FCC Test Report

(PART 22)

Report No.: RF171130C26

FCC ID: HD5-660W

Test Model: SOM660W

Received Date: Nov. 30, 2017

Test Date: Dec. 27, 2017 ~ Jan. 18, 2018

Issued Date: Jan. 26, 2018

Applicant: Honeywell International Inc.

Address: 9680 Old Bailes Road, Fort Mill, SC 29707 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 Tsuen, Kwei Shan Hsiang, Taoyuan Hsien 333, Taiwan, R.O.C.

FCC Registration / Designation Number: 788550 / TW0003

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Release Control Record

Issue No.	Description	Date Issued
RF171130C26	Original Release	Jan. 26, 2018

1 Certificate of Conformity

Product: HSOM660

Brand: Honeywell

Test Model: SOM660W

Sample Status: Engineering Sample

Applicant: Honeywell International Inc.

Test Date: Dec. 27, 2017 ~ Jan. 18, 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 : Vera Huang , **Date:** Jan. 26, 2018

Vera Huang / Specialist

Approved by : , **Date:** Jan. 26, 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.
---	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 -27.78 dB at 42.61 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	Nov. 24, 2017	Nov. 23, 2018
Spectrum Analyzer ROHDE & SCHWARZ	FSU43	100115	Nov. 23, 2017	Nov. 22, 2018
BILOG Antenna SCHWARZBECK	VULB9168	9168-472	Dec. 06, 2017	Dec. 05, 2018
HORN Antenna SCHWARZBECK	BBHA 9120 D	9120D-969	Dec. 12, 2017	Dec. 11, 2018
Double Ridge Guide Horn Antenna EMCO	3115	5619	Nov. 30, 2017	Nov. 29, 2018
BILOG Antenna SCHWARZBECK	VULB 9168	9168-153	Dec. 06, 2017	Dec. 05, 2018
HORN Antenna SCHWARZBECK	BBHA 9170	9170-480	Dec. 01, 2017	Nov. 30, 2018
RF signal cable ETS-LINDGREN	5D-FB	Cable-CH1-01(RFC-SMS-100-SMS-120+RFC-SMS-100-SMS-400)	Jun. 23, 2017	Jun. 22, 2018
MXG Vector signal generator Agilent	N5182B	MY53050430	Oct. 24, 2017	Oct. 23, 2018
Loop Antenna	EM-6879	269	Aug. 11, 2017	Aug. 10, 2018
Preamplifier EMCI	EMC001340	980201	Nov. 01, 2017	Oct. 30, 2018
Bluetooth Tester	CBT	100946	Jul. 29, 2016	Jul. 28, 2018
Preamplifier EMCI	EMC 012645	980115	Oct. 20, 2017	Oct. 19, 2018
Preamplifier EMCI	EMC 184045	980116	Oct. 20, 2017	Oct. 19, 2018
Preamplifier EMCI	EMC 330H	980112	Oct. 13, 2017	Oct. 12, 2018
Power Meter Anritsu	ML2495A	1012010	Aug. 15, 2017	Aug. 14, 2018
Power Sensor Anritsu	MA2411B	1315050	Aug. 15, 2017	Aug. 14, 2018
RF Coaxial Cable HUBER+SUHNNER	EMC104-SM-SM-8000&3000	140811+170717	Oct. 20, 2017	Oct. 19, 2018

Description & Manaufacturer	Model No.	Serial No.	Date of Calibration	Due Date of Calibration
RF Coaxial Cable HUBER+SUHNNER	SUCOFLEX 104	EMC104-SM-SM-1000(140807)	Oct. 20, 2017	Oct. 19, 2018
RF Coaxial Cable Worken	8D-FB	Cable-Ch10-01	Oct. 20, 2017	Oct. 19, 2018
Software BV ADT	E3 6.120103	NA	NA	NA
Antenna Tower MF	MFA-440H	NA	NA	NA
Turn Table MF	MFT-201SS	NA	NA	NA
Antenna Tower &Turn Table Controller MF	MF-7802	NA	NA	NA

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	HSOM660	
Brand	Honeywell	
Test Model	SOM660W	
Status of EUT	Engineering Sample	
HW Version	V2.0	
HW P/N	22	
SW Version	HON.01.004	
SW P/N	351D	
Power Supply Rating	3.85 Vdc (battery)	
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	1303.17 mW
	EDGE	383.71 mW
	WCDMA	154.17 mW
	CDMA	135.21 mW
	LTE 5 (Channel Bandwidth: 1.4 MHz)	107.15 mW
	LTE 5 (Channel Bandwidth: 3 MHz)	128.23 mW
	LTE 5 (Channel Bandwidth: 5 MHz)	133.97 mW
	LTE 5 (Channel Bandwidth: 10 MHz)	139.00 mW
	LTE 26 (Channel Bandwidth: 1.4 MHz)	96.38 mW
	LTE 26 (Channel Bandwidth: 3 MHz)	100.46 mW
	LTE 26 (Channel Bandwidth: 5 MHz)	120.50 mW
	LTE 26 (Channel Bandwidth: 10 MHz)	127.06 mW
	LTE 26 (Channel Bandwidth: 15 MHz)	128.82 mW

Emission Designator	GSM/GPRS	247KGXW
	EDGE	246KG7W
	WCDMA	4M16F9W
	CDMA	1M27F9W
	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)	8M98G7D
	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	
Accessory Device	Refer to Note as below	
Data Cable Supplied	N/A	

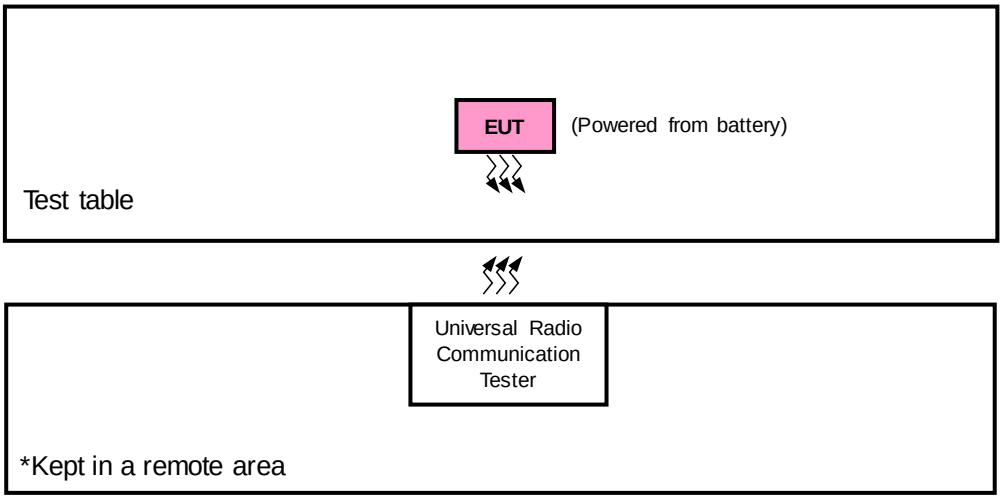
Note:

1. The EUT has been tested with following support unit.

Product	Brand	Model	Description
Battery	Inventus Power Inc.	CW-BAT	3.85 Vdc, 5800 mAh

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



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

GSM

EUT Configure Mode	Test Item	Available Channel	Tested Channel	Mode
-	ERP	128 to 251	128, 189, 251	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
-	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
-	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
-	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

EUT Configure Mode	Test Item	Available Channel	Tested Channel	Channel Bandwidth	Modulation	Mode
-	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
-	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	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
-	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	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	Jisyong Wang / 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	3.85 Vdc	Jisyong Wang / 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:

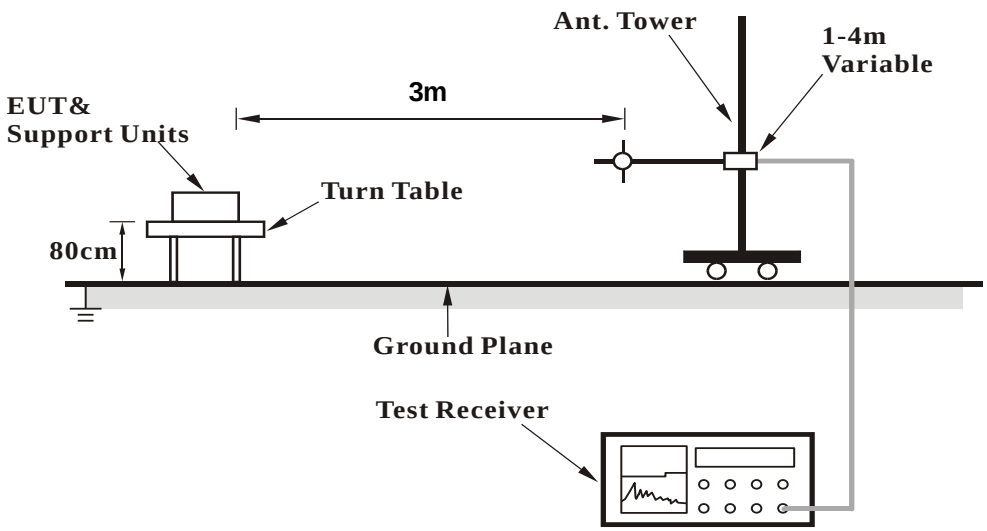
a. All measurements were done at low, middle and high operational frequency range. RBW and VBW is 1 MHz for GSM, GPRS & EDGE, and 5 MHz for WCDMA and CDMA, and 10 MHz for LTE mode.
b. Substitution method is used for E.I.R.P measurement. In the semi-anechoic chamber, EUT placed on the 0.8 m (below or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

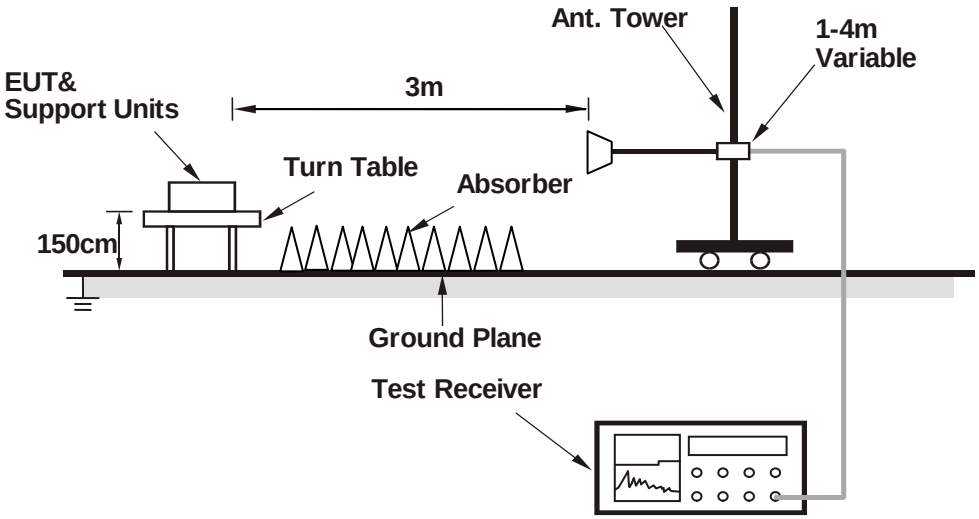
The EUT was set up for the maximum power with GSM, GPRS, EDGE, WCDMA, CDMA, and LTE link data modulation and link up with simulator. Set the EUT to transmit under low, middle and high channel and record the power level shown on simulator.

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)

Band	GSM850		
Channel	128	189	251
Frequency (MHz)	824.2	836.4	848.8
GSM (GMSK, 1Tx-slot)	34.00	34.13	34.15
GPRS (GMSK, 1Tx-slot)	34.01	34.14	34.16
GPRS (GMSK, 2Tx-slot)	30.70	30.83	30.85
GPRS (GMSK, 3Tx-slot)	28.36	28.49	28.51
GPRS (GMSK, 4Tx-slot)	27.07	27.20	27.22
EDGE (8PSK, 1Tx-slot)	27.69	27.82	27.84
EDGE (8PSK, 2Tx-slot)	24.41	24.54	24.56
EDGE (8PSK, 3Tx-slot)	22.61	22.74	22.76
EDGE (8PSK, 4Tx-slot)	21.23	21.36	21.38

Band	WCDMA V		
Channel	4132	4182	4233
Frequency (MHz)	826.4	836.4	846.6
RMC 12.2K	23.65	23.96	24.40
HSDPA Subtest-1	22.69	23.00	23.44
HSDPA Subtest-2	22.67	22.98	23.42
HSDPA Subtest-3	22.22	22.53	22.97
HSDPA Subtest-4	22.21	22.52	22.96
HSUPA Subtest-1	22.68	22.99	23.43
HSUPA Subtest-2	20.74	21.05	21.49
HSUPA Subtest-3	21.71	22.02	22.46
HSUPA Subtest-4	20.68	20.99	21.43
HSUPA Subtest-5	22.69	23.00	23.44

Band	CDMA		
Channel	1013	384	777
Frequency (MHz)	824.70	836.52	848.31
RC1+SO55	23.77	24.06	24.52
RC3+SO55	23.79	24.08	24.54
RC3+SO32(+ F-SCH)	23.75	24.04	24.50
RC3+SO32(+SCH)	23.74	24.03	24.49
RTAP 153.6	23.78	24.07	24.53
RETAP 4096	23.55	23.84	24.30

LTE Band 5

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	23.34	23.36	23.62	0	5M	QPSK	1	0	23.25	23.27	23.53	0
		1	24	23.48	23.50	23.76	0			1	12	23.39	23.41	23.67	0
		1	49	23.61	23.63	23.89	0			1	24	23.52	23.54	23.80	0
		25	0	22.47	22.49	22.75	1			12	0	22.38	22.40	22.66	1
		25	12	22.54	22.56	22.82	1			12	6	22.45	22.47	22.73	1
		25	25	22.62	22.64	22.90	1			12	13	22.53	22.55	22.81	1
		50	0	22.52	22.54	22.80	1			25	0	22.43	22.45	22.71	1
	16QAM	1	0	22.33	22.35	22.61	1		16QAM	1	0	22.24	22.26	22.52	1
		1	24	22.47	22.49	22.75	1			1	12	22.38	22.40	22.66	1
		1	49	22.60	22.62	22.88	1			1	24	22.51	22.53	22.79	1
		25	0	21.46	21.48	21.74	2			12	0	21.37	21.39	21.65	2
		25	12	21.53	21.55	21.81	2			12	6	21.44	21.46	21.72	2
		25	25	21.61	21.63	21.89	2			12	13	21.52	21.54	21.80	2
		50	0	21.51	21.53	21.79	2			25	0	21.42	21.44	21.70	2
	64QAM	1	0	21.29	21.31	21.57	2		64QAM	1	0	21.20	21.22	21.48	2
		1	24	21.43	21.45	21.71	2			1	12	21.34	21.36	21.62	2
		1	49	21.56	21.58	21.84	2			1	24	21.47	21.49	21.75	2
		25	0	20.42	20.44	20.70	3			12	0	20.33	20.35	20.61	3
		25	12	20.49	20.51	20.77	3			12	6	20.40	20.42	20.68	3
		25	25	20.57	20.59	20.85	3			12	13	20.48	20.50	20.76	3
		50	0	20.47	20.49	20.75	3			25	0	20.38	20.40	20.66	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	23.20	23.22	23.48	0	1.4M	QPSK	1	0	23.09	23.11	23.37	0
		1	7	23.34	23.36	23.62	0			1	2	23.23	23.25	23.51	0
		1	14	23.47	23.49	23.75	0			1	5	23.36	23.38	23.64	0
		8	0	22.33	22.35	22.61	1			3	0	23.22	23.24	23.50	0
		8	3	22.40	22.42	22.68	1			3	1	23.29	23.31	23.57	0
		8	7	22.48	22.50	22.76	1			3	3	23.37	23.39	23.65	0
		15	0	22.38	22.40	22.66	1			6	0	22.27	22.29	22.55	1
	16QAM	1	0	22.19	22.21	22.47	1		16QAM	1	0	22.08	22.10	22.36	1
		1	7	22.33	22.35	22.61	1			1	2	22.22	22.24	22.50	1
		1	14	22.46	22.48	22.74	1			1	5	22.35	22.37	22.63	1
		8	0	21.32	21.34	21.60	2			3	0	22.21	22.23	22.49	1
		8	3	21.39	21.41	21.67	2			3	1	22.28	22.30	22.56	1
		8	7	21.47	21.49	21.75	2			3	3	22.36	22.38	22.64	1
		15	0	21.37	21.39	21.65	2			6	0	21.26	21.28	21.54	2
	64QAM	1	0	21.15	21.17	21.43	2		64QAM	1	0	21.04	21.06	21.32	2
		1	7	21.29	21.31	21.57	2			1	2	21.18	21.20	21.46	2
		1	14	21.42	21.44	21.70	2			1	5	21.31	21.33	21.59	2
		8	0	20.28	20.30	20.56	3			3	0	21.17	21.19	21.45	2
		8	3	20.35	20.37	20.63	3			3	1	21.24	21.26	21.52	2
		8	7	20.43	20.45	20.71	3			3	3	21.32	21.34	21.60	2
		15	0	20.33	20.35	20.61	3			6	0	20.22	20.24	20.50	3

LTE Band 26

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	23.39	23.95	23.47	0
		1	37	23.30	23.99	23.38	0
		1	74	23.50	23.95	23.58	0
		36	0	22.43	22.97	22.51	1
		36	19	22.40	23.05	22.48	1
		36	39	22.52	22.99	22.60	1
		75	0	22.37	22.92	22.45	1
	16QAM	1	0	22.33	23.24	22.41	1
		1	37	22.24	23.28	22.32	1
		1	74	22.44	23.22	22.52	1
		36	0	21.37	22.01	21.45	2
		36	19	21.34	22.19	21.42	2
		36	39	21.46	22.08	21.54	2
		75	0	21.31	22.02	21.39	2
	64QAM	1	0	21.26	21.85	21.34	2
		1	37	21.17	21.89	21.25	2
		1	74	21.37	21.84	21.45	2
		36	0	20.30	20.87	20.38	3
		36	19	20.27	20.95	20.35	3
		36	39	20.39	20.89	20.47	3
		75	0	20.24	20.82	20.32	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	23.82	23.95	23.37	0
		1	24	23.89	23.99	23.28	0
		1	49	23.82	23.95	23.48	0
		25	0	22.84	22.97	22.41	1
		25	12	22.98	23.05	22.38	1
		25	25	22.86	22.99	22.50	1
		50	0	22.86	22.92	22.35	1
	16QAM	1	0	23.11	23.24	22.31	1
		1	24	23.21	23.28	22.22	1
		1	49	23.09	23.22	22.42	1
		25	0	21.95	22.01	21.35	2
		25	12	22.06	22.19	21.32	2
		25	25	21.95	22.08	21.44	2
		50	0	21.96	22.02	21.29	2
	64QAM	1	0	21.72	21.85	21.24	2
		1	24	21.79	21.89	21.15	2
		1	49	21.72	21.85	21.35	2
		25	0	20.74	20.87	20.28	3
		25	12	20.88	20.95	20.25	3
		25	25	20.76	20.89	20.37	3
		50	0	20.76	20.82	20.22	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	23.90	23.76	23.29	0
		1	12	23.94	23.78	23.20	0
		1	24	23.90	23.72	23.40	0
		12	0	22.92	22.83	22.33	1
		12	6	23.00	22.93	22.30	1
		12	13	22.94	22.97	22.42	1
		25	0	22.87	23.00	22.27	1
	16QAM	1	0	23.18	22.88	22.23	1
		1	12	23.22	22.77	22.14	1
		1	24	23.16	22.98	22.34	1
		12	0	21.95	21.83	21.27	2
		12	6	22.13	21.86	21.24	2
		12	13	22.02	21.91	21.36	2
		25	0	21.96	21.82	21.21	2
	64QAM	1	0	21.79	21.65	21.16	2
		1	12	21.83	21.67	21.07	2
		1	24	21.79	21.61	21.27	2
		12	0	20.81	20.72	20.20	3
		12	6	20.89	20.82	20.17	3
		12	13	20.83	20.86	20.29	3
		25	0	20.76	20.89	20.14	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	23.85	23.71	23.22	1
		1	7	23.89	23.73	23.13	1
		1	14	23.85	23.67	23.33	1
		8	0	22.87	22.78	22.26	3
		8	3	22.95	22.88	22.23	3
		8	7	22.89	22.92	22.35	3
		15	0	22.82	22.95	22.20	6
	16QAM	1	0	23.10	22.82	22.16	1
		1	7	23.14	22.71	22.07	1
		1	14	23.08	22.92	22.27	1
		8	0	21.87	21.77	21.20	2
		8	3	22.05	21.80	21.17	2
		8	7	21.94	21.85	21.29	2
		15	0	21.88	21.76	21.14	2
	64QAM	1	0	21.74	21.60	21.09	2
		1	7	21.78	21.62	21.00	2
		1	14	21.74	21.56	21.20	2
		8	0	20.76	20.67	20.13	3
		8	3	20.84	20.77	20.10	3
		8	7	20.78	20.81	20.22	3
		15	0	20.71	20.84	20.07	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	23.77	23.63	23.09	0
		1	2	23.81	23.65	23.00	0
		1	5	23.77	23.59	23.20	0
		3	0	23.79	23.70	23.03	0
		3	1	23.87	23.80	23.00	0
		3	3	23.81	23.84	23.12	0
		6	0	22.74	22.87	22.07	1
	16QAM	1	0	23.06	22.78	22.03	1
		1	2	23.10	22.67	21.94	1
		1	5	23.04	22.88	22.14	1
		3	0	22.83	22.73	21.97	1
		3	1	23.01	22.76	21.94	1
		3	3	22.90	22.81	22.06	1
		6	0	21.84	21.72	21.01	2
	64QAM	1	0	21.69	21.55	20.96	2
		1	2	21.73	21.03	20.87	2
		1	5	21.69	21.51	21.07	2
		3	0	21.71	21.62	20.90	2
		3	1	21.79	21.72	20.87	2
		3	3	21.73	21.76	20.99	2
		6	0	20.66	20.79	19.94	3

ERP Power (dBm)

GSM							
Plane	**Channel**	**Frequency (MHz)**	**LVL (dBm)**	**Correction Factor (dB)**	**ERP (dBm)**	**ERP (mW)**	**Polarization (H/V)**
X	128	824.2	0.68	32.62	31.15	1303.17	H
	189	836.4	0.66	32.52	31.03	1267.65	
	251	848.8	0.62	32.65	31.12	1294.20	
	128	824.2	-8.04	32.76	22.57	180.72	V
	189	836.4	-8.00	32.39	22.24	167.49	
	251	848.8	-7.89	32.54	22.50	177.83	

EDGE							
Plane	**Channel**	**Frequency (MHz)**	**LVL (dBm)**	**Correction Factor (dB)**	**ERP (dBm)**	**ERP (mW)**	**Polarization (H/V)**
X	128	824.2	-4.71	32.62	25.76	376.70	H
	189	836.4	-4.68	32.52	25.69	370.68	
	251	848.8	-4.66	32.65	25.84	383.71	
	128	824.2	-8.04	32.76	22.57	180.72	V
	189	836.4	-8.00	32.39	22.24	167.49	
	251	848.8	-7.89	32.54	22.50	177.83	

WCDMA							
Plane	**Channel**	**Frequency (MHz)**	**LVL (dBm)**	**Correction Factor (dB)**	**ERP (dBm)**	**ERP (mW)**	**Polarization (H/V)**
X	4132	826.4	-8.61	32.62	21.86	153.46	H
	4182	836.4	-8.49	32.52	21.88	154.17	
	4233	846.6	-9.33	32.65	21.17	130.92	
	4132	826.4	-17.68	32.76	12.93	19.63	V
	4182	836.4	-17.28	32.39	12.96	19.77	
	4233	846.6	-17.14	32.54	13.25	21.13	

CDMA							
Plane	**Channel**	**Frequency (MHz)**	**LVL (dBm)**	**Correction Factor (dB)**	**ERP (dBm)**	**ERP (mW)**	**Polarization (H/V)**
X	1013	824.7	-9.34	32.62	21.13	129.72	H
	384	836.52	-9.21	32.52	21.16	130.62	
	777	848.31	-9.19	32.65	21.31	135.21	
	1013	824.7	-17.44	32.76	13.17	20.75	V
	384	836.52	-16.97	32.39	13.27	21.23	
	777	848.31	-16.84	32.54	13.55	22.65	

LTE Band 5							
Channel Bandwidth: 1.4 MHz / QPSK							
Plane	**Channel**	**Frequency (MHz)**	**LVL (dBm)**	**Correction Factor (dB)**	**ERP (dBm)**	**ERP (mW)**	**Polarization (H/V)**
Y	20407	824.7	-10.35	32.62	20.12	102.80	H
	20525	836.5	-10.26	32.52	20.11	102.57	
	20643	848.3	-10.20	32.65	20.30	107.15	
	20407	824.7	-17.47	32.76	13.14	20.61	V
	20525	836.5	-17.17	32.39	13.07	20.28	
	20643	848.3	-17.06	32.54	13.33	21.53	
Channel Bandwidth: 1.4 MHz / 16QAM							
Y	20407	824.7	-11.37	32.62	19.10	81.28	H
	20525	836.5	-11.31	32.52	19.06	80.54	
	20643	848.3	-11.30	32.65	19.20	83.18	
	20407	824.7	-18.67	32.76	11.94	15.63	V
	20525	836.5	-18.19	32.39	12.05	16.03	
	20643	848.3	-18.11	32.54	12.28	16.90	
Channel Bandwidth: 1.4 MHz / 64QAM							
Y	20407	824.7	-12.44	32.62	18.03	63.53	H
	20525	836.5	-12.39	32.52	17.98	62.81	
	20643	848.3	-12.44	32.65	18.06	63.97	
	20407	824.7	-19.70	32.76	10.91	12.33	V
	20525	836.5	-19.33	32.39	10.91	12.33	
	20643	848.3	-19.15	32.54	11.24	13.30	

LTE Band 5							
Channel Bandwidth: 3 MHz / QPSK							
Plane	**Channel**	**Frequency (MHz)**	**LVL (dBm)**	**Correction Factor (dB)**	**ERP (dBm)**	**ERP (mW)**	**Polarization (H/V)**
Y	20415	825.5	-9.48	32.62	20.99	125.60	H
	20525	836.5	-9.35	32.52	21.02	126.47	
	20635	847.5	-9.42	32.65	21.08	128.23	
	20415	825.5	-16.66	32.76	13.95	24.83	V
	20525	836.5	-16.28	32.39	13.96	24.89	
	20635	847.5	-16.36	32.54	14.03	25.29	
Channel Bandwidth: 3 MHz / 16QAM							
Y	20415	825.5	-10.49	32.62	19.98	99.54	H
	20525	836.5	-10.41	32.52	19.96	99.08	
	20635	847.5	-10.49	32.65	20.01	100.23	
	20415	825.5	-17.74	32.76	12.87	19.36	V
	20525	836.5	-17.29	32.39	12.95	19.72	
	20635	847.5	-17.38	32.54	13.01	20.00	
Channel Bandwidth: 3 MHz / 64QAM							
Y	20415	825.5	-11.51	32.62	18.96	78.70	H
	20525	836.5	-11.50	32.52	18.87	77.09	
	20635	847.5	-11.58	32.65	18.92	77.98	
	20415	825.5	-18.79	32.76	11.82	15.21	V
	20525	836.5	-18.34	32.39	11.90	15.49	
	20635	847.5	-18.44	32.54	11.95	15.67	

LTE Band 5							
Channel Bandwidth: 5 MHz / QPSK							
Plane	**Channel**	**Frequency (MHz)**	**LVL (dBm)**	**Correction Factor (dB)**	**ERP (dBm)**	**ERP (mW)**	**Polarization (H/V)**
Y	20425	826.5	-9.38	32.62	21.09	128.53	H
	20525	836.5	-9.19	32.52	21.18	131.22	
	20625	846.5	-9.23	32.65	21.27	133.97	
	20425	826.5	-16.48	32.76	14.13	25.88	V
	20525	836.5	-16.12	32.39	14.12	25.82	
	20625	846.5	-16.13	32.54	14.26	26.67	
Channel Bandwidth: 5 MHz / 16QAM							
Y	20425	826.5	-10.42	32.62	20.05	101.16	H
	20525	836.5	-10.28	32.52	20.09	102.09	
	20625	846.5	-10.32	32.65	20.18	104.23	
	20425	826.5	-17.50	32.76	13.11	20.46	V
	20525	836.5	-17.15	32.39	13.09	20.37	
	20625	846.5	-17.22	32.54	13.17	20.75	
Channel Bandwidth: 5 MHz / 64QAM							
Y	20425	826.5	-11.46	32.62	19.01	79.62	H
	20525	836.5	-11.34	32.52	19.03	79.98	
	20625	846.5	-11.35	32.65	19.15	82.22	
	20425	826.5	-18.59	32.76	12.02	15.92	V
	20525	836.5	-18.17	32.39	12.07	16.11	
	20625	846.5	-18.27	32.54	12.12	16.29	

LTE Band 5							
Channel Bandwidth: 10 MHz / QPSK							
Plane	**Channel**	**Frequency (MHz)**	**LVL (dBm)**	**Correction Factor (dB)**	**ERP (dBm)**	**ERP (mW)**	**Polarization (H/V)**
Y	20450	829.0	-9.20	32.62	21.27	133.97	H
	20525	836.5	-9.10	32.52	21.27	133.97	
	20600	844.0	-9.07	32.65	21.43	139.00	
	20450	829.0	-16.37	32.76	14.24	26.55	V
	20525	836.5	-16.00	32.39	14.24	26.55	
	20600	844.0	-15.95	32.54	14.44	27.80	
Channel Bandwidth: 10 MHz / 16QAM							
Y	20425	826.5	-10.25	32.62	20.22	105.20	H
	20525	836.5	-10.19	32.52	20.18	104.23	
	20625	846.5	-10.13	32.65	20.37	108.89	
	20425	826.5	-17.38	32.76	13.23	21.04	V
	20525	836.5	-17.08	32.39	13.16	20.70	
	20625	846.5	-17.00	32.54	13.39	21.83	
Channel Bandwidth: 10 MHz / 64QAM							
Y	20450	829.0	-11.27	32.62	19.20	83.18	H
	20525	836.5	-11.22	32.52	19.15	82.22	
	20600	844.0	-11.15	32.65	19.35	86.10	
	20450	829.0	-18.46	32.76	12.15	16.41	V
	20525	836.5	-18.09	32.39	12.15	16.41	
	20600	844.0	-18.01	32.54	12.38	17.30	

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)**
Y	26797	824.7	-10.73	32.62	19.74	94.19	H
	26915	836.5	-10.77	32.52	19.60	91.20	
	27033	848.3	-10.66	32.65	19.84	96.38	
	26797	824.7	-16.82	32.76	13.79	23.93	V
	26915	836.5	-16.35	32.39	13.89	24.49	
	27033	848.3	-16.36	32.54	14.03	25.29	
Channel Bandwidth: 1.4 MHz / 16QAM							
Y	26797	824.7	-11.77	32.62	18.70	74.13	H
	26915	836.5	-11.86	32.52	18.51	70.96	
	27033	848.3	-11.73	32.65	18.77	75.34	
	26797	824.7	-17.73	32.76	12.88	19.41	V
	26915	836.5	-17.33	32.39	12.91	19.54	
	27033	848.3	-17.30	32.54	13.09	20.37	
Channel Bandwidth: 1.4 MHz / 64QAM							
Y	26797	824.7	-12.86	32.62	17.61	57.68	H
	26915	836.5	-12.95	32.52	17.42	55.21	
	27033	848.3	-12.82	32.65	17.68	58.61	
	26797	824.7	-19.85	32.76	10.76	11.91	V
	26915	836.5	-19.53	32.39	10.71	11.78	
	27033	848.3	-18.86	32.54	11.53	14.22	

LTE Band 26							
Channel Bandwidth: 3 MHz / QPSK							
Plane	**Channel**	**Frequency (MHz)**	**LVL (dBm)**	**Correction Factor (dB)**	**ERP (dBm)**	**ERP (mW)**	**Polarization (H/V)**
Y	26805	825.5	-10.55	32.62	19.92	98.17	H
	26915	836.5	-10.57	32.52	19.80	95.50	
	27025	847.5	-10.48	32.65	20.02	100.46	
	26805	825.5	-16.61	32.76	14.00	25.12	V
	26915	836.5	-16.34	32.39	13.90	24.55	
	27025	847.5	-16.25	32.54	14.14	25.94	
Channel Bandwidth: 3 MHz / 16QAM							
Y	26805	825.5	-11.60	32.62	18.87	77.09	H
	26915	836.5	-11.68	32.52	18.69	73.96	
	27025	847.5	-11.61	32.65	18.89	77.45	
	26805	825.5	-17.52	32.76	13.09	20.37	V
	26915	836.5	-17.14	32.39	13.10	20.42	
	27025	847.5	-17.07	32.54	13.32	21.48	
Channel Bandwidth: 3 MHz / 64QAM							
Y	26805	825.5	-12.42	32.62	18.05	63.83	H
	26915	836.5	-12.81	32.52	17.56	57.02	
	27025	847.5	-12.78	32.65	17.72	59.16	
	26805	825.5	-19.63	32.76	10.98	12.53	V
	26915	836.5	-19.32	32.39	10.92	12.36	
	27025	847.5	-18.43	32.54	11.96	15.70	

LTE Band 26							
Channel Bandwidth: 5 MHz / QPSK							
Plane	Channel	Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	ERP (dBm)	ERP (mW)	Polarization (H/V)
Y	26815	826.5	-9.66	32.62	20.81	120.50	H
	26915	836.5	-9.70	32.52	20.67	116.68	
	27015	846.5	-9.70	32.65	20.80	120.23	
	26815	826.5	-15.87	32.76	14.74	29.79	V
	26919	836.5	-15.46	32.39	14.78	30.06	
	27015	846.5	-15.20	32.54	15.19	33.04	
Channel Bandwidth: 5 MHz / 16QAM							
Y	26815	826.5	-10.72	32.62	19.75	94.41	H
	26915	836.5	-10.79	32.52	19.58	90.78	
	27015	846.5	-10.77	32.65	19.73	93.97	
	26815	826.5	-16.79	32.76	13.82	24.10	V
	26919	836.5	-16.43	32.39	13.81	24.04	
	27015	846.5	-16.12	32.54	14.27	26.73	
Channel Bandwidth: 5 MHz / 64QAM							
Y	26815	826.5	-11.76	32.62	18.71	74.30	H
	26915	836.5	-11.82	32.52	18.55	71.61	
	27015	846.5	-11.80	32.65	18.70	74.13	
	26815	826.5	-18.93	32.76	11.68	14.72	V
	26919	836.5	-18.54	32.39	11.70	14.79	
	27015	846.5	-18.24	32.54	12.15	16.41	

LTE Band 26							
Channel Bandwidth: 10 MHz / QPSK							
Plane	Channel	Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	ERP (dBm)	ERP (mW)	Polarization (H/V)
Y	26840	829.0	-9.56	32.62	20.91	123.31	H
	26915	836.5	-9.51	32.52	20.86	121.90	
	26990	844.0	-9.46	32.65	21.04	127.06	
	26840	829.0	-15.64	32.76	14.97	31.41	V
	26919	836.5	-15.22	32.39	15.02	31.77	
	26990	844.0	-15.06	32.54	15.33	34.12	
Channel Bandwidth: 10 MHz / 16QAM							
Y	26840	829.0	-10.63	32.62	19.84	96.38	H
	26915	836.5	-10.55	32.52	19.82	95.94	
	26990	844.0	-10.47	32.65	20.03	100.69	
	26840	829.0	-16.55	32.76	14.06	25.47	V
	26919	836.5	-16.16	32.39	14.08	25.59	
	26990	844.0	-16.03	32.54	14.36	27.29	
Channel Bandwidth: 10 MHz / 64QAM							
Y	26840	829.0	-11.65	32.62	18.82	76.21	H
	26915	836.5	-11.57	32.52	18.80	75.86	
	26990	844.0	-11.54	32.65	18.96	78.70	
	26840	829.0	-18.73	32.76	11.88	15.42	V
	26919	836.5	-18.28	32.39	11.96	15.70	
	26990	844.0	-18.07	32.54	12.32	17.06	

LTE Band 26							
Channel Bandwidth: 15 MHz / QPSK							
Plane	**Channel**	**Frequency (MHz)**	**LVL (dBm)**	**Correction Factor (dB)**	**ERP (dBm)**	**ERP (mW)**	**Polarization (H/V)**
Y	26865	831.5	-9.38	32.62	21.09	128.53	H
	26915	836.5	-9.38	32.52	20.99	125.60	
	26965	841.5	-9.40	32.65	21.10	128.82	
	26865	831.5	-15.40	32.76	15.21	33.19	V
	26915	836.5	-15.13	32.39	15.11	32.43	
	26965	841.5	-14.93	32.54	15.46	35.16	
Channel Bandwidth: 15 MHz / 16QAM							
Y	26865	831.5	-10.43	32.62	20.04	100.93	H
	26915	836.5	-10.47	32.52	19.90	97.72	
	26965	841.5	-10.45	32.65	20.05	101.16	
	26865	831.5	-16.39	32.76	14.22	26.42	V
	26915	836.5	-16.04	32.39	14.20	26.30	
	26965	841.5	-15.90	32.54	14.49	28.12	
Channel Bandwidth: 15 MHz / 64QAM							
Y	26865	831.5	-11.50	32.62	18.97	78.89	H
	26915	836.5	-11.55	32.52	18.82	76.21	
	26965	841.5	-11.46	32.65	19.04	80.17	
	26865	831.5	-18.43	32.76	12.18	16.52	V
	26915	836.5	-18.22	32.39	12.02	15.92	
	26965	841.5	-17.98	32.54	12.41	17.42	

4.2 Frequency Stability Measurement

4.2.1 Limits of Frequency Stabiliity Measurement

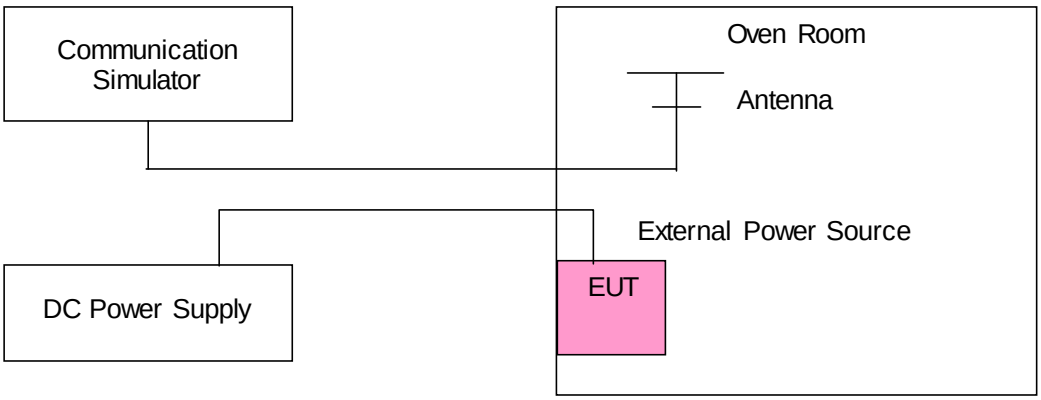
1.5 ppm is for base and fixed station. 2.5 ppm is for mobile station.

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)	GSM				Limit (ppm)
	Low Channel		High Channel		
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
3.85	824.200003	0.003	848.800002	0.002	2.5
2.8	824.200004	0.004	848.800004	0.004	2.5
4.38	824.200003	0.003	848.800003	0.004	2.5

Note: The applicant defined the normal working voltage of the battery is from 2.8 Vdc to 4.38 Vdc.

Frequency Error vs. Temperature

Temp. (℃)	GSM				Limit (ppm)
	Low Channel		High Channel		
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
-30	824.200002	0.003	848.800003	0.004	2.5
-20	824.200002	0.002	848.800003	0.004	2.5
-10	824.200001	0.002	848.800004	0.005	2.5
0	824.200002	0.002	848.800002	0.002	2.5
10	824.200003	0.004	848.800002	0.003	2.5
20	824.199997	-0.004	848.799999	-0.002	2.5
30	824.199997	-0.004	848.799998	-0.002	2.5
40	824.199999	-0.001	848.799999	-0.001	2.5
50	824.199999	-0.002	848.799996	-0.005	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	0.003	848.800003	0.003	2.5
2.8	824.200003	0.003	848.800002	0.002	2.5
4.38	824.200003	0.004	848.800002	0.003	2.5

Note: The applicant defined the normal working voltage of the battery is from 2.8 Vdc to 4.38 Vdc.

Frequency Error vs. Temperature

Temp. (℃)	EDGE				Limit (ppm)
	Low Channel		High Channel		
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
-30	824.200001	0.001	848.800002	0.002	2.5
-20	824.200002	0.002	848.800003	0.004	2.5
-10	824.200002	0.002	848.800004	0.005	2.5
0	824.200003	0.004	848.800004	0.004	2.5
10	824.200003	0.004	848.800002	0.002	2.5
20	824.199999	-0.002	848.799998	-0.002	2.5
30	824.199998	-0.003	848.799997	-0.004	2.5
40	824.199998	-0.003	848.799997	-0.003	2.5
50	824.199996	-0.004	848.799997	-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	826.400004	0.004	846.600004	0.004	2.5
2.8	826.400003	0.004	846.600004	0.004	2.5
4.38	826.400002	0.002	846.600004	0.005	2.5

Note: The applicant defined the normal working voltage of the battery is from 2.8 Vdc to 4.38 Vdc.

Frequency Error vs. Temperature

Temp. (℃)	WCDMA				Limit (ppm)
	Low Channel		High Channel		
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
-30	826.400004	0.004	846.600002	0.003	2.5
-20	826.400003	0.004	846.600003	0.003	2.5
-10	826.400002	0.002	846.600001	0.002	2.5
0	826.400004	0.005	846.600003	0.003	2.5
10	826.400002	0.002	846.600003	0.003	2.5
20	826.399999	-0.002	846.599998	-0.002	2.5
30	826.399997	-0.003	846.599996	-0.005	2.5
40	826.399999	-0.001	846.599997	-0.004	2.5
50	826.399997	-0.004	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	824.700003	0.003	848.310003	0.003	2.5
2.8	824.700004	0.005	848.310002	0.002	2.5
4.38	824.700003	0.004	848.310002	0.003	2.5

Note: The applicant defined the normal working voltage of the battery is from 2.8 Vdc to 4.38 Vdc.

Frequency Error vs. Temperature

Temp. (℃)	CDMA				Limit (ppm)
	Low Channel		High Channel		
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
-30	824.700002	0.003	848.310004	0.004	2.5
-20	824.700002	0.003	848.310001	0.001	2.5
-10	824.700002	0.002	848.310003	0.003	2.5
0	824.700002	0.003	848.310003	0.003	2.5
10	824.700003	0.004	848.310002	0.002	2.5
20	824.699998	-0.002	848.309999	-0.001	2.5
30	824.699998	-0.002	848.309997	-0.004	2.5
40	824.699999	-0.001	848.309997	-0.003	2.5
50	824.699998	-0.003	848.309997	-0.004	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	824.700004	0.004	848.300002	0.002	2.5
2.8	824.700004	0.005	848.300002	0.002	2.5
4.38	824.700002	0.003	848.300004	0.004	2.5

Note: The applicant defined the normal working voltage of the battery is from 2.8 Vdc to 4.38 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	824.700001	0.001	848.300003	0.003	2.5
-20	824.700002	0.002	848.300002	0.003	2.5
-10	824.700002	0.003	848.300001	0.001	2.5
0	824.700004	0.005	848.300002	0.002	2.5
10	824.700002	0.003	848.300001	0.002	2.5
20	824.699998	-0.003	848.299996	-0.004	2.5
30	824.699998	-0.002	848.299996	-0.004	2.5
40	824.699996	-0.005	848.299997	-0.004	2.5
50	824.699997	-0.004	848.299996	-0.004	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	825.500003	0.003	847.500002	0.002	2.5
2.8	825.500002	0.003	847.500002	0.002	2.5
4.38	825.500004	0.005	847.500004	0.004	2.5

Note: The applicant defined the normal working voltage of the battery is from 2.8 Vdc to 4.38 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	825.500004	0.005	847.500003	0.004	2.5
-20	825.500004	0.004	847.500002	0.003	2.5
-10	825.500003	0.004	847.500003	0.003	2.5
0	825.500001	0.001	847.500003	0.003	2.5
10	825.500004	0.004	847.500003	0.004	2.5
20	825.499997	-0.003	847.499997	-0.004	2.5
30	825.499998	-0.002	847.499997	-0.003	2.5
40	825.499997	-0.004	847.499999	-0.002	2.5
50	825.499998	-0.002	847.499998	-0.002	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	826.500001	0.002	846.500003	0.004	2.5
2.8	826.500002	0.003	846.500003	0.004	2.5
4.38	826.500003	0.003	846.500003	0.003	2.5

Note: The applicant defined the normal working voltage of the battery is from 2.8 Vdc to 4.38 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	0.002	846.500001	0.001	2.5
-20	826.500003	0.003	846.500003	0.003	2.5
-10	826.500004	0.004	846.500002	0.002	2.5
0	826.500001	0.001	846.500002	0.002	2.5
10	826.500003	0.004	846.500003	0.004	2.5
20	826.499997	-0.004	846.499998	-0.003	2.5
30	826.499997	-0.004	846.499997	-0.004	2.5
40	826.499998	-0.002	846.499998	-0.002	2.5
50	826.499997	-0.004	846.499997	-0.004	2.5

Frequency Error vs. Voltage

Voltage (Volts)	LTE Band 5				Limit (ppm)
	Channel Bandwidth: 10 MHz				
	Low Channel		High Channel		
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
3.85	829.000003	0.004	844.000002	0.002	2.5
2.8	829.000001	0.001	844.000002	0.003	2.5
4.38	829.000003	0.004	844.000001	0.002	2.5

Note: The applicant defined the normal working voltage of the battery is from 2.8 Vdc to 4.38 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	829.000003	0.004	844.000004	0.004	2.5
-20	829.000003	0.003	844.000001	0.001	2.5
-10	829.000004	0.005	844.000003	0.003	2.5
0	829.000002	0.002	844.000004	0.004	2.5
10	829.000002	0.002	844.000003	0.004	2.5
20	828.999999	-0.001	843.999997	-0.004	2.5
30	828.999998	-0.002	843.999996	-0.004	2.5
40	828.999996	-0.004	843.999998	-0.002	2.5
50	828.999998	-0.003	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	0.003	848.300003	0.004	2.5
2.8	824.700004	0.004	848.300002	0.002	2.5
4.38	824.700002	0.002	848.300002	0.003	2.5

Note: The applicant defined the normal working voltage of the battery is from 2.8 Vdc to 4.38 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	848.300003	0.004	2.5
-20	824.700001	0.001	848.300003	0.003	2.5
-10	824.700004	0.005	848.300002	0.003	2.5
0	824.700003	0.003	848.300003	0.004	2.5
10	824.700002	0.003	848.300003	0.003	2.5
20	824.699997	-0.004	848.299998	-0.002	2.5
30	824.699997	-0.004	848.299998	-0.002	2.5
40	824.699997	-0.004	848.299998	-0.003	2.5
50	824.699997	-0.004	848.299998	-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	825.500002	0.003	847.500002	0.002	2.5
2.8	825.500003	0.003	847.500004	0.004	2.5
4.38	825.500004	0.005	847.500003	0.004	2.5

Note: The applicant defined the normal working voltage of the battery is from 2.8 Vdc to 4.38 Vdc.

Frequency Error vs. Temperature

Temp. (℃)	LTE Band 26				Limit (ppm)
	Channel Bandwidth: 3 MHz				
	Low Channel		High Channel		
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
-30	825.500004	0.004	847.500003	0.003	2.5
-20	825.500004	0.004	847.500002	0.002	2.5
-10	825.500001	0.002	847.500004	0.005	2.5
0	825.500003	0.003	847.500003	0.003	2.5
10	825.500004	0.005	847.500003	0.003	2.5
20	825.499998	-0.002	847.499999	-0.002	2.5
30	825.499998	-0.003	847.499998	-0.003	2.5
40	825.499999	-0.002	847.499998	-0.002	2.5
50	825.499998	-0.002	847.499997	-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	0.003	846.500002	0.002	2.5
2.8	826.500003	0.003	846.500003	0.004	2.5
4.38	826.500004	0.005	846.500003	0.004	2.5

Note: The applicant defined the normal working voltage of the battery is from 2.8 Vdc to 4.38 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	0.004	846.500002	0.002	2.5
-20	826.500003	0.004	846.500002	0.002	2.5
-10	826.500002	0.002	846.500004	0.005	2.5
0	826.500003	0.004	846.500002	0.003	2.5
10	826.500002	0.002	846.500003	0.004	2.5
20	826.499998	-0.002	846.499999	-0.002	2.5
30	826.499996	-0.005	846.499997	-0.004	2.5
40	826.499998	-0.003	846.499999	-0.002	2.5
50	826.499998	-0.003	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)	
3.85	829.000004	0.004	844.000003	0.004	2.5
2.8	829.000003	0.004	844.000003	0.004	2.5
4.38	829.000002	0.003	844.000004	0.005	2.5

Note: The applicant defined the normal working voltage of the battery is from 2.8 Vdc to 4.38 Vdc.

Frequency Error vs. Temperature

Temp. (℃)	LTE Band 26				Limit (ppm)
	Channel Bandwidth: 10 MHz				
	Low Channel		High Channel		
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
-30	829.000004	0.005	844.000001	0.002	2.5
-20	829.000003	0.003	844.000002	0.002	2.5
-10	829.000003	0.003	844.000002	0.002	2.5
0	829.000002	0.003	844.000002	0.002	2.5
10	829.000002	0.003	844.000003	0.003	2.5
20	828.999996	-0.005	843.999997	-0.003	2.5
30	828.999997	-0.004	843.999997	-0.004	2.5
40	828.999998	-0.002	843.999997	-0.004	2.5
50	828.999998	-0.003	843.999998	-0.003	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	831.500004	0.004	841.500002	0.003	2.5
2.8	831.500002	0.003	841.500002	0.003	2.5
4.38	831.500003	0.004	841.500004	0.005	2.5

Note: The applicant defined the normal working voltage of the battery is from 2.8 Vdc to 4.38 Vdc.

Frequency Error vs. Temperature

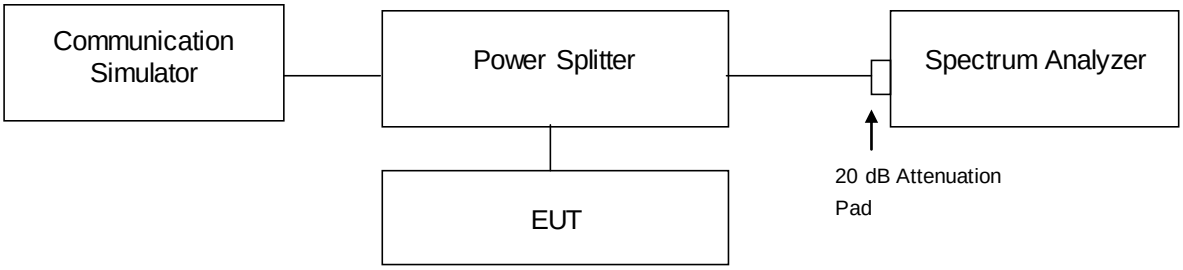
Temp. (℃)	LTE Band 26				Limit (ppm)
	Channel Bandwidth: 15 MHz				
	Low Channel		High Channel		
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
-30	831.500003	0.004	841.500002	0.002	2.5
-20	831.500004	0.004	841.500002	0.002	2.5
-10	831.500004	0.004	841.500002	0.002	2.5
0	831.500003	0.003	841.500002	0.002	2.5
10	831.500003	0.004	841.500002	0.002	2.5
20	831.499996	-0.005	841.499996	-0.005	2.5
30	831.499998	-0.002	841.499996	-0.005	2.5
40	831.499996	-0.005	841.499999	-0.001	2.5
50	831.499997	-0.003	841.499998	-0.002	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



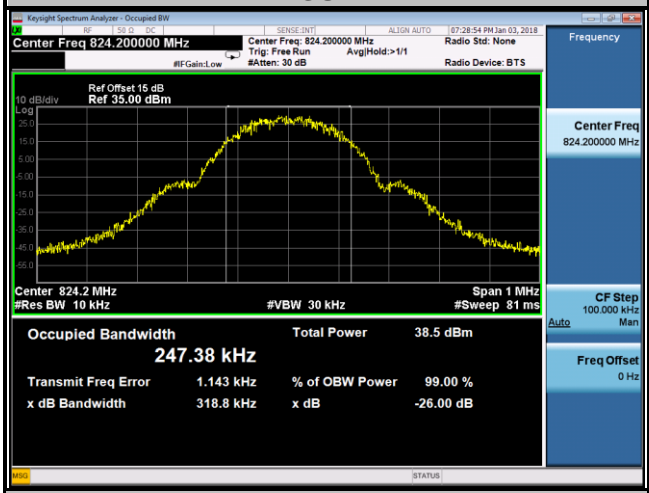
4.3.3 Test Result

Channel	Frequency (MHz)	99 % Occupied Bandwidth (kHz)		Channel	Frequency (MHz)	99 % Occupied Bandwidth (MHz)
		GSM	EDGE			WCDMA
128	824.2	247.38	246.29	4132	826.4	4.1508
189	836.4	246.77	244.38	4182	836.4	4.1569
251	848.8	246.33	246.28	4233	846.6	4.1548

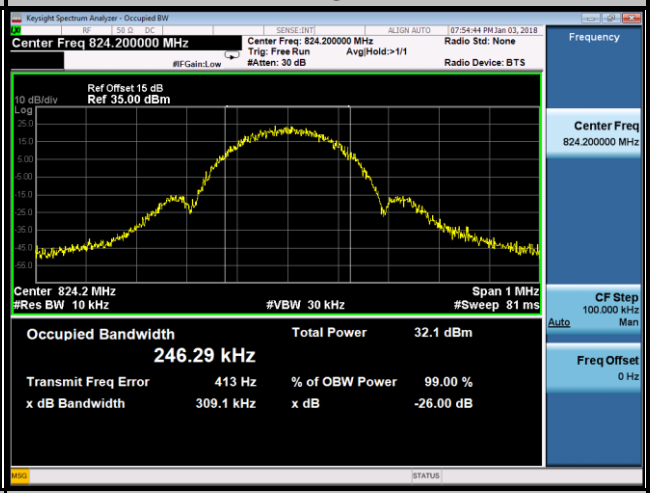
Channel	Frequency (MHz)	99 % Occupied Bandwidth (kHz)
		CDMA
1013	824.70	1.2751
384	836.52	1.2752
777	848.31	1.2772

Spectrum Plot of Worst Value

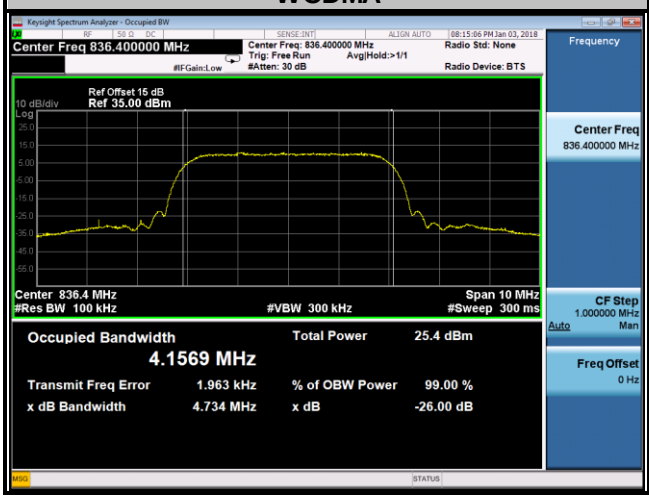
GSM



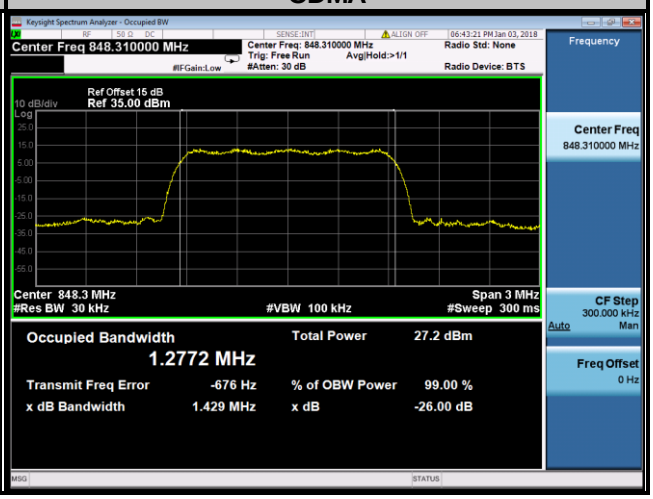
EDGE



WCDMA

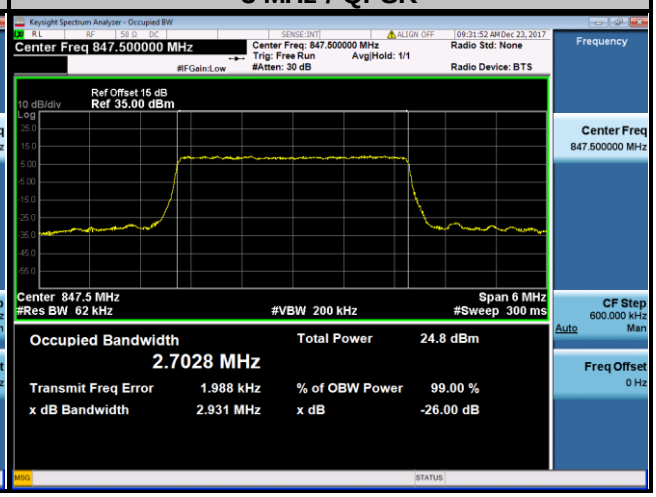


CDMA



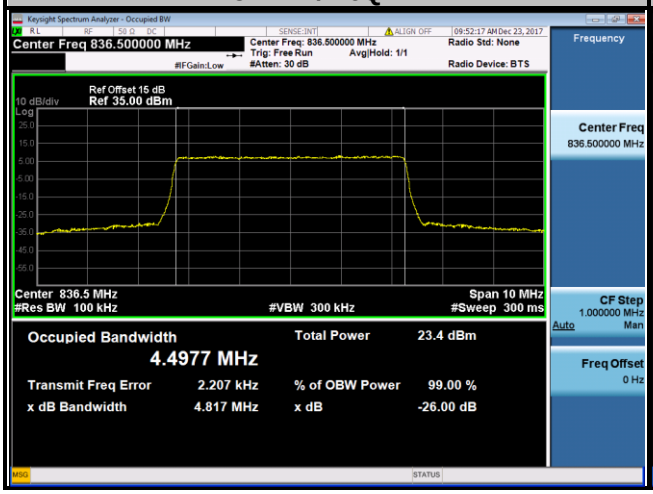
LTE Band 5									
Channel Bandwidth: 1.4 MHz					Channel Bandwidth: 3 MHz				
Channel	Frequency (MHz)	99 % Occupied Bandwidth (MHz)			Channel	Frequency (MHz)	99 % Occupied Bandwidth (MHz)		
		QPSK	16QAM	64QAM			QPSK	16QAM	64QAM
20407	824.7	1.0864	1.0873	1.0886	20415	825.5	2.7009	2.6978	2.6978
20525	836.5	1.0873	1.0896	1.0878	20525	836.5	2.7010	2.6971	2.6984
20643	848.3	1.0866	1.0894	1.0878	20635	847.5	2.7028	2.6987	2.6995

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



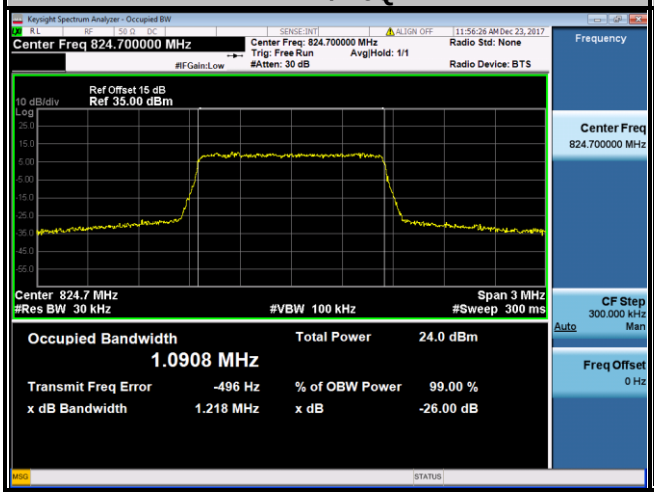
LTE Band 5									
Channel Bandwidth: 5 MHz					Channel Bandwidth: 10 MHz				
Channel	Frequency (MHz)	99 % Occupied Bandwidth (MHz)			Channel	Frequency (MHz)	99 % Occupied Bandwidth (MHz)		
		QPSK	16QAM	64QAM			QPSK	16QAM	64QAM
20425	826.5	4.4929	4.4940	4.4932	20450	829.0	8.9669	8.9698	8.9691
20525	836.5	4.4951	4.4977	4.4940	20525	836.5	8.9797	8.9747	8.9789
20625	846.5	4.4946	4.4932	4.4967	20600	844.0	8.9659	8.9684	8.9714

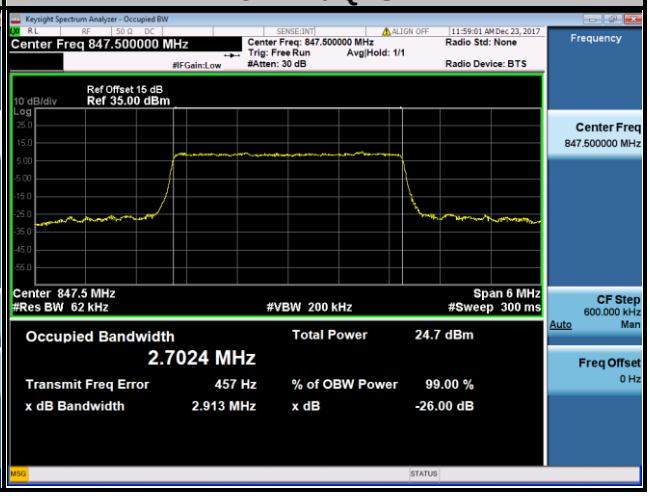
Spectrum Plot of Worst Value	
5 MHz / 16QAM	10 MHz / QPSK



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	1.0871	1.0908	1.0877	26805	825.5	2.7012	2.6977	2.6979
26915	836.5	1.0868	1.0889	1.0886	26915	836.5	2.6999	2.6967	2.6977
27033	848.3	1.0876	1.0880	1.0877	27025	847.5	2.7024	2.6981	2.6986

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





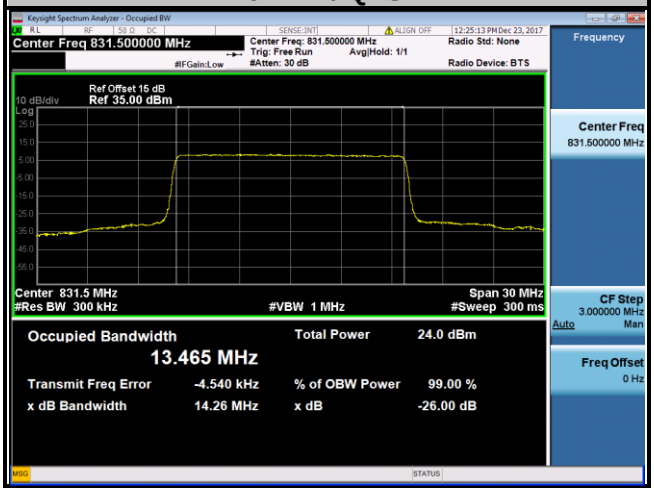
LTE Band 26									
Channel Bandwidth: 5 MHz					Channel Bandwidth: 10 MHz				
Channel	Frequency (MHz)	99 % Occupied Bandwidth (MHz)			Channel	Frequency (MHz)	99 % Occupied Bandwidth (MHz)		
		QPSK	16QAM	64QAM			QPSK	16QAM	64QAM
26815	826.5	4.4915	4.4944	4.5014	26840	829.0	8.9681	8.9672	8.9707
26915	836.5	4.4943	4.4969	4.5045	26915	836.5	8.9755	8.9762	8.9800
27015	846.5	4.4927	4.4933	4.5036	26990	844.0	8.9645	8.9648	8.9681

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	13.465	13.453	13.446
26915	836.5	13.457	13.445	13.439
26965	841.5	13.432	13.418	13.409

Spectrum Plot of Worst Value

15 MHz / QPSK

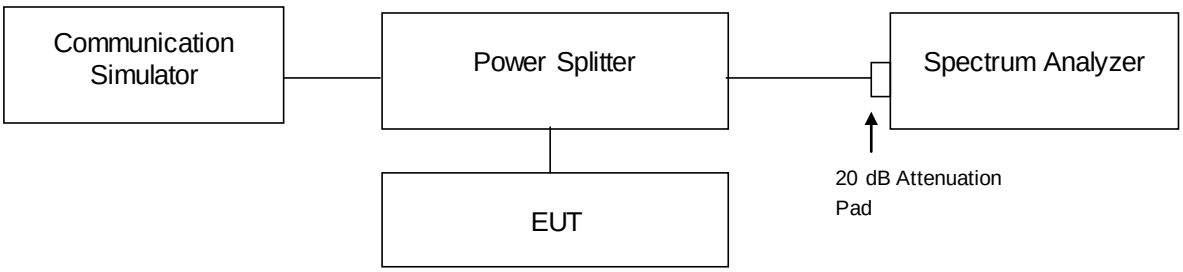


4.4 Band Edge Measurement

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

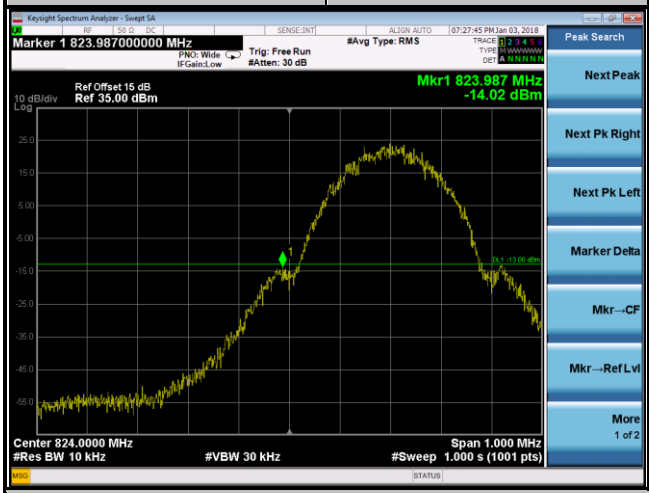


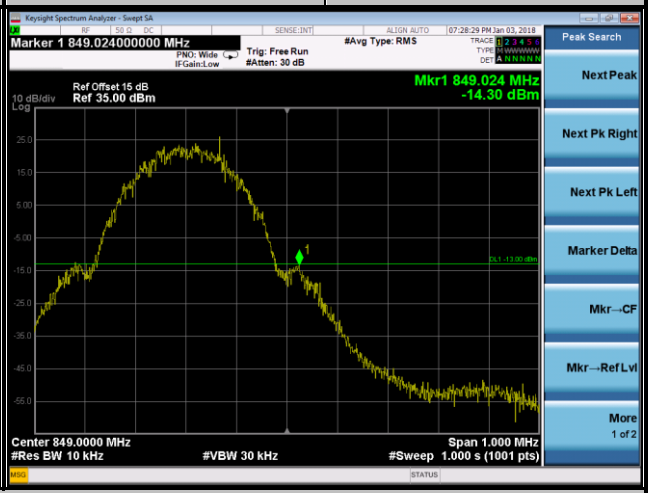
4.4.3 Test Procedures

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 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 1 MHz. RB of the spectrum is 13 kHz and VB of the spectrum is 51 kHz (CDMA / LTE Bandwidth 1.4 MHz).
e. 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).
f. The center frequency of spectrum is the band edge frequency and span is 1 MHz. RB of the spectrum is 100 kHz and VB of the spectrum is 300 kHz (LTE Bandwidth 5 MHz/10 MHz).
g. 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).
h. Record the max trace plot into the test report.

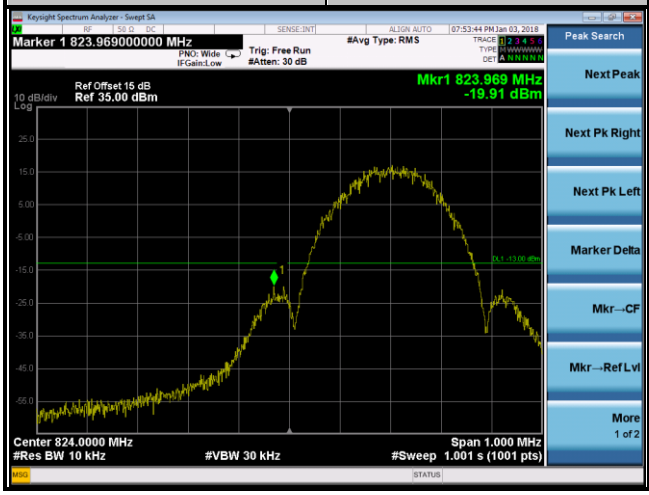
4.4.4 Test Results

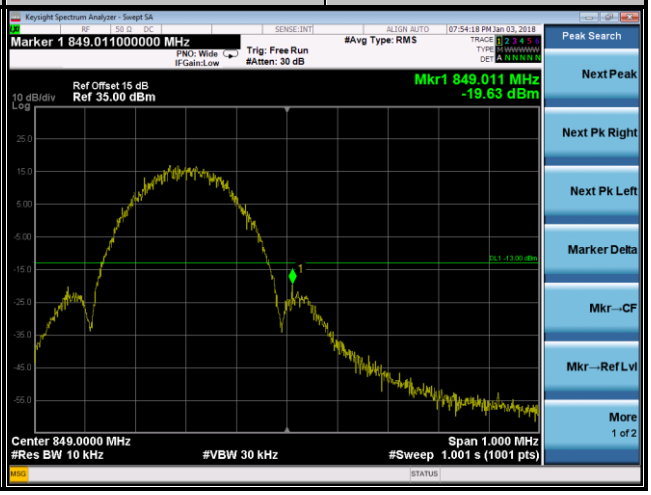
GSM			
Channel	128	Channel	251





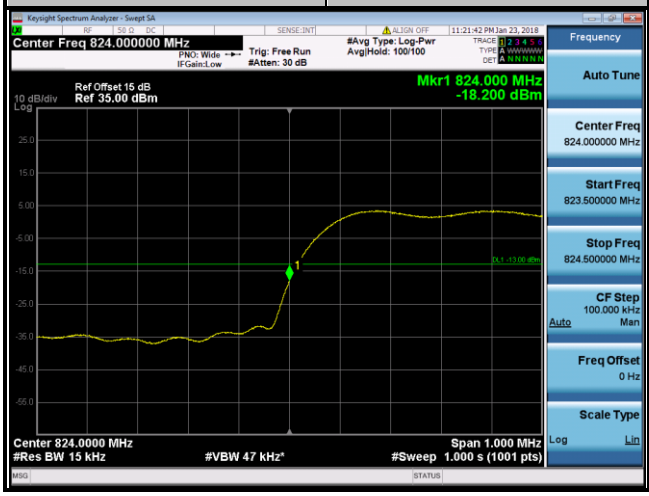
EDGE			
Channel	128	Channel	251

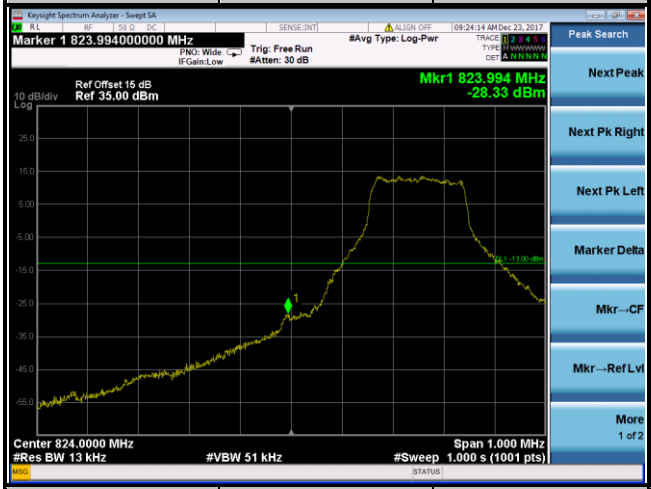
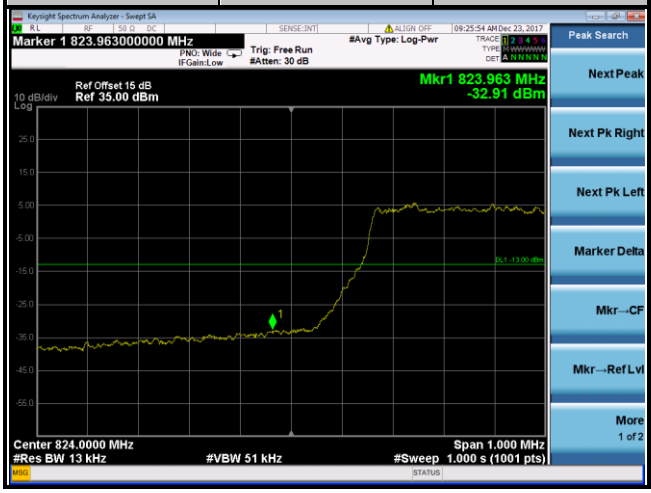
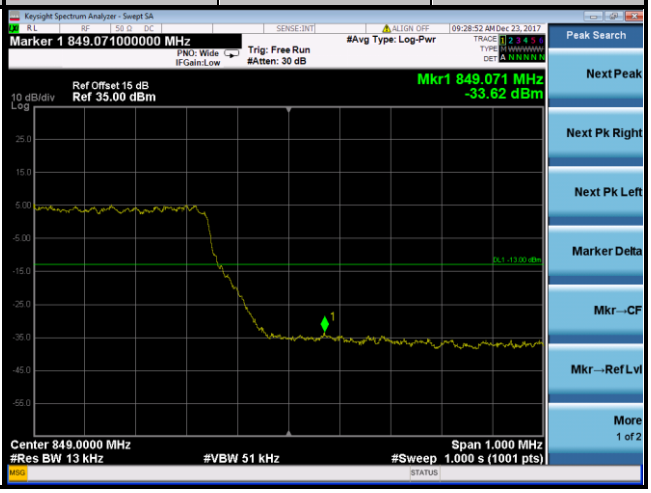


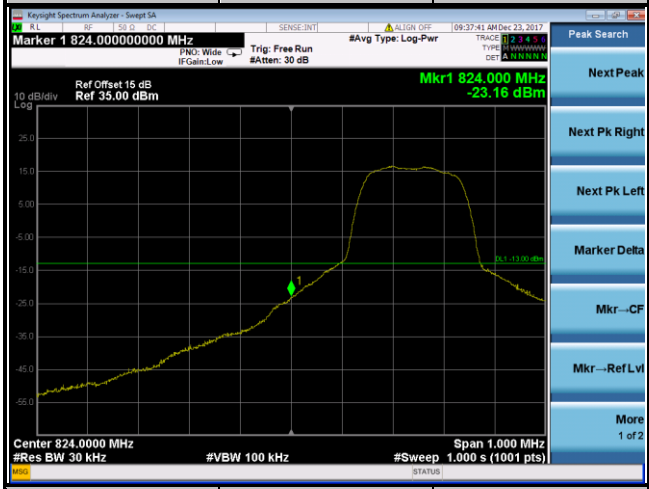
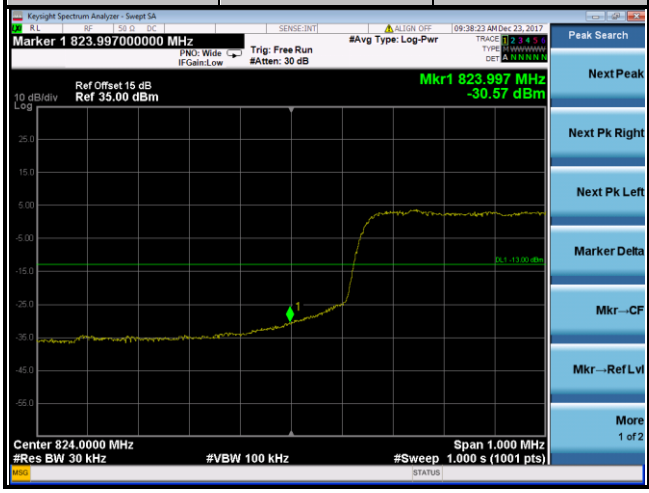


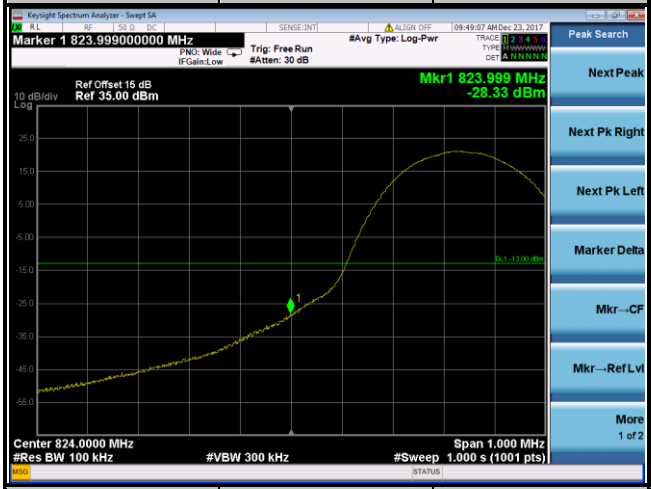
WCDMA			
Channel	4132	Channel	4233

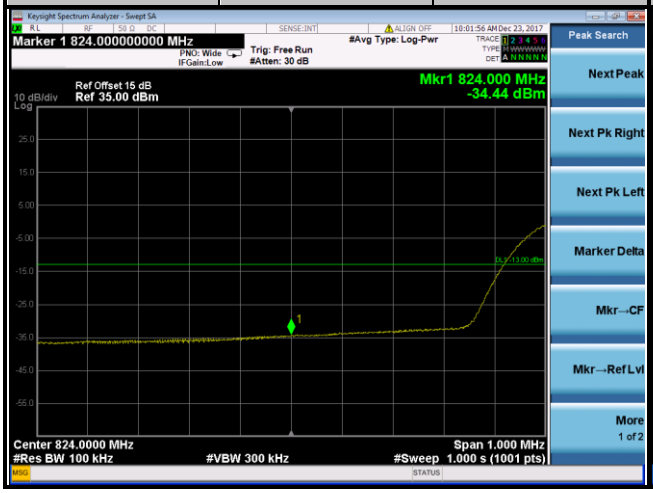
CDMA			
Channel	1013	Channel	777

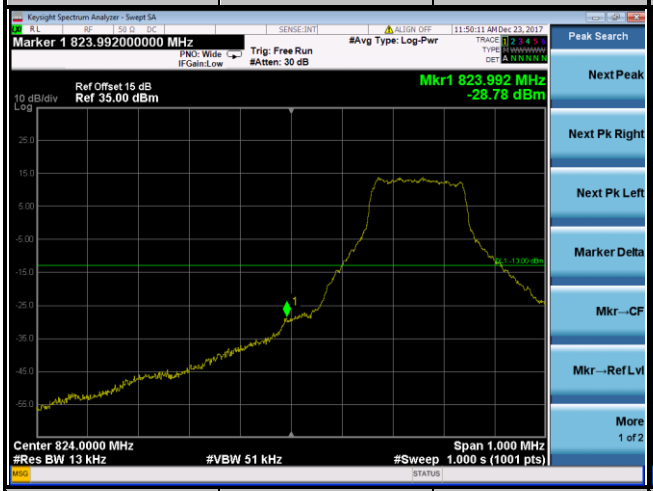
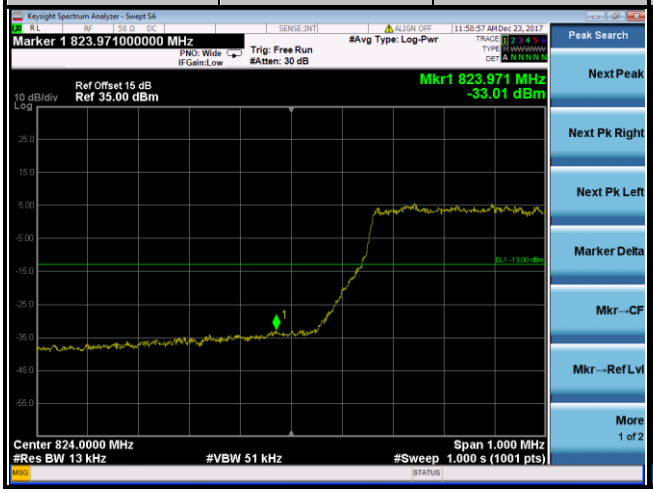
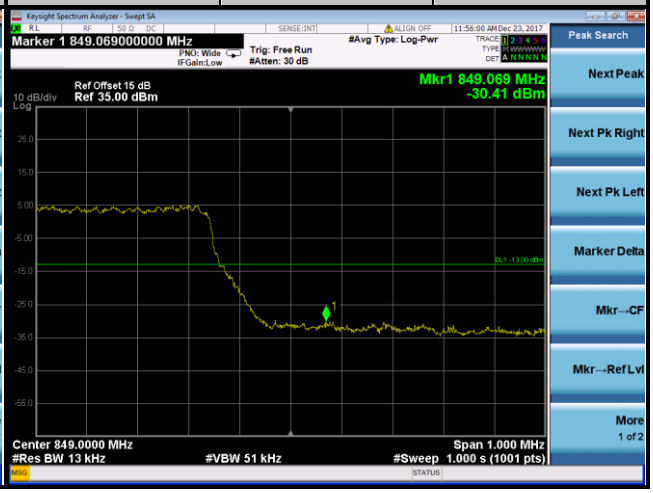


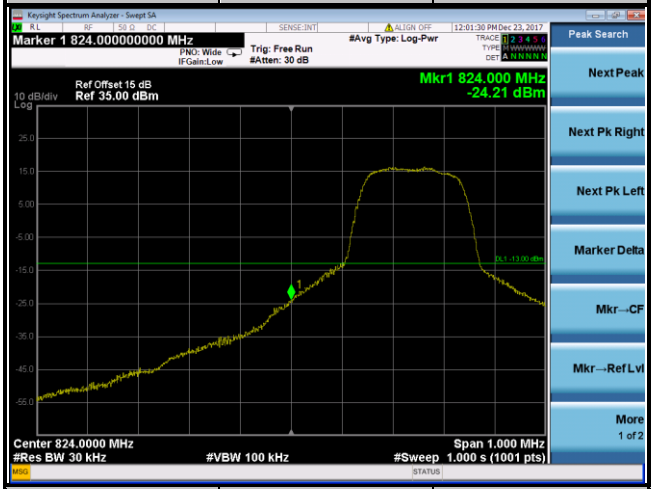
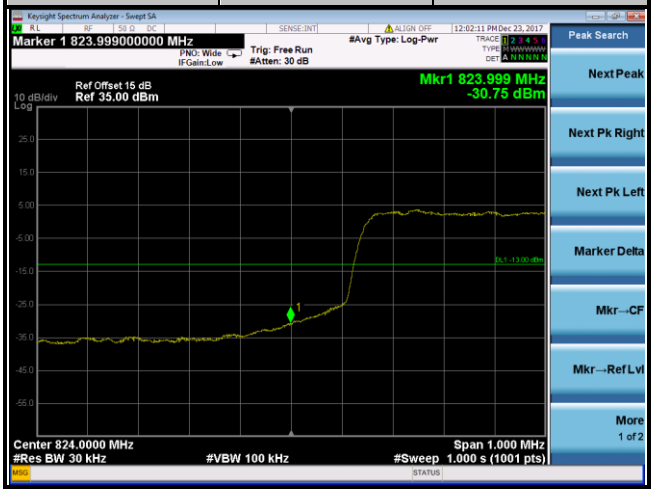
LTE Band 5					
Channel Bandwidth: 1.4 MHz					
Channel	20407	1 RB	Channel	20643	1 RB
					
Channel	20407	6 RB	Channel	20643	6 RB
					

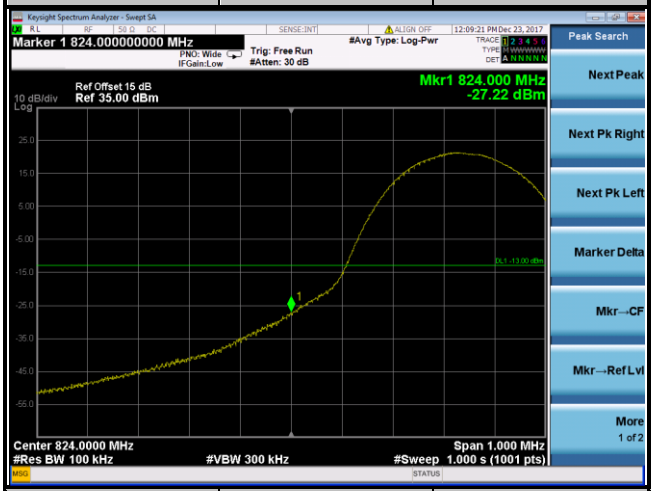
LTE Band 5					
Channel Bandwidth: 3 MHz					
Channel	20415	1 RB	Channel	20635	1 RB
					
Channel	20415	15 RB	Channel	20635	15 RB
					

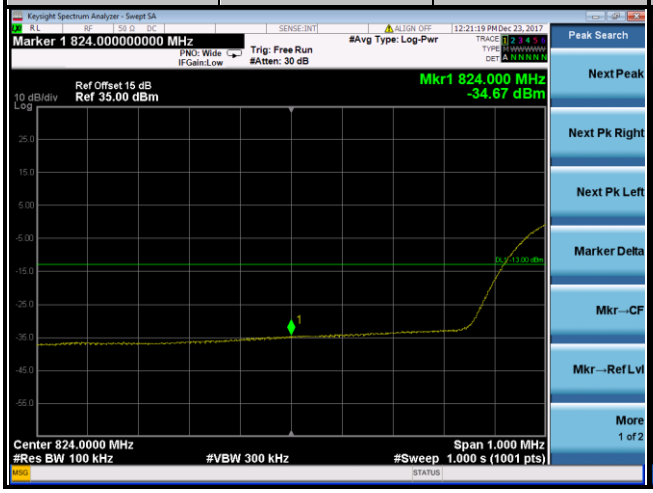
LTE Band 5					
Channel Bandwidth: 5 MHz					
Channel	20425	1 RB	Channel	20625	1 RB
					
Channel	20425	25 RB	Channel	20625	25 RB

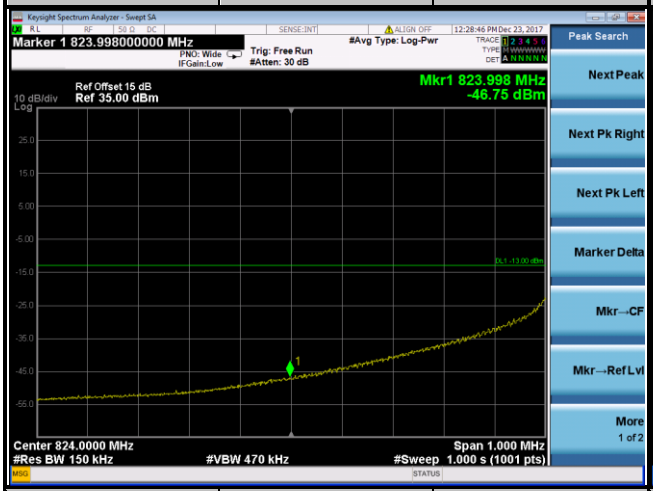
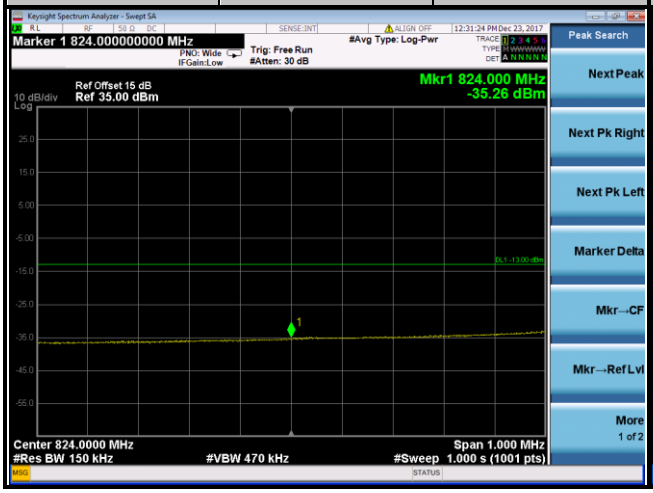
LTE Band 5					
Channel Bandwidth: 10 MHz					
Channel	20450	1 RB	Channel	20600	1 RB
Channel	20450	50 RB	Channel	20600	50 RB
					

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
					

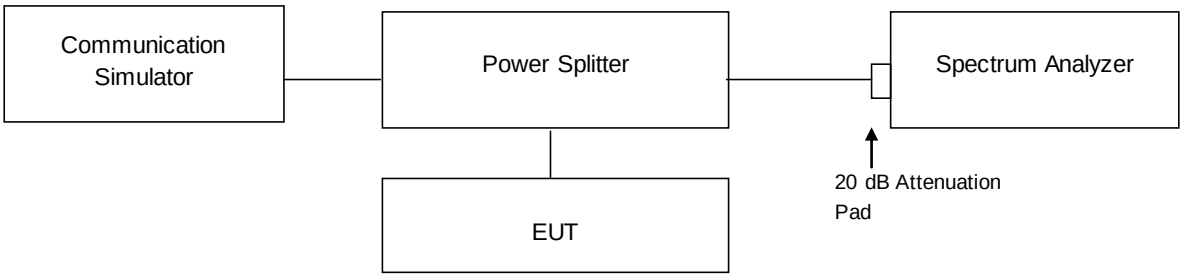
LTE Band 26					
Channel Bandwidth: 15 MHz					
Channel	26865	1 RB	Channel	26965	1 RB
					
Channel	26865	75 RB	Channel	26965	75 RB
					

4.5 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 %.