



# TEST REPORT

No.I19Z61573-WMD01

for

**Remote Radio Unit AIR 6488 B41**

**FCC ID: TA8CKRD901108**

**In accordance with FCC CFR 47 Part 27**

**Issued Date: 2019-09-12**



**Note:**

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## **REPORT HISTORY**

<b>Report Number</b>	<b>Revision</b>	<b>Description</b>	<b>Issue Date</b>
I19Z61573-WMD01	Rev.0	1 <sup>st</sup> edition	2019-09-12



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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 (CN0066). 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: 2019-08-28

Testing End Date: 2019-09-12

### 1.4. Signature



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Dong Yuan

(Prepared this test report)



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Zhou Yu

(Reviewed this test report)



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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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### **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 for NR 30MHz channel bandwidth Maximum 34.95dBm (3.125W) per port for NR 50, 60, 80, 90MHz channel bandwidth
Power source	-48V DC
Serial Number	D828634051
Hardware Version	R1D
Software Version	UP: CXP2010046/5_R27B07; Radio SW: CXP2030020%4_R28B01
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	NR: 1 carrier
Supported modulations	NR: QPSK, 64QAM and 256QAM
Supported Channel bandwidth	NR: 30MHz, 50MHz, 60MHz, 80MHz, 90MHz,
Date of receipt	2019-08-27

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 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, 64QAM and 256QAM for 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 55 for NR single mode.

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

#### NR Single mode

Configuration	Carrier	Channel Bandwidth (MHz)	Carrier Frequency Configuration (MHz)		
			Bottom	Middle	Top
NR-MIMO-1C 30.0M	1 Carrier	NR 30MHz,	2511.00	2593.02	2675.01
NR-MIMO-1C 50.0M	1 Carrier	NR 50MHz,	2521.02	2593.02	2665.02
NR-MIMO-1C 60.0M	1 Carrier	NR 60MHz,	2526.00	2593.02	2660.01
NR-MIMO-1C 80.0M	1 Carrier	NR 80MHz,	2536.02	2593.02	2650.02
NR-MIMO-1C 90.0M	1 Carrier	NR 90MHz,	2541.00	2593.02	2645.01

N/A – Not Applicable

## 4. Reference Documents

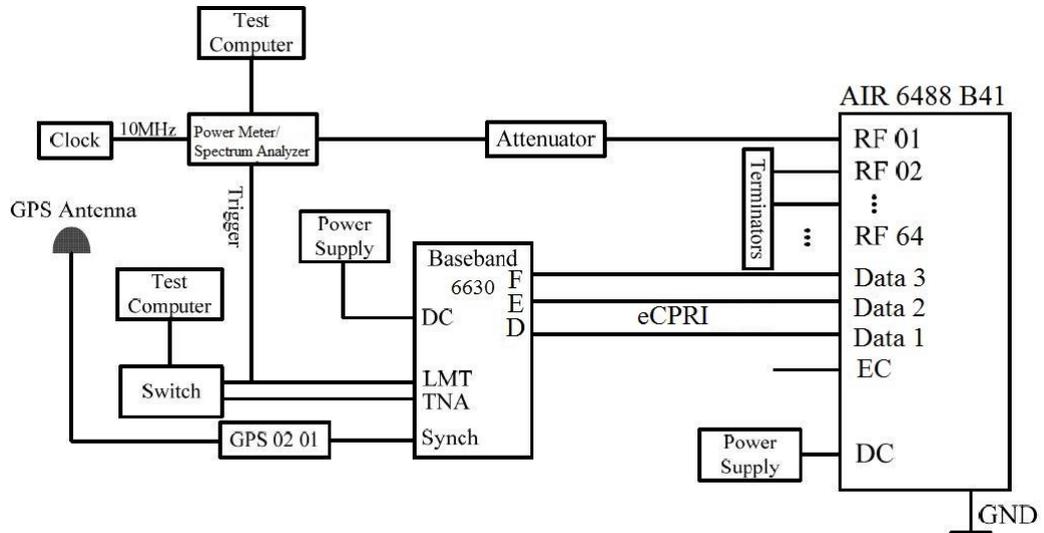
### 4.1. Reference Documents for testing

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

<b>Reference</b>	<b>Title</b>	<b>Version</b>
FCC Part 27	MISCELLANEOUS WIRELESS COMMUNICATIONS SERVICES	10-1-18 Edition
FCC Part 2	FREQUENCY ALLOCATIONS AND RADIO TREATY MATTERS; GENERAL RULES AND REGULATIONS	10-1-17 Edition
ANSI/TIA-603-E	Land Mobile FM or PM Communications Equipment Measurement and Performance Standards	2016
ANSI C63.4	Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 KHz to 40 GHz	2014
ANSI 63.26	IEEE/ANSI Standard for Compliance Testing of Transmitters Used in Licensed Radio Services	2015
TIA 102.CAAA-E	Project 25 Digital C4FM/CQPSK Transceiver Measurement Methods	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

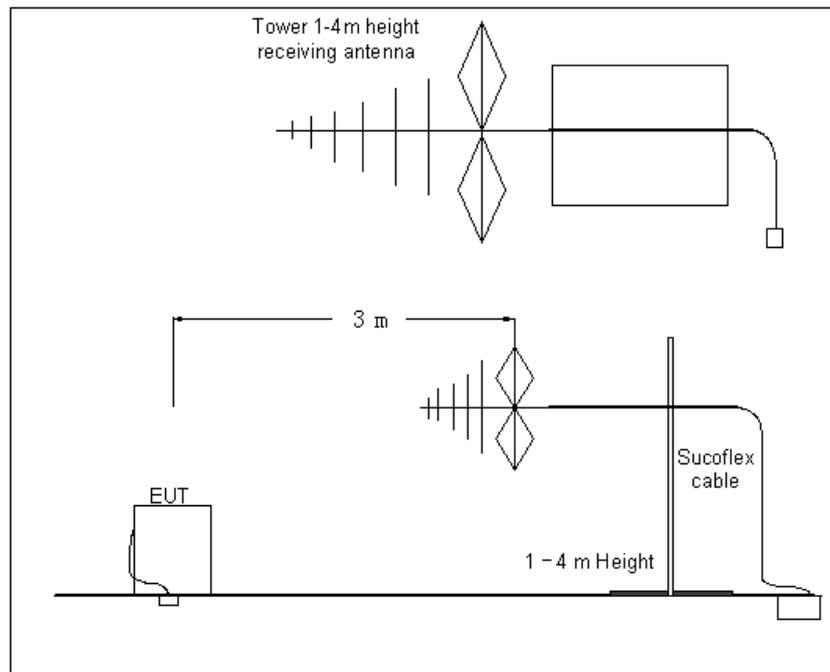
## 5. TEST SETUP

### 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**

<b>Items</b>	<b>Test Name</b>	<b>Clause in FCC rules</b>	<b>Verdict</b>
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) 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 NR 60MHz of port 17-32 and 49-64 are derived from test report I19Z61414-WMD01.

## 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	3115	00167250	ETS-LINDGREN	2020-05-21
6	EMI Antenna	3116	2661	ETS-LINDGREN	2020-07-27
7	EMI Antenna	VULB 9163	9163-514	SCHWARZBECK	2021-01-03
8	Test Receiver	ESU26	100376	Rohde & Schwarz	2019-11-27
9	Climate Chamber	KTHG-415TBS	7353K	QINGSHENG	2020-01-14

## 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 = 100MHz channel bandwidth

Y = 5.5 or 6 MHz

Beamwidth = 12°

Peak to Average Ratio:  $\leq 13$  dB



**A.1.4 Measurement result**

Configuration NR-MIMO-1C 30.0M

Maximum Output Power 32.73dBm per port for NR Channel Bandwidth 30MHz

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/30.0	32.64	17.87	8.94	32.56	17.79	8.99	32.53	17.76	9.01
2	QPSK/30.0	32.84	18.07	8.95	32.94	18.17	8.95	32.89	18.12	8.98
3	QPSK/30.0	32.51	17.74	8.94	32.51	17.74	8.98	32.58	17.80	9.02
4	QPSK/30.0	32.75	17.97	8.94	32.70	17.93	8.99	32.79	18.02	9.03
5	QPSK/30.0	32.60	17.83	8.93	32.59	17.82	9.06	32.66	17.88	8.99
6	QPSK/30.0	32.84	18.07	8.95	32.77	17.99	9.05	32.90	18.13	9.03
7	QPSK/30.0	32.71	17.94	8.94	32.70	17.91	8.99	32.71	17.93	9.04
8	QPSK/30.0	32.64	17.87	8.92	32.69	17.92	9.05	32.78	18.01	9.02
9	QPSK/30.0	32.32	17.55	8.95	32.44	17.67	8.99	32.27	17.50	8.97
10	QPSK/30.0	32.11	17.34	8.93	32.09	17.32	9.00	32.07	17.29	8.96
11	QPSK/30.0	32.32	17.55	8.94	32.39	17.62	9.01	32.26	17.49	8.99
12	QPSK/30.0	32.19	17.41	8.94	32.23	17.45	8.99	32.04	17.28	8.99
13	QPSK/30.0	32.44	17.67	8.94	32.52	17.75	8.99	32.52	17.75	8.99
14	QPSK/30.0	31.94	17.17	8.96	31.92	17.15	9.05	32.00	17.23	8.93
15	QPSK/30.0	32.50	17.73	9.00	32.33	17.56	8.98	32.36	17.59	8.99
16	QPSK/30.0	32.22	17.44	8.94	32.17	17.40	8.95	32.19	17.42	8.98
17	QPSK/30.0	32.41	17.64	8.95	32.44	17.66	8.99	32.45	17.68	8.98
18	QPSK/30.0	32.28	17.50	8.94	32.33	17.56	8.98	32.33	17.56	9.03
19	QPSK/30.0	32.60	17.83	8.94	32.58	17.81	8.98	32.49	17.72	9.00
20	QPSK/30.0	32.39	17.60	8.94	32.40	17.63	9.04	32.40	17.63	9.03
21	QPSK/30.0	32.65	17.88	8.99	32.56	17.79	9.03	32.56	17.78	9.01
22	QPSK/30.0	32.11	17.34	8.94	32.09	17.31	9.04	32.18	17.41	9.05
23	QPSK/30.0	32.71	17.93	8.95	32.65	17.88	8.98	32.72	17.95	8.99
24	QPSK/30.0	32.25	17.48	8.94	32.27	17.51	8.94	32.37	17.60	8.98
25	QPSK/30.0	32.50	17.73	8.97	32.50	17.73	9.00	32.50	17.73	9.02
26	QPSK/30.0	32.43	17.64	8.95	32.41	17.63	8.94	32.50	17.72	9.03
27	QPSK/30.0	32.44	17.66	8.92	32.32	17.55	9.03	32.21	17.42	8.98
28	QPSK/30.0	32.32	17.55	8.93	32.32	17.55	9.04	32.34	17.57	9.03
29	QPSK/30.0	32.41	17.64	8.94	32.37	17.60	9.03	32.50	17.73	9.07
30	QPSK/30.0	32.27	17.50	8.95	32.28	17.51	9.09	32.43	17.66	9.00
31	QPSK/30.0	32.55	17.77	8.97	32.52	17.74	9.04	32.63	17.84	9.01
32	QPSK/30.0	32.40	17.62	8.95	32.35	17.58	9.03	32.38	17.61	9.01
Total Power 1-32		47.50	32.73	-	47.49	32.72	-	47.51	32.74	-
Total Power 1-32+23 dBi		70.50	55.73	-	70.49	55.72	-	70.51	55.74	-



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/30.0	32.54	17.77	8.98	32.55	17.78	9.05	32.39	17.62	9.00
34	QPSK/30.0	32.47	17.70	8.96	32.49	17.72	9.01	32.49	17.72	9.04
35	QPSK/30.0	32.49	17.72	8.93	32.41	17.63	9.04	32.37	17.60	9.02
36	QPSK/30.0	32.48	17.71	8.92	32.61	17.84	8.99	32.46	17.70	9.06
37	QPSK/30.0	32.44	17.67	8.92	32.26	17.49	8.99	32.46	17.69	9.05
38	QPSK/30.0	32.61	17.84	8.93	32.71	17.94	9.05	32.52	17.75	9.01
39	QPSK/30.0	32.58	17.81	8.97	32.53	17.75	9.01	32.55	17.78	9.05
40	QPSK/30.0	32.59	17.82	8.94	32.60	17.82	9.05	32.61	17.84	9.06
41	QPSK/30.0	32.52	17.75	8.95	32.41	17.64	9.02	32.43	17.66	9.05
42	QPSK/30.0	32.49	17.71	8.93	32.45	17.67	9.06	32.46	17.70	9.04
43	QPSK/30.0	32.56	17.79	8.94	32.62	17.84	9.03	32.40	17.62	9.04
44	QPSK/30.0	32.55	17.76	8.94	32.67	17.90	9.05	32.47	17.70	9.01
45	QPSK/30.0	32.65	17.88	8.94	32.62	17.85	8.99	32.49	17.72	9.05
46	QPSK/30.0	32.52	17.76	8.95	32.47	17.70	9.04	32.45	17.68	9.09
47	QPSK/30.0	32.54	17.77	8.93	32.59	17.82	9.05	32.40	17.62	9.04
48	QPSK/30.0	32.60	17.81	8.94	32.74	17.97	9.00	32.56	17.79	8.95
49	QPSK/30.0	32.60	17.83	8.97	32.47	17.69	9.03	32.51	17.73	9.01
50	QPSK/30.0	32.61	17.84	8.95	32.63	17.86	9.00	32.74	17.96	9.02
51	QPSK/30.0	32.46	17.68	8.97	32.53	17.76	9.07	32.43	17.65	9.03
52	QPSK/30.0	32.79	18.03	8.92	32.82	18.05	9.02	32.81	18.04	9.01
53	QPSK/30.0	32.54	17.77	8.94	32.63	17.85	9.01	32.65	17.88	8.99
54	QPSK/30.0	32.59	17.82	8.92	32.61	17.84	9.06	32.59	17.83	9.01
55	QPSK/30.0	33.05	18.24	8.96	32.93	18.16	9.05	32.94	18.18	9.06
56	QPSK/30.0	32.92	18.16	8.92	32.68	18.13	8.98	32.88	18.11	8.99
57	QPSK/30.0	32.11	17.34	8.95	32.04	17.27	9.02	32.08	17.31	9.05
58	QPSK/30.0	32.08	17.17	8.92	32.16	17.39	9.04	32.21	17.44	9.05
59	QPSK/30.0	32.45	17.67	8.94	32.47	17.70	9.06	32.46	17.69	8.99
60	QPSK/30.0	32.28	17.51	8.95	32.33	17.56	9.00	32.37	17.60	9.01
61	QPSK/30.0	32.26	17.48	8.94	32.27	17.50	9.02	32.36	17.59	9.00
62	QPSK/30.0	32.54	17.77	8.94	32.47	17.69	9.00	32.55	17.78	9.01
63	QPSK/30.0	32.48	17.70	8.93	32.44	17.67	9.02	32.37	17.60	9.03
64	QPSK/30.0	32.49	17.72	8.94	32.55	17.78	9.02	32.38	17.61	9.04
Total Power 33-64		47.58	32.81	-	47.58	32.81	-	47.55	32.78	-
Total Power 33-64+23 dBi		70.58	55.81	-	70.58	55.81	-	70.55	55.78	-
EIRP		73.55	58.78	-	73.55	58.78	-	73.54	58.77	-



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	64QAM/30.0	33.01	18.28	8.72	32.92	18.15	8.81	32.96	18.19	8.80
55	256QAM/30.0	32.93	18.16	8.90	32.85	18.08	9.00	32.88	18.11	9.00



Configuration NR-MIMO-1C 50.0M

Maximum Output Power 34.95dBm per port for NR Channel Bandwidth 50MHz

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/50.0	-	-	-	34.57	17.59	7.97	-	-	-
2	QPSK/50.0	-	-	-	34.88	17.88	7.98	-	-	-
3	QPSK/50.0	-	-	-	34.52	17.53	7.97	-	-	-
4	QPSK/50.0	-	-	-	34.67	17.68	7.98	-	-	-
5	QPSK/50.0	-	-	-	34.60	17.61	7.97	-	-	-
6	QPSK/50.0	-	-	-	34.81	17.82	7.96	-	-	-
7	QPSK/50.0	-	-	-	34.70	17.71	7.97	-	-	-
8	QPSK/50.0	-	-	-	34.77	17.78	7.97	-	-	-
9	QPSK/50.0	-	-	-	34.48	17.49	7.97	-	-	-
10	QPSK/50.0	-	-	-	34.24	17.25	7.96	-	-	-
11	QPSK/50.0	-	-	-	34.51	17.51	7.96	-	-	-
12	QPSK/50.0	-	-	-	34.34	17.35	7.96	-	-	-
13	QPSK/50.0	-	-	-	34.65	17.66	7.97	-	-	-
14	QPSK/50.0	-	-	-	34.07	17.04	7.98	-	-	-
15	QPSK/50.0	-	-	-	34.43	17.44	7.95	-	-	-
16	QPSK/50.0	-	-	-	34.32	17.33	7.96	-	-	-
17	QPSK/50.0	-	-	-	34.71	17.72	7.99	-	-	-
18	QPSK/50.0	-	-	-	34.52	17.53	7.97	-	-	-
19	QPSK/50.0	-	-	-	34.76	17.77	7.98	-	-	-
20	QPSK/50.0	-	-	-	34.61	17.62	7.97	-	-	-
21	QPSK/50.0	-	-	-	34.72	17.70	7.96	-	-	-
22	QPSK/50.0	-	-	-	34.39	17.40	7.96	-	-	-
23	QPSK/50.0	-	-	-	34.93	17.94	7.97	-	-	-
24	QPSK/50.0	-	-	-	34.58	17.58	7.97	-	-	-
25	QPSK/50.0	-	-	-	34.70	17.71	7.98	-	-	-
26	QPSK/50.0	-	-	-	34.58	17.58	7.96	-	-	-
27	QPSK/50.0	-	-	-	34.57	17.58	7.97	-	-	-
28	QPSK/50.0	-	-	-	34.51	17.53	7.95	-	-	-
29	QPSK/50.0	-	-	-	34.61	17.62	7.97	-	-	-
30	QPSK/50.0	-	-	-	34.52	17.53	7.96	-	-	-
31	QPSK/50.0	-	-	-	34.68	17.69	7.97	-	-	-
32	QPSK/50.0	-	-	-	34.47	17.48	7.96	-	-	-
Total Power 1-32		-	-	-	49.63	32.64	-	-	-	-
Total Power 1-32+23 dBi		-	-	-	72.63	55.64	-	-	-	-



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/50.0	-	-	-	34.70	17.71	7.98	-	-	-
34	QPSK/50.0	-	-	-	34.62	17.63	7.97	-	-	-
35	QPSK/50.0	-	-	-	34.52	17.53	7.97	-	-	-
36	QPSK/50.0	-	-	-	34.76	17.77	7.96	-	-	-
37	QPSK/50.0	-	-	-	34.43	17.44	7.96	-	-	-
38	QPSK/50.0	-	-	-	34.81	17.82	7.97	-	-	-
39	QPSK/50.0	-	-	-	34.60	17.62	7.96	-	-	-
40	QPSK/50.0	-	-	-	34.68	17.70	7.97	-	-	-
41	QPSK/50.0	-	-	-	34.58	17.59	7.98	-	-	-
42	QPSK/50.0	-	-	-	34.65	17.66	7.97	-	-	-
43	QPSK/50.0	-	-	-	34.73	17.74	7.96	-	-	-
44	QPSK/50.0	-	-	-	34.79	17.80	7.96	-	-	-
45	QPSK/50.0	-	-	-	34.69	17.70	7.97	-	-	-
46	QPSK/50.0	-	-	-	34.62	17.63	7.97	-	-	-
47	QPSK/50.0	-	-	-	34.85	17.84	7.97	-	-	-
48	QPSK/50.0	-	-	-	34.83	17.83	7.97	-	-	-
49	QPSK/50.0	-	-	-	34.84	17.84	7.96	-	-	-
50	QPSK/50.0	-	-	-	34.78	17.79	7.96	-	-	-
51	QPSK/50.0	-	-	-	34.71	17.72	7.98	-	-	-
52	QPSK/50.0	-	-	-	34.96	18.00	7.98	-	-	-
53	QPSK/50.0	-	-	-	34.91	17.91	7.96	-	-	-
54	QPSK/50.0	-	-	-	34.77	17.78	7.97	-	-	-
55	QPSK/50.0	-	-	-	35.10	18.11	7.97	-	-	-
56	QPSK/50.0	-	-	-	34.94	17.96	7.96	-	-	-
57	QPSK/50.0	-	-	-	34.19	17.20	7.97	-	-	-
58	QPSK/50.0	-	-	-	34.31	17.32	7.97	-	-	-
59	QPSK/50.0	-	-	-	34.62	17.63	7.97	-	-	-
60	QPSK/50.0	-	-	-	34.50	17.51	8.00	-	-	-
61	QPSK/50.0	-	-	-	34.30	17.32	7.95	-	-	-
62	QPSK/50.0	-	-	-	34.73	17.74	7.96	-	-	-
63	QPSK/50.0	-	-	-	34.53	17.54	7.97	-	-	-
64	QPSK/50.0	-	-	-	34.66	17.67	7.96	-	-	-
Total Power 33-64		-	-	-	49.73	32.74	-	-	-	-
Total Power 33-64+23 dBi		-	-	-	72.73	55.74	-	-	-	-
EIRP		-	-	-	75.69	58.70	-	-	-	-



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	64QAM/50.0	35.35	18.36	8.15	35.10	18.20	7.97	35.18	18.19	8.19
55	256QAM/50.0	35.19	18.21	8.16	35.05	18.06	8.00	35.05	18.04	8.19



Configuration NR-MIMO-1C 60.0M

Maximum Output Power 34.95dBm per port for NR Channel Bandwidth 60MHz

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/60.0	34.85	17.07	8.27	34.76	16.97	7.98	34.69	16.91	8.29
2	QPSK/60.0	35.13	17.35	8.26	35.13	17.35	7.98	35.06	17.28	8.25
3	QPSK/60.0	34.71	16.93	8.22	34.73	16.95	8.00	34.74	16.96	8.24
4	QPSK/60.0	35.01	17.21	8.27	34.96	17.18	7.98	35.04	17.26	8.27
5	QPSK/60.0	34.86	17.07	8.23	34.78	17.00	8.00	34.84	17.06	8.28
6	QPSK/60.0	35.13	17.35	8.25	34.95	17.17	7.99	35.07	17.30	8.27
7	QPSK/60.0	35.03	17.25	8.27	34.96	17.18	7.98	34.99	17.21	8.23
8	QPSK/60.0	34.90	17.12	8.26	34.91	17.12	7.98	35.01	17.23	8.26
9	QPSK/60.0	34.57	16.79	8.26	34.68	16.90	7.98	34.46	16.68	8.25
10	QPSK/60.0	34.42	16.63	8.24	34.43	16.65	7.97	34.28	16.50	8.24
11	QPSK/60.0	34.72	16.94	8.24	34.70	16.92	7.98	34.57	16.79	8.27
12	QPSK/60.0	34.53	16.75	8.23	34.53	16.75	7.98	34.42	16.64	8.23
13	QPSK/60.0	34.78	17.00	8.24	34.74	16.95	7.98	34.75	16.97	8.27
14	QPSK/60.0	34.20	16.42	8.25	34.23	16.45	7.97	34.19	16.41	8.27
15	QPSK/60.0	34.83	17.05	8.24	34.56	16.78	7.99	34.60	16.82	8.24
16	QPSK/60.0	34.52	16.74	8.26	34.42	16.64	7.98	34.41	16.63	8.25
17	QPSK/60.0	34.57	16.78	8.22	34.63	16.85	8.01	34.70	16.61	8.30
18	QPSK/60.0	34.32	16.55	8.21	34.50	16.70	8.02	34.62	16.55	8.31
19	QPSK/60.0	34.70	16.92	8.26	34.75	16.96	8.01	34.84	16.75	8.27
20	QPSK/60.0	34.55	16.76	8.21	34.61	16.84	8.02	34.76	16.62	8.34
21	QPSK/60.0	34.71	16.95	8.27	34.70	16.93	8.03	34.77	16.72	8.29
22	QPSK/60.0	34.29	16.51	8.23	34.38	16.60	8.02	34.64	16.56	8.29
23	QPSK/60.0	34.86	17.07	8.24	34.97	17.19	8.00	35.01	16.80	8.30
24	QPSK/60.0	34.48	16.70	8.21	34.52	16.71	8.01	34.83	16.75	8.31
25	QPSK/60.0	34.63	16.84	8.23	34.62	16.85	8.02	34.85	16.72	8.32
26	QPSK/60.0	34.59	16.60	8.27	34.54	16.76	8.00	34.86	16.66	8.27
27	QPSK/60.0	34.53	16.74	8.28	34.50	16.71	8.02	34.64	16.52	8.29
28	QPSK/60.0	34.40	16.61	8.25	34.44	16.67	8.01	34.62	16.43	8.30
29	QPSK/60.0	34.62	16.85	8.27	34.59	16.82	8.03	34.89	16.79	8.30
30	QPSK/60.0	34.51	16.73	8.23	34.51	16.72	8.00	34.72	16.65	8.32
31	QPSK/60.0	34.64	16.86	8.25	34.61	16.81	8.02	34.90	16.78	8.29
32	QPSK/60.0	34.47	16.69	8.20	34.36	16.58	8.01	34.68	16.84	8.31
Total Power 1-32		49.72	31.93	-	49.70	31.92	-	49.79	31.85	-
Total Power 1-32+23 dBi		72.72	54.93	-	72.70	54.92	-	72.79	54.85	-



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/60.0	34.88	17.09	8.26	34.89	17.11	8.33	34.75	16.96	8.26
34	QPSK/60.0	34.80	17.02	8.26	34.83	17.05	8.34	34.75	16.98	8.24
35	QPSK/60.0	34.82	17.04	8.25	34.72	16.93	7.98	34.65	16.86	8.28
36	QPSK/60.0	34.82	17.04	8.31	34.94	17.16	7.99	34.78	17.00	8.27
37	QPSK/60.0	34.85	17.07	8.27	34.64	16.84	7.97	34.82	17.04	8.26
38	QPSK/60.0	34.85	17.07	8.28	35.00	17.22	7.99	34.80	17.01	8.27
39	QPSK/60.0	34.88	17.10	8.27	34.74	16.96	7.98	34.79	17.00	8.27
40	QPSK/60.0	34.92	17.13	8.25	34.86	17.08	8.00	34.78	17.00	8.26
41	QPSK/60.0	34.83	17.05	8.28	34.66	16.88	7.99	34.68	16.90	8.24
42	QPSK/60.0	34.78	17.00	8.27	34.73	16.95	7.99	34.73	16.94	8.26
43	QPSK/60.0	34.83	17.06	8.28	34.92	17.13	7.97	34.67	16.88	8.28
44	QPSK/60.0	34.82	17.03	8.26	34.96	17.18	7.98	34.76	16.99	8.26
45	QPSK/60.0	34.91	17.13	8.25	34.87	17.09	7.97	34.74	16.97	8.23
46	QPSK/60.0	34.91	17.12	8.26	34.85	17.07	7.99	34.87	17.09	8.26
47	QPSK/60.0	34.88	17.10	8.27	34.98	17.20	7.97	34.76	16.98	8.28
48	QPSK/60.0	34.88	17.10	8.26	34.96	17.18	7.98	34.78	17.00	8.28
49	QPSK/60.0	34.70	16.92	8.24	34.81	17.03	8.03	35.09	17.31	8.34
50	QPSK/60.0	34.77	17.00	8.22	34.78	17.01	8.02	35.05	17.27	8.32
51	QPSK/60.0	34.61	16.31	8.26	34.68	16.89	8.03	34.85	17.08	8.32
52	QPSK/60.0	34.95	17.17	8.25	35.02	17.23	8.02	35.25	17.36	8.32
53	QPSK/60.0	34.82	17.04	8.24	34.87	17.09	8.02	35.19	17.27	8.34
54	QPSK/60.0	34.74	16.99	8.27	34.77	16.98	8.00	35.07	17.15	8.28
55	QPSK/60.0	35.18	17.38	8.20	35.08	17.29	8.01	35.39	17.46	8.30
56	QPSK/60.0	35.24	17.44	8.27	35.05	17.28	8.01	35.40	17.52	8.31
57	QPSK/60.0	34.22	16.45	8.23	34.26	16.48	8.00	34.50	16.71	8.32
58	QPSK/60.0	34.26	16.48	8.25	34.25	16.47	8.01	34.60	16.81	8.31
59	QPSK/60.0	34.50	16.73	8.28	34.62	16.83	8.02	34.84	17.06	8.30
60	QPSK/60.0	34.57	16.79	8.26	34.50	16.71	8.02	34.75	16.98	8.29
61	QPSK/60.0	34.34	16.56	8.25	34.33	16.55	8.02	34.60	16.74	8.33
62	QPSK/60.0	34.80	17.00	8.29	34.67	16.89	8.01	34.97	17.05	8.32
63	QPSK/60.0	34.56	16.78	8.31	34.52	16.73	8.01	34.59	16.75	8.30
64	QPSK/60.0	34.63	16.83	8.24	34.60	16.84	8.02	34.60	16.78	8.26
Total Power 33-64		49.82	32.03	-	49.82	32.04	-	49.90	32.08	-
Total Power 33-64 +23 dBi		72.82	55.03	-	72.82	55.04	-	72.90	55.08	-
EIRP		75.78	57.99	-	75.77	57.99	-	75.86	57.98	-



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	64QAM/60.0	35.24	17.46	8.21	35.04	17.26	7.98	35.11	17.32	8.26
55	256QAM/60.0	35.08	17.30	8.23	34.91	17.13	7.99	34.97	17.18	8.30



Configuration NR-MIMO-1C 80.0M

Maximum Output Power 34.95dBm per port for NR Channel Bandwidth 80MHz

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/80.0	-	-	-	34.25	15.22	8.01	-	-	-
2	QPSK/80.0	-	-	-	34.54	15.52	8.01	-	-	-
3	QPSK/80.0	-	-	-	34.23	15.20	8.02	-	-	-
4	QPSK/80.0	-	-	-	34.33	15.30	8.01	-	-	-
5	QPSK/80.0	-	-	-	34.28	15.23	8.02	-	-	-
6	QPSK/80.0	-	-	-	34.45	15.43	8.01	-	-	-
7	QPSK/80.0	-	-	-	34.36	15.34	8.01	-	-	-
8	QPSK/80.0	-	-	-	34.44	15.41	8.02	-	-	-
9	QPSK/80.0	-	-	-	34.44	15.41	8.01	-	-	-
10	QPSK/80.0	-	-	-	34.14	15.11	8.02	-	-	-
11	QPSK/80.0	-	-	-	34.46	15.43	8.01	-	-	-
12	QPSK/80.0	-	-	-	34.28	15.24	8.02	-	-	-
13	QPSK/80.0	-	-	-	34.28	15.25	8.01	-	-	-
14	QPSK/80.0	-	-	-	34.09	15.06	8.02	-	-	-
15	QPSK/80.0	-	-	-	34.37	15.34	8.01	-	-	-
16	QPSK/80.0	-	-	-	34.38	15.35	8.02	-	-	-
17	QPSK/80.0	-	-	-	34.27	15.24	8.02	-	-	-
18	QPSK/80.0	-	-	-	34.16	15.13	8.01	-	-	-
19	QPSK/80.0	-	-	-	34.37	15.34	8.01	-	-	-
20	QPSK/80.0	-	-	-	34.26	15.22	8.01	-	-	-
21	QPSK/80.0	-	-	-	34.35	15.33	8.01	-	-	-
22	QPSK/80.0	-	-	-	34.28	15.25	8.02	-	-	-
23	QPSK/80.0	-	-	-	34.59	15.56	8.00	-	-	-
24	QPSK/80.0	-	-	-	34.22	15.19	8.02	-	-	-
25	QPSK/80.0	-	-	-	34.35	15.32	8.02	-	-	-
26	QPSK/80.0	-	-	-	34.22	15.19	8.01	-	-	-
27	QPSK/80.0	-	-	-	34.23	15.20	8.01	-	-	-
28	QPSK/80.0	-	-	-	34.16	15.13	8.01	-	-	-
29	QPSK/80.0	-	-	-	34.27	15.25	8.01	-	-	-
30	QPSK/80.0	-	-	-	34.15	15.12	8.01	-	-	-
31	QPSK/80.0	-	-	-	34.32	15.29	8.03	-	-	-
32	QPSK/80.0	-	-	-	34.14	15.10	8.02	-	-	-
Total Power 1-32		-	-	-	49.35	30.33	-	-	-	-
Total Power 1-32+23 dBi		-	-	-	72.35	53.33	-	-	-	-



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/80.0	-	-	-	34.37	15.34	8.02	-	-	-
34	QPSK/80.0	-	-	-	34.31	15.28	8.02	-	-	-
35	QPSK/80.0	-	-	-	34.19	15.16	8.02	-	-	-
36	QPSK/80.0	-	-	-	34.42	15.38	8.02	-	-	-
37	QPSK/80.0	-	-	-	34.11	15.08	8.01	-	-	-
38	QPSK/80.0	-	-	-	34.49	15.46	8.02	-	-	-
39	QPSK/80.0	-	-	-	34.26	15.23	8.01	-	-	-
40	QPSK/80.0	-	-	-	34.36	15.33	8.02	-	-	-
41	QPSK/80.0	-	-	-	34.19	15.15	8.02	-	-	-
42	QPSK/80.0	-	-	-	34.26	15.23	8.01	-	-	-
43	QPSK/80.0	-	-	-	34.40	15.37	8.02	-	-	-
44	QPSK/80.0	-	-	-	34.45	15.42	8.01	-	-	-
45	QPSK/80.0	-	-	-	34.37	15.32	8.01	-	-	-
46	QPSK/80.0	-	-	-	34.31	15.28	8.04	-	-	-
47	QPSK/80.0	-	-	-	34.50	15.47	8.02	-	-	-
48	QPSK/80.0	-	-	-	34.48	15.45	8.01	-	-	-
49	QPSK/80.0	-	-	-	34.49	15.47	8.00	-	-	-
50	QPSK/80.0	-	-	-	34.47	15.43	8.01	-	-	-
51	QPSK/80.0	-	-	-	34.36	15.33	8.02	-	-	-
52	QPSK/80.0	-	-	-	34.70	15.67	8.01	-	-	-
53	QPSK/80.0	-	-	-	34.57	15.54	8.01	-	-	-
54	QPSK/80.0	-	-	-	34.44	15.41	8.02	-	-	-
55	QPSK/80.0	-	-	-	34.76	15.72	8.02	-	-	-
56	QPSK/80.0	-	-	-	34.63	15.50	8.01	-	-	-
57	QPSK/80.0	-	-	-	34.26	15.23	8.01	-	-	-
58	QPSK/80.0	-	-	-	34.24	15.21	8.02	-	-	-
59	QPSK/80.0	-	-	-	34.57	15.54	8.01	-	-	-
60	QPSK/80.0	-	-	-	34.44	15.41	8.01	-	-	-
61	QPSK/80.0	-	-	-	34.27	15.23	8.01	-	-	-
62	QPSK/80.0	-	-	-	34.42	15.39	8.01	-	-	-
63	QPSK/80.0	-	-	-	34.19	15.16	8.00	-	-	-
64	QPSK/80.0	-	-	-	34.34	15.31	8.01	-	-	-
Total Power 33-64		-	-	-	49.45	30.41	-	-	-	-
Total Power 33-64 +23 dBi		-	-	-	72.45	53.41	-	-	-	-
EIRP		-	-	-	75.41	56.38	-	-	-	-



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	64QAM/80.0	35.28	16.25	8.30	35.17	16.14	8.01	35.17	16.14	8.32
55	256QAM/80.0	35.24	16.21	8.36	35.15	16.11	8.05	35.08	16.05	8.37



Configuration NR-MIMO-1C 90.0M

Maximum Output Power 34.95dBm per port for NR Channel Bandwidth 90MHz

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/90.0	-	-	-	34.71	15.17	7.97	-	-	-
2	QPSK/90.0	-	-	-	35.04	15.50	7.95	-	-	-
3	QPSK/90.0	-	-	-	34.70	15.16	7.95	-	-	-
4	QPSK/90.0	-	-	-	34.83	15.29	7.97	-	-	-
5	QPSK/90.0	-	-	-	34.74	15.20	7.96	-	-	-
6	QPSK/90.0	-	-	-	34.93	15.39	7.97	-	-	-
7	QPSK/90.0	-	-	-	34.86	15.31	7.95	-	-	-
8	QPSK/90.0	-	-	-	34.92	15.37	7.97	-	-	-
9	QPSK/90.0	-	-	-	34.65	15.10	7.96	-	-	-
10	QPSK/90.0	-	-	-	34.39	14.82	7.97	-	-	-
11	QPSK/90.0	-	-	-	34.66	15.12	7.94	-	-	-
12	QPSK/90.0	-	-	-	34.50	14.95	7.95	-	-	-
13	QPSK/90.0	-	-	-	34.79	15.25	7.98	-	-	-
14	QPSK/90.0	-	-	-	34.21	14.68	7.96	-	-	-
15	QPSK/90.0	-	-	-	34.60	15.04	7.95	-	-	-
16	QPSK/90.0	-	-	-	34.42	14.86	7.96	-	-	-
17	QPSK/90.0	-	-	-	34.77	15.21	7.98	-	-	-
18	QPSK/90.0	-	-	-	34.64	15.10	7.97	-	-	-
19	QPSK/90.0	-	-	-	34.86	15.31	7.95	-	-	-
20	QPSK/90.0	-	-	-	34.74	15.20	7.96	-	-	-
21	QPSK/90.0	-	-	-	34.86	15.32	7.94	-	-	-
22	QPSK/90.0	-	-	-	34.53	14.99	7.95	-	-	-
23	QPSK/90.0	-	-	-	35.09	15.55	7.97	-	-	-
24	QPSK/90.0	-	-	-	34.71	15.17	7.97	-	-	-
25	QPSK/90.0	-	-	-	34.85	15.31	7.97	-	-	-
26	QPSK/90.0	-	-	-	34.74	15.20	7.97	-	-	-
27	QPSK/90.0	-	-	-	34.73	15.19	7.95	-	-	-
28	QPSK/90.0	-	-	-	34.67	15.12	7.94	-	-	-
29	QPSK/90.0	-	-	-	34.33	14.79	8.36	-	-	-
30	QPSK/90.0	-	-	-	34.17	14.63	8.33	-	-	-
31	QPSK/90.0	-	-	-	34.82	15.28	7.96	-	-	-
32	QPSK/90.0	-	-	-	34.62	15.08	7.96	-	-	-
Total Power 1-32		-	-	-	49.75	30.20	-	-	-	-
Total Power 1-32+23 dBi		-	-	-	72.75	53.20	-	-	-	-



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/90.0	-	-	-	34.87	15.33	7.95	-	-	-
34	QPSK/90.0	-	-	-	34.77	15.23	7.97	-	-	-
35	QPSK/90.0	-	-	-	34.66	15.12	7.97	-	-	-
36	QPSK/90.0	-	-	-	34.88	15.34	7.98	-	-	-
37	QPSK/90.0	-	-	-	34.60	15.05	7.94	-	-	-
38	QPSK/90.0	-	-	-	34.96	15.42	7.96	-	-	-
39	QPSK/90.0	-	-	-	34.76	15.22	7.94	-	-	-
40	QPSK/90.0	-	-	-	34.84	15.30	7.96	-	-	-
41	QPSK/90.0	-	-	-	34.67	15.12	7.95	-	-	-
42	QPSK/90.0	-	-	-	34.74	15.20	7.94	-	-	-
43	QPSK/90.0	-	-	-	34.85	15.32	7.97	-	-	-
44	QPSK/90.0	-	-	-	34.95	15.40	7.97	-	-	-
45	QPSK/90.0	-	-	-	34.85	15.31	7.96	-	-	-
46	QPSK/90.0	-	-	-	34.78	15.24	7.97	-	-	-
47	QPSK/90.0	-	-	-	34.99	15.44	7.96	-	-	-
48	QPSK/90.0	-	-	-	34.97	15.43	7.96	-	-	-
49	QPSK/90.0	-	-	-	34.98	15.43	7.96	-	-	-
50	QPSK/90.0	-	-	-	34.95	15.39	7.96	-	-	-
51	QPSK/90.0	-	-	-	34.84	15.29	7.95	-	-	-
52	QPSK/90.0	-	-	-	35.18	15.64	7.94	-	-	-
53	QPSK/90.0	-	-	-	35.05	15.51	7.95	-	-	-
54	QPSK/90.0	-	-	-	34.93	15.39	7.96	-	-	-
55	QPSK/90.0	-	-	-	35.24	15.70	7.95	-	-	-
56	QPSK/90.0	-	-	-	35.11	15.57	7.97	-	-	-
57	QPSK/90.0	-	-	-	34.33	14.80	7.97	-	-	-
58	QPSK/90.0	-	-	-	34.77	15.23	7.97	-	-	-
59	QPSK/90.0	-	-	-	34.65	15.11	7.97	-	-	-
60	QPSK/90.0	-	-	-	34.44	14.90	7.98	-	-	-
61	QPSK/90.0	-	-	-	34.46	14.91	7.94	-	-	-
62	QPSK/90.0	-	-	-	34.89	15.34	7.97	-	-	-
63	QPSK/90.0	-	-	-	34.68	15.14	7.96	-	-	-
64	QPSK/90.0	-	-	-	34.83	15.28	7.94	-	-	-
Total Power 33-64		-	-	-	49.88	30.34	-	-	-	-
Total Power 33-64+23 dBi		-	-	-	72.88	53.34	-	-	-	-
EIRP		-	-	-	75.83	56.28	-	-	-	-



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	64QAM/90.0	35.29	15.74	8.34	35.14	15.59	7.97	35.11	15.56	8.28
55	256QAM/90.0	35.31	15.76	8.35	35.13	15.59	7.98	35.06	15.52	8.39



## **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 NR-MIMO-1C 30.0M

-26dBc Occupied Bandwidth

Antenna	Modulation / Bandwidth	Occupied Bandwidth (MHz)		
		Channel Position B	Channel Position M	Channel Position T
55	QPSK/ 30.0 MHz	28.93	28.94	28.91
55	QPSK/ 50.0 MHz	49.17	49.14	49.13
55	QPSK/ 60.0 MHz	59.75	59.79	59.77
55	QPSK/ 80.0 MHz	80.02	80.02	80.01
55	QPSK/ 90.0 MHz	90.30	90.34	90.31

-26dBc Occupied Bandwidth

Antenna	Bandwidth	Occupied Bandwidth (MHz)	
		Modulation 64QAM/ Channel Position M	Modulation 256QAM/ Channel Position M
55	30.0 MHz	28.90	28.86
55	50.0 MHz	49.18	49.17
55	60.0 MHz	59.78	59.78
55	80.0 MHz	80.02	80.03
55	90.0 MHz	90.34	90.36

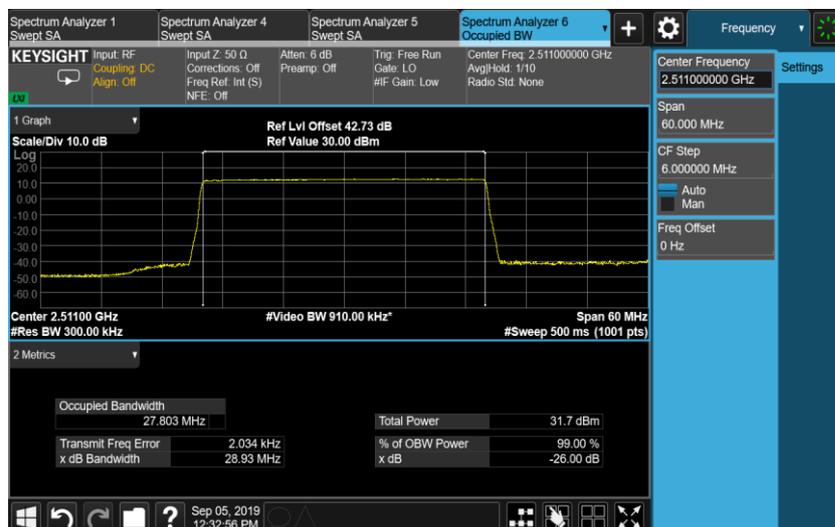
99% Occupied Bandwidth

Antenna	Modulation / Bandwidth	Occupied Bandwidth (MHz)		
		Channel Position B	Channel Position M	Channel Position T
55	QPSK/ 30.0 MHz	27.803	27.812	27.799
55	QPSK/ 50.0 MHz	47.386	47.436	47.397
55	QPSK/ 60.0 MHz	57.738	57.785	57.736
55	QPSK/ 80.0 MHz	77.314	77.394	77.320
55	QPSK/ 90.0 MHz	87.277	87.378	87.306

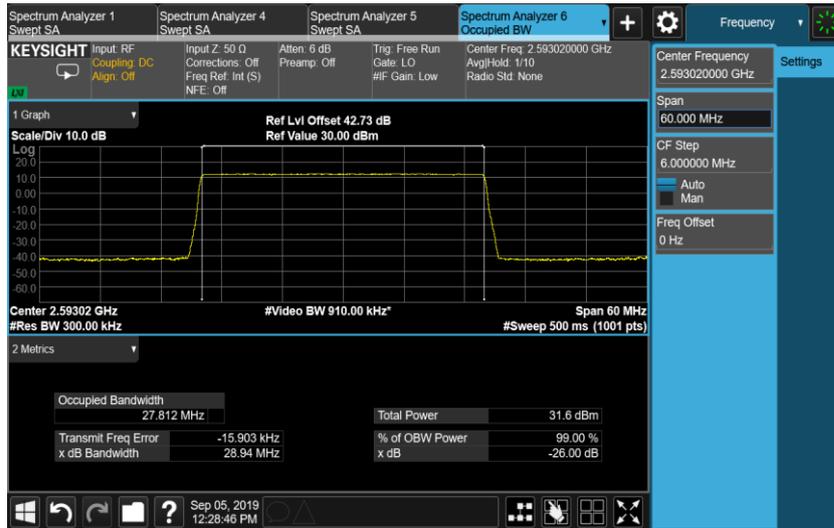
99% Occupied Bandwidth

Antenna	Bandwidth	Occupied Bandwidth (MHz)	
		Modulation 64QAM/ Channel Position M	Modulation 256QAM/ Channel Position M
55	30.0 MHz	27.840	27.831
55	50.0 MHz	47.483	47.456
55	60.0 MHz	57.765	57.794
55	80.0 MHz	77.378	77.416
55	90.0 MHz	87.392	87.453

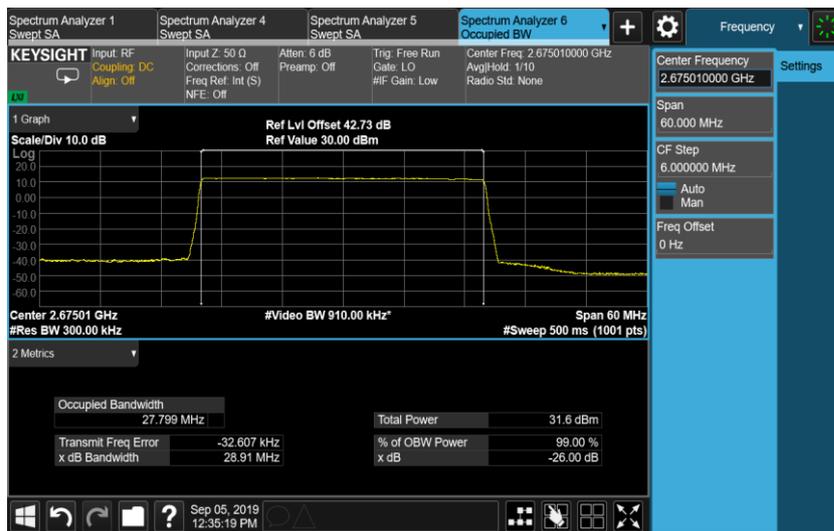
Port 55, QPSK 30.0M Channel position B



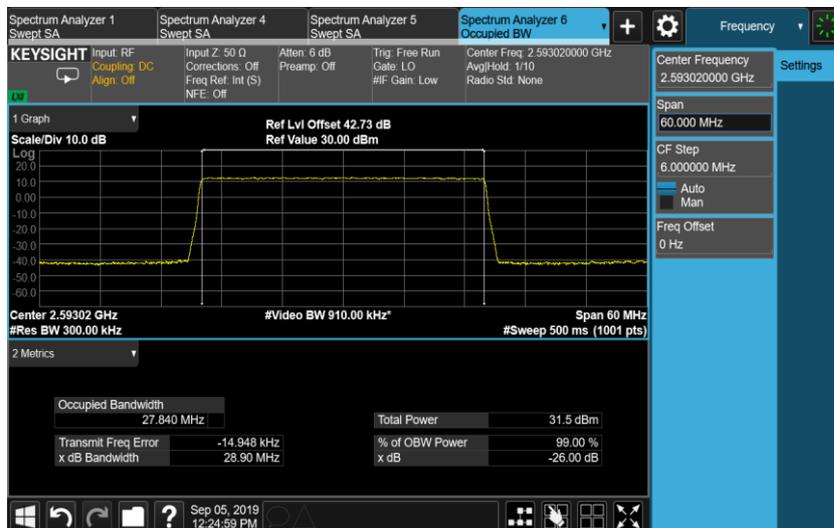
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Port 55, QPSK 30.0M Channel position T



Port 55, 64QAM 30.0M Channel position M



Port 55, 256QAM 30.0M Channel position M

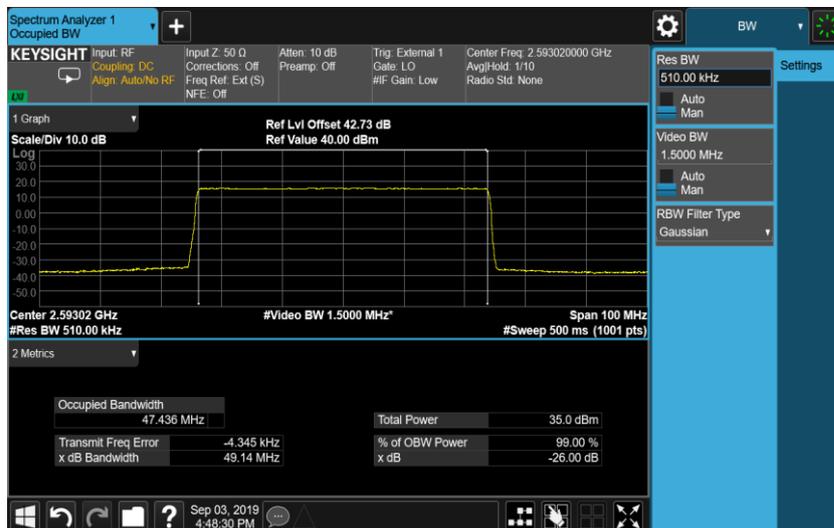


Configuration NR-MIMO-1C 50M

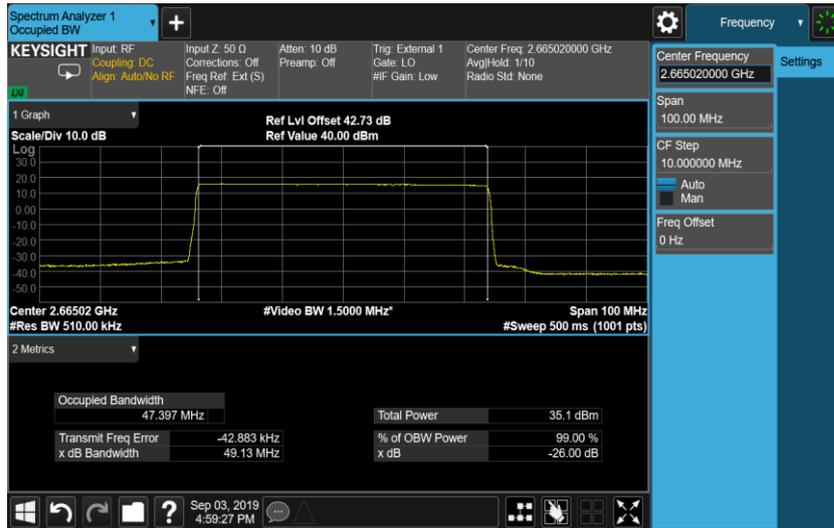
Port 55, QPSK 50.0M Channel position B



Port 55, QPSK 50.0M Channel position M



Port 55, QPSK 50.0M Channel position T



Port 55, 64QAM 50.0M Channel position M



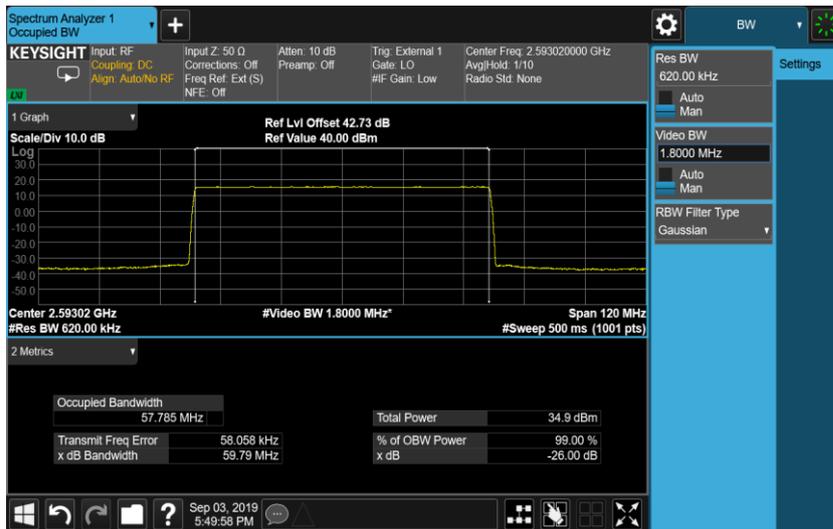
Port 55, 256QAM 50.0M Channel position M



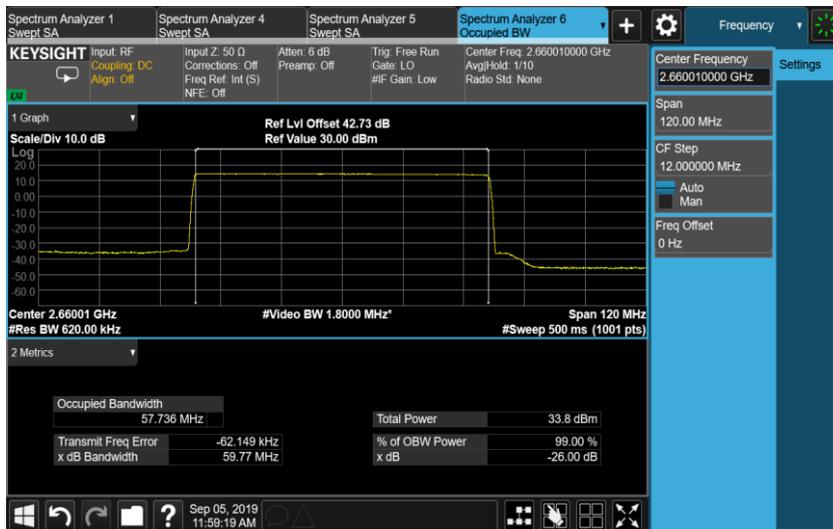
Configuration NR-MIMO-1C 60M  
Port 55, QPSK 60.0M Channel position B



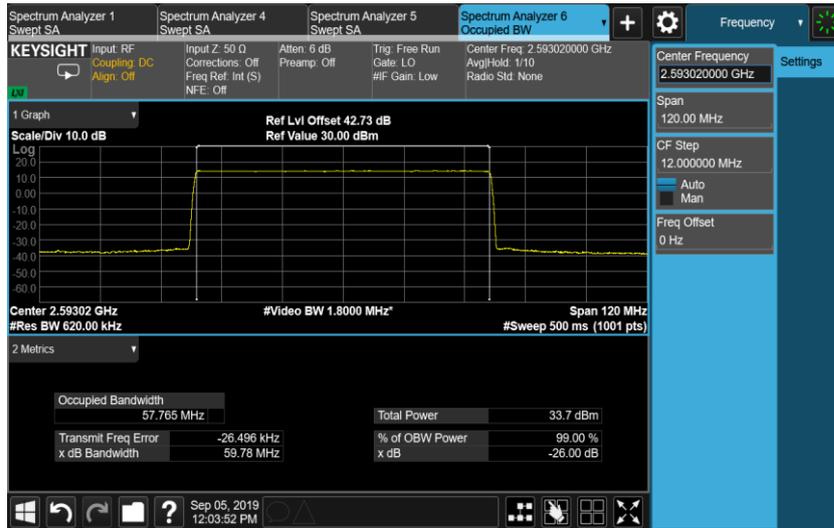
Port 55, QPSK 60.0M Channel position M



Port 55, QPSK 60.0M Channel position T



Port 55, 64QAM 60.0M Channel position M

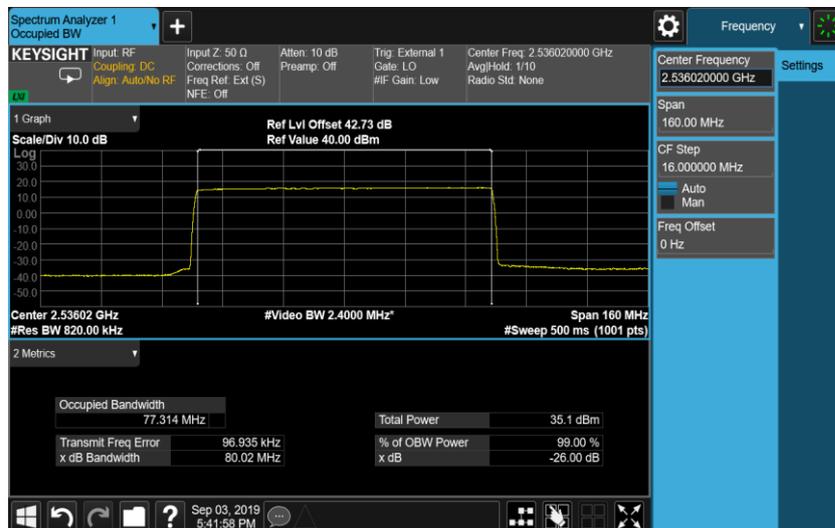


Port 55, 256QAM 60.0M Channel position M



Configuration NR-MIMO-1C-80

Port 55, QPSK 80.0M Channel position B



Port 55, QPSK 80.0M Channel position M



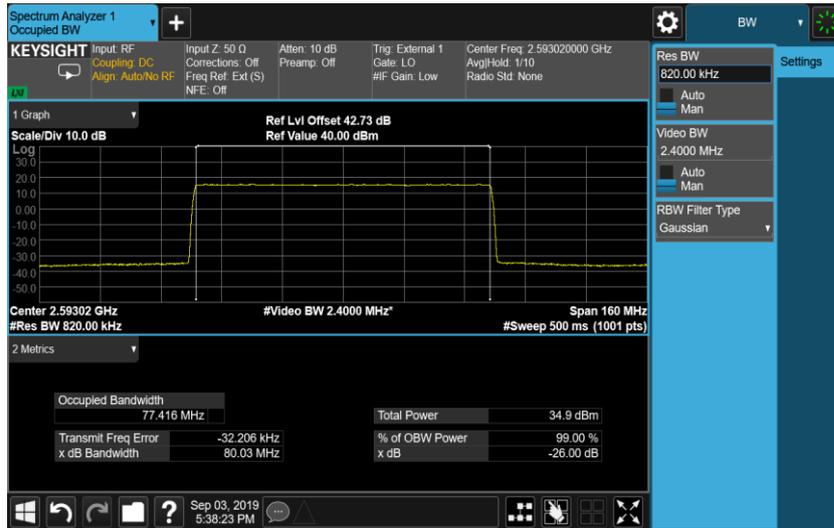
Port 55, QPSK 80.0M Channel position T



Port 55, 64QAM 80.0M Channel position M

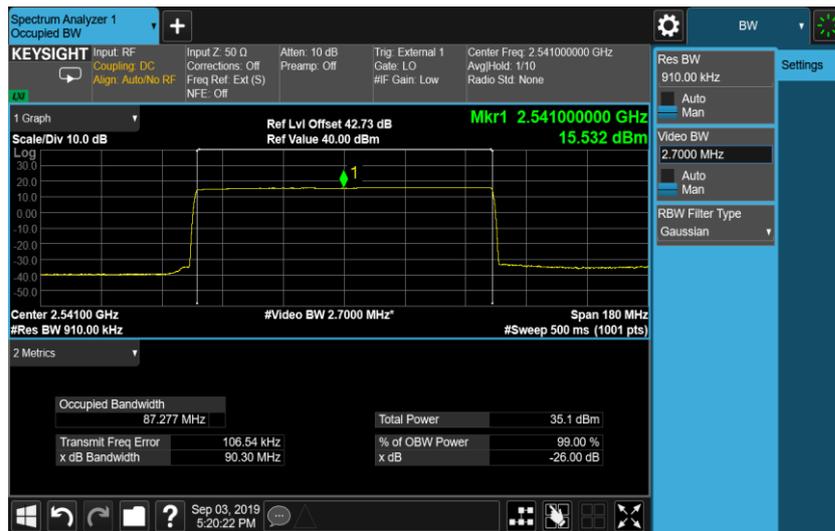


Port 55, 256QAM 80.0M Channel position M

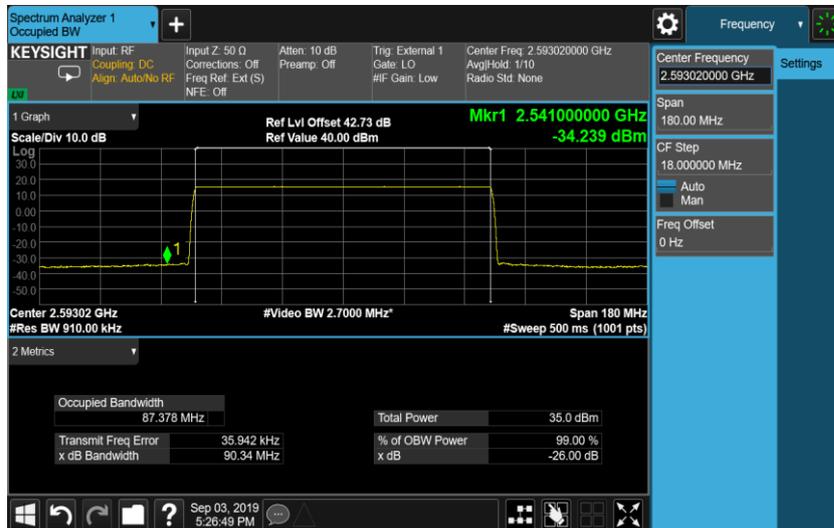


Configuration NR-MIMO-1C 90M

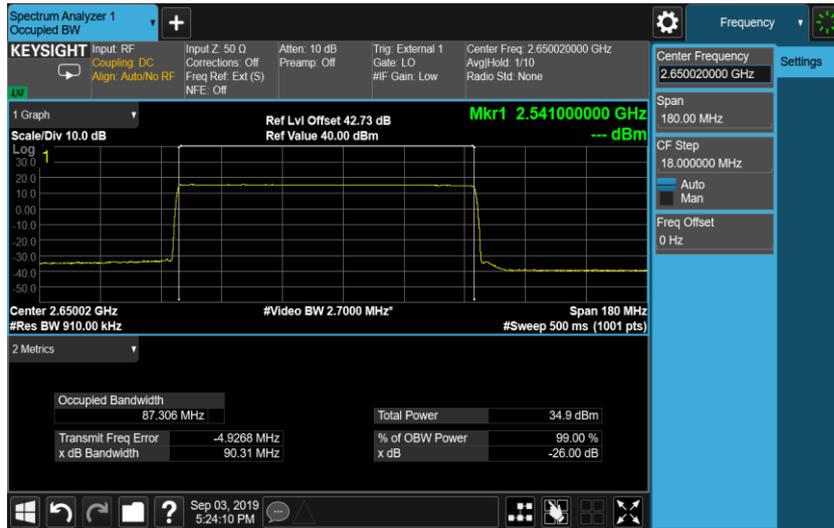
Port 55, QPSK 90.0M Channel position B



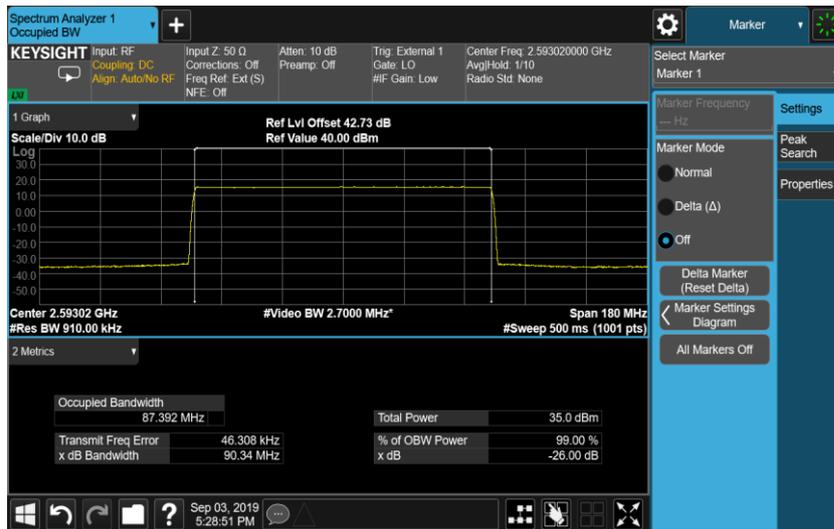
Port 55, QPSK 90.0M Channel position M



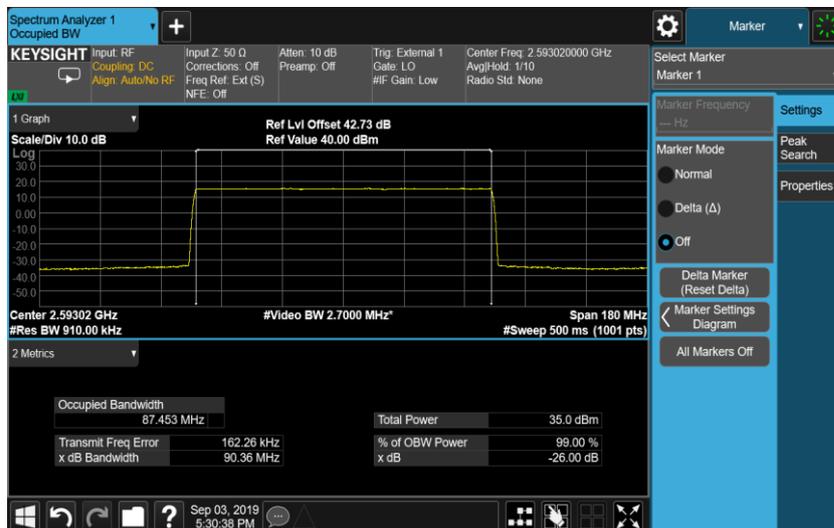
Port 55, QPSK 90.0M Channel position T



Port 55, 64QAM 90.0M Channel position M



Port 55, 256QAM 90.0M Channel position M



### **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 [10Log(1/64)] by using the Measure and Add 10Log(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.

For NR 60M/80M/90M, the limit was adjusted with -10.79dB [10Log(50/600)] / -12.41dB [10Log(50/800)] / -12.55dB [10Log(50/900)] to compensate for the reduced measurement bandwidth 50KHz for emission in the 1 MHz bands immediately outside and adjacent to the frequency block. For MIMO mode, the limit of -41.85dBm/-43.10dBm/-43.61dBm was used.

The limit was adjusted with -13.01dB [10Log(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**

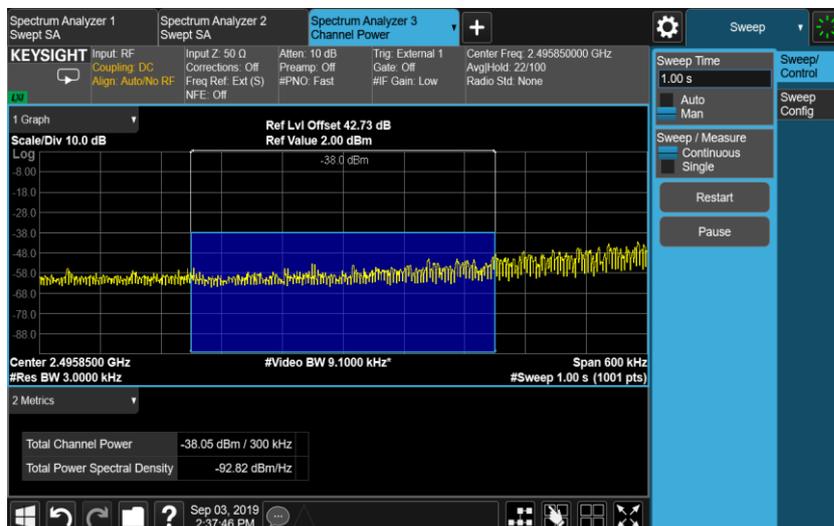
The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least  $43 + 10\log(P)$  dB.

### A.3.4 Measurement result

Configuration NR-MIMO-1C, QPSK

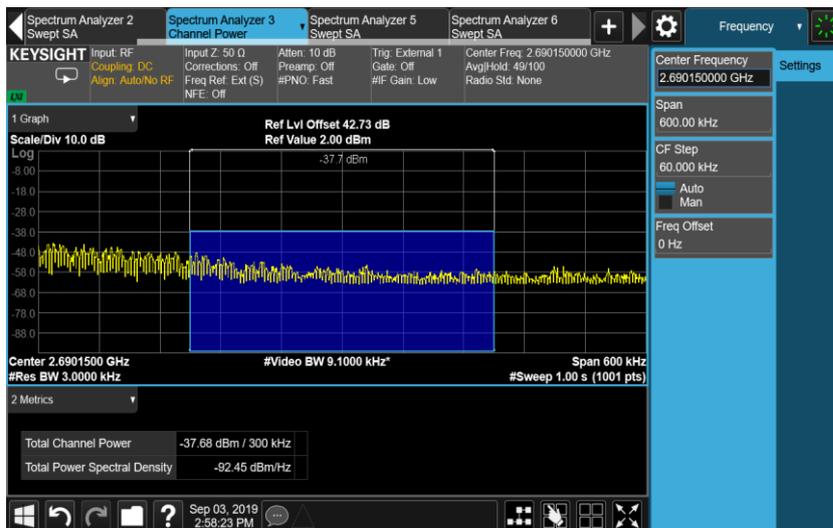
Band Edge Frequency	Channel Bandwidth	RBW(KHz)	Limit(dBm)
Channel Position B 2496MHz	NR 30.0 MHz	300/50	-31.06/-44.07
	NR 50.0 MHz	500/50	-31.06/-44.07
	NR 60.0 MHz	50/50	-41.85/-44.07
	NR 80.0 MHz	50/50	-43.10/-44.07
	NR 90.0 MHz	50/50	-43.61/-44.07
Channel Position T 2690MHz	NR 30.0 MHz	300/50	-31.06/-44.07
	NR 50.0 MHz	500/50	-31.06/-44.07
	NR 60.0 MHz	50/50	-41.85/-44.07
	NR 80.0 MHz	50/50	-43.10/-44.07
	NR 90.0 MHz	50/50	-43.61/-44.07

Port 55, Channel Position B, 30.0MHz





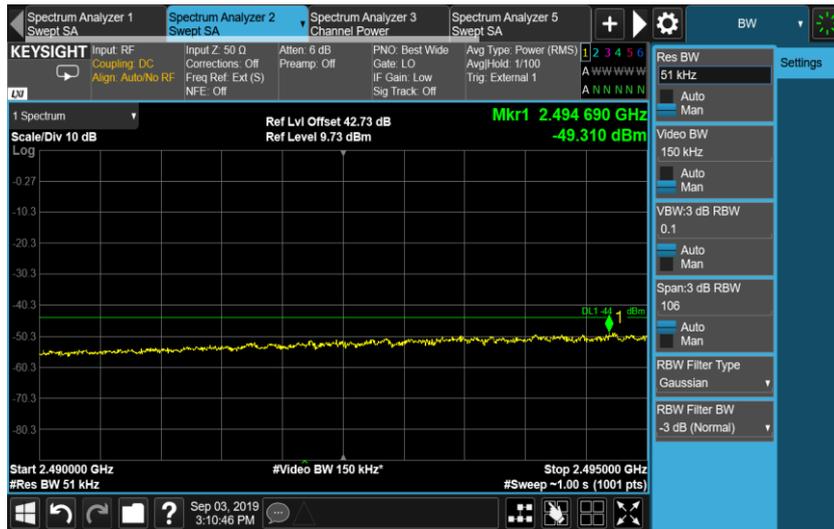
Port 55, Channel Position T, 30.0MHz





Port 55, Channel Position B, 50.0MHz





Port 55, Channel Position T, 50.0MHz

