



RF MEASUREMENT REPORT

FCC ID: XMR024BG770ASN
Applicant: Quectel Wireless Solutions Co., Ltd.
Product: LTE NTN Module
Model No.: BG770A-SN
Brand Name: Quectel
FCC Rule(s): Part 2, 22 (H), 24 (E), 27
Result: Complies
Received Date: 2024-06-14
Test Date: 2024-07-19 ~ 2024-09-26

Reviewed By:

Sunny Sun

Approved By:

Robin Wu



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
2406RSU025-U3	V01	Initial Report	2024-11-27	Valid

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1. General Information

1.1. Applicant

Quectel Wireless Solutions Co., Ltd.

Building 5, Shanghai Business Park Phase III (Area B), No.1016 Tianlin Road, Minhang District, Shanghai, China, 200233

1.2. Manufacturer

Quectel Wireless Solutions Co., Ltd.

Building 5, Shanghai Business Park Phase III (Area B), No.1016 Tianlin Road, Minhang District, Shanghai, China, 200233

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 Location (Suzhou - Wujiang) Building 1, No.1 Xingdong Road, Wujiang, Suzhou, Jiangsu, People’s Republic of China	
	Laboratory Accreditations	
	A2LA: 3628.01 FCC: CN1166 VCCI:	CNAS: L10551 ISED: CN0001 ☐ 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 FCC: CN1284	CNAS: L10551 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 NTN Module
Model No.	BG770A-SN
Brand Name	Quectel
IMEI	867953065839237 (Radiated) 867953065839203 (Conducted) 867953065838916 (Conducted)
3GPP Specification	L-Band 255 LTE Cat M1 Band 2/4/5/12/13/25/26/66 LTE Cat NB Band 2/4/5/12/13/17/25/66
GNSS Specification	GPS/GLONASS
Operating Temperature Range	-35 ~ 75°C
Supply Voltage Rating	3.1 ~ 4.2Vdc, typical 3.3Vdc
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

LTE Cat NB Specification	
TX Frequency Range	Band 2: 1850 ~ 1910 MHz; Band 4: 1710 ~ 1755 MHz Band 5: 824 ~ 849 MHz; Band 12: 699 ~ 716 MHz Band 13: 777 ~ 787 MHz; Band 17: 704 ~ 716 MHz Band 25: 1850 ~ 1915 MHz; Band 66: 1710 ~ 1780 MHz
RX Frequency Range	Band 2: 1930 ~ 1990 MHz; Band 4: 2110 ~ 2155 MHz Band 5: 869 ~ 894 MHz; Band 12: 729 ~ 746 MHz Band 13: 746 ~ 756 MHz; Band 17: 734 ~ 746 MHz Band 25: 1930 ~ 1995 MHz; Band 66: 2110 ~ 2200 MHz
Support Bandwidth	200kHz
Support Power Class	PC3
Modulation	Uplink BPSK, QPSK; Downlink QPSK
Note: All bands move one channel inward from band edge.	

1.6. Description of Available Antennas

Technology	Frequency Range (MHz)	Antenna Type	Max Peak Gain (dBi)
LTE Cat NB Band 2	1850 ~ 1910	Fixed External Antenna	1.3
LTE Cat NB Band 4	1710 ~ 1755		1.4
LTE Cat NB Band 5	824 ~ 849		1.1
LTE Cat NB Band 12	699 ~ 716		1.1
LTE Cat NB Band 13	777 ~ 787		1.1
LTE Cat NB Band 17	704 ~ 716		1.1
LTE Cat NB Band 25	1850 ~ 1915		1.3
LTE Cat NB Band 66	1710 ~ 1780		1.4
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).			

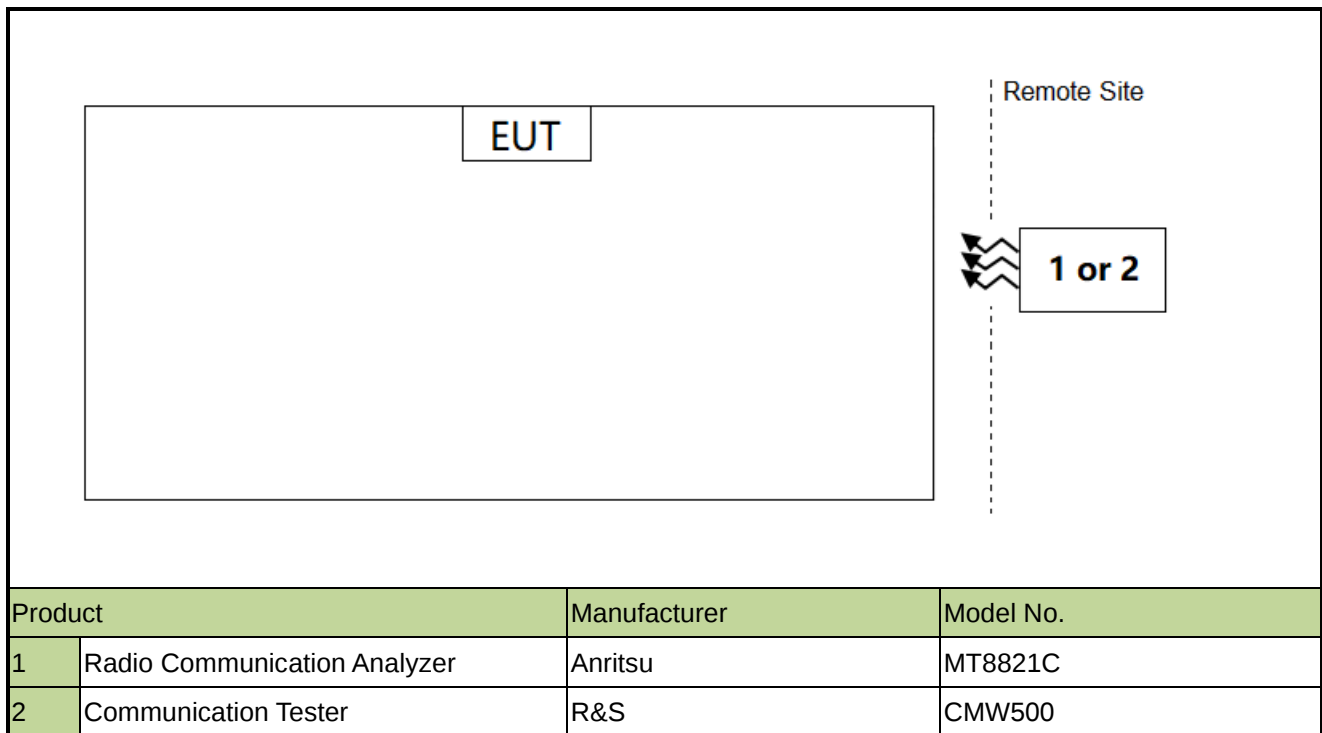
1.7. Test Methodology

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

- FCC CFR 47 Part 2, Part 22, Part 24, Part 27
- ANSI C63.26:2015
- 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



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
Temperature Chamber	BAOYT	BYH-150CL	MRTSUE06051	1 year	2024-09-27	WZ-TR3
				1 year	2025-09-02	WZ-TR3
Thermohygrometer	testo	608-H1	MRTSUE11268	1 year	2024-12-14	WZ-TR3
Radio Communication Analyzer	Anritsu	MT8821C	MRTSUE06960	1 year	2025-06-18	WZ-SR6
Communication Tester	R&S	CMW500	MRTSUE06881	1 year	2025-05-08	WZ-SR6
Shielding Room	HUAMING	WZ-SR6	MRTSUE06443	N/A	N/A	WZ-SR6
Signal Analyzer	Keysight	N9020B	MRTSUE06583	1 year	2025-06-29	WZ-SR6
Thermohygrometer	testo	608-H1	MRTSUE06362	1 year	2025-02-04	WZ-SR6
USB Power Sensor	Keysight	U2021XA	MRTSUE06447	1 year	2025-05-08	WZ-SR6
Anechoic Chamber	RIKEN	SIP-AC3	MRTSUE06782	1 year	2024-12-21	SIP-AC3
Horn Antenna	R&S	HF907	MRTSUE06611	1 year	2025-07-07	SIP-AC3
Preamplifier	Schwarzbeck	BBV 9721	MRTSUE06121	1 year	2025-06-06	SIP-AC3
Preamplifier	EMCI	EMC012645SE	MRTSUE06642	1 year	2025-01-11	SIP-AC3
Thermohygrometer	testo	608-H1	MRTSUE06619	1 year	2024-10-28	SIP-AC3
TRILOG Antenna	Schwarzbeck	VULB 9168	MRTSUE06646	1 year	2024-08-04	SIP-AC3
				1 year	2025-07-29	SIP-AC3
Signal Analyzer	Keysight	N9020B	MRTSUE06604	1 year	2025-02-03	SIP-AC3
Signal Analyzer	Keysight	N9010B	MRTSUE07028	1 year	2024-10-23	SIP-AC3
EMI Test Receiver	R&S	ESR3	MRTSUE06185	1 year	2024-12-17	SIP-AC3
Preamplifier	EMCI	EMC184045SE	MRTSUE06602	1 year	2024-10-09	SIP-AC3
EMI Test Receiver	R&S	ESR3	MRTSUE06613	1 year	2024-10-23	SIP-AC3
Loop Antenna	Schwarzbeck	FMZB 1519 B	MRTSUE06937	1 year	2025-01-27	SIP-AC3
Active Loop Antenna	Schwarzbeck	FMZB 1519-60 D	MRTSUE07075	1 year	2024-12-04	SIP-AC3
Directional Coupler	MVE	MVE4912-10	MRTSUE07051	1 year	2024-08-23	WZ-SR6
				1 year	2025-08-22	WZ-SR6
Attenuator	MVE	MVE2213	MRTSUE11090	1 year	2025-06-05	WZ-SR6

Software	Version	Function
e3	230711	RE & CE
Controller_MF 7802BS	1.02	RE Antenna & Turntable
UCTS	V 6.23.217.99	license 3G & 4G & 5G
BenchVue Power Meter	2018.1	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% ($U=2U_c(y)$):	
Coaxial:	9kHz~30MHz: 2.35dB
Coplanar:	9kHz~30MHz: 2.37dB
Horizontal:	30MHz~200MHz: 3.46dB
	200MHz~1GHz: 3.78dB
	1GHz~40GHz: 4.97dB
Vertical:	30MHz~200MHz: 4.07dB
	200MHz~1GHz: 5.28dB
	1GHz~40GHz: 4.78dB
Conducted Spurious Emissions	
Measuring Uncertainty for a Level of Confidence of 95% ($U=2U_c(y)$):	
1.47dB	
Output Power	
Measuring Uncertainty for a Level of Confidence of 95% ($U=2U_c(y)$):	
0.66dB	
Occupied Bandwidth	
Measuring Uncertainty for a Level of Confidence of 95% ($U=2U_c(y)$):	
69.28kHz	
Frequency Stability	
Measuring Uncertainty for a Level of Confidence of 95% ($U=2U_c(y)$):	
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)(9) (c)(9) (d)(4)	Equivalent Radiated Power		Pass
22.913(d), 24.232(d), 27.50(d)(5)	Peak to Average Ratio		Pass
2.1051, 22.917(a), 24.238(a) 27.53(c) (f) (g) (h)	Transmitter unwanted emissions (band-edge)		Pass
2.1051, 22.917(a), 24.238(a) 27.53(c) (f) (g) (h)	Transmitter unwanted emissions (spurious)		
2.1051, 22.917(a), 24.238(a) 27.53(c) (f) (g) (h)	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, Peak to Average Ratio, Channel Band Edge, Conducted Spurious Emission, Radiated Spurious Emission were presented the 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 Cat NB Band 25 (1850 ~ 1915 MHz) overlaps the entire frequency range of LTE Cat NB Band 2 (1850 ~ 1910 MHz). Therefore, test data provided in this report covers Band 2 as well as Band 25.
- 5) LTE Cat NB Band 66 (1710 ~ 1780 MHz) overlaps the entire frequency range of LTE Cat NB Band 4 (1710 ~ 1755 MHz). Therefore, test data provided in this report covers Band 4 as well as Band 66.

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.

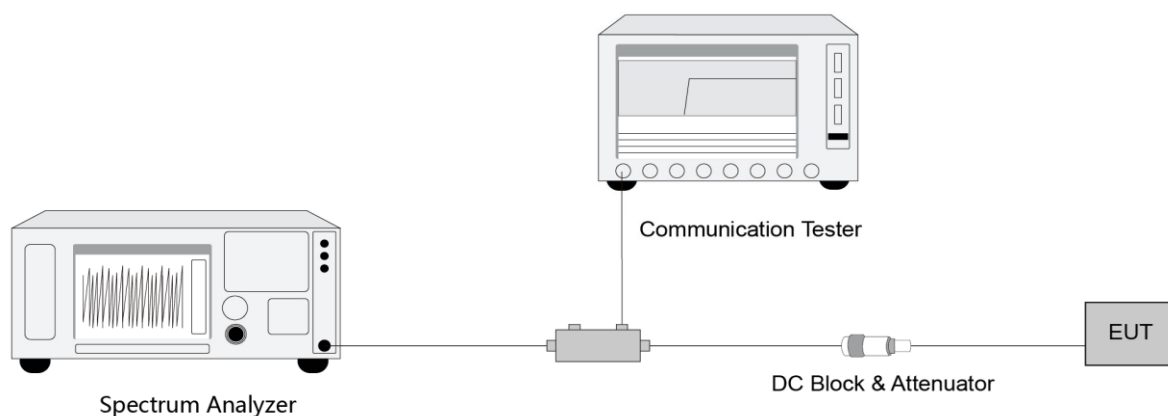
5.2.2. Test Procedure

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 $\geq 3 \times$ 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 $\pm 0.00025\%$ ($\pm 2.5\text{ppm}$) 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.

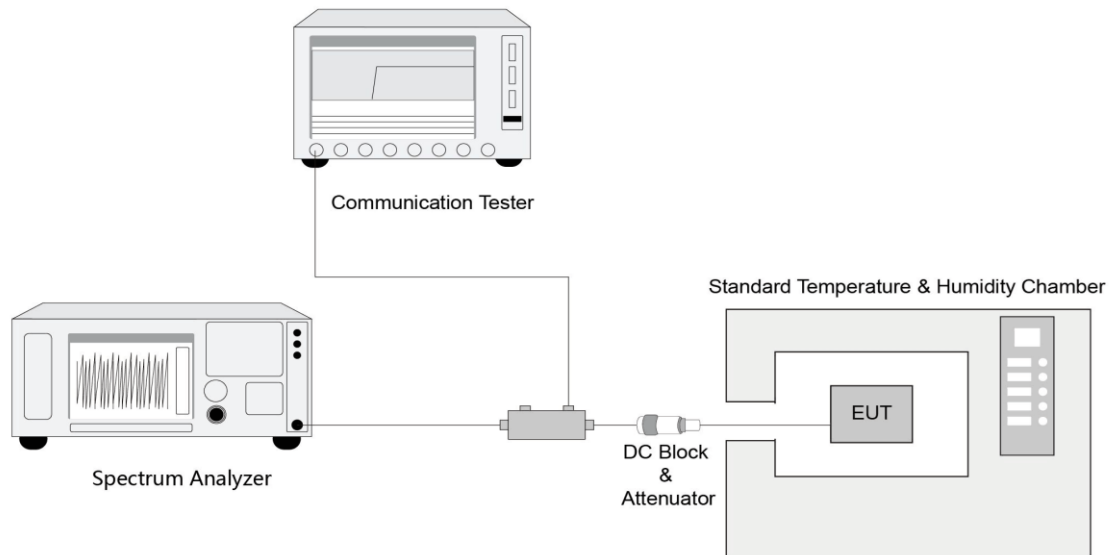
Frequency Stability Under Voltage Variations:

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 ($\pm 15\%$) and endpoint, record the maximum

frequency change.

5.3.4. Test Setup



5.3.5. Test Result

Refer to Appendix A.2.

5.4. Equivalent Isotropically Radiated Power Measurement

5.4.1. Test Limit

Band 2/25:

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 1 watt EIRP.

Band 5:

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

Band 12/17, 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.

5.4.2. Test Procedure

ANSI C63.26-2015 - Section 5.2.4.2

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.

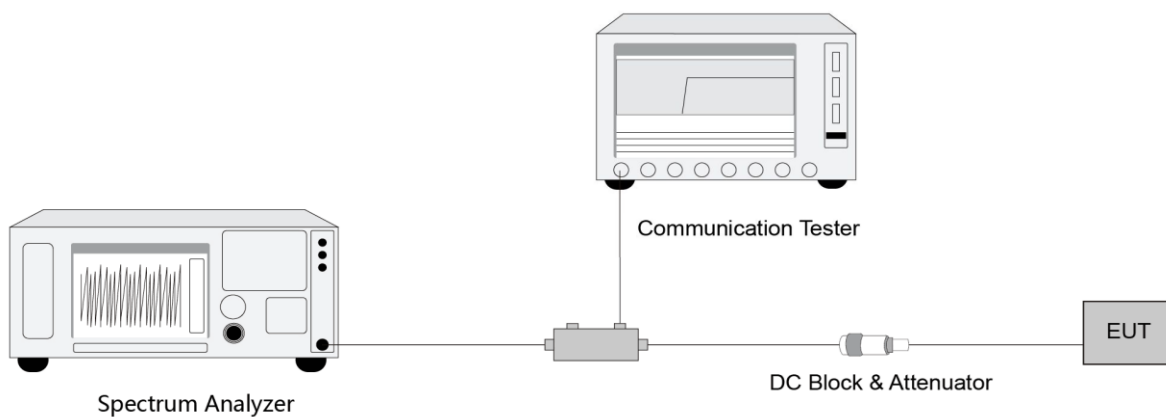
5.5.2. Test Procedure

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

5.5.3. Test Setting

1. Set the resolution / measurement bandwidth $\geq$ 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. Conducted 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 $43 + 10\log_{10}(P_{\text{Watts}})$ 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 $43 + 10\log_{10}(P_{\text{Watts}})$ 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 $65 + 10 \log_{10} (P_{\text{Watts}})$, dB, for mobile and portable equipment.

For LTE Cat NB 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.

5.6.2. Test Procedure

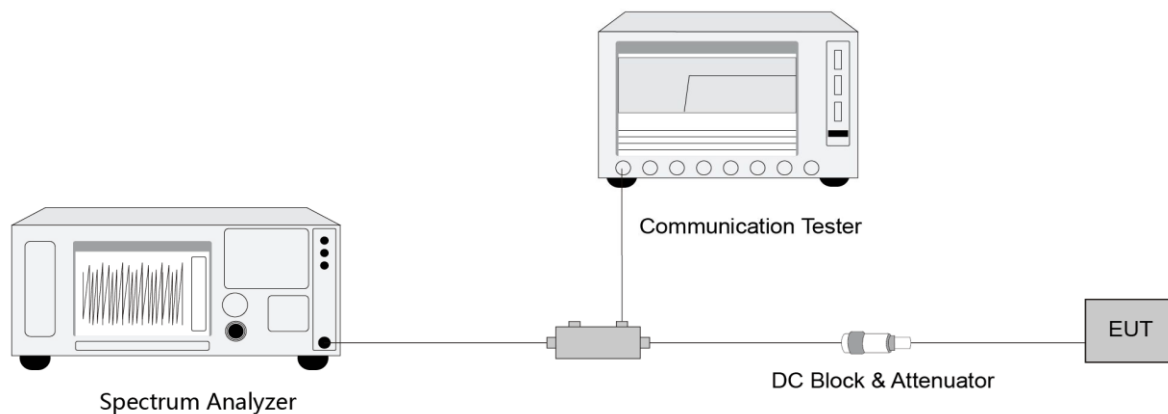
ANSI C63.26-2015 - Section 5.7

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. $VBW \geq 3 \cdot RBW$

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. 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. Conducted Spurious Emissions 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.

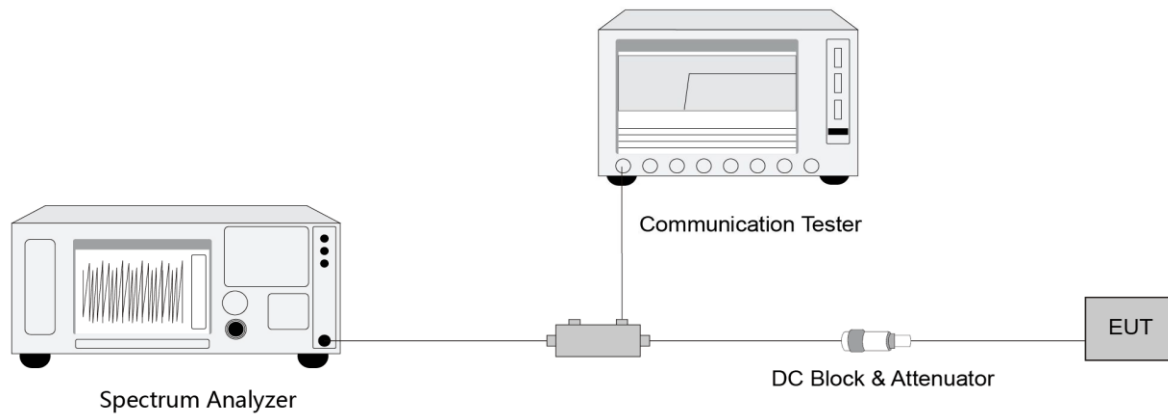
5.7.2. Test Procedure

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 $\geq 3 \times$ 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. 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 the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + 10 \log(P)$ dB. The emission limit equal to -13dBm.

For LTE Cat NB 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.

$E \text{ (dB}\mu\text{V/m)} = \text{EIRP (dBm)} - 20 \log D + 104.8$; where D is the measurement distance in meters. The emission limit equal to 82.3dB μ V/m or 55.3dB μ V/m.

5.8.2. Test Procedure

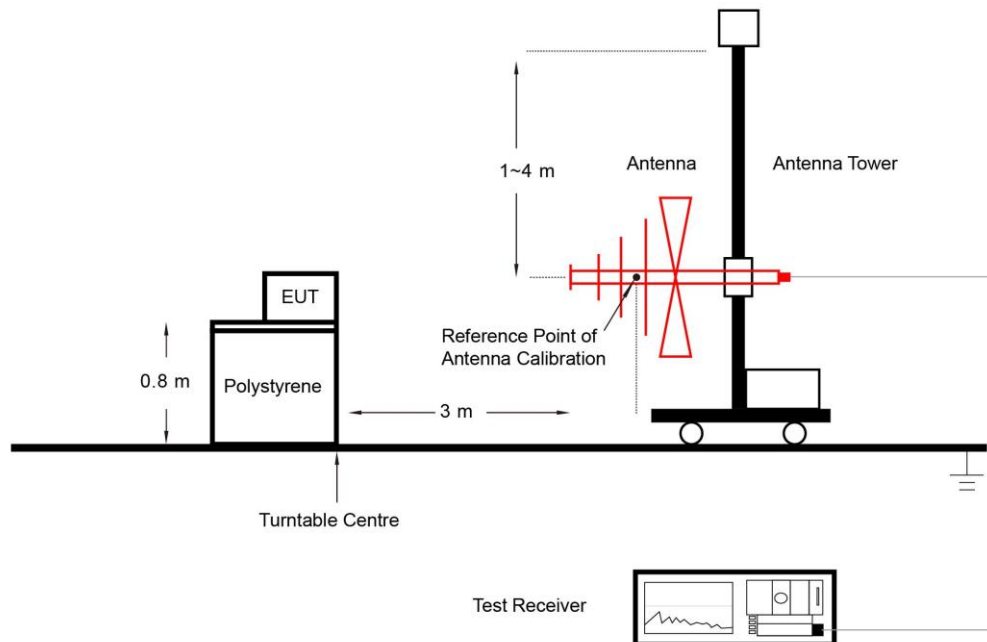
ANSI C63.26-2015 - Section 5.2.7 & 5.5

5.8.3. Test Setting

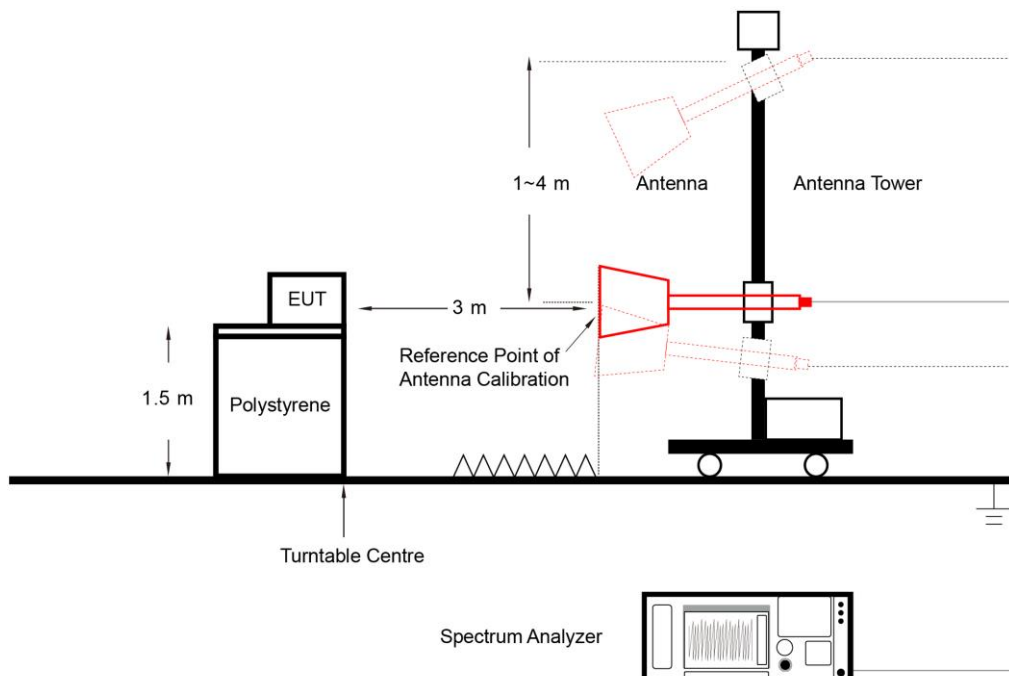
1. RBW = 120kHz or 1MHz
2. VBW $\geq 3 \times$ RBW
3. Sweep time $\geq 10 \times (\text{number of points in sweep}) \times (\text{transmission symbol period})$
4. Detector = CISPR quasi-peak / average detector (Below 1 GHz, compliance with the limits shall be demonstrated using a CISPR quasi-peak detector 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

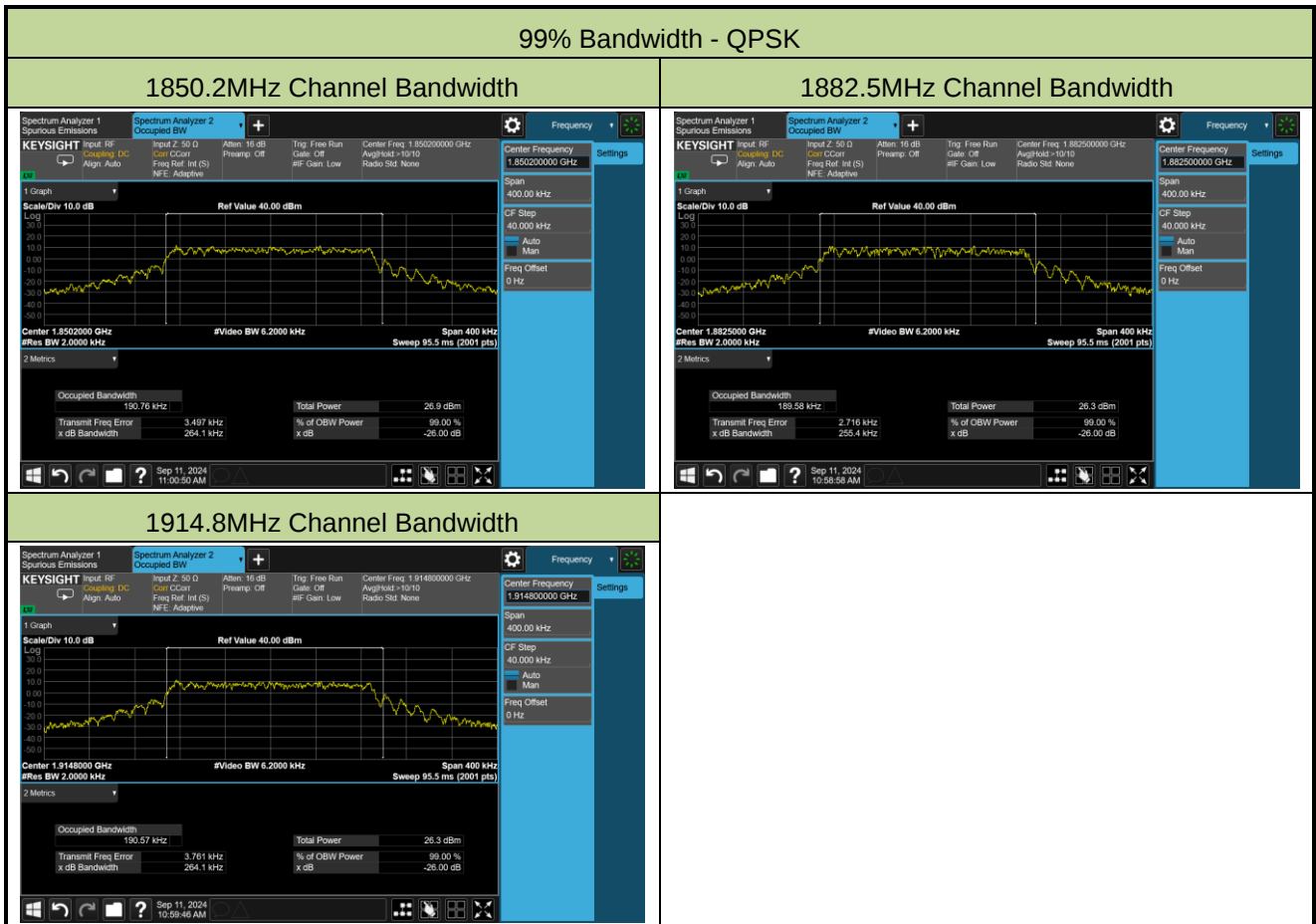
Refer to Appendix A.7.

Appendix A - Test Result

A.1 Occupied Bandwidth Test Result

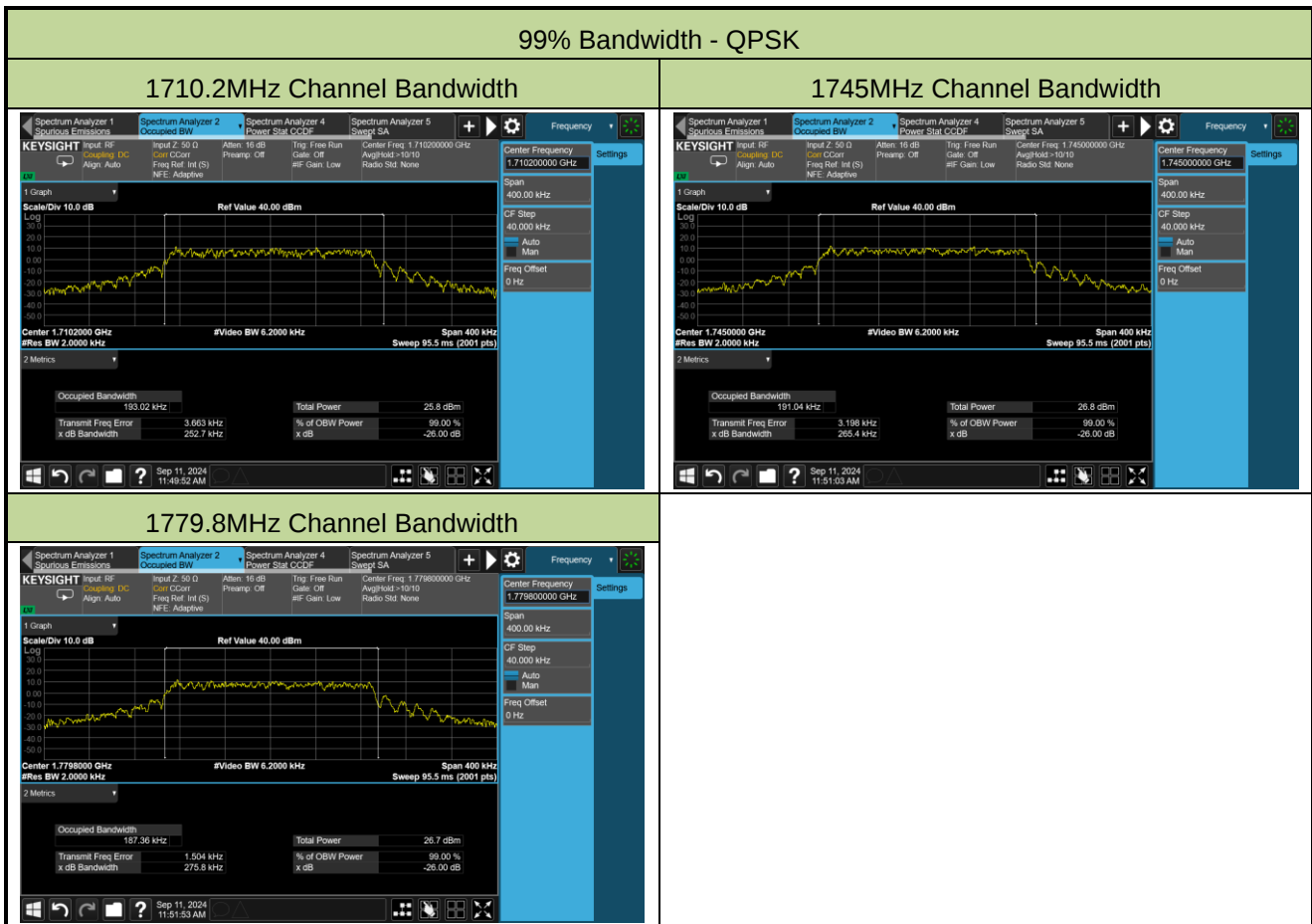
Test Site	WZ-SR6	Test Engineer	Lucas Wang
Test Date	2024-09-11	Test Band	Band 2/25

Modulation	Sub-carrier spacing (kHz)	Frequency (MHz)	99% Bandwidth (MHz)
QPSK	15	1850.2	0.19076
		1882.5	0.18958
		1914.8	0.19057



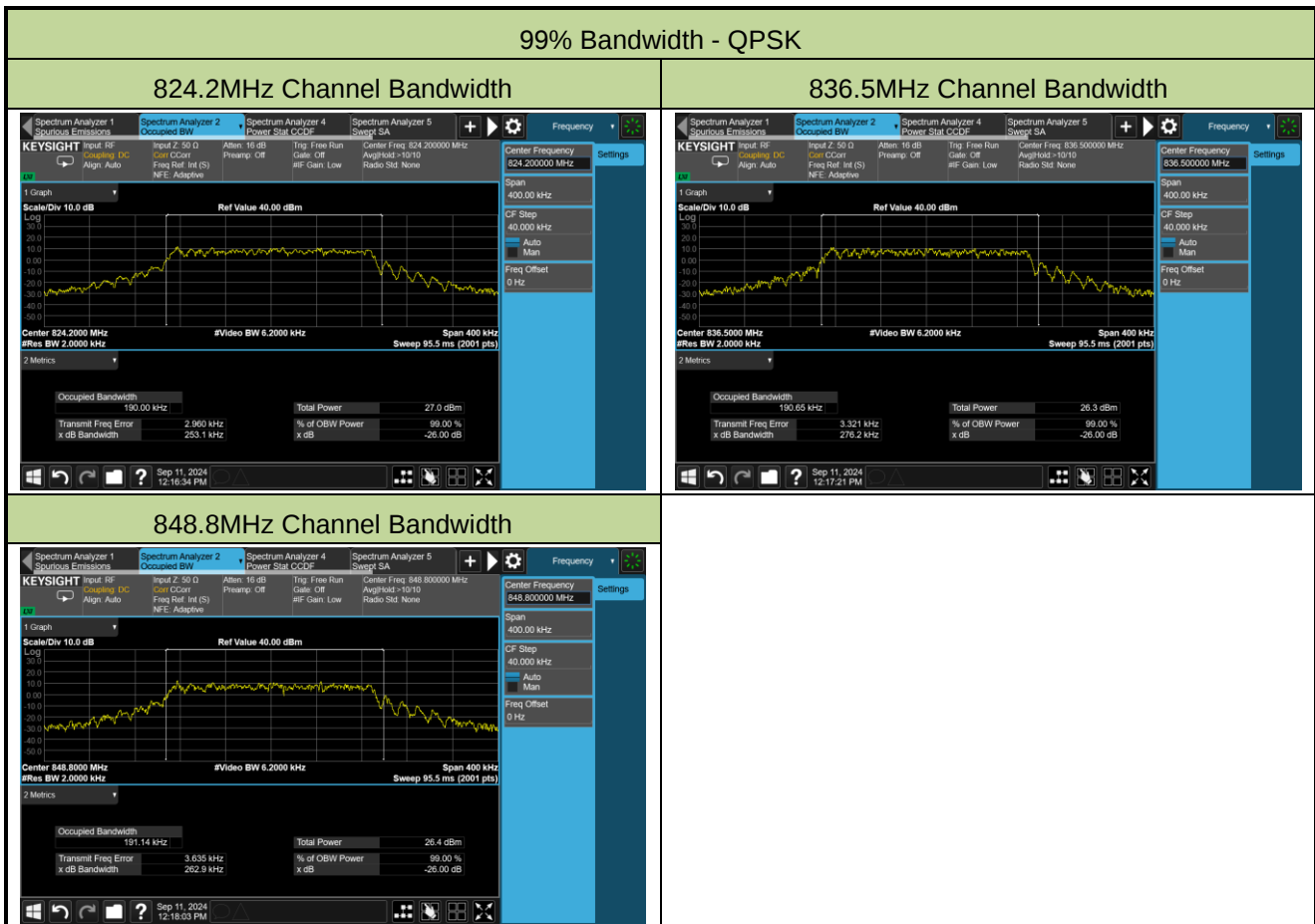
Test Site	WZ-SR6	Test Engineer	Lucas Wang
Test Date	2024-09-11	Test Band	Band 4/66

Modulation	Sub-carrier spacing (kHz)	Frequency (MHz)	99% Bandwidth (MHz)
QPSK	15	1710.2	0.19302
		1745	0.19104
		1779.8	0.18736



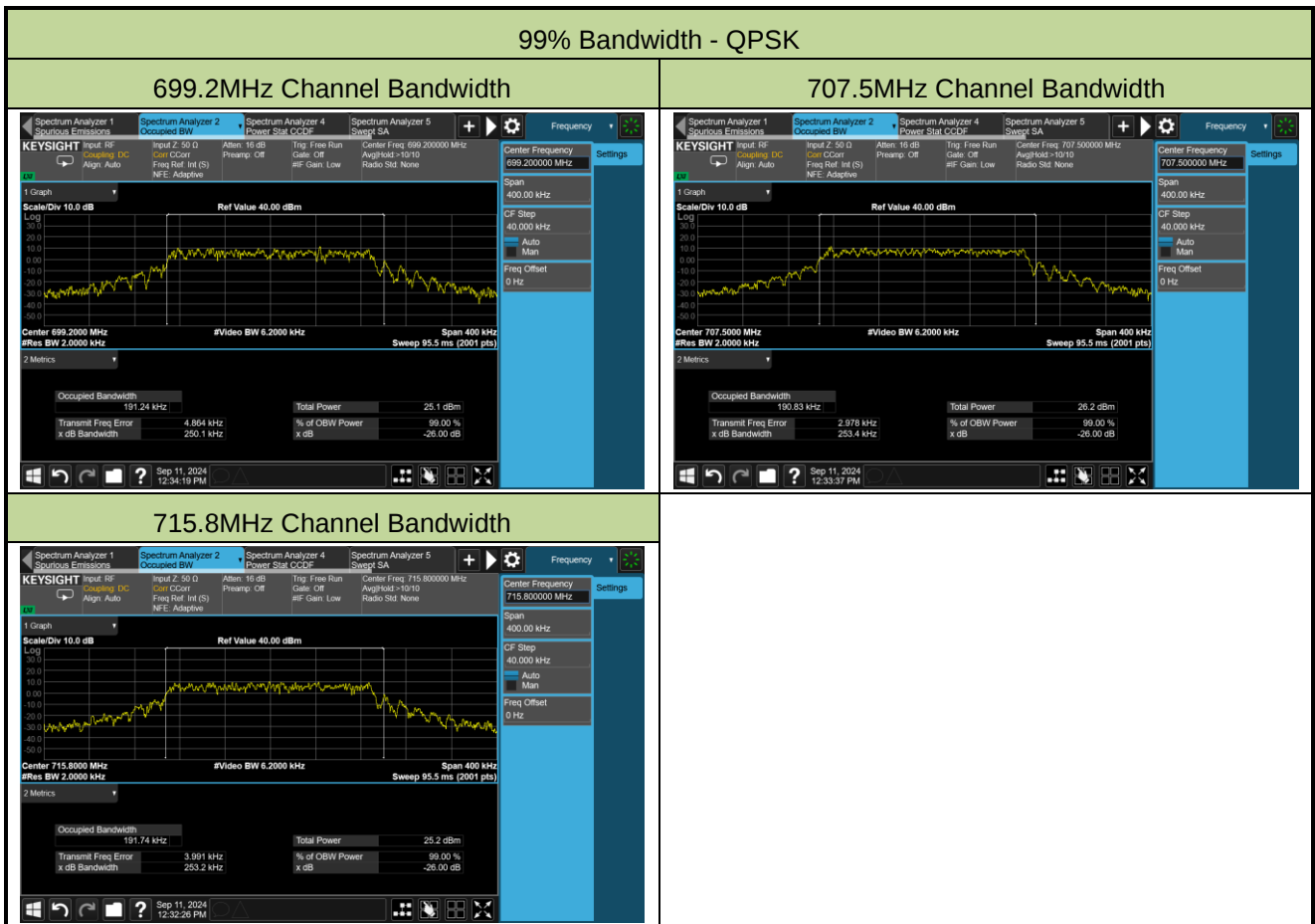
Test Site	WZ-SR6	Test Engineer	Lucas Wang
Test Date	2024-09-11	Test Band	Band 5

Modulation	Sub-carrier spacing (kHz)	Frequency (MHz)	99% Bandwidth (MHz)
QPSK	15	824.2	0.19000
		836.5	0.19065
		848.8	0.19114



Test Site	WZ-SR6	Test Engineer	Lucas Wang
Test Date	2024-09-11	Test Band	Band 12/17

Modulation	Sub-carrier spacing (kHz)	Frequency (MHz)	99% Bandwidth (MHz)
QPSK	15	699.2	0.19124
		707.5	0.19083
		715.8	0.19174



Test Site	WZ-SR6	Test Engineer	Lucas Wang
Test Date	2024-09-11	Test Band	Band 13

Modulation	Sub-carrier spacing (kHz)	Frequency (MHz)	99% Bandwidth (MHz)
QPSK	15	777.2	0.19192
		782	0.18806
		786.8	0.19181



A.2 Frequency Stability Test Result

Test Site	WZ-TR3	Test Engineer	Lucas Wang
Test Date	2024-09-14 ~ 2024-09-18	Test Band	Band 2/25

Voltage	Temp (°C)	Frequency Range (MHz)		Delta (Hz)	Frequency stability (ppm)	Within Authorized Frequency Block
		1850	1915			
		f _L	f _H			
Normal	+ 20 (Ref)	1850.098	1914.917	0.00	0.0000	Pass
	+ 50	1850.098	1914.917	9.83	0.0053	Pass
	+ 40	1850.098	1914.917	-3.16	-0.0017	Pass
	+ 30	1850.098	1914.917	1.06	0.0006	Pass
	+ 10	1850.098	1914.917	6.26	0.0034	Pass
	0	1850.098	1914.917	5.33	0.0029	Pass
	- 10	1850.098	1914.917	-1.32	-0.0007	Pass
	- 20	1850.098	1914.917	-0.92	-0.0005	Pass
	- 30	1850.098	1914.917	-1.07	-0.0006	Pass
15%	+ 20	1850.098	1914.917	5.09	0.0028	Pass
-15%	+ 20	1850.098	1914.917	9.38	0.0051	Pass

Test Site	WZ-TR3	Test Engineer	Lucas Wang
Test Date	2024-09-14 ~ 2024-09-18	Test Band	Band 4/66

Voltage	Temp (°C)	Frequency Range (MHz)		Delta (Hz)	Frequency stability (ppm)	Within Authorized Frequency Block
		1710	1780			
		f _L	f _H			
Normal	+ 20 (Ref)	1710.098	1779.918	0.00	0.0000	Pass
	+ 50	1710.098	1779.918	-2.44	-0.0014	Pass
	+ 40	1710.098	1779.918	3.07	0.0018	Pass
	+ 30	1710.098	1779.918	2.27	0.0013	Pass
	+ 10	1710.098	1779.918	3.88	0.0023	Pass
	0	1710.098	1779.918	-5.43	-0.0032	Pass
	- 10	1710.098	1779.918	4.80	0.0028	Pass
	- 20	1710.098	1779.918	-4.13	-0.0024	Pass
	- 30	1710.098	1779.918	8.15	0.0048	Pass
15%	+ 20	1710.098	1779.918	-0.83	-0.0005	Pass
-15%	+ 20	1710.098	1779.918	-3.04	-0.0018	Pass

Test Site	WZ-TR3	Test Engineer	Lucas Wang
Test Date	2024-09-14 ~ 2024-09-18	Test Band	Band 5

Voltage	Temp (°C)	Frequency Range (MHz)		Delta (Hz)	Frequency stability (ppm)	Within Authorized Frequency Block
		824	849			
		f _L	f _H			
Normal	+ 20 (Ref)	824.098	848.917	0.00	0.0000	Pass
	+ 50	824.098	848.917	5.31	0.0064	Pass
	+ 40	824.098	848.917	4.08	0.0050	Pass
	+ 30	824.098	848.917	-2.70	-0.0033	Pass
	+ 10	824.098	848.917	-5.14	-0.0062	Pass
	0	824.098	848.917	-0.77	-0.0009	Pass
	- 10	824.098	848.917	1.52	0.0018	Pass
	- 20	824.098	848.917	1.88	0.0023	Pass
	- 30	824.098	848.917	2.81	0.0034	Pass
15%	+ 20	824.098	848.917	3.08	0.0037	Pass
-15%	+ 20	824.098	848.917	2.44	0.0030	Pass

Test Site	WZ-TR3	Test Engineer	Lucas Wang
Test Date	2024-09-14 ~ 2024-09-18	Test Band	Band 12/17

Voltage	Temp (°C)	Frequency Range (MHz)		Delta (Hz)	Frequency stability (ppm)	Within Authorized Frequency Block
		699	716			
		f _L	f _H			
Normal	+ 20 (Ref)	699.098	715.917	0.00	0.0000	Pass
	+ 50	699.098	715.917	10.84	0.0155	Pass
	+ 40	699.098	715.917	-7.85	-0.0112	Pass
	+ 30	699.098	715.917	-2.81	-0.0040	Pass
	+ 10	699.098	715.917	7.32	0.0105	Pass
	0	699.098	715.917	-1.08	-0.0015	Pass
	- 10	699.098	715.917	-2.62	-0.0037	Pass
	- 20	699.098	715.917	3.33	0.0048	Pass
	- 30	699.098	715.917	-5.59	-0.0080	Pass
15%	+ 20	699.098	715.917	9.00	0.0129	Pass
-15%	+ 20	699.098	715.917	-4.99	-0.0071	Pass

Test Site	WZ-TR3	Test Engineer	Lucas Wang
Test Date	2024-09-14 ~ 2024-09-18	Test Band	Band 13

Voltage	Temp (°C)	Frequency Range (MHz)		Delta (Hz)	Frequency stability (ppm)	Within Authorized Frequency Block
		777	787			
		f _L	f _H			
Normal	+ 20 (Ref)	777.098	786.917	0.00	0.0000	Pass
	+ 50	777.098	786.917	-9.63	-0.0124	Pass
	+ 40	777.098	786.917	1.98	0.0025	Pass
	+ 30	777.098	786.917	2.38	0.0031	Pass
	+ 10	777.098	786.917	-5.46	-0.0070	Pass
	0	777.098	786.917	-2.09	-0.0027	Pass
	- 10	777.098	786.917	-1.05	-0.0014	Pass
	- 20	777.098	786.917	-5.86	-0.0075	Pass
	- 30	777.098	786.917	-2.57	-0.0033	Pass
15%	+ 20	777.098	786.917	-8.04	-0.0103	Pass
-15%	+ 20	777.098	786.917	-3.25	-0.0042	Pass

A.3 Equivalent Isotropically Radited Power Test Result

Test Site	WZ-SR6	Test Engineer	Lucas Wang
Test Date	2024-08-01 ~ 2024-09-24	Test Band	Band 2/25

Channel Bandwidth (MHz)	Frequency (MHz)	Sub-carrier spacing (kHz)	N _{tones}	Output Power (dBm)	EIRP (dBm)	Limit (dBm)
BPSK						
0.2	1850.2	3.75	1@0	23.69	24.99	< 33.01
	1882.5			23.55	24.85	< 33.01
	1914.8			23.74	25.04	< 33.01
	1850.2		1@47	23.63	24.93	< 33.01
	1882.5			23.60	24.90	< 33.01
	1914.8			23.70	25.00	< 33.01
	1850.2	15	1@0	23.76	25.06	< 33.01
	1882.5			22.82	24.12	< 33.01
	1914.8			22.67	23.97	< 33.01
	1850.2		1@11	23.71	25.01	< 33.01
	1882.5			22.81	24.11	< 33.01
	1914.8			22.61	23.91	< 33.01
QPSK						
0.2	1850.2	3.75	1@0	23.59	24.89	< 33.01
	1882.5			23.50	24.80	< 33.01
	1914.8			23.61	24.91	< 33.01
	1850.2		1@47	23.66	24.96	< 33.01
	1882.5			23.54	24.84	< 33.01
	1914.8			23.73	25.03	< 33.01
	1850.2	15	1@0	23.78	25.08	< 33.01
	1882.5			22.80	24.10	< 33.01
	1914.8			22.76	24.06	< 33.01
	1850.2		1@11	23.80	25.10	< 33.01
	1882.5			22.83	24.13	< 33.01
	1914.8			22.69	23.99	< 33.01
	1850.2	12@0	21.69	22.99	< 33.01	
	1882.5		21.86	23.16	< 33.01	
	1914.8		21.58	22.88	< 33.01	
Note: The EIRP (dBm) = Output Power (dBm) + Antenna Gain (dBi)						

Test Site	WZ-SR6	Test Engineer	Lucas Wang
Test Date	2024-08-01 ~ 2024-09-24	Test Band	Band 4/66

Channel Bandwidth (MHz)	Frequency (MHz)	Sub-carrier spacing (kHz)	N _{tones}	Output Power (dBm)	EIRP (dBm)	Limit (dBm)
BPSK						
0.2	1710.2	3.75	1@0	23.64	25.04	< 30.00
	1745.0			23.92	25.32	< 30.00
	1779.8			23.49	24.89	< 30.00
	1710.2		1@47	23.59	24.99	< 30.00
	1745.0			23.89	25.29	< 30.00
	1779.8			23.44	24.84	< 30.00
	1710.2	15	1@0	22.71	24.11	< 30.00
	1745.0			22.76	24.16	< 30.00
	1779.8			22.93	24.33	< 30.00
	1710.2		1@11	22.61	24.01	< 30.00
	1745.0			22.68	24.08	< 30.00
	1779.8			22.91	24.31	< 30.00
QPSK						
0.2	1710.2	3.75	1@0	23.57	24.97	< 30.00
	1745.0			23.85	25.25	< 30.00
	1779.8			23.42	24.82	< 30.00
	1710.2		1@47	23.64	25.04	< 30.00
	1745.0			23.94	25.34	< 30.00
	1779.8			23.51	24.91	< 30.00
	1710.2	15	1@0	22.70	24.10	< 30.00
	1745.0			22.79	24.19	< 30.00
	1779.8			22.93	24.33	< 30.00
	1710.2		1@11	22.73	24.13	< 30.00
	1745.0			22.77	24.17	< 30.00
	1779.8			22.99	24.39	< 30.00
	1710.2		12@0	21.77	23.17	< 30.00
	1745.0			21.79	23.19	< 30.00
	1779.8			21.88	23.28	< 30.00
Note: The EIRP (dBm) = Output Power (dBm) + Antenna Gain (dBi)						

Test Site	WZ-SR6	Test Engineer	Lucas Wang
Test Date	2024-08-01 ~ 2024-09-24	Test Band	Band 5

Channel Bandwidth (MHz)	Frequency (MHz)	Sub-carrier spacing (kHz)	N _{tones}	Output Power (dBm)	ERP (dBm)	Limit (dBm)
BPSK						
0.2	824.2	3.75	1@0	23.57	22.52	< 38.45
	836.5			23.67	22.62	< 38.45
	848.8			23.70	22.65	< 38.45
	824.2		1@47	23.54	22.49	< 38.45
	836.5			23.59	22.54	< 38.45
	848.8			23.74	22.69	< 38.45
	824.2	15	1@0	22.84	21.79	< 38.45
	836.5			22.89	21.84	< 38.45
	848.8			22.80	21.75	< 38.45
	824.2		1@11	22.70	21.65	< 38.45
	836.5			22.78	21.73	< 38.45
	848.8			22.74	21.69	< 38.45
QPSK						
0.2	824.2	3.75	1@0	23.55	22.50	< 38.45
	836.5			23.66	22.61	< 38.45
	848.8			23.71	22.66	< 38.45
	824.2		1@47	23.61	22.56	< 38.45
	836.5			23.62	22.57	< 38.45
	848.8			23.78	22.73	< 38.45
	824.2	15	1@0	22.72	21.67	< 38.45
	836.5			22.76	21.71	< 38.45
	848.8			22.84	21.79	< 38.45
	824.2		1@11	22.63	21.58	< 38.45
	836.5			22.80	21.75	< 38.45
	848.8			22.87	21.82	< 38.45
	824.2		12@0	21.77	20.72	< 38.45
	836.5			21.82	20.77	< 38.45
	848.8			21.72	20.67	< 38.45
Note: The ERP (dBm) = Output Power (dBm) + Antenna Gain (dBi) - 2.15						

Test Site	WZ-SR6	Test Engineer	Lucas Wang
Test Date	2024-08-01 ~ 2024-09-24	Test Band	Band 12/17

Channel Bandwidth (MHz)	Frequency (MHz)	Sub-carrier spacing (kHz)	N _{tones}	Output Power (dBm)	ERP (dBm)	Limit (dBm)
BPSK						
0.2	699.2	3.75	1@0	24.25	23.20	< 44.77
	707.5			24.47	23.42	< 44.77
	715.8			23.88	22.83	< 44.77
	699.2		1@47	24.22	23.17	< 44.77
	707.5			24.52	23.47	< 44.77
	715.8			23.86	22.81	< 44.77
	699.2	15	1@0	21.49	20.44	< 44.77
	707.5			21.51	20.46	< 44.77
	715.8			21.58	20.53	< 44.77
	699.2		1@11	21.52	20.47	< 44.77
	707.5			21.57	20.52	< 44.77
	715.8			21.67	20.62	< 44.77
QPSK						
0.2	699.2	3.75	1@0	24.20	23.15	< 44.77
	707.5			24.51	23.46	< 44.77
	715.8			23.78	22.73	< 44.77
	699.2		1@47	24.26	23.21	< 44.77
	707.5			24.58	23.53	< 44.77
	715.8			23.84	22.79	< 44.77
	699.2	15	1@0	21.54	20.49	< 44.77
	707.5			21.45	20.40	< 44.77
	715.8			21.55	20.50	< 44.77
	699.2		1@11	21.61	20.56	< 44.77
	707.5			21.56	20.51	< 44.77
	715.8			21.62	20.57	< 44.77
	699.2		12@0	21.46	20.41	< 44.77
	707.5			21.50	20.45	< 44.77
	715.8			21.61	20.56	< 44.77
Note: The ERP (dBm) = Output Power (dBm) + Antenna Gain (dBi) - 2.15						

Note: The ERP (dBm) = Output Power (dBm) + Antenna Gain (dBi) - 2.15

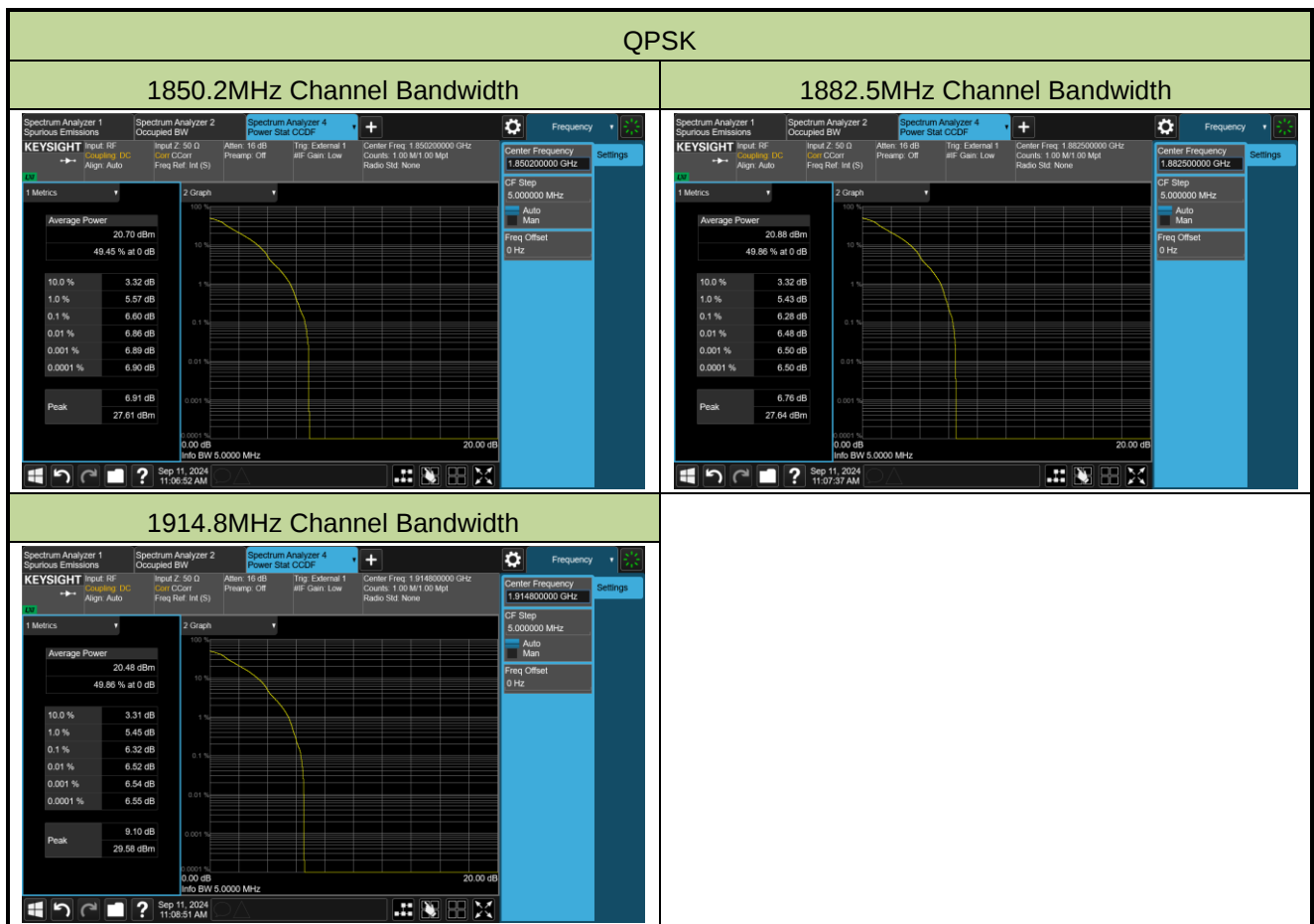
Test Site	WZ-SR6	Test Engineer	Lucas Wang
Test Date	2024-08-01 ~ 2024-09-24	Test Band	Band 13

Channel Bandwidth (MHz)	Frequency (MHz)	Sub-carrier spacing (kHz)	N _{tones}	Output Power (dBm)	ERP (dBm)	Limit (dBm)
BPSK						
0.2	777.2	3.75	1@0	23.79	22.74	< 44.77
	782.0			23.79	22.74	< 44.77
	786.8			23.75	22.70	< 44.77
	777.2		1@47	23.80	22.75	< 44.77
	782.0			23.76	22.71	< 44.77
	786.8			23.70	22.65	< 44.77
	777.2	15	1@0	21.56	20.51	< 44.77
	782.0			22.67	21.62	< 44.77
	786.8			22.65	21.60	< 44.77
	777.2		1@11	22.59	21.54	< 44.77
	782.0			22.57	21.52	< 44.77
	786.8			22.59	21.54	< 44.77
QPSK						
0.2	777.2	3.75	1@0	23.74	22.69	< 44.77
	782.0			23.74	22.69	< 44.77
	786.8			23.72	22.67	< 44.77
	777.2		1@47	23.82	22.77	< 44.77
	782.0			23.80	22.75	< 44.77
	786.8			23.73	22.68	< 44.77
	777.2	15	1@0	21.50	20.45	< 44.77
	782.0			22.53	21.48	< 44.77
	786.8			22.59	21.54	< 44.77
	777.2		1@11	21.62	20.57	< 44.77
	782.0			22.64	21.59	< 44.77
	786.8			22.73	21.68	< 44.77
	777.2		12@0	21.56	20.51	< 44.77
	782.0			21.59	20.54	< 44.77
	786.8			21.61	20.56	< 44.77
Note: The ERP (dBm) = Output Power (dBm) + Antenna Gain (dBi) - 2.15						

A.4 Peak to Average Radio Test Result

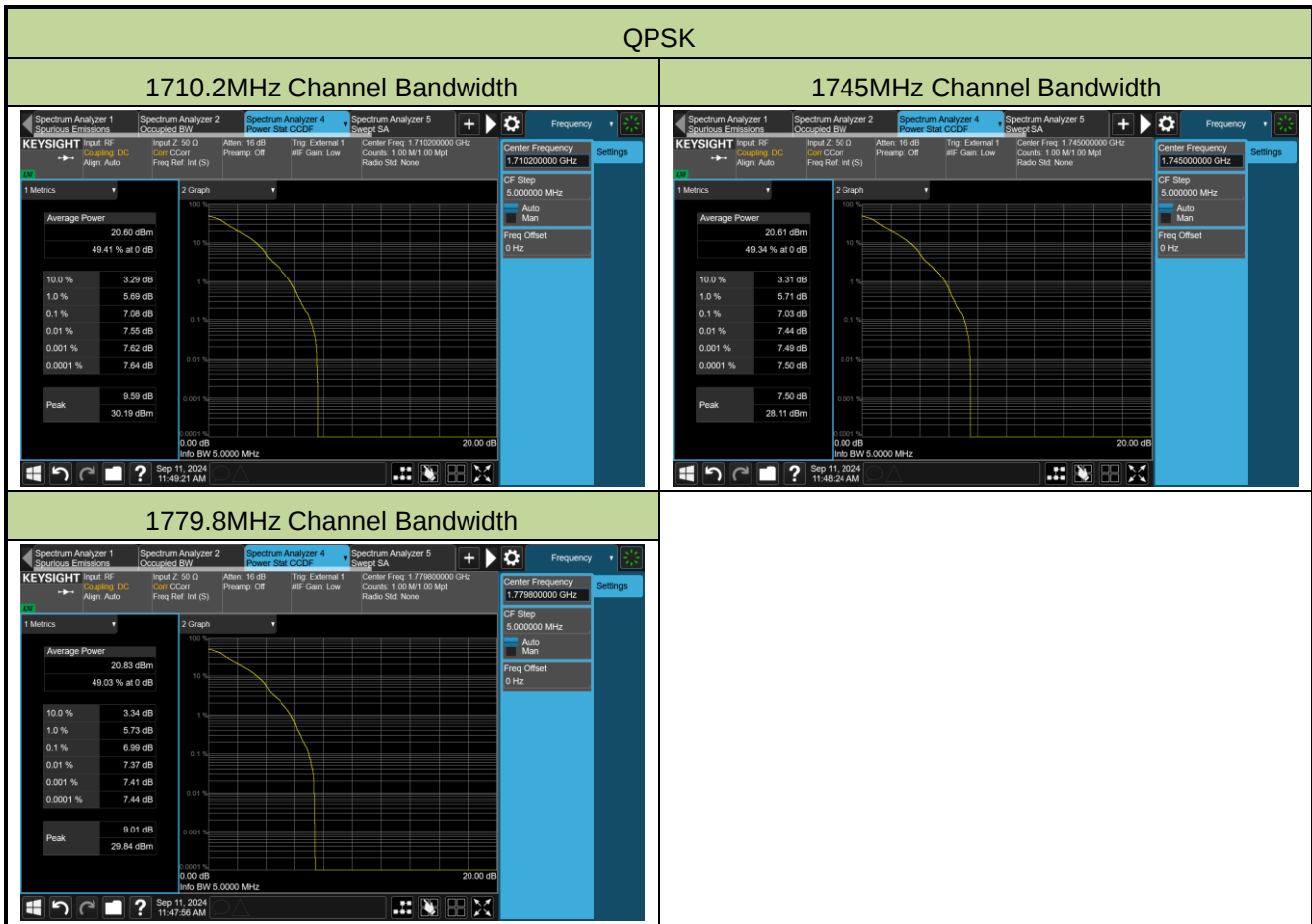
Test Site	WZ-SR6	Test Engineer	Lucas Wang
Test Date	2024-09-11	Test Band	Band 2/25

Channel Bandwidth (MHz)	Frequency (MHz)	Sub-carrier spacing (kHz)	Peak to Average Ratio (dB)	Limit (dB)	Result
QPSK					
0.2	1850.2	15	6.60	≤ 13.00	Pass
	1882.5	15	6.28	≤ 13.00	Pass
	1914.8	15	6.32	≤ 13.00	Pass



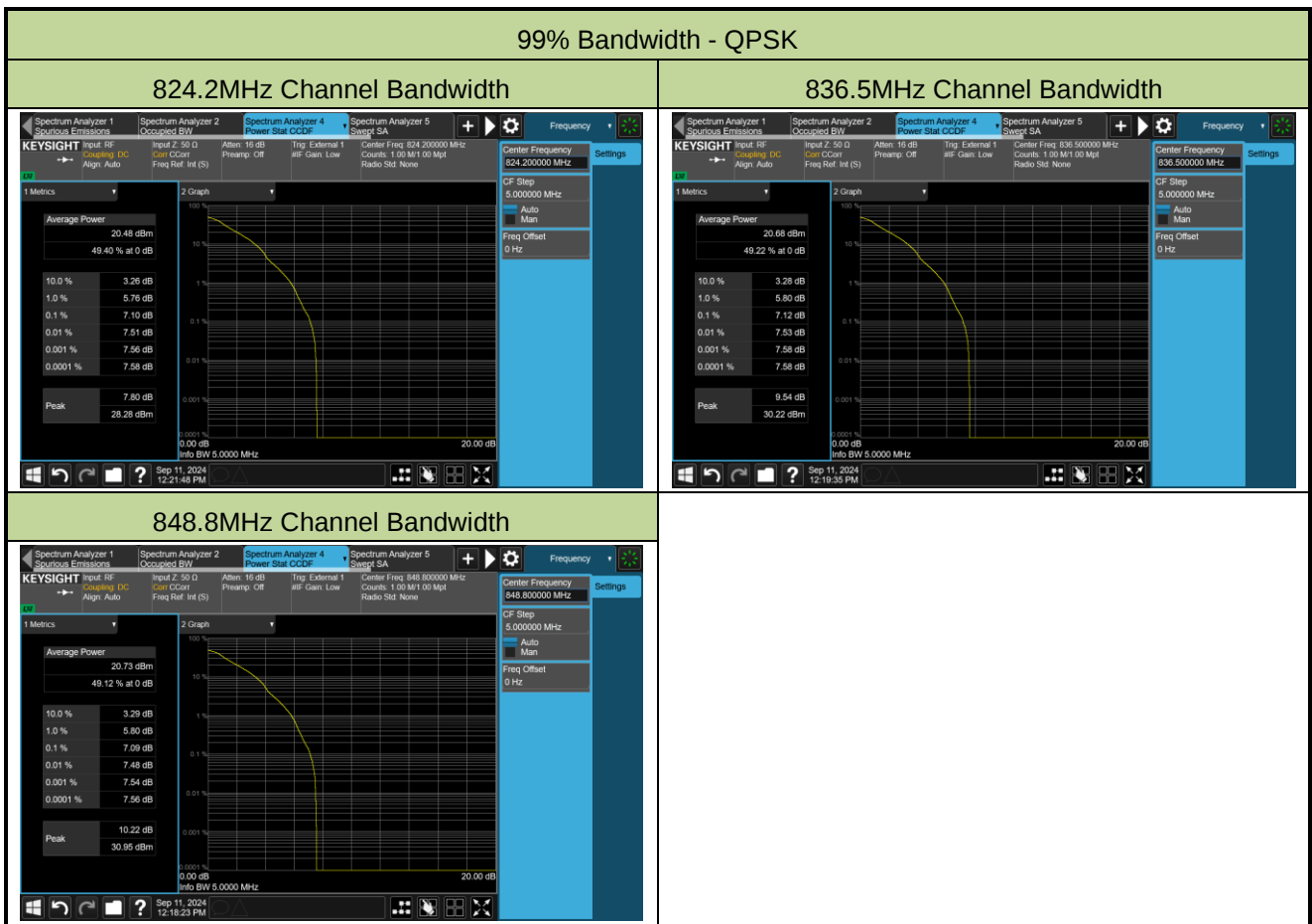
Test Site	WZ-SR6	Test Engineer	Lucas Wang
Test Date	2024-09-11	Test Band	Band 4/66

Frequency (MHz)	Channel Bandwidth (MHz)	Sub-carrier spacing (kHz)	Peak to Average Ratio (dB)	Limit (dB)	Result
QPSK					
0.2	1710.2	15	7.08	≤ 13.00	Pass
	1745	15	7.03	≤ 13.00	Pass
	1779.8	15	6.99	≤ 13.00	Pass



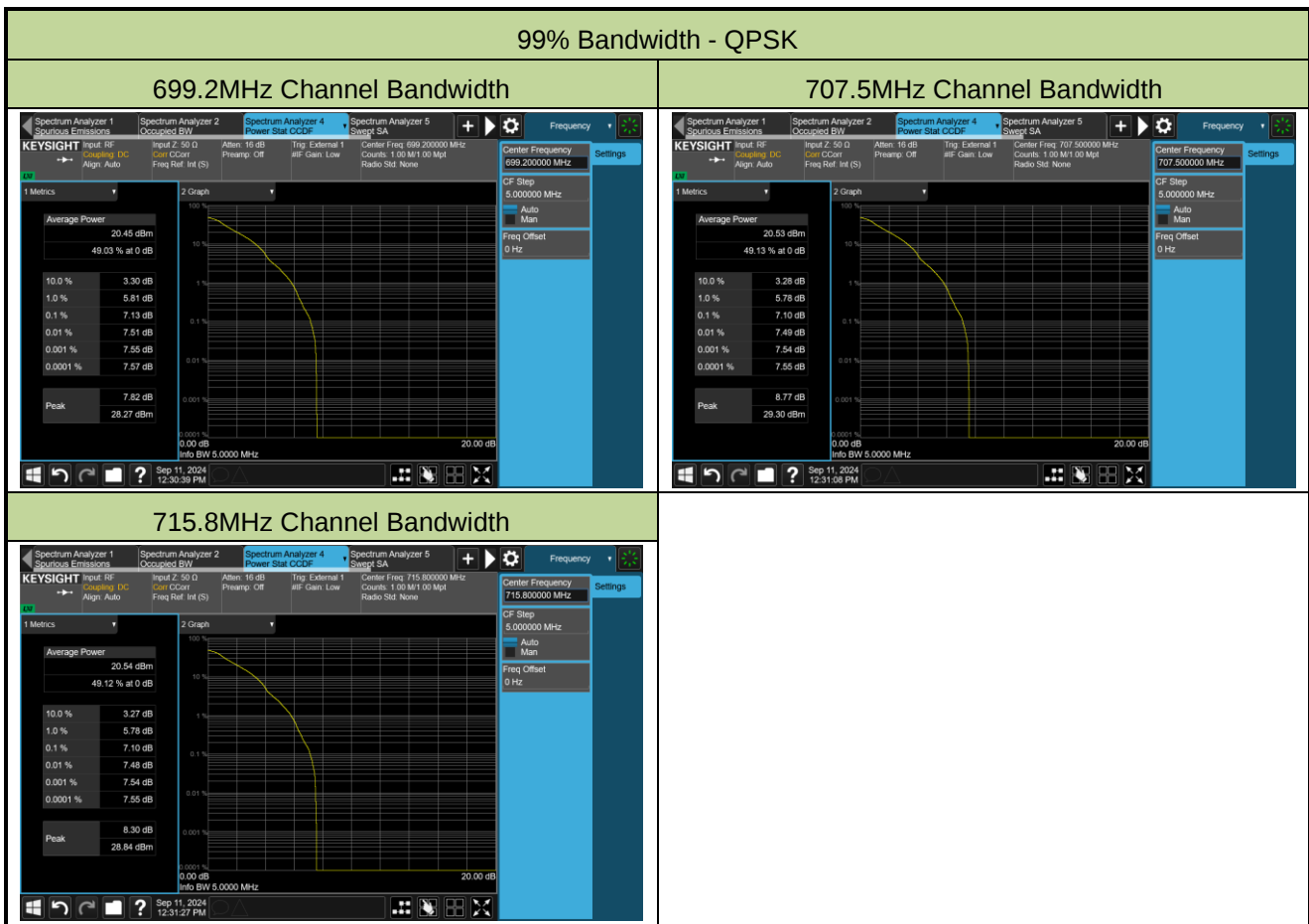
Test Site	WZ-SR6	Test Engineer	Lucas Wang
Test Date	2024-09-11	Test Band	Band 5

Frequency (MHz)	Channel Bandwidth (MHz)	Sub-carrier spacing (kHz)	Peak to Average Ratio (dB)	Limit (dB)	Result
QPSK					
0.2	824.2	15	7.10	≤ 13.00	Pass
	836.5	15	7.12	≤ 13.00	Pass
	848.8	15	7.09	≤ 13.00	Pass



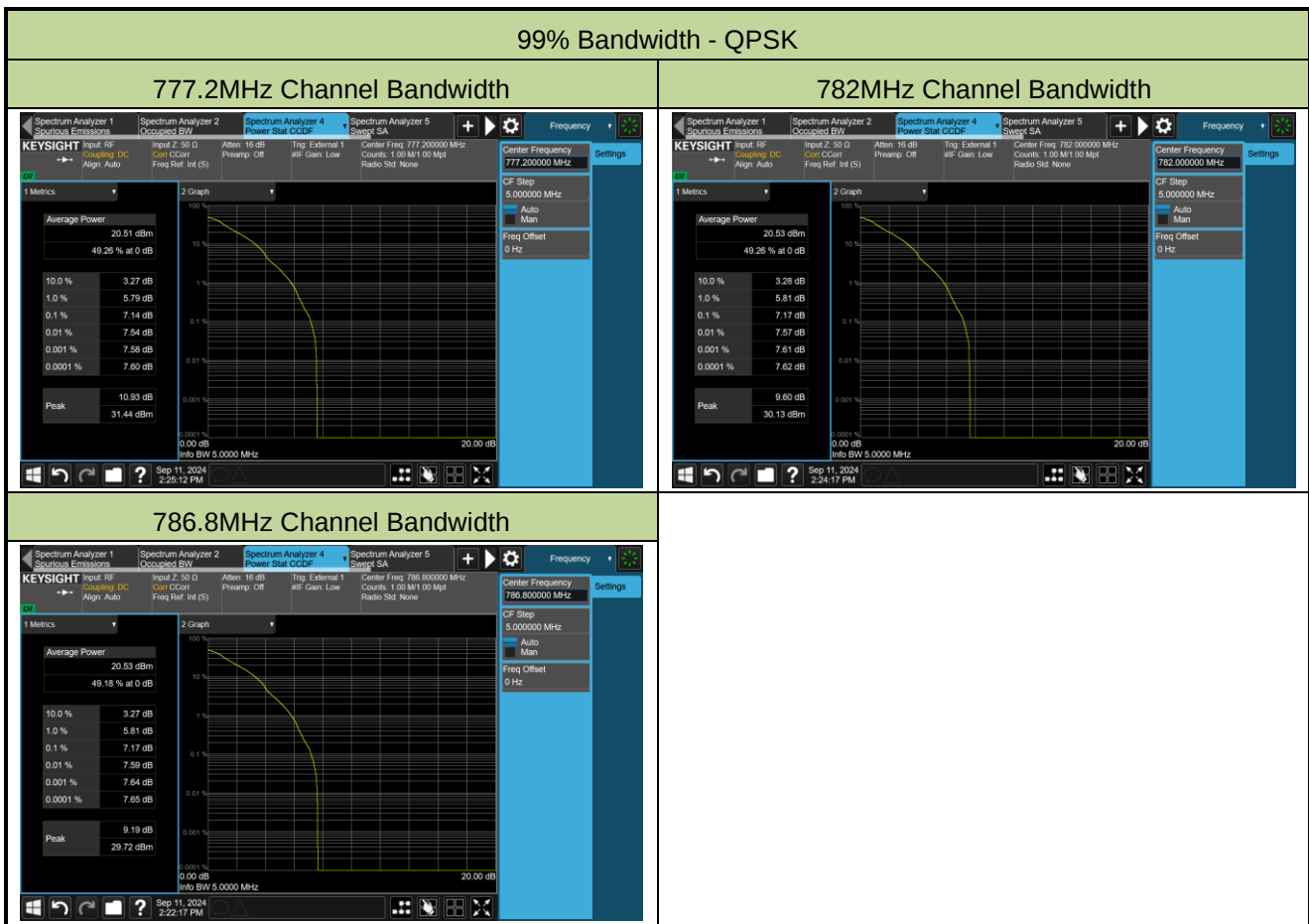
Test Site	WZ-SR6	Test Engineer	Lucas Wang
Test Date	2024-09-11	Test Band	Band 12/17

Frequency (MHz)	Channel Bandwidth (MHz)	Sub-carrier spacing (kHz)	Peak to Average Ratio (dB)	Limit (dB)	Result
QPSK					
0.2	699.2	15	7.13	≤ 13.00	Pass
	707.5	15	7.10	≤ 13.00	Pass
	715.8	15	7.10	≤ 13.00	Pass



Test Site	WZ-SR6	Test Engineer	Lucas Wang
Test Date	2024-09-11	Test Band	Band 13

Frequency (MHz)	Channel Bandwidth (MHz)	Sub-carrier spacing (kHz)	Peak to Average Ratio (dB)	Limit (dB)	Result
QPSK					
0.2	777.2	15	7.14	≤ 13.00	Pass
	782	15	7.17	≤ 13.00	Pass
	786.8	15	7.17	≤ 13.00	Pass

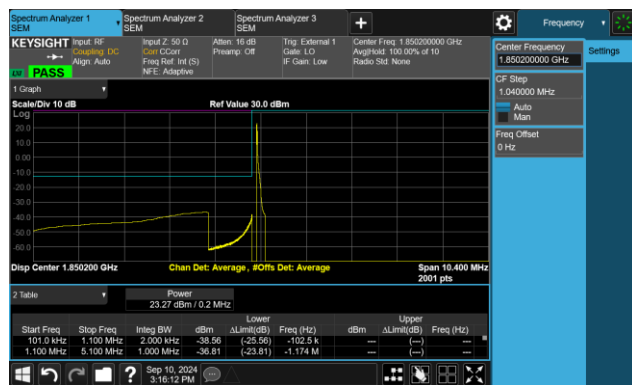


A.5 Conducted Band-Edge Test Result

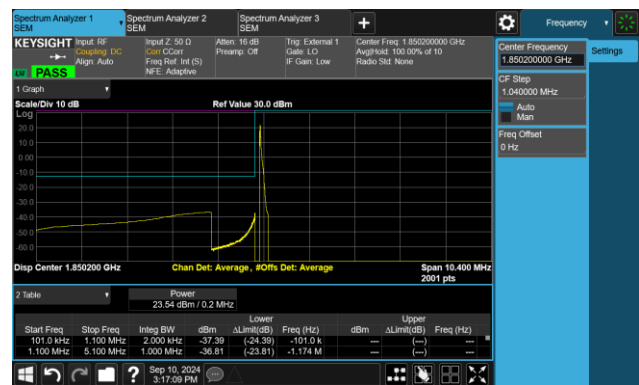
Test Site	WZ-SR6	Test Engineer	Lucas Wang
Test Date	2024-09-10 ~ 2024-09-12	Test Band	Band 2/25

BPSK

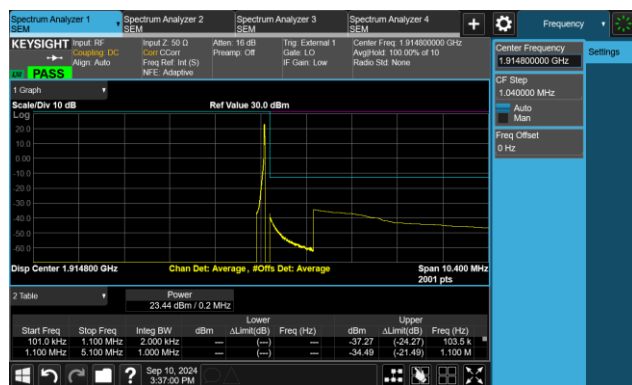
3.75kHz 1@0 CH-Low



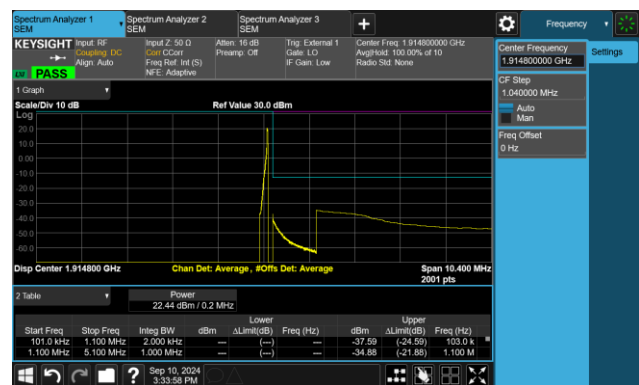
15kHz 1@0 CH-Low



3.75kHz 1@47 CH-High

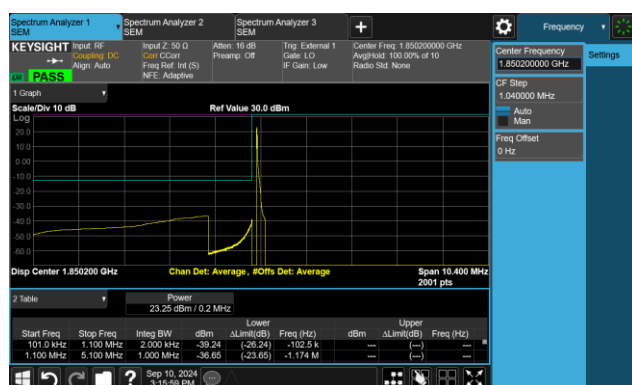


15kHz 1@11 CH-High

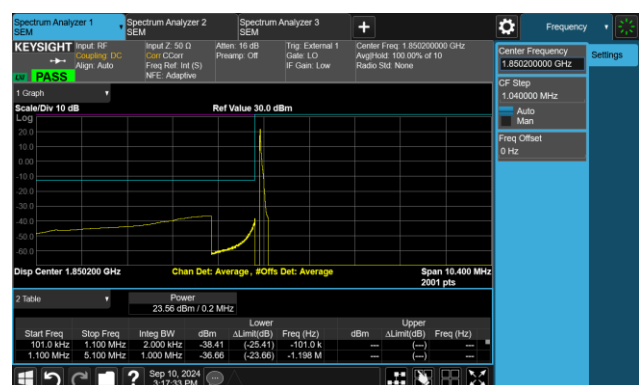


QPSK

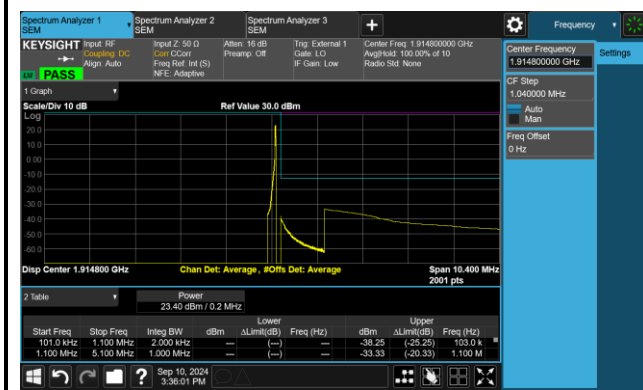
3.75kHz 1@0 CH-Low



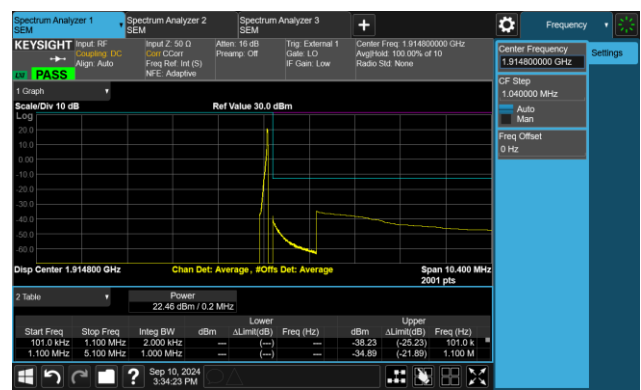
15kHz 1@0 CH-Low



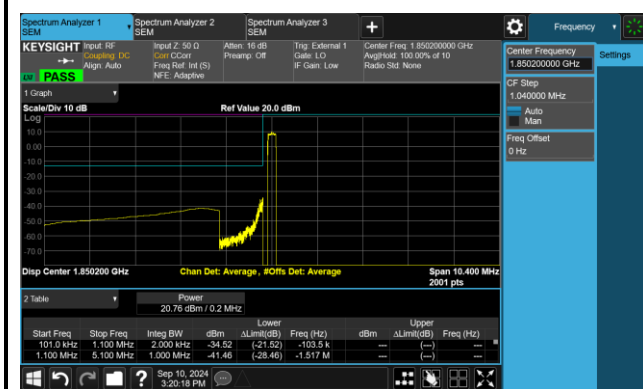
3.75kHz 1@47 CH-High



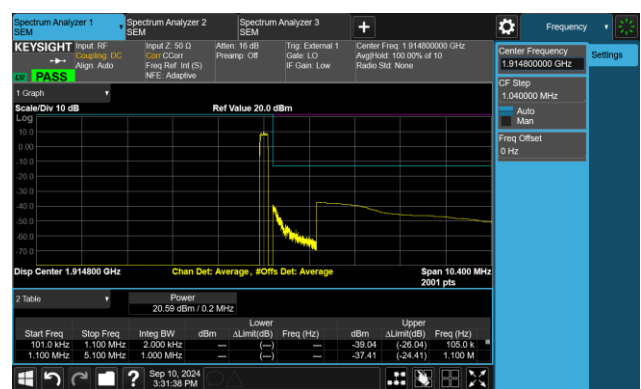
15kHz 1@11 CH-High



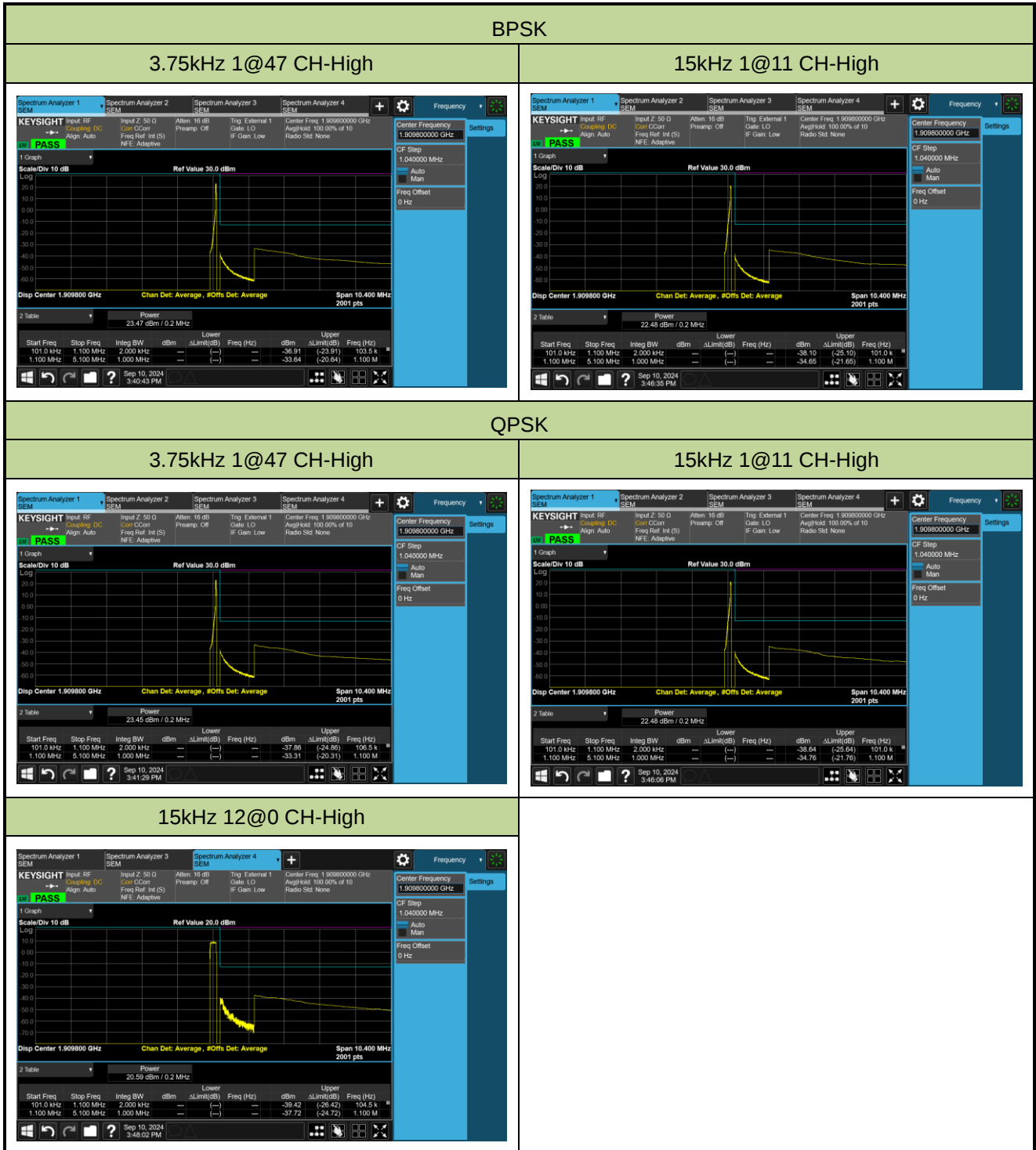
15 kHz 12@0 CH-Low



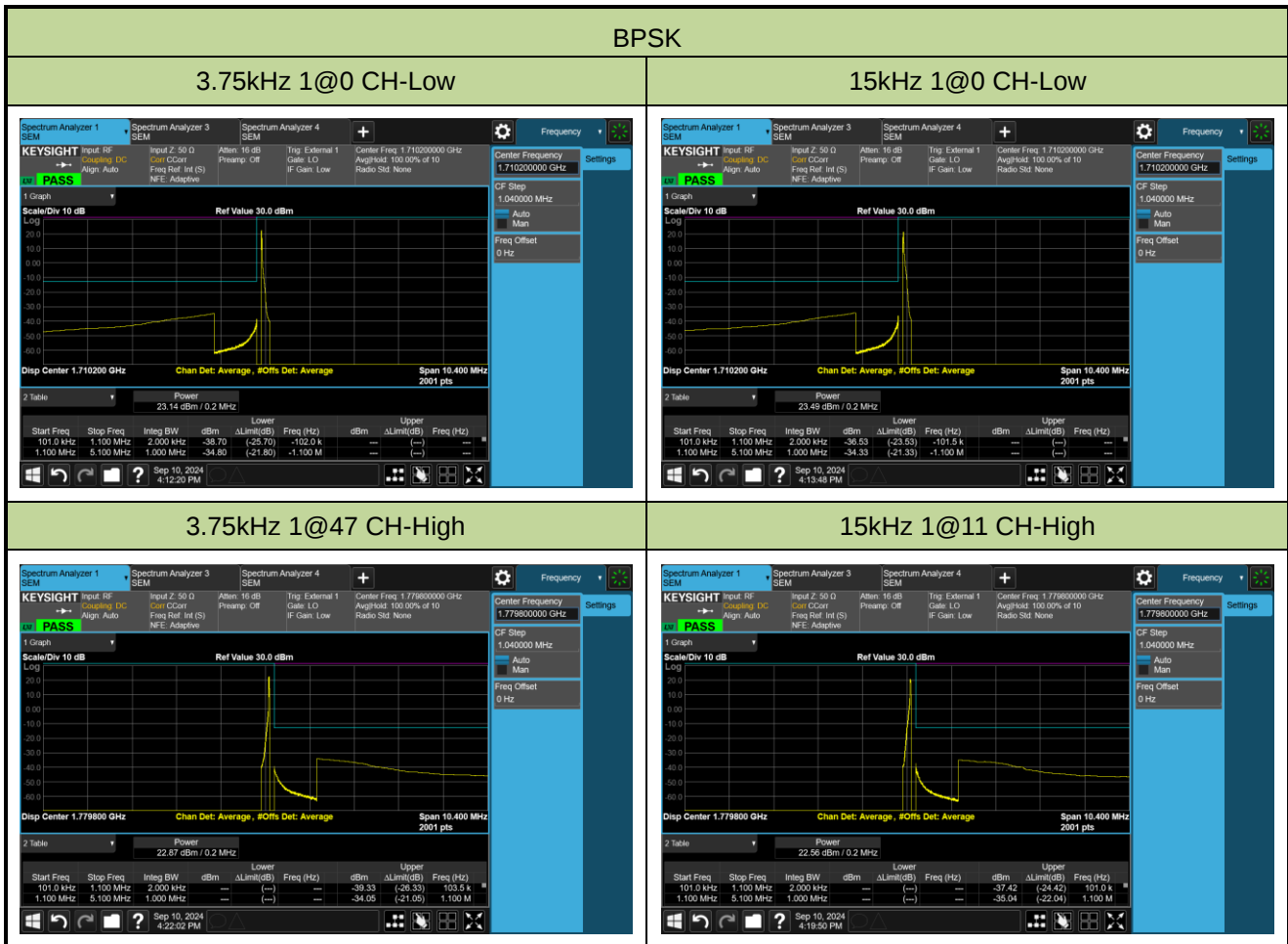
15kHz 12@0 CH-High



Test Site	WZ-SR6	Test Engineer	Lucas Wang
Test Date	2024-09-10 ~ 2024-09-12	Test Band	Band 2

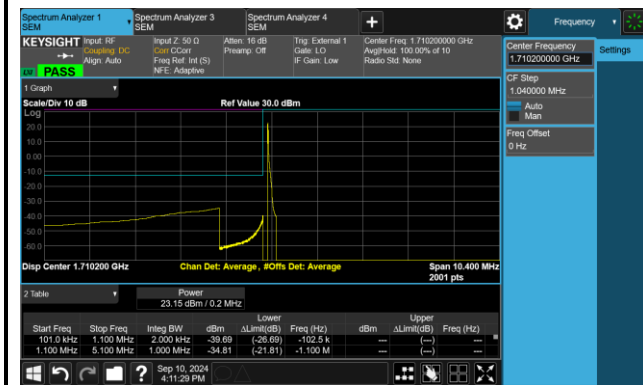


Test Site	WZ-SR6	Test Engineer	Lucas Wang
Test Date	2024-09-10 ~ 2024-09-12	Test Band	Band 4/66

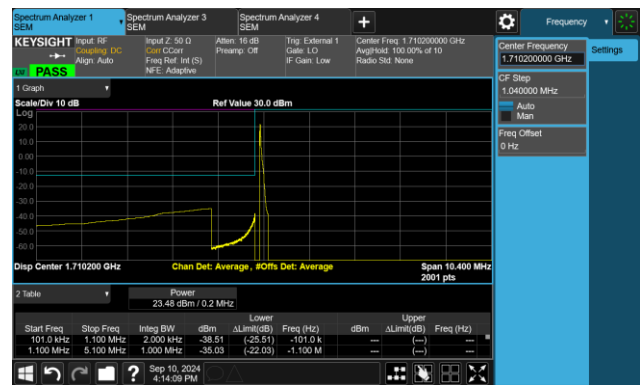


QPSK

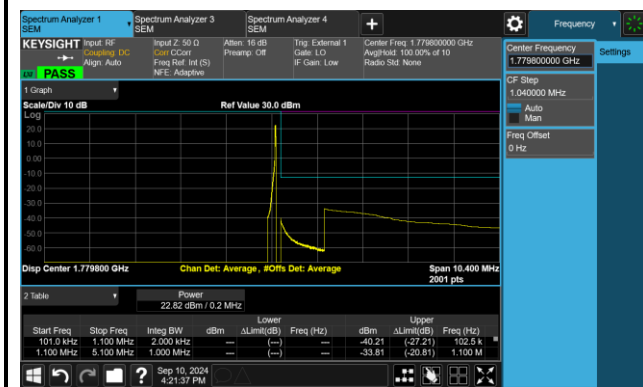
3.75kHz 1@0 CH-Low



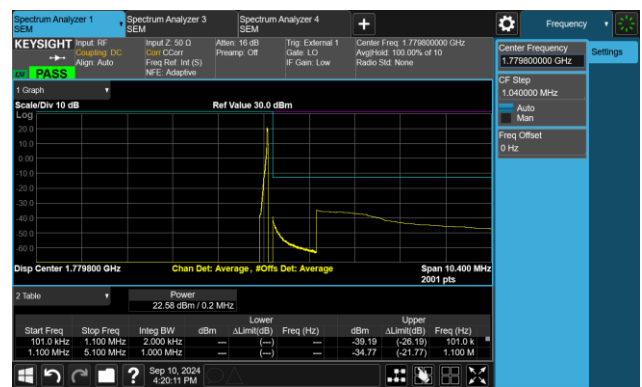
15kHz 1@0 CH-Low



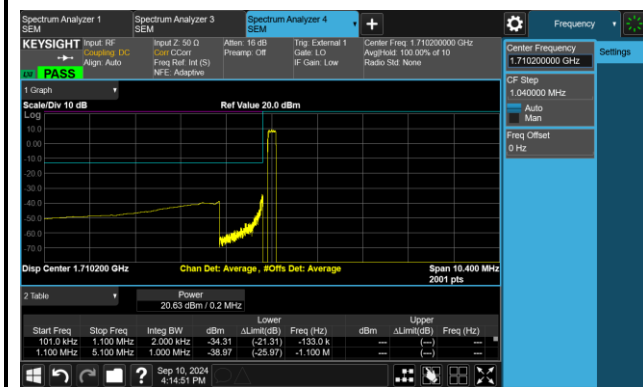
3.75kHz 1@47 CH-High



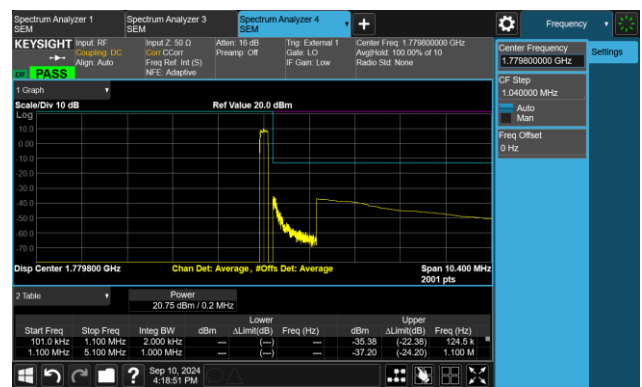
15kHz 1@11 CH-High



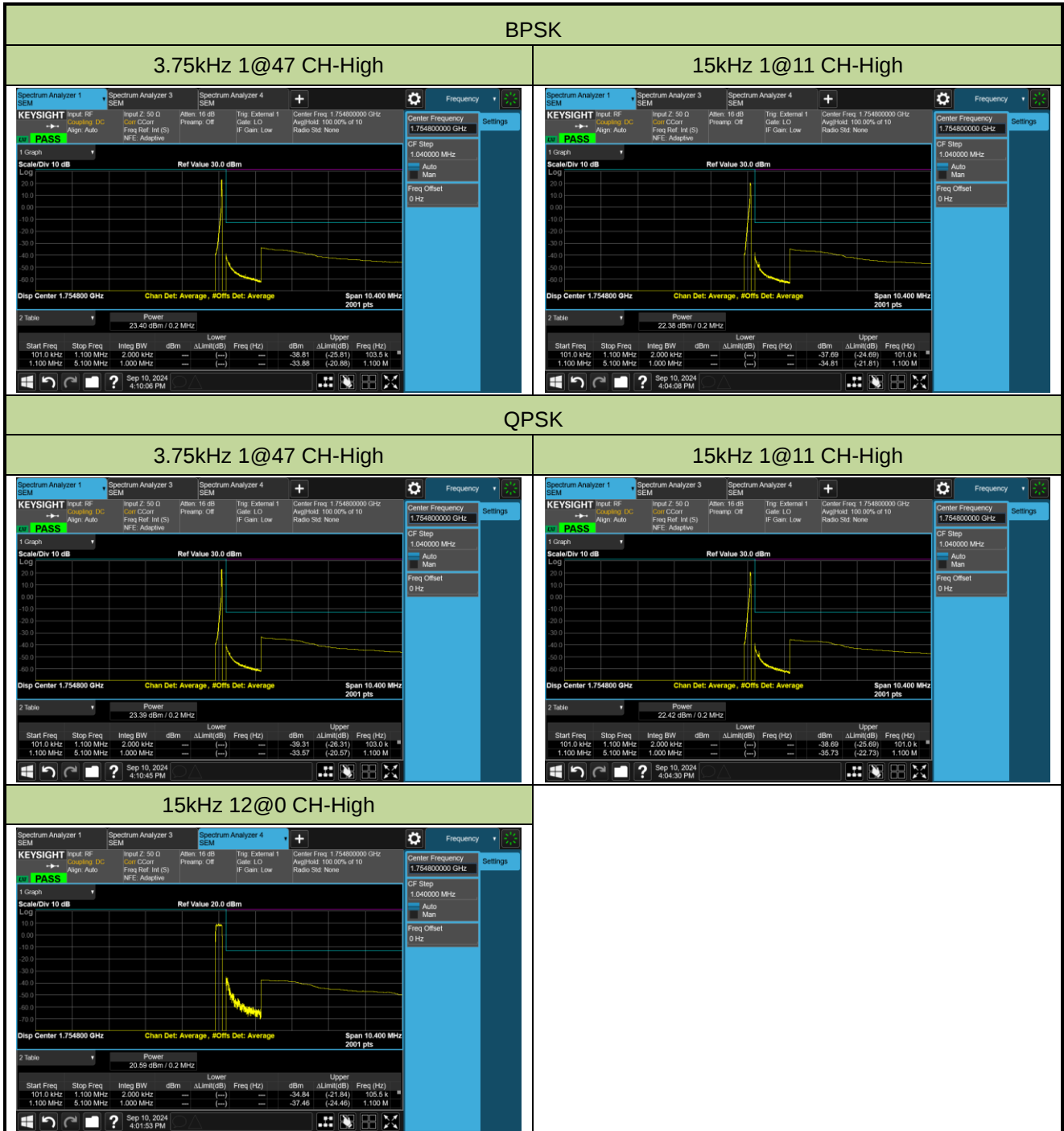
15 kHz 12@0 CH-Low



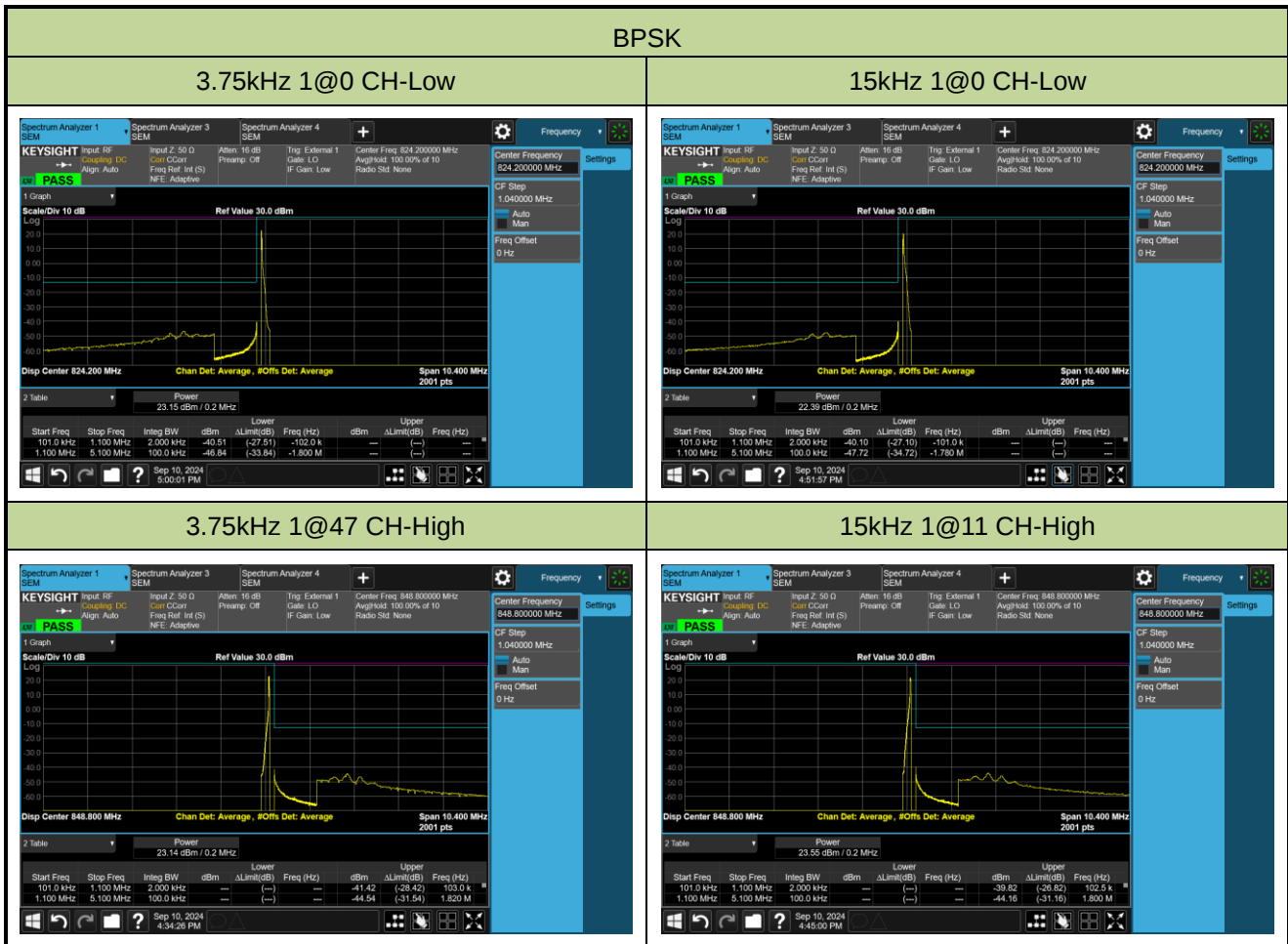
15kHz 12@0 CH-High



Test Site	WZ-SR6	Test Engineer	Lucas Wang
Test Date	2024-09-10 ~ 2024-09-12	Test Band	Band 4

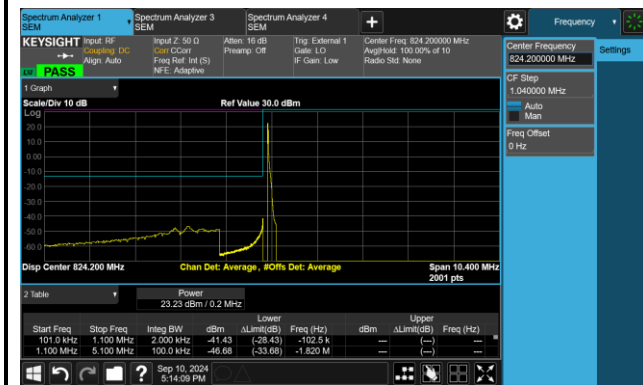


Test Site	WZ-SR6	Test Engineer	Lucas Wang
Test Date	2024-09-10 ~ 2024-09-12	Test Band	Band 5

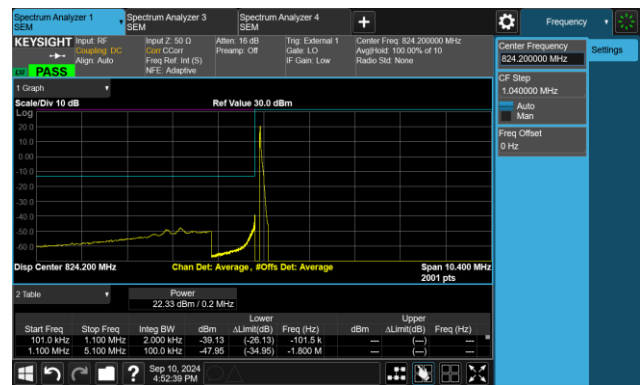


QPSK

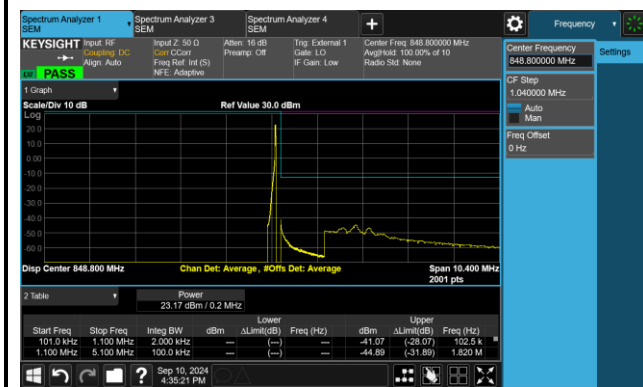
3.75kHz 1@0 CH-Low



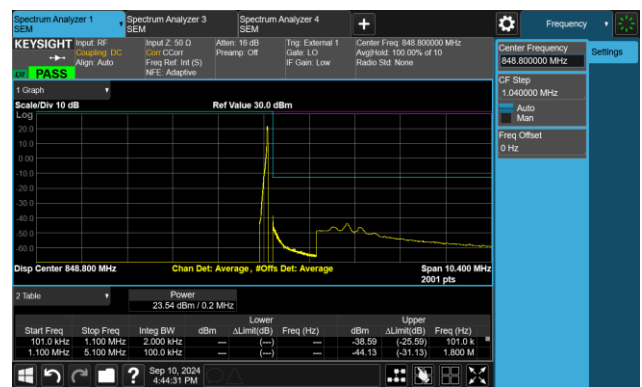
15kHz 1@0 CH-Low



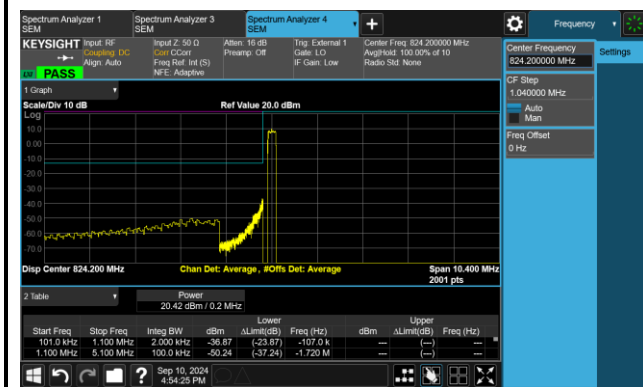
3.75kHz 1@47 CH-High



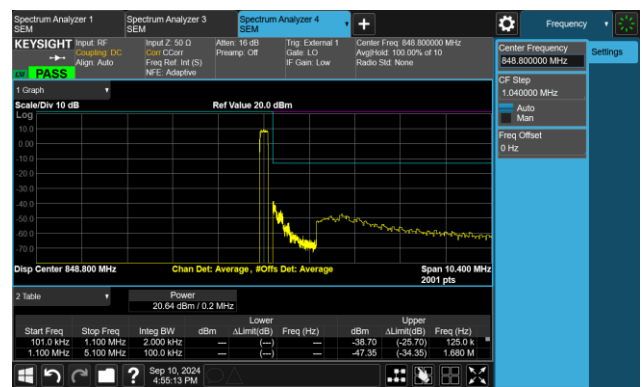
15kHz 1@11 CH-High



15 kHz 12@0 CH-Low



15kHz 12@0 CH-High



Test Site	WZ-SR6	Test Engineer	Lucas Wang
Test Date	2024-09-10 ~ 2024-09-12	Test Band	Band 12/17

