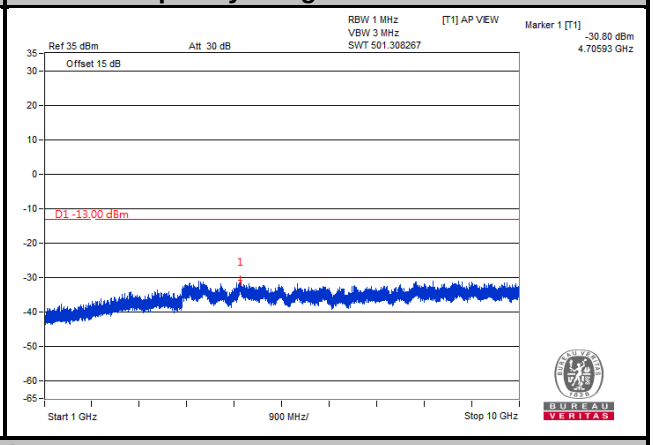
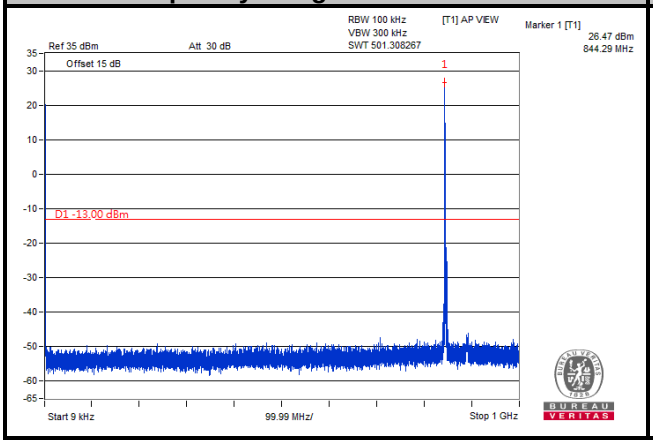
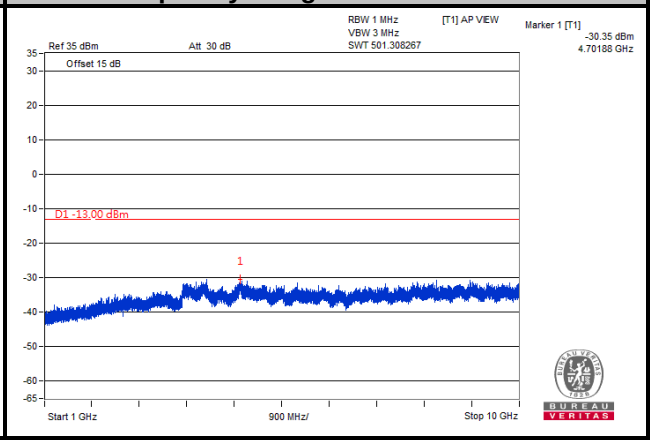
Note: The signal over the limit in 9 kHz is from spectrum analyzer.

LTE Band 5	
Channel Bandwidth: 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
	

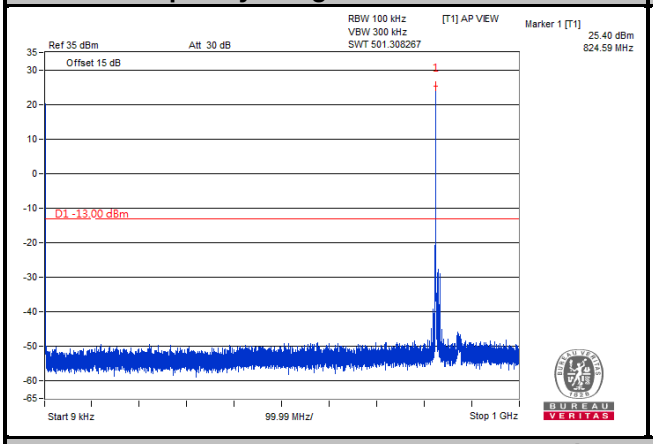
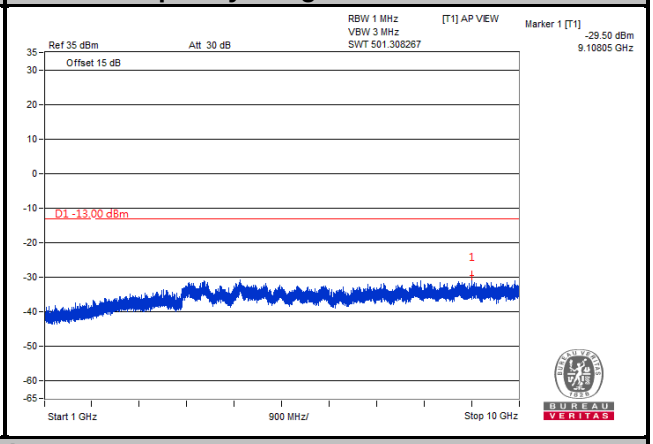
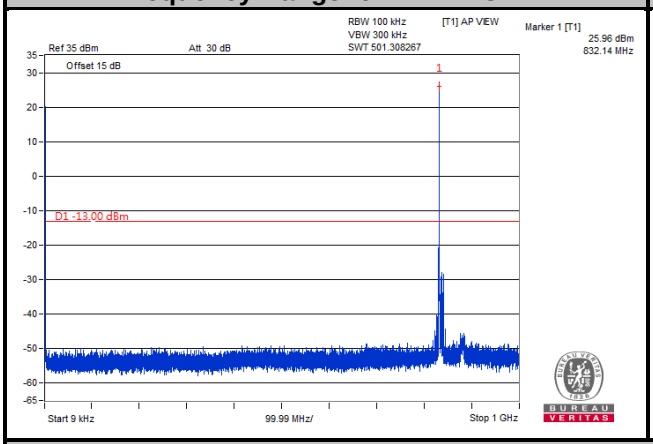
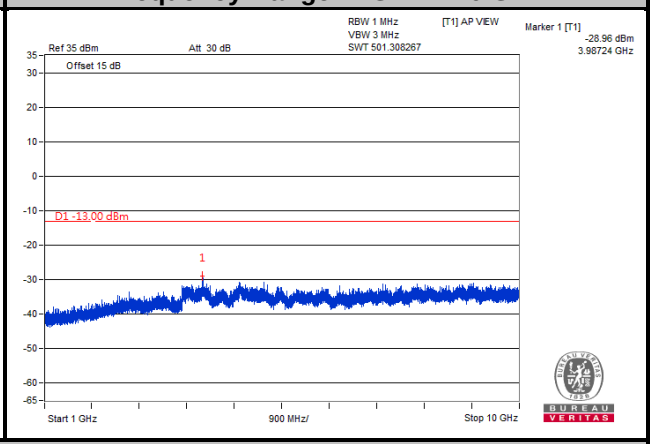
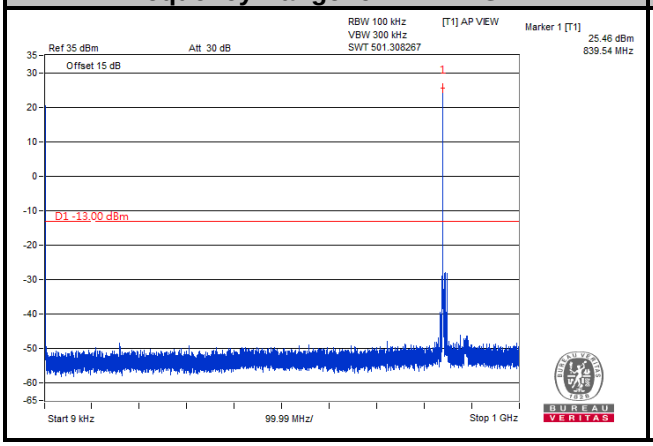
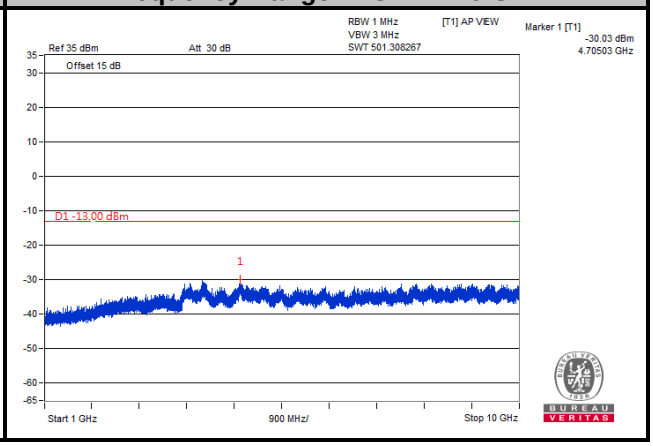
Note: The signal over the limit in 9 kHz is from spectrum analyzer.

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
	

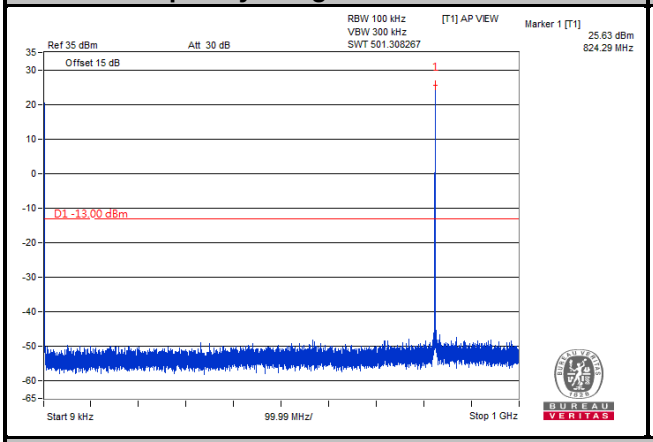
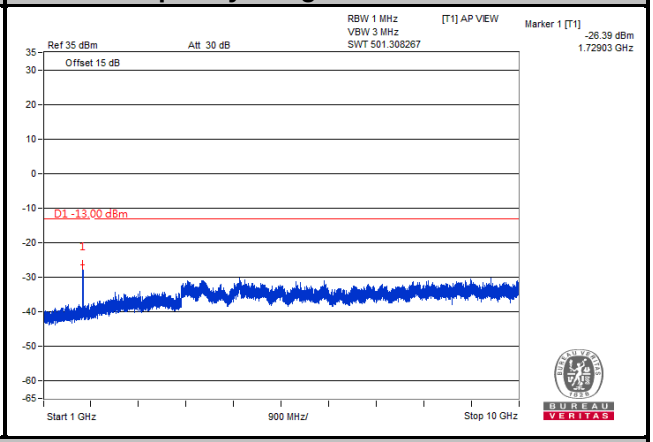
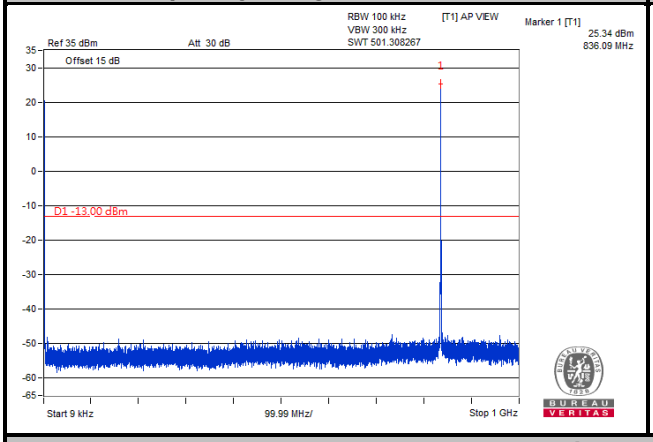
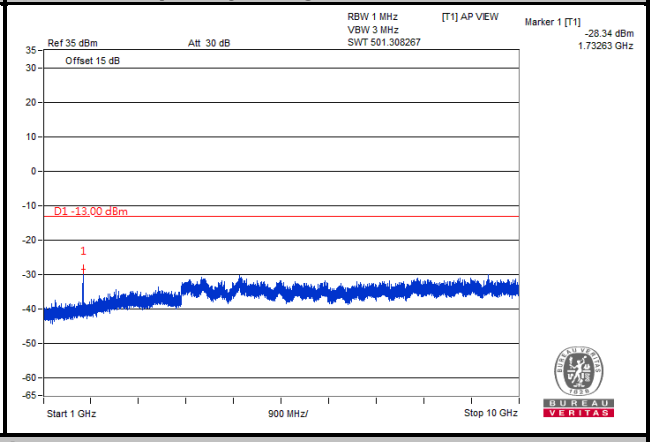
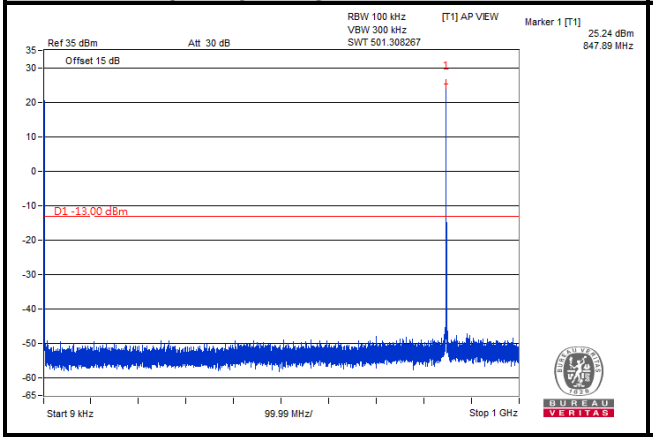
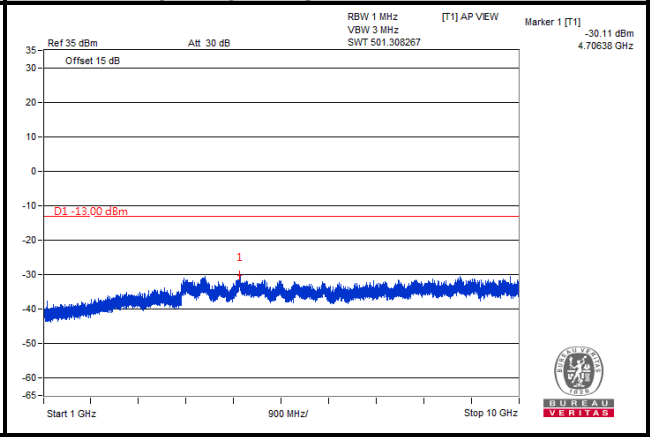
Note: The signal over the limit in 9 kHz is from spectrum analyzer.

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
	

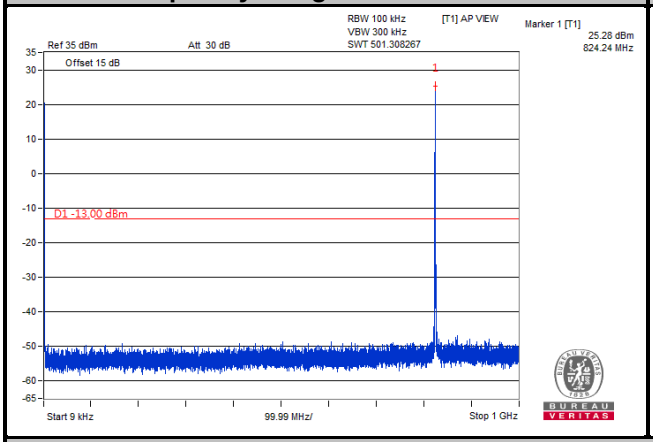
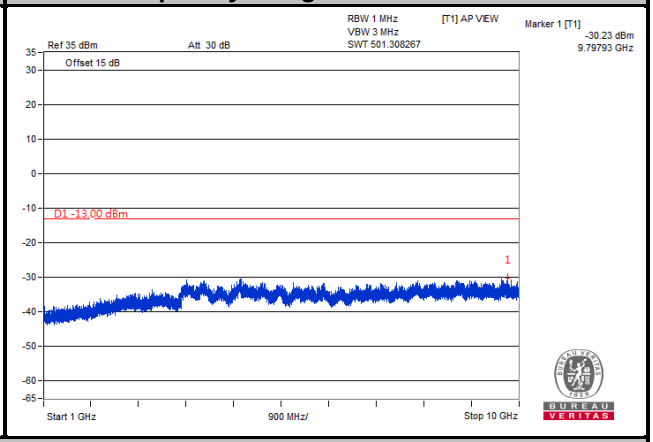
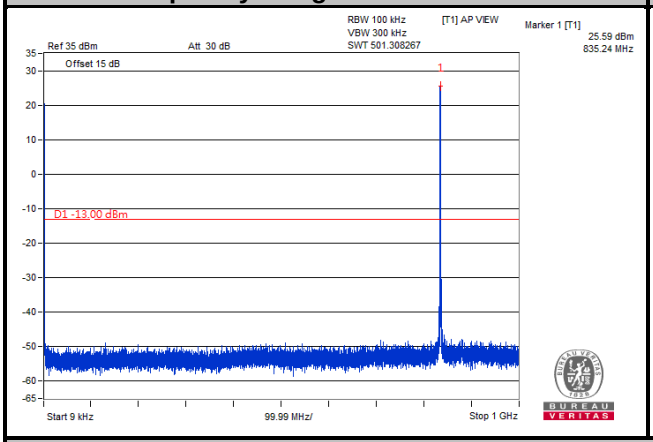
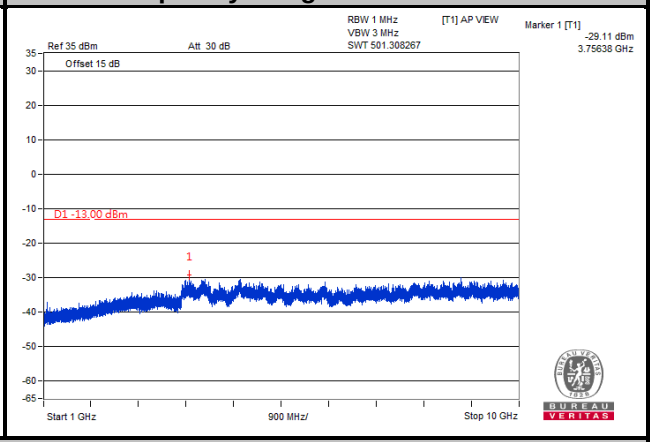
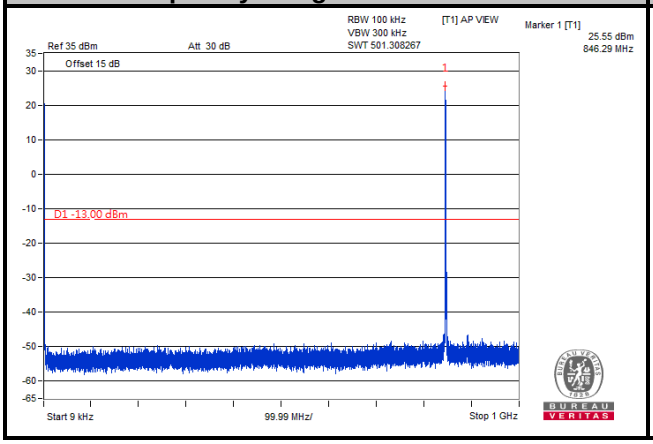
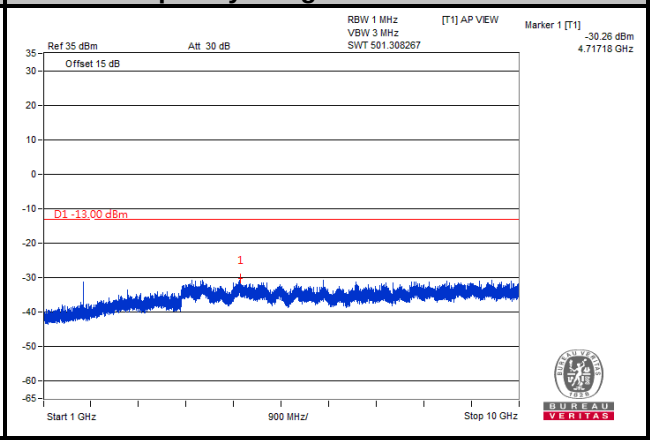
Note: The signal over the limit in 9 kHz is from spectrum analyzer.

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
	

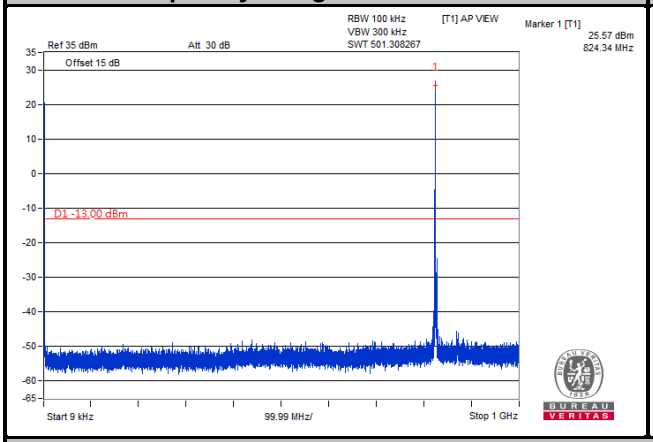
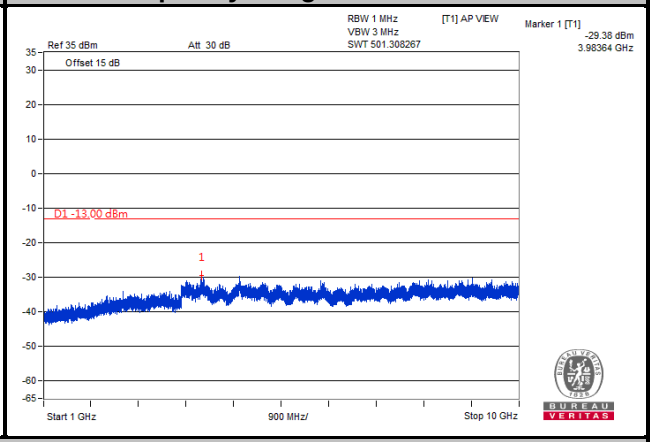
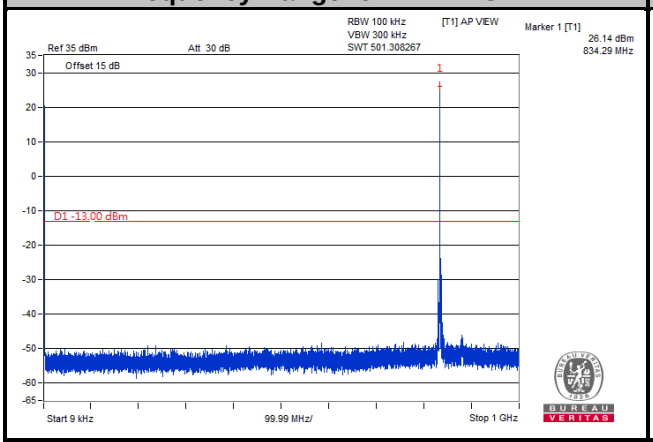
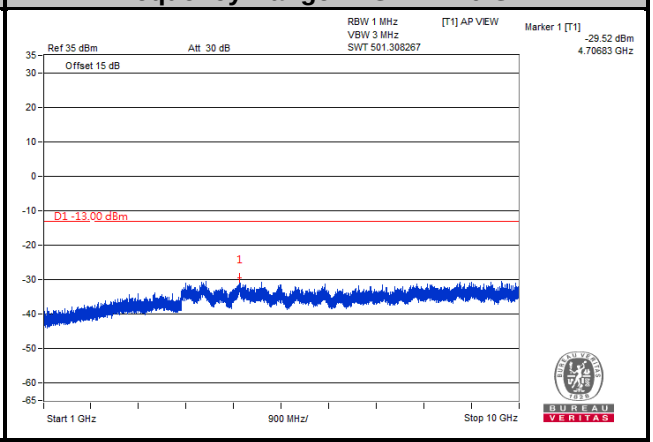
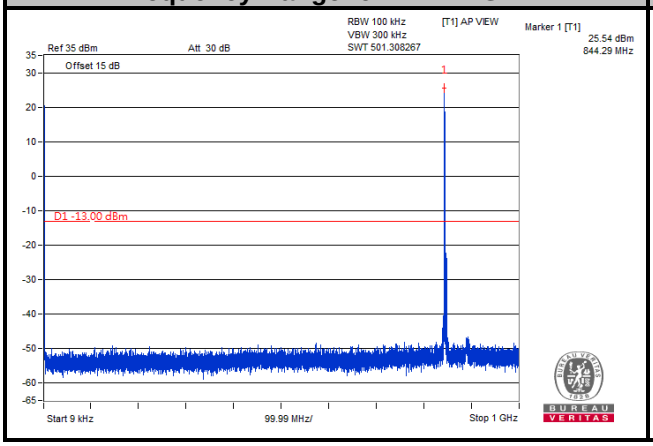
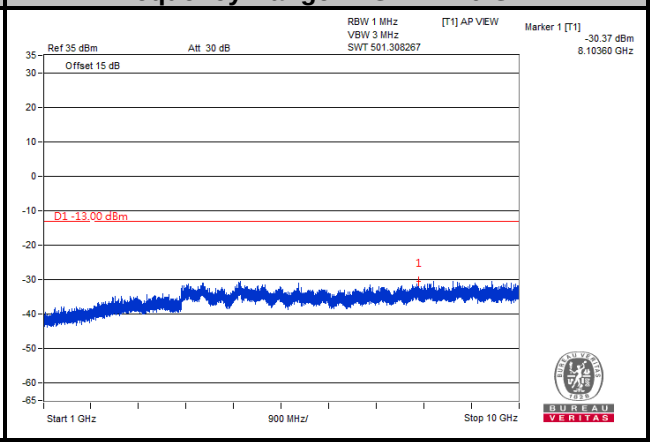
Note: The signal over the limit in 9 kHz is from spectrum analyzer.

LTE Band 26	
Channel Bandwidth: 1.4 MHz	
Channel 26797	
Frequency Range: 9 kHz ~ 1 GHz	Frequency Range: 1 GHz ~ 10 GHz
	
Channel 26915	
Frequency Range: 9 kHz ~ 1 GHz	Frequency Range: 1 GHz ~ 10 GHz
	
Channel 27033	
Frequency Range: 9 kHz ~ 1 GHz	Frequency Range: 1 GHz ~ 10 GHz
	

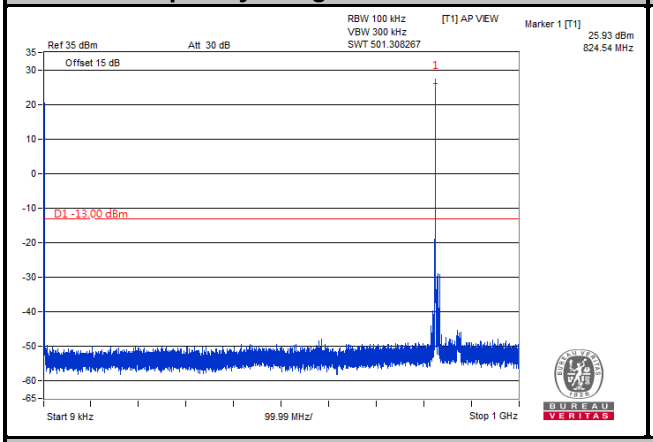
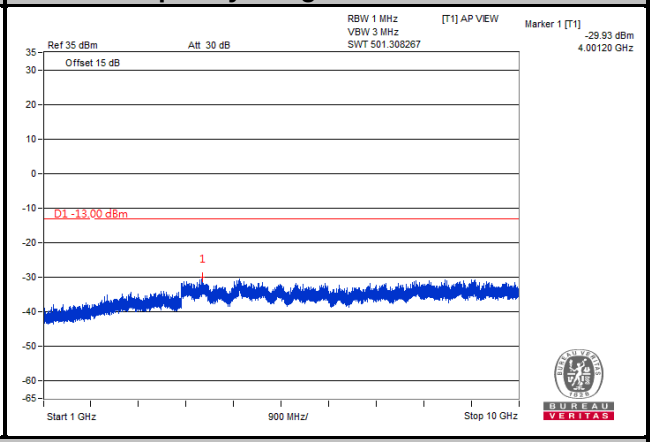
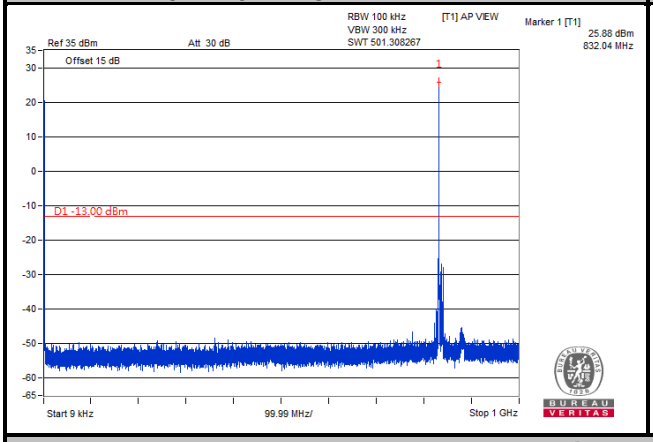
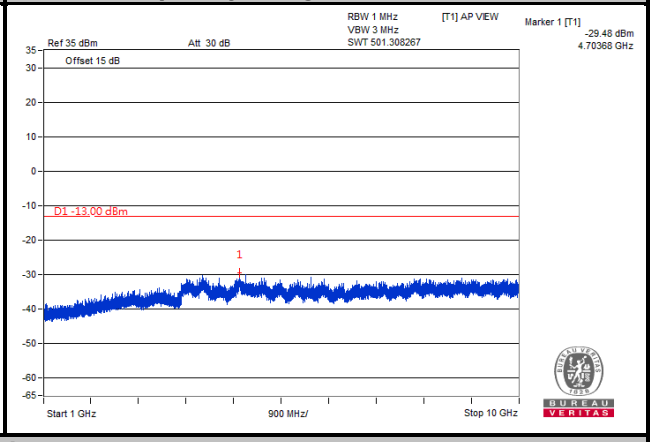
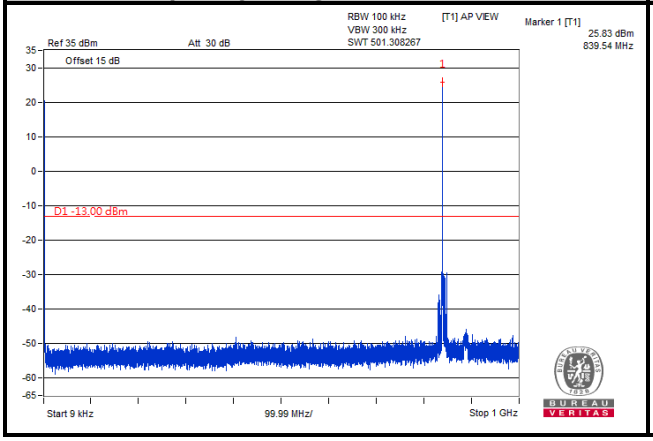
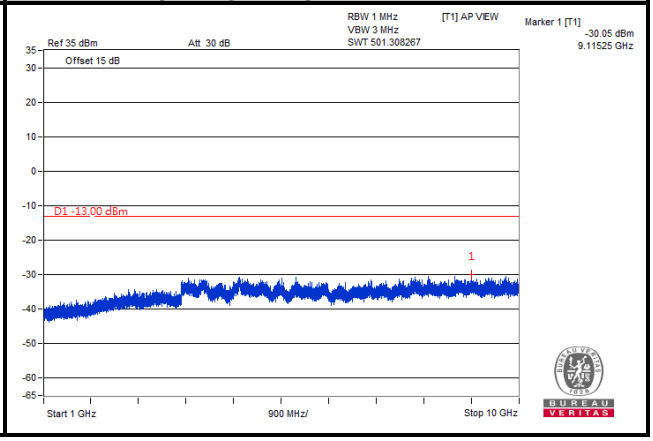
Note: The signal over the limit in 9 kHz is from spectrum analyzer.

LTE Band 26	
Channel Bandwidth: 3 MHz	
Channel 26805	
Frequency Range: 9 kHz ~ 1 GHz	Frequency Range: 1 GHz ~ 10 GHz
	
Channel 26915	
Frequency Range: 9 kHz ~ 1 GHz	Frequency Range: 1 GHz ~ 10 GHz
	
Channel 27025	
Frequency Range: 9 kHz ~ 1 GHz	Frequency Range: 1 GHz ~ 10 GHz
	

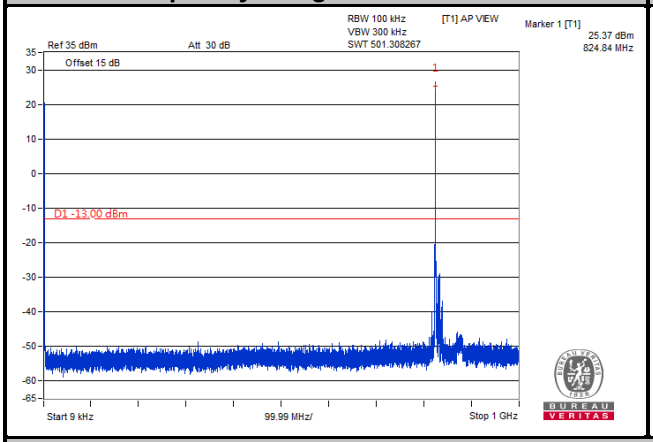
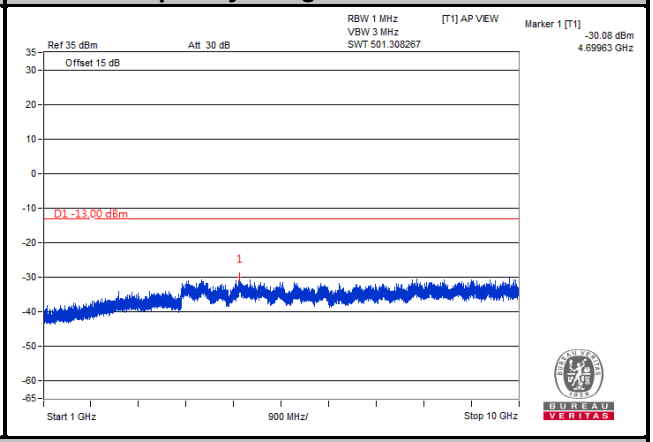
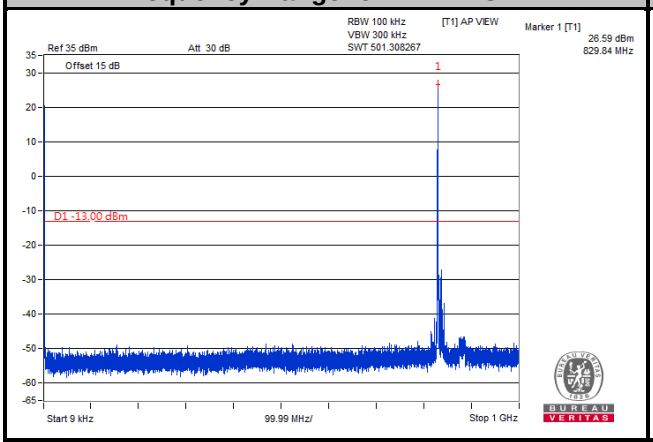
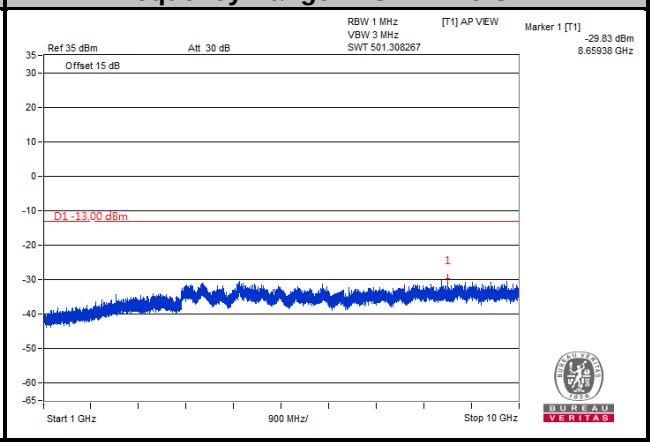
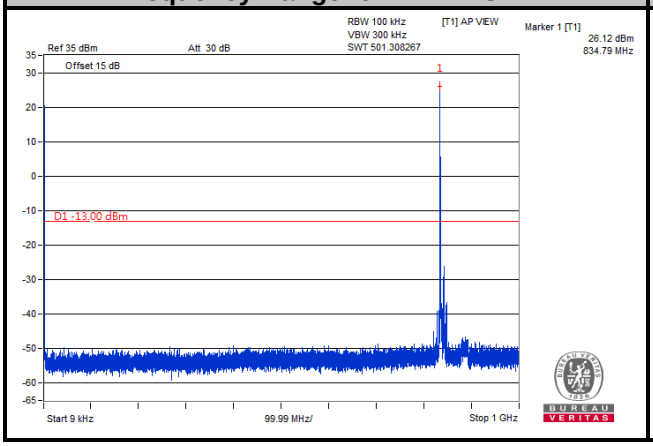
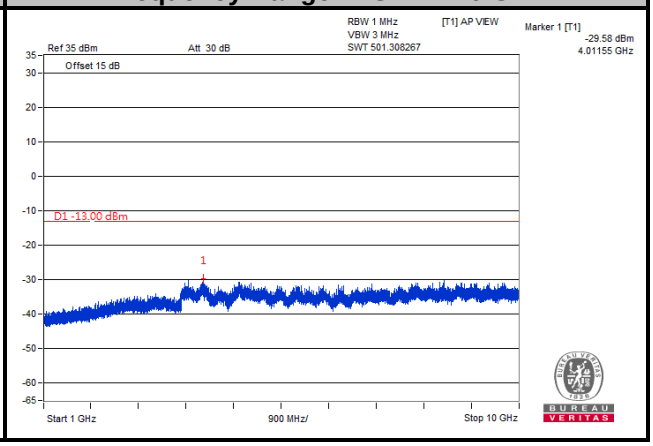
Note: The signal over the limit in 9 kHz is from spectrum analyzer.

LTE Band 26	
Channel Bandwidth: 5 MHz	
Channel 26815	
Frequency Range: 9 kHz ~ 1 GHz	Frequency Range: 1 GHz ~ 10 GHz
	
Channel 26915	
Frequency Range: 9 kHz ~ 1 GHz	Frequency Range: 1 GHz ~ 10 GHz
	
Channel 27015	
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: 10 MHz	
Channel 26840	
Frequency Range: 9 kHz ~ 1 GHz	Frequency Range: 1 GHz ~ 10 GHz
	
Channel 26915	
Frequency Range: 9 kHz ~ 1 GHz	Frequency Range: 1 GHz ~ 10 GHz
	
Channel 26990	
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: 15 MHz	
Channel 26865	
Frequency Range: 9 kHz ~ 1 GHz	Frequency Range: 1 GHz ~ 10 GHz
	
Channel 26915	
Frequency Range: 9 kHz ~ 1 GHz	Frequency Range: 1 GHz ~ 10 GHz
	
Channel 26965	
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.

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.

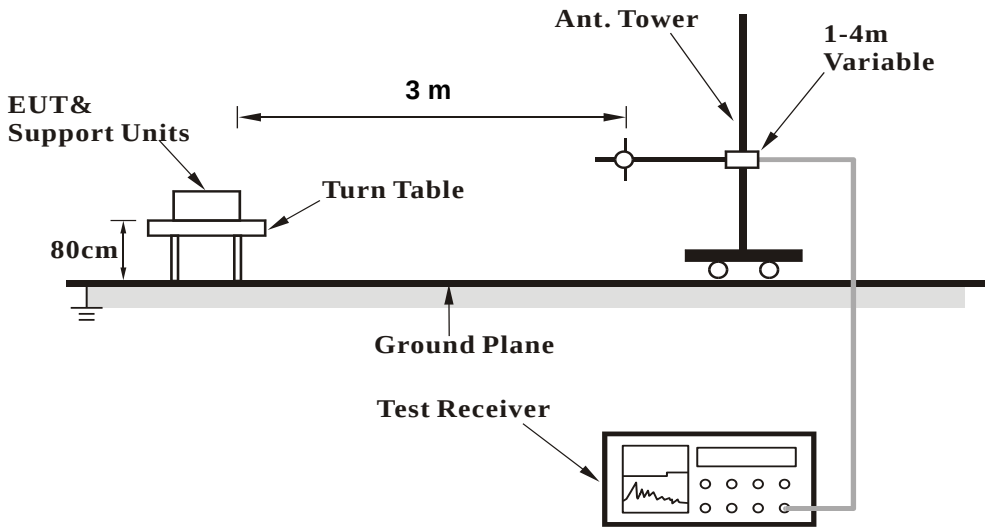
NOTE: The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 1 MHz/3 MHz.

4.8.3 Deviation from Test Standard

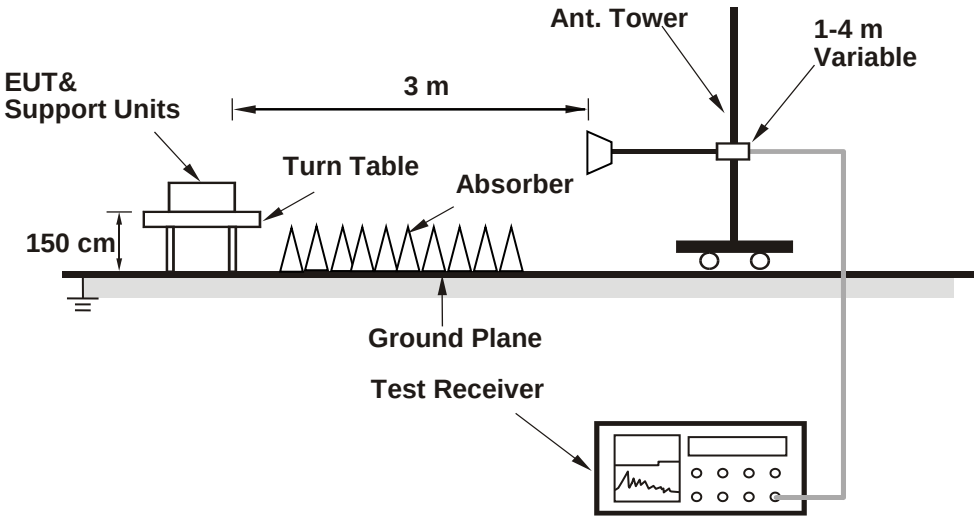
No deviation.

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

GSM:

Low Channel

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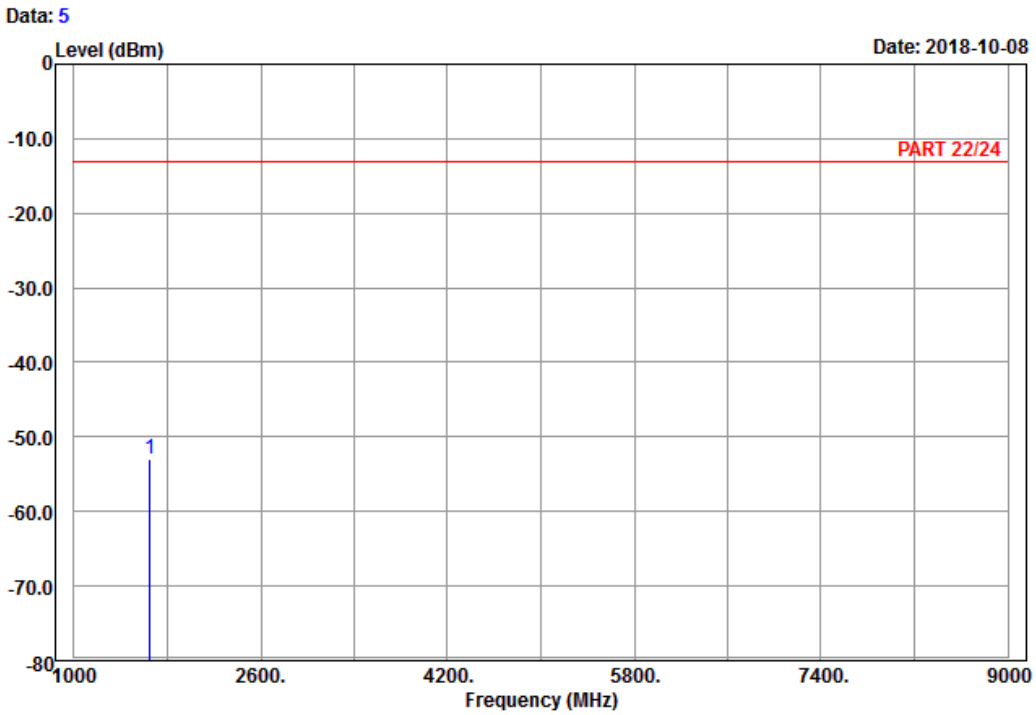
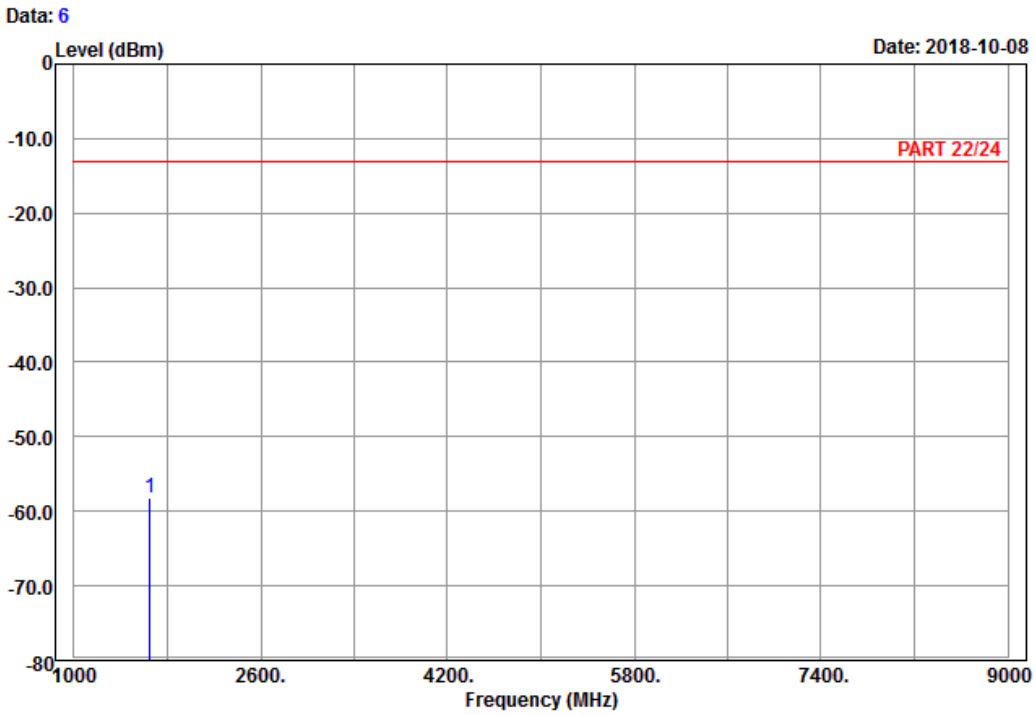


Site : 966 chamber 1
Condition: PART 22/24 Horizontal
Remark : GSM 850_Link_CH128
Tested by: Karl Lee

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1 pp	1648.40	-53.01	-60.74	-13.00	-40.01	7.73	Peak

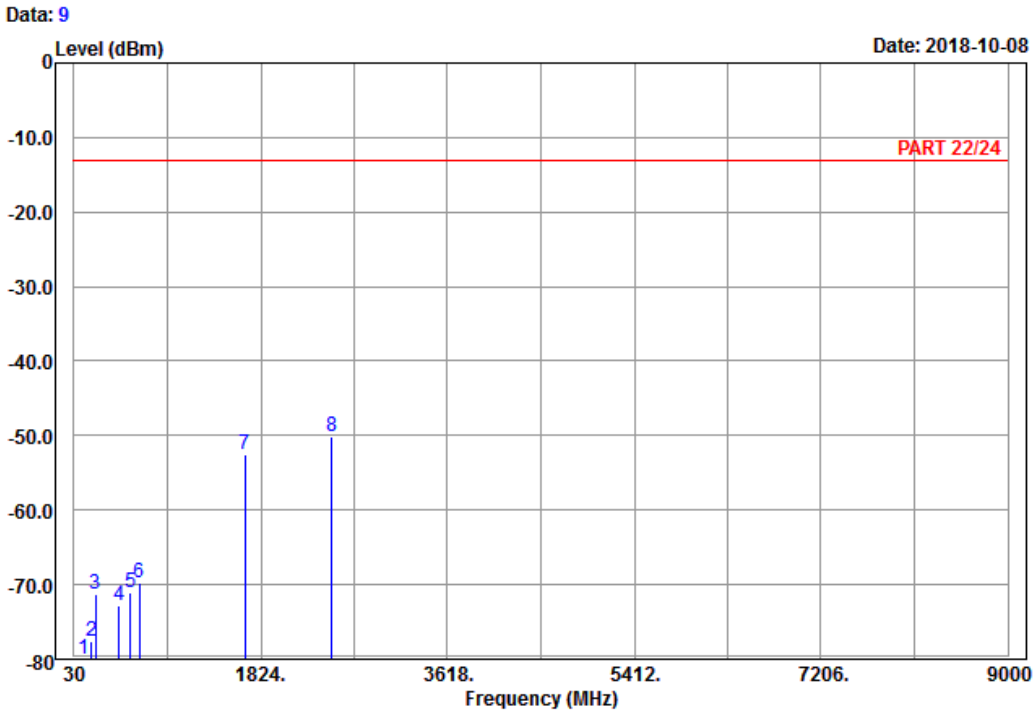


Site : 966 chamber 1
Condition: PART 22/24 Vertical
Remark : GSM 850_Link_CH128
Tested by: Karl Lee

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1 pp	1648.40	-58.30	-66.03	-13.00	-45.30	7.73	Peak

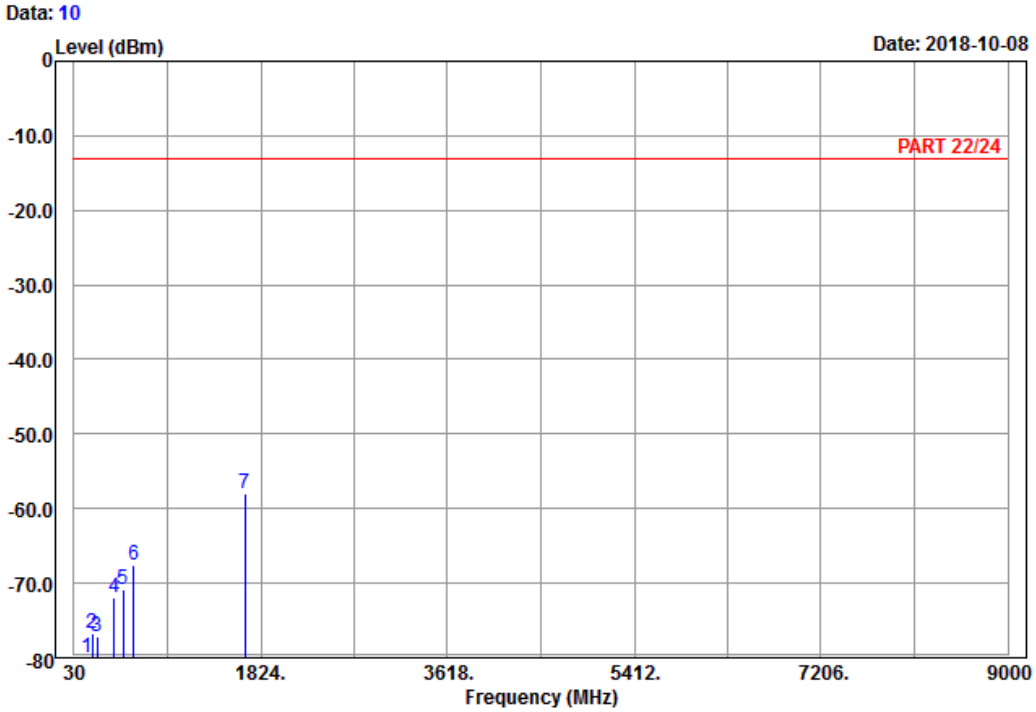
Middle Channel

Bureau Veritas Consumer Products Services Ltd.,Taoyuan Branch



Site : 966 chamber 1
Condition: PART 22/24 Horizontal
Remark : GSM 850_Link_CH189
Tested by: Karl Lee

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1	123.96	-79.96	-71.95	-13.00	-66.96	-8.01	Peak
2	200.10	-77.52	-71.34	-13.00	-64.52	-6.18	Peak
3	239.79	-71.24	-65.59	-13.00	-58.24	-5.65	Peak
4	465.90	-72.84	-68.55	-13.00	-59.84	-4.29	Peak
5	574.40	-71.11	-70.45	-13.00	-58.11	-0.66	Peak
6	655.60	-69.72	-69.56	-13.00	-56.72	-0.16	Peak
7	1672.80	-52.57	-60.48	-13.00	-39.57	7.91	Peak
8 pp	2509.20	-50.24	-61.52	-13.00	-37.24	11.28	Peak

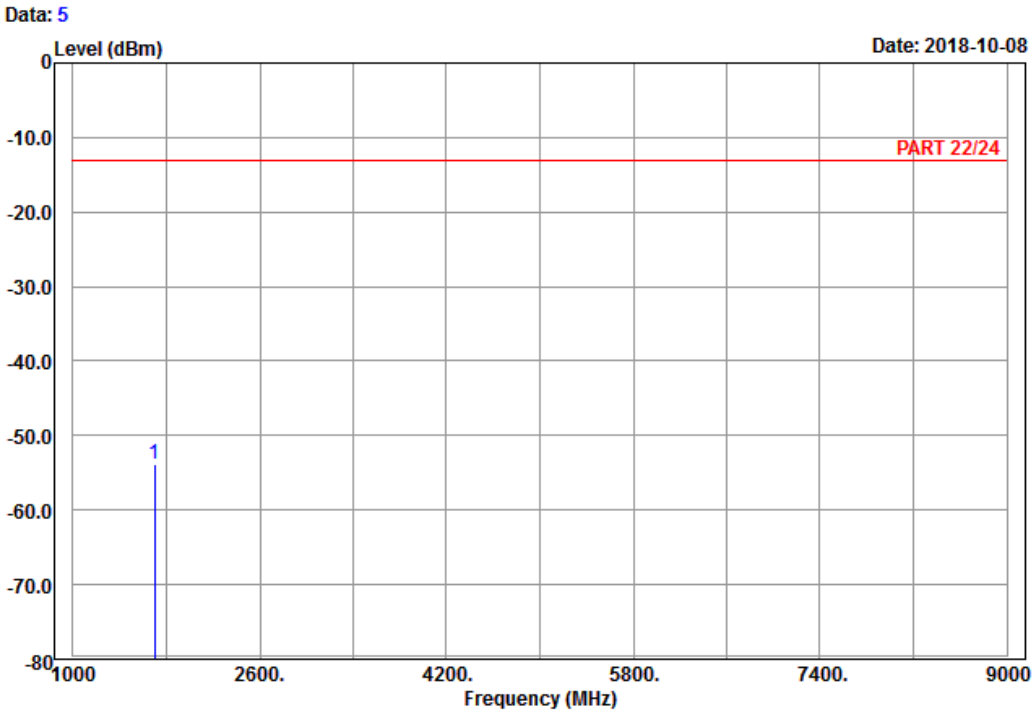


Site : 966 chamber 1
Condition: PART 22/24 Vertical
Remark : GSM 850_Link_CH189
Tested by: Karl Lee

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1	153.93	-80.06	-72.22	-13.00	-67.06	-7.84	Peak
2	209.01	-76.72	-70.67	-13.00	-63.72	-6.05	Peak
3	252.48	-77.24	-71.72	-13.00	-64.24	-5.52	Peak
4	416.90	-72.00	-68.88	-13.00	-59.00	-3.12	Peak
5	503.00	-70.94	-65.87	-13.00	-57.94	-5.07	Peak
6	603.80	-67.51	-67.89	-13.00	-54.51	0.38	Peak
7 pp	1672.80	-57.92	-65.83	-13.00	-44.92	7.91	Peak

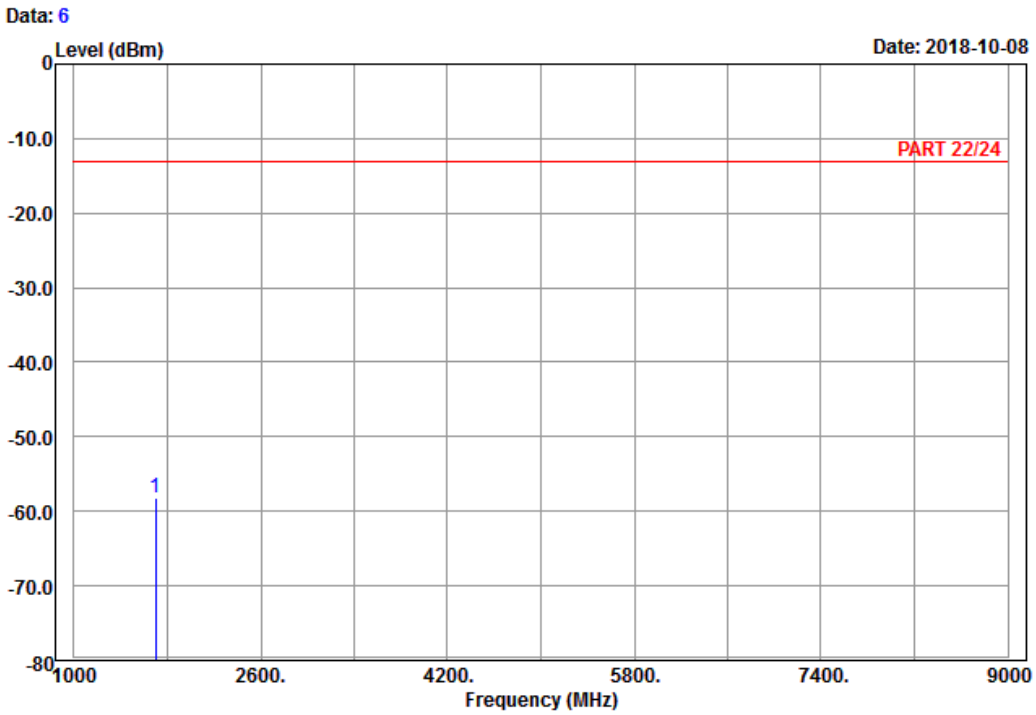
High Channel

Bureau Veritas Consumer Products Services Ltd.,Taoyuan Branch



Site : 966 chamber 1
Condition: PART 22/24 Horizontal
Remark : GSM 850_Link_CH251
Tested by: Karl Lee

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1 pp	1697.60	-53.88	-62.02	-13.00	-40.88	8.14	Peak



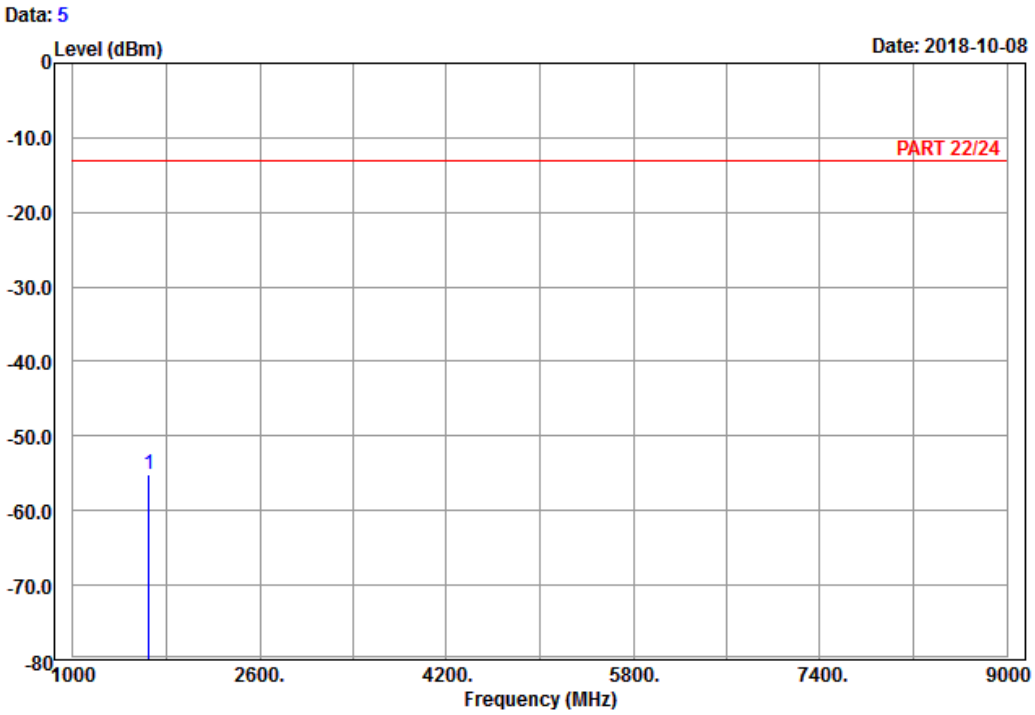
Site : 966 chamber 1
Condition: PART 22/24 Vertical
Remark : GSM 850_Link_CH251
Tested by: Karl Lee

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1 pp	1697.60	-58.14	-66.28	-13.00	-45.14	8.14	Peak

EDGE:

Low Channel

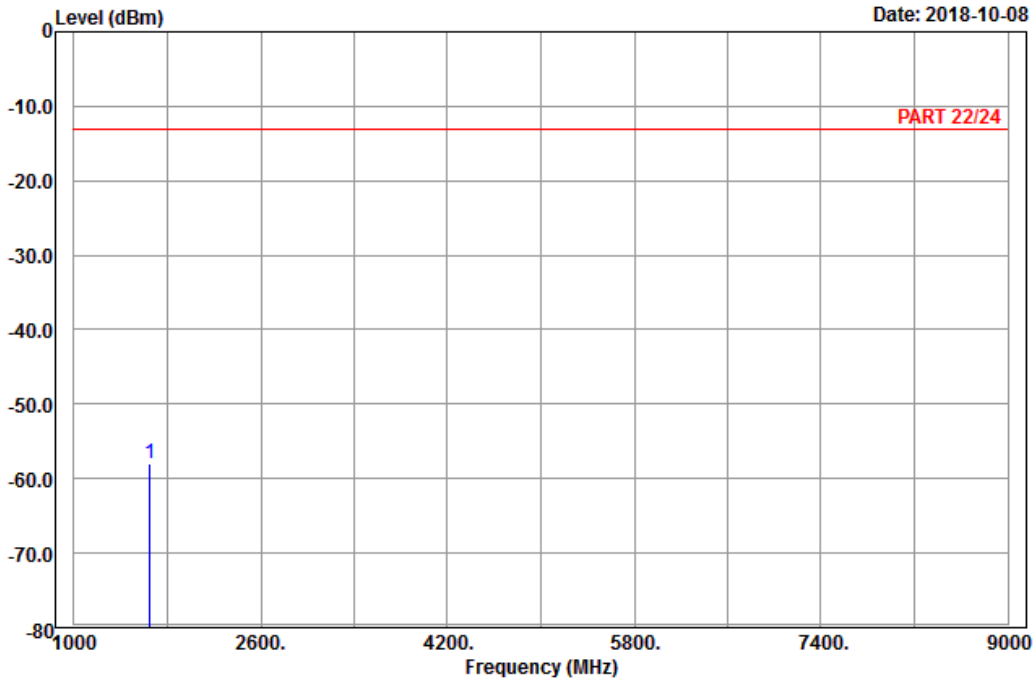
Bureau Veritas Consumer Products Services Ltd.,Taoyuan Branch



Site : 966 chamber 1
Condition: PART 22/24 Horizontal
Remark : EDGE 850_Link_CH128
Tested by: Karl Lee

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1 pp	1648.40	-55.19	-62.92	-13.00	-42.19	7.73	Peak

Data: 6

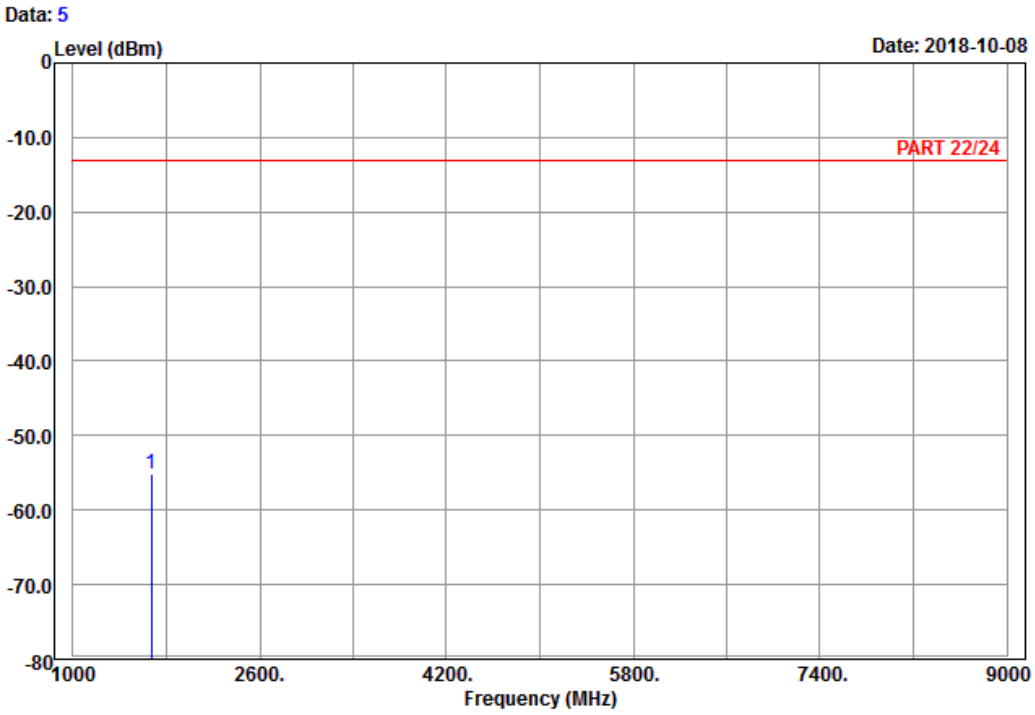


Site : 966 chamber 1
Condition: PART 22/24 Vertical
Remark : EDGE 850_Link_CH128
Tested by: Karl Lee

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1 pp	1648.40	-57.91	-65.64	-13.00	-44.91	7.73	Peak

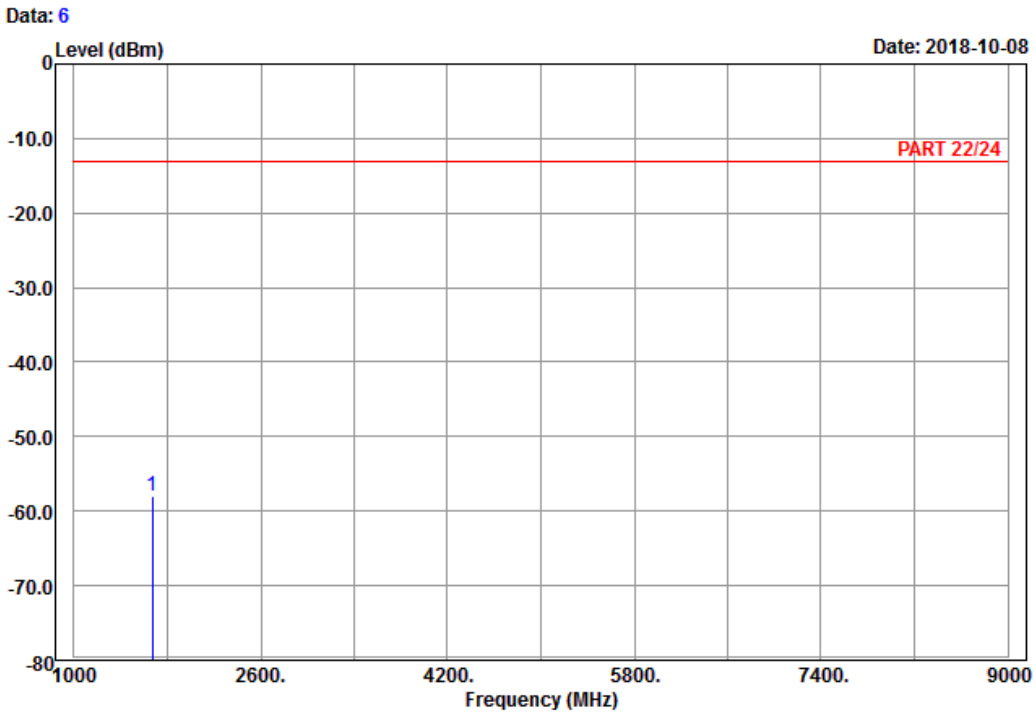
Middle Channel

Bureau Veritas Consumer Products Services Ltd.,Taoyuan Branch



Site : 966 chamber 1
Condition: PART 22/24 Horizontal
Remark : EDGE 850_Link_CH189
Tested by: Karl Lee

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1 pp	1672.80	-55.17	-63.08	-13.00	-42.17	7.91	Peak

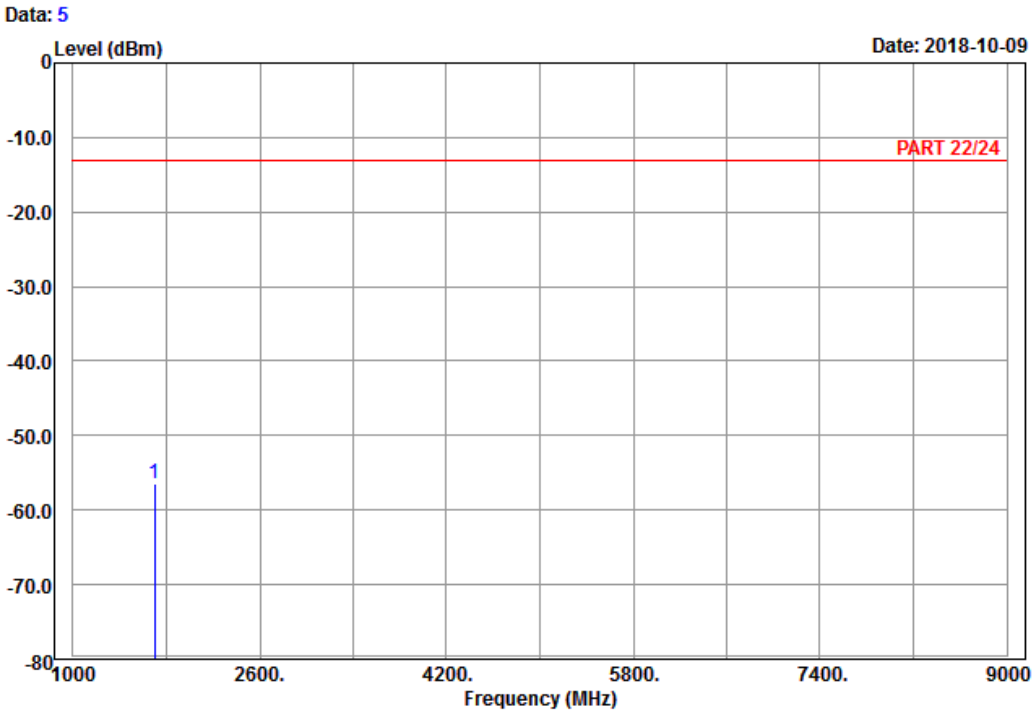


Site : 966 chamber 1
Condition: PART 22/24 Vertical
Remark : EDGE 850_Link_CH189
Tested by: Karl Lee

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1 pp	1672.80	-57.98	-65.89	-13.00	-44.98	7.91	Peak

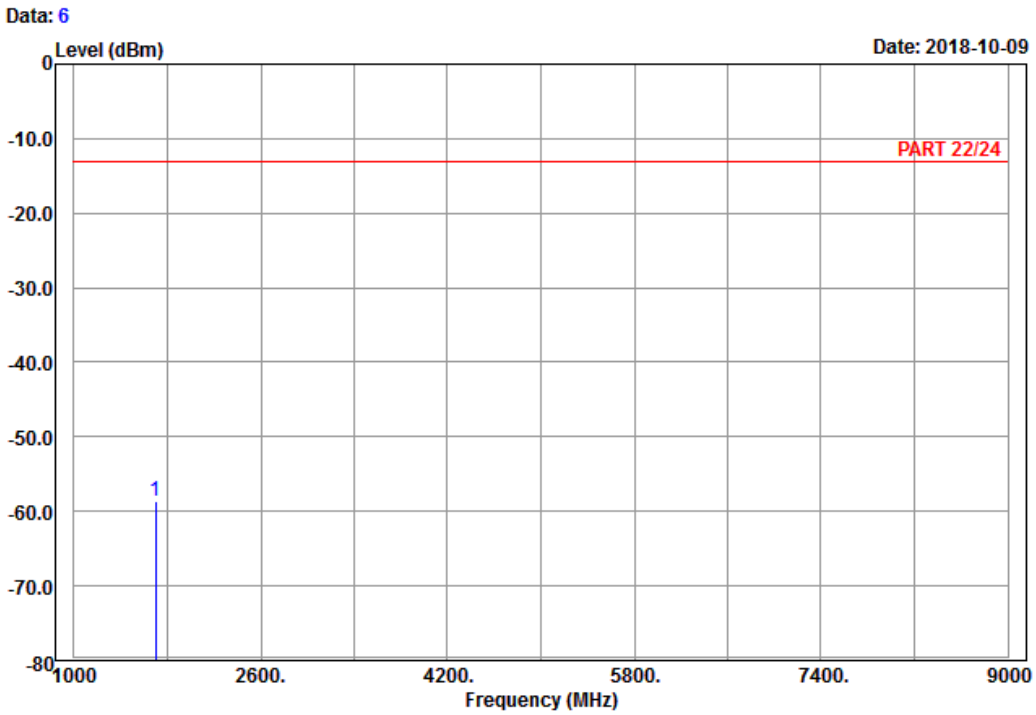
High Channel

Bureau Veritas Consumer Products Services Ltd.,Taoyuan Branch



Site : 966 chamber 1
Condition: PART 22/24 Horizontal
Remark : EDGE 850_Link_CH251
Tested by: Karl Lee

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1 pp	1697.60	-56.54	-64.68	-13.00	-43.54	8.14	Peak



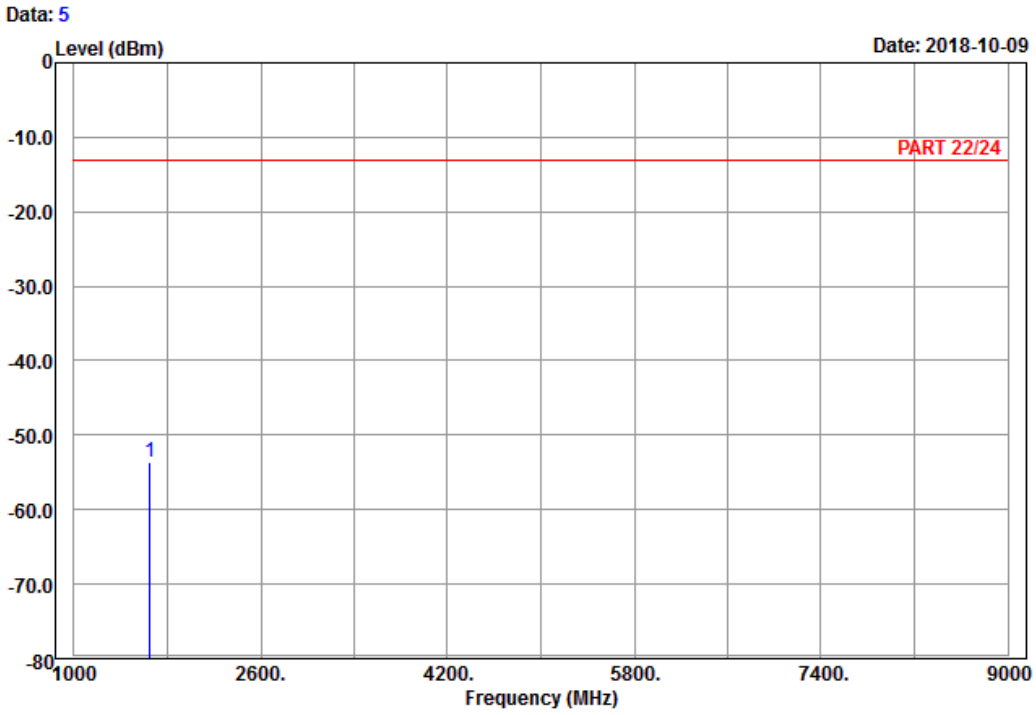
Site : 966 chamber 1
Condition: PART 22/24 Vertical
Remark : EDGE 850_Link_CH251
Tested by: Karl Lee

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1 pp	1697.60	-58.70	-66.84	-13.00	-45.70	8.14	Peak

WCDMA:

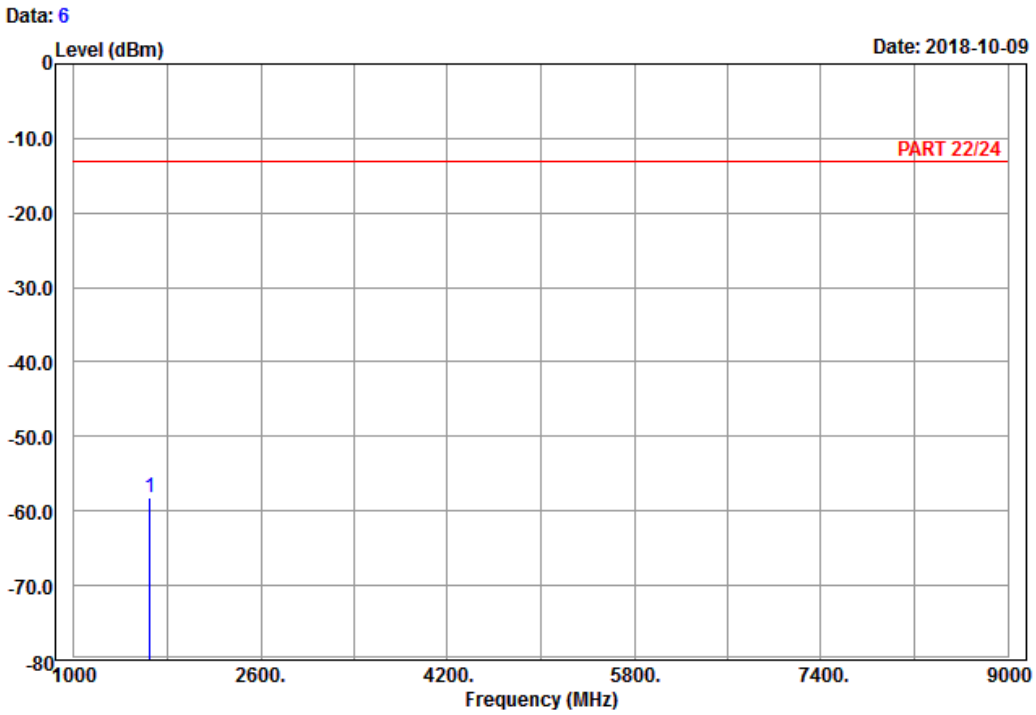
Low Channel

Bureau Veritas Consumer Products Services Ltd.,Taoyuan Branch



Site : 966 chamber 1
Condition: PART 22/24 Horizontal
Remark : Band V_Link_CH4132
Tested by: Karl Lee

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1 pp	1652.80	-53.57	-61.30	-13.00	-40.57	7.73	Peak

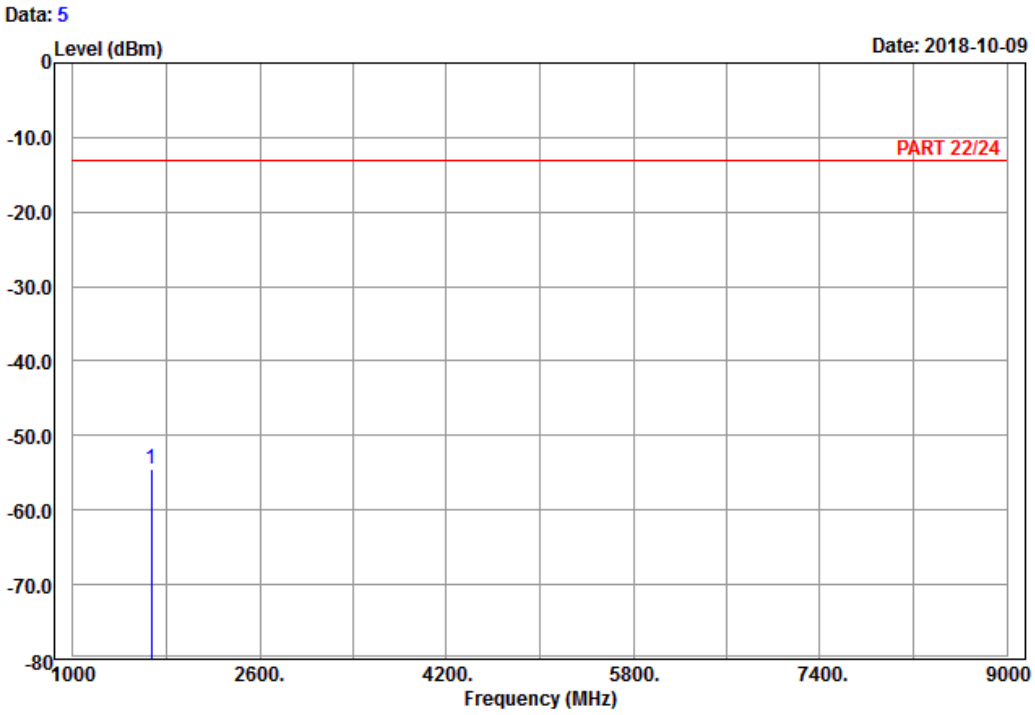


Site : 966 chamber 1
Condition: PART 22/24 Vertical
Remark : Band V_Link_CH4132
Tested by: Karl Lee

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1 pp	1652.80	-58.22	-65.95	-13.00	-45.22	7.73	Peak

Middle Channel

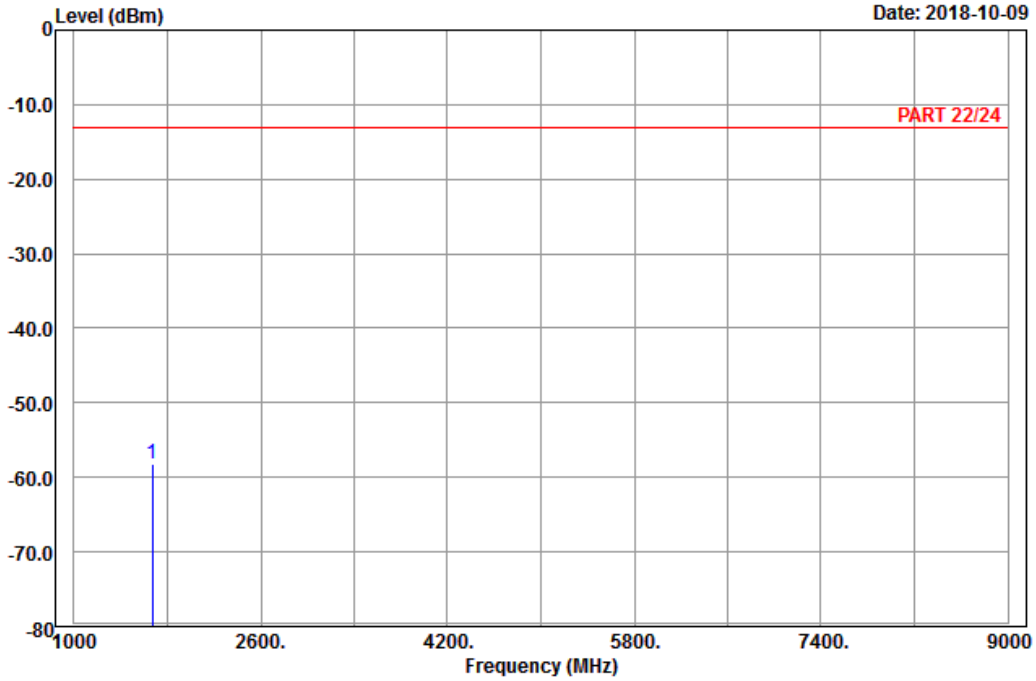
Bureau Veritas Consumer Products Services Ltd.,Taoyuan Branch



Site : 966 chamber 1
Condition: PART 22/24 Horizontal
Remark : Band V_Link_CH4182
Tested by: Karl Lee

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1 pp	1672.80	-54.46	-62.37	-13.00	-41.46	7.91	Peak

Data: 6

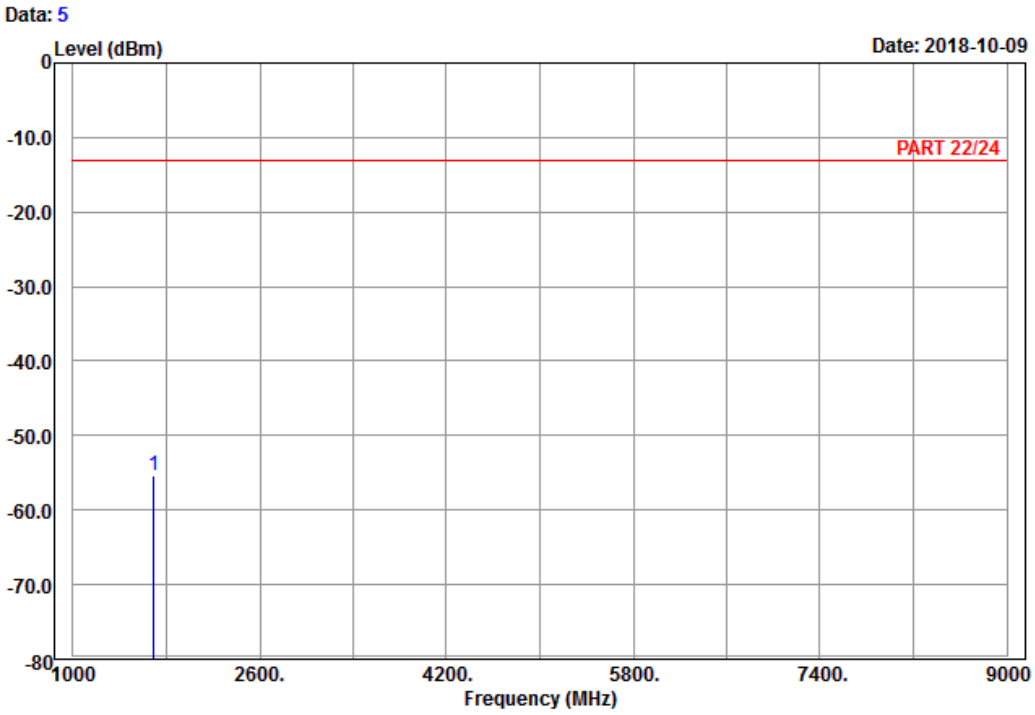


Site : 966 chamber 1
Condition: PART 22/24 Vertical
Remark : Band V_Link_CH4182
Tested by: Karl Lee

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1 pp	1672.80	-58.23	-66.14	-13.00	-45.23	7.91	Peak

High Channel

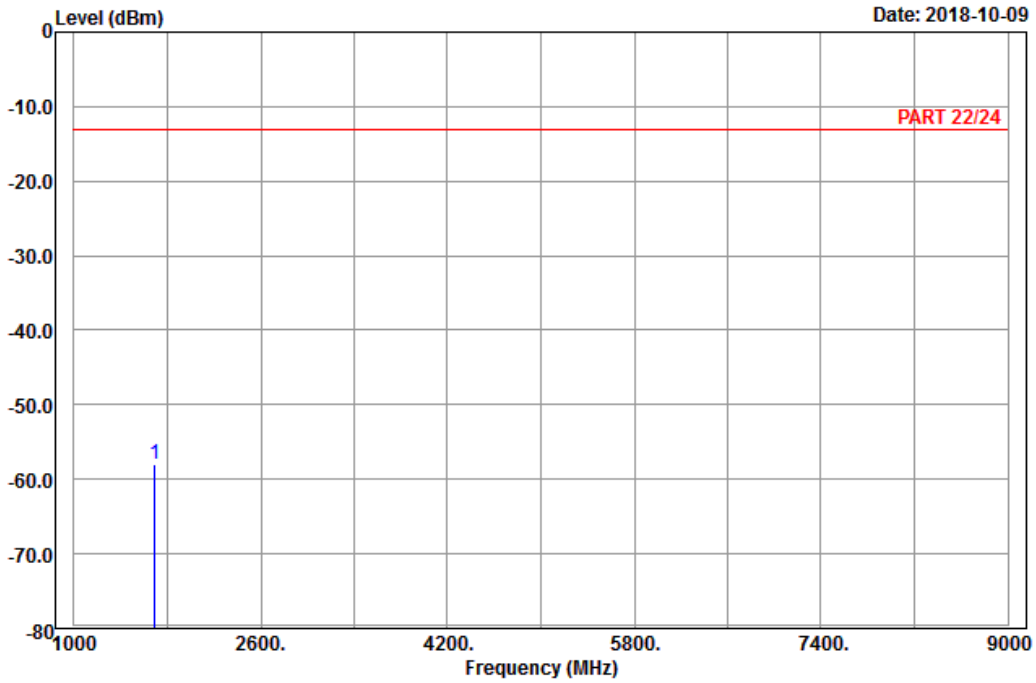
Bureau Veritas Consumer Products Services Ltd.,Taoyuan Branch



Site : 966 chamber 1
Condition: PART 22/24 Horizontal
Remark : Band V_Link_CH4233
Tested by: Karl Lee

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1 pp	1693.20	-55.46	-63.60	-13.00	-42.46	8.14	Peak

Data: 6



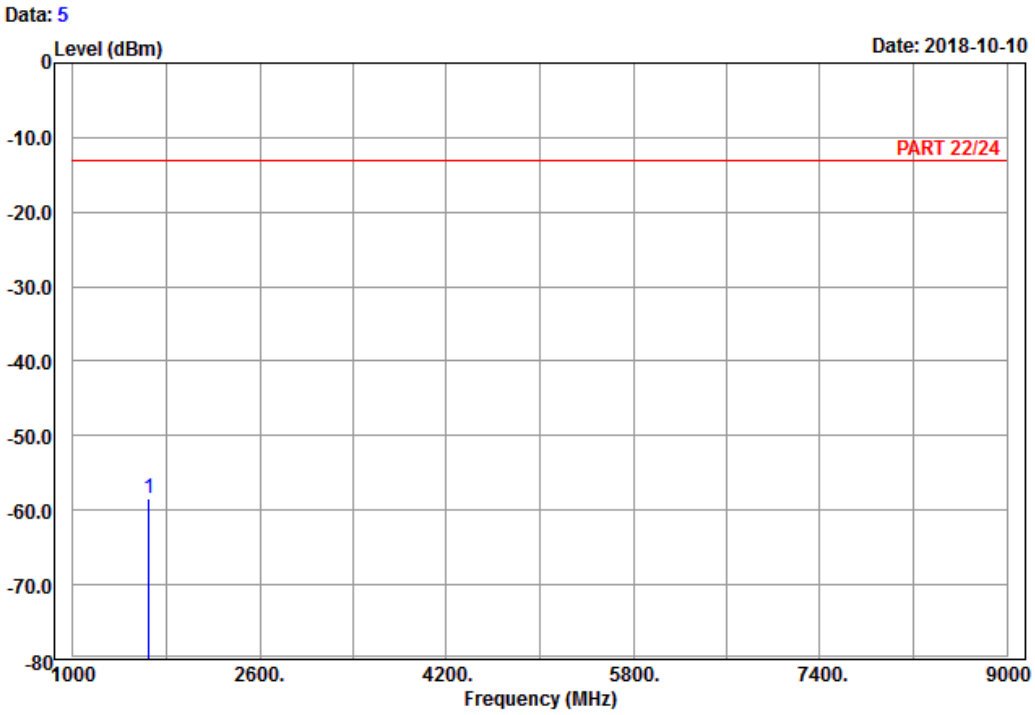
Site : 966 chamber 1
Condition: PART 22/24 Vertical
Remark : Band V_Link_CH4233
Tested by: Karl Lee

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1 pp	1693.20	-57.88	-66.02	-13.00	-44.88	8.14	Peak

CDMA:

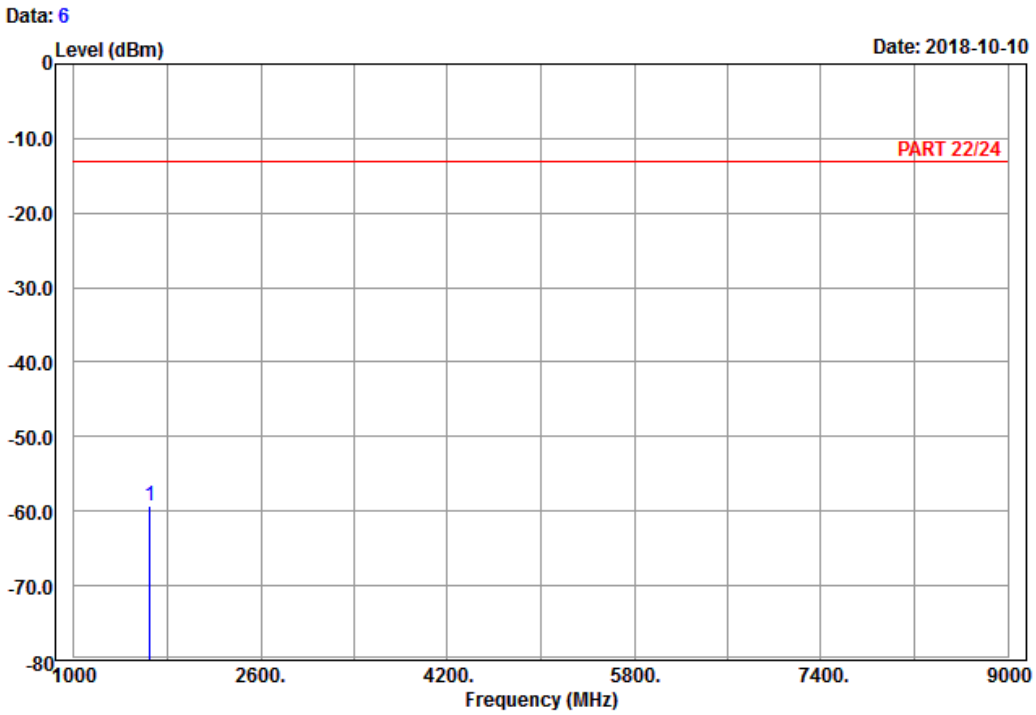
Low Channel

Bureau Veritas Consumer Products Services Ltd.,Taoyuan Branch




```
Site     : 966 chamber 1
Condition: PART 22/24 Horizontal
Remark   : BC 0_Link_CH1013
Tested by: Charles Hsiao
                        Read  Limit   Over
           Freq  Level  Level   Line  Limit Factor Remark
          _____ _____ _____ _____ _____ _____ _____
            MHz   dBm   dBm   dBm    dB    dB

1 pp  1649.40 -58.36 -66.09 -13.00 -45.36   7.73 Peak
```

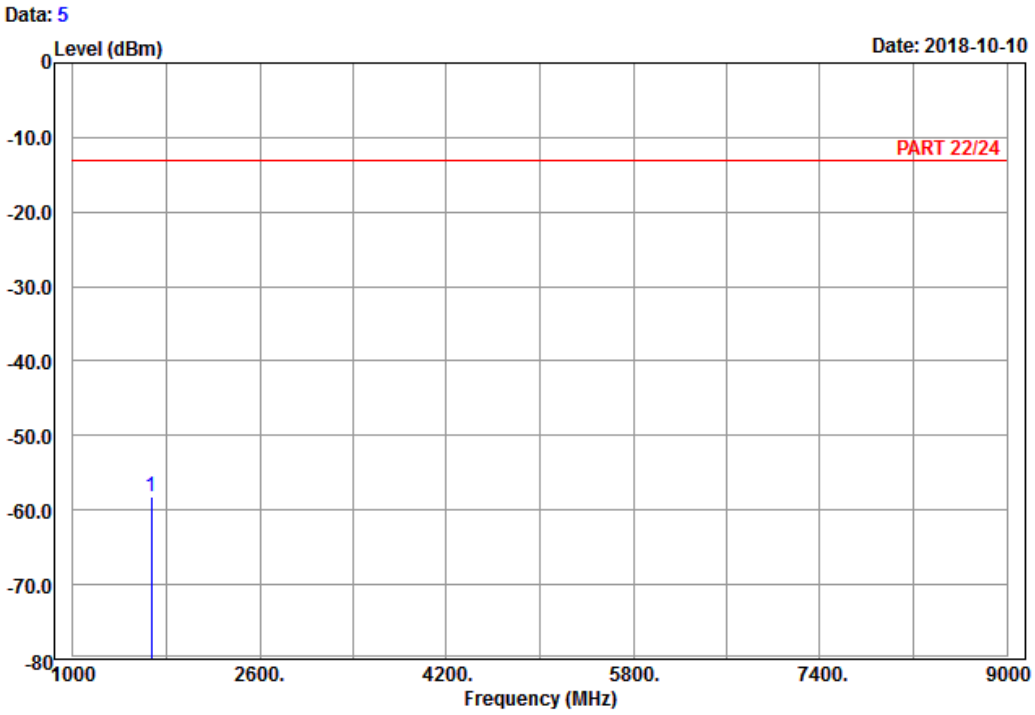


Site : 966 chamber 1
Condition: PART 22/24 Vertical
Remark : BC 0_Link_CH1013
Tested by: Charles Hsiao

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1 pp	1649.40	-59.27	-67.00	-13.00	-46.27	7.73	Peak

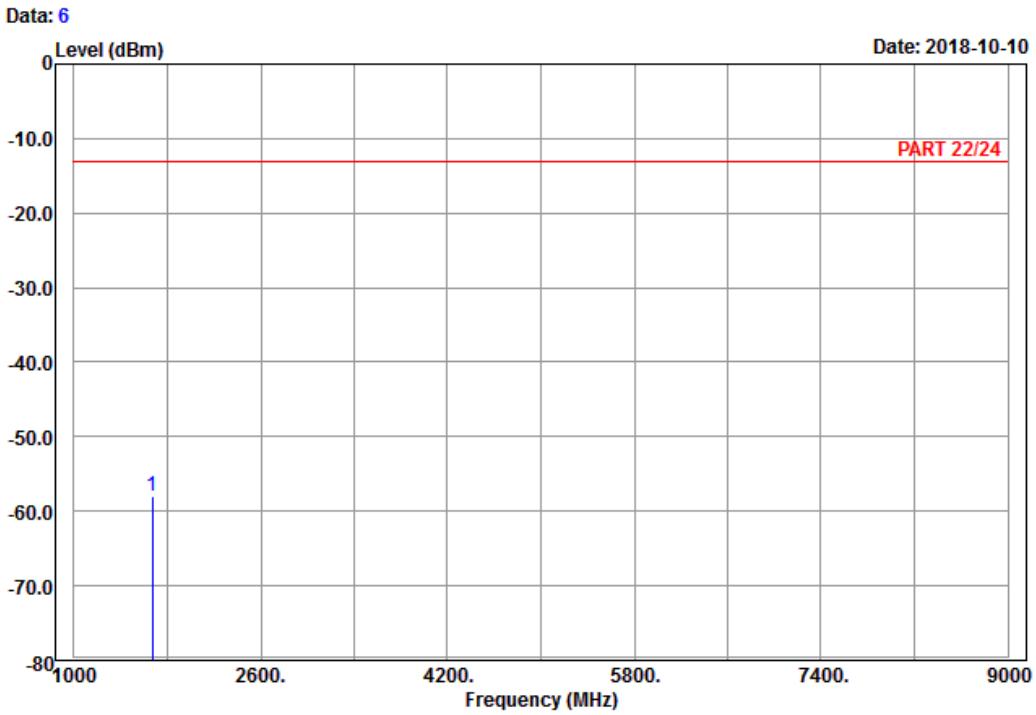
Middle Channel

Bureau Veritas Consumer Products Services Ltd.,Taoyuan Branch



Site : 966 chamber 1
Condition: PART 22/24 Horizontal
Remark : BC 0_Link_CH384
Tested by: Charles Hsiao

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1 pp	1673.04	-58.10	-66.01	-13.00	-45.10	7.91	Peak

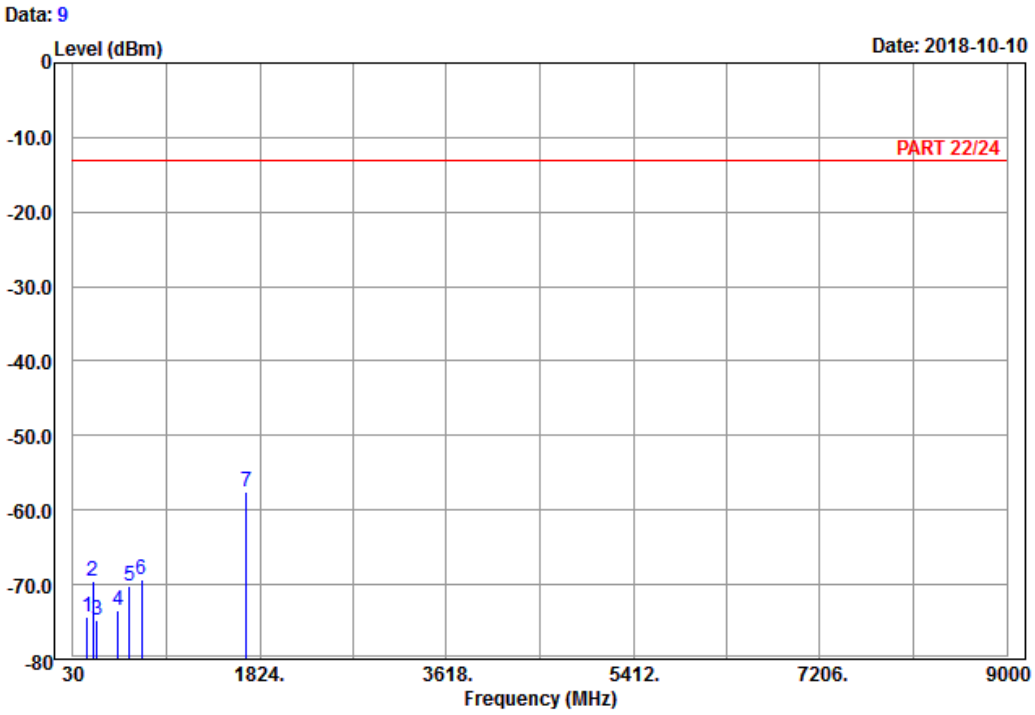


Site : 966 chamber 1
Condition: PART 22/24 Vertical
Remark : BC 0_Link_CH384
Tested by: Charles Hsiao

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1 pp	1673.04	-57.96	-65.87	-13.00	-44.96	7.91	Peak

High Channel

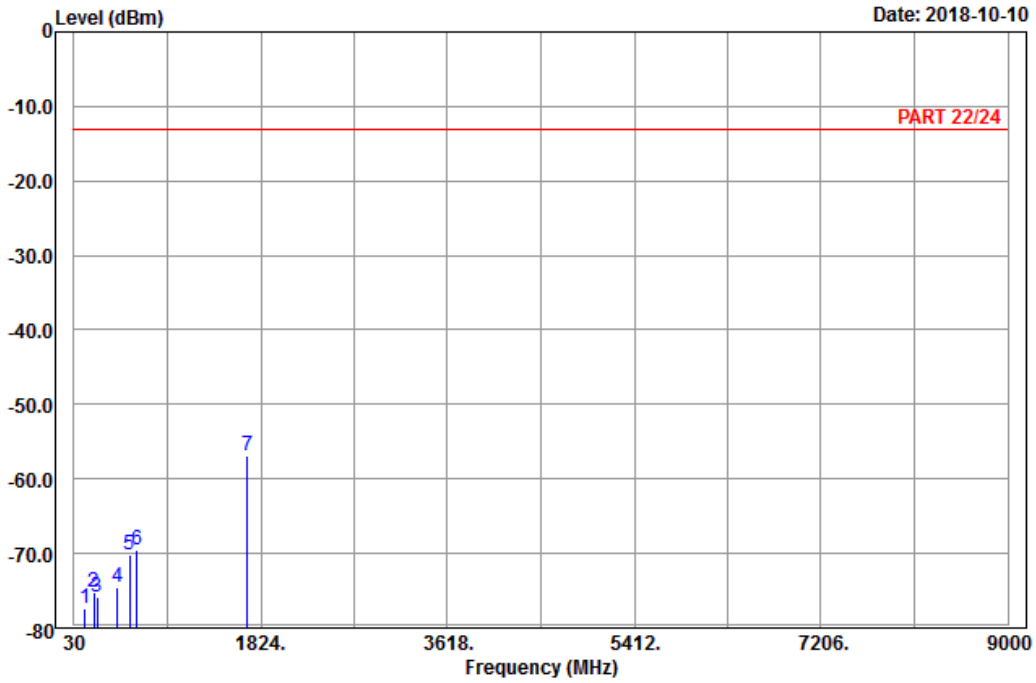
Bureau Veritas Consumer Products Services Ltd.,Taoyuan Branch



Site : 966 chamber 1
Condition: PART 22/24 Horizontal
Remark : BC 0_Link_CH777
Tested by: Charles Hsiao

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1	168.51	-74.29	-67.49	-13.00	-61.29	-6.80	Peak
2	219.27	-69.57	-63.65	-13.00	-56.57	-5.92	Peak
3	256.26	-74.67	-69.11	-13.00	-61.67	-5.56	Peak
4	460.30	-73.47	-69.32	-13.00	-60.47	-4.15	Peak
5	570.90	-70.08	-69.30	-13.00	-57.08	-0.78	Peak
6	688.50	-69.31	-68.99	-13.00	-56.31	-0.32	Peak
7 pp	1696.62	-57.55	-65.69	-13.00	-44.55	8.14	Peak

Data: 10

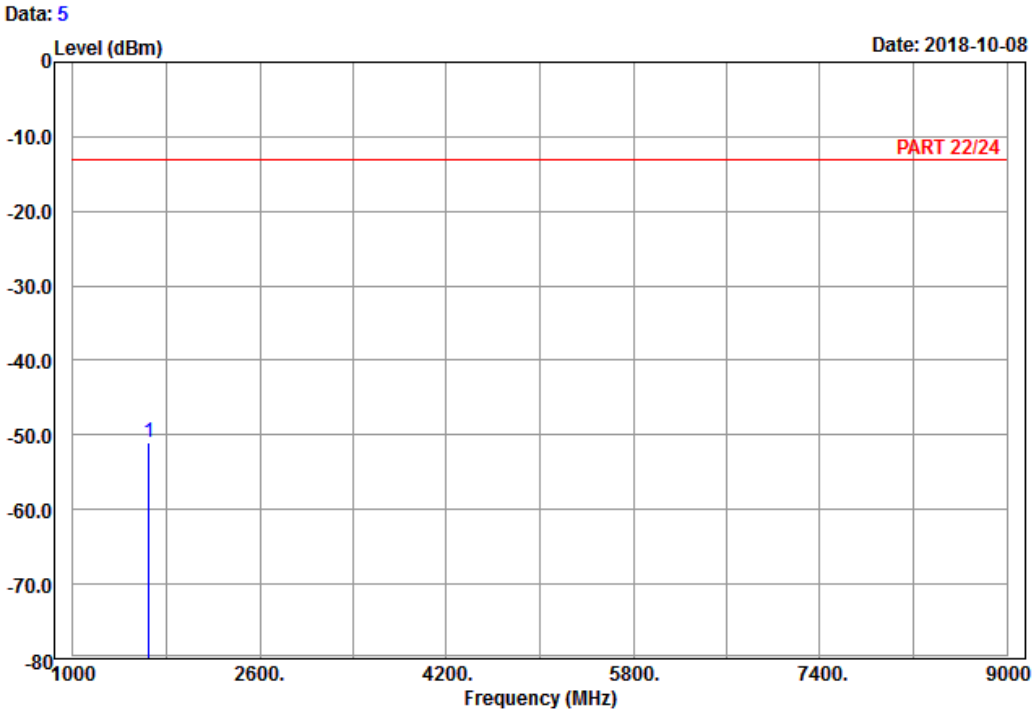


Site : 966 chamber 1
Condition: PART 22/24 Vertical
Remark : BC 0_Link_CH777
Tested by: Charles Hsiao

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1	136.11	-77.29	-69.62	-13.00	-64.29	-7.67	Peak
2	219.81	-75.15	-69.24	-13.00	-62.15	-5.91	Peak
3	254.10	-75.77	-70.23	-13.00	-62.77	-5.54	Peak
4	448.40	-74.59	-70.79	-13.00	-61.59	-3.80	Peak
5	561.10	-70.22	-69.04	-13.00	-57.22	-1.18	Peak
6	636.70	-69.62	-69.64	-13.00	-56.62	0.02	Peak
7 pp	1696.62	-56.80	-64.94	-13.00	-43.80	8.14	Peak

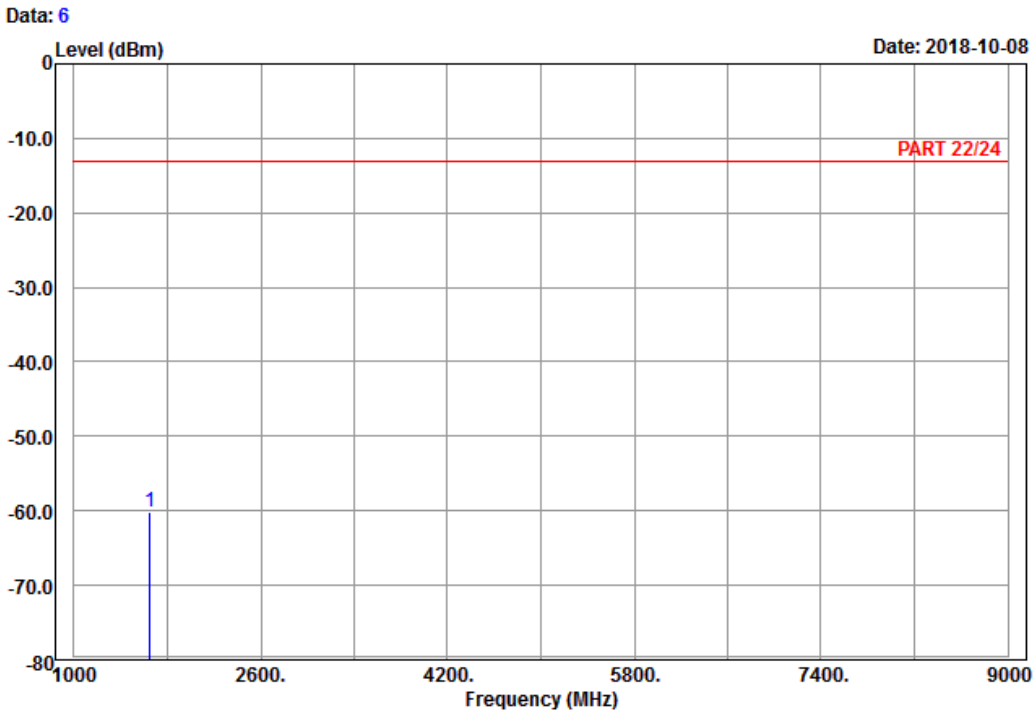
LTE Band 5
Channel Bandwidth: 1.4 MHz / QPSK
Low Channel

Bureau Veritas Consumer Products Services Ltd.,Taoyuan Branch




```
Site      : 966 chamber 1
Condition: PART 22/24 Horizontal
Remark    : LTE_Band 5_Link_CH20407
Tested by: Karl Lee
                          Read  Limit   Over
           Freq  Level  Level   Line  Limit Factor Remark
         _______ ______ ______ ______ ______ ______ _______
              MHz    dBm    dBm    dBm     dB     dB

  1 pp  1649.40 -51.11 -58.84 -13.00 -38.11   7.73 Peak
```

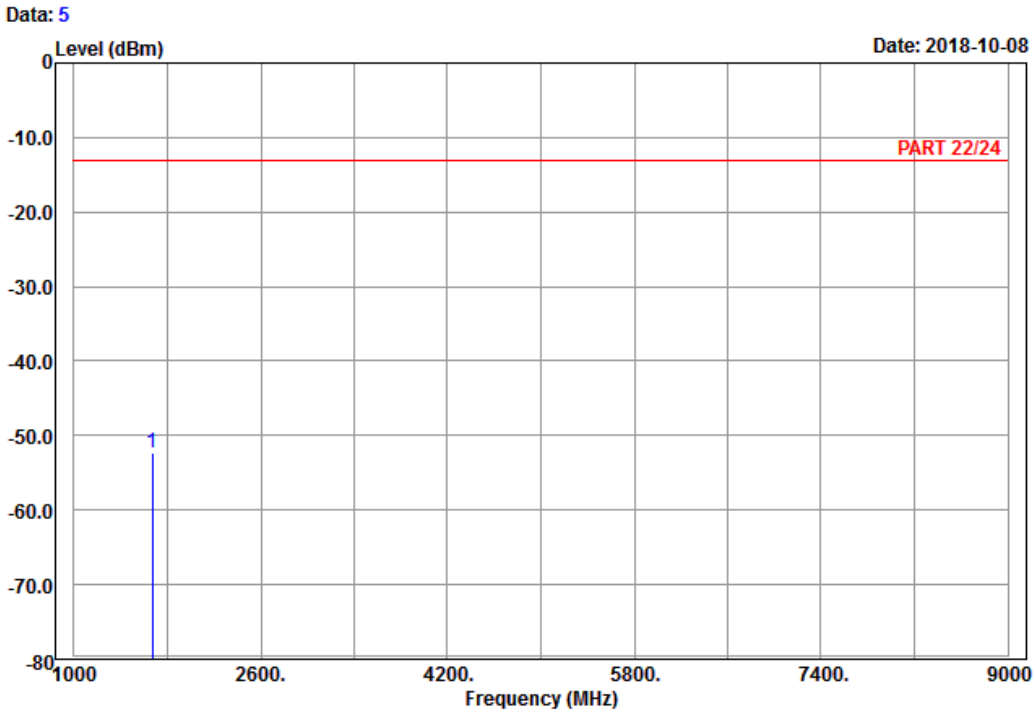


Site : 966 chamber 1
Condition: PART 22/24 Vertical
Remark : LTE_Band 5_Link_CH20407
Tested by: Karl Lee

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1 pp	1649.40	-60.18	-67.91	-13.00	-47.18	7.73	Peak

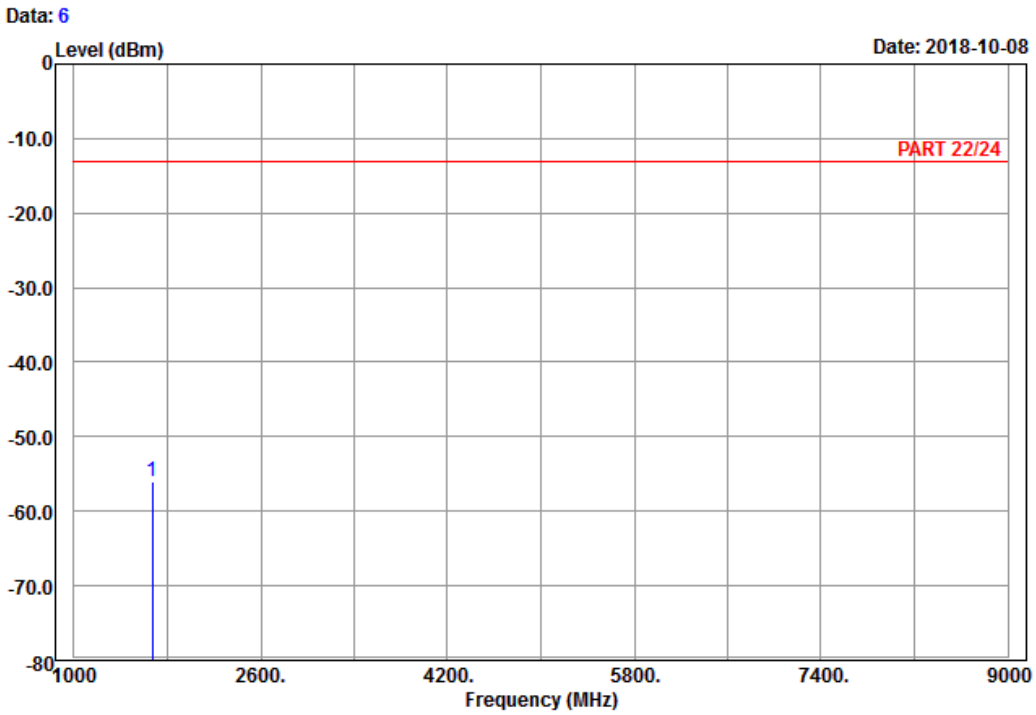
Middle Channel

Bureau Veritas Consumer Products Services Ltd.,Taoyuan Branch



Site : 966 chamber 1
Condition: PART 22/24 Horizontal
Remark : LTE_Band 5_Link_CH20525
Tested by: Karl Lee

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1 pp	1673.00	-52.22	-60.13	-13.00	-39.22	7.91	Peak

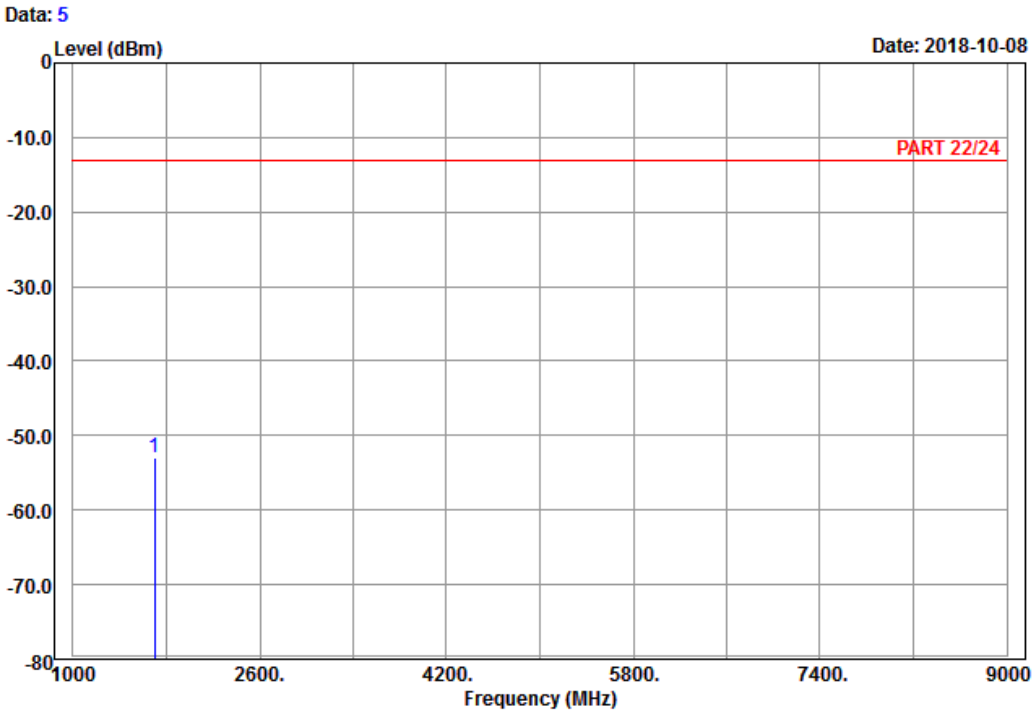


Site : 966 chamber 1
Condition: PART 22/24 Vertical
Remark : LTE_Band 5_Link_CH20525
Tested by: Karl Lee

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1 pp	1673.00	-56.13	-64.04	-13.00	-43.13	7.91	Peak

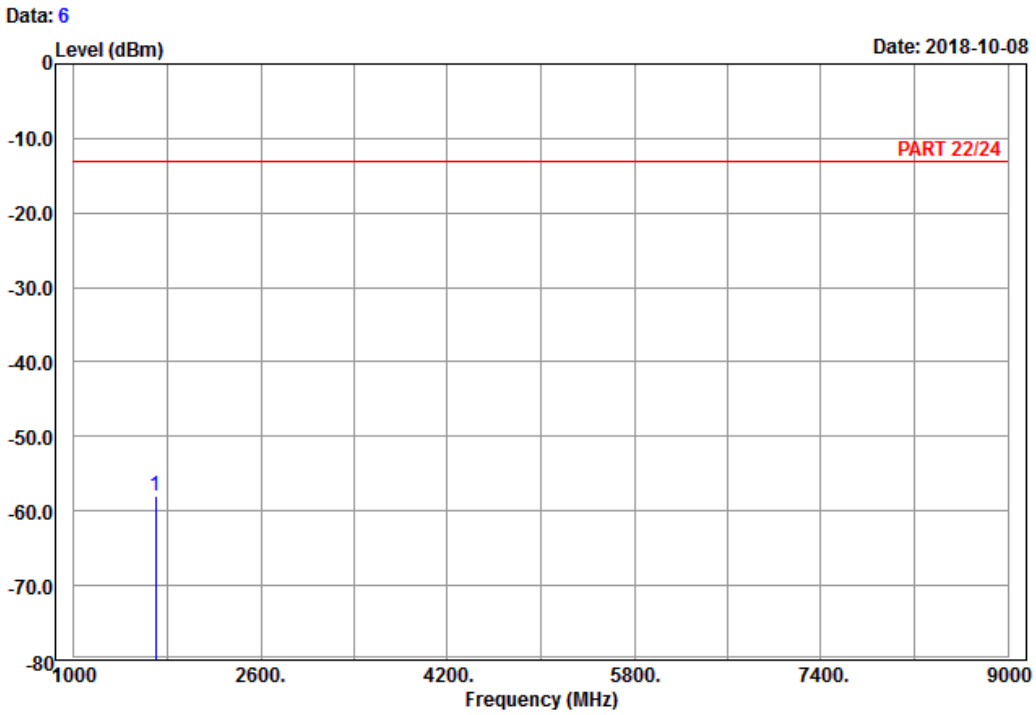
High Channel

Bureau Veritas Consumer Products Services Ltd.,Taoyuan Branch



Site : 966 chamber 1
Condition: PART 22/24 Horizontal
Remark : LTE_Band 5_Link_CH20643
Tested by: Karl Lee

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1 pp	1696.60	-52.92	-61.06	-13.00	-39.92	8.14	Peak

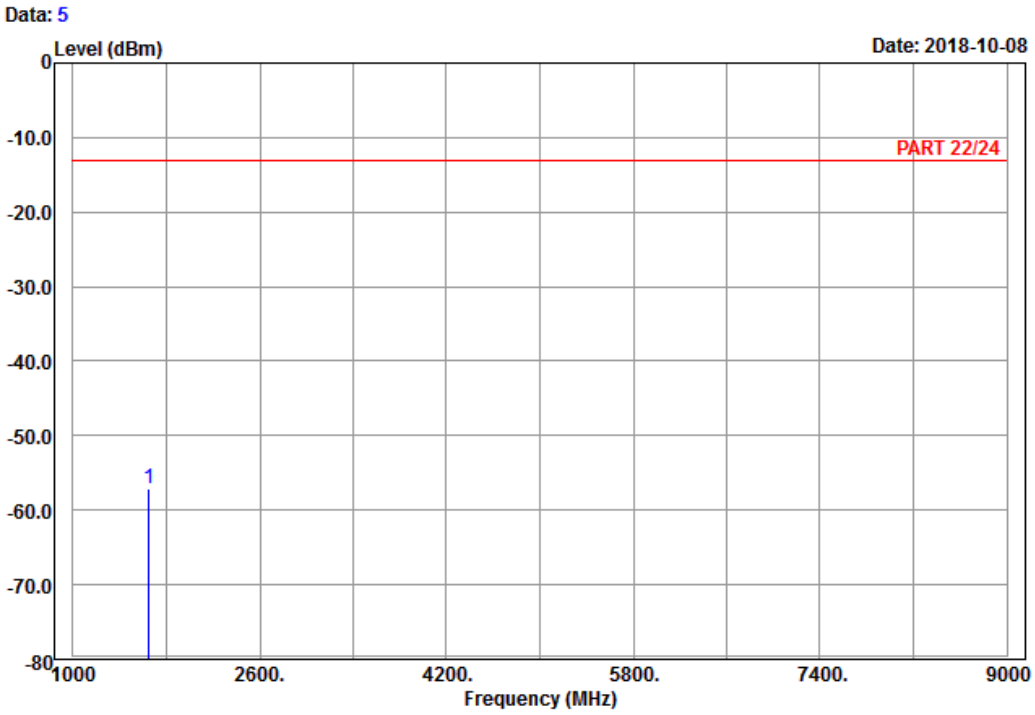


Site : 966 chamber 1
Condition: PART 22/24 Vertical
Remark : LTE_Band 5_Link_CH20643
Tested by: Karl Lee

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1 pp	1696.60	-57.93	-66.07	-13.00	-44.93	8.14	Peak

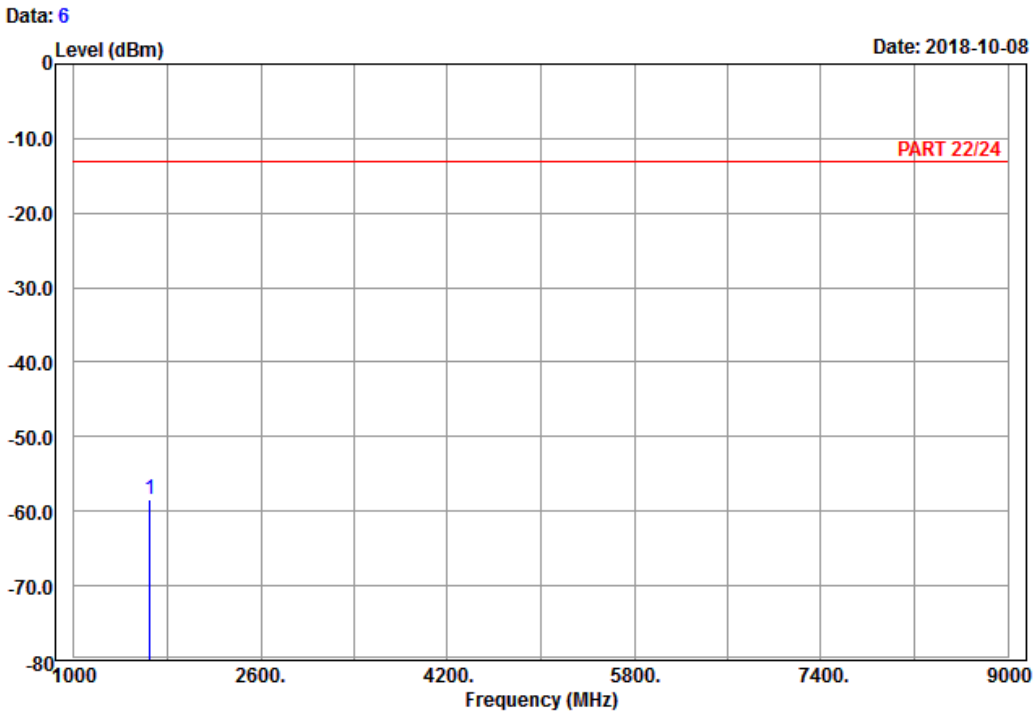
Channel Bandwidth: 5 MHz / QPSK
Low Channel

Bureau Veritas Consumer Products Services Ltd.,Taoyuan Branch



Site : 966 chamber 1
Condition: PART 22/24 Horizontal
Remark : LTE_Band 5_Link_CH20425
Tested by: Karl Lee

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1 pp	1653.00	-57.20	-64.93	-13.00	-44.20	7.73	Peak

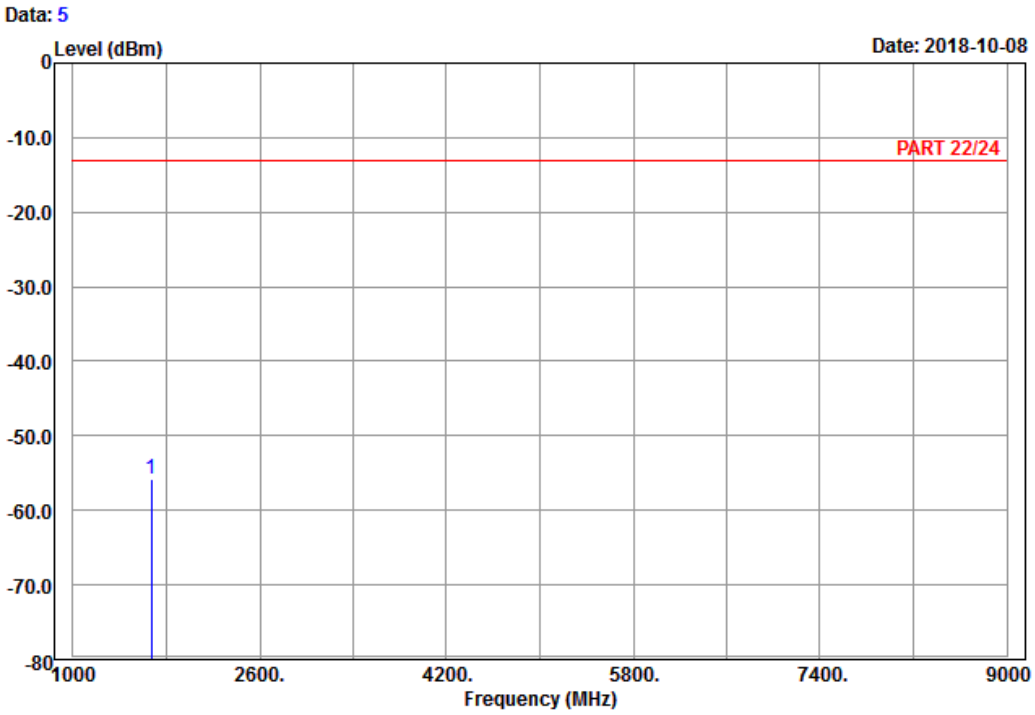


Site : 966 chamber 1
Condition: PART 22/24 Vertical
Remark : LTE_Band 5_Link_CH20425
Tested by: Karl Lee

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1 pp	1653.00	-58.36	-66.09	-13.00	-45.36	7.73	Peak

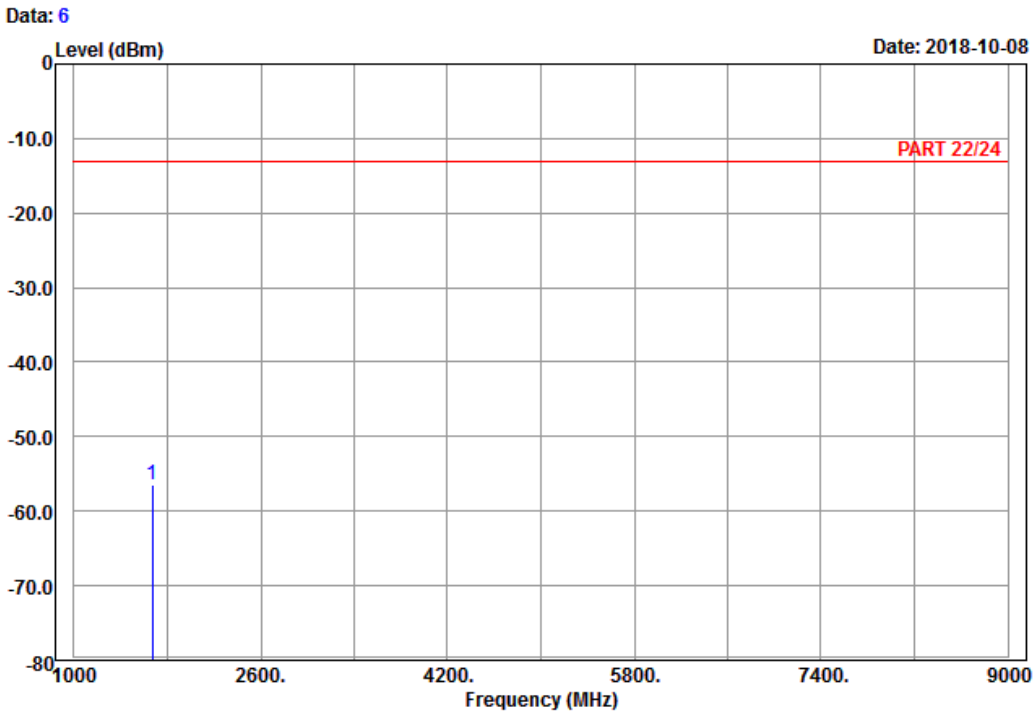
Middle Channel

Bureau Veritas Consumer Products Services Ltd.,Taoyuan Branch



Site : 966 chamber 1
Condition: PART 22/24 Horizontal
Remark : LTE_Band 5_Link_CH20525
Tested by: Karl Lee

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1 pp	1673.00	-55.87	-63.78	-13.00	-42.87	7.91	Peak

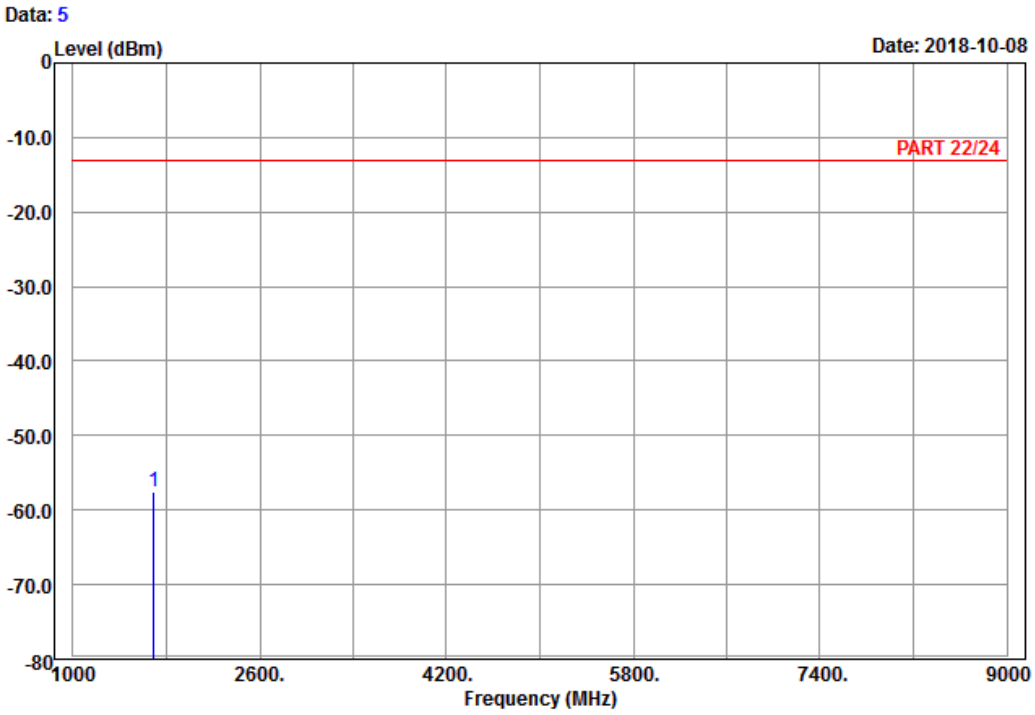


Site : 966 chamber 1
Condition: PART 22/24 Vertical
Remark : LTE_Band 5_Link_CH20525
Tested by: Karl Lee

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1 pp	1673.00	-56.51	-64.42	-13.00	-43.51	7.91	Peak

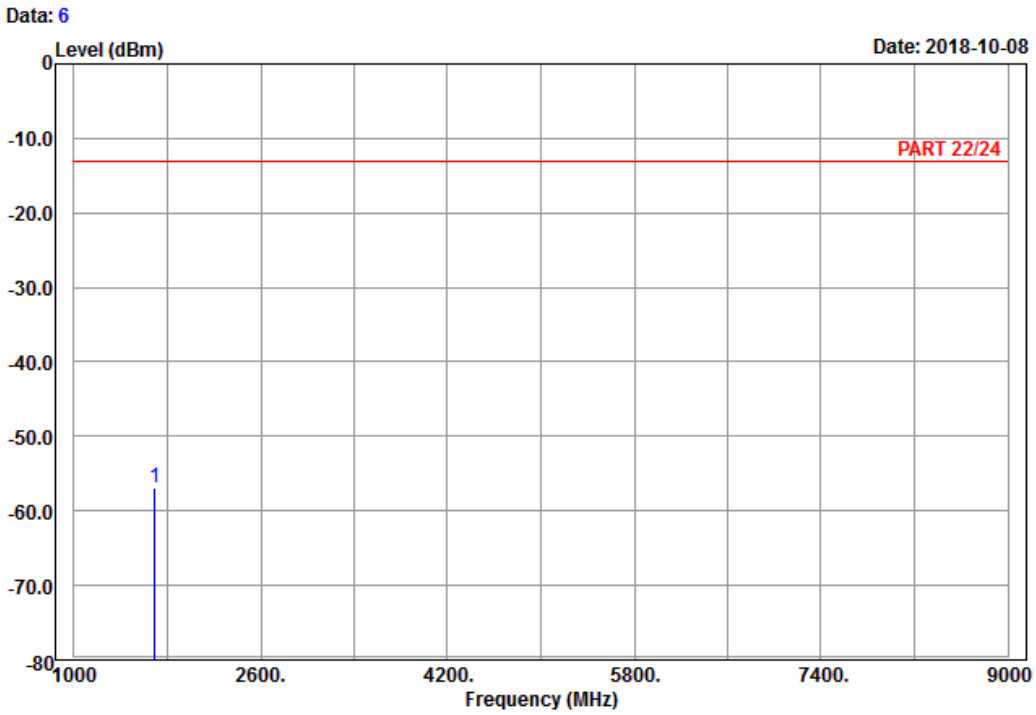
High Channel

Bureau Veritas Consumer Products Services Ltd.,Taoyuan Branch



Site : 966 chamber 1
Condition: PART 22/24 Horizontal
Remark : LTE_Band 5_Link_CH20625
Tested by: Karl Lee

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1 pp	1693.00	-57.46	-65.48	-13.00	-44.46	8.02	Peak

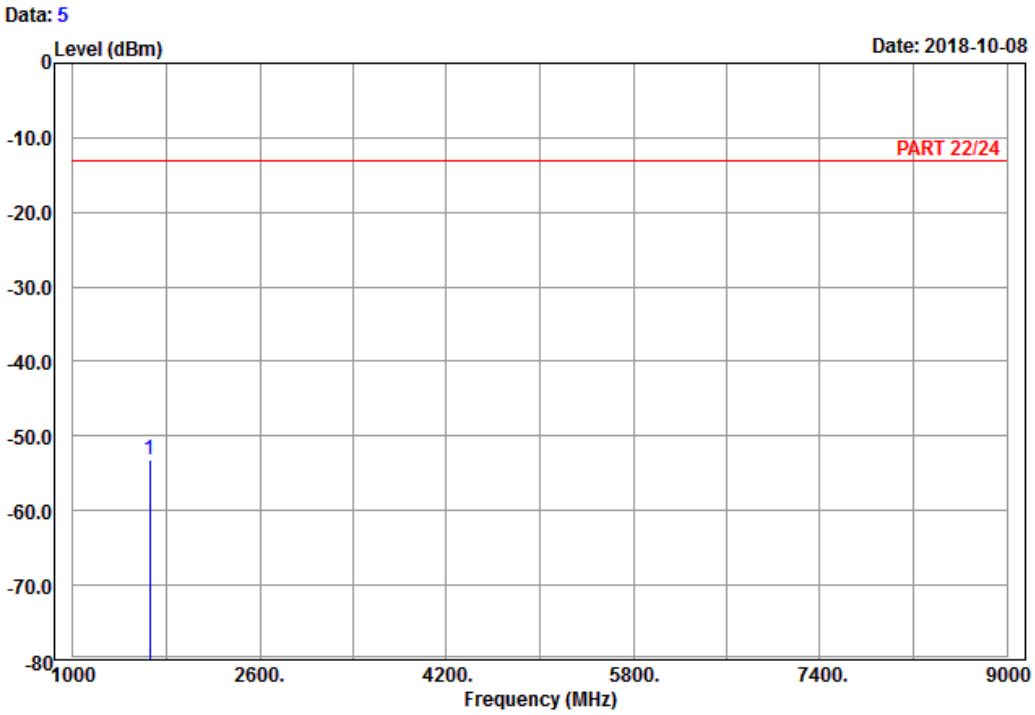


Site : 966 chamber 1
Condition: PART 22/24 Vertical
Remark : LTE_Band 5_Link_CH20625
Tested by: Karl Lee

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1 pp	1693.00	-56.85	-64.87	-13.00	-43.85	8.02	Peak

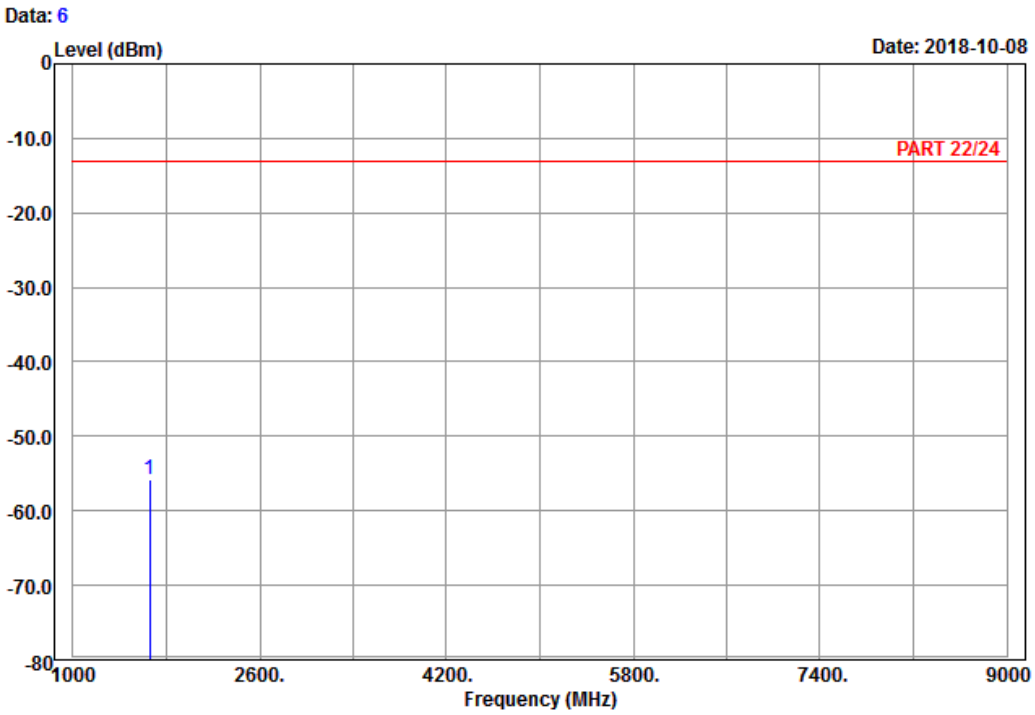
Channel Bandwidth: 10 MHz / QPSK
Low Channel

Bureau Veritas Consumer Products Services Ltd.,Taoyuan Branch



Site : 966 chamber 1
Condition: PART 22/24 Horizontal
Remark : LTE_Band 5_Link_CH20450
Tested by: Karl Lee

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1 pp	1658.00	-53.27	-61.18	-13.00	-40.27	7.91	Peak

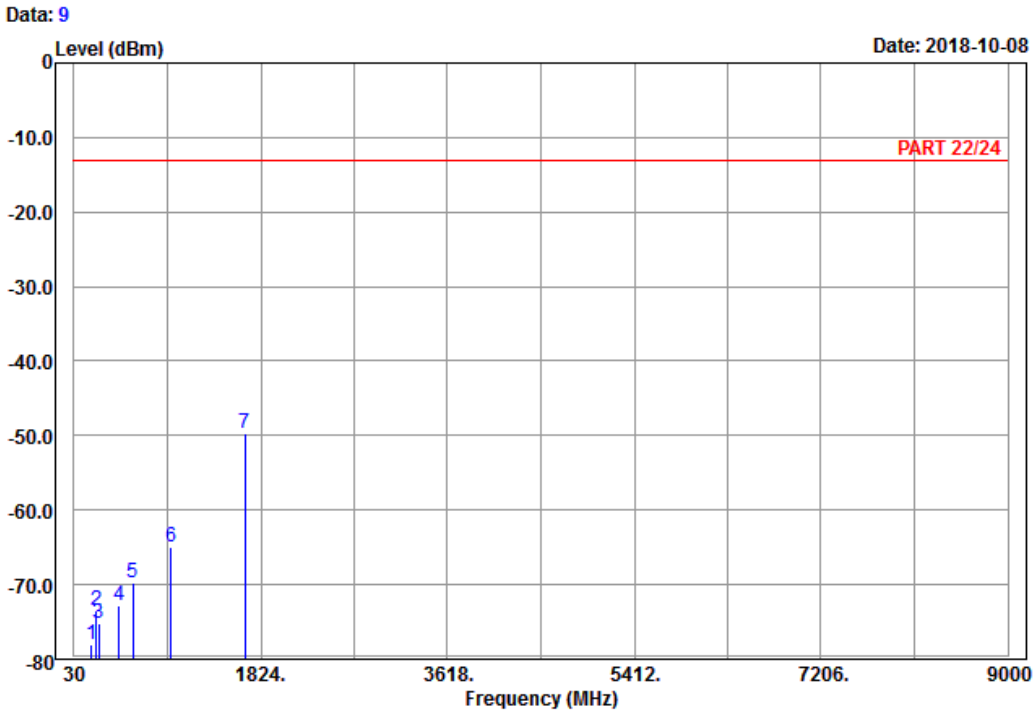


Site : 966 chamber 1
Condition: PART 22/24 Vertical
Remark : LTE_Band 5_Link_CH20450
Tested by: Karl Lee

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1 pp	1658.00	-55.87	-63.78	-13.00	-42.87	7.91	Peak

Middle Channel

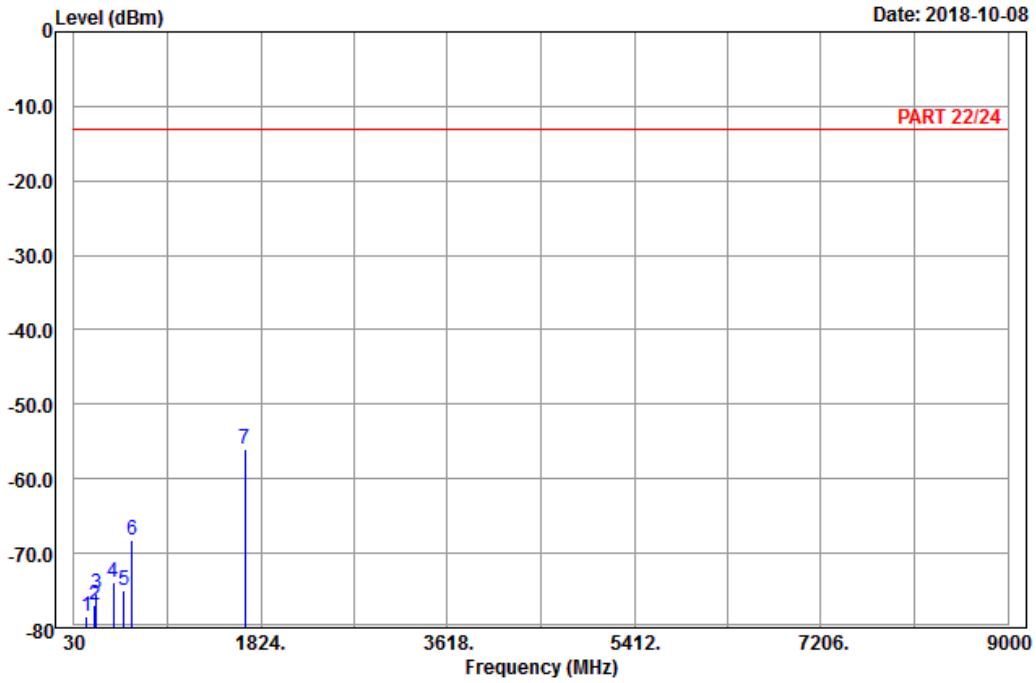
Bureau Veritas Consumer Products Services Ltd.,Taoyuan Branch



Site : 966 chamber 1
Condition: PART 22/24 Horizontal
Remark : LTE_Band 5_Link_CH20525
Tested by: Karl Lee

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1	199.83	-78.08	-71.90	-13.00	-65.08	-6.18	Peak
2	246.00	-73.46	-67.90	-13.00	-60.46	-5.56	Peak
3	264.63	-75.17	-69.53	-13.00	-62.17	-5.64	Peak
4	465.90	-72.84	-68.55	-13.00	-59.84	-4.29	Peak
5	596.80	-69.74	-70.01	-13.00	-56.74	0.27	Peak
6	960.80	-65.03	-70.17	-13.00	-52.03	5.14	Peak
7 pp	1673.00	-49.78	-57.69	-13.00	-36.78	7.91	Peak

Data: 10

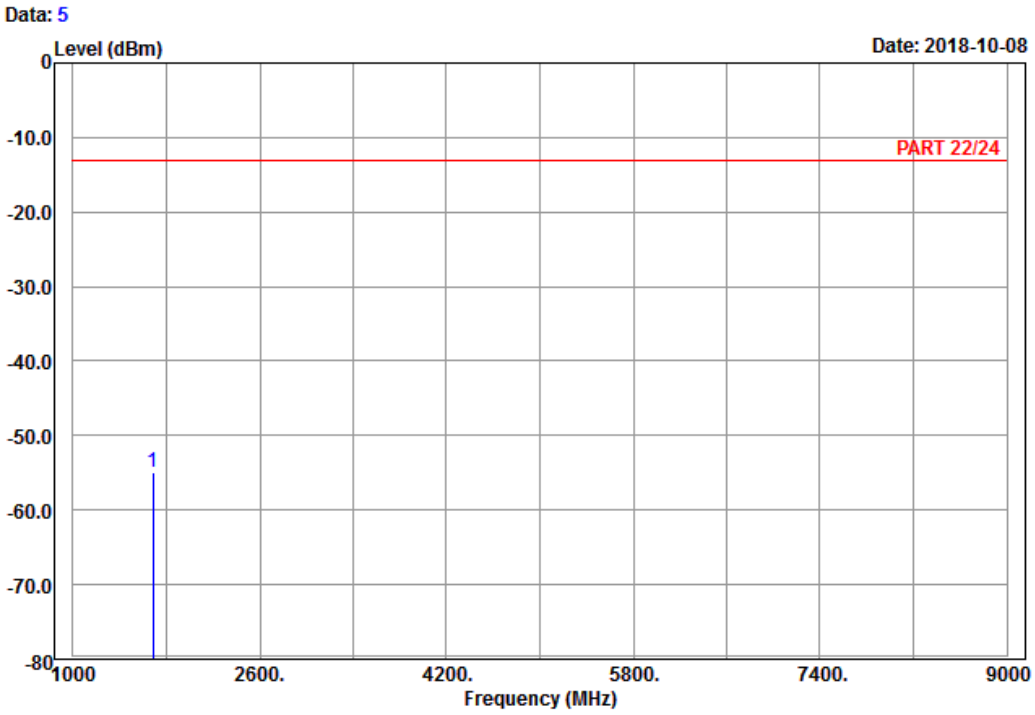


Site : 966 chamber 1
Condition: PART 22/24 Vertical
Remark : LTE_Band 5_Link_CH20525
Tested by: Karl Lee

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1	152.31	-78.38	-70.49	-13.00	-65.38	-7.89	Peak
2	228.18	-76.86	-71.05	-13.00	-63.86	-5.81	Peak
3	247.08	-75.49	-69.94	-13.00	-62.49	-5.55	Peak
4	406.40	-73.98	-71.09	-13.00	-60.98	-2.89	Peak
5	508.60	-75.05	-70.34	-13.00	-62.05	-4.71	Peak
6	584.20	-68.33	-68.07	-13.00	-55.33	-0.26	Peak
7 pp	1673.00	-55.94	-63.85	-13.00	-42.94	7.91	Peak

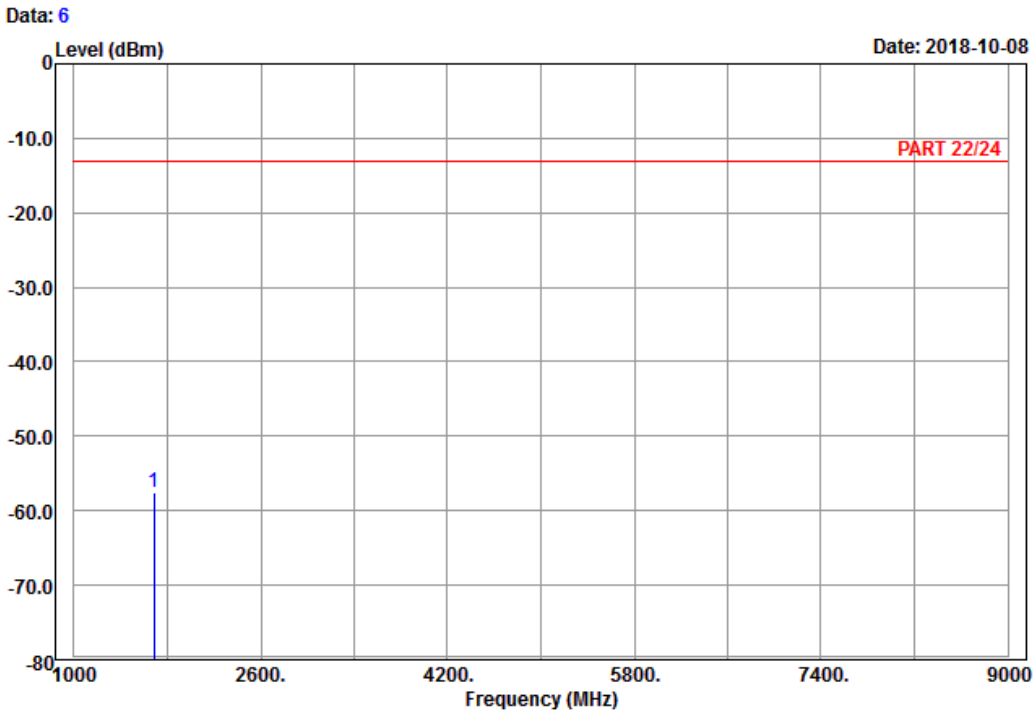
High Channel

Bureau Veritas Consumer Products Services Ltd.,Taoyuan Branch



Site : 966 chamber 1
Condition: PART 22/24 Horizontal
Remark : LTE_Band 5_Link_CH20600
Tested by: Karl Lee

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1 pp	1688.00	-54.87	-62.89	-13.00	-41.87	8.02	Peak

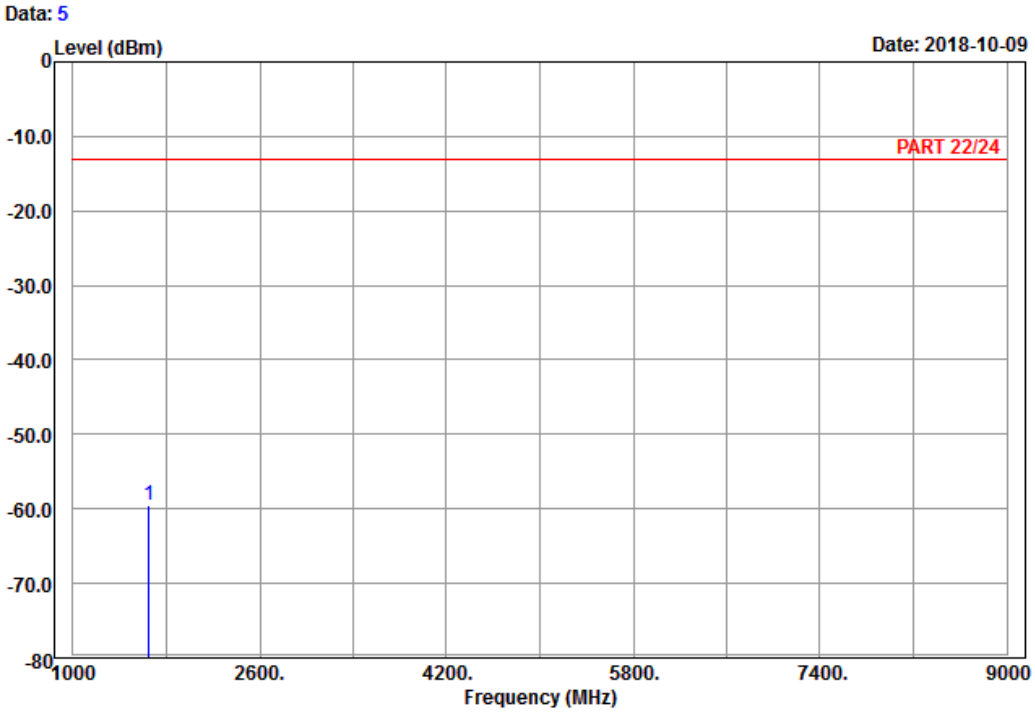


Site : 966 chamber 1
Condition: PART 22/24 Vertical
Remark : LTE_Band 5_Link_CH20600
Tested by: Karl Lee

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1 pp	1688.00	-57.55	-65.57	-13.00	-44.55	8.02	Peak

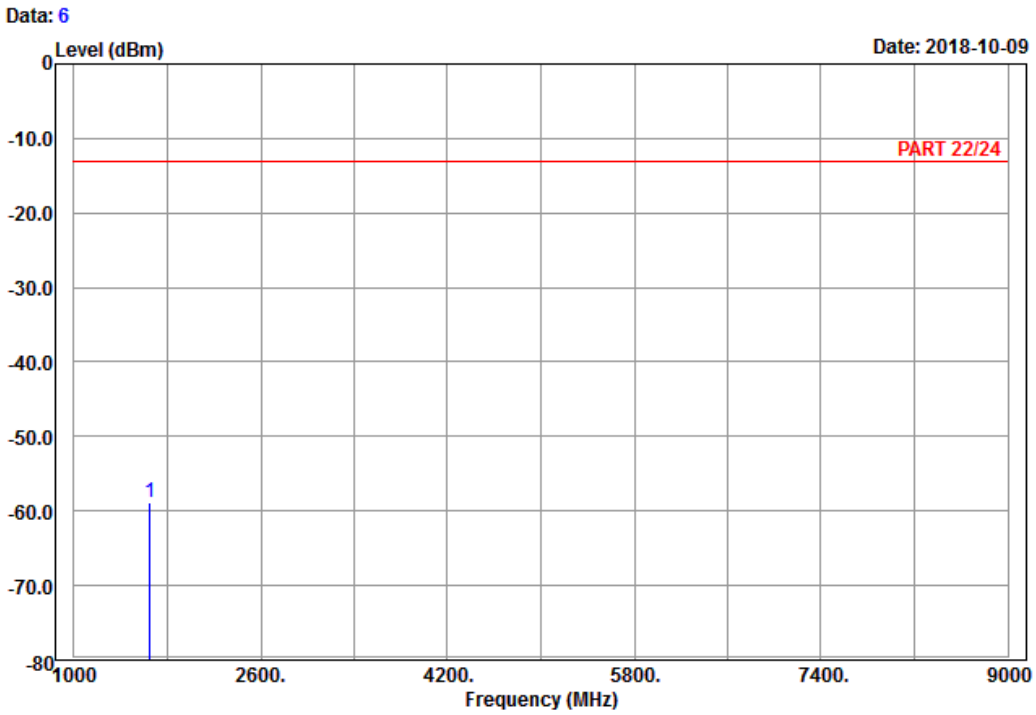
LTE Band 26
Channel Bandwidth: 1.4 MHz / QPSK
Low Channel

Bureau Veritas Consumer Products Services Ltd.,Taoyuan Branch




```
Site      : 966 chamber 1
Condition: PART 22/24 Horizontal
Remark    : LTE_Band 26_Link_CH26797
Tested by: Karl Lee
```

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1 pp	1649.40	-59.50	-67.23	-13.00	-46.50	7.73	Peak

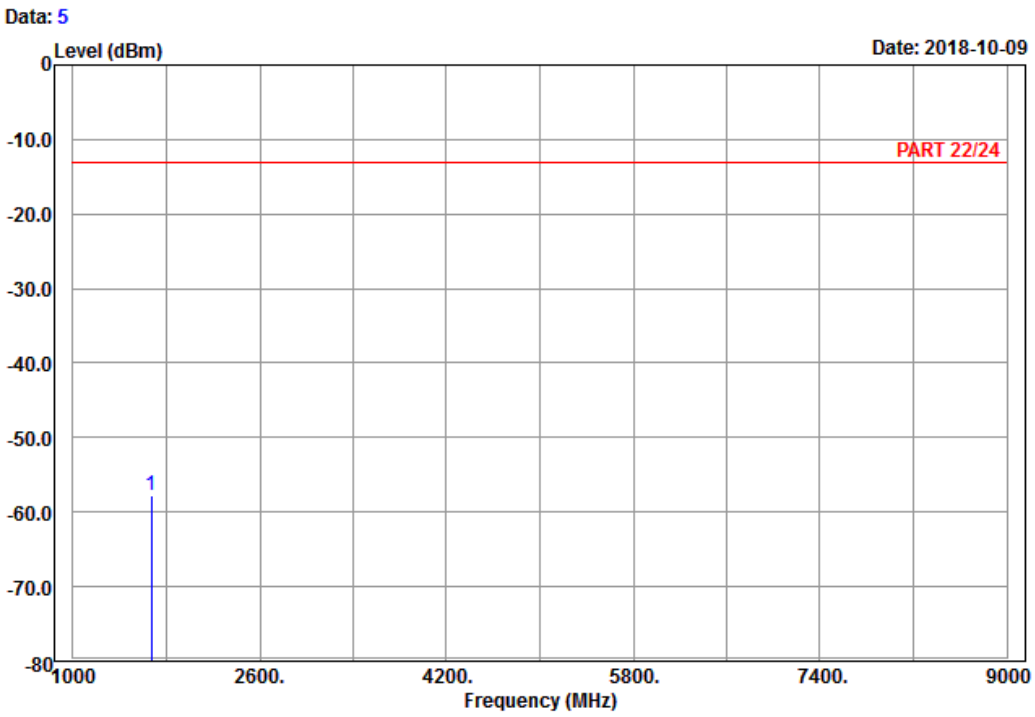


Site : 966 chamber 1
Condition: PART 22/24 Vertical
Remark : LTE_Band 26_Link_CH26797
Tested by: Karl Lee

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1 pp	1649.40	-58.85	-66.58	-13.00	-45.85	7.73	Peak

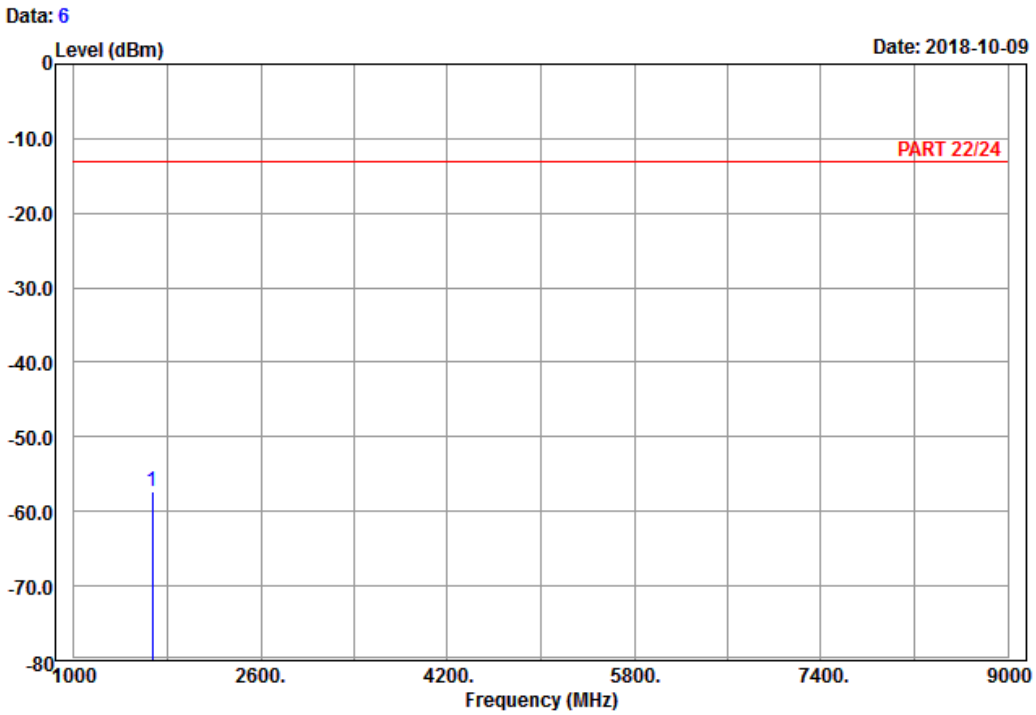
Middle Channel

Bureau Veritas Consumer Products Services Ltd.,Taoyuan Branch



Site : 966 chamber 1
Condition: PART 22/24 Horizontal
Remark : LTE_Band 26_Link_CH26915
Tested by: Karl Lee

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1 pp	1673.00	-57.87	-65.78	-13.00	-44.87	7.91	Peak

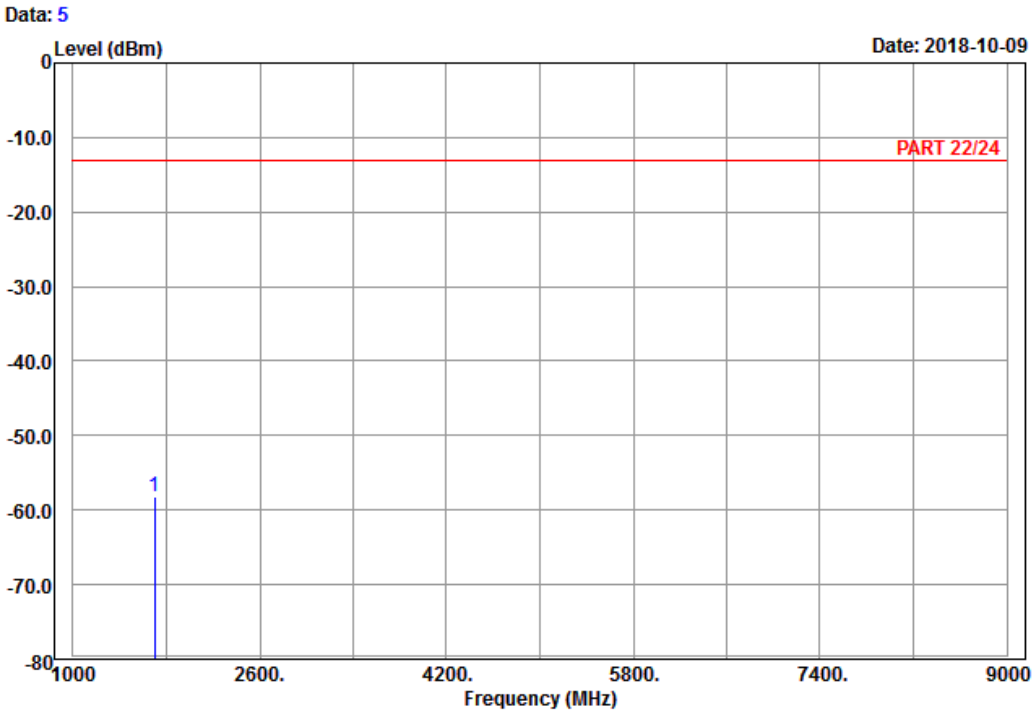


Site : 966 chamber 1
Condition: PART 22/24 Vertical
Remark : LTE_Band 26_Link_CH26915
Tested by: Karl Lee

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1 pp	1673.00	-57.33	-65.24	-13.00	-44.33	7.91	Peak

High Channel

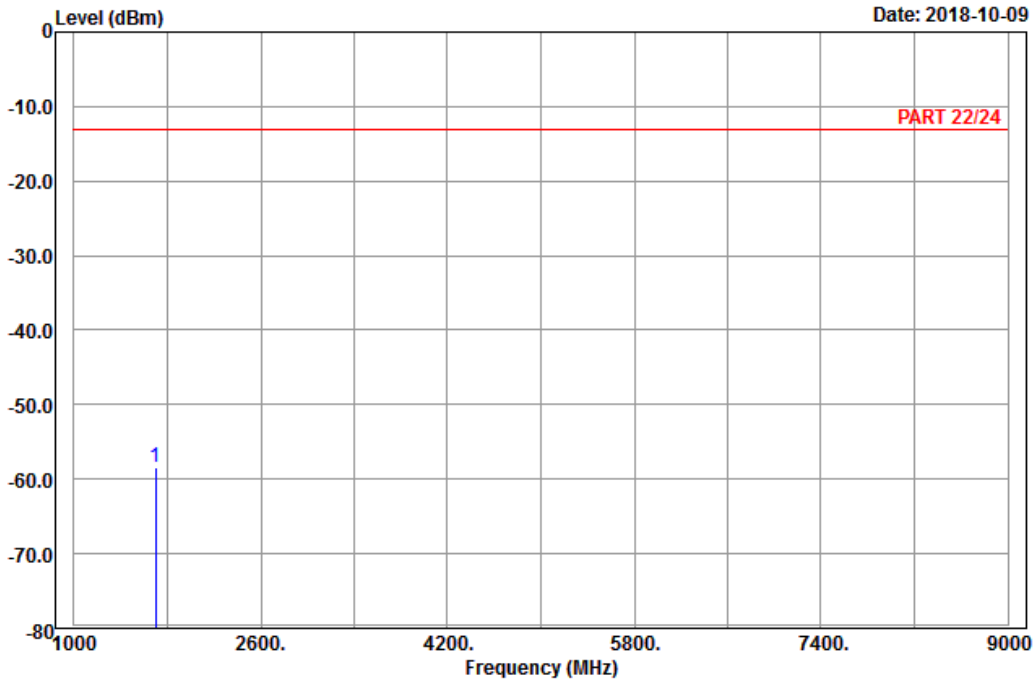
Bureau Veritas Consumer Products Services Ltd.,Taoyuan Branch



Site : 966 chamber 1
Condition: PART 22/24 Horizontal
Remark : LTE_Band 26_Link_CH27033
Tested by: Karl Lee

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1 pp	1696.60	-58.19	-66.33	-13.00	-45.19	8.14	Peak

Data: 6

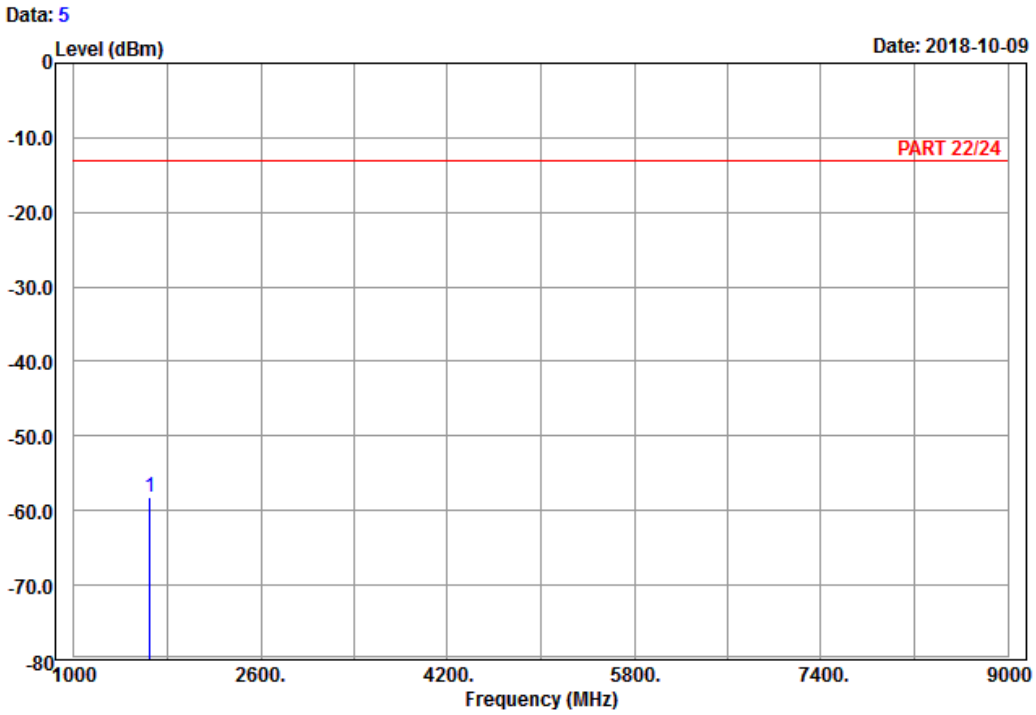


Site : 966 chamber 1
Condition: PART 22/24 Vertical
Remark : LTE_Band 26_Link_CH27033
Tested by: Karl Lee

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1 pp	1696.60	-58.33	-66.47	-13.00	-45.33	8.14	Peak

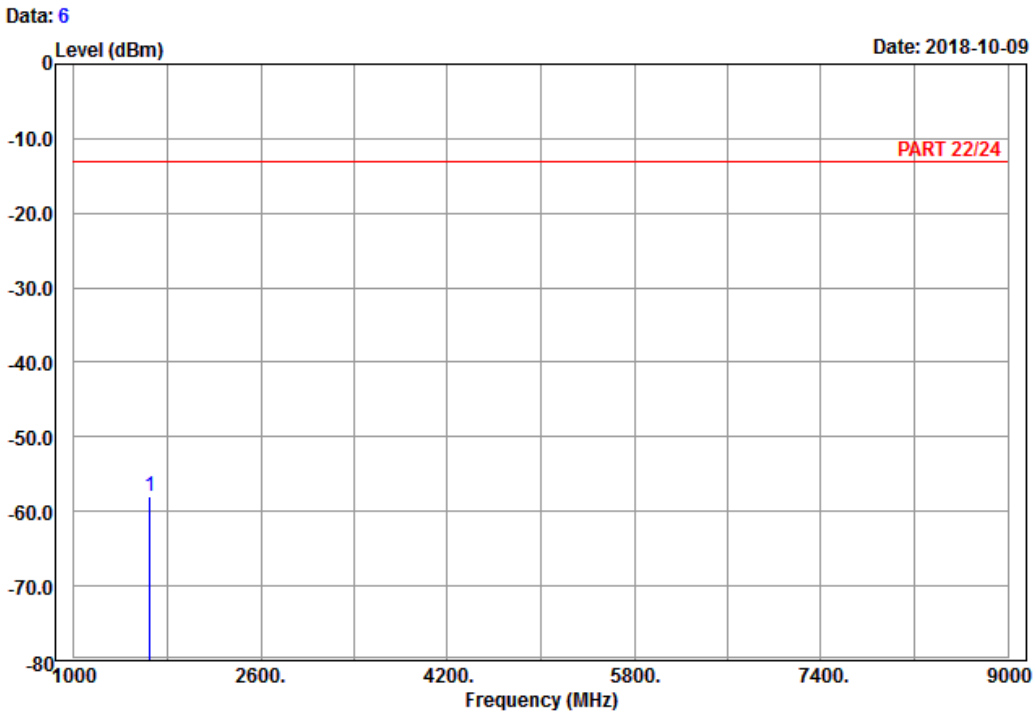
Channel Bandwidth: 5 MHz / QPSK
Low Channel

Bureau Veritas Consumer Products Services Ltd.,Taoyuan Branch



Site : 966 chamber 1
Condition: PART 22/24 Horizontal
Remark : LTE_Band 26_Link_CH26815
Tested by: Karl Lee

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1 pp	1653.00	-58.27	-66.00	-13.00	-45.27	7.73	Peak

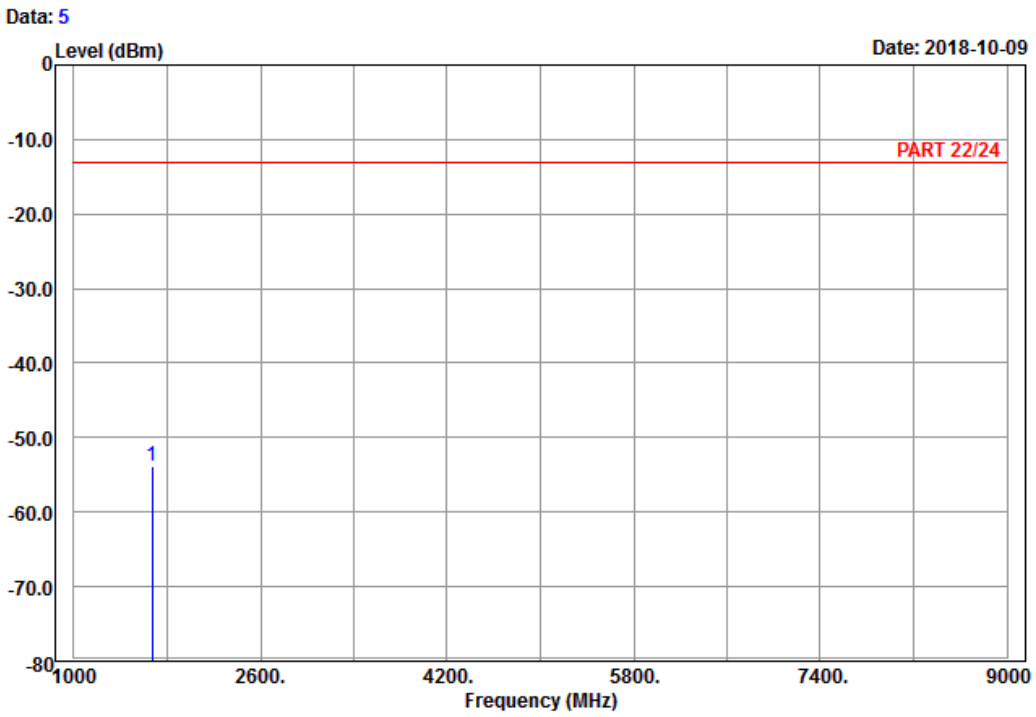


Site : 966 chamber 1
Condition: PART 22/24 Vertical
Remark : LTE_Band 26_Link_CH26815
Tested by: Karl Lee

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1 pp	1653.00	-57.90	-65.63	-13.00	-44.90	7.73	Peak

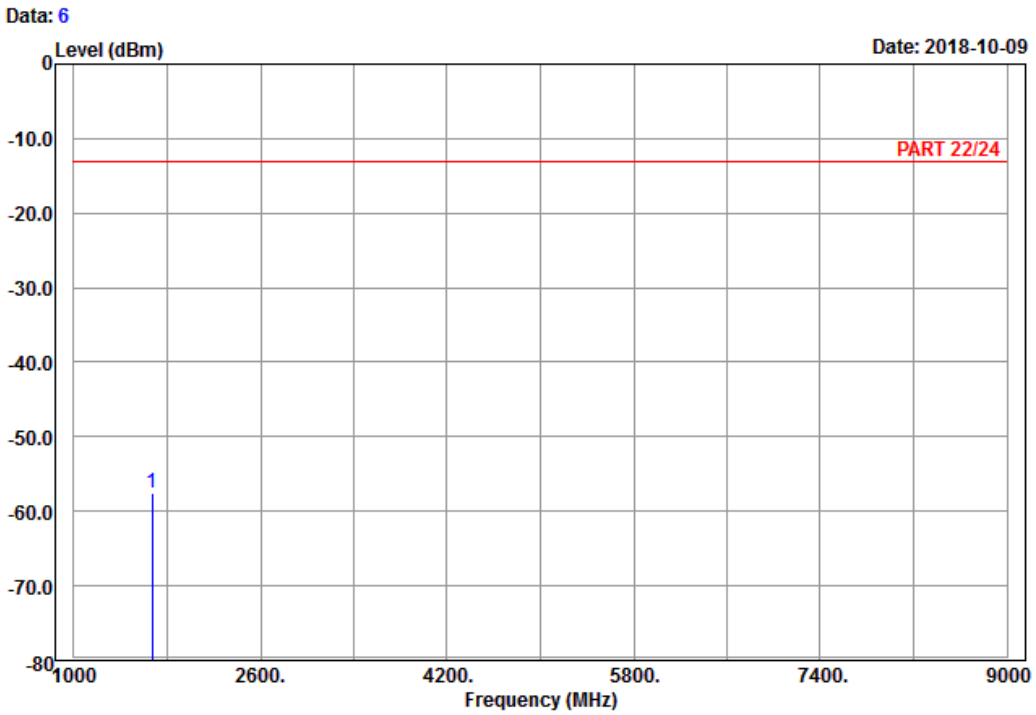
Middle Channel

Bureau Veritas Consumer Products Services Ltd.,Taoyuan Branch



Site : 966 chamber 1
Condition: PART 22/24 Horizontal
Remark : LTE_Band 26_Link_CH26915
Tested by: Karl Lee

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1 pp	1673.00	-53.86	-61.77	-13.00	-40.86	7.91	Peak

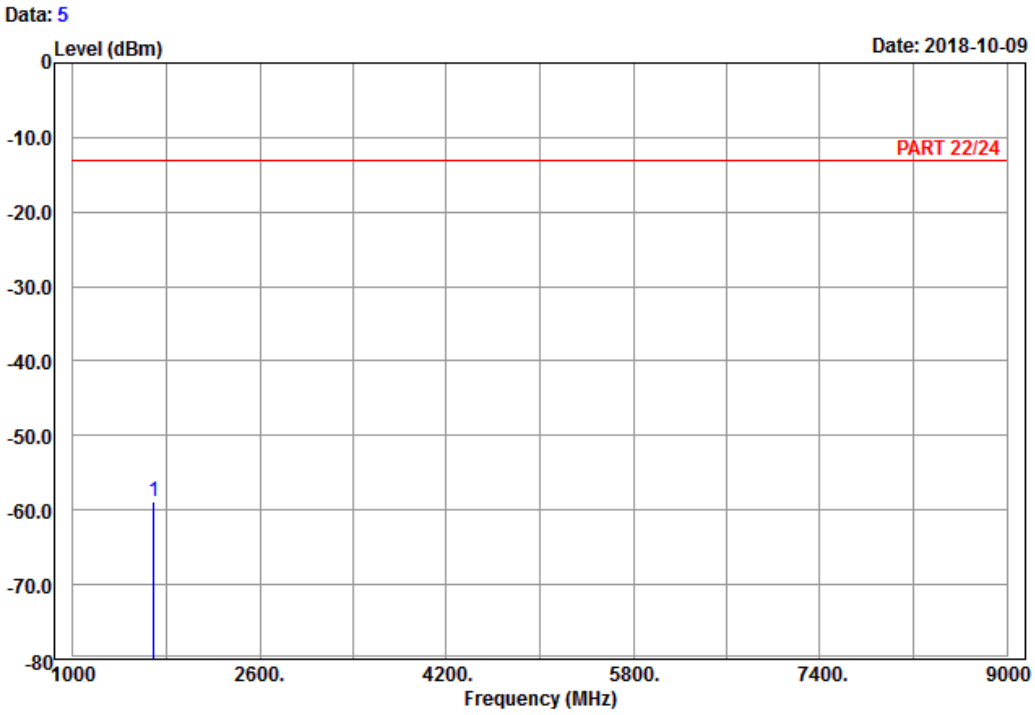


Site : 966 chamber 1
Condition: PART 22/24 Vertical
Remark : LTE_Band 26_Link_CH26915
Tested by: Karl Lee

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1 pp	1673.00	-57.52	-65.43	-13.00	-44.52	7.91	Peak

High Channel

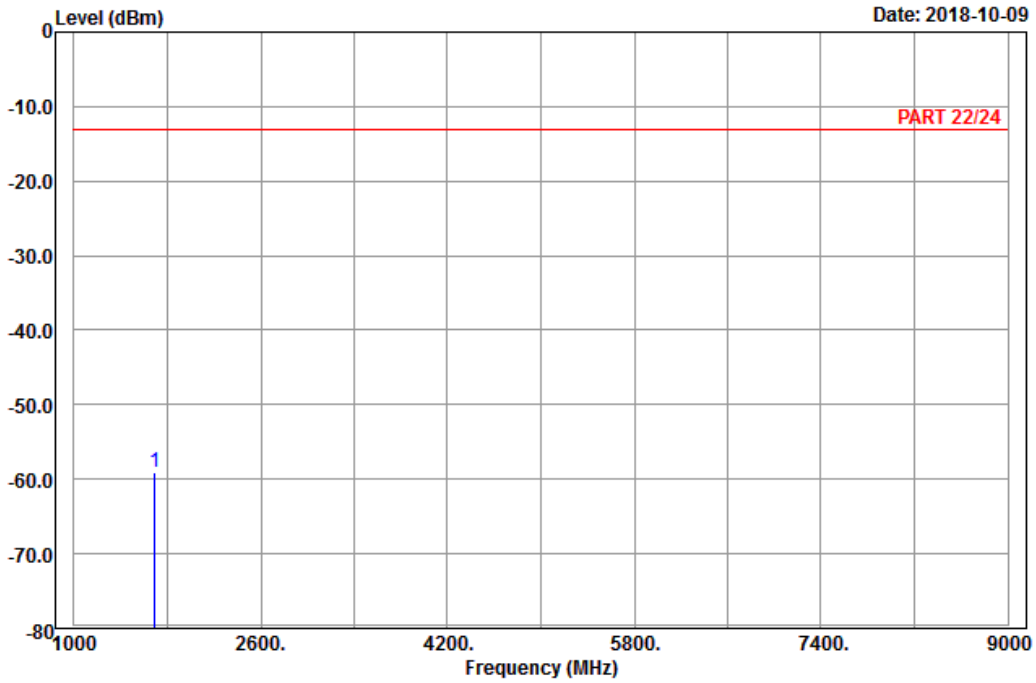
Bureau Veritas Consumer Products Services Ltd.,Taoyuan Branch



Site : 966 chamber 1
Condition: PART 22/24 Horizontal
Remark : LTE_Band 26_Link_CH27015
Tested by: Karl Lee

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1 pp	1693.00	-58.94	-66.96	-13.00	-45.94	8.02	Peak

Data: 6

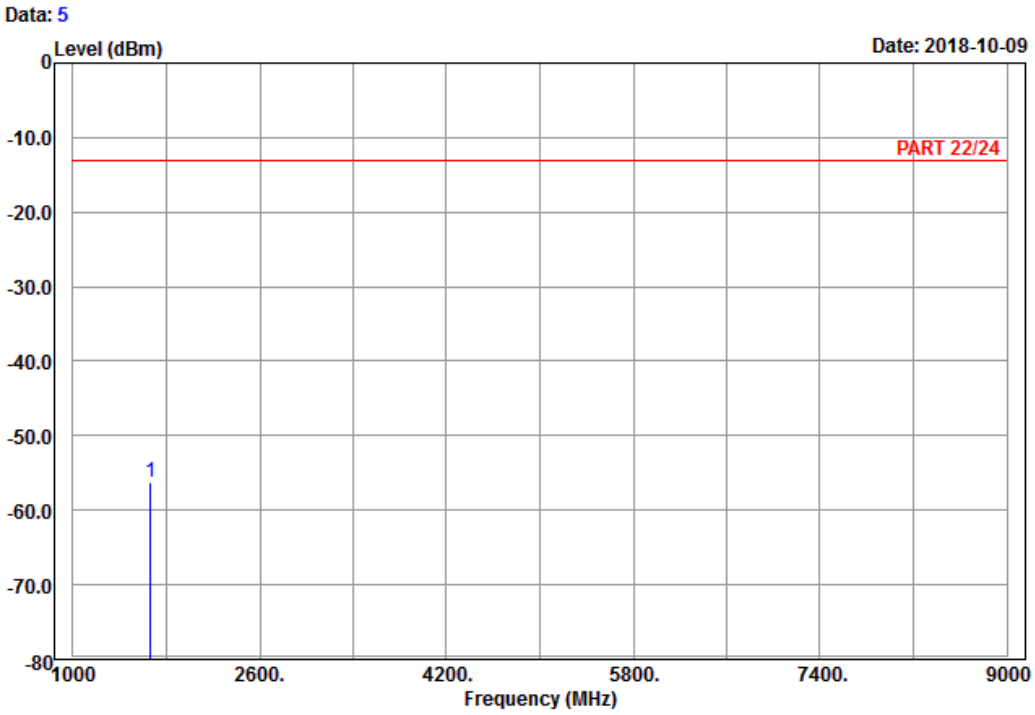


Site : 966 chamber 1
Condition: PART 22/24 Vertical
Remark : LTE_Band 26_Link_CH27015
Tested by: Karl Lee

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1 pp	1693.00	-59.00	-67.02	-13.00	-46.00	8.02	Peak

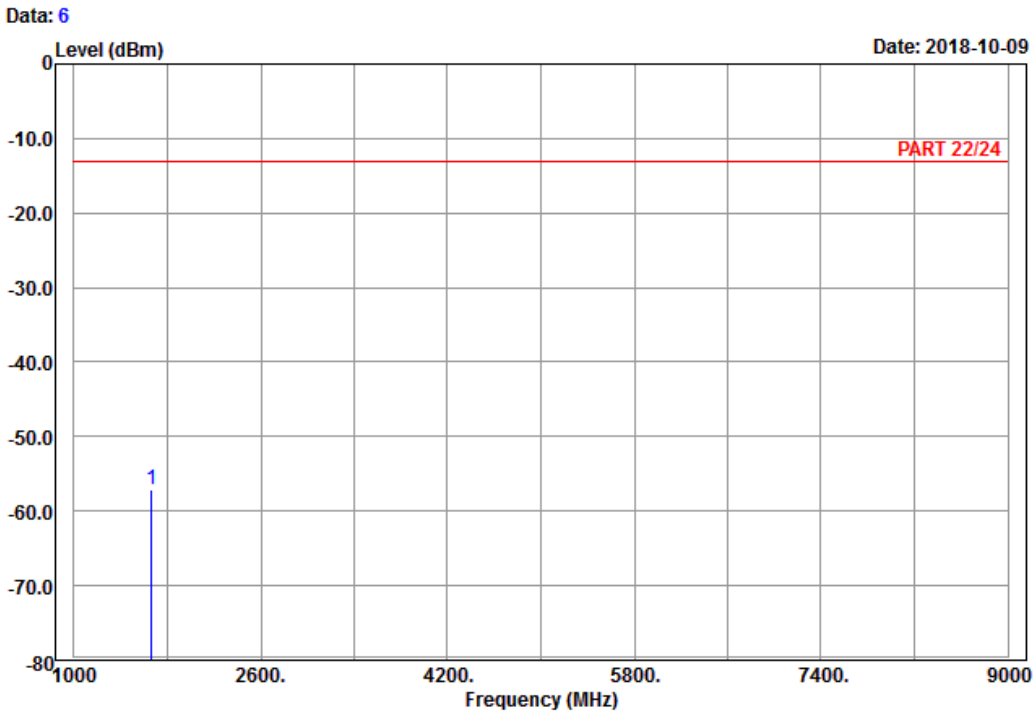
Channel Bandwidth: 15 MHz / QPSK
Low Channel

Bureau Veritas Consumer Products Services Ltd.,Taoyuan Branch



Site : 966 chamber 1
Condition: PART 22/24 Horizontal
Remark : LTE_Band 26_Link_CH26865
Tested by: Karl Lee

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1 pp	1663.00	-56.14	-64.05	-13.00	-43.14	7.91	Peak

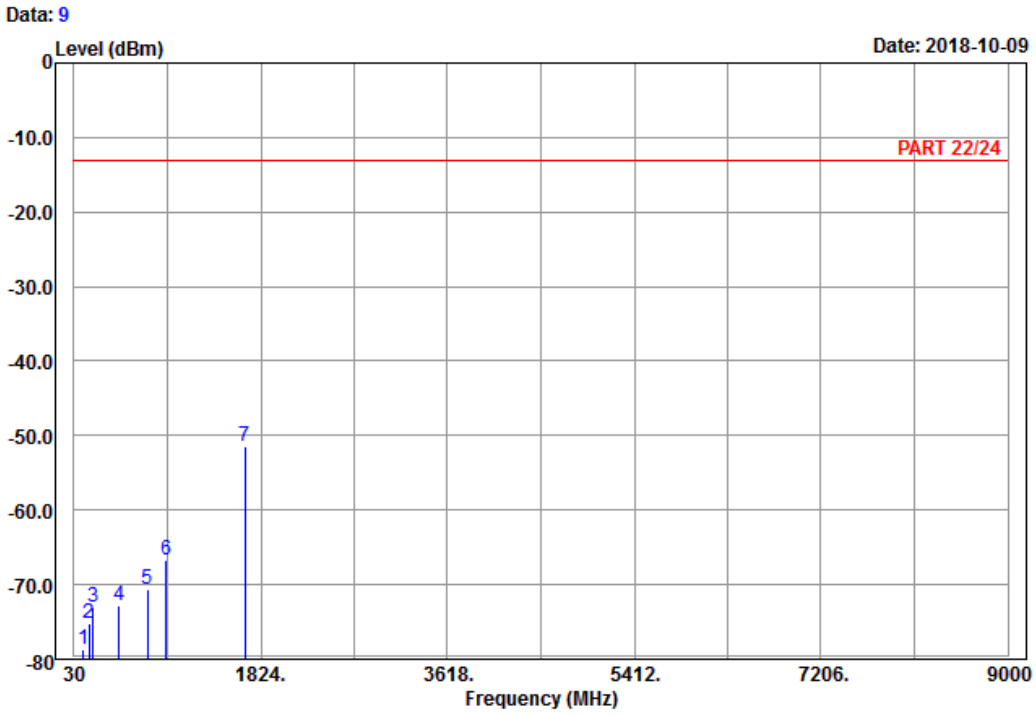


Site : 966 chamber 1
Condition: PART 22/24 Vertical
Remark : LTE_Band 26_Link_CH26865
Tested by: Karl Lee

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1 pp	1663.00	-57.18	-65.09	-13.00	-44.18	7.91	Peak

Middle Channel

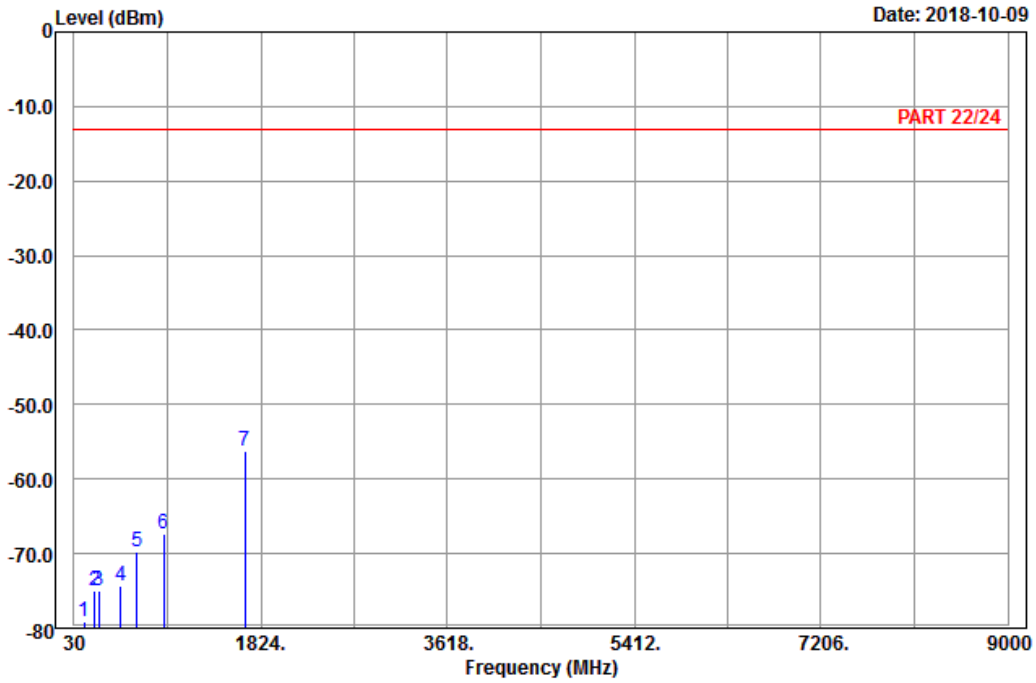
Bureau Veritas Consumer Products Services Ltd.,Taoyuan Branch



Site : 966 chamber 1
Condition: PART 22/24 Horizontal
Remark : LTE_Band 26_Link_CH26915
Tested by: Karl Lee

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1	122.34	-78.78	-70.65	-13.00	-65.78	-8.13	Peak
2	175.53	-75.14	-69.05	-13.00	-62.14	-6.09	Peak
3	215.76	-73.07	-67.11	-13.00	-60.07	-5.96	Peak
4	466.60	-72.88	-68.56	-13.00	-59.88	-4.32	Peak
5	734.00	-70.64	-69.62	-13.00	-57.64	-1.02	Peak
6	916.00	-66.78	-70.36	-13.00	-53.78	3.58	Peak
7 pp	1673.00	-51.46	-59.37	-13.00	-38.46	7.91	Peak

Data: 10

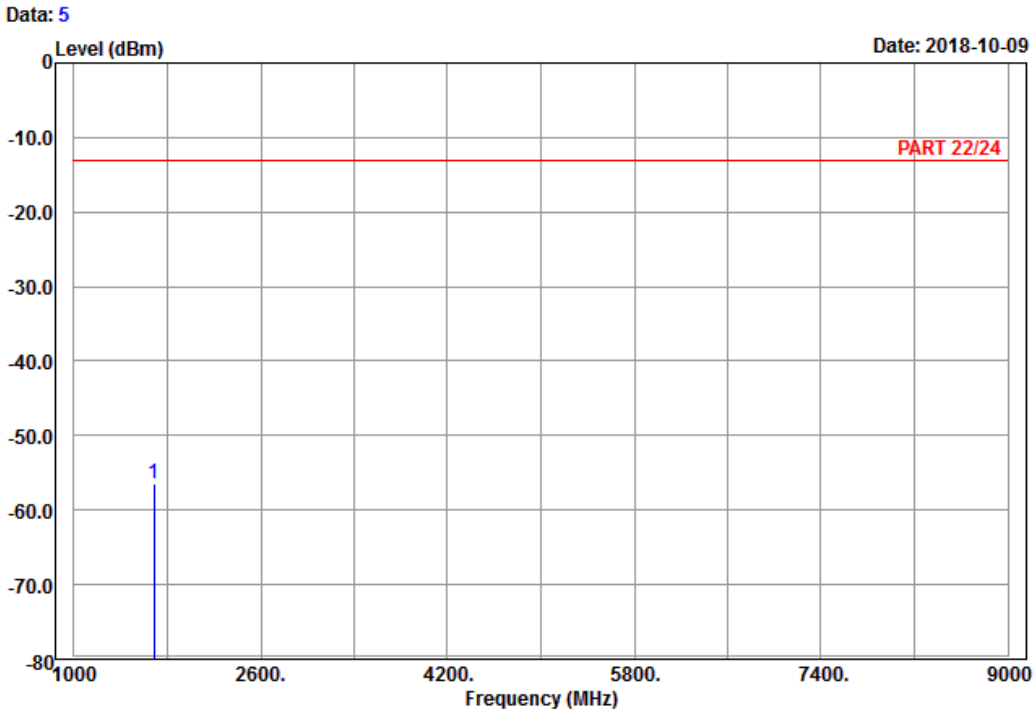


Site : 966 chamber 1
Condition: PART 22/24 Vertical
Remark : LTE_Band 26_Link_CH26915
Tested by: Karl Lee

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1	127.20	-79.14	-71.31	-13.00	-66.14	-7.83	Peak
2	229.26	-74.96	-69.17	-13.00	-61.96	-5.79	Peak
3	269.22	-75.03	-69.35	-13.00	-62.03	-5.68	Peak
4	477.10	-74.26	-69.64	-13.00	-61.26	-4.62	Peak
5	631.10	-69.78	-69.85	-13.00	-56.78	0.07	Peak
6	894.30	-67.25	-69.97	-13.00	-54.25	2.72	Peak
7 pp	1673.00	-56.25	-64.16	-13.00	-43.25	7.91	Peak

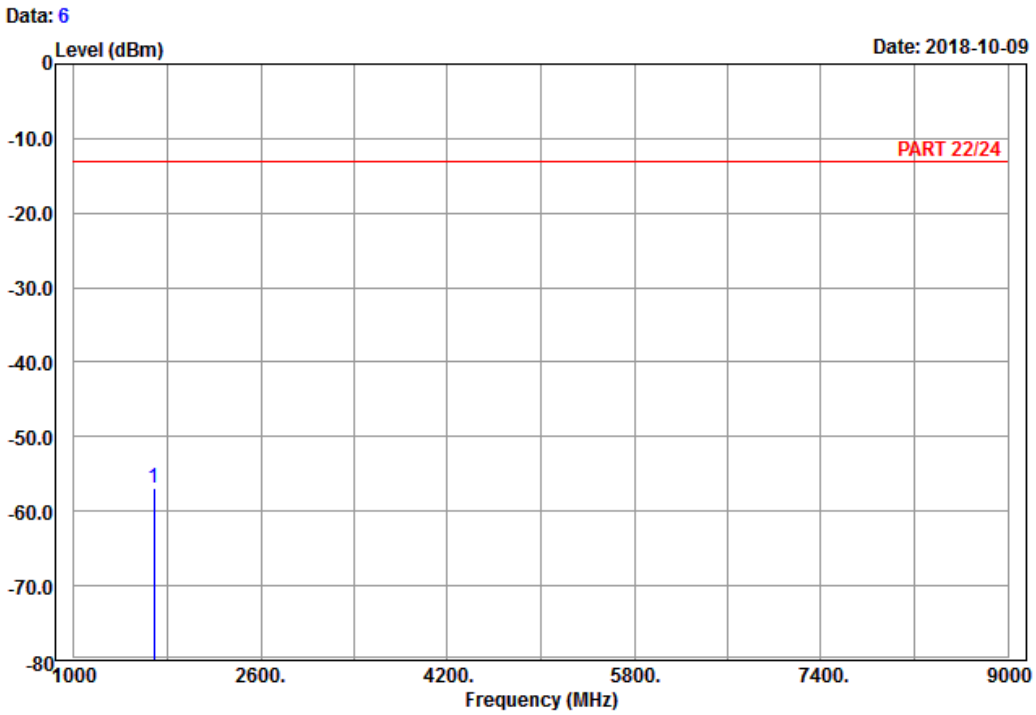
High Channel

Bureau Veritas Consumer Products Services Ltd.,Taoyuan Branch



Site : 966 chamber 1
Condition: PART 22/24 Horizontal
Remark : LTE_Band 26_Link_CH26965
Tested by: Karl Lee

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1 pp	1683.00	-56.37	-64.39	-13.00	-43.37	8.02	Peak



Site : 966 chamber 1
Condition: PART 22/24 Vertical
Remark : LTE_Band 26_Link_CH26965
Tested by: Karl Lee

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1 pp	1683.00	-56.87	-64.89	-13.00	-43.87	8.02	Peak

5 Pictures of Test Arrangements

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

Appendix – Information on 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:

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Fax: 886-2-26051924

Hsin Chu EMC/RF/Telecom Lab
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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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