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Report On

Application for Grant of Equipment Authorization of the
Inseego Corp.

MIFI8000 Wireless Hotspot Modem

FCC CFR 47 Part 2 and 27: 2018

RSS-139 Issue 3: 2015

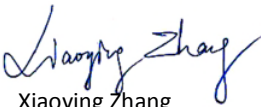
RSS-130 Issue 2: 2019

RSS-199 Issue 3: 2016

Report No. 72142923B

May 2019



REPORT ON	Radio Testing of the Inseego Corp. MIFI8000 Wireless Hotspot Modem
TEST REPORT NUMBER	72142923B
PREPARED FOR	Inseego Corp. 9605 Scranton Road, Suite 300 San Diego, CA 92121 USA
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DATED	May 16, 2019



Revision History

72142923B Inseego Corp. MIFI8000 Wireless Hotspot Modem					
DATE	OLD REVISION	NEW REVISION	REASON	PAGES AFFECTED	APPROVED BY
05/16/2019	-	Initial Release			Ferdinand Custodio

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SECTION 1

REPORT SUMMARY

Radio Testing of the
Inseego Corp.
MIFI8000 Wireless Hotspot Modem



1.1 INTRODUCTION

The information contained in this report is intended to show verification of the Inseego Corp. MIFI8000 Wireless Hotspot Modem to the requirements of the following:

- FCC CFR 47 Part 2 and 27: 2018
- RSS-139 Issue 3: 2015
- RSS-130 Issue 2: 2019
- RSS-199 Issue 3: 2016

Objective	To perform Radio Testing to determine the Equipment Under Test's (EUT's) compliance with the Test Specification, for the series of tests carried out.
Manufacturer	Inseego Corp.
Product Marketing Name	MiFi 8000
Model Number(s)	MIFI8000
FCC ID Number	PKRISGMIFI8000
IC Number	3229A-MIFI8000
Serial Number(s)	AT071218B00062 (MIFI8000) AZ280418A00044 (MIFI8800L)
Number of Samples Tested	2
Test Specification/Issue/Date	• FCC CRF 47 Part 2 and 27 (October 1, 2018) • RSS-139 Issue 3: July 2015 – Advanced Wireless Services (AWS) Equipment Operating in the Bands 1710-1780 MHz and 2110-2180 MHz • KDB412172 D01 Determining ERP and EIRP v01r01 August 07, 2015: Guidelines for determining the Effective Radiated Power (ERP) and Equivalent Isotropically Radiated Power (EIRP) of an RF transmitting system • KDB971168 D01 Power Meas License Digital Systems v03r01: April 9 2018: Measurement guidance for certification of licensed digital transmitters • RSS-130 Issue 2: February 2019 – Mobile Broadband Services (MBS) Equipment Operating in the Frequency Bands 617-652 MHz, 663-698 MHz, 698-756 MHz and 777-787 MHz • RSS-199 Issue 3: December 2016 – Broadband Radio Service (BRS) Equipment Operating in the Band 2500-2690 MHz • RSS-Gen Issue 5 Amendment1: March 2019 - General Requirements for Compliance of Radio Apparatus • ANSI C63.26-2015: American National Standard for Compliance Testing of Transmitters Used in Licensed Radio Services • 3GPP TS 36.521-1 Version 15.2.0 Release 15: Evolved Universal Terrestrial Radio Access (E-UTRA); User



Equipment (UE) Conformance Specification Radio
Transmission and Reception; Part 1: Conformance Testing

- 3GPP TS 36.508 Version 15.3.0 Release 15: Evolved Universal Terrestrial Radio Access (E-UTRA) and Evolved Packet Core (EPC); Common Test Environments for User Equipment (UE) Conformance Testing

Start of Test July 06, 2018

Finish of Test May 12, 2019

Name of Engineer(s) Xiaoying Zhang

- Related Document(s)
- Supporting documents for EUT certification are separate exhibits.
 - 72139211B_MIFI8800L_FCC Part 27_LTE Band 4 7 13 and 66_RSS 130 RSS 139 RSS 199_Test Report.pdf

1.2 BRIEF SUMMARY OF RESULTS

A brief summary of the tests carried out in accordance with FCC CFR 47 Part 2 and 27: 2018 with cross-reference to the corresponding ISSED RSS standard is shown below.

Section	FCC Part Sections(s)	RSS Section(s)	Test Description	Result
2.1	2.1046	-	Transmitter Conducted Output Power	Compliant
2.2	2.1046 27.50(h)(2)	RSS-139 (6.5) RSS-199 (4.4)	Equivalent Isotropic Radiated Power	Compliant
2.3	2.1046 27.50 (b)(10) 27.50 (c)(10) 27.50 (h)(2)	RSS-130 (4.6.3)	Effective Radiated Power	Compliant
2.4	2.1049 27.53(h)(3) 27.53(m)(6)	RSS-Gen (6.7) RSS-139 (6.6) RSS-199 (4.5)	Occupied Bandwidth	Compliant
2.5	27.50 (d)(5)	RSS-139 (6.5) RSS-130 (4.6.1) RSS-199 (4.4)	Peak-Average Ratio	Compliant
2.6	2.1051 27.53(g) 27.53(h)(1)(3) 27.53(m)(4)(6) 27.53(c)(2)	RSS-139 (6.6) RSS-130 (4.7.1) RSS-199 (4.5)	Band Edge	Compliant
2.7	2.1051 27.53(g) 27.53(h)(1)(3) 27.53(m)(4)(6) 27.53(c)(2)(4)(5)&(f)	RSS-139 (6.6) RSS-130 (4.7.1) RSS-199 (4.5)	Conducted Spurious Emissions	Compliant
2.8	2.1053 27.53(g) 27.53(h)(1) 27.53(m)(4) 27.53(c)(2)	RSS-139 (6.6) RSS-130 (4.7.1) RSS-199 (4.5)	Field Strength of Spurious Radiation	Compliant



2.9	2.1055 27.54	RSS-139 (6.4) RSS-130 (4.5) RSS-199 (4.3)	Frequency Stability	Compliant
-	-	RSS-Gen 7.4	Receiver Spurious Emissions	N/A*
2.10	-	RSS-GEN 8.8	Power Line Conducted Emissions	Compliant

N/A* Not Applicable. No stand-alone receiver.



1.3 PRODUCT INFORMATION

1.3.1 EUT General Description

The Equipment Under Test (EUT) was an Inseego Corp. MIFI8000 Wireless Hotspot Modem. The EUT is a Wireless Hotspot Modem supporting 2G/3G/4G Technologies. The EUT comes with a USB Port.

1.3.2 Technical Description

EUT Description	Wireless Hotspot Modem
Product Marketing Name	MiFi 8000
Model Number(s)	MIFI8000
Rated Voltage	3.7V, 4400mAh (Rechargeable Li-Ion battery pack) Input 100-240VAC, Output 5V (External AC-DC Power Adapter)
Mode Verified	*LTE Band 4: 1710-1755 MHz *LTE Band 7: 2500-2570 MHz *LTE Band 13: 777-787 MHz *LTE Band 66: 1710-1780 MHz (* All the test data for LTE Band 4, 7, 13 and 66 are from previous testing of model MIFI8800L which shares the same board and architecture with the only exception of different cell bands support) WCDMA Band 4: 1710-1755 MHz LTE Band 12: 698-716 MHz LTE Band 17: 704-716 MHz LTE Band 41: 2496-2690 MHz
Capability	WCDMA Band 2, 4, 5, LTE Band 2, 4, 5, 7, 12, 13, 14, 17, 25, 26, 41, 48, 66 and 802.11 a/b/g/n/ac
Primary Unit (EUT)	☐ Production ☒ Pre-Production ☐ Engineering
Manufacturer Declared Voltage Range	3.3 V – 4.3 VDC

(Client declaration, max.
antenna gain covered under
this test report)

Bands	Frequency(ies)	Antenna Gains
WCDMA Band 4	1710-1755 MHz	0.0 dBi
LTE Band 4	1710-1755 MHz	0.0 dBi
LTE Band 7	2500-2570 MHz	2.3 dBi
LTE Band 12	698-716 MHz	-2.0 dBi
LTE Band 13	777-787 MHz	-0.6 dBi
LTE Band 17	704-716 MHz	-2.1 dBi
LTE Band 41	2496-2690 MHz	1.7 dBi
LTE Band 66	1710-1780 MHz	0.0 dBi

1.3.3 Transmit Frequency Table

Technology / Band	Tx Frequency (MHz)	Emission Designator	EIRP	
			Max. Power (dBm)	Max. Power (mW)
WCDMA Band 4	1710-1755	4M13F9W	23.89	24.49

Technology / Band	Modulation	Bandwidth (MHz)	Tx Frequency (MHz)	Emission Designator	EIRP	
					Max. Power (dBm)	Max. Power (mW)
LTE Band 41	QPSK	5	2496 - 2690	4M48G7D	24.07	255.27
		10	2496 - 2690	8M96G7D	24.06	254.68
		15	2496 - 2690	13M5G7D	24.09	256.45
		20	2496 - 2690	17M8G7D	23.08	203.24
	16QAM	5	2496 - 2690	4M47W7D	23.14	206.06
		10	2496 - 2690	8M96W7D	23.21	209.41
		15	2496 - 2690	13M5W7D	23.32	214.78
		20	2496 - 2690	17M9W7D	22.08	161.44



Technology / Band	Modulation	Bandwidth (MHz)	Tx Frequency (MHz)	Emission Designator	EIRP	
					Max. Power (dBm)	Max. Power (mW)
LTE Band 4	QPSK	1.4	1710-1750	1M09G7D	23.92	246.6
		3	1710-1750	2M70G7D	23.94	247.74
		5	1710-1750	4M50G7D	23.95	248.31
		10	1710-1750	8M99G7D	23.93	247.17
		15	1710-1750	13M5G7D	23.99	250.61
		20	1710-1750	17M9G7D	23.99	250.61
	16QAM	1.4	1710-1750	1M10W7D	22.65	184.08
		3	1710-1750	2M70W7D	22.69	185.78
		5	1710-1750	4M49W7D	22.84	192.31
		10	1710-1750	8M98W7D	22.75	188.36
		15	1710-1750	13M5W7D	23.19	208.45
		20	1710-1750	17M9W7D	23.18	207.97
LTE Band 7	QPSK	5	2500-2570	4M48G7D	25.99	397.19
		10	2500-2570	8M97G7D	25.38	345.14
		15	2500-2570	13M4G7D	25.42	348.34
		20	2500-2570	17M9G7D	25.37	344.35
	16QAM	5	2500-2570	4M49W7D	25.35	342.77
		10	2500-2570	8M96W7D	24.65	291.74
		15	2500-2570	13M5W7D	24.65	291.74
		20	2500-2570	17M9W7D	24.59	287.74
		10	777-787	8M91W7D	22.45	107.15
LTE Band 66	QPSK	1.4	1710-1780	1M10G7D	23.94	247.74
		3	1710-1780	2M70G7D	23.91	246.04
		5	1710-1780	4M50G7D	23.95	248.31
		10	1710-1780	8M98G7D	24.0	251.19
		15	1710-1780	13M5G7D	23.92	246.60
		20	1710-1780	18M0G7D	23.98	250.03
	16QAM	1.4	1710-1780	1M09W7D	22.75	188.36
		3	1710-1780	2M70W7D	22.71	186.64
		5	1710-1780	4M48W7D	23.02	200.45
		10	1710-1780	8M97W7D	22.74	187.93
		15	1710-1780	13M5W7D	22.83	191.87
		20	1710-1780	18M0W7D	22.8	190.55

Technology / Band	Modulation	Bandwidth (MHz)	Tx Frequency (MHz)	Emission Designator	ERP	
					Max. Power (dBm)	Max. Power (mW)
LTE Band 12	QPSK	1.4	699 - 716	1M09G7D	19.83	96.16
		3	699 - 716	2M70G7D	19.79	95.28
		5	699 - 716	4M50G7D	19.83	96.16
		10	699 - 716	8M98G7D	19.73	93.97
	16QAM	1.4	699 - 716	1M09W7D	18.86	76.91
		3	699 - 716	2M70W7D	18.86	76.91
		5	699 - 716	4M49W7D	19.05	80.35
		10	699 - 716	8M97W7D	18.89	77.45

Technology / Band	Modulation	Bandwidth (MHz)	Tx Frequency (MHz)	Emission Designator	ERP	
					Max. Power (dBm)	Max. Power (mW)
LTE Band 17	QPSK	5	704 - 716	4M49G7D	19.63	91.83
		10	704 - 716	8M94G7D	19.61	91.41
	16QAM	5	704 - 716	4M48W7D	18.84	76.56
		10	704 - 716	8M94W7D	18.81	76.03

Technology / Band	Modulation	Bandwidth (MHz)	Tx Frequency (MHz)	Emission Designator	ERP	
					Max. Power (dBm)	Max. Power (mW)
LTE Band 13	QPSK	5	777-787	4M46G7D	21.2	131.83
		10	777-787	8M92G7D	21.18	131.22
	16QAM	5	777-787	4M47W7D	20.47	111.43
		10	777-787	8M91W7D	20.3	107.15



1.4 EUT TEST CONFIGURATION

1.4.1 Test Configuration Description

Test Configuration	Description
A	Conducted antenna port measurement. EUT Transmits at max power and is powered by the internal battery and/or USB via AC Adapter.
B	Radiated test setup / case spurious emissions. The EUT is connected to the call box in radiated way or connect to the call box with antenna port terminated by the call box.

1.4.2 EUT Exercise Software

EUT is controlled by a CMW 500 Wideband Radio Communication Tester. There is no other test software used during verification.

1.4.3 Support Equipment and I/O cables

Manufacturer	Equipment/Cable	Description
Inseego Corp.	USB Cable	Standard USB Type A to USB Type C
Inseego Corp.	External AC-DC Power Adapter	Model: SSW-2783, PN: 40123126.01 Input: 100-240VAC, 50/60Hz, 0.5A Output: 5VDC, max. 2A

1.4.4 Mode of Operation for Inter-Band Carrier Aggregation

The Test frequencies for E-UTRA PCell and SCell for CA intra-band operation during the test is set according to 3GPP TS 36.508 Version 15.3.0 Release 15 as follows:

E-UTRA CA Configuration CA_41C							
Range	CC Combinations / N _{RB_agg}	CC1			CC2		
		BW (RB)	N _{UL}	Frequency of Uplink (MHz)	BW (RB)	N _{UL}	Frequency of Uplink (MHz)
Low	25+100	25	39683	2499.3	100	39800	2511
		100	39750	2506	25	39867	2517.7
	50+75	50	39703	2501.3	75	39823	2513.3
		75	39725	2503.5	50	39845	2515.5
	50+100	50	39705	2501.5	100	39849	2515.9
		100	39750	2506	50	39894	2520.4
	75+75	75	39725	2503.5	100	39875	2518.5
		75	39728	2503.8	100	39899	2520.9
	75+100	100	39750	2506	75	39921	2523.1
		100	39750	2506	75	39948	2525.8

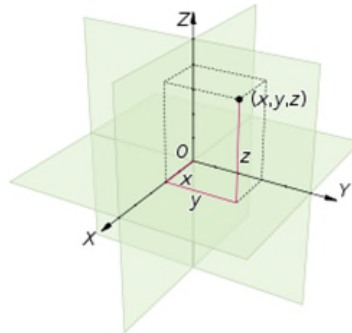
1.4.5 Worst Case Configuration

Worst-case configuration used in this test report as per output power measurements:

Technology / Band	Test Configuration
WCDMA Band 4	Connection Setup: Test Mode, Type: RMC, Test Mode: No Loop

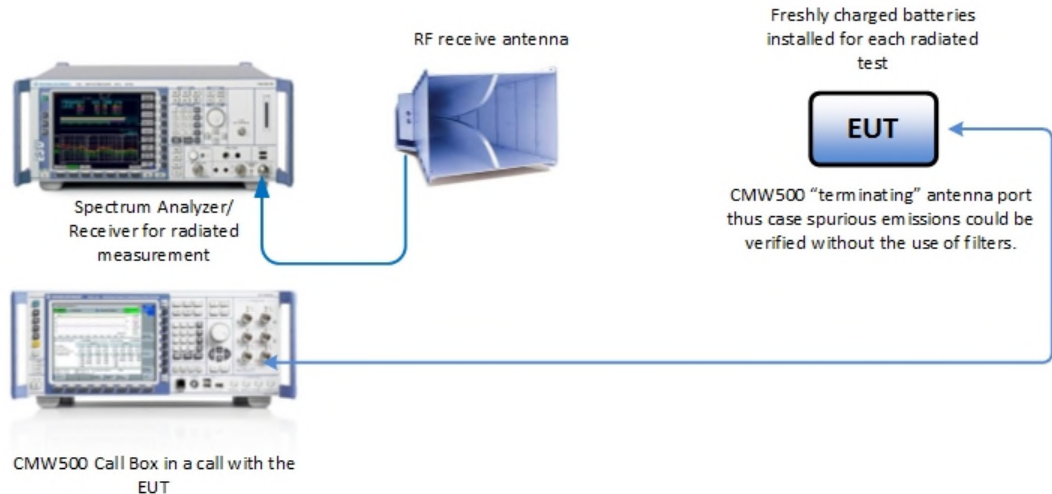
Band	Channel BW	Modulation	RB Size/Offset
LTE Band 12	5 MHz	QPSK	1/12
LTE Band 17	5 MHz	QPSK	1/12
LTE Band 41	15 MHz	QPSK	1/0
LTE Band 41C	10 MHz + 15 MHz	QPSK	1/49 + 1/0
LTE Band 4	20 MHz	QPSK	1/0
LTE Band 7	5 MHz	QPSK	1/13
LTE Band 13	5 MHz	QPSK	1/13
LTE Band 66	10 MHz	QPSK	1/0

For radiated measurements X, Y, and Z orientations were verified. The verification was determined “Y” as worst case configuration.

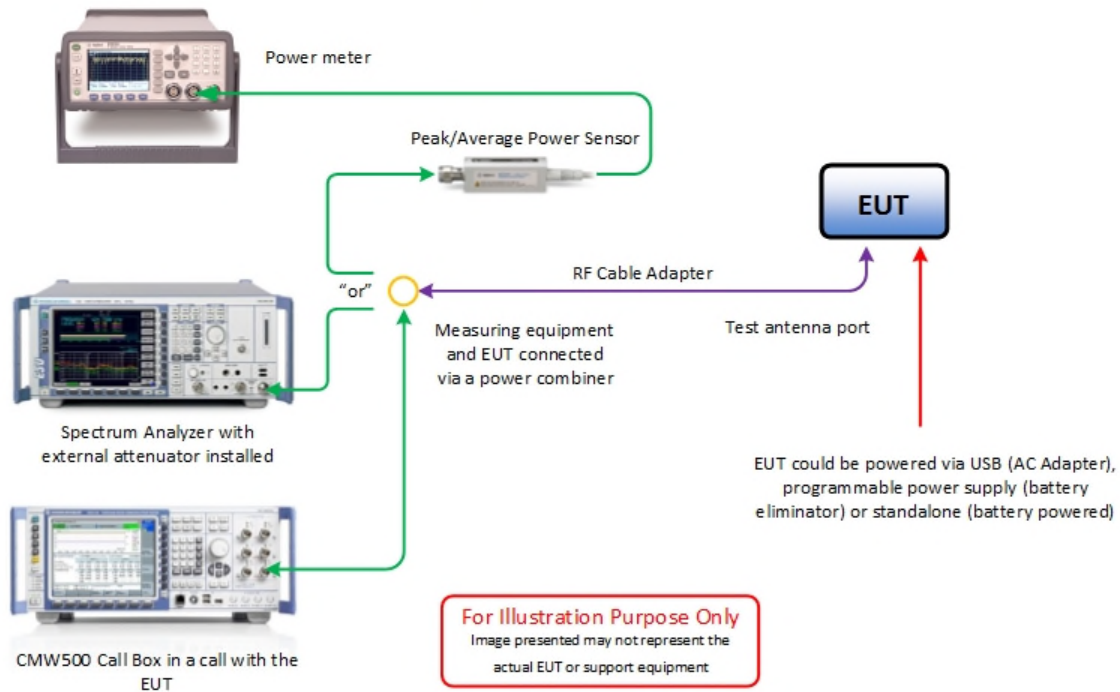


1.4.6 Simplified Test Configuration Diagram

Radiated Test Configuration



Conducted (Antenna Port) Test Configuration





1.5 DEVIATIONS FROM THE STANDARD

No deviations from the applicable test standards or test plan were made during testing.

1.6 MODIFICATION RECORD

Description of Modification	Modification Fitted By	Date Modification Fitted
Serial Number: AT071218B00062 (MIFI8000), AZ280418A00044 (MIFI8800L)		
None	—	—

The table above details modifications made to the EUT during the test programme. The modifications incorporated during each test (if relevant) are recorded on the appropriate test pages.

1.7 TEST METHODOLOGY

All measurements contained in this report were conducted with ANSI C63.26-2015, American National Standard for Compliance Testing of Transmitters Used in Licensed Radio Services.

For conducted and radiated emissions the equipment under test (EUT) was configured to measure its highest possible emission level. The test modes were adapted according to the Operating Instructions provided by the manufacturer/client.

1.8 TEST FACILITY LOCATION

1.8.1 TÜV SÜD America Inc. (Mira Mesa)

10040 Mesa Rim Road, San Diego, CA 92121-2912 (32.901268,-117.177681). Phone: 858 678 1400 FAX: 858 546 0364

1.8.2 TÜV SÜD America Inc. (Rancho Bernardo)

16936 Via Del Campo, San Diego, CA 92127-1708 (33.018644,-117.092409). Phone: (858) 678-1400 Fax: (858) 546-0364.

1.9 TEST FACILITY REGISTRATION

1.9.1 FCC – Designation No.: US1146

TUV SUD America Inc. (San Diego), is an accredited test facility with the site description report on file and has met all the requirements specified in §2.948 of the FCC rules. The acceptance letter from the FCC is maintained in our files and the Designation is US1146.



1.9.2 Innovation, Science and Economic Development Canada (IC) Registration No.: 3067A-1 & 22806-1

The 10m Semi-anechoic chamber of TUV SUD America Inc. (San Diego Rancho Bernardo) has been registered by Certification and Engineering Bureau of Innovation, Science and Economic Development Canada for radio equipment testing with Registration No. 3067A-1.

The 3m Semi-anechoic chamber of TUV SUD America Inc. (San Diego Mira Mesa) has been registered by Certification and Engineering Bureau of Innovation, Science and Economic Development Canada for radio equipment testing with Registration No. 22806-1.

1.9.3 BSMI – Laboratory Code: SL2-IN-E-028R (US0102)

TUV Product Service Inc. (San Diego) is a recognized EMC testing laboratory by the BSMI under the MRA (Mutual Recognition Arrangement) with the United States. Accreditation includes CNS 13438 up to 6GHz.

1.9.4 NCC (National Communications Commission - US0102)

TUV SUD America Inc. (San Diego) is listed as a Foreign Recognized Telecommunication Equipment Testing Laboratory and is accredited to ISO/IEC 17025 (A2LA Certificate No.2955.13) which under APEC TEL MRA Phase 1 was designated as a Conformity Assessment Body competent to perform testing of equipment subject to the Technical Regulations covered under its scope of accreditation including RTTE01, PLMN01 and PLMN08 for TTE type of testing and LP002 for Low-Power RF Device type of testing.

1.9.5 VCCI – Registration No. A-0280 and A-0281

TUV SUD America Inc. (San Diego) is a VCCI registered measurement facility which includes radiated field strength measurement, radiated field strength measurement above 1GHz, mains port interference measurement and telecommunication port interference measurement.

1.9.6 RRA – Identification No. US0102

TUV SUD America Inc. (San Diego) is National Radio Research Agency (RRA) recognized laboratory under Phase I of the APEC Tel MRA.

1.9.7 OFCA – U.S. Identification No. US0102

TUV SUD America Inc. (San Diego) is recognized by Office of the Communications Authority (OFCA) under Appendix B, Phase I of the APEC Tel MRA.

1.10 SAMPLE CALCULATIONS

1.10.1 WCDMA Emission Designator

Emission Designator = 4M15F9W
 WCDMA BW = 4.15 MHz
 F = Frequency Modulation
 9= Composite Digital Info
 W = Combination (Audio/Data)

1.10.2 LTE Emission Designator (QPSK)

Emission Designator = 4M51G7D
 G = Phase Modulation
 7= Quantized/Digital Info
 D = Data Transmission, telemetry, telecommand

1.10.3 LTE Emission Designator (16QAM)

Emission Designator = 4M50W7D
 W = Frequency Modulation
 7= Quantized/Digital Info
 D = Data Transmission, telemetry, telecommand

1.10.4 Spurious Radiated Emission (below 1GHz)

Measuring equipment raw measurement (dBμV) @ 30 MHz			24.4
Correction Factor (dB)	Asset# 1066 (cable)	0.3	-12.6
	Asset# 1172 (cable)	0.3	
	Asset# 1016 (preamplifier)	-30.7	
	Asset# 1175(cable)	0.3	
	Asset# 1002 (antenna)	17.2	
Reported QuasiPeak Final Measurement (dBμV/m) @ 30MHz			11.8

1.10.5 Spurious Radiated Emission – Substitution Method

Example = 84dBμV/m @ 1413 MHz (numerical sample only)

The field strength reading of 84dBμV/m @ 1413 MHz (2nd Harmonic of 706.5 MHz) is the maximized measurement when the EUT is on the turntable measured at 3 meters. The gain of the substituted antenna is 7.8dBi while the transmit cable loss is 1.0 dB (cable between signal generator and the substituted antenna). The signal generator level is adjusted until the 84dBμV/m level at the receiving end is replicated (identical test setup, i.e. same antenna, cable/s and preamp). If the adjusted signal generator level is -18dBm, then we have the following for both EIRP and ERP as required:

$$\begin{aligned}
 P_{\text{EIRP}} &= -18 \text{ dBm} + 7.8 \text{ dBi} - 1 \text{ dB} \\
 &= 11.2 \text{ dBm} \\
 P_{\text{ERP}} &= P_{\text{EIRP}} - 2.15 \text{ dB} \\
 &= 11.2 \text{ dBm} - 2.15 \text{ dB} \\
 &= 9.05 \text{ dBm}
 \end{aligned}$$



SECTION 2

TEST DETAILS

Radio Testing of the
Inseego Corp.
MIFI8000 Wireless Hotspot Modem



2.1 TRANSMITTER CONDUCTED POWER MEASUREMENTS

2.1.1 Specification Reference

FCC 47 CFR Part 2, Clause 2.1046

2.1.2 Standard Applicable

The conducted power measurements were made in accordance to FCC Part 2 Clause 2.1046.

FCC 47 CFR Part 2.1046:

(a) For transmitters other than single sideband, independent sideband and controlled carrier radiotelephone, power output shall be measured at the RF output terminals when the transmitter is adjusted in accordance with the tune-up procedure to give the values of current and voltage on the circuit elements specified in § 2.1033(c)(8). The electrical characteristics of the radio frequency load attached to the output terminals when this test is made shall be stated.

(c) For measurements conducted pursuant to paragraphs (a) and (b) of this section, all calculations and methods used by the applicant for determining carrier power or peak envelope power, as appropriate, on the basis of measured power in the radio frequency load attached to the transmitter output terminals shall be shown. Under the test conditions specified, no components of the emission spectrum shall exceed the limits specified in the applicable rule parts as necessary for meeting occupied bandwidth or emission limitations.

2.1.3 Equipment Under Test and Modification State

Serial No: AT071218B00062 (MIFI8000), AZ280418A00044 (MIFI8800L) / Test Configuration A

2.1.4 Date of Test/Initial of test personnel who performed the test

February 25, 26, April 03, and May 10, 2019 / XYZ

June 18, 19 and July 19, 2018 / XYZ

2.1.5 Test Equipment Used

The major items of test equipment used for the above tests are identified in Section 3.1.

2.1.6 Environmental Conditions/ Test Location

Test performed at TÜV SÜD America Inc. Rancho Bernardo facility

Ambient Temperature	21.2 - 25.7°C
Relative Humidity	35.0 - 51.6%
ATM Pressure	98.5 - 99.3 kPa

2.1.7 Additional Observations

- This is a conducted test using Power Meter.
- The path loss was measured and entered as a level offset.
- Low, Middle and High channels for all bandwidths with different RB size and RB offset and modulations were verified and reported.

2.1.8 Test Results

Band	Channel	Frequency (MHz)	Average Max Power (dBm)	Peak Max Power (dBm)
WCDMA Band 4	1312	1712.4	23.54	26.58
	1413	1732.6	23.62	26.89
	1513	1752.6	23.89	27.14

LTE Band 12							
Bandwidth (MHz)	Channel	Frequency (MHz)	Modulation	No. RB	RB Start	Average Power (dBm)	Peak Power (dBm)
1.4	23017	699.7	QPSK	1	3	23.98	26.86
	23095	707.5		1	3	23.80	27.09
	23173	715.3		1	3	23.74	26.82
	23.17	699.7	16QAM	1	3	23.01	27.03
	23095	707.5		1	3	22.85	28.04
	23173	715.3		1	3	22.74	27.25
3	23025	700.5	QPSK	1	7	23.94	23.73
	23095	707.5		1	7	23.83	27.0
	23165	714.5		1	7	23.75	26.69
	23025	700.5	16QAM	1	7	22.92	27.06
	23095	707.5		1	7	23.01	27.84
	23165	714.5		1	7	22.82	27.17
5	23035	701.5	QPSK	1	12	23.98	27.18
	23095	707.5		1	12	23.90	27.15
	23155	713.5		1	12	23.84	26.77
	23035	701.5	16QAM	1	0	23.04	27.10
	23095	707.5		1	0	23.20	28.07
	23155	713.5		1	0	22.89	27.22
10	23060	704	QPSK	1	49	23.84	27.09
	23095	707.5		1	49	23.77	26.78
	23130	711		1	49	23.88	27.07
	23060	704	16QAM	1	25	22.95	27.93
	23095	707.5		1	25	23.04	27.94
	23130	711		1	25	22.87	27.28



LTE Band 17							
Bandwidth (MHz)	Channel	Frequency (MHz)	Modulation	No. RB	RB Start	Average Power (dBm)	Peak Power (dBm)
5	23755	706.5	QPSK	1	12	23.87	27.09
	23790	710		1	12	23.88	27.01
	23825	713.5		1	12	23.87	26.73
	23755	706.5	16QAM	1	12	23.09	27.90
	23790	710		1	12	23.01	27.55
	23825	713.5		1	12	23.07	27.04
10	23780	709	QPSK	1	25	23.86	27.13
	23790	710		1	25	23.81	27.13
	23800	711		1	25	23.85	26.87
	23780	709	16QAM	1	25	22.95	28.0
	23790	710		1	25	23.06	27.94
	23800	711		1	25	22.93	27.22

LTE Band 41							
Bandwidth (MHz)	Channel	Frequency (MHz)	Modulation	No. RB	RB Start	Average Power (dBm)	Peak Power (dBm)
5	39675	2498.5	QPSK	1	12	21.40	29.20
	40620	2593		1	12	20.88	28.54
	41565	2687.5		1	12	22.37	30.07
	39675	2498.5	16QAM	1	12	20.38	29.60
	40620	2593		1	12	20.21	28.94
	41565	2687.5		1	12	21.44	30.46
10	39700	2501	QPSK	1	0	21.19	29.29
	40620	2593		1	0	20.97	28.50
	41540	2685		1	0	22.36	30.25
	39700	2501	16QAM	1	0	20.11	29.27
	40620	2593		1	0	20.05	28.92
	41540	2685		1	0	21.51	30.69
15	39725	2503.5	QPSK	1	0	21.06	28.84
	40620	2593		1	0	21.15	28.76
	41515	2682.5		1	0	22.39	30.12
	39725	2503.5	16QAM	1	0	20.25	29.33
	40620	2593		1	0	20.15	28.97
	41515	2682.5		1	0	21.62	30.75
20	39750	2506	QPSK	1	0	21.33	29.08
	40620	2593		1	0	21.38	28.74
	41490	2680		1	0	21.32	29.29
	39750	2506	16QAM	1	0	20.37	29.49
	40620	2593		1	0	20.29	29.01
	41490	2680		1	0	20.38	29.88

CA_41C									
Bandwidth (MHz)	Modulation	PCC Freq (MHz)	No. RB	RB Offset	SCC Freq (MHz)	No. RB	RB Offset	Average Power (dBm)	Peak Power (dBm)
25+100	QPSK	2499.3	1	24	2511	1	0	21.45	29.94
			25	0		100	0	19.52	28.43
		2583.8	1	24	2595.5	1	0	21.18	29.40
			25	0		100	0	19.21	28.85
		2668.3	1	24	2680	1	0	20.92	29.44
			25	0		100	0	18.88	27.93
	16QAM	2499.3	1	24	2511	1	0	20.75	30.39
			25	0		100	0	18.60	28.98
		2583.8	1	24	2595.5	1	0	20.51	29.54
			25	0		100	0	18.76	29.03
		2668.3	1	24	2680	1	0	20.02	29.23
			25	0		100	0	17.95	27.62
100+25	QPSK	2506	1	99	2517.7	1	0	21.38	29.30
			100	0		25	0	19.42	29.23
		2590.5	1	99	2602.2	1	0	21.09	29.58
			100	0		25	0	19.10	28.14
		2675	1	99	2686.7	1	0	20.75	29.69
			100	0		25	0	18.79	28.36
	16QAM	2506	1	99	2517.7	1	0	20.67	29.65
			100	0		25	0	18.50	28.66
		2590.5	1	99	2602.2	1	0	20.26	29.29
			100	0		25	0	18.17	28.05
		2675	1	99	2686.7	1	0	19.93	29.20
			100	0		25	0	17.89	28.04

CA_41C									
Bandwidth (MHz)	Modulation	PCC Freq (MHz)	No. RB	RB Offset	SCC Freq (MHz)	No. RB	RB Offset	Average Power (dBm)	Peak Power (dBm)
50+75	QPSK	2501.3	1	49	2513.3	1	0	21.47	31.30
			50	0		75	0	19.44	28.60
		2585.9	1	49	2597.9	1	0	20.90	30.28
			50	0		75	0	19.04	28.04
		2670.5	1	49	2682.5	1	0	20.71	30.02
			50	0		75	0	18.67	29.15
	16QAM	2501.3	1	49	2513.3	1	0	20.61	30.66
			50	0		75	0	18.54	28.54
		2585.9	1	49	2597.9	1	0	20.01	30.65
			50	0		75	0	18.15	27.91
		2670.5	1	49	2682.5	1	0	19.91	30.28
			50	0		75	0	17.84	29.82
75+50	QPSK	2503.5	1	74	2515.5	1	0	21.30	31.18
			75	0		50	0	19.27	29.47
		2588.1	1	74	2600.1	1	0	20.99	29.85
			75	0		50	0	18.94	28.62
		2672.7	1	74	2684.7	1	0	20.61	30.28
			75	0		50	0	18.60	29.18
	16QAM	2503.5	1	74	2515.5	1	0	20.44	30.67
			75	0		50	0	18.36	29.02
		2588.1	1	74	2600.1	1	0	20.23	29.82
			75	0		50	0	18.02	28.48
		2672.7	1	74	2684.7	1	0	19.75	30.01
			75	0		50	0	17.83	29.12

CA_41C									
Bandwidth (MHz)	Modulation	PCC Freq (MHz)	No. RB	RB Offset	SCC Freq (MHz)	No. RB	RB Offset	Average Power (dBm)	Peak Power (dBm)
50+100	QPSK	2501.5	1	49	2515.9	1	0	21.24	31.08
			50	0		100	0	19.26	29.84
		2583.6	1	49	2598	1	0	20.91	30.62
			50	0		100	0	19.01	29.52
		2665.6	1	49	2680	1	0	20.75	30.27
			50	0		100	0	18.70	29.07
	16QAM	2501.5	1	49	2515.9	1	0	20.35	30.36
			50	0		100	0	18.35	29.69
		2583.6	1	49	2598	1	0	20.10	30.78
			50	0		100	0	18.14	29.55
		2665.6	1	49	2680	1	0	19.90	30.24
			50	0		100	0	17.91	29.30
100+50	QPSK	2506	1	99	2520.4	1	0	21.25	30.24
			100	0		50	0	19.29	30.17
		2588.1	1	99	2602.5	1	0	20.94	30.37
			100	0		50	0	18.96	29.43
		2670.1	1	99	2684.5	1	0	20.71	30.64
			100	0		50	0	18.82	29.01
	16QAM	2506	1	99	2520.4	1	0	20.45	30.74
			100	0		50	0	18.39	29.91
		2588.1	1	99	2602.5	1	0	20.06	29.45
			100	0		50	0	18.06	28.73
		2670.1	1	99	2684.5	1	0	19.97	29.92
			100	0		50	0	17.92	29.05

CA_41C									
Bandwidth (MHz)	Modulation	PCC Freq (MHz)	No. RB	RB Offset	SCC Freq (MHz)	No. RB	RB Offset	Average Power (dBm)	Peak Power (dBm)
75+75	QPSK	2503.5	1	74	2518.5	1	0	21.17	31.21
			75	0		75	0	19.59	30.71
		2585.5	1	74	2600.5	1	0	20.72	30.14
			75	0		75	0	18.87	29.72
		2667.5	1	74	2682.5	1	0	20.64	30.09
			75	0		75	0	18.17	29.35
	16QAM	2503.5	1	74	2518.5	1	0	20.25	30.54
			75	0		75	0	18.95	30.25
		2585.5	1	74	2600.5	1	0	20.07	30.7
			75	0		75	0	18.0	29.44
		2667.5	1	74	2682.5	1	0	19.76	30.73
			75	0		75	0	17.64	29.22

CA_41C									
Bandwidth (MHz)	Modulation	PCC Freq (MHz)	No. RB	RB Offset	SCC Freq (MHz)	No. RB	RB Offset	Average Power (dBm)	Peak Power (dBm)
75+100	QPSK	2503.8	1	74	2520.9	1	0	19.66	29.6
			75	0		100	0	18.18	29.36
		2583.3	1	74	2600.4	1	0	20.89	30.55
			75	0		100	0	19.08	29.93
		2662.9	1	74	2680	1	0	20.74	30.41
			75	0		100	0	18.62	29.38
	16QAM	2503.8	1	74	2520.9	1	0	19.76	30.10
			75	0		100	0	17.73	28.64
		2583.3	1	74	2600.4	1	0	20.21	30.96
			75	0		100	0	18.18	29.05
		2662.9	1	74	2680	1	0	20.08	31.63
			75	0		100	0	17.68	28.71
100+75	QPSK	2506	1	99	2523.1	1	0	21.16	30.85
			100	0		75	0	19.01	30.01
		2585.6	1	99	2602.7	1	0	20.87	30.23
			100	0		75	0	19.07	29.48
		2665.1	1	99	2682.2	1	0	20.75	30.47
			100	0		75	0	18.26	28.49
	16QAM	2506	1	99	2523.1	1	0	20.32	30.25
			100	0		75	0	18.08	29.99
		2585.6	1	99	2602.7	1	0	20.01	30.42
			100	0		75	0	18.10	29.26
		2665.1	1	99	2682.2	1	0	19.96	30.44
			100	0		75	0	17.47	28.74

CA_41C									
Bandwidth (MHz)	Modulation	PCC Freq (MHz)	No. RB	RB Offset	SCC Freq (MHz)	No. RB	RB Offset	Average Power (dBm)	Peak Power (dBm)
100+100	QPSK	2506	1	99	2525.8	1	0	21.46	30.48
			100	0		100	0	19.39	28.96
		2583.1	1	99	2602.9	1	0	21.01	21.18
			100	0		100	0	19.10	28.30
		2660.2	1	99	2680	1	0	20.80	30.67
			100	0		100	0	18.69	28.72
	16QAM	2506	1	99	2525.8	1	0	20.73	30.46
			100	0		100	0	18.49	29.81
		2583.1	1	99	2602.9	1	0	20.17	29.26
			100	0		100	0	18.20	29.18
		2660.2	1	99	2680	1	0	19.98	30.86
			100	0		100	0	17.79	28.95



LTE Band 4							
Bandwidth (MHz)	Channel	Frequency (MHz)	Modulation	No. RB	RB Start	Average Power (dBm)	Peak Power (dBm)
1.4	19957	1710.7	QPSK	1	0	23.89	25.59
				1	3	23.92	25.6
				1	5	23.87	25.68
				6	0	23.43	26.32
			16QAM	1	0	22.63	25.69
				1	3	22.65	25.83
				1	5	22.61	25.79
				6	0	22.21	26.57
	20175	1732.5	QPSK	1	0	23.13	26.34
				1	3	23.17	26.24
				1	5	23.11	26.22
				6	0	22.8	26.29
			16QAM	1	0	22.14	26.51
				1	3	22.19	26.61
				1	5	23.16	26.55
				6	0	21.73	26.14
	20393	1754.3	QPSK	1	0	23.02	25.89
				1	3	23.05	25.91
				1	5	22.99	26.03
				6	0	22.54	26.76
			16QAM	1	0	21.99	26.18
				1	3	22.05	26.35
				1	5	21.95	26.37
				6	0	21.58	27.07

LTE Band 4							
Bandwidth (MHz)	Channel	Frequency (MHz)	Modulation	No. RB	RB Start	Average Power (dBm)	Peak Power (dBm)
3	19965	1711.5	QPSK	1	0	23.94	25.61
				1	8	23.9	25.62
				1	14	23.76	25.76
				15	0	23.14	26.28
			16QAM	1	0	22.69	25.64
				1	8	22.63	25.83
				1	14	22.48	25.9
				15	0	22.09	26.54
	20175	1732.5	QPSK	1	0	23.12	26.14
				1	8	23.12	26.15
				1	14	23.06	26.14
				15	0	22.76	26.28
			16QAM	1	0	22.22	26.48
				1	8	22.22	26.67
				1	14	22.18	26.48
				15	0	21.76	26.08
	20385	1753.5	QPSK	1	0	23.1	25.63
				1	8	23.06	25.73
				1	14	22.97	25.88
				15	0	22.66	26.79
			16QAM	1	0	22.02	25.95
				1	8	22.01	26.01
				1	14	22.0	26.26
				15	0	21.64	27.03

LTE Band 4							
Bandwidth (MHz)	Channel	Frequency (MHz)	Modulation	No. RB	RB Start	Average Power (dBm)	Peak Power (dBm)
5	19975	1712.5	QPSK	1	0	23.95	25.62
				1	13	23.77	25.77
				1	24	23.66	26.04
				25	0	23.11	26.6
			16QAM	1	0	22.84	25.65
				1	13	22.74	25.89
				1	24	22.71	26.27
				25	0	22.11	26.78
	20175	1732.5	QPSK	1	0	23.17	26.14
				1	13	23.18	26.16
				1	24	23.09	26.16
				25	0	22.71	26.26
			16QAM	1	0	22.3	26.6
				1	13	22.3	26.65
				1	24	22.23	26.55
				25	0	21.63	26.11
	20375	1752.5	QPSK	1	0	23.13	25.52
				1	13	23.1	25.68
				1	24	22.99	25.93
				25	0	22.6	26.63
			16QAM	1	0	22.04	25.80
				1	13	22.04	26.04
				1	24	21.98	26.36
				25	0	21.63	26.82

LTE Band 4							
Bandwidth (MHz)	Channel	Frequency (MHz)	Modulation	No. RB	RB Start	Average Power (dBm)	Peak Power (dBm)
10	20000	1715	QPSK	1	0	23.93	25.68
				1	25	23.6	26.25
				1	49	23.4	26.62
				50	0	23.2	27.03
			16QAM	1	0	22.71	25.88
				1	25	22.42	26.57
				1	49	22.33	27.21
				50	0	22.24	27.38
	20175	1732.5	QPSK	1	0	23.77	26.67
				1	25	23.58	26.59
				1	49	23.55	26.58
				50	0	22.72	26.34
			16QAM	1	0	22.75	27.08
				1	25	22.57	27.07
				1	49	22.5	26.98
				50	0	21.67	26.52
	20350	1750	QPSK	1	0	23.67	25.91
				1	25	23.54	29.95
				1	49	23.43	26.4
				50	0	22.57	26.42
			16QAM	1	0	22.63	26.15
				1	25	22.52	26.38
				1	49	22.53	26.82
				50	0	21.64	26.65

LTE Band 4							
Bandwidth (MHz)	Channel	Frequency (MHz)	Modulation	No. RB	RB Start	Average Power (dBm)	Peak Power (dBm)
15	20025	1717.5	QPSK	1	0	23.99	25.79
				1	38	23.92	27.08
				1	74	23.71	26.82
				75	0	22.99	27.47
			16QAM	1	0	23.19	26.41
				1	38	23.05	27.59
				1	74	22.84	27.08
				75	0	22.08	28.04
	20175	1732.5	QPSK	1	0	23.85	26.6
				1	38	23.55	26.61
				1	74	23.53	26.52
				75	0	22.73	26.7
			16QAM	1	0	22.88	27.02
				1	38	22.65	27.15
				1	74	22.63	27.02
				75	0	21.8	26.6
	20325	1747.5	QPSK	1	0	23.66	26.33
				1	38	23.5	26.04
				1	74	23.41	26.44
				75	0	22.65	26.6
			16QAM	1	0	22.73	26.69
				1	38	22.46	26.35
				1	74	22.53	26.89
				75	0	21.74	26.86

LTE Band 4							
Bandwidth (MHz)	Channel	Frequency (MHz)	Modulation	No. RB	RB Start	Average Power (dBm)	Peak Power (dBm)
20	20050	1720	QPSK	1	0	23.99	26.15
				1	50	23.74	27.13
				1	99	23.58	26.65
				100	0	22.99	27.21
			16QAM	1	0	23.18	26.87
				1	50	22.88	27.95
				1	99	22.54	26.21
				100	0	22.02	27.84
	20175	1732.5	QPSK	1	0	23.86	27.18
				1	50	23.55	26.69
				1	99	23.52	26.56
				100	0	22.81	26.88
			16QAM	1	0	23.05	27.63
				1	50	22.62	26.34
				1	99	22.71	27.18
				100	0	21.72	26.91
	20300	1745	QPSK	1	0	23.24	26.27
				1	50	23.06	25.77
				1	99	22.97	26.11
				100	0	22.65	26.85
			16QAM	1	0	22.25	26.74
				1	50	21.98	26.12
				1	99	22.02	26.69
				100	0	21.72	27.16

LTE Band 7							
Bandwidth (MHz)	Channel	Frequency (MHz)	Modulation	No. RB	RB Start	Average Power (dBm)	Peak Power (dBm)
5	20775	2502.5	QPSK	1	0	21.51	25.05
				1	13	21.77	25.22
				1	24	21.69	25.21
				25	0	21.84	27.22
			16QAM	1	0	21.04	26.35
				1	13	21.29	26.44
				1	24	21.17	26.36
				25	0	21.02	27.84
	21100	2535	QPSK	1	0	23.62	27.51
				1	13	23.69	27.43
				1	24	23.59	27.36
				25	0	22.72	28.51
			16QAM	1	0	23.01	28.58
				1	13	23.05	28.47
				1	24	22.9	28.43
				25	0	21.82	29.19
	21425	2567.5	QPSK	1	0	22.99	26.66
				1	13	22.98	26.54
				1	24	22.63	26.28
				25	0	22.2	27.49
			16QAM	1	0	22.29	27.63
				1	13	22.29	27.57
				1	24	21.96	27.31
				25	0	21.27	28.02

LTE Band 7							
Bandwidth (MHz)	Channel	Frequency (MHz)	Modulation	No. RB	RB Start	Average Power (dBm)	Peak Power (dBm)
10	20800	2505	QPSK	1	0	21.63	25.14
				1	25	21.93	25.38
				1	49	21.81	25.31
				50	0	21.92	27.24
			16QAM	1	0	20.79	26.3
				1	25	21.13	26.41
				1	49	21.02	26.34
				50	0	20.97	27.41
	21100	2535	QPSK	1	0	22.76	26.46
				1	25	23.06	26.72
				1	49	22.87	26.55
				50	0	22.52	28.32
			16QAM	1	0	22.05	27.66
				1	25	22.35	27.91
				1	49	22.15	27.56
				50	0	21.63	28.37
	21400	2565	QPSK	1	0	23.03	26.66
				1	25	23.08	26.64
				1	49	22.49	26.15
				50	0	22.28	27.98
			16QAM	1	0	22.24	27.66
				1	25	22.29	27.63
				1	49	21.68	27.13
				50	0	21.35	28.16

LTE Band 7							
Bandwidth (MHz)	Channel	Frequency (MHz)	Modulation	No. RB	RB Start	Average Power (dBm)	Peak Power (dBm)
15	20825	2507.5	QPSK	1	0	21.57	25.04
				1	38	22.0	25.44
				1	74	20.82	24.27
				75	0	21.85	27.24
			16QAM	1	0	20.82	26.11
				1	38	21.29	26.51
				1	74	20.09	25.37
				75	0	21.03	27.77
	21100	2535	QPSK	1	0	22.63	26.29
				1	38	23.03	26.69
				1	74	22.77	26.35
				75	0	22.52	28.26
			16QAM	1	0	21.93	27.44
				1	38	22.35	27.82
				1	74	22.07	27.44
				75	0	21.57	28.45
	21375	2562.5	QPSK	1	0	23.03	26.63
				1	38	23.12	26.74
				1	74	22.37	26.02
				75	0	22.22	28.07
			16QAM	1	0	22.16	27.69
				1	38	22.26	27.84
				1	74	21.50	27.10
				75	0	21.3	28.19

LTE Band 7							
Bandwidth (MHz)	Channel	Frequency (MHz)	Modulation	No. RB	RB Start	Average Power (dBm)	Peak Power (dBm)
20	20850	2510	QPSK	1	0	21.27	24.72
				1	50	22.05	25.5
				1	99	21.68	25.27
				100	0	21.9	27.35
			16QAM	1	0	20.46	25.86
				1	50	21.28	26.5
				1	99	20.84	26.33
				100	0	21.04	27.49
	21100	2535	QPSK	1	0	22.28	25.91
				1	50	22.98	26.64
				1	99	22.46	26.0
				100	0	22.61	28.01
			16QAM	1	0	21.57	27.19
				1	50	22.29	27.75
				1	99	21.74	27.11
				100	0	21.72	28.71
	21350	2560	QPSK	1	0	22.65	26.21
				1	50	23.07	26.76
				1	99	22.09	25.78
				100	0	22.26	27.62
			16QAM	1	0	21.84	27.33
				1	50	22.26	27.81
				1	99	21.22	26.83
				100	0	21.36	28.51

LTE Band 13							
Bandwidth (MHz)	Channel	Frequency (MHz)	Modulation	No. RB	RB Start	Average Power (dBm)	Peak Power (dBm)
5	23205	779.5	QPSK	1	0	23.82	27.08
				1	13	23.82	27.17
				1	24	23.82	27.28
				25	0	23.13	28.0
			16QAM	1	0	22.99	27.61
				1	13	23.01	27.89
				1	24	23.01	27.92
				25	0	22.18	28.78
	23230	782	QPSK	1	0	23.95	27.39
				1	13	23.93	27.34
				1	24	23.88	27.32
				25	0	23.19	28.1
			16QAM	1	0	22.98	28.07
				1	13	23.08	28.01
				1	24	22.97	28.06
				25	0	22.25	28.42
	23255	784.5	QPSK	1	0	23.95	27.41
				1	13	23.86	27.13
				1	24	23.77	27.2
				25	0	23.0	28.22
			16QAM	1	0	23.22	28.05
				1	13	23.1	27.83
				1	24	23.03	27.88
				25	0	22.24	28.32

LTE Band 13							
Bandwidth (MHz)	Channel	Frequency (MHz)	Modulation	No. RB	RB Start	Average Power (dBm)	Peak Power (dBm)
10	23230	782	QPSK	1	0	23.93	27.15
				1	25	23.82	27.21
				1	49	23.72	27.1
				50	0	23.12	28.07
			16QAM	1	0	23.05	27.71
				1	25	23.0	27.92
				1	49	22.89	27.88
				50	0	22.18	28.19

LTE Band 66							
Bandwidth (MHz)	Channel	Frequency (MHz)	Modulation	No. RB	RB Start	Average Power (dBm)	Peak Power (dBm)
1.4	131979	1710.7	QPSK	1	0	23.91	25.83
				1	3	23.94	25.87
				1	5	23.9	25.91
				6	0	23.41	26.54
			16QAM	1	0	22.72	26.06
				1	3	22.75	26.11
				1	5	22.7	26.12
				6	0	22.21	26.75
	132322	1745	QPSK	1	0	23.05	25.62
				1	3	23.11	25.51
				1	5	22.98	25.64
				6	0	22.46	26.49
			16QAM	1	0	21.9	26.08
				1	3	21.95	26.14
				1	5	21.86	26.01
				6	0	21.43	26.73
	132665	1779.3	QPSK	1	0	22.84	25.86
				1	3	22.87	25.84
				1	5	22.8	25.94
				6	0	22.33	26.82
			16QAM	1	0	21.77	26.12
				1	3	21.87	26.18
				1	5	21.8	26.29
				6	0	21.38	27.18

LTE Band 66							
Bandwidth (MHz)	Channel	Frequency (MHz)	Modulation	No. RB	RB Start	Average Power (dBm)	Peak Power (dBm)
3	131987	1711.5	QPSK	1	0	23.91	25.92
				1	8	23.85	26.05
				1	14	23.84	26.22
				15	0	23.26	26.75
			16QAM	1	0	22.71	26.08
				1	8	22.71	26.25
				1	14	22.71	26.45
				15	0	22.26	26.98
	132322	1745	QPSK	1	0	23.03	25.62
				1	8	22.96	25.57
				1	14	22.97	25.62
				15	0	22.42	26.8
			16QAM	1	0	21.94	25.96
				1	8	21.91	25.97
				1	14	21.88	25.98
				15	0	21.5	26.96
	132657	1778.5	QPSK	1	0	22.84	25.79
				1	8	22.78	25.84
				1	14	22.73	25.96
				15	0	22.39	26.8
			16QAM	1	0	21.93	26.18
				1	8	21.91	26.29
				1	14	21.89	26.42
				15	0	21.43	26.87

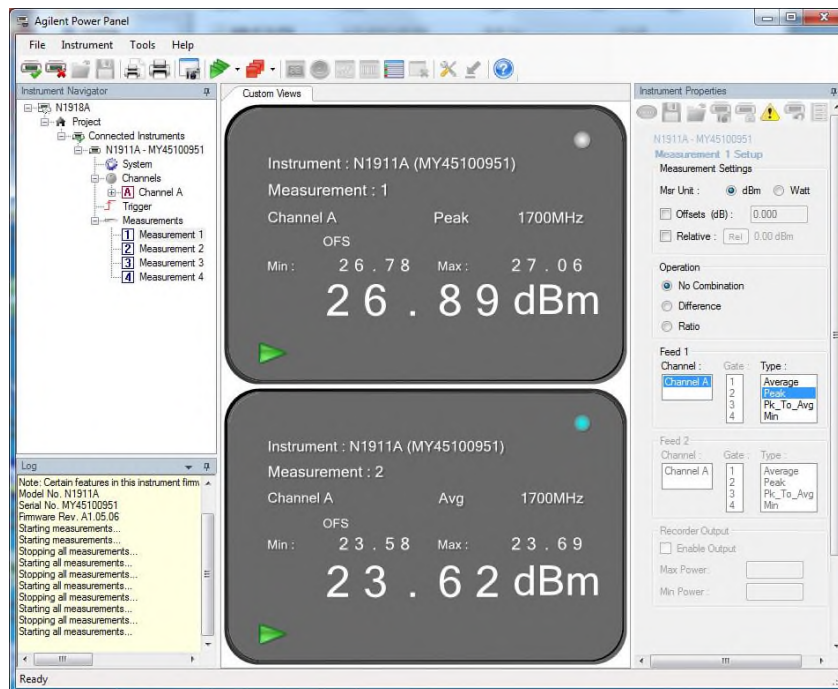
LTE Band 66							
Bandwidth (MHz)	Channel	Frequency (MHz)	Modulation	No. RB	RB Start	Average Power (dBm)	Peak Power (dBm)
5	131997	1712.5	QPSK	1	0	23.95	26.48
				1	13	23.92	26.63
				1	24	23.73	26.82
				25	0	23.24	26.85
			16QAM	1	0	22.97	26.71
				1	13	23.02	27.1
				1	24	22.84	27.28
				25	0	22.24	26.93
	132322	1745	QPSK	1	0	23.12	26.21
				1	13	23.11	26.05
				1	24	23.01	26.04
				25	0	22.56	26.28
			16QAM	1	0	22.15	26.62
				1	13	22.15	26.47
				1	24	22.1	26.52
				25	0	21.62	26.65
	132647	1777.5	QPSK	1	0	23.06	26.21
				1	13	23.03	26.26
				1	24	22.98	26.24
				25	0	22.53	27.0
			16QAM	1	0	22.23	26.47
				1	13	22.28	26.81
				1	24	22.17	26.96
				25	0	21.61	27.35

LTE Band 66							
Bandwidth (MHz)	Channel	Frequency (MHz)	Modulation	No. RB	RB Start	Average Power (dBm)	Peak Power (dBm)
10	132022	1715	QPSK	1	0	24.0	25.79
				1	25	23.61	26.32
				1	49	23.43	26.66
				50	0	23.24	27.37
			16QAM	1	0	22.74	25.99
				1	25	22.58	26.68
				1	49	22.54	27.34
				50	0	22.25	27.59
	132322	1745	QPSK	1	0	23.19	25.76
				1	25	22.97	25.49
				1	49	22.95	25.55
				50	0	22.54	26.56
			16QAM	1	0	22.11	26.28
				1	25	21.86	25.86
				1	49	21.86	25.97
				50	0	21.61	26.7
	132622	1775	QPSK	1	0	22.94	26.14
				1	25	22.84	25.72
				1	49	22.76	25.85
				50	0	22.49	27.07
			16QAM	1	0	22.1	26.77
				1	25	21.94	26.19
				1	49	21.92	26.18
				50	0	21.58	27.29

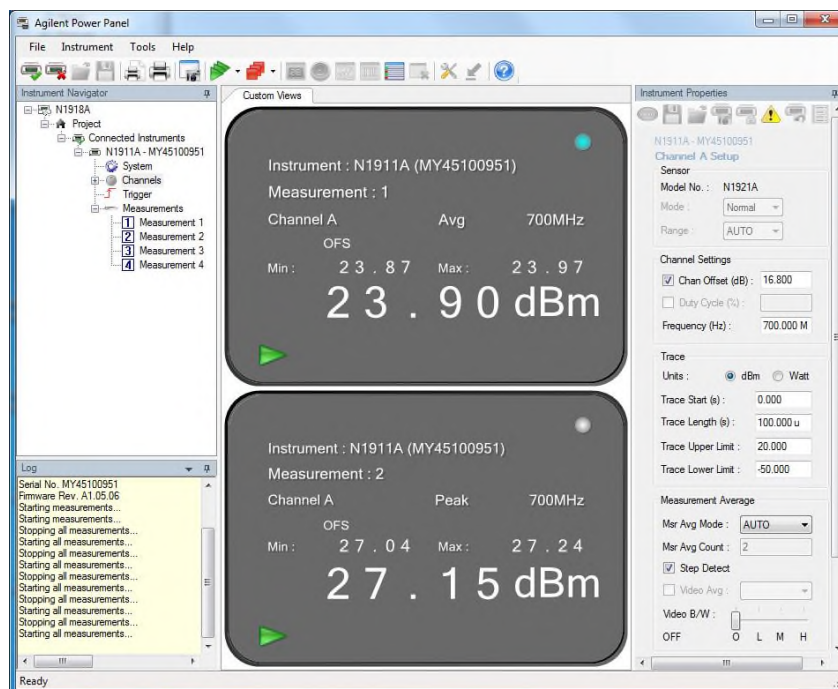
LTE Band 66							
Bandwidth (MHz)	Channel	Frequency (MHz)	Modulation	No. RB	RB Start	Average Power (dBm)	Peak Power (dBm)
15	132047	1717.5	QPSK	1	0	23.92	25.99
				1	38	23.52	26.7
				1	74	23.43	26.44
				75	0	23.19	27.64
			16QAM	1	0	22.83	26.26
				1	38	22.68	27.31
				1	74	22.51	26.81
				75	0	22.26	27.76
	132322	1745	QPSK	1	0	23.2	26.17
				1	38	22.93	25.62
				1	74	22.89	25.85
				75	0	22.63	26.78
			16QAM	1	0	22.32	26.64
				1	38	21.97	26.02
				1	74	22.0	26.32
				75	0	21.7	27.01
	132597	1772.5	QPSK	1	0	23.04	26.07
				1	38	22.8	26.01
				1	74	22.8	25.92
				75	0	22.54	27.44
			16QAM	1	0	21.97	25.68
				1	38	21.86	26.72
				1	74	21.82	26.41
				75	0	21.65	27.51

LTE Band 66							
Bandwidth (MHz)	Channel	Frequency (MHz)	Modulation	No. RB	RB Start	Average Power (dBm)	Peak Power (dBm)
20	132072	1720	QPSK	1	0	23.98	26.26
				1	50	23.44	26.78
				1	99	23.34	26.34
				100	0	23.12	27.39
			16QAM	1	0	22.8	26.6
				1	50	22.48	27.52
				1	99	22.21	25.68
				100	0	22.11	27.8
	132322	1745	QPSK	1	0	23.41	26.37
				1	50	22.95	25.84
				1	99	22.86	26.08
				100	0	22.56	26.9
			16QAM	1	0	22.4	26.75
				1	50	21.93	26.22
				1	99	21.95	26.75
				100	0	21.61	27.14
	132572	1770	QPSK	1	0	22.98	26.31
				1	50	22.91	26.07
				1	99	22.85	26.05
				100	0	22.45	26.91
			16QAM	1	0	22.23	26.71
				1	50	22.05	26.44
				1	99	22.01	26.6
				100	0	21.49	26.77

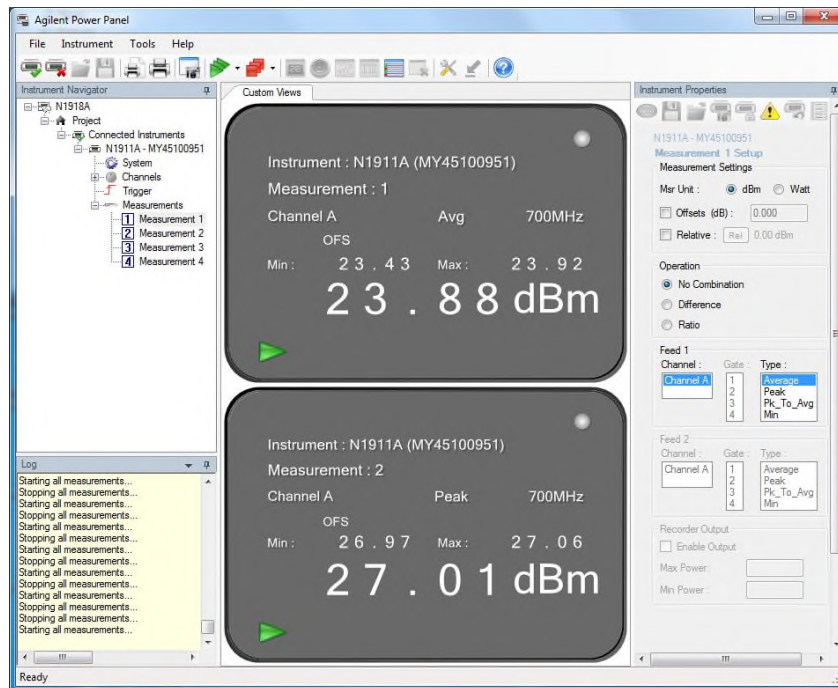
2.1.9 Sample Test Measurement Screen



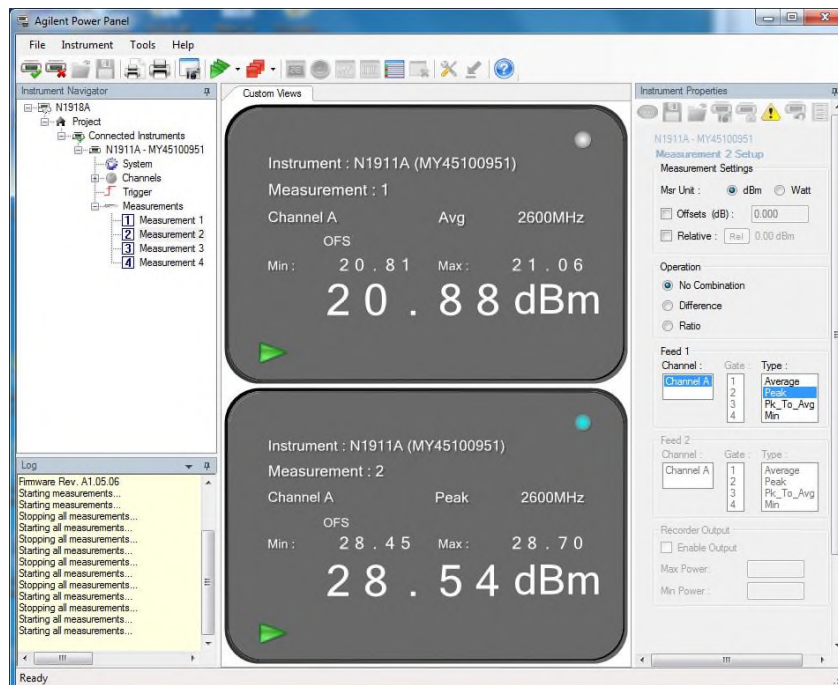
WCDMA Band 4 Middle Channel



LTE Band 12_5 MH Bandwidth Middle Channel QPSK 1 RB 0 Offset

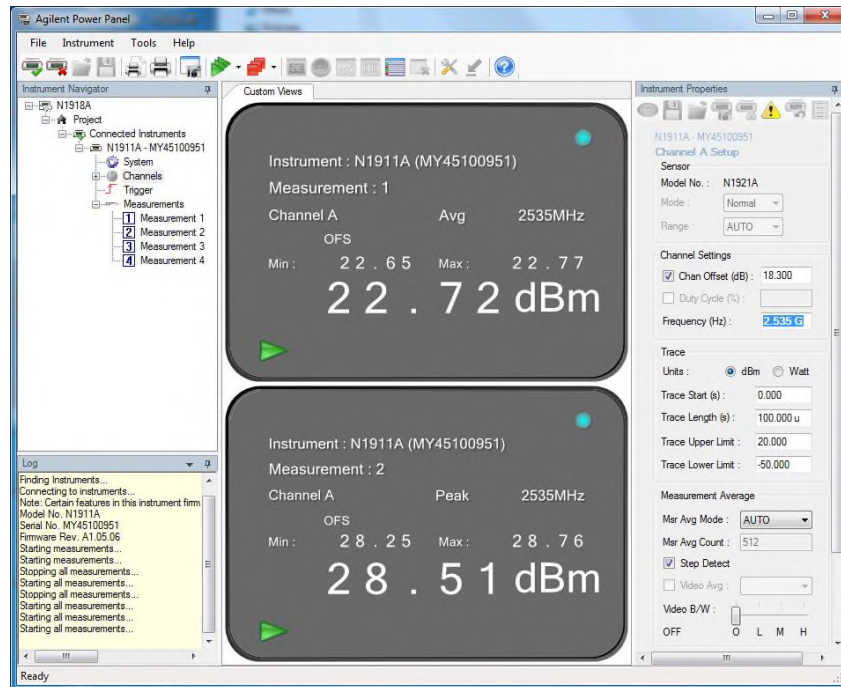


LTE Band 17_5 MHz Bandwidth Middle Channel QPSK 1 RB 12 Offset

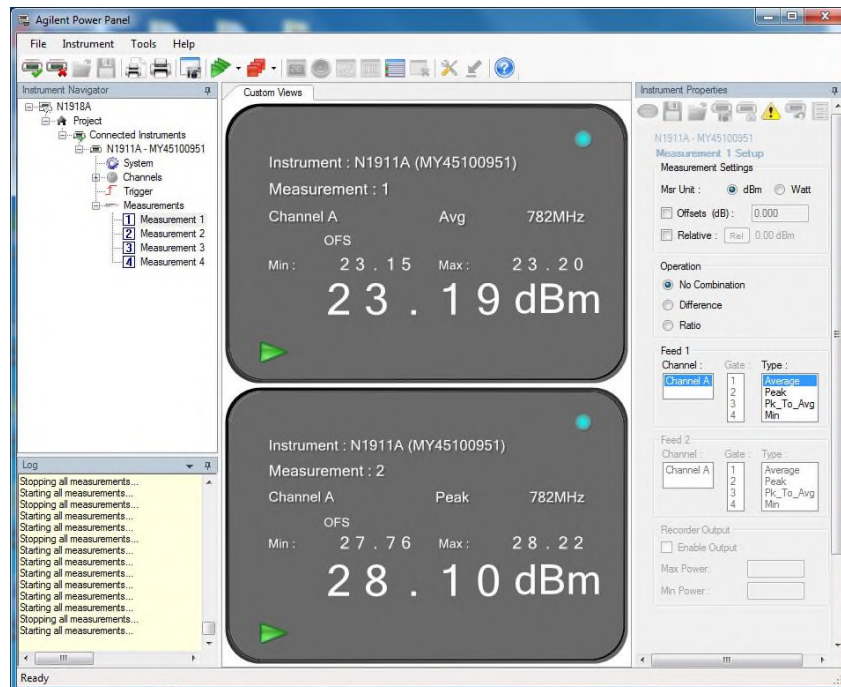


LTE Band 41_5 MHz Bandwidth Middle Channel QPSK 1 RB 12 Offset

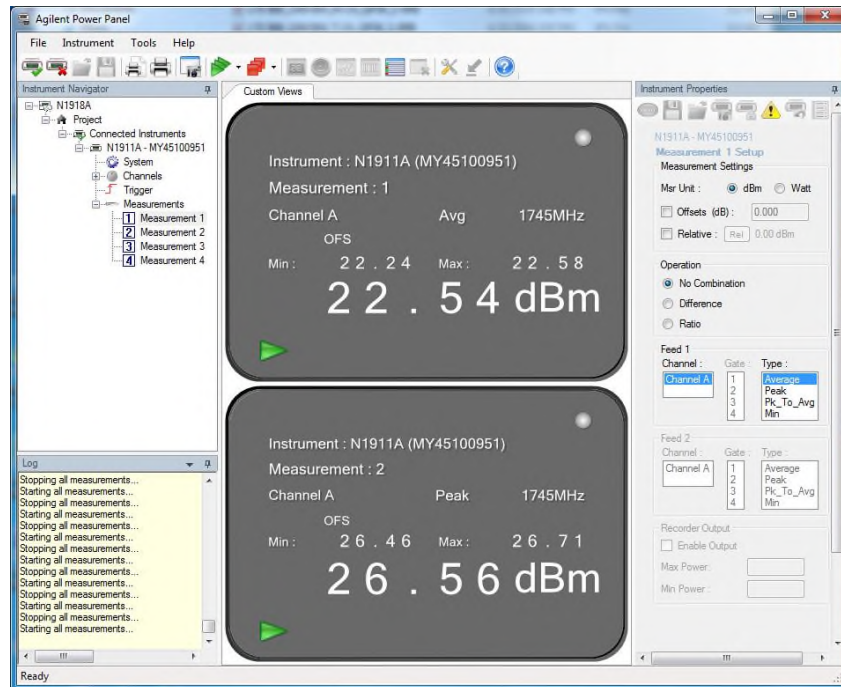




LTE Band 7_10 MH Bandwidth Middle Chanel QPSK Full RB



LTE Band 13_5 MH Bandwidth Middle Chanel QPSK Full RB



LTE Band 66_10 MH Bandwidth Middle Channel QPSK Full RB



2.2 EQUIVALENT ISOTROPIC RADIATED POWER

2.2.1 Specification Reference

FCC 47 CFR Part 2, Clause 2.1046
FCC 47 CFR Part 27, Clause 27.50 (h)(2)
RSS-139, Clause 6.5
RSS-199, Clause 4.4

2.2.2 Standard Applicable

FCC 47 CFR Part 27.50(h)
(2) Mobile and other user stations. Mobile stations are limited to 2.0 watts EIRP. All user stations are limited to 2.0 watts transmitter output power.

RSS-139, Clause 6.5:
The equivalent isotropically radiated power (e.i.r.p.) for Mobile and portable transmitters shall not exceed one watt.

RSS-199, Clause 4.4:
For mobile subscriber equipment, the e.i.r.p. shall not exceed 2 W.

2.2.3 Equipment Under Test

Serial No: AT071218B00062 (MIFI8000), AZ280418A00044 (MIFI8800L), Test Configuration (N/A, calculation only)

2.2.4 Date of Verification/Initial of test personnel who performed the calculation

February 25, 26, and April 03, 2019 / XYZ
June 18, 19 and July 19, 2018 / XYZ

2.2.5 Additional Observations

- EIRP was calculated as per Section 1.2 and 1.3 of KDB412172 D01 (Determining ERP and EIRP v01r01).
- Calculation formula in logarithmic terms:

$$\text{EIRP} = P_T + G_T - L_c$$

Where:

P_T = transmitter conducted output power dBm (Section 2.1 of this test report)

G_T = gain of the transmitting antenna, in dBi (EIRP)

L_c = signal attenuation in the connecting cable between the transmitter and antenna, in dB (Power measurement performed directly at the primary antenna port. The loss between the LTE module and the primary antenna port is considered negligible).

- For LTE Bands, only the worst case RB size and RB offset presented.

2.2.6 Test Results

WCDMA Band 4						
Frequency (MHz)	Max Power Average (dBm)	Antenna Gain (dBi)	EIRP			
			(dBm)	(mW)	Limit (dBm)	Margin (dB)
1712.4	23.54	0.0	23.54	22.59	33	9.46
1732.6	23.62	0.0	23.62	23.01	33	9.38
1752.6	23.89	0.0	23.89	24.49	33	9.11

LTE Band 41									
Modulation	Bandwidth (MHz)	RB Size/Offset	Channels	Frequency (MHz)	Tx Average Power (dBm)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dBm)
QPSK	5	1 / 12	39675	2498.5	21.40	1.7	23.1	33	9.9
		1 / 12	40620	2593	20.88	1.7	22.58	33	10.42
		1 / 12	41565	2687.5	22.37	1.7	24.07	33	8.93
	10	1 / 0	39700	2501	21.19	1.7	22.89	33	10.11
		1 / 0	40620	2593	20.97	1.7	22.67	33	10.33
		1 / 0	41540	2685	22.36	1.7	24.06	33	8.94
	15	1 / 0	39725	2503.5	21.06	1.7	22.76	33	10.24
		1 / 0	40620	2593	21.15	1.7	22.85	33	10.15
		1 / 0	41515	2682.5	22.39	1.7	24.09	33	8.91
	20	1 / 0	39750	2506	21.33	1.7	23.03	33	9.97
		1 / 0	40620	2593	21.38	1.7	23.08	33	9.92
		1 / 0	41490	2680	21.32	1.7	23.02	33	9.98
16QAM	5	1 / 12	39675	2498.5	20.38	1.7	22.08	33	10.92
		1 / 12	40620	2593	20.21	1.7	21.91	33	11.09
		1 / 12	41565	2687.5	21.44	1.7	23.14	33	9.86
	10	1 / 0	39700	2501	20.11	1.7	21.81	33	11.19
		1 / 0	40620	2593	20.05	1.7	21.75	33	11.25
		1 / 0	41540	2685	21.51	1.7	23.21	33	9.79
	15	1 / 0	39725	2503.5	20.25	1.7	21.95	33	11.05
		1 / 0	40620	2593	20.15	1.7	21.85	33	11.15
		1 / 0	41515	2682.5	21.62	1.7	23.32	33	9.68
	20	1 / 0	39750	2506	20.37	1.7	22.07	33	10.93
		1 / 0	40620	2593	20.29	1.7	21.99	33	11.01
		1 / 0	41490	2680	20.38	1.7	22.08	33	10.92

LTE Band 41C									
Modulation	Bandwidth (MHz)	RB Size/Offset	PCC Frequency (MHz)	SCC Frequency (MHz)	Tx Average Power (dBm)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dBm)
QPSK	5 + 20	1 / 24 + 1 / 0	2499.3	2511	21.45	1.7	23.15	33	9.85
		25 / 0 + 100 / 0	2499.3	2511	19.52	1.7	21.22	33	11.78
		1 / 24 + 1 / 0	2583.8	2595.5	21.18	1.7	22.88	33	10.12
		25 / 0 + 100 / 0	2583.8	2595.5	19.21	1.7	20.91	33	12.09
		1 / 24 + 1 / 0	2668.3	2680	20.92	1.7	22.62	33	10.38
		25 / 0 + 100 / 0	2668.3	2680	18.88	1.7	20.58	33	12.42
16QAM	5 + 20	1 / 24 + 1 / 0	2499.3	2511	20.75	1.7	22.45	33	10.55
		25 / 0 + 100 / 0	2499.3	2511	18.60	1.7	20.3	33	12.7
		1 / 24 + 1 / 0	2583.8	2595.5	20.51	1.7	22.21	33	10.79
		25 / 0 + 100 / 0	2583.8	2595.5	18.76	1.7	20.46	33	12.54
		1 / 24 + 1 / 0	2668.3	2680	20.02	1.7	21.72	33	11.28
		25 / 0 + 100 / 0	2668.3	2680	17.95	1.7	19.65	33	13.35
QPSK	20 + 5	1 / 100 + 1 / 0	2506	2517.7	21.38	1.7	23.08	33	9.92
		100 / 0 + 25 / 0	2506	2517.7	19.42	1.7	21.12	33	11.88
		1 / 100 + 1 / 0	2590.5	2602.2	21.09	1.7	22.79	33	10.21
		100 / 0 + 25 / 0	2590.5	2602.2	19.10	1.7	20.8	33	12.2
		1 / 100 + 1 / 0	2675	2686.7	20.75	1.7	22.45	33	10.55
		100 / 0 + 25 / 0	2675	2686.7	18.79	1.7	20.49	33	12.51
16QAM	20 + 5	1 / 100 + 1 / 0	2506	2517.7	20.67	1.7	22.37	33	10.63
		100 / 0 + 25 / 0	2506	2517.7	18.50	1.7	20.2	33	12.8
		1 / 100 + 1 / 0	2590.5	2602.2	20.26	1.7	21.96	33	11.04
		100 / 0 + 25 / 0	2590.5	2602.2	18.17	1.7	19.87	33	13.13
		1 / 100 + 1 / 0	2675	2686.7	19.93	1.7	21.63	33	11.37
		100 / 0 + 25 / 0	2675	2686.7	17.89	1.7	19.59	33	13.41



LTE Band 41C									
Modulation	Bandwidth (MHz)	RB Size/Offset	PCC Frequency (MHz)	SCC Frequency (MHz)	Tx Average Power (dBm)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dBm)
QPSK	10 + 15	1 / 49 + 1 / 0	2501.3	2513.3	21.47	1.7	23.17	33	9.83
		50 / 0 + 75 / 0	2501.3	2513.3	19.44	1.7	21.14	33	11.86
		1 / 49 + 1 / 0	2585.9	2597.9	20.90	1.7	22.6	33	10.4
		50 / 0 + 75 / 0	2585.9	2597.9	19.04	1.7	20.74	33	12.26
		1 / 49 + 1 / 0	2670.5	2682.5	20.71	1.7	22.41	33	10.59
		50 / 0 + 75 / 0	2670.5	2682.5	18.67	1.7	20.37	33	12.63
16QAM	10 + 15	1 / 49 + 1 / 0	2501.3	2513.3	20.61	1.7	22.31	33	10.69
		50 / 0 + 75 / 0	2501.3	2513.3	18.54	1.7	20.24	33	12.76
		1 / 49 + 1 / 0	2585.9	2597.9	20.01	1.7	21.71	33	11.29
		50 / 0 + 75 / 0	2585.9	2597.9	18.15	1.7	19.85	33	13.15
		1 / 49 + 1 / 0	2670.5	2682.5	19.91	1.7	21.61	33	11.39
		50 / 0 + 75 / 0	2670.5	2682.5	17.84	1.7	19.54	33	13.46
QPSK	15 + 10	1 / 74 + 1 / 0	2503.5	2515.5	21.30	1.7	23	33	10
		75 / 0 + 50 / 0	2503.5	2515.5	19.27	1.7	20.97	33	12.03
		1 / 74 + 1 / 0	2588.1	2600.1	20.99	1.7	22.69	33	10.31
		75 / 0 + 50 / 0	2588.1	2600.1	18.94	1.7	20.64	33	12.36
		1 / 74 + 1 / 0	2672.7	2515.5	20.61	1.7	22.31	33	10.69
		75 / 0 + 50 / 0	2672.7	2515.5	18.60	1.7	20.3	33	12.7
16QAM	15 + 10	1 / 74 + 1 / 0	2503.5	2515.5	20.44	1.7	22.14	33	10.86
		75 / 0 + 50 / 0	2503.5	2515.5	18.36	1.7	20.06	33	12.94
		1 / 74 + 1 / 0	2588.1	2600.1	20.23	1.7	21.93	33	11.07
		75 / 0 + 50 / 0	2588.1	2600.1	18.02	1.7	19.72	33	13.28
		1 / 74 + 1 / 0	2672.7	2515.5	19.75	1.7	21.45	33	11.55
		75 / 0 + 50 / 0	2672.7	2515.5	17.83	1.7	19.53	33	13.47

LTE Band 41C									
Modulation	Bandwidth (MHz)	RB Size/Offset	PCC Frequency (MHz)	SCC Frequency (MHz)	Tx Average Power (dBm)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dBm)
QPSK	10 + 20	1 / 49 + 1 / 0	2501.5	2515.9	21.24	1.7	22.94	33	10.06
		50 / 0 + 100 / 0	2501.5	2515.9	19.26	1.7	20.96	33	12.04
		1 / 49 + 1 / 0	2583.6	2598	20.91	1.7	22.61	33	10.39
		50 / 0 + 100 / 0	2583.6	2598	19.01	1.7	20.71	33	12.29
		1 / 49 + 1 / 0	2665.6	2680	20.75	1.7	22.45	33	10.55
		50 / 0 + 100 / 0	2665.6	2680	18.70	1.7	20.4	33	12.6
16QAM	10 + 20	1 / 49 + 1 / 0	2501.5	2515.9	20.35	1.7	22.05	33	10.95
		50 / 0 + 100 / 0	2501.5	2515.9	18.35	1.7	20.05	33	12.95
		1 / 49 + 1 / 0	2583.6	2598	20.10	1.7	21.8	33	11.2
		50 / 0 + 100 / 0	2583.6	2598	18.14	1.7	19.84	33	13.16
		1 / 49 + 1 / 0	2665.6	2680	19.90	1.7	21.6	33	11.4
		50 / 0 + 100 / 0	2665.6	2680	17.91	1.7	19.61	33	13.39
QPSK	20 + 10	1 / 99 + 1 / 0	2506	2520.4	21.25	1.7	22.95	33	10.05
		100 / 0 + 50 / 0	2506	2520.4	19.29	1.7	20.99	33	12.01
		1 / 99 + 1 / 0	2588.1	2602.5	20.94	1.7	22.64	33	10.36
		100 / 0 + 50 / 0	2588.1	2602.5	18.96	1.7	20.66	33	12.34
		1 / 99 + 1 / 0	2670.1	2684.5	20.71	1.7	22.41	33	10.59
		100 / 0 + 50 / 0	2670.1	2684.5	18.82	1.7	20.52	33	12.48
16QAM	20 + 10	1 / 99 + 1 / 0	2506	2520.4	20.45	1.7	22.15	33	10.85
		100 / 0 + 50 / 0	2506	2520.4	18.39	1.7	20.09	33	12.91
		1 / 99 + 1 / 0	2588.1	2602.5	20.06	1.7	21.76	33	11.24
		100 / 0 + 50 / 0	2588.1	2602.5	18.06	1.7	19.76	33	13.24
		1 / 99 + 1 / 0	2670.1	2684.5	19.97	1.7	21.67	33	11.33
		100 / 0 + 50 / 0	2670.1	2684.5	17.92	1.7	19.62	33	13.38

LTE Band 41C									
Modulation	Bandwidth (MHz)	RB Size/Offset	PCC Frequency (MHz)	SCC Frequency (MHz)	Tx Average Power (dBm)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dBm)
QPSK	15 + 15	1 / 74 + 1 / 0	2503.5	2518.5	21.17	1.7	22.87	33	10.13
		75 / 0 + 75 / 0	2503.5	2518.5	19.59	1.7	21.29	33	11.71
		1 / 74 + 1 / 0	2585.5	2600.5	20.72	1.7	22.42	33	10.58
		75 / 0 + 75 / 0	2585.5	2600.5	18.87	1.7	20.57	33	12.43
		1 / 74 + 1 / 0	2667.5	2682.5	20.64	1.7	22.34	33	10.66
		75 / 0 + 75 / 0	2667.5	2682.5	18.17	1.7	19.87	33	13.13
16QAM	15 + 15	1 / 74 + 1 / 0	2503.5	2518.5	20.25	1.7	21.95	33	11.05
		75 / 0 + 75 / 0	2503.5	2518.5	18.95	1.7	20.65	33	12.35
		1 / 74 + 1 / 0	2585.5	2600.5	20.07	1.7	21.77	33	11.23
		75 / 0 + 75 / 0	2585.5	2600.5	18.0	1.7	19.7	33	13.3
		1 / 74 + 1 / 0	2667.5	2682.5	19.76	1.7	21.46	33	11.54
		75 / 0 + 75 / 0	2667.5	2682.5	17.64	1.7	19.34	33	13.66

LTE Band 41C									
Modulation	Bandwidth (MHz)	RB Size/Offset	PCC Frequency (MHz)	SCC Frequency (MHz)	Tx Average Power (dBm)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dBm)
QPSK	15 + 20	1 / 74 + 1 / 0	2503.8	2520.9	19.66	1.7	21.36	33	11.64
		75 / 0 + 100 / 0	2503.8	2520.9	18.18	1.7	19.88	33	13.12
		1 / 74 + 1 / 0	2583.3	2600.4	20.89	1.7	22.59	33	10.41
		75 / 0 + 100 / 0	2583.3	2600.4	19.08	1.7	20.78	33	12.22
		1 / 74 + 1 / 0	2662.9	2680	20.74	1.7	22.44	33	10.56
		75 / 0 + 100 / 0	2662.9	2680	18.62	1.7	20.32	33	12.68
16QAM	15 + 20	1 / 74 + 1 / 0	2503.8	2520.9	19.76	1.7	21.46	33	11.54
		75 / 0 + 100 / 0	2503.8	2520.9	17.73	1.7	19.43	33	13.57
		1 / 74 + 1 / 0	2583.3	2600.4	20.21	1.7	21.91	33	11.09
		75 / 0 + 100 / 0	2583.3	2600.4	18.18	1.7	19.88	33	13.12
		1 / 74 + 1 / 0	2662.9	2680	20.08	1.7	21.78	33	11.22
		75 / 0 + 100 / 0	2662.9	2680	17.68	1.7	19.38	33	13.62
QPSK	20 + 15	1 / 99 + 1 / 0	2506	2523.1	21.16	1.7	22.86	33	10.14
		100 / 0 + 75 / 0	2506	2523.1	19.01	1.7	20.71	33	12.29
		1 / 99 + 1 / 0	2585.6	2602.7	20.87	1.7	22.57	33	10.43
		100 / 0 + 75 / 0	2585.6	2602.7	19.07	1.7	20.77	33	12.23
		1 / 99 + 1 / 0	2665.1	2682.2	20.75	1.7	22.45	33	10.55
		100 / 0 + 75 / 0	2665.1	2682.2	18.26	1.7	19.96	33	13.04
16QAM	20 + 15	1 / 99 + 1 / 0	2506	2523.1	20.32	1.7	22.02	33	10.98
		100 / 0 + 75 / 0	2506	2523.1	18.08	1.7	19.78	33	13.22
		1 / 99 + 1 / 0	2585.6	2602.7	20.01	1.7	21.71	33	11.29
		100 / 0 + 75 / 0	2585.6	2602.7	18.10	1.7	19.8	33	13.2
		1 / 99 + 1 / 0	2665.1	2682.2	19.96	1.7	21.66	33	11.34
		100 / 0 + 75 / 0	2665.1	2682.2	17.47	1.7	19.17	33	13.83

LTE Band 41C									
Modulation	Bandwidth (MHz)	RB Size/Offset	PCC Frequency (MHz)	SCC Frequency (MHz)	Tx Average Power (dBm)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dBm)
QPSK	20 + 20	1 / 99 + 1 / 0	2506	2525.8	21.46	1.7	23.16	33	9.84
		100 / 0 + 100 / 0	2506	2525.8	19.39	1.7	21.09	33	11.91
		1 / 99 + 1 / 0	2583.1	2602.9	21.01	1.7	22.71	33	10.29
		100 / 0 + 100 / 0	2583.1	2602.9	19.10	1.7	20.8	33	12.2
		1 / 99 + 1 / 0	2660.2	2680	20.80	1.7	22.5	33	10.5
		100 / 0 + 100 / 0	2660.2	2680	18.69	1.7	20.39	33	12.61
16QAM	20 + 20	1 / 99 + 1 / 0	2506	2525.8	20.73	1.7	22.43	33	10.57
		100 / 0 + 100 / 0	2506	2525.8	18.49	1.7	20.19	33	12.81
		1 / 99 + 1 / 0	2583.1	2602.9	20.17	1.7	21.87	33	11.13
		100 / 0 + 100 / 0	2583.1	2602.9	18.20	1.7	19.9	33	13.1
		1 / 99 + 1 / 0	2660.2	2680	19.98	1.7	21.68	33	11.32
		100 / 0 + 100 / 0	2660.2	2680	17.79	1.7	19.49	33	13.51



LTE Band 4									
Modulation	Bandwidth (MHz)	RB Size/Offset	Channels	Frequency (MHz)	Tx Average Power (dBm)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dBm)
QPSK	1.4	1 / 3	19957	1710.7	23.92	0.0	23.92	33	9.08
		1 / 3	20175	1732.5	23.17	0.0	23.17	33	9.83
		1 / 3	20393	1754.3	23.05	0.0	23.05	33	9.95
	3	1 / 0	19965	1711.5	23.94	0.0	23.94	33	9.06
		1 / 8	20175	1732.5	23.12	0.0	23.12	33	9.88
		1 / 0	20385	1753.5	23.1	0.0	23.1	33	9.9
	5	1 / 0	19975	1712.5	23.95	0.0	23.95	33	9.05
		1 / 13	20175	1732.5	23.18	0.0	23.18	33	9.82
		1 / 0	20375	1752.5	23.13	0.0	23.13	33	9.87
	10	1 / 0	20000	1715.0	23.93	0.0	23.93	33	9.07
		1 / 0	20175	1732.5	23.77	0.0	23.77	33	9.23
		1 / 0	20350	1750.0	23.67	0.0	23.67	33	9.33
	15	1 / 0	20025	1717.5	23.99	0.0	23.99	33	9.01
		1 / 0	20175	1732.5	23.85	0.0	23.85	33	9.15
		1 / 0	20325	1747.5	23.66	0.0	23.66	33	9.34
	20	1 / 0	20050	1720.0	23.99	0.0	23.99	33	9.01
		1 / 0	20175	1732.5	23.86	0.0	23.86	33	9.14
		1 / 0	20300	1745.0	23.24	0.0	23.24	33	9.76

LTE Band 4									
Modulation	Bandwidth (MHz)	RB Size/Offset	Channels	Frequency (MHz)	Tx Average Power (dBm)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dBm)
16QAM	1.4	1 / 3	19957	1710.7	22.65	0.0	22.65	33	10.35
		1 / 3	20175	1732.5	22.19	0.0	22.19	33	10.81
		1 / 3	20393	1754.3	22.05	0.0	22.05	33	10.95
	3	1 / 0	19965	1711.5	22.69	0.0	22.69	33	10.31
		1 / 8	20175	1732.5	22.22	0.0	22.22	33	10.78
		1 / 0	20385	1753.5	22.02	0.0	22.02	33	10.98
	5	1 / 0	19975	1712.5	22.84	0.0	22.84	33	10.16
		1 / 13	20175	1732.5	22.3	0.0	22.3	33	10.7
		1 / 0	20375	1752.5	22.04	0.0	22.04	33	10.96
	10	1 / 0	20000	1715.0	22.71	0.0	22.71	33	10.29
		1 / 0	20175	1732.5	22.75	0.0	22.75	33	10.25
		1 / 0	20350	1750.0	22.63	0.0	22.63	33	10.37
	15	1 / 0	20025	1717.5	23.19	0.0	23.19	33	9.81
		1 / 0	20175	1732.5	22.88	0.0	22.88	33	10.12
		1 / 0	20325	1747.5	22.73	0.0	22.73	33	10.27
	20	1 / 0	20050	1720.0	23.18	0.0	23.18	33	9.82
		1 / 0	20175	1732.5	23.05	0.0	23.05	33	9.95
		1 / 0	20300	1745.0	22.25	0.0	22.25	33	10.75



LTE Band 7									
Modulation	Bandwidth (MHz)	RB Size/Offset	Channels	Frequency (MHz)	Tx Average Power (dBm)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dBm)
QPSK	5	1 / 13	20775	2502.5	21.77	2.3	24.07	33	8.93
		1 / 13	21100	2535	23.69	2.3	25.99	33	7.01
		1 / 0	21425	2567.5	22.99	2.3	25.29	33	7.71
	10	1 / 25	20800	2505	21.93	2.3	24.23	33	8.77
		1 / 25	21100	2535	23.06	2.3	25.36	33	7.64
		1 / 25	21400	2565	23.08	2.3	25.38	33	7.62
	15	1 / 38	20825	2507.5	22.0	2.3	24.3	33	8.7
		1 / 38	21100	2535	23.03	2.3	25.33	33	7.67
		1 / 38	21375	2562.5	23.12	2.3	25.42	33	7.58
	20	1 / 50	20850	2510	22.05	2.3	24.35	33	8.65
		1 / 50	21100	2535	22.98	2.3	25.28	33	7.72
		1 / 50	21350	2560	23.07	2.3	25.37	33	7.63
16QAM	5	1 / 13	20775	2502.5	21.29	2.3	23.59	33	9.41
		1 / 13	21100	2535	23.05	2.3	25.35	33	7.65
		1 / 0	21425	2567.5	22.29	2.3	24.59	33	8.41
	10	1 / 25	20800	2505	21.13	2.3	23.43	33	9.57
		1 / 25	21100	2535	22.35	2.3	24.65	33	8.35
		1 / 25	21400	2565	22.29	2.3	24.59	33	8.41
	15	1 / 38	20825	2507.5	21.29	2.3	23.59	33	9.41
		1 / 38	21100	2535	22.35	2.3	24.65	33	8.35
		1 / 38	21375	2562.5	22.26	2.3	24.56	33	8.44
	20	1 / 50	20850	2510	21.28	2.3	23.58	33	9.42
		1 / 50	21100	2535	22.29	2.3	24.59	33	8.41
		1 / 50	21350	2560	22.26	2.3	24.56	33	8.44



LTE Band 66									
Modulation	Bandwidth (MHz)	RB Size/Offset	Channels	Frequency (MHz)	Tx Average Power (dBm)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dBm)
QPSK	1.4	1 / 3	131979	1710.7	23.94	0.0	23.94	33	9.06
		1 / 3	132322	1745	23.11	0.0	23.11	33	9.89
		1 / 3	132665	1779.3	22.87	0.0	22.87	33	10.13
	3	1 / 0	131987	1711.5	23.91	0.0	23.91	33	9.09
		1 / 0	132322	1745	23.03	0.0	23.03	33	9.97
		1 / 0	132657	1778.5	22.84	0.0	22.84	33	10.16
	5	1 / 0	131997	1712.5	23.95	0.0	23.95	33	9.05
		1 / 0	132322	1745	23.12	0.0	23.12	33	9.88
		1 / 0	132647	1777.5	23.06	0.0	23.06	33	9.94
	10	1 / 0	132022	1715	24.0	0.0	24.0	33	9
		1 / 0	132322	1745	23.19	0.0	23.19	33	9.81
		1 / 0	132622	1775	22.94	0.0	22.94	33	10.06
	15	1 / 0	132047	1717.5	23.92	0.0	23.92	33	9.08
		1 / 0	132322	1745	23.2	0.0	23.2	33	9.8
		1 / 0	132597	1772.5	23.04	0.0	23.04	33	9.96
	20	1 / 0	132072	1720	23.98	0.0	23.98	33	9.02
		1 / 0	132322	1745	23.41	0.0	23.41	33	9.59
		1 / 0	132572	1770	22.98	0.0	22.98	33	10.02



LTE Band 66									
Modulation	Bandwidth (MHz)	RB Size/Offset	Channels	Frequency (MHz)	Tx Average Power (dBm)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dBm)
16QAM	1.4	1 / 3	131979	1710.7	22.75	0.0	22.75	33	10.25
		1 / 3	132322	1745	21.95	0.0	21.95	33	11.05
		1 / 3	132665	1779.3	21.87	0.0	21.87	33	11.13
	3	1 / 0	131987	1711.5	22.71	0.0	22.71	33	10.29
		1 / 0	132322	1745	21.94	0.0	21.94	33	11.06
		1 / 0	132657	1778.5	21.93	0.0	21.93	33	11.07
	5	1 / 13	131997	1712.5	23.02	0.0	23.02	33	9.98
		1 / 0	132322	1745	22.15	0.0	22.15	33	10.85
		1 / 13	132647	1777.5	22.28	0.0	22.28	33	10.72
	10	1 / 0	132022	1715	22.74	0.0	22.74	33	10.26
		1 / 0	132322	1745	22.11	0.0	22.11	33	10.89
		1 / 0	132622	1775	22.1	0.0	22.1	33	10.9
	15	1 / 0	132047	1717.5	22.83	0.0	22.83	33	10.17
		1 / 0	132322	1745	22.32	0.0	22.32	33	10.68
		1 / 0	132597	1772.5	21.97	0.0	21.97	33	11.03
	20	1 / 0	132072	1720	22.8	0.0	22.8	33	10.2
		1 / 0	132322	1745	22.4	0.0	22.4	33	10.6
		1 / 0	132572	1770	22.23	0.0	22.23	33	10.77



2.3 EFFECTIVE RADIATED POWER

2.3.1 Specification Reference

FCC 47 CFR Part 2, Clause 2.1046
FCC 47 CFR Part 27, Clause 27.50 (c)(10)
FCC 47 CFR Part 27, Clause 27.50 (b)(10)
RSS-130, Clause 4.6.3

2.3.2 Standard Applicable

FCC 47 CFR Part 27.50(b)
(10) Portable stations (hand-held devices) transmitting in the 746-757 MHz, 776-788 MHz, and 805-806 MHz bands are limited to 3 watts ERP.

FCC 47 CFR Part 27.50(c)
(10) Portable stations (hand-held devices) in the 600 MHz uplink band and the 698-746 MHz band, and fixed and mobile stations in the 600 MHz uplink band are limited to 3 watts ERP.

RSS-130, Clause 4.6.3 Frequency bands 698-756 MHz and 777-787 MHz
The e.r.p. shall not exceed 30 watts for mobile equipment and outdoor fixed subscriber equipment. The e.r.p. shall not exceed 3 watts for portable equipment and indoor fixed subscriber equipment.

2.3.3 Equipment Under Test

Serial No: AT071218B00062 (MIFI8000), AZ280418A00044 (MIFI8800L), Test Configuration (N/A, calculation only)

2.3.4 Date of Verification/Initial of test personnel who performed the calculation

February 25, 2019 / XYZ
June 18, 2018 / XYZ

2.3.5 Additional Observations

- ERP was calculated as per Section 1.2 and 1.3 of KDB412172 D01 (Determining ERP and EIRP v01r01).
- Calculation formula in logarithmic terms:

$$\text{ERP} = P_T + G_T - L_c - 2.15\text{dB}$$

Where:

P_T = transmitter conducted output power dBm (Section 2.1 of this test report)
 G_T = gain of the transmitting antenna, in dBi (EIRP - the -2.15 in the formula is to convert EIRP to ERP);
 L_c = signal attenuation in the connecting cable between the transmitter and antenna, in dB (Power measurement performed directly at the primary antenna port. The loss between the LTE module and the primary antenna port is considered negligible).

- Only the worst-case RB size and RB offset presented.

2.3.6 Test Results

LTE Band 12									
Modulation	Bandwidth (MHz)	RB Size/Offset	Channels	Frequency (MHz)	Tx Average Power (dBm)	Antenna Gain (dBi)	ERP (dBm)	Limit (dBm)	Margin (dBm)
QPSK	1.4	1 / 3	23017	699.7	23.98	-2.0	19.83	34.8	14.97
		1 / 3	23095	707.5	23.80	-2.0	19.65	34.8	15.15
		1 / 3	23173	715.3	23.74	-2.0	19.59	34.8	15.21
	3	1 / 7	23025	700.5	23.94	-2.0	19.79	34.8	15.01
		1 / 7	23095	707.5	23.83	-2.0	19.68	34.8	15.12
		1 / 7	23165	714.5	23.75	-2.0	19.6	34.8	15.2
	5	1 / 12	23035	701.5	23.98	-2.0	19.83	34.8	14.97
		1 / 12	23095	707.5	23.90	-2.0	19.75	34.8	15.05
		1 / 12	23155	713.5	23.84	-2.0	19.69	34.8	15.11
	10	1 / 49	23060	704	23.84	-2.0	19.69	34.8	15.11
		1 / 49	23095	707.5	23.77	-2.0	19.62	34.8	15.18
		1 / 49	23130	711	23.88	-2.0	19.73	34.8	15.07
16QAM	1.4	1 / 3	23017	699.7	23.01	-2.0	18.86	34.8	15.94
		1 / 3	23095	707.5	22.85	-2.0	18.7	34.8	16.1
		1 / 3	23173	715.3	22.74	-2.0	18.59	34.8	16.21
	3	1 / 7	23025	700.5	22.92	-2.0	18.77	34.8	16.03
		1 / 7	23095	707.5	23.01	-2.0	18.86	34.8	15.94
		1 / 7	23165	714.5	22.82	-2.0	18.67	34.8	16.13
	5	1 / 0	23035	701.5	23.04	-2.0	18.89	34.8	15.91
		1 / 0	23095	707.5	23.20	-2.0	19.05	34.8	15.75
		1 / 0	23155	713.5	22.89	-2.0	18.74	34.8	16.06
	10	1 / 25	23060	704	22.95	-2.0	18.8	34.8	16
		1 / 25	23095	707.5	23.04	-2.0	18.89	34.8	15.91
		1 / 25	23130	711	22.87	-2.0	18.72	34.8	16.08



LTE Band 17									
Modulation	Bandwidth (MHz)	RB Size/Offset	Channels	Frequency (MHz)	Tx Average Power (dBm)	Antenna Gain (dBi)	ERP (dBm)	Limit (dBm)	Margin (dBm)
QPSK	5	1 / 12	23755	706.5	23.87	-2.1	19.62	34.8	15.18
		1 / 12	23790	710	23.88	-2.1	19.63	34.8	15.17
		1 / 12	23825	713.5	23.87	-2.1	19.62	34.8	15.18
	10	1 / 25	23780	709	23.86	-2.1	19.61	34.8	15.19
		1 / 25	23790	710	23.81	-2.1	19.56	34.8	15.24
		1 / 25	23800	711	23.85	-2.1	19.6	34.8	15.2
16QAM	5	1 / 12	23755	706.5	23.09	-2.1	18.84	34.8	15.96
		1 / 12	23790	710	23.01	-2.1	18.76	34.8	16.04
		1 / 12	23825	713.5	23.07	-2.1	18.82	34.8	15.98
	10	1 / 25	23780	709	22.95	-2.1	18.7	34.8	16.1
		1 / 25	23790	710	23.06	-2.1	18.81	34.8	15.99
		1 / 25	23800	711	22.93	-2.1	18.68	34.8	16.12

LTE Band 13									
Modulation	Bandwidth (MHz)	RB Size/Offset	Channels	Frequency (MHz)	Tx Average Power (dBm)	Antenna Gain (dBi)	ERP (dBm)	Limit (dBm)	Margin (dBm)
QPSK	5	1 / 24	23205	779.5	23.82	-0.6	21.07	34.77	13.7
		1 / 0	23230	782	23.95	-0.6	21.2	34.77	13.57
		1 / 0	23255	784.5	23.95	-0.6	21.2	34.77	13.57
	10	-	-	-	-	-	-	-	-
		1 / 0	23230	782	23.93	-0.6	21.18	34.77	13.59
		-	-	-	-	-	-	-	-
16QAM	5	1 / 24	23205	779.5	23.01	-0.6	20.26	34.77	14.51
		1 / 13	23230	782	23.08	-0.6	20.33	34.77	14.44
		1 / 0	23255	784.5	23.22	-0.6	20.47	34.77	14.3
	10	-	-	-	-	-	-	-	-
		1 / 0	23230	782	23.05	-0.6	20.3	34.77	14.47
		-	-	-	-	-	-	-	-



2.4 OCCUPIED BANDWIDTH

2.4.1 Specification Reference

FCC 47 CFR Part 2, Clause 2.1049
FCC 47 CFR Part 27, Clause 27.53 (h)(3)
FCC 47 CFR Part 27, Clause 27.53 (m)(6)
RSS-GEN, Clause 6.7

2.4.2 Standard Applicable

The transmitted signal bandwidth shall be reported as the 99% emission bandwidth, that is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers radiated are each equal to 0.5 percent of the total mean power radiated by a given emission.

26dB Bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated by at least 26 dB below the transmitter power.

2.4.3 Equipment Under Test and Modification State

Serial No: AT071218B00062 (MIFI8000), AZ280418A00044 (MIFI8800L) / Test Configuration A

2.4.4 Date of Test/Initial of test personnel who performed the test

February 25 and 27, April 05, 2019 / XYZ
June 07, 11 and 12, 2018 / XYZ

2.4.5 Test Equipment Used

The major items of test equipment used for the above tests are identified in Section 3.1.

2.4.6 Environmental Conditions/ Test Location

Test performed at TÜV SÜD America Inc. Rancho Bernardo facility

Ambient Temperature	21.2 - 24.8°C
Relative Humidity	35.0 - 53.3%
ATM Pressure	99.0 - 99.6kPa

2.4.7 Additional Observations

- This is a conducted test. Both 26dB bandwidth and 99% bandwidth presented.
- Using the occupied bandwidth measurement function in the spectrum analyzer, the 99% occupied bandwidth was measured.
- The 26dB bandwidth was measured in accordance with ANSI C63.26 clause 5.4.3 using the ndB measurement function in the spectrum analyzer.
- The transmitter shall be operated at its maximum carrier power measured under normal test conditions.

- The span of the analyzer shall be set to capture all products of the modulation process, including the emission skirts.
- The resolution bandwidth (RBW) shall be in the range of 1% of the occupied bandwidth (OBW) and video bandwidth (VBW) shall be at least 3x RBW.
- Low, Middle and High channels for all bandwidths and modulations were verified. Test results of Middle channel were presented as representative.

2.4.8 Test Results

Band	Channel	Frequency	99% OBW (MHz)	26dB BW (MHz)
WCDMA Band 4	1413	1732.6	4.13	4.69

LTE Band 12					
Modulation	Bandwidth (MHz)	Channel	Frequency (MHz)	99% OBW (MHz)	26dB BW (MHz)
QPSK	1.4	23095	707.5	1.088	1.27
	3			2.696	3.01
	5			4.499	4.97
	10			8.977	9.72
16QAM	1.4	23095	707.5	1.091	1.24
	3			2.696	3.0
	5			4.485	4.88
	10			8.967	9.55

LTE Band 17					
Modulation	Bandwidth (MHz)	Channel	Frequency (MHz)	99% OBW (MHz)	26dB BW (MHz)
QPSK	5	23790	710	4.491	4.88
	10			8.941	9.81
16QAM	5	23790	710	4.476	4.93
	10			8.938	9.68

LTE Band 41					
Modulation	Bandwidth (MHz)	Channel	Frequency (MHz)	99% OBW (MHz)	26dB BW (MHz)
QPSK	5	40620	2593	4.48	4.95
	10			8.96	9.64
	15			13.46	14.59
	20			17.81	19.02
16QAM	5	40620	2593	4.47	4.91
	10			8.96	9.64
	15			13.45	14.65
	20			17.87	19.36

LTE Band 4					
<i>Modulation</i>	<i>Bandwidth (MHz)</i>	<i>Channel</i>	<i>Frequency (MHz)</i>	<i>99% OBW (MHz)</i>	<i>26dB BW (MHz)</i>
QPSK	1.4	20175	1732.5	1.09	1.29
	3			2.70	3.40
	5			4.50	5.01
	10			8.99	9.94
	15			13.49	14.98
	20			17.88	19.19
16QAM	1.4	20175	1732.5	1.10	1.29
	3			2.70	3.23
	5			4.49	4.95
	10			8.98	9.77
	15			13.45	14.59
	20			17.88	19.19

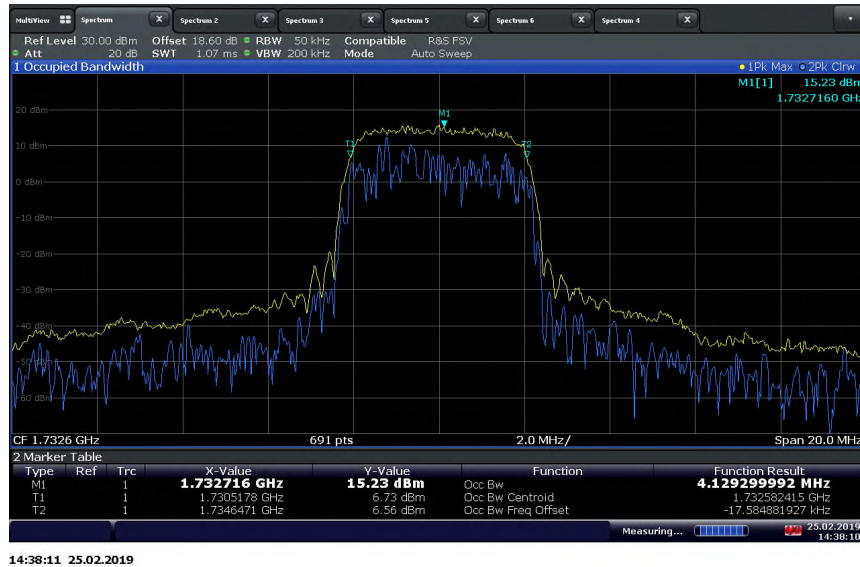
LTE Band 7					
<i>Modulation</i>	<i>Bandwidth (MHz)</i>	<i>Channel</i>	<i>Frequency (MHz)</i>	<i>99% OBW (MHz)</i>	<i>26dB BW (MHz)</i>
QPSK	5	21100	2535.0	4.48	4.93
	10			8.97	9.72
	15			13.44	14.65
	20			17.92	19.28
16QAM	5	21100	2535.0	4.49	4.93
	10			8.96	9.72
	15			13.46	14.59
	20			17.93	19.28

LTE Band 13					
<i>Modulation</i>	<i>Bandwidth (MHz)</i>	<i>Channel</i>	<i>Frequency (MHz)</i>	<i>99% OBW (MHz)</i>	<i>26dB BW (MHz)</i>
QPSK	5	23230	782.0	4.46	4.86
	10			8.92	9.68
16QAM	5	23230	782.0	4.47	4.88
	10			8.91	9.64

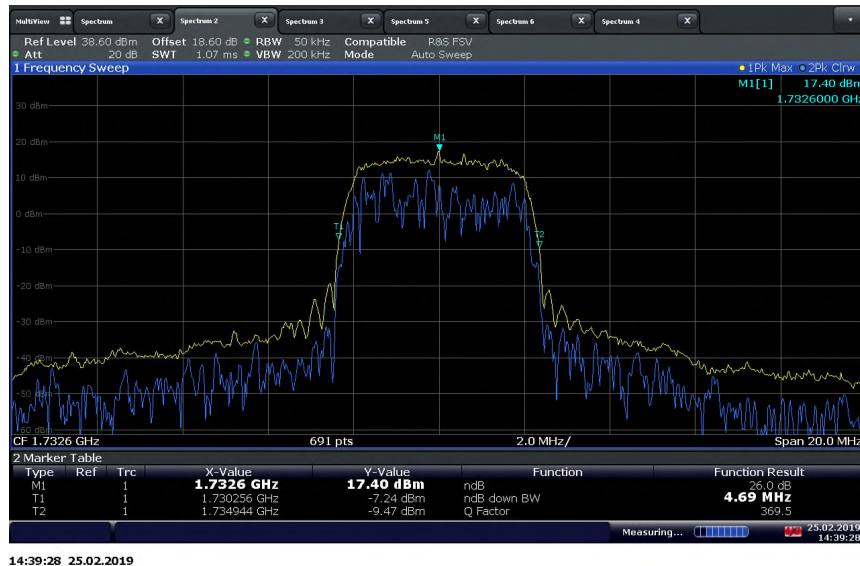
LTE Band 66					
<i>Modulation</i>	<i>Bandwidth (MHz)</i>	<i>Channel</i>	<i>Frequency (MHz)</i>	<i>99% OBW (MHz)</i>	<i>26dB BW (MHz)</i>
QPSK	1.4	132322	1745.0	1.10	1.25
	3			2.70	3.04
	5			4.50	4.97
	10			8.98	9.90
	15			13.51	14.98
	20			17.97	19.54
16QAM	1.4	132322	1745.0	1.09	1.22
	3			2.70	3.00
	5			4.48	4.91
	10			8.97	9.81
	15			13.51	14.85
	20			17.97	19.45

2.4.9 Example Test Plots

WCDMA Band 4 / Middle Channel 1732.6 MHz / 99%OBW



WCDMA Band 4 / Middle Channel 1732.6 MHz / 26dB OBW



LTE Band 12 (5 MHz BW) / Middle Channel 707.5 MHz / QPSK / 99%OBW



11:19:15 27.02.2019

LTE Band 12 (5 MHz BW) / Middle Channel 707.5 MHz / QPSK / 26dB OBW



11:19:59 27.02.2019

LTE Band 17 (5 MHz BW) / Middle Channel 710 MHz / QPSK / 99%OBW



10:35:44 27.02.2019

LTE Band 17 (5 MHz BW) / Middle Channel 710 MHz / QPSK / 26dB OBW



10:36:32 27.02.2019

LTE Band 41 (5 MHz BW) / Middle Channel 2593 MHz / QPSK / 99%OBW



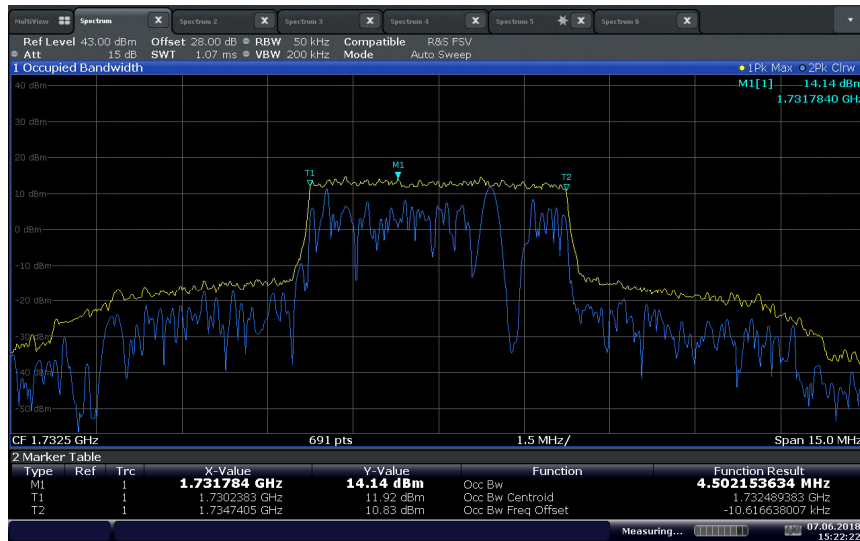
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LTE Band 41 (5 MHz BW) / Middle Channel 2593 MHz / QPSK / 26dB OBW



15:40:43 05.04.2019

LTE Band 4 (5 MHz BW) / Middle Channel 1732.5 MHz / QPSK / 99%OBW



15:22:22 07.06.2018

LTE Band 4 (5 MHz BW) / Middle Channel 1732.5 MHz / QPSK / 26dB BW



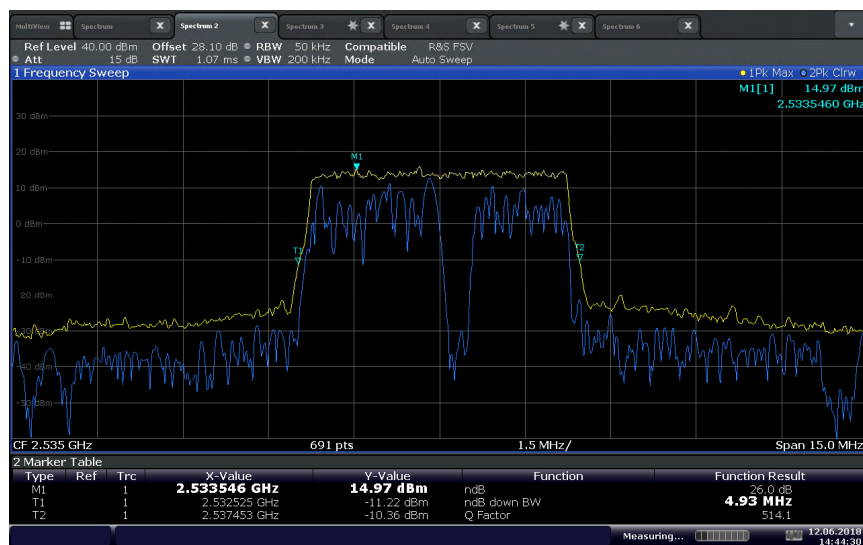
15:23:09 07.06.2018

LTE Band 7 (5 MHz BW) / Middle Channel 2535.0 MHz / QPSK / 99%OBW



14:45:03 12.06.2018

LTE Band 7 (5 MHz BW) / Middle Channel 2535.0 MHz / QPSK / 26dB BW



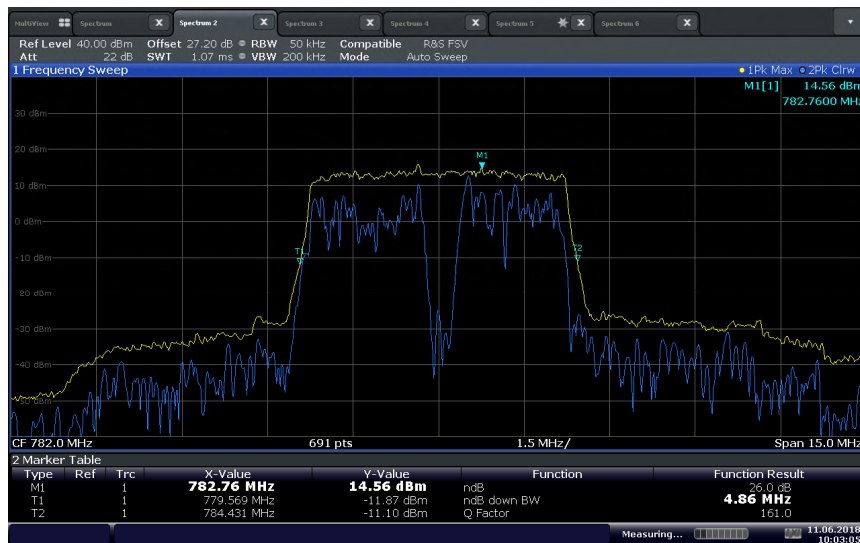
14:44:30 12.06.2018

LTE Band 13 (5 MHz BW) / Middle Channel 782.0 MHz / QPSK / 99%OBW



10:01:15 11.06.2018

LTE Band 13 (5 MHz BW) / Middle Channel 782.0 MHz / QPSK / 26dB BW



10:03:06 11.06.2018

LTE Band 66 (5 MHz BW) / Middle Channel 1745.0 MHz / QPSK / 99%OBW



LTE Band 66 (5 MHz BW) / Middle Channel 1745.0 MHz / QPSK / 26dB BW





2.5 PEAK-AVERAGE POWER RATIO

2.5.1 Specification Reference

FCC 47 CFR Part 27, Clause 27.50 (d)(5)
RSS-139, Clause 6.5
RSS-130, Clause 4.6.1
RSS-199, Clause 4.4

2.5.2 Standard Applicable

FCC 47 CFR Part 27.50(d):

(5) Power measurements for transmissions by stations authorized under this section may be made either in accordance with a Commission-approved average power technique or in compliance with paragraph (d)(6) of this section. In measuring transmissions in this band using an average power technique, the peak-to-average ratio (PAR) of the transmission may not exceed 13dB.

RSS-130, RSS-139, and RSS-199:

The transmitter's peak-to-average power ratio (PAPR) shall not exceed 13 dB for more than 0.1% of the time using a signal corresponding to the highest PAPR during periods of continuous transmission.

2.5.3 Equipment Under Test and Modification State

Serial No: AT071218B00062 (MIFI8000), AZ280418A00044 (MIFI8800L) / Test Configuration A

2.5.4 Date of Test/Initial of test personnel who performed the test

February 25 and 27, March 05, 2019 / XYZ
June 11, 13 and 14, 2018 / XYZ

2.5.5 Test Equipment Used

The major items of test equipment used for the above tests are identified in Section 3.1.

2.5.6 Environmental Conditions/ Test Location

Test performed at TÜV SÜD America Inc. Rancho Bernardo facility

Ambient Temperature	21.2 - 26.2°C
Relative Humidity	35.0 - 54.2%
ATM Pressure	98.5 - 99.6kPa

2.5.7 Additional Observations

- This is a conducted test.
- As per FCC KDB 971168 D01 v03r01 clause 5.7, the PAPR was measured in accordance with ANSI C63.26 clause 5.2.3.4.
- Measurement was done using the Spectrum Analyzer's Complementary Cumulative Distribution Function (CCDF) measurement profile. The built-in function is used to determine the largest deviation between the average and the peak power of the EUT in a given bandwidth (crest factor or peak-to-average ratio). A CCDF curve depicts the probability of the peak signal amplitude exceeding the average power level. Most contemporary measurement instrumentation include the capability to produce CCDF curves for an input signal provided that the instrument's resolution bandwidth can be set wide enough to accommodate the entire input signal bandwidth.
- Low, Middle and High channels for all bandwidths and modulations were verified.
- The path loss for was measured and entered as a level offset.
- There are no measured PAR levels greater than 13dB. EUT complies.

2.5.8 Test Results

Band	Channels	Frequency (MHz)	PAR (dB)	Limit for PAR (dB)
WCDMA Band 4	1312	1712.4	3.61	13
	1413	1732.6	3.29	13
	1513	1752.6	3.18	13

LTE Band 12					
Modulation	Bandwidth (MHz)	Channels	Frequency (MHz)	PAR (dB)	Limit for PAR (dB)
QPSK	1.4	23017	699.7	3.10	13
		23095	707.5	4.90	13
		23173	715.3	4.32	13
	3	23025	700.5	3.27	13
		23095	707.5	4.74	13
		23165	714.5	3.49	13
	5	23035	701.5	4.29	13
		23095	707.5	4.90	13
		23155	713.5	3.88	13
	10	23060	704	4.75	13
		23095	707.5	4.93	13
		23130	711	4.35	13
16QAM	1.4	23017	699.7	4.23	13
		23095	707.5	6.39	13
		23173	715.3	4.75	13
	3	23025	700.5	4.36	13
		23095	707.5	5.99	13
		23165	714.5	4.64	13
	5	23035	701.5	5.41	13
		23095	707.5	6.24	13
		23155	713.5	4.87	13
	10	23060	704	5.71	13
		23095	707.5	6.0	13
		23130	711	5.38	13

LTE Band 17					
Modulation	Bandwidth (MHz)	Channels	Frequency (MHz)	PAR (dB)	Limit for PAR (dB)
QPSK	5	23755	706.5	4.74	13
		23790	710	4.01	13
		23825	713.5	3.61	13
	10	23780	709	4.73	13
		23790	710	4.22	13
		23800	711	4.40	13
16QAM	5	23755	706.5	6.48	13
		23790	710	5.13	13
		23825	713.5	4.44	13
	10	23780	709	5.96	13
		23790	710	5.35	13
		23800	711	5.56	13

LTE Band 41					
Modulation	Bandwidth (MHz)	Channels	Frequency (MHz)	PAR (dB)	Limit for PAR (dB)
QPSK	5	39675	2498.5	8.20	13
		40620	2593	7.23	13
		41565	2687.5	7.95	13
	10	39675	2498.5	7.80	13
		40620	2593	7.16	13
		41565	2687.5	8.71	13
	15	39700	2501	8.0	13
		40620	2593	7.30	13
		41540	2685	7.84	13
	20	39700	2501	8.08	13
		40620	2593	8.28	13
		41540	2685	7.71	13
16QAM	5	39725	2503.5	9.04	13
		40620	2593	9.31	13
		41515	2682.5	9.61	13
	10	39725	2503.5	8.91	13
		40620	2593	8.37	13
		41515	2682.5	8.80	13
	15	39750	2506	8.92	13
		40620	2593	8.60	13
		41490	2680	8.90	13
	20	39750	2506	9.22	13
		40620	2593	9.11	13
		41490	2680	9.0	13

LTE Band 4					
Modulation	Bandwidth (MHz)	Channels	Frequency (MHz)	PAR (dB)	Limit for PAR (dB)
QPSK	1.4	19957	1710.7	3.06	13
		20175	1732.5	3.15	13
		20393	1754.3	4.47	13
	3	19965	1711.5	3.19	13
		20175	1732.5	3.13	13
		20385	1753.5	4.03	13
	5	19975	1712.5	3.84	13
		20175	1732.5	3.08	13
		20375	1752.5	4.7	13
	10	20000	1715	4.98	13
		20175	1732.5	4.81	13
		20350	1750	4.71	13
	15	20025	1717.5	5.41	13
		20175	1732.5	5.64	13
		20325	1747.5	5.55	13
	20	20050	1720	6.44	13
		20175	1732.5	6.64	13
		20300	1745	6.74	13
16QAM	1.4	19957	1710.7	4.6	13
		20175	1732.5	4.32	13
		20393	1754.3	5.69	13
	3	19965	1711.5	4.43	13
		20175	1732.5	4.32	13
		20385	1753.5	5.34	13
	5	19975	1712.5	5.07	13
		20175	1732.5	4.19	13
		20375	1752.5	5.66	13
	10	20000	1715	5.96	13
		20175	1732.5	5.53	13
		20350	1750	5.96	13
	15	20025	1717.5	7.03	13
		20175	1732.5	6.81	13
		20325	1747.5	6.37	13
	20	20050	1720	7.77	13
		20175	1732.5	7.72	13
		20300	1745	7.99	13

LTE Band 7					
Modulation	Bandwidth (MHz)	Channels	Frequency (MHz)	PAR (dB)	Limit for PAR (dB)
QPSK	5	20775	2502.5	5.96	13
		21100	2535	6.12	13
		21425	2567.5	5.43	13
	10	20800	2505	5.64	13
		21100	2535	5.8	13
		21400	2565	5.65	13
	15	20825	2507.5	5.65	13
		21100	2535	5.65	13
		21375	2562.5	5.82	13
	20	20850	2510	6.73	13
		21100	2535	6.5	13
		21350	2560	6.72	13
16QAM	5	20775	2502.5	7.04	13
		21100	2535	7.32	13
		21425	2567.5	6.62	13
	10	20800	2505	6.9	13
		21100	2535	7.33	13
		21400	2565	7.03	13
	15	20825	2507.5	7.15	13
		21100	2535	7.73	13
		21375	2562.5	7.07	13
	20	20850	2510	7.55	13
		21100	2535	8.05	13
		21350	2560	8.02	13

LTE Band 13					
Modulation	Bandwidth (MHz)	Channels	Frequency (MHz)	PAR (dB)	Limit for PAR (dB)
QPSK	5	23205	779.5	5.23	13
		23230	782	4.83	13
		23255	784.5	5.64	13
	10	-	-	-	13
		23230	782	5.01	13
		-	-	-	13
16QAM	5	23205	779.5	6.48	13
		23230	782	6.33	13
		23255	784.5	6.65	13
	10	-	-	-	13
		23230	782	6.59	13
		-	-	-	13

LTE Band 66					
Modulation	Bandwidth (MHz)	Channels	Frequency (MHz)	PAR (dB)	Limit for PAR (dB)
QPSK	1.4	131979	1710.7	2.92	13
		132322	1745	3.8	13
		132665	1779.3	4.23	13
	3	131987	1711.5	2.91	13
		132322	1745	3.64	13
		132657	1778.5	3.86	13
	5	131997	1712.5	3.86	13
		132322	1745	4.3	13
		132647	1777.5	4.6	13
	10	132022	1715	4.76	13
		132322	1745	4.78	13
		132622	1775	4.93	13
	15	132047	1717.5	5.41	13
		132322	1745	5.62	13
		132597	1772.5	5.78	13
	20	132072	1720	6.85	13
		132322	1745	6.56	13
		132572	1770	6.57	13
16QAM	1.4	131979	1710.7	4.39	13
		132322	1745	5.19	13
		132665	1779.3	5.45	13
	3	131987	1711.5	4.28	13
		132322	1745	4.77	13
		132657	1778.5	5.04	13
	5	131997	1712.5	4.84	13
		132322	1745	4.55	13
		132647	1777.5	5.56	13
	10	132022	1715	6.15	13
		132322	1745	5.89	13
		132622	1775	6.24	13
	15	132047	1717.5	6.81	13
		132322	1745	6.95	13
		132597	1772.5	7.11	13
	20	132072	1720	7.89	13
		132322	1745	8.02	13
		132572	1770	7.6	13

2.5.9 Example Test Plots

WCDMA Band 4 / Middle Channel 1732.6 MHz



LTE Band 12 (5 MHz BW) / Middle Channel 707.5 MHz / QPSK



LTE Band 17 (5 MHz BW) / Middle Channel 710 MHz / QPSK



13:30:49 27.02.2019

LTE Band 41 (5 MHz BW) / Middle Channel 2593 MHz / QPSK



15:46:29 05.04.2019

LTE Band 4 (5 MHz BW) / Middle Channel 1732.5 MHz / QPSK



LTE Band 7 (5 MHz BW) / Middle Channel 2535 MHz / QPSK



LTE Band 13 (5 MHz BW) / Middle Channel 782 MHz / QPSK



15:04:55 13.06.2018

LTE Band 66 (5 MHz BW) / Middle Channel 1745 MHz / QPSK



15:48:15 13.06.2018

2.6 SPURIOUS EMISSION AT BAND EDGE

2.6.1 Specification Reference

FCC 47 CFR Part 2, Clause 2.1051
FCC 47 CFR Part 27, Clause 27.53(h)(1)(3)
FCC 47 CFR Part 27, Clause 27.53(g)
FCC 47 CFR Part 27, Clause 27.53(c)(2)
RSS-139, Clause 6.6
RSS-130, Clause 4.7.1
RSS-199, Clause 4.5

2.6.2 Standard Applicable

FCC 47 CFR Part 27.53

(h) AWS emission limits – (1) General protection levels. Except as otherwise specified below, for operations in the 1695-1710 MHz, 1710-1755 MHz, 1755-1780 MHz, 1915-1920 MHz, 1995-2000 MHz, 2000-2020 MHz, 2110-2155 MHz, 2155-2180 MHz, and 2180-2200 MHz bands, the power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) in watts by at least $43 + 10 \log_{10}(P)$ dB.

(g) For operations in the 600 MHz band and the 698–746 MHz band, the power of any emission outside a licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, by at least $43 + 10 \log(P)$ dB. Compliance with this provision is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kilohertz or greater. However, in the 100 kilohertz bands immediately outside and adjacent to a licensee's frequency block, a resolution bandwidth of at least 30 kHz may be employed.

(c) For operations in the 746-758 MHz band and the 776-788 MHz band, the power of any emission outside the licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, in accordance with the following:

(2) On any frequency outside the 776-788 MHz band, the power of any emission shall be attenuated outside the band below the transmitter power (P) by at least $43 + 10 \log_{10}(P)$ dB.

RSS-139, Clause 6.6:

(i) In the first 1.0 MHz bands immediately outside and adjacent to the equipment's smallest operating frequency block, which can contain the equipment's occupied bandwidth, the emission power per any 1% of the emission bandwidth shall be attenuated below the transmitter output power P (dBW), by at least $43 + 10 \log_{10} p$ (watts) dB.

RSS-130:

4.7.1 The unwanted emissions in any 100 kHz bandwidth on any frequency outside the low frequency edge and the high frequency edge of each frequency block range(s), shall be attenuated below the transmitter power, P (dBW), by at least $43 + 10 \log_{10} p$ (watts), dB. However, in the 100 kHz band immediately outside of the equipment's frequency block range, a resolution bandwidth of 30 kHz may be employed.



RSS-199, Clause 4.5:

In the 1 MHz band immediately outside and adjacent to the channel edge, the unwanted emission power shall be measured with a resolution bandwidth of at 1% of the occupied bandwidth for base station and fixed subscriber equipment, and 2% for mobile subscriber equipment. Beyond the 1 MHz band, a resolution bandwidth of 1 MHz shall be used.

(b) for mobile subscriber equipment, the power of any unwanted emissions measured as above shall be attenuated (in dB) below the transmitter power, P (dBW), by at least:

(i) $40 + 10 \log_{10} p$ from the channel edges to 5 MHz away.

(ii) $43 + 10 \log_{10} p$ between 5 MHz and X MHz from the channel edges, and

(iii) $55 + 10 \log_{10} p$ at X MHz and beyond from the channel edges

Note: X is 6 MHz or the equipment occupied bandwidth, whichever is greater

2.6.3 Equipment Under Test and Modification State

Serial No: AT071218B00062 (MIFI8000), AZ280418A00044 (MIFI8800L) / Test Configuration A

2.6.4 Date of Test/Initial of test personnel who performed the test

February 25 and 27, April 8 and 9, 2019 / XYZ

July 16, 17 and 20, 2018 / XYZ

2.6.5 Test Equipment Used

The major items of test equipment used for the above tests are identified in Section 3.1.

2.6.6 Environmental Conditions/ Test Location

Test performed at TÜV SÜD America Inc. Rancho Bernardo facility

Ambient Temperature	21.2 - 26.4°C
Relative Humidity	35.0 - 56.4%
ATM Pressure	98.9 - 99.6kPa

2.6.7 Additional Observations

- This is a conducted test.
- The path loss were measured and entered as a level offset.
- RBW is set to minimum 1% (for band 4, 12, 13, 17 and 66) or 2% (for band 7, 38, 41) of EBW and VBW is set to $>3 \times \text{RBW}$ in the 1 MHz (for band 4, 7 and 66) or 100 kHz (for band 12, 13, 17) band immediately outside and adjacent to the channel edge.
- For Band 4 and 66, RBW was set 1% of the Emission Bandwidth for emissions more than 1.0 MHz outside the equipment's operating frequency block, and the limit is set to:
 $-13 + 10 \lg (\text{RBW}_{\text{used}}/1 \text{ MHz}) \text{ dBm}$.
- For LTE Band 12, 13, 17, RBW was set 1% of the Emission Bandwidth for emissions more than 100 kHz outside the equipment's operating frequency block, and the limit is set to:
 $-13 + 10 \lg (\text{RBW}_{\text{used}}/100 \text{ kHz}) \text{ dBm}$.
- For LTE Band 7, 38, 41, RBW was set 2% of the Emission Bandwidth and for emissions more than 1.0 MHz and less than 5 MHz outside the equipment's operating frequency block, the limit is set to:
 $-10 + 10 \lg (\text{RBW}_{\text{used}}/1 \text{ MHz}) \text{ dBm}$.
- Only worst case configuration for all technologies presented in this test report.

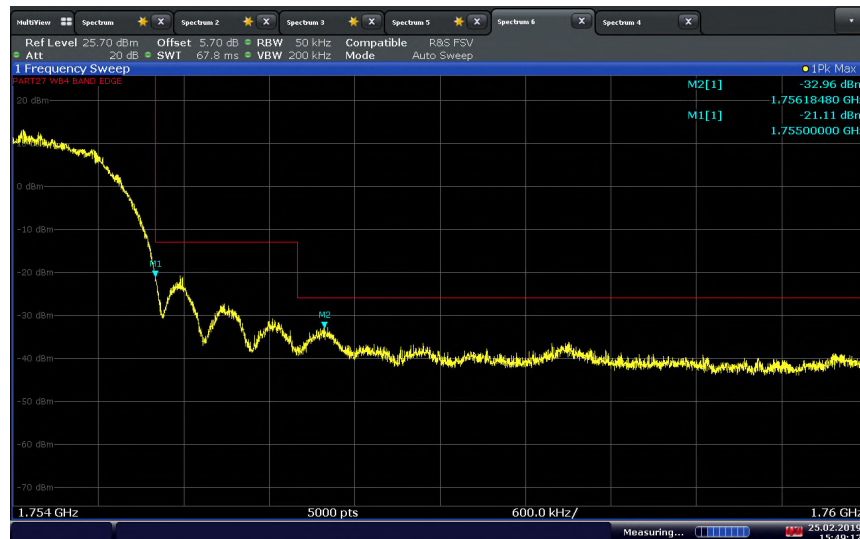
2.6.8 Test Results

WCDMA Band 4 / Low Channel 1712.4 MHz / Band Edge @1710 MHz



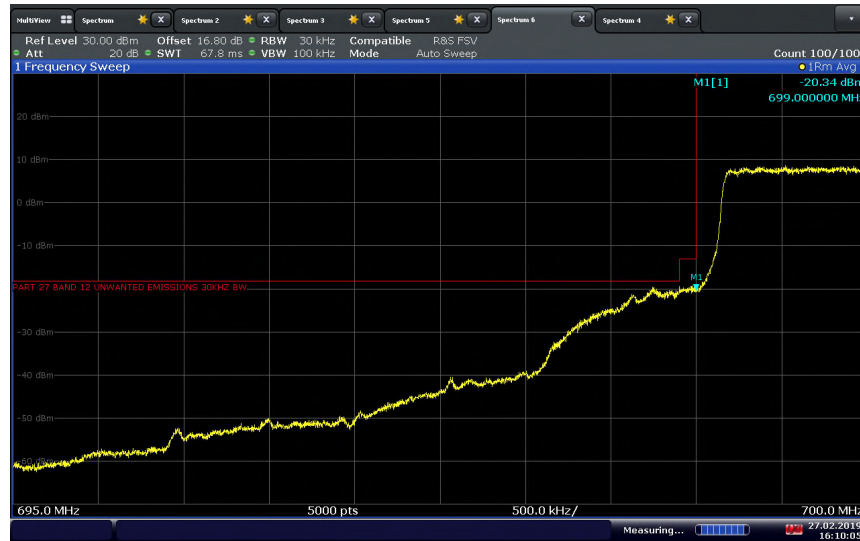
15:46:31 25.02.2019

WCDMA Band 4 / High Channel 1752.6 MHz / Band Edge @1755 MHz



15:49:12 25.02.2019

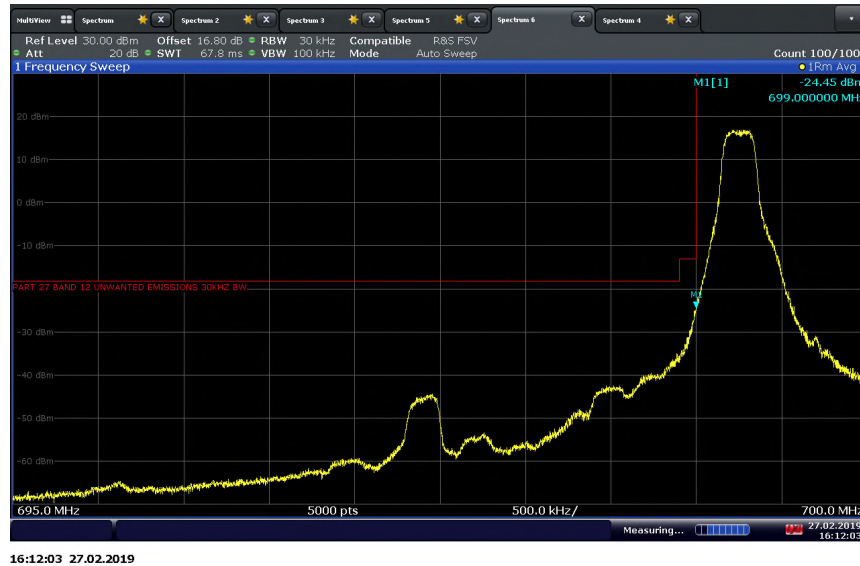
LTE Band 12 (1.4 MHz BW)/QPSK/Low Channel 699.7 MHz/Full RB Band Edge @699 MHz



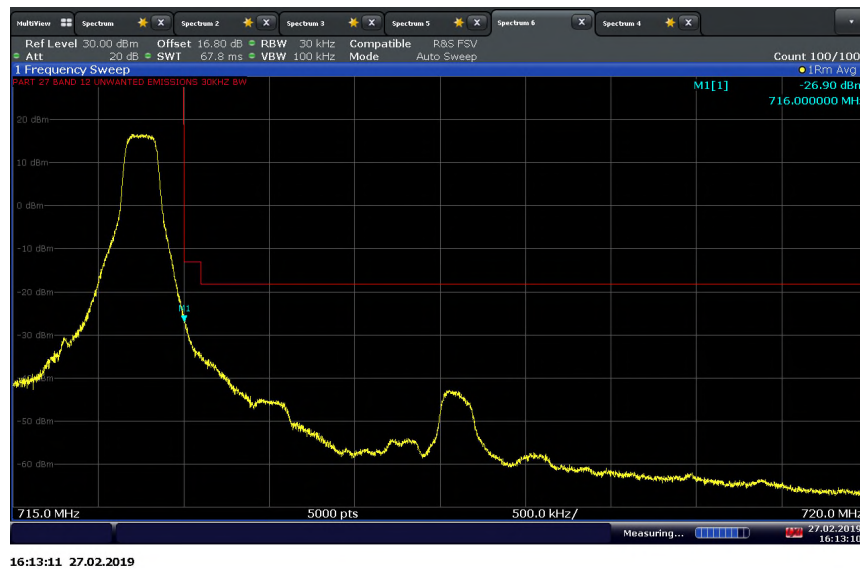
LTE Band 12 (1.4 MHz BW)/QPSK/High Channel 715.3 MHz/Full RB Band Edge @716 MHz



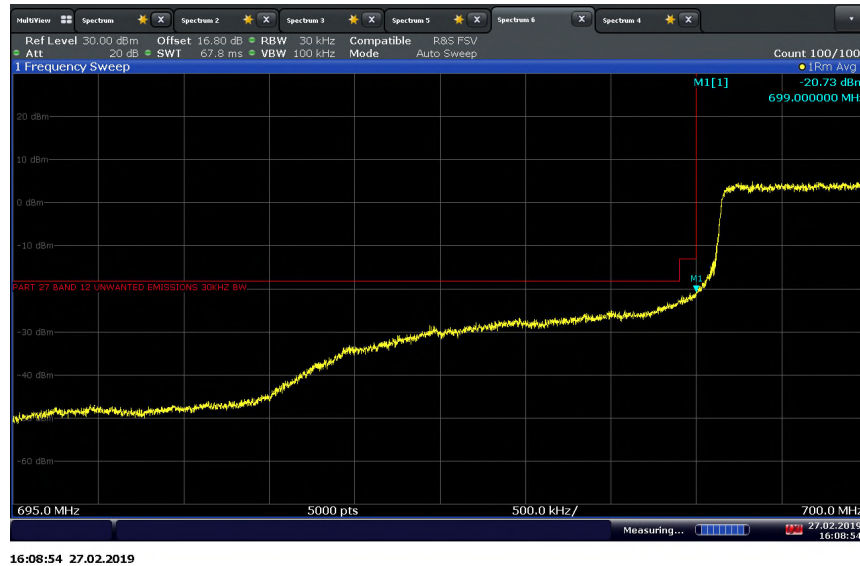
LTE Band 12 (1.4 MHz BW)/QPSK/Low Channel 699.7 MHz/1 RB 0 offset Band Edge @699 MHz



LTE Band 12 (1.4 MHz BW)/QPSK/High Channel 715.3 MHz/1 RB 5 offset Band Edge @716 MHz



LTE Band 12 (3 MHz BW)/QPSK/Low Channel 700.5 MHz/Full RB Band Edge @699 MHz



LTE Band 12 (3 MHz BW)/QPSK/High Channel 714.5 MHz/Full RB Band Edge @716 MHz



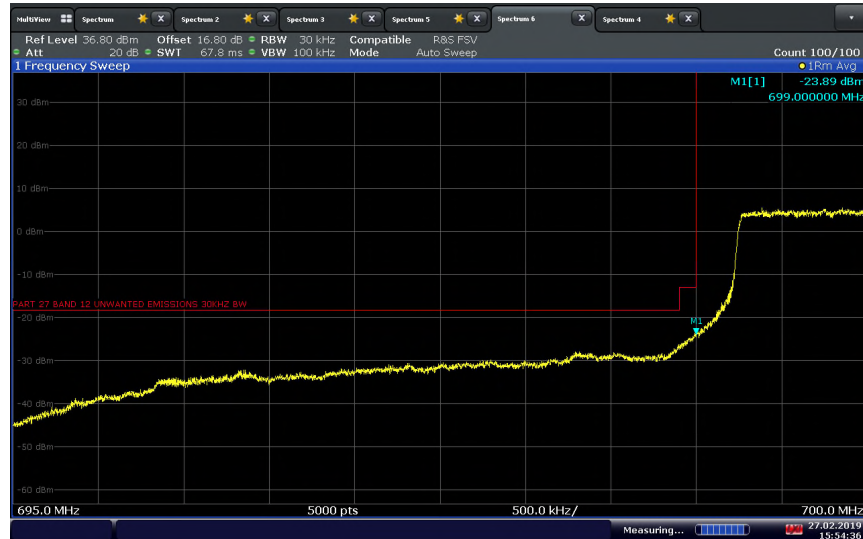
LTE Band 12 (3 MHz BW)/QPSK/Low Channel 700.5 MHz/1 RB 0 offset Band Edge @699 MHz



LTE Band 12 (3 MHz BW)/QPSK/High Channel 714.5 MHz/1 RB 14 offset Band Edge @716 MHz



LTE Band 12 (5 MHz BW)/QPSK/Low Channel 701.5 MHz/Full RB Band Edge @699 MHz



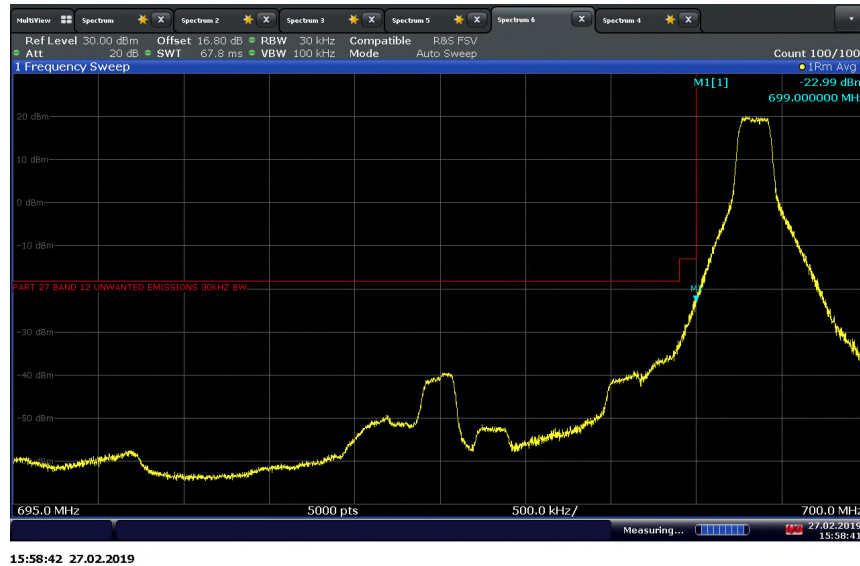
15:54:36 27.02.2019

LTE Band 12 (5 MHz BW)/QPSK/High Channel 713.5 MHz/Full RB Band Edge @716 MHz

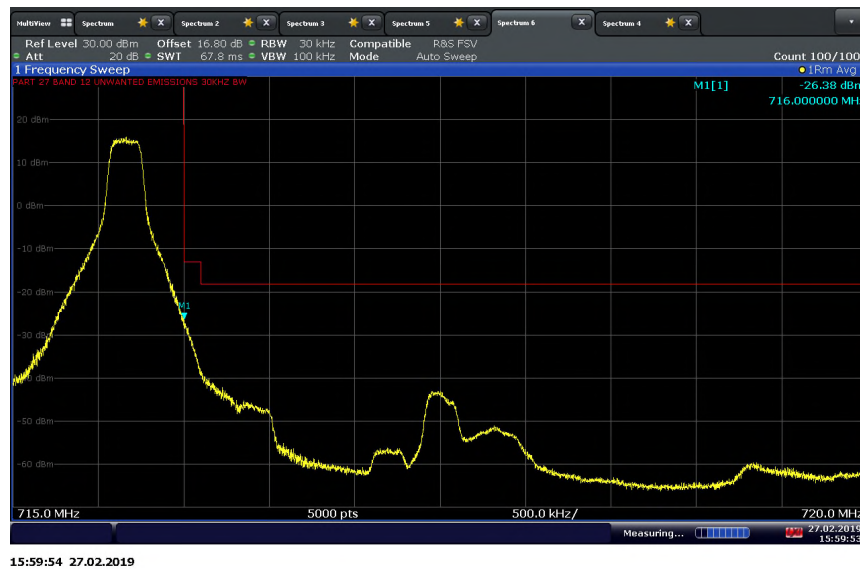


16:02:21 27.02.2019

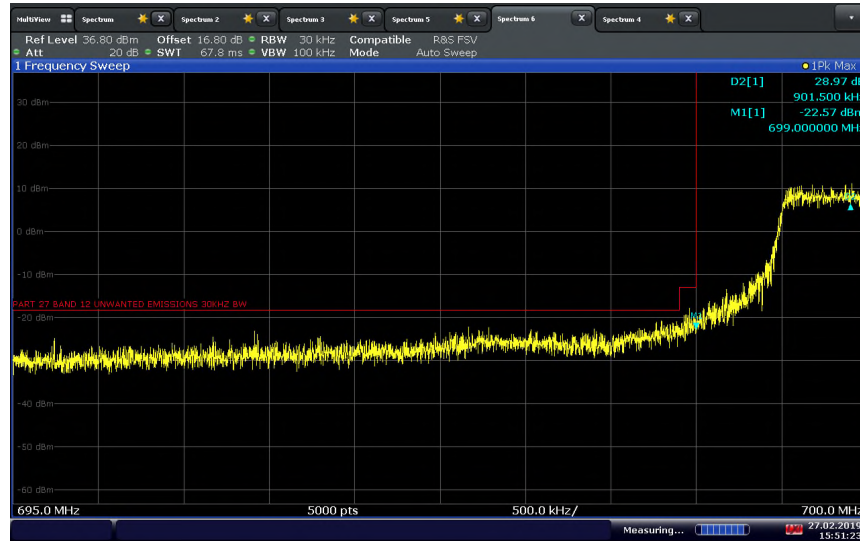
LTE Band 12 (5 MHz BW)/QPSK/Low Channel 701.5 MHz/1 RB 0 offset Band Edge @699 MHz



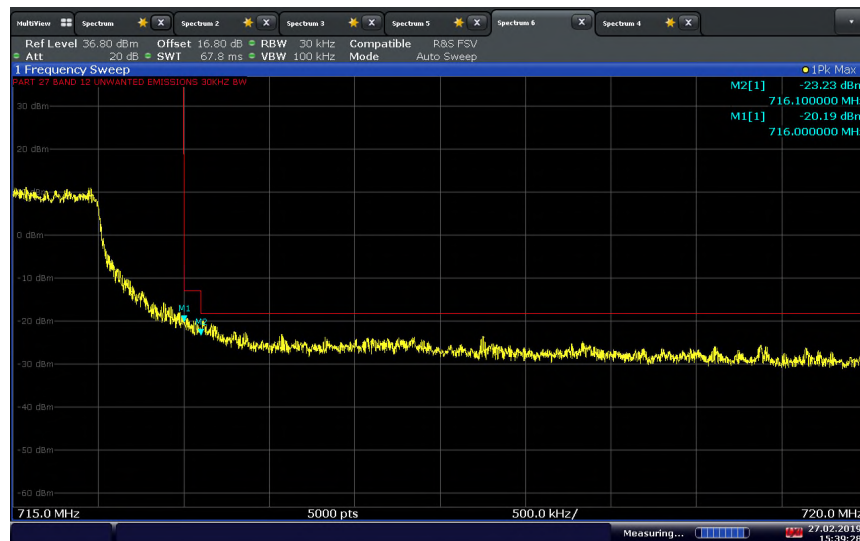
LTE Band 12 (5 MHz BW)/QPSK/High Channel 713.5 MHz/1 RB 24 offset Band Edge @716 MHz



LTE Band 12 (10 MHz BW)/QPSK/Low Channel 704 MHz/Full RB Band Edge @699 MHz



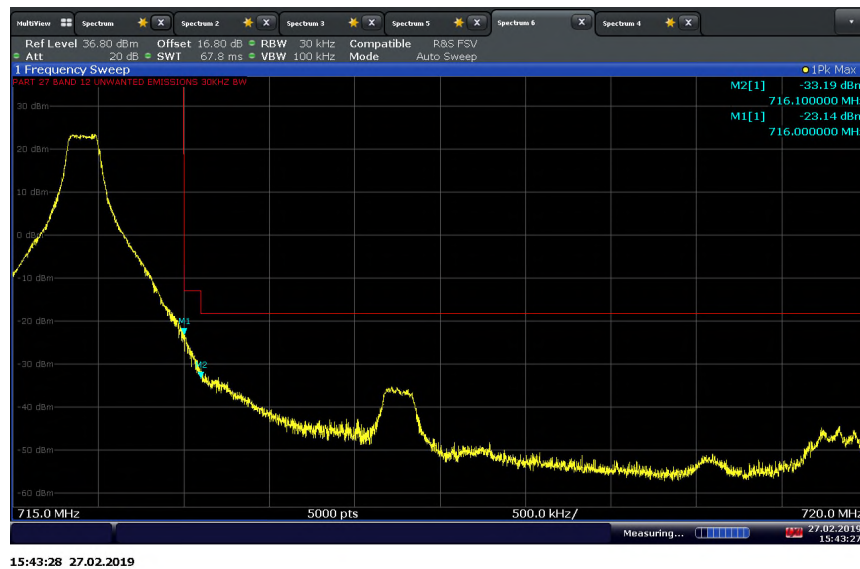
LTE Band 12 (10 MHz BW)/QPSK/High Channel 711 MHz/Full RB Band Edge @716 MHz



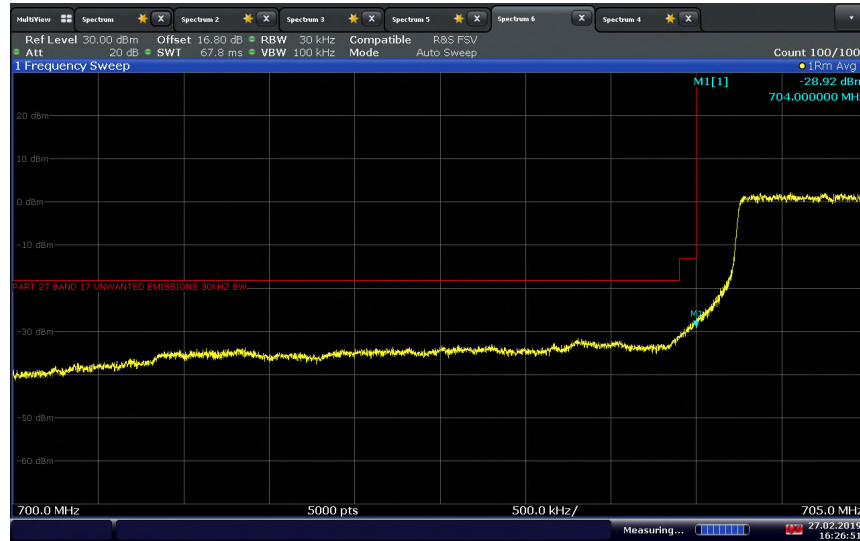
LTE Band 12 (10 MHz BW)/QPSK/Low Channel 704 MHz/1 RB 0 offset Band Edge @699 MHz



LTE Band 12 (10 MHz BW)/QPSK/High Channel 711 MHz/1 RB 49 offset Band Edge @716 MHz

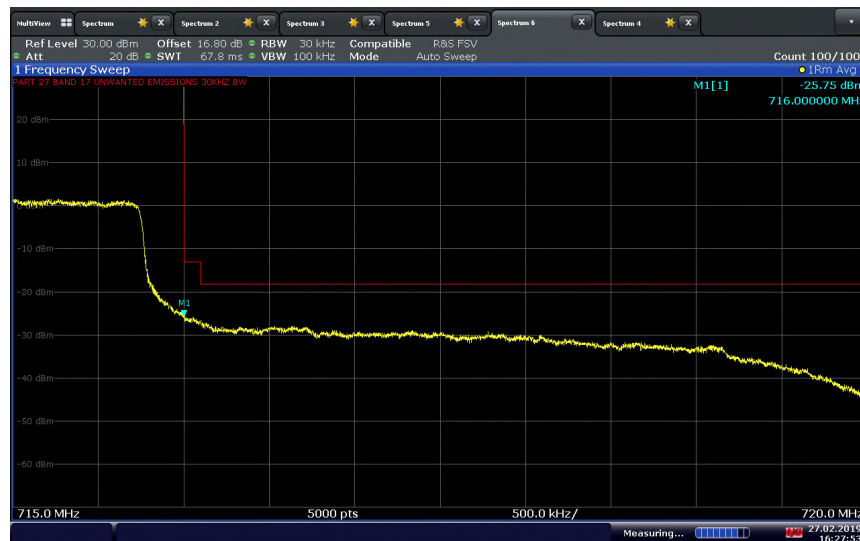


LTE Band 17 (5 MHz BW)/QPSK/Low Channel 706.5 MHz/Full RB Band Edge @704 MHz



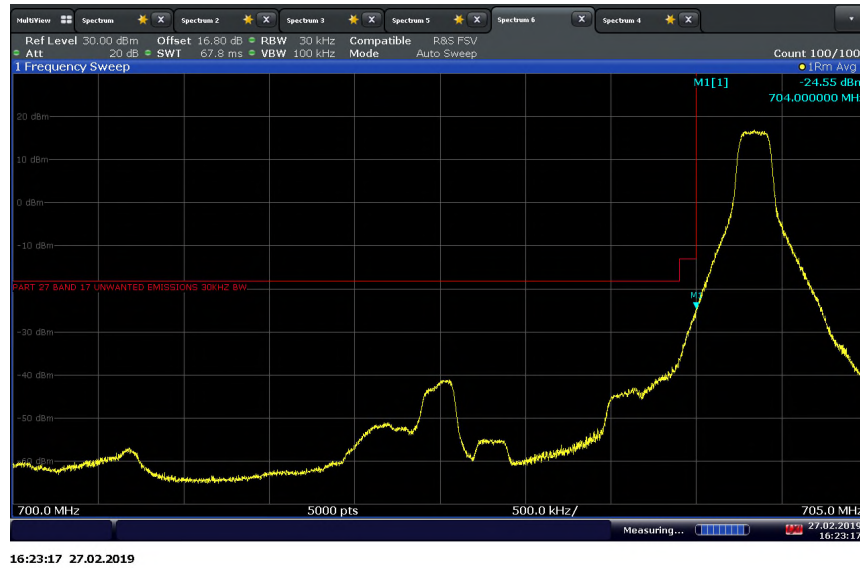
16:26:52 27.02.2019

LTE Band 17 (5 MHz BW)/QPSK/High Channel 713.5 MHz/Full RB Band Edge @716 MHz

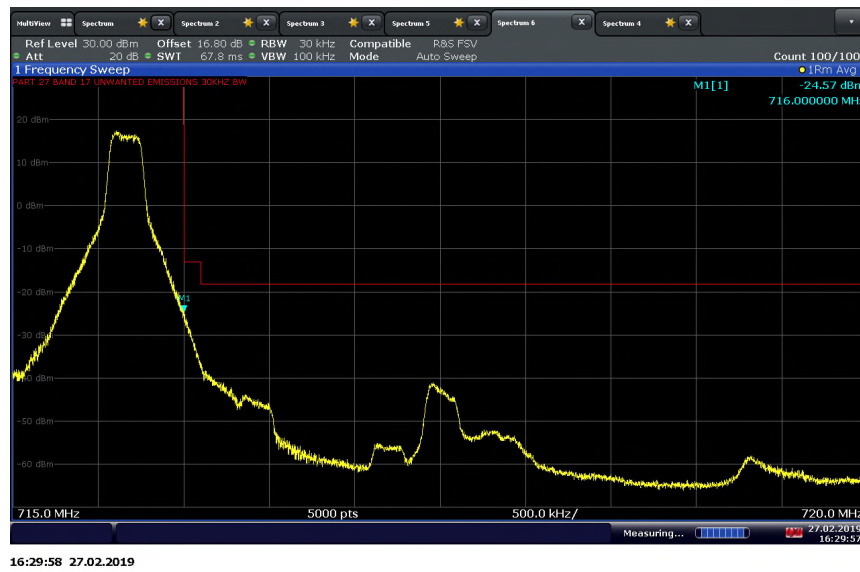


16:27:53 27.02.2019

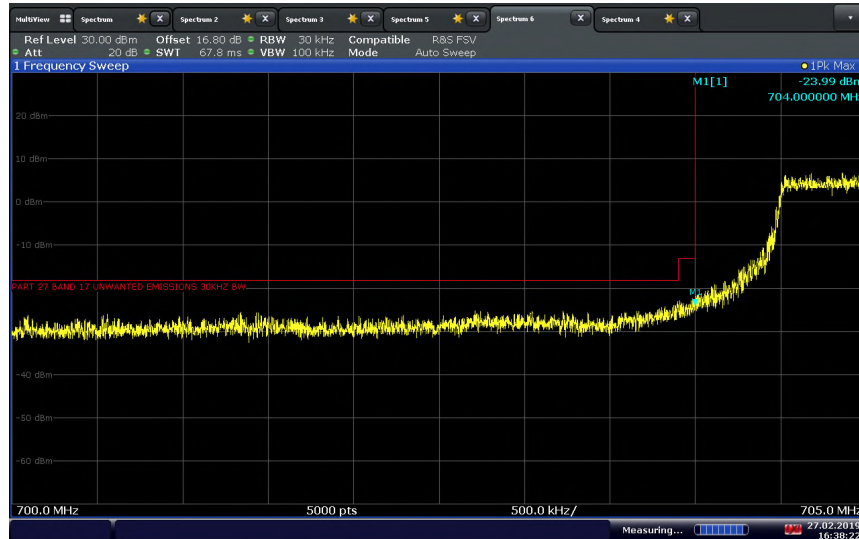
LTE Band 17 (5 MHz BW)/QPSK/Low Channel 706.5 MHz/1 RB 0 offset Band Edge @704 MHz



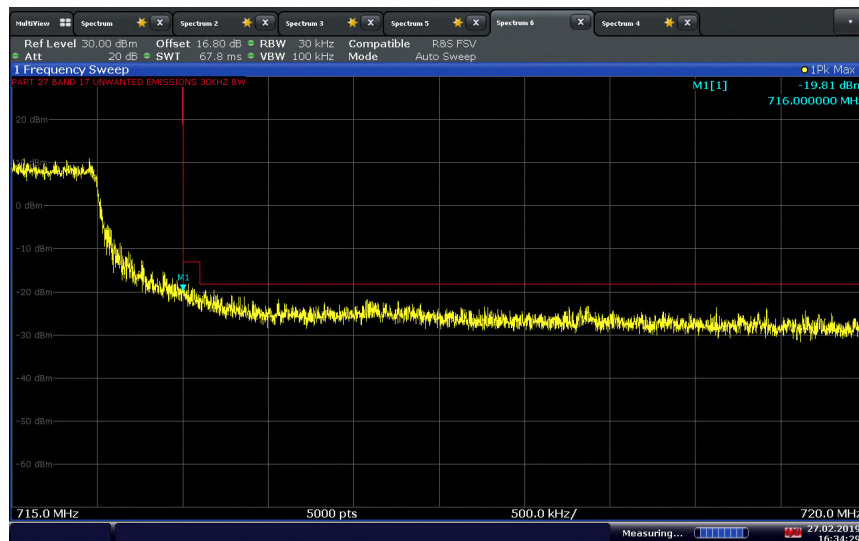
LTE Band 17 (5 MHz BW)/QPSK/High Channel 713.5 MHz/1 RB 24 offset Band Edge @716 MHz



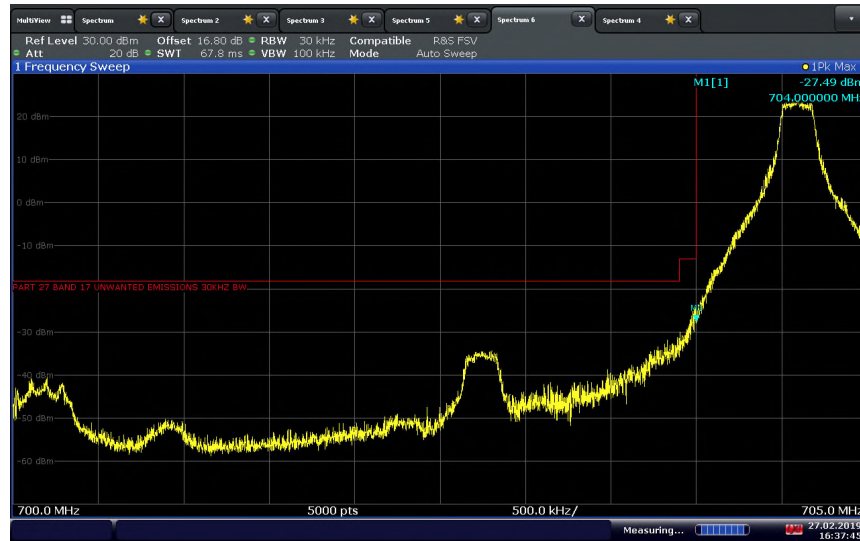
LTE Band 17 (10 MHz BW)/QPSK/Low Channel 709 MHz/Full RB Band Edge @704 MHz



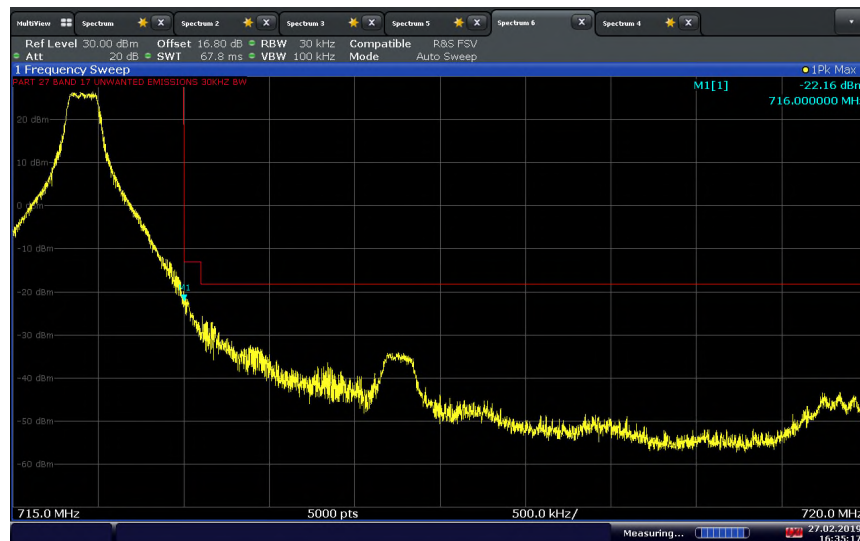
LTE Band 17 (10 MHz BW)/QPSK/High Channel 711 MHz/Full RB Band Edge @716 MHz



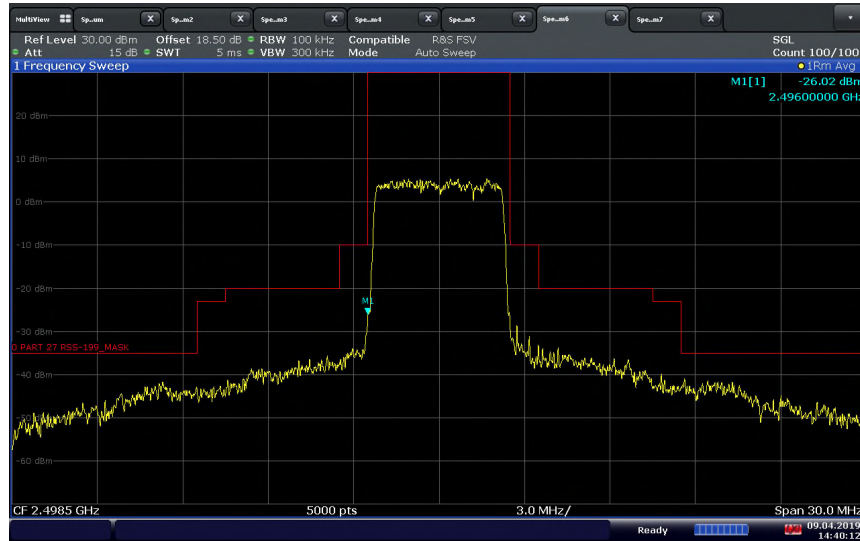
LTE Band 17 (10 MHz BW)/QPSK/Low Channel 709 MHz/1 RB 0 offset Band Edge @704 MHz



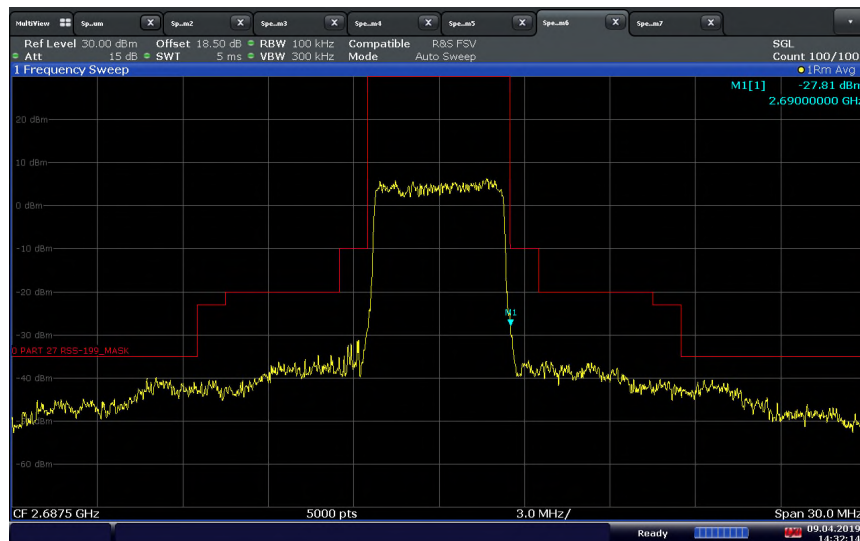
LTE Band 17 (10 MHz BW)/QPSK/High Channel 711 MHz/1 RB 49 offset Band Edge @716 MHz



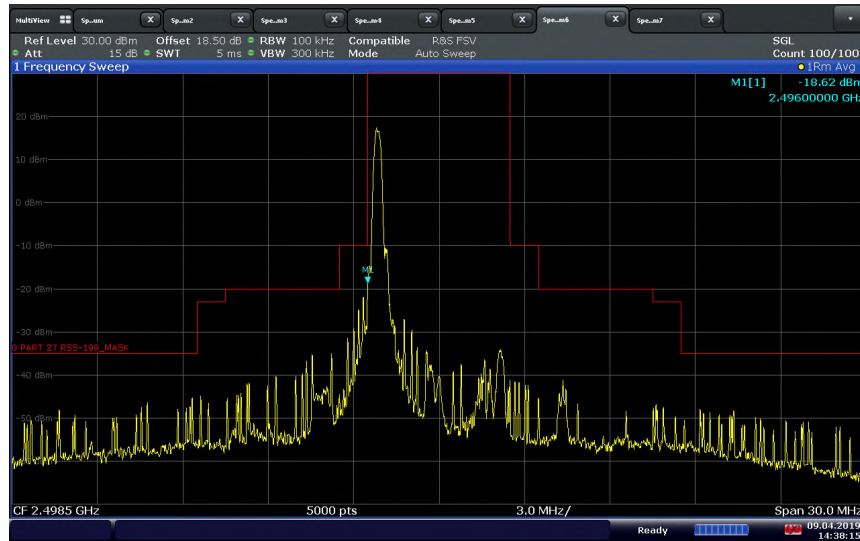
LTE Band 41 (5 MHz BW)/QPSK/Low Channel 2498.5 MHz/Full RB Band Edge @2496 MHz



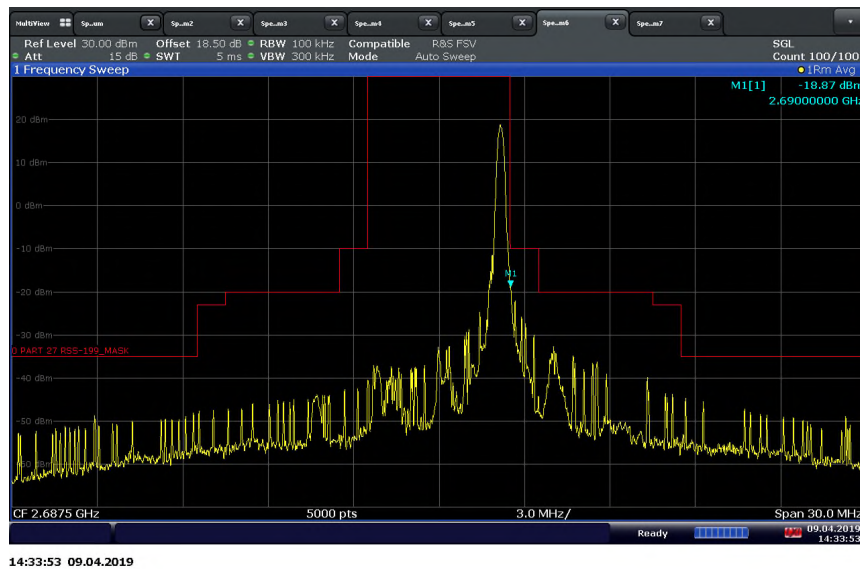
LTE Band 41 (5 MHz BW)/QPSK/High Channel 2687.5 MHz/Full RB Band Edge @2690 MHz



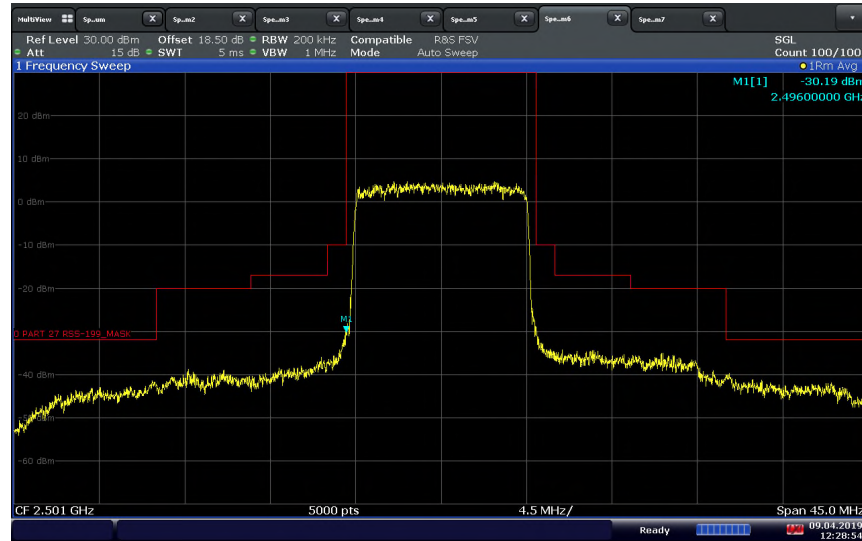
LTE Band 41 (5 MHz BW)/QPSK/Low Channel 2498.5 MHz/1 RB 0 offset Band Edge @2496 MHz



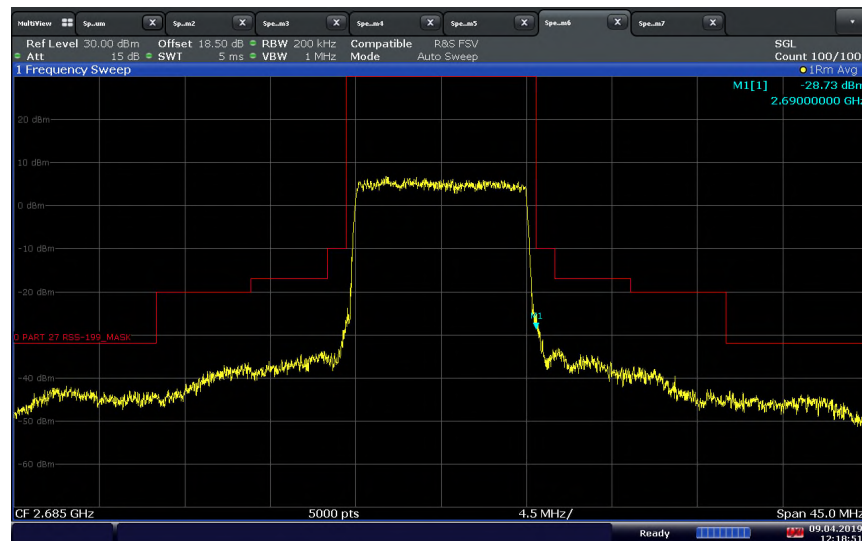
LTE Band 41 (5 MHz BW)/QPSK/High Channel 2687.5 MHz/1 RB 49 offset Band Edge @2690 MHz



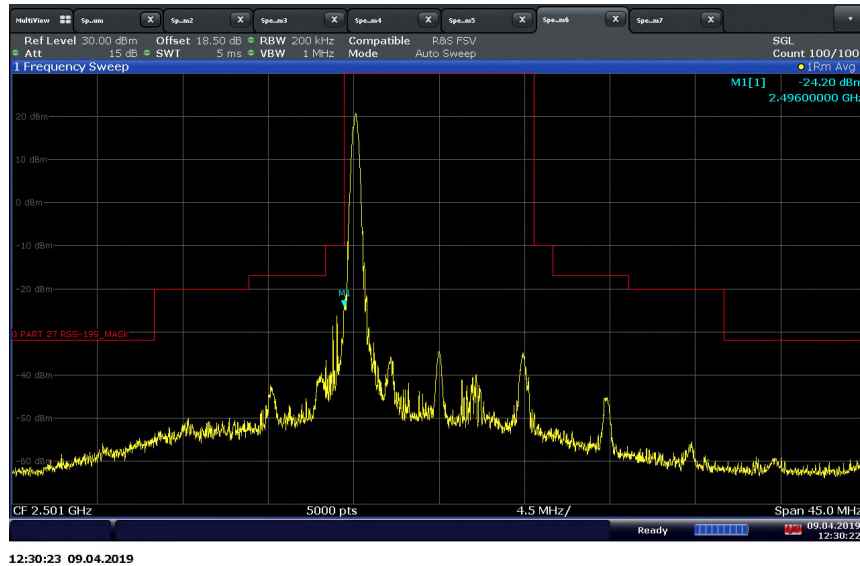
LTE Band 41 (10 MHz BW)/QPSK/Low Channel 2501 MHz/Full RB Band Edge @2496 MHz



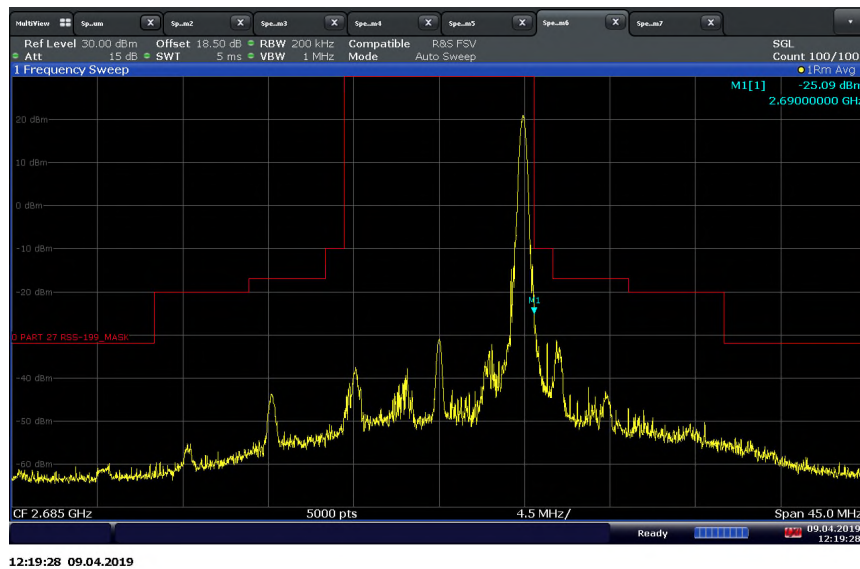
LTE Band 41 (10 MHz BW)/QPSK/High Channel 2685 MHz/Full RB Band Edge @2690 MHz



LTE Band 41 (10 MHz BW)/QPSK/Low Channel 2501 MHz/1 RB 0 offset Band Edge @2496 MHz



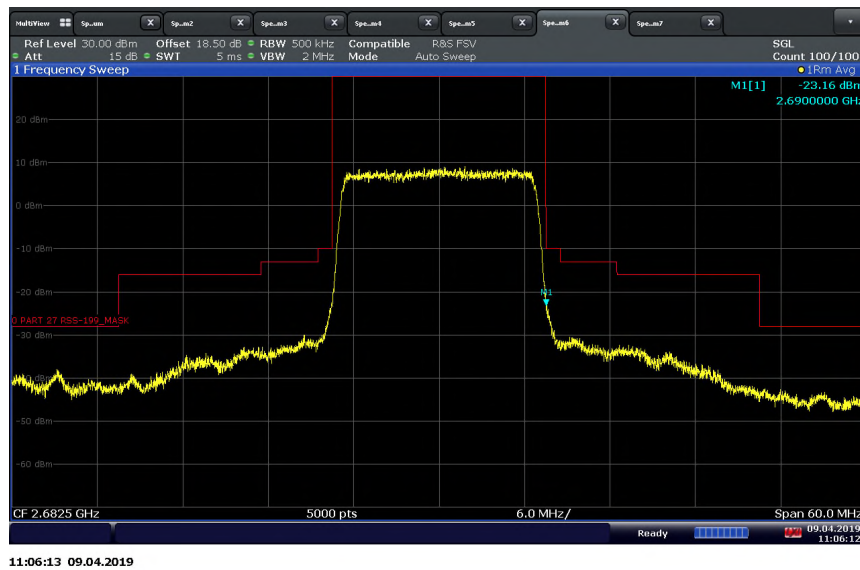
LTE Band 41 (10 MHz BW)/QPSK/High Channel 2685 MHz/1 RB 49 offset Band Edge @2690 MHz



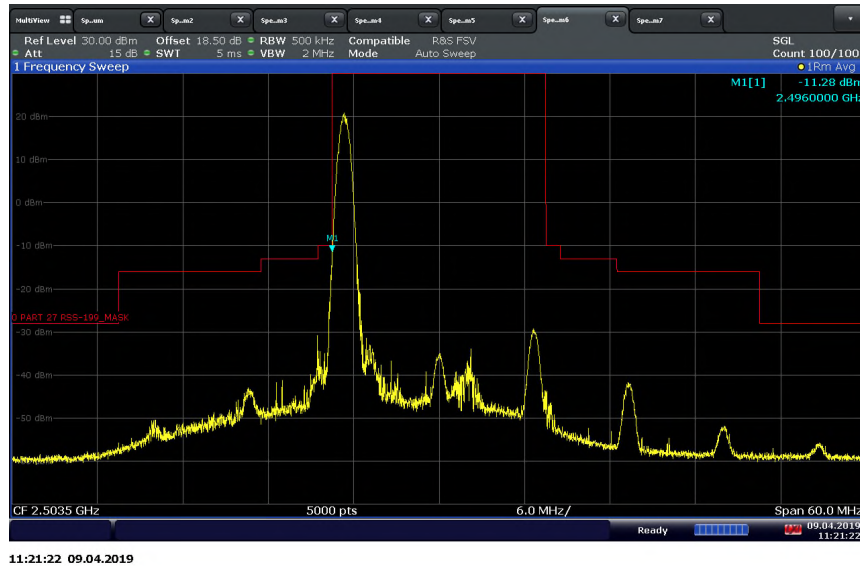
LTE Band 41 (15 MHz BW)/QPSK/Low Channel 2503.5 MHz/Full RB Band Edge @2496 MHz



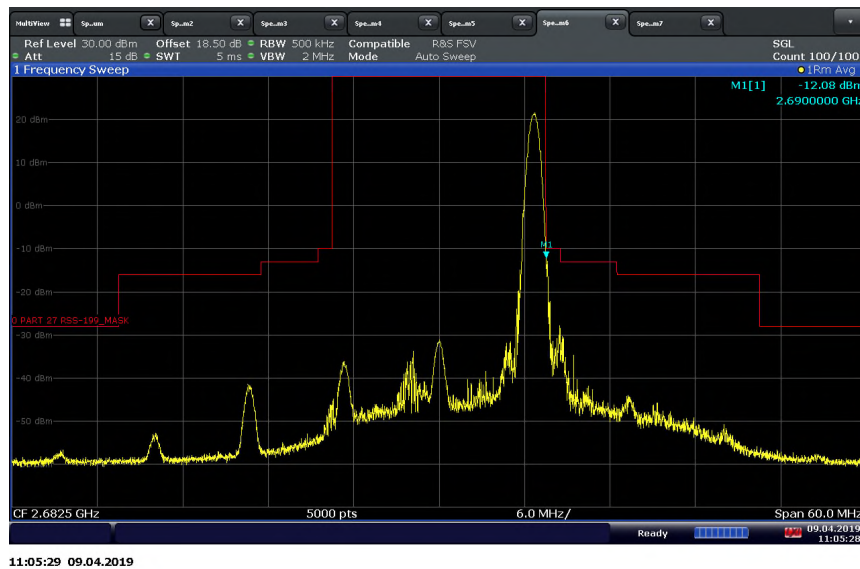
LTE Band 41 (15 MHz BW)/QPSK/High Channel 2682.5 MHz/Full RB Band Edge @2690 MHz



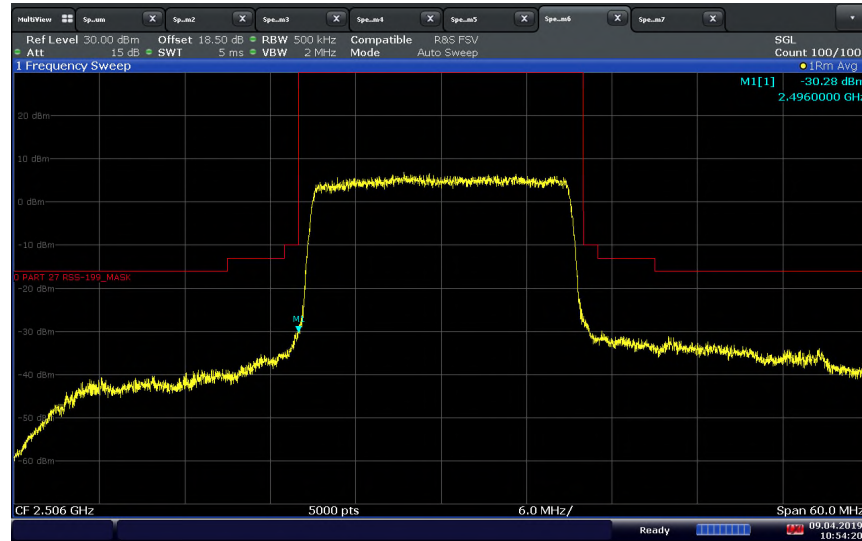
LTE Band 41 (15 MHz BW)/QPSK/Low Channel 2503.5 MHz/1 RB 0 offset Band Edge @2496 MHz



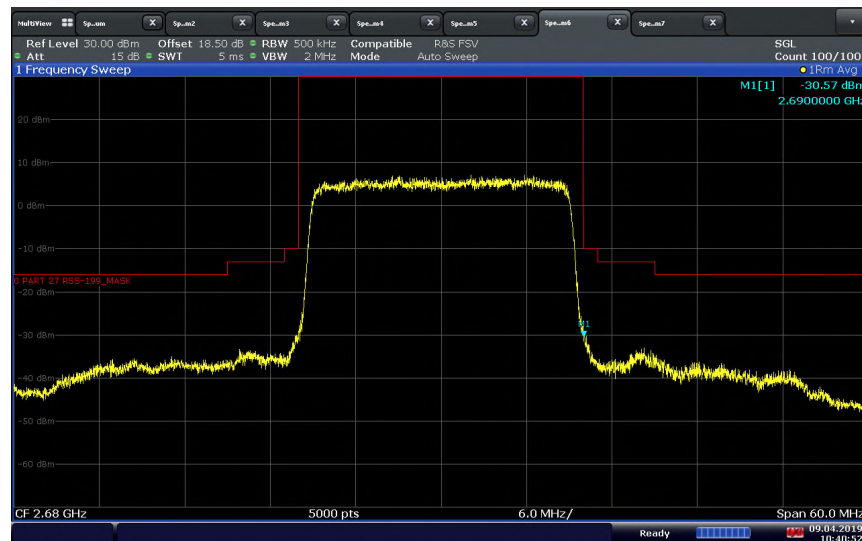
LTE Band 41 (15 MHz BW)/QPSK/High Channel 2682.5 MHz/1 RB 74 offset Band Edge @2690 MHz



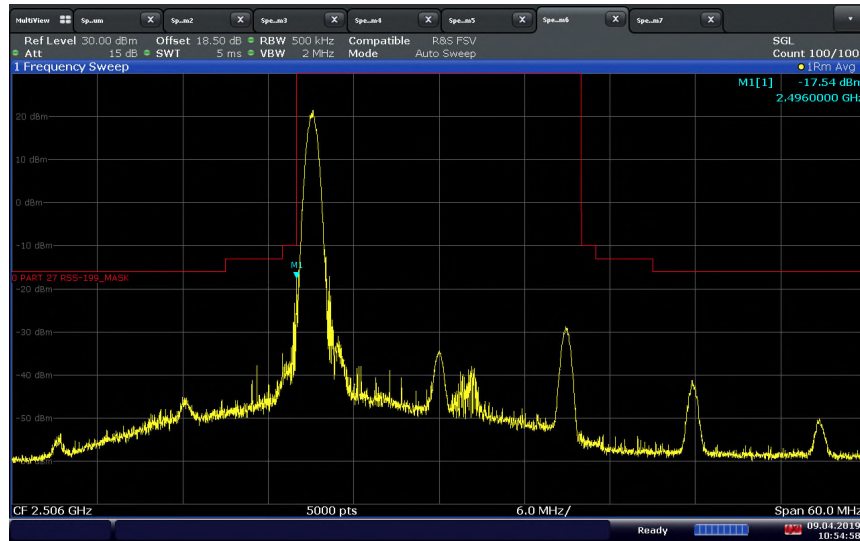
LTE Band 41 (20 MHz BW)/QPSK/Low Channel 2506 MHz/Full RB Band Edge @2496 MHz



LTE Band 41 (20 MHz BW)/QPSK/High Channel 2680 MHz/Full RB Band Edge @2690 MHz



LTE Band 41 (20 MHz BW)/QPSK/Low Channel 2506 MHz/1 RB 0 offset Band Edge @2496 MHz



LTE Band 41 (20 MHz BW)/QPSK/High Channel 2680 MHz/1 RB 99 offset Band Edge @2690 MHz

