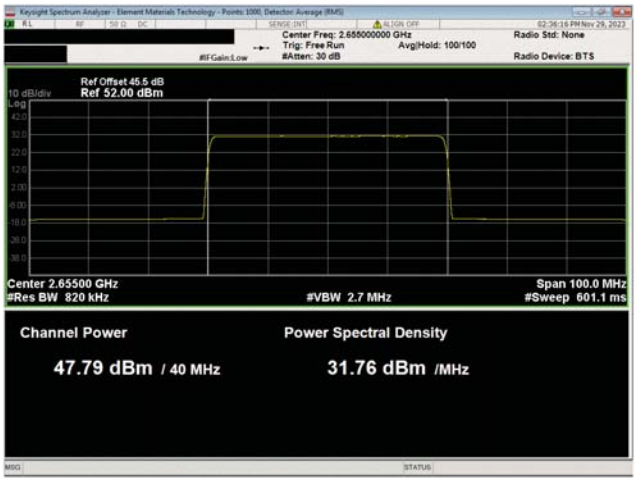
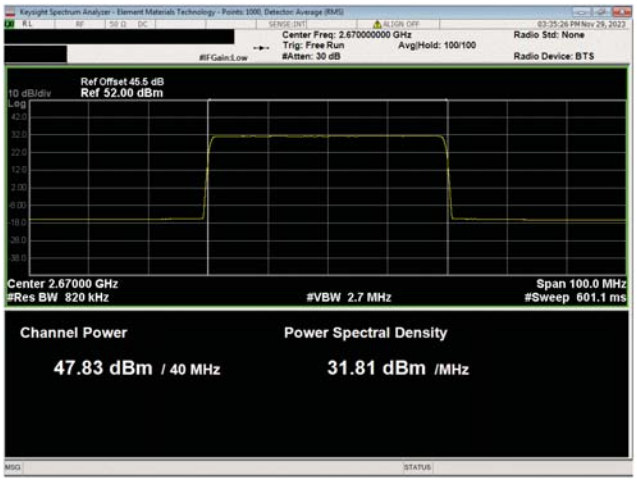
AVERAGE POWER – SINGLE PORT

element
TbtTx 2023.08.15.2
WTD.2023.11.13.0



BRS Band n7, 2620 Mhz - 2690 MHz
40 MHz Bandwidth
256QAM Modulation
Mid Ch, 2655.0 MHz



BRS Band n7, 2620 Mhz - 2690 MHz
40 MHz Bandwidth
256QAM Modulation
High Ch, 2670.0 MHz

AVERAGE POWER - MULTICARRIER

element
TbtTx 2023.11.27.0
WTD.2023.11.13.0

TEST DESCRIPTION

Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data.

The measurement was made using a direct connection between the RF output of the EUT and a spectrum analyzer.

The fundamental emission output power (maximum average conducted output power) was measured using the channels and modes as called out on the following data sheets. The transmit power was set to its default maximum.
The method in section 5.2.4.4 of ANSI C63.26 was used to make the measurements. This method uses trace averaging across the ON and OFF times of the EUT transmissions in the spectrum analyzer channel power function using an RMS detector. Following the measurement a duty cycle correction was applied by adding [10 log (1/D)], where D is the duty cycle in decimal, to the measured power to compute the average power during the actual transmission times.

RF conducted emissions testing was performed only on one port. The AHFIHA antenna ports are essentially electrically identical (the RF power variation between antenna ports is small as shown in this certification testing) and antenna port 1 was selected to perform the testing under this effort as allowed by ANSI C63.26-2015 paragraphs 5.2.5.3, 5.7.2i and 6.4.

The output power was measured for a single carrier over the carrier channel bandwidth listed in the test case. The total output power for multiport (2x2 MIMO, 4x4 MIMO) operations was determined based per ANSI C63.26 clauses 6.4.3.1 and 6.4.3.2.4 (10 log N_{out}). The total output power for two port operation is the single port power +3 dB [i.e. 10*log(2)]. The total power for four port operations is single port power +6 dB [i.e. 10*log(4)].

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Analyzer - Spectrum Analyzer	Agilent	N9010A	AFL	2023-03-17	2024-03-17
Block - DC	Fairview Microwave	SD3379	AMM	2023-08-04	2024-08-04
Generator - Signal	Keysight	N5182B	TES	2021-09-14	2024-09-14

AVERAGE POWER - MULTICARRIER

element
TbtTx 2023.11.27.0
WTD.2023.11.13.0

MULTICARRIER TEST CONFIGURATIONS

a) *PCS Multicarrier Multiband Test Case 1:* In the PCS band, three NR5 carriers using two carriers (with minimum spacing between carrier frequencies) at the lower band edge (1932.5 MHz and 1937.5 MHz) and a third carrier with maximum spacing between the other two carrier frequencies (1992.5 MHz) at the upper band edge. In the AWS and BRS bands, single NR10 and NR5 carriers at the middle channel (2155.0 MHz and 2655.0 MHz). The smallest channel bandwidth is selected to maximize carrier power spectral density. The carriers are operated at maximum power (~20W/PCS carrier, 60W/AWS carrier and 40W/BRS carrier) with a total port power of 160 watts (60W for PCS band carriers + 60W for AWS band carrier + 40W for BRS band carrier).

b) *PCS Multicarrier Multiband Test Case 2:* In the PCS band, two NR30 carriers (with minimum spacing between carrier frequencies) at the lower band edge (1945.0 MHz and 1975.0 MHz). In the AWS and BRS bands, single NR40 carriers at the middle channel (2155.0 MHz and 2655.0 MHz). The largest channel bandwidth is selected to maximize carrier OBW. The carriers are operated at maximum power (~30W/PCS carrier, 60W/AWS carrier and 40W/BRS carrier) with a total port power of 160 watts (60W for PCS band carriers + 60W for AWS band carrier + 40W for BRS band carrier).

c) *PCS Multicarrier Multiband Test Case 3:* In the PCS band, two NR30 carriers (with minimum spacing between carrier frequencies) at the upper band edge (1950.0 MHz and 1980.0 MHz). In the AWS and BRS bands, single NR40 carriers at the middle channel (2155.0 MHz and 2655.0 MHz). The largest channel bandwidth is selected to maximize carrier OBW. The carriers and operated at maximum power (~30W/PCS carrier, 60W/AWS carrier and 40W/BRS carrier) with a total port power of 160 watts (60W for PCS band carriers + 60W for AWS band carrier + 40W for BRS band carrier).

d) *AWS Multicarrier Multiband Test Case 1*: In the AWS band, three NR5 carriers using two carriers (with minimum spacing between carrier frequencies) at the lower band edge (2112.5 MHz and 2117.5 MHz) and a third carrier with maximum spacing between the other two carrier frequencies (2197.5 MHz) at the upper band edge. In the PCS and BRS bands, single NR10 and NR5 carriers at the middle channel (1962.5 MHz and 2655.0 MHz). The smallest channel bandwidth was selected to maximize carrier power spectral density. The carriers are operated at maximum power (~20W/AWS carrier, 60W/PCS carrier and 40W/BRS carrier) with a total port power of 160 watts (60W for PCS band carrier + 60W for AWS band carriers + 40W for BRS band carrier)

e) *AWS Multicarrier Multiband Test Case 2:* In the AWS band, two NR40 carriers (with minimum spacing between carrier frequencies) at the lower band edge (2130.0 MHz and 2170.0 MHz). In the PCS and BRS bands, single NR40 carriers at the middle channel (1962.5 MHz and 2655.0 MHz). The largest channel bandwidth is selected to maximize carrier OBW. The carriers are operated at maximum power (~30W/AWS carrier, 60W/PCS carrier and 40W/BRS carrier) with a total port power of 160 watts (60W for PCS band carrier + 60W for AWS band carriers + 40W for BRS band carrier).

f) *AWS Multicarrier Multiband Test Case 3:* In the AWS band, two NR40 carriers (with minimum spacing between carrier frequencies) at the upper band edge (2140.0 MHz and 2180.0 MHz). In the PCS and BRS bands, single NR40 carriers at the middle channel (1962.5 MHz and 2655.0 MHz). The largest channel bandwidth is selected to maximize carrier OBW. The carriers are operated at maximum power (~30W/AWS carrier, 60W/PCS carrier and 40W/BRS carrier) with a total port power of 160 watts (60W for PCS band carrier + 60W for AWS band carriers + 40W for BRS band carrier).

g) *BRS Multicarrier Multiband Test Case 1*: In the BRS band, three NR5 carriers using two carriers (with minimum spacing between carrier frequencies) at the lower band edge (2622.5 MHz and 2627.5 MHz) and a third carrier with maximum spacing between the other two carrier frequencies (2687.5 MHz) at the upper band edge. In the PCS and AWS bands, single NR10 and NR5 carriers at the middle channel (1962.5 MHz and 2155.0 MHz). The smallest channel bandwidth was selected to maximize carrier power spectral density. The carriers are operated at maximum power (~20W/BRS carrier, 60W/PCS carrier, and 40W/AWS carrier) with a total port power of 160 watts (60W for PCS band carrier + 60W for BRS band carriers + 40W for AWS band carrier)

h) *BRS Multicarrier Multiband Test Case 2:* In the BRS band, two NR30 carriers (with minimum spacing between carrier frequencies) at the lower band edge (2635.0 MHz and 2665.0 MHz). In the PCS and AWS bands, single NR40 carriers at the middle channel (1962.5 MHz and 2155.0 MHz). The largest channel bandwidth is selected to maximize carrier OBW. The carriers are operated at maximum power (~30W/BRS carrier, 60W/PCS carrier and

40W/AWS carrier) with a total port power of 160 watts (60W for PCS band carrier + 60W for BRS band carriers + 40W for AWS band carrier).

i) *BRS Multicarrier Multiband Test Case 3:* In the BRS band, two NR30 carriers (with minimum spacing between carrier frequencies) at the upper band edge (2645.0 MHz and 2675.0 MHz). In the PCS and AWS bands, single NR40 carriers at the middle channel (1962.5 MHz and 2155.0 MHz). The largest channel bandwidth is selected to maximize carrier OBW. The carriers are operated at maximum power (~30W/BRS carrier, 60W/PCS carrier and 40W/AWS carrier) with a total port power of 160 watts (60W for PCS band carrier + 60W for BRS band carriers + 40W for AWS band carrier).

AVERAGE POWER - MULTICARRIER

element
TbtTx 2023.11.27.0
WTD.2023.11.13.0

EUT:	AirScale Base Transceiver Station Remote Radio Head Model AHFIHA	Work Order:	NOKI0072
Serial Number:	RW233800370	Date:	2024-01-25
Customer:	Nokia Solutions and Networks	Temperature:	22.2°C
Attendees:	John Rattanavong, Mitch Hill	Relative Humidity:	32.7%
Customer Project:	None	Bar. Pressure (PMSL):	1026 mbar
Tested By:	Jarrod Brenden	Job Site:	TX07
Power:	54VDC	Configuration:	NOKI0072-2

TEST SPECIFICATIONS

Specification:	Method:
FCC 24E:2024	ANSI C63.26:2015
FCC 27:2024	ANSI C63.26:2015
RSS-133 Issue 6:2013 +A1:2018	ANSI C63.26:2015
RSS-199 Issue 4:2023	ANSI C63.26:2015
RSS139 Issue 4:2022	ANSI C63.26:2015

COMMENTS

Losses in the measurement path were accounted for: DC Block, attenuators, cables, and filters where used. Carriers were enabled at power and frequency combinations described in test cases. The following is the output power measurements at the radio output ports. The output power was measured for a single carrier over the carrier channel bandwidth.

DEVIATIONS FROM TEST STANDARD

None

CONCLUSION

Pass

Tested By

TEST RESULTS

	Initial Value dBm/MHz	Duty Cycle Factor (dB)	Single Port dBm/Carrier BW	Two Port (2x2 MIMO) dBm/Carrier BW	Four Port (4x4 MIMO) dBm/Carrier BW
Port 1					
PCS Multicarrier Multiband Test Case 1					
QPSK Modulation					
PSC Band n25, NR5, Low Ch, 1932.5 MHz	43.04	0	43	46	49
PSC Band n25, NR5, Low Ch, 1937.5 MHz	43.2	0	43.2	46.2	49.2
PSC Band n25, NR5, High Ch, 1992.5 MHz	43.179	0	43.2	46.2	49.2
AWS Band n66, NR10, Mid Ch, 2155.0 MHz	47.44	0	47.4	50.4	53.4
BRS Band n7, NR5, Mid Ch, 2655.0 MHz	45.87	0	45.9	48.9	51.9
PCS Multicarrier Multiband Test Case 2					
QPSK Modulation					
PSC Band n25, NR30, Low Ch, 1945.0 MHz	45.114	0	45.1	48.1	51.1
PSC Band n25, NR30, Low Ch, 1975.0 MHz	45.17	0	45.2	48.2	51.2
AWS Band n66, NR40, Mid Ch, 2155.0 MHz	47.806	0	47.8	50.8	53.8
BRS Band n7, NR40, Mid Ch, 2655.0 MHz	46.099	0	46.1	49.1	52.1

AVERAGE POWER - MULTICARRIER

element
TbtTx 2023.11.27.0
WTD.2023.11.13.0

	Initial Value dBm/MHz	Duty Cycle Factor (dB)	Single Port dBm/Carrier BW	Two Port (2x2 MIMO) dBm/Carrier BW	Four Port (4x4 MIMO) dBm/Carrier BW
PCS Multicarrier Multiband Test Case 3					
QPSK Modulation					
PSC Band n25, NR 30, High Ch, 1950.0 MHz	45.139	0	45.1	48.1	51.1
PSC Band n25, NR30, High Ch, 1980.0 MHz	45.106	0	45.1	48.1	51.1
AWS Band n66, NR40, Mid Ch, 2155.0 MHz	47.772	0	47.8	50.8	53.8
BRS Band n7, NR40, Mid Ch, 2655.0 MHz	46.117	0	46.1	49.1	52.1
AWS Multicarrier Multiband Test Case 1					
QPSK Modulation					
AWS Band n66, NR5, Low Ch, 2112.5 MHz	42.982	0	43	46	49
AWS Band n66, NR5, Low Ch, 2117.5 MHz	42.94	0	43	46	49
AWS Band n66, NR5, High Ch, 2197.5 MHz	43.219	0	43.2	46.2	49.2
PSC Band n25, NR10, Mid Ch, 1962.5 MHz	47.814	0	47.8	50.8	53.8
BRS Band n7, NR5, Mid Ch, 2655.0 MHz	46.024	0	46	49	52
AWS Multicarrier Multiband Test Case 2					
QPSK Modulation					
AWS Band n66, NR40, Low Ch, 2130.0 MHz	44.748	0	44.7	47.7	50.7
AWS Band n66, NR40, Low Ch, 2170.0 MHz	44.87	0	44.9	47.9	50.9
PSC Band n25, NR40, Mid Ch, 1962.5 MHz	47.95	0	48	51	54
BRS Band n7, NR40, Mid Ch, 2655.0 MHz	46.091	0	46.1	49.1	52.1
AWS Multicarrier Multiband Test Case 3					
QPSK Modulation					
AWS Band n66, NR40, High Ch, 2140.0 MHz	44.7	0	44.7	47.7	50.7
AWS Band n66, NR40, High Ch, 2180.0 MHz	44.869	0	44.9	47.9	50.9
PSC Band n25, NR40, Mid Ch, 1962.5 MHz	47.963	0	48	51	54
BRS Band n7, NR40, Mid Ch, 2655.0 MHz	46.102	0	46.1	49.1	52.1
BRS Multicarrier Multiband Test Case 1					
QPSK Modulation					
BRS Band n7, NR5, Low Ch, 2622.5 MHz	42.66	0	42.7	45.7	48.7
BRS Band n7, NR5, Low Ch, 2627.5 MHz	42.65	0	42.7	45.7	48.7
BRS Band n7, NR5, High Ch, 2687.5 MHz	42.719	0	42.7	45.7	48.7
PSC Band n25, NR10, Mid Ch, 1962.5 MHz	48.018	0	48	51	54
AWS Band n66, NR5, Mid Ch, 2155.0 MHz	45.737	0	45.7	48.7	51.7
BRS Multicarrier Multiband Test Case 2					
QPSK Modulation					
BRS Band n7, NR30, Low Ch, 2635.0 MHz	44.625	0	44.6	47.6	50.6
BRS Band n7, NR30, Low Ch, 2665.0 MHz	44.55	0	44.6	47.6	50.6
PSC Band n25, NR40, Mid Ch, 1962.5 MHz	47.902	0	47.9	50.9	53.9
AWS Band n66, NR40, Mid Ch, 2155.0 MHz	45.832	0	45.8	48.8	51.8
BRS Multicarrier Multiband					

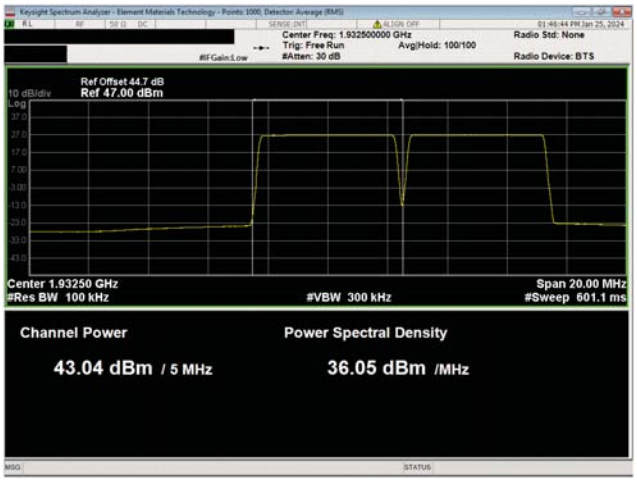
AVERAGE POWER - MULTICARRIER

element
TbtTx 2023.11.27.0
WTD.2023.11.13.0

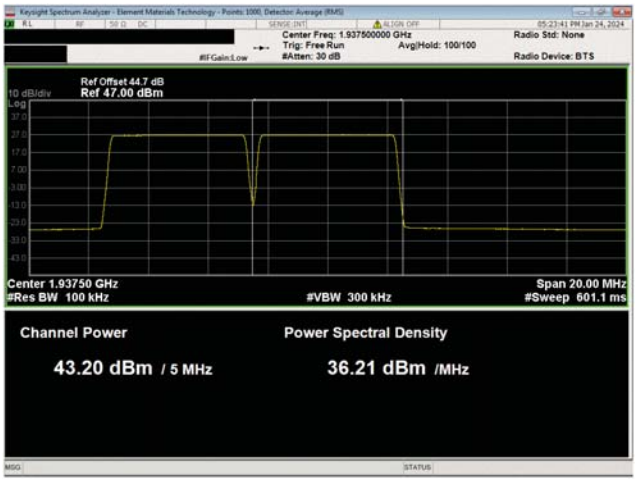
	Initial Value dBm/MHz	Duty Cycle Factor (dB)	Single Port dBm/Carrier BW	Two Port (2x2 MIMO) dBm/Carrier BW	Four Port (4x4 MIMO) dBm/Carrier BW
Test Case 3					
QPSK Modulation					
BRS Band n7, NR30, High Ch, 2645.0 MHz	44.51	0	44.5	47.5	50.5
BRS Band n7, NR30, High Ch, 2675.0 MHz	44.592	0	44.6	47.6	50.6
PSC Band n25, NR40, Mid Ch, 1962.5 MHz	47.895	0	47.9	50.9	53.9
AWS Band n66, NR40, Mid Ch, 2155.0 MHz	45.826	0	45.8	48.8	51.8

AVERAGE POWER - MULTICARRIER

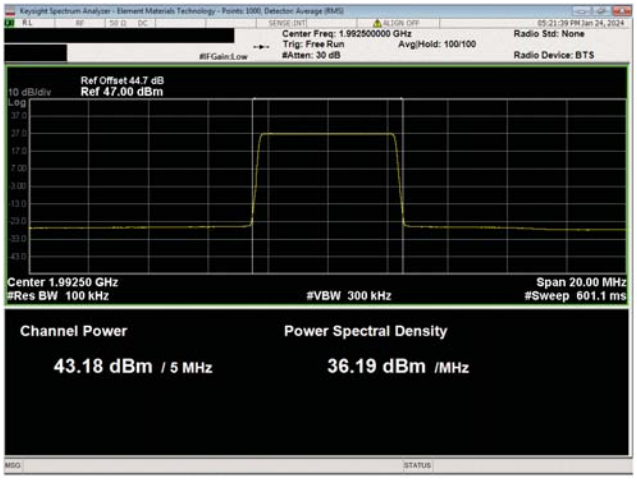
element
TbtTx 2023.11.27.0
WTD.2023.11.13.0



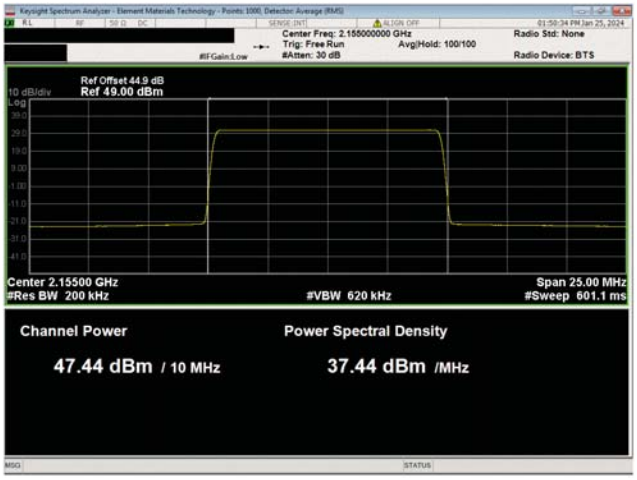
PCS Multicarrier Multiband Test Case 1
QPSK Modulation
PSC Band n25, NR5, Low Ch, 1932.5 MHz



PCS Multicarrier Multiband Test Case 1
QPSK Modulation
PSC Band n25, NR5, Low Ch, 1937.5 MHz

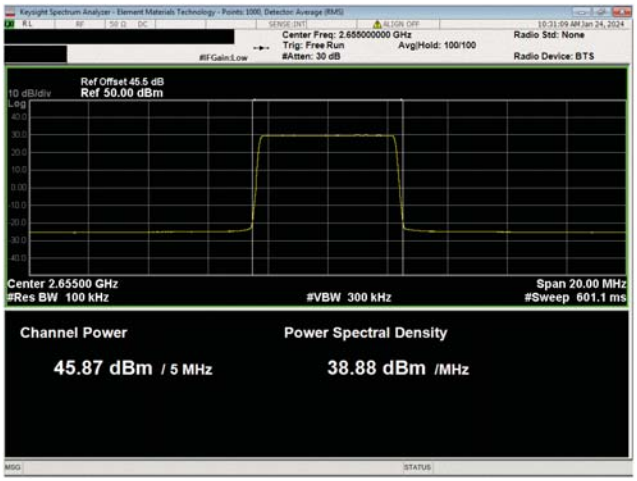


PCS Multicarrier Multiband Test Case 1
QPSK Modulation
PSC Band n25, NR5, High Ch, 1992.5 MHz

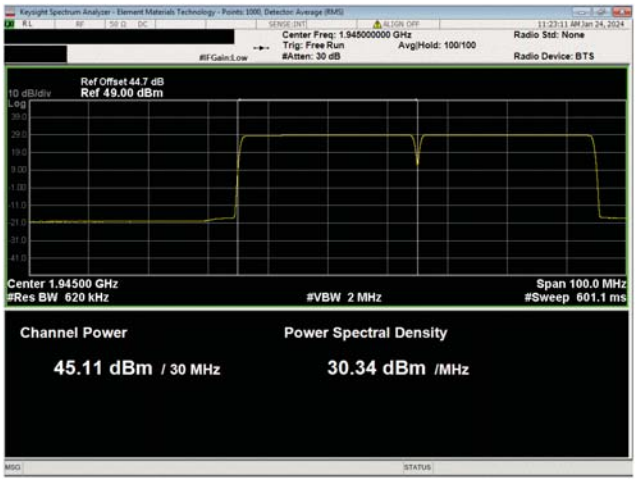


PCS Multicarrier Multiband Test Case 1
QPSK Modulation
AWS Band n66, NR10, Mid Ch, 2155.0 MHz

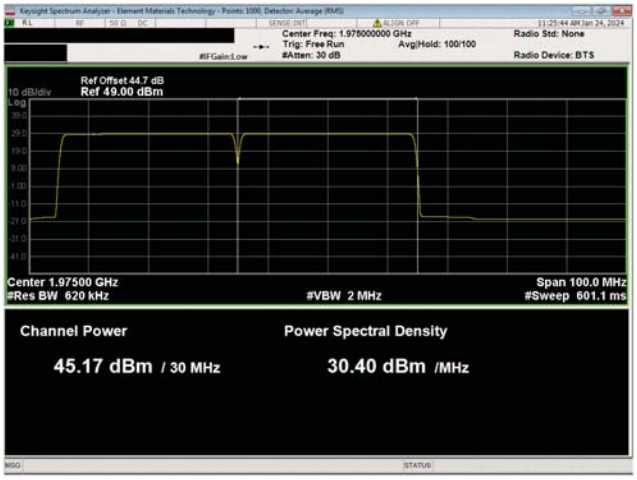
AVERAGE POWER - MULTICARRIER



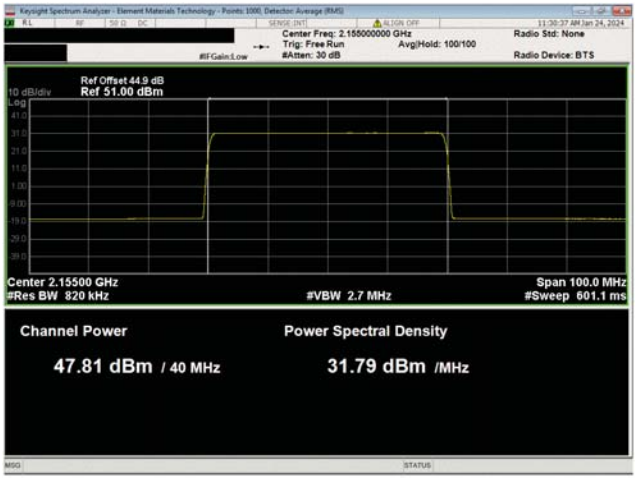
PCS Multicarrier Multiband Test Case 1
QPSK Modulation
BRS Band n7, NR5, Mid Ch, 2655.0 MHz



PCS Multicarrier Multiband Test Case 2
QPSK Modulation
PSC Band n25, NR30, Low Ch, 1945.0 MHz

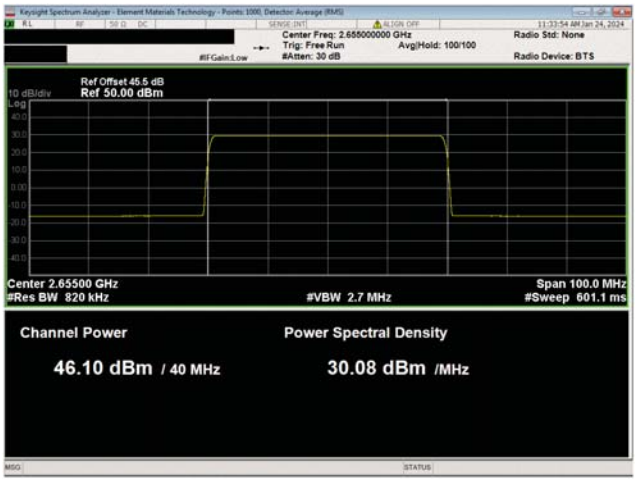


PCS Multicarrier Multiband Test Case 2
QPSK Modulation
PSC Band n25, NR30, Low Ch, 1975.0 MHz

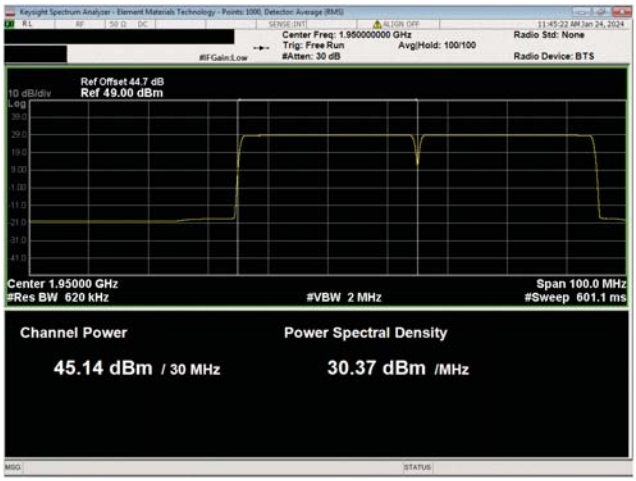


PCS Multicarrier Multiband Test Case 2
QPSK Modulation
AWS Band n66, NR40, Mid Ch, 2155.0 MHz

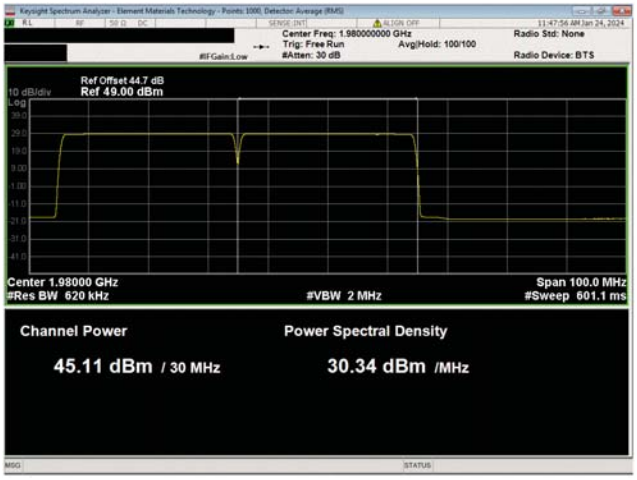
AVERAGE POWER - MULTICARRIER



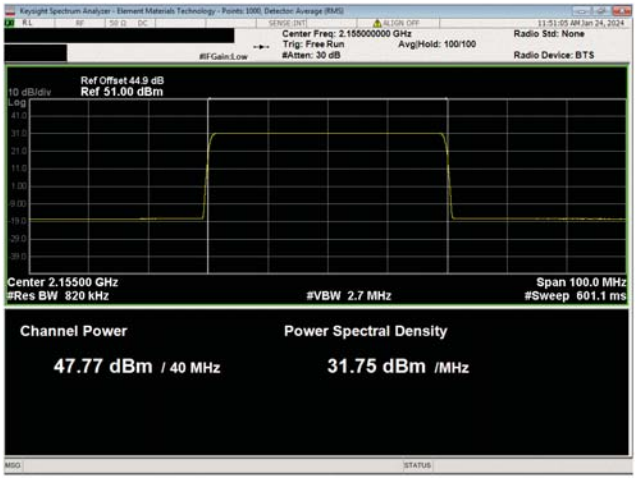
PCS Multicarrier Multiband Test Case 2
QPSK Modulation
BRS Band n7, NR40, Mid Ch, 2655.0 MHz



PCS Multicarrier Multiband Test Case 3
QPSK Modulation
PSC Band n25, NR 30, High Ch, 1950.0 MHz

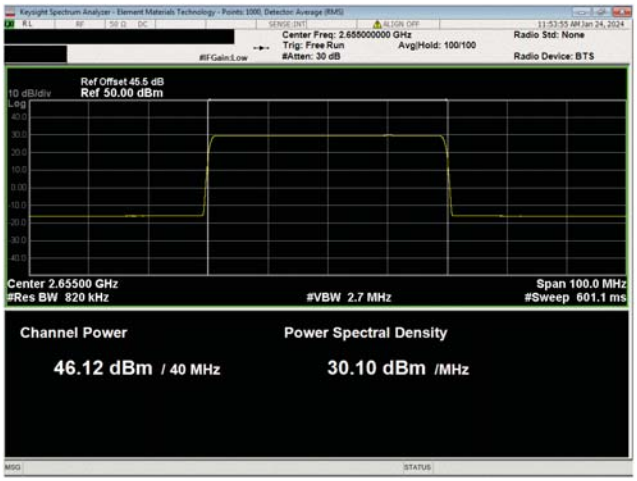


PCS Multicarrier Multiband Test Case 3
QPSK Modulation
PSC Band n25, NR30, High Ch, 1980.0 MHz

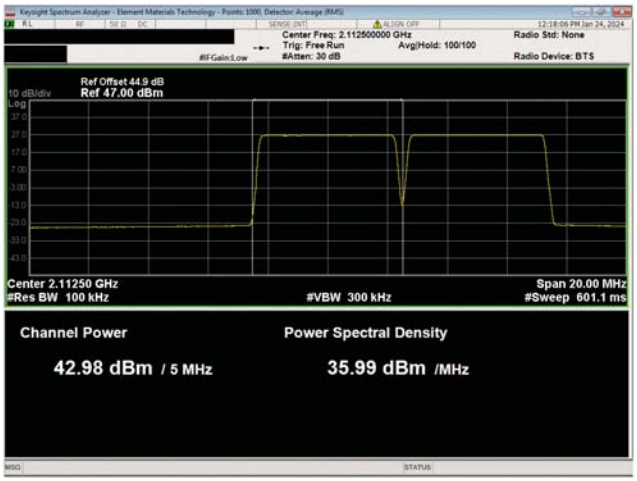


PCS Multicarrier Multiband Test Case 3
QPSK Modulation
AWS Band n66, NR40, Mid Ch, 2155.0 MHz

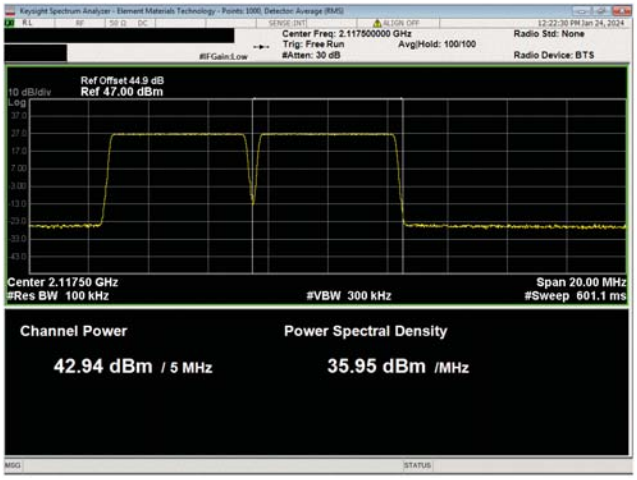
AVERAGE POWER - MULTICARRIER



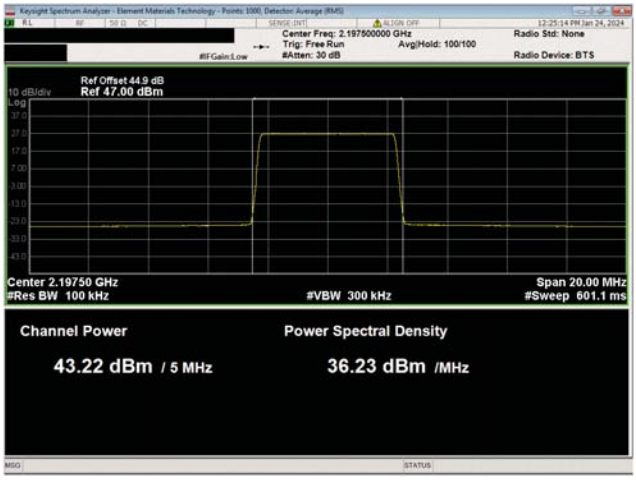
PCS Multicarrier Multiband Test Case 3
QPSK Modulation
BRS Band n7, NR40, Mid Ch, 2655.0 MHz



AWS Multicarrier Multiband Test Case 1
QPSK Modulation
AWS Band n66, NR5, Low Ch, 2112.5 MHz

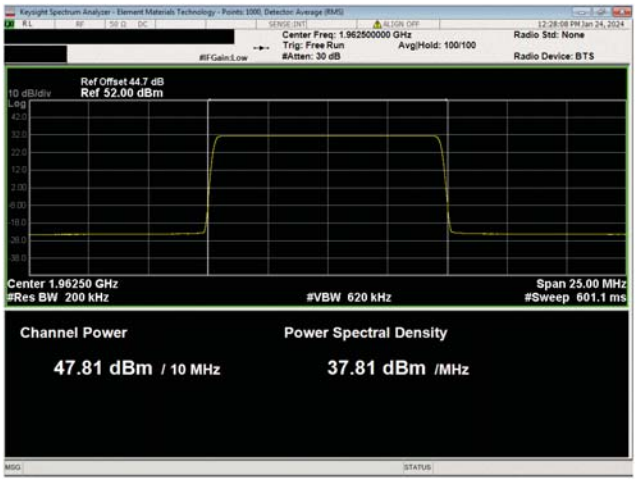


AWS Multicarrier Multiband Test Case 1
QPSK Modulation
AWS Band n66, NR5, Low Ch, 2117.5 MHz

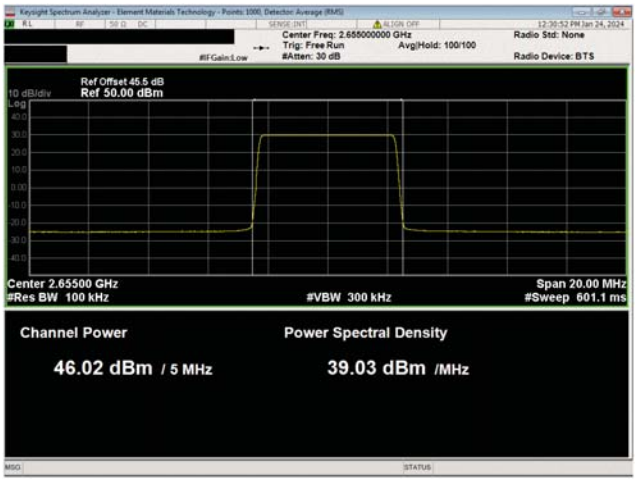


AWS Multicarrier Multiband Test Case 1
QPSK Modulation
AWS Band n66, NR5, High Ch, 2197.5 MHz

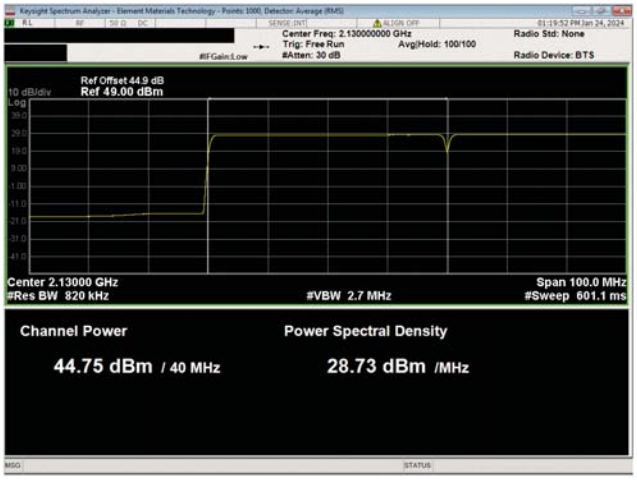
AVERAGE POWER - MULTICARRIER



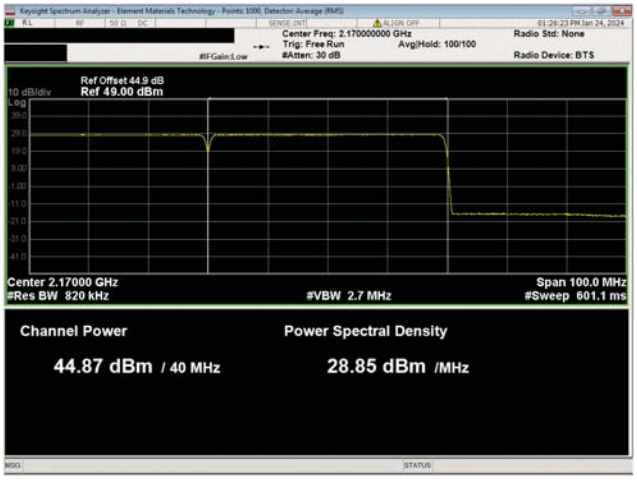
AWS Multicarrier Multiband Test Case 1
QPSK Modulation
PSC Band n25, NR10, Mid Ch, 1962.5 MHz



AWS Multicarrier Multiband Test Case 1
QPSK Modulation
BRS Band n7, NR5, Mid Ch, 2655.0 MHz

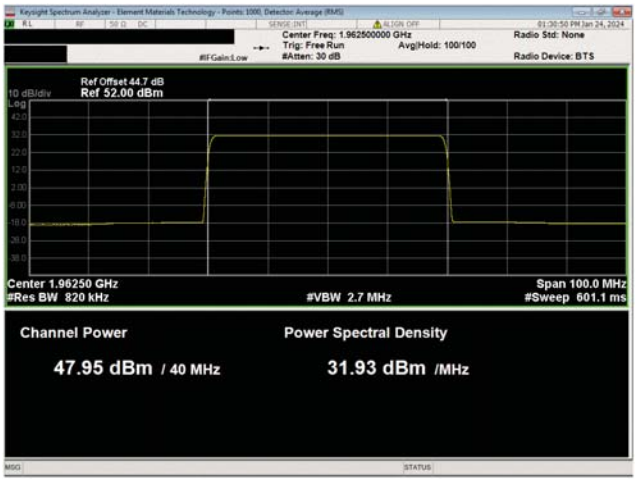


AWS Multicarrier Multiband Test Case 2
QPSK Modulation
AWS Band n66, NR40, Low Ch, 2130.0 MHz

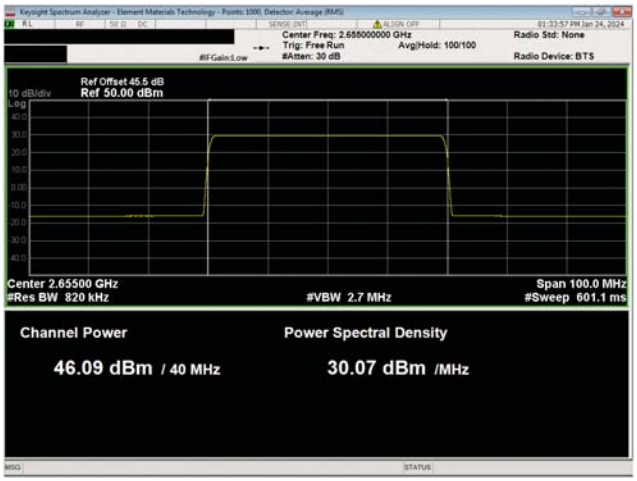


AWS Multicarrier Multiband Test Case 2
QPSK Modulation
AWS Band n66, NR40, Low Ch, 2170.0 MHz

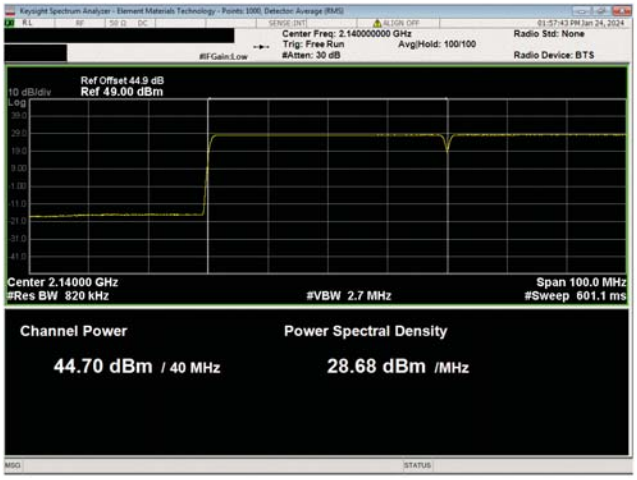
AVERAGE POWER - MULTICARRIER



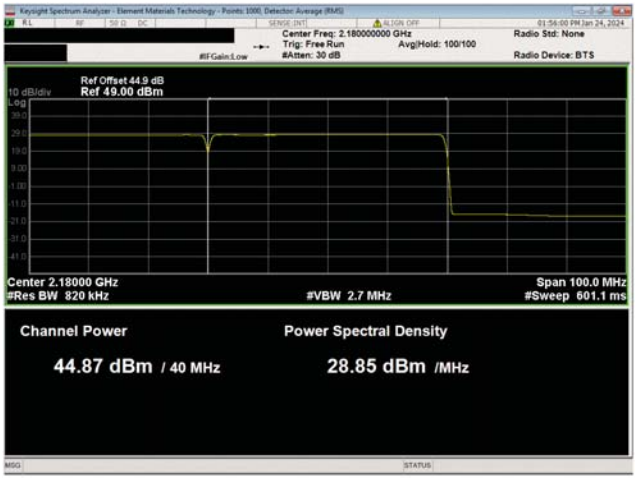
AWS Multicarrier Multiband Test Case 2
QPSK Modulation
PSC Band n25, NR40, Mid Ch, 1962.5 MHz



AWS Multicarrier Multiband Test Case 2
QPSK Modulation
BRS Band n7, NR40, Mid Ch, 2655.0 MHz

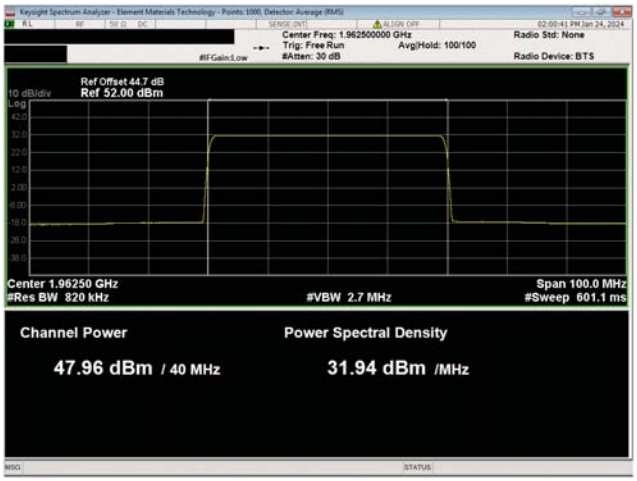


AWS Multicarrier Multiband Test Case 3
QPSK Modulation
AWS Band n66, NR40, High Ch, 2140.0 MHz

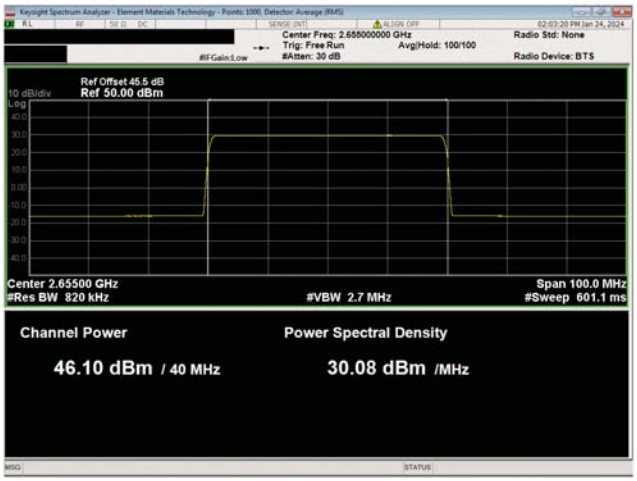


AWS Multicarrier Multiband Test Case 3
QPSK Modulation
AWS Band n66, NR40, High Ch, 2180.0 MHz

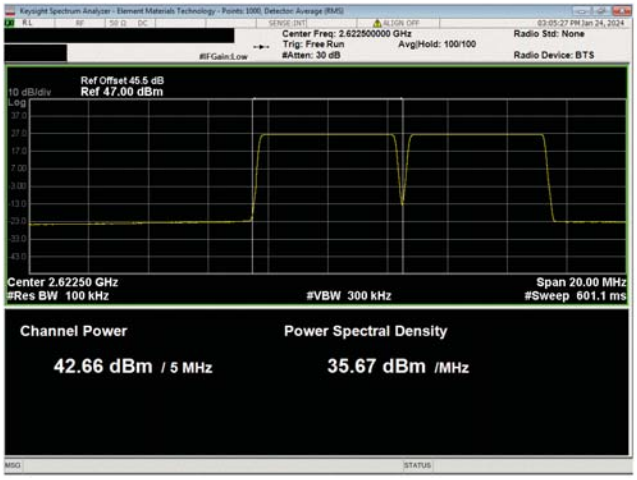
AVERAGE POWER - MULTICARRIER



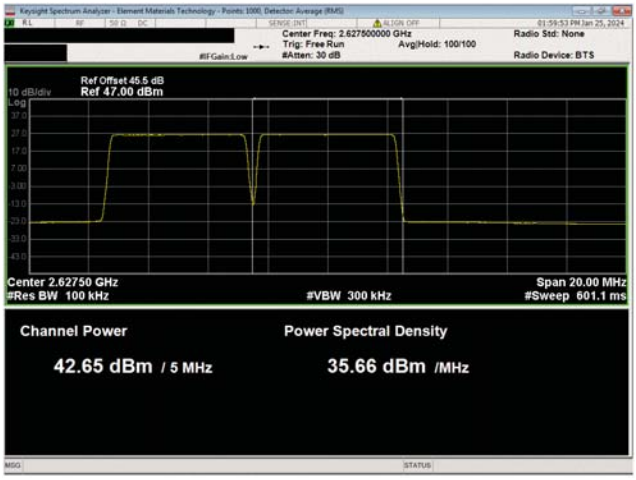
AWS Multicarrier Multiband Test Case 3
QPSK Modulation
PSC Band n25, NR40, Mid Ch, 1962.5 MHz



AWS Multicarrier Multiband Test Case 3
QPSK Modulation
BRS Band n7, NR40, Mid Ch, 2655.0 MHz

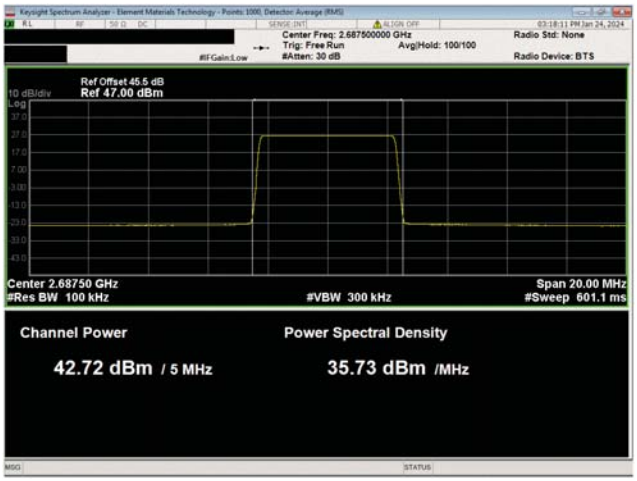


BRS Multicarrier Multiband Test Case 1
QPSK Modulation
BRS Band n7, NR5, Low Ch, 2622.5 MHz

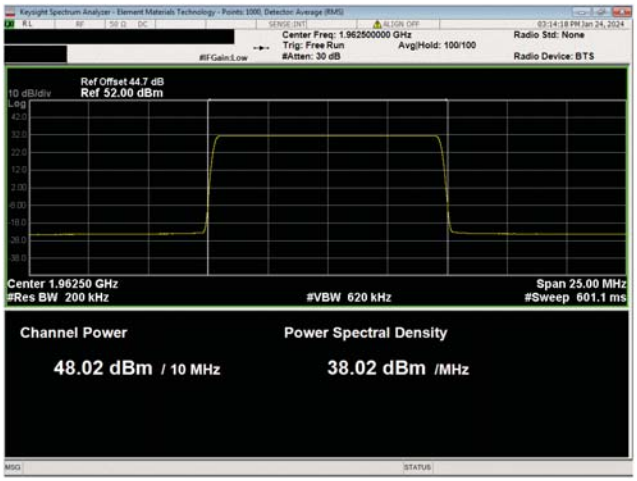


BRS Multicarrier Multiband Test Case 1
QPSK Modulation
BRS Band n7, NR5, Low Ch, 2627.5 MHz

AVERAGE POWER - MULTICARRIER

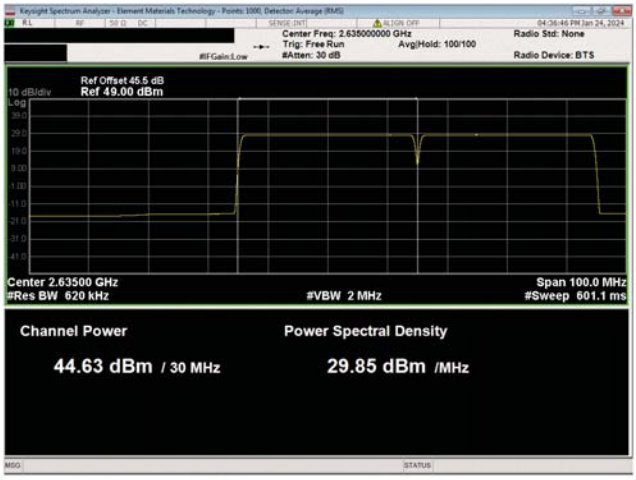


BRS Multicarrier Multiband Test Case 1
QPSK Modulation
BRS Band n7, NR5, High Ch, 2687.5 MHz



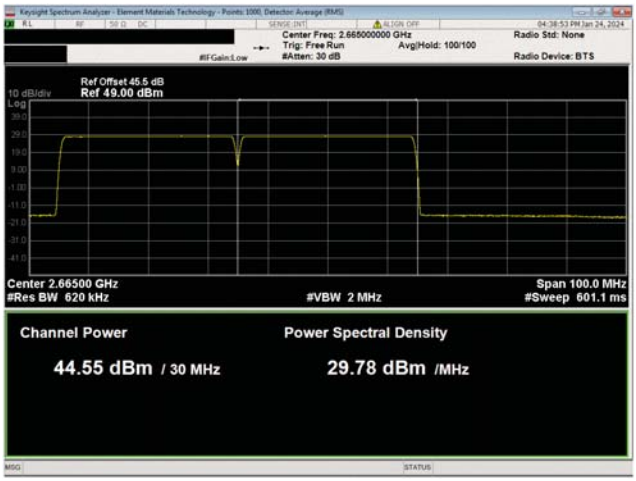
BRS Multicarrier Multiband Test Case 1
QPSK Modulation
PSC Band n25, NR10, Mid Ch, 1962.5 MHz

BRS Multicarrier Multiband Test Case 1
QPSK Modulation
AWS Band n66, NR5, Mid Ch, 2155.0 MHz

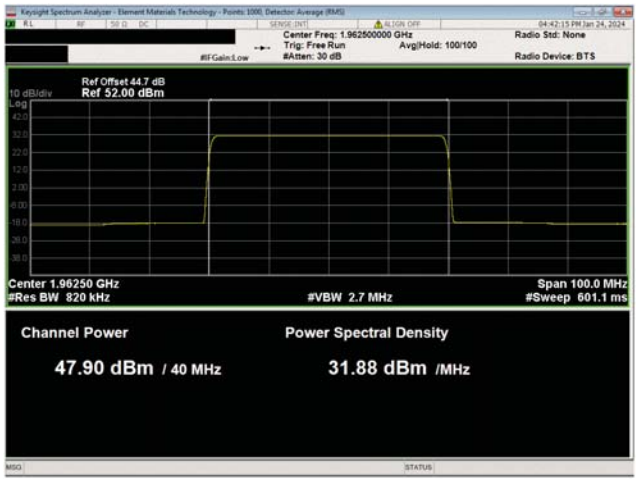


BRS Multicarrier Multiband Test Case 2
QPSK Modulation
BRS Band n7, NR30, Low Ch, 2635.0 MHz

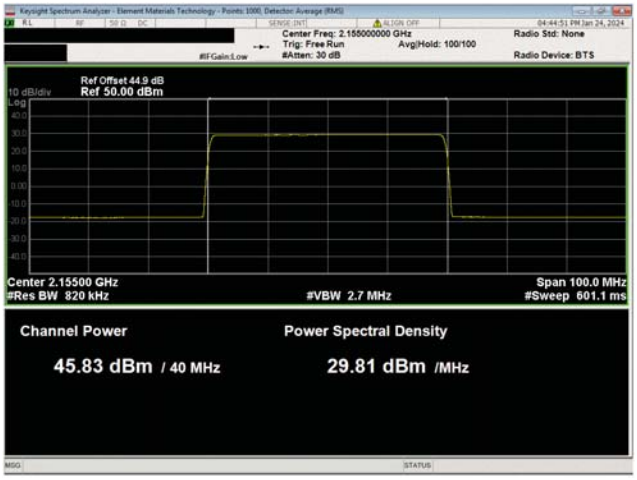
AVERAGE POWER - MULTICARRIER



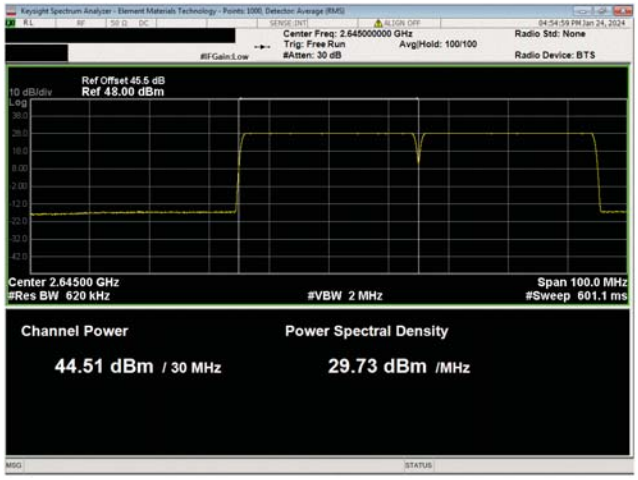
BRS Multicarrier Multiband Test Case 2
QPSK Modulation
BRS Band n7, NR30, Low Ch, 2665.0 MHz



BRS Multicarrier Multiband Test Case 2
QPSK Modulation
PSC Band n25, NR40, Mid Ch, 1962.5 MHz

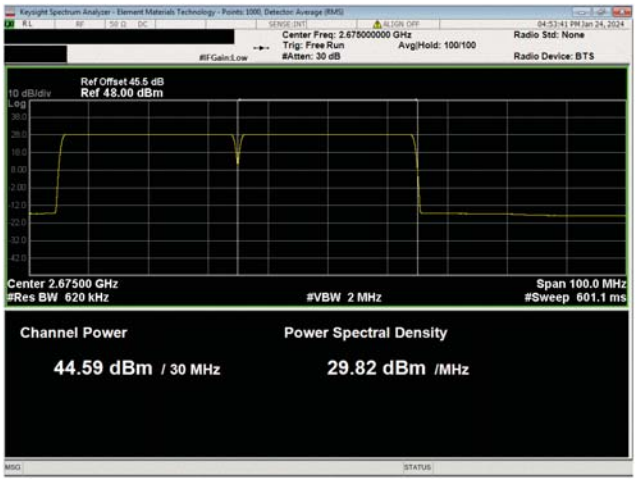


BRS Multicarrier Multiband Test Case 2
QPSK Modulation
AWS Band n66, NR40, Mid Ch, 2155.0 MHz

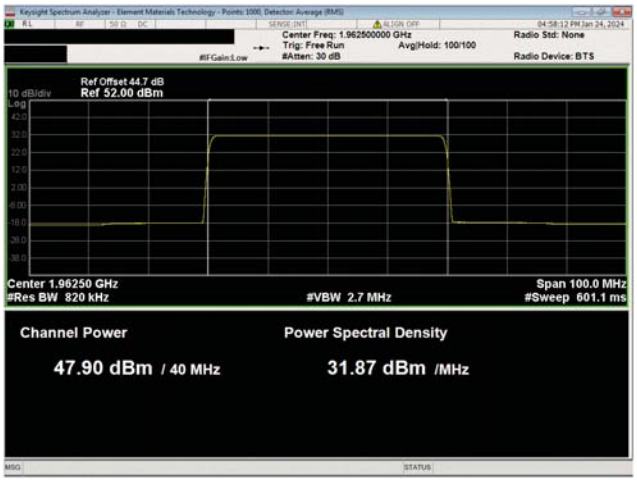


BRS Multicarrier Multiband Test Case 3
QPSK Modulation
BRS Band n7, NR30, High Ch, 2645.0 MHz

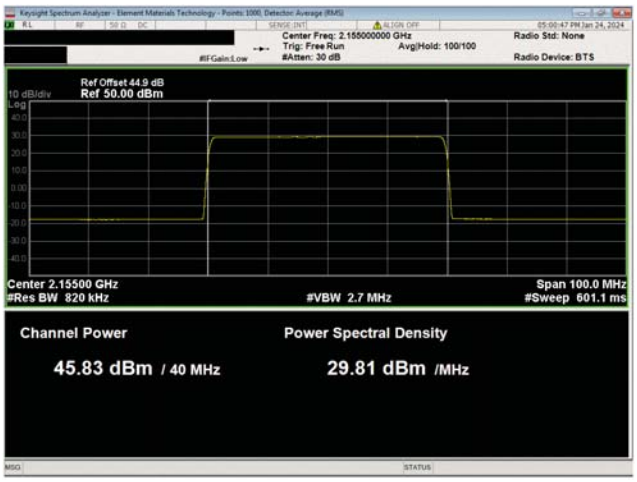
AVERAGE POWER - MULTICARRIER



BRS Multicarrier Multiband Test Case 3
QPSK Modulation
BRS Band n7, NR30, High Ch, 2675.0 MHz



BRS Multicarrier Multiband Test Case 3
QPSK Modulation
PSC Band n25, NR40, Mid Ch, 1962.5 MHz



BRS Multicarrier Multiband Test Case 3
QPSK Modulation
AWS Band n66, NR40, Mid Ch, 2155.0 MHz

POWER SPECTRAL DENSITY AND EIRP CALCULATIONS

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TEST DESCRIPTION

Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data.

The measurement was made using a direct connection between the RF output of the EUT and a spectrum analyzer.

The fundamental emission power spectral density was measured using the channels and modes as called out on the following data sheets.

The method of ANSI C63.26-2015 section 5.2.4.5 was used to make this measurement.

The RF conducted emission testing was performed on one port. The AHFIHA antenna ports are essentially electrically identical (the RF power variation between antenna ports is small as shown in the “Output Power” report section) and antenna port 1 was selected to perform the testing under this effort as allowed by ANSI C63.26-2015 paragraphs 5.2.5.3, 5.7.2i, and 6.4.

The total PSD for multiport (2x2, 4x4 MIMO) operation was determined based upon ANSI 63.26 clause 6.4.3.2.4 (10 Log Nout). The total PSD for two port operation is single port PSD +3dB [i.e. 10 Log(2)]. The total PSD for four port operation is single port PSD +6dB [i.e. 10 Log(4)]. The EIRP calculations are based upon ANSI C63.26-2015 paragraphs 6.4 for a four port MIMO base station.

REQUIREMENTS FOR PCS BAND n25

FCC Requirements: Part 24.232 Power and antenna height limits.

(a)(2) Base stations with an emission bandwidth greater than 1 MHz are limited to 1640 watts/MHz equivalent isotropically radiated power (EIRP) with an antenna height up to 300 meters HAAT, except as described in paragraph (b) below.
(a)(3) Base station antenna heights may exceed 300 meters HAAT with a corresponding reduction in power; *see* Tables 1 and 2 of this section.
(b)(2) Base stations that are located in counties with population densities of 100 persons or fewer per square mile, based upon the most recently available population statistics from the Bureau of the Census, with an emission bandwidth greater than 1 MHz are limited to 3280 watts/MHz equivalent isotropically radiated power (EIRP) with an antenna height up to 300 meters HAAT.

ISED Requirements RSS-133 Section 6.4/SRSP-510 section 5.1.1:

SRSP-510 section 5.1 Radiated power and antenna height limits for base stations

For base stations with a channel bandwidth greater than 1 MHz, the maximum e.i.r.p. is limited to 3280 watts/MHz e.i.r.p. (i.e., no more than 3280 watts e.i.r.p. in any 1 MHz band segment) with an antenna height above average terrain (HAAT) up to 300 metres. Fixed or base stations operating in urban areas are limited to a maximum allowable e.i.r.p. of 1640 watts/MHz e.i.r.p. Base station antenna heights above average terrain may exceed 300 metres with a corresponding reduction in e.i.r.p. according to the following table:

EIRP Calculations for Four Port MIMO Operations for Band n25 Single 5G NR Carriers

EIRP calculations are needed at each transmitter location to optimize base station operational performance while meeting regulatory requirements. Each cell site installation needs to consider the power measurements in the radio certification report as well as site specific regulatory requirements (such as antenna height, population density, etc.), site installation parameters (line loss between antenna and radio, antenna parameters, etc.) and base station operational parameters (MIMO operational setup, carrier power level, channel bandwidth, modulation type, etc.) to optimize performance. Transmitter output power may be reduced (from maximum) by base station setup parameters. Base station antennas are selected by the customer.

The base station antenna is selected by the customer and this EIRP calculation is based upon a sample worst case antenna. The EIRP calculation is based upon Commscope antenna assembly model “FFV4Q4-65B-R7-V2”. The maximum Band n25

gain (17.1dBi) for this antenna was used for the EIRP calculation. This antenna assembly has a pair of ±45° cross-polarized radiators used for Band n25. Four AHFIHA transmitter outputs are connected to the antenna assembly RF inputs.

Equivalent Isotropically Radiated Power (EIRP) is calculated (as specified in ANSI C63.26-2015 section 6.4 for uncorrelated output signals) from the results of power measurements (highest measured PSD for each channel bandwidth type). The maximum antenna gain was used for this calculation. The cable loss between the antenna and transmitter is site dependent and a typical loss of 1.0dB for this frequency range was used. Calculations of worst-case EIRP for four port MIMO are as follows:

Parameter	5 MHz Ch BW	10 MHz Ch BW	15 MHz Ch BW	20 MHz Ch BW	25 MHz Ch BW	30 MHz Ch BW	40 MHz Ch BW
Worst Case PSD/Antenna Port	40.3 dBm/MHz	39.4 dBm/MHz	38.4 dBm/MHz	37.3 dBm/MHz	36.0 dBm/MHz	35.5 dBm/MHz	34.4 dBm/MHz
Number of Ant Ports per Polarization	2	2	2	2	2	2	2
Total PSD per Polarization 10Log 2 = + 3dB	43.3 dBm/MHz	42.4 dBm/MHz	41.4 dBm/MHz	40.3 dBm/MHz	39.0 dBm/MHz	38.5 dBm/MHz	37.4 dBm/MHz
Cable Loss (site dependent) = 1.0dB	42.3 dBm/MHz	41.4 dBm/MHz	40.4 dBm/MHz	39.3 dBm/MHz	38.0 dBm/MHz	37.5 dBm/MHz	36.4 dBm/MHz
Dir Gain = Max Ant Gain (G_{Ant}) See Note 1	17.1 dBi	17.1 dBi	17.1 dBi	17.1 dBi	17.1 dBi	17.1 dBi	17.1 dBi
EIRP per Polarization	59.4 dBm/MHz	58.5 dBm/MHz	57.5 dBm/MHz	56.4 dBm/MHz	55.1 dBm/MHz	54.6 dBm/MHz	53.5 dBm/MHz
Number of Polarizations	2	2	2	2	2	2	2
EIRP Total = Y1 ±45°and Y2 ±45° See Note 2	59.4 dBm/MHz	58.5 dBm/MHz	57.5 dBm/MHz	56.4 dBm/MHz	55.1 dBm/MHz	54.6 dBm/MHz	53.5 dBm/MHz
Passing FCC & ISED EIRP Limit	62.15 & 65.16 dBm/MHz	62.15 & 65.16 dBm/MHz	62.15 & 65.16 dBm/MHz	62.15 & 65.16 dBm/MHz	62.15 & 65.16 dBm/MHz	62.15 & 65.16 dBm/MHz	62.15 & 65.16 dBm/MHz

Note 1: The directional gain is equal to antenna gain since the transmit signals are completely uncorrelated. See ANSI C63.26 sections 6.4.5.2.3b) and 6.4.5.3.1b) for guidance.
Note 2: The EIRP per antenna polarity is required to be below the regulatory limit as described in ANSI C63.26-2015 section 6.4.6.3 b)2) and KDB 662911 D02v01 page 3 example (2) since the two transmitter outputs to each antenna are 90 degree-phase shifted relative to each other (cross-polarized radiators).

EIRP Calculation Summary
The worst case AHFIHA Band n25 four port MIMO EIRP levels using antenna assembly model “FFV4Q4-65B-R7-V2” are less than the FCC and ISED (65.16 dBm/MHz and 62.15 dBm/MHz) EIRP Regulatory Limits.

POWER SPECTRAL DENSITY AND EIRP CALCULATIONS

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REQUIREMENTS FOR AWS BAND n66

FCC Requirements:

27.50(d) The following power and antenna height requirements apply to stations transmitting in the 1695-1710 MHz, 1710-1755 MHz, 1755-1780 MHz, 1915-1920 MHz, 1995-2000 MHz, 2000-2020 MHz, 2110-2155 MHz, 2155-2180 MHz and 2180-2200 MHz bands:
(1) The power of each fixed or base station transmitting in the 1995-2000 MHz, 2110-2155 MHz, 2155-2180 MHz or 2180-2200 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:
(ii) An EIRP of 3280 watts/MHz when transmitting with an emission bandwidth greater than 1 MHz.
(2) The power of each fixed or base station transmitting in the 1995-2000 MHz, the 2110-2155 MHz 2155-2180 MHz band, or 2180-2200 MHz band and situated in any geographic location other than that described in paragraph (d)(1) of this section is limited to:
(ii) An EIRP of 1640 watts/MHz when transmitting with an emission bandwidth greater than 1 MHz.

ISED Requirements RSS-139 Section 5.5/SRSP-513 Section 6.1.2/SRSP-519 Section 6.1.2:

SRSP-513 6.1.3 E.i.r.p. limits and antenna height limits for non-AAS systems

21. For fixed and base stations operating in the band 2110-2180 MHz with a channel bandwidth greater than 1 MHz, the maximum permissible e.i.r.p. is 62 dBm/MHz (i.e. no more than 62 dBm e.i.r.p. in any 1 MHz band segment), with an antenna HAAT of up to 300 m.
22. Fixed and base stations operating in the band 2110-2180 MHz and located in geographic areas at a distance greater than 26 km from large or medium population centres may increase their e.i.r.p. to a maximum of 65 dBm/MHz (i.e. no more than 65 dBm e.i.r.p. in any 1 MHz band segment), with an antenna HAAT of up to 300 m.

SRSP-519 6.1.3 Radiated power and antenna height limits for base stations using non-AAS systems

22. For base stations operating in the bands 2000-2020 MHz and 2180-2200 MHz with an antenna HAAT of up to 300 m, the e.i.r.p. shall not exceed 62 dBm/MHz when transmitting with an emission bandwidth greater than 1 MHz.
23. Base stations located in geographic areas at a distance greater than 26 km from large or medium population centres may increase their e.i.r.p. to a maximum of 65 dBm when transmitting with an emission bandwidth of 1 MHz or less, and 65 dBm/MHz when transmitting with an emission bandwidth greater than 1 MHz, with an antenna HAAT of up to 300 m.

EIRP Calculations for Four Port MIMO Operations for Band n66 Single NR Carriers

EIRP calculations are needed at each transmitter location to optimize base station operational performance while meeting regulatory requirements. Each cell site installation needs to consider the power measurements in the radio certification report as well as site specific regulatory requirements (such as antenna height, population density, etc.), site installation parameters (line loss between antenna and radio, antenna parameters, etc.) and base station operational parameters (MIMO operational setup, carrier power level, channel bandwidth, modulation type, etc.) to optimize performance. Transmitter output power may be reduced (from maximum) by base station setup parameters. Base station antennas are selected by the customer.

The base station antenna is selected by the customer and this EIRP calculation is based upon a sample worst case antenna. The EIRP calculation is based upon Commscope antenna assembly model “FFV4Q4-65B-R7-V2”. The maximum Band n66 gain (17.1dBi) for this antenna was used for the EIRP calculation. This antenna assembly has a pair of ±45° cross-polarized radiators used for Band n66. Four AHFIHA transmitter outputs are connected to the antenna assembly RF inputs.

Equivalent Isotropically Radiated Power (EIRP) is calculated for four port MIMO (as specified in ANSI C63.26-2015 section 6.4 for uncorrelated output signals) from the results of power measurements (highest measured PSD for each channel bandwidth type). The maximum antenna gain was used for this calculation. The cable loss between the antenna and transmitter is site dependent and a typical loss of 1.0dB for this frequency range was used. EIRP was calculated as described in SRSP 513 clause 6.1.2 and SRSP 519 clause 6.1.2 “EIRP for non-AAS uncorrelated transmission”. Calculations of worst-case EIRP for four port MIMO are as follows:

POWER SPECTRAL DENSITY AND EIRP CALCULATIONS

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Parameter	5 MHz Ch BW	10 MHz Ch BW	15 MHz Ch BW	20 MHz Ch BW	25 MHz Ch BW	30 MHz Ch BW	40 MHz Ch BW
Worst Case PSD/Antenna Port	39.9 dBm/MHz	39.1 dBm/MHz	38.1 dBm/MHz	37.0 dBm/MHz	35.7 dBm/MHz	35.3 dBm/MHz	34.1 dBm/MHz
Number of Ant Ports per Polarization	2	2	2	2	2	2	2
Total PSD per Polarization 10Log 2 = + 3dB	42.9 dBm/MHz	42.1 dBm/MHz	41.1 dBm/MHz	40.0 dBm/MHz	38.7 dBm/MHz	38.3 dBm/MHz	37.1 dBm/MHz
Cable Loss (site dependent) = 1.0dB	41.9 dBm/MHz	41.1 dBm/MHz	40.1 dBm/MHz	39.0 dBm/MHz	37.7 dBm/MHz	37.3 dBm/MHz	36.1 dBm/MHz
Dir Gain = Max Ant Gain (G_{Ant}) See Note 1	17.1 dBi	17.1 dBi	17.1 dBi	17.1 dBi	17.1 dBi	17.1 dBi	17.1 dBi
EIRP per Polarization	59.0 dBm/MHz	58.2 dBm/MHz	57.2 dBm/MHz	56.1 dBm/MHz	54.8 dBm/MHz	54.4 dBm/MHz	53.2 dBm/MHz
Number of Polarizations	2	2	2	2	2	2	2
EIRP Total = Y1 ±45°and Y2 ±45° See Note 2	59.0 dBm/MHz	58.2 dBm/MHz	57.2 dBm/MHz	56.1 dBm/MHz	54.8 dBm/MHz	54.4 dBm/MHz	53.2 dBm/MHz
Passing FCC EIRP Limit	62.15 & 65.16 dBm/MHz	62.15 & 65.16 dBm/MHz	62.15 & 65.16 dBm/MHz	62.15 & 65.16 dBm/MHz	62.15 & 65.16 dBm/MHz	62.15 & 65.16 dBm/MHz	62.15 & 65.16 dBm/MHz
Passing ISED EIRP Limit	62.0 & 65.0 dBm/MHz	62.0 & 65.0 dBm/MHz	62.0 & 65.0 dBm/MHz	62.0 & 65.0 dBm/MHz	62.0 & 65.0 dBm/MHz	62.0 & 65.0 dBm/MHz	62.0 & 65.0 dBm/MHz

Note 1: The directional gain is equal to antenna gain since the transmit signals are completely uncorrelated. See ANSI C63.26 sections 6.4.5.2.3b) and 6.4.5.3.1b) for guidance.
Note 2: The EIRP per antenna polarity is required to be below the regulatory limit as described in ANSI C63.26-2015 section 6.4.6.3 b)2) and KDB 662911 D02v01 page 3 example (2) since the two transmitter outputs to each antenna are 90 degree-phase shifted relative to each other (cross-polarized radiators).

EIRP Calculation Summary
The worst case AHFIHA Band n66 four port MIMO EIRP levels using antenna assembly model “FFV4Q4-65B-R7-V2” are less than the FCC (65.16 dBm/MHz and 62.15 dBm/MHz) and ISED (65 dBm/MHz and 62 dBm/MHz) EIRP Regulatory Limits.

POWER SPECTRAL DENSITY AND EIRP CALCULATIONS

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REQUIREMENTS FOR BRS BAND n7

FCC Requirements:

The FCC EIRP limit is defined by 27.50(h)(ii) as 33dBW+ 10Log(X/Y) dBW + 10 log(360/beamwidth) dBW where X is the channel width in MHz and Y is 5.5 or 6MHz.

ISED Requirements RSS-199 Section 5.5/SRSP-517 Section 6.1:

SRSP-517 6.1 Fixed and base stations using non-active antenna systems

19. This section describes how equivalent isotropically radiated power (e.i.r.p.) is calculated for fixed and base stations using non-active antenna systems (non-AAS).

SRSP-517 6.1.2 E.i.r.p. for non-AAS uncorrelated transmission

21. In non-AAS uncorrelated transmission, multiple non-AAS antennas can be used at a station to each transmit different digital data in a given symbol period (i.e.: space-time codes) or independent parallel data stream over the same frequency bandwidth in order to increase data rates (i.e., spatial multiplexing), or to form any other transmission mode where signals from different antennas are completely uncorrelated. For these uses, the e.i.r.p. shall be calculated based on the aggregate power conducted across all antennas and the maximum antenna gain (G_{max}).

SRSP-517 6.1.3 E.i.r.p. limits and antenna height limits for non-AAS systems

23. For fixed and base stations operating in the band 2500-2690 MHz with a channel bandwidth greater than 1 MHz, the maximum permissible e.i.r.p. is 1640 W/MHz (i.e. no more than 1640 W e.i.r.p. in any 1 MHz band segment), with an antenna HAAT of up to 300 m.

24. Fixed and base stations with an antenna HAAT exceeding 300 m shall apply a reduction in e.i.r.p. according to table 1.

ISED EIRP Calculations for Four Port MIMO Operations for Band n7 Single 5G NR Carriers

EIRP calculations are needed at each transmitter location to optimize base station operational performance while meeting regulatory requirements. Each cell site installation needs to consider the power measurements in the radio certification report as well as site specific regulatory requirements (such as antenna height, population density, etc.), site installation parameters (line loss between antenna and radio, antenna parameters, etc.) and base station operational parameters (MIMO operational setup, carrier power level, channel bandwidth, modulation type, etc.) to optimize performance. Transmitter output power may be reduced (from maximum) by base station setup parameters. Base station antennas are selected by the customer.

The base station antenna is selected by the customer and this EIRP calculation is based upon a sample worst case antenna. The EIRP calculation is based upon Commscope antenna assembly model “FFV4Q4-65B-R7-V2”. The maximum Band n7 gain (17.3dBi) for this antenna was used for the EIRP calculation. This antenna assembly has a pair of ±45° cross-polarized radiators used for Band n7. Four AHFIHA transmitter outputs are connected to the antenna assembly RF inputs.

Equivalent Isotropically Radiated Power (EIRP) is calculated for four port MIMO (as specified in ANSI C63.26-2015 section 6.4 for uncorrelated output signals) from the results of power measurements (highest measured PSD for each channel bandwidth type). The maximum antenna gain was used for this calculation. The cable loss between the antenna and transmitter is site dependent and a typical loss of 1.0dB for this frequency range was used. EIRP was calculated as described in SRSP 517 clause 6.1.2. Calculations of worst-case EIRP for four port MIMO are as follows:

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Parameter	5 MHz Ch BW	10 MHz Ch BW	15 MHz Ch BW	20 MHz Ch BW	25 MHz Ch BW	30 MHz Ch BW	40 MHz Ch BW
Worst Case PSD/Antenna Port	39.8 dBm/MHz	38.9 dBm/MHz	38.0 dBm/MHz	36.9 dBm/MHz	35.6 dBm/MHz	35.1 dBm/MHz	34.0 dBm/MHz
Number of Ant Ports per Polarization	2	2	2	2	2	2	2
Total PSD per Polarization 10Log 2 = + 3dB	42.8 dBm/MHz	41.9 dBm/MHz	41.0 dBm/MHz	39.9 dBm/MHz	38.6 dBm/MHz	38.1 dBm/MHz	37.0 dBm/MHz
Cable Loss (site dependent) = 1.0dB	41.8 dBm/MHz	40.9 dBm/MHz	40.0 dBm/MHz	38.9 dBm/MHz	37.6 dBm/MHz	37.1 dBm/MHz	36.0 dBm/MHz
Dir Gain = Max Ant Gain (G_{Ant}) See Note 1	17.3 dBi	17.3 dBi	17.3 dBi	17.3 dBi	17.3 dBi	17.3 dBi	17.3 dBi
EIRP per Polarization	59.1 dBm/MHz	58.2 dBm/MHz	57.3 dBm/MHz	56.2 dBm/MHz	54.9 dBm/MHz	54.4 dBm/MHz	53.3 dBm/MHz
Number of Polarizations	2	2	2	2	2	2	2
EIRP Total = Y1 ±45°and Y2 ±45° See Note 2	59.1 dBm/MHz	58.2 dBm/MHz	57.3 dBm/MHz	56.2 dBm/MHz	54.9 dBm/MHz	54.4 dBm/MHz	53.3 dBm/MHz
Passing ISED EIRP Limit	62.15 dBm/MHz	62.15 dBm/MHz	62.15 dBm/MHz	62.15 dBm/MHz	62.15 dBm/MHz	62.15 dBm/MHz	62.15 dBm/MHz

Note 1: The directional gain is equal to antenna gain since the transmit signals are completely uncorrelated. See ANSI C63.26 sections 6.4.5.2.3b) and 6.4.5.3.1b) for guidance.
Note 2: The EIRP per antenna polarity is required to be below the regulatory limit as described in ANSI C63.26-2015 section 6.4.6.3 b)2) and KDB 662911 D02v01 page 3 example (2) since the two transmitter outputs to each antenna are 90 degree-phase shifted relative to each other (cross-polarized radiators).

EIRP Calculation Summary
The worst case AHFIHA Band n7 four port MIMO EIRP levels using antenna assembly model “FFV4Q4-65B-R7-V2” are less than the ISED (62.15 dBm/MHz) EIRP Regulatory Limits.

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FCC EIRP Calculations for Four Port MIMO Operations for Band n7 Single NR Carriers
EIRP calculations are needed at each transmitter location to optimize base station operational performance while meeting regulatory requirements. Each cell site installation needs to consider the power measurements in the radio certification report as well as site specific regulatory requirements (such as antenna height, population density, etc.), site installation parameters (line loss between antenna and radio, antenna parameters, etc.) and base station operational parameters (MIMO operational setup, carrier power level, channel bandwidth, modulation type, etc.) to optimize performance. Transmitter output power may be reduced (from maximum) by base station setup parameters. Base station antennas are selected by the customer.

The base station antenna is selected by the customer and this EIRP calculation is based upon a sample worst case antenna. The EIRP calculation is based upon CommScope antenna assembly model "FFV4Q4-65B-R7-V2". The maximum Band n7 gain (17.3dBi) for this antenna was used for the EIRP calculation. This antenna assembly has a pair of ±45° cross-polarized radiators used for Band n7. Four AHFIHA transmitter outputs are connected to the antenna assembly RF inputs.

Equivalent Isotropically Radiated Power (EIRP) is calculated for four port MIMO (as specified in ANSI C63.26-2015 section 6.4 for uncorrelated output signals) from the results of power measurements (highest measured power for each channel bandwidth type). The maximum antenna gain was used for this calculation. The cable loss between the antenna and transmitter is site dependent and a typical loss of 1.0dB for this frequency range was used. Calculations of worst-case EIRP for four port MIMO are as follows:

Parameter	5 MHz Ch BW	10 MHz Ch BW	15 MHz Ch BW	20 MHz Ch BW	25 MHz Ch BW	30 MHz Ch BW	40 MHz Ch BW
Worst Case Power Output per Antenna Port	46.1 dBm	47.7 dBm	47.7 dBm	47.8 dBm	47.9 dBm	48.1 dBm	47.8 dBm
Number of Ant Ports per Polarization	2	2	2	2	2	2	2
Total Power per Polarization 10Log 2 = + 3dB	49.1 dBm	50.7 dBm	50.7 dBm	50.8 dBm	50.9 dBm	51.1 dBm	50.8 dBm
Cable Loss (site dependent) = 1.0dB	48.1 dBm	49.7 dBm	49.7 dBm	49.8 dBm	49.9 dBm	50.1 dBm	49.8 dBm
Dir Gain = Max Ant Gain (G_{Ant}) See Note 1	17.3 dBi	17.3 dBi	17.3 dBi	17.3 dBi	17.3 dBi	17.3 dBi	17.3 dBi
EIRP per Polarization	65.4 dBm	67.0 dBm	67.0 dBm	67.1 dBm	67.2 dBm	67.4 dBm	67.1 dBm
Number of Polarizations	2	2	2	2	2	2	2
EIRP Total = Y1 ±45°and Y2 ±45° See Note 2	65.4 dBm	67.0 dBm	67.0 dBm	67.1 dBm	67.2 dBm	67.4 dBm	67.1 dBm
Passing FCC EIRP Limit See Note 3	70.2 dBm	73.2 dBm	75.0 dBm	76.2 dBm	77.2 dBm	78.0 dBm	79.2 dBm

Note 1: The directional gain is equal to antenna gain since the transmit signals are completely uncorrelated. See ANSI C63.26 sections 6.4.5.2.3b) and 6.4.5.3.1b) for guidance.
Note 2: The EIRP per antenna polarity is required to be below the regulatory limit as described in ANSI C63.26-2015 section 6.4.6.3 b)2) and KDB 662911 D02v01 page 3 example (2) since the two transmitter outputs to each antenna are 90 degree-phase shifted relative to each other (cross-polarized radiators).
Note 3: The EIRP limit is defined by FCC part 27.50(h)(ii) as 33dBW+ 10Log(X/Y) dBW + 10 log(360/beamwidth) dBW where X is the channel width in MHz and Y is 5.5 or 6MHz. The CommScope model FFV4Q4-65B-R7-V2 antenna has a horizontal beamwidth of 57 degrees for the 2490 to 2690MHz frequency range. Y was selected to be 6MHz.

EIRP Calculation Summary
The worst case AHFIHA Band n7 four port MIMO EIRP levels using antenna assembly model "FFV4Q4-65B-R7-V2" are less than the FCC EIRP Regulatory Limits.

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EUT:	AirScale Base Transceiver Station Remote Radio Head Model AHFIHA	Work Order:	NOKI0072
Serial Number:	RW233403213	Date:	2023-12-04
Customer:	Nokia Solutions and Networks	Temperature:	22.9°C
Attendees:	John Rattanavong, Mitch Hill	Relative Humidity:	34%
Customer Project:	None	Bar. Pressure (PMSL):	1023 mbar
Tested By:	Jarrod Brenden	Job Site:	TX07
Power:	54VDC	Configuration:	NOKI0072-2

TEST SPECIFICATIONS

Specification:	Method:
FCC 24E:2024	ANSI C63.26:2015
FCC 27:2024	ANSI C63.26:2015
RSS-133 Issue 6:2013 +A1:2018	ANSI C63.26:2015
RSS-199 Issue 4:2023	ANSI C63.26:2015
RSS139 Issue 4:2022	ANSI C63.26:2015

COMMENTS

Losses in the measurement path were accounted for: DC Block, attenuators, cables, and filters where used. PCS Band n25, AWS Band n66, and BRS Band n7 carriers are enabled individually at maximum power (40 watts/carrier for 5MHz carrier and 60W/carrier for 10MHz to 40MHz carriers).

DEVIATIONS FROM TEST STANDARD

None

CONCLUSION

Pass

Tested By

TEST RESULTS

	Initial Value dBm/MHz	Duty Cycle Factor	Single Port dBm/MHz == PSD	Two Port (2x2 MIMO) dBm/MHz == PSD	Four Port (4x4 MIMO) dBm/MHz == PSD
Port 1					
PCS Band n25, 1930 MHz - 1995 MHz					
5 MHz Bandwidth					
QPSK Modulation					
Low Ch, 1932.5 MHz	40.303	0	40.3	43.3	46.3
Mid Ch, 1962.5 MHz	40.09	0	40.1	43.1	46.1
High Ch, 1992.5 MHz	40.213	0	40.2	43.2	46.2
16QAM Modulation					
Low Ch, 1932.5 MHz	40.25	0	40.3	43.3	46.3
Mid Ch, 1962.5 MHz	40.074	0	40.1	43.1	46.1
High Ch, 1992.5 MHz	40.208	0	40.2	43.2	46.2
64QAM Modulation					
Low Ch, 1932.5 MHz	40.29	0	40.3	43.3	46.3
Mid Ch, 1962.5 MHz	40.121	0	40.1	43.1	46.1
High Ch, 1992.5 MHz	40.262	0	40.3	43.3	46.3

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	Initial Value dBm/MHz	Duty Cycle Factor	Single Port dBm/MHz == PSD	Two Port (2x2 MIMO) dBm/MHz == PSD	Four Port (4x4 MIMO) dBm/MHz == PSD
256QAM Modulation					
Low Ch, 1932.5 MHz	40.239	0	40.2	43.2	46.2
Mid Ch, 1962.5 MHz	40.198	0	40.2	43.2	46.2
High Ch, 1992.5 MHz	40.167	0	40.2	43.2	46.2
10 MHz Bandwidth					
QPSK Modulation					
Mid Ch, 1962.5 MHz	38.637	0	38.6	41.6	44.6
16QAM Modulation					
Mid Ch, 1962.5 MHz	39.356	0	39.4	42.4	45.4
64QAM Modulation					
Mid Ch, 1962.5 MHz	38.684	0	38.7	41.7	44.7
256QAM Modulation					
Mid Ch, 1962.5 MHz	38.672	0	38.7	41.7	44.7
15 MHz Bandwidth					
QPSK Modulation					
Mid Ch, 1962.5 MHz	36.888	0	36.9	39.9	42.9
16QAM Modulation					
Mid Ch, 1962.5 MHz	38.41	0	38.4	41.4	44.4
64QAM Modulation					
Mid Ch, 1962.5 MHz	36.903	0	36.9	39.9	42.9
256QAM Modulation					
Mid Ch, 1962.5 MHz	36.832	0	36.8	39.8	42.8
20 MHz Bandwidth					
QPSK Modulation					
Mid Ch, 1962.5 MHz	35.634	0	35.6	38.6	41.6
16QAM Modulation					
Mid Ch, 1962.5 MHz	37.254	0	37.3	40.3	43.3
64QAM Modulation					
Mid Ch, 1962.5 MHz	35.6	0	35.6	38.6	41.6
256QAM Modulation					
Mid Ch, 1962.5 MHz	35.61	0	35.6	38.6	41.6
25 MHz Bandwidth					
QPSK Modulation					
Mid Ch, 1962.5 MHz	34.675	0	34.7	37.7	40.7
16QAM Modulation					
Mid Ch, 1962.5 MHz	35.986	0	36.0	39.0	42.0
64QAM Modulation					
Mid Ch, 1962.5 MHz	34.717	0	34.7	37.7	40.7
256QAM Modulation					
Mid Ch, 1962.5 MHz	34.602	0	34.6	37.6	40.6
30 MHz Bandwidth					
QPSK Modulation					
Mid Ch, 1962.5 MHz	33.882	0	33.9	36.9	39.9
16QAM Modulation					
Mid Ch, 1962.5 MHz	35.5	0	35.5	38.5	41.5
64QAM Modulation					
Mid Ch, 1962.5 MHz	33.847	0	33.8	36.8	39.8
256QAM Modulation					
Mid Ch, 1962.5 MHz	33.908	0	33.9	36.9	39.9
40 MHz Bandwidth					
QPSK Modulation					

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	Initial Value dBm/MHz	Duty Cycle Factor	Single Port dBm/MHz == PSD	Two Port (2x2 MIMO) dBm/MHz == PSD	Four Port (4x4 MIMO) dBm/MHz == PSD
Mid Ch, 1962.5 MHz	32.544	0	32.5	35.5	38.5
16QAM Modulation					
Mid Ch, 1962.5 MHz	34.391	0	34.4	37.4	40.4
64QAM Modulation					
Mid Ch, 1962.5 MHz	32.64	0	32.6	35.6	38.6
256QAM Modulation					
Mid Ch, 1962.5 MHz	32.528	0	32.5	35.5	38.5
AWS Band n66, 2110 MHz - 2200 MHz					
5 MHz Bandwidth					
QPSK Modulation					
Low Ch, 2112.5 MHz	39.944	0	39.9	42.9	45.9
Mid Ch, 2155.0 MHz	39.836	0	39.8	42.8	45.8
High Ch, 2197.5 MHz	39.732	0	39.7	42.7	45.7
16QAM Modulation					
Low Ch, 2112.5 MHz	39.877	0	39.9	42.9	45.9
Mid Ch, 2155.0 MHz	39.792	0	39.8	42.8	45.8
High Ch, 2197.5 MHz	39.695	0	39.7	42.7	45.7
64QAM Modulation					
Low Ch, 2112.5 MHz	39.921	0	39.9	42.9	45.9
Mid Ch, 2155.0 MHz	39.826	0	39.8	42.8	45.8
High Ch, 2197.5 MHz	39.737	0	39.7	42.7	45.7
256QAM Modulation					
Low Ch, 2112.5 MHz	39.94	0	39.9	42.9	45.9
Mid Ch, 2155.0 MHz	39.806	0	39.8	42.8	45.8
High Ch, 2197.5 MHz	39.733	0	39.7	42.7	45.7
10 MHz Bandwidth					
QPSK Modulation					
Mid Ch, 2155.0 MHz	38.397	0	38.4	41.4	44.4
16QAM Modulation					
Mid Ch, 2155.0 MHz	39.082	0	39.1	42.1	45.1
64QAM Modulation					
Mid Ch, 2155.0 MHz	38.433	0	38.4	41.4	44.4
256QAM Modulation					
Mid Ch, 2155.0 MHz	38.404	0	38.4	41.4	44.4
15 MHz Bandwidth					
QPSK Modulation					
Mid Ch, 2155.0 MHz	36.603	0	36.6	39.6	42.6
16QAM Modulation					
Mid Ch, 2155.0 MHz	38.129	0	38.1	41.1	44.1
64QAM Modulation					
Mid Ch, 2155.0 MHz	36.597	0	36.6	39.6	42.6
256QAM Modulation					
Mid Ch, 2155.0 MHz	36.603	0	36.6	39.6	42.6
20 MHz Bandwidth					
QPSK Modulation					
Mid Ch, 2155.0 MHz	35.412	0	35.4	38.4	41.4
16QAM Modulation					
Mid Ch, 2155.0 MHz	36.989	0	37.0	40.0	43.0
64QAM Modulation					
Mid Ch, 2155.0 MHz	35.404	0	35.4	38.4	41.4
256QAM Modulation					

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	Initial Value dBm/MHz	Duty Cycle Factor	Single Port dBm/MHz == PSD	Two Port (2x2 MIMO) dBm/MHz == PSD	Four Port (4x4 MIMO) dBm/MHz == PSD
Mid Ch, 2155.0 MHz	35.434	0	35.4	38.4	41.4
25 MHz Bandwidth					
QPSK Modulation					
Mid Ch, 2155.0 MHz	34.411	0	34.4	37.4	40.4
16QAM Modulation					
Mid Ch, 2155.0 MHz	35.714	0	35.7	38.7	41.7
64QAM Modulation					
Mid Ch, 2155.0 MHz	34.411	0	34.4	37.4	40.4
256QAM Modulation					
Mid Ch, 2155.0 MHz	34.379	0	34.4	37.4	40.4
30 MHz Bandwidth					
QPSK Modulation					
Mid Ch, 2155.0 MHz	33.487	0	33.5	36.5	39.5
16QAM Modulation					
Mid Ch, 2155.0 MHz	35.272	0	35.3	38.3	41.3
64QAM Modulation					
Mid Ch, 2155.0 MHz	33.635	0	33.6	36.6	39.6
256QAM Modulation					
Mid Ch, 2155.0 MHz	33.699	0	33.7	36.7	39.7
40 MHz Bandwidth					
QPSK Modulation					
Mid Ch, 2155.0 MHz	32.309	0	32.3	35.3	38.3
16QAM Modulation					
Mid Ch, 2155.0 MHz	34.073	0	34.1	37.1	40.1
64QAM Modulation					
Mid Ch, 2155.0 MHz	32.332	0	32.3	35.3	38.3
256QAM Modulation					
Mid Ch, 2155.0 MHz	32.326	0	32.3	35.3	38.3
BRS Band n7, 2620 MHz - 2690 MHz					
5 MHz Bandwidth					
QPSK Modulation					
Low Ch, 2622.5 MHz	39.74	0	39.7	42.7	45.7
Mid Ch, 2655.0 MHz	39.728	0	39.7	42.7	45.7
High Ch, 2687.5 MHz	39.682	0	39.7	42.7	45.7
16QAM Modulation					
Low Ch, 2622.5 MHz	39.705	0	39.7	42.7	45.7
Mid Ch, 2655.0 MHz	39.706	0	39.7	42.7	45.7
High Ch, 2687.5 MHz	39.659	0	39.7	42.7	45.7
64QAM Modulation					
Low Ch, 2625.0 MHz	39.758	0	39.8	42.8	45.8
Mid Ch, 2655.0 MHz	39.727	0	39.7	42.7	45.7
High Ch, 2687.5 MHz	39.669	0	39.7	42.7	45.7
256QAM Modulation					
Low Ch, 2622.5 MHz	39.814	0	39.8	42.8	45.8
Mid Ch, 2655.0 MHz	39.762	0	39.8	42.8	45.8
High Ch, 2687.5 MHz	39.681	0	39.7	42.7	45.7
10 MHz Bandwidth					
QPSK Modulation					
Mid Ch, 2655.0 MHz	38.25	0	38.3	41.3	44.3
16QAM Modulation					
Mid Ch, 2655.0 MHz	38.938	0	38.9	41.9	44.9

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	Initial Value dBm/MHz	Duty Cycle Factor	Single Port dBm/MHz == PSD	Two Port (2x2 MIMO) dBm/MHz == PSD	Four Port (4x4 MIMO) dBm/MHz == PSD
64QAM Modulation					
Mid Ch, 2655.0 MHz	38.28	0	38.3	41.3	44.3
256QAM Modulation					
Mid Ch, 2655.0 MHz	38.283	0	38.3	41.3	44.3
15 MHz Bandwidth					
QPSK Modulation					
Mid Ch, 2655.0 MHz	36.473	0	36.5	39.5	42.5
16QAM Modulation					
Mid Ch, 2655.0 MHz	37.984	0	38.0	41.0	44.0
64QAM Modulation					
Mid Ch, 2655.0 MHz	36.489	0	36.5	39.5	42.5
256QAM Modulation					
Mid Ch, 2655.0 MHz	36.483	0	36.5	39.5	42.5
20 MHz Bandwidth					
QPSK Modulation					
Mid Ch, 2655.0 MHz	35.265	0	35.3	38.3	41.3
16QAM Modulation					
Mid Ch, 2655.0 MHz	36.887	0	36.9	39.9	42.9
64QAM Modulation					
Mid Ch, 2655.0 MHz	35.289	0	35.3	38.3	41.3
256QAM Modulation					
Mid Ch, 2655.0 MHz	35.306	0	35.3	38.3	41.3
25 MHz Bandwidth					
QPSK Modulation					
Mid Ch, 2655.0 MHz	34.268	0	34.3	37.3	40.3
16QAM Modulation					
Mid Ch, 2655.0 MHz	35.574	0	35.6	38.6	41.6
64QAM Modulation					
Mid Ch, 2655.0 MHz	34.275	0	34.3	37.3	40.3
256QAM Modulation					
Mid Ch, 2655.0 MHz	34.223	0	34.2	37.2	40.2
30 MHz Bandwidth					
QPSK Modulation					
Mid Ch, 2655.0 MHz	33.373	0	33.4	36.4	39.4
16QAM Modulation					
Mid Ch, 2655.0 MHz	35.149	0	35.1	38.1	41.1
64QAM Modulation					
Mid Ch, 2655.0 MHz	33.475	0	33.5	36.5	39.5
256QAM Modulation					
Mid Ch, 2655.0 MHz	33.52	0	33.5	36.5	39.5
40 MHz Bandwidth					
QPSK Modulation					
Mid Ch, 2655.0 MHz	32.199	0	32.2	35.2	38.2
16QAM Modulation					
Mid Ch, 2655.0 MHz	33.989	0	34.0	37.0	40.0
64QAM Modulation					
Mid Ch, 2655.0 MHz	32.255	0	32.3	35.3	38.3
256QAM Modulation					
Mid Ch, 2655.0 MHz	32.261	0	32.3	35.3	38.3

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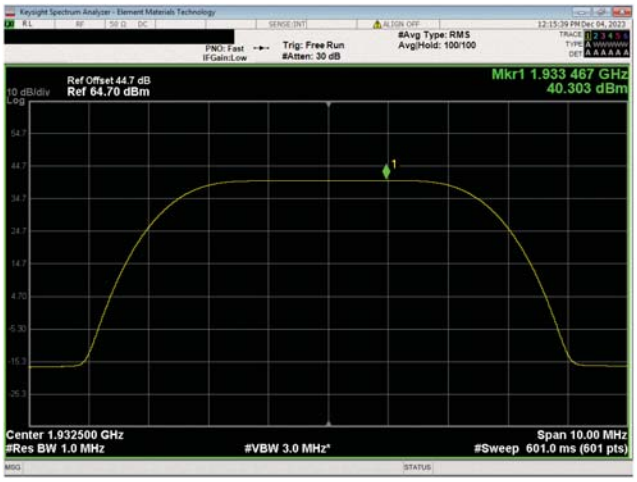
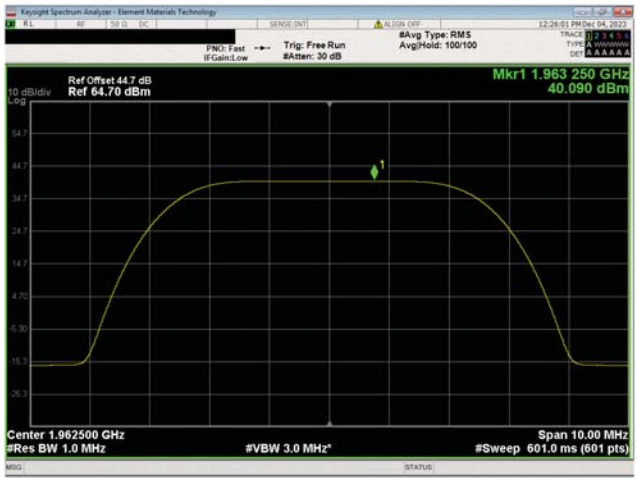
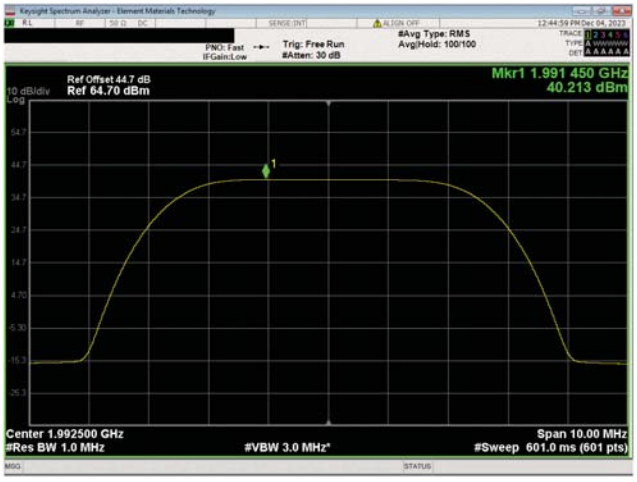


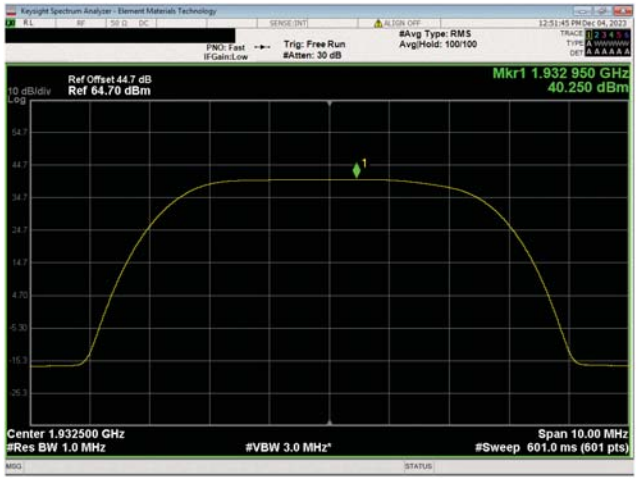
PCS Band n25, 1930 MHz - 1995 MHz
5 MHz Bandwidth
QPSK Modulation
Low Ch, 1932.5 MHz



PCS Band n25, 1930 MHz - 1995 MHz
5 MHz Bandwidth
QPSK Modulation
Mid Ch, 1962.5 MHz



PCS Band n25, 1930 MHz - 1995 MHz
5 MHz Bandwidth
QPSK Modulation
High Ch, 1992.5 MHz



PCS Band n25, 1930 MHz - 1995 MHz
5 MHz Bandwidth
16QAM Modulation
Low Ch, 1932.5 MHz

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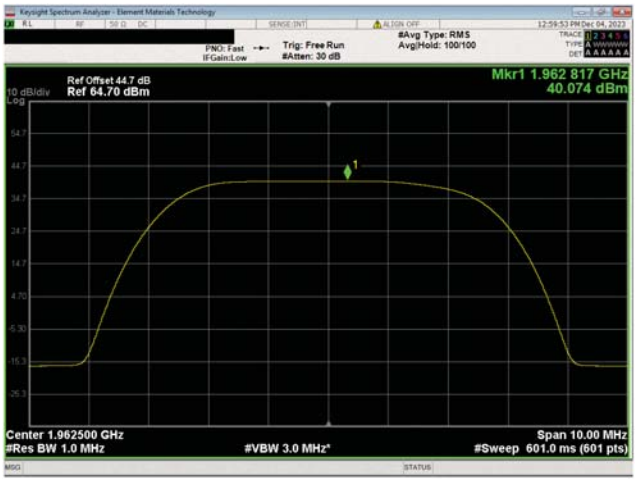
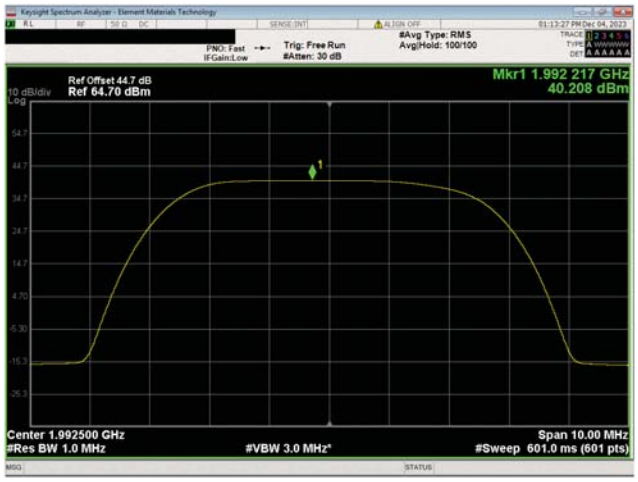
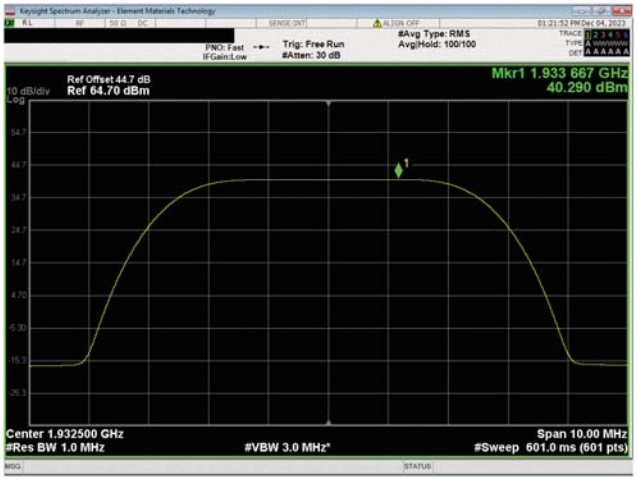


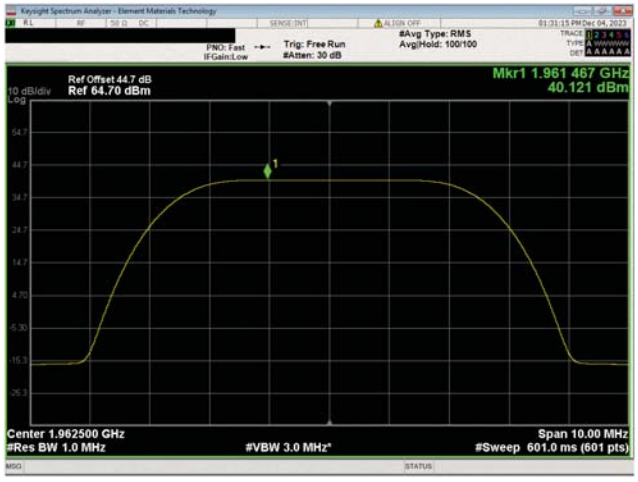
PCS Band n25, 1930 MHz - 1995 MHz
5 MHz Bandwidth
16QAM Modulation
Mid Ch, 1962.5 MHz



PCS Band n25, 1930 MHz - 1995 MHz
5 MHz Bandwidth
16QAM Modulation
High Ch, 1992.5 MHz



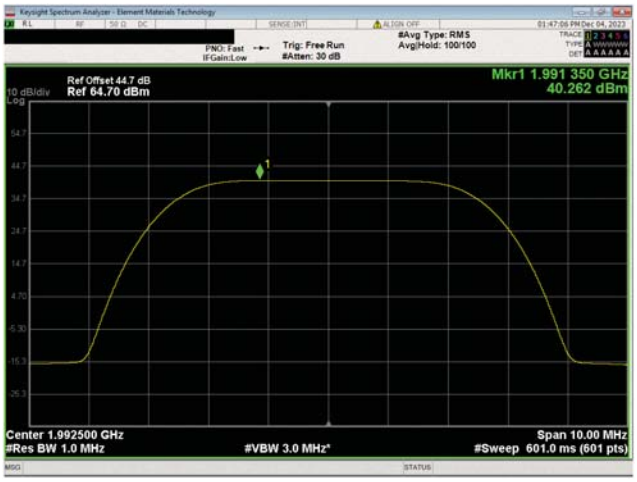
PCS Band n25, 1930 MHz - 1995 MHz
5 MHz Bandwidth
64QAM Modulation
Low Ch, 1932.5 MHz



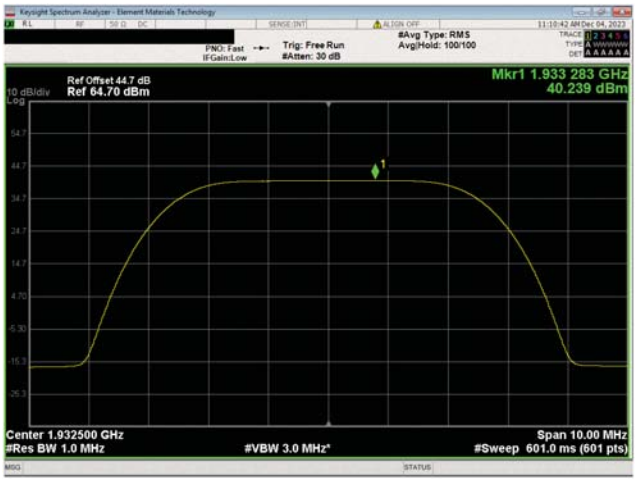
PCS Band n25, 1930 MHz - 1995 MHz
5 MHz Bandwidth
64QAM Modulation
Mid Ch, 1962.5 MHz

POWER SPECTRAL DENSITY AND EIRP CALCULATIONS

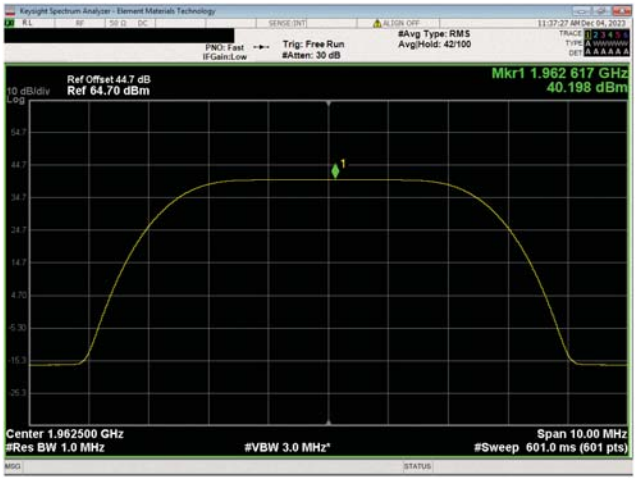
element
TbtTx 2023.08.15.2
WTD.2023.11.13.0



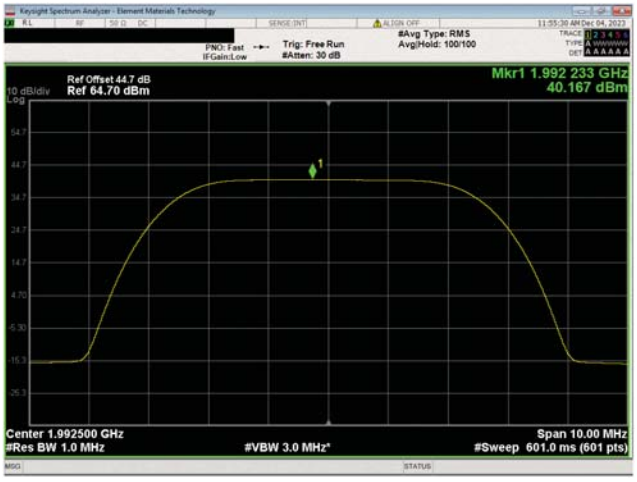
PCS Band n25, 1930 MHz - 1995 MHz
5 MHz Bandwidth
64QAM Modulation
High Ch, 1992.5 MHz



PCS Band n25, 1930 MHz - 1995 MHz
5 MHz Bandwidth
256QAM Modulation
Low Ch, 1932.5 MHz



PCS Band n25, 1930 MHz - 1995 MHz
5 MHz Bandwidth
256QAM Modulation
Mid Ch, 1962.5 MHz



PCS Band n25, 1930 MHz - 1995 MHz
5 MHz Bandwidth
256QAM Modulation
High Ch, 1992.5 MHz

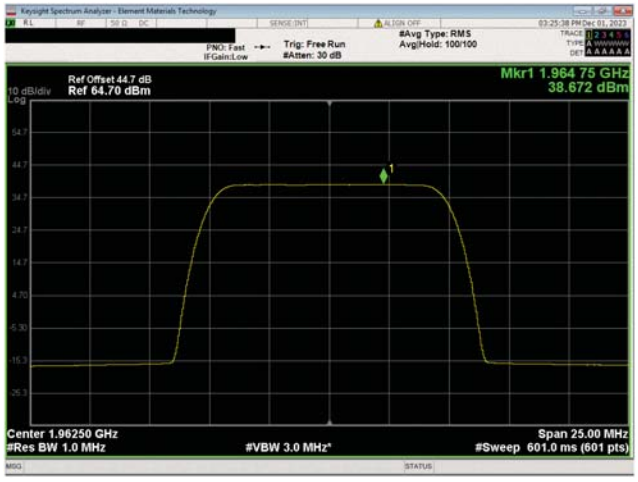
POWER SPECTRAL DENSITY AND EIRP CALCULATIONS

element
TbtTx 2023.08.15.2
WTD.2023.11.13.0

PCS Band n25, 1930 MHz - 1995 MHz
10 MHz Bandwidth
QPSK Modulation
Mid Ch, 1962.5 MHz

PCS Band n25, 1930 MHz - 1995 MHz
10 MHz Bandwidth
16QAM Modulation
Mid Ch, 1962.5 MHz

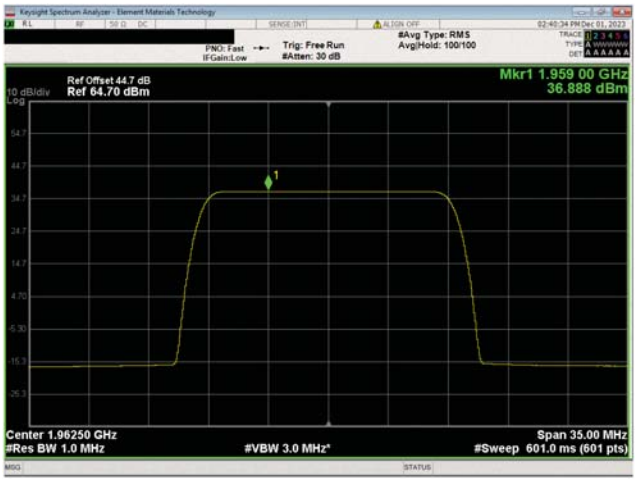
PCS Band n25, 1930 MHz - 1995 MHz
10 MHz Bandwidth
64QAM Modulation
Mid Ch, 1962.5 MHz



PCS Band n25, 1930 MHz - 1995 MHz
10 MHz Bandwidth
256QAM Modulation
Mid Ch, 1962.5 MHz

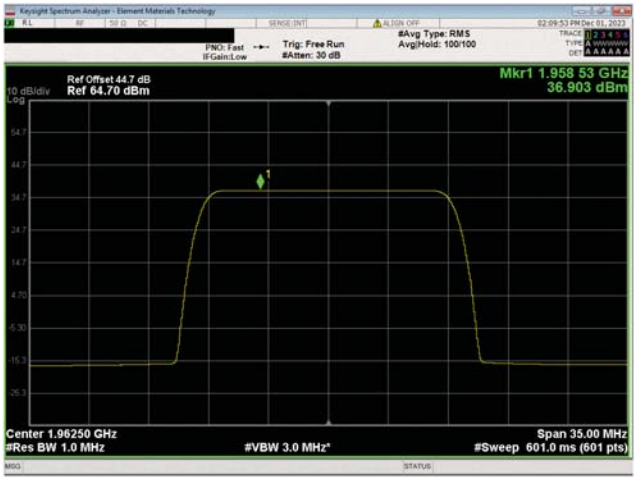
POWER SPECTRAL DENSITY AND EIRP CALCULATIONS

element
TbtTx 2023.08.15.2
WTD.2023.11.13.0

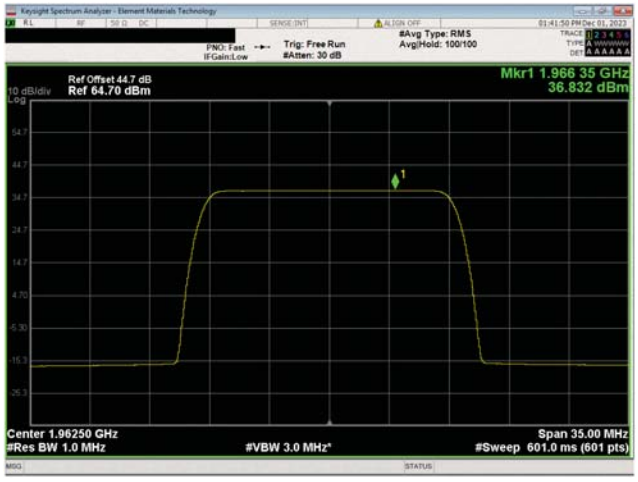


PCS Band n25, 1930 MHz - 1995 MHz
15 MHz Bandwidth
QPSK Modulation
Mid Ch, 1962.5 MHz

PCS Band n25, 1930 MHz - 1995 MHz
15 MHz Bandwidth
16QAM Modulation
Mid Ch, 1962.5 MHz



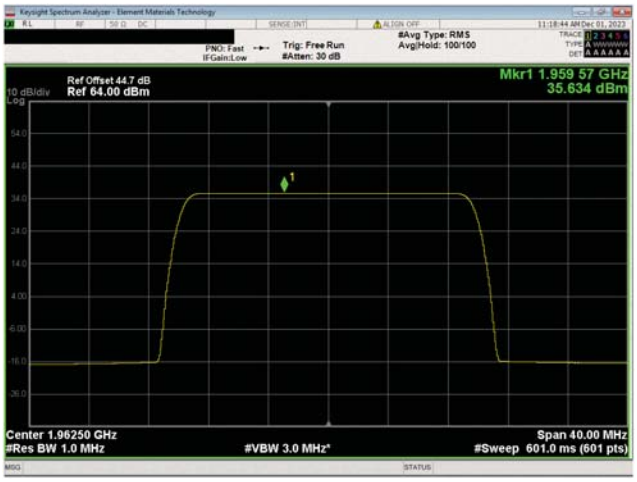
PCS Band n25, 1930 MHz - 1995 MHz
15 MHz Bandwidth
64QAM Modulation
Mid Ch, 1962.5 MHz



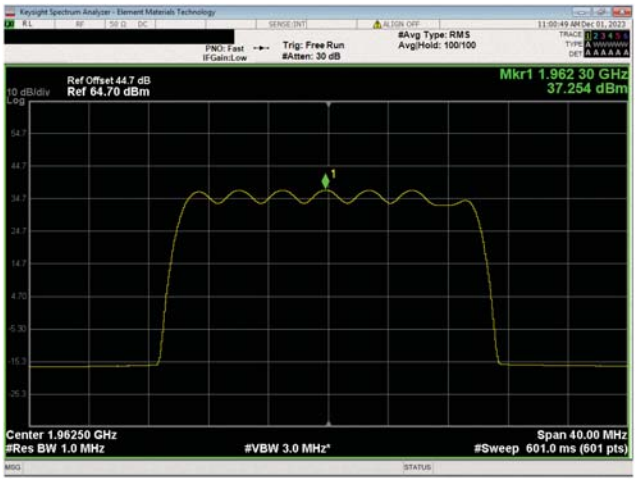
PCS Band n25, 1930 MHz - 1995 MHz
15 MHz Bandwidth
256QAM Modulation
Mid Ch, 1962.5 MHz

POWER SPECTRAL DENSITY AND EIRP CALCULATIONS

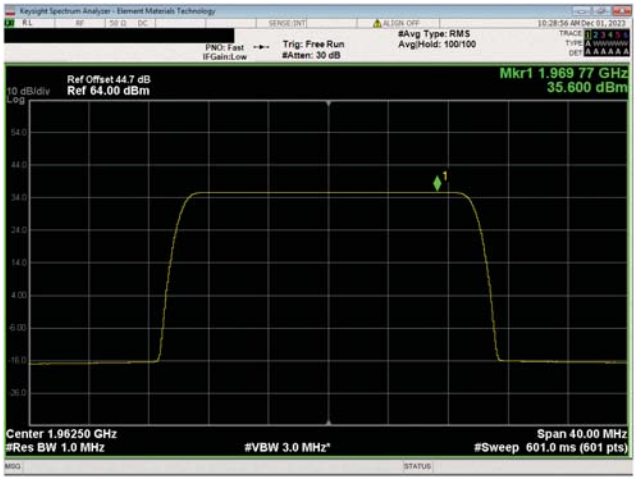
element
TbtTx 2023.08.15.2
WTD.2023.11.13.0



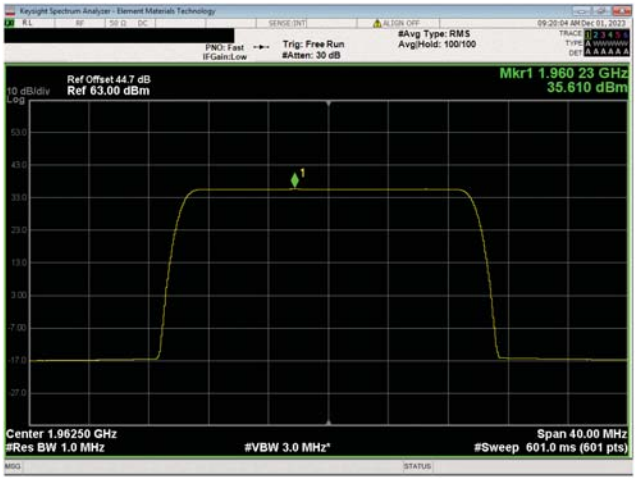
PCS Band n25, 1930 MHz - 1995 MHz
20 MHz Bandwidth
QPSK Modulation
Mid Ch, 1962.5 MHz



PCS Band n25, 1930 MHz - 1995 MHz
20 MHz Bandwidth
16QAM Modulation
Mid Ch, 1962.5 MHz



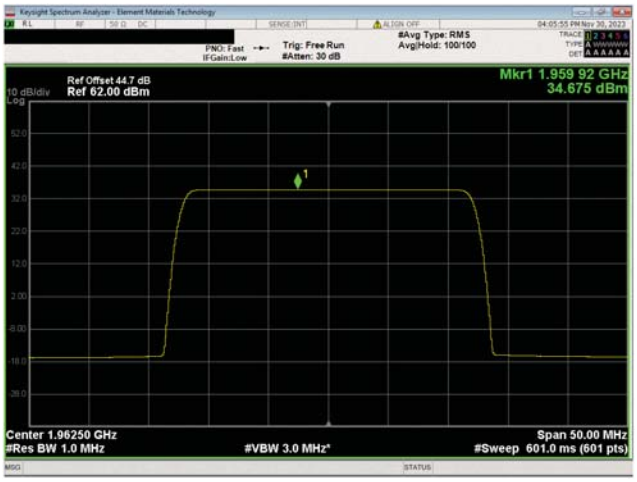
PCS Band n25, 1930 MHz - 1995 MHz
20 MHz Bandwidth
64QAM Modulation
Mid Ch, 1962.5 MHz



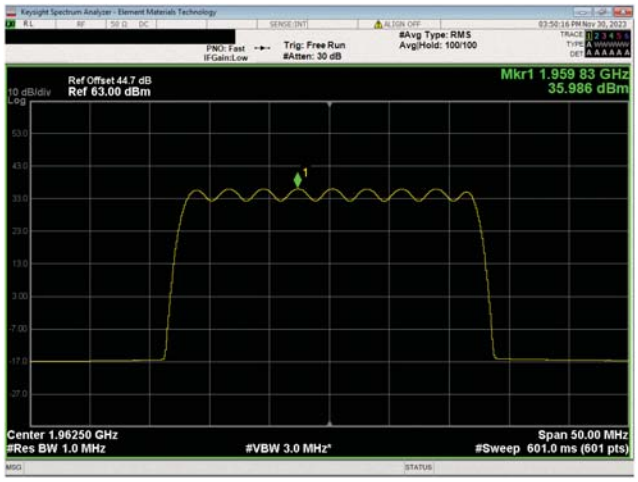
PCS Band n25, 1930 MHz - 1995 MHz
20 MHz Bandwidth
256QAM Modulation
Mid Ch, 1962.5 MHz

POWER SPECTRAL DENSITY AND EIRP CALCULATIONS

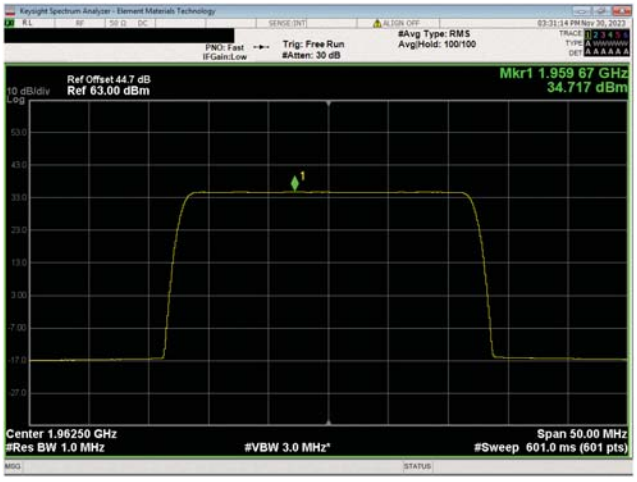
element
TbtTx 2023.08.15.2
WTD.2023.11.13.0



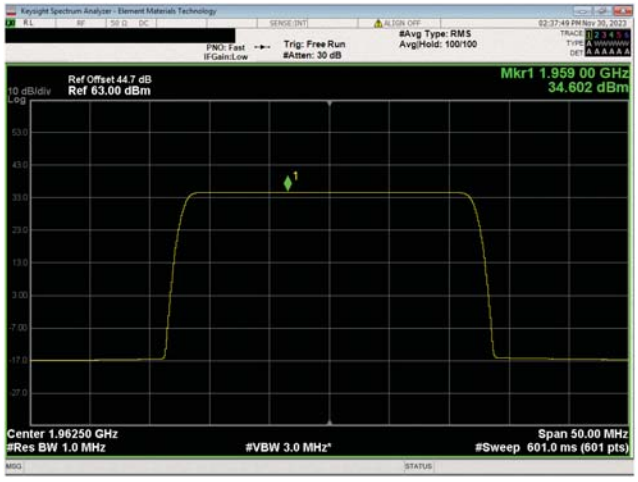
PCS Band n25, 1930 MHz - 1995 MHz
25 MHz Bandwidth
QPSK Modulation
Mid Ch, 1962.5 MHz



PCS Band n25, 1930 MHz - 1995 MHz
25 MHz Bandwidth
16QAM Modulation
Mid Ch, 1962.5 MHz



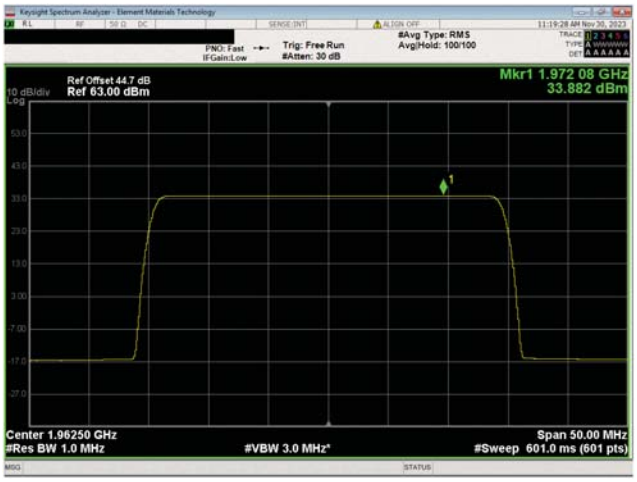
PCS Band n25, 1930 MHz - 1995 MHz
25 MHz Bandwidth
64QAM Modulation
Mid Ch, 1962.5 MHz



PCS Band n25, 1930 MHz - 1995 MHz
25 MHz Bandwidth
256QAM Modulation
Mid Ch, 1962.5 MHz

POWER SPECTRAL DENSITY AND EIRP CALCULATIONS

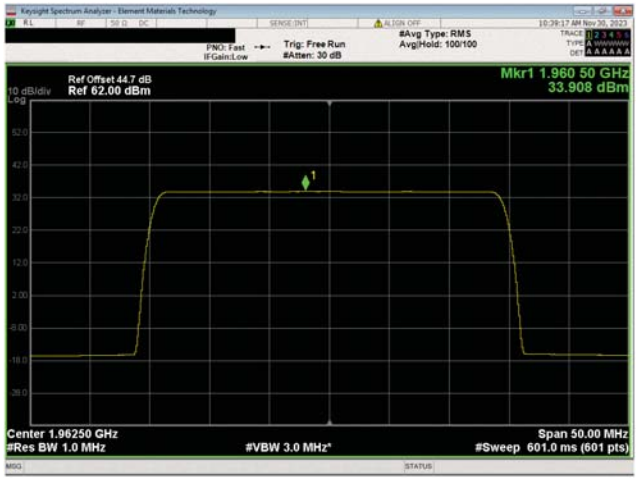
element
TbtTx 2023.08.15.2
WTD.2023.11.13.0



PCS Band n25, 1930 MHz - 1995 MHz
30 MHz Bandwidth
QPSK Modulation
Mid Ch, 1962.5 MHz

PCS Band n25, 1930 MHz - 1995 MHz
30 MHz Bandwidth
16QAM Modulation
Mid Ch, 1962.5 MHz

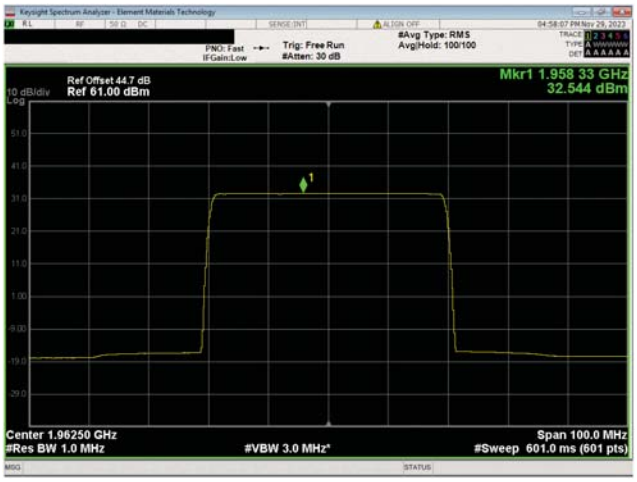
PCS Band n25, 1930 MHz - 1995 MHz
30 MHz Bandwidth
64QAM Modulation
Mid Ch, 1962.5 MHz



PCS Band n25, 1930 MHz - 1995 MHz
30 MHz Bandwidth
256QAM Modulation
Mid Ch, 1962.5 MHz

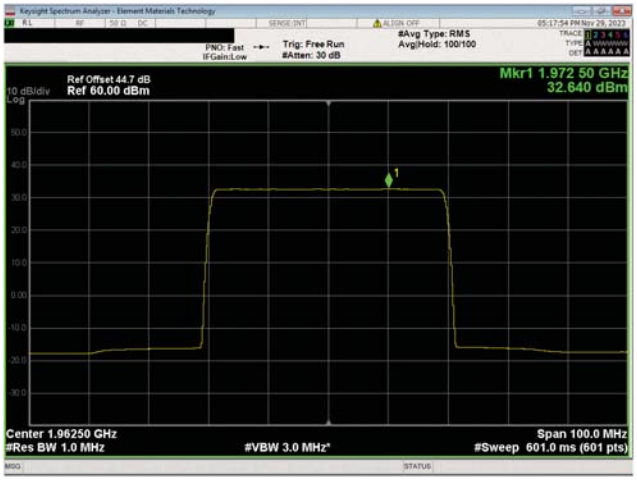
POWER SPECTRAL DENSITY AND EIRP CALCULATIONS

element
TbtTx 2023.08.15.2
WTD.2023.11.13.0

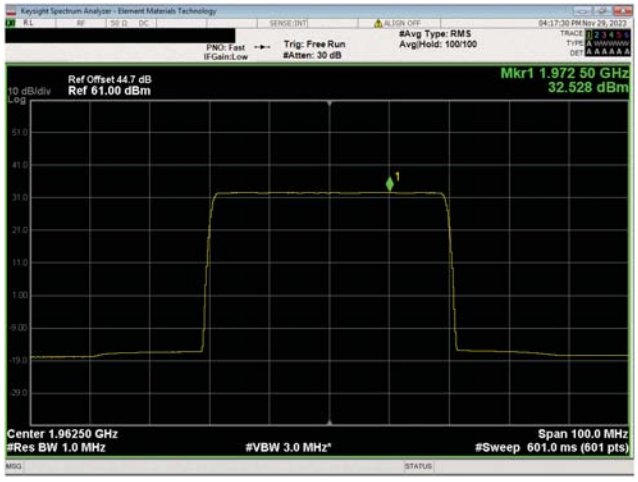


PCS Band n25, 1930 MHz - 1995 MHz
40 MHz Bandwidth
QPSK Modulation
Mid Ch, 1962.5 MHz

PCS Band n25, 1930 MHz - 1995 MHz
40 MHz Bandwidth
16QAM Modulation
Mid Ch, 1962.5 MHz



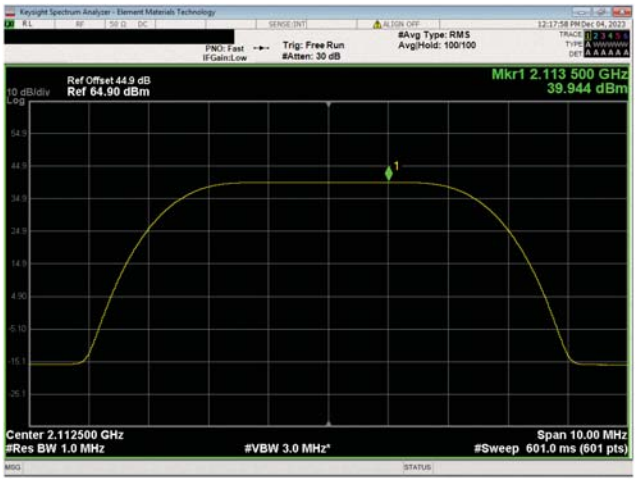
PCS Band n25, 1930 MHz - 1995 MHz
40 MHz Bandwidth
64QAM Modulation
Mid Ch, 1962.5 MHz



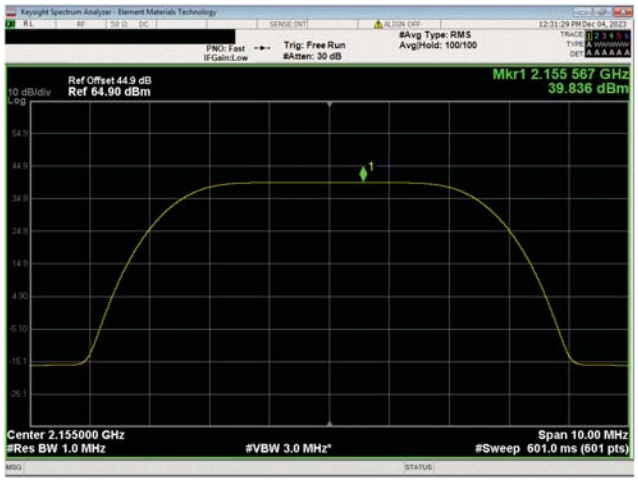
PCS Band n25, 1930 MHz - 1995 MHz
40 MHz Bandwidth
256QAM Modulation
Mid Ch, 1962.5 MHz

POWER SPECTRAL DENSITY AND EIRP CALCULATIONS

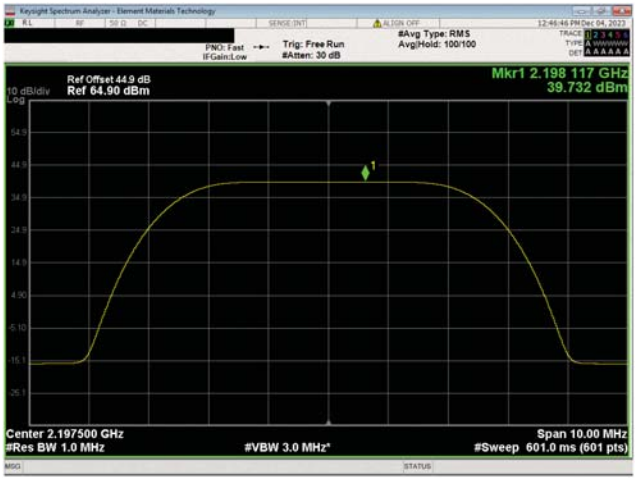
element
TbtTx 2023.08.15.2
WTD.2023.11.13.0



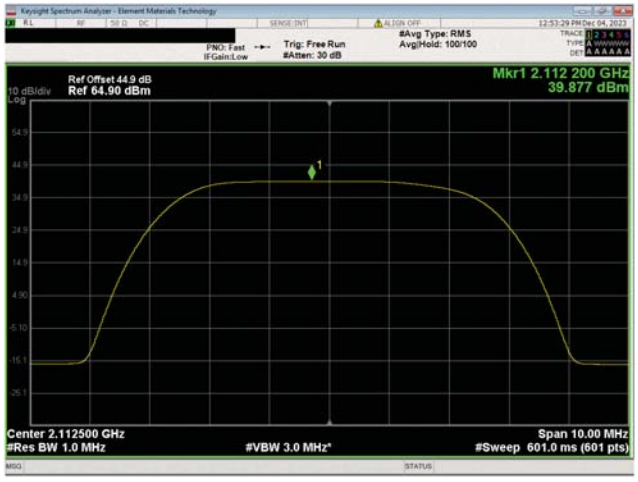
AWS Band n66, 2110 MHz - 2200 MHz
5 MHz Bandwidth
QPSK Modulation
Low Ch, 2112.5 MHz



AWS Band n66, 2110 MHz - 2200 MHz
5 MHz Bandwidth
QPSK Modulation
Mid Ch, 2155.0 MHz



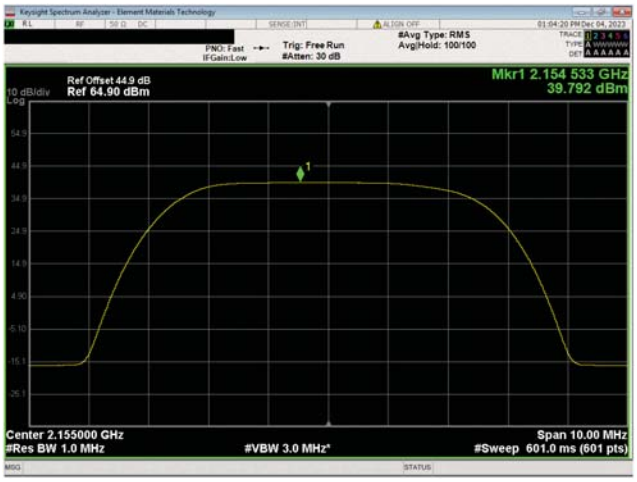
AWS Band n66, 2110 MHz - 2200 MHz
5 MHz Bandwidth
QPSK Modulation
High Ch, 2197.5 MHz



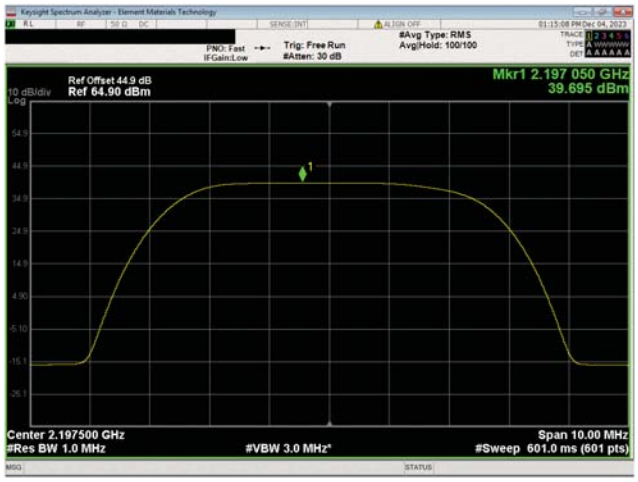
AWS Band n66, 2110 MHz - 2200 MHz
5 MHz Bandwidth
16QAM Modulation
Low Ch, 2112.5 MHz

POWER SPECTRAL DENSITY AND EIRP CALCULATIONS

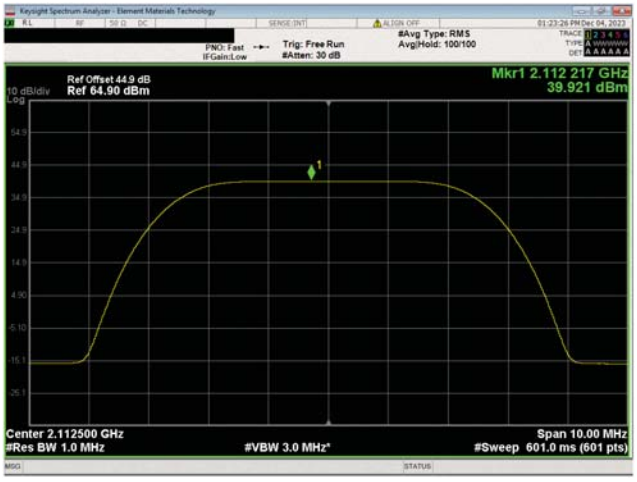
element
TbtTx 2023.08.15.2
WTD.2023.11.13.0



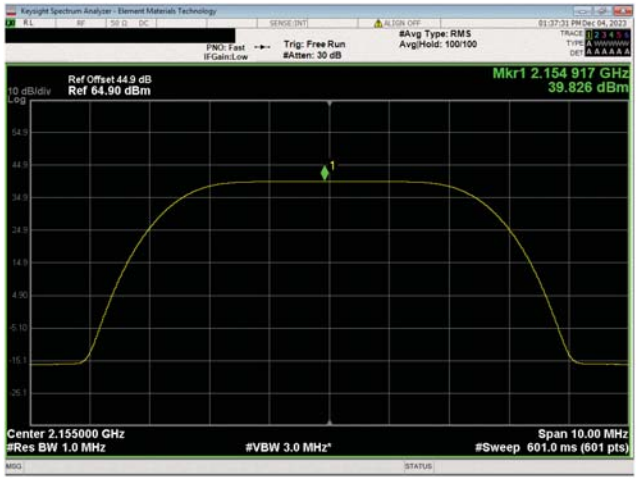
AWS Band n66, 2110 MHz - 2200 MHz
5 MHz Bandwidth
16QAM Modulation
Mid Ch, 2155.0 MHz



AWS Band n66, 2110 MHz - 2200 MHz
5 MHz Bandwidth
16QAM Modulation
High Ch, 2197.5 MHz



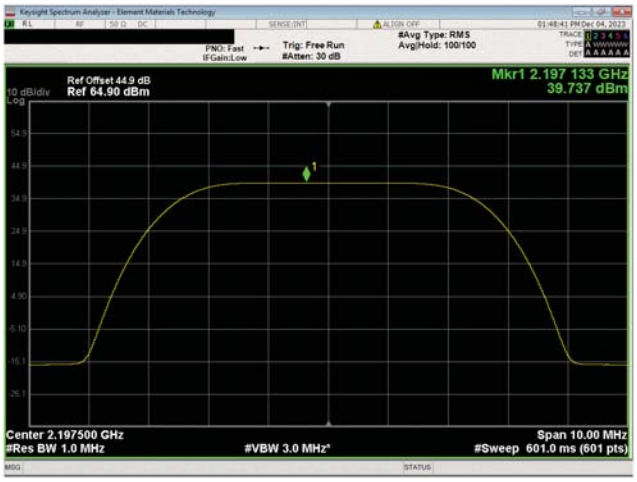
AWS Band n66, 2110 MHz - 2200 MHz
5 MHz Bandwidth
64QAM Modulation
Low Ch, 2112.5 MHz



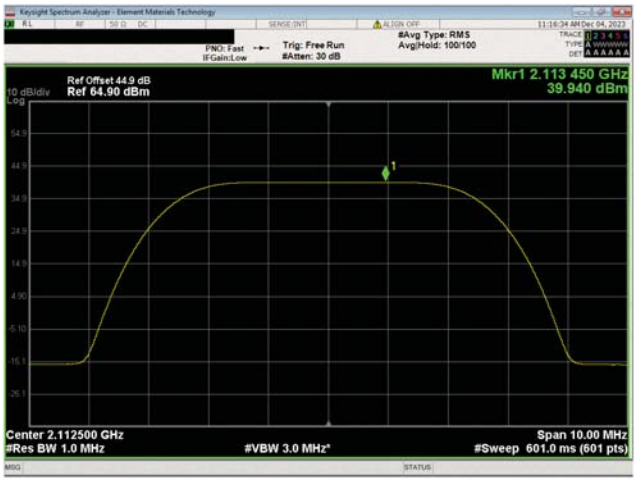
AWS Band n66, 2110 MHz - 2200 MHz
5 MHz Bandwidth
64QAM Modulation
Mid Ch, 2155.0 MHz

POWER SPECTRAL DENSITY AND EIRP CALCULATIONS

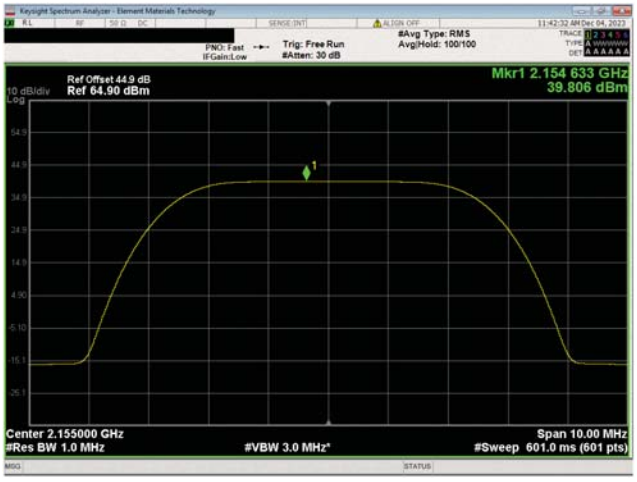
element
TbtTx 2023.08.15.2
WTD.2023.11.13.0



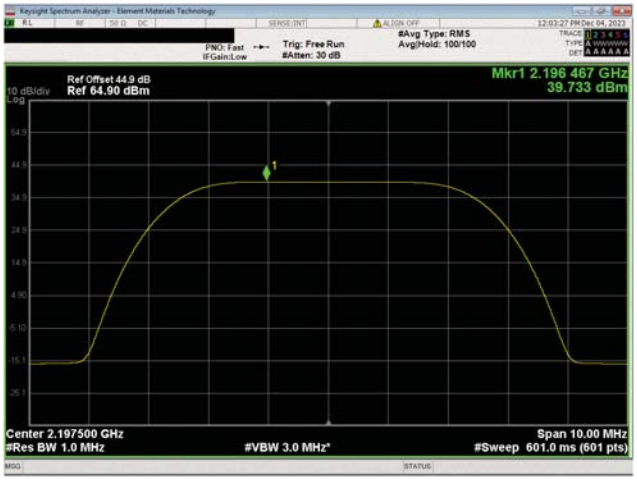
AWS Band n66, 2110 MHz - 2200 MHz
5 MHz Bandwidth
64QAM Modulation
High Ch, 2197.5 MHz



AWS Band n66, 2110 MHz - 2200 MHz
5 MHz Bandwidth
256QAM Modulation
Low Ch, 2112.5 MHz



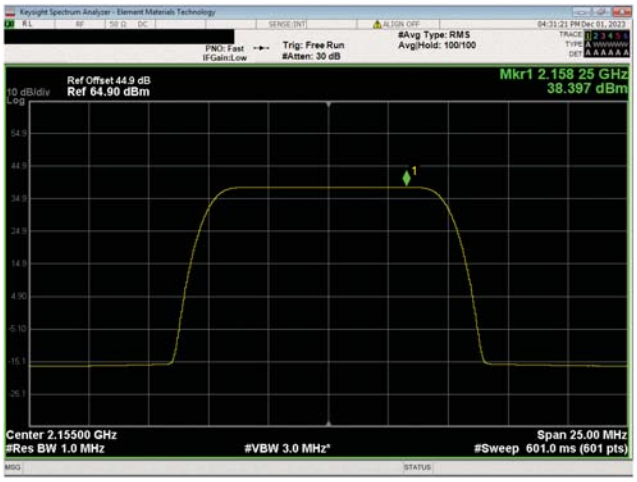
AWS Band n66, 2110 MHz - 2200 MHz
5 MHz Bandwidth
256QAM Modulation
Mid Ch, 2155.0 MHz



AWS Band n66, 2110 MHz - 2200 MHz
5 MHz Bandwidth
256QAM Modulation
High Ch, 2197.5 MHz

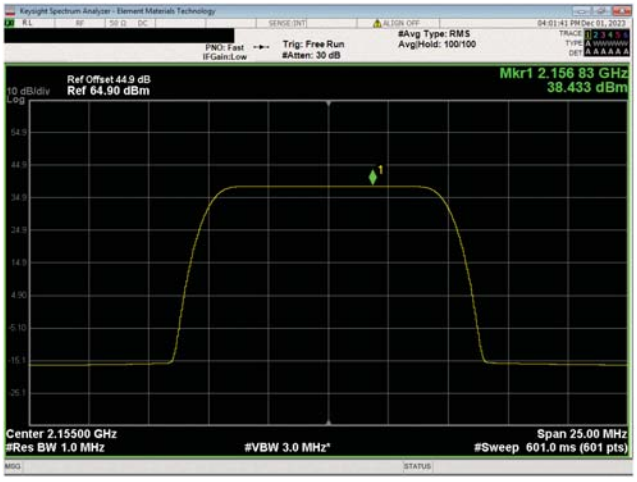
POWER SPECTRAL DENSITY AND EIRP CALCULATIONS

element
TbtTx 2023.08.15.2
WTD.2023.11.13.0

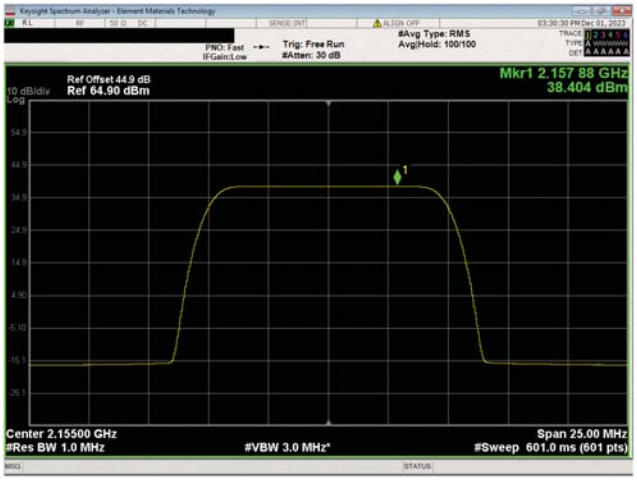


AWS Band n66, 2110 MHz - 2200 MHz
10 MHz Bandwidth
QPSK Modulation
Mid Ch, 2155.0 MHz

AWS Band n66, 2110 MHz - 2200 MHz
10 MHz Bandwidth
16QAM Modulation
Mid Ch, 2155.0 MHz



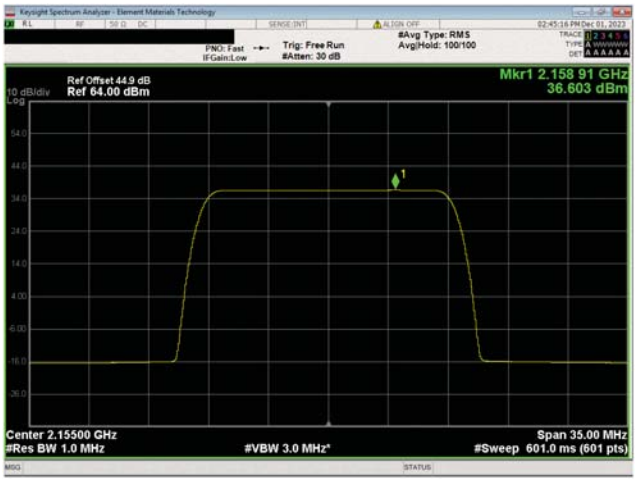
AWS Band n66, 2110 MHz - 2200 MHz
10 MHz Bandwidth
64QAM Modulation
Mid Ch, 2155.0 MHz



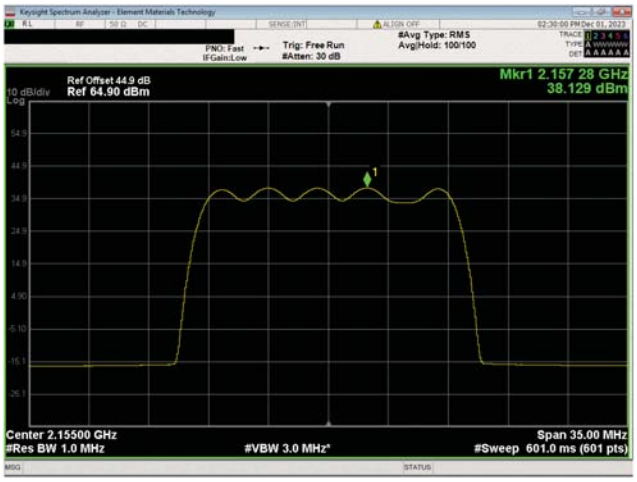
AWS Band n66, 2110 MHz - 2200 MHz
10 MHz Bandwidth
256QAM Modulation
Mid Ch, 2155.0 MHz

POWER SPECTRAL DENSITY AND EIRP CALCULATIONS

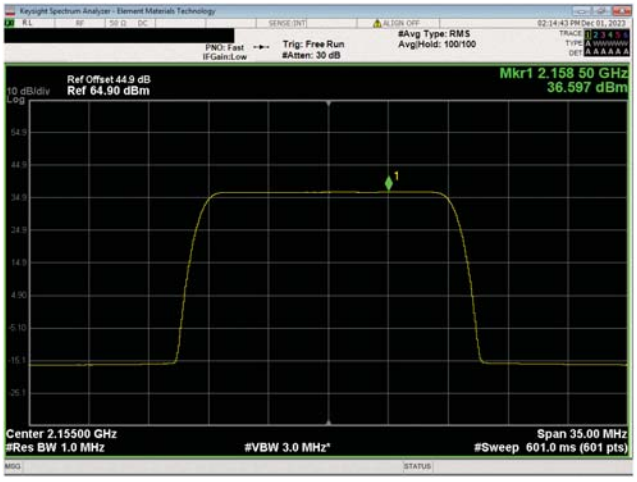
element
TbtTx 2023.08.15.2
WTD.2023.11.13.0



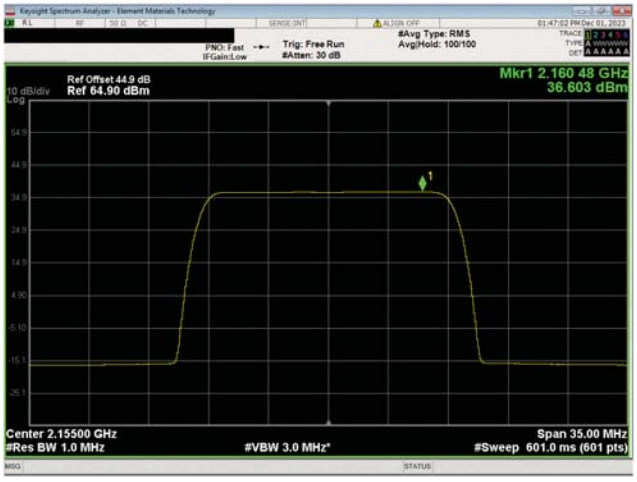
AWS Band n66, 2110 MHz - 2200 MHz
15 MHz Bandwidth
QPSK Modulation
Mid Ch, 2155.0 MHz



AWS Band n66, 2110 MHz - 2200 MHz
15 MHz Bandwidth
16QAM Modulation
Mid Ch, 2155.0 MHz



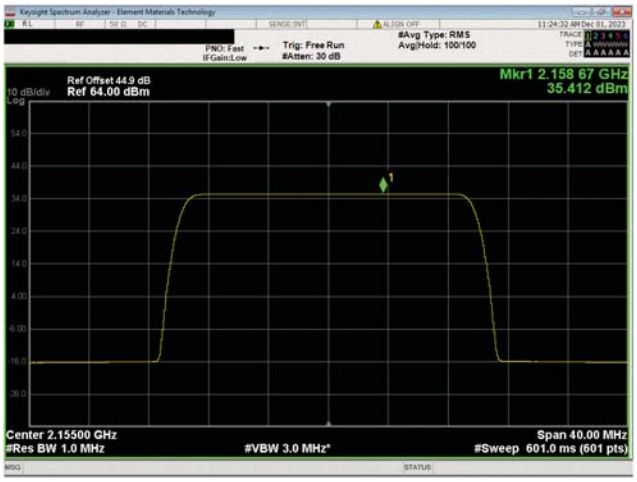
AWS Band n66, 2110 MHz - 2200 MHz
15 MHz Bandwidth
64QAM Modulation
Mid Ch, 2155.0 MHz



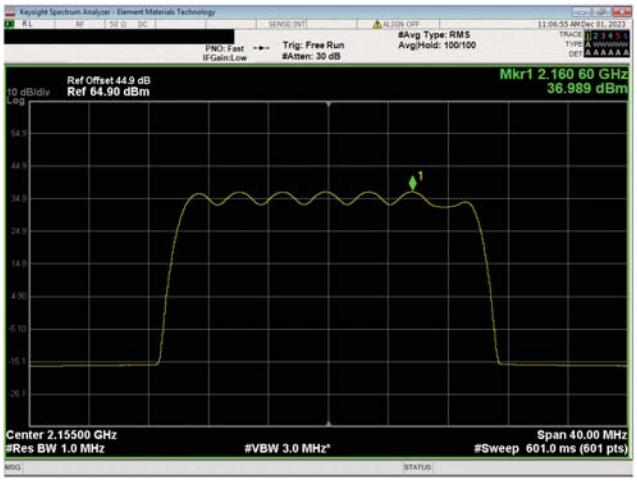
AWS Band n66, 2110 MHz - 2200 MHz
15 MHz Bandwidth
256QAM Modulation
Mid Ch, 2155.0 MHz

POWER SPECTRAL DENSITY AND EIRP CALCULATIONS

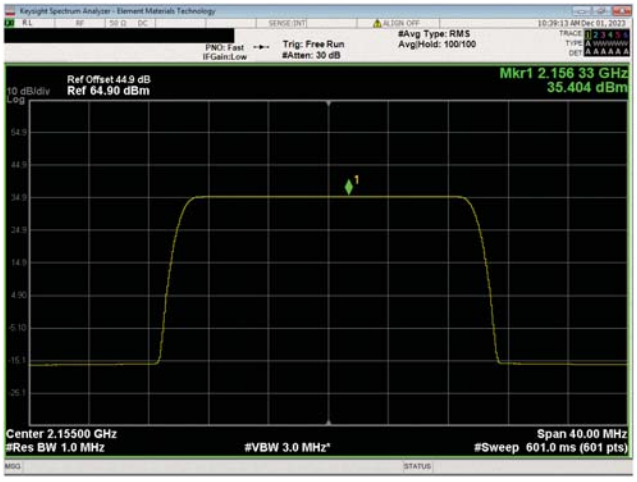
element
TbtTx 2023.08.15.2
WTD.2023.11.13.0



AWS Band n66, 2110 MHz - 2200 MHz
20 MHz Bandwidth
QPSK Modulation
Mid Ch, 2155.0 MHz



AWS Band n66, 2110 MHz - 2200 MHz
20 MHz Bandwidth
16QAM Modulation
Mid Ch, 2155.0 MHz



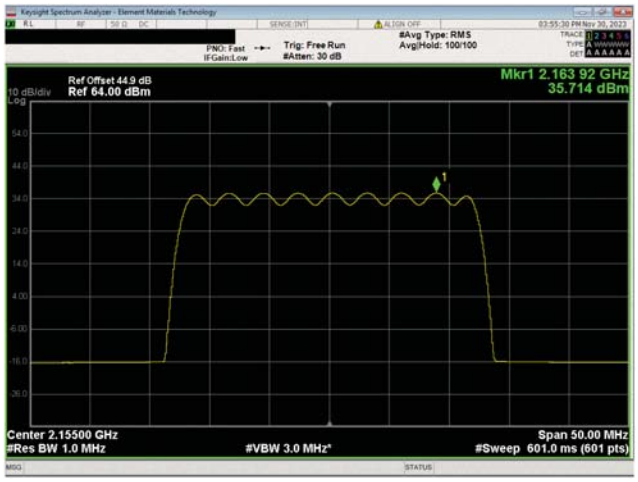
AWS Band n66, 2110 MHz - 2200 MHz
20 MHz Bandwidth
64QAM Modulation
Mid Ch, 2155.0 MHz

AWS Band n66, 2110 MHz - 2200 MHz
20 MHz Bandwidth
256QAM Modulation
Mid Ch, 2155.0 MHz

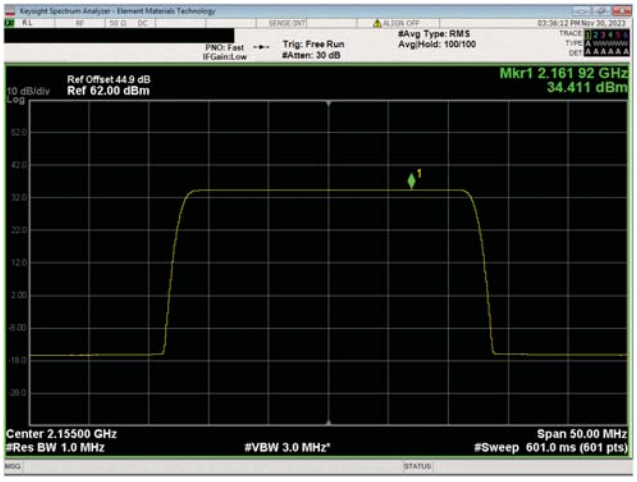
POWER SPECTRAL DENSITY AND EIRP CALCULATIONS

element
TbtTx 2023.08.15.2
WTD.2023.11.13.0

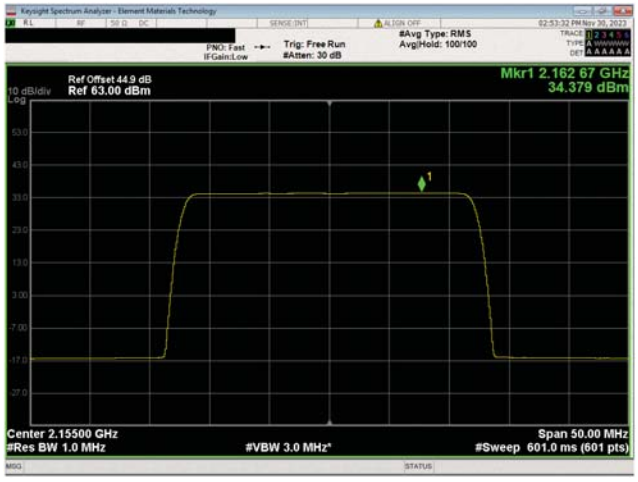
AWS Band n66, 2110 MHz - 2200 MHz
25 MHz Bandwidth
QPSK Modulation
Mid Ch, 2155.0 MHz



AWS Band n66, 2110 MHz - 2200 MHz
25 MHz Bandwidth
16QAM Modulation
Mid Ch, 2155.0 MHz



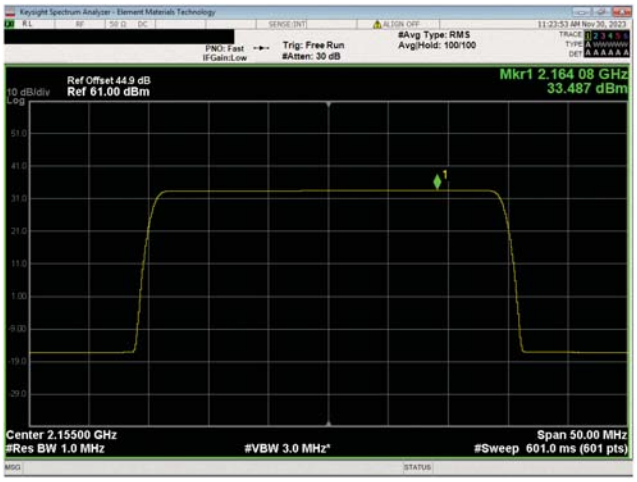
AWS Band n66, 2110 MHz - 2200 MHz
25 MHz Bandwidth
64QAM Modulation
Mid Ch, 2155.0 MHz



AWS Band n66, 2110 MHz - 2200 MHz
25 MHz Bandwidth
256QAM Modulation
Mid Ch, 2155.0 MHz

POWER SPECTRAL DENSITY AND EIRP CALCULATIONS

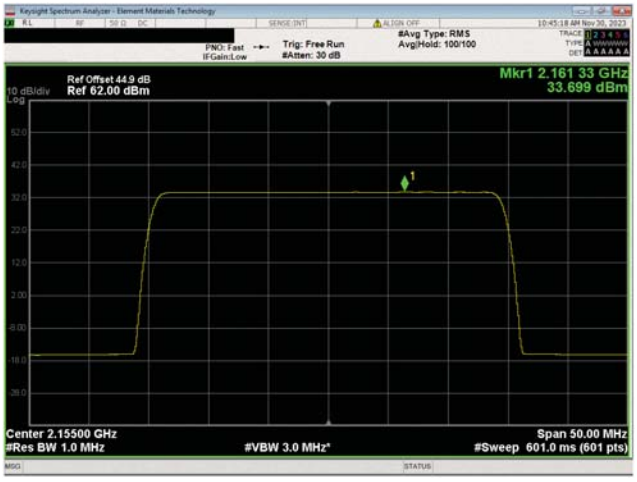
element
TbtTx 2023.08.15.2
WTD.2023.11.13.0



AWS Band n66, 2110 MHz - 2200 MHz
30 MHz Bandwidth
QPSK Modulation
Mid Ch, 2155.0 MHz

AWS Band n66, 2110 MHz - 2200 MHz
30 MHz Bandwidth
16QAM Modulation
Mid Ch, 2155.0 MHz

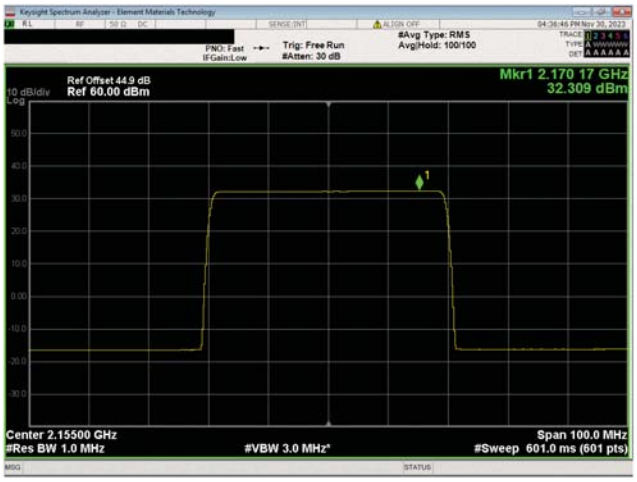
AWS Band n66, 2110 MHz - 2200 MHz
30 MHz Bandwidth
64QAM Modulation
Mid Ch, 2155.0 MHz



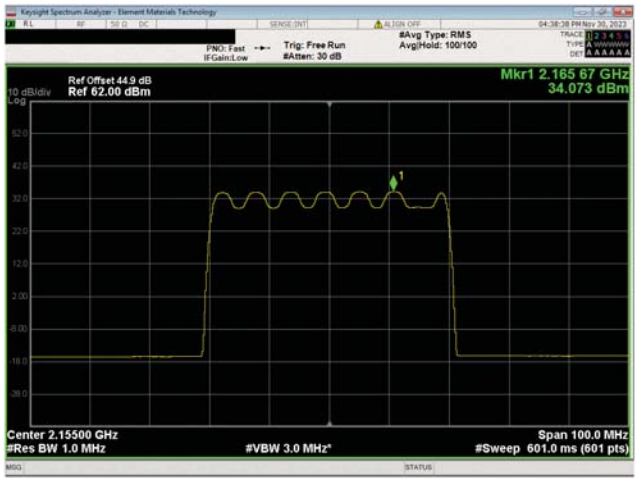
AWS Band n66, 2110 MHz - 2200 MHz
30 MHz Bandwidth
256QAM Modulation
Mid Ch, 2155.0 MHz

POWER SPECTRAL DENSITY AND EIRP CALCULATIONS

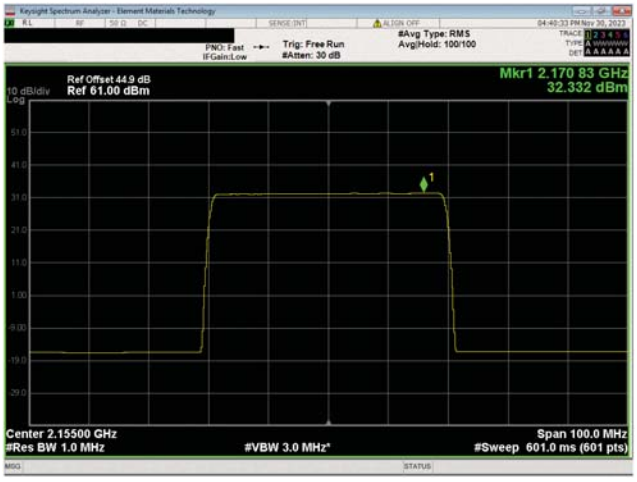
element
TbtTx 2023.08.15.2
WTD.2023.11.13.0



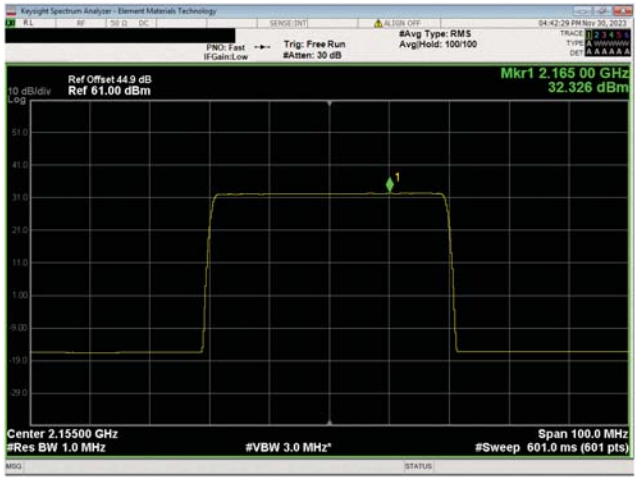
AWS Band n66, 2110 MHz - 2200 MHz
40 MHz Bandwidth
QPSK Modulation
Mid Ch, 2155.0 MHz



AWS Band n66, 2110 MHz - 2200 MHz
40 MHz Bandwidth
16QAM Modulation
Mid Ch, 2155.0 MHz



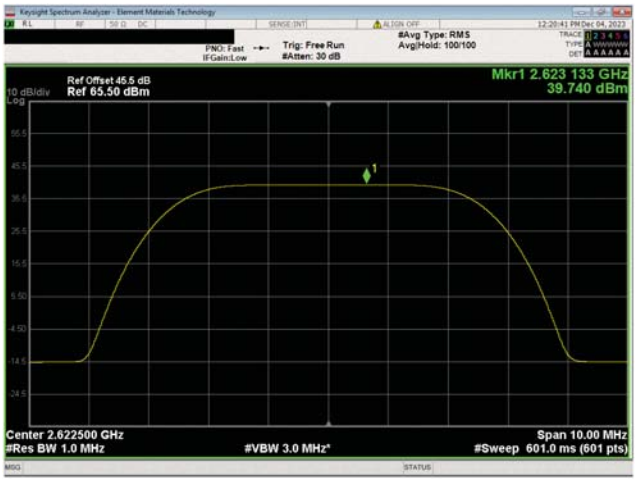
AWS Band n66, 2110 MHz - 2200 MHz
40 MHz Bandwidth
64QAM Modulation
Mid Ch, 2155.0 MHz



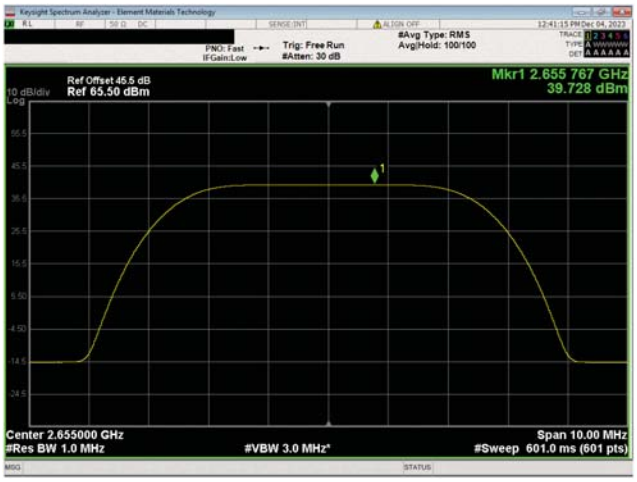
AWS Band n66, 2110 MHz - 2200 MHz
40 MHz Bandwidth
256QAM Modulation
Mid Ch, 2155.0 MHz

POWER SPECTRAL DENSITY AND EIRP CALCULATIONS

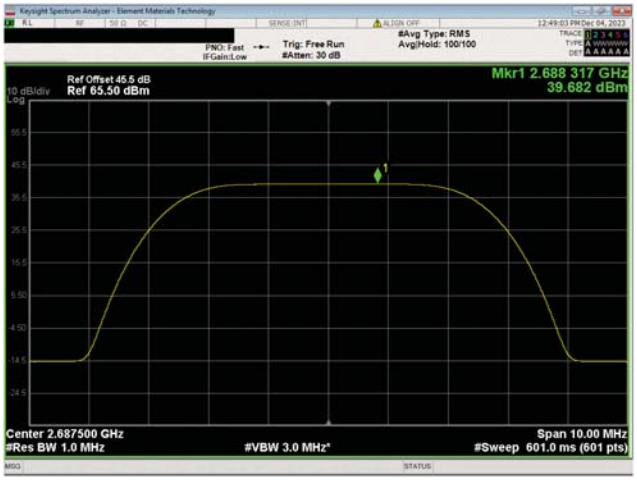
element
TbtTx 2023.08.15.2
WTD.2023.11.13.0



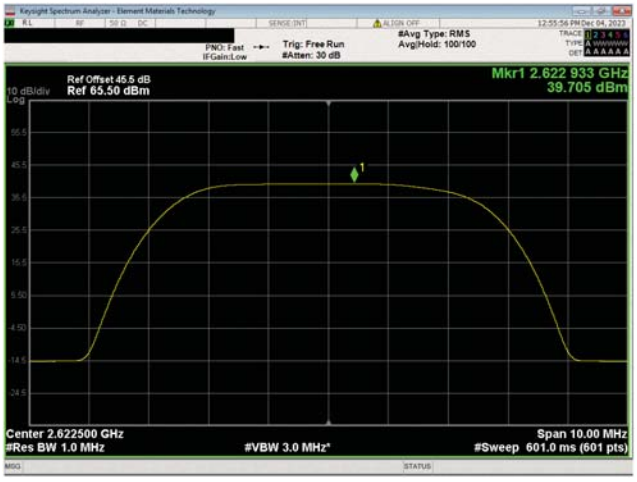
BRS Band n7, 2620 MHz - 2690 MHz
5 MHz Bandwidth
QPSK Modulation
Low Ch, 2622.5 MHz



BRS Band n7, 2620 MHz - 2690 MHz
5 MHz Bandwidth
QPSK Modulation
Mid Ch, 2655.0 MHz



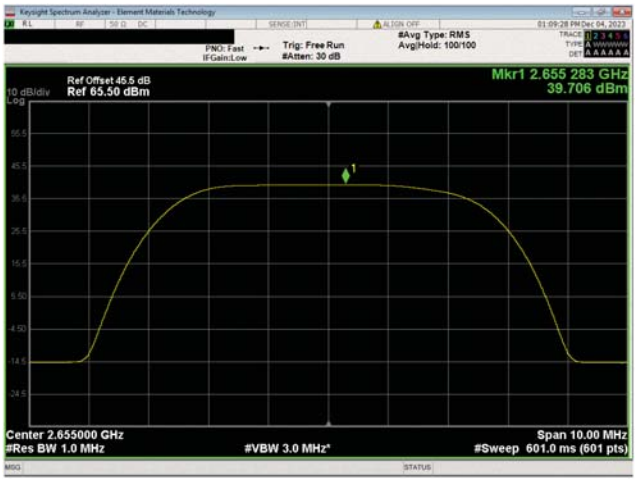
BRS Band n7, 2620 MHz - 2690 MHz
5 MHz Bandwidth
QPSK Modulation
High Ch, 2687.5 MHz



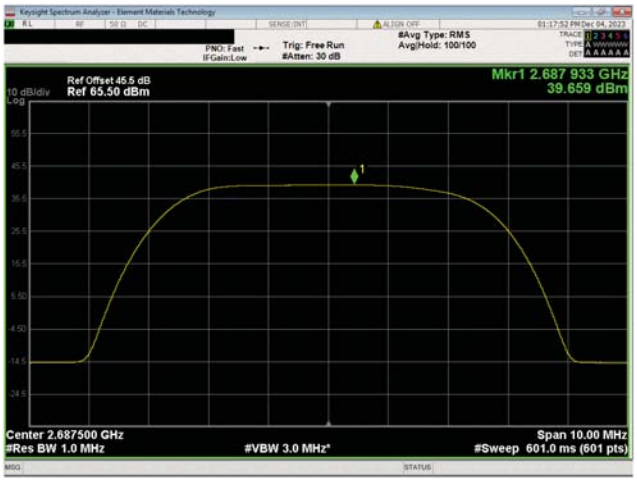
BRS Band n7, 2620 MHz - 2690 MHz
5 MHz Bandwidth
16QAM Modulation
Low Ch, 2622.5 MHz

POWER SPECTRAL DENSITY AND EIRP CALCULATIONS

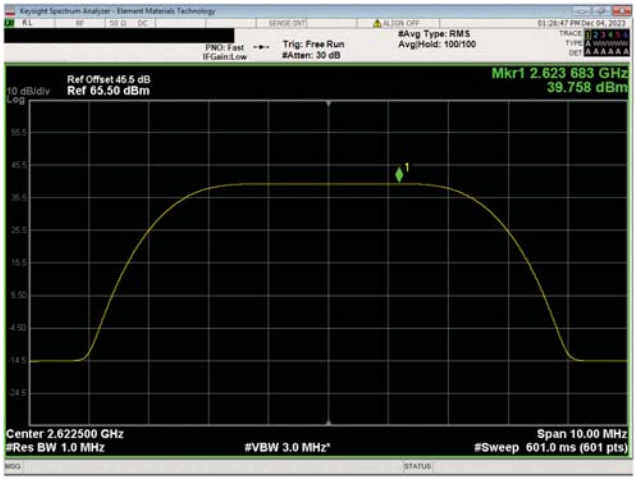
element
TbtTx 2023.08.15.2
WTD.2023.11.13.0



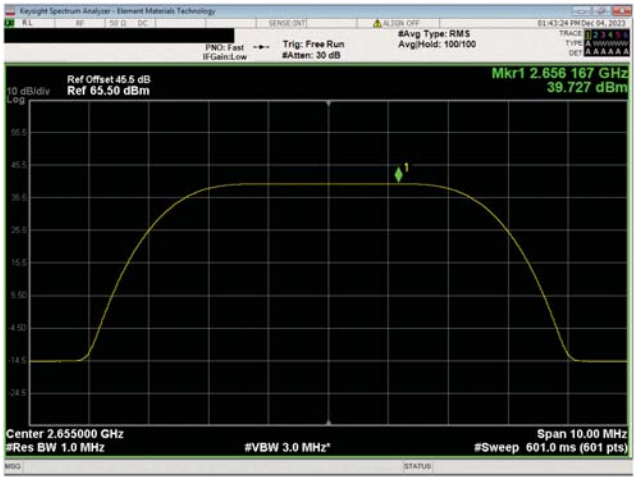
BRS Band n7, 2620 MHz - 2690 MHz
5 MHz Bandwidth
16QAM Modulation
Mid Ch, 2655.0 MHz



BRS Band n7, 2620 MHz - 2690 MHz
5 MHz Bandwidth
16QAM Modulation
High Ch, 2687.5 MHz



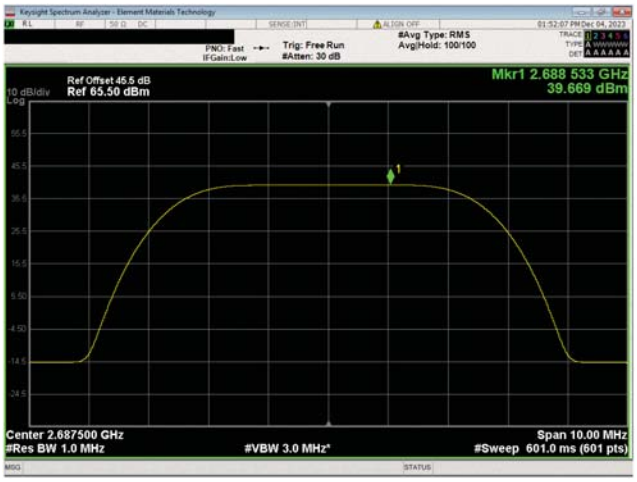
BRS Band n7, 2620 MHz - 2690 MHz
5 MHz Bandwidth
64QAM Modulation
Low Ch, 2625.0 MHz



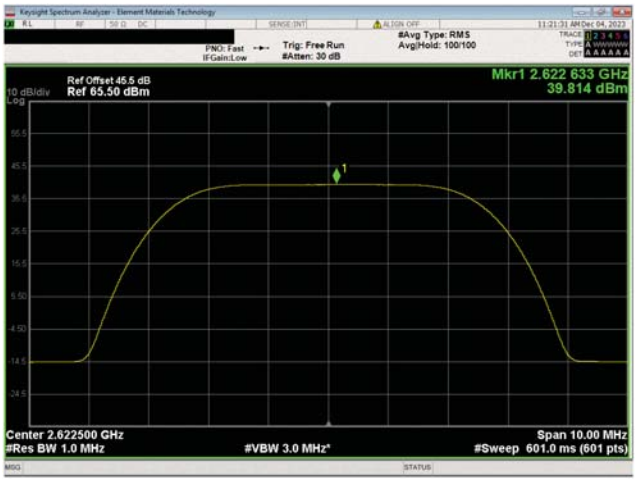
BRS Band n7, 2620 MHz - 2690 MHz
5 MHz Bandwidth
64QAM Modulation
Mid Ch, 2655.0 MHz

POWER SPECTRAL DENSITY AND EIRP CALCULATIONS

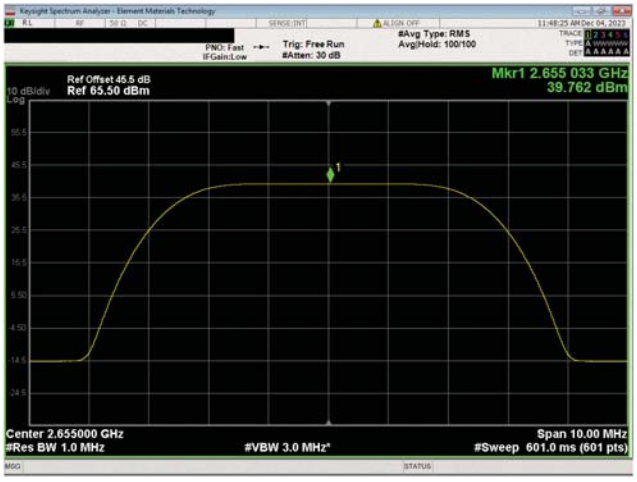
element
TbtTx 2023.08.15.2
WTD.2023.11.13.0



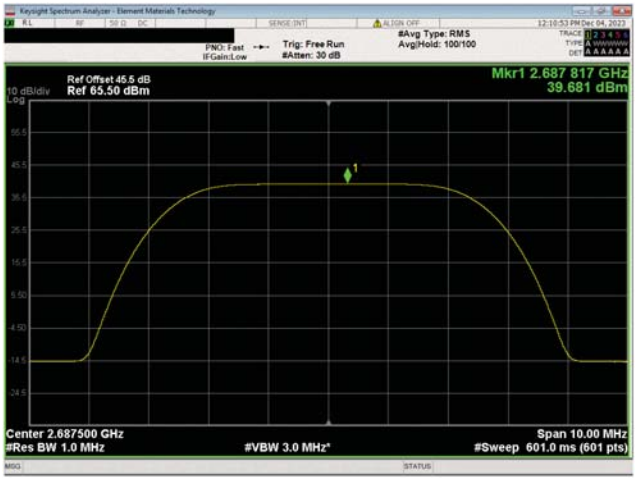
BRS Band n7, 2620 MHz - 2690 MHz
5 MHz Bandwidth
64QAM Modulation
High Ch, 2687.5 MHz



BRS Band n7, 2620 MHz - 2690 MHz
5 MHz Bandwidth
256QAM Modulation
Low Ch, 2622.5 MHz



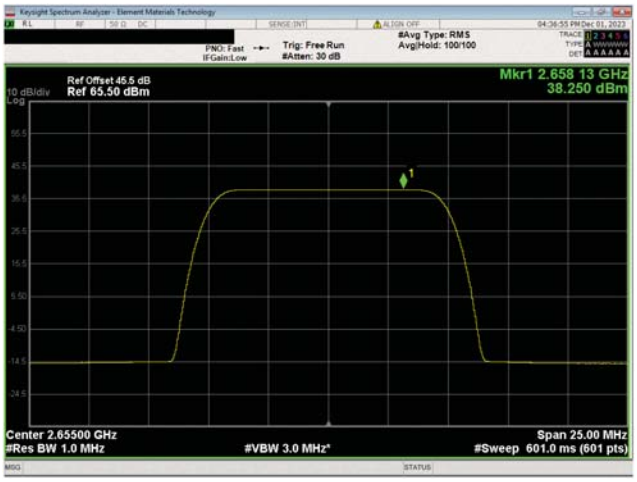
BRS Band n7, 2620 MHz - 2690 MHz
5 MHz Bandwidth
256QAM Modulation
Mid Ch, 2655.0 MHz



BRS Band n7, 2620 MHz - 2690 MHz
5 MHz Bandwidth
256QAM Modulation
High Ch, 2687.5 MHz

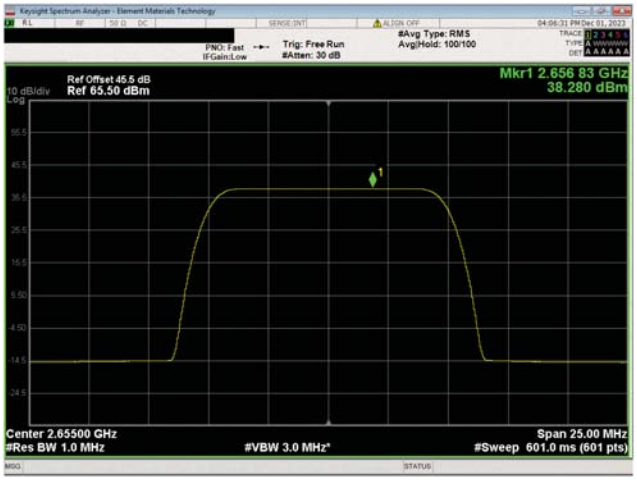
POWER SPECTRAL DENSITY AND EIRP CALCULATIONS

element
TbtTx 2023.08.15.2
WTD.2023.11.13.0

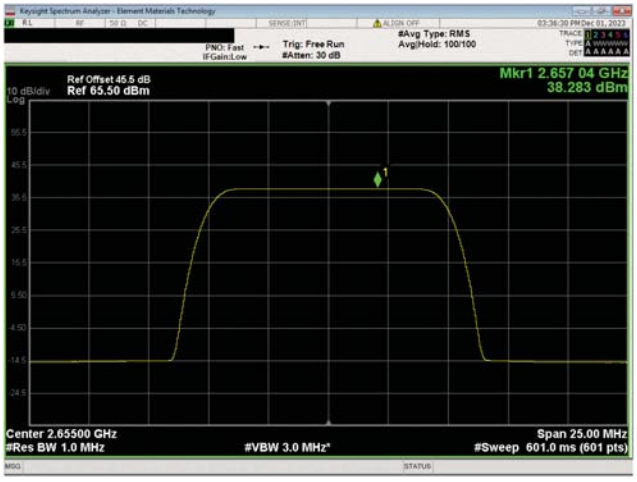


BRS Band n7, 2620 MHz - 2690 MHz
10 MHz Bandwidth
QPSK Modulation
Mid Ch, 2655.0 MHz

BRS Band n7, 2620 MHz - 2690 MHz
10 MHz Bandwidth
16QAM Modulation
Mid Ch, 2655.0 MHz



BRS Band n7, 2620 MHz - 2690 MHz
10 MHz Bandwidth
64QAM Modulation
Mid Ch, 2655.0 MHz

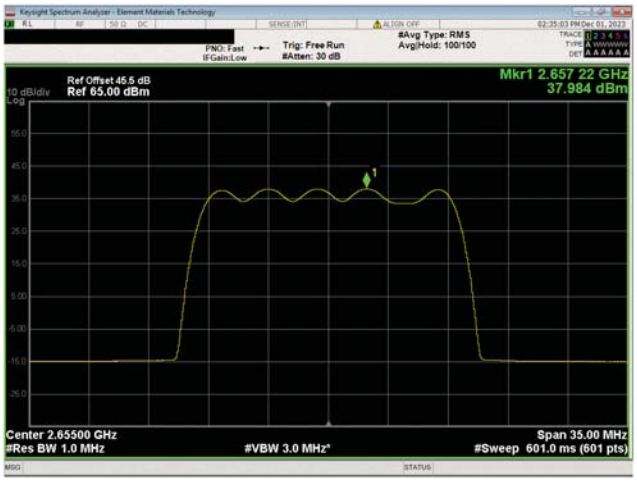


BRS Band n7, 2620 MHz - 2690 MHz
10 MHz Bandwidth
256QAM Modulation
Mid Ch, 2655.0 MHz

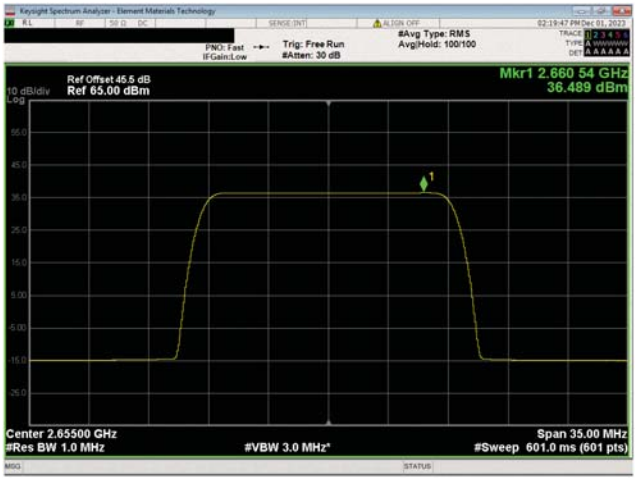
POWER SPECTRAL DENSITY AND EIRP CALCULATIONS

element
TbtTx 2023.08.15.2
WTD.2023.11.13.0

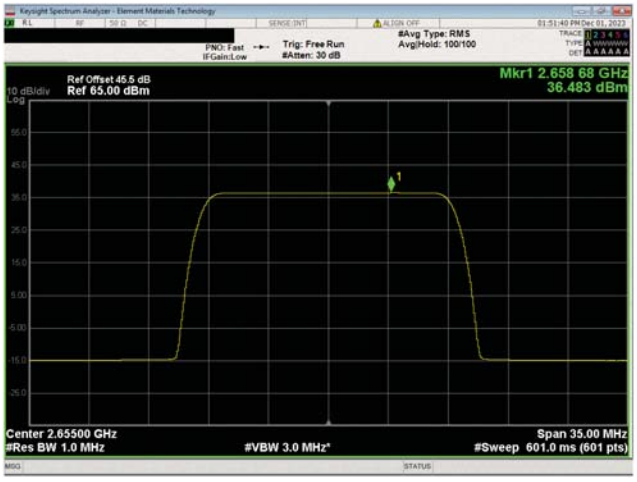
BRS Band n7, 2620 MHz - 2690 MHz
15 MHz Bandwidth
QPSK Modulation
Mid Ch, 2655.0 MHz



BRS Band n7, 2620 MHz - 2690 MHz
15 MHz Bandwidth
16QAM Modulation
Mid Ch, 2655.0 MHz



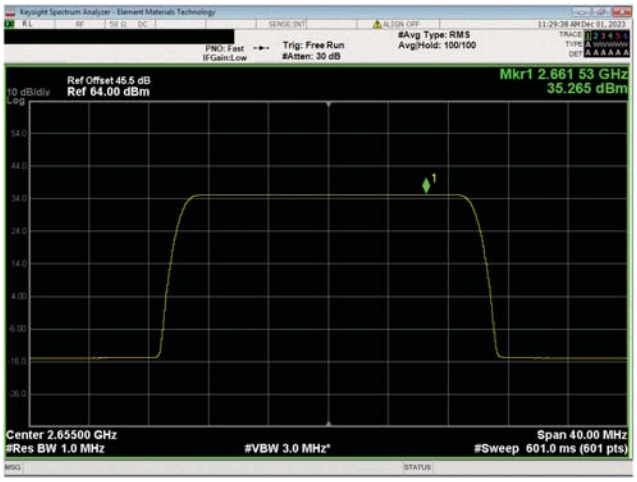
BRS Band n7, 2620 MHz - 2690 MHz
15 MHz Bandwidth
64QAM Modulation
Mid Ch, 2655.0 MHz



BRS Band n7, 2620 MHz - 2690 MHz
15 MHz Bandwidth
256QAM Modulation
Mid Ch, 2655.0 MHz

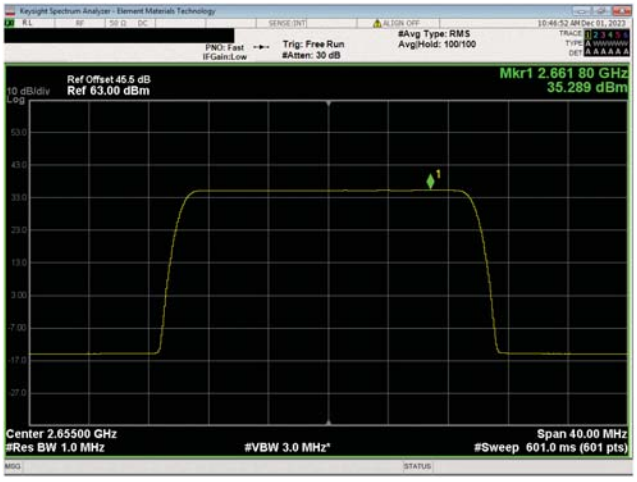
POWER SPECTRAL DENSITY AND EIRP CALCULATIONS

element
TbtTx 2023.08.15.2
WTD.2023.11.13.0

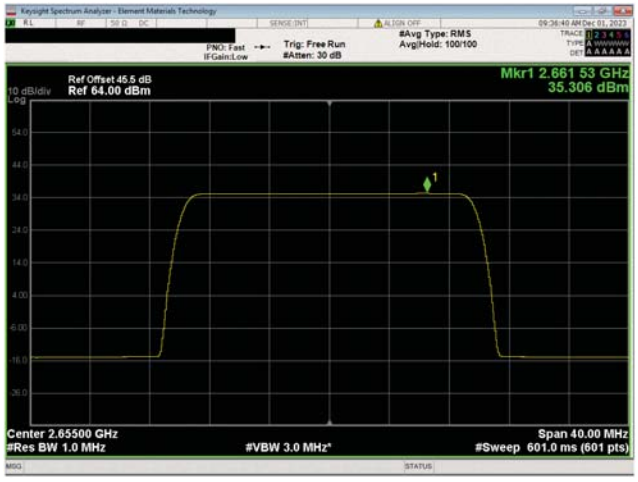


BRS Band n7, 2620 MHz - 2690 MHz
20 MHz Bandwidth
QPSK Modulation
Mid Ch, 2655.0 MHz

BRS Band n7, 2620 MHz - 2690 MHz
20 MHz Bandwidth
16QAM Modulation
Mid Ch, 2655.0 MHz



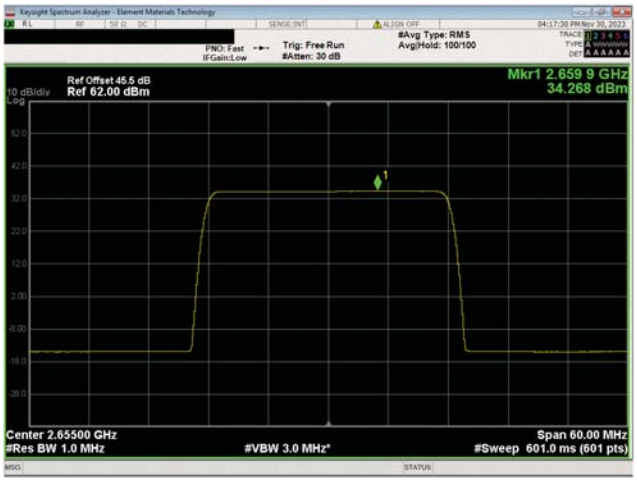
BRS Band n7, 2620 MHz - 2690 MHz
20 MHz Bandwidth
64QAM Modulation
Mid Ch, 2655.0 MHz



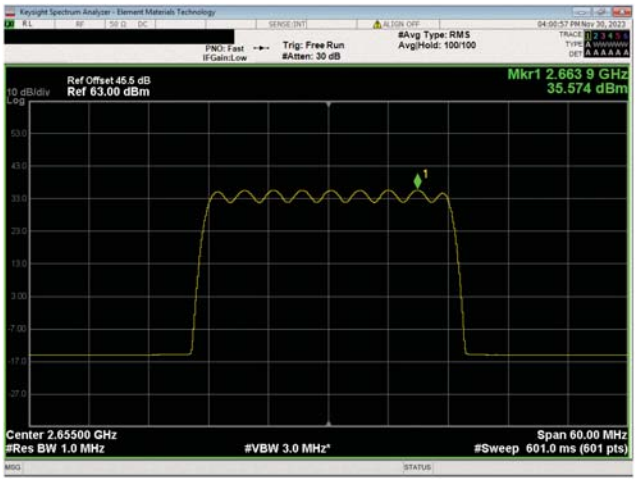
BRS Band n7, 2620 MHz - 2690 MHz
20 MHz Bandwidth
256QAM Modulation
Mid Ch, 2655.0 MHz

POWER SPECTRAL DENSITY AND EIRP CALCULATIONS

element
TbtTx 2023.08.15.2
WTD.2023.11.13.0

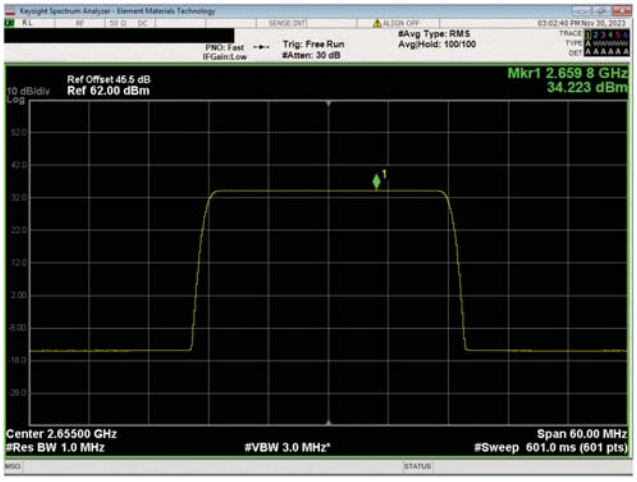


BRS Band n7, 2620 MHz - 2690 MHz
25 MHz Bandwidth
QPSK Modulation
Mid Ch, 2655.0 MHz



BRS Band n7, 2620 MHz - 2690 MHz
25 MHz Bandwidth
16QAM Modulation
Mid Ch, 2655.0 MHz

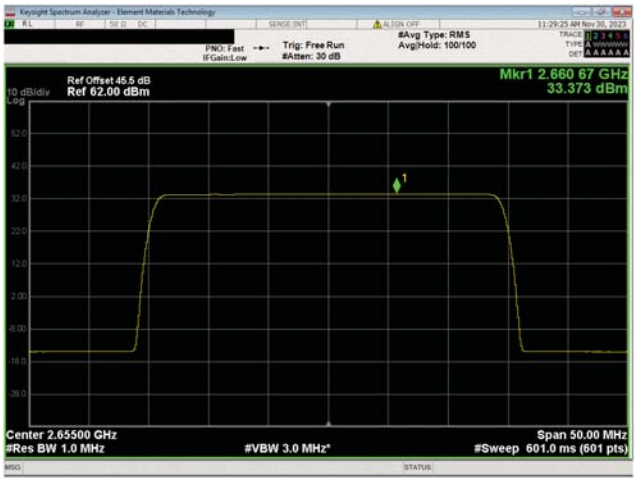
BRS Band n7, 2620 MHz - 2690 MHz
25 MHz Bandwidth
64QAM Modulation
Mid Ch, 2655.0 MHz



BRS Band n7, 2620 MHz - 2690 MHz
25 MHz Bandwidth
256QAM Modulation
Mid Ch, 2655.0 MHz

POWER SPECTRAL DENSITY AND EIRP CALCULATIONS

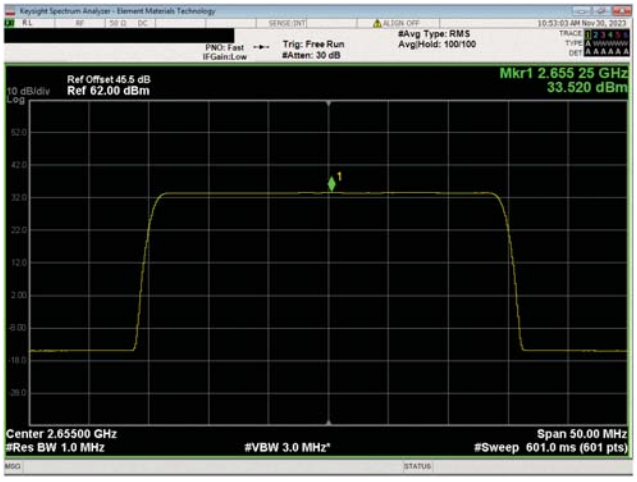
element
TbtTx 2023.08.15.2
WTD.2023.11.13.0



BRS Band n7, 2620 MHz - 2690 MHz
30 MHz Bandwidth
QPSK Modulation
Mid Ch, 2655.0 MHz

BRS Band n7, 2620 MHz - 2690 MHz
30 MHz Bandwidth
16QAM Modulation
Mid Ch, 2655.0 MHz

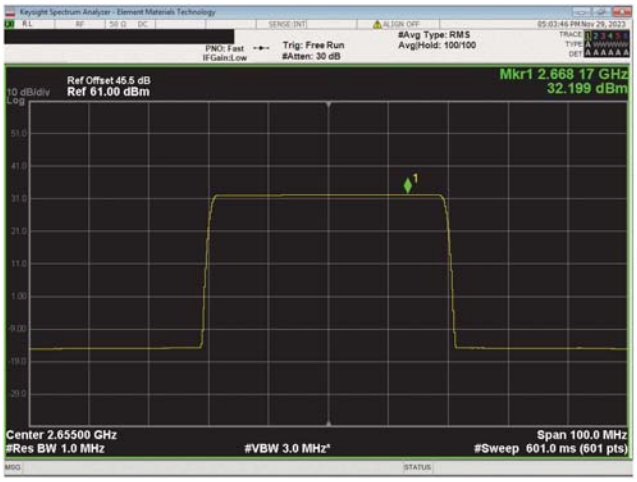
BRS Band n7, 2620 MHz - 2690 MHz
30 MHz Bandwidth
64QAM Modulation
Mid Ch, 2655.0 MHz



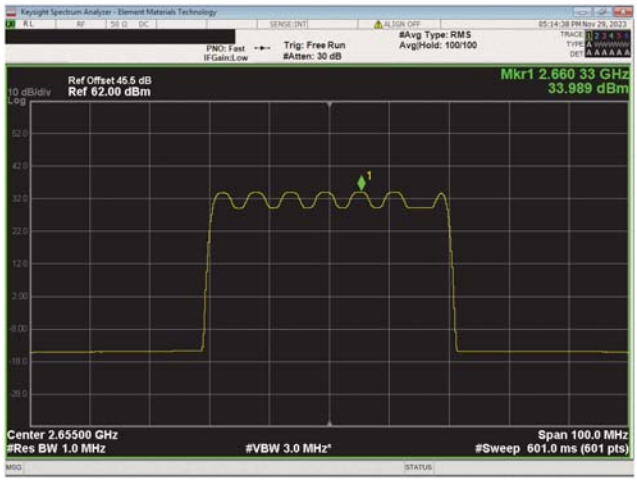
BRS Band n7, 2620 MHz - 2690 MHz
30 MHz Bandwidth
256QAM Modulation
Mid Ch, 2655.0 MHz

POWER SPECTRAL DENSITY AND EIRP CALCULATIONS

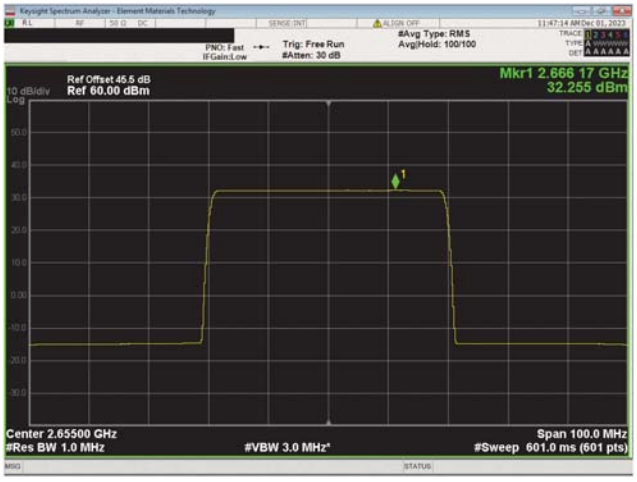
element
TbtTx 2023.08.15.2
WTD.2023.11.13.0



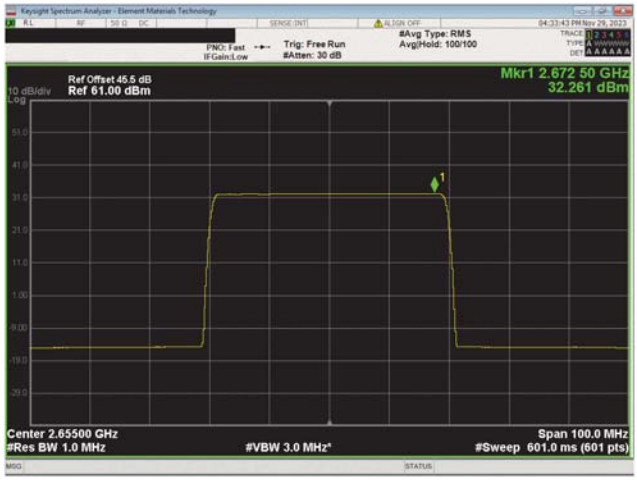
BRS Band n7, 2620 MHz - 2690 MHz
40 MHz Bandwidth
QPSK Modulation
Mid Ch, 2655.0 MHz



BRS Band n7, 2620 MHz - 2690 MHz
40 MHz Bandwidth
16QAM Modulation
Mid Ch, 2655.0 MHz



BRS Band n7, 2620 MHz - 2690 MHz
40 MHz Bandwidth
64QAM Modulation
Mid Ch, 2655.0 MHz



BRS Band n7, 2620 MHz - 2690 MHz
40 MHz Bandwidth
256QAM Modulation
Mid Ch, 2655.0 MHz