



No.I20Z60290-WMD01



TEST REPORT

No.I20Z60290-WMD01

for

Ericsson AB Remote Radio Unit

AIR 6488 B41

FCC ID: TA8CKRD901108

In accordance with FCC CFR 47 Part 27

Issued Date: 2020-07-20

Note:

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No.I20Z60290-WMD01

REPORT HISTORY

Report Number	Revision	Description	Issue Date
I20Z60290-WMD01	Rev.0	1 st edition	2020-07-20

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(BDA)

Address: No.18A, Kangding Street, Beijing Economic-Technology
Development Area, Beijing, P. R. China 100176

1.3. Project date

Testing Start Date: 2020-06-24

Testing End Date: 2020-07-17

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
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Telephone: +86 13911554808

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 34.95 dBm (3.125 W) per port for all modes. Maximum 17.96 dBm/MHz (0.0625 W/MHz) per port for all modes.
Power source	-48V DC
Serial Number	D828634051
Hardware Version	R1D
Software Version	UP: CXP2010053/1_R67A156, PIS: CXP2030020%5_R36A189
Frequency range	RX: 2496MHz-2690MHz, TX: 2496MHz-2690MHz (LTE, NR)
Number of Antenna ports	64TX /64 RX
Maximum RF bandwidth (IBW)	100MHz
Maximum Number of supported carriers per port	3 carriers (LTE up to 2 carriers, NR 1 carrier)
Supported modulations	LTE: QPSK, 16QAM, 64QAM and 256QAM NR: QPSK, 16QAM, 64QAM and 256QAM
Supported Channel bandwidth	LTE: 10 MHz, 20MHz NR: 20 MHz,30 MHz,40 MHz,50 MHz,60 MHz,80MHz
Date of receipt	2020-06-24

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. It can operate in LTE+NR mix mode. It can be configured to transmit in MIMO mode for NR carriers, and MIMO mode for NR 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 and NR 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 Port 56 for LTE+NR mix mode.

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

LTE+NR

Configuration	Carrier	Carrier Bandwidth	Carrier Frequency Configuration (MHz)		
			Bottom	Middle	Top
LTE+NR-MIMO-MC-1	1L+1NR	20MHz+20MHz	(NR)2506.02+(L)2586	(NR)2553+(L)2633	(NR)2600.01+(L)2680
		20MHz+80MHz	(NR)2536.02+(L)2586	(NR)2583+(L)2633	(NR)2630.01+(L)2680
LTE+NR-MIMO-MC-2	2L+1NR	2L 20MHz+1NR 20MHz	(NR)2506.02+(L)2566+ 2586	(NR)2553+(L)2613+263 3	(NR)2600.01+(L)2660+26 80
		2L 20MHz+1NR 40MHz	(NR)2516.01+(L)2566+ 2586	(NR)2563.02+(L)2613+ 2633	(NR)2610+(L)2660+2680
LTE+NR-MIMO-MC-BE-1	1L+1NR	20MHz+20MHz	(L)2506+(NR)2526	N/A	(NR)2660.01+(L)2680
		20MHz+30MHz	(L)2506+(NR)2531.01	N/A	(NR)2655+(L)2680
		20MHz+80MHz	(L)2506+(NR)2556	N/A	(NR)2630.01+(L)2680
LTE+NR-MIMO-MC-BE-2	2L+1NR	2L 20MHz+1NR 20MHz	(L)2506+2526+(NR)254 6.01	N/A	(NR)2640+(L)2660+2680
		2L 20MHz+1NR 40MHz	(L)2506+2526+(NR)255 6	N/A	(NR)2630.01+(L)2660+26 80

LTE CA

Configuration	Carrier	Carrier Bandwidth	Carrier Frequency Configuration (MHz)		
			Bottom	Middle	Top
LTE-MIMO-CA-1	3L	20MHz	2506+2525.8+2545.6	2573.2+2593+2612.8	2640.4+2660.2+2680
LTE-MIMO-CA-B E-1	3L	20MHz	2506+2525.8+2545.6	N/A	2640.4+2660.2+2680

N/A – Not Applicable

4. Reference Documents

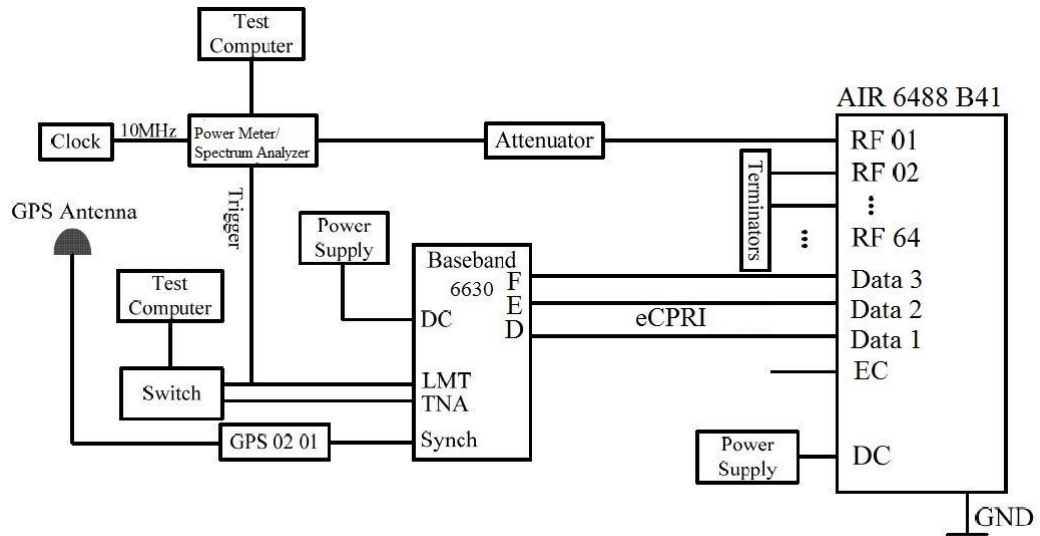
4.1. Reference Documents for testing

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

Reference	Title	Version
FCC Part 27	MISCELLANEOUS WIRELESS COMMUNICATIONS SERVICES	10-1-19 Edition
FCC Part 2	FREQUENCY ALLOCATIONS AND RADIO TREATY MATTERS; GENERAL RULES AND REGULATIONS	10-1-19 Edition
ANSI 63.26	American National Standard for Compliance Testing of Transmitters Used in Licensed Radio Services	2015
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

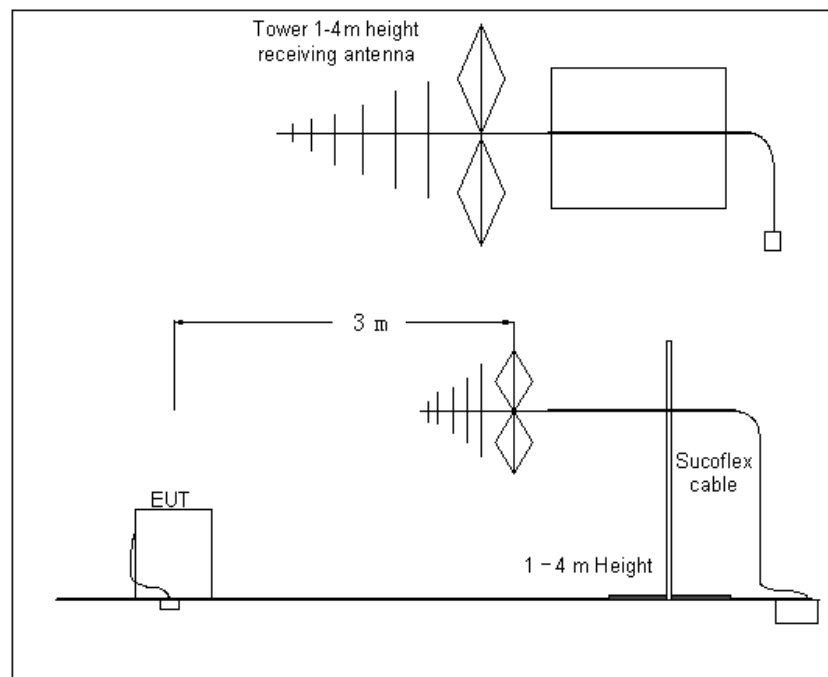
5. TEST SETUP

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	NT

NT - Not tested in this configuration. Passed in an equivalently tested configuration shown in Document: I19Z61573-WMD01, I18Z62307-WMD02 and I19Z62127-WMD01.

8. Test Equipment Utilized

NO.	Description	TYPE	series number	MANUFACTURE	CAL DUE DATE
1	AC Power Supply	PAS20-18	UH000694	Kikusui	2021-08-01
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	2021-02-25
5	Climate Chamber	KTHG-415TBS	7353K	QINGSHENG	2020-08-07
6	Antenna	3117	00139065	ETS	2020-11-10
7	Power Amplifier	MY39500449	83006A	Agilent	/
8	Antenna	VULB9163	9163-482	Schwarzbeck	2020-09-16
9	Power Amplifier	SCU18	102249	R&S	/
10	Test Receiver	ESU26	100376	R&S	2020-10-30
11	Test Receiver	FSV40	101047	R&S	2021-06-15
12	Power Amplifier	SCU40	1707/1708	R&S	/
13	Antenna	3116	2661	ETS	2020-10-08
14	Full anechoic chamber	FACT-3	Ct000332-1074	ETS	2021-07-19

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:

$$\text{EIRP} \leq 33 \text{ dBW} + 10\log(X/Y) \text{ dBW} + 10 \log(360/\text{Beamwidth}) \text{ dBW} = 83 \text{ dBm}$$

X = 20MHz channel bandwidth

Y = 5.5 or 6 MHz

Beamwidth = 12°

Peak to Average Ratio: $\leq 13 \text{ dB}$

A.1.4 Measurement result

Configuration LTE+NR-MIMO-MC-1 (1LTE 20M+1NR 20M)

Maximum Output Power 33.98dBm per port

Antenna	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/20.0									
	QPSK/20.0	33.95	21.52	-	33.90	22.08	-	33.66	22.41	-
2	QPSK/20.0									
	QPSK/20.0	34.47	22.33	-	34.39	22.53	-	34.19	22.92	-
3	QPSK/20.0									
	QPSK/20.0	33.88	21.69	-	33.87	22.05	-	33.65	22.35	-
4	QPSK/20.0									
	QPSK/20.0	34.03	21.87	-	34.00	22.12	-	33.91	22.64	-
5	QPSK/20.0									
	QPSK/20.0	34.26	22.27	-	34.19	22.16	-	34.01	22.74	-
6	QPSK/20.0									
	QPSK/20.0	34.38	22.37	-	34.28	22.20	-	34.18	22.97	-
7	QPSK/20.0									
	QPSK/20.0	34.28	22.30	-	34.18	22.10	-	34.01	22.82	-
8	QPSK/20.0									
	QPSK/20.0	34.44	22.40	-	34.43	22.68	-	34.25	23.05	-
9	QPSK/20.0									
	QPSK/20.0	33.74	21.43	-	33.76	21.88	-	33.44	22.22	-
10	QPSK/20.0									
	QPSK/20.0	33.56	21.31	-	33.57	21.69	-	33.32	22.02	-
11	QPSK/20.0									
	QPSK/20.0	33.88	21.56	-	33.83	21.96	-	33.51	22.26	-
12	QPSK/20.0									
	QPSK/20.0	33.80	21.52	-	33.79	21.91	-	33.46	22.18	-
13	QPSK/20.0									
	QPSK/20.0	34.09	21.43	-	34.10	22.02	-	33.85	22.59	-
14	QPSK/20.0									
	QPSK/20.0	33.61	21.87	-	33.52	21.47	-	33.28	21.99	-
15	QPSK/20.0									
	QPSK/20.0	34.11	21.47	-	33.84	21.64	-	33.65	22.44	-
16	QPSK/20.0									
	QPSK/20.0	33.82	21.75	-	33.48	21.36	-	33.32	22.07	-
17	QPSK/20.0									
	QPSK/20.0	33.85	22.22	-	33.77	22.07	-	33.72	22.27	-
18	QPSK/20.0									
	QPSK/20.0	33.58	21.97	-	33.52	21.88	-	33.56	22.06	-

Antenna	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)
19	QPSK/20.0									
	QPSK/20.0	34.18	22.54	-	34.16	22.53	-	34.02	22.50	-
20	QPSK/20.0									
	QPSK/20.0	33.70	23.07	-	33.70	22.05	-	33.73	22.32	-
21	QPSK/20.0									
	QPSK/20.0	33.98	23.21	-	33.90	22.46	-	33.71	22.12	-
22	QPSK/20.0									
	QPSK/20.0	33.58	22.77	-	33.65	22.24	-	33.55	21.93	-
23	QPSK/20.0									
	QPSK/20.0	34.02	23.23	-	33.94	22.44	-	33.84	22.24	-
24	QPSK/20.0									
	QPSK/20.0	34.04	23.22	-	34.13	22.95	-	34.02	22.35	-
25	QPSK/20.0									
	QPSK/20.0	33.75	23.13	-	33.87	22.88	-	33.76	22.29	-
26	QPSK/20.0									
	QPSK/20.0	33.65	23.03	-	33.75	22.75	-	33.60	22.14	-
27	QPSK/20.0									
	QPSK/20.0	33.83	23.19	-	33.98	22.97	-	33.82	22.39	-
28	QPSK/20.0									
	QPSK/20.0	33.71	22.67	-	33.70	22.69	-	33.52	22.07	-
29	QPSK/20.0									
	QPSK/20.0	33.98	23.20	-	34.02	22.87	-	33.84	22.22	-
30	QPSK/20.0									
	QPSK/20.0	33.91	23.02	-	34.02	22.76	-	33.83	22.18	-
31	QPSK/20.0									
	QPSK/20.0	33.78	23.01	-	33.88	22.72	-	33.56	21.93	-
32	QPSK/20.0									
	QPSK/20.0	33.76	23.01	-	33.85	22.68	-	33.57	22.40	-
Total Power 1-32		48.98	37.46	-	48.96	37.35	-	48.79	37.41	-
Total Power 1-32 +23 dBi		71.98	60.46	-	71.96	60.35	-	71.79	60.41	-
33	QPSK/20.0									
	QPSK/20.0	34.05	23.26	-	34.16	23.16	-	33.78	22.90	-
34	QPSK/20.0									
	QPSK/20.0	34.08	23.38	-	34.21	23.24	-	33.87	23.11	-
35	QPSK/20.0									
	QPSK/20.0	33.93	23.24	-	33.85	22.89	-	33.57	22.83	-

Antenna	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)
36	QPSK/20.0									
	QPSK/20.0	33.94	23.25	-	34.20	23.24	-	33.72	23.00	-
37	QPSK/20.0									
	QPSK/20.0	33.59	22.96	-	33.56	22.33	-	33.51	23.09	-
38	QPSK/20.0									
	QPSK/20.0	33.61	22.96	-	33.92	22.65	-	33.47	23.03	-
39	QPSK/20.0									
	QPSK/20.0	33.69	23.05	-	33.59	22.36	-	33.40	23.03	-
40	QPSK/20.0									
	QPSK/20.0	33.79	23.14	-	33.88	22.63	-	33.56	23.15	-
41	QPSK/20.0									
	QPSK/20.0	34.05	23.27	-	33.95	22.90	-	33.74	23.01	-
42	QPSK/20.0									
	QPSK/20.0	34.03	23.28	-	34.02	23.09	-	33.73	22.89	-
43	QPSK/20.0									
	QPSK/20.0	34.07	23.28	-	34.23	23.23	-	33.69	22.97	-
44	QPSK/20.0									
	QPSK/20.0	34.09	23.37	-	34.38	23.39	-	33.90	23.16	-
45	QPSK/20.0									
	QPSK/20.0	33.57	22.87	-	33.75	22.51	-	33.41	23.02	-
46	QPSK/20.0									
	QPSK/20.0	33.59	22.98	-	33.65	22.44	-	33.55	23.10	-
47	QPSK/20.0									
	QPSK/20.0	33.58	22.91	-	33.81	22.55	-	33.37	22.97	-
48	QPSK/20.0									
	QPSK/20.0	33.58	22.88	-	33.83	22.59	-	33.45	23.05	-
49	QPSK/20.0									
	QPSK/20.0	33.85	23.00	-	33.89	22.63	-	33.76	23.30	-
50	QPSK/20.0									
	QPSK/20.0	33.88	22.98	-	34.02	22.72	-	33.80	23.32	-
51	QPSK/20.0									
	QPSK/20.0	33.86	22.98	-	33.90	22.64	-	33.69	23.22	-
52	QPSK/20.0									
	QPSK/20.0	34.05	23.18	-	34.20	22.91	-	33.90	23.42	-
53	QPSK/20.0									
	QPSK/20.0	34.30	23.01	-	34.40	22.89	-	34.20	23.37	-
54	QPSK/20.0									
	QPSK/20.0	34.13	22.83	-	34.25	22.70	-	34.02	23.19	-

Antenna	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	QPSK/20.0									
	QPSK/20.0	34.66	23.43	-	34.57	23.08	-	34.36	23.53	-
56	QPSK/20.0									
	QPSK/20.0	34.86	23.63	-	34.77	23.23	-	34.58	23.69	-
57	QPSK/20.0									
	QPSK/20.0	33.32	22.42	-	33.43	22.16	-	33.20	22.61	-
58	QPSK/20.0									
	QPSK/20.0	33.42	22.53	-	33.49	22.17	-	33.35	22.77	-
59	QPSK/20.0									
	QPSK/20.0	33.79	22.91	-	33.82	22.53	-	33.56	23.04	-
60	QPSK/20.0									
	QPSK/20.0	33.64	22.76	-	33.62	22.32	-	33.47	22.83	-
61	QPSK/20.0									
	QPSK/20.0	33.88	22.57	-	33.91	22.38	-	33.61	22.80	-
62	QPSK/20.0									
	QPSK/20.0	34.30	23.06	-	34.23	22.67	-	33.95	23.16	-
63	QPSK/20.0									
	QPSK/20.0	34.07	22.81	-	34.08	22.60	-	33.69	22.87	-
64	QPSK/20.0									
	QPSK/20.0	34.15	22.83	-	34.20	22.71	-	33.76	22.87	-
Total Power 33-64		48.98	38.09	-	49.06	37.80	-	48.77	38.13	-
Total Power 33-64 +23 dBi		71.98	61.09	-	72.06	60.80	-	71.77	61.13	-
EIRP		74.99	63.80	-	75.02	63.59	-	74.79	63.80	-

Configuration LTE+NR-MIMO-MC-1 (1LTE 20M+1NR 80M)

Maximum Output Power 34.95dBm per port

Antenna	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/20.0									
	QPSK/80.0	34.47	21.08	-	34.29	21.82	-	34.46	21.76	-
2	QPSK/20.0									
	QPSK/80.0	34.97	21.64	-	34.90	22.54	-	34.89	22.26	-
3	QPSK/20.0									
	QPSK/80.0	34.36	20.95	-	34.28	21.90	-	34.41	21.79	-

Antenna	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)
4	QPSK/20.0									
	QPSK/80.0	34.56	21.19	-	34.54	22.16	-	34.70	22.04	-
5	QPSK/20.0									
	QPSK/80.0	34.73	21.56	-	34.64	22.46	-	34.82	22.27	-
6	QPSK/20.0									
	QPSK/80.0	34.83	21.75	-	34.79	22.65	-	34.94	22.55	-
7	QPSK/20.0									
	QPSK/80.0	34.76	21.66	-	34.62	22.50	-	34.81	22.46	-
8	QPSK/20.0									
	QPSK/80.0	34.85	21.72	-	34.79	22.64	-	35.02	22.61	-
9	QPSK/20.0									
	QPSK/80.0	34.36	20.90	-	34.22	21.74	-	34.27	21.44	-
10	QPSK/20.0									
	QPSK/80.0	34.13	20.80	-	33.96	21.65	-	34.01	21.31	-
11	QPSK/20.0									
	QPSK/80.0	34.45	20.98	-	34.21	21.81	-	34.30	21.41	-
12	QPSK/20.0									
	QPSK/80.0	34.41	21.04	-	34.24	22.02	-	34.28	21.49	-
13	QPSK/20.0									
	QPSK/80.0	34.63	21.52	-	34.50	22.43	-	34.57	22.14	-
14	QPSK/20.0									
	QPSK/80.0	34.10	20.91	-	34.00	21.98	-	34.06	21.40	-
15	QPSK/20.0									
	QPSK/80.0	34.54	21.48	-	34.40	22.45	-	34.42	22.04	-
16	QPSK/20.0									
	QPSK/80.0	34.29	21.11	-	34.18	22.15	-	34.26	21.68	-
17	QPSK/20.0									
	QPSK/80.0	34.40	21.92	-	34.40	21.81	-	34.43	21.05	-
18	QPSK/20.0									
	QPSK/80.0	34.13	21.65	-	34.14	21.57	-	34.23	20.95	-
19	QPSK/20.0									
	QPSK/80.0	34.76	22.35	-	34.75	21.05	-	34.77	21.53	-
20	QPSK/20.0									
	QPSK/80.0	34.29	21.86	-	34.27	20.59	-	34.42	21.03	-
21	QPSK/20.0									
	QPSK/80.0	34.44	22.19	-	34.41	21.02	-	34.38	21.17	-
22	QPSK/20.0									
	QPSK/80.0	34.22	22.01	-	34.23	21.36	-	34.26	21.22	-

Antenna	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)
23	QPSK/20.0									
	QPSK/80.0	34.54	22.28	-	34.52	21.03	-	34.51	21.29	-
24	QPSK/20.0									
	QPSK/80.0	34.58	22.35	-	34.53	21.72	-	34.60	21.42	-
25	QPSK/20.0									
	QPSK/80.0	34.40	21.99	-	34.22	21.14	-	34.47	21.15	-
26	QPSK/20.0									
	QPSK/80.0	34.20	21.78	-	34.13	21.04	-	34.29	20.78	-
27	QPSK/20.0									
	QPSK/80.0	34.41	22.03	-	34.34	21.33	-	34.52	21.33	-
28	QPSK/20.0									
	QPSK/80.0	34.15	21.70	-	34.10	20.42	-	34.19	20.76	-
29	QPSK/20.0									
	QPSK/80.0	34.45	22.23	-	34.43	21.58	-	34.51	21.24	-
30	QPSK/20.0									
	QPSK/80.0	34.46	22.34	-	34.45	21.68	-	34.51	21.62	-
31	QPSK/20.0									
	QPSK/80.0	34.31	22.15	-	34.29	21.40	-	34.23	21.02	-
32	QPSK/20.0									
	QPSK/80.0	34.23	22.05	-	34.24	21.39	-	34.27	21.25	-
Total Power 1-32		49.51	36.74	-	49.43	36.81	-	49.52	36.63	-
Total Power 1-32 +23 dBi		72.51	59.74	-	72.43	59.81	-	72.52	59.63	-
33	QPSK/20.0									
	QPSK/80.0	34.63	22.17	-	34.48	22.85	-	34.46	22.16	-
34	QPSK/20.0									
	QPSK/80.0	34.69	22.26	-	34.67	22.64	-	34.60	22.61	-
35	QPSK/20.0									
	QPSK/80.0	34.47	22.02	-	34.29	22.03	-	34.29	21.98	-
36	QPSK/20.0									
	QPSK/80.0	34.51	22.04	-	34.44	22.12	-	34.41	22.15	-
37	QPSK/20.0									
	QPSK/80.0	34.24	21.20	-	34.22	21.26	-	34.27	21.57	-
38	QPSK/20.0									
	QPSK/80.0	34.26	21.32	-	34.34	21.29	-	34.21	21.83	-
39	QPSK/20.0									
	QPSK/80.0	34.22	21.29	-	34.18	20.98	-	34.11	21.73	-

Antenna	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)
40	QPSK/20.0									
	QPSK/80.0	34.42	21.44	-	34.39	21.04	-	34.28	21.68	-
41	QPSK/20.0									
	QPSK/80.0	34.61	22.08	-	34.41	21.34	-	34.37	22.14	-
42	QPSK/20.0									
	QPSK/80.0	34.54	22.06	-	34.41	21.44	-	34.41	22.19	-
43	QPSK/20.0									
	QPSK/80.0	34.66	22.11	-	34.47	21.60	-	34.36	22.01	-
44	QPSK/20.0									
	QPSK/80.0	34.72	22.27	-	34.71	21.87	-	34.59	22.25	-
45	QPSK/20.0									
	QPSK/80.0	34.21	21.22	-	34.17	20.85	-	34.12	21.14	-
46	QPSK/20.0									
	QPSK/80.0	34.18	21.06	-	34.34	21.03	-	34.23	21.25	-
47	QPSK/20.0									
	QPSK/80.0	34.22	21.27	-	34.16	20.80	-	34.10	21.13	-
48	QPSK/20.0									
	QPSK/80.0	34.18	21.16	-	34.34	21.08	-	34.16	21.14	-
49	QPSK/20.0									
	QPSK/80.0	34.33	21.18	-	34.37	20.96	-	34.35	20.65	-
50	QPSK/20.0									
	QPSK/80.0	34.40	21.32	-	34.38	21.10	-	34.37	20.65	-
51	QPSK/20.0									
	QPSK/80.0	34.34	21.15	-	34.36	20.97	-	34.31	20.59	-
52	QPSK/20.0									
	QPSK/80.0	34.56	21.41	-	34.58	21.26	-	34.53	20.83	-
53	QPSK/20.0									
	QPSK/80.0	34.74	22.14	-	34.74	21.93	-	34.73	21.52	-
54	QPSK/20.0									
	QPSK/80.0	34.58	21.98	-	34.55	21.80	-	34.53	21.31	-
55	QPSK/20.0									
	QPSK/80.0	35.04	22.50	-	34.94	22.25	-	34.92	21.83	-
56	QPSK/20.0									
	QPSK/80.0	35.25	22.64	-	35.17	22.36	-	35.15	22.02	-
57	QPSK/20.0									
	QPSK/80.0	33.87	20.64	-	33.76	20.43	-	33.75	20.22	-
58	QPSK/20.0									
	QPSK/80.0	33.90	20.85	-	33.81	20.69	-	33.89	20.50	-

Antenna	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)
59	QPSK/20.0									
	QPSK/80.0	34.25	21.03	-	34.19	20.97	-	34.15	20.84	-
60	QPSK/20.0									
	QPSK/80.0	34.12	21.06	-	33.99	20.77	-	33.98	20.61	-
61	QPSK/20.0									
	QPSK/80.0	34.29	21.69	-	34.17	21.40	-	34.17	21.38	-
62	QPSK/20.0									
	QPSK/80.0	34.72	22.09	-	34.58	21.60	-	34.50	21.65	-
63	QPSK/20.0									
	QPSK/80.0	34.51	21.98	-	34.40	21.47	-	34.20	21.38	-
64	QPSK/20.0									
	QPSK/80.0	34.56	21.86	-	34.53	21.28	-	34.26	21.28	-
Total Power 33-64		49.51	36.72	-	49.45	36.51	-	49.40	36.54	-
Total Power 33-64 +23 dBi		72.51	59.72	-	72.45	59.51	-	72.40	59.54	-
EIRP		75.52	62.74	-	75.45	62.67	-	75.47	62.60	-

Configuration LTE+NR-MIMO-MC-2(2LTE 20M+1NR 20M)

Maximum Output Power 34.95dBm per port

Antenna	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/20.0									
	QPSK/20.0	34.51	22.25	-	34.36	22.05	-	34.09	21.50	-
2	QPSK/20.0									
	QPSK/20.0	34.91	22.69	-	34.93	22.64	-	34.60	21.85	-
3	QPSK/20.0									
	QPSK/20.0	34.35	22.05	-	34.35	22.04	-	34.08	21.51	-
4	QPSK/20.0									
	QPSK/20.0	34.57	22.32	-	34.58	22.27	-	34.23	22.61	-
5	QPSK/20.0									
	QPSK/20.0	34.82	22.65	-	34.77	22.63	-	34.42	22.64	-
6	QPSK/20.0									
	QPSK/20.0	34.98	22.85	-	34.88	22.74	-	34.58	22.80	-
7	QPSK/20.0									
	QPSK/20.0	34.90	22.77	-	34.81	22.69	-	34.43	22.65	-

Antenna	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)
8	QPSK/20.0									
	QPSK/20.0	34.99	22.86	-	34.96	22.81	-	34.62	22.86	-
9	QPSK/20.0									
	QPSK/20.0	34.29	21.99	-	34.30	22.03	-	33.87	21.16	-
10	QPSK/20.0									
	QPSK/20.0	34.02	21.84	-	34.07	21.80	-	33.74	21.08	-
11	QPSK/20.0									
	QPSK/20.0	34.30	22.08	-	34.29	22.02	-	33.93	21.44	-
12	QPSK/20.0									
	QPSK/20.0	34.33	22.17	-	34.31	22.03	-	33.91	21.32	-
13	QPSK/20.0									
	QPSK/20.0	34.62	22.56	-	34.65	22.55	-	34.20	21.84	-
14	QPSK/20.0									
	QPSK/20.0	34.10	21.94	-	34.07	21.96	-	33.68	21.30	-
15	QPSK/20.0									
	QPSK/20.0	34.62	22.56	-	34.44	22.32	-	34.20	21.40	-
16	QPSK/20.0									
	QPSK/20.0	34.41	22.28	-	34.22	22.17	-	34.04	21.22	-
17	QPSK/20.0									
	QPSK/20.0	34.32	21.36	-	34.25	20.99	-	34.02	21.77	-
18	QPSK/20.0									
	QPSK/20.0	34.08	21.14	-	33.97	20.77	-	33.88	21.59	-
19	QPSK/20.0									
	QPSK/20.0	34.65	21.69	-	34.67	21.47	-	34.41	22.04	-
20	QPSK/20.0									
	QPSK/20.0	34.17	21.18	-	34.18	20.96	-	34.05	21.71	-
21	QPSK/20.0									
	QPSK/20.0	34.42	21.50	-	34.41	21.33	-	34.11	21.61	-
22	QPSK/20.0									
	QPSK/20.0	34.22	21.38	-	34.23	21.20	-	33.96	21.42	-
23	QPSK/20.0									
	QPSK/20.0	34.51	21.63	-	34.50	21.39	-	34.29	21.73	-
24	QPSK/20.0									
	QPSK/20.0	34.59	21.71	-	34.55	21.48	-	34.41	21.86	-
25	QPSK/20.0									
	QPSK/20.0	34.27	21.33	-	34.21	21.03	-	34.10	21.77	-
26	QPSK/20.0									
	QPSK/20.0	34.13	21.13	-	34.09	20.91	-	33.94	21.57	-

Antenna	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)
27	QPSK/20.0									
	QPSK/20.0	34.33	21.38	-	34.29	21.08	-	34.16	21.88	-
28	QPSK/20.0									
	QPSK/20.0	34.00	21.05	-	34.01	20.84	-	33.80	21.51	-
29	QPSK/20.0									
	QPSK/20.0	34.49	21.56	-	34.45	21.34	-	34.23	21.73	-
30	QPSK/20.0									
	QPSK/20.0	34.48	21.69	-	34.49	21.48	-	34.26	21.71	-
31	QPSK/20.0									
	QPSK/20.0	34.31	21.44	-	34.32	21.21	-	34.01	21.83	-
32	QPSK/20.0									
	QPSK/20.0	34.27	21.43	-	34.28	21.19	-	34.07	21.57	-
Total Power 1-32		49.50	36.98	-	49.46	36.83	-	49.19	36.84	-
Total Power 1-32 +23 dBi		72.50	59.98	-	72.46	59.83	-	72.19	59.84	-
33	QPSK/20.0									
	QPSK/20.0	34.60	22.03	-	34.58	21.67	-	34.22	21.25	-
34	QPSK/20.0									
	QPSK/20.0	34.57	22.05	-	34.62	21.74	-	34.32	21.34	-
35	QPSK/20.0									
	QPSK/20.0	34.43	21.91	-	34.33	21.45	-	34.04	21.00	-
36	QPSK/20.0									
	QPSK/20.0	34.43	21.92	-	34.62	21.78	-	34.19	21.23	-
37	QPSK/20.0									
	QPSK/20.0	34.00	21.32	-	33.86	20.74	-	33.83	20.54	-
38	QPSK/20.0									
	QPSK/20.0	33.95	21.23	-	34.18	21.05	-	33.77	20.51	-
39	QPSK/20.0									
	QPSK/20.0	33.98	21.25	-	33.85	20.69	-	33.65	20.37	-
40	QPSK/20.0									
	QPSK/20.0	34.17	21.46	-	34.13	21.02	-	33.83	20.57	-
41	QPSK/20.0									
	QPSK/20.0	34.54	22.04	-	34.37	21.44	-	34.14	21.11	-
42	QPSK/20.0									
	QPSK/20.0	34.53	21.94	-	34.49	21.67	-	34.17	21.21	-
43	QPSK/20.0									
	QPSK/20.0	34.53	21.97	-	34.62	21.70	-	34.10	21.08	-

Antenna	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)
44	QPSK/20.0									
	QPSK/20.0	34.43	21.83	-	34.82	21.98	-	34.37	21.35	-
45	QPSK/20.0									
	QPSK/20.0	33.93	21.24	-	34.03	20.86	-	33.66	20.39	-
46	QPSK/20.0									
	QPSK/20.0	33.96	21.28	-	33.92	20.82	-	33.78	20.48	-
47	QPSK/20.0									
	QPSK/20.0	33.91	21.19	-	34.09	20.91	-	33.64	20.35	-
48	QPSK/20.0									
	QPSK/20.0	33.92	21.25	-	34.07	20.93	-	33.68	20.41	-
49	QPSK/20.0									
	QPSK/20.0	34.09	21.35	-	34.14	20.66	-	33.92	20.60	-
50	QPSK/20.0									
	QPSK/20.0	34.20	21.37	-	34.23	20.75	-	33.97	20.57	-
51	QPSK/20.0									
	QPSK/20.0	34.12	21.40	-	34.15	20.66	-	33.89	20.53	-
52	QPSK/20.0									
	QPSK/20.0	34.35	21.60	-	34.41	20.87	-	34.08	20.69	-
53	QPSK/20.0									
	QPSK/20.0	34.75	21.72	-	34.82	21.60	-	34.55	21.36	-
54	QPSK/20.0									
	QPSK/20.0	34.56	21.57	-	34.62	21.33	-	34.37	21.16	-
55	QPSK/20.0									
	QPSK/20.0	35.13	22.24	-	35.01	21.82	-	34.78	21.55	-
56	QPSK/20.0									
	QPSK/20.0	35.40	22.56	-	35.21	21.99	-	35.00	21.79	-
57	QPSK/20.0									
	QPSK/20.0	33.65	20.82	-	33.62	20.14	-	33.29	20.01	-
58	QPSK/20.0									
	QPSK/20.0	33.72	20.84	-	33.68	20.16	-	33.46	20.02	-
59	QPSK/20.0									
	QPSK/20.0	34.07	21.25	-	34.03	20.57	-	33.73	20.34	-
60	QPSK/20.0									
	QPSK/20.0	33.93	21.10	-	33.85	20.37	-	33.57	20.14	-
61	QPSK/20.0									
	QPSK/20.0	34.31	21.30	-	34.27	21.07	-	33.96	20.77	-
62	QPSK/20.0									
	QPSK/20.0	34.75	21.76	-	34.58	21.40	-	34.34	21.15	-

Antenna	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)
63	QPSK/20.0									
	QPSK/20.0	34.54	21.55	-	34.47	21.25	-	34.08	20.87	-
64	QPSK/20.0									
	QPSK/20.0	34.60	21.57	-	34.60	21.41	-	34.16	20.96	-
Total Power 33-64		49.38	36.63	-	49.39	36.22	-	49.08	35.88	-
Total Power 33-64 +23 dBi		72.38	59.63	-	72.39	59.22	-	72.08	58.88	-
EIRP		75.45	62.82	-	75.44	62.55	-	75.15	62.40	-

Configuration LTE+NR-MIMO-MC-2(2LTE 20M+1NR 40M)

Maximum Output Power 34.95dBm per port

Antenna	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/20.0									
	QPSK/40.0	34.40	21.91	-	34.22	21.75	-	34.04	21.60	-
2	QPSK/20.0									
	QPSK/40.0	34.87	22.42	-	34.71	22.28	-	34.55	22.17	-
3	QPSK/20.0									
	QPSK/40.0	34.32	21.82	-	34.15	21.80	-	34.03	21.61	-
4	QPSK/20.0									
	QPSK/40.0	34.52	22.08	-	34.38	21.97	-	34.33	21.97	-
5	QPSK/20.0									
	QPSK/40.0	34.78	22.46	-	34.63	22.32	-	34.53	22.30	-
6	QPSK/20.0									
	QPSK/40.0	34.96	22.67	-	34.72	22.46	-	34.71	22.46	-
7	QPSK/20.0									
	QPSK/40.0	34.82	22.56	-	34.62	22.31	-	34.58	22.38	-
8	QPSK/20.0									
	QPSK/40.0	34.91	22.65	-	34.77	22.42	-	34.75	22.56	-
9	QPSK/20.0									
	QPSK/40.0	34.23	21.73	-	34.07	21.60	-	33.58	21.46	-
10	QPSK/20.0									
	QPSK/40.0	34.02	21.57	-	33.84	21.52	-	33.68	21.27	-
11	QPSK/20.0									
	QPSK/40.0	34.36	21.88	-	34.08	21.65	-	33.92	21.56	-

Antenna	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)
12	QPSK/20.0									
	QPSK/40.0	34.32	21.83	-	34.12	21.82	-	33.91	21.50	-
13	QPSK/20.0									
	QPSK/40.0	34.67	22.38	-	34.47	22.23	-	34.33	22.07	-
14	QPSK/20.0									
	QPSK/40.0	34.11	21.81	-	33.86	21.56	-	33.75	21.51	-
15	QPSK/20.0									
	QPSK/40.0	34.62	22.29	-	34.36	22.04	-	34.22	22.00	-
16	QPSK/20.0									
	QPSK/40.0	34.45	22.19	-	34.11	21.78	-	34.01	21.79	-
17	QPSK/20.0									
	QPSK/40.0	34.48	22.52	-	34.20	21.21	-	34.14	21.08	-
18	QPSK/20.0									
	QPSK/40.0	34.23	22.28	-	33.95	20.95	-	33.99	20.92	-
19	QPSK/20.0									
	QPSK/40.0	34.80	22.83	-	34.69	21.70	-	34.52	21.48	-
20	QPSK/20.0									
	QPSK/40.0	34.39	22.38	-	34.16	21.17	-	34.15	21.11	-
21	QPSK/20.0									
	QPSK/40.0	34.60	22.70	-	34.43	21.61	-	34.21	21.28	-
22	QPSK/20.0									
	QPSK/40.0	34.35	22.55	-	34.34	21.69	-	34.06	21.18	-
23	QPSK/20.0									
	QPSK/40.0	34.71	22.87	-	34.56	21.85	-	34.38	21.49	-
24	QPSK/20.0									
	QPSK/40.0	34.79	22.92	-	34.59	21.86	-	34.51	21.62	-
25	QPSK/20.0									
	QPSK/40.0	34.42	22.43	-	34.21	21.36	-	34.22	21.08	-
26	QPSK/20.0									
	QPSK/40.0	34.24	22.28	-	34.07	21.20	-	34.02	20.92	-
27	QPSK/20.0									
	QPSK/40.0	34.46	22.53	-	34.32	21.54	-	34.26	21.18	-
28	QPSK/20.0									
	QPSK/40.0	34.19	22.24	-	34.00	21.10	-	33.95	20.86	-
29	QPSK/20.0									
	QPSK/40.0	34.62	22.80	-	34.47	21.65	-	34.33	21.36	-
30	QPSK/20.0									
	QPSK/40.0	34.63	22.86	-	34.45	21.80	-	34.34	21.46	-

Antenna	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)
31	QPSK/20.0									
	QPSK/40.0	34.49	22.69	-	34.31	21.52	-	34.09	21.08	-
32	QPSK/20.0									
	QPSK/40.0	34.44	22.60	-	34.30	21.59	-	34.17	21.18	-
Total Power 1-32		49.56	37.43	-	49.38	36.80	-	49.26	36.62	-
Total Power 1-32 +23 dBi		72.56	60.43	-	72.38	59.80	-	72.26	59.62	-
33	QPSK/20.0									
	QPSK/40.0	34.65	22.13	-	34.47	22.31	-	34.35	21.75	-
34	QPSK/20.0									
	QPSK/40.0	34.69	22.05	-	34.57	22.41	-	34.41	21.82	-
35	QPSK/20.0									
	QPSK/40.0	34.52	22.15	-	34.19	21.98	-	34.16	21.57	-
36	QPSK/20.0									
	QPSK/40.0	34.56	22.34	-	34.44	22.27	-	34.28	21.68	-
37	QPSK/20.0									
	QPSK/40.0	34.09	21.73	-	33.87	21.40	-	33.91	20.96	-
38	QPSK/20.0									
	QPSK/40.0	34.07	21.71	-	34.11	21.62	-	33.85	20.93	-
39	QPSK/20.0									
	QPSK/40.0	34.05	21.73	-	33.82	21.36	-	33.75	20.83	-
40	QPSK/20.0									
	QPSK/40.0	34.25	21.98	-	34.04	21.55	-	33.94	21.01	-
41	QPSK/20.0									
	QPSK/40.0	34.67	22.62	-	34.24	22.05	-	34.26	21.68	-
42	QPSK/20.0									
	QPSK/40.0	34.57	22.56	-	34.24	22.01	-	34.27	21.71	-
43	QPSK/20.0									
	QPSK/40.0	34.63	22.56	-	34.38	22.15	-	34.19	21.60	-
44	QPSK/20.0									
	QPSK/40.0	34.68	22.60	-	34.68	22.40	-	34.44	21.87	-
45	QPSK/20.0									
	QPSK/40.0	34.00	21.63	-	33.87	21.36	-	33.76	20.82	-
46	QPSK/20.0									
	QPSK/40.0	34.05	21.66	-	33.99	21.52	-	33.87	20.93	-
47	QPSK/20.0									
	QPSK/40.0	34.01	21.70	-	33.93	21.44	-	33.75	20.86	-

Antenna	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)
48	QPSK/20.0									
	QPSK/40.0	34.01	21.67	-	34.01	21.54	-	33.79	20.85	-
49	QPSK/20.0									
	QPSK/40.0	34.11	21.08	-	34.01	20.76	-	34.01	20.50	-
50	QPSK/20.0									
	QPSK/40.0	34.17	21.18	-	34.15	20.92	-	34.04	20.61	-
51	QPSK/20.0									
	QPSK/40.0	34.19	21.16	-	34.02	20.78	-	34.00	20.49	-
52	QPSK/20.0									
	QPSK/40.0	34.42	21.41	-	34.25	20.98	-	34.20	20.72	-
53	QPSK/20.0									
	QPSK/40.0	34.72	22.03	-	34.67	21.70	-	34.63	21.46	-
54	QPSK/20.0									
	QPSK/40.0	34.60	21.95	-	34.47	21.44	-	34.47	21.35	-
55	QPSK/20.0									
	QPSK/40.0	35.10	22.44	-	34.91	21.92	-	34.80	21.66	-
56	QPSK/20.0									
	QPSK/40.0	35.40	22.75	-	35.14	22.19	-	35.10	21.95	-
57	QPSK/20.0									
	QPSK/40.0	33.65	20.63	-	33.50	20.21	-	33.35	19.77	-
58	QPSK/20.0									
	QPSK/40.0	33.76	20.75	-	33.59	20.30	-	33.50	20.04	-
59	QPSK/20.0									
	QPSK/40.0	34.04	21.02	-	33.93	20.71	-	33.78	20.30	-
60	QPSK/20.0									
	QPSK/40.0	33.96	20.90	-	33.68	20.43	-	33.62	20.13	-
61	QPSK/20.0									
	QPSK/40.0	34.30	21.59	-	34.09	21.14	-	34.00	20.78	-
62	QPSK/20.0									
	QPSK/40.0	34.72	22.07	-	34.45	21.47	-	34.40	21.11	-
63	QPSK/20.0									
	QPSK/40.0	34.53	21.86	-	34.30	21.31	-	34.14	21.01	-
64	QPSK/20.0									
	QPSK/40.0	34.56	21.86	-	34.45	21.47	-	34.16	20.94	-
Total Power 33-64		49.43	36.88	-	49.27	36.56	-	49.17	36.14	-
Total Power 33-64 +23 dBi		72.43	59.88	-	72.27	59.56	-	72.17	59.14	-
EIRP		75.51	63.17	-	75.34	62.69	-	75.23	62.40	-

Configuration LTE-MIMO-CA-1 (3LTE 20M)

Maximum Output Power 34.95dBm per port

Antenna	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/20.0	34.82	22.30	-	34.71	21.84	-	34.55	22.36	-
2	QPSK/20.0	35.26	22.70	-	35.26	22.39	-	35.14	22.90	-
3	QPSK/20.0	34.62	22.08	-	34.68	21.82	-	34.59	22.33	-
4	QPSK/20.0	34.90	22.40	-	34.87	21.99	-	34.91	22.68	-
5	QPSK/20.0	35.30	22.72	-	35.25	22.35	-	35.22	22.97	-
6	QPSK/20.0	35.47	22.95	-	35.38	22.46	-	35.42	23.17	-
7	QPSK/20.0	35.35	22.86	-	35.32	22.39	-	35.26	23.03	-
8	QPSK/20.0	35.47	22.97	-	35.45	22.50	-	35.40	23.15	-
9	QPSK/20.0	34.54	22.02	-	34.65	21.75	-	34.34	22.13	-
10	QPSK/20.0	34.42	21.92	-	34.41	21.50	-	34.18	21.92	-
11	QPSK/20.0	34.67	22.10	-	34.60	21.71	-	34.36	22.15	-
12	QPSK/20.0	34.59	21.99	-	34.63	21.74	-	34.39	22.18	-
13	QPSK/20.0	35.15	22.56	-	35.15	22.20	-	35.00	22.77	-
14	QPSK/20.0	34.55	21.93	-	34.53	21.62	-	34.38	22.14	-
15	QPSK/20.0	35.12	22.51	-	34.95	22.03	-	34.85	22.63	-
16	QPSK/20.0	34.85	22.26	-	34.74	21.85	-	34.62	22.36	-
17	QPSK/20.0	34.91	21.99	-	34.63	21.96	-	34.67	21.63	-
18	QPSK/20.0	34.61	21.66	-	34.36	21.73	-	34.49	21.43	-
19	QPSK/20.0	35.24	22.36	-	35.04	22.38	-	35.11	22.04	-
20	QPSK/20.0	34.75	21.85	-	34.56	21.92	-	34.74	21.69	-
21	QPSK/20.0	35.13	22.26	-	34.92	22.27	-	34.97	21.85	-
22	QPSK/20.0	34.90	22.05	-	34.75	22.10	-	34.83	21.81	-
23	QPSK/20.0	35.25	22.40	-	35.00	22.35	-	35.07	22.04	-
24	QPSK/20.0	35.30	22.46	-	35.07	22.41	-	35.19	22.16	-
25	QPSK/20.0	34.84	21.99	-	34.59	21.94	-	34.82	21.77	-
26	QPSK/20.0	34.70	21.83	-	34.46	21.79	-	34.65	21.62	-
27	QPSK/20.0	34.91	22.06	-	34.72	22.03	-	34.89	21.84	-
28	QPSK/20.0	34.62	21.75	-	34.39	21.77	-	34.45	21.38	-
29	QPSK/20.0	35.17	22.31	-	34.99	22.32	-	35.01	21.95	-
30	QPSK/20.0	35.24	22.38	-	35.00	22.34	-	35.13	22.09	-
31	QPSK/20.0	35.09	22.25	-	34.86	22.19	-	34.78	21.72	-
32	QPSK/20.0	35.01	22.18	-	34.80	22.16	-	34.82	21.78	-
Total Power 1-32		50.02	37.32	-	49.90	37.12	-	49.88	37.26	-
Total Power 1-32 +23 dBi		73.02	60.32	-	72.90	60.12	-	72.88	60.26	-
33	QPSK/20.0	35.27	22.71	-	35.30	22.40	-	34.98	22.24	-

Antenna	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)
34	QPSK/20.0	35.33	22.81	-	35.40	22.51	-	35.04	22.31	-
35	QPSK/20.0	35.10	22.60	-	35.07	22.17	-	34.85	22.12	-
36	QPSK/20.0	35.17	22.60	-	35.32	22.39	-	34.98	22.27	-
37	QPSK/20.0	34.41	21.80	-	34.21	21.38	-	34.27	21.67	-
38	QPSK/20.0	34.38	21.81	-	34.56	21.72	-	34.20	22.30	-
39	QPSK/20.0	34.39	21.83	-	34.30	21.45	-	34.15	21.83	-
40	QPSK/20.0	34.53	21.96	-	34.52	21.67	-	34.24	21.97	-
41	QPSK/20.0	35.26	22.73	-	35.10	22.22	-	34.85	22.58	-
42	QPSK/20.0	35.25	22.73	-	35.21	22.27	-	34.92	22.64	-
43	QPSK/20.0	35.23	22.66	-	35.33	22.42	-	34.82	22.56	-
44	QPSK/20.0	35.36	22.87	-	35.56	22.63	-	35.06	22.75	-
45	QPSK/20.0	34.41	21.88	-	34.39	21.56	-	34.03	21.73	-
46	QPSK/20.0	34.36	21.80	-	34.33	21.49	-	34.13	21.82	-
47	QPSK/20.0	34.39	21.84	-	34.53	21.66	-	34.00	21.71	-
48	QPSK/20.0	34.35	21.84	-	34.43	21.60	-	34.08	21.81	-
49	QPSK/20.0	34.52	21.64	-	34.35	21.63	-	34.35	21.99	-
50	QPSK/20.0	34.66	21.72	-	34.41	21.73	-	34.42	22.12	-
51	QPSK/20.0	34.49	21.57	-	34.32	21.65	-	34.28	22.08	-
52	QPSK/20.0	34.72	21.77	-	34.56	21.89	-	34.54	22.36	-
53	QPSK/20.0	35.44	22.54	-	35.28	22.65	-	35.30	23.20	-
54	QPSK/20.0	35.30	22.43	-	35.08	22.43	-	35.11	22.99	-
55	QPSK/20.0	35.80	22.94	-	35.54	22.88	-	35.50	23.40	-
56	QPSK/20.0	36.07	23.20	-	35.71	23.09	-	35.77	23.65	-
57	QPSK/20.0	34.02	21.10	-	33.85	21.16	-	33.78	21.62	-
58	QPSK/20.0	34.13	21.22	-	33.93	21.26	-	33.93	21.59	-
59	QPSK/20.0	34.39	21.49	-	34.25	21.57	-	34.15	21.70	-
60	QPSK/20.0	34.31	21.46	-	34.06	21.39	-	33.96	21.40	-
61	QPSK/20.0	34.97	22.13	-	34.78	22.15	-	34.72	22.04	-
62	QPSK/20.0	35.39	22.58	-	35.13	22.49	-	35.06	22.23	-
63	QPSK/20.0	35.24	22.42	-	35.00	22.38	-	34.80	21.94	-
64	QPSK/20.0	35.28	22.40	-	35.13	22.51	-	34.81	21.83	-
Total Power 33-64		49.95	37.24	-	49.86	37.09	-	49.68	37.29	-
Total Power 33-64 +23 dBi		72.95	60.24	-	72.86	60.09	-	72.68	60.29	-
EIRP		76.00	63.29	-	75.89	63.12	-	75.79	63.29	-

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 ANSI 63.26.

The measurement method is from ANSI 63.26:

- 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 (i.e., two to five times the OBW).
- 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) Set the detection mode to peak, and the trace mode to max hold.
- e) Use the 99 % power bandwidth function of the spectrum analyzer and report the measured bandwidth.

A.2.3 Measurement result

Configuration LTE-MIMO-CA-1 (3LTE 20M)

-26dBc Occupied Bandwidth

Antenna	Modulation / Bandwidth	Occupied Bandwidth (MHz)		
		Channel Position B	Channel Position M	Channel Position T
56	QPSK/ 20.0 MHz	58.45	57.71	58.05

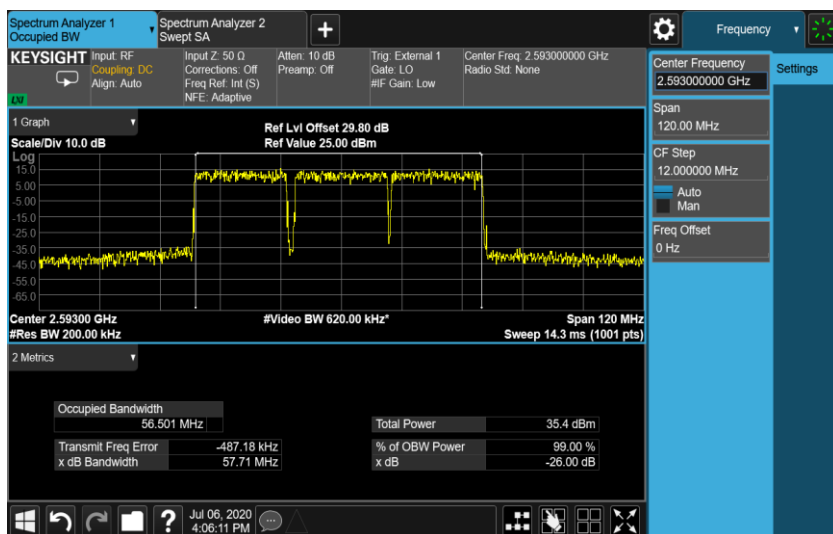
99% Occupied Bandwidth

Antenna	Modulation / Bandwidth	Occupied Bandwidth (MHz)		
		Channel Position B	Channel Position M	Channel Position T
56	QPSK/ 20.0 MHz	56.985	56.501	57.034

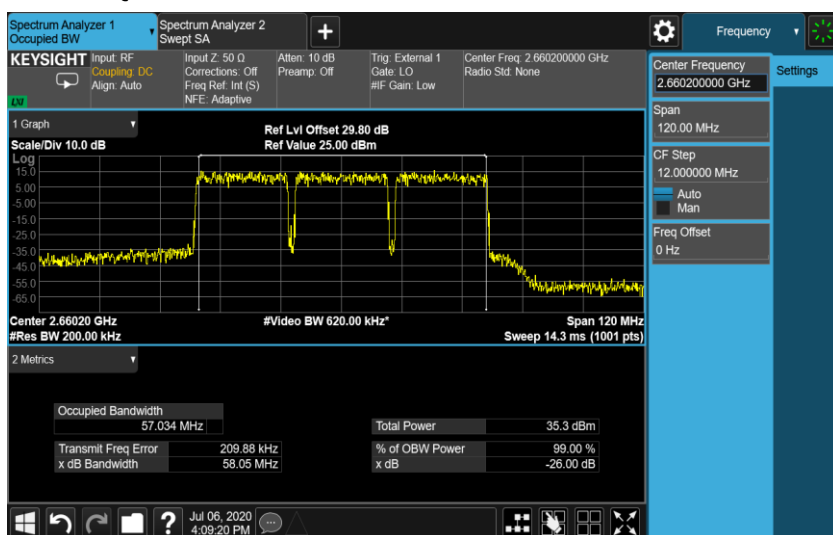
Port 56, QPSK Channel Position B



Port 56, QPSK Channel Position M



Port 56, QPSK Channel Position T



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 adjust 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 for emission more than 1MHz away from the band edges. Spectrum analyzer detector was set as RMS.

A.3.3 Measurement limit

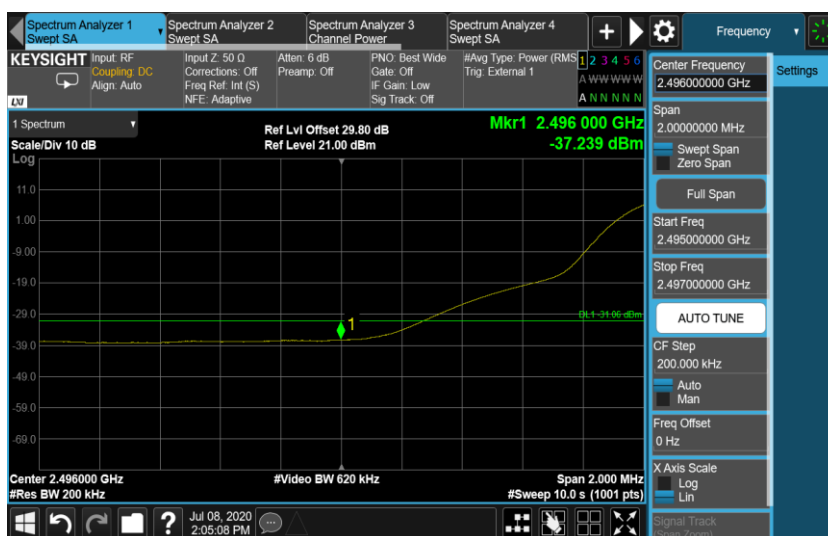
The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + 10\log(P)$ dB.

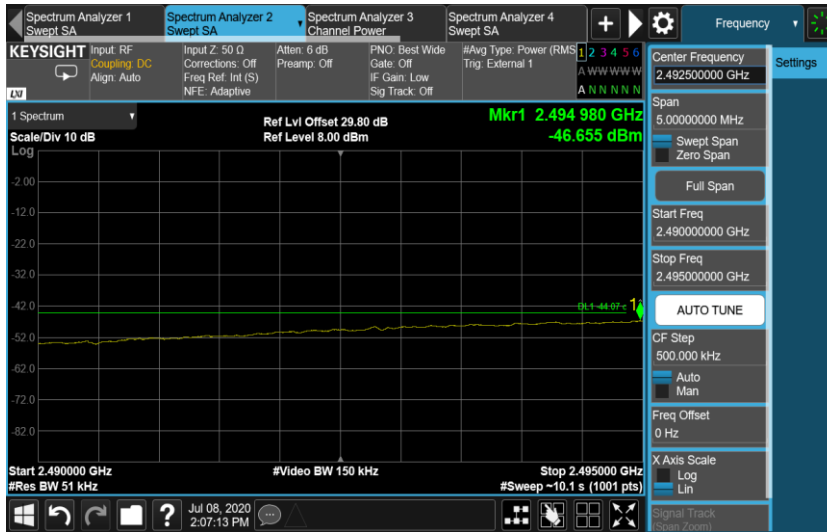
A.3.4 Measurement result

Configuration LTE+NR-MIMO-MC-BE-1 (1LTE+1NR)

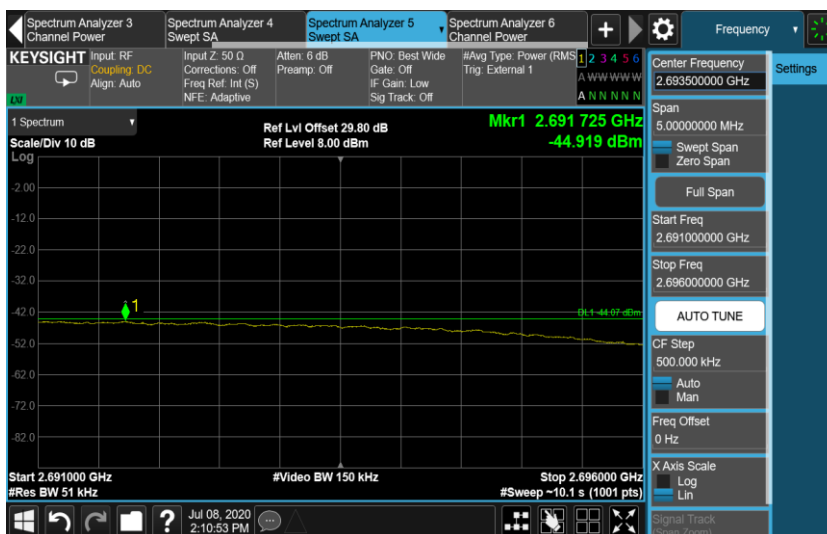
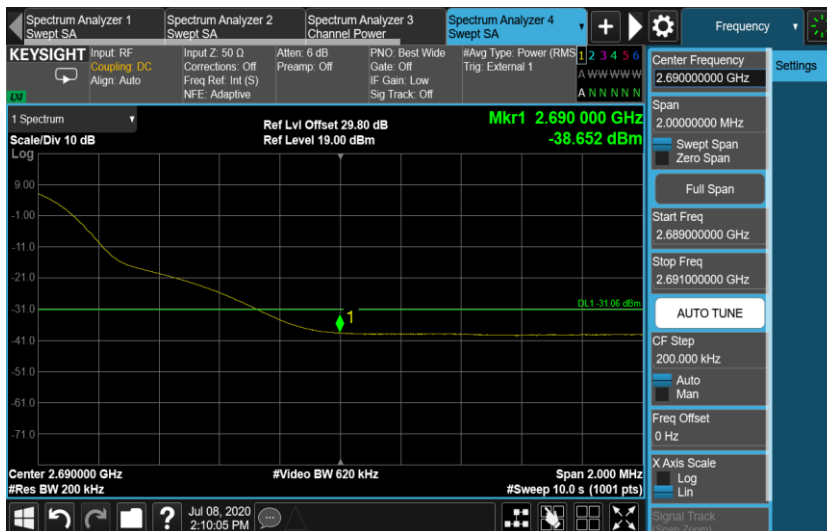
Band Edge Frequency	Channel Bandwidth	RBW (KHz)	Limit (dBm)
Channel Position B	(L) 20.0MHz, (NR) 20.0 MHz	200	-31.06
		50	-44.07
	(L) 20.0MHz, (NR) 30.0 MHz	200	-31.06
		50	-44.07
	(L) 20.0MHz, (NR) 80.0 MHz	200	-31.06
		50	-44.07
Channel Position T	(L) 20.0MHz, (NR) 20.0 MHz	200	-31.06
		50	-44.07
	(L) 20.0MHz, (NR) 30.0 MHz	200	-31.06
		50	-44.07
	(L) 20.0MHz, (NR) 80.0 MHz	200	-31.06
		50	-44.07

Port 56, Channel Position B, LTE 20.0MHz, NR 20.0 MHz

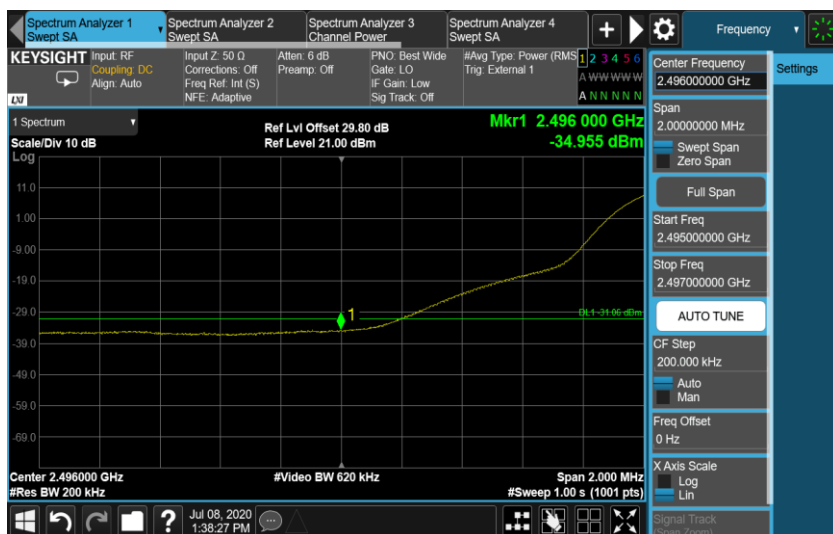




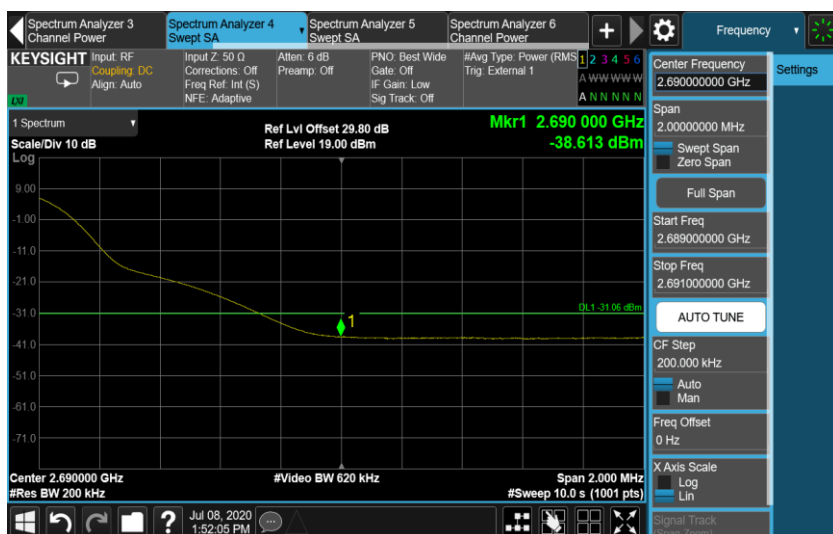
Port 56, Channel Position T, LTE 20.0MHz, NR 20.0 MHz

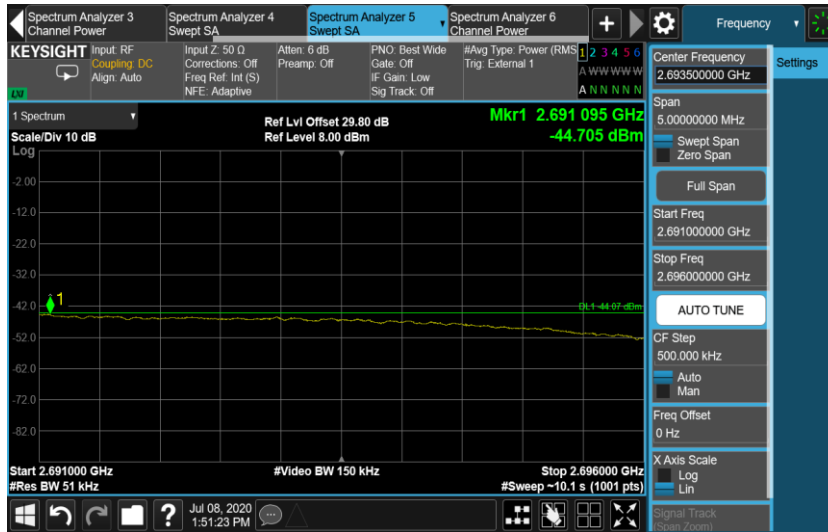


Port 56, Channel Position B, LTE 20.0MHz, NR 30.0 MHz

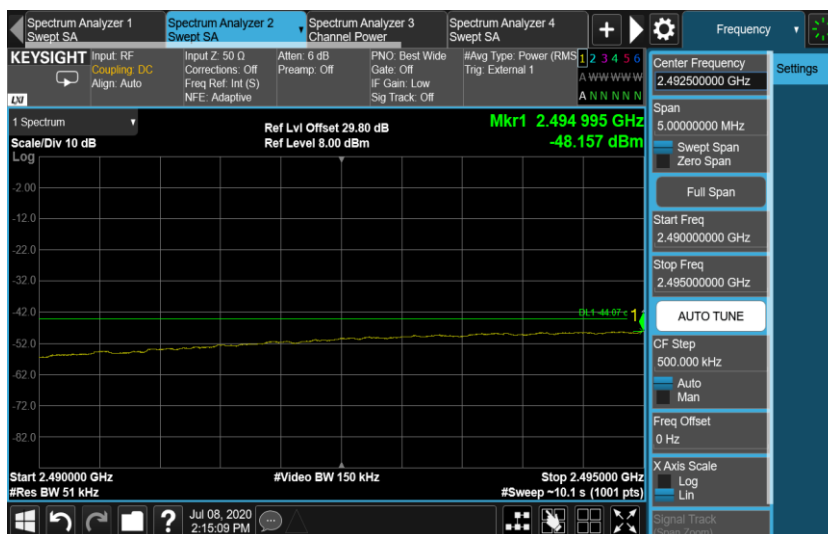


Port 56, Channel Position T, LTE 20.0MHz, NR 30.0 MHz

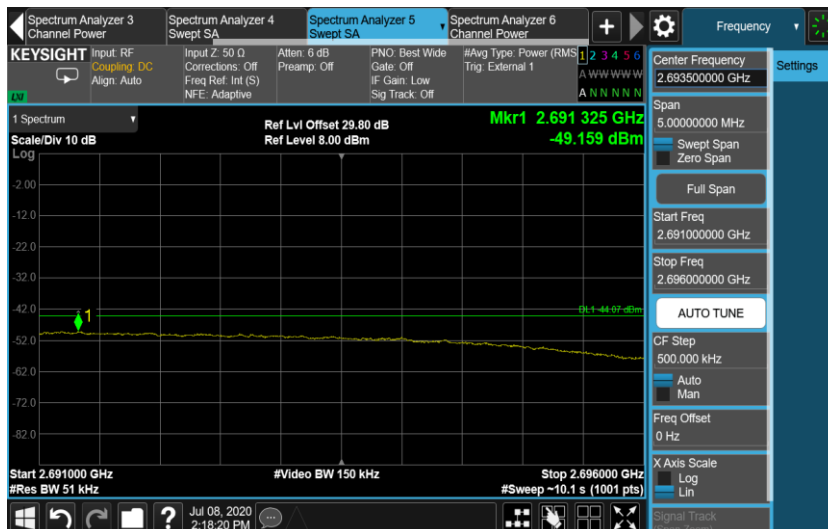
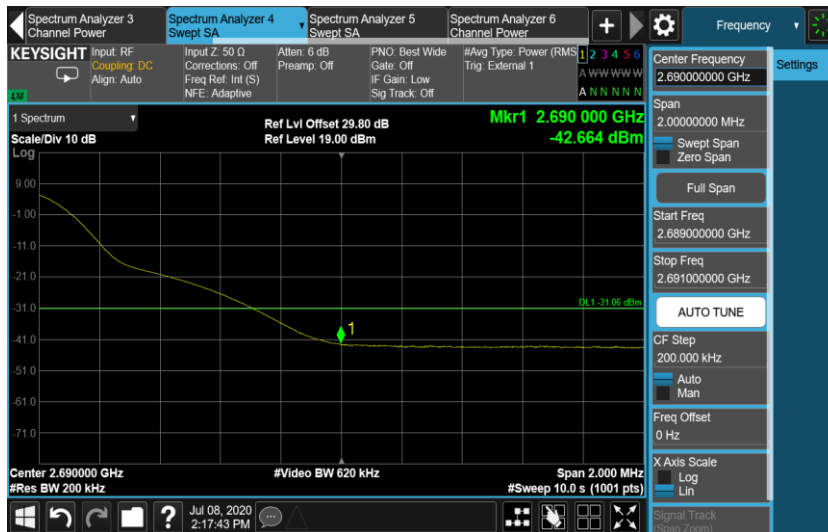




Port 56, Channel Position B, LTE 20.0MHz, NR 80.0 MHz



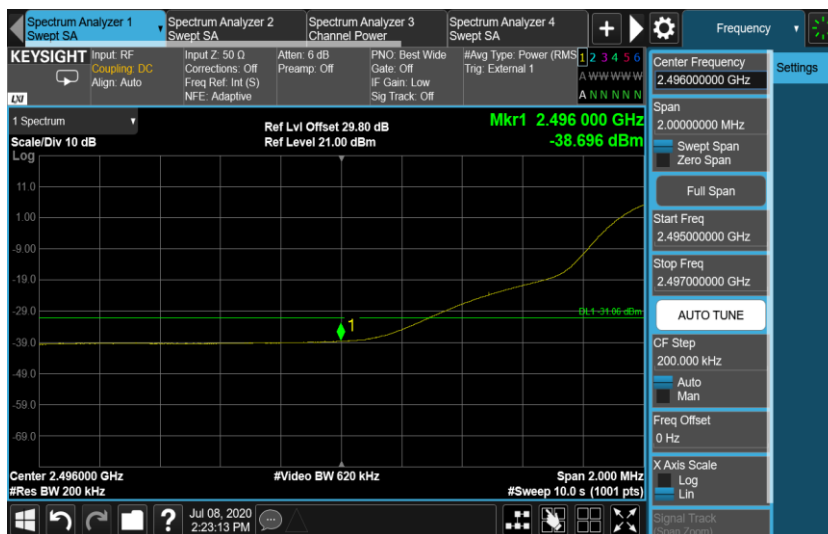
Port 56, Channel Position T, LTE 20.0MHz, NR 80.0 MHz

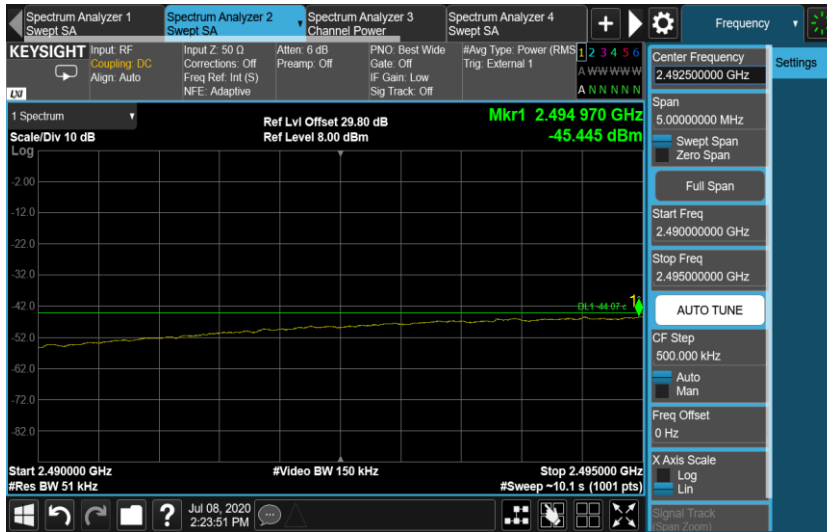


Configuration LTE+NR-MIMO-MC-BE-2 (2LTE+1NR)

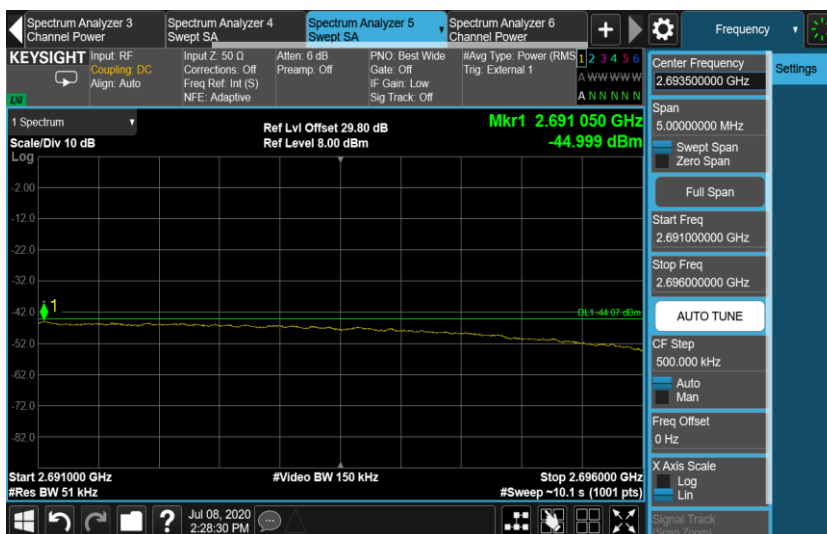
Band Edge Frequency	Channel Bandwidth	RBW (KHz)	Limit (dBm)
Channel Position B	(L) 20.0MHz, (NR) 20.0 MHz	200	-31.06
		50	-44.07
	(L) 20.0MHz, (NR) 40.0 MHz	200	-31.06
		50	-44.07
Channel Position T	(L) 20.0MHz, (NR) 20.0 MHz	200	-31.06
		50	-44.07
	(L) 20.0MHz, (NR) 40.0 MHz	200	-31.06
		50	-44.07

Port 56, Channel Position B, LTE 20.0MHz, NR 20.0 MHz

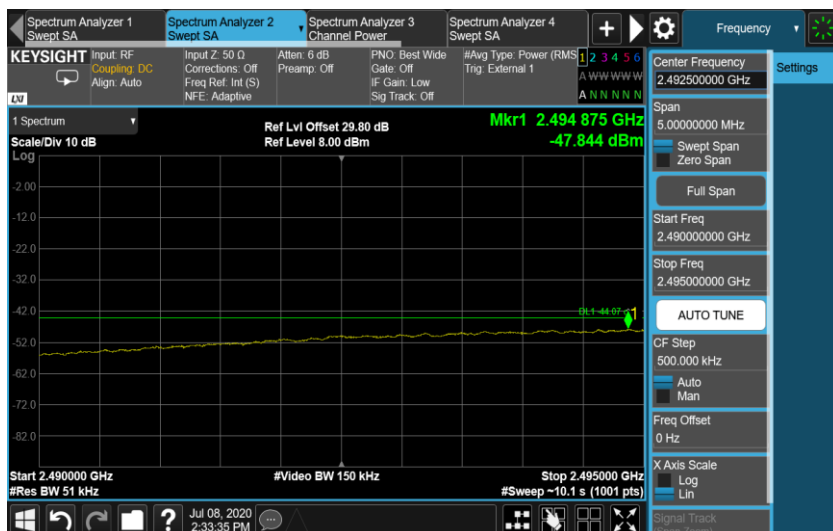




Port 56, Channel Position T, LTE 20.0MHz, NR 20.0 MHz

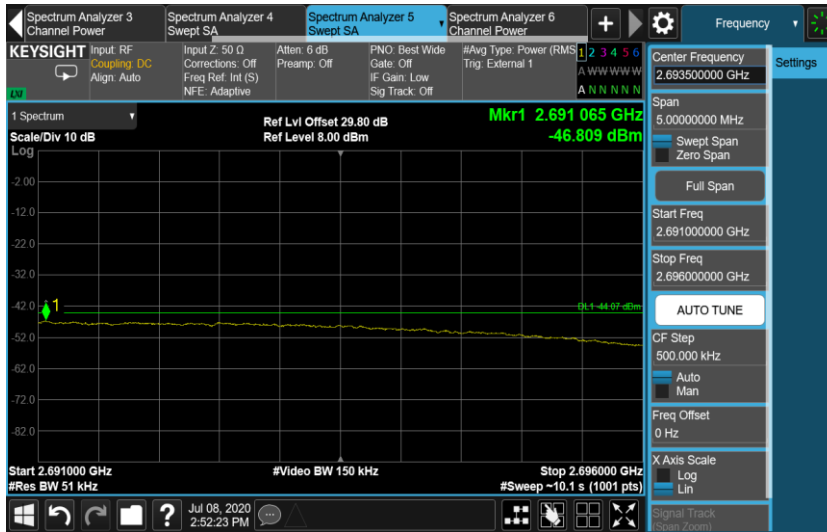


Port 56, Channel Position B, LTE 20.0MHz, NR 40.0 MHz



Port 56, Channel Position T, LTE 20.0MHz, NR 40.0 MHz



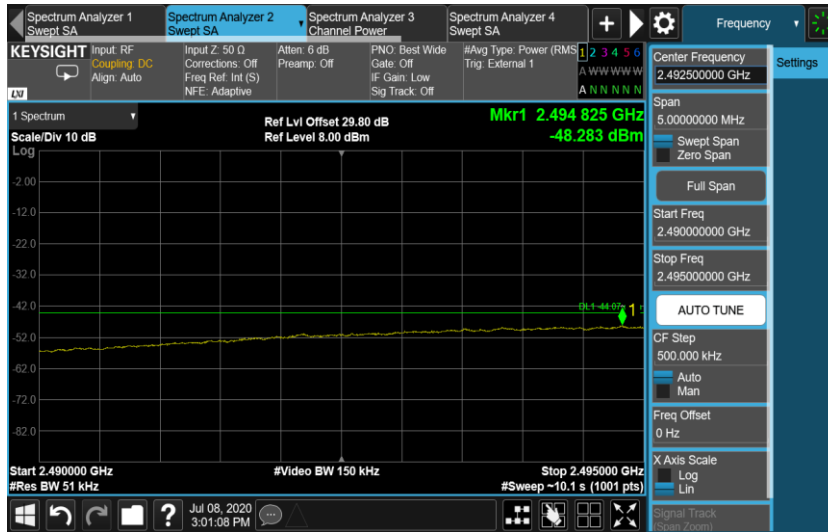


Configuration LTE-MIMO-CA-BE-1 (3LTE 20M)

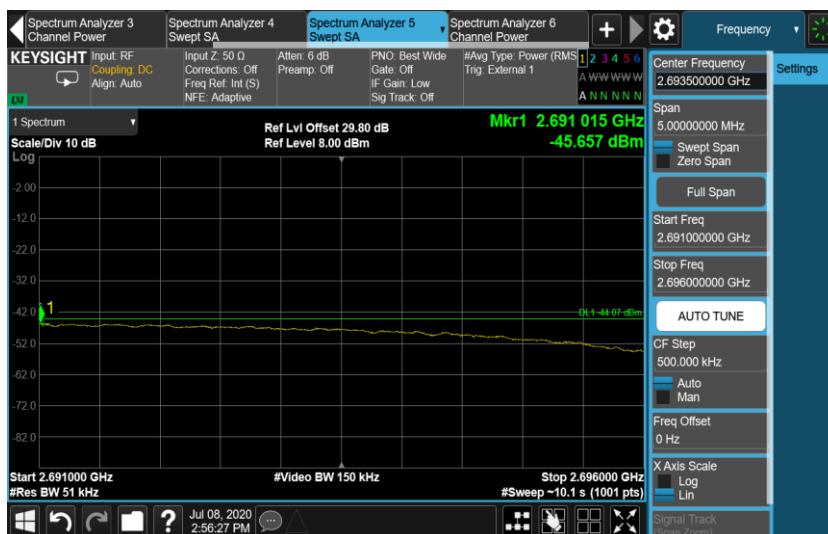
Band Edge Frequency	Channel Bandwidth	RBW(KHz)	Limit(dBm)
Channel Position B	(L) 20.0MHz	200	-31.06
		50	-44.07
Channel Position T	(L) 20.0MHz	200	-31.06
		50	-44.07

Port 56, Channel Position B, LTE 20.0MHz





Port 56, Channel Position T, LTE 20.0MHz



A.4 Conducted Spurious Emission

A.4.1 Reference

FCC CFR 47 Part 2, Clause 2.1051

FCC CFR 47 Part 27, Clause 27.53(m)

A.4.2 Method of measurement

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

The spurious emissions from the antenna terminal were measured. The transmitter output power was attenuated using an attenuator and the frequency spectrum investigated from 3KHz to 27GHz. The resolution bandwidth of 1MHz was employed for frequency band 3KHz to 27GHz. The spectrum analyzer detector was set to RMS.

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.

A.4.3 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.