

FCC Test Report

(PART 90)

Report No.: RF171017C11D-1

FCC ID: WYPPG4032

Test Model: KWSA80K

Received Date: Oct. 17, 2017

Test Date: Oct. 21, 2017 ~ May 16, 2018

Issued Date: May 30, 2018

Applicant: Sonim Technologies, Inc.

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Issued By: Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch

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(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



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Table of Contents

Report Issue History Record	3
1 Certificate of Conformity	4
2 Summary of Test Results.....	5
2.1 Measurement Uncertainty.....	6
2.2 Test Site and Instruments	7
3 General Information	9
3.1 General Description of EUT	9
3.2 Configuration of System under Test.....	10
3.2.1 Description of Support Units	10
3.3 Test Mode Applicability and Tested Channel Detail	11
3.4 EUT Operating Conditions	13
3.5 General Description of Applied Standards.....	13
4 Test Types and Results	14
4.1 Output Power Measurement.....	14
4.1.1 Limits of Output Power Measurement	14
4.1.2 Test Procedures.....	14
4.1.3 Test Setup.....	15
4.1.4 Test Results	16
4.2 Frequency Stability Measurement	21
4.2.1 Limits of Frequency Stability Measurement.....	21
4.2.2 Test Procedure	21
4.2.3 Test Setup.....	21
4.2.4 Test Results	22
4.3 Occupied Bandwidth Measurement.....	28
4.3.1 Test Procedure	28
4.3.2 Test Setup.....	28
4.3.3 Test Result	29
4.4 Emission Mask Measurement.....	32
4.4.1 Limits of Band Edge Measurement	32
4.4.2 Test Setup.....	32
4.4.3 Test Procedures.....	32
4.4.4 Test Results	33
4.5 Conducted Spurious Emissions.....	39
4.5.1 Limits of Conducted Spurious Emissions Measurement.....	39
4.5.2 Test Setup.....	39
4.5.3 Test Procedure	39
4.5.4 Test Results	40
4.6 Radiated Emission Measurement.....	44
4.6.1 Limits of Radiated Emission Measurement	44
4.6.2 Test Procedure	44
4.6.3 Deviation from Test Standard	44
4.6.4 Test Setup.....	45
4.6.5 Test Results	46
5 Pictures of Test Arrangements.....	68
Appendix – Information on the Testing Laboratories	69

Report Issue History Record

Issue No.	Description	Date Issued
RF171017C11D-1	Original Release	May 30, 2018

1 Certificate of Conformity

Product: Mobile Phone

Brand: KENWOOD

Test Model: KWSA80K

Sample Status: Production Unit

Applicant: Sonim Technologies, Inc.

Test Date: Oct. 21, 2017 ~ May 16, 2018

Standards: FCC Part 90, Subpart S, R
FCC Part 2

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:** May 30, 2018
Evonne Liu / Specialist

Approved by : Dylan Chiou, **Date:** May 30, 2018
Dylan Chiou / Project Engineer

2 Summary of Test Results

Applied Standard: FCC Part 90 & Part 2 (LTE 14)			
FCC Clause	Test Item	Result	Remarks
2.1046 90.542(a)(7)	Effective Radiated Power	Pass	Meet the requirement of limit.
2.1055 90.539	Frequency Stability	Pass	Meet the requirement of limit.
2.1049	Occupied Bandwidth (*)	Pass	Meet the requirement of limit.
90.210(n)	Emission Masks	Pass	Meet the requirement of limit.
2.1051 90.543(e)	Conducted Spurious Emissions	Pass	Meet the requirement of limit.
2.1053 90.543(e)	Radiated Spurious Emissions	Pass	Meet the requirement of limit. Minimum passing margin is -20.25 dB at 1586 MHz.

Applied Standard: FCC Part 90 & Part 2 (LTE 26)			
FCC Clause	Test Item	Result	Remarks
2.1046 90.635 (b)	Effective Radiated Power	Pass	Meet the requirement of limit.
2.1055 90.213	Frequency Stability	Pass	Meet the requirement of limit.
2.1049 90.209	Occupied Bandwidth (*)	Pass	Meet the requirement of limit.
2.1051 90.209	Emission Masks	Pass	Meet the requirement of limit.
2.1051 90.691	Conducted Spurious Emissions	Pass	Meet the requirement of limit.
2.1053 90.691	Radiated Spurious Emissions	Pass	Meet the requirement of limit. Minimum passing margin is -32.54 dB at 30 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	Expanded Uncertainty (k=2) ($\pm$)
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 & Manufacturer	Model No.	Serial No.	Date of Calibration	Due Date of Calibration
Test Receiver Agilent	N9038A	MY51210203	Feb. 17, 2017	Feb. 16, 2018
			Mar. 16, 2018	Mar. 15, 2019
Spectrum Analyzer Agilent	N9010A	MY52220314	Dec. 16, 2016	Dec. 15, 2017
			Nov. 24, 2017	Nov. 23, 2018
Spectrum Analyzer ROHDE & SCHWARZ	FSU43	101261	Dec. 13, 2016	Dec. 12, 2017
			Jan. 11, 2018	Jan. 10, 2019
BILOG Antenna SCHWARZBECK	VULB9168	9168-472	Dec. 26, 2016	Dec. 27, 2017
			Dec. 06, 2017	Dec. 05, 2018
HORN Antenna SCHWARZBECK	BBHA 9120 D	9120D-969	Dec. 12, 2016	Dec. 13, 2017
			Dec. 12, 2017	Dec. 13, 2018
Double Ridge Guide Horn Antenna EMCO	3115	5619	Dec. 26, 2016	Dec. 27, 2017
			Nov. 30, 2017	Nov. 29, 2018
BILOG Antenna SCHWARZBECK	VULB 9168	9168-153	Dec. 12, 2016	Dec. 13, 2017
			Dec. 06, 2017	Dec. 05, 2018
Fixed Attenuator Mini-Circuits	BW-N10W5+	NA	Jul. 07, 2017	Jul. 06, 2018
MXG Vector signal generator Agilent	N5182B	MY53052282	Dec. 23, 2016	Dec. 22, 2017
			Dec. 28, 2017	Dec. 27, 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. 20, 2017	Oct. 19, 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	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	KENWOOD	
Test Model	KWSA80K	
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 Band 14 (Channel Bandwidth: 5 MHz)	790.5 ~ 795.5 MHz
	LTE Band 14 (Channel Bandwidth: 10 MHz)	793 MHz
	LTE Band 26 (Channel Bandwidth: 1.4 MHz)	814.7 ~ 823.3 MHz
	LTE Band 26 (Channel Bandwidth: 3 MHz)	815.5 ~ 822.5 MHz
	LTE Band 26 (Channel Bandwidth: 5 MHz)	816.5 ~ 821.5 MHz
	LTE Band 26 (Channel Bandwidth: 10 MHz)	819 MHz
Emission Designator	LTE Band 14 (Channel Bandwidth: 5 MHz)	4M50W7D
	LTE Band 14 (Channel Bandwidth: 10 MHz)	8M99W7D
	LTE Band 26 (Channel Bandwidth: 1.4 MHz)	1M09W7D
	LTE Band 26 (Channel Bandwidth: 3 MHz)	2M70G7D
	LTE Band 26 (Channel Bandwidth: 5 MHz)	4M50W7D
	LTE Band 26 (Channel Bandwidth: 10 MHz)	8M97W7D
Max. ERP Power	LTE Band 14 (Channel Bandwidth: 5 MHz)	41.98 mW
	LTE Band 14 (Channel Bandwidth: 10 MHz)	41.30 mW
	LTE Band 26 (Channel Bandwidth: 1.4 MHz)	51.29 mW
	LTE Band 26 (Channel Bandwidth: 3 MHz)	50.70 mW
	LTE Band 26 (Channel Bandwidth: 5 MHz)	51.52 mW
	LTE Band 26 (Channel Bandwidth: 10 MHz)	52.00 mW
Antenna Type	Fixed Internal Antenna	
Accessory Device	Refer to Note as below	
Data Cable Supplied	Refer to Note as below	

Note:

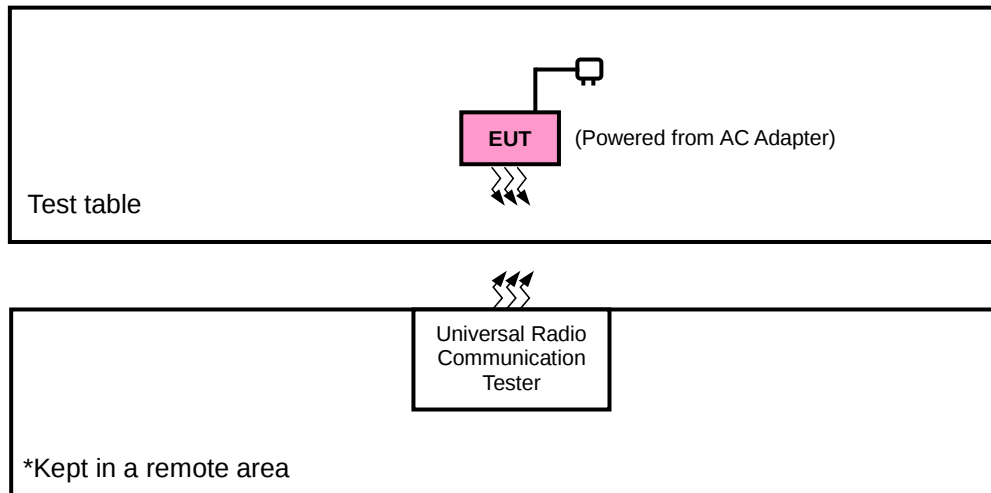
1. This is a duplicate report to the original report no.: RF171205C19A-1. The difference compared with the original report is changing brand, model name, EUT appearance and remove Type no. Only radiated spurious emissions tests were re-tested. Other test data are duplicated from original report.
2. The EUT contains following accessory devices.

Product	Brand	Model	Description
Adapter	KENWOOD	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	KENWOOD	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

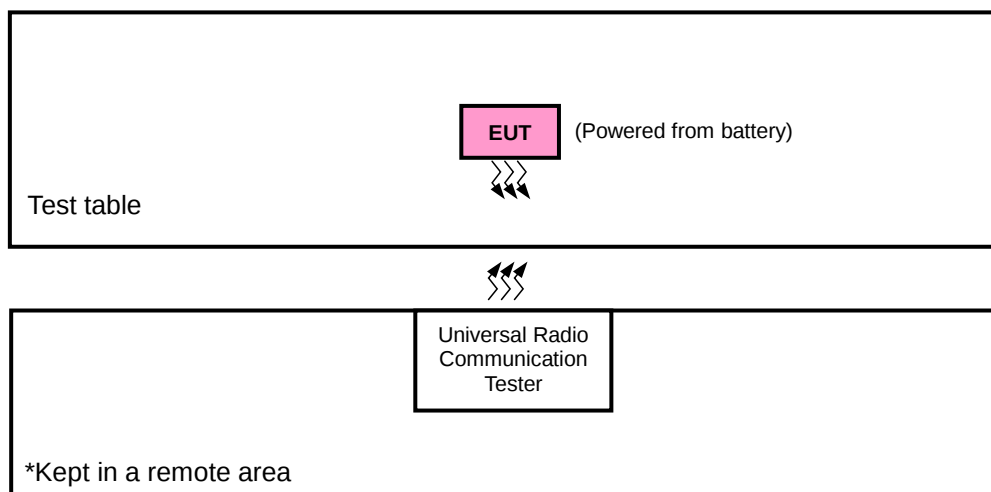
3. The above EUT information is declared by manufacturer and for more detailed features description, please refer to the manufacturer's specifications or user's manual.

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 14	X-plane	X-axis
LTE Band 26	X-plane	X-axis

LTE Band 14

EUT Configure Mode	Test Item	Available Channel	Tested Channel	Channel Bandwidth	Modulation	Mode
-	ERP	23305 to 23355	23305, 23330, 23355	5 MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset
		23330	23330	10 MHz	QPSK, 16QAM, 64QAM	1 RB / 24 RB Offset
-	Frequency Stability	23305 to 23355	23305, 23330, 23355	5 MHz	QPSK	1 RB / 0 RB Offset
		23330	23330	10 MHz	QPSK	1 RB / 24 RB Offset
-	Occupied Bandwidth	23305 to 23355	23305, 23330, 23355	5 MHz	QPSK, 16QAM, 64QAM	25 RB / 0 RB Offset
		23330	23330	10 MHz	QPSK, 16QAM, 64QAM	50 RB / 0 RB Offset
-	Peak to Average Ratio	23305 to 23355	23305, 23330, 23355	5 MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset
		23330	23330	10 MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset
-	Band Edge	23305 to 23355	23305	5 MHz	QPSK	1 RB / 0 RB Offset
			23355	5 MHz	QPSK	25 RB / 0 RB Offset
		23330	23330	10 MHz	QPSK	1 RB / 24 RB Offset
						25 RB / 0 RB Offset
			23330	10 MHz	QPSK	1 RB / 0 RB Offset
						50 RB / 0 RB Offset
-	Conducted Emission	23305 to 23355	23305, 23330, 23355	5 MHz	QPSK	1 RB / 0 RB Offset
		23330	23330	10 MHz	QPSK	1 RB / 0 RB Offset
-	Radiated Emission	23330	23330	10 MHz	QPSK	1 RB / 24 RB Offset
						1 RB / 50 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	26697 to 26783	26697, 26740, 26783	1.4 MHz	QPSK, 16QAM, 64QAM	1 RB / 2 RB Offset
		26705 to 26775	26705, 26740, 26775	3 MHz	QPSK, 16QAM, 64QAM	1 RB / 7 RB Offset
		26715 to 26765	26715, 26740, 26765	5 MHz	QPSK, 16QAM, 64QAM	1 RB / 12 RB Offset
		26740	26740	10 MHz	QPSK, 16QAM, 64QAM	1 RB / 49 RB Offset
-	Frequency Stability	26697 to 26783	26697, 26783	1.4 MHz	QPSK	1 RB / 2 RB Offset
		26705 to 26775	26705, 26775	3 MHz	QPSK	1 RB / 7 RB Offset
		26715 to 26765	26715, 26765	5 MHz	QPSK	1 RB / 12 RB Offset
		26740	26740	10 MHz	QPSK	1 RB / 49 RB Offset
-	Occupied Bandwidth	26697 to 26783	26697, 26740, 26783	1.4 MHz	QPSK, 16QAM, 64QAM	6 RB / 0 RB Offset
		26705 to 26775	26705, 26740, 26775	3 MHz	QPSK, 16QAM, 64QAM	15 RB / 0 RB Offset
		26715 to 26765	26715, 26740, 26765	5 MHz	QPSK, 16QAM, 64QAM	25 RB / 0 RB Offset
		26740	26740	10 MHz	QPSK, 16QAM, 64QAM	50 RB / 0 RB Offset
-	Emission Mask	26697 to 26783	26697, 26740, 26783	1.4 MHz	QPSK, 16QAM, 64QAM	6 RB / 0 RB Offset
		26705 to 26775	26705, 26740, 26775	3 MHz	QPSK, 16QAM, 64QAM	15 RB / 0 RB Offset
		26715 to 26765	26715, 26740, 26765	5 MHz	QPSK, 16QAM, 64QAM	25 RB / 0 RB Offset
		26740	26740	10 MHz	QPSK, 16QAM, 64QAM	50 RB / 0 RB Offset
-	Conducted Emission	26697 to 26783	26697, 26740, 26783	1.4 MHz	QPSK	1 RB / 0 RB Offset
		26705 to 26775	26705, 26740, 26775	3 MHz	QPSK	1 RB / 0 RB Offset
		26715 to 26765	26715, 26740, 26765	5 MHz	QPSK	1 RB / 0 RB Offset
		26740	26740	10 MHz	QPSK	1 RB / 0 RB Offset
-	Radiated Emission	26740	26740	10 MHz	QPSK	1 RB / 49 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
Frequency Stability	25 deg. C, 65 % RH	3.85 Vdc	Gavin Wu
Occupied Bandwidth	25 deg. C, 65 % RH	3.85 Vdc	Gavin Wu
Peak to Average Ratio	25 deg. C, 65 % RH	3.85 Vdc	Gavin Wu
Emission Mask	25 deg. C, 65 % RH	3.85 Vdc	Gavin Wu
Condcudeted Emission	25 deg. C, 65 % RH	3.85 Vdc	Gavin Wu
Radiated Emission	25 deg. C, 65 % RH	120 Vac, 60 Hz	Jisyong Wang

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 90

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 100 watts e.r.p.

4.1.2 Test Procedures

EIRP / ERP Measurement:

- a. All measurements were done at low, middle and high operational frequency range. RBW and VBW is 10 MHz for LTE mode.
- b. Substitution method is used for E.I.R.P measurement. In the semi-anechoic chamber, EUT placed on the 0.8 m (below or equal 1 GHz) and/or 1.5 m (above 1 GHz) height of Turn Table, rotated the table around 360 degrees to search the maximum radiation power and receiver antenna shall be rotated vertical and horizontal polarization and moved height from 1 m to 4 m to find the maximum polar radiated power. The "Read Value" is the spectrum reading the maximum power value.
- c. The substitution horn antenna is substituted for EUT at the same position and signals generator export the CW signal to the substitution antenna via a tx cable. Rotated the Turn Table and moved receiving antenna to find the maximum radiation power. Adjust output power level of S.G to get a Value of spectrum reading equal to "Read Value" of step b. Record the power level of S.G.
- d. $EIRP = \text{Output power level of S.G} - \text{TX cable loss} + \text{Antenna gain of substitution horn}$. E.R.P power can be calculated from E.I.R.P power by subtracting the gain of dipole, $E.R.P \text{ power} = E.I.P.R \text{ power} - 2.15 \text{ dBi}$.

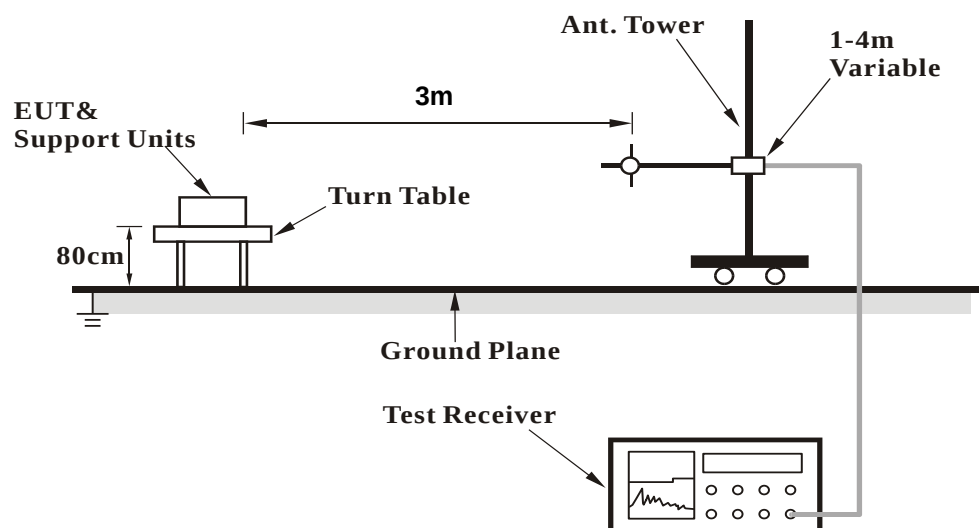
Conducted Power Measurement:

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

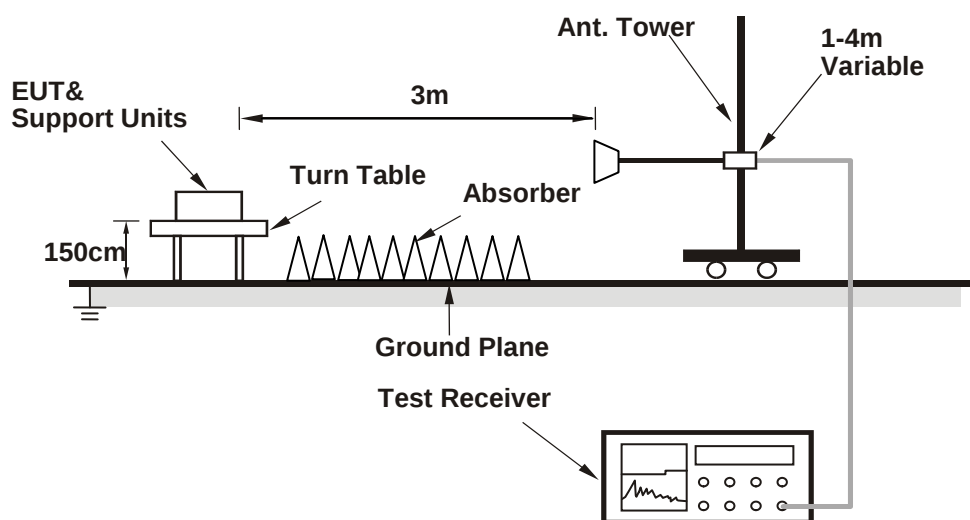
4.1.3 Test Setup

EIRP / ERP Measurement:

<Radiated Emission below or equal 1 GHz>

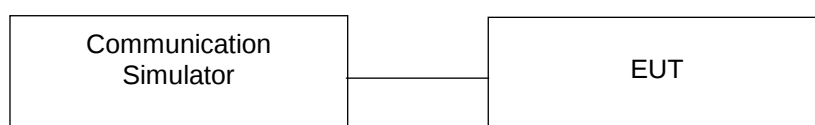


<Radiated Emission above 1 GHz>



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

Conducted Power Measurement:



4.1.4 Test Results

Conducted Output Power (dBm)

LTE Band 14														
BW (MHz)	RB Size	RB Offset	QPSK				16QAM				64QAM			
			Mid Ch 23330			3GPP MPR (dB)	Mid Ch 23330			3GPP MPR (dB)	Mid Ch 23330			3GPP MPR (dB)
			793.0 MHz				793.0 MHz				793.0 MHz			
10	1	0	23.24			0	22.32			1	21.53			2
	1	24	23.21			0	22.28			1	21.46			2
	1	49	23.17			0	22.25			1	21.41			2
	25	0	22.37			1	21.31			2	20.39			3
	25	12	22.34			1	21.28			2	20.35			3
	25	25	22.30			1	21.24			2	20.32			3
	50	0	22.34			1	21.31			2	20.37			3
BW (MHz)	RB Size	RB Offset	QPSK				16QAM				64QAM			
			Low Ch 23305	Mid Ch 23330	High Ch 23355	3GPP MPR (dB)	Low Ch 23305	Mid Ch 23330	High Ch 23355	3GPP MPR (dB)	Low Ch 23305	Mid Ch 23330	High Ch 23355	3GPP MPR (dB)
			790.5 MHz	793.0 MHz	795.5 MHz		790.5 MHz	793.0 MHz	795.5 MHz		790.5 MHz	793.0 MHz	795.5 MHz	
5	1	0	23.15	23.19	23.21	0	22.23	22.27	22.29	1	21.45	21.49	21.51	2
	1	12	23.12	23.16	23.18	0	22.19	22.23	22.25	1	21.38	21.42	21.44	2
	1	24	23.08	23.12	23.14	0	22.16	22.20	22.22	1	21.33	21.37	21.39	2
	12	0	22.28	22.32	22.34	1	21.22	21.26	21.28	2	21.44	21.48	21.50	3
	12	6	22.25	22.29	22.31	1	21.19	21.23	21.25	2	21.37	21.41	21.43	3
	12	13	22.21	22.25	22.27	1	21.15	21.19	21.21	2	21.32	21.36	21.38	3
	25	0	22.25	22.29	22.31	1	21.22	21.26	21.28	2	20.29	20.33	20.35	3

LTE Band 26														
BW (MHz)	RB Size	RB Offset	QPSK				16QAM				64QAM			
			Mid Ch 26740			3GPP MPR (dB)	Mid Ch 26740			3GPP MPR (dB)	Mid Ch 26740			3GPP MPR (dB)
			819.0 MHz				819.0 MHz				819.0 MHz			
10	1	0	23.98			0	23.13			1	21.86			2
	1	24	23.92			0	23.10			1	21.82			2
	1	49	23.91			0	23.07			1	21.76			2
	25	0	23.08			1	22.06			2	21.16			3
	25	12	23.04			1	22.03			2	21.13			3
	25	25	23.02			1	22.01			2	21.10			3
	50	0	23.00			1	21.99			2	21.13			3
BW (MHz)	RB Size	RB Offset	QPSK				16QAM				64QAM			
			Low Ch 26715 816.5 MHz	Mid Ch 26740 819.0 MHz	High Ch 26765 821.5 MHz	3GPP MPR (dB)	Low Ch 26715 816.5 MHz	Mid Ch 26740 819.0 MHz	High Ch 26765 821.5 MHz	3GPP MPR (dB)	Low Ch 26715 816.5 MHz	Mid Ch 26740 819.0 MHz	High Ch 26765 821.5 MHz	3GPP MPR (dB)
5	1	0	24.10	23.95	24.08	0	23.25	23.10	23.23	1	21.97	21.82	21.95	2
	1	12	24.04	23.89	24.02	0	23.22	23.07	23.20	1	21.93	21.78	21.91	2
	1	24	24.03	23.88	24.01	0	23.19	23.04	23.17	1	21.87	21.72	21.85	2
	12	0	23.20	23.05	23.18	1	22.18	22.03	22.16	2	21.96	21.81	21.94	3
	12	6	23.16	23.01	23.14	1	22.15	22.00	22.13	2	21.92	21.77	21.90	3
	12	13	23.14	22.99	23.12	1	22.13	21.98	22.11	2	21.86	21.71	21.84	3
	25	0	23.12	22.97	23.10	1	22.11	21.96	22.09	2	21.24	21.09	21.22	3
BW (MHz)	RB Size	RB Offset	QPSK				16QAM				64QAM			
			Low Ch 26705 815.5 MHz	Mid Ch 26740 819.0 MHz	High CH 26775 822.5 MHz	3GPP MPR (dB)	Low Ch 26705 815.5 MHz	Mid Ch 26740 819.0 MHz	High CH 26775 822.5 MHz	3GPP MPR (dB)	Low Ch 26705 815.5 MHz	Mid Ch 26740 819.0 MHz	High CH 26775 822.5 MHz	3GPP MPR (dB)
3	1	0	24.07	23.92	24.05	0	23.22	23.07	23.20	1	21.93	21.78	21.91	2
	1	7	24.01	23.86	23.99	0	23.19	23.04	23.17	1	21.89	21.74	21.87	2
	1	14	24.00	23.85	23.98	0	23.16	23.01	23.14	1	21.83	21.68	21.81	2
	8	0	23.17	23.02	23.15	1	22.15	22.00	22.13	2	21.92	21.77	21.90	3
	8	3	23.13	22.98	23.11	1	22.12	21.97	22.10	2	21.88	21.73	21.86	3
	8	7	23.11	22.96	23.09	1	22.10	21.95	22.08	2	21.82	21.67	21.80	3
	15	0	23.09	22.94	23.07	1	22.08	21.93	22.06	2	21.20	21.05	21.18	3
BW (MHz)	RB Size	RB Offset	QPSK				16QAM				64QAM			
			Low Ch 26697 814.7 MHz	Mid Ch 26740 819.0 MHz	High Ch 26783 823.3 MHz	3GPP MPR (dB)	Low Ch 26697 814.7 MHz	Mid Ch 26740 819.0 MHz	High Ch 26783 823.3 MHz	3GPP MPR (dB)	Low Ch 26697 814.7 MHz	Mid Ch 26740 819.0 MHz	High Ch 26783 823.3 MHz	3GPP MPR (dB)
1.4	1	0	24.03	23.88	24.01	0	23.18	23.03	23.16	1	21.89	21.74	21.87	2
	1	2	23.97	23.82	23.95	0	23.15	23.00	23.13	1	21.85	21.70	21.83	2
	1	5	23.96	23.81	23.94	0	23.12	22.97	23.10	1	21.79	21.64	21.77	2
	3	0	24.01	23.86	23.99	0	23.17	23.02	23.15	1	21.88	21.73	21.86	2
	3	1	23.95	23.80	23.93	0	23.14	22.99	23.12	1	21.84	21.69	21.82	2
	3	3	23.94	23.79	23.92	0	23.11	22.96	23.09	1	21.78	21.63	21.76	2
	6	0	23.05	22.90	23.03	1	22.04	21.89	22.02	2	21.16	21.01	21.14	3

ERP Power (dBm)

LTE Band 14							
Channel Bandwidth: 5 MHz / QPSK							
Plane	Channel	Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	ERP (dBm)	ERP (mW)	Polarization (H/V)
X	23305	790.5	-14.02	32.18	16.01	39.90	H
	23330	793.0	-13.98	32.17	16.04	40.18	
	23355	795.5	-13.88	32.26	16.23	41.98	
	23305	790.5	-16.60	32.69	13.94	24.77	V
	23330	793.0	-16.52	32.72	14.05	25.41	
	23355	795.5	-16.59	32.85	14.11	25.76	
Channel Bandwidth: 5 MHz / 16QAM							
X	23305	790.5	-14.08	32.18	15.95	39.36	H
	23330	793.0	-14.11	32.17	15.91	38.99	
	23355	795.5	-14.13	32.26	15.98	39.63	
	23305	790.5	-16.92	32.69	13.62	23.01	V
	23330	793.0	-16.88	32.72	13.69	23.39	
	23355	795.5	-17.02	32.85	13.68	23.33	
Channel Bandwidth: 5 MHz / 64QAM							
X	23305	790.5	-14.38	32.18	15.65	36.73	H
	23330	793.0	-14.41	32.17	15.61	36.39	
	23355	795.5	-14.43	32.26	15.68	36.98	
	23305	790.5	-17.22	32.69	13.32	21.48	V
	23330	793.0	-17.18	32.72	13.39	21.83	
	23355	795.5	-17.32	32.85	13.38	21.78	

LTE Band 14							
Channel Bandwidth: 10 MHz / QPSK							
Plane	Channel	Frequency (MHz)	LVL (dBm)	Correction Factor (dB)	ERP (dBm)	ERP (mW)	Polarization (H/V)
X	23330	793.0	-13.86	32.17	16.16	41.30	H
	23330	793.0	-16.59	32.72	13.98	25.00	V
Channel Bandwidth: 10 MHz / 16QAM							
X	23330	793.0	-13.96	32.17	16.06	40.36	H
	23330	793.0	-16.66	32.72	13.91	24.60	V
Channel Bandwidth: 10 MHz / 64QAM							
X	23330	793.0	-14.26	32.17	15.76	37.67	H
	23330	793.0	-16.96	32.72	13.61	22.96	V

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	26697	814.7	-13.11	32.01	16.75	47.32	H
	26740	819.0	-13.00	32.11	16.96	49.66	
	26783	823.3	-13.07	32.32	17.10	51.29	
	26697	814.7	-17.14	32.54	13.25	21.13	V
	26740	819.0	-17.06	32.51	13.30	21.38	
	26783	823.3	-17.15	32.51	13.21	20.94	
Channel Bandwidth: 1.4 MHz / 16QAM							
X	26697	814.7	-13.92	32.01	15.94	39.26	H
	26740	819.0	-13.77	32.11	16.19	41.59	
	26783	823.3	-13.86	32.32	16.31	42.76	
	26697	814.7	-17.55	32.54	12.84	19.23	V
	26740	819.0	-17.20	32.51	13.16	20.70	
	26783	823.3	-17.26	32.51	13.10	20.42	
Channel Bandwidth: 1.4 MHz / 64QAM							
X	26697	814.7	-14.22	32.01	15.64	36.64	H
	26740	819.0	-14.07	32.11	15.89	38.82	
	26783	823.3	-14.06	32.32	16.11	40.83	
	26697	814.7	-17.75	32.54	12.64	18.37	V
	26740	819.0	-17.50	32.51	12.86	19.32	
	26783	823.3	-17.56	32.51	12.80	19.05	

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	26705	815.5	-12.98	32.02	16.89	48.87	H
	26740	819.0	-12.91	32.11	17.05	50.70	
	26775	822.5	-13.00	32.18	17.03	50.47	
	26705	815.5	-17.10	32.5	13.25	21.13	V
	26740	819.0	-16.97	32.51	13.39	21.83	
	26775	822.5	-17.06	32.47	13.26	21.18	
Channel Bandwidth: 3 MHz / 16QAM							
X	26705	815.5	-13.72	32.02	16.15	41.21	H
	26740	819.0	-13.54	32.11	16.42	43.85	
	26775	822.5	-13.69	32.18	16.34	43.05	
	26705	815.5	-17.11	32.5	13.24	21.09	V
	26740	819.0	-17.02	32.51	13.34	21.58	
	26775	822.5	-17.05	32.47	13.27	21.23	
Channel Bandwidth: 3 MHz / 64QAM							
X	26705	815.5	-14.02	32.02	15.85	38.46	H
	26740	819.0	-13.74	32.11	16.22	41.88	
	26775	822.5	-13.99	32.18	16.04	40.18	
	26705	815.5	-17.41	32.5	12.94	19.68	V
	26740	819.0	-17.32	32.51	13.04	20.14	
	26775	822.5	-17.35	32.47	12.97	19.82	

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	26715	816.5	-12.88	32.04	17.01	50.23	H
	26740	819.0	-12.84	32.11	17.12	51.52	
	26765	821.5	-12.89	31.79	16.75	47.32	
	26715	816.5	-16.91	32.52	13.46	22.18	V
	26740	819.0	-16.84	32.51	13.52	22.49	
	26765	821.5	-16.33	32.17	13.69	23.39	
Channel Bandwidth: 5 MHz / 16QAM							
X	26715	816.5	-13.11	32.04	16.78	47.64	H
	26740	819.0	-13.32	32.11	16.64	46.13	
	26765	821.5	-13.54	31.79	16.10	40.74	
	26715	816.5	-16.84	32.52	13.53	22.54	V
	26740	819.0	-16.94	32.51	13.42	21.98	
	26765	821.5	-16.97	32.17	13.05	20.18	
Channel Bandwidth: 5 MHz / 64QAM							
X	26715	816.5	-13.41	32.04	16.48	44.46	H
	26740	819.0	-13.62	32.11	16.34	43.05	
	26765	821.5	-13.74	31.79	15.90	38.90	
	26715	816.5	-17.14	32.52	13.23	21.04	V
	26740	819.0	-17.14	32.51	13.22	20.99	
	26765	821.5	-17.27	32.17	12.75	18.84	

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	26740	819.0	-12.80	32.11	17.16	52.00	H
	26740	819.0	-16.30	32.51	14.06	25.47	V
Channel Bandwidth: 10 MHz / 16QAM							
X	26740	819.0	-13.32	32.11	16.64	46.13	H
	26740	819.0	-16.86	32.51	13.50	22.39	V
Channel Bandwidth: 10 MHz / 64QAM							
X	26740	819.0	-13.62	32.11	16.34	43.05	H
	26740	819.0	-17.16	32.51	13.20	20.89	V

4.2 Frequency Stability Measurement

4.2.1 Limits of Frequency Stability Measurement

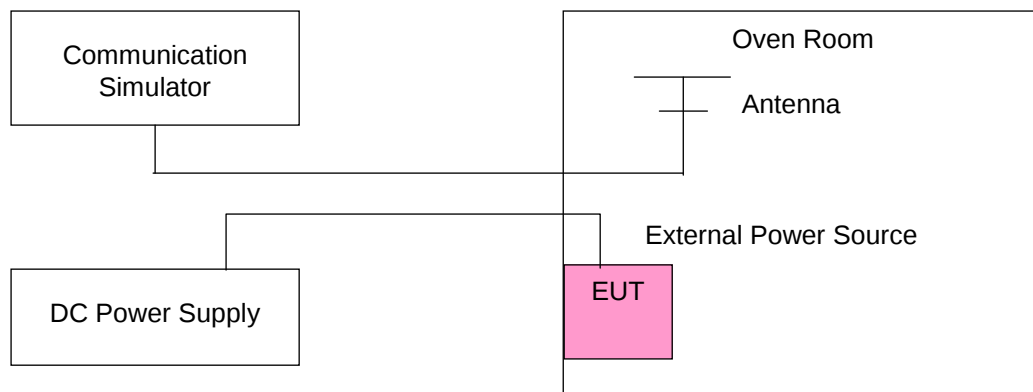
1.5 ppm is for base and fixed station. 2.5 ppm is for mobile station.

4.2.2 Test Procedure

- 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.
- 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.
- The temperature range step is 10 degrees in this test items. All temperature levels shall be hold the ± 0.5 °C 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 14				Limit (ppm)
	Channel Bandwidth: 5 MHz				
	Low Channel		High Channel		
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
3.8	790.500003	0.003	795.500004	0.005	2.5
3.6	790.500004	0.005	795.500003	0.004	2.5
4.35	790.500002	0.003	795.500003	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. (°C)	LTE Band 14				Limit (ppm)
	Channel Bandwidth: 5 MHz				
	Low Channel		High Channel		
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
-30	790.500001	0.001	795.500002	0.003	2.5
-20	790.500002	0.003	795.500003	0.004	2.5
-10	790.500002	0.002	795.500002	0.003	2.5
0	790.500003	0.004	795.500003	0.004	2.5
10	790.500002	0.002	795.500004	0.005	2.5
20	790.499998	-0.003	795.499997	-0.004	2.5
30	790.499999	-0.002	795.499997	-0.004	2.5
40	790.499998	-0.002	795.499996	-0.005	2.5
50	790.499999	-0.001	795.499996	-0.005	2.5

Frequency Error vs. Voltage

Voltage (Volts)	LTE Band 14		Limit (ppm)
	Channel Bandwidth: 10 MHz		
	Frequency (MHz)	Frequency Error (ppm)	
3.8	793.000001	0.001	2.5
3.6	793.000004	0.005	2.5
4.35	793.000001	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. (°C)	LTE Band 14		Limit (ppm)
	Channel Bandwidth: 10 MHz		
	Frequency (MHz)	Frequency Error (ppm)	
-30	793.000002	0.002	2.5
-20	793.000002	0.003	2.5
-10	793.000002	0.003	2.5
0	793.000002	0.003	2.5
10	793.000002	0.003	2.5
20	792.999997	-0.003	2.5
30	792.999999	-0.002	2.5
40	792.999999	-0.002	2.5
50	792.999996	-0.005	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)	
3.8	814.700001	0.001	823.300002	0.003	2.5
3.6	814.700001	0.001	823.300003	0.004	2.5
4.35	814.700002	0.002	823.300002	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. (°C)	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	814.700003	0.003	823.300003	0.003	2.5
-20	814.700002	0.002	823.300004	0.004	2.5
-10	814.700002	0.002	823.300002	0.002	2.5
0	814.700003	0.004	823.300004	0.004	2.5
10	814.700002	0.002	823.300003	0.003	2.5
20	814.699996	-0.005	823.299999	-0.001	2.5
30	814.699997	-0.004	823.299997	-0.004	2.5
40	814.699998	-0.003	823.299996	-0.005	2.5
50	814.699998	-0.003	823.299997	-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	815.500003	0.004	822.500003	0.003	2.5
3.6	815.500002	0.003	822.500002	0.002	2.5
4.35	815.500002	0.003	822.500002	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. (°C)	LTE Band 26				Limit (ppm)
	Channel Bandwidth: 3 MHz				
	Low Channel		High Channel		
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
-30	815.500003	0.004	822.500002	0.002	2.5
-20	815.500003	0.004	822.500003	0.004	2.5
-10	815.500004	0.004	822.500001	0.002	2.5
0	815.500002	0.003	822.500003	0.003	2.5
10	815.500004	0.004	822.500002	0.002	2.5
20	815.499996	-0.005	822.499999	-0.002	2.5
30	815.499999	-0.001	822.499996	-0.005	2.5
40	815.499996	-0.005	822.499998	-0.003	2.5
50	815.499999	-0.001	822.499996	-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)	
3.8	816.500004	0.005	821.500000	0.000	2.5
3.6	816.500003	0.003	821.500000	0.000	2.5
4.35	816.500003	0.004	821.500000	0.000	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. (°C)	LTE Band 26				Limit (ppm)
	Channel Bandwidth: 5 MHz				
	Low Channel		High Channel		
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
-30	816.500003	0.004	821.500003	0.003	2.5
-20	816.500003	0.003	821.500001	0.002	2.5
-10	816.500002	0.003	821.500002	0.002	2.5
0	816.500002	0.003	821.500002	0.002	2.5
10	816.500003	0.004	821.500002	0.003	2.5
20	816.499996	-0.004	821.499996	-0.005	2.5
30	816.499997	-0.003	821.499999	-0.002	2.5
40	816.499997	-0.004	821.499999	-0.002	2.5
50	816.499997	-0.004	821.499997	-0.003	2.5

Frequency Error vs. Voltage

Voltage (Volts)	LTE Band 26		Limit (ppm)
	Channel Bandwidth: 10 MHz		
	Frequency (MHz)	Frequency Error (ppm)	
3.8	819.000003	0.003	2.5
3.6	819.000002	0.002	2.5
4.35	819.000004	0.005	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

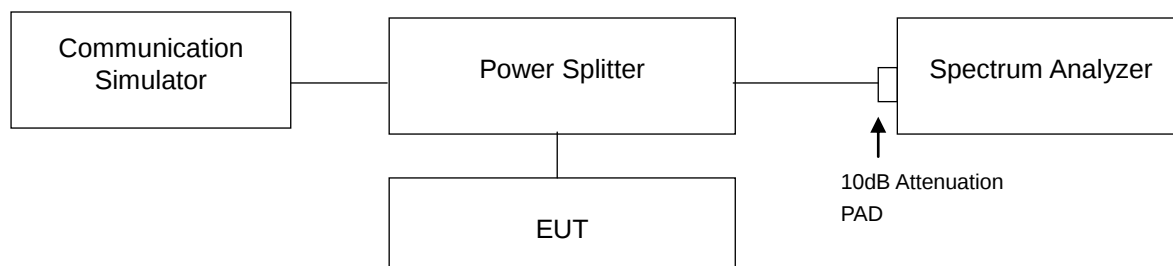
Temp. (°C)	LTE Band 26		Limit (ppm)
	Channel Bandwidth: 10 MHz		
	Frequency (MHz)	Frequency Error (ppm)	
-30	819.000002	0.002	2.5
-20	819.000003	0.003	2.5
-10	819.000001	0.002	2.5
0	819.000003	0.003	2.5
10	819.000003	0.004	2.5
20	818.999998	-0.003	2.5
30	818.999997	-0.004	2.5
40	818.999996	-0.005	2.5
50	818.999999	-0.001	2.5

4.3 Occupied Bandwidth Measurement

4.3.1 Test Procedure

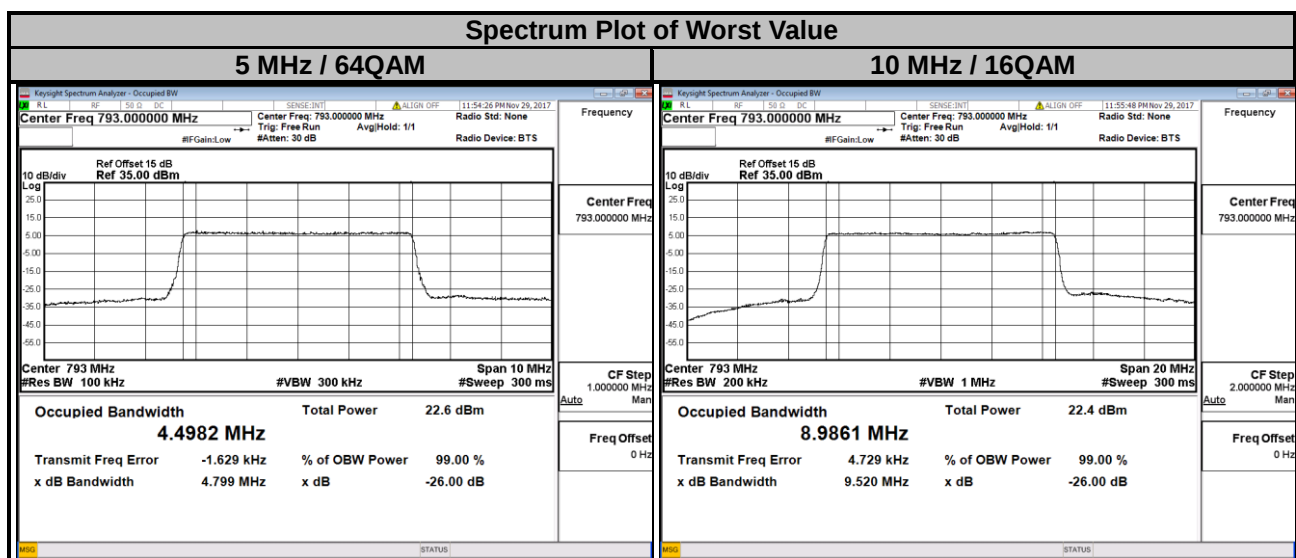
The EUT makes a call to the communication simulator. All measurements were done at low, middle and high operational frequency range. The communication simulator station system controlled a EUT to export maximum output power under transmission mode and specific channel frequency. Use OBW measurement function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

4.3.2 Test Setup

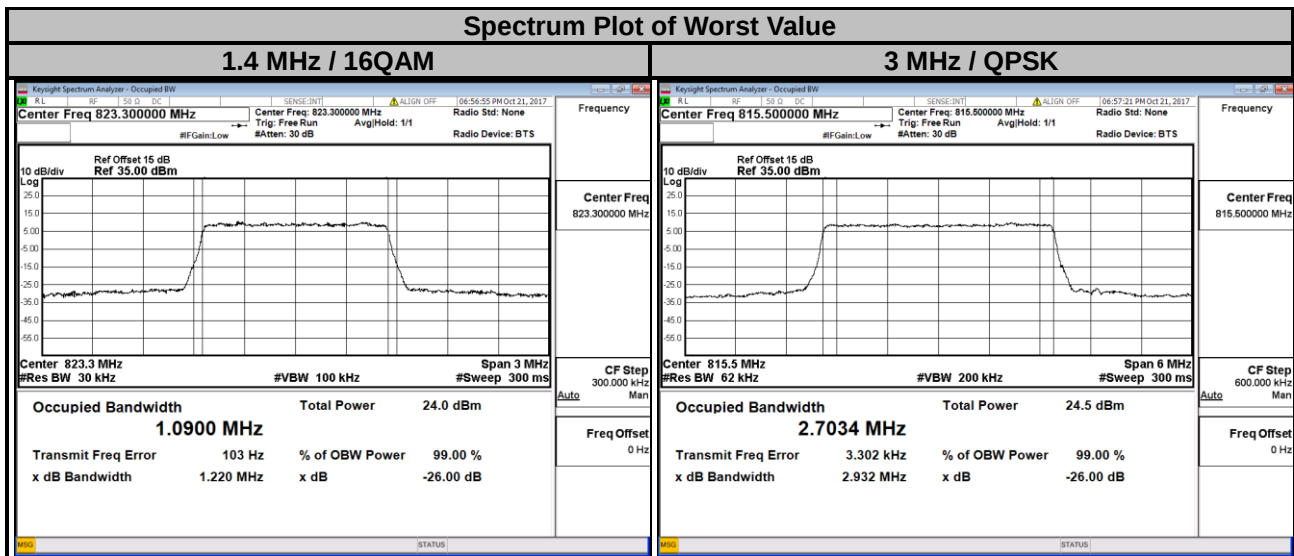


4.3.3 Test Result

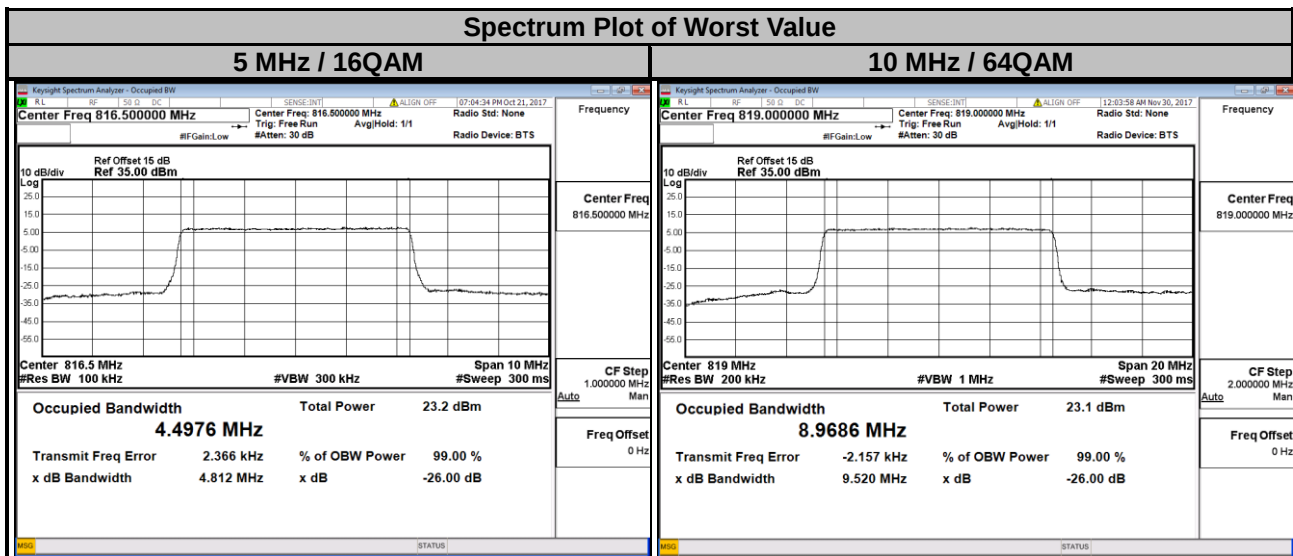
LTE Band 14									
Channel Bandwidth: 5 MHz					Channel Bandwidth: 10 MHz				
Channel	Frequency (MHz)	99 % Occupied Bandwidth (MHz)			Channel	Frequency (MHz)	99 % Occupied Bandwidth (MHz)		
		QPSK	16QAM	64QAM			QPSK	16QAM	64QAM
23205	779.5	4.4906	4.4912	4.4941	23230	782.0	8.9838	8.9853	8.9861
23230	782.0	4.4939	4.4960	4.4982					
23255	784.5	4.4932	4.4959	4.4943					



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
26697	814.7	1.0865	1.0899	1.0894	26705	815.5	2.7034	2.6989	2.6995
26740	819.0	1.0864	1.0885	1.0897	26740	819.0	2.7026	2.6968	2.6965
26783	823.3	1.0866	1.0900	1.0897	26775	822.5	2.7022	2.6981	2.6978



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
26715	816.5	4.4931	4.4976	4.4957	26740	819.0	8.9606	8.9639
26740	819.0	4.4894	4.4939	4.4929				
26765	821.5	4.4904	4.4937	4.4913				
							8.9686	

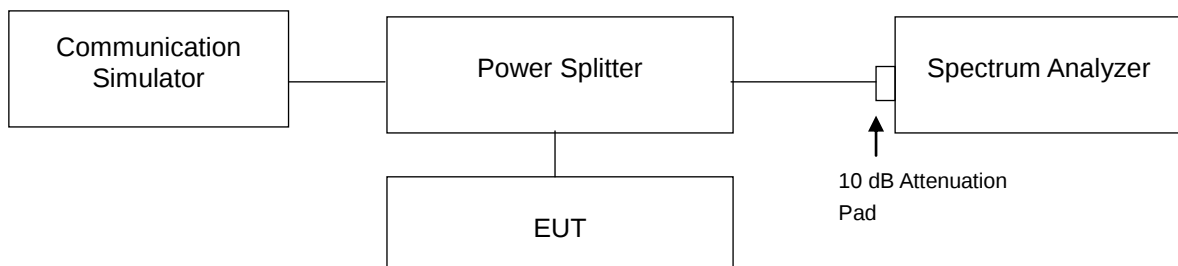


4.4 Emission Mask Measurement

4.4.1 Limits of Band Edge Measurement

According to FCC part 90.691 shall be tested the emission mask. For any frequency removed from the EA licensee's frequency block by up to and including 37.5 kHz, the power of any emission shall be attenuated below the transmitter power (P) in watts by at least $116 \log_{10}(f/6.1)$ decibels or $50 + 10 \log_{10}(P)$ decibels or 80 decibels, whichever is the lesser attenuation, where f is the frequency removed from the center of the outer channel in the block in kilohertz and where f is greater than 12.5 kHz.

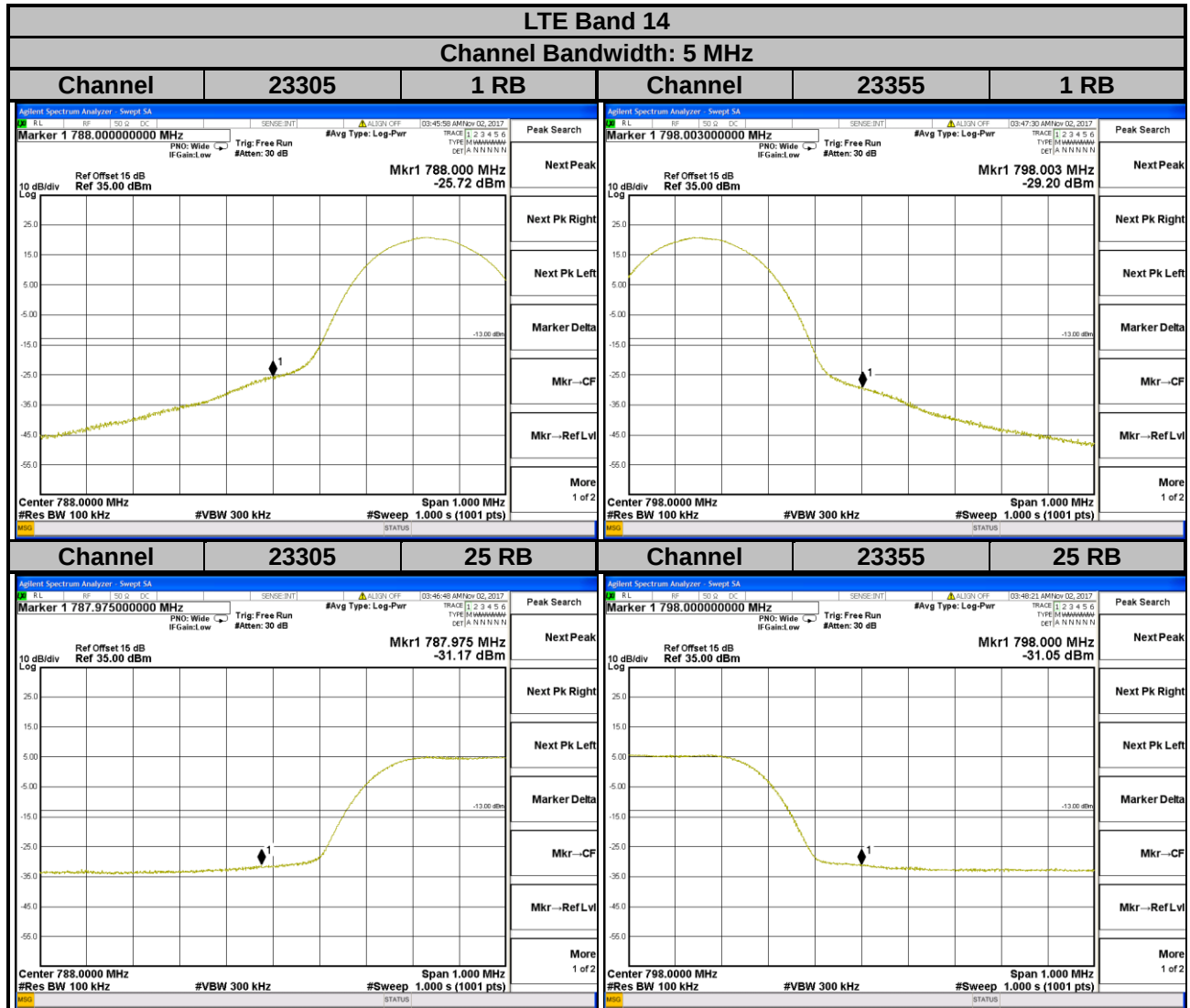
4.4.2 Test Setup

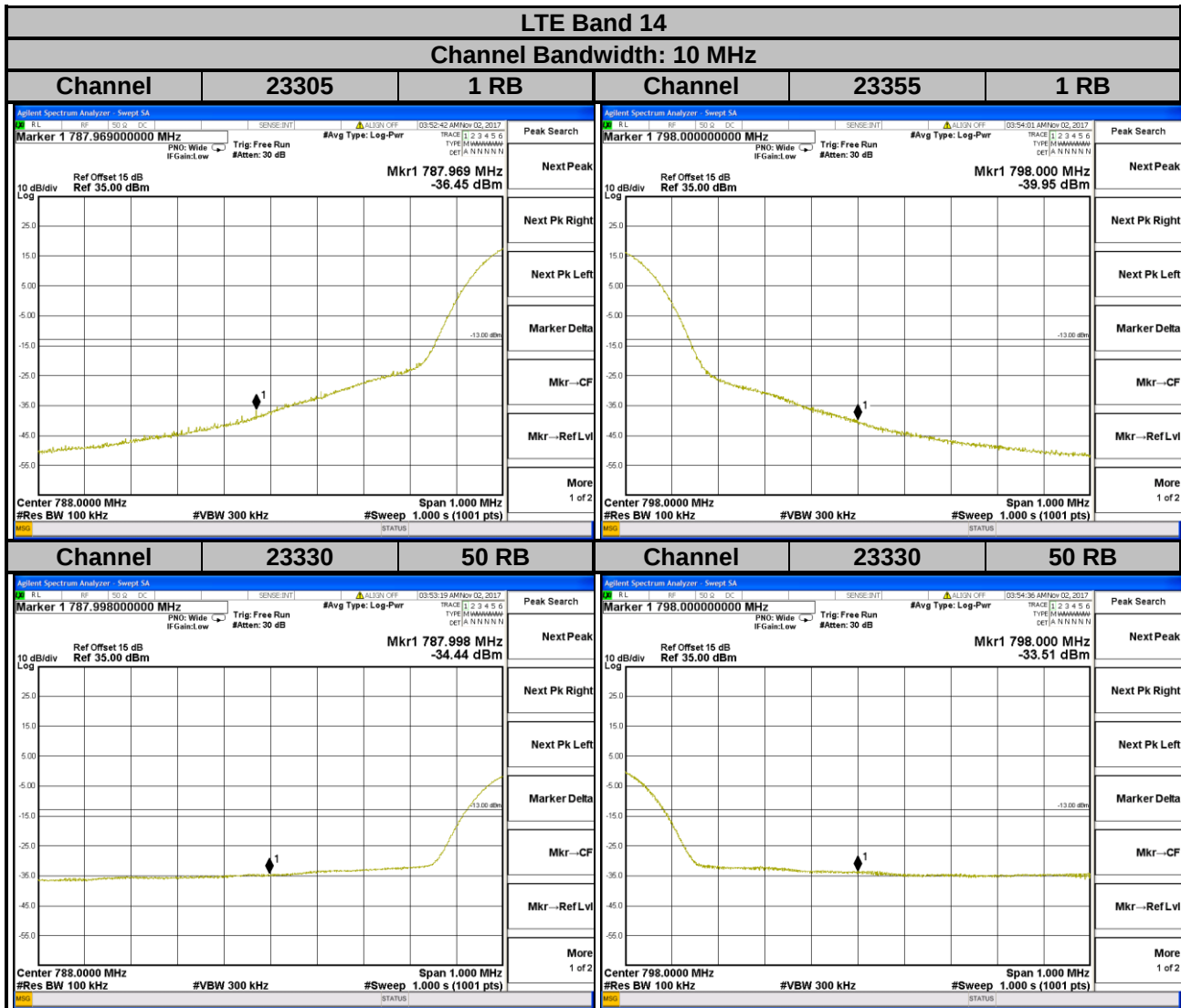


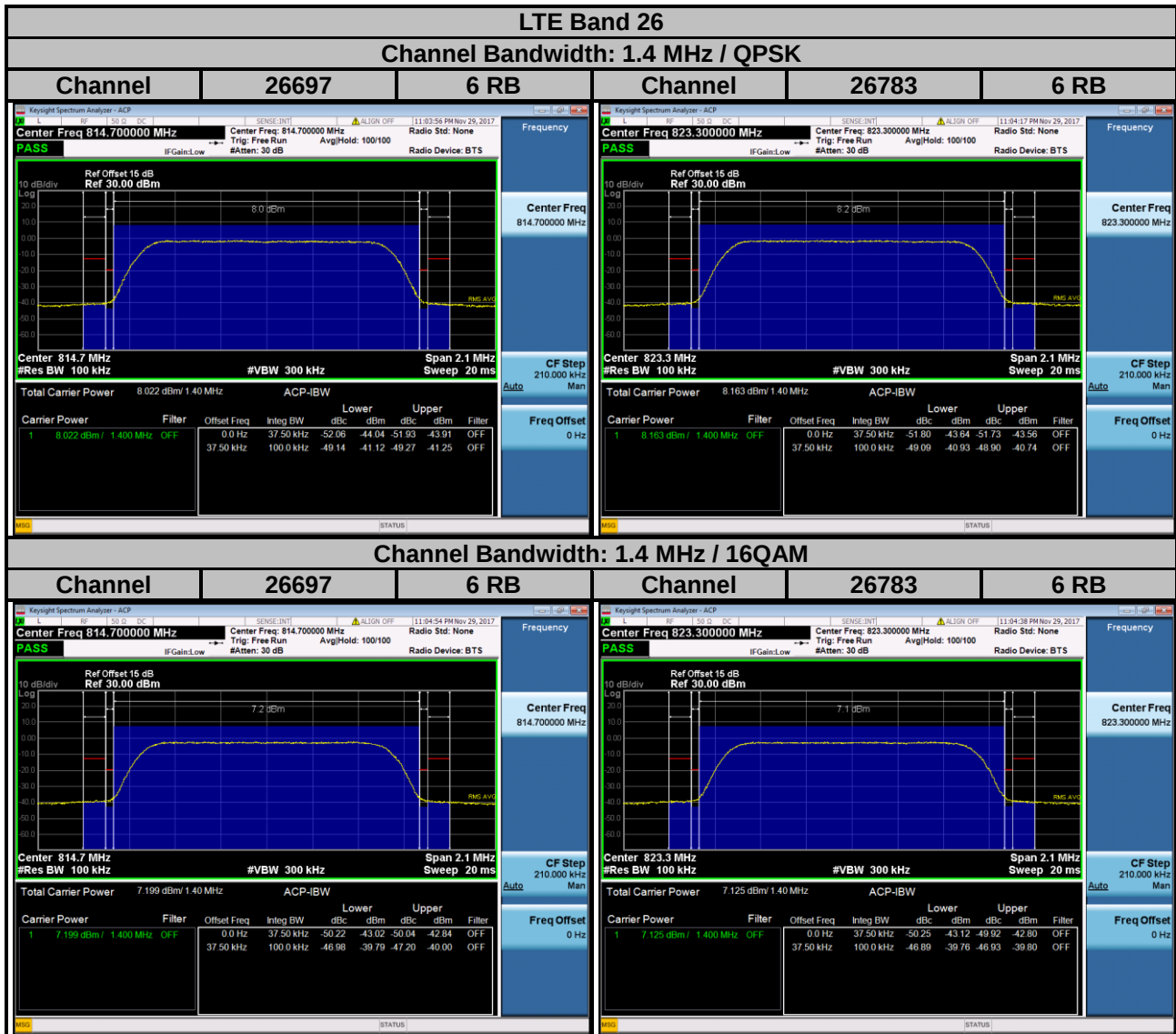
4.4.3 Test Procedures

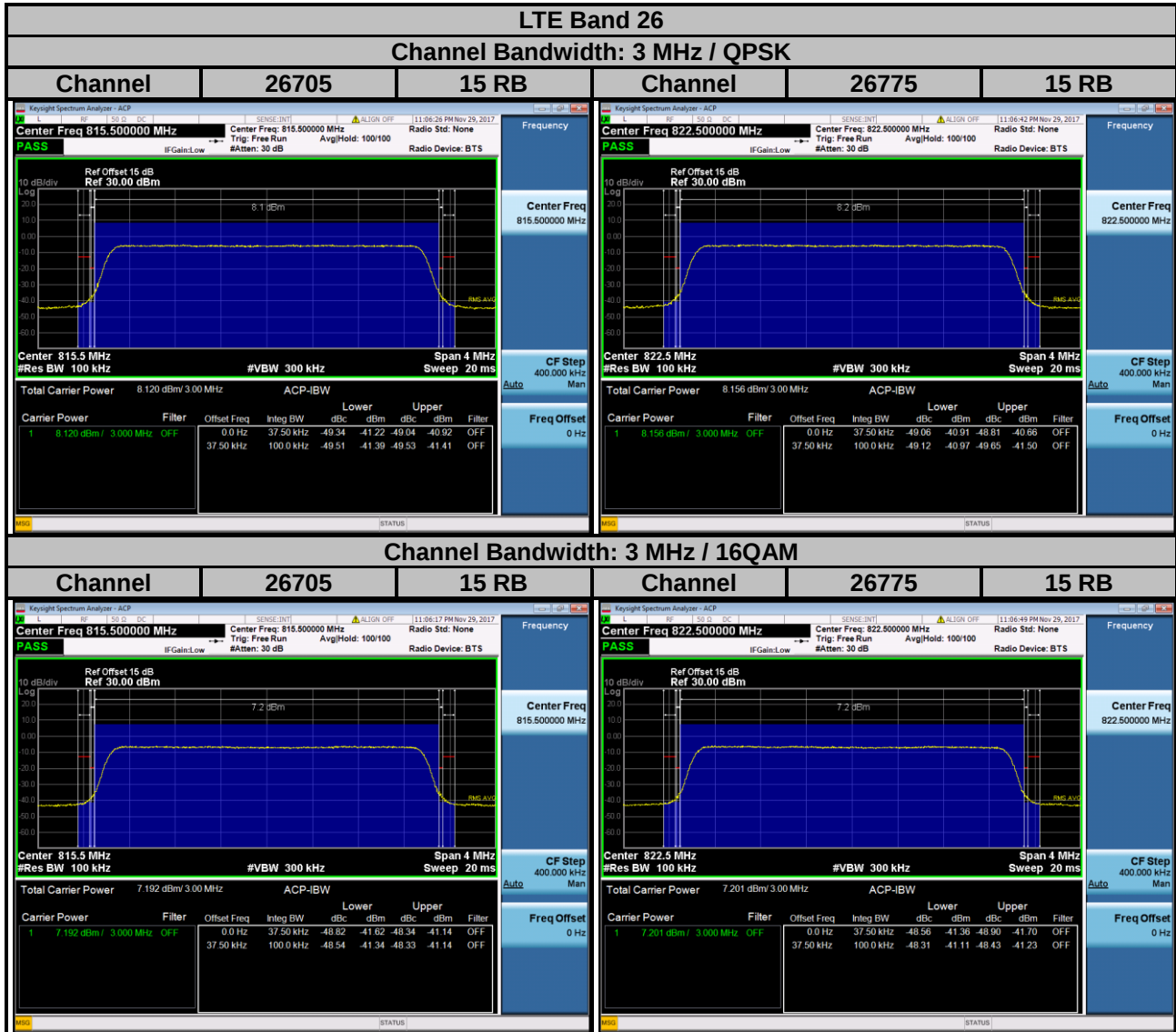
- The measurement used the power splitter via EUT RF power connector between simulation base station and spectrum analyzer.
- Record the test plot.

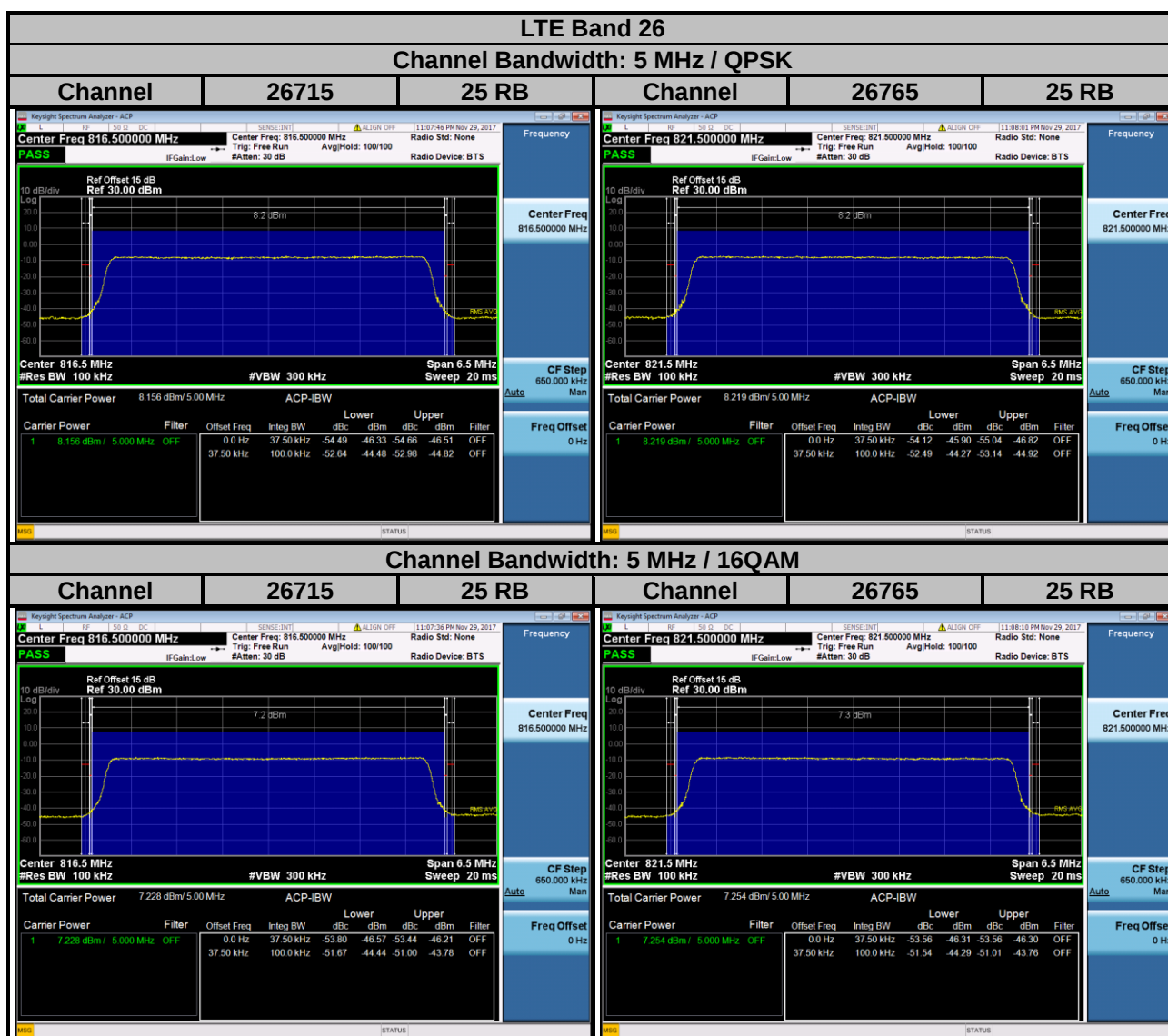
4.4.4 Test Results

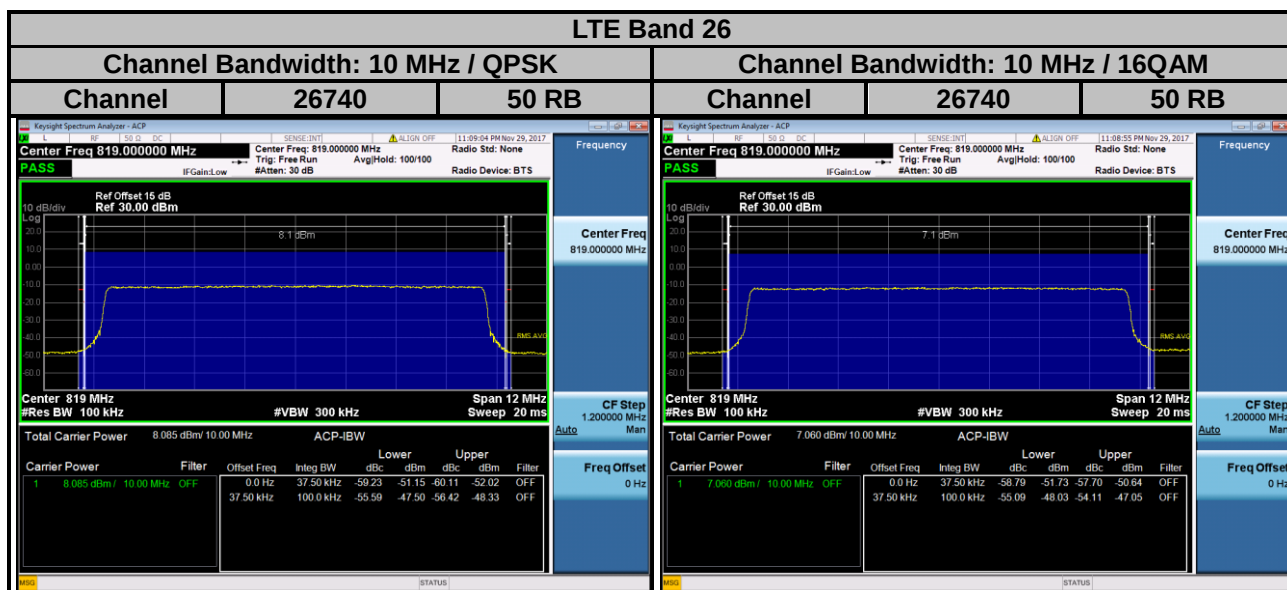










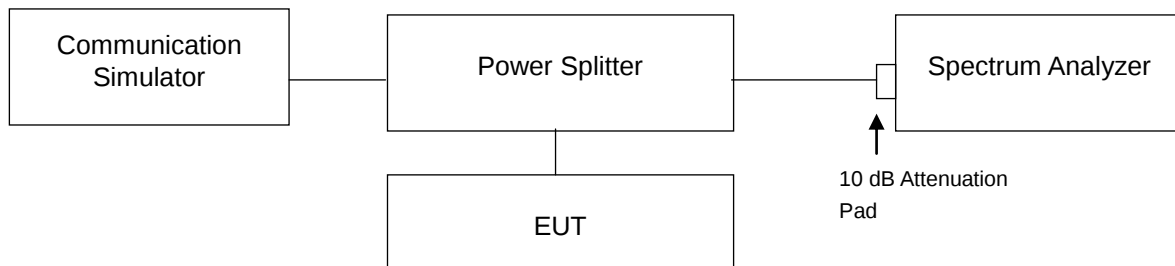


4.5 Conducted Spurious Emissions

4.5.1 Limits of Conducted Spurious Emissions Measurement

The power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) by at least $43 + 10 \log_{10}(P)$ dB. The limit of emission is equal to -13 dBm.

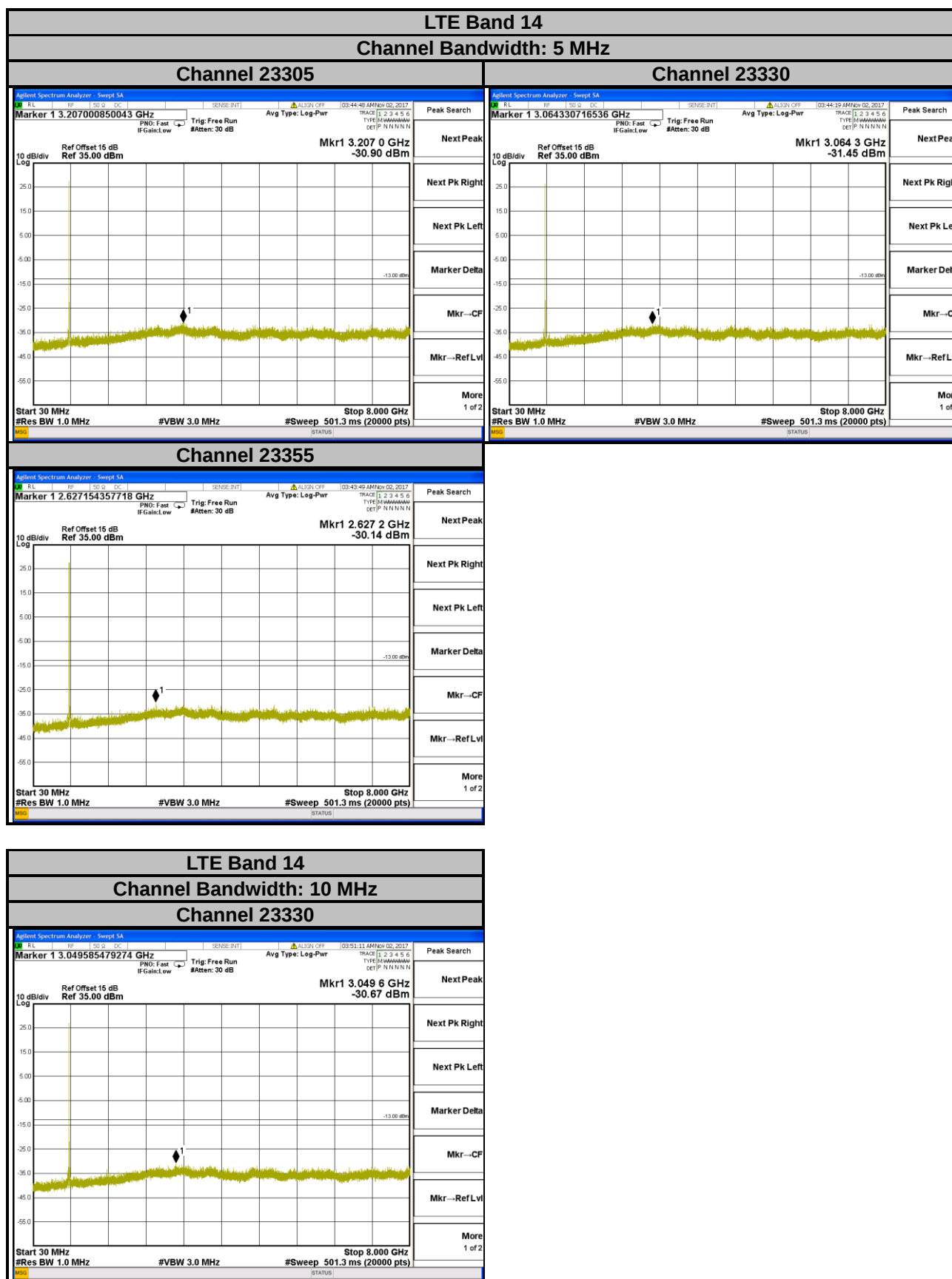
4.5.2 Test Setup

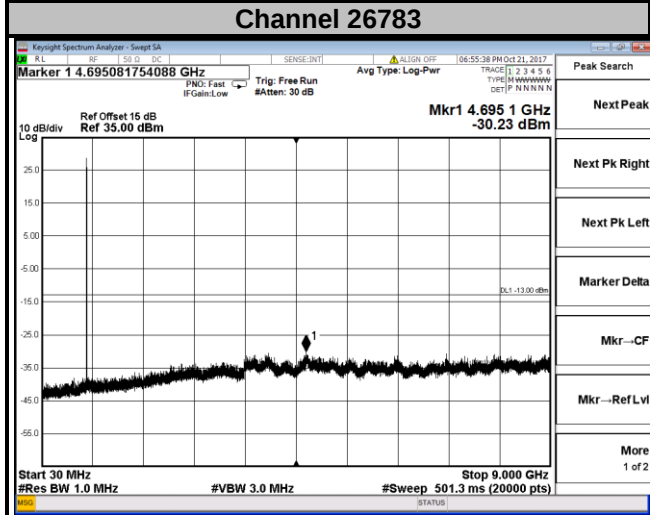
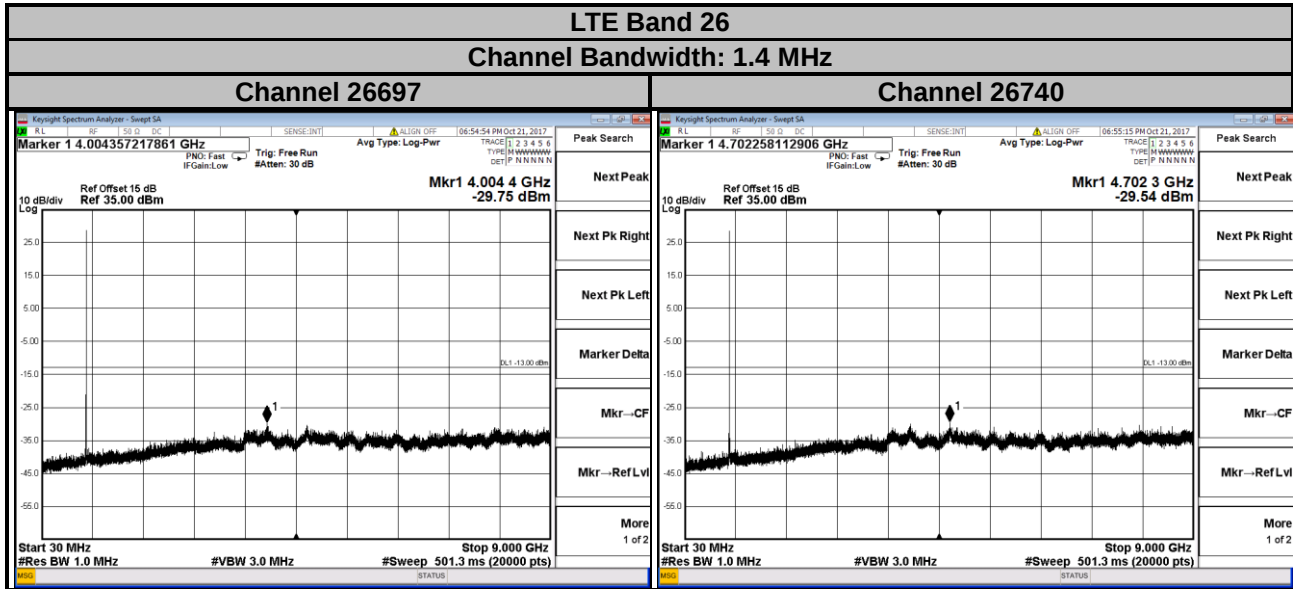


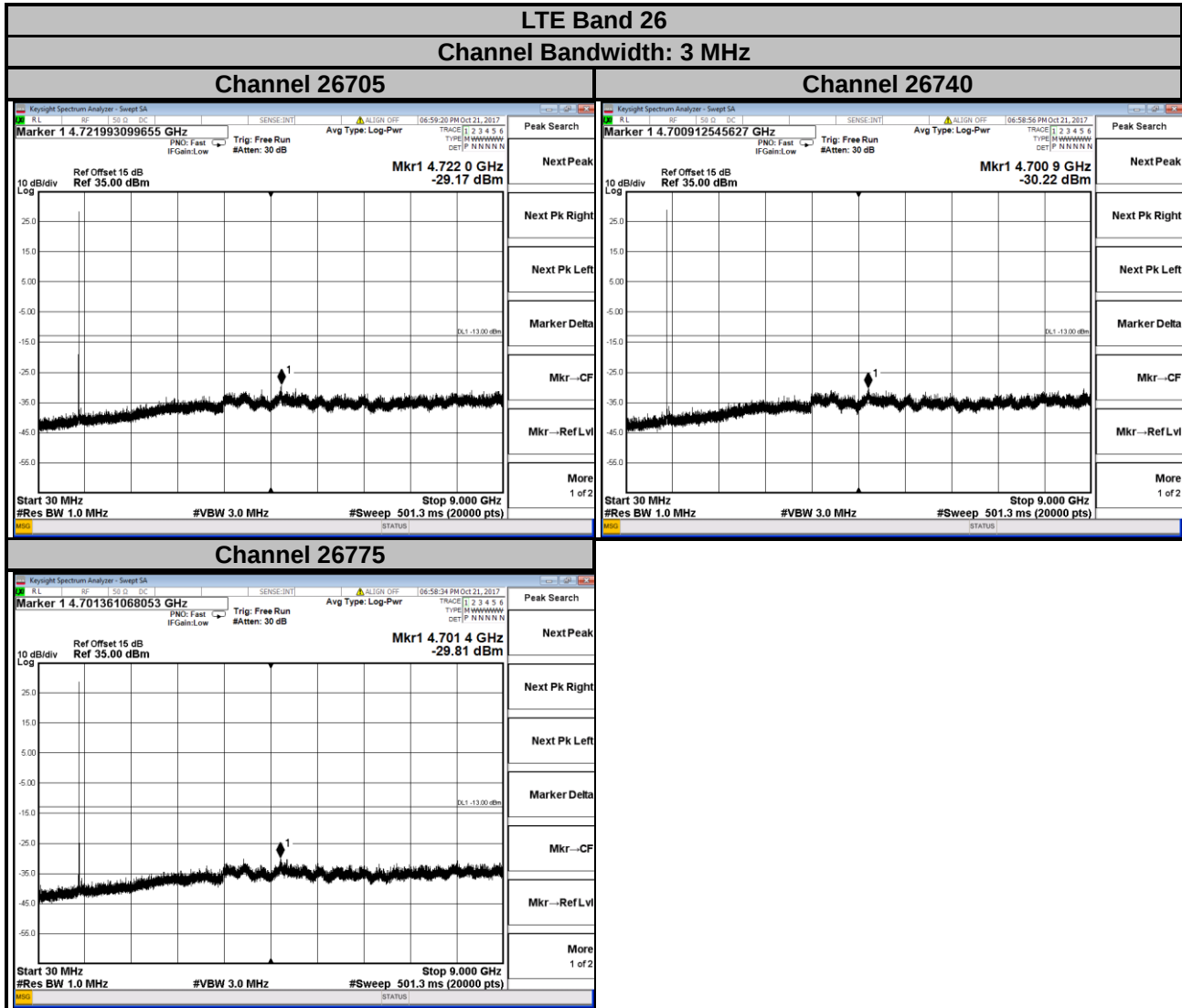
4.5.3 Test Procedure

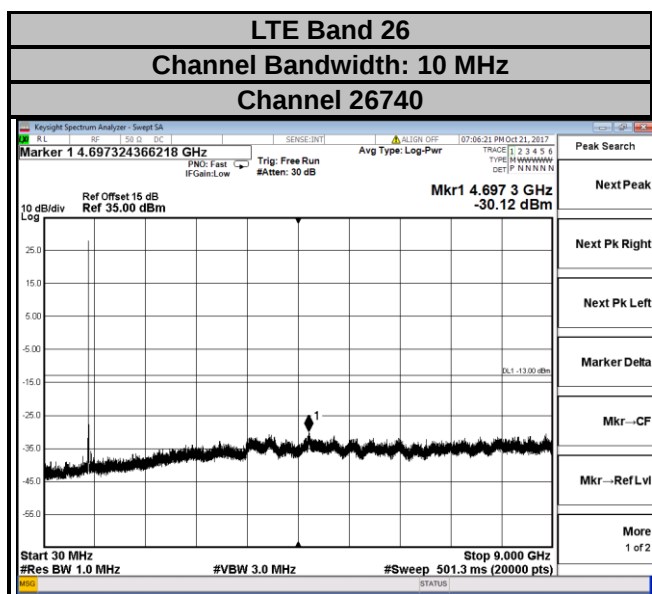
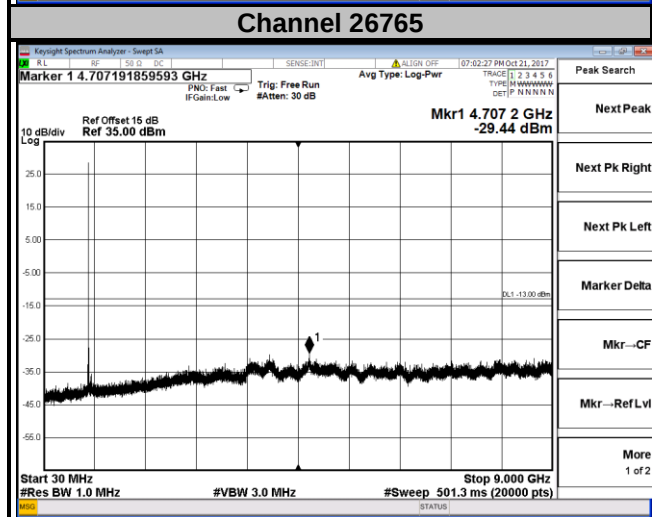
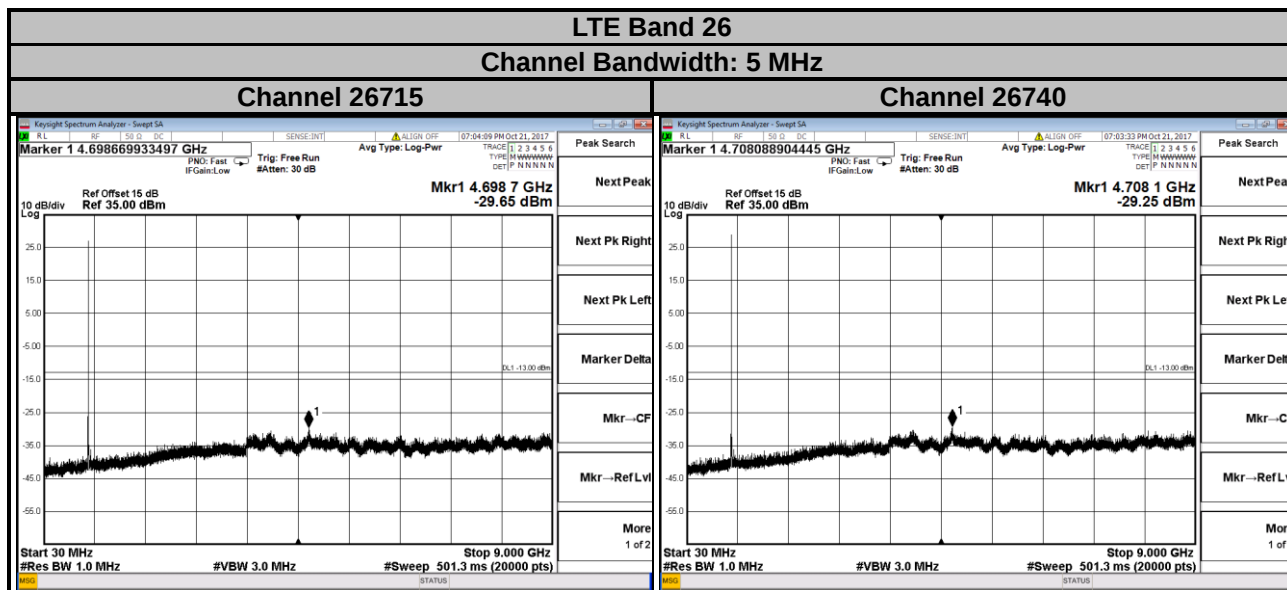
- The EUT makes a phone call to the communication simulator. All measurements were done at low, middle and high operational frequency range.
- Measuring frequency range is from 30 MHz to 9 GHz. 10 dB attenuation pad is connected with spectrum. RBW = 100 kHz and VBW = 300 kHz are used for conducted emission measurement.

4.5.4 Test Results









4.6 Radiated Emission Measurement

4.6.1 Limits of Radiated Emission Measurement

The power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) by at least $43 + 10 \log_{10}(P)$ dB. The limit of emission is equal to -13 dBm.

4.6.2 Test Procedure

- 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.
- 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.
- $EIRP = \text{Output power level of S.G} - \text{TX cable loss} + \text{Antenna gain of substitution horn}.$
- E.R.P power can be calculated form E.I.R.P power by subtracting the gain of dipole, $E.R.P \text{ power} = E.I.P.R \text{ power} - 2.15 \text{ dBi}.$

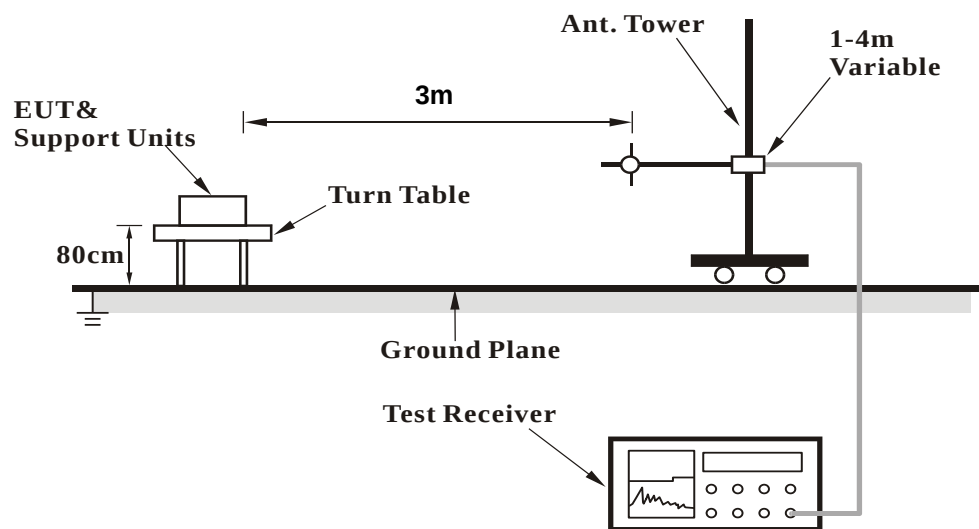
Note: The resolution bandwidth of spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz.

4.6.3 Deviation from Test Standard

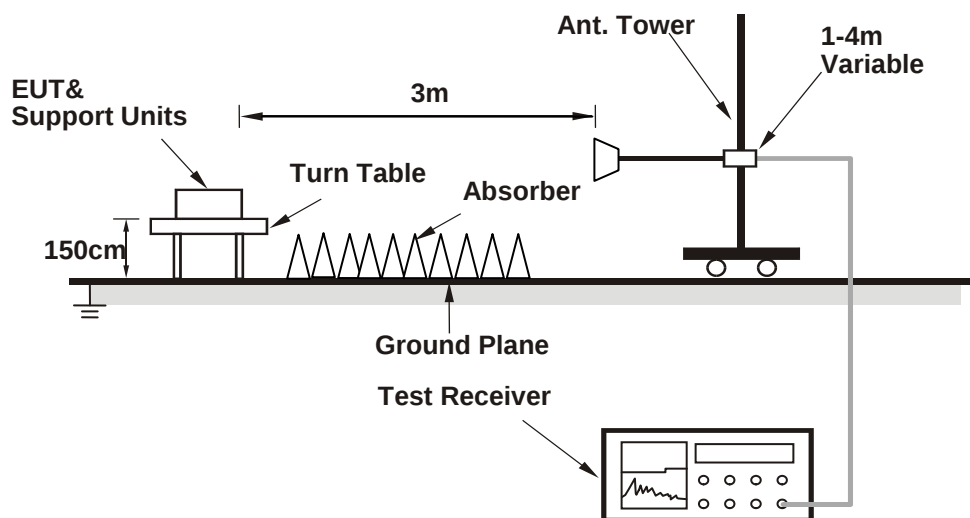
No deviation.

4.6.4 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).

4.6.5 Test Results

LTE Band 14

Channel Bandwidth: 5 MHz / QPSK

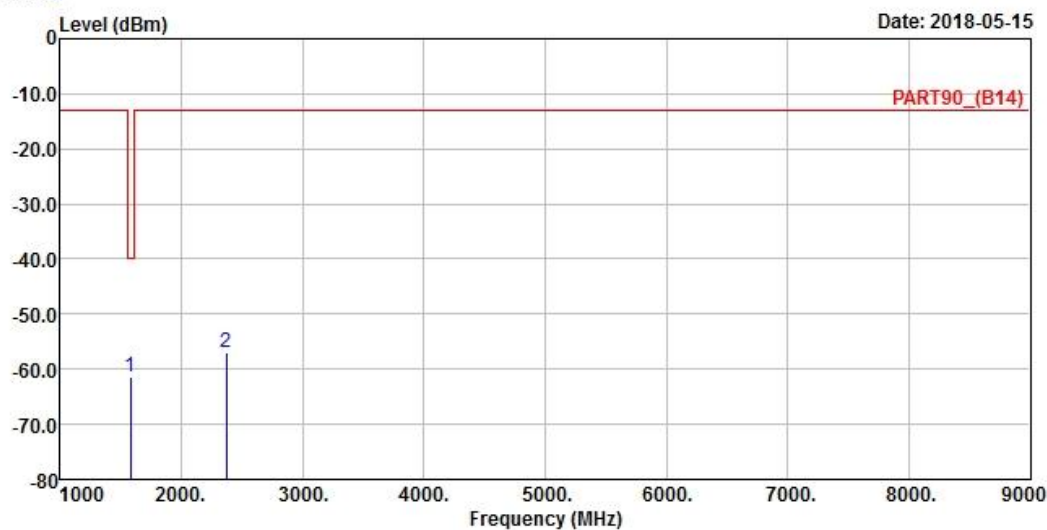
Low Channel



Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 3



Site : 966 Chamber 5

Condition: PART90_(B14) HORIZONTAL

Remak : LTE Band 14 QPSK_5M_L-CH Link

Tested by: Jisyong Wang

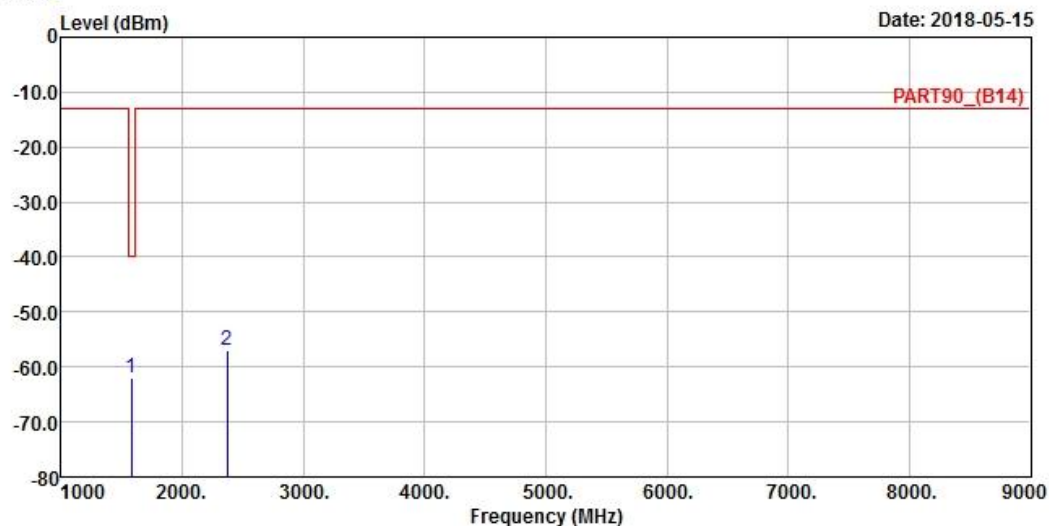
			Read	Limit	Over		
	Freq	Level	Level	Line	Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1 pp	1581.00	-61.26	-46.30	-40.00	-21.26	-14.96	Peak
2	2371.50	-57.05	-46.61	-13.00	-44.05	-10.44	Peak



Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 4



Site : 966 Chamber 5

Condition: PART90_(B14) VERTICAL

Remak : LTE Band 14 QPSK_5M_L-CH Link

Tested by: Jisyong Wang

			Read	Limit	Over		
	Freq	Level	Level	Line	Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1 pp	1581.00	-61.87	-46.91	-40.00	-21.87	-14.96	Peak
2	2371.50	-57.04	-46.60	-13.00	-44.04	-10.44	Peak

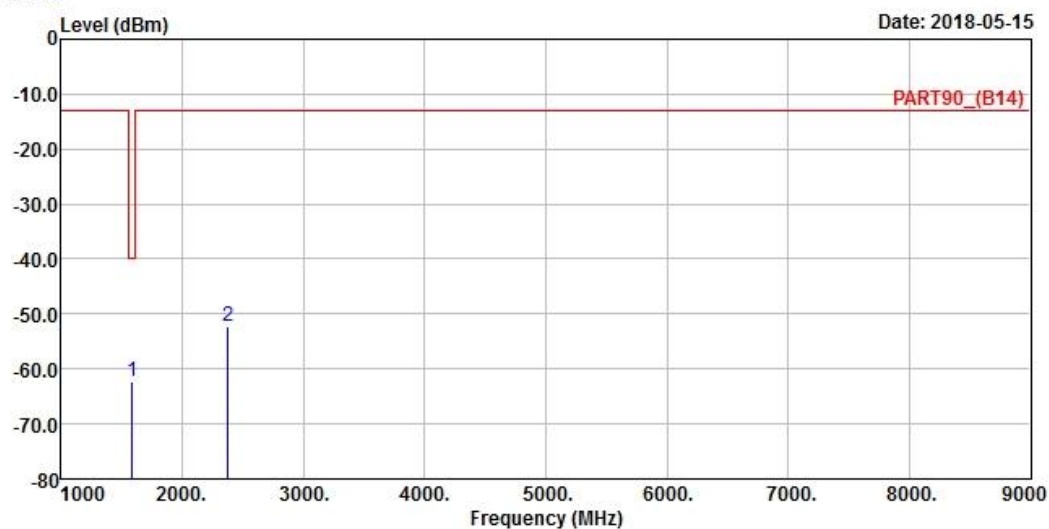
Middle Channel



Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 3



Site : 966 Chamber 5

Condition: PART90_(B14) HORIZONTAL

Remak : LTE Band 14 QPSK_5M_M-CH Link

Tested by: Jisyong Wang

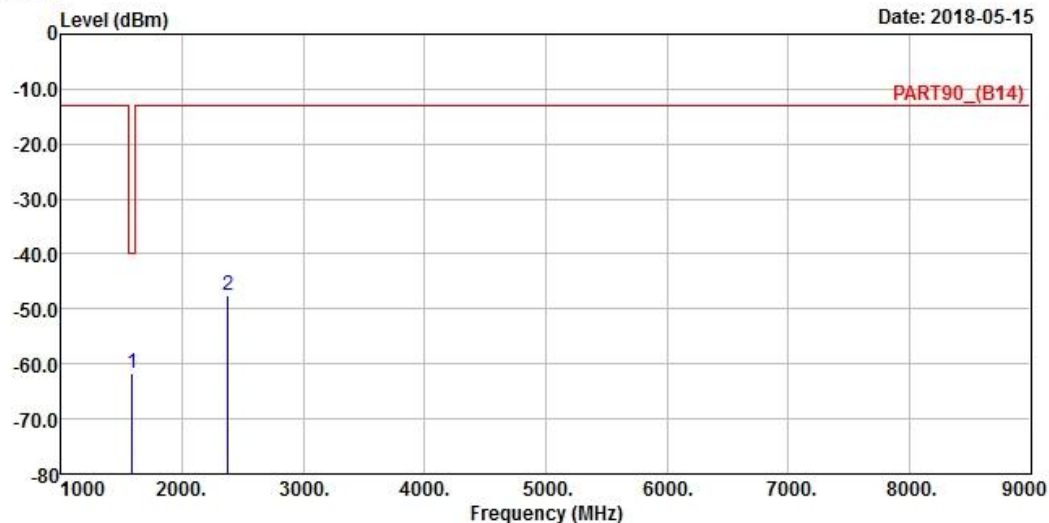
			Read	Limit	Over		
	Freq	Level	Level	Line	Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1 pp	1586.00	-62.19	-47.29	-40.00	-22.19	-14.90	Peak
2	2379.00	-52.13	-41.69	-13.00	-39.13	-10.44	Peak



Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 4



Site : 966 Chamber 5

Condition: PART90_(B14) VERTICAL

Remak : LTE Band 14 QPSK_5M_M-CH Link

Tested by: Jisyong Wang

			Read	Limit	Over		
	Freq	Level	Level	Line	Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1 pp	1586.00	-61.61	-46.71	-40.00	-21.61	-14.90	Peak
2	2379.00	-47.55	-37.11	-13.00	-34.55	-10.44	Peak

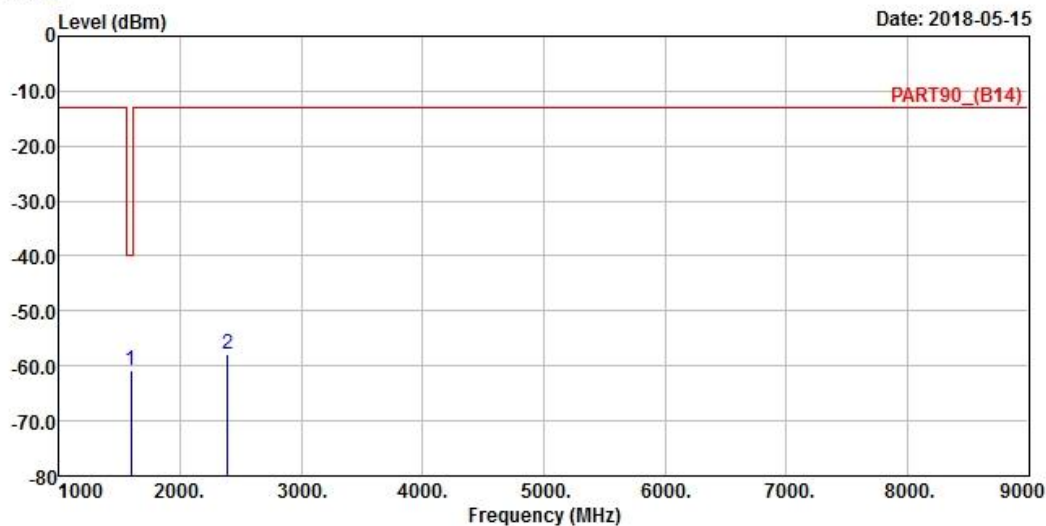
High Channel



Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 3



Site : 966 Chamber 5

Condition: PART90_(B14) HORIZONTAL

Remak : LTE Band 14 QPSK_5M_H-CH Link

Tested by: Jisyong Wang

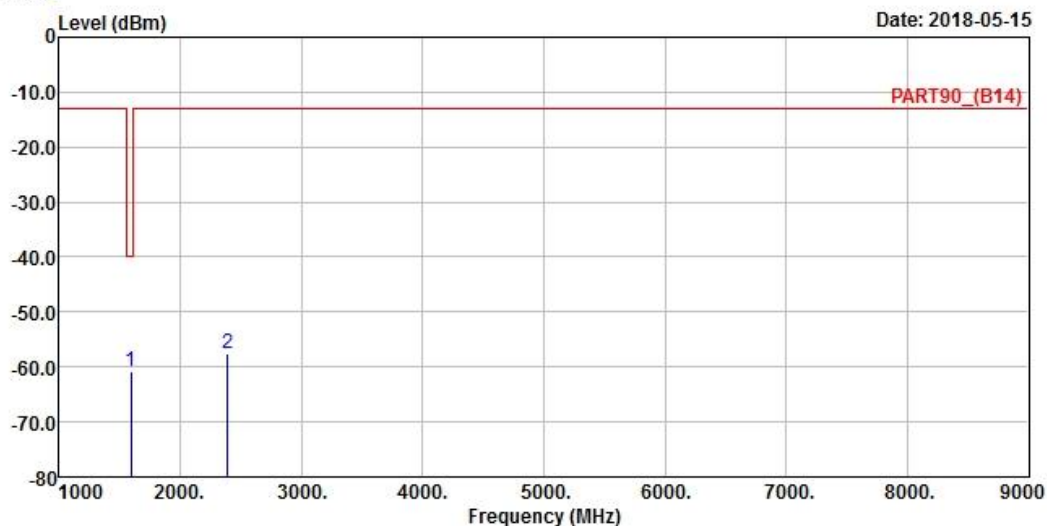
			Read	Limit	Over		
	Freq	Level	Level	Line	Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1 pp	1591.00	-60.80	-45.90	-40.00	-20.80	-14.90	Peak
2	2386.50	-57.94	-47.50	-13.00	-44.94	-10.44	Peak



Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 4



Site : 966 Chamber 5

Condition: PART90_(B14) VERTICAL

Remak : LTE Band 14 QPSK_5M_H-CH Link

Tested by: Jisyong Wang

			Read	Limit	Over		
	Freq	Level	Level	Line	Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1 pp	1591.00	-60.74	-45.84	-40.00	-20.74	-14.90	Peak
2	2386.50	-57.44	-47.00	-13.00	-44.44	-10.44	Peak

Channel Bandwidth: 10 MHz / QPSK
Middle Channel

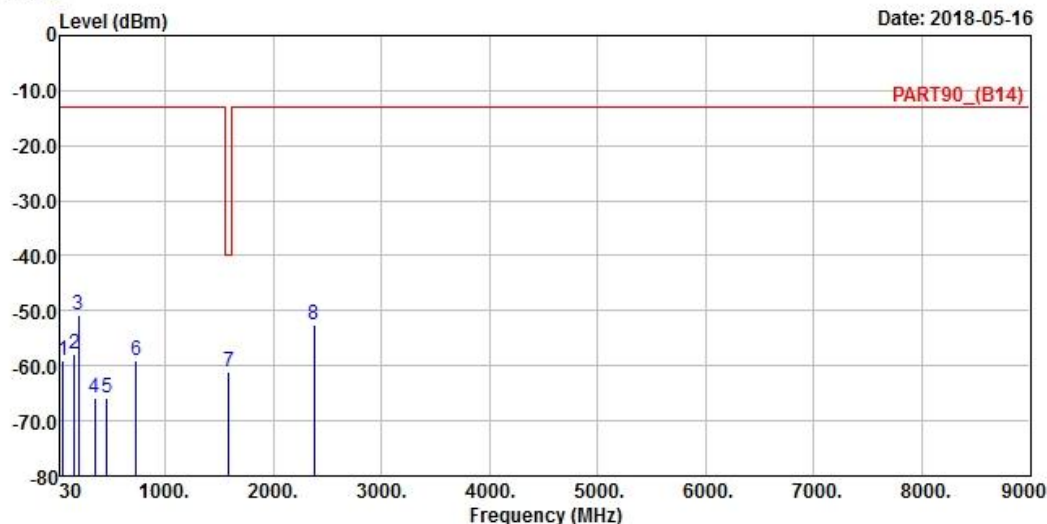


Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 5

Date: 2018-05-16



Site : 966 Chamber 5
Condition: PART90_(B14) HORIZONTAL
Remak : LTE Band 14 QPSK_10M_M-CH Link
Tested by: Jisyong Wang

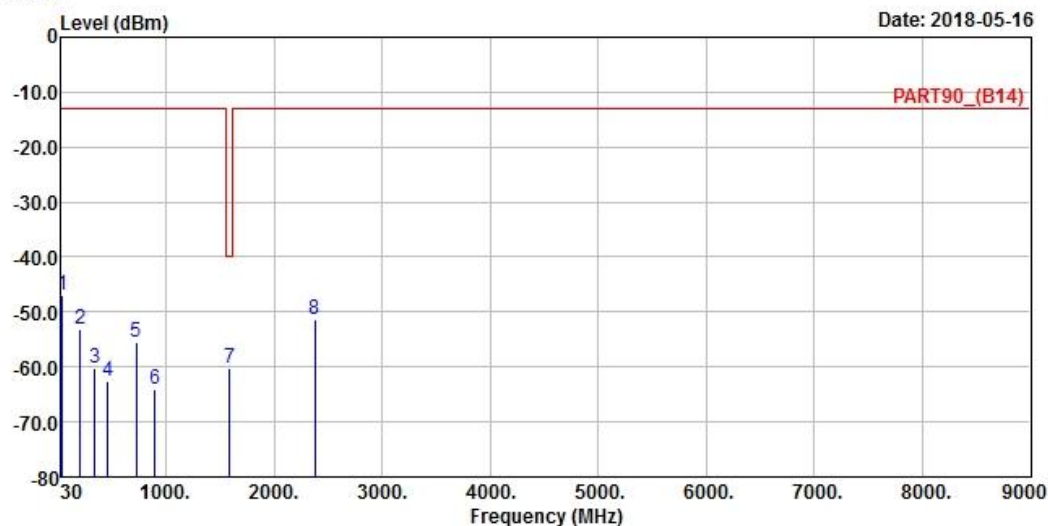
	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1	56.19	-59.09	-52.49	-13.00	-46.09	-6.60	Peak
2	160.95	-57.87	-52.96	-13.00	-44.87	-4.91	Peak
3	197.81	-50.66	-42.83	-13.00	-37.66	-7.83	Peak
4	348.16	-65.90	-59.63	-13.00	-52.90	-6.27	Peak
5	463.59	-65.95	-60.65	-13.00	-52.95	-5.30	Peak
6	728.40	-59.12	-59.58	-13.00	-46.12	0.46	Peak
7 pp	1586.00	-61.11	-46.21	-40.00	-21.11	-14.90	Peak
8	2379.00	-52.43	-41.99	-13.00	-39.43	-10.44	Peak



Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 6



Site : 966 Chamber 5

Condition: PART90_(B14) VERTICAL

Remak : LTE Band 14 QPSK_10M_M-CH Link

Tested by: Jisyong Wang

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1	40.67	-46.87	-46.99	-13.00	-33.87	0.12	Peak
2	201.69	-53.13	-45.19	-13.00	-40.13	-7.94	Peak
3	341.37	-60.18	-53.81	-13.00	-47.18	-6.37	Peak
4	459.71	-62.58	-57.21	-13.00	-49.58	-5.37	Peak
5	720.64	-55.44	-55.74	-13.00	-42.44	0.30	Peak
6	900.09	-63.96	-64.53	-13.00	-50.96	0.57	Peak
7 pp	1586.00	-60.25	-45.35	-40.00	-20.25	-14.90	Peak
8	2379.00	-51.46	-41.02	-13.00	-38.46	-10.44	Peak

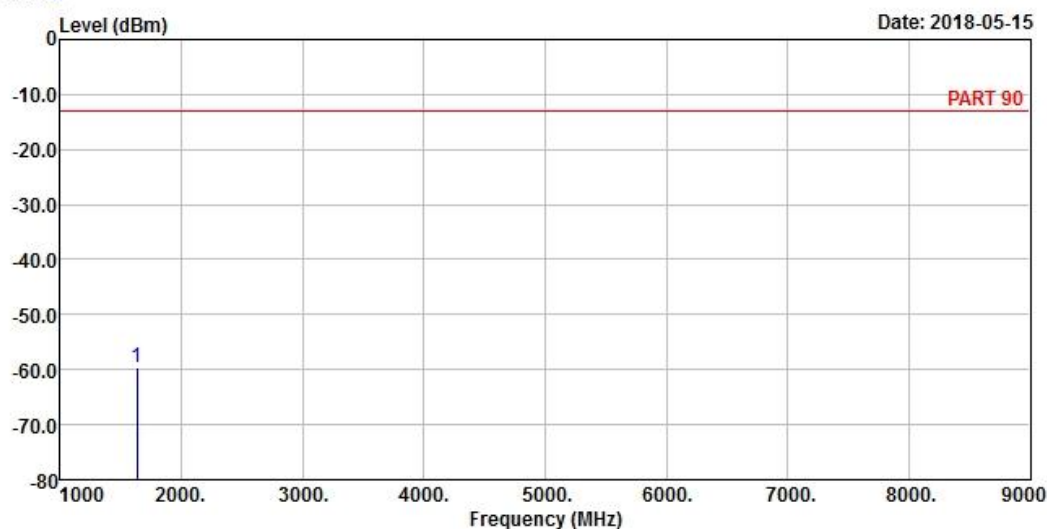
LTE Band 26
Channel Bandwidth: 1.4 MHz / QPSK
Low Channel



Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 3



Site : 966 Chamber 5
Condition: PART 90 HORIZONTAL
Remak : LTE Band 26 QPSK_1.4M Link_L-CH
Tested by: Jisyong Wang

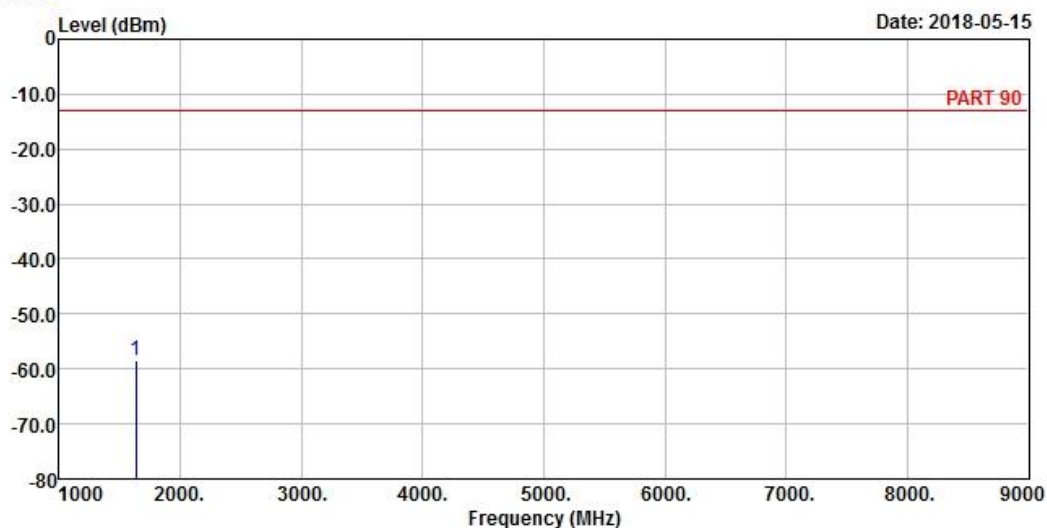
Freq	Level	Read	Limit	Over	Factor	Remark
		Level	Line	Limit		
MHz	dBm	dBm	dBm	dB	dB	
1 pp 1629.40	-59.75	-44.96	-13.00	-46.75	-14.79	Peak



Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 4



Site : 966 Chamber 5

Condition: PART 90 VERTICAL

Remak : LTE Band 26 QPSK_1.4M Link_L-CH

Tested by: Jisyong Wang

Freq	Level	Read	Limit	Over		Factor	Remark
		Level	Line	Limit	Limit		
MHz	dBm	dBm	dBm	dB	dB	dB	
1 pp 1629.40	-58.34	-43.55	-13.00	-45.34	-14.79		Peak

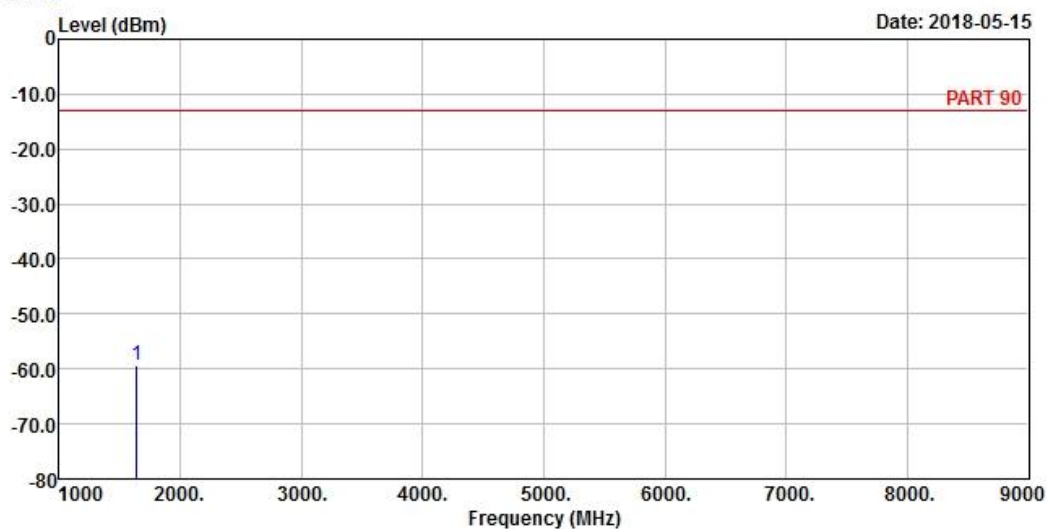
Middle Channel



Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 3



Site : 966 Chamber 5
 Condition: PART 90 HORIZONTAL
 Remak : LTE Band 26 QPSK_1.4M Link_M-CH
 Tested by: Jisyong Wang

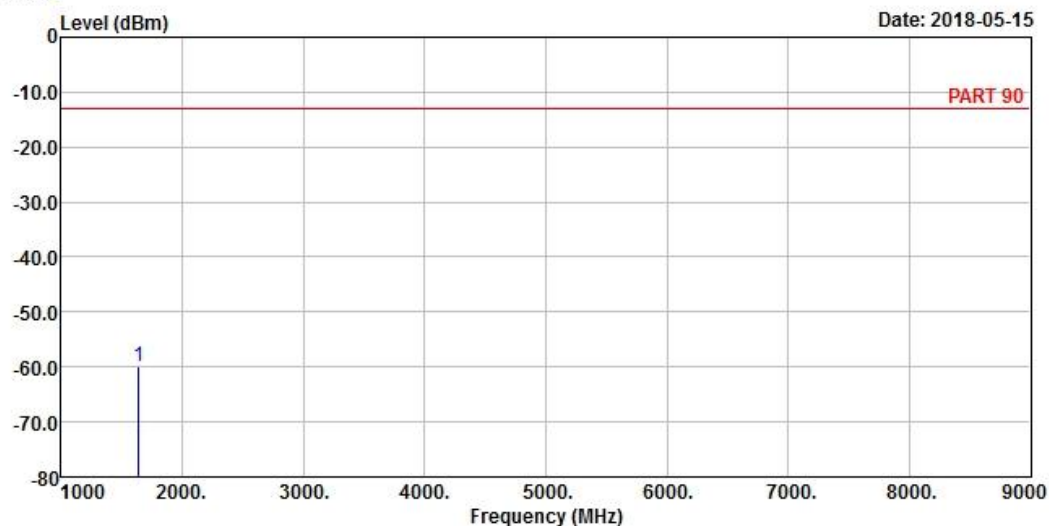
		Read	Limit	Over		
Freq	Level	Level	Line	Limit	Factor	Remark
MHz	dBm	dBm	dBm	dB	dB	
1 pp 1638.00	-59.25	-44.46	-13.00	-46.25	-14.79	Peak



Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 4



Site : 966 Chamber 5

Condition: PART 90 VERTICAL

Remak : LTE Band 26 QPSK_1.4M Link_M-CH

Tested by: Jisyong Wang

		Read	Limit	Over		
Freq	Level	Level	Line	Limit	Factor	Remark
MHz	dBm	dBm	dBm	dB	dB	
1 pp 1638.00	-59.86	-45.07	-13.00	-46.86	-14.79	Peak

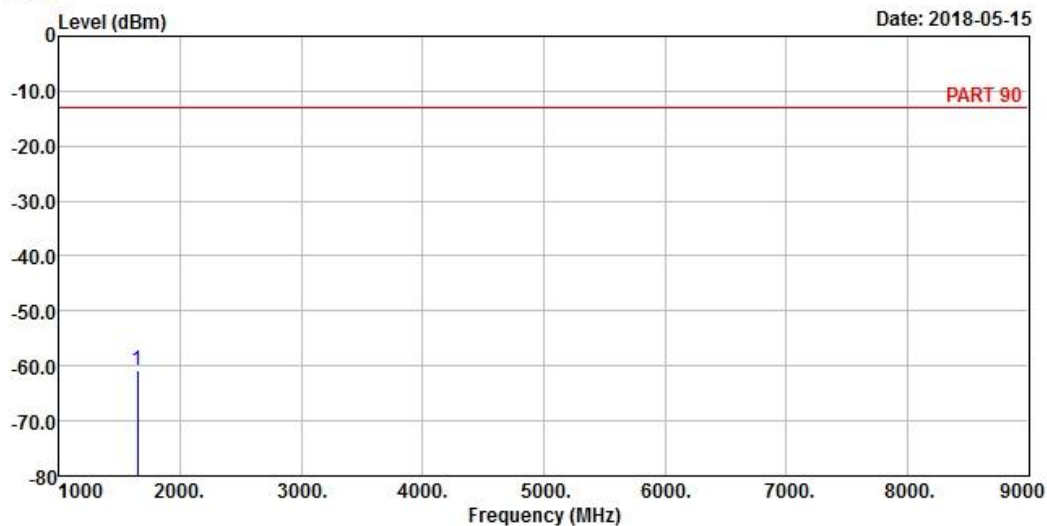
High Channel



Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 3



Site : 966 Chamber 5
 Condition: PART 90 HORIZONTAL
 Remak : LTE Band 26 QPSK_1.4M Link_H-CH
 Tested by: Jisyong Wang

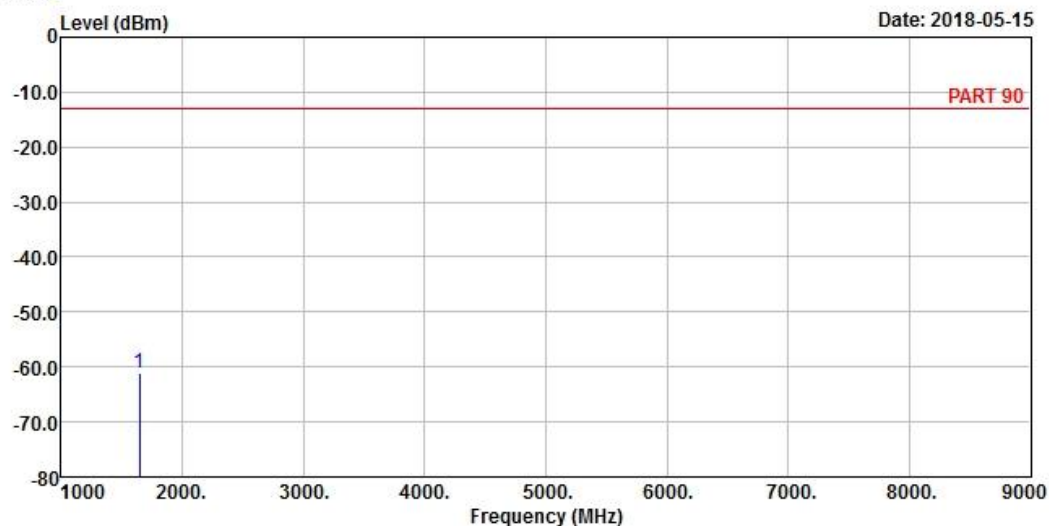
		Read	Limit	Over		
Freq	Level	Level	Line	Limit	Factor	Remark
MHz	dBm	dBm	dBm	dB	dB	
1 pp 1646.60	-60.90	-46.17	-13.00	-47.90	-14.73	Peak



Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 4



Site : 966 Chamber 5
 Condition: PART 90 VERTICAL
 Remak : LTE Band 26 QPSK_1.4M Link_H-CH
 Tested by: Jisyong Wang

		Read	Limit	Over		
Freq	Level	Level	Line	Limit	Factor	Remark
MHz	dBm	dBm	dBm	dB	dB	
1 pp 1646.60	-61.02	-46.29	-13.00	-48.02	-14.73	Peak

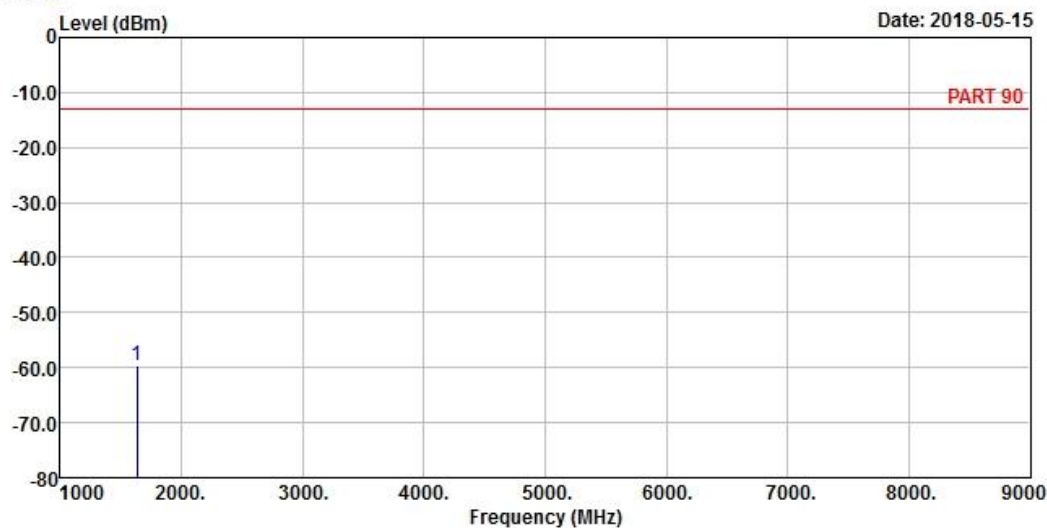
Channel Bandwidth: 5 MHz / QPSK
Low Channel



Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 3



Site : 966 Chamber 5
Condition: PART 90 HORIZONTAL
Remak : LTE Band 26 QPSK_5M Link_L-CH
Tested by: Jisyong Wang

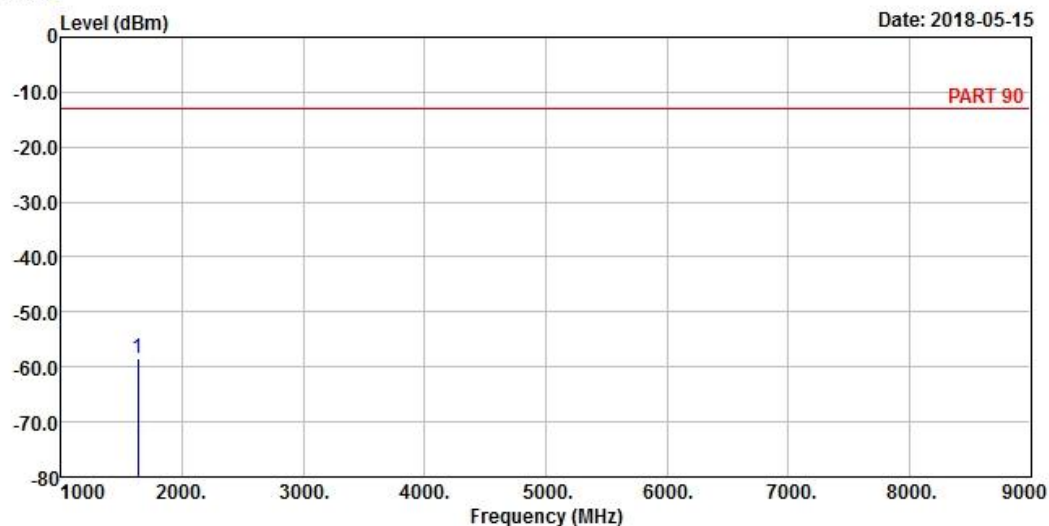
		Read	Limit	Over		
Freq	Level	Level	Line	Limit	Factor	Remark
MHz	dBm	dBm	dBm	dB	dB	
1 pp 1633.00	-59.75	-44.96	-13.00	-46.75	-14.79	Peak



Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 4



Site : 966 Chamber 5

Condition: PART 90 VERTICAL

Remak : LTE Band 26 QPSK_5M Link_L-CH

Tested by: Jisyong Wang

Freq	Level	Read	Limit	Over		Factor	Remark
		Level	Line	Limit	Limit		
MHz	dBm	dBm	dBm	dB	dB	dB	
1 pp 1633.00	-58.34	-43.55	-13.00	-45.34	-14.79		Peak

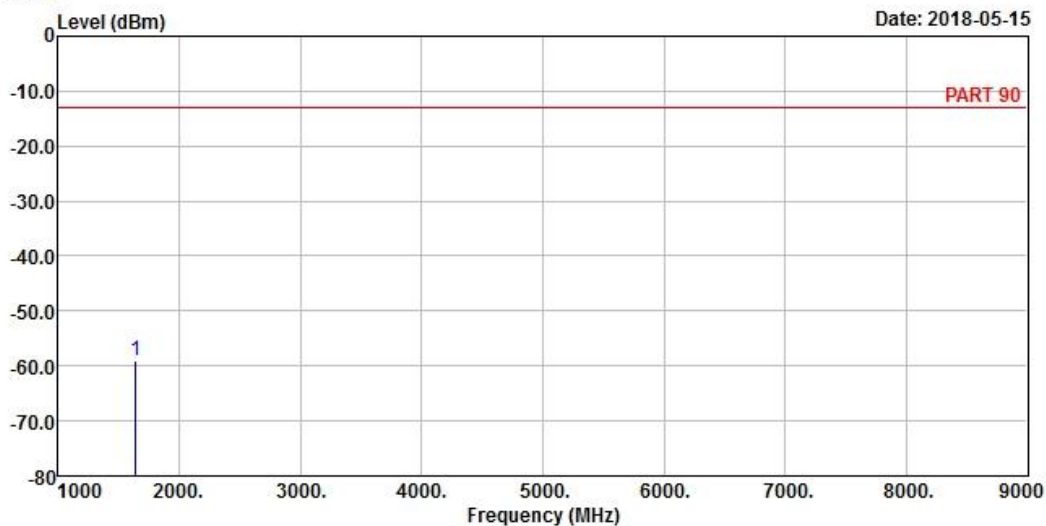
Middle Channel



Bureau Veritas Consumer Products Services Ltd.,Taoyuan Branch

A D T

Data: 3



Site : 966 Chamber 5
Condition: PART 90 HORIZONTAL
Remak : LTE Band 26 QPSK_5M Link_M-CH
Tested by: Jisyong Wang

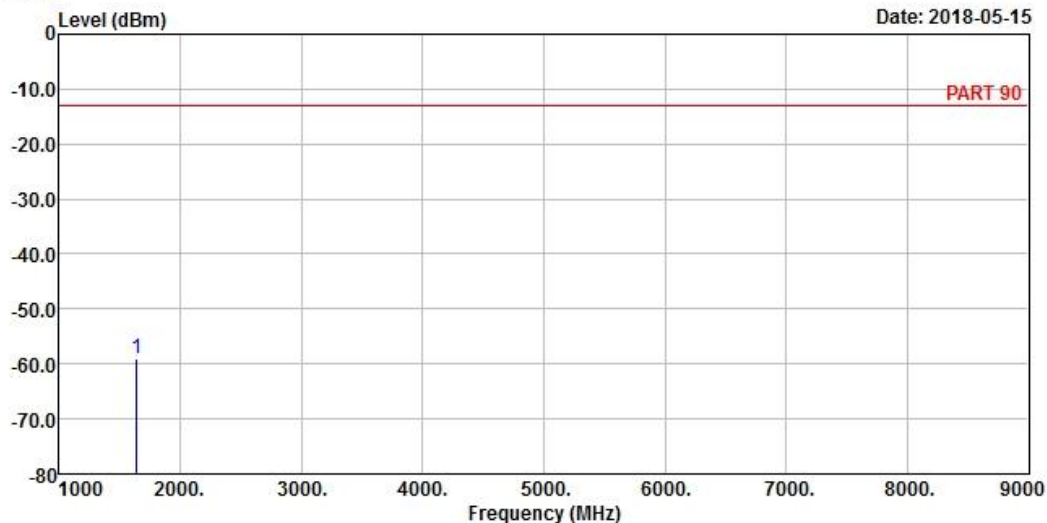
		Read	Limit	Over		
Freq	Level	Level	Line	Limit	Factor	Remark
MHz	dBm	dBm	dBm	dB	dB	
1 pp 1638.00	-58.99	-44.20	-13.00	-45.99	-14.79	Peak



Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 4



Site : 966 Chamber 5
 Condition: PART 90 VERTICAL
 Remak : LTE Band 26 QPSK_5M Link_M-CH
 Tested by: Jisyong Wang

		Read	Limit	Over		
Freq	Level	Level	Line	Limit	Factor	Remark
MHz	dBm	dBm	dBm	dB	dB	
1 pp 1638.00	-59.08	-44.29	-13.00	-46.08	-14.79	Peak

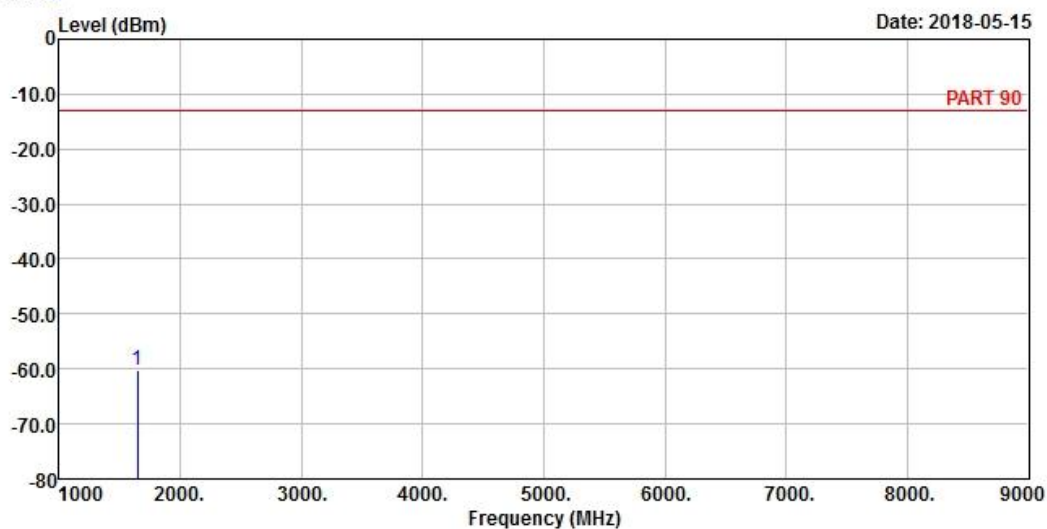
High Channel



Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 3



Site : 966 Chamber 5
 Condition: PART 90 HORIZONTAL
 Remak : LTE Band 26 QPSK_5M Link_H-CH
 Tested by: Jisyong Wang

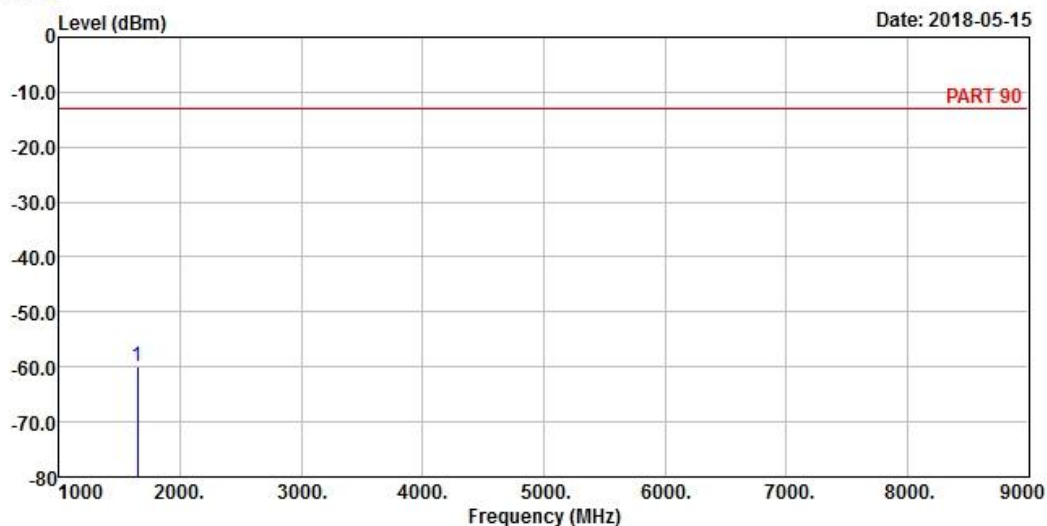
		Read	Limit	Over		
Freq	Level	Level	Line	Limit	Factor	Remark
MHz	dBm	dBm	dBm	dB	dB	
1 pp 1643.00	-60.16	-45.43	-13.00	-47.16	-14.73	Peak



Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 4



Site : 966 Chamber 5

Condition: PART 90 VERTICAL

Remak : LTE Band 26 QPSK_5M Link_H-CH

Tested by: Jisyong Wang

Freq	Level	Read	Limit	Over	Factor	Remark
		Level	Line	Limit		
MHz	dBm	dBm	dBm	dB	dB	
1 pp 1643.00	-59.83	-45.10	-13.00	-46.83	-14.73	Peak

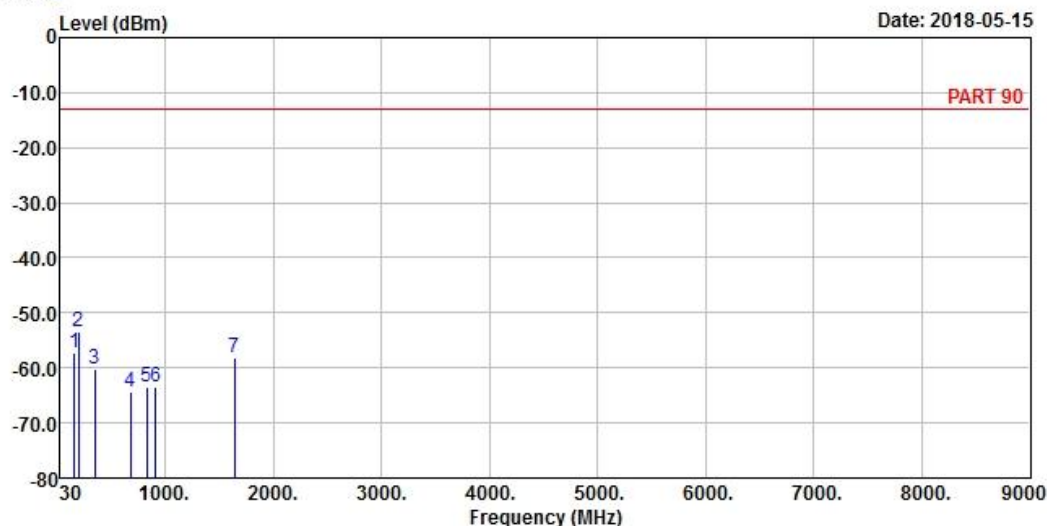
Channel Bandwidth: 10 MHz / QPSK
Middle Channel



Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 5



Site : 966 Chamber 5
Condition: PART 90 HORIZONTAL
Remak : LTE Band 26 QPSK_10M Link_M-CH
Tested by: Jisyong Wang

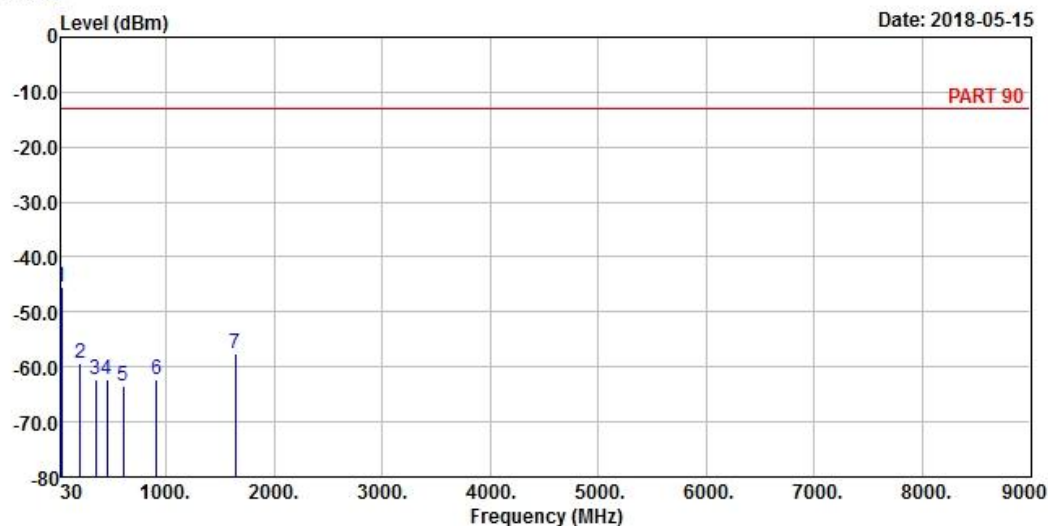
	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1	161.92	-57.20	-52.22	-13.00	-44.20	-4.98	Peak
2 pp	200.72	-53.54	-45.56	-13.00	-40.54	-7.98	Peak
3	347.19	-60.22	-53.94	-13.00	-47.22	-6.28	Peak
4	679.90	-64.38	-63.96	-13.00	-51.38	-0.42	Peak
5	829.28	-63.60	-64.07	-13.00	-50.60	0.47	Peak
6	914.64	-63.56	-64.49	-13.00	-50.56	0.93	Peak
7	1638.00	-58.12	-43.33	-13.00	-45.12	-14.79	Peak



Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

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Data: 6



Site : 966 Chamber 5

Condition: PART 90 VERTICAL

Remak : LTE Band 26 QPSK_10M Link_M-CH

Tested by: Jisyong Wang

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1 pp	30.00	-45.54	-45.92	-13.00	-32.54	0.38	Peak
2	202.66	-59.24	-51.34	-13.00	-46.24	-7.90	Peak
3	345.25	-62.35	-56.04	-13.00	-49.35	-6.31	Peak
4	454.86	-62.30	-56.84	-13.00	-49.30	-5.46	Peak
5	605.21	-63.35	-62.58	-13.00	-50.35	-0.77	Peak
6	910.76	-62.22	-63.06	-13.00	-49.22	0.84	Peak
7	1638.00	-57.56	-42.77	-13.00	-44.56	-14.79	Peak

5 Pictures of Test Arrangements

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

Appendix – Information on the Testing Laboratories

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

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

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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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