



Article 2 Clause 1 Item 19-2-2

CERTIFICATION TEST REPORT

For

MODEL NUMBER: RM510

REPORT NUMBER: 4789980659-2

ISSUE DATE: June 26, 2021

Prepared for

SZ DJI TECHNOLOGY CO.,LTD.

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Prepared by

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Revision History

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TABLE OF CONTENTS

1. ATTESTATION OF TEST RESULTS	4
2. TEST METHODOLOGY	5
3. FACILITIES AND ACCREDITATION	5
4. MEASUREMENT UNCERTAINTY.....	6
5. EQUIPMENT UNDER TEST	6
5.1. DESCRIPTION OF EUT	6
5.2. RATED ANTENNA OUTPUT POWER.....	6
5.3. CHANNEL LIST	6
5.4. TEST CHANNEL CONFIGURATION.....	7
5.5. DESCRIPTION OF AVAILABLE ANTENNAS	8
5.6. DESCRIPTION OF TEST SETUP.....	9
6. SETUP PHOTO	10
7. MEASURING INSTRUMENT AND SOFTWARE USED	10
8. TEST RESULTS.....	11
8.1. Appendix A: Frequency_Error.....	11
8.1.1. Test Result	11
8.1.2. Test Graphs	12
8.2. Appendix B: Antenna Power	14
8.2.1. Test Result	14
8.3. Appendix C: Occupied Bandwidth.....	15
8.3.1. Test Result	15
8.3.2. Test Graphs	16
8.4. Appendix D: Spread Bandwidth	17
8.4.1. Test Result	17
8.4.2. Test Graphs	18
8.5. Appendix E: Spurious Emission of TX.....	19
8.5.1. Test Result	19
8.5.2. Test Graphs	20
8.6. Appendix F: Spurious Emission of RX.....	26
8.6.1. Test Result	26
8.6.2. Test Graphs	27
8.7. Appendix G: Dwell Time.....	30
8.7.1. Test Result	30
8.7.2. Test Graphs	31
8.8. INTERFERENCE PREVENTION FUNCTION.....	32



1. ATTESTATION OF TEST RESULTS

Applicant Information

Company Name: SZ DJI TECHNOLOGY CO.,LTD.
Address: 14th floor,West Wing,Skyworth Semiconductor Design Building
NO.18 Gaoxin South 4th Ave,Nanshan District,Shenzhen,China

EUT Information

Model: RM510
Serial No.: XXXXXXXXXX
Mac Address: 0x62024B32
Software Version: 01.00.00.0
Sample Received Date: June 15, 2021
Sample Status: Normal
Date of Tested: June 23, 2021

APPLICABLE STANDARDS	
STANDARD	TEST RESULTS
Article 2 Clause 1 Item 19-2-2	PASS

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Laboratory Manager



2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with Notice 88 of Ordinance Concerning Technical Regulations Conformity Certification of Specified Radio Equipment

3. FACILITIES AND ACCREDITATION

Accreditation Certificate	A2LA (Certificate No.: 4102.01) UL Verification Services (Guangzhou) Co., Ltd. Song Shan Lake Branch. has been assessed and proved to be in compliance with A2LA.
	FCC (FCC Designation No.: CN1187) UL Verification Services (Guangzhou) Co., Ltd. Song Shan Lake Branch. Has been recognized to perform compliance testing on equipment subject to the Commission's Declaration of Conformity (DoC) and Certification rules
	ISED (Company No.: 21320) UL Verification Services (Guangzhou) Co., Ltd. Song Shan Lake Branch. has been registered and fully described in a report filed with ISED. The Company Number is 21320 and the test lab Conformity Assessment Body Identifier (CABID) is CN0046.
	VCCI (Registration No.: G-20019, R-20004, C-20012 and T-20011) UL Verification Services (Guangzhou) Co., Ltd. Song Shan Lake Branch. has been assessed and proved to be in compliance with VCCI, the Membership No. is 3793.
	Facility Name: Chamber D, the VCCI registration No. is G-20019 and R-20004 Shielding Room B, the VCCI registration No. is C-20012 and T-20011

Note: The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. This document may not be altered or revised in any way unless done so by UL Verification Services (Guangzhou) Co., Ltd., Song Shan Lake Branch and all revisions are duly noted

Test Item	Date	Temp (5-35°C)	Humidity (45-85%RH)	Test Room
Frequency Error	23-June-21	25.3°C	57%	Shielding Room D
Occupied Bandwidth	23-June-21	25.3°C	57%	Shielding Room D
Unwanted Emission Strength	23-June-21	25.3°C	57%	Shielding Room D
Output Power/ E.I.R.P	23-June-21	25.3°C	57%	Shielding Room D
Secondary Radiated Emission Strength	23-June-21	25.3°C	57%	Shielding Room D
Dwell Time	23-June-21	25.3°C	57%	Shielding Room D
Spreading bandwidth/factor	23-June-21	25.3°C	57%	Shielding Room D
Interference Prevention Function	23-June-21	25.3°C	57%	Shielding Room D
Half Power Beam Angle	/	/	/	/



4. MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus:

Test Item	Uncertainty
Conduction emission	3.62 dB
Duty Cycle	$\pm 0.028\%$
DTS and 99% Occupied Bandwidth	$\pm 0.0196\%$
Maximum Conducted Output Power	± 0.686 dB
Conducted Unwanted Emissions	± 0.746 dB (9 kHz ~ 1 GHz)
	± 1.328 dB (1 GHz ~ 26 GHz)
Note: This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.	

5. EQUIPMENT UNDER TEST

5.1. DESCRIPTION OF EUT

Model	RM510
Technology	SRD
Transmit Frequency Range	2405.12 MHz ~ 2479.12 MHz
Mode	SRD 2.4GHz _1.4MHz CA
Modulation	FHSS
Ratings	DC 7.2 V

5.2. RATED ANTENNA OUTPUT POWER

Test Mode	Frequency (MHz)	Channel Number	Type of radio wave	Antenna Power (W/MHz)
SRD 2.4GHz _1.4MHz CA	2405.12 ~ 2479.12	1-38[38]	DID, X7W	0.000714

5.3. CHANNEL LIST

Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
1	2405.12	11	2425.12	21	2445.12	31	2465.12
2	2407.12	12	2427.12	22	2447.12	32	2467.12
3	2409.12	13	2429.12	23	2449.12	33	2469.12
4	2411.12	14	2431.12	24	2451.12	34	2471.12
5	2413.12	15	2433.12	25	2453.12	35	2473.12
6	2415.12	16	2435.12	26	2455.12	36	2475.12



7	2417.12	17	2437.12	27	2457.12	37	2477.12
8	2419.12	18	2439.12	28	2459.12	38	2479.12
9	2421.12	19	2441.12	29	2461.12	/	/
10	2423.12	20	2443.12	30	2463.12	/	/

5.4. TEST CHANNEL CONFIGURATION

Test Mode	Test Channel	Frequency
SRD 2.4GHz _1.4MHz CA	CH 1(Low Channel), CH 19(MID Channel), CH 38(High Channel)	2405.12 MHz, 2441.12 MHz, 2479.12 MHz
SRD 2.4GHz _1.4MHz CA	Hopping	2405.12 MHz ~ 2479.12 MHz

5.5. DESCRIPTION OF AVAILABLE ANTENNAS

Antenna	Frequency (MHz)	Antenna Type	MAX Antenna Gain (dBi)
0	2405.12 ~ 2479.12	Dipole	3
1	2405.12 ~ 2479.12	Dipole	3

Test Mode	Transmit and Receive Mode	Description
SRD 2.4GHz _1.4MHz CA	<input checked="" type="checkbox"/> 2TX, 4RX	Antenna 0 and Antenna 1 can be used as transmitting/receiving antenna.

Note: 1. The value of the antenna gain was declared by customer.

2. The EUT support SISO mode and MIMO mode, for SISO mode and MIMO mode, the power settings of all antenna ports are the same, the antenna gain of all antenna ports are the same, so only the worst case of MIMO mode (ANT 0 and ANT 1) are selected for the final test, and only the worst data of ANT 1 are recorded in the report.

5.6. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

Item	Equipment	Brand Name	Model Name	Remarks
1	Laptop	ThinkPad	X230i	/

I/O CABLES

Cable No	Port	Connector Type	Cable Type	Cable Length(m)	Remarks
1	USB	/	/	1m	/

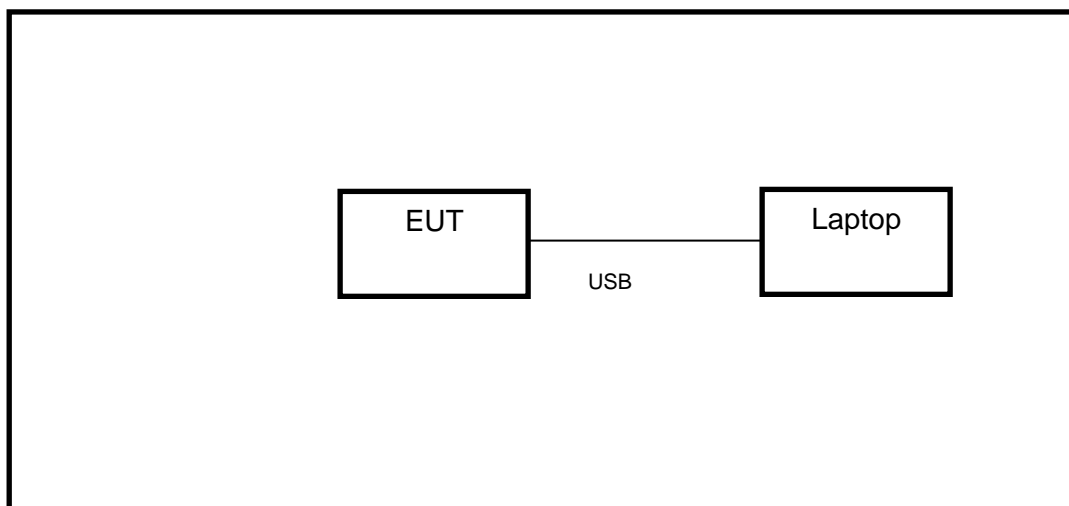
ACCESSORIES

Item	Accessory	Brand Name	Model Name	Description
1	/	/	/	/

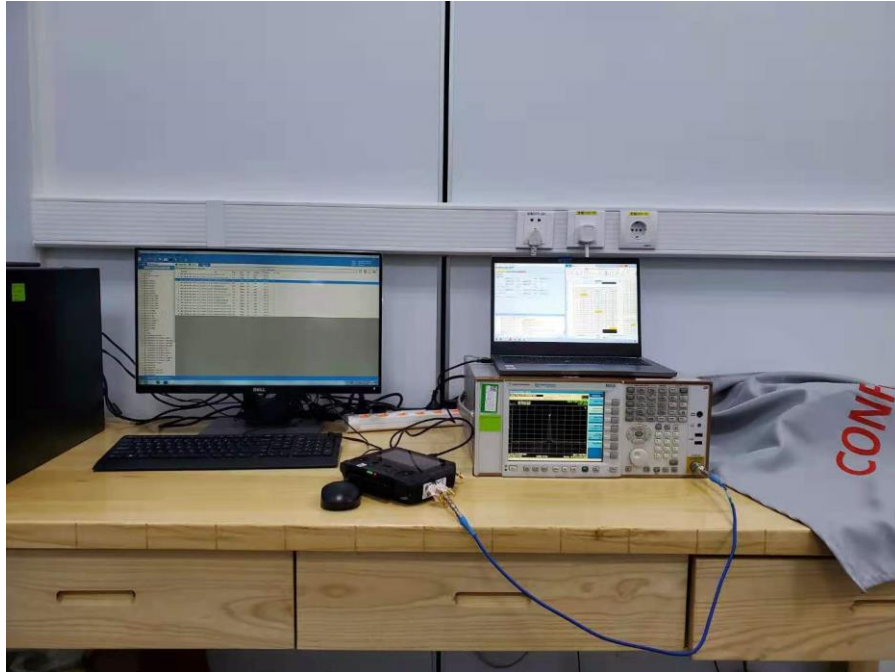
TEST SETUP

The EUT can work in engineering mode with a software through a Laptop.

SETUP DIAGRAM FOR TESTS



6. SETUP PHOTO



7. MEASURING INSTRUMENT AND SOFTWARE USED

Tonsend RF Test System						
Use	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Due. Date
	Wideband Radio Communication Tester	R&S	CMW500	155523	Nov.20,2020	Nov.19,2021
X	PXA Signal Analyzer	Keysight	N9020A	MY49100060	Nov.20,2020	Nov.19,2021
	MXG Vector Signal Generator	Keysight	N5182B	MY56200284	Nov.20,2020	Nov.19,2021
	MXG Vector Signal Generator	Keysight	N5172B	MY56200301	Nov.20,2020	Nov.19,2021
	DC power supply	Keysight	E3642A	MY55159130	Nov.24,2020	Nov.23,2021
X	Power Sensor	Keysight	U2021XA	MY58100022	Nov.20,2020	Nov.19,2021
Software						
	Description	Manufacturer	Name		Version	
X	Tonsend SRD Test System	Tonsend	JS1120-3 RF Test System		2.6.88.0339	

Note: "X" used equipment.



8. TEST RESULTS

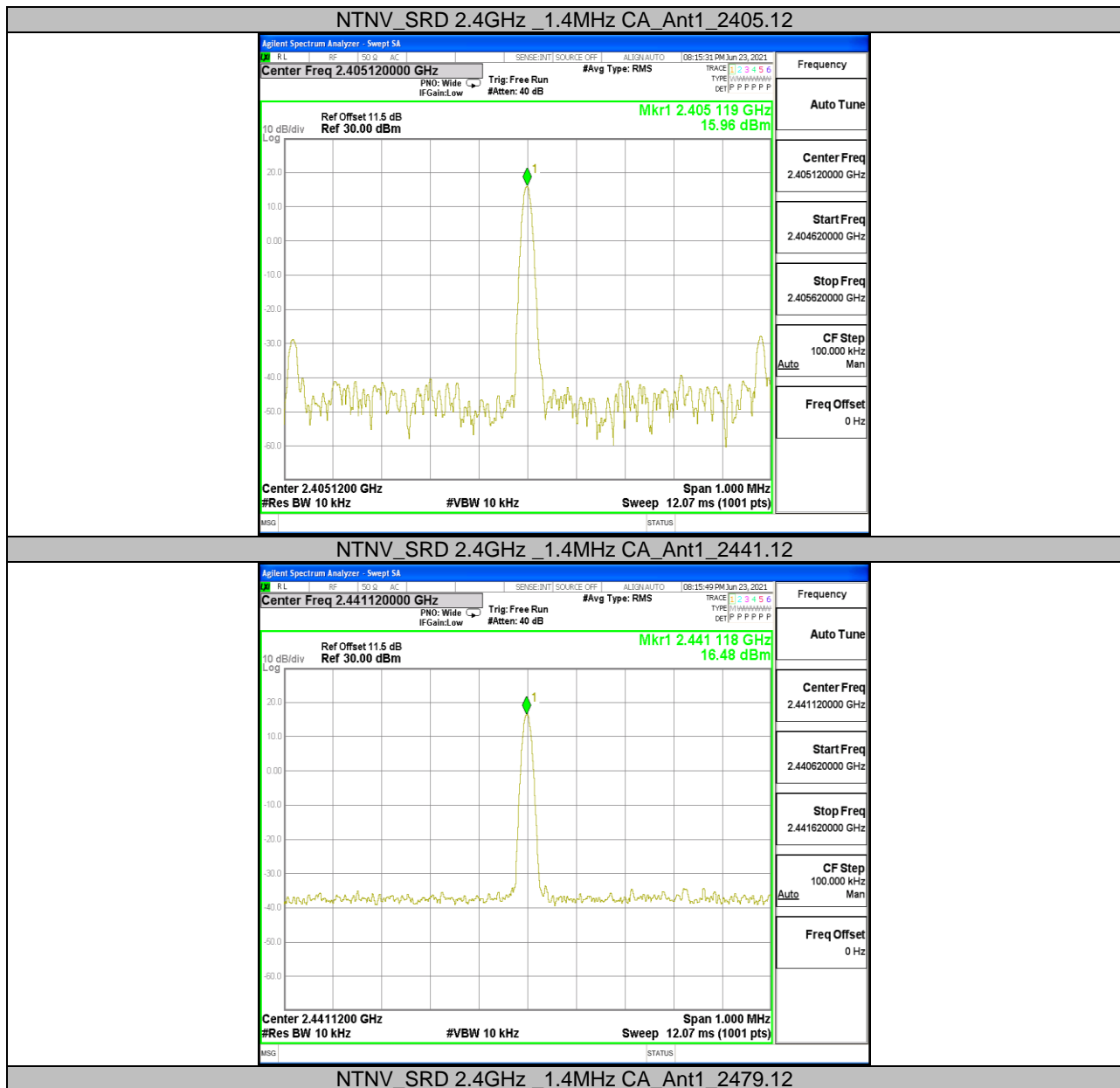
8.1. Appendix A: Frequency_Error

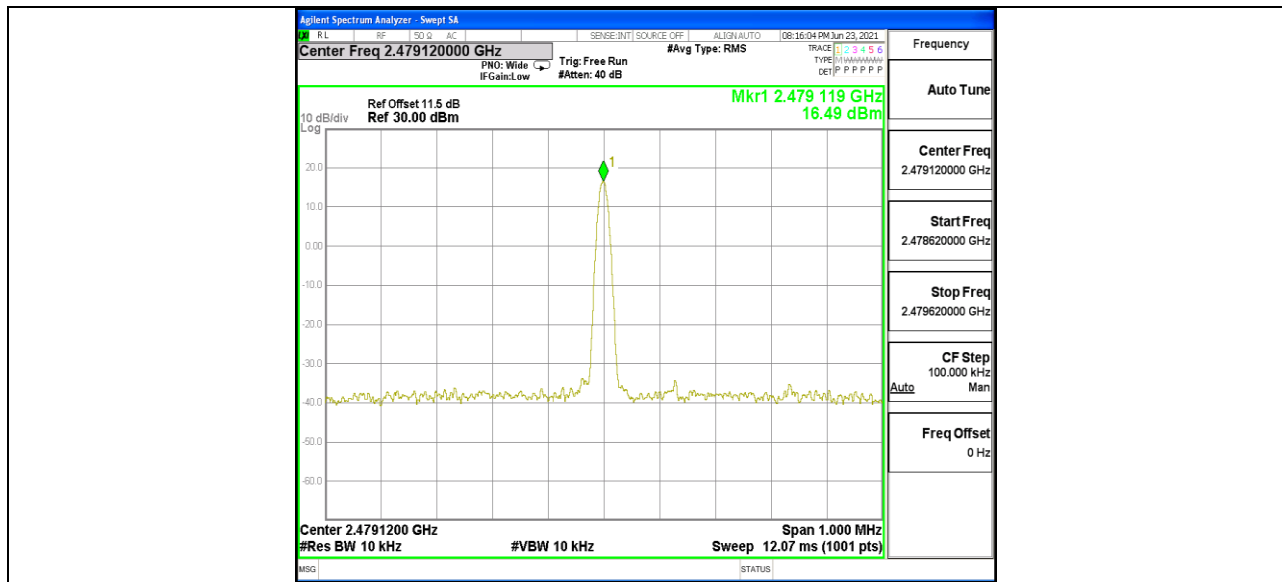
8.1.1. Test Result

Test Condition	Test Mode	Antenna	Channel	Result[ppm]	Limit[ppm]	Verdict
NTNV	SRD 2.4GHz _1.4MHz CA	Ant1	2405.12	0.00000	±50	PASS
			2441.12	0.00000	±50	PASS
			2479.12	-0.40337	±50	PASS



8.1.2. Test Graphs







8.2. Appendix B: Antenna Power

8.2.1. Test Result

Test Condition	Test Mode	Antenna	Freq. [MHz]	P/M(AV) Reading [dBm]	Result A [W]	Spreading Bandwidth [MHz]	Result B [W/MHz]	Antenna Gain [dBi]	E.I.R.P. (A) [W/MHz]
NTNV	SRD 2.4GHz _ 1.4MHz CA	MIMO	Hop	15.98	0.039628	68.1640	0.000581	3.0	0.001160

Note:

Result A = $10^{\left(\frac{\text{P/M Reading [dBm]} (\text{Detector: AV})}{10} \right) / 1000}$

Result B = Result A / Spreading Bandwidth

[Total Power / Result and Limit]

Voltage	Freq. [MHz]	Output Power				E.I.R.P.			
		Result (B) [W/MHz]	Tolerance Result [%]	Limit [W/MHz]	Tolerance Limit [%]	Result (B) [W/MHz]	Result [dBm/MHz]	Remark	Limit [dBm/MHz]
NTNV	Hop	0.000581	-18.6	0.003000	+20 ~ -80	0.001160	0.64	-	6.91

Note:

Tolerance = Output Power Result (B) / Declared Output Power * 100 - 100.

Output Power Result (B) : Sum of all "Output Power (A)" at same Freq.

E.I.R.P. Result (B): Sum of all "E.I.R.P. (A)" at same Freq.

[Declared Output Power]			
SRD 2.4GHz _ 1.4MHz CA	Average of Power between Channels (38HOP)		0.000581 W/MHz
	Declared Output Power 1		0.000714 W/MHz
	+20		0.000857 W/MHz
	Middle (Declared Output Power -30%)		0.000500 W/MHz
	-80		0.000143 W/MHz

EIRP				
NTNV	SRD 2.4GHz _ 1.4MHz CA	Antenna Gain	3.00	dBi
		E.I.R.P. for Declared Output Power 1	1.54	dBm/MHz
		Limit	6.91	dBm/MHz

Note:

E.I.R.P. for Declared Output Power = $10 * \log (\text{Declared Output Power} * 1000) + \text{Antenna Gain}$

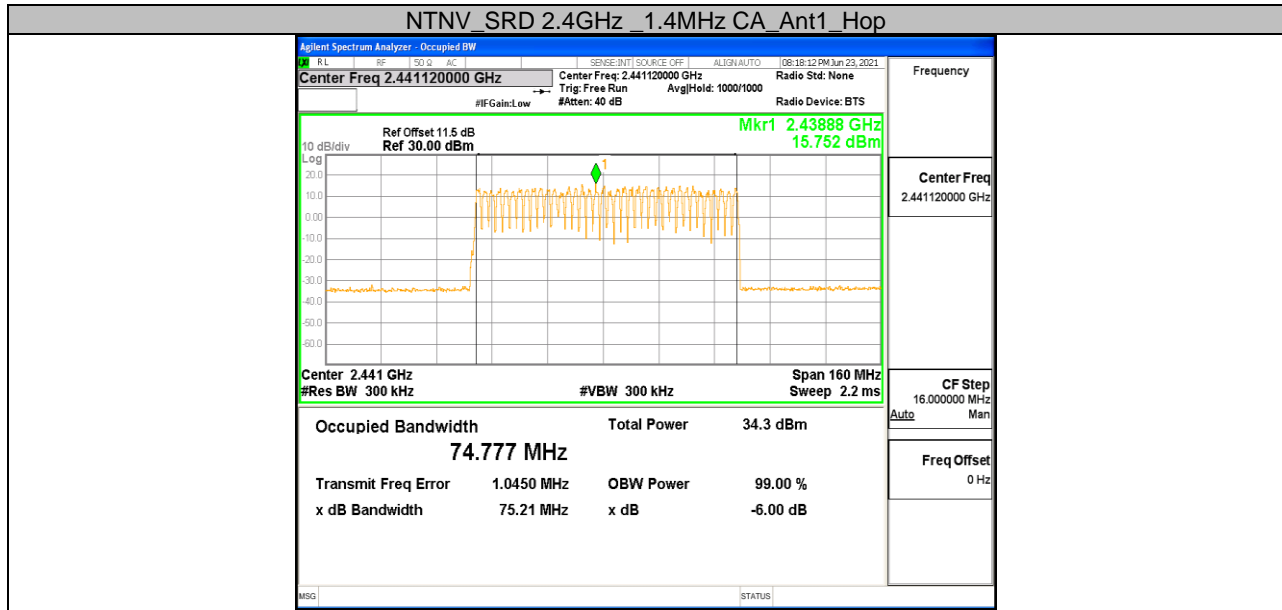


8.3. Appendix C: Occupied Bandwidth

8.3.1. Test Result

Test Condition	Test Mode	Antenna	Channel	Result [MHz]	Limit [MHz]	Verdict
NTNV	SRD 2.4GHz _1.4MHz CA	Ant1	Hop	74.777	≤83.5	PASS

8.3.2. Test Graphs





8.4. Appendix D: Spread Bandwidth

8.4.1. Test Result

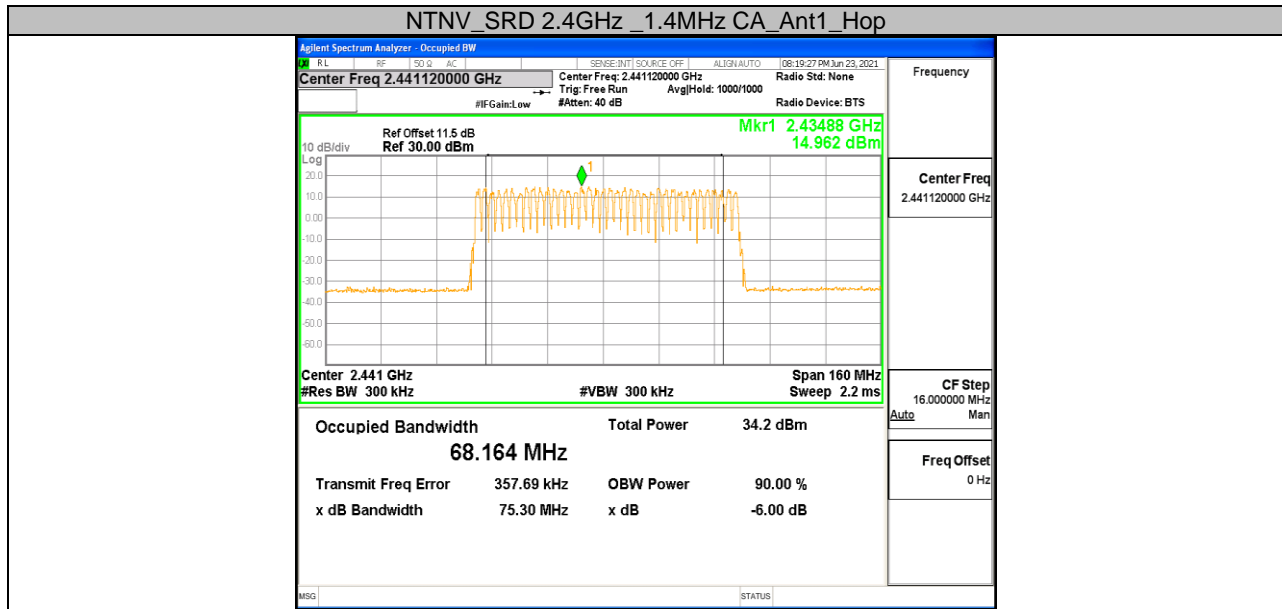
Test Condition	Test Mode	Antenna	Channel	Result [MHz]	Limit [MHz]	Verdict
NTNV	SRD 2.4GHz _1.4MHz CA	Ant1	Hop	68.164	≥0.5	PASS

Spreading Factor	Result	Limit	Symbol Rate
Spreading rate	422.85	> 5	0.1612 Mbps

Note:

Spreading Factor=Spreading Bandwidth/Symbol Rate
Symbol Rate is declared by customer.

8.4.2. Test Graphs



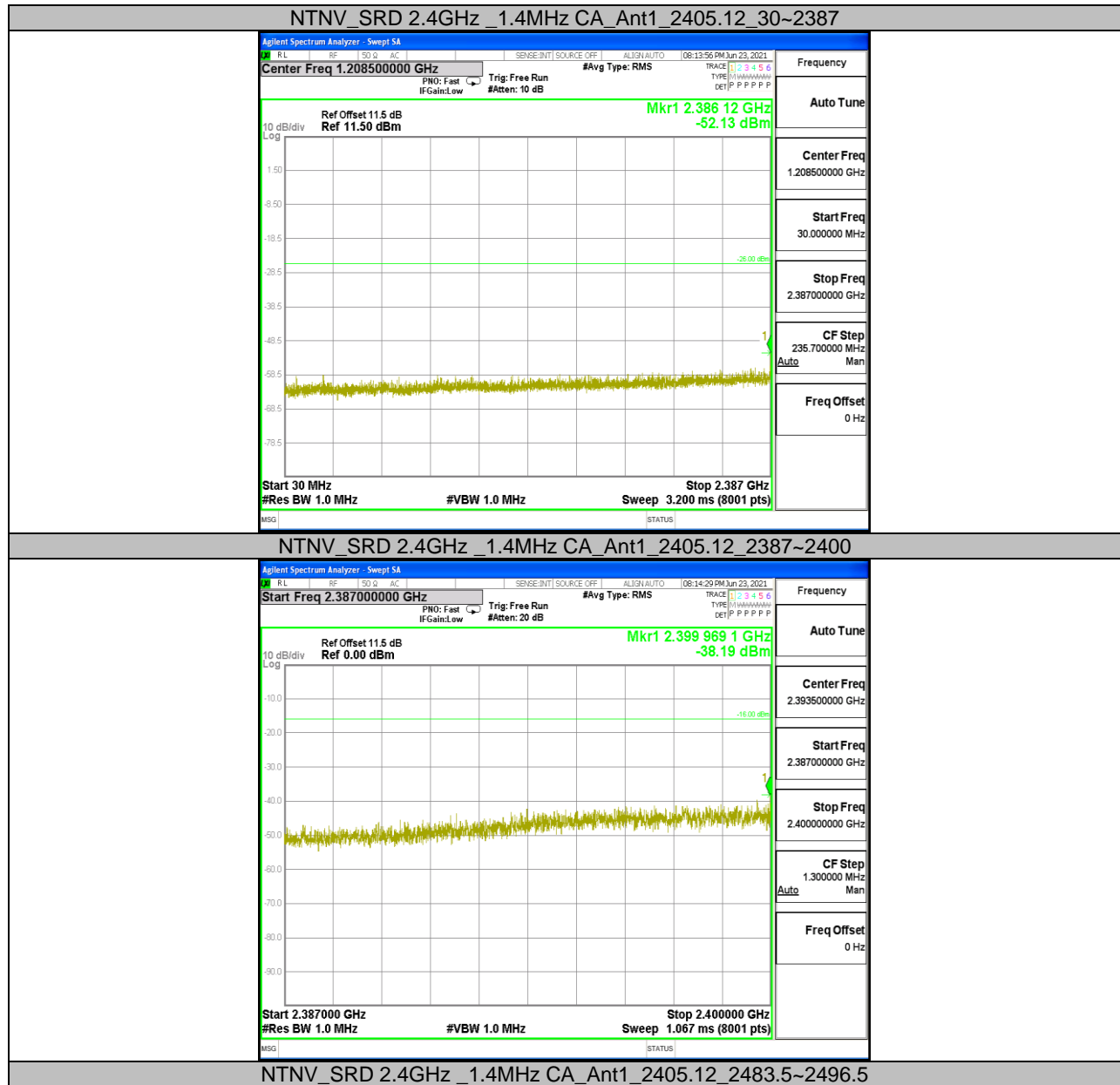
8.5. Appendix E: Spurious Emission of TX

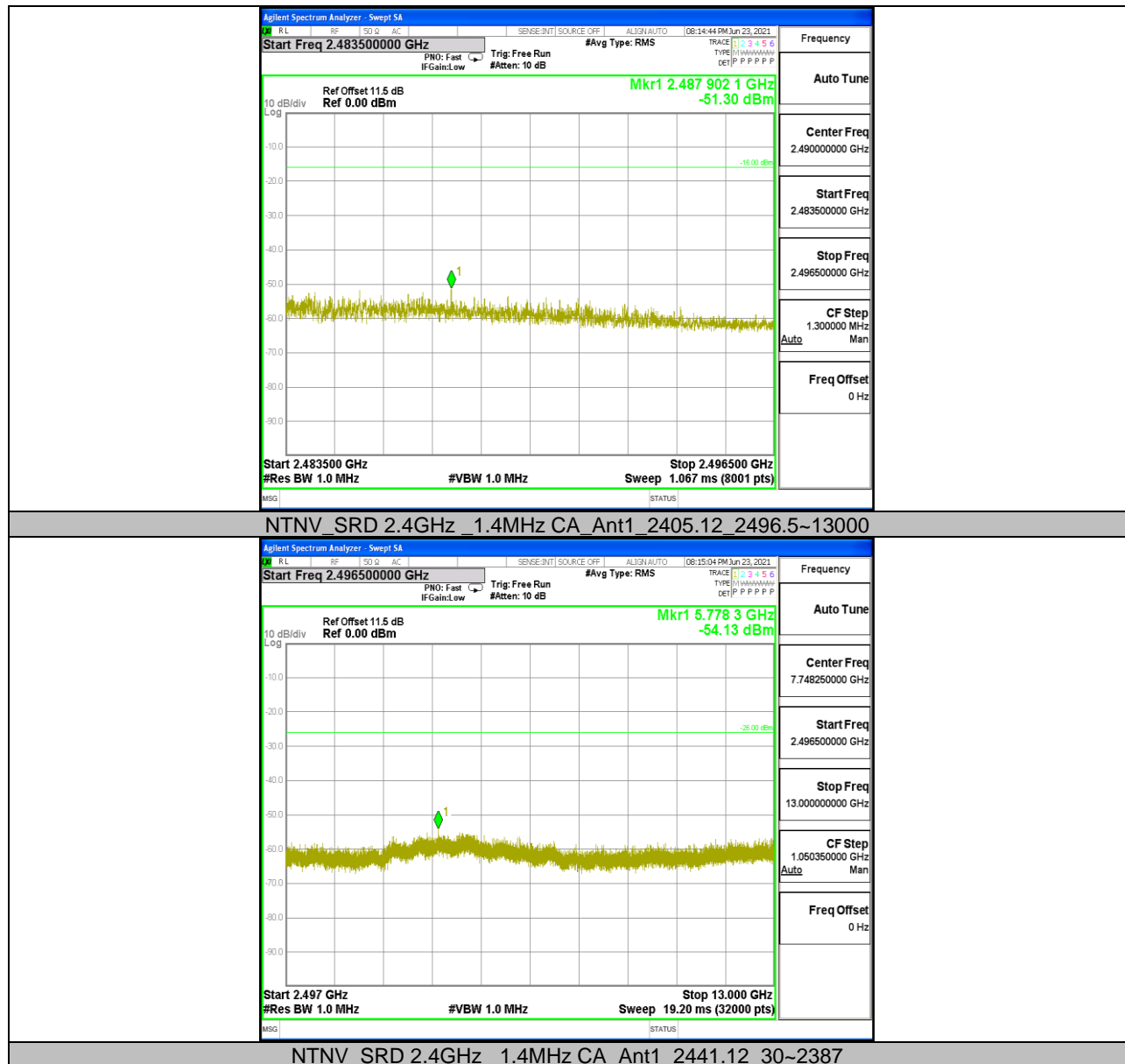
8.5.1. Test Result

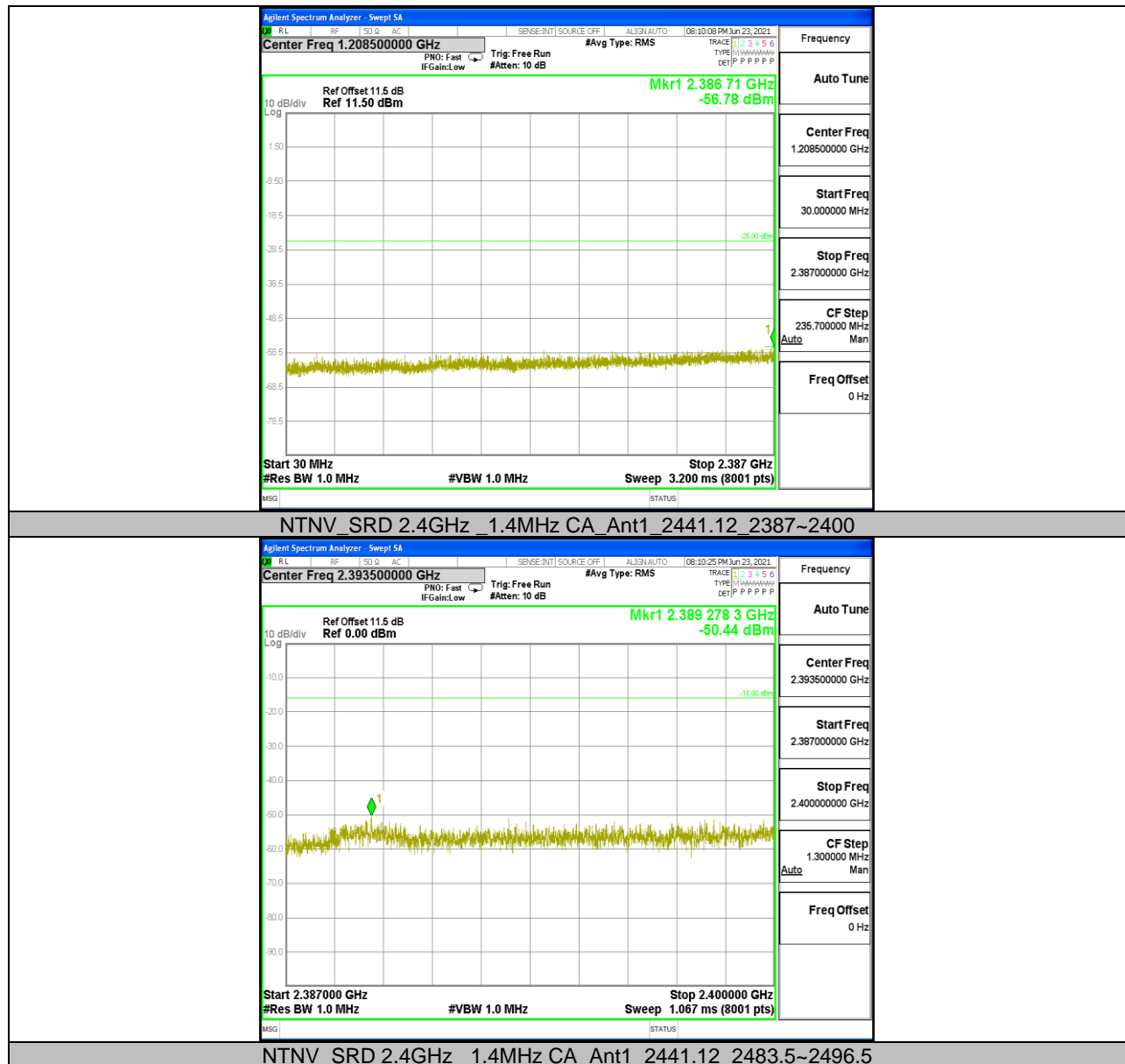
Test Condition	Test Mode	Antenna	Channel	Freq.Range [MHz]	Reading [dBm]	N(Ant) 10Log(N) [dB]	Result [dBm]	Limit [dBm]	Verdict
NTNV	SRD 2.4GHz _1.4MHz CA	Ant1	2405.12	30~2387	-52.129	3.01	-49.119	≤-26	PASS
				2387~2400	-38.193	3.01	-35.183	≤-16	PASS
				2483.5~2496.5	-51.296	3.01	-48.286	≤-16	PASS
				2496.5~13000	-54.127	3.01	-51.117	≤-26	PASS
			2441.12	30~2387	-56.779	3.01	-53.769	≤-26	PASS
				2387~2400	-50.438	3.01	-47.428	≤-16	PASS
				2483.5~2496.5	-50.868	3.01	-47.858	≤-16	PASS
				2496.5~13000	-54.142	3.01	-51.132	≤-26	PASS
			2479.12	30~2387	-55.83	3.01	-52.82	≤-26	PASS
				2387~2400	-52.064	3.01	-49.054	≤-16	PASS
				2483.5~2496.5	-27.989	3.01	-24.979	≤-16	PASS
				2496.5~13000	-54.842	3.01	-51.832	≤-26	PASS

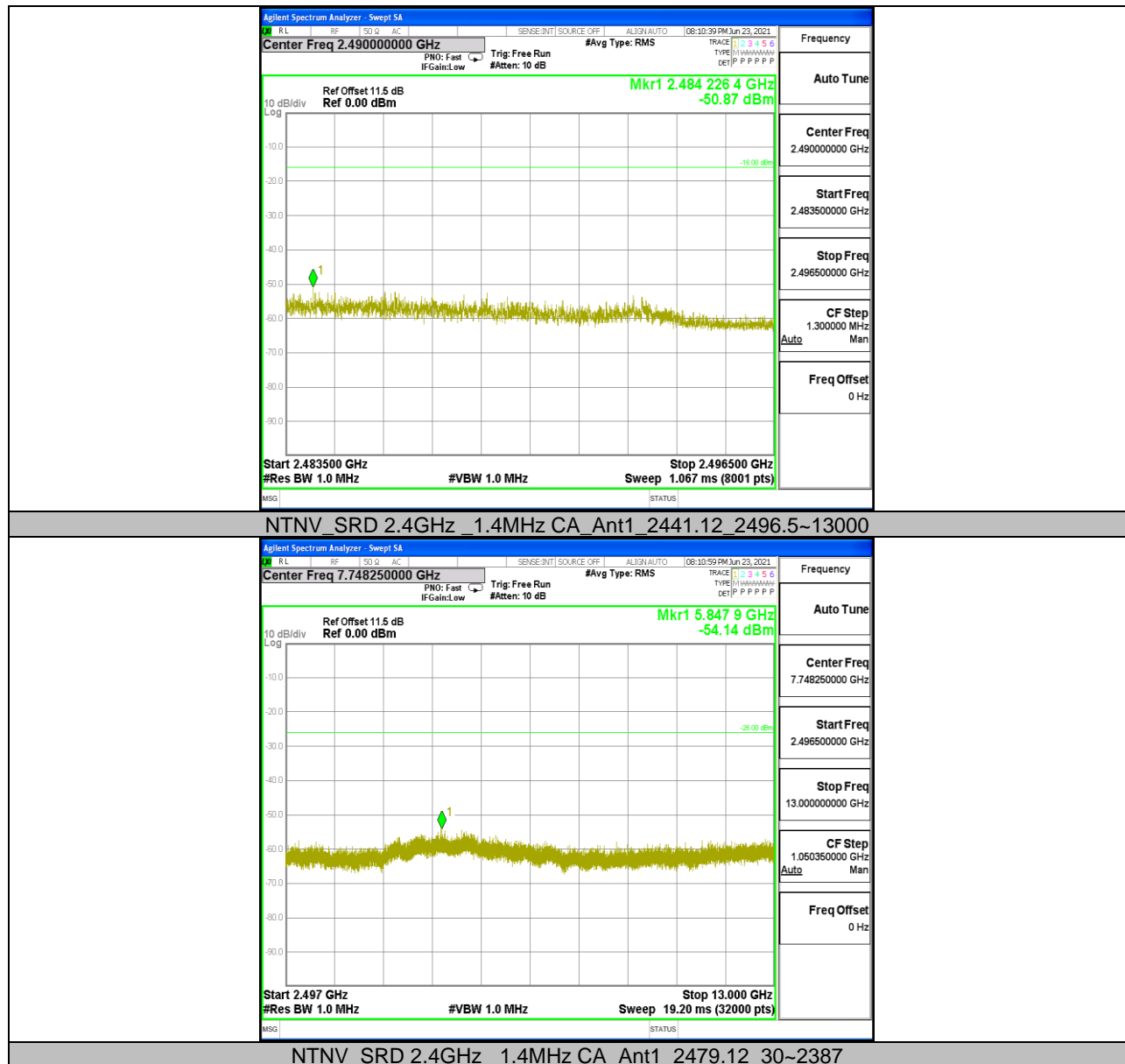


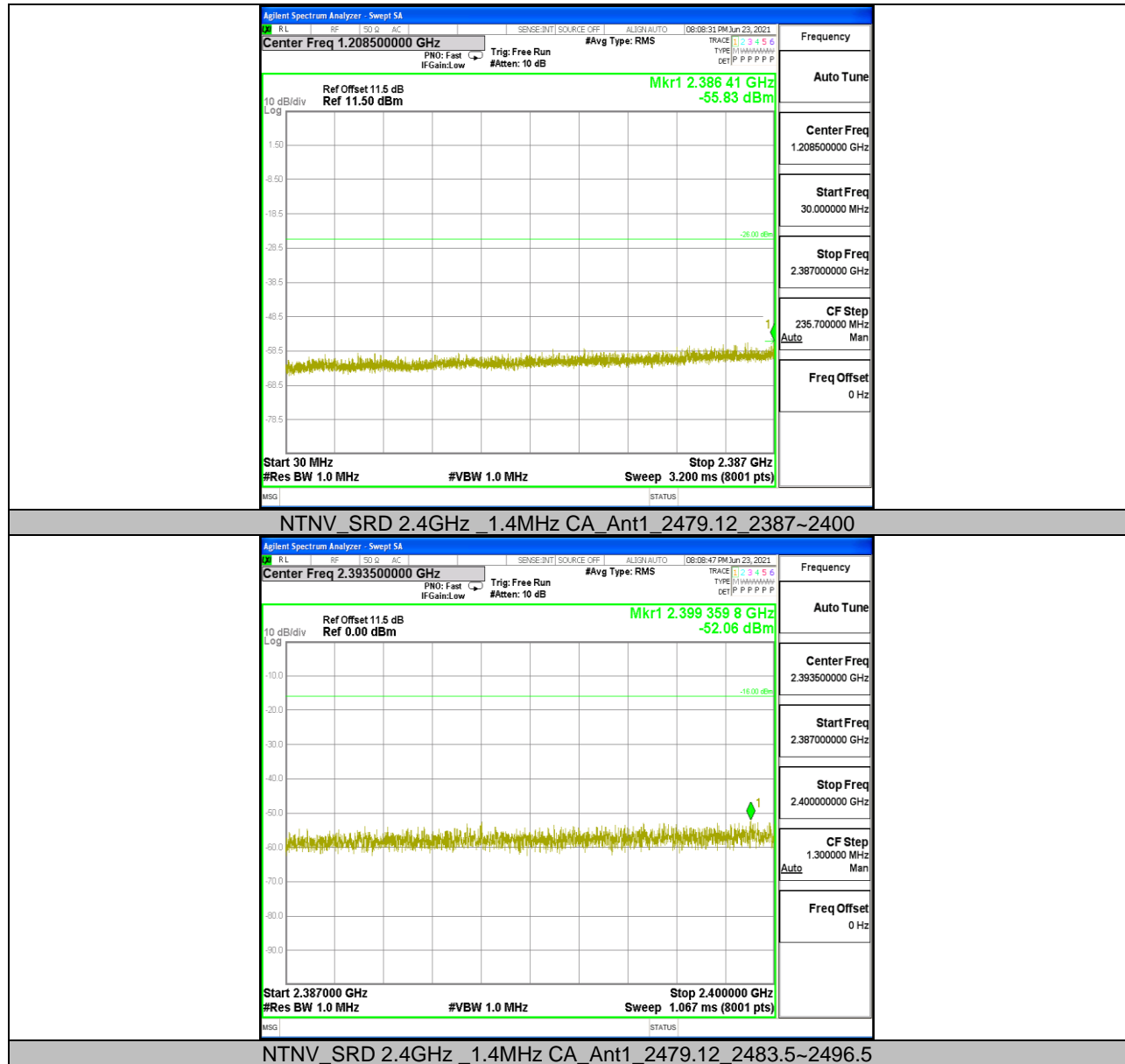
8.5.2. Test Graphs

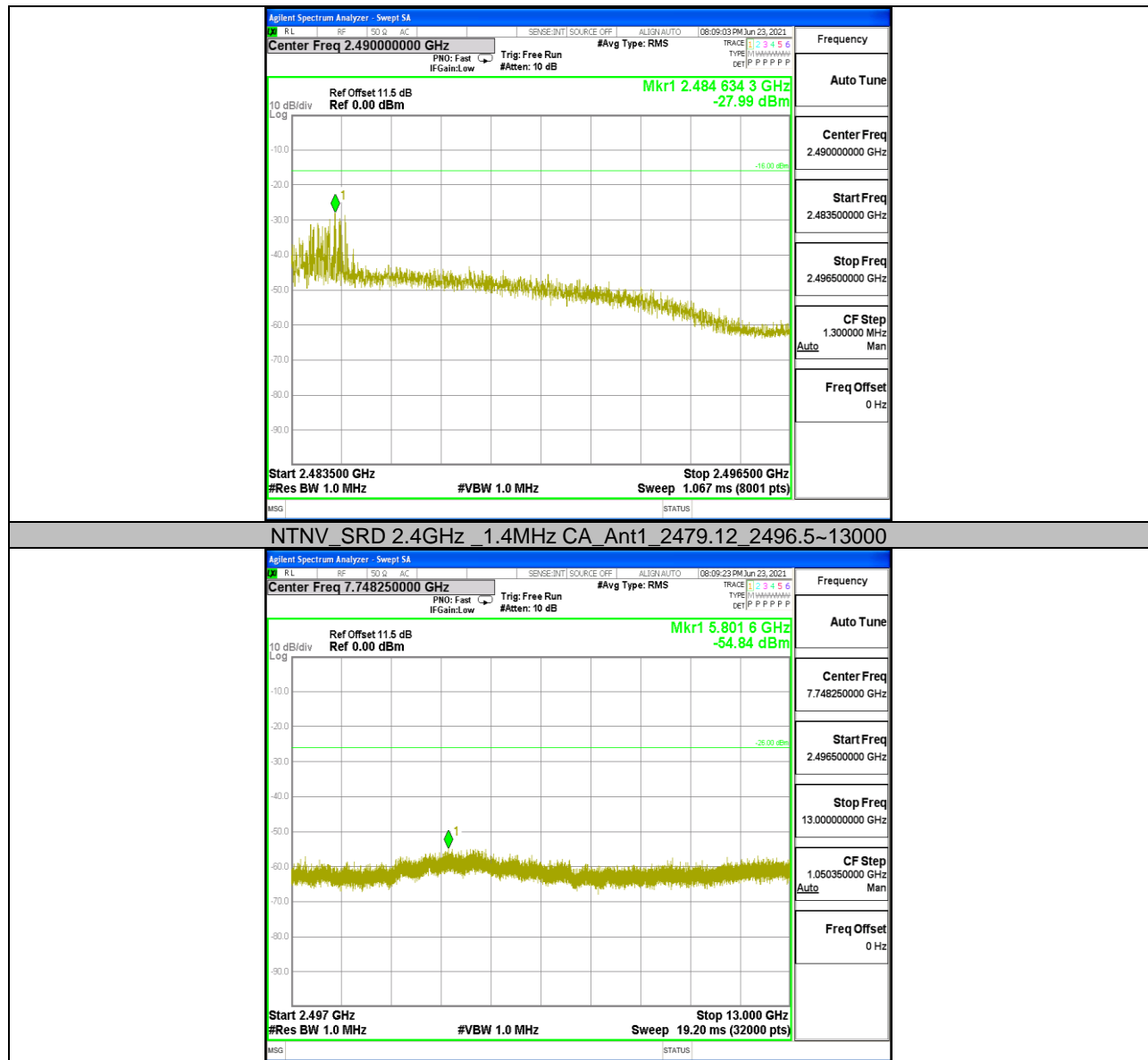














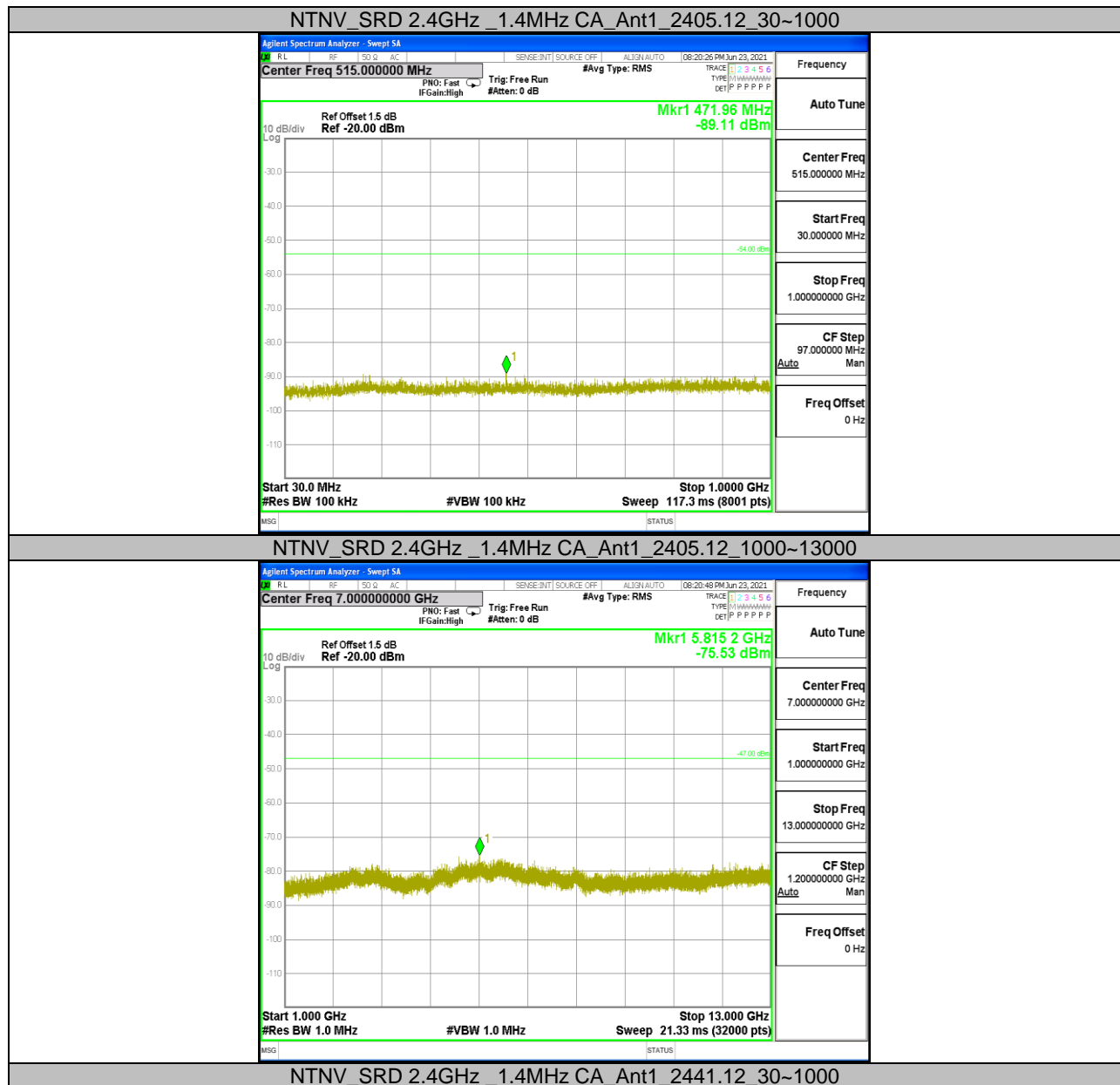
8.6. Appendix F: Spurious Emission of RX

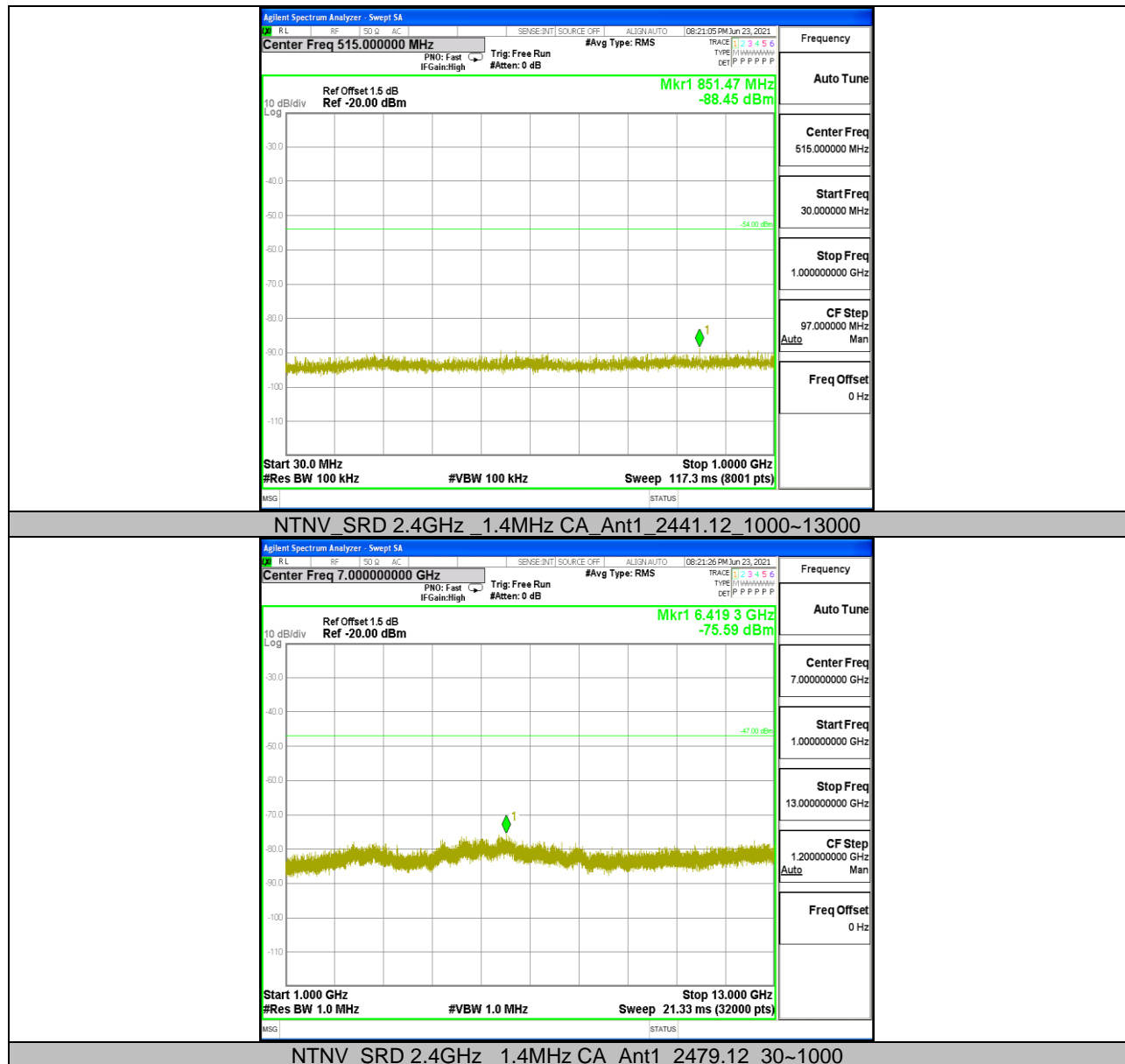
8.6.1. Test Result

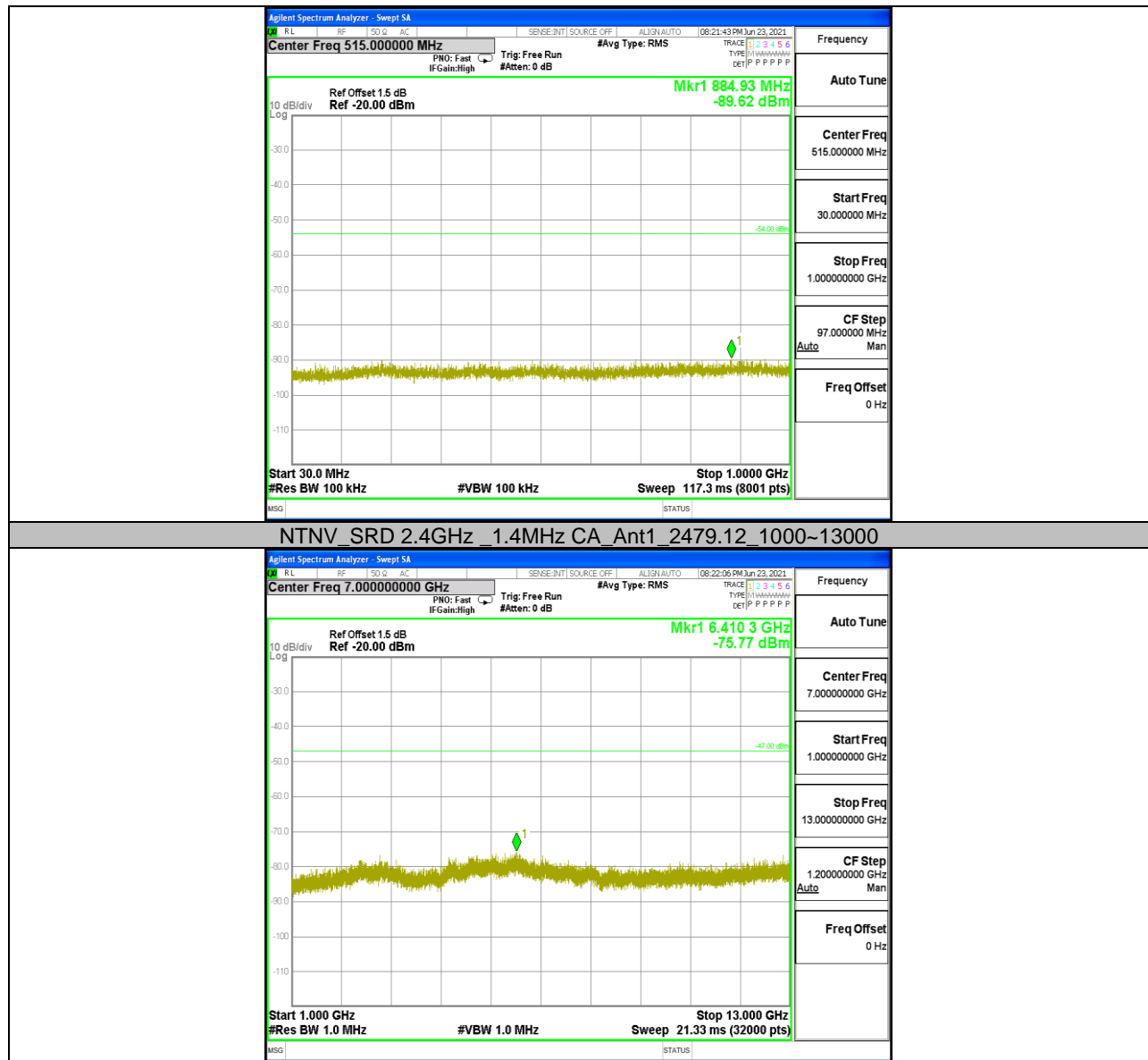
Test Condition	Test Mode	Antenna	Channel	Freq.Range [MHz]	Reading [dBm]	N(Ant) 10Log(N) [dB]	Result [dBm]	Limit [dBm]	Verdict
NTNV	SRD 2.4GHz _1.4MHz CA	Ant1	2405.12	30~1000	-89.113	3.01	-86.103	≤-54	PASS
				1000~13000	-75.529	3.01	-72.519	≤-47	PASS
			2441.12	30~1000	-88.449	3.01	-85.439	≤-54	PASS
				1000~13000	-75.591	3.01	-72.581	≤-47	PASS
			2479.12	30~1000	-89.622	3.01	-86.612	≤-54	PASS
				1000~13000	-75.769	3.01	-72.759	≤-47	PASS



8.6.2. Test Graphs









8.7. Appendix G: Dwell Time

8.7.1. Test Result

Test Condition	Test Mode	Antenna	Channel	On Time [ms]	Period [ms]	Result (Duty) (%)	Result (Burst Rate)	Result (Dwell Time) [s]	Limit [s]	Verdict
NTNV	SRD 2.4GHz _1.4MHz CA	Ant1	2441.12	1.02	9.99	10.21	9.79	0.00017	<0.4	PASS

Note: Result(Duty) = On Time / Period * 100

On Time = $1 \Delta 2 + 4 \Delta 3$

Result (Dwell Time) = $(0.4 * \text{Spreading Bandwidth [MHz]} * \text{On Time} / \text{Spreading rate [Mbps]}) / (\text{Period} * \text{Hopping Number})$

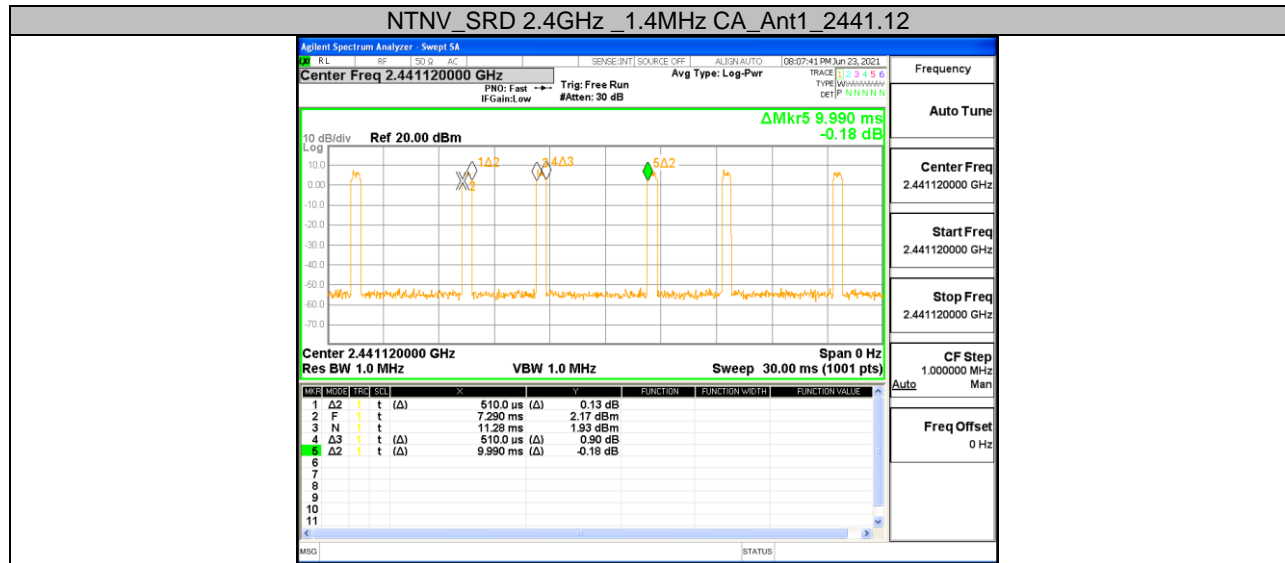
Spreading rate = Spreading Bandwidth / Transmission Rate

Transmission Rate = 0.1612Mbps (declared by customer.)

Result (Burst Rate) = Period / On Time



8.7.2. Test Graphs





8.8. INTERFERENCE PREVENTION FUNCTION

Test Procedure

In the case that the EUT has the function of automatically transmitting the identification code:

1. Transmit the predetermined identification codes from EUT
2. Check the transmitted identification codes with the demodulator.

In the case of receiving the identification codes:

1. Transmit the predetermined identification codes from the counterpart.
2. Check if communication is normal.
3. Transmit the signal other than predetermined ID codes from the counterpart.
4. Check if the EUT stops the transmission, or if it displays that identification codes are different from the predetermined ones.

Measurement Result

Environmental Conditions

Temperature:	25.8°C
Relative Humidity:	59%
ATM Pressure:	100.3kPa

Test result: Pass