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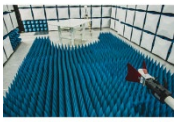

TEST REPORT
PART 27 MEASUREMENT REPORT

Applicant Name:
Samsung Electronics Co., Ltd.
129, Samsung-ro,
Yeongtong-gu, Suwon-si
Gyeonggi-do, 16677, Korea

Date of Testing:
11/20/2023 - 12/14/2023
Test Site/Location:
Element Lab., Suwon,
Yongin-si, Gyeonggi-do, Korea
Test Report Serial No.:
8K23110201-00.A3L

FCC ID:	**A3LRF4451D-70A**
APPLICANT:	**Samsung Electronics Co., Ltd.**

Application Type:	Class II Permissive Change
Model:	RF4451d-70A
EUT Type:	RRU(RF4451d)
FCC Classification:	Licensed Non-Broadcast Station Transmitter
FCC Rule Part(s):	§27
Test Procedure(s):	ANSI C63.26-2015, KDB 971168 D01 v03r01, KDB 662911 D01 v02r01

This equipment has been shown to be capable of compliance with the applicable technical standards as indicated in the measurement report and was tested in accordance with the measurement procedures specified in §2.947. Test results reported herein relate only to the item(s) tested.

I attest to the accuracy of data. All measurements reported herein were performed by me or were made under my supervision and are correct to the best of my knowledge and belief. I assume full responsibility for the completeness of these measurements and vouch for the qualifications of all persons taking them.

ACCREDITED
Testing Laboratory
Certificate Number 2041.04

Prepared by Jonathan Jang
Test Engineer

Reviewed by Charles.Shin
Technical Manager

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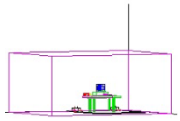
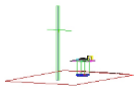


MEASUREMENT REPORT
FCC Part 27



Mode	Tx Frequency (MHz)	Total Conducted output power		Max Emission Designator	Modulation
		Max. Power (dBm)	Max. Power (W)		
NR_1C_15M	2110 to 2200	52.63	183.42	14M1G7D	QPSK
		52.70	186.29	14M2W7D	QAM
NR_2C_30M		52.09	161.77	28M6G7D	QPSK
		52.52	178.59	28M6W7D	QAM
NR_3C_5M+5M+15M		54.13	259.06	24M2G7D	QPSK
		54.10	257.10	24M3W7D	QAM
NR_3C_5M+5M+30M		54.16	260.85	38M9G7D	QPSK
		54.21	263.84	38M7W7D	QAM

5G NR n66 EUT Overview

1.0 REVISION RECORD

Issue Number	Issued Date	Revision History
8K23110201-00.A3L	12/15/2022	Initial Issue

2.0 INTRODUCTION

2.1 Scope

Measurement and determination of electromagnetic emissions (EMC) of radio frequency devices including intentional and/or unintentional radiators for compliance with the technical rules and regulations of the Federal Communications Commission and the Innovation, Science and Economic Development Canada.

2.2 Element Test Location

These measurement tests were conducted at the Element Materials Technology Suwon. Ltd. facility located at (#1407) 13, Heungdeok 1-ro, Giheung-gu, Yongin-si, Gyeonggi-do 16954, Korea.

2.3 Test Facility / Accreditation

Measurements were performed at Element Materials Technology Suwon Lab located in Yongin-si, Gyeonggi, Korea.

- Element Materials Technology Suwon is an ISO 17025-2017 accredited test facility under the American Association for Laboratory Accreditation(A2LA) with Certificate number 2041.04 for Specific Absorption Rate (SAR), where applicable, and Electromagnetic Compatibility (EMC) testing for FCC and Innovation, Science, and Economic Development Canada rules.

- Element Materials Technology Suwon facility is accredited, designated, and recognized in accordance with the provision of Radio Wave Act and International Standard ISO/IEC 17025:2017 under the National Radio Research Agency.

  - Designation Number / CABID: KR0169
  - Test Firm Registration Number of FCC: 417945
  - Test Firm Registration Number of IC: 26168

3.0 PRODUCT INFORMATION

3.1 Equipment Description

The Equipment Under Test (EUT) is the **Samsung RRU(RF4451d) FCC ID: A3LRF4451D-70A**. The test data contained in this report pertains only to the emissions due to the EUT's licensed transmitters that operate under the provisions of Part 27.

A class II permissive change on the original filing is being pursued to add channel Bandwidth without hardware modification.

3.2 Device Capabilities

This device supports the following conditional features and filter information:

EUT Type	RRU (RF4451d)		
Model Name	RF4451d-70A		
Test Device Serial No	S618618736		
Device Capabilities:	5G NR		
Operating Band/Frequency Range:	Band	Tx (Downlink)	Rx (Uplink)
	n66:	2110 MHz to 2200 MHz	1710 MHz to 1780 MHz
	n70:	1995 MHz to 2020 MHz	1695 MHz to 1710 MHz
Supported Modulation	QPSK, 16QAM, 64QAM, 256QAM		
n66 Supported Number of Carriers and Channel Bandwidth	NR: 5,10,15,20 and 30MHz bandwidth modes for 5G NR n66 with up to 3CC aggregated of Max. Bandwidth 40 MHz		
n70 Supported Number of Carriers and Channel Bandwidth	NR: 25MHz bandwidth 1CC mode for 5G NR n70		
Multi-Band operation Supported Number of Carriers and Channel Bandwidth	n66 and n70 with up to 4CC aggregated of Max. Bandwidth 65 MHz		
Maximum Output Power	n66	Total 240 W	
	n70	Total 160 W	
	Multi-band_n66 + n70	Total 320 W	
Number of Antenna ports	4TRX Configuration		
Supported Configurations	Single carrier, Multi-carrier, Multi-band		
Input Voltage:	-48 VDC		
Antenna:	Antenna is not provided by manufacture		

3.3 Test Configuration

The setup is as follows:

a) The EUT ("RRU(RF4451d)") and a Data Unit (DU) are each powered by -48V DC power supply.
b) The DU is connected to a test laptop via an ethernet cable acting as backhaul.
c) DU connects to the EUT through a fiber optic cable.
d) An RF cable connects the signal analyzer and the EUT Ports for respective measurement.

The EUT was tested per the guidance of ANSI C63.26-2015 and KDB 971168 D01 v03r01. See Section 8.0 of this test report for a description of the radiated and antenna port conducted emissions tests.

Distribution unit (DU) which were used in test, that authorized under the SDoC procedure.

The following information is about configurations of carrier frequency and output power per port declared by the manufacturer.

* Abbreviations:

- C: Contiguous carrier
- NC: Non-contiguous carriers in multi-carrier operation

Single and Multi Carrier Configuration	No. of Carriers	Total Bandwidth (MHz)	Carrier Frequency Configuration (MHz)			Rated Power (W/path)
			Lowest	Middle	Highest	
n66_1C_15M	1	15	2117.5	2155.0	2192.5	40
n66_1C_30M (Note 1)	1	30	-	-	2185.0	40
n66_3C_5M+5M+15M	3	25 (5+5+15)	2112.5 + 2117.5 + 2127.5	2145.0 + 2150.0 + 2160.0	2177.5 + 2182.5 + 2192.5	60
n66_3NC_5M+5M+15M			2112.5 + 2150.0 + 2192.5			
n66_3C_5M+5M+30M (Note 1)	3	40 (5+5+30)	2112.5 + 2117.5 + 2185.0			60
n66_3NC_5M+5M+30M (Note 1)			2112.5 + 2155.0 + 2185.0			

Multi-band Configuration	No. of Carriers	Total Bandwidth (MHz)	Carrier Frequency Configuration (MHz)			Rated Power (W/path)
			Lowest	Middle	Highest	
n70_1C_25M+ n66_1C_15M	2	40 (25+15)	2007.5 + 2117.5	2007.5 + 2155.0	2007.5 + 2192.5	80
n70_1C_25M+ n66_3C_5M+5M+30M	4	65 (25+5+5+30)	2007.5 + 2177.5 + 2182.5 + 2192.5			80

Notes:

1) Configuration of "n66_1C_30M" is fixed to 2185.0 MHz high channel only.

3.4 EMI Suppression Device(s)/Modifications

No EMI suppression device(s) were added and no modifications were made during testing.

4.0 DESCRIPTION OF TESTS

4.1 Measurement Procedure

The measurement procedures described in the document titled “American National Standard for Compliance Testing of Transmitter Used in Licensed Radio Service” (ANSI C63.26-2015) and the guidance provided in KDB 842590 D01 v01r01 were used in the measurement of the EUT.

Occupied Bandwidth:
KDB 971168 D01 v03r01 – Section 4.3
ANSI C63.26-2015 – Section 5.4.4

Conducted Power Measurement and EIRP and PSD
KDB 971168 D01 v03r01 – Section 5.3
KDB 971168 D01 v03r01 – Section 5.4
KDB 662911 D01 v02r01 – Section E)1) In-Band Power Measurements
ANSI C63.26-2015 – Section 5.2.5
ANSI C63.26-2015 – Section 5.2.4

Peak-to-Average Power Ratio:
KDB 971168 D01 v03r01 – Section 5.7
ANSI C63.26-2015 – Section 5.2.3.4

Channel Edge Emissions at Antenna Terminal
KDB 971168 D01 v03r01 – Section 6
KDB 662911 D01 v02r01 – Section E)3) Out-of-Band and Spurious Emission Measurements
a) Absolute Emission Limits
iii) Measure and add 10 log(N_{ANT}) dB
ANSI C63.26-2015 – Section 5.7

Spurious and Harmonic Emissions at Antenna Terminal
KDB 971168 D01 v03r01 – Section 6
KDB 662911 D01 v02r01 – Section E)3) Out-of-Band and Spurious Emission Measurements
a) Absolute Emission Limits
iii) Measure and add 10 log(N_{ANT}) dB
ANSI C63.26-2015 – Section 5.7

Radiated unwanted emission
KDB 971168 D01 v03r01 – Section 7
ANSI C63.26-2015 – Section 5.8

Frequency Stability / Temperature Variation
KDB 971168 D01 v03r01 – Section 9
ANSI C63.26-2015 – Section 5.6

4.2 Radiated Emissions

The radiated test facilities consisted of an indoor 3 meter semi-anechoic chamber used for final measurements and exploratory measurements, when necessary. The measurement area is contained within the semi- anechoic chamber which is shielded from any ambient interference.

For all measurements, the spectrum was scanned through all EUT azimuths and from 1 to 4 meter receive antenna height using a broadband antenna from 30MHz up to tenth harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower. For frequencies above 1GHz, linearly polarized Vivaldi antennas were used. When exploratory measurements were necessary, they were performed at 1 meter test distance inside the semi-anechoic chamber using broadband antennas, broadband amplifiers, and spectrum analyzers to determine the frequencies and modes producing the maximum emissions. Sufficient time for the EUT, support equipment, and test equipment was allowed in order for them to warm up to their normal operating condition. The EUT, support equipment, and interconnecting cables were arranged and manipulated to maximize each emission. Appropriate precaution was taken to ensure that all emissions from the EUT were maximized and investigated. The system configuration, mode of operation, turntable azimuth, and receive antenna height was noted for each frequency found.

Final measurements were made in the semi-anechoic chamber using calibrated, linearly polarized broadband and Vivaldi antennas. The test setup was configured to the setup that produced the worst case emissions. The spectrum analyzer was set to investigate all frequencies required for testing to compare the highest radiated disturbances with respect to the specified limits. The turntable containing the EUT was rotated through 360 degrees and the height of the receive antenna was varied 1 to 4 meters and stopped at the azimuth and height producing the maximum emission. Each emission was maximized by changing the polarity of the receive antenna to produce the worst-case emissions

4.3 Measurement Software

Test item	Name	Version
Conducted Measurement	Node B automation	1.0

5.0 MEASUREMENT UNCERTAINTY

The measurement uncertainties shown below were calculated in accordance with the requirements of ANSI C63.4-2014. All measurement uncertainty values are shown with a coverage factor of k = 2 to indicate a 95% level of confidence. The measurement uncertainty shown below meets or exceeds the U_{CISPR} measurement uncertainty values specified in CISPR 16-4-2 and, thus, can be compared directly to specified limits to determine compliance.

Contribution	Expanded Uncertainty (±dB)
Conducted Bench Top Measurements	1.95
Radiated Disturbance (<1GHz)	4.10
Radiated Disturbance (>1GHz)	4.82
Radiated Disturbance (>18GHz)	4.96

6.0 TEST EQUIPMENT CALIBRATION DATA

Test Equipment Calibration is traceable to the National Institute of Standards and Technology (NIST). Measurement antennas used during testing were calibrated in accordance to the requirements of ANSI C63.5-2017.

Manufacture	Model	Description	Cal Date	Cal interval	Cal Due	Serial Number
Keysight	N9020B	MXA SIGNAL ANALYZER	10/12/2023	Annual	10/11/2024	MY55470135
Rohde & Schwarz	ESW	EMI Test Receiver	07/05/2023	Annual	07/04/2024	101761
AC POWER KOREA	ACPD-60150	DC Power Supply	01/12/2023	Annual	01/11/2024	DC-1
Rohde & Schwarz	TS-SFUNIT-Rx	Shielded Filter Unit	01/13/2023	Annual	01/14/2024	102131
Schwarzbeck	VULB9162	Broadband TRILOG Antenna	06/01/2023	Biennial	05/30/2025	9162-217
Sunol sciences	DRH-118	Horn Antenna	07/13/2023	Biennial	07/12/2025	A102416-1
Schwarzbeck	BBHA 9170	Horn Antenna	01/27/2022	Biennial	01/26/2024	1037
WAINWRIGHT	WHW-13000-18000-40000-40CC	High Pass Filter	04/06/2023	Annual	04/05/2024	2
Reachline	RL50W40GKF-20	Attenuator	04/06/2023	Annual	04/05/2024	PK00411
Reachline	250W18NN-40	Attenuator	10/12/2023	Annual	10/11/2024	PK00416
Reachline	250W18NN-40	Attenuator	10/12/2023	Annual	10/11/2024	PK00418
Reachline	250W18NN-40	Attenuator	10/12/2023	Annual	10/11/2024	PK00420
Reachline	250W18NN-40	Attenuator	10/12/2023	Annual	10/11/2024	PK00422

Table 6-1. Test Equipment

Notes:

1. For equipment listed above that has a calibration date or calibration due date that falls within the test date range, care was taken to ensure that this equipment was used after the calibration date and before the calibration due date.

2. All testing was performed before the calibration due date.

7.0 SAMPLE CALCULATIONS

Emission Designator

QPSK Modulation

Emission Designator = 14M1G7D

Occupied Bandwidth = 14.14 MHz
G = Phase Modulation
7 = Quantized/Digital Info
D = Data transmission, telemetry, telecommand

QAM Modulation

Emission Designator = 14M2W7D

Occupied Bandwidth = 14.17 MHz
W = Amplitude/Angle Modulated
7 = Quantized/Digital Info
D = Data transmission, telemetry, telecommand

8.0 TEST RESULTS

8.1 Summary

Company Name: SAMSUNG Electronics Co., Ltd.

FCC ID: A3LRF4451D-70A

FCC Classification: Licensed Non-Broadcast Station Transmitter

Mode(s): 5G NR

FCC Part Section(s)	Test Description	Limit	Test Condition	Test Result	Reference
§ 2.1046	Conducted Average Output Power	N/A	CONDUCTED	PASS	Annex 1
§ 2.1049	Occupied Bandwidth	N/A		PASS	Section 8.2
§ 2.1046, § 27.50(d)	Equivalent Isotropic Radiated Power (Power Spectral Density)	≤ 1640 W/MHz		PASS	Section 8.3 (Note 4)
§ 2.1046, § 27.50(d)	Peak-to-average ratio	≤ 13 dB		PASS	Section 8.4
§ 2.1051, § 27.53(h)	Band Edge Emissions at Antenna Terminal	< 43 + log10(P[Watts]) at Band Edge and all out-of-band emissions		PASS	Section 8.5
§ 2.1051, § 27.53(h)	Spurious and Harmonic Emissions at Antenna Terminal	Additional protection levels. Notwithstanding the foregoing paragraph (h)(1) of this section (Note 5)		PASS	Section 8.6
§ 2.1055 § 27.54	Frequency Stability	Fundamental emissions stay within authorized frequency block		N/A	(Note 6)
§ 2.1055, § 27.53(h)	Radiated unwanted emission	< 43 + log10(P[Watts]) at Band Edge and all out-of-band emissions	RADIATED	PASS	Section 8.8

Table 8-1. Summary of Test Results

Notes:

1) All modes of operation and data rates were investigated. The test results shown in the following sections represent the worst case emissions.

2) The analyzer plots were all taken with a correction table loaded into the analyzer.

3) All antenna port conducted emissions testing was performed on a test bench with the antenna port of the EUT connected to the spectrum analyzer through calibrated cables and attenuators.

4) The maximum antenna gain is determined at the time of licensing depending on the geographical location of the base station.

5) Requirements of additional protection levels are addressed at the time of licensing by the Licensing Bureau. Therefore, requirement of additional protection level is not included during equipment certification.

6) This is a variant report for channel bandwidth and modulation enabled by software without hardware change. The test item does not affect those operation. And it was performed in original report.

8.2 Occupied Bandwidth

Test Overview

The occupied bandwidth, that is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers radiated are each equal to 0.5 percent of the total mean power radiated by a given emission shall be measured. All modes of operation were investigated and the worst case configuration results are reported in this section.

Test Procedures Used

KDB 971168 D01 v03r01 – Section 4.3

ANSI C63.26-2015 – Section 5.4.4

Test Setting

The measurement was made using a direct connection between the RF output of the EUT and the spectrum analyzer. The spectrum analyzer settings were as follows:

1. The signal analyzer's automatic bandwidth measurement capability was used to perform the 99% occupied bandwidth and the 26dB bandwidth. The bandwidth measurement was not influenced by any intermediate power nulls in the fundamental emission.
2. RBW = 1 – 5% of the expected OBW
3. VBW ≥ 3 x RBW
4. Detector = Peak
5. Trace mode = max hold
6. Sweep = auto couple
7. The trace was allowed to stabilize
8. If necessary, steps 2 – 7 were repeated after changing the RBW such that it would be within 1 – 5% of the 99% occupied bandwidth observed in Step 7

Test Setup

The EUT and measurement equipment were set up as shown in the diagram below.

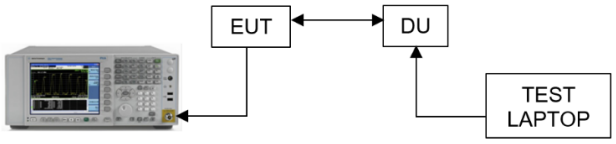


Figure 8-1. Test Instrument & Measurement Setup

Test Notes

None

Channel	Port	OBW (MHz)			
		QPSK	16QAM	64QAM	256QAM
Low	0	14.12	14.15	14.13	14.11
	1	14.13	14.16	14.12	14.13
	2	14.12	14.14	14.12	14.11
	3	14.11	**14.17**	14.13	14.10
Middle	0	14.10	14.14	14.10	14.11
	1	**14.14**	14.15	14.13	14.13
	2	14.11	14.17	14.10	14.09
	3	14.11	14.16	14.12	14.10
High	0	14.09	14.16	14.09	14.11
	1	14.12	14.17	14.09	14.12
	2	14.10	14.14	14.10	14.09
	3	14.11	14.14	14.11	14.07

Table 8-2. Occupied Bandwidth Summary Data (n66_1C_15M)

Channel	Port	OBW (MHz)			
		QPSK	16QAM	64QAM	256QAM
High	0	28.54	28.39	28.57	**28.62**
	1	28.52	28.40	28.58	28.50
	2	28.52	28.43	28.56	28.53
	3	**28.55**	28.37	28.55	28.57

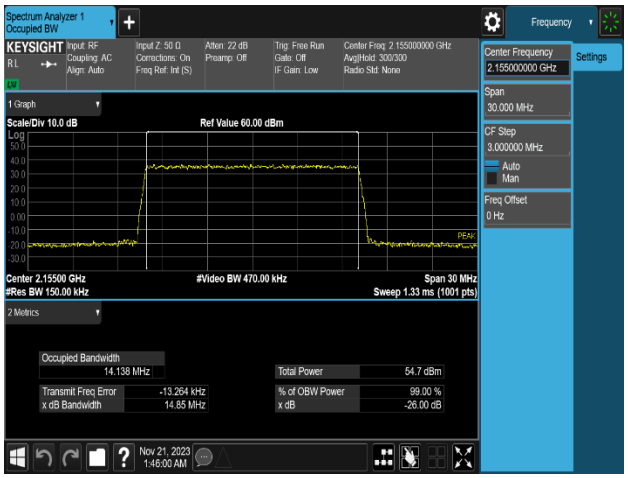
Table 8-3. Occupied Bandwidth Summary Data (n66_1C_30M)

Channel	Port	OBW (MHz)	
		QPSK	16QAM
Low	0	24.13	24.19
	1	24.18	24.17
	2	24.19	24.17
	3	24.17	24.15
Middle	0	24.16	24.22
	1	24.16	24.21
	2	24.15	24.21
	3	24.19	24.20
High	0	24.16	**24.25**
	1	24.18	24.25
	2	24.14	24.18
	3	**24.21**	24.18

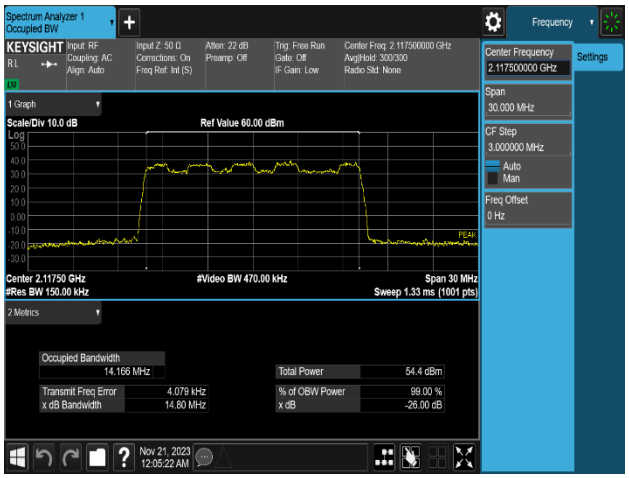
Table 8-4. Occupied Bandwidth Summary Data (n66_3C_5M+5M+15M)

Channel	Port	OBW (MHz)	
		QPSK	16QAM
High	0	**38.86**	38.64
	1	38.84	38.63
	2	38.83	38.53
	3	38.82	**38.66**

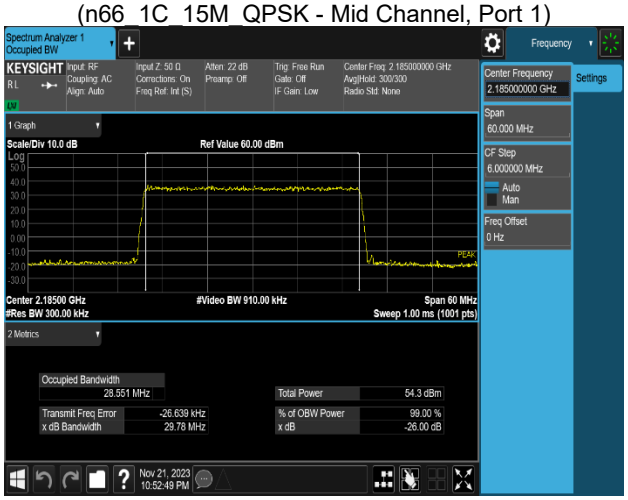
Table 8-5. Occupied Bandwidth Summary Data (n66_3C_5M+5M+30M)



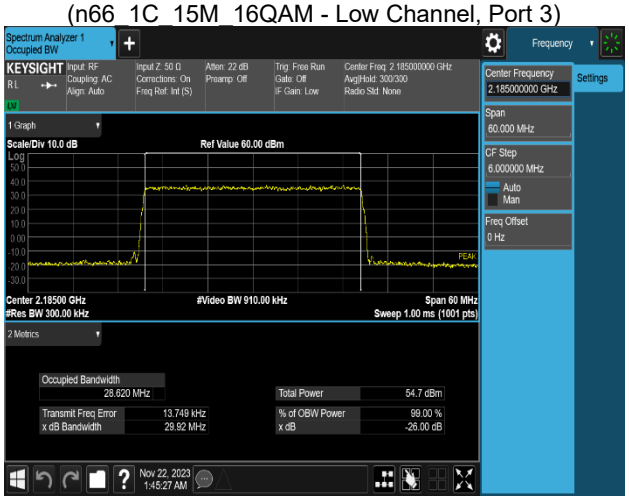
Plot 8-1. Occupied Bandwidth Plot
(n66_1C_15M_QPSK - Mid Channel, Port 1)



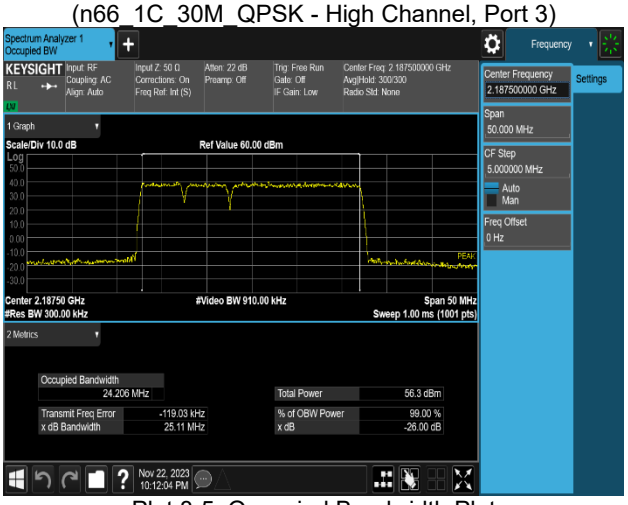
Plot 8-2. Occupied Bandwidth Plot
(n66_1C_15M_16QAM - Low Channel, Port 3)



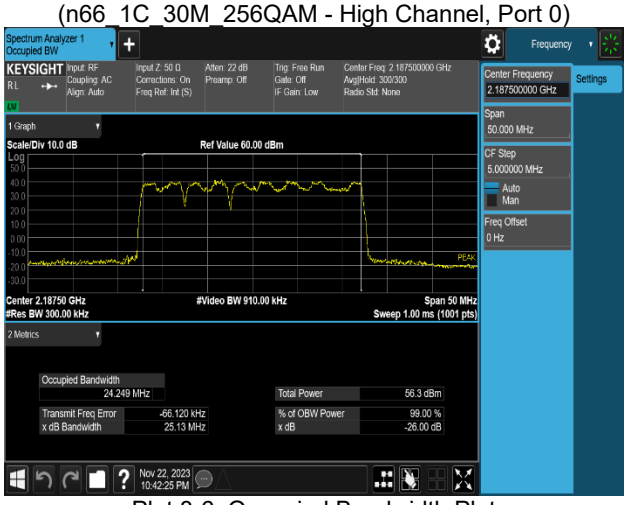
Plot 8-3. Occupied Bandwidth Plot
(n66_1C_30M_QPSK - High Channel, Port 3)



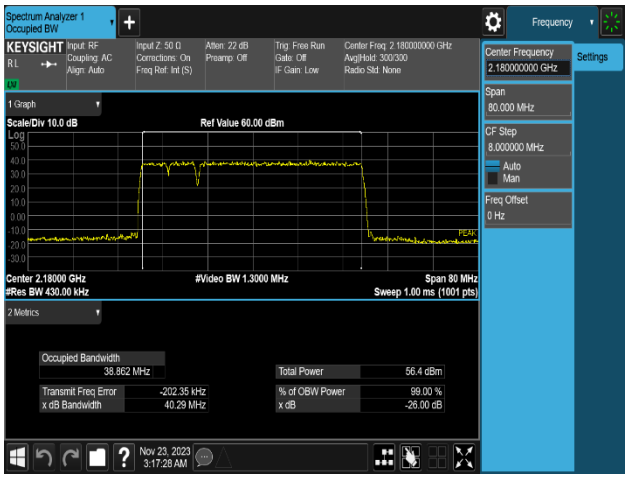
Plot 8-4. Occupied Bandwidth Plot
(n66_1C_30M_256QAM - High Channel, Port 0)



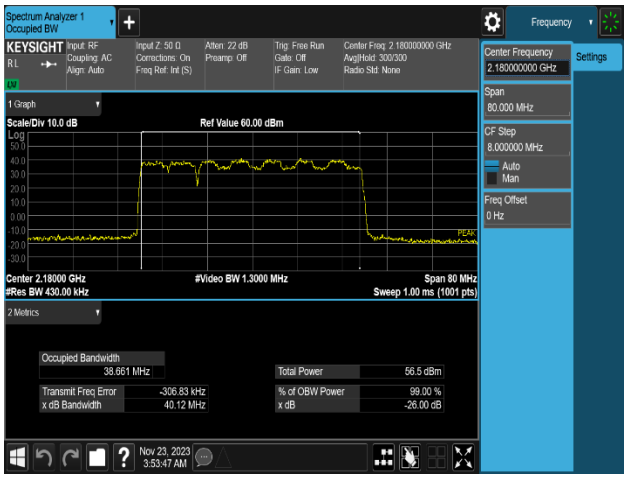
Plot 8-5. Occupied Bandwidth Plot
(n66_3C_5M+5M+15M_QPSK - High Channel, Port 3)



Plot 8-6. Occupied Bandwidth Plot
(n66_3C_5M+5M+15M_16QAM - High Channel, Port 0)



Plot 8-7. Occupied Bandwidth Plot
(n66_3C_5M+5M+30M_QPSK - High Channel, Port 0)



Plot 8-8. Occupied Bandwidth Plot
(n66_3C_5M+5M+30M_16QAM - High Channel, Port 3)

8.3 Equivalent Isotropic Radiated Power (Power Spectral Density)

Test Overview

A transmitter port of EUT is connected to the input of a signal analyzer. All measurements are performed as RMS average measurements while the EUT is operating at its maximum duty cycle, at maximum power, and at the appropriate frequencies.

Test Procedure Used

KDB 971168 D01 v03r01 – Section 5.2
KDB 662911 D01 v02r01 – Section E)2) In-Band Power Spectral Density (PSD) Measurements
b) Measure and sum spectral maxima across the outputs.
ANSI C63.26-2015 – Section 5.2.4

Test Setting

The measurement was made using a direct connection between the RF output of the EUT and the spectrum analyzer. The spectrum analyzer settings were as follows:

1. Conducted power measurements are performed using the signal analyzer's "SA mode" measurement capability for signals with continuous operation.
2. Set span to 2 × to 3 × the OBW.
3. Set RBW = 1 MHz (the reference bandwidth)
4. Set VBW ≥ 3 × RBW.
5. Set number of measurement points in sweep ≥ 2 × span / RBW.
6. Sweep time:
   a) Set ≥ auto-couple, and enable trace averaging, or
   b) Set ≥ [10 × (number of points in sweep) × (transmission symbol period)] and enable a single sweep (automation-compatible) measurement. The sweep time should never be faster than the auto-coupled sweep time.
7. Detector = power averaging (rms).
8. The trace was allowed to stabilize
9. Use the peak marker function to determine the maximum amplitude level. (=P_{Meas})
10. The relevant equation for determining the maximum EIRP from the measured RF output power is given in Equation as follows:
    $EIRP = P_{Meas} + G_T$
    where
    GT: gain of the transmitting antenna, in dBi (EIRP).

Test Setup

The EUT and measurement equipment were set up as shown in the diagram below.

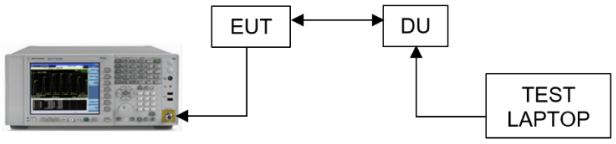


Figure 8-2. Test Instrument & Measurement Setup

Limit

§ 27.50(d)

(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.

Note) The maximum antenna gain and ERIP Limit is determined at the time of licensing depending on the geographical location of the base station.

Test Notes

1. Consider the following factors for MIMO:
   The output power per each port is measured as dBm/MHz or dBm, the output powers are summed up in linear using the measure-and-sum technique defined in KDB 971168 D01 v03r01 - Section E) 2).

2. The output power per port (dBm/MHz or dBm) is converted to a linear value (mW). A summation of linear powers for all ports gives us the total MIMO Conducted Power (mW). We convert this back to logarithmic scale for further output power calculations.

3. All transmit signals from different antennas are completely uncorrelated with each other. So the maximum output power shall be calculated based on the aggregate power conducted across all antennas.

4. Sample Calculation:
   Let us assume the following numbers:
   a) Total MIMO Conducted Power as 21760.47 milliWatts
   b)

Factors		Value	Unit
Summed MIMO Conducted Power (linear sum)		21760.42	mW/MHz
Summed MIMO Conducted Power (dBm)	= 10 * log (21760.47) =	43.38	dBm/MHz

Channel	Port	PSD Power (dBm/MHz)			
		QPSK	**16QAM**	64QAM	256QAM
Low	0	35.79	**37.65**	36.00	35.85
	1	35.73	**37.50**	35.94	35.96
	2	35.39	**37.11**	35.57	35.31
	3	35.55	**37.14**	35.64	35.41
Total MIMO PSD Power (mW/MHz)		14581.63	**21760.47**	15178.42	14660.99
Total MIMO PSD Power (dBm/MHz)		41.64	**43.38**	41.81	41.66
Channel	Port	QPSK	16QAM	64QAM	256QAM
Middle	0	35.87	37.53	36.10	35.95
	1	35.72	37.47	35.77	35.84
	2	35.57	37.08	35.58	35.59
	3	35.57	37.13	35.53	35.54
Total MIMO PSD Power (mW/MHz)		14809.52	21499.96	15040.06	14971.37
Total MIMO PSD Power (dBm/MHz)		41.71	43.32	41.77	41.75
Channel	Port	QPSK	16QAM	64QAM	256QAM
High	0	35.81	37.37	35.95	35.38
	1	35.85	37.46	35.91	35.48
	2	35.49	37.09	35.63	35.50
	3	35.45	37.03	35.65	35.54
Total MIMO PSD Power (mW/MHz)		14701.08	21181.01	15166.58	14105.85
Total MIMO PSD Power (dBm/MHz)		41.67	43.26	41.81	41.49

Table 8-6. Peak Power Spectral Density Table (n66_1C_15M)

Channel	Port	QPSK	**16QAM**	64QAM	256QAM
High	0	31.95	**34.19**	32.55	32.63
	1	31.97	**34.06**	32.43	32.33
	2	32.36	**34.32**	32.55	32.41
	3	32.23	**34.35**	32.57	32.61
Total MIMO PSD Power (mW/MHz)		6533.75	**10591.45**	7153.13	7108.37
Total MIMO PSD Power (dBm/MHz)		38.15	**40.25**	38.54	38.52

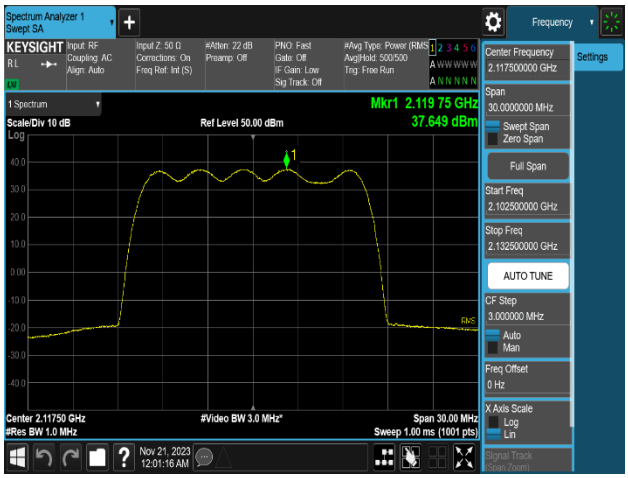
Table 8-7. Peak Power Spectral Density Table (n66_1C_30M)

Channel	Port	PSD Power (dBm/MHz)	
		QPSK	16QAM
Low	0	34.87	34.92
	1	35.01	34.90
	2	34.92	34.84
	3	35.05	34.88
Total MIMO PSD Power (mW/MHz)		12538.46	12316.74
Total MIMO PSD Power (dBm/MHz)		40.98	40.90
Channel	Port	QPSK	**16QAM**
Middle	0	34.96	**36.34**
	1	34.91	**36.28**
	2	35.14	**36.38**
	3	35.17	**36.52**
Total MIMO PSD Power (mW/MHz)		12778.44	**17378.04**
Total MIMO PSD Power (dBm/MHz)		41.06	**42.40**
Channel	Port	QPSK	16QAM
High	0	34.91	36.32
	1	34.94	36.24
	2	34.94	36.48
	3	35.15	36.41
Total MIMO PSD Power (mW/MHz)		12611.63	17322.32
Total MIMO PSD Power (dBm/MHz)		41.01	42.39

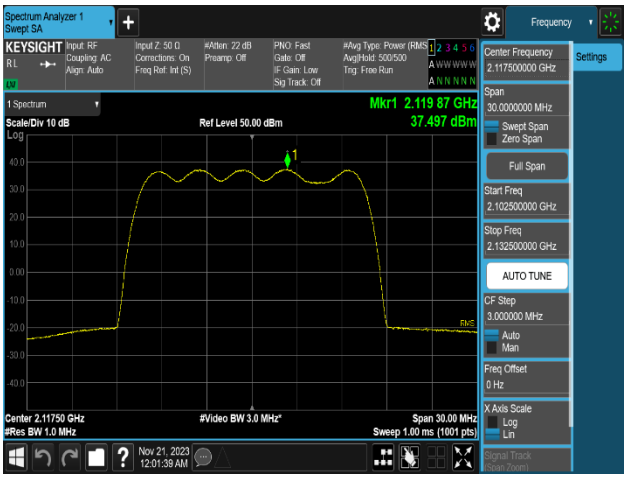
Table 8-8. Peak Power Spectral Density Table (n66_3C_5M+5M+15M)

Channel	Port	PSD Power (dBm/MHz)	
		QPSK	**16QAM**
High	0	32.91	**34.76**
	1	33.00	**34.51**
	2	33.20	**34.72**
	3	33.17	**34.73**
Total MIMO PSD Power (mW/MHz)		8111.48	**11754.87**
Total MIMO PSD Power (dBm/MHz)		39.09	**40.70**

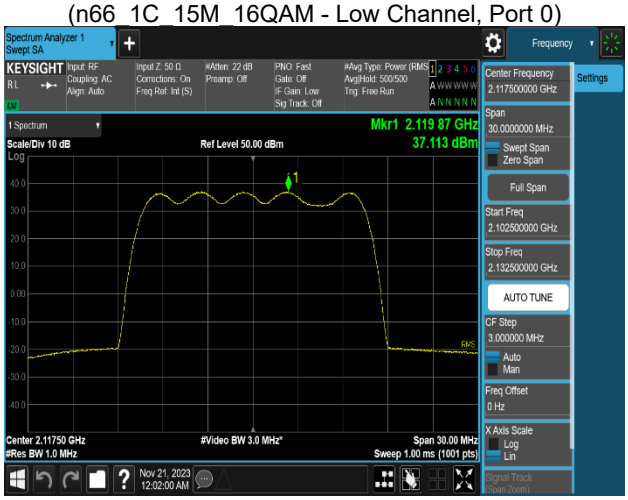
Table 8-9. Peak Power Spectral Density Table (n66_3C_5M+5M+30M)



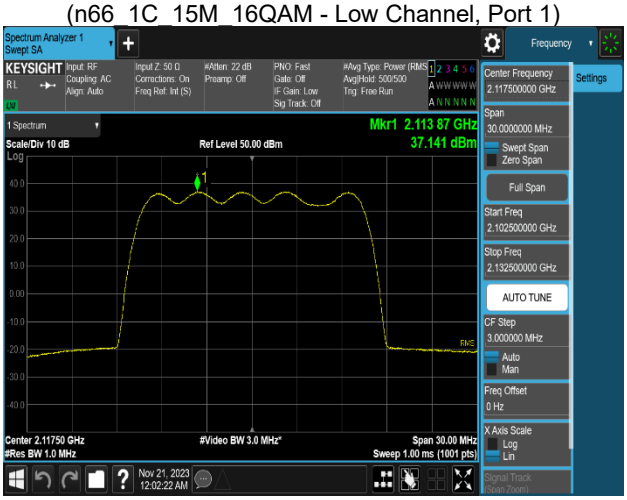
Plot 8-9. Power Spectral Density Plot
(n66_1C_15M_16QAM - Low Channel, Port 0)



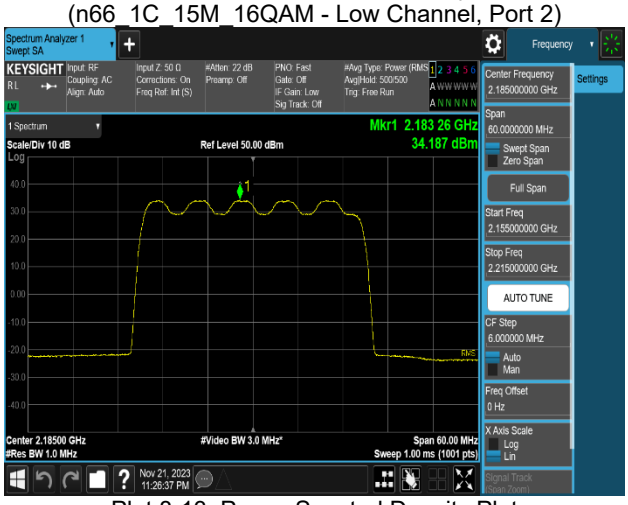
Plot 8-10. Power Spectral Density Plot
(n66_1C_15M_16QAM - Low Channel, Port 1)



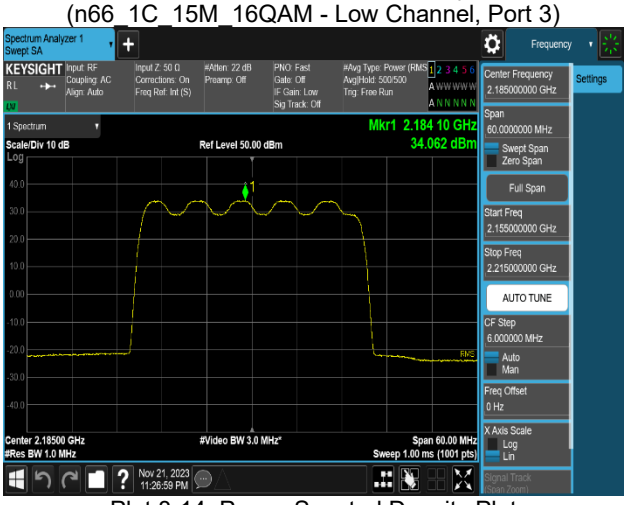
Plot 8-11. Power Spectral Density Plot
(n66_1C_15M_16QAM - Low Channel, Port 2)



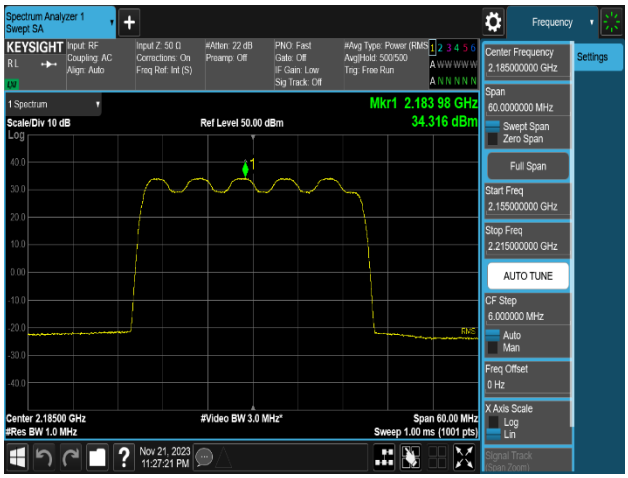
Plot 8-12. Power Spectral Density Plot
(n66_1C_15M_16QAM - Low Channel, Port 3)



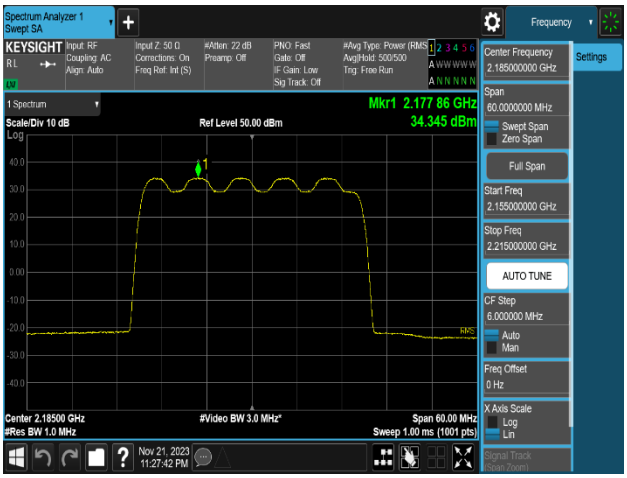
Plot 8-13. Power Spectral Density Plot
(n66_1C_30M_16QAM - High Channel, Port 0)



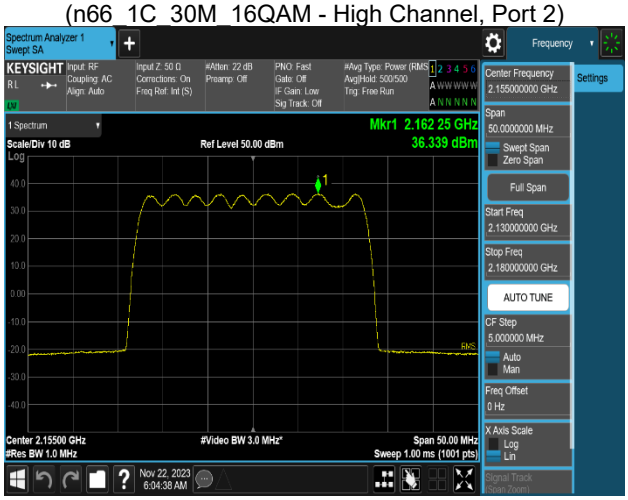
Plot 8-14. Power Spectral Density Plot
(n66_1C_30M_16QAM - High Channel, Port 1)



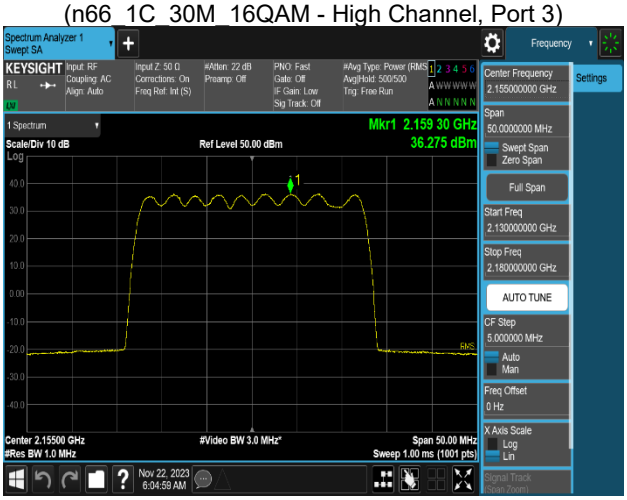
Plot 8-15. Power Spectral Density Plot
(n66_1C_30M_16QAM - High Channel, Port 2)



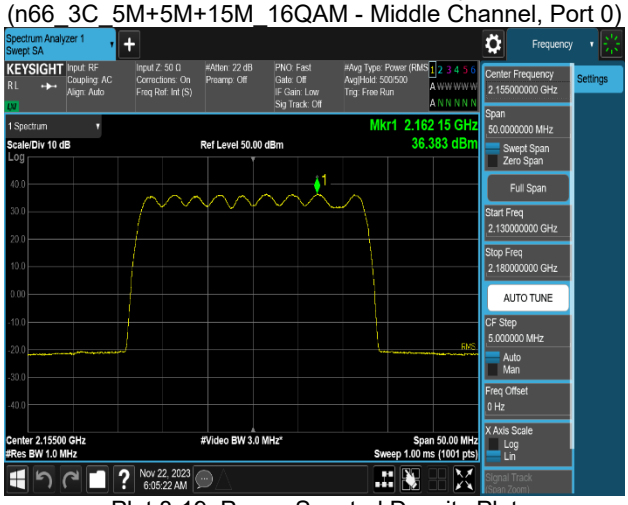
Plot 8-16. Power Spectral Density Plot
(n66_1C_30M_16QAM - High Channel, Port 3)



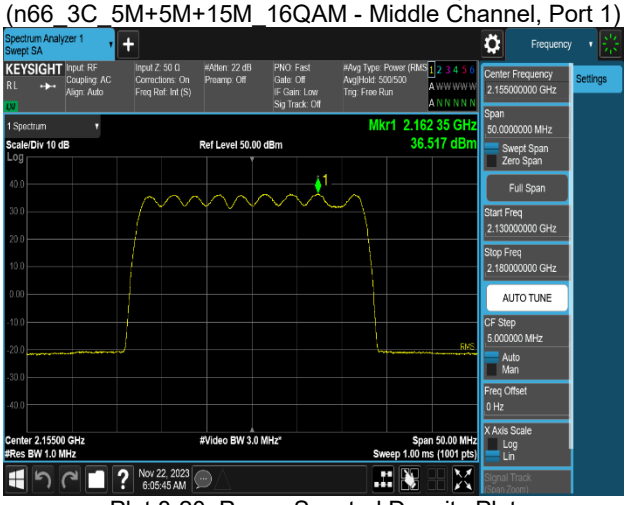
Plot 8-17. Power Spectral Density Plot
(n66_3C_5M+5M+15M_16QAM - Middle Channel, Port 0)



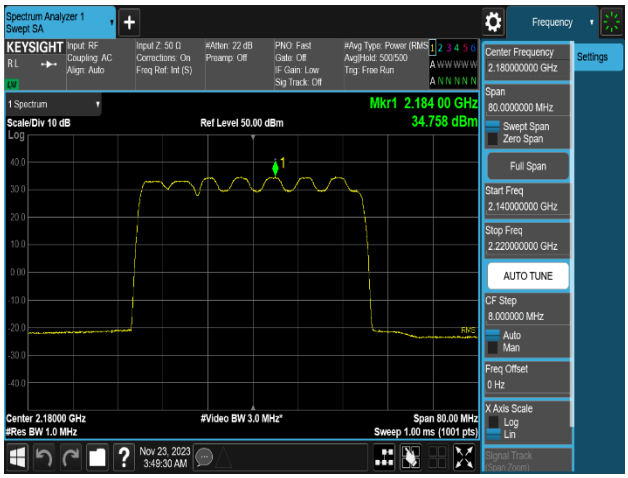
Plot 8-18. Power Spectral Density Plot
(n66_3C_5M+5M+15M_16QAM - Middle Channel, Port 1)



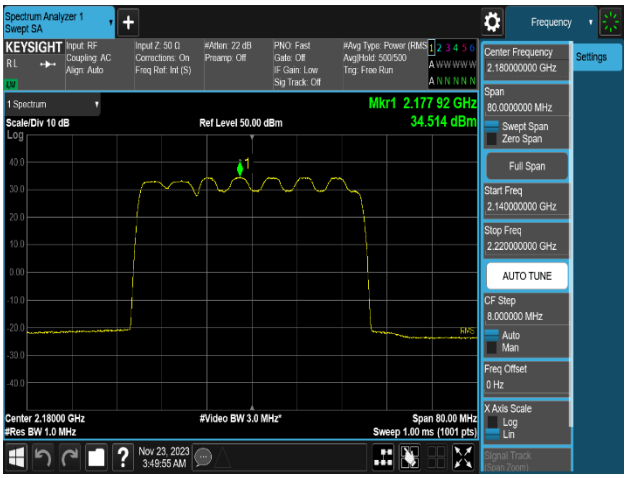
Plot 8-19. Power Spectral Density Plot
(n66_3C_5M+5M+15M_16QAM - Middle Channel, Port 2)



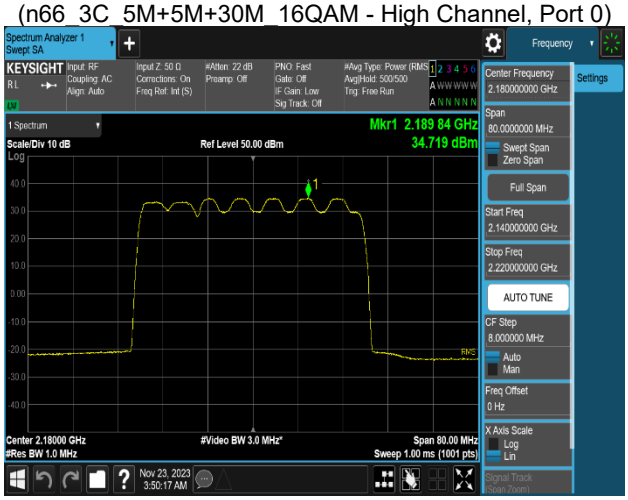
Plot 8-20. Power Spectral Density Plot
(n66_3C_5M+5M+15M_16QAM - Middle Channel, Port 3)



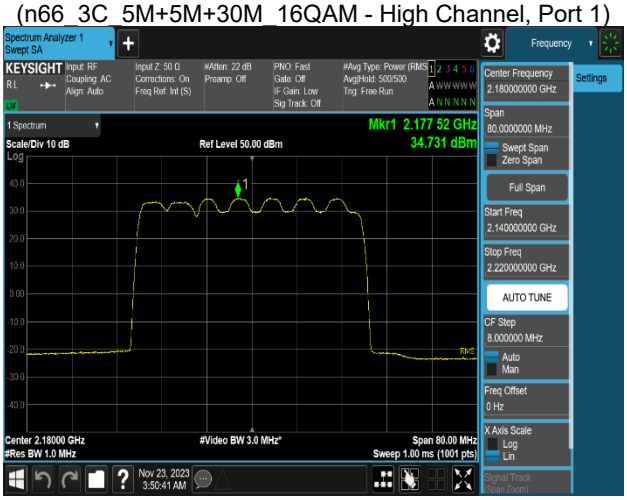
Plot 8-21. Power Spectral Density Plot
(n66_3C_5M+5M+30M_16QAM - High Channel, Port 0)



Plot 8-22. Power Spectral Density Plot
(n66_3C_5M+5M+30M_16QAM - High Channel, Port 1)



Plot 8-23. Power Spectral Density Plot
(n66_3C_5M+5M+30M_16QAM - High Channel, Port 2)



Plot 8-24. Power Spectral Density Plot
(n66_3C_5M+5M+30M_16QAM - High Channel, Port 3)

8.4 Peak To Average Ratio

Test Overview

The peak to average ratio measurement is performed at the conducted port of the EUT. The spectrum analyzers Complementary Cumulative Distribution Function (CCDF) measurement profile is used to determine the largest deviation between the average and the peak power of the EUT in a given bandwidth. The CCDF curve shows how much time the peak waveform spends at or above a given average power level. The percent of time the signal spends at or above the level defines the probability for that particular power level.

Test Procedure Used

KDB 971168 D01 v03r01 – Section 5.7

ANSI C63.26-2015 – Section 5.2.3.4

Test Setting

The measurement was made using a direct connection between the RF output of the EUT and the spectrum analyzer. The spectrum analyzer settings were as follows:

1. The signal analyzer's CCDF function is enabled.
2. Frequency = carrier center frequency
3. Measurement BW ≥ OBW or specified reference bandwidth
4. The signal analyzer was set to collect one million samples to generate the CCDF curve
5. The measurement interval was set depending on the type of signal analyzed. For continuous signals (>98% duty cycle), the measurement interval was set to 1ms.

Test Setup

The EUT and measurement equipment were set up as shown in the diagram below.

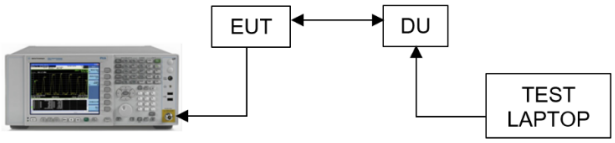


Figure 8-3. Test Instrument & Measurement Setup

Limit

§ 27.50(d)

(5) In measuring transmissions in this band using an average power technique, the peak-to-average ratio (PAR) of the transmission may not exceed 13 dB.

Channel	Port	PAPR (dB)				Limit (dB)
		QPSK	16QAM	64QAM	256QAM	
Low	0	8.21	8.18	8.13	8.21	≤ 13
	1	8.20	8.18	8.15	8.21	
	2	8.20	8.18	8.12	8.20	
	3	8.21	8.18	8.16	8.21	
Middle	0	8.19	8.17	8.16	8.20	
	1	8.21	8.19	8.15	**8.22**	
	2	8.20	8.19	8.16	8.22	
	3	8.20	8.20	8.15	8.22	
High	0	8.21	8.18	8.16	8.22	
	1	**8.22**	8.21	8.17	8.20	
	2	8.20	8.19	8.16	8.19	
	3	8.20	8.19	8.15	8.21	

Table 8-10. Peak To Average Power Ratio Summary Data (n66_1C_15M)

Channel	Port	PAPR (dB)				Limit (dB)
		QPSK	16QAM	64QAM	256QAM	
High	0	8.31	**8.27**	8.21	8.21	≤ 13
	1	8.30	8.24	8.21	8.19	
	2	8.28	8.20	8.20	8.22	
	3	**8.32**	8.24	8.20	8.22	

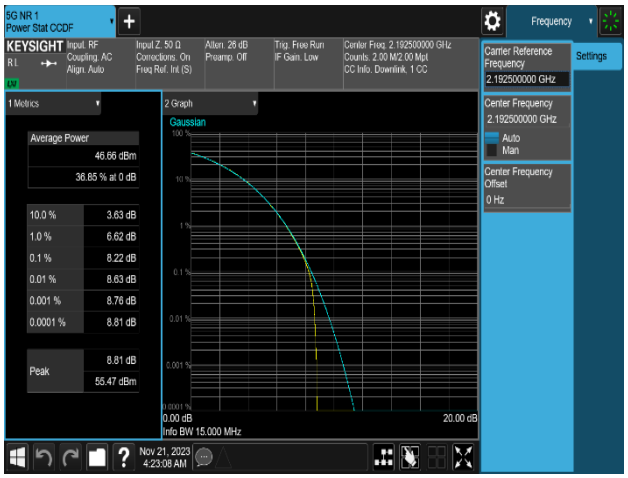
Table 8-11. Peak To Average Power Ratio Summary Data (n66_1C_30M)

Channel	Port	PAPR (dB)	Limit (dB)
		QPSK	
Low	0	7.97	≤ 13
	1	7.99	
	2	8.00	
	3	7.99	
Middle	0	8.03	
	1	8.05	
	2	**8.06**	
	3	8.03	
High	0	8.00	
	1	7.99	
	2	7.96	
	3	7.99	

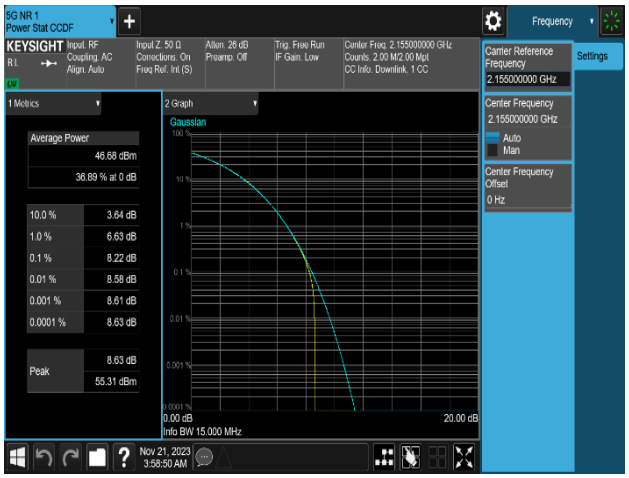
Table 8-12. Peak To Average Power Ratio Summary Data (n66_3C_5M+5M+15M)

Channel	Port	PAPR (dB)	Limit (dB)
		QPSK	
High	0	8.06	≤ 13
	1	**8.09**	
	2	8.08	
	3	8.09	

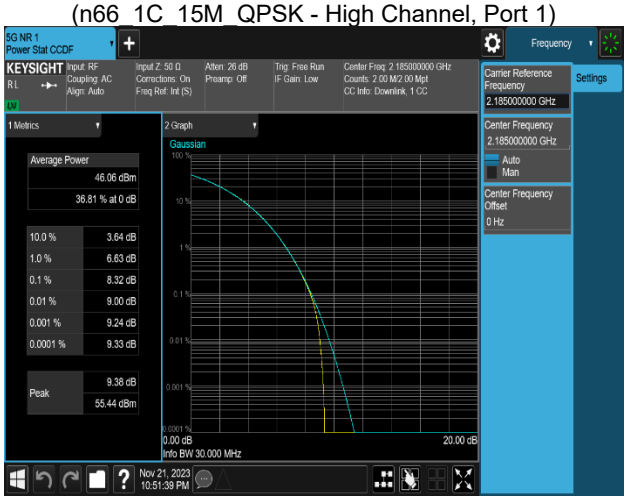
Table 8-13. Peak To Average Power Ratio Summary Data (n66_3C_5M+5M+30M)



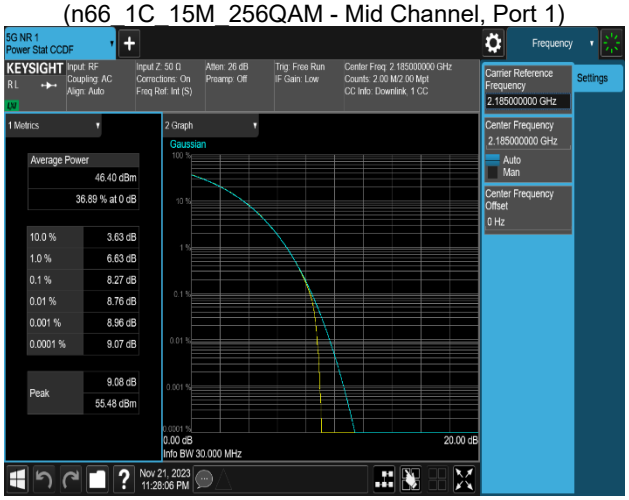
Plot 8-25. Peak To Average Power Ratio Plot
(n66_1C_15M_QPSK - High Channel, Port 1)



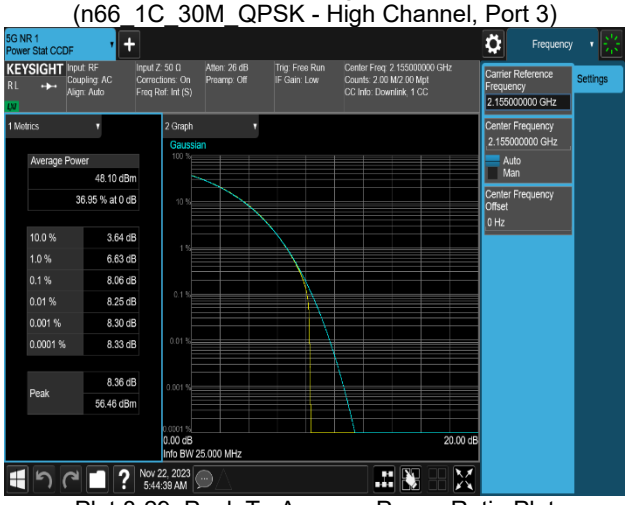
Plot 8-26. Peak To Average Power Ratio Plot
(n66_1C_15M_256QAM - Mid Channel, Port 1)



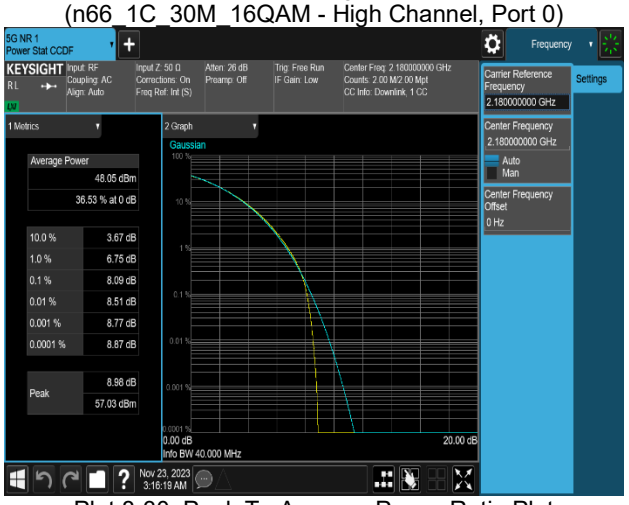
Plot 8-27. Peak To Average Power Ratio Plot
(n66_1C_30M_QPSK - High Channel, Port 3)



Plot 8-28. Peak To Average Power Ratio Plot
(n66_1C_30M_16QAM - High Channel, Port 0)



Plot 8-29. Peak To Average Power Ratio Plot
(n66_3C_5M+5M+15M_QPSK - Mid Channel, Port 2)



Plot 8-30. Peak To Average Power Ratio Plot
(n66_3C_5M+5M+30M_QPSK - High Channel, Port 1)

8.5 Band Edge Emissions at Antenna Terminal

Test Overview

All out of band emissions are measured with a spectrum analyzer connected to the antenna terminal of the EUT while the EUT is operating at its maximum duty cycle, at maximum power, and at the appropriate frequencies. All data rates were investigated to determine the worst case configuration. All modes of operation were investigated and the worst case configuration results are reported in this section.

Test Procedure Used

KDB 971168 D01 v03r01 – Section 6
KDB 662911 D01 v02r01 – Section E)3) Out-of-Band and Spurious Emission Measurements
a) Absolute Emission Limits
iii) Measure and add 10 log(N_{ANT}) dB
ANSI C63.26-2015 – Section 5.7.3

Test Setting

1. Start and stop frequency were set such that the band edge would be placed in the center of the plot
2. Span was set large enough so as to capture all out of band emissions near the band edge
3. RBW: Please see test notes below.
4. VBW ≥ 3 x RBW
5. Detector = RMS
6. Number of sweep points ≥ 2 x Span/RBW
7. Trace mode = trace average
8. Sweep time = auto couple
9. The trace was allowed to stabilize

Limit

§ 27.53(h)

(h) AWS emission limits—(1) General protection levels. Except as otherwise specified below, for operations 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 bands, the power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) in watts by at least 43 + 10 log10 (P) dB.

Test Setup

The EUT and measurement equipment were set up as shown in the diagram below.

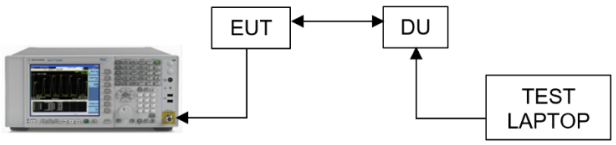


Figure 8-4. Test Instrument & Measurement Setup

Test Notes

1. Compliance with this provision is based on the use of measurement instrumentation employing a resolution bandwidth of 1 megahertz or greater. However, in the 1 megahertz bands immediately outside and adjacent to the licensee's frequency block, a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed. The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.

2. When the channel edge detect with a margin of under 1dB to Limit, That used to integration method was performed using the spectrum analyzer's band power functions according to ANSI C63.26-2015 – Section 5.7. The spectrum analyzer marker was placed at one-half of the RBW away from the band edge. The integration value was set to a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter.

3. The limits were adjusted by a factor of [-10*log (4)] dB to account for the device operation as a 4 port MIMO transmitter, as per FCC KDB 622911. MIMO Factor calculation as below:
   MIMO Factor = 10*log (4) = 6.02 dB

Frequency range	Basic Limit (dBm/MHz)	4Tx MIMO Factor (dB)	RBW Factor (dB)	Adjusted limit (dBm)
Low Frequency block – 1MHz	-13	6.02	0	-19.02
High Frequency block + 1MHz	-13	6.02	0	-19.02
Note: Adjusted limit (dBm/MHz) = Basic limit (dBm/1MHz) - MIMO Factor - RBW Factor				

Channel	Port	Measured Range (MHz)	Max. Value (dBm)				Limit (dBm)
			QPSK	16QAM	64QAM	256QAM	
Low	0	2109 to 2110	-24.16	-23.60	-23.85	**-23.55**	-19.02
	1	2109 to 2110	-24.33	-24.30	-24.18	-24.22	
	2	2109 to 2110	-24.14	-24.11	-24.14	-24.22	
	3	2109 to 2110	-24.27	-23.83	-24.19	-24.15	
High	0	2200 to 2201	-24.93	**-23.16**	-24.90	-25.04	
	1	2200 to 2201	-25.34	-23.59	-24.92	-24.99	
	2	2200 to 2201	-24.81	-23.23	-24.72	-24.82	
	3	2200 to 2201	-25.56	-24.07	-25.03	-24.83	

Table 8-14. Band Edge Emission Summary Data (n66_1C_15M)

Channel	Port	Measured Range (MHz)	Max. Value (dBm)				Limit (dBm)
			QPSK	16QAM	64QAM	256QAM	
Low	0	2109 to 2110	-30.33	-30.07	-30.33	-30.15	-19.02
	1	2109 to 2110	-30.04	-30.01	**-29.60**	-29.72	
	2	2109 to 2110	-30.26	-30.33	-30.17	-30.04	
	3	2109 to 2110	-29.69	-29.93	-29.76	-29.82	
High	0	2200 to 2201	-26.77	-27.17	-26.71	-26.83	
	1	2200 to 2201	-26.91	-26.97	**-26.59**	-26.95	
	2	2200 to 2201	-26.79	-26.88	-26.79	-26.94	
	3	2200 to 2201	-26.83	-27.04	-26.67	-26.95	

Table 8-15. Band Edge Emission Summary Data (n66_1C_30M)

Channel	Port	Measured Range (MHz)	Max. Value (dBm)	Limit (dBm)
			QPSK	
Low	0	2109 to 2110	-23.99	-19.02
	1	2109 to 2110	-24.23	
	2	2109 to 2110	-24.41	
	3	2109 to 2110	**-23.96**	
High	0	2200 to 2201	-24.52	
	1	2200 to 2201	-24.82	
	2	2200 to 2201	**-24.22**	
	3	2200 to 2201	-24.43	

Table 8-16. Band Edge Emission Summary Data (n66_3C_5M+5M+15M)

Channel	Port	Measured Range (MHz)	Max. Value (dBm)	Limit (dBm)
			QPSK	
Low	0	2109 to 2110	-23.87	-19.02
	1	2109 to 2110	**-23.80**	
	2	2109 to 2110	-23.87	
	3	2109 to 2110	-24.13	
High	0	2200 to 2201	-24.28	
	1	2200 to 2201	-24.46	
	2	2200 to 2201	-24.25	
	3	2200 to 2201	**-23.21**	

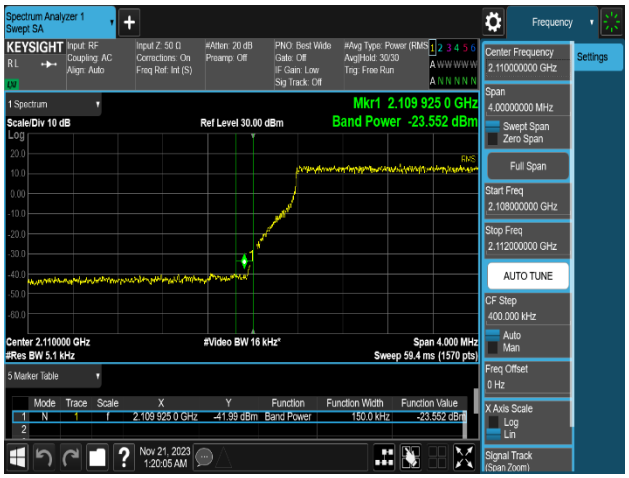
Table 8-17. Band Edge Emission Summary Data (n66_3NC_5M+5M+15M)

Channel	Port	Measured Range (MHz)	Max. Value (dBm)	Limit (dBm)
			QPSK	
Low	0	2109 to 2110	**-27.79**	-19.02
	1	2109 to 2110	-27.81	
	2	2109 to 2110	-27.88	
	3	2109 to 2110	-27.82	
High	0	2200 to 2201	-24.68	
	1	2200 to 2201	-24.71	
	2	2200 to 2201	-24.52	
	3	2200 to 2201	**-24.51**	

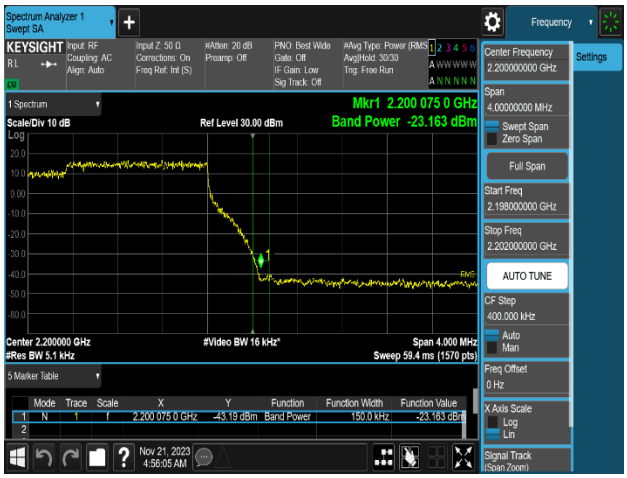
Table 8-18. Band Edge Emission Summary Data (n66_3C_5M+5M+30M)

Channel	Port	Measured Range (MHz)	Max. Value (dBm)	Limit (dBm)
			QPSK	
Low	0	2109 to 2110	**-23.15**	-19.02
	1	2109 to 2110	-23.39	
	2	2109 to 2110	-23.17	
	3	2109 to 2110	-23.45	
High	0	2200 to 2201	-22.58	
	1	2200 to 2201	**-21.78**	
	2	2200 to 2201	-22.78	
	3	2200 to 2201	-22.52	

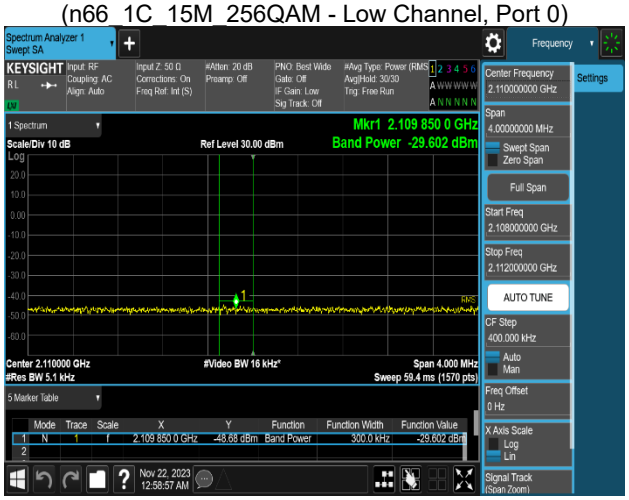
Table 8-19. Band Edge Emission Summary Data (n66_3NC_5M+5M+30M)



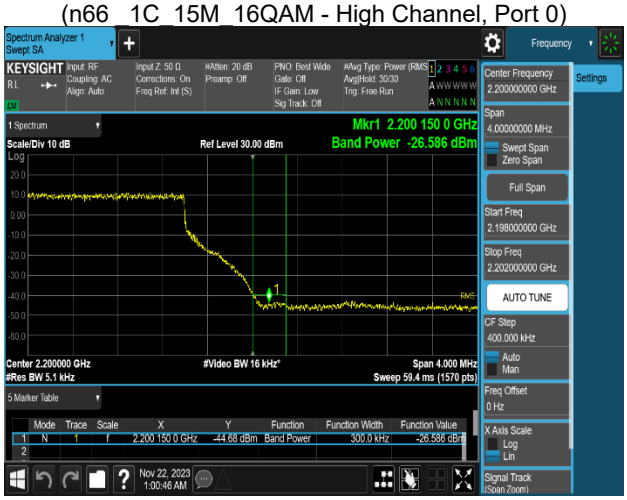
Plot 8-31. Band Edge Emission Plot
(n66_1C_15M_256QAM - Low Channel, Port 0)



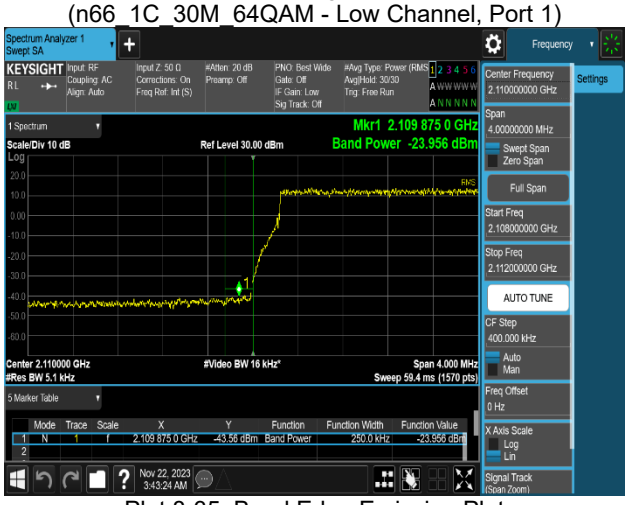
Plot 8-32. Band Edge Emission Plot
(n66_1C_15M_16QAM - High Channel, Port 0)



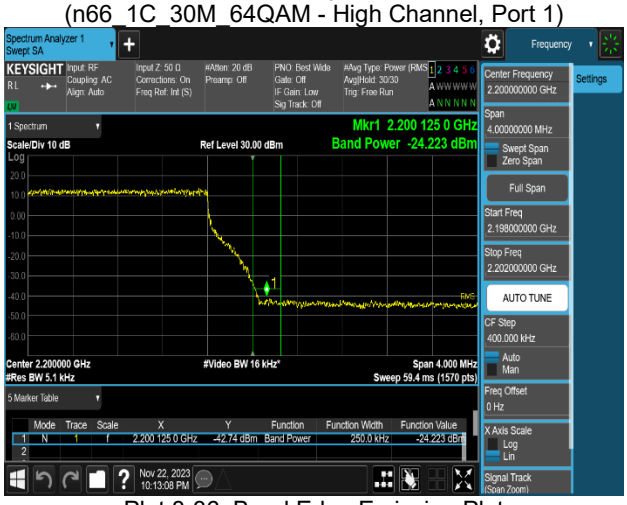
Plot 8-33. Band Edge Emission Plot
(n66_1C_30M_64QAM - Low Channel, Port 1)



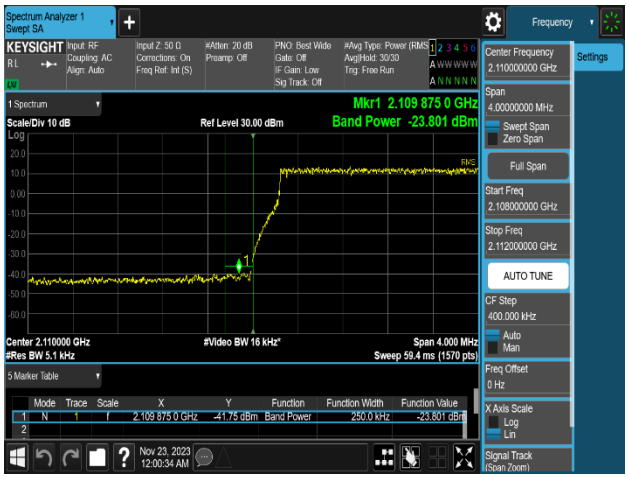
Plot 8-34. Band Edge Emission Plot
(n66_1C_30M_64QAM - High Channel, Port 1)



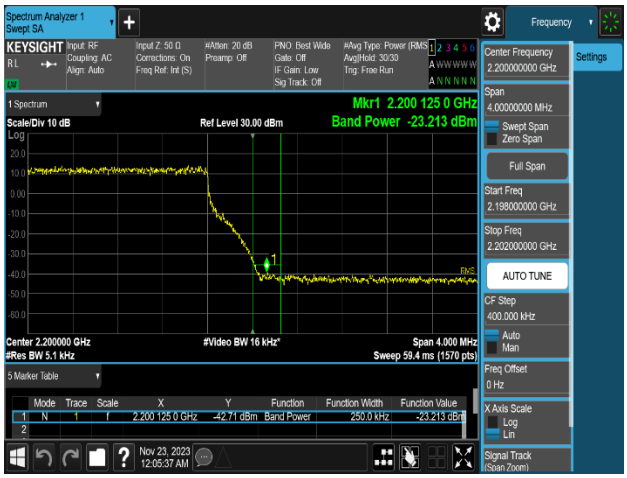
Plot 8-35. Band Edge Emission Plot
(n66_3C_5M+5M+15M_QPSK - Low Channel, Port 3)



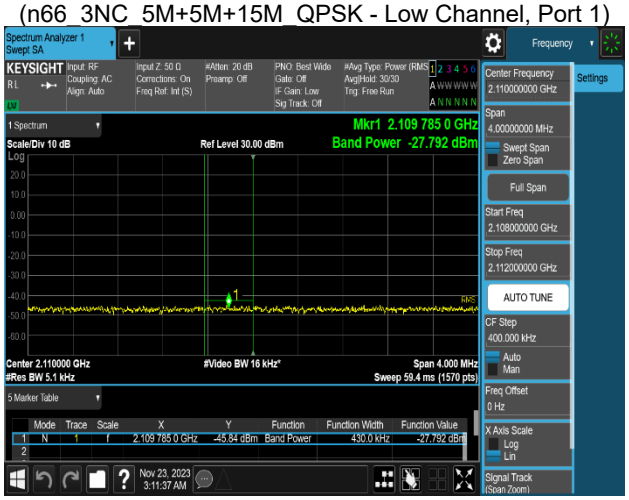
Plot 8-36. Band Edge Emission Plot
(n66_3C_5M+5M+15M_QPSK - High Channel, Port 2)



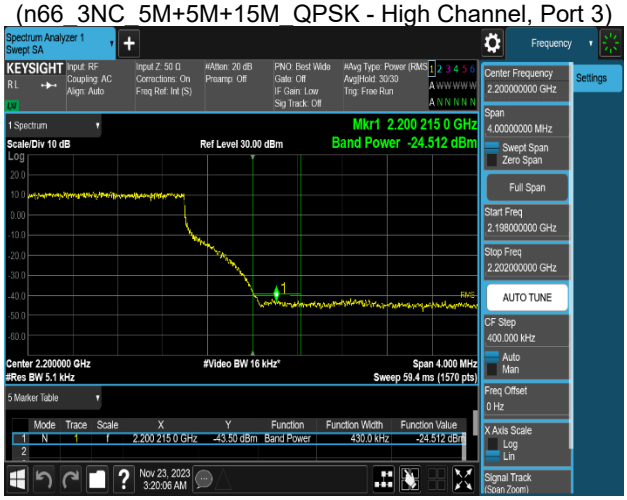
Plot 8-37. Band Edge Emission Plot
(n66_3NC_5M+5M+15M_QPSK - Low Channel, Port 1)



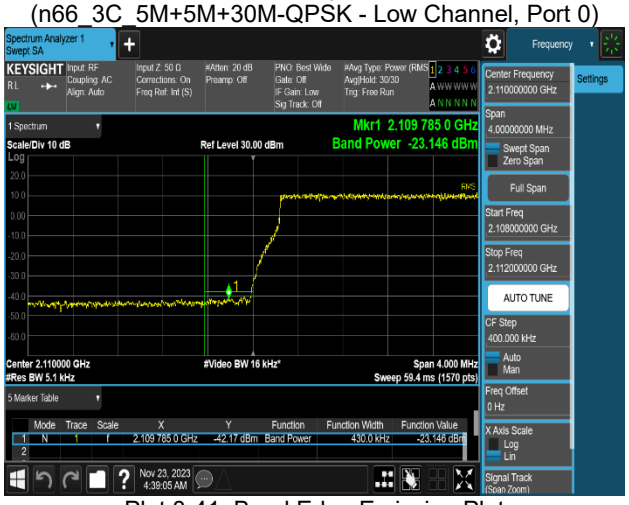
Plot 8-38. Band Edge Emission Plot
(n66_3NC_5M+5M+15M_QPSK - High Channel, Port 3)



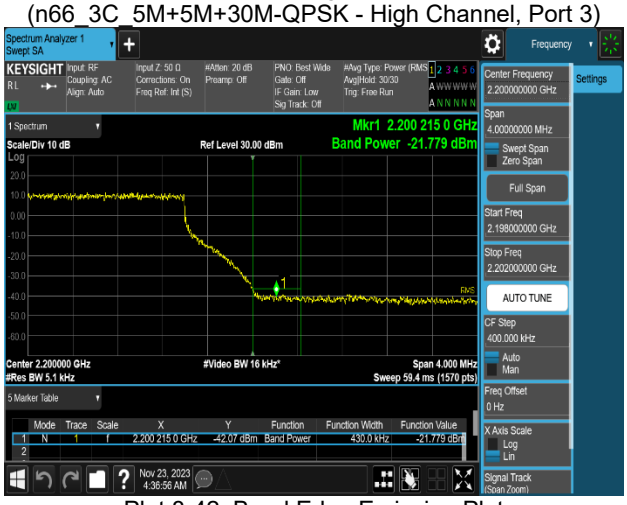
Plot 8-39. Band Edge Emission Plot
(n66_3C_5M+5M+30M-QPSK - Low Channel, Port 0)



Plot 8-40. Band Edge Emission Plot
(n66_3C_5M+5M+30M-QPSK - High Channel, Port 3)



Plot 8-41. Band Edge Emission Plot
(n66_3NC_5M+5M+30M_QPSK - Low Channel, Port 0)



Plot 8-42. Band Edge Emission Plot
(n66_3NC_5M+5M+30M_QPSK - High Channel, Port 1)

8.6 Spurious and Harmonic Emissions at Antenna Terminal

Test Overview

The level of the carrier and the various conducted spurious and harmonic frequencies is measured by means of a calibrated spectrum analyzer. The spectrum is scanned from the lowest frequency generated in the equipment up to a frequency including its 10th harmonic. All out of band emissions are measured with a spectrum analyzer connected to the antenna terminal of the EUT while the EUT is operating at its maximum duty cycle, at maximum power, and at the appropriate frequencies. All data rates were investigated to determine the worst case configuration. All modes of operation were investigated and the worst case configuration results are reported in this section.

Test Procedure Used

KDB 971168 D01 v03r01 – Section 6

KDB 662911 D01 v02r01 – Section E)3) Out-of-Band and Spurious Emission Measurements

a) Absolute Emission Limits

iii) Measure and add 10 log(N_{ANT}) dB

ANSI C63.26-2015 – Section 5.7

Test Setting

1. Start frequency was set to 9 kHz and stop frequency was set to at least 10 * the fundamental frequency excluding the frequency range of the band edge measurement.
2. RBW: Please see test notes below.
3. VBW ≥ 3 x RBW
4. Detector = RMS
5. Number of sweep points ≥ 2 x Span/RBW
6. Trace mode = trace average
7. Sweep time = auto couple
8. The trace was allowed to stabilize

Limit

§ 27.53(h)

(h) AWS emission limits—(1) General protection levels. Except as otherwise specified below, for operations 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 bands, the power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) in watts by at least 43 + 10 log10 (P) dB.

Test Setup

The EUT and measurement equipment were set up as shown in the diagram below.

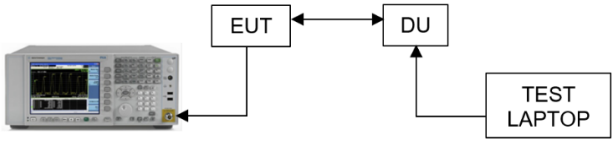


Figure 8-5. Test Instrument & Measurement Setup

Test Notes

1. Compliance with this provision is based on the use of measurement instrumentation employing a resolution bandwidth of 1 megahertz or greater. However, in the 1 megahertz bands immediately outside and adjacent to the licensee's frequency block, a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed. The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.

2. All modes of operation were investigated and the worst configuration result plots are reported in each operating frequency band.

3. The limits were adjusted by a factor of [-10*log (4)] dB to account for the device operation as a 4 port MIMO transmitter, as per FCC KDB 622911. MIMO Factor calculation as below:
   MIMO Factor = 10*log (4) = 6.02 dB

4. Narrower RBW parameter is applied according to Section 5.7 of ANSI C63.26-2015 for some edge channels due to improving measurement accuracy. RBW Factor calculation as below:
   - RBW Factor = 10*log (1/0.001) = 30 dB
   - RBW Factor = 10*log (1/0.01) = 20 dB
   - RBW Factor = 10*log (1/0.1) = 10 dB

Frequency range	Basic Limit (dBm/MHz)	MIMO Factor (dB)	References RBW (MHz)	Measurement RBW (kHz)	RBW Factor (dB)	Adjusted limit (dBm)
9 kHz to 150 kHz	-13.00	6.02	1	0.001	30	-49.02
150 kHz to 30 MHz				0.01	20	-39.02
30 MHz to 2 GHz				1	0	-19.02
2 GHz to 2.108 GHz				0.1	10	-29.02
2.108 GHz to 2.109 GHz				1	0	-19.02
2.201 GHz to 2.202 GHz				1	0	-19.02
2.202 GHz to 3 GHz				0.1	10	-29.02
3 GHz to 22 GHz				1	0	-19.02
Note: Adjusted limit (dBm/MHz) = Basic limit (dBm/1MHz) - MIMO Factor - RBW Factor						

Channel	Port	Measurement Range	Level (dBm)				Limit (dBm)	Margin (dB)
			QPSK	16QAM	64QAM	256QAM		
Low	0	9 kHz to 150 kHz	-60.94	**-60.65**	-60.59	-60.57	-49.02	-11.55
		150 kHz to 30 MHz	-51.35	**-52.76**	-52.82	-53.75	-39.02	-12.33
		30 MHz to 2 GHz	-33.97	**-34.08**	-34.22	-34.20	-19.02	-14.95
		2 GHz to 2.108 GHz	-32.47	**-31.06**	-31.29	-31.38	-29.02	-2.04
		2.108 GHz to 2.109 GHz	-21.87	**-20.76**	-21.52	-21.38	-19.02	**-1.74**
		2.201 GHz to 2.202 GHz	-26.02	**-26.02**	-26.10	-26.17	-19.02	-7.00
		2.202 GHz to 3 GHz	-37.01	**-36.88**	-36.94	-37.29	-29.02	-7.86
		3 GHz to 10 GHz	-28.53	**-28.85**	-28.02	-28.59	-19.02	-9.00
		10 GHz to 18 GHz	-25.09	**-25.33**	-25.33	-25.14	-19.02	-6.07
		18 GHz to 22 GHz	-42.43	**-42.43**	-42.56	-42.11	-19.02	-23.09
	1	9 kHz to 150 kHz	-61.36	-60.53	-61.20	-60.91	-49.02	-11.51
		150 kHz to 30 MHz	-53.22	-52.99	-53.83	-53.62	-39.02	-13.97
		30 MHz to 2 GHz	-34.27	-34.56	-34.21	-34.29	-19.02	-15.19
		2 GHz to 2.108 GHz	-33.73	-32.15	-32.88	-33.20	-29.02	-3.13
		2.108 GHz to 2.109 GHz	-23.04	-21.96	-22.26	-22.40	-19.02	-2.94
		2.201 GHz to 2.202 GHz	-26.96	-26.98	-27.02	-26.85	-19.02	-7.83
		2.202 GHz to 3 GHz	-38.26	-38.11	-38.09	-38.37	-29.02	-9.07
		3 GHz to 10 GHz	-28.60	-28.74	-28.74	-28.74	-19.02	-9.58
		10 GHz to 18 GHz	-25.86	-26.00	-26.04	-25.84	-19.02	-6.82
		18 GHz to 22 GHz	-42.25	-42.38	-42.60	-42.43	-19.02	-23.23
	2	9 kHz to 150 kHz	-61.42	-61.10	-61.39	-61.38	-49.02	-12.08
		150 kHz to 30 MHz	-49.78	-49.69	-50.23	-49.72	-39.02	-10.67
		30 MHz to 2 GHz	-34.12	-34.33	-33.80	-34.29	-19.02	-14.78
		2 GHz to 2.108 GHz	-32.31	-31.84	-32.24	-32.20	-29.02	-2.82
		2.108 GHz to 2.109 GHz	-22.52	-21.55	-22.21	-22.21	-19.02	-2.53
		2.201 GHz to 2.202 GHz	-26.23	-26.24	-26.28	-26.22	-19.02	-7.20
		2.202 GHz to 3 GHz	-37.34	-37.45	-37.20	-37.54	-29.02	-8.18
		3 GHz to 10 GHz	-28.27	-28.52	-28.28	-28.78	-19.02	-9.25
		10 GHz to 18 GHz	-25.32	-25.65	-25.28	-25.07	-19.02	-6.05
		18 GHz to 22 GHz	-42.37	-42.39	-41.78	-42.61	-19.02	-22.76
	3	9 kHz to 150 kHz	-61.39	-60.58	-60.39	-60.34	-49.02	-11.32
		150 kHz to 30 MHz	-53.52	-53.14	-53.02	-53.69	-39.02	-14.00
		30 MHz to 2 GHz	-34.09	-34.14	-33.99	-33.99	-19.02	-14.97
		2 GHz to 2.108 GHz	-33.00	-31.71	-32.11	-32.52	-29.02	-2.69
		2.108 GHz to 2.109 GHz	-22.64	-21.36	-22.08	-22.25	-19.02	-2.34
		2.201 GHz to 2.202 GHz	-26.28	-26.13	-26.17	-26.02	-19.02	-7.00
		2.202 GHz to 3 GHz	-37.46	-37.24	-37.14	-37.36	-29.02	-8.12
		3 GHz to 10 GHz	-28.45	-28.48	-28.83	-28.76	-19.02	-9.43
		10 GHz to 18 GHz	-25.57	-25.33	-25.22	-25.03	-19.02	-6.01
		18 GHz to 22 GHz	-42.45	-42.14	-42.37	-42.26	-19.02	-23.12

Middle	0	9 kHz to 150 kHz	-61.00	-61.15	-61.19	-61.07	-49.02	-11.98
		150 kHz to 30 MHz	-53.87	-52.90	-52.09	-53.52	-39.02	-13.07
		30 MHz to 2 GHz	-34.19	-33.94	-33.87	-34.25	-19.02	-14.85
		2 GHz to 2.108 GHz	-38.09	-38.24	-38.52	-38.17	-29.02	-9.07
		2.108 GHz to 2.109 GHz	-26.95	-26.89	-26.91	-26.95	-19.02	-7.87
		2.201 GHz to 2.202 GHz	-26.10	-26.26	-26.15	-26.14	-19.02	-7.08
		2.202 GHz to 3 GHz	-37.18	-37.44	-36.69	-37.33	-29.02	-7.67
		3 GHz to 10 GHz	-28.64	-28.62	-28.28	-28.57	-19.02	-9.26
		10 GHz to 18 GHz	-25.47	-25.31	-25.38	-25.35	-19.02	-6.29
		18 GHz to 22 GHz	-42.32	-42.09	-41.71	-42.02	-19.02	-22.69
	1	9 kHz to 150 kHz	-61.55	-60.97	-61.26	-61.13	-49.02	-11.95
		150 kHz to 30 MHz	-53.70	-52.23	-53.30	-53.47	-39.02	-13.21
		30 MHz to 2 GHz	-34.54	-34.38	-34.02	-33.92	-19.02	-14.90
		2 GHz to 2.108 GHz	-37.37	-37.53	-37.46	-37.49	-29.02	-8.35
		2.108 GHz to 2.109 GHz	-26.58	-26.42	-26.30	-26.43	-19.02	-7.28
		2.201 GHz to 2.202 GHz	-26.77	-26.78	-26.69	-26.82	-19.02	-7.67
		2.202 GHz to 3 GHz	-37.97	-37.81	-38.04	-38.22	-29.02	-8.79
		3 GHz to 10 GHz	-28.84	-28.90	-27.84	-28.67	-19.02	-8.82
		10 GHz to 18 GHz	-25.60	-26.20	-26.35	-25.97	-19.02	-6.58
		18 GHz to 22 GHz	-42.06	-42.25	-42.46	-42.25	-19.02	-23.04
	2	9 kHz to 150 kHz	-61.24	-60.77	-60.94	-60.87	-49.02	-11.75
		150 kHz to 30 MHz	-50.42	-51.07	-50.42	-50.40	-39.02	-11.38
		30 MHz to 2 GHz	-34.04	-33.86	-34.12	-33.82	-19.02	-14.80
		2 GHz to 2.108 GHz	-37.88	-38.00	-37.53	-37.91	-29.02	-8.51
		2.108 GHz to 2.109 GHz	-26.77	-26.60	-26.86	-26.80	-19.02	-7.58
		2.201 GHz to 2.202 GHz	-26.28	-26.20	-26.45	-26.17	-19.02	-7.15
		2.202 GHz to 3 GHz	-37.15	-37.17	-36.84	-37.04	-29.02	-7.82
		3 GHz to 10 GHz	-28.45	-28.38	-28.25	-28.16	-19.02	-9.14
		10 GHz to 18 GHz	-25.48	-25.42	-25.21	-25.29	-19.02	-6.19
		18 GHz to 22 GHz	-42.09	-42.53	-42.35	-42.19	-19.02	-23.07
	3	9 kHz to 150 kHz	-60.84	-59.60	-60.63	-60.67	-49.02	-10.58
		150 kHz to 30 MHz	-53.43	-52.73	-53.51	-53.71	-39.02	-13.71
		30 MHz to 2 GHz	-30.93	-33.95	-33.84	-33.98	-19.02	-11.91
		2 GHz to 2.108 GHz	-37.81	-37.27	-37.13	-37.46	-29.02	-8.11
		2.108 GHz to 2.109 GHz	-26.61	-26.43	-26.41	-26.53	-19.02	-7.39
		2.201 GHz to 2.202 GHz	-26.18	-26.21	-26.21	-26.06	-19.02	-7.04
		2.202 GHz to 3 GHz	-37.28	-36.97	-36.99	-37.12	-29.02	-7.95
		3 GHz to 10 GHz	-28.73	-28.50	-28.40	-28.29	-19.02	-9.27
		10 GHz to 18 GHz	-25.20	-25.48	-25.47	-25.28	-19.02	-6.18
		18 GHz to 22 GHz	-42.34	-42.03	-42.12	-42.18	-19.02	-23.01

High	0	9 kHz to 150 kHz	-60.75	-60.27	-61.09	-61.15	-49.02	-11.25
		150 kHz to 30 MHz	-53.55	-52.74	-53.13	-53.41	-39.02	-13.72
		30 MHz to 2 GHz	-34.11	-33.92	-33.87	-34.02	-19.02	-14.85
		2 GHz to 2.108 GHz	-38.31	-38.70	-38.11	-38.64	-29.02	-9.09
		2.108 GHz to 2.109 GHz	-26.91	-27.14	-27.05	-27.43	-19.02	-7.89
		2.201 GHz to 2.202 GHz	-23.67	-23.44	-23.60	-23.65	-19.02	-4.42
		2.202 GHz to 3 GHz	-33.42	-33.91	-33.66	-33.78	-29.02	-4.40
		3 GHz to 10 GHz	-28.33	-28.60	-28.45	-28.63	-19.02	-9.31
		10 GHz to 18 GHz	-25.02	-25.30	-25.00	-25.89	-19.02	-5.98
		18 GHz to 22 GHz	-42.33	-41.88	-42.12	-41.98	-19.02	-22.86
	1	9 kHz to 150 kHz	-60.03	-61.03	-61.12	-60.95	-49.02	-11.01
		150 kHz to 30 MHz	-53.12	-53.85	-53.42	-54.05	-39.02	-14.10
		30 MHz to 2 GHz	-34.28	-34.24	-33.85	-34.14	-19.02	-14.83
		2 GHz to 2.108 GHz	-37.60	-37.17	-37.60	-38.29	-29.02	-8.15
		2.108 GHz to 2.109 GHz	-26.59	-26.37	-26.45	-27.07	-19.02	-7.35
		2.201 GHz to 2.202 GHz	-23.77	-23.26	-23.55	-23.42	-19.02	-4.24
		2.202 GHz to 3 GHz	-33.17	-33.52	-33.71	-33.31	-29.02	-4.15
		3 GHz to 10 GHz	-28.75	-28.76	-28.73	-28.95	-19.02	-9.71
		10 GHz to 18 GHz	-26.45	-25.99	-25.38	-26.30	-19.02	-6.36
		18 GHz to 22 GHz	-42.07	-41.72	-42.00	-42.42	-19.02	-22.70
	2	9 kHz to 150 kHz	-61.11	-60.90	-61.44	-61.37	-49.02	-11.88
		150 kHz to 30 MHz	-50.44	-50.25	-49.64	-49.15	-39.02	-10.13
		30 MHz to 2 GHz	-33.89	-33.94	-34.03	-34.28	-19.02	-14.87
		2 GHz to 2.108 GHz	-38.27	-38.19	-38.33	-38.69	-29.02	-9.17
		2.108 GHz to 2.109 GHz	-26.90	-26.91	-26.73	-27.21	-19.02	-7.71
		2.201 GHz to 2.202 GHz	-23.63	-23.01	-23.55	-23.60	-19.02	-3.99
		2.202 GHz to 3 GHz	-33.57	-33.95	-33.60	-33.60	-29.02	-4.55
		3 GHz to 10 GHz	-28.56	-28.78	-28.80	-28.75	-19.02	-9.54
		10 GHz to 18 GHz	-25.34	-25.45	-25.24	-25.73	-19.02	-6.22
		18 GHz to 22 GHz	-42.21	-41.80	-42.16	-42.16	-19.02	-22.78
	3	9 kHz to 150 kHz	-60.29	-60.65	-60.33	-60.98	-49.02	-11.27
		150 kHz to 30 MHz	-53.25	-51.84	-53.69	-52.11	-39.02	-12.82
		30 MHz to 2 GHz	-33.62	-33.85	-33.84	-34.14	-19.02	-14.60
		2 GHz to 2.108 GHz	-37.48	-37.96	-37.41	-38.23	-29.02	-8.39
		2.108 GHz to 2.109 GHz	-26.41	-26.56	-26.40	-26.79	-19.02	-7.38
		2.201 GHz to 2.202 GHz	-23.74	-23.14	-23.84	-23.24	-19.02	-4.12
		2.202 GHz to 3 GHz	-33.94	-33.47	-33.64	-33.35	-29.02	-4.33
		3 GHz to 10 GHz	-28.30	-28.39	-28.19	-28.56	-19.02	-9.17
		10 GHz to 18 GHz	-25.38	-24.95	-25.26	-25.36	-19.02	-5.93
		18 GHz to 22 GHz	-42.35	-42.39	-42.22	-42.33	-19.02	-23.20

Table 8-20. Conducted Spurious Emission Summary Data (n66_1C_15M)

Channel	Port	Measurement Range	Level (dBm)				Limit (dBm)	Margin (dB)
			QPSK	16QAM	64QAM	256QAM		
High	0	9 kHz to 150 kHz	-61.92	-61.49	-60.98	-60.01	-49.02	-10.99
		150 kHz to 30 MHz	-53.33	-53.51	-53.79	-54.31	-39.02	-14.31
		30 MHz to 2 GHz	-34.26	-34.37	-34.28	-34.07	-19.02	-15.05
		2 GHz to 2.108 GHz	-38.92	-38.81	-38.85	-38.80	-29.02	-9.78
		2.108 GHz to 2.109 GHz	-27.55	-27.58	-27.20	-27.28	-19.02	-8.18
		2.201 GHz to 2.202 GHz	-25.24	-25.09	-24.86	-24.90	-19.02	-5.84
		2.202 GHz to 3 GHz	-35.70	-35.52	-35.70	-35.24	-29.02	-6.22
		3 GHz to 10 GHz	-28.52	-28.36	-28.85	-28.56	-19.02	-9.34
		10 GHz to 18 GHz	-25.48	-25.14	-25.68	-25.36	-19.02	-6.12
		18 GHz to 22 GHz	-42.51	-42.41	-41.95	-42.19	-19.02	-22.93
	1	9 kHz to 150 kHz	-61.60	**-61.44**	-62.00	-60.97	-49.02	-11.95
		150 kHz to 30 MHz	-53.54	**-54.30**	-53.10	-53.33	-39.02	-14.08
		30 MHz to 2 GHz	-34.25	**-34.17**	-33.96	-33.95	-19.02	-14.93
		2 GHz to 2.108 GHz	-37.59	**-38.15**	-37.91	-37.74	-29.02	-8.57
		2.108 GHz to 2.109 GHz	-26.87	**-26.98**	-26.82	-26.75	-19.02	-7.73
		2.201 GHz to 2.202 GHz	-25.12	**-24.58**	-25.16	-25.04	-19.02	**-5.56**
		2.202 GHz to 3 GHz	-35.29	**-34.80**	-35.36	-34.97	-29.02	-5.78
		3 GHz to 10 GHz	-28.84	**-28.68**	-28.59	-28.65	-19.02	-9.57
		10 GHz to 18 GHz	-26.11	**-26.21**	-26.06	-26.11	-19.02	-7.04
		18 GHz to 22 GHz	-42.12	**-41.94**	-42.19	-42.23	-19.02	-22.92
	2	9 kHz to 150 kHz	-61.90	-61.22	-61.20	-61.74	-49.02	-12.18
		150 kHz to 30 MHz	-48.51	-48.73	-48.80	-48.77	-39.02	-9.49
		30 MHz to 2 GHz	-34.20	-34.07	-34.35	-34.29	-19.02	-15.05
		2 GHz to 2.108 GHz	-38.70	-39.07	-38.58	-38.68	-29.02	-9.56
		2.108 GHz to 2.109 GHz	-27.67	-27.54	-27.31	-27.39	-19.02	-8.29
		2.201 GHz to 2.202 GHz	-24.90	-24.82	-25.01	-25.12	-19.02	-5.80
		2.202 GHz to 3 GHz	-35.82	-35.12	-34.93	-35.31	-29.02	-5.91
		3 GHz to 10 GHz	-28.48	-28.86	-28.84	-28.55	-19.02	-9.46
		10 GHz to 18 GHz	-25.29	-25.79	-25.76	-25.54	-19.02	-6.27
		18 GHz to 22 GHz	-42.46	-42.34	-41.78	-42.40	-19.02	-22.76
	3	9 kHz to 150 kHz	-60.77	-61.44	-60.96	-60.74	-49.02	-11.72
		150 kHz to 30 MHz	-53.73	-53.40	-55.17	-54.77	-39.02	-14.38
		30 MHz to 2 GHz	-34.12	-34.19	-34.04	-33.60	-19.02	-14.58
		2 GHz to 2.108 GHz	-37.72	-37.82	-37.17	-37.71	-29.02	-8.15
		2.108 GHz to 2.109 GHz	-26.91	-26.91	-26.68	-26.66	-19.02	-7.64
		2.201 GHz to 2.202 GHz	-25.22	-24.96	-25.07	-25.09	-19.02	-5.94
		2.202 GHz to 3 GHz	-35.74	-35.80	-35.53	-34.59	-29.02	-5.57
		3 GHz to 10 GHz	-28.43	-28.51	-28.58	-28.86	-19.02	-9.41
		10 GHz to 18 GHz	-25.22	-25.32	-25.56	-25.34	-19.02	-6.20
		18 GHz to 22 GHz	-42.17	-42.33	-42.15	-42.25	-19.02	-23.13

Table 8-21. Conducted Spurious Emission Summary Data (n66_1C_30M)

Channel	Port	Measurement Range	Level (dBm)	Limit (dBm)	Margin (dB)
			QPSK		
Low	0	9 kHz to 150 kHz	**-60.90**	-49.02	-11.88
		150 kHz to 30 MHz	**-52.76**	-39.02	-13.74
		30 MHz to 2 GHz	**-33.65**	-19.02	-14.63
		2 GHz to 2.108 GHz	**-30.92**	-29.02	**-1.90**
		2.108 GHz to 2.109 GHz	**-21.44**	-19.02	-2.42
		2.201 GHz to 2.202 GHz	**-26.37**	-19.02	-7.35
		2.202 GHz to 3 GHz	**-36.68**	-29.02	-7.66
		3 GHz to 10 GHz	**-28.74**	-19.02	-9.72
		10 GHz to 18 GHz	**-25.12**	-19.02	-6.10
		18 GHz to 22 GHz	**-42.02**	-19.02	-23.00
	1	9 kHz to 150 kHz	-60.77	-49.02	-11.75
		150 kHz to 30 MHz	-52.55	-39.02	-13.53
		30 MHz to 2 GHz	-34.04	-19.02	-15.02
		2 GHz to 2.108 GHz	-33.24	-29.02	-4.22
		2.108 GHz to 2.109 GHz	-22.83	-19.02	-3.81
		2.201 GHz to 2.202 GHz	-27.04	-19.02	-8.02
		2.202 GHz to 3 GHz	-38.41	-29.02	-9.39
		3 GHz to 10 GHz	-28.80	-19.02	-9.78
		10 GHz to 18 GHz	-26.13	-19.02	-7.11
		18 GHz to 22 GHz	-42.25	-19.02	-23.23
	2	9 kHz to 150 kHz	-61.22	-49.02	-12.20
		150 kHz to 30 MHz	-49.54	-39.02	-10.52
		30 MHz to 2 GHz	-33.97	-19.02	-14.95
		2 GHz to 2.108 GHz	-31.78	-29.02	-2.76
		2.108 GHz to 2.109 GHz	-22.50	-19.02	-3.48
		2.201 GHz to 2.202 GHz	-26.02	-19.02	-7.00
		2.202 GHz to 3 GHz	-37.13	-29.02	-8.11
		3 GHz to 10 GHz	-28.27	-19.02	-9.25
		10 GHz to 18 GHz	-25.67	-19.02	-6.65
		18 GHz to 22 GHz	-42.22	-19.02	-23.20
	3	9 kHz to 150 kHz	-60.58	-49.02	-11.56
		150 kHz to 30 MHz	-52.12	-39.02	-13.10
		30 MHz to 2 GHz	-33.71	-19.02	-14.69
		2 GHz to 2.108 GHz	-32.69	-29.02	-3.67
		2.108 GHz to 2.109 GHz	-22.64	-19.02	-3.62
		2.201 GHz to 2.202 GHz	-26.24	-19.02	-7.22
		2.202 GHz to 3 GHz	-36.90	-29.02	-7.88
		3 GHz to 10 GHz	-28.13	-19.02	-9.11
		10 GHz to 18 GHz	-25.53	-19.02	-6.51
		18 GHz to 22 GHz	-42.29	-19.02	-23.27

Channel	Port	Measurement Range	Level (dBm)	Limit (dBm)	Margin (dB)
			QPSK		
Middle	0	9 kHz to 150 kHz	-61.24	-49.02	-12.22
		150 kHz to 30 MHz	-52.53	-39.02	-13.51
		30 MHz to 2 GHz	-33.72	-19.02	-14.70
		2 GHz to 2.108 GHz	-38.14	-29.02	-9.12
		2.108 GHz to 2.109 GHz	-26.73	-19.02	-7.71
		2.201 GHz to 2.202 GHz	-26.28	-19.02	-7.26
		2.202 GHz to 3 GHz	-37.10	-29.02	-8.08
		3 GHz to 10 GHz	-28.35	-19.02	-9.33
		10 GHz to 18 GHz	-25.36	-19.02	-6.34
		18 GHz to 22 GHz	-41.62	-19.02	-22.60
	1	9 kHz to 150 kHz	-61.00	-49.02	-11.98
		150 kHz to 30 MHz	-52.87	-39.02	-13.85
		30 MHz to 2 GHz	-33.98	-19.02	-14.96
		2 GHz to 2.108 GHz	-37.46	-29.02	-8.44
		2.108 GHz to 2.109 GHz	-26.67	-19.02	-7.65
		2.201 GHz to 2.202 GHz	-26.60	-19.02	-7.58
		2.202 GHz to 3 GHz	-37.95	-29.02	-8.93
		3 GHz to 10 GHz	-28.38	-19.02	-9.36
		10 GHz to 18 GHz	-26.10	-19.02	-7.08
		18 GHz to 22 GHz	-42.26	-19.02	-23.24
	2	9 kHz to 150 kHz	-61.18	-49.02	-12.16
		150 kHz to 30 MHz	-50.62	-39.02	-11.60
		30 MHz to 2 GHz	-33.84	-19.02	-14.82
		2 GHz to 2.108 GHz	-38.00	-29.02	-8.98
		2.108 GHz to 2.109 GHz	-26.85	-19.02	-7.83
		2.201 GHz to 2.202 GHz	-26.49	-19.02	-7.47
		2.202 GHz to 3 GHz	-37.55	-29.02	-8.53
		3 GHz to 10 GHz	-28.57	-19.02	-9.55
		10 GHz to 18 GHz	-25.28	-19.02	-6.26
		18 GHz to 22 GHz	-42.16	-19.02	-23.14
	3	9 kHz to 150 kHz	-58.43	-49.02	-9.41
		150 kHz to 30 MHz	-53.38	-39.02	-14.36
		30 MHz to 2 GHz	-33.98	-19.02	-14.96
		2 GHz to 2.108 GHz	-37.14	-29.02	-8.12
		2.108 GHz to 2.109 GHz	-26.23	-19.02	-7.21
		2.201 GHz to 2.202 GHz	-26.04	-19.02	-7.02
		2.202 GHz to 3 GHz	-36.94	-29.02	-7.92
		3 GHz to 10 GHz	-28.62	-19.02	-9.60
		10 GHz to 18 GHz	-25.12	-19.02	-6.10
		18 GHz to 22 GHz	-42.03	-19.02	-23.01

Channel	Port	Measurement Range	Level (dBm)	Limit (dBm)	Margin (dB)
			QPSK		
High	0	9 kHz to 150 kHz	-60.93	-49.02	-11.91
		150 kHz to 30 MHz	-54.20	-39.02	-15.18
		30 MHz to 2 GHz	-34.12	-19.02	-15.10
		2 GHz to 2.108 GHz	-39.15	-29.02	-10.13
		2.108 GHz to 2.109 GHz	-27.43	-19.02	-8.41
		2.201 GHz to 2.202 GHz	-23.61	-19.02	-4.59
		2.202 GHz to 3 GHz	-33.42	-29.02	-4.40
		3 GHz to 10 GHz	-28.81	-19.02	-9.79
		10 GHz to 18 GHz	-25.75	-19.02	-6.73
		18 GHz to 22 GHz	-42.30	-19.02	-23.28
	1	9 kHz to 150 kHz	-61.26	-49.02	-12.24
		150 kHz to 30 MHz	-52.60	-39.02	-13.58
		30 MHz to 2 GHz	-34.32	-19.02	-15.30
		2 GHz to 2.108 GHz	-37.86	-29.02	-8.84
		2.108 GHz to 2.109 GHz	-26.77	-19.02	-7.75
		2.201 GHz to 2.202 GHz	-23.14	-19.02	-4.12
		2.202 GHz to 3 GHz	-32.38	-29.02	-3.36
		3 GHz to 10 GHz	-28.84	-19.02	-9.82
		10 GHz to 18 GHz	-26.39	-19.02	-7.37
		18 GHz to 22 GHz	-41.89	-19.02	-22.87
	2	9 kHz to 150 kHz	-60.53	-49.02	-11.51
		150 kHz to 30 MHz	-49.33	-39.02	-10.31
		30 MHz to 2 GHz	-33.92	-19.02	-14.90
		2 GHz to 2.108 GHz	-38.37	-29.02	-9.35
		2.108 GHz to 2.109 GHz	-27.01	-19.02	-7.99
		2.201 GHz to 2.202 GHz	-22.85	-19.02	-3.83
		2.202 GHz to 3 GHz	-32.44	-29.02	-3.42
		3 GHz to 10 GHz	-28.43	-19.02	-9.41
		10 GHz to 18 GHz	-25.36	-19.02	-6.34
		18 GHz to 22 GHz	-42.34	-19.02	-23.32
	3	9 kHz to 150 kHz	-59.94	-49.02	-10.92
		150 kHz to 30 MHz	-53.23	-39.02	-14.21
		30 MHz to 2 GHz	-34.02	-19.02	-15.00
		2 GHz to 2.108 GHz	-37.56	-29.02	-8.54
		2.108 GHz to 2.109 GHz	-26.82	-19.02	-7.80
		2.201 GHz to 2.202 GHz	-23.21	-19.02	-4.19
		2.202 GHz to 3 GHz	-32.53	-29.02	-3.51
		3 GHz to 10 GHz	-28.91	-19.02	-9.89
		10 GHz to 18 GHz	-25.78	-19.02	-6.76
		18 GHz to 22 GHz	-42.03	-19.02	-23.01

Table 8-22. Conducted Spurious Emission Summary Data (n66_3C_5M+5M+15M)

Channel	Port	Measurement Range	Level (dBm)	Limit (dBm)	Margin (dB)
			QPSK		
High	0	9 kHz to 150 kHz	-61.22	-49.02	-12.20
		150 kHz to 30 MHz	-53.57	-39.02	-14.55
		30 MHz to 2 GHz	-33.75	-19.02	-14.73
		2 GHz to 2.108 GHz	-31.57	-29.02	-2.55
		2.108 GHz to 2.109 GHz	-21.42	-19.02	-2.40
		2.201 GHz to 2.202 GHz	-22.07	-19.02	-3.05
		2.202 GHz to 3 GHz	-32.05	-29.02	-3.03
		3 GHz to 10 GHz	-28.65	-19.02	-9.63
		10 GHz to 18 GHz	-25.59	-19.02	-6.57
		18 GHz to 22 GHz	-42.30	-19.02	-23.28
	1	9 kHz to 150 kHz	-61.20	-49.02	-12.18
		150 kHz to 30 MHz	-53.20	-39.02	-14.18
		30 MHz to 2 GHz	-33.98	-19.02	-14.96
		2 GHz to 2.108 GHz	-32.24	-29.02	-3.22
		2.108 GHz to 2.109 GHz	-21.58	-19.02	-2.56
		2.201 GHz to 2.202 GHz	-22.15	-19.02	-3.13
		2.202 GHz to 3 GHz	-32.44	-29.02	-3.42
		3 GHz to 10 GHz	-28.46	-19.02	-9.44
		10 GHz to 18 GHz	-25.89	-19.02	-6.87
		18 GHz to 22 GHz	-42.01	-19.02	-22.99
	2	9 kHz to 150 kHz	**-61.02**	-49.02	-12.00
		150 kHz to 30 MHz	**-49.99**	-39.02	-10.97
		30 MHz to 2 GHz	**-34.03**	-19.02	-15.01
		2 GHz to 2.108 GHz	**-30.49**	-29.02	**-1.47**
		2.108 GHz to 2.109 GHz	**-20.77**	-19.02	-1.75
		2.201 GHz to 2.202 GHz	**-21.69**	-19.02	-2.67
		2.202 GHz to 3 GHz	**-31.96**	-29.02	-2.94
		3 GHz to 10 GHz	**-28.46**	-19.02	-9.44
		10 GHz to 18 GHz	**-25.32**	-19.02	-6.30
		18 GHz to 22 GHz	**-41.93**	-19.02	-22.91
	3	9 kHz to 150 kHz	-59.39	-49.02	-10.37
		150 kHz to 30 MHz	-53.56	-39.02	-14.54
		30 MHz to 2 GHz	-33.73	-19.02	-14.71
		2 GHz to 2.108 GHz	-31.56	-29.02	-2.54
		2.108 GHz to 2.109 GHz	-21.62	-19.02	-2.60
		2.201 GHz to 2.202 GHz	-21.35	-19.02	-2.33
		2.202 GHz to 3 GHz	-31.29	-29.02	-2.27
		3 GHz to 10 GHz	-28.70	-19.02	-9.68
		10 GHz to 18 GHz	-25.17	-19.02	-6.15
		18 GHz to 22 GHz	-42.05	-19.02	-23.03

Table 8-23. Conducted Spurious Emission Summary Data (n66_3NC_5M+5M+15M)

Channel	Port	Measurement Range	Level (dBm)	Limit (dBm)	Margin (dB)
			QPSK		
High	0	9 kHz to 150 kHz	-60.67	-49.02	-11.65
		150 kHz to 30 MHz	-47.13	-39.02	-8.11
		30 MHz to 2 GHz	-33.98	-19.02	-14.96
		2 GHz to 2.108 GHz	-37.99	-29.02	-8.97
		2.108 GHz to 2.109 GHz	-26.49	-19.02	-7.47
		2.201 GHz to 2.202 GHz	-23.99	-19.02	-4.97
		2.202 GHz to 3 GHz	-33.85	-29.02	-4.83
		3 GHz to 10 GHz	-28.61	-19.02	-9.59
		10 GHz to 18 GHz	-25.41	-19.02	-6.39
		18 GHz to 22 GHz	-41.53	-19.02	-22.51
	1	9 kHz to 150 kHz	-60.60	-49.02	-11.58
		150 kHz to 30 MHz	-47.00	-39.02	-7.98
		30 MHz to 2 GHz	-34.12	-19.02	-15.10
		2 GHz to 2.108 GHz	-36.97	-29.02	-7.95
		2.108 GHz to 2.109 GHz	-26.07	-19.02	-7.05
		2.201 GHz to 2.202 GHz	-24.11	-19.02	-5.09
		2.202 GHz to 3 GHz	-33.54	-29.02	-4.52
		3 GHz to 10 GHz	-28.13	-19.02	-9.11
		10 GHz to 18 GHz	-26.11	-19.02	-7.09
		18 GHz to 22 GHz	-42.30	-19.02	-23.28
	2	9 kHz to 150 kHz	-61.21	-49.02	-12.19
		150 kHz to 30 MHz	-47.01	-39.02	-7.99
		30 MHz to 2 GHz	-33.82	-19.02	-14.80
		2 GHz to 2.108 GHz	-37.12	-29.02	-8.10
		2.108 GHz to 2.109 GHz	-26.36	-19.02	-7.34
		2.201 GHz to 2.202 GHz	-23.65	-19.02	-4.63
		2.202 GHz to 3 GHz	-33.70	-29.02	-4.68
		3 GHz to 10 GHz	-28.64	-19.02	-9.62
		10 GHz to 18 GHz	-24.95	-19.02	-5.93
		18 GHz to 22 GHz	-42.20	-19.02	-23.18
	3	9 kHz to 150 kHz	**-58.88**	-49.02	-9.86
		150 kHz to 30 MHz	**-47.92**	-39.02	-8.90
		30 MHz to 2 GHz	**-33.82**	-19.02	-14.80
		2 GHz to 2.108 GHz	**-36.38**	-29.02	-7.36
		2.108 GHz to 2.109 GHz	**-25.70**	-19.02	-6.68
		2.201 GHz to 2.202 GHz	**-23.38**	-19.02	-4.36
		2.202 GHz to 3 GHz	**-33.05**	-29.02	**-4.03**
		3 GHz to 10 GHz	**-28.21**	-19.02	-9.19
		10 GHz to 18 GHz	**-25.31**	-19.02	-6.29
		18 GHz to 22 GHz	**-41.82**	-19.02	-22.80

Table 8-24. Conducted Spurious Emission Summary Data (n66_3C_5M+5M+30M)

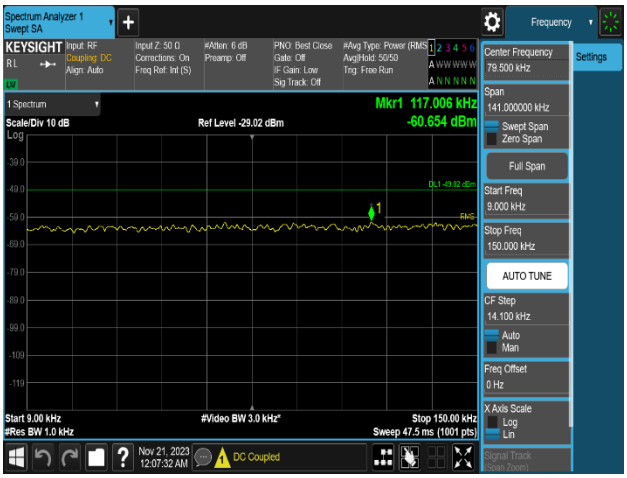
Channel	Port	Measurement Range	Level (dBm)	Limit (dBm)	Margin (dB)
			QPSK		
Mid	0	9 kHz to 150 kHz	-59.96	-49.02	-10.94
		150 kHz to 30 MHz	-52.67	-39.02	-13.65
		30 MHz to 2 GHz	-34.04	-19.02	-15.02
		2 GHz to 2.108 GHz	-33.40	-29.02	-4.38
		2.108 GHz to 2.109 GHz	-22.76	-19.02	-3.74
		2.201 GHz to 2.202 GHz	-22.87	-19.02	-3.85
		2.202 GHz to 3 GHz	-32.74	-29.02	-3.72
		3 GHz to 10 GHz	-28.52	-19.02	-9.50
		10 GHz to 18 GHz	-25.55	-19.02	-6.53
		18 GHz to 22 GHz	-42.11	-19.02	-23.09
	1	9 kHz to 150 kHz	-61.60	-49.02	-12.58
		150 kHz to 30 MHz	-53.49	-39.02	-14.47
		30 MHz to 2 GHz	-34.00	-19.02	-14.98
		2 GHz to 2.108 GHz	-33.31	-29.02	-4.29
		2.108 GHz to 2.109 GHz	-22.72	-19.02	-3.70
		2.201 GHz to 2.202 GHz	-22.89	-19.02	-3.87
		2.202 GHz to 3 GHz	-32.41	-29.02	-3.39
		3 GHz to 10 GHz	-28.52	-19.02	-9.50
		10 GHz to 18 GHz	-26.13	-19.02	-7.11
		18 GHz to 22 GHz	-41.92	-19.02	-22.90
	2	9 kHz to 150 kHz	**-61.00**	-49.02	-11.98
		150 kHz to 30 MHz	**-50.39**	-39.02	-11.37
		30 MHz to 2 GHz	**-33.89**	-19.02	-14.87
		2 GHz to 2.108 GHz	**-32.67**	-29.02	-3.65
		2.108 GHz to 2.109 GHz	**-22.19**	-19.02	**-3.17**
		2.201 GHz to 2.202 GHz	**-22.57**	-19.02	-3.55
		2.202 GHz to 3 GHz	**-32.50**	-29.02	-3.48
		3 GHz to 10 GHz	**-28.47**	-19.02	-9.45
		10 GHz to 18 GHz	**-25.54**	-19.02	-6.52
		18 GHz to 22 GHz	**-41.79**	-19.02	-22.77
	3	9 kHz to 150 kHz	-60.04	-49.02	-11.02
		150 kHz to 30 MHz	-52.62	-39.02	-13.60
		30 MHz to 2 GHz	-33.61	-19.02	-14.59
		2 GHz to 2.108 GHz	-32.84	-29.02	-3.82
		2.108 GHz to 2.109 GHz	-22.52	-19.02	-3.50
		2.201 GHz to 2.202 GHz	-22.21	-19.02	-3.19
		2.202 GHz to 3 GHz	-32.81	-29.02	-3.79
		3 GHz to 10 GHz	-28.31	-19.02	-9.29
		10 GHz to 18 GHz	-25.36	-19.02	-6.34
		18 GHz to 22 GHz	-41.95	-19.02	-22.93

Table 8-25. Conducted Spurious Emission Summary Data (n66_3NC_5M+5M+30M)

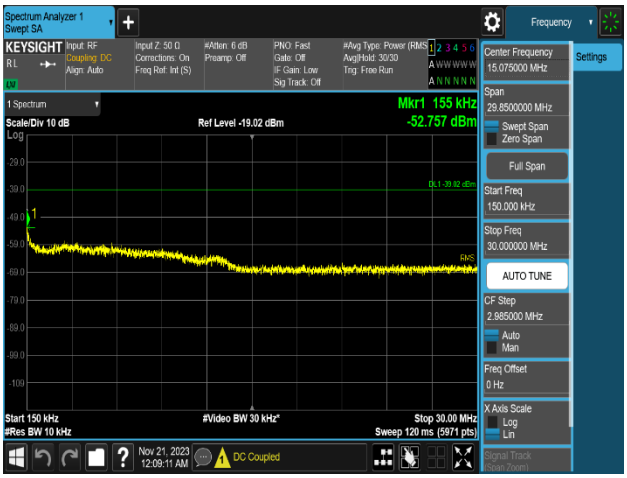
Channel	Port	Measurement Range	Level (dBm) QPSK			Limit (dBm)	Margin (dB)
			QPSK / Multi-Band operation Mode				
			n70_1C_25M+ n66_1C_15M	n70_1C_25M + n66_3C_5M + 5M+30M	n70_1C_25M + n66_3NC_5M + 5M+30M		
Low	0	9 kHz to 150 kHz	**-60.22**	-60.83	-60.64	-49.02	-11.20
		150 kHz to 30 MHz	**-51.91**	-53.10	-52.01	-39.02	-12.89
		30 MHz to 1.993 GHz	**-23.89**	-24.49	-24.44	-19.02	-4.87
		1.993 GHz to 1.994 GHz	**-23.10**	-24.42	-24.32	-19.02	-4.08
		1.994 GHz to 1.995 GHz	**-25.37**	-26.93	-26.74	-19.02	-6.35
		2.020 GHz to 2.021 GHz	**-25.55**	-26.95	-26.32	-19.02	-6.53
		2.021 GHz to 2.022 GHz	**-22.81**	-24.62	-24.50	-19.02	-3.79
		2.022 GHz to 2.108 GHz	**-31.35**	-34.05	-33.82	-29.02	-2.33
		2.108 GHz to 2.109 GHz	**-21.50**	-26.68	-23.32	-19.02	-2.48
		2.109 GHz to 2.110 GHz	**-23.96**	-32.53	-27.57	-19.02	-4.94
		2.200 GHz to 2.201 GHz	**-25.05**	-28.53	-28.04	-19.02	-6.03
		2.201 GHz to 2.202 GHz	**-26.26**	-24.55	-23.04	-19.02	-4.02
		2.202 GHz to 3 GHz	**-37.24**	-33.77	-33.40	-29.02	-4.38
		3 GHz to 10 GHz	**-28.33**	-28.70	-28.33	-19.02	-9.31
		10 GHz to 18 GHz	**-25.32**	-25.23	-24.96	-19.02	-5.94
		18 GHz to 22 GHz	**-42.25**	-42.04	-42.07	-19.02	-23.02
	1	9 kHz to 150 kHz	-60.35	-61.24	-60.90	-49.02	-11.33
		150 kHz to 30 MHz	-52.85	-53.37	-53.49	-39.02	-13.83
		30 MHz to 1.993 GHz	-24.97	-24.83	-24.95	-19.02	-5.81
		1.993 GHz to 1.994 GHz	-24.37	-25.29	-25.33	-19.02	-5.35
		1.994 GHz to 1.995 GHz	-26.38	-27.41	-27.76	-19.02	-7.36
		2.020 GHz to 2.021 GHz	-26.22	-27.59	-27.33	-19.02	-7.20
		2.021 GHz to 2.022 GHz	-24.60	-25.34	-25.52	-19.02	-5.58
		2.022 GHz to 2.108 GHz	-32.58	-35.19	-33.70	-29.02	-3.56
		2.108 GHz to 2.109 GHz	-22.18	-25.68	-23.49	-19.02	-3.16
		2.109 GHz to 2.110 GHz	-25.21	-32.27	-28.02	-19.02	-6.19
		2.200 GHz to 2.201 GHz	-25.86	-29.46	-28.38	-19.02	-6.84
		2.201 GHz to 2.202 GHz	-26.86	-24.80	-23.30	-19.02	-4.28
		2.202 GHz to 3 GHz	-37.75	-34.21	-33.30	-29.02	-4.28
		3 GHz to 10 GHz	-28.78	-28.38	-28.57	-19.02	-9.36
		10 GHz to 18 GHz	-26.13	-26.10	-25.66	-19.02	-6.64
		18 GHz to 22 GHz	-42.16	-42.30	-42.53	-19.02	-23.14
	2	9 kHz to 150 kHz	-60.59	-61.51	-60.97	-49.02	-11.57
		150 kHz to 30 MHz	-49.36	-50.06	-49.98	-39.02	-10.34
		30 MHz to 1.993 GHz	-22.48	-23.32	-22.98	-19.02	-3.46
		1.993 GHz to 1.994 GHz	-22.77	-23.77	-23.45	-19.02	-3.75
		1.994 GHz to 1.995 GHz	-25.46	-26.87	-26.51	-19.02	-6.44
		2.020 GHz to 2.021 GHz	-25.84	-26.59	-26.53	-19.02	-6.82
		2.021 GHz to 2.022 GHz	-23.40	-24.26	-23.15	-19.02	-4.13
		2.022 GHz to 2.108 GHz	-32.20	-33.52	-33.26	-29.02	-3.18

		2.108 GHz to 2.109 GHz	-21.73	-26.60	-23.03	-19.02	-2.71
		2.109 GHz to 2.110 GHz	-24.31	-32.92	-28.40	-19.02	-5.29
		2.200 GHz to 2.201 GHz	-25.05	-29.31	-28.28	-19.02	-6.03
		2.201 GHz to 2.202 GHz	-26.43	-24.26	-23.46	-19.02	-4.44
		2.202 GHz to 3 GHz	-37.63	-34.52	-33.70	-29.02	-4.68
		3 GHz to 10 GHz	-28.61	-28.78	-28.62	-19.02	-9.59
		10 GHz to 18 GHz	-25.18	-25.35	-25.28	-19.02	-6.16
		18 GHz to 22 GHz	-42.35	-42.19	-42.11	-19.02	-23.09
	3	9 kHz to 150 kHz	-59.53	-60.04	-60.30	-49.02	-10.51
		150 kHz to 30 MHz	-52.25	-52.60	-52.32	-39.02	-13.23
		30 MHz to 1.993 GHz	-24.65	-25.35	-25.35	-19.02	-5.63
		1.993 GHz to 1.994 GHz	-23.32	-24.80	-24.93	-19.02	-4.30
		1.994 GHz to 1.995 GHz	-25.37	-26.92	-27.22	-19.02	-6.35
		2.020 GHz to 2.021 GHz	-26.17	-27.14	-26.88	-19.02	-7.15
		2.021 GHz to 2.022 GHz	-23.99	-25.16	-25.05	-19.02	-4.97
		2.022 GHz to 2.108 GHz	-31.75	-34.99	-33.17	-29.02	-2.73
		2.108 GHz to 2.109 GHz	-21.97	-26.07	-23.28	-19.02	-2.95
		2.109 GHz to 2.110 GHz	-23.96	-32.10	-27.83	-19.02	-4.94
		2.200 GHz to 2.201 GHz	-25.33	-28.81	-27.96	-19.02	-6.31
		2.201 GHz to 2.202 GHz	-26.14	-24.43	-22.49	-19.02	-3.47
		2.202 GHz to 3 GHz	-37.09	-33.96	-32.68	-29.02	-3.66
		3 GHz to 10 GHz	-28.54	-28.48	-28.38	-19.02	-9.36
		10 GHz to 18 GHz	-25.26	-25.24	-25.13	-19.02	-6.11
		18 GHz to 22 GHz	-42.31	-42.10	-42.33	-19.02	-23.08

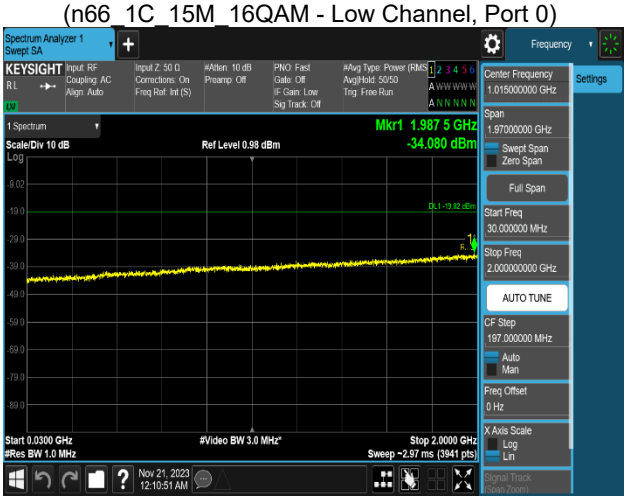
Table 8-26. Conducted Spurious Emission Summary Data (Multi-Band operation)



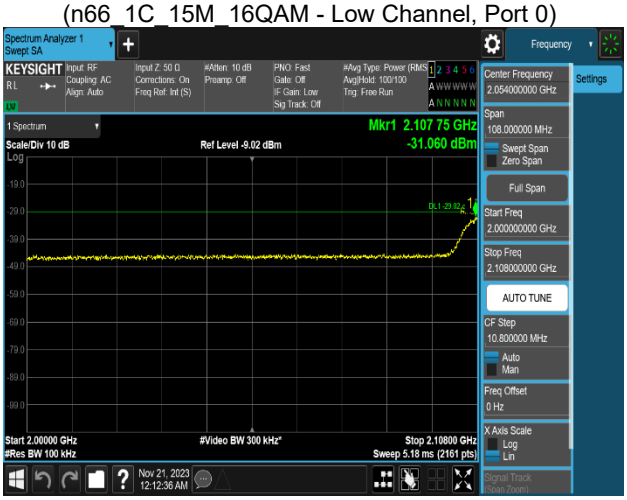
Plot 8-43. Conducted Spurious Emission Plot
9 kHz to 150 kHz
(n66_1C_15M_16QAM - Low Channel, Port 0)



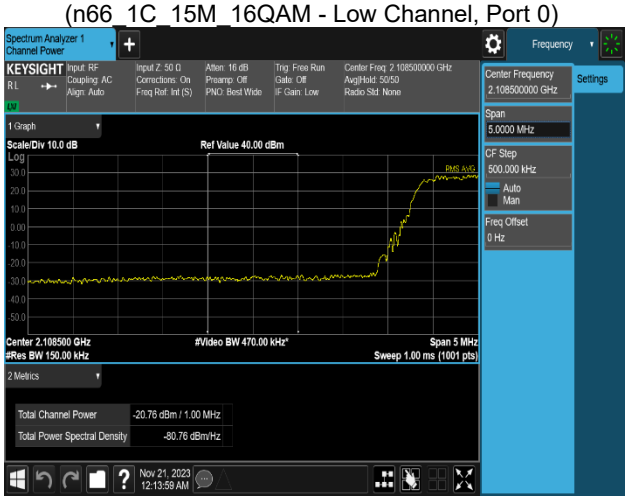
Plot 8-44. Conducted Spurious Emission Plot
150 kHz to 30 MHz
(n66_1C_15M_16QAM - Low Channel, Port 0)



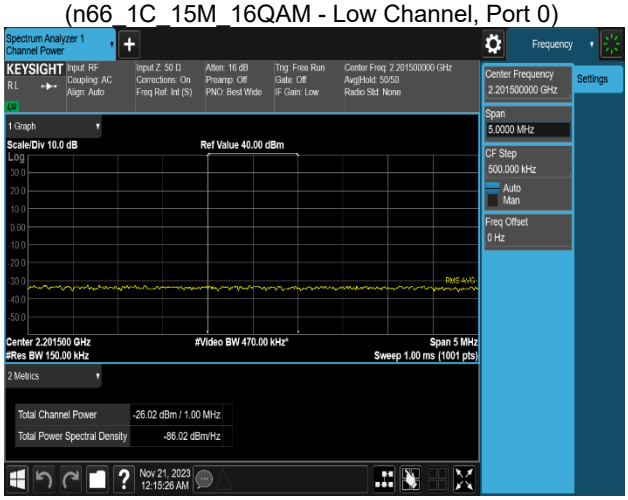
Plot 8-45. Conducted Spurious Emission Plot
30 MHz to 2 GHz
(n66_1C_15M_16QAM - Low Channel, Port 0)



Plot 8-46. Conducted Spurious Emission Plot
2 GHz to 2.108 GHz
(n66_1C_15M_16QAM - Low Channel, Port 0)



Plot 8-47. Conducted Spurious Emission Plot
2.108 GHz to 2.109 GHz
(n66_1C_15M_16QAM - Low Channel, Port 0)



Plot 8-48. Conducted Spurious Emission Plot
2.201 GHz to 2.202 GHz
(n66_1C_15M_16QAM - Low Channel, Port 0)