FCC Test Report

(PART 22)

Report No.:	RF171017C11
FCC ID:	WYPPC4000
Test Model:	XP8800
Type Number:	PC4011/PT4000
Received Date:	Oct. 17, 2017
Test Date:	Oct. 21, 2017 ~ Nov. 29, 2017
Issued Date:	Dec. 04, 2017
Applicant:	Sonim Technologies, Inc.
Address:	1825 S. Grant St., Suite 200., San Mateo, CA, 94402
Issued By:	Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch
Lab Address:	No. 47-2, 14th Ling, Chia Pau Vil., Lin Kou Dist., New Taipei City, Taiwan (R.O.C)
Test Location:	No. 19, Hwa Ya 2nd Rd, Wen Hwa Tsuen, Kwei Shan Hsiang, Taoyuan Hsien 333, Taiwan, R.O.C.
FCC Registration / Designation Number:	788550 / TW0003

This report is for your exclusive use. Any copying or replication of this report to or for any other person or entity, or use of our name or trademark, is permitted only with our prior written permission. This report sets forth our findings solely with respect to the test samples identified herein. The results set forth in this report are not indicative or representative of the quality or characteristics of the lot from which a test sample was taken or any similar or identical product unless specifically and expressly noted. Our report includes all of the tests requested by you and the results thereof based upon the information that you provided to us. You have 60 days from date of issuance of this report to notify us of any material error or omission caused by our negligence, provided, however, that such notice shall be in writing and shall specifically address the issue you wish to raise. A failure to raise such issue within the prescribed time shall constitute your unqualified acceptance of the completeness of this report, the tests conducted and the correctness of the report contents. Unless specific mention, the uncertainty of measurement has been explicitly taken into account to declare the compliance or non-compliance to the specification. The report must not be used by the client to claim product certification, approval, or endorsement by TAF or any government agencies

Table of Contents

Release Control Record

Issue No.	Description	Date Issued
RF171017C11	Original Release	Dec. 04, 2017

1 Certificate of Conformity

Product:	Mobile Phone
Brand:	Sonim
Test Model:	XP8800
Sample Status:	Production Unit
Applicant:	Sonim Technologies, Inc.
Test Date:	Oct. 21, 2017 ~ Nov. 29, 2017
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 EMC characteristics under the conditions specified in this report.

Prepared by : Evonne Liu , **Date:** Dec. 04, 2017

Evonne Liu / Specialist

Approved by : , **Date:** Dec. 04, 2017

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.
---	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 -29.09 dB at 2464.50 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) (±)
Conducted Emissions at mains ports	150 kHz ~ 30 MHz	2.44 dB
Radiated Emissions up to 1 GHz	30 MHz ~ 200 MHz	2.93 dB
	200 MHz ~ 1000 MHz	2.95 dB
Radiated Emissions above 1 GHz	1 GHz ~ 18 GHz	2.26 dB
	18 GHz ~ 40 GHz	1.94 dB

2.2 Test Site and Instruments

Description & Manaufacturer	Model No.	Serial No.	Date of Calibration	Due Date of Calibration
Test Receiver Agilent	N9038A	MY51210203	Feb. 17, 2017	Feb. 16, 2018
Spectrum Analyzer Agilent	N9010A	MY52220314	Dec. 16, 2016	Dec. 15, 2017
Spectrum Analyzer ROHDE & SCHWARZ	FSU43	101261	Dec. 13, 2016	Dec. 12, 2017
BILOG Antenna SCHWARZBECK	VULB9168	9168-472	Dec. 26, 2016	Dec. 27, 2017
HORN Antenna SCHWARZBECK	BBHA 9120 D	9120D-969	Dec. 12, 2016	Dec. 13, 2017
Double Ridge Guide Horn Antenna EMCO	3115	5619	Dec. 26, 2016	Dec. 27, 2017
BILOG Antenna SCHWARZBECK	VULB 9168	9168-153	Dec. 12, 2016	Dec. 13, 2017
Fixed Attenuator Mini-Circuits	MDCS18N-10	MDCS18N-10-01	Apr. 17, 2017	Apr. 16, 2018
MXG Vector signal generator Agilent	N5182B	MY53052282	Dec. 23, 2016	Dec. 22, 2017
Preamplifier EMCI	EMC 012645	980115	Oct. 20, 2017	Oct. 19, 2018
Preamplifier EMCI	EMC 184045	980116	Oct. 20, 2017	Oct. 19, 2018
Preamplifier EMCI	EMC 330H	980112	Oct. 20, 2017	Oct. 19, 2018
Power Meter Anritsu	ML2495A	1145013	Mar. 07, 2017	Mar. 06, 2018
Power Sensor Anritsu	MA2411B	1126085	Mar. 07, 2017	Mar. 06, 2018
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	309219/4 2950114	Oct. 20, 2017	Oct. 19, 2018
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	250130/4	Oct. 20, 2017	Oct. 19, 2018
RF Coaxial Cable Worken	8D-FB	Cable-Ch10-01	Oct. 20, 2017	Oct. 19, 2018
Software BV ADT	E3 6.120103	NA	NA	NA
Antenna Tower MF	MFA-440H	NA	NA	NA
Turn Table MF	MFT-201SS	NA	NA	NA
Antenna Tower &Turn Table Controller MF	MF-7802	NA	NA	NA
Radio Communication Analyzer	MT8820C	6201300640	Aug. 16, 2017	Aug. 15, 2019
Temperature & Humidity Chamber	GTH-120-40-CP-A R	MAA1306-019	Sep. 08, 2017	Sep. 07, 2018
DC Power Supply Topward	33010D	807748	Oct. 25, 2016	Oct. 24, 2018
Digital Multimeter Fluke	87-III	70360742	Jun. 30, 2017	Jun. 29, 2018

Note: 1. The calibration interval of the above test instruments is 12 / 24 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The test was performed in HwaYa Chamber 10.
3. The horn antenna and preamplifier (model: EMC 184045) are used only for the measurement of emission frequency above 1 GHz if tested.
4. The IC Site Registration No. is IC7450F-10.

3 General Information

3.1 General Description of EUT

Product	Mobile Phone	
Brand	Sonim	
Test Model	XP8800	
Status of EUT	Production Unit	
Power Supply Rating	5.0 Vdc or 9.0 Vdc or 12.0 Vdc (adapter) 3.85 Vdc (Li-ion battery)	
Modulation Type	LTE	QPSK, 16QAM, 64QAM
Frequency Range	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	LTE 26 (Channel Bandwidth: 1.4 MHz)	70.15 mW
	LTE 26 (Channel Bandwidth: 3 MHz)	71.61 mW
	LTE 26 (Channel Bandwidth: 5 MHz)	74.99 mW
	LTE 26 (Channel Bandwidth: 10 MHz)	76.74 mW
	LTE 26 (Channel Bandwidth: 15 MHz)	81.47 mW
Emission Designator	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	Fixed Internal Antenna	
Accessory Device	Refer to Note as below	
Data Cable Supplied	Refer to Note as below	

Note:

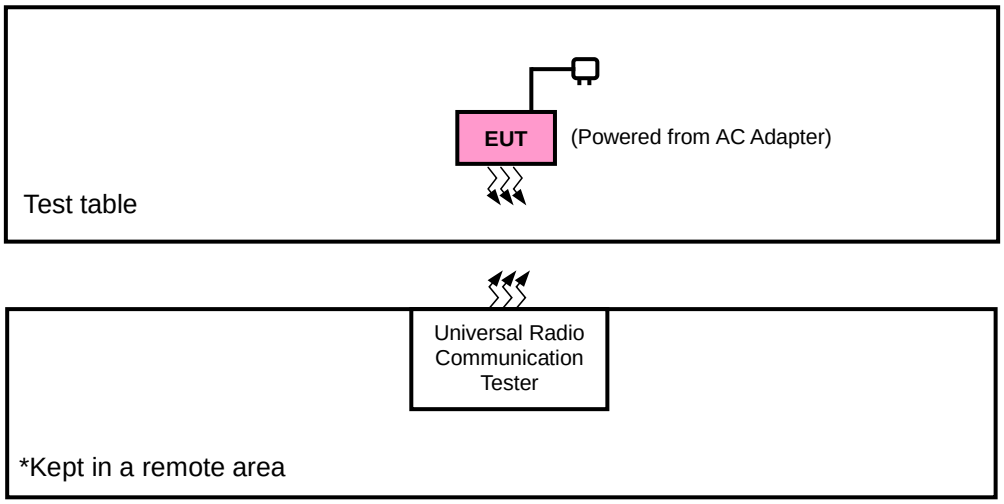
1. The EUT contains following accessory devices.

Product	Brand	Model	Description
Adapter	Sonim	S42A02	I/P: 100-240 Vac, 50/60 Hz, 500 mA O/P: 5 Vdc, 1500 mA or 9 Vdc, 1500 mA or 12 Vdc, 1100 mA
Battery	Sonim	BAT-04900-01S	3.85 Vdc, 4900 mAh
USB Cable 1	N/A	N/A	1.5 m shielded cable w/o core
USB Cable 2	N/A	N/A	1 m non-shielded cable w/o core

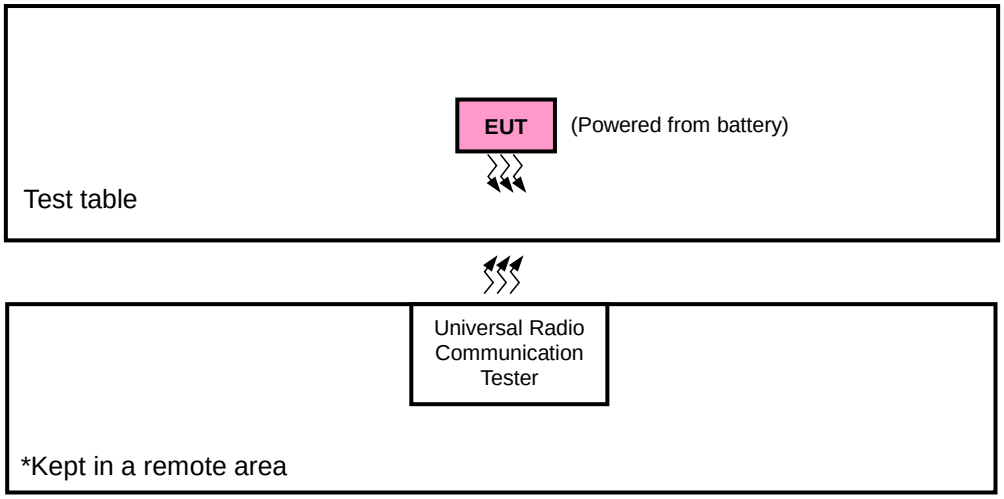
2. The above EUT information is declared by manufacturer and for more detailed features description, please refer to the manufacturer's specifications or user's manual.

3.2 Configuration of System under Test

<Radiated Emission Test>



<E.R.P. Test>



3.2.1 Description of Support Units

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

3.3 Test Mode Applicability and Tested Channel Detail

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

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

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 / 5 RB Offset
		26805 to 27025	26805, 26915, 27025	3 MHz	QPSK, 16QAM, 64QAM	1 RB / 14 RB Offset
		26815 to 27015	26815, 26915, 27015	5 MHz	QPSK, 16QAM, 64QAM	1 RB / 24 RB Offset
		26840 to 26990	26840, 26915, 26990	10 MHz	QPSK, 16QAM, 64QAM	1 RB / 49 RB Offset
		26865 to 26965	26865, 26915, 26965	15 MHz	QPSK	1 RB / 49 RB Offset
-	Frequency Stability	26797 to 27033	26797, 27033	1.4 MHz	QPSK	1 RB / 5 RB Offset
		26805 to 27025	26805, 27025	3 MHz	QPSK	1 RB / 14 RB Offset
		26815 to 27015	26815, 27015	5 MHz	QPSK	1 RB / 24 RB Offset
		26840 to 26990	26840, 26990	10 MHz	QPSK, 16QAM, 64QAM	1 RB / 49 RB Offset
		26865 to 26965	26865, 26965	15 MHz	QPSK, 16QAM, 64QAM	1 RB / 49 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
-	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	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
-	Conducted Emission	26797 to 27033	26797, 26915, 27033	1.4 MHz	QPSK	1 RB / 0 RB Offset
		26805 to 27025	26805, 26915, 27025	3 MHz	QPSK	15 RB / 0 RB Offset
		26815 to 27015	26815, 26915, 27015	5 MHz	QPSK	25 RB / 0 RB Offset
		26840 to 26990	26840, 26915, 26990	10 MHz	QPSK	1 RB / 0 RB Offset
		26865 to 26965	26865, 26915, 26965	15 MHz	QPSK	25 RB / 0 RB Offset
-	Radiated Emission	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	Getaz Yang
Frequency Stability	25 deg. C, 65 % RH	3.85 Vdc	Gavin Wu
Occupied Bandwidth	25 deg. C, 65 % RH	3.85 Vdc	Gavin Wu
Band Edge	25 deg. C, 65 % RH	3.85 Vdc	Gavin Wu
Peak to Average Ratio	25 deg. C, 65 % RH	3.85 Vdc	Gavin Wu
Conducted Emission	25 deg. C, 65 % RH	3.85 Vdc	Gavin Wu
Radiated Emission	25 deg. C, 65 % RH	120 Vac, 60 Hz	Getaz Yang

3.4 EUT Operating Conditions

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

3.5 General Description of Applied Standards

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 v02r02
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:

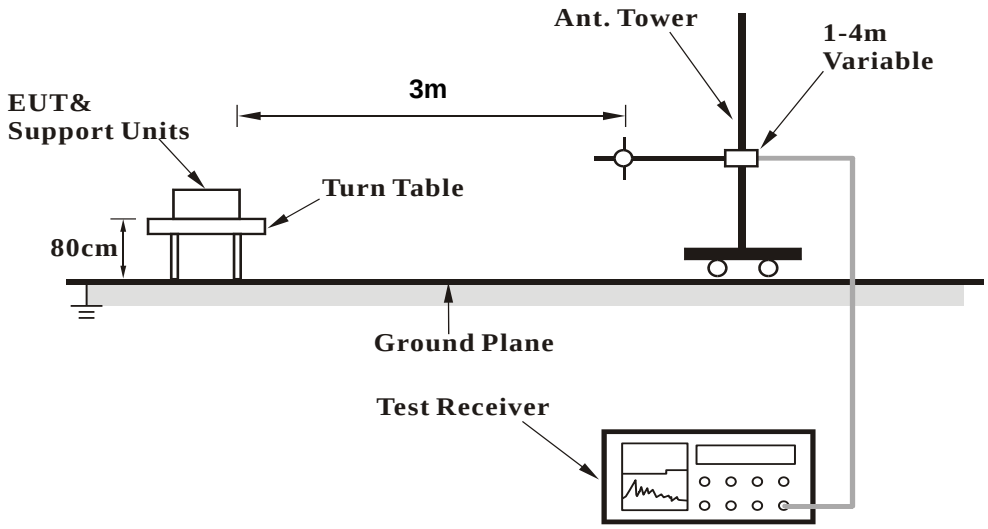
a. All measurements were done at low, middle and high operational frequency range. RBW and VBW is 1 MHz for GSM, GPRS & EDGE, and 5 MHz for WCDMA and CDMA, and 10 MHz for LTE mode.
b. Substitution method is used for E.I.R.P measurement. In the semi-anechoic chamber, EUT placed on the 0.8 m (below or 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.P.R power - 2.15 dBi.

Conducted Power Measurement:

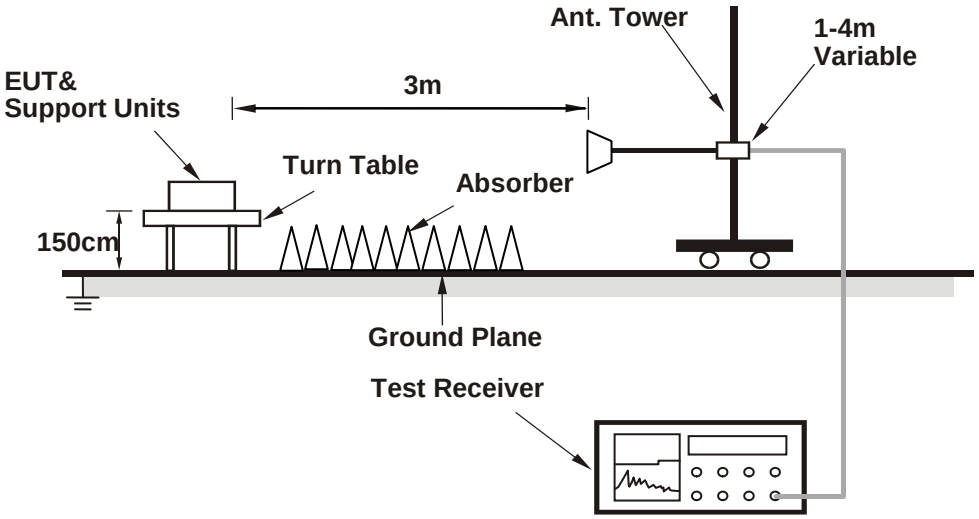
The EUT was set up for the maximum power with GSM, GPRS, EDGE, WCDMA, CDMA, and LTE link data modulation and link up with simulator. Set the EUT to transmit under low, middle and high channel and record the power level shown on simulator.

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

Conducted Output Power (dBm)

LTE Band 26																
			QPSK				16QAM				64QAM					
BW (MHz)	RB Size	RB Offset	Low Ch 26865 831.5 MHz	Mid Ch 26915 836.5 MHz	High Ch 26965 841.5 MHz	3GPP MPR (dB)	Low Ch 26865 831.5 MHz	Mid Ch 26915 836.5 MHz	High Ch 26965 841.5 MHz	3GPP MPR (dB)	Low Ch 26865 831.5 MHz	Mid Ch 26915 836.5 MHz	High Ch 26965 841.5 MHz	3GPP MPR (dB)		
15	1	0	24.15	24.20	24.11	0	23.39	23.44	23.35	1	22.08	22.13	22.04	2		
	1	37	24.05	24.10	24.01	0	23.33	23.38	23.29	1	22.04	22.09	22.00	2		
	1	74	23.93	23.98	23.89	0	23.20	23.25	23.16	1	21.99	22.04	21.95	2		
	36	0	23.18	23.23	23.14	1	22.19	22.24	22.15	2	21.08	21.13	21.04	3		
	36	19	23.16	23.21	23.12	1	22.16	22.21	22.12	2	21.04	21.09	21.00	3		
	36	39	23.09	23.14	23.05	1	22.13	22.18	22.09	2	20.97	21.02	20.93	3		
	75	0	23.14	23.19	23.10	1	22.15	22.20	22.11	2	21.03	21.08	20.99	3		
			QPSK				16QAM				64QAM					
BW (MHz)	RB Size	RB Offset	Low Ch 26840 829.0 MHz	Mid Ch 26915 836.5 MHz	High Ch 26990 844.0 MHz	3GPP MPR (dB)	Low Ch 26840 829.0 MHz	Mid Ch 26915 836.5 MHz	High Ch 26990 844.0 MHz	3GPP MPR (dB)	Low Ch 26840 829.0 MHz	Mid Ch 26915 836.5 MHz	High Ch 26990 844.0 MHz	3GPP MPR (dB)		
10	1	0	24.12	24.17	24.08	0	23.36	23.41	23.32	1	22.04	22.09	22.00	2		
	1	24	24.02	24.07	23.98	0	23.30	23.35	23.26	1	22.00	22.05	21.96	2		
	1	49	23.90	23.95	23.86	0	23.17	23.22	23.13	1	21.95	22.00	21.91	2		
	25	0	23.15	23.20	23.11	1	22.16	22.21	22.12	2	22.03	22.08	21.99	3		
	25	12	23.13	23.18	23.09	1	22.13	22.18	22.09	2	21.99	22.04	21.95	3		
	25	25	23.06	23.11	23.02	1	22.10	22.15	22.06	2	21.94	21.99	21.90	3		
	50	0	23.11	23.16	23.07	1	22.12	22.17	22.08	2	20.99	21.04	20.95	3		
			QPSK				16QAM				64QAM					
BW (MHz)	RB Size	RB Offset	Low Ch 26815 826.5 MHz	Mid Ch 26915 836.5 MHz	High Ch 27015 846.5 MHz	3GPP MPR (dB)	Low Ch 26815 826.5 MHz	Mid Ch 26915 836.5 MHz	High Ch 27015 846.5 MHz	3GPP MPR (dB)	Low Ch 26815 826.5 MHz	Mid Ch 26915 836.5 MHz	High Ch 27015 846.5 MHz	3GPP MPR (dB)		
5	1	0	24.09	24.14	24.05	0	23.33	23.38	23.29	1	22.00	22.05	21.96	2		
	1	12	23.99	24.04	23.95	0	23.27	23.32	23.23	1	21.96	22.01	21.92	2		
	1	24	23.87	23.92	23.83	0	23.14	23.19	23.10	1	21.91	21.96	21.87	2		
	12	0	23.12	23.17	23.08	1	22.13	22.18	22.09	2	21.99	22.04	21.95	3		
	12	6	23.10	23.15	23.06	1	22.10	22.15	22.06	2	21.95	22.00	21.91	3		
	12	13	23.03	23.08	22.99	1	22.07	22.12	22.03	2	21.90	21.95	21.86	3		
	25	0	23.08	23.13	23.04	1	22.09	22.14	22.05	2	20.95	21.00	20.91	3		
			QPSK				16QAM				64QAM					
BW (MHz)	RB Size	RB Offset	Low Ch 26805 825.5 MHz	Mid Ch 26915 836.5 MHz	High Ch 27025 847.5 MHz	3GPP MPR (dB)	Low Ch 26805 825.5 MHz	Mid Ch 26915 836.5 MHz	High Ch 27025 847.5 MHz	3GPP MPR (dB)	Low Ch 26805 825.5 MHz	Mid Ch 26915 836.5 MHz	High Ch 27025 847.5 MHz	3GPP MPR (dB)		
3	1	0	24.06	24.11	24.02	0	23.30	23.35	23.26	1	21.96	22.01	21.92	2		
	1	7	23.96	24.01	23.92	0	23.24	23.29	23.20	1	21.92	21.97	21.88	2		
	1	14	23.84	23.89	23.80	0	23.11	23.16	23.07	1	21.87	21.92	21.83	2		
	8	0	23.09	23.14	23.05	1	22.10	22.15	22.06	2	21.95	22.00	21.91	3		
	8	3	23.07	23.12	23.03	1	22.07	22.12	22.03	2	21.91	21.96	21.87	3		
	8	7	23.00	23.05	22.96	1	22.04	22.09	22.00	2	21.86	21.91	21.82	3		
	15	0	23.05	23.10	23.01	1	22.06	22.11	22.02	2	20.91	20.96	20.87	3		
			QPSK				16QAM				64QAM					
BW (MHz)	RB Size	RB Offset	Low Ch 26797 824.7 MHz	Mid Ch 26915 836.5 MHz	High Ch 27033 848.3 MHz	3GPP MPR (dB)	Low Ch 26797 824.7 MHz	Mid Ch 26915 836.5 MHz	High Ch 27033 848.3 MHz	3GPP MPR (dB)	Low Ch 26797 824.7 MHz	Mid Ch 26915 836.5 MHz	High Ch 27033 848.3 MHz	3GPP MPR (dB)		
1.4	1	0	24.02	24.07	23.98	0	23.26	23.31	23.22	1	21.92	21.97	21.88	2		
	1	2	23.92	23.97	23.88	0	23.20	23.25	23.16	1	21.88	21.93	21.84	2		
	1	5	23.80	23.85	23.76	0	23.07	23.12	23.03	1	21.83	21.88	21.79	2		
	3	0	24.00	24.05	23.96	0	23.25	23.30	23.21	1	21.91	21.96	21.87	2		
	3	1	23.90	23.95	23.86	0	23.19	23.24	23.15	1	21.87	21.92	21.83	2		
	3	3	23.78	23.83	23.74	0	23.06	23.11	23.02	1	21.82	21.87	21.78	2		
	6	0	23.01	23.06	22.97	1	22.02	22.07	21.98	2	20.87	20.92	20.83	3		

ERP Power (dBm)

LTE Band 26							
Channel Bandwidth: 1.4 MHz / QPSK							
Plane	**Channel**	**Frequency (MHz)**	**LVL (dBm)**	**Correction Factor (dB)**	**ERP (dBm)**	**ERP (mW)**	**Polarization (H/V)**
X	26797	824.7	-12.01	32.62	18.46	70.15	H
	26915	836.5	-11.95	32.52	18.42	69.50	
	27033	848.3	-12.10	32.65	18.40	69.18	
	26797	824.7	-16.98	32.76	13.63	23.07	V
	26915	836.5	-16.88	32.39	13.36	21.68	
	27033	848.3	-17.01	32.54	13.38	21.78	
Channel Bandwidth: 1.4 MHz / 16QAM							
X	26797	824.7	-13.70	32.62	16.77	47.53	H
	26915	836.5	-13.62	32.52	16.75	47.32	
	27033	848.3	-13.72	32.65	16.78	47.64	
	26797	824.7	-17.68	32.76	12.93	19.63	V
	26915	836.5	-17.42	32.39	12.82	19.14	
	27033	848.3	-17.55	32.54	12.84	19.23	
Channel Bandwidth: 1.4 MHz / 64QAM							
X	20407	824.7	-13.50	32.62	16.97	49.77	H
	20525	836.5	-13.42	32.52	16.95	49.55	
	20643	848.3	-13.52	32.65	16.98	49.89	
	20407	824.7	-17.38	32.76	13.23	21.04	V
	20525	836.5	-17.12	32.39	13.12	20.51	
	20643	848.3	-17.25	32.54	13.14	20.61	

LTE Band 26							
Channel Bandwidth: 3 MHz / QPSK							
Plane	**Channel**	**Frequency (MHz)**	**LVL (dBm)**	**Correction Factor (dB)**	**ERP (dBm)**	**ERP (mW)**	**Polarization (H/V)**
X	26805	825.5	-11.92	32.62	18.55	71.61	H
	26915	836.5	-11.88	32.52	18.49	70.63	
	27025	847.5	-11.99	32.65	18.51	70.96	
	26805	825.5	-16.96	32.76	13.65	23.17	V
	26915	836.5	-16.74	32.39	13.50	22.39	
	27025	847.5	-16.84	32.54	13.55	22.65	
Channel Bandwidth: 3 MHz / 16QAM							
X	26805	825.5	-13.52	32.62	16.95	49.55	H
	26915	836.5	-13.51	32.52	16.86	48.53	
	27025	847.5	-13.60	32.65	16.90	48.98	
	26805	825.5	-17.51	32.76	13.10	20.42	V
	26915	836.5	-17.34	32.39	12.90	19.50	
	27025	847.5	-17.49	32.54	12.90	19.50	
Channel Bandwidth: 3 MHz / 64QAM							
X	26805	825.5	-13.52	32.62	16.95	49.55	H
	26915	836.5	-13.51	32.52	16.86	48.53	
	27025	847.5	-13.60	32.65	16.90	48.98	
	26805	825.5	-17.31	32.76	13.30	21.38	V
	26915	836.5	-17.14	32.39	13.10	20.42	
	27025	847.5	-17.29	32.54	13.10	20.42	

LTE Band 26							
Channel Bandwidth: 5 MHz / QPSK							
Plane	**Channel**	**Frequency (MHz)**	**LVL (dBm)**	**Correction Factor (dB)**	**ERP (dBm)**	**ERP (mW)**	**Polarization (H/V)**
X	26815	826.5	-11.72	32.62	18.75	74.99	H
	26915	836.5	-11.65	32.52	18.72	74.47	
	27015	846.5	-11.89	32.65	18.61	72.61	
	26815	826.5	-16.51	32.76	14.10	25.70	V
	26919	836.5	-16.44	32.39	13.80	23.99	
	27015	846.5	-16.60	32.54	13.79	23.93	
Channel Bandwidth: 5 MHz / 16QAM							
X	26815	826.5	-13.41	32.62	17.06	50.82	H
	26915	836.5	-13.38	32.52	16.99	50.00	
	27015	846.5	-13.56	32.65	16.94	49.43	
	26815	826.5	-17.28	32.76	13.33	21.53	V
	26919	836.5	-17.26	32.39	12.98	19.86	
	27015	846.5	-17.34	32.54	13.05	20.18	
Channel Bandwidth: 5 MHz / 64QAM							
X	26815	826.5	-13.41	32.62	17.06	50.82	H
	26915	836.5	-13.38	32.52	16.99	50.00	
	27015	846.5	-13.56	32.65	16.94	49.43	
	26815	826.5	-17.08	32.76	13.53	22.54	V
	26919	836.5	-17.06	32.39	13.18	20.80	
	27015	846.5	-17.14	32.54	13.25	21.13	

LTE Band 26							
Channel Bandwidth: 10 MHz / QPSK							
Plane	**Channel**	**Frequency (MHz)**	**LVL (dBm)**	**Correction Factor (dB)**	**ERP (dBm)**	**ERP (mW)**	**Polarization (H/V)**
X	26840	829.0	-11.62	32.62	18.85	76.74	H
	26915	836.5	-11.57	32.52	18.80	75.86	
	26990	844.0	-11.80	32.65	18.70	74.13	
	26840	829.0	-16.45	32.76	14.16	26.06	V
	26919	836.5	-16.35	32.39	13.89	24.49	
	26990	844.0	-16.39	32.54	14.00	25.12	
Channel Bandwidth: 10 MHz / 16QAM							
X	26840	829.0	-13.29	32.62	17.18	52.24	H
	26915	836.5	-13.22	32.52	17.15	51.88	
	26990	844.0	-13.31	32.65	17.19	52.36	
	26840	829.0	-17.24	32.76	13.37	21.73	V
	26919	836.5	-17.18	32.39	13.06	20.23	
	26990	844.0	-17.29	32.54	13.10	20.42	
Channel Bandwidth: 10 MHz / 64QAM							
X	26840	829.0	-13.09	32.62	17.38	54.70	H
	26915	836.5	-13.02	32.52	17.35	54.33	
	26990	844.0	-13.11	32.65	17.39	54.83	
	26840	829.0	-17.04	32.76	13.57	22.75	V
	26919	836.5	-16.98	32.39	13.26	21.18	
	26990	844.0	-17.09	32.54	13.30	21.38	

LTE Band 26							
Channel Bandwidth: 15 MHz / QPSK							
Plane	**Channel**	**Frequency (MHz)**	**LVL (dBm)**	**Correction Factor (dB)**	**ERP (dBm)**	**ERP (mW)**	**Polarization (H/V)**
X	26865	831.5	-11.36	32.62	19.11	81.47	H
	26915	836.5	-11.44	32.52	18.93	78.16	
	26965	841.5	-11.48	32.65	19.02	79.80	
	26865	831.5	-16.21	32.76	14.40	27.54	V
	26915	836.5	-16.19	32.39	14.05	25.41	
	26965	841.5	-16.33	32.54	14.06	25.47	
Channel Bandwidth: 15 MHz / 16QAM							
X	26865	831.5	-13.22	32.62	17.25	53.09	H
	26915	836.5	-13.14	32.52	17.23	52.84	
	26965	841.5	-13.28	32.65	17.22	52.72	
	26865	831.5	-17.13	32.76	13.48	22.28	V
	26915	836.5	-17.11	32.39	13.13	20.56	
	26965	841.5	-17.19	32.54	13.20	20.89	
Channel Bandwidth: 15 MHz / 64QAM							
X	26865	831.5	-13.02	32.62	17.45	55.59	H
	26915	836.5	-12.94	32.52	17.43	55.34	
	26965	841.5	-13.08	32.65	17.42	55.21	
	26865	831.5	-16.93	32.76	13.68	23.33	V
	26915	836.5	-16.91	32.39	13.33	21.53	
	26965	841.5	-16.99	32.54	13.40	21.88	

4.2 Frequency Stability Measurement

4.2.1 Limits of Frequency Stabiliity Measurement

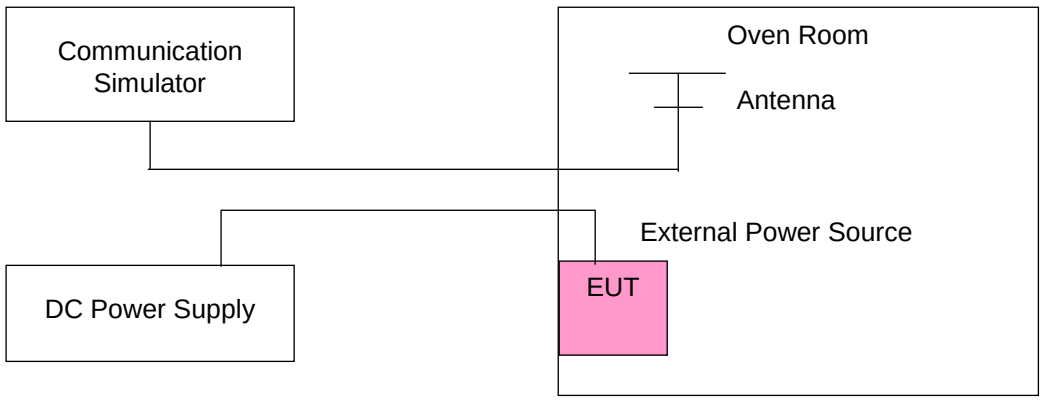
1.5 ppm is for base and fixed station. 2.5 ppm is for mobile station.

4.2.2 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.

4.2.3 Test Setup



4.2.4 Test Results

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)	
3.8	824.700001	0.002	848.300003	0.004	2.5
3.6	824.700003	0.003	848.300003	0.003	2.5
4.35	824.700002	0.002	848.300001	0.001	2.5

Note: The applicant defined the normal working voltage of the battery is from 3.6 Vdc to 4.35 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	824.700003	0.004	848.300001	0.001	2.5
-20	824.700004	0.004	848.300002	0.002	2.5
-10	824.700004	0.005	848.300002	0.002	2.5
0	824.700003	0.004	848.300002	0.002	2.5
10	824.700004	0.005	848.300003	0.003	2.5
20	824.699997	-0.004	848.299997	-0.003	2.5
30	824.699998	-0.003	848.299999	-0.002	2.5
40	824.699998	-0.002	848.299996	-0.004	2.5
50	824.699997	-0.003	848.299998	-0.003	2.5

Frequency Error vs. Voltage

Voltage (Volts)	LTE Band 26				Limit (ppm)
	Channel Bandwidth: 3 MHz				
	Low Channel		High Channel		
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
3.8	825.500003	0.004	847.500003	0.003	2.5
3.6	825.500002	0.002	847.500002	0.002	2.5
4.35	825.500002	0.002	847.500001	0.001	2.5

Note: The applicant defined the normal working voltage of the battery is from 3.6 Vdc to 4.35 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	825.500001	0.001	847.500004	0.005	2.5
-20	825.500003	0.003	847.500001	0.001	2.5
-10	825.500003	0.004	847.500002	0.002	2.5
0	825.500002	0.002	847.500002	0.003	2.5
10	825.500001	0.001	847.500001	0.002	2.5
20	825.499998	-0.003	847.499999	-0.001	2.5
30	825.499997	-0.004	847.499998	-0.002	2.5
40	825.499997	-0.004	847.499998	-0.002	2.5
50	825.499998	-0.003	847.499998	-0.002	2.5

Frequency Error vs. Voltage

Voltage (Volts)	LTE Band 26				Limit (ppm)
	Channel Bandwidth: 5 MHz				
	Low Channel		High Channel		
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
3.8	826.500003	0.004	846.500003	0.004	2.5
3.6	826.500003	0.004	846.500002	0.002	2.5
4.35	826.500002	0.002	846.500003	0.003	2.5

Note: The applicant defined the normal working voltage of the battery is from 3.6 Vdc to 4.35 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	846.500002	0.002	2.5
-20	826.500002	0.002	846.500003	0.004	2.5
-10	826.500003	0.003	846.500002	0.002	2.5
0	826.500001	0.001	846.500004	0.004	2.5
10	826.500004	0.005	846.500002	0.002	2.5
20	826.499999	-0.002	846.499998	-0.002	2.5
30	826.499999	-0.001	846.499996	-0.004	2.5
40	826.499998	-0.002	846.499997	-0.003	2.5
50	826.499997	-0.004	846.499997	-0.003	2.5

Frequency Error vs. Voltage

Voltage (Volts)	LTE Band 26				Limit (ppm)
	Channel Bandwidth: 10 MHz				
	Low Channel		High Channel		
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
3.8	829.000002	0.002	844.000001	0.002	2.5
3.6	829.000001	0.002	844.000003	0.003	2.5
4.35	829.000002	0.003	844.000002	0.002	2.5

Note: The applicant defined the normal working voltage of the battery is from 3.6 Vdc to 4.35 Vdc.

Frequency Error vs. Temperature

Temp. (℃)	LTE Band 26				Limit (ppm)
	Channel Bandwidth: 10 MHz				
	Low Channel		High Channel		
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
-30	829.000004	0.004	844.000003	0.003	2.5
-20	829.000002	0.002	844.000002	0.002	2.5
-10	829.000001	0.002	844.000003	0.004	2.5
0	829.000002	0.003	844.000003	0.003	2.5
10	829.000001	0.001	844.000002	0.002	2.5
20	828.999997	-0.004	843.999996	-0.004	2.5
30	828.999997	-0.003	843.999998	-0.002	2.5
40	828.999996	-0.004	843.999996	-0.005	2.5
50	828.999998	-0.002	843.999997	-0.004	2.5

Frequency Error vs. Voltage

Voltage (Volts)	LTE Band 26				Limit (ppm)
	Channel Bandwidth: 15 MHz				
	Low Channel		High Channel		
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
3.8	831.500001	0.001	841.500004	0.004	2.5
3.6	831.500003	0.003	841.500003	0.003	2.5
4.35	831.500002	0.002	841.500004	0.004	2.5

Note: The applicant defined the normal working voltage of the battery is from 3.6 Vdc to 4.35 Vdc.

Frequency Error vs. Temperature

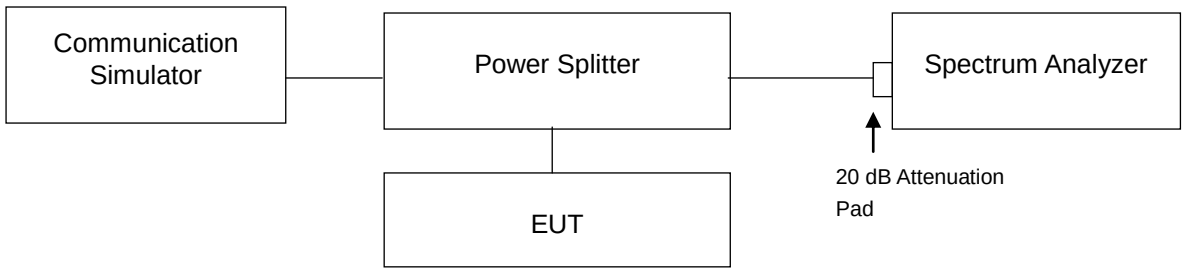
Temp. (℃)	LTE Band 26				Limit (ppm)
	Channel Bandwidth: 15 MHz				
	Low Channel		High Channel		
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
-30	831.500004	0.005	841.500002	0.003	2.5
-20	831.500003	0.003	841.500002	0.003	2.5
-10	831.500003	0.004	841.500001	0.002	2.5
0	831.500002	0.002	841.500001	0.001	2.5
10	831.500003	0.003	841.500003	0.004	2.5
20	831.499996	-0.005	841.499998	-0.002	2.5
30	831.499996	-0.004	841.499998	-0.002	2.5
40	831.499999	-0.001	841.499997	-0.003	2.5
50	831.499997	-0.004	841.499997	-0.004	2.5

4.3 Occupied Bandwidth Measurement

4.3.1 Test Procedure

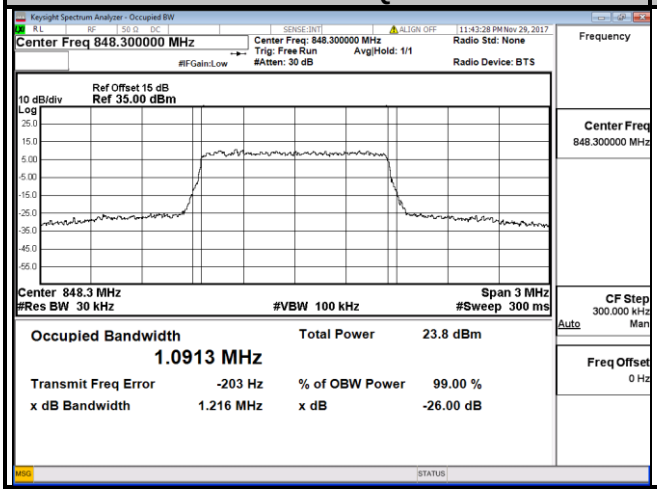
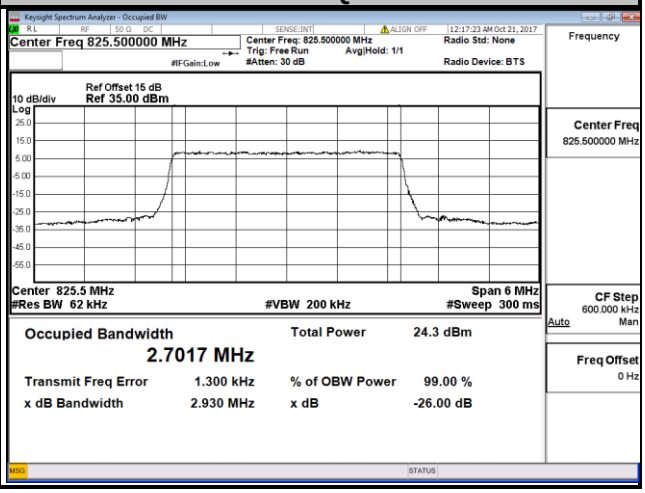
The EUT makes a call to the communication simulator. All measurements were done at low, middle and high operational frequency range. The communication simulator station system controlled a EUT to export maximum output power under transmission mode and specific channel frequency. Use OBW measurement function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

4.3.2 Test Setup

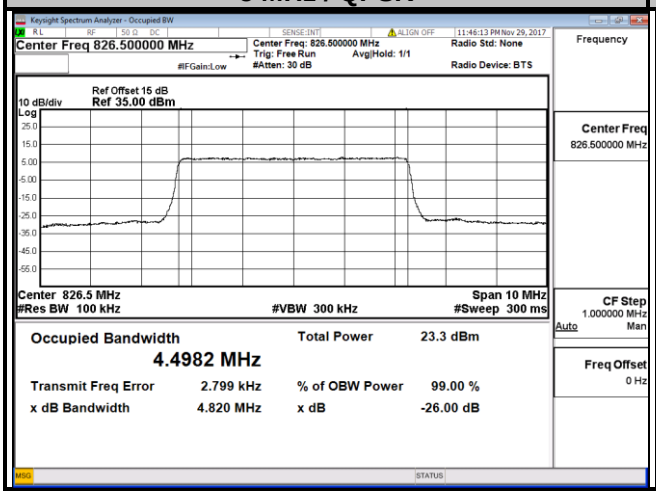
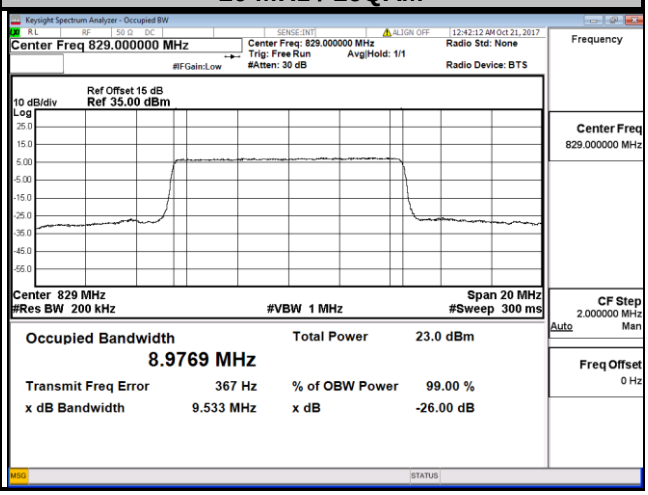


4.3.3 Test Result

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	1.0867	1.0889	1.0902	26805	825.5	2.7017	2.6991	2.6976
26915	836.5	1.0861	1.0893	1.0883	26915	836.5	2.7014	2.6960	2.6965
27033	848.3	1.0869	1.0896	1.0913	27025	847.5	2.7004	2.6973	2.6975

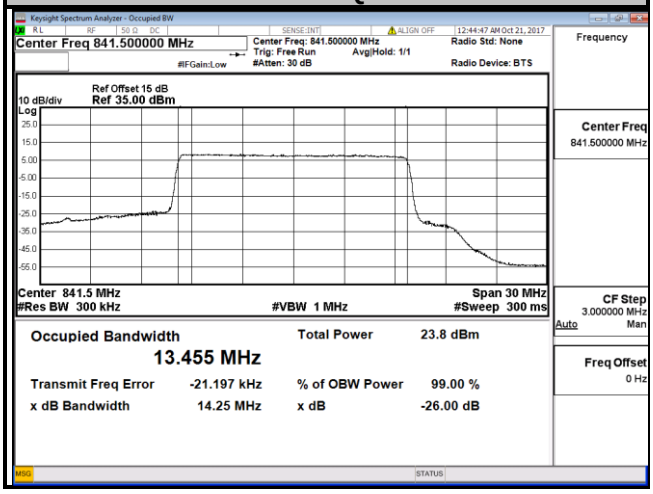
Spectrum Plot of Worst Value	
1.4 MHz / 64QAM	3 MHz / QPSK
	

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	4.4966	4.4964	4.4982	26840	829.0	8.9714	8.9769	8.9757
26915	836.5	4.4927	4.4935	4.4933	26915	836.5	8.9665	8.9672	8.9675
27015	846.5	4.4874	4.4909	4.4903	26990	844.0	8.9633	8.9629	8.9630

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

LTE Band 26				
Channel Bandwidth: 15 MHz				
Channel	Frequency (MHz)	99 % Occupied Bandwidth (MHz)		
		QPSK	16QAM	64QAM
26865	831.5	13.4360	13.4310	13.4401
26915	836.5	13.4470	13.4390	13.4376
26965	841.5	13.4550	13.4430	13.4380

Spectrum Plot of Worst Value
15 MHz / QPSK

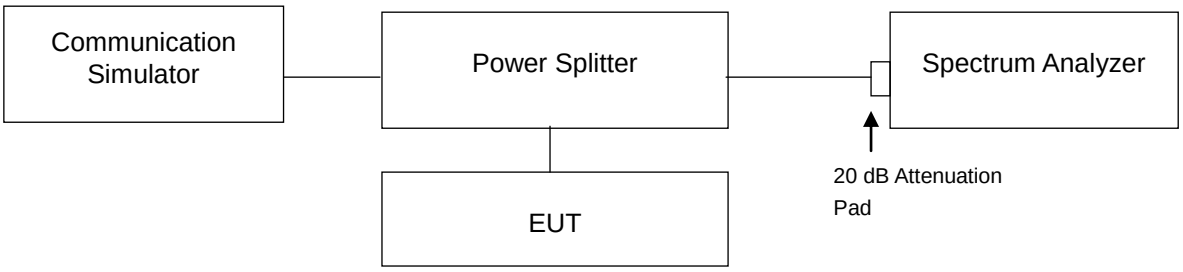


4.4 Band Edge Measurement

4.4.1 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.

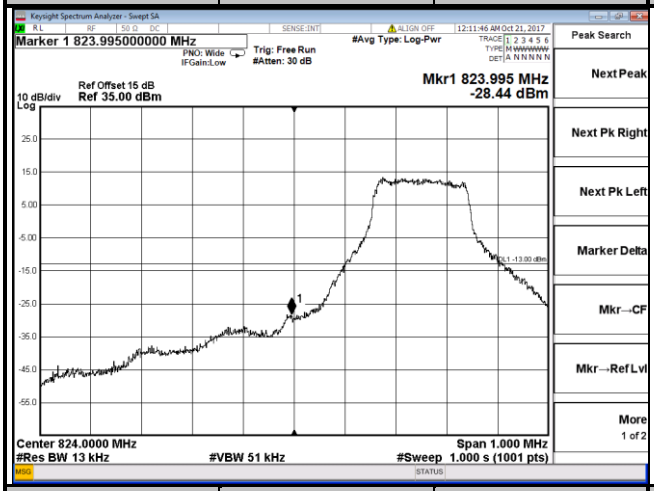
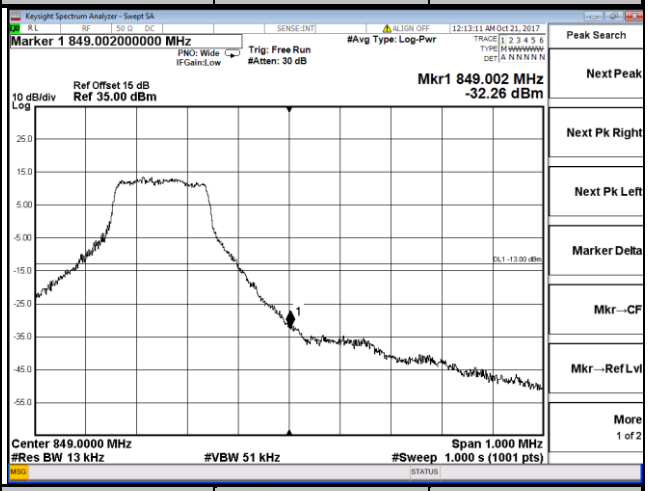
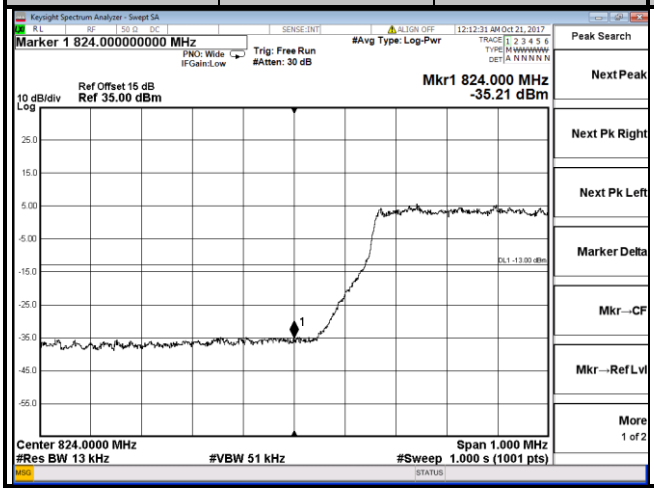
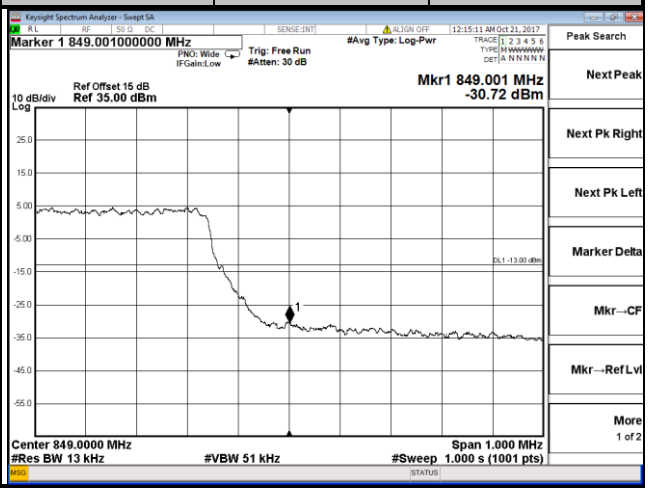
4.4.2 Test Setup

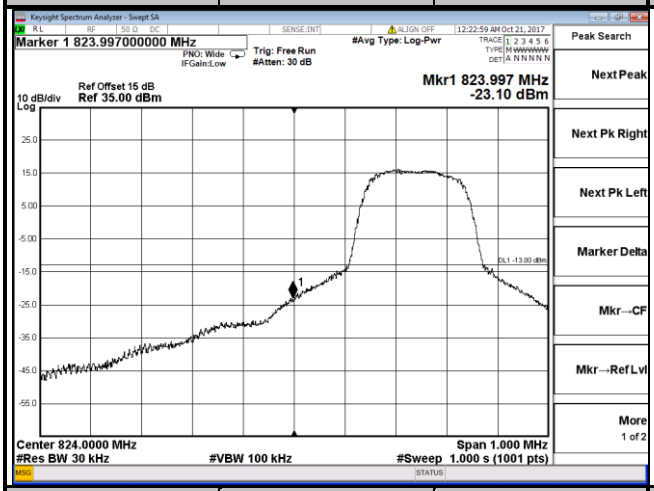
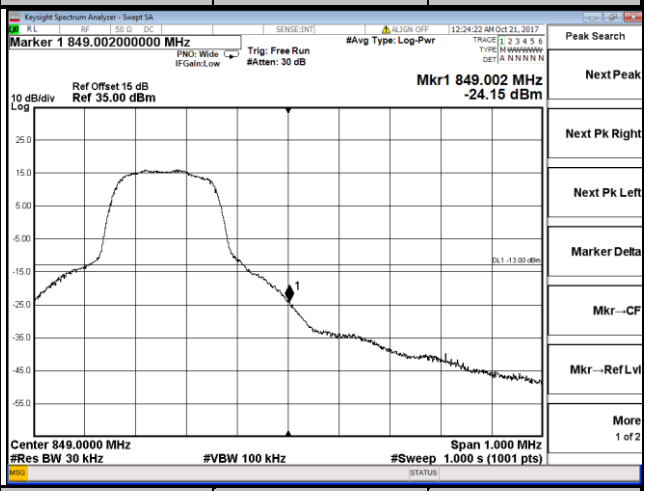
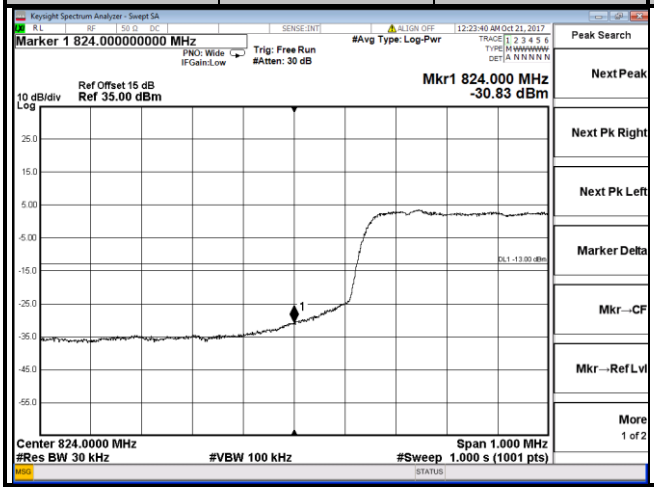
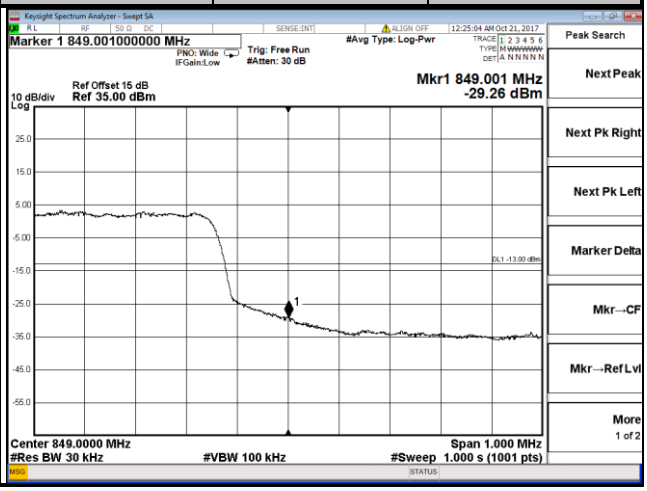


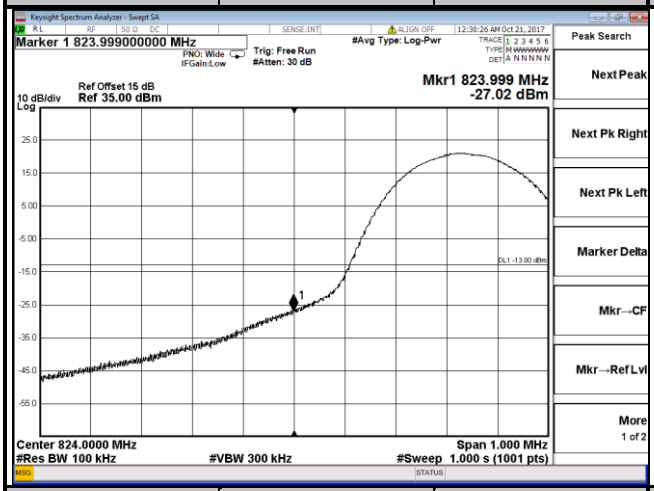
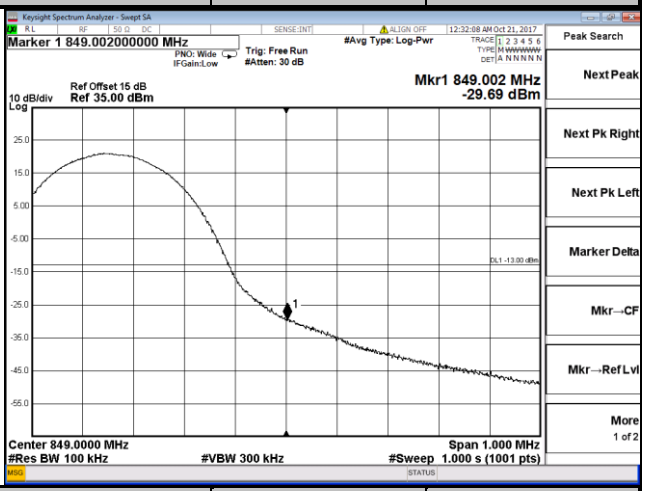
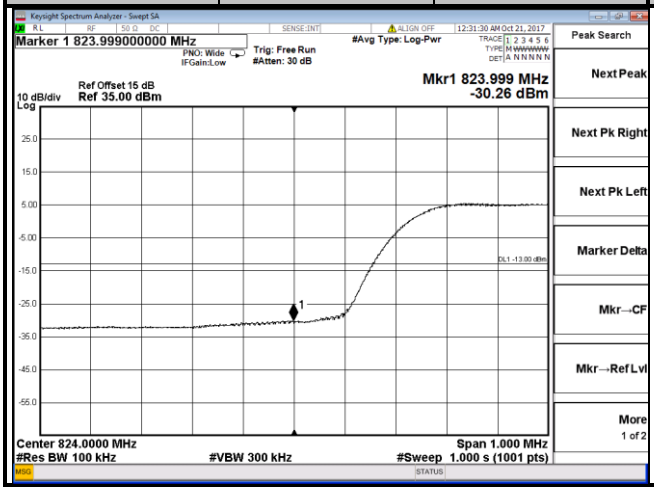
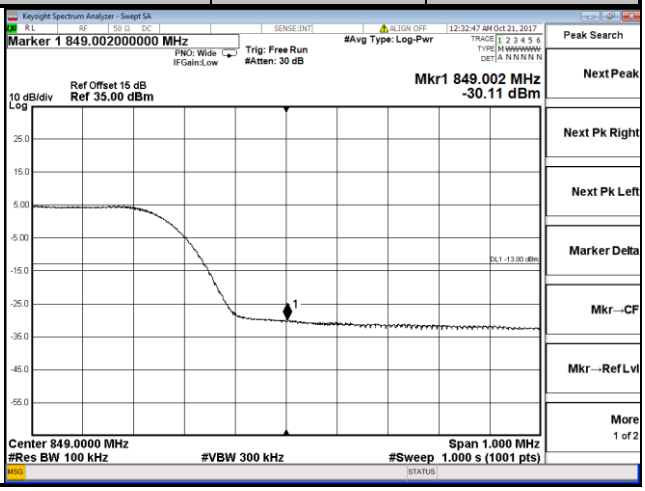
4.4.3 Test Procedures

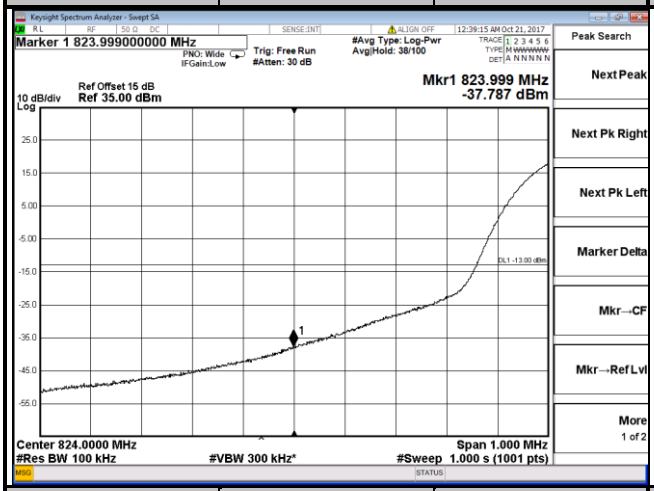
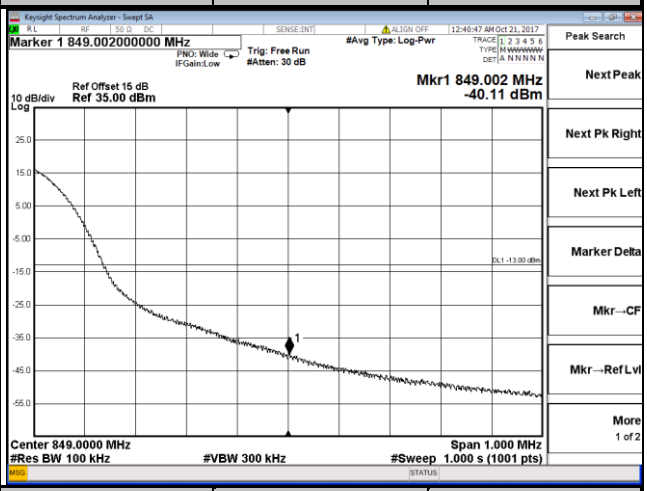
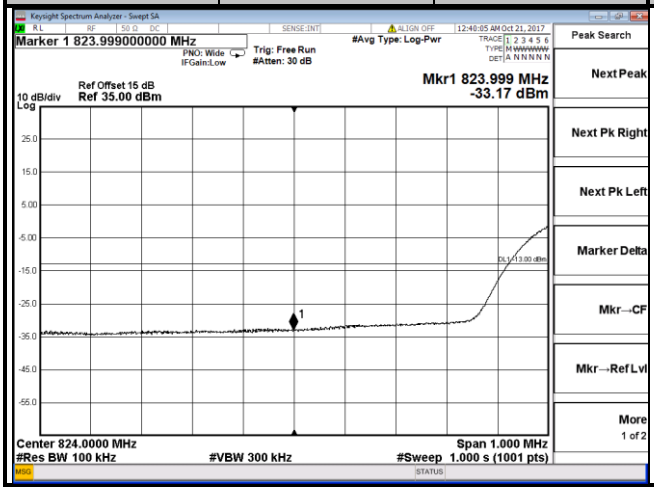
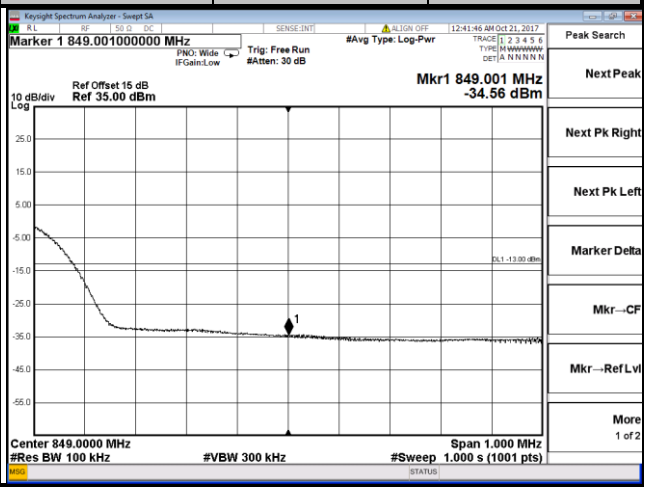
a. All measurements were done at low and high operational frequency range.
b. The center frequency of spectrum is the band edge frequency and span is 1 MHz. RB of the spectrum is 13 kHz and VB of the spectrum is 51 kHz (LTE Bandwidth 1.4 MHz).
c. The center frequency of spectrum is the band edge frequency and span is 1 MHz. RB of the spectrum is 30 kHz and VB of the spectrum is 100 kHz (LTE Bandwidth 3 MHz).
d. The center frequency of spectrum is the band edge frequency and span is 1 MHz. RB of the spectrum is 100 kHz and VB of the spectrum is 300 kHz (LTE Bandwidth 5 MHz/10 MHz).
e. The center frequency of spectrum is the band edge frequency and span is 1MHz. RB of the spectrum is 150 kHz and VB of the spectrum is 470 kHz (LTE Bandwidth 15 MHz).
f. Record the max trace plot into the test report.

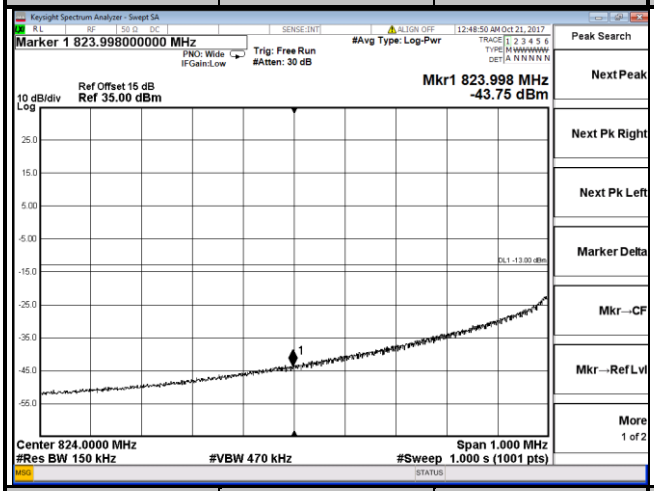
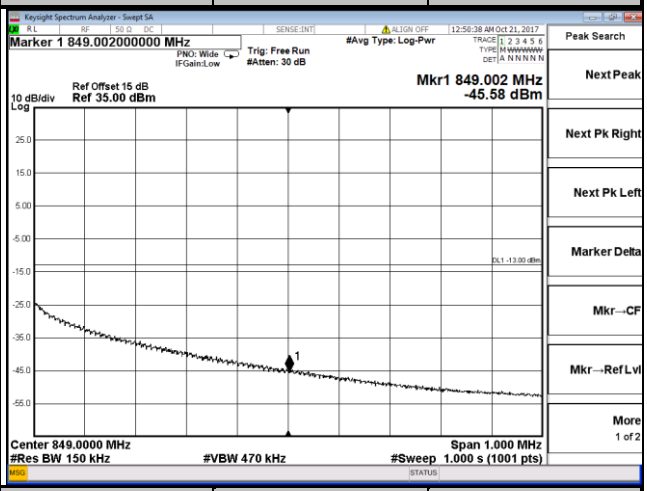
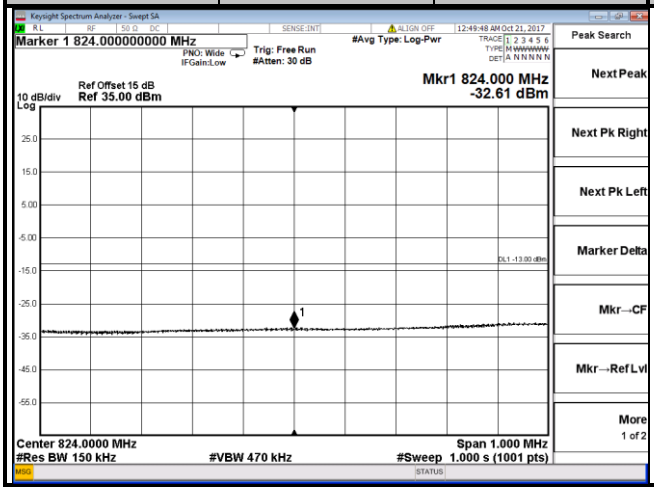
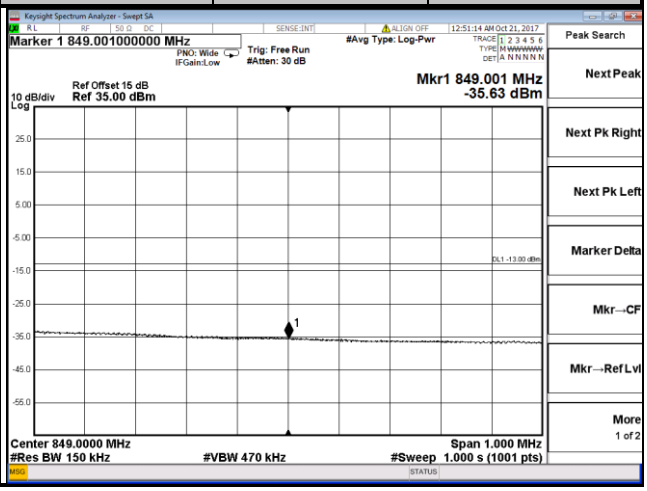
4.4.4 Test Results

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
					

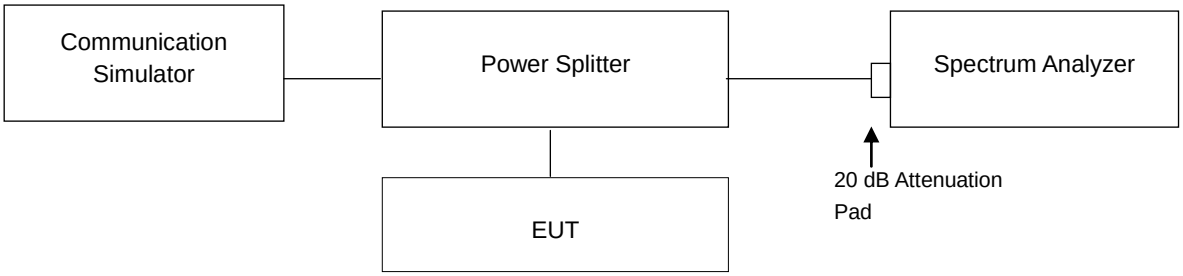
LTE Band 26					
Channel Bandwidth: 15 MHz					
Channel	26865	1 RB	Channel	26965	1 RB
					
Channel	26865	75 RB	Channel	26965	75 RB
					

4.5 Peak to Average Ratio

4.5.1 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.

4.5.2 Test Setup



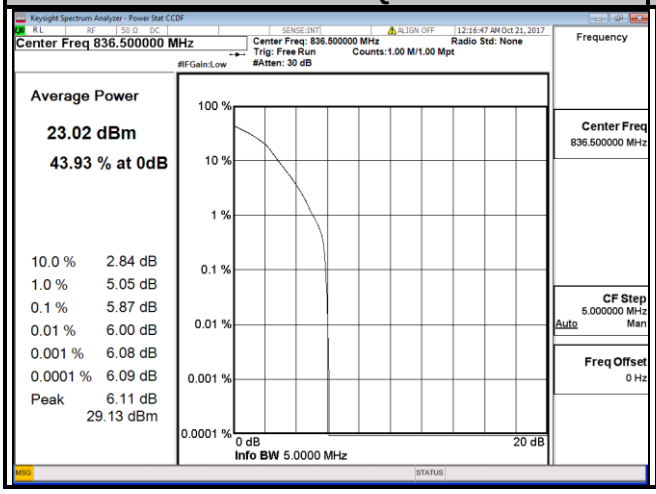
4.5.3 Test Procedures

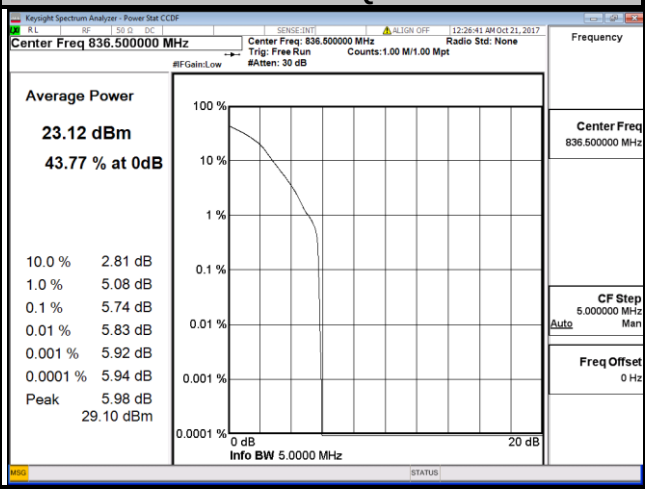
1. Set resolution/measurement bandwidth ≥ signal's occupied bandwidth;
2. Set the number of counts to a value that stabilizes the measured CCDF curve;
3. Record the maximum PAPR level associated with a probability of 0.1 %.

4.5.4 Test Results

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	5.00	5.69	5.77	26805	825.5	4.90	5.68	5.67
26915	836.5	5.07	5.87	5.81	26915	836.5	4.97	5.74	5.72
27033	848.3	4.70	5.49	5.47	27025	847.5	4.73	5.55	5.50

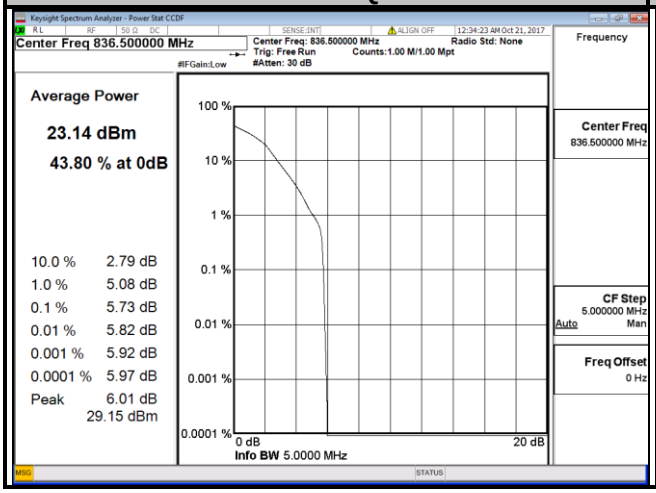
Spectrum Plot of Worst Value	
1.4 MHz / 16QAM	3 MHz / 16QAM

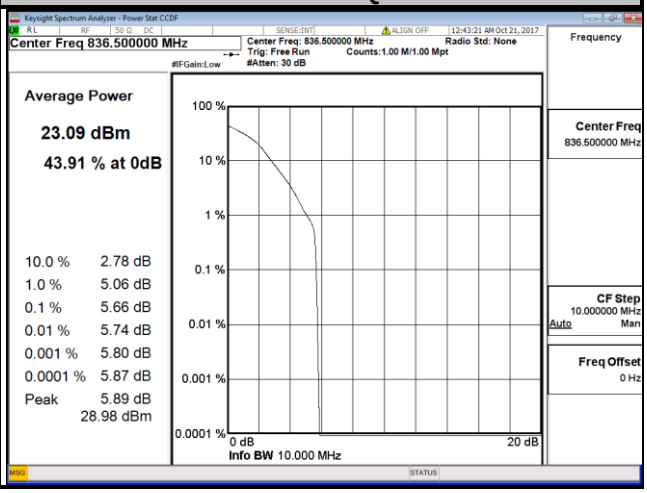




LTE Band 26									
Channel Bandwidth: 5 MHz					Channel Bandwidth: 10 MHz				
Channel	Frequency (MHz)	Peak to Average Ratio (dB)			Channel	Frequency (MHz)	Peak to Average Ratio (dB)		
		QPSK	16QAM	64QAM			QPSK	16QAM	64QAM
26815	826.5	4.89	5.68	5.67	26840	829.0	4.85	5.65	5.63
26915	836.5	4.94	5.73	5.68	26915	836.5	4.87	5.66	5.64
27015	846.5	4.73	5.53	5.48	26990	844.0	4.84	5.62	5.62

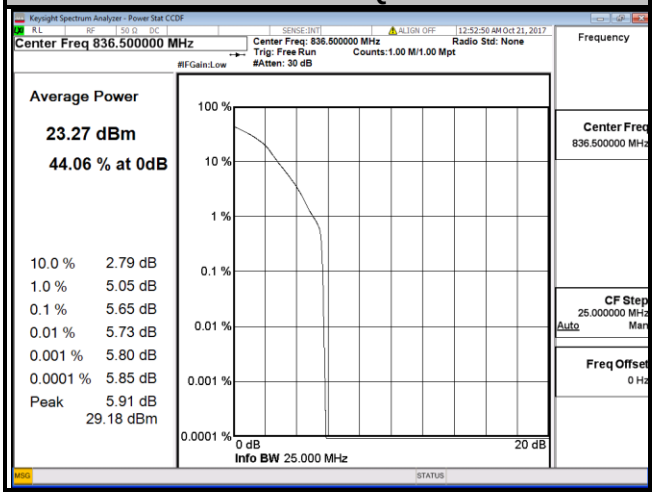
Spectrum Plot of Worst Value	
5 MHz / 16QAM	10 MHz / 16QAM





LTE Band 26				
Channel Bandwidth: 15 MHz				
Channel	Frequency (MHz)	Peak to Average Ratio (dB)		
		QPSK	16QAM	64QAM
26865	831.5	4.84	5.55	5.59
26915	836.5	4.82	5.65	5.59
26965	841.5	4.86	5.65	5.63

Spectrum Plot of Worst Value
15 MHz / 16QAM

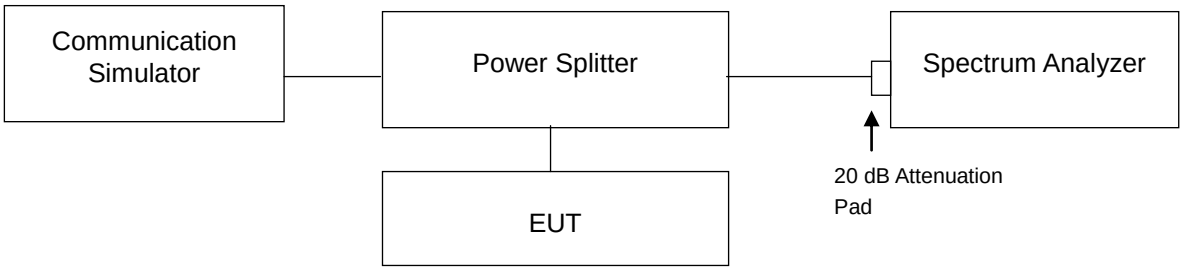


4.6 Conducted Spurious Emissions

4.6.1 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.

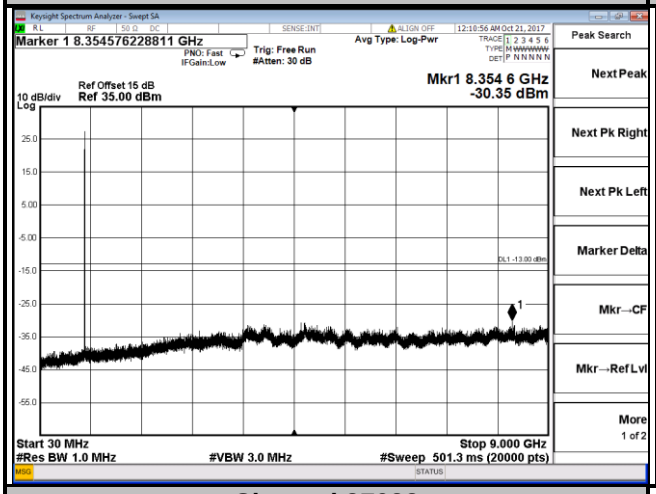
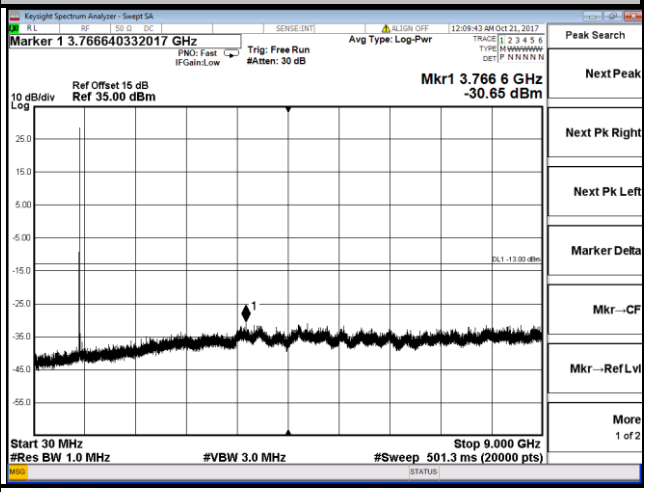
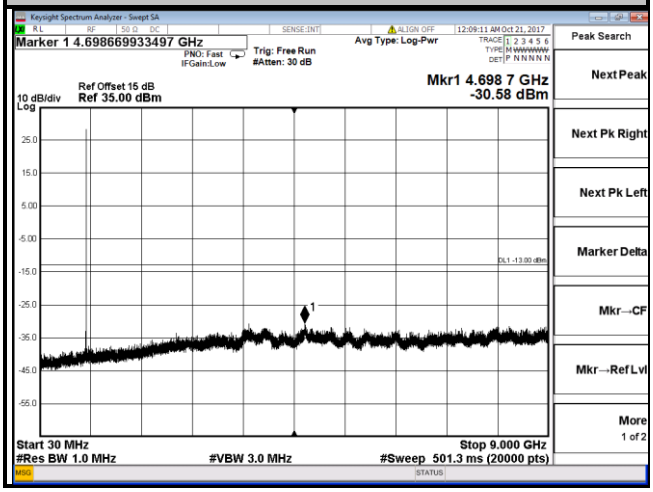
4.6.2 Test Setup

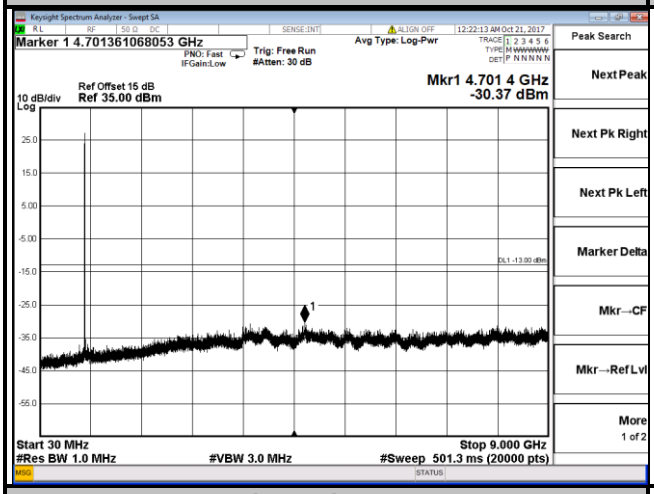
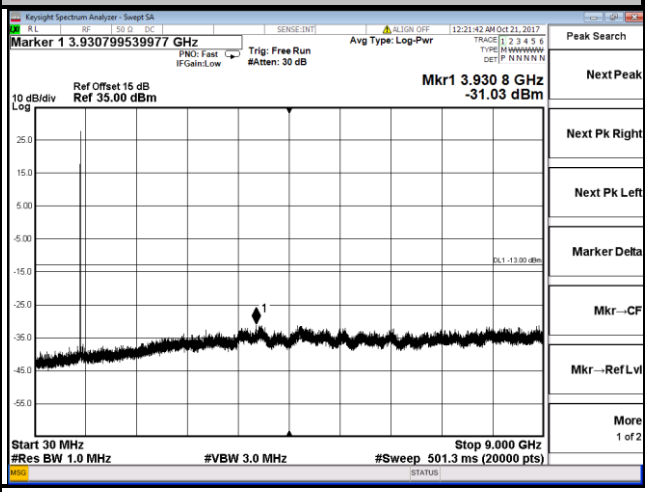
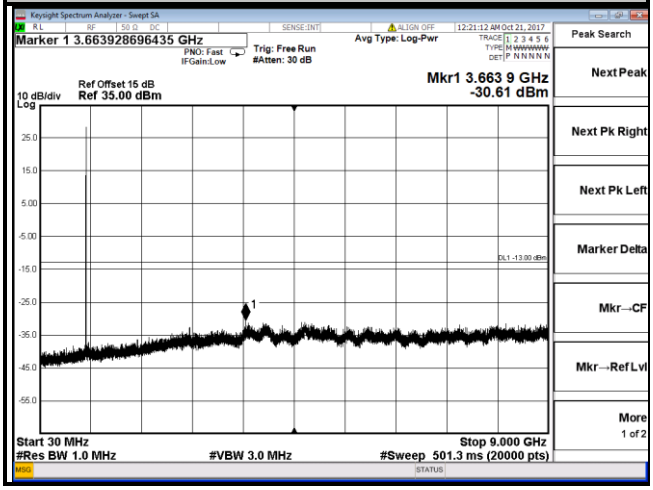


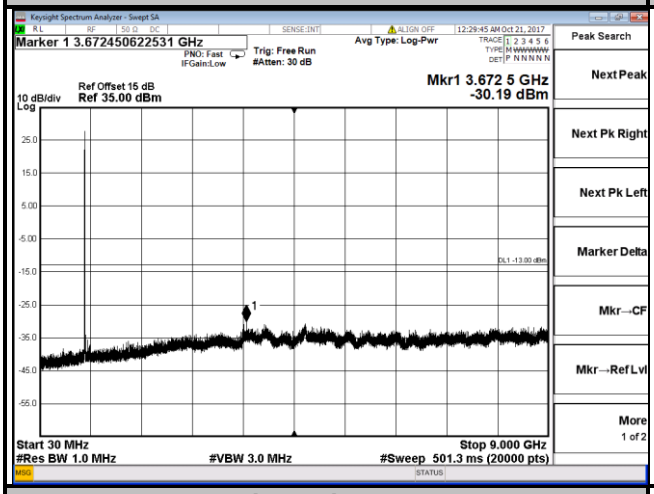
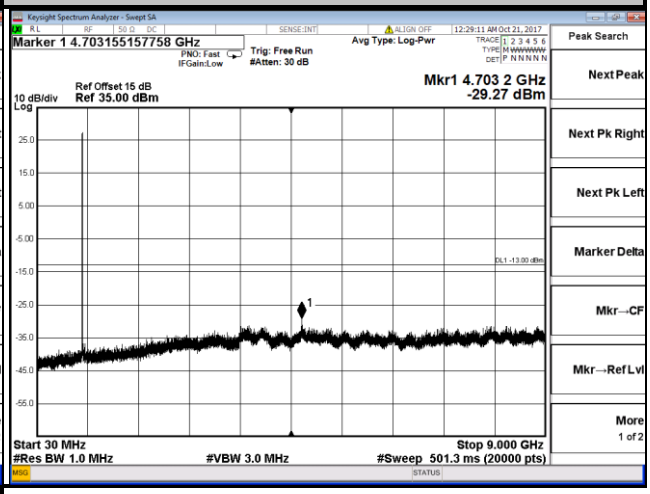
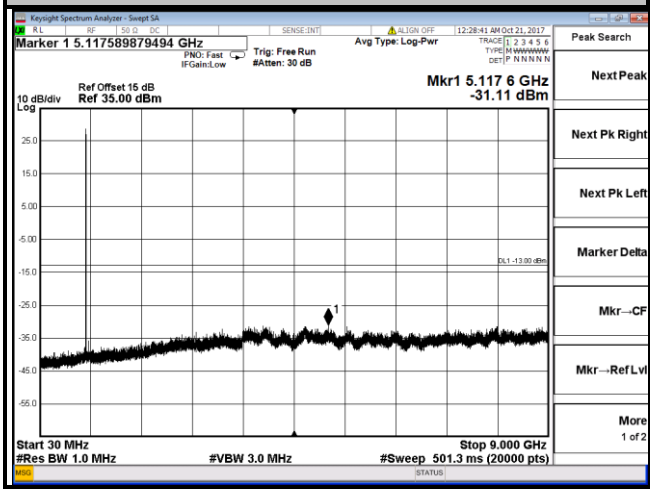
4.6.3 Test Procedure

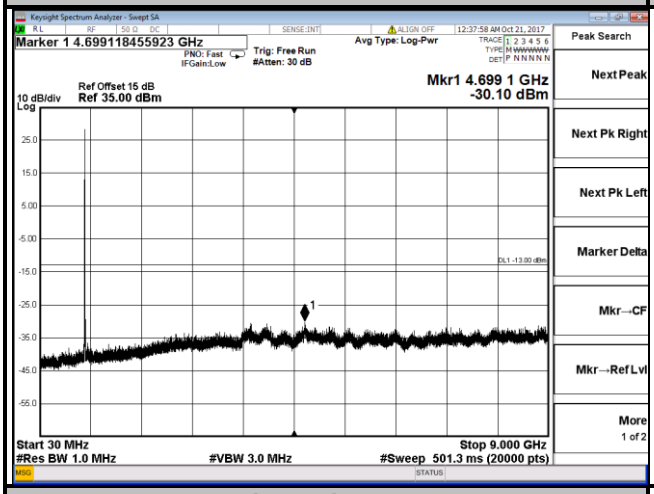
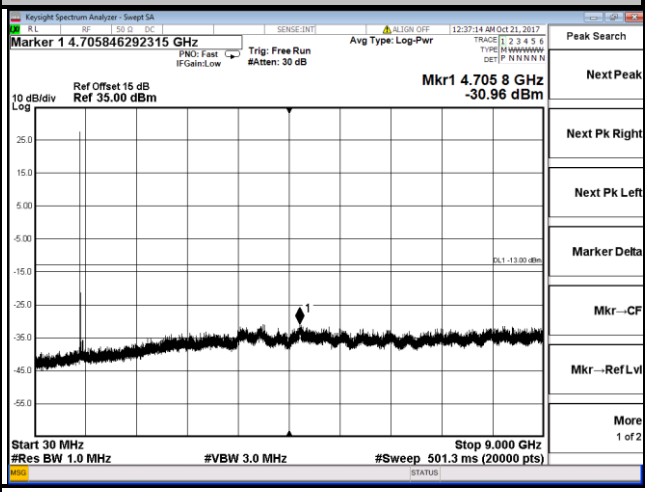
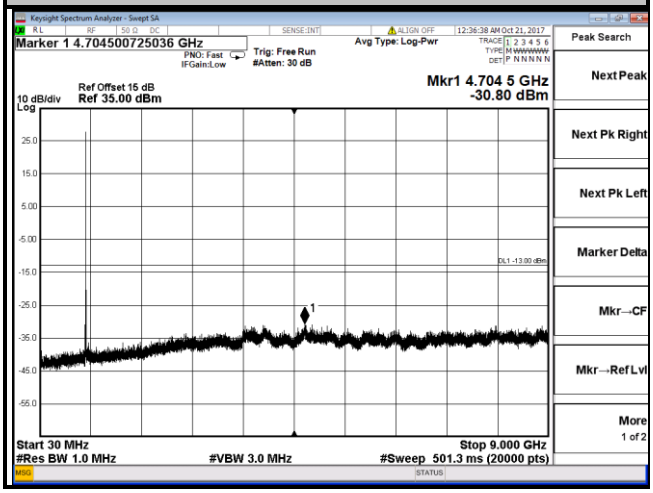
a. The EUT makes a phone call to the communication simulator. All measurements were done at low, middle and high operational frequency range.
b. Measuring frequency range is from 9 kHz to 9 GHz. 20 dB attenuation pad is connected with spectrum. RBW = 100 kHz and VBW = 300 kHz is used for conducted emission measurement.

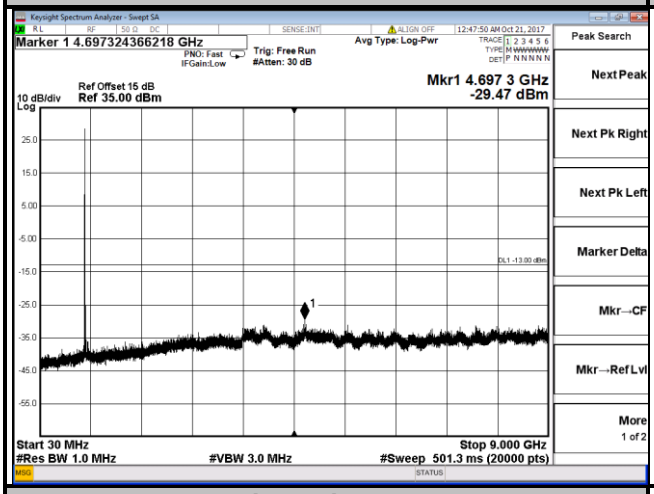
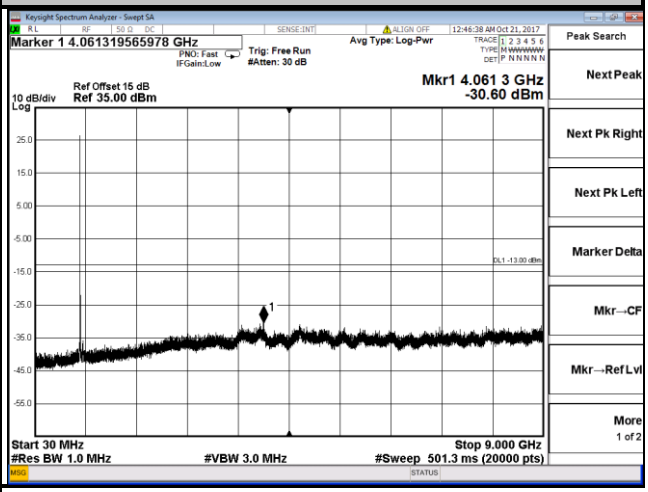
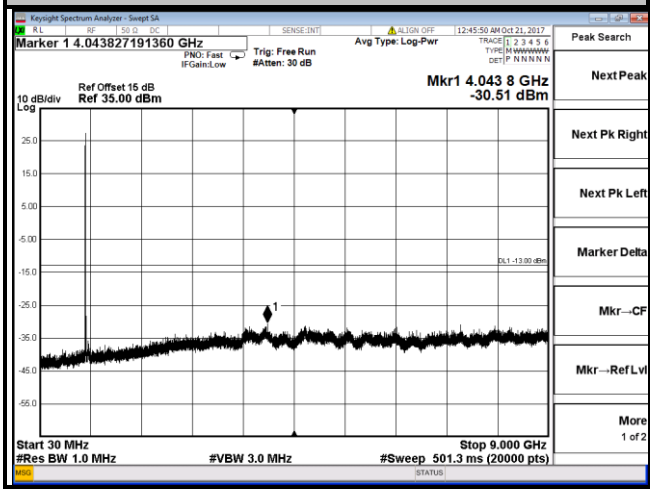
4.6.4 Test Results

LTE Band 26	
Channel Bandwidth: 1.4 MHz	
Channel 26797	Channel 26915
	
Channel 27033	
	

LTE Band 26	
Channel Bandwidth: 3 MHz	
Channel 26805	Channel 26915
	
Channel 27025	
	

LTE Band 26	
Channel Bandwidth: 5 MHz	
Channel 26815	Channel 26915
	
Channel 27015	
	

LTE Band 26	
Channel Bandwidth: 10 MHz	
Channel 26840	Channel 26915
	
Channel 26990	
	

LTE Band 26	
Channel Bandwidth: 15 MHz	
Channel 26865	Channel 26915
	
Channel 26965	
	

4.7 Radiated Emission Measurement

4.7.1 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.

4.7.2 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.P.R power - 2.15 dBi.

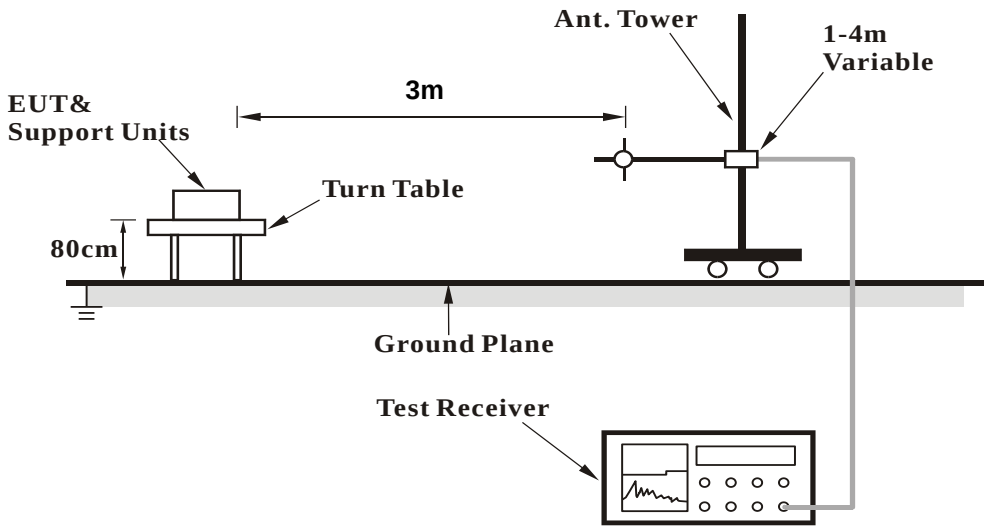
NOTE: The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 1 MHz/3 MHz.

4.7.3 Deviation from Test Standard

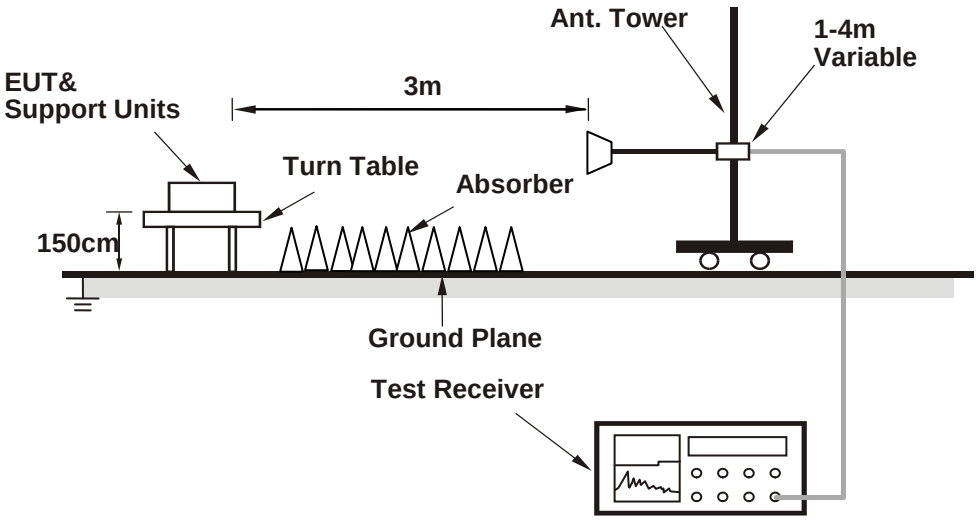
No deviation.

4.7.4 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).

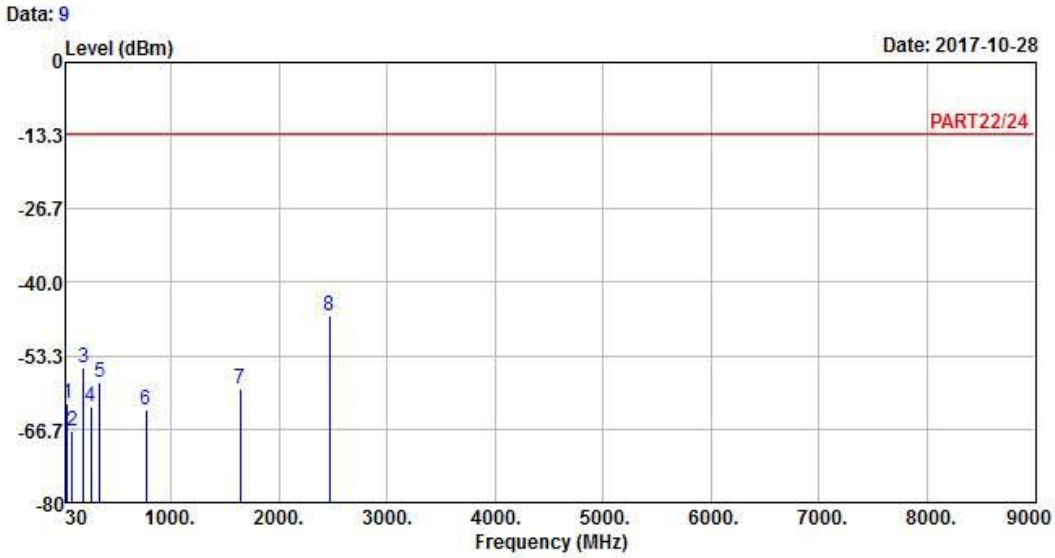
4.7.5 Test Results

LTE Band 26

Channel Bandwidth: 15 MHz / QPSK

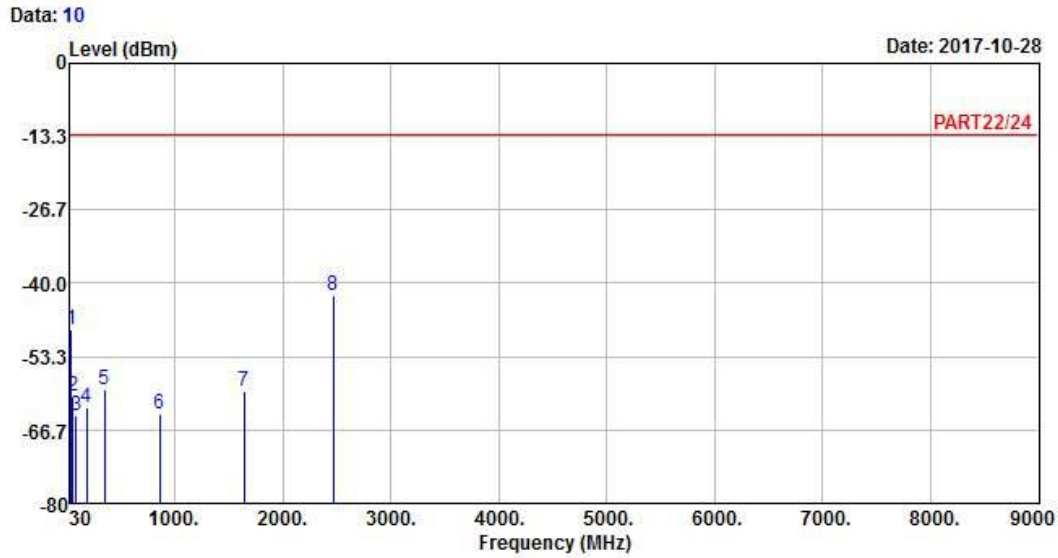
Low Channel

Bureau Veritas Consumer Products Services Ltd.,Taoyuan Branch



Site : 966 Chamber 5
Condition: PART22/24 HORIZONTAL
Remak : LTE Band 26 QPSK_15M_L-CH
Tested by: Getaz Yang

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1	39.18	-62.07	-62.17	-13.00	-49.07	0.10	Peak
2	87.51	-67.08	-56.04	-13.00	-54.08	-11.04	Peak
3	193.62	-55.62	-48.16	-13.00	-42.62	-7.46	Peak
4	258.69	-62.57	-56.40	-13.00	-49.57	-6.17	Peak
5	340.60	-58.30	-51.91	-13.00	-45.30	-6.39	Peak
6	769.70	-63.06	-63.88	-13.00	-50.06	0.82	Peak
7	1643.00	-59.34	-44.61	-13.00	-46.34	-14.73	Peak
8 pp	2464.50	-45.92	-35.48	-13.00	-32.92	-10.44	Peak



Site : 966 Chamber 5
Condition: PART22/24 VERTICAL
Remak : LTE Band 26 QPSK_15M_L-CH
Tested by: Getaz Yang

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1	39.45	-48.41	-49.05	-13.00	-35.41	0.64	Peak
2	56.19	-60.57	-53.97	-13.00	-47.57	-6.60	Peak
3	85.89	-63.94	-52.92	-13.00	-50.94	-11.02	Peak
4	182.82	-62.45	-55.14	-13.00	-49.45	-7.31	Peak
5	344.80	-59.40	-53.09	-13.00	-46.40	-6.31	Peak
6	860.70	-63.88	-64.23	-13.00	-50.88	0.35	Peak
7	1643.00	-59.61	-44.88	-13.00	-46.61	-14.73	Peak
8 pp	2464.50	-42.09	-31.65	-13.00	-29.09	-10.44	Peak

Middle Channel

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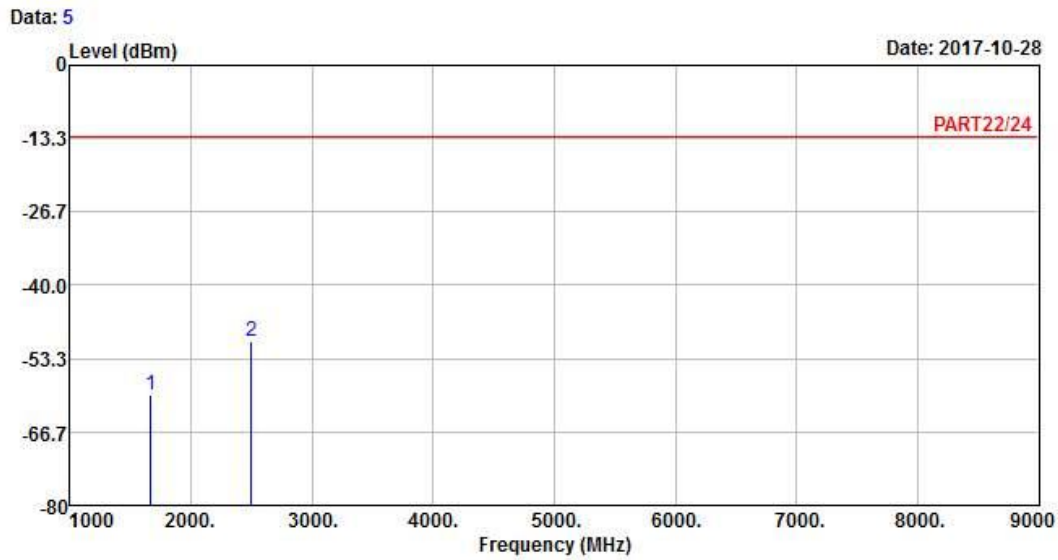
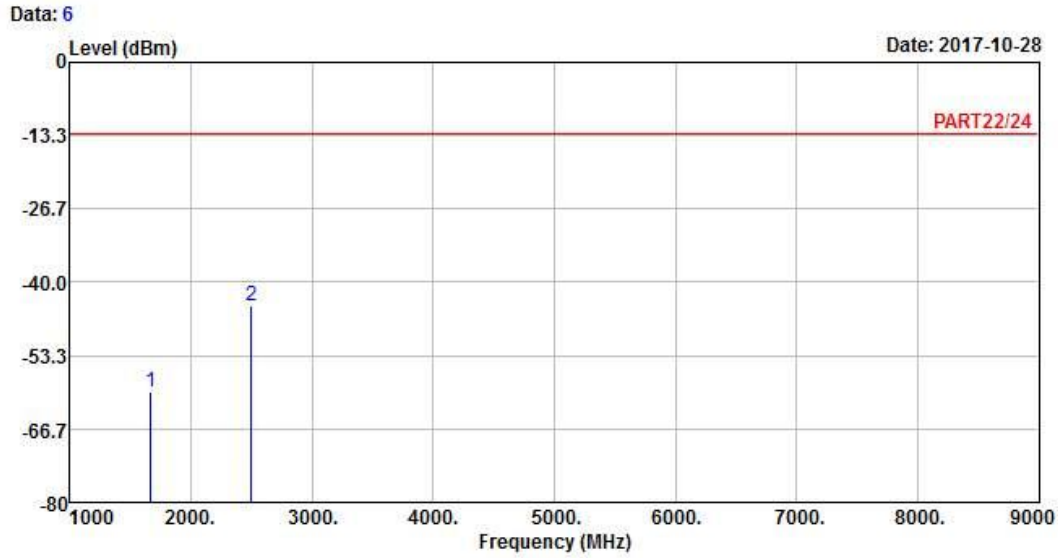


Site : 966 Chamber 5
Condition: PART22/24 HORIZONTAL
Remak : LTE Band 26 QPSK_15M_M-CH
Tested by: Getaz Yang

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1	1663.00	-59.93	-45.25	-13.00	-46.93	-14.68	Peak
2 pp	2494.50	-50.09	-39.65	-13.00	-37.09	-10.44	Peak

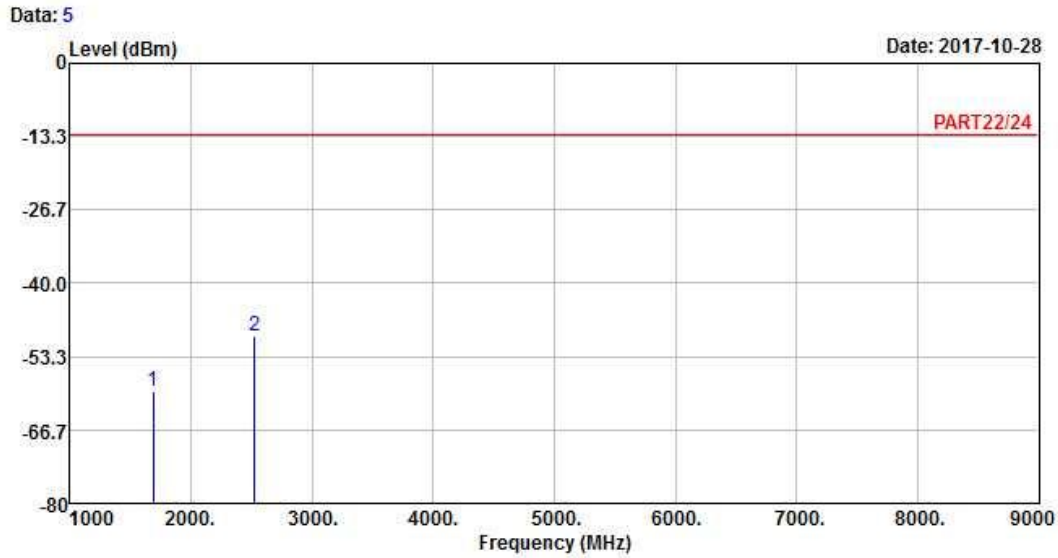


Site : 966 Chamber 5
Condition: PART22/24 VERTICAL
Remak : LTE Band 26 QPSK_15M_M-CH
Tested by: Getaz Yang

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1	1663.00	-60.05	-45.37	-13.00	-47.05	-14.68	Peak
2 pp	2494.50	-44.36	-33.92	-13.00	-31.36	-10.44	Peak

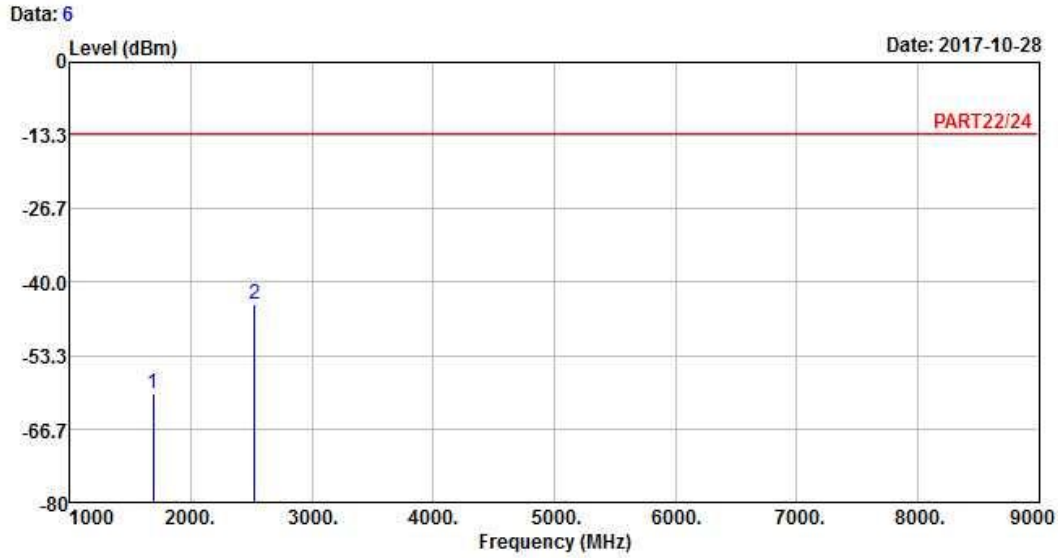
High Channel

Bureau Veritas Consumer Products Services Ltd.,Taoyuan Branch



Site : 966 Chamber 5
Condition: PART22/24 HORIZONTAL
Remak : LTE Band 26 QPSK_15M_H-CH
Tested by: Getaz Yang

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1	1683.00	-59.61	-45.01	-13.00	-46.61	-14.60	Peak
2 pp	2524.50	-49.54	-38.70	-13.00	-36.54	-10.84	Peak



Site : 966 Chamber 5
Condition: PART22/24 VERTICAL
Remak : LTE Band 26 QPSK_15M_H-CH
Tested by: Getaz Yang

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1	1683.00	-60.23	-45.63	-13.00	-47.23	-14.60	Peak
2 pp	2524.50	-44.07	-33.23	-13.00	-31.07	-10.84	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:

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

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

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

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

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

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