RF MEASUREMENT REPORT

FCC ID:	2BEY3LCUR57WWDC
Applicant:	NETPRISMA INC.
Product:	LTE-A Cat 16 M.2 Module
Model No.:	LCUR57-WWD
Brand Name:	Vrileg
FCC Rule(s):	Part 2, 22 (H), 24 (E), 27
Result:	Complies
Received Date:	2024-04-22
Test Date:	2024-04-25 ~ 2024-06-04

Reviewed By: Sunny Sun

Approved By: Robin Wu

ACCREDITED
TESTING LABORATORY
CERTIFICATE #3628.01

The test results relate only to the samples tested.

This equipment has been shown to be capable of compliance with the applicable technical standards as indicated in the measurement report and was tested in accordance with the measurement procedures specified in ANSI C63.26-2015. Test results reported herein relate only to the item(s) tested.

Revision History

Report No.	Version	Description	Issue Date	Note
2404RSU035-U2	V01	Initial Report	2024-06-07	Valid

CONTENTS

1. General Information

1.1. Applicant

NETPRISMA INC.

1301 6TH AVE, SEATTLE, WA, 98101-2304, UNITED STATES

1.2. Manufacturer

NETPRISMA INC.

1301 6TH AVE, SEATTLE, WA, 98101-2304, UNITED STATES

1.3. Testing Facility

☒	**Test Site – MRT Suzhou Laboratory**				
	Laboratory Location (Suzhou - Wuzhong)				
	D8 Building, No.2 Tian'edang Rd., Wuzhong Economic Development Zone, Suzhou, China				
	Laboratory Location (Suzhou - SIP)				
	4b Building, Liando U Valley, No.200 Xingpu Rd., Shengpu Town, Suzhou Industrial Park, China				
	Laboratory Accreditations				
	A2LA: 3628.01		CNAS: L10551		
	FCC: CN1166		ISED: CN0001		
	VCCI:	☐R-20025	☐G-20034	☐C-20020	☐T-20020
		☐R-20141	☐G-20134	☐C-20103	☐T-20104
☐	**Test Site – MRT Shenzhen Laboratory**				
	Laboratory Location (Shenzhen)				
	1G, Building A, Junxiangda Building, Zhongshanyuan Road West, Nanshan District, Shenzhen, China				
	Laboratory Accreditations				
	A2LA: 3628.02		CNAS: L10551		
	FCC: CN1284		ISED: CN0105		
☐	**Test Site – MRT Taiwan Laboratory**				
	Laboratory Location (Taiwan)				
	No. 38, Fuxing 2nd Rd., Guishan Dist., Taoyuan City 333, Taiwan (R.O.C.)				
	Laboratory Accreditations				
	TAF: 3261				
	FCC: 291082, TW3261		ISED: TW3261		

1.4. Product Information

Product Name	LTE-A Cat 16 M.2 Module
Model No.	LCUR57-WWD
Brand Name	Vrileg
Serial No.	D1C24CG1D000013 (Conducted) D1C24CG1D000108 (Radiated)
3GPP Specification	WCDMA Band II/IV/V LTE Band 2, 4, 5, 7, 12, 13, 14, 25, 26, 30, 38, 41, 42, 43, 48, 66
Operating Temperature Range	-25 ~ 75 °C
Supply Voltage Rating	3.135 – 4.4Vdc, typical 3.7Vdc
Antenna Specification	Refer to Section 1.6
Remark: The information of EUT was provided by the manufacturer, and the accuracy of the information shall be the responsibility of the manufacturer.	

1.5. Radio Specification under Testing

E-UTRA Specification	
FDD TX Frequency Range	LTE Band 2: 1850 ~ 1910 MHz; LTE Band 4: 1710 ~ 1755 MHz LTE Band 5: 824 ~ 849 MHz; LTE Band 7: 2500 ~ 2570 MHz LTE Band 12: 699 ~ 716 MHz; LTE Band 13: 777 ~ 787 MHz LTE Band 25: 1850 ~ 1915 MHz; LTE Band 26: 814 ~ 849 MHz LTE Band 66: 1710 ~ 1780 MHz
FDD RX Frequency Range	LTE Band 2: 1930 ~ 1990 MHz; LTE Band 4: 2110 ~ 2155 MHz LTE Band 5: 869 ~ 894 MHz; LTE Band 7: 2620 ~ 2690 MHz LTE Band 12: 729 ~ 746 MHz; LTE Band 13: 746 ~ 756 MHz LTE Band 25: 1930 ~ 1995 MHz; LTE Band 26: 859 ~ 894 MHz LTE Band 66: 2110 ~ 2200 MHz
TDD TX & RX Frequency Range	LTE Band 38: 2570 ~ 2620 MHz; LTE Band 41: 2496 ~ 2690 MHz; LTE Band 42: 3450 ~ 3550 MHz; LTE Band 43: 3700 ~ 3800 MHz
HUPE Band	Band 41
Intra-Band	CA_41C
Support Bandwidth	Band 2, 4, 25, 66: 1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz, 20MHz Band 5, 12: 1.4MHz, 3MHz, 5MHz, 10MHz Band 7, 38, 41, 42, 43: 5MHz, 10MHz, 15MHz, 20MHz Band 13: 5MHz, 10MHz Band 26: 1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz
Support Power Class	PC3, PC2
Modulation	UL up to 64QAM, DL up to 256QAM

1.6. Description of Available Antennas

Technology	Frequency Range (MHz)	Antenna Type	Max Peak Gain (dBi)
LTE Band 2	1850 ~ 1910	PIFA	3.87
LTE Band 4	1710 ~ 1755		3.91
LTE Band 5	824 ~ 849		3.32
LTE Band 7	2500 ~ 2570		3.16
LTE Band 12	699 ~ 716		3.19
LTE Band 13	777 ~ 787		3.28
LTE Band 25	1850 ~ 1915		3.87
LTE Band 26	814 ~ 849		3.32
LTE Band 38	2570 ~ 2620		3.07
LTE Band 41	2500 ~ 2690		3.16
LTE Band 42	3450 ~ 3600		2.35
LTE Band 43	3600 ~ 3800		1.94
LTE Band 66	1710 ~ 1780		3.91
Note 1: All antenna information (Antenna type and Peak Gain) is provided by the manufacturer. Note 2: The typical antennas used to calculate the ERP (EIRP).			

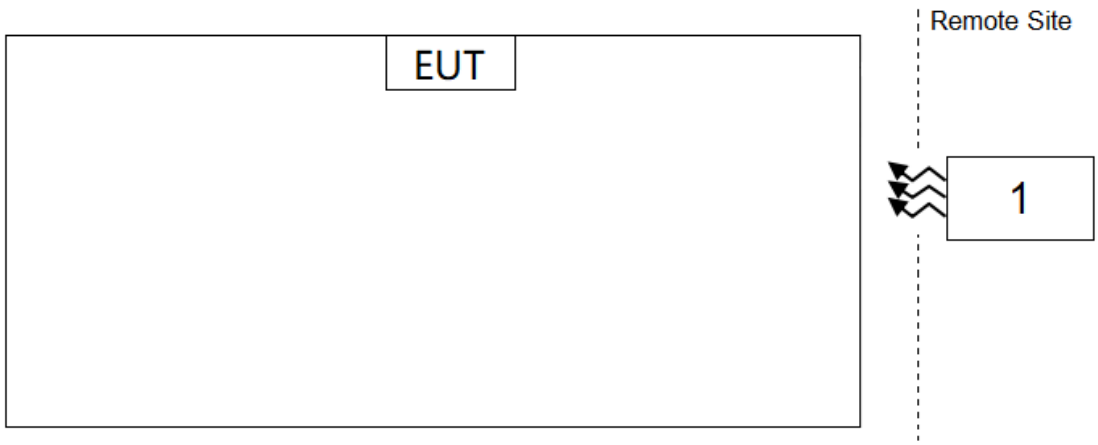
1.7. Test Methodology

According to the specifications of the manufacturer, the EUT must comply with the requirements of the following standards:

- ANSI C63.26:2015
- FCC CFR 47 Part 2, Part 22, Part 24, Part 27
- FCC KDB 971168 D01 v03r01: Power Meas License Digital Systems
- FCC KDB 971168 D02 v02r01: Misc Rev Approv License Devices
- FCC KDB 412172 D01 v01r01: Determining ERP and EIRP

2. Test Configuration

2.1. Test System Connection Diagram



Product		Manufacturer	Model No.
1	Wideband Radio Communication Tester	R&S	CMW 500

2.2. Test Environment Condition

Ambient Temperature	15 ~ 35°C
Relative Humidity	20% ~ 75%RH

3. Measuring Instrument

Instrument	Manufacturer	Model No.	Asset No.	Cali. Interval	Cali. Due Date	Test Site
Communication Tester	R&S	CMW500	MRTSUE06243	1 year	2024-09-27	SIP-SR1
Thermohygrometer	testo	622	MRTSUE06629	1 year	2024-12-21	SIP-SR1
Communication Tester	R&S	CMW500	MRTSUE06881	1 year	2024-05-09	SIP-SR1
				1 year	2025-05-08	SIP-SR1
Temperature Chamber	BAOYT	BYG-80CL	MRTSUE06932	1 year	2025-02-03	SIP-SR1
Shielding Room	MIX-BEP	SIP-SR1	MRTSUE06948	N/A	N/A	SIP-SR1
Directional Coupler	MVE	MVE4912-10	MRTSUE07052	1 year	2024-08-24	SIP
Attenuator	MVE	MVE2213	MRTSUE11111	1 year	2024-08-02	SIP
Signal Analyzer	Keysight	N9010B	MRTSUE07028	1 year	2024-10-23	SIP-SR1
Directional Coupler	MVE	MVE4816-10	MRTSUE11120	1 year	2024-08-24	SIP
Communication Tester	R&S	CMW500	MRTSUE06108	1 year	2024-10-23	WZ-SR6
Thermohygrometer	testo	608-H1	MRTSUE06362	1 year	2025-02-04	WZ-SR6
Shielding Room	HUAMING	WZ-SR6	MRTSUE06443	N/A	N/A	WZ-SR6
Radio Communication Analyzer	Anritsu	MT8821C	MRTSUE06960	1 year	2024-07-06	WZ-SR6
Temperature Chamber	BAOYT	BYH-150CL	MRTSUE06051	1 year	2024-09-27	WZ-TR3
Thermohygrometer	testo	608-H1	MRTSUE11268	1 year	2024-12-14	WZ-TR3
Thermohygrometer	testo	608-H1	MRTSUE06362	1 year	2025-02-04	WZ-SR6
Shielding Room	HUAMING	WZ-SR6	MRTSUE06443	N/A	N/A	WZ-SR6
Signal Analyzer	Keysight	N9020B	MRTSUE06583	1 year	2024-09-27	WZ-SR6
USB Power Sensor	Keysight	U8488A	MRTSUE06958	5 years	2026-07-08	SIP-SR3
Thermohygrometer	testo	608-H1	MRTSUE06616	1 year	2024-10-28	SIP-AC1
Horn Antenna	R&S	HF907	MRTSUE06610	1 year	2024-06-17	SIP-AC1
EMI Test Receiver	R&S	ESR3	MRTSUE06185	1 year	2024-12-17	SIP-AC1
Anechoic Chamber	RIKEN	SIP-AC1	MRTSUE06554	1 year	2024-12-21	SIP-AC1
Signal Analyzer	Keysight	N9010B	MRTSUE06559	1 year	2024-05-09	SIP-AC1
				1 year	2025-05-08	SIP-AC1
Horn Antenna	Schwarzbeck	BBHA 9170	MRTSUE06599	1 year	2024-09-24	SIP-AC1
Preamplifier	EMCI	EMC184045SE	MRTSUE06602	1 year	2024-10-09	SIP-AC1
Loop Antenna	Schwarzbeck	FMZB 1519 B	MRTSUE06937	1 year	2025-01-27	SIP-AC1
Signal Analyzer	Keysight	N9010B	MRTSUE07028	1 year	2024-10-23	SIP-AC1
Active Loop Antenna	Schwarzbeck	FMZB 1519-60 D	MRTSUE07075	1 year	2024-12-04	SIP-AC1
Thermohygrometer	testo	608-H1	MRTSUE06622	1 year	2024-11-03	SIP-AC2
Preamplifier	EMCI	EMC051845SE	MRTSUE06601	1 year	2024-11-02	SIP-AC2
TRILOG Antenna	Schwarzbeck	VULB 9168	MRTSUE06647	1 year	2024-06-17	SIP-AC2

EMI Test Receiver	R&S	ESR3	MRTSUE06613	1 year	2024-12-17	SIP-AC2
Signal Analyzer	Keysight	N9020B	MRTSUE06604	1 year	2025-02-03	SIP-AC2
Preamplifier	EMCI	EMC051845SE	MRTSUE06601	1 year	2024-11-02	SIP-AC2
Horn Antenna	Schwarzbeck	BBHA 9170	MRTSUE06598	1 year	2024-11-04	SIP-AC2
Horn Antenna	Schwarzbeck	BBHA 9120D	MRTSUE06648	1 year	2024-10-21	SIP-AC2
Anechoic Chamber	RIKEN	SIP-AC2	MRTSUE06781	1 year	2024-12-21	SIP-AC2
Cable	HUBER+SUHNER	SF106	MRTSUE06522	1 year	2025-05-07	SIP-AC2
Cable	HUBER+SUHNER	SF106	MRTSUE06594	1 year	2024-12-21	SIP-AC1
Cable	HUBER+SUHNER	SF106	MRTSUE06874	1 year	2024-12-21	SIP-AC1
Cable	HUBER+SUHNER	SF106	MRTSUE06875	1 year	2024-12-21	SIP-AC2

Software	Version	Function
EMI Software	V3.0.0	EMI Test Software
Controller_MF 7802BS	1.02	RE Antenna & Turntable
CMWrun	V 1.9.10.20	license 2G & 3G & 4G
UCTS	V 6.23.217.99	license 3G & 4G & 5G
Agilent Power Analyzer/Agilent Power Panel	V R03.09.00	Power

4. Decision Rules and Measurement Uncertainty

4.1. Decision Rules

The Decision Rule is based on Simple Acceptance in accordance with ISO Guide 98-4: 2012 Clause 8.2. (Measurement uncertainty is not taken into account when stating conformity with a specified requirement.)

4.2. Measurement Uncertainty

Where relevant, the following test uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k = 2.

Radiated Spurious Emissions
Measurement Uncertainty for a Level of Confidence of 95% (U=2Uc(y)): Coaxial: 9kHz~30MHz: 2.61dB Coplanar: 9kHz~30MHz: 2.62dB Horizontal: 30MHz~200MHz: 3.79dB 200MHz~1GHz: 3.91dB 1GHz~40GHz: 4.99dB Vertical: 30MHz~200MHz: 4.06dB 200MHz~1GHz: 5.21dB 1GHz~40GHz: 4.90dB
Conducted Spurious Emissions
Measuring Uncertainty for a Level of Confidence of 95% (U=2Uc(y)): 1.47dB
Output Power
Measuring Uncertainty for a Level of Confidence of 95% (U=2Uc(y)): 0.66dB
Occupied Bandwidth
Measuring Uncertainty for a Level of Confidence of 95% (U=2Uc(y)): 69.28kHz
Frequency Stability
Measuring Uncertainty for a Level of Confidence of 95% (U=2Uc(y)): 8.04Hz

5. Test Result

5.1. Summary

FCC Part Section(s)	Test Description	Test Condition	Test Result
2.1049	Occupied Bandwidth	Conducted	Pass
2.1055, 22.355, 24.235, 27.54	Frequency Stability		Pass
22.913(a)(5), 24.232(c) 27.50(b)(10) (c)(10) (d)(4) (h)(2) (k)(3) (j)(3)	Transmitter Output Power		Pass
22.913(d), 24.232(d), 27.50(d)(5) (k)(4) (j)(4)	Peak to Average Ratio		Pass
2.1051, 22.917(a), 24.238(a) 27.53(c) (f) (g) (h) (m) (n) (i)	Transmitter unwanted emissions (band-edge)		Pass
2.1051, 22.917(a), 24.238(a) 27.53(c) (f) (g) (h) (m) (n) (i)	Transmitter unwanted emissions (spurious)		
2.1051, 22.917(a), 24.238(a) 27.53(c) (f) (g) (h) (m) (n) (i)	Transmitter Spurious Emissions	Radiated	Pass

Notes:

1) The analyzer plots shown in this section were all taken with a correction table loaded into the analyzer. The correction table was used to account for the losses of the cables and attenuators used as part of the system to connect the EUT to the analyzer at all frequencies of interest.
2) All supported modulation types were evaluated. The worst-case emission of modulation was selected. Therefore, the Frequency Stability, Transmitter unwanted emissions (band-edge), Transmitter unwanted emissions (spurious), Radiated Spurious Emissions were presented worst-case in the test report.
3) For radiated emission tests, every axis (X, Y, Z) was also verified. The test results shown in the following sections represent the worst-case emissions.
4) LTE Band 66 (1710 ~ 1780 MHz) overlaps the entire frequency range of LTE Band 4 (1710 ~ 1755 MHz). Therefore, test data provided in this report covers Band 4 as well as Band 66.
5) LTE Band 26 (824 ~ 849 MHz) overlaps the entire frequency range of LTE Band 5 (824 ~ 849 MHz). Therefore, test data provided in this report covers Band 5 as well as Band 26.
6) LTE Band 25 (1850 ~ 1915 MHz) overlaps the entire frequency range of LTE Band 2 (1850 ~ 1910 MHz). Therefore, test data provided in this report covers Band 2 as well as Band 25.
7) LTE Band 41 (2500 ~ 2690 MHz) overlaps the entire frequency range of LTE Band 38 (2570 ~ 2620 MHz). Therefore, test data provided in this report covers Band 38 as well as Band 41.
8) This report is based on MRT Original “2404RSU035-U2” Report, FCC ID: 2BEY3LCUR57WWDA to copying report and updating the FCC ID.

5.2. Occupied Bandwidth Measurement

5.2.1. Test Limit

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.

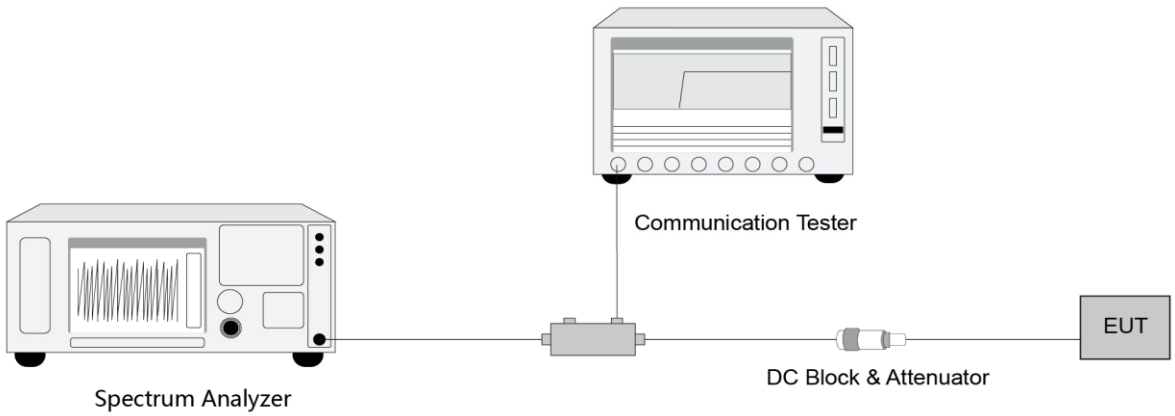
5.2.2. Test Procedure

ANSI C63.26-2015 - Section 5.4.4

5.2.3. Test Setting

1. Set center frequency to the nominal EUT channel center frequency
2. RBW = The nominal RBW shall be in the range of 1% to 5% of the anticipated OBW
3. VBW ≥ 3 × RBW
4. Detector = Peak
5. Trace mode = max hold
6. Sweep = auto couple
7. Allow the trace to stabilize
8. Use the 99% power bandwidth function of the instrument and report the measured bandwidth.

5.2.4. Test Setup



5.2.5. Test Result

Refer to Appendix A.1.

5.3. Frequency Stability Measurement

5.3.1. Test Limit

The frequency stability shall be measured by variation of ambient temperature and variation of primary supply voltage to ensure that the fundamental emission stays within the authorized frequency block. The frequency stability of the transmitter shall be maintained within ±0.00025% (±2.5ppm) of the center frequency.

5.3.2. Test Procedure

ANSI C63.26-2015 - Section 5.6

5.3.3. Test Setting

1. A reference point shall be established at the applicable unwanted emissions limit using a RBW equal to the RBW required by the unwanted emissions specification of the applicable regulatory standard. These reference points measured using the lowest and highest channel of operation shall be identified as f_L and f_H respectively.
2. Use the frequency error function of the instrument and record the frequency error.
3. Change the temperature of equipment and repeat Steps 2.
4. Change the Voltage of equipment and repeat Steps 2.
5. The frequency error offset determined in the above methods shall be added or subtracted from the values of f_L and f_H and the resulting frequencies must remain within the band

Frequency Stability Under Temperature Variations:

The equipment under test was connected to an external AC or DC power supply and input rated voltage. RF output was connected to a frequency counter or spectrum analyzer via feed through attenuators. The EUT was placed inside the temperature chamber. Set the spectrum analyzer RBW low enough to obtain the desired frequency resolution and measure EUT 20°C operating frequency as reference frequency. Turn EUT off and set the chamber temperature to highest. After the temperature stabilized for approximately 30 minutes recorded the frequency. Repeat step measure with 10°C decreased per stage until the lowest temperature reached.

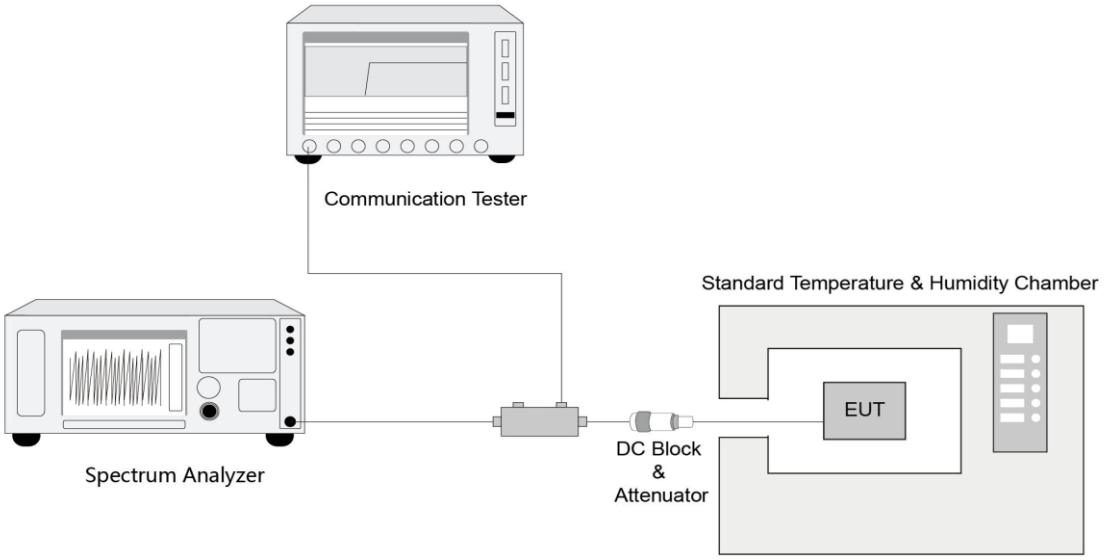
Frequency Stability Under Voltage Variations:

Set chamber temperature to 20°C. Use a variable AC power supply / DC power source to power the EUT and set the voltage to rated voltage. Set the spectrum analyzer RBW low enough to obtain the desired frequency resolution and recorded the frequency.

Reduce the input voltage to specify extreme voltage variation (±15%) and endpoint, recordthe maximum

frequency change.

5.3.4. Test Setup



5.3.5. Test Result

Refer to Appendix A.2.

5.4. Transmitter Output Power Measurement

5.4.1. Test Limit

Band 2/25, 7, 38/41:

Mobile and portable stations are limited to 2 watts EIRP and the equipment must employ a means for limiting power to the minimum necessary for successful communications.

Band 4/66:

Fixed, mobile stations operating in the 1710-1755 MHz band and mobile in the 1695-1710 MHz and 1755-1780 MHz bands are limited to 1watt EIRP.

Band 5/26:

The ERP of mobile transmitters and auxiliary test transmitters must not exceed 7 watts.

Band 12, 13:

Control stations and mobile stations transmitting in the 746-757 MHz, 776-788 MHz, and 805-806 MHz bands are limited to 30 watts ERP.

Control and mobile stations in the 698-746 MHz band are limited to 30 watts ERP.

Band 42:

Mobile devices are limited to 1Watt (30 dBm) EIRP. Mobile devices operating in these bands must employ a means for limiting power to the minimum necessary for successful communications.

Band 43:

Mobile and portable stations are limited to 1 Watt EIRP. Mobile and portable stations operating in these bands must employ a means for limiting power to the minimum necessary for successful communications.

5.4.2. Test Procedure

ANSI C63.26-2015 - Section 5.2.4.2

5.4.3. Test Setting

Average power measurements were performed only when the EUT was transmitting at its maximum power control level using a broadband power meter with a pulse sensor. The power meter implemented triggering and gating capabilities which were set up such that power measurements were recorded only during the ON time of the transmitter.

The relevant equation for determining the maximum ERP or EIRP from the measured RF output power is given in Equation (1) as follows:

ERP or EIRP = P_{Meas} + G_T

where

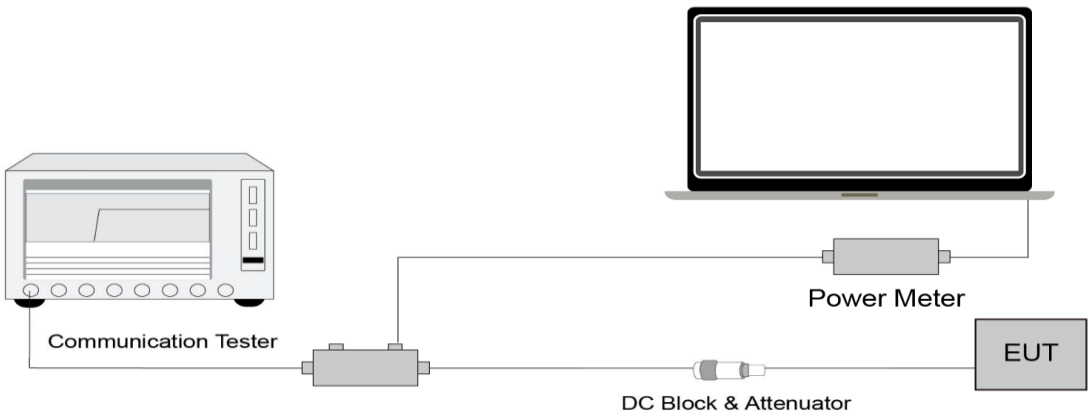
ERP or EIRP effective radiated power or equivalent isotropically radiated power, respectively (expressed in the same units as P_{Meas}, e.g., dBm or dBW)

P_{Meas} measured transmitter output power or PSD, in dBm or dBW

G_T gain of the transmitting antenna, in dBd (ERP) or dBi (EIRP)

ERP = EIRP -2.15

5.4.4. Test Setup



5.4.5. Test Result

Refer to Appendix A.3.

5.5. Peak to Average Ratio Measurement

5.5.1. Test Limit

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

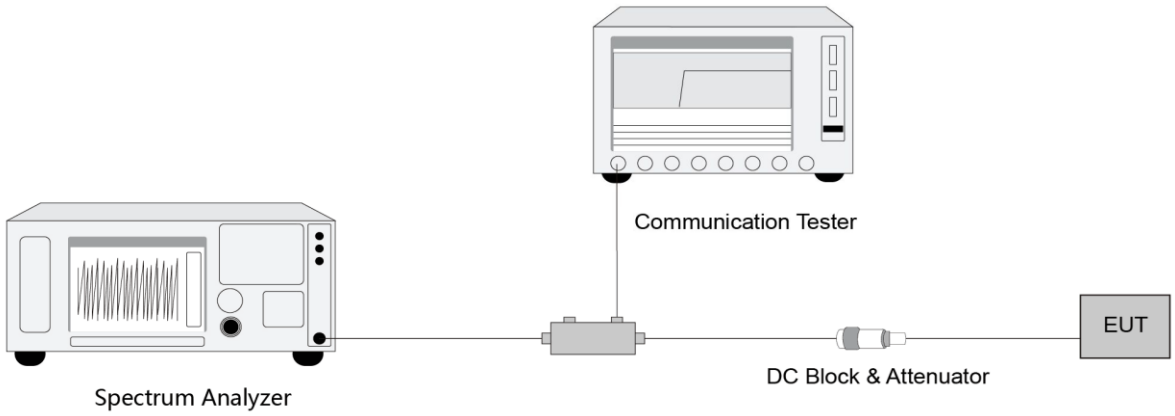
5.5.2. Test Procedure

ANSI C63.26-2015 - Section 5.2.3.4 (CCDF).

5.5.3. Test Setting

1. Set the resolution / measurement bandwidth ≥ signal's occupied bandwidth
2. Set the number of counts to a value that stabilizes the measured CCDF curve
3. Record the maximum PARR level associated with a probability of 0.1%

5.5.4. Test Setup



5.5.5. Test Result

Refer to Appendix A.4

5.6. Transmitter unwanted emissions (band-edge) Measurement

5.6.1. Test Limit

22.917(a), 24.238 (a), 27.53 (g) (h)

For operations in the 824 ~ 849 MHz, 1850 ~ 1910 MHz, 1930 ~ 1990 MHz, 600MHz & 698 ~ 746 MHz and 1710 ~ 1755 MHz, the FCC limit is 43 + 10log10(P[$_{Watts}$]) dB below the transmitter power P(Watts) in a 1 MHz bandwidth. However, in the 1MHz bands immediately outside and adjacent to the licensee's frequency block, a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed.

27.53 (c)

For operations in the 776-788 MHz band, the FCC limit is 43 + 10log10(P[$_{Watts}$]) dB below the transmitter power P(Watts) in a 100 kHz bandwidth. However, in the 100 kHz bands immediately outside and adjacent to the frequency block, a resolution bandwidth of at least 30 kHz may be employed. In addition, the power of any unwanted emissions in any 6.25 kHz bandwidth for all frequencies between 763-775 MHz and 793-806 MHz shall be attenuated below the transmitter power, P (dBW), by at least 65 + 10 log10 (P[$_{Watts}$]), dB, for mobile and portable equipment.

27.53(m)(4)

For mobile digital stations, the attenuation factor shall be not less than 40 + 10 log (P) dB on all frequencies between the channel edge and 5 megahertz from the channel edge, 43 + 10 log (P) dB on all frequencies between 5 megahertz and X megahertz from the channel edge, and 55 + 10 log (P) dB on all frequencies more than X megahertz from the channel edge, where X is the greater of 6 megahertz or the actual emission bandwidth as defined in paragraph (m)(6) of this section. In addition, the attenuation factor shall not be less that 43 + 10 log (P) dB on all frequencies between 2490.5 MHz and 2496 MHz and 55 + 10 log (P) dB at or below 2490.5 MHz. Mobile Satellite Service licensees operating on frequencies below 2495 MHz may also submit a documented interference complaint against BRS licensees operating on channel BRS Channel 1 on the same terms and conditions as adjacent channel BRS or EBS licensees.

27.53(l)(2)

For mobile operations in the 3700-3980 MHz band, the conducted power of any emission outside the licensee's authorized bandwidth shall not exceed −13 dBm/MHz. Compliance with this paragraph (l)(2) is based on the use of measurement instrumentation employing a resolution bandwidth of 1 megahertz or greater. However, in the 1 megahertz bands immediately outside and adjacent to the licensee's frequency block, the minimum resolution bandwidth for the measurement shall be either one percent of the emission

bandwidth of the fundamental emission of the transmitter or 350 kHz. In the bands between 1 and 5 MHz removed from the licensee's frequency block, the minimum resolution bandwidth for the measurement shall be 500 kHz. The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.

27.53(n)(2)

For mobile operations in the 3450-3550 MHz band, the conducted power of any emission outside the licensee's authorized bandwidth shall not exceed −13 dBm/MHz. Compliance with this paragraph (n)(2) is based on the use of measurement instrumentation employing a resolution bandwidth of 1 megahertz or greater. However, in the 1 megahertz bands immediately outside and adjacent to the licensee's frequency block, a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed, but limited to a maximum of 200 kHz. In the bands between 1 and 5 MHz removed from the licensee's frequency block, the minimum resolution bandwidth for the measurement shall be 500 kHz. The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.

5.6.2. Test Procedure

ANSI C63.26-2015 - Section 5.7

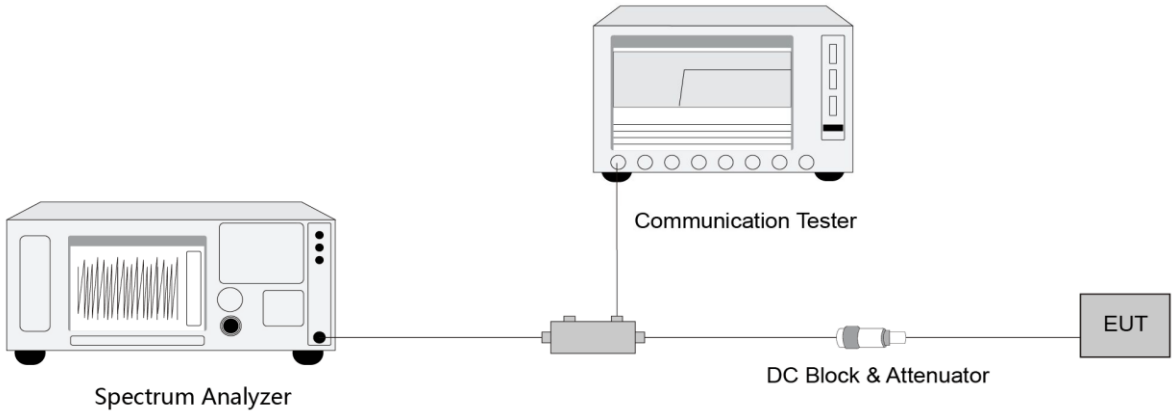
5.6.3. Test Setting

1. Set the analyzer frequency to Low or High channel
2. RBW = specified resolution bandwidth, for improvement of the accuracy in the measurement of the average power of a noise-like emission, a RBW narrower than the specified reference bandwidth can be used (generally limited to no less than 1% of the frequency block group, provided that a subsequent integration is performed over the full required measurement bandwidth. This integration should be performed using the spectrum analyzer’s band power functions.
3. VBW ≥ 3*RBW
4. Sweep time = auto
5. Detector = power averaging (rms)
6. If the EUT can be configured to transmit continuously, then set the trigger to free run
7. If the EUT cannot be configured to transmit continuously, then use a sweep trigger with the level set to

enable triggering only on full power bursts and configure the EUT to transmit at full power for the entire duration of each sweep. Verify that the sweep time is less than or equal to the transmission burst duration. Time gating can also be used under similar constraints

8. Trace average at least 100 traces in power averaging (rms) mode if sweep is set to auto-couple. To accurately determine the average power over the on and off time of the transmitter, it can be necessary to increase the number of traces to be averaged above 100, or if using a manually configured sweep time, increase the sweep time.
9. Compute the power by integrating the spectrum across the specified resolution bandwidth using the instrument's band or channel power measurement function, with the band/channel limits set equal to the specified resolution bandwidth, when using a measurement bandwidth smaller than the specified bandwidth. Otherwise, Use the peak marker function to determine the maximum amplitude level.

5.6.4. Test Setup



5.6.5. Test Result

Refer to Appendix A.5.

5.7. Transmitter unwanted emissions (spurious) Measurement

5.7.1. Test Limit

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

The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log(P) dB.

For LTE Band 13, For operations in the 746-758 MHz, 775-788 MHz, and 805-806 MHz bands, emissions in the band 1559-1610 MHz shall be limited to -70 dBW/MHz (-40dBm/MHz) equivalent isotropically radiated power (EIRP) for wideband signals, and -80 dBW (-50dBm) EIRP for discrete emissions of less than 700 Hz bandwidth.

For Band 7, 38/41 the power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 55 + 10 log(P) dB.

5.7.2. Test Procedure

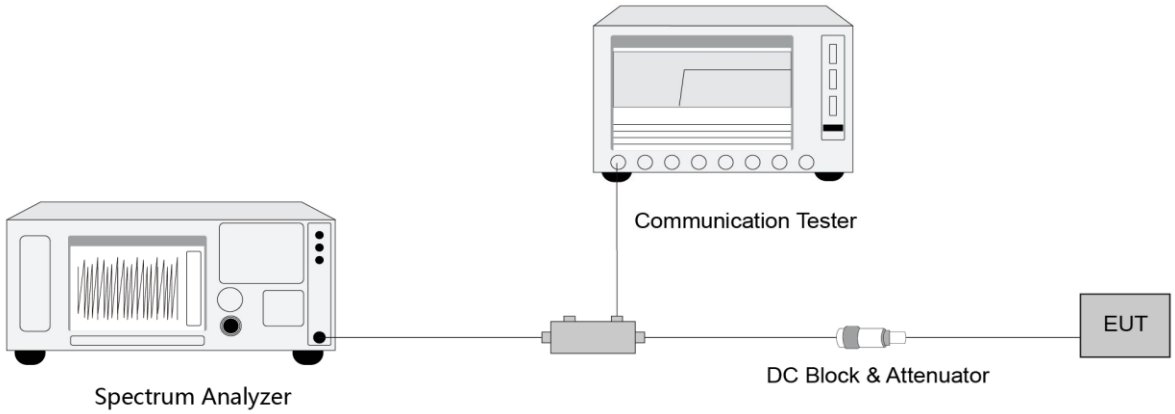
ANSI C63.26-2015 - Section 5.7

5.7.3. Test Setting

1. Set the analyzer frequency to low, Mid or high channel.
2. RBW = specified resolution bandwidth
3. VBW ≥ 3*RBW
4. Sweep time = auto
5. Detector = power averaging (rms)
6. If the EUT can be configured to transmit continuously, then set the trigger to free run
7. If the EUT cannot be configured to transmit continuously, then use a sweep trigger with the level set to enable triggering only on full power bursts and configure the EUT to transmit at full power for the entire duration of each sweep. Verify that the sweep time is less than or equal to the transmission burst duration. Time gating can also be used under similar constraints

8. Trace average at least 100 traces in power averaging (rms) mode if sweep is set to auto-couple. To accurately determine the average power over the on and off time of the transmitter, it can be necessary to increase the number of traces to be averaged above 100, or if using a manually configured sweep time, increase the sweep time.
9. Use the peak marker function to determine the maximum amplitude level.

5.7.4. Test Setup



5.7.5. Test Result

Refer to Appendix A.6

5.8. Radiated Spurious Emissions Measurement

5.8.1. Test Limit

The power of any emission outside of theauthorized operating frequency ranges must be attenuated below the transmitting power (P) by a factorof at least 43 + 10 log(P) dB. The emission limit equal to -13dBm.

For Band 7, 38/41, the powerof any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 55 + 10 log(P) dB. The emission limit equal to -25dBm.

For LTE Band 13, For operations in the 746-758 MHz, 775-788 MHz, and 805-806 MHz bands, emissions in the band 1559-1610 MHz shall be limited to -70 dBW/MHz (-40dBm/MHz) equivalent isotropically radiated power (EIRP) for wideband signals, and -80 dBW (-50dBm) EIRP for discrete emissions of less than 700 Hz bandwidth.

E (dBμV/m) = EIRP (dBm) - 20 log D + 104.8; where D is the measurement distance in meters. The emission limit equal to 82.3dBμV/m or 70.3 or 55.3dBμV/m.

5.8.2. Test Procedure

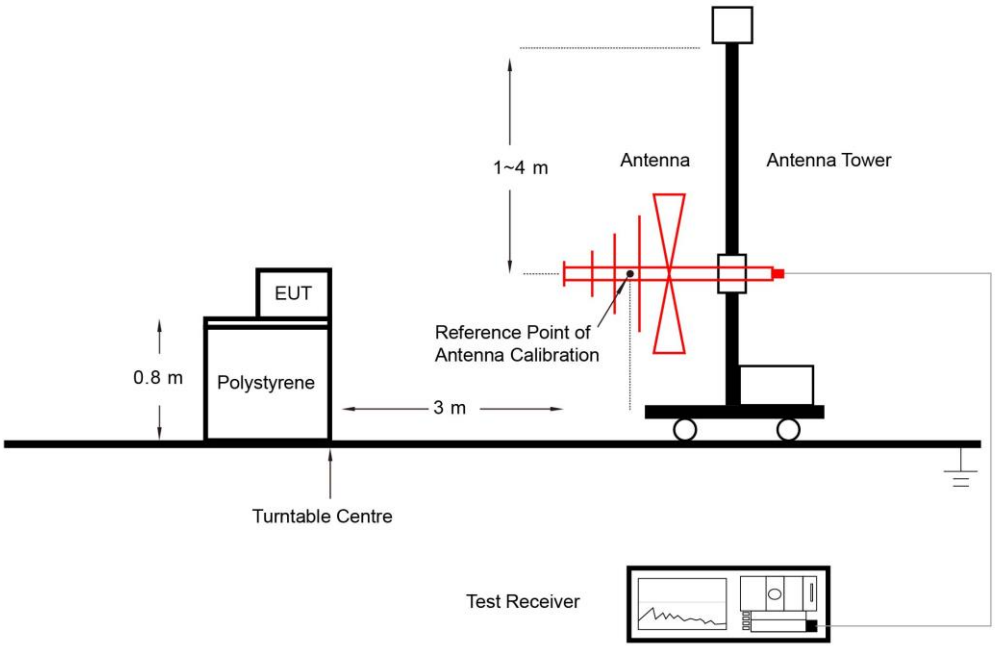
ANSI C63.26-2015 - Section 5.2.7 & 5.5

5.8.3. Test Setting

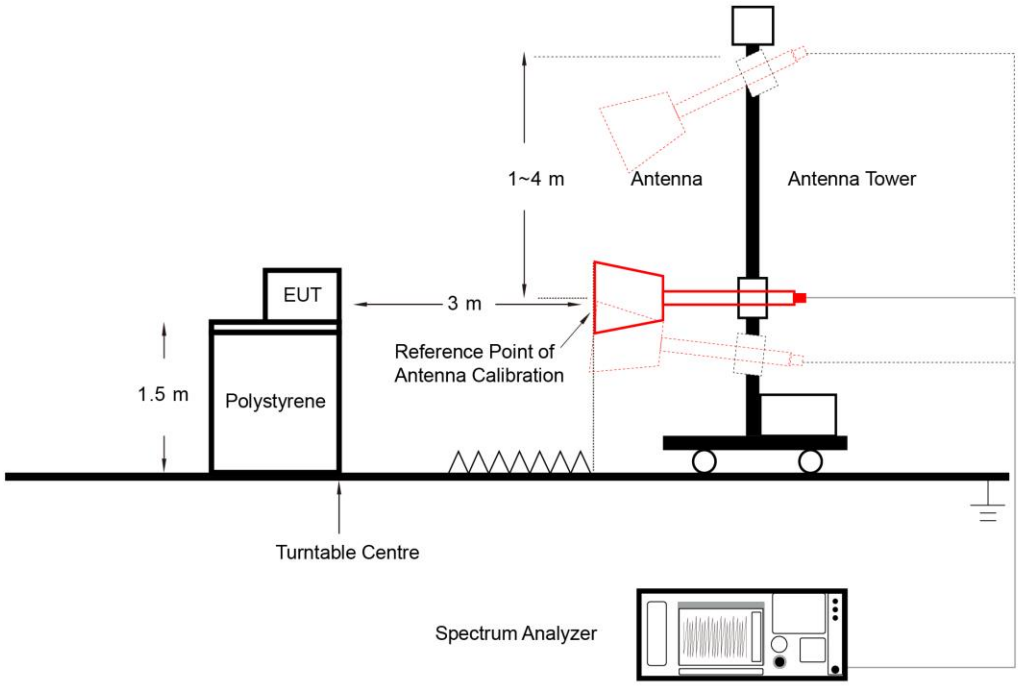
1. RBW = 120kHz or 1MHz
2. VBW ≥ 3*RBW
3. Sweep time ≥ 10 × (number of points in sweep) × (transmission symbol period)
4. Detector = CISPR quasi-peak / average detector (Below 1 GHz, compliance with the limits shall be demonstrated using a CISPR quasi-peak detector and the related measurement bandwidth. Above 1 GHz, compliance with the limits shall be demonstrated using a linear average detector with a minimum resolution bandwidth of 1 MHz.)
5. The trace was allowed to stabilize

5.8.4. Test Setup

Below 1GHz Test Setup:



Above 1GHz Test Setup:



5.8.5. Test Result

Refer to Appendix A.7.

Appendix A - Test Result

A.1 Occupied Bandwidth Test Result

Test Site	SIP-SR1	Test Engineer	Yoniter Yang
Test Date	2024-04-25 ~ 2024-05-05	Test Band	Band 2/25

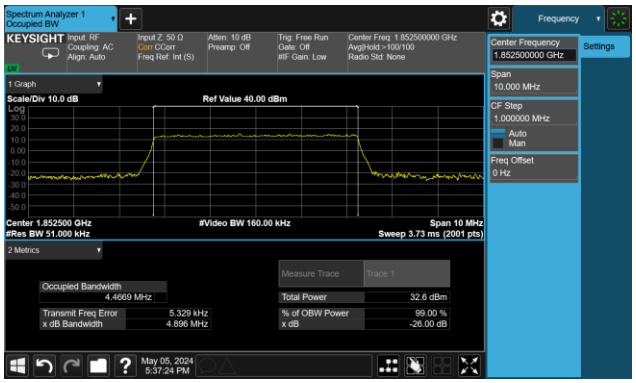
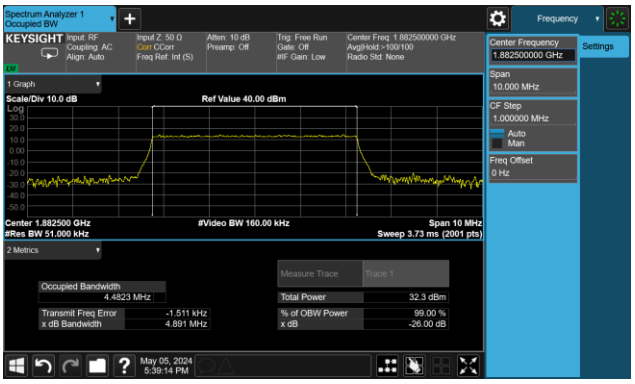
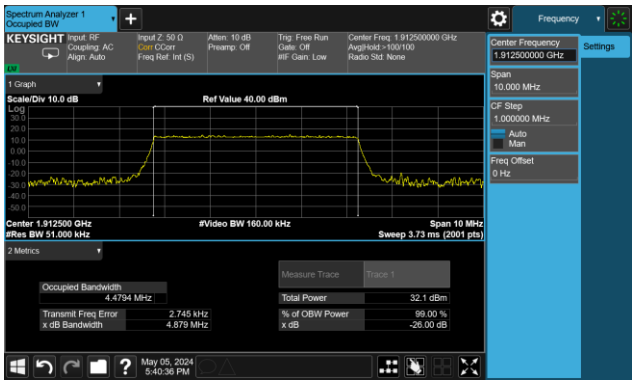
Bandwidth (MHz)	Frequency (MHz)	99% Bandwidth (MHz)
QPSK		
1.4	1850.70	1.08
	1882.50	1.08
	1914.30	1.09
3	1851.50	2.69
	1882.50	2.68
	1913.50	2.69
5	1852.50	4.47
	1882.50	4.48
	1912.50	4.48
10	1855.00	8.95
	1882.50	8.94
	1910.00	8.95
15	1857.50	13.44
	1882.50	13.39
	1907.50	13.42
20	1860.00	17.88
	1882.50	17.86
	1905.00	17.85

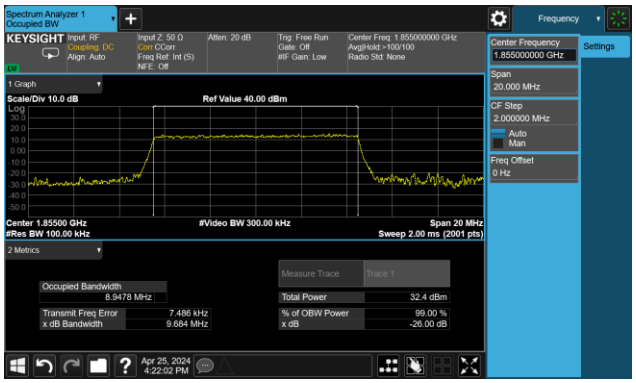
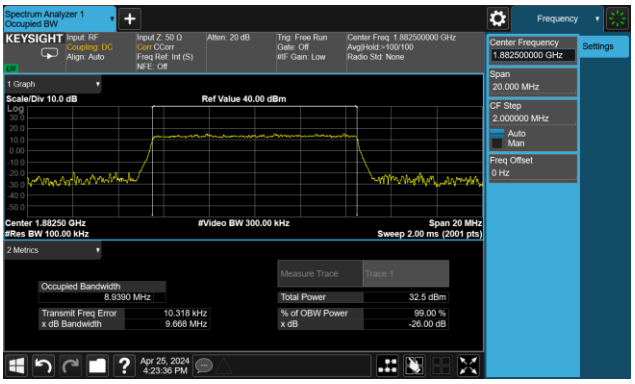
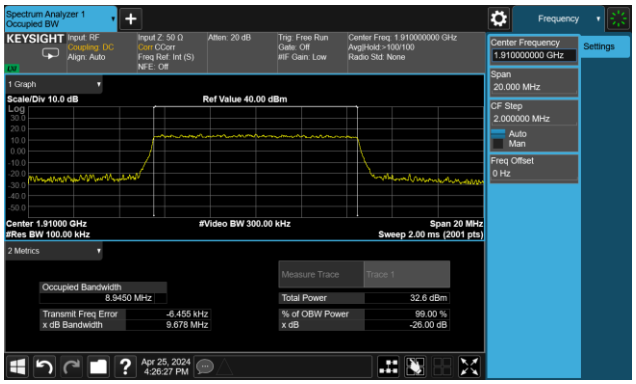
Bandwidth (MHz)	Frequency (MHz)	99% Bandwidth (MHz)
16QAM		
1.4	1850.70	1.08
	1882.50	1.08
	1914.30	1.08
3	1851.50	2.69
	1882.50	2.68
	1913.50	2.68
5	1852.50	4.47
	1882.50	4.48
	1912.50	4.47
10	1855.00	8.94
	1882.50	8.94
	1910.00	8.95
15	1857.50	13.41
	1882.50	13.41
	1907.50	13.42
20	1860.00	17.89
	1882.50	17.89
	1905.00	17.86

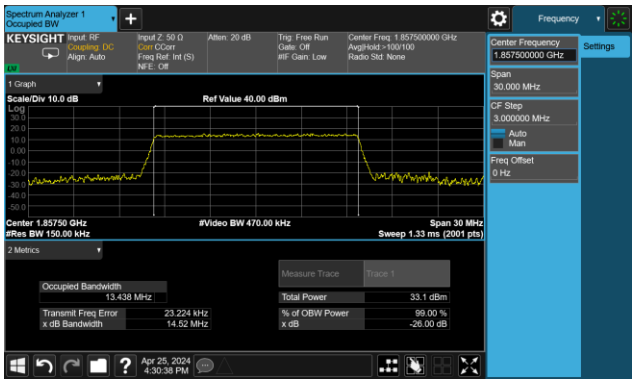
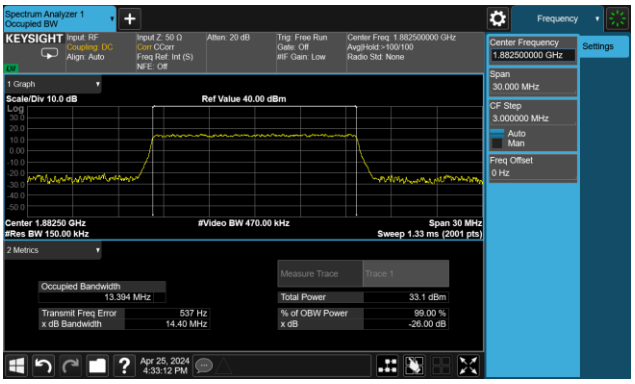
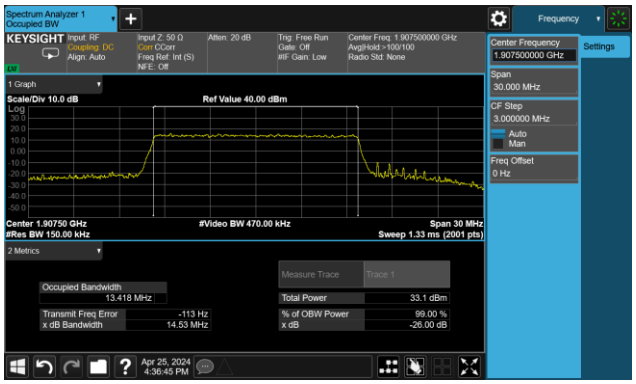
Bandwidth (MHz)	Frequency (MHz)	99% Bandwidth (MHz)
64QAM		
1.4	1850.70	1.09
	1882.50	1.08
	1914.30	1.08
3	1851.50	2.68
	1882.50	2.69
	1913.50	2.68
5	1852.50	4.46
	1882.50	4.47
	1912.50	4.46
10	1855.00	8.95
	1882.50	8.94
	1910.00	8.94
15	1857.50	13.38
	1882.50	13.41
	1907.50	13.45
20	1860.00	17.86
	1882.50	17.85
	1905.00	17.87

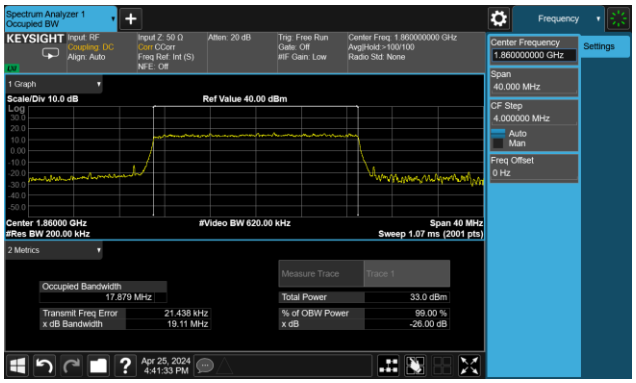
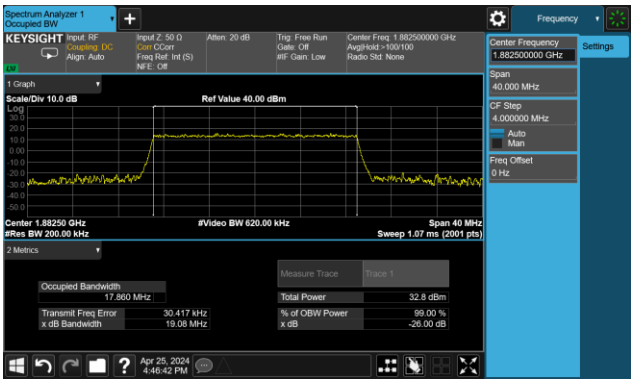
99% Bandwidth – 1.4MHz Bandwidth QPSK	
Low Channel Bandwidth	Middle Channel Bandwidth
	
High Channel Bandwidth	
	

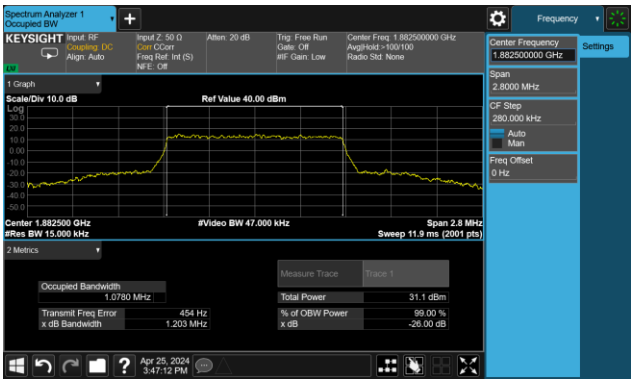
99% Bandwidth — 3MHz Bandwidth QPSK	
Low Channel Bandwidth	Middle Channel Bandwidth
	
High Channel Bandwidth	
	

99% Bandwidth – 5MHz Bandwidth QPSK	
Low Channel Bandwidth	Middle Channel Bandwidth
	
High Channel Bandwidth	
	

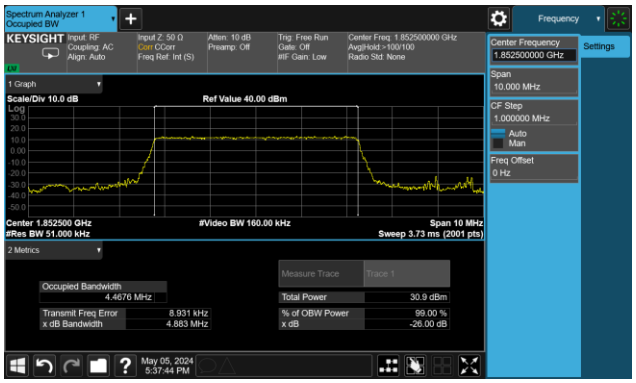
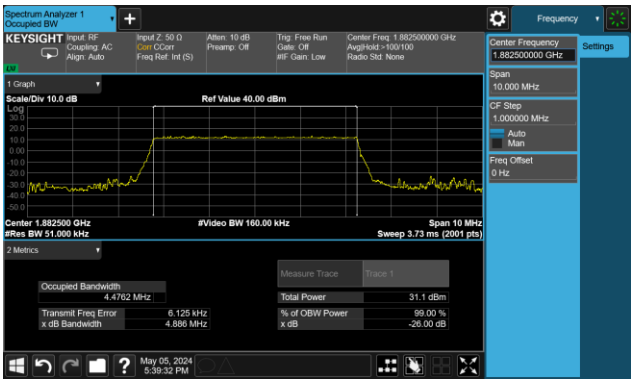
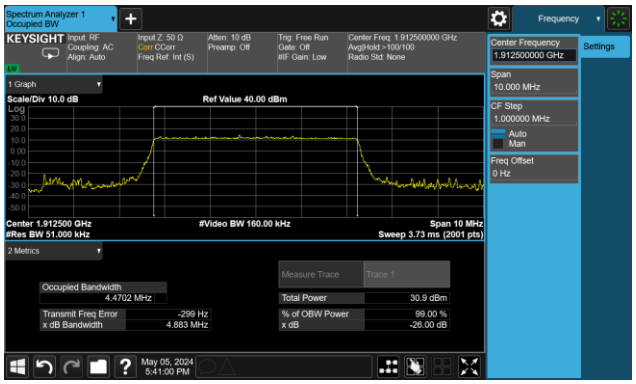
99% Bandwidth – 10MHz Bandwidth QPSK	
Low Channel Bandwidth	Middle Channel Bandwidth
	
High Channel Bandwidth	
	

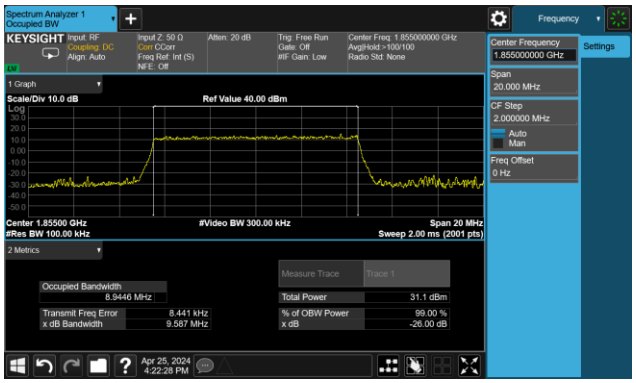
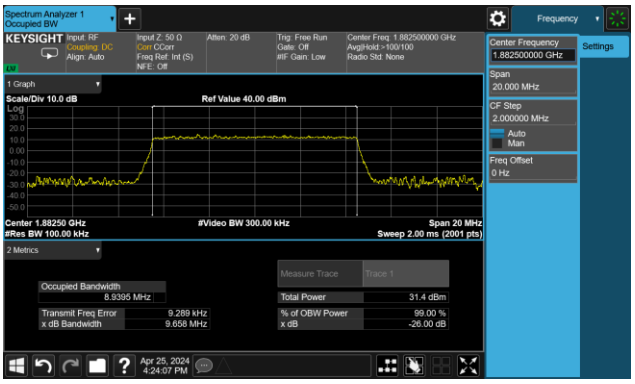
99% Bandwidth – 15MHz Bandwidth QPSK	
Low Channel Bandwidth	Middle Channel Bandwidth
	
High Channel Bandwidth	
	

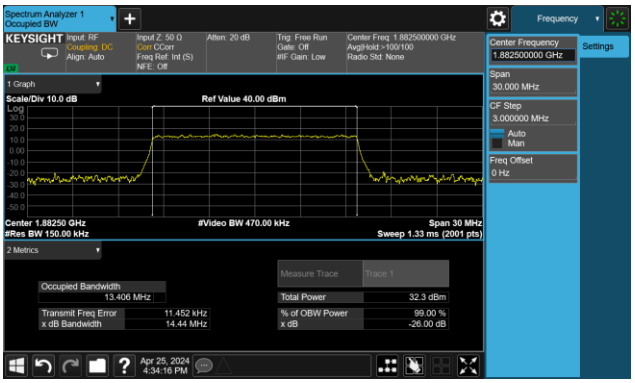
99% Bandwidth – 20MHz Bandwidth QPSK	
Low Channel Bandwidth	Middle Channel Bandwidth
	
High Channel Bandwidth	
	

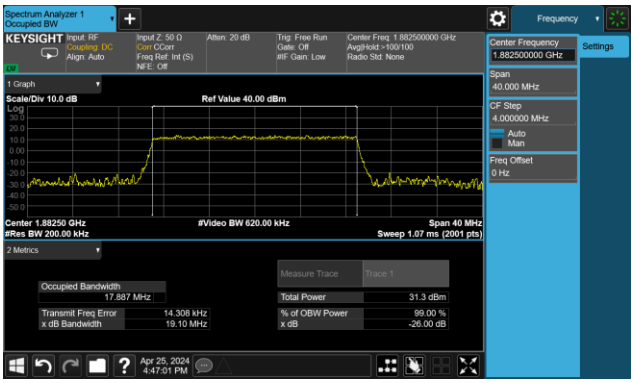
99% Bandwidth – 1.4MHz Bandwidth 16QAM	
Low Channel Bandwidth	Middle Channel Bandwidth
	
High Channel Bandwidth	
	

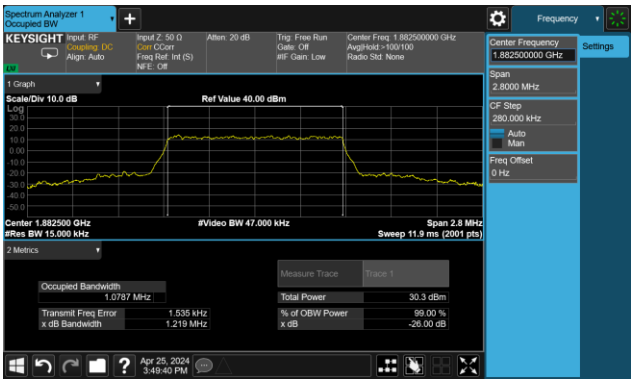
99% Bandwidth – 3MHz Bandwidth 16QAM	
Low Channel Bandwidth	Middle Channel Bandwidth
	
High Channel Bandwidth	
	

99% Bandwidth – 5MHz Bandwidth 16QAM	
Low Channel Bandwidth	Middle Channel Bandwidth
	
High Channel Bandwidth	
	

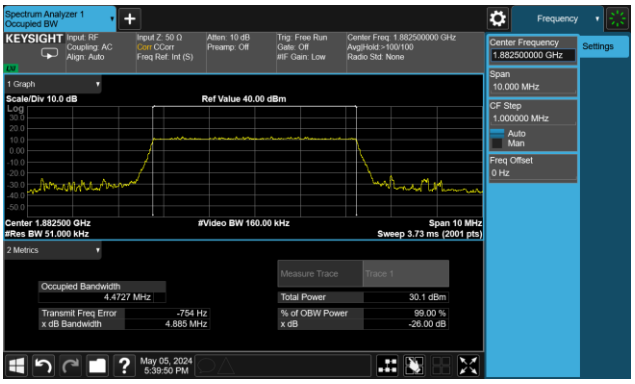
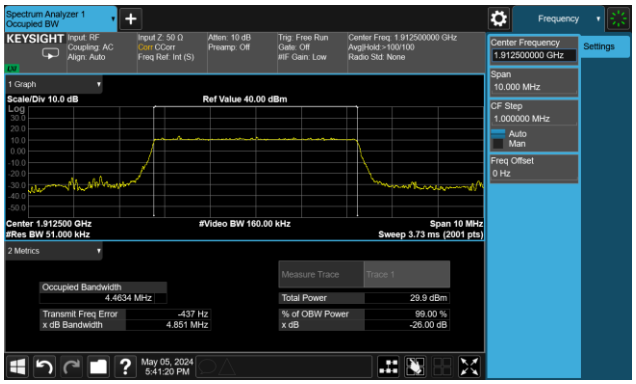
99% Bandwidth – 10MHz Bandwidth 16QAM	
Low Channel Bandwidth	Middle Channel Bandwidth
	
High Channel Bandwidth	
	

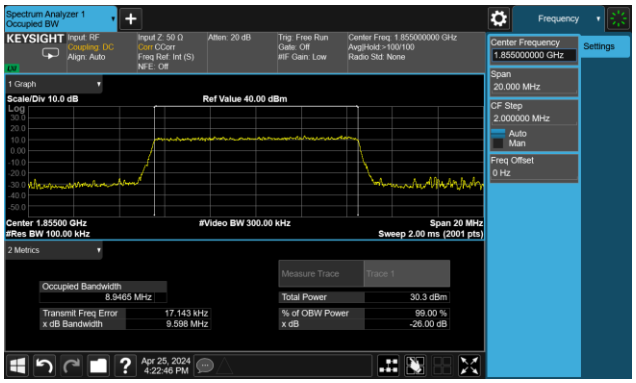
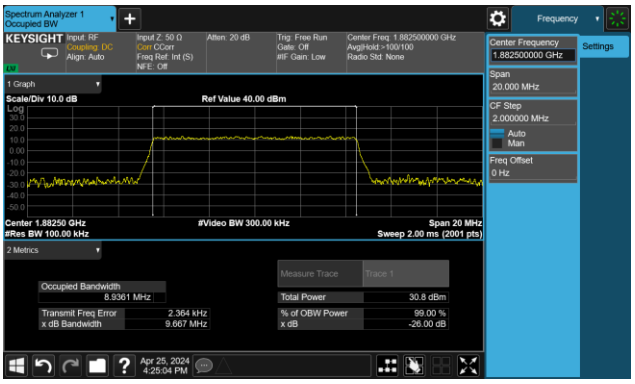
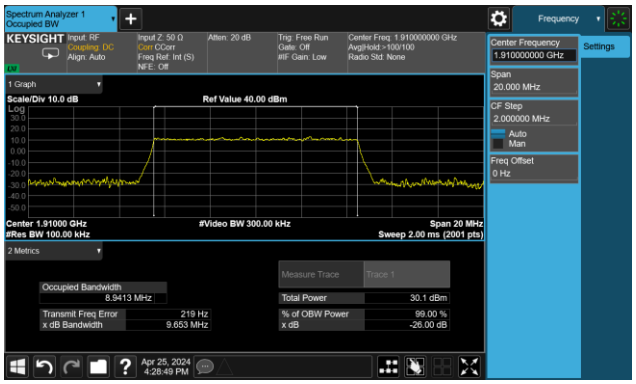
99% Bandwidth – 15MHz Bandwidth 16QAM	
Low Channel Bandwidth	Middle Channel Bandwidth
	
High Channel Bandwidth	
	

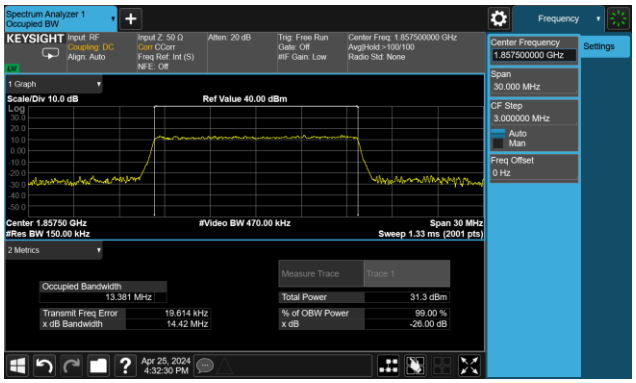
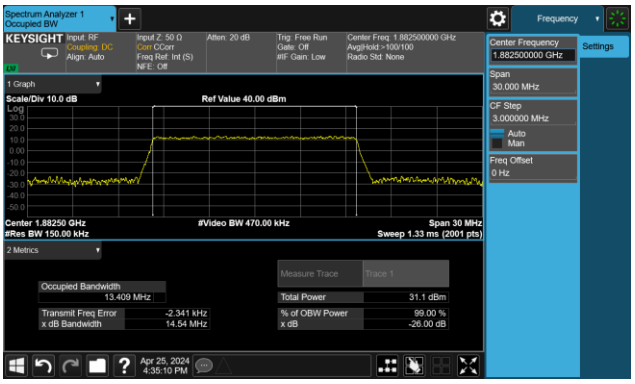
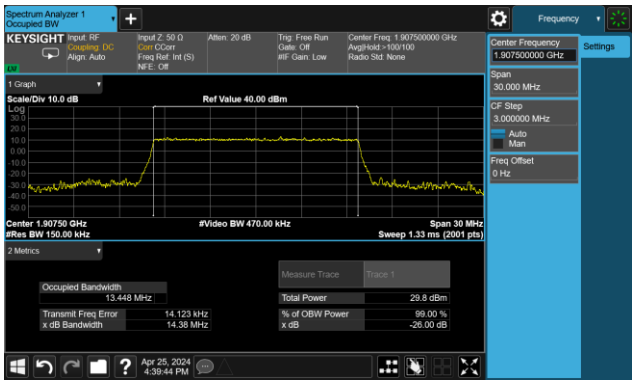
99% Bandwidth – 20MHz Bandwidth 16QAM	
Low Channel Bandwidth	Middle Channel Bandwidth
	
High Channel Bandwidth	
	

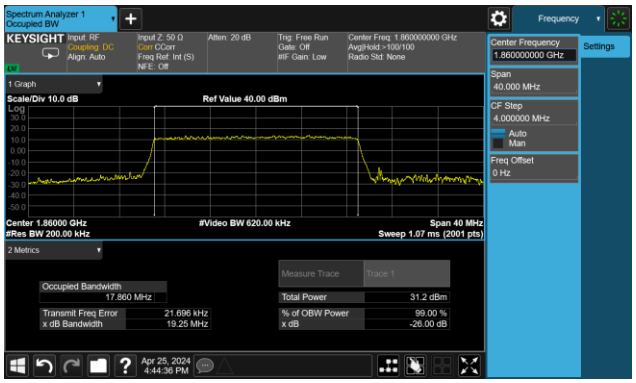
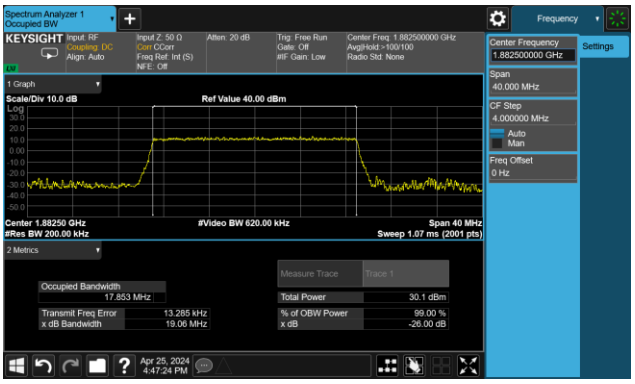
99% Bandwidth – 1.4MHz Bandwidth 64QAM	
Low Channel Bandwidth	Middle Channel Bandwidth
	
High Channel Bandwidth	
	

99% Bandwidth – 3MHz Bandwidth 64QAM	
Low Channel Bandwidth	Middle Channel Bandwidth
	
High Channel Bandwidth	
	

99% Bandwidth – 5MHz Bandwidth 64QAM	
Low Channel Bandwidth	Middle Channel Bandwidth
	
High Channel Bandwidth	
	

99% Bandwidth – 10MHz Bandwidth 64QAM	
Low Channel Bandwidth	Middle Channel Bandwidth
	
High Channel Bandwidth	
	

99% Bandwidth – 15MHz Bandwidth 64QAM	
Low Channel Bandwidth	Middle Channel Bandwidth
	
High Channel Bandwidth	
	

99% Bandwidth – 20MHz Bandwidth 64QAM	
Low Channel Bandwidth	Middle Channel Bandwidth
	
High Channel Bandwidth	
	

Test Site	SIP-SR1	Test Engineer	Yoniter Yang
Test Date	2024-05-05	Test Band	Band 4/66

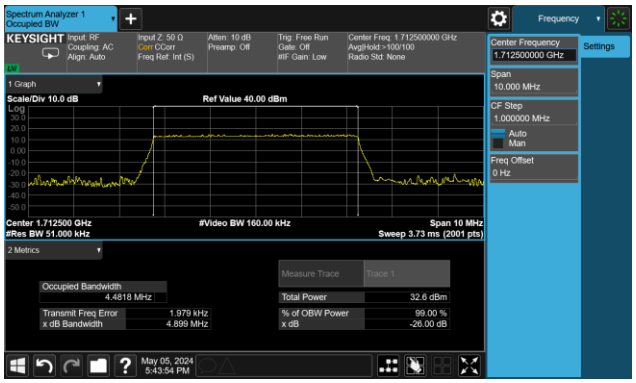
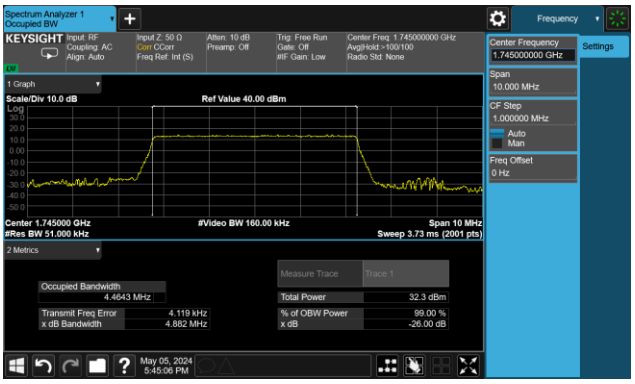
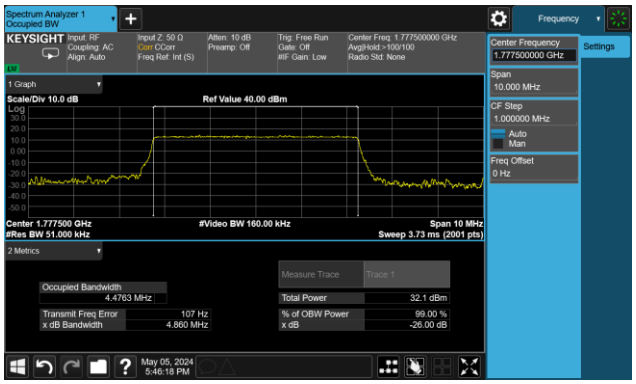
Bandwidth (MHz)	Frequency (MHz)	99% Bandwidth (MHz)
QPSK		
1.4	1710.70	1.08
	1745.00	1.08
	1779.30	1.08
3	1711.50	2.69
	1745.00	2.69
	1778.50	2.68
5	1712.50	4.48
	1745.00	4.46
	1777.50	4.48
10	1715.00	8.95
	1745.00	8.93
	1775.00	8.94
15	1717.50	13.41
	1745.00	13.41
	1772.50	13.40
20	1720.00	17.85
	1745.00	17.85
	1770.00	17.89

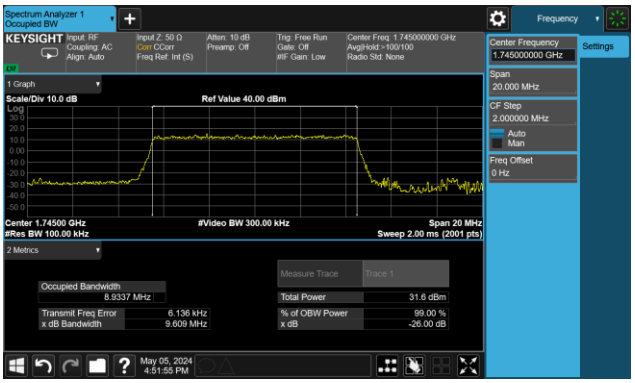
Bandwidth (MHz)	Frequency (MHz)	99% Bandwidth (MHz)
16QAM		
1.4	1710.70	1.08
	1745.00	1.08
	1779.30	1.08
3	1711.50	2.68
	1745.00	2.68
	1778.50	2.68
5	1712.50	4.46
	1745.00	4.46
	1777.50	4.47
10	1715.00	8.94
	1745.00	8.94
	1775.00	8.94
15	1717.50	13.41
	1745.00	13.38
	1772.50	13.40
20	1720.00	17.87
	1745.00	17.91
	1770.00	17.88

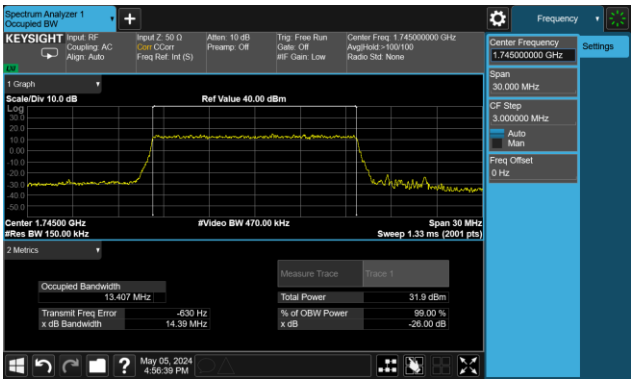
Bandwidth (MHz)	Frequency (MHz)	99% Bandwidth (MHz)
64QAM		
1.4	1710.70	1.08
	1745.00	1.08
	1779.30	1.08
3	1711.50	2.69
	1745.00	2.68
	1778.50	2.68
5	1712.50	4.46
	1745.00	4.47
	1777.50	4.46
10	1715.00	8.95
	1745.00	8.94
	1775.00	8.95
15	1717.50	13.42
	1745.00	13.39
	1772.50	13.39
20	1720.00	17.85
	1745.00	17.85
	1770.00	17.87

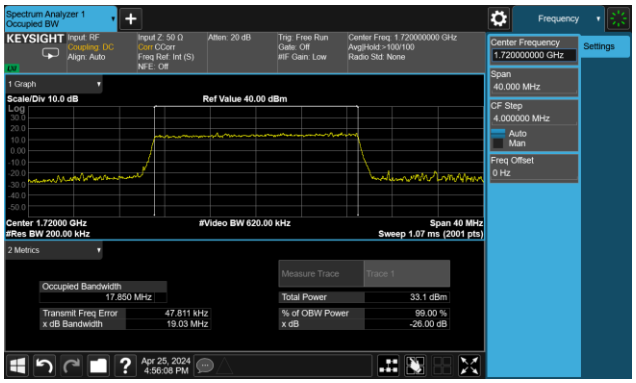
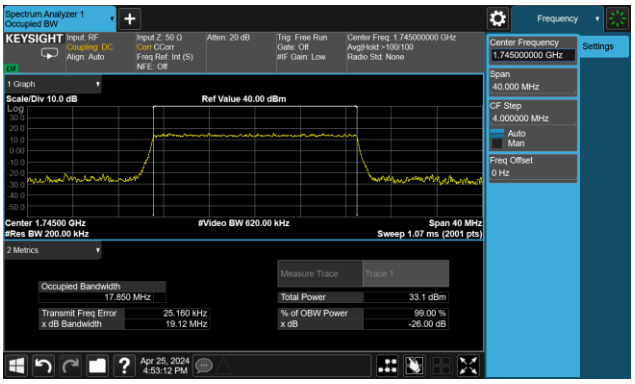
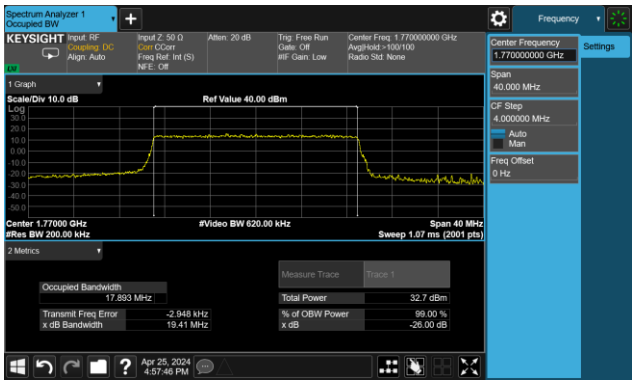
99% Bandwidth – 1.4MHz Bandwidth QPSK	
Low Channel Bandwidth	Middle Channel Bandwidth
	
High Channel Bandwidth	
	

99% Bandwidth – 3MHz Bandwidth QPSK	
Low Channel Bandwidth	Middle Channel Bandwidth
	
High Channel Bandwidth	
	

99% Bandwidth – 5MHz Bandwidth QPSK	
Low Channel Bandwidth	Middle Channel Bandwidth
	
High Channel Bandwidth	
	

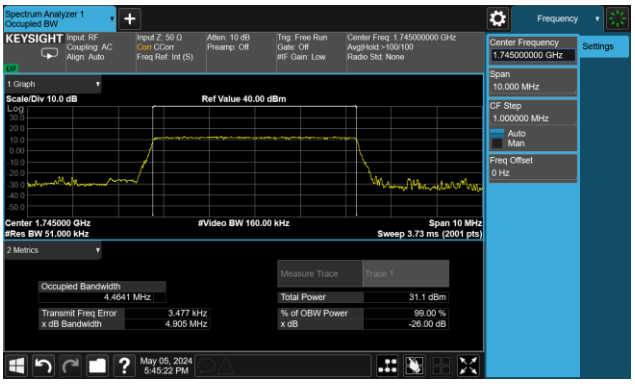
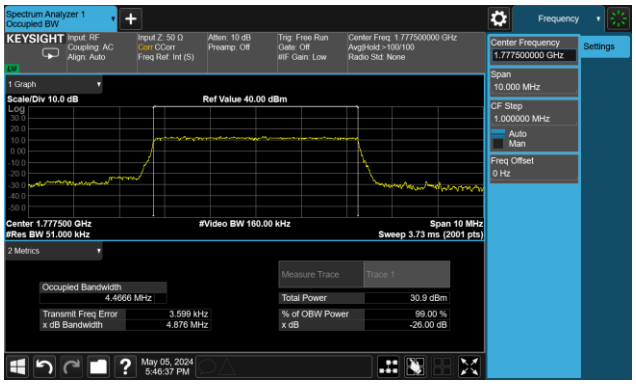
99% Bandwidth – 10MHz Bandwidth QPSK	
Low Channel Bandwidth	Middle Channel Bandwidth
	
High Channel Bandwidth	
	

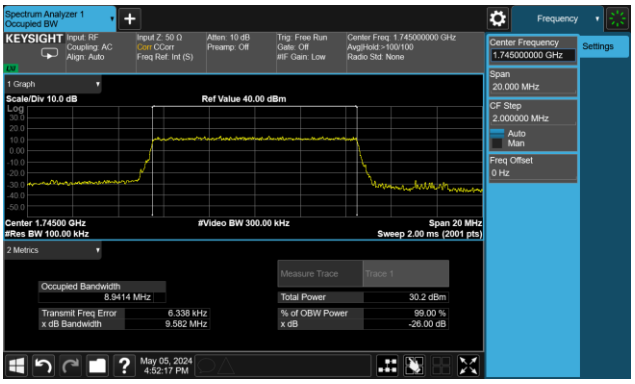
99% Bandwidth – 15MHz Bandwidth QPSK	
Low Channel Bandwidth	Middle Channel Bandwidth
	
High Channel Bandwidth	
	

99% Bandwidth – 20MHz Bandwidth QPSK	
Low Channel Bandwidth	Middle Channel Bandwidth
	
High Channel Bandwidth	
	

99% Bandwidth – 1.4MHz Bandwidth 16QAM	
Low Channel Bandwidth	Middle Channel Bandwidth
	
High Channel Bandwidth	
	

99% Bandwidth – 3MHz Bandwidth 16QAM	
Low Channel Bandwidth	Middle Channel Bandwidth
	
High Channel Bandwidth	
	

99% Bandwidth – 5MHz Bandwidth 16QAM	
Low Channel Bandwidth	Middle Channel Bandwidth
	
High Channel Bandwidth	
	

99% Bandwidth – 10MHz Bandwidth 16QAM	
Low Channel Bandwidth	Middle Channel Bandwidth
	
High Channel Bandwidth