

# EMC Test Report

**Project Number:** 4323476  
**Report Number:** 4323476EMC01      **Revision Level:** 0  
**Client:** Continental Automotive Systems, Inc.


**Equipment Under Test:** Wireless Modem Module  
**Model:** BL28NA-003  
**FCC ID:** LHJ-BL28NA003  
**IC ID:** 2807E-BL28NA003

**FCC Rule Parts:** Part 2, Part 22(H), Part 24(E), Part 27  
**Industry Canada:** RSS-GEN, Issue 5  
RSS-130, Issue 1  
RSS-132, Issue 3  
RSS-133, Issue 6  
RSS-139, Issue 3  
RSS-199, Issue 3

**Report issued on:** 04 September 2018

**Test Result:** Compliant

Tested by:

  
\_\_\_\_\_  
Martin Taylor, Project Engineer

Reviewed by:

  
\_\_\_\_\_  
David Schramm, Operations Manager

*Remarks: This report details the results of the testing carried out on one sample, the results contained in this test report do not relate to other samples of the same product. The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report.*

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# 1 Summary of Test Results

Reference Sections		Test Description	Test Condition	Test Result
FCC	IC			
2.1046	RSS-GEN (6.12)	Conducted Output Power	Conducted	Reported
24.232(d) 27.50(d)(5)	RSS-130 (4.4) RSS-132 (5.4) RSS-133 (6.4) RSS-139 (6.5) RSS-199 (4.4)	Peak-to-Average Ratio		Pass
2.1049 22.917(b) 24.238(b) 27.53(h)(3) 27.53(m)(6)	RSS-GEN (6.7) RSS-133 (2.3) RSS-199 (4.2)	Occupied Bandwidth Emission Bandwidth	Conducted	Reported
2.1051 22.917(a) 24.238(a) 27.53(g) 27.53(h) 27.53(m)(4)	RSS-130 (4.6.1) RSS-132 (5.5) RSS-133 (6.5.1) RSS-139 (6.6) RSS-199 (4.5)	Band Edge / Conducted Spurious Emissions		Pass
22.913(a)(5) 27.50(c)(9)	--	Effective Radiated Power	Radiated	Pass
24.232(c) 27.50(d)(4) 27.50(h)(2)	RSS-130 (4.4) RSS-132 (5.4) RSS-133 (6.4) RSS-139 (6.5) RSS-199 (4.4)	Effective Isotropic Radiated Power		Pass
2.1053 22.917(a) 24.238(a) 27.53(g) 27.53(h) 27.53(m)(4)	RSS-GEN (6.13) RSS-130 (4.6) RSS-132 (5.5) RSS-133 (6.5.1) RSS-139 (6.6) RSS-199 (4.5)	Radiated Spurious Emissions	Conducted	Pass
2.1055 24.235 27.54	RSS-GEN (6.11) RSS-130 (4.3) RSS-132 (5.3) RSS-133 (6.3) RSS-139 (6.4) RSS-199 (4.3)	Frequency Stability		Pass

## 1.1 Modifications Required to Compliance

None

## 2 General Information

### 2.1 Client Information

Name: Continental Automotive Systems, Inc.  
Address: 21440 West Lake Cook Road  
City, State, Zip, Country: Deer Park, IL 60010, USA

### 2.2 Test Laboratory

Name: SGS North America, Inc.  
Address: 620 Old Peachtree Road NW, Suite 100  
City, State, Zip, Country: Suwanee, GA 30024, USA

### 2.3 General Information of EUT

Type of Product: Wireless Modem Module  
Model Number: BL28NA-003  
Serial Number: ADN180505317640  
FCC ID: LHJ- BL28NA003  
IC ID: 2807E- BL28NA003

IMEI Number: 004401810317640

Rated Voltage: 10.2 – 13.8 Vdc  
Test Voltage: 12 Vdc, 10.2 Vdc, 13.8 Vdc

Tx Frequency Range: 1850 – 1910 MHz (LTE Band 2)  
1710 – 1755 MHz (LTE Band 4)  
824 – 849 MHz (LTE Band 5)  
2500 – 2570 MHz (LTE Band 7)  
699 – 716 MHz (LTE Band 12)

FCC Classification: PCS Licensed Transmitter PCB  
Type: Pre-Production

Sample Received Date: 13 June 2018  
Dates of testing: 12 July – 14 August 2018

### 2.4 Operating Modes and Conditions

The EUT was exercised by connecting a CMW 500 Radio Communication Tester to the device. The CMW was used to control signaling and channel during testing.

### 3 RF Output Power

#### 3.1 Test Result

Test Description	Basic Standards	Test Result
RF Output Power	FCC 2.1046 RSS-GEN (6.12)	Reported

#### 3.2 Test Method

The EUT was directly connected to a Radio Communication Tester (CMW 500) and a radio link was established. The output power of the EUT was set to maximum value by using the maximum power setting on the CMW. The output power was measured using the CMW internal measurement functions.

#### 3.3 Test Site

SGS EMC Laboratory, Suwanee, GA

##### Environmental Conditions

Temperature: 23.3 °C  
 Relative Humidity: 51.5 %  
 Atmospheric Pressure: 97.5 kPa

#### 3.4 Test Equipment

Test End Date: 17-Jul-2018

Tester: MT

Equipment	Model	Manufacturer	Asset Number	Cal Due Date
RF CABLE	141	HUBER & SUHNER	B095588	25-Jul-2019
WIDEBAND RADIO COMMUNICATION TESTER	CMW500	ROHDE & SCHWARZ	B094874	25-Jan-2020

- Unless otherwise noted, equipment is on a 1-year calibration cycle.
- Based on manufacturer's specifications, the CMW 500 is on a 2-year calibration cycle.

### 3.5 Test Data - LTE Band 2

Max Power: 23.44 dBm / 0.221W

UpLink Channel	UL Frequency (MHz)	BW (MHz)	Modulation	# RB	Position	Measured Power (dBm)	Cable Loss (dB)	Conducted Power (dBm)
18607	1850.7	1.4	QPSK	1	(RB Pos:0)	22.65	0.53	23.18
18607	1850.7	1.4	QPSK	1	(RB Pos:5)	22.64	0.53	23.17
18607	1850.7	1.4	QPSK	4	(RB Pos:0)	22.61	0.53	23.14
18607	1850.7	1.4	QPSK	4	(RB Pos:2)	22.50	0.53	23.03
18607	1850.7	1.4	QPSK	6	(RB Pos:0)	21.54	0.53	22.07
18900	1880	1.4	QPSK	1	(RB Pos:0)	22.40	0.54	22.94
18900	1880	1.4	QPSK	1	(RB Pos:5)	22.36	0.54	22.90
18900	1880	1.4	QPSK	4	(RB Pos:0)	22.61	0.54	23.15
18900	1880	1.4	QPSK	4	(RB Pos:2)	22.65	0.54	23.19
18900	1880	1.4	QPSK	6	(RB Pos:0)	21.60	0.54	22.14
19193	1909.3	1.4	QPSK	1	(RB Pos:0)	22.90	0.54	23.44
19193	1909.3	1.4	QPSK	1	(RB Pos:5)	22.81	0.54	23.35
19193	1909.3	1.4	QPSK	4	(RB Pos:0)	22.60	0.54	23.14
19193	1909.3	1.4	QPSK	4	(RB Pos:2)	22.54	0.54	23.08
19193	1909.3	1.4	QPSK	6	(RB Pos:0)	21.75	0.54	22.29
18615	1851.5	3	QPSK	1	(RB Pos:0)	22.72	0.53	23.25
18615	1851.5	3	QPSK	1	(RB Pos:14)	22.69	0.53	23.22
18615	1851.5	3	QPSK	8	(RB Pos:0)	21.82	0.53	22.35
18615	1851.5	3	QPSK	8	(RB Pos:7)	21.77	0.53	22.30
18615	1851.5	3	QPSK	15	(RB Pos:0)	21.80	0.53	22.33
18900	1880	3	QPSK	1	(RB Pos:0)	22.55	0.54	23.09
18900	1880	3	QPSK	1	(RB Pos:14)	22.38	0.54	22.92
18900	1880	3	QPSK	8	(RB Pos:0)	21.52	0.54	22.06
18900	1880	3	QPSK	8	(RB Pos:7)	21.56	0.54	22.10
18900	1880	3	QPSK	15	(RB Pos:0)	21.58	0.54	22.12
19185	1908.5	3	QPSK	1	(RB Pos:0)	22.68	0.54	23.22
19185	1908.5	3	QPSK	1	(RB Pos:14)	22.43	0.54	22.97
19185	1908.5	3	QPSK	8	(RB Pos:0)	21.72	0.54	22.26
19185	1908.5	3	QPSK	8	(RB Pos:7)	21.64	0.54	22.18
19185	1908.5	3	QPSK	15	(RB Pos:0)	21.71	0.54	22.25
18625	1852.5	5	QPSK	1	(RB Pos:0)	22.72	0.53	23.25
18625	1852.5	5	QPSK	1	(RB Pos:24)	22.61	0.53	23.14
18625	1852.5	5	QPSK	12	(RB Pos:0)	21.75	0.53	22.28
18625	1852.5	5	QPSK	12	(RB Pos:13)	21.76	0.53	22.29
18625	1852.5	5	QPSK	25	(RB Pos:0)	21.79	0.53	22.32
18900	1880	5	QPSK	1	(RB Pos:0)	22.31	0.54	22.85
18900	1880	5	QPSK	1	(RB Pos:24)	22.22	0.54	22.76
18900	1880	5	QPSK	12	(RB Pos:0)	21.59	0.54	22.13
18900	1880	5	QPSK	12	(RB Pos:13)	21.48	0.54	22.02
18900	1880	5	QPSK	25	(RB Pos:0)	21.53	0.54	22.07
19175	1907.5	5	QPSK	1	(RB Pos:0)	22.79	0.54	23.33
19175	1907.5	5	QPSK	1	(RB Pos:24)	22.67	0.54	23.21
19175	1907.5	5	QPSK	12	(RB Pos:0)	21.73	0.54	22.27
19175	1907.5	5	QPSK	12	(RB Pos:13)	21.65	0.54	22.19
19175	1907.5	5	QPSK	25	(RB Pos:0)	21.68	0.54	22.22
18650	1855	10	QPSK	1	(RB Pos:0)	22.77	0.53	23.30
18650	1855	10	QPSK	1	(RB Pos:49)	22.55	0.53	23.08
18650	1855	10	QPSK	25	(RB Pos:0)	21.78	0.53	22.31
18650	1855	10	QPSK	25	(RB Pos:25)	21.71	0.53	22.24
18650	1855	10	QPSK	50	(RB Pos:0)	21.75	0.53	22.28
18900	1880	10	QPSK	1	(RB Pos:0)	22.51	0.54	23.05
18900	1880	10	QPSK	1	(RB Pos:49)	22.51	0.54	23.05
18900	1880	10	QPSK	25	(RB Pos:0)	21.59	0.54	22.13
18900	1880	10	QPSK	25	(RB Pos:25)	21.57	0.54	22.11
18900	1880	10	QPSK	50	(RB Pos:0)	21.64	0.54	22.18
19150	1905	10	QPSK	1	(RB Pos:0)	22.58	0.54	23.12
19150	1905	10	QPSK	1	(RB Pos:49)	22.82	0.54	23.36
19150	1905	10	QPSK	25	(RB Pos:0)	21.75	0.54	22.29
19150	1905	10	QPSK	25	(RB Pos:25)	21.70	0.54	22.24
19150	1905	10	QPSK	50	(RB Pos:0)	21.77	0.54	22.31

UpLink Channel	UL Frequency (MHz)	BW (MHz)	Modulation	# RB	Position	Measured Power (dBm)	Cable Loss (dB)	Conducted Power (dBm)
18675	1857.5	15	QPSK	1	(RB Pos:0)	22.67	0.53	23.20
18675	1857.5	15	QPSK	1	(RB Pos:74)	22.64	0.53	23.17
18675	1857.5	15	QPSK	36	(RB Pos:0)	21.83	0.53	22.36
18675	1857.5	15	QPSK	36	(RB Pos:39)	21.68	0.53	22.21
18675	1857.5	15	QPSK	75	(RB Pos:0)	21.73	0.53	22.26
18900	1880	15	QPSK	1	(RB Pos:0)	22.19	0.54	22.73
18900	1880	15	QPSK	1	(RB Pos:74)	22.35	0.54	22.89
18900	1880	15	QPSK	36	(RB Pos:0)	21.63	0.54	22.17
18900	1880	15	QPSK	36	(RB Pos:39)	21.56	0.54	22.10
18900	1880	15	QPSK	75	(RB Pos:0)	21.65	0.54	22.19
19125	1902.5	15	QPSK	1	(RB Pos:0)	22.47	0.54	23.01
19125	1902.5	15	QPSK	1	(RB Pos:74)	22.54	0.54	23.08
19125	1902.5	15	QPSK	36	(RB Pos:0)	21.77	0.54	22.31
19125	1902.5	15	QPSK	36	(RB Pos:39)	21.65	0.54	22.19
19125	1902.5	15	QPSK	75	(RB Pos:0)	21.76	0.54	22.30
18700	1860	20	QPSK	1	(RB Pos:0)	22.47	0.53	23.00
18700	1860	20	QPSK	1	(RB Pos:99)	22.26	0.53	22.79
18700	1860	20	QPSK	50	(RB Pos:0)	21.91	0.53	22.44
18700	1860	20	QPSK	50	(RB Pos:50)	21.66	0.53	22.19
18700	1860	20	QPSK	100	(RB Pos:0)	21.64	0.53	22.17
18900	1880	20	QPSK	1	(RB Pos:0)	22.37	0.54	22.91
18900	1880	20	QPSK	1	(RB Pos:99)	22.83	0.54	23.37
18900	1880	20	QPSK	50	(RB Pos:0)	21.65	0.54	22.19
18900	1880	20	QPSK	50	(RB Pos:50)	21.57	0.54	22.11
18900	1880	20	QPSK	100	(RB Pos:0)	21.66	0.54	22.20
19100	1900	20	QPSK	1	(RB Pos:0)	22.60	0.54	23.14
19100	1900	20	QPSK	1	(RB Pos:99)	22.57	0.54	23.11
19100	1900	20	QPSK	50	(RB Pos:0)	21.80	0.54	22.34
19100	1900	20	QPSK	50	(RB Pos:50)	21.76	0.54	22.30
19100	1900	20	QPSK	100	(RB Pos:0)	21.77	0.54	22.31
18607	1850.7	1.4	16-QAM	1	(RB Pos:0)	21.72	0.53	22.25
18607	1850.7	1.4	16-QAM	1	(RB Pos:5)	21.61	0.53	22.14
18607	1850.7	1.4	16-QAM	4	(RB Pos:0)	21.92	0.53	22.45
18607	1850.7	1.4	16-QAM	4	(RB Pos:2)	21.96	0.53	22.49
18607	1850.7	1.4	16-QAM	6	(RB Pos:0)	20.97	0.53	21.50
18900	1880	1.4	16-QAM	1	(RB Pos:0)	21.49	0.54	22.03
18900	1880	1.4	16-QAM	1	(RB Pos:5)	21.45	0.54	21.99
18900	1880	1.4	16-QAM	4	(RB Pos:0)	21.38	0.54	21.92
18900	1880	1.4	16-QAM	4	(RB Pos:2)	21.33	0.54	21.87
18900	1880	1.4	16-QAM	6	(RB Pos:0)	20.39	0.54	20.93
19193	1909.3	1.4	16-QAM	1	(RB Pos:0)	21.81	0.54	22.35
19193	1909.3	1.4	16-QAM	1	(RB Pos:5)	21.78	0.54	22.32
19193	1909.3	1.4	16-QAM	4	(RB Pos:0)	22.00	0.54	22.54
19193	1909.3	1.4	16-QAM	4	(RB Pos:2)	22.03	0.54	22.57
19193	1909.3	1.4	16-QAM	6	(RB Pos:0)	20.90	0.54	21.44
18615	1851.5	3	16-QAM	1	(RB Pos:0)	21.47	0.53	22.00
18615	1851.5	3	16-QAM	1	(RB Pos:14)	21.55	0.53	22.08
18615	1851.5	3	16-QAM	8	(RB Pos:0)	20.97	0.53	21.50
18615	1851.5	3	16-QAM	8	(RB Pos:7)	21.03	0.53	21.56
18615	1851.5	3	16-QAM	15	(RB Pos:0)	20.81	0.53	21.34
18900	1880	3	16-QAM	1	(RB Pos:0)	21.39	0.54	21.93
18900	1880	3	16-QAM	1	(RB Pos:14)	21.21	0.54	21.75
18900	1880	3	16-QAM	8	(RB Pos:0)	20.63	0.54	21.17
18900	1880	3	16-QAM	8	(RB Pos:7)	20.69	0.54	21.23
18900	1880	3	16-QAM	15	(RB Pos:0)	20.40	0.54	20.94
19185	1908.5	3	16-QAM	1	(RB Pos:0)	21.39	0.54	21.93
19185	1908.5	3	16-QAM	1	(RB Pos:14)	21.47	0.54	22.01
19185	1908.5	3	16-QAM	8	(RB Pos:0)	20.74	0.54	21.28
19185	1908.5	3	16-QAM	8	(RB Pos:7)	20.90	0.54	21.44
19185	1908.5	3	16-QAM	15	(RB Pos:0)	20.77	0.54	21.31



UpLink Channel	UL Frequency (MHz)	BW (MHz)	Modulation	# RB	Position	Measured Power (dBm)	Cable Loss (dB)	Conducted Power (dBm)
18625	1852.5	5	16-QAM	1	(RB Pos:0)	21.41	0.53	21.94
18625	1852.5	5	16-QAM	1	(RB Pos:24)	21.29	0.53	21.82
18625	1852.5	5	16-QAM	12	(RB Pos:0)	20.81	0.53	21.34
18625	1852.5	5	16-QAM	12	(RB Pos:13)	20.83	0.53	21.36
18625	1852.5	5	16-QAM	25	(RB Pos:0)	20.88	0.53	21.41
18900	1880	5	16-QAM	1	(RB Pos:0)	21.40	0.54	21.94
18900	1880	5	16-QAM	1	(RB Pos:24)	20.95	0.54	21.49
18900	1880	5	16-QAM	12	(RB Pos:0)	20.51	0.54	21.05
18900	1880	5	16-QAM	12	(RB Pos:13)	20.38	0.54	20.92
18900	1880	5	16-QAM	25	(RB Pos:0)	20.45	0.54	20.99
19175	1907.5	5	16-QAM	1	(RB Pos:0)	21.34	0.54	21.88
19175	1907.5	5	16-QAM	1	(RB Pos:24)	21.25	0.54	21.79
19175	1907.5	5	16-QAM	12	(RB Pos:0)	20.44	0.54	20.98
19175	1907.5	5	16-QAM	12	(RB Pos:13)	20.43	0.54	20.97
19175	1907.5	5	16-QAM	25	(RB Pos:0)	20.57	0.54	21.11
18650	1855	10	16-QAM	1	(RB Pos:0)	21.60	0.53	22.13
18650	1855	10	16-QAM	1	(RB Pos:49)	21.48	0.53	22.01
18650	1855	10	16-QAM	25	(RB Pos:0)	21.05	0.53	21.58
18650	1855	10	16-QAM	25	(RB Pos:25)	20.86	0.53	21.39
18650	1855	10	16-QAM	50	(RB Pos:0)	20.89	0.53	21.42
18900	1880	10	16-QAM	1	(RB Pos:0)	21.49	0.54	22.03
18900	1880	10	16-QAM	1	(RB Pos:49)	21.29	0.54	21.83
18900	1880	10	16-QAM	25	(RB Pos:0)	20.71	0.54	21.25
18900	1880	10	16-QAM	25	(RB Pos:25)	20.69	0.54	21.23
18900	1880	10	16-QAM	50	(RB Pos:0)	20.75	0.54	21.29
19150	1905	10	16-QAM	1	(RB Pos:0)	21.89	0.54	22.43
19150	1905	10	16-QAM	1	(RB Pos:49)	21.85	0.54	22.39
19150	1905	10	16-QAM	25	(RB Pos:0)	20.98	0.54	21.52
19150	1905	10	16-QAM	25	(RB Pos:25)	20.86	0.54	21.40
19150	1905	10	16-QAM	50	(RB Pos:0)	20.73	0.54	21.27
18675	1857.5	15	16-QAM	1	(RB Pos:0)	21.31	0.53	21.84
18675	1857.5	15	16-QAM	1	(RB Pos:74)	21.17	0.53	21.70
18675	1857.5	15	16-QAM	36	(RB Pos:0)	20.81	0.53	21.34
18675	1857.5	15	16-QAM	36	(RB Pos:39)	20.65	0.53	21.18
18675	1857.5	15	16-QAM	75	(RB Pos:0)	20.63	0.53	21.16
18900	1880	15	16-QAM	1	(RB Pos:0)	21.32	0.54	21.86
18900	1880	15	16-QAM	1	(RB Pos:74)	21.07	0.54	21.61
18900	1880	15	16-QAM	36	(RB Pos:0)	20.62	0.54	21.16
18900	1880	15	16-QAM	36	(RB Pos:39)	20.53	0.54	21.07
18900	1880	15	16-QAM	75	(RB Pos:0)	20.51	0.54	21.05
19125	1902.5	15	16-QAM	1	(RB Pos:0)	21.46	0.54	22.00
19125	1902.5	15	16-QAM	1	(RB Pos:74)	21.44	0.54	21.98
19125	1902.5	15	16-QAM	36	(RB Pos:0)	20.71	0.54	21.25
19125	1902.5	15	16-QAM	36	(RB Pos:39)	20.62	0.54	21.16
19125	1902.5	15	16-QAM	75	(RB Pos:0)	20.64	0.54	21.18
18700	1860	20	16-QAM	1	(RB Pos:0)	21.95	0.53	22.48
18700	1860	20	16-QAM	1	(RB Pos:99)	21.72	0.53	22.25
18700	1860	20	16-QAM	50	(RB Pos:0)	20.73	0.53	21.26
18700	1860	20	16-QAM	50	(RB Pos:50)	20.62	0.53	21.15
18700	1860	20	16-QAM	100	(RB Pos:0)	20.63	0.53	21.16
18900	1880	20	16-QAM	1	(RB Pos:0)	21.48	0.54	22.02
18900	1880	20	16-QAM	1	(RB Pos:99)	21.46	0.54	22.00
18900	1880	20	16-QAM	50	(RB Pos:0)	20.53	0.54	21.07
18900	1880	20	16-QAM	50	(RB Pos:50)	20.47	0.54	21.01
18900	1880	20	16-QAM	100	(RB Pos:0)	20.76	0.54	21.30
19100	1900	20	16-QAM	1	(RB Pos:0)	21.25	0.54	21.79
19100	1900	20	16-QAM	1	(RB Pos:99)	21.22	0.54	21.76
19100	1900	20	16-QAM	50	(RB Pos:0)	20.90	0.54	21.44
19100	1900	20	16-QAM	50	(RB Pos:50)	20.76	0.54	21.30
19100	1900	20	16-QAM	100	(RB Pos:0)	20.76	0.54	21.30

### 3.6 Test Data - LTE Band 4

Max Power: 23.40 dBm / 0.219

UpLink Channel	UL Frequency (MHz)	BW (MHz)	Modulation	# RB	Position	Measured Power (dBm)	Cable Loss (dB)	Conducted Power (dBm)
19957	1710.7	1.4	QPSK	1	(RB Pos:0)	22.89	0.51	23.40
19957	1710.7	1.4	QPSK	1	(RB Pos:5)	22.74	0.51	23.25
19957	1710.7	1.4	QPSK	4	(RB Pos:0)	22.66	0.51	23.17
19957	1710.7	1.4	QPSK	4	(RB Pos:2)	22.66	0.51	23.17
19957	1710.7	1.4	QPSK	6	(RB Pos:0)	21.71	0.51	22.22
20175	1732.5	1.4	QPSK	1	(RB Pos:0)	22.63	0.52	23.15
20175	1732.5	1.4	QPSK	1	(RB Pos:5)	22.53	0.52	23.05
20175	1732.5	1.4	QPSK	4	(RB Pos:0)	22.67	0.52	23.19
20175	1732.5	1.4	QPSK	4	(RB Pos:2)	22.74	0.52	23.26
20175	1732.5	1.4	QPSK	6	(RB Pos:0)	21.72	0.52	22.24
20393	1754.3	1.4	QPSK	1	(RB Pos:0)	22.71	0.52	23.23
20393	1754.3	1.4	QPSK	1	(RB Pos:5)	22.75	0.52	23.27
20393	1754.3	1.4	QPSK	4	(RB Pos:0)	22.61	0.52	23.13
20393	1754.3	1.4	QPSK	4	(RB Pos:2)	22.62	0.52	23.14
20393	1754.3	1.4	QPSK	6	(RB Pos:0)	21.66	0.52	22.18
19965	1711.5	3	QPSK	1	(RB Pos:0)	22.66	0.51	23.17
19965	1711.5	3	QPSK	1	(RB Pos:14)	22.70	0.51	23.21
19965	1711.5	3	QPSK	8	(RB Pos:0)	21.91	0.51	22.42
19965	1711.5	3	QPSK	8	(RB Pos:7)	21.84	0.51	22.35
19965	1711.5	3	QPSK	15	(RB Pos:0)	21.82	0.51	22.33
20175	1732.5	3	QPSK	1	(RB Pos:0)	22.65	0.52	23.17
20175	1732.5	3	QPSK	1	(RB Pos:14)	22.53	0.52	23.05
20175	1732.5	3	QPSK	8	(RB Pos:0)	21.84	0.52	22.36
20175	1732.5	3	QPSK	8	(RB Pos:7)	21.73	0.52	22.25
20175	1732.5	3	QPSK	15	(RB Pos:0)	21.72	0.52	22.24
20385	1753.5	3	QPSK	1	(RB Pos:0)	22.67	0.52	23.19
20385	1753.5	3	QPSK	1	(RB Pos:14)	22.68	0.52	23.20
20385	1753.5	3	QPSK	8	(RB Pos:0)	21.67	0.52	22.19
20385	1753.5	3	QPSK	8	(RB Pos:7)	21.61	0.52	22.13
20385	1753.5	3	QPSK	15	(RB Pos:0)	21.63	0.52	22.15
19975	1712.5	5	QPSK	1	(RB Pos:0)	22.70	0.51	23.21
19975	1712.5	5	QPSK	1	(RB Pos:24)	22.74	0.51	23.25
19975	1712.5	5	QPSK	12	(RB Pos:0)	21.80	0.51	22.31
19975	1712.5	5	QPSK	12	(RB Pos:13)	21.83	0.51	22.34
19975	1712.5	5	QPSK	25	(RB Pos:0)	21.80	0.51	22.31
20175	1732.5	5	QPSK	1	(RB Pos:0)	22.56	0.52	23.08
20175	1732.5	5	QPSK	1	(RB Pos:24)	22.51	0.52	23.03
20175	1732.5	5	QPSK	12	(RB Pos:0)	21.71	0.52	22.23
20175	1732.5	5	QPSK	12	(RB Pos:13)	21.62	0.52	22.14
20175	1732.5	5	QPSK	25	(RB Pos:0)	21.69	0.52	22.21
20375	1752.5	5	QPSK	1	(RB Pos:0)	22.55	0.52	23.07
20375	1752.5	5	QPSK	1	(RB Pos:24)	22.82	0.52	23.34
20375	1752.5	5	QPSK	12	(RB Pos:0)	21.66	0.52	22.18
20375	1752.5	5	QPSK	12	(RB Pos:13)	21.65	0.52	22.17
20375	1752.5	5	QPSK	25	(RB Pos:0)	21.72	0.52	22.24
20000	1715	10	QPSK	1	(RB Pos:0)	22.69	0.51	23.20
20000	1715	10	QPSK	1	(RB Pos:49)	22.68	0.51	23.19
20000	1715	10	QPSK	25	(RB Pos:0)	21.91	0.51	22.42
20000	1715	10	QPSK	25	(RB Pos:25)	21.84	0.51	22.35
20000	1715	10	QPSK	50	(RB Pos:0)	21.88	0.51	22.39
20175	1732.5	10	QPSK	1	(RB Pos:0)	22.67	0.52	23.19
20175	1732.5	10	QPSK	1	(RB Pos:49)	22.58	0.52	23.10
20175	1732.5	10	QPSK	25	(RB Pos:0)	21.69	0.52	22.21
20175	1732.5	10	QPSK	25	(RB Pos:25)	21.60	0.52	22.12
20175	1732.5	10	QPSK	50	(RB Pos:0)	21.70	0.52	22.22
20350	1750	10	QPSK	1	(RB Pos:0)	22.54	0.52	23.06
20350	1750	10	QPSK	1	(RB Pos:49)	22.88	0.52	23.40
20350	1750	10	QPSK	25	(RB Pos:0)	21.68	0.52	22.20
20350	1750	10	QPSK	25	(RB Pos:25)	21.62	0.52	22.14
20350	1750	10	QPSK	50	(RB Pos:0)	21.63	0.52	22.15

UpLink Channel	UL Frequency (MHz)	BW (MHz)	Modulation	# RB	Position	Measured Power (dBm)	Cable Loss (dB)	Conducted Power (dBm)
20025	1717.5	15	QPSK	1	(RB Pos:0)	22.67	0.51	23.18
20025	1717.5	15	QPSK	1	(RB Pos:74)	22.63	0.51	23.14
20025	1717.5	15	QPSK	36	(RB Pos:0)	21.93	0.51	22.44
20025	1717.5	15	QPSK	36	(RB Pos:39)	21.75	0.51	22.26
20025	1717.5	15	QPSK	75	(RB Pos:0)	21.74	0.51	22.25
20175	1732.5	15	QPSK	1	(RB Pos:74)	22.65	0.52	23.17
20175	1732.5	15	QPSK	1	(RB Pos:74)	22.56	0.52	23.08
20175	1732.5	15	QPSK	36	(RB Pos:0)	21.87	0.52	22.39
20175	1732.5	15	QPSK	36	(RB Pos:39)	21.61	0.52	22.13
20175	1732.5	15	QPSK	75	(RB Pos:0)	21.78	0.52	22.30
20325	1747.5	15	QPSK	1	(RB Pos:0)	22.73	0.52	23.25
20325	1747.5	15	QPSK	1	(RB Pos:74)	22.57	0.52	23.09
20325	1747.5	15	QPSK	36	(RB Pos:0)	21.73	0.52	22.25
20325	1747.5	15	QPSK	36	(RB Pos:39)	21.60	0.52	22.12
20325	1747.5	15	QPSK	75	(RB Pos:0)	21.66	0.52	22.18
20050	1720	20	QPSK	1	(RB Pos:0)	22.54	0.51	23.05
20050	1720	20	QPSK	1	(RB Pos:99)	22.51	0.51	23.02
20050	1720	20	QPSK	50	(RB Pos:0)	21.96	0.51	22.47
20050	1720	20	QPSK	50	(RB Pos:50)	21.75	0.51	22.26
20050	1720	20	QPSK	100	(RB Pos:0)	21.90	0.51	22.41
20175	1732.5	20	QPSK	1	(RB Pos:0)	22.77	0.52	23.29
20175	1732.5	20	QPSK	1	(RB Pos:99)	22.79	0.52	23.31
20175	1732.5	20	QPSK	50	(RB Pos:0)	21.73	0.52	22.25
20175	1732.5	20	QPSK	50	(RB Pos:50)	21.65	0.52	22.17
20175	1732.5	20	QPSK	100	(RB Pos:0)	21.74	0.52	22.26
20300	1745	20	QPSK	1	(RB Pos:0)	22.60	0.52	23.12
20300	1745	20	QPSK	1	(RB Pos:99)	22.63	0.52	23.15
20300	1745	20	QPSK	50	(RB Pos:0)	21.73	0.52	22.25
20300	1745	20	QPSK	50	(RB Pos:50)	21.63	0.52	22.15
20300	1745	20	QPSK	100	(RB Pos:0)	21.68	0.52	22.20
19957	1710.7	1.4	16-QAM	1	(RB Pos:0)	21.45	0.51	21.96
19957	1710.7	1.4	16-QAM	1	(RB Pos:5)	21.48	0.51	21.99
19957	1710.7	1.4	16-QAM	4	(RB Pos:0)	21.46	0.51	21.97
19957	1710.7	1.4	16-QAM	4	(RB Pos:2)	21.72	0.51	22.23
19957	1710.7	1.4	16-QAM	6	(RB Pos:0)	20.88	0.51	21.39
20175	1732.5	1.4	16-QAM	1	(RB Pos:0)	21.17	0.52	21.69
20175	1732.5	1.4	16-QAM	1	(RB Pos:5)	21.19	0.52	21.71
20175	1732.5	1.4	16-QAM	4	(RB Pos:0)	21.61	0.52	22.13
20175	1732.5	1.4	16-QAM	4	(RB Pos:2)	21.51	0.52	22.03
20175	1732.5	1.4	16-QAM	6	(RB Pos:0)	20.48	0.52	21.00
20393	1754.3	1.4	16-QAM	1	(RB Pos:0)	21.71	0.52	22.23
20393	1754.3	1.4	16-QAM	1	(RB Pos:5)	21.86	0.52	22.38
20393	1754.3	1.4	16-QAM	4	(RB Pos:0)	21.79	0.52	22.31
20393	1754.3	1.4	16-QAM	4	(RB Pos:2)	21.62	0.52	22.14
20393	1754.3	1.4	16-QAM	6	(RB Pos:0)	20.86	0.52	21.38
19965	1711.5	3	16-QAM	1	(RB Pos:0)	21.41	0.51	21.92
19965	1711.5	3	16-QAM	1	(RB Pos:14)	21.34	0.51	21.85
19965	1711.5	3	16-QAM	8	(RB Pos:0)	20.64	0.51	21.15
19965	1711.5	3	16-QAM	8	(RB Pos:7)	20.70	0.51	21.21
19965	1711.5	3	16-QAM	15	(RB Pos:0)	20.66	0.51	21.17
20175	1732.5	3	16-QAM	1	(RB Pos:0)	21.31	0.52	21.83
20175	1732.5	3	16-QAM	1	(RB Pos:14)	21.15	0.52	21.67
20175	1732.5	3	16-QAM	8	(RB Pos:0)	20.59	0.52	21.11
20175	1732.5	3	16-QAM	8	(RB Pos:7)	20.49	0.52	21.01
20175	1732.5	3	16-QAM	15	(RB Pos:0)	20.62	0.52	21.14
20385	1753.5	3	16-QAM	1	(RB Pos:0)	21.21	0.52	21.73
20385	1753.5	3	16-QAM	1	(RB Pos:14)	21.28	0.52	21.80
20385	1753.5	3	16-QAM	8	(RB Pos:0)	20.77	0.52	21.29
20385	1753.5	3	16-QAM	8	(RB Pos:7)	20.68	0.52	21.20
20385	1753.5	3	16-QAM	15	(RB Pos:0)	20.53	0.52	21.05

UpLink Channel	UL Frequency (MHz)	BW (MHz)	Modulation	# RB	Position	Measured Power (dBm)	Cable Loss (dB)	Conducted Power (dBm)
19975	1712.5	5	16-QAM	1	(RB Pos:0)	20.93	0.51	21.44
19975	1712.5	5	16-QAM	1	(RB Pos:24)	20.86	0.51	21.37
19975	1712.5	5	16-QAM	12	(RB Pos:0)	20.70	0.51	21.21
19975	1712.5	5	16-QAM	12	(RB Pos:13)	20.57	0.51	21.08
19975	1712.5	5	16-QAM	25	(RB Pos:0)	20.60	0.51	21.11
20175	1732.5	5	16-QAM	1	(RB Pos:0)	21.22	0.52	21.74
20175	1732.5	5	16-QAM	1	(RB Pos:24)	20.70	0.52	21.22
20175	1732.5	5	16-QAM	12	(RB Pos:0)	20.66	0.52	21.18
20175	1732.5	5	16-QAM	12	(RB Pos:13)	20.54	0.52	21.06
20175	1732.5	5	16-QAM	25	(RB Pos:0)	20.57	0.52	21.09
20375	1752.5	5	16-QAM	1	(RB Pos:0)	21.13	0.52	21.65
20375	1752.5	5	16-QAM	1	(RB Pos:24)	21.05	0.52	21.57
20375	1752.5	5	16-QAM	12	(RB Pos:0)	20.43	0.52	20.95
20375	1752.5	5	16-QAM	12	(RB Pos:13)	20.46	0.52	20.98
20375	1752.5	5	16-QAM	25	(RB Pos:0)	20.61	0.52	21.13
20000	1715	10	16-QAM	1	(RB Pos:0)	21.39	0.51	21.90
20000	1715	10	16-QAM	1	(RB Pos:49)	21.13	0.51	21.64
20000	1715	10	16-QAM	25	(RB Pos:0)	20.83	0.51	21.34
20000	1715	10	16-QAM	25	(RB Pos:25)	20.88	0.51	21.39
20000	1715	10	16-QAM	50	(RB Pos:0)	20.71	0.51	21.22
20175	1732.5	10	16-QAM	1	(RB Pos:0)	21.52	0.52	22.04
20175	1732.5	10	16-QAM	1	(RB Pos:49)	21.44	0.52	21.96
20175	1732.5	10	16-QAM	25	(RB Pos:0)	20.76	0.52	21.28
20175	1732.5	10	16-QAM	25	(RB Pos:25)	20.63	0.52	21.15
20175	1732.5	10	16-QAM	50	(RB Pos:0)	20.62	0.52	21.14
20350	1750	10	16-QAM	1	(RB Pos:0)	21.66	0.52	22.18
20350	1750	10	16-QAM	1	(RB Pos:49)	21.65	0.52	22.17
20350	1750	10	16-QAM	25	(RB Pos:0)	20.85	0.52	21.37
20350	1750	10	16-QAM	25	(RB Pos:25)	20.61	0.52	21.13
20350	1750	10	16-QAM	50	(RB Pos:0)	20.63	0.52	21.15
20025	1717.5	15	16-QAM	1	(RB Pos:0)	21.65	0.51	22.16
20025	1717.5	15	16-QAM	1	(RB Pos:74)	21.53	0.51	22.04
20025	1717.5	15	16-QAM	36	(RB Pos:0)	20.91	0.51	21.42
20025	1717.5	15	16-QAM	36	(RB Pos:39)	20.88	0.51	21.39
20025	1717.5	15	16-QAM	75	(RB Pos:0)	20.70	0.51	21.21
20175	1732.5	15	16-QAM	1	(RB Pos:0)	21.52	0.52	22.04
20175	1732.5	15	16-QAM	1	(RB Pos:74)	21.47	0.52	21.99
20175	1732.5	15	16-QAM	36	(RB Pos:0)	20.61	0.52	21.13
20175	1732.5	15	16-QAM	36	(RB Pos:39)	20.59	0.52	21.11
20175	1732.5	15	16-QAM	75	(RB Pos:0)	20.60	0.52	21.12
20325	1747.5	15	16-QAM	1	(RB Pos:0)	21.65	0.52	22.17
20325	1747.5	15	16-QAM	1	(RB Pos:74)	21.38	0.52	21.90
20325	1747.5	15	16-QAM	36	(RB Pos:0)	20.75	0.52	21.27
20325	1747.5	15	16-QAM	36	(RB Pos:39)	20.53	0.52	21.05
20325	1747.5	15	16-QAM	75	(RB Pos:0)	20.54	0.52	21.06
20050	1720	20	16-QAM	1	(RB Pos:0)	21.66	0.51	22.17
20050	1720	20	16-QAM	1	(RB Pos:99)	21.11	0.51	21.62
20050	1720	20	16-QAM	50	(RB Pos:0)	20.92	0.51	21.43
20050	1720	20	16-QAM	50	(RB Pos:50)	20.75	0.51	21.26
20050	1720	20	16-QAM	100	(RB Pos:0)	20.88	0.51	21.39
20175	1732.5	20	16-QAM	1	(RB Pos:0)	21.84	0.52	22.36
20175	1732.5	20	16-QAM	1	(RB Pos:99)	21.86	0.52	22.38
20175	1732.5	20	16-QAM	50	(RB Pos:0)	20.76	0.52	21.28
20175	1732.5	20	16-QAM	50	(RB Pos:50)	20.68	0.52	21.20
20175	1732.5	20	16-QAM	100	(RB Pos:0)	20.77	0.52	21.29
20300	1745	20	16-QAM	1	(RB Pos:0)	21.71	0.52	22.23
20300	1745	20	16-QAM	1	(RB Pos:99)	21.68	0.52	22.20
20300	1745	20	16-QAM	50	(RB Pos:0)	20.88	0.52	21.40
20300	1745	20	16-QAM	50	(RB Pos:50)	20.67	0.52	21.19
20300	1745	20	16-QAM	100	(RB Pos:0)	20.74	0.52	21.26

### 3.7 Test Data - LTE Band 5

Max Power: 23.59dBm / 0.229W

UpLink Channel	UL Frequency (MHz)	BW (MHz)	Modulation	# RB	Position	Measured Power (dBm)	Cable Loss (dB)	Conducted Power (dBm)
20407	824.7	1.4	QPSK	1	(RB Pos:0)	23.08	0.35	23.43
20407	824.7	1.4	QPSK	1	(RB Pos:5)	22.85	0.35	23.20
20407	824.7	1.4	QPSK	4	(RB Pos:0)	23.02	0.35	23.37
20407	824.7	1.4	QPSK	4	(RB Pos:2)	23.16	0.35	23.51
20407	824.7	1.4	QPSK	6	(RB Pos:0)	22.06	0.35	22.41
20525	836.5	1.4	QPSK	1	(RB Pos:0)	23.06	0.35	23.41
20525	836.5	1.4	QPSK	1	(RB Pos:5)	23.04	0.35	23.39
20525	836.5	1.4	QPSK	4	(RB Pos:0)	22.95	0.35	23.30
20525	836.5	1.4	QPSK	4	(RB Pos:2)	22.95	0.35	23.30
20525	836.5	1.4	QPSK	6	(RB Pos:0)	22.01	0.35	22.36
20643	848.3	1.4	QPSK	1	(RB Pos:0)	23.21	0.35	23.56
20643	848.3	1.4	QPSK	1	(RB Pos:5)	23.14	0.35	23.49
20643	848.3	1.4	QPSK	4	(RB Pos:0)	22.92	0.35	23.27
20643	848.3	1.4	QPSK	4	(RB Pos:2)	22.88	0.35	23.23
20643	848.3	1.4	QPSK	6	(RB Pos:0)	22.01	0.35	22.36
20415	825.5	3	QPSK	1	(RB Pos:0)	23.24	0.35	23.59
20415	825.5	3	QPSK	1	(RB Pos:14)	23.01	0.35	23.36
20415	825.5	3	QPSK	8	(RB Pos:0)	22.11	0.35	22.46
20415	825.5	3	QPSK	8	(RB Pos:7)	22.03	0.35	22.38
20415	825.5	3	QPSK	15	(RB Pos:0)	22.08	0.35	22.43
20525	836.5	3	QPSK	1	(RB Pos:0)	22.97	0.35	23.32
20525	836.5	3	QPSK	1	(RB Pos:14)	22.93	0.35	23.28
20525	836.5	3	QPSK	8	(RB Pos:0)	22.06	0.35	22.41
20525	836.5	3	QPSK	8	(RB Pos:7)	22.07	0.35	22.42
20525	836.5	3	QPSK	15	(RB Pos:0)	22.06	0.35	22.41
20635	847.5	3	QPSK	1	(RB Pos:0)	22.96	0.35	23.31
20635	847.5	3	QPSK	1	(RB Pos:14)	22.79	0.35	23.14
20635	847.5	3	QPSK	8	(RB Pos:0)	22.04	0.35	22.39
20635	847.5	3	QPSK	8	(RB Pos:7)	22.04	0.35	22.39
20635	847.5	3	QPSK	15	(RB Pos:0)	21.99	0.35	22.34
20425	826.5	5	QPSK	1	(RB Pos:0)	22.90	0.35	23.25
20425	826.5	5	QPSK	1	(RB Pos:24)	22.77	0.35	23.12
20425	826.5	5	QPSK	12	(RB Pos:0)	22.08	0.35	22.43
20425	826.5	5	QPSK	12	(RB Pos:13)	22.05	0.35	22.40
20425	826.5	5	QPSK	25	(RB Pos:0)	22.12	0.35	22.47
20525	836.5	5	QPSK	1	(RB Pos:0)	22.81	0.35	23.16
20525	836.5	5	QPSK	1	(RB Pos:24)	22.98	0.35	23.33
20525	836.5	5	QPSK	12	(RB Pos:0)	22.00	0.35	22.35
20525	836.5	5	QPSK	12	(RB Pos:13)	22.05	0.35	22.40
20525	836.5	5	QPSK	25	(RB Pos:0)	22.03	0.35	22.38
20625	846.5	5	QPSK	1	(RB Pos:0)	22.98	0.35	23.33
20625	846.5	5	QPSK	1	(RB Pos:24)	22.89	0.35	23.24
20625	846.5	5	QPSK	12	(RB Pos:0)	22.08	0.35	22.43
20625	846.5	5	QPSK	12	(RB Pos:13)	22.08	0.35	22.43
20625	846.5	5	QPSK	25	(RB Pos:0)	22.08	0.35	22.43
20450	829	10	QPSK	1	(RB Pos:0)	22.95	0.35	23.30
20450	829	10	QPSK	1	(RB Pos:49)	22.94	0.35	23.29
20450	829	10	QPSK	25	(RB Pos:0)	22.15	0.35	22.50
20450	829	10	QPSK	25	(RB Pos:25)	22.03	0.35	22.38
20450	829	10	QPSK	50	(RB Pos:0)	22.11	0.35	22.46
20525	836.5	10	QPSK	1	(RB Pos:0)	22.96	0.35	23.31
20525	836.5	10	QPSK	1	(RB Pos:49)	23.05	0.35	23.40
20525	836.5	10	QPSK	25	(RB Pos:0)	22.06	0.35	22.41
20525	836.5	10	QPSK	25	(RB Pos:25)	22.06	0.35	22.41
20525	836.5	10	QPSK	50	(RB Pos:0)	22.02	0.35	22.37
20600	844	10	QPSK	1	(RB Pos:0)	22.86	0.35	23.21
20600	844	10	QPSK	1	(RB Pos:49)	22.92	0.35	23.27
20600	844	10	QPSK	25	(RB Pos:0)	22.10	0.35	22.45
20600	844	10	QPSK	25	(RB Pos:25)	22.14	0.35	22.49
20600	844	10	QPSK	50	(RB Pos:0)	22.14	0.35	22.49

UpLink Channel	UL Frequency (MHz)	BW (MHz)	Modulation	# RB	Position	Measured Power (dBm)	Cable Loss (dB)	Conducted Power (dBm)
20407	824.7	1.4	16-QAM	1	(RB Pos:0)	21.77	0.35	22.12
20407	824.7	1.4	16-QAM	1	(RB Pos:5)	21.52	0.35	21.87
20407	824.7	1.4	16-QAM	4	(RB Pos:0)	21.90	0.35	22.25
20407	824.7	1.4	16-QAM	4	(RB Pos:2)	21.83	0.35	22.18
20407	824.7	1.4	16-QAM	6	(RB Pos:0)	21.07	0.35	21.42
20525	836.5	1.4	16-QAM	1	(RB Pos:0)	21.75	0.35	22.10
20525	836.5	1.4	16-QAM	1	(RB Pos:5)	21.72	0.35	22.07
20525	836.5	1.4	16-QAM	4	(RB Pos:0)	21.61	0.35	21.96
20525	836.5	1.4	16-QAM	4	(RB Pos:2)	21.89	0.35	22.24
20525	836.5	1.4	16-QAM	6	(RB Pos:0)	20.93	0.35	21.28
20643	848.3	1.4	16-QAM	1	(RB Pos:0)	22.02	0.35	22.37
20643	848.3	1.4	16-QAM	1	(RB Pos:5)	21.72	0.35	22.07
20643	848.3	1.4	16-QAM	4	(RB Pos:0)	21.85	0.35	22.20
20643	848.3	1.4	16-QAM	4	(RB Pos:2)	21.79	0.35	22.14
20643	848.3	1.4	16-QAM	6	(RB Pos:0)	21.05	0.35	21.40
20415	825.5	3	16-QAM	1	(RB Pos:0)	21.77	0.35	22.12
20415	825.5	3	16-QAM	1	(RB Pos:14)	21.55	0.35	21.90
20415	825.5	3	16-QAM	8	(RB Pos:0)	21.09	0.35	21.44
20415	825.5	3	16-QAM	8	(RB Pos:7)	21.08	0.35	21.43
20415	825.5	3	16-QAM	15	(RB Pos:0)	20.91	0.35	21.26
20525	836.5	3	16-QAM	1	(RB Pos:0)	21.55	0.35	21.90
20525	836.5	3	16-QAM	1	(RB Pos:14)	21.82	0.35	22.17
20525	836.5	3	16-QAM	8	(RB Pos:0)	21.28	0.35	21.63
20525	836.5	3	16-QAM	8	(RB Pos:7)	21.29	0.35	21.64
20525	836.5	3	16-QAM	15	(RB Pos:0)	21.17	0.35	21.52
20635	847.5	3	16-QAM	1	(RB Pos:0)	21.98	0.35	22.33
20635	847.5	3	16-QAM	1	(RB Pos:14)	21.89	0.35	22.24
20635	847.5	3	16-QAM	8	(RB Pos:0)	21.07	0.35	21.42
20635	847.5	3	16-QAM	8	(RB Pos:7)	20.96	0.35	21.31
20635	847.5	3	16-QAM	15	(RB Pos:0)	20.98	0.35	21.33
20425	826.5	5	16-QAM	1	(RB Pos:0)	21.35	0.35	21.70
20425	826.5	5	16-QAM	1	(RB Pos:24)	21.21	0.35	21.56
20425	826.5	5	16-QAM	12	(RB Pos:0)	21.21	0.35	21.56
20425	826.5	5	16-QAM	12	(RB Pos:13)	21.02	0.35	21.37
20425	826.5	5	16-QAM	25	(RB Pos:0)	21.03	0.35	21.38
20525	836.5	5	16-QAM	1	(RB Pos:0)	21.50	0.35	21.85
20525	836.5	5	16-QAM	1	(RB Pos:24)	21.52	0.35	21.87
20525	836.5	5	16-QAM	12	(RB Pos:0)	21.03	0.35	21.38
20525	836.5	5	16-QAM	12	(RB Pos:13)	21.00	0.35	21.35
20525	836.5	5	16-QAM	25	(RB Pos:0)	20.88	0.35	21.23
20625	846.5	5	16-QAM	1	(RB Pos:0)	21.59	0.35	21.94
20625	846.5	5	16-QAM	1	(RB Pos:24)	21.55	0.35	21.90
20625	846.5	5	16-QAM	12	(RB Pos:0)	20.65	0.35	21.00
20625	846.5	5	16-QAM	12	(RB Pos:13)	20.65	0.35	21.00
20625	846.5	5	16-QAM	25	(RB Pos:0)	20.92	0.35	21.27
20450	829	10	16-QAM	1	(RB Pos:0)	21.76	0.35	22.11
20450	829	10	16-QAM	1	(RB Pos:49)	21.61	0.35	21.96
20450	829	10	16-QAM	25	(RB Pos:0)	21.14	0.35	21.49
20450	829	10	16-QAM	25	(RB Pos:25)	21.11	0.35	21.46
20450	829	10	16-QAM	50	(RB Pos:0)	21.11	0.35	21.46
20525	836.5	10	16-QAM	1	(RB Pos:0)	21.52	0.35	21.87
20525	836.5	10	16-QAM	1	(RB Pos:49)	21.68	0.35	22.03
20525	836.5	10	16-QAM	25	(RB Pos:0)	21.11	0.35	21.46
20525	836.5	10	16-QAM	25	(RB Pos:25)	21.21	0.35	21.56
20525	836.5	10	16-QAM	50	(RB Pos:0)	20.95	0.35	21.30
20600	844	10	16-QAM	1	(RB Pos:0)	22.13	0.35	22.48
20600	844	10	16-QAM	1	(RB Pos:49)	22.09	0.35	22.44
20600	844	10	16-QAM	25	(RB Pos:0)	21.13	0.35	21.48
20600	844	10	16-QAM	25	(RB Pos:25)	21.21	0.35	21.56
20600	844	10	16-QAM	50	(RB Pos:0)	21.02	0.35	21.37

### 3.8 Test Data - LTE Band 7

Max Power: 23.62dBm / 0.230W

UpLink Channel	UL Frequency (MHz)	BW (MHz)	Modulation	# RB	Position	Measured Power (dBm)	Cable Loss (dB)	Conducted Power (dBm)
20775	2502.5	5	QPSK	1	(RB Pos:0)	22.77	0.64	23.41
20775	2502.5	5	QPSK	1	(RB Pos:24)	22.88	0.64	23.52
20775	2502.5	5	QPSK	12	(RB Pos:0)	22.03	0.64	22.67
20775	2502.5	5	QPSK	12	(RB Pos:13)	22.05	0.64	22.69
20775	2502.5	5	QPSK	25	(RB Pos:0)	22.09	0.64	22.73
21100	2535	5	QPSK	1	(RB Pos:0)	22.41	0.64	23.05
21100	2535	5	QPSK	1	(RB Pos:24)	22.38	0.64	23.02
21100	2535	5	QPSK	12	(RB Pos:0)	21.54	0.64	22.18
21100	2535	5	QPSK	12	(RB Pos:13)	21.54	0.64	22.18
21100	2535	5	QPSK	25	(RB Pos:0)	21.48	0.64	22.12
21425	2567.5	5	QPSK	1	(RB Pos:0)	22.66	0.64	23.30
21425	2567.5	5	QPSK	1	(RB Pos:24)	22.58	0.64	23.22
21425	2567.5	5	QPSK	12	(RB Pos:0)	21.81	0.64	22.45
21425	2567.5	5	QPSK	12	(RB Pos:13)	21.62	0.64	22.26
21425	2567.5	5	QPSK	25	(RB Pos:0)	21.75	0.64	22.39
20800	2505	10	QPSK	1	(RB Pos:0)	22.79	0.64	23.43
20800	2505	10	QPSK	1	(RB Pos:49)	22.92	0.64	23.56
20800	2505	10	QPSK	25	(RB Pos:0)	22.11	0.64	22.75
20800	2505	10	QPSK	25	(RB Pos:25)	21.96	0.64	22.60
20800	2505	10	QPSK	50	(RB Pos:0)	22.01	0.64	22.65
21100	2535	10	QPSK	1	(RB Pos:0)	22.66	0.64	23.30
21100	2535	10	QPSK	1	(RB Pos:49)	22.75	0.64	23.39
21100	2535	10	QPSK	25	(RB Pos:0)	21.72	0.64	22.36
21100	2535	10	QPSK	25	(RB Pos:25)	21.62	0.64	22.26
21100	2535	10	QPSK	50	(RB Pos:0)	21.66	0.64	22.30
21400	2565	10	QPSK	1	(RB Pos:0)	22.98	0.64	23.62
21400	2565	10	QPSK	1	(RB Pos:49)	22.57	0.64	23.21
21400	2565	10	QPSK	25	(RB Pos:0)	21.94	0.64	22.58
21400	2565	10	QPSK	25	(RB Pos:25)	21.88	0.64	22.52
21400	2565	10	QPSK	50	(RB Pos:0)	21.89	0.64	22.53
20825	2507.5	15	QPSK	1	(RB Pos:0)	22.69	0.64	23.33
20825	2507.5	15	QPSK	1	(RB Pos:74)	22.70	0.64	23.34
20825	2507.5	15	QPSK	36	(RB Pos:0)	22.07	0.64	22.71
20825	2507.5	15	QPSK	36	(RB Pos:39)	21.92	0.64	22.56
20825	2507.5	15	QPSK	75	(RB Pos:0)	21.94	0.64	22.58
21100	2535	15	QPSK	1	(RB Pos:0)	22.54	0.64	23.18
21100	2535	15	QPSK	1	(RB Pos:74)	22.49	0.64	23.13
21100	2535	15	QPSK	36	(RB Pos:0)	21.83	0.64	22.47
21100	2535	15	QPSK	36	(RB Pos:39)	21.74	0.64	22.38
21100	2535	15	QPSK	75	(RB Pos:0)	21.70	0.64	22.34
21375	2562.5	15	QPSK	1	(RB Pos:0)	22.66	0.64	23.30
21375	2562.5	15	QPSK	1	(RB Pos:74)	22.61	0.64	23.25
21375	2562.5	15	QPSK	36	(RB Pos:0)	21.78	0.64	22.42
21375	2562.5	15	QPSK	36	(RB Pos:39)	21.94	0.64	22.58
21375	2562.5	15	QPSK	75	(RB Pos:0)	21.90	0.64	22.54
20850	2510	20	QPSK	1	(RB Pos:0)	22.62	0.64	23.26
20850	2510	20	QPSK	1	(RB Pos:99)	22.33	0.64	22.97
20850	2510	20	QPSK	50	(RB Pos:0)	22.02	0.64	22.66
20850	2510	20	QPSK	50	(RB Pos:50)	21.67	0.64	22.31
20850	2510	20	QPSK	100	(RB Pos:0)	21.89	0.64	22.53
21100	2535	20	QPSK	1	(RB Pos:0)	22.79	0.64	23.43
21100	2535	20	QPSK	1	(RB Pos:99)	22.55	0.64	23.19
21100	2535	20	QPSK	50	(RB Pos:0)	21.74	0.64	22.38
21100	2535	20	QPSK	50	(RB Pos:50)	21.63	0.64	22.27
21100	2535	20	QPSK	100	(RB Pos:0)	21.57	0.64	22.21
21350	2560	20	QPSK	1	(RB Pos:0)	22.54	0.64	23.18
21350	2560	20	QPSK	1	(RB Pos:99)	22.41	0.64	23.05
21350	2560	20	QPSK	50	(RB Pos:0)	21.74	0.64	22.38
21350	2560	20	QPSK	50	(RB Pos:50)	21.75	0.64	22.39
21350	2560	20	QPSK	100	(RB Pos:0)	21.69	0.64	22.33

UpLink Channel	UL Frequency (MHz)	BW (MHz)	Modulation	# RB	Position	Measured Power (dBm)	Cable Loss (dB)	Conducted Power (dBm)
20775	2502.5	5	16-QAM	1	(RB_Pos:0)	21.23	0.64	21.87
20775	2502.5	5	16-QAM	1	(RB_Pos:24)	20.97	0.64	21.61
20775	2502.5	5	16-QAM	12	(RB_Pos:0)	20.88	0.64	21.52
20775	2502.5	5	16-QAM	12	(RB_Pos:13)	20.94	0.64	21.58
20775	2502.5	5	16-QAM	25	(RB_Pos:0)	20.94	0.64	21.58
21100	2535	5	16-QAM	1	(RB_Pos:24)	20.78	0.64	21.42
21100	2535	5	16-QAM	12	(RB_Pos:0)	20.40	0.64	21.04
21100	2535	5	16-QAM	12	(RB_Pos:13)	20.48	0.64	21.12
21100	2535	5	16-QAM	25	(RB_Pos:0)	20.37	0.64	21.01
21425	2567.5	5	16-QAM	1	(RB_Pos:0)	21.26	0.64	21.90
21425	2567.5	5	16-QAM	1	(RB_Pos:24)	20.96	0.64	21.60
21425	2567.5	5	16-QAM	12	(RB_Pos:0)	20.51	0.64	21.15
21425	2567.5	5	16-QAM	12	(RB_Pos:13)	20.34	0.64	20.98
21425	2567.5	5	16-QAM	25	(RB_Pos:0)	20.61	0.64	21.25
20800	2505	10	16-QAM	1	(RB_Pos:0)	21.57	0.64	22.21
20800	2505	10	16-QAM	1	(RB_Pos:49)	21.34	0.64	21.98
20800	2505	10	16-QAM	25	(RB_Pos:0)	21.01	0.64	21.65
20800	2505	10	16-QAM	25	(RB_Pos:25)	20.88	0.64	21.52
20800	2505	10	16-QAM	50	(RB_Pos:0)	20.95	0.64	21.59
21100	2535	10	16-QAM	1	(RB_Pos:0)	21.63	0.64	22.27
21100	2535	10	16-QAM	1	(RB_Pos:49)	21.56	0.64	22.20
21100	2535	10	16-QAM	25	(RB_Pos:0)	20.52	0.64	21.16
21100	2535	10	16-QAM	25	(RB_Pos:25)	20.55	0.64	21.19
21100	2535	10	16-QAM	50	(RB_Pos:0)	20.54	0.64	21.18
21400	2565	10	16-QAM	1	(RB_Pos:0)	22.02	0.64	22.66
21400	2565	10	16-QAM	1	(RB_Pos:49)	21.84	0.64	22.48
21400	2565	10	16-QAM	25	(RB_Pos:0)	21.06	0.64	21.70
21400	2565	10	16-QAM	25	(RB_Pos:25)	20.98	0.64	21.62
21400	2565	10	16-QAM	50	(RB_Pos:0)	20.89	0.64	21.53
20825	2507.5	15	16-QAM	1	(RB_Pos:0)	21.74	0.64	22.38
20825	2507.5	15	16-QAM	1	(RB_Pos:74)	21.18	0.64	21.82
20825	2507.5	15	16-QAM	36	(RB_Pos:0)	20.91	0.64	21.55
20825	2507.5	15	16-QAM	36	(RB_Pos:39)	20.78	0.64	21.42
20825	2507.5	15	16-QAM	75	(RB_Pos:0)	20.89	0.64	21.53
21100	2535	15	16-QAM	1	(RB_Pos:0)	21.70	0.64	22.34
21100	2535	15	16-QAM	1	(RB_Pos:74)	21.61	0.64	22.25
21100	2535	15	16-QAM	36	(RB_Pos:0)	20.67	0.64	21.31
21100	2535	15	16-QAM	36	(RB_Pos:39)	20.71	0.64	21.35
21100	2535	15	16-QAM	75	(RB_Pos:0)	20.67	0.64	21.31
21375	2562.5	15	16-QAM	1	(RB_Pos:0)	21.69	0.64	22.33
21375	2562.5	15	16-QAM	1	(RB_Pos:74)	21.47	0.64	22.11
21375	2562.5	15	16-QAM	36	(RB_Pos:0)	20.81	0.64	21.45
21375	2562.5	15	16-QAM	36	(RB_Pos:39)	20.85	0.64	21.49
21375	2562.5	15	16-QAM	75	(RB_Pos:0)	20.75	0.64	21.39
20850	2510	20	16-QAM	1	(RB_Pos:0)	21.27	0.64	21.91
20850	2510	20	16-QAM	1	(RB_Pos:99)	21.04	0.64	21.68
20850	2510	20	16-QAM	50	(RB_Pos:0)	21.02	0.64	21.66
20850	2510	20	16-QAM	50	(RB_Pos:50)	20.57	0.64	21.21
20850	2510	20	16-QAM	100	(RB_Pos:0)	20.80	0.64	21.44
21100	2535	20	16-QAM	1	(RB_Pos:0)	21.89	0.64	22.53
21100	2535	20	16-QAM	1	(RB_Pos:99)	21.56	0.64	22.20
21100	2535	20	16-QAM	50	(RB_Pos:0)	20.84	0.64	21.48
21100	2535	20	16-QAM	50	(RB_Pos:50)	20.65	0.64	21.29
21100	2535	20	16-QAM	100	(RB_Pos:0)	20.62	0.64	21.26
21350	2560	20	16-QAM	1	(RB_Pos:0)	21.63	0.64	22.27
21350	2560	20	16-QAM	1	(RB_Pos:99)	21.43	0.64	22.07
21350	2560	20	16-QAM	50	(RB_Pos:0)	20.79	0.64	21.43
21350	2560	20	16-QAM	50	(RB_Pos:50)	20.82	0.64	21.46
21350	2560	20	16-QAM	100	(RB_Pos:0)	20.81	0.64	21.45



### 3.9 Test Data - LTE Band 12

Max Power: 23.80dBm / 0.240W

UpLink Channel	UL Frequency (MHz)	BW (MHz)	Modulation	# RB	Position	Measured Power (dBm)	Cable Loss (dB)	Conducted Power (dBm)
23017	699.7	1.4	QPSK	1	(RB Pos:0)	23.35	0.31	23.66
23017	699.7	1.4	QPSK	1	(RB Pos:5)	23.11	0.31	23.42
23017	699.7	1.4	QPSK	4	(RB Pos:0)	23.33	0.31	23.64
23017	699.7	1.4	QPSK	4	(RB Pos:2)	23.27	0.31	23.58
23017	699.7	1.4	QPSK	6	(RB Pos:0)	22.20	0.31	22.51
23095	707.5	1.4	QPSK	1	(RB Pos:0)	22.98	0.32	23.30
23095	707.5	1.4	QPSK	1	(RB Pos:5)	23.05	0.32	23.37
23095	707.5	1.4	QPSK	4	(RB Pos:0)	23.24	0.32	23.56
23095	707.5	1.4	QPSK	4	(RB Pos:2)	23.15	0.32	23.47
23095	707.5	1.4	QPSK	6	(RB Pos:0)	22.23	0.32	22.55
23173	715.3	1.4	QPSK	1	(RB Pos:0)	22.98	0.32	23.30
23173	715.3	1.4	QPSK	1	(RB Pos:5)	23.36	0.32	23.68
23173	715.3	1.4	QPSK	4	(RB Pos:0)	23.08	0.32	23.40
23173	715.3	1.4	QPSK	4	(RB Pos:2)	23.27	0.32	23.59
23173	715.3	1.4	QPSK	6	(RB Pos:0)	22.13	0.32	22.45
23025	700.5	3	QPSK	1	(RB Pos:0)	23.26	0.31	23.57
23025	700.5	3	QPSK	1	(RB Pos:14)	23.22	0.31	23.53
23025	700.5	3	QPSK	8	(RB Pos:0)	22.22	0.31	22.53
23025	700.5	3	QPSK	8	(RB Pos:7)	22.34	0.31	22.65
23025	700.5	3	QPSK	15	(RB Pos:0)	22.25	0.31	22.56
23095	707.5	3	QPSK	1	(RB Pos:0)	23.10	0.32	23.42
23095	707.5	3	QPSK	1	(RB Pos:14)	23.23	0.32	23.55
23095	707.5	3	QPSK	8	(RB Pos:0)	22.17	0.32	22.49
23095	707.5	3	QPSK	8	(RB Pos:7)	22.20	0.32	22.52
23095	707.5	3	QPSK	15	(RB Pos:0)	22.09	0.32	22.41
23165	714.5	3	QPSK	1	(RB Pos:0)	23.14	0.32	23.46
23165	714.5	3	QPSK	1	(RB Pos:14)	23.48	0.32	23.80
23165	714.5	3	QPSK	8	(RB Pos:0)	22.10	0.32	22.42
23165	714.5	3	QPSK	8	(RB Pos:7)	22.13	0.32	22.45
23165	714.5	3	QPSK	15	(RB Pos:0)	22.09	0.32	22.41
23035	701.5	5	QPSK	1	(RB Pos:0)	23.17	0.32	23.49
23035	701.5	5	QPSK	1	(RB Pos:24)	22.88	0.32	23.20
23035	701.5	5	QPSK	12	(RB Pos:0)	22.30	0.32	22.62
23035	701.5	5	QPSK	12	(RB Pos:13)	22.03	0.32	22.35
23035	701.5	5	QPSK	25	(RB Pos:0)	22.22	0.32	22.54
23095	707.5	5	QPSK	1	(RB Pos:0)	23.07	0.32	23.39
23095	707.5	5	QPSK	1	(RB Pos:24)	23.06	0.32	23.38
23095	707.5	5	QPSK	12	(RB Pos:0)	22.05	0.32	22.37
23095	707.5	5	QPSK	12	(RB Pos:13)	22.19	0.32	22.51
23095	707.5	5	QPSK	25	(RB Pos:0)	22.17	0.32	22.49
23155	713.5	5	QPSK	1	(RB Pos:0)	22.99	0.32	23.31
23155	713.5	5	QPSK	1	(RB Pos:24)	23.10	0.32	23.42
23155	713.5	5	QPSK	12	(RB Pos:0)	22.10	0.32	22.42
23155	713.5	5	QPSK	12	(RB Pos:13)	22.01	0.32	22.33
23155	713.5	5	QPSK	25	(RB Pos:0)	22.09	0.32	22.41
23060	704	10	QPSK	1	(RB Pos:0)	23.20	0.32	23.52
23060	704	10	QPSK	1	(RB Pos:49)	23.15	0.32	23.47
23060	704	10	QPSK	25	(RB Pos:0)	22.12	0.32	22.44
23060	704	10	QPSK	25	(RB Pos:25)	22.23	0.32	22.55
23060	704	10	QPSK	50	(RB Pos:0)	22.22	0.32	22.54
23095	707.5	10	QPSK	1	(RB Pos:0)	23.07	0.32	23.39
23095	707.5	10	QPSK	1	(RB Pos:49)	23.02	0.32	23.34
23095	707.5	10	QPSK	25	(RB Pos:0)	22.13	0.32	22.45
23095	707.5	10	QPSK	25	(RB Pos:25)	22.19	0.32	22.51
23095	707.5	10	QPSK	50	(RB Pos:0)	22.13	0.32	22.45
23130	711	10	QPSK	1	(RB Pos:0)	22.98	0.32	23.30
23130	711	10	QPSK	1	(RB Pos:49)	23.08	0.32	23.40
23130	711	10	QPSK	25	(RB Pos:0)	22.21	0.32	22.53
23130	711	10	QPSK	25	(RB Pos:25)	22.11	0.32	22.43
23130	711	10	QPSK	50	(RB Pos:0)	22.20	0.32	22.52

UpLink Channel	UL Frequency (MHz)	BW (MHz)	Modulation	# RB	Position	Measured Power (dBm)	Cable Loss (dB)	Conducted Power (dBm)
23017	699.7	1.4	16-QAM	1	(RB Pos:0)	22.05	0.31	22.36
23017	699.7	1.4	16-QAM	1	(RB Pos:5)	21.98	0.31	22.29
23017	699.7	1.4	16-QAM	4	(RB Pos:0)	21.93	0.31	22.24
23017	699.7	1.4	16-QAM	4	(RB Pos:2)	21.80	0.31	22.11
23017	699.7	1.4	16-QAM	6	(RB Pos:0)	20.91	0.31	21.22
23095	707.5	1.4	16-QAM	1	(RB Pos:0)	22.10	0.32	22.42
23095	707.5	1.4	16-QAM	1	(RB Pos:5)	22.07	0.32	22.39
23095	707.5	1.4	16-QAM	4	(RB Pos:0)	22.28	0.32	22.60
23095	707.5	1.4	16-QAM	4	(RB Pos:2)	22.14	0.32	22.46
23095	707.5	1.4	16-QAM	6	(RB Pos:0)	21.20	0.32	21.52
23173	715.3	1.4	16-QAM	1	(RB Pos:0)	21.63	0.32	21.95
23173	715.3	1.4	16-QAM	1	(RB Pos:5)	21.94	0.32	22.26
23173	715.3	1.4	16-QAM	4	(RB Pos:0)	22.21	0.32	22.53
23173	715.3	1.4	16-QAM	4	(RB Pos:2)	22.44	0.32	22.76
23173	715.3	1.4	16-QAM	6	(RB Pos:0)	21.37	0.32	21.69
23025	700.5	3	16-QAM	1	(RB Pos:0)	22.18	0.31	22.49
23025	700.5	3	16-QAM	1	(RB Pos:14)	21.78	0.31	22.09
23025	700.5	3	16-QAM	8	(RB Pos:0)	21.52	0.31	21.83
23025	700.5	3	16-QAM	8	(RB Pos:7)	21.16	0.31	21.47
23025	700.5	3	16-QAM	15	(RB Pos:0)	21.33	0.31	21.64
23095	707.5	3	16-QAM	1	(RB Pos:0)	21.69	0.32	22.01
23095	707.5	3	16-QAM	1	(RB Pos:14)	21.79	0.32	22.11
23095	707.5	3	16-QAM	8	(RB Pos:0)	21.02	0.32	21.34
23095	707.5	3	16-QAM	8	(RB Pos:7)	21.25	0.32	21.57
23095	707.5	3	16-QAM	15	(RB Pos:0)	21.05	0.32	21.37
23165	714.5	3	16-QAM	1	(RB Pos:0)	21.94	0.32	22.26
23165	714.5	3	16-QAM	1	(RB Pos:14)	22.20	0.32	22.52
23165	714.5	3	16-QAM	8	(RB Pos:0)	20.86	0.32	21.18
23165	714.5	3	16-QAM	8	(RB Pos:7)	20.85	0.32	21.17
23165	714.5	3	16-QAM	15	(RB Pos:0)	20.86	0.32	21.18
23035	701.5	5	16-QAM	1	(RB Pos:0)	21.74	0.32	22.06
23035	701.5	5	16-QAM	1	(RB Pos:24)	21.23	0.32	21.55
23035	701.5	5	16-QAM	12	(RB Pos:0)	21.17	0.32	21.49
23035	701.5	5	16-QAM	12	(RB Pos:13)	20.97	0.32	21.29
23035	701.5	5	16-QAM	25	(RB Pos:0)	21.07	0.32	21.39
23095	707.5	5	16-QAM	1	(RB Pos:0)	21.62	0.32	21.94
23095	707.5	5	16-QAM	1	(RB Pos:24)	21.54	0.32	21.86
23095	707.5	5	16-QAM	12	(RB Pos:0)	20.82	0.32	21.14
23095	707.5	5	16-QAM	12	(RB Pos:13)	20.81	0.32	21.13
23095	707.5	5	16-QAM	25	(RB Pos:0)	21.13	0.32	21.45
23155	713.5	5	16-QAM	1	(RB Pos:0)	21.68	0.32	22.00
23155	713.5	5	16-QAM	1	(RB Pos:24)	21.66	0.32	21.98
23155	713.5	5	16-QAM	12	(RB Pos:0)	20.64	0.32	20.96
23155	713.5	5	16-QAM	12	(RB Pos:13)	20.58	0.32	20.90
23155	713.5	5	16-QAM	25	(RB Pos:0)	20.95	0.32	21.27
23060	704	10	16-QAM	1	(RB Pos:0)	21.92	0.32	22.24
23060	704	10	16-QAM	1	(RB Pos:49)	21.95	0.32	22.27
23060	704	10	16-QAM	25	(RB Pos:0)	21.26	0.32	21.58
23060	704	10	16-QAM	25	(RB Pos:25)	21.01	0.32	21.33
23060	704	10	16-QAM	50	(RB Pos:0)	20.92	0.32	21.24
23095	707.5	10	16-QAM	1	(RB Pos:0)	21.54	0.32	21.86
23095	707.5	10	16-QAM	1	(RB Pos:49)	21.54	0.32	21.86
23095	707.5	10	16-QAM	25	(RB Pos:0)	21.09	0.32	21.41
23095	707.5	10	16-QAM	25	(RB Pos:25)	21.06	0.32	21.38
23095	707.5	10	16-QAM	50	(RB Pos:0)	21.01	0.32	21.33
23130	711	10	16-QAM	1	(RB Pos:0)	22.11	0.32	22.43
23130	711	10	16-QAM	1	(RB Pos:49)	22.05	0.32	22.37
23130	711	10	16-QAM	25	(RB Pos:0)	21.34	0.32	21.66
23130	711	10	16-QAM	25	(RB Pos:25)	21.11	0.32	21.43
23130	711	10	16-QAM	50	(RB Pos:0)	21.04	0.32	21.36

## 4 Peak to Average Ratio

### 4.1 Test Result

Test Description	Basic Standards	Test Result
Peak to Average Ratio	FCC 24.232(d) FCC 27.50(d)(5) RSS-130 (4.4) RSS-132 (5.4) RSS-133 (6.4) RSS-139 (6.5) RSS-199 (4.4)	Pass

### 4.2 Test Method

KDB document 971168 D01 Power Meas License Digital Systems v03r01 was used to determine the peak-to-average power ratio. Clause 5.7.2 references ANSI C63.26-2015 Subclause 5.2.3.4 which defines the measurement method using the CCDF function of the spectrum analyzer. Measurements were recorded at the middle channel of each band and the worst-case settings were determined to be the narrowest defined cell BW with full RB's and 16-QAM modulation.

### 4.3 Test Site

SGS EMC Laboratory, Suwanee, GA

#### Environmental Conditions

Temperature: 24.1 °C  
 Relative Humidity: 48.1 %  
 Atmospheric Pressure: 97.9 kPa

### 4.4 Test Equipment

Test End Date: 12-Jul-2018

Tester: MT

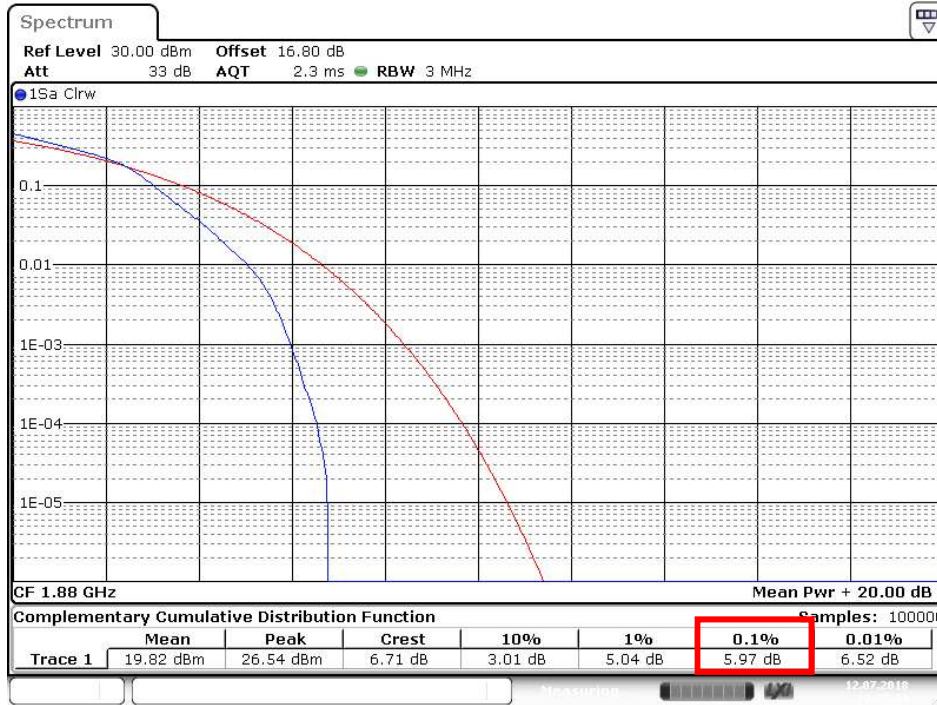
Equipment	Model	Manufacturer	Asset Number	Cal Due Date
SIGNAL ANALYZER	FSV30	ROHDE & SCHWARZ	1608522I	24-Jul-2018
RF CABLE	1134	GORE	B094785	26-Jul-2018
RF CABLE	141	HUBER & SUHNER	B095588	26-Jul-2018
ATTENUATOR, 10DB	BW-S10W2	MINI-CIRCUITS	15032	CNR
POWER SPLITTER	ZFRSC-183-S+	MINI-CIRCUITS	B101743	27-Jul-2018
WIDEBAND RADIO COMMUNICATION TESTER	CMW500	ROHDE & SCHWARZ	B094874	25-Jan-2020

- Unless otherwise noted, equipment is on a 1-year calibration cycle.
- Based on manufacturer's specifications, the CMW 500 is on a 2-year calibration cycle.

### 4.5 Test Data

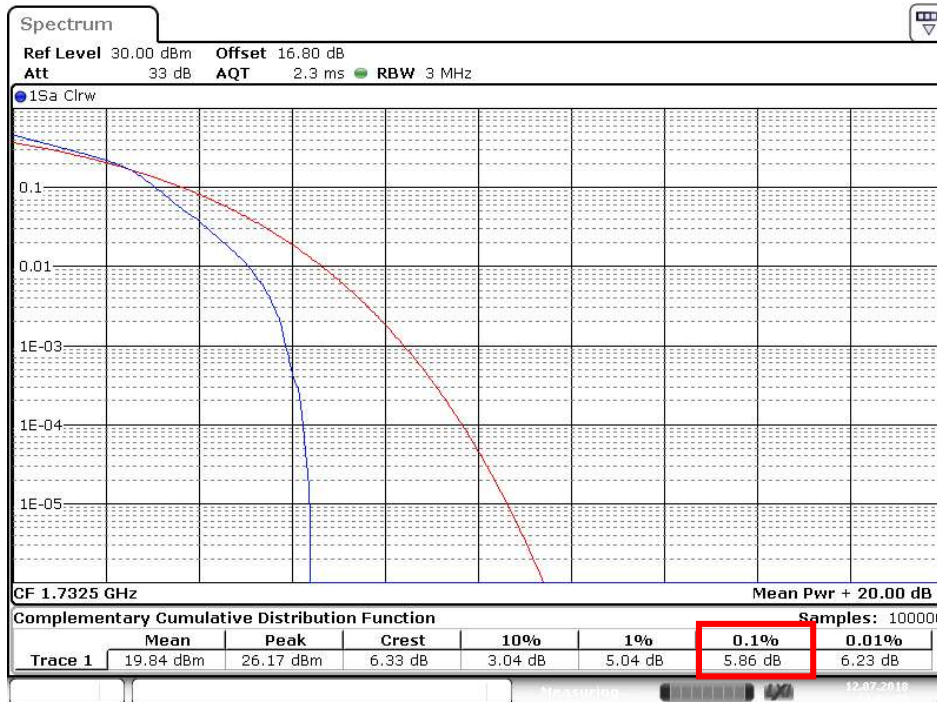
The requirement is that the peak-to-average ratio shall not exceed 13 dB for more than 0.1% of the time.

#### LTE Band 2



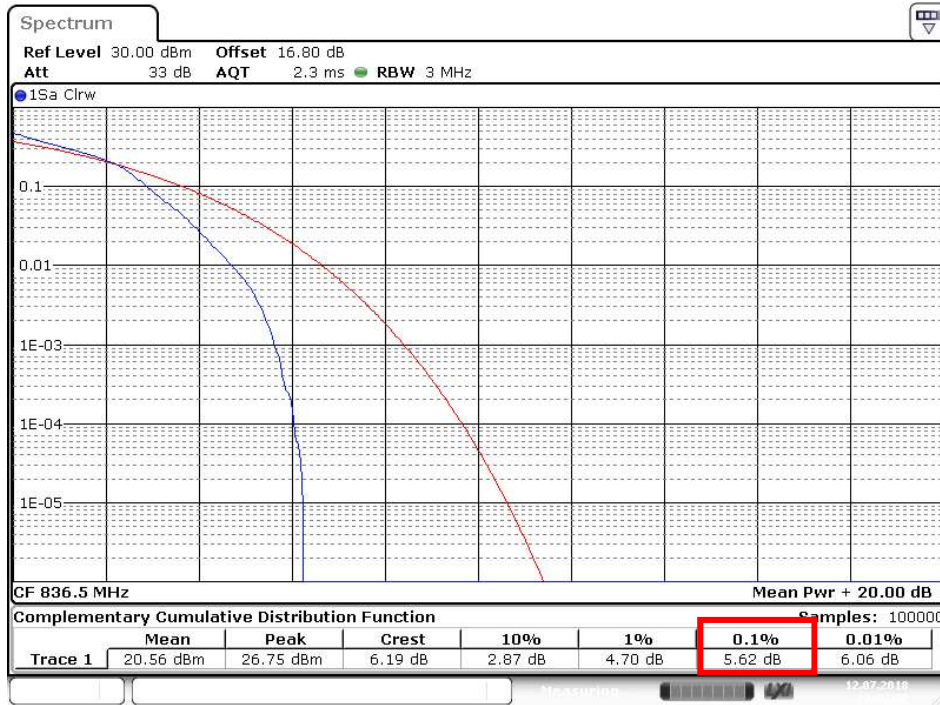
Date: 12 JUL 2018 20:05:34

#### LTE Band 4



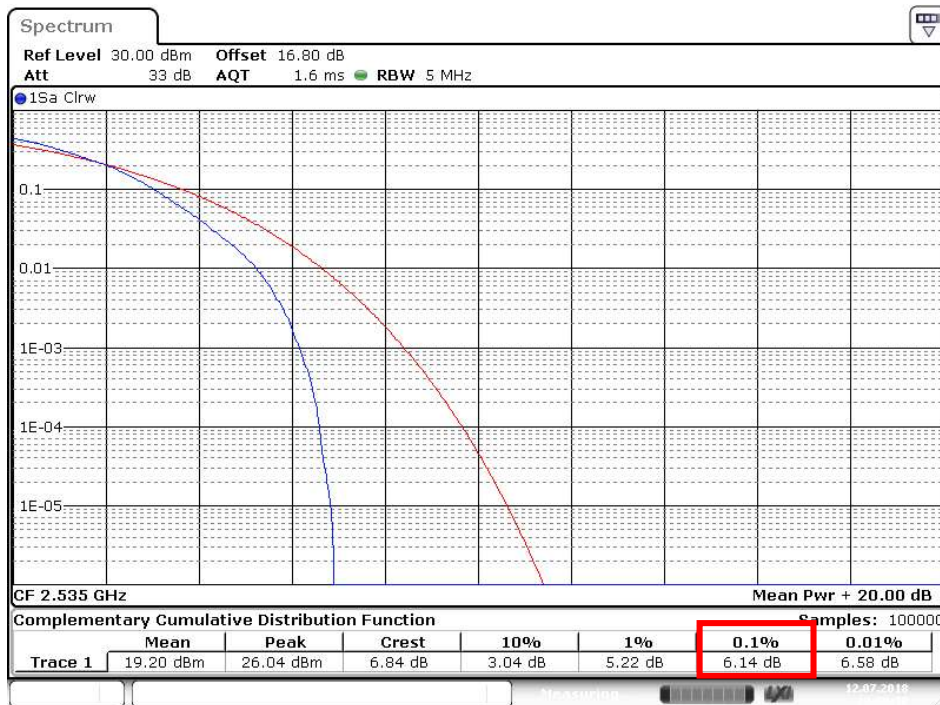
Date: 12 JUL 2018 20:04:39

### LTE Band 5



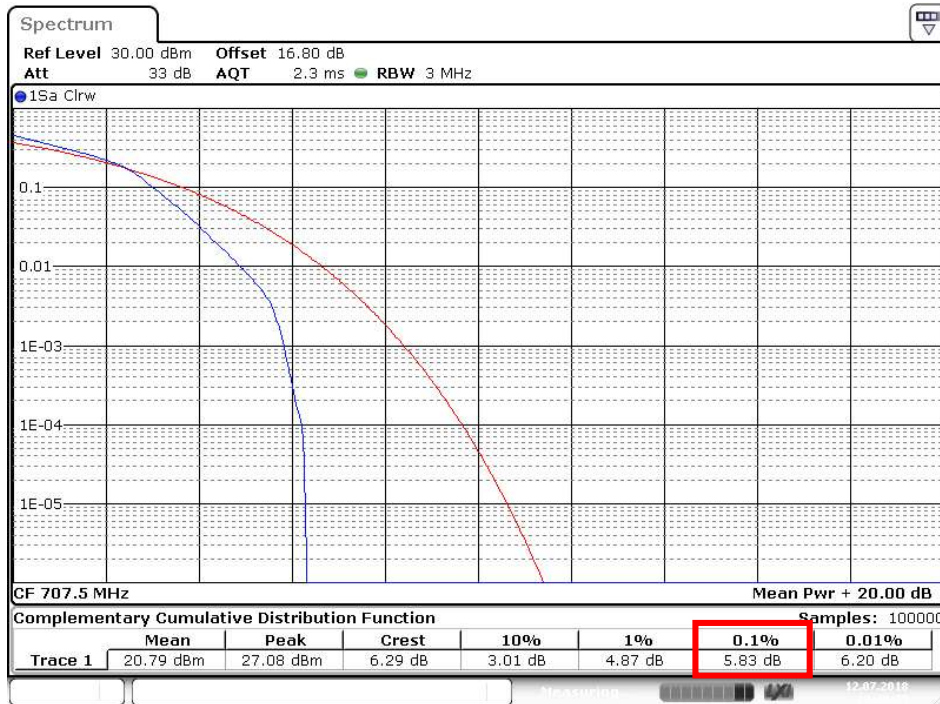
Date: 12 JUL 2018 20:02:39

### LTE Band 7



Date: 12 JUL 2018 20:09:18

### LTE Band 12



Date: 12 JUL 2018 19:48:39

## 5 Bandwidth

### 5.1 Test Result

Test Description	Basic Standards		Test Result
Occupied Bandwidth / Emission Bandwidth	FCC 2.1049 FCC 22.917(b) FCC 24.238(b) FCC 27.53(h)(3) FCC 27.53(m)(6)	RSS-GEN (6.7) RSS-133 (2.3) RSS-199 (4.2)	Reported

### 5.2 Test Method

The occupied bandwidth is the frequency bandwidth such that below its lower and above its upper frequency limits, the mean powers are each equal to 0.5% of the total mean power of a given emission.

The emission 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 at least 26 dB below the transmitter power.

The span of the analyzer was set to capture all products of the modulation process, including the emission skirts. The resolution bandwidth was set to between 1% and 5% of the occupied bandwidth. The video bandwidth was set to 3 times the resolution bandwidth. Video averaging is not permitted. The 99% occupied bandwidth was measured using the spectrum analyzer's occupied bandwidth measurement function. The 26dB emission bandwidth was measured manually using the corresponding power level reported earlier in this report as the reference level.

A radio link was established between the EUT and the Radio Communications Tester. The output power of the EUT was set to maximum value by using the maximum power setting on the Radio Communications Tester. The occupied bandwidth measurement was conducted at the middle channel of the band and at all available channel bandwidths. The emission bandwidth measurement was conducted at low, middle and high channels and at all available channel bandwidths. All available resource blocks were used for maximum bandwidth.

### 5.3 Test Site

SGS EMC Laboratory, Suwanee, GA

Environmental Conditions	Occupied BW	Emission BW
Temperature:	24.7 °C	23.4 °C
Relative Humidity:	46.7%	52.0 %
Atmospheric Pressure:	97.9 kPa	98.5 kPa

## 5.4 Test Equipment

### Occupied Bandwidth

Test End Date: 12-Jul-2018

Tester: MT

Equipment	Model	Manufacturer	Asset Number	Cal Due Date
SIGNAL ANALYZER	FSV30	ROHDE & SCHWARZ	16085221	24-Jul-2018
RF CABLE	1134	GORE	B094785	26-Jul-2018
RF CABLE	141	HUBER & SUHNER	B095588	26-Jul-2018
ATTENUATOR, 10DB	BW-S10W2	MINI-CIRCUITS	15032	CNR
POWER SPLITTER	ZFRSC-183-S+	MINI-CIRCUITS	B101743	27-Jul-2018
WIDEBAND RADIO COMMUNICATION TESTER	CMW500	ROHDE & SCHWARZ	B094874	25-Jan-2020

- Unless otherwise noted, equipment is on a 1-year calibration cycle.
- Based on manufacturer's specifications, the CMW 500 is on a 2-year calibration cycle.

### Emission Bandwidth

Test End Date: 24-Aug-2018

Tester: MT

Equipment	Model	Manufacturer	Asset Number	Cal Due Date
SIGNAL ANALYZER	FSV30	ROHDE & SCHWARZ	B085749	1-Nov-2019
RF CABLE	1134	GORE	B094785	25-Jul-2019
RF CABLE	141	HUBER & SUHNER	B095588	25-Jul-2019
ATTENUATOR, 10DB	BW-S10W2	MINI-CIRCUITS	15032	CNR
POWER SPLITTER	ZFRSC-183-S+	MINI-CIRCUITS	B101743	25-Jul-2019
WIDEBAND RADIO COMMUNICATION TESTER	CMW500	ROHDE & SCHWARZ	B094874	25-Jan-2020

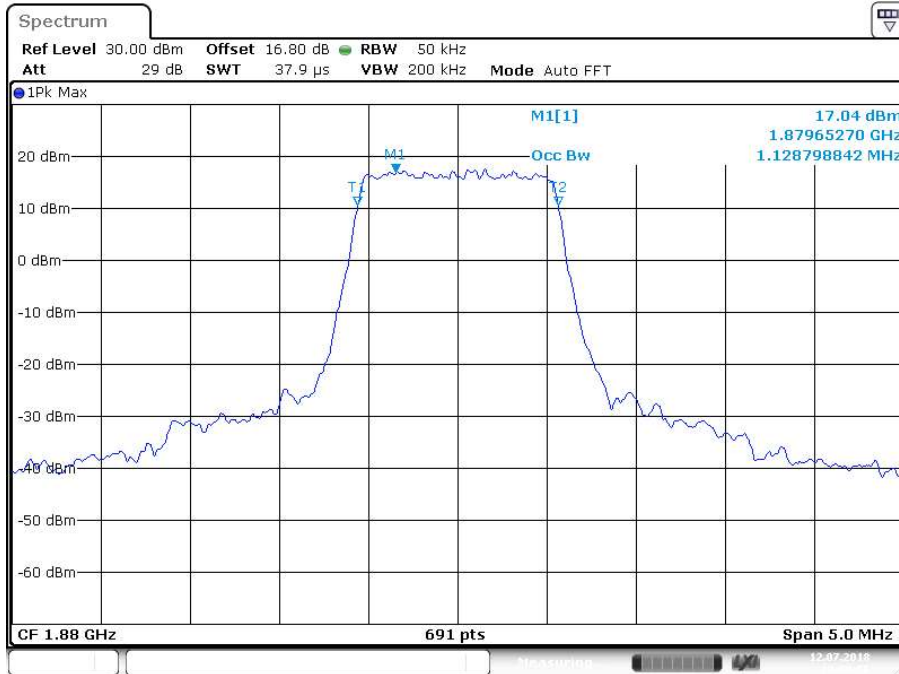
- Unless otherwise noted, equipment is on a 1-year calibration cycle.
- Based on manufacturer's specifications, the FSV30 & CMW 500 are on a 2-year calibration cycle.



### 5.5 Test Data – Occupied Bandwidth (99%)

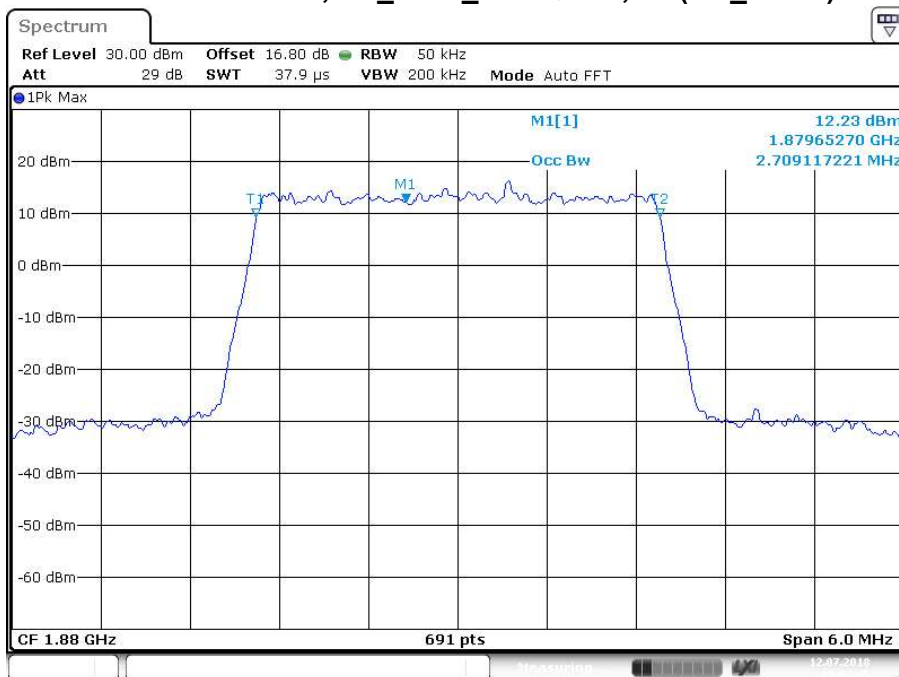
#### LTE Band 2

Occupied Bandwidth: @ULCH: 18900, BW: 1.4 MHz,  
 ULPower: 23dBm, UL\_MOD\_RB: QPSK, 6 (RB\_Pos:0)

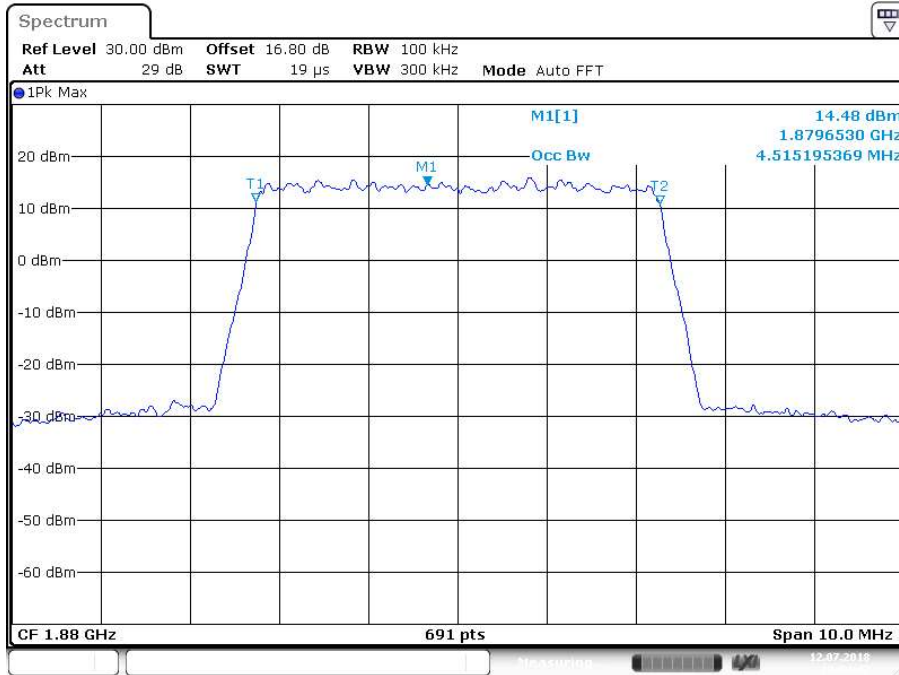


#### LTE Band 2

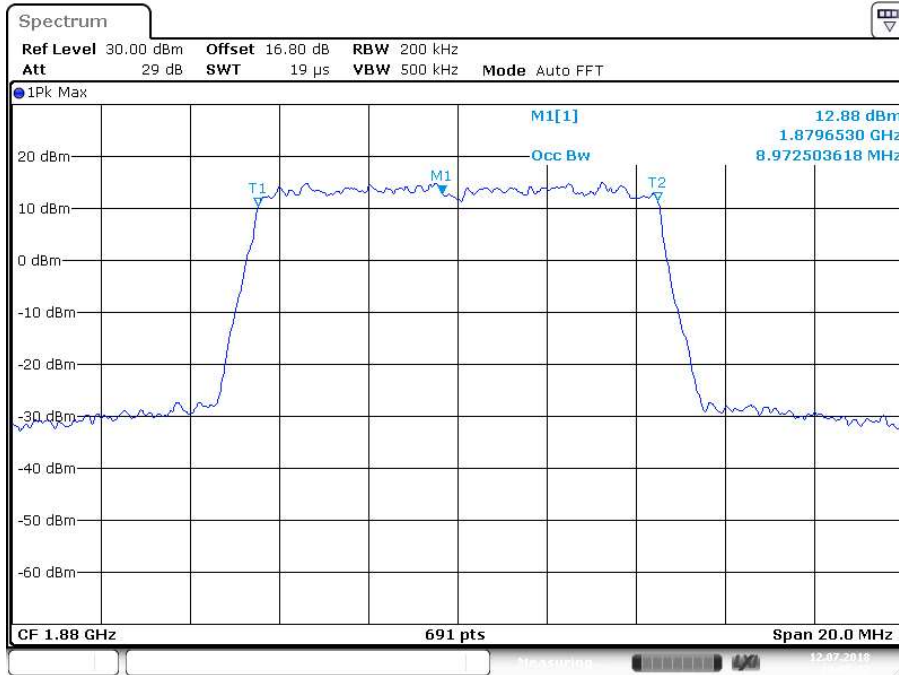
Occupied Bandwidth: @ULCH: 18900, BW: 3.0 MHz,  
 ULPower: 23dBm, UL\_MOD\_RB: QPSK, 15 (RB\_Pos:0)



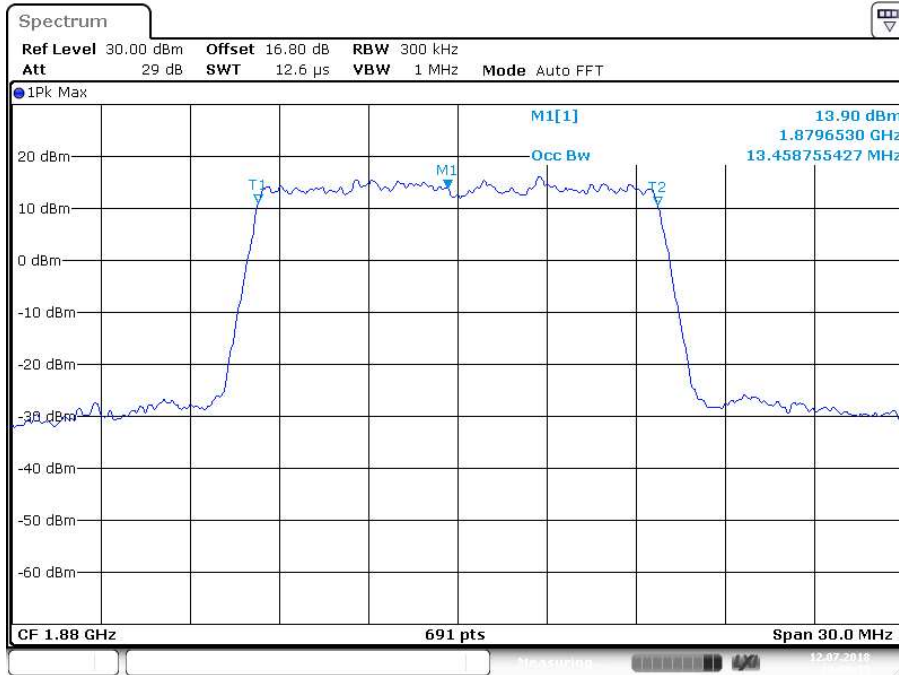
**LTE Band 2**  
**Occupied Bandwidth: @ULCH: 18900, BW: 5.0 MHz,**  
**ULPower: 23dBm, UL\_MOD\_RB: QPSK, 25 (RB\_Pos:0)**



**LTE Band 2**  
**Occupied Bandwidth: @ULCH: 18900, BW: 10 MHz,**  
**ULPower: 23dBm, UL\_MOD\_RB: QPSK, 50 (RB\_Pos:0)**

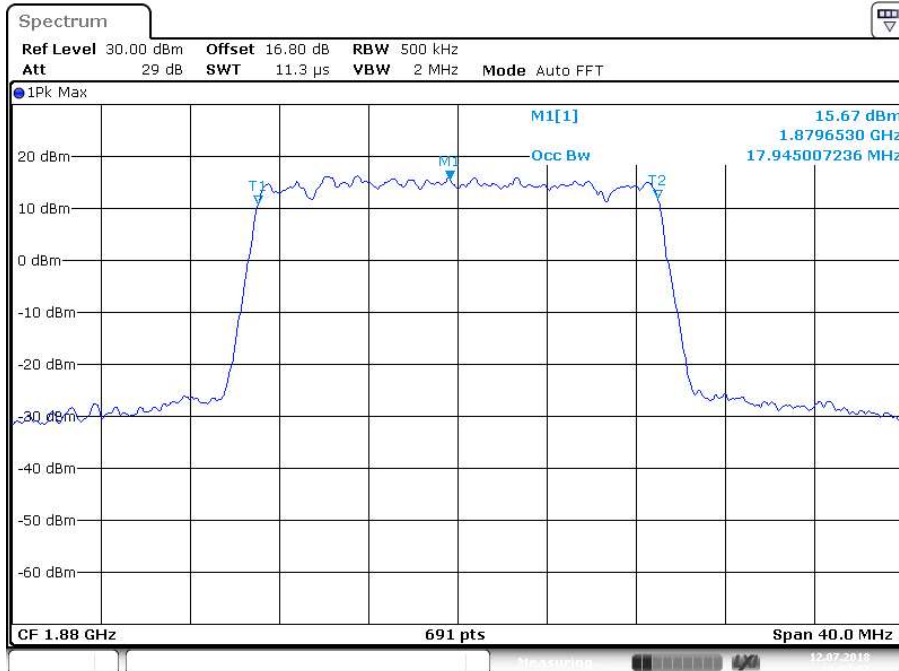


**LTE Band 2**  
**Occupied Bandwidth: @ULCH: 18900, BW: 15 MHz,**  
**ULPower: 23dBm, UL\_MOD\_RB: QPSK, 75 (RB\_Pos:0)**



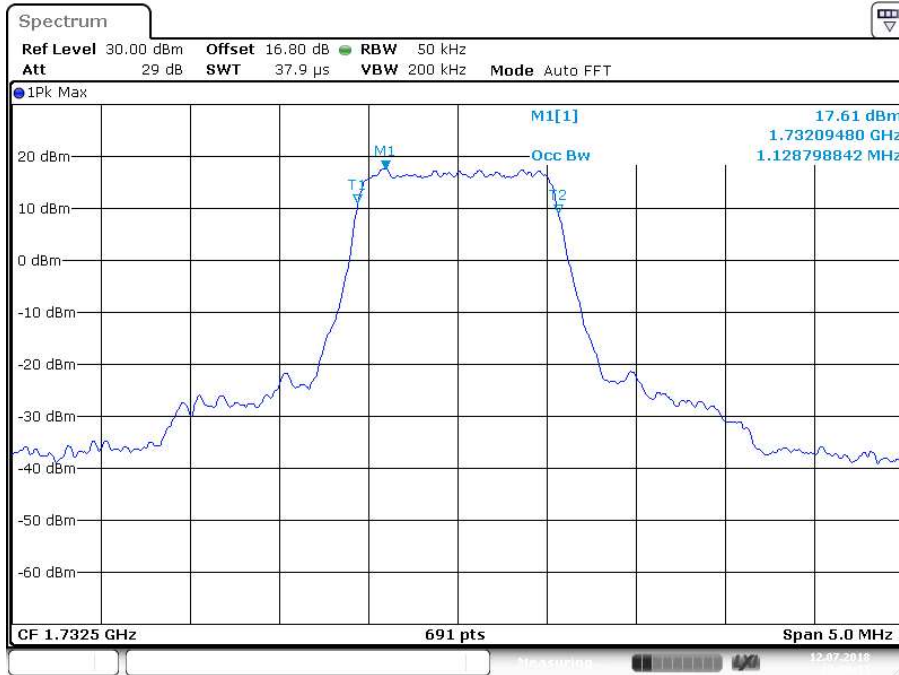
Date: 12 JUL 2018 18:06:19

**LTE Band 2**  
**Occupied Bandwidth: @ULCH: 18900, BW: 20 MHz,**  
**ULPower: 23dBm, UL\_MOD\_RB: QPSK, 100 (RB\_Pos:0)**



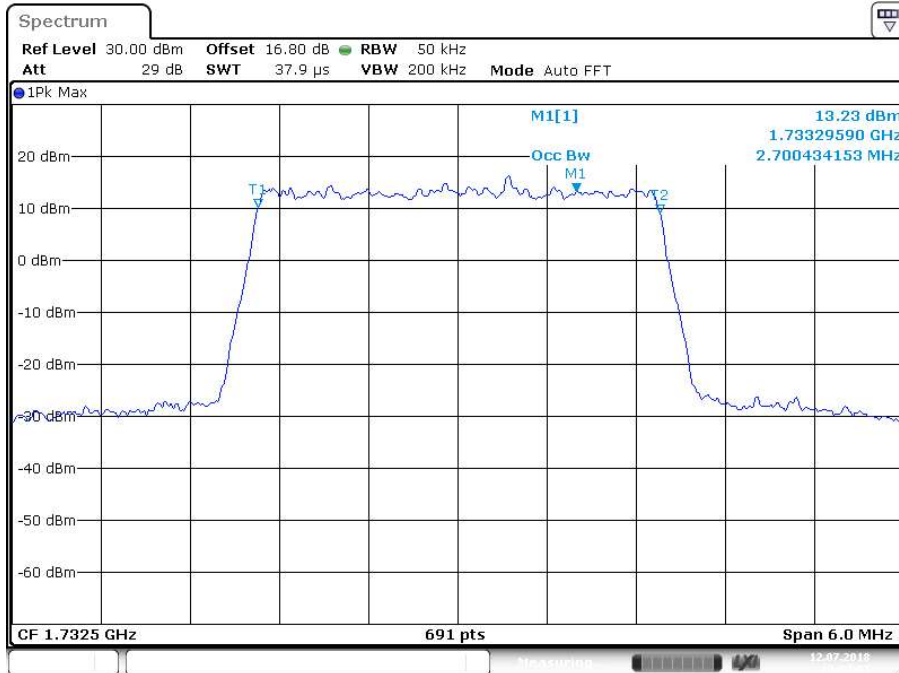
Date: 12 JUL 2018 18:07:07

**LTE Band 4**  
**Occupied Bandwidth: @ULCH: 20175, BW: 1.4 MHz,**  
**ULPower: 23dBm, UL\_MOD\_RB: QPSK, 6 (RB\_Pos:0)**



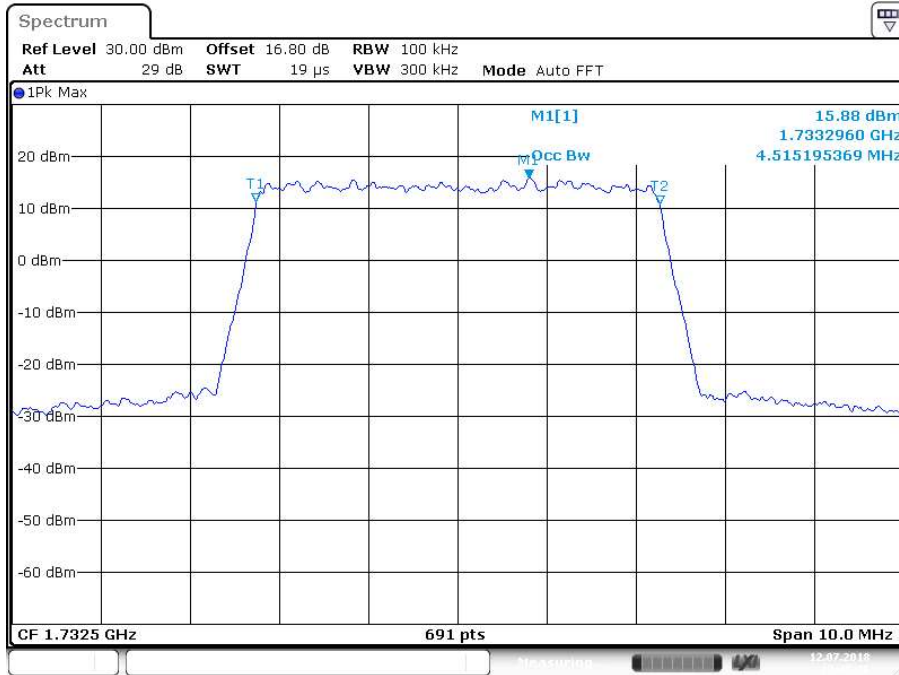
Date: 12 JUL 2018 17:59:11

**LTE Band 4**  
**Occupied Bandwidth: @ULCH: 20175, BW: 3.0 MHz,**  
**ULPower: 23dBm, UL\_MOD\_RB: QPSK, 15 (RB\_Pos:0)**



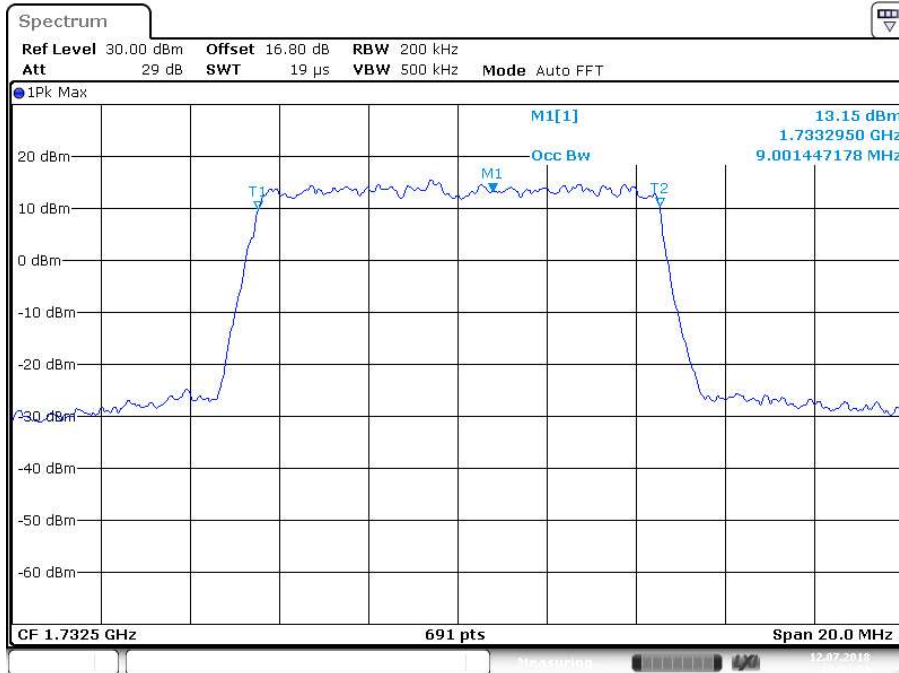
Date: 12 JUL 2018 17:57:01

**LTE Band 4**  
**Occupied Bandwidth: @ULCH: 20175, BW: 5.0 MHz,**  
**ULPower: 23dBm, UL\_MOD\_RB: QPSK, 25 (RB\_Pos:0)**



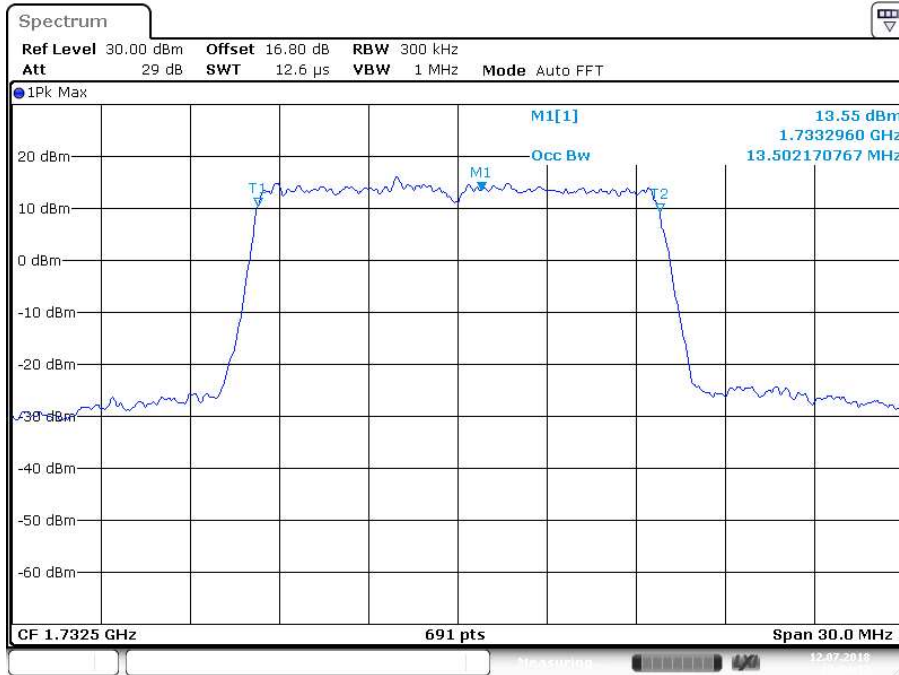
Date: 12 JUL 2018 17:45:26

**LTE Band 4**  
**Occupied Bandwidth: @ULCH: 20175, BW: 10 MHz,**  
**ULPower: 23dBm, UL\_MOD\_RB: QPSK, 50 (RB\_Pos:0)**



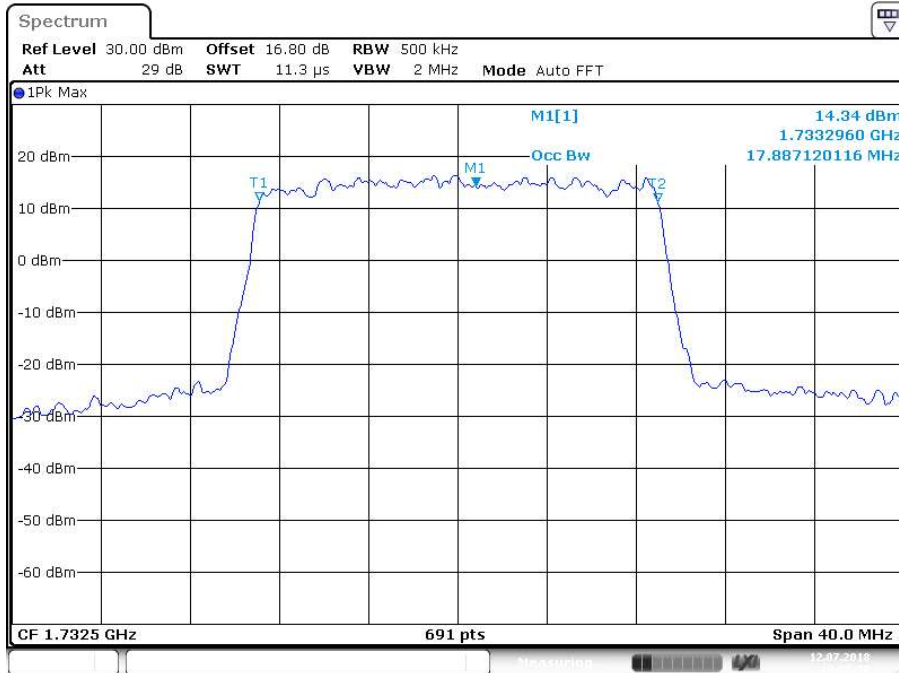
Date: 12 JUL 2018 17:53:04

**LTE Band 4**  
**Occupied Bandwidth: @ULCH: 20175, BW: 15 MHz,**  
**ULPower: 23dBm, UL\_MOD\_RB: QPSK, 75 (RB\_Pos:0)**



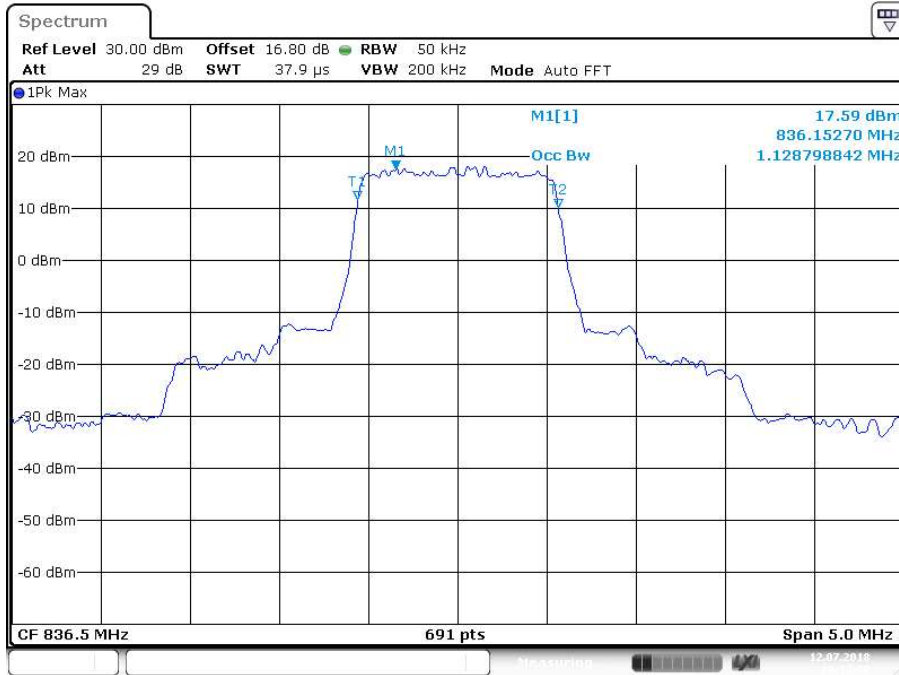
Date: 12 JUL 2018 17:54:13

**LTE Band 4**  
**Occupied Bandwidth: @ULCH: 20175, BW: 20 MHz,**  
**ULPower: 23dBm, UL\_MOD\_RB: QPSK, 100 (RB\_Pos:0)**

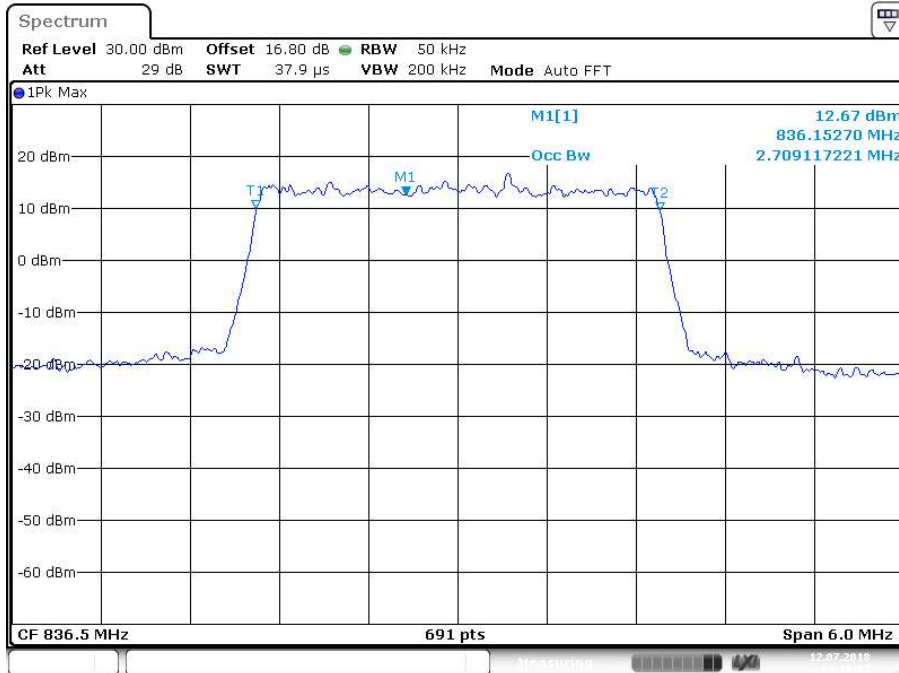


Date: 12 JUL 2018 17:55:10

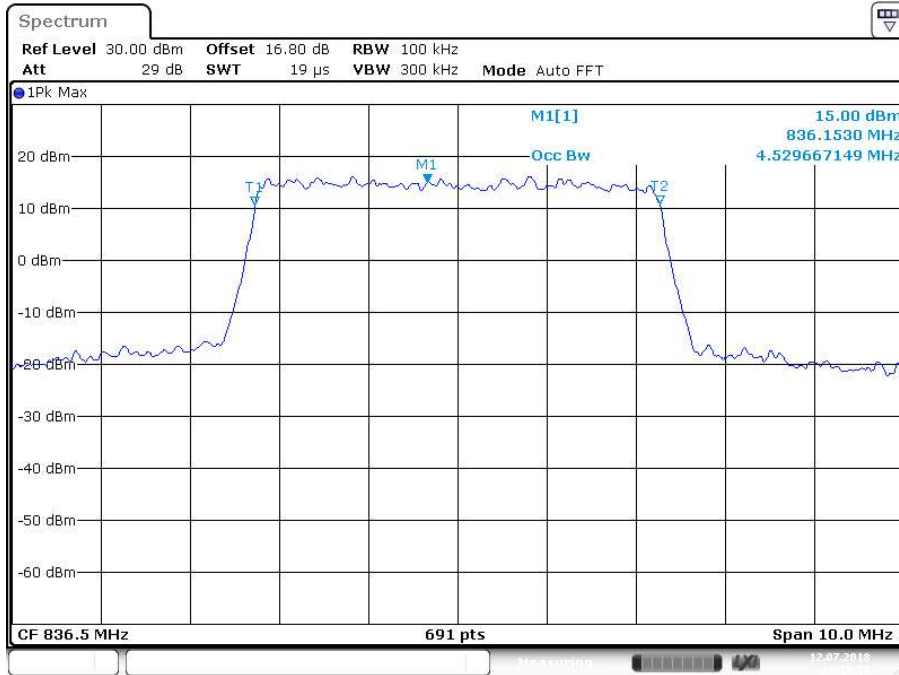
**LTE Band 5**  
**Occupied Bandwidth: @ULCH: 20525, BW: 1.4 MHz,**  
**ULPower: 23dBm, UL\_MOD\_RB: QPSK, 6 (RB\_Pos:0)**



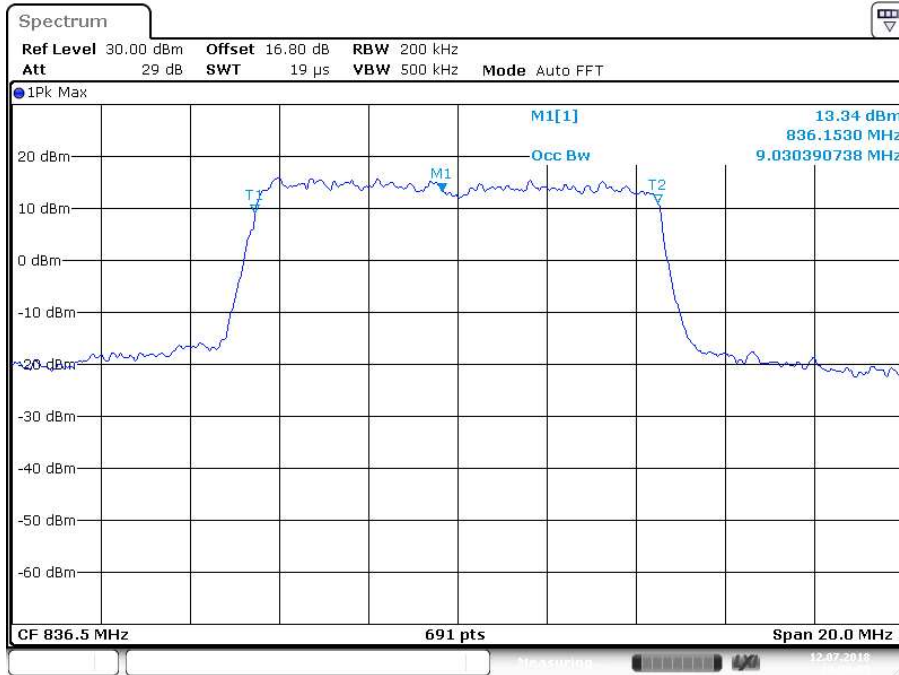
**LTE Band 5**  
**Occupied Bandwidth: @ULCH: 20525, BW: 3.0 MHz,**  
**ULPower: 23dBm, UL\_MOD\_RB: QPSK, 15 (RB\_Pos:0)**



**LTE Band 5**  
**Occupied Bandwidth: @ULCH: 20525, BW: 5.0 MHz,**  
**ULPower: 23dBm, UL\_MOD\_RB: QPSK, 25 (RB\_Pos:0)**

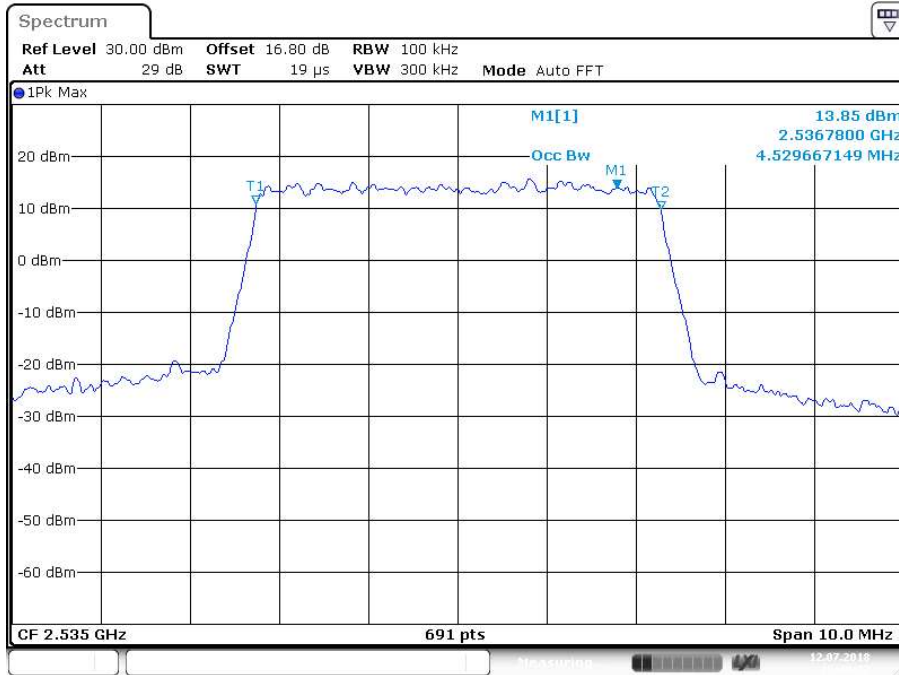


**LTE Band 5**  
**Occupied Bandwidth: @ULCH: 20525, BW: 10 MHz,**  
**ULPower: 23dBm, UL\_MOD\_RB: QPSK, 50 (RB\_Pos:0)**

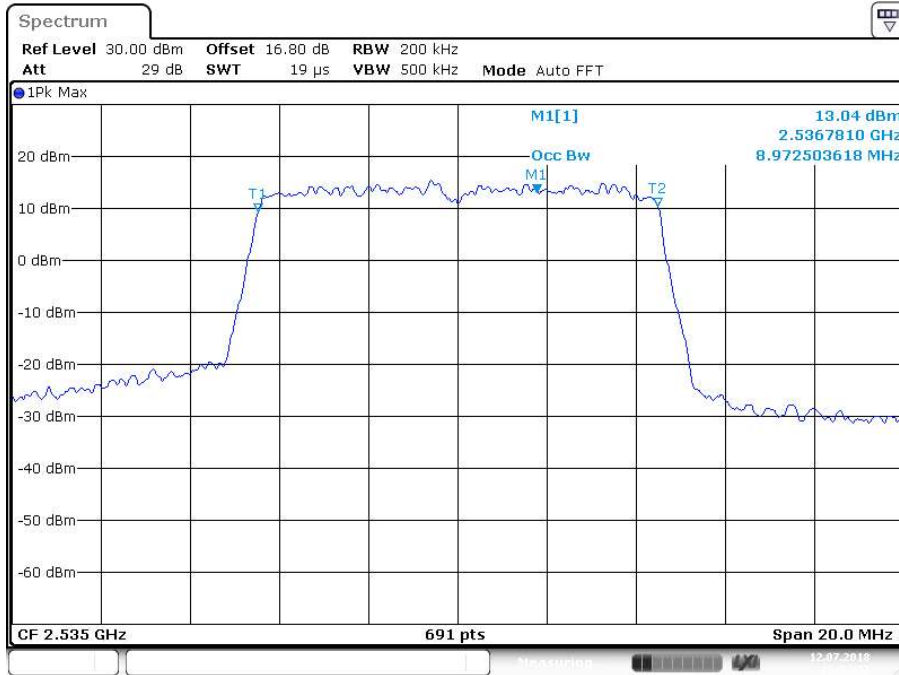




**LTE Band 7**  
**Occupied Bandwidth: @ULCH: 21100, BW: 5.0 MHz,**  
**ULPower: 23dBm, UL\_MOD\_RB: QPSK, 25 (RB\_Pos:0)**



**LTE Band 7**  
**Occupied Bandwidth: @ULCH: 21100, BW: 10 MHz,**  
**ULPower:23dBm, UL\_MOD\_RB: QPSK, 50 (RB\_Pos:0)**

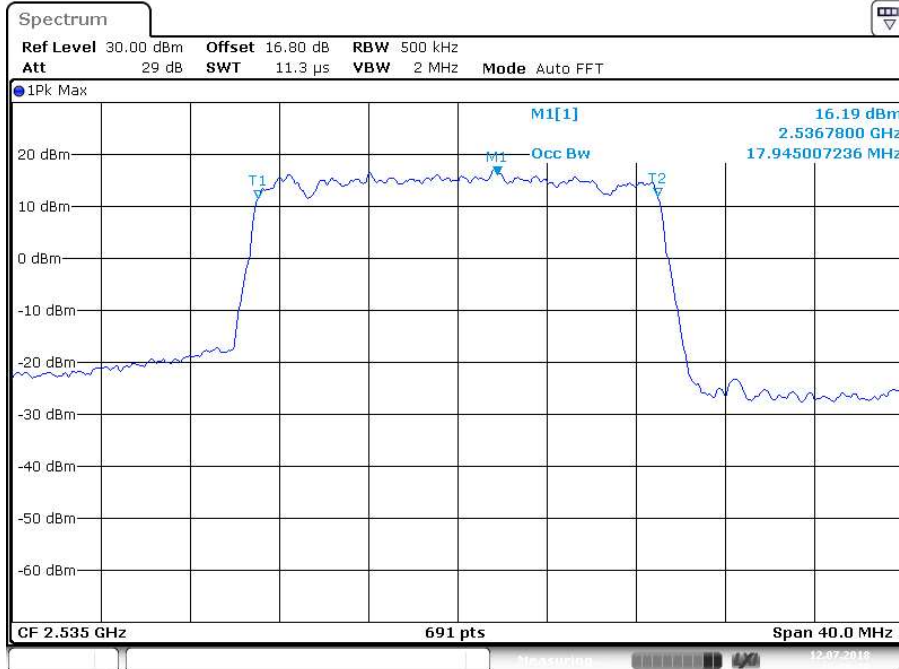


**LTE Band 7**  
**Occupied Bandwidth: @ULCH: 21100, BW: 15 MHz,**  
**ULPower: 23dBm, UL\_MOD\_RB: QPSK, 75 (RB\_Pos:0)**



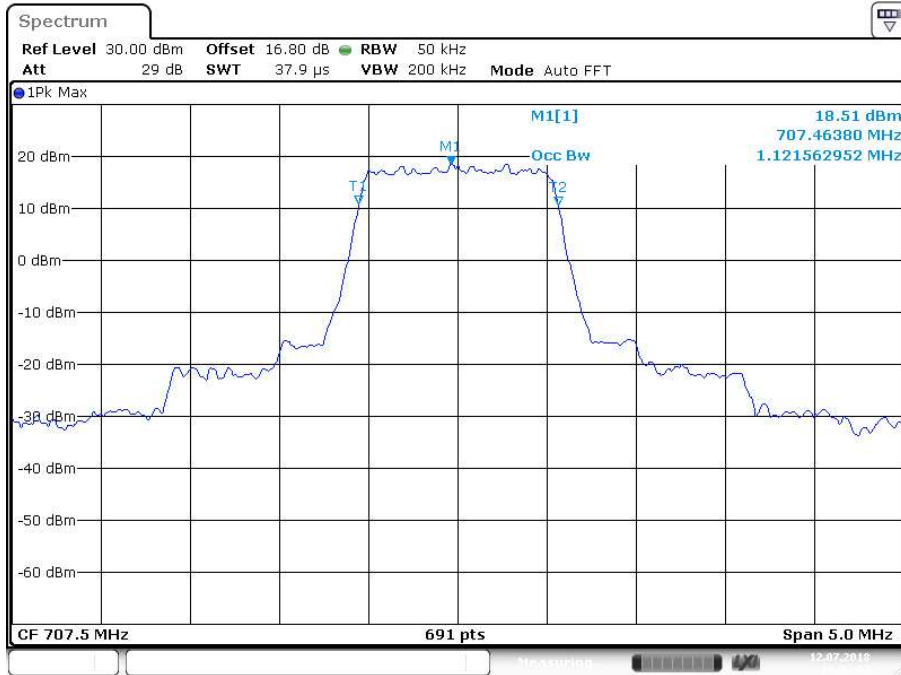
Date: 12 JUL 2018 15:54:50

**LTE Band 7**  
**Occupied Bandwidth: @ULCH: 21100, BW: 20 MHz,**  
**ULPower: 23dBm, UL\_MOD\_RB: QPSK, 100 (RB\_Pos:0)**



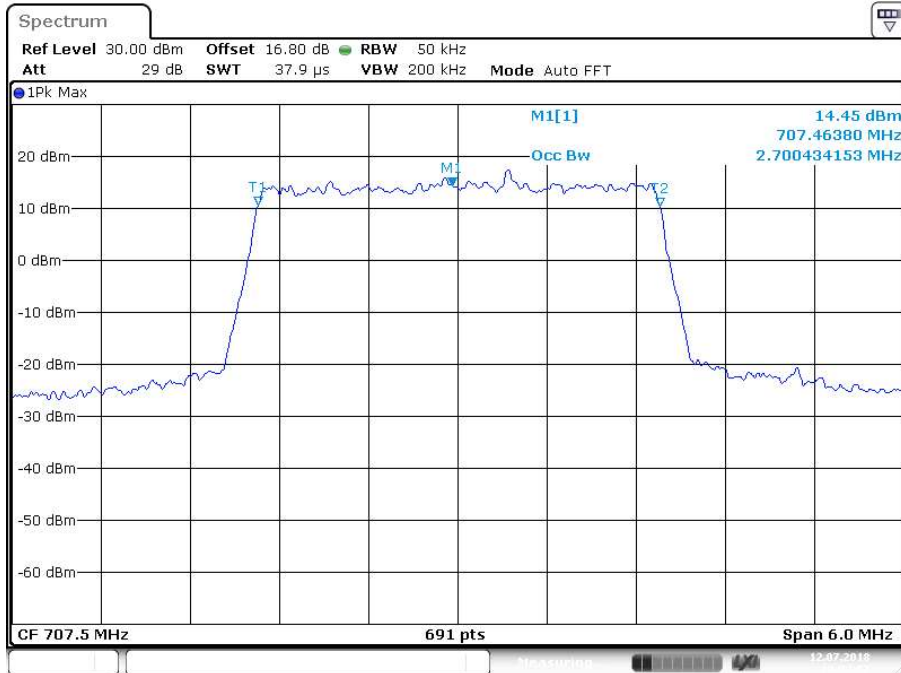
Date: 12 JUL 2018 15:56:20

**LTE Band 12**  
**Occupied Bandwidth: @ULCH: 23095, BW: 1.4 MHz,**  
**ULPower: 23dBm, UL\_MOD\_RB: QPSK, 6 (RB\_Pos:0)**



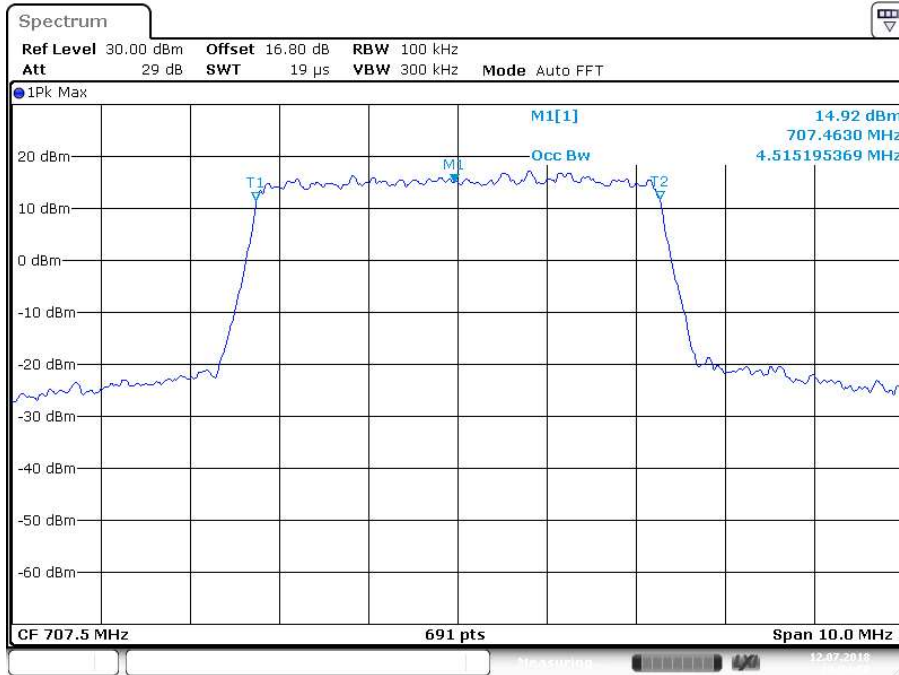
Date: 12 JUL 2018 18:23:03

**LTE Band 12**  
**Occupied Bandwidth: @ULCH: 23095, BW: 3.0 MHz,**  
**ULPower: 23dBm, UL\_MOD\_RB: QPSK, 15 (RB\_Pos:0)**



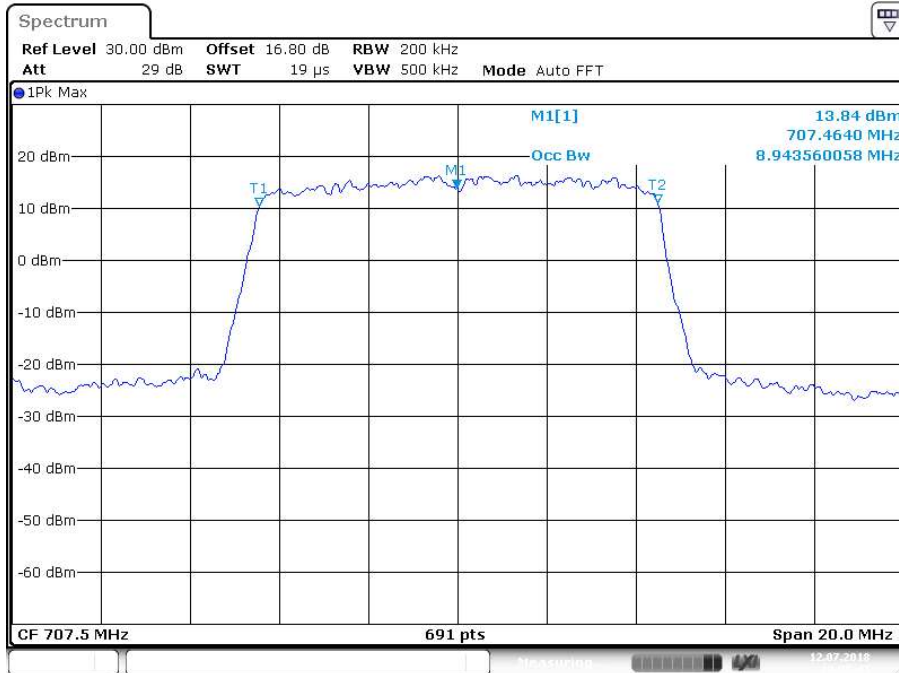
Date: 12 JUL 2018 18:23:57

**LTE Band 12**  
**Occupied Bandwidth: @ULCH: 23095, BW: 5.0 MHz,**  
**ULPower: 23dBm, UL\_MOD\_RB: QPSK, 25 (RB\_Pos:0)**



Date: 12 JUL 2018 18:24:50

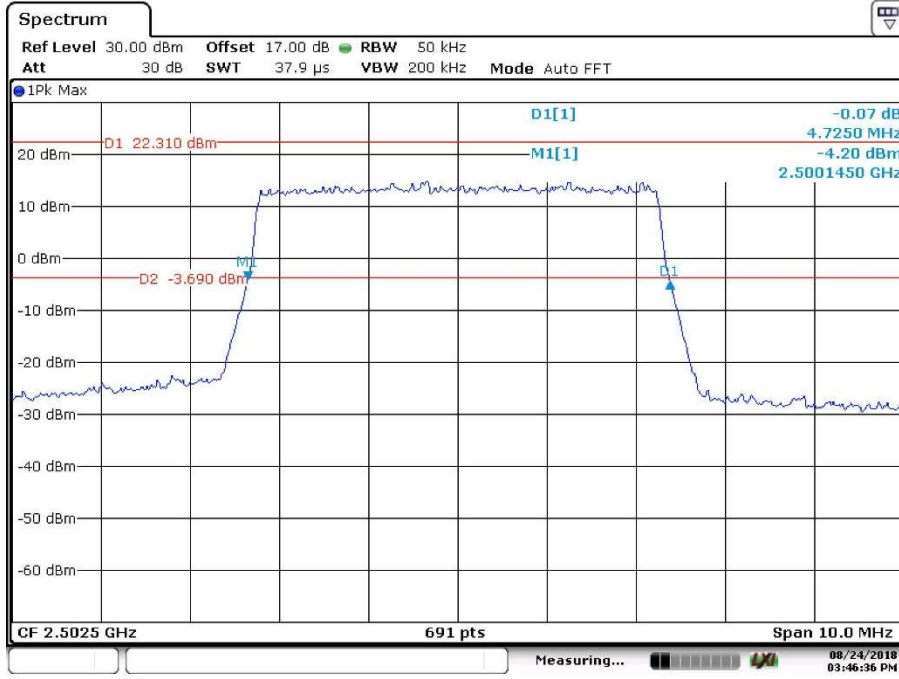
**LTE Band 12**  
**Occupied Bandwidth: @ULCH: 23095, BW: 10 MHz,**  
**ULPower: 23dBm, UL\_MOD\_RB: QPSK, 50 (RB\_Pos:0)**



Date: 12 JUL 2018 18:25:41

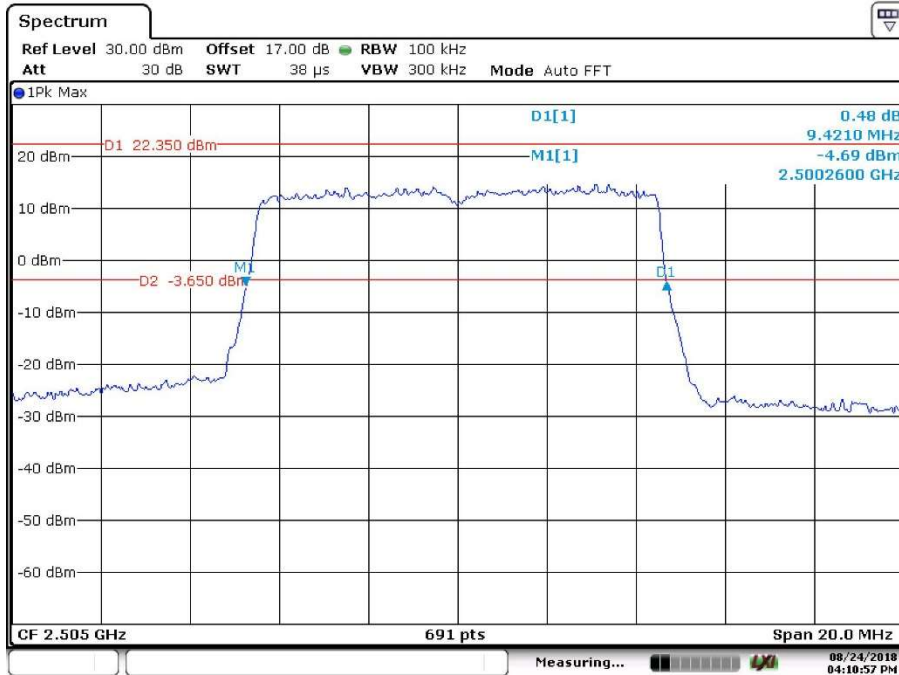
### 5.6 Test Data – Emission Bandwidth (26dB)

**LTE Band 7 – Low Channel**  
**Occupied Bandwidth @ULCH: 20775; BW: 5.0 MHz;**  
**ULPower: 23dBm; UL\_MOD\_RB: QPSK, 25 (RB\_Pos:0)**



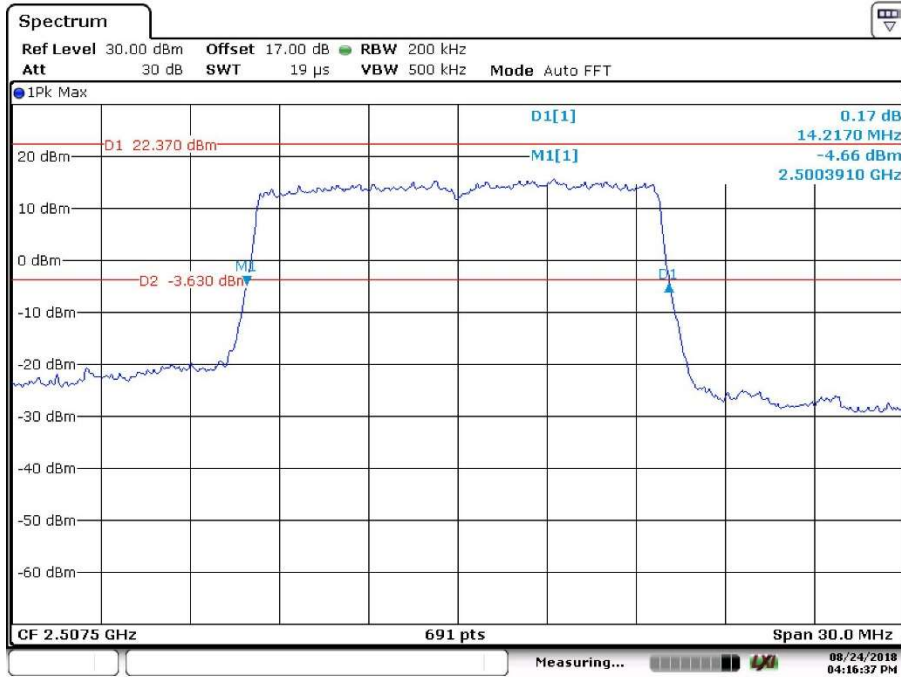
Date: 24.AUG.2018 15:46:36

**LTE Band 7 – Low Channel**  
**Occupied Bandwidth @ULCH: 20800; BW: 10 MHz;**  
**ULPower: 23dBm; UL\_MOD\_RB: QPSK, 50 (RB\_Pos:0)**

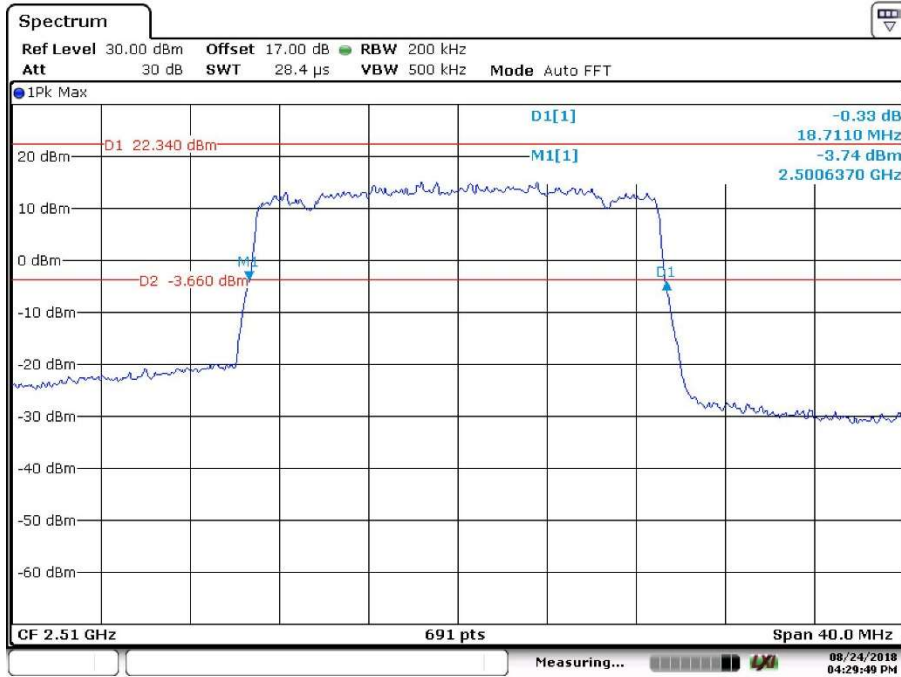


Date: 24.AUG.2018 16:10:56

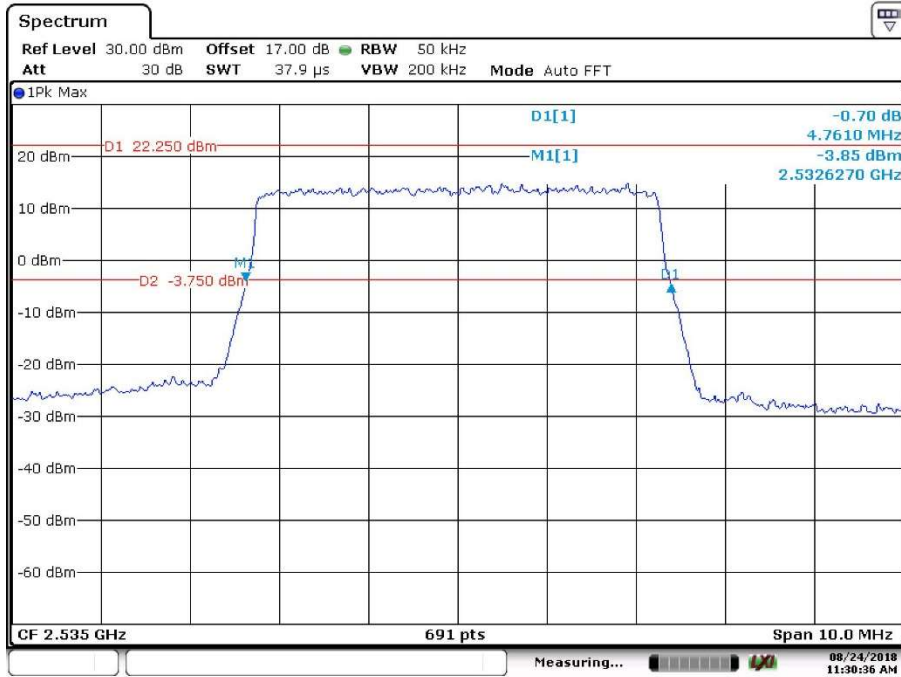
**LTE Band 7 – Low Channel**  
**Occupied Bandwidth @ULCH: 20825; BW: 15 MHz;**  
**ULPower: 23dBm; UL\_MOD\_RB: QPSK, 75 (RB\_Pos:0)**



**LTE Band 7 – Low Channel**  
**Occupied Bandwidth @ULCH: 20850; BW: 20 MHz;**  
**ULPower: 23dBm; UL\_MOD\_RB: QPSK, 100 (RB\_Pos:0)**

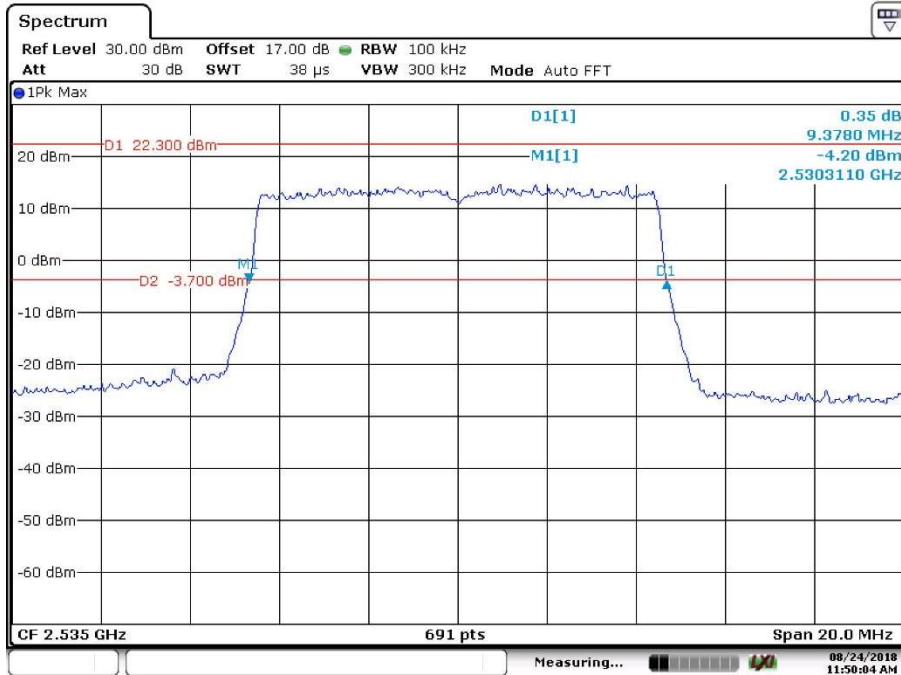


**LTE Band 7 – Mid Channel**  
**Occupied Bandwidth @ULCH: 21100; BW: 5.0 MHz;**  
**ULPower: 23dBm; UL\_MOD\_RB: QPSK, 25 (RB\_Pos:0)**



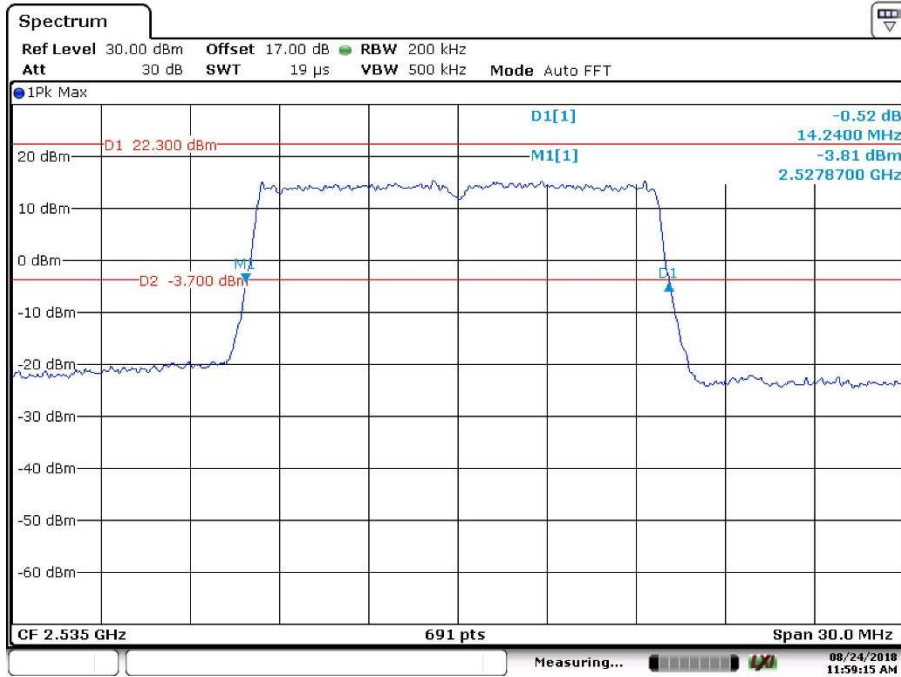
Date: 24.AUG.2018 11:30:36

**LTE Band 7 – Mid Channel**  
**Occupied Bandwidth @ULCH: 21100; BW: 10 MHz;**  
**ULPower: 23dBm; UL\_MOD\_RB: QPSK, 50 (RB\_Pos:0)**



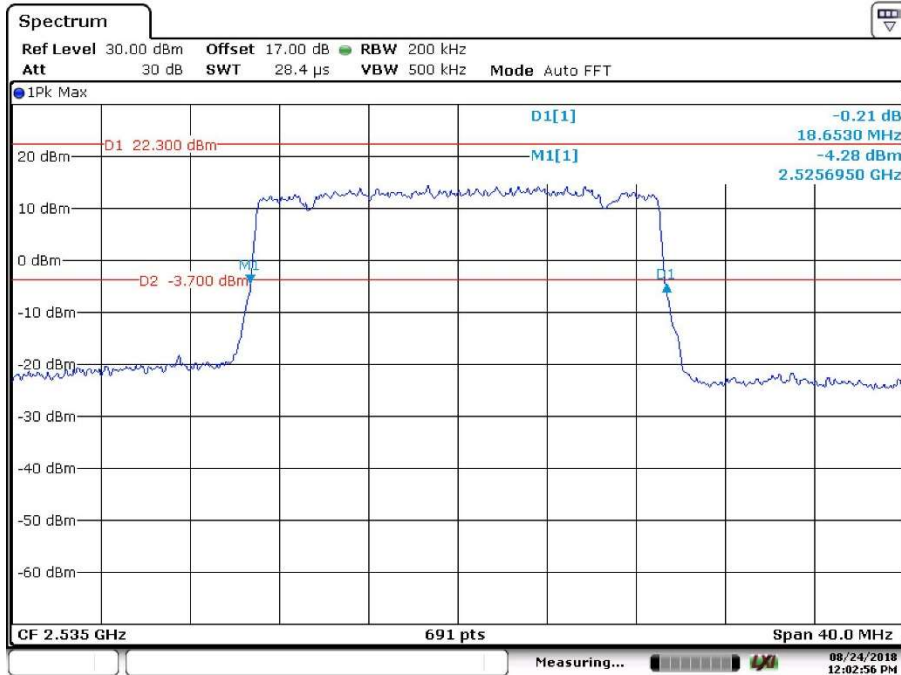
Date: 24.AUG.2018 11:50:04

**LTE Band 7 – Mid Channel**  
**Occupied Bandwidth @ULCH: 21100; BW: 15 MHz;**  
**ULPower: 23dBm; UL\_MOD\_RB: QPSK, 75 (RB\_Pos:0)**



Date: 24.AUG.2018 11:59:15

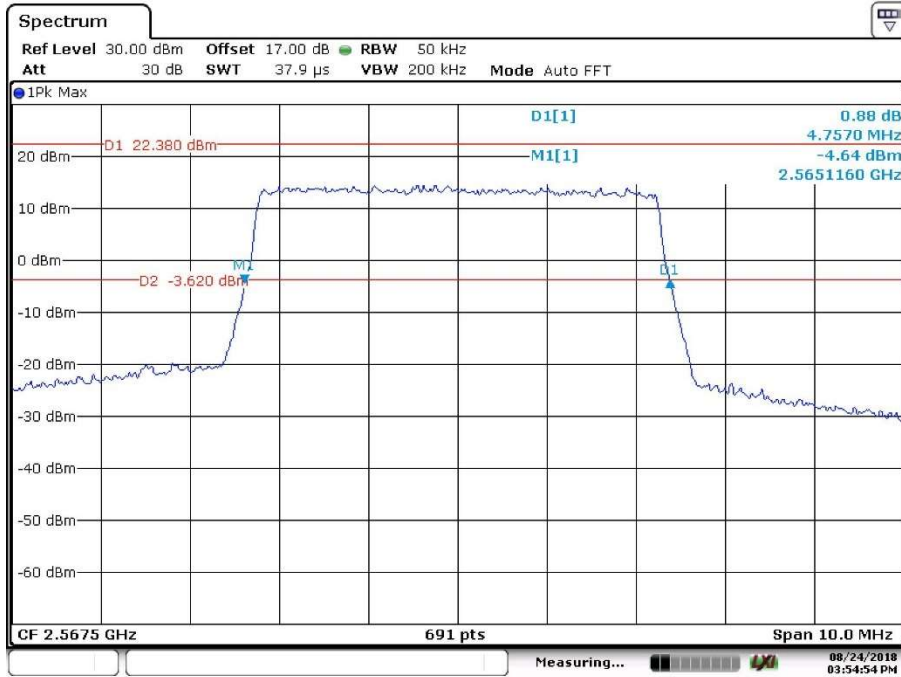
**LTE Band 7 – Mid Channel**  
**Occupied Bandwidth @ULCH: 21100; BW: 20 MHz;**  
**ULPower: 23dBm; UL\_MOD\_RB: QPSK, 100 (RB\_Pos:0)**



Date: 24.AUG.2018 12:02:56

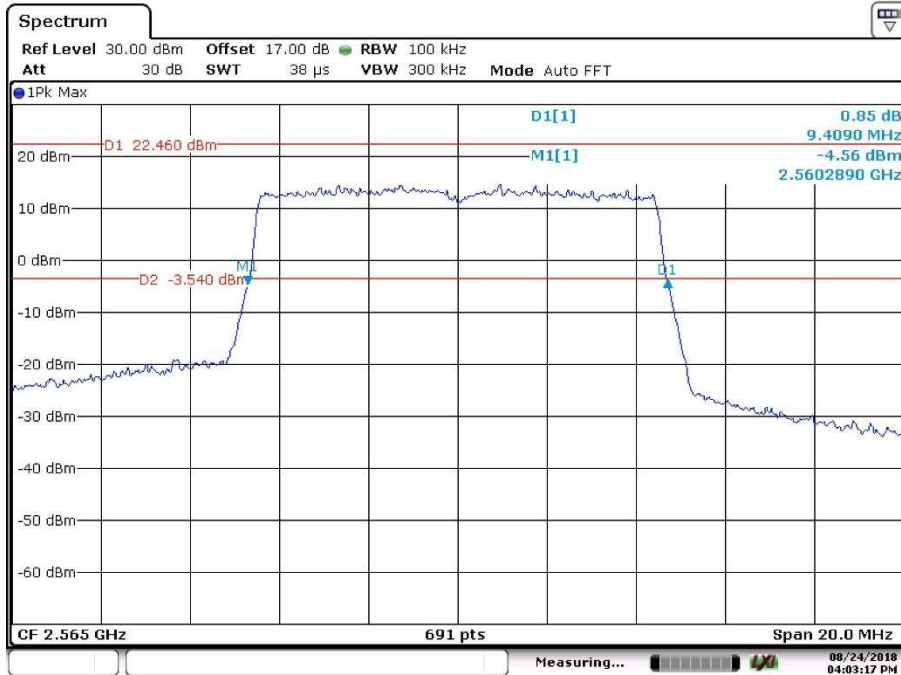


**LTE Band 7 – High Channel**  
**Occupied Bandwidth @ULCH: 21425; BW: 5.0 MHz;**  
**ULPower: 23dBm; UL\_MOD\_RB: QPSK, 25 (RB\_Pos:0)**



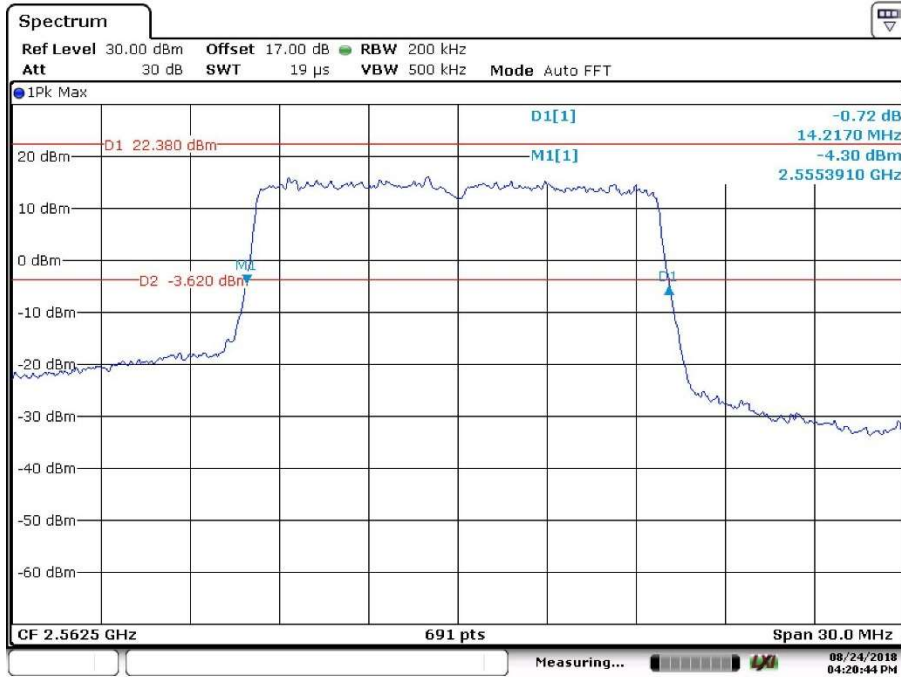
Date: 24.AUG.2018 15:54:53

**LTE Band 7 – High Channel**  
**Occupied Bandwidth @ULCH: 21400; BW: 10 MHz;**  
**ULPower: 23dBm; UL\_MOD\_RB: QPSK, 50 (RB\_Pos:0)**



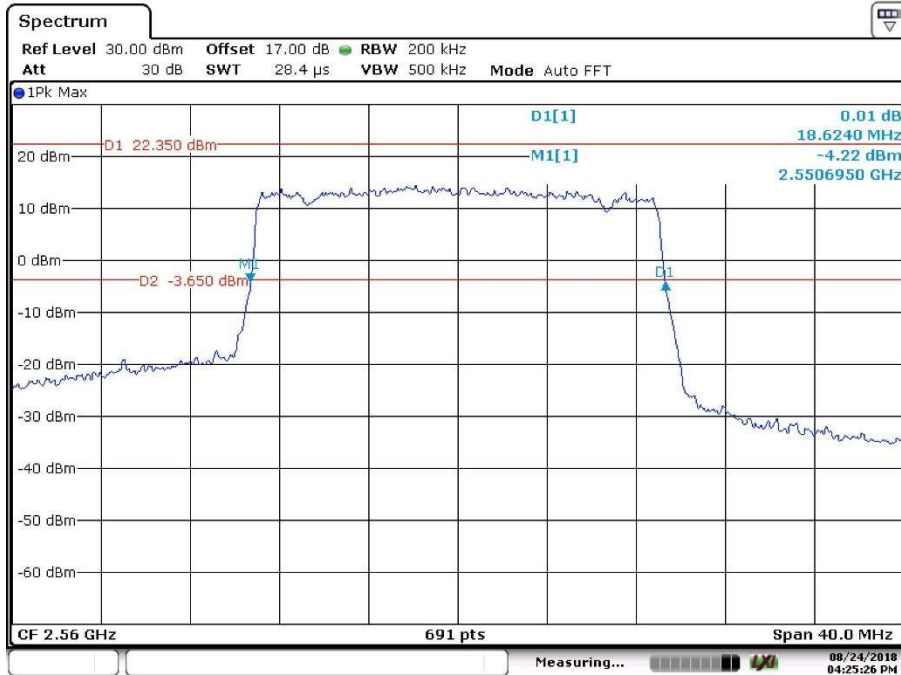
Date: 24.AUG.2018 16:03:17

**LTE Band 7 – High Channel**  
**Occupied Bandwidth @ULCH: 21375; BW: 15 MHz;**  
**ULPower: 23dBm; UL\_MOD\_RB: QPSK, 75 (RB\_Pos:0)**



Date: 24.AUG.2018 16:20:44

**LTE Band 7 – High Channel**  
**Occupied Bandwidth @ULCH: 21350; BW: 20 MHz;**  
**ULPower: 23dBm; UL\_MOD\_RB: QPSK, 100 (RB\_Pos:0)**



Date: 24.AUG.2018 16:25:25