

CTC Laboratories, Inc.

Room 101 Building B, No. 7, Lanqing 1st Road, Luhu Community, Guanhu Subdistrict, Longhua District, Shenzhen, Guangdong, China
Tel.: (86)755-27521059 Fax: (86)755-27521011 [Http://www.sz-ctc.org.cn](http://www.sz-ctc.org.cn)

TRF No: CTC-TR-057_A1

For anti-fake verification, please visit the official website of China Inspection And Testing Society : [vz.cnca.cn](http://www.vz.cnca.cn)



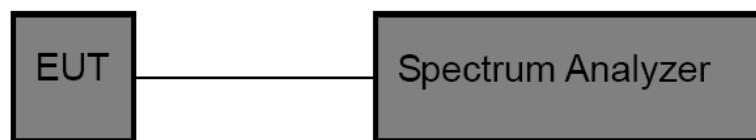
3.5. DTS Bandwidth

Limit

FCC CFR Title 47 Part 15 Subpart C Section 15.247 (a)(2) / RSS-247 5.2 a

Test Item	Limit	Frequency Range (MHz)
DTS Bandwidth	≥ 500 kHz (6dB bandwidth)	2400~2483.5

Test Configuration



Test Procedure

1. The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram above.
2. DTS Spectrum Setting:
 - (1) Set RBW = 100 kHz.
 - (2) Set the video bandwidth (VBW) ≥ 3 RBW.
 - (3) Detector = Peak.
 - (4) Trace mode = Max hold.
 - (5) Sweep = Auto couple.OCB Spectrum Setting:
 - (1) Set RBW = 1% ~ 5% occupied bandwidth.
 - (2) Set the video bandwidth (VBW) ≥ 3 RBW.
 - (3) Detector = Peak.
 - (4) Trace mode = Max hold.
 - (5) Sweep = Auto couple.

NOTE: The EUT was set to continuously transmitting in each mode and low, Middle and high channel for the test.

Test Mode

Please refer to the clause 2.4.

**Test Result**

Test Mode	Channel Frequency[MHz]	OCB [MHz]	DTS BW [MHz]	Limit[MHz]	Verdict
11B	2412	13.856	8.560	≥ 0.5	PASS
	2437	13.846	8.040		
	2462	13.796	8.040		
11G	2412	16.877	15.960	≥ 0.5	PASS
	2437	16.875	16.280		
	2462	16.858	15.480		
11N20SISO	2412	18.035	16.640	≥ 0.5	PASS
	2437	18.054	16.520		
	2462	17.966	15.640		
11N40SISO	2422	36.337	35.440	≥ 0.5	PASS
	2437	36.327	35.200		
	2452	36.390	35.440		

CTC Laboratories, Inc.

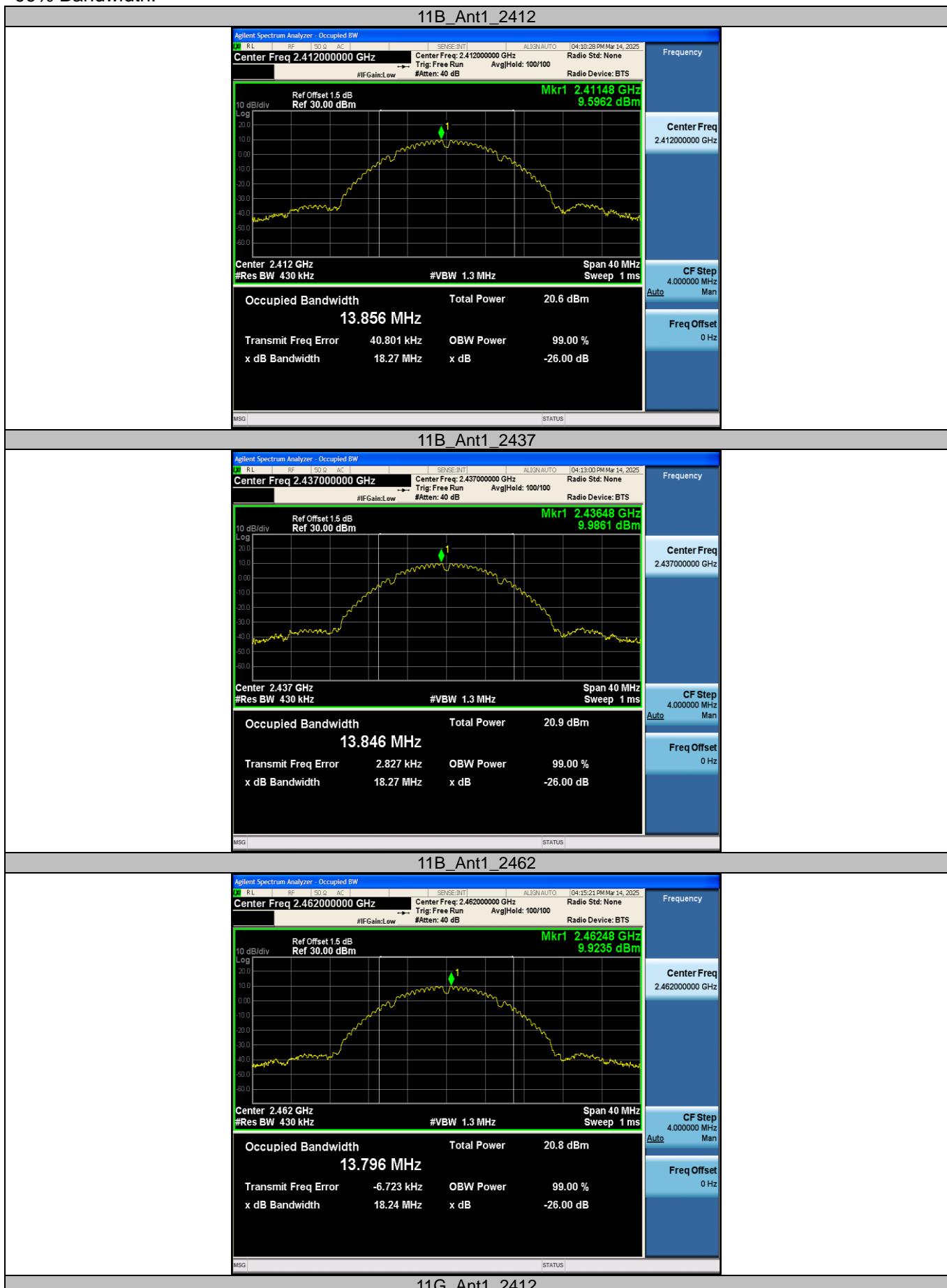
Room 101 Building B, No. 7, Lanqing 1st Road, Luhu Community, Guanhu Subdistrict, Longhua District, Shenzhen, Guangdong, China
Tel.: (86)755-27521059 Fax: (86)755-27521011 [Http://www.sz-ctc.org.cn](http://www.sz-ctc.org.cn)

TRF No: CTC-TR-057_A1

For anti-fake verification, please visit the official website of China Inspection And Testing Society : www.cnca.gov.cn



99% Bandwidth:

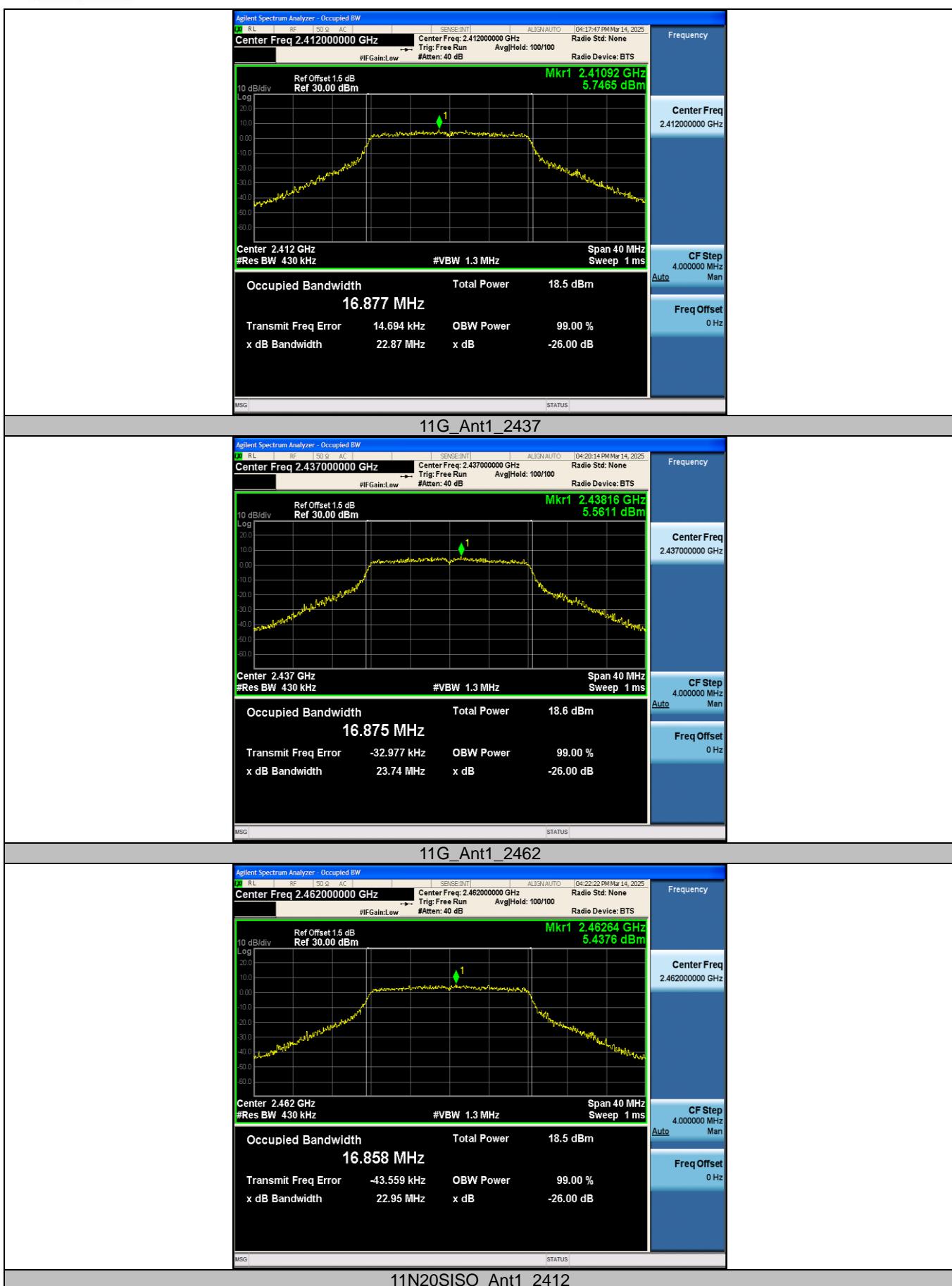


CTC Laboratories, Inc.

Room 101 Building B, No. 7, Lanqing 1st Road, Luhu Community, Guanhu Subdistrict, Longhua District, Shenzhen, Guangdong, China
Tel.: (86)755-27521059 Fax: (86)755-27521011 [Http://www.sz-ctc.org.cn](http://www.sz-ctc.org.cn)

TRF No: CTC-TR-057_A1

For anti-fake verification, please visit the official website of China Inspection And Testing Society : [vz.cnca.cn](http://www.vz.cnca.cn)

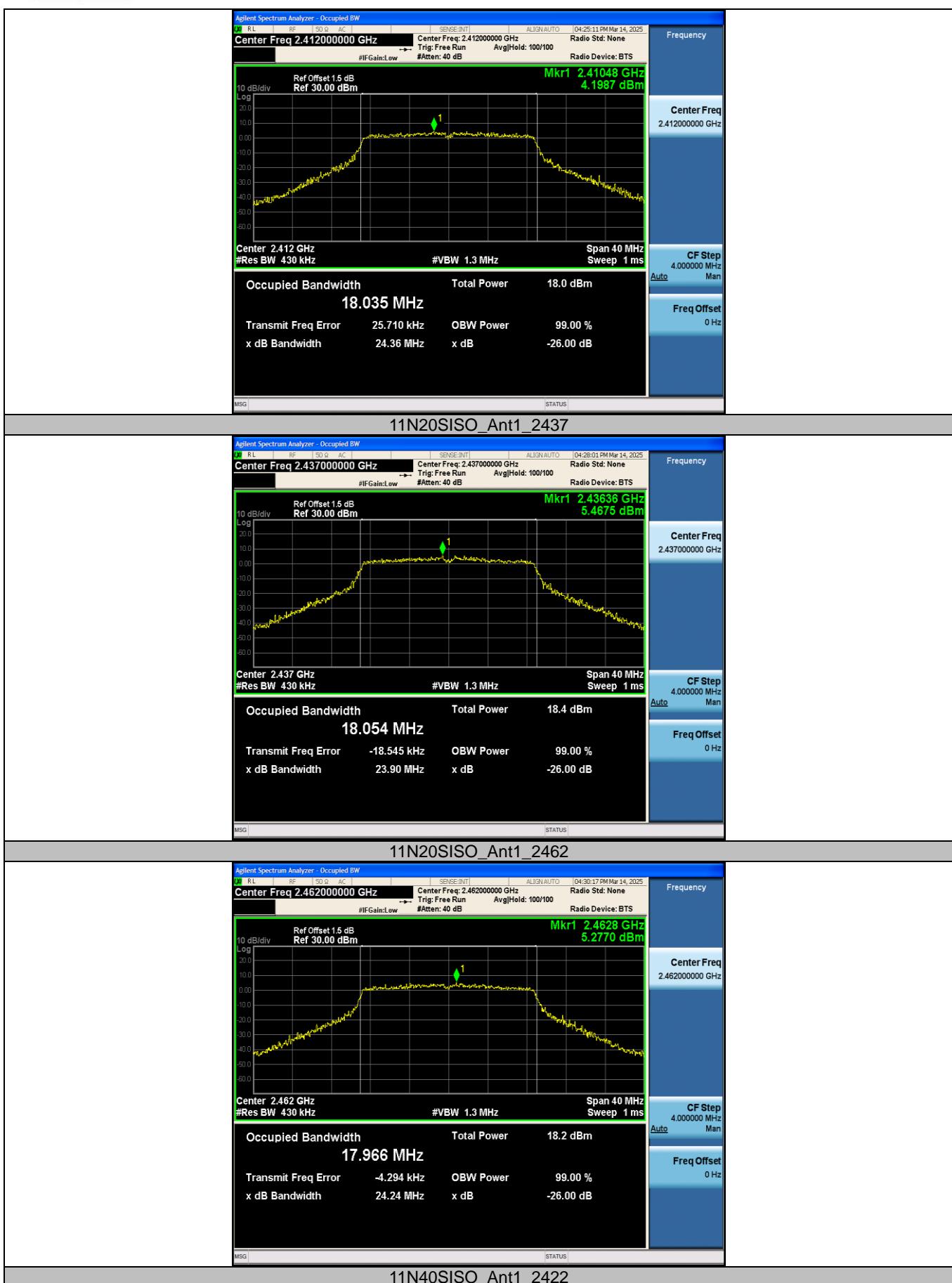


CTC Laboratories, Inc.

Room 101 Building B, No. 7, Lanqing 1st Road, Luhu Community, Guanhu Subdistrict, Longhua District, Shenzhen, Guangdong, China
Tel.: (86)755-27521059 Fax: (86)755-27521011 [Http://www.sz-ctc.org.cn](http://www.sz-ctc.org.cn)

TRF No: CTC-TR-057_A1

For anti-fake verification, please visit the official website of China Inspection And Testing Society : [vz.cnca.cn](http://www.vz.cnca.cn)

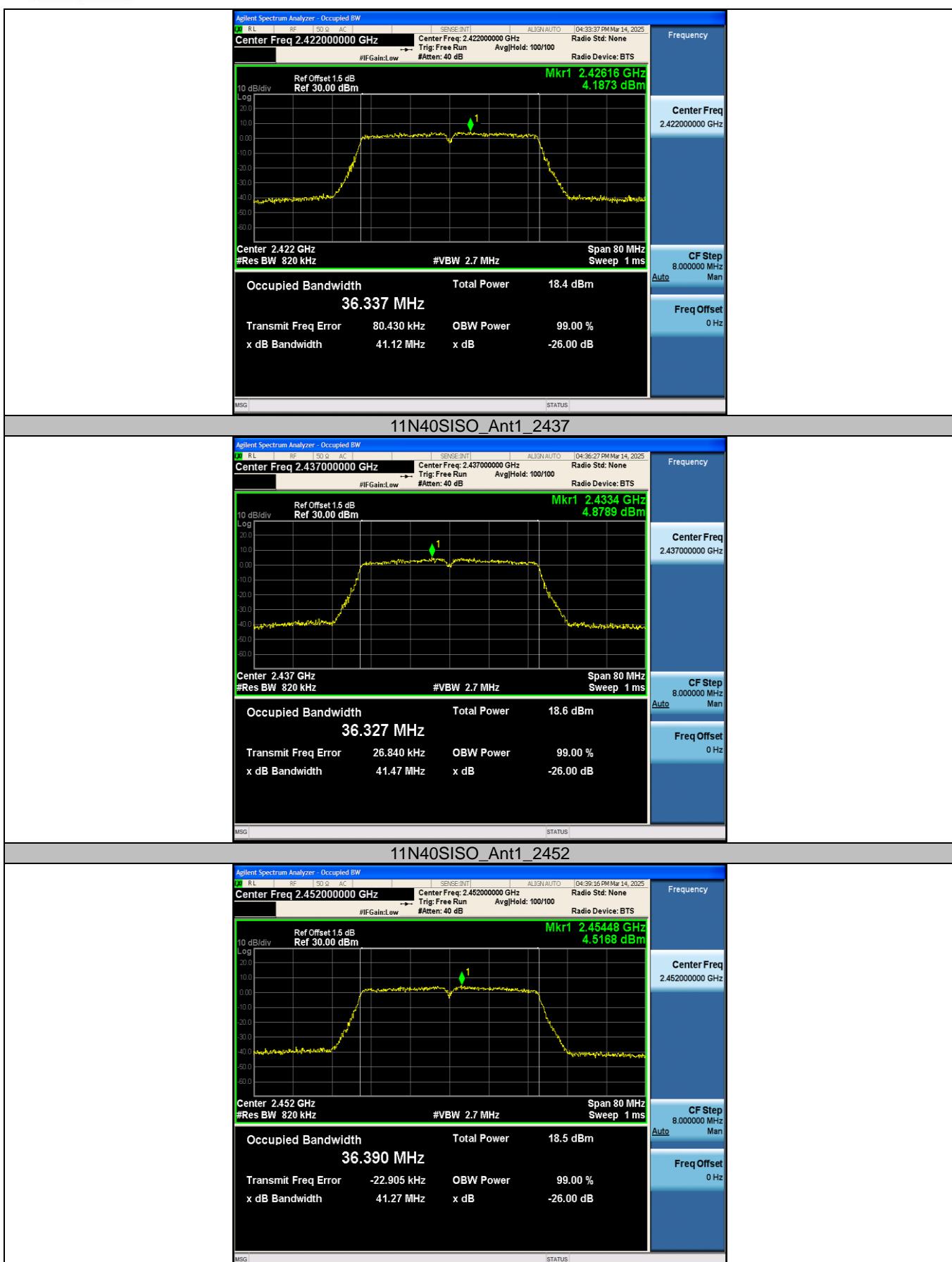


CTC Laboratories, Inc.

Room 101 Building B, No. 7, Lanqing 1st Road, Luhu Community, Guanhu Subdistrict, Longhua District, Shenzhen, Guangdong, China
Tel.: (86)755-27521059 Fax: (86)755-27521011 [Http://www.sz-ctc.org.cn](http://www.sz-ctc.org.cn)

TRF No: CTC-TR-057_A1

For anti-fake verification, please visit the official website of China Inspection And Testing Society : www.cnca.gov.cn





DTS Bandwidth:

11B_Ant1_2412



Frequency

Auto Tune

Center Freq

2.41200000 GHz

Start Freq

2.39200000 GHz

Stop Freq

2.43200000 GHz

CF Step

4.000000 MHz

Auto

Freq Offset

0 Hz

11B_Ant1_2437



Frequency

Auto Tune

Center Freq

2.43700000 GHz

Start Freq

2.41700000 GHz

Stop Freq

2.45700000 GHz

CF Step

4.000000 MHz

Auto

Freq Offset

0 Hz

11B_Ant1_2462



Frequency

Auto Tune

Center Freq

2.46200000 GHz

Start Freq

2.44200000 GHz

Stop Freq

2.48200000 GHz

CF Step

4.000000 MHz

Auto

Freq Offset

0 Hz

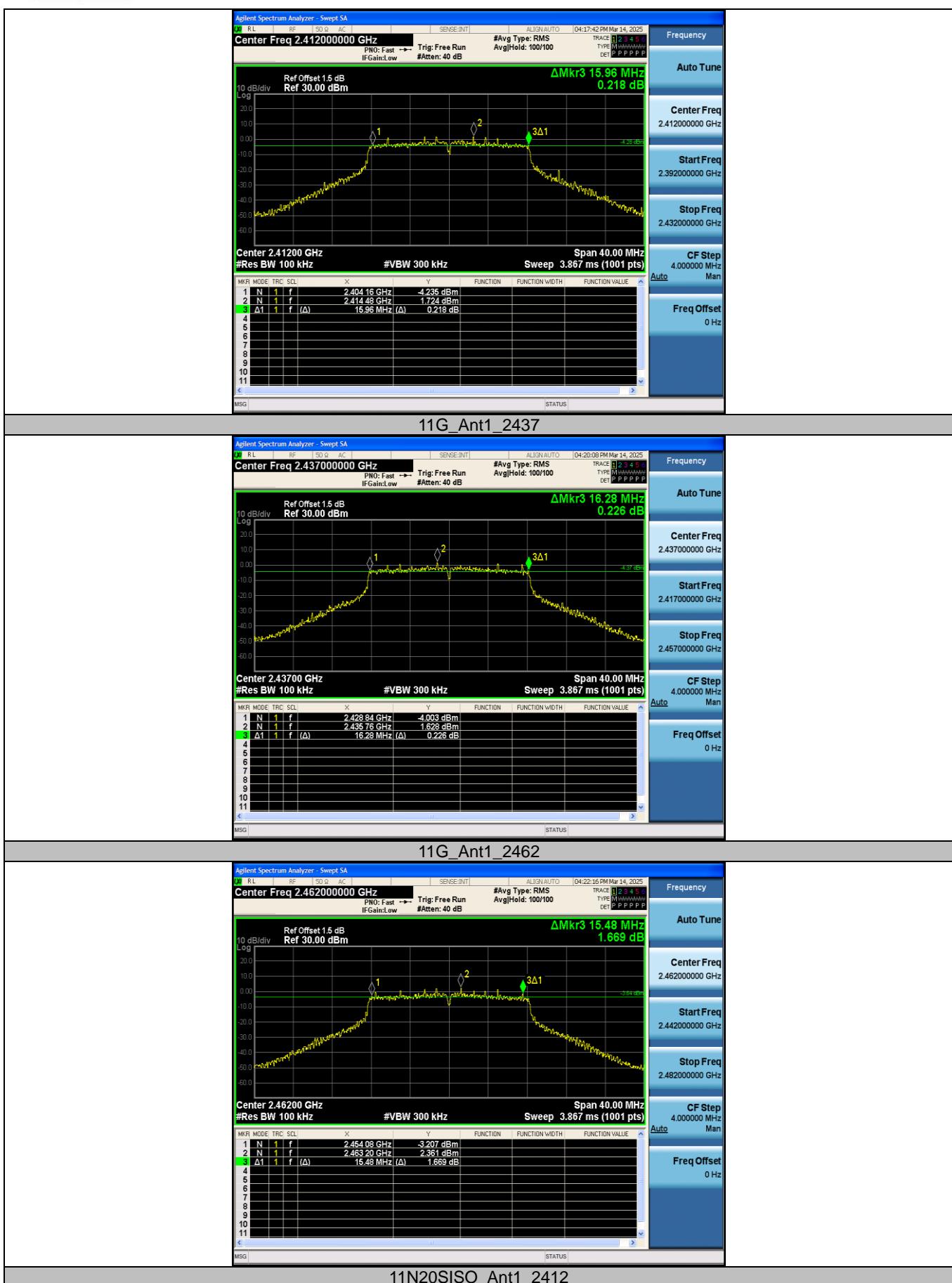
11G_Ant1_2412

CTC Laboratories, Inc.

Room 101 Building B, No. 7, Lanqing 1st Road, Luhu Community, Guanhu Subdistrict, Longhua District, Shenzhen, Guangdong, China
Tel.: (86)755-27521059 Fax: (86)755-27521011 [Http://www.sz-ctc.org.cn](http://www.sz-ctc.org.cn)

TRF No: CTC-TR-057_A1

For anti-fake verification, please visit the official website of China Inspection And Testing Society : [vz.cnca.cn](http://www.vz.cnca.cn)

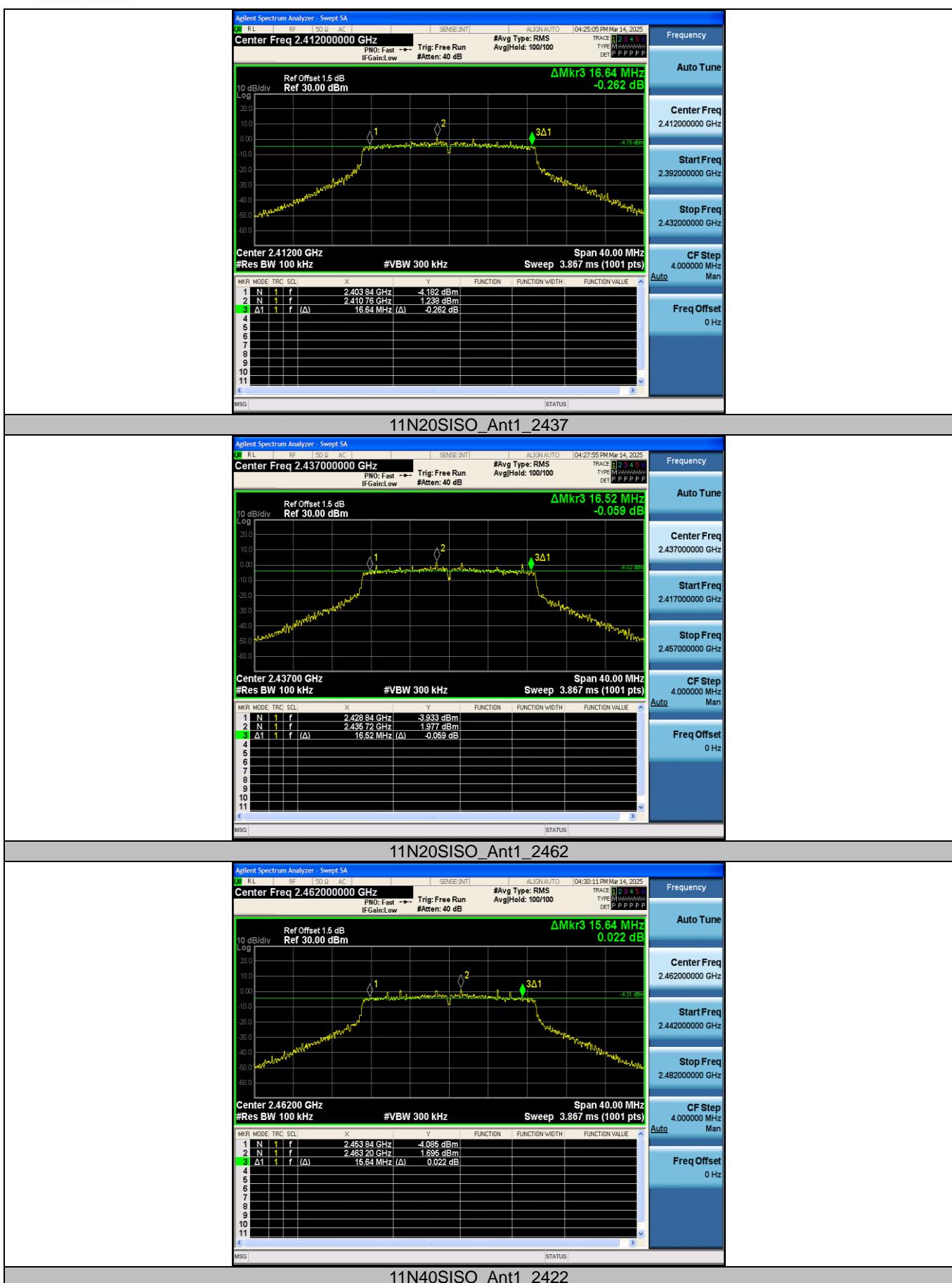


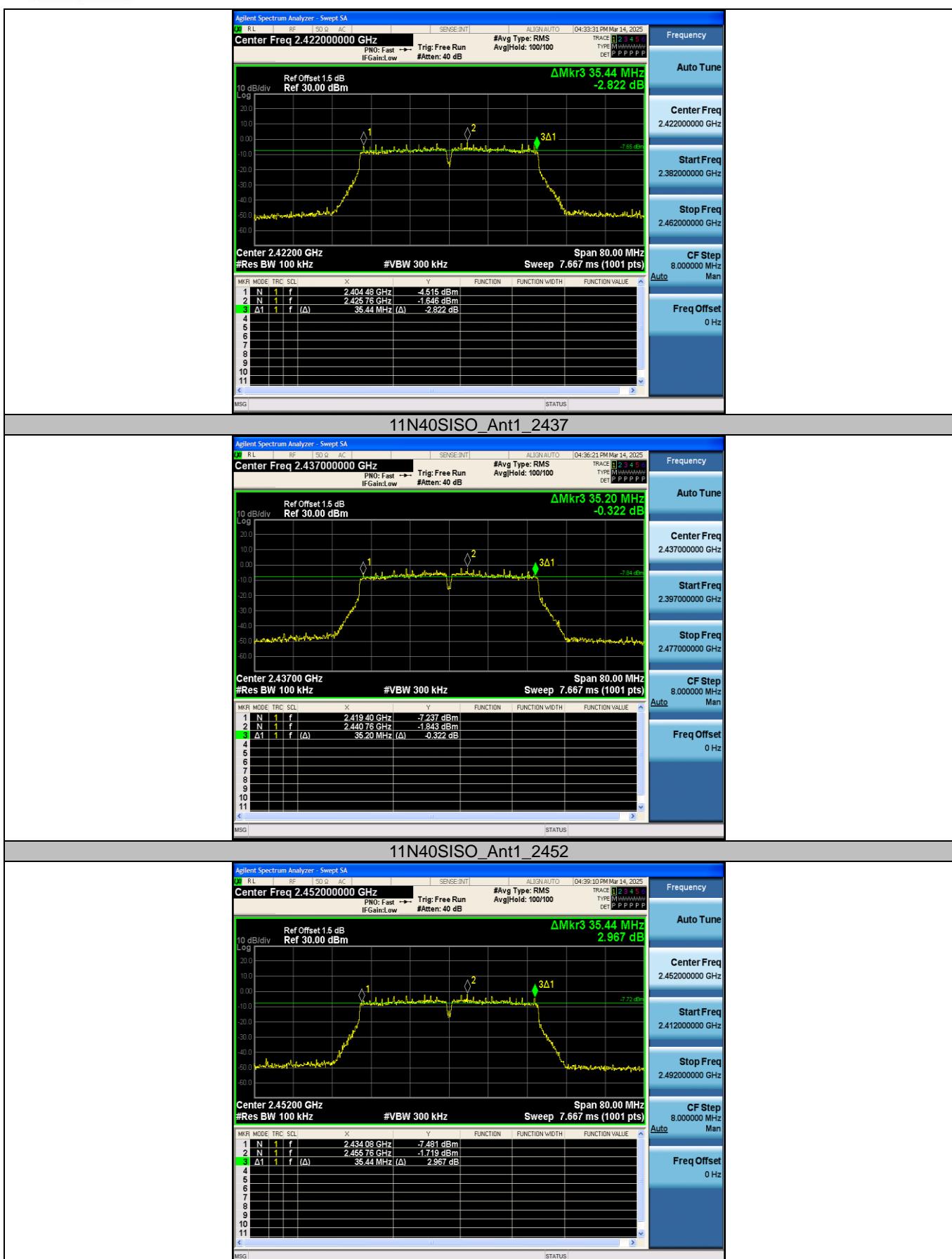
CTC Laboratories, Inc.

Room 101 Building B, No. 7, Lanqing 1st Road, Luhu Community, Guanhu Subdistrict, Longhua District, Shenzhen, Guangdong, China
Tel.: (86)755-27521059 Fax: (86)755-27521011 [Http://www.sz-ctc.org.cn](http://www.sz-ctc.org.cn)

TRF No: CTC-TR-057_A1

For anti-fake verification, please visit the official website of China Inspection And Testing Society : [vz.cnca.cn](http://www.vz.cnca.cn)







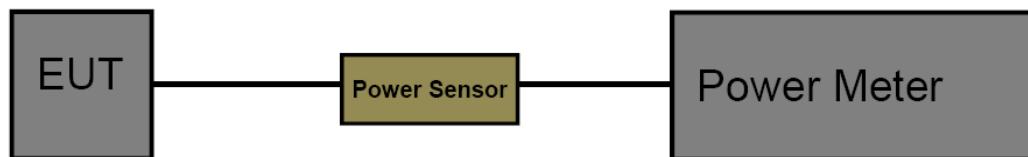
3.6. Peak Output Power

Limit

FCC CFR Title 47 Part 15 Subpart C Section 15.247 (b)(3) / RSS-247 5.4 d

Section	Test Item	Limit	Frequency Range (MHz)
FCC CFR 47 Part15.247 (b)(3)	Maximum Conducted Output Power	1 Watt or 30dBm	2400~2483.5
ISED RSS-247 5.4 d	Maximum Conducted Output Power	1 Watt or 30dBm	2400~2483.5
	EIRP	4 Watt or 36dBm	2400~2483.5

Test Configuration



Test Procedure

1. The maximum conducted output power may be measured using a broadband RF power meter.
2. Power measurements were performed only when the EUT was transmitting at its maximum power control level using a broadband power meter with a pulse sensor.
3. The power meter implemented triggering and gating capabilities which were set up such that power measurements were recorded only during the ON time of the transmitter.
4. Record the measurement data.

Test Mode

Please refer to the clause 2.4.

**Test Result**

Test Mode	Frequency [MHz]	Conducted Peak Power[dBm]	Conducted Limit[dBm]	EIRP [dBm]	EIRP Limit [dBm]	Verdict
11B	2412	20.11	≤30.00	21.94	≤36.00	PASS
	2437	20.31	≤30.00	22.14	≤36.00	PASS
	2462	20.19	≤30.00	22.02	≤36.00	PASS
11G	2412	19.39	≤30.00	21.22	≤36.00	PASS
	2437	19.47	≤30.00	21.30	≤36.00	PASS
	2462	19.30	≤30.00	21.13	≤36.00	PASS
11N20SISO	2412	18.86	≤30.00	20.69	≤36.00	PASS
	2437	19.12	≤30.00	20.95	≤36.00	PASS
	2462	18.84	≤30.00	20.67	≤36.00	PASS
11N40SISO	2422	18.68	≤30.00	20.51	≤36.00	PASS
	2437	18.82	≤30.00	20.65	≤36.00	PASS
	2452	18.74	≤30.00	20.57	≤36.00	PASS

CTC Laboratories, Inc.

Room 101 Building B, No. 7, Lanqing 1st Road, Luhu Community, Guanhu Subdistrict, Longhua District, Shenzhen, Guangdong, China
Tel.: (86)755-27521059 Fax: (86)755-27521011 [Http://www.sz-ctc.org.cn](http://www.sz-ctc.org.cn)

TRF No: CTC-TR-057_A1

For anti-fake verification, please visit the official website of China Inspection And Testing Society : [vz.cnca.cn](http://www.vz.cnca.cn)



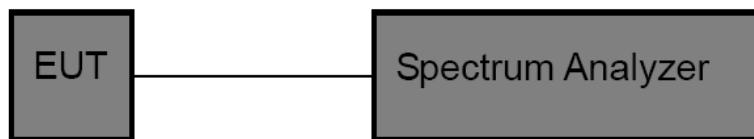
3.7. Power Spectral Density

Limit

FCC CFR Title 47 Part 15 Subpart C Section 15.247 (e) / RSS-247 5.2 b

Test Item	Limit	Frequency Range (MHz)
Power Spectral Density	8 dBm (in any 3 kHz)	2400~2483.5

Test Configuration



Test Procedure

1. The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram above.
2. The EUT was directly connected to the Spectrum Analyzer and antenna output port as show in the block diagram above. The measurement according to section 10.2 of KDB 558074 D01 DTS Meas Guidance v05r02.
3. Spectrum Setting:
Set analyzer center frequency to DTS channel center frequency.
Set span to at least 1.5 times the OBW.
Set RBW to: $3 \text{ kHz} \leq \text{RBW} \leq 100 \text{ kHz}$.
Set VBW $\geq [3 \times \text{RBW}]$.
Detector = power averaging (rms) or sample detector (when rms not available).
Ensure that the number of measurement points in the sweep $\geq [2 \times \text{span} / \text{RBW}]$.
Sweep time = auto couple.
Employ trace averaging (rms) mode over a minimum of 100 traces.
Use the peak marker function to determine the maximum amplitude level.
If the measured value exceeds requirement, then reduce RBW (but no less than 3 kHz) and repeat (note that this may require zooming in on the emission of interest and reducing the span to meet the minimum measurement point requirement as the RBW is reduced).

Test Mode

Please refer to the clause 2.4.

**Test Result**

Test Mode	Frequency[MHz]	Result[dBm/3kHz]	Limit[dBm/3kHz]	Verdict
11B	2412	-3.69	≤8.00	PASS
	2437	-3.32	≤8.00	PASS
	2462	-4.21	≤8.00	PASS
11G	2412	-11.82	≤8.00	PASS
	2437	-10.44	≤8.00	PASS
	2462	-12.67	≤8.00	PASS
11N20SISO	2412	-11.48	≤8.00	PASS
	2437	-13.30	≤8.00	PASS
	2462	-13.05	≤8.00	PASS
11N40SISO	2422	-16.59	≤8.00	PASS
	2437	-15.37	≤8.00	PASS
	2452	-16.80	≤8.00	PASS

CTC Laboratories, Inc.

Room 101 Building B, No. 7, Lanqing 1st Road, Luhu Community, Guanhu Subdistrict, Longhua District, Shenzhen, Guangdong, China
Tel.: (86)755-27521059 Fax: (86)755-27521011 [Http://www.sz-ctc.org.cn](http://www.sz-ctc.org.cn)

TRF No: CTC-TR-057_A1

For anti-fake verification, please visit the official website of China Inspection And Testing Society : www.cnca.gov.cn



Test Graphs

11B_Ant1_2412



11B_Ant1_2437



11B_Ant1_2462



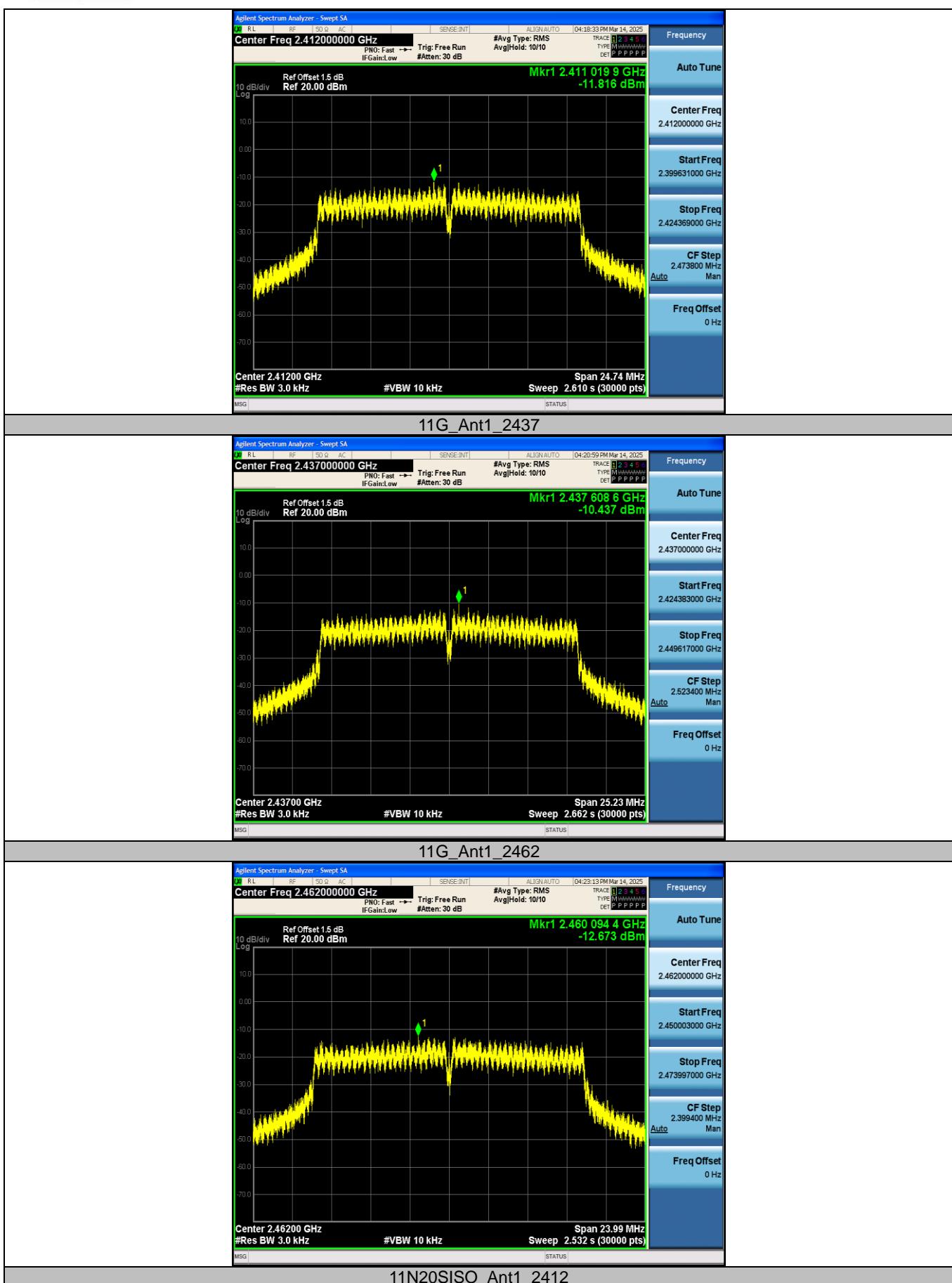
11G_Ant1_2412

CTC Laboratories, Inc.

Room 101 Building B, No. 7, Lanqing 1st Road, Luhu Community, Guanhu Subdistrict, Longhua District, Shenzhen, Guangdong, China
Tel.: (86)755-27521059 Fax: (86)755-27521011 [Http://www.sz-ctc.org.cn](http://www.sz-ctc.org.cn)

TRF No: CTC-TR-057_A1

For anti-fake verification, please visit the official website of China Inspection And Testing Society : [vz.cnca.cn](http://www.vz.cnca.cn)

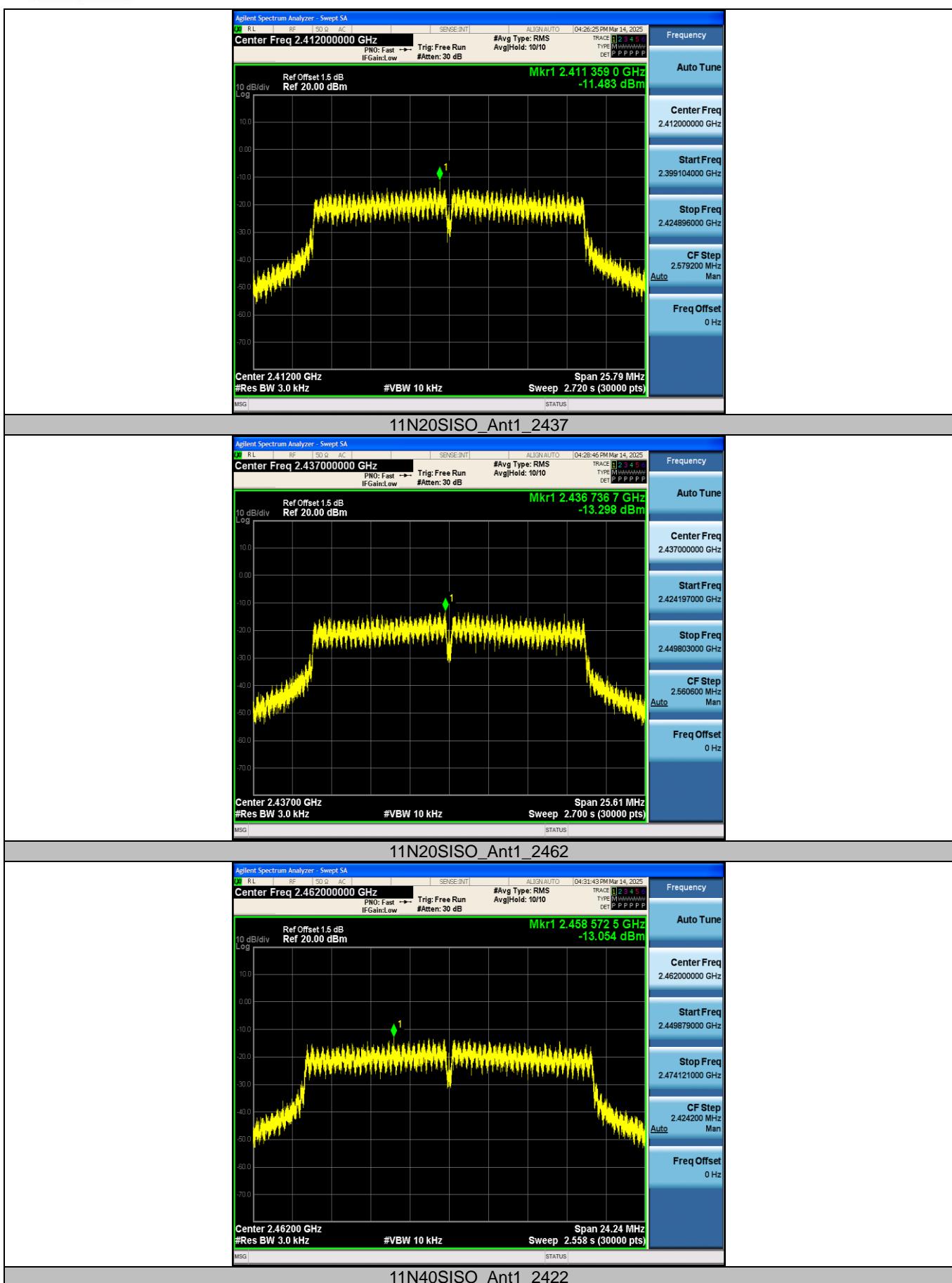


CTC Laboratories, Inc.

Room 101 Building B, No. 7, Lanqing 1st Road, Luhu Community, Guanhu Subdistrict, Longhua District, Shenzhen, Guangdong, China
Tel.: (86)755-27521059 Fax: (86)755-27521011 [Http://www.sz-ctc.org.cn](http://www.sz-ctc.org.cn)

TRF No: CTC-TR-057_A1

For anti-fake verification, please visit the official website of China Inspection And Testing Society : [vz.cnca.cn](http://www.vz.cnca.cn)



CTC Laboratories, Inc.

Room 101 Building B, No. 7, Lanqing 1st Road, Luhu Community, Guanhu Subdistrict, Longhua District, Shenzhen, Guangdong, China
Tel.: (86)755-27521059 Fax: (86)755-27521011 [Http://www.sz-ctc.org.cn](http://www.sz-ctc.org.cn)

TRF No: CTC-TR-057_A1

For anti-fake verification, please visit the official website of China Inspection And Testing Society : [vz.cnca.cn](http://www.vz.cnca.cn)



CTC Laboratories, Inc.

Room 101 Building B, No. 7, Lanqing 1st Road, Luhu Community, Guanhu Subdistrict, Longhua District, Shenzhen, Guangdong, China
Tel.: (86)755-27521059 Fax: (86)755-27521011 [Http://www.sz-ctc.org.cn](http://www.sz-ctc.org.cn)

TRF No: CTC-TR-057_A1

For anti-fake verification, please visit the official website of China Inspection And Testing Society : [vz.cnca.cn](http://www.vz.cnca.cn)

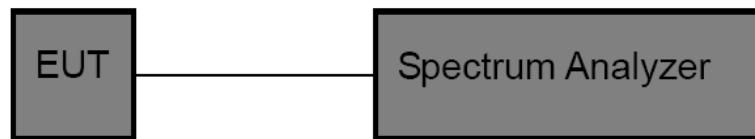


3.8. Duty Cycle

Limit

None, for report purposes only.

Test Configuration



Test Procedure

1. The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram above.
 2. The EUT was directly connected to the Spectrum Analyzer and antenna output port as show in the block diagram above. The measurement according to section 10.2 of KDB 558074 D01 DTS Meas Guidance v05r02.
 3. Spectrum Setting:
Set analyzer center frequency to test channel center frequency.
Set the span to 0Hz.
Set the RBW to 10MHz.
Set the VBW to 10MHz.
Detector: Peak.
Sweep time: Auto.
- Allow trace to fully stabilize. Then use the peak marker function to determine the maximum amplitude level.

Test Mode

Please refer to the clause 2.4.

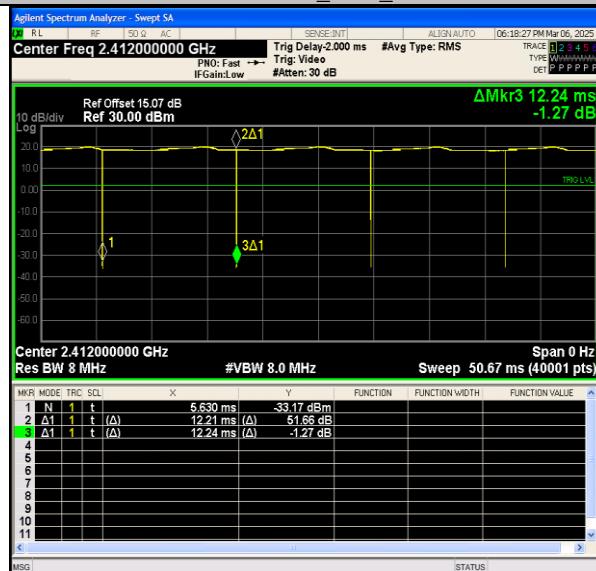
Test Result

Test Mode	Frequency [MHz]	Transmission Duration [ms]	Transmission Period [ms]	Duty Cycle (%)	1/T Minimum VBW (kHz)	Final Setting for VBW (kHz)
11B	2412	12.21	12.24	99.75	0.08	1
	2437	12.21	12.24	99.75	0.08	1
	2462	12.21	12.24	99.75	0.08	1
11G	2412	2.03	2.07	98.07	0.49	1
	2437	2.03	2.07	98.07	0.49	1
	2462	2.03	2.07	98.07	0.49	1
11N20SISO	2412	1.88	1.92	97.92	0.53	1
	2437	1.89	1.93	97.93	0.53	1
	2462	1.89	1.93	97.93	0.53	1
11N40SISO	2422	0.93	0.98	94.90	1.08	3
	2437	0.92	0.97	94.85	1.09	3
	2452	0.93	0.98	94.90	1.08	3



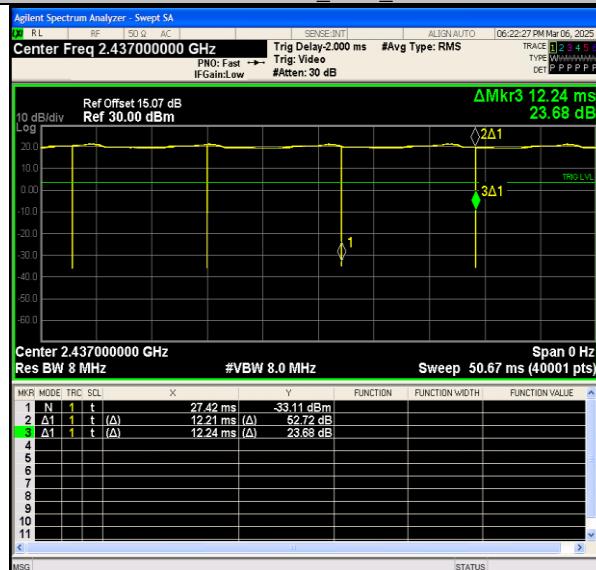
Test Graphs:

11B_Ant1_2412



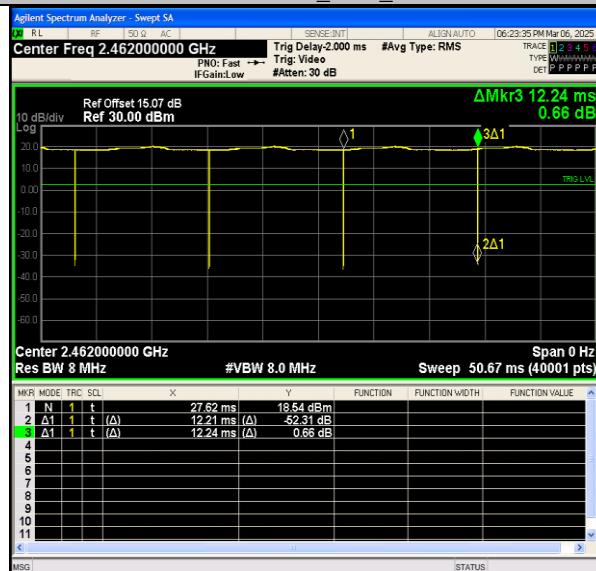
Frequency
Auto Tune
Center Freq
2.412000000 GHz
Start Freq
2.412000000 GHz
Stop Freq
2.412000000 GHz
CF Step
8.000000 MHz
Auto
Freq Offset
0 Hz

11B_Ant1_2437



Frequency
Auto Tune
Center Freq
2.437000000 GHz
Start Freq
2.437000000 GHz
Stop Freq
2.437000000 GHz
CF Step
8.000000 MHz
Auto
Freq Offset
0 Hz

11B_Ant1_2462



Frequency
Auto Tune
Center Freq
2.462000000 GHz
Start Freq
2.462000000 GHz
Stop Freq
2.462000000 GHz
CF Step
8.000000 MHz
Auto
Freq Offset
0 Hz

11G_Ant1_2412

CTC Laboratories, Inc.

Room 101 Building B, No. 7, Lanqing 1st Road, Luhu Community, Guanhu Subdistrict, Longhua District, Shenzhen, Guangdong, China
Tel.: (86)755-27521059 Fax: (86)755-27521011 [Http://www.sz-ctc.org.cn](http://www.sz-ctc.org.cn)

TRF No: CTC-TR-057_A1

For anti-fake verification, please visit the official website of China Inspection And Testing Society : [vz.cnca.cn](http://www.vz.cnca.cn)



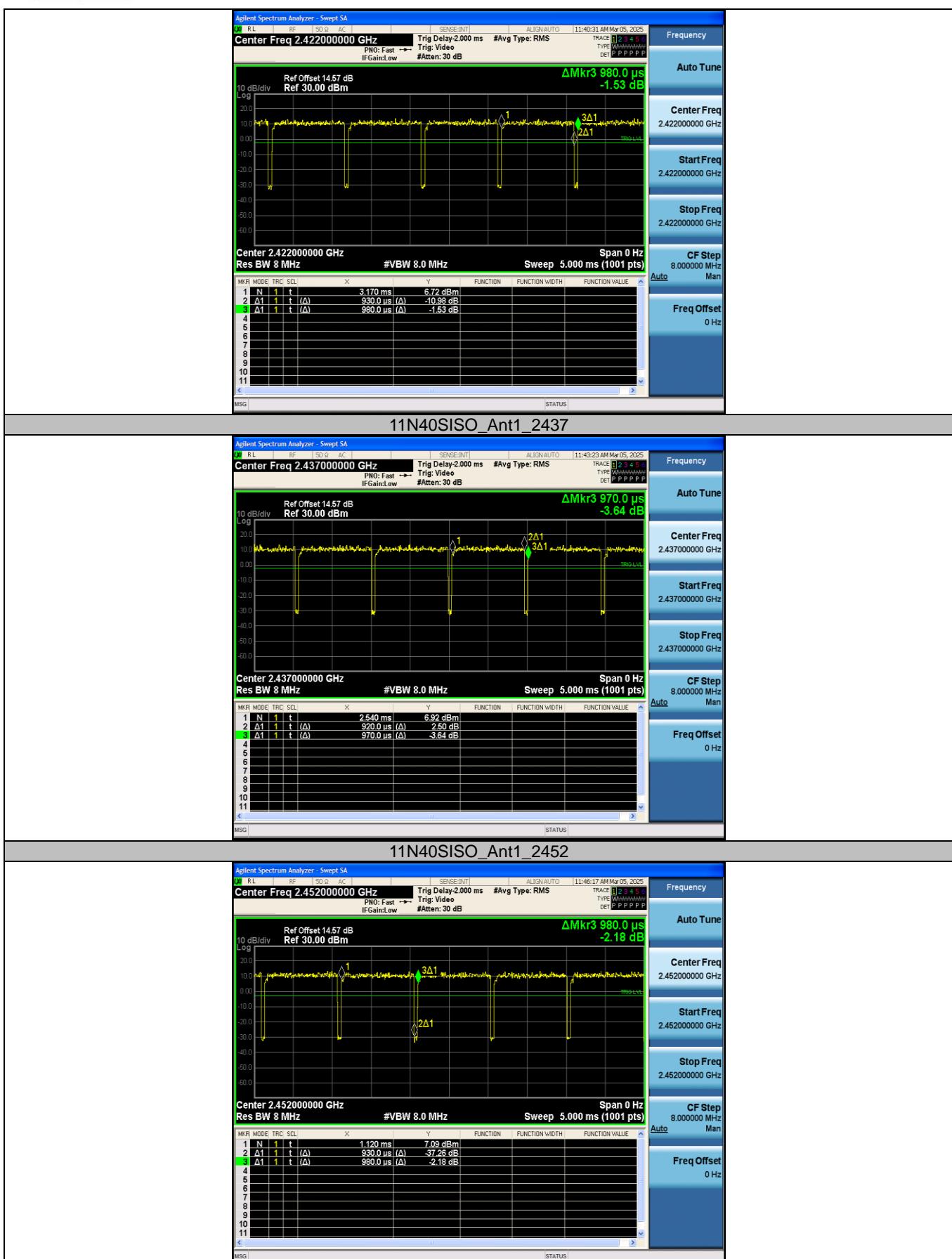
CTC Laboratories, Inc.

Room 101 Building B, No. 7, Lanqing 1st Road, Luhu Community, Guanhu Subdistrict, Longhua District, Shenzhen, Guangdong, China
Tel.: (86)755-27521059 Fax: (86)755-27521011 [Http://www.sz-ctc.org.cn](http://www.sz-ctc.org.cn)

TRF No: CTC-TR-057_A1

For anti-fake verification, please visit the official website of China Inspection And Testing Society : [vz.cnca.cn](http://www.vz.cnca.cn)





CTC Laboratories, Inc.

Room 101 Building B, No. 7, Lanqing 1st Road, Luhu Community, Guanhu Subdistrict, Longhua District, Shenzhen, Guangdong, China
Tel.: (86)755-27521059 Fax: (86)755-27521011 [Http://www.sz-ctc.org.cn](http://www.sz-ctc.org.cn)

TRF No: CTC-TR-057_A1

For anti-fake verification, please visit the official website of China Inspection And Testing Society : [vz.cnca.cn](http://www.vz.cnca.cn)



3.9. Antenna Requirement

Requirement

FCC CFR Title 47 Part 15 Subpart C Section 15.203

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 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.

FCC CFR Title 47 Part 15 Subpart C Section 15.247(c) (1)(i)

(i) Systems operating in the 2400~2483.5 MHz band that is used exclusively for fixed. Point-to-point operations may employ transmitting antennas with directional gain greater than 6dBi provided the maximum conducted output power of the intentional radiator is reduced by 1 dB for every 3 dB that the directional gain of the antenna exceeds 6dBi.

Test Result

The directional gain of the antenna is less than 6dBi, please refer to the EUT internal photographs antenna photo.

RSS-Gen Issue 5 Section 6.8

The applicant for equipment certification, as per RSP-100, must provide a list of all antenna types that may be used with the licence-exempt transmitter, indicating the maximum permissible antenna gain (in dBi) and the required impedance for each antenna. Licence-exempt transmitters that have received equipment certification may operate with different types of antennas. However, it is not permissible to exceed the maximum equivalent isotropically radiated power(e.i.r.p.) limits specified in the applicable standard (RSS) for licence-exempt apparatus.

Result

PASS.

The EUT has 1 antenna: a PIFA Antenna for 2.4G WIFI.

Note: Antenna use a permanently attached antenna which is not replaceable.

Not using a standard antenna jack or electrical connector for antenna replacement.

The antenna has to be professionally installed (please provide method of installation).

Which in accordance to RSS-Gen 6.8, please refer to the internal photos.

*****THE END OF REPORT*****