

TEST REPORT

**CTK Co., Ltd.**

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Report No.:

CTK-2025-03559

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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 : 2025-11-04

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 Original Equipment**4. Test Sample / Model**: RRU (RF4487d) / RF4487D-25A**5. Date of Test** : 2025-11-04 to 2025-12-12**6. Test Standard(method) used** : FCC 47 CFR Part 24E, Part 27, ANSI C63.26-2015**7. Testing Environment**: refer to 9 page**8. Test Results** : Compliance**9. Location of Test** : ☒ Permanent Testing Lab ☐ On Site Testing

(Address : 5, Dongbu-ro 221beon-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. This report cannot be reproduced or copied without the written consent of CTK.

Approval	Tested by	Technical Manager
	Won-Jae Jang: (Signature)	Byung-Kwon In: (Signature)

2025-12-15

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MEASUREMENT REPORT

FCC Rule Part 24E & 27

Mode	Tx Frequency (MHz)	Total Conducted output power		Max Emission Designator	Modulation
		Max. Power (dBm)	Max. Power (W)		
LTE_B25_1C_5M	1 930 MHz to 1 995 MHz	51.86	153.29	4M53G7D	QPSK
		51.89	154.43	4M54W7D	QAM
LTE_B25_1C_10M		53.59	228.42	9M09G7D	QPSK
		53.64	231.32	9M13W7D	QAM
LTE_B25_1C_15M		53.58	227.80	13M7G7D	QPSK
		53.61	229.37	13M7W7D	QAM
LTE_B25_1C_20M		54.93	310.96	18M1G7D	QPSK
		55.06	320.40	18M2W7D	QAM
LTE_B25_2C_5M+5M		53.34	215.54	9M55G7D	QPSK
		53.46	221.88	9M56W7D	QAM
LTE_B25_4C_15M+15M+15M+ 20M		55.26	423.09	63M4G7D	QPSK
		56.17	414.20	63M5W7D	QAM
NR_n25_1C_5M		51.87	153.81	4M53G7D	QPSK
		51.93	155.80	4M54W7D	QAM
NR_n25_1C_10M		53.83	241.80	9M40G7D	QPSK
		53.87	243.77	9M42W7D	QAM
NR_n25_1C_15M		53.74	236.85	14M3G7D	QPSK
		53.89	244.84	14M3W7D	QAM
NR_n25_1C_20M		54.94	312.23	19M1G7D	QPSK
		55.00	316.02	19M2W7D	QAM
NR_n25_1C_25M		55.87	386.59	24M0G7D	QPSK
		55.94	392.30	24M1W7D	QAM
NR_n25_1C_30M		55.82	382.34	28M8G7D	QPSK
		56.03	400.50	28M9W7D	QAM
NR_n25_2C_5M+5M		53.35	216.09	9M55G7D	QPSK
		53.34	215.72	9M58W7D	QAM
NR_n25_4C_15M+15M+15M+ 20M		56.16	412.94	64M3G7D	QPSK
		56.14	410.08	64M3W7D	QAM

EUT Overview

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Mode	Tx Frequency (MHz)	Total Conducted output power		Max Emission Designator	Modulation
		Max. Power (dBm)	Max. Power (W)		
LTE_B66_1C_5M	2 110 MHz to 2 180 MHz	51.74	149.17	4M53G7D	QPSK
		51.67	146.95	4M54W7D	QAM
LTE_B66_1C_10M		53.73	235.90	9M10G7D	QPSK
		53.68	233.26	9M12W7D	QAM
LTE_B66_1C_15M		53.80	239.97	13M7G7D	QPSK
		53.66	232.50	13M7W7D	QAM
LTE_B66_1C_20M		54.78	300.37	18M2G7D	QPSK
		54.68	293.78	18M2W7D	QAM
LTE_B66_2C_5M+5M		53.42	219.72	9M56G7D	QPSK
		53.52	224.98	9M57W7D	QAM
LTE_B66_3C_20M+20M+20M		54.72	296.55	58M3G7D	QPSK
		54.69	294.68	58M4W7D	QAM
NR_n66_1C_5M		51.86	153.60	4M53G7D	QPSK
		51.98	157.71	4M54W7D	QAM
NR_n66_1C_10M		53.61	229.87	9M39G7D	QPSK
		53.57	227.63	9M41W7D	QAM
NR_n66_1C_15M		53.57	227.72	14M3G7D	QPSK
		54.08	255.61	14M3W7D	QAM
NR_n66_1C_20M		54.98	315.09	19M1G7D	QPSK
		54.97	314.23	19M3W7D	QAM
NR_n66_1C_25M		54.88	307.54	24M0G7D	QPSK
		54.99	315.38	24M2W7D	QAM
NR_n66_1C_30M		55.02	317.64	28M9G7D	QPSK
		54.79	301.47	28M9W7D	QAM
NR_n66_2C_5M+5M		53.45	221.28	9M55G7D	QPSK
		53.32	214.61	9M58W7D	QAM
NR_n66_3C_20M+20M+30M		54.90	309.33	69M0G7D	QPSK
		55.06	320.93	68M6W7D	QAM

EUT Overview

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1.0 REVISION RECORD

Issue Number	Issued Date	Revision History
CTK-2025-03559	12/15/2025	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 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 RRU (RF4487d) FCC ID: A3LRF4487D-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 24E and 27.

3.2 Device Capabilities

This device supports the following conditional features and filter information:

FCC ID:	A3LRF4487D-25A		
FCC Classification	PCS Licensed Transmitter		
EUT Type:	RRU (RF4487d)		
Model Name:	RF4487D-25A		
Test Device Serial No:	S61V913273		
Device Capabilities:	LTE, 5G NR		
Operating Band/Frequency Range:	Band	Tx (Downlink)	Rx (Uplink)
	B/n25:	1 930 MHz to 1 995 MHz	1 850 MHz to 1 915 MHz
	B/n66:	2 110 MHz to 2 180 MHz	1 710 MHz to 1 780 MHz
Supported Modulation:	QPSK, 16QAM, 64QAM, 256QAM		
B/n25_Supported Number of Carriers and Channel Bandwidth:	LTE supports 5/10/15/20 MHz bandwidth modes with up to 4CC max aggregated BW of 65 MHz NR supports 5/10/15/20/25/30 MHz bandwidth modes with up to 4CC max aggregated BW of 65 MHz		
B/n66_Supported Number of Carriers and Channel Bandwidth:	LTE supports 5/10/15/20 MHz bandwidth modes with up to 3CC max aggregated BW of 60 MHz NR supports 5/10/15/20/25/30 MHz bandwidth modes with up to 3CC max aggregated BW of 70 MHz		
Multi-Band Supported Number of Carriers and Channel Bandwidth:	Multi-Band with B/n25 and B/n66 supports up to 7CC and a maximum bandwidth of 135 MHz		
Supported Configurations:	Single carrier, Multi carrier, Multi-Band		
Maximum Output Power	B/n25: 400W/Unit B/n66: 320W/Unit Multi-Band: 720W/Unit		
TRX path configuration	4T4R, 2T4R, 2T2R, 1T1R x 2sector, 1T1R No change in radio parameters has occurred for any TRX path configuration.		
Antenna Gain:	Antenna gain is not provided by manufacture.		
Input Voltage:	DC -48V		

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3.3 Test Configuration

The setup is as follows:

- The EUT ("RRU (RF4487d)") 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 measurement.

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

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

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

* Abbreviations:

- 1C: Single carrier
- 2C: Contiguous 2 carriers in multi-carrier operation
- 2NC: Non-Contiguous 2 carriers in multi-carrier operation
- 3C: Contiguous 3 carriers in multi-carrier operation
- 3NC: Non-Contiguous 3 carriers in multi-carrier operation
- 4C: Contiguous 4 carriers in multi-carrier operation
- 4NC: Non-Contiguous 4 carriers in multi-carrier operation

Configuration	No. of Carriers	Total Bandwidth (MHz)	Carrier Frequency Configuration (MHz)			4T4R Rated Power (W/Unit)
			Lowest	Middle	Highest	
LTE_B25_1C_5M	1	5	1 932.5	1 962.5	1 992.5	160
LTE_B25_1C_10M	1	10	1 935.0	1 962.5	1 990.0	240
LTE_B25_1C_15M	1	15	1 937.5	1 962.5	1 987.5	240
LTE_B25_1C_20M	1	20	1 940.0	1 962.5	1 985.0	320
LTE_B25_2C_5M+5M	2	10	1 935.0	1 962.5	1 990.0	240
LTE_B25_2NC_5M+5M			1 932.5 + 1 992.5			
LTE_B25_4C_15M+15M+15M+20M	4	65	1 937.5 + 1 952.5 + 1 967.5 + 1 985.0			400
NR_n25_1C_5M	1	5	1 932.5	1 962.5	1 992.5	160
NR_n25_1C_10M	1	10	1 935.0	1 962.5	1 990.0	240
NR_n25_1C_15M	1	15	1 937.5	1 962.5	1 987.5	240
NR_n25_1C_20M	1	20	1 940.0	1 962.5	1 985.0	320
NR_n25_1C_25M	1	25	1 942.5	1 962.5	1 982.5	400
NR_n25_1C_30M	1	30	1 945.0	1 962.5	1 980.0	400
NR_n25_2C_5M+5M	2	10	1 935.0	1 962.5	1 990.0	240
NR_n25_2NC_5M+5M			1 932.5 + 1 992.5			
NR_n25_4C_15M+15M+15M+20M	4	65	1 937.5 + 1 952.5 + 1 967.5 + 1 985.0			400



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Configuration	No. of Carriers	Total Bandwidth (MHz)	Carrier Frequency Configuration (MHz)			Rated Power (W/Unit)
			Lowest	Middle	Highest	
LTE_B66_1C_5M	1	5	2 112.5	2 145.0	2 177.5	160
LTE_B66_1C_10M	1	10	2 115.0	2 145.0	2 175.0	240
LTE_B66_1C_15M	1	15	2 117.5	2 145.0	2 172.5	240
LTE_B66_1C_20M	1	20	2 120.0	2 145.0	2 170.0	320
LTE_B66_2C_5M+5M	2	20	2 115.0	2 145.0	2 175.0	240
LTE_B66_2NC_5M+5M			2 112.5 + 2 177.5			
LTE_B66_3C_20M+20M+20M	3	60	2 140.0	2 145.0	2150.0	320
LTE_B66_3NC_20M+20M+20M			2 120.0 + 2 145.0 + 2 170.0			
NR_n66_1C_5M	1	5	2 112.5	2 145.0	2 177.5	160
NR_n66_1C_10M	1	10	2 115.0	2 145.0	2 175.0	240
NR_n66_1C_15M	1	15	2 117.5	2 145.0	2 172.5	240
NR_n66_1C_20M	1	20	2 120.0	2 145.0	2 170.0	320
NR_n66_1C_25M	1	25	2 122.5	2 145.0	2 167.5	320
NR_n66_1C_30M	1	30	2 125.0	2 145.0	2 165.0	320
NR_n66_2C_5M+5M	2	10	2 115.0	2 145.0	2 175.0	240
NR_n66_2NC_5M+5M			2 112.5 + 2 177.5			
NR_n66_3C_20M+20M+30M	3	70	2 120.0 + 2 140.0 + 2 165.0			320

Multi Band Configuration	No. of Carriers	Total Bandwidth (MHz)	Carrier Frequency Configuration (MHz)	Rated Power (W/Unit)
			Middle	
Multi Band_ NR_n25_1C_5M+ NR_n66_1C_5M	2	10	1 932.5 + 2 177.5	320
Multi Band_ NR_n25_4C_15M+15M+1 5M+20M+NR_n66_3C_20 M+20M+30M	7	135	1 937.5 + 1 952.5 + 1 967.5 + 1 985.0 + 2 120.0 + 2 140.0 + 2 165.0	720

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)2) In-Band Power Spectral Density (PSD) Measurements
b) Measure and sum spectral maxima across the outputs
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
ii) Measure and sum spectral maxima across the outputs
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
ii) Measure and sum spectral maxima across the outputs
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 Environmental 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	Interval	Cal Due	Serial Number
Rohde&Schwarz	FSV30	Signal Analyzer	2025-11-25	Annual	2026-11-25	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	2025-08-21	Biennial	2027-08-21	60654
PASTERNAK	PE7AP006-06	Attenuator	2025-07-28	Annual	2026-07-28	L20210504000023
SONOMA	310N	AMPLIFIER	2025-07-28	Annual	2026-07-28	411011
Agilent	8449B	Preamplifier	2025-03-11	Annual	2026-03-11	3008A00620
ETS-Lindgren	3115	Ridged Guide Antenna	2025-03-13	Annual	2026-03-13	00078895
TESTEK	TK-PA1840H	AMPLIFIER	2025-09-30	Annual	2026-09-30	210124-L
SCHWARZBECK	BBHA9170	HORN ANTENNA	2025-09-30	Annual	2026-09-30	01153
Keysight	N9020B	Signal Analyzer	2025-01-10	Annual	2026-01-10	MY58100015
Keysight	N9020B	Signal Analyzer	2025-11-19	Annual	2026-11-19	MY55470135
Rohde&Schwarz	FSW	Signal Analyzer	2025-03-28	Annual	2026-03-28	101250
REACHLINE	250W18NN-40	Attenuator	2025-10-02	Annual	2026-10-02	ey40db014
REACHLINE	250W18NN-40	Attenuator	2025-10-02	Annual	2026-10-02	ey40db015
REACHLINE	250W18NN-40	Attenuator	2025-10-02	Annual	2026-10-02	ey40db016
REACHLINE	250W18NN-40	Attenuator	2025-10-02	Annual	2026-10-02	ey40db017
emtest	RLAN50040-18-F	Attenuator	2025-08-08	Annual	2026-08-08	RLAN50040-18-F-0001
emtest	RLAN50040-18-F	Attenuator	2025-08-08	Annual	2026-08-08	RLAN50040-18-F-0002
emtest	RLAN50040-18-F	Attenuator	2025-08-08	Annual	2026-08-08	RLAN50040-18-F-0003
emtest	RLAN50040-18-F	Attenuator	2025-08-08	Annual	2026-08-08	RLAN50040-18-F-0004
Qualwave	QFA1820-18-10-S	Attenuator	2025-08-08	Annual	2026-08-08	22265090
Qualwave	QFA1820-18-10-S	Attenuator	2025-08-08	Annual	2026-08-08	22265091
Qualwave	QFA1820-18-10-S	Attenuator	2025-08-08	Annual	2026-08-08	22265092
Qualwave	QFA1820-18-10-S	Attenuator	2025-08-08	Annual	2026-08-08	22265093
Qualwave	QFA1820-18-10-S	Attenuator	2025-08-08	Annual	2026-08-08	22265094
Qualwave	QFA1820-18-10-S	Attenuator	2025-08-08	Annual	2026-08-08	22265095
Qualwave	QFA1820-18-10-S	Attenuator	2025-08-08	Annual	2026-08-08	22265096
Qualwave	QFA1820-18-10-S	Attenuator	2025-08-08	Annual	2026-08-08	22265097
WAINWRIGHT	WHKX3.0/18G-10SS	High Pass Filter	2025-11-10	Annual	2026-11-10	78
WAINWRIGHT	WHW-13000-18000-40000-40CC	High Pass Filter	2025-03-14	Annual	2026-03-14	0002
ESPEC	EBE2E20W6P3T-38	Temperature Chamber	2025-04-28	Annual	2026-04-28	3015007507
Agilent	6674A	DC Power Supply	2025-03-13	Annual	2026-03-13	US36372372
AC POWER KOREA	ACPD-60150	DC Power Supply	2025-11-07	Annual	2026-11-07	DC-2

Table 6-1. Summary of Test Results**Notes:**

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

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7.0 SAMPLE CALCULATIONS

Emission Designator

QPSK Modulation

Emission Designator = 4M53G7D

Occupied Bandwidth = 4.53 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

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8.0 TEST RESULTS

8.1 Summary

Company Name: SAMSUNG Electronics Co., Ltd.
FCC ID: A3LRF4487D-25A
FCC Classification: PCS Licensed Transmitter
Mode(s): LTE, NR

FCC Part Section(s)	Test Description	Limit	Test Condition	Test Result	Reference
§ 2.1046	Conducted Average Output Power	N/A	CONDUCTED	PASS	Annex A
§ 2.1049	Occupied Bandwidth	N/A		PASS	Section 8.2
§ 2.1046, § 24.232, § 27.50(d)	Equivalent Isotropic Radiated Power	< 1640 W/MHz		PASS	Section 8.3 (Note 4)
§ 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		PASS	Section 8.7
§ 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 8.8

Table 8-1. Summary of Test Results

Notes:

- 1) All modes of operation and data rates were investigated. The test results shown in the following sections represent the worst case emissions.
- 2) The analyzer plots were all taken with a correction table loaded into the analyzer.
- 3) All antenna port conducted emissions testing was performed on a test bench with the antenna port of the EUT connected to the spectrum analyzer through calibrated cables and attenuators.
- 4) The maximum antenna gain and Limit are determined at the time of licensing depending on the Geographical Location of the base station

8.2 Occupied Bandwidth

Test Overview

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

Test Procedures Used

KDB 971168 D01 v03r01 – Section 4.3

ANSI C63.26-2015 – Section 5.4.4

Test Setting

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

1. The signal analyzer's automatic bandwidth measurement capability was used to perform the 99% occupied bandwidth and the 26dB bandwidth. The bandwidth measurement was not influenced by any intermediate power nulls in the fundamental emission.
2. RBW = 1 – 5% of the expected OBW
3. VBW $\geq 3 \times$ 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.

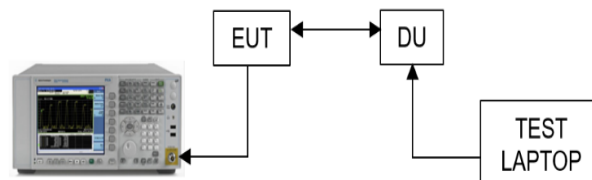


Figure 8-1. Test Instrument & Measurement Setup

Test Notes

None

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Channel	Port	OBW (MHz)			
		QPSK	16QAM	64QAM	256QAM
Low	0	4.52	4.51	4.53	4.51
	1	4.52	4.52	4.53	4.53
	2	4.52	4.53	4.53	4.53
	3	4.52	4.52	4.51	4.54
Middle	0	4.52	4.51	4.52	4.53
	1	4.51	4.51	4.52	4.53
	2	4.53	4.53	4.52	4.54
	3	4.52	4.51	4.52	4.53
High	0	4.53	4.51	4.54	4.53
	1	4.52	4.53	4.53	4.54
	2	4.52	4.51	4.53	4.52
	3	4.52	4.50	4.54	4.52

Table 8-2. Occupied Bandwidth Summary Data (LTE_B25_1C_5M)

Channel	Port	OBW (MHz)			
		QPSK	16QAM	64QAM	256QAM
Low	0	9.05	9.07	9.05	9.08
	1	9.03	9.10	9.09	9.07
	2	9.03	9.08	9.07	9.08
	3	9.08	9.11	9.07	9.06
Middle	0	9.08	9.06	9.08	9.07
	1	9.09	9.08	9.08	9.06
	2	9.06	9.09	9.08	9.06
	3	9.06	9.06	9.10	9.08
High	0	9.06	9.10	9.05	9.08
	1	9.07	9.13	9.07	9.07
	2	9.07	9.12	9.05	9.08
	3	9.08	9.08	9.06	9.08

Table 8-3. Occupied Bandwidth Summary Data (LTE_B25_1C_10M)

Channel	Port	OBW (MHz)			
		QPSK	16QAM	64QAM	256QAM
Low	0	13.62	13.64	13.61	13.65
	1	13.62	13.61	13.60	13.61
	2	13.59	13.64	13.66	13.62
	3	13.61	13.67	13.63	13.60
Middle	0	13.65	13.65	13.57	13.57
	1	13.62	13.67	13.60	13.64
	2	13.61	13.62	13.55	13.61
	3	13.59	13.67	13.62	13.61
High	0	13.63	13.63	13.60	13.62
	1	13.60	13.63	13.64	13.60
	2	13.62	13.65	13.62	13.60
	3	13.57	13.61	13.59	13.60

Table 8-4. Occupied Bandwidth Summary Data (LTE_B25_1C_15M)

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Channel	Port	OBW (MHz)			
		QPSK	16QAM	64QAM	256QAM
Low	0	18.04	18.22	18.08	18.18
	1	18.11	18.17	18.10	18.10
	2	18.12	18.15	18.11	18.08
	3	18.09	18.15	18.10	18.11
Middle	0	18.08	18.20	18.16	18.14
	1	18.09	18.13	18.16	18.16
	2	18.09	18.19	18.10	18.15
	3	18.12	18.23	18.11	18.13
High	0	18.08	18.21	18.12	18.14
	1	18.12	18.16	18.13	18.10
	2	18.11	18.13	18.08	18.10
	3	18.08	18.11	18.11	18.09

Table 8-5. Occupied Bandwidth Summary Data (LTE_B25_1C_20M)

Channel	Port	OBW (MHz)			
		LTE_B25_2C_5M+5M		LTE_B25_4C_15M+15M+15M+20M	
		QPSK	16QAM	QPSK	16QAM
Low	0	9.54	9.52		
	1	9.54	9.50		
	2	9.53	9.53		
	3	9.54	9.56		
Middle	0	9.55	9.50	63.34	63.35
	1	9.55	9.56	63.39	63.44
	2	9.52	9.51	63.37	63.51
	3	9.54	9.54	63.34	63.50
High	0	9.55	9.56		
	1	9.52	9.52		
	2	9.54	9.53		
	3	9.54	9.54		

Table 8-6. Occupied Bandwidth Summary Data (LTE_B25_ Multi carrier)

Channel	Port	OBW (MHz)			
		QPSK	16QAM	64QAM	256QAM
Low	0	4.53	4.53	4.53	4.51
	1	4.52	4.53	4.50	4.52
	2	4.50	4.53	4.53	4.50
	3	4.51	4.54	4.52	4.50
Middle	0	4.51	4.50	4.51	4.51
	1	4.52	4.50	4.51	4.52
	2	4.51	4.48	4.51	4.52
	3	4.53	4.51	4.54	4.53
High	0	4.52	4.54	4.54	4.51
	1	4.52	4.53	4.53	4.51
	2	4.51	4.52	4.53	4.52
	3	4.52	4.53	4.51	4.51

Table 8-7. Occupied Bandwidth Summary Data (NR_n25_1C_5M)



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Channel	Port	OBW (MHz)			
		QPSK	16QAM	64QAM	256QAM
Low	0	9.36	9.29	9.34	9.38
	1	9.37	9.31	9.38	9.38
	2	9.39	9.30	9.38	9.39
	3	9.35	9.33	9.36	9.38
Middle	0	9.39	9.30	9.35	9.38
	1	9.37	9.31	9.38	9.38
	2	9.36	9.30	9.37	9.42
	3	9.37	9.29	9.37	9.39
High	0	9.40	9.30	9.37	9.37
	1	9.37	9.30	9.40	9.40
	2	9.40	9.30	9.39	9.38
	3	9.35	9.32	9.39	9.39

Table 8-8. Occupied Bandwidth Summary Data (NR_n25_1C_10M)

Channel	Port	OBW (MHz)			
		QPSK	16QAM	64QAM	256QAM
Low	0	14.20	14.31	14.24	14.27
	1	14.22	14.30	14.22	14.22
	2	14.23	14.27	14.27	14.29
	3	14.24	14.29	14.23	14.24
Middle	0	14.24	14.31	14.26	14.27
	1	14.25	14.31	14.24	14.24
	2	14.25	14.30	14.27	14.24
	3	14.21	14.33	14.22	14.23
High	0	14.23	14.31	14.26	14.23
	1	14.24	14.29	14.23	14.25
	2	14.28	14.29	14.26	14.28
	3	14.24	14.31	14.24	14.26

Table 8-9. Occupied Bandwidth Summary Data (NR_n25_1C_15M)

Channel	Port	OBW (MHz)			
		QPSK	16QAM	64QAM	256QAM
Low	0	19.09	19.16	19.10	19.13
	1	19.06	19.15	19.09	19.09
	2	19.06	19.16	19.06	19.13
	3	19.08	19.21	19.12	19.06
Middle	0	19.09	19.16	19.08	19.10
	1	19.10	19.20	19.12	19.14
	2	19.09	19.19	19.14	19.05
	3	19.07	19.18	19.11	19.12
High	0	19.09	19.21	19.09	19.13
	1	19.08	19.17	19.09	19.10
	2	19.10	19.20	19.13	19.11
	3	19.09	19.16	19.11	19.12

Table 8-10. Occupied Bandwidth Summary Data (NR_n25_1C_20M)

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Channel	Port	OBW (MHz)			
		QPSK	16QAM	64QAM	256QAM
Low	0	23.88	24.02	23.95	23.89
	1	23.98	23.99	23.94	23.91
	2	23.93	23.99	23.92	23.91
	3	23.94	23.99	23.94	23.89
Middle	0	23.94	24.00	23.93	24.00
	1	23.95	24.01	23.93	23.96
	2	23.95	24.03	23.92	23.93
	3	23.98	24.07	23.94	23.92
High	0	23.91	24.07	23.93	23.94
	1	23.96	24.07	24.00	23.97
	2	23.94	24.06	23.94	23.90
	3	23.96	24.11	23.98	23.95

Table 8-11. Occupied Bandwidth Summary Data (NR_n25_1C_25M)

Channel	Port	OBW (MHz)			
		QPSK	16QAM	64QAM	256QAM
Low	0	28.78	28.56	28.77	28.79
	1	28.76	28.48	28.82	28.71
	2	28.75	28.60	28.80	28.76
	3	28.75	28.55	28.74	28.72
Middle	0	28.77	28.58	28.86	28.79
	1	28.80	28.53	28.83	28.81
	2	28.77	28.64	28.81	28.81
	3	28.79	28.54	28.81	28.85
High	0	28.83	28.51	28.86	28.80
	1	28.76	28.59	28.85	28.88
	2	28.82	28.57	28.83	28.80
	3	28.80	28.59	28.81	28.82

Table 8-12. Occupied Bandwidth Summary Data (NR_n25_1C_30M)

Channel	Port	OBW (MHz)			
		NR_n25_2C_5M+5M		NR_n25_4C_15M+15M+15M+20M	
		QPSK	16QAM	QPSK	16QAM
Low	0	9.53	9.56		
	1	9.53	9.55		
	2	9.53	9.57		
	3	9.53	9.58		
Middle	0	9.52	9.56	64.22	64.26
	1	9.52	9.54	64.23	64.23
	2	9.53	9.56	64.09	64.30
	3	9.55	9.54	64.28	64.24
High	0	9.54	9.58		
	1	9.53	9.56		
	2	9.54	9.56		
	3	9.56	9.57		

Table 8-13. Occupied Bandwidth Summary Data NR_n25_ Multi carrier)

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Channel	Port	OBW (MHz)			
		QPSK	16QAM	64QAM	256QAM
Low	0	4.51	4.53	4.51	4.54
	1	4.53	4.53	4.53	4.54
	2	4.52	4.52	4.52	4.54
	3	4.52	4.50	4.53	4.53
Middle	0	4.52	4.51	4.53	4.53
	1	4.52	4.52	4.52	4.54
	2	4.52	4.53	4.53	4.53
	3	4.52	4.51	4.52	4.52
High	0	4.52	4.52	4.52	4.52
	1	4.52	4.52	4.54	4.53
	2	4.52	4.52	4.53	4.51
	3	4.52	4.52	4.54	4.52

Table 8-14. Occupied Bandwidth Summary Data (LTE_B66_1C_5M)

Channel	Port	OBW (MHz)			
		QPSK	16QAM	64QAM	256QAM
Low	0	9.08	9.04	9.05	9.06
	1	9.10	9.09	9.06	9.07
	2	9.07	9.04	9.07	9.08
	3	9.09	9.06	9.07	9.10
Middle	0	9.08	9.07	9.06	9.05
	1	9.09	9.09	9.04	9.08
	2	9.06	9.12	9.06	9.08
	3	9.09	9.11	9.04	9.08
High	0	9.09	9.07	9.05	9.08
	1	9.05	9.07	9.08	9.06
	2	9.09	9.10	9.09	9.08
	3	9.08	9.08	9.09	9.09

Table 8-15. Occupied Bandwidth Summary Data (LTE_B66_1C_10M)

Channel	Port	OBW (MHz)			
		QPSK	16QAM	64QAM	256QAM
Low	0	13.58	13.66	13.62	13.66
	1	13.64	13.63	13.60	13.60
	2	13.59	13.66	13.59	13.61
	3	13.64	13.65	13.61	13.62
Middle	0	13.61	13.62	13.64	13.63
	1	13.67	13.67	13.59	13.60
	2	13.61	13.68	13.64	13.63
	3	13.58	13.65	13.57	13.62
High	0	13.65	13.66	13.66	13.57
	1	13.59	13.64	13.62	13.63
	2	13.61	13.63	13.61	13.64
	3	13.60	13.65	13.62	13.57

Table 8-16. Occupied Bandwidth Summary Data (LTE_B66_1C_15M)

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Channel	Port	OBW (MHz)			
		QPSK	16QAM	64QAM	256QAM
Low	0	18.09	18.12	18.10	18.10
	1	18.05	18.18	18.12	18.15
	2	18.08	18.14	18.13	18.10
	3	18.08	18.21	18.10	18.15
Middle	0	18.04	18.11	18.11	18.16
	1	18.15	18.15	18.08	18.09
	2	18.08	18.19	18.10	18.13
	3	18.10	18.15	18.13	18.15
High	0	18.18	18.17	18.09	18.12
	1	18.15	18.13	18.13	18.18
	2	18.14	18.15	18.13	18.14
	3	18.12	18.23	18.09	18.12

Table 8-17. Occupied Bandwidth Summary Data (LTE_B66_1C_20M)

Channel	Port	OBW (MHz)			
		LTE_B66_2C_5M+5M		LTE_B66_3C_20M+20M+20M	
		QPSK	16QAM	QPSK	16QAM
Low	0	9.53	9.55	58.17	58.21
	1	9.52	9.53	58.19	58.26
	2	9.56	9.54	58.15	58.18
	3	9.51	9.53	58.19	58.23
Middle	0	9.52	9.56	58.21	58.43
	1	9.54	9.50	58.19	58.43
	2	9.52	9.54	58.15	58.43
	3	9.54	9.54	58.16	58.44
High	0	9.54	9.57	58.13	58.38
	1	9.52	9.52	58.17	58.43
	2	9.52	9.55	58.27	58.39
	3	9.53	9.50	58.10	58.39

Table 8-18. Occupied Bandwidth Summary Data (LTE_B66_Multi carrier)

Channel	Port	OBW (MHz)			
		QPSK	16QAM	64QAM	256QAM
Low	0	4.53	4.54	4.52	4.52
	1	4.51	4.52	4.52	4.52
	2	4.52	4.53	4.52	4.52
	3	4.53	4.54	4.52	4.51
Middle	0	4.51	4.53	4.52	4.51
	1	4.52	4.52	4.54	4.52
	2	4.52	4.53	4.53	4.51
	3	4.52	4.52	4.54	4.51
High	0	4.51	4.52	4.53	4.51
	1	4.52	4.52	4.52	4.51
	2	4.53	4.53	4.53	4.50
	3	4.52	4.52	4.52	4.51

Table 8-19. Occupied Bandwidth Summary Data (NR_n66_1C_5M)

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Channel	Port	OBW (MHz)			
		QPSK	16QAM	64QAM	256QAM
Low	0	9.35	9.30	9.37	9.39
	1	9.39	9.29	9.39	9.36
	2	9.36	9.30	9.38	9.39
	3	9.37	9.29	9.39	9.41
Middle	0	9.38	9.29	9.38	9.37
	1	9.38	9.31	9.38	9.37
	2	9.38	9.31	9.37	9.39
	3	9.35	9.31	9.39	9.37
High	0	9.37	9.32	9.38	9.38
	1	9.39	9.30	9.37	9.40
	2	9.38	9.28	9.37	9.39
	3	9.36	9.30	9.36	9.38

Table 8-20. Occupied Bandwidth Summary Data (NR_n66_1C_10M)

Channel	Port	OBW (MHz)			
		QPSK	16QAM	64QAM	256QAM
Low	0	14.24	14.30	14.22	14.26
	1	14.23	14.29	14.26	14.24
	2	14.23	14.29	14.26	14.26
	3	14.23	14.30	14.26	14.26
Middle	0	14.22	14.29	14.25	14.27
	1	14.23	14.33	14.28	14.26
	2	14.24	14.33	14.23	14.27
	3	14.25	14.33	14.25	14.22
High	0	14.25	14.32	14.27	14.23
	1	14.25	14.29	14.22	14.29
	2	14.24	14.29	14.24	14.27
	3	14.24	14.27	14.26	14.26

Table 8-21. Occupied Bandwidth Summary Data (NR_n66_1C_15M)

Channel	Port	OBW (MHz)			
		QPSK	16QAM	64QAM	256QAM
Low	0	19.10	19.17	19.13	19.12
	1	19.07	19.15	19.10	19.11
	2	19.07	19.19	19.10	19.07
	3	19.06	19.15	19.11	19.09
Middle	0	19.09	19.21	19.12	19.11
	1	19.10	19.22	19.15	19.09
	2	19.11	19.21	19.13	19.09
	3	19.10	19.26	19.12	19.14
High	0	19.11	19.16	19.14	19.07
	1	19.11	19.22	19.14	19.09
	2	19.12	19.23	19.15	19.12
	3	19.04	19.24	19.09	19.13

Table 8-22. Occupied Bandwidth Summary Data (NR_n66_1C_20M)

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Channel	Port	OBW (MHz)			
		QPSK	16QAM	64QAM	256QAM
Low	0	23.94	24.04	23.98	23.97
	1	23.99	24.02	23.97	23.94
	2	24.00	24.05	23.93	23.96
	3	23.91	24.06	23.94	23.95
Middle	0	23.92	24.09	23.92	23.92
	1	23.99	24.16	23.99	23.95
	2	23.95	24.01	23.94	23.98
	3	23.94	24.03	23.92	23.93
High	0	23.93	24.01	23.98	23.92
	1	23.94	24.05	23.94	23.97
	2	23.96	24.11	23.98	23.94
	3	23.92	24.02	23.98	23.97

Table 8-23. Occupied Bandwidth Summary Data (NR_n66_1C_25M)

Channel	Port	OBW (MHz)			
		QPSK	16QAM	64QAM	256QAM
Low	0	28.79	28.62	28.80	28.81
	1	28.85	28.55	28.83	28.81
	2	28.81	28.60	28.89	28.81
	3	28.75	28.51	28.79	28.77
Middle	0	28.77	28.56	28.80	28.80
	1	28.75	28.62	28.78	28.80
	2	28.76	28.57	28.78	28.82
	3	28.84	28.62	28.80	28.82
High	0	28.79	28.52	28.77	28.79
	1	28.79	28.59	28.81	28.81
	2	28.84	28.58	28.83	28.80
	3	28.78	28.54	28.79	28.82

Table 8-24. Occupied Bandwidth Summary Data (NR_n66_1C_30M)

Channel	Port	OBW (MHz)			
		NR_n66_2C_5M+5M		NR_n66_3C_20M+20M+30M	
		QPSK	16QAM	QPSK	16QAM
Low	0	9.52	9.55		
	1	9.51	9.57		
	2	9.53	9.55		
	3	9.52	9.58		
Middle	0	9.52	9.56	68.87	68.57
	1	9.55	9.55	68.95	68.63
	2	9.54	9.56	69.00	68.55
	3	9.52	9.55	68.82	68.48
High	0	9.51	9.56		
	1	9.54	9.57		
	2	9.54	9.56		
	3	9.51	9.56		

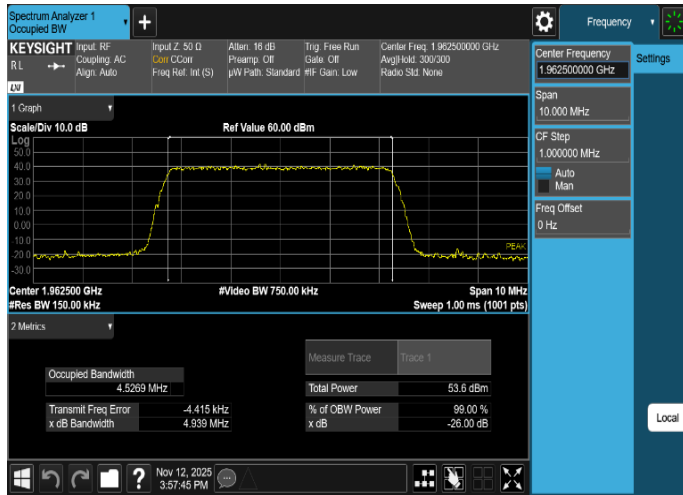
Table 8-25. Occupied Bandwidth Summary Data (NR_n66_Multi carrier)



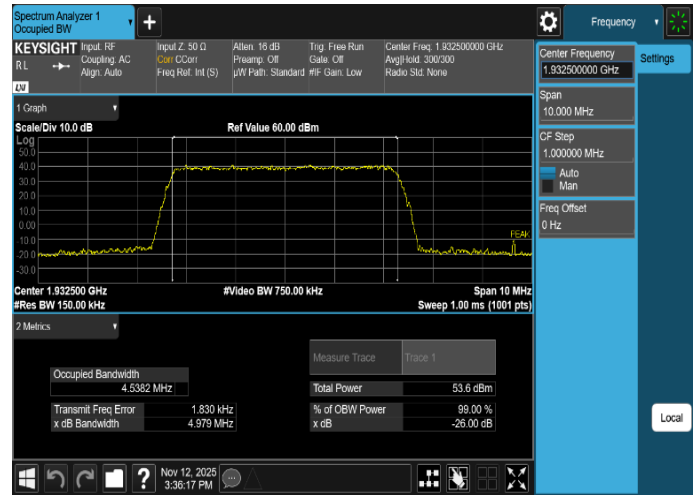
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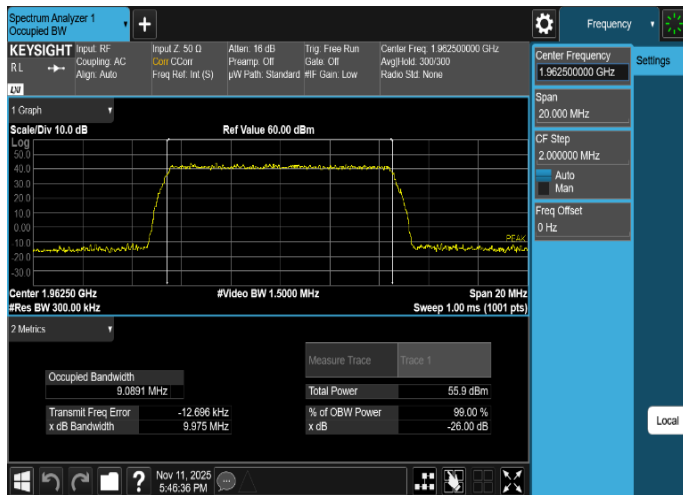
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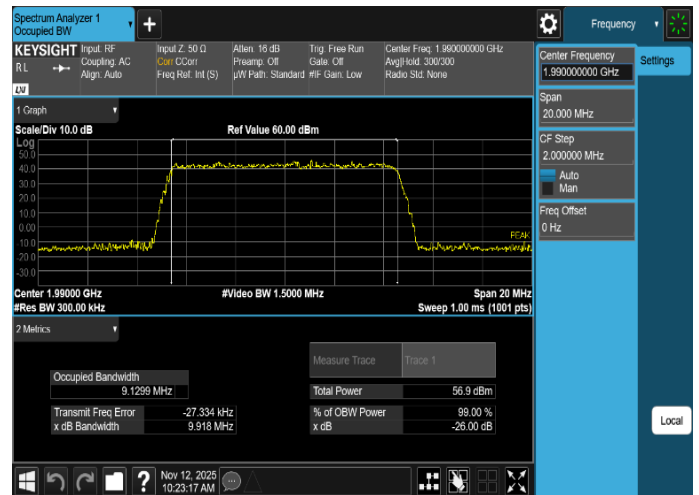
Plot 8-1. Occupied Bandwidth Plot
(LTE_B25_1C_5M_QPSK - Mid Channel, Port 2)



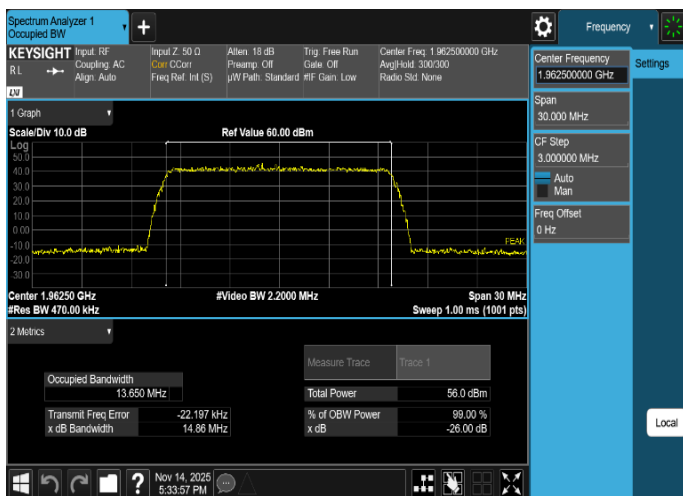
Plot 8-2. Occupied Bandwidth Plot
(LTE_B25_1C_5M_256QAM - Low Channel, Port 3)



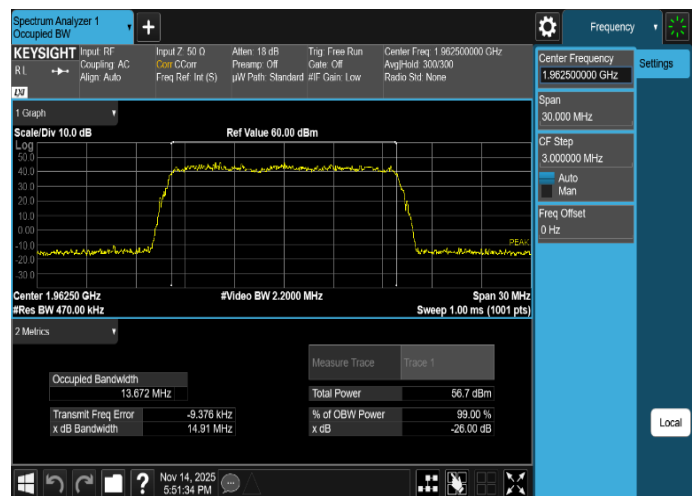
Plot 8-3. Occupied Bandwidth Plot
(LTE_B25_1C_10M_QPSK - Mid Channel, Port 1)



Plot 8-4. Occupied Bandwidth Plot
(LTE_B25_1C_10M_16QAM - High Channel, Port 1)



Plot 8-5. Occupied Bandwidth Plot
(LTE_B25_1C_15M_QPSK - Mid Channel, Port 0)



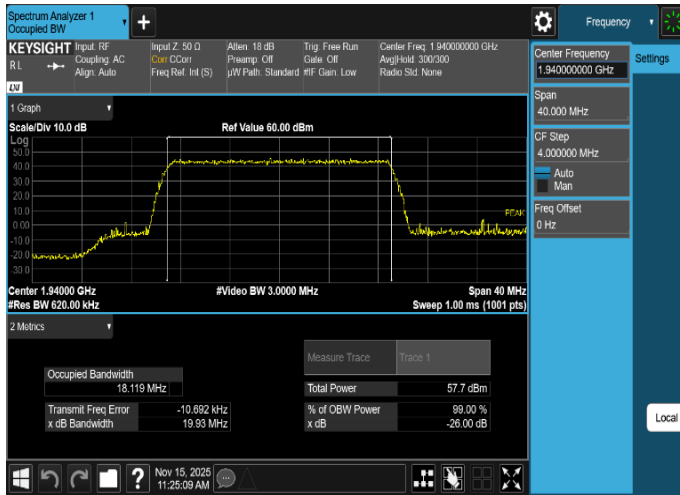
Plot 8-6. Occupied Bandwidth Plot
(LTE_B25_1C_15M_16QAM - Mid Channel, Port 3)



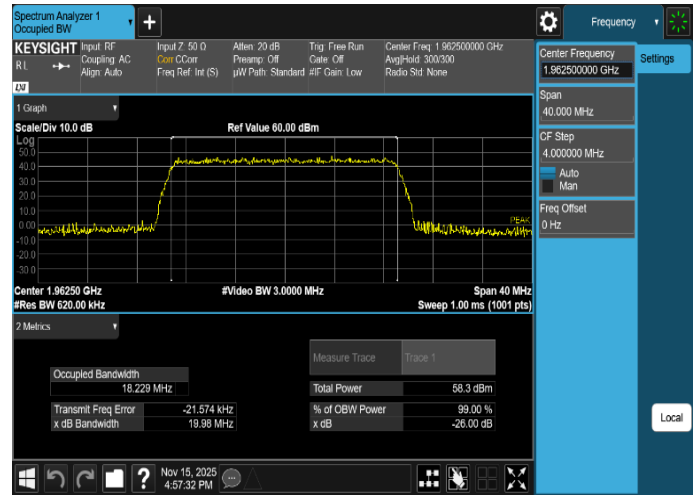
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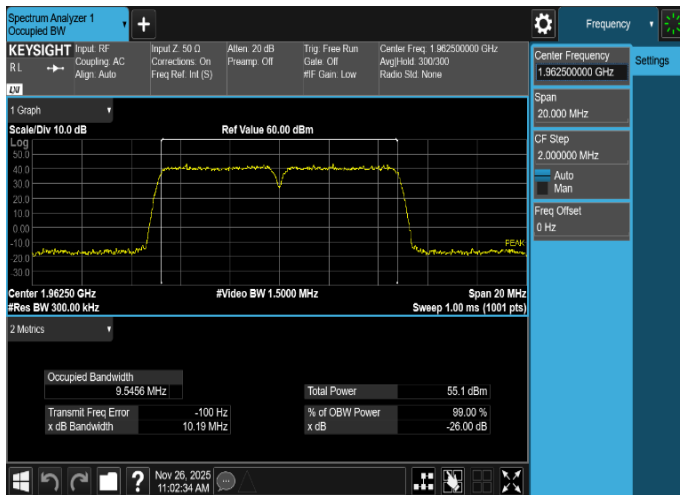
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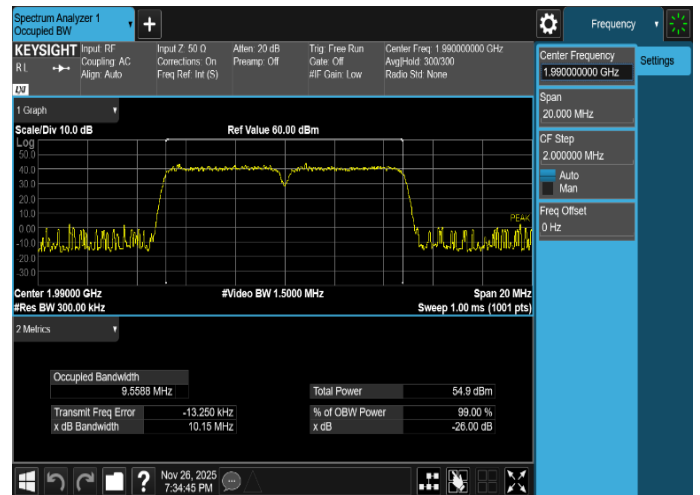
Plot 8-7. Occupied Bandwidth Plot
(LTE_B25_1C_20M_QPSK - Low Channel, Port 2)



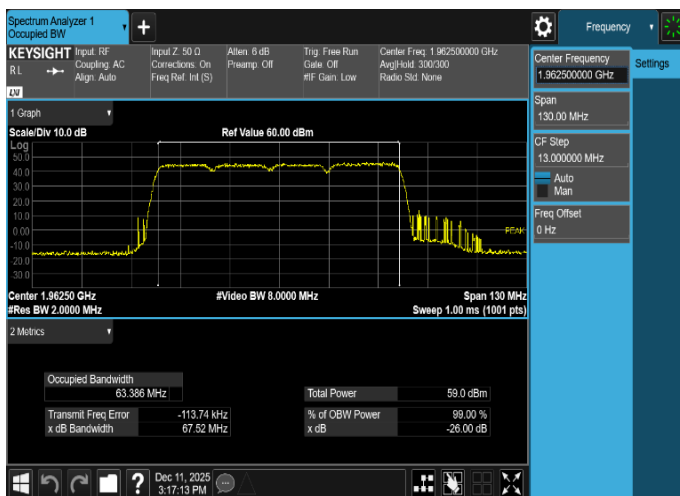
Plot 8-8. Occupied Bandwidth Plot
(LTE_B25_1C_20M_16QAM - Mid Channel, Port 3)



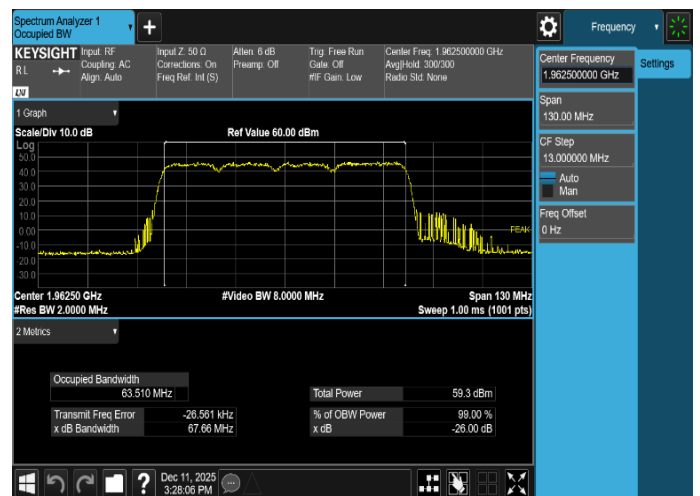
Plot 8-9. Occupied Bandwidth Plot
(LTE_B25_2C_5M+5M_QPSK - Mid Channel, Port 0)



Plot 8-10. Occupied Bandwidth Plot
(LTE_B25_2C_5M+5M_16QAM - High Channel, Port 0)



Plot 8-11. Occupied Bandwidth Plot
(LTE_B25_4C_15M+15M+15M+20M_QPSK - Mid Channel, Port 1)



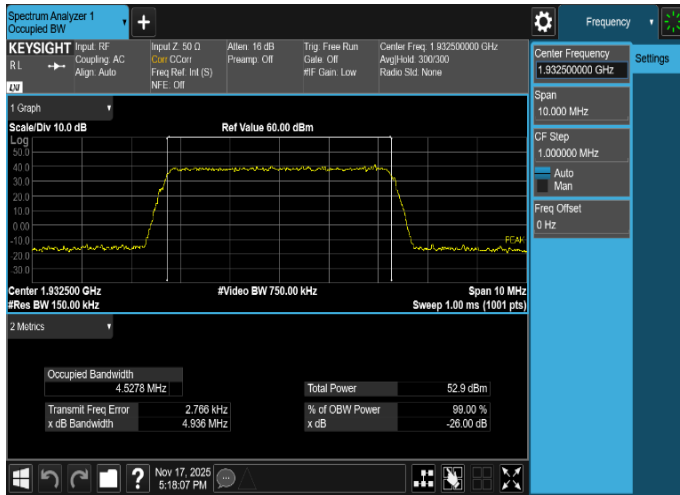
Plot 8-12. Occupied Bandwidth Plot
(LTE_B25_4C_15M+15M+15M+20M_16QAM - Mid Channel, Port 2)



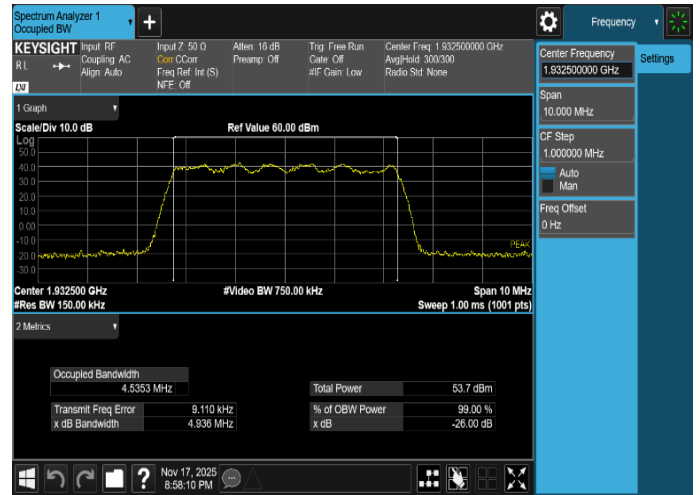
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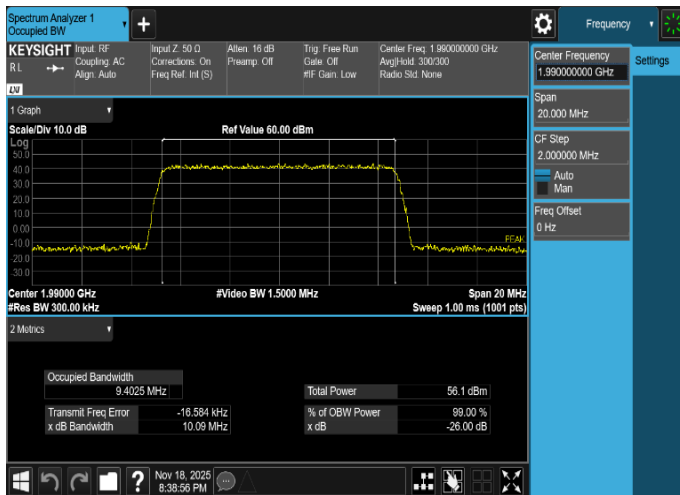
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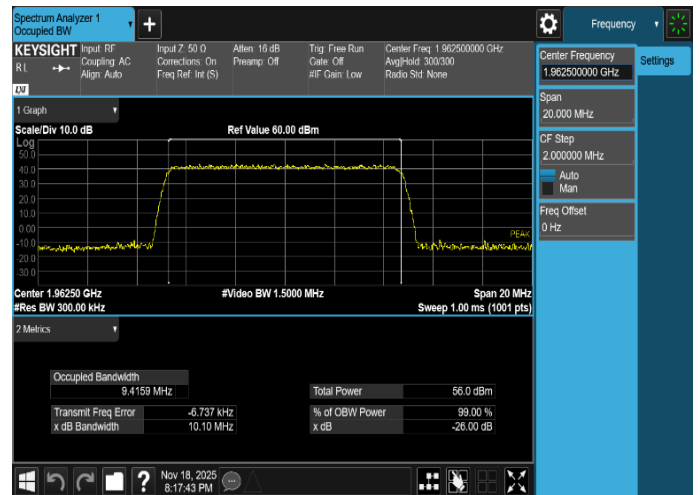
Plot 8-13. Occupied Bandwidth Plot
(NR_n25_1C_5M_QPSK - Low Channel, Port 0)



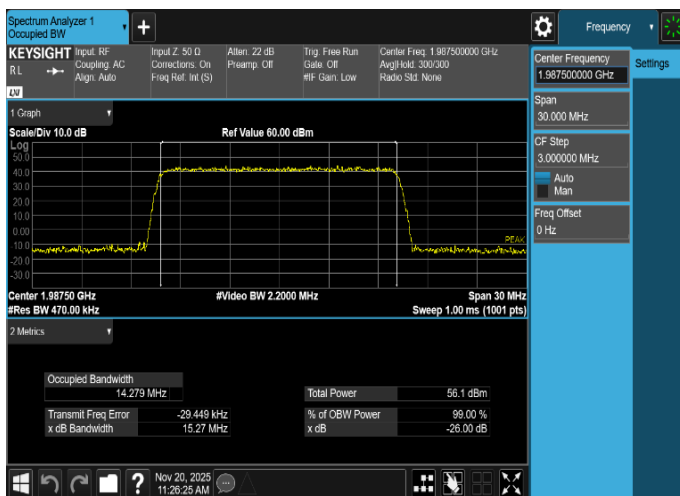
Plot 8-14. Occupied Bandwidth Plot
(NR_n25_1C_5M_16QAM - Low Channel, Port 3)



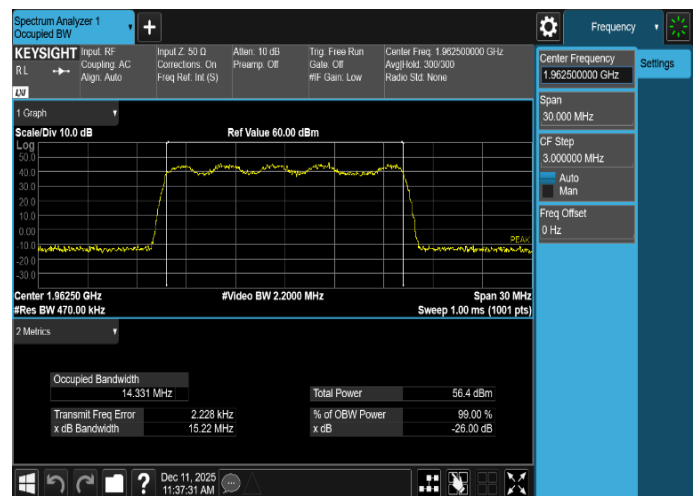
Plot 8-15. Occupied Bandwidth Plot
(NR_n25_1C_10M_QPSK - High Channel, Port 2)



Plot 8-16. Occupied Bandwidth Plot
(NR_n25_1C_10M_256QAM - Mid Channel, Port 2)



Plot 8-17. Occupied Bandwidth Plot
(NR_n25_1C_15M_QPSK - High Channel, Port 2)



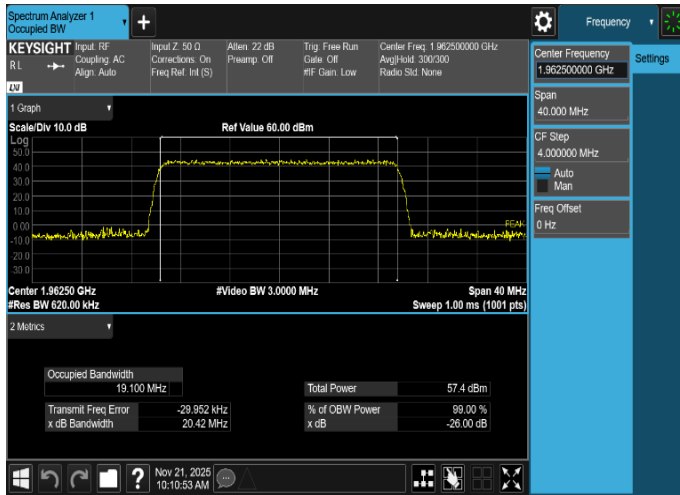
Plot 8-18. Occupied Bandwidth Plot
(NR_n25_1C_15M_16QAM - Mid Channel, Port 3)



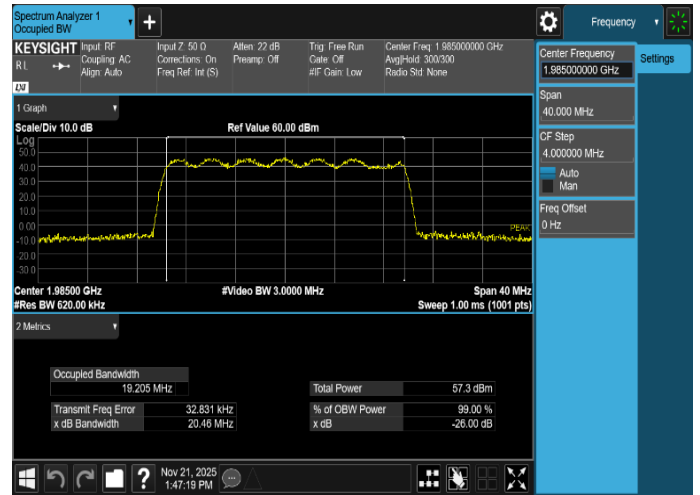
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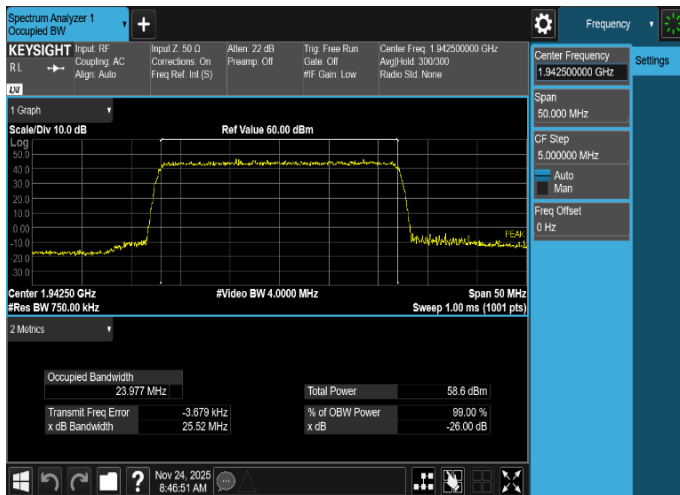
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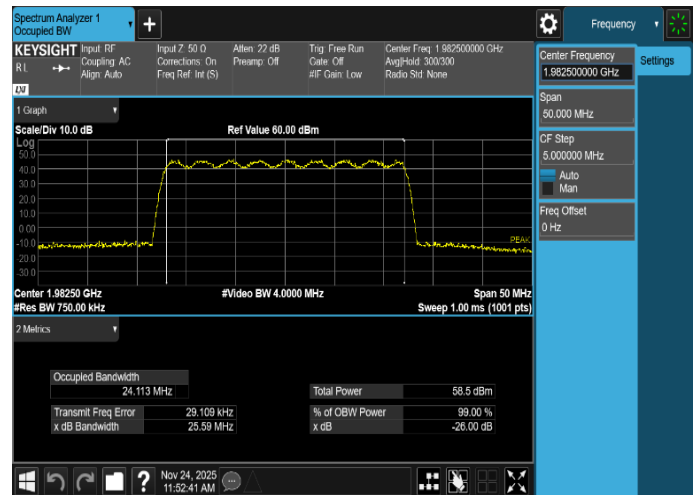
Plot 8-19. Occupied Bandwidth Plot
(NR_n25_1C_20M_QPSK - Mid Channel, Port 1)



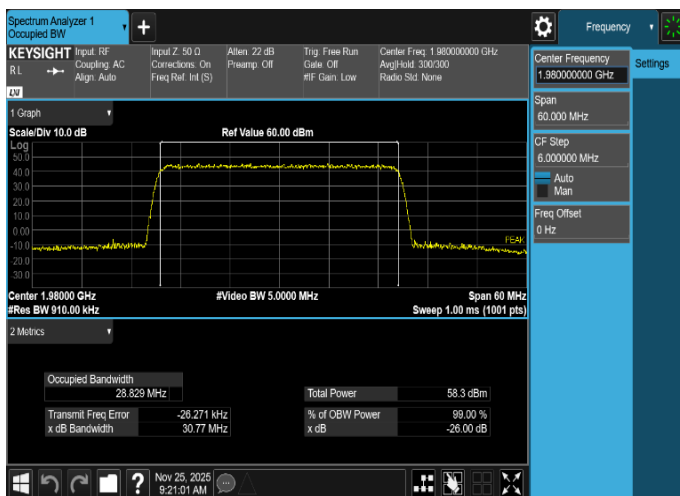
Plot 8-20. Occupied Bandwidth Plot
(NR_n25_1C_20M_16QAM - High Channel, Port 0)



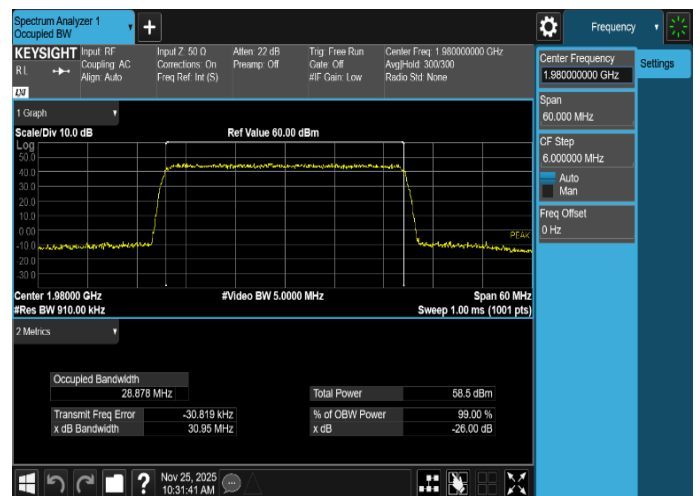
Plot 8-21. Occupied Bandwidth Plot
(NR_n25_1C_25M_QPSK - Low Channel, Port 1)



Plot 8-22. Occupied Bandwidth Plot
(NR_n25_1C_25M_16QAM - High Channel, Port 3)



Plot 8-23. Occupied Bandwidth Plot
(NR_n25_1C_30M_QPSK - High Channel, Port 0)



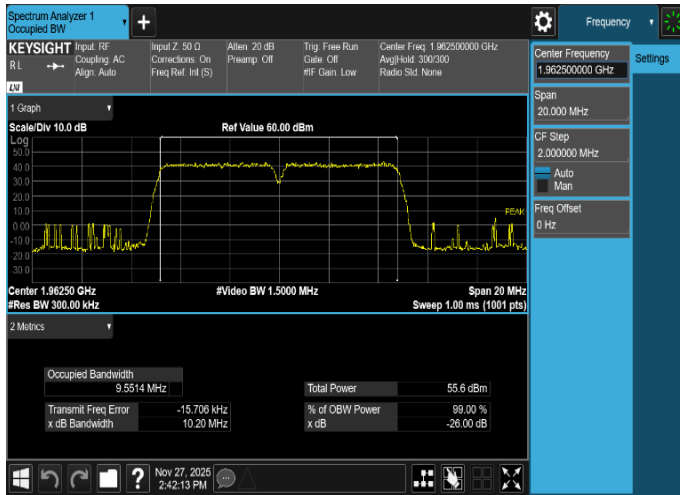
Plot 8-24. Occupied Bandwidth Plot
(NR_n25_1C_30M_256QAM - High Channel, Port 1)



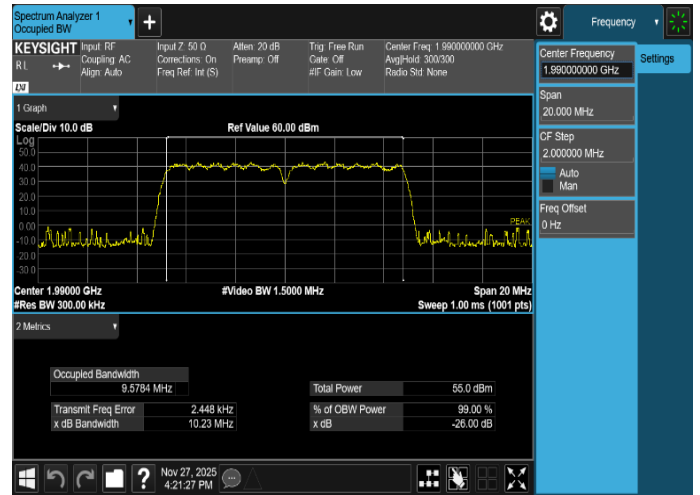
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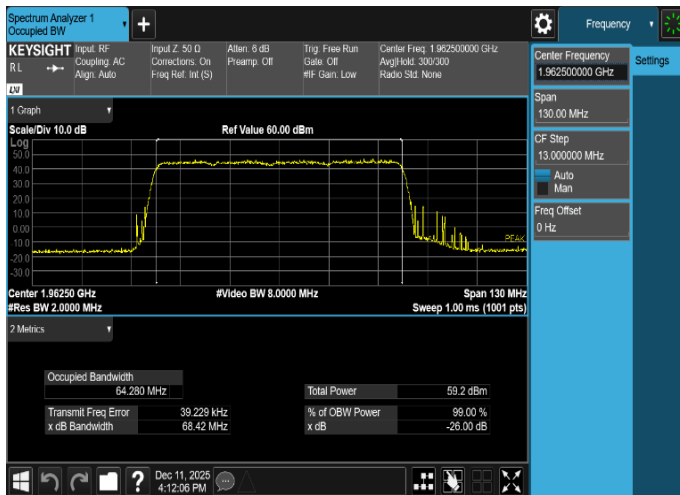
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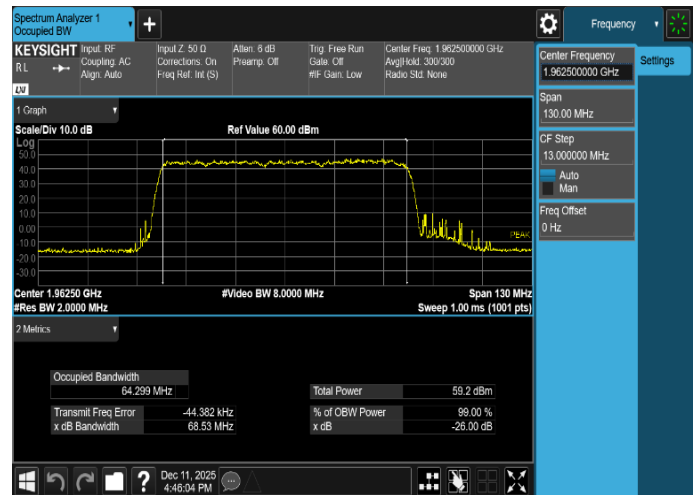
Plot 8-25. Occupied Bandwidth Plot
(NR_B25_2C_5M+5M_QPSK - Mid Channel, Port 3)



Plot 8-26. Occupied Bandwidth Plot
(NR_B25_2C_5M+5M_16QAM - High Channel, Port 0)



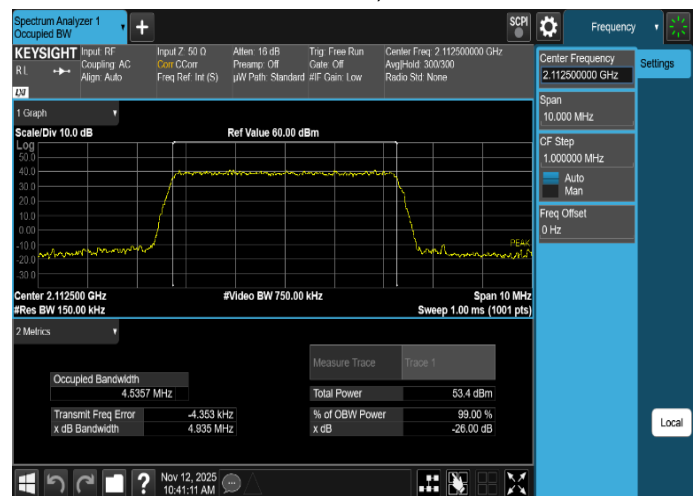
Plot 8-27. Occupied Bandwidth Plot
(NR_n25_4C_15M+15M+15M+20M_QPSK - Mid Channel, Port 3)



Plot 8-28. Occupied Bandwidth Plot
(NR_n25_4C_15M+15M+15M+20M_16QAM - Mid Channel, Port 2)



Plot 8-29. Occupied Bandwidth Plot
(LTE_B66_1C_5M_QPSK - Low Channel, Port 1)



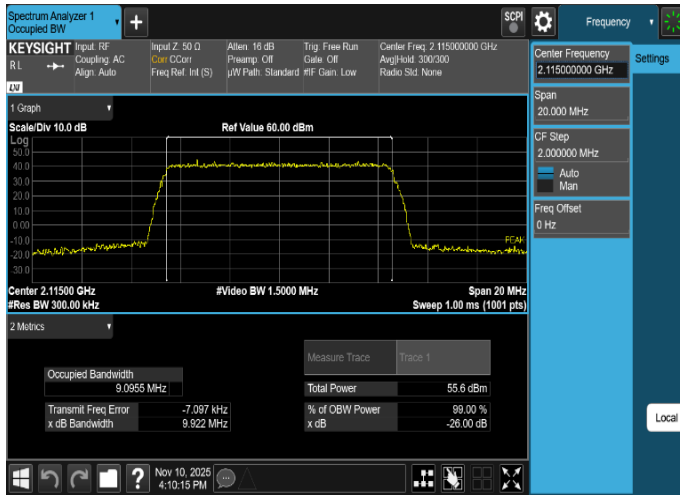
Plot 8-30. Occupied Bandwidth Plot
(LTE_B66_1C_5M_256QAM - Low Channel, Port 0)



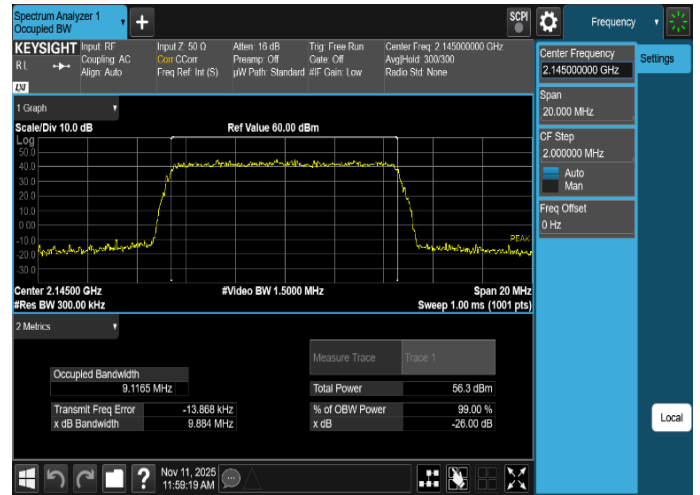
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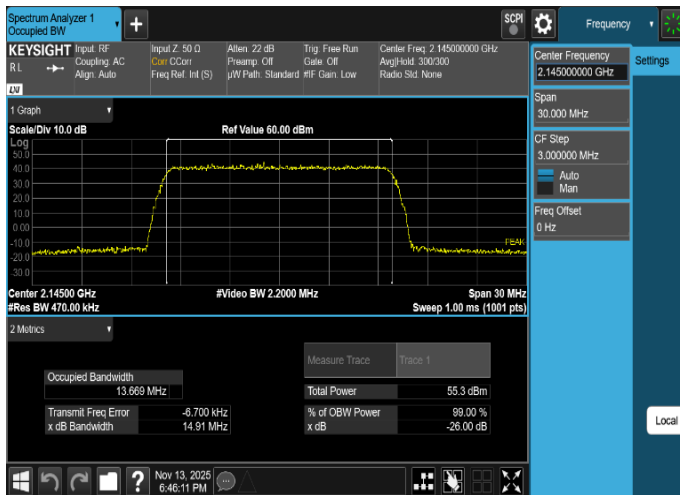
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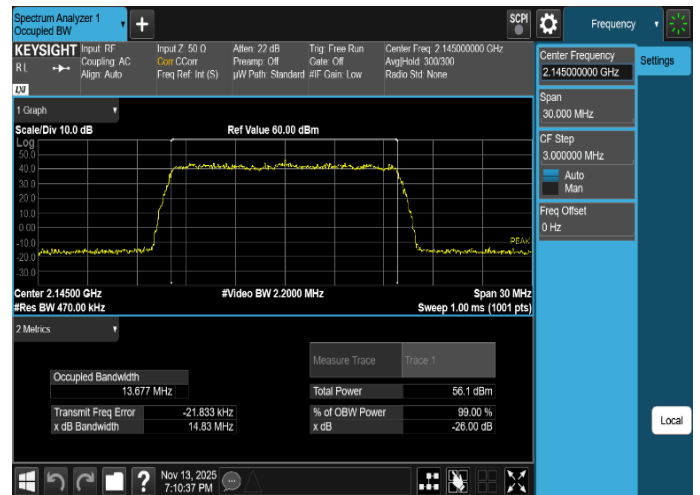
Plot 8-31. Occupied Bandwidth Plot
(LTE_B66_1C_10M_QPSK - Low Channel, Port 1)



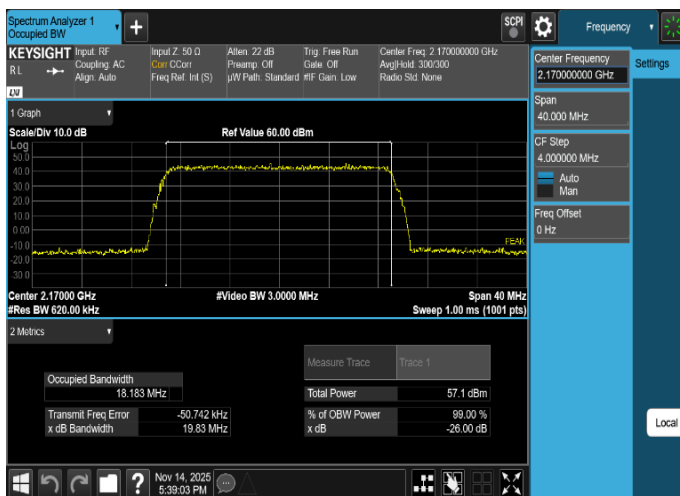
Plot 8-32. Occupied Bandwidth Plot
(LTE_B66_1C_10M_16QAM - Mid Channel, Port 2)



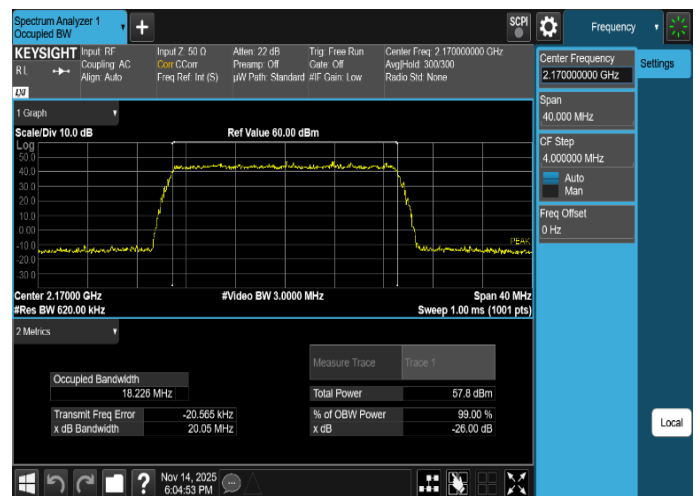
Plot 8-33. Occupied Bandwidth Plot
(LTE_B66_1C_15M_QPSK - Mid Channel, Port 1)



Plot 8-34. Occupied Bandwidth Plot
(LTE_B66_1C_15M_16QAM - Mid Channel, Port 2)



Plot 8-35. Occupied Bandwidth Plot
(LTE_B66_1C_20M_QPSK - High Channel, Port 0)



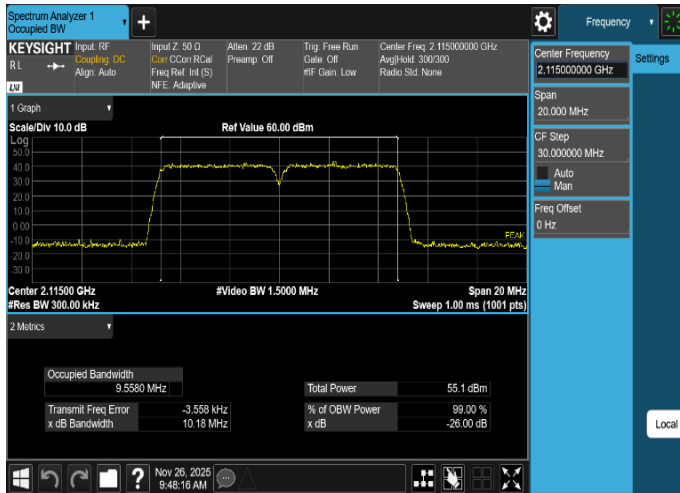
Plot 8-36. Occupied Bandwidth Plot
(LTE_B66_1C_20M_16QAM - High Channel, Port 3)



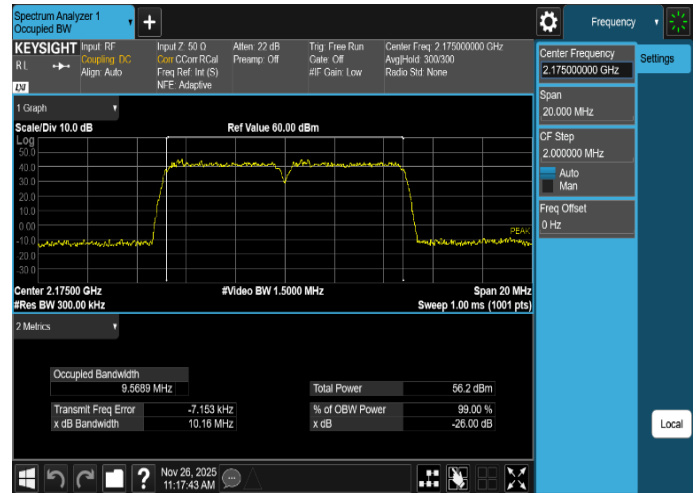
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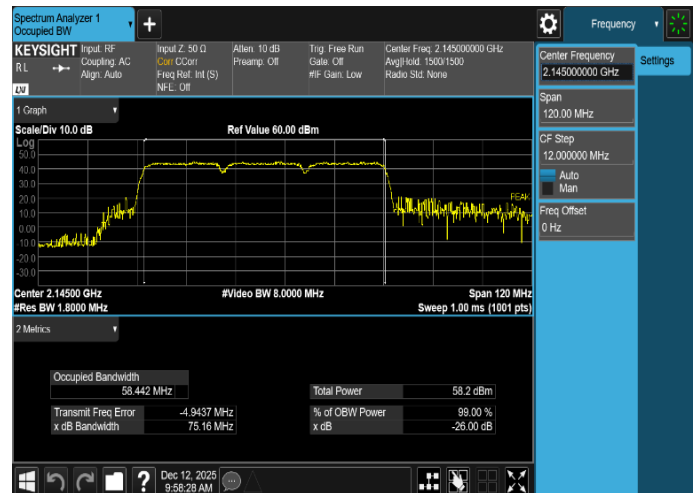
Plot 8-37. Occupied Bandwidth Plot
(LTE_B66_2C_5M+5M_QPSK - Low Channel, Port 2)



Plot 8-38. Occupied Bandwidth Plot
(LTE_B66_2C_5M+5M_16QAM - High Channel, Port 0)



Plot 8-39. Occupied Bandwidth Plot
(LTE_B66_3C_20M+20M+20M_QPSK - High Channel, Port 2)



Plot 8-40. Occupied Bandwidth Plot
(LTE_B66_3C_20M+20M+20M_16QAM - Mid Channel, Port 3)



Plot 8-41. Occupied Bandwidth Plot
(NR_n66_1C_5M_QPSK - Low Channel, Port 0)



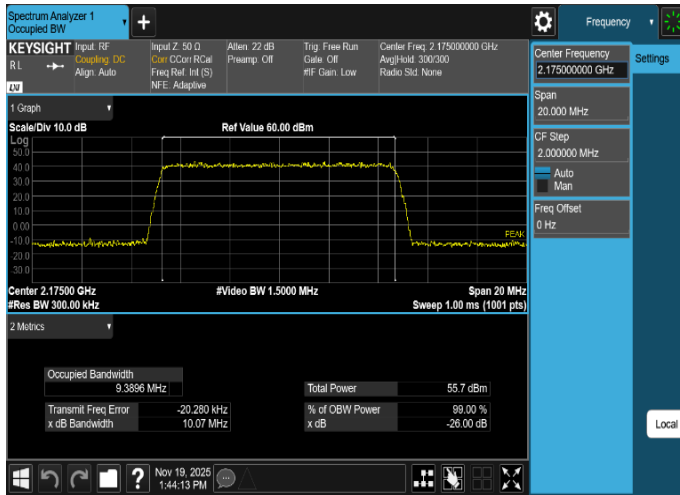
Plot 8-42. Occupied Bandwidth Plot
(NR_n66_1C_5M_16QAM - Low Channel, Port 0)



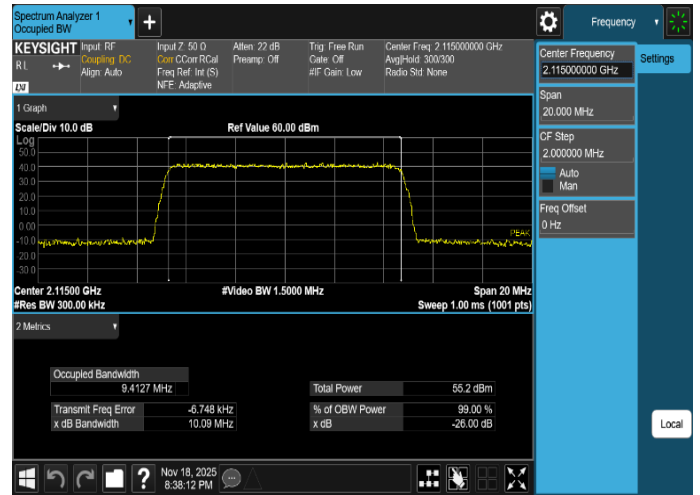
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17142, Korea
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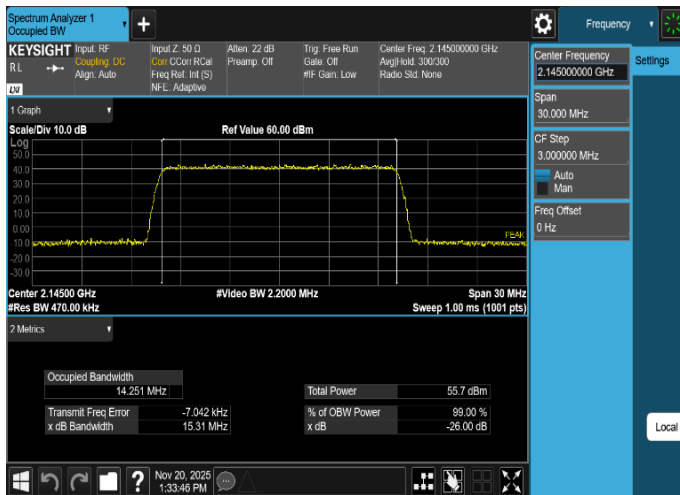
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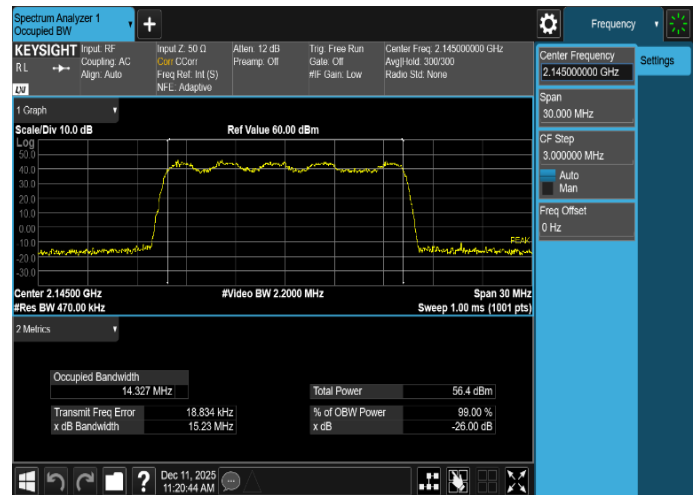
Plot 8-43. Occupied Bandwidth Plot
(NR_n66_1C_10M_QPSK - High Channel, Port 1)



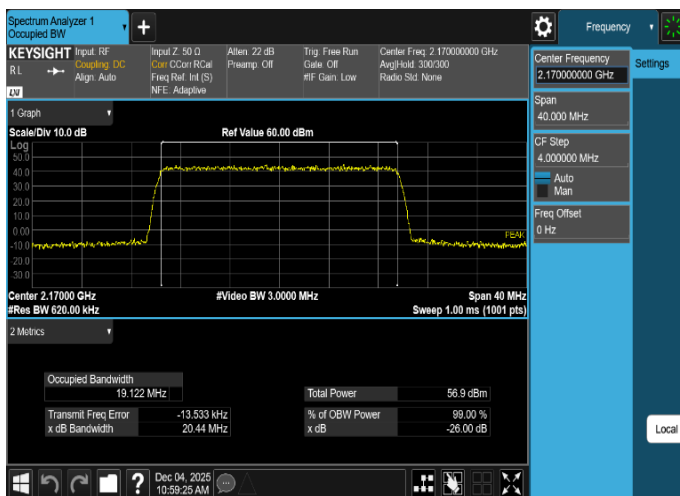
Plot 8-44. Occupied Bandwidth Plot
(NR_n66_1C_10M_256QAM - Low Channel, Port 3)



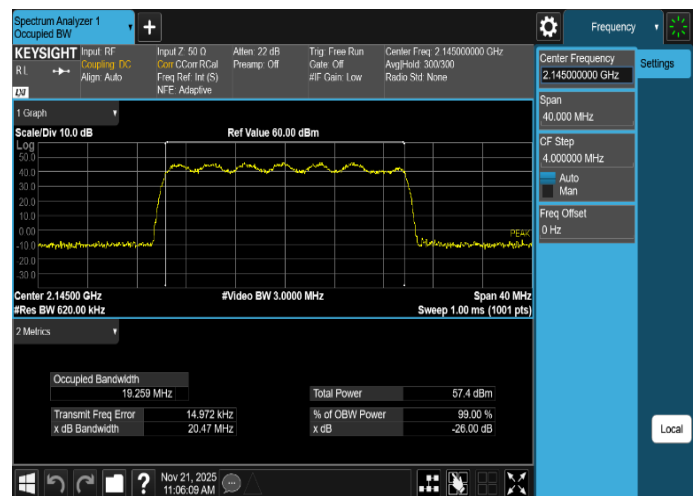
Plot 8-45. Occupied Bandwidth Plot
(NR_n66_1C_15M_QPSK - Mid Channel, Port 3)



Plot 8-46. Occupied Bandwidth Plot
(NR_n66_1C_15M_16QAM - Mid Channel, Port 1)



Plot 8-47. Occupied Bandwidth Plot
(NR_n66_1C_20M_QPSK - High Channel, Port 2)



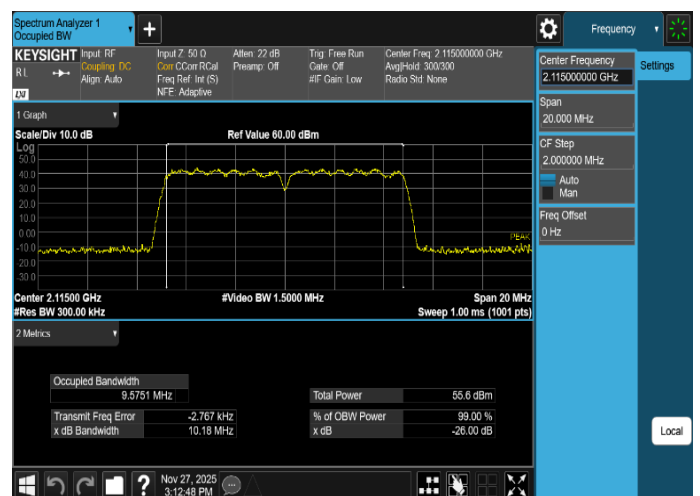
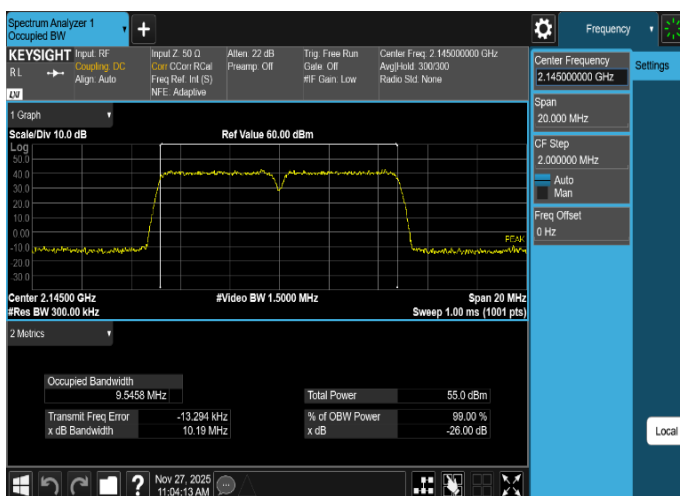
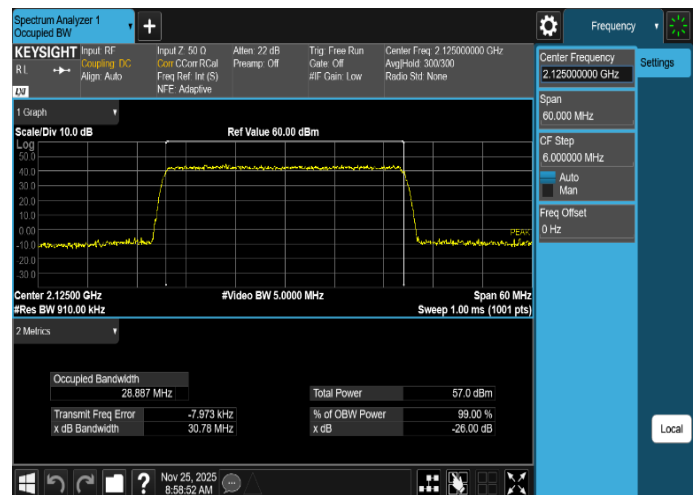
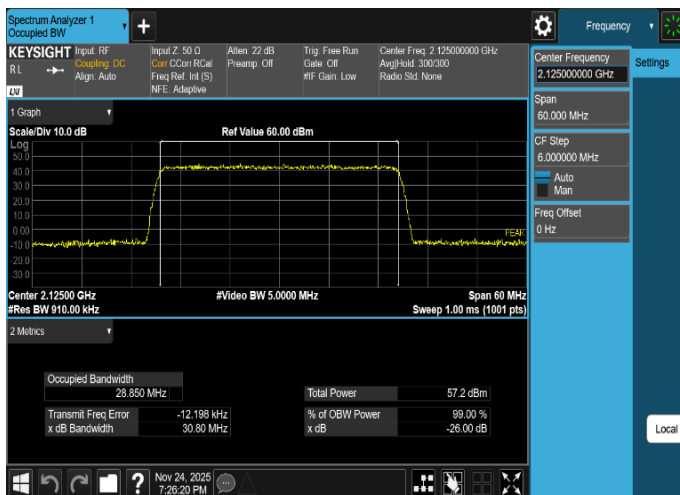
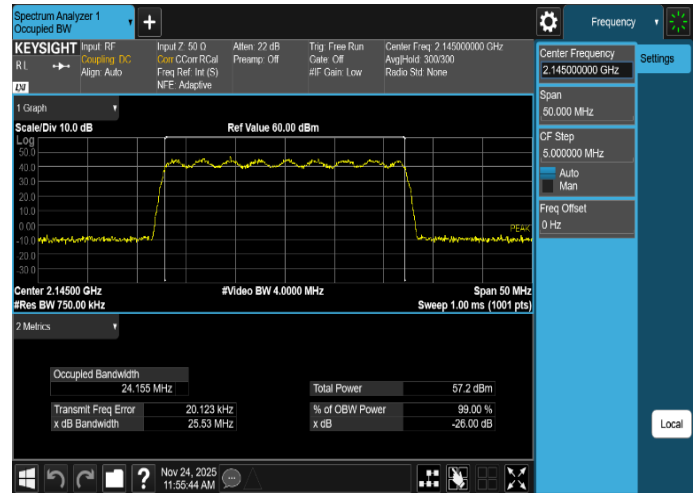
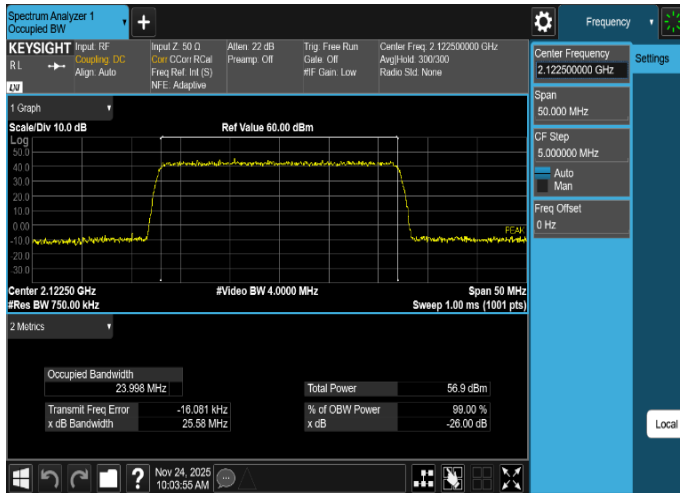
Plot 8-48. Occupied Bandwidth Plot
(NR_n66_1C_20M_16QAM - Mid Channel, Port 3)

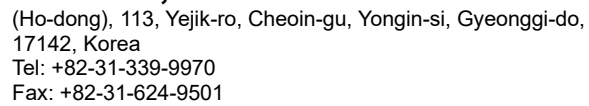


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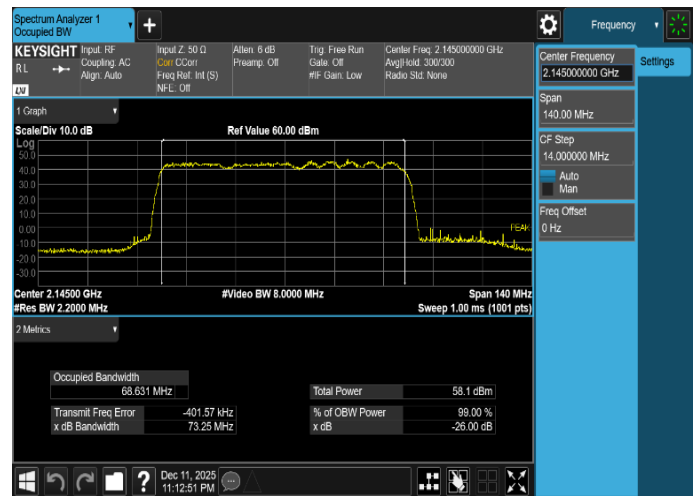
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Plot 8-56. Occupied Bandwidth Plot
(NR_n66_3C_20M+20M+30M_16QAM - Mid Channel, Port 1)

8.3 Equivalent Isotropically Radiated Power

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 Description

KDB 971168 D01 v03r01 – Section 5

KDB 662911 D01 v02r01 – Section E)1) In-Band Power Measurements

ANSI C63.26-2015 – Section 5.2.4.5, Section 5.2.4.4.1

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

1. Conducted power measurements are performed using the signal analyzer's "SA" 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

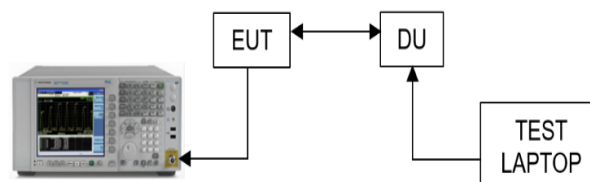


Figure 8-2. Test Instrument & Measurement Setup

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Limit**§ 24.232(a) (2)**

Base stations with an emission bandwidth greater than 1 MHz are limited to 1640 watts/MHz equivalent isotropically radiated power (EIRP) with an antenna height up to 300 meters HAAT, except as described in paragraph (b) below.

§ 27.50(d) (2) (ii)

An EIRP of 1640 watts/MHz when transmitting with an emission bandwidth greater than 1 MHz.

Note: The maximum antenna gain and EIRP limit are determined at the time of licensing depending on the geographical location of the base station.

Test Notes

1. For test results, an estimated calculated maximum permissible conducted output power is reported. The required reduction measurements will be performed after the installation.
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. Sample Calculation for NR_B25_1C_5M_QPSK - Low Channel:
Let us assume the following numbers:
 - a) Total MIMO Conducted Power as 38455.69 milliWatts
 - b)

Factors		Value	Unit
Summed MIMO Conducted Power (linear sum)		38455.69	mW
Summed MIMO Conducted Power (dBm)	$= 10 * \log (38455.69) =$	45.85	dBm



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Low Channel	Port	QPSK	16QAM	64QAM	256QAM
Power Spectral Density(dBm/MHz)	0	39.63	40.04	39.60	39.83
	1	39.87	40.29	39.94	39.90
	2	39.97	40.15	39.87	39.73
	3	39.84	40.09	39.84	39.74
Total MIMO PSD (mW/MHz)		38455.69	41331.45	38308.50	38195.96
Total MIMO PSD (dBm/MHz)		45.85	46.16	45.83	45.82
Middle Channel	Port	QPSK	16QAM	64QAM	256QAM
Power Spectral Density(dBm/MHz)	0	39.75	39.98	39.72	39.75
	1	40.04	40.30	40.02	39.95
	2	39.86	40.24	39.91	39.83
	3	40.16	40.34	40.01	39.91
Total MIMO PSD (mW/MHz)		39597.61	42051.77	39228.49	38734.73
Total MIMO PSD (dBm/MHz)		45.98	46.24	45.94	45.88
High Channel	Port	QPSK	16QAM	64QAM	256QAM
Power Spectral Density(dBm/MHz)	0	39.68	39.92	39.58	39.62
	1	39.85	40.37	39.98	39.92
	2	39.80	40.19	39.82	39.86
	3	39.85	40.27	39.79	39.87
Total MIMO PSD (mW/MHz)		38154.21	41783.90	38154.31	38365.84
Total MIMO PSD (dBm/MHz)		45.82	46.21	45.82	45.84

Table 8-26. Equivalent Isotropically Radiated Power Table (LTE_B25_1C_5M)

Low Channel	Port	QPSK	16QAM	64QAM	256QAM
Power Spectral Density(dBm/MHz)	0	38.46	38.81	38.59	38.51
	1	38.80	39.03	38.83	38.78
	2	38.67	39.06	38.77	38.74
	3	38.66	38.98	38.74	38.68
Total MIMO PSD (mW/MHz)		29310.82	31547.48	29855.55	29497.43
Total MIMO PSD (dBm/MHz)		44.67	44.99	44.75	44.70
Middle Channel	Port	QPSK	16QAM	64QAM	256QAM
Power Spectral Density(dBm/MHz)	0	38.47	38.79	38.45	38.47
	1	38.81	39.00	38.79	38.73
	2	38.65	39.00	38.61	38.63
	3	38.81	39.13	38.71	38.69
Total MIMO PSD (mW/MHz)		29572.77	31628.46	29257.92	29175.36
Total MIMO PSD (dBm/MHz)		44.71	45.00	44.66	44.65
High Channel	Port	QPSK	16QAM	64QAM	256QAM
Power Spectral Density(dBm/MHz)	0	38.43	38.72	38.37	38.44
	1	38.71	38.96	38.62	38.82
	2	38.67	39.01	38.55	38.61
	3	38.63	38.99	38.54	38.59
Total MIMO PSD (mW/MHz)		29042.92	31206.40	28456.40	29078.69
Total MIMO PSD (dBm/MHz)		44.63	44.94	44.54	44.64

Table 8-27. Equivalent Isotropically Radiated Power Table (LTE_B25_1C_10M)