

RF MEASUREMENT REPORT

FCC ID: XMR202211KG100S

Applicant: Quectel Wireless Solutions Co., Ltd

Product: Wireless Module for Amazon Sidewalk (900MHz & Bluetooth)

Model No.: KG100S

Brand Name: Quectel

FCC Classification: FCC Part 15 Spread Spectrum Transmitter (DSS)

FCC Rule Part(s): Part15 Subpart C (Section 15.247)

Result: Complies

Received Date: 2022-11-18

Test Date: 2023-02-02 ~ 2023-03-18

Reviewed By:

Sunny Sun

Sunny Sun

Approved By:

Robin Wu

Robin Wu



The test results relate only to the samples tested.

The test results shown in the test report are traceable to the national/international standards through the calibration of the equipment and evaluated measurement uncertainty herein.

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
2211RSU051-U3	V02	Initial Report	2023-03-25	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 Accreditations	
	A2LA: 3628.01 FCC: CN1166	CNAS: L10551 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 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: L3261-190725 FCC: 291082, TW3261	ISED: TW3261

1.4. Product Information

Product Name	Wireless Module for Amazon Sidewalk (900MHz & Bluetooth)
Model No.	KG100S
Serial No.	D1N22JJ0E000231 (KG100SABMD) P1N22LA23000016 (KG100SAAMD)
Bluetooth Specification	BT 5.1 (LE only)
LoRa Specification	902 ~ 928 MHz
Working Voltage	3.0 ~ 3.6 V, nominal 3.3 V
Note: 1. The information of EUT was provided by the manufacturer, and the accuracy of the information shall be the responsibility of the manufacturer. 2. The model differences of serial numbers are different for the duplexer, this report assessed two serial numbers.	

1.5. Radio Specification under Test

Frequency Range	50kbps: 902.2 ~ 927.8MHz 150kbps: 902.4 ~ 927.6MHz 250kbps: 902.5 ~ 927.5MHz
Channel Number	50kbps: 129 150kbps: 64 250kbps: 51
Type of modulation	FHSS
Antenna Type	Dipole
Antenna Gain	2.50 dBi
Note: The frequency range of the 50kbps data rate is the widest. Therefore, this report assesses the 50kbps data rate with the completion testing and spot-check with other data rates.	

1.6. Working Frequencies

50kbps

Channel	Frequency	Channel	Frequency	Channel	Frequency
1	902.2	34	908.8	67	915.4
2	902.4	35	909.0	68	915.6
3	902.6	36	909.2	69	915.8
4	902.8	37	909.4	70	916.0
5	903.0	38	909.6	71	916.2
6	903.2	39	909.8	72	916.4
7	903.4	40	910.0	73	916.6
8	903.6	41	910.2	74	916.8
9	903.8	42	910.4	75	917.0
10	904.0	43	910.6	76	917.2
11	904.2	44	910.8	77	917.4
12	904.4	45	911.0	78	917.6
13	904.6	46	911.2	79	917.8
14	904.8	47	911.4	80	918.0
15	905.0	48	911.6	81	918.2
16	905.2	49	911.8	82	918.4
17	905.4	50	912.0	83	918.6
18	905.6	51	912.2	84	918.8
19	905.8	52	912.4	85	919.0
20	906.0	53	912.6	86	919.2
21	906.2	54	912.8	87	919.4
22	906.4	55	913.0	88	919.6
23	906.6	56	913.2	89	919.8
24	906.8	57	913.4	90	920.0
25	907.0	58	913.6	91	920.2
26	907.2	59	913.8	92	920.4
27	907.4	60	914.0	93	920.6
28	907.6	61	914.2	94	920.8
29	907.8	62	914.4	95	921.0
30	908.0	63	914.6	96	921.2
31	908.2	64	914.8	97	921.4
32	908.4	65	915.0	98	921.6

Channel	Frequency	Channel	Frequency	Channel	Frequency
33	908.6	66	915.2	99	921.8
100	922.0	110	924.0	120	926.0
101	922.2	111	924.2	121	926.2
102	922.4	112	924.4	122	926.4
103	922.6	113	924.6	123	926.6
104	922.8	114	924.8	124	926.8
105	923.0	115	925.0	125	927.0
106	923.2	116	925.2	126	927.2
107	923.4	117	925.4	127	927.4
108	923.6	118	925.6	128	927.6
109	923.8	119	925.8	129	927.8

150kbps

Channel	Frequency	Channel	Frequency	Channel	Frequency
1	902.4	23	911.2	44	919.6
2	902.8	24	911.6	45	920.0
3	903.2	25	912.0	46	920.4
4	903.6	26	912.4	47	920.8
5	904.0	27	912.8	48	921.2
6	904.4	28	913.2	49	921.6
7	904.8	29	913.6	50	922.0
8	905.2	30	914.0	51	922.4
9	905.6	31	914.4	52	922.8
10	906.0	32	914.8	53	923.2
11	906.4	33	915.2	54	923.6
12	906.8	34	915.6	55	924.0
13	907.2	35	916.0	56	924.4
14	907.6	36	916.4	57	924.8
15	908.0	37	916.8	58	925.2
16	908.4	38	917.2	59	925.6
17	908.8	39	917.6	60	926.0
18	909.2	40	918.0	61	926.4
19	909.6	41	918.4	62	926.8
20	910.0	42	918.8	63	927.2
21	910.4	43	919.2	64	927.6
22	910.8	--	--	--	--

250kbps

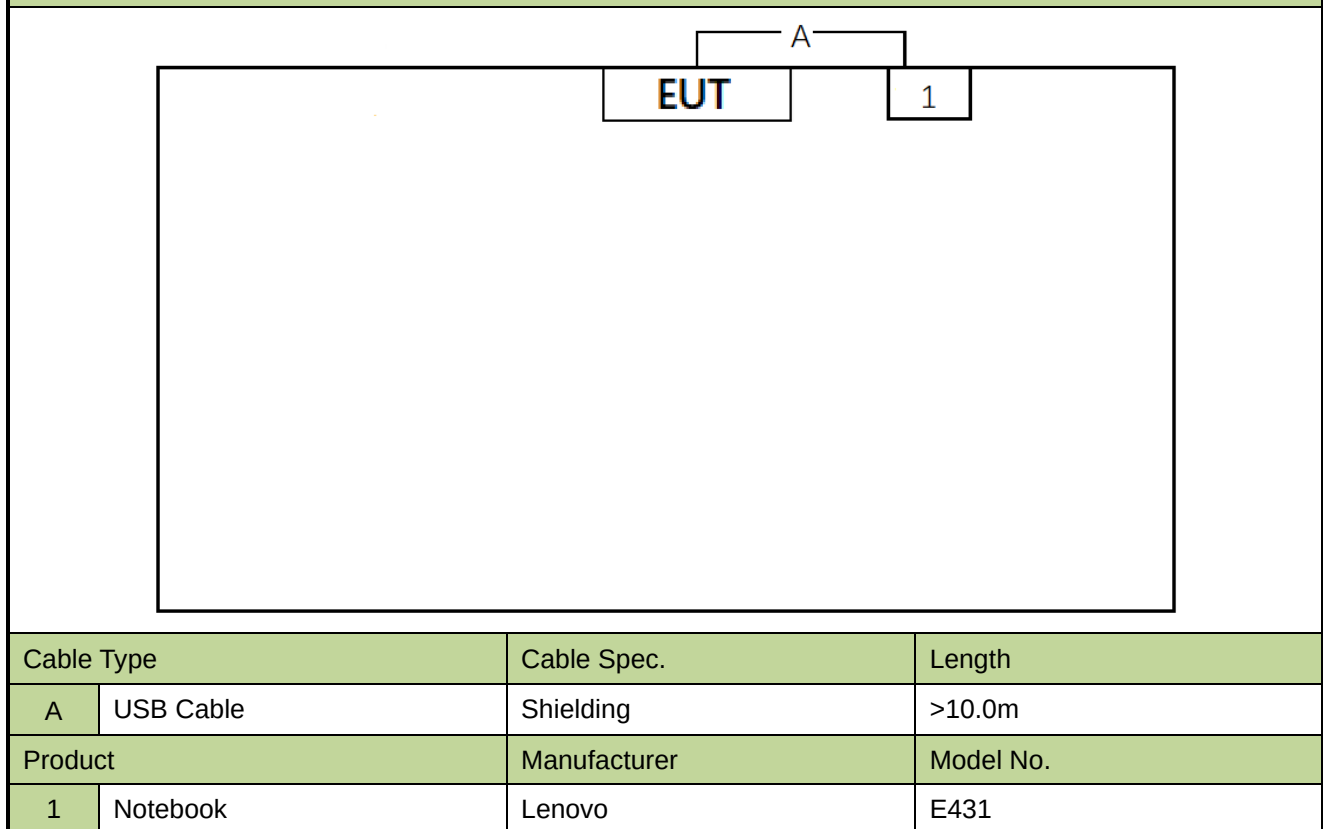
Channel	Frequency	Channel	Frequency	Channel	Frequency
1	902.5	18	911.0	35	919.5
2	903.0	19	911.5	36	920.0
3	903.5	20	912.0	37	920.5
4	904.0	21	912.5	38	921.0
5	904.5	22	913.0	39	921.5
6	905.0	23	913.5	40	922.0
7	905.5	24	914.0	41	922.5
8	906.0	25	914.5	42	923.0
9	906.5	26	915.0	43	923.5
10	907.0	27	915.5	44	924.0
11	907.5	28	916.0	45	924.5
12	908.0	29	916.5	46	925.0
13	908.5	30	917.0	47	925.5
14	909.0	31	917.5	48	926.0
15	909.5	32	918.0	49	926.5
16	910.0	33	918.5	50	927.0
17	910.5	34	919.0	51	927.5

2. Test Configuration

2.1. Test System Connection Diagram

The device was tested per the guidance ANSI C63.10: 2013 was used to reference the appropriate EUT setup for radiated emissions testing and AC line conducted testing.

Connection Diagram – Radiated Emission testing & AC Conducted Emissions



2.2. Test Software

The test utility software used during testing was “QCOM”, and the version was 1.6.

2.3. Applied Standards

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

- FCC Part 15.247
- KDB 558074 D01v05r02
- ANSI C63.10-2013

2.4. Test Environment Condition

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

3. Antenna Requirement

Excerpt from §15.203 of the FCC Rules/Regulations:

“An intentional radiator antenna shall be designed to ensure that no antenna other than that furnished by the responsible party can be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section.”

Conclusion:

The unit complies with the requirement of §15.203.

4. Measuring Instrument

Instrument	Manufacturer	Model No.	Asset No.	Cali. Interval	Cali. Due Date	Test Site
EMI Test Receiver	R&S	ESR7	MRTSUE06001	1 year	2023-12-28	WZ-AC1
Horn Antenna	Schwarzbeck	BBHA 9120D	MRTSUE06023	1 year	2023-08-22	WZ-AC1
Preamplifier	Agilent	83017A	MRTSUE06076	1 year	2023-05-08	WZ-AC1
TRILOG Antenna	Schwarzbeck	VULB 9168	MRTSUE06172	1 year	2023-06-21	WZ-AC1
Anechoic Chamber	TDK	WZ-AC1	MRTSUE06212	1 year	2023-04-21	WZ-AC1
Thermohygrometer	testo	608-H1	MRTSUE06403	1 year	2023-06-06	WZ-AC1
Signal Analyzer	Keysight	N9010B	MRTSUE06607	1 year	2023-12-28	WZ-AC1
Thermohygrometer	testo	608-H1	MRTSUE11039	1 year	2023-11-01	WZ-AC1
Loop Antenna	Schwarzbeck	FMZB 1519	MRTSUE06025	1 year	2023-09-29	WZ-AC1
Two-Line V-Network	R&S	ENV216	MRTSUE06002	1 year	2023-06-04	WZ-SR2
Shielding Room	MIX-BEP	WZ-SR2	MRTSUE06215	5 years	2026-12-20	WZ-SR2
Thermohygrometer	testo	608-H1	MRTSUE06404	1 year	2023-06-06	WZ-SR2
EMI Test Receiver	R&S	ESR3	MRTSUE06909	1 year	2023-10-27	WZ-SR2
Signal Analyzer	Keysight	N9010B	MRTSUE06457	1 year	2023-06-04	WZ-SR5
Thermohygrometer	testo	608-H1	MRTSUE06402	1 year	2023-06-06	WZ-SR5
Shielding Room	HUAMING	WZ-SR5	MRTSUE06442	N/A	N/A	WZ-SR5
USB Power Sensor	Keysight	U2021XA	MRTSUE06446	1 year	2023-06-04	WZ-SR5
Attenuator	MVE	MVE2213	MRTSUE11093	1 year	2023-06-09	WZ-SR5
Signal Analyzer	Agilent	N9020A	MRTSUE06106	1 year	2023-04-06	WZ-SR5

Software	Version	Function
EMI Software	V3.0.0	EMI Test Software
BenchVue Power Meter	2018.1	Power
Controller_MF 7802	2.03C	RE Antenna & Turntable

5. Decision Rules and Measurement Uncertainty

5.1. 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.)

5.2. 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 $k = 2$.

AC Conducted Emission Measurement	
The maximum measurement uncertainty is evaluated as:	
9kHz~150kHz:	3.58dB
150kHz~30MHz:	3.20dB
Radiated Disturbance	
The maximum measurement uncertainty is evaluated as:	
Coaxial:	9kHz~30MHz: 2.59dB
Coplanar:	9kHz~30MHz: 2.60dB
Horizontal:	30MHz~200MHz: 3.85dB
	200MHz~1GHz: 4.36dB
	1GHz~10GHz: 4.98dB
Vertical:	30MHz~200MHz: 4.06dB
	200MHz~1GHz: 5.28dB
	1GHz~10GHz: 4.91dB
Spurious Emissions, Conducted	
Measuring Uncertainty for a Level of Confidence of 95% ($U=2U_c(y)$):	
2.30dB	
Output Power	
Measuring Uncertainty for a Level of Confidence of 95% ($U=2U_c(y)$):	
2.30dB	
Occupied Bandwidth	
Measuring Uncertainty for a Level of Confidence of 95% ($U=2U_c(y)$):	
3.20%	

6. Test Result

6.1. Summary

FCC Section(s)	Test Description	Test Condition	Verdict
15.247(a)(1)	20dB Bandwidth	Conducted	Pass
15.247(b)(1)	Peak Transmitter Output Power		Pass
15.247(a)(1)	Channel Separation		Pass
15.247(a)(1)(iii)	Number of Channels		Pass
15.247(a)(1)(iii)	Time of Occupancy		Pass
15.247(d)	Band Edge / Out- of-Band Emissions		Pass
15.205, 15.209	General Field Strength (Restricted Bands and Radiated Emission)	Radiated	Pass
15.207	AC Conducted Emissions 150kHz - 30MHz	Line Conducted	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. For radiated emission test, every axis (X, Y, Z) was also verified. The test results shown in the following sections represent the worst-case emissions.

6.2. 20dB Bandwidth Measurement

6.2.1. Test Limit

The maximum allowed 20 dB bandwidth of the hopping channel is 500 kHz.

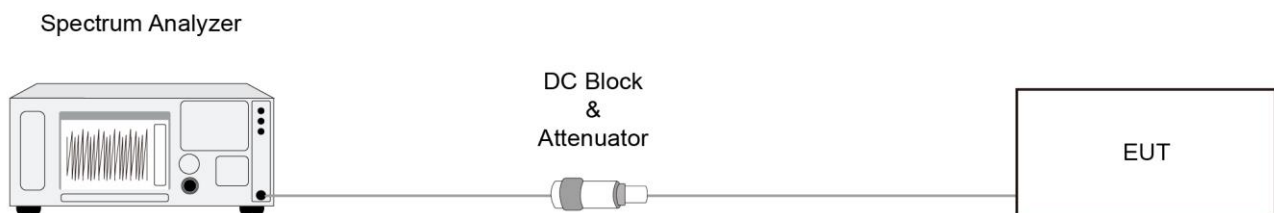
6.2.2. Test Procedure

ANSI C63.10-2013 - Section 6.9.2 (20dB Bandwidth)

6.2.3. Test Setting

1. Set RBW = 1% to 5% of the 20dB bandwidth
2. VBW = approximately three times RBW
3. Span = approximately 2 to 5 times the 20dB bandwidth, centered on a hopping channel
4. Detector = Peak
5. Trace mode = max hold
6. Sweep = auto couple
7. Allow the trace to stabilize
8. Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 20 dB relative to the maximum level measured in the fundamental emission.

6.2.4. Test Setup



6.2.5. Test Result

Refer to Appendix A.2.

6.3. Output Power Measurement

6.3.1. Test Limit

For frequency hopping systems operating in the 902-928 MHz band: 1 watt for systems employing at least 50 hopping channels; and, 0.25 watts for systems employing less than 50 hopping channels, but at least 25 hopping channels

6.3.2. Test Procedure

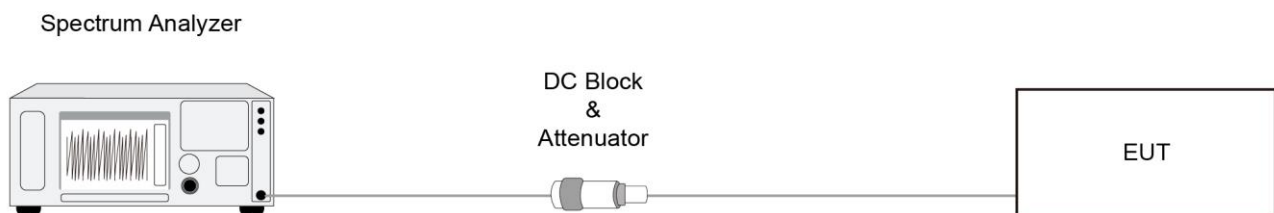
ANSI C63.10-2013 - Section 7.8.5

6.3.3. Test Setting

1. Set RBW $\geq$ the 20 dB bandwidth of the emission being measured.
2. VBW $\geq$ RBW
3. Span = approximately five times the 20dB bandwidth, centered on a hopping channel
4. Detector = Peak
5. Trace mode = max hold
6. Sweep = auto couple
7. Allow the trace to stabilize, Use the marker-to-peak function to set the marker to the peak of the emission.

The indicated level is the peak output power (don't forget added the external attenuation and cable loss)

6.3.4. Test Setup



6.3.5. Test Result

Refer to Appendix A.3.

6.4. Carrier Frequency Separation Measurement

6.4.1. Test Limit

Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater.

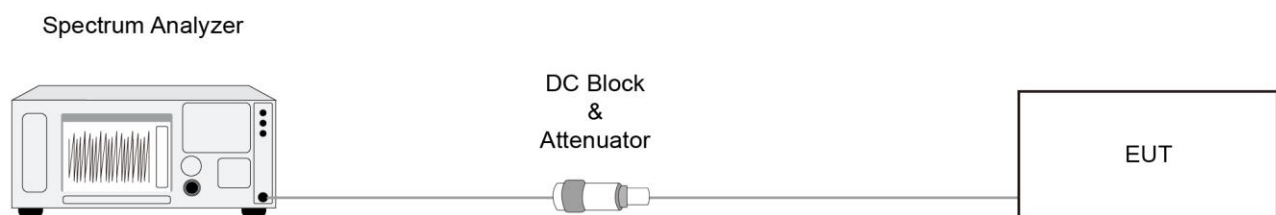
6.4.2. Test Procedure

ANSI C63.10-2013 - Section 7.8.2.

6.4.3. Test Setting

1. Span = wide enough to capture the peaks of two adjacent channels.
2. Start with the RBW set to approximately 30% of the channel spacing; adjust as necessary to best identify the center of each individual channel.
3. $VBW \geq RBW$
4. Sweep time = Auto couple
5. Detector = Peak
6. Trace mode = Max hold
7. Allowed the trace to stabilize
8. Use the marker-delta function to determine the separation between the peaks of the adjacent channels.

6.4.4. Test Setup



6.4.5. Test Result

Refer to Appendix A.4.

6.5. Number of Hopping Channels Measurement

6.5.1. Test Limit

For frequency hopping systems operating in the 902-928 MHz band: if the 20 dB bandwidth of the hopping channel is less than 250 kHz, the system shall use at least 50 hopping frequencies; if the 20 dB bandwidth of the hopping channel is 250 kHz or greater, the system shall use at least 25 hopping frequencies.

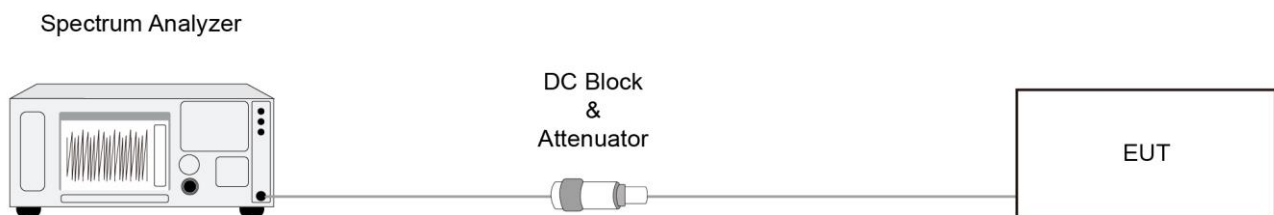
6.5.2. Test Procedure

ANSI C63.10-2013 - Section 7.8.3.

6.5.3. Test Settling

1. Span = the frequency band of operation. Depending on the number of channels the device supports, it may be necessary to divide the frequency range of operation across multiple spans, to allow the individual channels to be clearly seen.
2. To identify clearly the individual channels, set the RBW to less than 30% of the channel spacing or the 20 dB bandwidth, whichever is smaller.
3. VBW $\geq$ RBW
4. Sweep time = Auto couple
5. Detector = Peak
6. Trace mode = Max hold
7. Allow the trace to stabilize

6.5.4. Test Setup



6.5.5. Test Result

Refer to Appendix A.5.

6.6. Time of Occupancy Measurement

6.6.1. Test Limit

For frequency hopping systems operating in the 902-928 MHz band: if the 20 dB bandwidth of the hopping channel is less than 250 kHz, the average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 20 second period; if the 20 dB bandwidth of the hopping channel is 250 kHz or greater, the average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 10 second period.

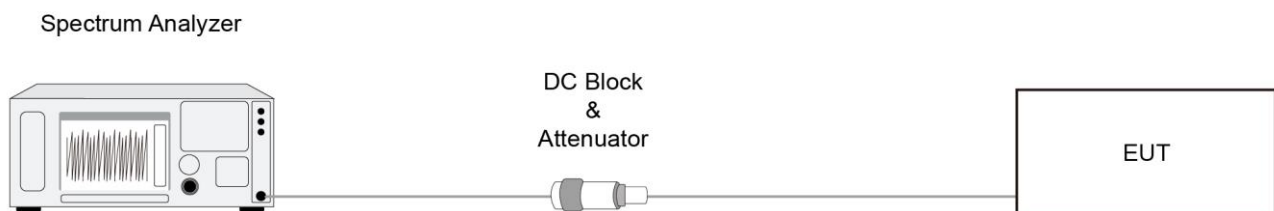
6.6.2. Test Procedure

ANSI C63.10-2013 - Section 7.8.4.

6.6.3. Test Settling

1. Span = zero span, centered on a hopping channel.
2. RBW shall be $\leq$ channel spacing and where possible RBW should be set $\gg 1 / T$, where T is the expected dwell time per channel.
3. VBW $\geq$ RBW
4. Sweep time = as necessary to capture the entire dwell time per hopping channel
5. Detector = Peak
6. Trace mode = max hold
7. Use the marker-delta function to determine the transmit time per hop. If this value varies with different modes of operation (data rate, modulation format, number of hopping channels, etc.), then repeat this test for each variation in transmit time. An oscilloscope may be used instead of a spectrum analyzer. The EUT shall show compliance with the appropriate regulatory limit for the number of hopping channels. A plot of the data shall be included in the test report.

6.6.4. Test Setup



6.6.5. Test Result

Refer to Appendix A.6.

6.7. Band-edge Compliance Measurement

6.7.1. Test Limit

The maximum permissible emission level is 20dBc. Any emissions were lying outside of the emission bandwidth and in authorized band edges to a field strength limit specified in Section 15.209 of the Title 47 CFR.

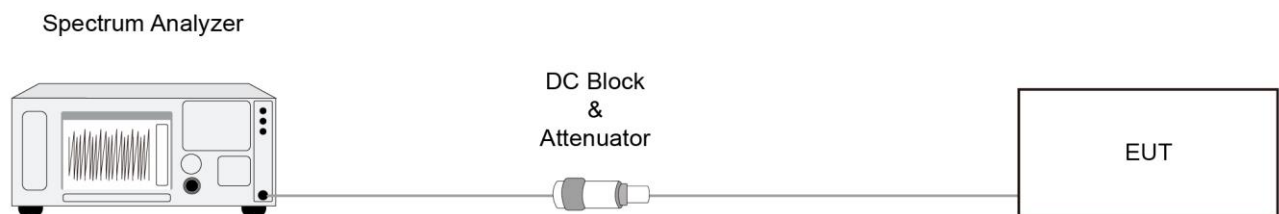
6.7.2. Test Procedure

ANSI C63.10-2013 - Section 6.10.4.

6.7.3. Test Setting

1. Span = wide enough to capture the peak level of the emission operating on the channel closest to the band edge, as well as any modulation products which fall outside of the authorized band of operation.
2. RBW = 100kHz
3. VBW = 300kHz
4. Detector = peak
5. Sweep time = auto couple
6. Trace mode = max hold
7. Trace was allowed to stabilize
8. Allow the trace to stabilize. Set the marker on the emission at the band edge, or on the highest modulation product outside of the band, if this level is greater than that at the band edge. Enable the marker-delta function, then use the marker-to-peak function to move the marker to the peak of the in-band emission.

6.7.4. Test Setup



6.7.5. Test Result

Refer to Appendix A.7.

6.8. Conducted Spurious Emissions Measurement

6.8.1. Test Limit

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, the attenuation required under this paragraph shall be 30 dB instead of 20 dB.

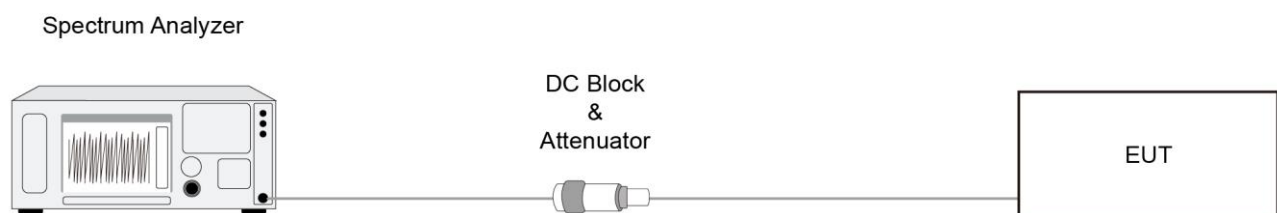
6.8.2. Test Procedure

ANSI C63.10-2013 - Section 7.8.8.

6.8.3. Test Setting

1. Span = wide enough to capture the peak level of the in-band emission and all spurious emissions (e.g., harmonics) from the lowest frequency generated in the EUT up through the 10th harmonic. Typically, several plots are required to cover this entire span.
2. RBW = 100kHz
3. VBW = 300kHz
4. Detector = peak
5. Sweep time = auto couple
6. Trace mode = max hold
7. Trace was allowed to stabilize
8. Set the marker on the peak of any spurious emission recorded. The level displayed must comply with the limit specified in this section.

6.8.4. Test Setup



6.8.5. Test Result

Refer to Appendix A.8.

6.9. Radiated Spurious Emission Measurement

6.9.1. Test Limit

All out of band emissions appearing in a restricted band as specified in Section 15.205 of the Title 47 CFR must not exceed the limits shown in Table per Section 15.209.

FCC Part 15 Subpart C Paragraph 15.209		
Frequency [MHz]	Field Strength [uV/m]	Measured Distance [Meters]
0.009 - 0.490	2400/F (kHz)	300
0.490 - 1.705	24000/F (kHz)	30
1.705 - 30	30	30
30 - 88	100	3
88 - 216	150	3
216 - 960	200	3
Above 960	500	3

6.9.2. Test Procedure

ANSI C63.10 Section 6.3 (General Requirements)

ANSI C63.10 Section 6.4 (Standard test method below 30MHz)

ANSI C63.10 Section 6.5 (Standard test method above 30MHz to 1GHz)

ANSI C63.10 Section 6.6 (Standard test method above 1GHz)

6.9.3. Test Setting

Table 1 - RBW as a function of frequency

Frequency	RBW
9 ~ 150 kHz	200 ~ 300 Hz
0.15 ~ 30 MHz	9 ~ 10 kHz
30 ~ 1000 MHz	100 ~ 120 kHz
> 1000 MHz	1 MHz

Quasi-Peak Measurements below 1GHz

1. Analyzer center frequency was set to the frequency of the radiated spurious emission of interest
2. Span was set greater than 1MHz
3. RBW = as specified in Table 1
4. Detector = CISPR quasi-peak
5. Sweep time = auto couple
6. Trace was allowed to stabilize

Peak Measurements above 1GHz

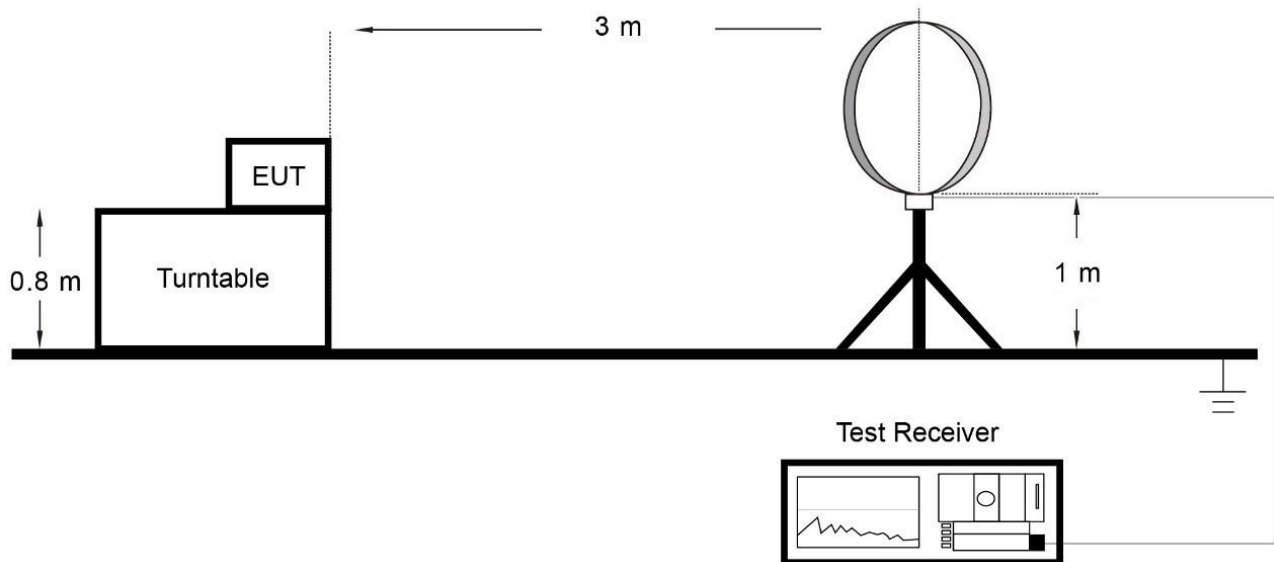
1. Analyzer center frequency was set to the frequency of the radiated spurious emission of interest
2. RBW = 1MHz
3. VBW = 3MHz
4. Detector = peak
5. Sweep time = auto couple
6. Trace mode = max hold
7. Trace was allowed to stabilize

Average Measurements above 1GHz (Method VB)

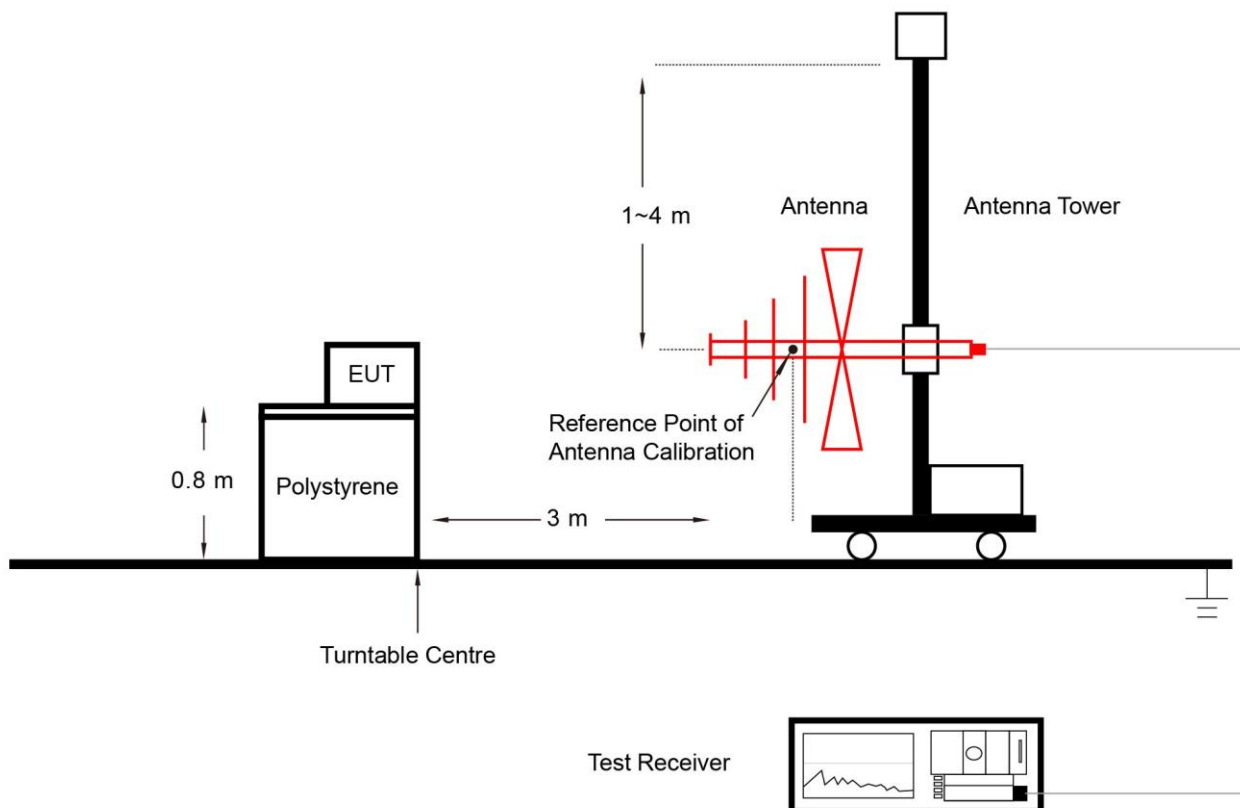
1. Analyzer center frequency was set to the frequency of the radiated spurious emission of interest
2. RBW = 1MHz
3. VBW; If the EUT is configured to transmit with duty cycle $\geq 98\%$, set VBW = 10 Hz.
If the EUT duty cycle is $< 98\%$, set VBW $\geq 1/T$. T is the minimum transmission duration.
4. Detector = Peak
5. Sweep time = auto
6. Trace mode = max hold
7. Trace was allowed to stabilize

6.9.4. Test Setup

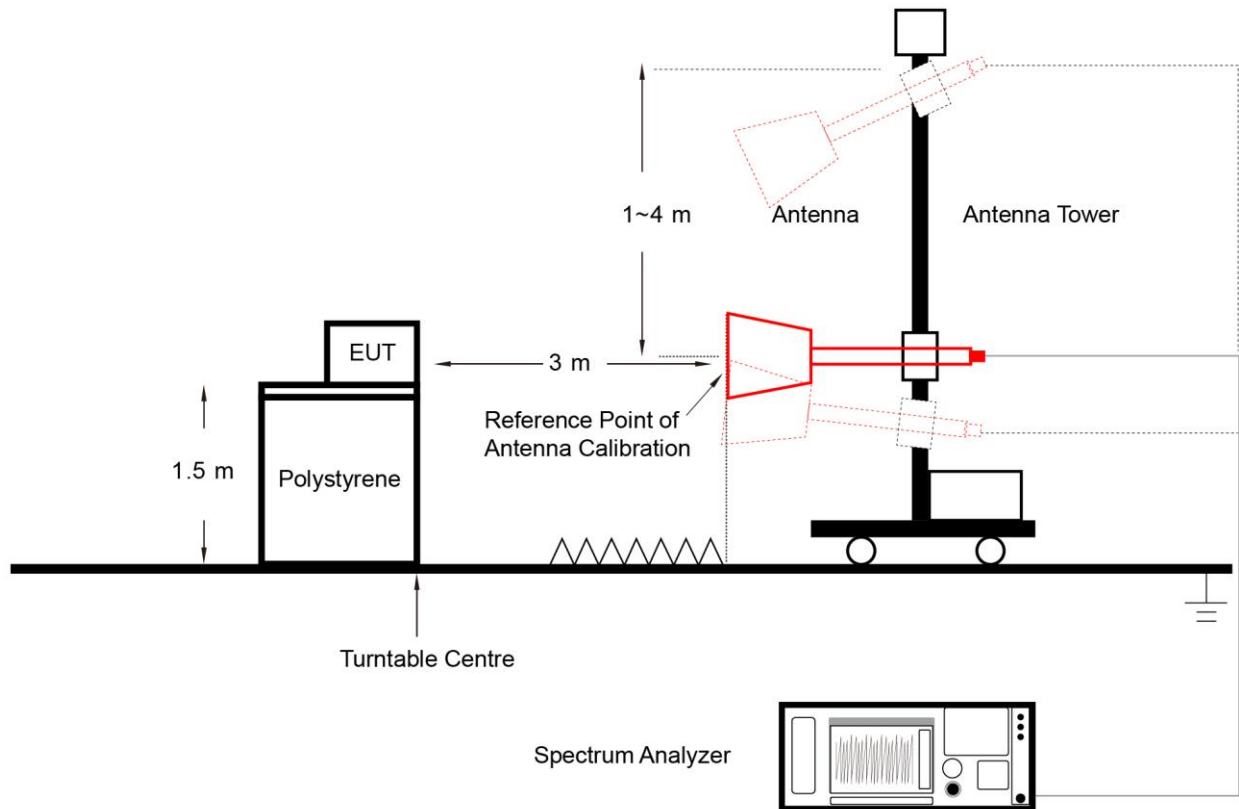
Below 30MHz Test Setup:



Below 1GHz Test Setup:



Above 1GHz Test Setup:



6.9.5. Test Result

Refer to Appendix A.9.

6.10. AC Conducted Emissions Measurement

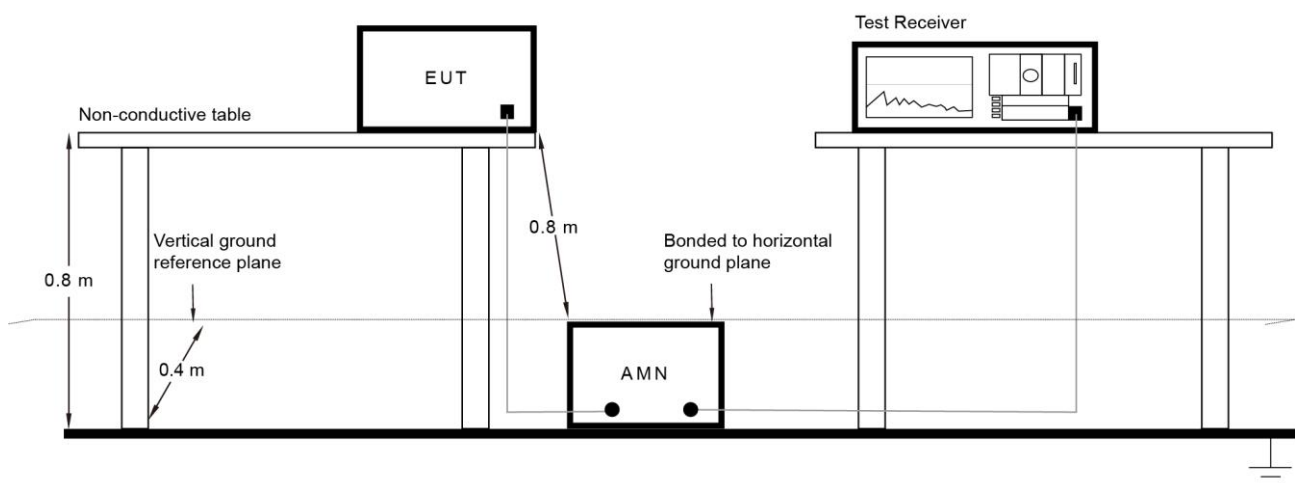
6.10.1. Test Limit

FCC Part 15 Subpart C Paragraph 15.207 Limits		
Frequency (MHz)	QP (dB μ V)	Average (dB μ V)
0.15 - 0.50	66 - 56	56 - 46
0.50 - 5.0	56	46
5.0 - 30	60	50

Note 1: The lower limit shall apply at the transition frequencies.

Note 2: The limit decreases linearly with the logarithm of the frequency in the range 0.15MHz to 0.5MHz.

6.10.2. Test Setup



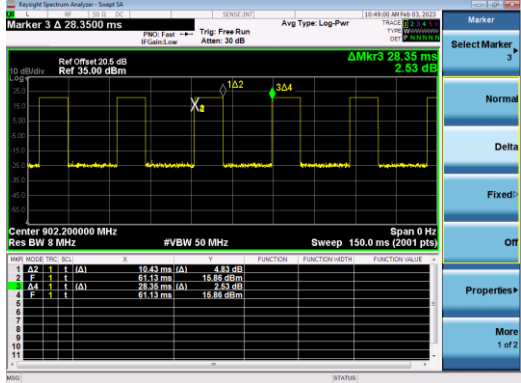
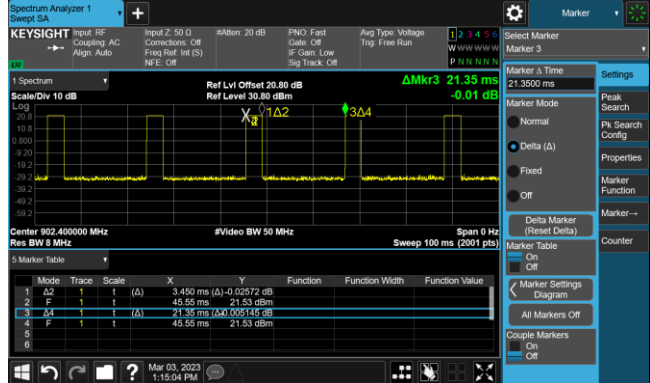
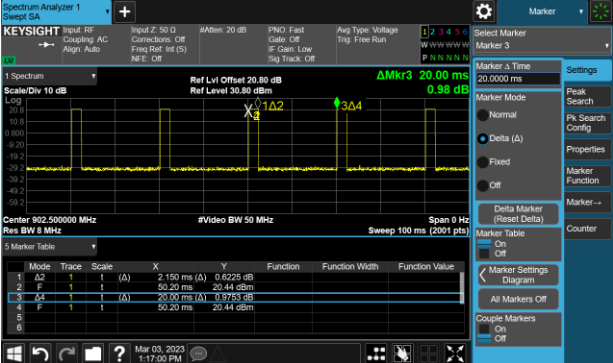
6.10.3. Test Result

Refer to Appendix A.10.

Appendix A - Test Result

A.1 Duty Cycle Test Result

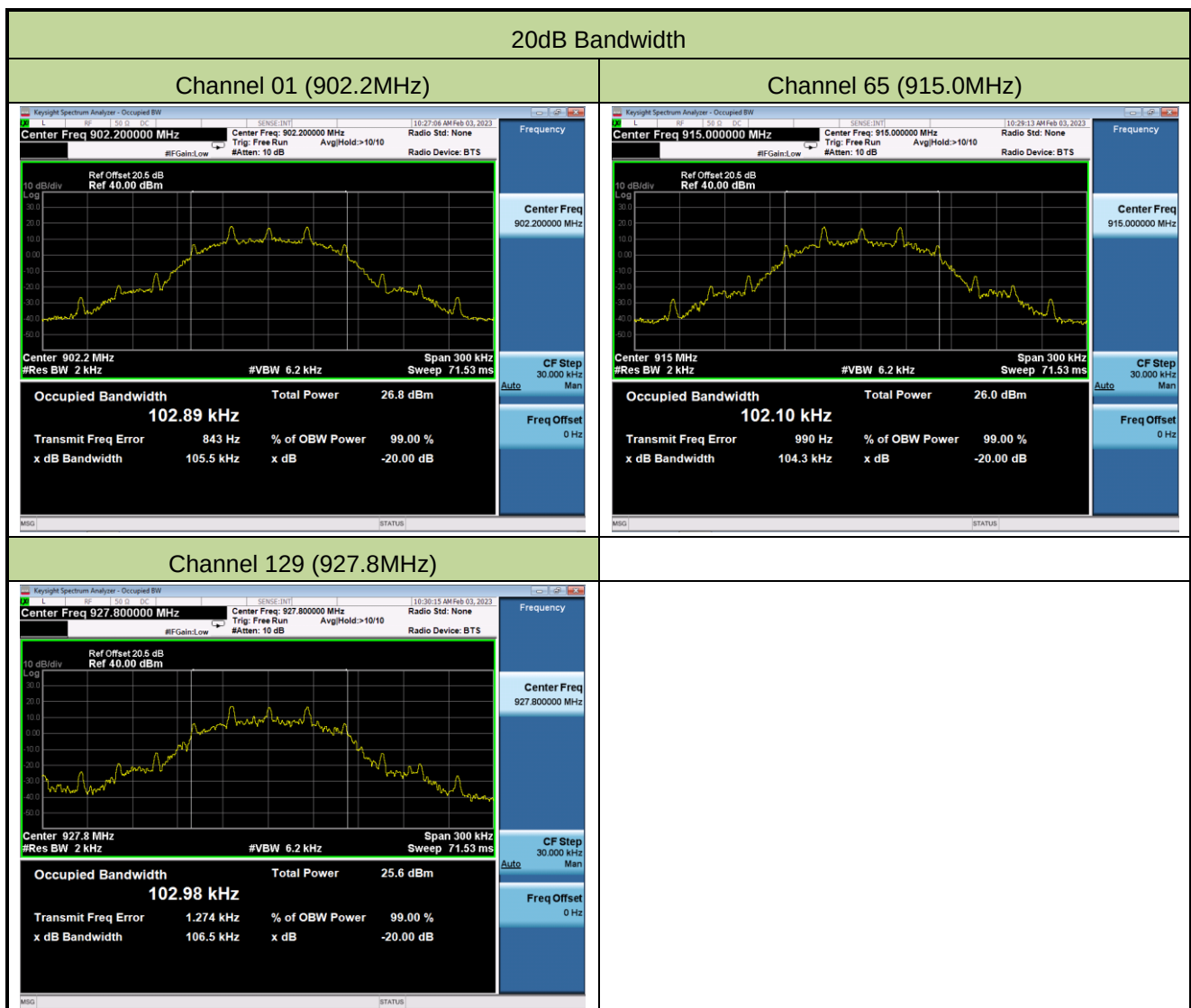
Test Site	WZ-SR5	Test Engineer	Lynn Yang
Test Date	2023-02-03 ~ 2023-03-03		

Duty Cycle	
50kbps	36.79%
150kbps	16.16%
250kbps	10.75%
Duty Cycle	
50kbps (T = Transmission Duration = 10.43 ms)	150kbps (T = Transmission Duration = 3.450 ms)
	
250kbps (T = Transmission Duration = 2.150 ms)	
	

A.2 20dB Bandwidth Test Result

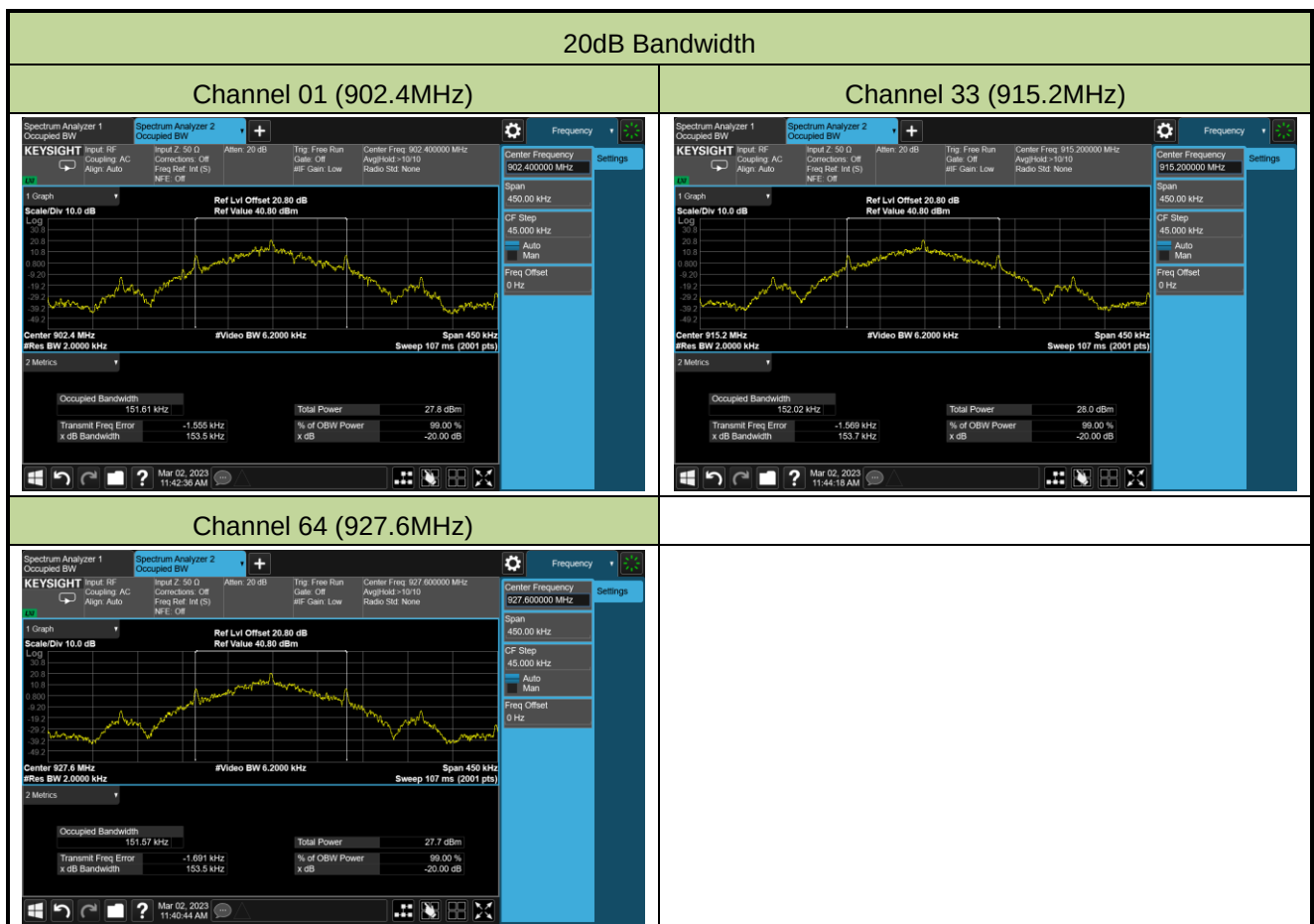
Test Site	WZ-SR5	Test Engineer	Lynn Yang
Test Date	2023-02-03	Duplexer Type No.	KG100SAAMD
Data Rate	50kbps		

Channel No.	Frequency (MHz)	20dB Bandwidth (kHz)	Limit (kHz)
01	902.2	105.5	≤ 500
65	915.0	104.3	≤ 500
129	927.8	106.5	≤ 500



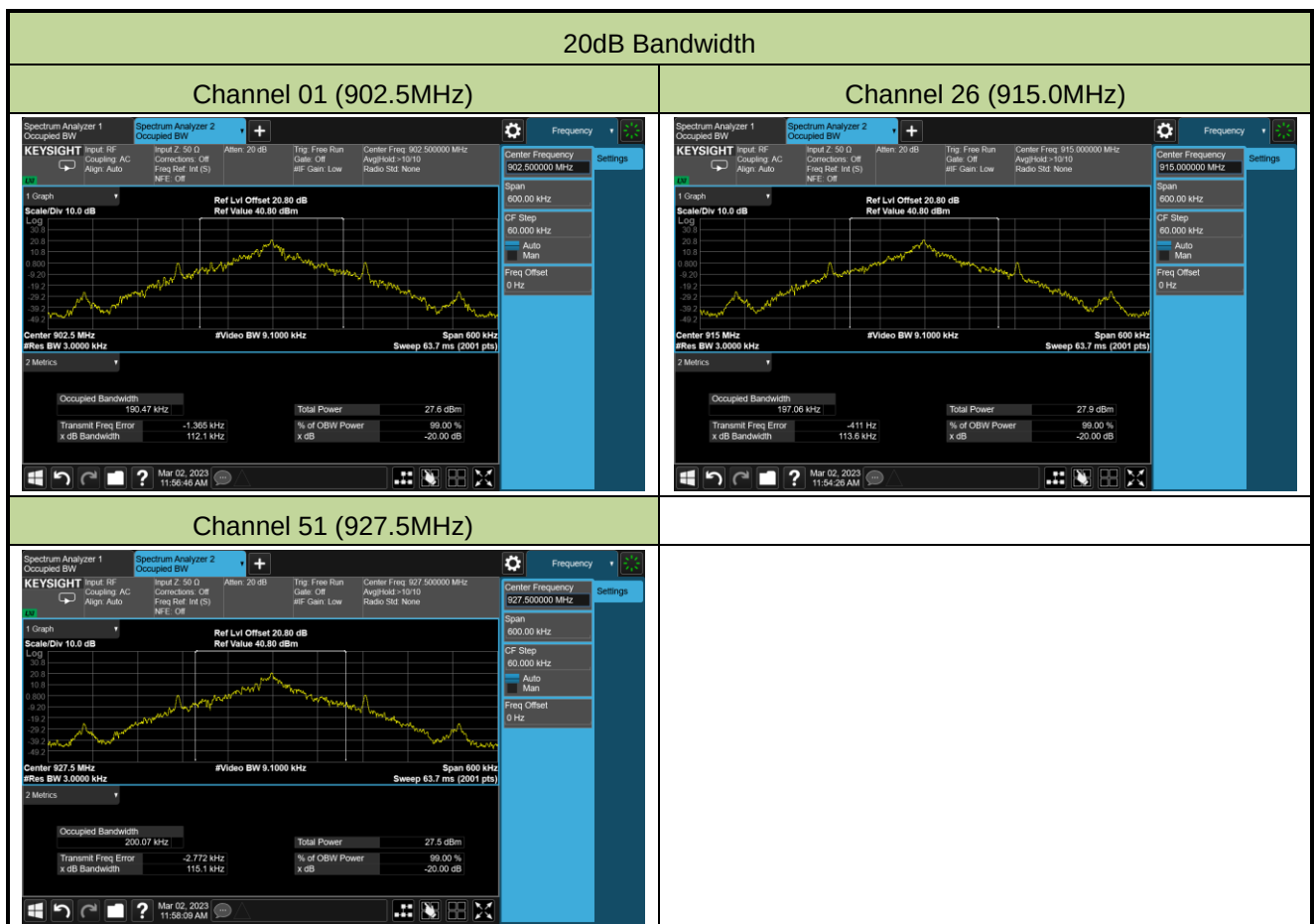
Test Site	WZ-SR5	Test Engineer	Lynn Yang
Test Date	2023-03-02	Duplexer Type No.	KG100SAAMD
Data Rate	150kbps		

Channel No.	Frequency (MHz)	20dB Bandwidth (kHz)	Limit (kHz)
01	902.4	153.5	≤ 500
33	915.2	153.7	≤ 500
64	927.6	153.5	≤ 500



Test Site	WZ-SR5	Test Engineer	Lynn Yang
Test Date	2023-03-02	Duplexer Type No.	KG100SAAMD
Data Rate	250kbps		

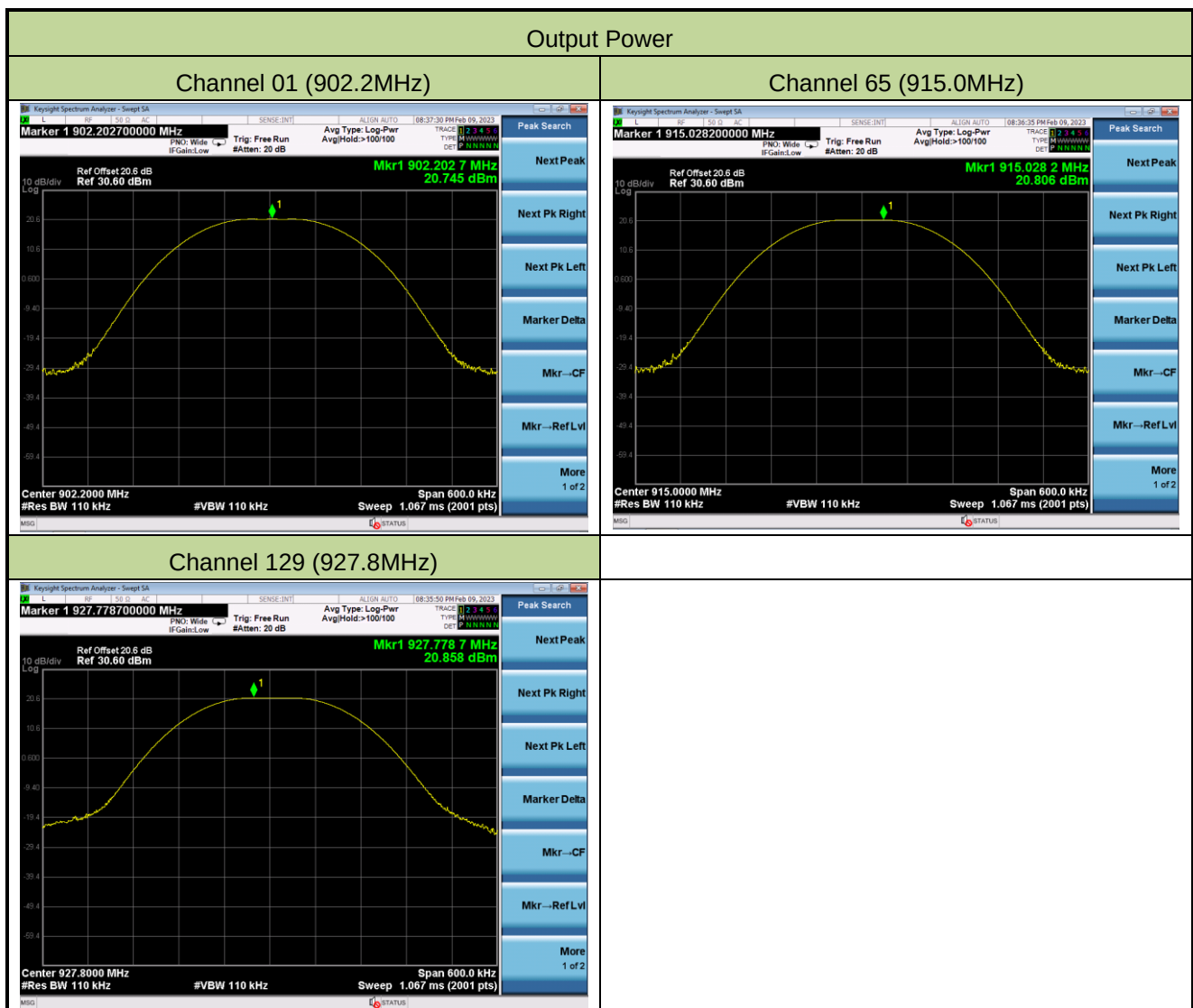
Channel No.	Frequency (MHz)	20dB Bandwidth (kHz)	Limit (kHz)
01	902.5	112.1	≤ 500
26	915.0	113.6	≤ 500
51	927.5	115.1	≤ 500



A.3 Output Power Test Result

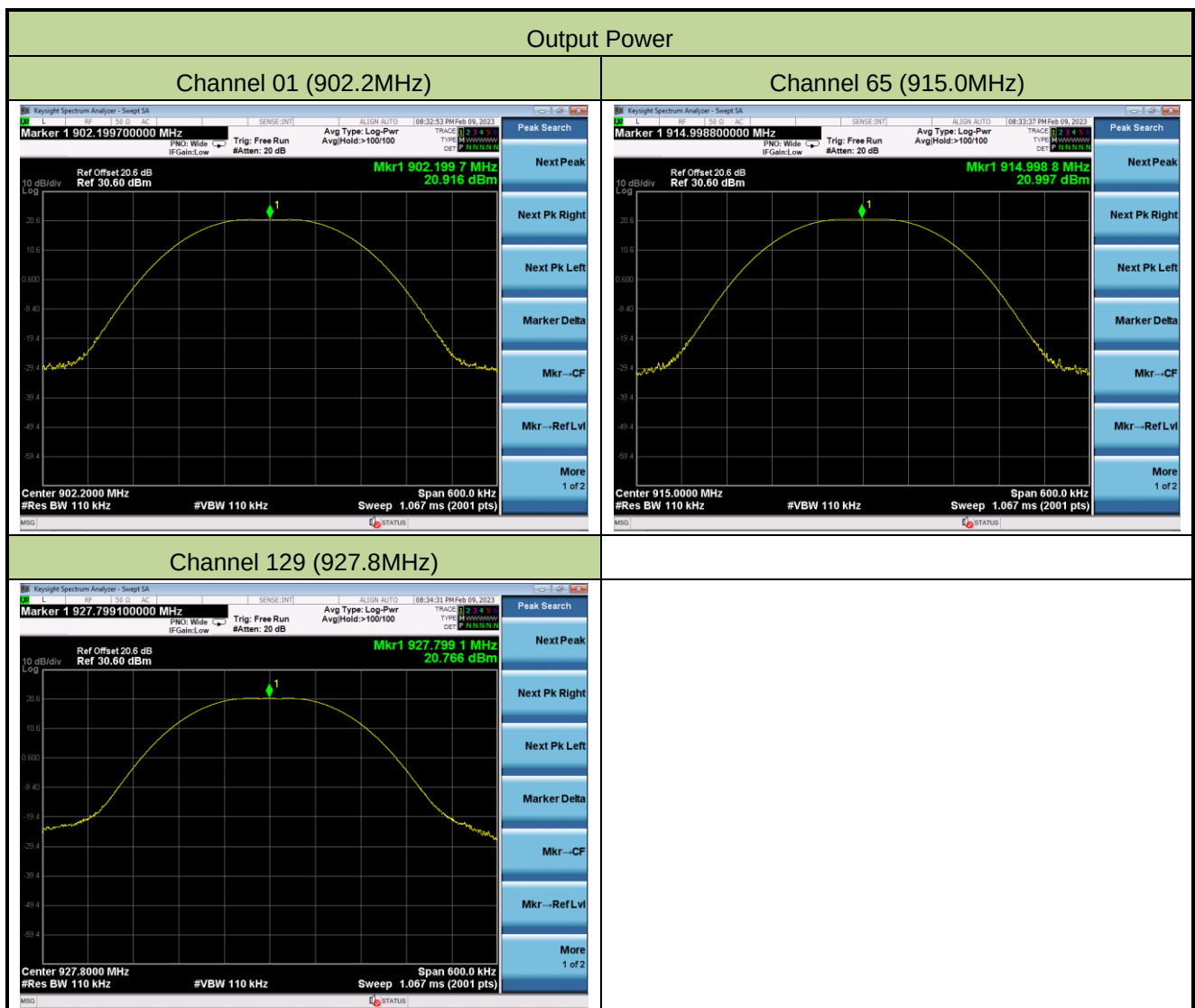
Test Site	WZ-SR5	Test Engineer	Lynn Yang
Test Date	2023-02-09	Duplexer Type No.	KG100SABMD
Data Rate	50kbps		

Channel No.	Frequency (MHz)	Output Power (dBm)	Power Limit (dBm)
01	902.2	20.745	≤ 30.00
65	915.0	20.806	≤ 30.00
129	927.8	20.858	≤ 30.00



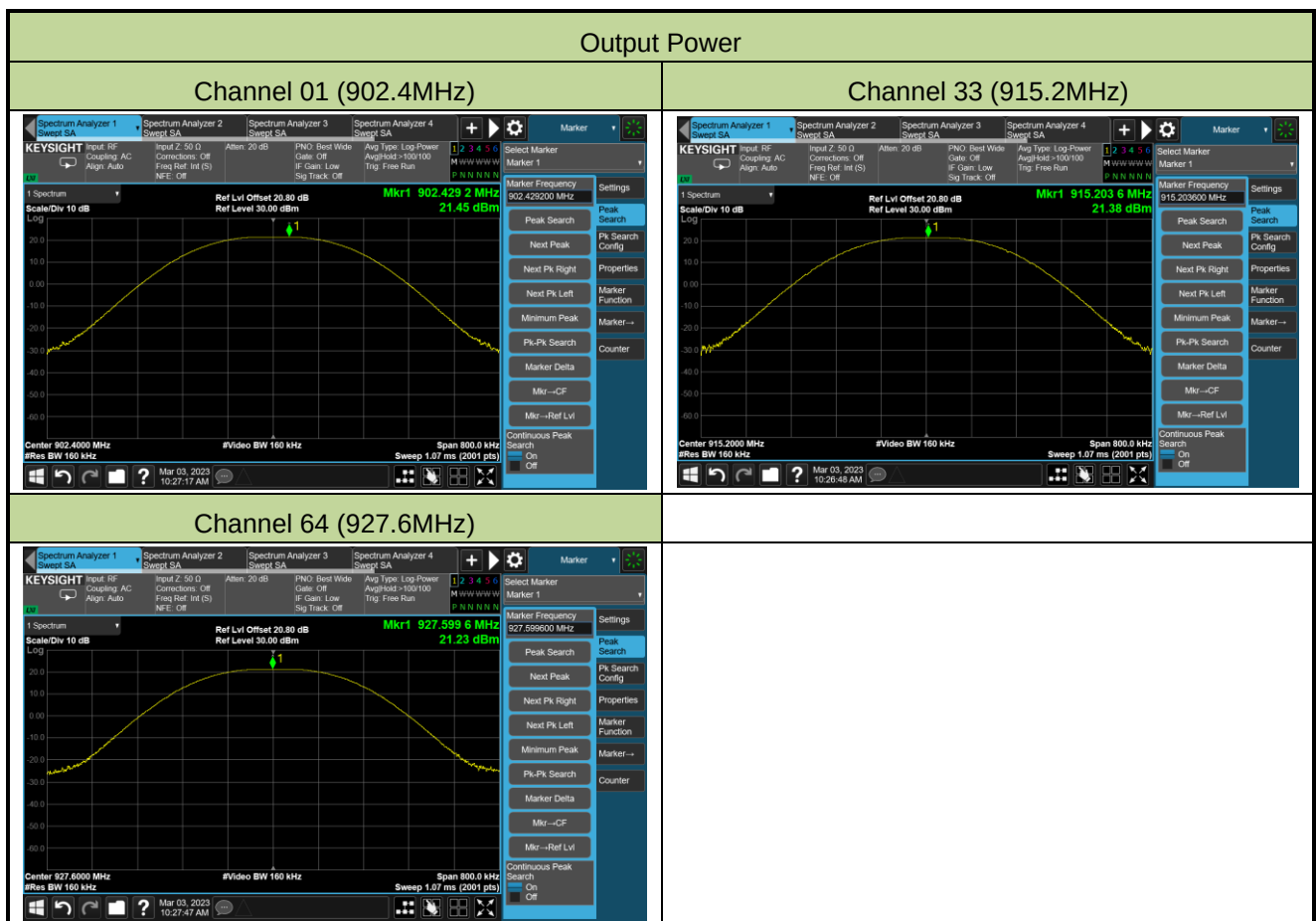
Test Site	WZ-SR5	Test Engineer	Lynn Yang
Test Date	2023-02-09	Duplexer Type No.	KG100SAAMD
Data Rate	50kbps		

Channel No.	Frequency (MHz)	Output Power (dBm)	Power Limit (dBm)
01	902.2	20.916	≤ 30.00
65	915.0	20.997	≤ 30.00
129	927.8	20.766	≤ 30.00



Test Site	WZ-SR5	Test Engineer	Lynn Yang
Test Date	2023-03-03	Duplexer Type No.	KG100SABMD
Data Rate	150kbps		

Channel No.	Frequency (MHz)	Output Power (dBm)	Power Limit (dBm)
01	902.4	21.45	≤ 30.00
33	915.2	21.38	≤ 30.00
64	927.6	21.23	≤ 30.00



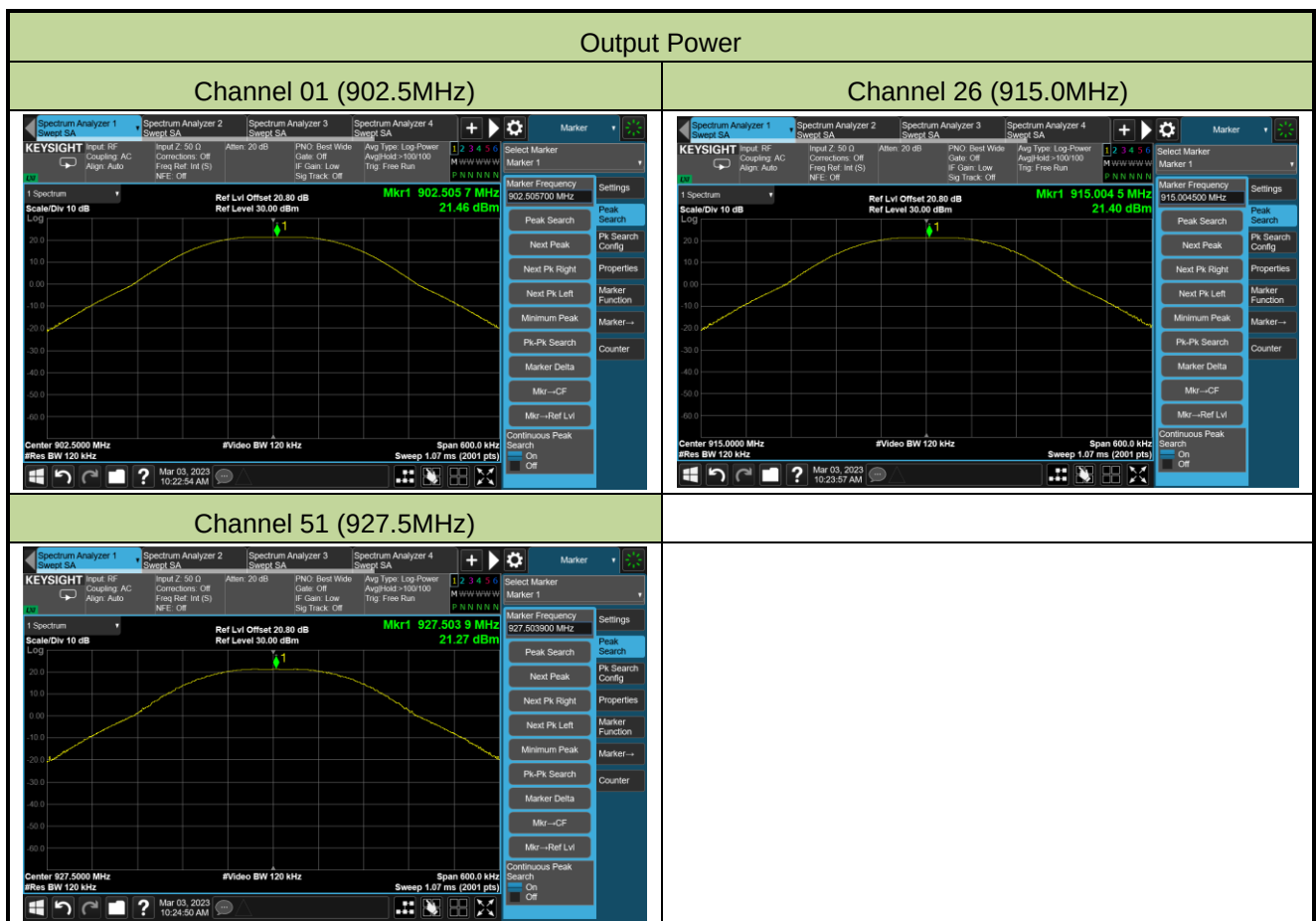
Test Site	WZ-SR5	Test Engineer	Lynn Yang
Test Date	2023-03-02	Duplexer Type No.	KG100SAAMD
Data Rate	150kbps		

Channel No.	Frequency (MHz)	Output Power (dBm)	Power Limit (dBm)
01	902.4	21.61	≤ 30.00
33	915.2	21.70	≤ 30.00
64	927.6	21.47	≤ 30.00



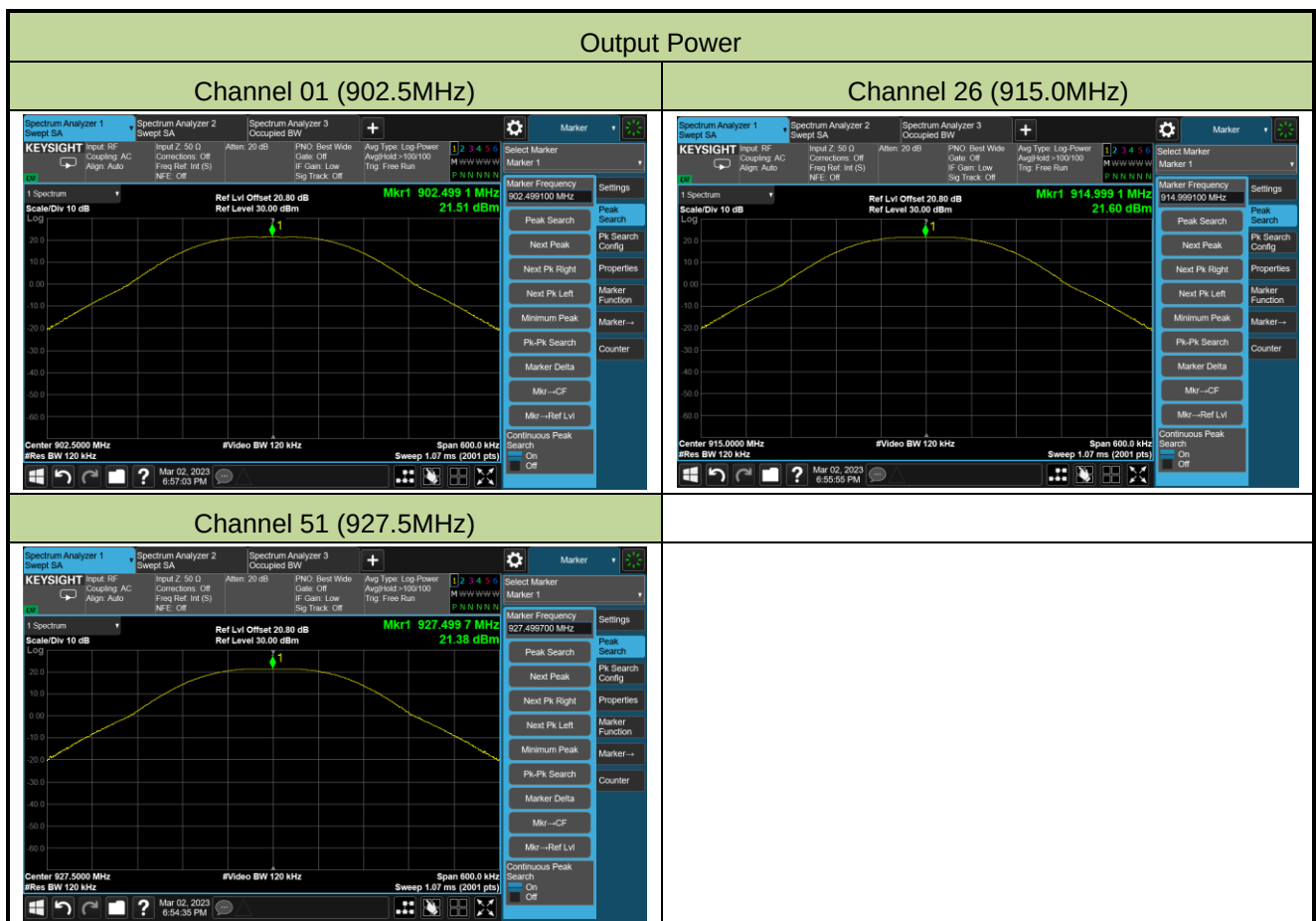
Test Site	WZ-SR5	Test Engineer	Lynn Yang
Test Date	2023-03-03	Duplexer Type No.	KG100SABMD
Data Rate	250kbps		

Channel No.	Frequency (MHz)	Output Power (dBm)	Power Limit (dBm)
01	902.5	21.46	≤ 30.00
26	915.0	21.40	≤ 30.00
51	927.5	21.27	≤ 30.00



Test Site	WZ-SR5	Test Engineer	Lynn Yang
Test Date	2023-03-02	Duplexer Type No.	KG100SAAMD
Data Rate	250kbps		

Channel No.	Frequency (MHz)	Output Power (dBm)	Power Limit (dBm)
01	902.5	21.51	≤ 30.00
26	915.0	21.60	≤ 30.00
51	927.5	21.38	≤ 30.00

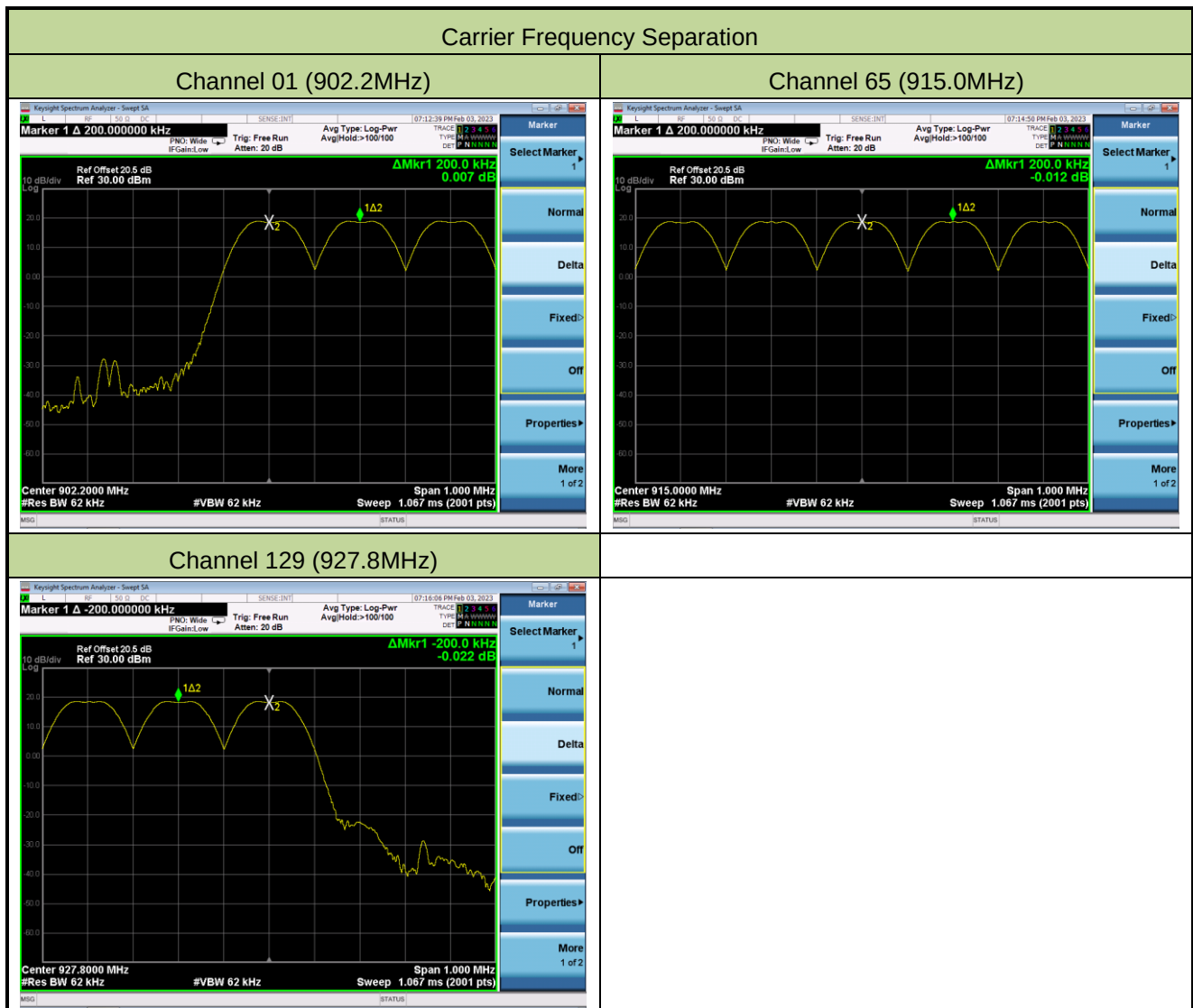


A.4 Carrier Frequency Separation Test Result

Test Site	WZ-SR5	Test Engineer	Lynn Yang
Test Date	2023-02-03	Duplexer Type No.	KG100SAAMD
Data Rate	50kbps		

Channel No.	Frequency (MHz)	Carrier Frequency Separation (kHz)	Limit (kHz)	Result
01	902.2	200	≥ 105.5	Pass
65	915.0	200	≥ 104.3	Pass
129	927.8	200	≥ 106.5	Pass

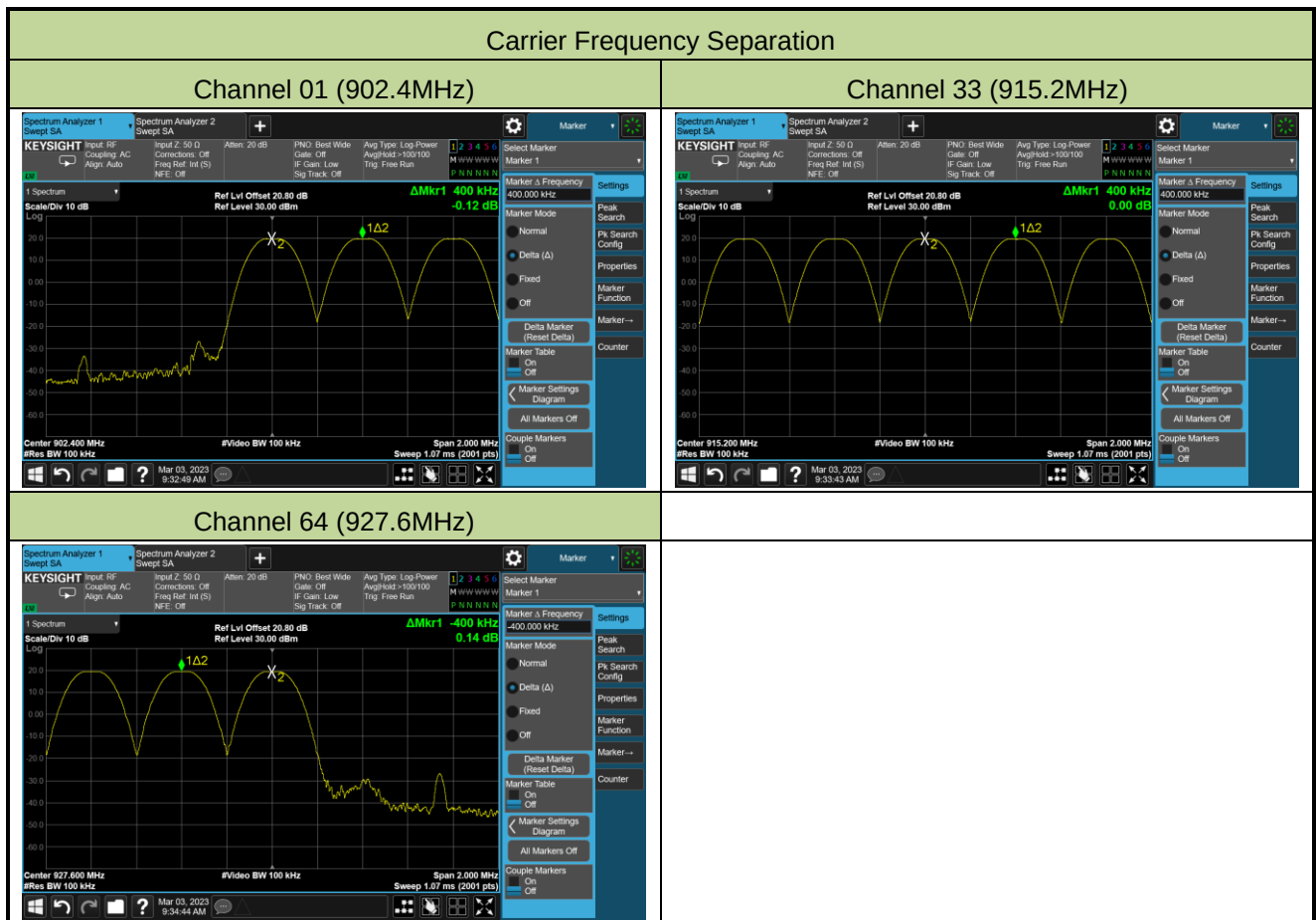
Note: The Limit is the value of the 20dB BW.



Test Site	WZ-SR5	Test Engineer	Lynn Yang
Test Date	2023-03-03	Duplexer Type No.	KG100SAAMD
Data Rate	150kbps		

Channel No.	Frequency (MHz)	Carrier Frequency Separation (kHz)	Limit (kHz)	Result
01	902.4	400	≥153.5	Pass
33	915.2	400	≥153.7	Pass
64	927.6	400	≥153.5	Pass

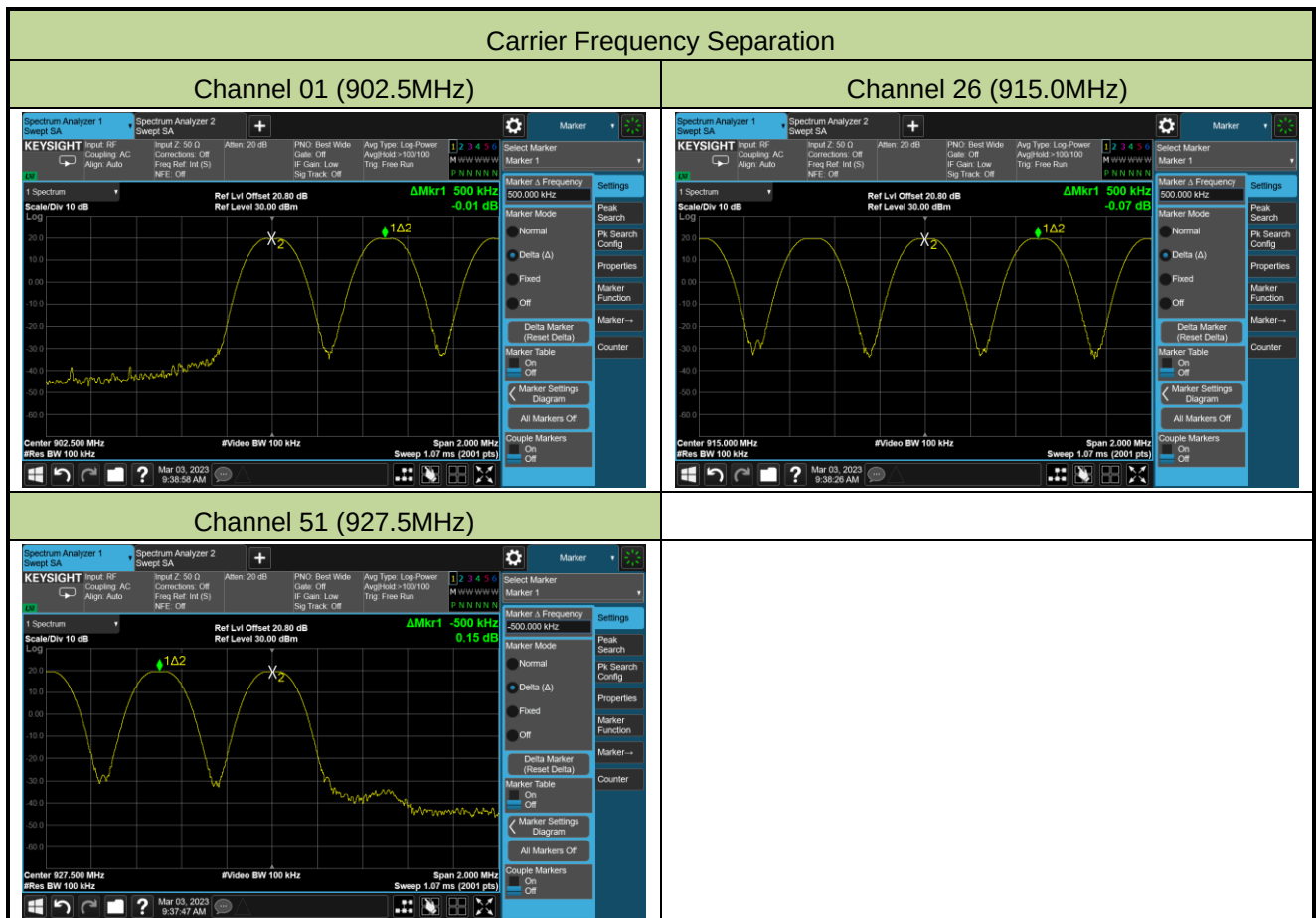
Note: The Limit is the value of the 20dB BW.



Test Site	WZ-SR5	Test Engineer	Lynn Yang
Test Date	2023-03-03	Duplexer Type No.	KG100SAAMD
Data Rate	250kbps		

Channel No.	Frequency (MHz)	Carrier Frequency Separation (kHz)	Limit (kHz)	Result
01	902.5	500	≥ 112.1	Pass
26	915.0	500	≥ 113.6	Pass
51	927.5	500	≥ 115.1	Pass

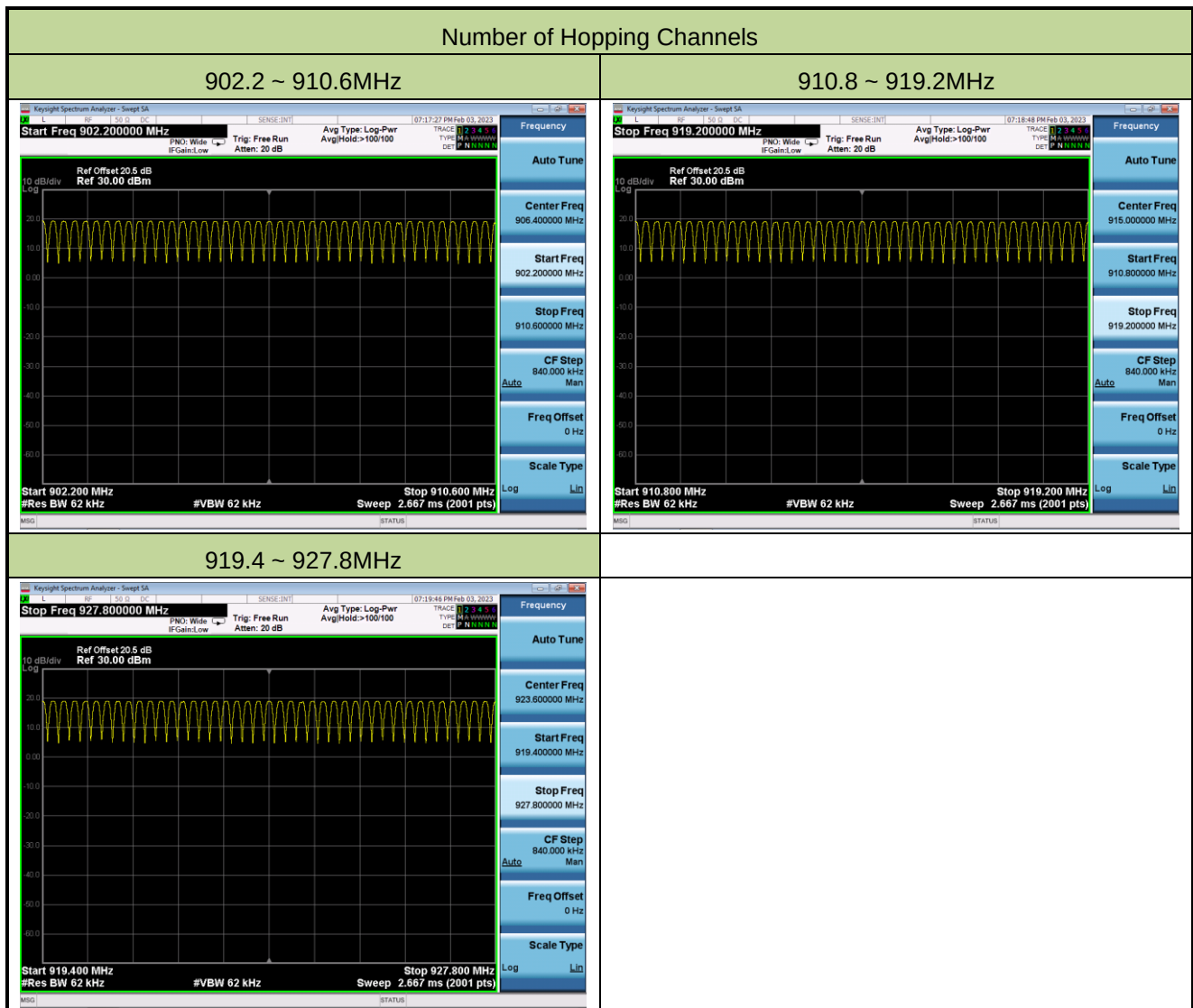
Note: The Limit is the value of the 20dB BW.



A.5 Number of Hopping Channels Test Result

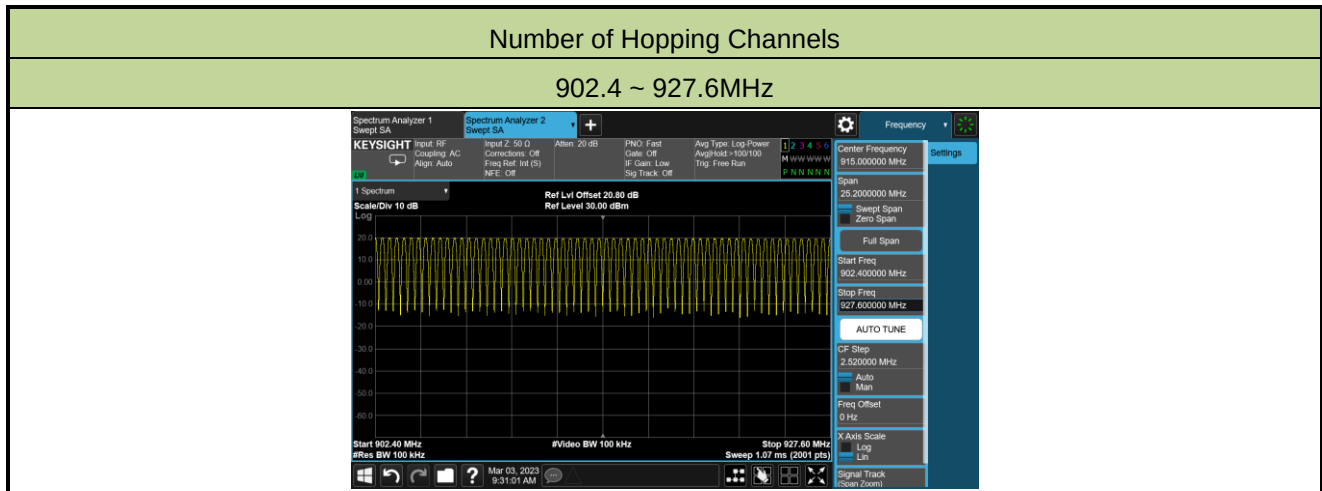
Test Site	WZ-SR5	Test Engineer	Lynn Yang
Test Date	2023-02-03	Duplexer Type No.	KG100SAAMD
Data Rate	50kbps		

Channel Numbers	Frequency (MHz)	Limit (Hopping Channels)	Result
129	902.2~927.8	≥ 50	Pass



Test Site	WZ-SR5	Test Engineer	Lynn Yang
Test Date	2023-03-03	Duplexer Type No.	KG100SAAMD
Data Rate	150kbps		

Channel Numbers	Frequency (MHz)	Limit (Hopping Channels)	Result
64	902.4~927.6	≥ 50	Pass



Test Site	WZ-SR5	Test Engineer	Lynn Yang
Test Date	2023-03-03	Duplexer Type No.	KG100SAAMD
Data Rate	250kbps		

Channel Numbers	Frequency (MHz)	Limit (Hopping Channels)	Result
51	902.5~927.5	≥ 50	Pass

