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):	Part90 Subpart R
Result:	Complies
Received Date:	2024-04-22
Test Date:	2024-04-25 ~ 2024-05-27

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.

The test report shall not be reproduced except in full without the written approval of MRT Technology (Suzhou) Co., Ltd.

Revision History

Report No.	Version	Description	Issue Date	Note
2404RSU035-U3	V01	Initial Report	2024-06-07	Valid

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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	
TX Frequency Range	Band 14: 788 ~ 798 MHz
RX Frequency Range	Band 14: 758 ~ 768 MHz
Support Bandwidth	5MHz, 10MHz
Support Power Class	PC3
Modulation	UL up to 64QAM, DL up to 256QAM

1.6. Description of Available Antennas

Technology	Frequency Range (MHz)	Antenna Type	MaxPeak Gain (dBi)
LTE Band 14	788 ~ 798	PIFA	3.25
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).			

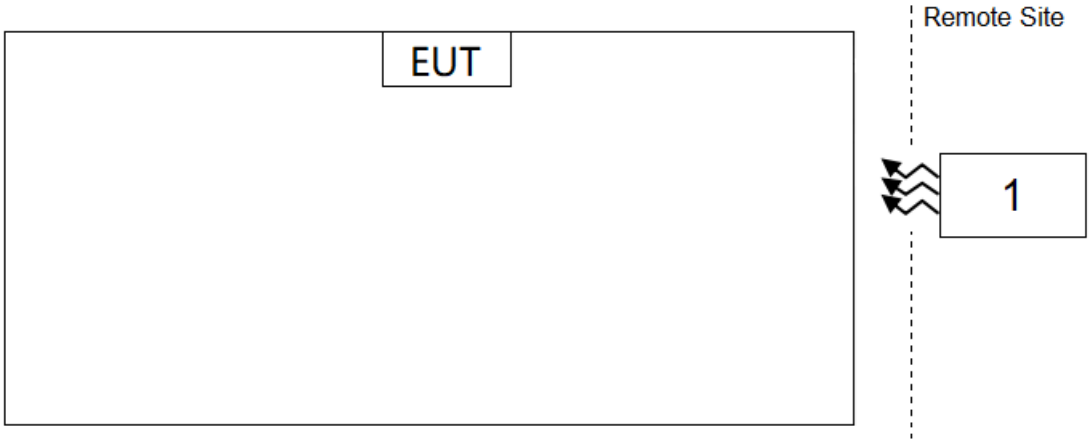
1.7. Test Methodology

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 90
- 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	MVE4816-10	MRTSUE11120	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	PULSAR	CS10-23-436/20	MRTSUE06848	1 year	2024-06-01	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
Cable	HUBER+SUHNER	SF106	MRTSUE06594	1 year	2024-12-21	SIP-AC1
Cable	HUBER+SUHNER	SF106	MRTSUE06874	1 year	2024-12-21	SIP-AC1

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
2.1055,90.539(e)	Frequency Stability		Pass
90.542(a)(7)	Transmitter Output Power		Pass
2.1051, 90.543(e)(2)(3)	Transmitter unwanted emissions (band-edge)		Pass
2.1051, 90.210(n)	Emission Mask		
2.1051, 90.543(e)(3) (f)	Transmitter unwanted emissions (spurious)		
2.1053, 90.543(e)(3) (f)	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 ofthe 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) This report is based on MRT Original “2404RSU035-U3” 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.

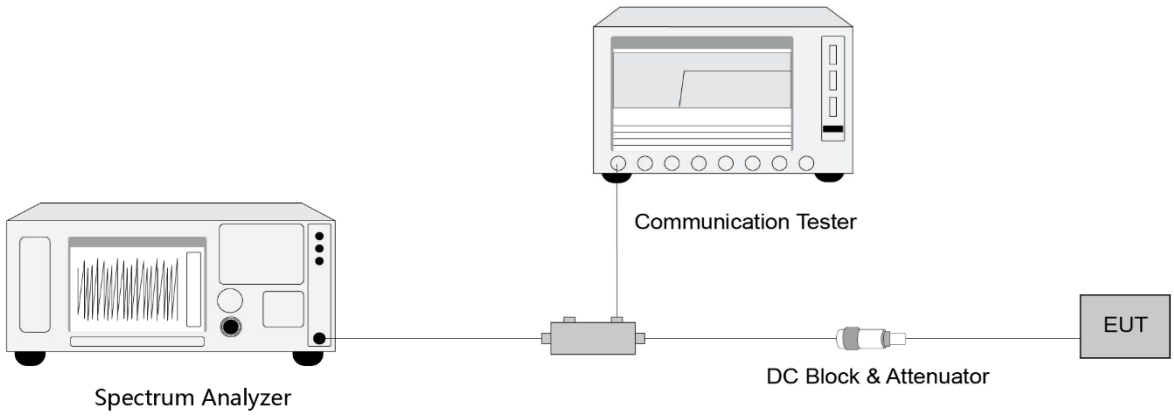
5.2.2. Test Procedure

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 of mobile, portable and control transmitters operating in the wideband segment must be 1.25 parts per million or better when AFC is locked to a base station, and 5 parts per million or better when AFC is not locked

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.

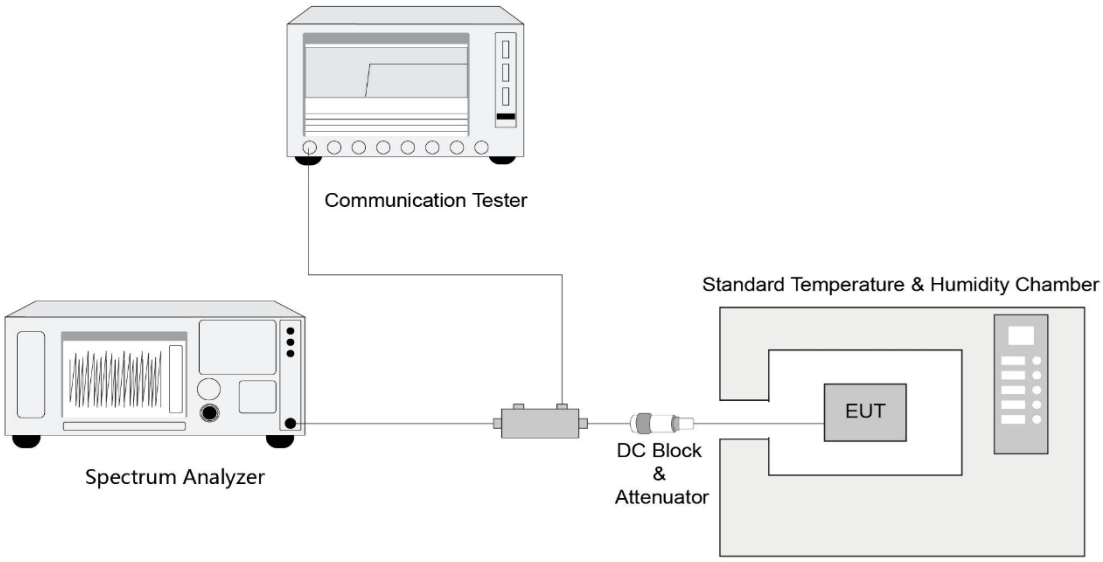
Frequency Stability Under Voltage Variations:

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 inputvoltage to specify extreme voltage variation (±15%) and end point, record the 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

Control stations and mobile stations transmitting in the 758-768 MHz band and the 788-798 MHz band are limited to 30 watts ERP.

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

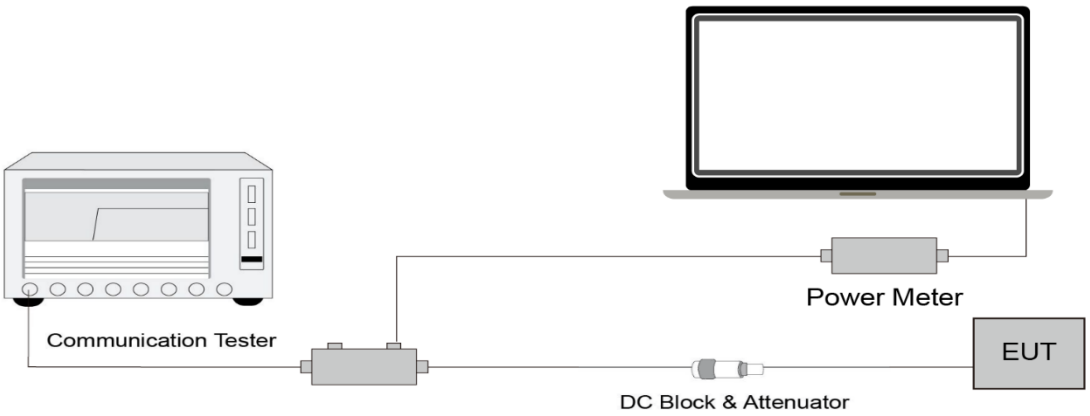
ERP or EIRP effective radiated power or equivalent isotropically radiated power, respectively (expressed in the same units as P_{Meas}, e.g., dBm or dBW)

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. Transmitter unwanted emissions (band-edge) Measurement

5.5.1. Test Limit

For operations in the 758-768 MHz and the 788-798 MHz bands, the power of any emission outside the licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, in accordance with the following:

(1) On all frequencies between 769-775 MHz and 799-805 MHz, by a factor not less than 65 + 10 log (P) dB in a 6.25 kHz band segment, for mobile and portable stations;

(2) On any frequency between 775-788 MHz, above 805 MHz, and below 758 MHz, byat least 43 + 10 log (P) dB.

5.5.2. Test Procedure

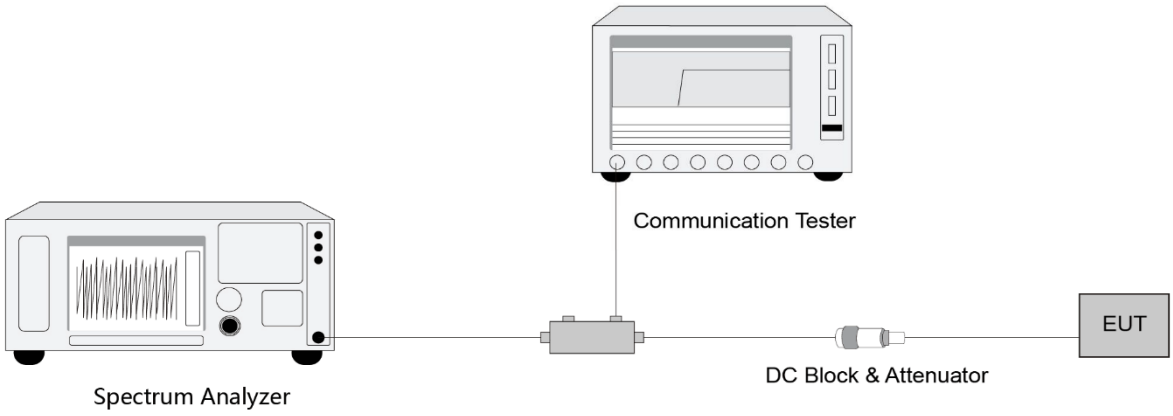
ANSI C63.26-2015 – Section 5.7

5.5.3. 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.

5.5.4. Test Setup



5.5.5. Test Result

Refer to Appendix A.4.

5.6. Emisson Mask Measurement

5.6.1. Test Limit

Emission Mask B, for transmitters that are equipped with an audio low-pass filter, the power of any emission must be attenuated below the unmodulated carrier power (P) as follows:

(1) On any frequency removed from the assigned frequency by more than 50 percent, but not more than 100 percent of the authorized bandwidth: At least 25 dB.

(2) On any frequency removed from the assigned frequency by more than 100 percent, but not more than 250 percent of the authorized bandwidth: At least 35 dB.

(3) On any frequency removed from the assigned frequency by more than 250 percent of the authorized bandwidth: At least 43 + 10 log (P) dB.

5.6.2. Test Procedure

ANSI C63.26-2015 - Section5.7

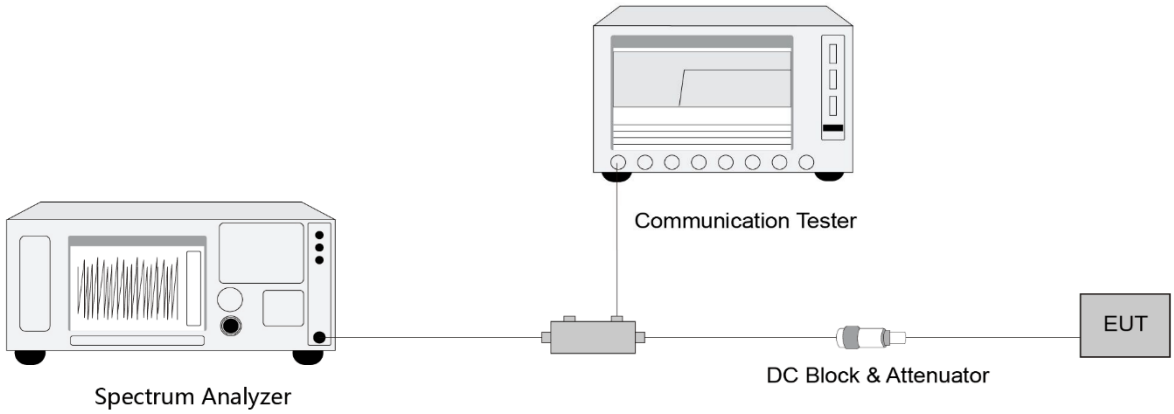
5.6.3. Test Setting

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.

On any frequency between 775-788 MHz, above 805 MHz, and below 758 MHz, by at least 43 + 10 log (P) dB.

For operations in the 758-775 MHz and 788-805 MHz bands, all emissions including harmonics in the band 1559-1610 MHz shall be limited to −70 dBW/MHz equivalent isotropically radiated power (EIRP) for wideband signals, and −80 dBW EIRP for discrete emissions of less than 700 Hz bandwidth.

5.7.2. Test Procedure

ANSI C63.26-2015 - Section 5.7

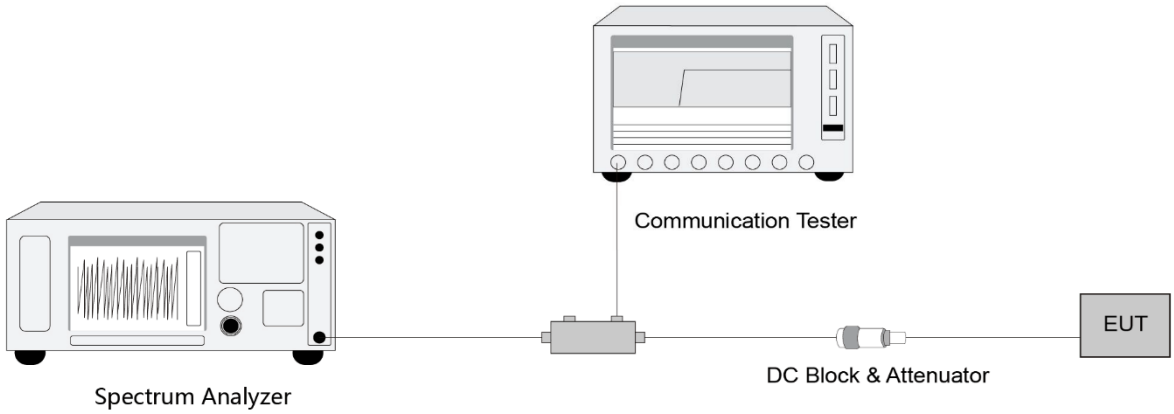
5.7.3. Test Setting

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

Out of band emissions: The powerof any emission outside of the authorized 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 operations in the 758-775 MHz and 788-805 MHz bands, all emissions including harmonics 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 the purpose of equipment authorization, atransmitter shall be tested with an antenna that is representative of the type that will be used with the equipment in normal operation.

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 55.3dBμV/m.

5.8.2. Test Procedure

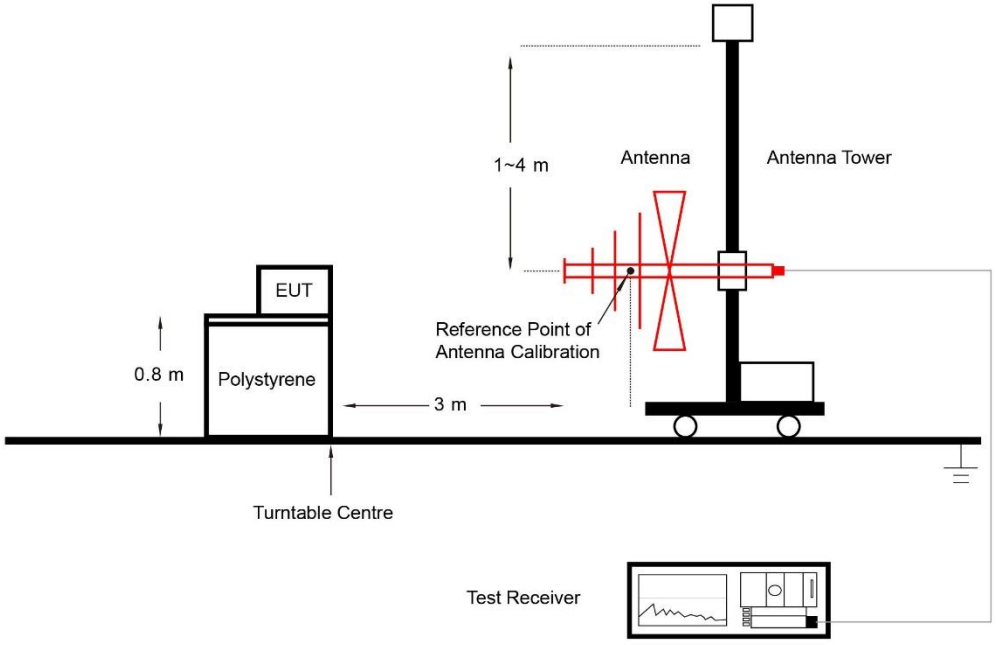
ANSI C63.26-2015 - Section 5.2.7 & 5.5

5.8.3. Test Setting

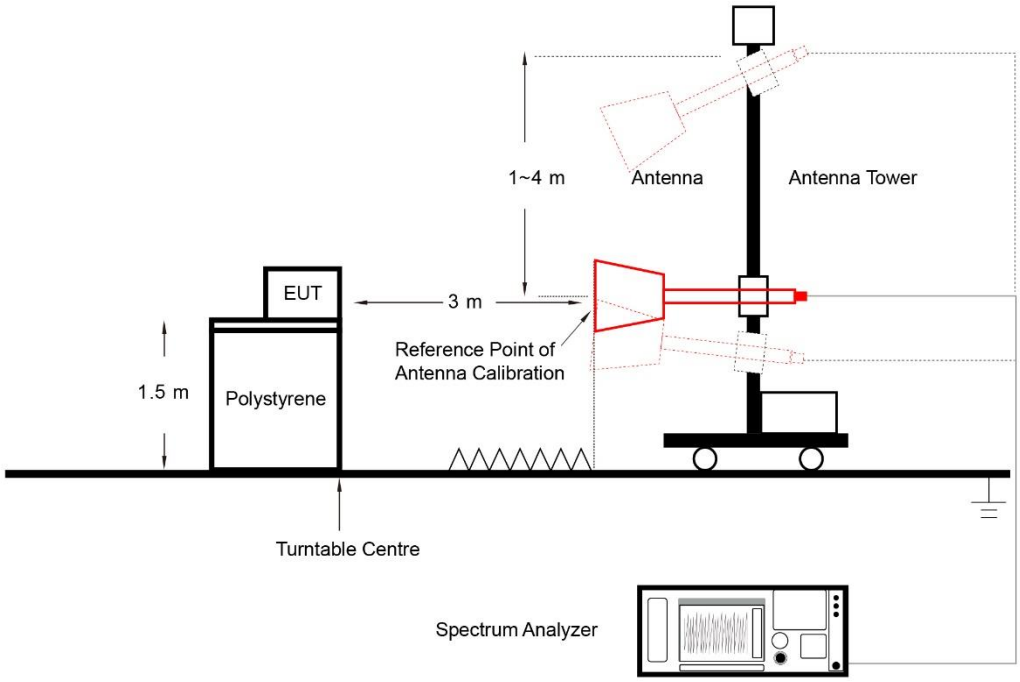
1. RBW = 120kHz or 1MHz
2. VBW ≥ 3*RBW
3. Sweep time ≥ 10 × (number of points in sweep) × (transmission symbol period)
4. Detector = CISPR quasi-peak / average detector (Below 1 GHz, compliance with the limits shall be demonstrated using a CISPR quasi-peak detector and the related measurement bandwidth.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

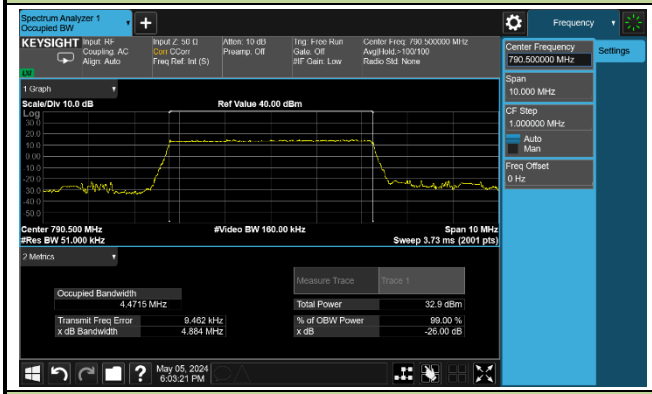
A.1 Occupied Bandwidth Test Result

Test Site	SIP-SR1	Test Engineer	Yoniter Yang
Test Date	2024-05-05	Test Band	Band 14

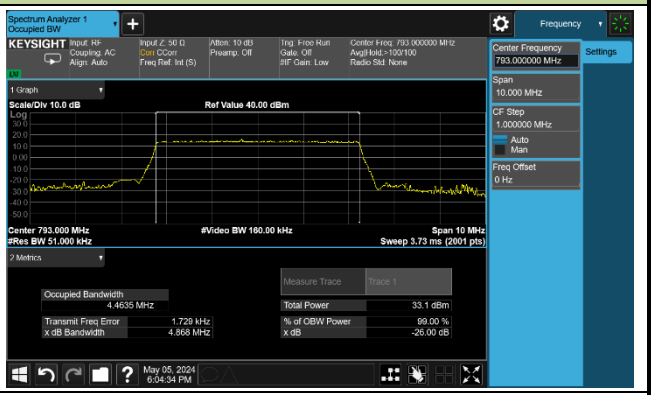
Bandwidth (MHz)	Frequency (MHz)	99% Bandwidth (MHz)
QPSK		
5	790.5	4.47
	793.0	4.46
	795.5	4.48
10	793.0	8.92
16QAM		
5	790.5	4.46
	793.0	4.46
	795.5	4.46
10	793.0	8.94
64QAM		
5	790.5	4.46
	793.0	4.46
	795.5	4.47
10	793.0	8.94

99% Bandwidth – 5MHz Bandwidth QPSK

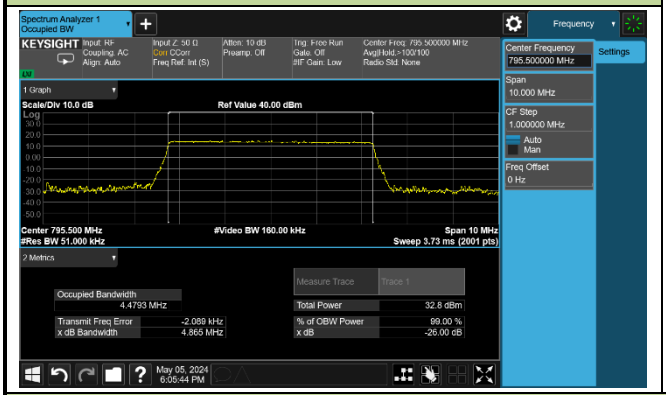
Low Channel Bandwidth



Middle Channel Bandwidth

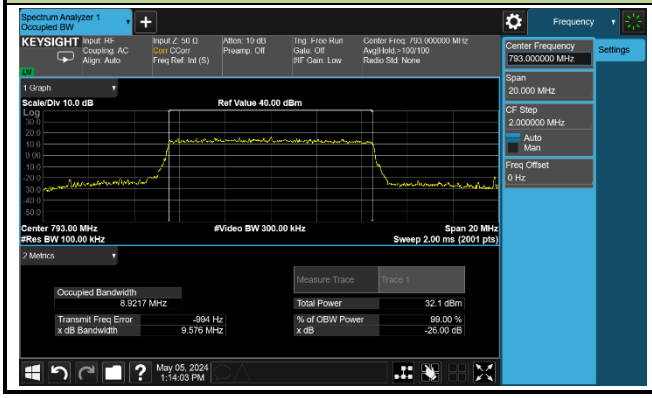


High Channel Bandwidth



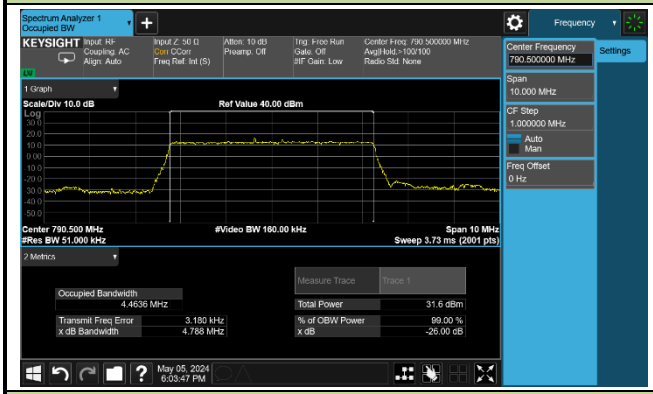
99% Bandwidth – 10MHz Bandwidth QPSK

Middle Channel Bandwidth

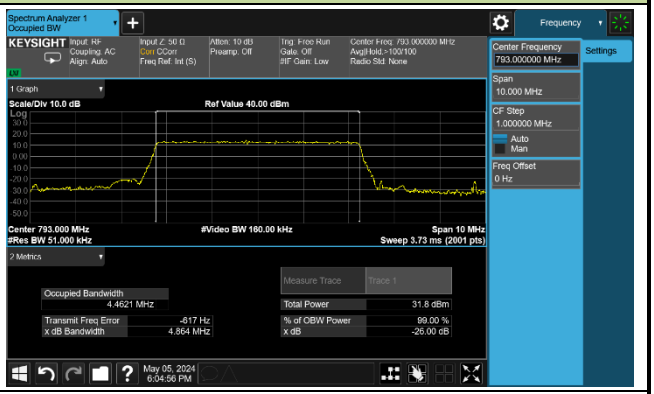


99% Bandwidth – 5MHz Bandwidth 16QAM

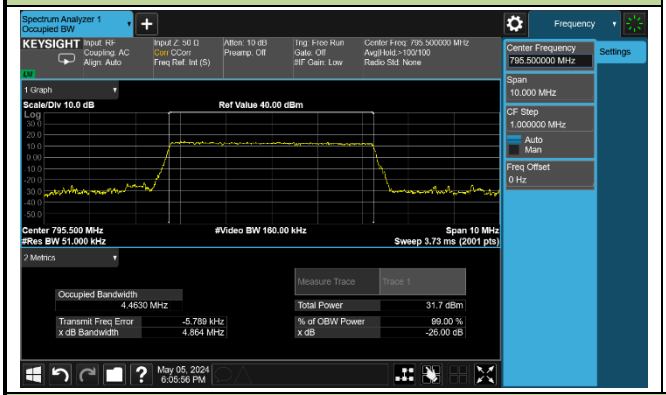
Low Channel Bandwidth



Middle Channel Bandwidth

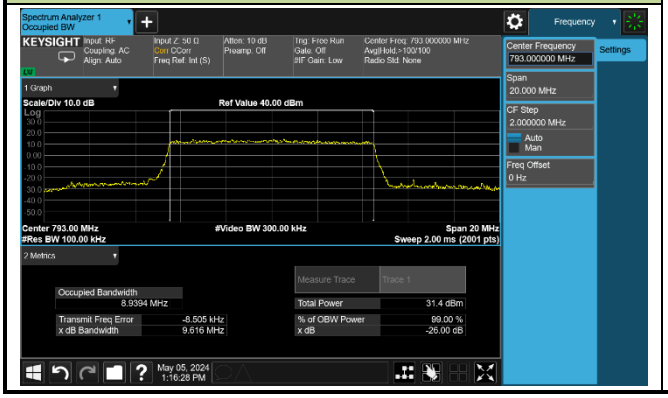


High Channel Bandwidth



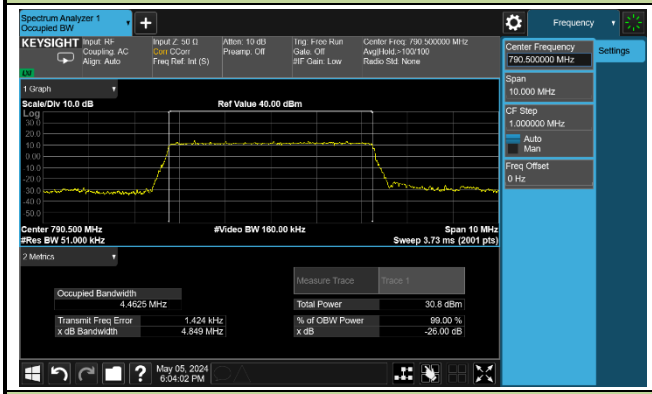
99% Bandwidth – 10MHz Bandwidth 16QAM

Middle Channel Bandwidth

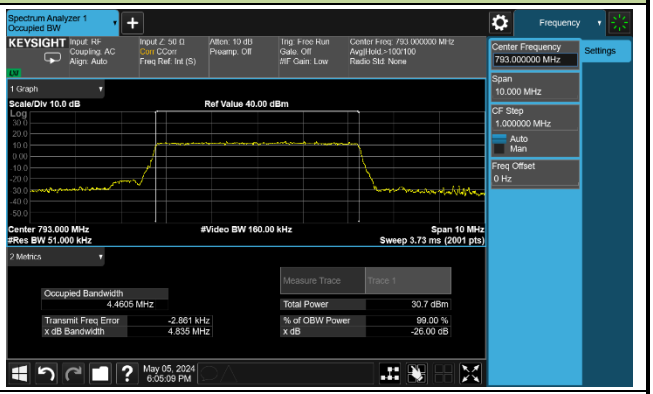


99% Bandwidth – 5MHz Bandwidth 64QAM

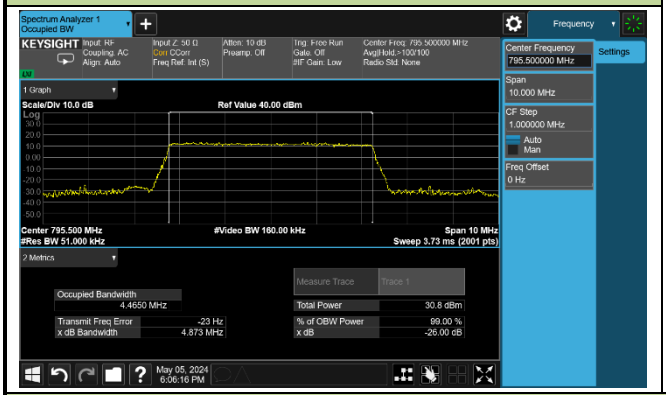
Low Channel Bandwidth



Middle Channel Bandwidth



High Channel Bandwidth



99% Bandwidth – 10MHz Bandwidth 64QAM

Middle Channel Bandwidth

A.2 Frequency Stability Test Result

Test Site	WZ-TR3	Test Engineer	Jone Zhang
Test Date	2024-05-24 ~ 2024-05-27	Test Band	Band 14

Voltage	Temp (°C)	Frequency Range (MHz)		Delta (Hz)	Frequency stability (ppm)	Within Authorized Frequency Block
		788.0	798.0			
		f_L	f_H			
Normal	+ 20 (Ref)	788.1900	797.8100	0.00	0.0000	Pass
	+ 50	788.1900	797.8100	2.00	0.0025	Pass
	+ 40	788.1900	797.8100	2.50	0.0032	Pass
	+ 30	788.1900	797.8100	4.70	0.0059	Pass
	+ 10	788.1900	797.8100	4.10	0.0052	Pass
	0	788.1900	797.8100	3.20	0.0040	Pass
	- 10	788.1900	797.8100	4.00	0.0050	Pass
	- 20	788.1900	797.8100	2.90	0.0037	Pass
	- 30	788.1900	797.8100	3.20	0.0040	Pass
15%	+ 20	788.1900	797.8100	4.00	0.0050	Pass
-15%	+ 20	788.1900	797.8100	2.40	0.0030	Pass

A.3 Transmitter Output Power Test Result

Test Site	SIP-SR1	Test Engineer	Yoniter Yang
Test Date	2024-04-29 ~ 2024-05-17	Test Band	Band 14

Frequency (MHz)	Channel Bandwidth (MHz)	RB Size	RB Offset	Output Power (dBm)	ERP (dBm)	Limit (dBm)
QPSK						
790.5	5	1	0	23.93	25.03	<34.77
793.0				23.86	24.96	<34.77
795.5				23.89	24.99	<34.77
790.5	5	1	12	23.97	25.07	<34.77
793.0				24.01	25.11	<34.77
795.5				24.05	25.15	<34.77
790.5	5	1	24	23.95	25.05	<34.77
793.0				24.02	25.12	<34.77
795.5				23.96	25.06	<34.77
790.5	5	25	0	23.30	24.40	<34.77
793.0				23.23	24.33	<34.77
795.5				23.28	24.38	<34.77
793.0	10	1	0	23.95	25.05	<34.77
793.0			24	23.82	24.92	<34.77
793.0			49	23.85	24.95	<34.77
793.0	10	50	0	23.07	24.17	<34.77
Note: The ERP (dBm) = Output Power (dBm) + Antenna Gain (dBi) - 2.15						

Frequency (MHz)	Channel Bandwidth (MHz)	RB Size	RB Offset	Output Power (dBm)	ERP (dBm)	Limit (dBm)
16QAM						
790.5	5	1	0	23.30	24.40	<34.77
793.0				22.88	23.98	<34.77
795.5				23.10	24.20	<34.77
790.5	5	1	12	23.42	24.52	<34.77
793.0				23.04	24.14	<34.77
795.5				23.16	24.26	<34.77
790.5	5	1	24	23.35	24.45	<34.77
793.0				22.95	24.05	<34.77
795.5				23.09	24.19	<34.77
790.5	5	25	0	22.08	23.18	<34.77
793.0				22.06	23.16	<34.77
795.5				22.07	23.17	<34.77
793.0	10	1	0	23.21	24.31	<34.77
793.0			24	23.02	24.12	<34.77
793.0			49	23.05	24.15	<34.77
793.0	10	50	0	21.85	22.95	<34.77
Note: The ERP (dBm) = Output Power (dBm) + Antenna Gain (dBi) - 2.15						

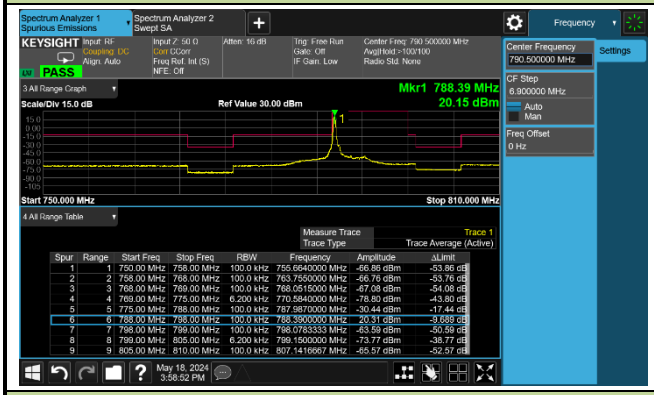
Frequency (MHz)	Channel Bandwidth (MHz)	RB Size	RB Offset	Output Power (dBm)	ERP (dBm)	Limit (dBm)
64QAM						
790.5	5	1	0	22.16	23.26	<34.77
793.0				22.02	23.12	<34.77
795.5				22.22	23.32	<34.77
790.5	5	1	12	22.25	23.35	<34.77
793.0				22.11	23.21	<34.77
795.5				22.12	23.22	<34.77
790.5	5	1	24	22.17	23.27	<34.77
793.0				22.06	23.16	<34.77
795.5				21.74	22.84	<34.77
790.5	5	25	0	21.12	22.22	<34.77
793.0				21.05	22.15	<34.77
795.5				21.02	22.12	<34.77
793.0	10	1	0	22.02	23.12	<34.77
793.0			24	21.89	22.99	<34.77
793.0			49	21.68	22.78	<34.77
793.0	10	50	0	20.84	21.94	<34.77
Note: The ERP (dBm) = Output Power (dBm) + Antenna Gain (dBi) - 2.15						

A.4 Transmitter unwanted emissions (band-edge) Test Result

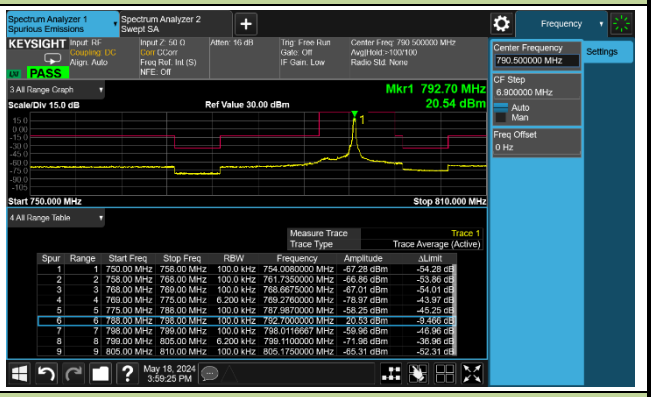
Test Site	SIP-SR1	Test Engineer	Yoniter Yang
Test Date	2024-05-18	Test Band	Band 14

5MHz Channel Bandwidth – 1RB

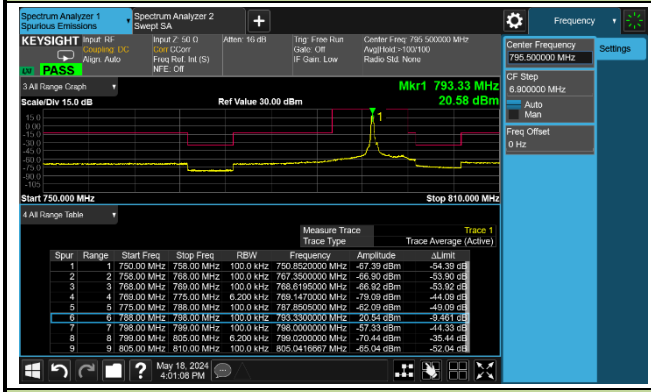
Low Channel_1RB_Low



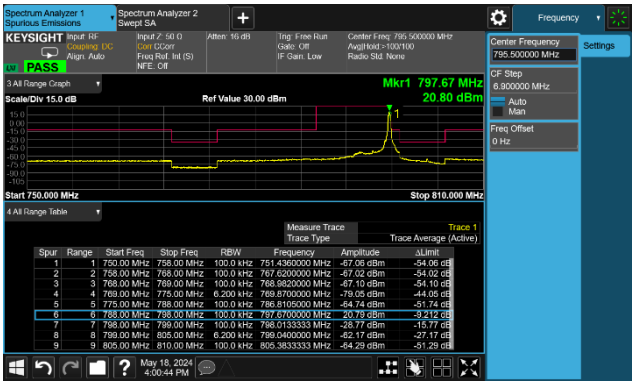
Low Channel_1RB_High



High Channel_1RB_Low

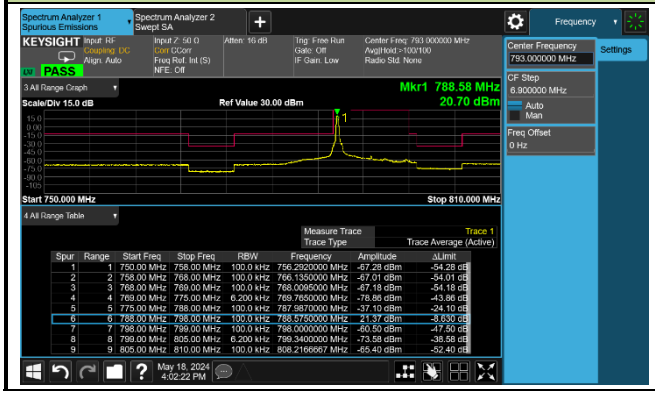


High Channel_1RB_High

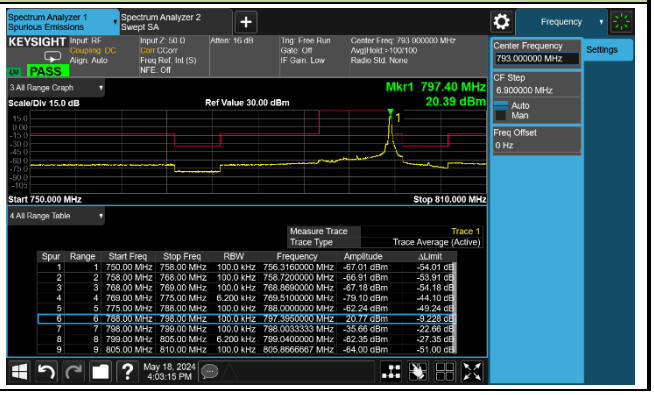


10MHz Channel Bandwidth – 1RB

Middle Channel_1RB_Low

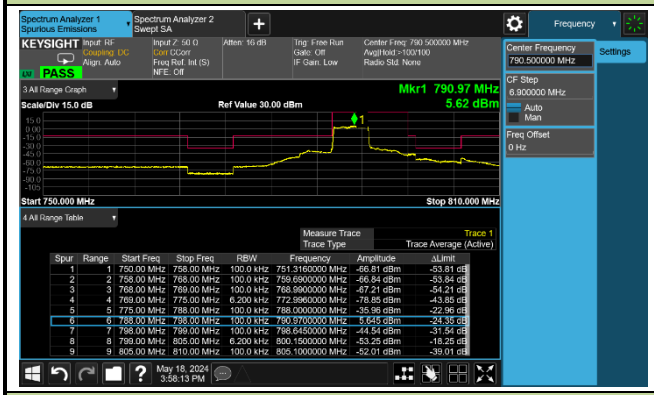


Middle Channel_1RB_High



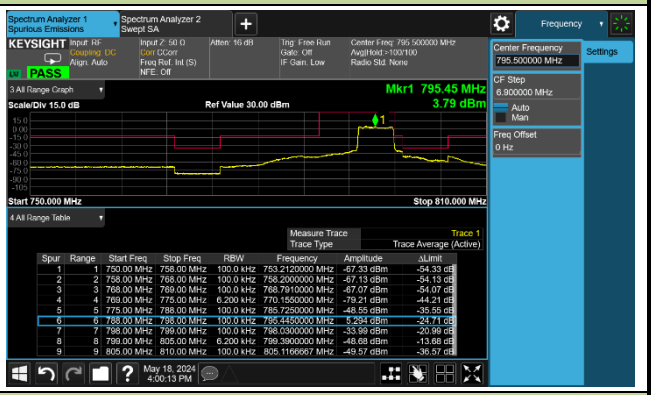
5MHz Channel Bandwidth – Full RB

Low Channel_Full RB



Spur	Range	Start Freq	Stop Freq	RBW	Frequency	Amplitude	ΔLimit
1	1	750.00 MHz	758.00 MHz	100.0 kHz	751.3160000 MHz	-66.81 dBm	-53.81 dB
2	2	758.00 MHz	768.00 MHz	100.0 kHz	759.6900000 MHz	-66.84 dBm	-53.84 dB
3	3	768.00 MHz	769.00 MHz	100.0 kHz	768.9900000 MHz	-67.21 dBm	-54.21 dB
4	4	769.00 MHz	775.00 MHz	6.200 kHz	772.9860000 MHz	-78.85 dBm	-43.85 dB
5	5	775.00 MHz	788.00 MHz	100.0 kHz	788.0000000 MHz	-35.96 dBm	-22.96 dB
6	6	788.00 MHz	798.00 MHz	100.0 kHz	790.9700000 MHz	5.645 dBm	-24.35 dB
7	7	798.00 MHz	799.00 MHz	100.0 kHz	798.6450000 MHz	-44.54 dBm	-31.54 dB
8	8	799.00 MHz	805.00 MHz	6.200 kHz	800.1500000 MHz	-53.25 dBm	-18.25 dB
9	9	805.00 MHz	810.00 MHz	100.0 kHz	805.1000000 MHz	-52.01 dBm	-39.01 dB

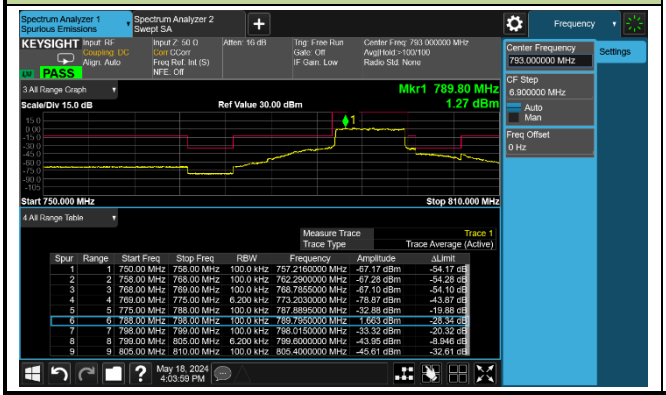
Middle Channel_Full RB



Spur	Range	Start Freq	Stop Freq	RBW	Frequency	Amplitude	ΔLimit
1	1	750.00 MHz	758.00 MHz	100.0 kHz	753.2120000 MHz	-67.33 dBm	-54.33 dB
2	2	758.00 MHz	768.00 MHz	100.0 kHz	758.2000000 MHz	-67.13 dBm	-54.13 dB
3	3	768.00 MHz	769.00 MHz	100.0 kHz	768.7910000 MHz	-67.07 dBm	-54.07 dB
4	4	769.00 MHz	775.00 MHz	6.200 kHz	770.1550000 MHz	-79.21 dBm	-44.21 dB
5	5	775.00 MHz	788.00 MHz	100.0 kHz	785.7250000 MHz	-48.55 dBm	-35.55 dB
6	6	788.00 MHz	798.00 MHz	100.0 kHz	795.4450000 MHz	5.294 dBm	-24.71 dB
7	7	798.00 MHz	799.00 MHz	100.0 kHz	798.0300000 MHz	-33.99 dBm	-20.99 dB
8	8	799.00 MHz	805.00 MHz	6.200 kHz	799.3900000 MHz	-48.68 dBm	-13.68 dB
9	9	805.00 MHz	810.00 MHz	100.0 kHz	805.1166667 MHz	-49.57 dBm	-36.57 dB

10MHz Channel Bandwidth – Full RB

Middle Channel



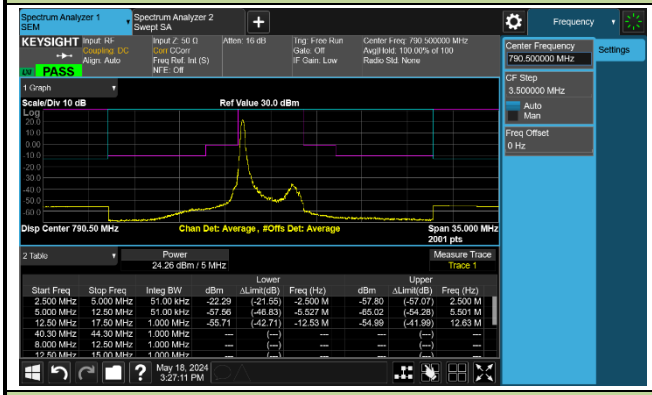
Spur	Range	Start Freq	Stop Freq	RBW	Frequency	Amplitude	ΔLimit
1	1	750.00 MHz	758.00 MHz	100.0 kHz	757.2160000 MHz	-67.17 dBm	-54.17 dB
2	2	758.00 MHz	768.00 MHz	100.0 kHz	762.2900000 MHz	-67.28 dBm	-54.28 dB
3	3	768.00 MHz	769.00 MHz	100.0 kHz	768.7855000 MHz	-67.10 dBm	-54.10 dB
4	4	769.00 MHz	775.00 MHz	6.200 kHz	773.2030000 MHz	-78.87 dBm	-43.87 dB
5	5	775.00 MHz	788.00 MHz	100.0 kHz	787.8895000 MHz	-32.88 dBm	-19.88 dB
6	6	788.00 MHz	798.00 MHz	100.0 kHz	789.7950000 MHz	1.663 dBm	-28.34 dB
7	7	798.00 MHz	799.00 MHz	100.0 kHz	798.0150000 MHz	-33.32 dBm	-20.32 dB
8	8	799.00 MHz	805.00 MHz	6.200 kHz	799.6000000 MHz	-43.95 dBm	-8.946 dB
9	9	805.00 MHz	810.00 MHz	100.0 kHz	805.4000000 MHz	-45.61 dBm	-32.61 dB

A.5 Emisson Mask Test Result

Test Site	SIP-SR1	Test Engineer	Yoniter Yang
Test Date	2024-05-18	Test Band	Band 14

5MHz Channel Bandwidth – 1RB

Low Channel_1RB_Low

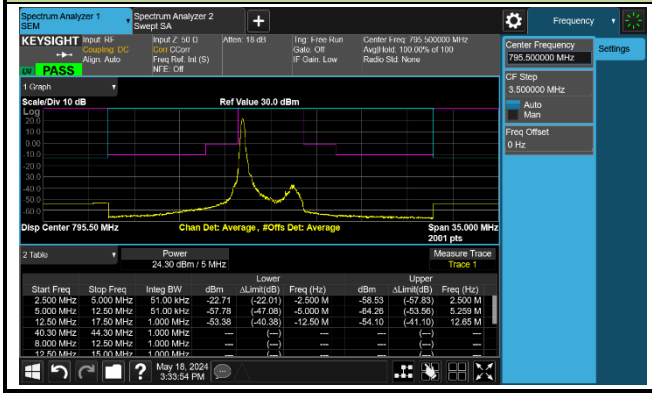


Low Channel_1RB_High

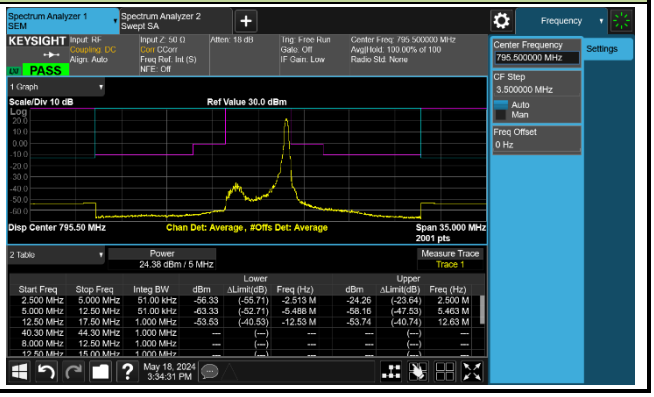
Middle Channel_1RB_Low

Middle Channel_1RB_High

High Channel_1RB_Low



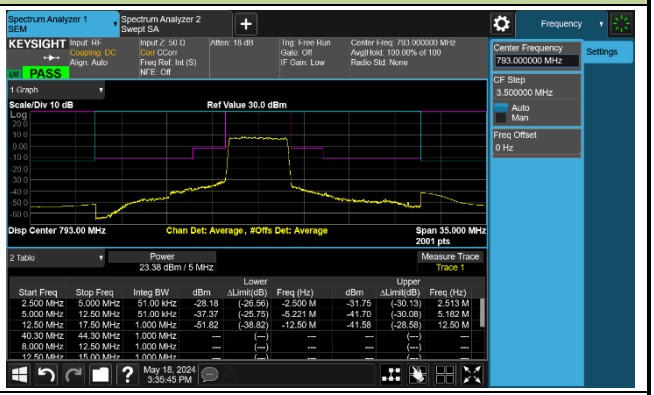
High Channel_1RB_High



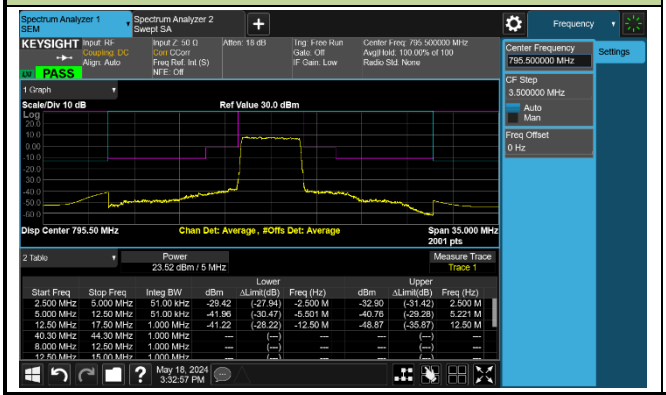
5MHz Channel Bandwidth – Full RB

Low Channel

Middle Channel

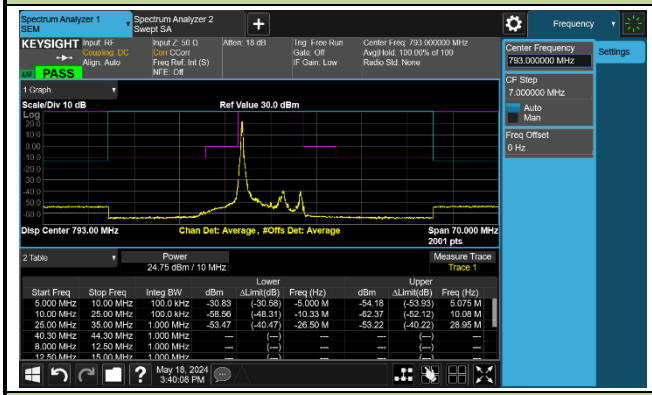


High Channel

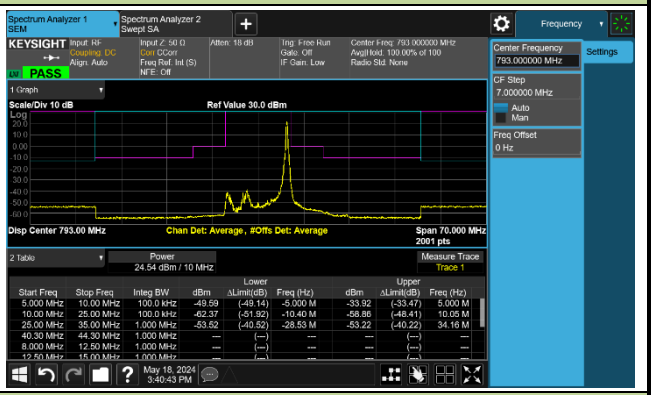


10MHz Channel Bandwidth – 1RB

Middle Channel_1RB_Low

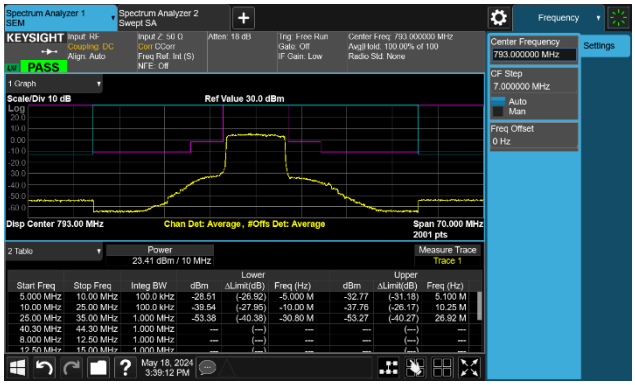


Middle Channel_1RB_High



10MHz Channel Bandwidth – Full RB

Middle Channel



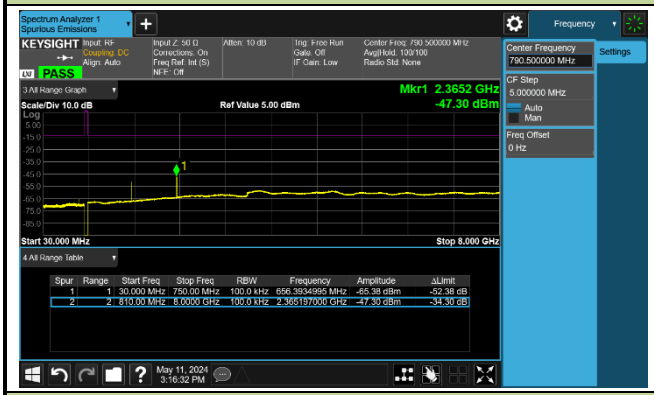
A.6 Transmitter unwanted emissions (spurious) Test Result

Test Site	SIP-SR1	Test Engineer	Yoniter Yang
Test Date	2024-05-11 ~ 2024-05-18	Test Band	Band 14, 1RB, QPSK

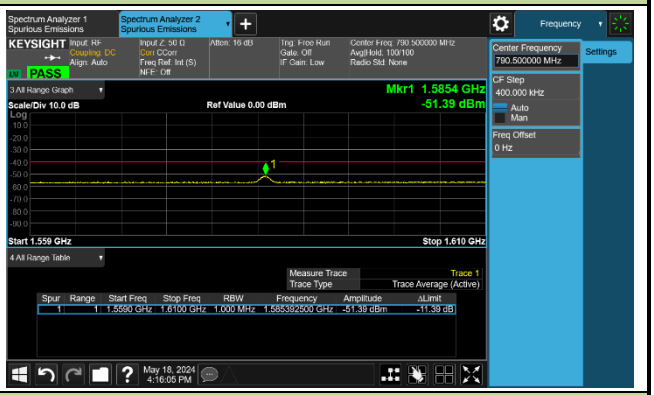
Channel Bandwidth (MHz)	Frequency (MHz)	Frequency Range (MHz)	Max Spurious Emissions (dBm)	Limit (dBm)	Result
5	790.5	30 ~ 8000	-47.30	≤ -13.00	Pass
5	793.0	30 ~ 8000	-46.67	≤ -13.00	Pass
5	795.5	30 ~ 8000	-45.89	≤ -13.00	Pass
10	793.0	30 ~ 8000	-45.59	≤ -13.00	Pass
5	790.5	1559 ~ 1610	-51.39	≤ -40.00	Pass
5	793.0	1559 ~ 1610	-51.16	≤ -40.00	Pass
5	795.5	1559 ~ 1610	-51.10	≤ -40.00	Pass
10	793.0	1559 ~ 1610	-51.33	≤ -40.00	Pass
Note: The amplitude of Conducted Spurious emissions (frequency range from 9kHz to 30MHz) is that proximity to ambient noise, which also are attenuated more than 20 dB below the permissible value. Therefore, the data is not presented in the report.					

5MHz Channel Bandwidth

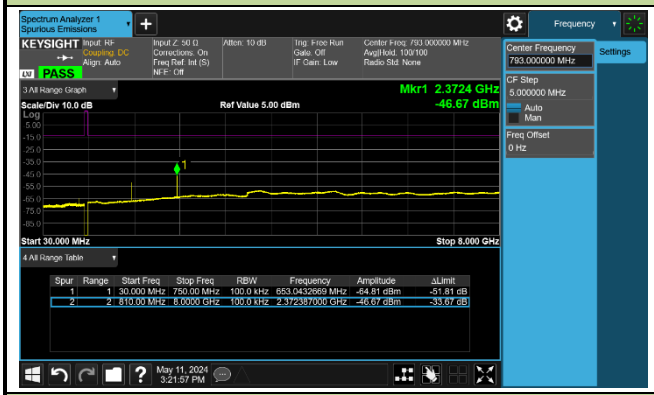
Low Channel 30 ~ 8000MHz



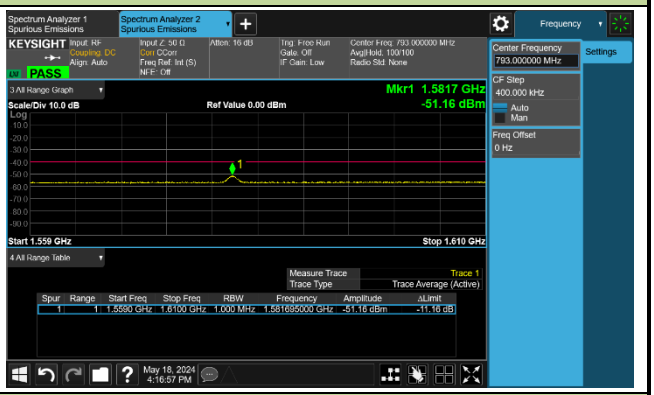
1559 - 1610MHz



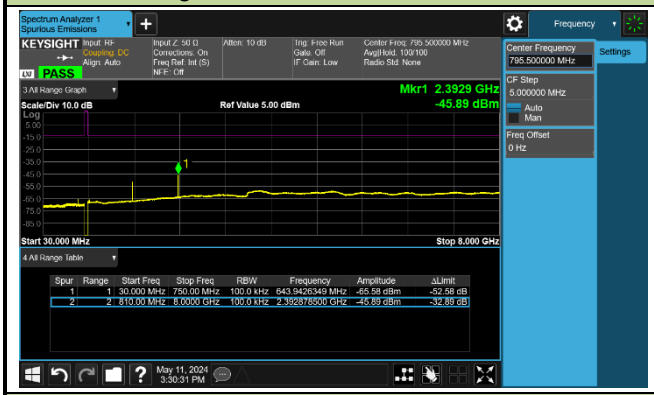
Middle Channel 30 ~ 8000MHz



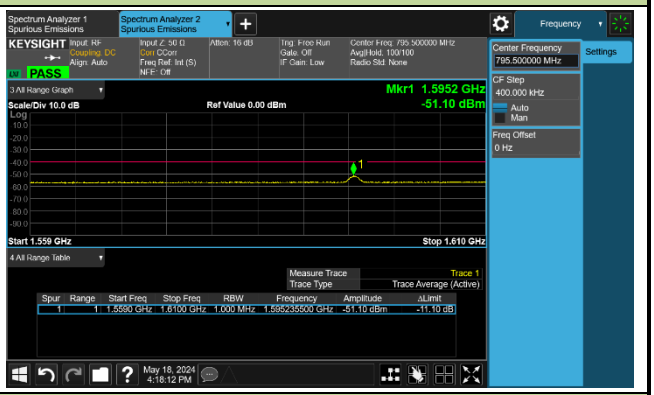
1559 - 1610MHz



High Channel 30 ~ 8000MHz

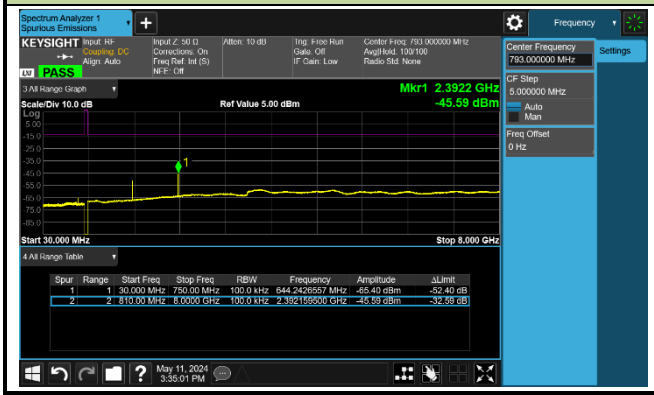


1559 - 1610MHz

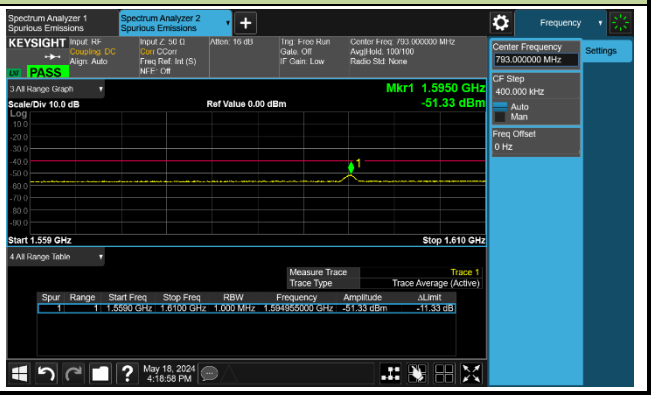


10MHz Channel Bandwidth

Middle Channel 30 ~ 8000MHz



1559 - 1610MHz



A.7 Radiated Spurious Emissions Test Result

Test Site	SIP-AC1	Test Engineer	Fusco Pan
Test Date	2024-05-06 ~ 2024-05-09	Test Band	Band 14, 1RB, QPSK

Frequency (MHz)	Reading Level (dBμV)	Factor (dB/m)	Measure Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector	Polarization
Low Channel							
68.8	16.8	15.9	32.7	82.3	-49.6	Quasi-Peak	Horizontal
920.9	17.1	29.6	46.7	82.3	-35.6	Quasi-Peak	Horizontal
67.3	17.4	16.2	33.6	82.3	-48.7	Quasi-Peak	Vertical
912.2	14.1	29.6	43.7	82.3	-38.6	Quasi-Peak	Vertical
1569.5	39.3	-7.7	31.6	55.3	-23.7	Peak	Horizontal
15322.5	34.7	19.5	54.2	82.3	-28.1	Peak	Horizontal
1569.5	40.1	-7.7	32.4	55.3	-22.9	Peak	Vertical
17549.5	33.8	21.9	55.7	82.3	-26.6	Peak	Vertical
Middle Channel							
68.8	14.9	15.9	30.8	82.3	-51.5	Quasi-Peak	Horizontal
926.3	14.3	29.6	43.9	82.3	-38.4	Quasi-Peak	Horizontal
68.8	16.3	15.9	32.2	82.3	-50.1	Quasi-Peak	Vertical
913.7	14.3	29.6	43.9	82.3	-38.4	Quasi-Peak	Vertical
1595.0	40.0	-7.5	32.5	55.3	-22.8	Peak	Horizontal
17915.0	32.2	23.5	55.7	82.3	-26.6	Peak	Horizontal
1569.5	38.9	-7.7	31.2	55.3	-24.1	Peak	Vertical
16580.5	34.2	20.0	54.2	82.3	-28.1	Peak	Vertical
High Channel							
637.7	13.3	25.7	39.0	82.3	-43.3	Quasi-Peak	Horizontal
966.5	14.4	29.8	44.2	82.3	-38.1	Quasi-Peak	Horizontal
66.9	17.9	16.3	34.2	82.3	-48.1	Quasi-Peak	Vertical
910.8	16.6	29.6	46.2	82.3	-36.1	Quasi-Peak	Vertical
1578.0	39.9	-7.6	32.3	55.3	-23.0	Peak	Horizontal
15263.0	35.3	19.7	55.0	82.3	-27.3	Peak	Horizontal
1595.0	39.8	-7.5	32.3	55.3	-23.0	Peak	Vertical
15348.0	35.7	19.8	55.5	82.3	-26.8	Peak	Vertical

Note1: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB/m)

Factor (dB/m) = Cable Loss (dB) + Antenna Factor (dB/m).

Note2: The peak-detection value will always be equal to or greater than average-detection value. In a result, the peak-detection value measured by spectrum analyzer shall represent the worst-case results.

Note 3: The amplitude of Radiated transmitter spurious emissions (Frequency range from 9kHz to 30MHz) is that proximity to ambient noise, which also are attenuated more than 20 dB below the permissible value. Therefore, the data is not presented in the report.

Appendix B - Test Setup Photograph

Refer to “2404RSU035-UT” file.

Appendix C - EUT Photograph

Refer to “2404RSU035-UE” file.

The End