

TEST REPORT

**CTK Co., Ltd.**

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Report No.:

CTK-2025-01904

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1. Applicant

- Name : Samsung Electronics Co., Ltd.
- Address : 129, Samsung-ro, Yeongtong-gu, Suwon-si Gyeonggi-do, 16677, Korea
- Date of Receipt : 2025-06-04

2. Manufacturer

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

3. Use of Report : For FCC Certification**4. Test Sample / Model:** MMU (MT1602d) / MT1602d-48A**5. Date of Test** : 2025-06-04 to 2025-07-21**6. Test Standard(method) used** : FCC 47 CFR Part 96, ANSI C63.26-2015**7. Testing Environment:** refer to 10 page**8. Test Results** : Compliance**9. Location of Test** : ☒ Permanent Testing Lab ☐ On Site Testing

(Address : 5, Dongbu-ro 221 beon-gil, Cheoin-gu, Yongin-si, Gyeonggi-do, Korea)

The results shown in this test report refer only to the sample(s) tested unless otherwise stated.
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Approval	Tested by	Technical Manager
	Du-Jin Kim: (Signature) 	Byung-Kwon In: (Signature) 

2025-07-21

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MEASUREMENT REPORT

FCC Rule Part 96

Mode	Total Bandwidth (MHz)	Max. PSD (dBm/1MHz)	Max. EIRP (dBm/10MHz)	Max. EIRP /Entire Band Width(dBm)	Max. EIRP /Entire Band Width (W)	Emission Designator	Modulation
n48_1C_10M	10	36.16	44.87	44.87	30.69	8M72G7D	QPSK
		36.44	44.98	44.98	31.48	8M71W7D	QAM
n48_1C_20M	20	35.70	45.34	48.00	63.10	18M4G7D	QPSK
		35.91	45.40	48.09	64.42	18M4W7D	QAM
n48_1C_30M	30	35.66	45.50	49.94	98.63	28M1G7D	QPSK
		35.74	45.43	49.92	98.17	28M0W7D	QAM
n48_1C_40M	40	36.02	45.44	51.20	131.83	38M1G7D	QPSK
		36.24	45.57	51.28	134.28	38M1W7D	QAM
n48_2C_20M+30M	50	36.09	45.20	51.76	149.97	48M1G7D	QPSK
		36.13	45.87	52.09	161.81	48M1W7D	QAM
n48_1C_60M	60	36.07	45.31	52.78	189.67	58M0G7D	QPSK
		36.11	45.44	53.02	200.45	58M1W7D	QAM
n48_4C_10M+10M+10M+40M	70	36.43	45.21	53.40	218.78	68M2G7D	QPSK
		36.45	45.25	53.52	224.91	68M3W7D	QAM
n48_1C_80M	80	35.89	45.31	53.95	248.31	77M7G7D	QPSK
		36.01	45.60	54.24	265.46	77M7W7D	QAM

EUT Overview

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1.0 REVISION RECORD

Issue Number	Issued Date	Revision History
CTK-2025-01904	07/21/2025	Initial Issue

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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 Test Location

These measurement tests were conducted at the CTK Co., Ltd. facility located at (Ho-dong), 113, Yejik-ro, Cheoin-gu, Yongin-si, Gyeonggi-do, Korea

2.3 Laboratory Accreditations and Listings

Country	Agency	Registration Number
USA	FCC	805871
CANADA	ISED	CN : 8737A CAB ID : KR0025
KOREA	NRRA	KR0025

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3.0 PRODUCT INFORMATION

3.1 Equipment Description

The Equipment Under Test (EUT) is the **Samsung MMU(MT1602d) FCC ID: A3LMT1602D-48A**.
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 96.

Except when testing for equipment authorization purposes, the subject radio does not operate in standalone n48 (3.5 GHz) band mode.

3.2 Device Capabilities

This device supports the following conditional features and filter information:

FCC ID	A3LMT1602D-48A
EUT Type	MMU(MT1602d)
Model Name	MT1602d-48A
Device Capabilities:	5G NR
Operating Band/Frequency Range:	n48: 3 550 MHz to 3 700 MHz n77: 3 700 MHz to 3 980 MHz
Supported Modulation	QPSK, 16QAM, 64QAM, 256QAM
n48 Supported Number of Carriers and Channel Bandwidth	10, 20, 30, 40, 60 and 80MHz bandwidth for n48 with up to 4CC aggregated of Max. Bandwidth 80 MHz
n77 Supported Number of Carriers and Channel Bandwidth	40, 60, 80 and 100MHz bandwidth for n77 with up to 2CC aggregated of Max. Bandwidth 200 MHz
Multi-Band Supported Number of Carriers and Channel Bandwidth	n48 and n77 with up to 6CC aggregated of Max. Bandwidth 280 MHz
Maximum Output Power	n48 : Max 7.5W/unit n77 : Max 90W/unit Multi-Band: 90W/unit (n48: 7.5W + n77: 82.5W)
Occupied Bandwidth (OBW)/ Instantaneous Bandwidth (IBW)	n48: 80 MHz / 150 MHz n77: 200 MHz / 200 MHz
Number of Antenna ports	16T16R
Supported Configurations	Single carrier, Multi-carrier, Multi-Band
Input Voltage:	-48 VDC
Maximum antenna gain	n48: User specific beam Max 20.3 dBi (19.8 dBi ± 0.5 dB tolerance) Common Beam Max 14.8 dBi (14.3 dBi ± 0.5 dB tolerance) n77: User specific beam Max 20.7 dBi (20.2 dBi ± 0.5 dB tolerance) Common Beam Max 15.6 dBi (15.1 dBi ± 0.5 dB tolerance) Antenna gain declared by the manufacturer.

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3.3 Test Configuration

The setup is as follows:

- The EUT "MMU(MT1602d)" and a Data Unit (DU) are each powered by -48V DC power supply.
- The DU is connected to a test laptop via an ethernet cable acting as backhaul.
- DU connects to the EUT through a fiber optic cable.
- An RF cable connects the signal analyzer and the EUT Ports for respective measurements.

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:

- 1C: single carrier
- 2C: Contiguous 2 carriers in multi-carrier operation
- 2NC: Non-Contiguous 2 carriers in multi-carrier operation

Configuration	No. of Carriers	Total Carrier Bandwidth (MHz)	Carrier Frequency Configuration (MHz)			Rated Conducted Power (W/unit)
			Low	Middle	High	
n48_1C_10M	1	10	3 555	3 625	3 695	29.7
n48_1C_20M	1	20	3 560	3 625	3 690	32.7
n48_1C_30M	1	30	3 565	3 625	3 685	34.4
n48_1C_40M	1	40	3 570	3 625	3 680	35.7
n48_2C_20M+30M	2	50	3 575	3 625	3 675	36.7
n48_2NC_20M+30M			3 560 + 3 685			
n48_1C_60M	1	60	3 580	3 625	3 670	37.5
n48_4C_10M+10M+10M+40M	4	70	3 585	3 625	3 665	38.2
n48_4NC_10M+10M+10M+40M			3 555 + 3 590 + 3 625+ 3 680			
n48_1C_80M	1	80	3 590	3 625	3 660	38.7
Multi-band operation n48_1C_80M + n77_1C_60M	2	140	3 590 + 3 730			49.5
Multi-band operation n48_4C_20M+20M+20M+20M n77_2C_100M+100M	6	280	3 560+3 580+3 600+3 620+3 750+3 850			49.5

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Notes:

1. Multi-band operation was tested using the worst-case modulation for each band based on single-carrier results.

3.4 EMI Suppression Device(s)/Modifications

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



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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 971168 D01 v03r01, and KDB 662911 D01 v02r01 and KDB 940660 D01 v03 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

Modulation Characteristics:

ANSI C63.26 - Section 5.3

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

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4.2 Measurement Software

Test item	Name	Version
Conducted Measurement	Node B automation	1.0
Radiated Measurement	EP5RE	6.0.1.0
	ES10	10.001

4.3 Enviromental Conditions

The temperature is controlled within the range of 15°C to 35°C. The relative humidity is controlled within the range of 10% to 75%. The atmospheric pressure is monitored within the range 86-106kPa (860-1060mbar).

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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.

Description	Uncertainty
Conducted Power Measurement and EIRP	1.5 dB (C.L. : Approx. 95%, $k = 2$)
Occupied bandwidth	0.1 MHz (C.L. : Approx. 95%, $k = 2$)
Peak-to-average power ratio	1.0 dB (C.L. : Approx. 95%, $k = 2$)
Band Edge Emissions at Antenna Terminal	3.0 dB (C.L. : Approx. 95%, $k = 2$)
Spurious and Harmonic Emissions at Antenna Terminal	3.0 dB (C.L. : Approx. 95%, $k = 2$)
Radiated Emissions ($f \leq 1$ GHz)	4.11 dB (C.L. : Approx. 95%, $k = 2$)
Radiated Emissions ($f > 1$ GHz)	4.64 dB (C.L. : Approx. 95%, $k = 2$)
Frequency Stability	0.1 kHz (C.L. : Approx. 95%, $k = 2$)

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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
Rohde & Schwarz	FSV30	SIGNAL ANALYZER	2024-11-26	Annual	2025-11-26	100925
Rohde & Schwarz	FSV40	SPECTRUM ANALYZER	2025-01-10	Annual	2026-01-10	101574
Rohde & Schwarz	ESW44	EMI TEST RECEIVER	2025-04-28	Annual	2026-04-28	102039
TESEQ	CBL6111D	Bilog Antenna	2024-08-21	Annual	2025-08-21	60654
PASTERNAK	PE7AP006-06	Attenuator	2024-07-31	Annual	2025-07-31	L20210504000 023
SONOMA	310N	AMPLIFIER	2024-07-31	Annual	2025-07-31	411011
Agilent	8449B	Preamplifier	2025-03-11	Annual	2026-03-11	3008A00620
ETS-Lindgren	3115	DOUBLE RIDGED GUIDE ANTENNA	2025-03-13	Annual	2026-03-13	00078895
ESPEC	EBE-2E20W6P3T-38	Temperature Chamber	2025-04-28	Annual	2026-04-28	3015007507
Agilent	6674A	SYSTEM DC POWER SUPPLY	2025-03-13	Annual	2026-03-13	US36372372
Keysight	N9030B	Signal Analyzer	2025-03-28	Annual	2026-03-28	MY57142018
Rohde & Schwarz	FSW	Signal & Spectrum Analyzer	2025-03-28	Annual	2026-03-28	101250
INSJOY	RFX0132R	RF SWITCH SYSTEM	2024-10-08	Annual	2025-10-08	RFS01
AC POWER SUPPLY	ACPD-60150	DC POWER SUPPLY	2025-04-04	Annual	2026-04-04	DC-1

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.

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7.0 SAMPLE CALCULATIONS

Emission Designator

QPSK Modulation

Emission Designator = 8M72G7D

Occupied Bandwidth = 8.72 MHz

G = Phase Modulation

7 = Quantized/Digital Info

D = Data transmission, telemetry, telecommand

QAM Modulation

Emission Designator = 8M71W7D

Occupied Bandwidth = 8.71 MHz

W = Amplitude/Angle Modulated

7 = Quantized/Digital Info

D = Data transmission, telemetry, telecommand

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8.0 TEST RESULTS

8.1 Summary

Company Name: SAMSUNG Electronics Co., Ltd.
FCC ID: A3LMT1602D-48A
Type of Radio Equipment: Citizens Band Category B Devices (CBD)
Mode(s): 5G NR

FCC Part Section(s)	Test Description	Test Limit	Test Condition	Test Result	Reference
2.1049	Occupied Bandwidth	N/A	Conducted	PASS	Section 8.2
2.1046 96.41(a)	Modulation Characteristics	Digital modulation		PASS	Section 8.3
2.1046 96.41(b)	Power Spectral Density (PSD)	Category B CBSD 37 dBm/MHz (PSD)		PASS	Section 8.4
2.1046 96.41(b)	Equivalent Isotropic Radiated Power (EIRP)	Category B CBSD 47 dBm/10MHz (EIRP)		PASS	Section 8.5
96.41(g)	Peak-Average Ratio	≤ 13 dB		PASS	Section 8.6
2.1051 96.41(e)	Out of Band Emissions	Within 0 MHz to 10 MHz above and below the assigned channel ≤ -13 dBm/MHz Greater than 10 MHz above and below the assigned channel ≤ -25 dBm/MHz Any emission below 3530 MHz and above 3720 MHz ≤ -40 dBm/MHz		PASS	Section 8.7 Section 8.8
Waiver DA 25-387		each radio, when operated in 3.5 GHz band-only mode for equipment authorization testing, must comply with section 96.41(e)(2) in its entirety, except the radio's OOB may be limited to a conducted power level of no greater than -25 dBm/MHz for frequencies between 3.72 and 4.0 GHz		PASS	
2.1055	Frequency Stability	Fundamental emissions stay within authorized frequency block	Radiated	PASS	Section 8.9
2.1051 96.41(e)	Radiated unwanted emission	< -40dBm/MHz		PASS	Section 8.10

Table 8-1. Summary of Test Results

- 1) Equipment Authorization test under DA 25-387 Waiver.
- 2) All modes of operation and data rates were investigated. The test results shown in the following sections represent the worst case emissions.
- 3) The analyzer plots were all taken with a correction table loaded into the analyzer.
- 4) 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.

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. All measured modes of operation were investigated, and the worst case configuration results are reported in this section.

Test Procedure Used

ANSI C63.26 - Section 5.4.4
 KDB 971168 D01 v03r01 - Section 4.3

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. 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 $\geq 3 \times$ 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.

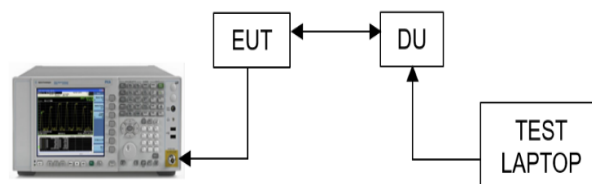


Figure 8-1. Test Instrument & Measurement Setup

Limit

N/A

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Channel	Port	OBW (MHz)			
		QPSK	16QAM	64QAM	256QAM
Low	0	8.69	8.63	8.68	8.67
	1	8.68	8.71	8.67	8.68
	2	8.68	8.67	8.68	8.66
	3	8.67	8.66	8.67	8.69
	4	8.65	8.64	8.68	8.66
	5	8.66	8.64	8.70	8.68
	6	8.67	8.66	8.67	8.68
	7	8.67	8.67	8.70	8.66
	8	8.66	8.69	8.69	8.66
	9	8.67	8.66	8.70	8.71
	10	8.71	8.64	8.67	8.66
	11	8.66	8.67	8.66	8.65
	12	8.69	8.70	8.70	8.66
	13	8.66	8.66	8.71	8.65
	14	8.68	8.65	8.68	8.67
Mid	0	8.66	8.69	8.66	8.68
	1	8.70	8.65	8.68	8.68
	2	8.71	8.67	8.64	8.68
	3	8.67	8.66	8.64	8.63
	4	8.67	8.66	8.67	8.65
	5	8.66	8.66	8.66	8.67
	6	8.68	8.67	8.68	8.67
	7	8.67	8.67	8.66	8.65
	8	8.69	8.66	8.67	8.67
	9	8.72	8.63	8.65	8.64
	10	8.69	8.63	8.68	8.67
	11	8.67	8.67	8.67	8.70
	12	8.70	8.66	8.67	8.67
	13	8.68	8.66	8.67	8.65
	14	8.66	8.64	8.67	8.68
High	0	8.67	8.65	8.66	8.68
	1	8.67	8.68	8.66	8.68
	2	8.69	8.66	8.65	8.66
	3	8.65	8.66	8.66	8.64
	4	8.66	8.66	8.67	8.64
	5	8.63	8.66	8.66	8.66
	6	8.66	8.65	8.68	8.65
	7	8.64	8.65	8.68	8.68
	8	8.68	8.64	8.66	8.66
	9	8.66	8.66	8.67	8.67
	10	8.67	8.67	8.69	8.64
	11	8.67	8.68	8.64	8.66
	12	8.71	8.66	8.69	8.65
	13	8.65	8.64	8.69	8.68
	14	8.65	8.66	8.64	8.65
	15	8.66	8.64	8.66	8.66

Table 8-2. Occupied Bandwidth Summary Data (n48_1C_10M)

**CTK Co., Ltd.**

(Ho-dong), 113, Yejik-ro, Cheoin-gu, Yongin-si, Gyeonggi-do,
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Channel	Port	OBW (MHz)			
		QPSK	16QAM	64QAM	256QAM
Low	0	18.34	18.31	18.33	18.34
	1	18.33	18.31	18.26	18.27
	2	18.28	18.32	18.33	18.22
	3	18.26	18.26	18.29	18.28
	4	18.26	18.30	18.29	18.32
	5	18.40	18.36	18.26	18.23
	6	18.28	18.28	18.32	18.32
	7	18.26	18.30	18.29	18.34
	8	18.32	18.26	18.29	18.32
	9	18.30	18.28	18.30	18.24
	10	18.26	18.32	18.31	18.33
	11	18.32	18.28	18.31	18.33
	12	18.32	18.30	18.28	18.27
	13	18.26	18.30	18.35	18.29
	14	18.30	18.28	18.33	18.26
	15	18.31	18.25	18.27	18.30
Mid	0	18.29	18.30	18.33	18.38
	1	18.28	18.34	18.32	18.28
	2	18.32	18.30	18.34	18.33
	3	18.34	18.30	18.28	18.26
	4	18.31	18.32	18.35	18.25
	5	18.38	18.29	18.30	18.28
	6	18.28	18.29	18.31	18.27
	7	18.27	18.27	18.30	18.28
	8	18.28	18.30	18.33	18.33
	9	18.29	18.28	18.34	18.31
	10	18.32	18.32	18.32	18.26
	11	18.29	18.30	18.25	18.35
	12	18.33	18.37	18.30	18.27
	13	18.31	18.32	18.29	18.28
	14	18.24	18.28	18.32	18.26
	15	18.31	18.26	18.37	18.29
High	0	18.33	18.30	18.28	18.34
	1	18.27	18.28	18.39	18.32
	2	18.29	18.32	18.32	18.30
	3	18.28	18.34	18.29	18.31
	4	18.31	18.32	18.34	18.30
	5	18.33	18.28	18.32	18.28
	6	18.29	18.29	18.33	18.33
	7	18.34	18.30	18.34	18.29
	8	18.30	18.29	18.28	18.28
	9	18.28	18.31	18.34	18.28
	10	18.29	18.26	18.26	18.20
	11	18.29	18.31	18.32	18.28
	12	18.26	18.30	18.25	18.29
	13	18.35	18.34	18.31	18.29
	14	18.33	18.30	18.31	18.24
	15	18.31	18.30	18.29	18.31

Table 8-3. Occupied Bandwidth Summary Data (n48_1C_20M)

**CTK Co., Ltd.**

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Channel	Port	OBW (MHz)			
		QPSK	16QAM	64QAM	256QAM
Low	0	27.99	27.99	27.89	27.96
	1	27.94	27.96	27.97	27.99
	2	28.02	28.02	28.01	27.96
	3	27.94	27.97	27.98	27.97
	4	27.96	27.95	27.94	27.88
	5	28.02	27.96	27.96	27.94
	6	27.93	27.92	28.04	27.93
	7	27.94	27.93	28.02	27.98
	8	27.94	27.91	27.99	27.94
	9	27.95	27.94	28.00	27.98
	10	27.97	27.86	28.04	27.95
	11	28.05	27.91	27.95	27.95
	12	27.87	27.92	28.01	27.99
	13	27.91	27.96	27.92	27.96
	14	28.00	27.96	27.96	28.00
	15	28.00	27.89	27.92	27.97
Mid	0	27.92	27.91	27.96	27.98
	1	27.93	27.99	27.98	27.99
	2	27.90	27.95	27.93	27.95
	3	28.02	27.96	27.97	27.98
	4	27.90	27.95	27.89	27.89
	5	27.96	27.95	27.91	27.93
	6	27.87	27.93	27.94	28.02
	7	27.96	27.90	27.94	27.95
	8	27.94	27.96	27.95	27.99
	9	27.98	27.99	27.94	27.97
	10	27.95	27.93	27.94	27.98
	11	27.91	27.97	28.02	27.98
	12	27.95	27.90	27.96	27.87
	13	27.90	27.96	27.96	27.89
	14	27.92	27.96	27.88	27.97
	15	28.03	28.02	27.93	27.98
High	0	27.92	27.96	28.03	27.91
	1	27.94	27.94	28.02	28.00
	2	27.93	27.98	27.91	27.91
	3	27.91	27.95	27.96	27.89
	4	27.92	27.97	28.02	27.92
	5	28.00	27.99	27.95	28.03
	6	28.05	27.99	27.96	27.94
	7	27.88	27.91	28.04	28.02
	8	27.91	27.96	27.91	27.92
	9	27.90	27.95	27.97	27.98
	10	27.98	28.00	27.97	28.02
	11	27.93	27.97	27.87	27.99
	12	27.96	27.89	28.02	27.99
	13	27.91	27.98	27.99	27.99
	14	27.97	27.98	27.93	27.92
	15	27.94	27.97	27.89	27.96

Table 8-4. Occupied Bandwidth Summary Data (n48_1C_30M)

**CTK Co., Ltd.**

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Channel	Port	OBW (MHz)			
		QPSK	16QAM	64QAM	256QAM
Low	0	37.98	37.89	37.88	37.96
	1	37.89	37.88	37.89	37.91
	2	37.94	37.98	37.98	37.98
	3	37.87	37.90	38.01	37.97
	4	37.96	37.82	37.96	37.88
	5	37.98	37.88	37.93	37.93
	6	37.90	37.90	37.89	37.91
	7	37.92	37.90	37.89	38.02
	8	37.95	37.94	38.01	37.97
	9	37.89	37.91	37.93	38.02
	10	37.89	37.95	37.93	37.88
	11	38.02	37.87	37.88	37.90
	12	37.91	37.96	38.05	37.98
	13	37.98	37.91	37.92	37.95
	14	37.93	37.90	37.98	37.89
	15	37.93	38.00	37.96	37.81
Mid	0	38.04	37.89	37.95	37.98
	1	37.90	37.98	37.96	37.81
	2	37.93	38.03	38.10	37.95
	3	37.85	37.87	37.94	37.85
	4	37.95	37.92	37.90	37.91
	5	37.94	37.94	37.89	37.96
	6	37.95	37.91	38.00	38.03
	7	37.98	37.95	37.97	37.99
	8	37.92	37.88	37.97	37.88
	9	37.90	37.94	37.95	37.87
	10	37.92	37.88	37.93	38.05
	11	37.90	37.89	37.85	38.08
	12	37.93	37.93	37.91	37.89
	13	37.99	37.90	37.99	37.97
	14	37.92	37.92	37.98	37.98
	15	37.89	37.94	37.89	37.93
High	0	37.98	37.89	37.94	37.96
	1	37.87	37.97	37.94	37.93
	2	37.96	37.94	37.98	37.96
	3	37.91	37.95	37.96	37.96
	4	38.02	37.99	37.94	37.99
	5	38.06	38.00	37.92	38.03
	6	37.96	37.95	38.01	37.97
	7	37.95	38.03	37.92	37.97
	8	37.96	37.95	38.03	37.97
	9	37.88	37.94	37.93	37.88
	10	38.05	37.94	38.00	37.97
	11	37.92	37.86	37.97	37.95
	12	37.96	37.94	37.95	37.99
	13	37.99	37.92	37.93	37.88
	14	37.95	37.91	38.01	37.94
	15	37.97	37.85	37.94	37.96

Table 8-5. Occupied Bandwidth Summary Data (n48_1C_40M)

**CTK Co., Ltd.**

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Channel	Port	OBW (MHz)			
		QPSK	16QAM	64QAM	256QAM
Low	0	47.86	47.87	47.95	47.95
	1	47.85	47.84	47.99	47.88
	2	47.79	47.91	47.89	47.90
	3	47.78	47.94	48.01	47.89
	4	47.82	47.94	47.93	47.95
	5	47.95	47.91	47.91	47.90
	6	47.90	47.87	47.92	47.84
	7	47.92	47.90	47.93	47.95
	8	47.90	47.90	48.01	47.93
	9	47.81	48.00	47.99	47.97
	10	47.94	47.88	48.02	47.92
	11	47.85	47.91	47.88	47.92
	12	48.01	47.91	47.96	47.93
	13	47.89	47.87	47.89	47.92
	14	47.92	47.95	47.98	47.99
Mid	15	47.85	47.93	47.89	47.90
	0	48.04	48.00	48.00	47.92
	1	47.85	47.97	47.95	47.99
	2	47.89	48.02	47.90	48.02
	3	47.96	47.85	47.91	47.95
	4	47.88	48.01	47.95	47.90
	5	47.89	47.97	47.91	47.90
	6	47.98	47.96	47.90	47.92
	7	47.89	47.90	47.99	48.09
	8	48.06	47.88	48.08	47.93
	9	48.04	47.95	47.98	47.99
	10	47.93	47.92	47.99	47.94
	11	47.92	47.96	47.89	47.97
	12	47.96	47.90	47.87	47.85
	13	47.85	47.94	47.97	47.94
High	14	47.84	47.97	47.76	47.95
	15	47.99	47.87	48.02	47.96
	0	47.88	48.00	47.86	47.89
	1	47.95	47.91	47.96	48.02
	2	47.96	47.96	47.98	47.98
	3	47.91	47.97	47.92	47.96
	4	48.05	47.84	47.84	47.98
	5	47.92	48.10	47.98	47.89
	6	48.00	47.92	47.98	47.98
	7	48.00	47.99	48.01	47.88
	8	47.91	47.92	47.91	47.85
	9	47.90	48.01	47.97	47.92
	10	47.97	48.02	48.00	47.95
	11	47.93	47.93	48.01	48.01
	12	47.89	47.91	47.95	47.94
	13	47.92	47.98	48.00	47.96
	14	47.90	47.92	48.00	48.01
	15	47.99	47.91	48.10	48.00

Table 8-6. Occupied Bandwidth Summary Data (n48_2C_20M+30M)

**CTK Co., Ltd.**

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Channel	Port	OBW (MHz)			
		QPSK	16QAM	64QAM	256QAM
Low	0	57.76	57.91	57.88	57.94
	1	57.84	57.91	57.96	57.90
	2	57.83	57.82	57.83	57.89
	3	57.82	57.83	57.72	57.79
	4	57.83	57.94	57.88	57.78
	5	57.88	57.82	57.75	57.94
	6	57.79	57.85	57.74	57.88
	7	57.65	57.84	57.84	57.86
	8	57.87	57.84	57.89	57.83
	9	57.86	57.81	57.71	57.65
	10	57.76	57.90	57.79	57.94
	11	57.85	57.75	57.83	57.90
	12	57.85	57.85	57.88	57.75
	13	57.93	57.76	57.89	57.88
	14	57.79	57.93	57.83	57.79
	15	57.81	57.73	57.71	57.86
Mid	0	57.99	57.87	57.96	57.97
	1	57.92	57.77	57.92	57.89
	2	57.94	57.91	58.01	57.81
	3	57.96	57.78	58.03	57.80
	4	57.85	57.90	57.95	57.85
	5	58.02	57.86	57.84	57.89
	6	57.88	57.79	57.92	57.80
	7	57.91	57.85	57.99	57.74
	8	57.89	57.89	57.88	58.07
	9	57.77	57.87	57.84	57.86
	10	57.86	57.96	57.86	57.82
	11	57.94	57.81	57.94	57.81
	12	57.84	57.85	57.82	57.78
	13	57.94	57.90	57.85	57.91
	14	57.96	57.91	57.90	57.91
	15	57.90	57.92	57.89	57.85
High	0	57.85	57.86	57.93	57.81
	1	57.94	57.92	57.91	57.98
	2	57.87	57.85	57.87	57.93
	3	57.96	57.88	58.01	57.80
	4	57.86	57.92	57.86	57.84
	5	57.91	57.89	58.04	57.82
	6	57.86	57.93	57.98	57.87
	7	57.82	57.89	57.89	57.87
	8	58.01	57.79	57.97	57.94
	9	57.84	57.77	57.92	57.90
	10	57.96	57.84	57.89	57.97
	11	57.85	57.84	58.10	57.91
	12	57.89	57.88	57.99	57.93
	13	57.88	57.91	57.88	57.88
	14	58.02	57.94	57.80	57.89
	15	57.79	57.85	57.85	57.97

Table 8-7. Occupied Bandwidth Summary Data (n48_1C_60M)

**CTK Co., Ltd.**

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Channel	Port	OBW (MHz)			
		QPSK	16QAM	64QAM	256QAM
Low	0	68.02	67.88	68.12	67.87
	1	68.01	68.02	68.27	68.01
	2	67.92	68.23	68.00	67.93
	3	67.90	68.02	67.90	67.94
	4	67.93	68.13	68.07	67.75
	5	67.97	67.94	68.04	67.99
	6	67.91	68.01	68.00	68.09
	7	68.05	67.94	68.06	67.98
	8	68.07	67.94	67.95	67.96
	9	67.83	67.94	68.09	68.11
	10	68.00	68.11	67.90	67.99
	11	68.22	67.97	68.03	68.01
	12	67.91	67.96	68.00	68.02
	13	67.93	68.01	67.98	67.94
	14	67.86	68.07	68.08	67.97
	15	68.01	68.13	68.00	67.95
Mid	0	68.12	67.85	68.13	67.95
	1	67.98	68.01	68.06	67.95
	2	67.96	68.05	68.04	68.12
	3	68.08	68.07	68.14	68.12
	4	67.98	67.93	67.98	67.87
	5	67.99	68.04	68.15	68.04
	6	68.08	67.93	68.13	68.05
	7	68.09	68.07	68.09	68.00
	8	67.77	68.01	68.00	68.03
	9	67.99	68.01	68.09	68.02
	10	67.84	67.95	67.93	68.12
	11	67.96	68.16	68.04	67.99
	12	67.99	67.98	68.11	68.07
	13	67.92	68.02	67.99	68.02
	14	67.98	67.97	68.09	68.04
	15	67.94	67.99	68.03	68.03
High	0	68.17	67.99	68.00	68.09
	1	68.13	68.07	67.98	68.09
	2	68.03	68.13	68.08	67.96
	3	67.96	68.04	68.04	68.14
	4	67.95	68.02	67.93	67.97
	5	67.96	67.91	67.98	68.01
	6	68.03	68.03	67.92	68.01
	7	67.97	68.00	68.01	68.04
	8	67.93	68.06	67.97	68.11
	9	67.97	68.04	67.98	68.07
	10	68.09	67.97	68.17	68.04
	11	68.06	67.99	68.19	68.01
	12	68.02	68.07	68.15	68.01
	13	68.19	68.09	68.07	68.12
	14	68.01	67.99	68.06	68.06
	15	68.03	68.03	67.98	68.13

Table 8-8. Occupied Bandwidth Summary Data (n48_4C_10M+10M+10M+40M)

**CTK Co., Ltd.**

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Channel	Port	OBW (MHz)			
		QPSK	16QAM	64QAM	256QAM
Low	0	77.52	77.31	77.52	77.28
	1	77.27	77.43	77.35	77.47
	2	77.47	77.48	77.57	77.35
	3	77.36	77.48	77.39	77.48
	4	77.43	77.42	77.44	77.58
	5	77.37	77.36	77.44	77.44
	6	77.51	77.38	77.32	77.55
	7	77.31	77.45	77.34	77.42
	8	77.38	77.49	77.49	77.40
	9	77.49	77.46	77.33	77.39
	10	77.56	77.44	77.40	77.55
	11	77.51	77.32	77.29	77.49
	12	77.27	77.37	77.55	77.35
	13	77.33	77.36	77.54	77.44
	14	77.37	77.43	77.40	77.42
	15	77.53	77.48	77.48	77.51
Mid	0	77.57	77.50	77.52	77.47
	1	77.57	77.50	77.61	77.73
	2	77.53	77.61	77.45	77.55
	3	77.42	77.40	77.55	77.48
	4	77.61	77.46	77.48	77.34
	5	77.52	77.49	77.51	77.54
	6	77.44	77.53	77.45	77.48
	7	77.48	77.41	77.55	77.65
	8	77.50	77.43	77.50	77.47
	9	77.31	77.50	77.53	77.36
	10	77.57	77.33	77.50	77.54
	11	77.43	77.48	77.47	77.54
	12	77.45	77.63	77.56	77.42
	13	77.64	77.44	77.59	77.56
	14	77.69	77.41	77.33	77.48
	15	77.44	77.64	77.59	77.59
High	0	77.56	77.43	77.40	77.46
	1	77.65	77.69	77.53	77.64
	2	77.55	77.48	77.65	77.48
	3	77.49	77.54	77.51	77.45
	4	77.33	77.54	77.58	77.58
	5	77.52	77.53	77.48	77.41
	6	77.50	77.48	77.63	77.36
	7	77.42	77.49	77.62	77.62
	8	77.47	77.48	77.49	77.58
	9	77.48	77.61	77.43	77.49
	10	77.59	77.50	77.51	77.71
	11	77.54	77.47	77.60	77.54
	12	77.50	77.51	77.47	77.49
	13	77.52	77.61	77.59	77.54
	14	77.42	77.53	77.47	77.47
	15	77.63	77.49	77.62	77.52

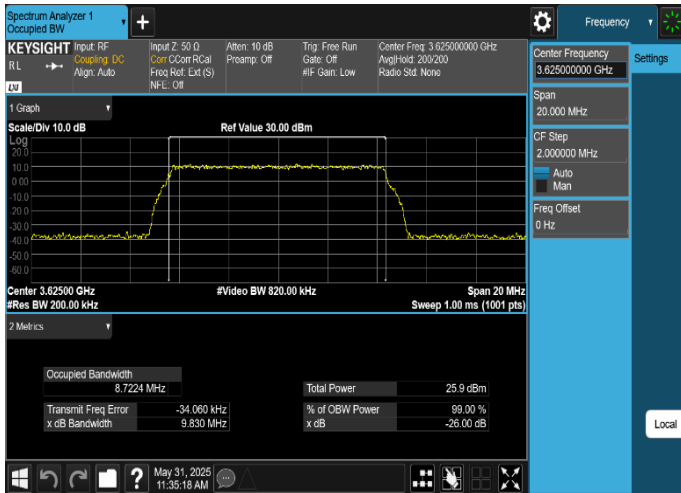
Table 8-9. Occupied Bandwidth Summary Data (n48_1C_80M)



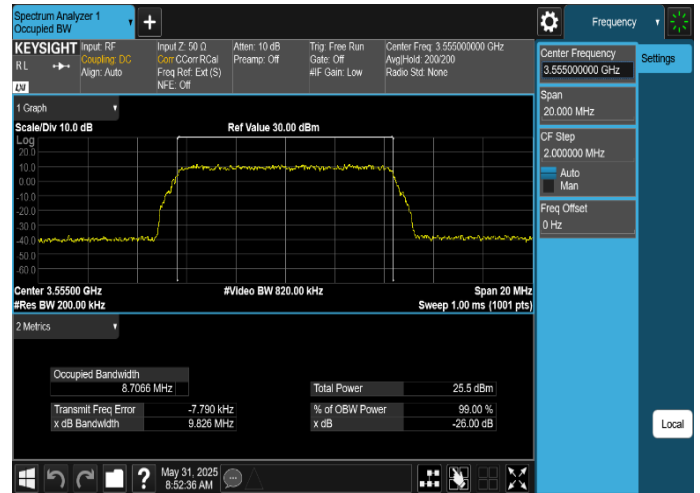
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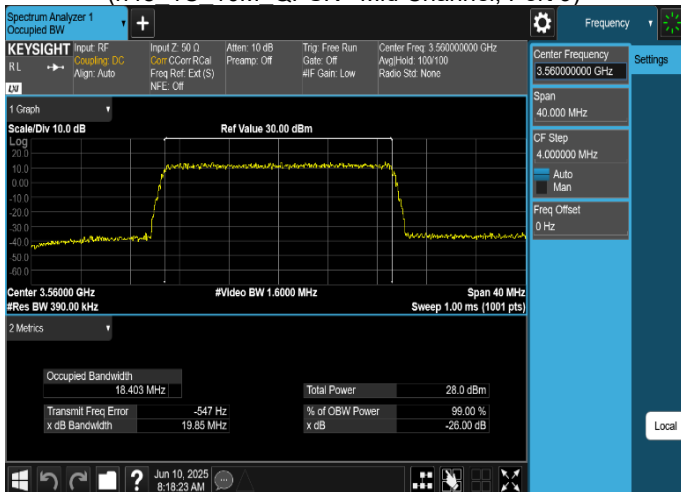
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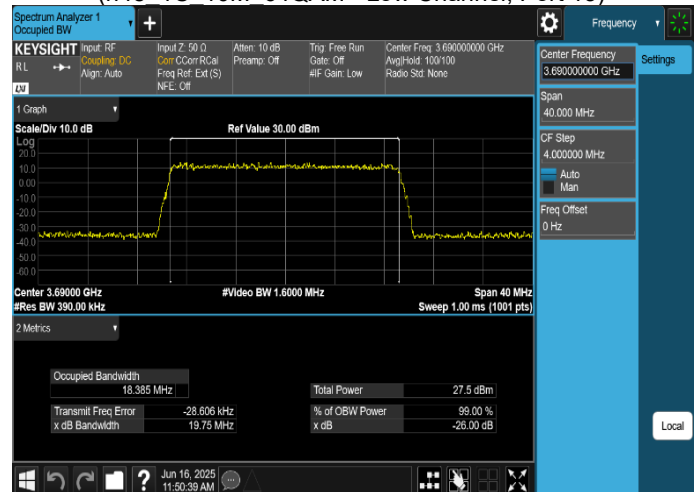
Plot 8-1. Occupied Bandwidth Plot
(n48 1C 10M QPSK- Mid Channel, Port 9)



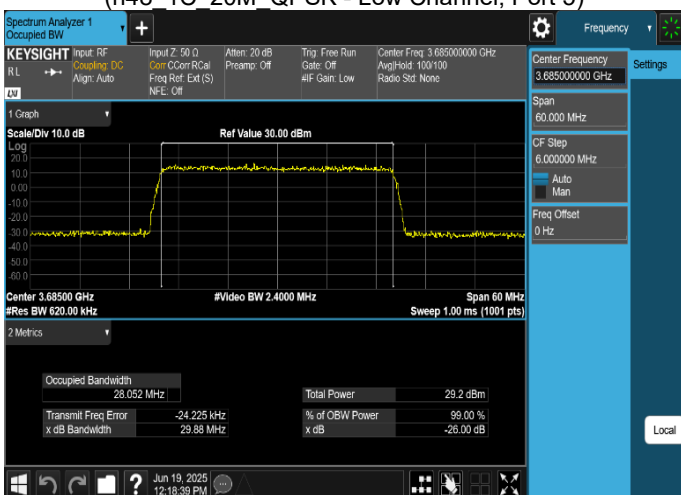
Plot 8-2. Occupied Bandwidth Plot
(n48 1C 10M 64QAM - Low Channel, Port 13)



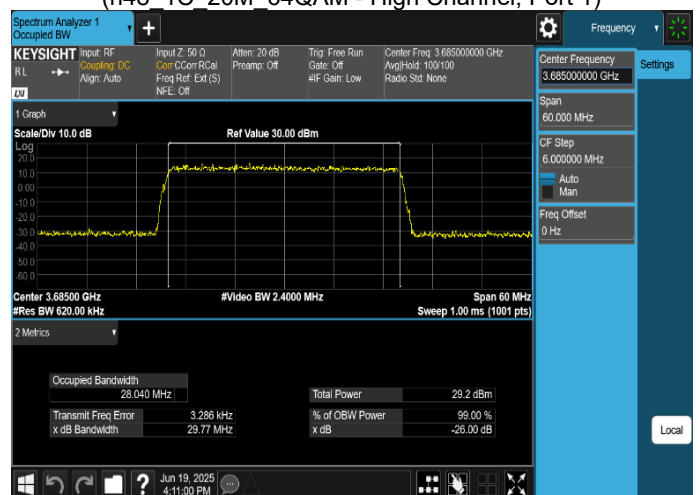
Plot 8-3. Occupied Bandwidth Plot
(n48 1C 20M QPSK - Low Channel, Port 5)



Plot 8-4. Occupied Bandwidth Plot
(n48 1C 20M 64QAM - High Channel, Port 1)



Plot 8-5. Occupied Bandwidth Plot
(n48 1C 30M QPSK - High Channel, Port 6)



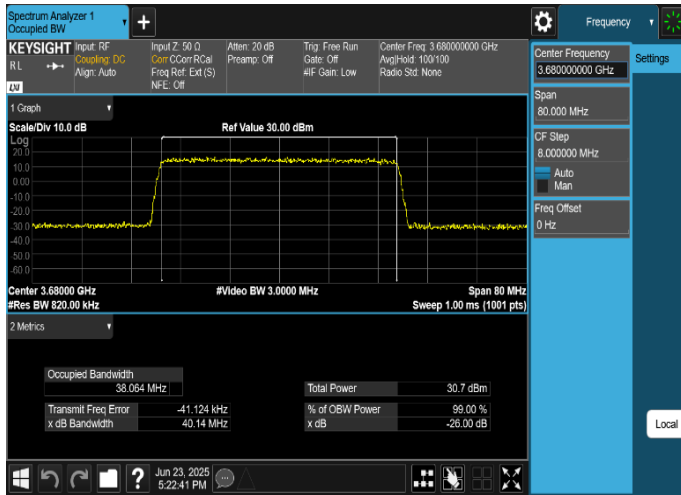
Plot 8-6. Occupied Bandwidth Plot
(n48 1C 30M 64QAM - High Channel, Port 7)



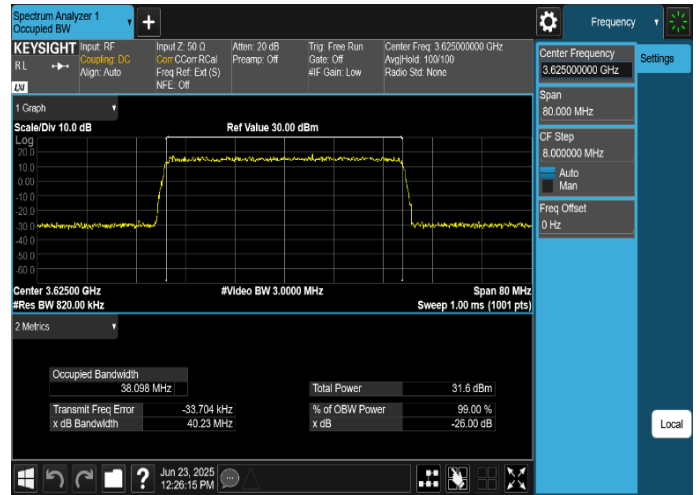
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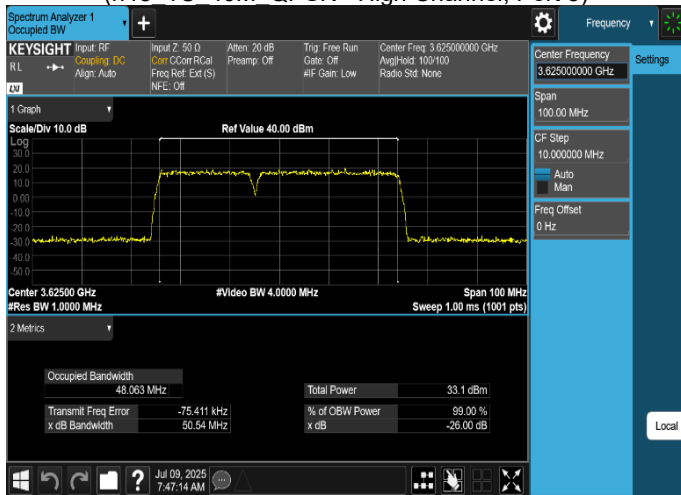
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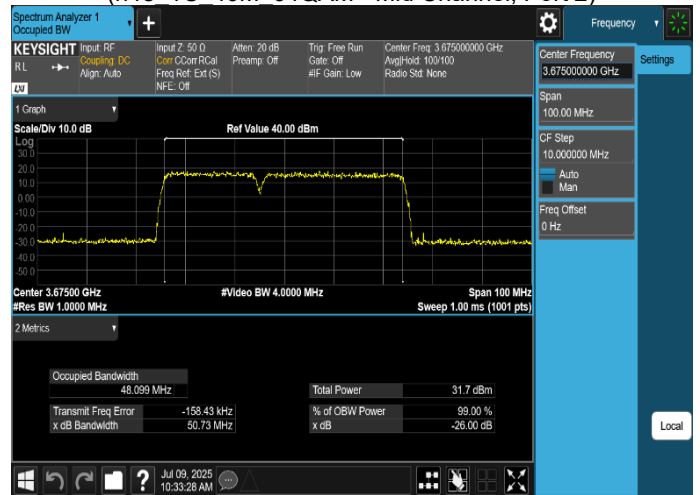
Plot 8-7. Occupied Bandwidth Plot
(n48_1C_40M_QPSK - High Channel, Port 5)



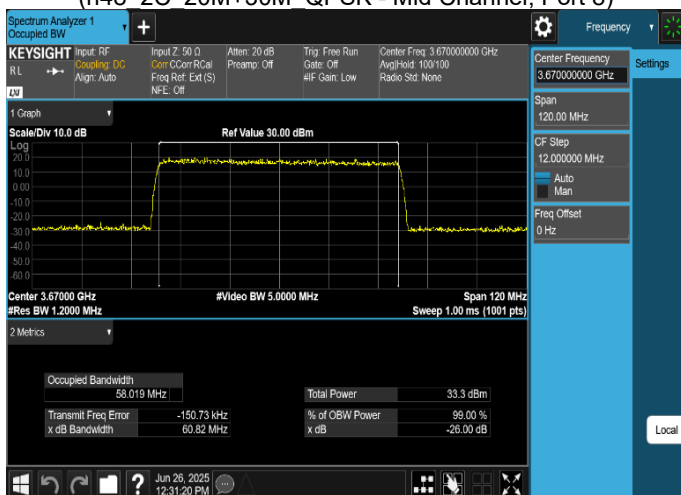
Plot 8-8. Occupied Bandwidth Plot
(n48_1C_40M_64QAM - Mid Channel, Port 2)



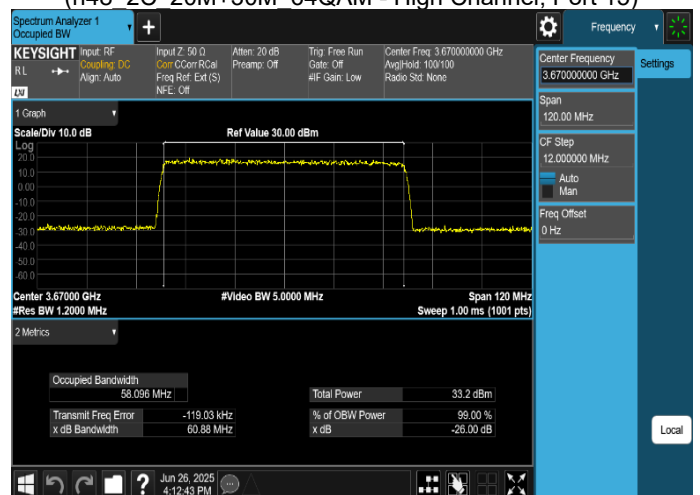
Plot 8-9. Occupied Bandwidth Plot
(n48_2C_20M+30M_QPSK - Mid Channel, Port 8)



Plot 8-10. Occupied Bandwidth Plot
(n48_2C_20M+30M_64QAM - High Channel, Port 15)



Plot 8-11. Occupied Bandwidth Plot
(n48_1C_60M_QPSK - High Channel, Port 14)



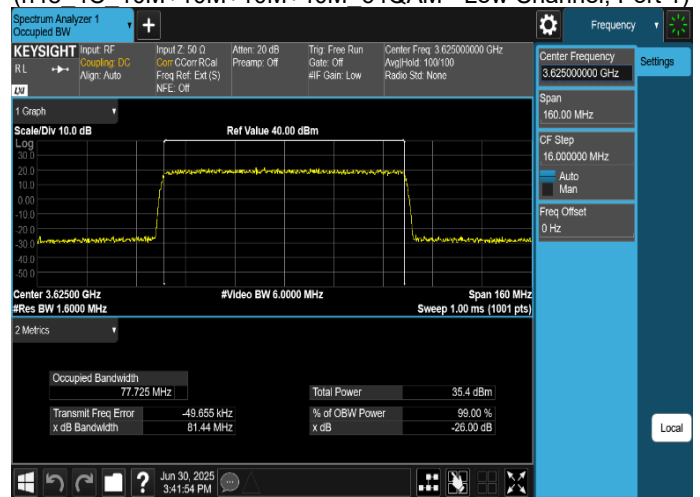
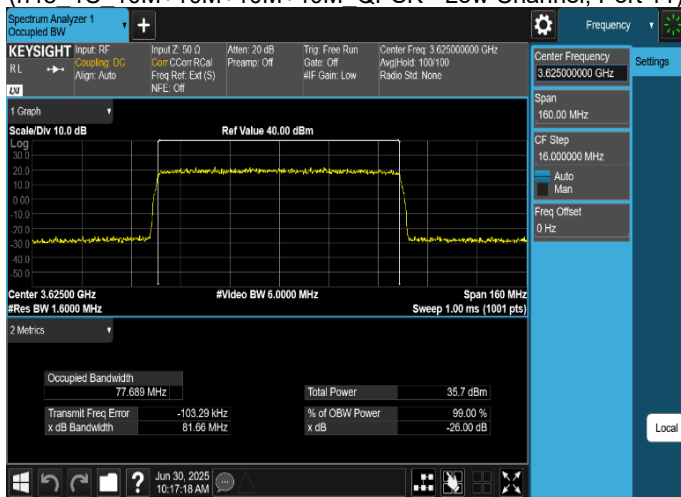
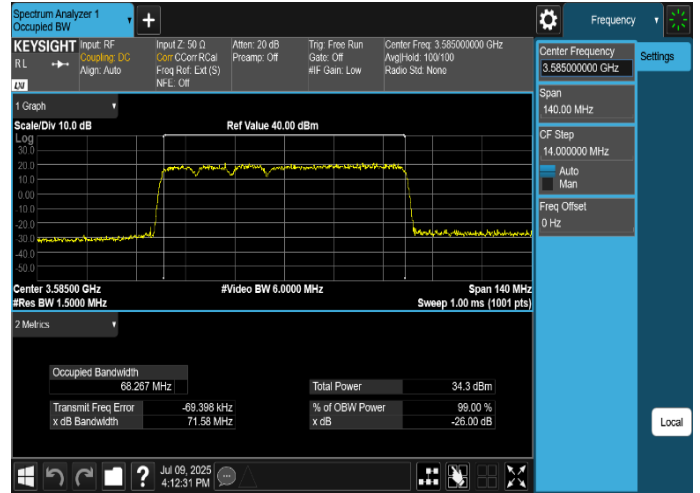
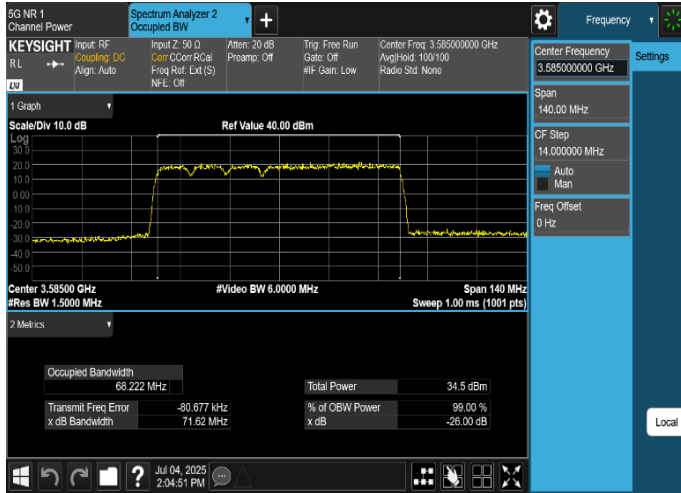
Plot 8-12. Occupied Bandwidth Plot
(n48_1C_60M_64QAM - High Channel, Port 11)



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8.3 Modulation Characteristics

Test Overview

Verification of a curve or equivalent data that shows that the equipment will meet the modulation requirements of the rules under which the equipment is to be licensed.

Test Procedure Used

ANSI C63.26 - Section 5.3

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 was modulation analyzer mode.

Test Setup

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

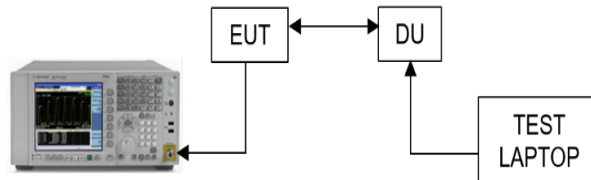


Figure 8-2. Test Instrument & Measurement Setup

Limit

96.41(a)

Systems operating in the Citizens Broadband Radio Service must use digital modulation techniques.

Test Notes

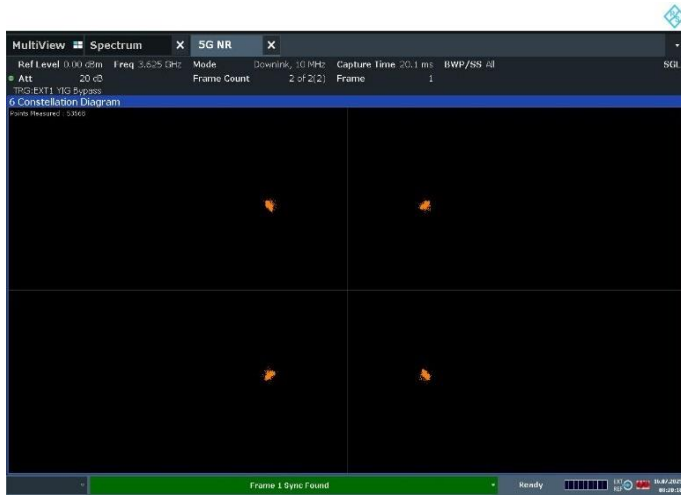
Systems operating in the Citizens Broadband Radio Service use digital modulation techniques of QPSK and QAM



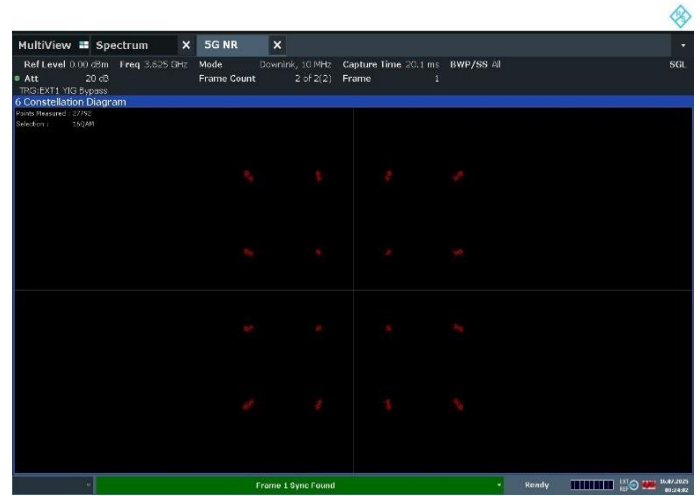
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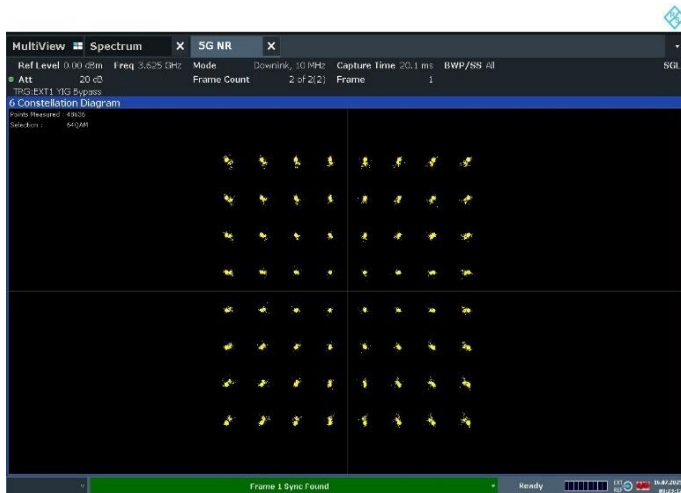
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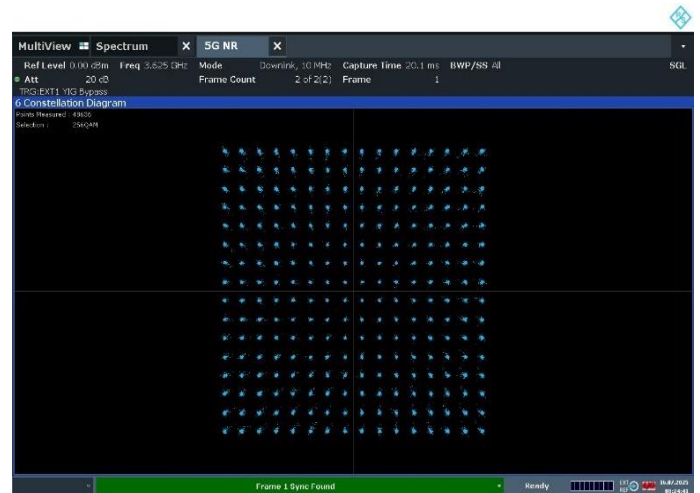
Plot 8-17. Modulation Characteristics Plot
(n48_1C_10M_QPSK Modulation)



Plot 8-18. Modulation Characteristics Plot
(n48_1C_10M_16QAM Modulation)



Plot 8-19. Modulation Characteristics Plot
(n48_1C_10M_64QAM Modulation)



Plot 8-20. Modulation Characteristics Plot
(n48_1C_10M_256QAM Modulation)

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8.4 Maximum 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

ANSI C63.26 - Section 5.2.4
ANSI C63.26 - Section 5.2.5
KDB 971168 D01 v03r01 - Section 5.3

ANSI C63.26 - Section 6.4.3.2.3
KDB 662911 D01 v02r01
- Section E)2) In-Band Power Spectral Density (PSD) Measurements
b) Measure and sum spectral maxima across the outputs.

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:

The PSD is measured following the same procedures described in 5.2.4.4 of ANSI C63.26 for measuring the total average power, but with the RBW set to the reference bandwidth specified by the applicable regulatory requirement, and by using the marker function to identify the maximum PSD instead of summing the power across the OBW. If the fundamental measurement condition cannot be realized, then one of the alternative procedures in 5.2.4.4.2 or 5.2.4.4.3 should be selected, based on whether the transmitter duty cycle is constant (variations $\leq \pm 2\%$) or non-constant (variations $> \pm 2\%$), respectively.

1. Conducted power measurements are performed using the signal analyzer's "SA mode" measurement capability for signals with continuous operation.
2. Set span to $2 \times$ to $3 \times$ the OBW.
3. Set RBW = 1 MHz (the reference bandwidth)
4. Set VBW $\geq 3 \times$ RBW.
5. Set number of measurement points in sweep $\geq 2 \times$ span / RBW.
6. Sweep time:
 - a) Set $\geq$ auto-couple, and enable trace averaging, or
 - b) Set $\geq [10 \times (\text{number of points in sweep}) \times (\text{transmission symbol period})]$ 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. ($=P_{\text{Meas}}$)
10. The relevant equation for determining the maximum EIRP from the measured RF output power is given in Equation as follows:
$$\text{EIRP} = P_{\text{Meas}} + G_T$$

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.

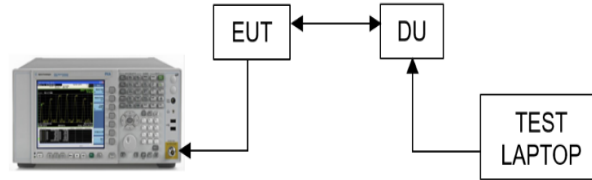


Figure 8-3. Test Instrument & Measurement Setup

Limit

§ 96.41 (b) Maximum PSD
 Category B CBSD : 37 dBm/MHz

Test Notes

- Consider the following factors for MIMO Power Spectral Density:
 The power spectral density is measured as dBm / MHz, with the resolution bandwidth of 1 MHz PSDs are summed up in linear using the measure-and-sum technique defined in KDB 971168 D01 v03r01 - Section E) 2).
- Periodic trigger was used with gating ON. Gate sweep time, Gate delay and gate length were set accordingly to capture ON time of the transmission.
- PSD per port (dBm/MHz) 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 PSD calculations.
- Tested for Common beam mode to perform RF testing that can get maximum Tx power setting.
- Applied antenna gain as below:

Mode	NR 10MHz			NR 20MHz			NR 30MHz		
	SU	MU	Common	SU	MU	Common	SU	MU	Common
Tx Power Max(dBm)	25.2	21.7	30.7	28.2	24.7	33.7	29.9	26.4	35.4
Max. Gain (dBi)	20.3	20.3	14.8	20.3	20.3	14.8	20.3	14.8	14.45
Beam EIRP Sum (dB)	0	3	0	0	3	0	0	3	0
Max. EIRP (dBm)	45.5	45	45.5	48.5	48	48.5	50.2	44.2	49.9
Mode	NR 40MHz			NR 60MHz			NR 80MHz		
	SU	MU	Common	SU	MU	Common	SU	MU	Common
Tx Power Max(dBm)	31.2	27.7	36.7	33	29.5	38.5	34.2	30.7	39.7
Max. Gain (dBi)	20.3	20.3	14.8	20.3	20.3	14.8	20.3	20.3	14.8
Beam EIRP Sum (dB)	0	3	0	0	3	0	0	3	0
Max. EIRP (dBm)	51.5	51	51.5	53.3	52.8	53.3	54.5	54	54.5

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6. Sample Calculation:

Let us assume the following numbers:

- a) Total MIMO Conducted PSD as 121.46 mW
- b) Antenna Gain = 14.80 dBi

Factors		Value	Unit
Summed MIMO Conducted PSD (linear sum)		121.46	mW
Summed MIMO Conducted PSD (dBm)	$= 10 * \log (121.46) =$	20.84	dBm/MHz
Antenna Gain		14.80	dB
e.i.r.p PSD		35.64	dBm/MHz
Limit		37.00	dBm/MHz
Margin = Limit - e.i.r.p PSD	$= 35.64 - 37.00 =$	-1.36	dB

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Channel	Port	QPSK	16QAM	64QAM	256QAM
Low	0	8.33	8.51	8.52	8.46
	1	8.65	8.84	8.80	8.73
	2	9.01	9.19	9.16	9.09
	3	8.72	8.90	8.91	8.85
	4	8.82	8.95	8.95	8.85
	5	8.77	8.94	8.93	8.86
	6	9.23	9.37	9.38	9.28
	7	9.11	9.32	9.32	9.23
	8	8.83	9.01	9.02	8.92
	9	8.63	8.79	8.82	8.73
	10	9.22	9.38	9.40	9.29
	11	8.70	8.83	8.91	8.80
	12	8.66	8.76	8.80	8.69
	13	8.84	8.92	9.02	8.90
	14	8.77	8.94	8.92	8.81
	15	8.49	8.66	8.69	8.58
Total MIMO Conducted PSD (mW/MHz)		121.46	125.99	126.42	123.79
Total MIMO Conducted PSD (dBm/MHz)		20.84	21.00	21.02	20.93
Ant. Gain (dBi)		14.80	14.80	14.80	14.80
e.i.r.p PSD (dBm/MHz)		35.64	35.80	35.82	35.73
e.i.r.p PSD Limit (dBm/MHz)		37.00	37.00	37.00	37.00
Margin (dB)		-1.36	-1.20	-1.18	-1.27
Channel	Port	QPSK	16QAM	64QAM	256QAM
Mid	0	8.88	9.00	9.22	9.13
	1	9.18	9.42	9.47	9.41
	2	9.47	9.71	9.79	9.72
	3	9.18	9.40	9.49	9.48
	4	9.25	9.47	9.58	9.60
	5	9.31	9.53	9.62	9.64
	6	9.86	10.06	10.13	10.18
	7	9.64	9.91	9.98	9.73
	8	9.28	9.49	9.63	9.38
	9	9.17	9.36	9.52	9.24
	10	9.66	9.89	10.04	9.77
	11	9.21	9.47	9.57	9.31
	12	9.12	9.32	9.45	9.21
	13	9.49	9.68	9.52	9.57
	14	9.27	9.51	9.34	9.36
	15	9.07	9.30	9.13	9.16
Total MIMO Conducted PSD (mW/MHz)		136.87	143.88	145.92	142.61
Total MIMO Conducted PSD (dBm/MHz)		21.36	21.58	21.64	21.54
Ant. Gain (dBi)		14.80	14.80	14.80	14.80
e.i.r.p PSD (dBm/MHz)		36.16	36.38	36.44	36.34
e.i.r.p PSD Limit (dBm/MHz)		37.00	37.00	37.00	37.00
Margin (dB)		-0.84	-0.62	-0.56	-0.66

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Channel	Port	QPSK	16QAM	64QAM	256QAM
High	0	8.10	8.08	8.19	8.29
	1	8.58	8.77	8.74	8.77
	2	8.78	8.97	8.83	8.91
	3	8.62	8.77	8.71	8.75
	4	8.48	8.72	8.66	8.70
	5	8.59	8.79	8.73	8.76
	6	8.98	9.27	9.21	9.26
	7	8.99	9.19	9.11	9.17
	8	8.47	8.73	8.64	8.70
	9	8.56	8.77	8.70	8.70
	10	8.87	9.21	9.12	9.11
	11	8.59	8.77	8.64	8.62
	12	8.28	8.45	8.38	8.37
	13	8.78	8.98	8.87	8.84
	14	8.44	8.70	8.53	8.52
	15	8.37	8.58	8.49	8.45
Total MIMO Conducted PSD (mW/MHz)		115.85	121.51	119.39	120.06
Total MIMO Conducted PSD (dBm/MHz)		20.64	20.85	20.77	20.79
Ant. Gain (dBi)		14.80	14.80	14.80	14.80
e.i.r.p PSD (dBm/MHz)		35.44	35.65	35.57	35.59
e.i.r.p PSD Limit (dBm/MHz)		37.00	37.00	37.00	37.00
Margin (dB)		-1.56	-1.35	-1.43	-1.41

Table 8-10. Power Spectral Density Table (n48_1C_10M)

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Channel	Port	QPSK	16QAM	64QAM	256QAM
Low	0	8.34	8.41	8.33	8.35
	1	8.64	8.69	8.62	8.67
	2	8.91	8.91	8.83	8.91
	3	8.75	8.79	8.71	8.75
	4	8.75	8.79	8.72	8.75
	5	8.76	8.82	8.76	8.79
	6	9.10	9.12	9.09	9.12
	7	9.11	9.11	9.10	9.13
	8	8.79	8.79	8.79	8.82
	9	8.63	8.65	8.60	8.63
	10	8.78	8.77	8.76	8.78
	11	8.71	8.74	8.70	8.72
	12	8.60	8.63	8.59	8.63
	13	8.79	8.86	8.83	8.83
	14	8.71	8.77	8.73	8.78
	15	8.42	8.47	8.42	8.46
Total MIMO Conducted PSD (mW/MHz)		119.75	120.66	119.33	120.35
Total MIMO Conducted PSD (dBm/MHz)		20.78	20.82	20.77	20.80
Ant. Gain (dBi)		14.80	14.80	14.80	14.80
e.i.r.p PSD (dBm/MHz)		35.58	35.62	35.57	35.60
e.i.r.p PSD Limit (dBm/MHz)		37.00	37.00	37.00	37.00
Margin (dB)		-1.42	-1.38	-1.43	-1.40
Channel	Port	QPSK	16QAM	64QAM	256QAM
Mid	0	8.54	8.63	8.48	8.61
	1	8.73	8.95	8.80	8.90
	2	8.90	9.14	8.99	9.10
	3	8.76	8.99	8.82	8.88
	4	8.81	9.05	8.86	8.95
	5	8.87	9.10	8.93	9.01
	6	9.30	9.54	9.40	9.49
	7	9.23	9.47	9.29	9.40
	8	8.88	9.12	8.96	9.05
	9	8.68	8.97	8.75	8.85
	10	8.85	9.07	8.97	9.02
	11	8.80	9.04	8.86	8.94
	12	8.71	8.88	8.78	8.83
	13	9.05	9.22	9.11	9.15
	14	8.91	9.07	8.93	9.03
	15	8.64	8.81	8.72	8.77
Total MIMO Conducted PSD (mW/MHz)		123.00	129.13	124.76	127.20
Total MIMO Conducted PSD (dBm/MHz)		20.90	21.11	20.96	21.04
Ant. Gain (dBi)		14.80	14.80	14.80	14.80
e.i.r.p PSD (dBm/MHz)		35.70	35.91	35.76	35.84
e.i.r.p PSD Limit (dBm/MHz)		37.00	37.00	37.00	37.00
Margin (dB)		-1.30	-1.09	-1.24	-1.16

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Channel	Port	QPSK	16QAM	64QAM	256QAM
High	0	7.89	8.16	8.22	8.28
	1	8.34	8.64	8.67	8.71
	2	8.51	8.77	8.82	8.87
	3	8.33	8.66	8.71	8.71
	4	8.34	8.65	8.65	8.69
	5	8.37	8.66	8.71	8.75
	6	8.82	9.09	9.11	9.17
	7	8.80	9.10	9.12	9.19
	8	8.33	8.62	8.63	8.68
	9	8.29	8.62	8.63	8.73
	10	8.40	8.70	8.72	8.80
	11	8.35	8.65	8.65	8.73
	12	8.07	8.33	8.34	8.45
	13	8.59	8.85	8.83	8.97
	14	8.26	8.52	8.54	8.63
	15	8.18	8.47	8.44	8.56
Total MIMO Conducted PSD (mW/MHz)		109.97	117.55	118.06	119.97
Total MIMO Conducted PSD (dBm/MHz)		20.41	20.70	20.72	20.79
Ant. Gain (dBi)		14.80	14.80	14.80	14.80
e.i.r.p PSD (dBm/MHz)		35.21	35.50	35.52	35.59
e.i.r.p PSD Limit (dBm/MHz)		37.00	37.00	37.00	37.00
Margin (dB)		-1.79	-1.50	-1.48	-1.41

Table 8-11. Power Spectral Density Table (n48_1C_20M)

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Channel	Port	QPSK	16QAM	64QAM	256QAM
Low	0	8.36	8.24	8.35	8.27
	1	8.61	8.49	8.60	8.66
	2	8.88	8.74	8.83	8.91
	3	8.74	8.57	8.71	8.75
	4	8.73	8.56	8.73	8.73
	5	8.75	8.70	8.73	8.76
	6	9.17	9.06	9.12	9.14
	7	9.11	9.06	9.06	9.10
	8	8.81	8.77	8.78	8.81
	9	8.64	8.54	8.52	8.58
	10	8.76	8.77	8.73	8.83
	11	8.66	8.71	8.68	8.78
	12	8.60	8.57	8.56	8.66
	13	8.83	8.82	8.79	8.92
	14	8.77	8.93	8.74	8.83
	15	8.47	8.57	8.43	8.56
Total MIMO Conducted PSD (mW/MHz)		119.89	118.58	118.97	120.61
Total MIMO Conducted PSD (dBm/MHz)		20.79	20.74	20.75	20.81
Ant. Gain (dBi)		14.80	14.80	14.80	14.80
e.i.r.p PSD (dBm/MHz)		35.59	35.54	35.55	35.61
e.i.r.p PSD Limit (dBm/MHz)		37.00	37.00	37.00	37.00
Margin (dB)		-1.41	-1.46	-1.45	-1.39
Channel	Port	QPSK	16QAM	64QAM	256QAM
Mid	0	8.33	8.38	8.43	8.42
	1	8.57	8.73	8.79	8.67
	2	8.82	8.91	8.94	8.88
	3	8.62	8.72	8.74	8.79
	4	8.70	8.82	8.81	8.77
	5	8.74	8.85	8.87	8.88
	6	9.21	9.30	9.34	9.40
	7	9.19	9.23	9.27	9.36
	8	8.86	8.83	8.87	8.96
	9	8.72	8.70	8.70	8.79
	10	8.81	8.82	8.89	8.99
	11	8.78	8.74	8.89	8.91
	12	8.63	8.64	8.74	8.72
	13	9.18	8.97	9.12	9.16
	14	9.06	9.00	8.97	8.94
	15	8.79	8.73	8.71	8.70
Total MIMO Conducted PSD (mW/MHz)		121.92	122.53	123.76	124.29
Total MIMO Conducted PSD (dBm/MHz)		20.86	20.88	20.93	20.94
Ant. Gain (dBi)		14.80	14.80	14.80	14.80
e.i.r.p PSD (dBm/MHz)		35.66	35.68	35.73	35.74
e.i.r.p PSD Limit (dBm/MHz)		37.00	37.00	37.00	37.00
Margin (dB)		-1.34	-1.32	-1.27	-1.26

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Channel	Port	QPSK	16QAM	64QAM	256QAM
High	0	7.96	7.93	7.96	8.03
	1	8.37	8.31	8.34	8.36
	2	8.57	8.51	8.53	8.60
	3	8.39	8.33	8.36	8.41
	4	8.38	8.31	8.37	8.43
	5	8.42	8.40	8.43	8.43
	6	8.86	8.83	8.85	8.94
	7	8.83	8.82	8.84	8.85
	8	8.38	8.34	8.40	8.43
	9	8.27	8.27	8.31	8.36
	10	8.43	8.39	8.45	8.53
	11	8.35	8.33	8.39	8.43
	12	8.01	7.99	8.07	8.12
	13	8.59	8.59	8.64	8.60
	14	8.24	8.24	8.32	8.36
	15	8.17	8.19	8.24	8.22
Total MIMO Conducted PSD (mW/MHz)		110.53	109.85	110.99	111.98
Total MIMO Conducted PSD (dBm/MHz)		20.43	20.41	20.45	20.49
Ant. Gain (dBi)		14.80	14.80	14.80	14.80
e.i.r.p PSD (dBm/MHz)		35.23	35.21	35.25	35.29
e.i.r.p PSD Limit (dBm/MHz)		37.00	37.00	37.00	37.00
Margin (dB)		-1.77	-1.79	-1.75	-1.71

Table 8-12. Power Spectral Density Table (n48_1C_30M)

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Channel	Port	QPSK	16QAM	64QAM	256QAM
Low	0	8.80	8.73	8.94	8.91
	1	9.02	9.01	9.26	9.22
	2	9.28	9.30	9.51	9.46
	3	9.17	9.18	9.37	9.31
	4	9.15	9.16	9.35	9.32
	5	9.19	9.19	9.39	9.34
	6	9.65	9.64	9.82	9.76
	7	9.54	9.55	9.76	9.71
	8	9.25	9.26	9.48	9.40
	9	9.01	9.02	9.24	9.15
	10	9.14	9.18	9.40	9.35
	11	9.19	9.15	9.39	9.28
	12	8.99	9.05	9.21	9.18
	13	9.31	9.29	9.53	9.44
	14	9.18	9.18	9.44	9.35
	15	8.92	8.92	9.17	9.07
Total MIMO Conducted PSD (mW/MHz)		132.46	132.49	139.23	137.17
Total MIMO Conducted PSD (dBm/MHz)		21.22	21.22	21.44	21.37
Ant. Gain (dBi)		14.80	14.80	14.80	14.80
e.i.r.p PSD (dBm/MHz)		36.02	36.02	36.24	36.17
e.i.r.p PSD Limit (dBm/MHz)		37.00	37.00	37.00	37.00
Margin (dB)		-0.98	-0.98	-0.76	-0.83
Channel	Port	QPSK	16QAM	64QAM	256QAM
Mid	0	8.71	8.51	8.62	8.53
	1	8.93	8.75	8.87	8.73
	2	9.19	9.01	9.15	8.97
	3	8.99	8.79	8.93	8.75
	4	9.12	8.91	9.06	8.89
	5	9.13	8.95	9.12	8.95
	6	9.65	9.42	9.66	9.42
	7	9.52	9.33	9.49	9.33
	8	9.18	8.98	9.12	8.95
	9	8.96	8.80	8.97	8.81
	10	9.11	8.88	9.09	8.93
	11	9.07	8.89	9.06	8.89
	12	8.96	8.78	8.93	8.77
	13	9.26	9.09	9.28	9.14
	14	9.12	8.93	9.14	8.97
	15	8.83	8.65	8.79	8.70
Total MIMO Conducted PSD (mW/MHz)		130.42	124.84	129.65	124.95
Total MIMO Conducted PSD (dBm/MHz)		21.15	20.96	21.13	20.97
Ant. Gain (dBi)		14.80	14.80	14.80	14.80
e.i.r.p PSD (dBm/MHz)		35.95	35.76	35.93	35.77
e.i.r.p PSD Limit (dBm/MHz)		37.00	37.00	37.00	37.00
Margin (dB)		-1.05	-1.24	-1.07	-1.23

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Channel	Port	QPSK	16QAM	64QAM	256QAM
High	0	8.10	8.13	8.07	8.07
	1	8.42	8.46	8.44	8.40
	2	8.62	8.65	8.60	8.67
	3	8.44	8.50	8.43	8.49
	4	8.47	8.50	8.48	8.47
	5	8.49	8.52	8.49	8.54
	6	8.93	8.94	8.97	8.94
	7	8.87	8.97	8.91	8.95
	8	8.45	8.51	8.47	8.49
	9	8.39	8.46	8.37	8.43
	10	8.47	8.54	8.49	8.54
	11	8.39	8.47	8.45	8.54
	12	8.11	8.16	8.15	8.21
	13	8.57	8.60	8.65	8.74
	14	8.36	8.39	8.39	8.41
	15	8.20	8.20	8.19	8.31
Total MIMO Conducted PSD (mW/MHz)		112.23	113.42	112.70	113.75
Total MIMO Conducted PSD (dBm/MHz)		20.50	20.55	20.52	20.56
Ant. Gain (dBi)		14.80	14.80	14.80	14.80
e.i.r.p PSD (dBm/MHz)		35.30	35.35	35.32	35.36
e.i.r.p PSD Limit (dBm/MHz)		37.00	37.00	37.00	37.00
Margin (dB)		-1.70	-1.65	-1.68	-1.64

Table 8-13. Power Spectral Density Table (n48_1C_40M)

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Channel	Port	QPSK	16QAM	64QAM	256QAM
Low	0	8.74	8.75	8.60	8.76
	1	9.14	9.16	8.96	9.09
	2	9.30	9.31	9.19	9.36
	3	9.16	9.20	9.04	9.21
	4	9.29	9.28	9.09	9.32
	5	9.05	9.21	9.00	9.25
	6	9.61	9.56	9.49	9.67
	7	9.62	9.62	9.40	9.66
	8	9.36	9.28	9.12	9.35
	9	9.18	9.12	8.95	9.22
	10	9.22	9.19	8.99	9.32
	11	9.28	9.17	9.04	9.34
	12	9.21	9.03	8.85	9.16
	13	9.49	9.46	9.13	9.43
	14	9.30	9.24	9.08	9.34
	15	9.00	8.95	8.81	9.03
Total MIMO Conducted PSD (mW/MHz)		134.62	133.87	128.61	135.75
Total MIMO Conducted PSD (dBm/MHz)		21.29	21.27	21.09	21.33
Ant. Gain (dBi)		14.80	14.80	14.80	14.80
e.i.r.p PSD (dBm/MHz)		36.09	36.07	35.89	36.13
e.i.r.p PSD Limit (dBm/MHz)		37.00	37.00	37.00	37.00
Margin (dB)		-0.91	-0.93	-1.11	-0.87
Channel	Port	QPSK	16QAM	64QAM	256QAM
Mid	0	8.79	8.88	8.80	8.77
	1	8.96	9.07	9.02	8.99
	2	9.28	9.35	9.29	9.28
	3	9.06	9.18	9.09	9.10
	4	9.19	9.29	9.21	9.19
	5	9.21	9.25	9.19	9.22
	6	9.78	9.82	9.72	9.74
	7	9.62	9.67	9.67	9.69
	8	9.21	9.30	9.27	9.25
	9	9.01	9.05	9.09	9.08
	10	9.13	8.89	9.15	9.14
	11	9.16	8.95	9.22	9.22
	12	8.99	8.83	9.01	8.99
	13	9.41	9.16	9.39	9.36
	14	9.24	9.01	9.27	9.20
	15	8.91	8.66	8.96	8.91
Total MIMO Conducted PSD (mW/MHz)		132.83	131.76	133.54	133.15
Total MIMO Conducted PSD (dBm/MHz)		21.23	21.20	21.26	21.24
Ant. Gain (dBi)		14.80	14.80	14.80	14.80
e.i.r.p PSD (dBm/MHz)		36.03	36.00	36.06	36.04
e.i.r.p PSD Limit (dBm/MHz)		37.00	37.00	37.00	37.00
Margin (dB)		-0.97	-1.00	-0.94	-0.96

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Channel	Port	QPSK	16QAM	64QAM	256QAM
High	0	8.41	8.18	8.40	8.40
	1	8.69	8.48	8.71	8.76
	2	8.87	8.70	8.95	8.94
	3	8.70	8.56	8.77	8.78
	4	8.81	8.63	8.84	8.83
	5	8.72	8.60	8.81	8.81
	6	9.27	9.12	9.26	9.33
	7	9.19	9.08	9.23	9.26
	8	8.76	8.63	8.76	8.78
	9	8.68	8.54	8.68	8.75
	10	8.76	8.64	8.78	8.78
	11	8.78	8.63	8.83	8.77
	12	8.45	8.32	8.43	8.42
	13	8.94	8.83	8.93	8.90
	14	8.71	8.56	8.70	8.68
	15	8.49	8.33	8.51	8.49
Total MIMO Conducted PSD (mW/MHz)		120.54	116.47	121.19	121.36
Total MIMO Conducted PSD (dBm/MHz)		20.81	20.66	20.83	20.84
Ant. Gain (dBi)		14.80	14.80	14.80	14.80
e.i.r.p PSD (dBm/MHz)		35.61	35.46	35.63	35.64
e.i.r.p PSD Limit (dBm/MHz)		37.00	37.00	37.00	37.00
Margin (dB)		-1.39	-1.54	-1.37	-1.36

Table 8-14. Power Spectral Density Table (n48_2C_20M+30M)

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Channel	Port	QPSK	16QAM	64QAM	256QAM
Low	0	8.48	8.61	8.82	8.75
	1	9.12	8.85	9.04	9.01
	2	9.32	9.15	9.38	9.27
	3	9.17	8.99	9.21	9.11
	4	9.26	9.07	9.22	9.18
	5	9.23	9.04	9.28	9.13
	6	9.72	9.56	9.75	9.61
	7	9.62	9.45	9.69	9.51
	8	9.30	9.13	9.35	9.19
	9	9.08	8.88	9.10	9.00
	10	9.23	9.05	9.23	9.13
	11	9.22	9.00	9.25	9.11
	12	9.13	8.91	9.08	9.00
	13	9.41	9.20	9.40	9.25
	14	9.27	9.12	9.32	9.19
	15	9.04	8.86	9.06	8.95
Total MIMO Conducted PSD (mW/MHz)		134.08	128.85	135.16	131.65
Total MIMO Conducted PSD (dBm/MHz)		21.27	21.10	21.31	21.19
Ant. Gain (dBi)		14.80	14.80	14.80	14.80
e.i.r.p PSD (dBm/MHz)		36.07	35.90	36.11	35.99
e.i.r.p PSD Limit (dBm/MHz)		37.00	37.00	37.00	37.00
Margin (dB)		-0.93	-1.10	-0.89	-1.01
Channel	Port	QPSK	16QAM	64QAM	256QAM
Mid	0	8.67	8.53	8.46	8.26
	1	8.67	8.71	8.69	8.55
	2	8.93	8.94	8.95	8.74
	3	8.69	8.75	8.78	8.54
	4	8.83	8.90	8.91	8.65
	5	8.83	8.89	8.87	8.68
	6	9.37	9.42	9.42	9.16
	7	9.20	9.31	9.24	9.01
	8	8.89	9.01	8.96	8.68
	9	8.69	8.76	8.75	8.56
	10	8.80	8.86	8.83	8.60
	11	8.79	8.87	8.79	8.60
	12	8.70	8.77	8.71	8.50
	13	9.00	9.02	8.97	8.83
	14	8.93	8.93	8.92	8.71
	15	8.59	8.60	8.58	8.43
Total MIMO Conducted PSD (mW/MHz)		122.88	124.10	123.37	117.51
Total MIMO Conducted PSD (dBm/MHz)		20.89	20.94	20.91	20.70
Ant. Gain (dBi)		14.80	14.80	14.80	14.80
e.i.r.p PSD (dBm/MHz)		35.69	35.74	35.71	35.50
e.i.r.p PSD Limit (dBm/MHz)		37.00	37.00	37.00	37.00
Margin (dB)		-1.31	-1.26	-1.29	-1.50

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Channel	Port	QPSK	16QAM	64QAM	256QAM
High	0	8.02	8.15	8.14	8.33
	1	8.33	8.43	8.46	8.70
	2	8.53	8.66	8.66	8.87
	3	8.31	8.48	8.46	8.69
	4	8.42	8.55	8.54	8.70
	5	8.38	8.44	8.53	8.70
	6	8.86	8.95	9.00	9.14
	7	8.78	8.86	8.92	9.19
	8	8.41	8.47	8.56	8.80
	9	8.28	8.39	8.46	8.75
	10	8.39	8.48	8.55	8.83
	11	8.35	8.43	8.49	8.73
	12	8.16	8.18	8.26	8.46
	13	8.62	8.67	8.71	8.94
	14	8.42	8.47	8.51	8.72
	15	8.17	8.23	8.27	8.52
Total MIMO Conducted PSD (mW/MHz)		110.87	113.16	114.25	120.24
Total MIMO Conducted PSD (dBm/MHz)		20.45	20.54	20.58	20.80
Ant. Gain (dBi)		14.80	14.80	14.80	14.80
e.i.r.p PSD (dBm/MHz)		35.25	35.34	35.38	35.60
e.i.r.p PSD Limit (dBm/MHz)		37.00	37.00	37.00	37.00
Margin (dB)		-1.75	-1.66	-1.62	-1.40

Table 8-15. Power Spectral Density Table (n48_1C_60M)

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Channel	Port	QPSK	16QAM	64QAM	256QAM
Low	0	9.11	9.16	8.85	8.87
	1	9.33	9.36	9.08	9.09
	2	9.64	9.71	9.36	9.47
	3	9.61	9.67	9.37	9.39
	4	9.43	9.48	9.30	9.27
	5	9.45	9.56	9.19	9.31
	6	9.96	10.05	9.74	9.77
	7	9.79	9.96	9.56	9.65
	8	9.50	9.63	9.28	9.38
	9	9.30	9.44	9.09	9.18
	10	9.55	9.66	9.33	9.36
	11	9.37	9.51	9.12	9.21
	12	9.54	9.67	9.31	9.38
	13	9.58	9.71	9.37	9.46
	14	9.47	9.60	9.25	9.34
	15	9.33	9.43	9.09	9.15
Total MIMO Conducted PSD (mW/MHz)		142.66	146.11	135.30	137.28
Total MIMO Conducted PSD (dBm/MHz)		21.54	21.65	21.31	21.38
Ant. Gain (dBi)		14.80	14.80	14.80	14.80
e.i.r.p PSD (dBm/MHz)		36.34	36.45	36.11	36.18
e.i.r.p PSD Limit (dBm/MHz)		37.00	37.00	37.00	37.00
Margin (dB)		-0.66	-0.55	-0.89	-0.82
Channel	Port	QPSK	16QAM	64QAM	256QAM
Mid	0	9.11	9.07	8.91	9.05
	1	9.33	9.32	9.15	9.31
	2	9.63	9.61	9.43	9.60
	3	9.46	9.45	9.22	9.42
	4	9.63	9.64	9.50	9.59
	5	9.55	9.54	9.44	9.50
	6	10.08	10.08	9.94	10.01
	7	10.00	10.02	9.88	9.95
	8	9.64	9.62	9.51	9.58
	9	9.39	9.42	9.43	9.35
	10	9.59	9.60	9.56	9.47
	11	9.55	9.56	9.65	9.44
	12	9.54	9.45	9.60	9.49
	13	9.80	9.79	9.92	9.75
	14	9.63	9.61	9.73	9.59
	15	9.39	9.40	9.24	9.33
Total MIMO Conducted PSD (mW/MHz)		145.50	145.25	143.12	143.65
Total MIMO Conducted PSD (dBm/MHz)		21.63	21.62	21.56	21.57
Ant. Gain (dBi)		14.80	14.80	14.80	14.80
e.i.r.p PSD (dBm/MHz)		36.43	36.42	36.36	36.37
e.i.r.p PSD Limit (dBm/MHz)		37.00	37.00	37.00	37.00
Margin (dB)		-0.57	-0.58	-0.64	-0.63