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Report On

FCC Testing of the
Ericsson Remote Radio Unit LTE KRD 901 075/1, KRD 901 075/11
AIR 6468 B41 (2496-2690 MHz), in accordance with
FCC CFR 47 Part 27

COMMERCIAL-IN-CONFIDENCE

FCC ID: TA8AKRD901075

PREPARED BY

A handwritten signature in black ink, appearing to read 'Maggie Whiting'.

Maggie Whiting
Key Account Manager

APPROVED BY

A handwritten signature in black ink, appearing to read 'Nic Forsyth'.

Nic Forsyth
Authorised Signatory

DATED

05 April 2018

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SECTION 1

REPORT INFORMATION



Product Service

1.1 REPORT DETAILS

Manufacturer	Ericsson
Address	Torshamnsgatan 23 Kista SE-16480 Stockholm Sweden
Product Name	AIR 6468 B41
Product Number	KRD 901 075/1, KRD 901 075/11
Serial Number(s)	D826900142
Software Version	CXP2030020/1_R8A29
Hardware Version	R1A
Test Specification/Issue/Date	FCC CFR 47 Part 27: 2017
Start of Test	26 February 2018
Finish of Test	14 March 2018
Name of Engineer(s)	Raj Kumar Kallem Graeme Lawler
Related Document(s)	FCC CFR 47 Part 2: 2017 KDB 971168 D01 v03 KDB 662911 D01 v02r01 ANSI C63.26:2015

ENGINEERING STATEMENT

The measurements shown in this report were made in accordance with the procedures described on test pages. All reported testing was carried out on a sample equipment to demonstrate compliance with FCC CFR 47 Part 27. The sample tested was found to comply with the requirements defined in the applied rules.

Test Engineer(s);

G Lawler

R Kallem

This report has been up-issued to Issue 3 to correct typographical errors.



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1.2 BRIEF SUMMARY OF RESULTS

A brief summary of results for each configuration, in accordance with FCC CFR 47 Part 2, FCC CFR 47 Part 27 is shown below.

Section	Specification Clause		Test Description	Result
	FCC CFR 47 Part 2	FCC CFR 47 Part 27		
2.1	2.1046	27.50(h)	Maximum Peak Output Power and Peak to Average Ratio – Conducted and EIRP calculation	Pass
2.2	2.1049	27.53 (m)	Occupied Bandwidth	Pass
2.3	2.1051	27.53 (m)	Band Edge	Pass
2.4	2.1051	27.53 (m)	Transmitter Spurious Emissions	Pass
2.5	2.1055	27.54	Frequency Stability	Pass
2.6	2.1053	27.53 (m)	Radiated Spurious Emissions	Pass



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1.3 CONFIGURATION DESCRIPTION

Configuration	RAT	No. Of carriers	Carrier Bandwidth	Carrier Frequency Configuration (MHz)		
				Bottom	Middle	Top
A	LTE	1	15 MHz	2503.5	2593	2682.5
			20 MHz	2506	2593	2680
B	LTE	2	15 MHz	2503.5 + 2548.5	2570.5 + 2615.5	2637.5 + 2682.5
			20 MHz	2506+2546	2573+2613	2640+2680
C	LTE	3	15 MHz	2503.5 + 2518.5 + 2548.5	2570.5 + 2585.5 + 2615.5	2637.5 + 2652.5 + 2682.5
			20 MHz	2506+2526+2546	2573+2593+2613	2640+2660+2680



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1.4 DECLARATION OF BUILD STATUS

MAIN EUT	
MANUFACTURING DESCRIPTION	Remote Radio Unit
MANUFACTURER	Ericsson AB
PRODUCT NAME	AIR 6468 B41
PRODUCT NUMBER	KRD 901 075/1, KRD 901 075/11
SERIAL NUMBER	D826900142
HARDWARE VERSION	R1A
SOFTWARE VERSION	CXP2030020/1_R8A29
TRANSMITTER OPERATING RANGE	TR/RX:2496MHz-2690MHz
MODULATIONS	LTE:QPSK,16QAM,64QAM,256QAM
ITU DESIGNATION OF EMISSION	LTE: 15M0F9W,20M0F9W
OUTPUT POWER (RMS) (W or dBm)	32.7dBm (1.875W) per Port
OUTPUT POWER TOLERANCE	+0.6/-2.0 dB
ANTENNA GAIN	24 dBi
FCC ID	TA8AKRD901075
TECHNICAL DESCRIPTION (a brief description of the intended use and operation)	The equipment is the Remote Radio Part of TDD LTE Base Station

No responsibility will be accepted by TÜV SÜD Product Service UK Limited as to the accuracy of the information declared in this document by the manufacturer.



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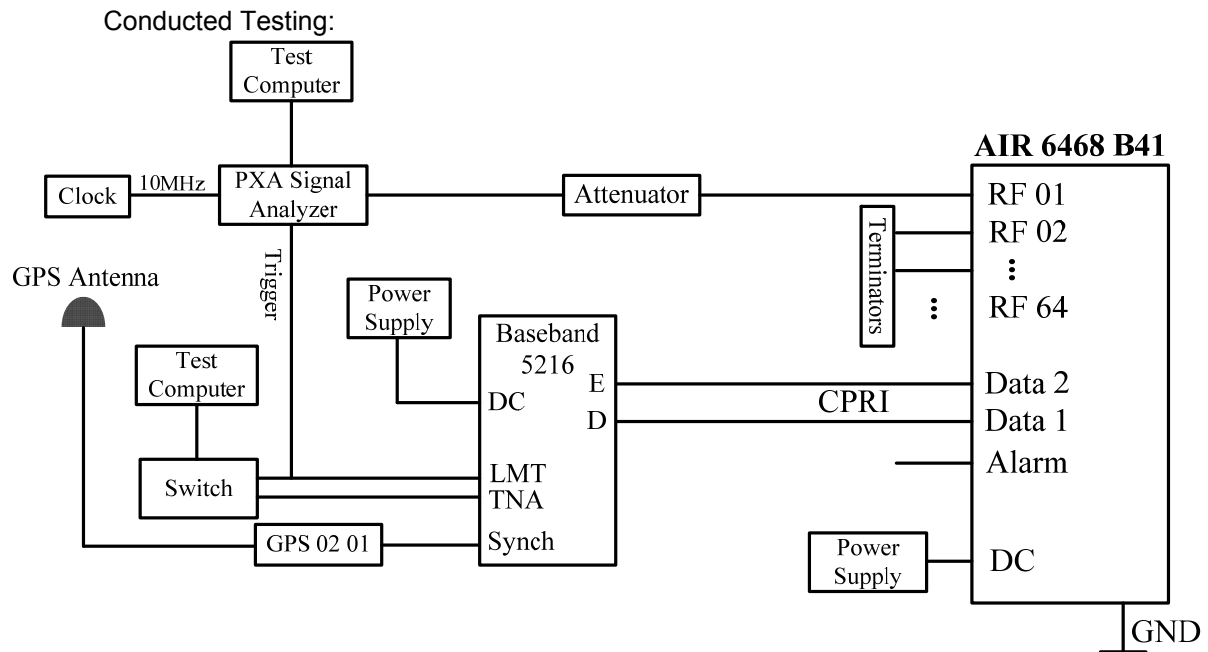
1.5 PRODUCT INFORMATION

1.5.1 Technical Description

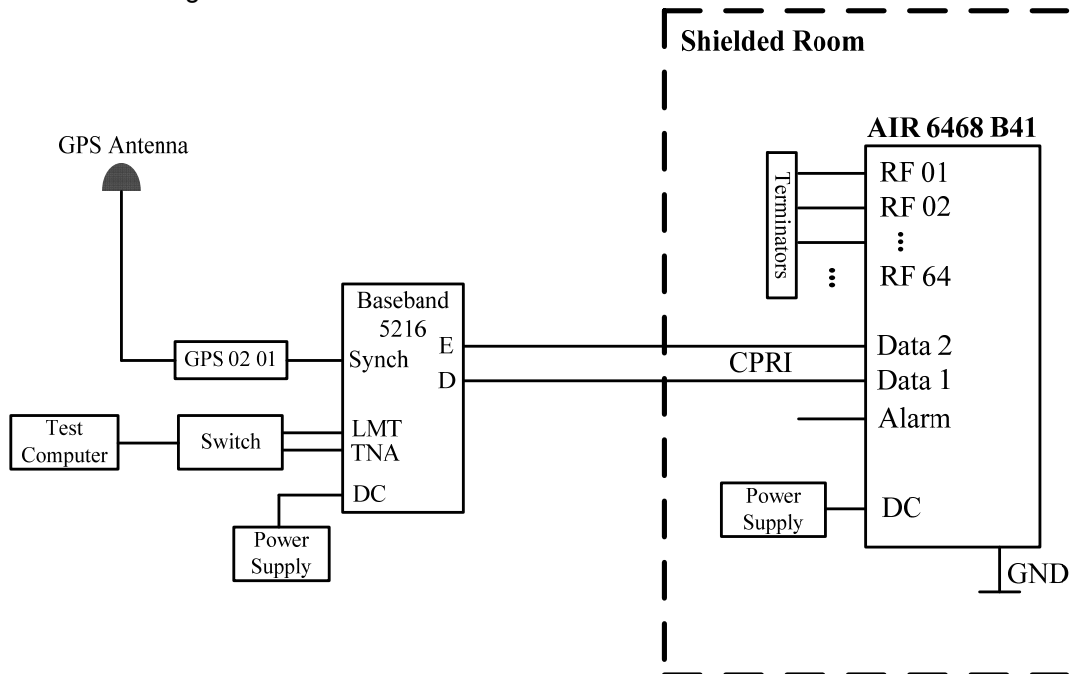
The Equipment Under Test (EUT) AIR 6468 B41 is an Ericsson AB Radio Unit working in the public mobile service 2496-2690 MHz band which provides communication connections to 2496-2690 MHz network. The AIR 6468 B41 operates from a -48V DC supply.

A full technical description can be found in the Manufacturer's documentation.

1.6 TEST SETUP



Radiated Testing:





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1.7 TEST CONDITIONS

For all tests the EUT was set up in accordance with the relevant test standard and to represent typical operating conditions. Tests were applied with the EUT situated in a shielded enclosure, test laboratories or a chamber as appropriate.

The EUT was powered from a -48V DC supply.

FCC Measurement Facility Registration Number
90987 Octagon House, Fareham Test Laboratory

1.8 DEVIATION FROM THE STANDARD

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

1.9 MODIFICATION RECORD

No modifications were made to the EUT during testing.

1.10 ADDITIONAL INFORMATION

Initial pre-testing was carried out to determine the worst case modulation scheme by measuring the output power from QPSK, 16QAM, 64QAM and 256QAM on the middle channel of one antenna port. From these tests, it was determined that 64QAM was the worst case and was used for all testing.

On the worst case modulation scheme, the output power was then measured on all 64 antenna ports. For power measurements, the total power was established by summing all of the antenna port powers.

Complete testing was carried out on the worst case antenna port which was established as being the highest output power from the 64 measured ports. This antenna port was 43. For Conducted Spurious Emissions and Band Edge measurements, the limit line was reduced by $10\log(64) = 18.06$ dB.



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SECTION 2

TEST DETAILS



Product Service

2.1 MAXIMUM PEAK OUTPUT POWER AND PEAK TO AVERAGE RATIO – CONDUCTED AND EIRP

2.1.1 Specification Reference

FCC CFR 47 Part 2, Clause 2.1046
FCC CFR 47 Part 27, Clause 27.50(h)(1)

2.1.2 Date of Test and Modification State

01 and 08 March 2018 - Modification State 0

2.1.3 Test Equipment Used

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

2.1.4 Environmental Conditions

Ambient Temperature	19.5 - 23.7°C
Relative Humidity	16 - 29.1%

2.1.5 Test Method

All measurements were made in accordance with FCC KDB 971168 D01, clause 5.2.1 and summed in accordance with FCC KDB 662911 D01.

Measurements were performed with a Spectrum Analyser using the Band Power measurement function. The detector was set to RMS with an RBW of at least 1 % of the carrier bandwidth and a VBW of at least 3 times the RBW. The integration bandwidth was configured to be wider than the total bandwidth of the carrier or combinations of carriers, (multi-carrier). Using a sweep time of auto, measurements were performed over 200 samples, with the average measurement recorded.

Due to Average measurements being recorded, an additional Peak to Average measurement was made in all single carrier configurations. This was achieved using the CCDF function of the Spectrum Analyser with the RBW being set to a value wider than the largest signal being measured – in this case – 20 MHz.

Two polarizations are generated for the beam, 32 ports are used to create each polarization. The antenna gain for each polarization is declared as 24 dBi, therefore the EIRP for each polarization is calculated as the sum of the power over 32 ports plus the antenna gain. This calculation is applied for each polarization and then each polarization EIRP is summed to calculate the overall EIRP.



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2.1.6 Test Results

Configuration A

Maximum Output Power 32.7 dBm / Port

Antenna	LTE Modulation	LTE Carrier Bandwidth	Peak to Average Ratio (PAR) / Output Power	
			Channel Position B	
			PAR	Average Power
			dB	dBm
1	64QAM	15.0 MHz	7.18	32.07
2	64QAM	15.0 MHz	7.21	31.89
3	64QAM	15.0 MHz	7.12	31.93
4	64QAM	15.0 MHz	7.12	31.85
5	64QAM	15.0 MHz	7.16	31.90
6	64QAM	15.0 MHz	7.16	31.86
7	64QAM	15.0 MHz	7.16	31.89
8	64QAM	15.0 MHz	7.15	32.11
9	64QAM	15.0 MHz	7.14	31.83
10	64QAM	15.0 MHz	7.15	31.85
11	64QAM	15.0 MHz	7.10	32.08
12	64QAM	15.0 MHz	7.11	31.91
13	64QAM	15.0 MHz	7.10	32.24
14	64QAM	15.0 MHz	7.10	31.98
15	64QAM	15.0 MHz	7.11	31.90
16	64QAM	15.0 MHz	7.14	31.77
17	64QAM	15.0 MHz	7.15	31.82
18	64QAM	15.0 MHz	7.15	31.80
19	64QAM	15.0 MHz	7.15	31.91
20	64QAM	15.0 MHz	7.15	31.79
21	64QAM	15.0 MHz	7.16	31.77
22	64QAM	15.0 MHz	7.15	31.84
23	64QAM	15.0 MHz	7.20	31.58
24	64QAM	15.0 MHz	7.19	31.82
25	64QAM	15.0 MHz	7.11	31.88
26	64QAM	15.0 MHz	7.11	31.98
27	64QAM	15.0 MHz	7.11	31.87
28	64QAM	15.0 MHz	7.12	32.04
29	64QAM	15.0 MHz	7.10	31.89
30	64QAM	15.0 MHz	7.11	31.89
31	64QAM	15.0 MHz	7.15	31.81
32	64QAM	15.0 MHz	7.15	31.74
Total Power Antennas 1-32			-	46.94
Total Power Antennas 1-32 +24 dBi Gain			-	70.94
33	64QAM	15.0 MHz	7.15	31.80
34	64QAM	15.0 MHz	7.17	31.81
35	64QAM	15.0 MHz	7.15	31.78
36	64QAM	15.0 MHz	7.15	31.85
37	64QAM	15.0 MHz	7.14	32.09
38	64QAM	15.0 MHz	7.13	31.81
39	64QAM	15.0 MHz	7.18	31.75
40	64QAM	15.0 MHz	7.18	31.79
41	64QAM	15.0 MHz	7.14	31.75
42	64QAM	15.0 MHz	7.14	31.89



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Antenna	LTE Modulation	LTE Carrier Bandwidth	Peak to Average Ratio (PAR) / Output Power	
			Channel Position B	
			PAR	Average Power
			dB	dBm
43	64QAM	15.0 MHz	7.15	32.08
44	64QAM	15.0 MHz	7.13	31.91
45	64QAM	15.0 MHz	7.12	31.96
46	64QAM	15.0 MHz	7.12	31.92
47	64QAM	15.0 MHz	7.17	31.90
48	64QAM	15.0 MHz	7.17	31.88
49	64QAM	15.0 MHz	7.19	32.05
50	64QAM	15.0 MHz	7.20	31.98
51	64QAM	15.0 MHz	7.13	31.99
52	64QAM	15.0 MHz	7.13	32.10
53	64QAM	15.0 MHz	7.16	31.87
54	64QAM	15.0 MHz	7.15	31.84
55	64QAM	15.0 MHz	7.16	31.83
56	64QAM	15.0 MHz	7.17	31.97
57	64QAM	15.0 MHz	7.17	31.95
58	64QAM	15.0 MHz	7.19	31.83
59	64QAM	15.0 MHz	7.13	31.79
60	64QAM	15.0 MHz	7.15	31.94
61	64QAM	15.0 MHz	7.15	32.01
62	64QAM	15.0 MHz	7.15	32.07
63	64QAM	15.0 MHz	7.16	31.94
64	64QAM	15.0 MHz	7.16	31.86
Total Power Antennas 33-64			-	46.96
Total Power Antennas 33-64 +24 dBi Gain			-	70.96
EIRP			-	73.96

Antenna	LTE Modulation	LTE Carrier Bandwidth	Peak to Average Ratio (PAR) / Output Power	
			Channel Position B	
			PAR (dB)	Average Power (dBm)
1	16QAM	20.0 MHz	7.20	32.21
2	16QAM	20.0 MHz	7.22	32.13
3	16QAM	20.0 MHz	7.15	32.19
4	16QAM	20.0 MHz	7.14	32.03
5	16QAM	20.0 MHz	7.18	32.18
6	16QAM	20.0 MHz	7.18	32.08
7	16QAM	20.0 MHz	7.19	31.90
8	16QAM	20.0 MHz	6.99	31.74
9	16QAM	20.0 MHz	7.16	32.08
10	16QAM	20.0 MHz	6.79	32.08
11	16QAM	20.0 MHz	7.12	32.15
12	16QAM	20.0 MHz	7.13	31.76
13	16QAM	20.0 MHz	7.13	32.31
14	16QAM	20.0 MHz	6.93	32.19
15	16QAM	20.0 MHz	7.13	32.06
16	16QAM	20.0 MHz	6.76	31.96
17	16QAM	20.0 MHz	7.20	32.05
18	16QAM	20.0 MHz	7.20	32.21
19	16QAM	20.0 MHz	7.20	32.14



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Antenna	LTE Modulation	LTE Carrier Bandwidth	Peak to Average Ratio (PAR) / Output Power	
			Channel Position B	
			PAR (dB)	Average Power (dBm)
20	16QAM	20.0 MHz	7.20	32.11
21	16QAM	20.0 MHz	7.20	32.10
22	16QAM	20.0 MHz	7.20	32.08
23	16QAM	20.0 MHz	7.25	31.79
24	16QAM	20.0 MHz	7.23	31.88
25	16QAM	20.0 MHz	7.15	31.99
26	16QAM	20.0 MHz	7.00	32.18
27	16QAM	20.0 MHz	7.01	32.25
28	16QAM	20.0 MHz	7.16	32.23
29	16QAM	20.0 MHz	7.14	32.19
30	16QAM	20.0 MHz	7.17	32.18
31	16QAM	20.0 MHz	7.19	32.08
32	16QAM	20.0 MHz	7.20	32.01
Total Power Antennas 1-32			-	47.13
Total Power Antennas 1-32 +24 dBi Gain			-	71.13
33	16QAM	20.0 MHz	7.19	32.01
34	16QAM	20.0 MHz	7.22	31.79
35	16QAM	20.0 MHz	7.19	32.09
36	16QAM	20.0 MHz	7.20	31.97
37	16QAM	20.0 MHz	7.18	32.22
38	16QAM	20.0 MHz	7.19	31.98
39	16QAM	20.0 MHz	7.22	32.17
40	16QAM	20.0 MHz	7.21	31.84
41	16QAM	20.0 MHz	7.18	31.71
42	16QAM	20.0 MHz	7.20	31.79
43	16QAM	20.0 MHz	7.20	32.33
44	16QAM	20.0 MHz	7.19	31.98
45	16QAM	20.0 MHz	7.15	32.02
46	16QAM	20.0 MHz	7.17	32.17
47	16QAM	20.0 MHz	7.22	32.11
48	16QAM	20.0 MHz	7.22	32.20
49	16QAM	20.0 MHz	7.20	32.41
50	16QAM	20.0 MHz	7.22	32.32
51	16QAM	20.0 MHz	7.15	32.53
52	16QAM	20.0 MHz	7.15	32.50
53	16QAM	20.0 MHz	7.20	32.39
54	16QAM	20.0 MHz	7.17	32.28
55	16QAM	20.0 MHz	7.19	32.28
56	16QAM	20.0 MHz	7.19	32.27
57	16QAM	20.0 MHz	7.19	32.35
58	16QAM	20.0 MHz	7.26	32.26
59	16QAM	20.0 MHz	7.14	32.36
60	16QAM	20.0 MHz	7.18	32.49
61	16QAM	20.0 MHz	7.18	32.62
62	16QAM	20.0 MHz	7.18	32.46
63	16QAM	20.0 MHz	7.18	32.32
64	16QAM	20.0 MHz	7.19	32.19
Total Power Antennas 33-64			-	47.26
Total Power Antennas 33-64 +24 dBi Gain			-	71.26
EIRP			-	74.21



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Configuration A

Maximum Output Power 32.7 dBm / Port

Antenna	LTE Modulation	LTE Carrier Bandwidth	Peak to Average Ratio (PAR) / Output Power	
			Channel Position M	
			PAR	Average Power
			dB	dBm
1	64QAM	15.0 MHz	7.12	32.14
2	64QAM	15.0 MHz	7.11	32.19
3	64QAM	15.0 MHz	7.04	32.13
4	64QAM	15.0 MHz	7.05	32.05
5	64QAM	15.0 MHz	7.08	32.05
6	64QAM	15.0 MHz	7.08	32.08
7	64QAM	15.0 MHz	7.07	32.19
8	64QAM	15.0 MHz	7.06	32.30
9	64QAM	15.0 MHz	7.05	32.15
10	64QAM	15.0 MHz	7.06	32.15
11	64QAM	15.0 MHz	7.01	32.29
12	64QAM	15.0 MHz	7.02	32.13
13	64QAM	15.0 MHz	7.01	32.28
14	64QAM	15.0 MHz	7.02	32.20
15	64QAM	15.0 MHz	7.03	32.32
16	64QAM	15.0 MHz	7.03	32.12
17	64QAM	15.0 MHz	7.08	32.06
18	64QAM	15.0 MHz	7.08	32.01
19	64QAM	15.0 MHz	7.06	32.03
20	64QAM	15.0 MHz	7.06	31.97
21	64QAM	15.0 MHz	7.05	32.05
22	64QAM	15.0 MHz	7.06	32.13
23	64QAM	15.0 MHz	7.10	32.05
24	64QAM	15.0 MHz	7.10	32.12
25	64QAM	15.0 MHz	7.02	32.03
26	64QAM	15.0 MHz	7.02	32.20
27	64QAM	15.0 MHz	7.04	32.14
28	64QAM	15.0 MHz	7.04	32.01
29	64QAM	15.0 MHz	7.00	31.97
30	64QAM	15.0 MHz	7.01	32.15
31	64QAM	15.0 MHz	7.07	32.11
32	64QAM	15.0 MHz	7.07	32.04
Total Power Antennas 1-32			-	47.17
Total Power Antennas 1-32 +24 dBi Gain			-	71.17
33	64QAM	15.0 MHz	7.08	32.00
34	64QAM	15.0 MHz	7.08	32.15
35	64QAM	15.0 MHz	7.06	32.12
36	64QAM	15.0 MHz	7.07	32.01
37	64QAM	15.0 MHz	7.07	32.41
38	64QAM	15.0 MHz	7.05	32.14
39	64QAM	15.0 MHz	7.10	32.03
40	64QAM	15.0 MHz	7.10	31.99
41	64QAM	15.0 MHz	7.05	32.20
42	64QAM	15.0 MHz	7.05	32.21
43	64QAM	15.0 MHz	7.07	32.52
44	64QAM	15.0 MHz	7.07	32.14



Product Service

Antenna	LTE Modulation	LTE Carrier Bandwidth	Peak to Average Ratio (PAR) / Output Power	
			Channel Position M	
			PAR	Average Power
			dB	dBm
45	64QAM	15.0 MHz	7.04	32.03
46	64QAM	15.0 MHz	7.03	32.26
47	64QAM	15.0 MHz	7.11	32.28
48	64QAM	15.0 MHz	7.11	32.20
49	64QAM	15.0 MHz	7.11	32.26
50	64QAM	15.0 MHz	7.11	32.27
51	64QAM	15.0 MHz	7.04	32.11
52	64QAM	15.0 MHz	7.04	32.13
53	64QAM	15.0 MHz	7.08	31.95
54	64QAM	15.0 MHz	7.08	31.98
55	64QAM	15.0 MHz	7.06	32.33
56	64QAM	15.0 MHz	7.06	32.16
57	64QAM	15.0 MHz	7.08	32.14
58	64QAM	15.0 MHz	7.08	32.11
59	64QAM	15.0 MHz	7.04	32.00
60	64QAM	15.0 MHz	7.05	32.12
61	64QAM	15.0 MHz	7.04	31.99
62	64QAM	15.0 MHz	7.05	32.36
63	64QAM	15.0 MHz	7.06	32.13
64	64QAM	15.0 MHz	7.06	32.09
Total Power Antennas 33-64			-	47.2
Total Power Antennas 33-64 +24 dBi Gain			-	71.2
EIRP			-	74.2
1	64QAM	20.0 MHz	7.10	32.21
2	64QAM	20.0 MHz	7.11	32.16
3	64QAM	20.0 MHz	7.03	32.46
4	64QAM	20.0 MHz	7.02	32.33
5	64QAM	20.0 MHz	7.07	32.26
6	64QAM	20.0 MHz	7.06	32.33
7	64QAM	20.0 MHz	7.05	32.23
8	64QAM	20.0 MHz	7.05	32.27
9	64QAM	20.0 MHz	7.04	32.35
10	64QAM	20.0 MHz	7.04	32.43
11	64QAM	20.0 MHz	6.75	32.66
12	64QAM	20.0 MHz	7.01	32.23
13	64QAM	20.0 MHz	7.01	32.47
14	64QAM	20.0 MHz	7.00	32.37
15	64QAM	20.0 MHz	6.75	31.98
16	64QAM	20.0 MHz	6.48	32.05
17	64QAM	20.0 MHz	6.53	32.01
18	64QAM	20.0 MHz	7.07	32.36
19	64QAM	20.0 MHz	7.05	32.40
20	64QAM	20.0 MHz	7.05	32.21
21	64QAM	20.0 MHz	7.05	32.18
22	64QAM	20.0 MHz	7.05	32.37
23	64QAM	20.0 MHz	7.08	32.23
24	64QAM	20.0 MHz	7.08	32.24
25	64QAM	20.0 MHz	7.01	32.00
26	64QAM	20.0 MHz	6.93	32.43



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Antenna	LTE Modulation	LTE Carrier Bandwidth	Peak to Average Ratio (PAR) / Output Power	
			Channel Position M	
			PAR	Average Power
			dB	dBm
27	64QAM	20.0 MHz	6.95	32.27
28	64QAM	20.0 MHz	7.03	32.28
29	64QAM	20.0 MHz	6.99	32.25
30	64QAM	20.0 MHz	6.99	32.47
31	64QAM	20.0 MHz	7.06	32.15
32	64QAM	20.0 MHz	7.06	32.23
Total Power Antennas 1-32			-	47.33
Total Power Antennas 1-32 +24 dBi Gain			-	71.33
33	64QAM	20.0 MHz	7.07	32.10
34	64QAM	20.0 MHz	7.06	32.15
35	64QAM	20.0 MHz	7.04	32.26
36	64QAM	20.0 MHz	7.05	32.13
37	64QAM	20.0 MHz	7.05	32.44
38	64QAM	20.0 MHz	7.04	32.17
39	64QAM	20.0 MHz	7.08	32.29
40	64QAM	20.0 MHz	7.08	32.20
41	64QAM	20.0 MHz	7.03	32.10
42	64QAM	20.0 MHz	7.03	32.18
43	64QAM	20.0 MHz	7.05	32.79
44	64QAM	20.0 MHz	7.06	32.23
45	64QAM	20.0 MHz	7.02	32.16
46	64QAM	20.0 MHz	6.75	32.35
47	64QAM	20.0 MHz	7.09	32.37
48	64QAM	20.0 MHz	7.10	32.34
49	64QAM	20.0 MHz	7.10	32.40
50	64QAM	20.0 MHz	7.10	32.58
51	64QAM	20.0 MHz	7.03	32.63
52	64QAM	20.0 MHz	7.04	32.52
53	64QAM	20.0 MHz	7.08	32.34
54	64QAM	20.0 MHz	7.07	32.38
55	64QAM	20.0 MHz	7.05	32.38
56	64QAM	20.0 MHz	7.05	32.42
57	64QAM	20.0 MHz	7.07	32.31
58	64QAM	20.0 MHz	7.07	32.51
59	64QAM	20.0 MHz	7.04	32.53
60	64QAM	20.0 MHz	7.05	32.57
61	64QAM	20.0 MHz	7.04	32.44
62	64QAM	20.0 MHz	7.03	32.67
63	64QAM	20.0 MHz	7.06	32.28
64	64QAM	20.0 MHz	7.05	32.32
Total Power Antennas 33-64			-	47.42
Total Power Antennas 33-64 +24 dBi Gain			-	71.42
EIRP			-	74.38



Product Service

Configuration A

Maximum Output Power 32.7 dBm

Antenna	LTE Modulation	LTE Carrier Bandwidth	Peak to Average Ratio (PAR) / Output Power	
			Channel Position T	
			PAR	Average Power
			dB	dBm
1	64QAM	15.0 MHz	7.19	32.13
2	64QAM	15.0 MHz	7.19	32.18
3	64QAM	15.0 MHz	7.11	32.17
4	64QAM	15.0 MHz	7.10	32.03
5	64QAM	15.0 MHz	7.16	32.13
6	64QAM	15.0 MHz	7.17	32.06
7	64QAM	15.0 MHz	7.14	32.08
8	64QAM	15.0 MHz	7.14	32.19
9	64QAM	15.0 MHz	7.12	32.20
10	64QAM	15.0 MHz	7.12	32.14
11	64QAM	15.0 MHz	7.12	32.35
12	64QAM	15.0 MHz	7.11	32.02
13	64QAM	15.0 MHz	7.10	32.48
14	64QAM	15.0 MHz	7.09	32.27
15	64QAM	15.0 MHz	7.12	32.01
16	64QAM	15.0 MHz	7.13	32.02
17	64QAM	15.0 MHz	7.17	32.11
18	64QAM	15.0 MHz	7.16	32.12
19	64QAM	15.0 MHz	7.13	32.06
20	64QAM	15.0 MHz	7.15	32.07
21	64QAM	15.0 MHz	7.16	32.10
22	64QAM	15.0 MHz	7.16	32.00
23	64QAM	15.0 MHz	7.17	32.00
24	64QAM	15.0 MHz	7.19	32.09
25	64QAM	15.0 MHz	7.11	32.06
26	64QAM	15.0 MHz	7.10	32.14
27	64QAM	15.0 MHz	7.14	32.11
28	64QAM	15.0 MHz	7.15	32.21
29	64QAM	15.0 MHz	7.08	31.96
30	64QAM	15.0 MHz	7.09	32.12
31	64QAM	15.0 MHz	7.15	31.98
32	64QAM	15.0 MHz	7.17	32.00
Total Power Antennas 1-32			-	47.17
Total Power Antennas 1-32 +24 dBi Gain			-	71.17
33	64QAM	15.0 MHz	7.17	31.95
34	64QAM	15.0 MHz	7.18	32.08
35	64QAM	15.0 MHz	7.15	32.12
36	64QAM	15.0 MHz	7.14	32.05
37	64QAM	15.0 MHz	7.16	32.46
38	64QAM	15.0 MHz	7.17	31.99
39	64QAM	15.0 MHz	7.18	32.03
40	64QAM	15.0 MHz	7.18	32.10
41	64QAM	15.0 MHz	7.13	32.18
42	64QAM	15.0 MHz	7.13	32.20
43	64QAM	15.0 MHz	7.15	32.43
44	64QAM	15.0 MHz	7.17	32.14



Product Service

Antenna	LTE Modulation	LTE Carrier Bandwidth	Peak to Average Ratio (PAR) / Output Power	
			Channel Position T	
			PAR	Average Power
			dB	dBm
45	64QAM	15.0 MHz	7.12	32.04
46	64QAM	15.0 MHz	7.13	32.33
47	64QAM	15.0 MHz	7.19	32.17
48	64QAM	15.0 MHz	7.20	32.29
49	64QAM	15.0 MHz	7.18	32.33
50	64QAM	15.0 MHz	7.18	32.35
51	64QAM	15.0 MHz	7.11	32.11
52	64QAM	15.0 MHz	7.12	32.17
53	64QAM	15.0 MHz	7.17	32.24
54	64QAM	15.0 MHz	7.17	31.97
55	64QAM	15.0 MHz	7.14	32.02
56	64QAM	15.0 MHz	7.13	32.16
57	64QAM	15.0 MHz	7.14	32.00
58	64QAM	15.0 MHz	7.14	32.16
59	64QAM	15.0 MHz	7.14	32.06
60	64QAM	15.0 MHz	7.15	32.23
61	64QAM	15.0 MHz	7.13	32.14
62	64QAM	15.0 MHz	7.11	32.29
63	64QAM	15.0 MHz	7.14	32.24
64	64QAM	15.0 MHz	7.15	31.98
Total Power Antennas 33-64			-	47.21
Total Power Antennas 33-64 +24 dBi Gain			-	71.21
EIRP			-	74.20
1	64QAM	20.0 MHz	7.22	32.32
2	64QAM	20.0 MHz	7.21	32.37
3	64QAM	20.0 MHz	7.14	32.22
4	64QAM	20.0 MHz	7.13	32.27
5	64QAM	20.0 MHz	7.17	32.39
6	64QAM	20.0 MHz	7.19	32.22
7	64QAM	20.0 MHz	6.96	31.45
8	64QAM	20.0 MHz	7.16	32.28
9	64QAM	20.0 MHz	6.92	31.87
10	64QAM	20.0 MHz	7.16	32.47
11	64QAM	20.0 MHz	6.70	32.29
12	64QAM	20.0 MHz	7.12	32.33
13	64QAM	20.0 MHz	6.88	32.59
14	64QAM	20.0 MHz	7.12	32.55
15	64QAM	20.0 MHz	6.35	31.92
16	64QAM	20.0 MHz	7.17	32.19
17	64QAM	20.0 MHz	6.37	32.00
18	64QAM	20.0 MHz	7.19	32.23
19	64QAM	20.0 MHz	7.16	32.41
20	64QAM	20.0 MHz	7.15	32.30
21	64QAM	20.0 MHz	7.17	32.45
22	64QAM	20.0 MHz	7.17	32.37
23	64QAM	20.0 MHz	7.20	32.27
24	64QAM	20.0 MHz	7.20	32.10
25	64QAM	20.0 MHz	7.12	32.19
26	64QAM	20.0 MHz	7.11	32.25



Product Service

Antenna	LTE Modulation	LTE Carrier Bandwidth	Peak to Average Ratio (PAR) / Output Power	
			Channel Position T	
			PAR	Average Power
			dB	dBm
27	64QAM	20.0 MHz	7.01	32.41
28	64QAM	20.0 MHz	7.16	32.52
29	64QAM	20.0 MHz	7.10	32.31
30	64QAM	20.0 MHz	7.11	32.51
31	64QAM	20.0 MHz	7.19	32.11
32	64QAM	20.0 MHz	7.18	32.05
Total Power Antennas 1-32			-	47.31
Total Power Antennas 1-32 +24 dBi Gain			-	71.31
33	64QAM	20.0 MHz	7.19	32.15
34	64QAM	20.0 MHz	7.20	32.15
35	64QAM	20.0 MHz	7.17	32.30
36	64QAM	20.0 MHz	7.14	32.20
37	64QAM	20.0 MHz	7.15	32.51
38	64QAM	20.0 MHz	7.17	32.36
39	64QAM	20.0 MHz	7.20	32.18
40	64QAM	20.0 MHz	7.19	32.08
41	64QAM	20.0 MHz	7.15	32.18
42	64QAM	20.0 MHz	7.14	32.13
43	64QAM	20.0 MHz	7.18	32.32
44	64QAM	20.0 MHz	7.17	32.39
45	64QAM	20.0 MHz	6.89	32.27
46	64QAM	20.0 MHz	7.14	32.48
47	64QAM	20.0 MHz	7.20	32.52
48	64QAM	20.0 MHz	7.22	32.41
49	64QAM	20.0 MHz	7.21	32.47
50	64QAM	20.0 MHz	7.21	32.60
51	64QAM	20.0 MHz	7.14	32.58
52	64QAM	20.0 MHz	7.15	32.53
53	64QAM	20.0 MHz	7.16	32.43
54	64QAM	20.0 MHz	7.19	32.41
55	64QAM	20.0 MHz	7.15	32.47
56	64QAM	20.0 MHz	7.16	32.41
57	64QAM	20.0 MHz	7.18	32.46
58	64QAM	20.0 MHz	7.16	32.65
59	64QAM	20.0 MHz	7.17	32.50
60	64QAM	20.0 MHz	7.17	32.66
61	64QAM	20.0 MHz	7.12	32.50
62	64QAM	20.0 MHz	7.13	32.71
63	64QAM	20.0 MHz	7.17	32.48
64	64QAM	20.0 MHz	7.18	32.19
Total Power Antennas 33-64			-	47.45
Total Power Antennas 33-64 +24 dBi Gain			-	71.45
EIRP			-	74.39



Product Service

Configuration B

Maximum Output Power 32.7 dBm

Antenna	LTE Modulation	LTE Carrier Bandwidth	Peak to Average Ratio (PAR) / Output Power
			Average Power
			dBm
1	64QAM	15.0 MHz	31.95
2	64QAM	15.0 MHz	32.04
3	64QAM	15.0 MHz	32.01
4	64QAM	15.0 MHz	32.11
5	64QAM	15.0 MHz	31.83
6	64QAM	15.0 MHz	31.92
7	64QAM	15.0 MHz	32.04
8	64QAM	15.0 MHz	32.03
9	64QAM	15.0 MHz	32.01
10	64QAM	15.0 MHz	31.89
11	64QAM	15.0 MHz	32.19
12	64QAM	15.0 MHz	31.99
13	64QAM	15.0 MHz	32.36
14	64QAM	15.0 MHz	31.90
15	64QAM	15.0 MHz	31.87
16	64QAM	15.0 MHz	32.02
17	64QAM	15.0 MHz	31.94
18	64QAM	15.0 MHz	31.89
19	64QAM	15.0 MHz	32.04
20	64QAM	15.0 MHz	31.99
21	64QAM	15.0 MHz	31.87
22	64QAM	15.0 MHz	31.86
23	64QAM	15.0 MHz	31.91
24	64QAM	15.0 MHz	31.77
25	64QAM	15.0 MHz	31.95
26	64QAM	15.0 MHz	31.88
27	64QAM	15.0 MHz	32.18
28	64QAM	15.0 MHz	31.92
29	64QAM	15.0 MHz	31.94
30	64QAM	15.0 MHz	31.90
31	64QAM	15.0 MHz	31.81
32	64QAM	15.0 MHz	31.96
Total Power Antennas 1-32			47.02
Total Power Antennas 1-32 +24 dBi Gain			71.02
33	64QAM	15.0 MHz	31.93
34	64QAM	15.0 MHz	31.92
35	64QAM	15.0 MHz	32.04
36	64QAM	15.0 MHz	32.01
37	64QAM	15.0 MHz	32.23
38	64QAM	15.0 MHz	32.18
39	64QAM	15.0 MHz	31.97
40	64QAM	15.0 MHz	31.98
41	64QAM	15.0 MHz	31.91
42	64QAM	15.0 MHz	31.97



Product Service

43	64QAM	15.0 MHz	32.41
44	64QAM	15.0 MHz	31.98
45	64QAM	15.0 MHz	32.01
46	64QAM	15.0 MHz	31.99
47	64QAM	15.0 MHz	32.13
48	64QAM	15.0 MHz	32.16
49	64QAM	15.0 MHz	32.06
50	64QAM	15.0 MHz	31.99
51	64QAM	15.0 MHz	32.05
52	64QAM	15.0 MHz	32.13
53	64QAM	15.0 MHz	31.92
54	64QAM	15.0 MHz	31.86
55	64QAM	15.0 MHz	31.89
56	64QAM	15.0 MHz	31.97
57	64QAM	15.0 MHz	31.88
58	64QAM	15.0 MHz	31.97
59	64QAM	15.0 MHz	31.94
60	64QAM	15.0 MHz	32.01
61	64QAM	15.0 MHz	31.93
62	64QAM	15.0 MHz	32.04
63	64QAM	15.0 MHz	31.97
64	64QAM	15.0 MHz	31.98
Total Power Antennas 33-64			47.07
Total Power Antennas 33-64 +24 dBi Gain			71.07
EIRP			74.05
1	64QAM	20.0 MHz	32.24
2	64QAM	20.0 MHz	32.09
3	64QAM	20.0 MHz	32.20
4	64QAM	20.0 MHz	32.23
5	64QAM	20.0 MHz	31.98
6	64QAM	20.0 MHz	31.97
7	64QAM	20.0 MHz	32.00
8	64QAM	20.0 MHz	32.15
9	64QAM	20.0 MHz	32.13
10	64QAM	20.0 MHz	32.15
11	64QAM	20.0 MHz	32.42
12	64QAM	20.0 MHz	32.19
13	64QAM	20.0 MHz	32.34
14	64QAM	20.0 MHz	32.01
15	64QAM	20.0 MHz	32.13
16	64QAM	20.0 MHz	32.21
17	64QAM	20.0 MHz	32.09
18	64QAM	20.0 MHz	31.81
19	64QAM	20.0 MHz	32.10
20	64QAM	20.0 MHz	32.12
21	64QAM	20.0 MHz	31.96
22	64QAM	20.0 MHz	32.07
23	64QAM	20.0 MHz	32.13
24	64QAM	20.0 MHz	32.06
25	64QAM	20.0 MHz	32.04
26	64QAM	20.0 MHz	32.03
27	64QAM	20.0 MHz	32.19
28	64QAM	20.0 MHz	32.03



Product Service

29	64QAM	20.0 MHz	31.91
30	64QAM	20.0 MHz	32.14
31	64QAM	20.0 MHz	32.00
32	64QAM	20.0 MHz	32.27
Total Power Antennas 1-32			47.16
Total Power Antennas 1-32 +24 dBi Gain			71.16
33	64QAM	20.0 MHz	32.07
34	64QAM	20.0 MHz	32.09
35	64QAM	20.0 MHz	32.24
36	64QAM	20.0 MHz	32.12
37	64QAM	20.0 MHz	32.38
38	64QAM	20.0 MHz	32.17
39	64QAM	20.0 MHz	32.08
40	64QAM	20.0 MHz	32.11
41	64QAM	20.0 MHz	32.02
42	64QAM	20.0 MHz	32.05
43	64QAM	20.0 MHz	32.46
44	64QAM	20.0 MHz	32.08
45	64QAM	20.0 MHz	32.07
46	64QAM	20.0 MHz	32.15
47	64QAM	20.0 MHz	32.25
48	64QAM	20.0 MHz	32.27
49	64QAM	20.0 MHz	31.97
50	64QAM	20.0 MHz	32.03
51	64QAM	20.0 MHz	32.17
52	64QAM	20.0 MHz	32.19
53	64QAM	20.0 MHz	32.00
54	64QAM	20.0 MHz	31.97
55	64QAM	20.0 MHz	31.91
56	64QAM	20.0 MHz	32.06
57	64QAM	20.0 MHz	31.93
58	64QAM	20.0 MHz	32.03
59	64QAM	20.0 MHz	32.11
60	64QAM	20.0 MHz	32.27
61	64QAM	20.0 MHz	31.99
62	64QAM	20.0 MHz	32.19
63	64QAM	20.0 MHz	31.99
64	64QAM	20.0 MHz	31.98
Total Power Antennas 33-64			47.16
Total Power Antennas 33-64 +24 dBi Gain			71.16
EIRP			74.17



Product Service

Configuration C

Maximum Output Power 32.7 dBm

Antenna	LTE Modulation	LTE Carrier Bandwidth	Peak to Average Ratio (PAR) / Output Power
			Channel Position M
			dBm
1	64QAM	15.0 MHz	32.11
2	64QAM	15.0 MHz	32.23
3	64QAM	15.0 MHz	32.18
4	64QAM	15.0 MHz	32.14
5	64QAM	15.0 MHz	32.02
6	64QAM	15.0 MHz	32.02
7	64QAM	15.0 MHz	32.11
8	64QAM	15.0 MHz	32.16
9	64QAM	15.0 MHz	32.09
10	64QAM	15.0 MHz	32.05
11	64QAM	15.0 MHz	32.48
12	64QAM	15.0 MHz	32.04
13	64QAM	15.0 MHz	32.34
14	64QAM	15.0 MHz	32.05
15	64QAM	15.0 MHz	32.05
16	64QAM	15.0 MHz	32.11
17	64QAM	15.0 MHz	32.03
18	64QAM	15.0 MHz	32.10
19	64QAM	15.0 MHz	32.10
20	64QAM	15.0 MHz	32.05
21	64QAM	15.0 MHz	31.95
22	64QAM	15.0 MHz	32.04
23	64QAM	15.0 MHz	31.98
24	64QAM	15.0 MHz	32.03
25	64QAM	15.0 MHz	32.08
26	64QAM	15.0 MHz	32.12
27	64QAM	15.0 MHz	32.17
28	64QAM	15.0 MHz	32.04
29	64QAM	15.0 MHz	32.05
30	64QAM	15.0 MHz	32.09
31	64QAM	15.0 MHz	31.92
32	64QAM	15.0 MHz	32.13
Total Power Antennas 1-32			47.15
Total Power Antennas 1-32 +24 dBi Gain			71.15
33	64QAM	15.0 MHz	31.98
34	64QAM	15.0 MHz	32.04
35	64QAM	15.0 MHz	32.13
36	64QAM	15.0 MHz	32.09
37	64QAM	15.0 MHz	32.35
38	64QAM	15.0 MHz	32.25
39	64QAM	15.0 MHz	32.03
40	64QAM	15.0 MHz	32.02
41	64QAM	15.0 MHz	32.09
42	64QAM	15.0 MHz	32.19
43	64QAM	15.0 MHz	32.55
44	64QAM	15.0 MHz	32.18



Product Service

Antenna	LTE Modulation	LTE Carrier Bandwidth	Peak to Average Ratio (PAR) / Output Power
			Channel Position M
			dBm
45	64QAM	15.0 MHz	32.13
46	64QAM	15.0 MHz	32.12
47	64QAM	15.0 MHz	32.14
48	64QAM	15.0 MHz	32.32
49	64QAM	15.0 MHz	32.13
50	64QAM	15.0 MHz	32.09
51	64QAM	15.0 MHz	32.20
52	64QAM	15.0 MHz	32.09
53	64QAM	15.0 MHz	32.05
54	64QAM	15.0 MHz	31.92
55	64QAM	15.0 MHz	31.95
56	64QAM	15.0 MHz	32.02
57	64QAM	15.0 MHz	31.92
58	64QAM	15.0 MHz	32.06
59	64QAM	15.0 MHz	32.11
60	64QAM	15.0 MHz	32.12
61	64QAM	15.0 MHz	31.99
62	64QAM	15.0 MHz	32.12
63	64QAM	15.0 MHz	32.10
64	64QAM	15.0 MHz	32.11
Total Power Antennas 33-64			47.17
Total Power Antennas 33-64 +24 dBi Gain			71.17
EIRP			74.17
1	64QAM	20.0 MHz	32.23
2	64QAM	20.0 MHz	32.23
3	64QAM	20.0 MHz	32.29
4	64QAM	20.0 MHz	32.21
5	64QAM	20.0 MHz	32.01
6	64QAM	20.0 MHz	32.20
7	64QAM	20.0 MHz	32.11
8	64QAM	20.0 MHz	32.29
9	64QAM	20.0 MHz	32.27
10	64QAM	20.0 MHz	32.22
11	64QAM	20.0 MHz	32.43
12	64QAM	20.0 MHz	32.13
13	64QAM	20.0 MHz	32.39
14	64QAM	20.0 MHz	32.20
15	64QAM	20.0 MHz	32.26
16	64QAM	20.0 MHz	32.24
17	64QAM	20.0 MHz	32.05
18	64QAM	20.0 MHz	31.78
19	64QAM	20.0 MHz	32.24
20	64QAM	20.0 MHz	32.23
21	64QAM	20.0 MHz	32.05
22	64QAM	20.0 MHz	32.09
23	64QAM	20.0 MHz	32.17
24	64QAM	20.0 MHz	32.14
25	64QAM	20.0 MHz	32.23
26	64QAM	20.0 MHz	32.18
27	64QAM	20.0 MHz	32.21



Product Service

Antenna	LTE Modulation	LTE Carrier Bandwidth	Peak to Average Ratio (PAR) / Output Power
			Channel Position M
			dBm
28	64QAM	20.0 MHz	32.12
29	64QAM	20.0 MHz	32.09
30	64QAM	20.0 MHz	32.23
31	64QAM	20.0 MHz	32.13
32	64QAM	20.0 MHz	32.26
Total Power Antennas 1-32			47.24
Total Power Antennas 1-32 +24 dBi Gain			71.24
33	64QAM	20.0 MHz	32.10
34	64QAM	20.0 MHz	32.09
35	64QAM	20.0 MHz	32.25
36	64QAM	20.0 MHz	32.15
37	64QAM	20.0 MHz	32.49
38	64QAM	20.0 MHz	32.21
39	64QAM	20.0 MHz	32.17
40	64QAM	20.0 MHz	32.13
41	64QAM	20.0 MHz	32.12
42	64QAM	20.0 MHz	32.22
43	64QAM	20.0 MHz	32.60
44	64QAM	20.0 MHz	32.21
45	64QAM	20.0 MHz	32.10
46	64QAM	20.0 MHz	32.22
47	64QAM	20.0 MHz	32.25
48	64QAM	20.0 MHz	32.30
49	64QAM	20.0 MHz	32.13
50	64QAM	20.0 MHz	32.16
51	64QAM	20.0 MHz	32.18
52	64QAM	20.0 MHz	32.13
53	64QAM	20.0 MHz	32.02
54	64QAM	20.0 MHz	32.04
55	64QAM	20.0 MHz	32.11
56	64QAM	20.0 MHz	32.15
57	64QAM	20.0 MHz	32.03
58	64QAM	20.0 MHz	32.27
59	64QAM	20.0 MHz	32.18
60	64QAM	20.0 MHz	32.21
61	64QAM	20.0 MHz	32.13
62	64QAM	20.0 MHz	32.25
63	64QAM	20.0 MHz	32.09
64	64QAM	20.0 MHz	32.02
Total Power Antennas 33-64			47.23
Total Power Antennas 33-64 +24 dBi Gain			71.23
EIRP			74.24



Product Service

Limit		
Peak Power	Formula	$\leq 33 \text{ dBW} + 10 \log(X/Y) \text{ dBW} + 10 \log(360/\text{Beamwidth}) \text{ dBW}$ X = actual channel bandwidth Y = 5.5 or 6 MHz Beamwidth = 12°
	15 MHz Carrier Bandwidth	51.8 DBW
	20 MHz Carrier Bandwidth	53.0 DBW
Peak to Average Ratio		$\leq 13 \text{ dB}^*$

*Note: Peak to Average ratio not specified in the specification rule parts for an EBS device.



Product Service

2.2 OCCUPIED BANDWIDTH

2.2.1 Specification Reference

FCC CFR 47 Part 2, Clause 2.1049
FCC CFR 47 Part 27, Clause 27.53(m)(6)

2.2.2 Date of Test and Modification State

01 March 2018 - Modification State 0

2.2.3 Test Equipment Used

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

2.2.4 Environmental Conditions

Ambient Temperature 19.5°C
Relative Humidity 16%

2.2.5 Test Method

All measurements were made in accordance with FCC KDB 971168 D01.

The Spectrum Analyser RBW was configured to be at least 1% of the channel bandwidth of the carrier to be measured.

For 26 dB Bandwidth, in accordance with KDB 971168 D01, a peak detector and a trace setting of Max Hold were used. The trace was allowed to stabilise. Using the Spectrum Analyser function, the 26 dB measurement result was obtained.

2.2.6 Test Results

Configuration A

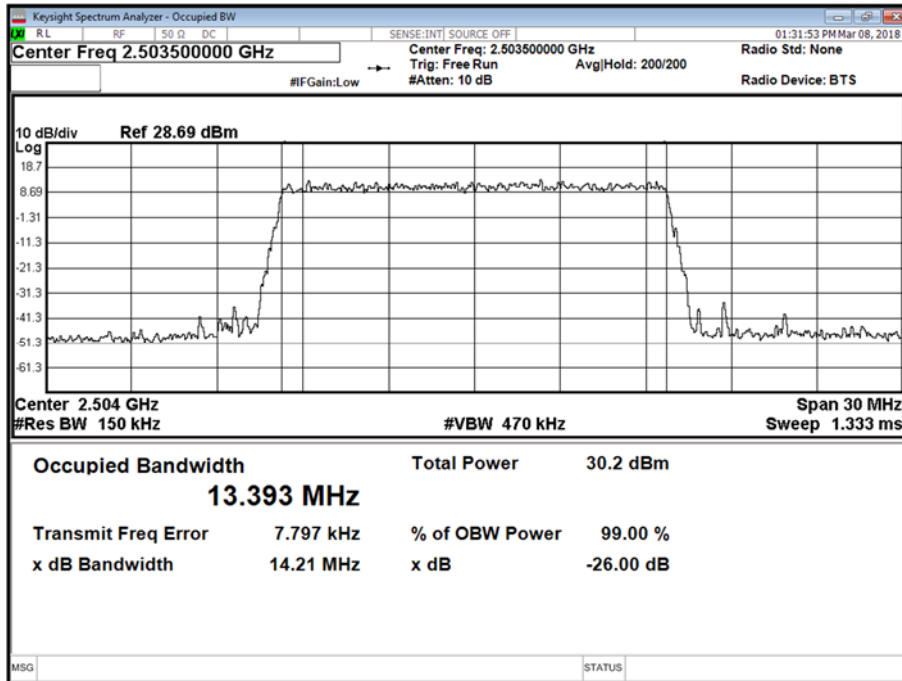
Maximum Output Power 32.7 dBm / Port

Antenna	LTE Modulation	LTE Carrier Bandwidth	Result (kHz)					
			Channel Position B		Channel Position M		Channel Position T	
			Occupied Bandwidth	-26 dB Bandwidth	Occupied Bandwidth	-26 dB Bandwidth	Occupied Bandwidth	-26 dB Bandwidth
43	64QAM	15.0 MHz	13,393.00	14,210.00	13,400.00	14,250.00	13,423.00	14,350.00
43	64QAM	20.0 MHz	17,895.00	19,140.00	17,959.00	19,120.00	17,875.00	19,150.00

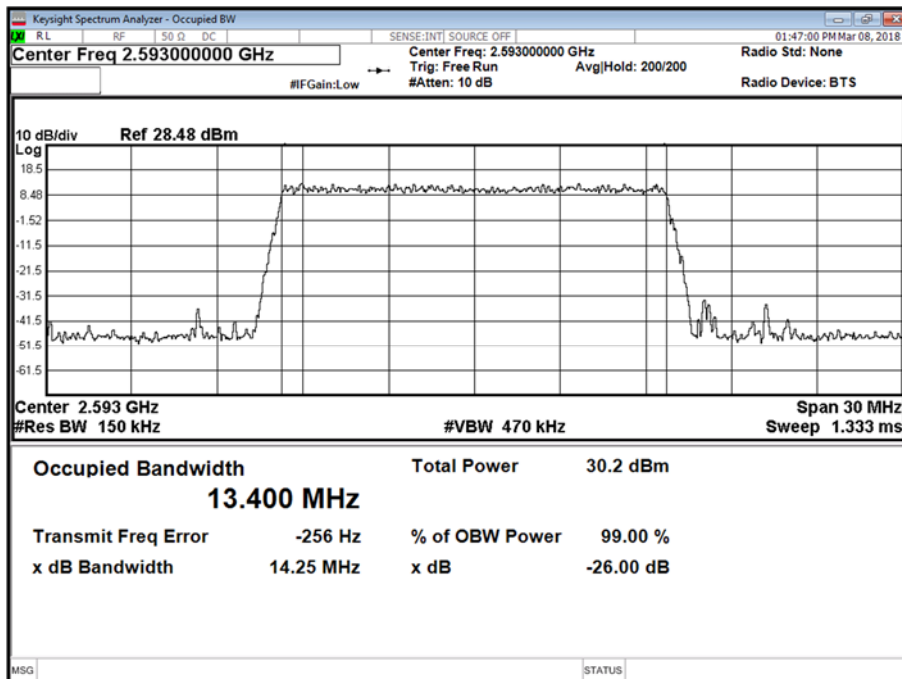


Product Service

Antenna 43 - LTE Modulation 64QAM - LTE Carrier Bandwidth 15.0 MHz - Channel Position B



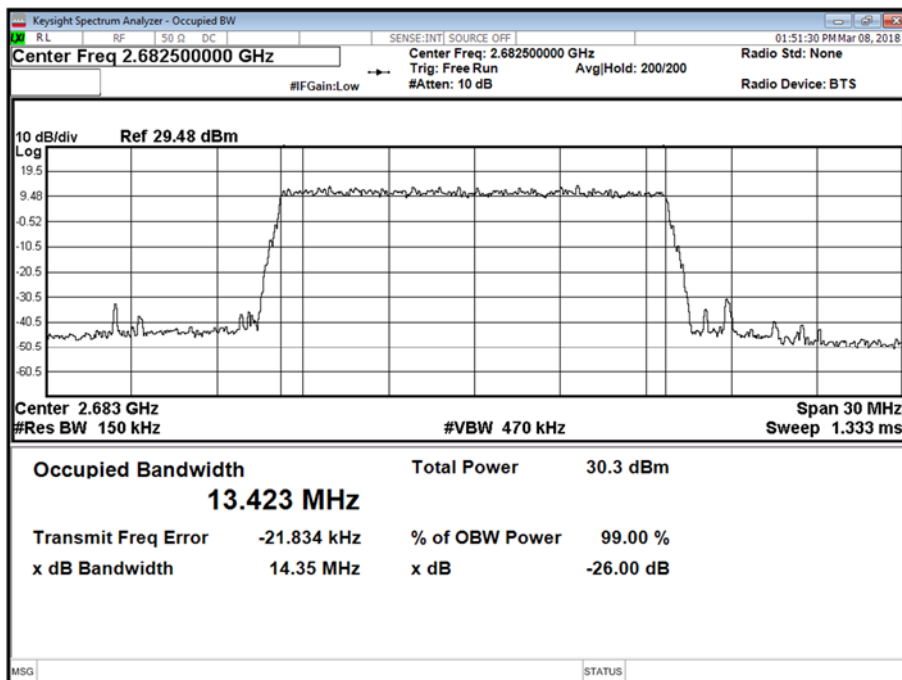
Antenna 43 - LTE Modulation 64QAM - LTE Carrier Bandwidth 15.0 MHz - Channel Position M



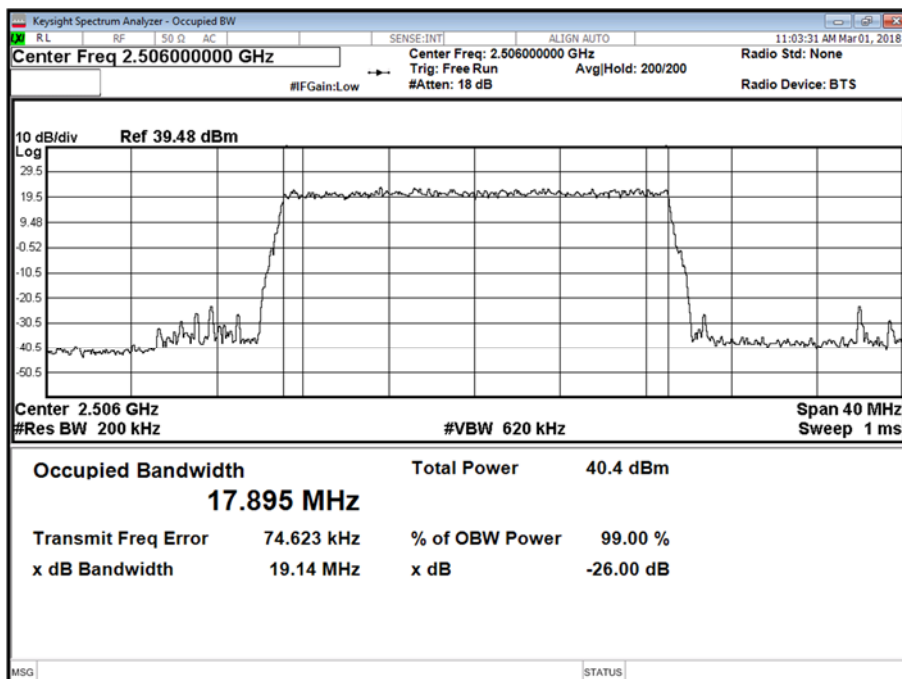


Product Service

Antenna 43 - LTE Modulation 64QAM - LTE Carrier Bandwidth 15.0 MHz - Channel Position T



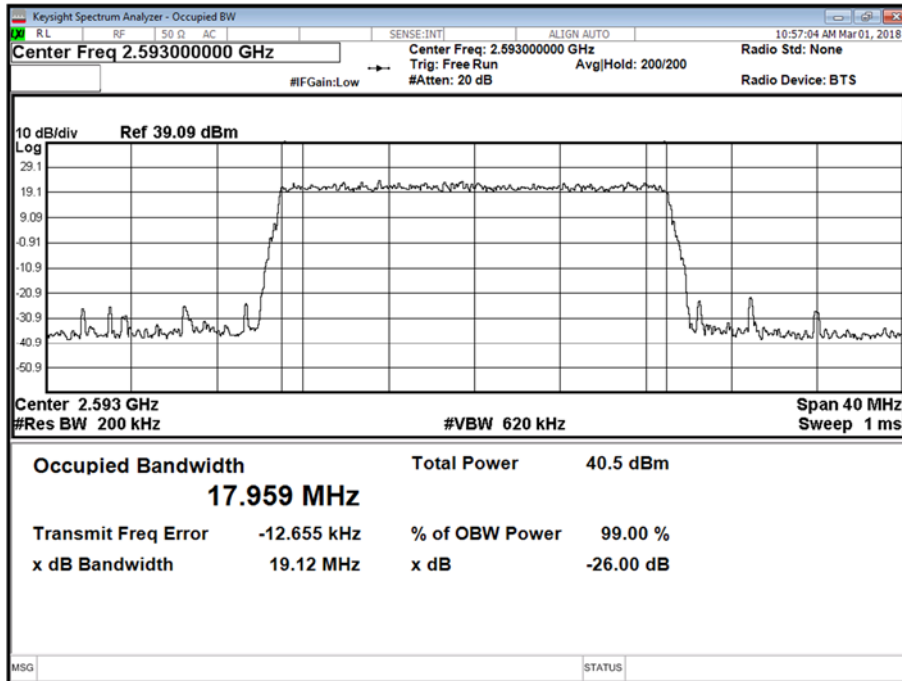
Antenna 43 - LTE Modulation 64QAM - LTE Carrier Bandwidth 20.0 MHz - Channel Position B



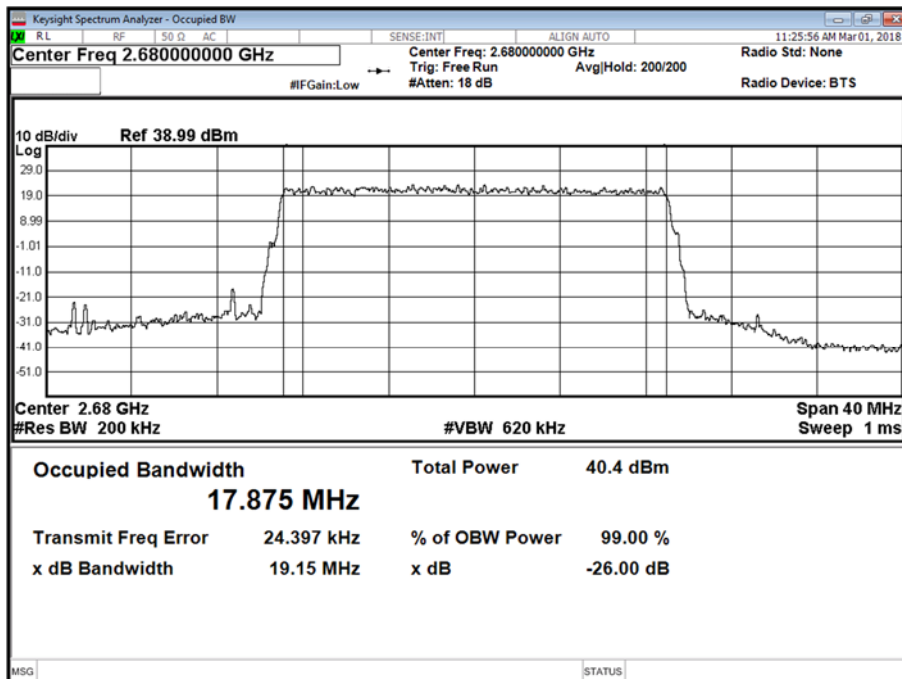


Product Service

Antenna 43 - LTE Modulation 64QAM - LTE Carrier Bandwidth 20.0 MHz - Channel Position M



Antenna 43 - LTE Modulation 64QAM - LTE Carrier Bandwidth 20.0 MHz - Channel Position T





Product Service

2.3 BAND EDGE

2.3.1 Specification Reference

FCC CFR 47 Part 2, Clause 2.1051
FCC CFR 47 Part 27, Clause 27.53 (h)

2.3.2 Date of Test and Modification State

01 March 2018 - Modification State 0

2.3.3 Test Equipment Used

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

2.3.4 Environmental Conditions

Ambient Temperature 19.5°C
Relative Humidity 16%

2.3.5 Test Method

All measurements were made in accordance with FCC KDB 971168 D01.

The EUT was connected to a Spectrum Analyser via 40 dB of attenuation. The path loss between the EUT and the Spectrum Analyser was measured using a Network Analyser. The measured path loss was entered as a Reference Level Offset in the Spectrum Analyser. The Spectrum Analyser RBW was adjusted to be at least 1% of the measured 26 dB Bandwidth. Using an RMS detector, the frequency spectrum up to 1 MHz away from the Band Edge was investigated. The display line was set to the worst case accounting for 64 Port MIMO operation in accordance with KDB 662911 D01. This equated to $43 + 10\log(P) - 10\log(64) = -31.06$ dBm.

Additional plots were shown for measurements from 1 – 6 MHz away from the Band Edge. A RBW of 51 kHz was used with the limit line corrected by $10\log(1\text{MHz} / 51 \text{ kHz}) = 13$ dB. Therefore, the limit line accounting for MIMO and the reduced RBW was set at -44.06 dBm.

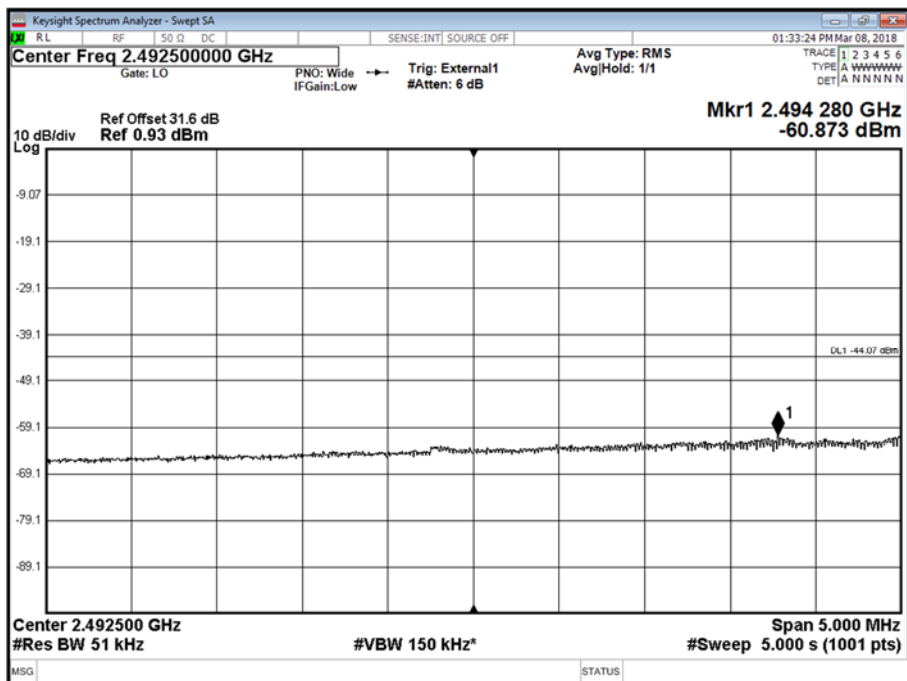
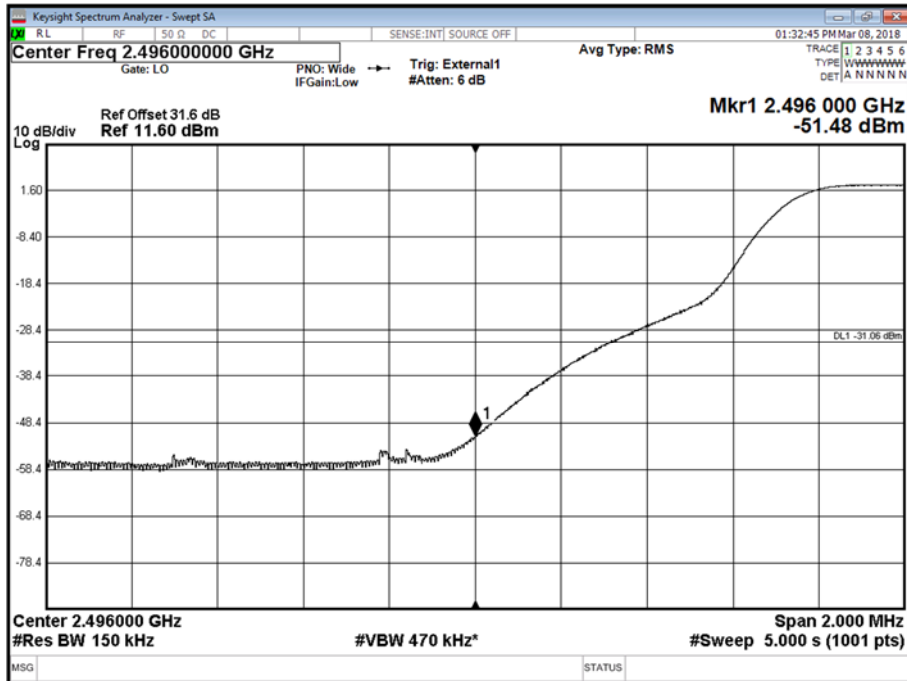
2.3.6 Test Results

Configuration A

Maximum Output Power 32.7 dBm

Antenna	LTE Modulation	LTE Carrier Bandwidth	Band Edge (MHz)	
			Channel Position B	Channel Position T
43	64QAM	15.0 MHz	2503.5	2682.5
43	64QAM	20.0 MHz	2506.0	2680

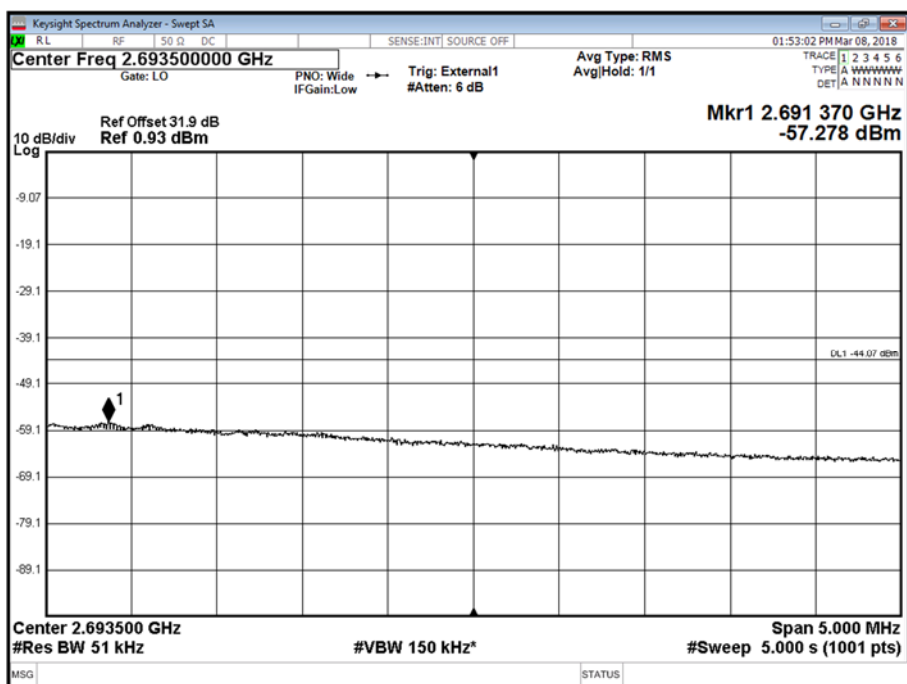
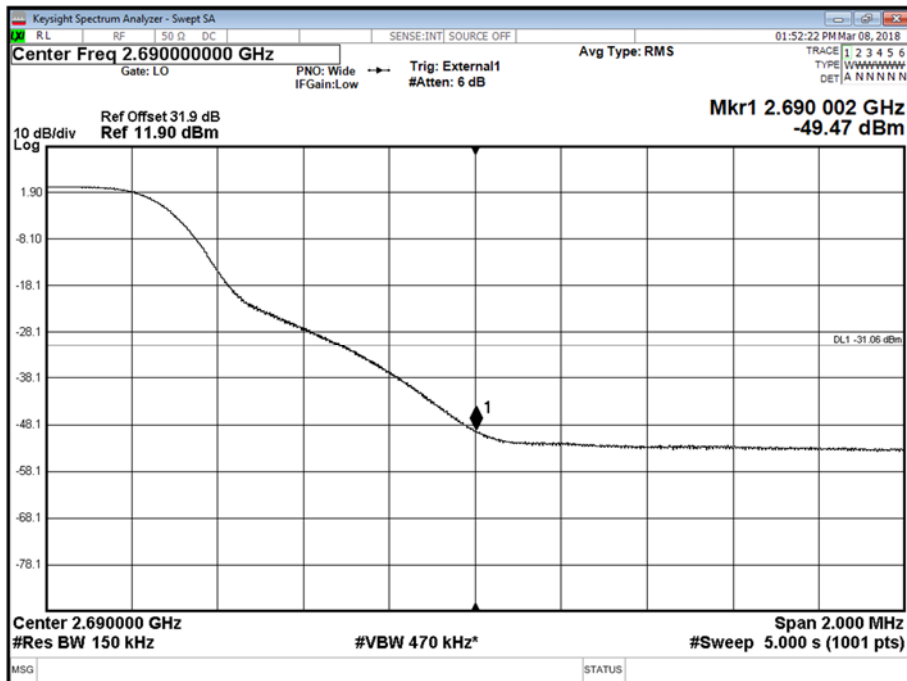
Antenna 43 - LTE Modulation 64QAM - LTE Carrier Bandwidth 15.0 MHz - Channel Position B





Product Service

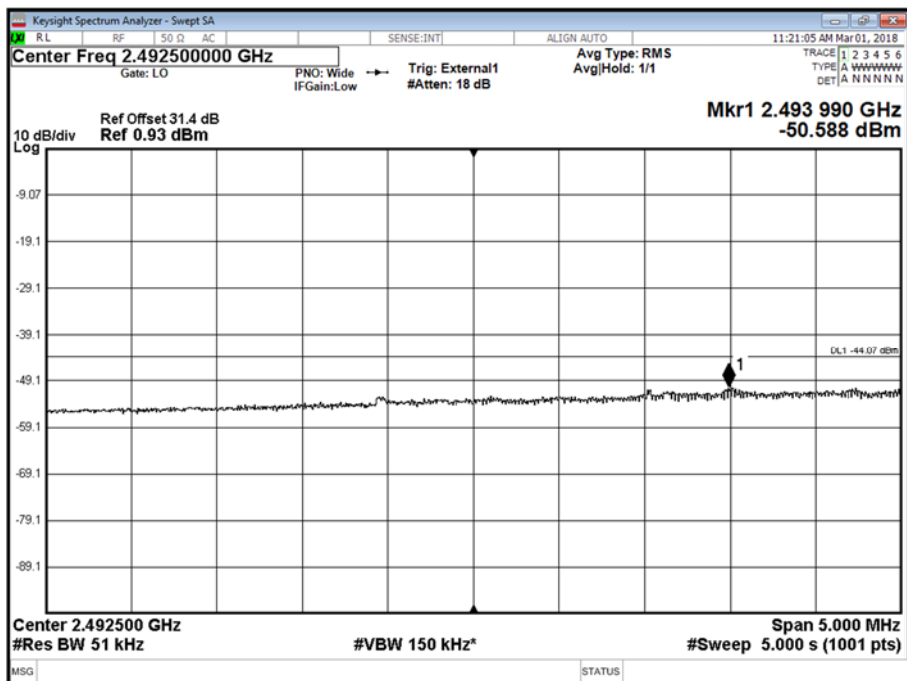
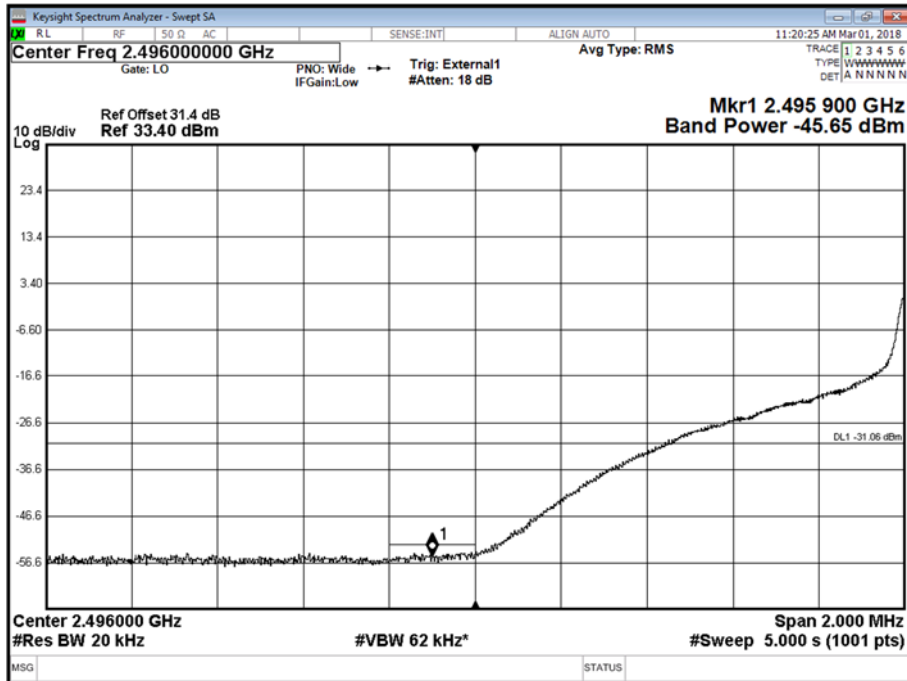
Antenna 43 - LTE Modulation 64QAM - LTE Carrier Bandwidth 15.0 MHz - Channel Position T



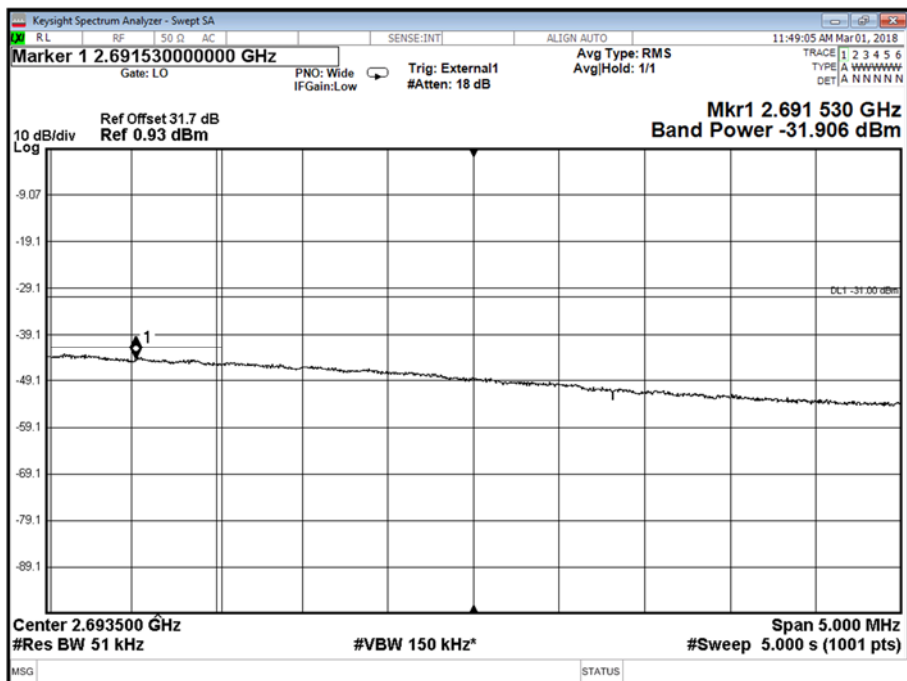
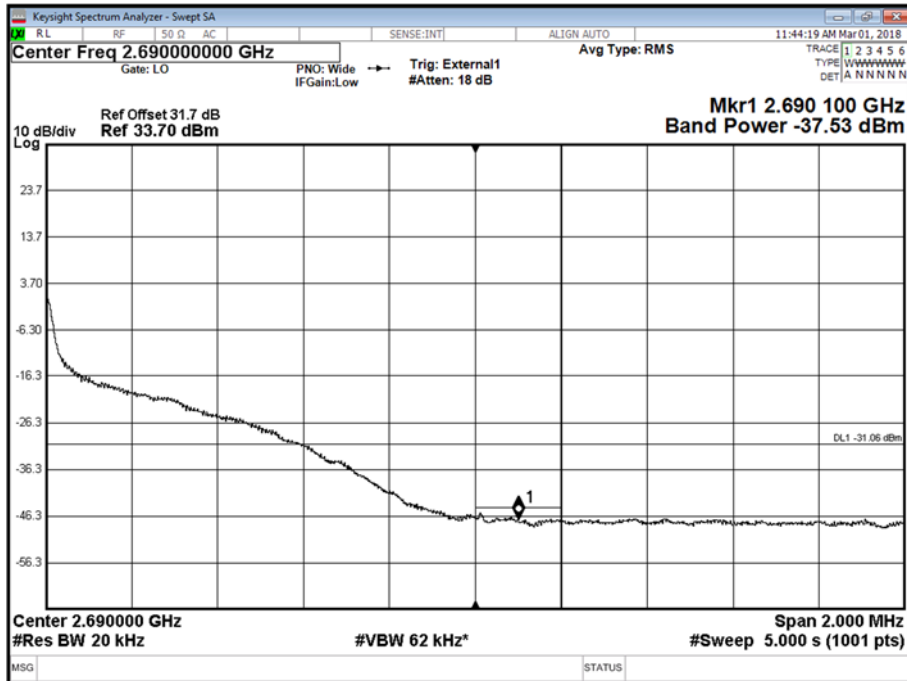


Product Service

Antenna 43 - LTE Modulation 64QAM - LTE Carrier Bandwidth 20.0 MHz - Channel Position B



Antenna 43 - LTE Modulation 64QAM - LTE Carrier Bandwidth 20.0 MHz - Channel Position T

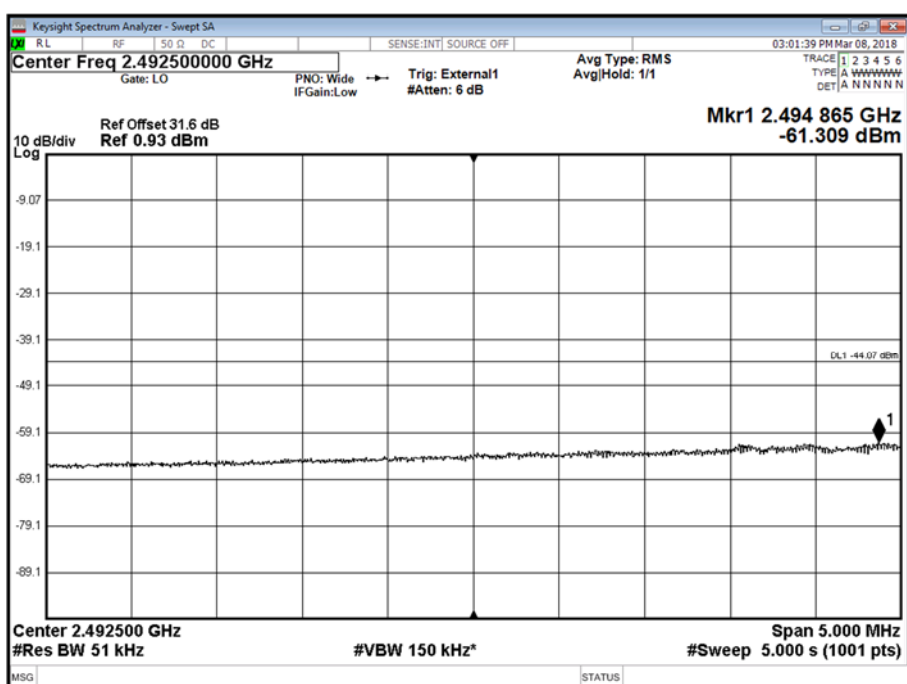
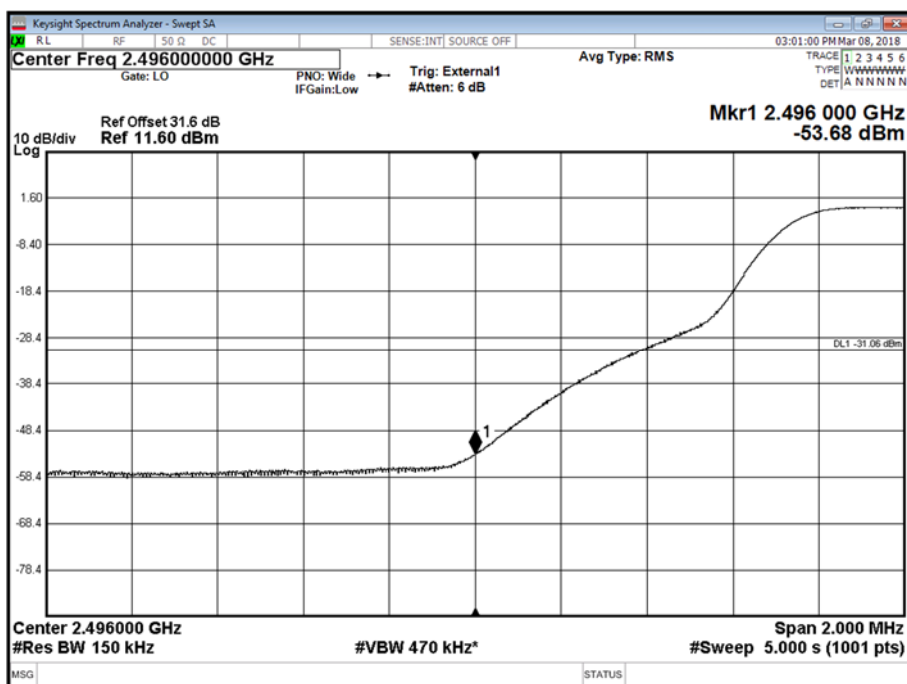


Configuration B

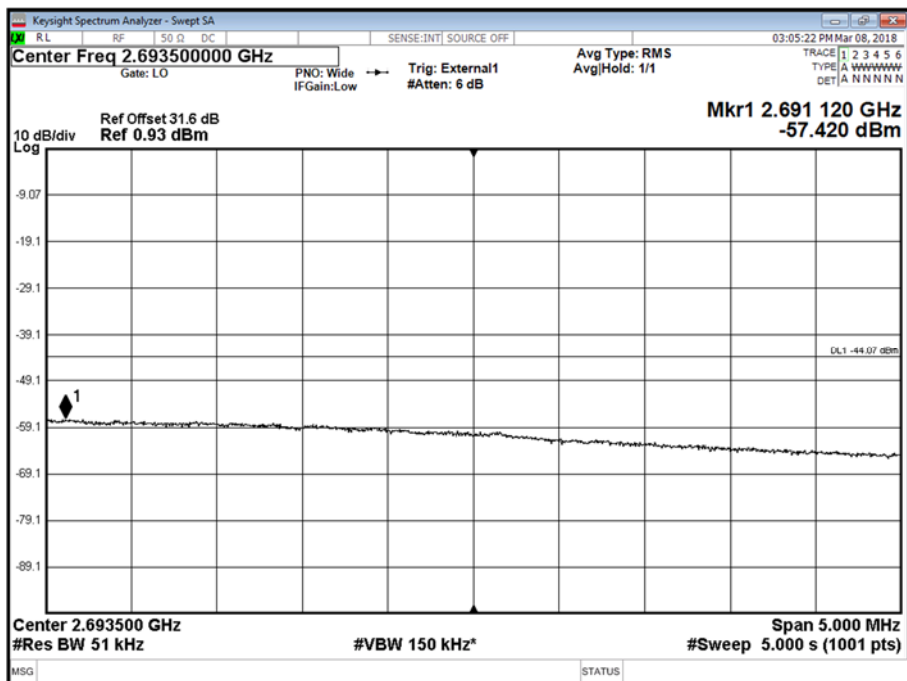
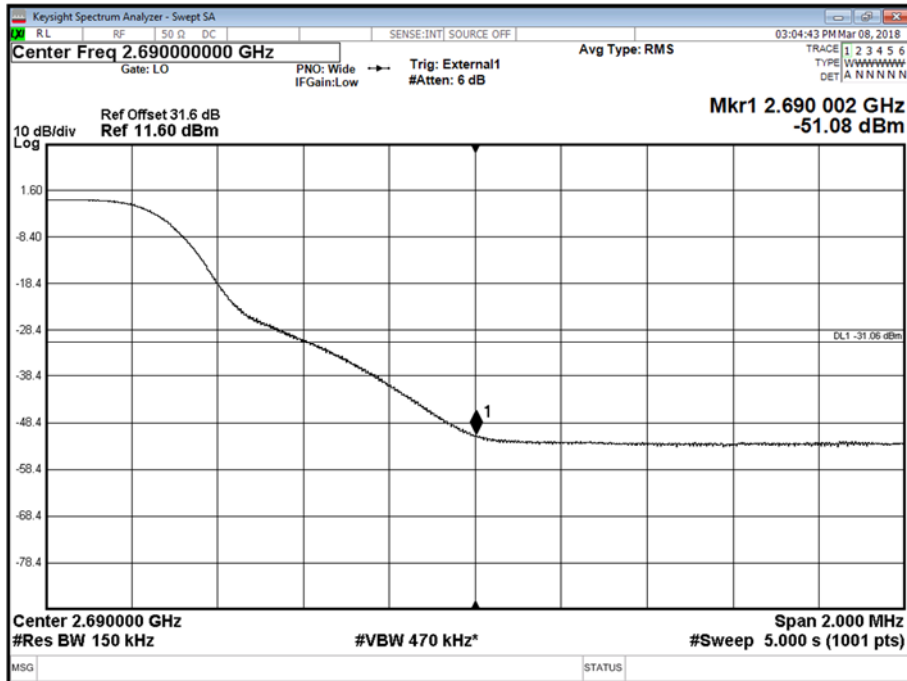
Maximum Output Power 32.7 dBm

Antenna	LTE Modulation	LTE Carrier Bandwidth	Band Edge (MHz)	
			Channel Position B	Channel Position T
43	64QAM	15.0 MHz	2503.5 + 2548.5	2637.5 + 2682.5
43	64QAM	20.0 MHz	2506.0 + 2526	2660.0 + 2680.0

Antenna 43 - LTE Modulation 64QAM - LTE Carrier Bandwidth 15.0 MHz - Channel Position B



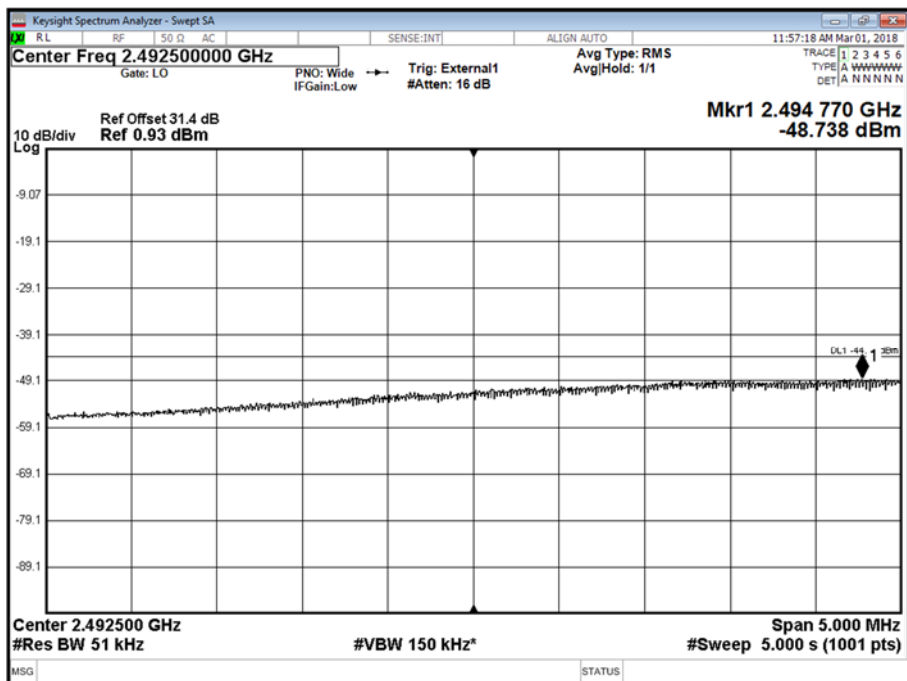
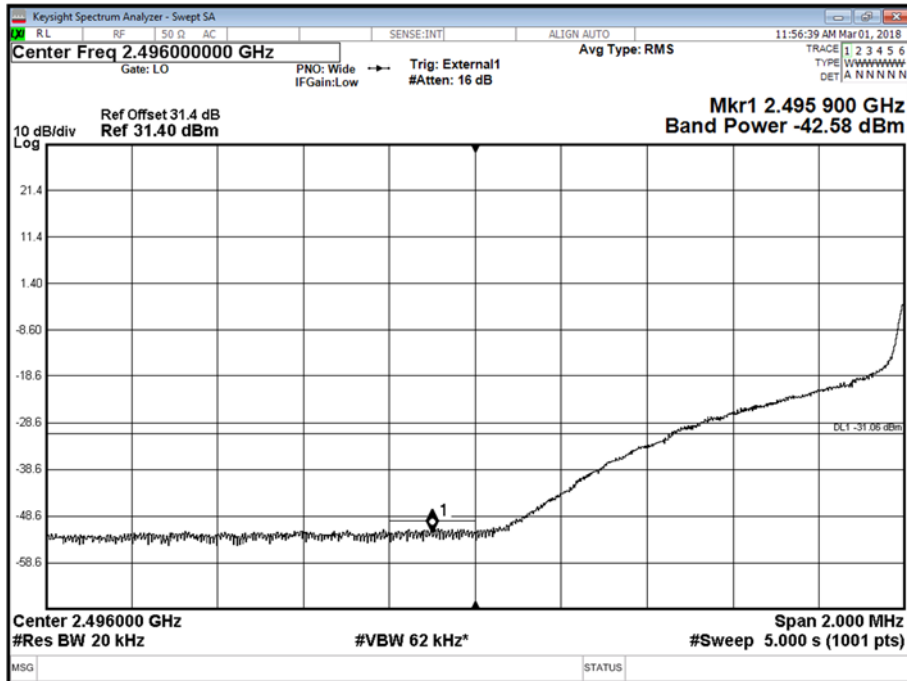
Antenna 43 - LTE Modulation 64QAM - LTE Carrier Bandwidth 15.0 MHz - Channel Position T





Product Service

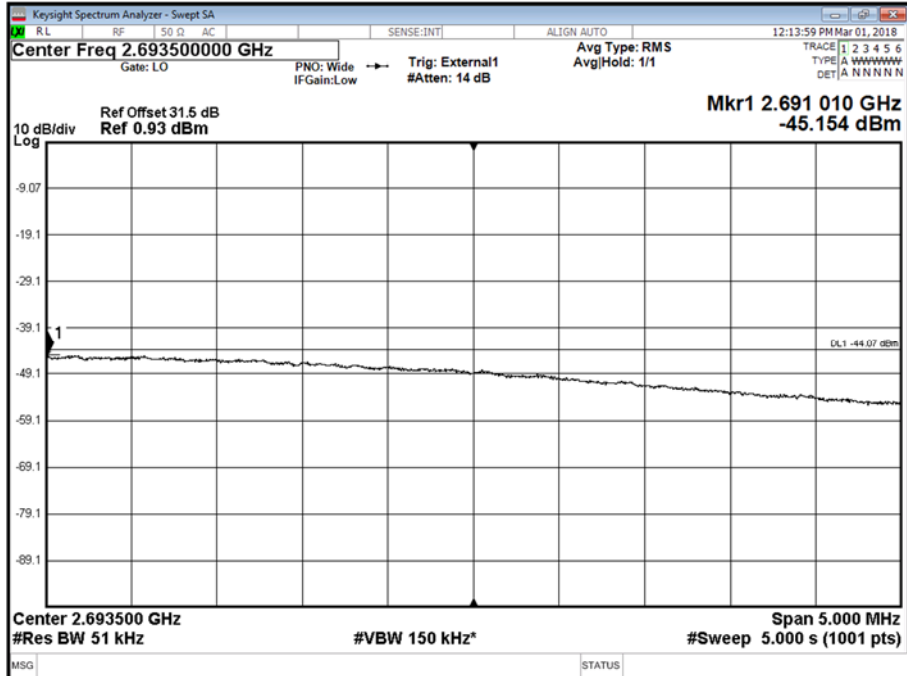
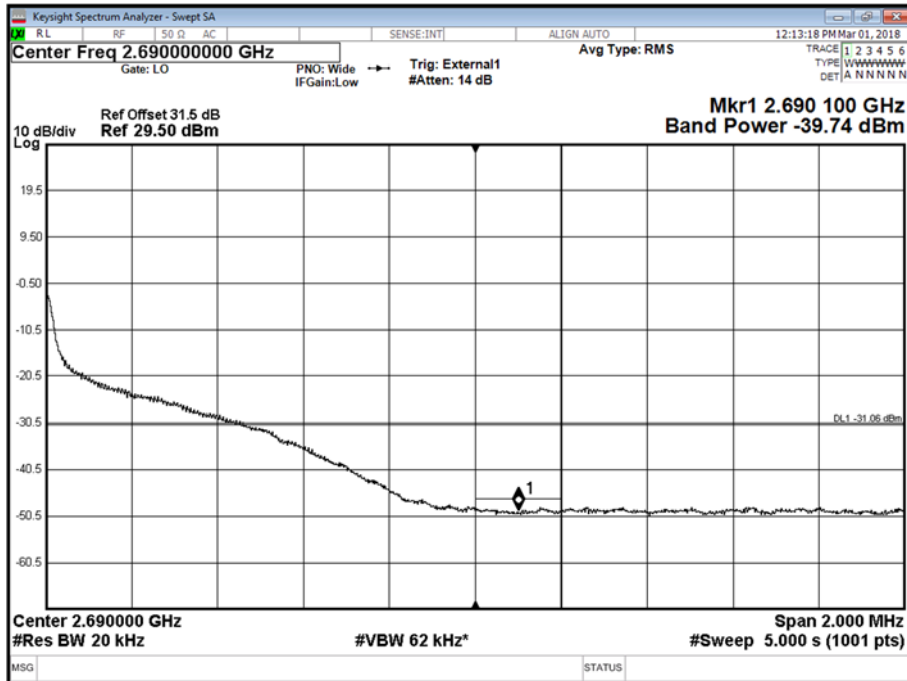
Antenna 43 - LTE Modulation 64QAM - LTE Carrier Bandwidth 20.0 MHz - Channel Position B





Product Service

Antenna 43 - LTE Modulation 64QAM - LTE Carrier Bandwidth 20.0 MHz - Channel Position T

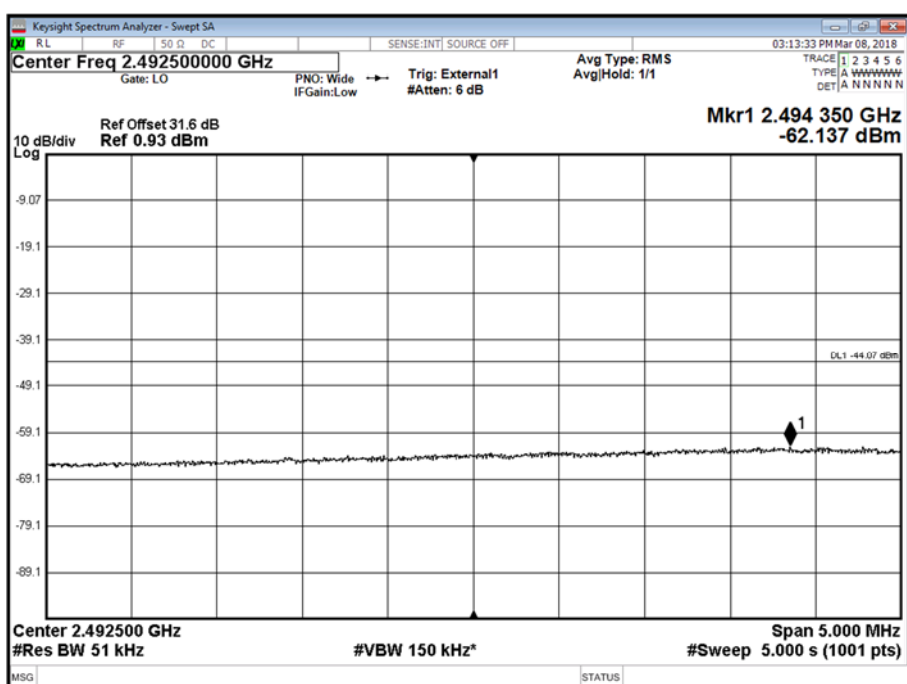
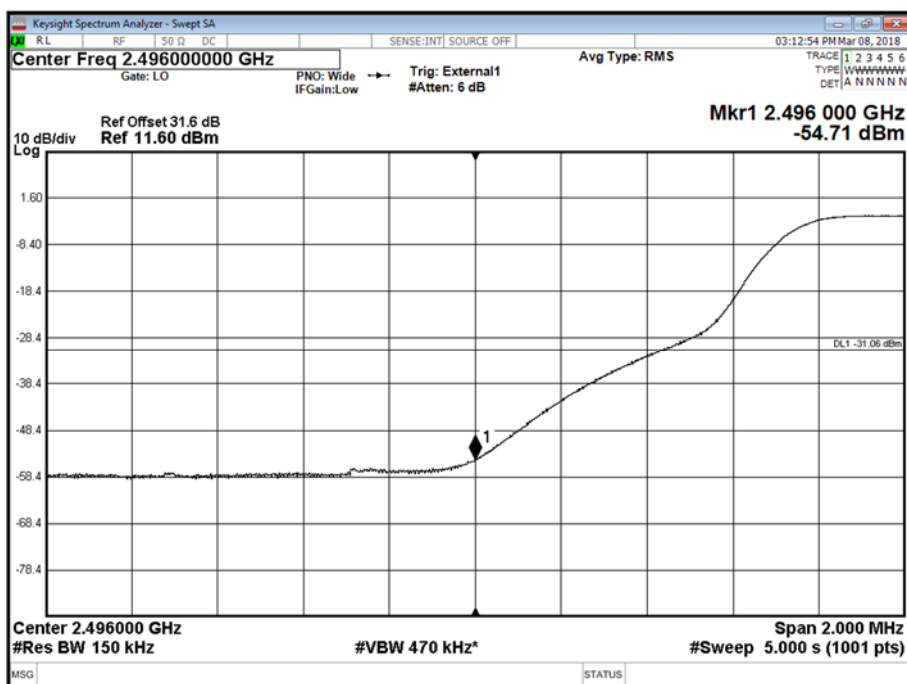


Configuration C

Maximum Output Power 32.7 dBm

Antenna	LTE Modulation	LTE Carrier Bandwidth	Band Edge (MHz)	
			Channel Position B	Channel Position T
43	64QAM	15.0 MHz	2503.5 + 2518.5 + 2548.5	2637.5 + 2652.5 + 2682.5
43	64QAM	20.0 MHz	2506.0+2526.0+2546.0	2640.0 + 2660.0 + 2680.0

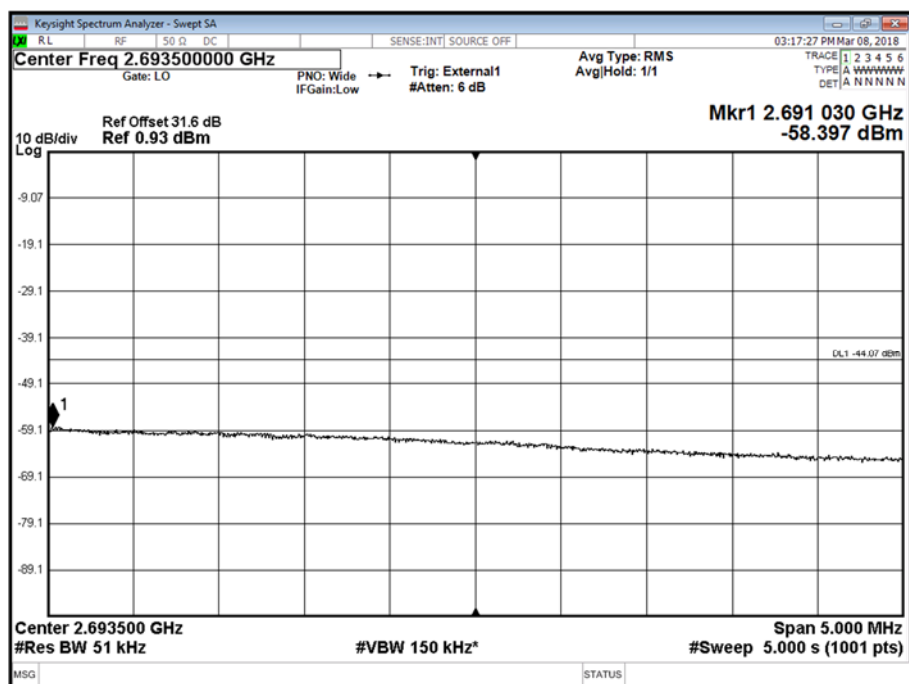
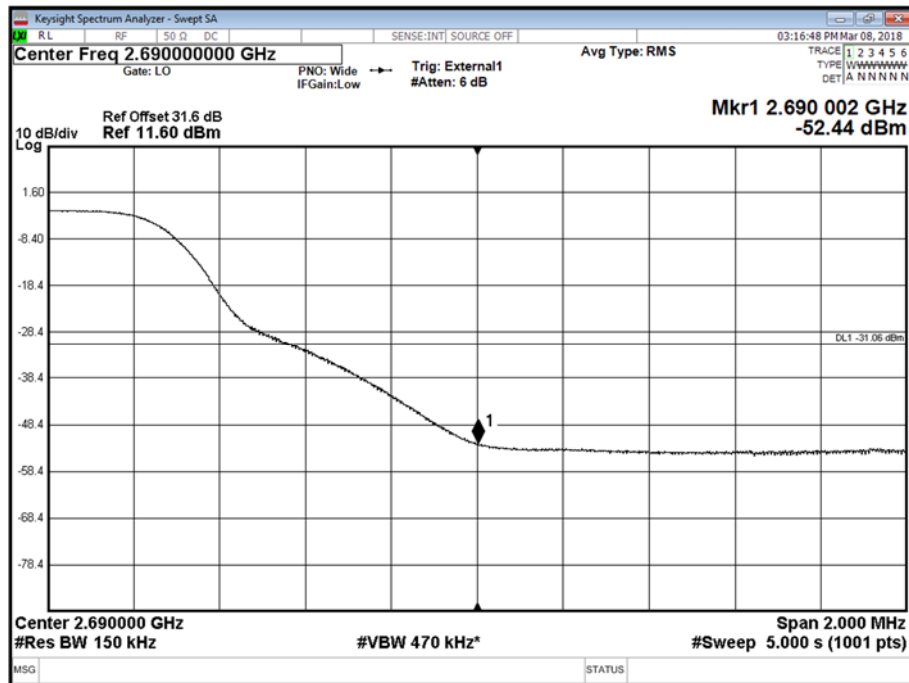
Antenna 43 - LTE Modulation 64QAM - LTE Carrier Bandwidth 15.0 MHz - Channel Position B





Product Service

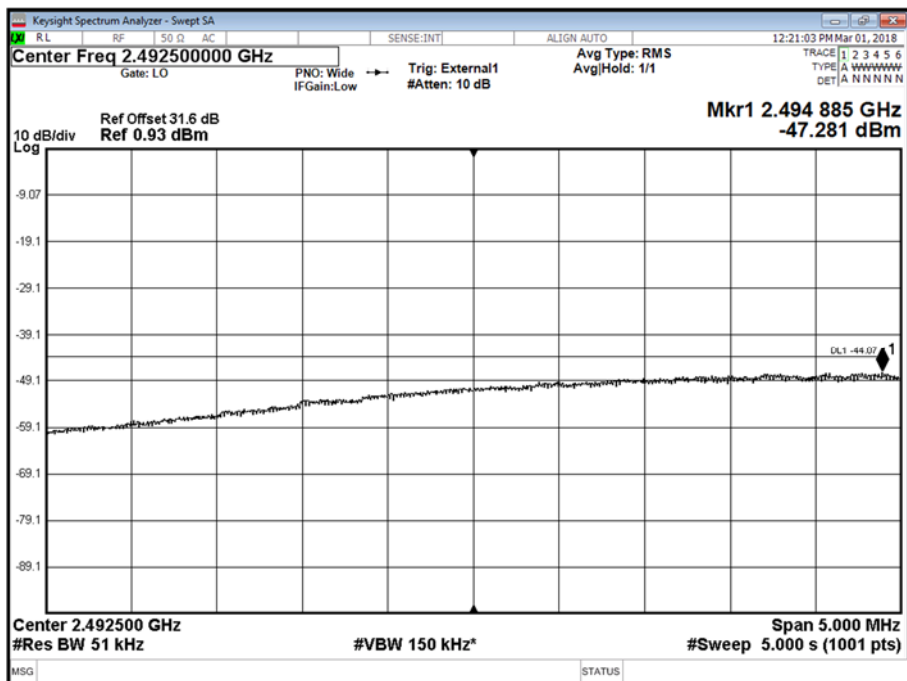
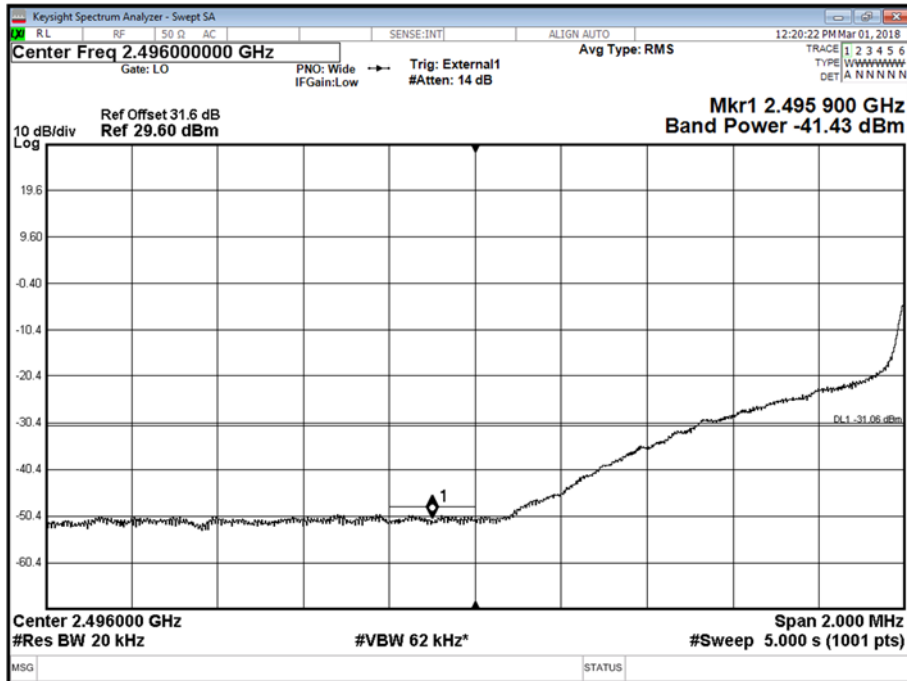
Antenna 43 - LTE Modulation 64QAM - LTE Carrier Bandwidth 15.0 MHz - Channel Position T





Product Service

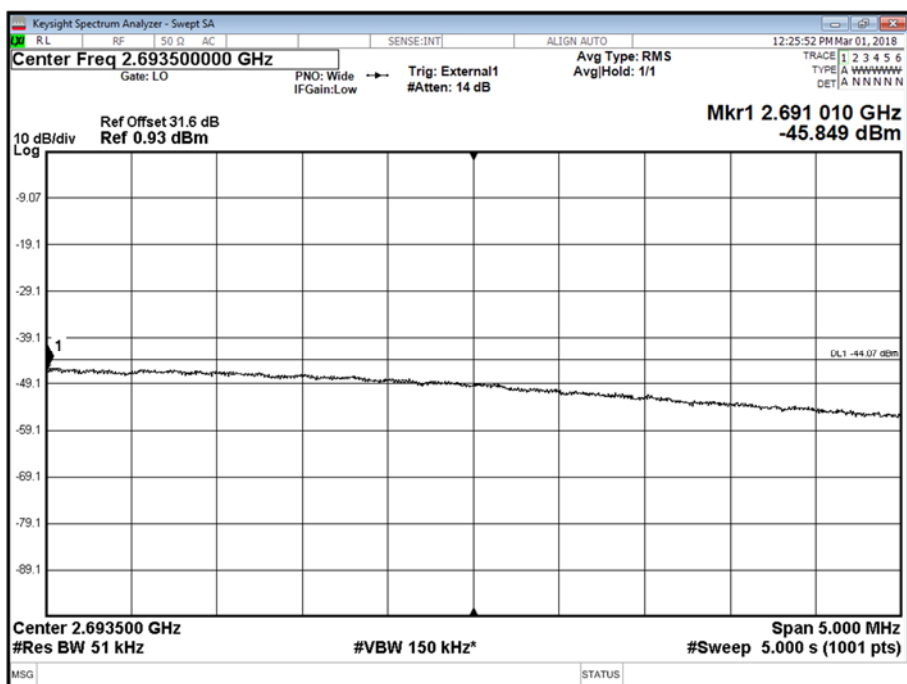
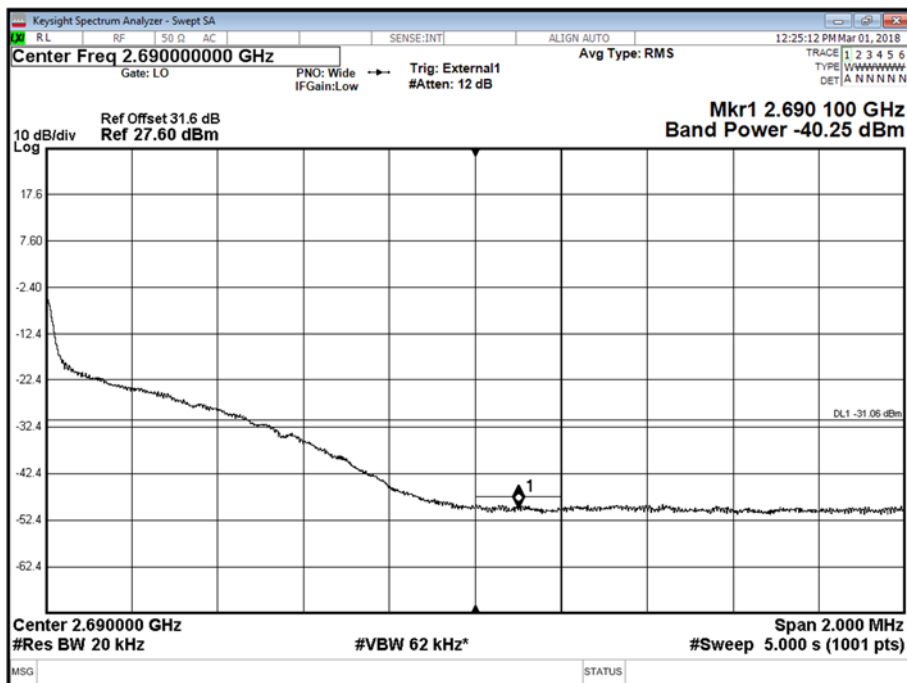
Antenna 43 - LTE Modulation 64QAM - LTE Carrier Bandwidth 20.0 MHz - Channel Position B





Product Service

Antenna 43 - LTE Modulation 64QAM - LTE Carrier Bandwidth 20.0 MHz - Channel Position T



Limit	The power of any emission outside the frequency band shall be attenuated below the transmitter power (P) by at least $43+10\log P$ dB
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Product Service

2.4 TRANSMITTER SPURIOUS EMISSIONS

2.4.1 Specification Reference

FCC CFR 47 Part 2, Clause 2.1051
FCC CFR 47 Part 27, Clause 27.53 (h)

2.4.2 Date of Test and Modification State

08 to 14 March 2018 - Modification State 0

2.4.3 Test Equipment Used

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

2.4.4 Environmental Conditions

Ambient Temperature	23.7°C
Relative Humidity	29.1%

2.4.5 Test Method

All measurements were made in accordance with FCC KDB 971168 D01.

The EUT was connected to a Spectrum Analyser via 40 dB of attenuation for measurements below 3 GHz and up to 27 GHz using 20 dB of attenuation and a high pass filter. Prior to testing, a Network Analyser was used to calibrate the path loss between the EUT and the Spectrum Analyser. The worst case path loss in the measured ranges was entered as a reference level offset. Over the measured ranges, the RBW was set to 1 MHz with a VBW of 3 MHz. All measurement results are specified as average with an RMS detector being used in conjunction with a trace setting of Max Hold. Measurements were performed in configurations of the EUT as reported below.

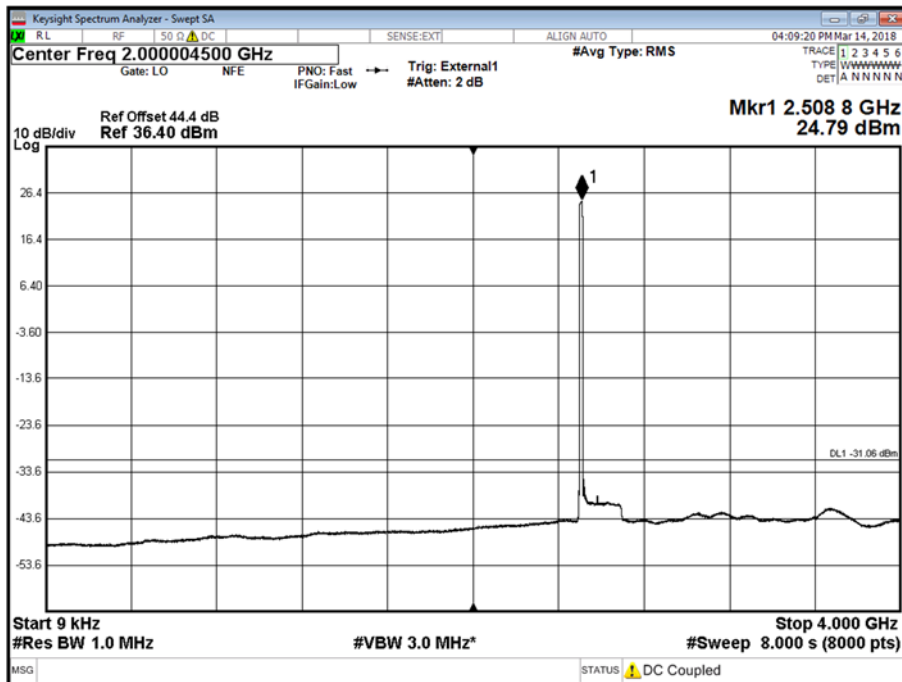
The EUT can transmit with 64 ports simultaneously. Testing was only performed on the antenna port with the highest conducted output power and the test limits reduced from the specification limit of $43+10\log(P)$ by a factor of $10\log(64)$ in accordance with KDB 662911 D01 v02r01 to cover all MIMO configurations. This equated to a limit of -31.06 dBm, (worst case).

2.4.6 Test Results

Configuration A

Maximum Output Power 32.7 dBm / Port

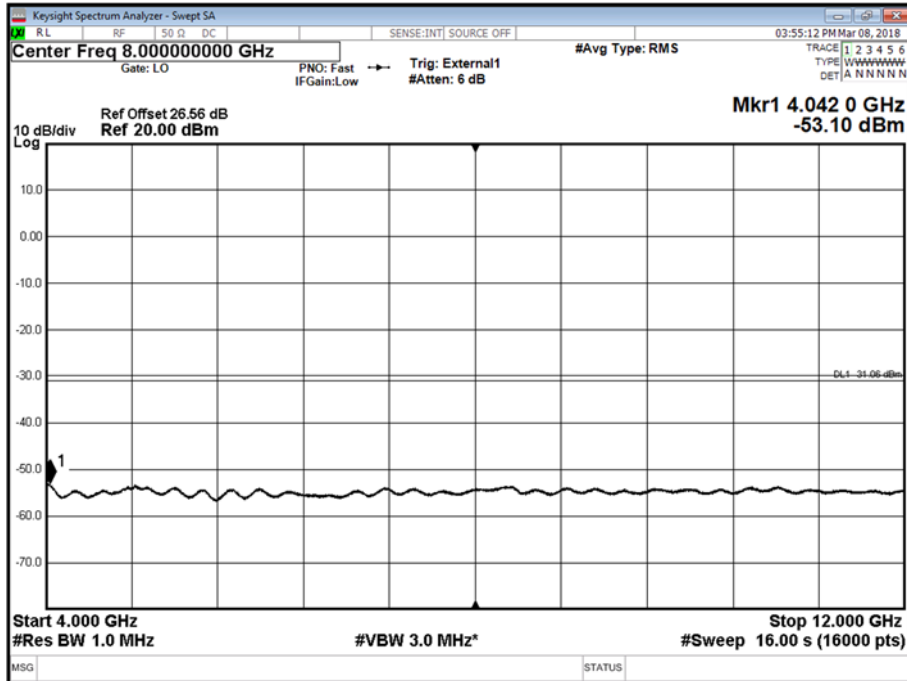
Antenna 43 - LTE Modulation 64QAM - LTE Carrier Bandwidth 15.0 MHz - Channel Position B - Band 1 - Range 0.009 to 4000 MHz



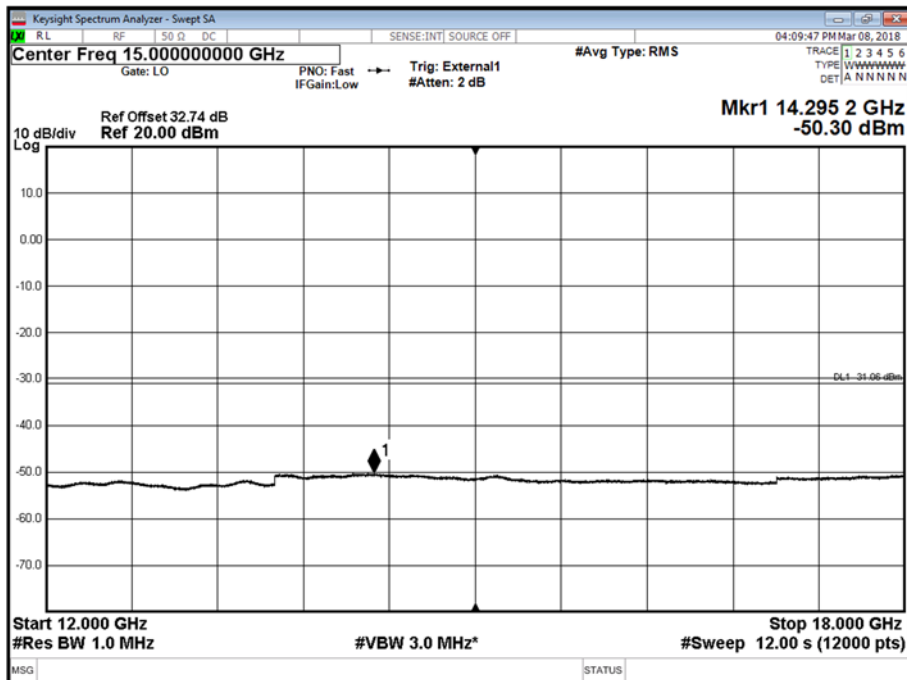


Product Service

Antenna 43 - LTE Modulation 64QAM - LTE Carrier Bandwidth 15.0 MHz - Channel Position B - Band 2 - Range 4000 to 12000 MHz



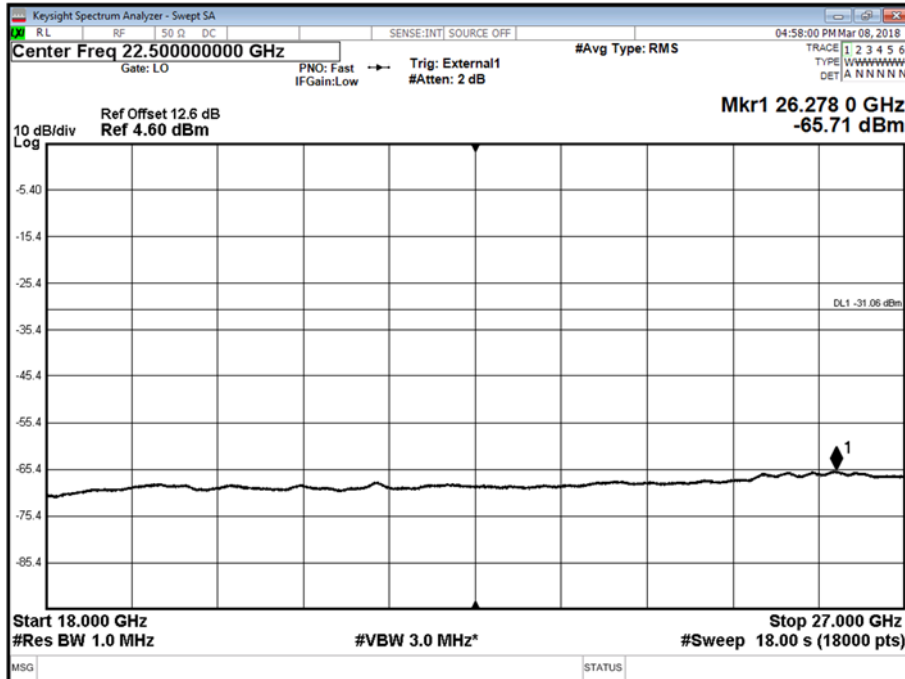
Antenna 43 - LTE Modulation 64QAM - LTE Carrier Bandwidth 15.0 MHz - Channel Position B - Band 3 - Range 12000 to 18000 MHz



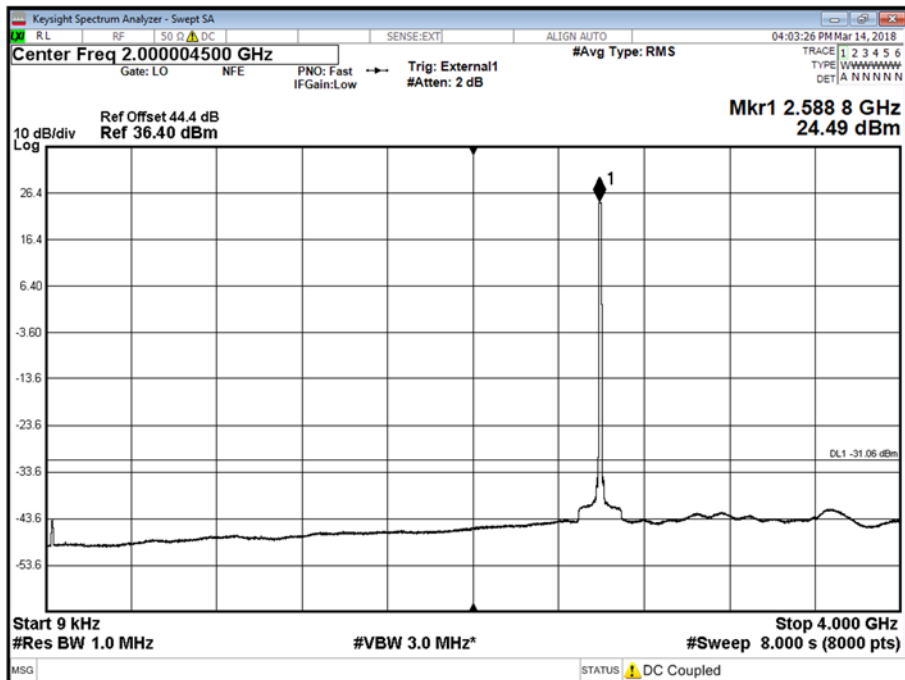


Product Service

Antenna 43 - LTE Modulation 64QAM - LTE Carrier Bandwidth 15.0 MHz - Channel Position B - Band 4 - Range 18000 to 27000 MHz



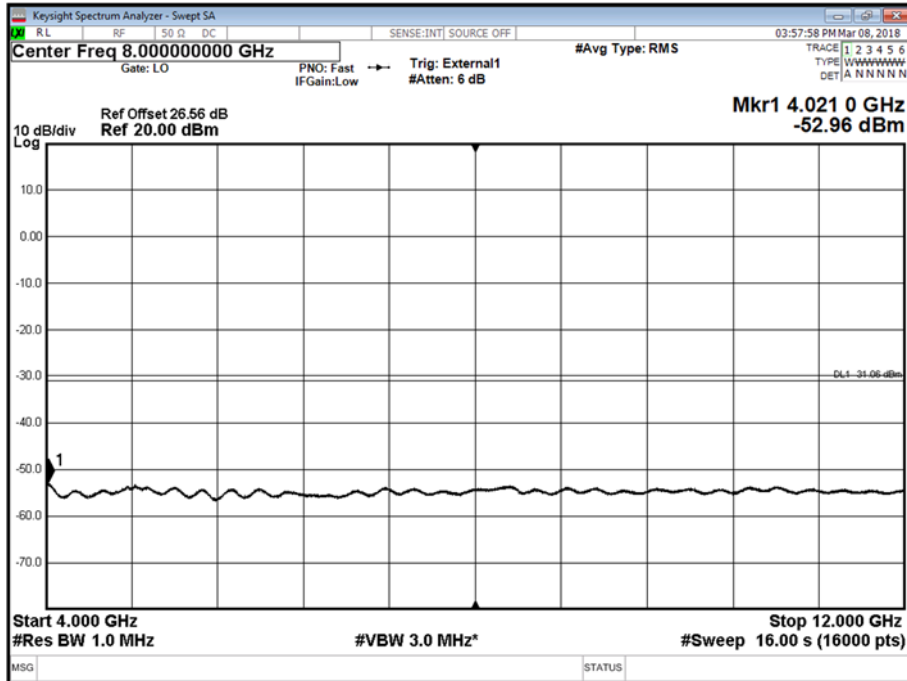
Antenna 43 - LTE Modulation 64QAM - LTE Carrier Bandwidth 15.0 MHz - Channel Position M - Band 1 - Range 0.009 to 4000 MHz





Product Service

Antenna 43 - LTE Modulation 64QAM - LTE Carrier Bandwidth 15.0 MHz - Channel Position M - Band 2 - Range 4000 to 12000 MHz



Antenna 43 - LTE Modulation 64QAM - LTE Carrier Bandwidth 15.0 MHz - Channel Position M - Band 3 - Range 12000 to 18000 MHz

