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Ericsson AB

RF TEST REPORT

Report Type:
FCC Part 27 RF report

PRODUCT NAME:
Radio/AIR 4435 B77D

REPORT NUMBER:
210802618SHA-001

ISSUE DATE:
August 23, 2021

DOCUMENT CONTROL NUMBER:
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TEST REPORT

Report no.: 210802618SHA-001

Applicant:	Ericsson AB
	Isafjordsgatan 10 SE-164 80 Stockholm 16480 Sweden
Manufacturer:	Ericsson AB
	Isafjordsgatan 10 SE-164 80 Stockholm 16480 Sweden
FCC ID:	TA8AKRC161934

SUMMARY:

The equipment complies with the requirements according to the following standard(s) or Specification:
FCC CFR 47 Part 27: MISCELLANEOUS WIRELESS COMMUNICATIONS SERVICES

PREPARED BY:	**REVIEWED BY:**
Project Engineer Jackson Huang	Reviewer Edwin Xu

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TEST REPORT

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TEST REPORT

Revision History

Report No.	Version	Description	Issued Date
210802618SHA-001	Rev. 01	Initial issue of report	August 23, 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	Pass
Frequency Stability	27.54 2.1055	Pass

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TEST REPORT

1 GENERAL INFORMATION

1.1 Description of Equipment Under Test (EUT)

Description:	Remote Radio Unit
Product name:	Radio/AIR 4435 B77D
Product number:	Radio 4435 B77D: KRC 161 934/1, KRC 161 934/2 AIR 4435 B77D: KRD 901 225/1(with antenna), KRD 901 225/3(RDNB), KRD 901 225/2(with antenna), KRD 901 225/4(RDNB)
Serial Number(s)	EA8A556368 for KRC 161 934/1, EA8A581288 for KRC 161 934/2, EA8A594568 for KRD 901 225/4
Rating:	100-250VAC 50/60Hz or -48VDC
Software Version:	UP: CXP9024418/15 R30E14 PIS: CXP9017316/7 R86MG for KRC 161 934/1 PIS: CXP9017316/7 R86NG for KRC 161 934/2 PIS: CXP9017316/7 R87JV for KRC 901 225/4
Hardware Version:	KRC 161 934/1 R1A, KRC 161 934/2 R1A, KRD 901 225/4 R1A
Sample received date:	July 21, 2021
Date of test:	July 21, 2021 ~ August 20, 2021

1.2 Technical Specification

Frequency Range:	3700-3980MHz
Number of Antenna ports:	4 TX/RX
Supported RAT:	NR
Supported other mode:	/
Max RF bandwidth (IBW):	160MHz
Supported Number of Carriers:	SR NR: Maximum 6 carriers
Supported modulation:	QPSK, 16QAM, 64QAM, 256QAM
Supported Channel Bandwidth:	NR: 20MHz, 30MHz, 40MHz, 50MHz, 60MHz, 70MHz, 80MHz, 90MHz, 100MHz
Declaration output power:	Maximum 15W & 0.5W/MHz per port for all modes

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) Radio/AIR 4435 B77D is an Ericsson Radio Unit working in the wireless communication services 3700-3980MHz band which provides communication connections to 3700-3980MHz network. Radio/AIR 4435 B77D operates from a -48V DC or 120VAC 60Hz.
Radio 4435 B77D has 2 variants. Their difference is listed as below, and others are same.
KRC 161 934/1 with AC input;
KRC 161 934/2 with DC input.
AIR 4435 B77D has 4 variants. Their difference is listed as below, and others are same.
KRD 901 225/1 with AC input and antenna;
KRD 901 225/2 with DC input and antenna;
KRD 901 225/3 with AC input and RDNB board for testing purpose;
KRD 901 225/4 with DC input and RDNB board for testing purpose.
Full tests were performed on KRC 161 934/1 except that Radiated Unwanted Emissions were performed on KRC 161 934/1 and KRD 901 225/4. And Frequency stability was performed on both KRC 161 934/1 and KRC 161 934/2.
The EUT includes 4 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.

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 64QAM 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 4 measured ports on worst case modulation scheme. This antenna port was Port B for all modes.

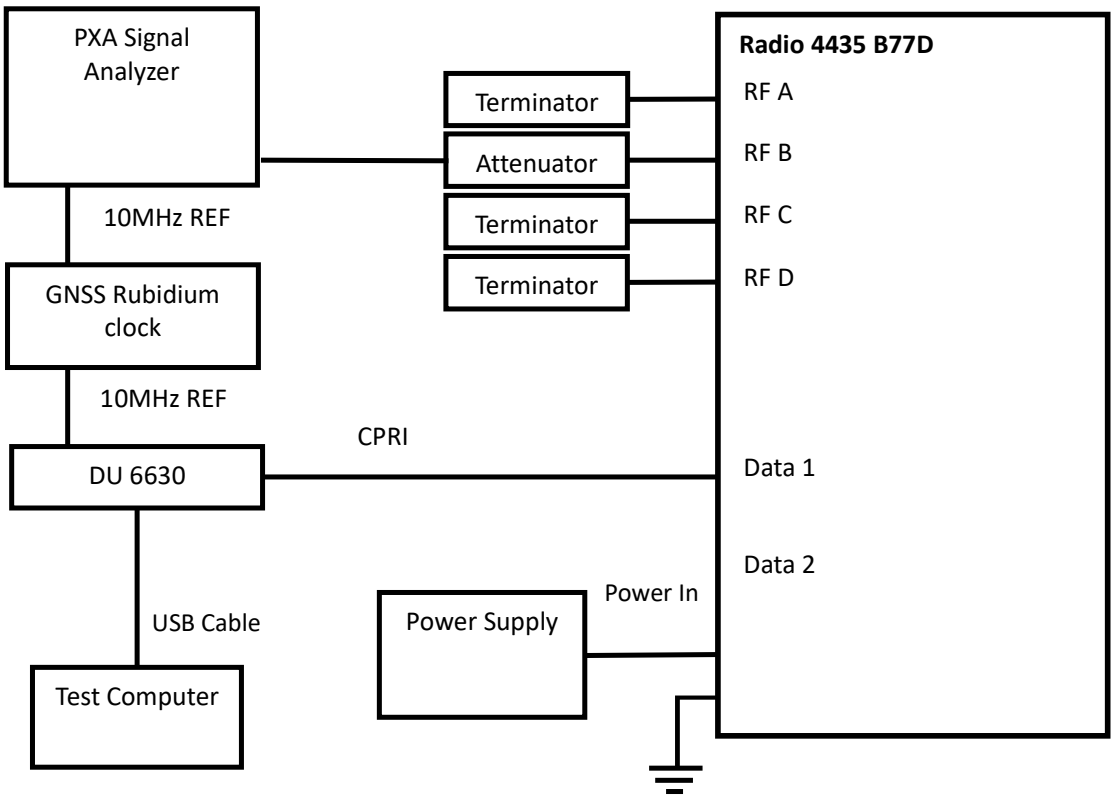
The settings below were used for all measurements unless otherwise noted:

Configuration	Carrier	NR Carrier Bandwidth (MHz)	Carrier Frequency Configuration (MHz)		
			Bottom	Middle	Top
NR-MIMO-1C	1	20	3710.01	3840.00	3970.02
		30	3715.02	3840.00	3965.01
		40	3720.00	3840.00	3960.00
		50	3725.01	3840.00	3955.02
		60	3730.02	3840.00	3950.01
		70	3735.00	3840.00	3945.00
		80	3740.01	3840.00	3940.02
		90	3745.02	3840.00	3935.01
		100	3750.00	3840.00	3930.00
NR-MIMO-2C	2	20	-	3770.01+3909.99	-
		30	-	3775.02+3905.01	-
		40	-	3780.00+3900.00	-
		50	-	3785.01+3894.99	-
		60	-	3790.02+3890.01	-
		70	-	3795.00+3885.00	-
		60+100	-	3790.02+3870.00	-
NR-MIMO-6C	6	20	-	3770.01+3790.02+3810.00+ 3870.00+3890.01+3909.99	-

Configuration	Carrier	NR Carrier Bandwidth (MHz)	Carrier Frequency Configuration (MHz)		
			Bottom	Middle	Top
NR-MIMO-1C-BE	1	20	3710.01	-	3970.02
		30	3715.02	-	3965.01
		100	3750.00	-	3930.00
NR-MIMO-2C-BE	2	20	3710.01+3730.02	-	3950.01+3970.02
		30	3715.02+3745.02	-	3935.01+3965.01
		70	3735+3805.02	-	3875.01+3945
		60+100	3730.02+3810.00	-	3850.02+3930.00
NR-MIMO-6C-BE	6	20	3710.01+3730.02 +3750.00+3770.01 +3790.02+3810.0	-	3870.00+3890.01 +3910.02+3930.00 +3950.01+3970.02

2.4 Test Setup

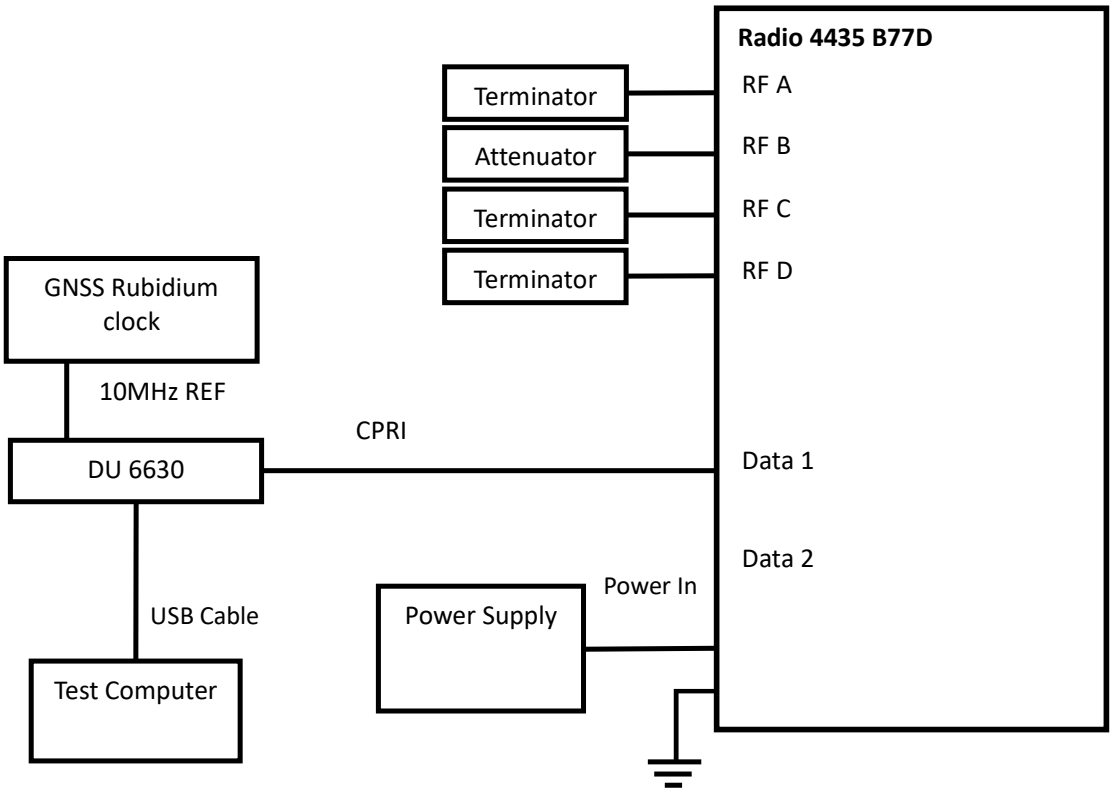
Conducted Measurement:



No.	Auxiliary Equipment	Product Number / Model Type	Version
1	Test computer	DELL PowerEdge R220	-
2	Baseband 6630	KDU137848/11	R2B
3	GNSS Rubidium clock	HJ5418A-V1	-
4	AC Power Supply	ITECH 3000VA	-
5	DC Power Supply	XANTREX XFR 60-46	
6	Attenuator	WDTS100-40dB-6G-C	-
7	Terminator	WTF50-6G-A	-

TEST REPORT

Radiated Measurement:



No.	Auxiliary Equipment	Product Number / Model Type	Version
1	Test computer	DELL PowerEdge R220	-
2	Baseband 6630	KDU137848/11	R2B
3	GNSS Rubidium clock	HJ5418A-V1	-
4	AC Power Supply	ITECH 3000VA	-
5	DC Power Supply	XANTREX XFR 60-46	
6	Attenuator	WDTS100-40dB-6G-C	-
7	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	21°C	51% RH
Frequency Stability	Please refer to clause 8	

2.6 Instrument list

Intertek Testing Services Shanghai					
Used	Equipment	Manufacturer	Type	S/N	Due date
☒	PXA Signal Analyzer	Keysight	N9030A	MY54490502	2021.8.24
☐	Signal Generator	R&S	SMU200A	103457	2022.8.15
☒	Multi-meter	Fluke	117	93990470	2022.1.17
☒	Climatic Chamber	赛宝	CEEC-WR16H-50W	15-95	2021.9.21
☒	Humiture meter	托普	TPJ-20	TP161108085	2022.1.16

BEIJING BOOMWAVE TEST SERVICE CO. LTD.					
Used	Equipment	Manufacturer	Type	S/N	Due date
☒	EMI TEST RECERVER	R&S	ESR26	101320	2021-12-28
☒	Spectrum Analyzer	R&S	FSV40	101403	2022-01-01
☒	Hybrid antenna	SCHWARZBECK	VULB9163	01266	2022-07-03
☒	Double-Ridged Waveguide Horn Antenna	R&S	BBHA9120D	1276	2022-03-17
☒	Broad-Band Horn Antenna	SCHWARZBECK	BBHA9170	797	2022-03-17
☒	Pre-amplifier	R&S	SCU40	2046336	2022-03-17
☒	Pre-amplifier	Qualwave	QLAS-1000-18000-45-30	20255003	2022-07-01
☒	Power amplifier	Pasternack Enterprises	PE15A1009	V00140120181115E822	2022-01-01
☒	Digital display temperature and humidity recorder	DICKSON	TM320	015080	2022-08-05
☒	Aneroid barometer	Shanghai Boji	DYM3	00868	2022-05-05
☒	Semi-Anechoic Chamber	TDK	SAC03	/	2024-07-23

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.

3.3 Measurement result

NR-MIMO-1C

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)
A	64QAM	20	39.63	27.59	8.02	39.90	27.77	8.06	39.63	27.71	8.07
B	64QAM	20	39.64	27.64	8.03	39.98	27.77	8.09	39.54	27.57	8.00
C	64QAM	20	39.69	27.58	8.06	39.74	27.58	8.08	39.55	27.54	8.07
D	64QAM	20	39.82	27.87	7.97	39.95	27.81	8.03	39.69	27.67	8.03
Total			45.72	33.69	-	45.91	33.75	-	45.62	33.64	-

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)
A	64QAM	30	41.60	27.70	7.36	41.67	27.66	7.29	41.41	27.53	7.44
B	64QAM	30	41.59	27.68	7.37	41.79	27.94	7.26	41.40	27.51	7.44
C	64QAM	30	41.43	27.58	7.35	41.57	27.52	7.28	41.40	27.59	7.47
D	64QAM	30	41.72	27.78	7.37	41.73	27.75	7.28	41.56	27.70	7.45
Total			47.61	33.71	-	47.71	33.74	-	47.46	33.60	-

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)
A	64QAM	40	41.42	26.26	7.41	41.77	26.51	7.30	41.49	26.38	7.56
B	64QAM	40	41.30	26.08	7.46	41.56	26.18	7.33	41.21	26.02	7.58
C	64QAM	40	41.43	26.19	7.45	41.44	26.11	7.30	41.25	26.18	7.51
D	64QAM	40	41.75	26.46	7.46	41.76	26.50	7.30	41.56	26.42	7.54
Total			47.50	32.27	-	47.66	32.35	-	47.40	32.27	-

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)
A	64QAM	50	41.42	25.29	7.49	41.75	25.51	7.35	41.46	25.27	7.68
B	64QAM	50	41.57	25.41	7.50	41.80	25.61	7.36	41.43	25.18	7.65
C	64QAM	50	41.37	25.35	7.49	41.43	25.19	7.37	41.37	25.18	7.63
D	64QAM	50	41.56	25.44	7.55	41.68	25.48	7.36	41.46	25.22	7.63
Total			47.50	31.39	-	47.69	31.47	-	47.45	31.23	-

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)
A	64QAM	60	41.62	24.66	7.51	41.72	24.60	7.33	41.55	24.55	7.77
B	64QAM	60	41.73	24.72	7.51	41.80	24.63	7.32	41.61	24.55	7.69
C	64QAM	60	41.48	24.44	7.57	41.53	24.47	7.32	41.43	24.40	7.72
D	64QAM	60	41.67	24.60	7.55	41.58	24.51	7.32	41.61	24.60	7.70
Total			47.65	30.63	-	47.68	30.57	-	47.57	30.55	-

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)
A	64QAM	70	41.68	24.14	7.55	41.63	23.90	7.41	41.49	23.85	7.83
B	64QAM	70	41.75	24.17	7.61	41.78	24.01	7.38	41.64	23.78	7.74
C	64QAM	70	41.39	24.83	7.59	41.37	23.58	7.39	41.34	23.74	7.84
D	64QAM	70	41.72	24.04	7.64	41.46	23.65	7.38	41.47	23.85	7.78
Total			47.66	30.33	-	47.58	29.81	-	47.51	29.83	-

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)
A	64QAM	80	41.59	23.42	7.61	41.54	23.18	7.33	41.61	23.30	7.79
B	64QAM	80	41.54	23.31	7.59	41.52	23.27	7.35	41.54	23.33	7.78
C	64QAM	80	41.51	23.34	7.53	41.42	23.06	7.36	41.43	23.18	7.86
D	64QAM	80	41.73	23.45	7.59	41.62	23.24	7.32	41.66	23.50	7.83
Total			47.61	29.40	-	47.55	29.21	-	47.58	29.35	-

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)
A	64QAM	90	41.33	22.64	7.66	41.44	22.53	7.40	41.30	22.60	7.90
B	64QAM	90	41.55	22.72	7.62	41.47	22.61	7.39	41.48	22.71	7.89
C	64QAM	90	41.65	22.87	7.60	41.43	22.53	7.38	41.39	22.73	7.85
D	64QAM	90	41.51	22.71	7.65	41.54	22.65	7.39	41.53	22.77	7.85
Total			47.53	28.76	-	47.49	28.60	-	47.45	28.72	-

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)
A	64QAM	100	41.56	22.24	7.62	41.72	22.35	7.37	41.66	22.44	7.85
B	64QAM	100	41.62	22.30	7.68	41.57	22.24	7.36	41.65	22.45	7.89
C	64QAM	100	41.59	22.31	7.66	41.44	22.16	7.37	41.53	22.32	7.85
D	64QAM	100	41.55	22.22	7.69	41.52	22.12	7.37	41.51	22.31	7.87
Total			47.60	28.29	-	47.58	28.24	-	47.61	28.40	-

NR-MIMO-2C

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)
A	64QAM	20	-	-	-	40.36	25.57	-	-	-	-
B	64QAM	20	-	-	-	40.47	25.82	-	-	-	-
C	64QAM	20	-	-	-	40.35	25.64	-	-	-	-
D	64QAM	20	-	-	-	40.73	25.85	-	-	-	-
Total			-	-	-	46.50	31.74	-	-	-	-

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)
A	64QAM	30	-	-	-	40.55	24.08	-	-	-	-
B	64QAM	30	-	-	-	40.41	23.87	-	-	-	-
C	64QAM	30	-	-	-	40.36	23.79	-	-	-	-
D	64QAM	30	-	-	-	40.55	24.00	-	-	-	-
Total			-	-	-	46.49	29.96	-	-	-	-

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)
A	64QAM	40	-	-	-	40.52	22.73	-	-	-	-
B	64QAM	40	-	-	-	40.46	22.66	-	-	-	-
C	64QAM	40	-	-	-	40.45	22.54	-	-	-	-
D	64QAM	40	-	-	-	40.57	22.70	-	-	-	-
Total			-	-	-	46.52	28.68	-	-	-	-

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)
A	64QAM	50	-	-	-	40.60	21.65	-	-	-	-
B	64QAM	50	-	-	-	40.47	21.55	-	-	-	-
C	64QAM	50	-	-	-	40.39	21.62	-	-	-	-
D	64QAM	50	-	-	-	40.61	21.90	-	-	-	-
Total			-	-	-	46.54	27.70	-	-	-	-

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)
A	64QAM	60	-	-	-	40.51	20.94	-	-	-	-
B	64QAM	60	-	-	-	40.53	20.93	-	-	-	-
C	64QAM	60	-	-	-	40.46	21.81	-	-	-	-
D	64QAM	60	-	-	-	40.62	21.02	-	-	-	-
Total			-	-	-	46.55	27.21	-	-	-	-

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)
A	64QAM	70	-	-	-	40.46	20.52	-	-	-	-
B	64QAM	70	-	-	-	40.37	20.19	-	-	-	-
C	64QAM	70	-	-	-	40.49	20.22	-	-	-	-
D	64QAM	70	-	-	-	40.54	20.33	-	-	-	-
Total			-	-	-	46.49	26.34	-	-	-	-

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)
A	64QAM	60+100	-	-	-	40.49	19.69	-	-	-	-
B	64QAM	60+100	-	-	-	40.39	19.43	-	-	-	-
C	64QAM	60+100	-	-	-	40.48	19.60	-	-	-	-
D	64QAM	60+100	-	-	-	40.57	20.79	-	-	-	-
Total			-	-	-	46.50	25.93	-	-	-	-

NR-MIMO-6C

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)
A	64QAM	20	-	-	-	40.63	21.19	-	-	-	-
B	64QAM	20	-	-	-	40.45	21.21	-	-	-	-
C	64QAM	20	-	-	-	40.60	21.05	-	-	-	-
D	64QAM	20	-	-	-	40.66	21.31	-	-	-	-
Total			-	-	-	46.61	27.21	-	-	-	-

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.

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 product s 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 10log (OBW / 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.

4.2 Measurement result

NR-MIMO-1C

99% Occupied Bandwidth

Antenna Port	Modulation	Bandwidth	Occupied Bandwidth (MHz)		
			Channel Position B	Channel Position M	Channel Position T
B	64QAM	20MHz	18.288	18.242	18.217
B	64QAM	30MHz	27.856	27.849	27.854
B	64QAM	40MHz	37.806	37.915	37.811
B	64QAM	50MHz	47.446	47.495	47.455
B	64QAM	60MHz	57.728	57.800	57.771
B	64QAM	70MHz	67.360	67.304	67.409
B	64QAM	80MHz	77.447	77.328	77.290
B	64QAM	90MHz	87.352	87.368	87.176
B	64QAM	100MHz	97.415	97.365	97.289

-26dBc Occupied Bandwidth

Antenna Port	Modulation	Bandwidth	Occupied Bandwidth (MHz)		
			Channel Position B	Channel Position M	Channel Position T
B	64QAM	20MHz	19.72	19.68	19.65
B	64QAM	30MHz	29.67	29.68	29.61
B	64QAM	40MHz	39.76	39.84	39.84
B	64QAM	50MHz	49.82	49.84	49.70
B	64QAM	60MHz	60.11	60.05	60.11
B	64QAM	70MHz	70.19	69.99	70.20
B	64QAM	80MHz	79.99	80.04	79.97
B	64QAM	90MHz	90.46	90.48	90.35
B	64QAM	100MHz	100.5	100.5	100.5

NR-MIMO-2C

99% Occupied Bandwidth

Antenna Port	Modulation	Bandwidth	Occupied Bandwidth (MHz)		
			Channel Position B	Channel Position M	Channel Position T
B	64QAM	60+100MHz	156.59	156.64	156.63

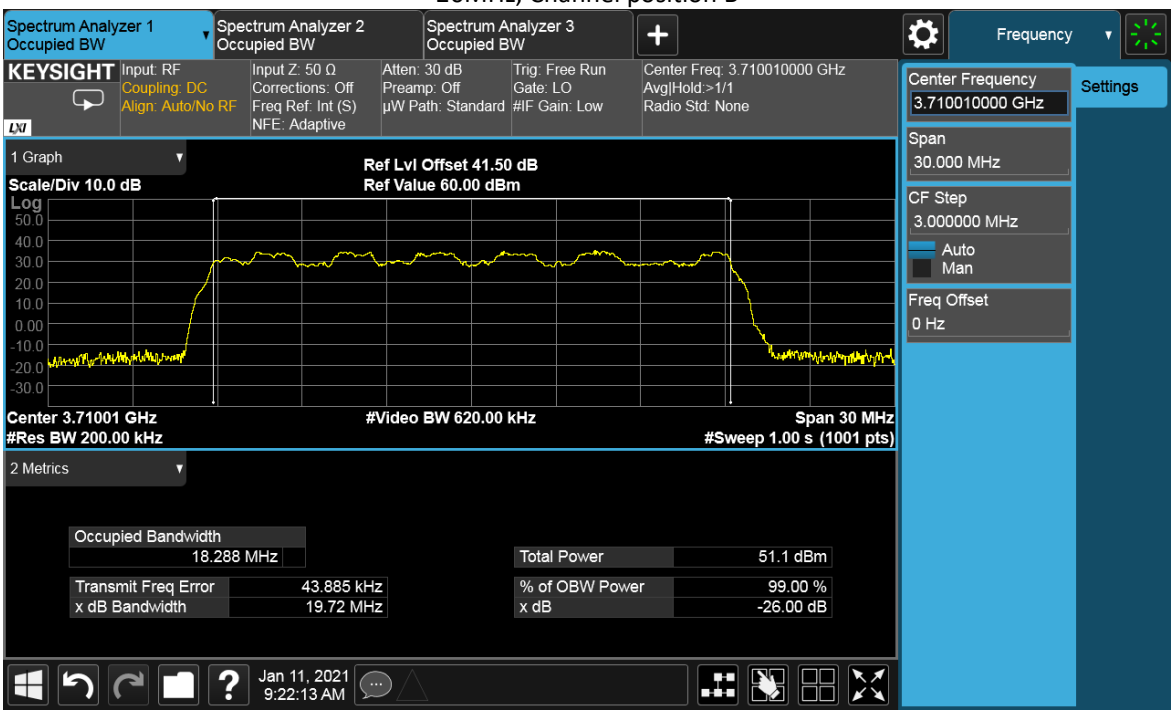
-26dBc Occupied Bandwidth

Antenna Port	Modulation	Bandwidth	Occupied Bandwidth (MHz)		
			Channel Position B	Channel Position M	Channel Position T
B	64QAM	60+100MHz	160.0	160.0	160.1

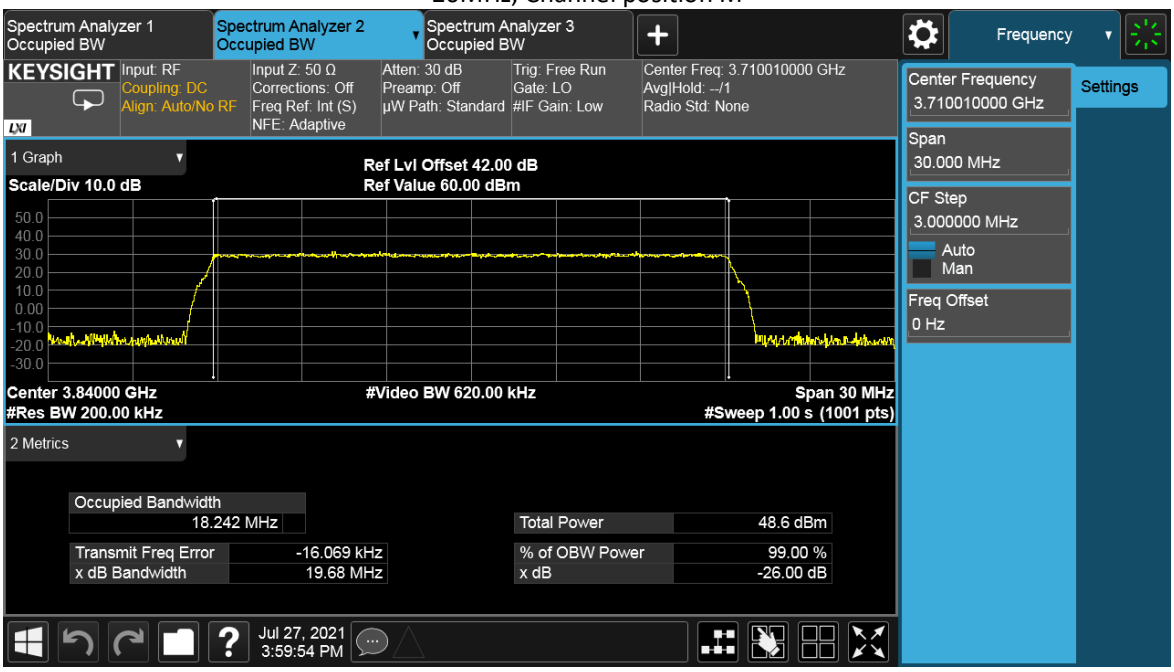
Total Quality. Assured.

TEST REPORT

20MHz, Channel position B

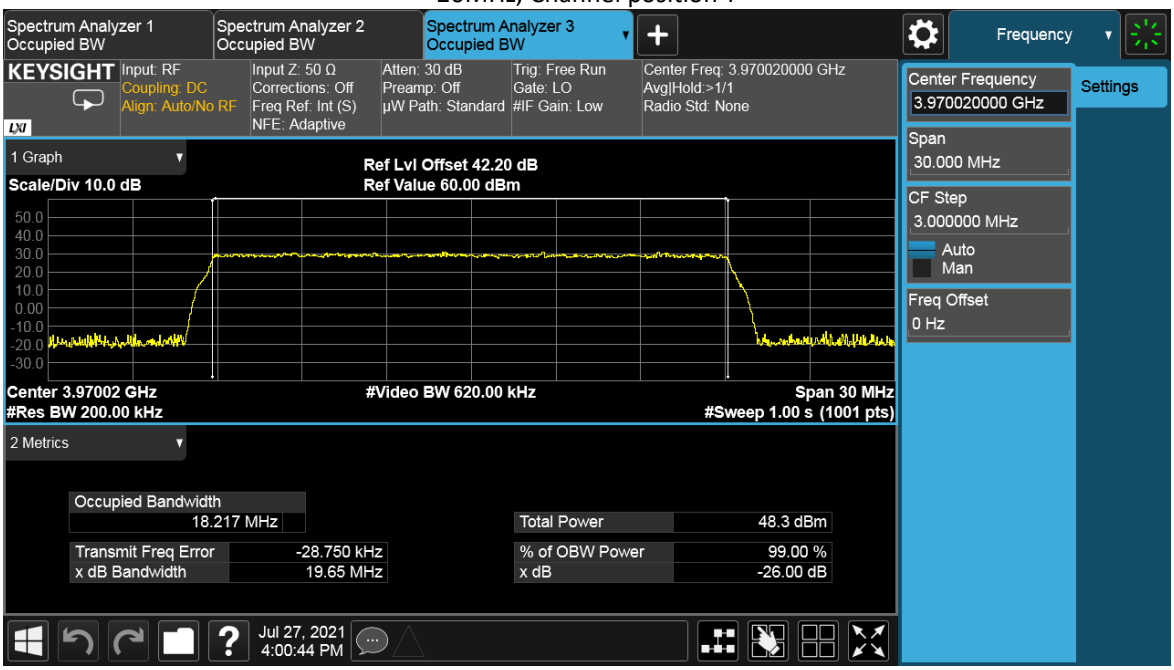


20MHz, Channel position M

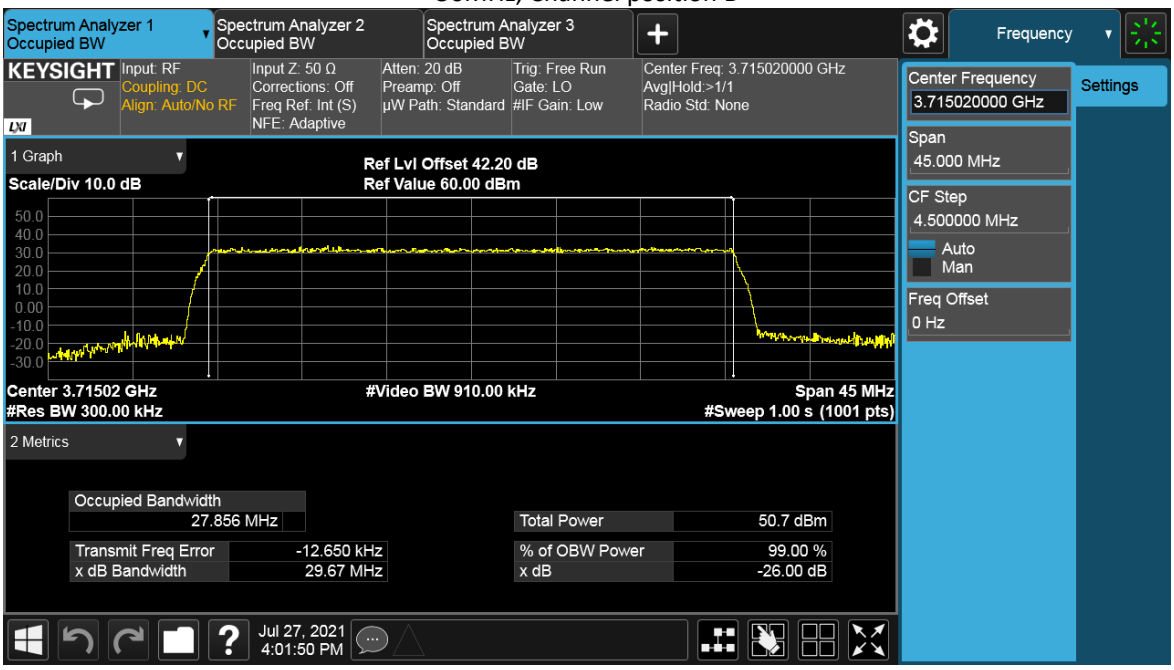


TEST REPORT

20MHz, Channel position T

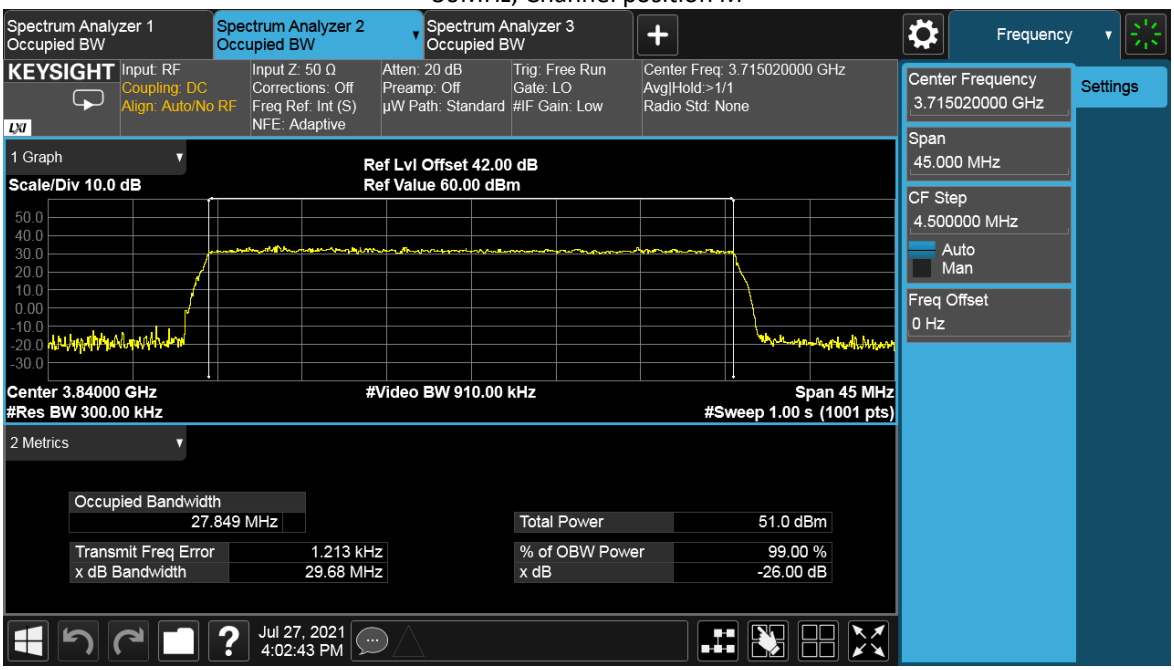


30MHz, Channel position B



TEST REPORT

30MHz, Channel position M



30MHz, Channel position T