



No.I19Z62127-WMD01



TEST REPORT

No.I19Z62127-WMD01

for

Remote Radio Unit AIR 6488 B41

FCC ID: TA8CKRD901108

In accordance with FCC CFR 47 Part 27

Issued Date: 2019-12-24

Note:

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No.I19Z62127-WMD01

REPORT HISTORY

Report Number	Revision	Description	Issue Date
I19Z62127-WMD01	Rev.0	1 st edition	2019-12-24

Note: the latest revision of the test report supersedes all previous version.

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1. Test Laboratory

1.1. Introduction & Accreditation

Telecommunication Technology Labs, CAICT is an ISO/IEC 17025:2005 accredited test laboratory under NATIONAL VOLUNTARY LABORATORY ACCREDITATION PROGRAM (NVLAP) with lab code 600118-0, and is also an FCC accredited test laboratory (CN5017), and ISED accredited test laboratory (ISED#: 24849). The detail accreditation scope can be found on NVLAP website.

1.2. Testing Location

Location 1: CTTL(huayuan North Road)

Address: No. 52, Huayuan North Road, Haidian District, Beijing,
P. R. China 100191

Location 2: CTTL(Shouxiang)

Address: No. 51 Shouxiang Science Building, Xueyuan Road,
Haidian District, Beijing, P. R. China 100191

1.3. Project date

Testing Start Date: 2019-12-11

Testing End Date: 2019-12-20

1.4. Signature

Dong Yuan

(Prepared this test report)



Zhou Yu

(Reviewed this test report)



Liu Baodian

(Approved this test report)

2. Client Information

2.1. Applicant Information

Company Name: Ericsson (China) Communications Company Ltd.
Address /Post: Ericsson Tower, No.5 Lize East Street, Chaoyang District, Beijing
100102, P.R.China
Contact: Jieying Zhu
Email: jieying.zhu@ericsson.com
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2.2. Manufacturer Information

Company Name: Ericsson AB
Address /Post: Isafjordsgatan 10, 164 80 Stockholm
Sweden
Contact: /
Email: /
Telephone: /

3. Equipment Under Test (EUT)

3.1. About EUT

Description	Remote Radio Unit
Product Name	AIR 6488 B41
Product Number	KRD 901 108/2, KRD 901 108/21, KRD 901 108/1, KRD 901 108/11 (note)
FCC ID	TA8CKRD901108
Antenna	YES
Antenna Gain	23dBi
Output power	Maximum 32.73dBm (1.875W) per port of LTE 10M Maximum 34.95dBm (3.125W) per port of LTE 20M
Power source	-48V DC
Serial Number	D828634051
Hardware Version	R1D
Software Version	UP: CXP2010053/1_R53B30; Radio SW: CXP2030020%5_R22B24
Frequency range	TX/RX: 2496MHz-2690MHz
Number of Antenna ports	64TX /64 RX ports
Maximum RF bandwidth (IBW)	100MHz
Maximum Number of supported carriers per port	3 carriers
Supported modulations	LTE: QPSK, 16QAM, 64QAM and 256QAM
Supported Channel bandwidth	LTE: 10MHz and 20MHz
Date of receipt	2019-12-10

Note: The differences between the 4 variants are as below, and others are same.

KRD 901 108/2 with un-security software and RDNB board for testing purpose

KRD 901 108/21 with security software and RDNB board for testing purpose

KRD 901 108/1 with un-security software and antenna

KRD 901 108/11 with security software and antenna

3.2. General Description

The Equipment Under Test (EUT) AIR 6488 B41 is an Ericsson Radio Unit working in the public mobile service 2496-2690 MHz band which provides communication connections to 2496-2690 MHz network. The AIR 6488 B41 operates from a -48V DC supply.

The EUT includes 64 TX/RX ports and it can be configured to transmit in MIMO mode for LTE carriers, and MIMO mode for LTE was used for measurements as the worst configuration. The complete testing was performed with the EUT transmitting at maximum RF power unless otherwise stated.

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

3.3. Configuration Description

The following settings were used to represent all traffic scenarios. The output power was measured on the bottom, middle and top channel of all applicable antenna ports. By measuring the output power of QPSK, 16QAM, 64QAM and 256QAM for LTE on one of the antenna ports, it was determined that QPSK was the worst case modulation scheme and was used for all testing.

Complete testing was carried out on the worst case antenna port which was established as being the highest output power from the applicable measured ports on worst case modulation scheme. This antenna port was 55 for LTE mode.

The settings below were used for all measurements unless otherwise noted:

LTE

Configuration	Carrier	Channel Bandwidth (MHz)	Carrier Frequency Configuration (MHz)		
			Bottom	Middle	Top
LTE-MIMO-1C 10M	1 Carrier	LTE 10 MHz	2501.0	2593.0	2685.0
LTE-MIMO-1C 20M	1 Carrier	LTE 20MHz	2506.0	2593.0	2680.0
LTE-MIMO-2C 10M	2 Carriers	LTE 10 MHz	2501+2591	2548+2638	2595+2685
LTE-MIMO-2C 20M	2 Carriers	LTE 20MHz	2506+2586	2553+2633	2600+2680
LTE-MIMO-3C 10M	3 Carriers	LTE 10 MHz	2501+2511+2591	2548+2558+2638	2595+2605+2685
LTE-MIMO-3C 20M	3 Carriers	LTE 20MHz	2506+2526+2586	2553+2573+2633	2600+2620+2680
LTE-MIMO-1C- BE 10M	1 Carrier	LTE 10 MHz	2501.0	N/A	2685.0
LTE-MIMO-1C- BE 20M	1 Carrier	LTE 20MHz	2506.0	N/A	2680.0
LTE-MIMO-2C- BE 10M	2 Carriers	LTE 10 MHz	2501+2511	N/A	2675+2685
LTE-MIMO-2C- BE 20M	2 Carriers	LTE 20MHz	2506+2526	N/A	2660+2680

N/A – Not Applicable

4. Reference Documents

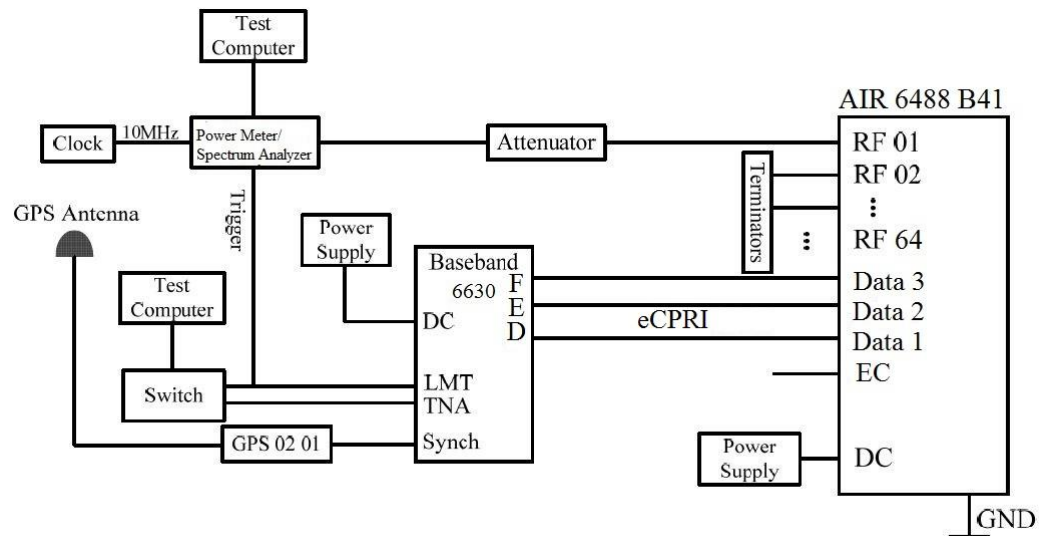
4.1. Reference Documents for testing

The following documents listed in this section are referred for testing.

Reference	Title	Version
FCC Part 27	MISCELLANEOUS WIRELESS COMMUNICATIONS SERVICES	10-1-18 Edition
FCC Part 2	FREQUENCY ALLOCATIONS AND RADIO TREATY MATTERS; GENERAL RULES AND REGULATIONS	10-1-18 Edition
ANSI/TIA-603-E	Land Mobile FM or PM Communications Equipment Measurement and Performance Standards	2016
KDB 971168 D01	MEASUREMENT GUIDANCE FOR CERTIFICATION OF LICENSED DIGITAL TRANSMITTERS	v03r01
KDB 662911 D01	Emissions Testing of Transmitters with Multiple Outputs in the Same Band	v02r01

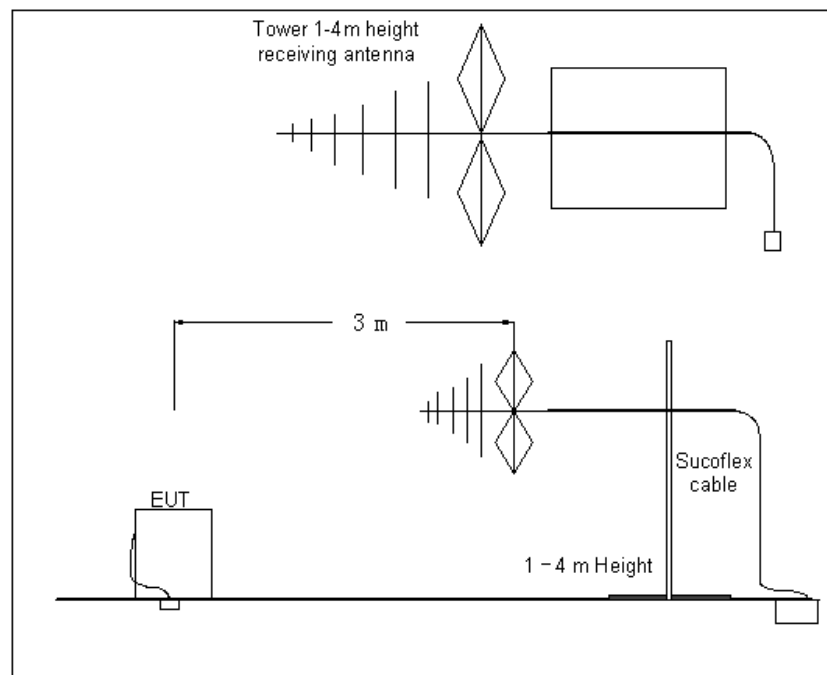
5. TEST SETUP

Test Setup, Conducted Measurement:



No.	Auxiliary Equipment	Model Type	Version
1	Test Computer	HP EliteBook 8540w	-
2	Baseband 6630	KDU 137 848/1	R2C
3	Power supply unit	PCR2000M	-
4	Terminator	SHX 6G	-
5	Attenuator	Aeroflex / Weinschel	-

Test Setup, Radiated Measurement:



6. LABORATORY ENVIRONMENT

Control room / conducted chamber did not exceed following limits along the EMC testing:

Temperature	Min. = 15 °C, Max. = 35 °C
Relative humidity	Min. = 20 %, Max. = 80 %
Shielding effectiveness	> 110 dB
Electrical insulation	> 2 MΩ
Ground system resistance	< 0.5 Ω

Semi-anechoic chamber(10 meters×6.7 meters×6.15 meters) did not exceed following limits along the EMC testing:

Temperature	Min. = 15 °C, Max. = 30 °C
Relative humidity	Min. = 35 %, Max. = 60 %
Shielding effectiveness	> 100 dB
Electrical insulation	> 2 MΩ
Ground system resistance	< 0.5 Ω
Normalised site attenuation (NSA)	< ± 3.5 dB, 3 m distance
Site voltage standing-wave ratio (S_{VSWR})	Between 0 and 6 dB, from 1GHz to 18GHz
Uniformity of field strength	Between 0 and 6 dB, from 80 to 3000 MHz

7. SUMMARY OF TEST RESULTS

Items	Test Name	Clause in FCC rules	Verdict
1	Maximum Output Power and Peak to Average Power Ratio - EIRP calculation	27.50(h), 2.1046	Pass
2	Occupied Bandwidth	27.53(m), 2.1049	Pass
3	Spurious Emissions at Band Edge	27.53(m), 2.1051	Pass
4	Conducted Spurious Emission	27.53(m), 2.1051	Pass
5	Radiated Spurious Emission	27.53(m), 2.1053	Pass
6	Frequency Stability	27.54, 2.1055	Pass

7.1. Explanation of re-use of test data

The Equipment Under Test (EUT) AIR 6488 B41 has the same RF design as product of AIR 6488 B41 (FCC ID: TA8CKRD901108, test report I18Z62307-WMD04) according to the declaration provided by the applicant. Spot check measurements were performed on this device and the spot check test results are consistent with basic model. Maximum Output Power test results of LTE 20MHz of port 1-16 and 33-48 and Frequency Stability test results are derived from test report I18Z62307-WMD04.

8. Test Equipment Utilized

NO.	Description	TYPE	series number	MANUFACTURE	CAL DUE DATE
1	AC Power Supply	PCR2000M	PJ000583	Kikusui	2020-02-22
2	40dB Attenuator	66-40-33	CD4019	Aeroflex / Weinschel	-
3	40dB Attenuator	TSG150R-4-40N11	1511040001	Nanjing Jiexi Technologies	-
4	Spectrum Analyzer	N9030	MY57142378	Keysight	2020-02-02
5	EMI Antenna	3117	00119024	ETS	2020-02-25
6	Preamplifier	MY39500449	83006A	Agilent	/
7	EMI Antenna	VULB9163	9163-514	Schwarzbeck	2020-01-27
8	Preamplifier	SCU18	102249	R&S	/
9	Test Receiver	ESU26	100376	R&S	2020-11-26
10	Test Receiver	FSV40	101047	R&S	2020-06-16
11	Preamplifier	SCU40	1707/1708	R&S	/
12	EMI Antenna	3116	2661	ETS	2020-11-14

9. MEASUREMENT UNCERTAINTY

For a 95% confidence level, the measurement uncertainties for defined systems are:

Test Discipline	Measurement Uncertainty
Conducted Maximum Peak Output Power	0.5dB
Occupied Bandwidth	1.1Hz
Conducted Spurious Emissions	2.3dB
Band Edge	2.3dB
Radiated Spurious Emissions	5.4dB
Frequency Stability	$<\pm 1 \times 10^{-7}$

ANNEX A: MEASUREMENT RESULTS

A.1 Maximum Output Power and Peak to Average Power Ratio - EIRP calculation

A.1.1 Reference

FCC CFR 47 Part 2, Clause 2.1046

FCC CFR 47 Part 27, Clause 27.50(h)

A.1.2 Method of Measurements

During the process of testing, the EUT was configured to transmit on maximum power and proper modulation. The transmitter power shall be measured in terms of a root-mean-square (RMS) average value. In case of the EUT was configured to MIMO mode, since the EUT transmits on all antennas simultaneously in the same frequency range, using the Measure-and-Sum approach, the output power at all antennas were tested, and the total output power were then summed mathematically in linear power units according to FCC KDB 662911 D01.

A peak to average ratio measurement is performed at the conducted ports of the EUT for single carrier for single RAT mode. The spectrum analyzers Complementary Cumulative Distribution Function (CCDF) was used and 0.1% probability value recorded.

Two polarizations are generated for the beam, 32 ports are used to create each polarization, the antenna gain for each polarization is declared as 23 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.

A.1.3 Limit

Output Power:

$$\text{EIRP} \leq 33 \text{ dBW} + 10\log(X/Y) \text{ dBW} + 10 \log(360/\text{Beamwidth}) \text{ dBW}$$

X is the actual channel width in MHz

Y = 5.5 or 6 MHz

Beamwidth = 12°

Peak to Average Ratio: ≤ 13 dB

A.1.4 Measurement result

Configuration LTE-MIMO-1C (1LTE 10MHz QPSK)

Maximum Output Power 27.96dBm per port

Port	Modulation/ Carrier Bandwidth (MHz)	Output Power / Peak to Average Ratio (PAR)								
		Channel position B			Channel position M			Channel position T		
		POWER (dBm)	POWER (dBm/MHz)	PAR (db)	POWER (dBm)	POWER (dBm/MHz)	PAR (db)	POWER (dBm)	POWER (dBm/MHz)	PAR (db)
1	QPSK/10.0	27.17	17.17	8.56	27.06	17.10	8.56	27.05	17.06	8.57
2	QPSK/10.0	27.43	17.43	8.54	27.39	17.40	8.54	27.45	17.46	8.51
3	QPSK/10.0	27.11	17.11	8.56	27.07	17.03	8.58	27.14	17.14	8.54
4	QPSK/10.0	27.23	17.24	8.55	27.21	17.21	8.56	27.34	17.33	8.50
5	QPSK/10.0	27.54	17.52	8.49	27.52	17.51	8.50	27.67	17.67	8.39
6	QPSK/10.0	27.70	17.70	8.47	27.63	17.63	8.47	27.82	17.83	8.49
7	QPSK/10.0	27.67	17.67	8.47	27.63	17.63	8.49	27.83	17.83	8.45
8	QPSK/10.0	27.59	17.59	8.48	27.62	17.62	8.50	27.88	17.87	8.47
9	QPSK/10.0	27.01	17.01	8.55	27.10	17.11	8.55	26.96	16.96	8.54
10	QPSK/10.0	26.75	16.76	8.56	26.82	16.82	8.56	26.74	16.74	8.55
11	QPSK/10.0	26.69	16.69	8.56	26.68	16.69	8.56	26.60	16.61	8.56
12	QPSK/10.0	26.53	16.53	8.57	26.74	16.74	8.56	26.69	16.69	8.55
13	QPSK/10.0	27.43	17.41	8.49	27.42	17.42	8.48	27.59	17.59	8.49
14	QPSK/10.0	26.82	16.83	8.61	28.25	18.25	8.59	28.25	18.25	8.51
15	QPSK/10.0	27.25	17.26	8.47	27.19	17.18	8.49	27.27	17.27	8.47
16	QPSK/10.0	27.15	17.14	8.47	27.08	17.08	8.49	27.21	17.20	8.80
17	QPSK/10.0	28.27	18.27	8.61	27.82	17.82	8.58	27.82	17.82	8.52
18	QPSK/10.0	28.11	18.11	8.62	28.07	18.07	8.59	28.12	18.12	8.52
19	QPSK/10.0	27.71	17.71	8.47	28.14	18.14	8.58	28.14	18.14	8.52
20	QPSK/10.0	27.66	17.66	8.59	27.73	17.73	8.57	27.81	17.81	8.50
21	QPSK/10.0	27.68	17.68	8.69	27.65	17.65	8.65	27.82	17.82	8.56
22	QPSK/10.0	27.04	17.04	8.68	27.08	17.08	8.63	27.44	17.44	8.54
23	QPSK/10.0	27.92	17.93	8.67	27.92	17.92	8.63	28.00	18.00	8.55
24	QPSK/10.0	27.21	17.21	8.68	27.17	17.17	8.64	27.33	17.33	8.55
25	QPSK/10.0	28.15	18.15	8.61	28.06	18.07	8.59	28.06	18.06	8.51
26	QPSK/10.0	28.15	18.15	8.59	28.15	18.15	8.57	28.33	18.33	8.52
27	QPSK/10.0	28.05	18.05	8.60	28.05	18.05	8.59	28.18	18.18	8.53
28	QPSK/10.0	27.76	17.76	8.61	27.48	17.46	8.59	27.79	17.79	8.50
29	QPSK/10.0	27.51	17.51	8.59	27.51	17.51	8.64	27.58	17.58	8.57
30	QPSK/10.0	27.51	17.52	8.68	27.50	17.51	8.66	27.63	17.63	8.57
31	QPSK/10.0	27.75	17.75	8.68	27.71	17.71	8.64	27.79	17.79	8.56
32	QPSK/10.0	27.54	17.54	8.70	27.76	17.76	8.65	27.62	17.62	8.55
Total Power 1-32		42.42	32.52	-	42.46	32.56	-	42.55	32.65	-
Total Power 1-32+23 dBi		65.42	55.52	-	65.46	55.56	-	65.55	55.65	-

Port	Modulation/ Carrier Bandwidth (MHz)	Output Power / Peak to Average Ratio (PAR)								
		Channel position B			Channel position M			Channel position T		
		POWER (dBm)	POWER (dBm/MHz)	PAR (db)	POWER (dBm)	POWER (dBm/MHz)	PAR (db)	POWER (dBm)	POWER (dBm/MHz)	PAR (db)
33	QPSK/10.0	27.51	17.51	8.47	27.45	17.45	8.49	27.34	17.34	8.47
34	QPSK/10.0	27.37	17.37	8.49	27.43	17.44	8.48	27.93	17.93	8.47
35	QPSK/10.0	27.40	17.38	8.48	27.28	17.28	8.49	27.29	17.29	8.48
36	QPSK/10.0	27.35	17.35	8.51	27.52	17.52	8.51	27.45	17.45	8.50
37	QPSK/10.0	27.15	17.15	8.61	26.97	16.99	8.61	27.19	17.18	8.59
38	QPSK/10.0	27.04	17.04	8.61	27.14	17.14	8.63	27.00	17.00	8.60
39	QPSK/10.0	27.14	17.15	8.59	27.05	17.05	8.62	27.15	17.15	8.61
40	QPSK/10.0	27.03	17.04	8.59	27.07	17.08	8.61	27.03	17.03	8.57
41	QPSK/10.0	27.21	17.20	8.48	26.98	16.98	8.48	27.27	17.26	8.47
42	QPSK/10.0	28.00	18.00	8.47	27.94	17.94	8.48	27.97	17.97	8.46
43	QPSK/10.0	27.54	17.54	8.47	27.54	17.54	8.49	27.33	17.33	8.47
44	QPSK/10.0	27.99	18.00	8.48	27.60	17.61	8.50	27.43	17.43	8.48
45	QPSK/10.0	27.27	17.27	8.60	27.23	17.23	8.61	27.20	17.20	8.60
46	QPSK/10.0	27.30	15.54	8.61	27.15	15.39	8.62	27.13	15.37	8.61
47	QPSK/10.0	27.05	17.05	8.61	27.01	17.00	8.63	29.96	16.96	8.60
48	QPSK/10.0	27.08	17.08	8.61	27.17	17.17	8.61	27.03	17.03	8.59
49	QPSK/10.0	27.16	17.17	8.72	27.21	17.21	8.70	27.16	17.16	8.61
50	QPSK/10.0	27.55	17.56	8.76	27.44	17.44	8.70	27.71	17.71	8.58
51	QPSK/10.0	27.57	17.57	8.72	27.58	17.58	8.69	27.56	17.56	8.59
52	QPSK/10.0	27.57	17.57	8.72	27.57	17.57	8.69	27.60	17.60	8.56
53	QPSK/10.0	28.38	18.39	8.62	28.38	18.36	8.58	28.42	18.43	8.50
54	QPSK/10.0	28.05	18.06	8.62	28.12	18.12	8.59	28.14	18.13	8.51
55	QPSK/10.0	28.20	18.23	8.59	28.16	18.15	8.57	28.21	18.21	8.50
56	QPSK/10.0	28.24	18.24	8.59	28.17	18.16	8.57	28.32	18.32	8.50
57	QPSK/10.0	27.05	17.04	8.72	27.07	17.07	8.68	27.18	17.18	8.60
58	QPSK/10.0	27.16	17.16	8.73	27.15	17.15	8.68	27.23	17.23	8.58
59	QPSK/10.0	26.67	16.67	8.71	26.77	16.77	8.69	26.98	16.98	8.59
60	QPSK/10.0	26.86	16.87	8.73	26.82	16.81	8.68	27.04	17.04	8.64
61	QPSK/10.0	27.74	17.70	8.55	27.71	17.62	8.61	27.85	17.88	8.51
62	QPSK/10.0	27.53	17.85	8.61	28.18	18.18	8.58	28.21	18.20	8.52
63	QPSK/10.0	27.84	17.85	8.58	27.92	17.93	8.57	27.87	17.87	8.52
64	QPSK/10.0	27.92	17.91	8.60	27.95	17.95	8.58	27.88	17.88	8.50
Total Power 33-64		42.41	32.47	-	42.41	32.46	-	42.57	32.51	-
Total Power 33-64+23 dBi		65.41	55.47	-	65.41	55.46	-	65.57	55.51	-
EIRP		68.43	58.51	-	68.45	58.52	-	68.57	58.59	-

Port	Modulation/ Carrier Bandwidth (MHz)	Output Power / Peak to Average Ratio (PAR)								
		Channel position B			Channel position M			Channel position T		
		POWER (dBm)	POWER (dBm/MHz)	PAR (db)	POWER (dBm)	POWER (dBm/MHz)	PAR (db)	POWER (dBm)	POWER (dBm/MHz)	PAR (db)
55	16QAM/10.0	28.16	18.17	8.43	28.13	18.14	8.42	28.19	18.19	8.38
55	64QAM/10.0	28.02	18.03	8.44	28.00	18.00	8.50	28.09	18.08	8.49
55	256QAM/10.0	28.20	18.23	8.41	28.16	18.15	8.44	28.21	18.21	8.40

Configuration LTE-MIMO-1C (1LTE 20MHz QPSK)

Maximum Output Power 30.97dBm per port

Port	Modulation/ Carrier Bandwidth (MHz)	LTE Output Power / Peak to Average Ratio (PAR)								
		Channel position B			Channel position M			Channel position T		
		POWER (dBm)	POWER (dBm/MHz)	PAR (db)	POWER (dBm)	POWER (dBm/MHz)	PAR (db)	POWER (dBm)	POWER (dBm/MHz)	PAR (db)
1	QPSK/20.0	30.39	17.38	8.68	30.31	17.29	8.73	30.27	17.26	8.41
2	QPSK/20.0	30.90	17.89	8.70	31.05	18.04	8.73	30.99	17.98	8.79
3	QPSK/20.0	30.30	17.29	8.69	30.24	17.23	8.77	30.98	17.97	8.43
4	QPSK/20.0	30.84	17.83	8.65	30.91	17.90	8.72	30.25	17.24	8.70
5	QPSK/20.0	31.20	18.19	8.70	30.83	17.82	8.72	31.11	18.10	8.43
6	QPSK/20.0	31.44	17.81	8.68	31.01	18.14	8.69	31.30	18.29	8.73
7	QPSK/20.0	30.95	17.94	8.71	30.92	17.91	8.72	30.97	17.96	8.42
8	QPSK/20.0	31.30	18.28	8.68	31.08	18.36	8.64	31.53	18.52	8.66
9	QPSK/20.0	30.02	17.01	8.36	30.16	17.15	8.49	30.21	17.20	8.41
10	QPSK/20.0	30.23	17.22	8.34	30.36	17.35	8.47	30.24	17.23	8.49
11	QPSK/20.0	30.12	17.11	8.50	30.17	17.16	8.51	30.33	17.32	8.43
12	QPSK/20.0	30.32	17.31	8.51	30.46	17.45	8.50	30.41	17.40	8.51
13	QPSK/20.0	30.69	17.68	8.47	30.75	17.74	8.50	30.83	17.83	8.42
14	QPSK/20.0	30.53	17.52	8.49	30.56	17.52	8.45	30.63	17.62	8.47
15	QPSK/20.0	30.69	17.68	8.50	30.58	17.56	8.51	30.64	17.63	8.42
16	QPSK/20.0	30.81	17.80	8.48	30.80	17.79	8.47	30.93	17.92	8.48
17	QPSK/20.0	30.85	17.85	8.50	30.83	17.81	8.52	30.79	17.79	8.48
18	QPSK/20.0	30.73	17.71	8.49	30.70	17.69	8.48	30.71	17.69	8.48
19	QPSK/20.0	30.64	17.63	8.50	30.72	17.71	8.50	30.79	17.80	8.47
20	QPSK/20.0	30.61	17.60	8.50	30.64	17.64	8.49	30.71	17.70	8.51
21	QPSK/20.0	30.65	17.65	8.62	30.62	17.63	8.53	30.12	17.10	8.57
22	QPSK/20.0	30.10	17.09	8.60	30.04	17.03	8.55	30.22	17.21	8.53
23	QPSK/20.0	30.91	17.89	8.59	30.82	17.81	8.56	30.80	17.79	8.55
24	QPSK/20.0	30.24	17.23	8.58	30.21	17.20	8.54	30.46	17.45	8.55
25	QPSK/20.0	30.71	17.70	8.49	30.59	17.59	8.49	30.64	17.63	8.48
26	QPSK/20.0	30.68	17.70	8.49	30.74	17.73	8.47	30.86	17.85	8.48
27	QPSK/20.0	30.57	17.58	8.50	30.58	17.57	8.49	30.67	17.66	8.48
28	QPSK/20.0	30.81	17.80	8.57	30.86	17.85	8.48	30.86	17.85	8.47
29	QPSK/20.0	30.46	17.45	8.58	30.49	17.48	8.55	30.50	17.49	8.54
30	QPSK/20.0	30.29	17.28	8.60	30.27	17.26	8.56	30.22	17.21	8.53
31	QPSK/20.0	30.78	17.77	8.59	30.73	17.72	8.54	30.80	17.79	8.55
32	QPSK/20.0	30.19	17.18	8.50	30.09	17.08	8.55	30.19	17.18	8.53
Total Power 1-32		45.56	32.53	-	45.54	32.61	-	45.60	32.69	-
Total Power 1-32+23dBi		68.56	55.53	-	68.54	55.61	-	68.60	55.69	-

Port	Modulation/ Carrier Bandwidth (MHz)	Output Power / Peak to Average Ratio (PAR)								
		Channel position B			Channel position M			Channel position T		
		POWER (dBm)	POWER (dBm/MHz)	PAR (db)	POWER (dBm)	POWER (dBm/MHz)	PAR (db)	POWER (dBm)	POWER (dBm/MHz)	PAR (db)
33	QPSK/20.0	30.75	17.74	8.68	30.79	17.77	8.66	30.66	17.65	8.44
34	QPSK/20.0	31.02	18.01	8.71	31.01	18.10	8.71	31.12	18.11	8.80
35	QPSK/20.0	31.03	18.02	8.72	30.62	17.61	8.71	31.09	18.08	8.41
36	QPSK/20.0	30.66	17.65	8.71	31.06	18.11	8.79	30.51	17.49	8.71
37	QPSK/20.0	30.15	17.14	8.71	30.14	17.24	8.77	30.26	17.25	8.40
38	QPSK/20.0	30.21	17.20	8.67	30.35	17.34	8.71	30.21	17.20	8.75
39	QPSK/20.0	30.25	16.84	8.68	30.30	17.30	8.72	29.86	16.83	8.43
40	QPSK/20.0	30.28	17.27	8.72	30.32	17.31	8.69	30.29	17.28	8.76
41	QPSK/20.0	30.65	17.64	8.50	30.90	18.01	8.49	30.61	17.61	8.42
42	QPSK/20.0	31.02	18.01	8.50	31.06	18.09	8.50	31.15	18.14	8.46
43	QPSK/20.0	30.76	17.75	8.52	30.75	17.72	8.48	30.62	17.61	8.45
44	QPSK/20.0	30.95	17.99	8.50	31.03	18.09	8.52	31.10	18.09	8.50
45	QPSK/20.0	30.22	17.17	8.45	30.37	17.32	8.49	30.21	17.20	8.41
46	QPSK/20.0	30.19	17.16	8.50	30.28	17.27	8.49	30.22	17.21	8.46
47	QPSK/20.0	30.25	17.22	8.49	30.42	17.41	8.49	30.21	17.20	8.47
48	QPSK/20.0	30.31	17.29	8.50	30.43	17.39	8.48	30.19	17.18	8.42
49	QPSK/20.0	29.69	16.88	8.59	29.73	16.77	8.58	29.70	16.68	8.57
50	QPSK/20.0	30.19	17.18	8.54	30.08	17.07	8.57	30.69	17.68	8.51
51	QPSK/20.0	30.08	17.07	8.58	30.08	17.07	8.57	29.98	16.98	8.57
52	QPSK/20.0	30.26	17.24	8.57	30.18	17.18	8.55	30.23	17.22	8.55
53	QPSK/20.0	30.87	17.72	8.51	30.95	17.94	8.49	31.02	18.01	8.47
54	QPSK/20.0	30.60	17.61	8.50	30.67	17.66	8.52	30.69	17.67	8.48
55	QPSK/20.0	31.14	18.09	8.49	31.09	18.08	8.49	31.10	18.09	8.48
56	QPSK/20.0	30.97	17.96	8.47	30.90	17.88	8.47	31.07	18.07	8.48
57	QPSK/20.0	29.49	16.50	8.59	29.60	16.59	8.57	29.62	16.63	8.57
58	QPSK/20.0	29.85	16.84	8.59	29.82	16.76	8.57	29.89	16.88	8.56
59	QPSK/20.0	29.21	16.20	8.58	29.28	16.20	8.59	29.53	16.52	8.57
60	QPSK/20.0	29.54	16.47	8.60	29.52	16.47	8.62	29.58	16.55	8.57
61	QPSK/20.0	30.35	17.34	8.48	30.33	17.32	8.49	30.45	17.44	8.48
62	QPSK/20.0	30.75	17.74	8.48	30.63	17.56	8.60	30.77	17.69	8.52
63	QPSK/20.0	30.42	17.42	8.48	30.45	17.43	8.49	30.40	17.39	8.47
64	QPSK/20.0	30.39	17.39	8.48	30.45	17.42	8.49	30.27	17.34	8.49
Total Power 33-64		45.32	32.41	-	45.36	32.46	-	45.35	32.45	-
Total Power33-64+23dBi		68.32	55.41	-	68.36	55.46	-	68.35	55.45	-
LTE EIRP		71.45	58.48	-	71.46	58.55	-	71.49	58.58	-

Port	Modulation/ Carrier Bandwidth (MHz)	Output Power / Peak to Average Ratio (PAR)								
		Channel position B			Channel position M			Channel position T		
		POWER (dBm)	POWER (dBm/MHz)	PAR (db)	POWER (dBm)	POWER (dBm/MHz)	PAR (db)	POWER (dBm)	POWER (dBm/MHz)	PAR (db)
55	16QAM/20.0	31.00	17.99	8.62	30.96	17.94	8.62	31.11	18.10	8.40
55	64QAM/20.0	31.30	18.28	8.48	31.24	18.23	8.49	31.21	18.20	8.52
55	256QAM/20.0	31.45	18.45	8.51	31.40	18.39	8.49	31.36	18.35	8.48

Configuration LTE-MIMO-3C (3LTE 10MHz QPSK)

Maximum Output Power 32.73dBm per port

Port	Modulation/ Carrier Bandwidth (MHz)	Output Power / Peak to Average Ratio (PAR)								
		Channel position B			Channel position M			Channel position T		
		POWER (dBm)	POWER (dBm/MHz)	PAR (db)	POWER (dBm)	POWER (dBm/MHz)	PAR (db)	POWER (dBm)	POWER (dBm/MHz)	PAR (db)
1	QPSK/10.0	32.24	-	-	32.35	-	-	32.22	-	-
2	QPSK/10.0	32.50	-	-	32.70	-	-	32.54	-	-
3	QPSK/10.0	32.10	-	-	32.27	-	-	32.20	-	-
4	QPSK/10.0	32.29	-	-	32.47	-	-	32.41	-	-
5	QPSK/10.0	32.25	-	-	32.56	-	-	32.45	-	-
6	QPSK/10.0	32.58	-	-	32.75	-	-	32.65	-	-
7	QPSK/10.0	32.54	-	-	32.71	-	-	32.62	-	-
8	QPSK/10.0	32.47	-	-	32.71	-	-	32.59	-	-
9	QPSK/10.0	31.70	-	-	32.06	-	-	31.82	-	-
10	QPSK/10.0	31.63	-	-	31.74	-	-	31.57	-	-
11	QPSK/10.0	31.65	-	-	32.05	-	-	31.81	-	-
12	QPSK/10.0	31.64	-	-	31.84	-	-	31.58	-	-
13	QPSK/10.0	32.35	-	-	32.55	-	-	32.41	-	-
14	QPSK/10.0	31.95	-	-	32.07	-	-	31.92	-	-
15	QPSK/10.0	32.46	-	-	32.47	-	-	32.39	-	-
16	QPSK/10.0	32.21	-	-	32.30	-	-	32.18	-	-
17	QPSK/10.0	32.73	-	-	32.85	-	-	32.72	-	-
18	QPSK/10.0	32.54	-	-	32.67	-	-	32.62	-	-
19	QPSK/10.0	32.34	-	-	32.57	-	-	32.36	-	-
20	QPSK/10.0	32.22	-	-	32.53	-	-	32.30	-	-
21	QPSK/10.0	32.20	-	-	32.38	-	-	32.27	-	-
22	QPSK/10.0	31.77	-	-	31.97	-	-	31.80	-	-
23	QPSK/10.0	32.67	-	-	32.83	-	-	32.65	-	-
24	QPSK/10.0	31.78	-	-	31.97	-	-	31.89	-	-
25	QPSK/10.0	32.51	-	-	32.66	-	-	32.41	-	-
26	QPSK/10.0	32.66	-	-	32.82	-	-	32.72	-	-
27	QPSK/10.0	32.58	-	-	32.85	-	-	32.64	-	-
28	QPSK/10.0	32.28	-	-	32.23	-	-	32.02	-	-
29	QPSK/10.0	32.36	-	-	32.52	-	-	32.43	-	-
30	QPSK/10.0	32.00	-	-	32.22	-	-	32.03	-	-
31	QPSK/10.0	32.32	-	-	32.51	-	-	32.43	-	-
32	QPSK/10.0	31.99	-	-	32.61	-	-	32.47	-	-
Total Power 1-32		47.16	-	-	47.36	-	-	47.22	-	-
Total Power 1-32+23 dBi		70.16	-	-	70.36	-	-	70.22	-	-

Port	Modulation/ Carrier Bandwidth (MHz)	Output Power / Peak to Average Ratio (PAR)								
		Channel position B			Channel position M			Channel position T		
		POWER (dBm)	POWER (dBm/MHz)	PAR (db)	POWER (dBm)	POWER (dBm/MHz)	PAR (db)	POWER (dBm)	POWER (dBm/MHz)	PAR (db)
33	QPSK/10.0	32.54	-	-	32.75	-	-	32.62	-	-
34	QPSK/10.0	32.45	-	-	32.72	-	-	32.51	-	-
35	QPSK/10.0	32.28	-	-	32.51	-	-	32.42	-	-
36	QPSK/10.0	32.39	-	-	32.72	-	-	32.56	-	-
37	QPSK/10.0	32.25	-	-	32.27	-	-	32.39	-	-
38	QPSK/10.0	32.09	-	-	32.46	-	-	32.14	-	-
39	QPSK/10.0	32.30	-	-	32.34	-	-	32.32	-	-
40	QPSK/10.0	32.19	-	-	32.27	-	-	32.16	-	-
41	QPSK/10.0	32.71	-	-	32.74	-	-	32.70	-	-
42	QPSK/10.0	32.54	-	-	32.71	-	-	32.56	-	-
43	QPSK/10.0	32.51	-	-	32.79	-	-	32.48	-	-
44	QPSK/10.0	32.51	-	-	32.88	-	-	32.61	-	-
45	QPSK/10.0	31.92	-	-	32.18	-	-	32.01	-	-
46	QPSK/10.0	31.88	-	-	32.01	-	-	31.99	-	-
47	QPSK/10.0	32.27	-	-	32.61	-	-	32.26	-	-
48	QPSK/10.0	32.11	-	-	32.40	-	-	32.16	-	-
49	QPSK/10.0	31.68	-	-	31.92	-	-	31.76	-	-
50	QPSK/10.0	31.86	-	-	32.00	-	-	31.92	-	-
51	QPSK/10.0	32.06	-	-	32.19	-	-	32.09	-	-
52	QPSK/10.0	32.03	-	-	32.18	-	-	32.08	-	-
53	QPSK/10.0	32.75	-	-	32.93	-	-	32.82	-	-
54	QPSK/10.0	32.48	-	-	32.75	-	-	32.66	-	-
55	QPSK/10.0	32.99	-	-	33.11	-	-	33.03	-	-
56	QPSK/10.0	32.92	-	-	33.05	-	-	32.95	-	-
57	QPSK/10.0	31.58	-	-	31.73	-	-	31.52	-	-
58	QPSK/10.0	31.65	-	-	31.83	-	-	31.68	-	-
59	QPSK/10.0	31.15	-	-	31.47	-	-	31.35	-	-
60	QPSK/10.0	31.31	-	-	31.42	-	-	31.24	-	-
61	QPSK/10.0	32.27	-	-	32.38	-	-	32.26	-	-
62	QPSK/10.0	32.66	-	-	32.77	-	-	32.57	-	-
63	QPSK/10.0	32.41	-	-	32.63	-	-	32.38	-	-
64	QPSK/10.0	32.50	-	-	32.79	-	-	32.42	-	-
Total Power 33-64		47.15	-	-	47.35	-	-	47.20	-	-
Total Power 33-64+23 dBi		70.15	-	-	70.35	-	-	70.20	-	-
EIRP		73.17	-	-	73.37	-	-	73.22	-	-

Port	Modulation/ Carrier Bandwidth (MHz)	Output Power / Peak to Average Ratio (PAR)								
		Channel position B			Channel position M			Channel position T		
		POWER (dBm)	POWER (dBm/MHz)	PAR (db)	POWER (dBm)	POWER (dBm/MHz)	PAR (db)	POWER (dBm)	POWER (dBm/MHz)	PAR (db)
55	16QAM/10.0	32.88	20.63	-	32.99	20.34	-	33.03	20.28	-
55	64QAM/10.0	32.98	19.42	-	33.04	19.13	-	33.05	19.20	-
55	256QAM/10.0	33.12	19.38	-	33.18	19.13	-	33.13	19.22	-

Configuration LTE-MIMO-3C (3LTE 20MHz QPSK)

Maximum Output Power 34.95dBm per port

Port	Modulation/ Carrier Bandwidth (MHz)	LTE Output Power / Peak to Average Ratio (PAR)								
		Channel position B			Channel position M			Channel position T		
		POWER (dBm)	POWER (dBm/MHz)	PAR (db)	POWER (dBm)	POWER (dBm/MHz)	PAR (db)	POWER (dBm)	POWER (dBm/MHz)	PAR (db)
1	QPSK/20.0	33.94	-	-	33.84	-	-	34.03	-	-
2	QPSK/20.0	34.37	-	-	34.31	-	-	34.26	-	-
3	QPSK/20.0	33.79	-	-	34.07	-	-	34.00	-	-
4	QPSK/20.0	34.19	-	-	33.97	-	-	34.18	-	-
5	QPSK/20.0	34.41	-	-	34.39	-	-	34.30	-	-
6	QPSK/20.0	34.82	-	-	34.55	-	-	34.77	-	-
7	QPSK/20.0	34.61	-	-	34.64	-	-	34.43	-	-
8	QPSK/20.0	34.63	-	-	34.69	-	-	34.66	-	-
9	QPSK/20.0	33.70	-	-	33.58	-	-	33.52	-	-
10	QPSK/20.0	33.63	-	-	33.50	-	-	33.60	-	-
11	QPSK/20.0	33.82	-	-	33.74	-	-	33.50	-	-
12	QPSK/20.0	33.82	-	-	33.77	-	-	33.61	-	-
13	QPSK/20.0	34.33	-	-	34.34	-	-	34.25	-	-
14	QPSK/20.0	33.87	-	-	33.91	-	-	33.79	-	-
15	QPSK/20.0	34.37	-	-	34.19	-	-	34.07	-	-
16	QPSK/20.0	34.34	-	-	34.19	-	-	34.09	-	-
17	QPSK/20.0	34.24	-	-	34.30	-	-	34.21	-	-
18	QPSK/20.0	34.15	-	-	34.22	-	-	34.13	-	-
19	QPSK/20.0	34.02	-	-	34.20	-	-	34.02	-	-
20	QPSK/20.0	33.94	-	-	34.09	-	-	33.92	-	-
21	QPSK/20.0	33.75	-	-	33.81	-	-	33.86	-	-
22	QPSK/20.0	33.45	-	-	33.57	-	-	33.59	-	-
23	QPSK/20.0	34.02	-	-	34.09	-	-	33.94	-	-
24	QPSK/20.0	33.51	-	-	33.68	-	-	33.67	-	-
25	QPSK/20.0	34.07	-	-	34.13	-	-	33.98	-	-
26	QPSK/20.0	34.13	-	-	34.23	-	-	34.26	-	-
27	QPSK/20.0	34.08	-	-	34.20	-	-	34.11	-	-
28	QPSK/20.0	33.62	-	-	33.93	-	-	33.97	-	-
29	QPSK/20.0	33.80	-	-	33.97	-	-	33.93	-	-
30	QPSK/20.0	33.73	-	-	33.73	-	-	33.56	-	-
31	QPSK/20.0	34.16	-	-	34.06	-	-	34.01	-	-
32	QPSK/20.0	33.99	-	-	33.77	-	-	33.64	-	-
Total Power1-32		48.97	-	-	48.99	-	-	48.92	-	-
Total Power1-32+23dBi		71.97	-	-	71.99	-	-	71.92	-	-

Port	Modulation/ Carrier Bandwidth (MHz)	LTE Output Power / Peak to Average Ratio (PAR)								
		Channel position B			Channel position M			Channel position T		
		POWER (dBm)	POWER (dBm/MHz)	PAR (db)	POWER (dBm)	POWER (dBm/MHz)	PAR (db)	POWER (dBm)	POWER (dBm/MHz)	PAR (db)
33	QPSK/20.0	34.38	-	-	34.42	-	-	34.21	-	-
34	QPSK/20.0	34.39	-	-	34.51	-	-	34.26	-	-
35	QPSK/20.0	34.19	-	-	34.47	-	-	34.03	-	-
36	QPSK/20.0	34.40	-	-	34.38	-	-	34.26	-	-
37	QPSK/20.0	33.41	-	-	33.27	-	-	33.31	-	-
38	QPSK/20.0	33.57	-	-	33.81	-	-	33.42	-	-
39	QPSK/20.0	33.51	-	-	33.43	-	-	33.32	-	-
40	QPSK/20.0	33.63	-	-	33.60	-	-	33.47	-	-
41	QPSK/20.0	34.31	-	-	34.18	-	-	34.10	-	-
42	QPSK/20.0	34.51	-	-	34.47	-	-	34.31	-	-
43	QPSK/20.0	34.29	-	-	34.45	-	-	34.08	-	-
44	QPSK/20.0	34.45	-	-	34.65	-	-	34.31	-	-
45	QPSK/20.0	33.48	-	-	33.49	-	-	33.30	-	-
46	QPSK/20.0	33.56	-	-	33.60	-	-	33.51	-	-
47	QPSK/20.0	33.42	-	-	33.59	-	-	33.29	-	-
48	QPSK/20.0	33.60	-	-	33.73	-	-	33.52	-	-
49	QPSK/20.0	33.18	-	-	33.37	-	-	33.33	-	-
50	QPSK/20.0	33.33	-	-	33.44	-	-	33.39	-	-
51	QPSK/20.0	33.34	-	-	33.42	-	-	33.34	-	-
52	QPSK/20.0	33.48	-	-	33.65	-	-	33.64	-	-
53	QPSK/20.0	34.24	-	-	34.37	-	-	34.34	-	-
54	QPSK/20.0	34.02	-	-	34.22	-	-	34.19	-	-
55	QPSK/20.0	34.58	-	-	34.53	-	-	34.49	-	-
56	QPSK/20.0	34.53	-	-	34.48	-	-	34.45	-	-
57	QPSK/20.0	33.15	-	-	33.21	-	-	33.08	-	-
58	QPSK/20.0	33.25	-	-	33.35	-	-	33.19	-	-
59	QPSK/20.0	32.78	-	-	32.96	-	-	32.61	-	-
60	QPSK/20.0	32.82	-	-	32.92	-	-	32.78	-	-
61	QPSK/20.0	33.78	-	-	33.85	-	-	33.84	-	-
62	QPSK/20.0	34.17	-	-	34.10	-	-	34.06	-	-
63	QPSK/20.0	33.98	-	-	34.11	-	-	33.94	-	-
64	QPSK/20.0	33.86	-	-	34.05	-	-	33.79	-	-
Total Power33-64		48.73	-	-	48.81	-	-	48.65	-	-
Total Power33-64+23dBi		71.73	-	-	71.81	-	-	71.65	-	-
LTE EIRP		74.86	-	-	74.91	-	-	74.80	-	-

Port	Modulation/ Carrier Bandwidth (MHz)	Output Power / Peak to Average Ratio (PAR)								
		Channel position B			Channel position M			Channel position T		
		POWER (dBm)	POWER (dBm/MHz)	PAR (db)	POWER (dBm)	POWER (dBm/MHz)	PAR (db)	POWER (dBm)	POWER (dBm/MHz)	PAR (db)
55	16QAM/20.0	34.58	19.65	-	34.31	18.78	-	34.39	18.67	-
55	64QAM/20.0	34.54	17.90	-	34.56	17.68	-	34.45	17.35	-
55	256QAM/20.0	34.59	17.96	-	34.60	17.82	-	34.50	17.71	-

A.2 Occupied Bandwidth

A.2.1 Reference

FCC CFR 47 Part 2, Clause 2.1049

FCC CFR 47 Part 27, Clause 27.53 (m)

A.2.2 Method of Measurements

The EUT was set to transmit at maximum power and testing was carried out on bottom, middle and top channels. Using the Occupied Bandwidth measurement function in the spectrum analyzer, the 26dB bandwidth was measured in accordance with FCC KDB 971168 D01 Clause 4.2.

The measurement method is from KDB 971168 4.2:

- a) The spectrum analyzer center frequency is set to the nominal EUT channel center frequency. The frequency span for the spectrum analyzer shall be set wide enough to capture all modulation products including the emission skirts.
- b) The nominal IF filter bandwidth (3 dB RBW) shall be in the range of 1 to 5 % of the anticipated OBW, and the VBW shall be at least 3 times the RBW.
- c) Set the reference level of the instrument as required to keep the signal from exceeding the maximum input mixer level for linear operation. In general, the peak of the spectral envelope must be at least $10\log(\text{OBW} / \text{RBW})$ below the reference level.
- d) Use the 99 % power bandwidth function of the spectrum analyzer and report the measured bandwidth.

A.2.3 Measurement result

Configuration LTE-MIMO-1C (1LTE 10MHz)

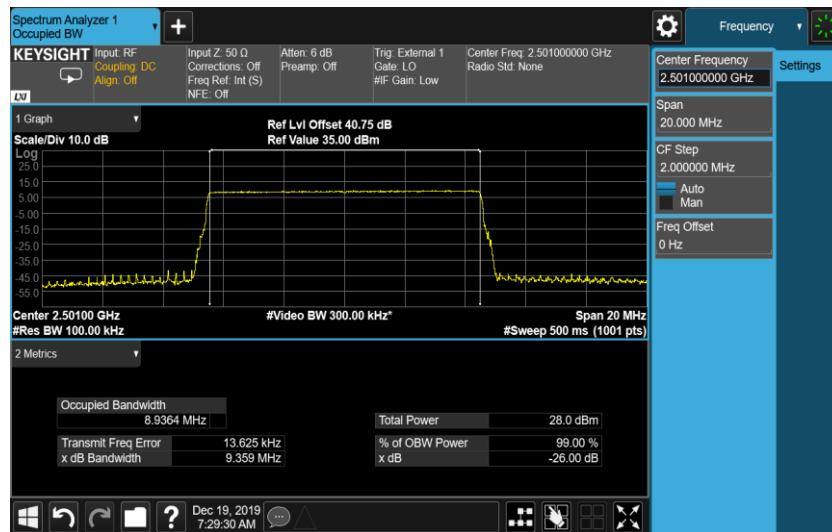
-26dBc Occupied Bandwidth, Port 55, LTE 10.0M

Modulation / Bandwidth	Occupied Bandwidth (MHz)		
	Channel Position B	Channel Position M	Channel Position T
QPSK/ 10.0 MHz	9.359	9.363	9.362
16QAM / 10.0 MHz	9.304	9.320	9.319
64QAM / 10.0 MHz	9.346	9.361	9.361
256QAM / 10.0 MHz	9.353	9.362	9.363

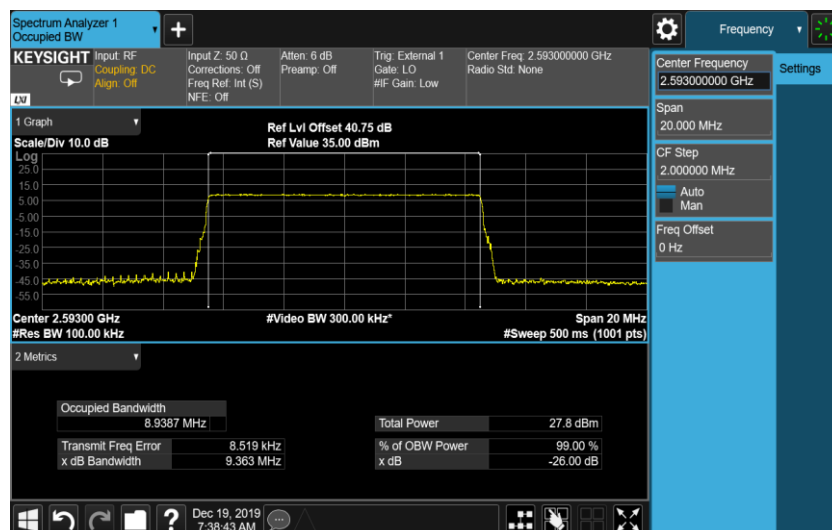
99% Occupied Bandwidth, Port 55, LTE 10.0M

Modulation / Bandwidth	Occupied Bandwidth (MHz)		
	Channel Position B	Channel Position M	Channel Position T
QPSK/ 10.0 MHz	8.9364	8.9387	8.9364
16QAM / 10.0 MHz	8.9062	8.9135	8.9074
64QAM / 10.0 MHz	8.9326	8.9342	8.9325
256QAM / 10.0 MHz	8.9356	8.9369	8.9339

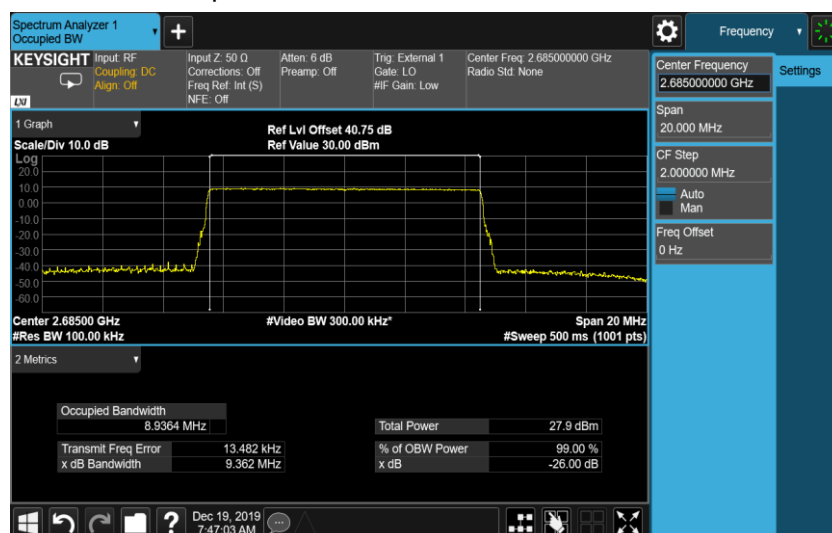
Port 55, QPSK 10.0M Channel position B, LTE



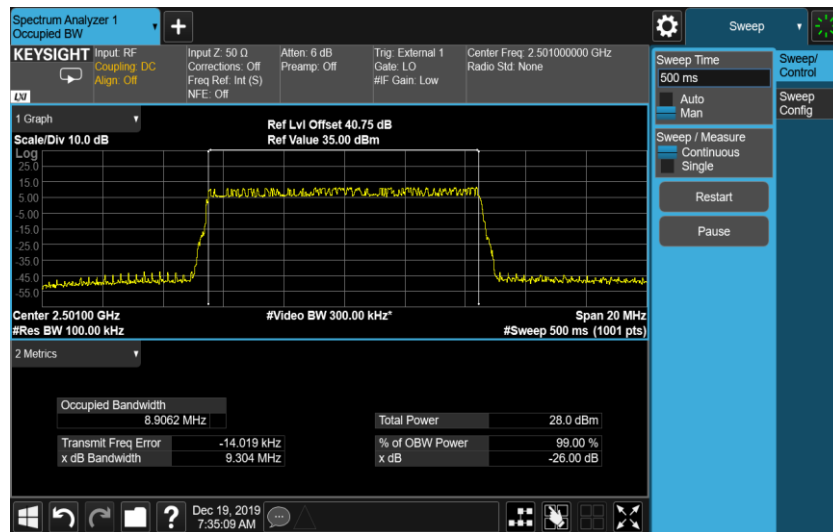
Port 55, QPSK 10.0M Channel position M, LTE



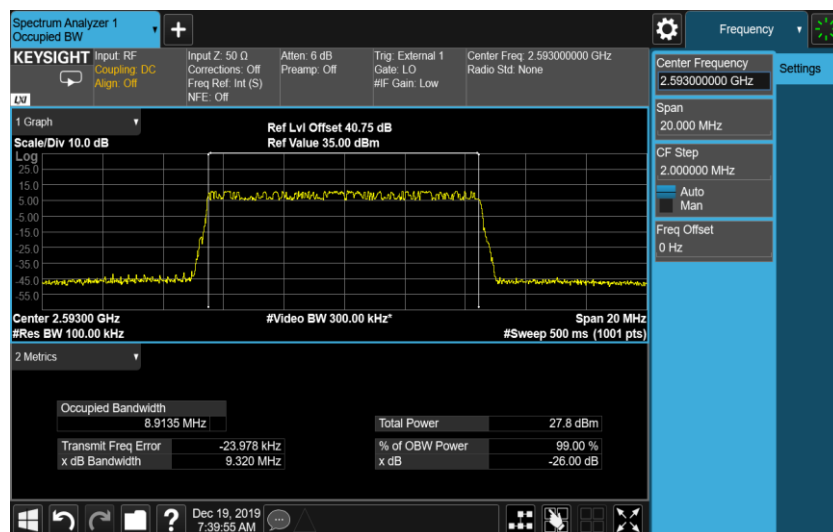
Port 55, QPSK 10.0M Channel position T, LTE



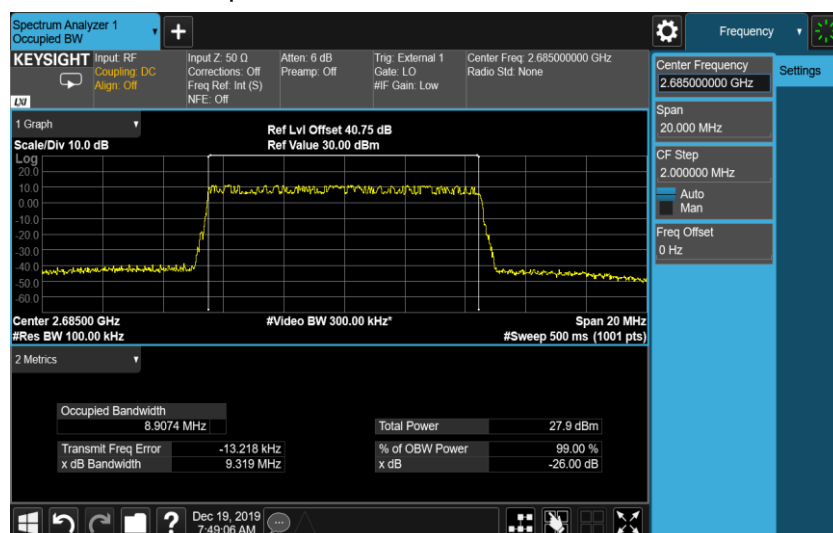
Port 55, 16QAM 10.0M Channel position B, LTE



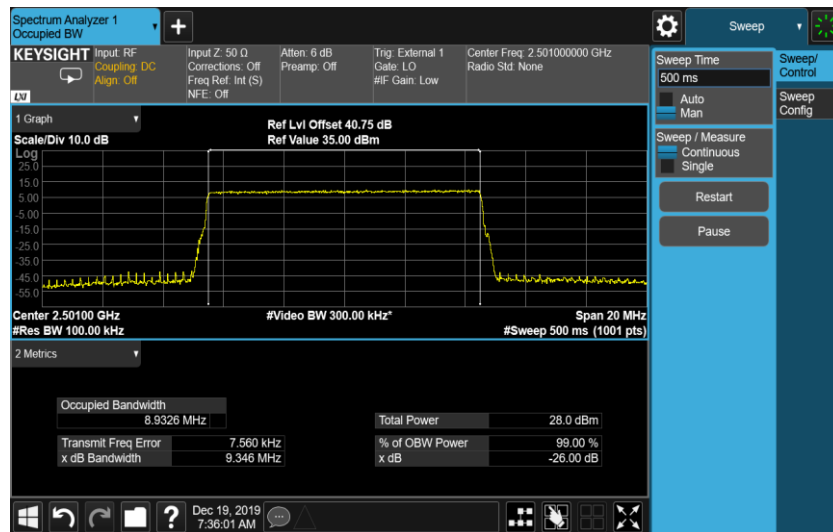
Port 55, 16QAM 10.0M Channel position M, LTE



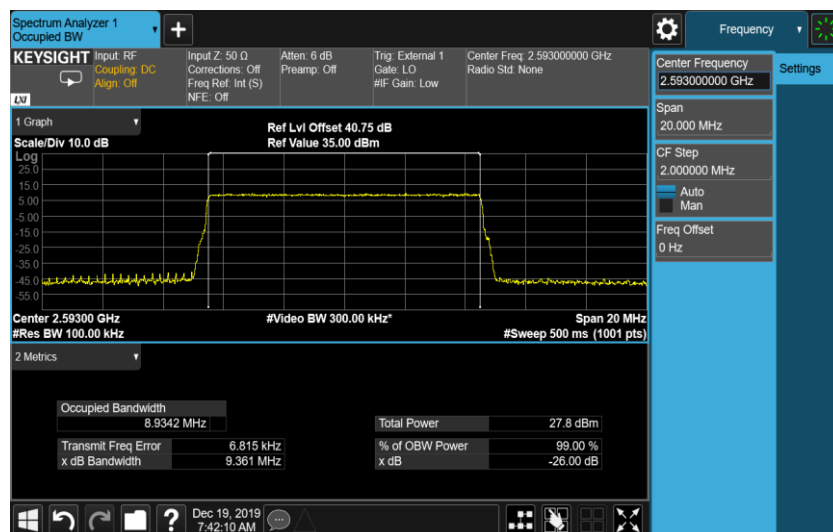
Port 55, 16QAM 10.0M Channel position T, LTE



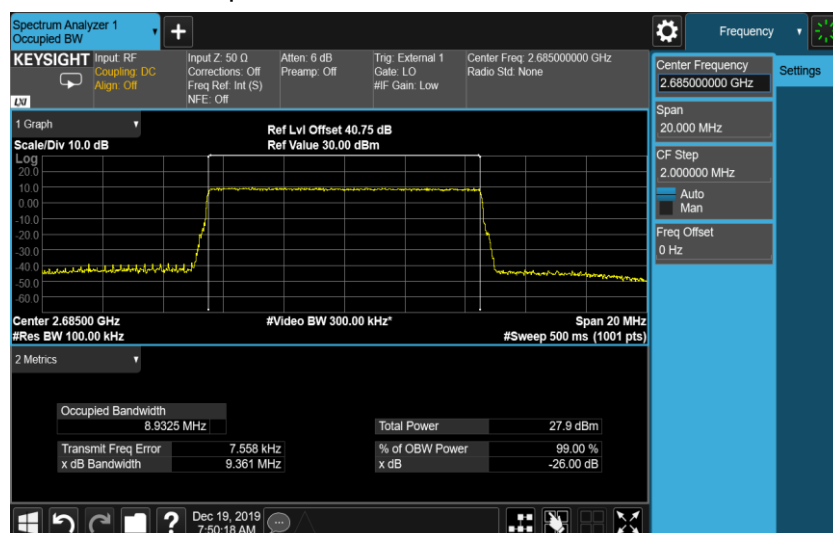
Port 55, 64QAM 10.0M Channel position B, LTE



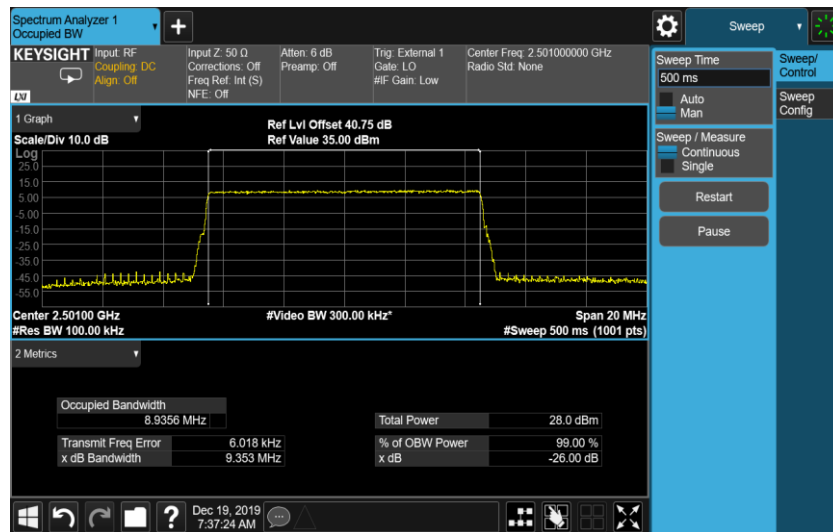
Port 55, 64QAM 10.0M Channel position M, LTE



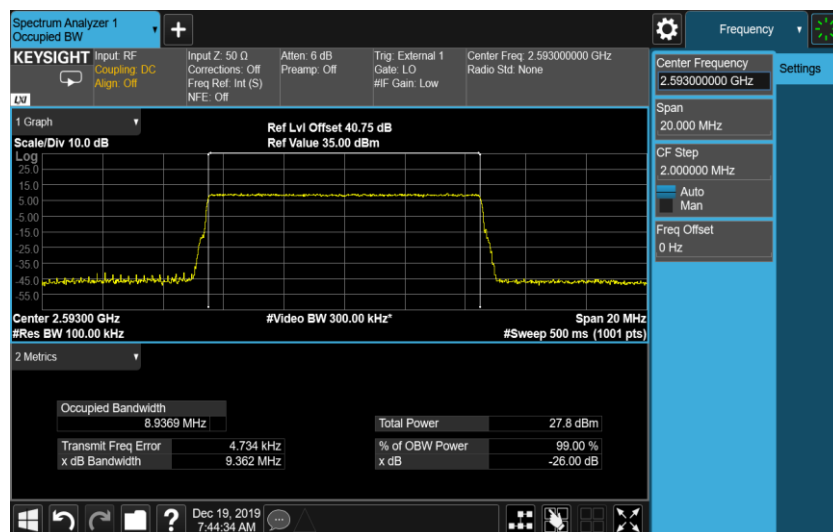
Port 55, 64QAM 10.0M Channel position T, LTE



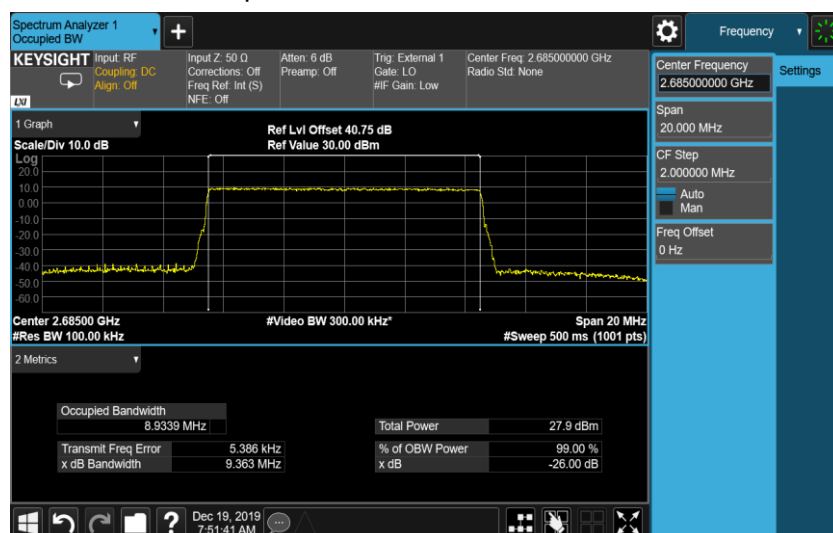
Port 55, 256QAM 10.0M Channel position B, LTE



Port 55, 256QAM 10.0M Channel position M, LTE



Port 55, 256QAM 10.0M Channel position T, LTE



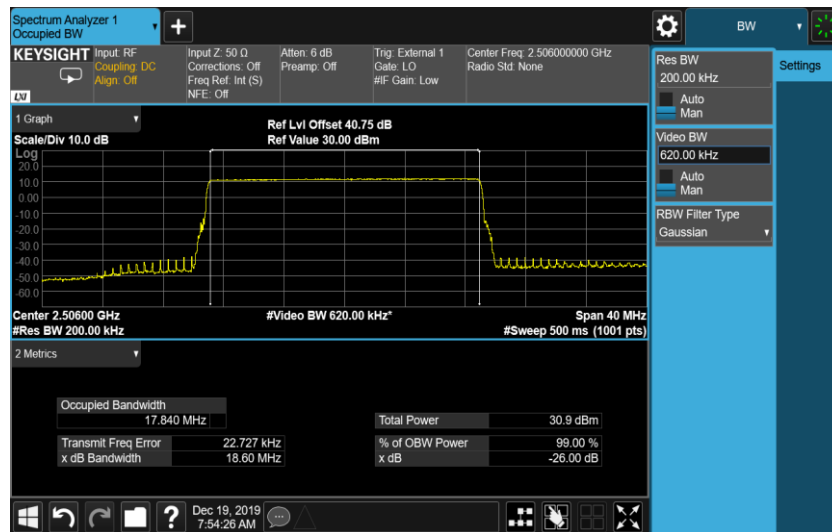
Configuration LTE-MIMO-1C (1LTE 20MHz)
-26dBc Occupied Bandwidth, Port 55, LTE 20.0M

Modulation / Bandwidth	Occupied Bandwidth (MHz)		
	Channel Position B	Channel Position M	Channel Position T
QPSK/ 20.0 MHz	18.60	18.68	18.59
16QAM / 20.0 MHz	18.50	18.49	18.49
64QAM / 20.0 MHz	18.60	18.58	18.55
256QAM / 20.0 MHz	18.63	18.55	18.55

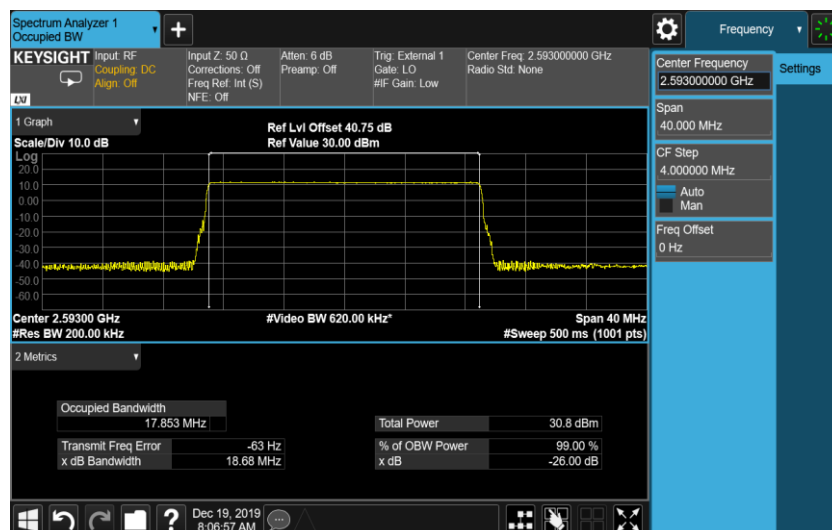
99% Occupied Bandwidth, Port 55, LTE 20.0M

Modulation / Bandwidth	Occupied Bandwidth (MHz)		
	Channel Position B	Channel Position M	Channel Position T
QPSK/ 20.0 MHz	17.840	17.853	17.844
16QAM / 20.0 MHz	17.778	17.710	17.695
64QAM / 20.0 MHz	17.845	17.854	17.843
256QAM / 20.0 MHz	17.847	17.857	17.849

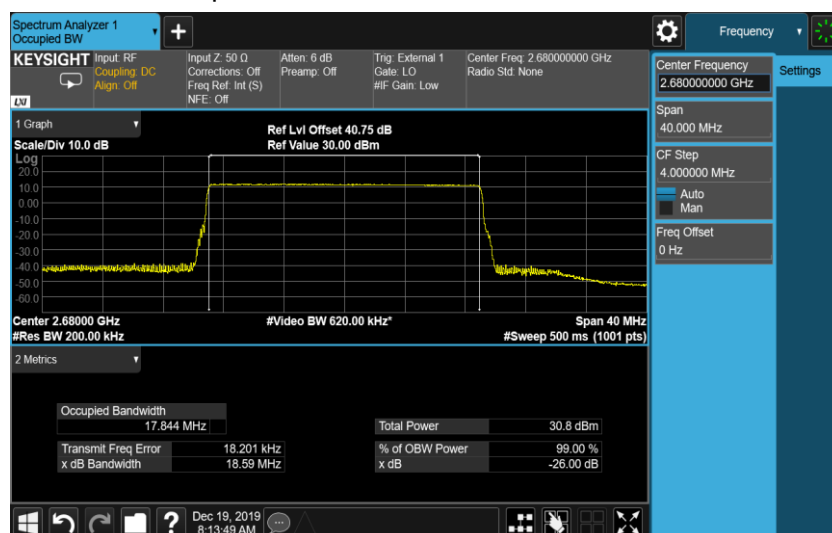
Port 55, QPSK 20.0M Channel position B, LTE



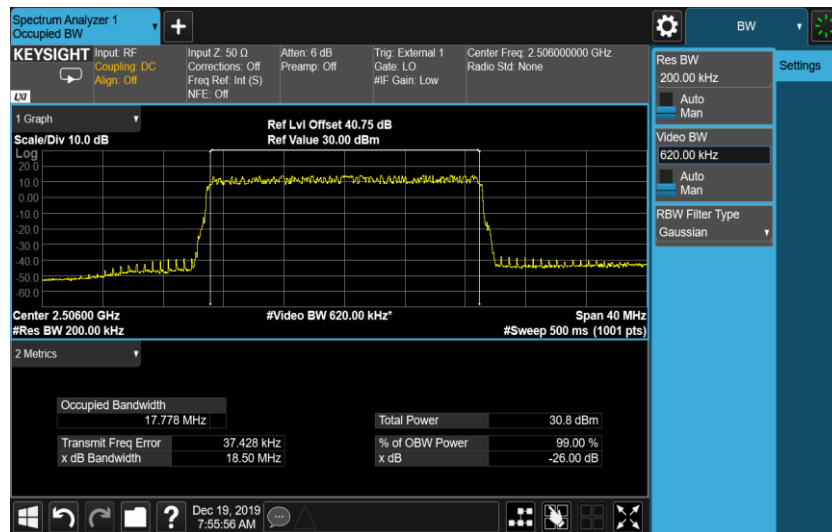
Port 55, QPSK 20.0M Channel position M, LTE



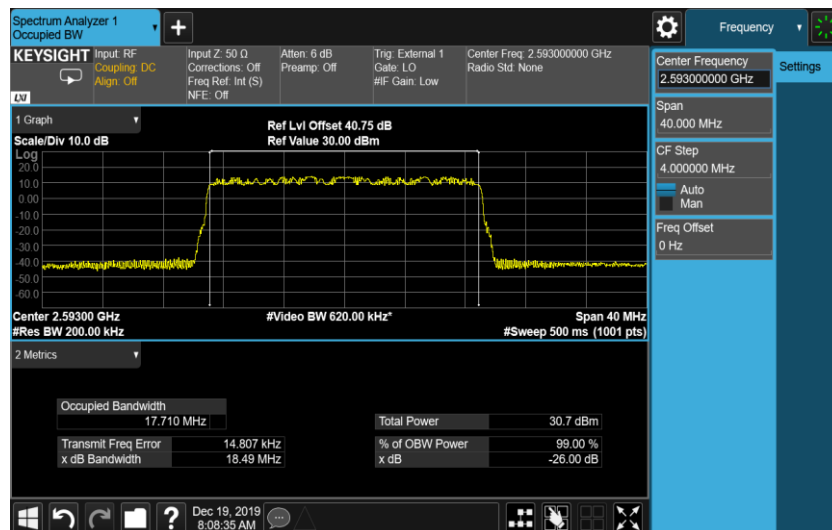
Port 55, QPSK 20.0M Channel position T, LTE



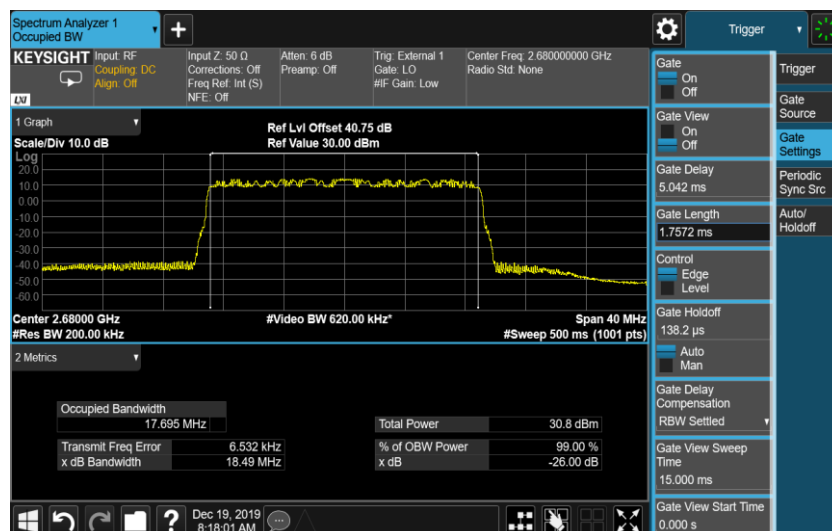
Port 55, 16QAM 20.0M Channel position B, LTE



Port 55, 16QAM 20.0M Channel position M, LTE



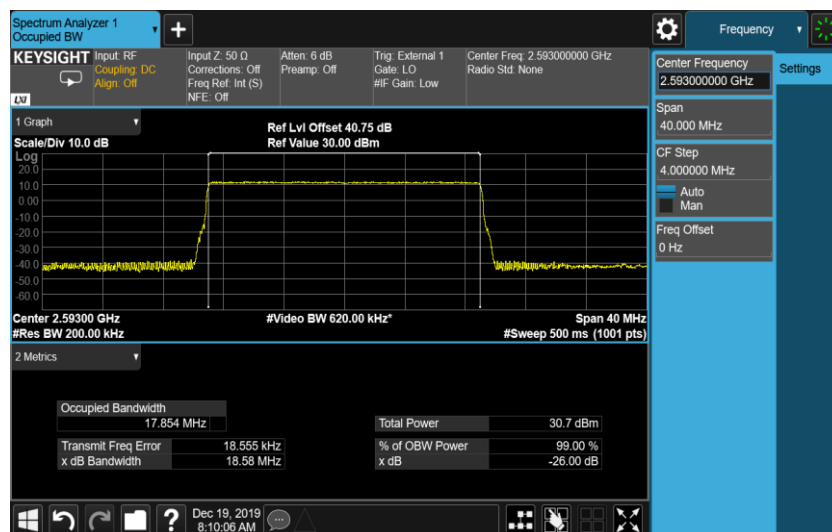
Port 55, 16QAM 20.0M Channel position T, LTE



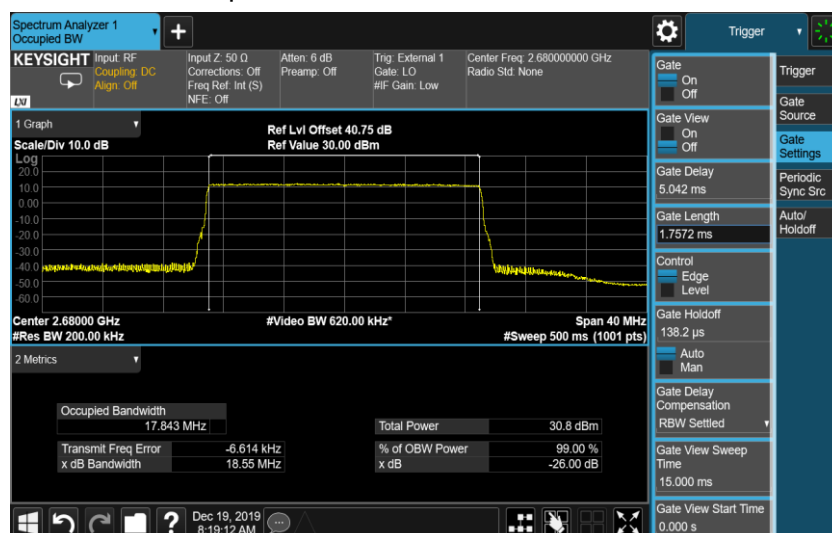
Port 55, 64QAM 20.0M Channel position B, LTE



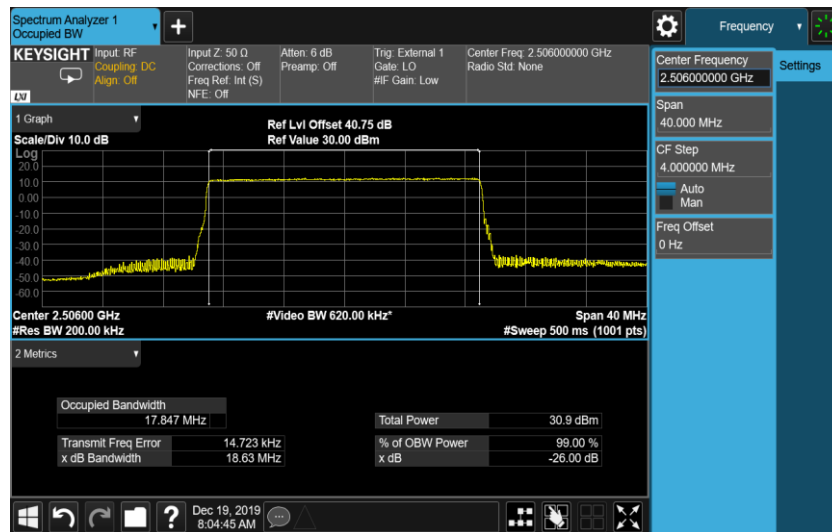
Port 55, 64QAM 20.0M Channel position M, LTE



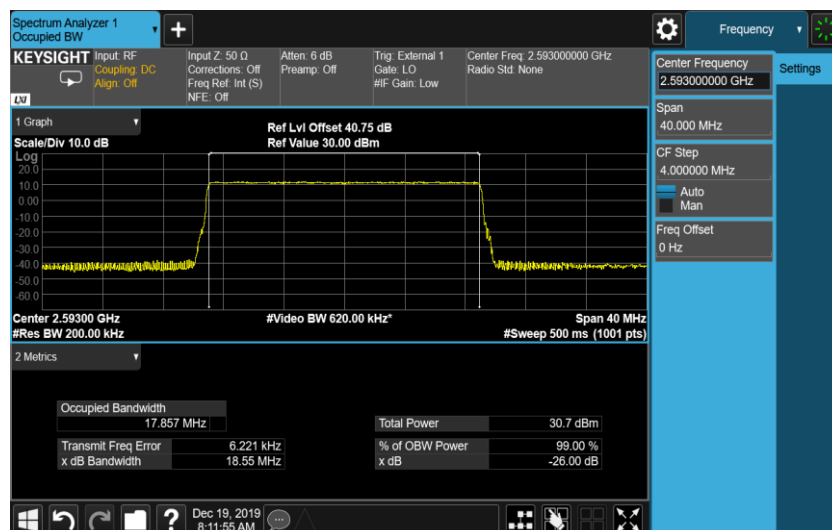
Port 55, 64QAM 20.0M Channel position T, LTE



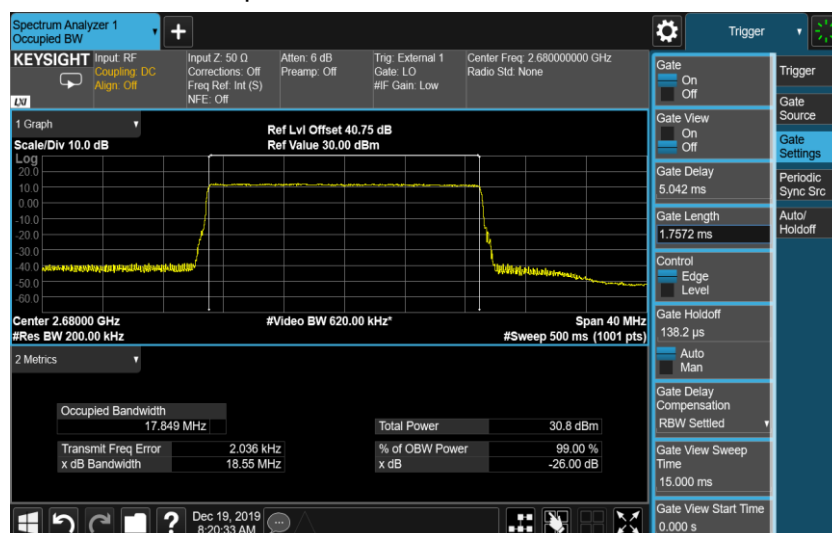
Port 55, 256QAM 20.0M Channel position B, LTE



Port 55, 256QAM 20.0M Channel position M, LTE



Port 55, 256QAM 20.0M Channel position T, LTE



A.3 Spurious Emissions at Band Edge

A.3.1 Reference

FCC CFR 47 Part 2, Clause 2.1051

FCC CFR 47 Part 27, Clause 27.53(m)

A.3.2 Method of measurement

The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + 10\log(P)$ dB.

For MIMO mode configurations, the limit was adjusted with a correction of -18.06dB [$10\log(1/64)$] by using the Measure and Add $10\log(N)$ dB technique according to KDB 662911 D01 Multiple Transmitter Output accounting for simultaneous transmission from antenna ports . Then the limit was adjusted to -31.06dBm.

In the 1 MHz bands immediately outside and adjacent to the frequency block, a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed and a RBW of 1MHz for measurements of emissions > 1MHz away from the band edges.

The limit was adjusted with -13.01dB [$10\log(50/1000)$] to compensate for the reduced measurement bandwidth 50KHz for emission more than 1MHz away from the band edges. For MIMO mode, the limit of -44.07dBm was used.

Spectrum analyzer detector was set as RMS.

A.3.3 Measurement limit

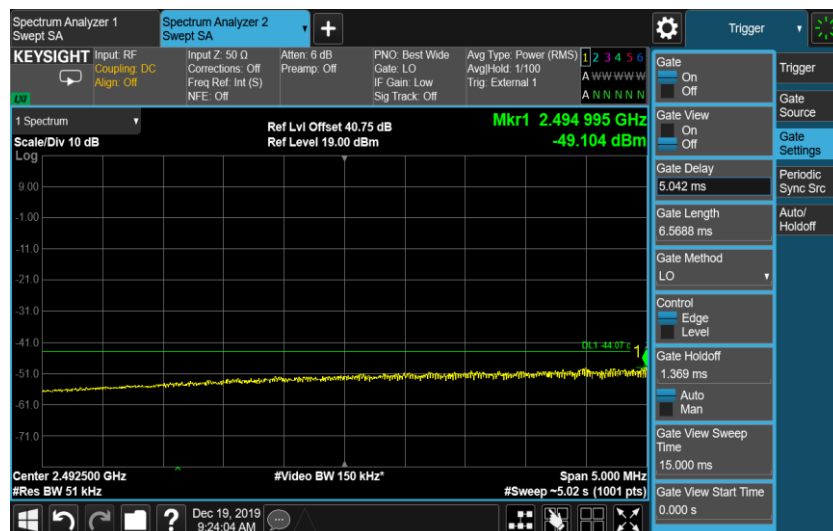
The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + 10\log(P)$ dB.

A.3.4 Measurement result

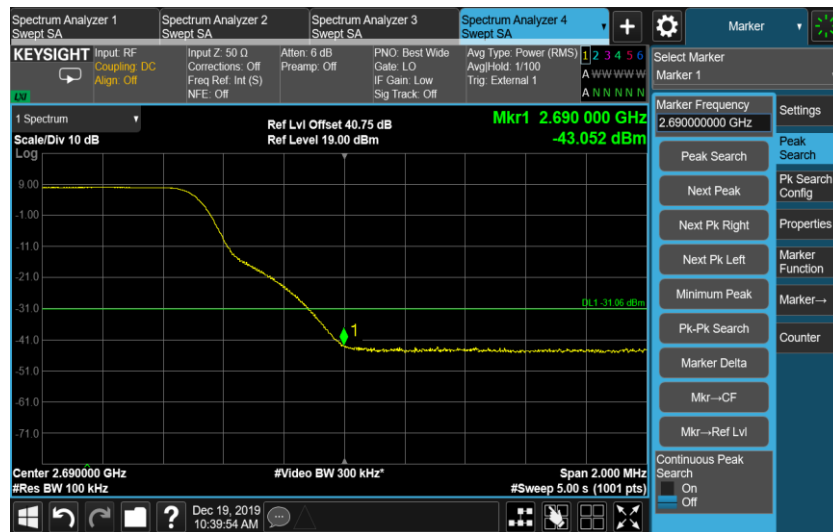
Configuration LTE-MIMO-1C-BE (1LTE QPSK 10M)

Band Edge Frequency	Channel Bandwidth	RBW(KHz)	Limit(dBm)
Channel Position B 2496.0MHz	LTE 10.0 MHz	100	-31.06
		50	-44.07
	LTE 20.0 MHz	200	-31.06
		50	-44.07
Channel Position T 2690.0MHz	LTE 10.0 MHz	100	-31.06
		50	-44.07
	LTE 20.0 MHz	200	-31.06
		50	-44.07

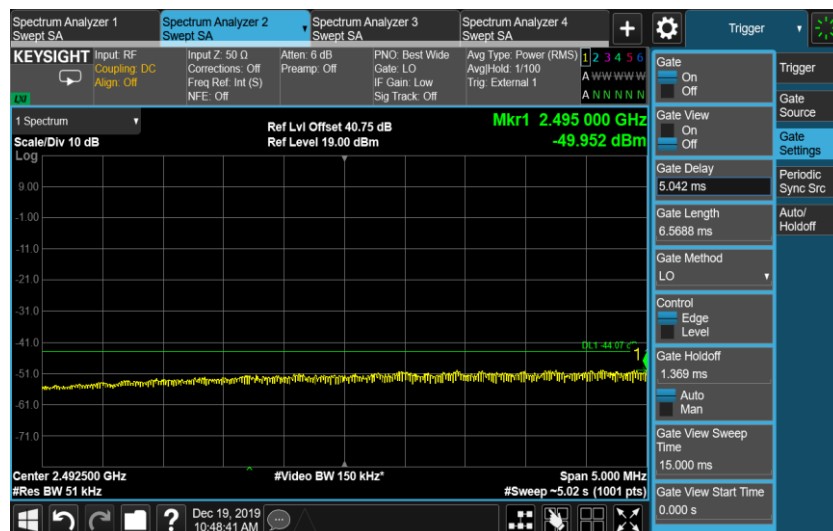
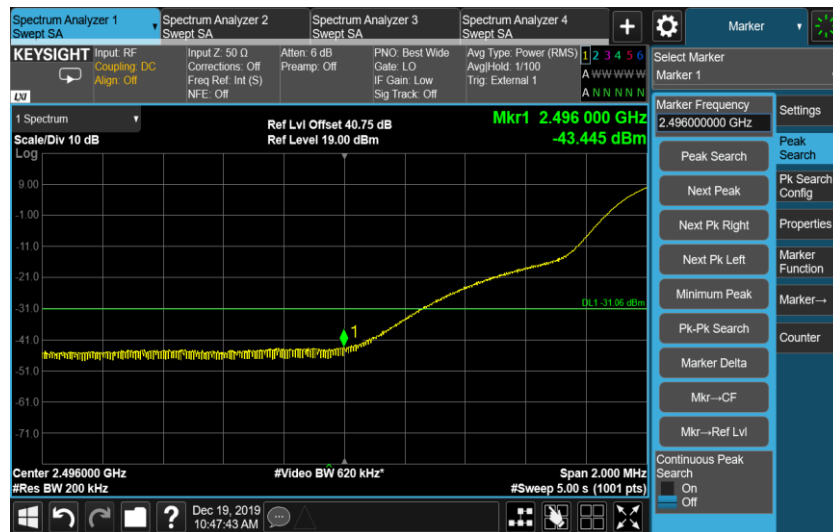
Port 55, Channel Position B, LTE 10M



Port 55, Channel Position T, LTE 10M



Port 55, Channel Position B, LTE 20M



Port 55, Channel Position T, LTE 20M



Configuration LTE-MIMO-2C-BE (2LTE QPSK)

Band Edge Frequency	Channel Bandwidth	RBW(KHz)	Limit(dBm)
Channel Position B 2496.0MHz	LTE 10.0 MHz	100	-31.06
		50	-44.07
	LTE 20.0 MHz	200	-31.06
		50	-44.07
Channel Position T 2690.0MHz	LTE 10.0 MHz	100	-31.06
		50	-44.07
	LTE 20.0 MHz	200	-31.06
		50	-44.07

Port 55, Channel Position B, LTE 10M

