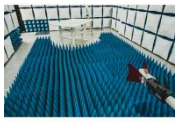
Element Materials Technology Suwon. Ltd.
(#1407) 13, Heungdeok 1-ro, Giheung-gu,
Yongin-si, Gyeonggi-do 16954, Korea
Tel. +82 31.660.7319 / Fax +82 31.660.7918
http://www.element.com



TEST REPORT
PART 24, 27 MEASUREMENT REPORT

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

Date of Testing:
09/01/2022 - 11/01/2022
Test Site/Location:
Element Lab., Suwon,
Yongin-si, Gyeonggi-do, Korea
Test Report Serial No.:
8K22072301-00-R1.A3L

FCC ID:	**A3LMF1601D-25A**
APPLICANT:	**Samsung Electronics Co., Ltd.**

Application Type:	Class II Permissive Change
Model:	MF1601d-25A
EUT Type:	MMU(MF1601d)
FCC Classification:	PCS Licensed Transmitter
FCC Rule Part(s):	24 & 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.

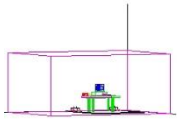
I attest to the accuracy of data. All measurements reported herein were performed by me or were made under my supervision and are correct to the best of my knowledge and belief. I assume full responsibility for the completeness of these measurements and vouch for the qualifications of all persons taking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

ACCREDITED
CERT #2041.04

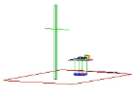
Prepared by DuJin Kim
Test Engineer

Reviewed by Charles.Shin
Technical Manager

TABLE OF CONTENTS



MEASUREMENT REPORT
FCC Part 24E & 27



Mode	Tx Frequency (MHz)	Total EIRP		Max Emission Designator	Modulation
		Max.EIRP (dBm/MHz)	Max. EIRP (W/MHz)		
NR_1C_5M	1930 - 1990	60.85	1216.07	4M51G7D	QPSK
		60.85	1216.37	4M54W7D	QAM
NR_1C_10M		60.87	1222.96	9M30G7D	QPSK
		60.86	1218.10	9M32W7D	QAM
DSS_1C_10M		61.11	1292.24	9M27G7D	QPSK
		61.27	1339.68	9M28W7D	QAM
NR_1C_15M		60.80	1202.76	14M1G7D	QPSK
		60.83	1211.29	14M2W7D	QAM
DSS_1C_15M		61.16	1305.73	14M0G7D	QPSK
		61.65	1461.89	14M0W7D	QAM
NR_1C_20M		60.76	1190.25	19M0G7D	QPSK
		60.72	1180.71	19M0W7D	QAM
DSS_1C_20M		61.04	1271.65	18M8G7D	QPSK
		61.20	1316.75	18M8W7D	QAM
NR_2C_15M+5M		60.72	1180.26	19M2G7D	QPSK
		60.74	1186.44	19M3W7D	QAM
NR_1C_15M + LTE_1C_5M		60.62	1154.20	19M3G7D	QPSK
		60.74	1186.42	19M3W7D	QAM
DSS_1C_15M + LTE_1C_5M		60.63	1155.39	19M2G7D	QPSK
		61.13	1295.75	19M2W7D	QAM
DSS_1C_15M + NR_1C_5M		60.89	1228.83	19M2G7D	QPSK
		61.26	1337.88	19M2W7D	QAM
NR_3C_10M+10M+10M		58.94	784.17	29M2G7D	QPSK
		58.93	782.14	29M2W7D	QAM
NR_2C_10M+10M + LTE_1C_10M		58.95	785.15	29M0G7D	QPSK
		59.15	822.68	29M0W7D	QAM
DSS_1C_15M + LTE_1C_15M		59.08	808.95	28M6G7D	QPSK
		59.75	945.12	28M6W7D	QAM
DSS_1C_15M + NR_1C_15M		58.98	790.94	29M0G7D	QPSK
		59.35	861.87	28M9W7D	QAM

FCC Rule Part 24E EUT Overview

Mode	Tx Frequency (MHz)	Total EIRP		Max Emission Designator	Modulation
		Max.EIRP (dBm/MHz)	Max. EIRP (W/MHz)		
NR_1C_5M	2110 - 2180	61.57	1433.99	4M49G7D	QPSK
		61.54	1425.93	4M49W7D	QAM
NR_1C_10M		61.29	1346.33	9M31G7D	QPSK
		61.29	1347.20	9M31W7D	QAM
DSS_1C_10M		61.28	1342.39	9M26G7D	QPSK
		61.44	1393.11	9M26W7D	QAM
NR_1C_15M		61.33	1358.58	14M1G7D	QPSK
		61.30	1349.23	14M2W7D	QAM
DSS_1C_15M		61.32	1355.39	14M0G7D	QPSK
		61.91	1550.84	14M0W7D	QAM
NR_1C_20M		61.10	1288.85	19M0G7D	QPSK
		61.11	1290.60	19M0W7D	QAM
DSS_1C_20M		61.14	1299.60	18M8G7D	QPSK
		61.40	1379.48	18M8W7D	QAM
LTE_2C_15M+5M		61.36	1367.57	18M9G7D	QPSK
		62.01	1588.70	18M9W7D	QAM
NR_2C_15M+5M		61.34	1361.86	19M3G7D	QPSK
		61.28	1343.12	19M3W7D	QAM
NR_1C_15M + LTE_1C_5M		61.21	1321.09	19M3G7D	QPSK
		61.41	1383.78	19M3W7D	QAM
DSS_1C_15M + LTE_1C_5M		61.30	1347.45	19M2G7D	QPSK
		61.84	1526.70	19M2W7D	QAM
DSS_1C_15M + NR_1C_5M		61.22	1322.93	19M2G7D	QPSK
		61.88	1542.87	19M2W7D	QAM
DSS_1C_10M + LTE_1C_5M + NR_1C_5M		61.31	1352.62	19M3G7D	QPSK
		61.43	1390.28	19M3W7D	QAM
NR_3C_20M+15M+15M		57.28	535.16	48M8G7D	QPSK
		57.24	529.98	48M8W7D	QAM
NR_2C_10M+15M + LTE_2C_10M+15M		57.27	533.80	48M8G7D	QPSK
		58.00	631.40	48M8W7D	QAM
DSS_1C_20M + LTE_2C_15M+15M		57.39	548.36	48M3G7D	QPSK
		58.08	642.30	48M4W7D	QAM
DSS_1C_20M + NR_2C_15M+15M		57.21	526.21	48M6G7D	QPSK
		57.34	542.41	48M7W7D	QAM
DSS_1C_20M + LTE_1C_15M + NR_1C_15M		57.29	536.29	48M3G7D	QPSK
		58.00	631.56	48M4W7D	QAM

FCC Rule Part 27 EUT Overview

1.0 REVISION RECORD

Issue Number	Issued Date	Revision History
8K22072301-00.A3L	11/02/2022	Initial Issue
8K22072301-00-R1.A3L	11/07/2022	Revision due to updated test plot.

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 Materials Technology Suwon 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 MMU(MF1601d) FCC ID: A3LMF1601D-25A**. 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 24 and 27.

A class II permissive change on the original filing is being pursued to enable RAT and Channel Bandwidth without hardware modification.

3.2 Device Capabilities

This device supports the following conditional features and filter information:

EUT Type:	MMU (MF1601d)	
Model Name:	MF1601d-25A	
Test Device Serial No.:	S617339486, SUZW000A2	
Device Capabilities:	LTE, DSS, NR	
Operating Band/Frequency Range:	Band / Tx (Downlink) / Rx (Uplink)	
	B2: 1930 MHz to 1990 MHz	1850 MHz to 1910 MHz
	B66: 2110 MHz to 2180 MHz	1710 MHz to 1780 MHz
Supported Modulation:	QPSK, 16QAM, 64QAM, 256QAM	
PCS Band 2 Supported Number of Carriers and Operating Bandwidth:	5, 10, 15 and 20MHz bandwidth modes for LTE Band 2 and 5G NR Band n2 with up to 3CC aggregated of Max. operating Bandwidth 30 MHz 10, 15 and 20MHz bandwidth modes for DSS Band 2 with 1CC Multi-RAT modes for LTE and 5G NR and DSS with up to 3CC aggregated of Max. operating Bandwidth 30 MHz	
AWS Band 66 Supported Number of Carriers and Operating Bandwidth:	5, 10, 15 and 20MHz bandwidth modes for LTE Band 66 with up to 4CC aggregated of Max. operating Bandwidth 50 MHz 5, 10, 15 and 20MHz bandwidth modes for 5G NR Band n66 with up to 3CC aggregated of Max. operating Bandwidth 50 MHz 10, 15 and 20MHz bandwidth modes for DSS Band 66 with 1CC Multi-RAT modes for LTE and 5G NR and DSS with up to 4CC aggregated of Max. operating Bandwidth 50 MHz	
Maximum Output Power	PCS Band 2	Total 160 W
	AWS Band 66	Total 160 W
Number of Antenna ports	Total 32 ports (PCS 16 ports + AWS 16 ports)	
Supported Configurations:	Single carrier, Multi-carrier, Multi-RAT, Dual-band	
Input Voltage:	-48 VDC	
Antenna Specification:	PCS Band 2	21.2 dBi
	AWS Band 66	21.4 dBi

3.3 Test Configuration

The setup is as follows:

a) The EUT ("MMU(MF1601d)") 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.

For DSS radio configuration, the DSS ratio worst case was found while operating with 9:1 and 5:5 and 2:8 mode based on the verification results and this report only the worst-case data were reported.

For all single carrier configurations, all testing was performed on all antenna ports.
The antenna ports in each RFIC are essentially electrically identical and the RF power variation between antenna ports is small as shown in single carrier testing, therefore measurements of multi-carrier configurations were made on the representative antenna ports of each RFIC.

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

PCS band Single and Multi Carriers Configuration	No. of Carriers	Total Carrier Bandwidth (MHz)	Carrier Frequency Configuration (MHz)			Rated Power (W/path)
			Lowest	Middle	Highest	
NR_1C_5M	1	5	1932.5	1960.0	1987.5	2.5
NR_1C_10M	1	10	1935.0	1960.0	1985.0	5.0
DSS_1C_10M	1	10	1935.0	1960.0	1985.0	5.0
NR_1C_15M	1	15	1937.5	1960.0	1982.5	7.5
DSS_1C_15M	1	15	1937.5	1960.0	1982.5	7.5
NR_1C_20M	1	20	1940.0	1960.0	1980.0	10.0
DSS_1C_20M	1	20	1940.0	1960.0	1980.0	10.0
NR_2C_15M+5M	2	20 (15+5)	1937.5+1947.5	1957.5+1967.5	1977.5+1987.5	10.0
Non-Contiguous			1937.5 + 1987.5			
NR_3C_10M+10M+10M	3	30 (10+10+10)	1935.0+1945.0 +1955.0	1950.0+1960.0 +1970.0	1965.0+1975.0 +1985.0	10.0
Non-Contiguous			1935.0 + 1960.0 + 1985.0			

PCS band Multi-RAT Configuration	No. of Carriers	Total Carrier Bandwidth (MHz)	Carrier Frequency Configuration (MHz)			Rated Power (W/path)
			Lowest	Middle	Highest	
NR_1C_15M + LTE_1C_5M	2	20 (15+5)	1937.5+1947.5	1957.5+1967.5	1977.5+1987.5	10.0
Non-Contiguous			1937.5 +1987.5			
DSS_1C_15M + LTE_1C_5M	2	20 (15+5)	1937.5+1947.5	1957.5+1967.5	1977.5+1987.5	10.0
Non-Contiguous			1937.5 +1987.5			
DSS_1C_15M + NR_1C_5M	2	20 (15+5)	1937.5+1947.5	1957.5+1967.5	1977.5+1987.5	10.0
Non-Contiguous			1937.5 +1987.5			
NR_2C_10M+10M + LTE_1C_10M	3	30 (10+10+10)	1935.0+1945.0 +1955.0	1950.0+1960.0 +1970.0	1965.0+1975.0 +1985.0	10.0
Non-Contiguous			1935.0 + 1960.0 + 1985.0			
DSS_1C_15M + LTE_1C_15M	2	30 (15+15)	1937.5+1952.5	1952.5+1967.5	1967.5+1982.5	10.0
Non-Contiguous			1937.5 + 1982.5			
DSS_1C_15M + NR_1C_15M	2	30 (15+15)	1937.5+1952.5	1952.5+1967.5	1967.5+1982.5	10.0
Non-Contiguous			1937.5 + 1982.5			

AWS band Single and Multi Carriers Configuration	No. of Carriers	Total Carrier Bandwidth (MHz)	Carrier Frequency Configuration (MHz)			Rated Power (W/path)
			Lowest	Middle	Highest	
NR_1C_5M	1	5	2112.5	2145.0	2177.5	2.5
NR_1C_10M	1	10	2115.0	2145.0	2175.0	5.0
DSS_1C_10M	1	10	2115.0	2145.0	2175.0	5.0
NR_1C_15M	1	15	2117.5	2145.0	2172.5	7.5
DSS_1C_15M	1	15	2117.5	2145.0	2172.5	7.5
NR_1C_20M	1	20	2120.0	2145.0	2170.0	10.0
DSS_1C_20M	1	20	2120.0	2145.0	2170.0	10.0
LTE_2C_15M+5M	2	20 (15+5)	2117.5+2127.5	2142.5+2152.5	2167.5+2177.5	10.0
Non-Contiguous			2117.5 + 2177.5			
NR_2C_15M+5M	2	20 (15+5)	2117.5+2127.5	2142.5+2152.5	2167.5+2177.5	10.0
Non-Contiguous			2117.5 + 2177.5			
NR_3C_20M+15M+15M	3	50 (20+15+15)	2120+2137.5 +2152.5	2130+2147.5 +2162.5	2140+2157.5 +2172.5	10.0
Non-Contiguous			2120.0 + 2147.5 + 2172.5			

AWS band Multi-RAT Configuration	No. of Carriers	Total Carrier Bandwidth (MHz)	Carrier Frequency Configuration (MHz)			Rated Power (W/path)
			Lowest	Middle	Highest	
NR_1C_15M + LTE_1C_5M	2	20 (15+5)	2117.5+2127.5	2142.5+2152.5	2167.5+2177.5	10.0
Non-Contiguous			2117.5 + 2177.5			
DSS_1C_15M + LTE_1C_5M	2	20 (15+5)	2117.5+2127.5	2142.5+2152.5	2167.5+2177.5	10.0
Non-Contiguous			2117.5 + 2177.5			
DSS_1C_15M + NR_1C_5M	2	20 (15+5)	2117.5+2127.5	2142.5+2152.5	2167.5+2177.5	10.0
Non-Contiguous			2117.5 + 2177.5			
DSS_1C_10M + LTE_1C_5M + NR_1C_5M	3	20 (10+5+5)	2115.0+2122.5 +2127.5	2140.0+2147.5 +2152.5	2165.0+2172.5 +2177.5	10.0
Non-Contiguous			2115.0+2147.5+2177.5			
NR_2C_15M+10M + LTE_2C_15M+10M	4	50 (10+10+15+15)	2117.5+2130.0 +2142.5+2155.0	2127.5+2140.0 +2152.5+2165.0	2137.5+2150.0 +2162.5+2175.0	10.0
Non-Contiguous			2117.5+2130.0+2162.5+2175.0			
DSS_1C_20M + LTE_2C_15M+15M	3	50 (20+15+15)	2120+2137.5 +2152.5	2130+2147.5 +2162.5	2140+2157.5 +2172.5	10.0
Non-Contiguous			2120.0 + 2147.5 + 2172.5			
DSS_1C_20M + NR_2C_15M+15M	3	50 (20+15+15)	2120+2137.5 +2152.5	2130+2147.5 +2162.5	2140+2157.5 +2172.5	10.0
Non-Contiguous			2120.0 + 2147.5 + 2172.5			
DSS_1C_20M + LTE_1C_15M + NR_1C_15M	3	50 (20+15+15)	2120+2137.5 +2152.5	2130+2147.5 +2162.5	2140+2157.5 +2172.5	10.0
Non-Contiguous			2120.0 + 2147.5 + 2172.5			

Dual band Operation	No. of Carriers	Carrier Bandwidth (MHz)	Carrier Frequency Configuration (MHz)	Rated Power (W/path)
			Middle	
PCS_NR_1C_5M+ AWS_NR_1C_5M	2	10 (5+5)	1932.5 + 2177.5	10.0
PCS_NR_3C_10M+10M+10M + AWS_NR_3C_20M+15M+15M	6	80 (10+10+10 +20+15+15)	1935.0+1945.0+1955.0 +2140+2157.5+2172.5	10.0

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 Spurious Emissions

The radiated test facilities consisted of an indoor 3 meter semi-anechoic chamber used for final measurement and exploratory measurements, when necessary. The measurement area is contained within the semi-anechoic chamber which is shielded from any ambient interference. The test site inside the chamber is a 8.5 m(L) x 6.1 m(W) x 5.6 m(H) elliptical, obstruction-free area in accordance with Figure 5.7 of Clause 5 in ANSI C63.4-2014. Absorbers are arranged on the floor between the turn table and the antenna mast in such a way so as to maximize the reduction of reflections for measurements above 1 GHz. For measurements below 1 GHz, the absorbers are removed. Measurement of spurious emissions using floor-standing method. The EUT installed and tested as described in the manufactures instruction manual.

The equipment under test was transmitting while connected to its terminated attenuator and is placed on a pole. The measurement antenna is in the far field of the EUT per formula $2D^2/\lambda$ where D is the larger between the dimension of the measurement antenna and the transmitting antenna of the EUT. In this case, “D” is the largest dimension of the measurement antenna. The EUT is manipulated through all orthogonal planes representative of its typical use to achieve the highest reading on the receive spectrum analyzer.

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	1.37
Radiated Disturbance (<1GHz)	3.94
Radiated Disturbance (>1GHz)	4.75
Radiated Disturbance (>18GHz)	4.84

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	N9030B	MXA Signal Analyzer	05/09/2022	Annual	05/08/2023	MY57142018
KEYSIGHT	N9020B	MXA Signal Analyzer	10/17/2022	Annual	10/16/2023	MY55470135
Rohde & Schwarz	FSW43	Signal and Spectrum Analyzer	01/18/2022	Annual	01/17/2023	101955
AC POWER KOREA	ACPD-60150	DC Power Supply	01/18/2022	Annual	01/17/2023	DC-1
Rohde & Schwarz	TS-SFUNIT-Rx	Shielded Filter Unit	03/02/2022	Annual	03/01/2023	102131
Schwarzbeck	VULB9162	Broadband TRILOG Antenna	07/13/2021	Biennial	07/12/2023	9162-217
Sunol sciences	DRH-118	Horn Antenna	07/14/2021	Biennial	07/13/2023	A102416-1
Schwarzbeck	BBHA 9170	Horn Antenna	01/27/2022	Biennial	01/26/2024	1037
Qualwave	QFA1820	Attenuator	07/28/2022	Annual	07/27/2023	22265083 ~ 22265098
RF One	RFHB1810SC10	Attenuator	01/18/2022	Annual	01/17/2023	RFHB0001 ~ RFHB0017
Reachline	RL50W40GKF-20	Attenuator	07/05/2022	Annual	07/04/2023	PK00408
Reachline	RL50W40GKF-20	Attenuator	07/05/2022	Annual	07/04/2023	PK00409

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 = 4M51G7D

Occupied Bandwidth = 4.51 MHz
G = Phase Modulation
7 = Quantized/Digital Info
D = Data transmission, telemetry, telecommand

QAM Modulation

Emission Designator = 4M54W7D

Occupied Bandwidth = 4.54 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: A3LMF1601D-25A

FCC Classification: PCS Licensed Transmitter

Mode(s): LTE, NR, DSS

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, § 24.232, § 27.50(d)	Equivalent Isotropic Radiated Power (Power Spectral Density)	< 1640 W/MHz		PASS	Section 8.3
§ 2.1046, § 24.232, § 27.50(d)	Peak-to-average ratio	≤ 13 dB		PASS	Section 8.4
§ 2.1051, § 24.238, § 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, § 24.238, § 27.53(h)	Spurious and Harmonic Emissions at Antenna Terminal			PASS	Section 8.6
§ 2.1055 § 24.235 § 27.54	Frequency Stability	Fundamental emissions stay within authorized frequency block		N/A	Note 4
§ 2.1055, § 24.238, § 27.53(h)	Radiated unwanted emission	< 43 + log10(P[Watts]) at Band Edge and all out-of-band emissions	RADIATED	PASS	Section 8.7

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) 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 setting 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.

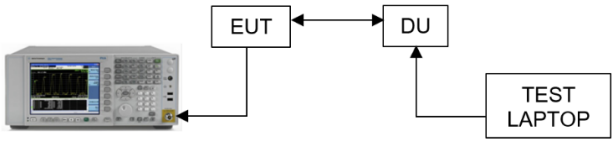


Figure 8-1. Test Instrument & Measurement Setup

Test Notes

None

Channel	Port	OBW (MHz)			
		QPSK	16QAM	64QAM	256QAM
Low	16	4.49	4.50	4.50	4.51
	17	4.50	4.51	4.50	4.49
	18	4.49	4.50	4.51	4.49
	19	4.50	4.49	4.52	4.52
	20	4.50	4.51	4.50	4.51
	21	4.50	4.50	4.51	4.50
	22	4.51	4.50	4.50	4.50
	23	4.50	4.50	4.49	4.50
	24	4.49	4.52	4.50	4.50
	25	4.50	4.52	4.50	4.51
	26	4.49	4.51	4.50	4.51
	27	4.49	4.51	4.49	4.50
	28	**4.51**	4.50	4.50	4.50
	29	4.49	4.50	4.51	4.52
	30	4.49	4.51	4.49	4.50
	31	4.50	4.50	4.50	4.50
Mid	16	4.49	4.51	4.49	4.51
	17	4.48	4.52	4.50	4.51
	18	4.49	4.51	4.50	4.52
	19	4.50	4.51	4.49	4.51
	20	4.50	4.51	4.51	4.51
	21	4.48	4.51	4.50	4.51
	22	4.49	4.50	4.50	4.50
	23	4.48	4.50	4.52	4.52
	24	4.50	4.52	4.50	4.51
	25	4.49	4.51	4.52	4.51
	26	4.50	4.51	4.51	4.50
	27	4.50	4.51	4.50	4.52
	28	4.50	4.50	4.50	4.50
	29	4.49	4.50	4.49	4.50
	30	4.48	4.50	4.50	4.51
	31	4.50	4.50	4.50	4.52
High	16	4.51	4.52	4.50	4.51
	17	4.49	4.53	4.49	4.51
	18	4.50	4.52	4.52	4.52
	19	4.50	4.51	4.51	4.50
	20	4.49	4.50	4.51	4.50
	21	4.50	4.50	4.50	4.50
	22	4.51	4.49	4.49	4.52
	23	4.50	4.51	4.50	4.51
	24	4.48	4.52	4.52	4.51
	25	4.50	4.50	4.52	4.51
	26	4.50	4.51	4.50	4.50
	27	4.50	4.52	4.50	4.51
	28	4.50	4.50	4.51	4.50
	29	4.49	**4.54**	4.52	4.51
	30	4.50	4.49	4.50	4.51
	31	4.50	4.50	4.50	4.52

Table 8-2. Occupied Bandwidth Summary Data (PCS_NR_1C_5M)

Channel	Port	OBW (MHz)			
		QPSK	16QAM	64QAM	256QAM
Low	16	9.29	9.30	9.28	9.30
	17	**9.30**	9.29	9.29	9.28
	18	9.30	9.30	9.29	9.28
	19	9.29	9.31	9.30	9.28
	20	9.28	9.29	9.29	9.29
	21	9.30	9.30	9.31	9.30
	22	9.28	9.29	9.28	9.29
	23	9.29	9.30	9.29	9.30
	24	9.30	9.28	9.30	9.30
	25	9.29	9.29	9.28	9.30
	26	9.29	9.30	9.29	9.29
	27	9.30	9.30	9.30	9.28
	28	9.28	9.29	9.28	9.29
	29	9.29	9.29	9.28	9.29
	30	9.29	9.30	9.27	9.29
	31	9.29	9.30	9.29	9.30
Mid	16	9.29	9.28	9.28	9.29
	17	9.30	9.32	9.28	9.29
	18	9.29	9.31	9.29	9.28
	19	9.29	9.30	9.28	9.30
	20	9.28	9.29	9.29	9.29
	21	9.29	9.30	9.28	9.30
	22	9.29	9.30	9.26	9.29
	23	9.30	9.30	9.27	9.29
	24	9.29	9.30	9.28	9.31
	25	9.29	9.31	9.28	9.29
	26	9.29	9.30	9.28	9.30
	27	9.30	9.29	9.28	9.29
	28	9.30	9.31	9.29	9.30
	29	9.30	9.31	9.28	9.30
	30	9.29	9.28	9.28	9.28
	31	9.29	9.31	9.27	9.29
High	16	9.30	9.31	9.29	9.30
	17	9.30	9.30	9.27	9.30
	18	9.30	9.31	9.28	9.30
	19	9.30	9.30	9.27	9.29
	20	9.30	9.31	9.27	9.29
	21	9.30	9.30	9.29	9.29
	22	9.29	9.29	9.28	9.31
	23	9.29	**9.32**	9.28	9.30
	24	9.29	9.29	9.28	9.29
	25	9.30	9.31	9.28	9.29
	26	9.29	9.31	9.30	9.30
	27	9.30	9.31	9.28	9.31
	28	9.28	9.31	9.27	9.30
	29	9.29	9.30	9.27	9.31
	30	9.30	9.32	9.28	9.30
	31	9.30	9.30	9.29	9.31

Table 8-3. Occupied Bandwidth Summary Data (PCS_NR_1C_10M)

Channel	Port	OBW (MHz)			
		QPSK	16QAM	64QAM	256QAM
Low	16	14.12	14.13	14.13	14.11
	17	14.10	14.11	14.11	14.11
	18	**14.14**	14.12	14.14	14.11
	19	14.11	14.13	14.14	14.11
	20	14.13	14.13	14.14	14.09
	21	14.13	14.10	14.09	14.12
	22	14.13	14.12	14.11	14.09
	23	14.11	14.12	14.11	14.12
	24	14.12	14.12	14.11	14.10
	25	14.10	14.11	14.11	14.11
	26	14.10	14.12	14.12	14.11
	27	14.10	14.12	14.12	14.11
	28	14.11	14.11	14.12	14.08
	29	14.11	14.10	14.11	14.11
	30	14.12	14.11	14.11	14.12
	31	14.10	14.12	14.11	14.11
Mid	16	14.10	14.12	14.14	14.10
	17	14.11	14.12	14.11	14.12
	18	14.10	14.11	14.14	14.10
	19	14.10	14.11	14.12	14.11
	20	14.11	14.13	14.14	14.13
	21	14.12	14.10	14.10	14.12
	22	14.10	14.11	14.15	14.11
	23	14.12	14.10	14.13	14.13
	24	14.10	14.10	14.11	14.11
	25	14.10	14.12	14.13	14.11
	26	14.12	14.11	14.15	14.11
	27	14.09	14.11	14.11	14.09
	28	14.09	14.11	14.11	14.10
	29	14.10	14.13	14.13	14.11
	30	14.10	14.14	14.13	14.13
	31	14.12	14.08	14.11	14.10
High	16	14.12	14.11	14.10	14.09
	17	14.10	14.11	14.11	14.11
	18	14.12	14.09	14.12	14.12
	19	14.12	14.11	14.12	14.10
	20	14.13	14.12	14.12	14.10
	21	14.11	14.12	14.12	14.10
	22	14.12	14.11	14.12	14.12
	23	14.11	14.10	14.11	14.12
	24	14.10	14.13	14.10	14.09
	25	14.11	14.13	14.12	14.12
	26	14.13	14.10	14.14	14.11
	27	14.12	14.11	14.10	14.12
	28	14.12	14.13	14.10	14.10
	29	14.12	14.10	**14.15**	14.10
	30	14.11	14.12	14.11	14.14
	31	14.11	14.11	14.13	14.12

Table 8-4. Occupied Bandwidth Summary Data (PCS_NR_1C_15M)

Channel	Port	OBW (MHz)			
		QPSK	16QAM	64QAM	256QAM
Low	16	18.93	18.95	18.92	19.00
	17	18.94	18.95	18.99	18.95
	18	18.95	18.96	18.90	18.97
	19	18.95	18.93	18.93	18.92
	20	18.94	18.93	18.99	18.97
	21	18.95	18.90	18.91	18.98
	22	18.91	18.94	18.94	18.93
	23	18.92	18.94	18.93	18.99
	24	18.94	18.94	18.93	18.93
	25	18.92	18.93	18.91	18.95
	26	18.92	18.96	18.90	18.96
	27	18.95	18.95	18.93	18.98
	28	18.94	18.96	18.92	18.93
	29	18.94	18.95	18.93	18.95
	30	18.94	18.92	18.92	18.94
	31	18.93	18.94	18.94	18.99
Mid	16	18.91	18.92	18.90	19.00
	17	18.95	18.92	18.91	18.95
	18	18.91	18.95	18.93	18.97
	19	18.94	18.94	18.94	18.97
	20	18.94	18.94	18.94	19.00
	21	18.94	18.94	18.92	18.94
	22	18.95	18.93	18.95	18.93
	23	18.94	18.94	18.92	18.98
	24	18.90	18.96	18.92	18.94
	25	18.92	18.94	18.92	18.93
	26	18.95	18.95	18.97	18.91
	27	18.94	18.94	18.92	18.96
	28	18.93	18.94	18.94	18.92
	29	18.95	18.92	18.95	18.95
	30	18.95	18.97	18.92	18.96
	31	18.91	18.97	19.01	**19.01**
High	16	18.93	18.93	18.96	18.93
	17	18.96	18.93	18.99	19.00
	18	18.93	18.97	18.91	18.97
	19	18.93	18.97	18.98	18.95
	20	18.94	18.93	18.97	18.90
	21	18.94	18.94	18.92	19.01
	22	18.95	18.97	18.92	18.94
	23	**18.98**	18.95	18.90	18.97
	24	18.97	18.92	18.96	18.93
	25	18.94	18.95	18.96	18.97
	26	18.96	18.99	18.86	18.94
	27	18.91	18.93	18.92	18.96
	28	18.95	18.95	18.95	18.94
	29	18.94	18.96	18.99	18.94
	30	18.92	18.92	18.93	18.92
	31	18.93	18.97	18.90	18.96

Table 8-5. Occupied Bandwidth Summary Data (PCS_NR_1C_20M)

Channel	Ratio	Port	OBW (MHz)			
			QPSK	16QAM	64QAM	256QAM
Low	LTE:5 NR:5	16	9.24	9.23	9.26	9.24
		17	9.23	9.23	9.25	9.26
		18	9.24	9.20	9.27	9.25
		19	9.23	9.24	9.25	9.26
		20	9.23	9.26	9.26	9.24
		21	9.23	9.21	9.26	9.25
		22	9.25	9.23	9.24	9.25
		23	9.24	9.20	9.23	9.23
		24	9.25	9.21	9.25	9.25
		25	9.25	9.23	9.28	9.26
		26	9.24	9.22	9.26	9.23
		27	9.23	9.21	9.24	9.24
		28	9.23	9.26	9.25	9.26
		29	9.24	9.25	9.27	9.27
		30	9.25	9.22	9.25	9.26
		31	9.23	9.22	9.26	9.24
Middle		16	9.23	9.21	9.28	9.24
		17	9.24	9.22	9.26	9.27
		18	9.24	9.23	9.23	9.24
		19	9.24	9.24	9.27	9.24
		20	9.24	9.24	9.25	9.24
		21	9.24	9.23	9.28	9.25
		22	9.23	9.22	9.24	9.26
		23	9.24	9.23	9.25	9.25
		24	9.24	9.22	9.26	9.26
		25	9.23	9.22	9.23	9.24
		26	9.22	9.21	9.23	9.27
		27	9.23	9.22	9.25	9.22
		28	9.23	9.24	9.25	9.26
		29	9.25	9.22	9.25	9.25
		30	9.23	9.21	9.25	9.22
		31	9.24	9.24	9.26	9.22
High		16	9.23	9.23	9.26	9.25
		17	9.24	9.22	9.26	9.24
		18	9.24	9.23	9.24	9.24
		19	9.23	9.22	9.25	9.25
		20	9.22	9.24	9.26	9.25
		21	9.24	9.21	9.25	9.26
		22	9.24	9.24	9.25	9.25
		23	9.23	9.21	9.24	9.24
		24	9.24	9.23	9.26	9.25
		25	9.24	9.22	9.24	9.26
		26	9.25	9.23	9.25	9.24
		27	9.25	9.20	9.26	9.26
		28	9.25	9.23	**9.28**	9.26
		29	9.25	9.22	9.26	9.26
		30	9.24	9.21	9.26	9.27
		31	9.24	9.22	9.24	9.24

Low	LTE: 9 NR: 1	16	9.22	9.22	9.17	9.27
		17	9.20	9.21	9.22	9.24
		30	9.18	9.22	9.17	9.24
		31	9.18	9.23	9.20	9.26
Middle		16	9.23	9.17	9.18	9.18
		17	9.24	9.19	9.22	9.24
		30	9.25	9.12	9.18	9.19
		31	9.25	9.12	9.22	9.19
High		16	9.21	9.16	9.23	9.21
		17	9.20	9.14	9.18	9.20
		30	9.23	9.17	9.23	9.17
		31	9.20	9.13	9.18	9.20
Low	LTE: 2 NR: 8	16	9.24	9.25	9.23	9.25
		17	**9.27**	9.24	9.28	9.23
		30	9.25	9.25	9.26	9.24
		31	9.24	9.24	9.27	9.25
Middle		16	9.22	9.22	9.23	9.25
		17	9.24	9.23	9.26	9.23
		30	9.24	9.23	9.27	9.27
		31	9.23	9.22	9.26	9.23
High		16	9.24	9.22	9.25	9.26
		17	9.24	9.21	9.26	9.24
		30	9.25	9.23	9.24	9.26
		31	9.25	9.23	9.24	9.25

Table 8-6. Occupied Bandwidth Summary Data (PCS_DSS_1C_10M)

Channel	Ratio	Port	OBW (MHz)			
			QPSK	16QAM	64QAM	256QAM
Low	LTE:5 NR:5	16	13.96	13.91	13.98	13.98
		17	13.96	13.89	13.92	13.97
		18	13.95	13.91	13.98	13.97
		19	13.95	13.89	13.99	13.99
		20	13.96	13.95	13.95	13.97
		21	13.96	13.92	13.95	13.97
		22	13.96	13.89	13.96	13.98
		23	13.95	13.94	13.99	13.96
		24	13.96	13.92	13.96	13.95
		25	13.97	13.92	13.98	13.95
		26	13.97	13.90	13.97	13.97
		27	13.96	13.91	13.97	13.97
		28	13.99	13.94	13.99	13.94
		29	13.94	13.92	13.97	13.93
		30	13.95	13.89	14.02	13.96
		31	13.95	13.92	14.00	13.96
Middle		16	13.97	13.94	14.00	13.95
		17	13.94	13.90	14.00	13.97
		18	13.95	13.94	14.00	13.97
		19	13.97	13.94	13.97	13.96
		20	13.96	13.94	13.98	13.98
		21	13.96	13.94	13.98	13.97
		22	13.96	13.93	13.96	13.96
		23	13.97	13.97	14.00	13.97
		24	13.96	13.96	13.99	13.98
		25	13.94	13.91	13.99	13.98
		26	13.97	13.92	14.00	13.96
		27	13.98	13.91	13.96	13.97
		28	13.97	13.98	13.95	13.97
		29	13.98	13.98	14.01	13.97
		30	13.96	13.90	13.95	13.95
		31	13.94	13.93	14.00	13.96
High		16	13.98	13.92	13.96	13.97
		17	13.99	13.97	13.97	13.95
		18	13.99	13.98	13.94	**14.03**
		19	13.94	13.91	13.96	13.97
		20	13.95	13.94	13.95	13.95
		21	13.98	13.91	13.99	13.97
		22	13.98	13.93	14.02	13.97
		23	13.97	13.95	14.00	13.96
		24	13.96	13.95	13.98	13.95
		25	13.96	13.90	13.99	14.02
		26	13.97	13.91	13.97	13.96
		27	13.99	13.96	13.97	14.00
		28	13.95	13.92	13.94	13.97
		29	13.98	13.93	13.99	13.95
		30	13.96	13.95	13.98	13.97
		31	14.00	13.91	13.96	13.97

Low	LTE: 9 NR: 1	16	13.87	13.77	13.90	13.90
		17	13.93	13.74	13.86	13.96
		30	13.87	13.81	13.91	13.82
		31	13.88	13.78	13.90	13.85
Middle		16	13.87	13.79	13.88	13.89
		17	13.86	13.76	13.88	13.92
		30	13.93	13.82	13.94	13.86
		31	13.89	13.74	13.96	13.92
High		16	13.88	13.80	13.88	13.95
		17	13.90	13.81	13.92	13.92
		30	13.88	13.82	13.91	13.88
		31	13.94	13.85	13.88	13.94
Low	LTE: 2 NR: 8	16	14.00	14.00	14.00	13.97
		17	13.98	13.95	13.96	14.00
		30	13.99	13.98	14.02	13.97
		31	13.97	13.98	13.96	13.98
Middle		16	13.99	13.97	14.01	13.98
		17	13.99	14.00	14.01	14.00
		30	13.99	13.97	13.98	14.00
		31	14.00	14.00	13.98	14.00
High		16	**14.03**	13.96	13.99	14.00
		17	14.02	13.95	13.99	14.00
		30	13.98	13.97	14.00	13.99
		31	14.00	13.98	13.99	14.01

Table 8-7. Occupied Bandwidth Summary Data (PCS_DSS_1C_15M)

Channel	Ratio	Port	OBW (MHz)			
			QPSK	16QAM	64QAM	256QAM
Low	LTE:5 NR:5	16	18.70	18.60	**18.78**	18.67
		17	18.69	18.67	18.73	18.70
		18	18.66	18.69	18.71	18.71
		19	18.75	18.70	18.70	18.70
		20	18.66	18.72	18.73	18.67
		21	18.70	18.63	18.75	18.68
		22	18.73	18.67	18.67	18.67
		23	18.71	18.68	18.66	18.64
		24	18.75	18.68	18.73	18.66
		25	18.65	18.68	18.72	18.67
		26	18.71	18.64	18.72	18.67
		27	18.73	18.70	18.67	18.71
		28	18.68	18.68	18.71	18.71
		29	18.75	18.65	18.73	18.65
		30	18.68	18.64	18.66	18.67
		31	18.67	18.68	18.65	18.69
Middle		16	18.74	18.69	18.71	18.69
		17	18.72	18.65	18.70	18.67
		18	18.69	18.68	18.67	18.69
		19	18.70	18.68	18.71	18.76
		20	18.72	18.68	18.70	18.66
		21	18.72	18.69	18.73	18.66
		22	18.69	18.70	18.73	18.67
		23	18.68	18.71	18.73	18.65
		24	18.71	18.70	18.72	18.73
		25	18.74	18.66	18.72	18.68
		26	18.73	18.66	18.74	18.68
		27	18.75	18.73	18.73	18.69
		28	18.72	18.66	18.70	18.67
		29	18.65	18.65	18.67	18.66
		30	18.69	18.74	18.70	18.72
		31	18.72	18.66	18.69	18.60
High		16	18.72	18.65	18.72	18.66
		17	18.67	18.66	18.71	18.66
		18	18.67	18.67	18.68	18.68
		19	18.66	18.68	18.72	18.72
		20	18.70	18.69	18.72	18.69
		21	18.71	18.72	18.65	18.69
		22	18.72	18.74	18.75	18.68
		23	18.69	18.68	18.69	18.70
		24	18.73	18.70	18.71	18.68
		25	18.72	18.73	18.68	18.70
		26	18.70	18.69	18.77	18.70
		27	18.70	18.71	18.77	18.67
		28	18.74	18.69	18.70	18.73
		29	18.69	18.69	18.76	18.66
		30	18.70	18.67	18.71	18.73
		31	18.70	18.65	18.74	18.73

Low	LTE: 9 NR: 1	16	18.51	18.47	18.58	18.55
		17	18.55	18.43	18.69	18.55
		30	18.54	18.58	18.55	18.55
		31	18.48	18.53	18.60	18.61
Middle		16	18.56	18.45	18.50	18.58
		17	18.56	18.60	18.59	18.53
		30	18.55	18.40	18.67	18.57
		31	18.59	18.49	18.55	18.55
High		16	18.58	18.47	18.50	18.54
		17	18.56	18.54	18.45	18.57
		30	18.62	18.47	18.59	18.60
		31	18.52	18.49	18.66	18.57
Low	LTE: 2 NR: 8	16	18.70	18.73	18.71	18.70
		17	18.73	18.75	18.72	18.71
		30	18.68	18.67	18.69	18.71
		31	18.72	18.72	18.74	18.71
Middle		16	18.70	18.66	18.70	18.68
		17	18.70	18.70	18.75	18.68
		30	18.72	18.72	18.73	18.69
		31	18.76	18.77	18.70	18.72
High		16	18.74	18.73	18.71	18.70
		17	**18.76**	18.70	18.72	18.69
		30	18.72	18.76	18.73	18.69
		31	18.69	18.71	18.71	18.69

Table 8-8. Occupied Bandwidth Summary Data (PCS_DSS_1C_20M)

Configuration	Channel	Port	OBW (MHz)			
			QPSK	16QAM	64QAM	256QAM
NR_2C 15M + 5M	Low	16	19.16	19.20	19.19	19.21
		17	19.23	19.16	19.18	19.22
		30	19.18	19.20	19.21	19.22
		31	19.19	19.21	19.19	19.22
	Middle	16	19.19	19.21	19.21	19.21
		17	19.21	19.22	19.19	19.21
		30	19.23	19.25	19.22	19.22
		31	19.19	19.24	19.24	19.20
	High	16	19.24	19.22	19.27	19.24
		17	19.22	19.21	19.19	19.23
		30	19.20	19.23	19.24	19.26
		31	19.24	19.25	19.19	19.22
NR_3C 10M +10M+10M	Low	16	29.10	29.07	29.10	29.10
		17	29.10	29.09	29.12	29.13
		30	29.11	29.13	**29.20**	29.13
		31	29.13	29.05	29.08	29.12
	Middle	16	29.10	29.12	29.12	29.11
		17	29.11	29.12	29.13	29.12
		30	29.10	29.11	29.12	29.11
		31	29.08	29.13	29.12	29.17
	High	16	29.11	29.13	29.09	29.15
		17	29.09	29.14	29.12	29.12
		30	**29.19**	29.14	29.12	29.15
		31	29.11	29.16	29.14	29.09
NR_1C_15M + LTE_1C_5M	Low	16	19.20	19.23	19.24	19.23
		17	19.22	19.21	19.23	19.21
		30	19.20	19.18	19.22	19.26
		31	19.22	19.18	19.20	19.26
	Middle	16	19.22	19.20	19.25	19.22
		17	19.23	19.18	19.23	19.23
		30	19.21	19.21	19.22	**19.29**
		31	19.22	19.22	19.24	19.23
	High	16	19.23	19.23	19.27	19.21
		17	**19.26**	19.23	19.22	19.25
		30	19.22	19.23	19.24	19.25
		31	19.22	19.22	19.22	19.23

NR_2C_10M+10M + LTE_1C_10M	Low	16	28.96	28.98	28.95	28.95
		17	28.98	28.96	28.94	28.96
		30	28.96	28.98	28.91	28.99
		31	28.98	29.02	28.97	29.03
	Middle	16	28.96	29.01	28.94	28.99
		17	28.97	28.99	28.96	29.02
		30	28.96	28.96	28.97	29.00
		31	28.96	28.98	28.99	28.92
	High	16	29.00	28.98	28.96	29.00
		17	28.97	28.98	28.95	29.04
		30	28.95	29.04	29.01	28.98
		31	28.96	28.98	28.98	28.94
DSS_1C_15M + LTE_1C_5M	Low	16	19.10	19.09	19.11	19.19
		17	19.14	19.14	19.17	19.18
		30	19.15	19.08	19.12	19.13
		31	19.15	19.07	19.13	19.11
	Middle	16	19.12	19.12	19.09	19.18
		17	19.13	19.10	19.13	19.14
		30	19.12	19.13	19.14	19.15
		31	19.13	19.12	19.18	19.14
	High	16	19.14	19.14	19.14	19.17
		17	19.14	19.14	19.19	19.15
		30	19.17	19.09	19.10	19.13
		31	19.16	19.11	19.14	19.15
DSS_1C_15M + LTE_1C_15M	Low	16	28.52	28.52	28.53	28.57
		17	28.51	28.56	28.51	28.50
		30	28.55	28.53	28.55	28.56
		31	28.55	28.48	28.51	28.51
	Middle	16	28.57	28.59	28.51	28.55
		17	28.57	28.53	28.53	28.55
		30	28.58	28.57	28.54	28.55
		31	28.59	28.57	28.53	28.49
	High	16	28.51	28.53	28.55	28.56
		17	28.58	28.56	28.53	28.53
		30	28.55	28.64	28.56	28.55
		31	28.61	28.57	28.58	28.56

DSS_1C_15M + NR_1C_5M	Low	16	19.15	19.09	19.12	19.07
		17	19.09	19.14	19.16	19.10
		30	19.10	19.08	19.13	19.14
		31	19.10	19.12	19.10	19.12
	Middle	16	19.15	19.11	19.12	19.13
		17	19.11	19.11	19.10	19.13
		30	19.12	19.12	19.13	19.12
		31	19.14	19.08	19.15	19.13
	High	16	19.10	19.09	19.13	19.11
		17	19.09	19.12	19.15	19.14
		30	19.10	19.10	19.15	19.10
		31	19.10	19.13	19.13	19.11
DSS_1C_15M + NR_1C_15M	Low	16	28.89	28.84	28.88	28.90
		17	28.92	28.88	28.86	28.90
		30	28.93	28.83	28.91	28.85
		31	28.82	28.90	28.89	28.90
	Middle	16	28.91	28.87	28.90	28.90
		17	28.93	28.84	28.89	28.90
		30	28.88	28.84	28.89	28.94
		31	28.86	28.87	28.86	28.83
	High	16	29.00	28.81	28.86	28.89
		17	28.93	28.87	28.86	28.89
		30	28.87	28.87	28.90	28.90
		31	28.84	28.85	28.91	28.92

Table 8-9. Occupied Bandwidth Summary Data (PCS_Multi-Carrier)

Channel	Port	OBW (MHz)			
		QPSK	16QAM	64QAM	256QAM
Low	0	4.48	4.47	4.47	4.47
	1	4.49	4.47	4.47	4.47
	2	4.48	4.47	4.47	4.47
	3	4.48	4.48	4.47	4.47
	4	4.48	4.47	4.47	4.48
	5	4.48	4.48	4.47	4.48
	6	**4.49**	4.48	4.48	4.47
	7	4.48	4.48	4.47	4.47
	8	4.49	4.47	4.48	4.47
	9	4.49	4.48	4.48	4.47
	10	4.48	4.48	4.47	4.47
	11	4.48	4.48	4.47	4.47
	12	4.49	4.48	4.48	4.47
	13	4.49	4.48	4.48	4.48
	14	4.48	4.48	4.48	4.47
	15	4.48	4.48	4.46	4.47
Mid	0	4.48	4.47	4.48	4.47
	1	4.48	4.47	4.47	4.47
	2	4.48	4.47	4.47	**4.49**
	3	4.48	4.47	4.48	4.48
	4	4.49	4.48	4.47	4.48
	5	4.49	4.47	4.47	4.48
	6	4.48	4.47	4.47	4.48
	7	4.49	4.47	4.47	4.49
	8	4.49	4.48	4.47	4.47
	9	4.48	4.47	4.48	4.48
	10	4.48	4.48	4.47	4.47
	11	4.49	4.47	4.48	4.48
	12	4.48	4.47	4.47	4.48
	13	4.48	4.47	4.47	4.47
	14	4.48	4.47	4.47	4.47
	15	4.48	4.47	4.48	4.47
High	0	4.48	4.47	4.47	4.47
	1	4.48	4.47	4.46	4.48
	2	4.47	4.47	4.47	4.47
	3	4.48	4.47	4.47	4.47
	4	4.47	4.47	4.46	4.47
	5	4.48	4.48	4.47	4.47
	6	4.48	4.47	4.47	4.47
	7	4.49	4.47	4.48	4.47
	8	4.48	4.47	4.47	4.48
	9	4.48	4.48	4.47	4.47
	10	4.48	4.48	4.48	4.47
	11	4.48	4.48	4.47	4.47
	12	4.48	4.48	4.47	4.47
	13	4.48	4.48	4.47	4.47
	14	4.48	4.48	4.47	4.48
	15	4.49	4.48	4.47	4.47

Table 8-10. Occupied Bandwidth Summary Data (AWS_NR_1C_5M)

Channel	Port	OBW (MHz)			
		QPSK	16QAM	64QAM	256QAM
Low	0	9.30	9.30	9.28	9.31
	1	9.27	9.29	9.29	9.31
	2	9.29	9.29	9.29	9.31
	3	9.28	9.30	9.27	9.30
	4	9.29	9.29	9.30	9.29
	5	9.29	9.29	9.27	9.29
	6	9.28	9.29	9.28	9.30
	7	9.29	9.29	9.30	9.30
	8	9.29	9.29	9.28	9.30
	9	9.29	9.28	9.29	9.29
	10	9.29	9.30	9.28	9.30
	11	9.28	9.28	9.30	9.30
	12	9.28	9.30	9.29	9.27
	13	9.29	9.29	9.30	9.29
	14	9.30	9.29	9.30	9.31
	15	9.28	9.29	9.29	9.29
Mid	0	9.29	9.30	9.28	9.29
	1	9.28	9.29	9.28	9.30
	2	9.29	9.30	9.29	9.29
	3	9.27	9.28	9.29	9.30
	4	9.29	9.30	9.27	9.30
	5	9.30	9.30	9.28	9.27
	6	9.30	9.30	9.28	9.29
	7	9.30	9.30	9.27	9.30
	8	9.29	9.30	9.28	9.29
	9	**9.31**	9.30	9.27	9.29
	10	9.30	9.28	9.29	9.29
	11	9.29	9.28	9.27	9.29
	12	9.30	**9.31**	9.28	9.29
	13	9.29	9.30	9.28	9.29
	14	9.28	9.29	9.29	9.28
	15	9.29	9.28	9.28	9.30
High	0	9.27	9.30	9.29	9.30
	1	9.28	9.29	9.27	9.29
	2	9.29	9.30	9.29	9.31
	3	9.29	9.29	9.29	9.29
	4	9.29	9.30	9.28	9.28
	5	9.29	9.30	9.28	9.30
	6	9.29	9.30	9.29	9.29
	7	9.31	9.30	9.29	9.30
	8	9.29	9.30	9.28	9.29
	9	9.30	9.29	9.30	9.30
	10	9.28	9.30	9.30	9.29
	11	9.29	9.28	9.29	9.30
	12	9.29	9.28	9.28	9.29
	13	9.29	9.29	9.28	9.30
	14	9.29	9.29	9.29	9.30
	15	9.29	9.30	9.29	9.30

Table 8-11. Occupied Bandwidth Summary Data (AWS_NR_1C_10M)

Channel	Port	OBW (MHz)			
		QPSK	16QAM	64QAM	256QAM
Low	0	14.10	14.13	14.11	14.10
	1	14.11	14.10	14.08	14.09
	2	14.09	14.09	14.10	14.11
	3	14.09	14.12	14.08	14.10
	4	14.11	14.10	14.12	14.12
	5	14.11	14.11	14.13	14.11
	6	14.10	14.10	14.11	14.10
	7	14.12	14.13	14.09	14.12
	8	14.12	14.11	14.09	14.11
	9	14.11	14.09	14.11	14.10
	10	14.11	14.11	14.09	14.08
	11	14.11	14.11	14.11	14.10
	12	14.10	14.12	14.10	14.12
	13	14.09	14.11	14.09	14.11
	14	14.10	14.10	14.12	14.10
	15	14.09	14.10	14.10	14.11
Mid	0	14.12	14.12	14.11	14.11
	1	14.14	14.10	14.10	14.12
	2	14.13	14.11	14.11	14.11
	3	14.10	14.11	14.13	14.09
	4	14.11	14.12	14.10	14.11
	5	14.12	14.09	14.12	14.11
	6	14.11	14.12	14.10	14.11
	7	14.10	14.10	14.09	14.11
	8	14.13	14.11	14.12	14.09
	9	14.12	14.13	14.10	14.11
	10	14.12	14.11	14.12	14.13
	11	14.11	14.09	14.08	14.11
	12	14.10	14.13	14.09	14.12
	13	14.11	14.09	14.14	14.12
	14	14.11	14.12	14.11	14.10
	15	14.13	14.14	**14.16**	14.11
High	0	14.10	14.13	14.08	14.10
	1	14.11	14.11	14.11	14.11
	2	14.09	14.12	14.15	14.10
	3	14.12	14.11	14.12	14.11
	4	14.11	14.10	14.08	14.09
	5	14.10	14.13	14.12	14.10
	6	14.10	14.14	14.11	14.10
	7	14.12	14.11	14.09	14.11
	8	14.12	14.12	14.10	14.11
	9	14.10	14.13	14.10	14.10
	10	14.13	14.12	14.11	14.12
	11	14.13	14.11	14.10	14.09
	12	14.09	14.13	14.09	14.11
	13	14.09	14.12	14.10	14.10
	14	**14.14**	14.15	14.11	14.09
	15	14.11	14.10	14.11	14.09

Table 8-12. Occupied Bandwidth Summary Data (AWS_NR_1C_15M)

Channel	Port	OBW (MHz)			
		QPSK	16QAM	64QAM	256QAM
Low	0	18.93	18.91	18.92	18.94
	1	18.91	18.89	18.94	18.91
	2	**18.96**	18.93	18.92	18.91
	3	18.91	18.93	18.90	18.93
	4	18.93	18.92	**18.98**	18.96
	5	18.96	18.91	18.90	18.92
	6	18.92	18.92	18.91	18.94
	7	18.93	18.91	18.90	18.94
	8	18.94	18.90	18.93	18.95
	9	18.90	18.92	18.91	18.96
	10	18.89	18.94	18.91	18.93
	11	18.90	18.93	18.91	18.94
	12	18.91	18.90	18.92	18.93
	13	18.91	18.93	18.88	18.94
	14	18.94	18.90	18.92	18.91
	15	18.93	18.90	18.92	18.94
Mid	0	18.89	18.95	18.97	18.91
	1	18.92	18.90	18.97	18.95
	2	18.93	18.92	18.92	18.91
	3	18.94	18.92	18.90	18.94
	4	18.92	18.96	18.92	18.94
	5	18.94	18.95	18.96	18.94
	6	18.93	18.92	18.93	18.93
	7	18.95	18.93	18.96	18.95
	8	18.90	18.91	18.90	18.96
	9	18.94	18.91	18.88	18.97
	10	18.95	18.88	18.89	18.95
	11	18.90	18.93	18.92	18.94
	12	18.91	18.94	18.93	18.94
	13	18.92	18.91	18.91	18.93
	14	18.95	18.92	18.92	18.95
	15	18.91	18.92	18.91	18.94
High	0	18.95	18.91	18.92	18.96
	1	18.93	18.89	18.89	18.94
	2	18.93	18.90	18.94	18.94
	3	18.89	18.95	18.92	18.95
	4	18.90	18.94	18.93	18.94
	5	18.94	18.90	18.95	18.95
	6	18.95	18.89	18.92	18.95
	7	18.94	18.92	18.93	18.97
	8	18.94	18.94	18.93	18.90
	9	18.89	18.93	18.96	18.93
	10	18.91	18.91	18.96	18.93
	11	18.91	18.93	18.94	18.92
	12	18.90	18.95	18.92	18.98
	13	18.91	18.95	18.97	18.93
	14	18.89	18.95	18.91	18.96
	15	18.95	18.92	18.91	18.94

Table 8-13. Occupied Bandwidth Summary Data (AWS_NR_1C_20M)

Channel	Ratio	Port	OBW (MHz)			
			QPSK	16QAM	64QAM	256QAM
Low	LTE:5 NR:5	0	9.23	9.24	9.24	9.23
		1	9.24	9.25	9.22	9.21
		2	9.25	9.23	9.24	9.22
		3	9.22	9.22	9.24	9.25
		4	9.24	9.23	9.22	9.24
		5	9.25	9.23	9.24	9.22
		6	9.25	9.22	9.24	9.23
		7	9.23	9.21	9.25	9.23
		8	9.24	9.23	9.21	9.24
		9	9.24	9.24	9.23	9.23
		10	9.22	9.23	9.23	9.24
		11	9.22	9.24	9.22	9.22
		12	9.26	9.22	9.21	9.23
		13	9.24	9.24	9.22	9.22
		14	9.23	9.23	9.22	9.24
		15	9.25	9.25	9.24	9.25
Middle		0	9.24	9.21	9.23	9.24
		1	9.24	9.24	9.23	9.24
		2	9.23	9.23	9.25	9.24
		3	9.25	9.21	9.24	9.24
		4	9.24	9.20	9.24	9.22
		5	9.25	9.22	9.23	9.22
		6	9.25	9.22	9.24	9.23
		7	9.25	9.21	9.24	9.22
		8	9.24	9.23	9.25	9.23
		9	9.25	9.23	9.22	9.24
		10	**9.26**	9.23	9.24	9.23
		11	9.24	9.21	9.23	9.23
		12	9.24	9.22	9.22	9.24
		13	9.25	9.22	**9.26**	9.24
		14	9.23	9.19	9.26	9.25
		15	9.23	9.22	9.23	9.24
High		0	9.25	9.22	9.23	9.23
		1	9.25	9.25	9.24	9.23
		2	9.23	9.21	9.23	9.26
		3	9.25	9.22	9.23	9.22
		4	9.25	9.23	9.24	9.23
		5	9.24	9.24	9.24	9.25
		6	9.23	9.25	9.24	9.25
		7	9.23	9.21	9.24	9.23
		8	9.24	9.25	9.24	9.23
		9	9.23	9.22	9.24	9.26
		10	9.24	9.23	9.22	9.25
		11	9.24	9.20	9.23	9.23
		12	9.24	9.22	9.25	9.24
		13	9.25	9.23	9.24	9.23
		14	9.24	9.23	9.21	9.26
		15	9.25	9.22	9.24	9.23

Low	LTE: 9 NR: 1	0	9.21	9.15	9.17	9.20
		1	9.19	9.16	9.19	9.20
		14	9.22	9.12	9.20	9.19
		15	9.17	9.14	9.18	9.24
Middle		0	9.15	9.15	9.22	9.18
		1	9.17	9.17	9.21	9.26
		14	9.19	9.16	9.20	9.20
		15	9.19	9.16	9.17	9.15
High		0	9.20	9.15	9.17	9.18
		1	9.18	9.13	9.16	9.18
		14	9.22	9.17	9.20	9.20
		15	9.18	9.14	9.17	9.16
Low	LTE: 2 NR: 8	0	9.21	9.17	9.20	9.18
		1	9.22	9.17	9.17	9.19
		14	9.19	9.12	9.17	9.16
		15	9.20	9.16	9.21	9.21
Middle		0	9.16	9.18	9.16	9.20
		1	9.22	9.16	9.16	9.17
		14	9.15	9.12	9.19	9.20
		15	9.22	9.16	9.20	9.20
High		0	9.18	9.15	9.20	9.17
		1	9.23	9.13	9.18	9.20
		14	9.22	9.11	9.19	9.22
		15	9.19	9.16	9.19	9.20

Table 8-14. Occupied Bandwidth Summary Data (AWS_DSS_1C_10M)

Channel	Ratio	Port	OBW (MHz)			
			QPSK	16QAM	64QAM	256QAM
Low	LTE:5 NR:5	0	13.97	13.92	13.96	13.95
		1	13.96	13.92	13.92	13.95
		2	13.99	13.88	14.01	13.94
		3	13.96	13.93	14.01	13.98
		4	13.95	13.91	13.96	13.97
		5	13.98	13.91	13.98	13.97
		6	13.99	13.93	13.95	**14.04**
		7	13.95	13.92	14.00	13.96
		8	13.97	13.95	14.00	13.94
		9	13.93	13.93	13.93	13.95
		10	13.98	13.94	14.01	14.02
		11	13.97	13.92	14.02	14.02
		12	13.96	13.89	13.99	13.98
		13	13.97	13.92	13.95	13.98
		14	13.96	13.93	13.96	13.96
		15	13.96	13.88	14.02	14.01
Middle		0	13.99	13.91	13.96	14.00
		1	13.95	13.92	14.00	13.99
		2	13.97	13.96	13.96	13.98
		3	13.97	13.91	13.95	13.96
		4	13.99	13.93	13.99	13.99
		5	13.95	13.94	13.96	13.97
		6	13.98	13.94	14.00	14.01
		7	13.96	13.94	14.00	13.98
		8	13.96	13.96	13.95	13.98
		9	13.95	13.93	13.98	13.97
		10	13.98	13.96	13.96	13.96
		11	13.99	13.94	13.97	13.97
		12	13.97	13.94	13.94	14.01
		13	13.96	13.92	13.99	14.01
		14	13.98	13.95	13.96	13.98
		15	13.97	13.95	13.96	14.01
High		0	13.97	13.97	13.93	14.00
		1	13.98	13.92	13.96	13.97
		2	13.96	13.94	13.99	14.03
		3	13.98	13.93	13.96	14.00
		4	13.98	13.92	13.98	14.00
		5	13.98	13.91	13.99	13.98
		6	13.97	13.91	13.97	13.96
		7	13.97	13.93	13.96	13.97
		8	13.97	13.96	13.96	13.97
		9	13.94	13.95	13.97	14.01
		10	14.00	13.92	13.94	14.00
		11	13.97	13.92	13.97	13.97
		12	13.96	13.92	13.97	13.99
		13	13.97	13.94	13.96	14.01
		14	13.99	13.95	14.00	13.99
		15	**14.01**	13.90	13.96	13.98

Low	LTE: 9 NR: 1	0	13.90	13.83	13.89	13.96
		1	13.85	13.82	13.94	13.93
		14	13.87	13.85	13.90	13.86
		15	13.83	13.80	13.93	13.95
Middle		0	13.82	13.79	13.87	14.00
		1	13.84	13.75	13.88	13.98
		14	13.89	13.80	13.91	13.88
		15	13.88	13.81	13.88	13.90
High		0	13.88	13.78	13.84	13.84
		1	13.87	13.82	13.89	13.92
		14	13.86	13.85	13.87	13.84
		15	13.90	13.81	13.90	13.94
Low	LTE: 2 NR: 8	0	13.88	13.83	13.93	13.82
		1	13.87	13.85	13.83	13.81
		14	13.90	13.75	13.91	13.89
		15	13.90	13.71	13.84	13.90
Middle		0	13.89	13.83	13.87	13.94
		1	13.88	13.85	13.84	13.91
		14	13.91	13.77	13.84	13.82
		15	13.88	13.78	13.92	13.87
High		0	13.85	13.82	13.89	13.90
		1	13.93	13.82	13.88	13.85
		14	13.88	13.86	13.91	13.80
		15	13.92	13.83	13.82	13.88

Table 8-15. Occupied Bandwidth Summary Data (AWS_DSS_1C_15M)

Channel	Ratio	Port	OBW (MHz)			
			QPSK	16QAM	64QAM	256QAM
Low	LTE:5 NR:5	0	18.66	18.63	18.65	18.62
		1	18.67	18.65	18.61	18.63
		2	18.70	18.58	18.65	18.64
		3	18.71	18.60	18.59	18.63
		4	18.73	18.62	18.61	18.61
		5	18.68	18.62	18.66	18.62
		6	18.68	18.62	18.64	18.62
		7	18.66	18.57	18.62	18.60
		8	18.71	18.66	18.56	18.60
		9	18.72	18.65	18.56	18.59
		10	18.69	18.64	18.60	18.64
		11	18.69	18.60	18.61	18.64
		12	18.65	18.62	18.61	18.60
		13	18.67	18.65	18.67	18.60
		14	18.71	18.62	18.65	18.65
		15	18.70	18.61	18.65	18.64
Middle		0	18.70	18.69	18.72	18.67
		1	18.67	18.70	**18.76**	18.64
		2	18.69	18.68	18.66	18.73
		3	18.68	18.68	18.62	18.66
		4	18.63	18.69	18.67	18.73
		5	18.66	18.67	18.65	18.65
		6	18.70	18.72	18.72	18.69
		7	18.67	18.68	18.68	18.71
		8	18.66	18.69	18.73	18.69
		9	**18.75**	18.66	18.68	18.71
		10	18.69	18.71	18.70	18.64
		11	18.67	18.67	18.65	18.66
		12	18.71	18.68	18.73	18.71
		13	18.69	18.74	18.66	18.67
		14	18.66	18.71	18.73	18.70
		15	18.71	18.71	18.67	18.69
High		0	18.68	18.63	18.68	18.71
		1	18.67	18.64	18.70	18.74
		2	18.74	18.68	18.69	18.71
		3	18.72	18.61	18.68	18.73
		4	18.70	18.70	18.69	18.71
		5	18.68	18.65	18.72	18.67
		6	18.67	18.65	18.69	18.70
		7	18.67	18.66	18.66	18.70
		8	18.67	18.65	18.70	18.69
		9	18.69	18.70	18.71	18.68
		10	18.64	18.69	18.74	18.64
		11	18.69	18.66	18.70	18.71
		12	18.66	18.71	18.70	18.70
		13	18.71	18.63	18.66	18.70
		14	18.71	18.73	18.65	18.73
		15	18.66	18.62	18.68	18.71

Low	LTE: 9 NR: 1	0	18.58	18.48	18.52	18.63
		1	18.53	18.48	18.54	18.61
		14	18.55	18.56	18.60	18.62
		15	18.55	18.57	18.45	18.62
Middle		0	18.51	18.48	18.62	18.56
		1	18.58	18.48	18.61	18.56
		14	18.63	18.53	18.52	18.54
		15	18.58	18.60	18.60	18.57
High		0	18.63	18.47	18.57	18.57
		1	18.63	18.54	18.48	18.60
		14	18.57	18.55	18.61	18.64
		15	18.62	18.49	18.58	18.59
Low	LTE: 2 NR: 8	0	18.65	18.47	18.62	18.56
		1	18.60	18.43	18.58	18.55
		14	18.58	18.49	18.57	18.50
		15	18.61	18.42	18.55	18.63
Middle		0	18.64	18.51	18.54	18.67
		1	18.73	18.46	18.56	18.63
		14	18.58	18.44	18.53	18.59
		15	18.67	18.54	18.54	18.56
High		0	18.54	18.46	18.59	18.61
		1	18.70	18.40	18.63	18.54
		14	18.68	18.51	18.58	18.62
		15	18.67	18.47	18.62	18.58

Table 8-16. Occupied Bandwidth Summary Data (AWS_DSS_1C_20M)

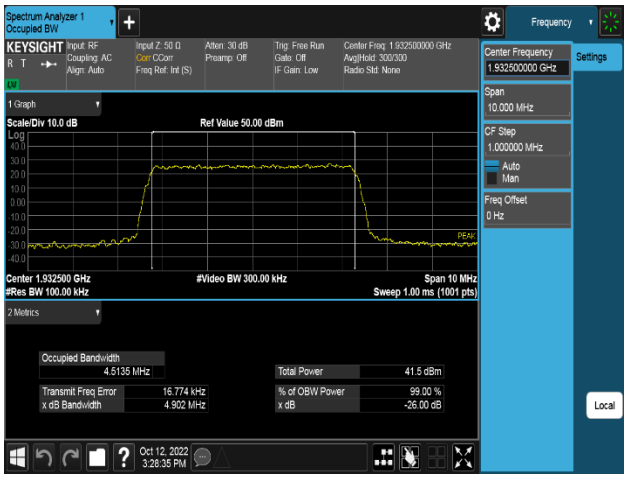
Configuration	Channel	Port	OBW (MHz)			
			QPSK	16QAM	64QAM	256QAM
LTE_2C 15M + 5M	Low	0	18.88	18.83	18.91	18.85
		1	18.89	18.87	18.86	18.88
		14	18.86	18.87	18.85	18.85
		15	18.88	18.87	18.87	18.85
	Middle	0	18.87	18.83	18.88	18.84
		1	18.88	18.85	18.89	18.86
		14	18.92	18.90	18.91	18.87
		15	18.86	18.87	18.90	18.89
	High	0	18.89	18.84	18.87	18.86
		1	18.85	18.85	18.89	18.84
		14	18.85	18.81	18.93	18.90
		15	18.92	18.83	18.89	18.88
NR_2C 15M + 5M	Low	0	19.26	19.23	19.26	19.23
		1	19.19	19.20	19.19	19.19
		14	19.19	19.23	19.23	19.17
		15	19.19	19.20	19.18	19.22
	Middle	0	19.24	19.22	19.21	19.22
		1	19.22	19.21	19.19	19.23
		14	19.22	19.22	19.26	19.21
		15	19.24	19.23	19.22	19.21
	High	0	19.17	19.25	19.21	19.26
		1	19.24	19.26	19.19	19.24
		14	19.22	19.21	19.18	19.21
		15	19.21	19.20	19.17	19.26
NR_3C 20M+15M+15M	Low	0	48.75	48.69	48.74	48.76
		1	48.71	48.71	48.74	48.69
		14	48.71	48.74	48.73	48.71
		15	48.70	48.70	48.78	48.71
	Middle	0	48.71	48.74	48.75	48.74
		1	48.68	48.76	48.72	48.71
		14	48.75	48.72	48.69	48.68
		15	48.74	48.69	48.83	48.73
	High	0	48.77	48.81	48.79	48.66
		1	48.71	48.71	48.81	48.72
		14	48.71	48.69	48.75	48.70
		15	48.72	48.74	48.78	48.75

NR_1C_15M + LTE_1C_5M	Low	0	19.21	19.19	19.20	19.23
		1	19.20	19.22	19.25	19.21
		14	19.20	19.25	19.22	19.23
		15	19.24	19.20	**19.28**	19.20
	Middle	0	19.20	19.20	19.25	19.28
		1	19.25	19.22	19.22	19.26
		14	19.20	19.24	19.21	19.26
		15	19.23	19.23	19.24	19.24
	High	0	19.24	19.21	19.20	19.21
		1	19.23	19.19	19.25	19.22
		14	19.21	19.24	19.21	19.24
		15	19.19	19.22	19.22	19.23
NR_2C_15M+10M + LTE_2C_15M+10M	Low	0	48.66	48.57	48.65	48.66
		1	48.72	48.62	48.65	48.63
		14	48.69	48.72	48.71	48.71
		15	**48.81**	48.67	48.67	48.75
	Middle	0	48.75	48.75	48.74	48.72
		1	48.68	48.72	48.71	48.77
		14	48.77	48.68	48.72	48.69
		15	48.73	48.68	48.77	48.78
	High	0	48.72	48.71	48.69	48.65
		1	48.74	48.74	48.72	48.78
		14	48.71	48.73	48.70	**48.84**
		15	48.67	48.76	48.71	48.73
DSS_1C_15M + LTE_1C_5M	Low	0	19.13	19.08	19.11	19.15
		1	19.16	19.07	19.10	19.10
		14	19.16	19.09	19.14	19.10
		15	19.12	19.06	19.16	19.12
	Middle	0	19.14	19.04	19.11	19.14
		1	19.15	19.07	19.16	19.13
		14	19.16	19.11	19.13	19.13
		15	19.15	19.15	19.14	19.13
	High	0	19.13	19.11	19.17	19.13
		1	19.14	19.11	19.08	19.13
		14	19.12	19.12	19.17	19.11
		15	19.15	19.05	19.18	19.14

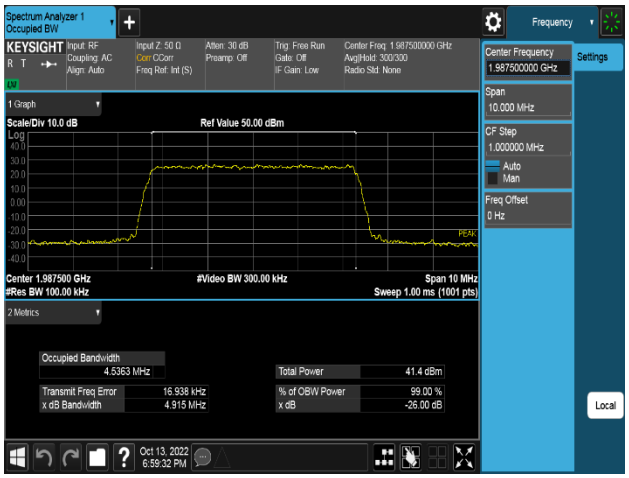
DSS_1C_20M + LTE_2C_15M+15M	Low	0	48.29	48.23	48.22	48.27
		1	48.17	48.13	48.18	48.24
		14	48.21	48.25	48.20	48.14
		15	48.21	48.21	48.16	48.25
	Middle	0	48.23	48.22	48.24	48.21
		1	48.23	48.24	48.23	48.19
		14	48.25	48.36	48.17	48.16
		15	48.33	48.35	48.32	48.23
	High	0	48.24	48.41	48.22	48.21
		1	48.21	48.31	48.19	48.17
		14	48.18	48.19	48.24	48.16
		15	48.19	48.35	48.32	48.26
DSS_1C_15M + NR_1C_5M	Low	0	19.16	19.12	19.11	19.09
		1	19.08	19.08	19.12	19.12
		14	19.10	19.07	19.09	19.08
		15	19.12	19.08	19.13	19.12
	Middle	0	19.11	19.11	19.16	19.10
		1	19.17	19.12	19.15	19.13
		14	19.13	19.07	19.16	19.18
		15	19.13	19.11	19.13	19.15
	High	0	19.13	19.10	19.13	19.17
		1	19.12	19.10	19.14	19.16
		14	19.09	19.11	19.14	19.17
		15	19.14	19.09	19.15	19.15
DSS_1C_20M + NR_2C_15M+15M	Low	0	48.50	48.61	48.61	48.53
		1	48.61	48.44	48.57	48.47
		14	48.59	48.65	48.59	48.51
		15	48.52	48.54	48.58	48.54
	Middle	0	48.55	48.63	48.58	48.59
		1	48.62	48.54	48.58	48.54
		14	48.54	48.48	48.61	48.52
		15	48.53	48.57	48.67	48.57
	High	0	48.58	48.61	48.54	48.52
		1	48.62	48.45	48.60	48.56
		14	48.62	48.58	48.71	48.57
		15	48.62	48.55	48.57	48.59

DSS_1C_10M + LTE_1C_5M + NR_1C_5M	Low	0	19.27	19.28	19.25	19.25
		1	19.24	19.26	19.24	19.23
		14	19.25	19.22	19.21	19.25
		15	19.25	19.25	19.26	19.24
	Middle	0	19.24	19.24	19.26	19.28
		1	19.24	19.22	19.24	19.24
		14	19.25	19.22	19.27	19.28
		15	19.27	19.19	19.26	19.28
	High	0	19.25	19.22	19.22	19.26
		1	**19.27**	19.22	19.26	19.27
		14	19.22	19.21	19.25	19.21
		15	19.24	19.21	19.24	19.25
DSS_1C_20M + LTE_1C_15M + NR_1C_15M	Low	0	48.19	48.38	48.16	48.17
		1	48.22	48.25	48.24	48.24
		14	48.31	48.17	48.20	48.17
		15	48.23	48.32	48.24	48.26
	Middle	0	48.23	48.20	48.25	48.27
		1	48.18	48.27	48.24	48.27
		14	48.20	48.20	48.16	48.21
		15	48.23	48.39	48.25	48.09
	High	0	48.25	48.31	48.18	48.18
		1	48.27	48.21	48.24	48.34
		14	48.27	48.28	48.17	48.26
		15	48.24	48.18	48.28	48.24

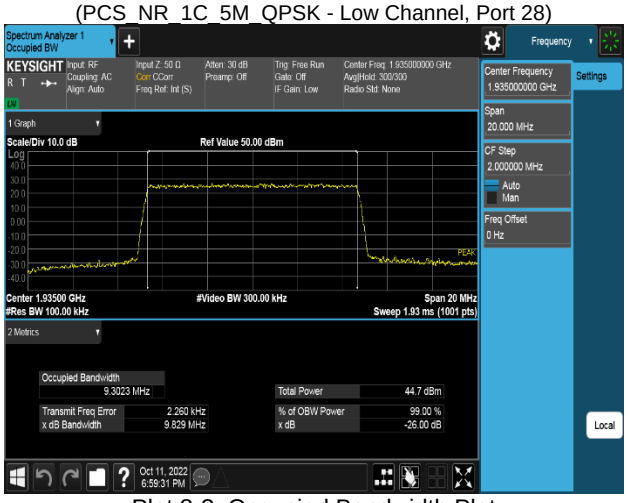
Table 8-17. Occupied Bandwidth Summary Data (AWS_Multi-Carrier)



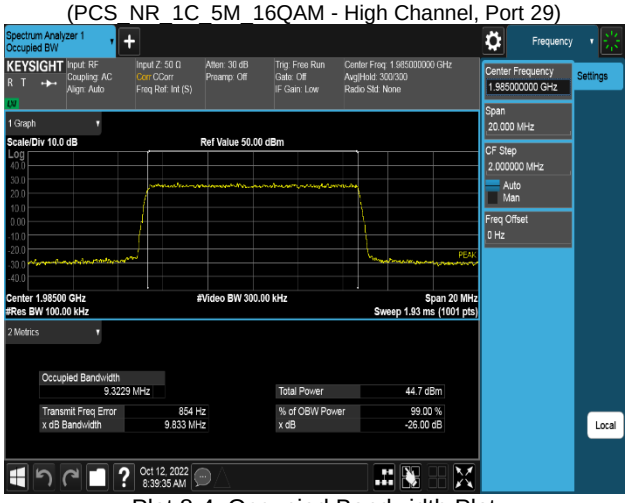
Plot 8-1. Occupied Bandwidth Plot
(PCS_NR_1C_5M_QPSK - Low Channel, Port 28)



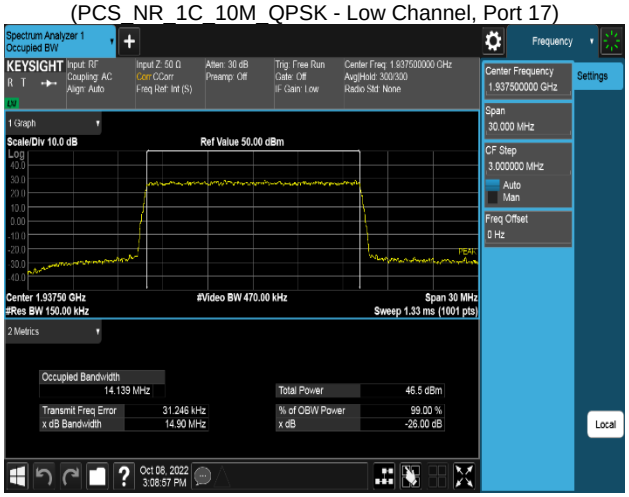
Plot 8-2. Occupied Bandwidth Plot
(PCS_NR_1C_5M_16QAM - High Channel, Port 29)



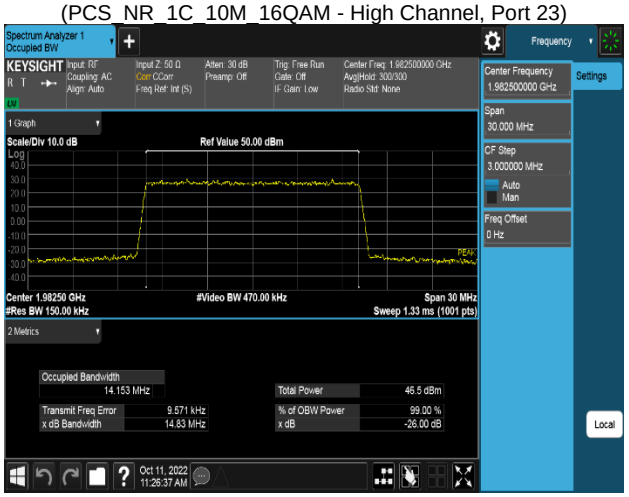
Plot 8-3. Occupied Bandwidth Plot
(PCS_NR_1C_10M_QPSK - Low Channel, Port 17)



Plot 8-4. Occupied Bandwidth Plot
(PCS_NR_1C_10M_16QAM - High Channel, Port 23)

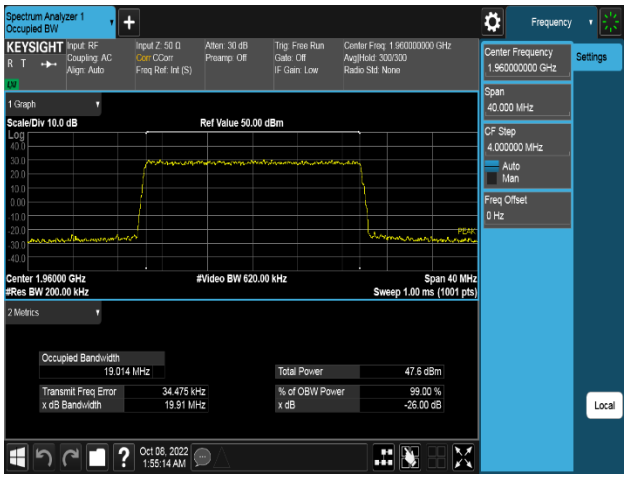


Plot 8-5. Occupied Bandwidth Plot
(PCS_NR_1C_15M_QPSK - Low Channel, Port 18)

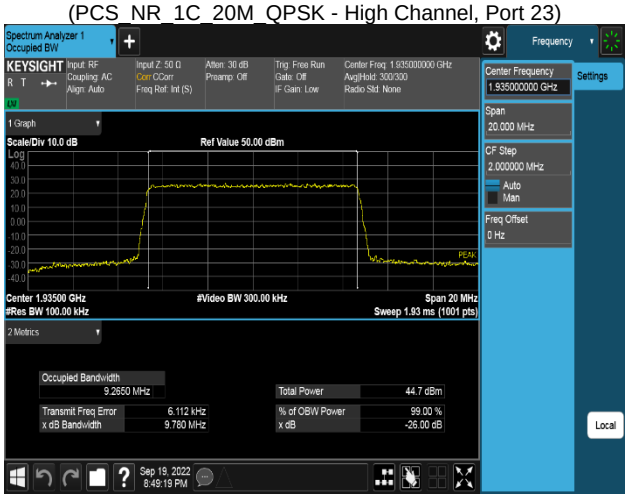


Plot 8-6. Occupied Bandwidth Plot
(PCS_NR_1C_15M_64QAM - High Channel, Port 29)

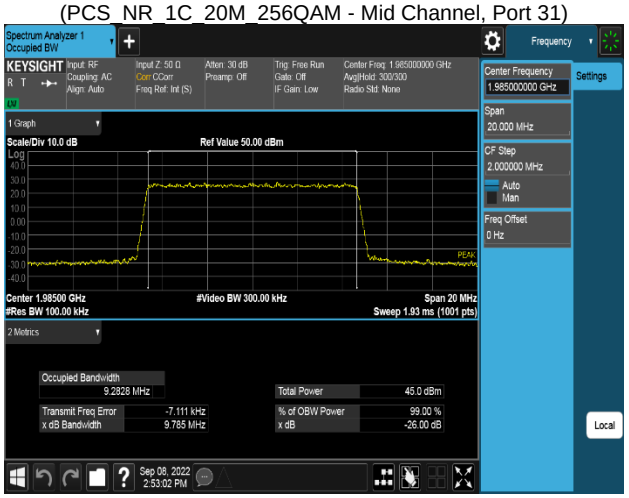
Plot 8-7. Occupied Bandwidth Plot
(PCS_NR_1C_20M_QPSK - High Channel, Port 23)



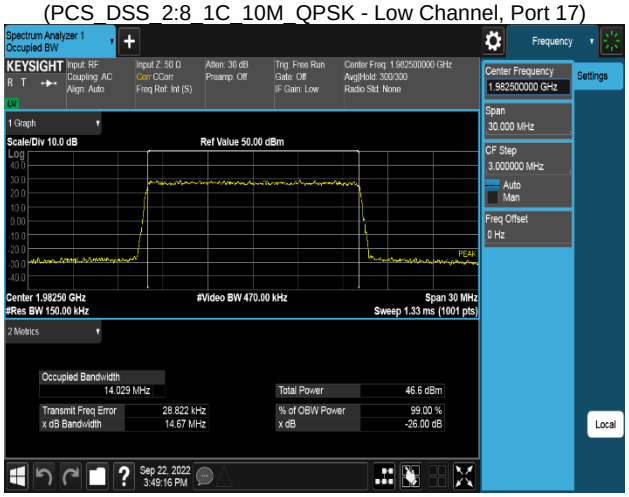
Plot 8-8. Occupied Bandwidth Plot
(PCS_NR_1C_20M_256QAM - Mid Channel, Port 31)



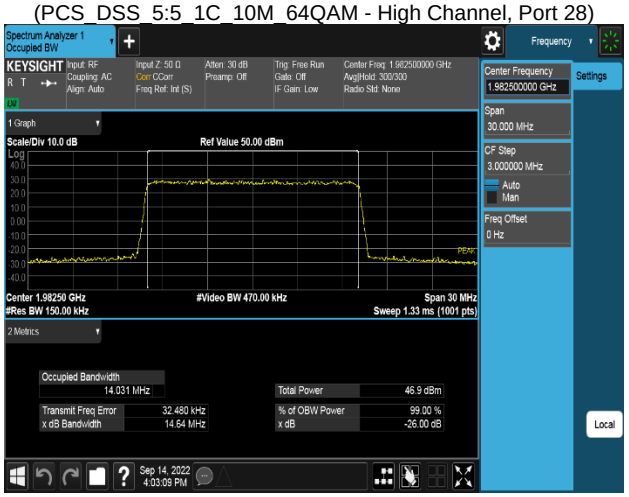
Plot 8-9. Occupied Bandwidth Plot
(PCS_DSS_2:8_1C_10M_QPSK - Low Channel, Port 17)



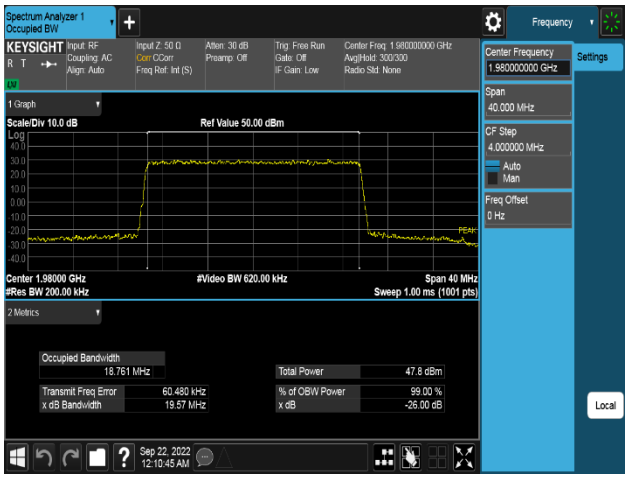
Plot 8-10. Occupied Bandwidth Plot
(PCS_DSS_5:5_1C_10M_64QAM - High Channel, Port 28)



Plot 8-11. Occupied Bandwidth Plot
(PCS_DSS_2:8_1C_15M_QPSK - High Channel, Port 16)

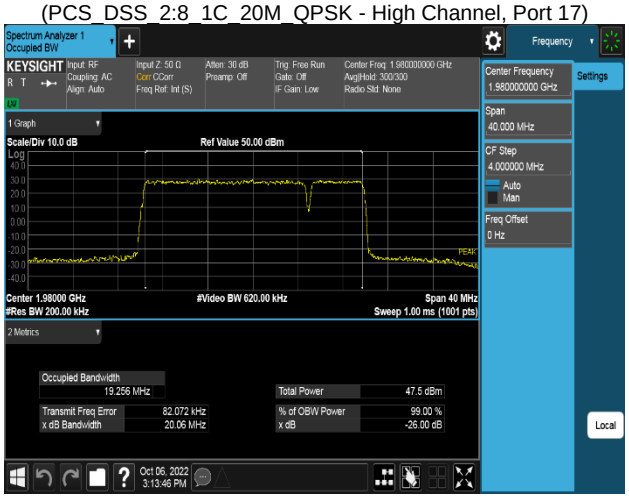


Plot 8-12. Occupied Bandwidth Plot
(PCS_DSS_5:5_1C_15M_256QAM - High Channel, Port 18)

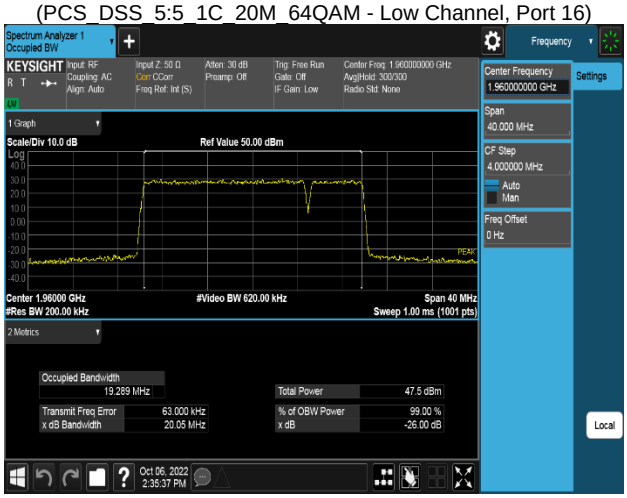


Plot 8-13. Occupied Bandwidth Plot
(PCS_DSS_2:8_1C_20M_QPSK - High Channel, Port 17)

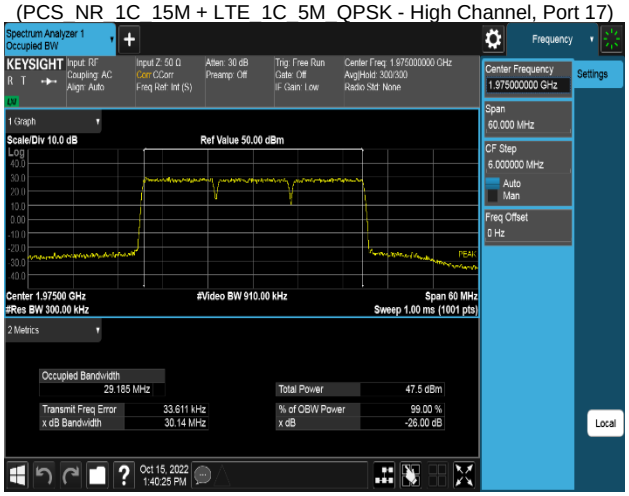
Plot 8-14. Occupied Bandwidth Plot
(PCS_DSS_5:5_1C_20M_64QAM - Low Channel, Port 16)



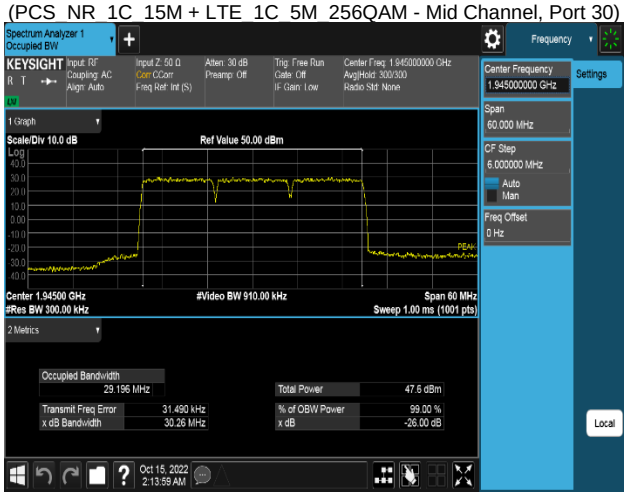
Plot 8-15. Occupied Bandwidth Plot
(PCS_NR_1C_15M + LTE_1C_5M_QPSK - High Channel, Port 17)



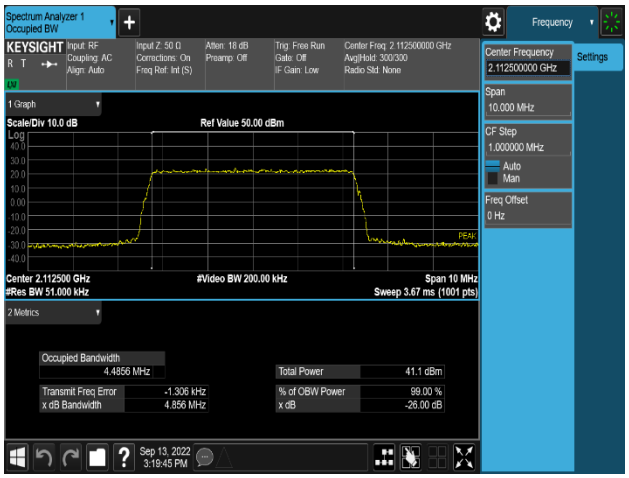
Plot 8-16. Occupied Bandwidth Plot
(PCS_NR_1C_15M + LTE_1C_5M_256QAM - Mid Channel, Port 30)



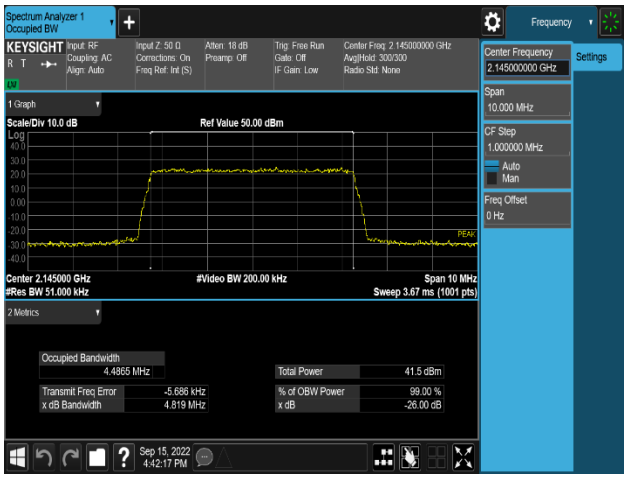
Plot 8-17. Occupied Bandwidth Plot
(PCS_NR_3C_10M+10M+10M _QPSK - High Channel, Port 30)



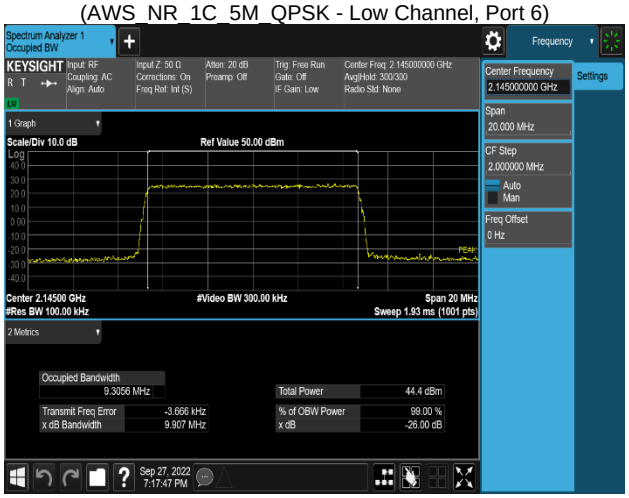
Plot 8-18. Occupied Bandwidth Plot
(PCS_NR_3C_10M+10M+10M _64QAM - Low Channel, Port 30)



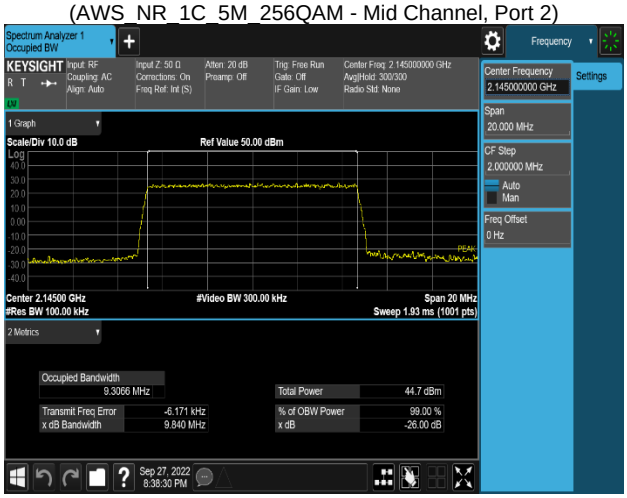
Plot 8-19. Occupied Bandwidth Plot
(AWS_NR_1C_5M_QPSK - Low Channel, Port 6)



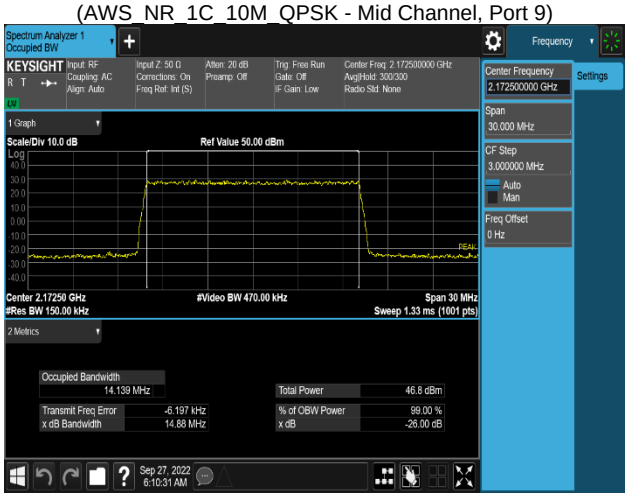
Plot 8-20. Occupied Bandwidth Plot
(AWS_NR_1C_5M_256QAM - Mid Channel, Port 2)



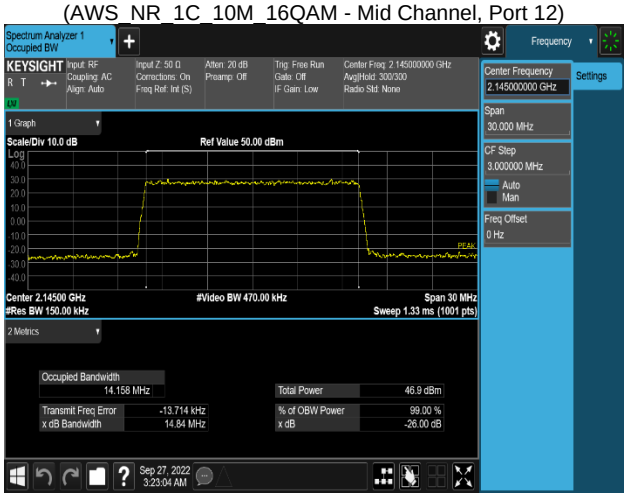
Plot 8-21. Occupied Bandwidth Plot
(AWS_NR_1C_10M_QPSK - Mid Channel, Port 9)



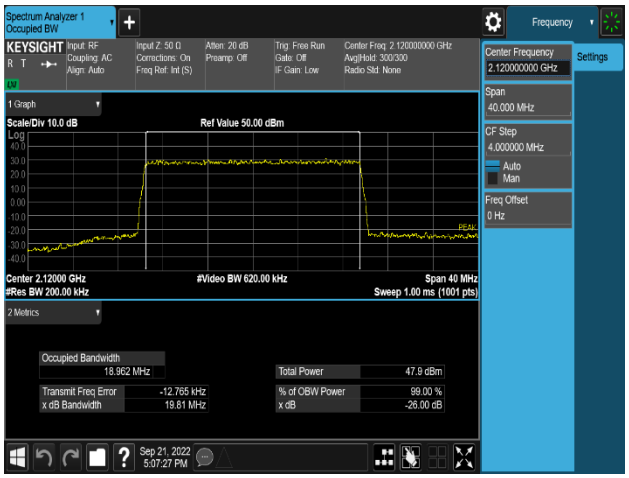
Plot 8-22. Occupied Bandwidth Plot
(AWS_NR_1C_10M_16QAM - Mid Channel, Port 12)



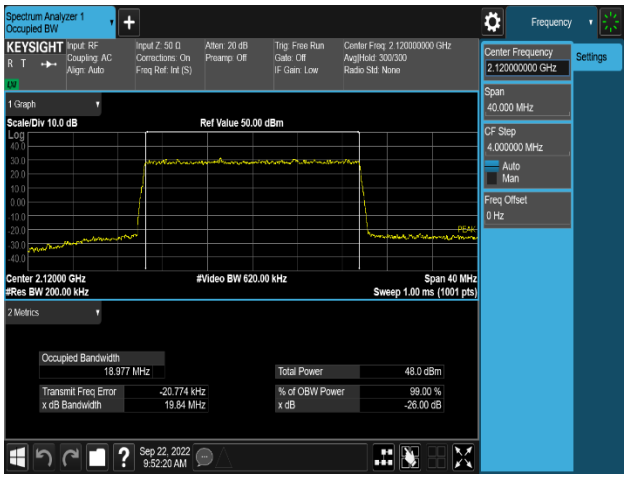
Plot 8-23. Occupied Bandwidth Plot
(AWS_NR_1C_15M_QPSK – High Channel, Port 14)



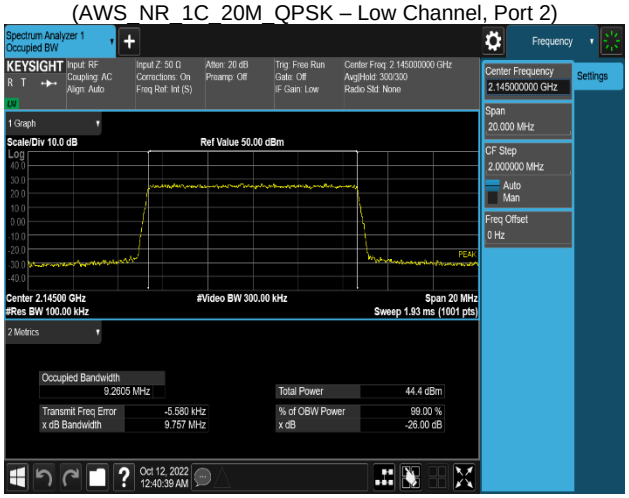
Plot 8-24. Occupied Bandwidth Plot
(AWS_NR_1C_15M_64QAM - Mid Channel, Port 15)



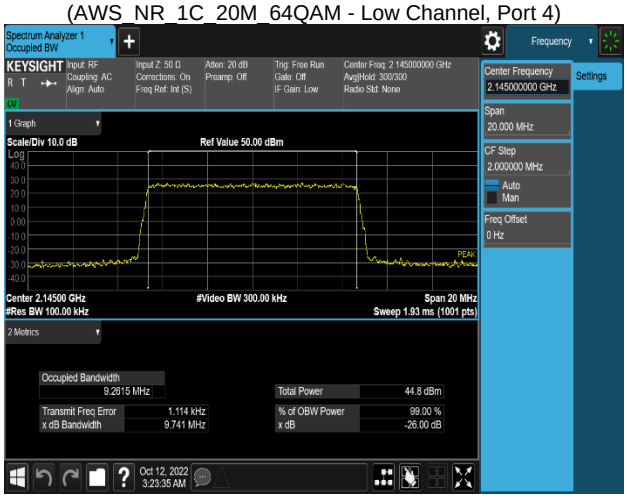
Plot 8-25. Occupied Bandwidth Plot
(AWS_NR_1C_20M_QPSK – Low Channel, Port 2)



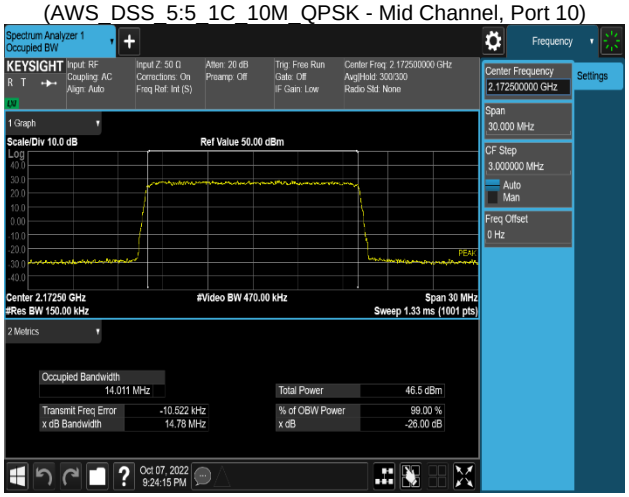
Plot 8-26. Occupied Bandwidth Plot
(AWS_NR_1C_20M_64QAM - Low Channel, Port 4)



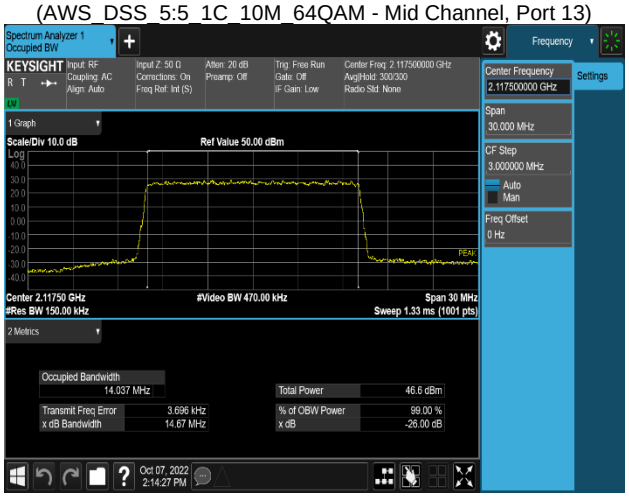
Plot 8-27. Occupied Bandwidth Plot
(AWS_DSS_5:5_1C_10M_QPSK - Mid Channel, Port 10)



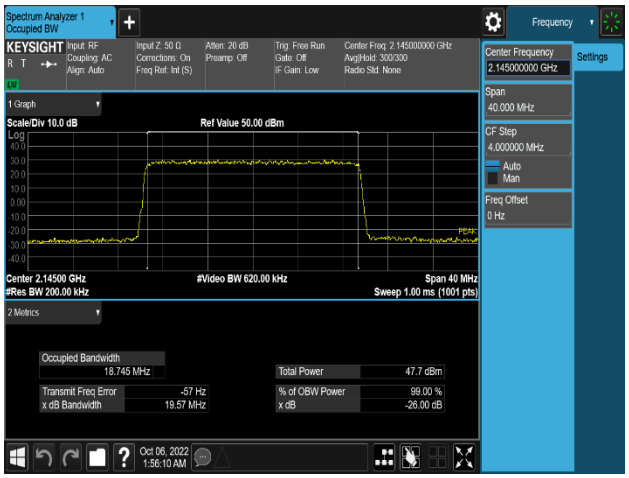
Plot 8-28. Occupied Bandwidth Plot
(AWS_DSS_5:5_1C_10M_64QAM - Mid Channel, Port 13)



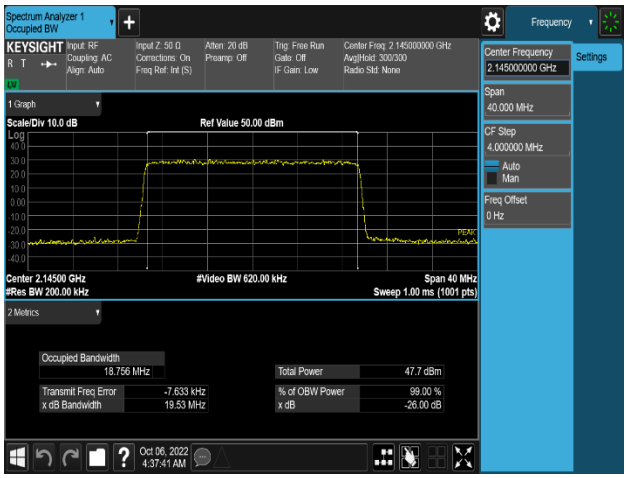
Plot 8-29. Occupied Bandwidth Plot
(AWS_DSS_5:5_1C_15M_QPSK - High Channel, Port 15)



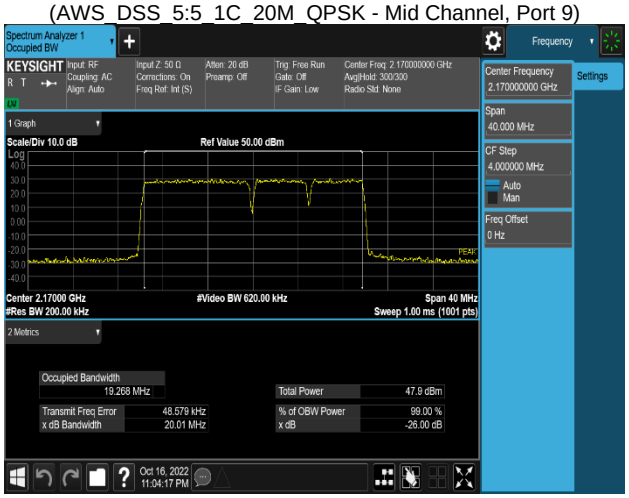
Plot 8-30. Occupied Bandwidth Plot
(AWS_DSS_5:5_1C_15M_256QAM - Low Channel, Port 6)



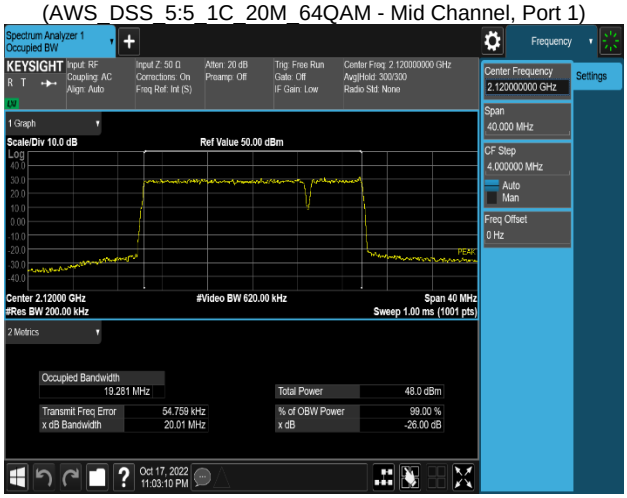
Plot 8-31. Occupied Bandwidth Plot
(AWS_DSS_5:5_1C_20M_QPSK - Mid Channel, Port 9)



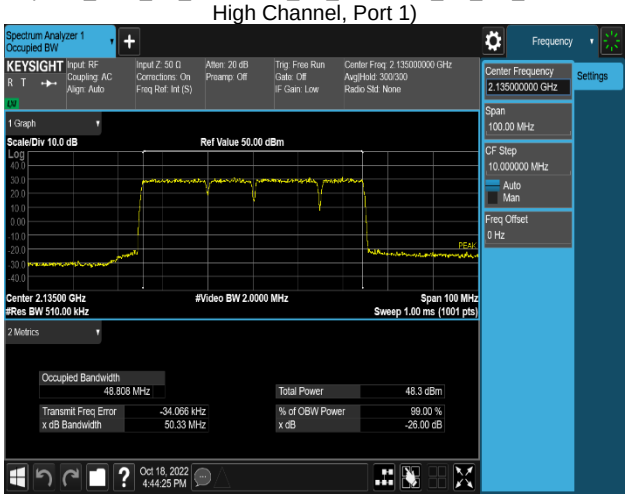
Plot 8-32. Occupied Bandwidth Plot
(AWS_DSS_5:5_1C_20M_64QAM - Mid Channel, Port 1)



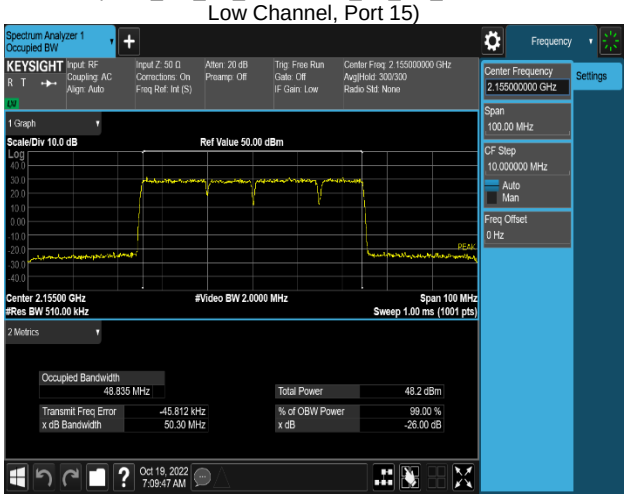
Plot 8-33. Occupied Bandwidth Plot
(AWS_DSS_1C_10M + NR_1C_5M + LTE_1C_5M_QPSK – High Channel, Port 1)



Plot 8-34. Occupied Bandwidth Plot
(AWS_NR_1C_15M + LTE_1C_5M_64QAM – Low Channel, Port 15)



Plot 8-35. Occupied Bandwidth Plot
(AWS_NR_2C_15M+10M + LTE_2C_15M+10M_QPSK – Low Channel, Port 15)



Plot 8-36. Occupied Bandwidth Plot
(AWS_NR_2C_15M+10M + LTE_2C_15M+10M_256QAM – High Channel, Port 14)

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)1) In-Band Power Measurements
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 average output power measurements are performed using the signal analyzer's "channel power mode" measurement capability for signals with continuous operation.
2. Set span to 2 × to 3 × the OBW.
3. Set RBW = 1 – 5% of the expected OBW
4. Set VBW ≥ 3 × RBW.
5. Set number of measurement points in sweep ≥ 2 × span / RBW.
6. Sweep time: auto-couple
7. Detector = power averaging (rms).
8. Set sweep trigger to "free run.".
9. The integration bandwidth was set equal to transmission bandwidth i.e. 20MHz for 1CC and 40MHz for 2CC measurements.
10. Trace average at least 100 traces in power averaging (rms) mode if sweep is set to auto-couple. To accurately determine the average power over the on and off time of the transmitter, it can be necessary to increase the number of traces to be averaged above 100, or if using a manually configured sweep time, increase the sweep time.
11. Compute the power by integrating the spectrum across the OBW of the signal using the instrument's band or channel power measurement function, with the band/channel limits set equal to the OBW band edges.

Test Setup

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

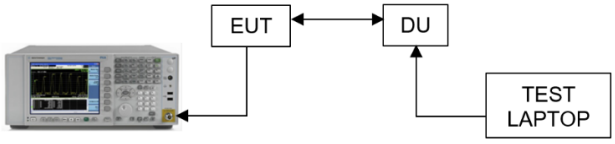


Figure 8-2. Test Instrument & Measurement Setup

Limit

Per part 24.232 and Part 27.50 , an EIRP of 1640 watts/MHz when transmitting with an emission bandwidth greater than 1MHz.

Test Notes

1. The Conducted Output Power results shown below are measured based on worst case results from original test report and is within the expected measurement tolerances.

2. 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).

3. 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.

4. 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.

5. Sample Calculation:
   Let us assume the following numbers:
   a) Total MIMO Conducted Power as 9224.82 milliWatts

   b)

Factors		Value	Unit
Summed MIMO Conducted Power (linear sum)		9224.82	mW/MHz
Summed MIMO Conducted Power (dBm)	= 10 * log (9224.82) =	39.65	dBm/MHz
Antenna Gain		21.20	dBi
Total e.i.r.p	= 39.65 + 21.20	60.85	dBm/MHz
Limit	= 10 * log (1640) + 30	62.15	dBm/MHz
Margin	= 60.85 – 62.15	-1.30	dB

Channel	Port	PSD (dBm/MHz)			
		QPSK	16QAM	64QAM	256QAM
Low	16	27.60	27.50	27.55	27.54
	17	27.56	27.69	27.64	27.66
	18	27.55	27.68	27.54	27.66
	19	27.44	27.47	27.49	27.40
	20	27.46	27.55	27.90	27.53
	21	27.67	27.60	**28.04**	27.65
	22	27.52	27.50	27.61	27.57
	23	27.47	27.58	27.89	27.51
	24	27.57	27.54	27.55	27.45
	25	27.49	27.50	27.48	27.53
	26	27.57	27.52	27.26	27.43
	27	27.49	27.44	27.22	27.51
	28	27.61	27.62	27.63	27.59
	29	27.54	27.62	27.76	27.58
	30	27.46	27.51	27.50	27.49
	31	27.29	27.37	27.53	27.37
Mid	16	27.55	27.39	27.36	27.37
	17	27.57	27.57	27.42	27.52
	18	27.70	27.53	27.55	27.56
	19	27.54	27.57	27.45	27.36
	20	27.51	27.55	27.31	27.36
	21	27.56	27.49	27.41	27.45
	22	27.64	27.64	27.47	27.54
	23	27.57	27.57	27.53	27.45
	24	27.58	27.52	27.46	27.41
	25	27.35	27.45	27.30	27.41
	26	27.42	27.57	27.37	27.58
	27	27.50	27.43	27.36	27.35
	28	27.68	27.63	27.41	27.53
	29	27.47	27.47	27.39	27.32
	30	27.50	27.49	27.42	27.40
	31	27.31	27.51	27.32	27.38
High	16	27.64	27.46	27.52	27.40
	17	27.63	27.48	27.49	27.49
	18	27.74	27.73	27.66	27.66
	19	27.64	27.57	27.55	27.56
	20	27.59	27.61	27.81	27.56
	21	27.70	27.72	27.62	27.69
	22	27.73	27.72	27.75	27.63
	23	27.73	27.77	27.71	27.67
	24	**27.78**	27.80	27.81	27.68
	25	27.45	27.57	27.45	27.51
	26	27.55	27.52	27.48	27.51
	27	27.50	27.59	27.48	27.44
	28	27.53	27.65	27.65	27.60
	29	27.50	27.57	27.36	27.54
	30	27.43	27.37	27.40	27.46
	31	27.58	27.59	27.42	27.43

Channel	Linear Sum	QPSK	16QAM	64QAM	256QAM
Low	Total MIMO Conducted Power (mW/MHz)	9035.76	9089.61	9213.38	9058.57
	Total MIMO Conducted Power (dBm/MHz)	39.56	39.59	39.64	39.57
	Ant. Gain (dBi)	21.20	21.20	21.20	21.20
	MIMO e.i.r.p (dBm/MHz)	60.76	60.79	60.84	60.77
	e.i.r.p Limit(dBm/MHz)	62.15	62.15	62.15	62.15
	Margin (dB)	-1.39	-1.36	-1.30	-1.38
Mid	Total MIMO Conducted Power (mW/MHz)	9055.20	9047.59	8808.99	8868.43
	Total MIMO Conducted Power (dBm/MHz)	39.57	39.57	39.45	39.48
	Ant. Gain (dBi)	21.20	21.20	21.20	21.20
	MIMO e.i.r.p (dBm/MHz)	60.77	60.77	60.65	60.68
	e.i.r.p Limit(dBm/MHz)	62.15	62.15	62.15	62.15
	Margin (dB)	-1.38	-1.38	-1.50	-1.47
High	Total MIMO Conducted Power (mW/MHz)	9224.82	9227.10	9154.39	9107.91
	Total MIMO Conducted Power (dBm/MHz)	39.65	39.65	39.62	39.59
	Ant. Gain (dBi)	21.20	21.20	21.20	21.20
	MIMO e.i.r.p (dBm/MHz)	60.85	60.85	60.82	60.79
	e.i.r.p Limit(dBm/MHz)	62.15	62.15	62.15	62.15
	Margin (dB)	-1.30	-1.30	-1.33	-1.35

Table 8-18. Power Spectral Density Table (PCS_NR_1C_5M)

Channel	Port	PSD (dBm/MHz)			
		QPSK	16QAM	64QAM	256QAM
Low	16	27.82	27.72	27.61	27.47
	17	27.56	27.54	27.68	27.63
	18	27.66	27.63	27.70	27.61
	19	27.47	27.48	27.35	27.70
	20	27.62	27.66	27.73	27.54
	21	27.69	27.72	27.58	27.58
	22	**28.00**	27.62	27.69	27.76
	23	27.64	27.65	27.57	27.71
	24	27.61	27.61	27.65	27.54
	25	27.52	27.59	27.48	27.48
	26	27.63	27.60	27.62	27.72
	27	27.58	27.52	27.68	27.43
	28	27.60	27.60	27.69	27.58
	29	27.63	27.57	27.65	27.75
	30	27.63	27.57	27.70	27.60
	31	27.45	27.67	27.46	27.50
Mid	16	27.43	27.41	27.60	27.59
	17	27.42	27.46	27.45	27.54
	18	27.61	27.60	27.76	**27.81**
	19	27.39	27.44	27.42	27.43
	20	27.53	27.43	27.51	27.38
	21	27.48	27.48	27.55	27.48
	22	27.55	27.75	27.67	27.77
	23	27.43	27.42	27.43	27.49
	24	27.50	27.45	27.52	27.47
	25	27.38	27.32	27.38	27.52
	26	27.50	27.57	27.46	27.55
	27	27.39	27.48	27.49	27.53
	28	27.48	27.50	27.52	27.47
	29	27.46	27.62	27.57	27.46
	30	27.51	27.65	27.39	27.36
	31	27.40	27.36	27.31	27.31
High	16	27.45	27.44	27.45	27.45
	17	27.41	27.55	27.50	27.40
	18	27.54	27.52	27.55	27.56
	19	27.44	27.50	27.76	27.48
	20	27.43	27.53	27.50	27.52
	21	27.51	27.53	27.48	27.55
	22	27.59	27.46	27.72	27.57
	23	27.59	27.47	27.53	27.52
	24	27.79	27.64	27.59	27.76
	25	27.47	27.47	27.56	27.42
	26	27.50	27.51	27.42	27.49
	27	27.52	27.38	27.35	27.32
	28	27.56	27.58	27.56	27.60
	29	27.58	27.55	27.52	27.53
	30	27.42	27.48	27.36	27.53
	31	27.45	27.63	27.31	27.42

Channel	Linear Sum	QPSK	16QAM	64QAM	256QAM
Low	Total MIMO Conducted Power (mW/MHz)	9277.10	9228.23	9240.23	9209.84
	Total MIMO Conducted Power (dBm/MHz)	39.67	39.65	39.66	39.64
	Ant. Gain (dBi)	21.20	21.20	21.20	21.20
	MIMO e.i.r.p (dBm/MHz)	60.87	60.85	60.86	60.84
	e.i.r.p Limit(dBm/MHz)	62.15	62.15	62.15	62.15
	Margin (dB)	-1.27	-1.30	-1.29	-1.31
Mid	Total MIMO Conducted Power (mW/MHz)	8927.65	8990.00	9004.90	9021.14
	Total MIMO Conducted Power (dBm/MHz)	39.51	39.54	39.54	39.55
	Ant. Gain (dBi)	21.20	21.20	21.20	21.20
	MIMO e.i.r.p (dBm/MHz)	60.71	60.74	60.74	60.75
	e.i.r.p Limit(dBm/MHz)	62.15	62.15	62.15	62.15
	Margin (dB)	-1.44	-1.41	-1.40	-1.40
High	Total MIMO Conducted Power (mW/MHz)	9032.42	9030.38	9018.18	9014.18
	Total MIMO Conducted Power (dBm/MHz)	39.56	39.56	39.55	39.55
	Ant. Gain (dBi)	21.20	21.20	21.20	21.20
	MIMO e.i.r.p (dBm/MHz)	60.76	60.76	60.75	60.75
	e.i.r.p Limit(dBm/MHz)	62.15	62.15	62.15	62.15
	Margin (dB)	-1.39	-1.39	-1.40	-1.40

Table 8-19. Power Spectral Density Table (PCS_NR_1C_10M)

Channel	Port	PSD (dBm/MHz)			
		QPSK	16QAM	64QAM	256QAM
Low	16	27.51	27.53	27.47	27.56
	17	27.64	27.69	27.54	27.64
	18	27.56	27.72	27.52	27.49
	19	27.43	27.68	27.48	27.56
	20	27.55	27.57	27.58	27.54
	21	27.50	27.62	27.50	27.61
	22	**27.82**	27.48	27.50	27.52
	23	27.57	27.60	27.65	27.60
	24	27.64	27.58	27.49	27.52
	25	27.51	27.55	27.44	27.68
	26	27.54	27.53	27.72	27.62
	27	27.47	27.51	27.55	27.56
	28	27.58	27.63	27.57	27.62
	29	27.58	27.51	27.40	27.57
	30	27.42	27.64	27.43	27.55
	31	27.64	27.63	27.40	27.50
Mid	16	27.48	27.51	27.27	27.67
	17	27.42	27.52	27.36	27.58
	18	27.58	27.52	27.51	27.60
	19	27.65	27.36	27.45	27.43
	20	27.53	27.43	27.33	27.44
	21	27.32	27.39	27.27	27.54
	22	27.53	27.68	27.43	27.71
	23	27.48	27.46	27.49	27.58
	24	27.32	27.37	27.49	27.62
	25	27.29	27.34	27.31	27.32
	26	27.58	27.47	27.34	27.60
	27	27.45	27.34	27.31	27.43
	28	27.39	27.51	27.39	27.51
	29	27.66	27.45	27.39	27.50
	30	27.44	27.51	27.46	27.58
	31	26.40	27.36	27.32	27.40
High	16	27.50	27.51	27.28	27.54
	17	27.51	27.46	27.48	27.50
	18	27.56	27.46	27.44	27.66
	19	27.61	27.47	27.18	27.43
	20	27.46	27.35	27.27	27.53
	21	27.49	27.34	27.49	27.57
	22	27.61	27.51	27.33	27.62
	23	27.61	27.48	27.37	27.47
	24	27.55	27.64	27.51	27.65
	25	27.70	27.46	27.40	27.38
	26	27.49	27.52	27.32	27.45
	27	27.55	27.48	27.33	27.45
	28	27.58	27.71	27.47	27.60
	29	27.63	27.50	27.48	27.59
	30	27.52	27.36	27.44	27.50
	31	27.46	27.40	27.32	**27.74**

Channel	Linear Sum	QPSK	16QAM	64QAM	256QAM
Low	Total MIMO Conducted Power (mW/MHz)	9123.88	9188.54	9029.55	9146.27
	Total MIMO Conducted Power (dBm/MHz)	39.60	39.63	39.56	39.61
	Ant. Gain (dBi)	21.20	21.20	21.20	21.20
	MIMO e.i.r.p (dBm/MHz)	60.80	60.83	60.76	60.81
	e.i.r.p Limit(dBm/MHz)	62.15	62.15	62.15	62.15
	Margin (dB)	-1.35	-1.32	-1.39	-1.34
Mid	Total MIMO Conducted Power (mW/MHz)	8823.78	8896.85	8757.60	9067.32
	Total MIMO Conducted Power (dBm/MHz)	39.46	39.49	39.42	39.57
	Ant. Gain (dBi)	21.20	21.20	21.20	21.20
	MIMO e.i.r.p (dBm/MHz)	60.66	60.69	60.62	60.77
	e.i.r.p Limit(dBm/MHz)	62.15	62.15	62.15	62.15
	Margin (dB)	-1.49	-1.46	-1.52	-1.37
High	Total MIMO Conducted Power (mW/MHz)	9106.76	8951.93	8756.25	9085.93
	Total MIMO Conducted Power (dBm/MHz)	39.59	39.52	39.42	39.58
	Ant. Gain (dBi)	21.20	21.20	21.20	21.20
	MIMO e.i.r.p (dBm/MHz)	60.79	60.72	60.62	60.78
	e.i.r.p Limit(dBm/MHz)	62.15	62.15	62.15	62.15
	Margin (dB)	-1.35	-1.43	-1.53	-1.36

Table 8-20. Power Spectral Density Table (PCS_NR_1C_15M)

Channel	Port	PSD (dBm/MHz)			
		QPSK	16QAM	64QAM	256QAM
Low	16	27.47	27.39	27.40	27.45
	17	27.52	27.49	27.36	27.51
	18	27.53	27.47	27.49	**27.74**
	19	27.56	27.38	27.45	27.32
	20	27.47	27.36	27.41	27.35
	21	27.47	27.55	27.67	27.58
	22	27.80	27.43	27.55	27.40
	23	27.77	27.46	27.57	27.43
	24	27.38	27.39	27.38	27.41
	25	27.36	27.45	27.33	27.29
	26	27.45	27.60	27.42	27.43
	27	27.45	27.47	27.57	27.44
	28	27.52	27.36	27.47	27.45
	29	27.53	27.37	27.49	27.57
	30	27.44	27.38	27.49	27.59
	31	27.47	27.34	27.38	27.37
Mid	16	27.52	27.30	27.28	27.44
	17	27.53	27.39	27.62	27.39
	18	27.45	27.58	27.49	27.46
	19	27.31	27.32	27.49	27.47
	20	27.39	27.22	27.49	27.30
	21	27.30	27.25	27.48	27.31
	22	27.52	27.37	27.38	27.40
	23	27.45	27.21	27.32	27.34
	24	27.40	27.21	27.39	27.31
	25	27.19	27.19	27.18	27.29
	26	27.26	27.32	27.36	27.30
	27	27.23	27.27	27.34	27.30
	28	27.30	27.52	27.38	27.33
	29	27.35	27.26	27.34	27.32
	30	27.28	27.13	27.40	27.23
	31	27.32	27.27	27.46	27.17
High	16	27.37	27.36	27.42	27.26
	17	27.38	27.42	27.51	27.42
	18	27.57	27.44	27.62	27.55
	19	27.35	27.25	27.39	27.33
	20	27.39	27.32	27.53	27.38
	21	27.38	27.45	27.53	27.36
	22	27.59	27.50	27.46	27.46
	23	27.34	27.33	27.47	27.48
	24	27.54	27.40	27.57	27.53
	25	27.46	27.44	27.52	27.48
	26	27.56	27.41	27.50	27.41
	27	27.26	27.28	27.45	27.37
	28	27.53	27.56	27.53	27.36
	29	**27.83**	27.48	27.44	27.41
	30	27.41	27.57	27.47	27.51
	31	27.42	27.43	27.27	27.35

Channel	Linear Sum	QPSK	16QAM	64QAM	256QAM
Low	Total MIMO Conducted Power (mW/MHz)	9028.96	8854.53	8924.67	8913.06
	Total MIMO Conducted Power (dBm/MHz)	39.56	39.47	39.51	39.50
	Ant. Gain (dBi)	21.20	21.20	21.20	21.20
	MIMO e.i.r.p (dBm/MHz)	60.76	60.67	60.71	60.70
	e.i.r.p Limit(dBm/MHz)	62.15	62.15	62.15	62.15
	Margin (dB)	-1.39	-1.48	-1.44	-1.45
Mid	Total MIMO Conducted Power (mW/MHz)	8716.85	8594.05	8794.25	8662.05
	Total MIMO Conducted Power (dBm/MHz)	39.40	39.34	39.44	39.38
	Ant. Gain (dBi)	21.20	21.20	21.20	21.20
	MIMO e.i.r.p (dBm/MHz)	60.60	60.54	60.64	60.58
	e.i.r.p Limit(dBm/MHz)	62.15	62.15	62.15	62.15
	Margin (dB)	-1.54	-1.61	-1.51	-1.57
High	Total MIMO Conducted Power (mW/MHz)	8921.65	8824.23	8956.58	8826.25
	Total MIMO Conducted Power (dBm/MHz)	39.50	39.46	39.52	39.46
	Ant. Gain (dBi)	21.20	21.20	21.20	21.20
	MIMO e.i.r.p (dBm/MHz)	60.70	60.66	60.72	60.66
	e.i.r.p Limit(dBm/MHz)	62.15	62.15	62.15	62.15
	Margin (dB)	-1.44	-1.49	-1.43	-1.49

Table 8-21. Power Spectral Density Table (PCS_NR_1C_20M)

Channel	Ratio	Port	PSD (dBm/MHz)			
			QPSK	16QAM	64QAM	256QAM
Low	LTE:5 NR:5	16	27.87	27.97	27.85	27.85
		17	27.76	28.12	27.98	27.86
		18	27.86	28.03	28.02	27.91
		19	27.74	27.94	27.87	27.81
		20	27.87	28.06	27.90	27.81
		21	27.89	28.02	28.04	27.97
		22	27.90	27.99	27.94	28.01
		23	27.91	28.08	27.86	27.87
		24	27.84	28.16	27.84	27.88
		25	**28.00**	27.90	27.74	27.91
		26	27.95	28.04	27.97	27.88
		27	27.90	27.96	27.85	27.84
		28	27.87	27.96	27.87	27.93
		29	27.95	28.01	27.84	28.01
		30	27.81	28.07	27.93	27.96
		31	27.83	27.93	28.04	27.80
Middle		16	27.69	27.87	27.76	27.89
		17	27.81	28.15	27.81	27.68
		18	27.84	28.17	27.90	27.85
		19	27.72	28.12	27.94	27.77
		20	27.75	27.99	27.87	27.80
		21	27.70	27.91	27.89	27.86
		22	27.89	28.03	27.83	28.03
		23	27.84	27.89	27.89	27.77
		24	27.84	28.19	27.86	27.84
		25	27.72	27.98	27.78	27.77
		26	27.67	27.97	27.85	27.76
		27	27.68	27.99	27.75	27.68
		28	27.88	**28.28**	27.83	27.91
		29	27.82	27.92	27.90	28.06
		30	27.80	28.07	27.77	27.76
		31	27.62	27.91	27.74	27.67
High		16	27.64	27.97	27.60	27.53
		17	27.63	27.87	27.61	27.84
		18	27.65	28.00	27.78	27.74
		19	27.65	27.77	27.78	27.71
		20	27.68	27.85	27.68	27.62
		21	27.74	27.89	27.69	27.73
		22	27.86	27.93	27.75	28.04
		23	27.90	28.09	27.60	27.84
		24	27.88	28.04	27.75	27.83
		25	27.79	28.20	27.81	27.72
		26	27.87	27.90	27.74	27.68
		27	27.86	27.95	27.60	27.58
		28	27.87	28.10	27.78	27.72
		29	27.93	27.97	27.83	27.83
		30	27.88	27.87	27.66	27.66
		31	27.88	27.79	27.85	27.72

Low	LTE: 9 NR: 1	16	27.68	27.98	27.78	27.80
		17	27.87	28.25	27.72	27.66
		30	27.80	27.95	27.70	27.78
		31	27.81	27.81	27.78	27.79
Middle		16	27.53	27.77	27.65	27.96
		17	27.57	27.84	27.66	27.71
		30	27.52	27.83	27.76	27.80
		31	27.42	27.81	27.60	27.61
High		16	27.61	27.84	27.56	27.55
		17	27.85	27.74	27.59	27.62
		30	27.60	27.82	27.72	27.47
		31	27.58	27.96	27.71	27.56
Low	LTE: 2 NR: 8	16	27.74	27.97	27.90	27.64
		17	27.89	27.96	27.86	27.88
		30	27.84	27.97	27.68	27.71
		31	27.88	27.76	27.87	27.78
Middle		16	27.64	27.89	27.57	27.61
		17	27.62	27.90	27.62	27.72
		30	27.68	27.80	27.52	27.53
		31	27.52	27.70	27.70	27.51
High		16	27.56	27.71	27.41	27.66
		17	27.81	27.79	27.61	27.72
		30	27.79	27.78	27.41	27.52
		31	27.88	28.08	27.58	27.61

Channel	Ratio	Linear Sum	QPSK	16QAM	64QAM	256QAM
Low	LTE:5 NR:5	Total MIMO Conducted Power (mW/MHz)	9802.67	10132.42	9882.21	9852.33
		Total MIMO Conducted Power (dBm/MHz)	39.91	40.06	39.95	39.94
		Ant. Gain (dBi)	21.20	21.20	21.20	21.20
		MIMO e.i.r.p (dBm/MHz)	61.11	61.26	61.15	61.14
		e.i.r.p Limit(dBm/MHz)	62.15	62.15	62.15	62.15
		Margin (dB)	-1.03	-0.89	-1.00	-1.01
Middle		Total MIMO Conducted Power (mW/MHz)	9569.65	10162.52	9719.75	9685.53
		Total MIMO Conducted Power (dBm/MHz)	39.81	40.07	39.88	39.86
		Ant. Gain (dBi)	21.20	21.20	21.20	21.20
		MIMO e.i.r.p (dBm/MHz)	61.01	61.27	61.08	61.06
		e.i.r.p Limit(dBm/MHz)	62.15	62.15	62.15	62.15
		Margin (dB)	-1.14	-0.88	-1.07	-1.09
High		Total MIMO Conducted Power (mW/MHz)	9630.06	9983.10	9462.91	9503.56
		Total MIMO Conducted Power (dBm/MHz)	39.84	39.99	39.76	39.78
		Ant. Gain (dBi)	21.20	21.20	21.20	21.20
		MIMO e.i.r.p (dBm/MHz)	61.04	61.19	60.96	60.98
		e.i.r.p Limit(dBm/MHz)	62.15	62.15	62.15	62.15
		Margin (dB)	-1.11	-0.96	-1.19	-1.17

Table 8-22. Power Spectral Density Table (PCS_DSS_1C_10M)

Channel	Ratio	Port	PSD (dBm/MHz)			
			QPSK	16QAM	64QAM	256QAM
Low	LTE:5 NR:5	16	27.74	28.26	27.83	27.72
		17	27.78	28.50	27.82	27.88
		18	28.00	28.50	27.82	27.80
		19	27.91	28.43	27.77	27.78
		20	27.82	28.16	27.74	27.93
		21	28.08	**28.64**	27.86	27.84
		22	27.87	28.47	27.85	27.84
		23	28.01	28.49	27.91	27.79
		24	27.88	28.21	27.76	27.86
		25	27.88	28.60	27.75	27.79
		26	27.95	28.46	27.98	27.81
		27	27.92	28.50	27.83	27.88
		28	28.03	28.40	28.00	28.04
		29	27.92	28.42	27.85	27.84
		30	27.77	28.40	27.89	27.88
		31	**28.09**	28.05	27.80	27.90
Middle		16	27.81	28.34	27.76	27.67
		17	27.84	28.23	27.83	27.79
		18	27.86	28.34	27.99	27.73
		19	27.75	28.43	27.67	27.69
		20	27.70	28.27	27.69	27.63
		21	27.83	28.40	27.70	27.71
		22	27.80	28.43	27.86	27.73
		23	27.78	28.50	27.67	27.80
		24	27.79	28.24	27.70	27.69
		25	27.85	28.05	27.58	27.59
		26	27.86	28.25	27.69	27.80
		27	27.74	28.24	27.63	27.77
		28	27.95	28.15	27.75	27.89
		29	27.80	28.22	27.73	27.67
		30	27.74	28.18	27.69	27.79
		31	27.83	28.15	27.59	27.65
High		16	27.80	28.15	27.83	27.76
		17	27.93	28.41	28.05	27.75
		18	27.92	28.46	27.97	27.88
		19	27.75	28.13	27.86	27.77
		20	27.73	28.21	27.78	27.92
		21	27.82	28.25	27.89	27.83
		22	27.92	28.23	28.03	27.83
		23	27.91	28.21	27.91	27.88
		24	27.92	28.27	27.96	28.06
		25	27.85	28.36	27.76	27.81
		26	27.86	28.14	27.80	27.83
		27	27.78	28.23	27.89	27.76
		28	27.92	28.18	27.86	27.98
		29	27.87	28.20	27.87	27.87
		30	27.76	28.17	27.90	27.99
		31	27.89	28.29	28.12	27.86

Low	LTE: 9 NR: 1	16	27.77	28.40	27.66	27.81
		17	28.04	28.53	27.62	27.69
		30	27.83	28.54	27.81	27.85
		31	27.80	28.47	27.79	27.74
Middle		16	27.54	28.21	27.65	27.60
		17	27.80	28.13	27.61	27.61
		30	27.73	28.34	27.81	27.66
		31	27.64	28.18	27.54	27.64
High		16	27.65	28.32	27.74	27.67
		17	27.73	28.35	27.64	27.77
		30	27.62	28.42	27.87	27.81
		31	27.83	28.33	27.65	27.79
Low	LTE: 2 NR: 8	16	27.70	28.31	27.83	27.83
		17	27.83	28.18	27.77	27.90
		30	27.83	27.99	27.86	27.93
		31	27.87	28.04	27.68	27.85
Middle		16	27.68	27.96	27.65	27.68
		17	27.67	28.08	27.66	27.73
		30	27.65	27.98	27.61	27.68
		31	27.78	28.04	27.63	27.68
High		16	27.76	28.22	27.64	27.58
		17	27.73	28.11	27.91	27.66
		30	27.70	28.20	27.71	27.73
		31	27.66	27.96	27.77	27.75

Channel	Ratio	Linear Sum	QPSK	16QAM	64QAM	256QAM
Low	LTE:5 NR:5	Total MIMO Conducted Power (mW/MHz)	9904.95	11089.57	9734.19	9752.65
		Total MIMO Conducted Power (dBm/MHz)	39.96	40.45	39.88	39.89
		Ant. Gain (dBi)	21.20	21.20	21.20	21.20
		MIMO e.i.r.p (dBm/MHz)	61.16	61.65	61.08	61.09
		e.i.r.p Limit(dBm/MHz)	62.15	62.15	62.15	62.15
		Margin (dB)	-0.99	-0.50	-1.07	-1.06
Middle		Total MIMO Conducted Power (mW/MHz)	9658.48	10762.19	9466.61	9476.66
		Total MIMO Conducted Power (dBm/MHz)	39.85	40.32	39.76	39.77
		Ant. Gain (dBi)	21.20	21.20	21.20	21.20
		MIMO e.i.r.p (dBm/MHz)	61.05	61.52	60.96	60.97
		e.i.r.p Limit(dBm/MHz)	62.15	62.15	62.15	62.15
		Margin (dB)	-1.10	-0.63	-1.19	-1.18
High		Total MIMO Conducted Power (mW/MHz)	9757.81	10675.33	9880.51	9777.50
		Total MIMO Conducted Power (dBm/MHz)	39.89	40.28	39.95	39.90
		Ant. Gain (dBi)	21.20	21.20	21.20	21.20
		MIMO e.i.r.p (dBm/MHz)	61.09	61.48	61.15	61.10
		e.i.r.p Limit(dBm/MHz)	62.15	62.15	62.15	62.15
		Margin (dB)	-1.05	-0.66	-1.00	-1.05

Table 8-23. Peak Power Spectral Density Table (PCS_DSS_1C_15M)

Channel	Ratio	Port	PSD (dBm/MHz)			
			QPSK	16QAM	64QAM	256QAM
Low	LTE:5 NR:5	16	27.76	27.92	27.73	27.78
		17	27.84	27.81	27.82	27.83
		18	27.76	27.95	27.81	27.89
		19	27.82	27.75	27.67	27.52
		20	27.77	27.83	27.70	27.66
		21	27.77	27.90	28.09	27.74
		22	27.78	27.79	27.94	27.71
		23	27.72	27.96	27.81	27.74
		24	27.78	27.97	27.90	27.86
		25	27.67	27.78	27.69	27.70
		26	27.95	**28.26**	27.89	27.89
		27	27.70	27.98	27.76	27.68
		28	27.72	27.91	27.79	27.80
		29	27.73	27.82	28.01	27.70
		30	27.70	27.94	27.76	27.82
		31	27.80	27.93	27.79	27.94
Middle		16	27.60	27.78	27.74	27.69
		17	27.61	27.77	27.69	27.65
		18	27.71	27.99	28.05	27.78
		19	27.66	27.95	27.63	27.78
		20	27.51	27.82	27.79	27.71
		21	27.65	27.82	27.79	27.74
		22	27.71	28.11	27.75	27.83
		23	27.70	27.86	27.89	27.68
		24	27.60	27.93	27.80	27.78
		25	27.58	27.82	27.65	27.59
		26	27.65	27.98	27.73	27.76
		27	27.55	27.80	27.64	27.59
		28	27.93	27.80	27.81	27.87
		29	27.75	27.87	27.67	27.67
		30	27.76	27.76	27.80	27.69
		31	27.55	27.99	27.74	27.64
High		16	27.68	28.00	27.71	27.47
		17	27.71	27.76	27.68	27.68
		18	27.79	28.24	27.80	27.54
		19	27.80	28.07	27.75	27.52
		20	27.66	27.83	27.62	27.58
		21	27.69	27.81	27.67	27.49
		22	27.86	28.08	27.88	27.59
		23	27.81	27.92	27.62	27.50
		24	**28.20**	28.09	27.96	27.66
		25	27.78	27.91	27.65	27.58
		26	27.75	27.82	27.70	27.63
		27	27.78	28.18	27.75	27.46
		28	27.78	27.90	27.79	27.67
		29	27.79	27.98	27.85	27.65
		30	27.82	27.78	27.57	27.52
		31	27.91	27.88	27.71	27.56

Low	LTE: 9 NR: 1	16	27.71	27.86	27.79	27.66
		17	27.76	28.04	27.73	27.65
		30	27.65	27.82	27.69	27.69
		31	27.84	28.01	27.72	27.71
Middle		16	27.53	27.83	27.61	27.53
		17	27.60	27.69	27.54	27.61
		30	27.44	27.90	27.62	27.58
		31	27.46	27.69	27.50	27.59
High		16	27.63	27.63	27.58	27.46
		17	27.90	27.79	27.71	27.68
		30	27.57	27.92	27.52	27.52
		31	27.86	27.96	27.73	27.53
Low	LTE: 2 NR: 8	16	27.77	27.86	27.66	27.62
		17	27.64	27.80	27.60	27.57
		30	27.74	27.91	27.74	27.87
		31	27.67	27.90	27.64	27.60
Middle		16	27.64	27.74	27.47	27.52
		17	27.50	27.68	27.51	27.56
		30	27.50	27.81	27.62	27.44
		31	27.55	27.73	27.68	27.57
High		16	27.50	27.67	27.73	27.40
		17	27.68	27.74	27.51	27.53
		30	27.70	27.74	27.67	27.61
		31	27.66	27.79	27.61	27.68

Channel	Ratio	Linear Sum	QPSK	16QAM	64QAM	256QAM
Low	LTE:5 NR:5	Total MIMO Conducted Power (mW/MHz)	9567.80	9882.02	9691.85	9569.61
		Total MIMO Conducted Power (dBm/MHz)	39.81	39.95	39.86	39.81
		Ant. Gain (dBi)	21.20	21.20	21.20	21.20
		MIMO e.i.r.p (dBm/MHz)	61.01	61.15	61.06	61.01
		e.i.r.p Limit(dBm/MHz)	62.15	62.15	62.15	62.15
		Margin (dB)	-1.14	-1.00	-1.08	-1.14
Middle		Total MIMO Conducted Power (mW/MHz)	9328.46	9820.05	9556.09	9454.64
		Total MIMO Conducted Power (dBm/MHz)	39.70	39.92	39.80	39.76
		Ant. Gain (dBi)	21.20	21.20	21.20	21.20
		MIMO e.i.r.p (dBm/MHz)	60.90	61.12	61.00	60.96
		e.i.r.p Limit(dBm/MHz)	62.15	62.15	62.15	62.15
		Margin (dB)	-1.25	-1.03	-1.15	-1.19
High		Total MIMO Conducted Power (mW/MHz)	9646.44	9988.59	9491.00	9140.66
		Total MIMO Conducted Power (dBm/MHz)	39.84	40.00	39.77	39.61
		Ant. Gain (dBi)	21.20	21.20	21.20	21.20
		MIMO e.i.r.p (dBm/MHz)	61.04	61.20	60.97	60.81
		e.i.r.p Limit(dBm/MHz)	62.15	62.15	62.15	62.15
		Margin (dB)	-1.10	-0.95	-1.18	-1.34

Table 8-24. Peak Power Spectral Density Table (PCS_DSS_1C_20M)