

FCC Radio Test Report

FCC ID: QISB525S-65A2

This report concerns (check one): Original Grant

Project No. : 1701C181D
Equipment : LTE CPE
Test Model : B525s-65a
Series Model : N/A
Applicant : Huawei Technologies Co.,Ltd.
Address : Administration Building, Headquarters of Huawei Technologies Co., Ltd., Bantian, Longgang District Shenzhen,518129, P.R.C

Date of Receipt : Jul. 15, 2019
Date of Test : Jul. 16, 2019 ~ Jul. 24, 2019
Issued Date : Jul. 24, 2019
Tested by : BTL Inc.

Technical Engineer :

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Authorized Signatory :

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Certificate #5123.02

Declaration

BTL represents to the client that testing is done in accordance with standard procedures as applicable and that test instruments used has been calibrated with standards traceable to international standard(s) and/or national standard(s).

BTL's reports apply only to the specific samples tested under conditions. It is manufacture's responsibility to ensure that additional production units of this model are manufactured with the identical electrical and mechanical components. **BTL** shall have no liability for any declarations, inferences or generalizations drawn by the client or others from **BTL** issued reports.

The report must not be used by the client to claim product certification, approval, or endorsement by NIST, A2LA, or any agency of the U.S. Government.

This report is the confidential property of the client. As a mutual protection to the clients, the public and ourselves, the test report shall not be reproduced, except in full, without our written approval.

BTL's laboratory quality assurance procedures are in compliance with the **ISO/IEC 17025** requirements, and accredited by the conformity assessment authorities listed in this test report.

BTL is not responsible for the sampling stage, so the results only apply to the sample as received.

The information, data and test plan are provided by manufacturer which may affect the validity of results, so it is manufacturer's responsibility to ensure that the apparatus meets the essential requirements of applied standards and in all the possible configurations as representative of its intended use.

Limitation

For the use of the authority's logo is limited unless the Test Standard(s)/Scope(s)/Item(s) mentioned in this test report is (are) included in the conformity assessment authorities acceptance respective.

Please note that the measurement uncertainty is provided for informational purpose only and are not use in determining the Pass/Fail results.

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REPORT ISSUED HISTORY

Report Version	Description	Issued Date
R00	<p>This is a supplementary report to the original test report (BTL-ETSP-5-1701C181A, SYBH(Z-RF)007012017-2001). Based on the original test report,</p> <ol style="list-style-type: none"> 1. Changed the factory information which does not affect the test results. 2. Updated the operation frequency for Band 41, so all the test items of Band 41 had been retested and recorded in this report. The other test results of other Bands please refer to original test report. <p>The other difference between model B525s-65a(old) and model B525s-65a(new) is show in the below table</p>	Jul. 22, 2019
R01	Added the despriction and data for modulation characteristics.	Jul. 24, 2019

	Model	B525s-65a(old)	B525s-65a(new)
Frequency	LTE BAND	B2,B4,B5, B7, B26, B38, B41(2555-2655)	B2,B4,B5, B7, B26, B38, B41(2496-2690)
	UMTS BAND	The same	The same
	GSM BAND	The same	The same
	IC	The same	The same
	Antenna	Internal antennas, 1dBi external antennas, 3dBi external antennas	Internal antennas
WiFi	2.4G Wi-Fi	The same	The same
	IC	The same	The same
	Antenna	The same	The same
Hardware	BOM	The same	1. Reduce the number of capacitor manufacturers. 2. The shielding cover is slightly bent, and the appearance change is not obvious.
	FLASH	The same	Reduce the number of manufacturers.
	PCB	The same	The same
	USB Port	The same	The same
	Hardware	The same	The same
Software	Software	11.232.08.DM.00	81.191.21.00.00
RF	RF circuit	The same	The same
NV	NV	The same	The same
Appearance	Dimension	The same	The same
	Color	The same	The same
	Display Unit	The same	The same
	ID	The same	The same
Accessory	Adapter	HW-120200E01 (HONOR/ Kuantech/ Fuhua)	HW-120200E01 (HONOR / Fuhua/ TOPOW)
		HW-120200B01 (HONOR / Fuhua)	HW-120200B01 (HONOR / Fuhua/ TOPOW)
		HW-120200U01 (HONOR / Fuhua)	HW-120200U01 (HONOR / Fuhua/ TOPOW)
		HW-120200A01 The same	HW-120200A01 The same

1. GENERAL SUMMARY

Equipment : LTE CPE
Brand Name : HUAWEI
Test Model : B525s-65a
Series Model : N/A
Applicant : Huawei Technologies Co.,Ltd.
Manufacturer: Huawei Technologies Co.,Ltd.
Address : Administration Building, Headquarters of Huawei Technologies Co., Ltd.,
Bantian, Longgang District Shenzhen,518129, P.R.C
Factory : Huawei Technologies Co.,Ltd.
Address : Administration Building, Headquarters of Huawei Technologies Co., Ltd.,
Bantian, Longgang District Shenzhen,518129, P.R.C
Date of Test : Jul. 16, 2019 ~ Jul. 24, 2019
Test Sample : Engineering Sample No.: DG1907164 for conducted, DG19071937 for
radiated.
Standard(s) : 47 CFR FCC Part 27 Subpart M
47 CFR FCC Part 2 & ANSI/TIA/EIA-603-E-2016
KDB 971168 D01 Power Meas License Digital Systems v03r01

The above equipment has been tested and found compliance with the requirement of the relative standards by BTL Inc.

The test data, data evaluation, and equipment configuration contained in our test report (Ref No. BTL-FCCP-5-1701C181D) were obtained utilizing the test procedures, test instruments, test sites that has been accredited by the Authority of A2LA according to the ISO/IEC 17025 quality assessment standard and technical standard(s).

Test results included in this report are only for the LTE Band 41 part.

2. SUMMARY OF TEST RESULTS

Test procedures according to the technical standard(s):

FCC Part 27 Subpart M & Part 2			
Standard(s) Section	Test Item	Judgment	Tested By
2.1046 & 27.50(d)(4) & 27.50(h)	Radiated power	PASS	Paul Li
2.1046 & 27.50(d)(4) & 27.50(h)	Maximum Output Power	PASS	Paul Li
2.1047	Modulation Characteristics	PASS	Paul Li
2.1049	Occupied Bandwidth	PASS	Paul Li
2.1051 & 27.53(h) & 27.53(l)	Conducted Spurious Emissions	PASS	Paul Li
2.1053 / 27.53(h) 2.1051 & 27.53(l)	Radiated Spurious Emissions	PASS	Paul Li
27.53(h) & 27.53(l)	Band Edge Measurements	PASS	Paul Li
27.50(d)(5)	Peak To Average Ratio	PASS	Paul Li
2.1055 & 27.54	Frequency Stability	PASS	Paul Li

NOTE:

(1) "N/A" denotes test is not applicable to this device.

2.1 TEST FACILITY

The test facilities used to collect the test data in this report is at the location of No.3, Jinshagang 1st Road, Shixia, Dalang Town, Dongguan, Guangdong, China.

BTL's Test Firm Registration Number for FCC: 357015

BTL's Designation Number for FCC: CN1240

2.2 MEASUREMENT UNCERTAINTY

The measurement uncertainty figures shall be calculated according the methods described in the ETSI TR 100 028 and shall correspond to an expansion factor (coverage factor) $k=1.96$ or $k=2$ (which provide confidence levels of respectively 90% and 95.45% in the case where the distributions characterizing the actual measurement uncertainties are normal (Gaussian)). Measurement Uncertainty for a Level of Confidence of 95 %, $U=2 \times U_c(y)$.

The BTL measurement uncertainty as below table:

A. Radiated Measurement :

Test Site	Method	Measurement Frequency Range	Ant. H / V	U,(dB)
DG-CB03 (3m)	CISPR	9KHz ~ 30MHz	V	3.79
		9KHz ~ 30MHz	H	3.57
		30MHz ~ 200MHz	V	4.88
		30MHz ~ 200MHz	H	4.14
		200MHz ~ 1,000MHz	V	4.62
		200MHz ~ 1,000MHz	H	4.80

Test Site	Method	Measurement Frequency Range	U,(dB)
DG-CB03 (3m)	CISPR	1GHz ~ 6GHz	4.58
		6GHz ~ 18GHz	5.18

Test Site	Method	Measurement Frequency Range	U,(dB)
DG-CB03 (1m)	CISPR	18 ~ 26.5 GHz	3.80
		26.5 ~ 40 GHz	4.30

Note: Unless specifically mentioned, the uncertainty of measurement has not been taken into account to declare the compliance or non-compliance to the specification.

3. GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

Equipment	LTE CPE			
Brand Name	HUAWEI			
Test Model	B525s-65a			
Series Model	N/A			
Model Difference(s)	N/A			
Hardware Version	WL1B525I			
Software Version	81.191.21.00.00			
Power Source	DC voltage supplied from AC/DC adapter.			
Power Rating	I/P: 100-240V~ 50/60Hz, 0.8A O/P: 12V 2A			
Antenna Type	Internal Antenna			
Antenna Gain	2 dBi			
IMEI No.	Conducted	864005035393317		
	Radiated	864005035393283		
Modulation Type	LTE	QPSK, 16QAM		
Operation Frequency	LTE 41 (Channel Bandwidth: 5MHz)	2498.5 ~ 2687.5 MHz		
	LTE 41 (Channel Bandwidth: 10MHz)	2501.0 ~ 2685.0 MHz		
	LTE 41 (Channel Bandwidth: 15MHz)	2503.5 ~ 2682.5 MHz		
	LTE 41 (Channel Bandwidth: 20MHz)	2506.0 ~ 2680.0 MHz		
Max. EIRP Power	LTE 41 (Channel Bandwidth: 5MHz)	QPSK	25.10	dBm
		16QAM	24.57	dBm
	LTE 41 (Channel Bandwidth: 10MHz)	QPSK	25.20	dBm
		16QAM	24.61	dBm
	LTE 41 (Channel Bandwidth: 15MHz)	QPSK	25.32	dBm
		16QAM	25.22	dBm
	LTE 41 (Channel Bandwidth: 20MHz)	QPSK	25.46	dBm
		16QAM	25.06	dBm

Note:

1. For a more detailed features description, please refer to the manufacturer's specifications or the user's manual.

2. The EUT contains following accessory devices.

Items	Manufacturer	Model Name	Description
Adapter	SHENZHEN HONOR ELECTRONIC CO.,LTD	HW-120200E01 HW-120200B01	I/P: 100-240V~ 50/60Hz, 0.8A O/P: 12V 2A
	Dongguan Shilong Fuhua Electronic Co.,Ltd	HW-120200U01 HW-120200A01	
	Shenzhen TOPOW Electronics CO., Ltd.	HW-120200E01 HW-120200B01 HW-120200U01	
LAN Cable	Luxshare Precision Industry Co., Ltd.	LUX20150329001	/
	NingBo Broad Telecommunication Co.,Ltd.	WA0003	
		WA0016	
HUIZHOU DEHONG TECHE NOLOGY CO.LTD	210-50390		
RJ11 Cable	Comlink Electronics(SHENZHEN) Co.Ltd	A0603883039	/
	Luxshare Precision Industry Co., Ltd.	LUX20170721001	
	NingBo Broad Telecommunication Co.,Ltd.	WA0015	

3.2 DESCRIPTION OF TEST MODES AND TEST CONDITION

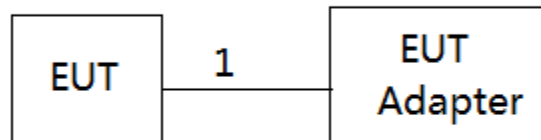
Following channel(s) was (were) selected for the final test as listed below:

LTE BAND 41					
Test Item	Available Channel	Tested Channel	Channel Bandwidth	Modulation	Mode
Output Power & EIRP	39675 to 41565	39675, 40620, 41565	5MHz	QPSK, 16QAM	1RB/12RB/25RB
	39700 to 41540	39700, 40620, 41540	10MHz	QPSK, 16QAM	1RB/25RB/50RB
	39725 to 41515	39725, 40620, 41515	15MHz	QPSK, 16QAM	1RB/36RB/75RB
	39750 to 41490	39750, 40620, 41490	20MHz	QPSK, 16QAM	1RB/50RB/100RB
Modulation Characteristics	39750 to 41490	40620	20MHz	QPSK, 16QAM	100RB
Occupied Bandwidth	39675 to 41565	39675, 40620, 41565	5MHz	QPSK, 16QAM	25RB
	39700 to 41540	39700, 40620, 41540	10MHz	QPSK, 16QAM	50RB
	39725 to 41515	39725, 40620, 41515	15MHz	QPSK, 16QAM	75 RB
	39750 to 41490	39750, 40620, 41490	20MHz	QPSK, 16QAM	100RB
Conducted Emission	39675 to 41565	40620	5MHz	QPSK	1 RB
	39700 to 41540	40620	10MHz	QPSK	1 RB
	39725 to 41515	40620	15MHz	QPSK	1 RB
	39750 to 41490	40620	20MHz	QPSK	1 RB
Radiated Emission	39675 to 41565	40620	5MHz	QPSK	1 RB
	39750 to 41490	40620	20MHz	QPSK	1 RB
Band Edge	39675 to 41565	39675, 41565	5MHz	QPSK, 16QAM	1RB/25RB
	39700 to 41540	39700, 41540	10MHz	QPSK, 16QAM	1RB/50RB
	39725 to 41515	39725, 41515	15MHz	QPSK, 16QAM	1RB/75RB
	39750 to 41490	39750, 41490	20MHz	QPSK, 16QAM	1RB/100RB
Peak to Average Ratio	39675 to 41565	39675, 40620, 41565	5MHz	QPSK, 16QAM	1 RB
	39700 to 41540	39700, 40620, 41540	10MHz	QPSK, 16QAM	1 RB
	39725 to 41515	39725, 40620, 41515	15MHz	QPSK, 16QAM	1 RB
	39750 to 41490	39750, 40620, 41490	20MHz	QPSK, 16QAM	1 RB
Frequency Stability	39675 to 41565	40620	5MHz	QPSK	1 RB
	39700 to 41540	40620	10MHz	QPSK	1 RB
	39725 to 41515	40620	15MHz	QPSK	1 RB
	39750 to 41490	40620	20MHz	QPSK	1 RB

EUT TEST CONDITIONS:

Test Item	Environmental Conditions	Test Voltage
EIRP	23.9°C, 50.2%RH	DC 12V
Output Power	23.9°C, 50.2%RH	DC 12V
Modulation Characteristics	23.9°C, 50.2%RH	DC 12V
Occupied Bandwidth	23.9°C, 50.2%RH	DC 12V
Conducted Emission	23.9°C, 50.2%RH	DC 12V
Radiated Emission	25°C, 60%RH	AC 120V/60Hz
Band Edge	23.9°C, 50.2%RH	DC 12V
Peak to Average Ratio	23.9°C, 50.2%RH	DC 12V
Frequency Stability	Normal and Extreme	Normal and Extreme

3.3 BLOCK DIAGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED



3.4 DESCRIPTION OF SUPPORT UNITS

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

Item	Equipment	Mfr/Brand	Model/Type No.	Series No.
-	-	-	-	-

Item	Cable Type	Shielded Type	Ferrite Core	Length
1	DC Cable	NO	NO	1.5m

4. TEST RESULT

4.1 OUTPUT POWER MEASUREMENT

4.1.1 LIMIT

Mobile / Portable station are limited to 2 watts e.i.r.p.

4.1.2 TEST PROCEDURE

EIRP:

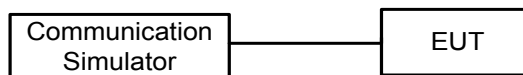
$EIRP = \text{Conducted Power} + \text{Antenan gain}$

Output Power:

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

4.1.3 TESTSETUP LAYOUT

Output Power Measurement



4.1.4 TEST DEVIATION

No deviation

4.1.5 TEST RESULTS

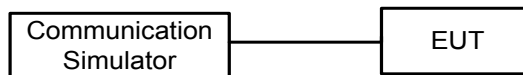
Please refer to the Appendix A.

4.2 MODULATION CHARACTERISTICS MEASUREMENT

4.2.1 TEST PROCEDURE

Equipment which employs modulation limiting. A curve or family of curves showing the percentage of modulation versus the modulation input voltage shall be supplied. The information submitted shall be sufficient to show modulation limiting capability throughout the range of modulating frequencies and input modulating signal levels employed.

4.2.2 TEST SETUP LAYOUT



4.2.3 TEST DEVIATION

No deviation

4.2.4 TEST RESULTS

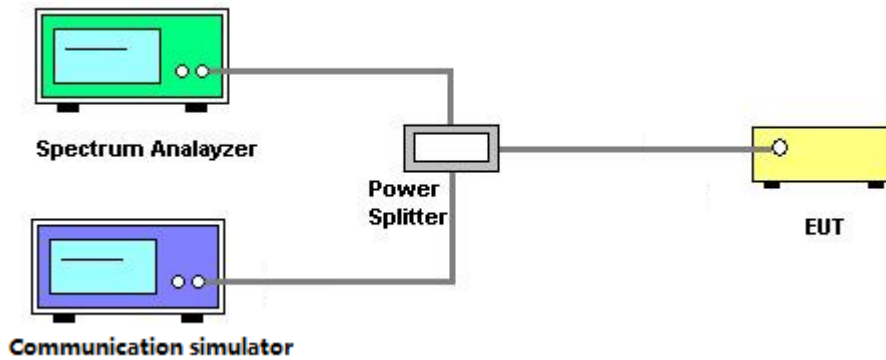
Please refer to the Appendix B.

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 and 26dB bandwidth.

4.3.2 TEST SETUP LAYOUT



4.3.3 TEST DEVIATION

No deviation

4.3.4 TEST RESULTS

Please refer to the Appendix C.

4.4 CONDUCTED EMISSIONS MEASUREMENT

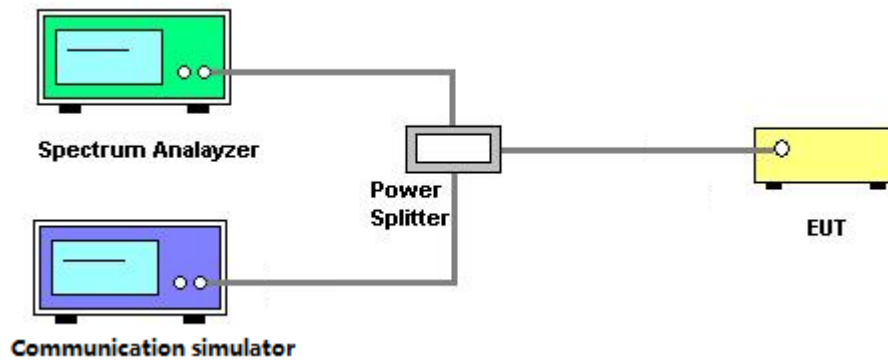
4.4.1 LIMIT

The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $55 + 10 \log(P)$ dB. The emission limit equal to -25dBm.

4.4.2 TEST PROCEDURES

1. The testing follows FCC KDB 971168 v03r01 Section 6.0.
2. The EUT was connected to spectrum analyzer and system simulator via a power divider.
3. The band edges of low and high channels for the highest RF powers were measured. Set $RBW \geq 1\%$ EBW in the 1MHz band immediately outside and adjacent to the band edge.
4. Set spectrum analyzer with RMS detector.
5. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.

4.4.3 TESTSETUP LAYOUT



4.4.4 TESTDEVIATION

No deviation

4.4.5 TEST RESULTS

Please refer to the Appendix D.

4.5 RADIATED EMISSIONS MEASUREMENT

4.5.1 LIMIT

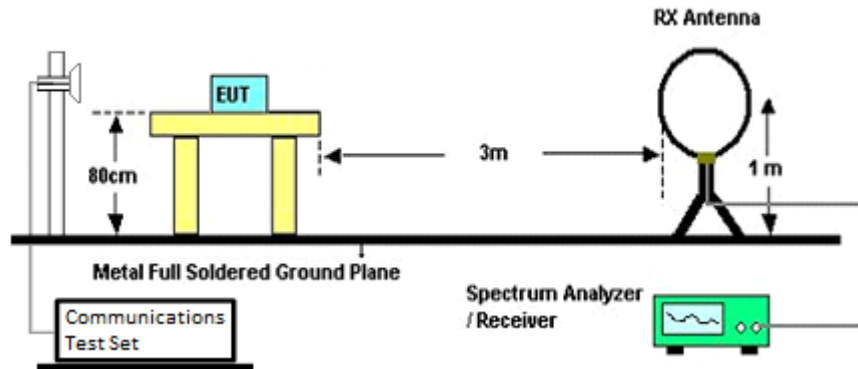
The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $55 + 10 \log(P)$ dB. The emission limit equal to -25dBm.

4.5.2 TEST PROCEDURES

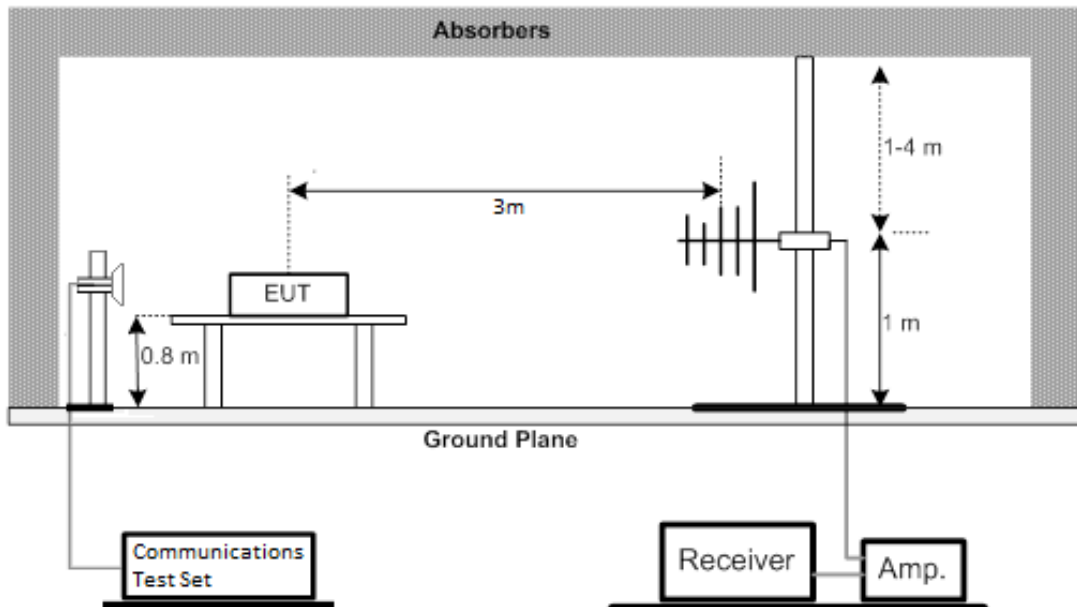
1. Substitution method is used for E.I.R.P measurement. In the semi-anechoic chamber, EUT placed on the 0.8m height of Turn Table, rotated the table around 360 degrees to search the maximum radiation power and receiver antenna shall be rotated vertical and horizontal polarization and moved height from 1m to 4m to find the maximum polar radiated power. The "Read Value" is the spectrum reading the maximum power value.
2. 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
3. EIRP = Output power level of S.G – TX cable loss + Antenna gain of substitution horn.
4. E.R.P power can be calculated form E.I.R.P power by subtracting the gain of dipole, E.R.P power = E.I.P.R power - 2.15dBi.
5. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 1MHz/3MHz.

4.5.3 TESTSETUP LAYOUT

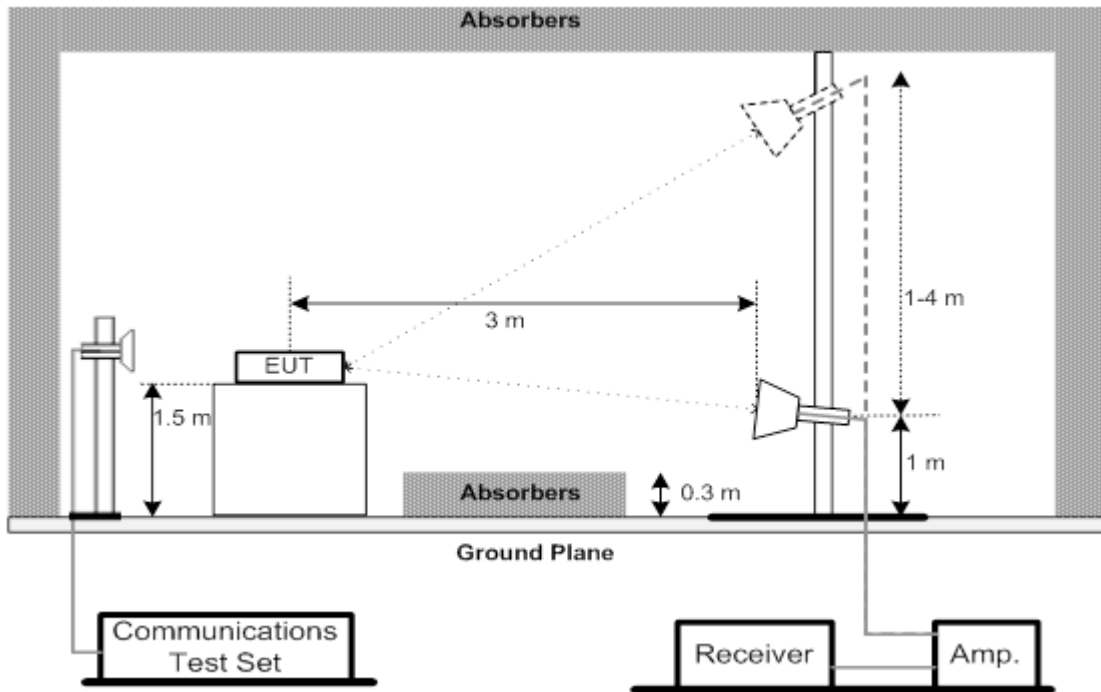
Below 30MHz



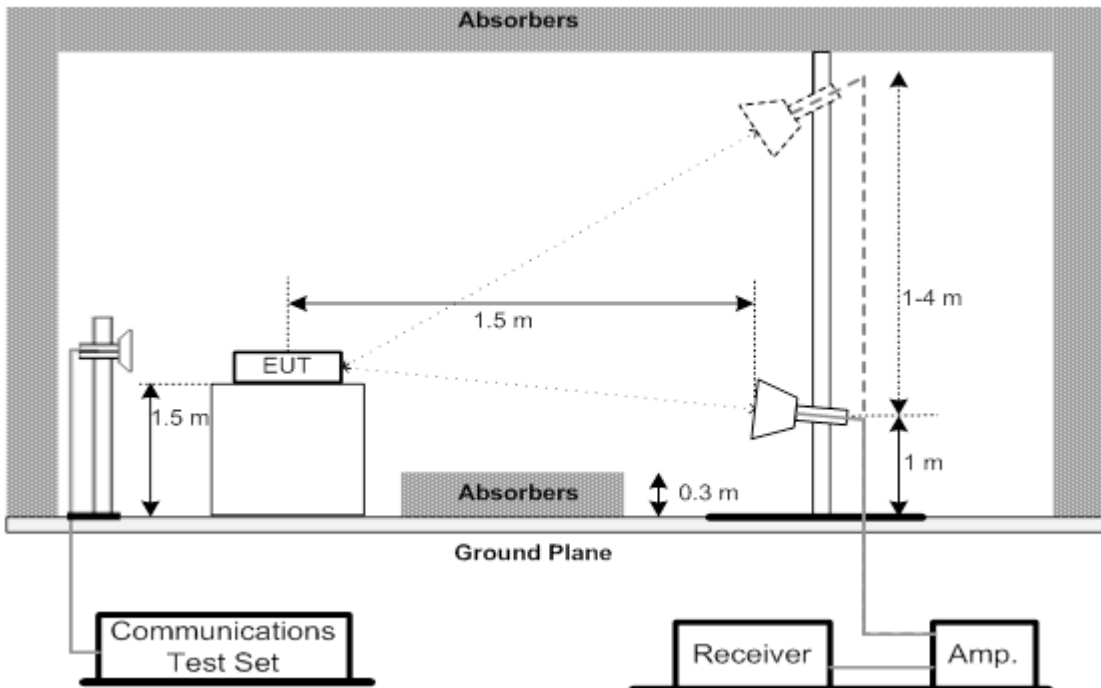
30MHz to 1GHz



1GHz to 18GHz



Above 18GHz



4.5.4 TESTDEVIATION

No deviation

4.5.5 TEST RESULTS (9KHZ TO 30MHZ)

Please refer to the Appendix E.

Rema

(1) All adapters had been pre-test and in this report only recorded the worst case (HONOR).

4.5.6 TEST RESULTS (30MHZ TO 1000MHZ)

Please refer to the Appendix F.

Rema

(1) All adapters had been pre-test and in this report only recorded the worst case (HONOR).

4.5.7 TEST RESULTS (ABOVE 1000MHZ)

Please refer to the Appendix G.

4.6 BAND EDGE MEASUREMENT

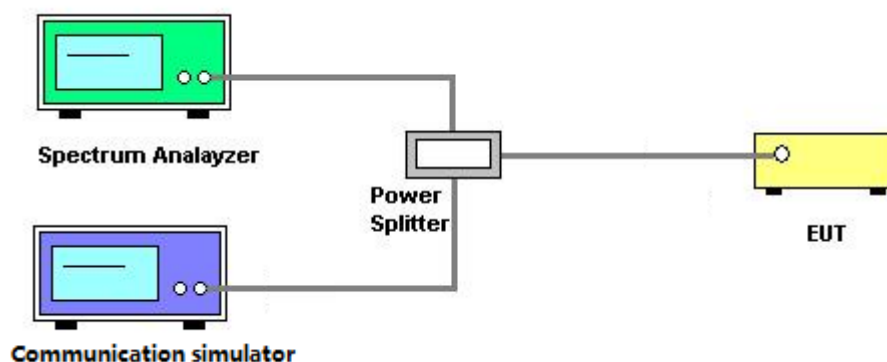
4.6.1 LIMIT

For mobile digital stations, the attenuation factor shall be not less than $40 + 10 \log (P)$ dB on all frequencies between the channel edge and 5 megahertz from the channel edge, $43 + 10 \log (P)$ dB on all frequencies between 5 megahertz and X megahertz from the channel edge, and $55 + 10 \log (P)$ dB on all frequencies more than X megahertz from the channel edge, where X is the greater of 6 megahertz or the actual emission bandwidth as defined in paragraph (m)(6) of this section. In addition, the attenuation factor shall not be less than $43 + 10 \log (P)$ dB on all frequencies between 2490.5 MHz and 2496 MHz and $55 + 10 \log (P)$ dB at or below 2490.5 MHz. Mobile Satellite Service licensees operating on frequencies below 2495 MHz may also submit a documented interference complaint against BRS licensees operating on channel BRS Channel 1 on the same terms and conditions as adjacent channel BRS or EBS licensees.

4.6.2 TEST PROCEDURES

1. All measurements were done at low and high operational frequency range.
2. Record the max trace plot into the test report.

4.6.3 TESTSETUP LAYOUT



4.6.4 TESTDEVIATION

No deviation

4.6.5 TEST RESULTS

Please refer to the Appendix H.

4.7 PEAK TO AVERAGE RATIO MEASUREMENT

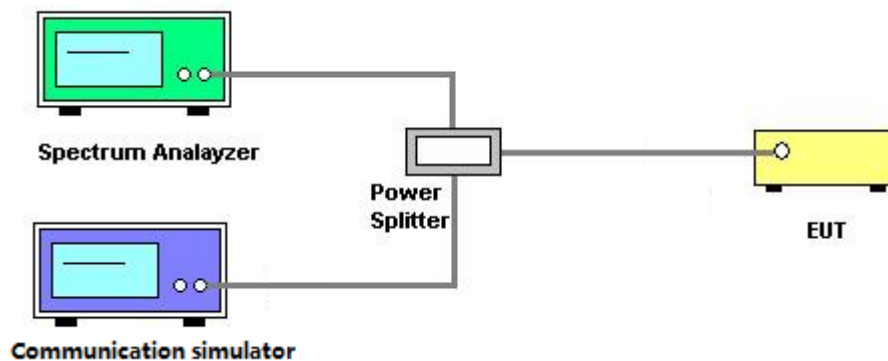
4.7.1 LIMIT

In measuring transmissions in this band using an average power technique, the peak to-average ratio (PAR) of the transmission may not exceed 13 dB.

4.7.2 TEST PROCEDURES

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

4.7.3 TESTSETUP LAYOUT



4.7.4 TESTDEVIATION

No deviation

4.7.5 TEST RESULTS

Please refer to the Appendix I.

4.8 FREQUENCY STABILITY MEASUREMENT

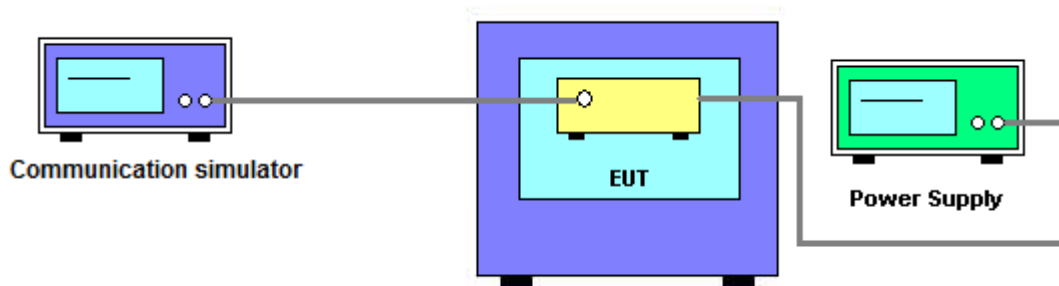
4.8.1 LIMIT

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

4.8.2 TEST PROCEDURES

1. 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.
2. 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.
3. The temperature range step is 10 degrees in this test items. All temperature levels shall be hold the $\pm 0.5^{\circ}\text{C}$ 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.
4. The frequency error was recorded frequency error from the communication simulator.

4.8.3 TESTSETUP LAYOUT



4.8.4 TESTDEVIATION

No deviation

4.8.5 TEST RESULTS

Please refer to the Appendix J.

5. LIST OF MEASUREMENT EQUIPMENTS

Radiated Emission Measurement					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Antenna	Schwarzbeck	VULB9160	9160-3232	Mar. 09, 2020
2	Amplifier	Agilent	8449B	3008A02274	Mar. 10, 2020
3	Amplifier	HP	8447D	2944A09673	Aug. 11, 2019
4	HighPass Filter	Wairwright Instruments Gmbh	WHK 1.5/15G-10ST	11	Mar. 10, 2020
5	Band Reject Filter	Wairwright Instruments Gmbh	WRCG 1710/1785-1690/180 5-60/12SS	38	Mar. 10, 2020
6	Band Reject Filter	Wairwright Instruments Gmbh	WRCG 824/849-810/863-60/ 9SS	7	Mar. 10, 2020
7	Band Reject Filter	Wairwright Instruments Gmbh	WRCG 880/915-860/935-60/ 9SS	14	Mar. 10, 2020
8	Band Reject Filter	Wairwright Instruments Gmbh	WRCG 1850/1910-1830/193 0-60/10SS	17	Mar. 10, 2020
9	HighPass Filter	Wairwright Instruments Gmbh	WHK3.1/18G-10SS	24	Mar. 10, 2020
10	Wireless Communication Test SET	Agilent	E5515C	MY48364183	Mar. 10, 2020
11	Microwave Preamplifier With Adaptor	EMC INSTRUMENT	EMC2654045	980039 & HA01	Mar. 10, 2020
12	Receiver	Agilent	N9038A	MY52130039	Aug. 11, 2019
13	wideband radio communication tester	R&S	CMW500	152372	Mar. 10, 2020
14	High pass filter	KANGMAIWEI	ZHPF-M3-12.75G-38 69	B2015073763	Feb. 12, 2020
15	High pass filter	KANGMAIWEI	ZHPF-M1000-4000-1	B2015073762	Feb. 12, 2020
16	High pass filter	KANGMAIWEI	ZHPF-M6-186-1727	B2015073764	Feb. 12, 2020
17	Cable	emci	LMR-400(30MHz-1G Hz)(8m+5m)	N/A	May 24, 2020
18	Cable	mitron	B10-01-01-12M	18072744	Jul. 30, 2019
19	Controller	ETS-Lindgren	2090	N/A	N/A
20	Measurement Software	Farad	EZ-EMC Ver.NB-03A1-01	N/A	N/A
21	Loop Antenna	EM	EM-6876-1	230	Jan. 15, 2020
22	Double Ridged Guide Antenna	ETS	3115	75789	Mar. 09, 2020
23	Broad-Band Horn Antenna	Schwarzbeck	BBHA 9170	9170319	Jun. 23, 2020

Conducted Measurement					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Wireless Communication Test SET	Agilent	E5515C	MY48364183	Mar. 10, 2020
2	EXA Spectrum Analyzer	Agilent	N9010A	MY50520044	Mar. 10, 2020
3	POWER SPLITTER	Mini-Circuits	ZFRSC-123-S+	331000910-1	Mar. 10, 2020
4	wideband radio communication tester	R&S	CMW500	152372	Mar. 10, 2020
5	Spectrum Analyzer	R&S	FSP40	100185	Aug. 11, 2019
6	Radio Communication Analyzer	ANRITSU	MT8821C	6261915479	Nov. 25, 2019

Frequency Stability Measurement					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Wireless Communication Test SET	Agilent	E5515C	MY48364183	Mar. 10, 2020
2*	Multi-output DC Power Supply	GW Instek	GPC-3030DN	EK880675	Sep. 26, 2020
3	POWER SPLITTER	Mini-Circuits	ZFRSC-123-S+	331000910-1	Mar. 10, 2020
4	wideband radio communication tester	R&S	CMW500	152372	Mar. 10, 2020
5	Const Temp.& Humidity Chamber	Bell	BTH-50C	20170306001	Mar. 10, 2020

Remark: "N/A" denotes no model name, serial no. or calibration specified.

All calibration period of equipment list is one year.

* All calibration period of equipment list is three year.

APPENDIX A - OUTPUT POWER

Output Power (dBm):

LTE Band / BW	Modulation	RB Sizer	RB Offset	Low CH	Mid CH	High CH
				39675CH	40620CH	41565CH
				2498.5MHz	2593MHz	2687.5MHz
41 / 5M	QPSK	1	0	22.62	22.10	22.24
		1	13	23.10	22.34	22.44
		1	24	22.60	21.95	22.18
		12	0	22.45	21.64	21.75
		12	6	22.56	21.71	21.84
		12	11	22.51	21.62	21.75
	16QAM	25	0	22.42	21.59	21.73
		1	0	22.04	21.88	21.83
		1	13	22.57	22.12	22.04
		1	24	22.09	21.71	21.72
		12	0	21.47	20.82	21.05
		12	6	21.59	20.88	21.13
		12	11	21.53	20.79	21.05
		25	0	21.41	20.67	20.95

LTE Band / BW	Modulation	RB Sizer	RB Offset	Low CH	Mid CH	High CH
				39700CH	40620CH	41540CH
				2501MHz	2593MHz	2685MHz
41 / 10M	QPSK	1	0	22.80	21.98	22.00
		1	25	23.20	22.35	22.44
		1	49	22.29	22.04	22.25
		25	0	22.54	21.55	21.84
		25	13	22.51	21.63	21.71
		25	25	22.20	21.56	21.72
	16QAM	50	0	22.36	21.55	21.65
		1	0	22.25	21.94	21.82
		1	25	22.61	22.31	22.20
		1	49	21.76	21.99	21.98
		25	0	21.44	20.70	20.69
		25	13	21.35	20.78	20.90
		25	25	21.08	20.71	20.91
		50	0	21.22	20.65	20.83

LTE Band / BW	Modulation	RB Sizer	RB Offset	Low CH	Mid CH	High CH
				39725CH	40620CH	41515CH
				2503.5MHz	2593MHz	2682.5MHz
41 / 15M	QPSK	1	0	23.09	22.22	21.87
		1	38	23.32	22.78	22.78
		1	74	22.45	22.33	22.45
		36	0	22.79	21.97	21.97
		36	18	22.67	22.15	22.02
		36	39	22.13	22.07	22.14
		75	0	22.47	22.01	21.97
	16QAM	1	0	22.98	21.97	21.68
		1	38	23.22	22.48	22.66
		1	74	22.12	22.05	22.40
		36	0	21.90	20.94	20.97
		36	18	21.75	21.12	21.25
		36	39	21.20	21.03	21.26
		75	0	21.52	21.04	21.14

LTE Band / BW	Modulation	RB Sizer	RB Offset	Low CH	Mid CH	High CH
				39750CH	40620CH	41490CH
				2506MHz	2593MHz	2680MHz
41 / 20M	QPSK	1	0	23.46	22.54	22.23
		1	50	23.02	22.80	22.58
		1	99	22.47	22.71	22.59
		50	0	22.74	22.03	21.87
		50	25	22.38	22.16	21.96
		50	50	22.06	22.17	22.07
		100	0	22.50	22.10	22.10
	16QAM	1	0	23.06	22.33	21.96
		1	50	22.71	22.62	22.46
		1	99	22.19	22.51	22.50
		50	0	21.91	21.08	20.74
		50	25	21.55	21.23	21.15
		50	50	21.06	21.23	21.28
		100	0	21.58	21.16	21.33

EIRP Power (dBm):

LTE Band / BW	Modulation	RB Sizer	RB Offset	Low CH	Mid CH	High CH
				39675CH	40620CH	41565CH
				2498.5MHz	2593MHz	2687.5MHz
41 / 5M	QPSK	1	0	24.62	24.10	24.24
		1	13	25.10	24.34	24.44
		1	24	24.60	23.95	24.18
		12	0	24.45	23.64	23.75
		12	6	24.56	23.71	23.84
		12	11	24.51	23.62	23.75
	16QAM	25	0	24.42	23.59	23.73
		1	0	24.04	23.88	23.83
		1	13	24.57	24.12	24.04
		1	24	24.09	23.71	23.72
		12	0	23.47	22.82	23.05
		12	6	23.59	22.88	23.13
		12	11	23.53	22.79	23.05
		25	0	23.41	22.67	22.95

LTE Band / BW	Modulation	RB Sizer	RB Offset	Low CH	Mid CH	High CH
				39700CH	40620CH	41540CH
				2501MHz	2593MHz	2685MHz
41 / 10M	QPSK	1	0	24.80	23.98	24.00
		1	25	25.20	24.35	24.44
		1	49	24.29	24.04	24.25
		25	0	24.54	23.55	23.84
		25	13	24.51	23.63	23.71
		25	25	24.20	23.56	23.72
	16QAM	50	0	24.36	23.55	23.65
		1	0	24.25	23.94	23.82
		1	25	24.61	24.31	24.20
		1	49	23.76	23.99	23.98
		25	0	23.44	22.70	22.69
		25	13	23.35	22.78	22.90
		25	25	23.08	22.71	22.91
		50	0	23.22	22.65	22.83

LTE Band / BW	Modulation	RB Siset	RB Offset	Low CH	Mid CH	High CH
				39725CH	40620CH	41515CH
				2503.5MHz	2593MHz	2682.5MHz
41 / 15M	QPSK	1	0	25.09	24.22	23.87
		1	38	25.32	24.78	24.78
		1	74	24.45	24.33	24.45
		36	0	24.79	23.97	23.97
		36	18	24.67	24.15	24.02
		36	39	24.13	24.07	24.14
		75	0	24.47	24.01	23.97
	16QAM	1	0	24.98	23.97	23.68
		1	38	25.22	24.48	24.66
		1	74	24.12	24.05	24.40
		36	0	23.90	22.94	22.97
		36	18	23.75	23.12	23.25
		36	39	23.20	23.03	23.26
		75	0	23.52	23.04	23.14

LTE Band / BW	Modulation	RB Siset	RB Offset	Low CH	Mid CH	High CH
				39750CH	40620CH	41490CH
				2506MHz	2593MHz	2680MHz
41 / 20M	QPSK	1	0	25.46	24.54	24.23
		1	50	25.02	24.80	24.58
		1	99	24.47	24.71	24.59
		50	0	24.74	24.03	23.87
		50	25	24.38	24.16	23.96
		50	50	24.06	24.17	24.07
		100	0	24.50	24.10	24.10
	16QAM	1	0	25.06	24.33	23.96
		1	50	24.71	24.62	24.46
		1	99	24.19	24.51	24.50
		50	0	23.91	23.08	22.74
		50	25	23.55	23.23	23.15
		50	50	23.06	23.23	23.28
		100	0	23.58	23.16	23.33

APPENDIX B - MODULATION CHARACTERISTICS

LTE Band 41_20M

QPSK

Measurement | Signaling | UE Power: 22.2 dbm

0 Symbol
I: 0.7182 Q: 0.7057

	Avg.	Max.	Min.
EVM	1.79	1.88	1.69 % (rms)
Peak Vector Error	11.29	14.92	8.46%
Carrier Leakage	-67.43	-65.30	-72.08 dBc
I/Q Imbalance	99.99	100.05	99.89 % (V/Q)

16QAM

Measurement | Signaling | UE Power: 21.2 dbm

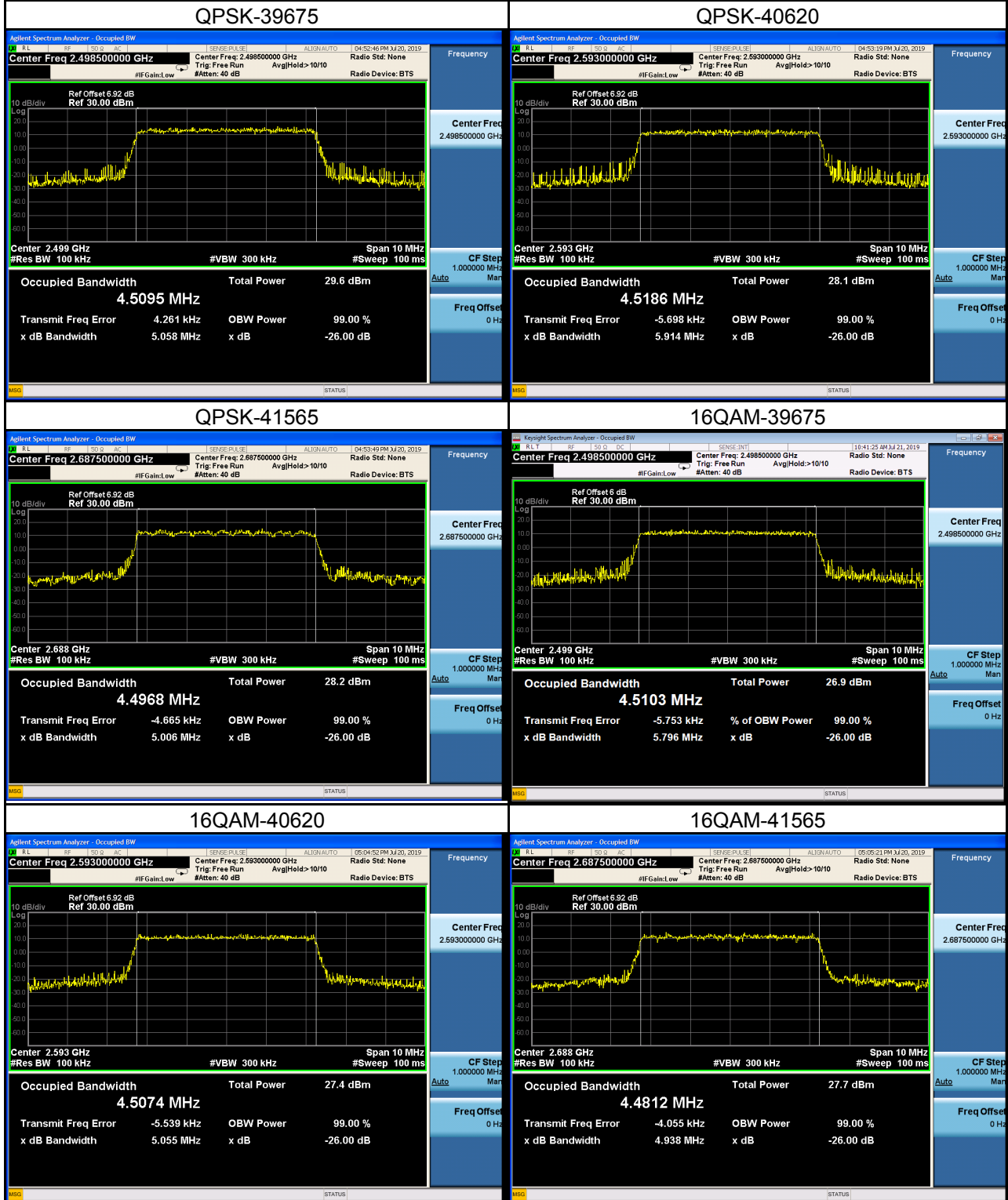
0 Symbol
I: -0.9707 Q: 0.2984

	Avg.	Max.	Min.
EVM	2.17	2.24	2.13 % (rms)
Peak Vector Error	14.58	17.05	12.14%
Carrier Leakage	-69.28	-64.29	-78.01 dBc
I/Q Imbalance	100.03	100.08	99.96 % (V/Q)

APPENDIX C - OCCUPIED BANDWIDTH

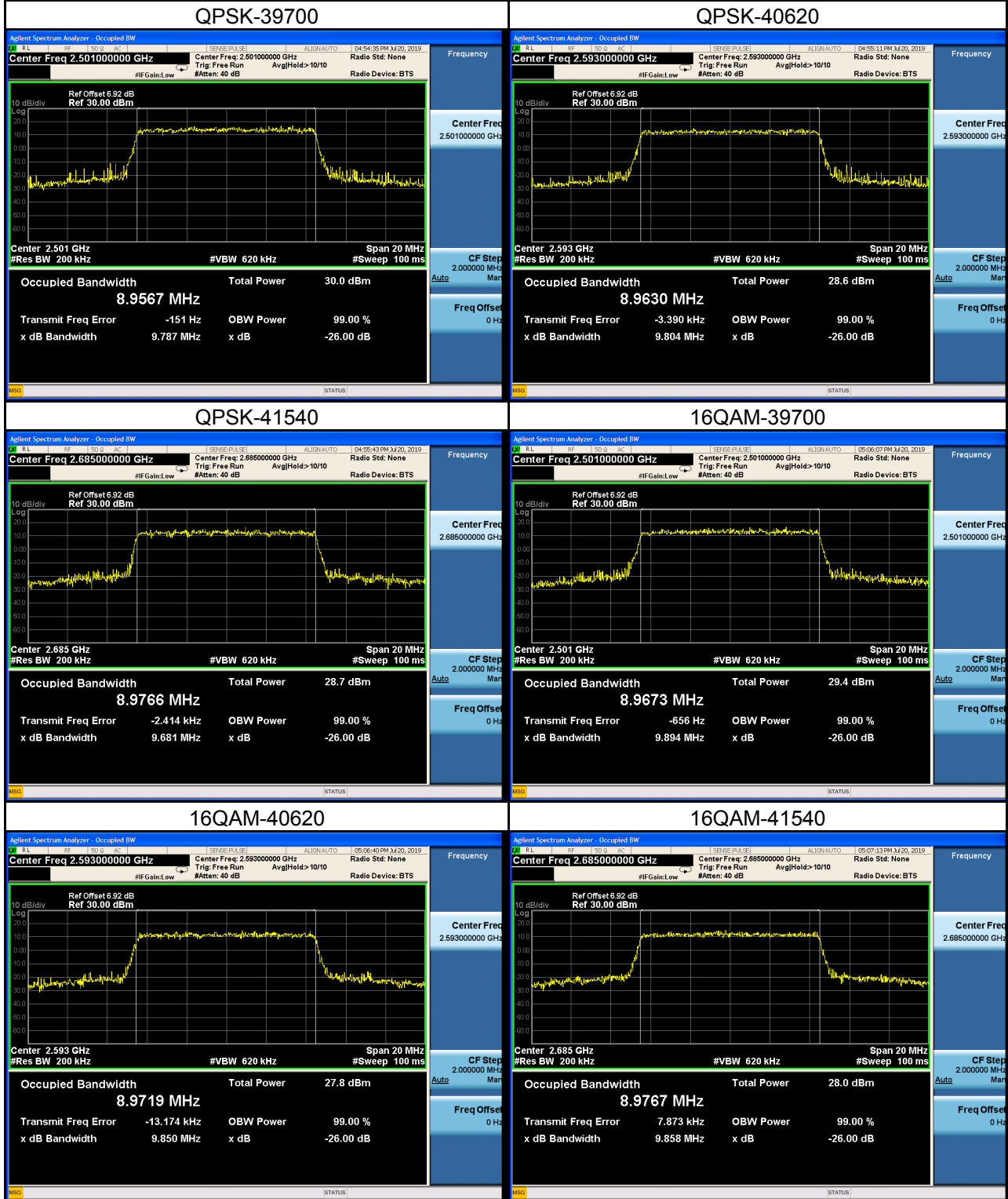
LTE Band 41_5M					
QPSK			16QAM		
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)
39675	2498.5	4.5095	39675	2498.5	4.5103
40620	2593	4.5186	40620	2593	4.5074
41565	2687.5	4.4968	41565	2687.5	4.4812
Channel	Frequency (MHz)	26dB Bandwidth (MHz)	Channel	Frequency (MHz)	26dB Bandwidth (MHz)
39675	2498.5	5.0580	39675	2498.5	5.7960
40620	2593	5.9140	40620	2593	5.0550
41565	2687.5	5.0060	41565	2687.5	4.9380

Spectrum Plot



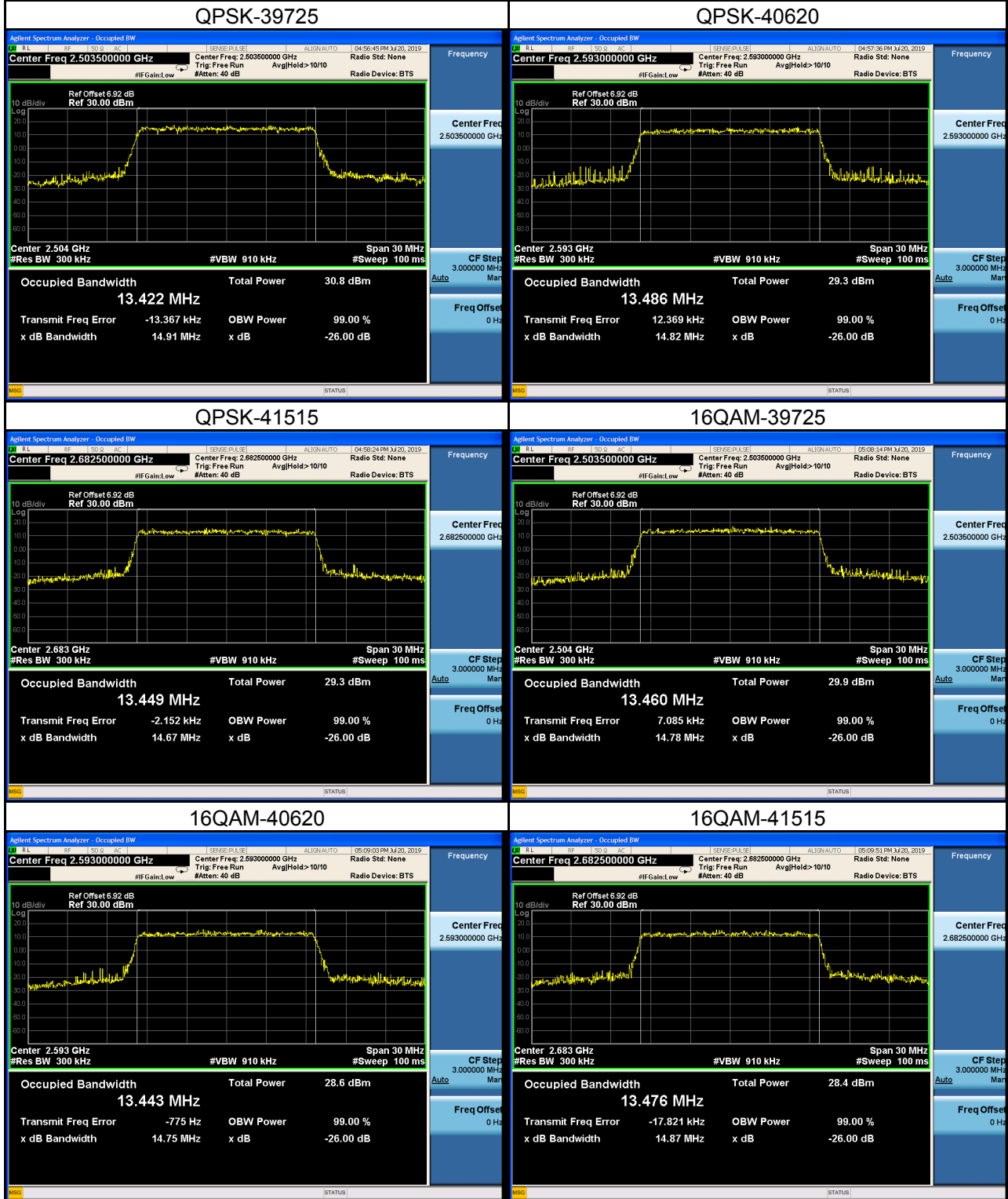
LTE Band 41_10M					
QPSK			16QAM		
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)
39700	2501	8.9567	39700	2501	8.9673
40620	2593	8.9630	40620	2593	8.9719
41540	2685	8.9766	41540	2685	8.9767
Channel	Frequency (MHz)	26dB Bandwidth (MHz)	Channel	Frequency (MHz)	26dB Bandwidth (MHz)
39700	2501	9.7870	39700	2501	9.8940
40620	2593	9.8040	40620	2593	9.8500
41540	2685	9.6810	41540	2685	9.8580

Spectrum Plot

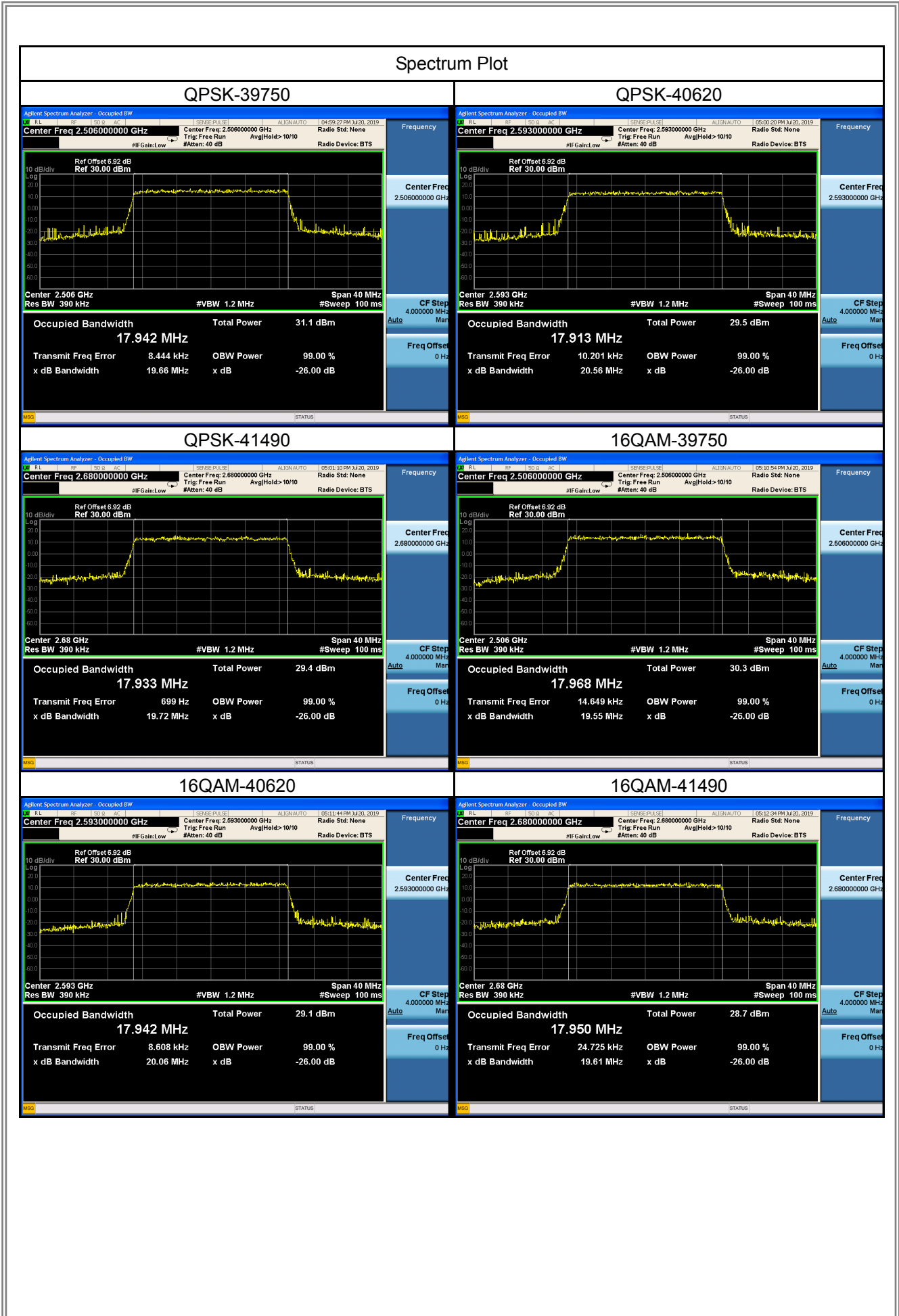


LTE Band 41_15M					
QPSK			16QAM		
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)
39725	2503.5	13.4220	39725	2503.5	13.4600
40620	2593	13.4860	40620	2593	13.4430
41515	2682.5	13.4490	41515	2682.5	13.4760
Channel	Frequency (MHz)	26dB Bandwidth (MHz)	Channel	Frequency (MHz)	26dB Bandwidth (MHz)
39725	2503.5	14.9100	39725	2503.5	14.7800
40620	2593	14.8200	40620	2593	14.7500
41515	2682.5	14.6700	41515	2682.5	14.8700

Spectrum Plot



LTE Band 41_20M					
QPSK			16QAM		
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)
39750	2506	17.9460	39750	2506	17.9680
40620	2593	17.9130	40620	2593	17.9420
41490	2680	17.9330	41490	2680	17.9500
Channel	Frequency (MHz)	26dB Bandwidth (MHz)	Channel	Frequency (MHz)	26dB Bandwidth (MHz)
39750	2506	19.6600	39750	2506	19.5500
40620	2593	20.5600	40620	2593	20.0600
41490	2680	19.7200	41490	2680	19.6100



APPENDIX D - CONDUCTED EMISSIONS

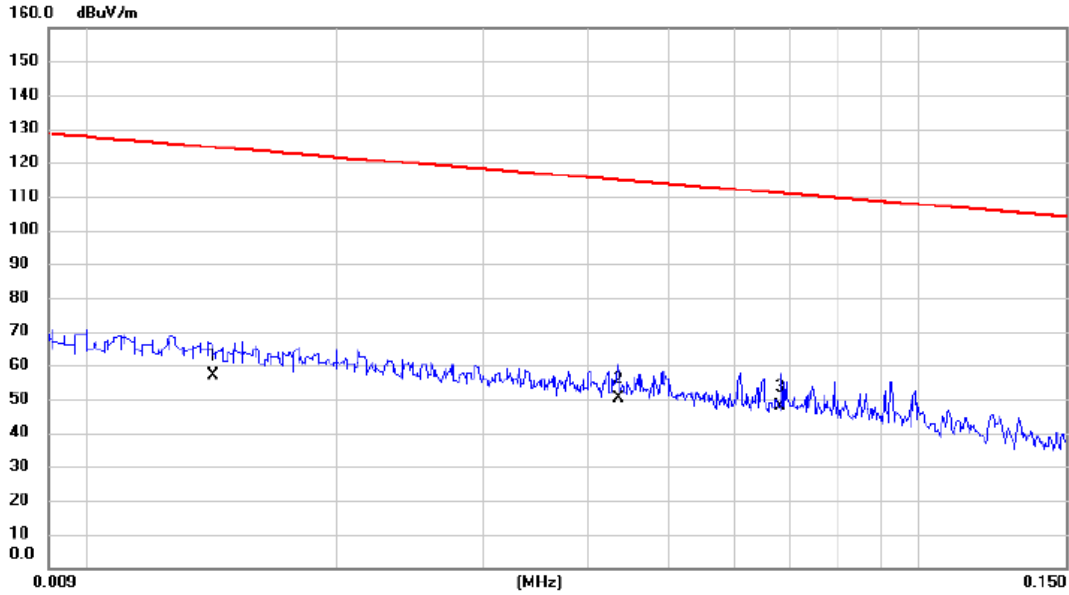
LTE Band 41_5M			
Channel	Frequency(MHz)	Channel	Frequency(MHz)
40620	2593	40620	2593
Channel	Frequency(MHz)	-	-
40620	2593	-	-
		-	

LTE Band 41_20M			
Channel	Frequency(MHz)	Channel	Frequency(MHz)
40620	2593	40620	2593
Channel	Frequency(MHz)	-	-
40620	2593	-	-
		-	

APPENDIX E - RADIATED EMISSION (9KHZ TO 30MHZ)

Test Mode: TX Mode

Ant 0°

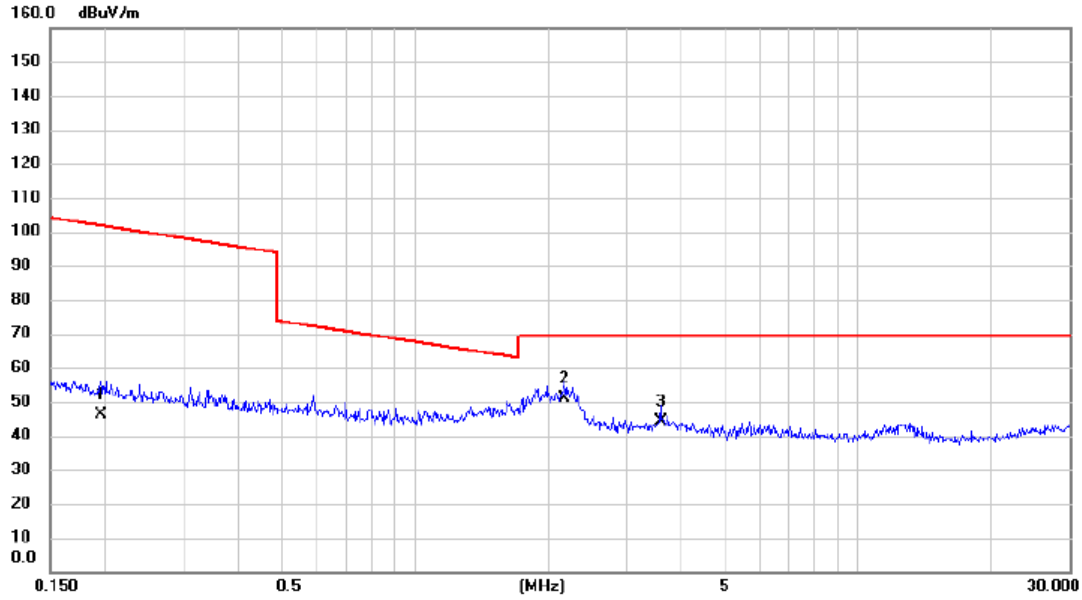


No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1		0.0142	36.23	20.83	57.06	124.56	-67.50	AVG	
2		0.0436	30.41	19.64	50.05	114.82	-64.77	AVG	
3	*	0.0682	28.61	19.17	47.78	110.93	-63.15	AVG	

Test Mode: TX Mode

Ant 0°

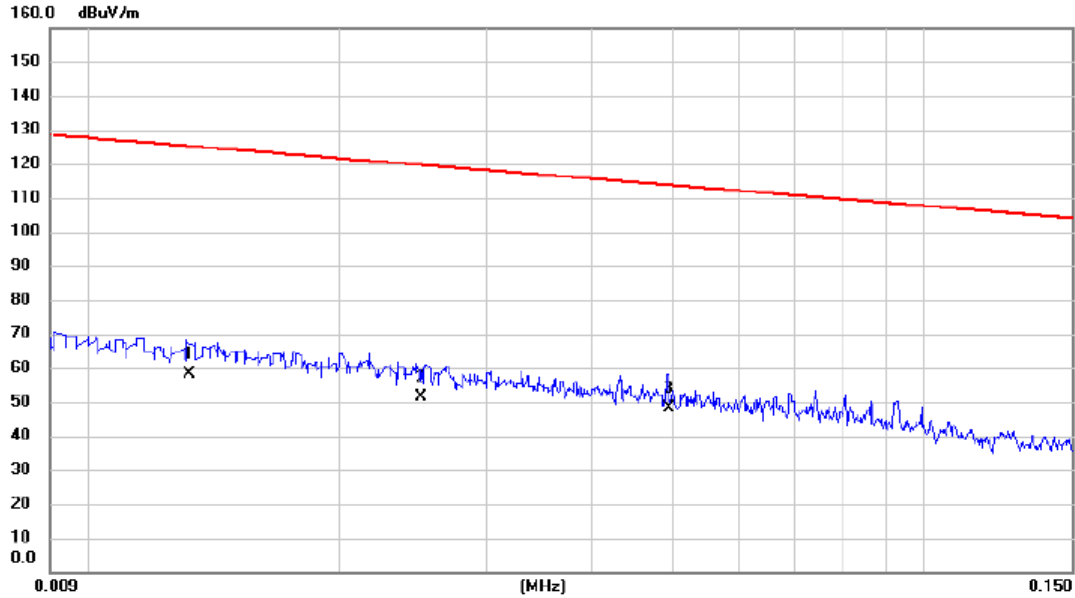
Horizontal



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1		0.1952	29.10	17.17	46.27	101.80	-55.53	AVG	
2	*	2.1783	34.03	17.01	51.04	69.54	-18.50	QP	
3		3.5843	28.11	16.07	44.18	69.54	-25.36	QP	

Test Mode: TX Mode

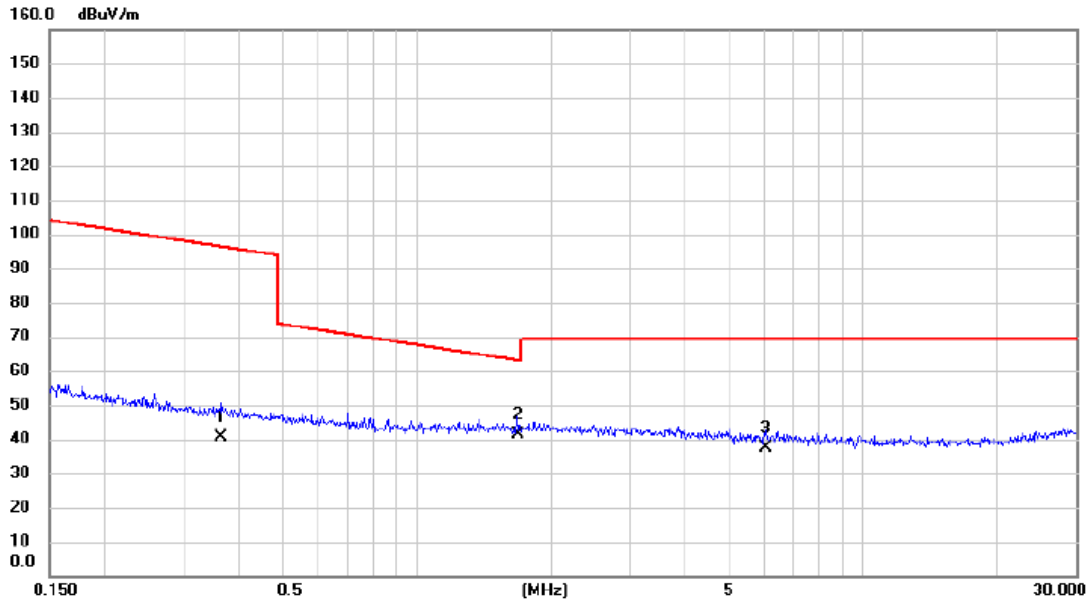
**Ant 90°
 Horizontal**



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1		0.0132	37.31	20.97	58.28	125.19	-66.91	AVG	
2		0.0250	31.35	19.94	51.29	119.65	-68.36	AVG	
3	*	0.0495	28.78	19.54	48.32	113.71	-65.39	AVG	

Test Mode: TX Mode

**Ant 90°
 Horizontal**

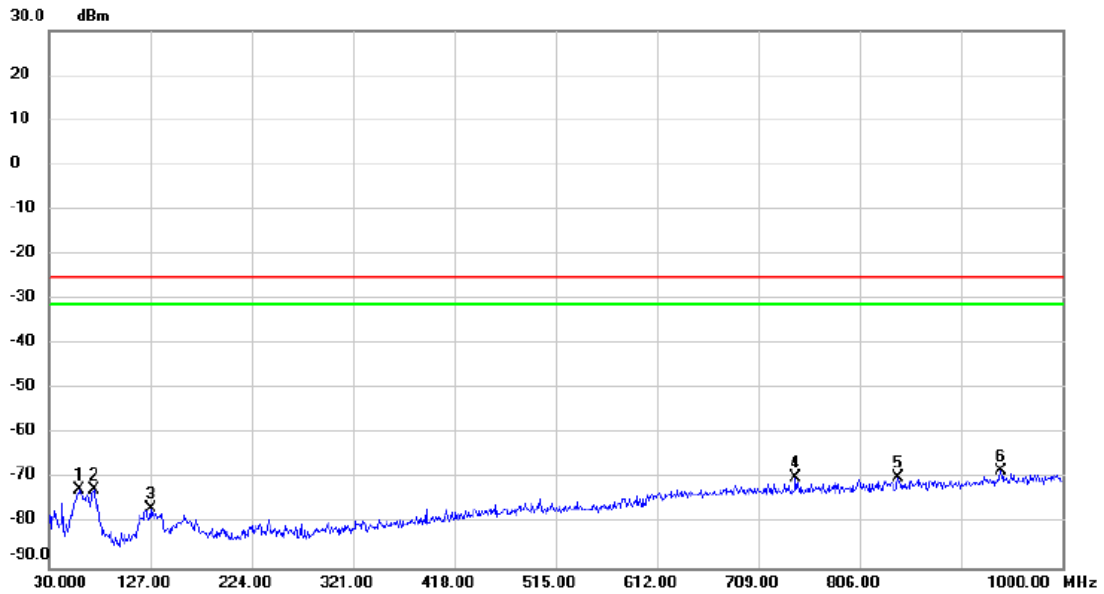


No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1		0.3653	23.73	17.01	40.74	96.35	-55.61	AVG	
2	*	1.6802	24.65	16.95	41.60	63.10	-21.50	QP	
3		6.0562	22.53	14.98	37.51	69.54	-32.03	QP	

APPENDIX F - RADIATED EMISSION (30MHZ TO 1GHZ)

Test Mode: LTE Band 41_TX CH40620_5M

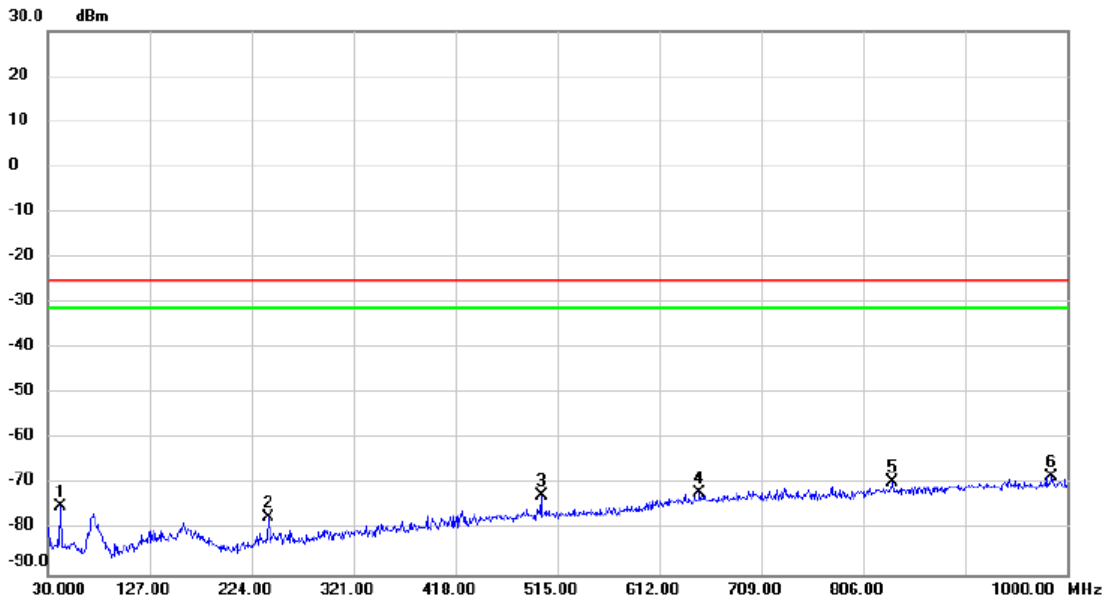
Vertical



No.	Mk.	Freq. MHz	Reading Level dBm	Correct Factor dB	Measure- ment dBm	Limit dBm	Margin dB	Detector	Comment
1		59.585	-67.17	-5.20	-72.37	-25.00	-47.37	peak	
2		73.165	-65.10	-7.22	-72.32	-25.00	-47.32	peak	
3		127.485	-73.33	-3.45	-76.78	-25.00	-51.78	peak	
4		744.890	-75.67	5.90	-69.77	-25.00	-44.77	peak	
5		843.345	-76.88	7.15	-69.73	-25.00	-44.73	peak	
6	*	941.315	-76.77	8.62	-68.15	-25.00	-43.15	peak	

Test Mode: LTE Band 41_TX CH40620_5M

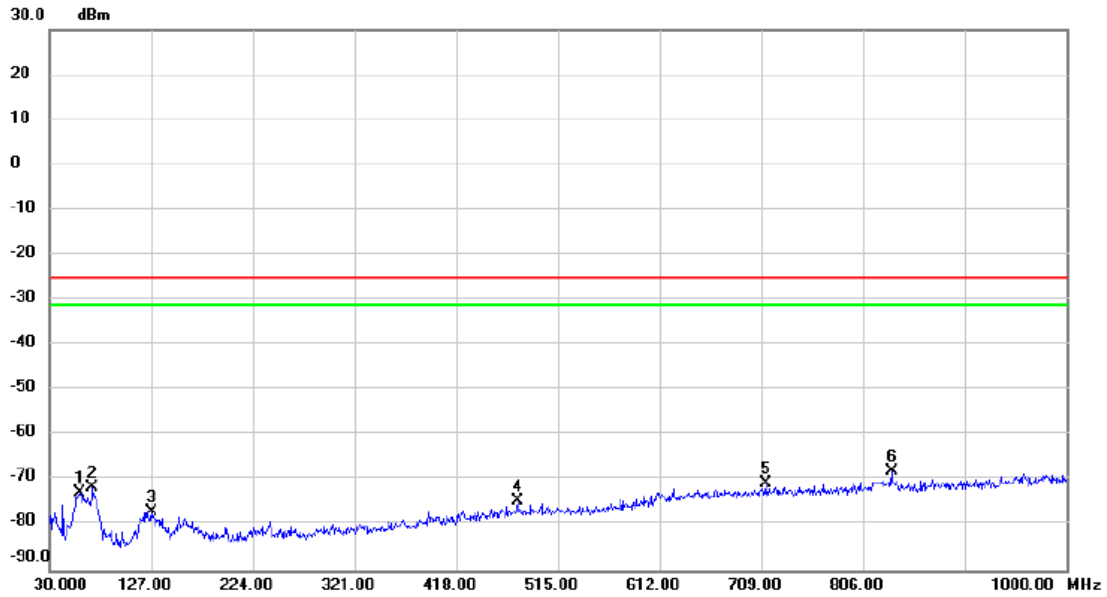
Horizontal



No.	Mk.	Freq. MHz	Reading Level dBm	Correct Factor dB	Measure- ment dBm	Limit dBm	Margin dB	Detector	Comment
1		42.125	-69.96	-4.85	-74.81	-25.00	-49.81	peak	
2		240.005	-72.96	-4.41	-77.37	-25.00	-52.37	peak	
3		499.965	-74.49	1.91	-72.58	-25.00	-47.58	peak	
4		650.800	-76.83	4.92	-71.91	-25.00	-46.91	peak	
5		833.645	-76.59	7.02	-69.57	-25.00	-44.57	peak	
6	*	985.450	-77.74	9.42	-68.32	-25.00	-43.32	peak	

Test Mode: LTE Band 41_TX CH40620_20M

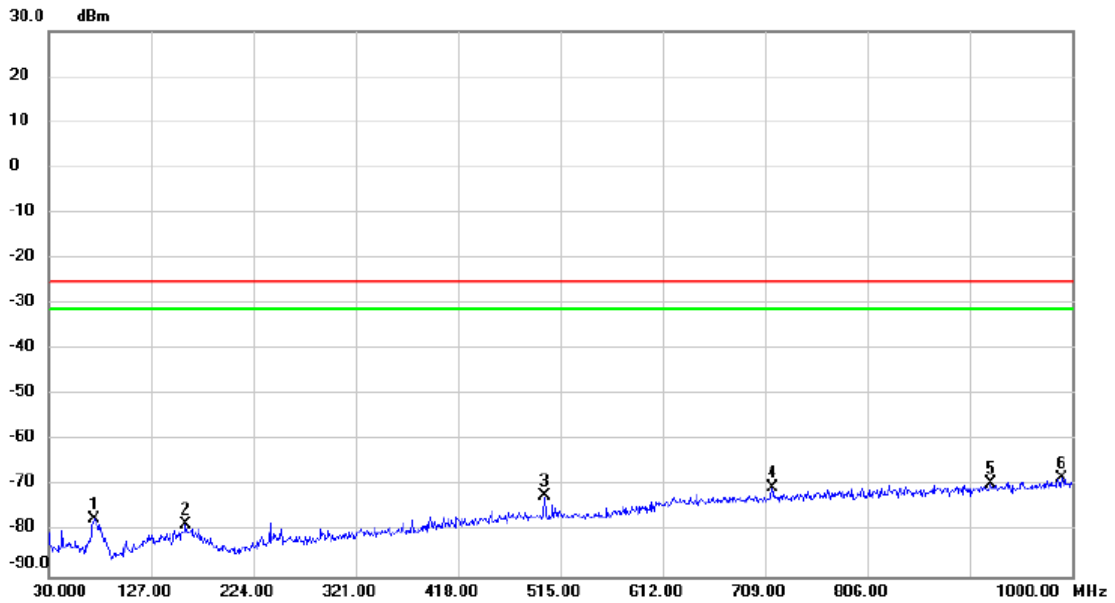
Vertical



No. Mk.	Freq. MHz	Reading Level dBm	Correct Factor dB	Measure- ment dBm	Limit dBm	Margin dB	Detector	Comment
1	58.615	-67.73	-5.12	-72.85	-25.00	-47.85	peak	
2	71.225	-64.68	-6.85	-71.53	-25.00	-46.53	peak	
3	127.000	-73.52	-3.45	-76.97	-25.00	-51.97	peak	
4	476.685	-76.38	1.73	-74.65	-25.00	-49.65	peak	
5	712.880	-76.33	5.67	-70.66	-25.00	-45.66	peak	
6 *	833.645	-74.83	7.02	-67.81	-25.00	-42.81	peak	

Test Mode: LTE Band 41_TX CH40620_20M

Horizontal

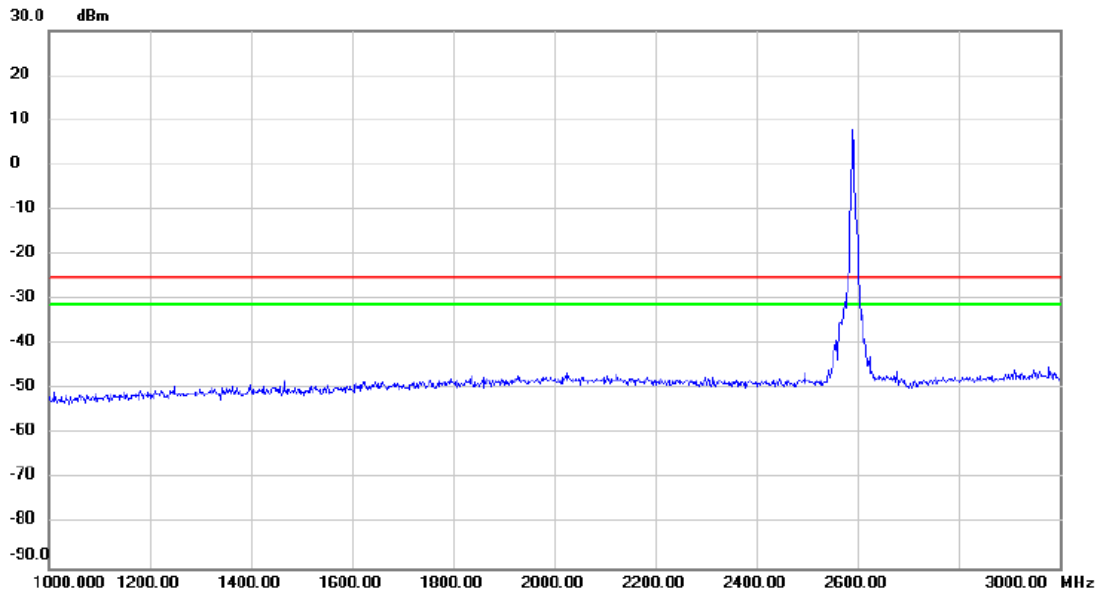


No.	Mk.	Freq. MHz	Reading Level dBm	Correct Factor dB	Measure- ment dBm	Limit dBm	Margin dB	Detector	Comment
1		73.650	-69.92	-7.32	-77.24	-25.00	-52.24	peak	
2		159.980	-76.98	-1.41	-78.39	-25.00	-53.39	peak	
3		499.965	-74.21	1.91	-72.30	-25.00	-47.30	peak	
4		716.275	-76.13	5.70	-70.43	-25.00	-45.43	peak	
5		922.400	-77.74	8.19	-69.55	-25.00	-44.55	peak	
6	*	990.300	-77.70	9.49	-68.21	-25.00	-43.21	peak	

APPENDIX G - RADIATED EMISSION (ABOVE 1GHZ)

Test Mode: LTE Band 41_TX CH40620_5M

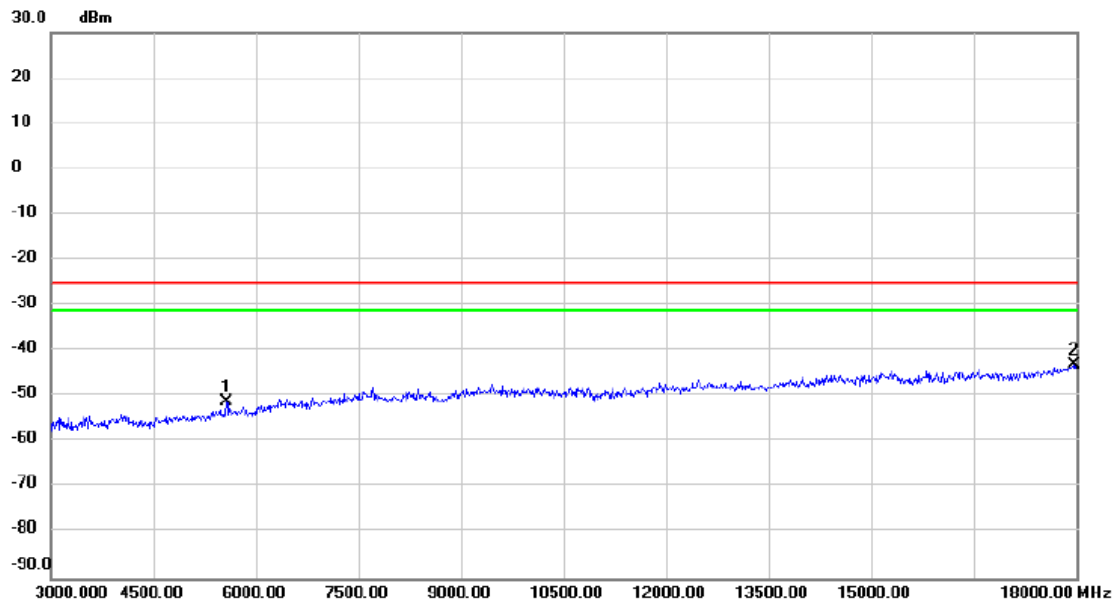
Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Margin	Detector	Comment
		MHz	dBm	dB	dBm	dBm	dB		

Test Mode: LTE Band 41_TX CH40620_5M

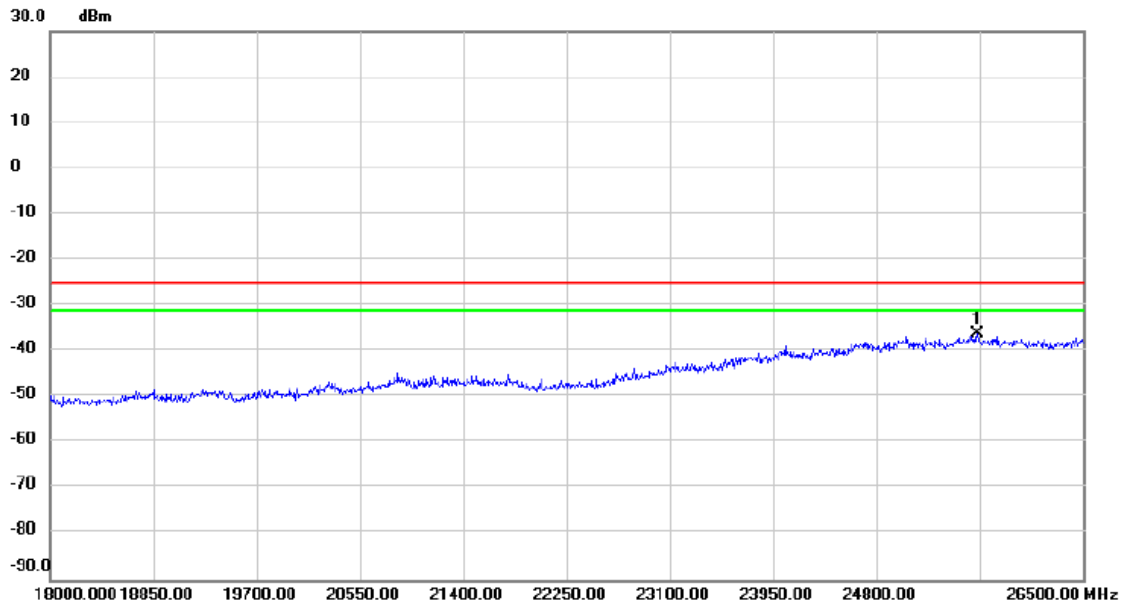
Vertical



No.	Mk.	Freq. MHz	Reading Level dBm	Correct Factor dB	Measure- ment dBm	Limit dBm	Margin dB	Detector	Comment
1		5565.000	-68.26	17.04	-51.22	-25.00	-26.22	peak	
2	*	17962.500	-74.16	31.01	-43.15	-25.00	-18.15	peak	

Test Mode: LTE Band 41_TX CH40620_5M

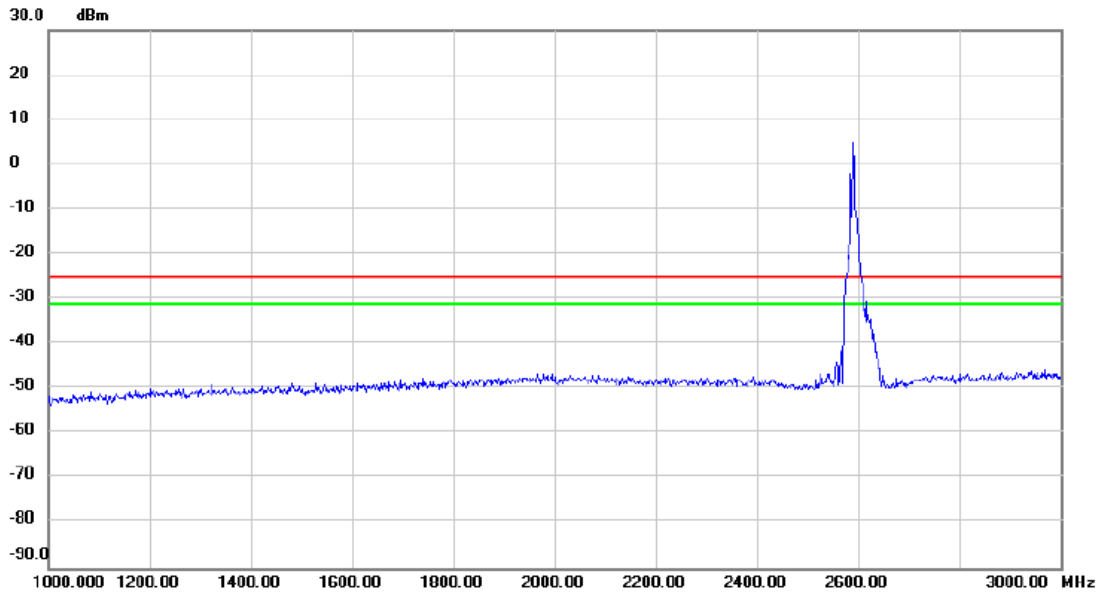
Vertical



No.	Mk.	Freq. MHz	Reading Level dBm	Correct Factor dB	Measure- ment dBm	Limit dBm	Margin dB	Detector	Comment
1	*	25633.000	-62.99	26.74	-36.25	-25.00	-11.25	peak	

Test Mode: LTE Band 41_TX CH40620_5M

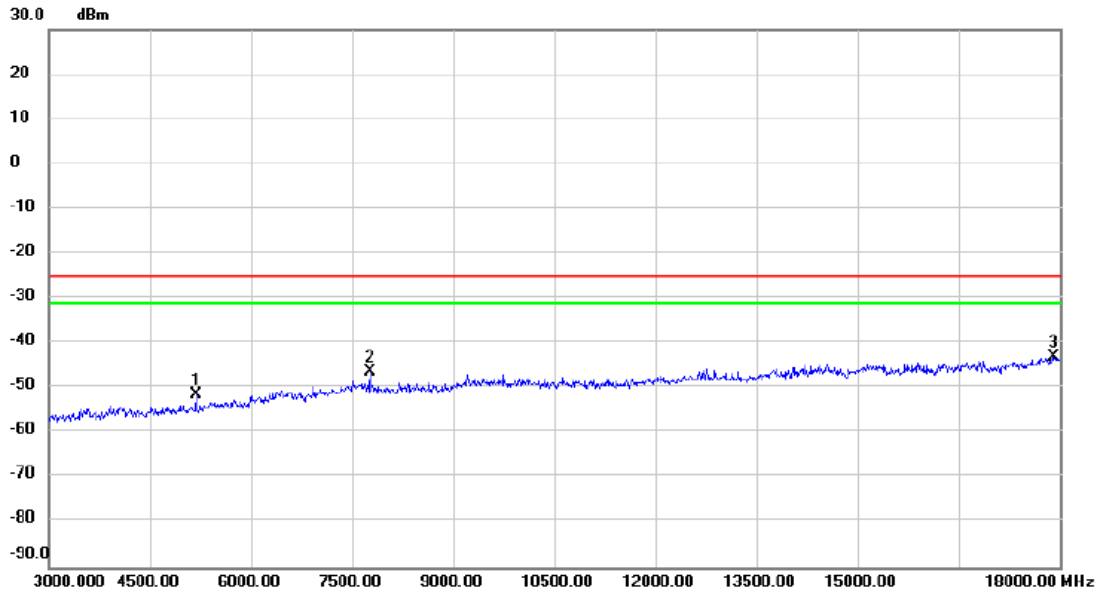
Horizontal



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Margin	Detector	Comment
		MHz	dBm	dB	dBm	dBm	dB		
		2600.00	5.0			-25.0	-20.0		

Test Mode: LTE Band 41_TX CH40620_5M

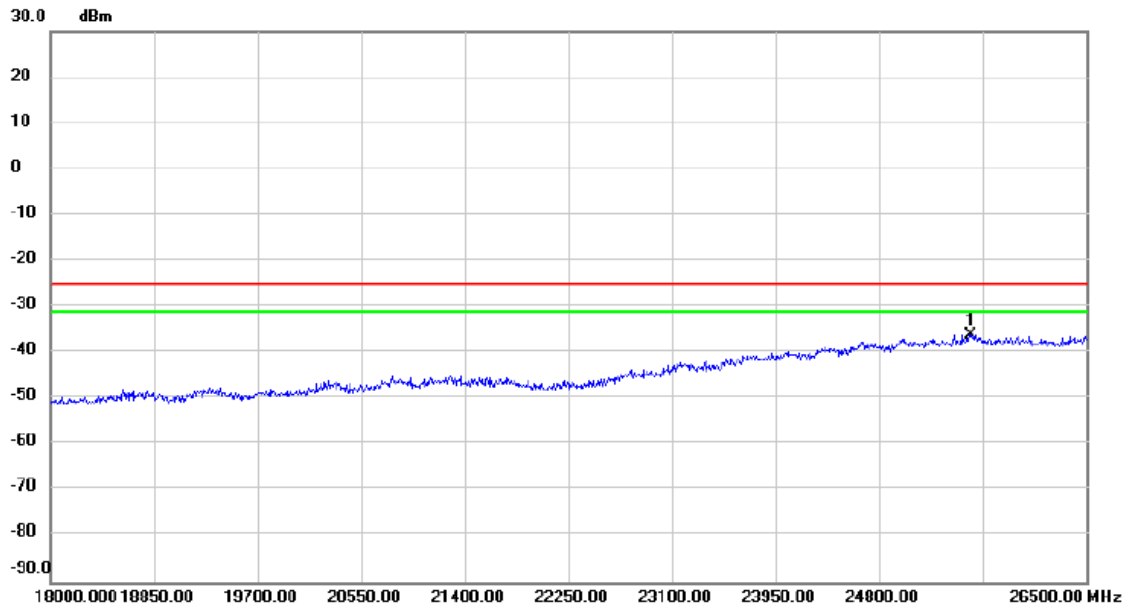
Horizontal



No.	Mk.	Freq. MHz	Reading Level dBm	Correct Factor dB	Measure- ment dBm	Limit dBm	Margin dB	Detector	Comment
1		5182.500	-67.50	16.13	-51.37	-25.00	-26.37	peak	
2		7770.000	-67.41	21.12	-46.29	-25.00	-21.29	peak	
3	*	17910.000	-73.96	30.88	-43.08	-25.00	-18.08	peak	

Test Mode: LTE Band 41_TX CH40620_5M

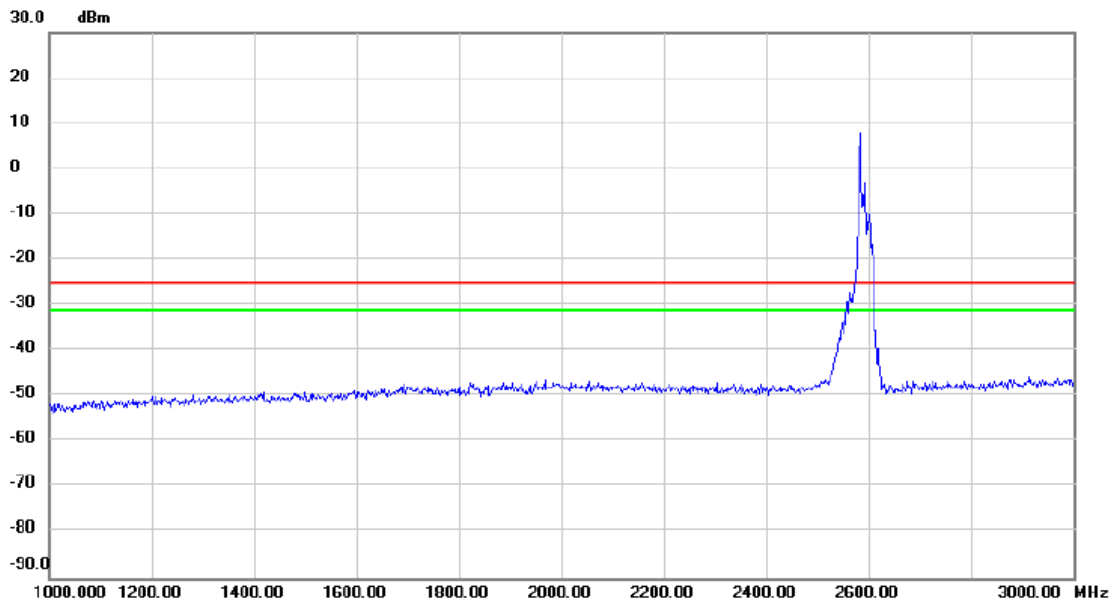
Horizontal



No.	Mk.	Freq. MHz	Reading Level dBm	Correct Factor dB	Measure- ment dBm	Limit dBm	Margin dB	Detector	Comment
1	*	25556.500	-62.75	26.71	-36.04	-25.00	-11.04	peak	

Test Mode: LTE Band 41_TX CH40620_20M

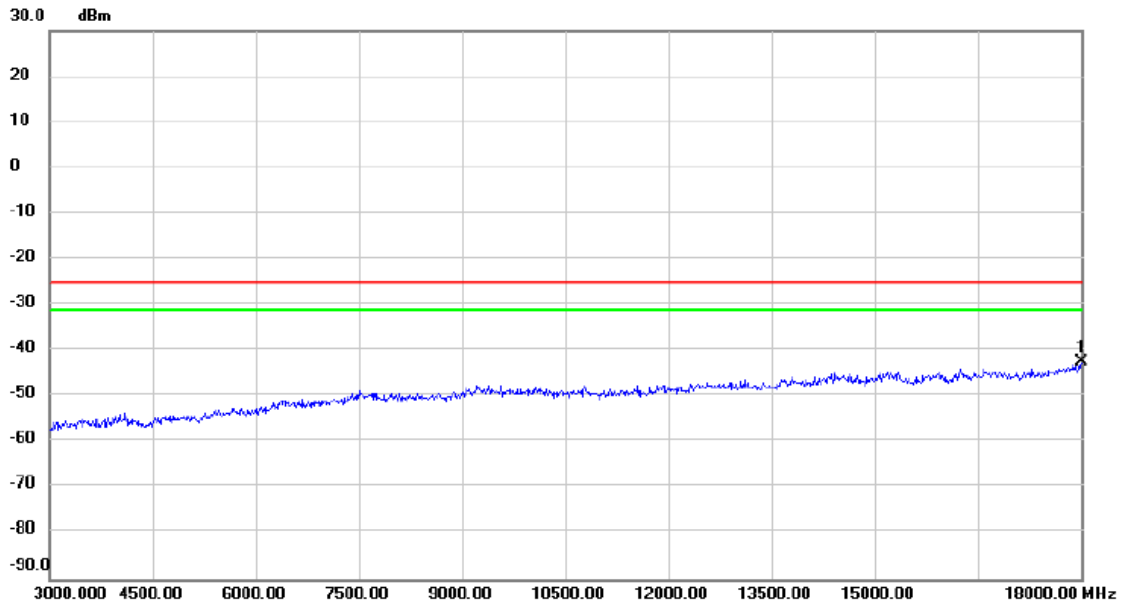
Vertical



No.	Mk.	Freq. MHz	Reading Level dBm	Correct Factor dB	Measure- ment dBm	Limit dBm	Margin dB	Detector	Comment
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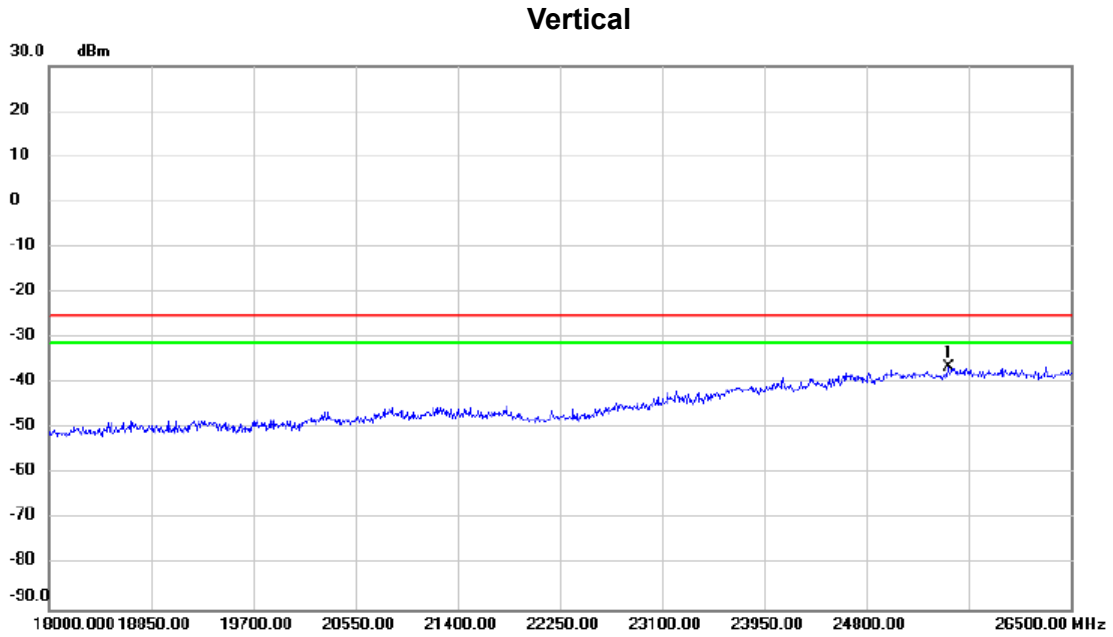
Test Mode: LTE Band 41_TX CH40620_20M

Vertical



No.	Mk.	Freq. MHz	Reading Level dBm	Correct Factor dB	Measure- ment dBm	Limit dBm	Margin dB	Detector	Comment
1	*	18000.000	-73.59	31.11	-42.48	-25.00	-17.48	peak	

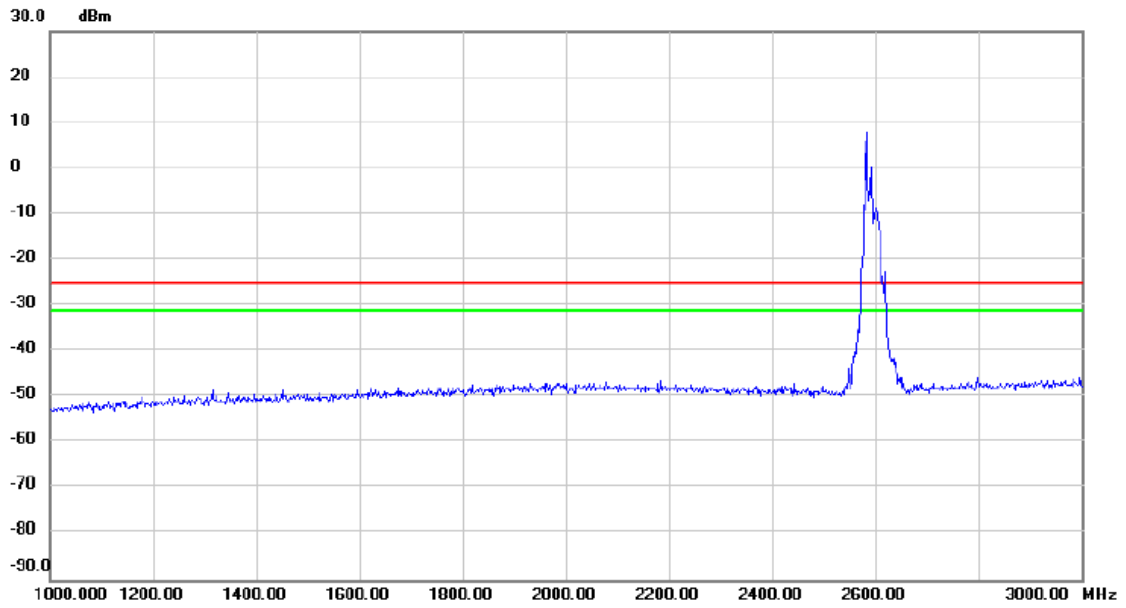
Test Mode: LTE Band 41_TX CH40620_20M



No.	Mk.	Freq. MHz	Reading Level dBm	Correct Factor dB	Measure- ment dBm	Limit dBm	Margin dB	Detector	Comment
1	*	25480.000	-63.09	26.68	-36.41	-25.00	-11.41	peak	

Test Mode: LTE Band 41_TX CH40620_20M

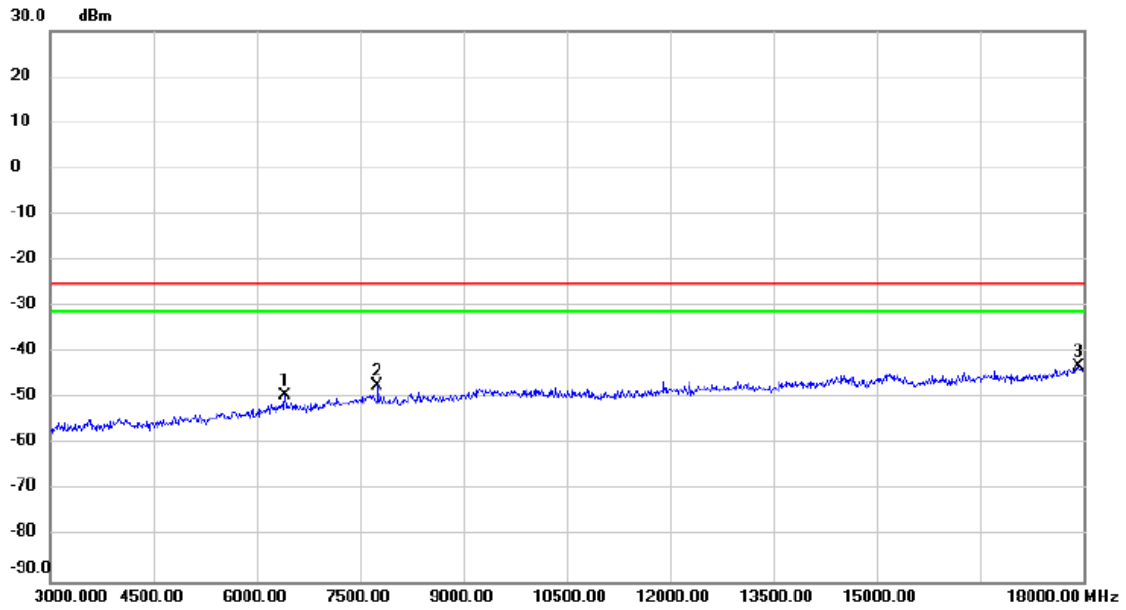
Horizontal



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Margin	Detector	Comment
		MHz	dBm	dB	dBm	dBm	dB		
		2600.00	8.00	0.00	8.00	-25.00	-33.00		

Test Mode: LTE Band 41_TX CH40620_20M

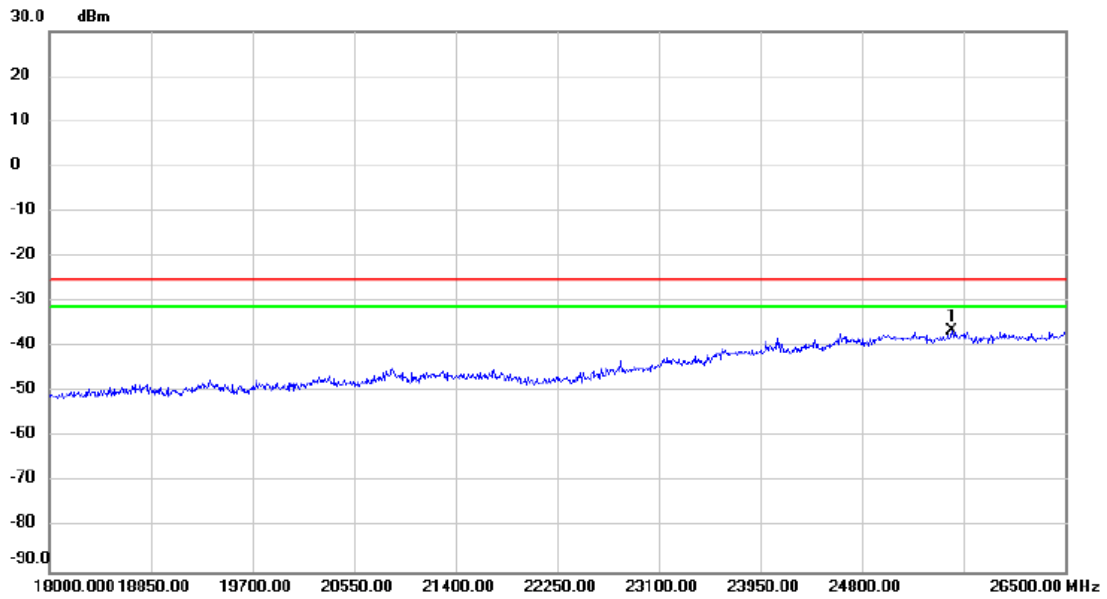
Horizontal



No.	Mk.	Freq. MHz	Reading Level dBm	Correct Factor dB	Measure- ment dBm	Limit dBm	Margin dB	Detector	Comment
1		6412.500	-68.65	19.18	-49.47	-25.00	-24.47	peak	
2		7755.000	-68.24	21.14	-47.10	-25.00	-22.10	peak	
3	*	17925.000	-74.03	30.91	-43.12	-25.00	-18.12	peak	

Test Mode: LTE Band 41_TX CH40620_20M

Horizontal



No.	Mk.	Freq. MHz	Reading Level dBm	Correct Factor dB	Measure- ment dBm	Limit dBm	Margin dB	Detector	Comment
1	*	25548.000	-63.10	26.72	-36.38	-25.00	-11.38	peak	

APPENDIX H - BAND EDGE

LTE Band 41_5M

1RB#0

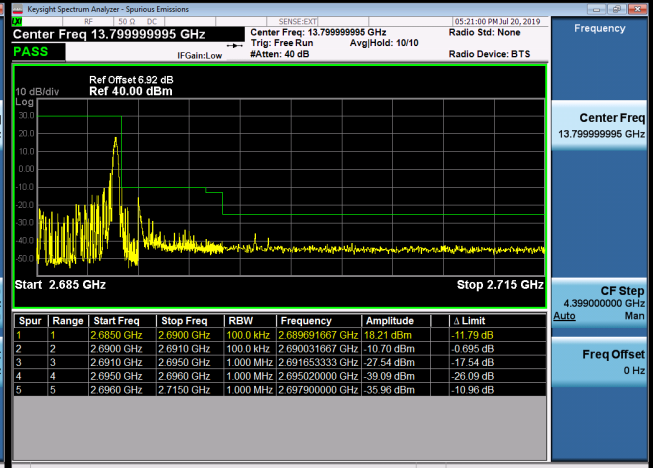
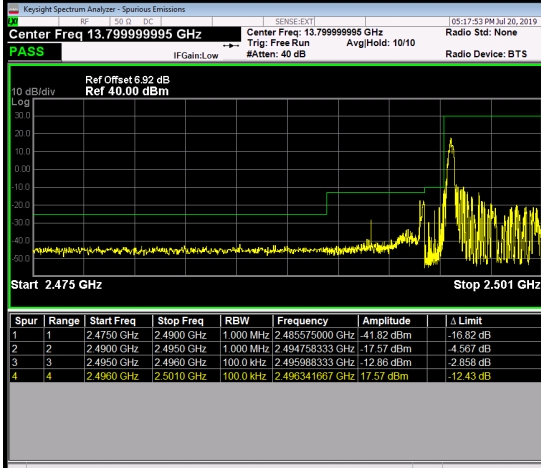
1RB#24

Channel

39675

Channel

41565



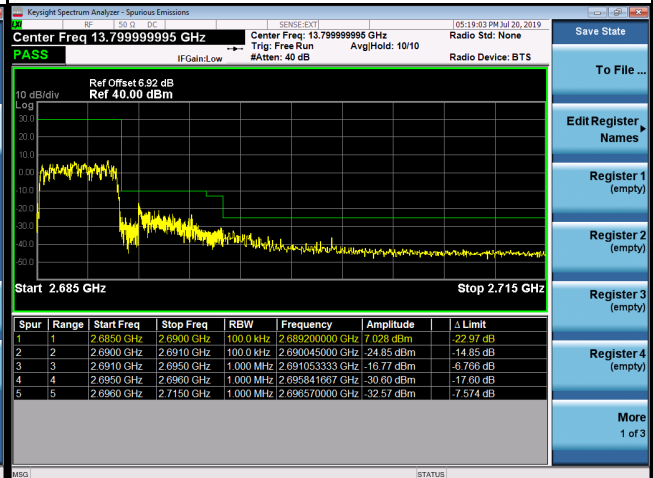
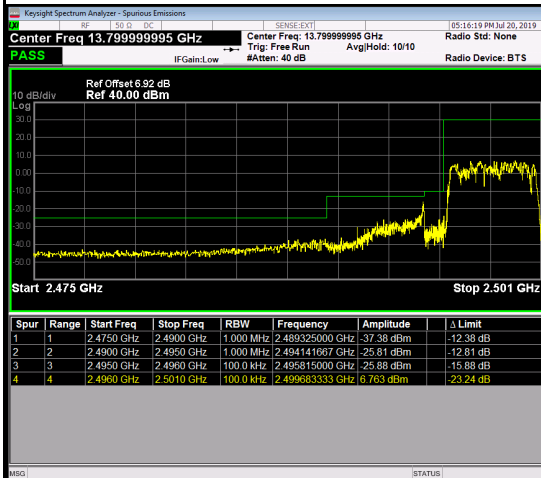
25RB#0

Channel

39675

Channel

41515



LTE Band 41_10M

1RB#0

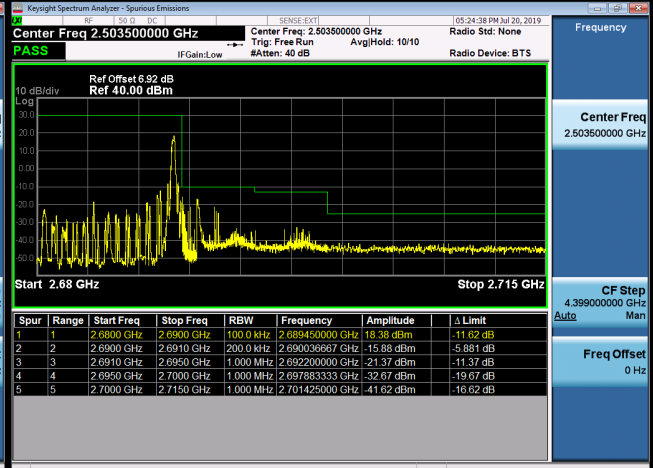
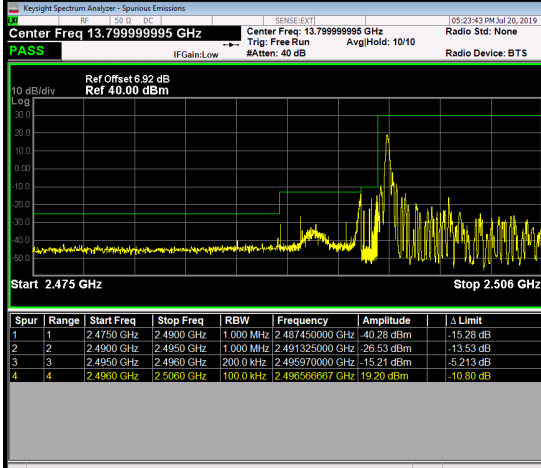
1RB#49

Channel

39700

Channel

51540



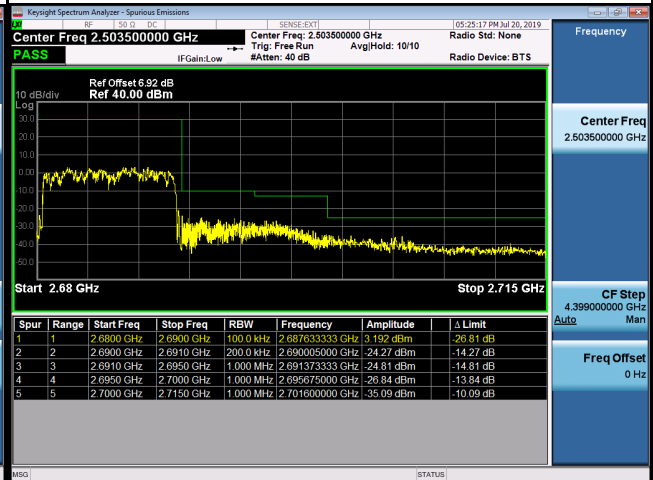
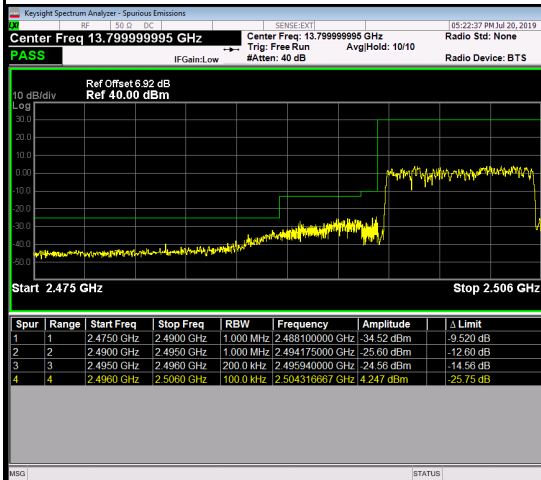
50RB#0

Channel

39700

Channel

51540



LTE Band 41_15M

1RB#0

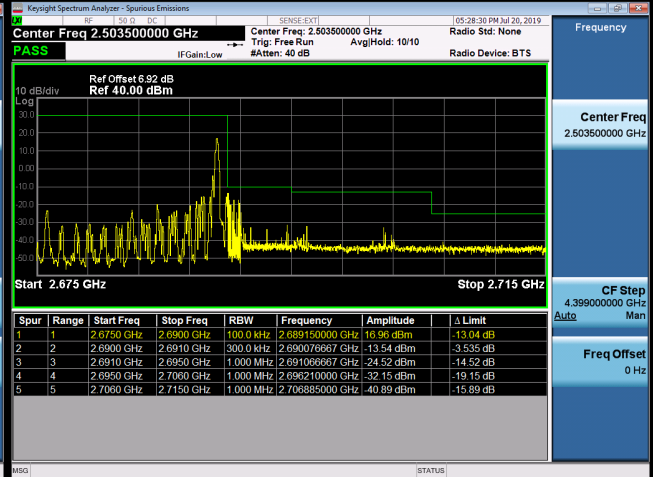
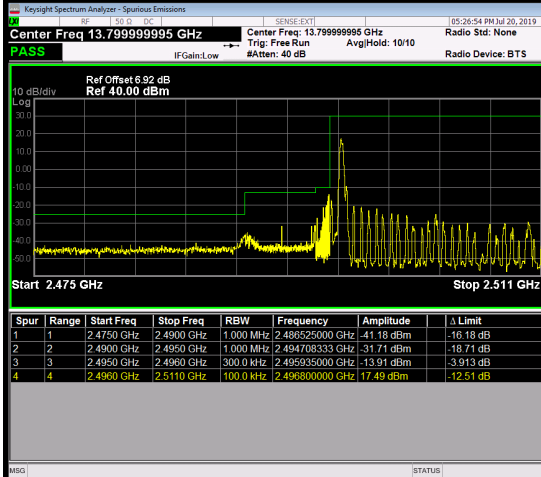
1RB#74

Channel

39725

Channel

41515



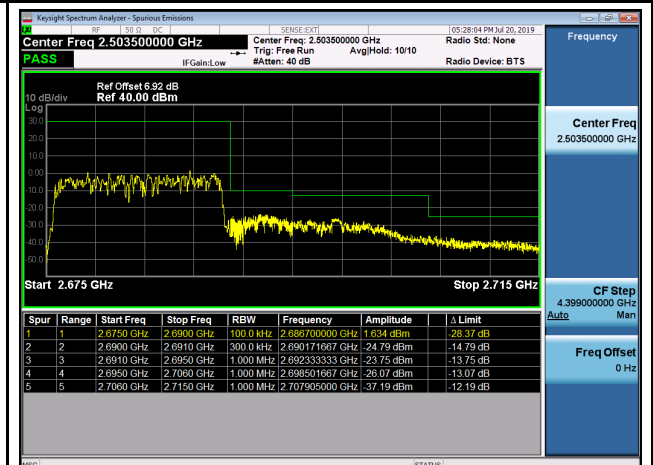
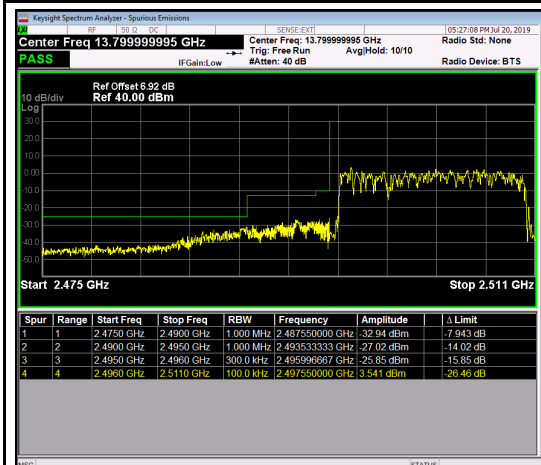
75RB#0

Channel

39725

Channel

41515



LTE Band 41_20M

1RB#0

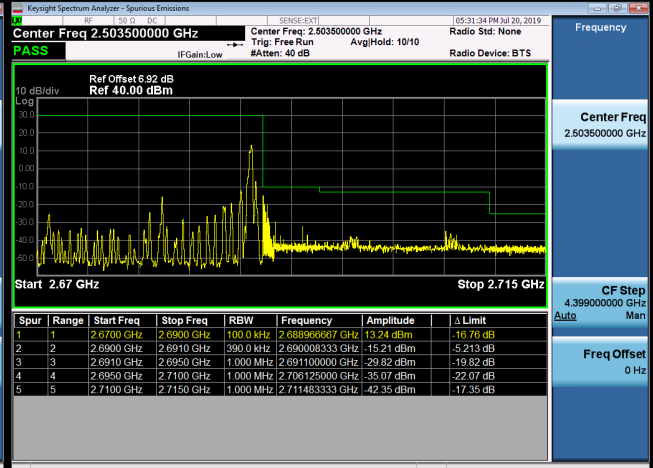
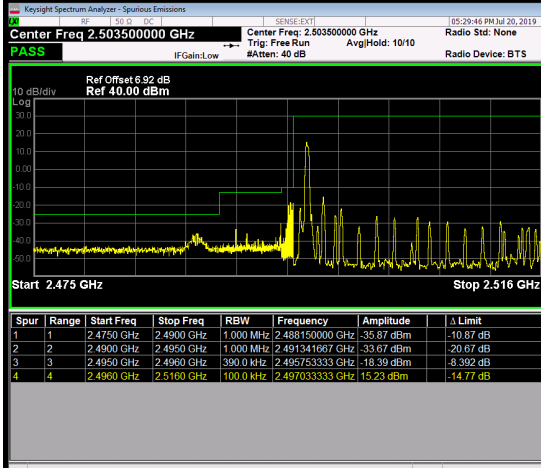
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Channel

39750

Channel

41490



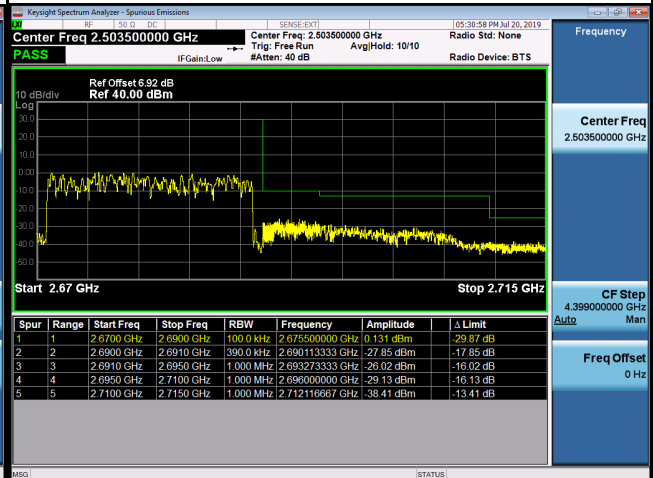
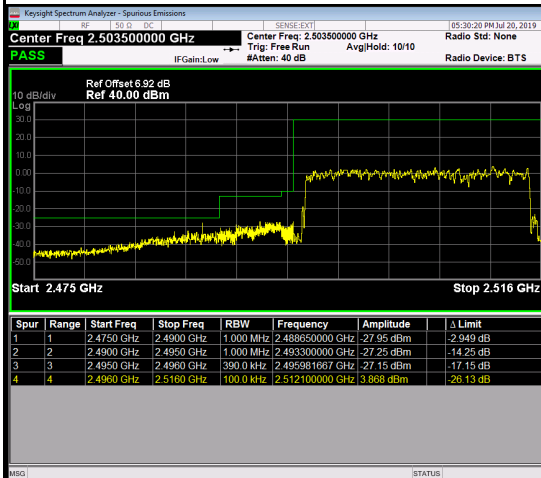
100RB#0

Channel

39750

Channel

41490

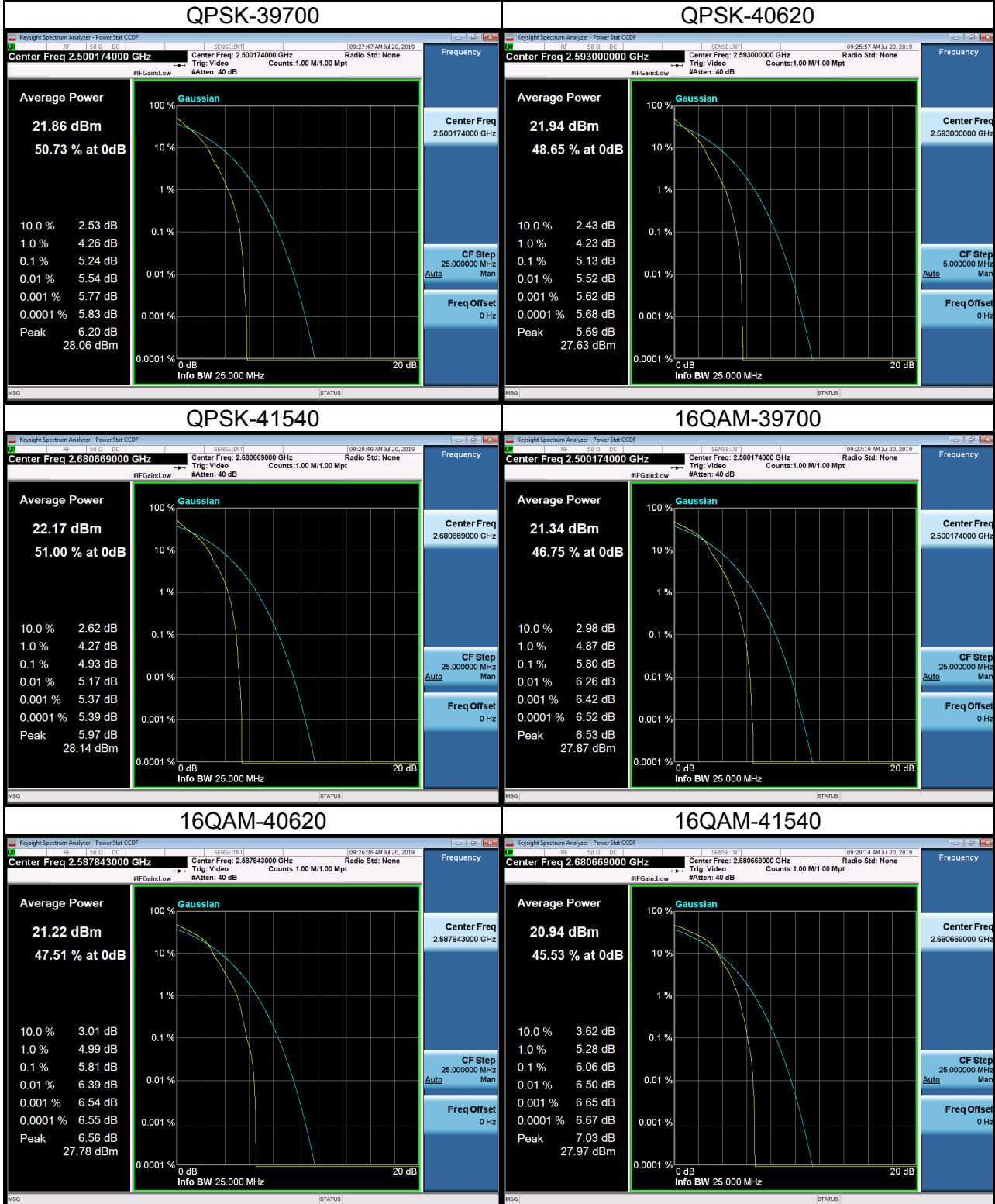


APPENDIX I - PEAK TO AVERAGE RATIO

LTE Band 41 Spectrum Plot_5M



LTE Band 41 Spectrum Plot_10M



LTE Band 41 Spectrum Plot_15M



LTE Band 41 Spectrum Plot_20M



APPENDIX J - FREQUENCY STABILITY

Test Mode:	LTE Band 41_CH40620_5M
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Temperature vs. Frequency Stability

Temperature(°C)	Frequency Error (Hz)	Frequency Error (ppm)	Limit(ppm)
0	2.93	0.001129965	±2.5
10	2.63	0.001014269	
20	-5.81	-0.002240648	
30	0.54	0.000208253	
40	3.44	0.001326649	
Max. Deviation (ppm)	5.81	0.002240648	

Voltage vs. Frequency Stability

Voltage(Volts)	Frequency Error (Hz)	Frequency Error (ppm)	Limit(ppm)
13.2	4.19	0.001615889	±2.5
12.0	5.93	0.002286926	
10.8	-2.05	-0.00079059	
Max. Deviation (ppm)	5.93	0.002286926	

Test Mode:	LTE Band 41_CH40620_10M
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Temperature vs. Frequency Stability

Temperature(°C)	Frequency Error (Hz)	Frequency Error (ppm)	Limit(ppm)
0	1.99	0.000767451	±2.5
10	0.54	0.000208253	
20	4.06	0.001565754	
30	3.33	0.001284227	
40	-1.16	-0.000447358	
Max. Deviation (ppm)	7.37	0.002842268	

Voltage vs. Frequency Stability

Voltage(Volts)	Frequency Error (Hz)	Frequency Error (ppm)	Limit(ppm)
13.2	-0.56	-0.000215966	±2.5
12.0	-0.62	-0.000239105	
10.8	4.21	0.001623602	
Max. Deviation (ppm)	4.21	0.001623602	

Test Mode:	LTE Band 41_CH40620_15M
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Temperature vs. Frequency Stability

Temperature(°C)	Frequency Error (Hz)	Frequency Error (ppm)	Limit(ppm)
0	-3.88	-0.001496336	±2.5
10	-2.36	-0.000910143	
20	-5.92	-0.00228307	
30	7.07	0.002726572	
40	-2.83	-0.0010914	
Max. Deviation (ppm)	7.07	0.002726572	

Voltage vs. Frequency Stability

Voltage(Volts)	Frequency Error (Hz)	Frequency Error (ppm)	Limit(ppm)
13.2	-5.88	-0.002267644	±2.5
12.0	4.17	0.001608176	
10.8	-2.74	-0.001056691	
Max. Deviation (ppm)	-5.88	-0.002267644	

Test Mode:	LTE Band 41_CH40620_20M
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Temperature vs. Frequency Stability

Temperature(°C)	Frequency Error (Hz)	Frequency Error (ppm)	Limit(ppm)
0	1.52	0.000586194	±2.5
10	1.57	0.000605476	
20	-7.89	-0.003042808	
30	3.78	0.001457771	
40	3.83	0.001477054	
Max. Deviation (ppm)	-7.89	-0.003042808	

Voltage vs. Frequency Stability

Voltage(Volts)	Frequency Error (Hz)	Frequency Error (ppm)	Limit(ppm)
13.2	-2.89	-0.001114539	±2.5
12.0	-4.38	-0.001689163	
10.8	5.97	0.002302352	
Max. Deviation (ppm)	5.97	0.002302352	

End of Test Report