

Ericsson AB

RF TEST REPORT

Report Type:
FCC Part 27 RF report

PRODUCT NAME:
AIR 6449 B77D

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210801641SHA-001

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TEST REPORT

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Manufacturer: Ericsson AB
Torshamnsgatan 23 Kista SE-16480 Stockholm Sweden

FCC ID: TA8BKRD901206

SUMMARY:

The equipment complies with the requirements according to the following standard(s) or Specification:

FCC CFR 47 Part 27: MISCELLANEOUS WIRELESS COMMUNICATIONS SERVICES

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Revision History

Report No.	Version	Description	Issued Date
75952122 Report 01	Issue 3	3rd issue of report issued by TUV SUD	June 08, 2021
210801641SHA-001	Rev. 01	This report is an amendment report of 75952122 Report 01, NR 70MHz and NR 90MHz bandwidth were added and tested.	August 17, 2021

Measurement result summary

TEST ITEM	FCC REFERANCE	RESULT
Max Output Power and Peak to Average Power Ratio and EIRP	27.50(j) 2.1046	Pass
Occupied Bandwidth	27.53(m) 2.1049	Pass
Unwanted Emissions at Band Edge	27.53(m) 2.1051	Pass
Conducted Unwanted Emission	27.53(m) 2.1051	Pass
Radiated Unwanted Emissions	27.53(m) 2.1053	NA ¹
Frequency Stability	27.54 2.1055	NA ¹

Note 1: There is no test needed for adding NR 70MHz & 90MHz bandwidth.

1 GENERAL INFORMATION

1.1 Description of Equipment Under Test (EUT)

Description:	Antenna Integrated Radio Unit
Product name:	AIR 6449 B77D
Product number:	KRD 901 206/11, KRD 901 206/1, KRD 901 206/2, KRD 901 206/21
Serial Number(s)	E23C868721
Rating:	-48V DC
Software Version:	UP: CXP2020666/1 R30B18 PIS: CXP2020534/1 R58B03
Hardware Version:	KRD 901 206/2 R1E
Sample received date:	August 02, 2021
Date of test:	August 02, 2021 ~ August 12, 2021

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1.2 Technical Specification

Frequency Range:	3700-3980MHz
Number of Antenna ports:	64 TX/RX
Supported RAT:	NR
Supported other mode:	/
Max RF bandwidth (IBW):	200MHz
Supported Number of Carriers:	SR NR: Maximum 2 carriers
Supported modulation:	QPSK, 16QAM, 64QAM, 256QAM
Supported Channel Bandwidth:	NR:20, 40, 60, 70, 80, 90, 100 MHz SCS :30KHz
Declaration output power:	Maximum 320W, 4W/MHz PSD (Non-rural), 8W/MHz PSD (rural)

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1.3 Description of Test Facility

Conducted testing:

Name:	Intertek Testing Services Shanghai
Address 1:	Building 86, No. 1198 Qinzhou Road(North), Shanghai 200233, P.R. China
Address 2:	No. 5 Lize East Street, Ericsson Tower, Chaoyang District, Beijing 100102 P.R.C.
Telephone:	+86 21 61278200
Telefax:	+86 21 54262353
The test facility is recognized, certified, or accredited by these organizations:	FCC Accredited Lab Designation Number: CN1175, CN1258
	IC Registration Lab CAB identifier.: CN0051
	A2LA Accreditation Lab Certificate Number: 3309.02, 3309.04

Radiated testing:

Name:	BEIJING BOOMWAVE TEST SERVICE CO. LTD.
Address:	EMC Building, No. 1 Wang Jing East Road Chao Yang District, Beijing, 100102 P.R.C.
Telephone:	+86 10 64711866 806
The test facility is recognized, certified, or accredited by these organizations:	FCC Accredited Lab Designation Number: CN1242
	IC Registration Lab CAB identifier.: CN0010
	A2LA Accreditation Lab Certificate Number: 4992.01

2 TEST SPECIFICATIONS

2.1 Related documents

FCC Part 27 (2019)

FCC Part 2 (2019)

ANSI C63.26:2015

KDB 971168 D01 v03r01

KDB 662911 D01 v02r01

2.2 Product Information

The Equipment Under Test (EUT) AIR 6449 B77D is an Ericsson Radio Unit working in the wireless communication services 3700-3980MHz band which provides communication connections to 3700-3980MHz network. AIR 6449 B77D operates from a -48V DC supply.

AIR 6449 B77D has 4 variants. Their difference is listed as below, and others are same.

KRD 901 206/2 with un-security software and RDNB board for testing purpose;

KRD 901 206/21 with security software and RDNB board for testing purpose;

KRD 901 206/1 with un-security software and antenna;

KRD 901 206/11 with security software and antenna.

We test KRD 901 206/2 as typical model and list the worst data.

The EUT includes 64 TX/RX ports. It can be configured to transmit in MIMO mode, and MIMO mode 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.

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2.3 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 on one of the antenna ports, it was determined that 16QAM for NR was the worst case modulation schemes and were 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 64 measured ports on worst case modulation scheme. This antenna port was Port 17 for all modes.

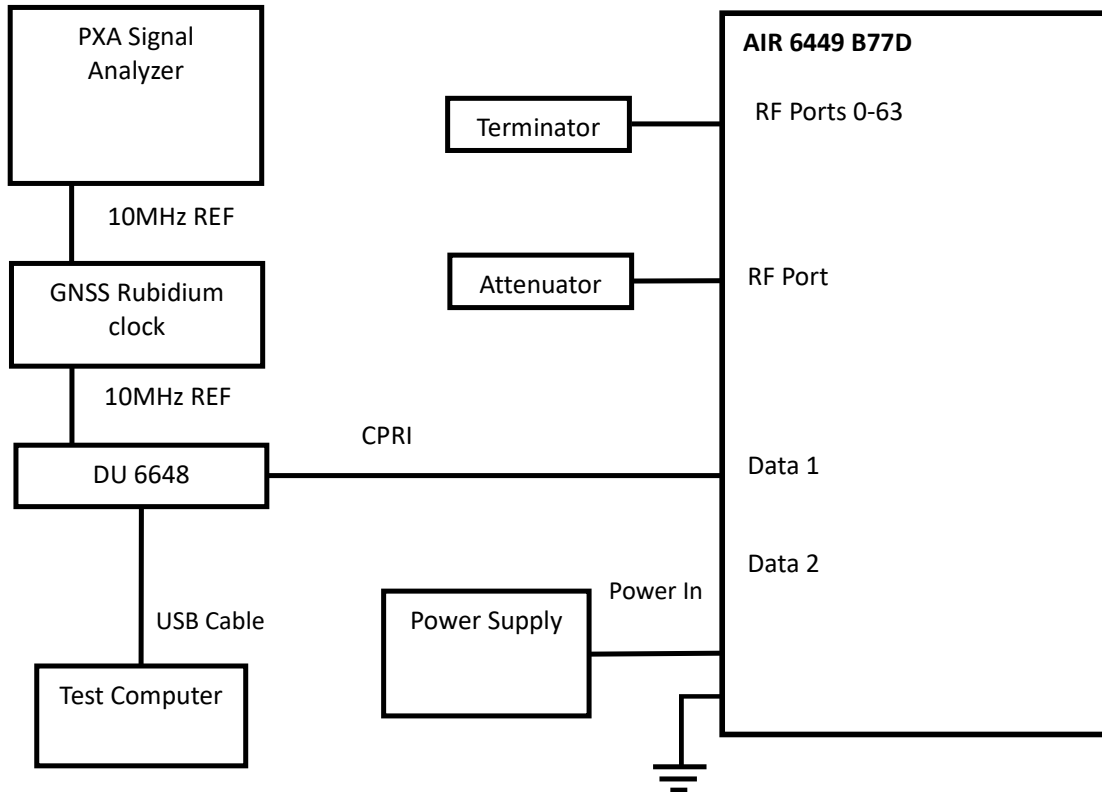
The settings below were used for all measurements unless otherwise noted:

Configuration	Carrier	NR Carrier Bandwidth (MHz)	Carrier Frequency Configuration (MHz)		
			Bottom	Middle	Top
NR-MIMO-1C-70M-320W	1	70	3735.00	3840.00	3945.00
NR-MIMO-1C-70M-280W	1	70	3735.00	3840.00	3945.00
NR-MIMO-1C-90M-320W	1	90	3745.02	3840.00	3935.01
NR-MIMO-2C-70M-320W	2	70	-	3775.02+3905.01	-
NR-MIMO-2C-90M-320W	2	90	-	3785.01+3894.99	-

Configuration	Carrier	NR Carrier Bandwidth (MHz)	Carrier Frequency Configuration (MHz)		
			Bottom	Middle	Top
NR-MIMO-1C-BE-70M-320W	1	70	3735.00	-	3945.00
NR-MIMO-1C-BE-90M-320W	1	90	3745.02	-	3935.01
NR-MIMO-2C-BE-70M-320W	2	70	3735.00+3805.02	-	3875.02+3945.00
NR-MIMO-2C-BE-90M-320W	2	90	3745.02+3835.02	-	3845.01+3935.01

2.4 Test Setup

Conducted Measurement:



No.	Auxiliary Equipment	Product Number / Model Type	Version
1	Test computer	DELL PowerEdge R220	-
2	Baseband 6648	KDU1370015/1	R3C
3	GNSS Rubidium clock	HJ5418A-V1	-
4	DC Power Supply	XANTREX XFR 60-46	-
5	Attenuator	WDTS100-40dB-6G-C	-
6	Terminator	WTF50-6G-A	-

2.5 Test environment condition:

Test items	Temperature	Humidity
Max Output Power and Peak to Average Power Ratio and EIRP	20°C to 24°C	45%RH to 55%RH
Occupied Bandwidth		
Unwanted Emissions at Band Edge		
Conducted Unwanted Emission		
Radiated Unwanted Emissions	-	-
Frequency Stability	Please refer to clause 8	

2.6 Instrument list

Intertek Testing Services Shanghai					
Used	Equipment	Manufacturer	Type	S/N	Due date
<input checked="" type="checkbox"/>	PXA Signal Analyzer	Keysight	N9030A	MY54490502	2021.8.24
<input type="checkbox"/>	Signal Generator	R&S	SMU200A	103457	2021.8.15
<input checked="" type="checkbox"/>	Multi-meter	Fluke	117	93990470	2022.1.17
<input type="checkbox"/>	Climatic Chamber	赛宝	CEEC-WR16H-50W	15-95	2021.9.21
<input checked="" type="checkbox"/>	Humiture meter	托普	TPJ-20	TP161108085	2022.1.16

BEIJING BOOMWAVE TEST SERVICE CO. LTD.					
Used	Equipment	Manufacturer	Type	S/N	Due date
<input type="checkbox"/>	EMI TEST RECERVER	R&S	ESR26	101320	2021-12-28
<input type="checkbox"/>	Spectrum Analyzer	R&S	FSV40	101403	2022-01-01
<input type="checkbox"/>	Hybrid antenna	SCHWARZBECK	VULB9163	01266	2022-07-03
<input type="checkbox"/>	Double-Ridged Waveguide Horn Antenna	R&S	BBHA9120D	1276	2022-03-17
<input type="checkbox"/>	Broad-Band Horn Antenna	SCHWARZBECK	BBHA9170	797	2022-03-17
<input type="checkbox"/>	Pre-amplifier	R&S	SCU40	2046336	2022-03-17
<input type="checkbox"/>	Pre-amplifier	Qualwave	QLAS-1000-18000-45-30	20255003	2022-07-01
<input type="checkbox"/>	Power amplifier	Pasternack Enterprises	PE15A1009	V00140120181 115E822	2022-01-01
<input type="checkbox"/>	Digital display temperature and humidity recorder	DICKSON	TM320	015080	2022-08-05
<input type="checkbox"/>	Aneroid barometer	Shanghai Boji	DYM3	00868	2022-05-05
<input type="checkbox"/>	Semi-Anechoic Chamber	TDK	SAC03	/	2024-07-23

TEST REPORT**2.7 Measurement uncertainty**

The measurement uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

Test item	Measurement uncertainty
Maximum output power	0.73dB
Occupied Bandwidth	0.88%
Unwanted Emissions at Band Edge	3.03dB
Conducted Unwanted Emission	3.03dB
Radiated Unwanted Emissions below 1GHz	4.90dB
Radiated Unwanted Emissions above 1GHz	5.02dB
Frequency stability	0.77×10^{-7}

3 Maximum Output Power and Peak to Average Power Ratio and EIRP

Test result: Pass

3.1 Limit

(1) The power of each fixed or base station transmitting in the 3700-3980 MHz band and located in any county with population density of 100 or fewer persons per square mile, based upon the most recently available population statistics from the Bureau of the Census, is limited to an equivalent isotropically radiated power (EIRP) of 3280 Watts/MHz. This limit applies to the aggregate power of all antenna elements in any given sector of a base station.

(2) The power of each fixed or base station transmitting in the 3700-3980 MHz band and situated in any geographic location other than that described in paragraph (j)(1) of this section is limited to an EIRP of 1640 Watts/MHz. This limit applies to the aggregate power of all antenna elements in any given sector of a base station.

Peak to Average Ratio: ≤ 13 dB

3.2 Measurement Procedure

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.

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3.3 Measurement result

NR-MIMO-1C-70M-320W

Antenna 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	16QAM	70	36.77	20.71	7.47	37.12	21.06	7.41	36.40	20.65	7.70
2	16QAM	70	36.75	20.76	7.42	37.16	21.14	7.35	36.56	20.85	7.65
3	16QAM	70	36.75	20.87	7.46	36.63	20.61	7.40	36.22	20.42	7.66
4	16QAM	70	36.11	20.76	7.44	36.78	21.03	7.37	36.40	20.57	7.66
5	16QAM	70	36.25	20.25	7.41	36.67	20.51	7.37	36.14	20.18	7.64
6	16QAM	70	36.83	20.96	7.44	36.83	20.80	7.36	36.11	20.22	7.65
7	16QAM	70	36.46	20.46	7.41	36.49	20.49	7.34	36.01	20.15	7.67
8	16QAM	70	36.89	20.95	7.45	36.80	20.69	7.36	36.27	20.60	7.68
9	16QAM	70	36.68	20.67	7.38	36.90	20.88	7.32	36.46	20.72	7.63
10	16QAM	70	36.54	20.64	7.41	36.66	20.71	7.37	36.11	20.25	7.64
11	16QAM	70	36.91	20.99	7.45	36.98	20.96	7.39	36.42	20.62	7.64
12	16QAM	70	36.56	20.66	7.44	36.73	20.61	7.36	36.41	20.61	7.66
13	16QAM	70	36.34	20.85	7.44	36.89	20.79	7.38	36.37	20.62	7.69
14	16QAM	70	36.95	21.04	7.41	37.05	21.02	7.33	36.43	20.64	7.67
15	16QAM	70	37.10	21.22	7.45	36.88	20.80	7.36	36.49	20.68	7.66
16	16QAM	70	36.95	21.09	7.44	36.99	20.94	7.39	36.50	20.69	7.70
17	16QAM	70	36.44	20.49	7.48	36.39	20.38	7.43	36.13	20.51	7.71
18	16QAM	70	37.04	21.11	7.43	36.62	20.63	7.38	36.59	20.81	7.68
19	16QAM	70	36.81	20.90	7.47	36.72	20.65	7.41	36.13	20.33	7.72
20	16QAM	70	36.95	21.03	7.44	37.01	20.92	7.39	36.42	20.77	7.67
21	16QAM	70	36.85	20.71	7.45	36.86	20.86	7.38	36.14	20.37	7.68
22	16QAM	70	36.70	20.57	7.46	36.69	20.69	7.39	36.09	20.17	7.67
23	16QAM	70	36.91	20.90	7.44	36.96	20.99	7.38	36.33	20.46	7.65
24	16QAM	70	37.03	21.02	7.45	36.88	20.82	7.38	36.30	20.49	7.68
25	16QAM	70	36.55	20.56	7.5	36.64	20.65	7.44	36.02	20.16	7.72
26	16QAM	70	36.67	20.66	7.49	36.69	20.73	7.43	36.23	20.38	7.69
27	16QAM	70	36.70	20.52	7.51	36.46	20.51	7.46	36.02	20.10	7.73
28	16QAM	70	37.15	21.16	7.5	36.79	20.72	7.44	36.34	20.59	7.73
29	16QAM	70	36.69	20.76	7.51	36.85	20.81	7.45	36.41	20.69	7.73
30	16QAM	70	36.56	20.56	7.52	36.69	20.67	7.48	36.24	20.53	7.72
31	16QAM	70	36.48	20.53	7.44	36.78	20.88	7.38	36.07	20.36	7.66
32	16QAM	70	36.57	20.46	7.55	36.59	20.53	7.50	36.03	20.32	7.75
33	16QAM	70	36.53	20.62	7.54	36.95	20.83	7.48	36.41	20.62	7.72
34	16QAM	70	36.54	20.60	7.49	36.78	20.75	7.43	36.10	20.49	7.70
35	16QAM	70	36.77	20.81	7.52	36.65	20.48	7.46	36.18	20.42	7.71
36	16QAM	70	36.45	20.52	7.49	36.76	20.82	7.43	36.04	20.36	7.69
37	16QAM	70	36.04	20.14	7.48	36.49	20.37	7.42	35.92	20.14	7.67

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38	16QAM	70	36.67	20.75	7.5	36.69	20.61	7.44	36.07	20.25	7.71
39	16QAM	70	36.17	20.23	7.47	36.29	20.24	7.45	35.81	19.99	7.68
40	16QAM	70	36.62	20.70	7.5	36.60	20.54	7.43	36.17	20.43	7.70
41	16QAM	70	36.37	20.33	7.44	36.68	20.58	7.38	36.28	20.39	7.66
42	16QAM	70	36.35	20.42	7.41	36.50	20.43	7.35	35.99	20.20	7.62
43	16QAM	70	36.59	20.69	7.44	36.72	20.65	7.39	36.08	20.26	7.64
44	16QAM	70	36.31	20.40	7.42	36.58	20.48	7.37	36.33	20.59	7.62
45	16QAM	70	36.08	20.58	7.35	36.31	20.64	7.27	35.82	20.62	7.57
46	16QAM	70	36.73	20.79	7.45	36.82	20.73	7.40	36.29	20.50	7.69
47	16QAM	70	36.87	20.97	7.43	36.83	20.75	7.36	36.40	20.70	7.64
48	16QAM	70	36.59	20.70	7.47	36.80	20.72	7.43	36.27	20.55	7.67
49	16QAM	70	35.75	20.21	7.48	35.97	20.21	7.40	35.79	20.39	7.71
50	16QAM	70	36.77	20.86	7.44	36.59	20.56	7.35	36.55	20.87	7.63
51	16QAM	70	36.50	20.58	7.45	36.60	20.59	7.41	36.12	20.33	7.68
52	16QAM	70	36.72	20.87	7.44	36.88	20.76	7.37	36.33	20.68	7.66
53	16QAM	70	36.52	20.60	7.43	36.62	20.62	7.35	35.90	20.29	7.62
54	16QAM	70	36.39	20.43	7.44	36.59	20.60	7.37	35.97	20.19	7.66
55	16QAM	70	36.50	20.59	7.42	36.74	20.73	7.37	36.29	20.51	7.64
56	16QAM	70	36.66	20.75	7.41	36.69	20.61	7.37	36.33	20.57	7.66
57	16QAM	70	36.18	20.40	7.29	36.55	20.62	7.21	36.00	20.27	7.55
58	16QAM	70	36.40	20.45	7.41	36.66	20.64	7.33	36.25	20.47	7.60
59	16QAM	70	36.29	20.47	7.41	36.48	20.49	7.37	36.17	20.41	7.63
60	16QAM	70	36.85	20.91	7.41	36.64	20.56	7.33	36.38	20.70	7.62
61	16QAM	70	36.59	20.68	7.43	36.74	20.73	7.35	36.35	20.74	7.62
62	16QAM	70	36.57	20.60	7.44	36.76	20.62	7.38	36.37	20.56	7.68
63	16QAM	70	36.56	20.63	7.41	36.89	20.85	7.34	36.26	20.49	7.62
64	16QAM	70	36.35	20.50	7.46	36.51	20.40	7.40	36.09	20.47	7.71
Total			54.67	38.75	-	54.78	38.75	-	54.29	38.53	-

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NR-MIMO-1C-70M-280W

Antenna 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	16QAM	70	36.34	20.38	7.88	36.36	20.30	7.89	35.94	20.16	7.94
2	16QAM	70	36.43	20.47	7.80	36.52	20.50	7.84	36.17	20.42	7.91
3	16QAM	70	36.31	20.41	7.86	36.18	20.32	7.88	35.83	20.22	7.93
4	16QAM	70	36.01	20.33	7.84	36.05	20.28	7.84	36.05	20.22	7.92
5	16QAM	70	35.76	19.85	7.82	35.98	19.96	7.83	35.60	19.77	7.92
6	16QAM	70	36.29	20.39	7.86	36.37	20.30	7.84	36.00	20.08	7.91
7	16QAM	70	35.95	20.01	7.82	35.93	19.93	7.84	35.60	19.87	7.94
8	16QAM	70	36.28	20.32	7.83	36.33	20.23	7.85	36.00	20.34	7.90
9	16QAM	70	36.05	20.05	7.78	36.06	20.09	7.79	35.81	20.07	7.89
10	16QAM	70	35.97	20.13	7.83	36.06	20.08	7.85	35.71	19.94	7.90
11	16QAM	70	36.35	20.39	7.86	36.37	20.36	7.87	36.00	20.20	7.91
12	16QAM	70	35.87	19.91	7.82	36.02	19.94	7.85	35.60	19.82	7.92
13	16QAM	70	36.15	20.21	7.85	36.25	20.19	7.86	35.68	19.97	7.99
14	16QAM	70	36.29	20.33	7.80	36.37	20.38	7.83	35.88	20.08	7.92
15	16QAM	70	36.41	20.50	7.83	36.44	20.38	7.84	35.83	20.03	7.90
16	16QAM	70	36.22	20.28	7.85	36.32	20.29	7.85	35.93	20.09	7.92
17	16QAM	70	35.73	19.75	7.87	35.78	19.75	7.89	35.63	19.91	7.98
18	16QAM	70	36.40	20.46	7.82	36.40	20.37	7.84	36.01	20.23	7.93
19	16QAM	70	36.09	20.16	7.88	36.13	20.10	7.90	35.64	19.88	7.96
20	16QAM	70	36.18	20.31	7.85	36.36	20.24	7.86	35.89	20.25	7.93
21	16QAM	70	35.95	20.20	7.82	36.09	20.15	7.85	35.63	19.89	7.92
22	16QAM	70	35.94	19.95	7.86	36.06	19.94	7.88	35.66	19.82	7.98
23	16QAM	70	36.24	20.32	7.86	36.07	20.25	7.84	35.71	19.91	7.95
24	16QAM	70	36.20	20.38	7.86	36.29	20.31	7.86	35.90	20.12	7.92
25	16QAM	70	35.89	19.92	7.91	35.89	19.79	7.91	35.40	19.62	7.95
26	16QAM	70	35.94	20.01	7.90	35.95	20.01	7.90	35.69	19.83	7.99
27	16QAM	70	35.80	19.84	7.89	35.75	19.75	7.93	35.41	19.56	7.96
28	16QAM	70	36.38	20.48	7.90	36.49	20.38	7.92	35.85	20.05	7.95
29	16QAM	70	36.18	20.29	7.92	36.20	20.17	7.90	35.55	19.92	7.98
30	16QAM	70	36.08	20.10	7.91	36.20	20.00	7.95	35.47	19.75	7.98
31	16QAM	70	35.98	20.03	7.81	35.94	19.99	7.84	35.49	19.78	7.94
32	16QAM	70	35.99	20.03	7.92	36.07	19.97	7.94	35.49	19.78	7.98
33	16QAM	70	36.09	20.11	7.91	36.19	20.15	7.94	35.89	20.04	8.01
34	16QAM	70	36.17	20.20	7.88	36.20	20.20	7.90	35.74	20.13	7.96
35	16QAM	70	36.28	20.35	7.93	36.33	20.17	7.93	35.97	20.10	7.99
36	16QAM	70	35.98	20.07	7.88	36.00	20.06	7.92	35.77	20.00	7.96
37	16QAM	70	35.58	19.67	7.86	35.86	19.77	7.89	35.58	19.78	7.94
38	16QAM	70	36.19	20.24	7.91	36.25	20.22	7.91	36.01	20.17	7.99
39	16QAM	70	35.72	19.79	7.88	35.71	19.70	7.88	35.54	19.74	7.97
40	16QAM	70	36.17	20.21	7.88	36.17	20.10	7.91	35.99	20.17	7.98

TEST REPORT

41	16QAM	70	35.92	19.87	7.83	35.90	19.88	7.82	35.73	19.76	7.95
42	16QAM	70	35.89	19.94	7.82	35.91	19.88	7.81	35.71	19.89	7.93
43	16QAM	70	36.13	20.18	7.84	36.11	20.09	7.84	35.69	19.86	7.94
44	16QAM	70	35.84	19.91	7.82	35.93	19.85	7.85	35.61	19.79	7.93
45	16QAM	70	35.62	20.15	7.75	36.07	19.97	7.76	35.86	20.12	7.88
46	16QAM	70	36.27	20.32	7.86	36.22	20.21	7.88	35.95	20.09	7.96
47	16QAM	70	36.38	20.44	7.87	36.40	20.38	7.84	36.10	20.33	7.95
48	16QAM	70	36.12	20.21	7.89	36.21	20.14	7.89	35.91	20.14	7.96
49	16QAM	70	35.31	19.73	7.86	35.68	19.63	7.87	35.63	20.00	7.97
50	16QAM	70	36.29	20.36	7.84	36.35	20.33	7.81	36.12	20.42	7.91
51	16QAM	70	36.03	20.06	7.85	36.06	20.09	7.87	35.80	19.96	7.98
52	16QAM	70	36.25	20.36	7.83	36.30	20.23	7.85	36.06	20.31	7.94
53	16QAM	70	36.04	20.11	7.81	36.05	20.12	7.82	35.68	19.90	7.92
54	16QAM	70	35.99	19.98	7.85	35.86	19.90	7.84	35.96	19.94	7.96
55	16QAM	70	36.06	20.13	7.84	36.11	20.15	7.84	35.83	19.97	7.93
56	16QAM	70	36.19	20.29	7.83	36.36	20.26	7.82	36.03	20.21	7.93
57	16QAM	70	35.73	20.00	7.74	35.89	20.06	7.71	35.68	19.94	7.83
58	16QAM	70	35.96	19.99	7.81	36.13	20.14	7.83	35.89	20.16	7.91
59	16QAM	70	35.94	20.02	7.84	36.00	19.96	7.85	35.86	20.02	7.94
60	16QAM	70	36.33	20.43	7.81	36.50	20.48	7.81	36.10	20.34	7.92
61	16QAM	70	36.14	20.19	7.82	36.22	20.22	7.85	35.82	20.18	7.90
62	16QAM	70	36.22	20.27	7.80	36.26	20.05	7.83	35.83	19.94	7.96
63	16QAM	70	36.12	20.13	7.83	36.05	20.11	7.79	35.88	20.17	7.93
64	16QAM	70	36.02	20.11	7.85	36.12	20.05	7.90	35.82	20.11	7.90
Total			54.14	38.22	-	54.20	38.18	-	53.86	38.09	-

TEST REPORT

NR-MIMO-1C-90M-320W

Antenna 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	16QAM	90	36.88	19.85	7.47	36.93	19.81	7.42	36.33	19.51	7.83
2	16QAM	90	36.95	19.87	7.44	36.62	19.97	7.36	36.71	19.81	7.68
3	16QAM	90	36.83	19.83	7.47	36.73	19.78	7.41	36.45	19.62	7.71
4	16QAM	90	36.48	19.84	7.44	36.55	19.76	7.38	36.24	19.62	7.76
5	16QAM	90	36.35	19.21	7.42	36.36	19.27	7.37	36.05	19.05	7.67
6	16QAM	90	36.84	19.92	7.44	36.91	19.83	7.38	36.53	19.60	7.70
7	16QAM	90	36.58	19.63	7.43	36.38	19.35	7.37	36.09	19.17	7.68
8	16QAM	90	36.94	20.01	7.42	36.83	19.80	7.38	36.49	19.70	7.69
9	16QAM	90	36.74	19.72	7.40	36.58	19.54	7.33	36.22	19.46	7.64
10	16QAM	90	36.63	19.67	7.43	36.62	19.63	7.36	36.26	19.28	7.72
11	16QAM	90	36.94	20.02	7.42	36.90	19.87	7.39	36.56	19.68	7.72
12	16QAM	90	36.80	19.67	7.42	36.59	19.50	7.38	36.15	19.27	7.72
13	16QAM	90	36.39	19.77	7.46	36.35	19.63	7.40	36.36	19.52	7.72
14	16QAM	90	37.01	20.02	7.42	36.90	19.87	7.35	36.57	19.67	7.72
15	16QAM	90	37.21	20.28	7.43	36.96	19.87	7.40	36.67	19.76	7.77
16	16QAM	90	37.05	20.12	7.46	36.85	19.76	7.41	36.58	19.64	7.78
17	16QAM	90	36.21	19.39	7.49	36.01	19.25	7.45	36.28	19.46	7.73
18	16QAM	90	37.16	20.09	7.45	36.91	19.87	7.39	36.65	19.73	7.78
19	16QAM	90	36.83	19.80	7.46	36.64	19.55	7.43	36.27	19.37	7.76
20	16QAM	90	37.07	20.10	7.42	36.94	19.82	7.39	36.57	19.79	7.71
21	16QAM	90	36.85	19.88	7.45	36.70	19.74	7.39	36.32	19.40	7.74
22	16QAM	90	36.82	19.68	7.48	36.49	19.42	7.43	36.15	19.25	7.70
23	16QAM	90	37.03	19.98	7.45	36.79	19.76	7.38	36.42	19.50	7.79
24	16QAM	90	36.60	20.12	7.43	36.96	19.91	7.41	36.61	19.76	7.76
25	16QAM	90	36.66	19.56	7.49	36.47	19.33	7.48	36.10	19.09	7.76
26	16QAM	90	36.74	19.69	7.46	36.53	19.56	7.45	36.15	19.27	7.75
27	16QAM	90	36.81	19.49	7.52	36.53	19.32	7.47	36.16	19.00	7.79
28	16QAM	90	37.26	20.24	7.50	37.06	19.89	7.44	36.69	19.72	7.80
29	16QAM	90	36.99	19.99	7.50	36.74	19.66	7.48	36.35	19.52	7.75
30	16QAM	90	37.02	19.95	7.52	36.77	19.53	7.48	36.24	19.36	7.77
31	16QAM	90	36.83	19.75	7.43	36.55	19.56	7.38	36.17	19.28	7.76
32	16QAM	90	36.90	19.93	7.52	36.77	19.49	7.52	36.30	19.41	7.78
33	16QAM	90	36.87	19.76	7.57	36.89	19.84	7.51	36.45	19.53	7.78
34	16QAM	90	36.90	19.86	7.50	36.83	19.85	7.44	36.54	19.59	7.75
35	16QAM	90	37.00	19.98	7.54	36.98	19.80	7.51	36.45	19.54	7.76
36	16QAM	90	36.79	19.70	7.53	36.71	19.79	7.46	36.22	19.45	7.75
37	16QAM	90	36.33	19.34	7.51	36.29	19.28	7.47	35.83	18.95	7.73
38	16QAM	90	36.92	19.85	7.52	36.81	19.83	7.48	36.47	19.53	7.75
39	16QAM	90	36.49	19.47	7.50	36.28	19.29	7.44	35.94	19.04	7.75
40	16QAM	90	36.95	19.90	7.52	36.69	19.73	7.46	36.45	19.55	7.78

TEST REPORT

41	16QAM	90	36.73	19.52	7.47	36.47	19.45	7.42	36.19	19.26	7.72
42	16QAM	90	36.67	19.64	7.44	36.51	19.57	7.37	36.28	19.35	7.70
43	16QAM	90	36.88	19.82	7.46	36.71	19.75	7.41	36.39	19.54	7.73
44	16QAM	90	36.62	19.58	7.44	36.49	19.44	7.39	36.22	19.32	7.71
45	16QAM	90	36.80	19.76	7.37	36.29	19.66	7.30	35.95	19.60	7.65
46	16QAM	90	37.01	19.95	7.46	36.80	19.89	7.42	36.60	19.72	7.75
47	16QAM	90	37.20	20.18	7.46	37.04	20.07	7.40	36.85	19.97	7.74
48	16QAM	90	36.89	19.87	7.50	36.97	19.76	7.45	36.62	19.75	7.74
49	16QAM	90	36.09	19.36	7.52	35.99	19.30	7.44	36.13	19.68	7.76
50	16QAM	90	37.08	20.03	7.48	36.99	20.01	7.37	36.75	19.88	7.71
51	16QAM	90	36.77	19.63	7.48	36.53	19.47	7.43	36.51	19.67	7.75
52	16QAM	90	37.04	20.03	7.46	36.79	19.70	7.38	36.75	19.87	7.72
53	16QAM	90	36.82	19.74	7.47	36.58	19.50	7.39	36.48	19.47	7.71
54	16QAM	90	36.66	19.59	7.49	36.40	19.38	7.40	36.28	19.47	7.74
55	16QAM	90	36.79	19.76	7.45	36.67	19.67	7.39	36.47	19.58	7.72
56	16QAM	90	36.94	19.89	7.45	36.85	19.71	7.39	36.52	19.64	7.71
57	16QAM	90	36.50	19.53	7.32	36.38	19.46	7.25	36.00	19.10	7.63
58	16QAM	90	36.67	19.64	7.43	36.65	19.60	7.36	36.06	19.17	7.67
59	16QAM	90	36.63	19.60	7.47	36.50	19.48	7.39	35.96	19.01	7.74
60	16QAM	90	37.08	20.04	7.43	37.01	19.98	7.36	36.48	19.70	7.71
61	16QAM	90	36.86	19.85	7.44	36.77	19.77	7.38	36.24	19.50	7.71
62	16QAM	90	36.81	19.75	7.47	36.82	19.57	7.40	36.25	19.26	7.72
63	16QAM	90	36.86	19.77	7.44	36.66	19.69	7.37	36.17	19.37	7.73
64	16QAM	90	36.84	19.73	7.49	36.69	19.59	7.42	36.27	19.41	7.73
Total			54.88	37.87	-	54.74	37.72	-	54.42	37.55	-

TEST REPORT

NR-MIMO-2C-70M-320W

Antenna 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	16QAM	70	-	-	-	36.58	16.78	-	-	-	-
2	16QAM	70	-	-	-	36.13	16.92	-	-	-	-
3	16QAM	70	-	-	-	36.58	16.63	-	-	-	-
4	16QAM	70	-	-	-	36.57	16.74	-	-	-	-
5	16QAM	70	-	-	-	36.03	16.32	-	-	-	-
6	16QAM	70	-	-	-	36.55	16.73	-	-	-	-
7	16QAM	70	-	-	-	36.15	16.43	-	-	-	-
8	16QAM	70	-	-	-	36.56	16.71	-	-	-	-
9	16QAM	70	-	-	-	36.38	16.50	-	-	-	-
10	16QAM	70	-	-	-	36.29	16.47	-	-	-	-
11	16QAM	70	-	-	-	36.57	16.78	-	-	-	-
12	16QAM	70	-	-	-	36.21	16.41	-	-	-	-
13	16QAM	70	-	-	-	36.21	16.77	-	-	-	-
14	16QAM	70	-	-	-	36.63	16.78	-	-	-	-
15	16QAM	70	-	-	-	36.72	16.96	-	-	-	-
16	16QAM	70	-	-	-	36.57	16.66	-	-	-	-
17	16QAM	70	-	-	-	36.02	16.25	-	-	-	-
18	16QAM	70	-	-	-	36.65	16.85	-	-	-	-
19	16QAM	70	-	-	-	36.36	16.63	-	-	-	-
20	16QAM	70	-	-	-	36.65	16.85	-	-	-	-
21	16QAM	70	-	-	-	36.42	16.64	-	-	-	-
22	16QAM	70	-	-	-	36.16	16.35	-	-	-	-
23	16QAM	70	-	-	-	36.52	16.67	-	-	-	-
24	16QAM	70	-	-	-	36.64	16.90	-	-	-	-
25	16QAM	70	-	-	-	36.14	16.25	-	-	-	-
26	16QAM	70	-	-	-	36.28	16.61	-	-	-	-
27	16QAM	70	-	-	-	36.04	16.17	-	-	-	-
28	16QAM	70	-	-	-	36.71	16.82	-	-	-	-
29	16QAM	70	-	-	-	36.47	16.69	-	-	-	-
30	16QAM	70	-	-	-	36.28	16.45	-	-	-	-
31	16QAM	70	-	-	-	36.26	16.54	-	-	-	-
32	16QAM	70	-	-	-	36.22	16.30	-	-	-	-
33	16QAM	70	-	-	-	36.29	16.44	-	-	-	-
34	16QAM	70	-	-	-	36.27	16.49	-	-	-	-
35	16QAM	70	-	-	-	36.43	16.59	-	-	-	-
36	16QAM	70	-	-	-	36.32	16.44	-	-	-	-
37	16QAM	70	-	-	-	35.79	16.01	-	-	-	-
38	16QAM	70	-	-	-	36.38	16.46	-	-	-	-
39	16QAM	70	-	-	-	35.87	16.03	-	-	-	-
40	16QAM	70	-	-	-	36.36	16.48	-	-	-	-

TEST REPORT

41	16QAM	70	-	-	-	36.05	16.16	-	-	-	-
42	16QAM	70	-	-	-	36.11	16.13	-	-	-	-
43	16QAM	70	-	-	-	36.31	16.33	-	-	-	-
44	16QAM	70	-	-	-	36.13	16.15	-	-	-	-
45	16QAM	70	-	-	-	36.06	16.47	-	-	-	-
46	16QAM	70	-	-	-	36.42	16.37	-	-	-	-
47	16QAM	70	-	-	-	36.65	16.73	-	-	-	-
48	16QAM	70	-	-	-	36.39	16.47	-	-	-	-
49	16QAM	70	-	-	-	35.69	15.93	-	-	-	-
50	16QAM	70	-	-	-	36.69	16.68	-	-	-	-
51	16QAM	70	-	-	-	36.33	16.47	-	-	-	-
52	16QAM	70	-	-	-	36.56	16.68	-	-	-	-
53	16QAM	70	-	-	-	36.27	16.42	-	-	-	-
54	16QAM	70	-	-	-	36.13	16.14	-	-	-	-
55	16QAM	70	-	-	-	36.31	16.35	-	-	-	-
56	16QAM	70	-	-	-	36.51	16.56	-	-	-	-
57	16QAM	70	-	-	-	36.07	16.30	-	-	-	-
58	16QAM	70	-	-	-	36.17	16.30	-	-	-	-
59	16QAM	70	-	-	-	36.10	16.12	-	-	-	-
60	16QAM	70	-	-	-	36.64	16.71	-	-	-	-
61	16QAM	70	-	-	-	36.41	16.53	-	-	-	-
62	16QAM	70	-	-	-	36.24	16.25	-	-	-	-
63	16QAM	70	-	-	-	36.30	16.44	-	-	-	-
64	16QAM	70	-	-	-	36.10	17.40	-	-	-	-
Total			-	-	-	54.39	34.58	-	-	-	-

TEST REPORT

NR-MIMO-2C-90M-320W

Antenna 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	16QAM	90	-	-	-	36.36	16.48	-	-	-	-
2	16QAM	90	-	-	-	36.47	16.79	-	-	-	-
3	16QAM	90	-	-	-	36.32	16.52	-	-	-	-
4	16QAM	90	-	-	-	36.26	16.50	-	-	-	-
5	16QAM	90	-	-	-	35.88	16.30	-	-	-	-
6	16QAM	90	-	-	-	36.32	16.51	-	-	-	-
7	16QAM	90	-	-	-	35.94	16.23	-	-	-	-
8	16QAM	90	-	-	-	36.24	16.48	-	-	-	-
9	16QAM	90	-	-	-	36.07	16.30	-	-	-	-
10	16QAM	90	-	-	-	35.99	16.29	-	-	-	-
11	16QAM	90	-	-	-	36.29	16.66	-	-	-	-
12	16QAM	90	-	-	-	35.92	16.10	-	-	-	-
13	16QAM	90	-	-	-	36.04	16.21	-	-	-	-
14	16QAM	90	-	-	-	36.15	16.40	-	-	-	-
15	16QAM	90	-	-	-	36.28	16.41	-	-	-	-
16	16QAM	90	-	-	-	36.11	16.25	-	-	-	-
17	16QAM	90	-	-	-	35.63	16.00	-	-	-	-
18	16QAM	90	-	-	-	36.29	16.61	-	-	-	-
19	16QAM	90	-	-	-	36.00	16.17	-	-	-	-
20	16QAM	90	-	-	-	36.23	16.44	-	-	-	-
21	16QAM	90	-	-	-	36.01	16.38	-	-	-	-
22	16QAM	90	-	-	-	35.84	16.00	-	-	-	-
23	16QAM	90	-	-	-	36.18	16.44	-	-	-	-
24	16QAM	90	-	-	-	36.34	16.59	-	-	-	-
25	16QAM	90	-	-	-	35.75	15.95	-	-	-	-
26	16QAM	90	-	-	-	35.96	16.26	-	-	-	-
27	16QAM	90	-	-	-	35.65	15.98	-	-	-	-
28	16QAM	90	-	-	-	36.38	16.59	-	-	-	-
29	16QAM	90	-	-	-	36.12	16.38	-	-	-	-
30	16QAM	90	-	-	-	35.92	16.22	-	-	-	-
31	16QAM	90	-	-	-	35.94	16.22	-	-	-	-
32	16QAM	90	-	-	-	35.87	16.02	-	-	-	-
33	16QAM	90	-	-	-	36.01	16.20	-	-	-	-
34	16QAM	90	-	-	-	35.77	16.09	-	-	-	-
35	16QAM	90	-	-	-	35.79	16.28	-	-	-	-
36	16QAM	90	-	-	-	36.06	16.29	-	-	-	-
37	16QAM	90	-	-	-	35.78	16.05	-	-	-	-
38	16QAM	90	-	-	-	36.15	16.32	-	-	-	-
39	16QAM	90	-	-	-	35.71	15.94	-	-	-	-
40	16QAM	90	-	-	-	36.09	16.26	-	-	-	-

TEST REPORT

41	16QAM	90	-	-	-	35.81	16.04	-	-	-	-
42	16QAM	90	-	-	-	35.81	16.14	-	-	-	-
43	16QAM	90	-	-	-	35.94	16.22	-	-	-	-
44	16QAM	90	-	-	-	35.84	16.03	-	-	-	-
45	16QAM	90	-	-	-	35.98	16.33	-	-	-	-
46	16QAM	90	-	-	-	36.06	16.47	-	-	-	-
47	16QAM	90	-	-	-	36.35	16.59	-	-	-	-
48	16QAM	90	-	-	-	36.07	16.22	-	-	-	-
49	16QAM	90	-	-	-	35.64	16.01	-	-	-	-
50	16QAM	90	-	-	-	36.26	16.43	-	-	-	-
51	16QAM	90	-	-	-	36.01	16.19	-	-	-	-
52	16QAM	90	-	-	-	36.22	16.44	-	-	-	-
53	16QAM	90	-	-	-	36.02	16.32	-	-	-	-
54	16QAM	90	-	-	-	35.85	16.15	-	-	-	-
55	16QAM	90	-	-	-	36.04	16.43	-	-	-	-
56	16QAM	90	-	-	-	36.22	16.50	-	-	-	-
57	16QAM	90	-	-	-	35.81	16.18	-	-	-	-
58	16QAM	90	-	-	-	35.92	16.29	-	-	-	-
59	16QAM	90	-	-	-	35.79	16.16	-	-	-	-
60	16QAM	90	-	-	-	36.36	16.65	-	-	-	-
61	16QAM	90	-	-	-	36.12	16.38	-	-	-	-
62	16QAM	90	-	-	-	35.94	16.23	-	-	-	-
63	16QAM	90	-	-	-	36.03	16.33	-	-	-	-
64	16QAM	90	-	-	-	35.89	16.04	-	-	-	-
Total			-	-	-	54.10	34.36	-	-	-	-

The DUT is tested without antenna. EIRP compliance is addressed at the time of licensing, as required by the responsible FCC Bureau. Licensee's are required to take into account maximum allowed antenna gain used in combination with above power settings to prevent the radiated output power to exceed the limits.

TEST REPORT**4 Occupied Bandwidth****Test result: Pass****4.1 Measurement Procedure**

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 (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.

TEST REPORT

4.2 Measurement result

NR-MIMO-1C-70M-320W & NR-MIMO-1C-90M-320W

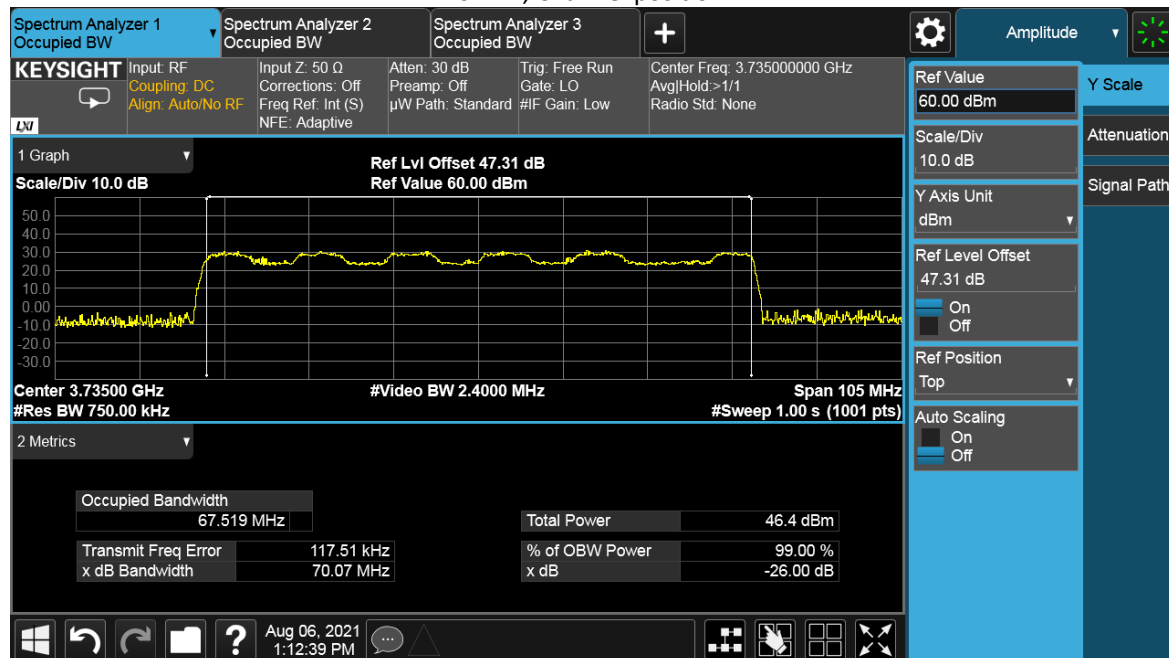
99% Occupied Bandwidth

Antenna Port	Modulation	Bandwidth	Occupied Bandwidth (MHz)		
			Channel Position B	Channel Position M	Channel Position T
17	16QAM	70MHz	67.519	67.481	67.469
17	16QAM	90MHz	87.563	87.492	87.543

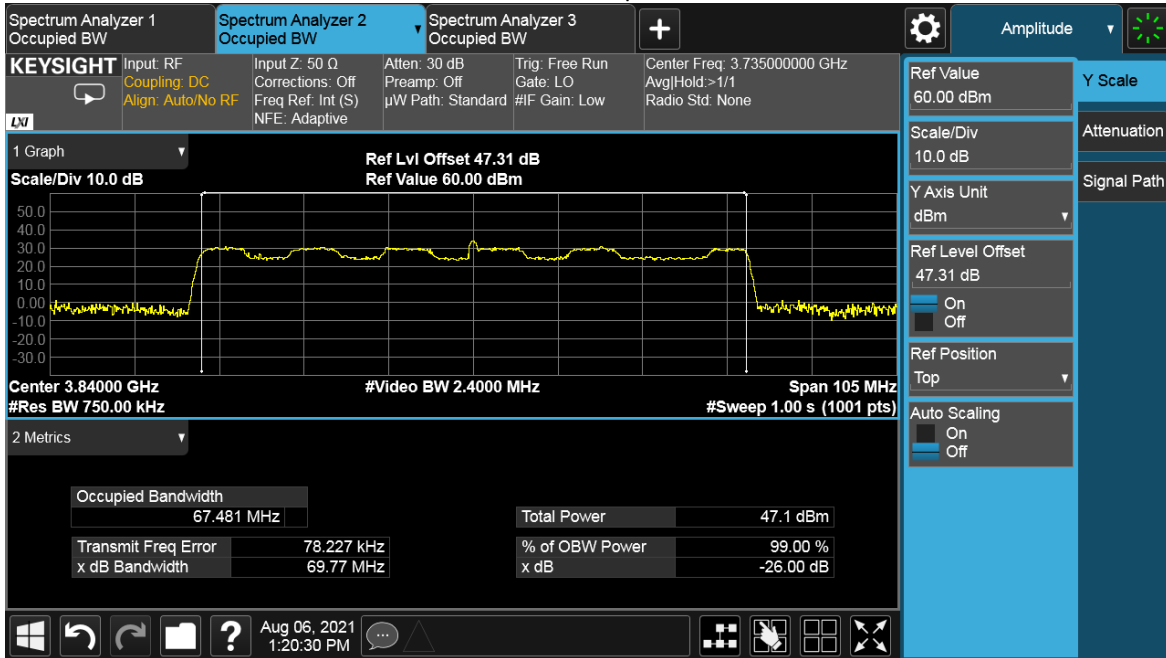
-26dBc Occupied Bandwidth

Antenna Port	Modulation	Bandwidth	Occupied Bandwidth (MHz)		
			Channel Position B	Channel Position M	Channel Position T
17	16QAM	70MHz	70.07	69.77	69.90
17	16QAM	90MHz	90.35	90.31	90.28

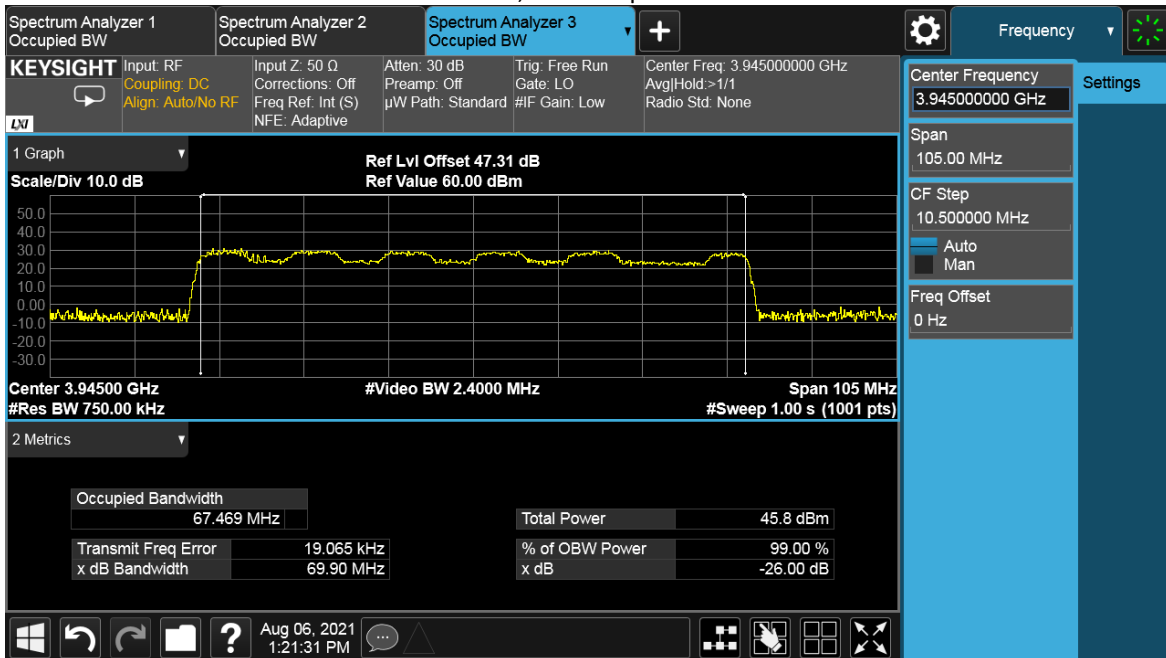
70MHz, Channel position B



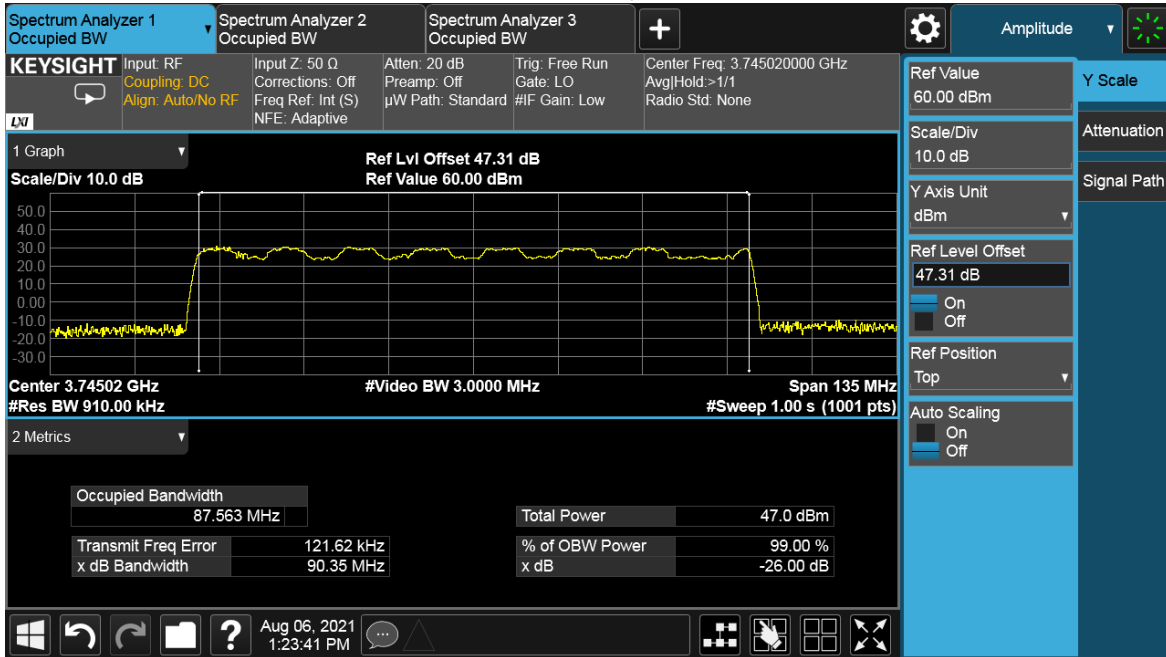
70MHz, Channel position M



70MHz, Channel position T



90MHz, Channel position B



90MHz, Channel position M

