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TEST REPORT

Report No.: CQASZ20230500829E-02
Applicant: Shenzhen Hollyland Technology Co., Ltd
Address of Applicant: 8F, Building 5D, Skyworth Innovation Valley, Tangtou Road, Shiyan Street, Baoan District, Shenzhen, 518055 China
Equipment Under Test (EUT):
Product: VenusLiv Air Live Stream Camera
Model No.: VenusLiv Air, VenusLiv Lite, VenusLiv , VenusLiv Mini, VenusLiv X Air, VenusLiv X Lite, VenusLive Air, VenusLive Lite, VenusLive, VenusLive Mini, VenusLiv X Air, Venus X Air, Venus X Lite, Venus Air, Venus Lite
Test Model No.: VenusLiv Air
Brand Name: HOLLYLAND
FCC ID: 2ADZC-C4702
Standards: 47 CFR Part 15, Subpart C
Date of Receipt: 2023-05-17
Date of Test: 2023-05-17 to 2023-06-02
Date of Issue: 2023-06-19
Test Result : **PASS***

*In the configuration tested, the EUT complied with the standards specified above

Tested By: Lewis Zhou
(Lewis Zhou)

Reviewed By: Timo Lei
(Timo Lei)

Approved By: Jack Ai
(Jack Ai)



1 Version

Revision History Of Report

Report No.	Version	Description	Issue Date
CQASZ20230500829E-02	Rev.01	Initial report	2023-06-19

2 Test Summary

Test Item	Test Requirement	Test method	Result
Antenna Requirement	47 CFR Part 15.203	N/A	PASS
AC Power Line Conducted Emission	47 CFR Part 15.207	ANSI C63.10-2013	PASS
Conducted Peak & Average Output Power	47 CFR Part 15.247	ANSI C63.10-2013	PASS
6dB Occupied Bandwidth	47 CFR Part 15.247	ANSI C63.10-2013	PASS
Power Spectral Density	47 CFR Part 15.247	ANSI C63.10-2013	PASS
Band-edge for RF Conducted Emissions	47 CFR Part 15.247	ANSI C63.10-2013	PASS
RF Conducted Spurious Emissions	47 CFR Part 15.247	ANSI C63.10-2013	PASS
Radiated Spurious Emissions	47 CFR Part 15.209	ANSI C63.10-2013	PASS
Restricted bands around fundamental frequency (Radiated Emission)	47 CFR Part 15.205/15.209	ANSI C63.10-2013	PASS

Remark:

The tested sample(s) and the sample information are provided by the client.

Tx: In this whole report Tx (or tx) means Transmitter.

Rx: In this whole report Rx (or rx) means Receiver.

RF: In this whole report RF means Radiated Frequency.

CH: In this whole report CH means channel.

Volt: In this whole report Volt means Voltage.

Temp: In this whole report Temp means Temperature.

Humid: In this whole report Humid means humidity.

Press: In this whole report Press means Pressure.

N/A: In this whole report not application

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4 General Information

4.1 Client Information

Applicant:	Shenzhen Hollyland Technology Co., Ltd
Address of Applicant:	8F, Building 5D, Skyworth Innovation Valley, Tangtou Road, Shiyuan Street, Baoan District, Shenzhen, 518055 China
Manufacturer:	Shenzhen Hollyland Technology Co., Ltd
Address of Manufacturer:	8F, Building 5D, Skyworth Innovation Valley, Tangtou Road, Shiyuan Street, Baoan District, Shenzhen, 518055 China
Factory:	Shenzhen Hollyland Technology Co., Ltd
Address of Factory:	8F, Building 5D, Skyworth Innovation Valley, Tangtou Road, Shiyuan Street, Baoan District, Shenzhen, 518055 China

4.2 General Description of EUT

Product Name:	VenusLiv Air Live Stream Camera
Model No.:	VenusLiv Air, VenusLiv Lite, VenusLiv , VenusLiv Mini, VenusLiv X Air, VenusLiv X Lite, VenusLive Air, VenusLive Lite, VenusLive, VenusLive Mini, VenusLiv X Air, Venus X Air, Venus X Lite, Venus Air, Venus Lite
Test Model No.:	VenusLiv Air
Trade Mark:	HOLLYLAND
Software Version:	V1.0.2.0
Hardware Version:	V28
Power Supply:	Power supply DC12V for adaptor Model:R241-12020001 Input:100-240V~50/60Hz 1.5A Output:12V 2A 24W
EUT Supports Radios application:	2.4GHz: Wi-Fi: 802.11b/g/n(HT20): 2412MHz~2462MHz; 802.11n(HT40): 2422MHz~2452MHz
Simultaneous Transmission	<input type="checkbox"/> Simultaneous TX is supported and evaluated in this report. <input checked="" type="checkbox"/> Simultaneous TX is not supported.

4.3 Product Specification subjective to this standard

Operation Frequency:	IEEE 802.11b/g/n(HT20): 2412MHz to 2462MHz IEEE 802.11n(HT40): 2422MHz to 2452MHz
Channel Numbers:	IEEE 802.11b/g, IEEE 802.11n HT20: 11 Channels IEEE 802.11n HT40: 7 Channels
Channel Separation:	5MHz
Type of Modulation:	IEEE for 802.11b: DSSS(CCK,DQPSK,DBPSK) IEEE for 802.11g : OFDM(64QAM, 16QAM, QPSK, BPSK) IEEE for 802.11n(HT20 and HT40) : OFDM (64QAM, 16QAM, QPSK, BPSK)
Transfer Rate:	IEEE for 802.11b: 1Mbps/2Mbps/5.5Mbps/11Mbps IEEE for 802.11g : 6Mbps/9Mbps/12Mbps/18Mbps/24Mbps/36Mbps/48Mbps/54Mbps IEEE for 802.11n(HT20) :

	6.5Mbps/13Mbps/19.5Mbps/26Mbps/39Mbps/52Mbps/58.5Mbps/65Mbps IEEE for 802.11n(HT40) : 13.5Mbps/27Mbps/40.5Mbps/54Mbps/81Mbps/108Mbps/121.5Mbps/135Mbps
Product Type:	<input checked="" type="checkbox"/> Mobile <input type="checkbox"/> Portable
Test Software of EUT:	QDART
Antenna Type:	FPC antenna
Antenna Gain:	1.74dBi

Operation Frequency each of channel(802.11b/g/n HT20)							
Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
1	2412MHz	4	2427MHz	7	2442MHz	10	2457MHz
2	2417MHz	5	2432MHz	8	2447MHz	11	2462MHz
3	2422MHz	6	2437MHz	9	2452MHz		
Operation Frequency each of channel(802.11n HT40)							
Channel	Frequency	Channel	Frequency	Channel	Frequency		
3	2422MHz	6	2437MHz	9	2452MHz		
4	2427MHz	7	2442MHz				
5	2432MHz	8	2447MHz				

Note:

In section 15.31(m), regards to the operating frequency range over 10 MHz, the Lowest frequency, the middle frequency, and the highest frequency of channel were selected to perform the test, and the selected channel see below:

For 802.11b/g/n (HT20):

Channel	Frequency
The Lowest channel	2412MHz
The Middle channel	2437MHz
The Highest channel	2462MHz

For 802.11n (HT40):

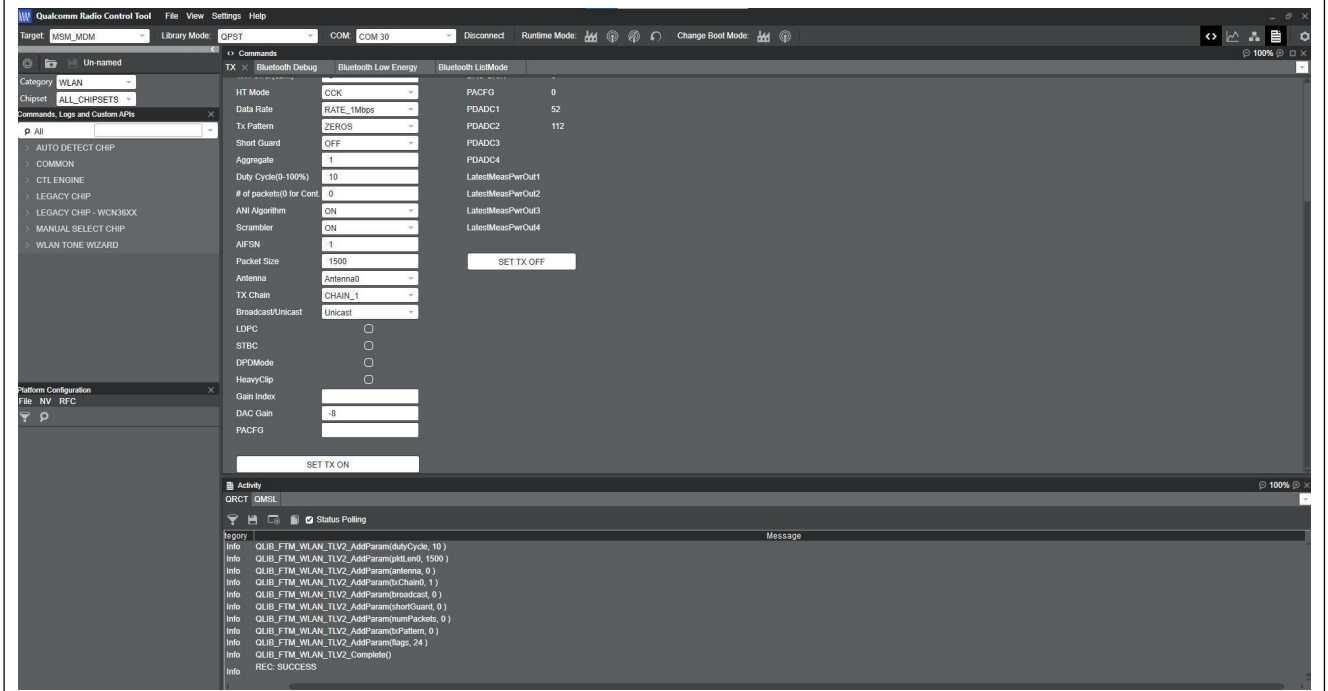
Channel	Frequency
The Lowest channel	2422MHz
The Middle channel	2437MHz
The Highest channel	2452MHz

Note:

Software provided by client enabled the EUT to transmit and receive data at lowest, middle and highest channel individually.

4.4 Test Environment and Mode

Operating Environment:	
Radiated Emissions:	
Temperature:	25.3 °C
Humidity:	55 % RH
Atmospheric Pressure:	1009 mbar
Conducted Emissions:	
Temperature:	25.6 °C
Humidity:	60 % RH
Atmospheric Pressure:	1009 mbar
Radio conducted item test (RF Conducted test room):	
Temperature:	25.5 °C
Humidity:	52 % RH
Atmospheric Pressure:	1009 mbar
Test mode:	
Transmitting mode:	EUT is set in RF test mode in all supported modulation types, bandwidth and data rate, etc.
Run Software:	



4.5 Description of Support Units

The EUT has been tested with associated equipment below.

1) Support equipment

Description	Manufacturer	Model No.	Certification	Supplied by
/	/	/	/	/

2) Cable

Cable No.	Description	Manufacturer	Cable Type/Length	Supplied by
/	/	/	/	/

4.6 Test Location

All tests were performed at:

Shenzhen Huaxia Testing Technology Co., Ltd.

1F., Block A of Tongsheng Technology Building, Huahui Road, Dalang Street, Longhua New District, Shenzhen, Guangdong, China

4.7 Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

• **A2LA (Certificate No. 4742.01)**

Shenzhen Huaxia Testing Technology Co., Ltd., Shenzhen EMC Laboratory is accredited by the American Association for Laboratory Accreditation(A2LA). Certificate No. 4742.01.

• **FCC Registration No.: 522263**

Shenzhen Huaxia Testing Technology Co., Ltd., Shenzhen EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Registration No.:522263

4.8 Statement of the measurement uncertainty

The data and results referenced in this document are true and accurate.

The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities.

The measurement uncertainty was calculated for all measurements listed in this test report acc. to CISPR 16 - 4 „Specification for radio disturbance and immunity measuring apparatus and methods – Part 4: Uncertainty in EMC Measurements“ and is documented in the **Shenzhen Huaxia Testing Technology Co., Ltd.** quality system acc. to DIN EN ISO/IEC 17025.

Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.

Hereafter the best measurement capability for CQA laboratory is reported:

No.	Item	Uncertainty	Notes
1	Radiated Emission (Below 1GHz)	5.12dB	(1)
2	Radiated Emission (Above 1GHz)	4.60dB	(1)
3	Conducted Disturbance (0.15~30MHz)	3.34dB	(1)
4	Radio Frequency	3×10^{-8}	(1)
5	Duty cycle	0.6 %.	(1)
6	Occupied Bandwidth	1.1%	(1)
7	RF conducted power	0.86dB	(1)
8	RF power density	0.74	(1)
9	Conducted Spurious emissions	0.86dB	(1)
10	Temperature test	0.8°C	(1)
11	Humidity test	2.0%	(1)
12	Supply voltages	0.5 %.	(1)
13	Frequency Error	5.5 Hz	(1)

(1)This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

4.9 Deviation from Standards

None.

4.10 Abnormalities from Standard Conditions

None.

4.11 Other Information Requested by the Customer

None.

4.12 Equipment List

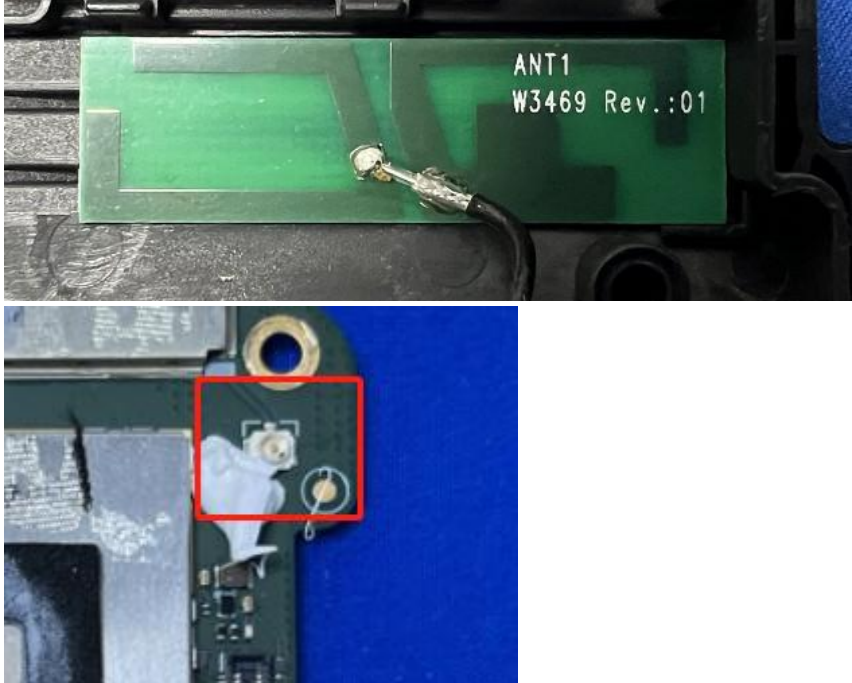
Test Equipment	Manufacturer	Model No.	Instrument No.	Calibration Date	Calibration Due Date
EMI Test Receiver	R&S	ESR7	CQA-005	2022/09/09	2023/09/08
Spectrum analyzer	R&S	FSU26	CQA-038	2022/09/09	2023/09/08
Spectrum analyzer	R&S	FSU40	CQA-075	2022/09/09	2023/09/08
Preamplifier	MITEQ	AFS4-00010300-18-10P-4	CQA-035	2022/09/09	2023/09/08
Preamplifier	MITEQ	AMF-6D-02001800-29-20P	CQA-036	2022/09/09	2023/09/08
Preamplifier	EMCI	EMC184055SE	CQA-089	2022/09/09	2023/09/08
Loop antenna	Schwarzbeck	FMZB1516	CQA-060	2021/09/16	2024/09/15
Bilog Antenna	R&S	HL562	CQA-011	2021/09/16	2024/09/15
Horn Antenna	R&S	HF906	CQA-012	2021/09/16	2024/09/15
Horn Antenna	Schwarzbeck	BBHA 9170	CQA-088	2021/09/16	2024/09/15
Coaxial Cable (Above 1GHz)	CQA	N/A	C007	2022/09/09	2023/09/08
Coaxial Cable (Below 1GHz)	CQA	N/A	C013	2022/09/09	2023/09/08
RF cable(9KHz~40GHz)	CQA	RF-01	CQA-079	2022/09/09	2023/09/08
Antenna Connector	CQA	RFC-01	CQA-080	2022/09/09	2023/09/08
Power Sensor	KEYSIGHT	U2021XA	CQA-30	2022/09/09	2023/09/08
N1918A Power Analysis Manager Power Panel	Agilent	N1918A	CQA-074	2022/09/09	2023/09/08
Power meter	R&S	NRVD	CQA-029	2022/09/09	2023/09/08
Power divider	MIDWEST	PWD-2533-02-SMA-79	CQA-067	2022/09/09	2023/09/08
EMI Test Receiver	R&S	ESR7	CQA-005	2022/09/09	2023/09/08
LISN	R&S	ENV216	CQA-003	2022/09/09	2023/09/08
Coaxial cable	CQA	N/A	CQA-C009	2022/09/09	2023/09/08
DC power	KEYSIGHT	E3631A	CQA-028	2022/09/09	2023/09/08

Test software:

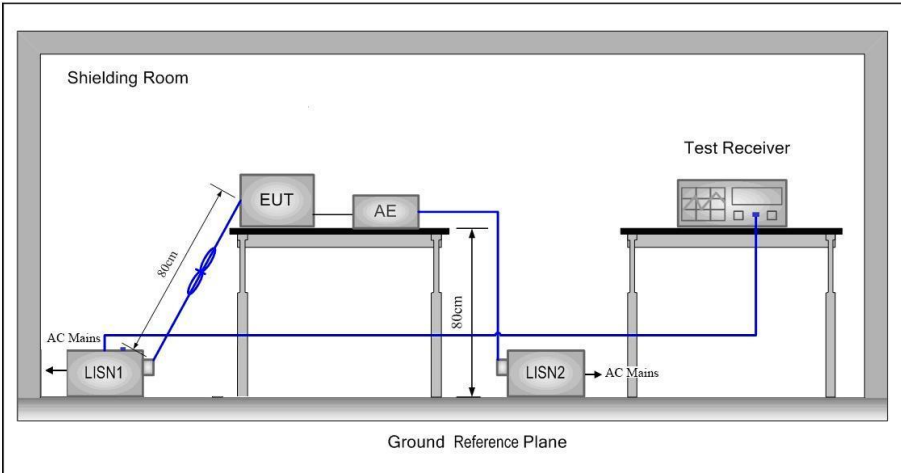
	Manufacturer	Software brand
Radiated Emissions test software	Tonscend	JS1120-3
Conducted Emissions test software	Audix	e3
RF Conducted test software	Audix	e3

5 Test results and Measurement Data

5.1 Antenna Requirement

Standard requirement:	47 CFR Part 15C Section 15.203 /247(c)
<p>15.203 requirement: An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall 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, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.</p> <p>15.247(b) (4) requirement: The conducted output power limit specified in paragraph (b) of this section is based on the use of antennas with directional gains that do not exceed 6 dBi. Except as shown in paragraph (c) of this section, if transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced below the stated values in paragraphs (b)(1), (b)(2), and (b)(3) of this section, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.</p>	
EUT Antenna:	
<p>The antenna is FPC antenna. The connection/connection type between the antenna to the EUT's antenna port is: unique coupling. This is either permanently attachment or a unique coupling that satisfies the requirement.</p>	

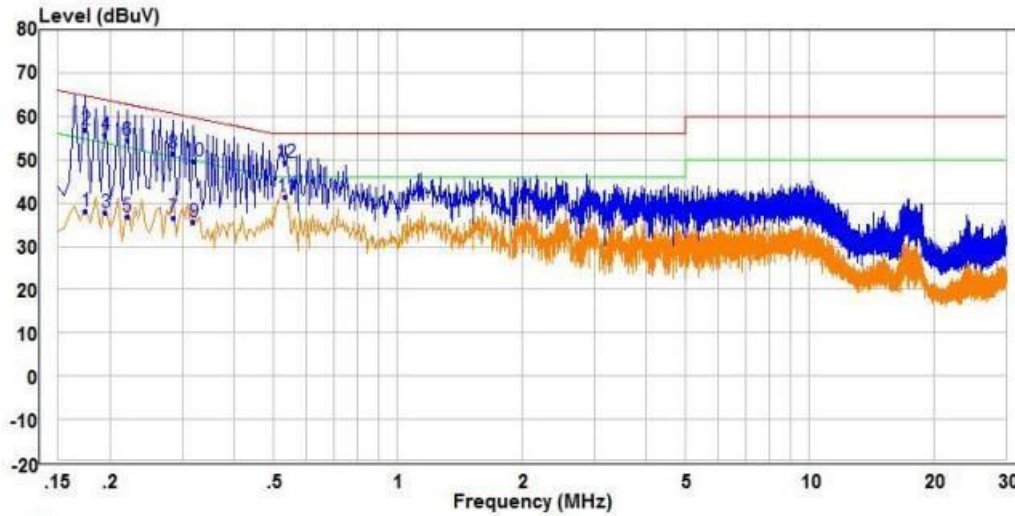
5.2 Conducted Emissions

Test Requirement:	47 CFR Part 15C Section 15.207														
Test Method:	ANSI C63.10: 2013														
Test Frequency Range:	150kHz to 30MHz														
Limit:	<table border="1"> <thead> <tr> <th rowspan="2">Frequency range (MHz)</th> <th colspan="2">Limit (dBuV)</th> </tr> <tr> <th>Quasi-peak</th> <th>Average</th> </tr> </thead> <tbody> <tr> <td>0.15-0.5</td> <td>66 to 56*</td> <td>56 to 46*</td> </tr> <tr> <td>0.5-5</td> <td>56</td> <td>46</td> </tr> <tr> <td>5-30</td> <td>60</td> <td>50</td> </tr> </tbody> </table>	Frequency range (MHz)	Limit (dBuV)		Quasi-peak	Average	0.15-0.5	66 to 56*	56 to 46*	0.5-5	56	46	5-30	60	50
	Frequency range (MHz)		Limit (dBuV)												
		Quasi-peak	Average												
	0.15-0.5	66 to 56*	56 to 46*												
	0.5-5	56	46												
5-30	60	50													
* Decreases with the logarithm of the frequency.															
Test Procedure:	<ol style="list-style-type: none"> 1) The mains terminal disturbance voltage test was conducted in a shielded room. 2) The EUT was connected to AC power source through a LISN 1 (Line Impedance Stabilization Network) which provides a $50\Omega/50\mu\text{H} + 5\Omega$ linear impedance. The power cables of all other units of the EUT were connected to a second LISN 2, which was bonded to the ground reference plane in the same way as the LISN 1 for the unit being measured. A multiple socket outlet strip was used to connect multiple power cables to a single LISN provided the rating of the LISN was not exceeded. 3) The tabletop EUT was placed upon a non-metallic table 0.8m above the ground reference plane. And for floor-standing arrangement, the EUT was placed on the horizontal ground reference plane, 4) The test was performed with a vertical ground reference plane. The rear of the EUT shall be 0.4 m from the vertical ground reference plane. The vertical ground reference plane was bonded to the horizontal ground reference plane. The LISN 1 was placed 0.8 m from the boundary of the unit under test and bonded to a ground reference plane for LISNs mounted on top of the ground reference plane. This distance was between the closest points of the LISN 1 and the EUT. All other units of the EUT and associated equipment was at least 0.8 m from the LISN 2. 5) In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.10: 2013 on conducted measurement. 														
Test Setup:															

Exploratory Test Mode:	Transmitting with all kind of modulations, data rates at lowest, middle and highest channel.
Final Test Mode:	Through Pre-scan, find the 1Mbps of rate of 802.11b at middle channel is the worst case. Only the worst case is recorded in the report.
Test Voltage:	AC120V/60Hz
Test Results:	Pass

Measurement Data

Live Line:

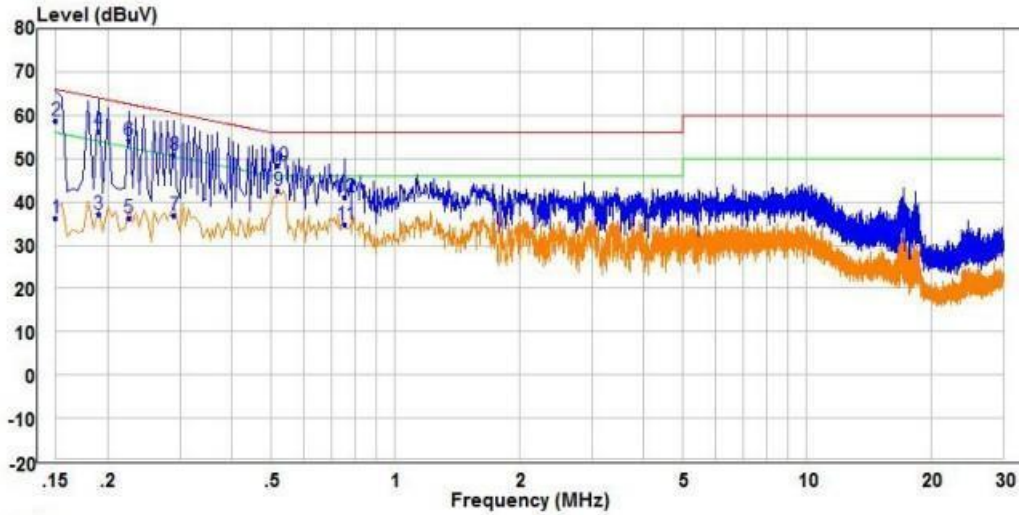


	Read			Limit	Over				
Freq	Level	Factor	Level	Line	Limit	Remark	Pol/Phase		
MHz	dBuV	dB	dBuV	dBuV	dB				
1	0.175	28.49	9.65	38.14	54.72	-16.58	Average	Line	
2	0.175	47.29	9.65	56.94	64.72	-7.78	QP	Line	
3	0.195	28.03	9.62	37.65	53.82	-16.17	Average	Line	
4	0.195	46.11	9.62	55.73	63.82	-8.09	QP	Line	
5	0.220	27.20	9.58	36.78	52.82	-16.04	Average	Line	
6	0.220	44.94	9.58	54.52	62.82	-8.30	QP	Line	
7	0.285	27.10	9.51	36.61	50.67	-14.06	Average	Line	
8	0.285	41.92	9.51	51.43	60.67	-9.24	QP	Line	
9	0.320	26.17	9.52	35.69	49.71	-14.02	Average	Line	
10	0.320	40.21	9.52	49.73	59.71	-9.98	QP	Line	
11	PP	0.535	31.63	9.74	41.37	46.00	-4.63	Average	Line
12	QP	0.535	39.57	9.74	49.31	56.00	-6.69	QP	Line

Remark:

1. The following Quasi-Peak and Average measurements were performed on the EUT:
2. Final Test Level = Receiver Reading + LISN Factor + Cable Loss.
3. If the Peak value under Average limit, the Average value is not recorded in the report.

Neutral Line:


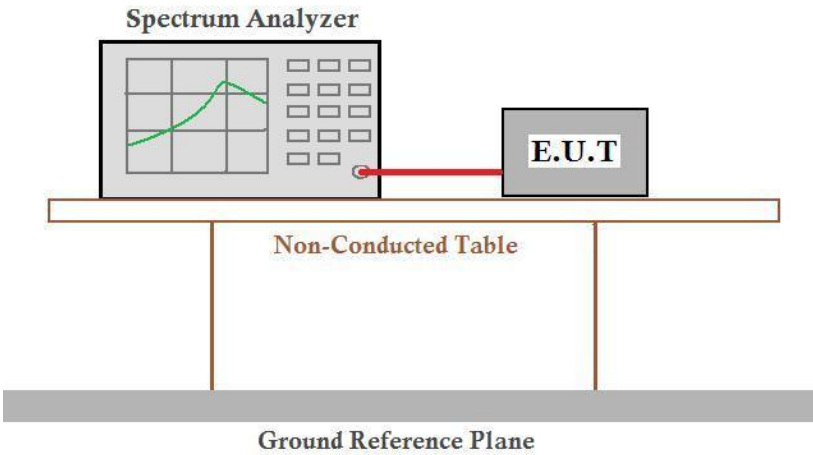


	Read Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark	Pol/Phase
	MHz	dBuV	dB	dBuV	dBuV	dB		
1	0.150	26.42	9.70	36.12	56.00	-19.88	Average	Neutral
2	QP 0.150	49.08	9.70	58.78	66.00	-7.22	QP	Neutral
3	0.190	27.41	9.62	37.03	54.04	-17.01	Average	Neutral
4	0.190	46.77	9.62	56.39	64.04	-7.65	QP	Neutral
5	0.225	26.64	9.57	36.21	52.63	-16.42	Average	Neutral
6	0.225	44.69	9.57	54.26	62.63	-8.37	QP	Neutral
7	0.290	27.36	9.49	36.85	50.52	-13.67	Average	Neutral
8	0.290	41.37	9.49	50.86	60.52	-9.66	QP	Neutral
9	PP 0.520	32.87	9.72	42.59	46.00	-3.41	Average	Neutral
10	0.520	38.75	9.72	48.47	56.00	-7.53	QP	Neutral
11	0.755	24.86	9.86	34.72	46.00	-11.28	Average	Neutral
12	0.755	31.36	9.86	41.22	56.00	-14.78	QP	Neutral

Remark:

1. The following Quasi-Peak and Average measurements were performed on the EUT:
2. Final Test Level = Receiver Reading + LISN Factor + Cable Loss.
3. If the Peak value under Average limit, the Average value is not recorded in the report.

5.3 Conducted Peak & Average Output Power

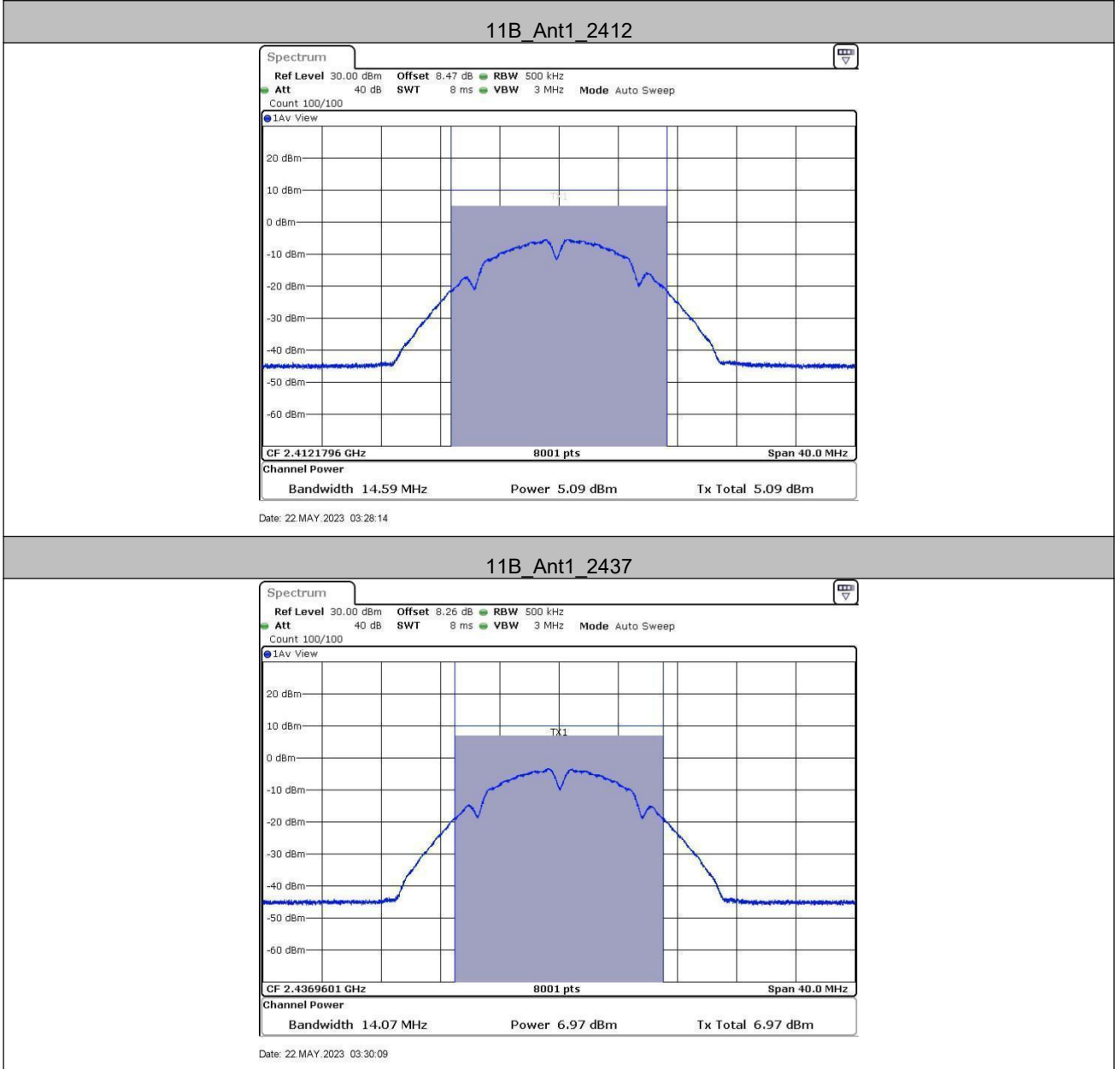
Test Requirement:	47 CFR Part 15C Section 15.247 (b)(3)
Test Method:	ANSI C63.10: 2013
Test Setup:	<p><i>Setup for Power meter measurement method</i></p>  <p><i>Setup for Spectrum analyser measurement method</i></p> 
Exploratory Test Mode:	Transmitting with all kind of modulations, data rates
Final Test Mode:	Only the worst case is recorded in the report.
Limit:	30dBm
Test Results:	Pass

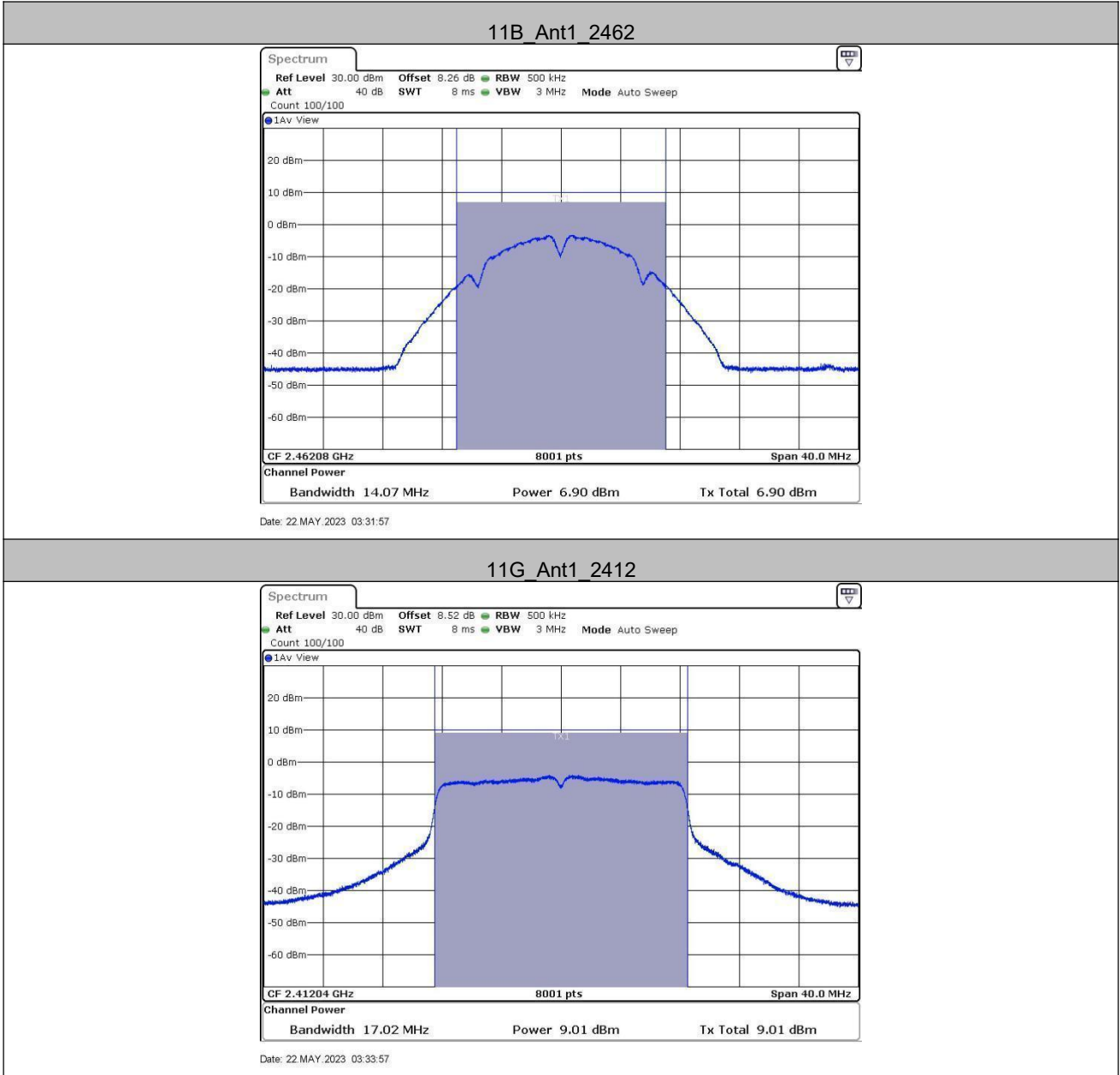
Test Result

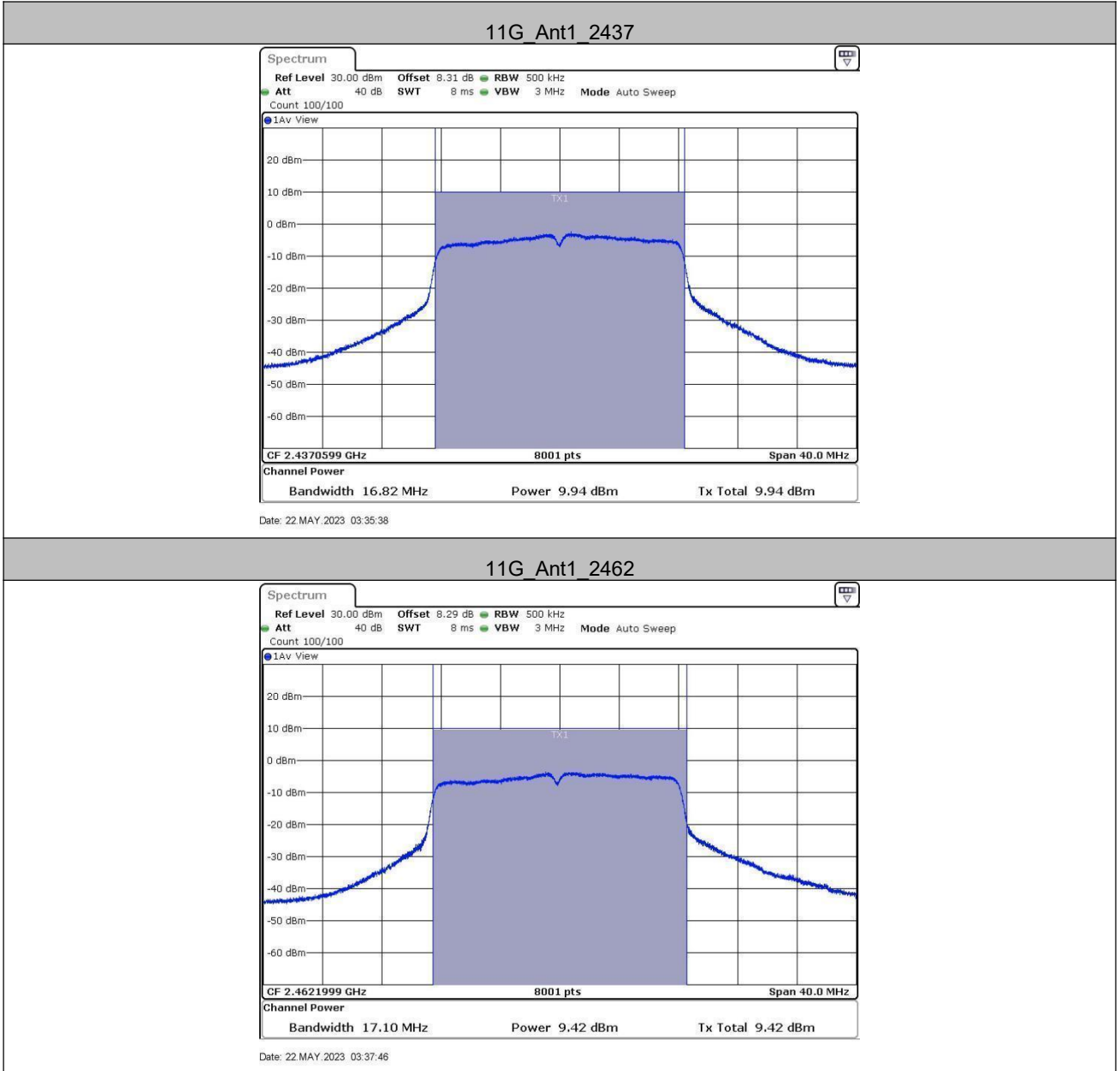
Test Mode	Frequency[MHz]	Result [dBm]	Limit [dBm]	Verdict
11B	2412	5.09	≤30.00	PASS
	2437	6.97	≤30.00	PASS
	2462	6.90	≤30.00	PASS
11G	2412	9.01	≤30.00	PASS
	2437	9.94	≤30.00	PASS
	2462	9.42	≤30.00	PASS
11N20SIS O	2412	8.46	≤30.00	PASS
	2437	9.68	≤30.00	PASS
	2462	9.27	≤30.00	PASS
11N40SIS O	2422	9.88	≤30.00	PASS
	2437	10.65	≤30.00	PASS
	2452	9.82	≤30.00	PASS

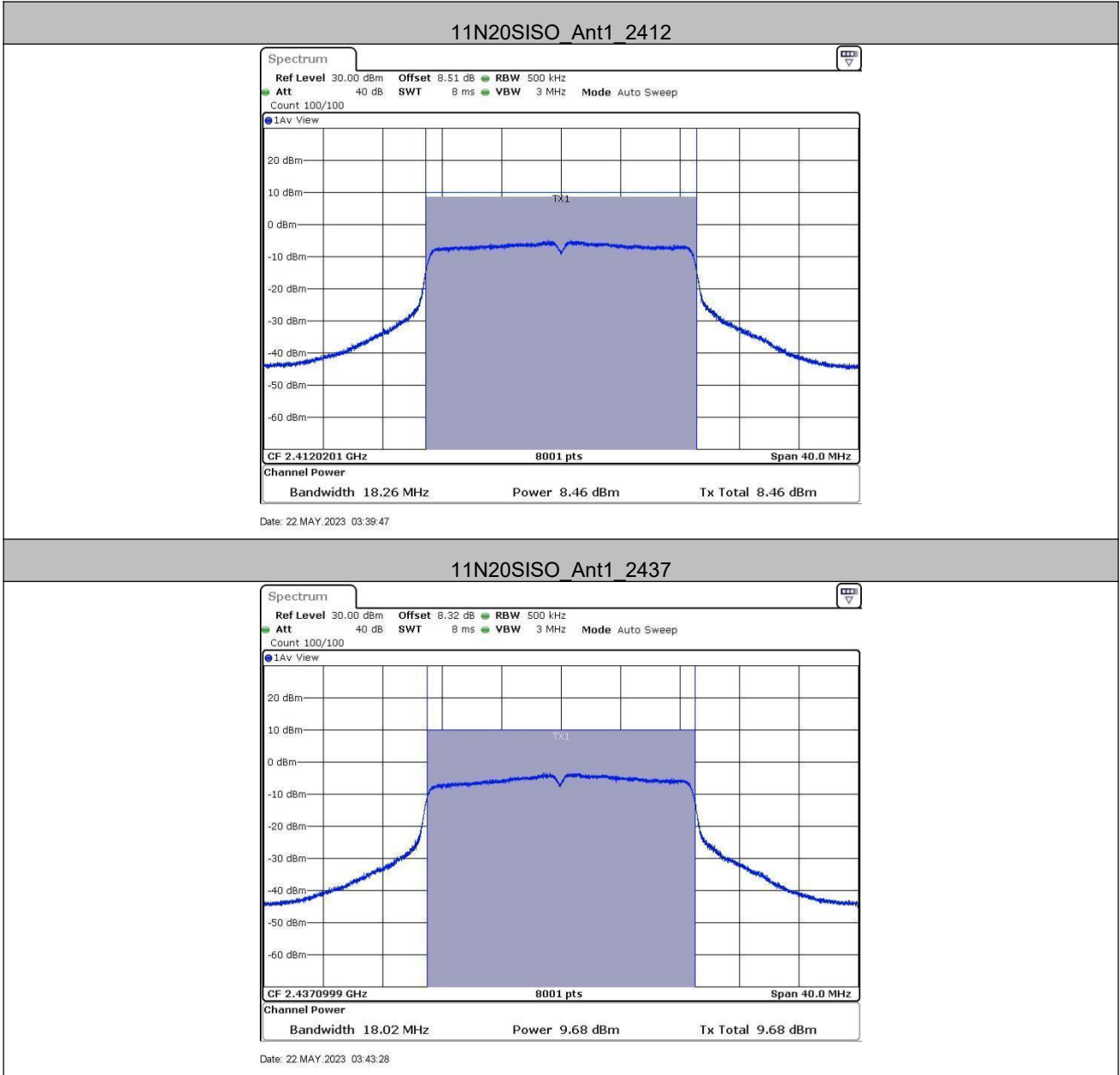
When Duty cycle >98%, D.C.F is not required.

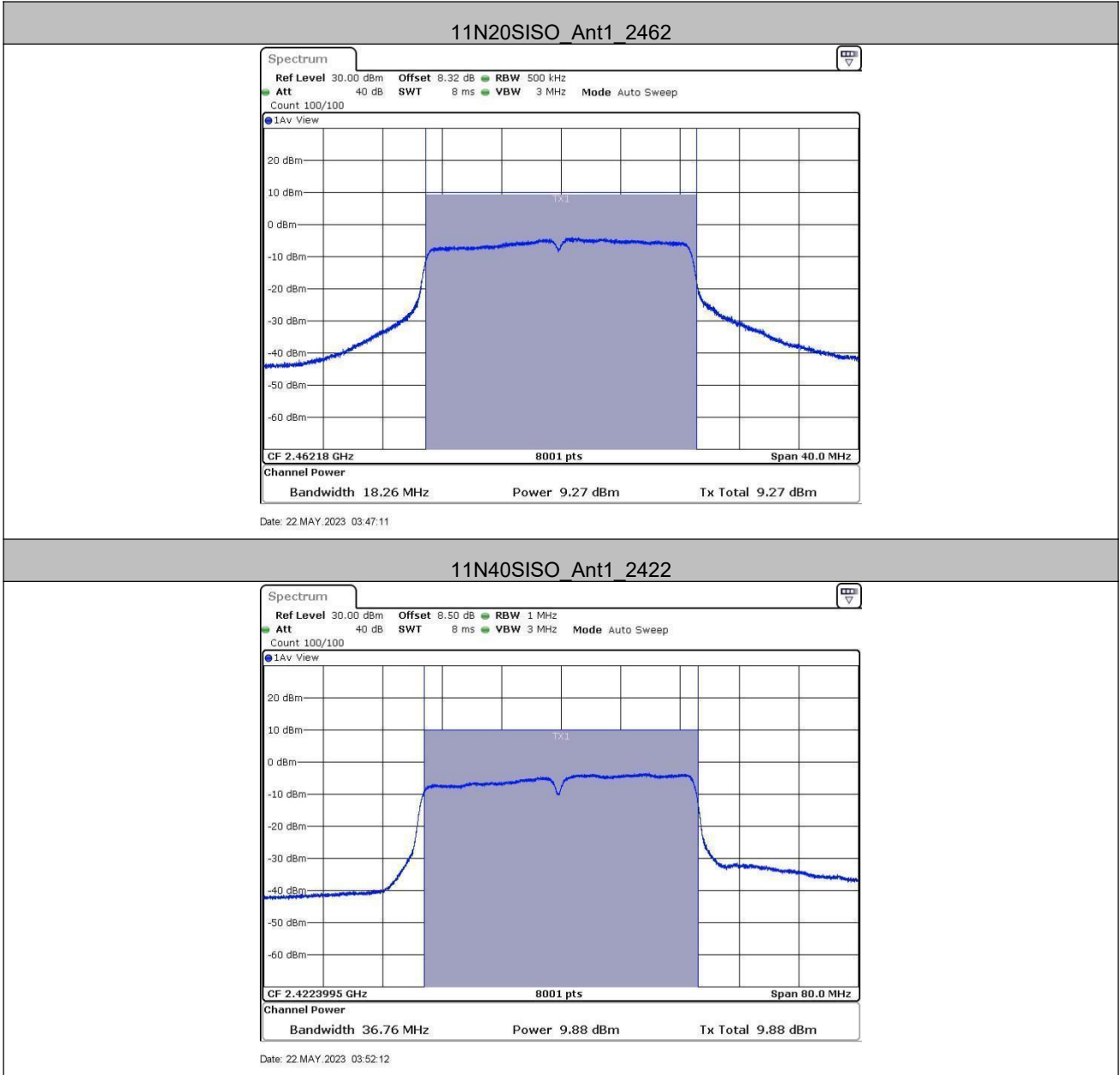
Test Graphs

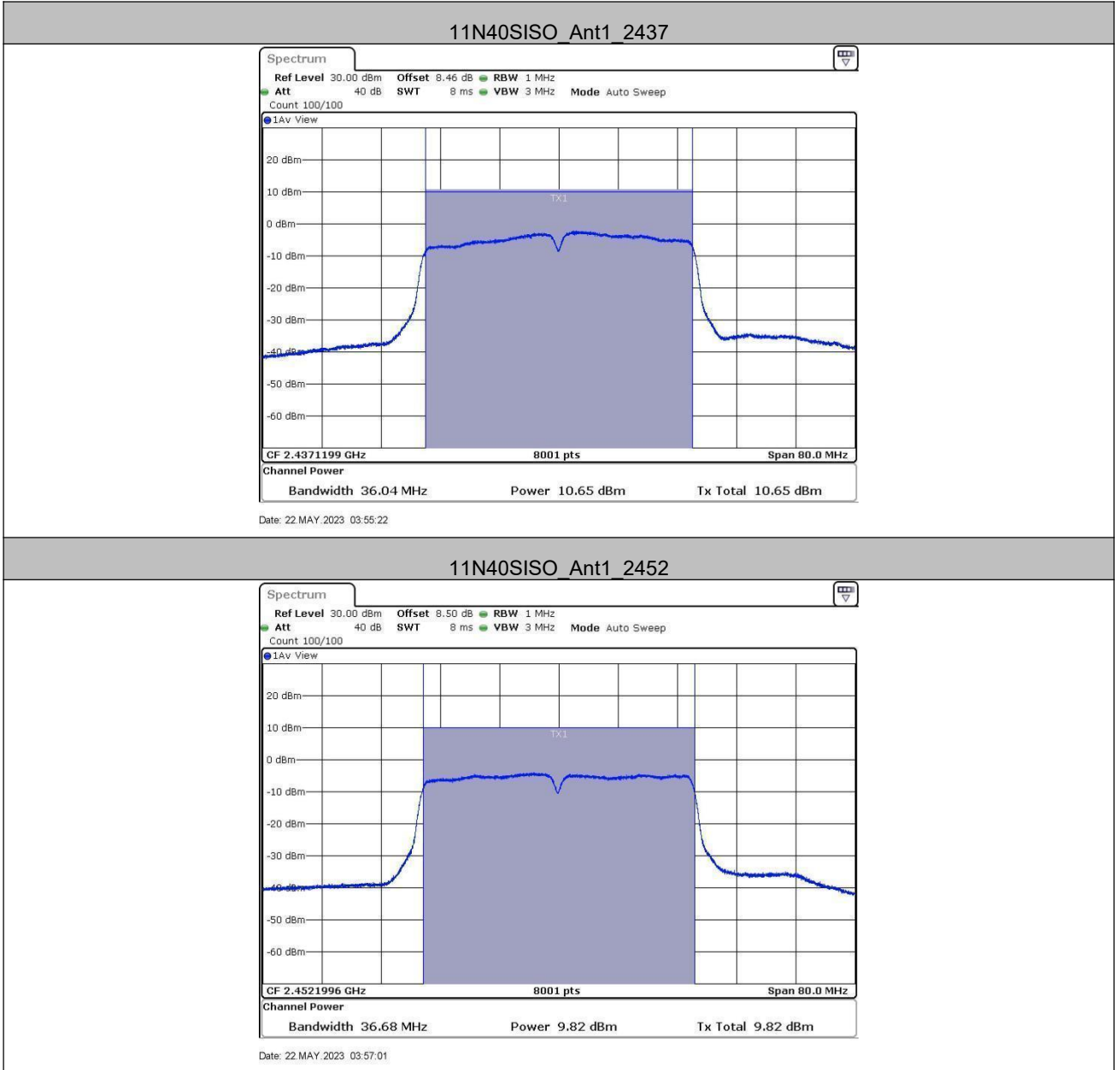




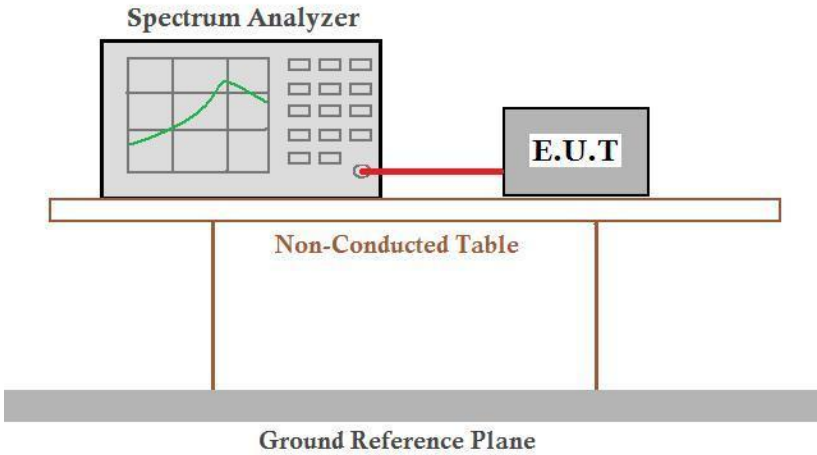








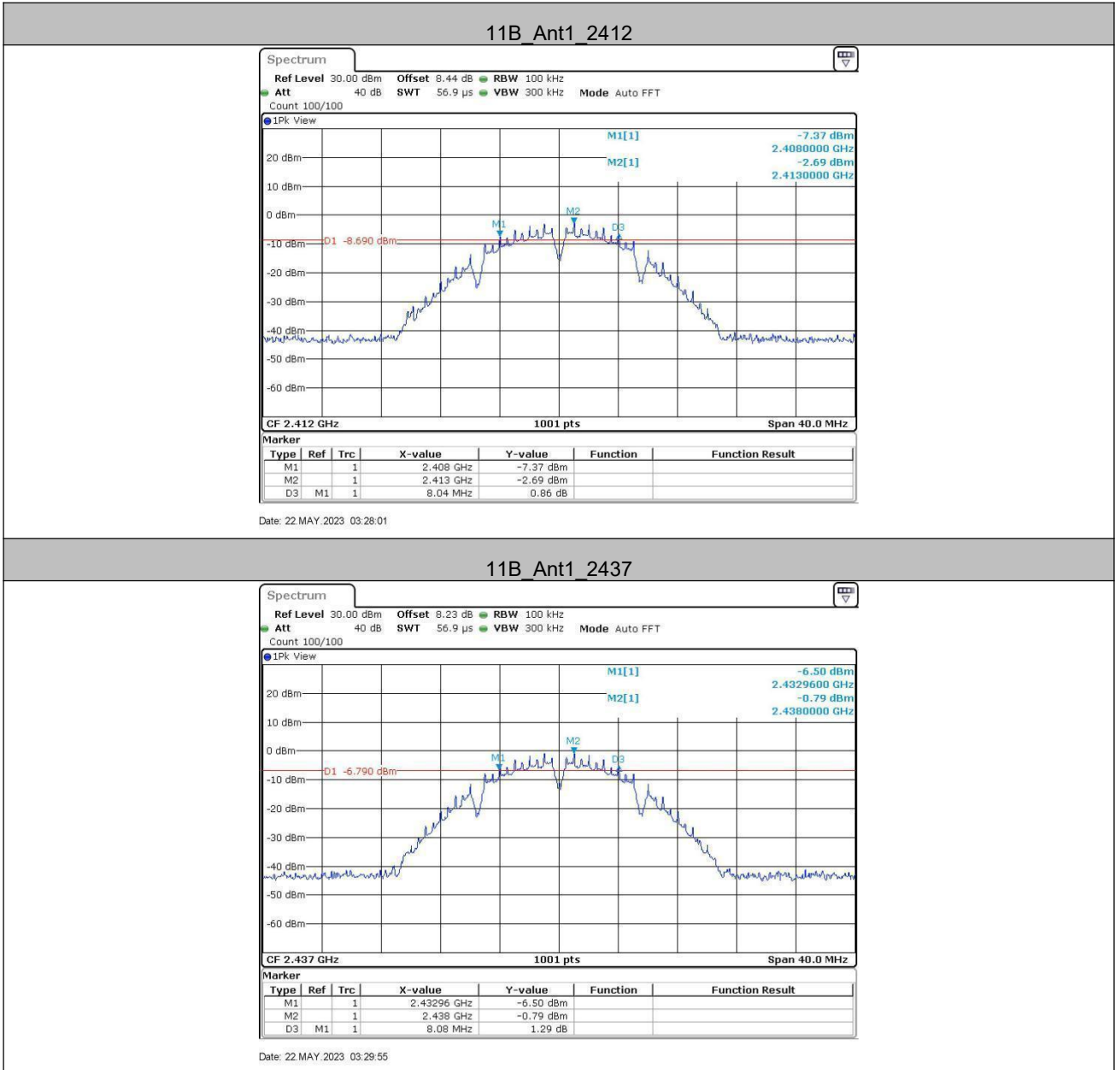
5.4 6dB Occupied Bandwidth

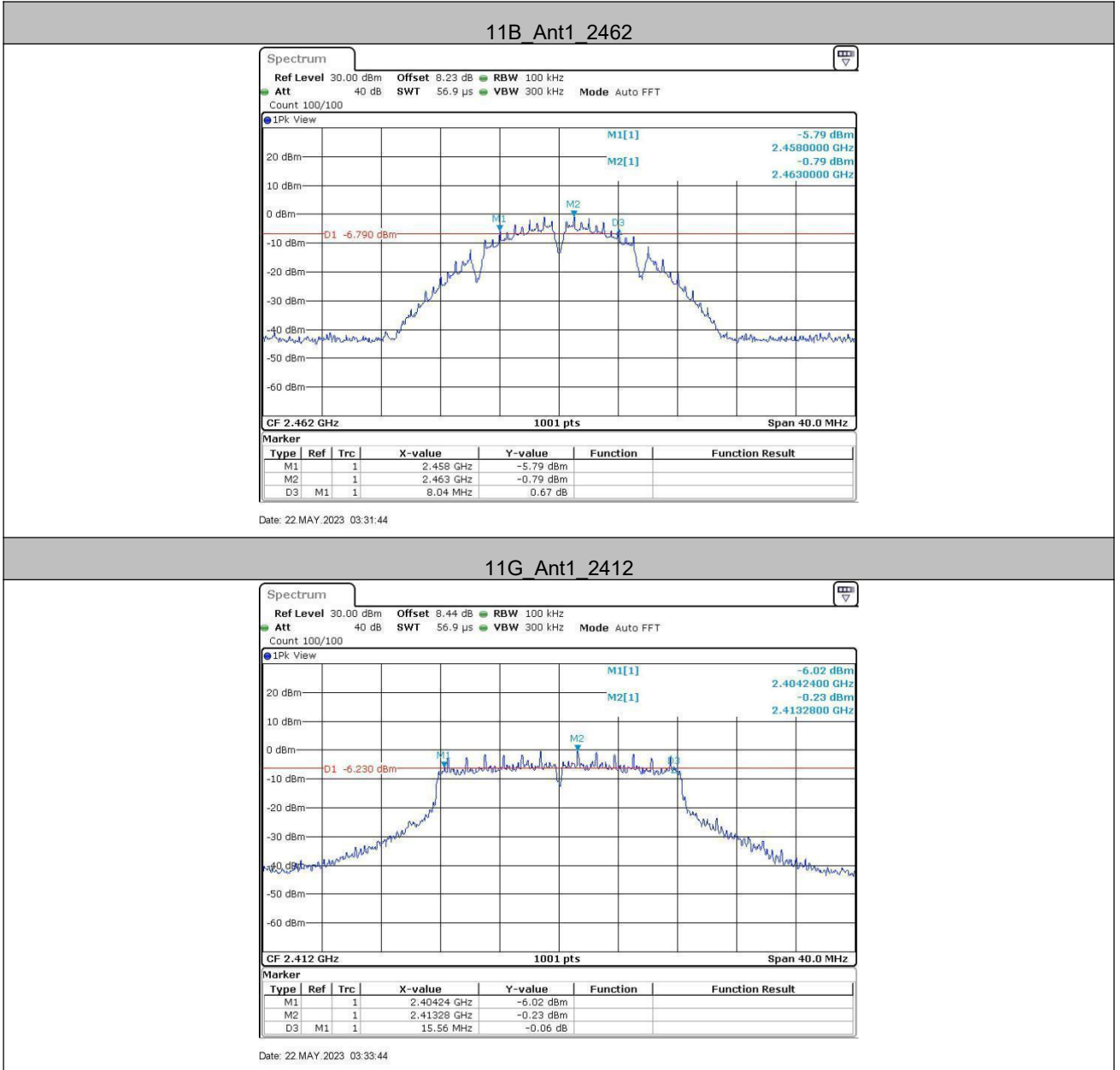
Test Requirement:	47 CFR Part 15C Section 15.247 (a)(2)
Test Method:	ANSI C63.10: 2013
Test Setup:	 <p>Offset=cable loss+ attenuation factor</p>
Exploratory Test Mode:	Transmitting with all kind of modulations, data rates
Final Test Mode:	Only the worst case is recorded in the report.
Limit:	≥ 500 kHz
Test Results:	Pass

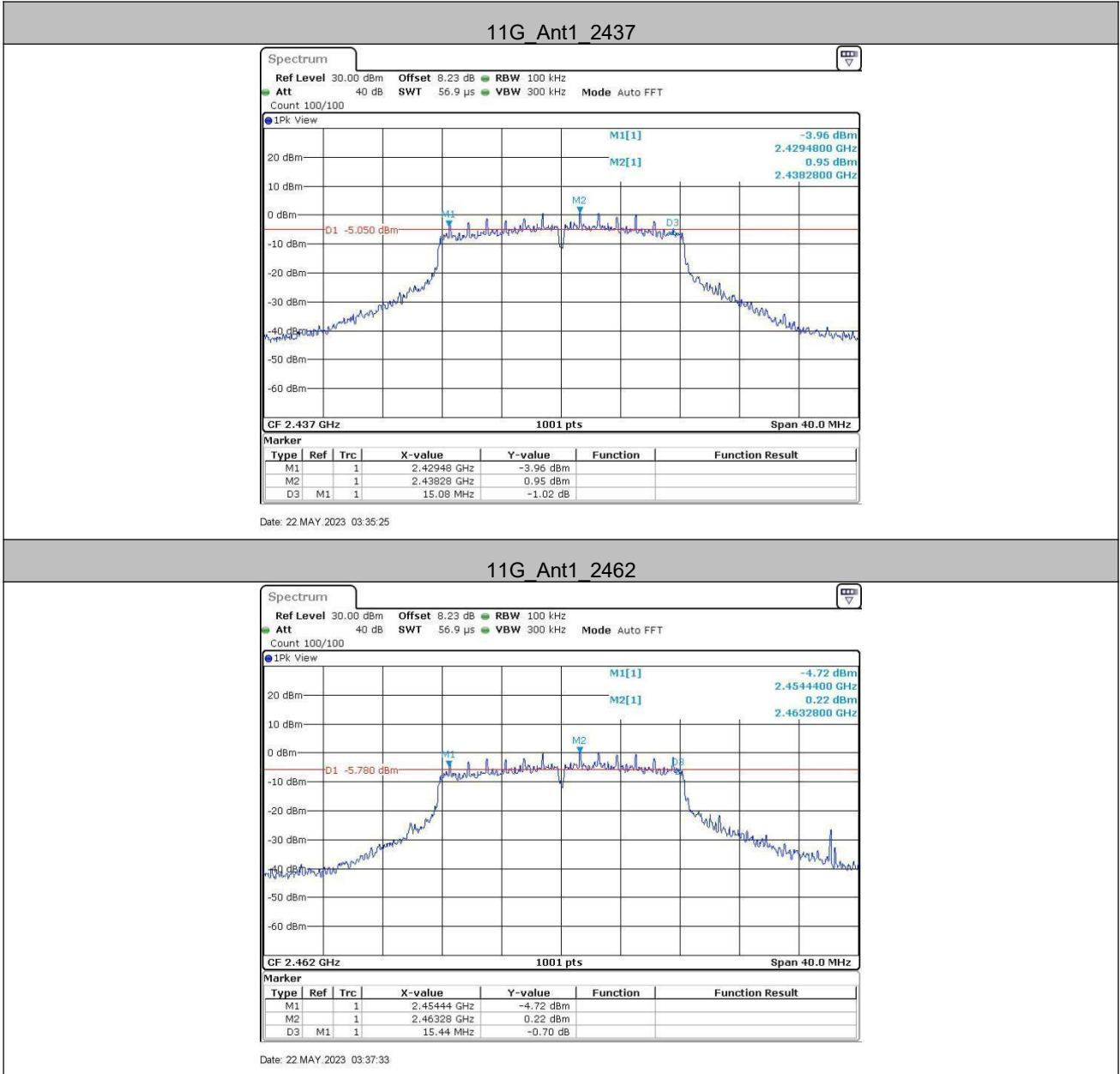
Test Result

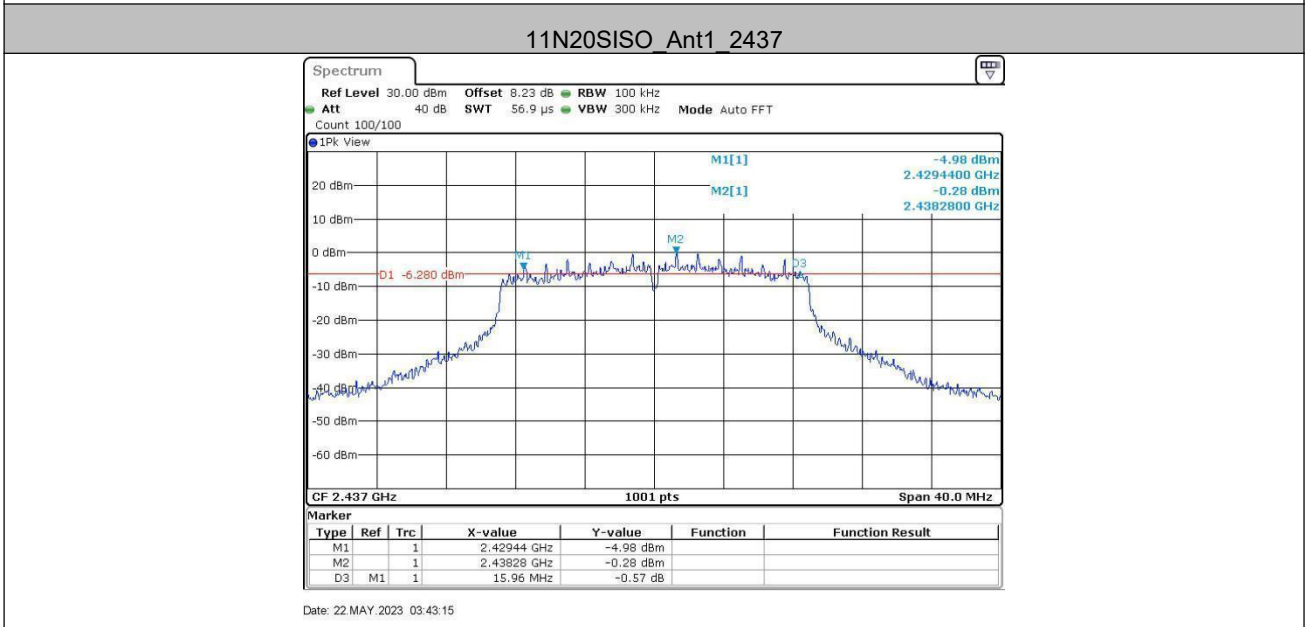
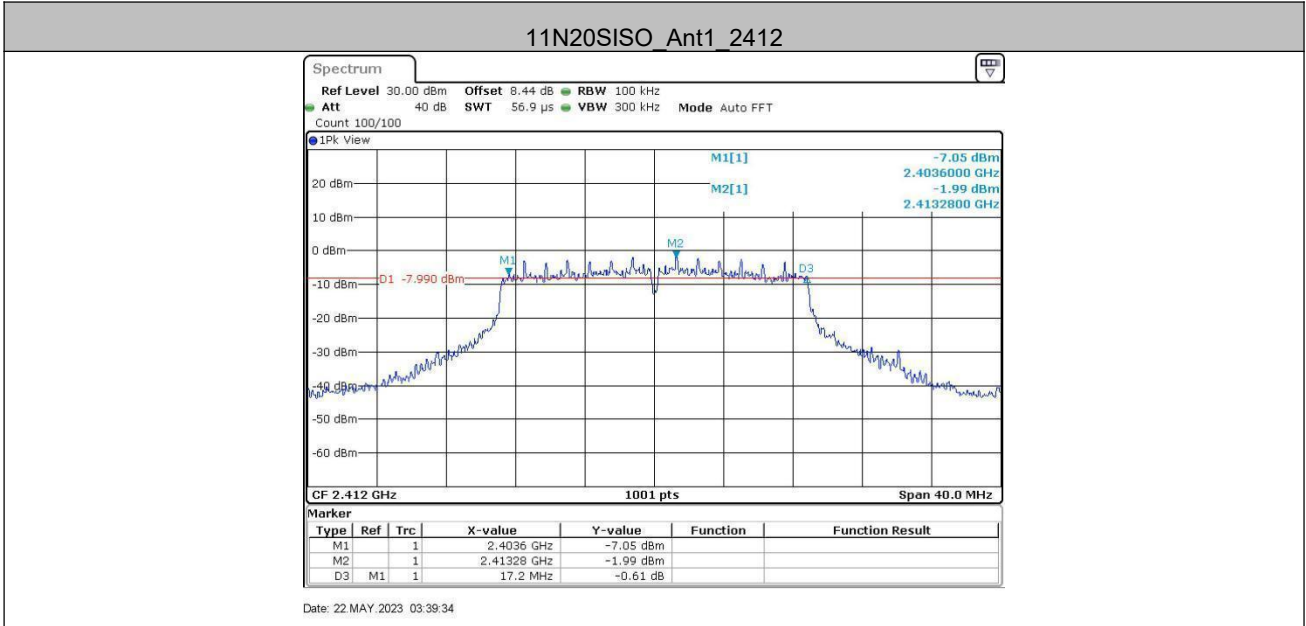
TestMode	Channel	DTS BW [MHz]	Limit[MHz]	Verdict
11B	2412	8.04	0.5	PASS
	2437	8.08	0.5	PASS
	2462	8.04	0.5	PASS
11G	2412	15.56	0.5	PASS
	2437	15.08	0.5	PASS
	2462	15.44	0.5	PASS
11N20SISO	2412	17.20	0.5	PASS
	2437	15.96	0.5	PASS
	2462	17.20	0.5	PASS
11N40SISO	2422	35.84	0.5	PASS
	2437	32.64	0.5	PASS
	2452	36.32	0.5	PASS

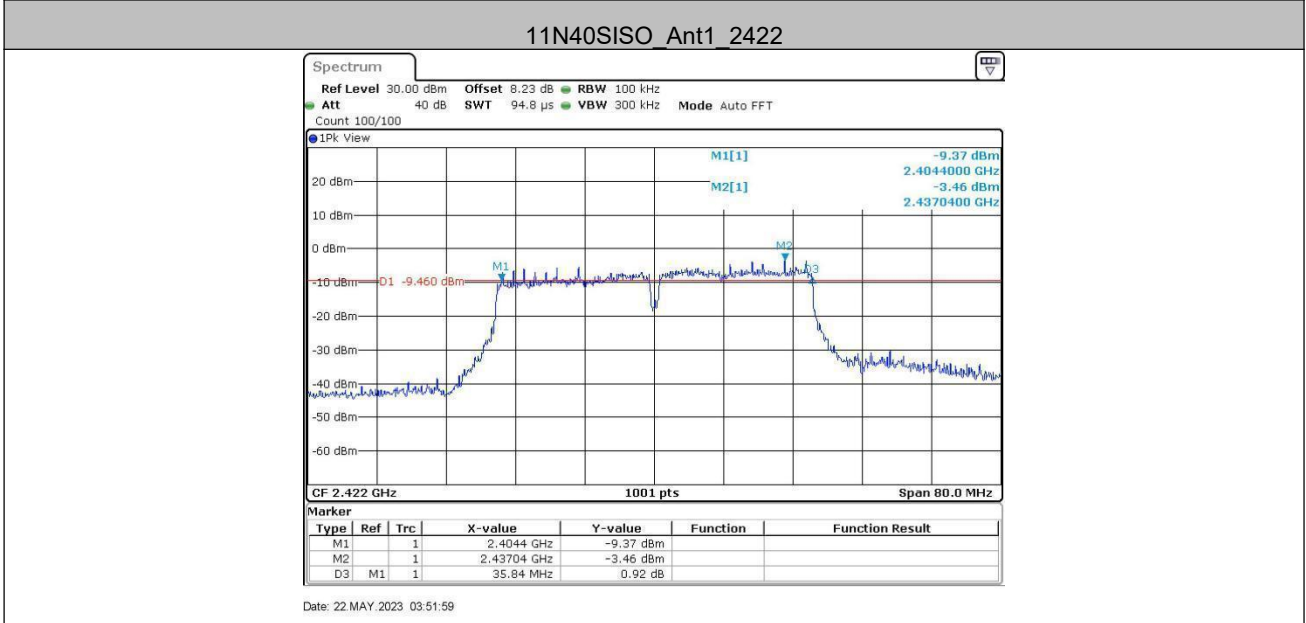
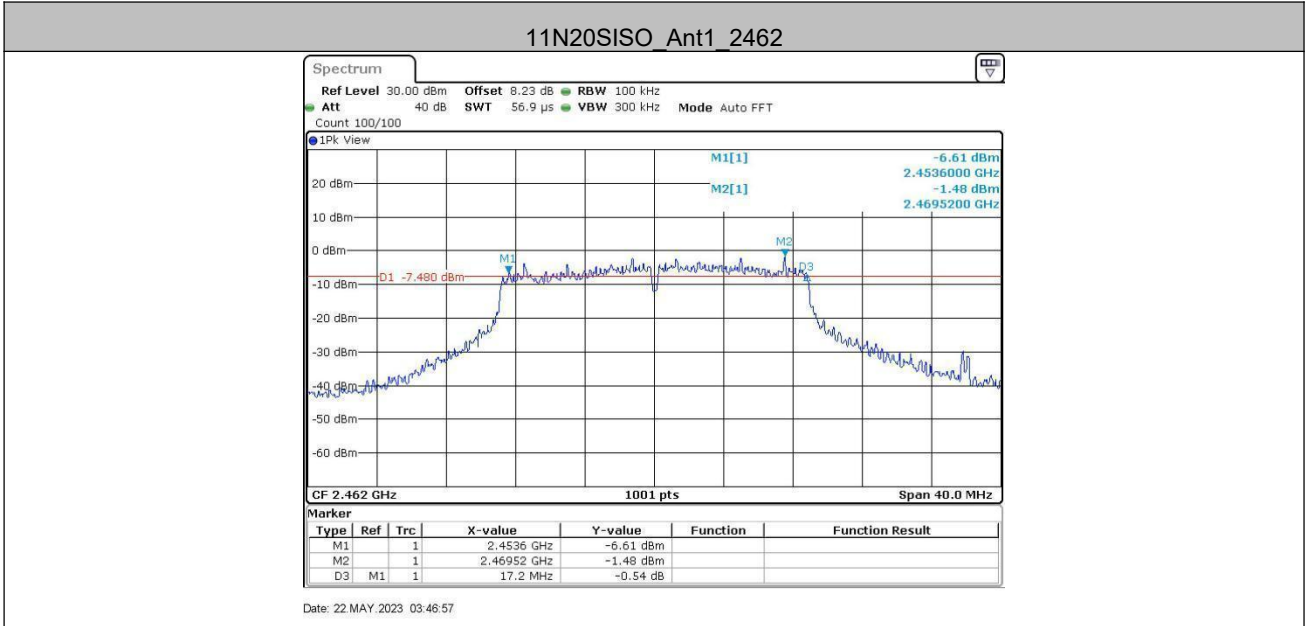
Test Graphs



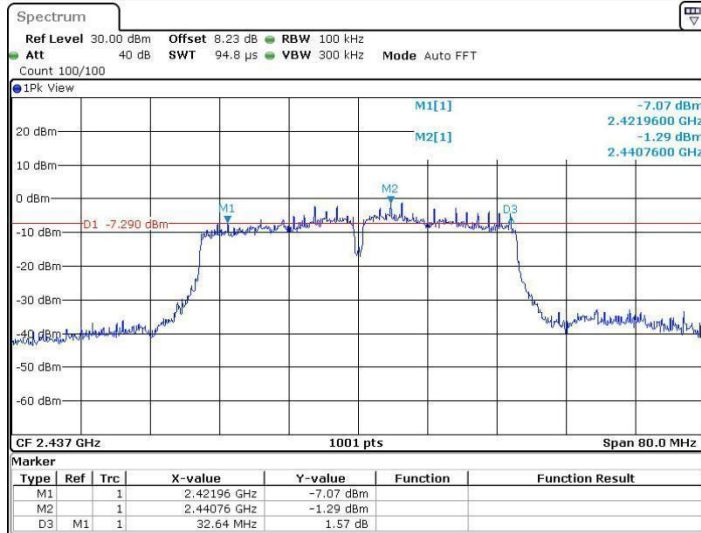






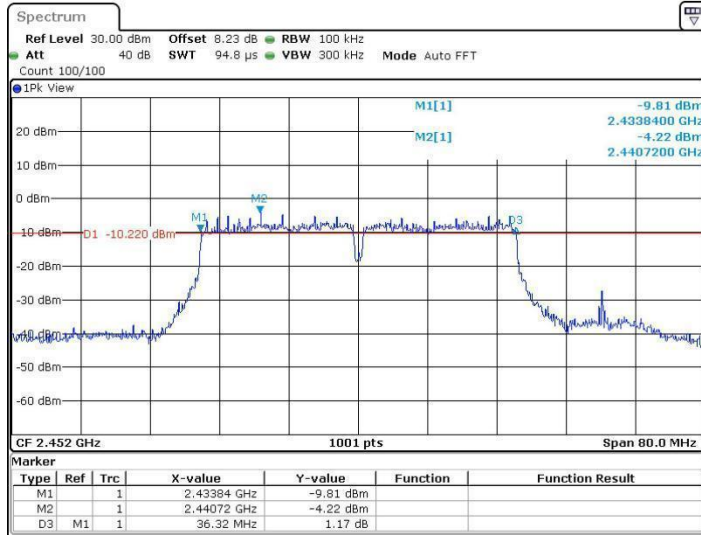


11N40SISO Ant1_2437



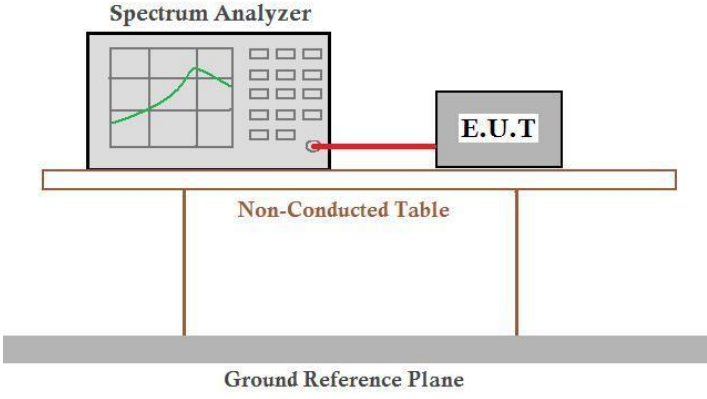
Date: 22 MAY 2023 03:55:08

11N40SISO Ant1_2452



Date: 22 MAY 2023 03:56:48

5.5 Power Spectral Density

Test Requirement:	47 CFR Part 15C Section 15.247 (e)
Test Method:	ANSI C63.10: 2013
Test Setup:	 <p>Offset=cable loss+ attenuation factor</p>
Exploratory Test Mode:	Transmitting with all kind of modulations, data rates
Final Test Mode:	Only the worst case is recorded in the report.
Limit:	≤8.00dBm/3kHz
Test Results:	Pass

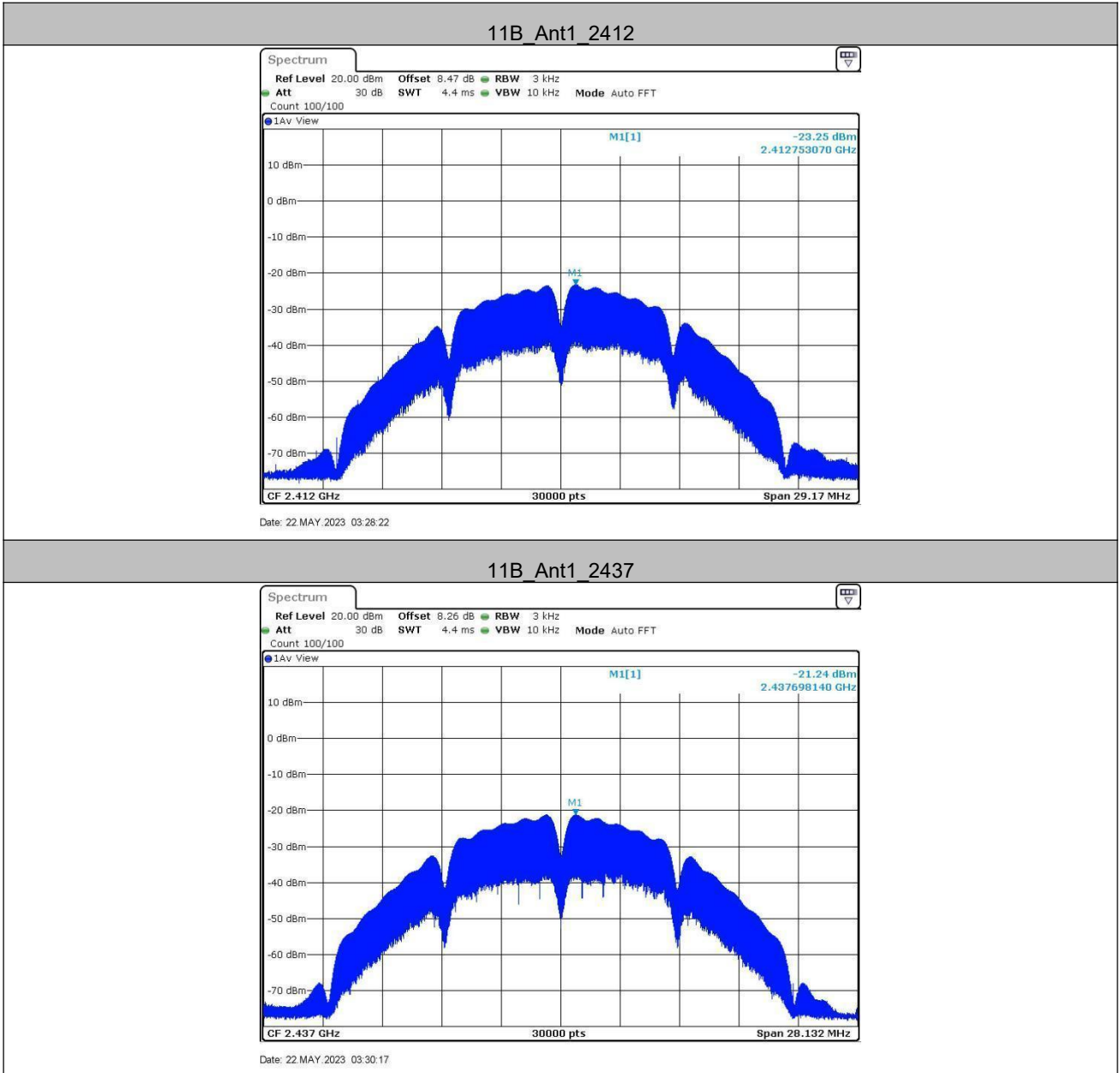
Test Result

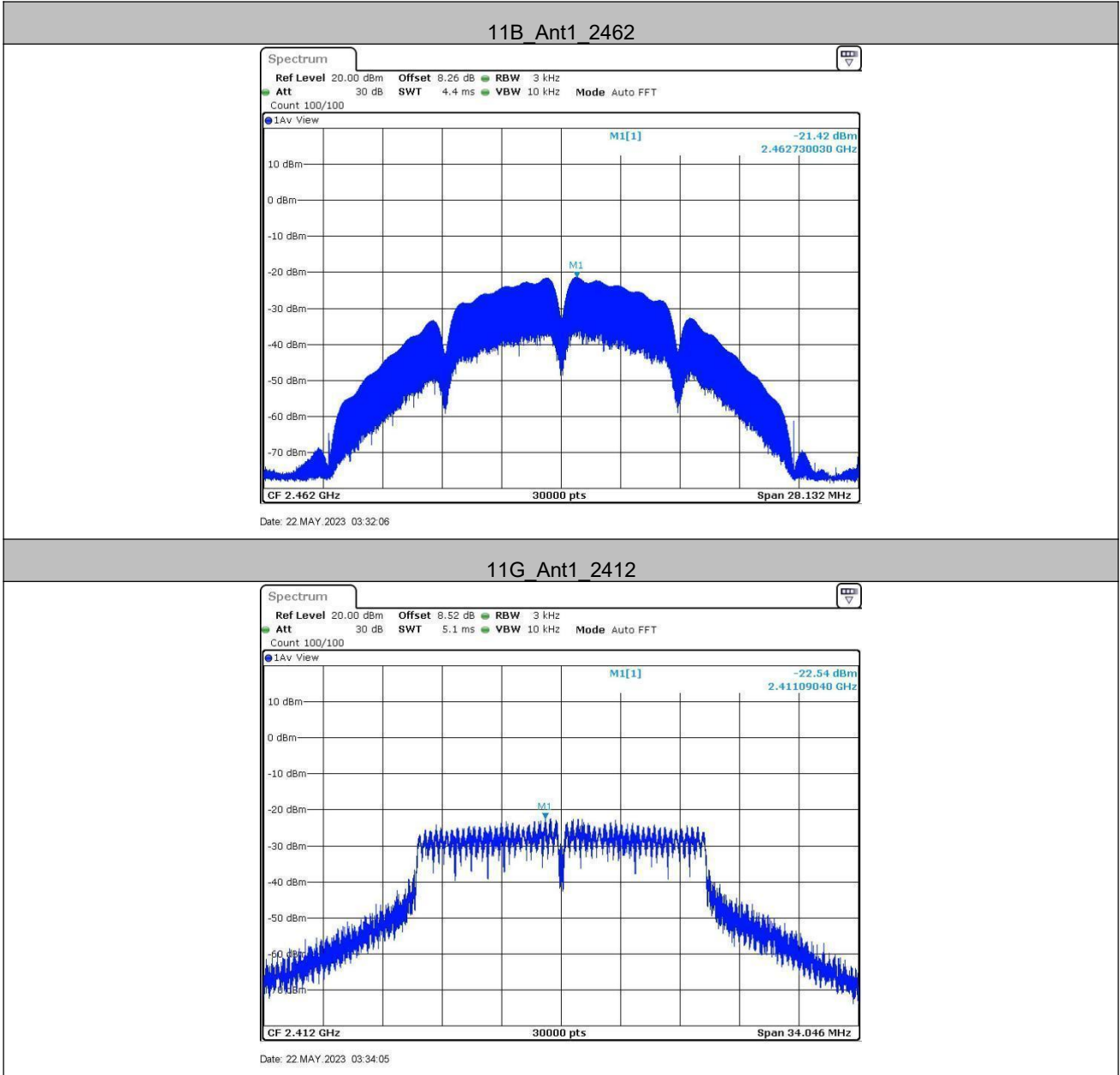
TestMode	Frequency[MHz]	Result[dBm/3kHz]	Limit[dBm/3kHz]	Verdict
11B	2412	-23.25	≤8.00	PASS
	2437	-21.24	≤8.00	PASS
	2462	-21.42	≤8.00	PASS
11G	2412	-22.54	≤8.00	PASS
	2437	-21.31	≤8.00	PASS
	2462	-21.92	≤8.00	PASS
11N20SISO	2412	-23.66	≤8.00	PASS
	2437	-21.98	≤8.00	PASS
	2462	-22.47	≤8.00	PASS
11N40SISO	2422	-24.06	≤8.00	PASS
	2437	-22.74	≤8.00	PASS
	2452	-25.02	≤8.00	PASS

Note:

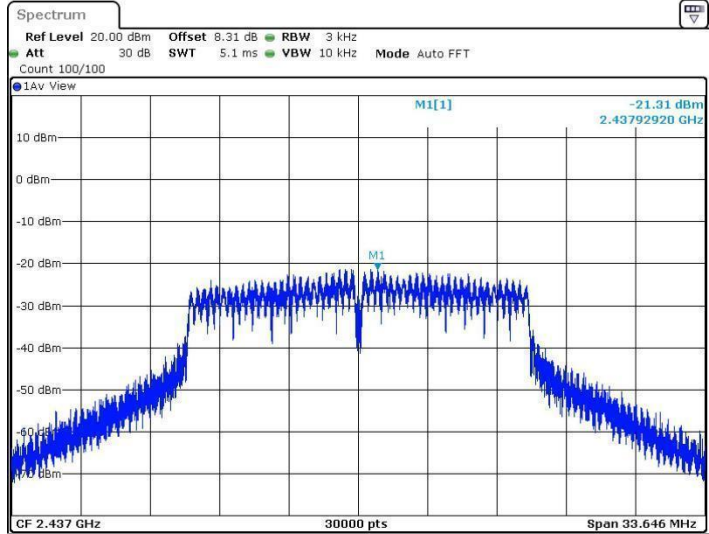
When Duty cycle >98%, D.C.F is not required.

Test Graphs

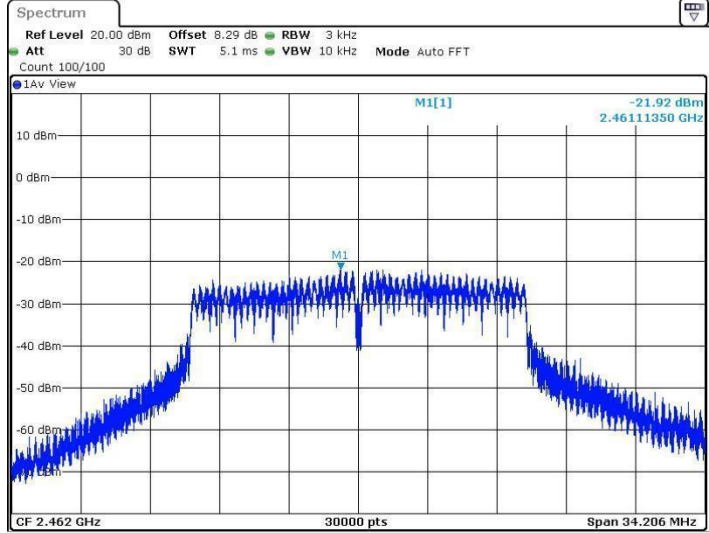


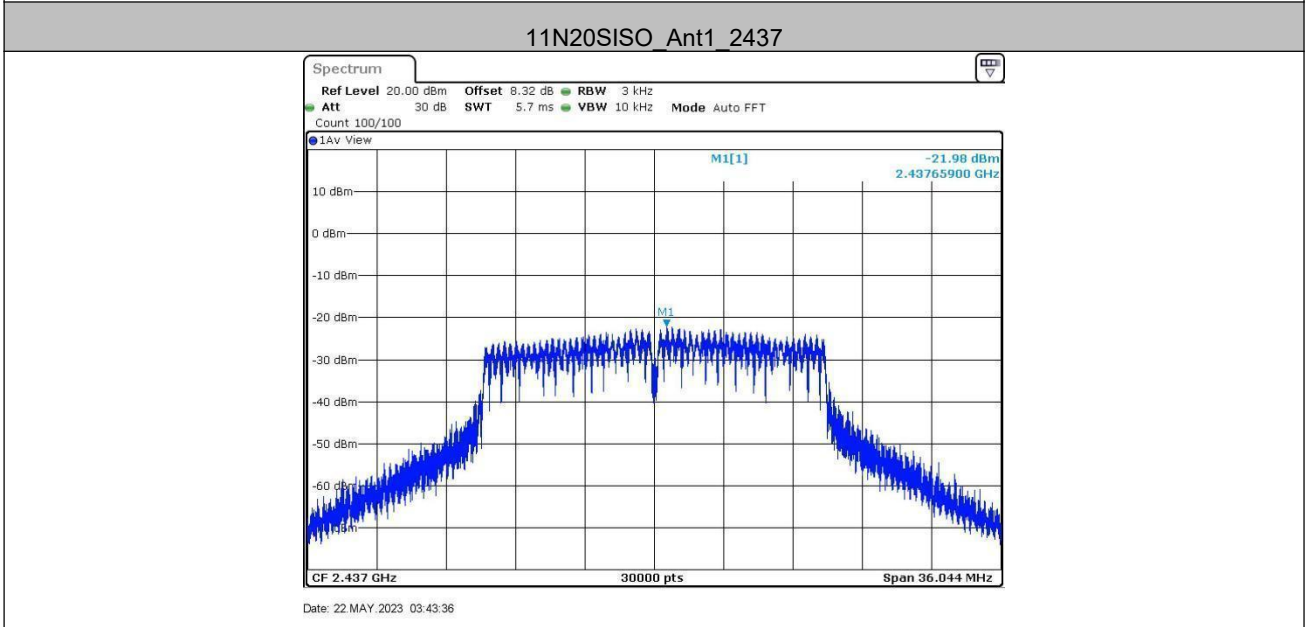
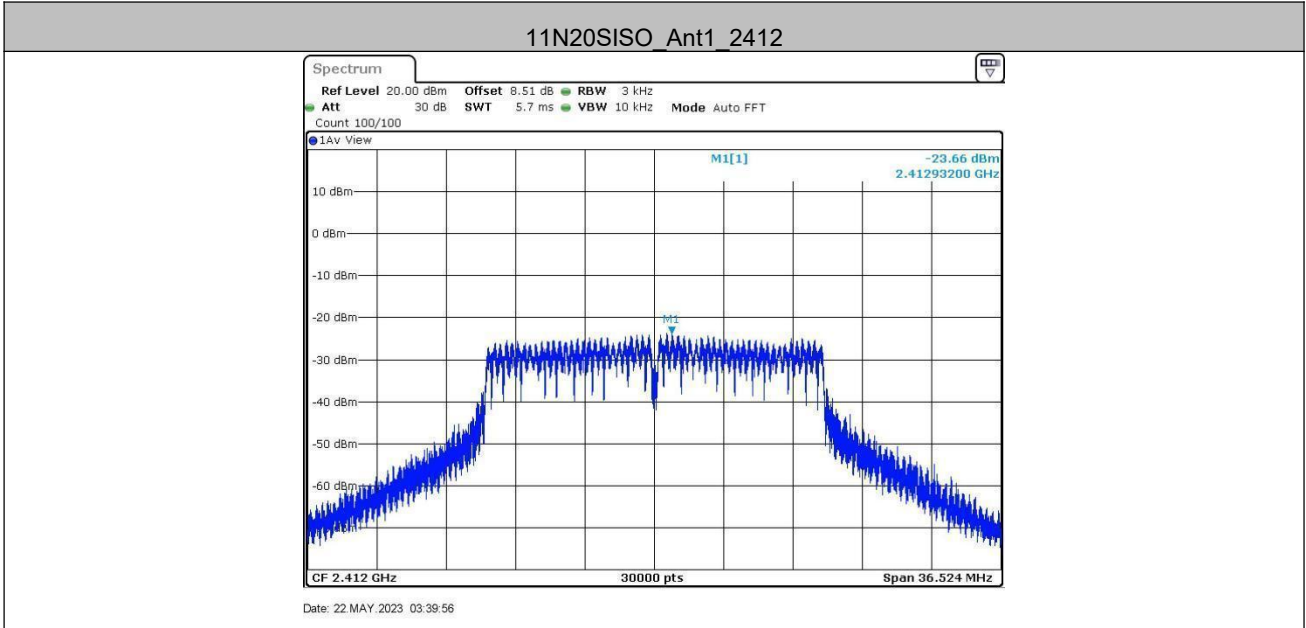


11G_Ant1_2437

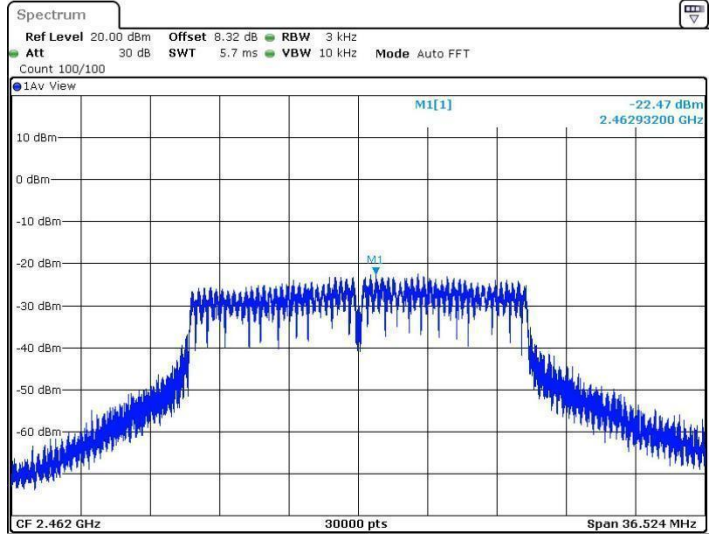


11G_Ant1_2462



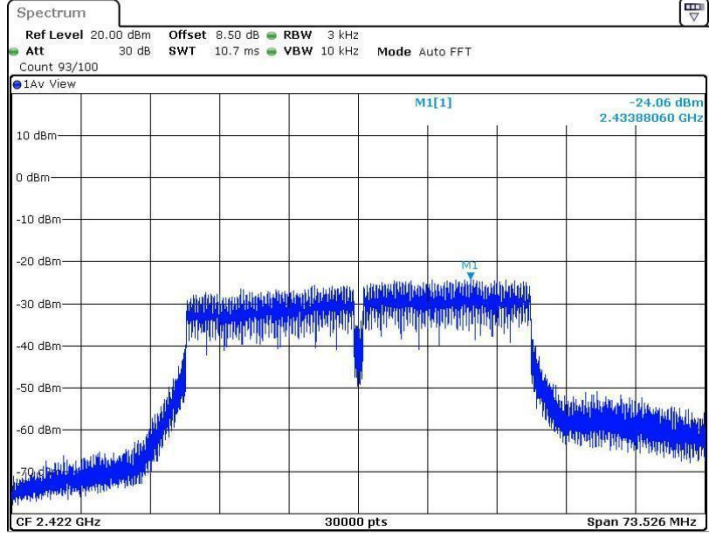


11N20SISO_Ant1_2462

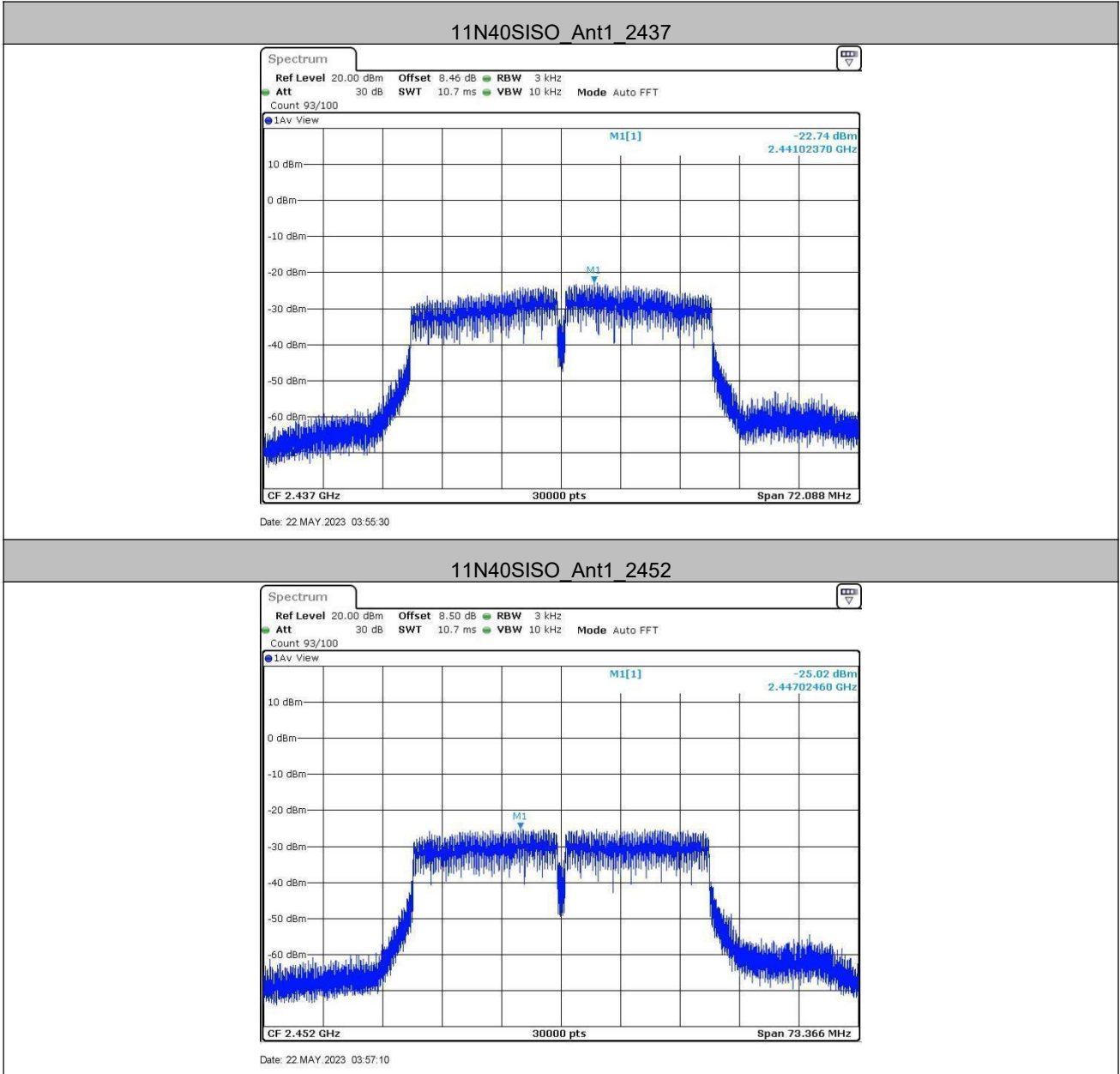


Date: 22 MAY 2023 03:47:19

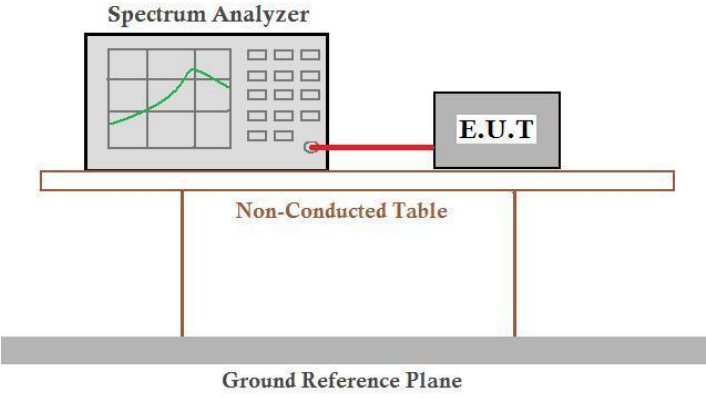
11N40SISO_Ant1_2422



Date: 22 MAY 2023 03:52:21



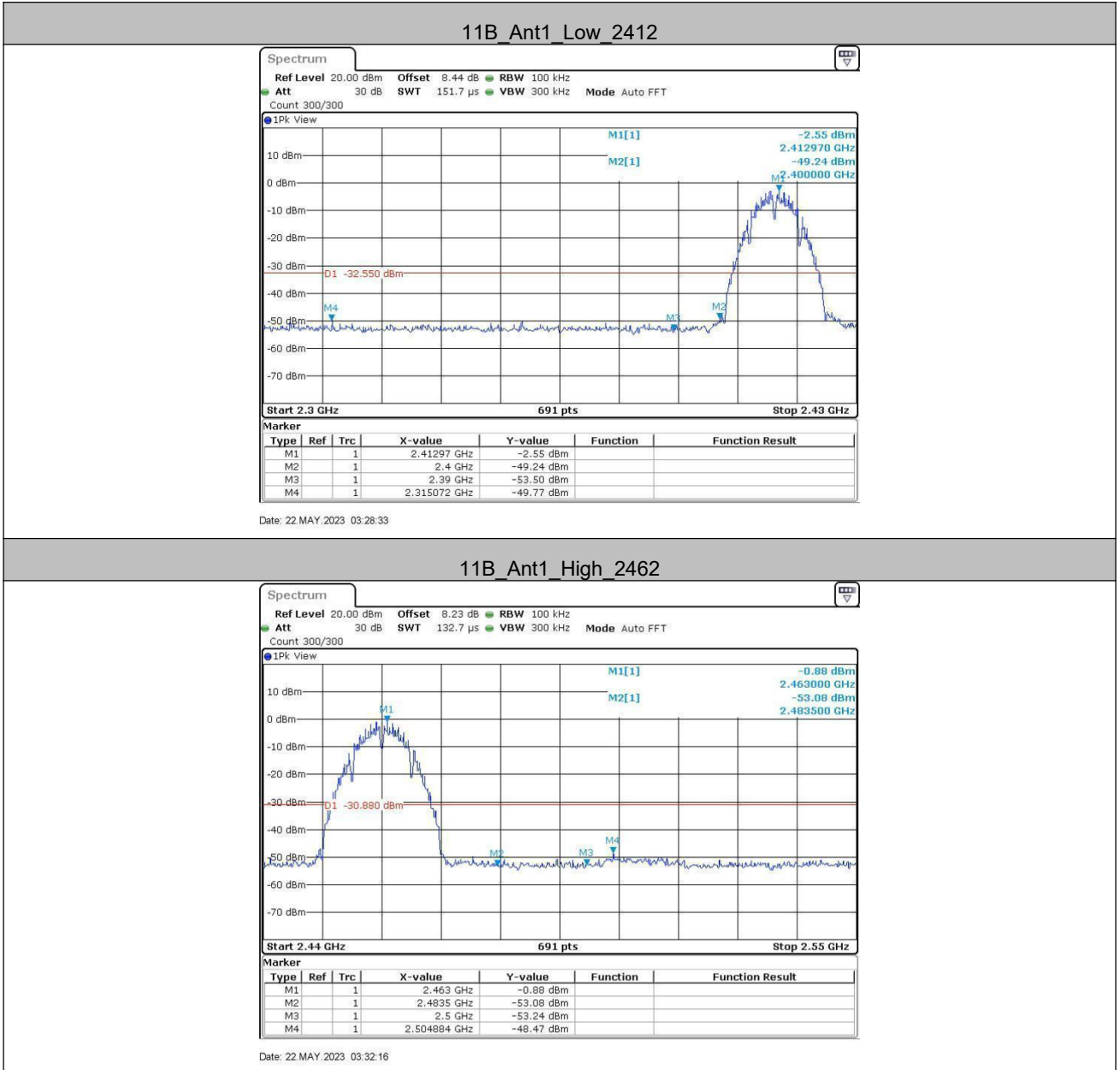
5.6 Band-edge for RF Conducted Emissions

Test Requirement:	47 CFR Part 15C Section 15.247 (d)
Test Method:	ANSI C63.10: 2013
Test Setup:	 <p>Offset=cable loss+ attenuation factor</p>
Exploratory Test Mode:	Transmitting with all kind of modulations, data rates
Final Test Mode:	Only the worst case is recorded in the report.
Limit:	In any 100 kHz bandwidth outside the frequency band in which the spread spectrum 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.
Test Results:	Pass

Test Result

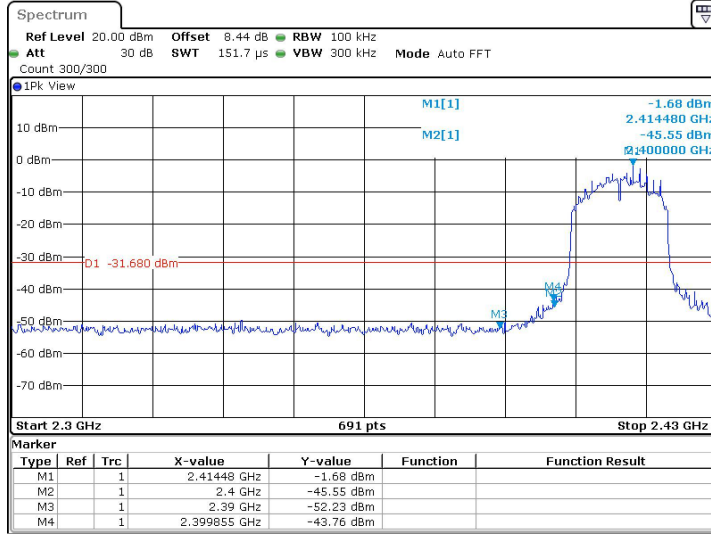
TestMode	ChName	Frequency[MHz]	RefLevel[dBm]	Result[dBm]	Limit[dBm]	Verdict
11B	Low	2412	-2.55	-49.77	≤-32.55	PASS
	High	2462	-0.88	-48.47	≤-30.88	PASS
11G	Low	2412	-1.09	-32.13	≤-31.09	PASS
	High	2462	-0.34	-42.83	≤-30.34	PASS
11N20SISO	Low	2412	-1.68	-32.13	≤-32.02	PASS
	High	2462	0.07	-42.76	≤-29.93	PASS
11N40SISO	Low	2422	-2.34	-38.44	≤-32.34	PASS
	High	2452	-3.16	-35.58	≤-33.16	PASS

5.6.1 Test Graphs





11N20SISO_Ant1_Low_2412



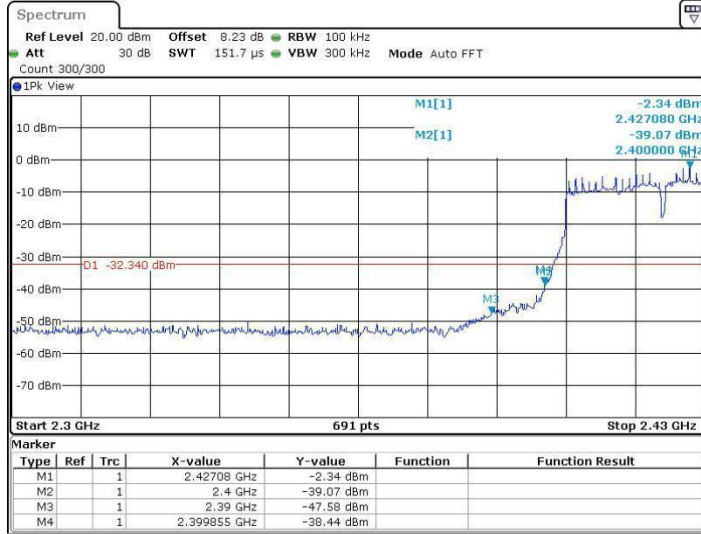
Date: 22 MAY 2023 03:47:29

11N20SISO_Ant1_High_2462



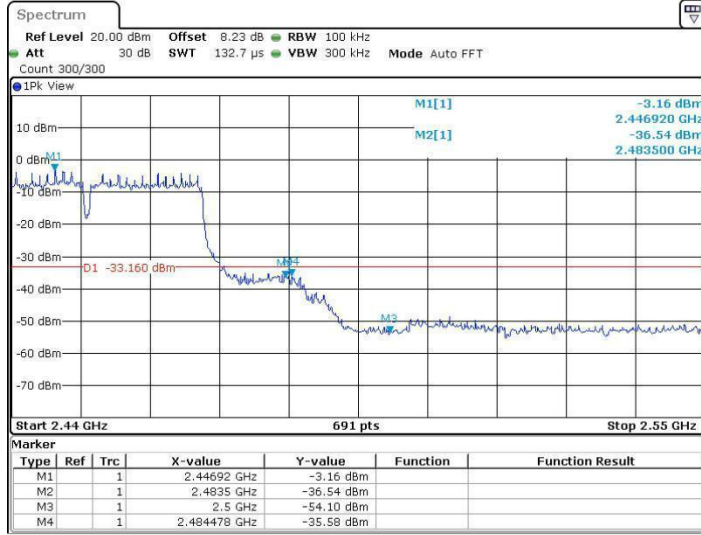
Date: 22 MAY 2023 03:47:29

11N40SISO_Ant1_Low_2422



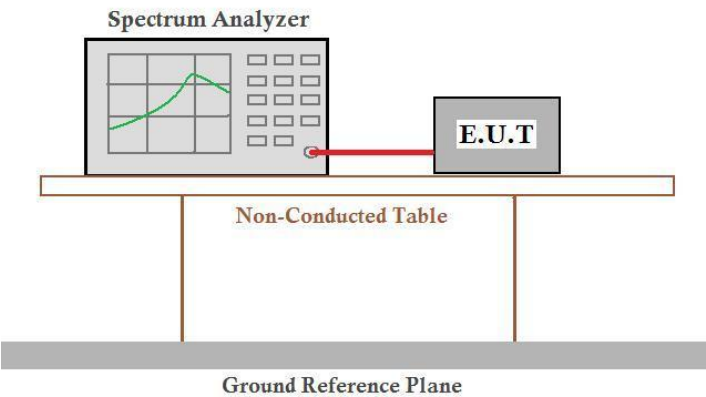
Date: 22 MAY 2023 03:52:31

11N40SISO_Ant1_High_2452



Date: 22 MAY 2023 03:57:20

5.7 RF Conducted Spurious Emissions

Test Requirement:	47 CFR Part 15C Section 15.247 (d)
Test Method:	ANSI C63.10: 2013
Test Setup:	 <p>The diagram illustrates the test setup for RF conducted spurious emissions. A Spectrum Analyzer is connected to an E.U.T. (Equipment Under Test) via a red cable. Both are placed on a Non-Conducted Table, which is supported by two vertical legs. Below the table is a Ground Reference Plane, represented by a thick grey bar.</p> <p>Offset=cable loss+ attenuation factor</p>
Exploratory Test Mode:	Transmitting with all kind of modulations, data rates
Final Test Mode:	Only the worst case is recorded in the report.
Limit:	In any 100 kHz bandwidth outside the frequency band in which the spread spectrum 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.
Test Results:	Pass

Test Result

TestMode	Frequency[MHz]	FreqRange [Mhz]	RefLevel [dBm]	Result [dBm]	Limit [dBm]	Verdict
11B	2412	Reference	-2.74	-2.74	---	PASS
		30~1000	-2.74	-57.67	≤-32.74	PASS
		1000~26500	-2.74	-54.79	≤-32.74	PASS
	2437	Reference	-0.69	-0.69	---	PASS
		30~1000	-0.69	-49.06	≤-30.69	PASS
		1000~26500	-0.69	-54.7	≤-30.69	PASS
	2462	Reference	-1.06	-1.06	---	PASS
		30~1000	-1.06	-58.66	≤-31.06	PASS
		1000~26500	-1.06	-55.54	≤-31.06	PASS
11G	2412	Reference	-0.36	-0.36	---	PASS
		30~1000	-0.36	-58.55	≤-30.36	PASS
		1000~26500	-0.36	-54.71	≤-30.36	PASS
	2437	Reference	0.37	0.37	---	PASS
		30~1000	0.37	-58.45	≤-29.63	PASS
		1000~26500	0.37	-55.55	≤-29.63	PASS
	2462	Reference	0.03	0.03	---	PASS
		30~1000	0.03	-58.53	≤-29.97	PASS
		1000~26500	0.03	-54.41	≤-29.97	PASS
11N20SISO	2412	Reference	-0.74	-0.74	---	PASS
		30~1000	-0.74	-58.31	≤-30.74	PASS
		1000~26500	-0.74	-55.1	≤-30.74	PASS
	2437	Reference	0.81	0.81	---	PASS
		30~1000	0.81	-58.76	≤-29.19	PASS
		1000~26500	0.81	-54.77	≤-29.19	PASS
	2462	Reference	-0.13	-0.13	---	PASS
		30~1000	-0.13	-58.35	≤-30.13	PASS
		1000~26500	-0.13	-55.16	≤-30.13	PASS
11N40SISO	2422	Reference	-2.25	-2.25	---	PASS
		30~1000	-2.25	-58.32	≤-32.25	PASS
		1000~26500	-2.25	-55.03	≤-32.25	PASS
	2437	Reference	-1.11	-1.11	---	PASS
		30~1000	-1.11	-57.74	≤-31.11	PASS
		1000~26500	-1.11	-55.36	≤-31.11	PASS
	2452	Reference	-2.76	-2.76	---	PASS

		30~1000	-2.76	-58.75	≤ -32.76	PASS
		1000~26500	-2.76	-55.7	≤ -32.76	PASS

Test Graphs

