

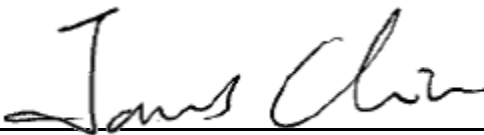
FCC Radio Test Report

FCC ID: M82-AIM10W

This report concerns: Original Grant

Project No. : 1710083
Equipment : Computer
Test Model : AIM-10W
Series Model : AIM-10WXXXXXXXXXXXXXXXXXXXX
(where X may be any alphanumeric character , blank or "-".)
Applicant : Advantech Co., Ltd.
Address : No.1, Alley 20, Lane 26, Rueiguang Road, Neihu District, Taipei 11491, Taiwan, R.O.C.

Date of Receipt : Nov. 13, 2017
Date of Test : Nov. 13, 2017 ~ Feb. 27, 2018
Issued Date : Mar. 01, 2018
Tested by : BTL Inc.

Technical Manager : 
(James Chiu)

Authorized Signatory : 
(Sean Chen)

B T L I N C .

No.18, Ln. 171, Sec. 2, Jiuzong Rd.,
Neihu Dist., Taipei City 114, Taiwan (R.O.C.)
TEL: +886-2-2657-3299 FAX: +886-2-2657-3331



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.

BTL's report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the Federal Government.

This report is the confidential property of the client. As a mutual protection to the clients, the public and **BTL-self**, extracts from the test report shall not be reproduced except in full with **BTL's** authorized written approval.

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

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.

CONTENTS

REPORT ISSUED HISTORY	5
1 CERTIFICATION	6
2 SUMMARY OF TEST RESULTS	7
2.1 TEST FACILITY	8
2.2 MEASUREMENT UNCERTAINTY	8
3 GENERAL INFORMATION	11
3.1 DESCRIPTION OF EUT	11
3.2 TEST MODES	13
3.3 BLOCK DIAGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED	14
3.4 SUPPORT UNITS	14
4 RF POWER OUTPUT TEST	15
4.1 LIMIT	15
4.2 TEST PROCEDURE	15
4.3 DEVIATION FROM TEST STANDARD	15
4.4 TEST SETUP	15
4.5 TEST RESULT	15
5 OCCUPIED BANDWIDTH TEST	16
5.1 TEST PROCEDURE	16
5.2 DEVIATION FROM TEST STANDARD	16
5.3 TEST SETUP	16
5.4 TEST RESULT	16
6 OUT OF BAND EMISSIONS TEST	17
6.1 LIMIT	17
6.2 TEST PROCEDURE	17
6.3 DEVIATION FROM TEST STANDARD	17
6.4 TEST SETUP	17
6.5 TEST RESULT	17
7 SPURIOUS EMISSIONS AT ANTENNA TERMINALS TEST	18
7.1 LIMIT	18
7.2 TEST PROCEDURE	18
7.3 DEVIATION FROM TEST STANDARD	18
7.4 TEST SETUP	18
7.5 TEST RESULT	18
8 FIELD STRENGTH OF SPURIOUS RADIATION TEST	19
8.1 LIMIT	19
8.2 TEST PROCEDURE	19
8.3 DEVIATION FROM TEST STANDARD	19
8.4 TEST SETUP	19
8.5 TEST RESULT	20
9 FREQUENCY STABILITY TEST	21
9.1 LIMIT	21

9.2	TEST PROCEDURE	21
9.3	DEVIATION FROM TEST STANDARD	21
9.4	TEST SETUP	21
9.5	TEST RESULT	21
10	LIST OF MEASURING EQUIPMENTS	22
11	EUT TEST PHOTO	23
APPENDIX A	RF POWER OUTPUT	27
APPENDIX B	OCCUPIED BANDWIDTH	31
APPENDIX C	OUT OF BAND EMISSIONS	37
APPENDIX D	SPURIOUS EMISSIONS AT ANTENNA TERMINALS	43
APPENDIX E	FIELD STRENGTH OF SPURIOUS RADIATION	46
APPENDIX F	FREQUENCY STABILITY	63

REPORT ISSUED HISTORY

Issue No.	Description	Issued Date
BTL-FCCP-7-1710083	Original Issue.	Mar. 01, 2018

1 CERTIFICATION

Equipment : Computer
Brand Name : ADVANTECH
Test Model : AIM-10W
Series Model : AIM-10WXXXXXXXXXXXXXXXXXX
(where X may be any alphanumeric character , blank or “-”.)
Applicant : Advantech Co., Ltd.
Manufacturer : Advantech Co., Ltd.
Address : No.1, Alley 20, Lane 26, Rueiguang Road, Neihu District, Taipei 11491, Taiwan, R.O.C.
Date of Test : Nov. 13, 2017 ~ Feb. 27, 2018
Test Sample : Production Unit
Standard(s) : 47 CRF FCC Part 2
47 CRF FCC Part 22, Subpart H
KDB 971168 D01 Power Meas License Digital Systems v03
ANSI/TIA-603-D-2010

The above equipment has been tested and found in 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-7-1710083) were obtained utilizing the test procedures, test instruments, test sites that has been accredited by the Authority of TAF according to the ISO-17025 quality assessment standard and technical standard(s).

Test result included in this report is only for the WCDMA Band V and LTE Band 5.

2 SUMMARY OF TEST RESULTS

Test procedures according to the technical standards.

FCC Clause No	Description	Test Result	Judgement	Tested By
§2.1046 §22.913(a)	RF Power Output	APPENDIX A	Pass	Kenji Lin
§2.1049 §22.917(b)	Occupied Bandwidth	APPENDIX B	Pass	Kenji Lin
§2.1051 §22.917(a)	Out of Band Emissions	APPENDIX C	Pass	Kenji Lin
§2.1051 §22.917(a)	Spurious Emissions at Antenna Terminals	APPENDIX D	Pass	Kenji Lin
§2.1053 §22.917(a)	Field strength of spurious radiation	APPENDIX E	Pass	Kenji Lin
§2.1055 §22.355	Frequency stability	APPENDIX F	Pass	Kenji Lin

NOTE:

(1) "N/A" denotes test is not applicable in this Test Report.

2.1 TEST FACILITY

The test facilities used to collect the test data in this report:

- ☐ **CB08:** (FCC RN:674415; FCC DN:TW0659; IC Assigned Code:20088-1)
No. 68-1, Ln. 169, Sec. 2, Datong Rd., Xizhi Dist., New Taipei City 221, Taiwan (R.O.C.)
- ☐ **CB11:** (FCC RN:674415; FCC DN:TW0659; IC Assigned Code:20088-2)
No. 68-1, Ln. 169, Sec. 2, Datong Rd., Xizhi Dist., New Taipei City 221, Taiwan (R.O.C.)
- ☒ **CB15:** (FCC RN:674415; FCC DN:TW0659; IC Assigned Code:20088-5)
No. 68-1, Ln. 169, Sec. 2, Datong Rd., Xizhi Dist., New Taipei City 221, Taiwan (R.O.C.)
- ☐ **CB16:** (FCC RN:674415; FCC DN:TW0659; IC Assigned Code:20088-6)
No. 68-1, Ln. 169, Sec. 2, Datong Rd., Xizhi Dist., New Taipei City 221, Taiwan (R.O.C.)
- ☒ **TR03:** (FCC RN:674415; FCC DN:TW0659)
No. 68-1, Ln. 169, Sec. 2, Datong Rd., Xizhi Dist., New Taipei City 221, Taiwan (R.O.C.)

2.2 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. The BTL measurement uncertainty is less than the CISPR 16-4-2 U_{CISPR} requirement.

The reported uncertainty of measurement $y \pm U$, where expanded uncertainty U is based on a standard uncertainty multiplied by a coverage factor of $k=2$, providing a level of confidence of approximately 95 %.

A. Conducted test:

Applied	Parameter	Uncertainty
☒	RF Power Output	$\pm 0.24 \text{ dB}$
☒	Frequency stability	$\pm 1.2 \times 10^{-7}$
☒	Occupied Bandwidth	$\pm 3.8 \%$
☒	Spurious Emissions at Antenna Terminals	$\pm 2.71 \text{ dB}$
☒	Temperature	$\pm 0.08 \text{ }^{\circ}\text{C}$

B. Radiated emissions below 1 GHz test:

Applied	Test Site	Method	Measurement Frequency Range	Ant. H / V	U (dB)
☐	CB08 (10m)	CISPR	30 MHz ~ 200 MHz	V	3.48
			30 MHz ~ 200 MHz	H	3.08
			200 MHz ~ 1,000 MHz	V	3.94
			200 MHz ~ 1,000 MHz	H	3.46
☐	CB08 (3m)	CISPR	30 MHz ~ 200 MHz	V	3.68
			30 MHz ~ 200 MHz	H	3.28
			200 MHz ~ 1,000 MHz	V	4.26
			200 MHz ~ 1,000 MHz	H	3.92
☐	CB11 (3m)	CISPR	30 MHz ~ 200 MHz	V	4.26
			30 MHz ~ 200 MHz	H	3.76
			200 MHz ~ 1,000 MHz	V	4.46
			200 MHz ~ 1,000 MHz	H	3.84
☒	CB15 (3m)	CISPR	30 MHz ~ 200 MHz	V	4.20
			30 MHz ~ 200 MHz	H	3.64
			200 MHz ~ 1,000 MHz	V	4.56
			200 MHz ~ 1,000 MHz	H	3.90
☐	CB16 (3m)	CISPR	30 MHz ~ 200 MHz	V	4.20
			30 MHz ~ 200 MHz	H	3.64
			200 MHz ~ 1,000 MHz	V	4.56
			200 MHz ~ 1,000 MHz	H	3.90

C. Radiated emissions above 1 GHz test:

Applied	Test Site	Method	Measurement Frequency Range	Ant. H / V	U (dB)
☐	CB08 (3m)	CISPR	1 GHz ~ 6 GHz	V	4.40
			1 GHz ~ 6 GHz	H	3.88
			6 GHz ~18 GHz	V	4.70
			6 GHz ~18 GHz	H	4.08
☐	CB11 (3m)	CISPR	1 GHz ~ 6 GHz	V	4.44
			1 GHz ~ 6 GHz	H	4.40
			6 GHz ~18 GHz	V	4.02
			6 GHz ~18 GHz	H	4.00
☒	CB15 (3m)	CISPR	1 GHz ~ 6 GHz	V	4.46
			1 GHz ~ 6 GHz	H	4.40
			6 GHz ~18 GHz	V	3.88
			6 GHz ~18 GHz	H	4.00
☐	CB16 (3m)	CISPR	1 GHz ~ 6 GHz	V	4.46
			1 GHz ~ 6 GHz	H	4.40
			6 GHz ~18 GHz	V	3.88
			6 GHz ~18 GHz	H	4.00

Applied	Test Site	Method	Measurement Frequency Range	U (dB)
☐	CB08 (1m)	CISPR	18 GHz ~ 26.5 GHz	4.68
			26.5 GHz ~ 40 GHz	5.16
☐	CB11 (1m)	CISPR	18 GHz ~ 26.5 GHz	4.76
			26.5 GHz ~ 40 GHz	5.24
☒	CB15 (1m)	CISPR	18 GHz ~ 26.5 GHz	4.62
			26.5 GHz ~ 40 GHz	5.12
☐	CB16 (1m)	CISPR	18 GHz ~ 26.5 GHz	4.62
			26.5 GHz ~ 40 GHz	5.12

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

Our calculated Measurement Instrumentation Uncertainty is shown in the tables above. These are our U_{lab} values in CISPR 16-4-2 terminology.

Since Table 1 of CISPR 16-4-2 has values of measurement instrumentation uncertainty, called U_{CISPR} , as follows:

Conducted Disturbance (mains port) – 150 kHz – 30 MHz : 3.6 dB

Radiated Disturbance (electric field strength on an open area test site or alternative test site) – 30 MHz – 1000 MHz : 5.2 dB

3 GENERAL INFORMATION

3.1 DESCRIPTION OF EUT

Equipment	Computer					
Brand Name	ADVANTECH					
Test Model	AIM-10W					
Series Model	AIM-10WXXXXXXXXXXXXXXXXXX (where X may be any alphanumeric character , blank or “-”.)					
Model Difference	Different model distribute to different area.					
Power Source	DC Voltage supplied from AC/DC adapter.					
Power Rating	I/P: AC 100-240V~, 1.5A, 50~60Hz, 1.5A O/P: DC 19V---3.42A					
Products Covered						
AC Adapter Manufacturer	TAMURA	Model	XEW1934N			
WWAN Module Manufacturer	Sierra Wireless	Model	EM7455 (FCC ID: N7NEM7455)			
Specification information						
Modulation Type	WCDMA	UL: BPSK DL: QPSK				
	LTE	UL: QPSK,16QAM DL: QPSK,16QAM				
Band	Operation Frequency	Modulation Type	Maximum ERP RF Power Output		Maximum Frequency Tolerance	Emission Designator
	MHz	-----	dBm	W	ppm	
WCDMA Band V	826.4 to 846.6	BPSK	14.51	0.026	0.0042	4M16F9W
LTE Band 5	824.7 to 848.3	QPSK	14.64	0.029	0.0077	8M99G7D
		16QAM	13.84	0.024		8M99W7D

NOTE:

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

(2) Table for Filed Antenna:

Ant.	Brand	Model	Type	Connector	Frequency Range (MHz)	Gain w/ Cable loss (dBi)	Gain w/o Cable Loss (dBi)	Cable Loss (dBi)
MAIN	INPAQ Corporation	P/N: 6036B0207401 (WA-F-LTE12-02-001)	PIFA	I-PEX MHF4-L	699-715	-3.70	-3.34	0.36
					704-716	-3.67	-3.21	0.36
					824-849	-5.77	-5.39	0.38
					777-787	-5.44	-5.07	0.37
					832-862	-7.24	-6.86	0.38
					880-915	-11.97	-11.38	0.59
					1710-1755	-2.29	-1.7	0.59
					1710-1785	-2.45	-1.86	0.59
					1710-1780	-2.15	-1.56	0.59
					1850-1910	-7.51	-6.91	0.6
					1920-1980	-5.71	-5.10	0.61
					2305-2315	-5.27	-4.58	0.69
					2500-2570	-6.37	-5.66	0.71
					2496-2690	-5.57	-4.86	0.71
					2620-2690	-5.38	-4.67	0.71
AUX	INPAQ Corporation	P/N: 6036B0207201 (WA-F-LTE12LB G1-12-001)	PIFA	I-PEX MHF4-L	717-728	-11.63	-11.53	0.10
					729-745	-11.03	-10.93	0.10
					734-746	-10.89	-10.79	0.10
					746-756	-10.46	-10.35	0.11
					869-894	-11.61	-11.5	0.11
					791-821	-4.85	-4.74	0.11
					925-960	-6.54	-6.42	0.12
					1805-1880	-2.91	-2.75	0.16
					1930-1990	-2.71	-2.54	0.17
					2110-2155	-1.72	-1.55	0.17
					2110-2200	-1.73	-1.55	0.18
					2350-2360	-2.88	-2.7	0.18
					2496-2690	0.19	0.38	0.19
					2620-2690	0.19	0.38	0.19

3.2 TEST MODES

To investigate the maximum EMI emission characteristics generated from EUT, the test system was pre-scanning tested based on the consideration of following EUT operation mode or test configuration mode which possibly have effect on EMI emission level. Each of these EUT operation mode(s) or test configuration mode(s) mentioned above was evaluated respectively.

The EUT system operated these modes were found to be the worst case during the pre-scanning test as following:

WCDMA				
Test Items	Band	Test Channel		
		L	M	H
RF Power Output	V	V	V	V
Occupied Bandwidth	V	V	V	V
Out of Band Emissions	V	V		V
Spurious Emissions at Antenna Terminals	V		V	
Field strength of spurious radiation	V		V	
Frequency stability	V		V	

LTE															
Test Items	Band	Bandwidth (MHz)						Modulation		RB Size			Test Channel		
		1.4	3	5	10	15	20	QPSK	16QAM	1	Half	Full	L	M	H
RF Power Output	5	V	V	V	V	-	-	V	V	V	V	V	V	V	V
Occupied Bandwidth	5	V	V	V	V	-	-	V	V			V	V	V	V
Out of Band Emissions	5	V	V	V	V	-	-	V	V	V		V	V		V
Spurious Emissions at Antenna Terminals	5	V	V	V	V	-	-	V	V	V				V	
Field strength of spurious radiation	5				V	-	-	V		V				V	
Frequency stability	5	V	V	V	V	-	-	V		V				V	

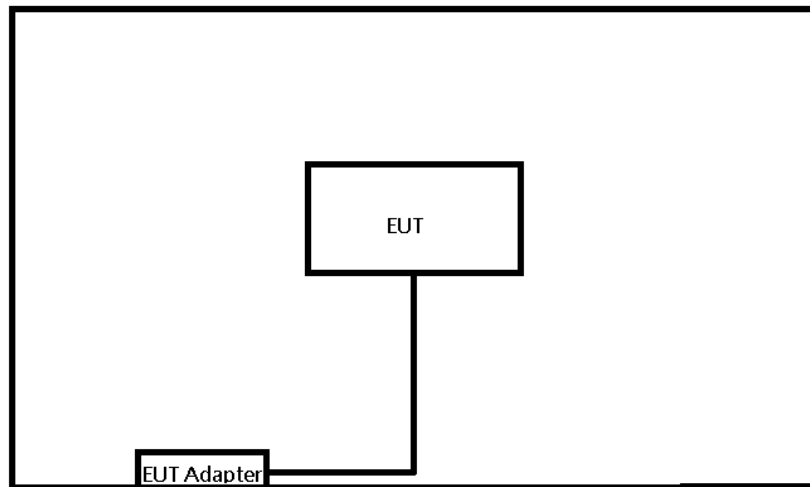
NOTE:

- (1) The marker "V" means this configuration is used for testing.
- (2) The gray marker "-" means this bandwidth is not supported.

EUT TEST CONDITIONS:

Test Item	Environmental Conditions	Test Voltage
RF Power Output	25 °C, 60 % RH	AC 120V/60Hz
Occupied Bandwidth	25 °C, 60 % RH	AC 120V/60Hz
Out of Band Emissions	25 °C, 60 % RH	AC 120V/60Hz
Spurious Emissions at Antenna Terminals	25 °C, 60 % RH	AC 120V/60Hz
Field strength of spurious radiation	23 °C, 70 % RH	AC 120V/60Hz
Frequency stability	Normal and Extreme	Normal and Extreme

3.3 BLOCK DIAGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED



3.4 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	Brand	Model/Type No.	FCC ID	Series No.
-	-	-	-	-	-

Item	Shielded Type	Ferrite Core	Length	Note
-	-	-	-	-

4 RF POWER OUTPUT TEST

4.1 LIMIT

The ERP of mobile transmitters and auxiliary test transmitters must not exceed 7 watts.

4.2 TEST PROCEDURE

EIRP / ERP Power Measurement:

EIRP = Conducted Power + Antenna gain.

ERP power = EIPR power - 2.15 dBi.

Conducted Power Measurement:

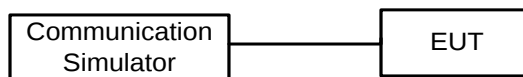
The EUT was set up for the maximum power with WCDMA and LTE link data modulation and link up with simulator. Set the EUT to transmit under low, middle and high channel and record the power level shown on simulator.

4.3 DEVIATION FROM TEST STANDARD

No deviation.

4.4 TEST SETUP

Conducted Power Measurement:



4.5 TEST RESULT

Please refer to the APPENDIX A.

5 OCCUPIED BANDWIDTH TEST

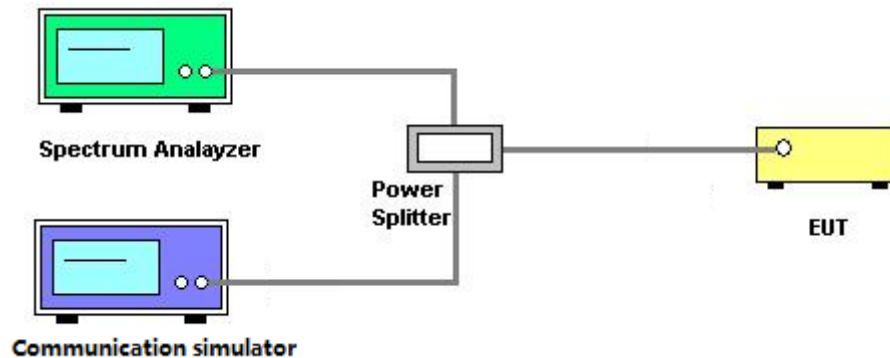
5.1 TEST PROCEDURE

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 26 dB bandwidth.

5.2 DEVIATION FROM TEST STANDARD

No deviation.

5.3 TEST SETUP



5.4 TEST RESULT

Please refer to the APPENDIX B.

6 OUT OF BAND EMISSIONS TEST

6.1 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 $43 + 10 \log(P)$ dB.

In the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed.

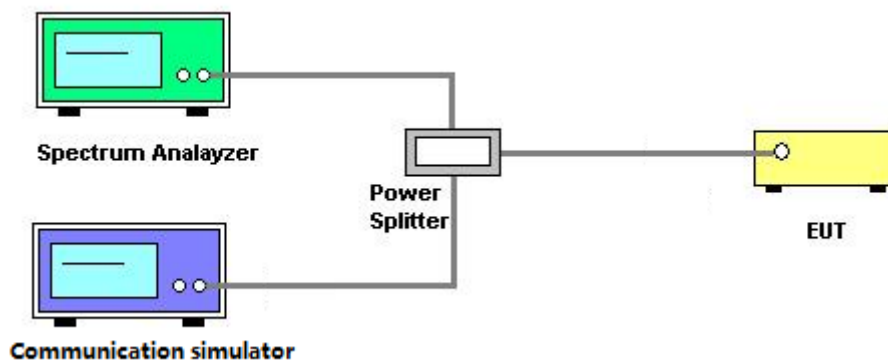
6.2 TEST PROCEDURE

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

6.3 DEVIATION FROM TEST STANDARD

No deviation.

6.4 TEST SETUP



6.5 TEST RESULT

Please refer to the APPENDIX C.

7 SPURIOUS EMISSIONS AT ANTENNA TERMINALS TEST

7.1 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 $43 + 10 \log(P)$ dB.

The emission limit is equal to -13 dBm.

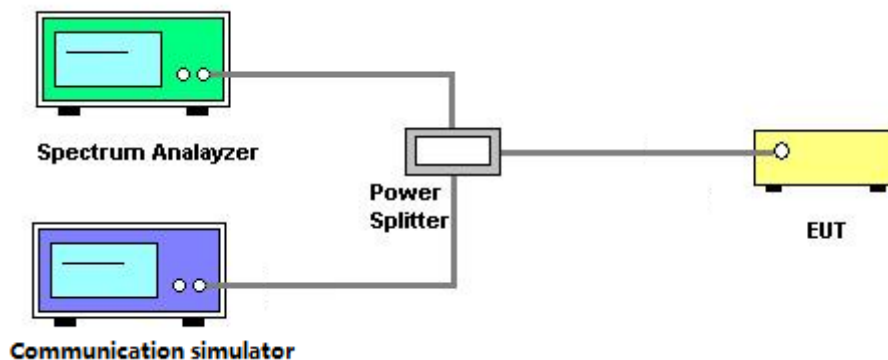
7.2 TEST PROCEDURE

- The testing follows FCC KDB 971168 D01 Power Meas License Digital Systems v03.
- The EUT was connected to spectrum analyzer and system simulator via a power divider.
- The band edges of low and high channels for the highest RF powers were measured. Set RBW $\geq 1\%$ EBW in the 1 MHz band immediately outside and adjacent to the band edge.
- Set spectrum analyzer with RMS detector.
- The RF fundamental frequency should be excluded against the limit line in the operating frequency band.
- The limit line is derived from $43 + 10\log(P)$ dB below the transmitter power P (Watts)
 $= P(W) - [43 + 10 \log(P)]$ (dB)
 $= [30 + 10 \log(P)]$ (dBm) - $[43 + 10 \log(P)]$ (dB)
 $= -13$ dBm

7.3 DEVIATION FROM TEST STANDARD

No deviation.

7.4 TEST SETUP



7.5 TEST RESULT

Please refer to the APPENDIX D.

8 FIELD STRENGTH OF SPURIOUS RADIATION TEST

8.1 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 $43 + 10 \log(P)$ dB.

The emission limit is equal to -13 dBm.

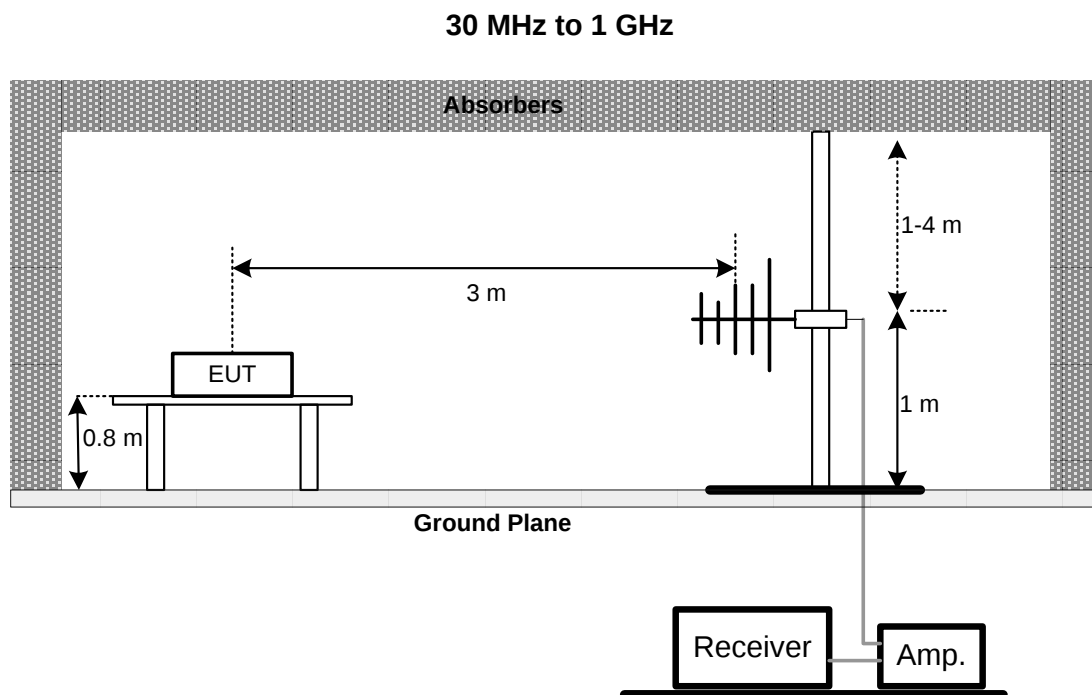
8.2 TEST PROCEDURE

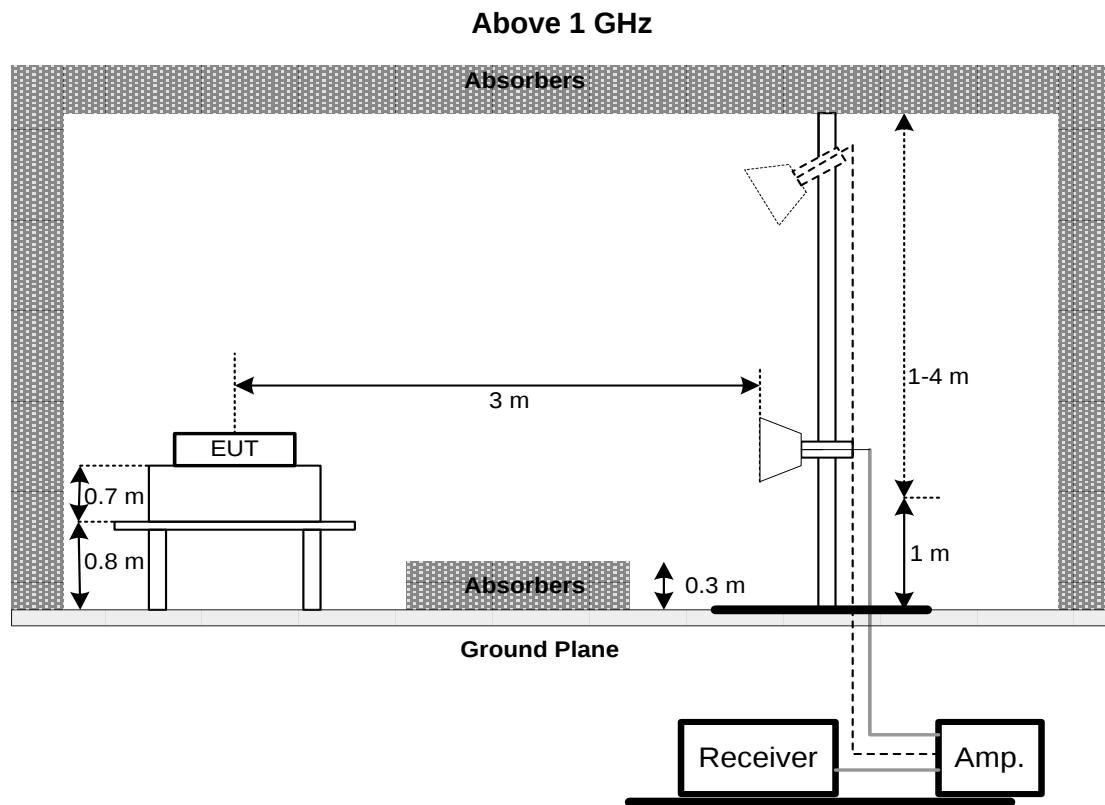
- In the semi-anechoic chamber, EUT placed on the 0.8 m height of Turn Table, rotated the table around 360 degrees to search the maximum radiation power and receiver antenna shall be rotated vertical and horizontal polarization and moved height from 1 m to 4 m to find the maximum polar radiated power. The "Read Value" is the spectrum reading the maximum power value.
- The substitution horn antenna is substituted for EUT at the same position and signals generator export the CW signal to the substitution antenna via a TX cable. Rotated the Turn Table and moved receiving antenna to find the maximum radiation power. Adjust output power level of S.G to get a Value of spectrum reading equal to "Read Value" of step a. Record the power level of S.G.
- $EIRP = \text{Output power level of S.G} - \text{TX cable loss} + \text{Antenna gain of substitution horn}.$
- ERP power can be calculated form EIRP power by subtracting the gain of dipole,
 $ERP \text{ power} = EIRP \text{ power} - 2.15 \text{ dBi}.$
- The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 1 MHz / 3 MHz.

8.3 DEVIATION FROM TEST STANDARD

No deviation.

8.4 TEST SETUP





8.5 TEST RESULT

Please refer to the APPENDIX E.

9 FREQUENCY STABILITY TEST

9.1 LIMIT

Frequency range (MHz)	Base, fixed (ppm)	Mobile > 3 watts (ppm)	Mobile ≤ 3 watts (ppm)
821 to 896	1.5	2.5	2.5

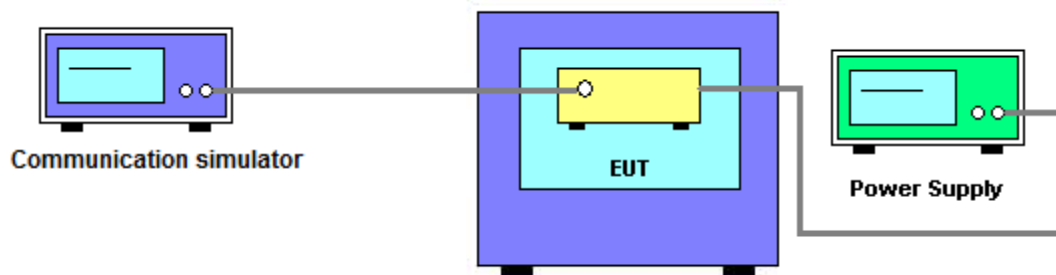
9.2 TEST PROCEDURE

- 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 $\pm 0.5^{\circ}\text{C}$ 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.
- The frequency error was recorded frequency error from the communication simulator.

9.3 DEVIATION FROM TEST STANDARD

No deviation.

9.4 TEST SETUP



9.5 TEST RESULT

Please refer to the APPENDIX F.

10 LIST OF MEASURING EQUIPMENTS

RF Power Output and Frequency stability					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Wireless Communications Test Set (WCDMA)	Agilent	8960	US38080149	Oct. 16, 2018
2	Radio Communication Analyzer (LTE)	Anritsu	MT8820C	6201525878	Nov. 04, 2018

Occupied Bandwidth, Out of Band Emissions and Spurious Emissions at Antenna Terminals					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	EXA Signal Analyzer	Agilent	N9010A	MY54200240	Oct. 01, 2018
2	Wireless Communications Test Set (WCDMA)	Agilent	8960	US38080149	Oct. 16, 2018
3	Radio Communication Analyzer (LTE)	Anritsu	MT8820C	6201525878	Nov. 04, 2018

Field strength of spurious radiation					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Preamplifier	EMCI	012645B	980267	Feb. 27, 2019
2	Preamplifier	EMCI	EMC02325	980217	Dec. 27, 2019
3	Test Cable	EMCI	EMC104-SM-SM-8000	8m	Jan. 03, 2019
4	Test Cable	EMCI	EMC104-SM-SM-800	150207	Jan. 03, 2019
5	Test Cable	EMCI	EEMC104-SM-SM-3000	151205	Jan. 03, 2019
6	MXE EMI Receiver	Agilent	N9038A	MY55420127	Jan. 08, 2019
7	Signal Analyzer	Agilent	N9010A	MY52220990	Feb. 21, 2019
8	Loop Ant	EMCO	6502	42960	Nov. 23, 2018
9	Horn Ant	SCHWARZBECK	BBHA 9120D	9120D-1342	Feb. 27, 2019
10	Trilog-Broadband Antenna	Schwarzbeck	VULB 9168	9168-548	Jan. 15, 2019
11	5dB Attenuator	EMCI	EMCI-N-6-05	AT-N0623	Jan. 15, 2019
12	Wireless Communications Test Set (WCDMA)	Agilent	8960	US38080149	Oct. 16, 2018
13	Radio Communication Analyzer (LTE)	Anritsu	MT8820C	6201525878	Nov. 04, 2018

Remark: "N/A" denotes no model name, no serial no. or no calibration specified.
All calibration period of equipment list is one year.

APPENDIX A RF POWER OUTPUT

CONTINUE ON NEXT PAGE

Band		WCDMA Band V					
Antenna Gain (dBi)	-5.77	Conducted Power (dBm)			ERP Power (dBm)		
Tx Channel		4132	4182	4233	4132	4182	4233
Rx Channel		4357	4407	4458	4357	4407	4458
Frequency (MHz)		826.4	836.4	846.6	826.4	836.4	846.6
RMC 12.2K		22.38	22.30	22.43	14.46	14.38	14.51
HSDPA Subtest-1		21.21	21.13	21.26	13.29	13.21	13.34
HSDPA Subtest-2		21.30	21.15	21.29	13.38	13.23	13.37
HSDPA Subtest-3		20.80	20.66	20.80	12.88	12.74	12.88
HSDPA Subtest-4		20.78	20.66	20.80	12.86	12.74	12.88
HSUPA Subtest-1		21.07	21.01	21.13	13.15	13.09	13.21
HSUPA Subtest-2		20.08	20.02	20.14	12.16	12.10	12.22
HSUPA Subtest-3		20.29	20.23	20.35	12.37	12.31	12.43
HSUPA Subtest-4		20.36	20.30	20.42	12.44	12.38	12.50
HSUPA Subtest-5		21.28	21.22	21.34	13.36	13.30	13.42

Remark: ERP power = Conducted Power + Antenna gain - 2.15.

Band				LTE Band 5					
Antenna Gain (dBi)	-5.77			Conducted Power (dBm)			ERP Power (dBm)		
Channel Bandwidth (MHz)	Modulation	RB Size	RB Offset	Low CH	Mid CH	High CH	Low CH	Mid CH	High CH
				20407	20525	20643	20407	20525	20643
				824.7 MHz	836.5 MHz	848.3 MHz	824.7 MHz	836.5 MHz	848.3 MHz
1.4	QPSK	1	0	22.12	22.20	21.99	14.20	14.28	14.07
		1	2	22.04	22.07	21.91	14.12	14.15	13.99
		1	5	21.96	21.99	21.83	14.04	14.07	13.91
		3	0	21.79	21.82	21.66	13.87	13.90	13.74
		3	1	21.87	21.90	21.74	13.95	13.98	13.82
		3	3	21.80	21.83	21.67	13.88	13.91	13.75
		6	0	21.33	21.42	21.48	13.41	13.50	13.56
	16QAM	1	0	21.40	21.35	21.27	13.48	13.43	13.35
		1	2	21.28	21.23	21.15	13.36	13.31	13.23
		1	5	21.25	21.20	21.12	13.33	13.28	13.20
		3	0	21.32	21.27	21.19	13.40	13.35	13.27
		3	1	21.20	21.15	21.07	13.28	13.23	13.15
		3	3	21.17	21.12	21.04	13.25	13.20	13.12
		6	0	20.16	20.11	20.03	12.24	12.19	12.11

Band				LTE Band 5					
Antenna Gain (dBi)	-5.77			Conducted Power (dBm)			ERP Power (dBm)		
Channel Bandwidth (MHz)	Modulation	RB Size	RB Offset	Low CH	Mid CH	High CH	Low CH	Mid CH	High CH
				20415	20525	20635	20415	20525	20635
				825.5 MHz	836.5 MHz	847.5 MHz	825.5 MHz	836.5 MHz	847.5 MHz
3	QPSK	1	0	22.23	22.31	22.10	14.31	14.39	14.18
		1	7	22.15	22.18	22.02	14.23	14.26	14.10
		1	14	22.07	22.10	21.94	14.15	14.18	14.02
		8	0	21.02	21.05	20.89	13.10	13.13	12.97
		8	3	21.10	21.13	20.97	13.18	13.21	13.05
		8	7	21.03	21.06	20.90	13.11	13.14	12.98
		15	0	20.96	20.99	20.83	13.04	13.07	12.91
	16QAM	1	0	21.51	21.46	21.38	13.59	13.54	13.46
		1	7	21.39	21.34	21.26	13.47	13.42	13.34
		1	14	21.36	21.31	21.23	13.44	13.39	13.31
		8	0	20.14	20.09	20.01	12.22	12.17	12.09
		8	3	20.13	20.08	20.00	12.21	12.16	12.08
		8	7	20.10	20.05	19.97	12.18	12.13	12.05
		15	0	20.04	19.99	19.91	12.12	12.07	11.99

Remark: ERP power = Conducted Power + Antenna gain - 2.15.

Band				LTE Band 5					
Antenna Gain (dBi)	-5.77			Conducted Power (dBm)			ERP Power (dBm)		
Channel Bandwidth (MHz)	Modulation	RB Size	RB Offset	Low CH	Mid CH	High CH	Low CH	Mid CH	High CH
				20425	20525	20625	20425	20525	20625
				826.5 MHz	836.5 MHz	846.5 MHz	826.5 MHz	836.5 MHz	846.5 MHz
5	QPSK	1	0	22.36	22.44	22.23	14.44	14.52	14.31
		1	12	22.28	22.31	22.15	14.36	14.39	14.23
		1	24	22.20	22.23	22.07	14.28	14.31	14.15
		12	0	21.15	21.18	21.02	13.23	13.26	13.10
		12	6	21.23	21.26	21.10	13.31	13.34	13.18
		12	13	21.16	21.19	21.03	13.24	13.27	13.11
		25	0	21.09	21.12	20.96	13.17	13.20	13.04
	16QAM	1	0	21.64	21.59	21.51	13.72	13.67	13.59
		1	12	21.52	21.47	21.39	13.60	13.55	13.47
		1	24	21.49	21.44	21.36	13.57	13.52	13.44
		12	0	20.27	20.22	20.14	12.35	12.30	12.22
		12	6	20.26	20.21	20.13	12.34	12.29	12.21
		12	13	20.23	20.18	20.10	12.31	12.26	12.18
		25	0	20.17	20.12	20.04	12.25	12.20	12.12

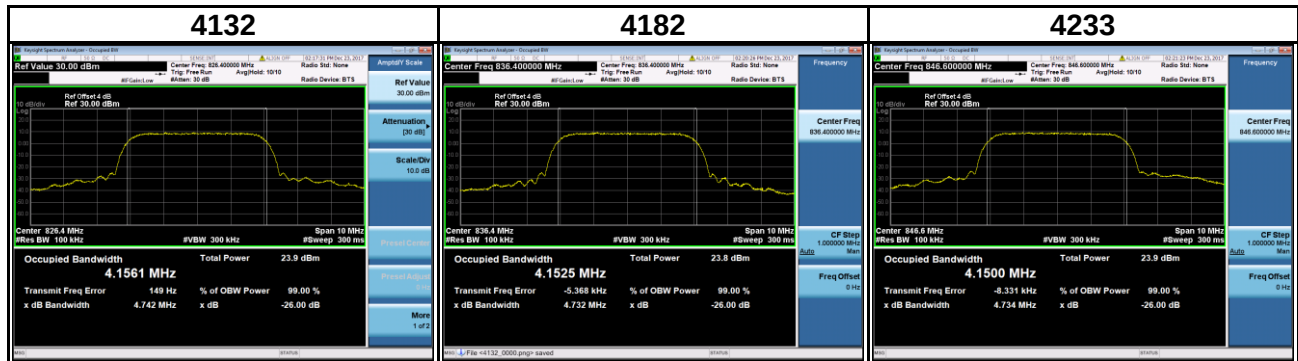
Band				LTE Band 5					
Antenna Gain (dBi)	-5.77			Conducted Power (dBm)			ERP Power (dBm)		
Channel Bandwidth (MHz)	Modulation	RB Size	RB Offset	Low CH	Mid CH	High CH	Low CH	Mid CH	High CH
				20450	20525	20600	20450	20525	20600
				829 MHz	836.5 MHz	844 MHz	829 MHz	836.5 MHz	844 MHz
10	QPSK	1	0	22.48	22.56	22.35	14.56	14.64	14.43
		1	24	22.40	22.43	22.27	14.48	14.51	14.35
		1	49	22.32	22.35	22.19	14.40	14.43	14.27
		25	0	21.27	21.30	21.14	13.35	13.38	13.22
		25	12	21.35	21.38	21.22	13.43	13.46	13.30
		25	25	21.28	21.31	21.15	13.36	13.39	13.23
		50	0	21.21	21.24	21.08	13.29	13.32	13.16
	16QAM	1	0	21.76	21.71	21.63	13.84	13.79	13.71
		1	24	21.64	21.59	21.51	13.72	13.67	13.59
		1	49	21.61	21.56	21.48	13.69	13.64	13.56
		25	0	20.39	20.34	20.26	12.47	12.42	12.34
		25	12	20.38	20.33	20.25	12.46	12.41	12.33
		25	25	20.35	20.30	20.22	12.43	12.38	12.30
		50	0	20.29	20.24	20.16	12.37	12.32	12.24

Remark: ERP power = Conducted Power + Antenna gain - 2.15.

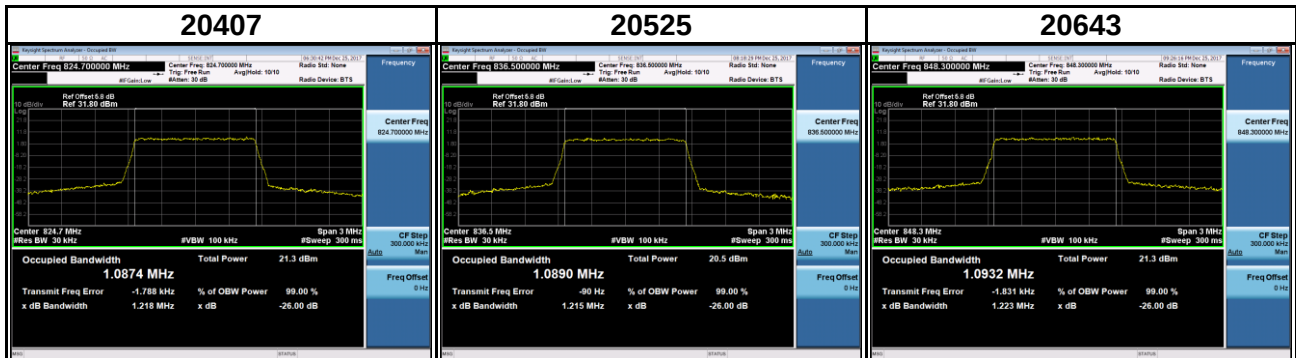
APPENDIX B OCCUPIED BANDWIDTH

CONTINUE ON NEXT PAGE

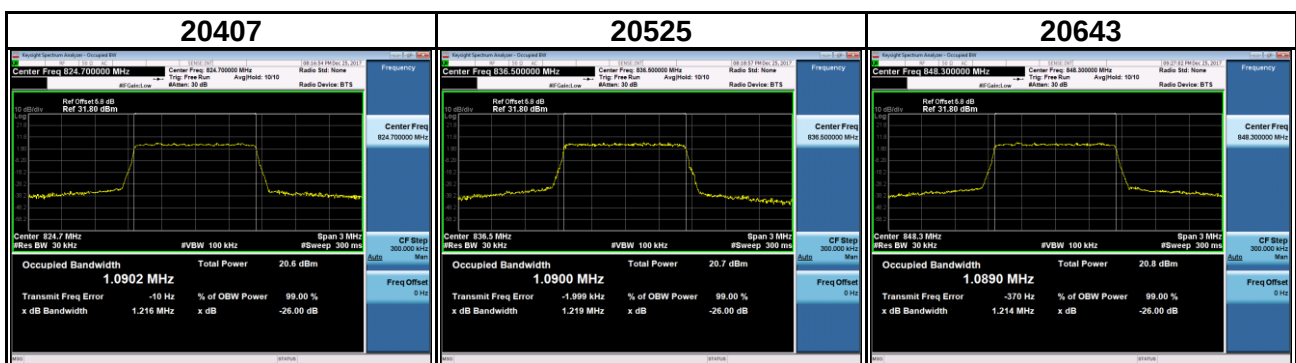
Band	WCDMA Band V		
Channel	Frequency (MHz)	99 % Occupied Bandwidth (MHz)	26 dB Bandwidth (MHz)
4132	826.4	4.1561	4.742
4182	836.4	4.1525	4.732
4233	846.6	4.1500	4.734



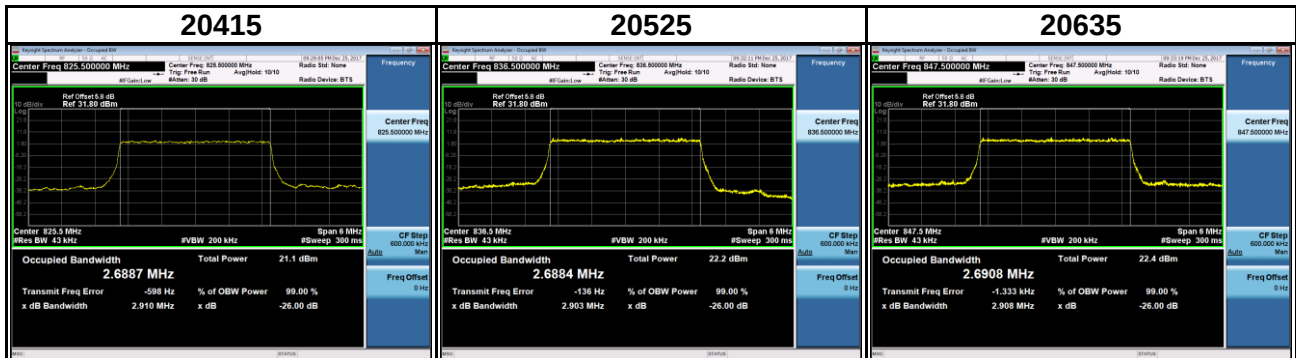
Band	LTE Band 5		
Channel Bandwidth (MHz)	1.4	Modulation	QPSK
Channel	Frequency (MHz)	99 % Occupied Bandwidth (MHz)	26 dB Bandwidth (MHz)
20407	824.7	1.0874	1.218
20525	836.5	1.0890	1.215
20643	848.3	1.0932	1.223



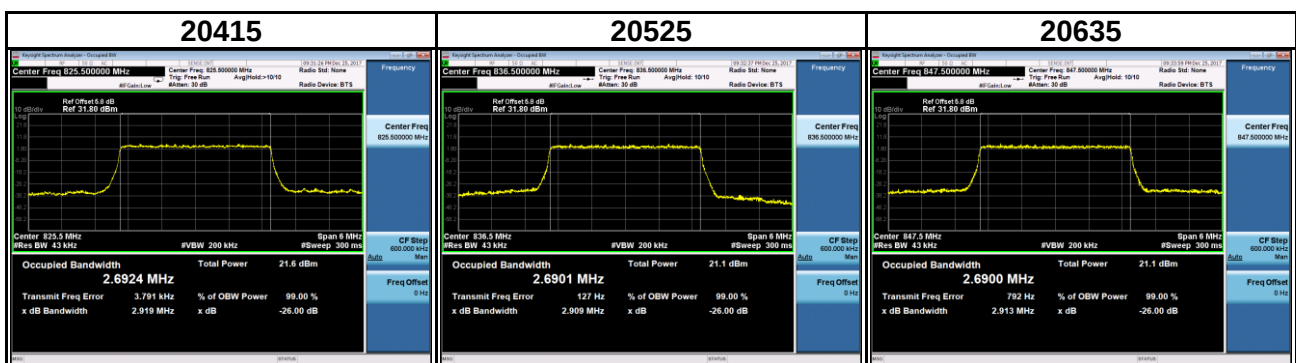
Band	LTE Band 5		
Channel Bandwidth (MHz)	1.4	Modulation	16QAM
Channel	Frequency (MHz)	99 % Occupied Bandwidth (MHz)	26 dB Bandwidth (MHz)
20407	824.7	1.0902	1.216
20525	836.5	1.0900	1.219
20643	848.3	1.0890	1.214



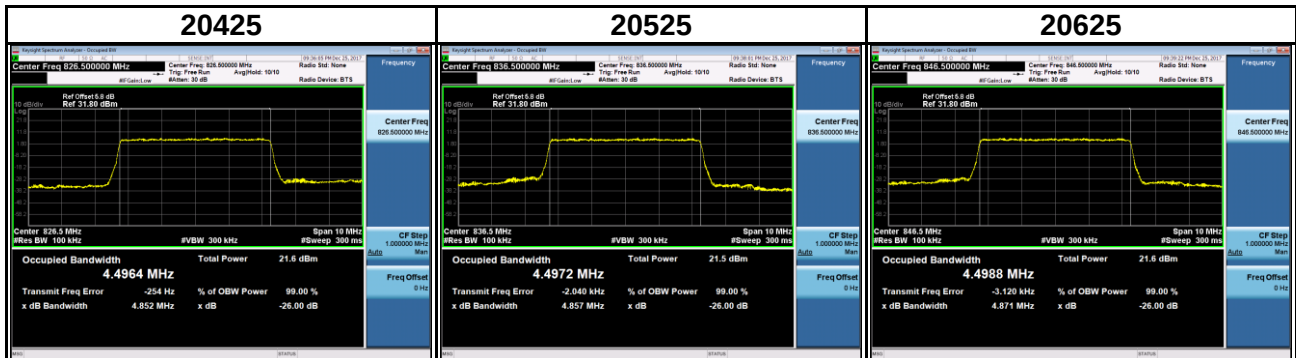
Band	LTE Band 5		
Channel Bandwidth (MHz)	3	Modulation	QPSK
Channel	Frequency (MHz)	99 % Occupied Bandwidth (MHz)	26 dB Bandwidth (MHz)
20415	825.5	2.6887	2.910
20525	836.5	2.6884	2.903
20635	847.5	2.6908	2.908



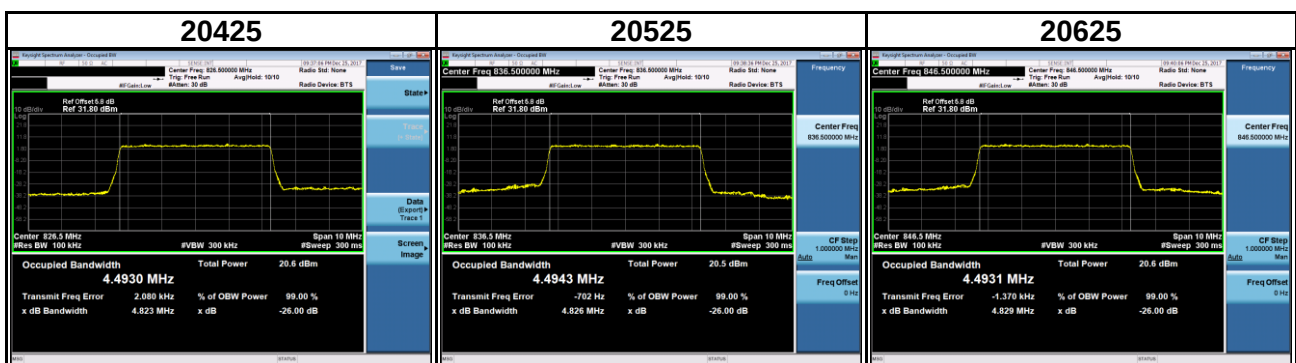
Band	LTE Band 5		
Channel Bandwidth (MHz)	3	Modulation	16QAM
Channel	Frequency (MHz)	99 % Occupied Bandwidth (MHz)	26 dB Bandwidth (MHz)
20415	825.5	2.6924	2.919
20525	836.5	2.6901	2.909
20635	847.5	2.6900	2.913



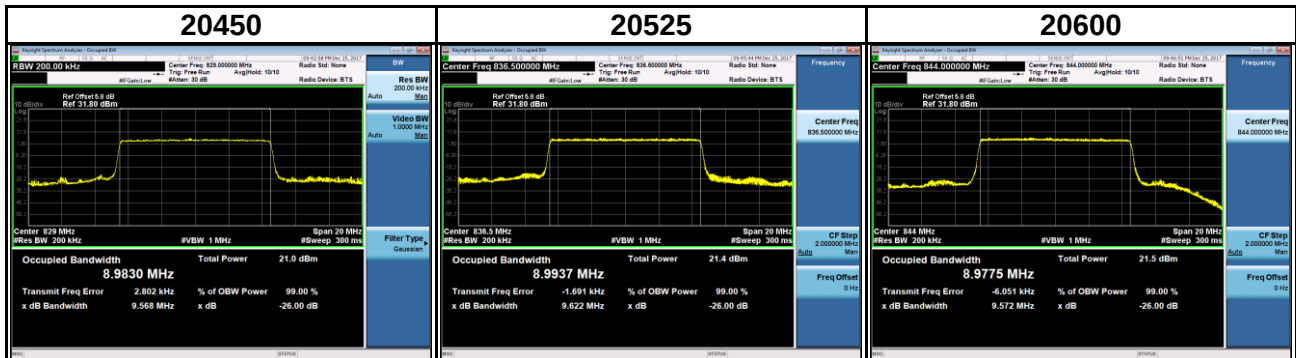
Band	LTE Band 5		
Channel Bandwidth (MHz)	5	Modulation	QPSK
Channel	Frequency (MHz)	99 % Occupied Bandwidth (MHz)	26 dB Bandwidth (MHz)
20425	826.5	4.4964	4.825
20525	836.5	4.4972	4.857
20625	846.5	4.4988	4.871



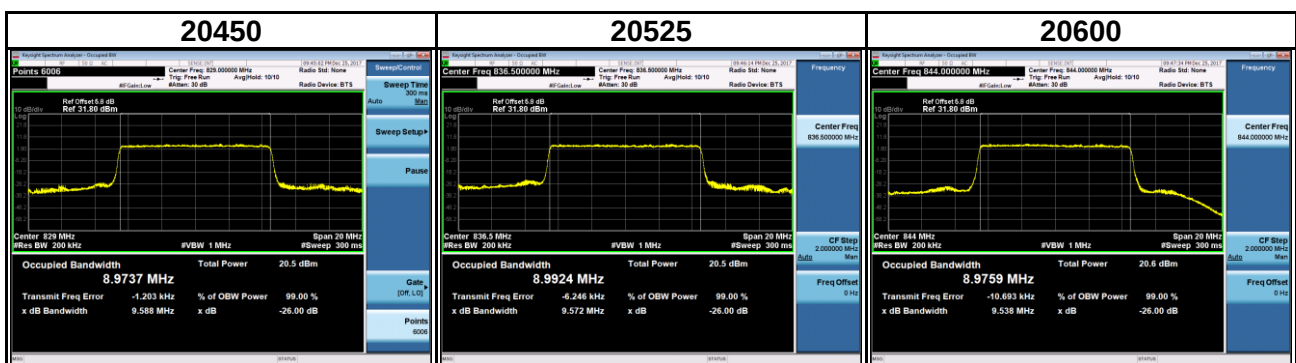
Band	LTE Band 5		
Channel Bandwidth (MHz)	5	Modulation	16QAM
Channel	Frequency (MHz)	99 % Occupied Bandwidth (MHz)	26 dB Bandwidth (MHz)
20425	826.5	4.4930	4.823
20525	836.5	4.4943	4.826
20625	846.5	4.4931	4.829



Band	LTE Band 5		
Channel Bandwidth (MHz)	10	Modulation	QPSK
Channel	Frequency (MHz)	99 % Occupied Bandwidth (MHz)	26 dB Bandwidth (MHz)
20450	829.0	8.9830	9.568
20525	836.5	8.9937	9.622
20600	844.0	8.9775	9.572

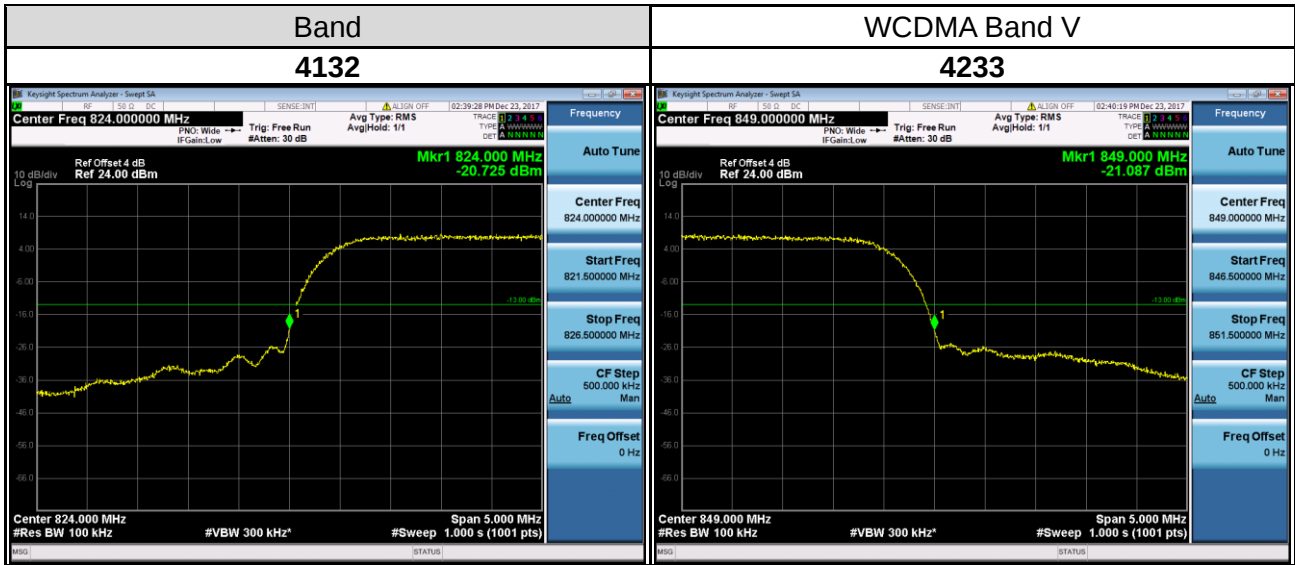


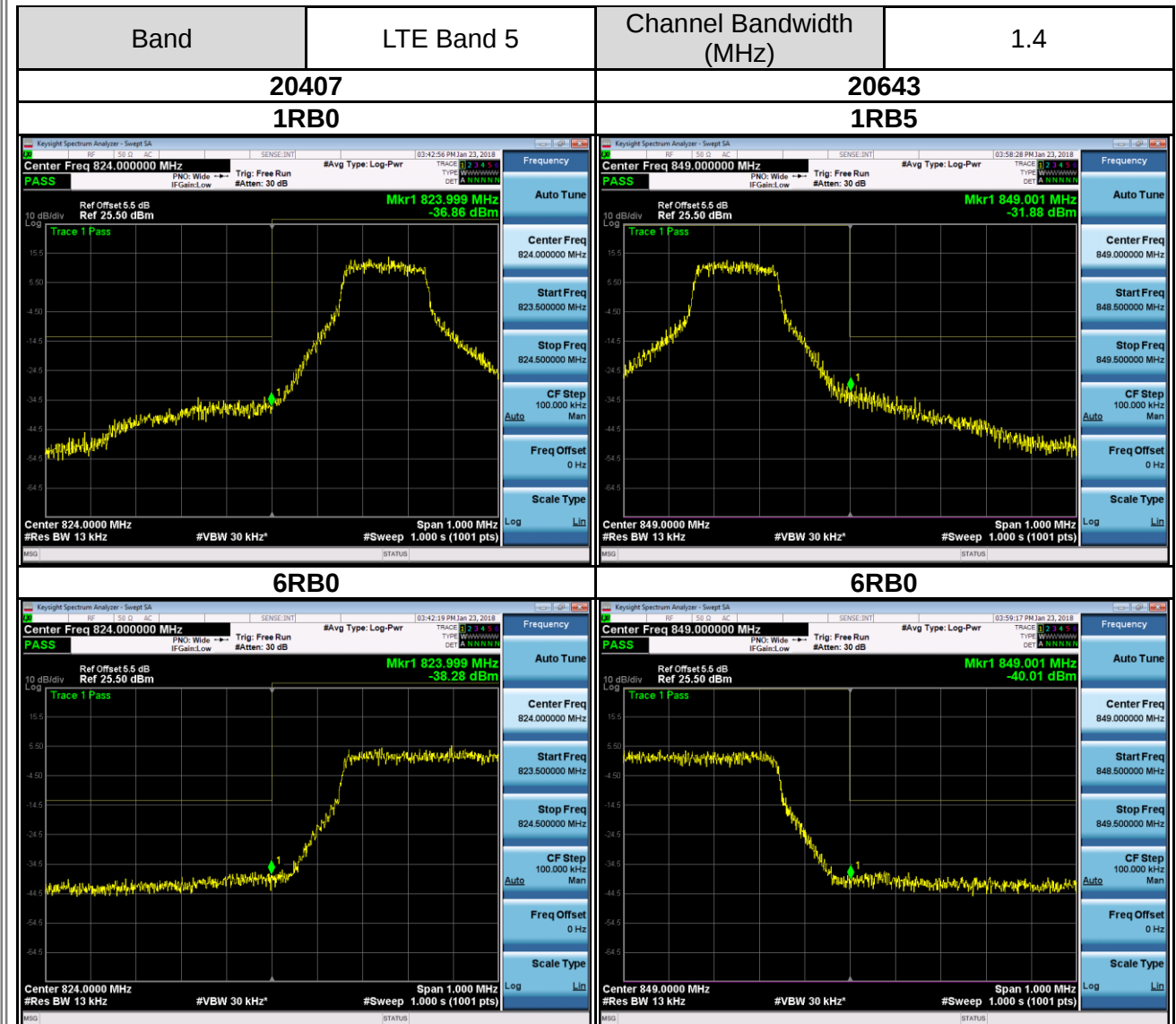
Band	LTE Band 5		
Channel Bandwidth (MHz)	10	Modulation	16QAM
Channel	Frequency (MHz)	99 % Occupied Bandwidth (MHz)	26 dB Bandwidth (MHz)
20450	829.0	8.9737	9.588
20525	836.5	8.9924	9.572
20600	844.0	8.9759	9.538

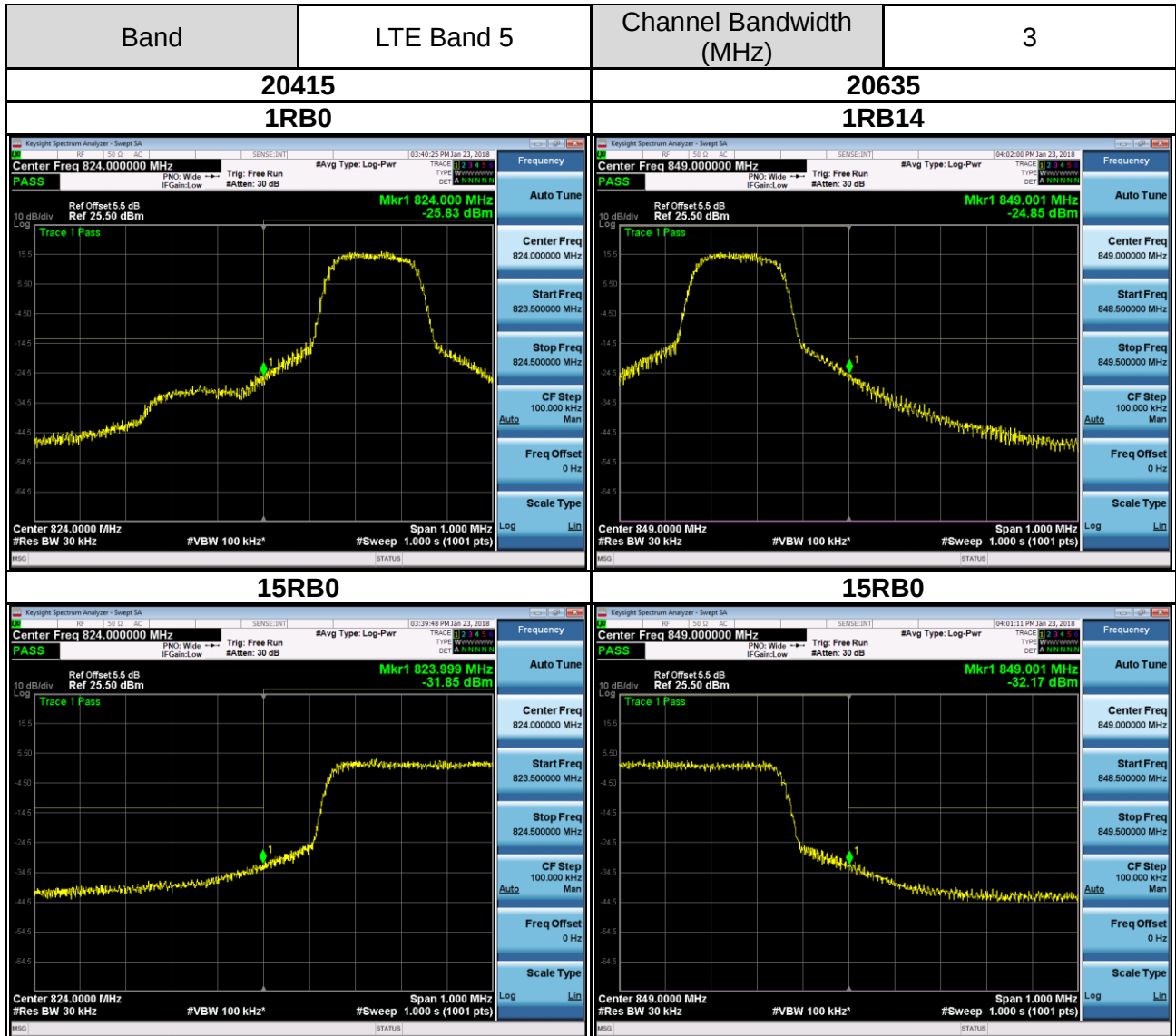


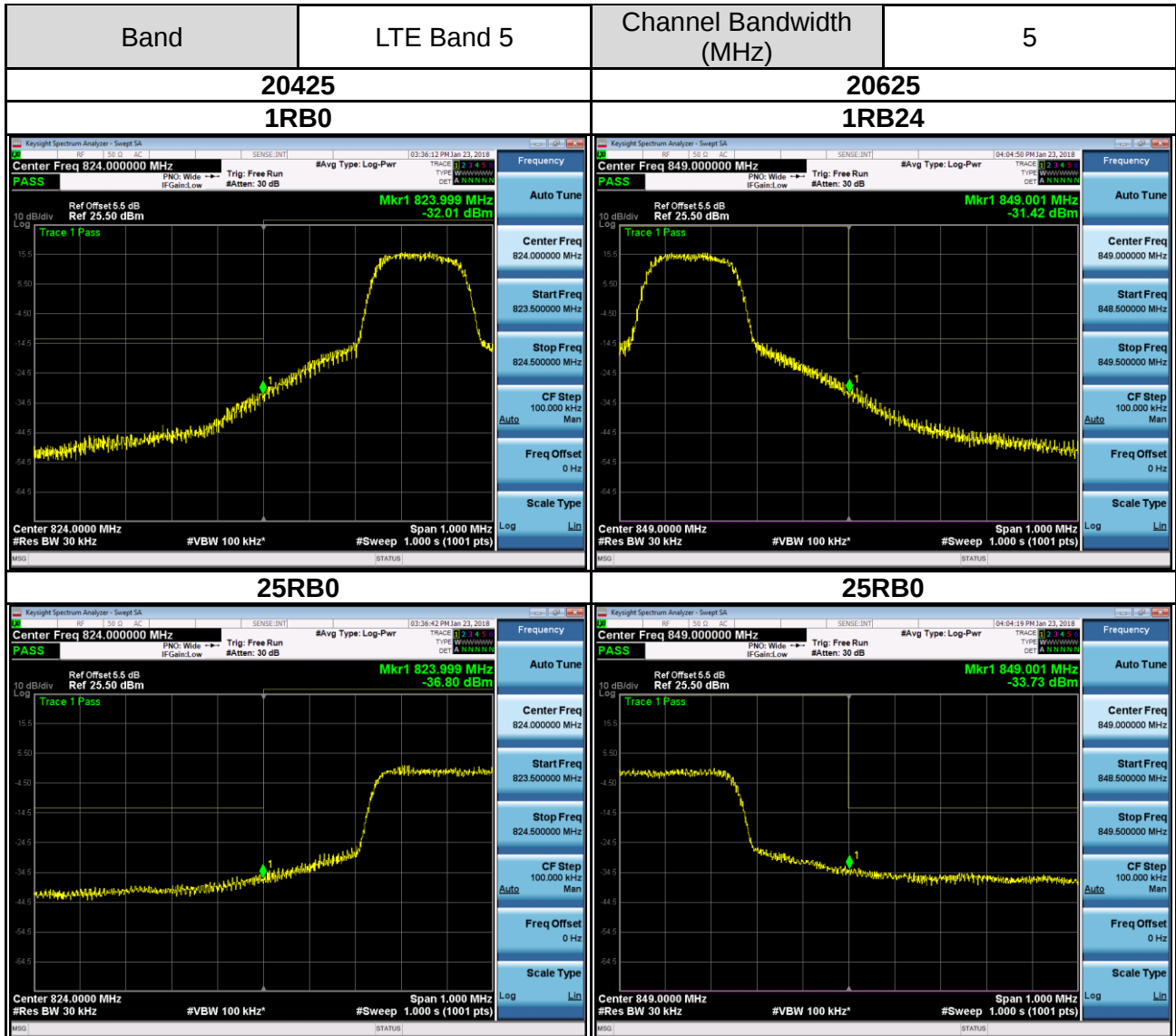
APPENDIX C OUT OF BAND EMISSIONS

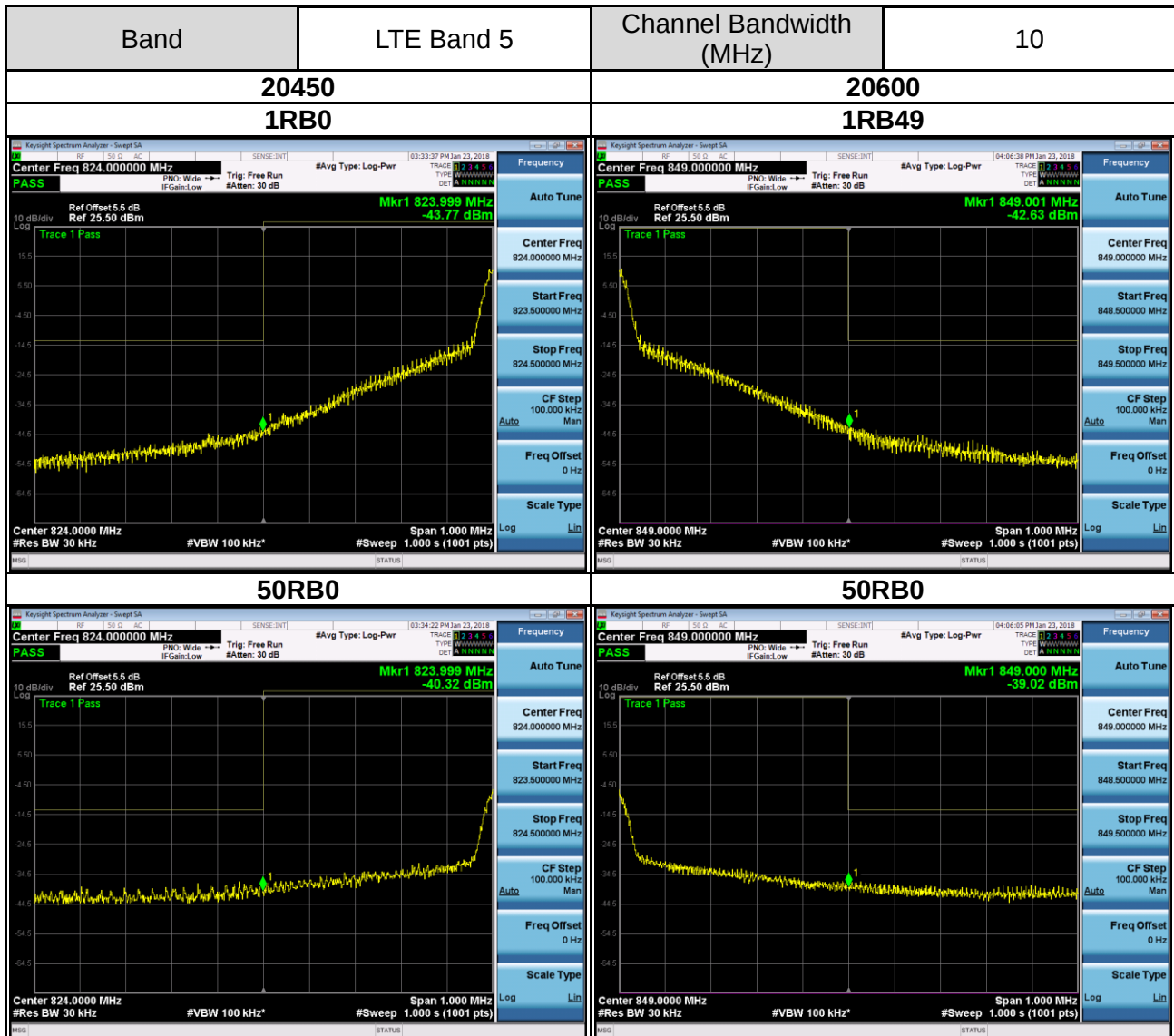
CONTINUE ON NEXT PAGE





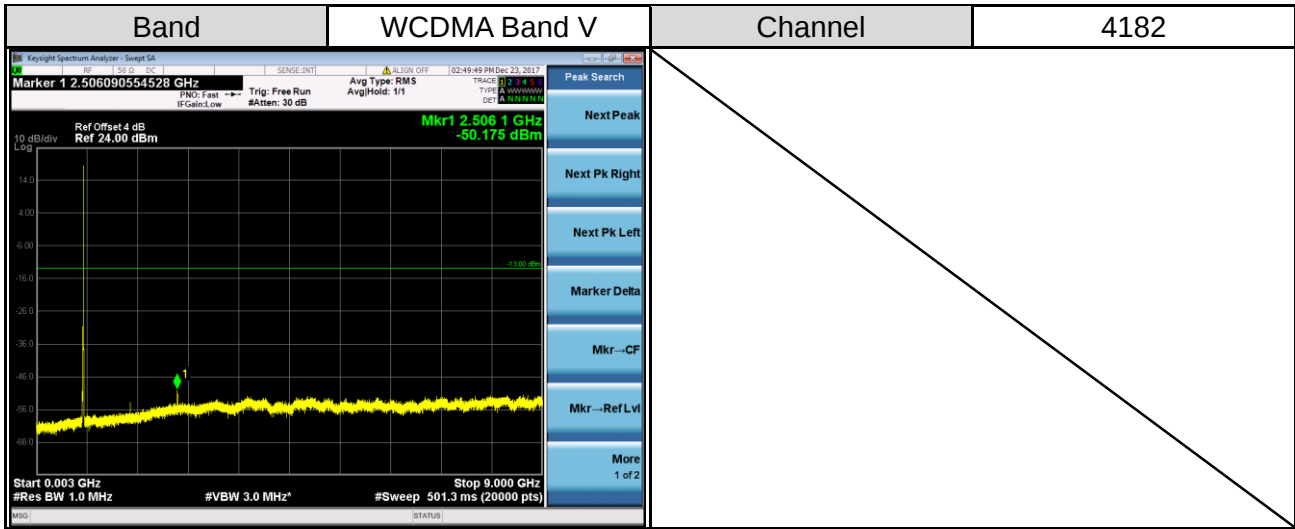






APPENDIX D SPURIOUS EMISSIONS AT ANTENNA TERMINALS

CONTINUE ON NEXT PAGE

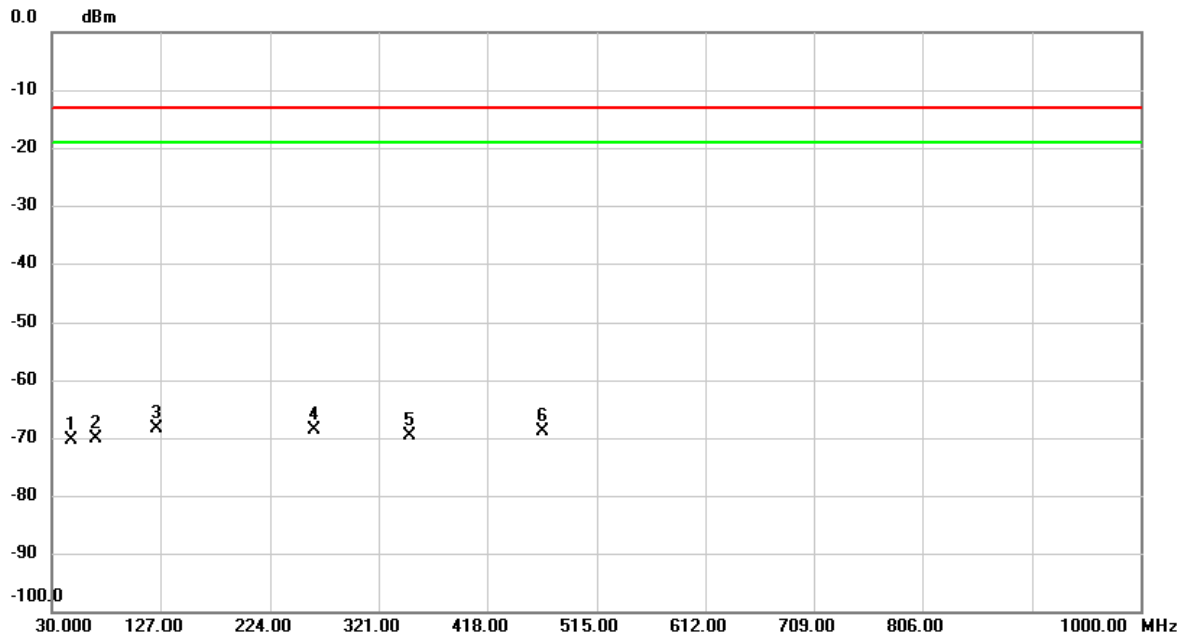




APPENDIX E FIELD STRENGTH OF SPURIOUS RADIATION

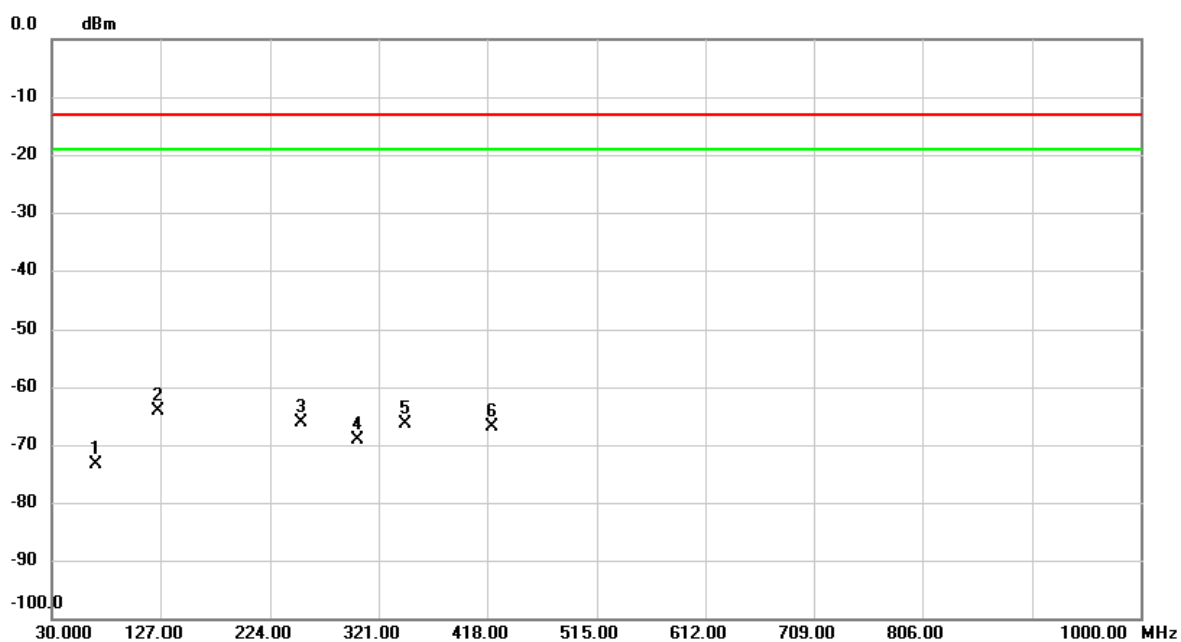
CONTINUE ON NEXT PAGE

Test Mode	WCDMA_Band V_Without Docking	Polarization	Vertical
-----------	------------------------------	--------------	----------



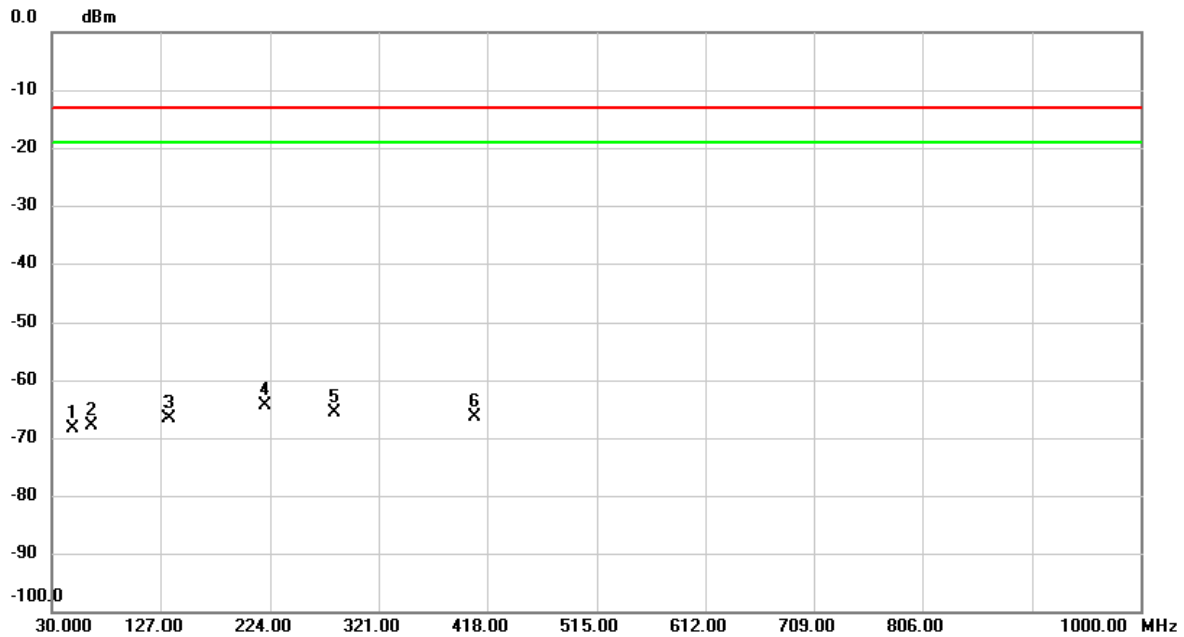
No.	Mk.	Freq. MHz	Reading Level dBm	Correct Factor dB	Measure- ment dBm	Limit dBm	Over dB	Detector	Comment
1		47.4600	-64.27	-6.03	-70.30	-13.00	-57.30	peak	
2		69.7700	-68.30	-1.92	-70.22	-13.00	-57.22	peak	
3	*	124.0900	-66.57	-1.81	-68.38	-13.00	-55.38	peak	
4		262.8000	-66.04	-2.56	-68.60	-13.00	-55.60	peak	
5		348.1600	-70.44	0.83	-69.61	-13.00	-56.61	peak	
6		467.4700	-72.92	4.17	-68.75	-13.00	-55.75	peak	

Test Mode	WCDMA_Band V_Without Docking	Polarization	Vertical
-----------	------------------------------	--------------	----------



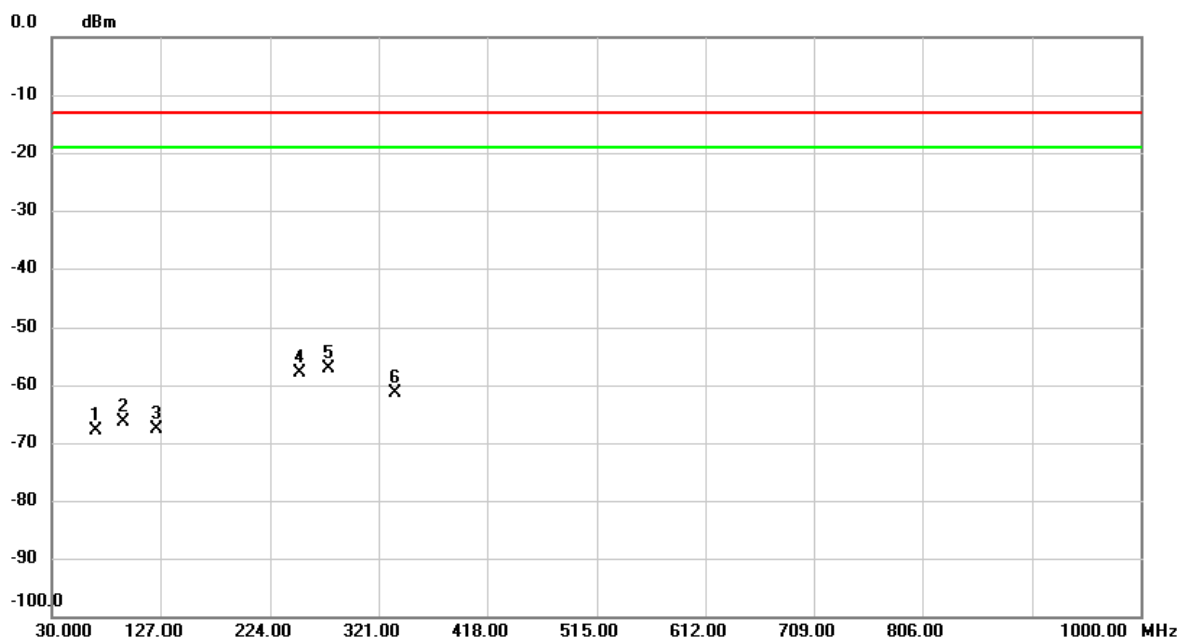
No.	Mk.	Freq. MHz	Reading Level dBm	Correct Factor dB	Measure- ment dBm	Limit dBm	Over dB	Detector	Comment
1		69.7700	-71.38	-1.92	-73.30	-13.00	-60.30	peak	
2	*	125.0600	-62.32	-1.87	-64.19	-13.00	-51.19	peak	
3		251.1600	-63.39	-2.76	-66.15	-13.00	-53.15	peak	
4		302.5700	-68.24	-0.97	-69.21	-13.00	-56.21	peak	
5		344.2800	-66.97	0.67	-66.30	-13.00	-53.30	peak	
6		421.8800	-70.56	3.63	-66.93	-13.00	-53.93	peak	

Test Mode	WCDMA_Band V_With Desk Docking	Polarization	Horizontal
-----------	--------------------------------	--------------	------------



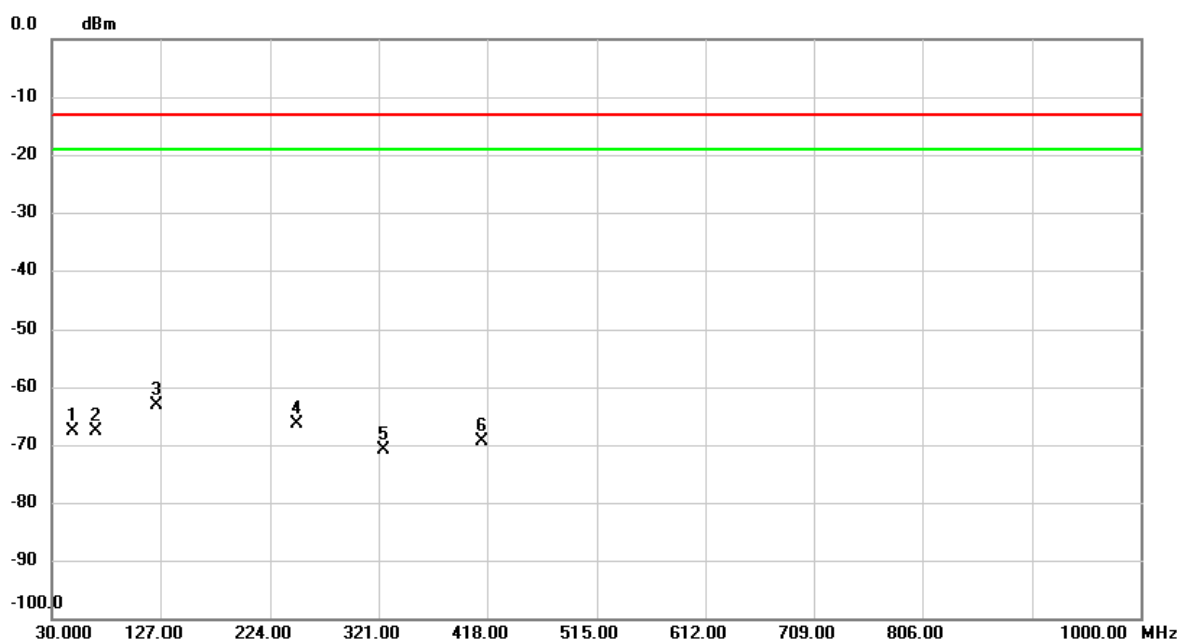
No.	Mk.	Freq. MHz	Reading Level dBm	Correct Factor dB	Measure- ment dBm	Limit dBm	Over dB	Detector	Comment
1		48.4300	-62.96	-5.41	-68.37	-13.00	-55.37	peak	
2		65.8900	-64.28	-3.68	-67.96	-13.00	-54.96	peak	
3		133.7900	-65.44	-1.29	-66.73	-13.00	-53.73	peak	
4	*	219.1500	-59.63	-4.69	-64.32	-13.00	-51.32	peak	
5		281.2300	-64.35	-1.35	-65.70	-13.00	-52.70	peak	
6		406.3600	-69.90	3.43	-66.47	-13.00	-53.47	peak	

Test Mode	WCDMA_Band V_With Desk Docking	Polarization	Horizontal
-----------	--------------------------------	--------------	------------



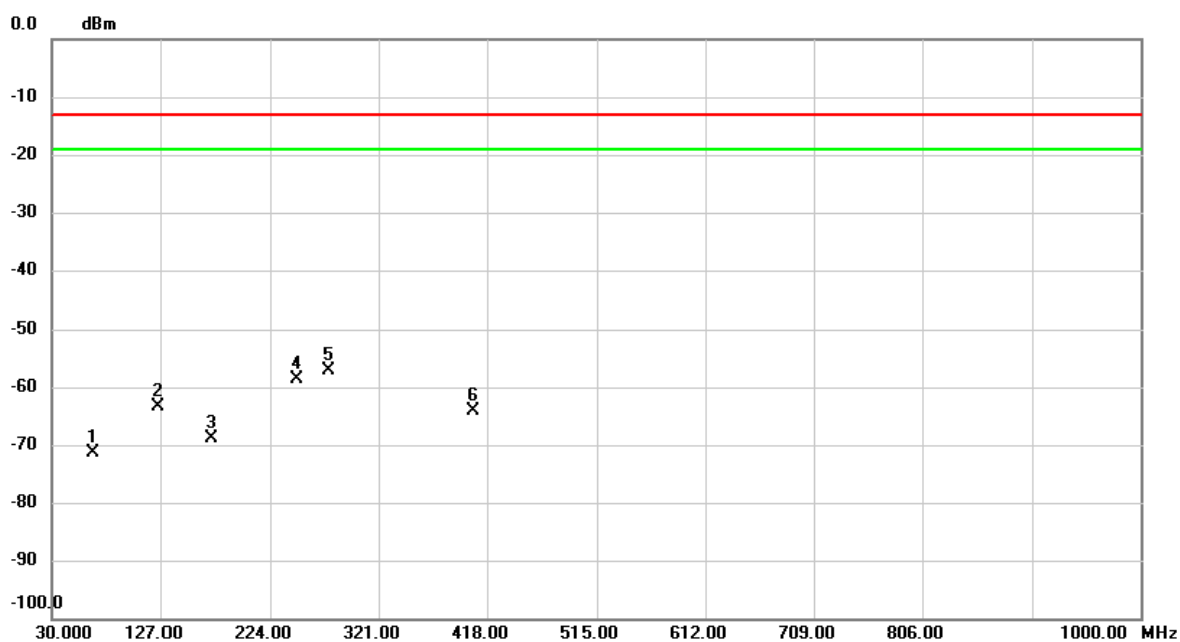
No.	Mk.	Freq. MHz	Reading Level dBm	Correct Factor dB	Measure- ment dBm	Limit dBm	Over dB	Detector	Comment
1		69.7700	-66.04	-1.92	-67.96	-13.00	-54.96	peak	
2		94.0200	-64.06	-2.38	-66.44	-13.00	-53.44	peak	
3		123.1200	-65.93	-1.74	-67.67	-13.00	-54.67	peak	
4		250.1900	-55.19	-2.76	-57.95	-13.00	-44.95	peak	
5	*	276.3800	-55.45	-1.65	-57.10	-13.00	-44.10	peak	
6		335.5500	-61.75	0.33	-61.42	-13.00	-48.42	peak	

Test Mode	WCDMA_Band V_With VESA Docking	Polarization	Horizontal
-----------	--------------------------------	--------------	------------



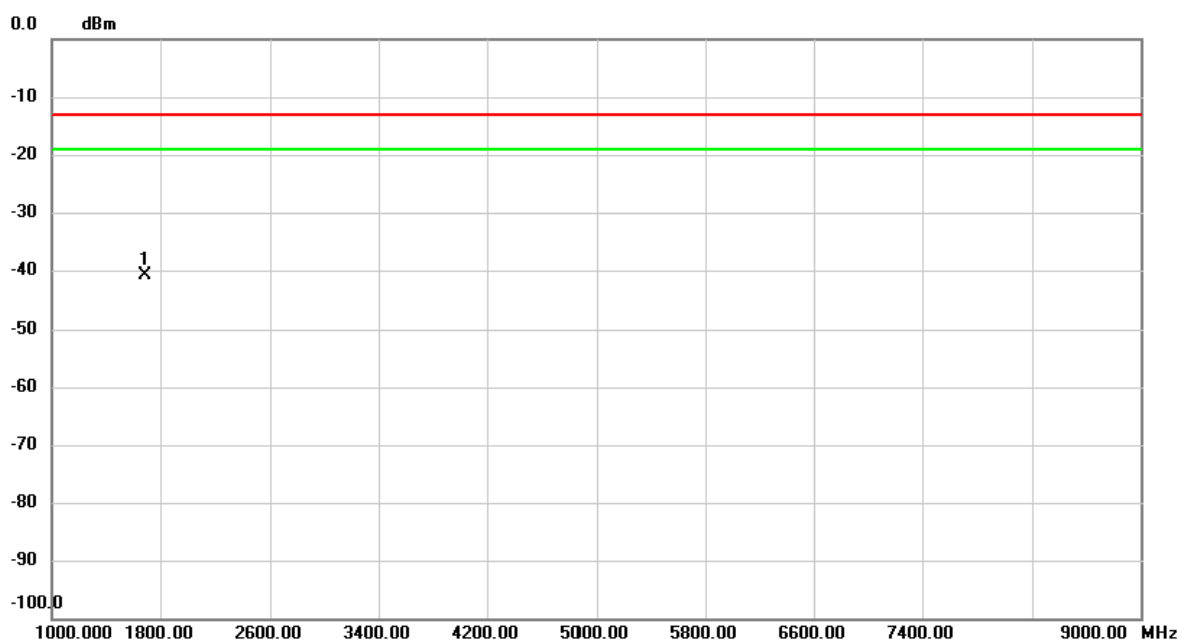
No.	Mk.	Freq. MHz	Reading Level dBm	Correct Factor dB	Measure- ment dBm	Limit dBm	Over dB	Detector	Comment
1		48.4300	-62.10	-5.41	-67.51	-13.00	-54.51	peak	
2		69.7700	-65.60	-1.92	-67.52	-13.00	-54.52	peak	
3	*	124.0900	-61.29	-1.81	-63.10	-13.00	-50.10	peak	
4		247.2800	-63.32	-2.93	-66.25	-13.00	-53.25	peak	
5		324.8800	-70.79	-0.09	-70.88	-13.00	-57.88	peak	
6		413.1500	-72.98	3.52	-69.46	-13.00	-56.46	peak	

Test Mode	WCDMA_Band V_With VESA Docking	Polarization	Horizontal
-----------	--------------------------------	--------------	------------



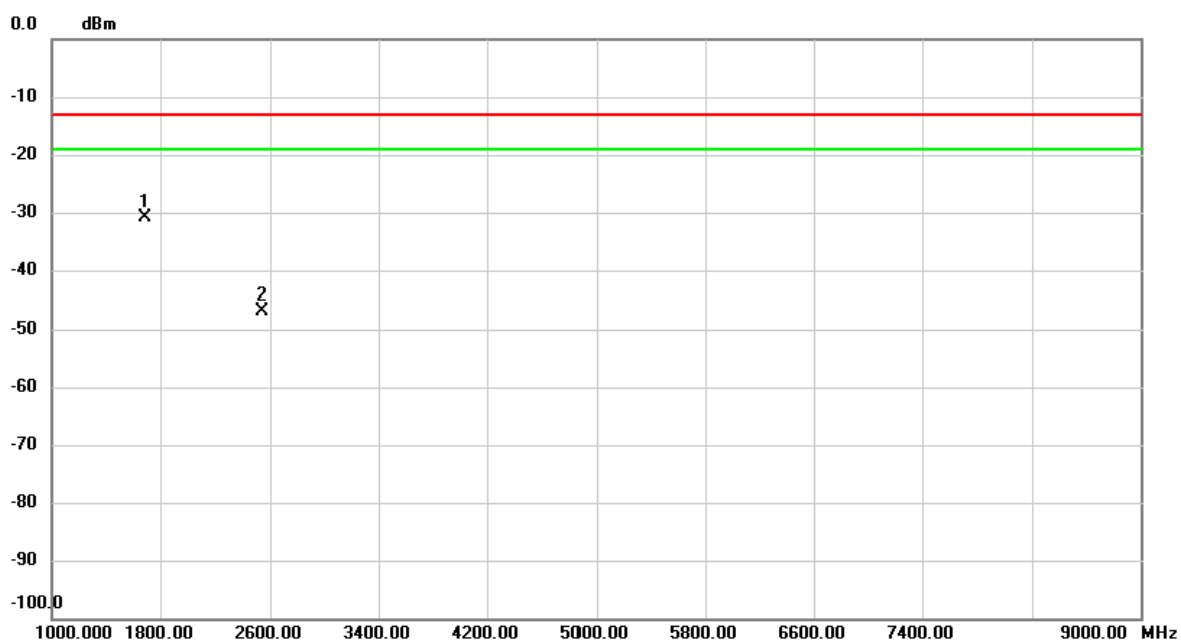
No.	Mk.	Freq. MHz	Reading Level dBm	Correct Factor dB	Measure- ment dBm	Limit dBm	Over dB	Detector	Comment
1		66.8600	-68.17	-3.24	-71.41	-13.00	-58.41	peak	
2		125.0600	-61.39	-1.87	-63.26	-13.00	-50.26	peak	
3		171.6200	-67.09	-1.66	-68.75	-13.00	-55.75	peak	
4		248.2500	-55.80	-2.87	-58.67	-13.00	-45.67	peak	
5	*	276.3800	-55.49	-1.65	-57.14	-13.00	-44.14	peak	
6		405.3900	-67.50	3.42	-64.08	-13.00	-51.08	peak	

Test Mode	WCDMA_Band V_Without Docking	Polarization	Horizontal
-----------	------------------------------	--------------	------------



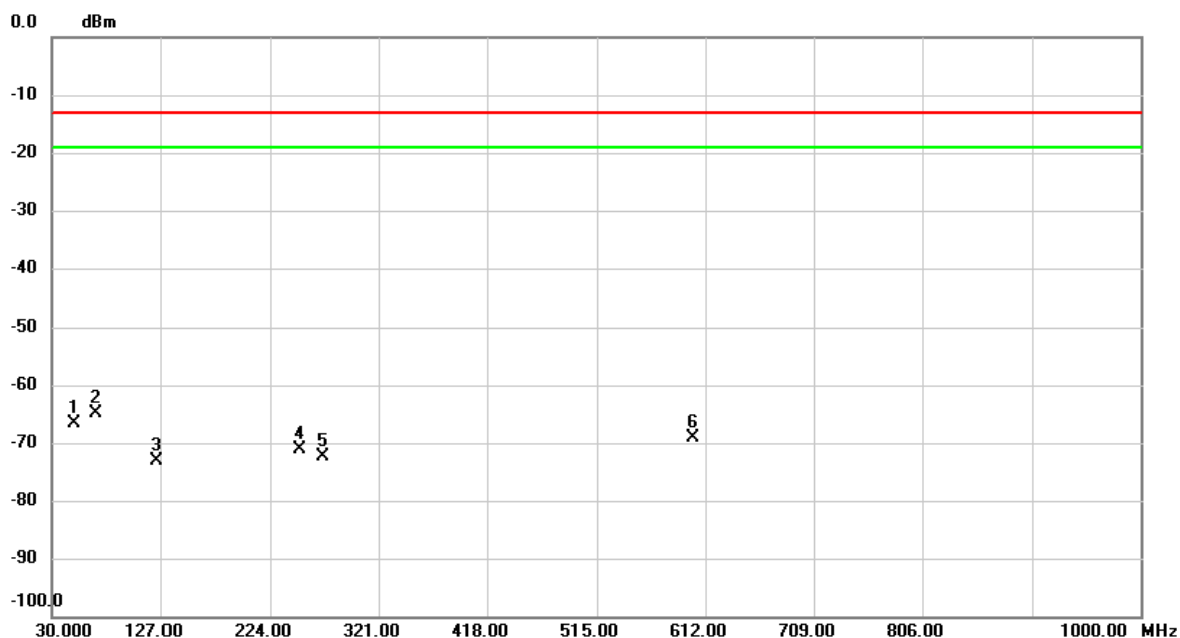
No.	Mk.	Freq. MHz	Reading Level dBm	Correct Factor dB	Measure- ment dBm	Limit dBm	Over dB	Detector	Comment
1	*	1693.200	-40.78	0.00	-40.78	-13.00	-27.78	peak	

Test Mode	WCDMA_Band V_Without Docking	Polarization	Horizontal
-----------	------------------------------	--------------	------------



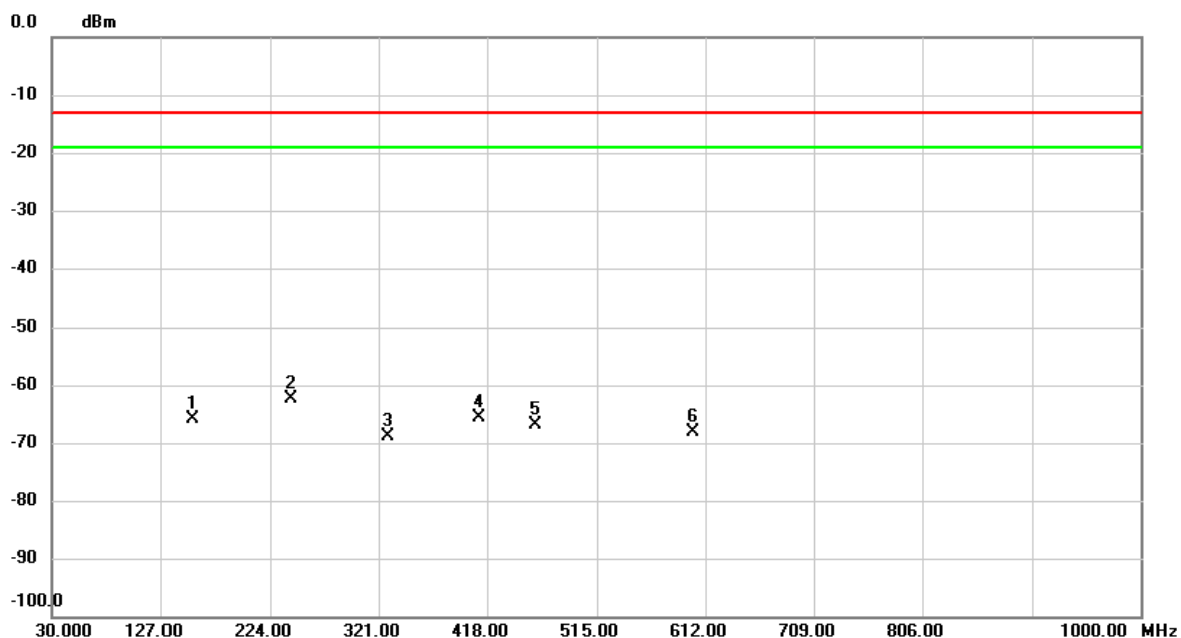
No.	Mk.	Freq. MHz	Reading Level dBm	Correct Factor dB	Measure- ment dBm	Limit dBm	Over dB	Detector	Comment
1	*	1693.200	-30.86	0.00	-30.86	-13.00	-17.86	peak	
2		2539.800	-46.99	0.00	-46.99	-13.00	-33.99	peak	

Test Mode	LTE_Band 5_Channel Bandwidth 10 MHz_QPSK_1RB0_Without Docking	Polarization	Vertical
-----------	--	--------------	----------



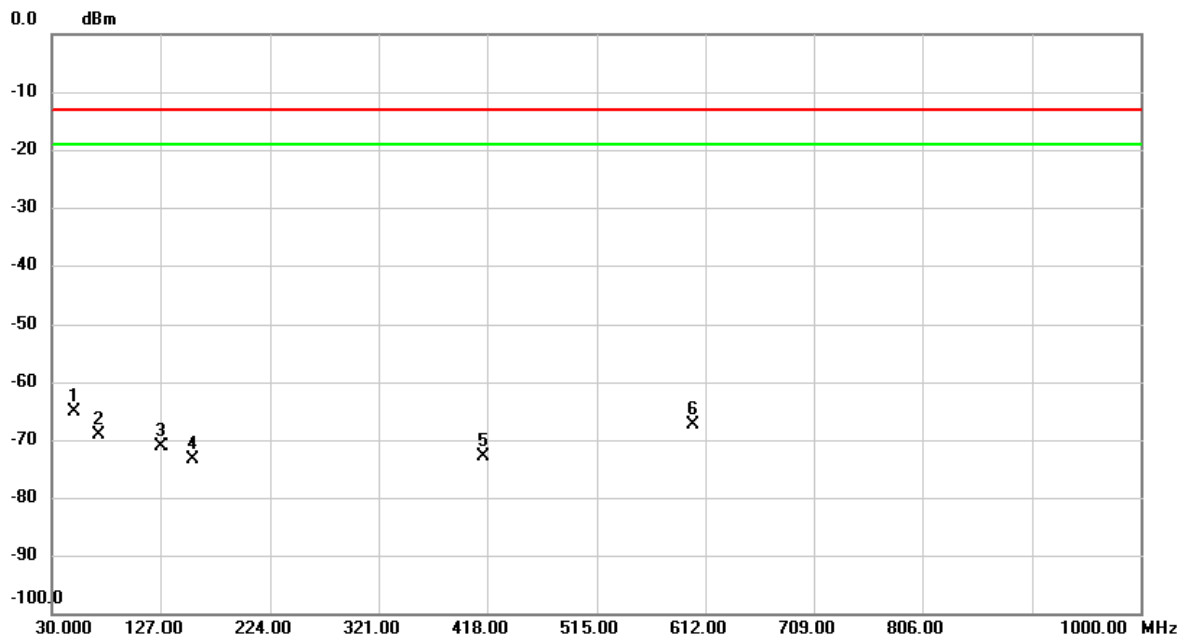
No.	Mk.	Freq. MHz	Reading Level dBm	Correct Factor dB	Measure- ment dBm	Limit dBm	Over dB	Detector	Comment
1		49.4000	-61.87	-4.80	-66.67	-13.00	-53.67	peak	
2	*	68.8000	-62.50	-2.36	-64.86	-13.00	-51.86	peak	
3		124.0900	-71.38	-1.81	-73.19	-13.00	-60.19	peak	
4		250.1900	-68.36	-2.76	-71.12	-13.00	-58.12	peak	
5		271.5300	-70.31	-2.03	-72.34	-13.00	-59.34	peak	
6		600.3600	-75.19	6.04	-69.15	-13.00	-56.15	peak	

Test Mode	LTE_Band 5_Channel Bandwidth 10 MHz_QPSK_1RB0_Without Docking	Polarization	Vertical
-----------	--	--------------	----------



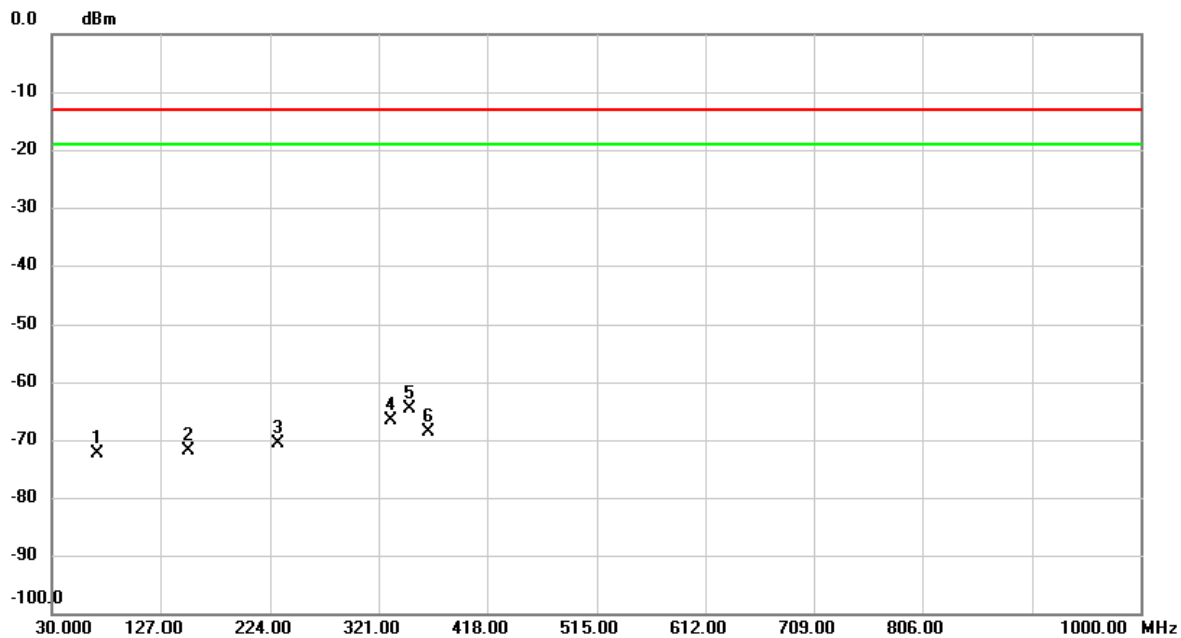
No.	Mk.	Freq. MHz	Reading Level dBm	Correct Factor dB	Measure- ment dBm	Limit dBm	Over dB	Detector	Comment
1		155.1300	-65.36	-0.40	-65.76	-13.00	-52.76	peak	
2	*	242.4300	-59.26	-3.23	-62.49	-13.00	-49.49	peak	
3		328.7600	-68.96	0.06	-68.90	-13.00	-55.90	peak	
4		411.2100	-69.16	3.49	-65.67	-13.00	-52.67	peak	
5		461.6500	-71.02	4.11	-66.91	-13.00	-53.91	peak	
6		600.3600	-74.15	6.04	-68.11	-13.00	-55.11	peak	

Test Mode	LTE_Band 5_Channel Bandwidth 10 MHz_QPSK_1RB0_With Desk Docking	Polarization	Horizontal
-----------	--	--------------	------------



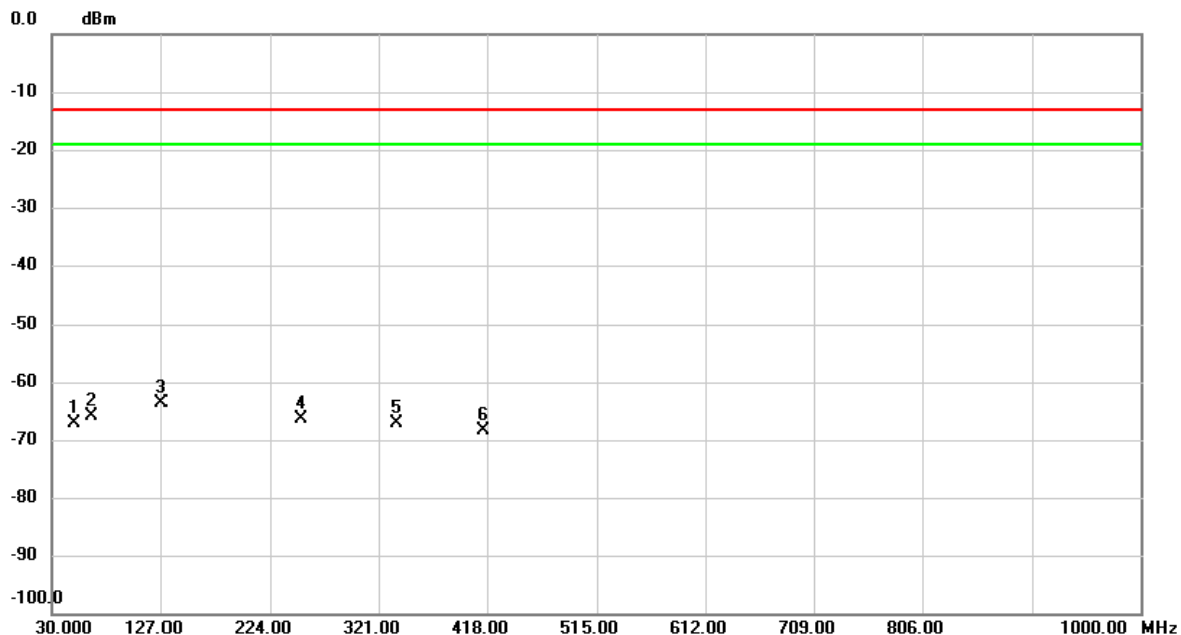
No.	Mk.	Freq. MHz	Reading Level dBm	Correct Factor dB	Measure- ment dBm	Limit dBm	Over dB	Detector	Comment
1	*	49.4000	-60.38	-4.80	-65.18	-13.00	-52.18	peak	
2		71.7100	-67.22	-1.85	-69.07	-13.00	-56.07	peak	
3		127.0000	-69.05	-2.01	-71.06	-13.00	-58.06	peak	
4		155.1300	-72.88	-0.40	-73.28	-13.00	-60.28	peak	
5		415.0900	-76.42	3.54	-72.88	-13.00	-59.88	peak	
6		600.3600	-73.52	6.04	-67.48	-13.00	-54.48	peak	

Test Mode	LTE_Band 5_Channel Bandwidth 10 MHz_QPSK_1RB0_With Desk Docking	Polarization	Horizontal
-----------	--	--------------	------------



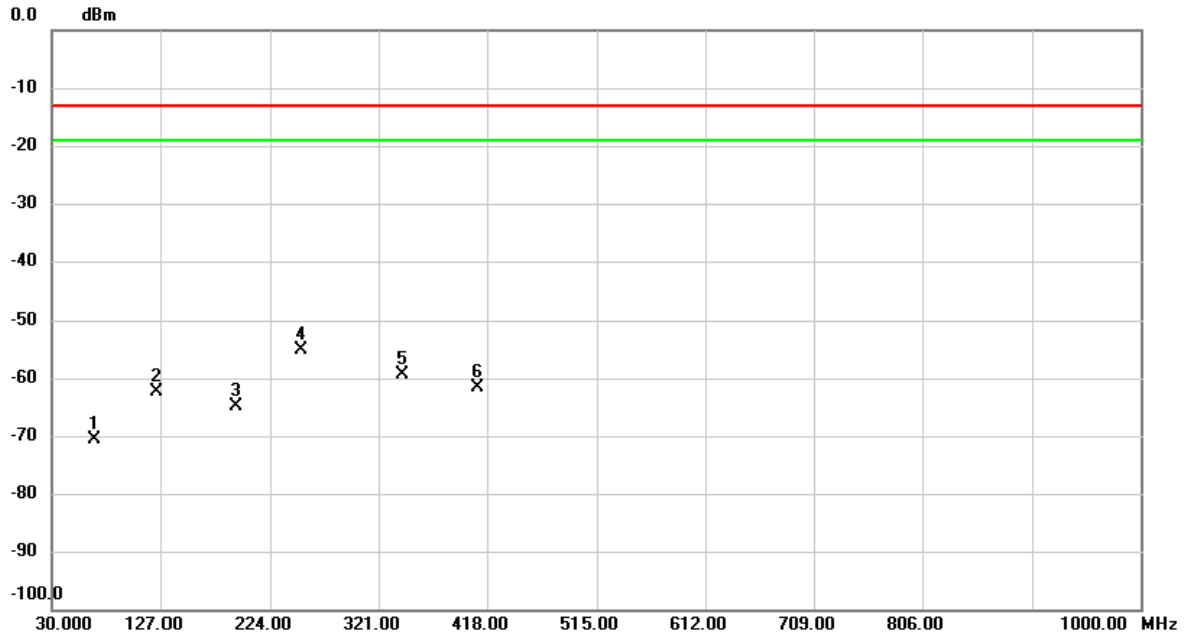
No.	Mk.	Freq. MHz	Reading Level dBm	Correct Factor dB	Measure- ment dBm	Limit dBm	Over dB	Detector	Comment
1		70.7400	-70.49	-1.83	-72.32	-13.00	-59.32	peak	
2		151.2500	-71.80	-0.11	-71.91	-13.00	-58.91	peak	
3		230.7900	-66.80	-3.87	-70.67	-13.00	-57.67	peak	
4		331.6700	-66.86	0.18	-66.68	-13.00	-53.68	peak	
5	*	348.1600	-65.41	0.83	-64.58	-13.00	-51.58	peak	
6		365.6200	-70.25	1.67	-68.58	-13.00	-55.58	peak	

Test Mode	LTE_Band 5_Channel Bandwidth 10 MHz_QPSK_1RB0_With VESA Docking	Polarization	Horizontal
-----------	--	--------------	------------



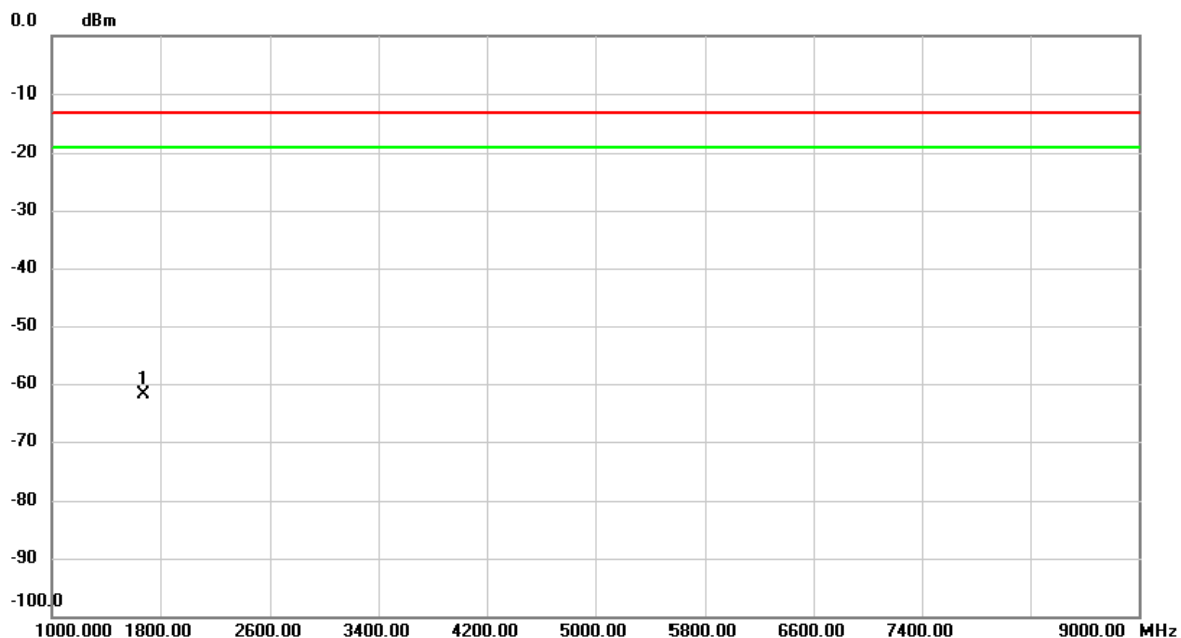
No.	Mk.	Freq. MHz	Reading Level dBm	Correct Factor dB	Measure- ment dBm	Limit dBm	Over dB	Detector	Comment
1		49.4000	-62.21	-4.80	-67.01	-13.00	-54.01	peak	
2		65.8900	-62.16	-3.68	-65.84	-13.00	-52.84	peak	
3	*	127.9700	-61.65	-2.08	-63.73	-13.00	-50.73	peak	
4		252.1300	-63.66	-2.75	-66.41	-13.00	-53.41	peak	
5		337.4900	-67.46	0.41	-67.05	-13.00	-54.05	peak	
6		415.0900	-71.89	3.54	-68.35	-13.00	-55.35	peak	

Test Mode	LTE_Band 5_Channel Bandwidth 10 MHz_QPSK_1RB0_With VESA Docking	Polarization	Horizontal
-----------	--	--------------	------------



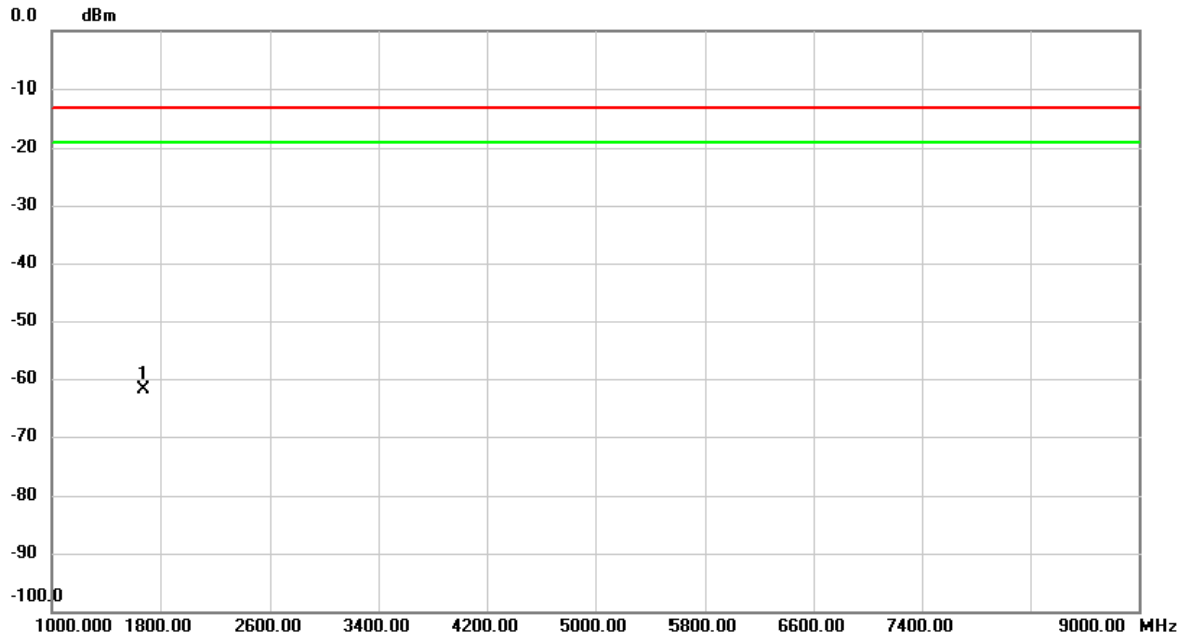
No.	Mk.	Freq. MHz	Reading Level dBm	Correct Factor dB	Measure- ment dBm	Limit dBm	Over dB	Detector	Comment
1		67.8300	-67.91	-2.80	-70.71	-13.00	-57.71	peak	
2		124.0900	-60.55	-1.81	-62.36	-13.00	-49.36	peak	
3		192.9600	-61.97	-2.86	-64.83	-13.00	-51.83	peak	
4	*	251.1600	-52.29	-2.76	-55.05	-13.00	-42.05	peak	
5		342.3400	-59.94	0.60	-59.34	-13.00	-46.34	peak	
6		409.2700	-65.10	3.47	-61.63	-13.00	-48.63	peak	

Test Mode	LTE_Band 5_Channel Bandwidth 10 MHz_QPSK_1RB0_Without Docking	Polarization	Horizontal
-----------	--	--------------	------------



No.	Mk.	Freq. MHz	Reading Level dBm	Correct Factor dB	Measure- ment dBm	Limit dBm	Over dB	Detector	Comment
1	*	1672.800	-52.81	-9.03	-61.84	-13.00	-48.84	peak	

Test Mode	LTE_Band 5_Channel Bandwidth 10 MHz_QPSK_1RB0_Without Docking	Polarization	Horizontal
-----------	--	--------------	------------



No.	Mk.	Freq. MHz	Reading Level dBm	Correct Factor dB	Measure- ment dBm	Limit dBm	Over dB	Detector	Comment
1	*	1672.800	-52.87	-9.03	-61.90	-13.00	-48.90	peak	

APPENDIX F FREQUENCY STABILITY

CONTINUE ON NEXT PAGE

Band		WCDMA Band II
Temperature vs. Frequency Stability		
Temperature (°C)	Frequency Error (ppm)	Limit (ppm)
-20	0.0028	2.5
-10	0.0036	2.5
0	-0.0022	2.5
10	0.0013	2.5
20	0.0042	2.5
30	-0.0032	2.5
40	0.0028	2.5
50	0.0041	2.5
60	-0.0014	2.5
Maximum Deviation (ppm)	0.0042	2.5

Band		WCDMA Band II
Voltage vs. Frequency Stability		
Voltage (V)	Frequency Error (ppm)	Limit (ppm)
100	0.0032	2.5
120	-0.0031	2.5
240	0.0025	2.5
Maximum Deviation (ppm)	0.0032	2.5

Band			LTE Band 5		
Temperature vs. Frequency Stability					
Channel Bandwidth (MHz)	Frequency Error (ppm)				Limit (ppm)
Temperature (°C)	1.4	3	5	10	
-20	0.0028	0.0051	0.0039	-0.0045	2.5
-10	0.0036	-0.0022	0.0072	0.0031	2.5
0	-0.0022	-0.0029	0.0012	0.0073	2.5
10	0.0013	0.0048	0.0062	-0.0025	2.5
20	0.0042	0.0018	-0.0016	0.0021	2.5
30	-0.0032	-0.0027	-0.0078	0.0043	2.5
40	0.0028	-0.0012	0.0033	-0.0029	2.5
50	0.0041	0.0058	0.0024	0.0077	2.5
60	-0.0014	0.0023	-0.0022	0.0051	2.5
Maximum Deviation (ppm)	0.0077				2.5

Band			LTE Band 5		
Voltage vs. Frequency Stability					
Channel Bandwidth (MHz)	Frequency Error (ppm)				Limit (ppm)
Voltage (V)	1.4	3	5	10	
100	-0.0041	0.0031	-0.0003	-0.0034	2.5
120	-0.0038	0.0009	-0.0032	-0.0042	2.5
240	0.0025	-0.0021	0.0052	-0.0021	2.5
Maximum Deviation (ppm)	0.0052				2.5