

<b>Product Name:</b> Dash camera	<b>Report No:</b> ITEZA2-202500004RF
<b>Product Model:</b> HDE-1002	<b>Security Classification:</b> Open
<b>Version:</b> V1.0	<b>Total Page:</b> 76

# TIRT Testing Report

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# FCC Radio Test Report

## FCC ID: 2BNBZ-HDE-1002

According to

**47 CFR FCC Part 15, Subpart C(Section 15.247)**

**ANSI C63.10:2013**

Applicant:	Honistar technology Co., Ltd
Address:	Unit 1507B 15/f eastcore 398 kwun tong road kwun tong kL
Manufacturer:	Honistar technology Co., Ltd
Address:	Unit 1507B 15/f eastcore 398 kwun tong road kwun tong kL
Factory:	Honglishida technology Co.,Ltd
Address:	3F, Block B, Jianxinda science and technology park, NO.3, 3rd Road, Yang Yong industrial zone, Song Gang town, BaoAn District, ShenZhen, China
Sample No:	1000053362

Date of Receipt:	2025/01/07
Date of Test:	2025/01/07~2025/02/08
Issued Date:	2025/02/18
Testing Lab:	TIRT

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Table of Contents	Page
<b>REPORT ISSUED HISTORY</b>	<b>5</b>
<b>1 . SUMMARY OF TEST RESULTS</b>	<b>6</b>
1.1 TEST FACILITY	7
1.2 MEASUREMENT UNCERTAINTY	7
1.3 TEST ENVIRONMENT CONDITIONS	8
<b>2 . GENERAL INFORMATION</b>	<b>9</b>
2.1 GENERAL DESCRIPTION OF EUT	9
2.2 DESCRIPTION OF TEST MODES	10
2.3 DUTY CYCLE	12
2.4 BLOCKDIAGRAMSHOWINGTHECONFIGURATIONOFSYSTEMTESTED	17
2.5 SUPPORT UNITS	17
<b>3 .AC POWER LINE CONDUCTED EMISSIONS</b>	<b>18</b>
3.1 LIMIT	18
3.2 TEST PROCEDURE	18
3.3 DEVIATIONFROMTESTSTANDARD	18
3.4 TESTSETUP	19
3.5 EUT OPERATION CONDITIONS	19
3.6 TEST RESULTS	19
<b>4 . RADIATED EMISSIONS</b>	<b>20</b>
4.1 LIMIT	20
4.2 TEST PROCEDURE	21
4.3 DEVIATIONFROMTESTSTANDARD	22
4.4 TESTSETUP	22
4.5 EUT OPERATIONCONDITIONS	24
4.6 TEST RESULTS - 9 KHZ TO 30MHZ	24
4.7 TEST RESULTS - 30 MHZTO 1000MHZ	24
4.8 TEST RESULTS- ABOVE 1000MHZ	24
<b>5 .BANDWIDTH</b>	<b>25</b>
5.1 LIMIT	25
5.2 TEST PROCEDURE	25
5.3 DEVIATION FROM STANDARD	25
5.4 TEST SETUP	25
5.5 EUT OPERATION CONDITIONS	25
5.6 TESTRESULTS	25

Table of Contents	Page
<b>6 .MAXIMUM OUTPUT POWER</b>	<b>26</b>
6.1 LIMIT	26
6.2 TEST PROCEDURE	26
6.3 DEVIATION FROM STANDARD	26
6.4 TEST SETUP	26
6.5 EUT OPERATION CONDITIONS	26
6.6 TESTRESULTS	26
<b>7 .CONDUCTED SPURIOUS EMISSIONS</b>	<b>27</b>
7.1 LIMIT	27
7.2 TEST PROCEDURE	27
7.3 DEVIATION FROM STANDARD	27
7.4 TEST SETUP	27
7.5 EUT OPERATION CONDITIONS	27
7.6 TESTRESULTS	27
<b>8 .POWER SPECTRAL DENSITY</b>	<b>28</b>
8.1 LIMIT	28
8.2 TEST PROCEDURE	28
8.3 DEVIATION FROM STANDARD	28
8.4 TEST SETUP	28
8.5 EUT OPERATION CONDITIONS	28
8.6 TESTRESULTS	28
<b>9 . MEASUREMENT INSTRUMENTS LIST</b>	<b>29</b>
<b>10 .EUT TEST PHOTO</b>	<b>30</b>
<b>11. PHOTOS OF EUT</b>	<b>30</b>
<b>APPENDIX A - RADIATED EMISSION - 9 KHZ TO 30 MHZ</b>	<b>31</b>
<b>APPENDIX B - RADIATED EMISSION - 30 MHZ TO 1000 MHZ</b>	<b>32</b>
<b>APPENDIXC -RADIATED EMISSION- ABOVE 1000MHZ</b>	<b>34</b>
<b>APPENDIXD - BANDWIDTH</b>	<b>39</b>
<b>APPENDIXE - MAXIMUMOUTPUT POWER</b>	<b>49</b>
<b>APPENDIXF - CONDUCTED SPURIOUS EMISSIONS</b>	<b>54</b>
<b>APPENDIXG - POWER SPECTRAL DENSITY</b>	<b>72</b>

**REPORT ISSUED HISTORY**

Report No.	Version	Description	Issued Date	Note
ITEZA2-202400004RF	V1.0	OriginalReport.	2025.02.18	Valid

**1. SUMMARY OF TEST RESULTS**

Test procedures according to the technical standard(s):

FCC CFR Title 47, Part 15, Subpart C				
Standard(s) Section	Test Item	Test Result	Judgment	Remark
15.207	AC Power Line Conducted Emissions	N/A	N/A	-----
15.247(d) 15.205(a) 15.209(a)	Radiated Emissions	APPENDIX A APPENDIX B APPENDIX C	PASS	-----
15.247(a)(2)	Bandwidth	APPENDIX D	PASS	-----
15.247(b)(3)	Maximum Output Power	APPENDIX E	PASS	-----
15.247(d)	Conducted Spurious Emissions	APPENDIX F	PASS	-----
15.247(e)	Power Spectral Density	APPENDIX G	PASS	-----
15.203	Antenna Requirement	-----	PASS	Note(2)

Note:

- (1) "N/A" denotes test is not applicable in this test report.
- (2) The device what use a permanently attached antenna were considered sufficient to comply with the provisions of 15.203.

## 1.1 TEST FACILITY

Company:	Beijing TIRT Technology Service Co.,Ltd Shenzhen
Address:	104 Building C, Xinmingsheng Industrial Park No.132, Zhangge Old Village East Zone, Zhangge Community, Fucheng Street, Longhua District, Shenzhen, Guangdong, P. R. China
CNAS Registration Number:	CNAS L14158
A2LA Registration Number:	6049.01
FCC Accredited Lab.Designation Number:	CN1366
FCC Test Firm Registration Number:	820690
Telephone:	+86-0755-27087573

## 1.2 MEASUREMENT UNCERTAINTY

ISO/IEC 17025 requires that an estimate of the measurement uncertainties associated with the emissions test results be included in the report. The measurement uncertainties given below are based on a 95% confidence level (based on a coverage factor (k=2))

The TIRT measurement uncertainty as below table:

Uncertainty	Parameter	Uncertainty
	Occupied Channel Bandwidth	±142.12 KHz
	RF power conducted	±0.74 dB
	RF power radiated	±3.25dB
	Spurious emissions, conducted	±1.78dB
	Spurious emissions, radiated (30MHz~1GHz)	±4.6dB
	Spurious emissions, radiated (1GHz~18GHz)	±4.9dB
	Conduction Emissions(150kHz~30MHz)	±3.1 dB
	Humidity	±4.6%
	Temprature	±0.7°C
	Time	±1.2%

Note: Unless specifically mentioned, the uncertainty of measurement has not been taken into account to declare the compliance or non-compliance to the specification.

**1.3 TEST ENVIRONMENT CONDITIONS**

Test Item	Temperature	Humidity	Test Voltage	Tested By
AC Power Line Conducted Emissions	25.1°C	52%	N/A	N/A
Radiated Emissions-9kHz to 3 MHz	24.5°C	50%	DC 3.7V from battery or DC 5V Car charger	Stone Tang
Radiated Emissions-30MHz to 1000MHz	24.2°C	53%	DC 3.7V from battery or DC 5V Car charger	Stone Tang
Radiated Emissions-Above 1000MHz	26.0°C	53%	DC 3.7V from battery or DC 5V Car charger	Stone Tang
Bandwidth	25.0°C	56%	DC 3.7V from battery or DC 5V Car charger	Stone Tang
Maximum Output Power	24.9°C	54%	DC 3.7V from battery or DC 5V Car charger	Stone Tang
Conducted Spurious Emissions	25.1°C	62%	DC 3.7V from battery or DC 5V Car charger	Stone Tang
Power Spectral Density	26.0°C	60%	DC 3.7V from battery or DC 5V Car charger	Stone Tang

**2. GENERAL INFORMATION****2.1 GENERAL DESCRIPTION OF EUT**

Equipment	Dash camera
Brand Name	N/A
Test Model	HDE-1002
Series Model	N/A
Model Difference(s)	N/A
Software Version	V1.0
Hardware Version	V1.0
Power Rating	DC 3.7V from battery or DC 5V Car charger
Operation Frequency	2412 MHz~ 2462 MHz
Modulation Type	IEEE 802.11b: DSSS(CCK,DQPSK,DBPSK) IEEE 802.11g: OFDM(64QAM, 16QAM, QPSK, BPSK) IEEE 802.11n :OFDM(64QAM, 16QAM, QPSK, BPSK)
Maximum Output Average Power	IEEE 802.11b: 16.81dBm (0.047973W)

Note:

1. For a more detailed features description, please refer to the manufacturer's specifications or the user's manual.

**2. Channel List:**

CH01 - CH11 for IEEE 802.11b, IEEE 802.11g, IEEE 802.11n(HT20) CH03 - CH09 for IEEE 802.11n(HT40)							
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
01	2412	04	2427	07	2442	10	2457
02	2417	05	2432	08	2447	11	2462
03	2422	06	2437	09	2452		

**3. Antenna Specification:**

Ant.	Manufactured	Model Name	Antenna Type	Connector	Gain (dBi)
1	Shenzhen unity wireless technology co., ltd	Q63	FPC	N/A	0.23

Note:

1. The antenna gain is provided by the manufacturer.
2. The antenna is for fixed use

**2.2 DESCRIPTION OF TEST MODES**

The test system was pre-tested based on the consideration of all possible combinations of EUT operation mode.

Pretest Mode	Description
Mode 1	TX B Mode Channel 01/06/11
Mode 2	TX G Mode Channel 01/06/11
Mode 3	TX N(HT20) Mode Channel 01/06/11
Mode 4	TX N(HT40) Mode Channel 03/06/09

Following mode(s) was (were) found to be the worst case(s) and selected for the final test.

**Radiated emissions test - Below 1GHz**

Final Test Mode	Description
Mode 1	TX B Mode Channel 01/06/11

**Radiated emissions test- Above 1GHz**

Final Test Mode	Description
Mode 1	TX B Mode Channel 01/06/11

**Conducted RF test**

Final Test Mode	Description
Mode 1	TX B Mode Channel 01/06/11
Mode 2	TX G Mode Channel 01/06/11
Mode 3	TX N(HT20) Mode Channel 01/06/11
Mode 4	TX N(HT40) Mode Channel 03/06/09

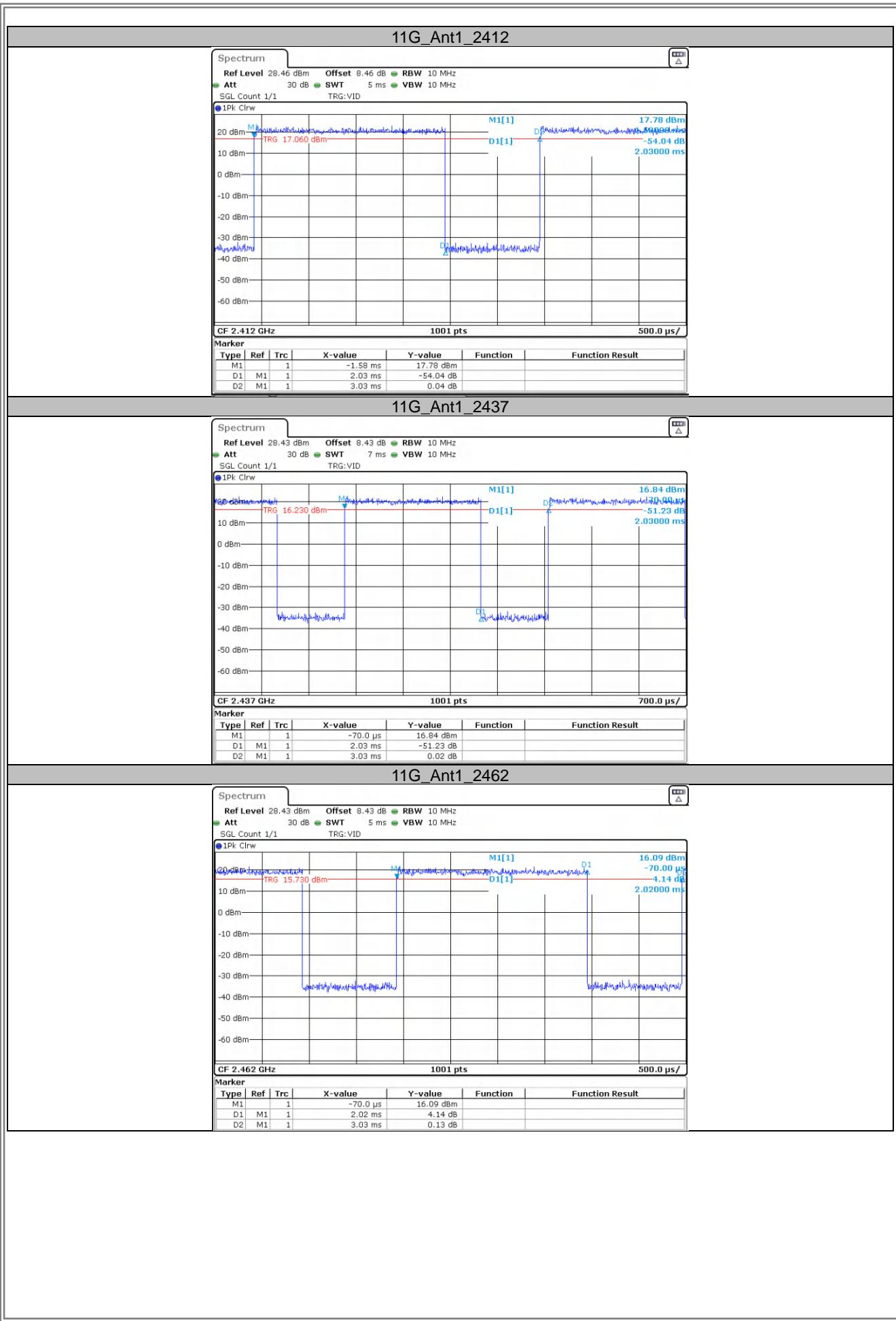
**NOTE:**

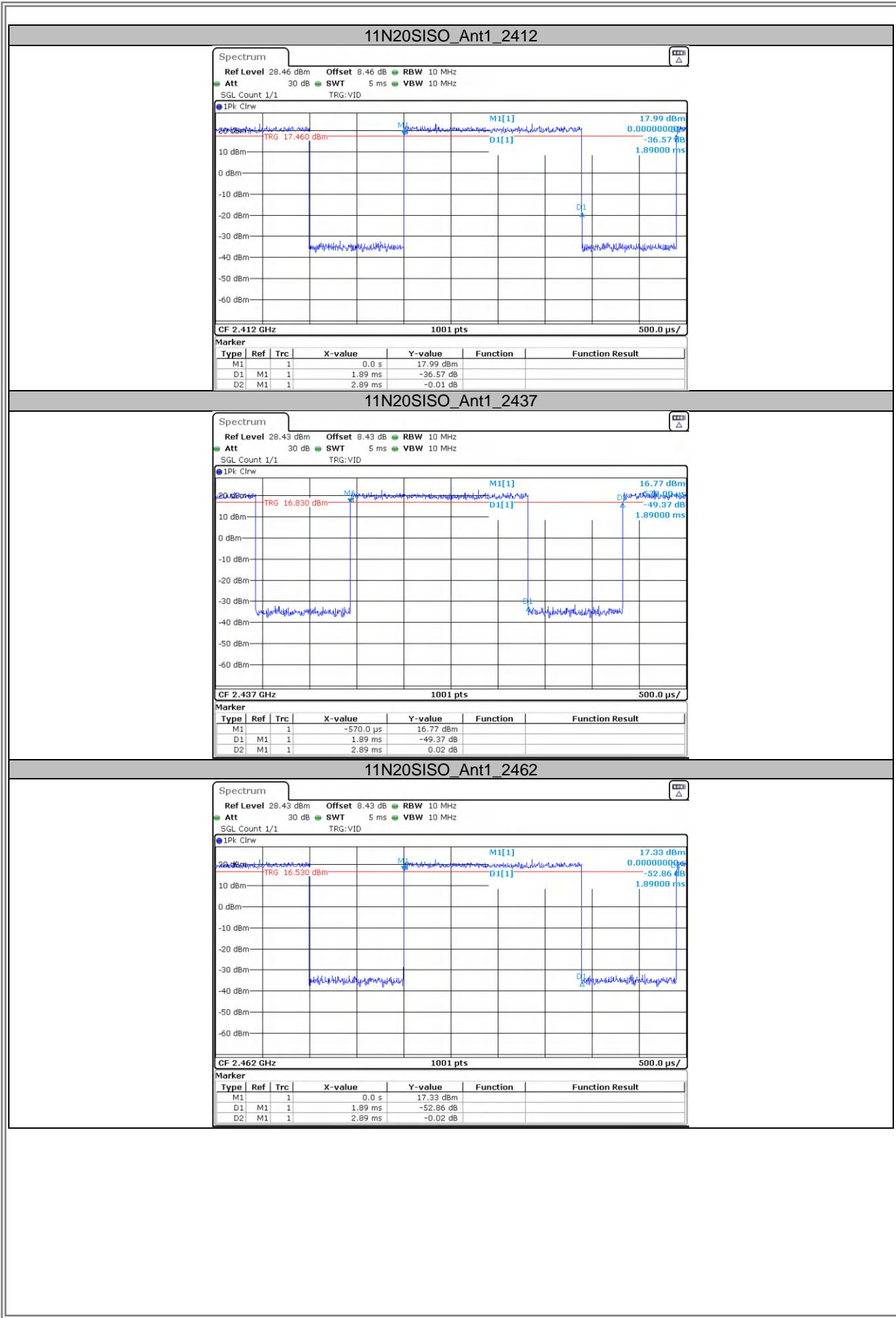
- (1) All the bit rate of transmitter have been tested and found the lowest rate is found to be the worst case and recorded.
- (2) For radiated emission above 1 GHz test, the spurious points of 1GHz~18GHz and 18GHz~26.5GHz have been pre-tested and in this report only recorded the worst case. The remaining spurious points are all below the limit value of 20dB.

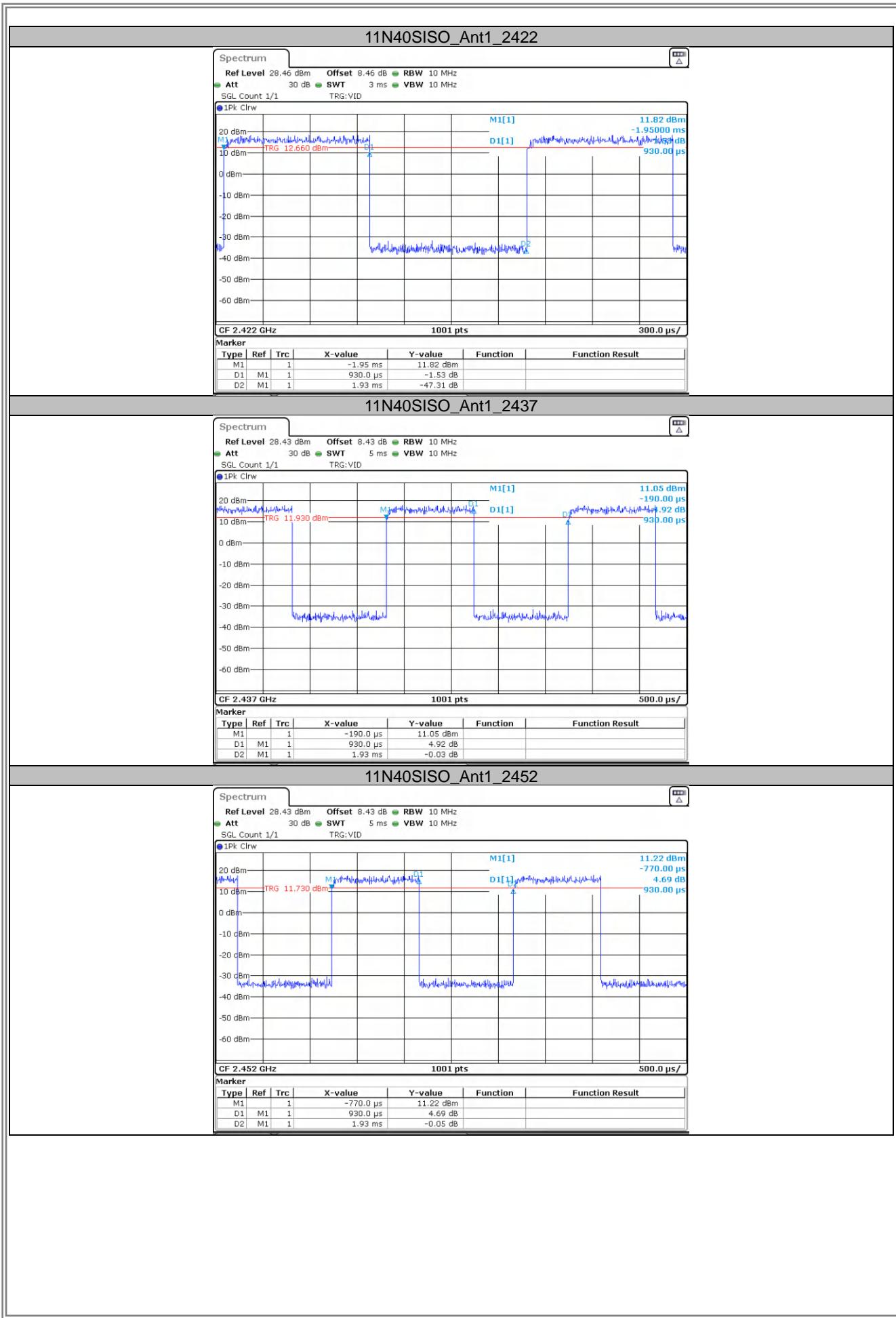
**2.3 DUTY CYCLE**

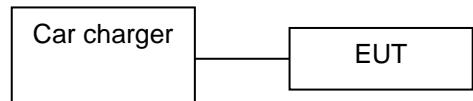
TestMode	Antenna	Frequency[MHz]	Transmission Duration [ms]	Transmission Period [ms]	Duty Cycle [%]
11B	Ant1	2412	19.00	19.00	100.00
		2437	19.00	19.00	100.00
		2462	19.00	19.00	100.00
11G	Ant1	2412	2.03	3.03	67.00
		2437	2.03	3.03	67.00
		2462	2.02	3.03	66.67
11N20SISO	Ant1	2412	1.89	2.89	65.40
		2437	1.89	2.89	65.40
		2462	1.89	2.89	65.40
11N40SISO	Ant1	2422	0.93	1.93	48.19
		2437	0.93	1.93	48.19
		2452	0.93	1.93	48.19









**2.4 BLOCK DIAGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED****2.5 SUPPORT UNITS**

Support Equipment				
No.	Equipment	Brand Name	Model Name	Remarks
1	/	/	/	/

### 3.AC POWER LINE CONDUCTED EMISSIONS

#### 3.1 LIMIT

Frequency of Emission (MHz)	Limit (dB $\mu$ V)	
	Quasi-peak	Average
0.15 -0.5	66 to 56*	56 to 46*
0.5-5.0	56	46
5.0 -30.0	60	50

**NOTE:**

- (1) The tighter limit applies at the band edges.
- (2) The limit of " \* " marked band means the limitation decreases linearly with the logarithm of the frequency in the range.

#### 3.2 TEST PROCEDURE

- a. The EUT was placed 0.8 meters from the horizontal ground plane with EUT being connected to the power mains through a line impedance stabilization network (LISN). All other support equipment powered from additional LISN(s). The LISN provide 50 Ohm/ 50uH of coupling impedance for the measuring instrument.
- b. Interconnecting cables that hang closer than 40 cm to the groundplane shall be folded back and forth in the center forming a bundle 30 to 40 cm long.
- c. I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.
- d. LISN at least 80 cm from nearest part of EUT chassis.
- e. For the actual test configuration, please refer to the related Item -EUT Test Photos.

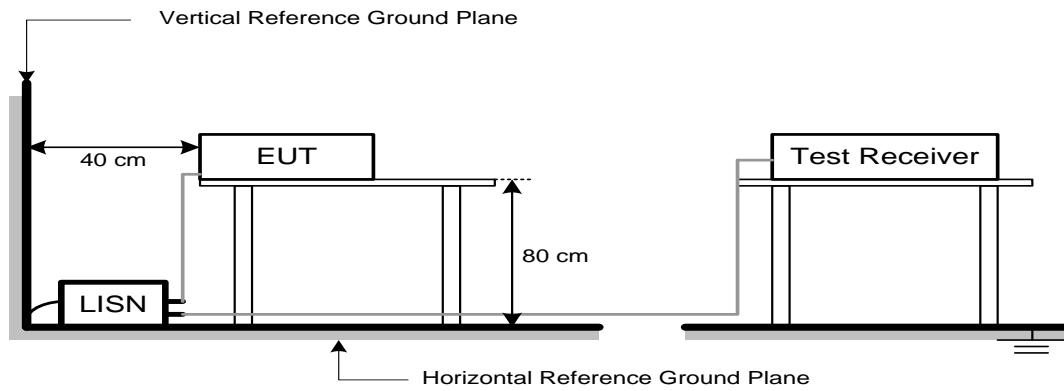
The following table is the setting of the receiver:

Receiver Parameters	Setting
Start Frequency	0.15 MHz
Stop Frequency	30 MHz
IF Bandwidth	9 kHz

#### 3.3 DEVIATION FROM TEST STANDARD

No deviation.

### 3.4 TEST SETUP



The LISN edge is arranged parallel to the edge of the test table

The vertical conducting plane or wall of an RF-shielded (screened) room shall be located 40 cm to the rear of the EUT

### 3.5 EUT OPERATION CONDITIONS

EUT was programmed to be in continuously transmitting mode.

### 3.6 TEST RESULTS

N/A

**No need to test the car charging power supply**

## 4. RADIATED EMISSIONS

### 4.1 LIMIT

In case the emission fall within the restricted band specified on 15.205(a), then the 15.209(a) limit in the table below has to be followed.

#### LIMITS OF RADIATED EMISSION MEASUREMENT (9 kHz-1000MHz)

Frequency (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30.0	30	30
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

#### LIMITS OF RADIATED EMISSION MEASUREMENT (Above 1000MHz)

Frequency (MHz)	(dBuV/m at 3 m)	
	Peak	Average
Above 1000	74	54

#### NOTE:

- (1) The limit for radiated test was performed according to FCC CFR Title 47, Part 15, Subpart C.
- (2) The tighter limit applies at the band edges.
- (3) Emission level (dBuV/m)=20log Emission level (uV/m).

**4.2 TEST PROCEDURE**

- a. The measuring distance of 3 m shall be used for measurements. The EUT was placed on the top of a rotating table 0.8 meter above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.(below 1GHz)
- b. The measuring distance of 3 m shall be used for measurements. The EUT was placed on the top of a rotating table 1.5 meter above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.(above 1GHz)
- c. The height of the equipment or of the substitution antenna shall be 0.8m or 1.5m; the height of the test antenna shall vary between 1 m to 4 m. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights find the maximum reading (used Bore sight function).
- e. The receiver system was set to peak and average detect function and specified bandwidth with maximum hold mode when the test frequency is above 1GHz.
- f. The initial step in collecting radiated emission data is a receiver peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured.
- g. All readings are Peak unless otherwise stated QP in column of Note. Peak denotes that the Peak reading compliance with the QP Limits and then QP Mode measurement didn't perform. (below 1GHz)
- h. All readings are Peak Mode value unless otherwise stated AVG in column of Note. If the Peak Mode Measured value compliance with the Peak Limits and lower than AVG Limits, the EUT shall be deemed to meet both Peak & AVG Limits and then only Peak Mode was measured, but AVG Mode didn't perform. (above 1GHz)
- i. For the actual test configuration, please refer to the related Item -EUT Test Photos.

The following table is the setting of the receiver:

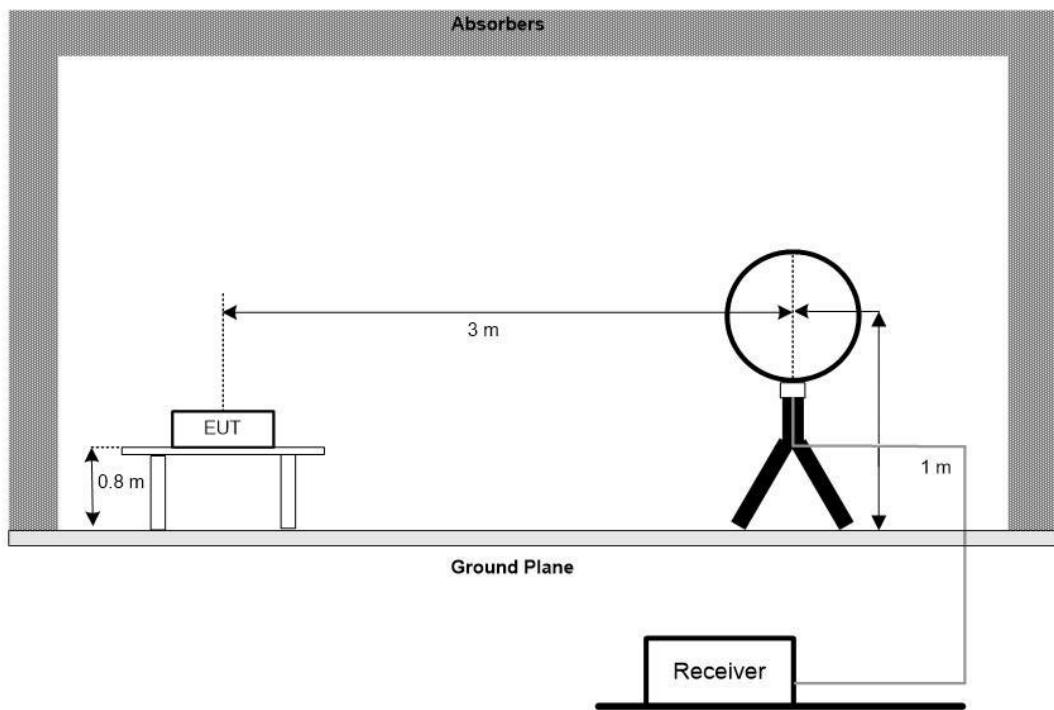
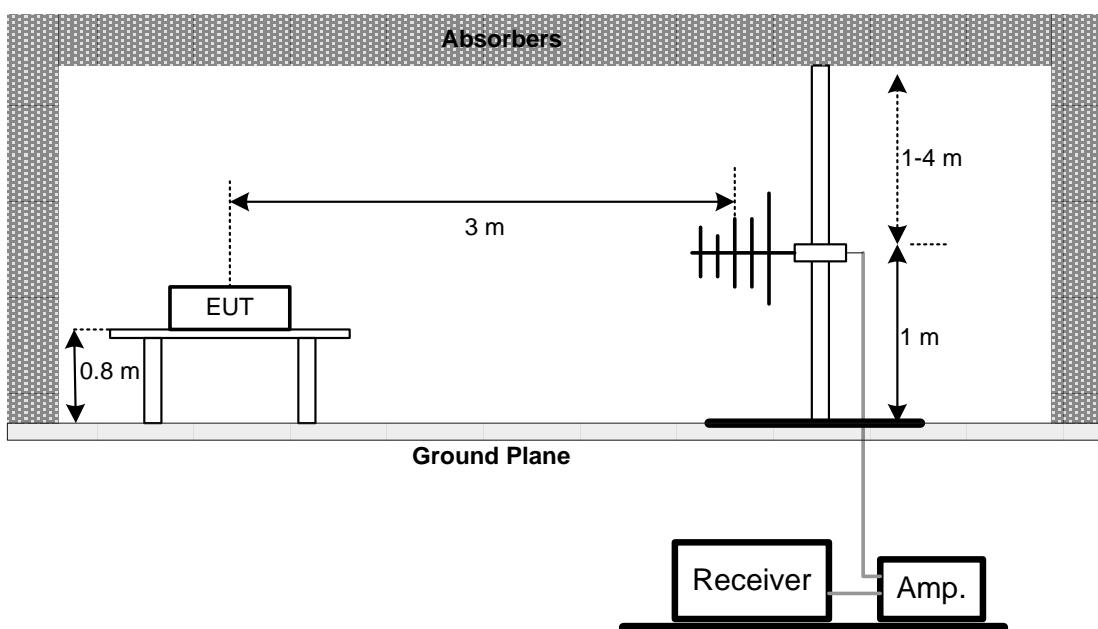
Spectrum Parameters	Setting
Start ~ Stop Frequency	9 kHz~150 kHz for RBW 200 Hz
Start ~ Stop Frequency	0.15 MHz~30 MHz for RBW 9 kHz
Start ~ Stop Frequency	30 MHz~1000 MHz for RBW 100 kHz

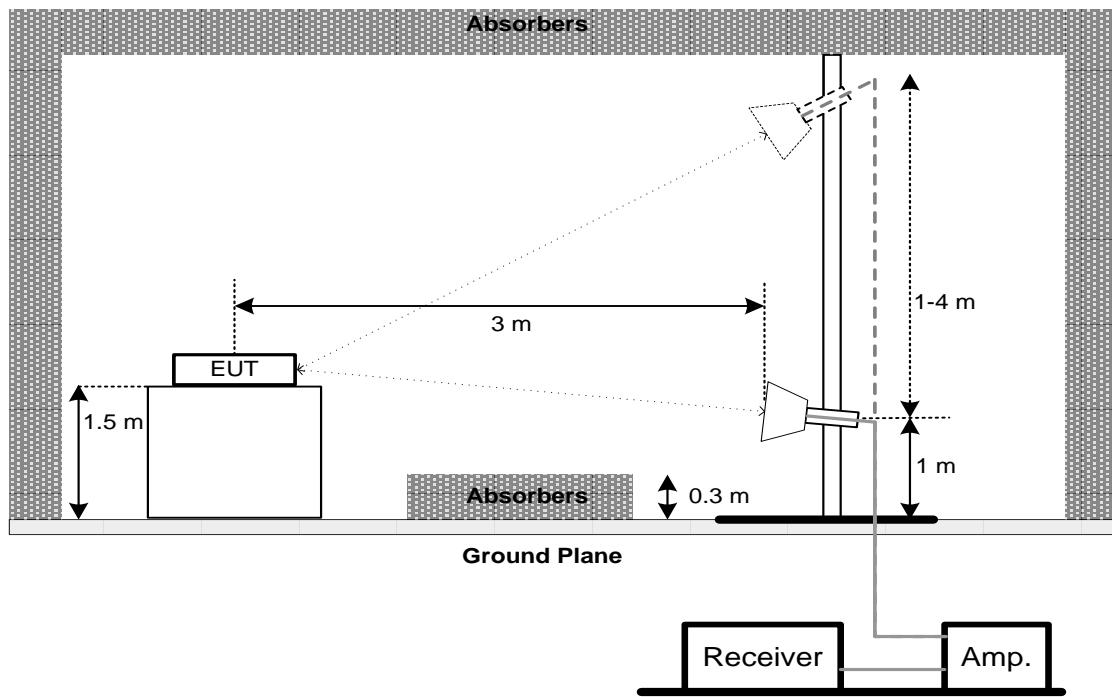
Spectrum Parameters	Setting
Start Frequency	1000 MHz
Stop Frequency	10th carrier harmonic
RBW / VBW (Emission in restricted band)	1MHz / 3MHz for PK value 1MHz / 1/THz for AVG value

Receiver Parameters	Setting
Start ~ Stop Frequency	9 kHz~90 kHz for PK/AVG detector
Start ~ Stop Frequency	90 kHz~110 kHz for QP detector
Start ~ Stop Frequency	110 kHz~490 kHz for PK/AVG detector
Start ~ Stop Frequency	490 kHz~30 MHz for QP detector
Start ~ Stop Frequency	30MHz~1000MHz for QP detector
Start ~ Stop Frequency	1 GHz~26.5GHz for PK/AVG detector

**4.3 DEVIATION FROM TEST STANDARD**

No deviation.

**4.4 TEST SETUP****9 kHz to 30 MHz****30 MHz to 1 GHz**

**Above 1 GHz**

**4.5EUT OPERATION CONDITIONS**

The EUT was programmed to be in continuously transmitting mode.

**4.6TEST RESULTS - 9 KHZ TO 30MHZ**

Please refer to the APPENDIX A.

Remark:

- (1) Distance extrapolation factor =  $40 \log (\text{specific distance} / \text{test distance})$  (dB).
- (2) Limit line = specific limits (dBuV) + distance extrapolation factor.

**4.7TEST RESULTS - 30 MHZTO 1000MHZ**

Please refer to the APPENDIX B

**4.8TEST RESULTS- ABOVE 1000MHZ**

Please refer to the APPENDIX C.

Remark:

- (1) No limit: This is fundamental signal, the judgment is not applicable.  
For fundamental signal judgment was referred to Peak output test.

## 5.BANDWIDTH

### 5.1LIMIT

Section	Test Item	Limit
FCC 15.247(a)(2)	6dB Bandwidth	Minimum 500 kHz
	99% Emission Bandwidth	-

### 5.2TEST PROCEDURE

- The EUT was directly connected to the tonscend test system and antenna output port as show in the block diagram below.
- The following table is the setting of the spectrum analyzer:

For 6 dB Bandwidth:

Spectrum Parameters	Setting
Span Frequency	> Measurement Bandwidth
RBW	100 kHz
VBW	300 kHz
Detector	Peak
Trace	Max Hold
Sweep Time	Auto

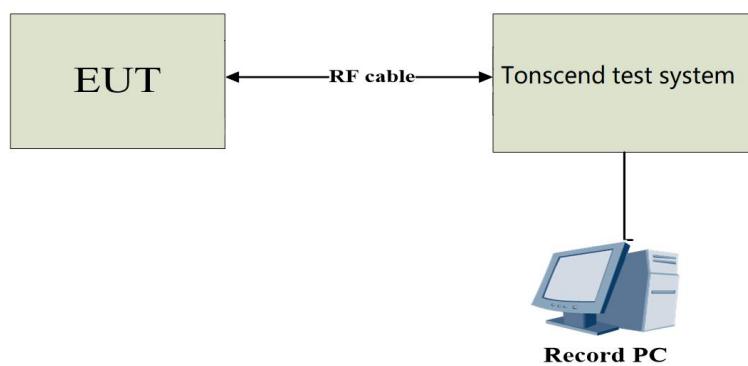
For 99% Emission Bandwidth:

Spectrum Parameters	Setting
Span Frequency	Between 1.5 times and 5.0 times the OBW
RBW	500 kHz For 20MHz 1 MHz For 40MHz
VBW	2MHz For 20MHz 3 MHz For 40MHz
Detector	Peak
Trace	Max Hold
Sweep Time	Auto

### 5.3DEVIATION FROM STANDARD

No deviation.

### 5.4TEST SETUP



### 5.5EUT OPERATION CONDITIONS

The EUT was programmed to be in continuously transmitting mode.

### 5.6TESTRESULTS

Please refer to the APPENDIX D.

## 6.MAXIMUM OUTPUT POWER

### 6.1LIMIT

Section	Test Item	Limit
FCC 15.247(b)(3)	Maximum Output Power	1.0000Watt or 30.00 dBm

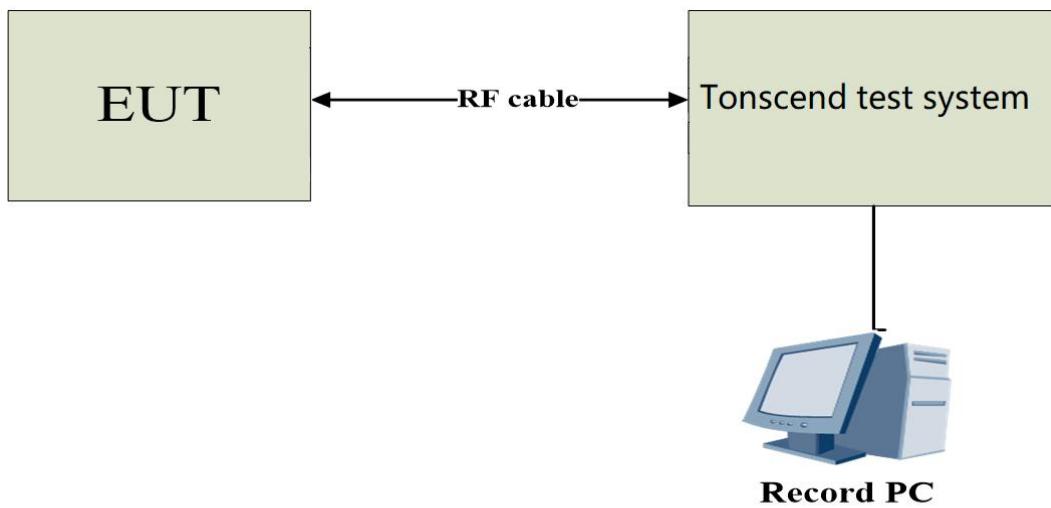
### 6.2TEST PROCEDURE

- a. The EUT was directly connected to the tonscend test system and antenna output port as show in the block diagram below.
- b. The maximum conducted output power was performed in accordance with method 11.9.1.3(for Average power)of ANSI C63.10-2013 and FCC KDB 662911 D01 v02r01 Multiple Transmitter Output.

### 6.3DEVIATION FROM STANDARD

No deviation.

### 6.4TEST SETUP



### 6.5EUT OPERATION CONDITIONS

The EUT was programmed to be in continuously transmitting mode.

### 6.6TESTRESULTS

Please refer to the APPENDIX E.

## 7.CONDUCTED SPURIOUS EMISSIONS

### 7.1 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 Output Power limits. If the transmitter complies with the Output Power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in Section 15.209(a) is not required.

### 7.2 TEST PROCEDURE

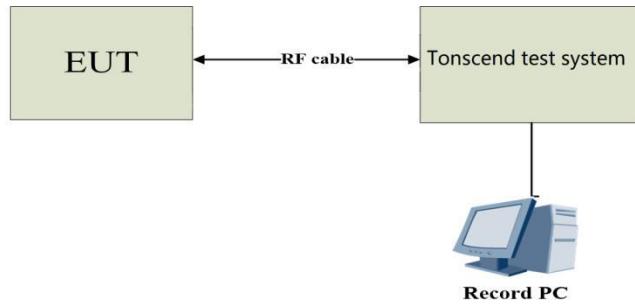
- The EUT was directly connected to the tonsend test system and antenna output port as show in the block diagram below.
- The following table is the setting of the spectrum analyzer:

Spectrum Parameters	Setting
Start Frequency	30 MHz
Stop Frequency	26.5 GHz
RBW	100 kHz
VBW	300 kHz
Detector	Peak
Trace	Max Hold
Sweep Time	Auto

### 7.3 DEVIATION FROM STANDARD

No deviation.

### 7.4 TEST SETUP



### 7.5 EUT OPERATION CONDITIONS

The EUT was programmed to be in continuously transmitting mode.

### 7.6 TEST RESULTS

Please refer to the APPENDIX F.

## 8. POWER SPECTRAL DENSITY

### 8.1 LIMIT

Section	Test Item	Limit
FCC 15.247(e)	Power Spectral Density	8 dBm (in any 3 kHz)

### 8.2 TEST PROCEDURE

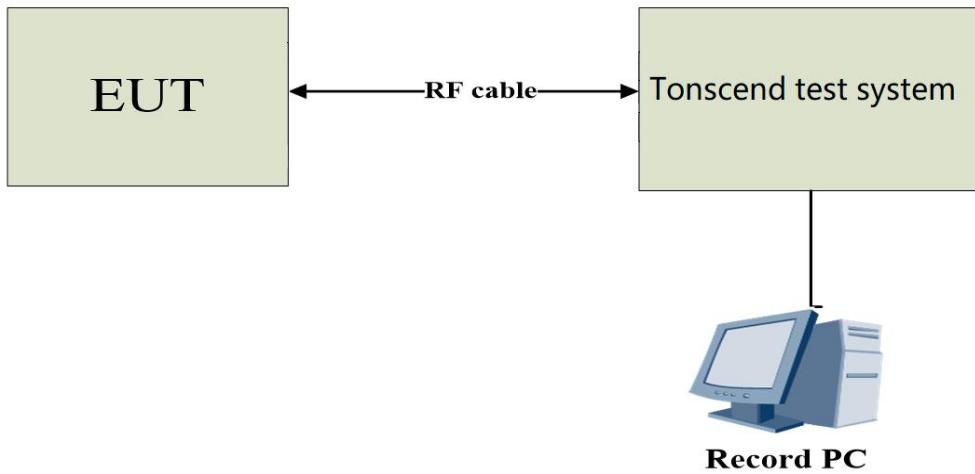
- The EUT was directly connected to the tonscend test system and antenna output port as show in the block diagram below.
- The following table is the setting of the spectrum analyzer:

Spectrum Parameters	Setting
Span Frequency	1.5 times the DTS bandwidth
RBW	3 kHz
VBW	10 kHz
Detector	RMS
Trace	Max Hold
Sweep Time	Auto

### 8.3 DEVIATION FROM STANDARD

No deviation.

### 8.4 TEST SETUP



### 8.5 EUT OPERATION CONDITIONS

The EUT was programmed to be in continuously transmitting mode.

### 8.6 TEST RESULTS

Please refer to the APPENDIX G.

**9. MEASUREMENT INSTRUMENTS LIST**

Name of Equipment	Manufacturer	Model Number	Serial Number	Last Calibration	Due Calibration
EMI Receiver	Rohde&Schwarz	ESIB 40	YH-TIRT-SAC-966 -20220911	2025/01/05	2026/01/04
Integral Antenna	Schwarzbeck	VULB 9163	01314	2023/12/11	2025/12/10
Integral Antenna	Rohde&Schwarz	HF907	RSM2991424	2023/12/11	2025/12/10
Preamplifier	Emtrace	RP01A	'02017	2025/01/05	2026/01/04
Preamplifier	Schwarzbeck	BBV9744	00143	2025/01/05	2026/01/04
Loop Antenna	ZHINAN	ZN30900A	12024	2025/01/05	2026/01/04
Horn Antenna	Schwarzbeck	BBHA9170	00956	2025/01/05	2026/01/04
RF Cable	/	LMR400UF-NMNM-7.0M	/	2025/01/05	2026/01/04
RF Cable	/	SFT2050PUR-NMNM-7.0M	/	2025/01/05	2026/01/04
EMI Receiver	Rohde&Schwarz	ESR7	1316.3003K07-10 2611-mk	2024/11/02	2025/11/01
LISN	Rohde&Schwarz	ENV216	3560.655.12-1029 15-Bp	2024/11/02	2025/11/01
RF Cable	\	SFT2050PUR-NMNM-2.0M	\	2025/01/05	2026/01/04
Spectrum analyzer	ROHDE&SCHWARZ	FSU26	200732	2025/01/05	2026/01/04
Spectrum analyzer	ROHDE&SCHWARZ	FSV40-N	101722	2025/01/05	2026/01/04
Filter	HEWLETT PACKARD	JS0806-F	19K8060209	2025/01/05	2026/01/04

Remark: "N/A" denotes no model name, serial no. or calibration specified.

**10. EUT TEST PHOTO**

Please reference to the appendix I Test Setup Photo for details.

**11. PHOTOS OF EUT**

Please reference to the appendix II external photos and appendix III internal photos for details..

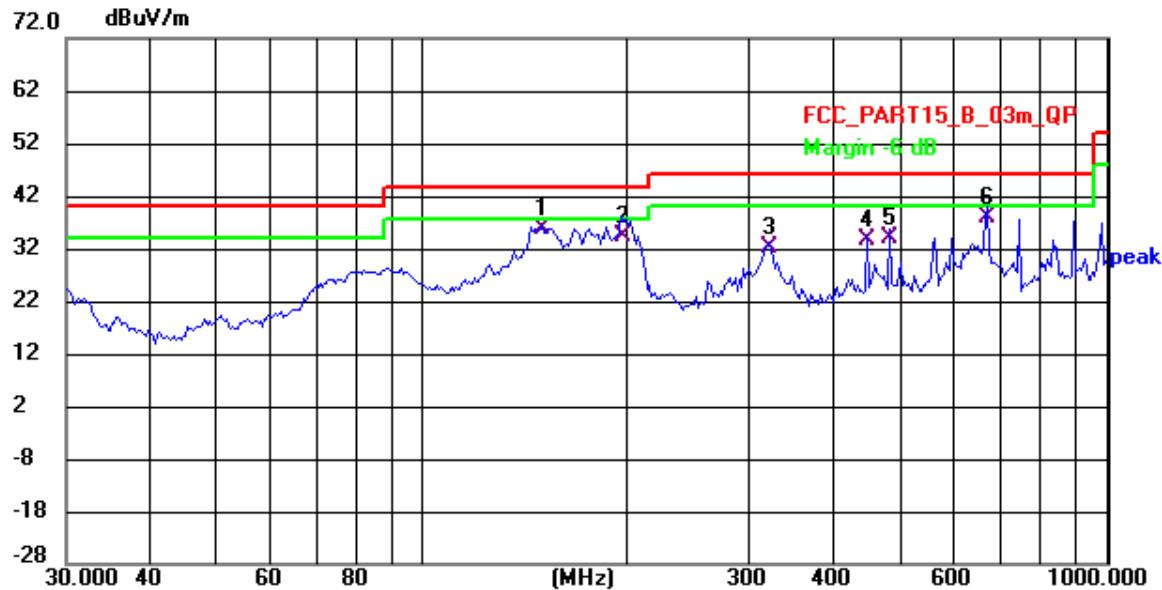
## APPENDIX A - RADIATED EMISSION - 9 KHZ TO 30 MHZ

The low frequency, which started from 9 kHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit line was not reported.

There is a comparison data of both open-field test site and semi-Anechoic chamber, and the result came out very similar.

## APPENDIX B - RADIATED EMISSION - 30 MHZ TO 1000 MHZ

Test Mode	TX B Mode Channel 06	Polarization	Vertical
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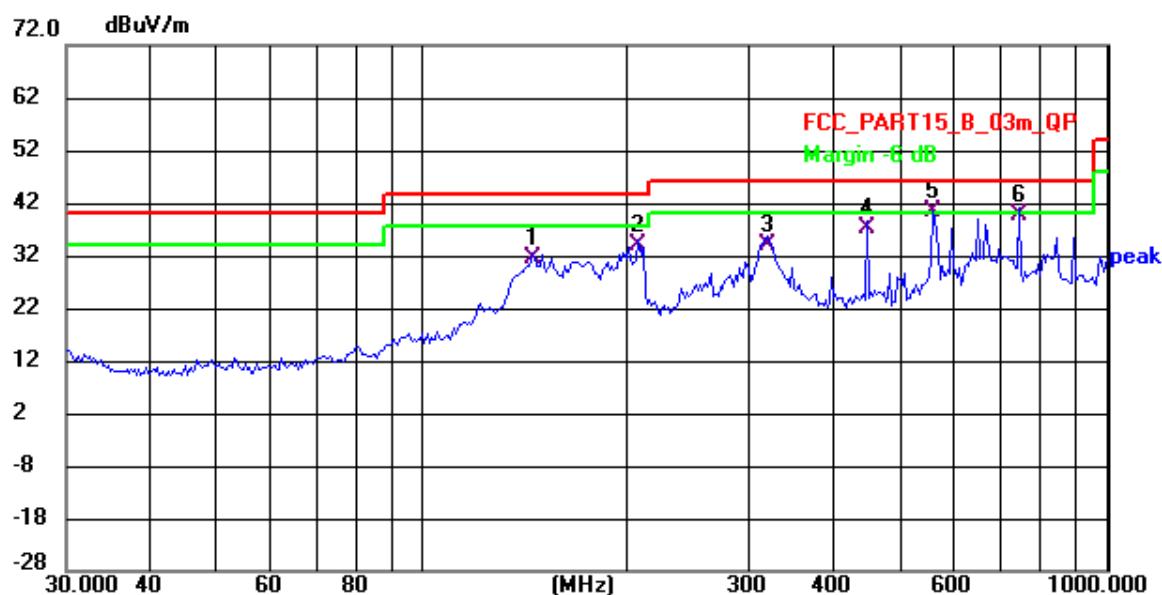


No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1 *	148.917	56.56	-20.85	35.71	43.50	-7.79	QP	100	0	P	
2	196.924	58.78	-24.44	34.34	43.50	-9.16	QP	100	1	P	
3	320.331	53.30	-21.29	32.01	46.00	-13.99	QP	100	0	P	
4	445.693	51.51	-17.93	33.58	46.00	-12.42	QP	100	270	P	
5	481.511	51.19	-17.14	34.05	46.00	-11.95	QP	100	90	P	
6	669.952	50.55	-12.48	38.07	46.00	-7.93	QP	100	180	P	

## REMARKS:

- (1) Measurement Value = Reading Level + Correct Factor.
- (2) Margin Level = Measurement Value - Limit Value.

Test Mode	TX B Mode Channel 06	Polarization	Horizontal
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No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	144.790	52.75	-21.21	31.54	43.50	-11.96	QP	200	266	P	
2	205.746	58.77	-24.92	33.85	43.50	-9.65	QP	100	121	P	
3	318.088	55.47	-21.39	34.08	46.00	-11.92	QP	100	164	P	
4	445.693	54.94	-17.93	37.01	46.00	-8.99	QP	100	218	P	
5 *	558.079	55.43	-15.18	40.25	46.00	-5.75	QP	200	0	P	
6	744.427	50.30	-10.69	39.61	46.00	-6.39	QP	200	0	P	

## REMARKS:

(1) Measurement Value = Reading Level + Correct Factor.  
 (2) Margin Level = Measurement Value - Limit Value.

**APPENDIX C -RADIATED EMISSION- ABOVE 1000MHZ**

Test Result of Radiated Spurious at Band edges.

Note: All test plots below include both horizontal and vertical, only show the worst mode data

Test Results				PASS				
Frequency Range				2310MHz~2410MHz				
Test Mode				TX B Mode Channel 01				
N o.	Freq MHz	Polarity	Reading (dBuV/m)	Correct Factor	Result (dBuV/m)	Limit (dBuV/m)	Margin	Remark
1	2390	H	74.31	-21.45	52.86	74.00	-21.14	Peak
2	2390	H	--	-21.45	--	54.00	--	Avg
3	2400	H	79.23	-26.20	53.03	74.00	-20.97	Peak
4	2400	H	--	-26.20	--	54.00	--	Avg
1	2390	V	75.14	-21.45	53.69	74.00	-20.31	Peak
2	2390	V	--	-21.45	--	54.00	--	Avg
3	2400	V	79.38	-26.20	53.18	74.00	-20.82	Peak
4	2400	V	--	-26.20	--	54.00	--	Avg
Test Results				PASS				
Frequency Range				2450MHz~2550MHz				
Test Mode				TX B Mode Channel 11				
1	2483.5	H	79.19	-25.35	53.84	74.00	-20.16	Peak
2	2483.5	H	--	-25.35	--	54.00	--	Avg
1	2483.5	V	78.81	-25.35	53.46	74.00	-20.54	Peak
2	2483.5	V	--	-25.35	--	54.00	--	Avg
Note: 1. Means other frequency and mode comply with standard requirements and at least have 20dB margin.								
2. Correct Factor=Cable Loss+ Antenna Factor-Amplifier Gain.								
Result=Reading + Correct Factor.								
Margin= Result-Limit.								
3. If the limits for the measurement with the average detector are met when using a receiver with a peak detector, the test unit shall be deemed to meet both limits and the measurement with the average detector need not be carried out.								

Test Results				PASS				
Frequency Range				2310MHz~2410MHz				
Test Mode				TX G Mode Channel 01				
N o.	Freq MHz	Polarity	Reading (dBuV/m)	Correct Factor	Result (dBuV/m)	Limit (dBuV/m)	Margin	Remark
1	2390	H	74.66	-21.45	53.21	74.00	-20.79	Peak
2	2390	H	--	-21.45	--	54.00	--	Avg
3	2400	H	79.14	-26.20	52.94	74.00	-21.06	Peak
4	2400	H	--	-26.20	--	54.00	--	Avg
1	2390	V	74.89	-21.45	53.44	74.00	-20.56	Peak
2	2390	V	--	-21.45	--	54.00	--	Avg
3	2400	V	79.34	-26.20	53.14	74.00	-20.86	Peak
4	2400	V	--	-26.20	--	54.00	--	Avg
Test Results				PASS				
Frequency Range				2450MHz~2550MHz				
Test Mode				TX G Mode Channel 11				
1	2483.5	H	79.26	-25.35	53.91	74.00	-20.09	Peak
2	2483.5	H	--	-25.35	--	54.00	--	Avg
1	2483.5	V	79.33	-25.35	53.98	74.00	-20.02	Peak
2	2483.5	V	--	-25.35	--	54.00	--	Avg
Note: 1. Means other frequency and mode comply with standard requirements and at least have 20dB margin. 2. Correct Factor=Cable Loss+ Antenna Factor-Amplifier Gain. Result=Reading + Correct Factor. Margin= Result-Limit. 3. If the limits for the measurement with the average detector are met when using a receiver with a peak detector, the test unit shall be deemed to meet both limits and the measurement with the average detector need not be carried out.								

Test Results					PASS			
Frequency Range					2310MHz~2410MHz			
Test Mode					TX N(HT20) Mode Channel 01			
N o.	Freq MHz	Polarity	Reading (dBuV/m)	Correct Factor	Result (dBuV/m)	Limit (dBuV/m)	Margin	Remark
1	2390	H	74.40	-21.45	52.95	74.00	-21.05	Peak
2	2390	H	--	-21.45	--	54.00	--	Avg
3	2400	H	79.19	-26.20	52.99	74.00	-21.01	Peak
4	2400	H	--	-26.20	--	54.00	--	Avg
1	2390	V	74.43	-21.45	52.98	74.00	-21.02	Peak
2	2390	V	--	-21.45	--	54.00	--	Avg
3	2400	V	79.40	-26.20	53.20	74.00	-20.80	Peak
4	2400	V	--	-26.20	--	54.00	--	Avg
Test Results				PASS				
Frequency Range				2450MHz~2550MHz				
Test Mode				TX N(HT20) Mode Channel 11				
1	2483.5	H	78.80	-25.35	53.45	74.00	-20.55	Peak
2	2483.5	H	--	-25.35	--	54.00	--	Avg
1	2483.5	V	78.92	-25.35	53.57	74.00	-20.43	Peak
2	2483.5	V	--	-25.35	--	54.00	--	Avg
Note: 1. Means other frequency and mode comply with standard requirements and at least have 20dB margin. 2. Correct Factor=Cable Loss+ Antenna Factor-Amplifier Gain. Result=Reading + Correct Factor. Margin= Result-Limit. 3. If the limits for the measurement with the average detector are met when using a receiver with a peak detector, the test unit shall be deemed to meet both limits and the measurement with the average detector need not be carried out.								

Test Results					PASS			
Frequency Range					2310MHz~2410MHz			
Test Mode					TX N(HT40) Mode Channel 03			
N o.	Freq MHz	Polarity	Reading (dBuV/m)	Correct Factor	Result (dBuV/m)	Limit (dBuV/m)	Margin	Remark
1	2390	H	74.77	-21.45	53.32	74.00	-20.68	Peak
2	2390	H	--	-21.45	--	54.00	--	Avg
3	2400	H	78.96	-26.20	52.76	74.00	-21.24	Peak
4	2400	H	--	-26.20	--	54.00	--	Avg
1	2390	V	74.91	-21.45	53.46	74.00	-20.54	Peak
2	2390	V	--	-21.45	--	54.00	--	Avg
3	2400	V	79.23	-26.20	53.03	74.00	-20.97	Peak
4	2400	V	--	-26.20	--	54.00	--	Avg
Test Results				PASS				
Frequency Range				2450MHz~2550MHz				
Test Mode				TX N(HT40) Mode Channel 09				
1	2483.5	H	78.54	-25.35	53.19	74.00	-20.81	Peak
2	2483.5	H	--	-25.35	--	54.00	--	Avg
1	2483.5	V	78.58	-25.35	53.23	74.00	-20.77	Peak
2	2483.5	V	--	-25.35	--	54.00	--	Avg
Note: 1. Means other frequency and mode comply with standard requirements and at least have 20dB margin. 2. Correct Factor=Cable Loss+ Antenna Factor-Amplifier Gain. Result=Reading + Correct Factor. Margin= Result-Limit. 3. If the limits for the measurement with the average detector are met when using a receiver with a peak detector, the test unit shall be deemed to meet both limits and the measurement with the average detector need not be carried out.								

## ABOVE 1000 MHz

Note: All the modes have been tested and recorded worst mode in the report.

Modulation Type: IEEE 802.11b

## Channel 1 / 2412 MHz

Frequency	Ant.Pol. H/V	Peak reading (dBuV)	AV reading (dBuV)	Correction Factor	Emission Level		Peak Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)
					Peak (dBuV/m)	AV (dBuV/m)			
4824.00	H	54.37	51.3	-1.89	52.48	49.41	74	54	-21.52
7236.00	H	44.20	---	7.9	52.10	---	74	54	-21.90
---	H	---	---	---	---	---	---	---	---
4824.00	V	55.39	---	-1.89	53.50	---	74	54	-20.50
7236.00	V	42.92	---	7.9	50.82	---	74	54	-23.18
---	V	---	---	---	---	---	---	---	---

## Channel 6 / 2437 MHz

Frequency	Ant.Pol. H/V	Peak reading (dBuV)	AV reading (dBuV)	Correction Factor	Emission Level		Peak Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)
					Peak (dBuV/m)	AV (dBuV/m)			
4874.00	H	55.53	52.31	-1.57	53.96	50.74	74	54	-20.04
7311.00	H	41.61	---	8.2	49.81	---	74	54	-24.19
---	H	---	---	---	---	---	---	---	---
4874.00	V	54.95	---	-1.57	53.38	---	74	54	-20.62
7311.00	V	43.36	---	8.2	51.56	---	74	54	-22.44
---	V	---	---	---	---	---	---	---	---

## Channel 11 / 2462 MHz

Frequency	Ant.Pol. H/V	Peak reading (dBuV)	AV reading (dBuV)	Correction Factor	Emission Level		Peak Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)
					Peak (dBuV/m)	AV (dBuV/m)			
4924.00	H	53.61	52	-1.28	52.33	50.72	74	54	-21.67
7386.00	H	41.83	---	9.3	51.13	---	74	54	-22.87
---	H	---	---	---	---	---	---	---	---
4924.00	V	54.36	---	-1.28	53.08	---	74	54	-20.92
7386.00	V	43.40	---	9.3	52.70	---	74	54	-21.30
---	V	---	---	---	---	---	---	---	---

**Notes:**

- 1). Radiated emissions measured in frequency range from 9 KHz~10th harmonic or 26.5GHz (which is less) were made with an instrument using Peak detector mode.
- 2). Data of measurement within this frequency range shown “---” in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- 3). Worst case data at 1Mbps at IEEE 802.11b.
- 4). Measured Level = Reading Level + Factor, Margin = Measured Level – Limit

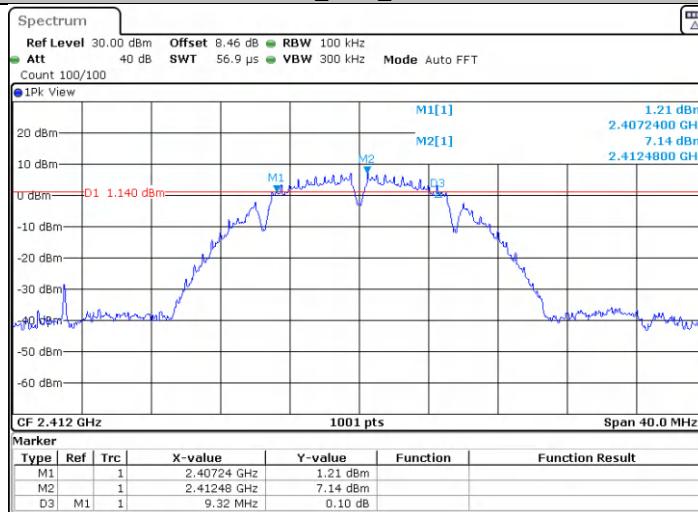
## APPENDIXD - BANDWIDTH

### 1. DTS Bandwidth

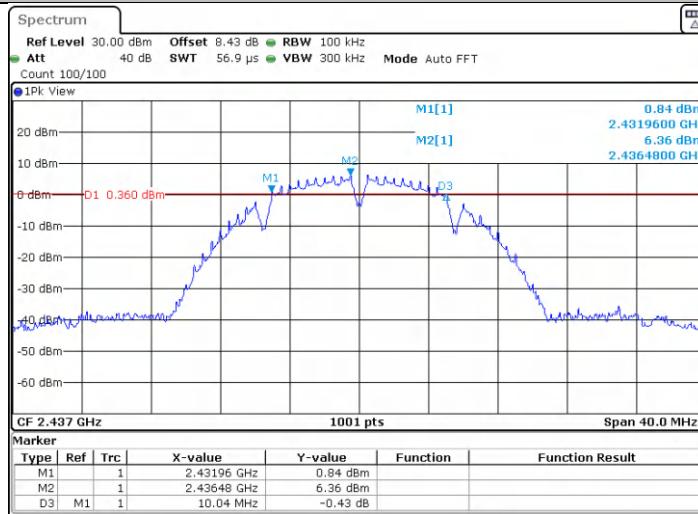
TestMode	Frequency[MHz]	DTS BW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
11B	2412	9.32	2407.24	2416.56	0.5	PASS
	2437	10.04	2431.96	2442.00	0.5	PASS
	2462	9.08	2457.44	2466.52	0.5	PASS
11G	2412	16.36	2403.80	2420.16	0.5	PASS
	2437	16.56	2428.72	2445.28	0.5	PASS
	2462	16.32	2453.84	2470.16	0.5	PASS
11N20SISO	2412	17.64	2403.16	2420.80	0.5	PASS
	2437	17.56	2428.20	2445.76	0.5	PASS
	2462	17.72	2453.16	2470.88	0.5	PASS
11N40SISO	2422	36.08	2403.84	2439.92	0.5	PASS
	2437	36.40	2418.76	2455.16	0.5	PASS
	2452	35.68	2433.84	2469.52	0.5	PASS

## Test Graphs

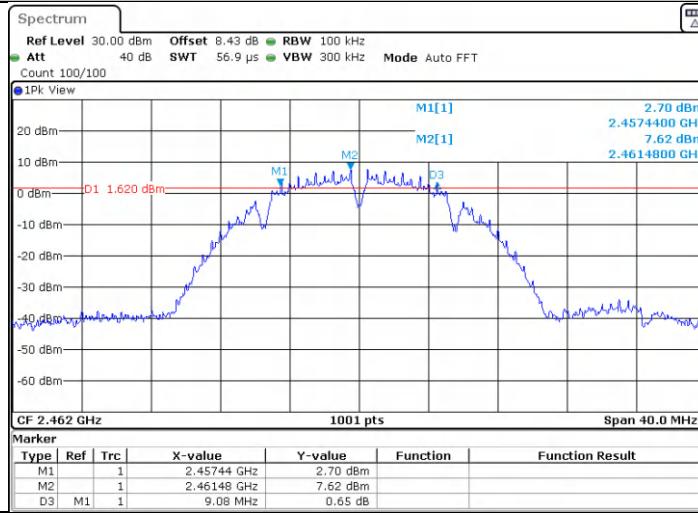
## 11B\_Ant1\_2412

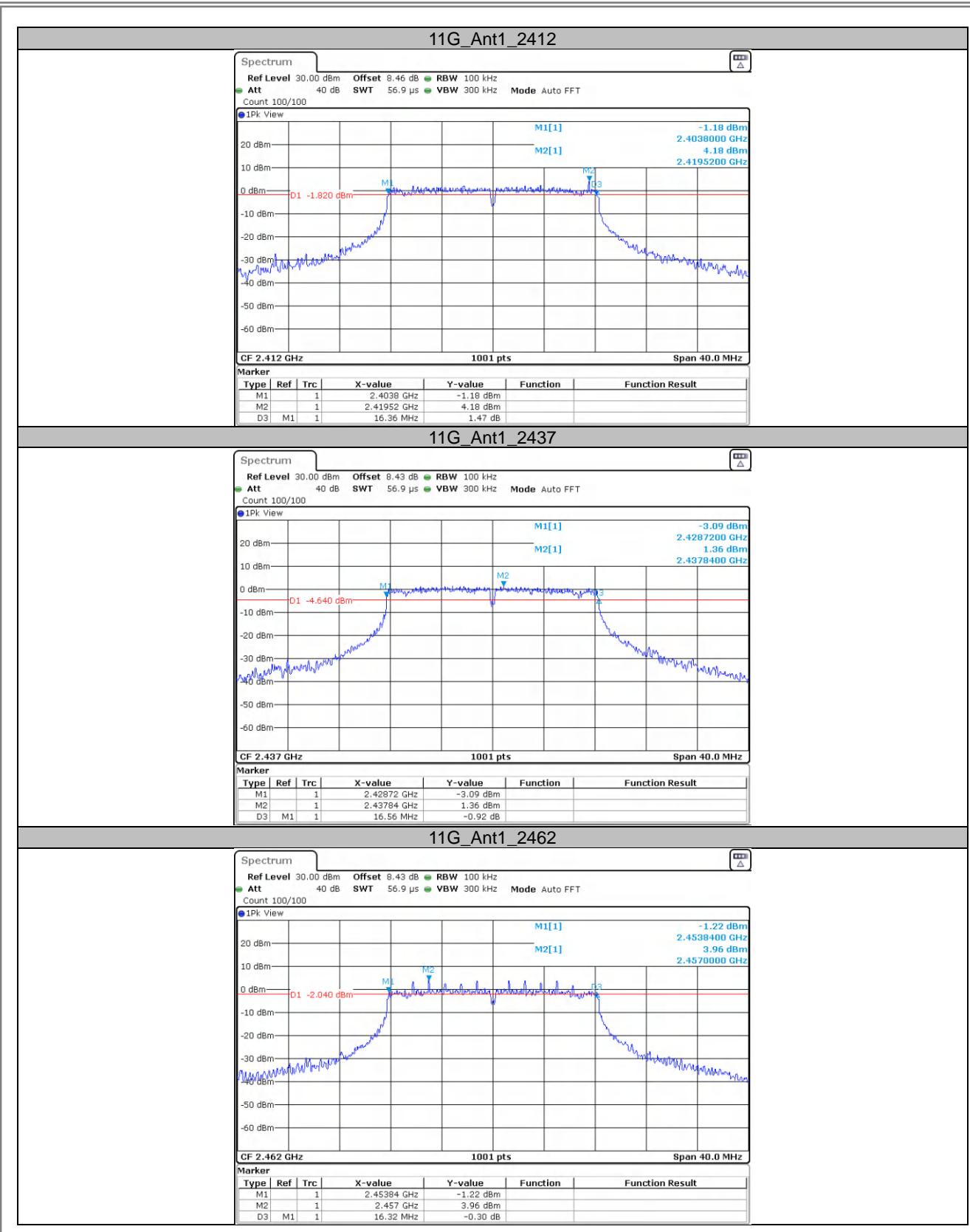


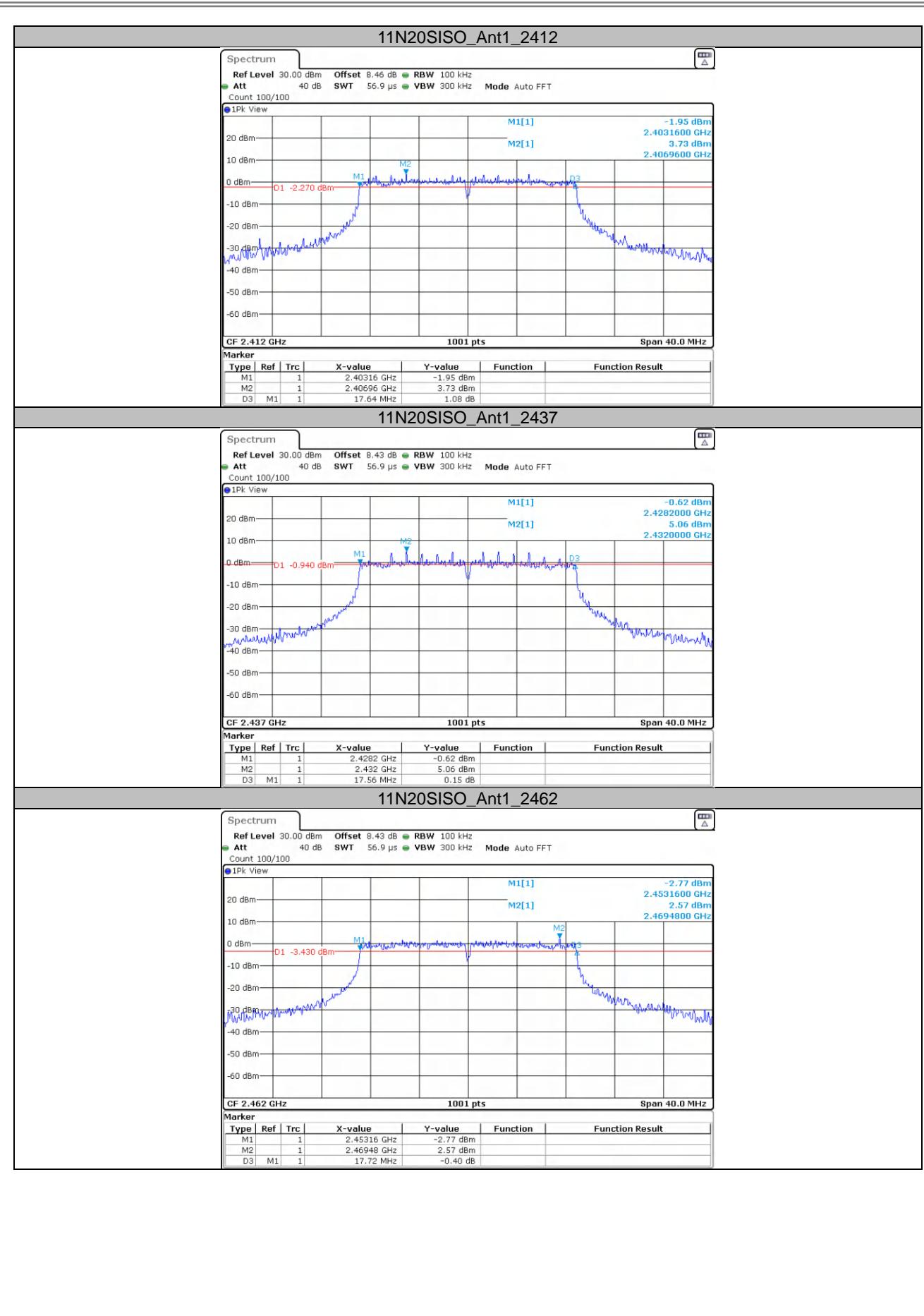
## 11B\_Ant1\_2437

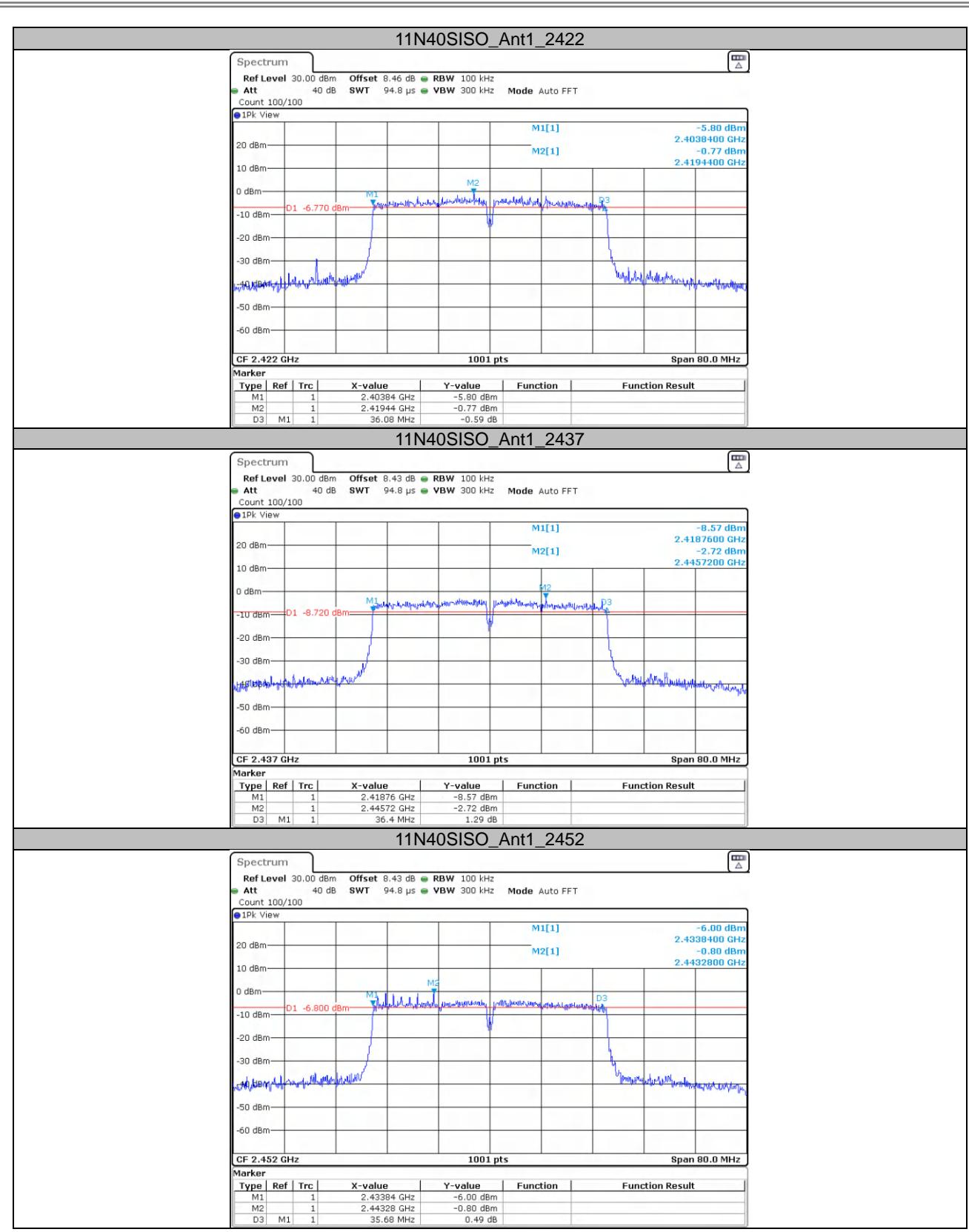


## 11B\_Ant1\_2462



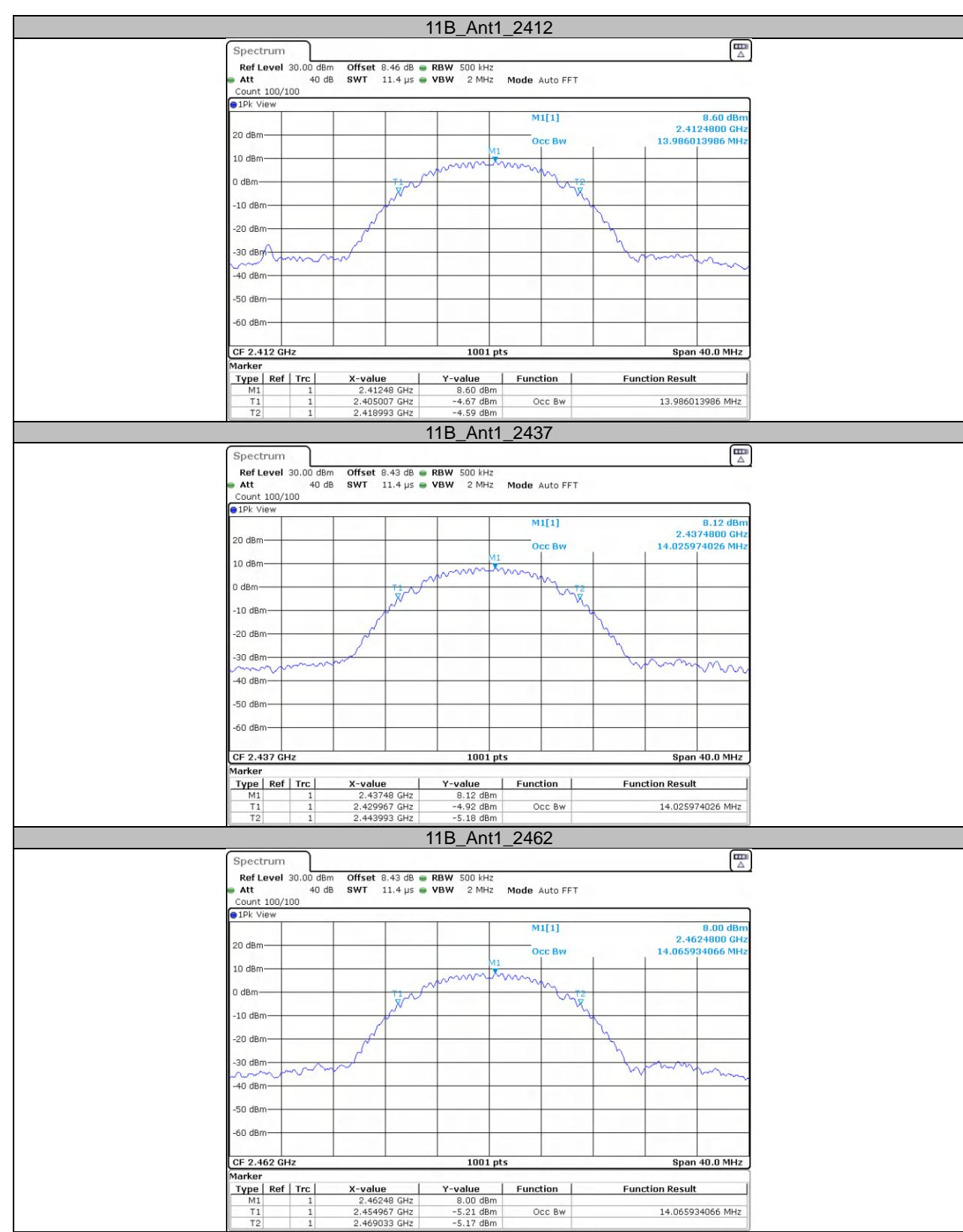


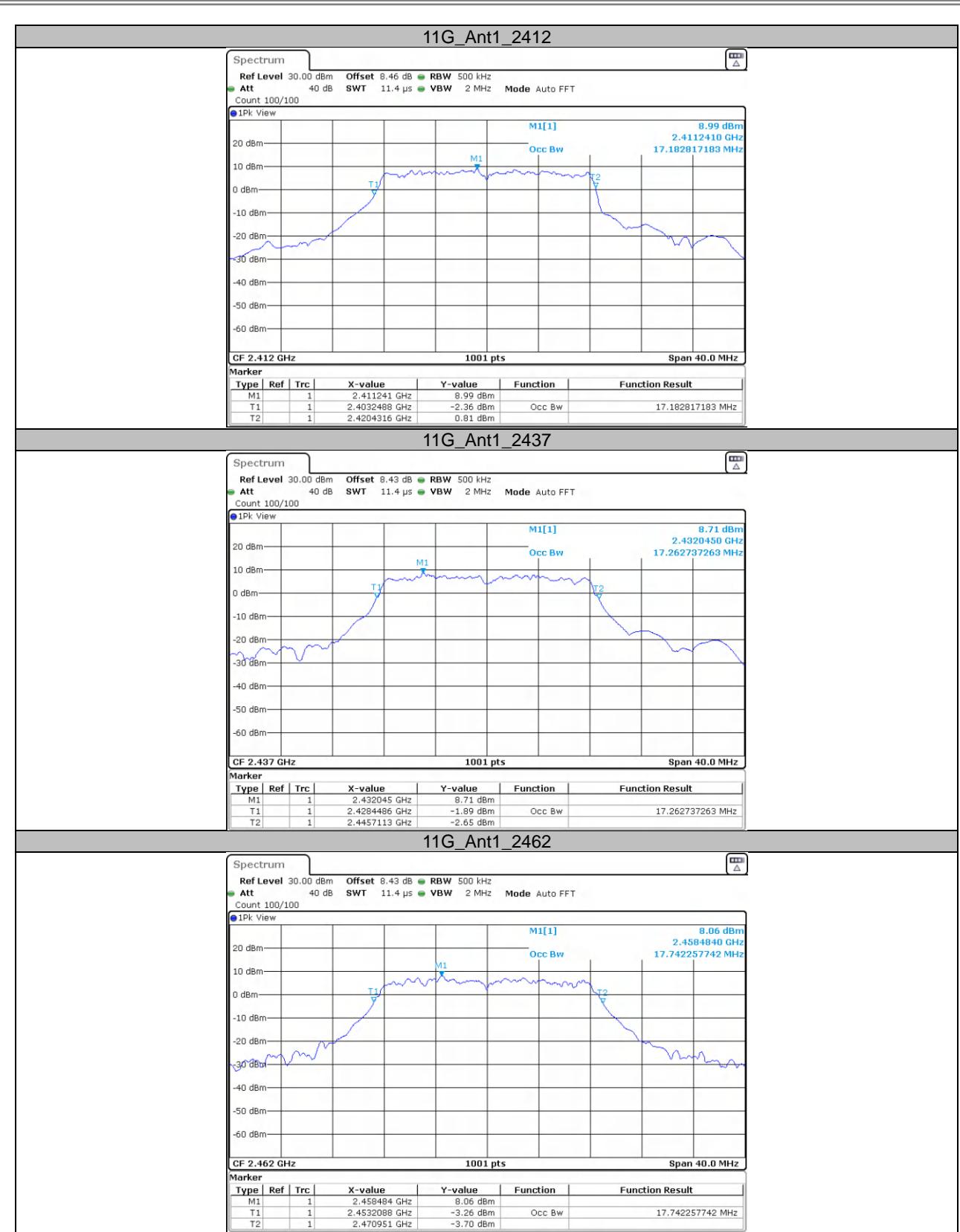


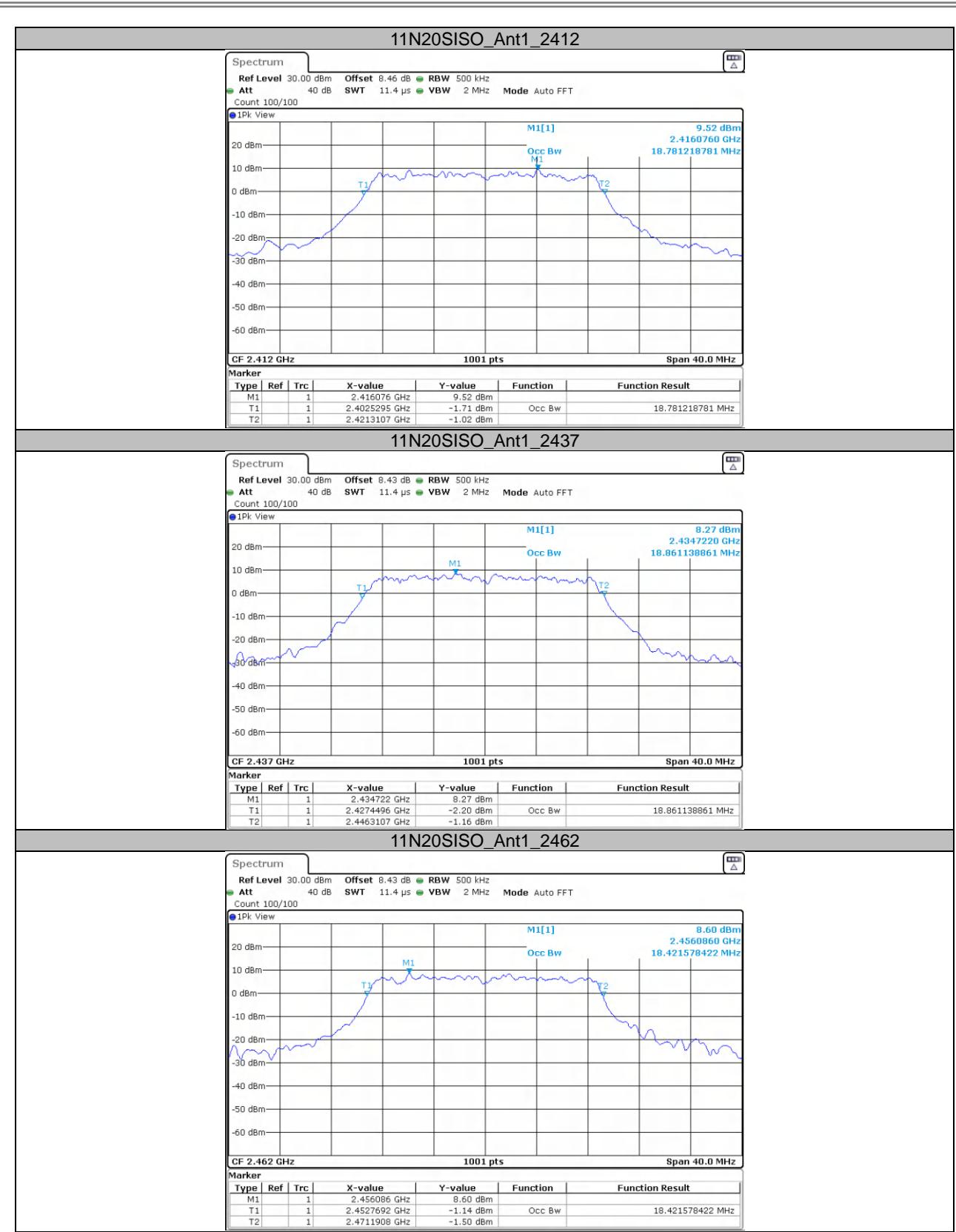


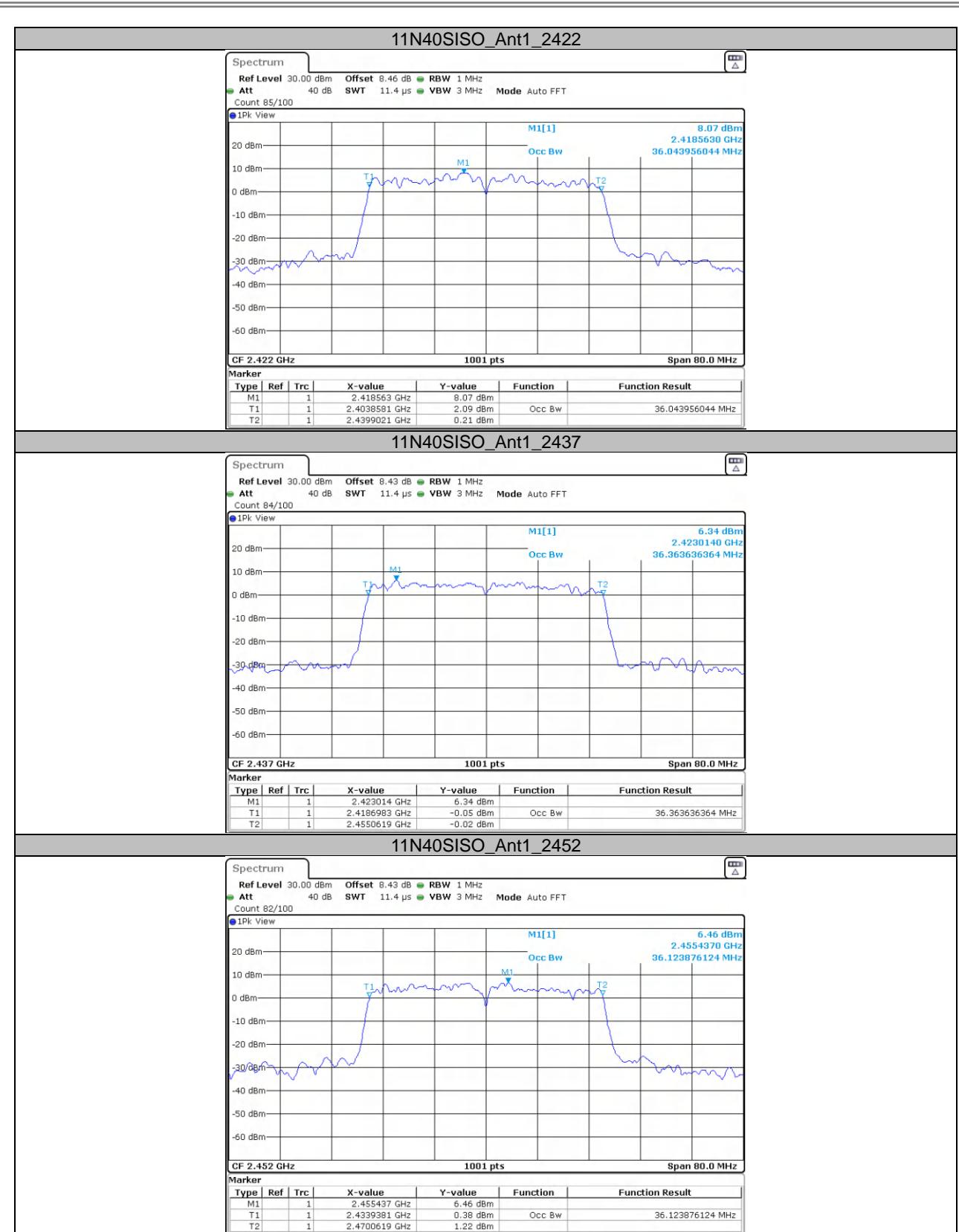
**99% OCCUPIED BANDWIDTH**

TestMode	Channel Frequency[MHz]	OCB [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
11B	2412	13.986	2405.0070	2418.9930	---	---
	2437	14.026	2429.9670	2443.9930	---	---
	2462	14.066	2454.9670	2469.0330	---	---
11G	2412	17.183	2403.2488	2420.4316	---	---
	2437	17.263	2428.4486	2445.7113	---	---
	2462	17.742	2453.2088	2470.9510	---	---
11N20SISO	2412	18.781	2402.5295	2421.3107	---	---
	2437	18.861	2427.4496	2446.3107	---	---
	2462	18.422	2452.7692	2471.1908	---	---
11N40SISO	2422	36.044	2403.8581	2439.9021	---	---
	2437	36.364	2418.6983	2455.0619	---	---
	2452	36.124	2433.9381	2470.0619	---	---



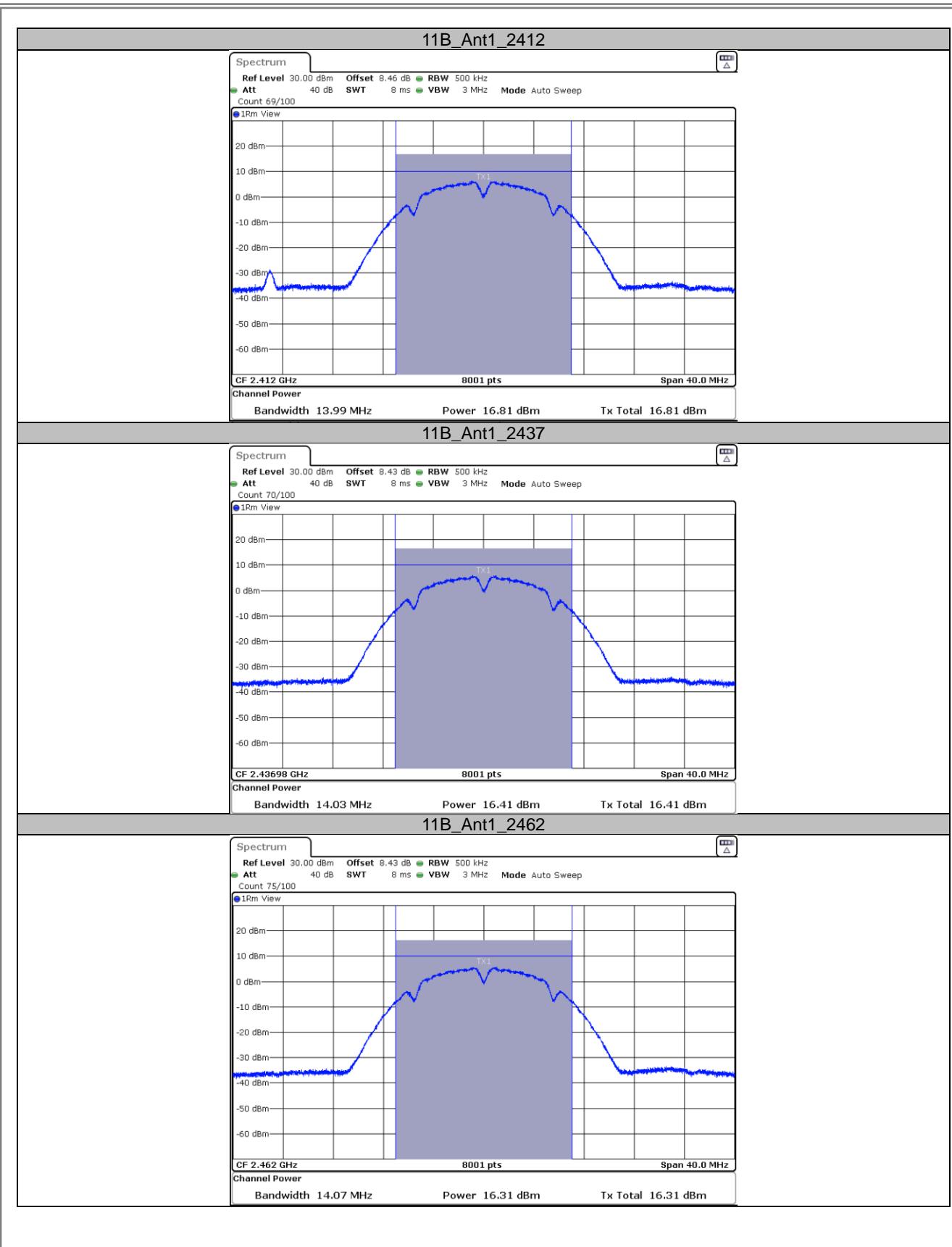


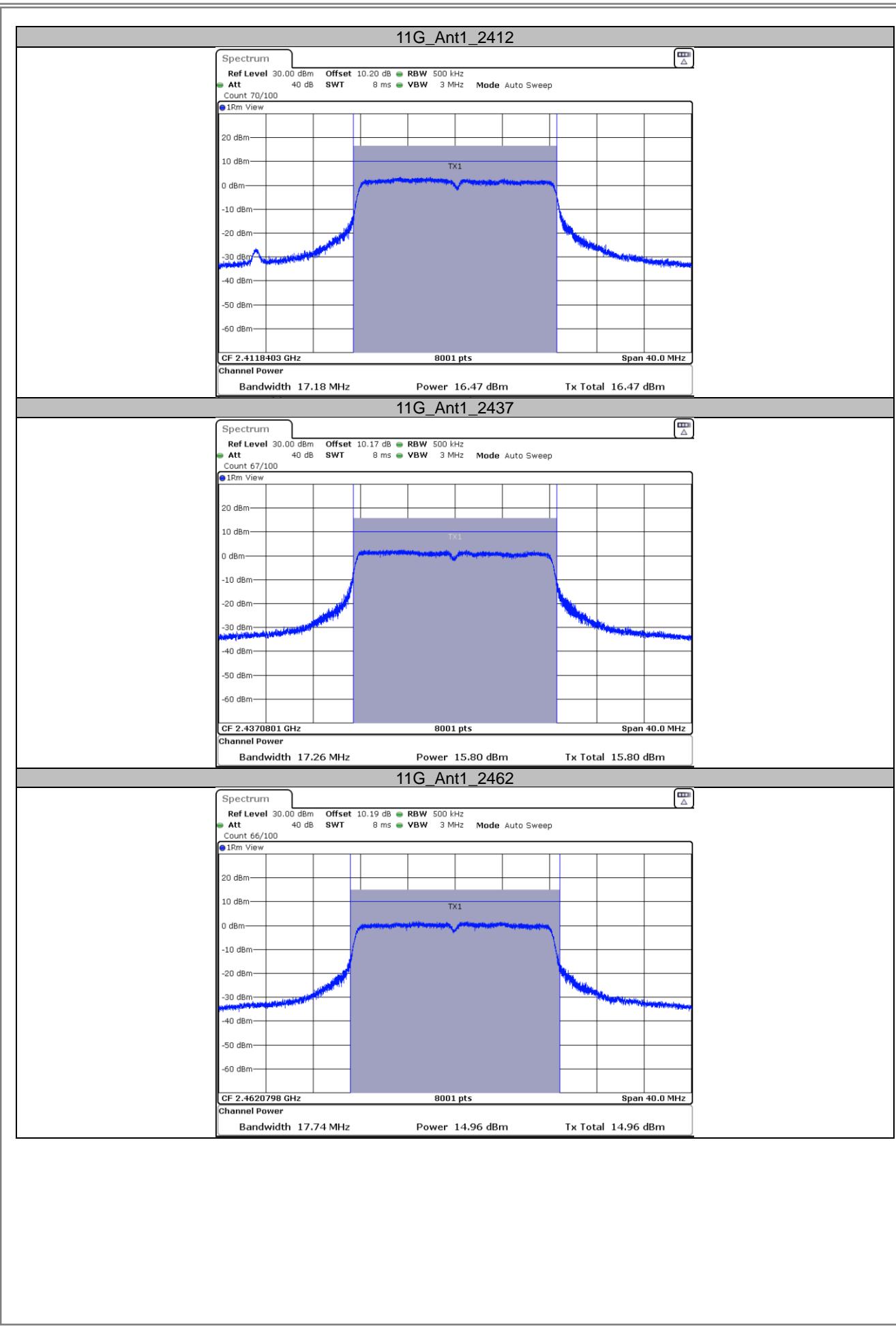


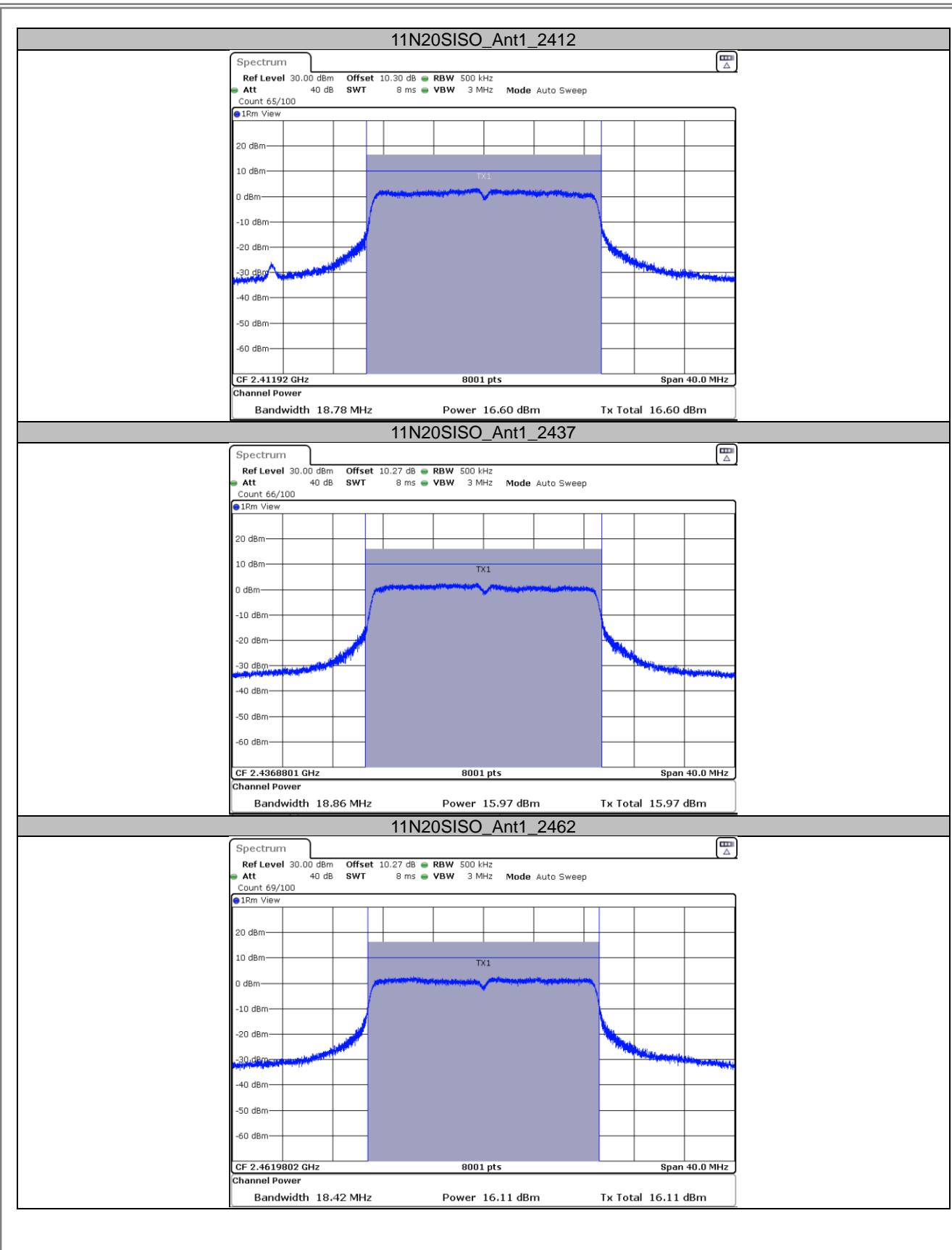


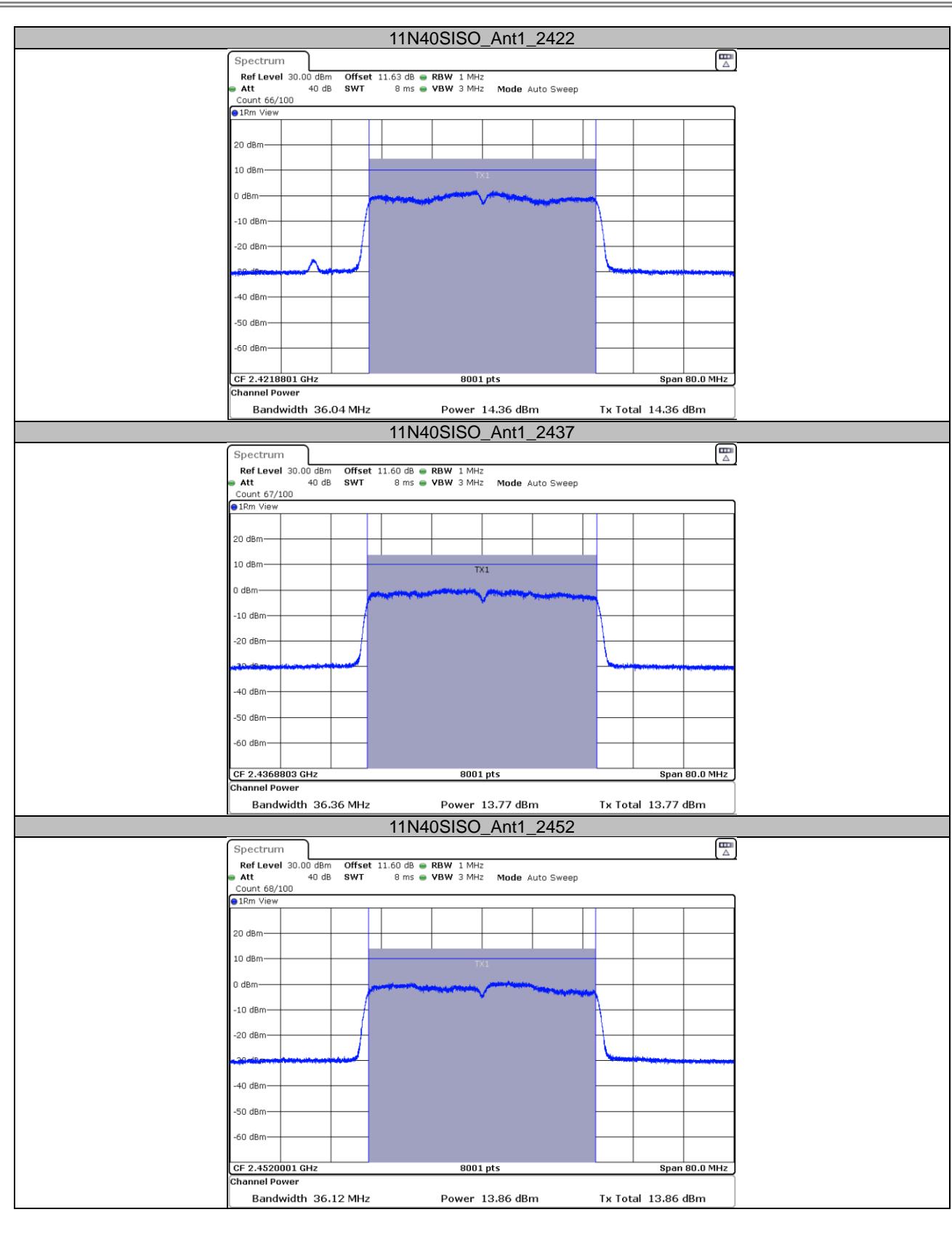
**APPENDIXE - MAXIMUMOUTPUT POWER**

Test Mode	Frequency[MHz]	Average power [dBm]	Duty Cycle [%]	DC Factor [dBm]	Result [dBm]	Limit [dBm]	Verdict
11B	2412	16.81	100.00	0.00	16.81	≤30.00	PASS
	2437	16.41	100.00	0.00	16.41	≤30.00	PASS
	2462	16.31	100.00	0.00	16.31	≤30.00	PASS
11G	2412	14.73	67.00	1.74	16.47	≤30.00	PASS
	2437	14.06	67.00	1.74	15.80	≤30.00	PASS
	2462	13.20	66.67	1.76	14.96	≤30.00	PASS
11N20SISO	2412	14.76	65.40	1.84	16.60	≤30.00	PASS
	2437	14.13	65.40	1.84	15.97	≤30.00	PASS
	2462	14.27	65.40	1.84	16.11	≤30.00	PASS
11N40SISO	2422	11.19	48.19	3.17	14.36	≤30.00	PASS
	2437	10.60	48.19	3.17	13.77	≤30.00	PASS
	2452	10.69	48.19	3.17	13.86	≤30.00	PASS





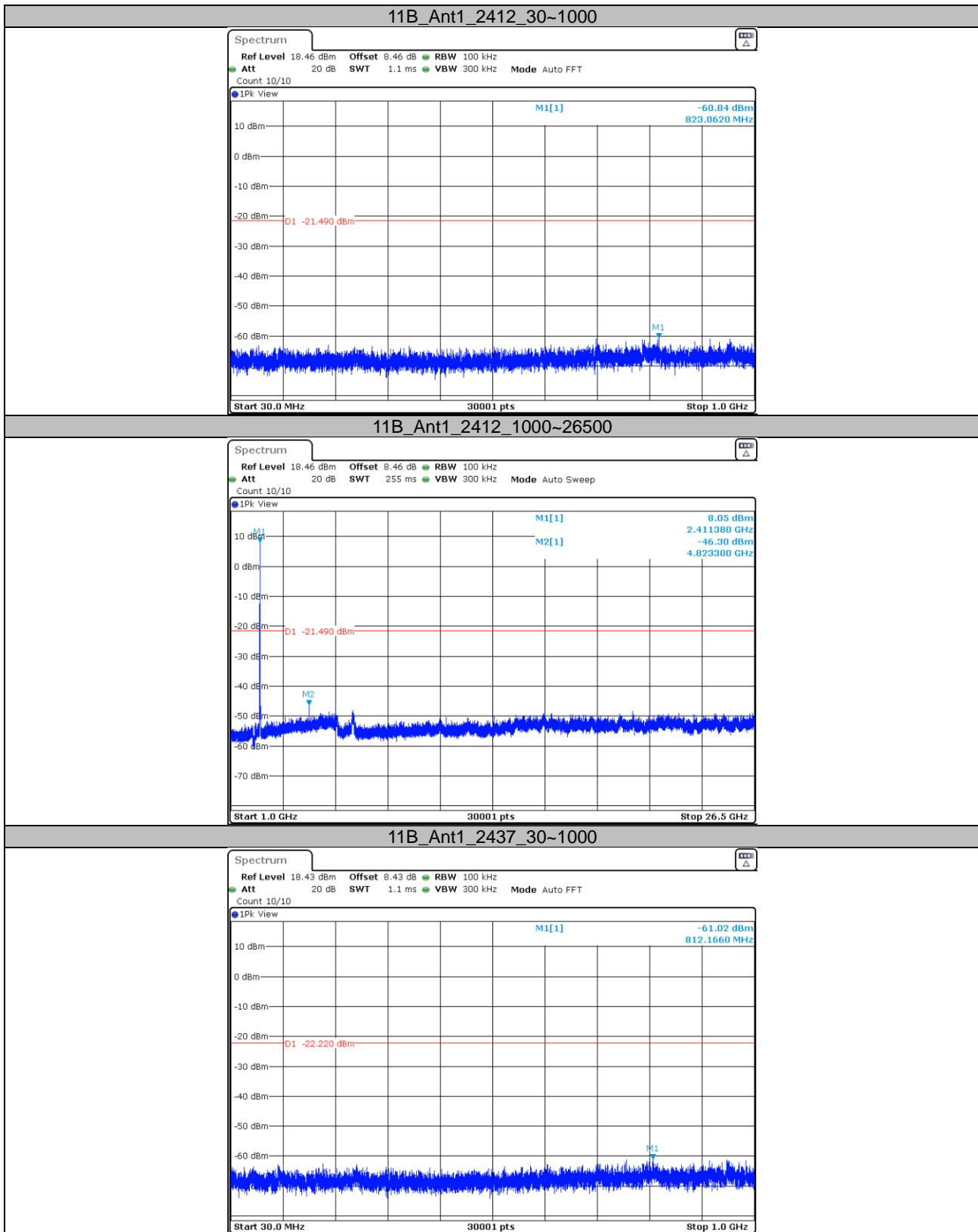


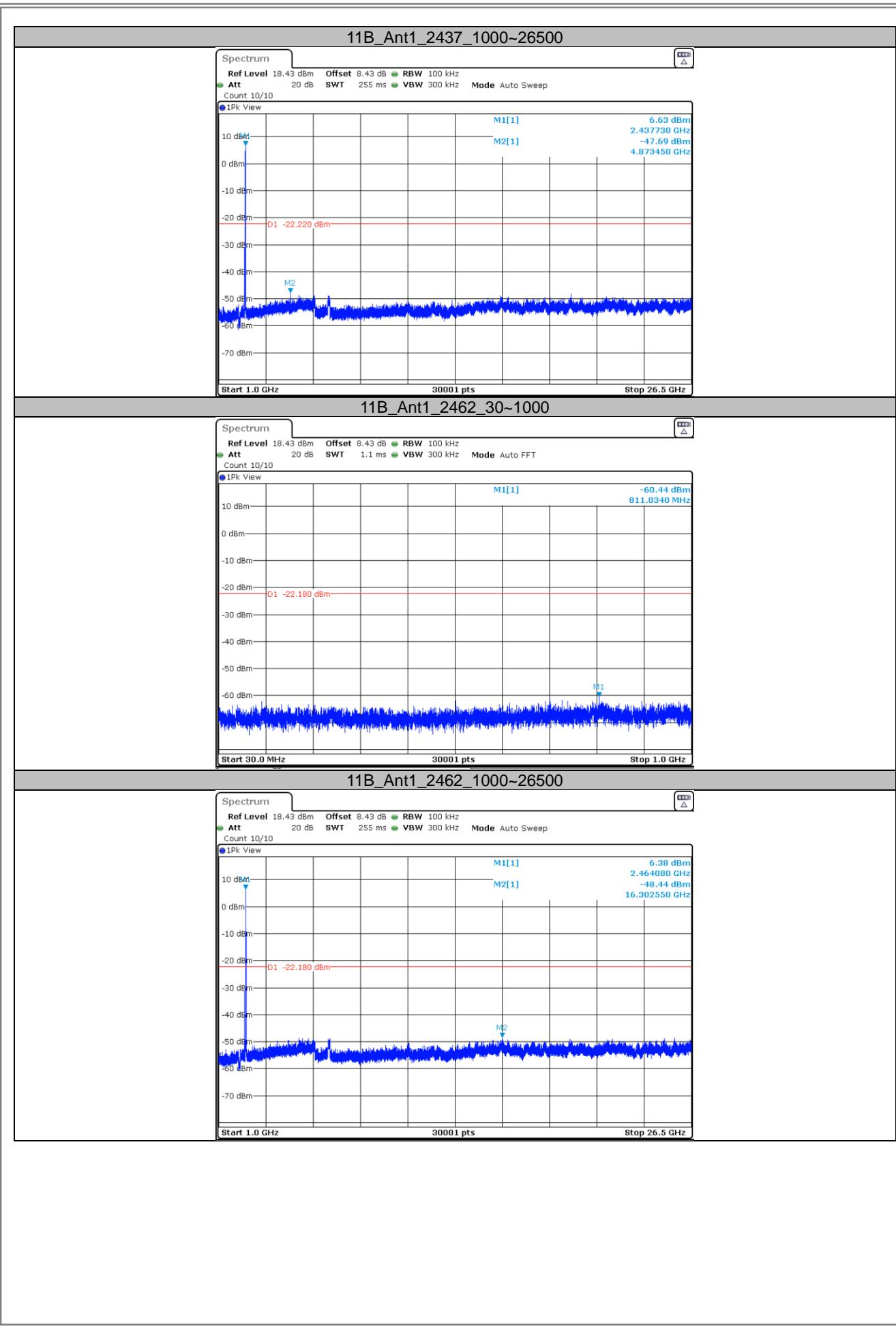


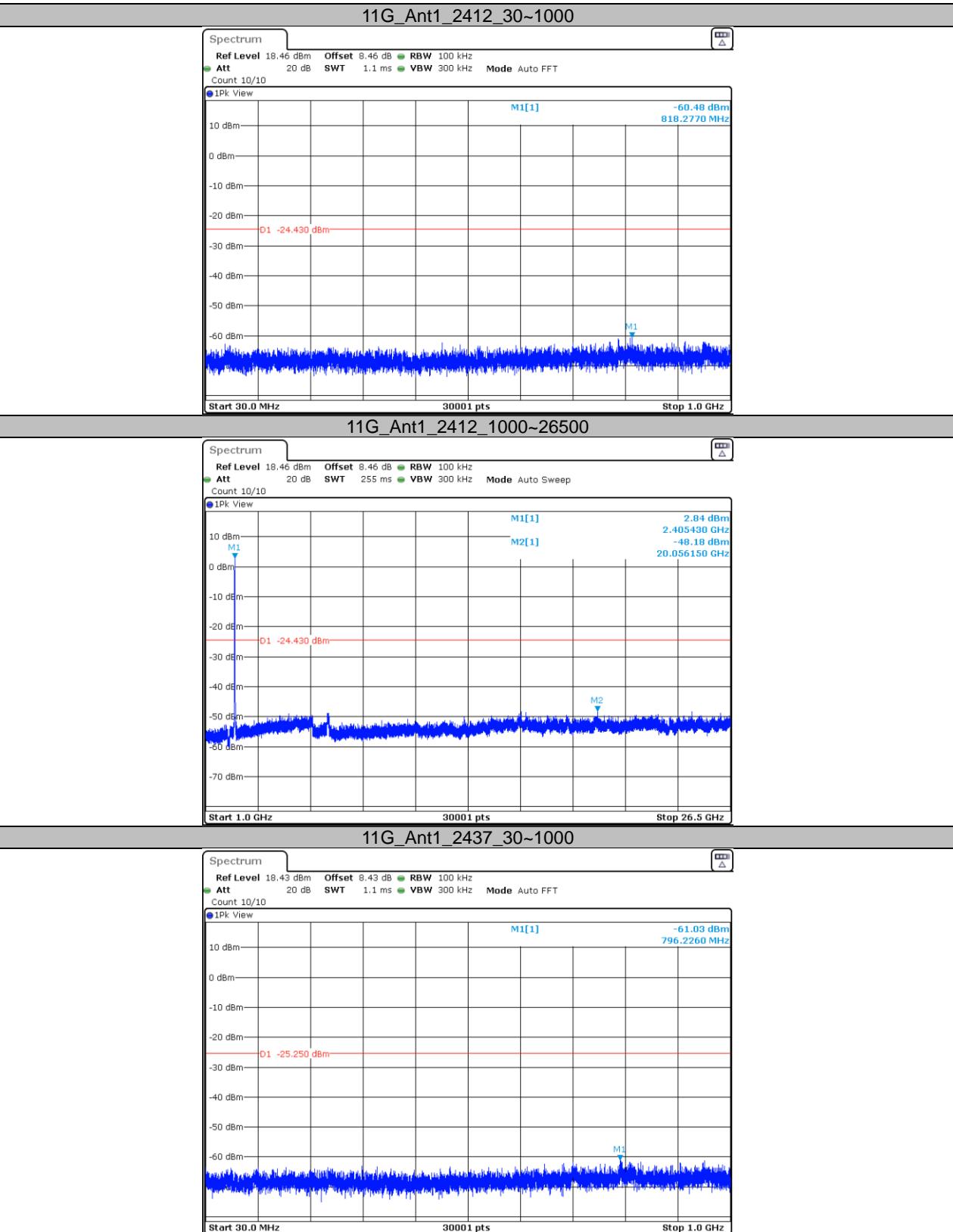
**APPENDIXF - CONDUCTED SPURIOUS EMISSIONS****1. Conducted Spurious Emission**

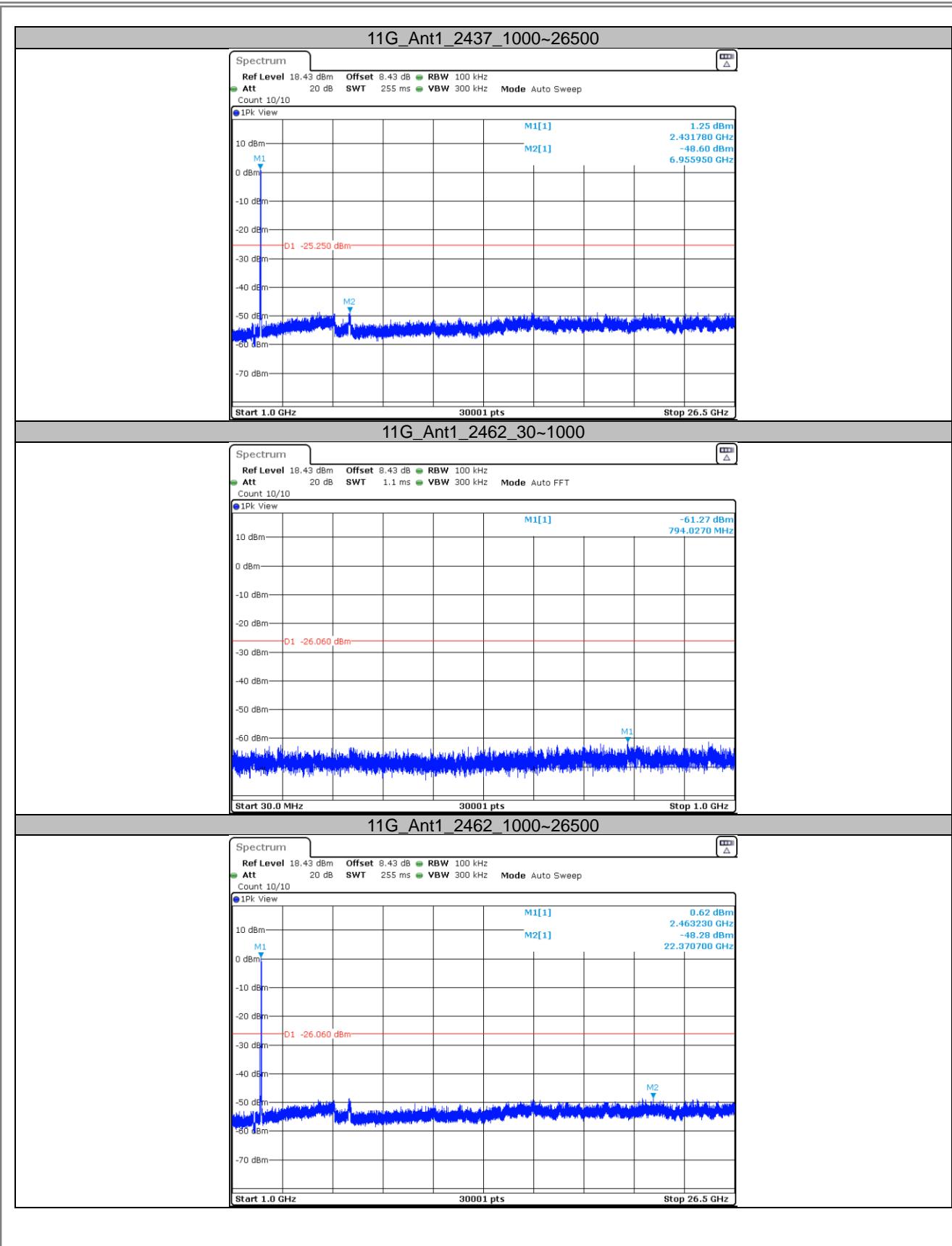
TestMode	Frequency[MHz]	FreqRange [Mhz]	RefLevel [dBm]	Result [dBm]	Limit [dBm]	Verdict
11B	2412	30~1000	8.51	-60.84	≤-21.49	PASS
		1000~26500	8.51	-46.3	≤-21.49	PASS
	2437	30~1000	7.78	-61.02	≤-22.22	PASS
		1000~26500	7.78	-47.69	≤-22.22	PASS
	2462	30~1000	7.82	-60.44	≤-22.18	PASS
		1000~26500	7.82	-48.44	≤-22.18	PASS
11G	2412	30~1000	5.57	-60.48	≤-24.43	PASS
		1000~26500	5.57	-48.18	≤-24.43	PASS
	2437	30~1000	4.75	-61.03	≤-25.25	PASS
		1000~26500	4.75	-48.6	≤-25.25	PASS
	2462	30~1000	3.94	-61.27	≤-26.06	PASS
		1000~26500	3.94	-48.28	≤-26.06	PASS
11N20SISO	2412	30~1000	5.82	-61.55	≤-24.18	PASS
		1000~26500	5.82	-48.14	≤-24.18	PASS
	2437	30~1000	4.97	-61.23	≤-25.03	PASS
		1000~26500	4.97	-48.17	≤-25.03	PASS
	2462	30~1000	4.45	-61.11	≤-25.55	PASS
		1000~26500	4.45	-48.33	≤-25.55	PASS
11N40SISO	2422	30~1000	0.67	-60.17	≤-29.33	PASS
		1000~26500	0.67	-48.45	≤-29.33	PASS
	2437	30~1000	0.07	-61.26	≤-29.93	PASS
		1000~26500	0.07	-48.62	≤-29.93	PASS
	2452	30~1000	-0.24	-60.95	≤-30.24	PASS
		1000~26500	-0.24	-47.9	≤-30.24	PASS

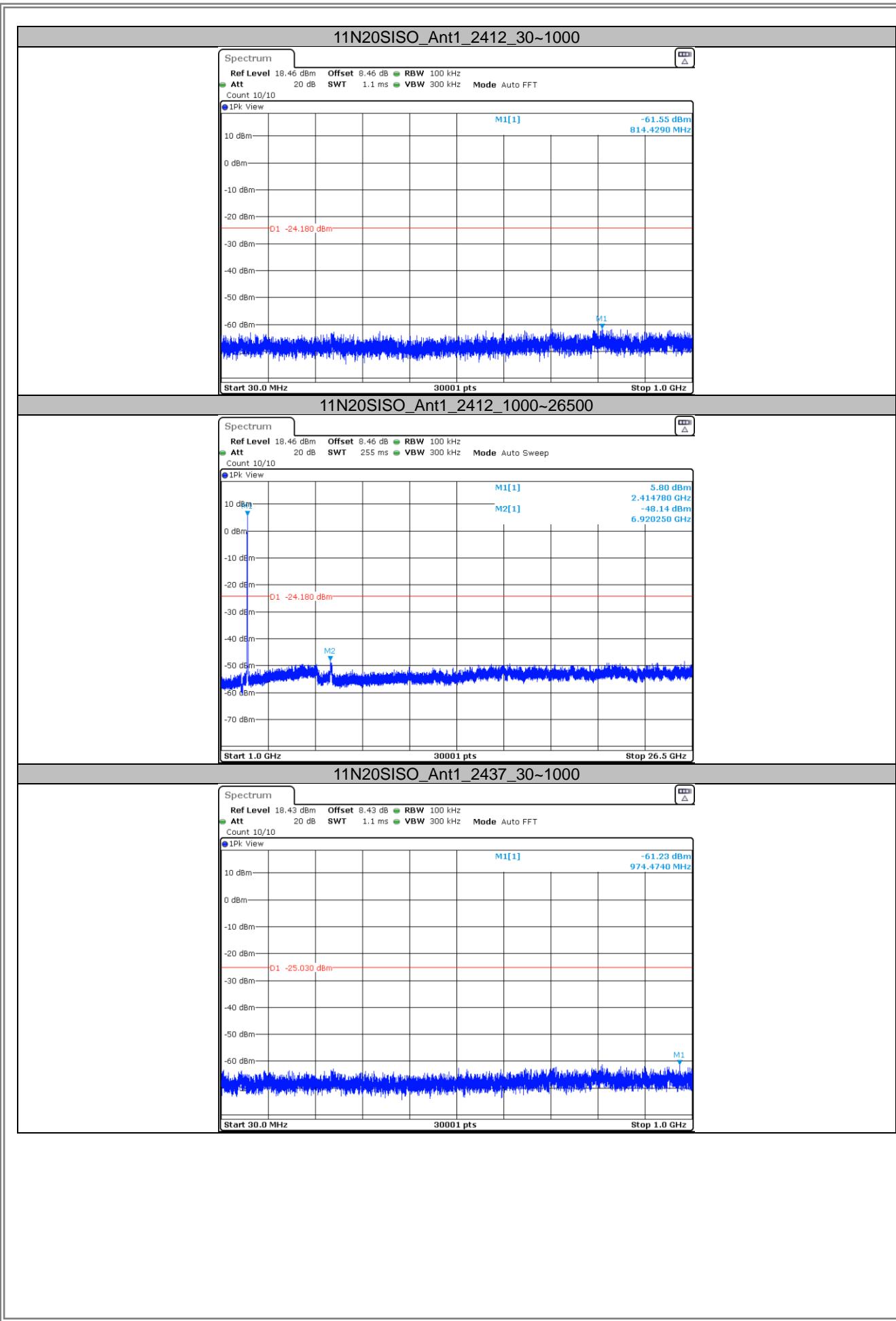
## Test Graphs

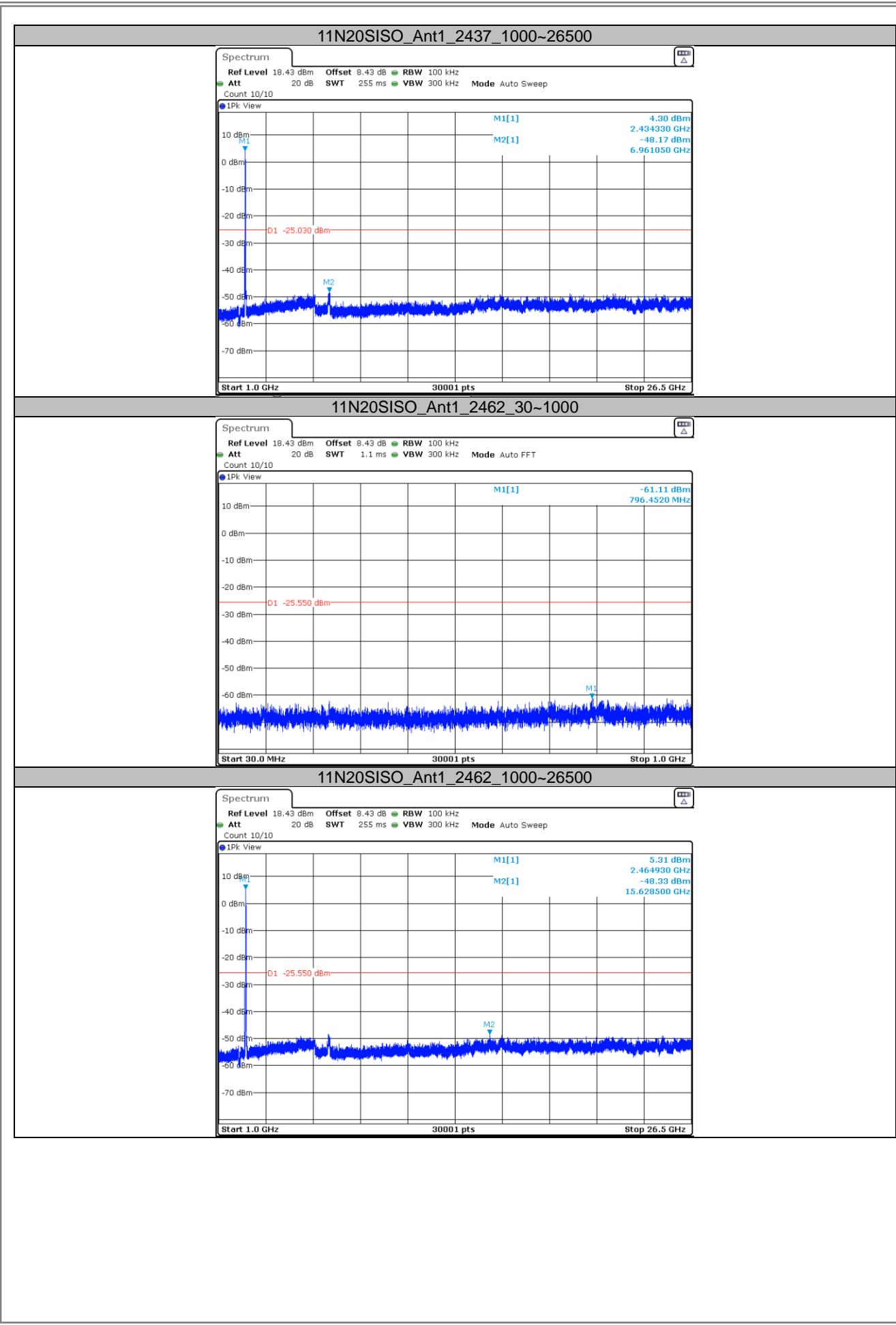


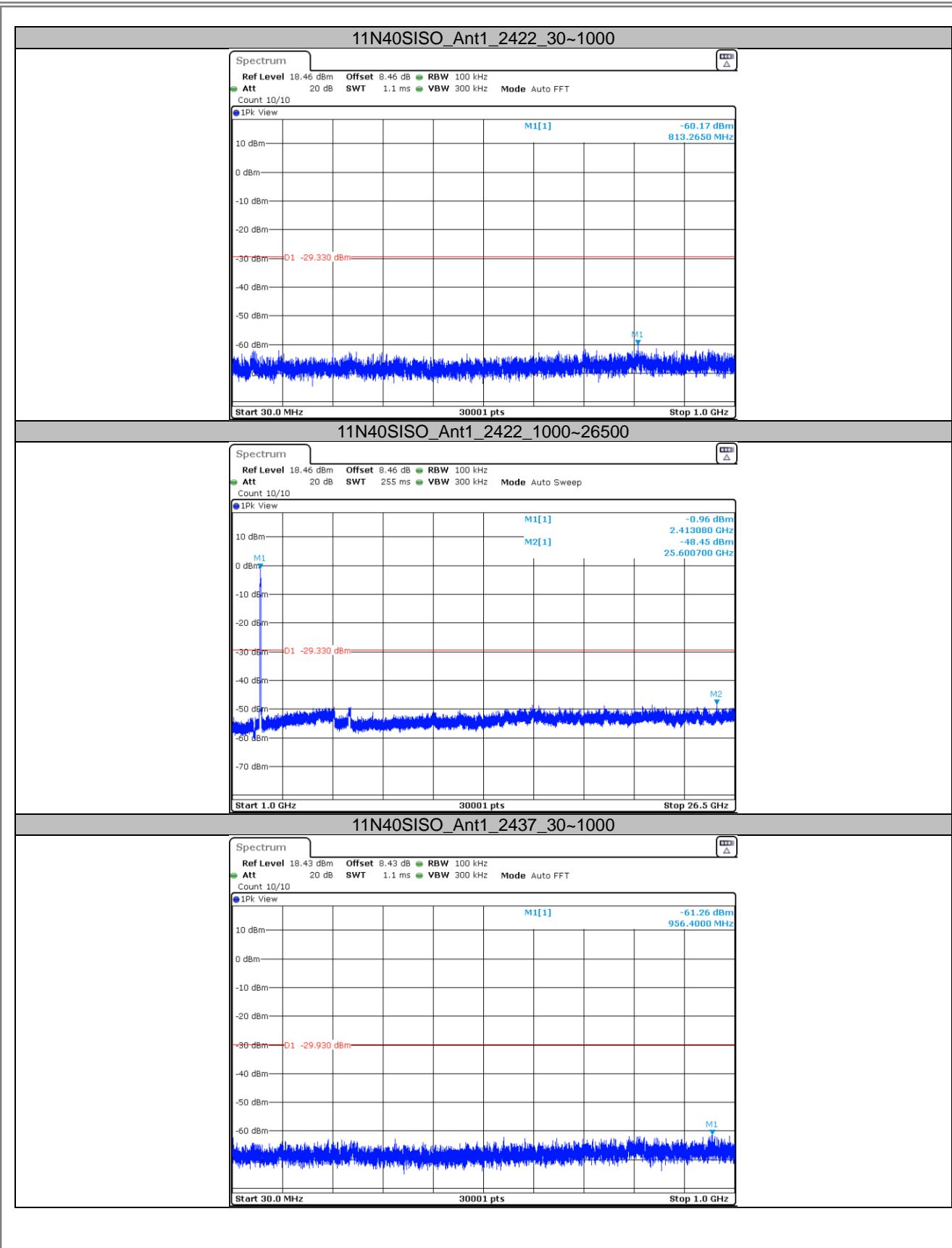


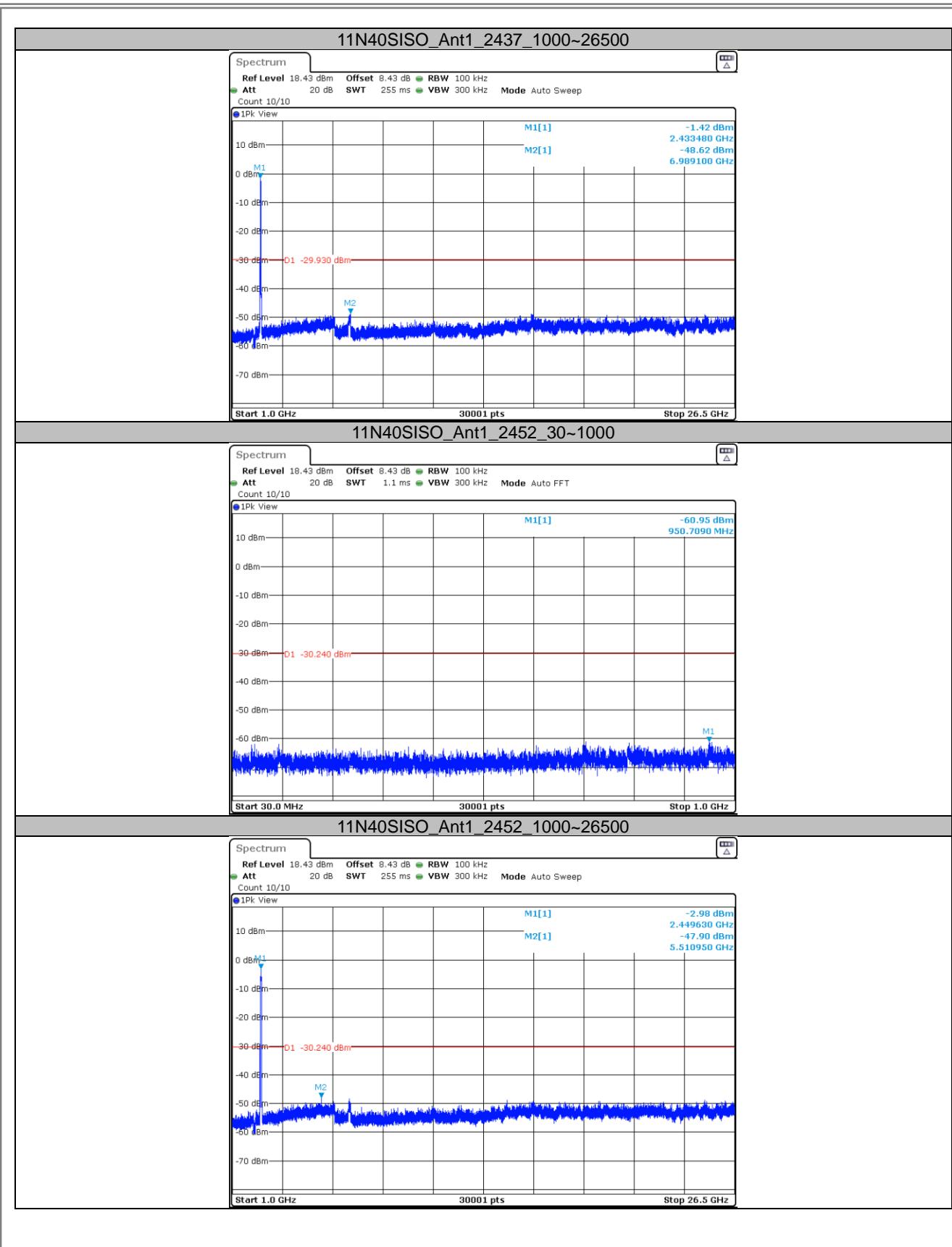






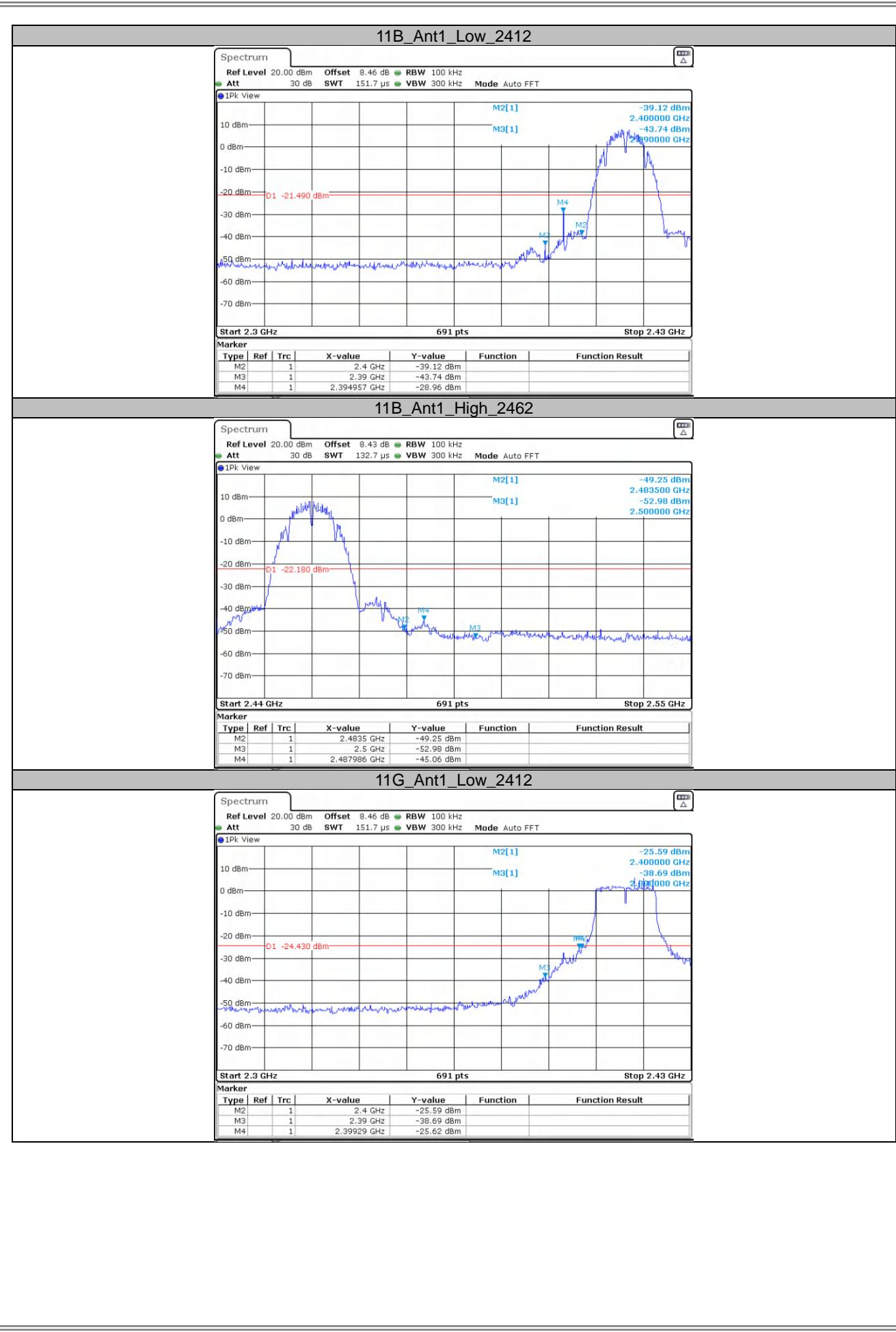


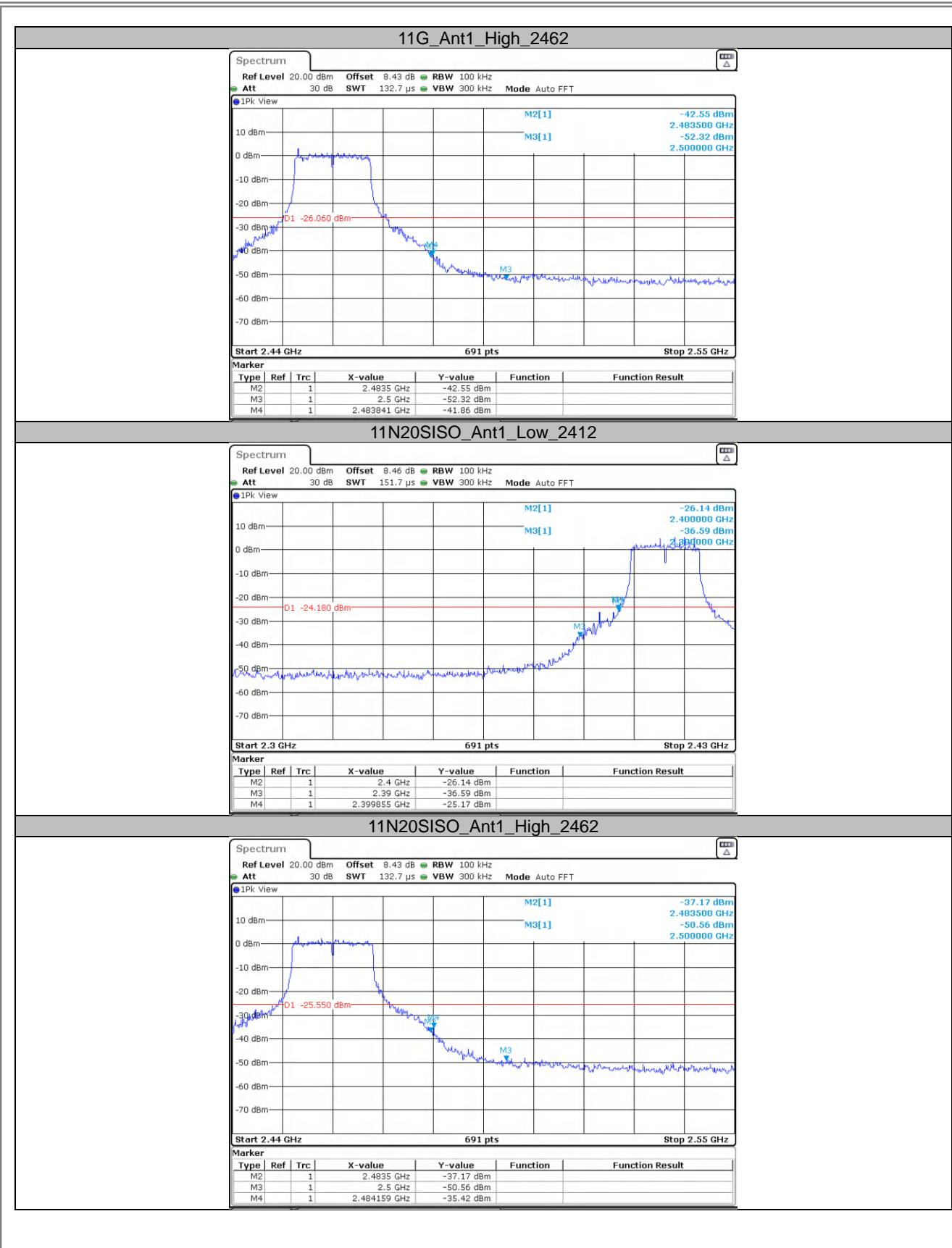


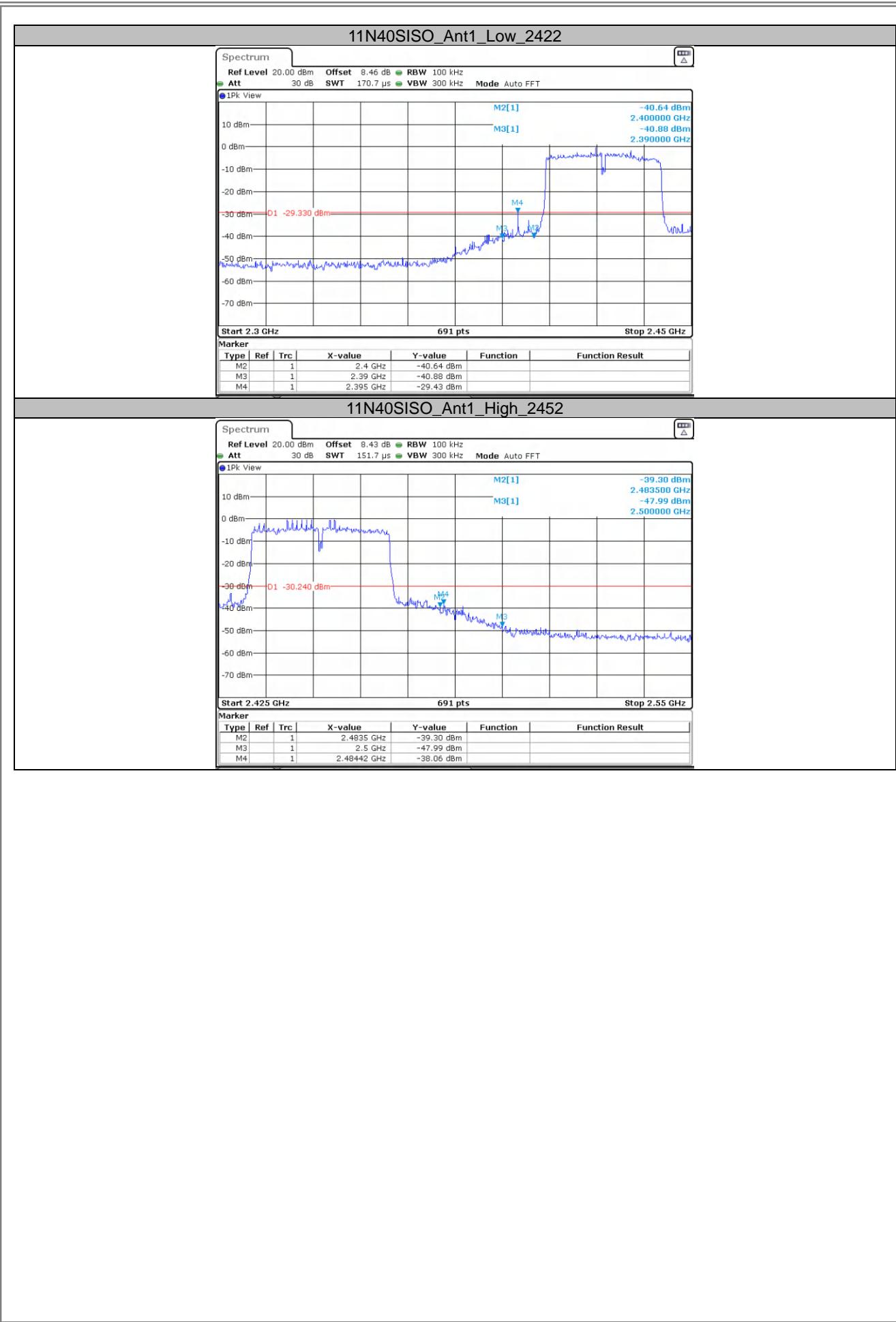


**2. Band edge measurements**

TestMode	ChName	Frequency[MHz]	RefLevel[dBm]	Result[dBm]	Limit[dBm]	Verdict
11B	Low	2412	8.51	-28.96	≤-21.49	PASS
	High	2462	7.82	-45.06	≤-22.18	PASS
11G	Low	2412	5.57	-25.62	≤-24.43	PASS
	High	2462	3.94	-41.86	≤-26.06	PASS
11N20SISO	Low	2412	5.82	-25.17	≤-24.18	PASS
	High	2462	4.45	-35.42	≤-25.55	PASS
11N40SISO	Low	2422	0.67	-29.43	≤-29.33	PASS
	High	2452	-0.24	-38.06	≤-30.24	PASS

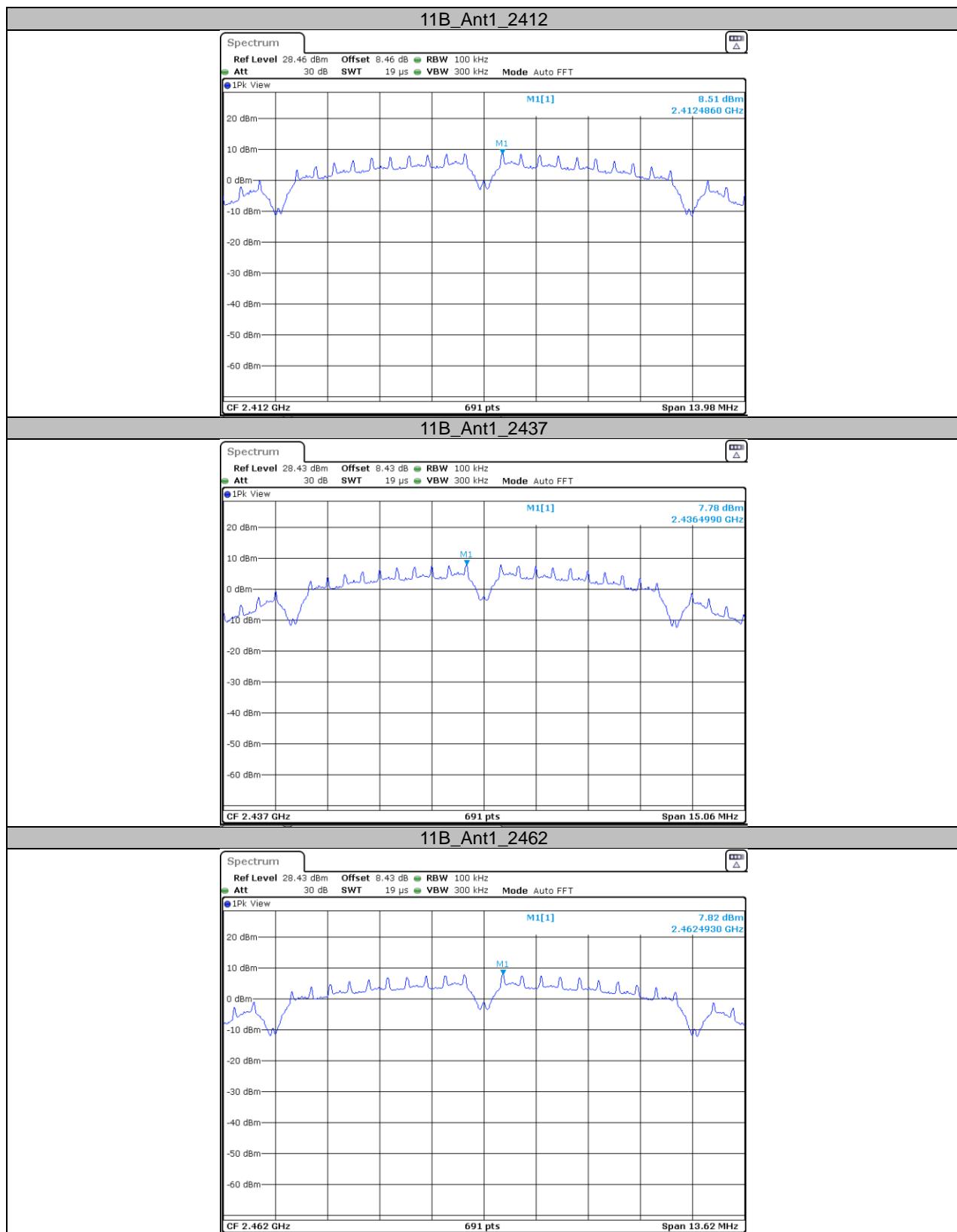


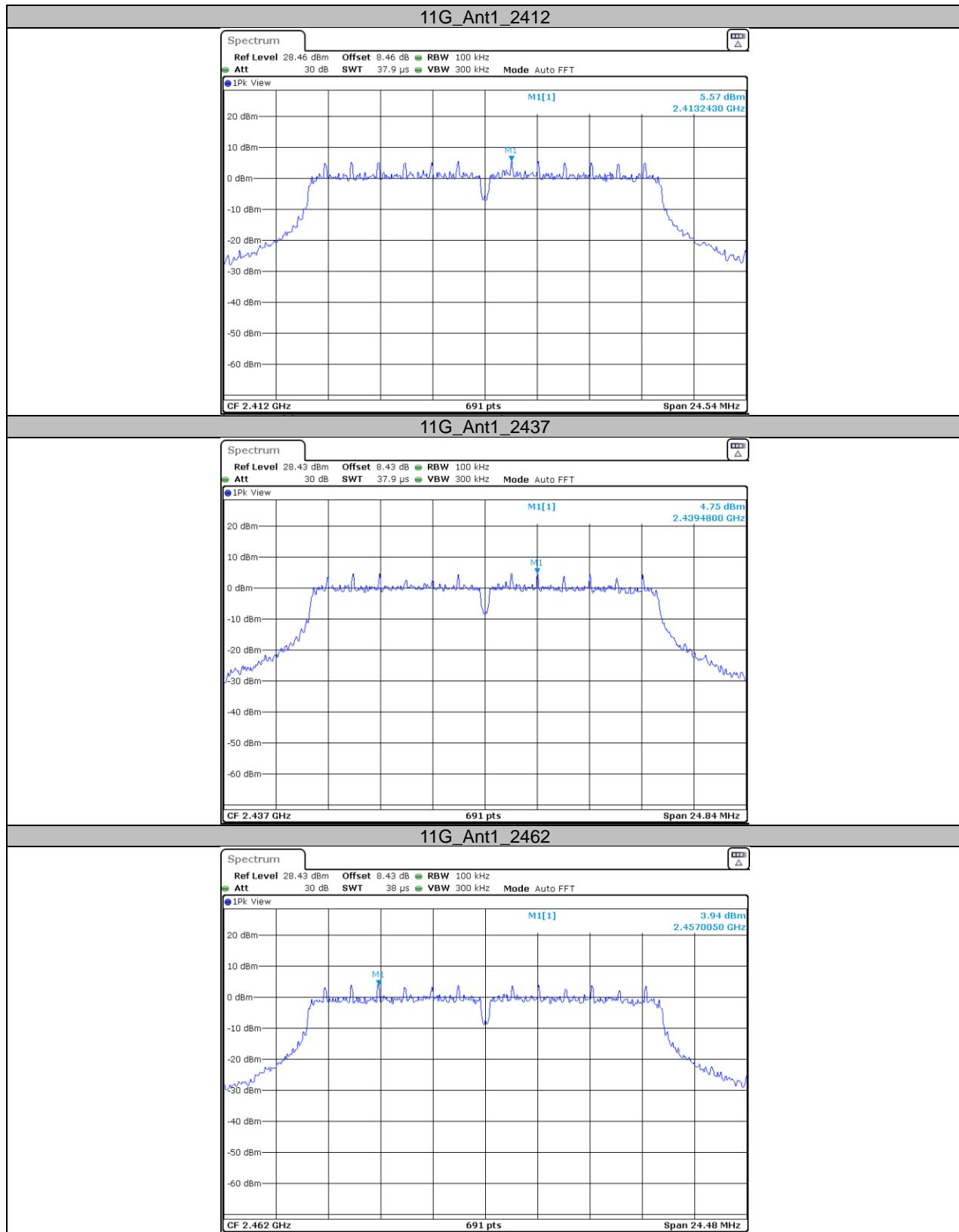


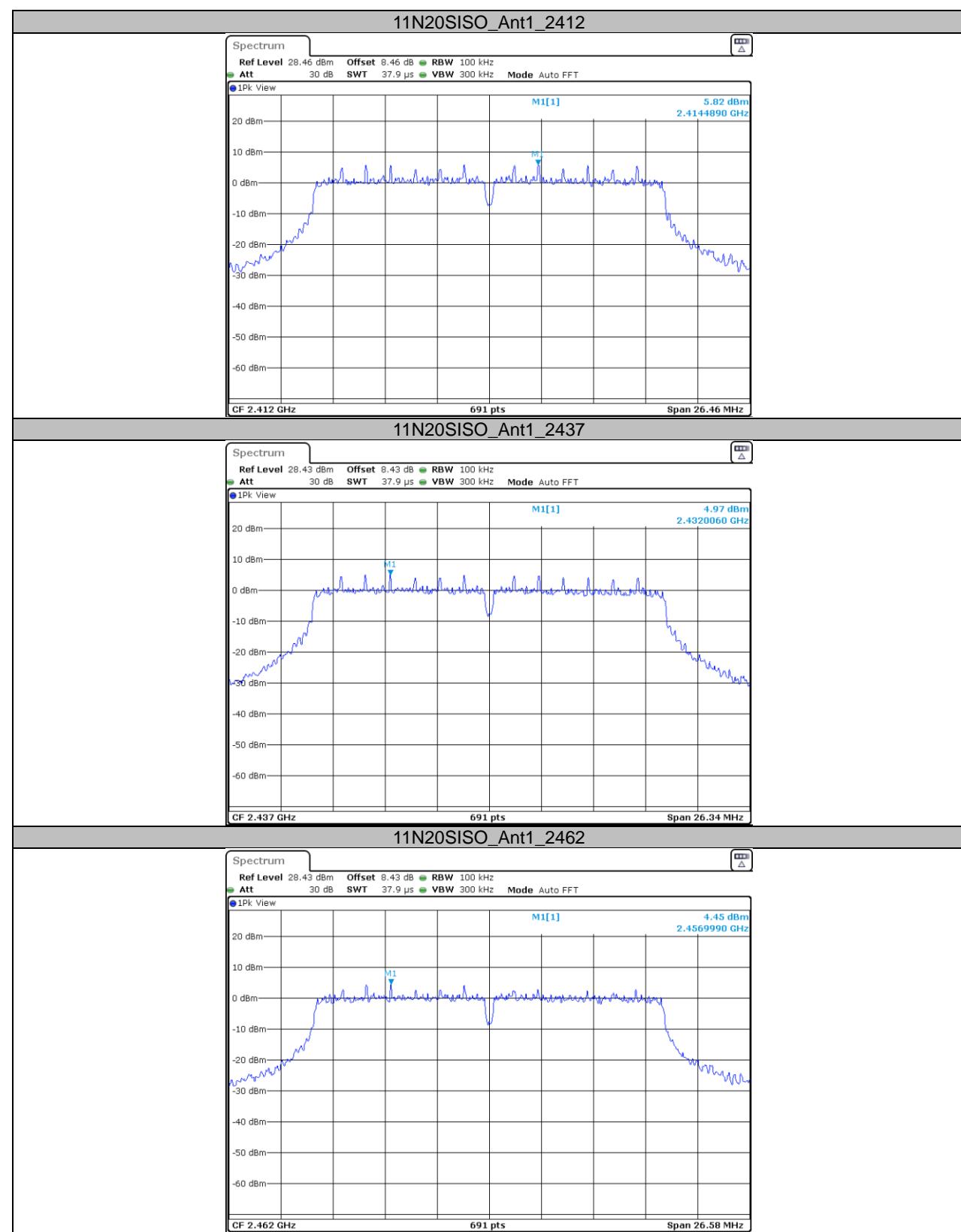


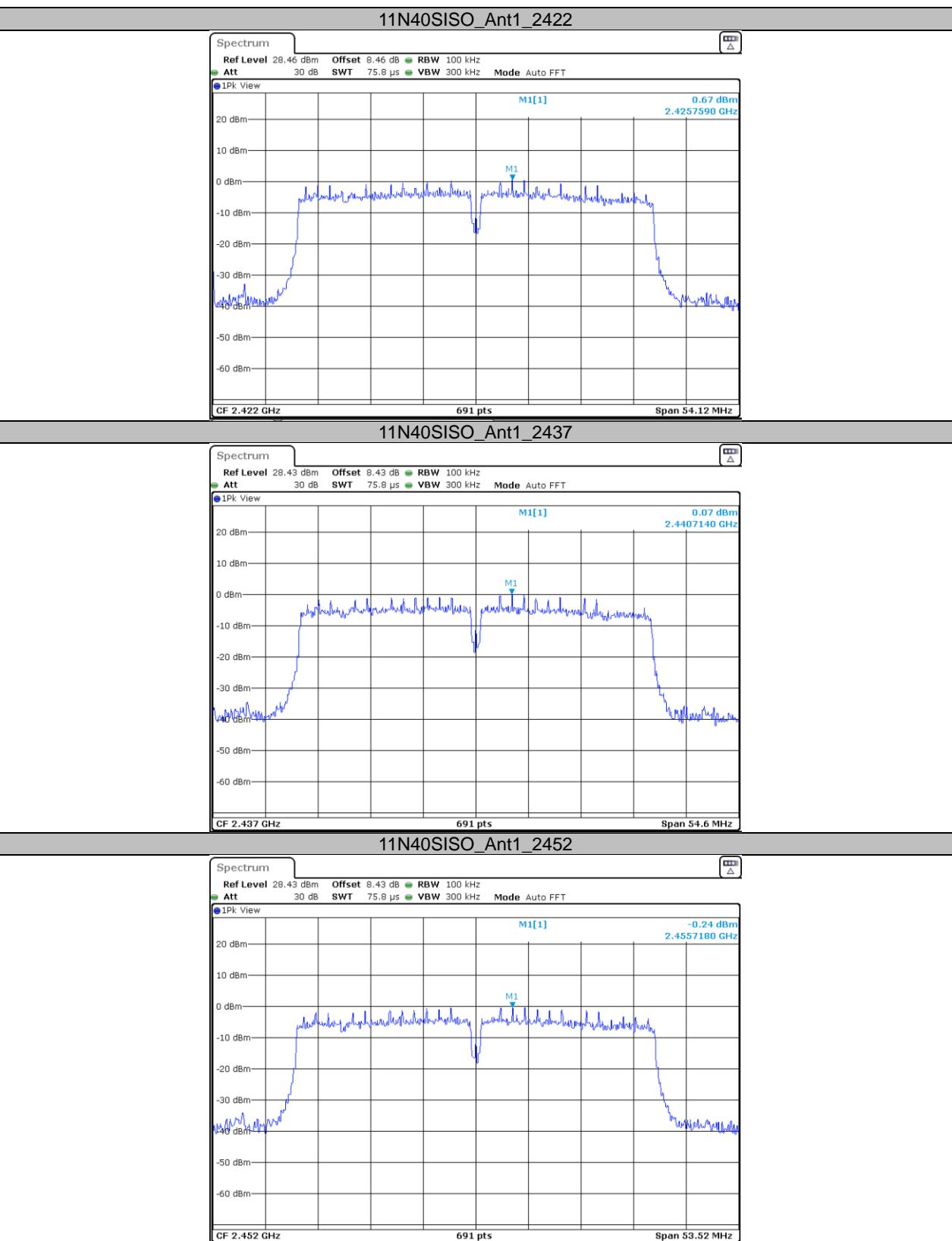
**3. Reference level measurement**

TestMode	Freq(MHz)	Max.Point[MHz]	Result[dBm]
11B	2412	2412.49	8.51
	2437	2436.50	7.78
	2462	2462.49	7.82
11G	2412	2413.24	5.57
	2437	2439.48	4.75
	2462	2457.01	3.94
11N20SISO	2412	2414.49	5.82
	2437	2432.01	4.97
	2462	2457.00	4.45
11N40SISO	2422	2425.76	0.67
	2437	2440.71	0.07
	2452	2455.72	-0.24





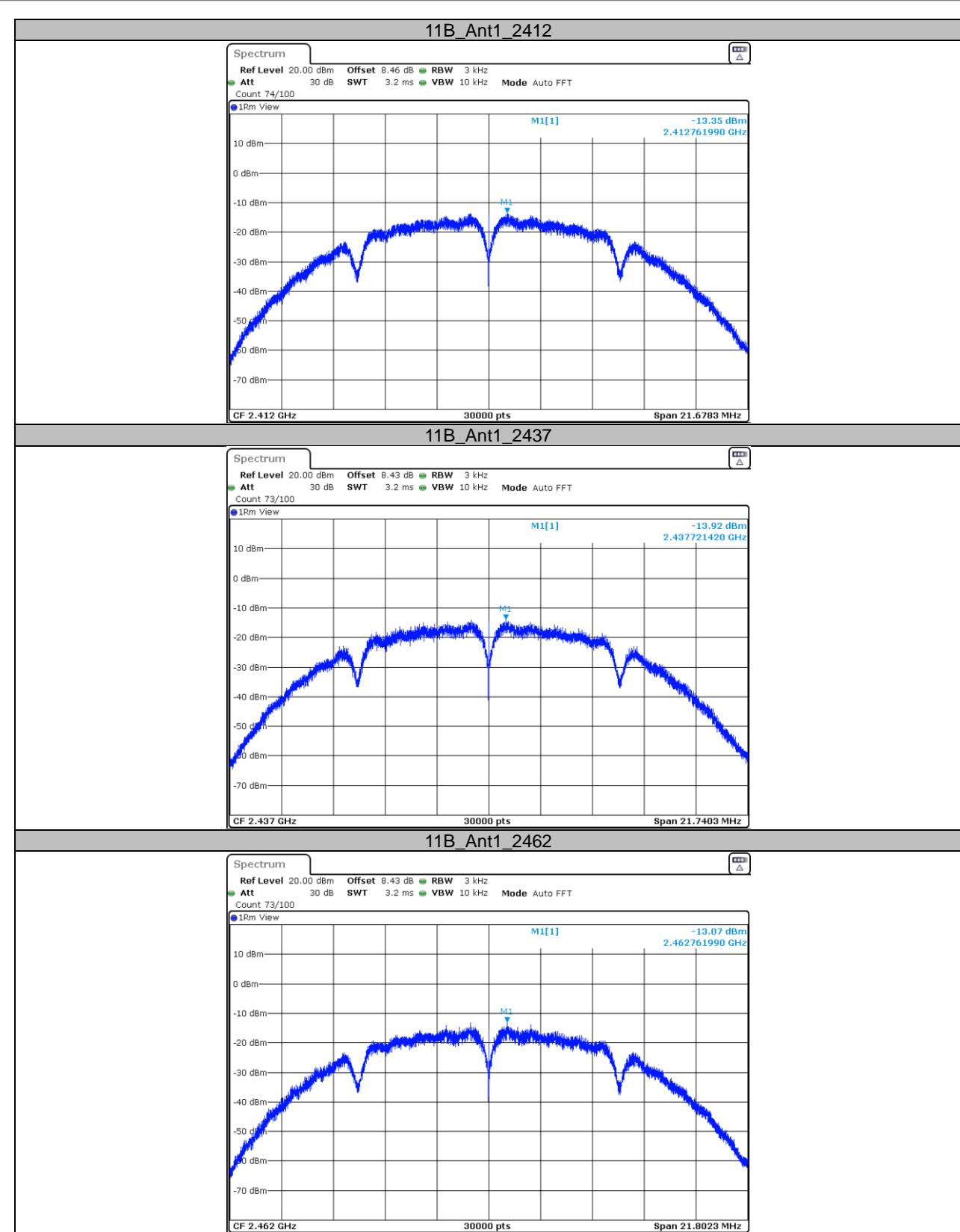


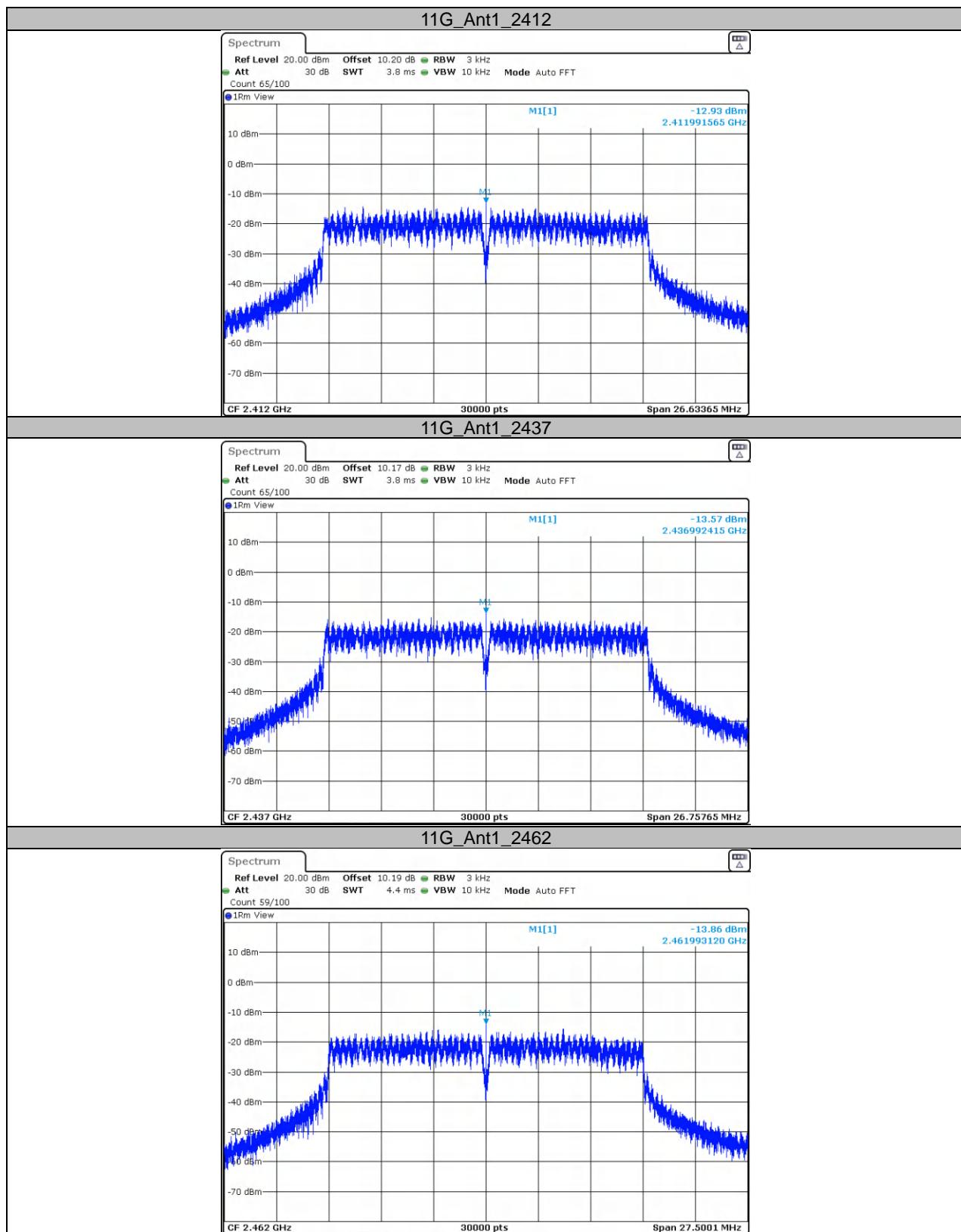


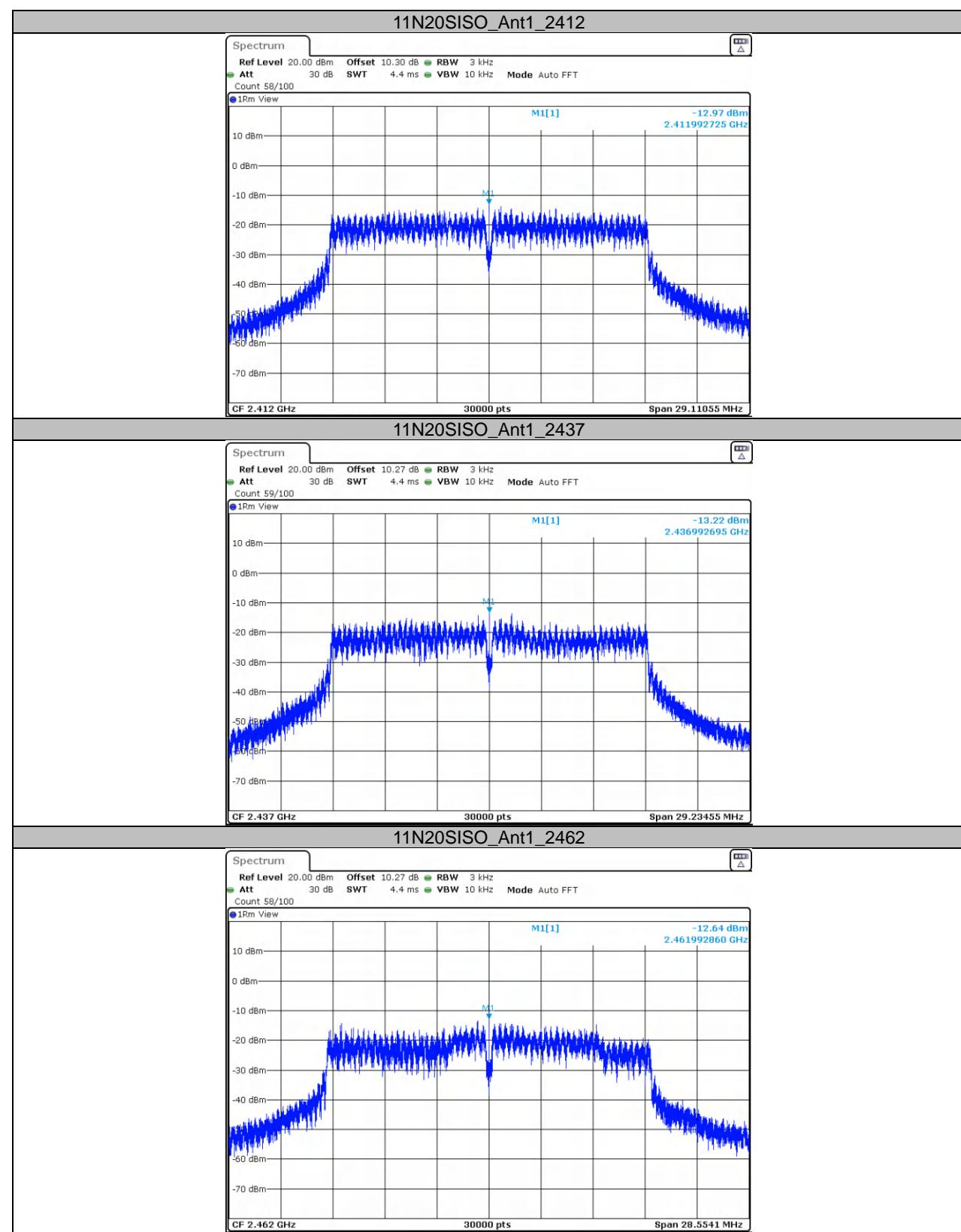
**APPENDIXG - POWER SPECTRAL DENSITY**

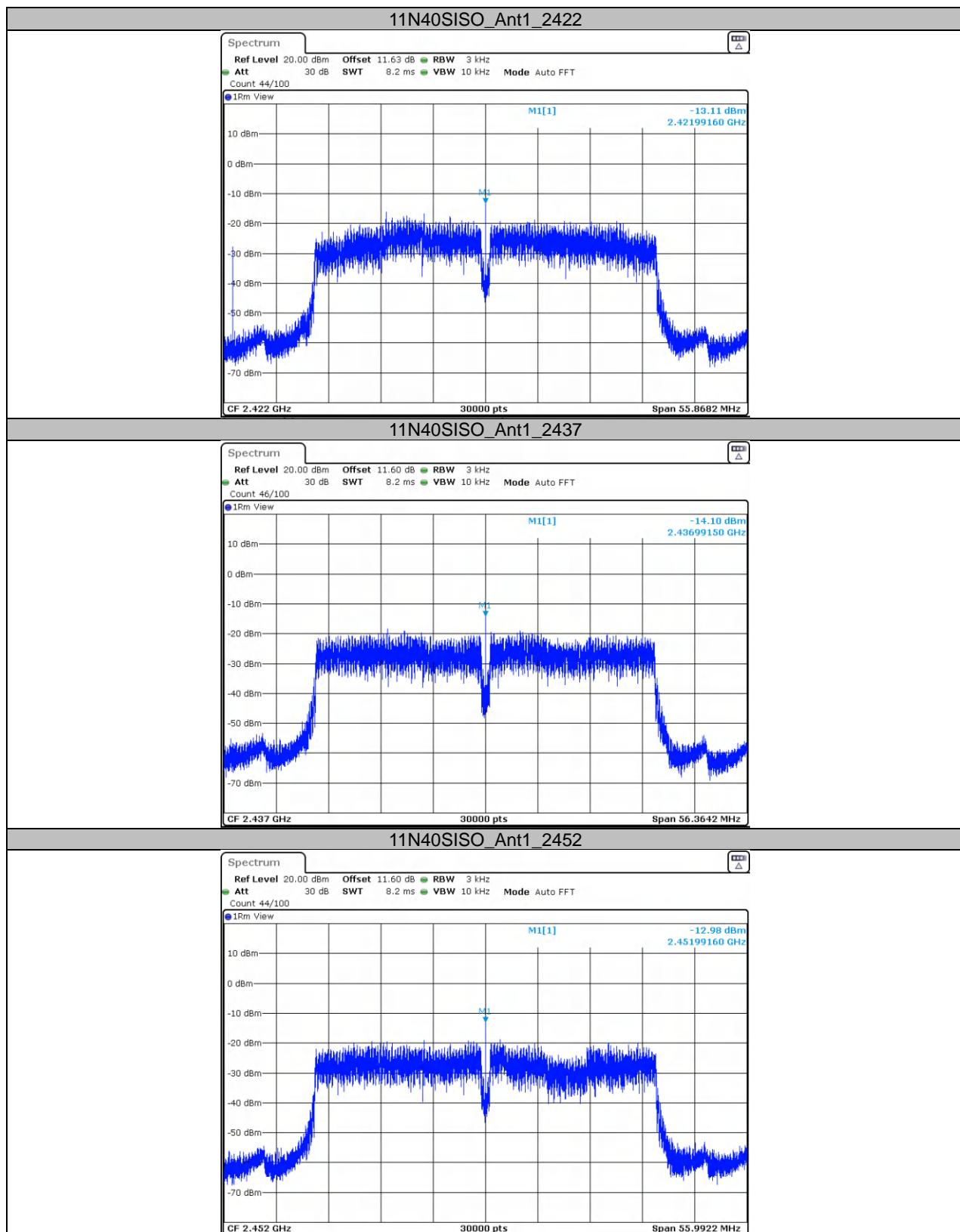
TestMode	Frequency[MHz]	Result[dBm/3-100kHz]	Limit[dBm/3kHz]	Verdict
11B	2412	-13.35	≤8.00	PASS
	2437	-13.92	≤8.00	PASS
	2462	-13.07	≤8.00	PASS
11G	2412	-12.93	≤8.00	PASS
	2437	-13.57	≤8.00	PASS
	2462	-13.86	≤8.00	PASS
11N20SISO	2412	-12.97	≤8.00	PASS
	2437	-13.22	≤8.00	PASS
	2462	-12.64	≤8.00	PASS
11N40SISO	2422	-13.11	≤8.00	PASS
	2437	-14.10	≤8.00	PASS
	2452	-12.98	≤8.00	PASS

Note: Data already contained Duty factor







**End of Test Report**