

FCC Test Report

(PART 90)

Report No.: RF180920C22-12

FCC ID: A4RG020C

Model Name: G020C

Received Date: Sep. 21, 2018

Test Date: Oct. 06, 2018 ~ Oct. 24, 2018

Issued Date: Dec. 27, 2018

Applicant: Google LLC

Address: 1600 Amphitheatre Parkway, Mountain View, CA 94043, USA

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

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Test Location (1): No. 19, Hwa Ya 2nd Rd, Wen Hwa Vil, Kwei Shan Dist., Taoyuan City 33383, Taiwan (R.O.C)

**FCC Registration /
Designation Number:** 788550 / TW0003



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Release Control Record

Issue No.	Description	Date Issued
RF180920C22-12	Original Release	Dec. 27, 2018

1 Certificate of Conformity

Product: Smartphone

Model Name: G020C


Sample Status: Identical Prototype


Applicant: Google LLC

Test Date: Oct. 06, 2018 ~ Oct. 24, 2018

Standards: FCC Part 90, Subpart I, 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 RF characteristics under the conditions specified in this report.

Prepared by :  _____, **Date:** Dec. 27, 2018
Ivonne Wu / Supervisor

Approved by :  _____, **Date:** Dec. 27, 2018
Dylan Chiou / Project Engineer

2 Summary of Test Results

Applied Standard: FCC Part 90 & Part 2 (CDMA)			
FCC Clause	Test Item	Result	Remarks
2.1046 90.635 (b)	Effective Radiated Power	Pass	Meet the requirement of limit.
2.1047	Modulation Characteristics	Pass	Meet the requirement.
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 90.210	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 -24.58 dB at 38.73 MHz.

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.
2.1047	Modulation Characteristics	Pass	Meet the requirement.
2.1055 90.539 (e)	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.
2.1053 90.543 (e)(2)(3)	Band Edge Measurements	Pass	Meet the requirement of limit.
2.1051 90.543 (e)(3)	Conducted Spurious Emissions	Pass	Meet the requirement of limit.
2.1053 90.543 (e)(f)	Radiated Spurious Emissions	Pass	Meet the requirement of limit. Minimum passing margin is -18.44 dB at 1586.00 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.
2.1047	Modulation Characteristics	Pass	Meet the requirement.
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 90.210	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 -35.10 dB at 44.55 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) (±)
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	Mar. 16, 2018	Mar. 15, 2019
Spectrum Analyzer Keysight	N9010A	MY56070348	Sep. 06, 2018	Sep. 05, 2019
Spectrum Analyzer ROHDE & SCHWARZ	FSU43	101261	Jan. 11, 2018	Jan. 10, 2019
Spectrum Analyzer ROHDE & SCHWARZ	FSW26	102023	Oct. 12, 2017	Oct. 11, 2018
			Oct. 11, 2018	Oct. 10, 2019
HORN Antenna SCHWARZBECK	BBHA 9120D	9120D-969	Dec. 12, 2017	Dec. 11, 2018
HORN Antenna SCHWARZBECK	BBHA 9170	148	Dec. 13, 2017	Dec. 12, 2017
BILOG Antenna SCHWARZBECK	VULB 9168	9168-472	Dec. 06, 2017	Dec. 05, 2018
Fixed Attenuator Mini-Circuits	MDCS18N-10	MDCS18N-10-01	Apr. 16, 2018	Apr. 15, 2019
MXG Vector signal generator Agilent	N5182B	MY53052658	May 24, 2018	May 23, 2019
Preamplifier EMCI	EMC 184045	980116	Oct. 12, 2018	Oct. 11, 2019
Preamplifier EMCI	EMC 012645	980115	Oct. 12, 2018	Oct. 11, 2019
Preamplifier EMCI	EMC 330H	980112	Oct. 12, 2018	Oct. 11, 2019
RF Coaxial Cable HUBER+SUHNNER	EMC104-SM-SM-800 0&3000	140811+170717	Oct. 12, 2018	Oct. 11, 2019
RF Coaxial Cable HUBER+SUHNNER	SUCOFLEX 104	EMC104-SM-SM-1 000(140807)	Oct. 12, 2018	Oct. 11, 2019
RF Coaxial Cable WOKEN	8D-FB	Cable-Ch10-01	Oct. 12, 2018	Oct. 11, 2019
Boresight Antenna Fixture	FBA-01	FBA-SIP01	NA	NA
Software BV ADT	E3 6.120103	NA	NA	NA
Antenna Tower MF	MFA-440H	NA	NA	NA
Turn Table MF	MFT-201SS	NA	NA	NA
Antenna Tower & Turn Table Controller MF	MF-7802	NA	NA	NA
Universal Radio Communication Tester R&S	CMU200	123112	Dec. 28, 2017	Dec. 27, 2018
Radio Communication Analyzer Anritsu	MT8820C	6201300640	Aug. 16, 2017	Aug. 15, 2019
Temperature & Humidity Chamber	GTH-120-40-CP-AR	MAA1306-019	Sep. 05, 2018	Sep. 04, 2019
DC Power Supply Topward	33010D	807748	NA	NA

- Note:
1. The calibration interval of the above test instruments is 12 / 24 months and the calibrations are traceable to NML/ROC and NIST/USA.
 2. The test was performed in 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 7450F-10.

3 General Information

3.1 General Description of EUT

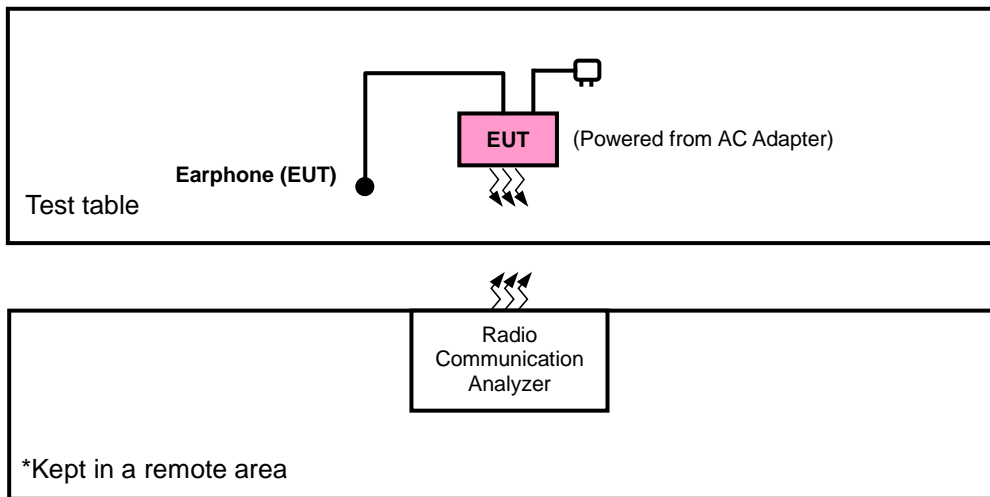
Product	Smartphone	
Model Name	G020C	
Status of EUT	Identical Prototype	
Power Supply Rating	3.85 Vdc (Li-ion battery) 5.0 Vdc or 9 Vdc (adapter) 5.0 Vdc (host equipment)	
Modulation Type	CDMA	QPSK, OQPSK, HPSK
	LTE	QPSK, 16QAM, 64QAM
Frequency Range	CDMA BC10	817.9 ~ 823.1 MHz
	LTE Band 14 (Channel 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	CDMA BC10	1M28F9W
	LTE Band 14 (Channel Bandwidth: 5 MHz)	4M50W7D
	LTE Band 14 (Channel Bandwidth: 10 MHz)	8M97W7D
	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	CDMA BC10	71.78 mW
	LTE Band 14 (Channel Bandwidth: 5 MHz)	67.45 mW
	LTE Band 14 (Channel Bandwidth: 10 MHz)	71.12 mW
	LTE Band 26 (Channel Bandwidth: 1.4 MHz)	63.39 mW
	LTE Band 26 (Channel Bandwidth: 3 MHz)	66.99 mW
	LTE Band 26 (Channel Bandwidth: 5 MHz)	71.12 mW
	LTE Band 26 (Channel Bandwidth: 10 MHz)	74.99 mW
Antenna Type	PIFA Antenna	
Antenna Gain	CDMA BC10	-5 dBi gain
	LTE Band 14	-5 dBi gain
	LTE Band 26	-4.7 dBi gain
Accessory Device	Refer to Note as below	
Data Cable Supplied	Refer to Note as below	

Note:

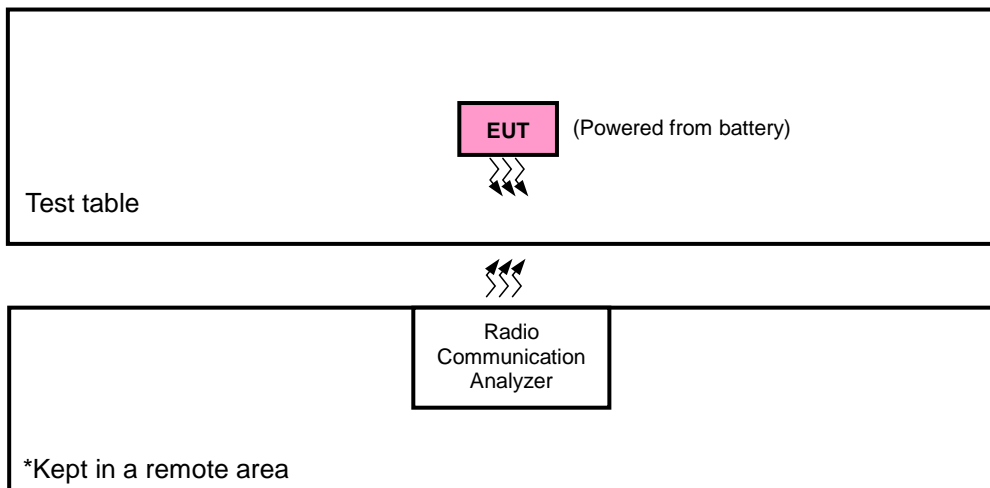
1. There're 2 configurations for the EUT listed as below.
 Main Sample: EUT + Battery 1
 2nd Sample: EUT + Battery 2
 ✧ After pre-tested with the EUT, only the worst configuration (main sample) was chosen for the final test.
2. The EUT's accessories list refers to Ext. Pho.
3. The above EUT information is declared by manufacturer and for more detailed features description, please refers to the manufacturer's specifications or user's manual.

3.2 Configuration of System under Test

<Radiated Emission Test>



<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
CDMA	Y-plane	X-axis
LTE Band 14	Y-plane	X-axis
LTE Band 26	Y-plane	X-axis

CDMA

EUT Configure Mode	Test Item	Available Channel	Tested Channel	Mode
-	ERP	476 to 684	476, 580, 684	1xRTT
-	Modulation Characteristics	476 to 684	580	1xRTT
-	Frequency Stability	476 to 684	476, 684	1xRTT
-	Occupied Bandwidth	476 to 684	476, 580, 684	1xRTT
-	Emission Mask	476 to 684	476, 580, 684	1xRTT
-	Conducted Emission	476 to 684	476, 580, 684	1xRTT
-	Radiated Emission	476 to 684	476, 580, 684	1xRTT

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 / 12 RB Offset
		23330	23330	10 MHz	QPSK, 16QAM, 64QAM	1 RB / 24 RB Offset
-	Modulation Characteristics	23305 to 23355	23330	5 MHz	QPSK, 16QAM, 64QAM	25 RB / 0 RB Offset
-	Frequency Stability	23305 to 23355	23305, 23355	5 MHz	QPSK	1 RB / 0 RB Offset
		23330	23330	10 MHz	QPSK	1 RB / 0 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
-	Emission Mask	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
-	Band Edge	23305 to 23355	23305, 23355	5 MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset
						25 RB / 0 RB Offset
		23330	23330	10 MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset
						50 RB / 0 RB Offset
-	Conducted Emission	23305 to 23355	23305, 23330, 23355	5 MHz	QPSK	1 RB / 12 RB Offset
		23330	23330	10 MHz	QPSK	1 RB / 24 RB Offset
-	Radiated Emission	23305 to 23355	23305, 23330, 23355	5 MHz	QPSK	1 RB / 12 RB Offset
		23330	23330	10 MHz	QPSK	1 RB / 24 RB Offset

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

LTE Band 26

EUT Configure Mode	Test Item	Available Channel	Tested Channel	Channel Bandwidth	Modulation	Mode
-	ERP	26697 to 26783	26697, 26740, 26783	1.4 MHz	QPSK, 16QAM, 64QAM	1 RB / 5 RB Offset
		26705 to 26775	26705, 26740, 26775	3 MHz	QPSK, 16QAM, 64QAM	1 RB / 14 RB Offset
		26715 to 26765	26715, 26740, 26765	5 MHz	QPSK, 16QAM, 64QAM	1 RB / 24 RB Offset
		26740	26740	10 MHz	QPSK, 16QAM, 64QAM	1 RB / 49 RB Offset
-	Modulation Characteristics	26715 to 26765	26740	5 MHz	QPSK, 16QAM, 64QAM	25 RB / 0 RB Offset
-	Frequency Stability	26697 to 26783	26697, 26783	1.4 MHz	QPSK	1 RB / 0 RB Offset
		26705 to 26775	26705, 26775	3 MHz	QPSK	1 RB / 0 RB Offset
		26715 to 26765	26715, 26765	5 MHz	QPSK	1 RB / 0 RB Offset
		26740	26740	10 MHz	QPSK	1 RB / 0 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 / 5 RB Offset
		26705 to 26775	26705, 26740, 26775	3 MHz	QPSK	1 RB / 14 RB Offset
		26715 to 26765	26715, 26740, 26765	5 MHz	QPSK	1 RB / 24 RB Offset
		26740	26740	10 MHz	QPSK	1 RB / 49 RB Offset
-	Radiated Emission	26697 to 26783	26697, 26740, 26783	1.4 MHz	QPSK	1 RB / 5 RB Offset
		26715 to 26765	26715, 26740, 26765	5 MHz	QPSK	1 RB / 24 RB Offset
		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	Thomas Wei
Frequency Stability	25 deg. C, 65 % RH	3.85 Vdc	Wayne Lin
Occupied Bandwidth	25 deg. C, 65 % RH	3.85 Vdc	Wayne Lin
Peak to Average Ratio	25 deg. C, 65 % RH	3.85 Vdc	Wayne Lin
Emission Mask	25 deg. C, 65 % RH	3.85 Vdc	Wayne Lin
Band Edge	25 deg. C, 65 % RH	3.85 Vdc	Wayne Lin
Conducted Emission	25 deg. C, 65 % RH	3.85 Vdc	Wayne Lin
Radiated Emission	25 deg. C, 65 % RH	120 Vac, 60 Hz	Thomas Wei

3.4 EUT Operating Conditions

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

3.5 General Description of Applied Standards

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

FCC 47 CFR Part 2

FCC 47 CFR Part 90

KDB 971168 D01 Power Meas License Digital Systems v03r01

KDB 971168 D02 Misc Rev Approv License Devices v02r01

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

LTE Band 14

Portable stations (hand-held devices) transmitting in the 758-768 MHz band and the 788-798 MHz band are limited to 3 watts ERP.

CDMA / LTE Band 26

The maximum output power of the transmitter for mobile stations is 100 watts (20 dBw).

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

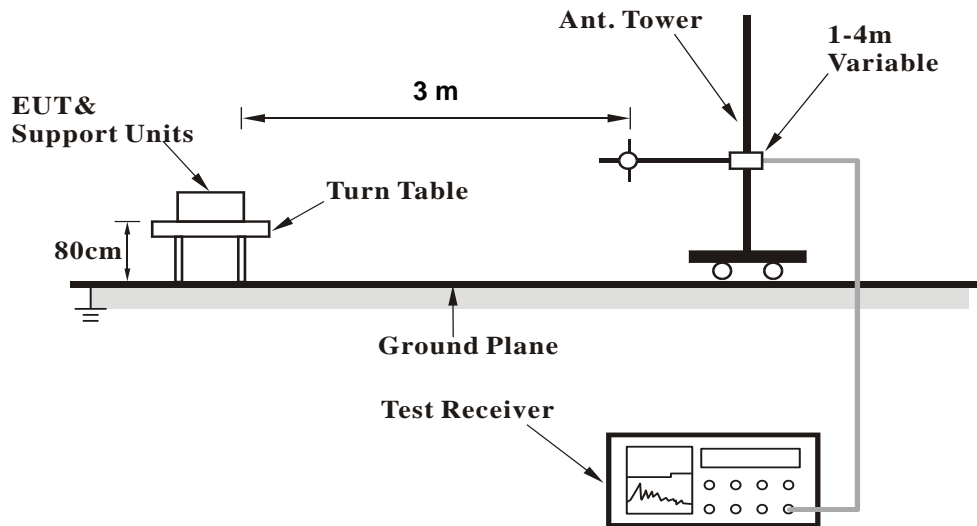
Conducted Power Measurement:

- a. The EUT was set up for the maximum power with CDMA and 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.

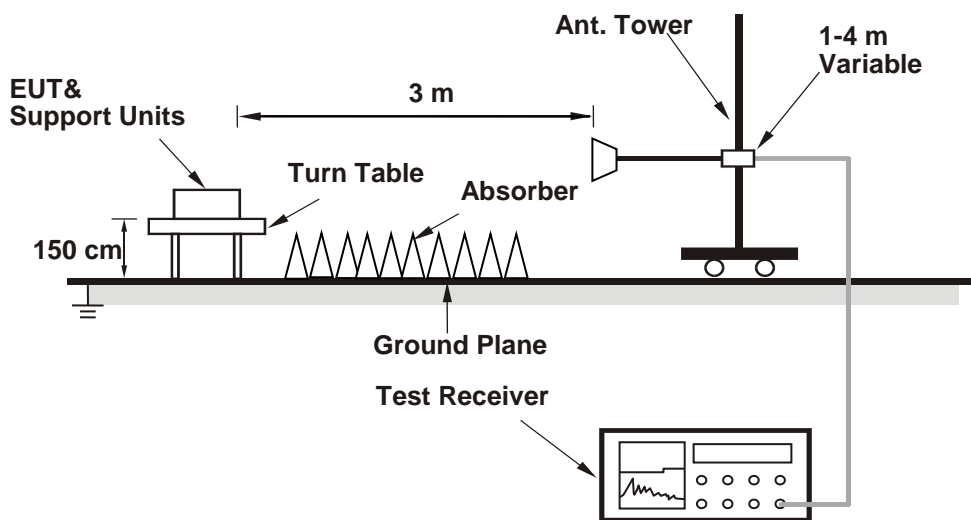
4.1.3 Test Setup

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

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

Band		TX Antenna	WLAN Function	Body-Worn/Hotspot
CDMA	BC10	Ant 0	WLAN-Off	Body-Worn/Hotspot
LTE	B14	Ant 0	WLAN-Off	Body-Worn/Hotspot
	B26	Ant 0	WLAN-Off	Body-Worn/Hotspot

Conducted Output Power (dBm)

Band	CDMA BC10		
Mode	Body-Worn / Hotspot		
Tx Antenna	Ant-0		
Channel	476	580	684
Frequency (MHz)	817.9	820.5	823.1
RC1+SO55	24.33	24.49	24.37
RC3+SO55	24.35	24.51	24.39
RC3+SO32(+ F-SCH)	24.32	24.48	24.36
RC3+SO32(+SCH)	24.30	24.46	24.34
RTAP 153.6	24.00	24.16	24.04
RETAP 4096	23.98	24.14	24.02

LTE Band 14															
Body-Worn / Hotspot															
Ant-0															
BW	MCS Index	RB Size	RB Offset	Mid			3GPP MPR (dB)	BW	MCS Index	RB Size	RB Offset	Low	Mid	High	3GPP MPR (dB)
				Channel								23305	23330	23355	
				Frequency (MHz)								793	793	795.5	
10M	QPSK	1	0	24.47		0	5M	QPSK	1	0	24.30	24.38	24.34	0	
		1	24	24.49		0			1	12	24.32	24.40	24.36	0	
		1	49	24.41		0			1	24	24.24	24.32	24.28	0	
		25	0	23.49		1			12	0	23.32	23.40	23.36	1	
		25	12	23.44		1			12	6	23.27	23.35	23.31	1	
		25	25	23.41		1			12	13	23.24	23.32	23.28	1	
	16QAM	1	0	23.46		1		25	0	23.31	23.39	23.35	1		
		1	24	23.48		1		1	0	23.29	23.37	23.33	1		
		1	49	23.40		1		1	12	23.31	23.39	23.35	1		
		25	0	22.48		2		1	24	23.23	23.31	23.27	1		
		25	12	22.43		2		12	0	22.31	22.39	22.35	2		
		25	25	22.40		2		12	6	22.26	22.34	22.30	2		
	64QAM	25	0	22.47		2		12	13	22.23	22.31	22.27	2		
		1	0	22.43		2		25	0	22.30	22.38	22.34	2		
		1	24	22.45		2		1	0	22.26	22.34	22.30	2		
		1	49	22.37		2		1	12	22.28	22.36	22.32	2		
		25	0	21.45		3		1	24	22.20	22.28	22.24	2		
		25	12	21.40		3		12	0	21.28	21.36	21.32	3		
	64QAM	25	25	21.37		3		12	6	21.23	21.31	21.27	3		
		50	0	21.44		3		12	13	21.20	21.28	21.24	3		
		1	0	21.44		3		25	0	21.27	21.35	21.31	3		

LTE Band 26
Body-Worn / Hotspot
Ant-0

BW	MCS Index	RB Size	RB Offset	Mid			3GPP MPR (dB)	BW	MCS Index	RB Size	RB Offset	Low	Mid	High	3GPP MPR (dB)		
				Channel								26715	26740	26765			
				Frequency (MHz)								816.5	819.0	821.5			
10M	QPSK	1	0	23.94		0	5M	QPSK	1	0	23.81	23.93	24.17	0			
		1	24	23.98		0			1	12	23.85	23.96	24.19	0			
		1	49	24.20		0			1	24	24.07	24.17	24.28	0			
		25	0	23.05		1			12	0	22.92	23.04	23.13	1			
		25	12	23.09		1			12	6	22.96	23.07	23.17	1			
		25	25	23.24		1			12	13	23.11	23.21	23.32	1			
	16QAM	50	0	23.14		1		25	0	23.01	23.13	23.22	1				
		1	0	22.86		1		16QAM	1	0	22.73	22.85	22.94	1			
		1	24	22.90		1			1	12	22.77	22.88	22.98	1			
		1	49	23.12		1			1	24	22.99	23.09	23.20	1			
		25	0	21.97		2			12	0	21.84	21.96	22.05	2			
		25	12	22.01		2			12	6	21.88	21.99	22.09	2			
	25	25	22.16		2	12			13	22.03	22.13	22.24	2				
	64QAM	50	0	22.06		2		64QAM	25	0	21.93	22.05	22.14	2			
		1	0	21.84		2			1	0	21.71	21.83	21.92	2			
		1	24	21.88		2			1	12	21.75	21.86	21.96	2			
		1	49	22.10		2			1	24	21.97	22.07	22.18	2			
		25	0	20.95		3			12	0	20.82	20.94	21.03	3			
		25	12	20.99		3			12	6	20.86	20.97	21.07	3			
	3M	QPSK	25	25	21.14			3	1.4M	QPSK	12	13	21.01	21.11	21.22	3	
			50	0	21.04			3			25	0	20.91	21.03	21.12	3	
16QAM			1	0	23.84	23.87	24.04	0			16QAM	1	0	23.88	23.93	24.02	0
			1	7	23.88	23.89	24.17	0				1	2	23.92	23.86	24.19	0
			1	14	24.10	24.17	24.20	0				1	5	24.14	24.14	24.19	0
			8	0	22.95	22.97	23.08	1				3	0	23.77	24.02	24.09	0
		8	3	22.99	23.00	23.15	1	3		1		23.81	24.09	24.14	0		
		8	7	23.14	23.11	23.30	1	3		3		23.96	24.10	24.27	0		
64QAM		15	0	23.04	23.12	23.11	1	64QAM		6	0	23.08	23.09	23.22	1		
		1	0	22.76	22.84	22.87	1			16QAM	1	0	22.80	22.82	22.94	1	
		1	7	22.80	22.82	22.85	1				1	2	22.84	22.75	22.90	1	
		1	14	23.02	23.10	23.17	1				1	5	23.06	23.03	23.09	1	
		8	0	21.87	21.82	22.05	2				3	0	22.73	22.88	23.01	1	
		8	3	21.91	21.96	22.01	2				3	1	22.77	22.94	22.99	1	
8		7	22.06	22.13	22.11	2	3	3			22.92	23.06	23.09	1			
64QAM		15	0	21.96	21.95	21.99	2	64QAM		6	0	22.00	22.02	22.12	2		
		1	0	21.74	21.70	21.77	2			16QAM	1	0	21.78	21.83	21.79	2	
		1	7	21.78	21.83	21.90	2				1	2	21.82	21.83	21.87	2	
		1	14	22.00	21.97	22.03	2				1	5	22.04	22.04	22.10	2	
		8	0	20.85	20.83	20.92	3				3	0	21.71	21.89	21.89	2	
		8	3	20.89	20.98	20.98	3				3	1	21.75	21.97	21.98	2	
8	7	21.04	21.08	21.11	3	3	3	21.90	22.11		22.12	2					
64QAM	15	0	20.94	20.98	21.07	3	64QAM	6	0	20.98	21.04	20.99	3				

ERP Power (dBm)

CDMA							
Plane	Channel	Frequency (MHz)	Reading (dBm)	Correction Factor (dB)	ERP (dBm)	ERP (mW)	Polarization (H/V)
Y	476	817.9	-10.65	31.208	18.41	69.34	H
	580	820.5	-10.59	31.3	18.56	71.78	
	684	823.1	-10.78	31.222	18.29	67.45	
	476	817.9	-17.87	31.504	11.48	14.06	V
	580	820.5	-17.28	31.117	11.69	14.76	
	684	823.1	-18.52	31.922	11.25	13.34	

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

LTE Band 14							
Channel Bandwidth: 5 MHz / QPSK							
Plane	Channel	Frequency (MHz)	Reading (dBm)	Correction Factor (dB)	ERP (dBm)	ERP (mW)	Polarization (H/V)
Y	23305	790.5	-11.88	32.24	18.21	66.22	H
	23330	793.0	-11.73	32.17	18.29	67.45	
	23355	795.5	-11.81	32.11	18.15	65.31	
	23305	790.5	-19.95	32.43	10.33	10.79	V
	23330	793.0	-19.88	32.42	10.39	10.94	
	23355	795.5	-20.02	32.46	10.29	10.69	
Channel Bandwidth: 5 MHz / 16QAM							
Y	23305	790.5	-12.87	32.24	17.22	52.72	H
	23330	793.0	-12.72	32.17	17.30	53.70	
	23355	795.5	-12.80	32.11	17.16	52.00	
	23305	790.5	-20.94	32.43	9.34	8.59	V
	23330	793.0	-20.87	32.42	9.40	8.71	
	23355	795.5	-21.01	32.46	9.30	8.51	
Channel Bandwidth: 5 MHz / 64QAM							
Y	23305	790.5	-13.85	32.24	16.24	42.07	H
	23330	793.0	-13.70	32.17	16.32	42.85	
	23355	795.5	-13.78	32.11	16.18	41.50	
	23305	790.5	-21.92	32.43	8.36	6.85	V
	23330	793.0	-21.85	32.42	8.42	6.95	
	23355	795.5	-21.99	32.46	8.32	6.79	

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

LTE Band 14							
Channel Bandwidth: 10 MHz / QPSK							
Plane	Channel	Frequency (MHz)	Reading (dBm)	Correction Factor (dB)	ERP (dBm)	ERP (mW)	Polarization (H/V)
Y	23330	793.0	-11.50	32.17	18.52	71.12	H
	23330	793.0	-19.65	32.42	10.62	11.53	V
Channel Bandwidth: 10 MHz / 16QAM							
Y	23330	793.0	-12.51	32.17	17.51	56.36	H
	23330	793.0	-20.66	32.42	9.61	9.14	V
Channel Bandwidth: 10 MHz / 64QAM							
Y	23330	793.0	-13.53	32.17	16.49	44.57	H
	23330	793.0	-21.68	32.42	8.59	7.23	V

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

LTE Band 26							
Channel Bandwidth: 1.4 MHz / QPSK							
Plane	Channel	Frequency (MHz)	Reading (dBm)	Correction Factor (dB)	ERP (dBm)	ERP (mW)	Polarization (H/V)
Y	26697	814.7	-11.90	32.01	17.96	62.52	H
	26740	819.0	-11.94	32.11	18.02	63.39	
	26783	823.3	-12.18	32.32	17.99	62.95	
	26697	814.7	-18.51	32.54	11.88	15.42	V
	26740	819.0	-18.37	32.51	11.99	15.81	
	26783	823.3	-18.44	32.51	11.92	15.56	
Channel Bandwidth: 1.4 MHz / 16QAM							
Y	26697	814.7	-12.90	32.01	16.96	49.66	H
	26740	819.0	-12.94	32.11	17.02	50.35	
	26783	823.3	-13.18	32.32	16.99	50.00	
	26697	814.7	-19.51	32.54	10.88	12.25	V
	26740	819.0	-19.37	32.51	10.99	12.56	
	26783	823.3	-19.44	32.51	10.92	12.36	
Channel Bandwidth: 1.4 MHz / 64QAM							
Y	26697	814.7	-13.91	32.01	15.95	39.36	H
	26740	819.0	-13.95	32.11	16.01	39.90	
	26783	823.3	-14.19	32.32	15.98	39.63	
	26697	814.7	-20.52	32.54	9.87	9.71	V
	26740	819.0	-20.38	32.51	9.98	9.95	
	26783	823.3	-20.45	32.51	9.91	9.79	

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

LTE Band 26							
Channel Bandwidth: 3 MHz / QPSK							
Plane	Channel	Frequency (MHz)	Reading (dBm)	Correction Factor (dB)	ERP (dBm)	ERP (mW)	Polarization (H/V)
Y	26705	815.5	-11.67	32.02	18.20	66.07	H
	26740	819.0	-11.70	32.11	18.26	66.99	
	26775	822.5	-11.80	32.18	18.23	66.53	
	26705	815.5	-18.23	32.5	12.12	16.29	V
	26740	819.0	-18.13	32.51	12.23	16.71	
	26775	822.5	-18.16	32.47	12.16	16.44	
Channel Bandwidth: 3 MHz / 16QAM							
Y	26705	815.5	-12.66	32.02	17.21	52.60	H
	26740	819.0	-12.69	32.11	17.27	53.33	
	26775	822.5	-12.79	32.18	17.24	52.97	
	26705	815.5	-19.22	32.5	11.13	12.97	V
	26740	819.0	-19.12	32.51	11.24	13.30	
	26775	822.5	-19.15	32.47	11.17	13.09	
Channel Bandwidth: 3 MHz / 64QAM							
Y	26705	815.5	-13.66	32.02	16.21	41.78	H
	26740	819.0	-13.69	32.11	16.27	42.36	
	26775	822.5	-13.79	32.18	16.24	42.07	
	26705	815.5	-20.22	32.5	10.13	10.30	V
	26740	819.0	-20.12	32.51	10.24	10.57	
	26775	822.5	-20.15	32.47	10.17	10.40	

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

LTE Band 26							
Channel Bandwidth: 5 MHz / QPSK							
Plane	Channel	Frequency (MHz)	Reading (dBm)	Correction Factor (dB)	ERP (dBm)	ERP (mW)	Polarization (H/V)
Y	26715	816.5	-11.43	32.04	18.46	70.15	H
	26740	819.0	-11.44	32.11	18.52	71.12	
	26765	821.5	-11.15	31.79	18.49	70.63	
	26715	816.5	-17.99	32.52	12.38	17.30	V
	26740	819.0	-17.87	32.51	12.49	17.74	
	26765	821.5	-17.60	32.17	12.42	17.46	
Channel Bandwidth: 5 MHz / 16QAM							
Y	26715	816.5	-12.42	32.04	17.47	55.85	H
	26740	819.0	-12.43	32.11	17.53	56.62	
	26765	821.5	-12.14	31.79	17.50	56.23	
	26715	816.5	-18.98	32.52	11.39	13.77	V
	26740	819.0	-18.86	32.51	11.50	14.13	
	26765	821.5	-18.59	32.17	11.43	13.90	
Channel Bandwidth: 5 MHz / 64QAM							
Y	26715	816.5	-13.43	32.04	16.46	44.26	H
	26740	819.0	-13.44	32.11	16.52	44.87	
	26765	821.5	-13.15	31.79	16.49	44.57	
	26715	816.5	-19.99	32.52	10.38	10.91	V
	26740	819.0	-19.87	32.51	10.49	11.19	
	26765	821.5	-19.60	32.17	10.42	11.02	

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

LTE Band 26							
Channel Bandwidth: 10 MHz / QPSK							
Plane	Channel	Frequency (MHz)	Reading (dBm)	Correction Factor (dB)	ERP (dBm)	ERP (mW)	Polarization (H/V)
Y	26740	819.0	-11.21	32.11	18.75	74.99	H
	26740	819.0	-17.64	32.51	12.72	18.71	V
Channel Bandwidth: 10 MHz / 16QAM							
Y	26740	819.0	-12.22	32.11	17.74	59.43	H
	26740	819.0	-18.65	32.51	11.71	14.83	V
Channel Bandwidth: 10 MHz / 64QAM							
Y	26740	819.0	-13.21	32.11	16.75	47.32	H
	26740	819.0	-19.64	32.51	10.72	11.80	V

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

4.2 Modulation Characteristics Measurement

4.2.1 Limits of Modulation Characteristics

N/A

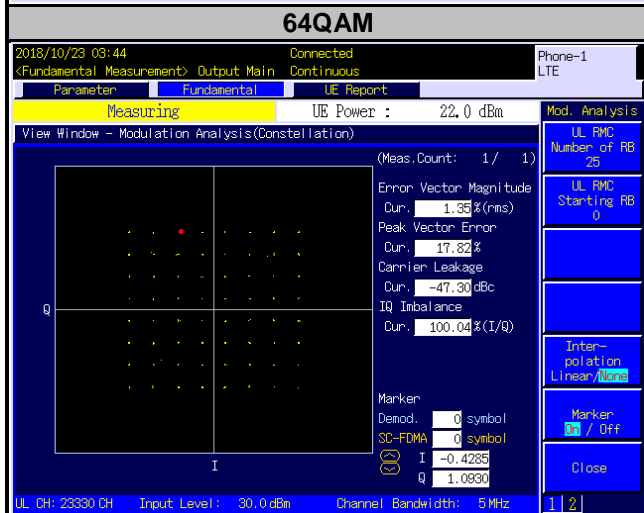
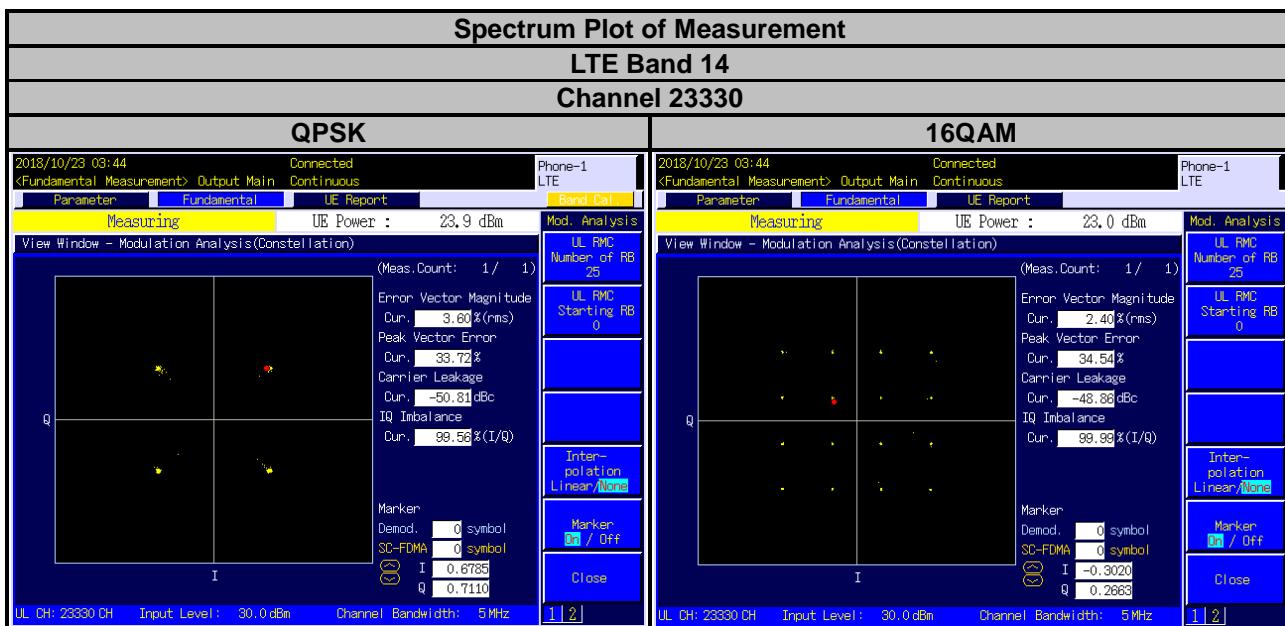
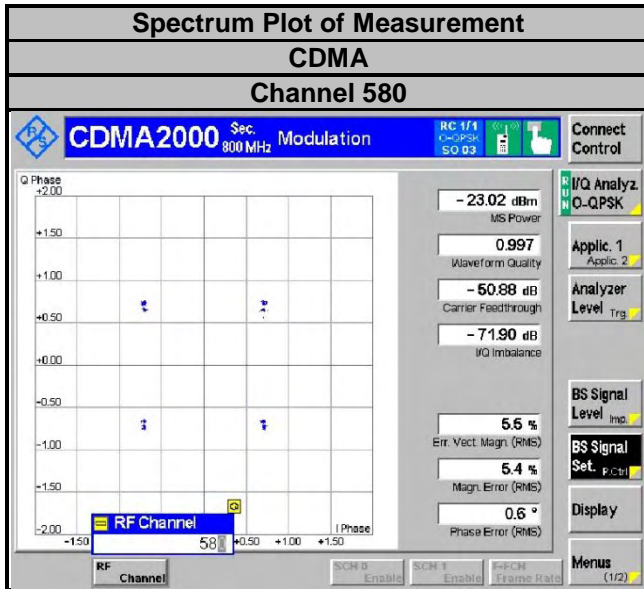
4.2.2 Test Setup



4.2.3 Test Procedure

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

4.2.4 Test Results

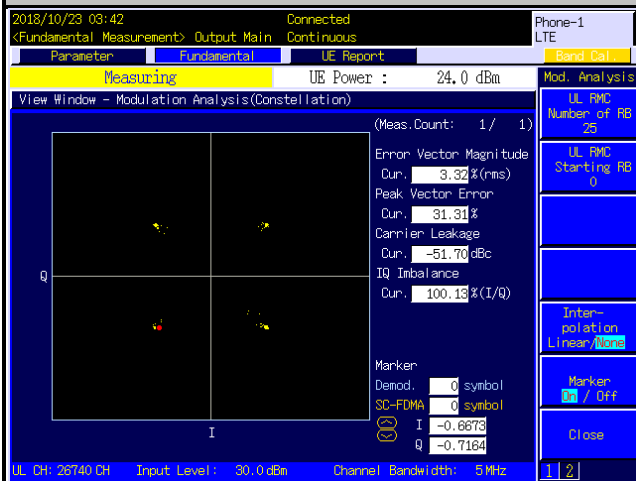


Spectrum Plot of Measurement

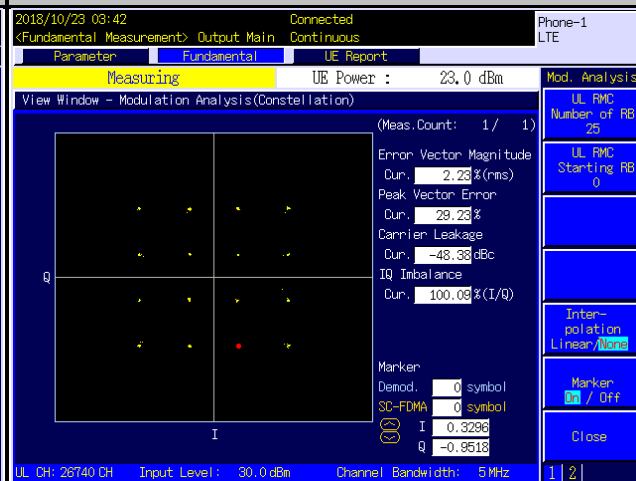
LTE Band 26

Channel 26740

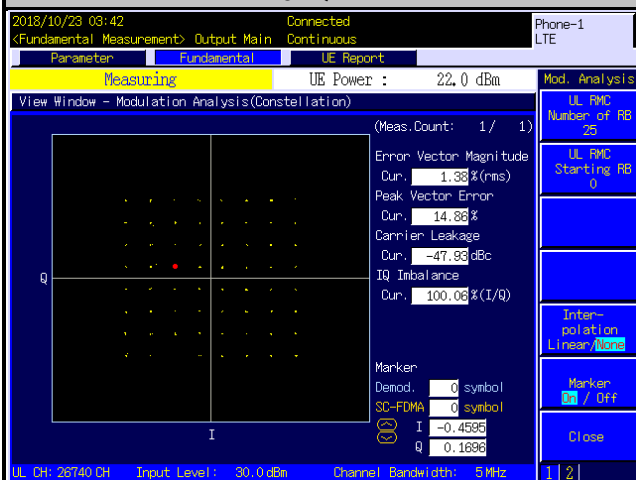
QPSK



16QAM



64QAM



4.3 Frequency Stability Measurement

4.3.1 Limits of Frequency Stability Measurement

LTE Band 14

The frequency stability of mobile, portable and control transmitters operating in the wideband segment must be 1.25 parts per million or better when AFC is locked to a base station, and 5 parts per million or better when AFC is not locked.

CDMA / LTE Band 26

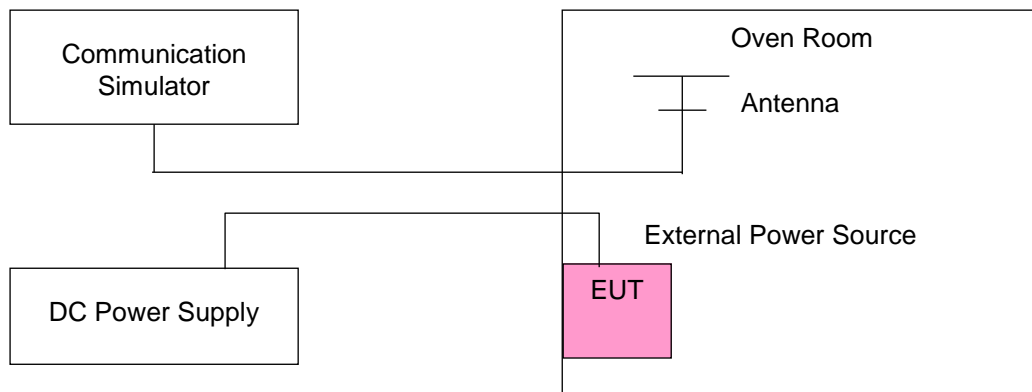
1.5 ppm is for base and fixed station. 2.5 ppm is for mobile station.

4.3.2 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.

4.3.3 Test Setup



4.3.4 Test Results

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	817.900002	0.003	823.100003	0.003	2.5
3.6	817.900001	0.002	823.100003	0.003	2.5
4.4	817.900002	0.002	823.100001	0.002	2.5

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

Frequency Error vs. Temperature

Temp. (°C)	CDMA				Limit (ppm)
	Low Channel		High Channel		
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
-30	817.900003	0.003	823.100003	0.004	2.5
-20	817.900002	0.002	823.100004	0.005	2.5
-10	817.900004	0.005	823.100003	0.003	2.5
0	817.900001	0.001	823.100004	0.004	2.5
10	817.900004	0.004	823.100002	0.002	2.5
20	817.899999	-0.001	823.099997	-0.004	2.5
30	817.899998	-0.002	823.099997	-0.004	2.5
40	817.899997	-0.003	823.099997	-0.003	2.5
50	817.899997	-0.004	823.099997	-0.004	2.5
55	817.899996	-0.005	823.099999	-0.002	2.5

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)	
3.85	790.500004	0.005	795.500000	0.002	2.5
3.6	790.500003	0.004	795.500000	0.003	2.5
4.4	790.500003	0.004	795.500000	0.002	2.5

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

Frequency Error vs. Temperature

Temp. (°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	790.500002	0.002	795.500000	0.005	2.5
-20	790.500002	0.003	795.500000	0.004	2.5
-10	790.500003	0.004	795.500000	0.002	2.5
0	790.500003	0.004	795.500000	0.004	2.5
10	790.500002	0.003	795.500000	0.001	2.5
20	790.499998	-0.003	795.500000	-0.004	2.5
30	790.499997	-0.004	795.500000	-0.002	2.5
40	790.499998	-0.002	795.500000	-0.001	2.5
50	790.499998	-0.003	795.500000	-0.002	2.5
55	790.499999	-0.001	795.500000	-0.004	2.5

Frequency Error vs. Voltage

Voltage (Volts)	LTE Band 14		Limit (ppm)
	Channel Bandwidth: 10 MHz		
	Frequency (MHz)	Frequency Error (ppm)	
3.85	793.000001	0.002	2.5
3.6	793.000002	0.002	2.5
4.4	793.000002	0.002	2.5

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

Frequency Error vs. Temperature

Temp. (°C)	LTE Band 14		Limit (ppm)
	Channel Bandwidth: 10 MHz		
	Frequency (MHz)	Frequency Error (ppm)	
-30	793.000003	0.003	2.5
-20	793.000004	0.005	2.5
-10	793.000003	0.003	2.5
0	793.000003	0.004	2.5
10	793.000003	0.003	2.5
20	792.999998	-0.002	2.5
30	792.999998	-0.002	2.5
40	792.999998	-0.002	2.5
50	792.999999	-0.002	2.5
55	792.999999	-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	814.700003	0.003	823.300000	0.003	2.5
3.6	814.700003	0.003	823.300000	0.004	2.5
4.4	814.700001	0.001	823.300000	0.005	2.5

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

Frequency Error vs. Temperature

Temp. (°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	0.004	823.300000	0.002	2.5
-20	814.700003	0.003	823.300000	0.001	2.5
-10	814.700004	0.005	823.300000	0.004	2.5
0	814.700001	0.001	823.300000	0.004	2.5
10	814.700002	0.003	823.300000	0.003	2.5
20	814.699999	-0.001	823.300000	-0.003	2.5
30	814.699998	-0.003	823.300000	-0.003	2.5
40	814.699997	-0.004	823.300000	-0.003	2.5
50	814.699998	-0.002	823.300000	-0.002	2.5
55	814.699998	-0.003	823.300000	-0.002	2.5

Frequency Error vs. Voltage

Voltage (Volts)	LTE Band 26				Limit (ppm)
	Channel Bandwidth: 3 MHz				
	Low Channel		High Channel		
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
3.85	815.500002	0.002	822.500000	0.004	2.5
3.6	815.500002	0.003	822.500000	0.005	2.5
4.4	815.500003	0.004	822.500000	0.004	2.5

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

Frequency Error vs. Temperature

Temp. (°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	815.500001	0.001	822.500000	0.004	2.5
-20	815.500004	0.005	822.500000	0.002	2.5
-10	815.500002	0.002	822.500000	0.002	2.5
0	815.500003	0.004	822.500000	0.004	2.5
10	815.500004	0.004	822.500000	0.003	2.5
20	815.499998	-0.003	822.500000	-0.004	2.5
30	815.499996	-0.005	822.500000	-0.003	2.5
40	815.499999	-0.002	822.500000	-0.002	2.5
50	815.499998	-0.003	822.500000	-0.002	2.5
55	815.499998	-0.003	822.500000	-0.005	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	816.500003	0.003	821.500000	0.003	2.5
3.6	816.500002	0.003	821.500000	0.003	2.5
4.4	816.500004	0.005	821.500000	0.004	2.5

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

Frequency Error vs. Temperature

Temp. (°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	816.500004	0.005	821.500000	0.004	2.5
-20	816.500002	0.002	821.500000	0.002	2.5
-10	816.500003	0.003	821.500000	0.002	2.5
0	816.500001	0.001	821.500000	0.004	2.5
10	816.500002	0.003	821.500000	0.003	2.5
20	816.499996	-0.005	821.500000	-0.002	2.5
30	816.499998	-0.002	821.500000	-0.003	2.5
40	816.499999	-0.001	821.500000	-0.003	2.5
50	816.499999	-0.002	821.500000	-0.005	2.5
55	816.499997	-0.003	821.500000	-0.002	2.5

Frequency Error vs. Voltage

Voltage (Volts)	LTE Band 26		Limit (ppm)
	Channel Bandwidth: 10 MHz		
	Frequency (MHz)	Frequency Error (ppm)	
3.85	819.000002	0.003	2.5
3.6	819.000001	0.001	2.5
4.4	819.000002	0.002	2.5

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

Frequency Error vs. Temperature

Temp. (°C)	LTE Band 26		Limit (ppm)
	Channel Bandwidth: 10 MHz		
	Frequency (MHz)	Frequency Error (ppm)	
-30	819.000003	0.003	2.5
-20	819.000002	0.003	2.5
-10	819.000002	0.003	2.5
0	819.000002	0.002	2.5
10	819.000002	0.002	2.5
20	818.999997	-0.004	2.5
30	818.999997	-0.003	2.5
40	818.999997	-0.003	2.5
50	818.999998	-0.003	2.5
55	818.999997	-0.003	2.5

4.4 Occupied Bandwidth Measurement

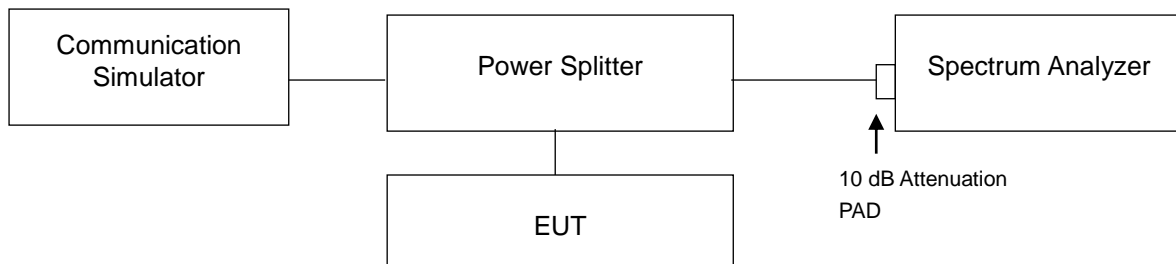
4.4.1 Limits of Occupied Bandwidth Measurement

The width of a frequency band such that, below the lower and above the upper frequency limits, the mean powers emitted are each equal to a specified percentage 0.5 % of the total mean power of a given emission.

4.4.2 Test Procedure

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

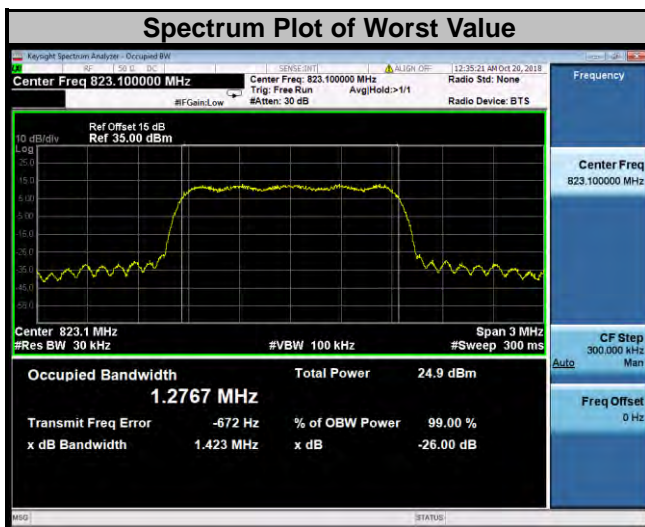
4.4.3 Test Setup



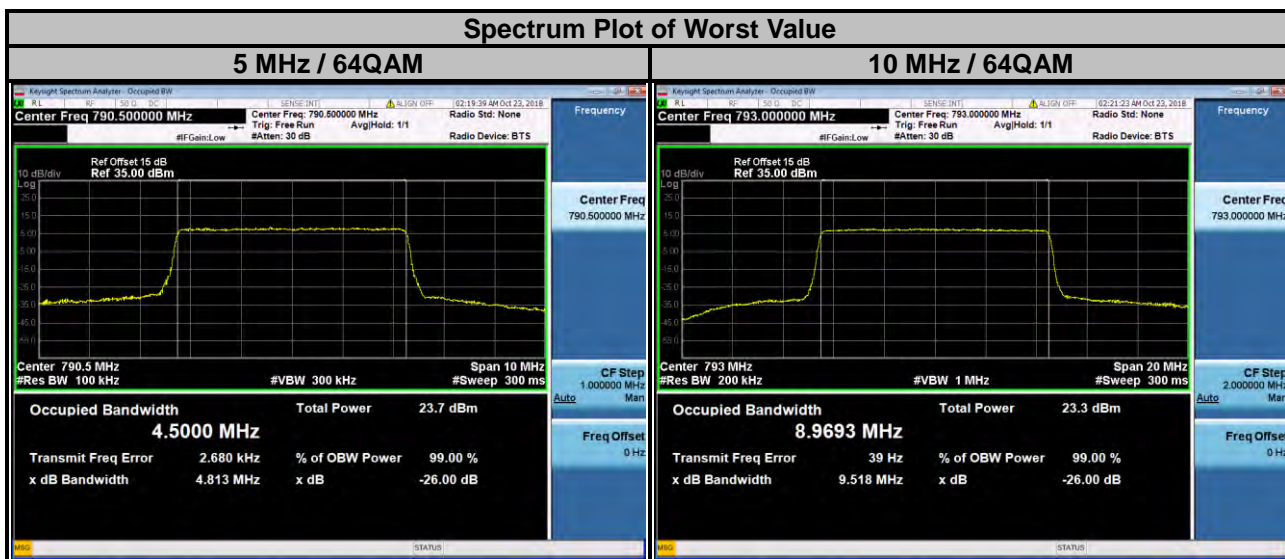
4.4.4 Test Results

<99 % Occupied Bandwidth>

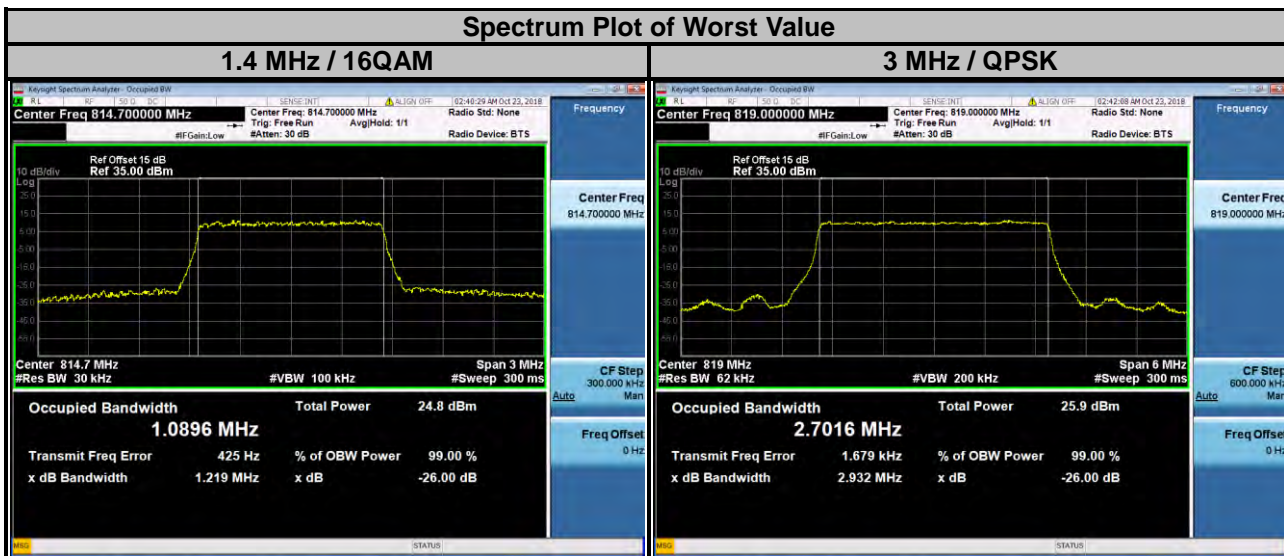
CDMA		
Channel	Frequency (MHz)	99 % Occupied Bandwidth (MHz)
476	817.9	1.2741
580	820.5	1.2740
684	823.1	1.2767



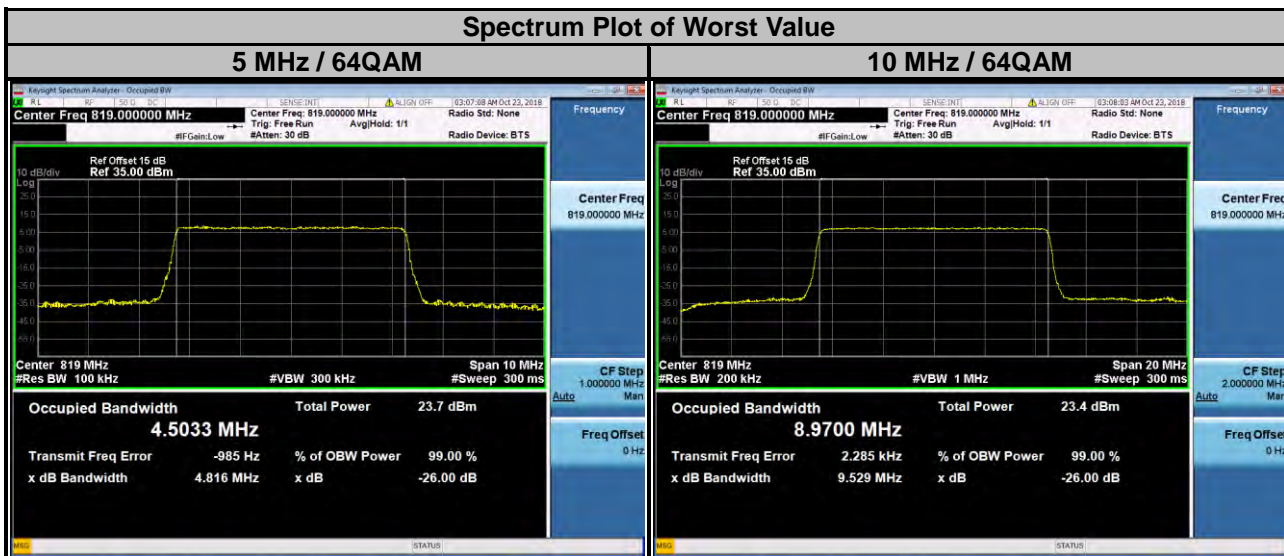
LTE Band 14									
Channel Bandwidth: 5 MHz					Channel Bandwidth: 10 MHz				
Channel	Frequency (MHz)	99 % Occupied Bandwidth (MHz)			Channel	Frequency (MHz)	99 % Occupied Bandwidth (MHz)		
		QPSK	16QAM	64QAM			QPSK	16QAM	64QAM
23305	790.5	4.4894	4.4947	4.5000	23330	793.0	8.9636	8.9625	8.9693
23330	793.0	4.4894	4.4944	4.4993					
23355	795.5	4.4929	4.4946	4.5047					



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	1.0863	1.0896	1.0882	26705	815.5	2.6987	2.6965	2.6964
26740	819.0	1.0852	1.0888	1.0880	26740	819.0	2.7016	2.6981	2.6980
26783	823.3	1.0842	1.0886	1.0879	26775	822.5	2.6993	2.6973	2.6988

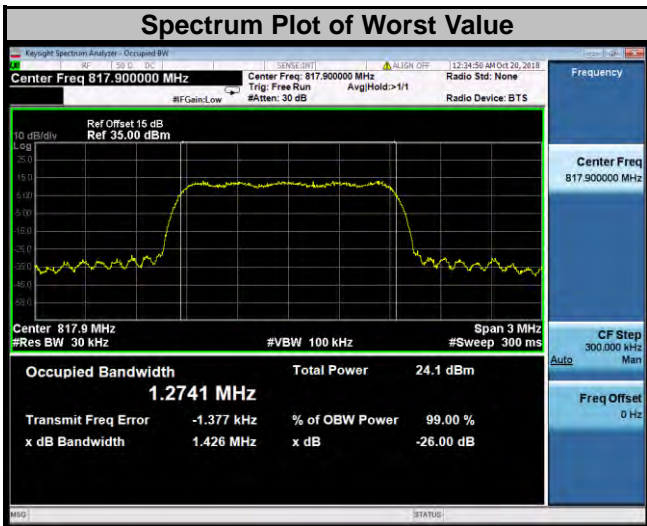


LTE Band 26									
Channel Bandwidth: 5 MHz					Channel Bandwidth: 10 MHz				
Channel	Frequency (MHz)	99 % Occupied Bandwidth (MHz)			Channel	Frequency (MHz)	99 % Occupied Bandwidth (MHz)		
		QPSK	16QAM	64QAM			QPSK	16QAM	64QAM
26715	816.5	4.4884	4.4914	4.4995	26740	819.0	8.9668	8.9700	8.9700
26740	819.0	4.4903	4.4934	4.5033					
26765	821.5	4.4912	4.4922	4.5012					

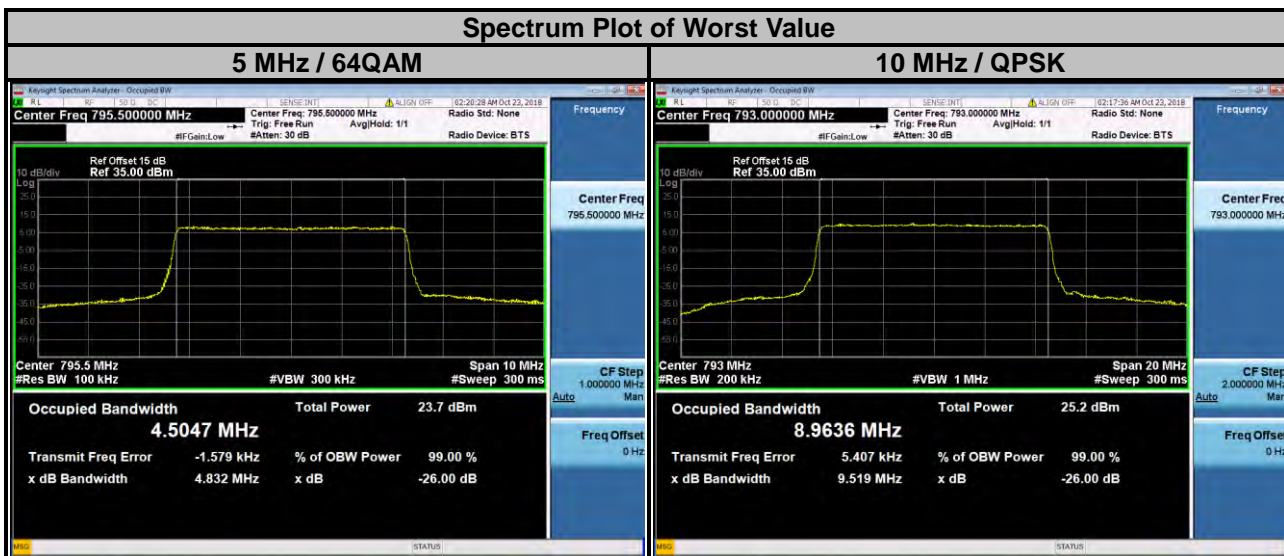


<26 dB Bandwidth>

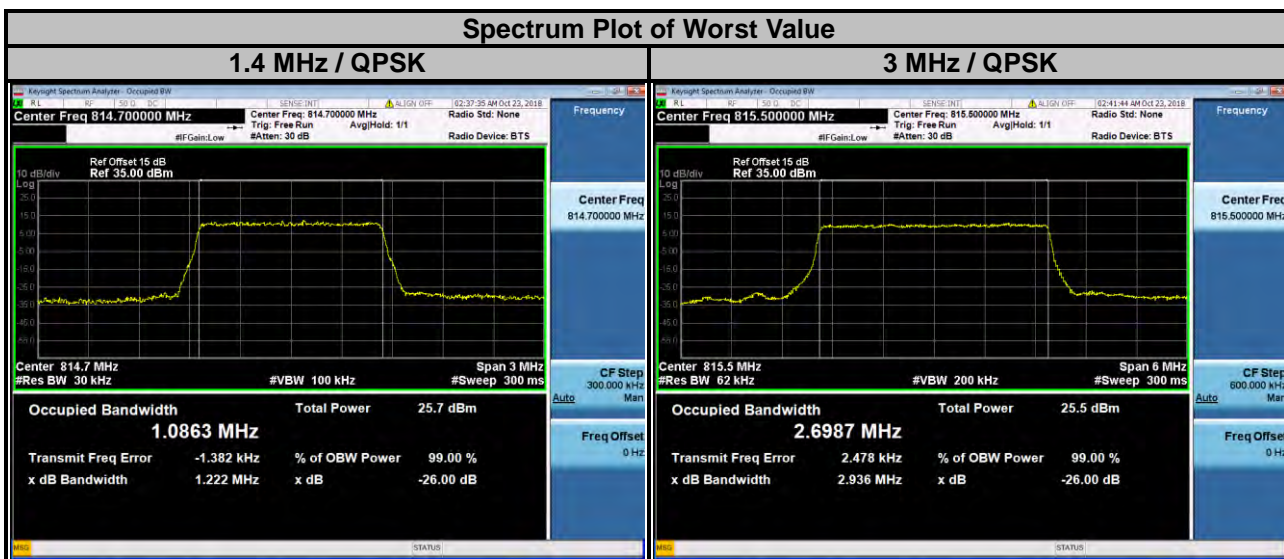
CDMA		
Channel	Frequency (MHz)	26 dB Bandwidth (MHz)
476	817.9	1.426
580	820.5	1.422
684	823.1	1.423



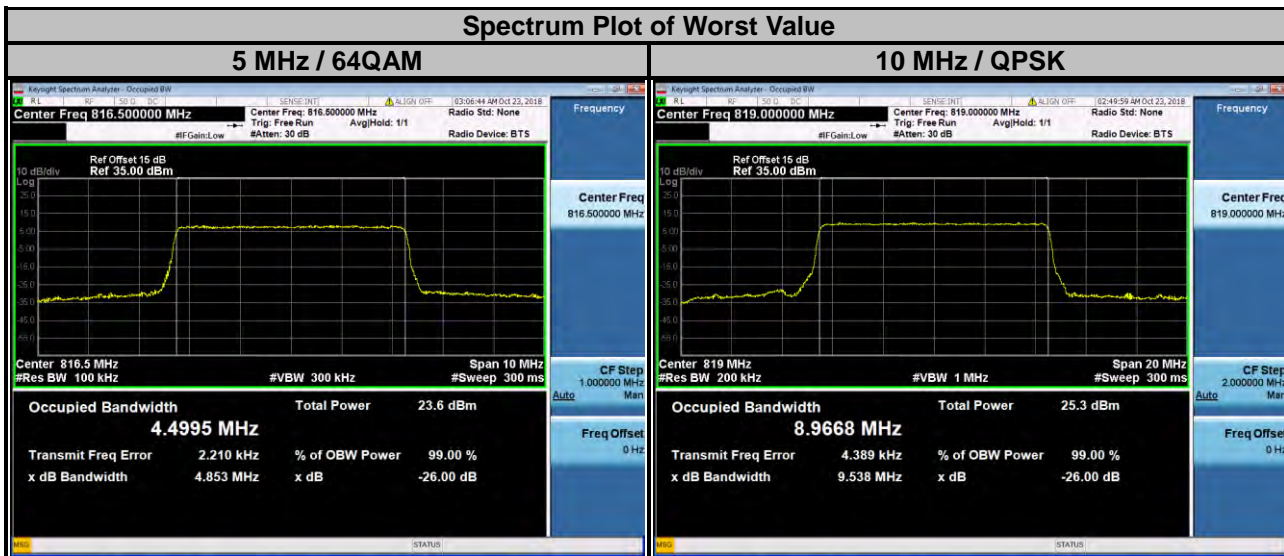
LTE Band 14									
Channel Bandwidth: 5 MHz					Channel Bandwidth: 10 MHz				
Channel	Frequency (MHz)	26 dB Bandwidth (MHz)			Channel	Frequency (MHz)	26 dB Bandwidth (MHz)		
		QPSK	16QAM	64QAM			QPSK	16QAM	64QAM
23305	790.5	4.823	4.815	4.813	23330	793.0	9.519	9.509	9.518
23330	793.0	4.815	4.802	4.831					
23355	795.5	4.821	4.810	4.832					



LTE Band 26									
Channel Bandwidth: 1.4 MHz					Channel Bandwidth: 3 MHz				
Channel	Frequency (MHz)	26 dB Bandwidth (MHz)			Channel	Frequency (MHz)	26 dB Bandwidth (MHz)		
		QPSK	16QAM	64QAM			QPSK	16QAM	64QAM
26697	814.7	1.222	1.219	1.215	26705	815.5	2.936	2.927	2.901
26740	819.0	1.222	1.212	1.209	26740	819.0	2.932	2.928	2.902
26783	823.3	1.218	1.215	1.217	26775	822.5	2.934	2.926	2.903



LTE Band 26									
Channel Bandwidth: 5 MHz					Channel Bandwidth: 10 MHz				
Channel	Frequency (MHz)	26 dB Bandwidth (MHz)			Channel	Frequency (MHz)	26 dB Bandwidth (MHz)		
		QPSK	16QAM	64QAM			QPSK	16QAM	64QAM
26715	816.5	4.829	4.801	4.853	26740	819.0	9.538	9.514	9.529
26740	819.0	4.827	4.814	4.816					
26765	821.5	4.813	4.800	4.829					



4.5 Emission Mask Measurement

4.5.1 Limits of Emission Mask Measurement

LTE Band 14

1. On any frequency removed from the assigned frequency by more than 50 percent, but not more than 100 percent of the authorized bandwidth: At least 25 dB.
2. On any frequency removed from the assigned frequency by more than 100 percent, but not more than 250 percent of the authorized bandwidth: At least 35 dB.
3. On any frequency removed from the assigned frequency by more than 250 percent of the authorized bandwidth: At least $43 + 10 \log(P)$ dB.

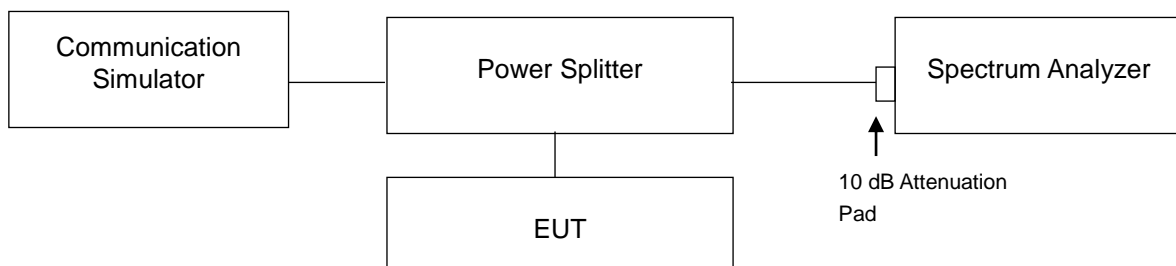
CDMA / LTE Band 26

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.

For any frequency removed from the EA licensee's frequency block greater than 37.5 kHz, the power of any emission shall be attenuated below the transmitter power (P) in watts by at least $43 + 10 \log_{10}(P)$ 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 37.5 kHz.

For §90.691(a), RBW=300 Hz for offset less than 37.5 kHz from channel edge and RBW=100 kHz for offsets greater than 37.5 kHz is allowed.

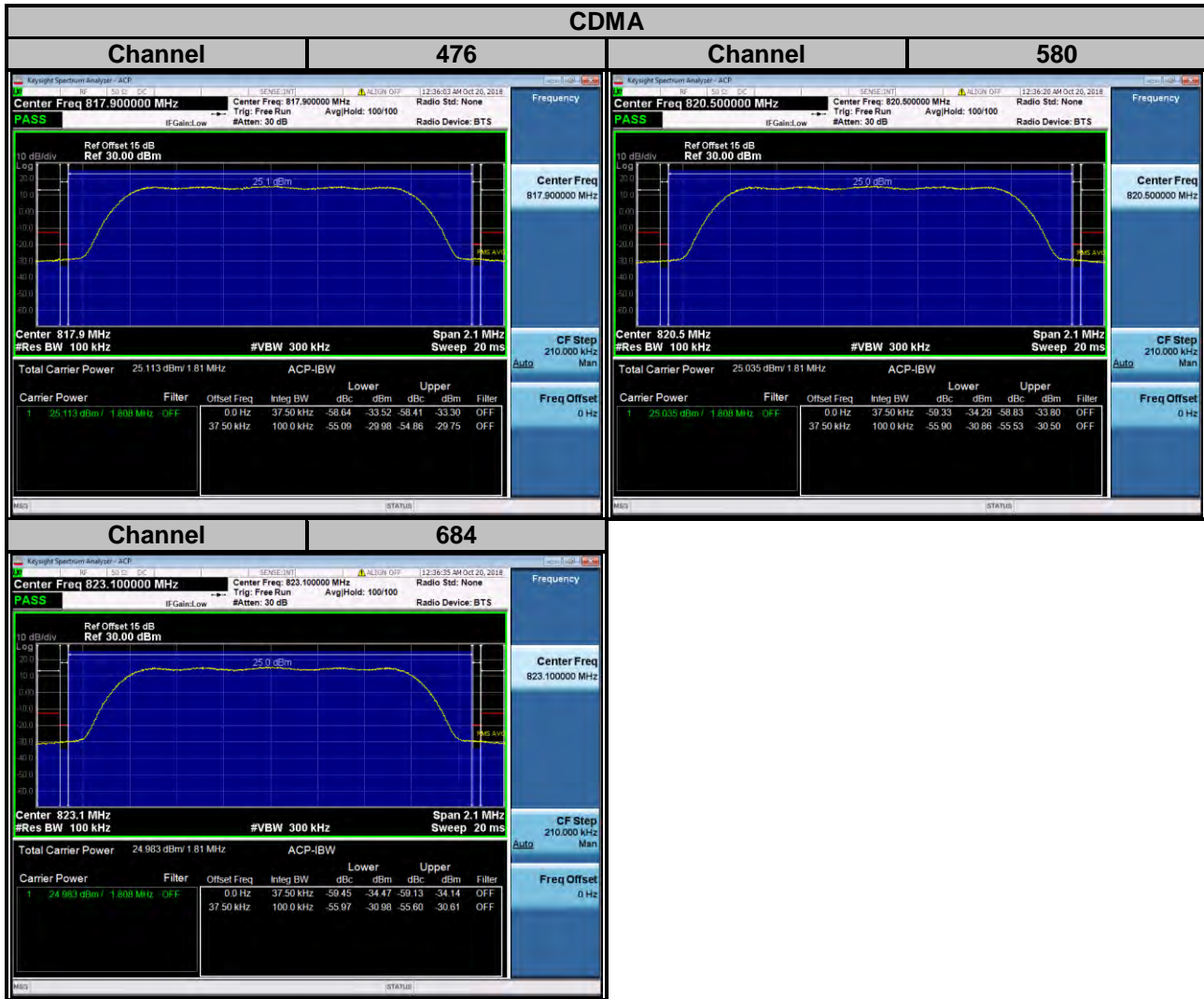
4.5.2 Test Setup



4.5.3 Test Procedures

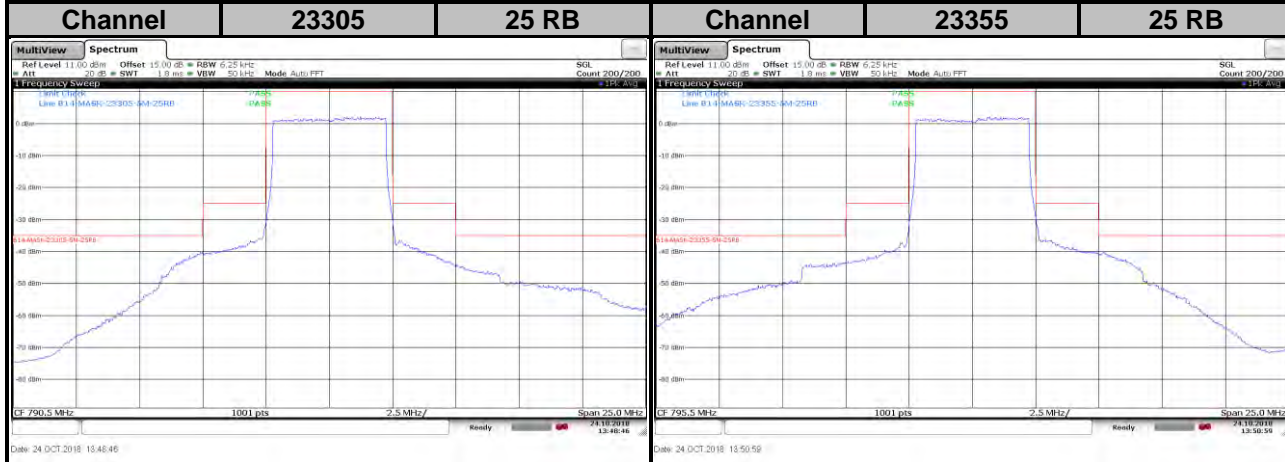
- a. The measurement used the power splitter via EUT RF power connector between simulation base station and spectrum analyzer.
- b. Record the test plot.

4.5.4 Test Results

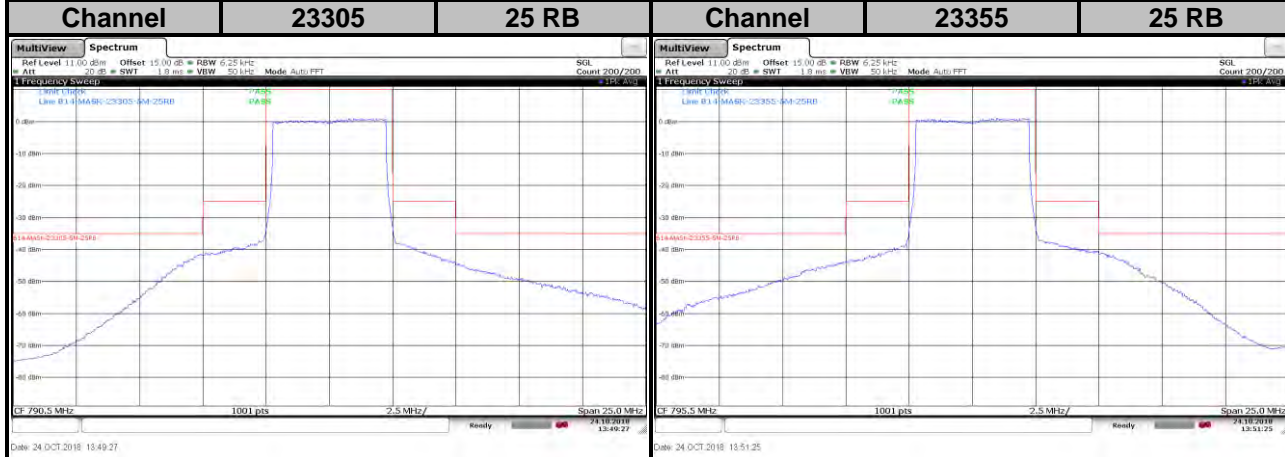


LTE Band 14

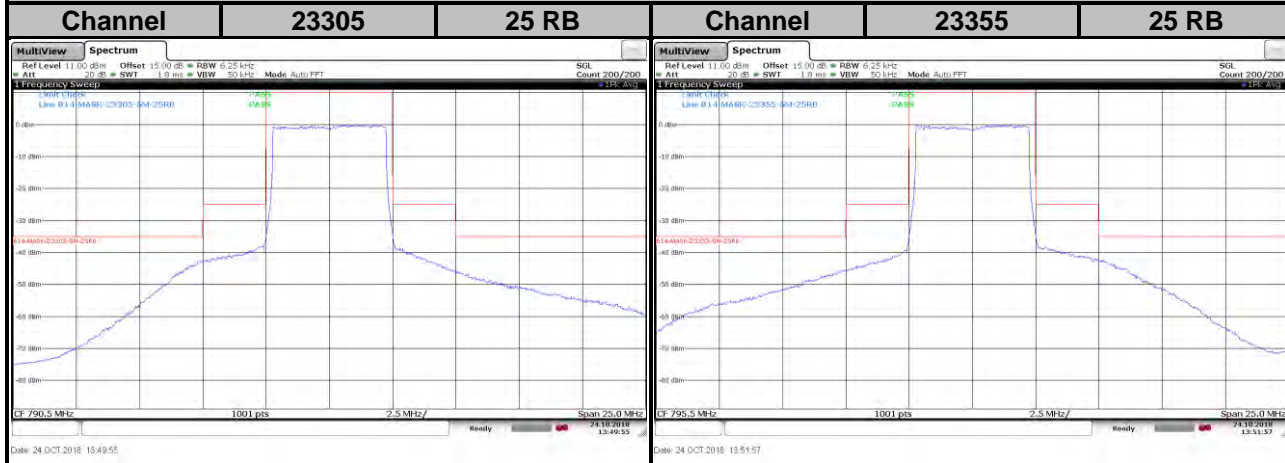
Channel Bandwidth: 5 MHz / QPSK



Channel Bandwidth: 5 MHz / 16QAM

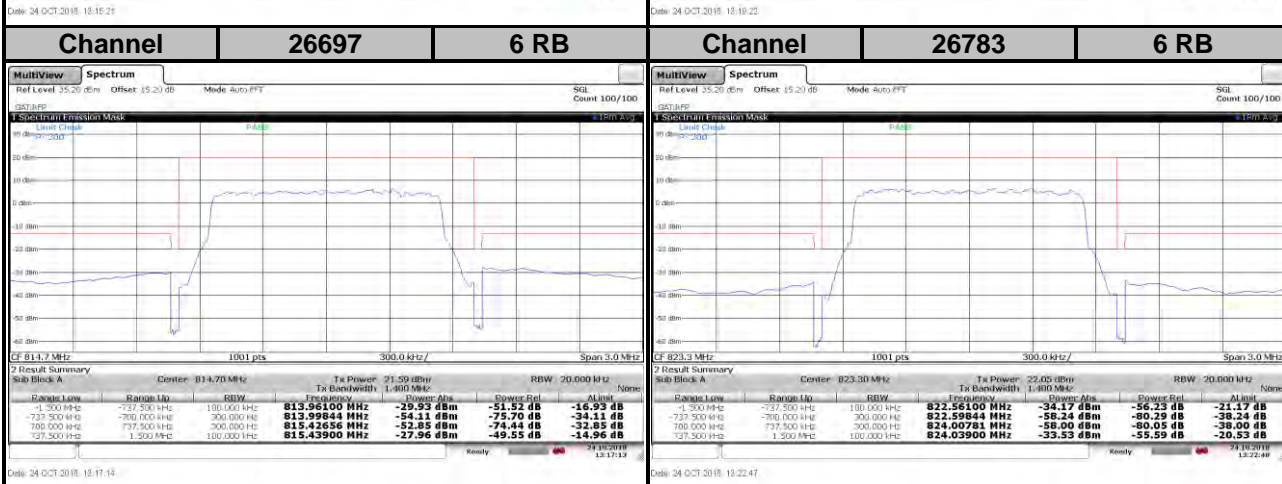
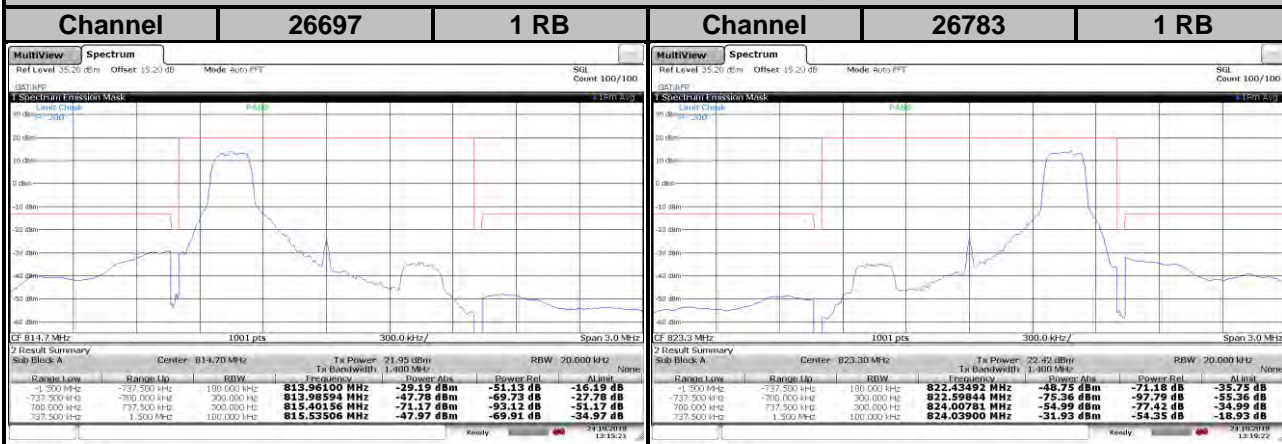


Channel Bandwidth: 5 MHz / 64QAM



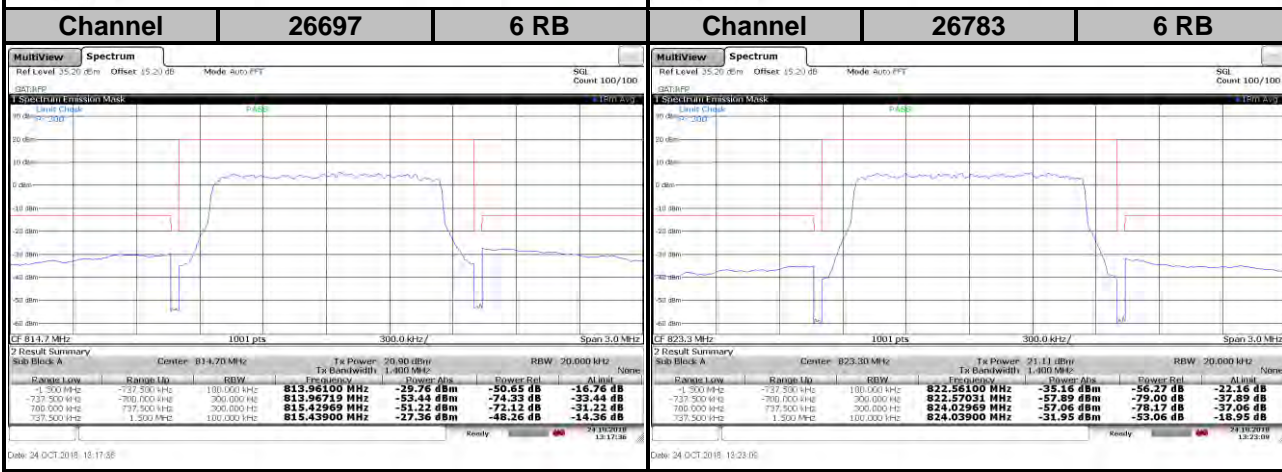
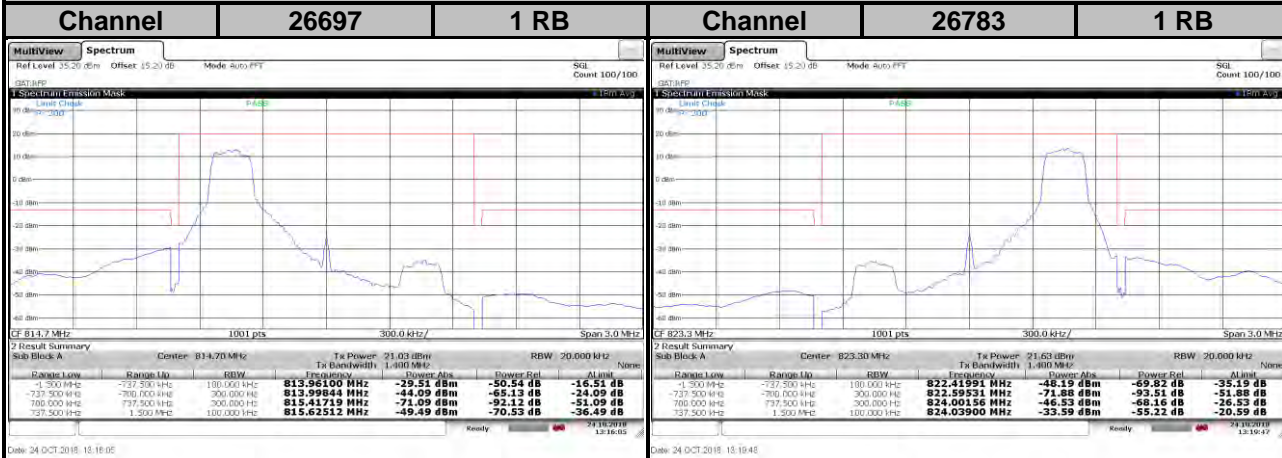
LTE Band 26

Channel Bandwidth: 1.4 MHz / QPSK



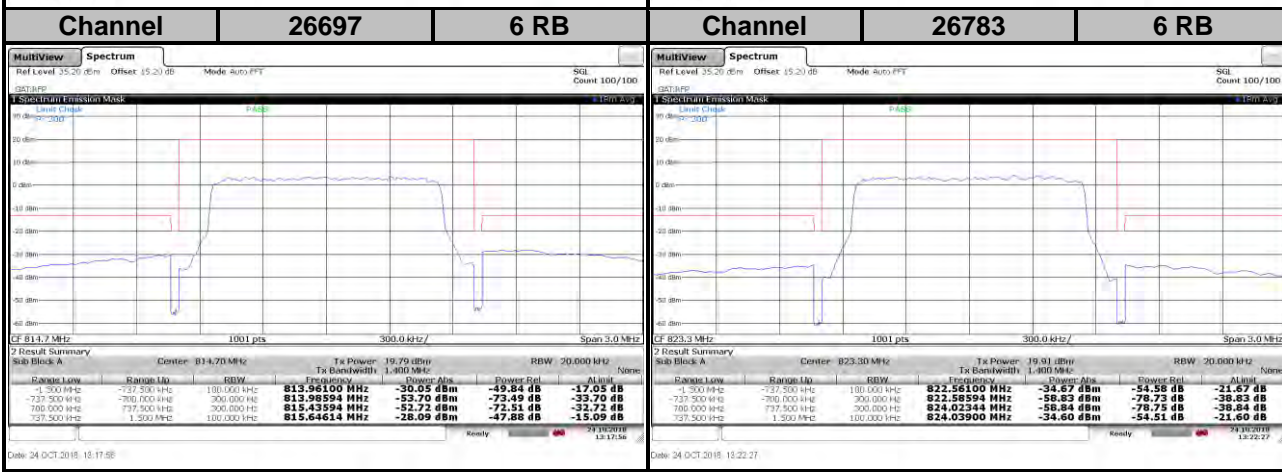
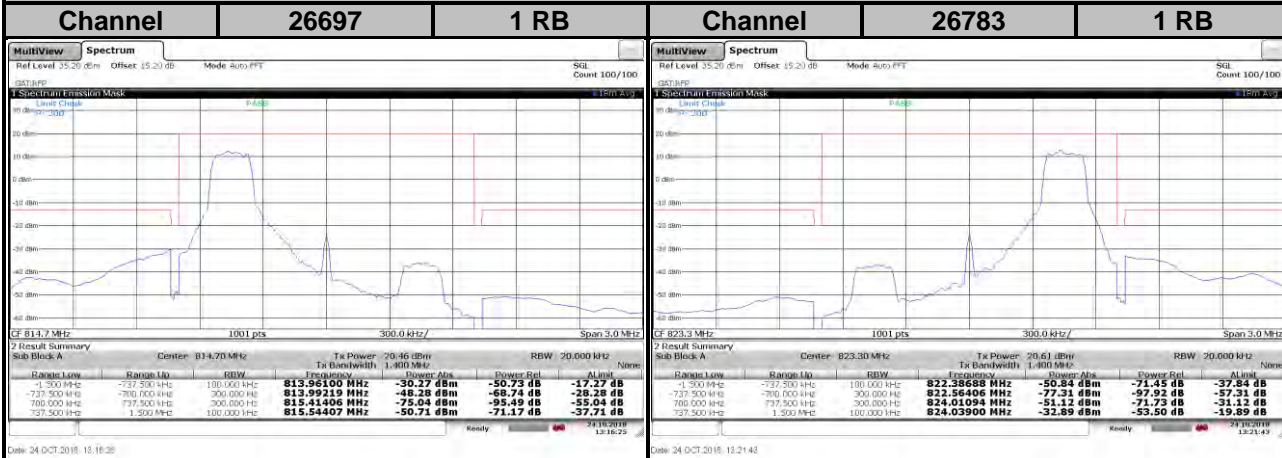
LTE Band 26

Channel Bandwidth: 1.4 MHz / 16QAM



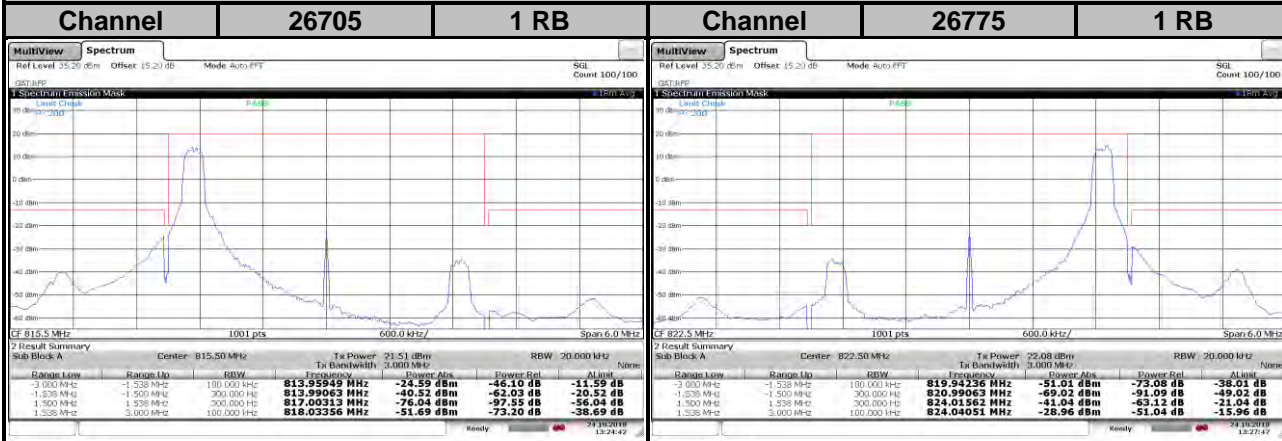
LTE Band 26

Channel Bandwidth: 1.4 MHz / 64QAM



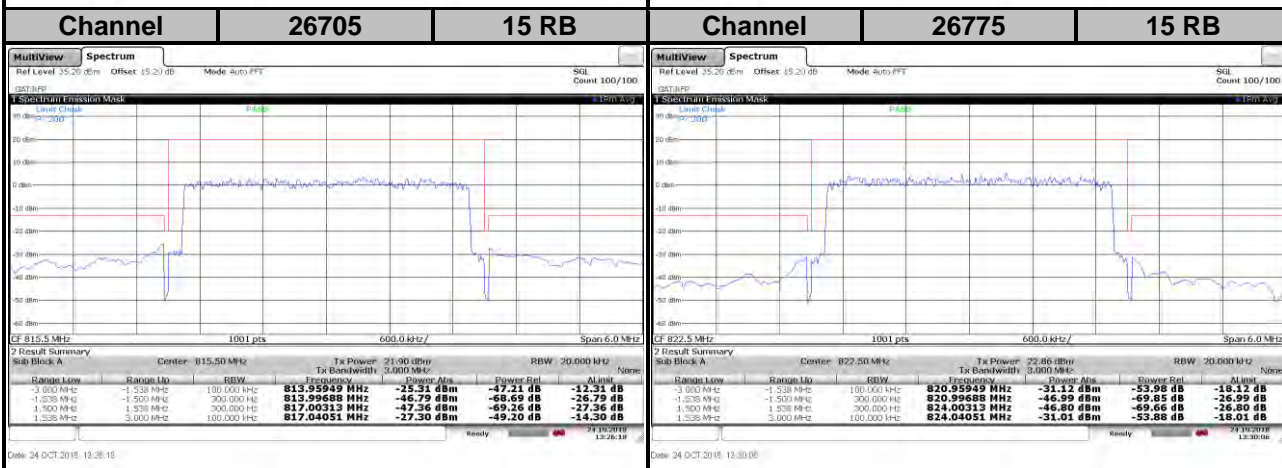
LTE Band 26

Channel Bandwidth: 3 MHz / QPSK



Date: 24 OCT 2018 13:24:43

Date: 24 OCT 2018 13:27:47

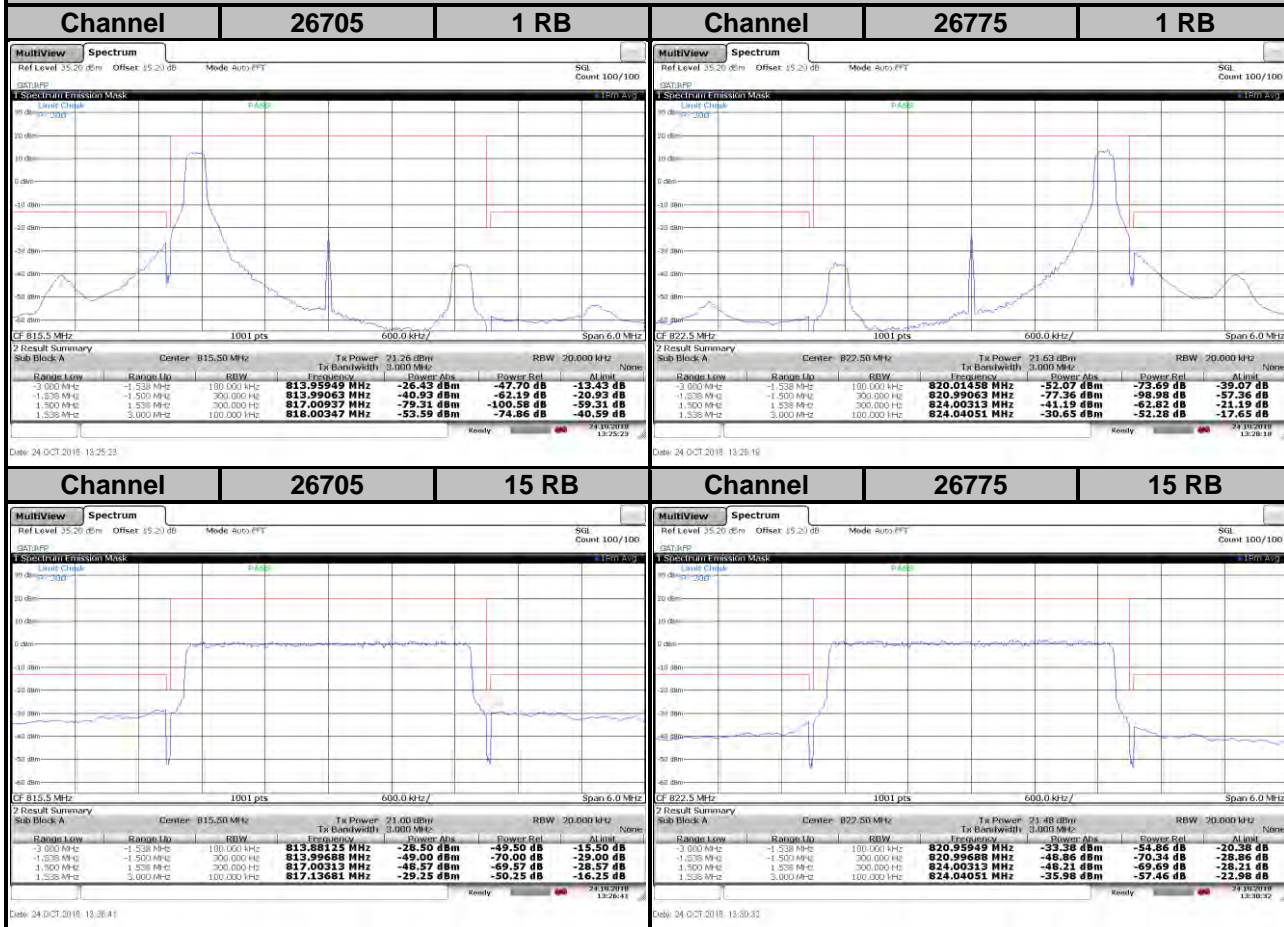


Date: 24 OCT 2018 13:28:15

Date: 24 OCT 2018 13:30:08

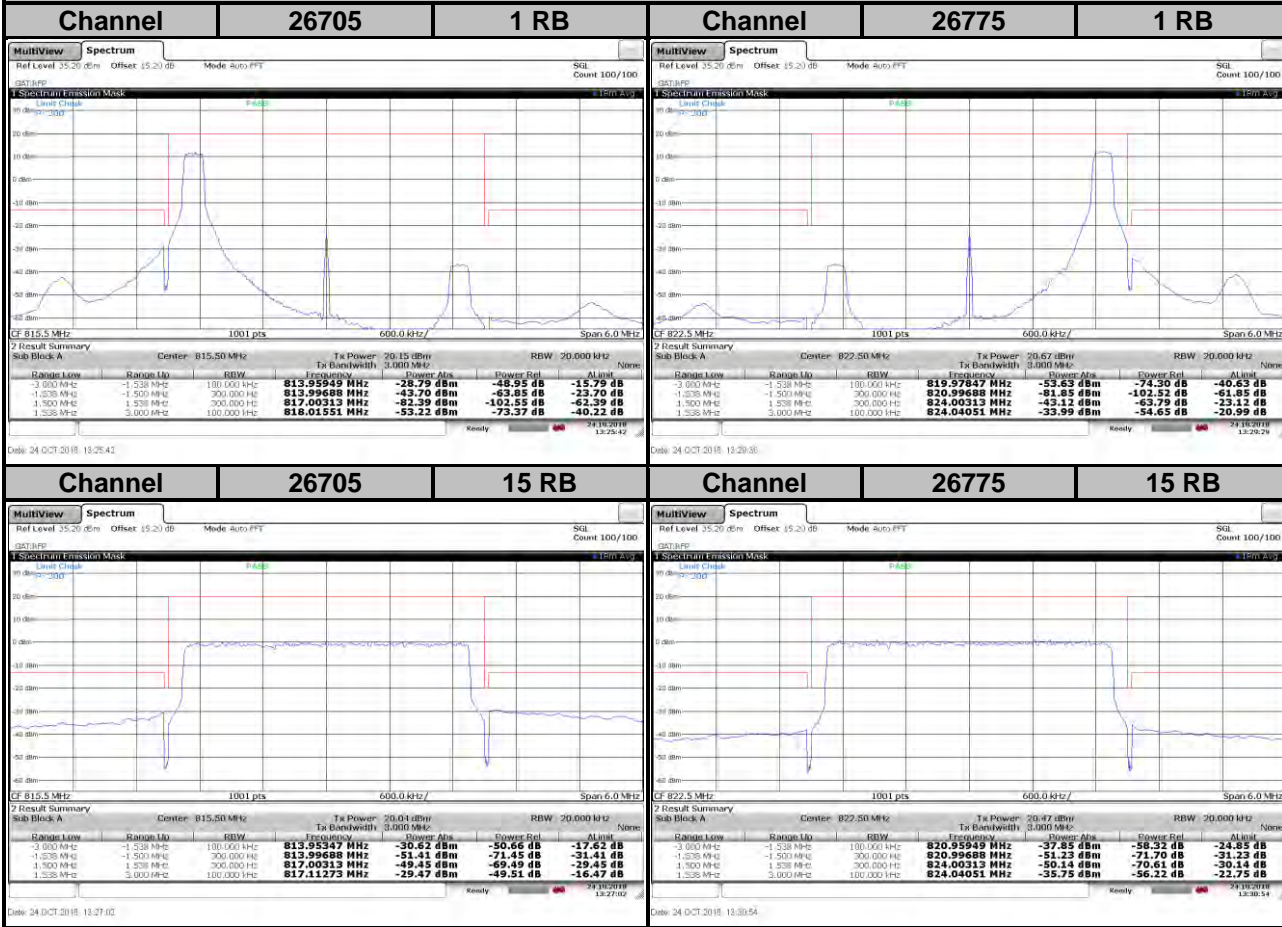
LTE Band 26

Channel Bandwidth: 3 MHz / 16QAM



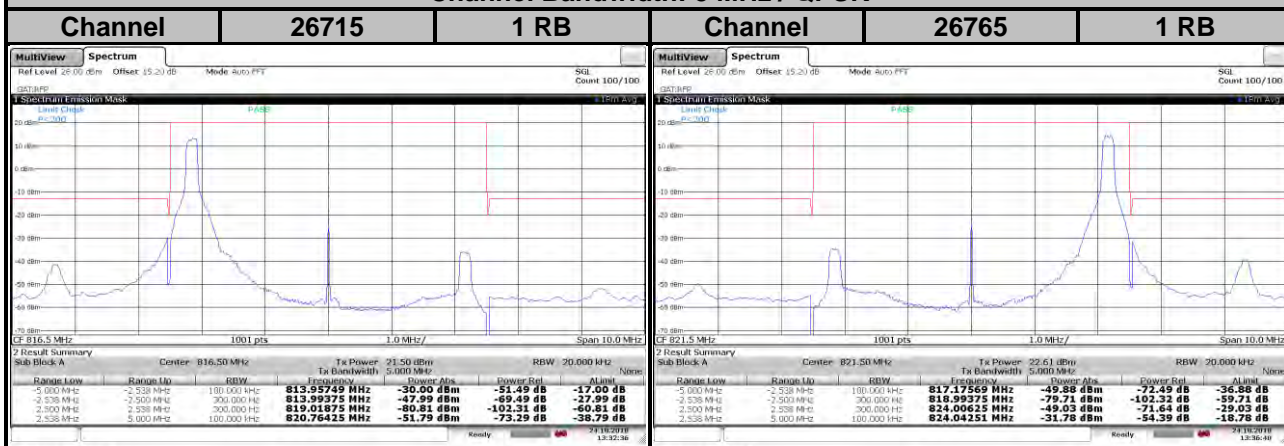
LTE Band 26

Channel Bandwidth: 3 MHz / 64QAM



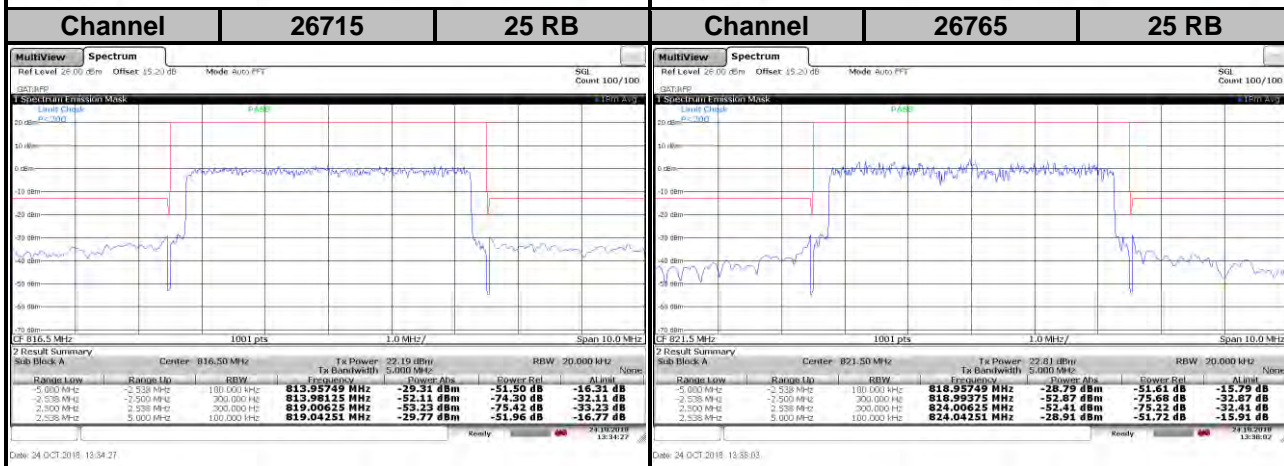
LTE Band 26

Channel Bandwidth: 5 MHz / QPSK



Date: 24 OCT 2018 13:33:35

Date: 24 OCT 2018 13:38:40

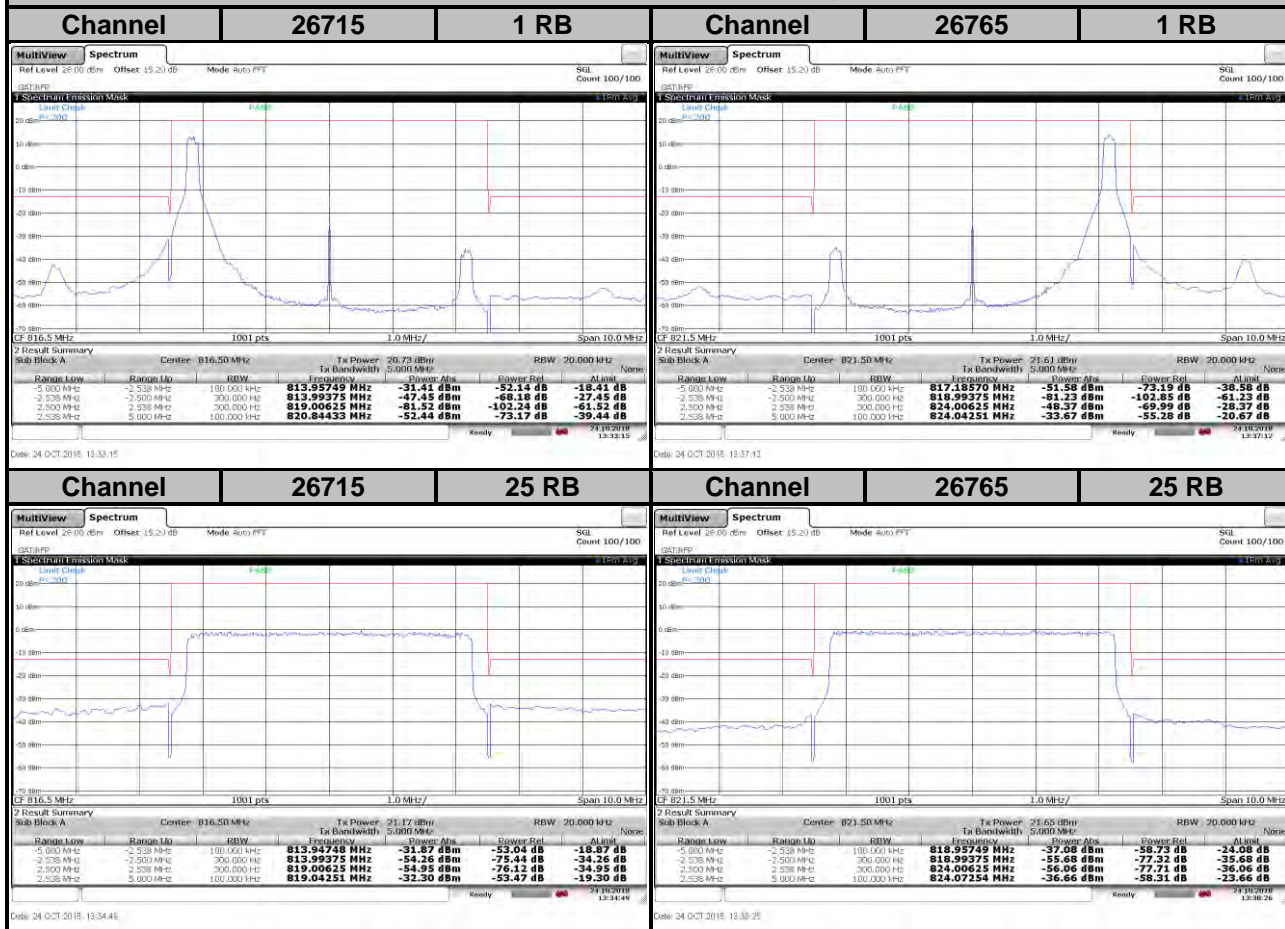


Date: 24 OCT 2018 13:34:27

Date: 24 OCT 2018 13:38:03

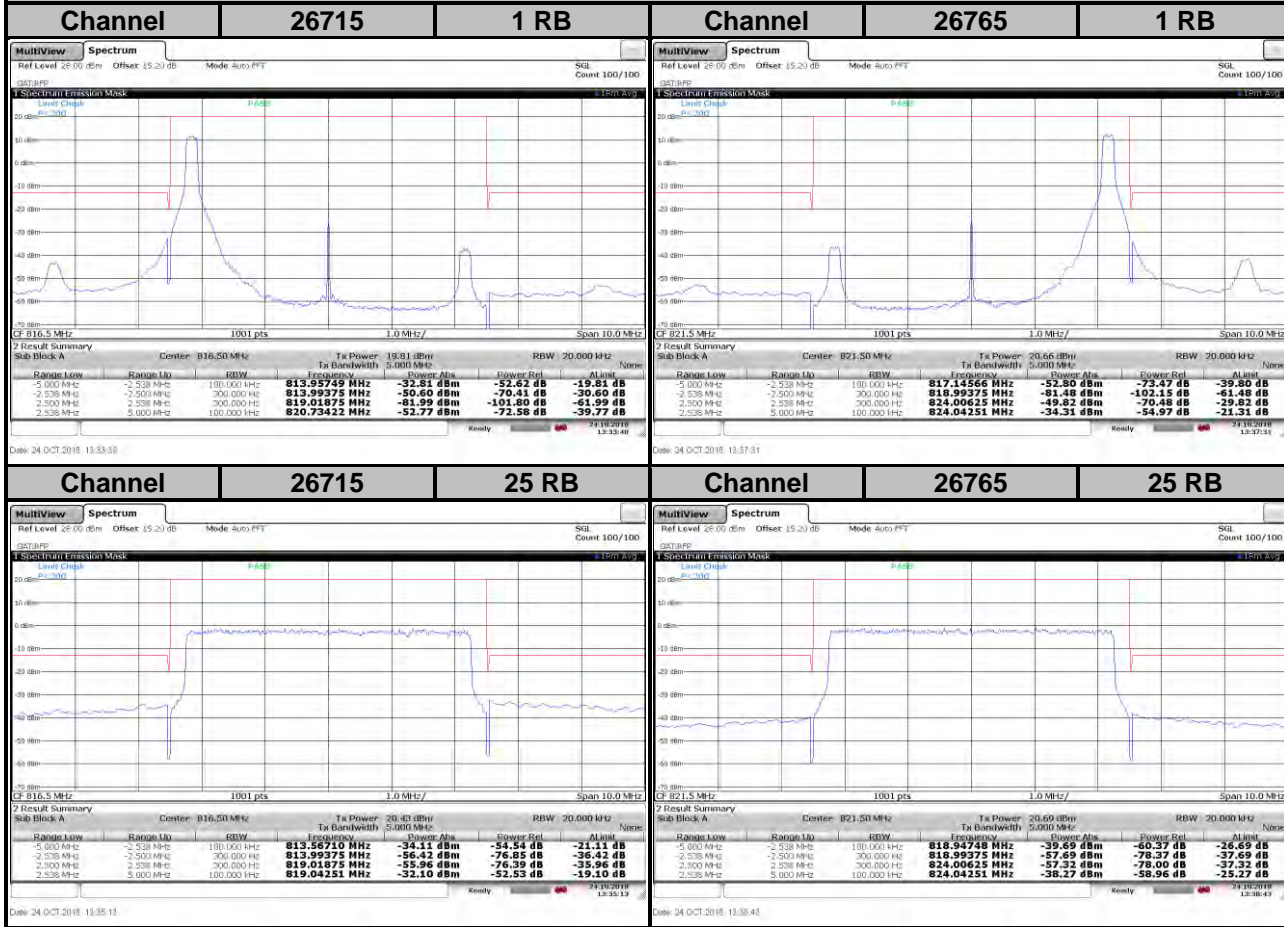
LTE Band 26

Channel Bandwidth: 5 MHz / 16QAM



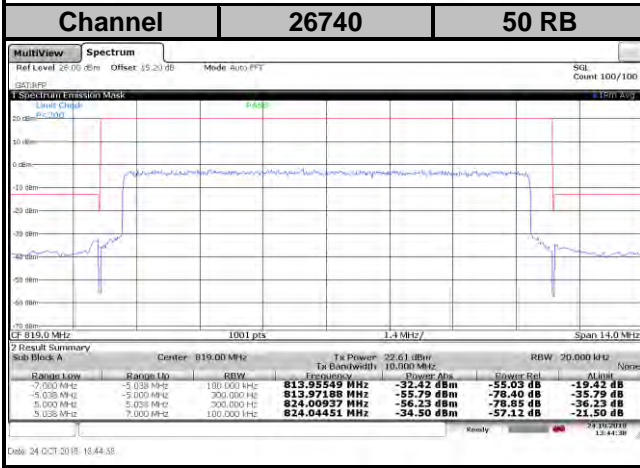
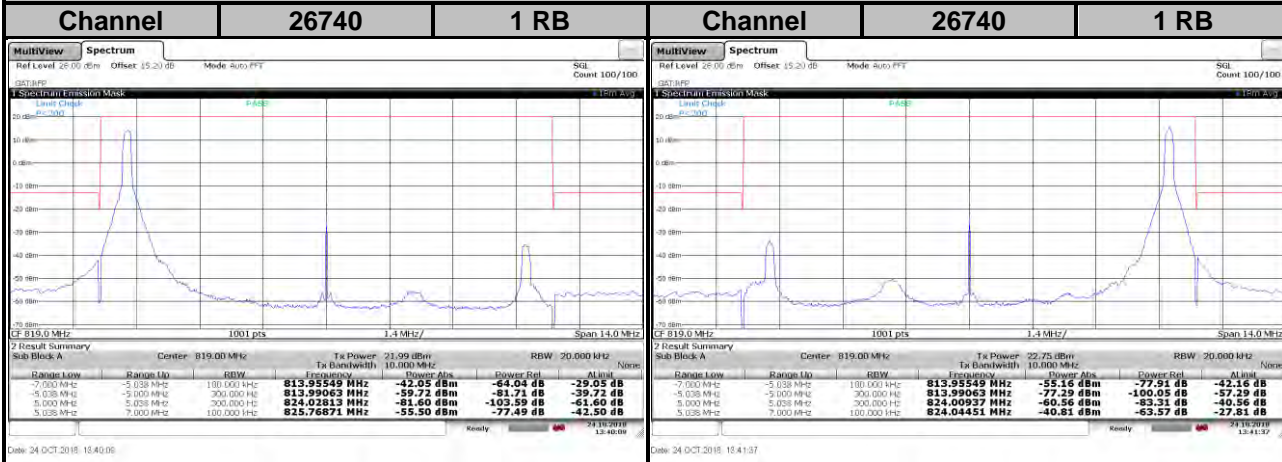
LTE Band 26

Channel Bandwidth: 5 MHz / 64QAM



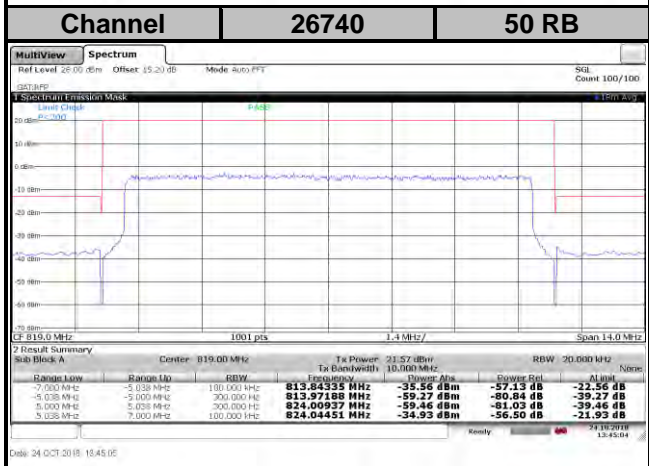
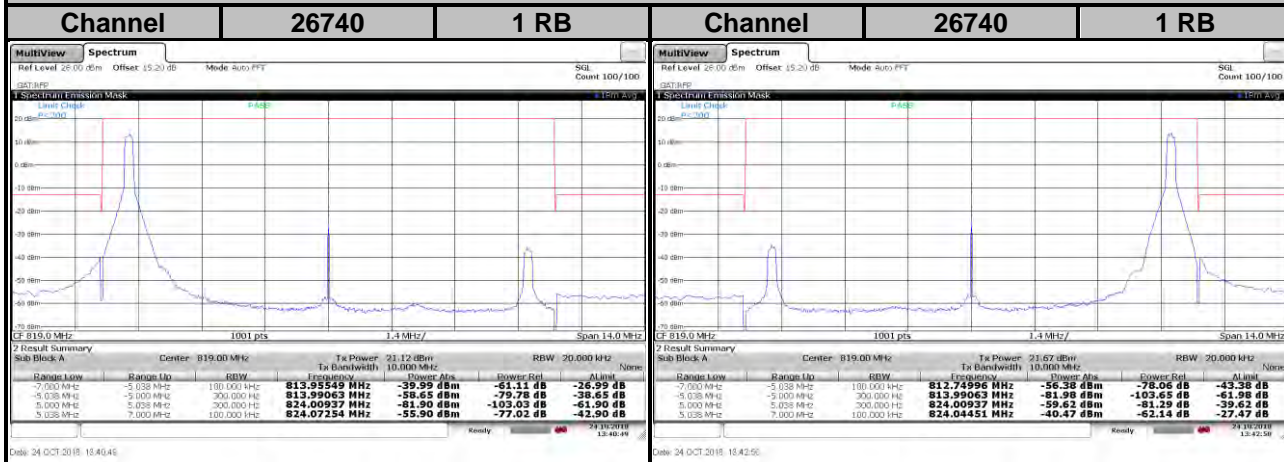
LTE Band 26

Channel Bandwidth: 10 MHz / QPSK



LTE Band 26

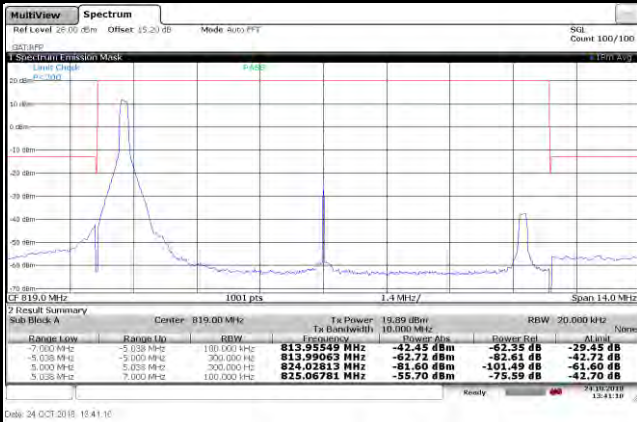
Channel Bandwidth: 10 MHz / 16QAM



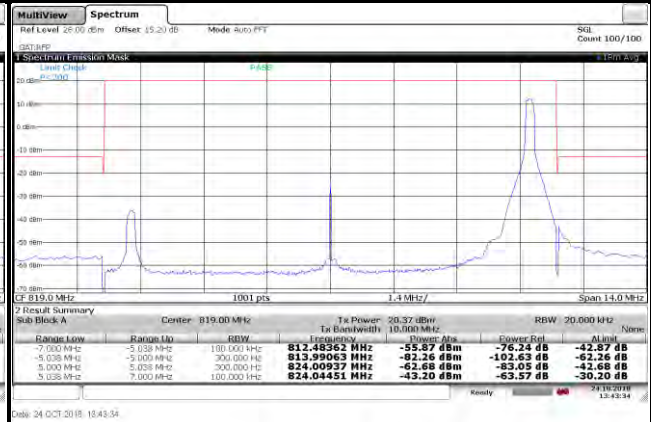
LTE Band 26

Channel Bandwidth: 10 MHz / 64QAM

Channel 26740 1 RB Channel 26740 1 RB

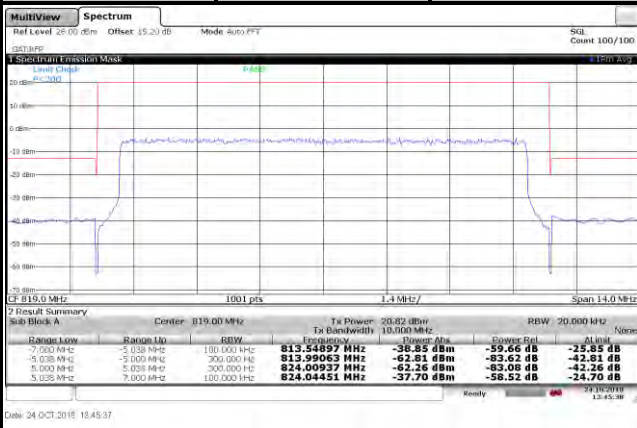


Date: 24 OCT 2018 15:41:10



Date: 24 OCT 2018 15:43:34

Channel 26740 1 RB



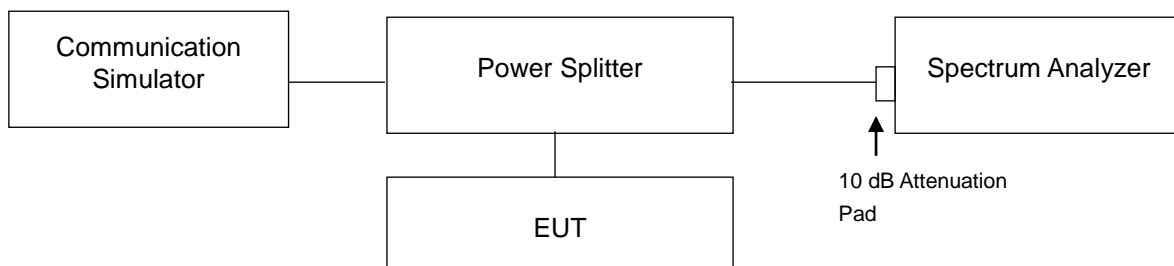
Date: 24 OCT 2018 15:45:37

4.6 Band Edge Measurement

4.6.1 Limits of Band Edge Measurement

- (1) On all frequencies between 769 - 775 MHz and 799 - 805 MHz, by a factor not less than $76 + 10 \log (P)$ dB in a 6.25 kHz band segment, for base and fixed stations.
- (2) On all frequencies between 769 - 775 MHz and 799 - 805 MHz, by a factor not less than $65 + 10 \log (P)$ dB in a 6.25 kHz band segment, for mobile and portable stations.
- (3) On any frequency between 775 - 788 MHz, above 805 MHz, and below 758 MHz, by at least $43 + 10 \log (P)$.

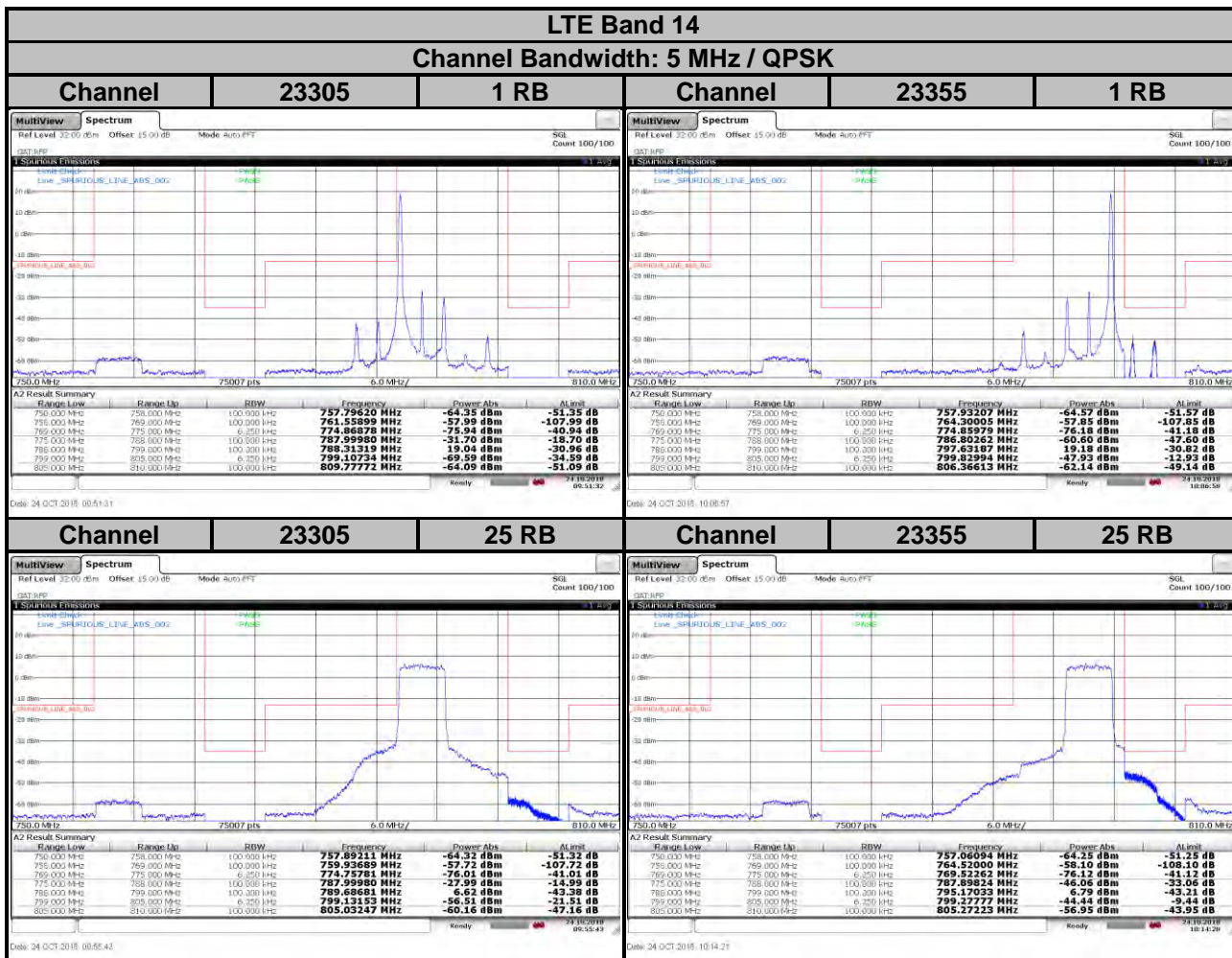
4.6.2 Test Setup



4.6.3 Test Procedures

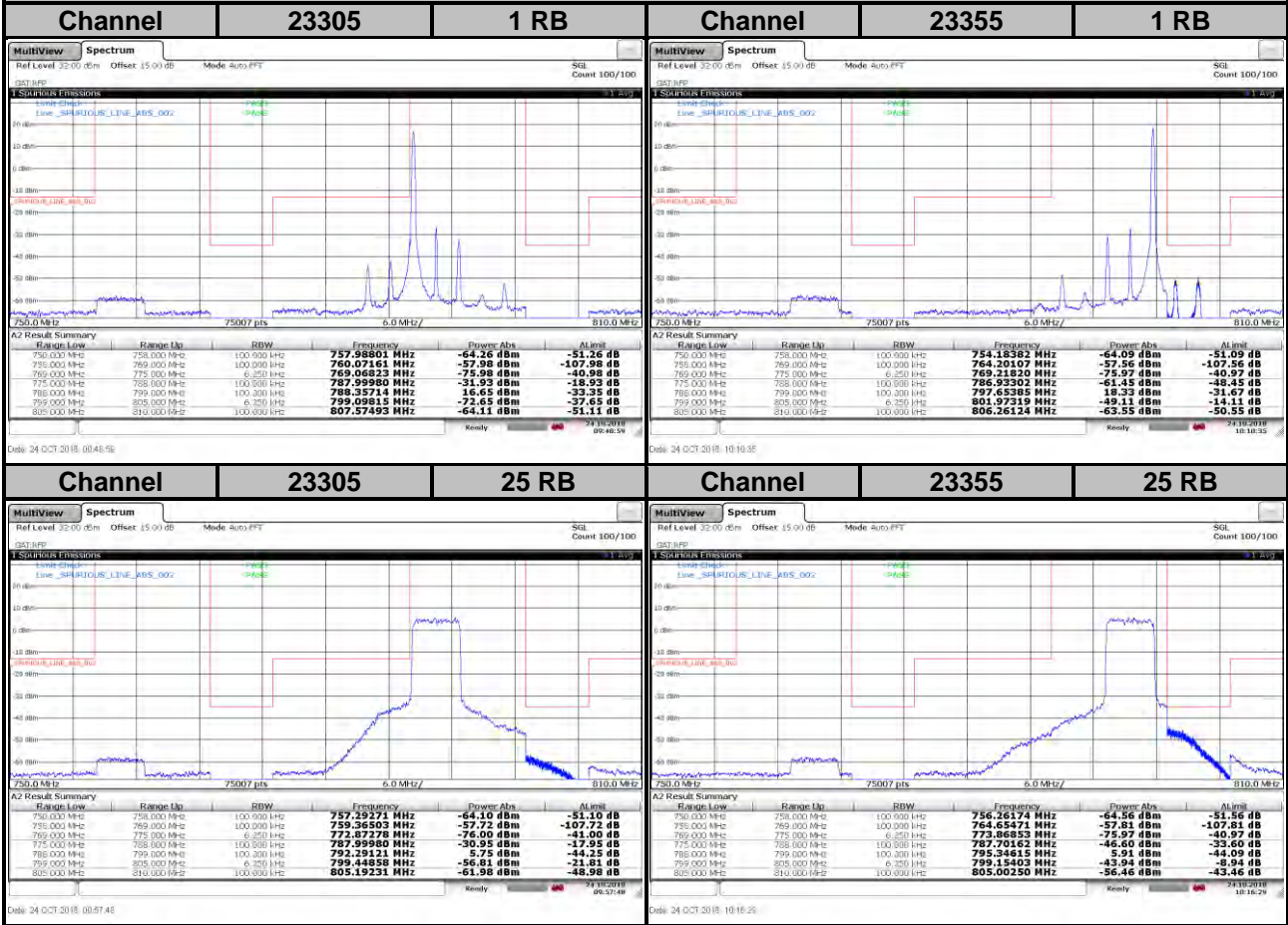
- a. All measurements were done at low and high operational frequency range.
- b. The band edge measurement used the power splitter via EUT RF power connector between signal generator and spectrum analyzer. This splitter loss, attenuator loss and cable loss are the worst loss 15 dB in the transmitted path track.
- c. Record the max. trace plot into the test report.

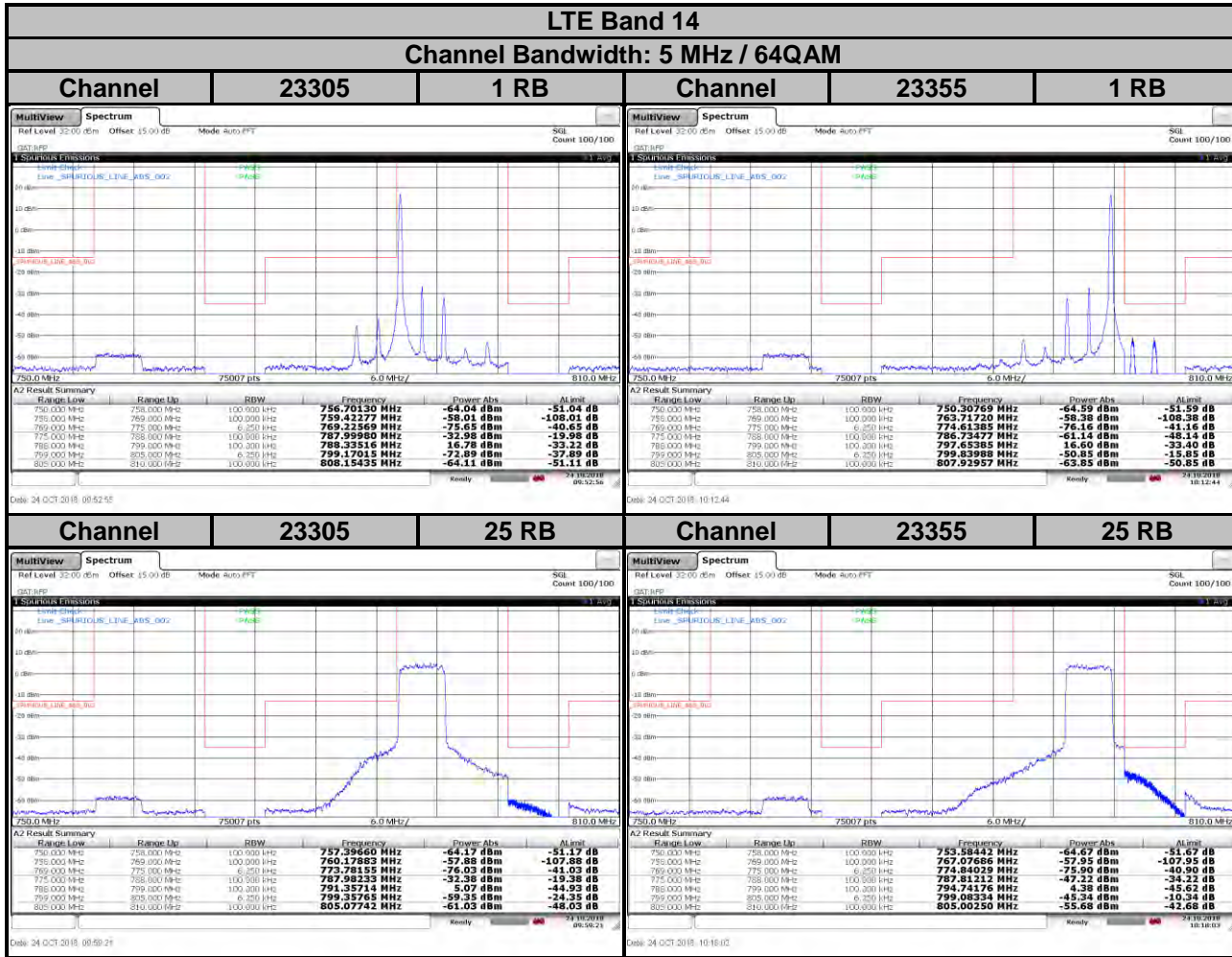
4.6.4 Test Results



LTE Band 14

Channel Bandwidth: 5 MHz / 16QAM



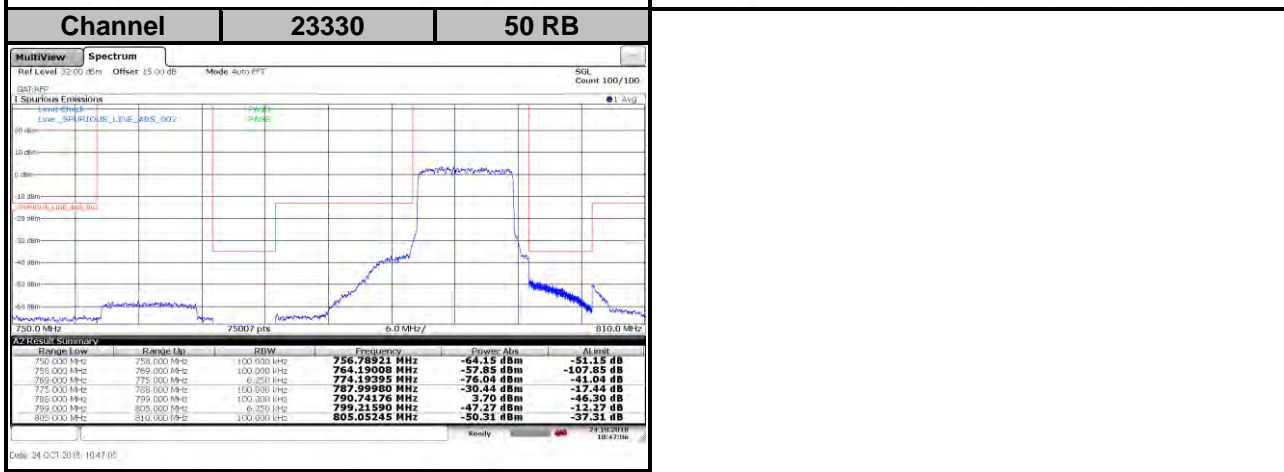
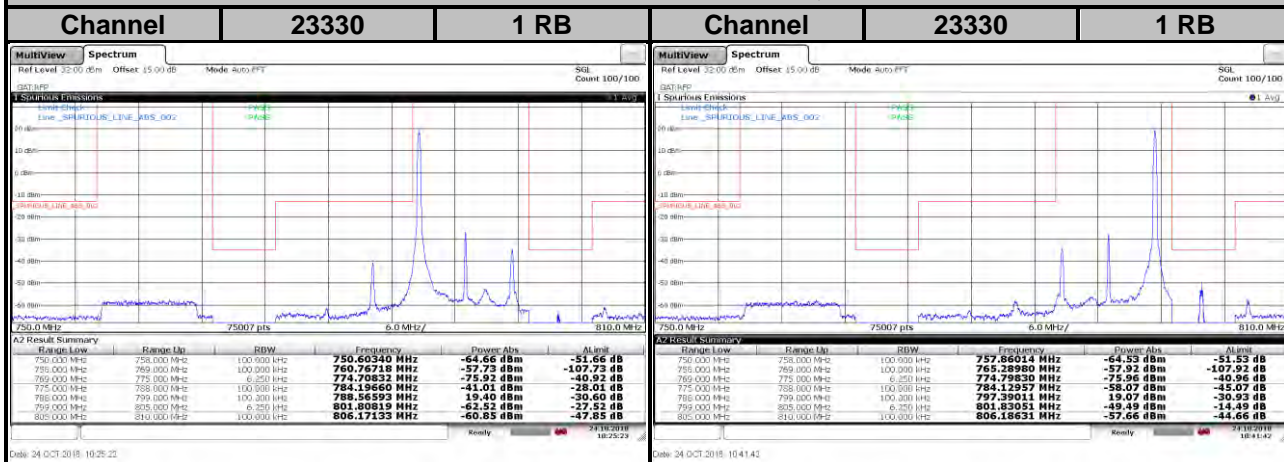




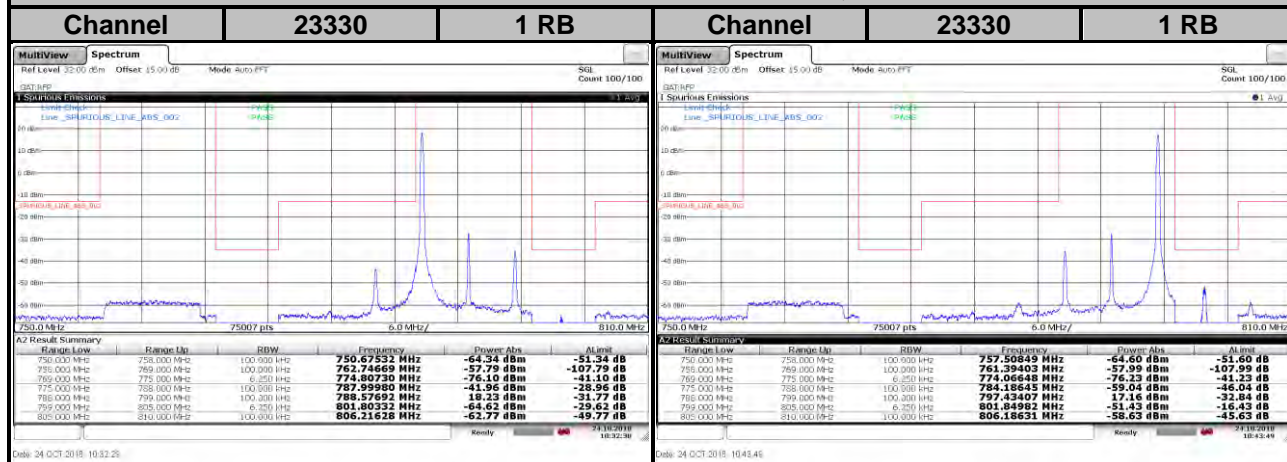
BUREAU VERITAS

LTE Band 14

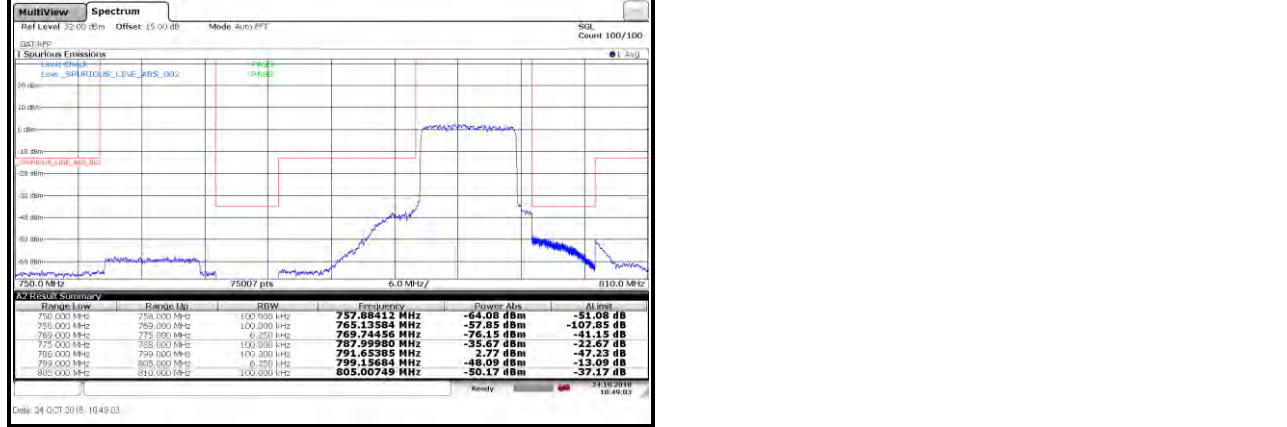
Channel Bandwidth: 10 MHz / QPSK



LTE Band 14
Channel Bandwidth: 10 MHz / 16QAM



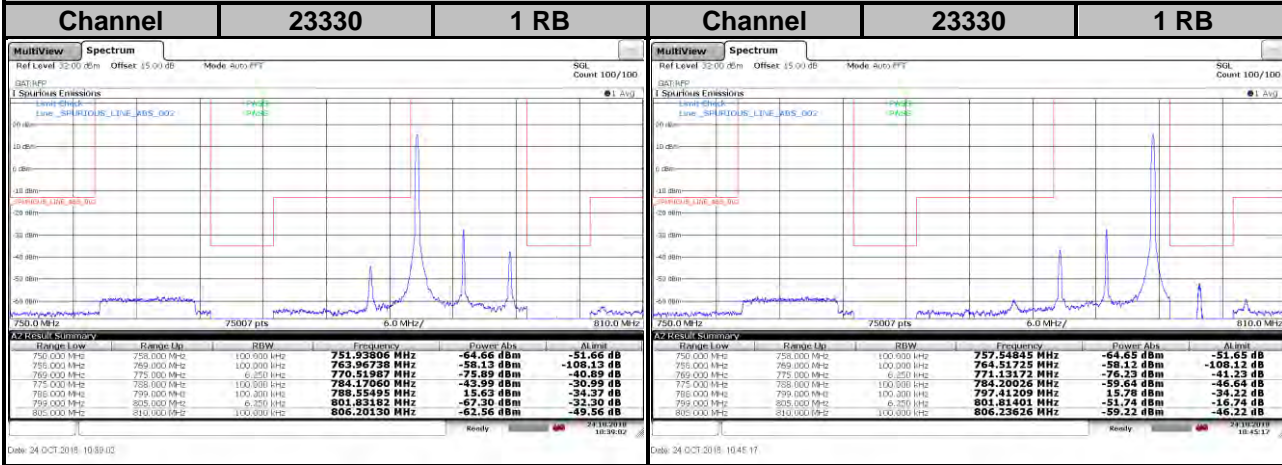
Date: 24 OCT 2018, 10:32:25 Date: 24 OCT 2018, 10:41:46



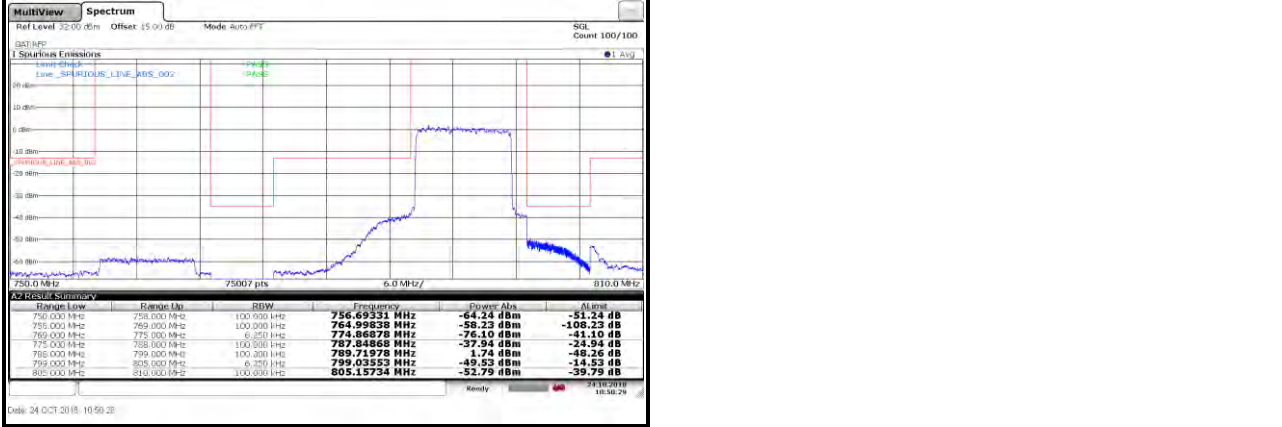
Date: 24 OCT 2018, 10:49:03

LTE Band 14

Channel Bandwidth: 10 MHz / 64QAM



Date: 24 OCT 2018, 10:59:02 | Date: 24 OCT 2018, 10:41:17



Date: 24 OCT 2018, 10:50:28

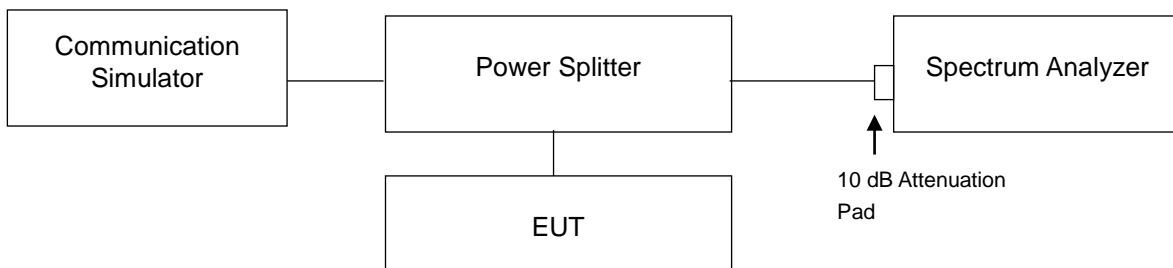
4.7 Conducted Spurious Emissions

4.7.1 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.

On all frequencies between 769 – 775 MHz and 799 – 805 MHz, by a factor not less than $65 + 10 \log (P)$ dB in a 6.25 kHz band segment, for mobile and portable stations.

4.7.2 Test Setup



4.7.3 Test Procedure

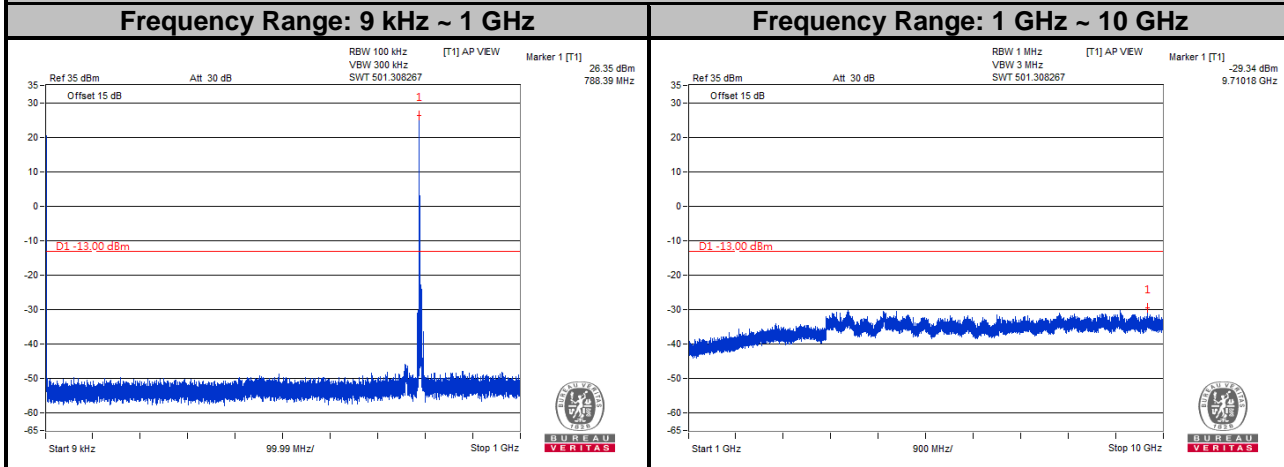
- The EUT makes a phone call to the communication simulator. All measurements were done at low, middle and high operational frequency range.
- Measuring frequency range is from 9 kHz to 1 GHz. 10 dB attenuation pad is connected with spectrum. RBW = 100 kHz and VBW = 300 kHz are used for conducted emission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

4.7.4 Test Results

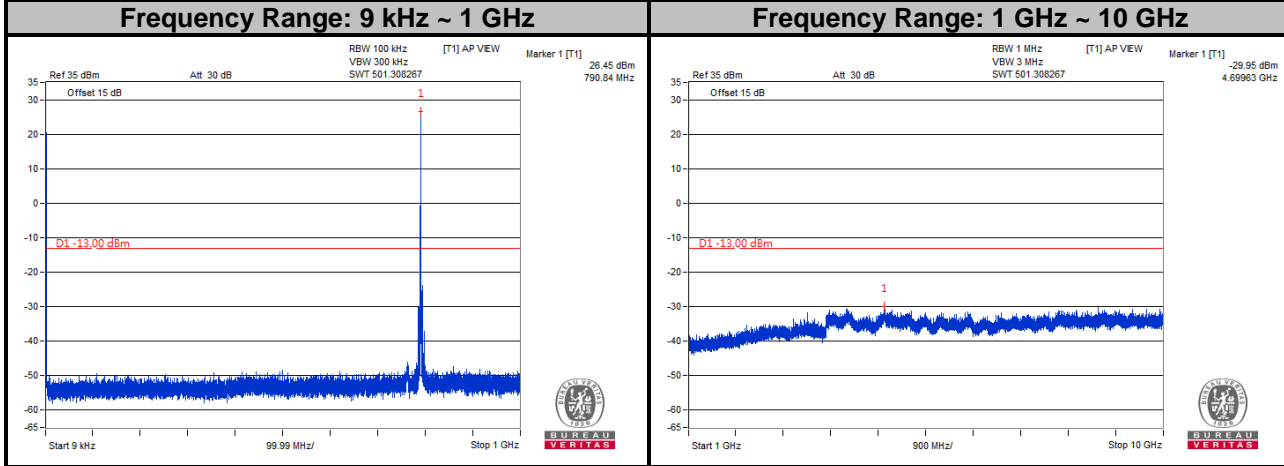


Note: The signal over the limit in 9 kHz is from spectrum analyzer.

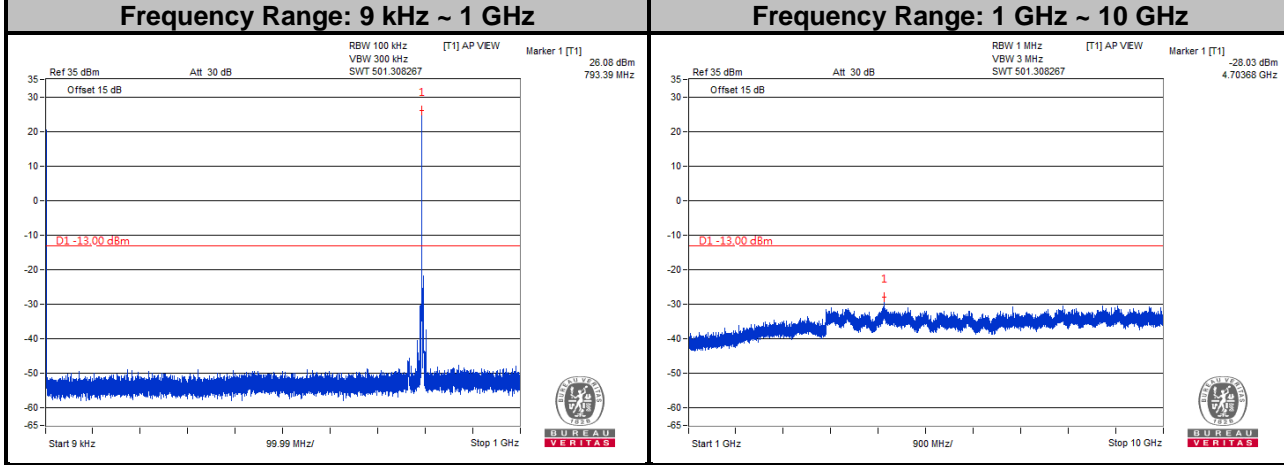
LTE Band 14
Channel Bandwidth: 5 MHz
Channel 23305



Channel 23330



Channel 23355



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

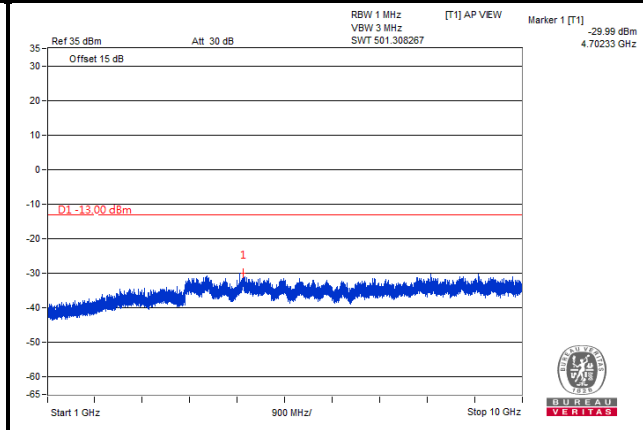
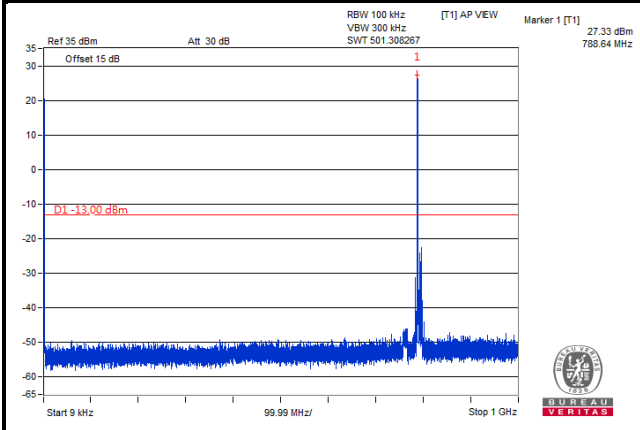
LTE Band 14

Channel Bandwidth: 10 MHz

Channel 23330

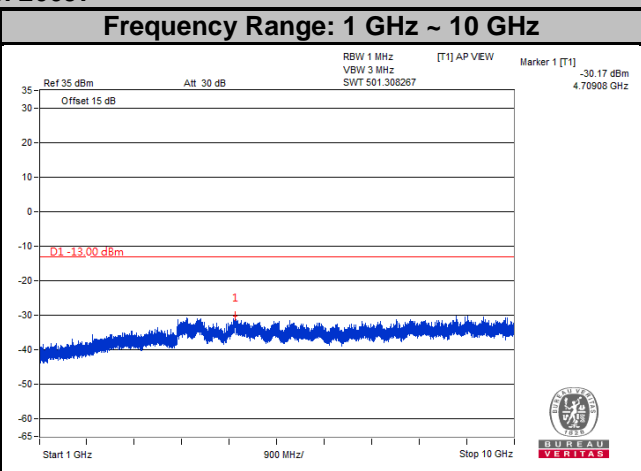
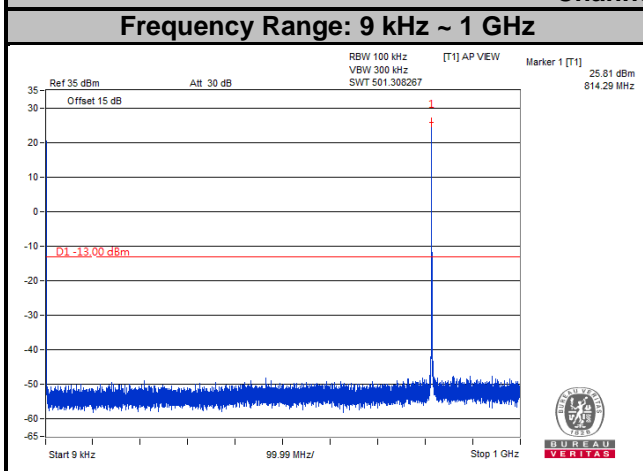
Frequency Range: 9 kHz ~ 1 GHz

Frequency Range: 1 GHz ~ 10 GHz

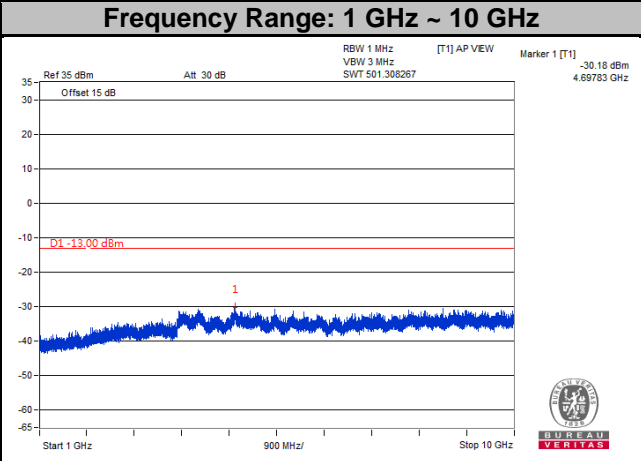
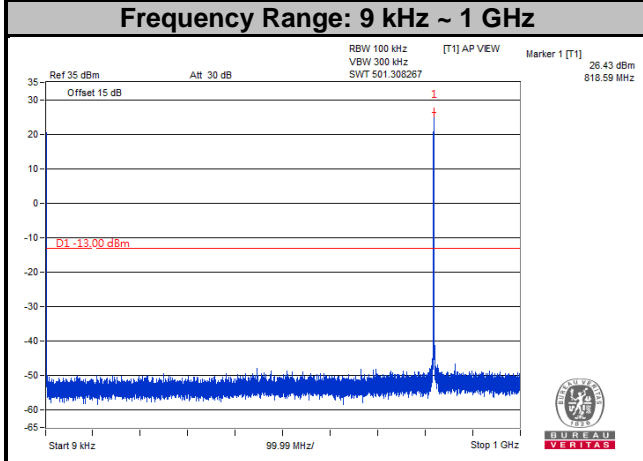


Note: The signal over the limit in 9 kHz is from spectrum analyzer.

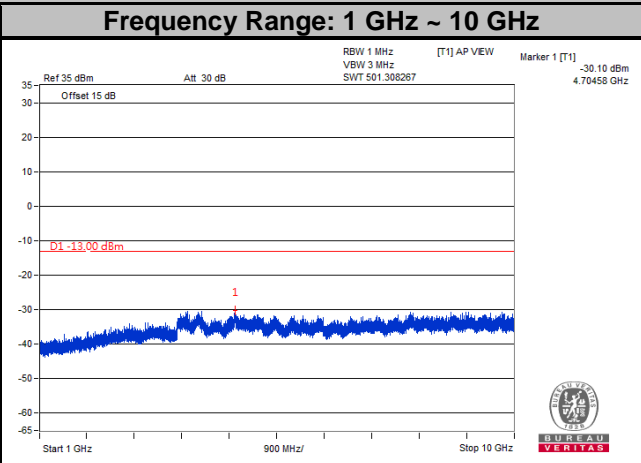
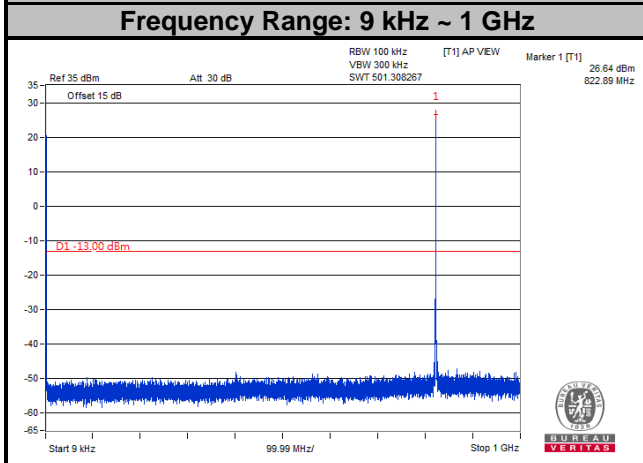
LTE Band 26
Channel Bandwidth: 1.4 MHz
Channel 26697



Channel 26740

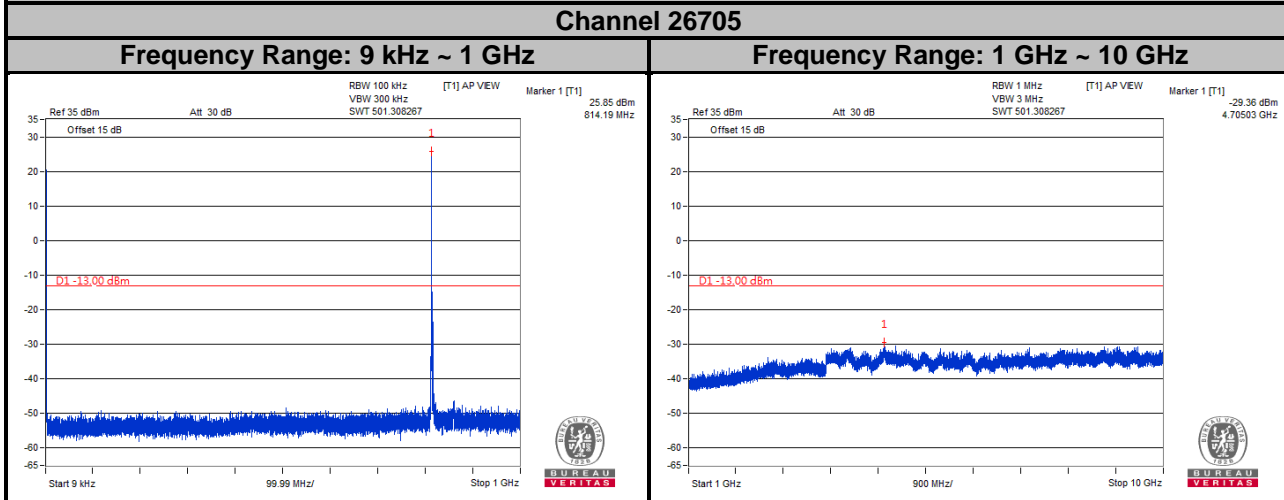


Channel 26783

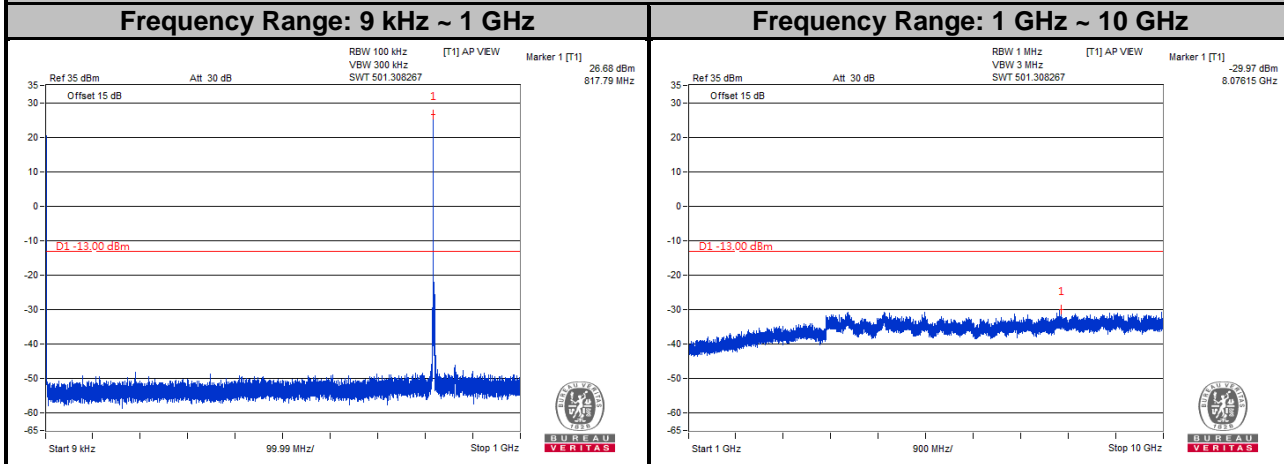


Note: The signal over the limit in 9 kHz is from spectrum analyzer.

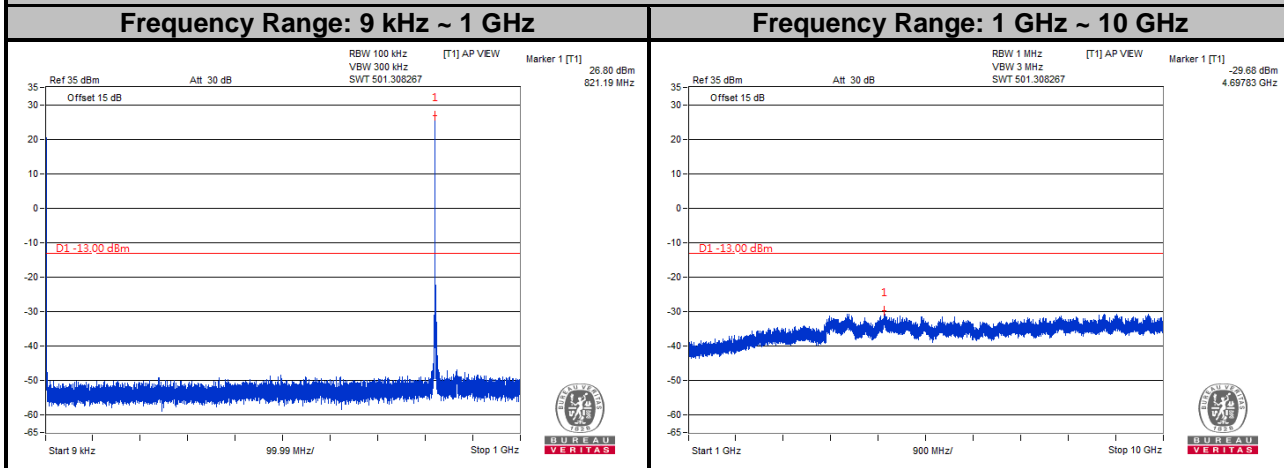
LTE Band 26
Channel Bandwidth: 3 MHz
Channel 26705



Channel 26740

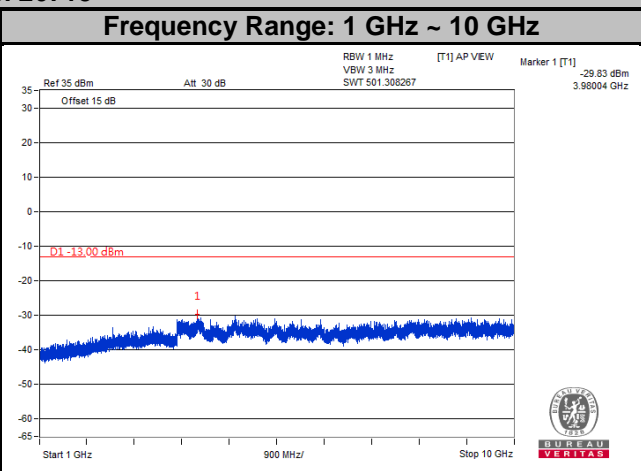
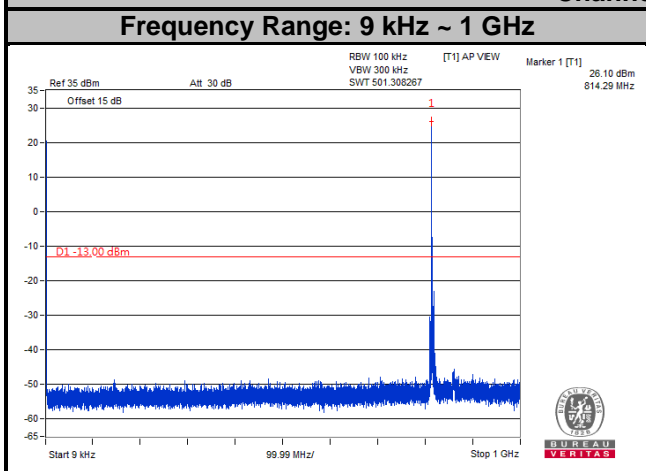


Channel 26775

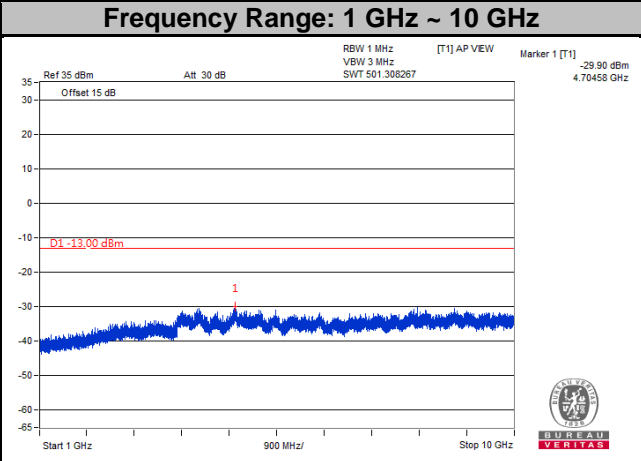
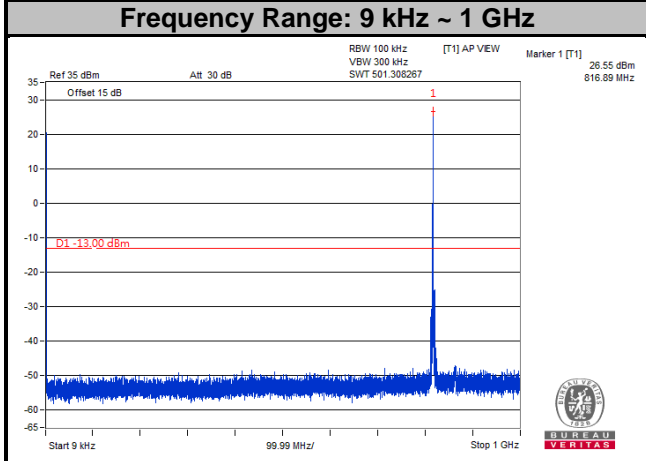


Note: The signal over the limit in 9 kHz is from spectrum analyzer.

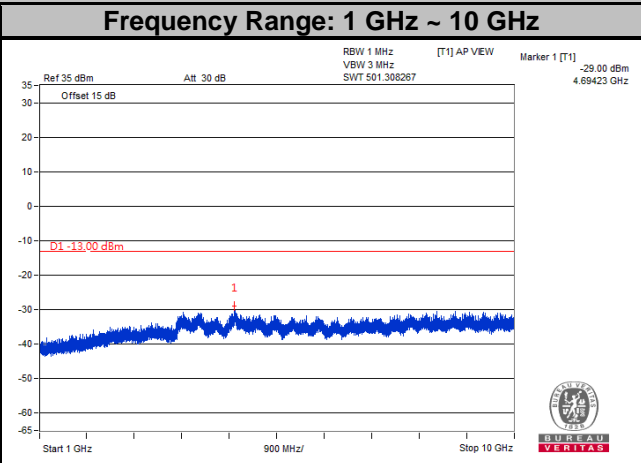
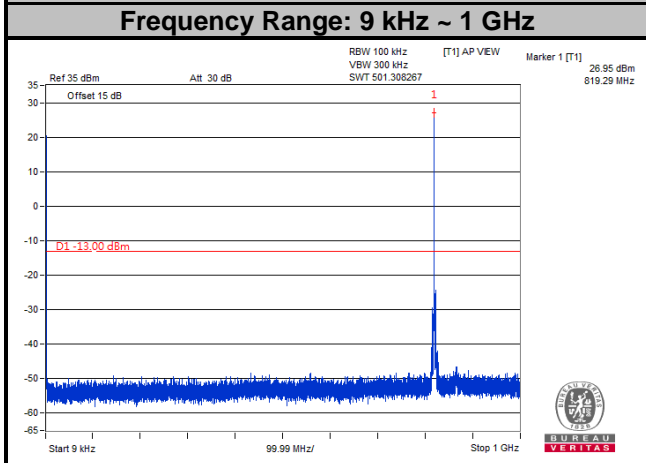
LTE Band 26
Channel Bandwidth: 5 MHz
Channel 26715



Channel 26740



Channel 26765



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

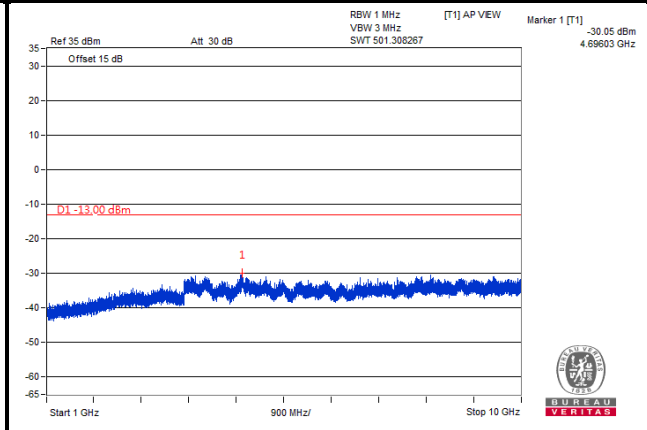
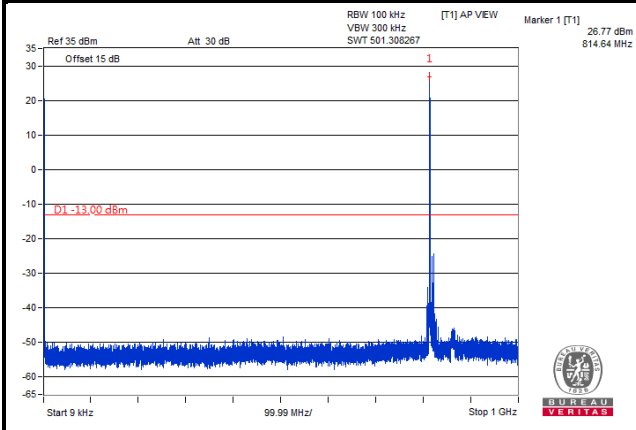
LTE Band 26

Channel Bandwidth: 10 MHz

Channel 26740

Frequency Range: 9 kHz ~ 1 GHz

Frequency Range: 1 GHz ~ 10 GHz



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

4.8 Radiated Emission Measurement

4.8.1 Limits of Radiated Emission Measurement

- (1) The power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) by at least $43 + 10 \log (P)$ dB. The limit of emission is equal to -13 dBm.
- (2) For operations in the 758-775 MHz and 788-805 MHz bands, all emissions including harmonics in the band 1559-1610 MHz shall be limited to -70 dBW/MHz equivalent isotropically radiated power (EIRP) for wideband signals, and -80 dBW EIRP for discrete emissions of less than 700 Hz bandwidth.

4.8.2 Test Procedure

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

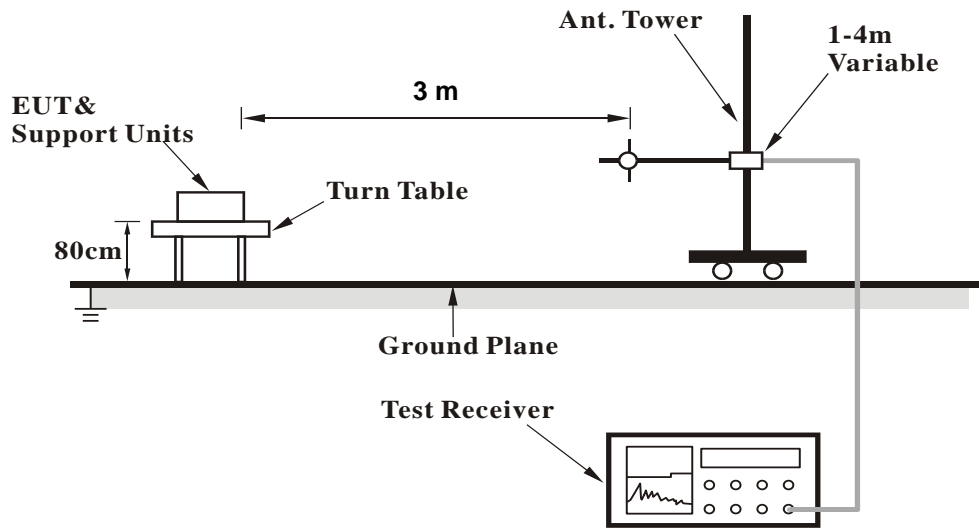
Note: The resolution bandwidth of spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz.

4.8.3 Deviation from Test Standard

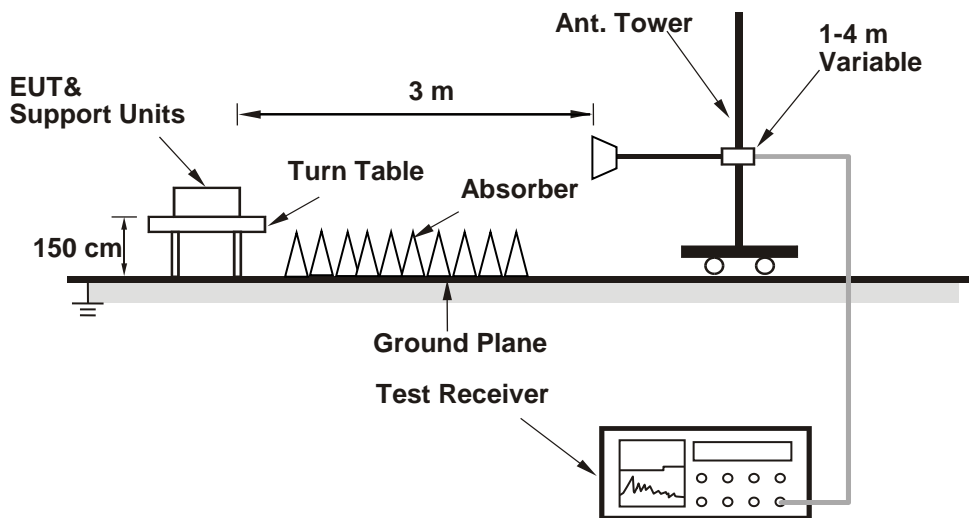
No deviation.

4.8.4 Test Setup

<Radiated Emission below or equal 1 GHz>



<Radiated Emission above 1 GHz>



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

4.8.5 Test Results

CDMA:
Low Channel

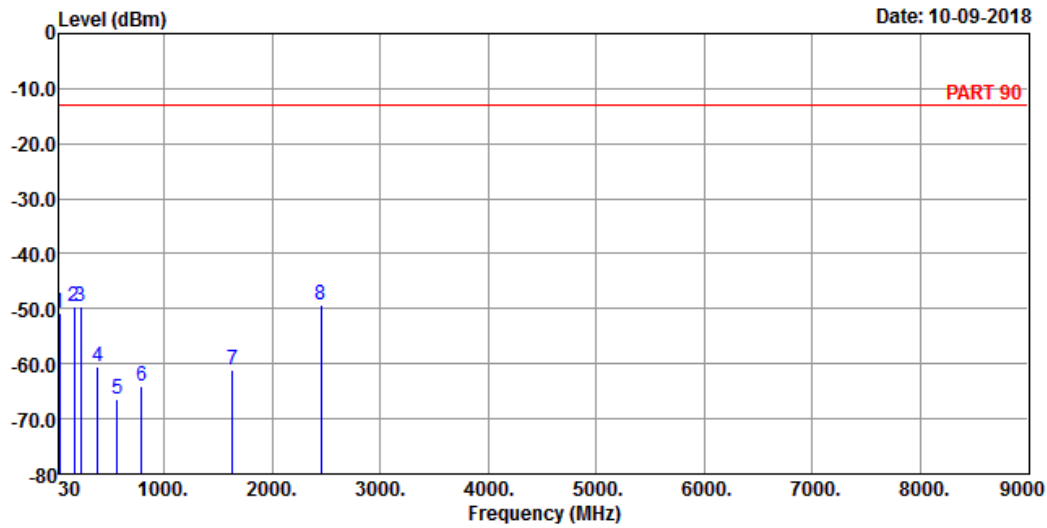


Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 5

Date: 10-09-2018



Site : 966 Chamber 5
Condition: PART 90 HORIZONTAL
Remark : CDMA BC10 Link_L-CH
Tested by: Thomas Wei

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1	30.00	-50.72	-51.10	-13.00	-37.72	0.38	Peak
2	170.65	-49.71	-44.01	-13.00	-36.71	-5.70	Peak
3	227.88	-49.55	-42.66	-13.00	-36.55	-6.89	Peak
4	387.93	-60.56	-54.54	-13.00	-47.56	-6.02	Peak
5	563.50	-66.30	-64.02	-13.00	-53.30	-2.28	Peak
6	792.42	-63.92	-64.68	-13.00	-50.92	0.76	Peak
7	1635.80	-61.23	-46.44	-13.00	-48.23	-14.79	Peak
8 pp	2453.70	-49.26	-38.82	-13.00	-36.26	-10.44	Peak

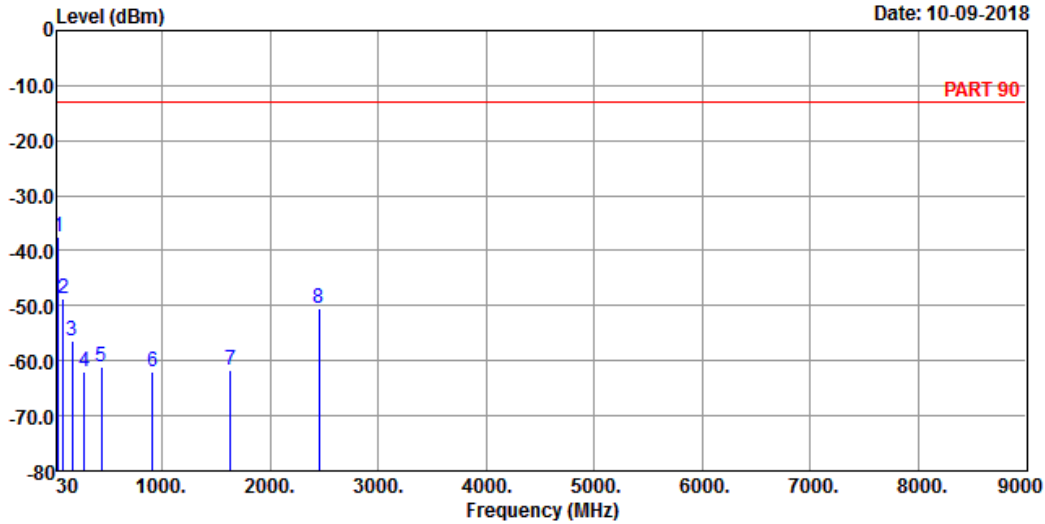


Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 6

Date: 10-09-2018



Site : 966 Chamber 5
 Condition: PART 90 VERTICAL
 Remark : CDMA BC10 Link_L-CH
 Tested by: Thomas Wei

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1 pp	38.73	-37.58	-37.68	-13.00	-24.58	0.10	Peak
2	86.26	-48.79	-37.77	-13.00	-35.79	-11.02	Peak
3	170.65	-56.36	-50.66	-13.00	-43.36	-5.70	Peak
4	278.32	-61.99	-55.42	-13.00	-48.99	-6.57	Peak
5	440.31	-61.18	-55.55	-13.00	-48.18	-5.63	Peak
6	910.76	-61.93	-62.77	-13.00	-48.93	0.84	Peak
7	1635.80	-61.69	-46.90	-13.00	-48.69	-14.79	Peak
8	2453.70	-50.52	-40.08	-13.00	-37.52	-10.44	Peak

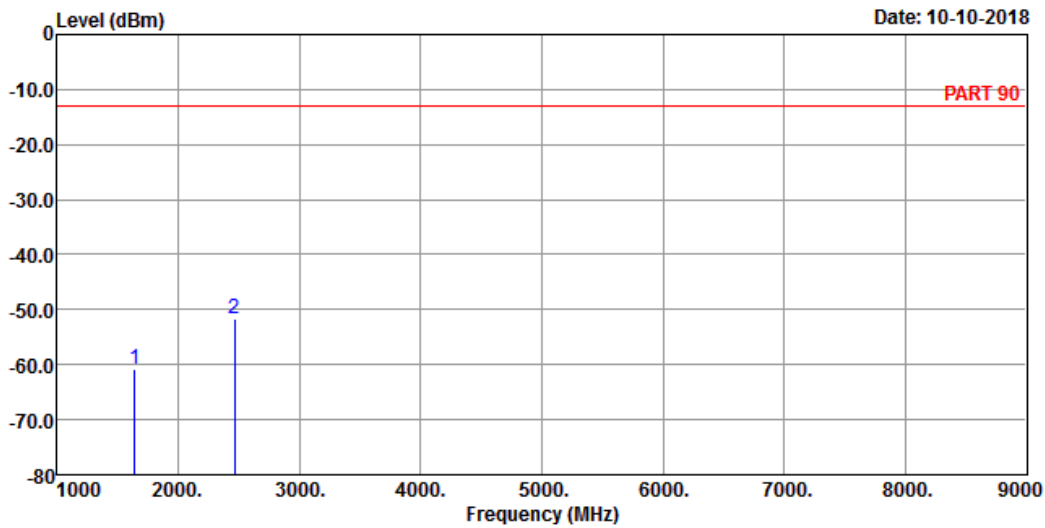
Middle Channel



Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 1



Site : 966 Chamber 5
 Condition: PART 90 HORIZONTAL
 Remark : CDMA BC10 Link_M-CH
 Tested by: Thomas Wei

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1	1641.00	-60.72	-45.99	-13.00	-47.72	-14.73	Peak
2 pp	2461.50	-51.65	-41.21	-13.00	-38.65	-10.44	Peak

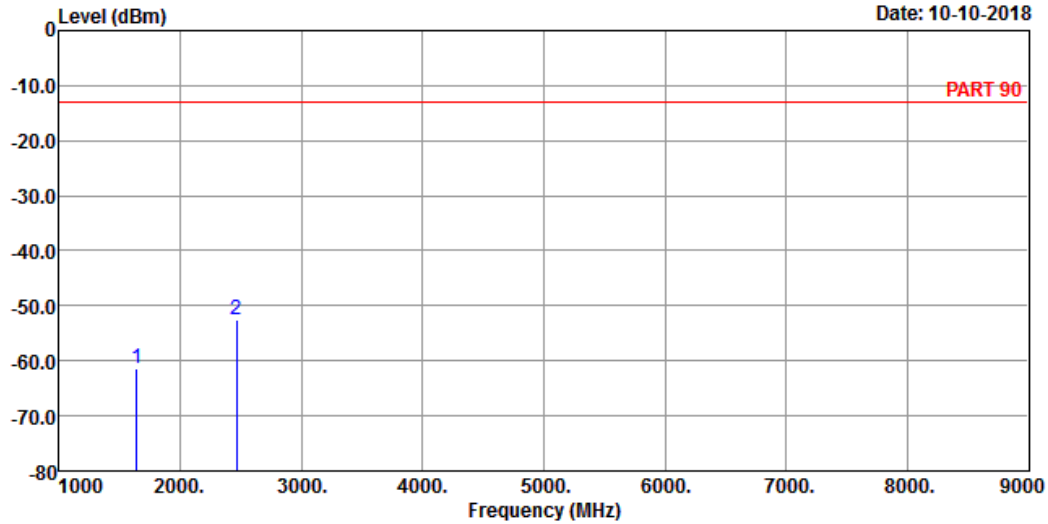


Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 2

Date: 10-10-2018



Site : 966 Chamber 5
 Condition: PART 90 VERTICAL
 Remark : CDMA BC10 Link_M-CH
 Tested by: Thomas Wei

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1	1641.00	-61.43	-46.70	-13.00	-48.43	-14.73	Peak
2 pp	2461.50	-52.50	-42.06	-13.00	-39.50	-10.44	Peak

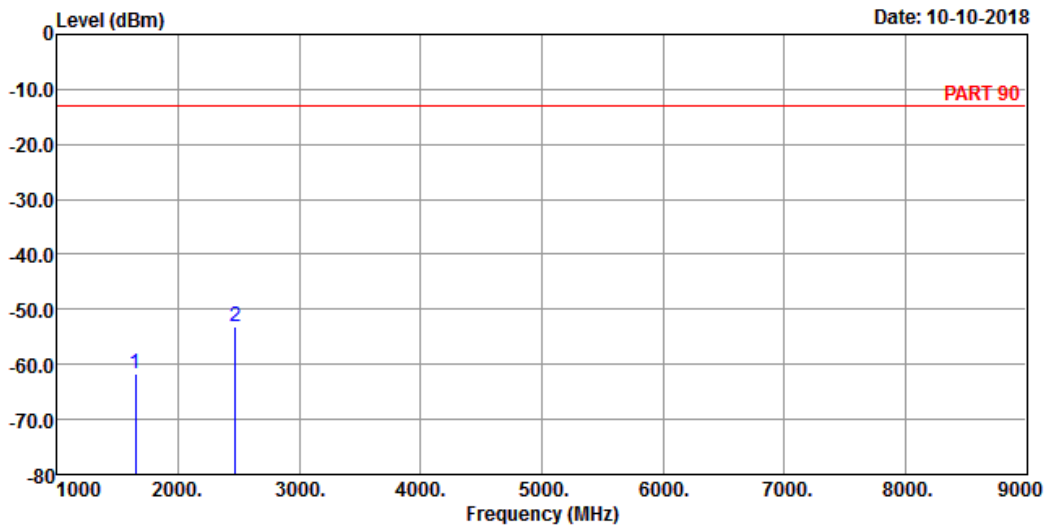
High Channel



Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 1



Site : 966 Chamber 5
 Condition: PART 90 HORIZONTAL
 Remark : CDMA BC10 Link_H-CH
 Tested by: Thomas Wei

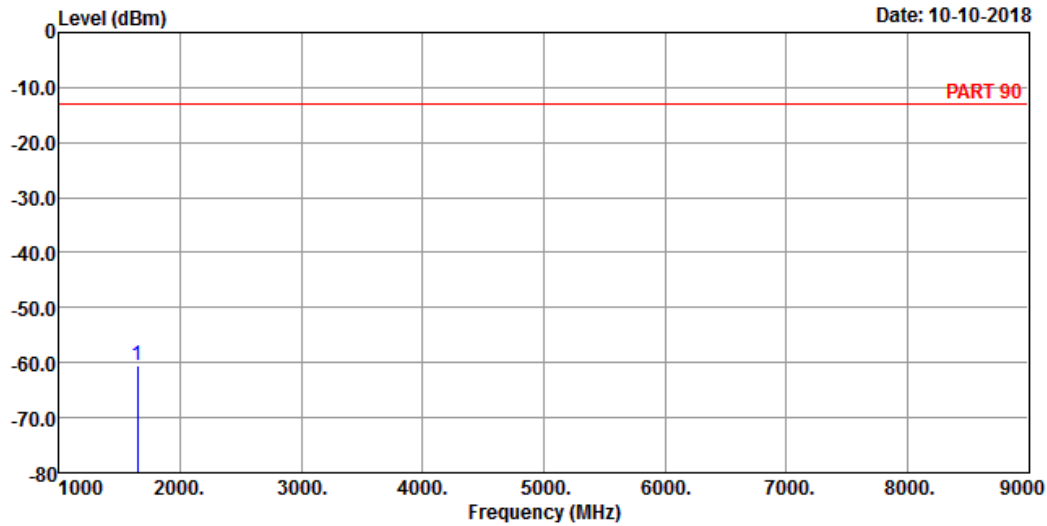
	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1	1646.20	-61.58	-46.85	-13.00	-48.58	-14.73	Peak
2 pp	2469.30	-53.07	-42.63	-13.00	-40.07	-10.44	Peak



Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 2



Site : 966 Chamber 5
 Condition: PART 90 VERTICAL
 Remark : CDMA BC10 Link_H-CH
 Tested by: Thomas Wei

Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
MHz	dBm	dBm	dBm	dB	dB	
1 pp 1646.20	-60.46	-45.73	-13.00	-47.46	-14.73	Peak

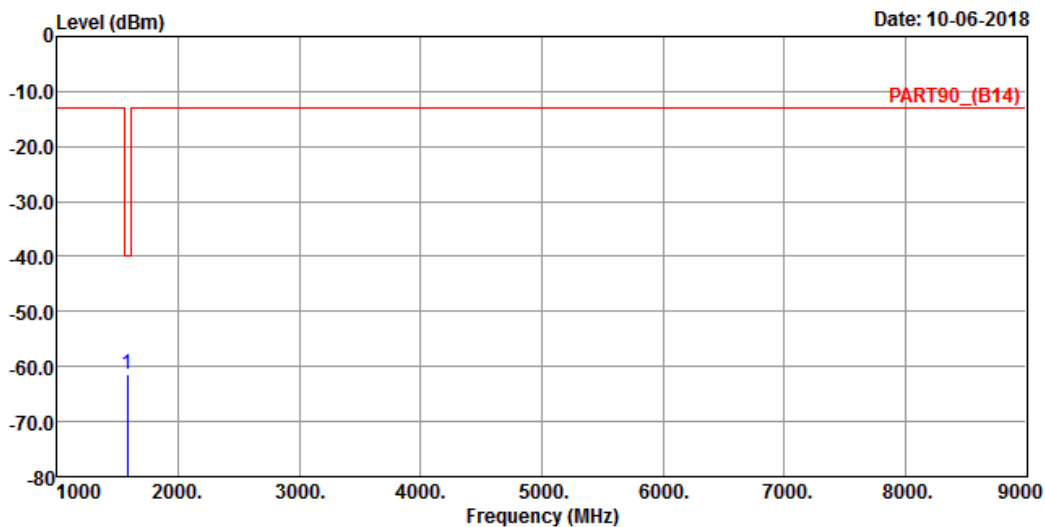
LTE Band 14
 Channel Bandwidth: 5 MHz / QPSK
 Low Channel



Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 1



Site : 966 Chamber 5
 Condition: PART90_(B14) HORIZONTAL
 Remark : LTE Band 14 QPSK_5M Link_L-CH
 Tested by: Thomas Wei

Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
MHz	dBm	dBm	dBm	dB	dB	

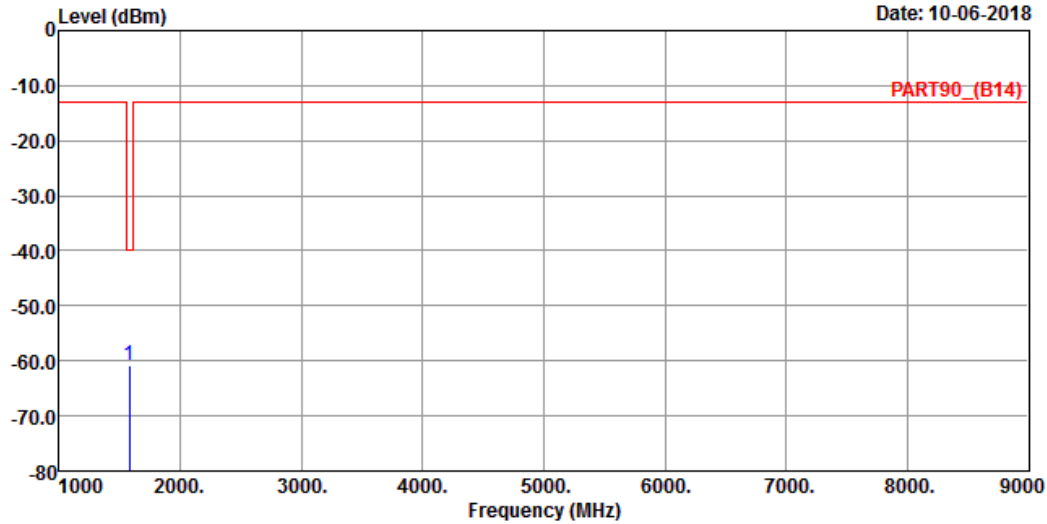
1 pp 1581.00 -61.34 -47.96 -40.00 -21.34 -13.38 Peak



Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 2



Site : 966 Chamber 5
 Condition: PART90_(B14) VERTICAL
 Remak : LTE Band 14 QPSK_5M Link_L-CH
 Tested by: Thomas Wei

Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
MHz	dBm	dBm	dBm	dB	dB	
1 pp 1581.00	-60.84	-47.46	-40.00	-20.84	-13.38	Peak

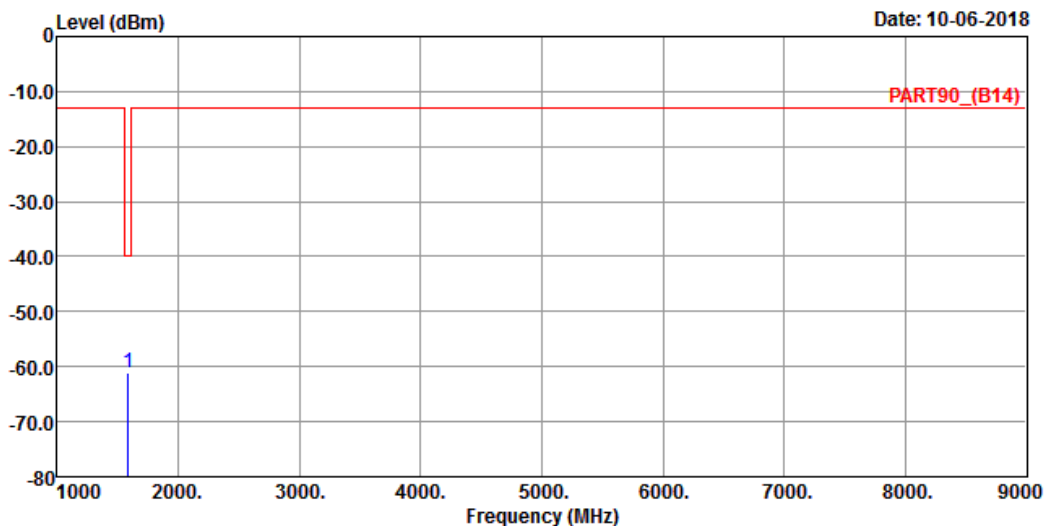
Middle Channel



Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 1



Site : 966 Chamber 5
 Condition: PART90_(B14) HORIZONTAL
 Remak : LTE Band 14 QPSK_5M Link_M-CH
 Tested by: Thomas Wei

	Read	Limit	Over		
Freq	Level	Level	Line	Limit	Factor
MHz	dBm	dBm	dBm	dB	dB

1 pp 1586.00 -61.21 -47.82 -40.00 -21.21 -13.39 Peak

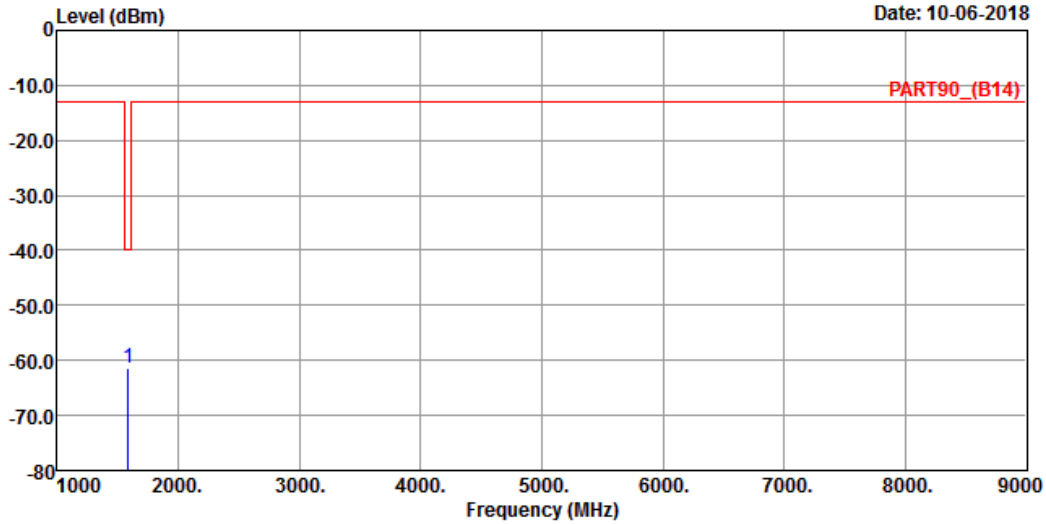


Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 2

Date: 10-06-2018



Site : 966 Chamber 5
 Condition: PART90_(B14) VERTICAL
 Remak : LTE Band 14 QPSK_5M Link_M-CH
 Tested by: Thomas Wei

Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
MHz	dBm	dBm	dBm	dB	dB	
1 pp 1586.00	-61.27	-47.88	-40.00	-21.27	-13.39	Peak

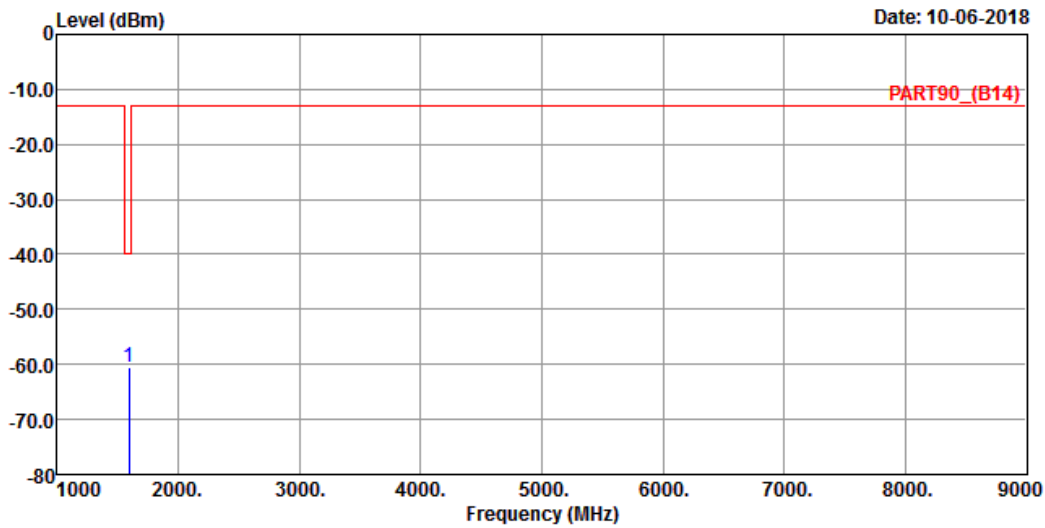
High Channel



Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 1



Site : 966 Chamber 5
 Condition: PART90_(B14) HORIZONTAL
 Remak : LTE Band 14 QPSK_5M Link_H-CH
 Tested by: Thomas Wei

	Read	Limit	Over		
Freq	Level	Level	Line	Limit	Factor
MHz	dBm	dBm	dBm	dB	dB

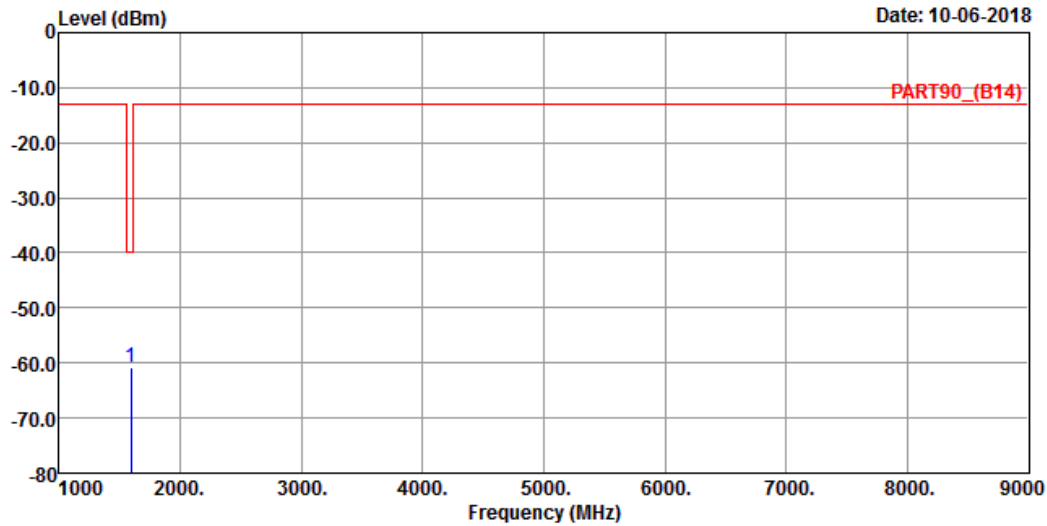
1 pp 1591.00 -60.55 -47.14 -40.00 -20.55 -13.41 Peak



Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 2



Site : 966 Chamber 5
 Condition: PART90_(B14) VERTICAL
 Remak : LTE Band 14 QPSK_5M Link_H-CH
 Tested by: Thomas Wei

Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
MHz	dBm	dBm	dBm	dB	dB	
1 pp 1591.00	-60.79	-47.38	-40.00	-20.79	-13.41	Peak

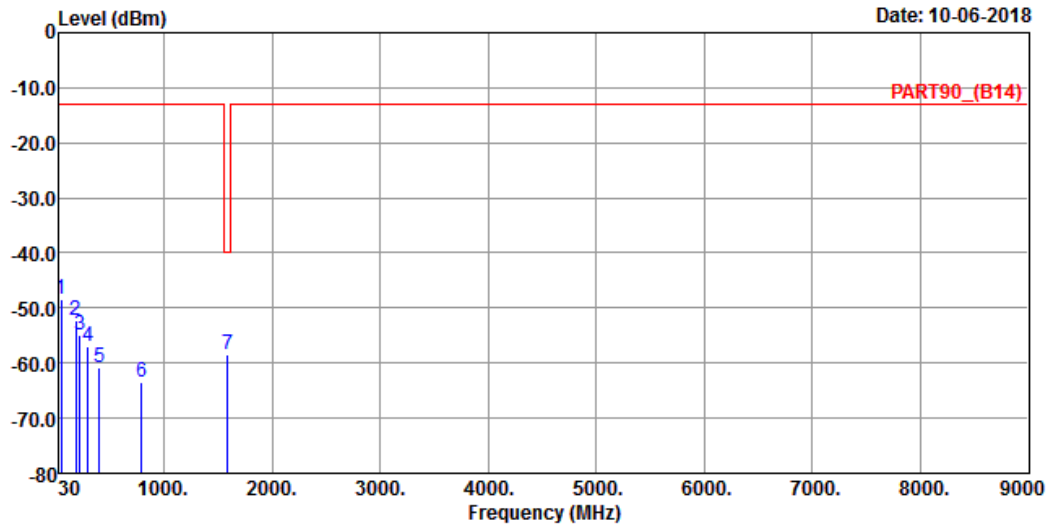
Channel Bandwidth: 10 MHz / QPSK
Middle Channel



Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 5



Site : 966 Chamber 5
Condition: PART90_(B14) HORIZONTAL
Remak : LTE Band 14 QPSK_10M Link_M-CH
Tested by: Thomas Wei

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1	43.58	-48.31	-46.84	-13.00	-35.31	-1.47	Peak
2	179.38	-52.16	-44.93	-13.00	-39.16	-7.23	Peak
3	221.09	-54.77	-47.61	-13.00	-41.77	-7.16	Peak
4	291.90	-56.90	-50.05	-13.00	-43.90	-6.85	Peak
5	399.57	-60.74	-54.79	-13.00	-47.74	-5.95	Peak
6	787.57	-63.59	-64.36	-13.00	-50.59	0.77	Peak
7 pp	1586.00	-58.44	-45.05	-40.00	-18.44	-13.39	Peak

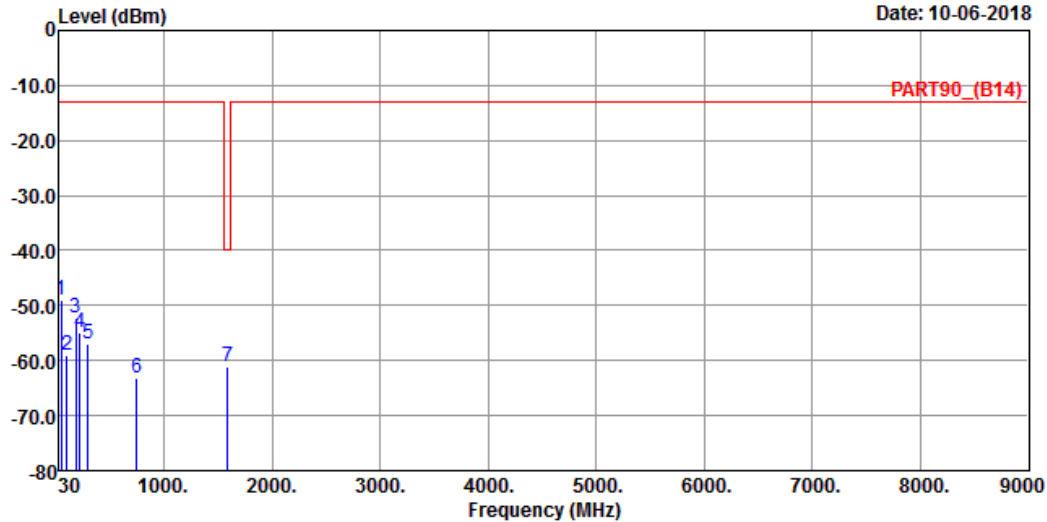


Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 6

Date: 10-06-2018



Site : 966 Chamber 5
 Condition: PART90_(B14) VERTICAL
 Remak : LTE Band 14 QPSK_10M Link_M-CH
 Tested by: Thomas Wei

	Read	Limit	Over			
Freq	Level	Level	Line	Limit	Factor	Remark
MHz	dBm	dBm	dBm	dB	dB	
1	44.55	-48.96	-46.97	-13.00	-35.96	-1.99 Peak
2	98.87	-59.12	-48.50	-13.00	-46.12	-10.62 Peak
3	179.38	-52.16	-44.93	-13.00	-39.16	-7.23 Peak
4	221.09	-54.77	-47.61	-13.00	-41.77	-7.16 Peak
5	291.90	-56.90	-50.05	-13.00	-43.90	-6.85 Peak
6	746.83	-63.27	-64.09	-13.00	-50.27	0.82 Peak
7 pp	1586.00	-61.21	-47.82	-40.00	-21.21	-13.39 Peak

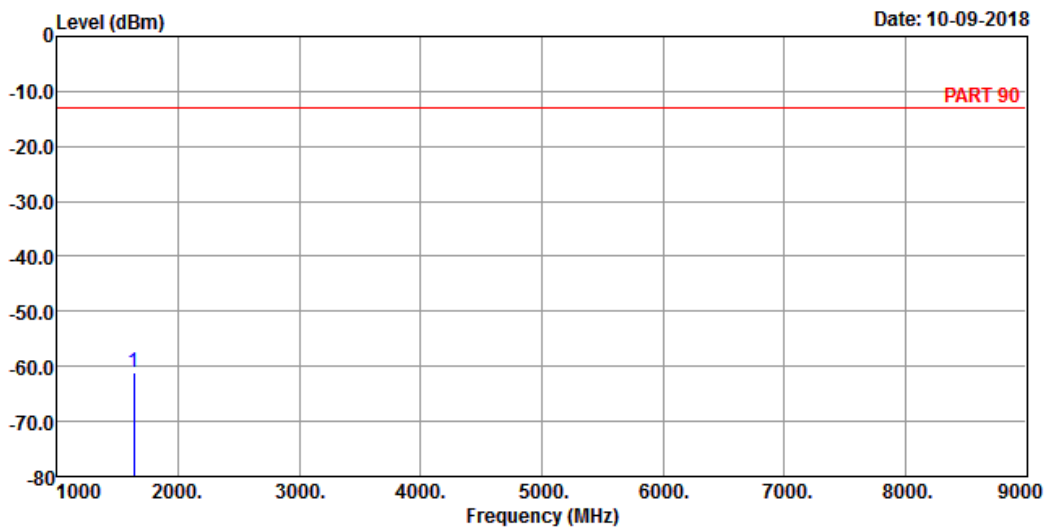
LTE Band 26
 Channel Bandwidth: 1.4 MHz / QPSK
 Low Channel



Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 1



Site : 966 Chamber 5
 Condition: PART 90 HORIZONTAL
 Remark : LTE Band 26 QPSK_1.4M Link_L-CH
 Tested by: Thomas Wei

Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
MHz	dBm	dBm	dBm	dB	dB	
1 pp 1629.40	-60.98	-46.19	-13.00	-47.98	-14.79	Peak

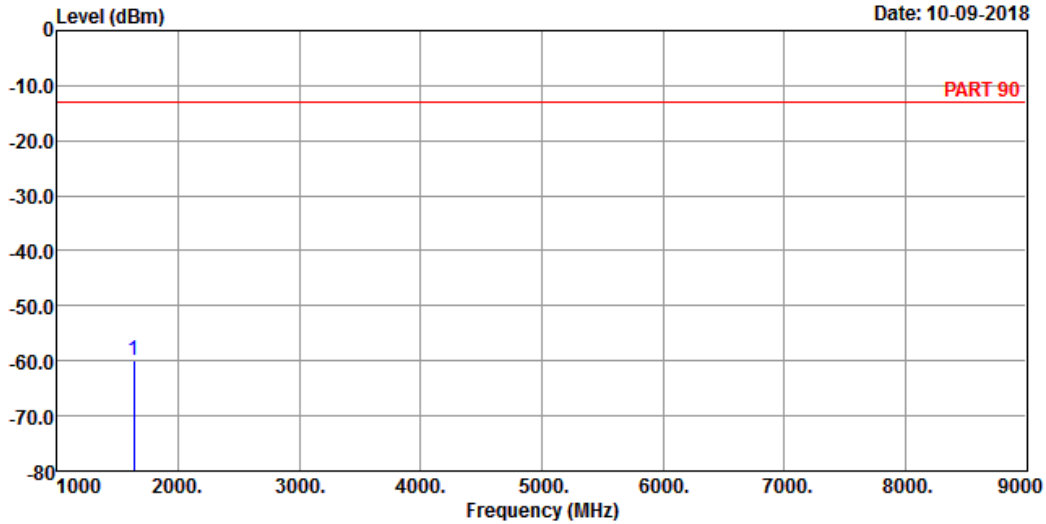


Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 2

Date: 10-09-2018



Site : 966 Chamber 5
 Condition: PART 90 VERTICAL
 Remak : LTE Band 26 QPSK_1.4M Link_L-CH
 Tested by: Thomas Wei

Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
MHz	dBm	dBm	dBm	dB	dB	
1 pp 1629.40	-59.88	-45.09	-13.00	-46.88	-14.79	Peak

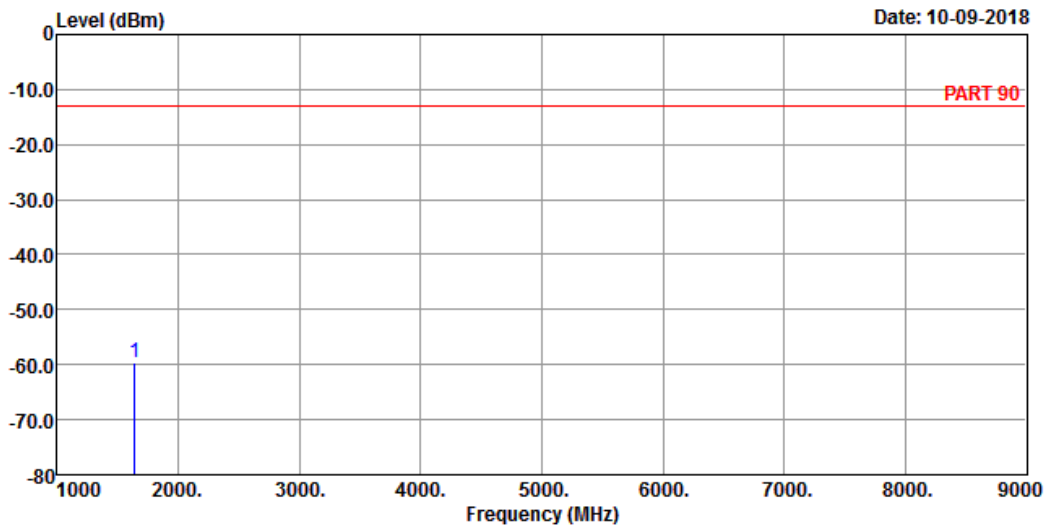
Middle Channel



Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 1



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

Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
MHz	dBm	dBm	dBm	dB	dB	

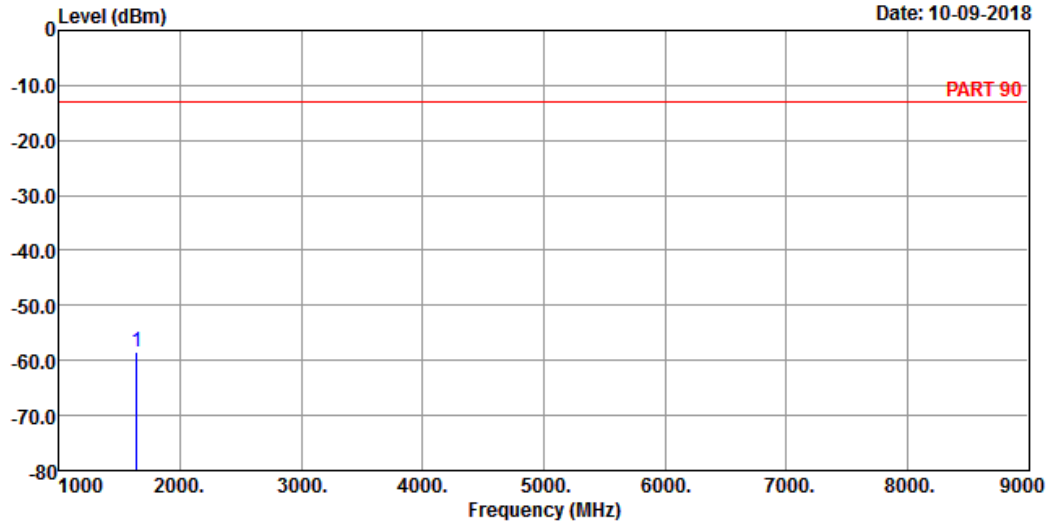
1 pp 1638.00 -59.57 -44.78 -13.00 -46.57 -14.79 Peak



Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 2



Site : 966 Chamber 5
 Condition: PART 90 VERTICAL
 Remak : LTE Band 26 QPSK_1.4M Link_M-CH
 Tested by: Thomas Wei

Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
MHz	dBm	dBm	dBm	dB	dB	
1 pp 1638.00	-58.39	-43.60	-13.00	-45.39	-14.79	Peak

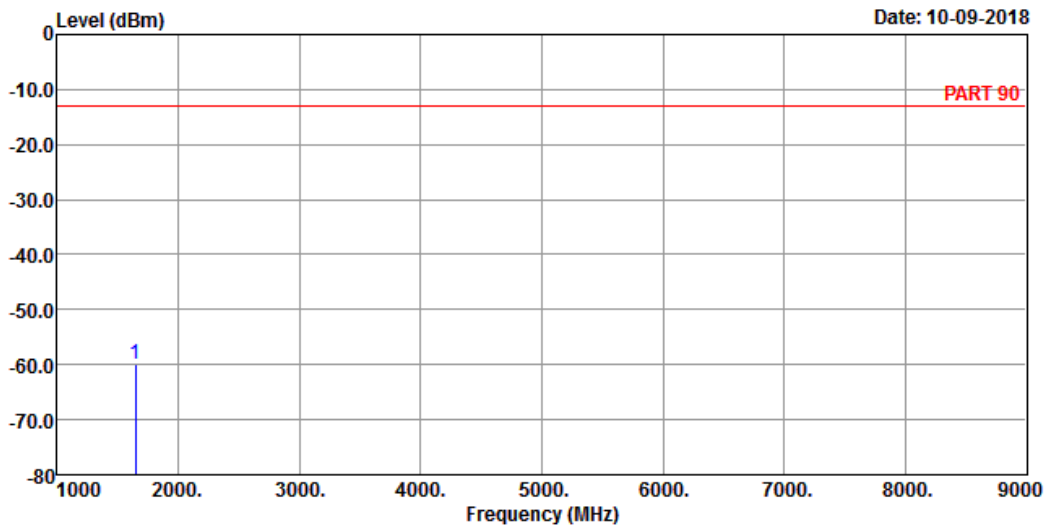
High Channel



Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 1



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

Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
MHz	dBm	dBm	dBm	dB	dB	

1 pp 1646.60 -59.87 -45.14 -13.00 -46.87 -14.73 Peak

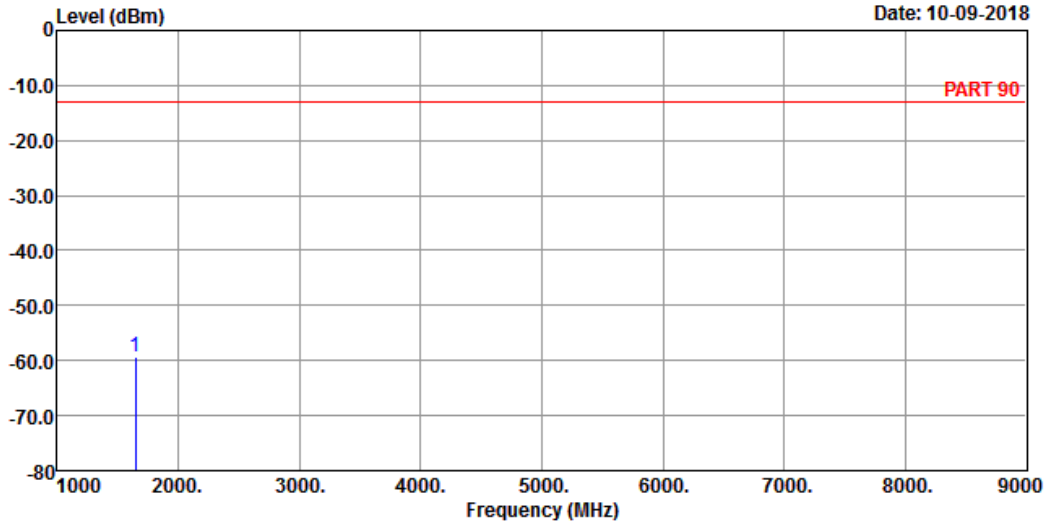


Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 2

Date: 10-09-2018



Site : 966 Chamber 5
 Condition: PART 90 VERTICAL
 Remark : LTE Band 26 QPSK_1.4M Link_H-CH
 Tested by: Thomas Wei

Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
MHz	dBm	dBm	dBm	dB	dB	
1 pp 1646.60	-59.28	-44.55	-13.00	-46.28	-14.73	Peak

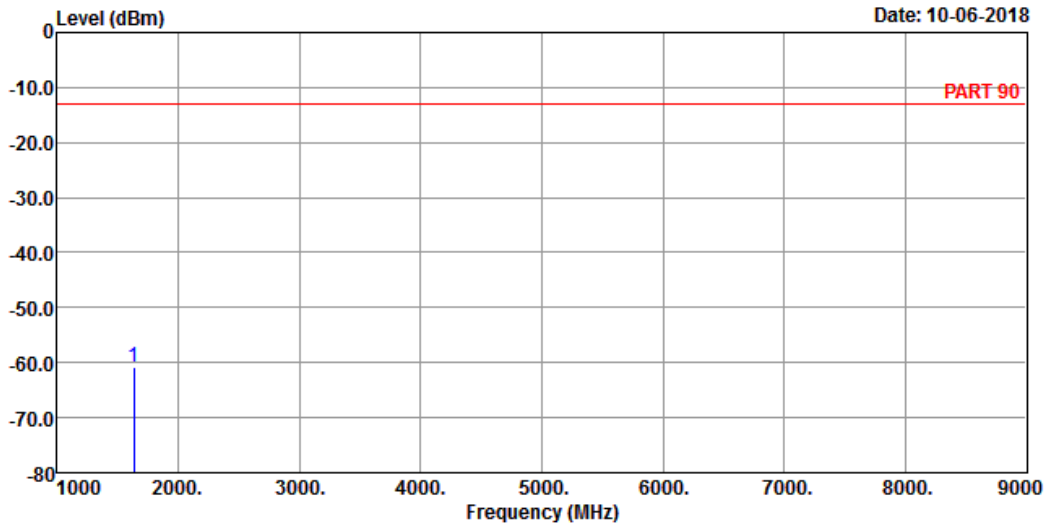
Channel Bandwidth: 5 MHz / QPSK
Low Channel



Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 1



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

Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
MHz	dBm	dBm	dBm	dB	dB	

1 pp 1633.00 -60.76 -45.97 -13.00 -47.76 -14.79 Peak

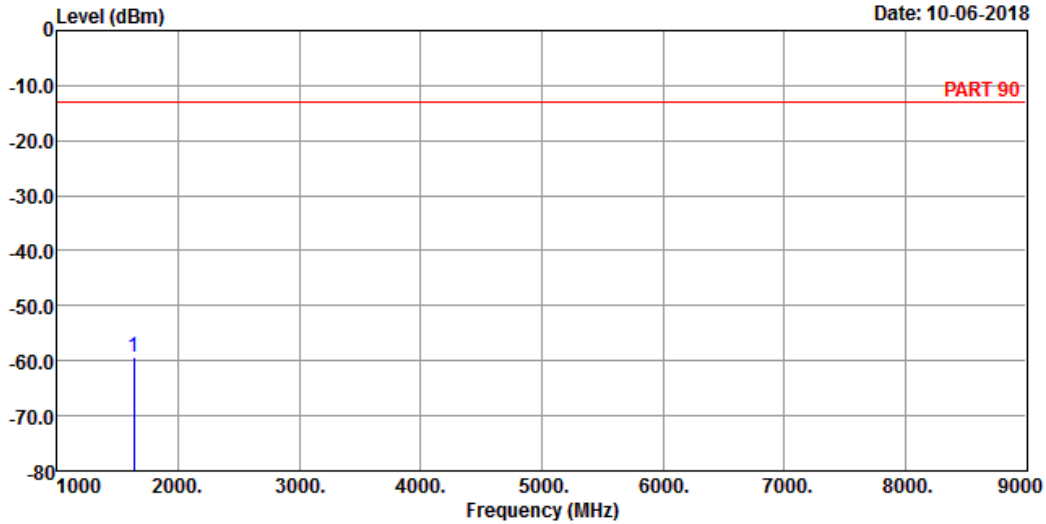


Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 2

Date: 10-06-2018



Site : 966 Chamber 5
 Condition: PART 90 VERTICAL
 Remak : LTE Band 26 QPSK_5M Link_L-CH
 Tested by: Thomas Wei

Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
MHz	dBm	dBm	dBm	dB	dB	
1 pp 1633.00	-59.41	-44.62	-13.00	-46.41	-14.79	Peak

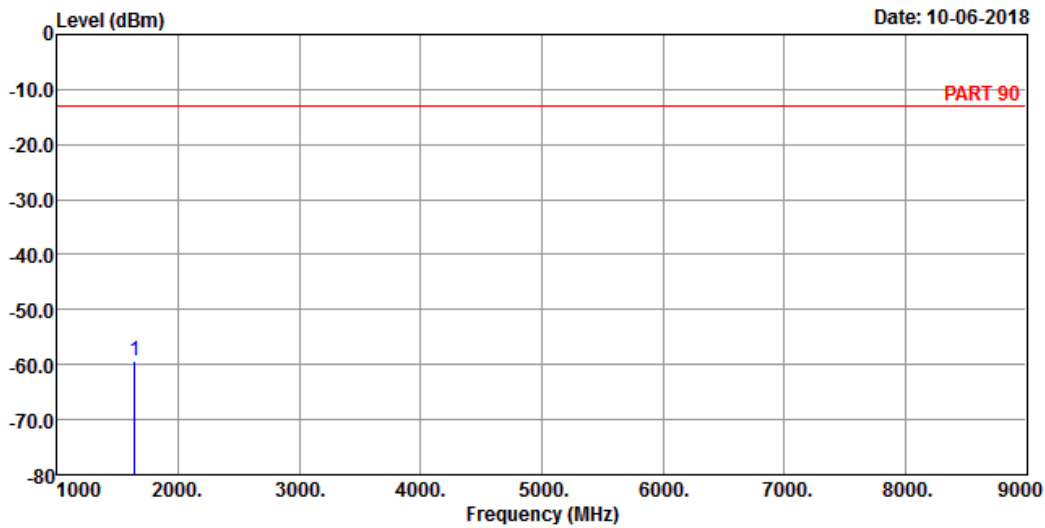
Middle Channel



Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 1



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

Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
MHz	dBm	dBm	dBm	dB	dB	

1 pp 1638.00 -59.30 -44.51 -13.00 -46.30 -14.79 Peak

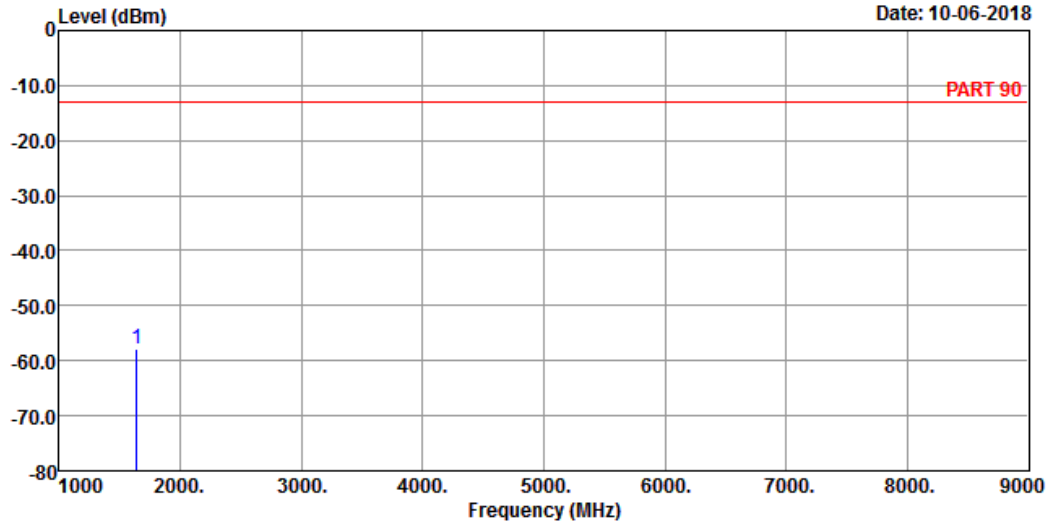


Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 2

Date: 10-06-2018



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

Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
MHz	dBm	dBm	dBm	dB	dB	
1 pp 1638.00	-57.84	-43.05	-13.00	-44.84	-14.79	Peak

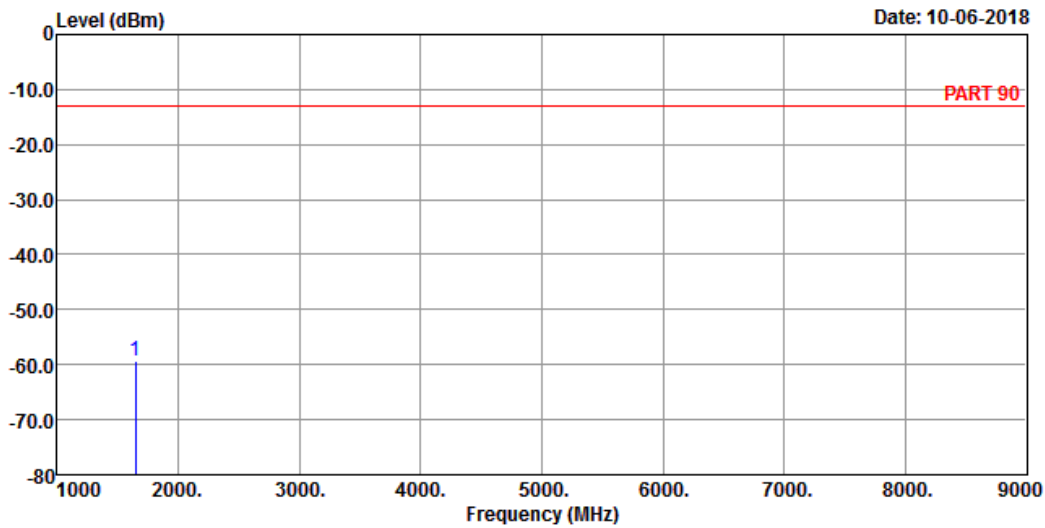
High Channel



Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 1



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

Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
MHz	dBm	dBm	dBm	dB	dB	

1 pp 1643.00 -59.41 -44.68 -13.00 -46.41 -14.73 Peak

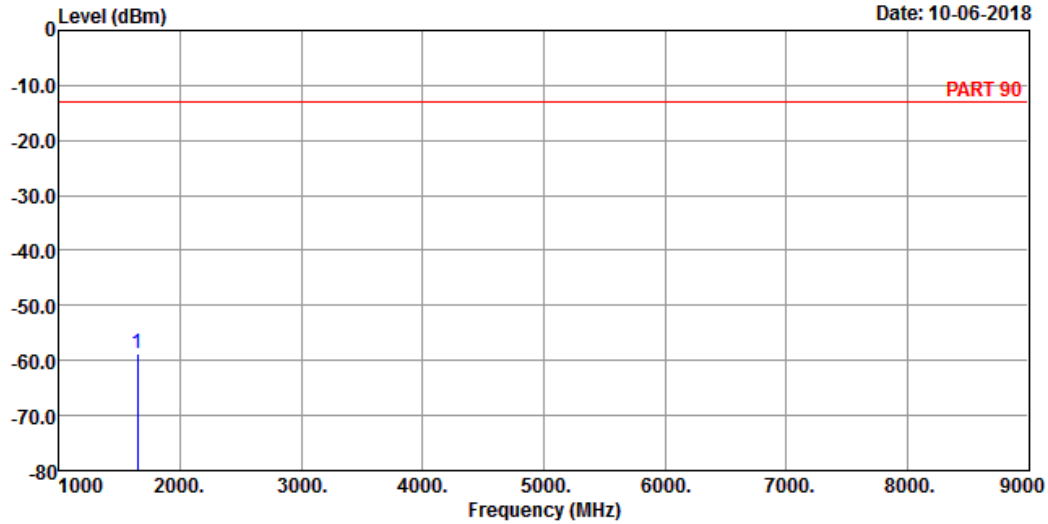


Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 2

Date: 10-06-2018



Site : 966 Chamber 5
 Condition: PART 90 VERTICAL
 Remak : LTE Band 26 QPSK_5M Link_H-CH
 Tested by: Thomas Wei

Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
MHz	dBm	dBm	dBm	dB	dB	
1 pp 1643.00	-58.65	-43.92	-13.00	-45.65	-14.73	Peak

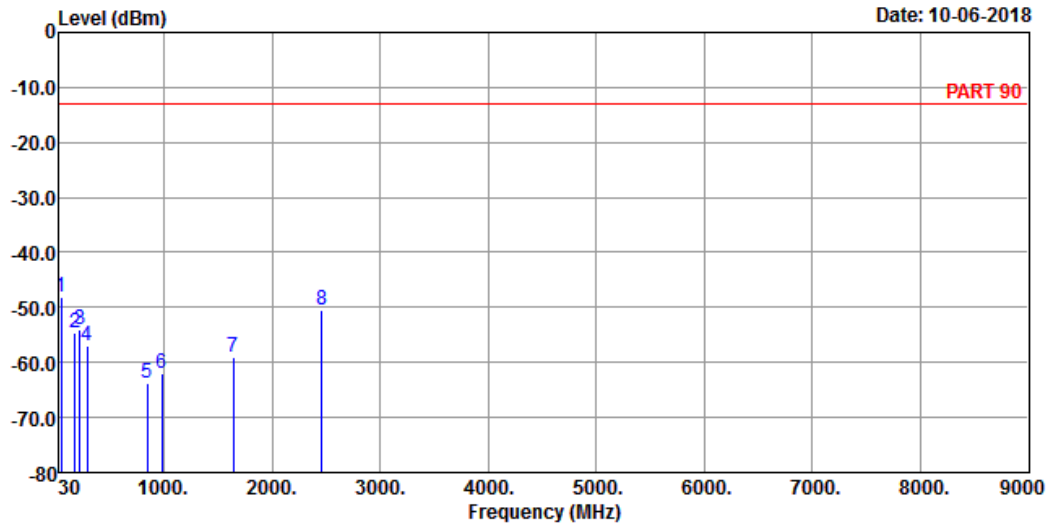
Channel Bandwidth: 10 MHz / QPSK
Middle Channel



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: Thomas Wei

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1 pp	44.55	-48.10	-46.11	-13.00	-35.10	-1.99	Peak
2	177.44	-54.68	-47.79	-13.00	-41.68	-6.89	Peak
3	218.18	-53.97	-46.69	-13.00	-40.97	-7.28	Peak
4	287.05	-56.90	-50.15	-13.00	-43.90	-6.75	Peak
5	845.77	-63.66	-63.99	-13.00	-50.66	0.33	Peak
6	977.69	-62.13	-64.92	-13.00	-49.13	2.79	Peak
7	1638.00	-58.94	-44.15	-13.00	-45.94	-14.79	Peak
8	2457.00	-50.50	-40.06	-13.00	-37.50	-10.44	Peak

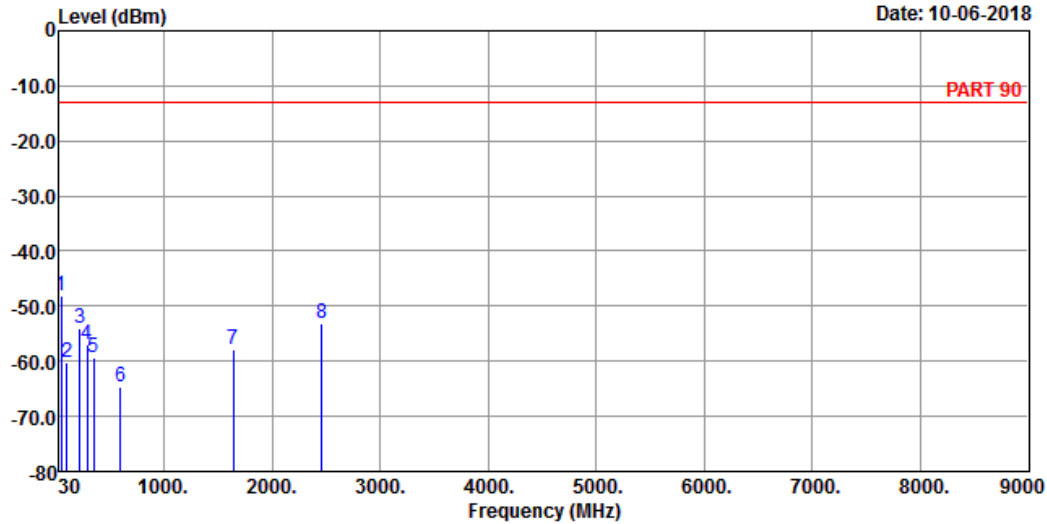


Bureau Veritas Consumer Products Services Ltd., Taoyuan Branch

A D T

Data: 6

Date: 10-06-2018



Site : 966 Chamber 5
 Condition: PART 90 VERTICAL
 Remak : LTE Band 26 QPSK_10M Link_M-CH
 Tested by: Thomas Wei

	Read	Limit	Over			
Freq	Level	Level	Line	Limit	Factor	Remark
MHz	dBm	dBm	dBm	dB	dB	
1 pp	44.55	-48.10	-46.11	-13.00	-35.10	-1.99 Peak
2	98.87	-60.14	-49.52	-13.00	-47.14	-10.62 Peak
3	218.18	-53.97	-46.69	-13.00	-40.97	-7.28 Peak
4	287.05	-56.90	-50.15	-13.00	-43.90	-6.75 Peak
5	345.25	-59.27	-52.96	-13.00	-46.27	-6.31 Peak
6	598.42	-64.69	-63.86	-13.00	-51.69	-0.83 Peak
7	1638.00	-57.88	-43.09	-13.00	-44.88	-14.79 Peak
8	2457.00	-53.08	-42.64	-13.00	-40.08	-10.44 Peak

5 Pictures of Test Arrangements

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

Appendix – Information on the Testing Laboratories

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

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

Linko EMC/RF Lab

Tel: 886-2-26052180

Fax: 886-2-26051924

Hsin Chu EMC/RF/Telecom Lab

Tel: 886-3-6668565

Fax: 886-3-6668323

Hwa Ya EMC/RF/Safety

Tel: 886-3-3183232

Fax: 886-3-3270892

Email: service.adt@tw.bureauveritas.com

Web Site: www.bureauveritas-adt.com

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

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