TEST REPORT

Report Reference No. ..... :	**TRE1709025801**	R/C…….: 93055
FCC ID ..... :	**2ANG9-MR728**	
Applicant's name ..... :	**Beijing Nebula Science and Technology Co., Ltd.**	
Address.....:	Room 102, Block C, I M WAY (Zhizao Street), Haidian District, Beijing, China	
Manufacturer.....:	Shenzhen Camory Technology Co.,Ltd.	
Address.....:	The 3st floor buiding B,Block No.6,Baoneng Hi-Tech Industrial Park,Qingxiang Road, Qingxiang Road Qinghu,Longhua District, Shenzhen	
Test item description ..... :	**Nebula NE ONE**	
Trade Mark .....:	Nebula Empire	
Model/Type reference.....:	MR728	
Listed Model(s) .....:	-	
Standard ..... :	**FCC CFR Title 47 Part 15 Subpart C Section 15.247**	
Date of receipt of test sample……....:	Sept. 29, 2017	
Date of testing……..:	Sept. 30, 2017 - Oct. 18, 2017	
Date of issue……....:	Oct. 19, 2017	
Result..... ……..:	**PASS**	

Compiled by (position+printedname+signature)...:	File administrators Becky Liang	Becky Liang
Supervised by (position+printedname+signature)....:	Project Engineer Jeff Sun	Jeff Sun
Approved by (position+printedname+signature)....:	RF Manager Hans Hu	Hans Hu

Testing Laboratory Name ..... :	**Shenzhen Huatongwei International Inspection Co., Ltd.**
Address.....:	1/F, Bldg 3, Hongfa Hi-tech Industrial Park, Genyu Road, Tianliao, Gongming, Shenzhen, China

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The test report merely correspond to the test sample.

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1. TEST STANDARDS AND REPORT VERSION

1.1. Test Standards

The tests were performed according to following standards:

FCC Rules Part 15.247: Frequency Hopping, Direct Spread Spectrum and Hybrid Systems that are in operation within the bands of 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz.

ANSI C63.10:2013: American National Standard forTesting Unlicensed Wireless Devices

KDB 558074 D01 DTS Meas Guidance v04: Guidance for Performing Compliance Measurements on Digital Transmission Systems (DTS) Operating under §15.247

1.2. Report version

Version No.	Date of issue	Description
00	Oct. 19, 2017	Original

2. TEST DESCRIPTION

Test Item	FCC Rule	Result	Test Engineer
Antenna requirement	15.203/15.247(c)	Pass	William Wang
Line Conducted Emissions (AC Main)	15.207	Pass	William Wang
Conducted Peak Output Power	15.247(b)(3)	Pass	William Wang
Power Spectral Density	15.247(e)	Pass	William Wang
6dB Bandwidth	15.247(a)(2)	Pass	William Wang
Restricted band	15.247(d)/15.205	Pass	William Wang
Spurious Emissions	15.247(d)/15.209	Pass	William Wang

Note: The measurement uncertainty is not included in the test result.

3. SUMMARY

3.1. Client Information

Applicant:	Beijing Nebula Science and Technology Co., Ltd.
Address:	Room 102, Block C, I M WAY (Zhizao Street), Haidian District, Beijing, China
Manufacturer:	Shenzhen Camory Technology Co.,Ltd.
Address:	The 3st floor buiding B,Block No.6,Baoneng Hi-Tech Industrial Park, Qingxiang Road, Qingxiang Road Qinghu,Longhua District,Shenzhen

3.2. Product Description

Name of EUT:	Nebula NE ONE
Trade Mark:	Nebula Empire
Model No.:	MR728
Listed Model(s):	-
Power supply:	DC 5.0V from USB port
Adapter information:	-
Hardware version:	X9F_KMRKEY_V1.0
Software version:	V1.0
WIFI	
Supported type:	802.11b/802.11g/802.11n(HT20)/802.11n(HT40)
Modulation:	DSSS for 802.11b OFDM for 802.11g/802.11n(HT20)/802.11n(HT40)
Operation frequency:	2412MHz~2462MHz for 802.11b/802.11g/802.11n(HT20) 2422MHz~2452MHz for 802.11n(HT40)
Channel number:	11 for 802.11b/802.11g/802.11n(HT20) 7 for 802.11n(HT40)
Channel separation:	5MHz
Antenna type:	Integral antenna
Antenna gain:	2.11 dBi

3.3. Operation state

➢ **Test frequency list**

According to section 15.31(m), regards to the operating frequency range over 10 MHz, must select three channel which were tested. the Lowest frequency, the middle frequency, and the highest frequency of channel were selected to perform the test, please see the above gray bottom.

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

➢ **Test mode**

For RF test items
The engineering test program was provided and enabled to make EUT continuous transmit (duty cycle>98%).
For AC power line conducted emissions:
The EUT was set to connect with the WLAN AP under large package sizes transmission.
For RF test axis
EUT in each of three orthogonal axis emissions had been tested ,but only the worst case (X axis) data Recorded in the report.

3.4. EUT configuration

The following peripheral devices and interface cables were connected during the measurement:

- ● - supplied by the manufacturer
- ○ - supplied by the lab

○	AC/DC ADAPTER	Manufacturer:	AQUIL STAR PRECISION INDUSTRIAL(SHENZHEN)CO.,LTD.
		Model No.:	ASSA41w-050200
/	/	Manufacturer:	/
		Model No.:	/

3.5. Modifications

No modifications were implemented to meet testing criteria.

4. TEST ENVIRONMENT

4.1. Address of the test laboratory

Laboratory: Shenzhen Huatongwei International Inspection Co., Ltd.
Address: 1/F, Bldg 3, Hongfa Hi-tech Industrial Park, Genyu Road, Tianliao, Gongming, Shenzhen, China

4.2. Test Facility

CNAS-Lab Code: L1225

Shenzhen Huatongwei International Inspection Co., Ltd. has been assessed and proved to be in compliance with CNAS-CL01 Accreditation Criteria for Testing and Calibration Laboratories (identical to ISO/IEC17025: 2005 General Requirements) for the Competence of Testing and Calibration Laboratories.

A2LA-Lab Cert. No.: 3902.01

Shenzhen Huatongwei International Inspection Co., Ltd. EMC Laboratory has been accredited by A2LA for technical competence in the field of electrical testing, and proved to be in compliance with ISO/IEC 17025: 2005 General Requirements for the Competence of Testing and Calibration Laboratories and any additional program requirements in the identified field of testing.

FCC-Registration No.: 762235

Shenzhen Huatongwei International Inspection Co., Ltd. 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.

IC-Registration No.:5377B-1

Two 3m Alternate Test Site of Shenzhen Huatongwei International Inspection Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for the performance of radiated measurements with Registration No.: 5377B-1.

ACA

Shenzhen Huatongwei International Inspection Co., Ltd. EMC Laboratory can also perform testing for the Australian C-Tick mark as a result of our A2LA accreditation.

4.3. Environmental conditions

During the measurement the environmental conditions were within the listed ranges:

Temperature:	15~35°C
Relative Humidity:	30~60 %
Air Pressure:	950~1050mba

4.4. 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 in calibration limits of the equipment and facilities. The measurement uncertainty was calculated for all measurements listed in this test report according to TR-100028-01 “Electromagnetic compatibility and Radio spectrum Matters (ERM); Uncertainties in the measurement of mobile radio equipment characteristics; Part 1” and TR-100028-02 “Electromagnetic compatibility and Radio spectrum Matters (ERM); Uncertainties in the measurement of mobile radio equipment characteristics; Part 2” and is documented in the Shenzhen Huatongwei International Inspection Co., Ltd. quality system according to 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.

Here after the best measurement capability for Shenzhen Huatongwei International Inspection Co., Ltd. is reported:

Test Items	Measurement Uncertainty	Notes
Transmitter power conducted	0.57 dB	(1)
Transmitter power Radiated	2.20 dB	(1)
Conducted spurious emissions 9kHz~40GHz	1.60 dB	(1)
Radiated spurious emissions 9kHz~40GHz	2.20 dB	(1)
Conducted Emissions 9kHz~30MHz	3.39 dB	(1)
Radiated Emissions 30~1000MHz	4.24 dB	(1)
Radiated Emissions 1~18GHz	5.16 dB	(1)
Radiated Emissions 18~40GHz	5.54 dB	(1)

(1) This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=1.96.

4.5. Equipments Used during the Test

Conducted Emissions					
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.
1	Artificial Mains	Rohde&Schwarz	ESH2-Z5	100028	2016/11/13
2	EMI Test Receiver	Rohde&Schwarz	ESCI3	100038	2016/11/13
3	Pulse Limiter	Rohde&Schwarz	ESHSZ2	100044	2016/11/13
4	EMI Test Software	Rohde&Schwarz	ES-K1 V1.71	-	-

Radiated Emissions					
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.
1	EMI test receiver	Rohde&Schwarz	ESI 26	100009	2016/11/13
2	Loop Antenna	Rohde&Schwarz	HFH2-Z2	100020	2016/11/13
3	Ultra-Broadband Antenna	ShwarzBeck	VULB9163	538	2016/11/13
4	Horn antenna	ShwarzBeck	9120D	1011	2016/11/13
5	Horn Antenna	SCHWARZBECK	BBHA9170	25841	2016/11/13
6	Amplifier	Sonoma	310N	E009-13	2016/11/13
7	JS Amplifier	Rohde&Schwarz	JS4-00101800-28-5A	F201504	2016/11/13
8	Amplifier	Compliance Direction systems	PAP1-4060	120	2016/11/13
9	High pass filter	Compliance Direction systems	BSU-6	34202	2016/11/13
10	EMI test Software	Rohde&Schwarz	ESK1	-	-
11	EMI test Software	Audix	E3	-	-
12	TURNTABLE	MATURO	TT2.0	-	-
13	ANTENNA MAST	MATURO	TAM-4.0-P	-	-

RF Conducted methods					
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.
1	Spectrum Analyzer	Rohde&Schwarz	FSP	1164.4391.40	2016/11/13
2	MXA Signal Analyzer	Agilent Technologies	N9020A	MY5050187	2016/11/13
3	Power Meter	Anritsu	ML2480B	100798	2016/11/13
4	Power Sensor	Anritsu	MA2411B	100258	2016/11/13

The Cal.Interval was one year.

5. TEST CONDITIONS AND RESULTS

5.1. 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 anantenna 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.

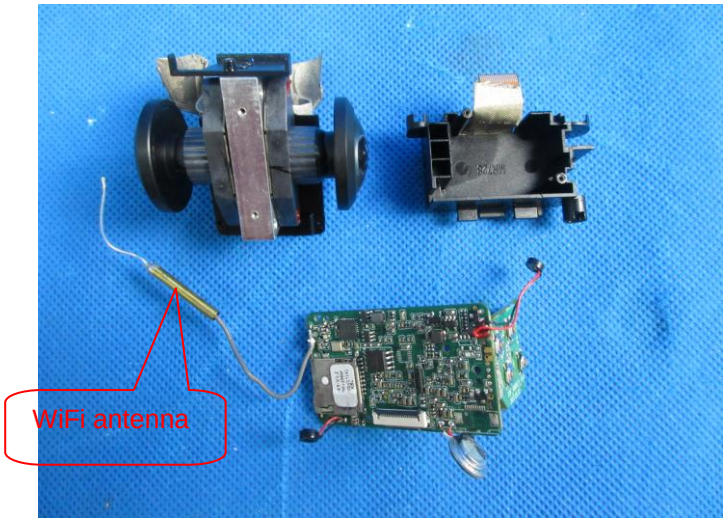
FCC CFR Title 47 Part 15 Subpart C Section 15.247(c) (1)(i):

(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 6 dBi 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 6 dBi.

TEST RESULTS

☒ **Passed** ☐ **Not Applicable**

The directional gain of the antenna less than 6 dBi, please refer to the below antenna photo.



5.2. Conducted Emissions (AC Main)

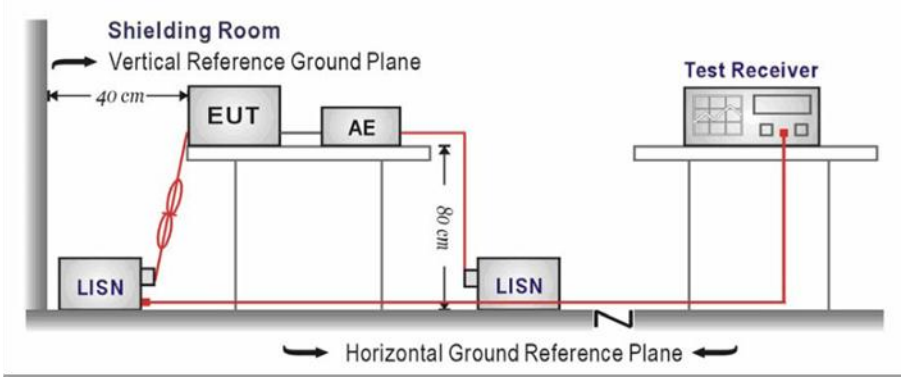
LIMIT

FCC CFR Title 47 Part 15 Subpart C Section 15.207:

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 CONFIGURATION



TEST PROCEDURE

1. The EUT was setup according to ANSI C63.10:2013 requirements.
2. The EUT was placed on a platform of nominal size, 1 m by 1.5 m, raised 80 cm above the conducting ground plane. The vertical conducting plane was located 40 cm to the rear of the EUT. All other surfaces of EUT were at least 80 cm from any other grounded conducting surface.
3. The EUT and simulators are connected to the main power through a line impedances stabilization network (LISN). The LISN provides a 50 ohm /50uH coupling impedance for the measuring equipment.
4. The peripheral devices are also connected to the main power through a LISN. (Please refer to the block diagram of the test setup and photographs)
5. Each current-carrying conductor of the EUT power cord, except the ground (safety) conductor,was individually connected through a LISN to the input power source.
6. The excess length of the power cord between the EUT and the LISN receptacle were folded back and forth at the center of the lead to form a bundle not exceeding 40 cm in length.
7. Conducted Emissions were investigated over the frequency range from 0.15MHz to 30MHz using a receiver bandwidth of 9 kHz.
8. During the above scans, the emissions were maximized by cable manipulation.

TEST MODE:

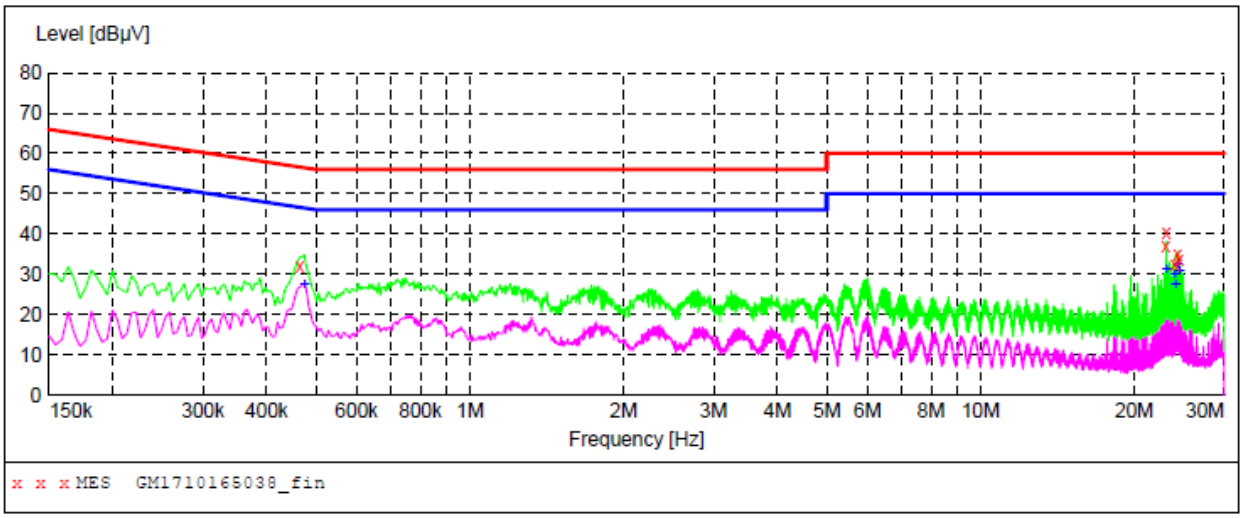
Please refer to the clause 3.3

TEST RESULTS

☒ **Passed** ☐ **Not Applicable**

Note:
1) Transd=Cable lose+ Pulse Limiter Factor + Artificial Mains Factor
2) Margin= Limit -Level

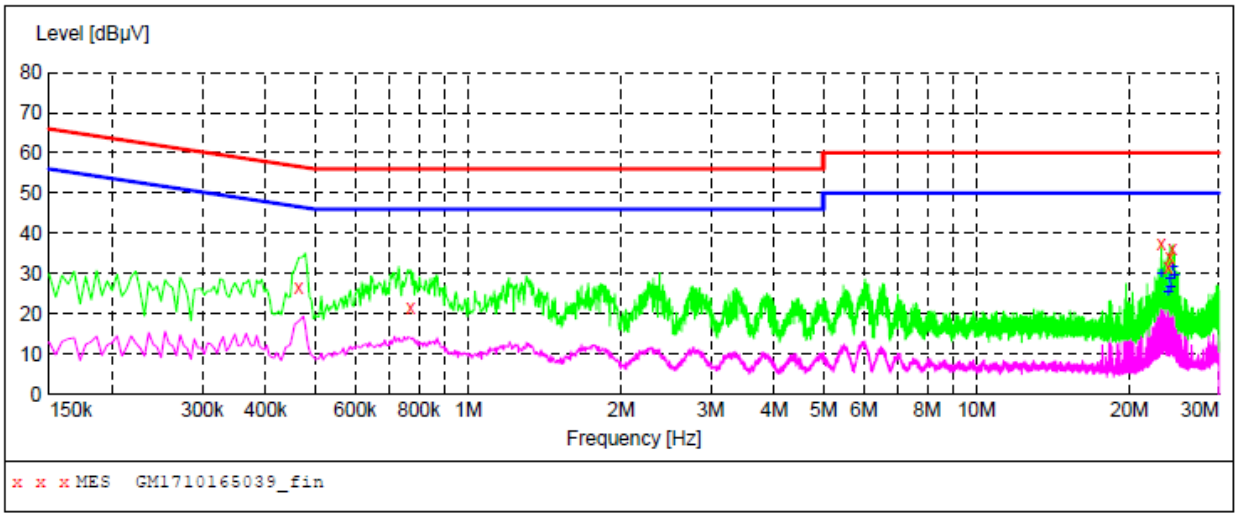
Test Line:	L



Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.465000	32.00	10.2	57	24.6	QP	L1	GND
23.064000	36.90	10.7	60	23.1	QP	L1	GND
23.127000	40.20	10.7	60	19.8	QP	L1	GND
24.040500	32.30	10.7	60	27.7	QP	L1	GND
24.346500	34.80	10.7	60	25.2	QP	L1	GND
24.531000	33.80	10.7	60	26.2	QP	L1	GND

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.474000	27.20	10.2	46	19.2	AV	L1	GND
23.127000	31.20	10.7	50	18.8	AV	L1	GND
24.040500	29.80	10.7	50	20.2	AV	L1	GND
24.103500	27.50	10.7	50	22.5	AV	L1	GND
24.346500	32.60	10.7	50	17.4	AV	L1	GND
24.531000	30.70	10.7	50	19.3	AV	L1	GND

Test Line:	N



Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.465000	26.70	10.2	57	29.9	QP	N	GND
0.771000	21.70	10.2	56	34.3	QP	N	GND
23.127000	37.60	10.7	60	22.4	QP	N	GND
23.860500	31.50	10.7	60	28.5	QP	N	GND
24.040500	34.00	10.7	60	26.0	QP	N	GND
24.346500	36.00	10.7	60	24.0	QP	N	GND

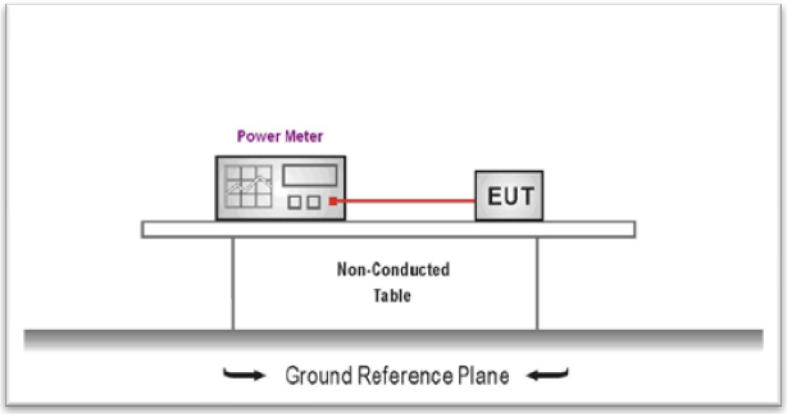
Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
23.127000	29.80	10.7	50	20.2	AV	N	GND
23.860500	25.20	10.7	50	24.8	AV	N	GND
24.040500	28.70	10.7	50	21.3	AV	N	GND
24.103500	26.50	10.7	50	23.5	AV	N	GND
24.346500	31.40	10.7	50	18.6	AV	N	GND
24.531000	29.50	10.7	50	20.5	AV	N	GND

5.3. Conducted Peak Output Power

LIMIT

FCC CFR Title 47 Part 15 Subpart C Section 15.247 (b)(3): **30dBm**:

TEST CONFIGURATION



TEST PROCEDURE

1. The EUT was tested according to ANSI C63.10: 2013 and KDB 558074 D01 for compliance to FCC 47 CFR 15.247 requirements.
2. The maximum peak conducted output power may be measured using a broadband peak RF power meter.
3. The power meter shall have a video bandwidth that is greater than or equal to the DTS bandwidth and shall utilize a fast-responding diode detector
4. Record the measurement data.

TEST MODE:

Please refer to the clause 3.3

TEST RESULTS

☒ **Passed** ☐ **Not Applicable**

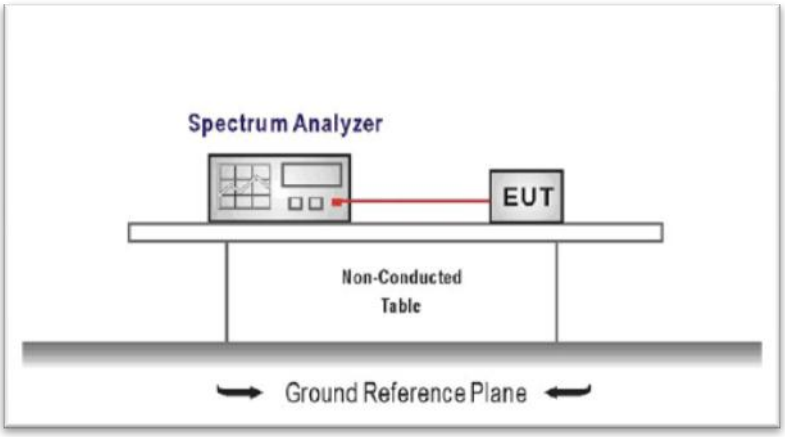
Type	Channel	Output power (dBm)	Limit (dBm)	Result
802.11b	01	17.86	≤30.00	Pass
	06	16.62		
	11	17.15		
802.11g	01	15.07	≤30.00	Pass
	06	15.21		
	11	15.52		
802.11n(HT20)	01	12.94	≤30.00	Pass
	06	13.62		
	11	14.12		
802.11n(HT40)	03	11.63	≤30.00	Pass
	06	12.05		
	09	12.35		

5.4. Power Spectral Density

LIMIT

FCC CFR Title 47 Part 15 Subpart C Section 15.247 (e): For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

TEST CONFIGURATION



TEST PROCEDURE

1. Connect the antenna port(s) to the spectrum analyzer input,
2. Configure the spectrum analyzer as shown below:
   Center frequency=DTS channel center frequency
   Span =1.5 times the DTS bandwidth
   RBW = 3 kHz ≤ RBW ≤ 100 kHz, VBW ≥ 3 × RBW
   Sweep time = auto couple
   Detector = peak
   Trace mode = max hold
3. Place the radio in continuous transmit mode, allow the trace to stabilize, view the transmitter wave form on the spectrum analyzer.
4. Use the peak marker function to determine the maximum amplitude level within the RBW.
5. If measured value exceeds limit, reduce RBW (no less than 3 kHz) and repeat.

TEST MODE:

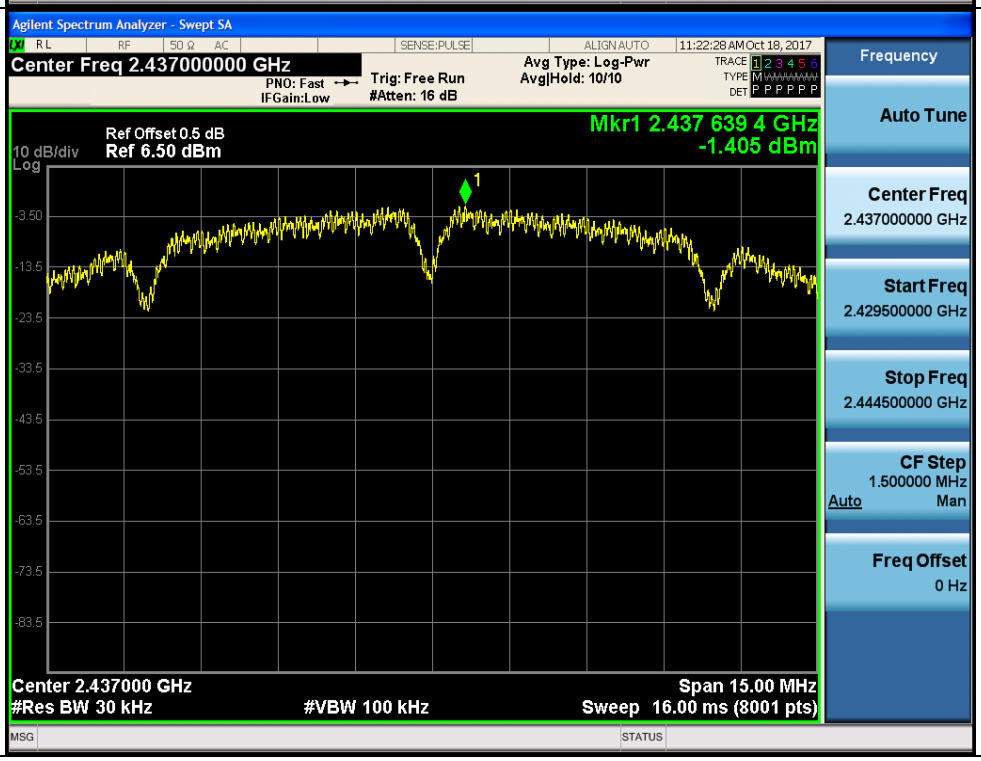
Please refer to the clause 3.3

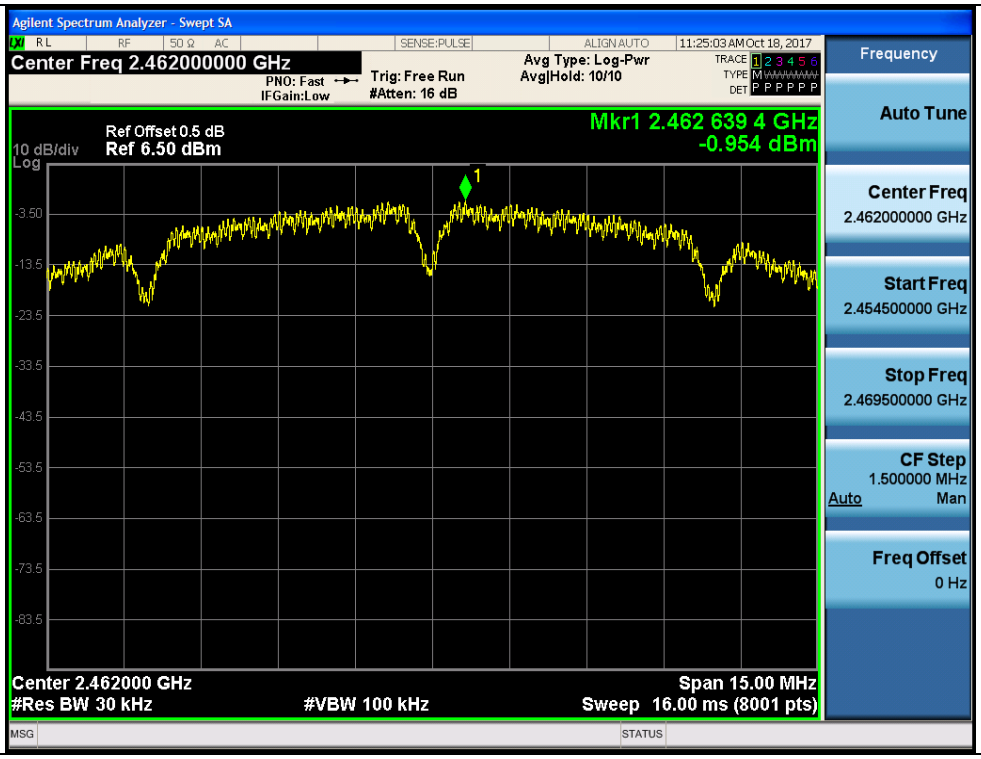
TEST RESULTS

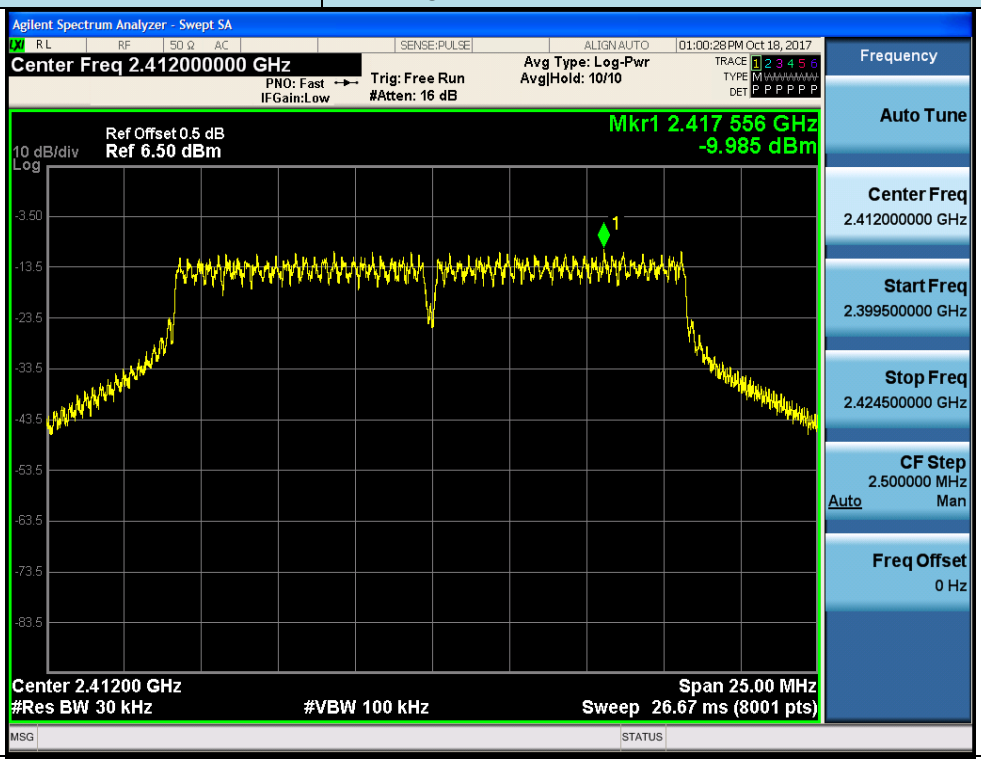
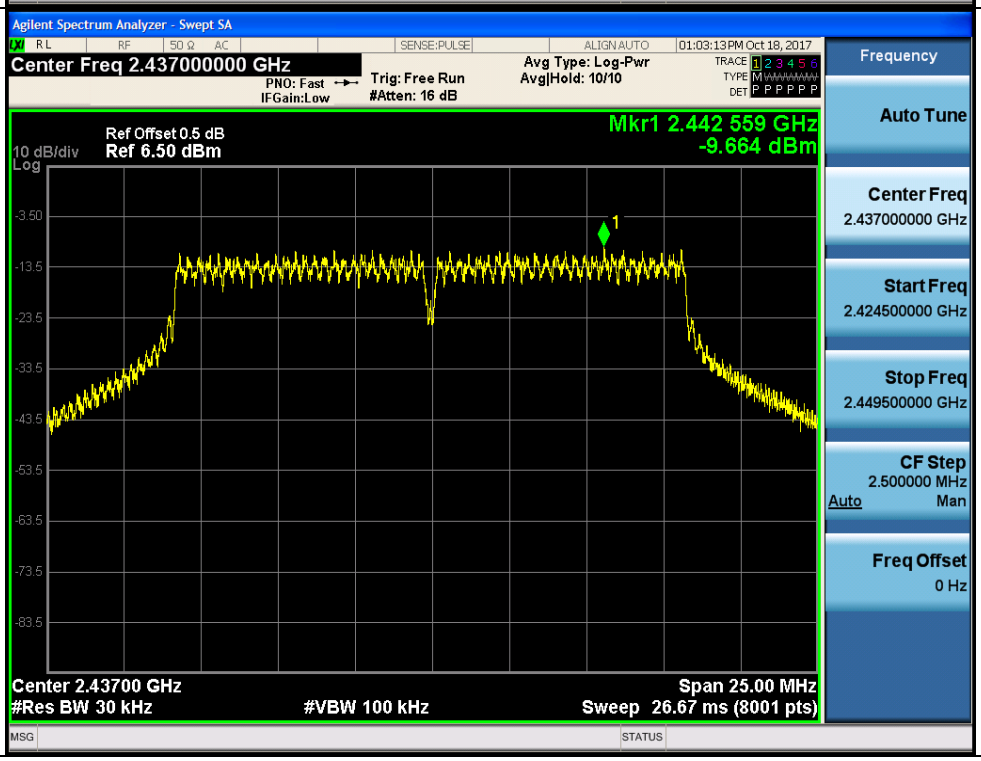
☒ **Passed** ☐ **Not Applicable**

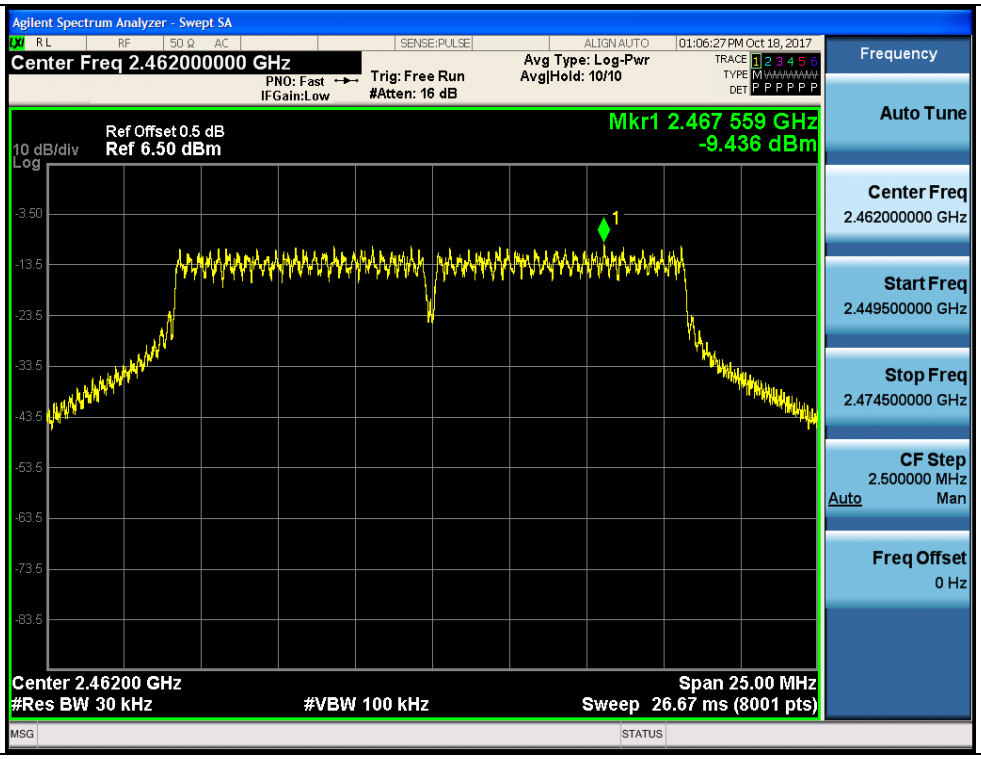
Type	Channel	Power Spectral Density (dBm/RBW)	Limit (dBm/RBW)	Result
802.11b	01	-0.253	≤8.00	Pass
	06	-1.405		
	11	-0.954		
802.11g	01	-9.985	≤8.00	Pass
	06	-9.664		
	11	-9.436		
802.11n(HT20)	01	-11.940	≤8.00	Pass
	06	-11.577		
	11	-10.823		
802.11n(HT40)	03	-16.150	≤8.00	Pass
	06	-15.665		
	09	-15.564		

Test plot as follows:

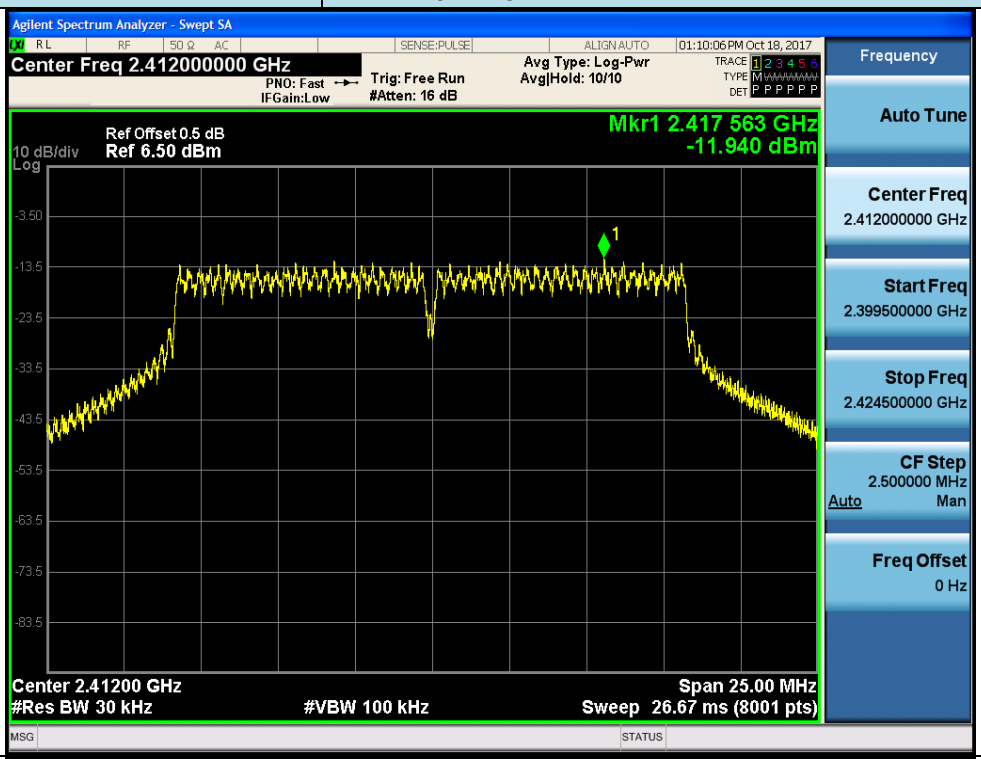
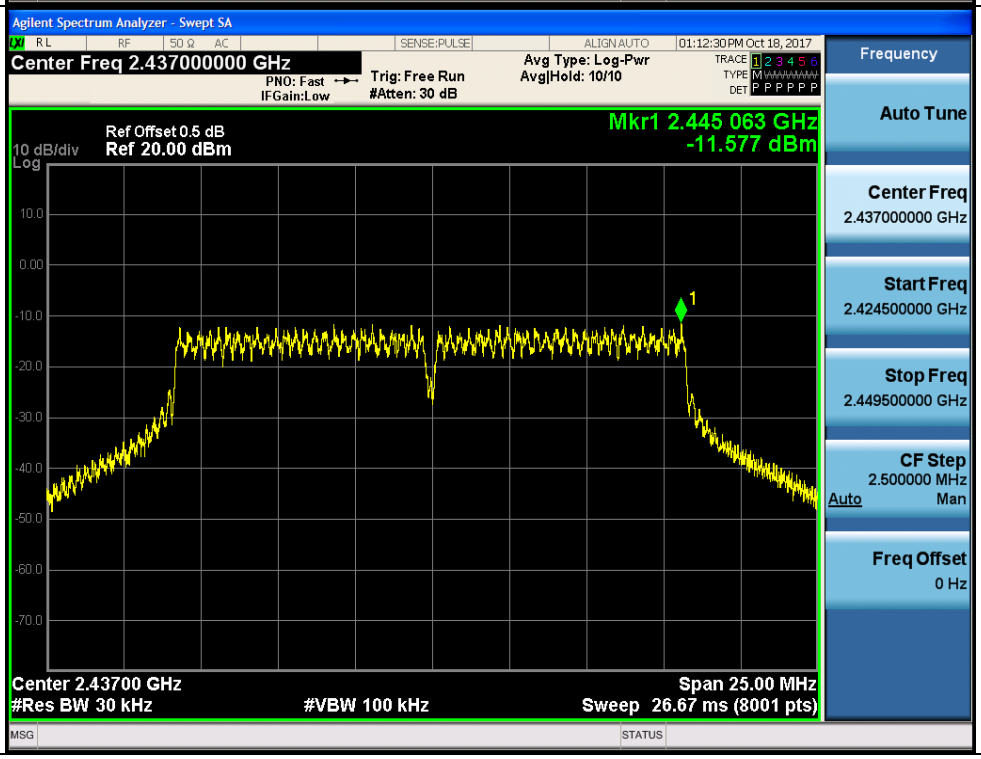
Type:	802.11 b
CH01	
CH06	

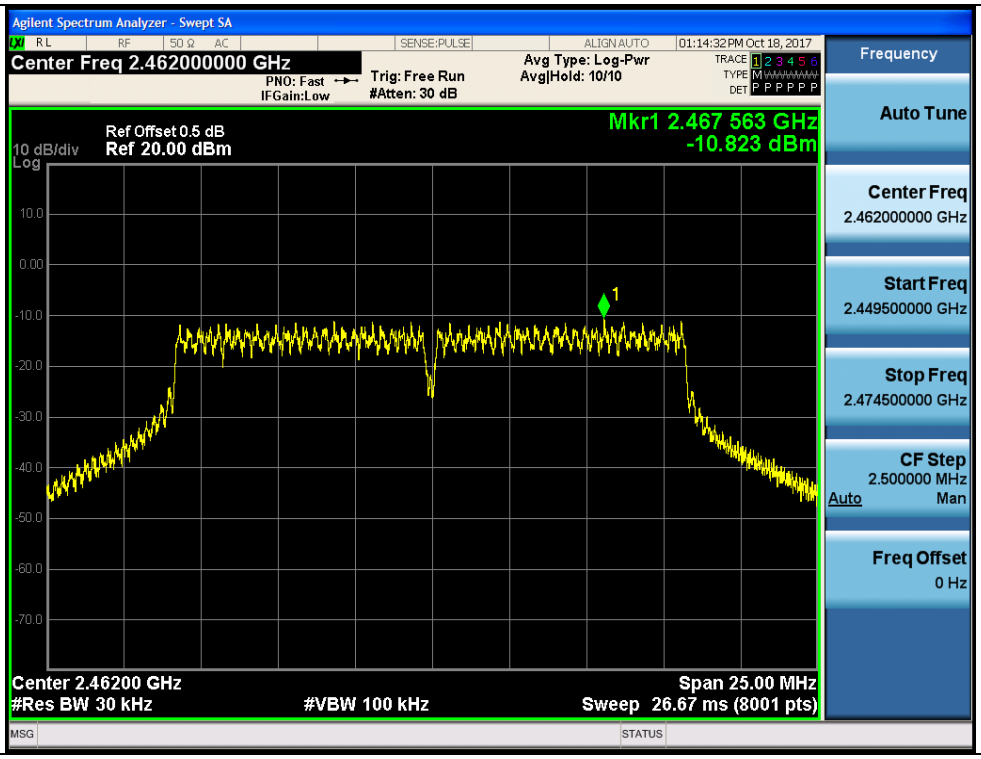
CH11	 Agilent Spectrum Analyzer - Swept SA Center Freq 2.462000000 GHz PNO: Fast IFGain:Low Trig: Free Run #Atten: 16 dB Avg Type: Log-Pwr Avg|Hold: 10/10 11:25:03 AM Oct 18, 2017 Ref Offset 0.5 dB 10 dB/div Log Ref 6.50 dBm Mkr1 2.462 639 4 GHz -0.954 dBm Center 2.462000 GHz #Res BW 30 kHz #VBW 100 kHz Span 15.00 MHz Sweep 16.00 ms (8001 pts) Frequency Auto Tune Center Freq 2.462000000 GHz Start Freq 2.454500000 GHz Stop Freq 2.469500000 GHz CF Step 1.500000 MHz Auto Man Freq Offset 0 Hz

Type:	802.11 g
CH01	
CH06	

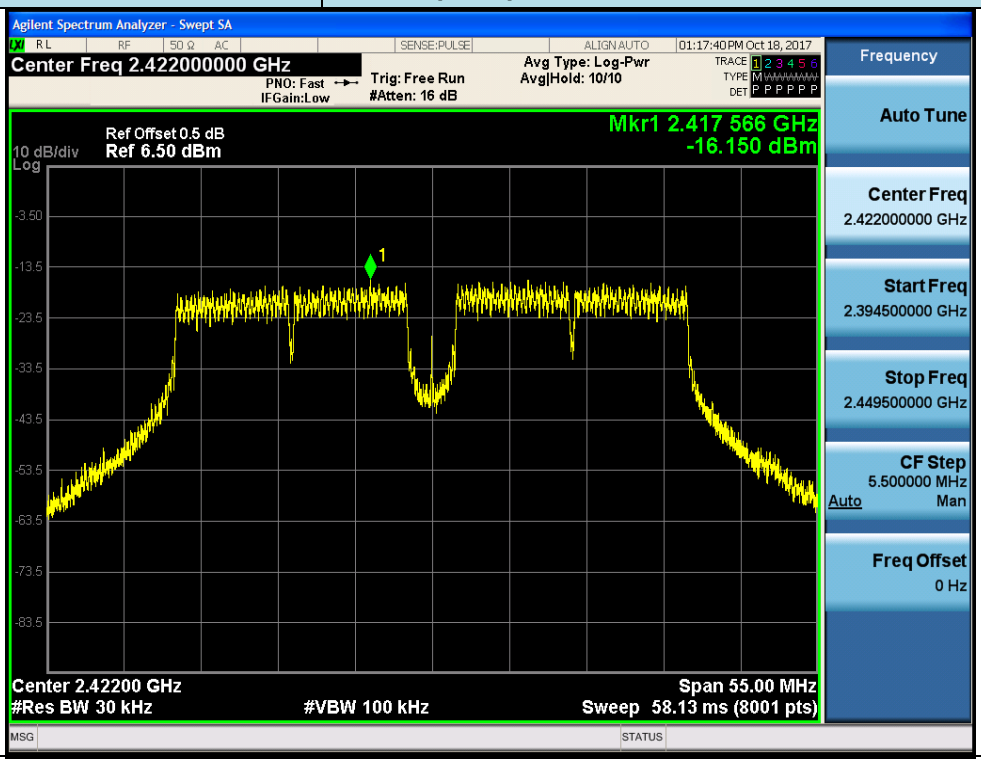
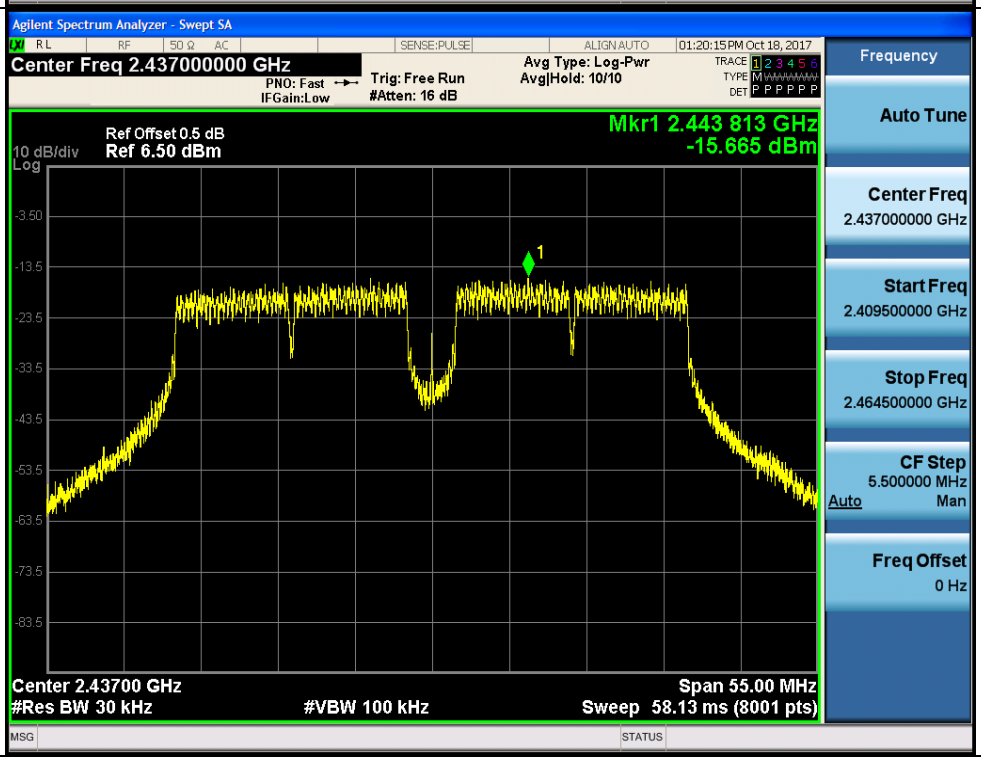
CH11	

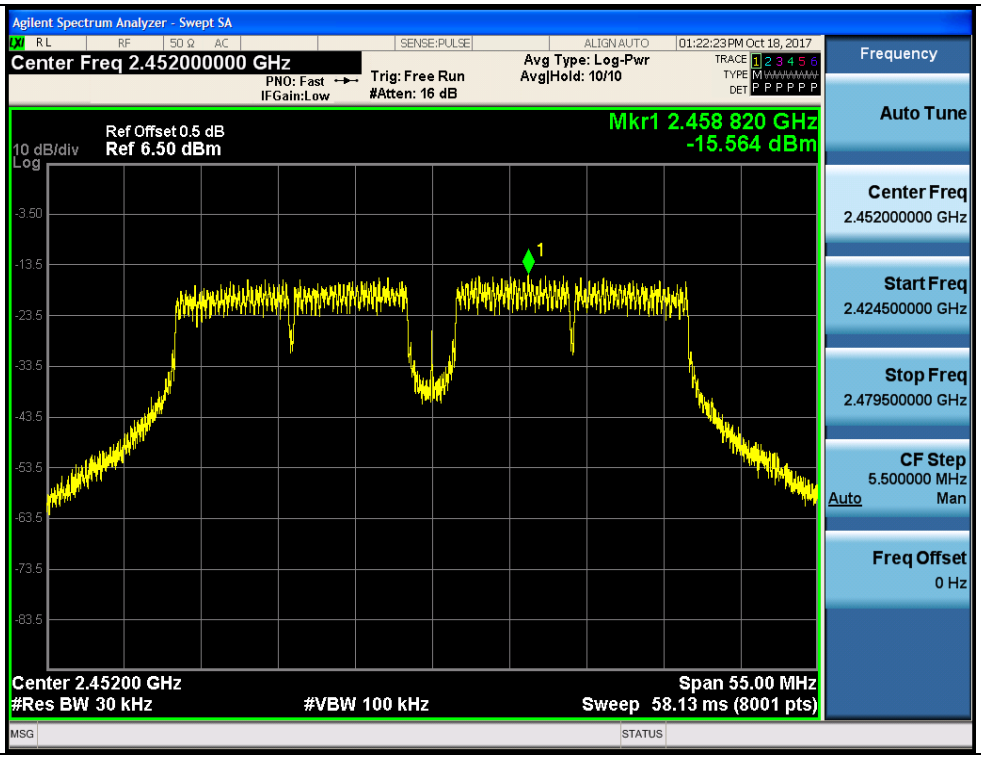
Agilent Spectrum Analyzer - Swept SA
Center Freq 2.462000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 16 dB
Avg Type: Log-Pwr
Avg|Hold: 10/10
01:06:27 PM Oct 18, 2017
Ref Offset 0.5 dB
10 dB/div
Log
Ref 6.50 dBm
Mkr1 2.467 559 GHz
-9.436 dBm
Center 2.46200 GHz
#Res BW 30 kHz
#VBW 100 kHz
Span 25.00 MHz
Sweep 26.67 ms (8001 pts)
Frequency
Auto Tune
Center Freq
2.462000000 GHz
Start Freq
2.449500000 GHz
Stop Freq
2.474500000 GHz
CF Step
2.500000 MHz
Auto
Man
Freq Offset
0 Hz

Type:	802.11n(HT20)
CH01	
CH06	

CH11	

Agilent Spectrum Analyzer - Swept SA
Center Freq 2.462000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
Avg Type: Log-Pwr
Avg|Hold: 10/10
01:14:32 PM Oct 18, 2017
Ref Offset 0.5 dB
10 dB/div
Ref 20.00 dBm
Log
Mkr1 2.467 563 GHz
-10.823 dBm
Center 2.46200 GHz
#Res BW 30 kHz
#VBW 100 kHz
Span 25.00 MHz
Sweep 26.67 ms (8001 pts)
Frequency
Auto Tune
Center Freq
2.462000000 GHz
Start Freq
2.449500000 GHz
Stop Freq
2.474500000 GHz
CF Step
2.500000 MHz
Auto
Man
Freq Offset
0 Hz

Type:	802.11n(HT40)
CH03	
CH06	

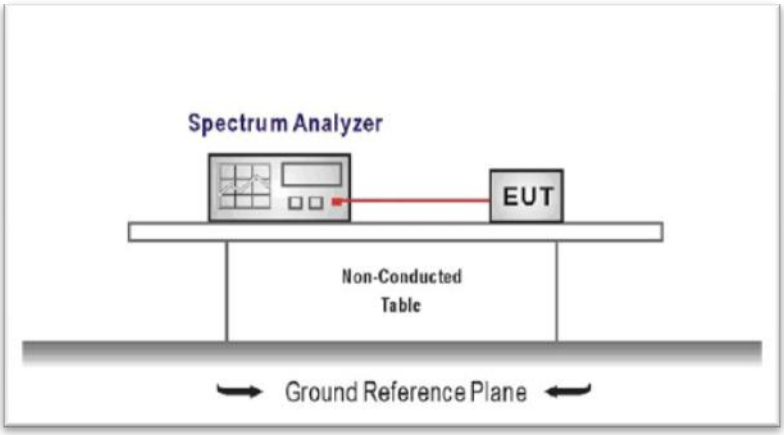
CH09	 Agilent Spectrum Analyzer - Swept SA Center Freq 2.452000000 GHz PNO: Fast IFGain:Low Trig: Free Run #Atten: 16 dB Avg Type: Log-Pwr Avg|Hold: 10/10 01:22:23 PM Oct 18, 2017 Ref Offset 0.5 dB 10 dB/div Ref 6.50 dBm Log Mkr1 2.458 820 GHz -15.564 dBm Center 2.45200 GHz #Res BW 30 kHz #VBW 100 kHz Span 55.00 MHz Sweep 58.13 ms (8001 pts) Frequency Auto Tune Center Freq 2.452000000 GHz Start Freq 2.424500000 GHz Stop Freq 2.479500000 GHz CF Step 5.500000 MHz Auto Man Freq Offset 0 Hz

5.5. 6dB bandwidth

LIMIT

FCC CFR Title 47 Part 15 Subpart C Section 15.247 (a)(2): For digital modulation systems, the minimum 6 dB bandwidth shall be at least 500 kHz.

TEST CONFIGURATION



TEST PROCEDURE

1. Connect the antenna port(s) to the spectrum analyzer input.
2. Configure the spectrum analyzer as shown below (enter all losses between the transmitter output and the spectrum analyzer).
   Center Frequency =DTS channel center frequency
   Span=2 x DTS bandwidth
   RBW = 100 kHz, VBW ≥ 3 × RBW
   Sweep time= auto couple
   Detector = Peak
   Trace mode = max hold
3. Place the radio in continuous transmit mode, allow the trace to stabilize, view the transmitter wave form on the spectrum analyzer.
4. Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission, and record the pertinent measurements.

TEST MODE:

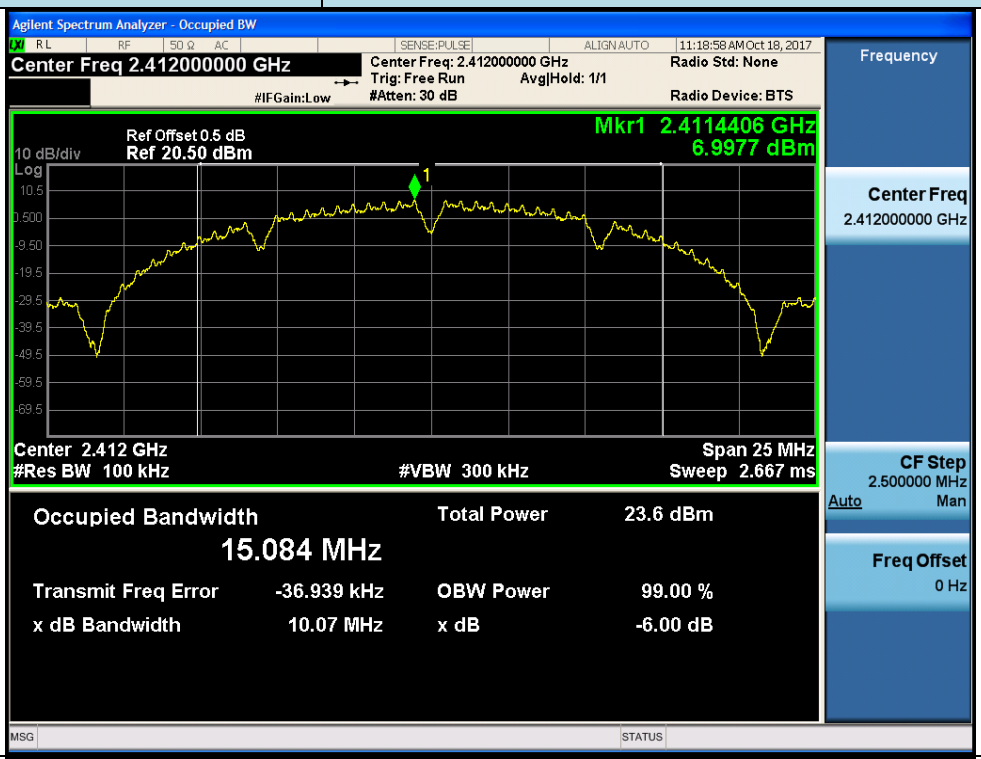
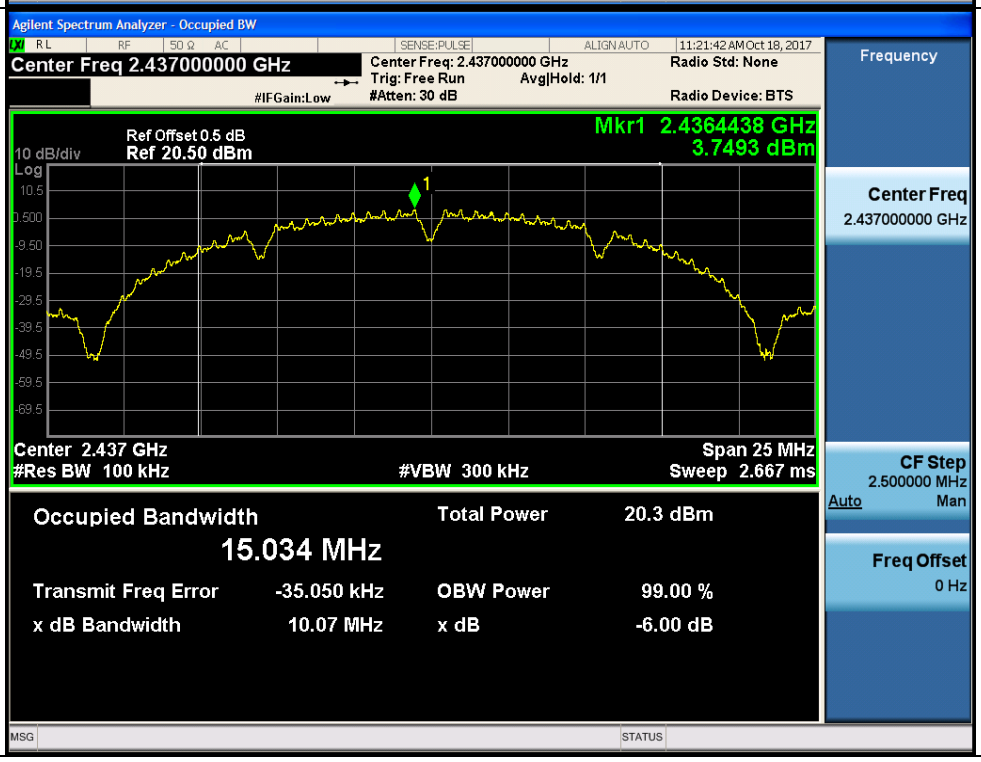
Please refer to the clause 3.3

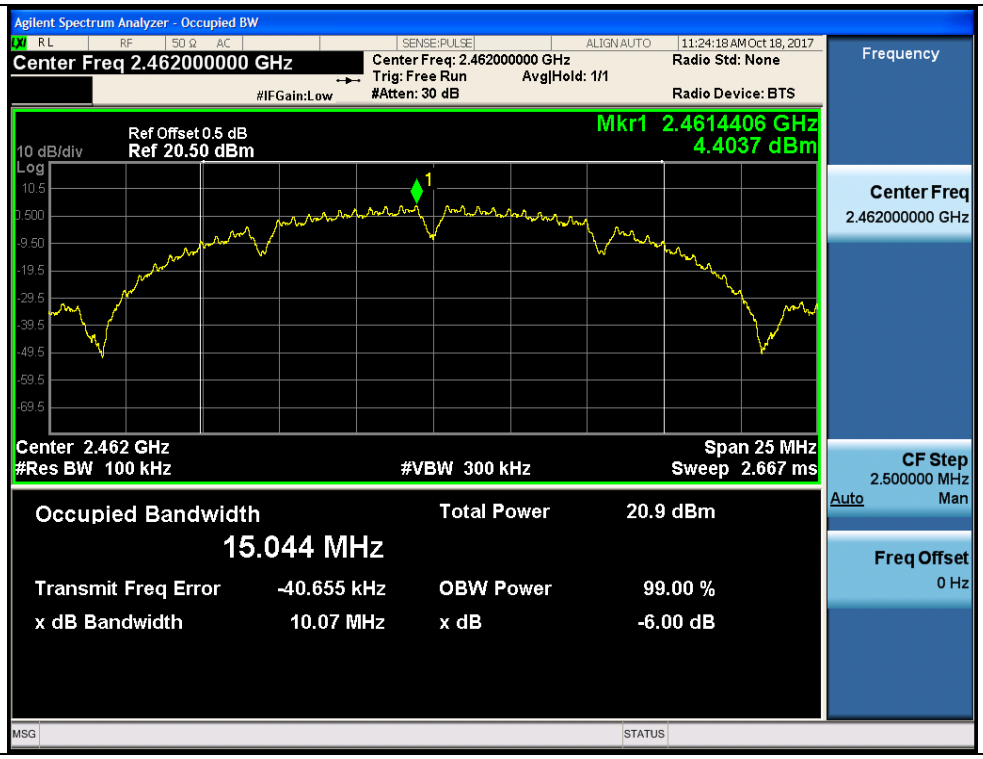
TEST RESULTS

☒ **Passed** ☐ **Not Applicable**

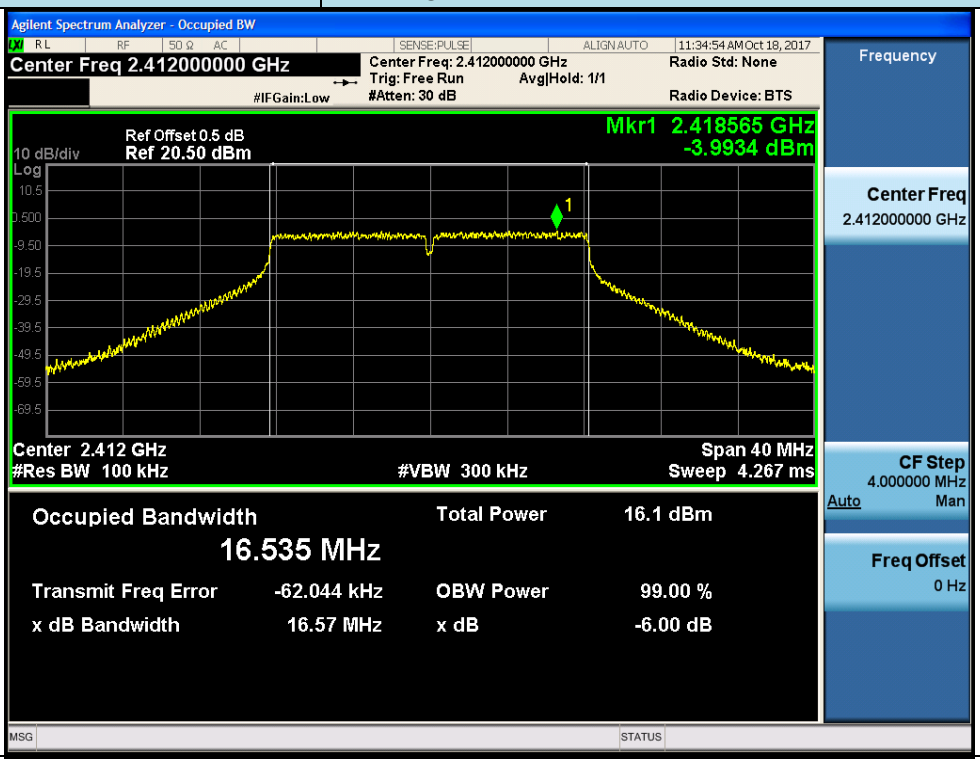
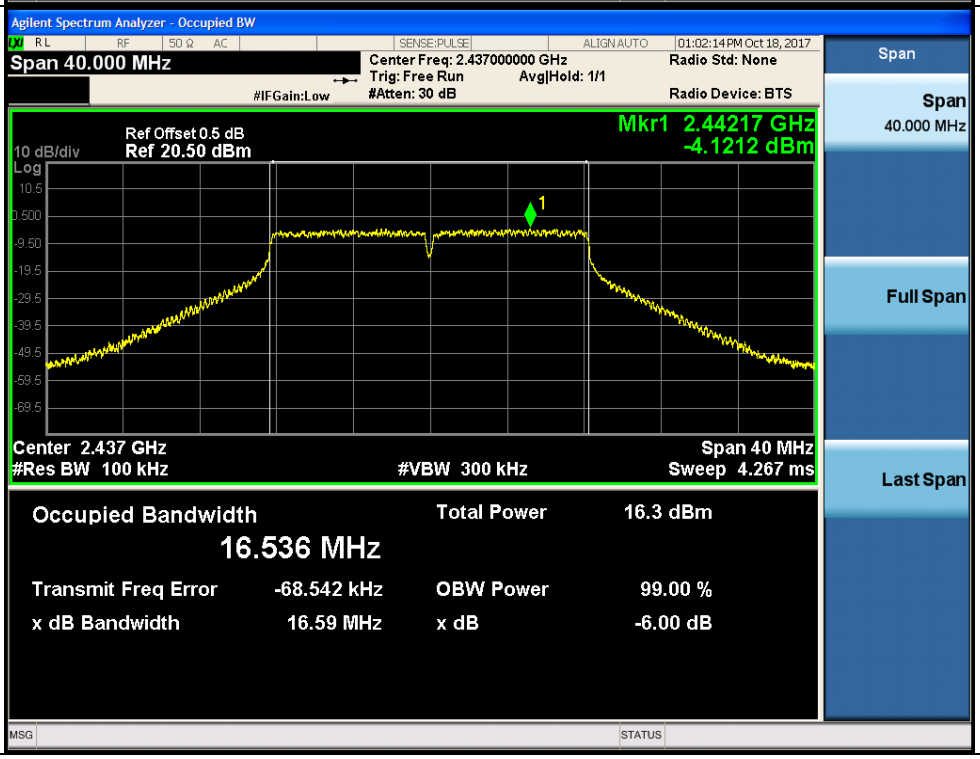
Type	Channel	6dB Bandwidth (MHz)	Limit (kHz)	Result
802.11b	01	10.07	≥500	Pass
	06	10.07		
	11	10.07		
802.11g	01	16.57	≥500	Pass
	06	16.59		
	11	16.58		
802.11n(HT20)	01	16.58	≥500	Pass
	06	16.58		
	11	16.58		
802.11n(HT40)	03	36.50	≥500	Pass
	06	36.47		
	09	36.48		

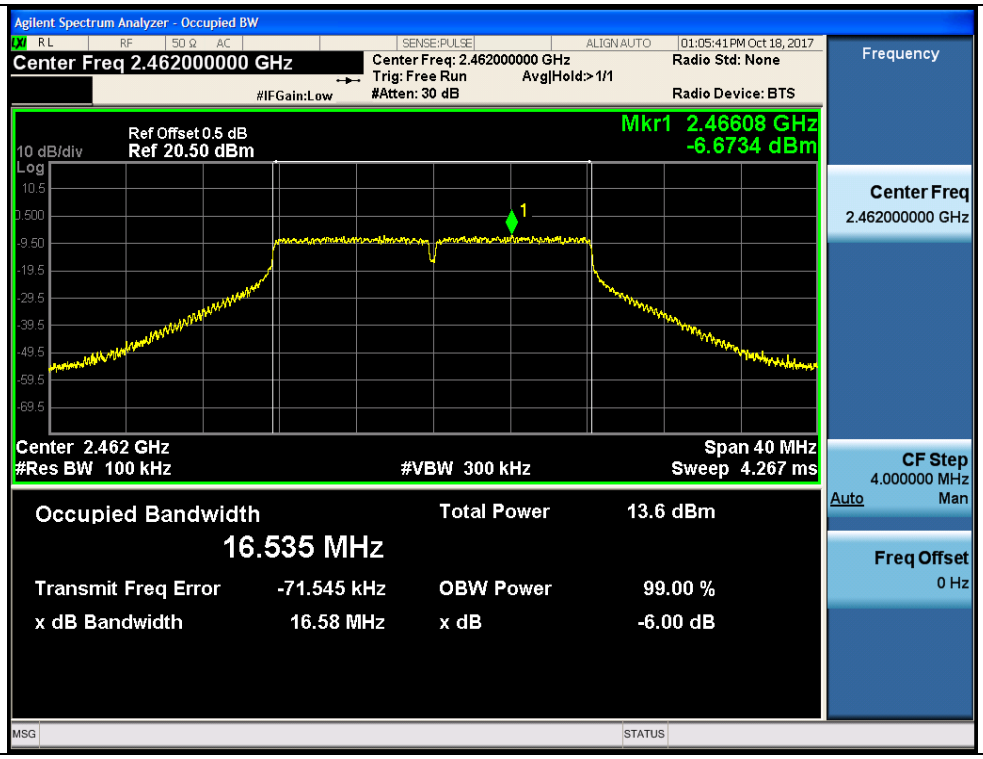
Test plot as follows:

Type:	802.11 b
CH01	
CH06	

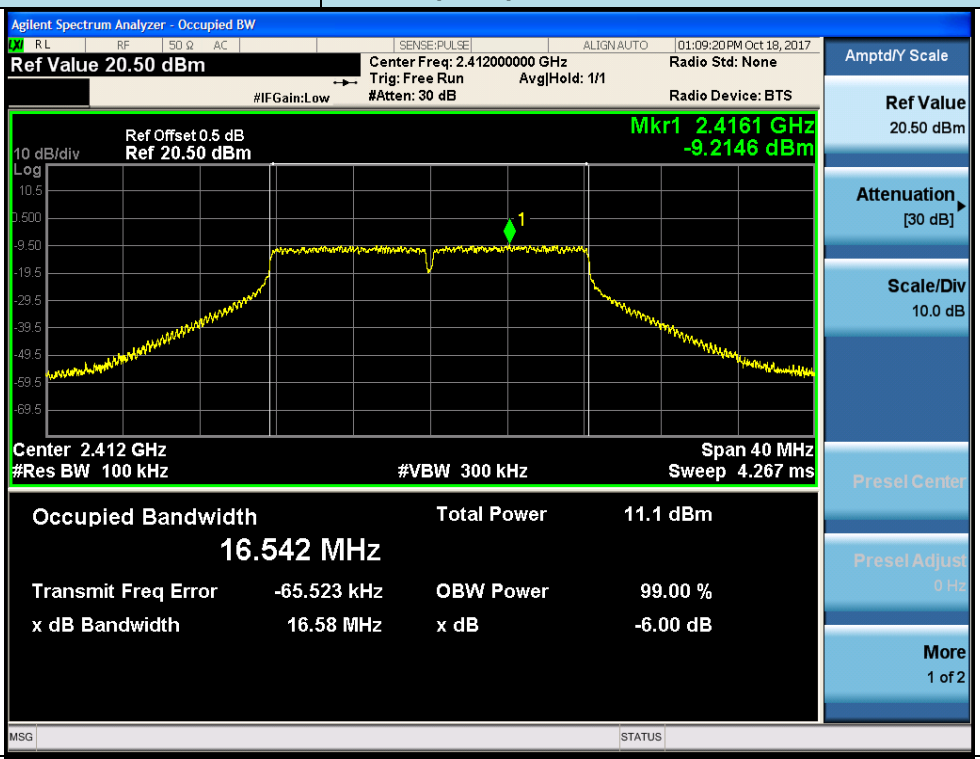
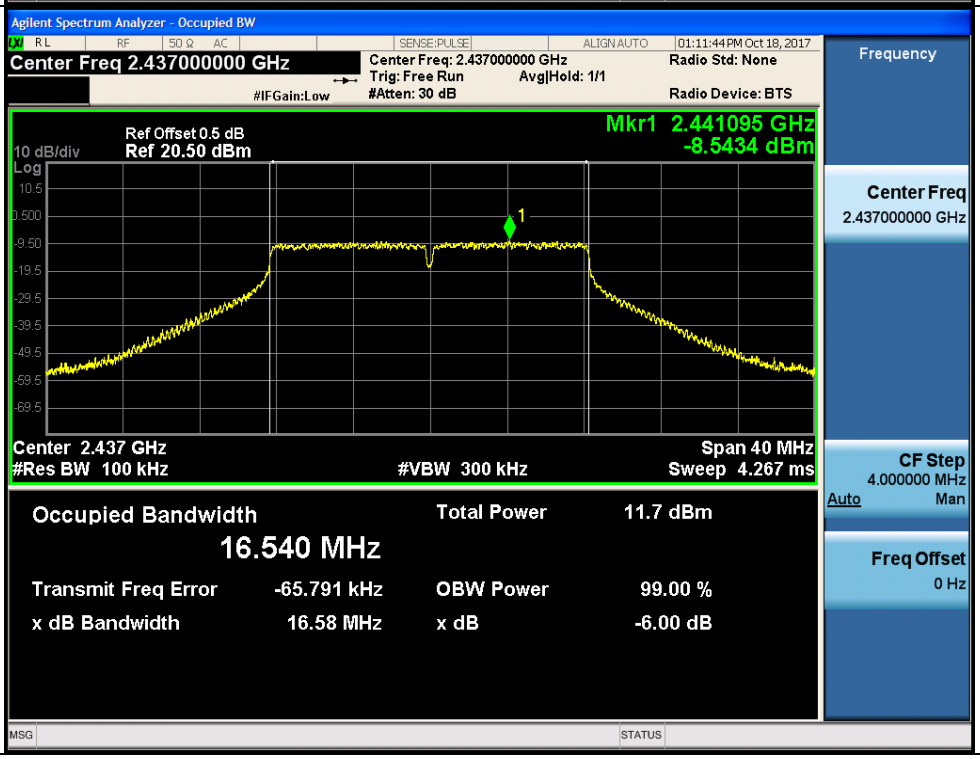
CH11	

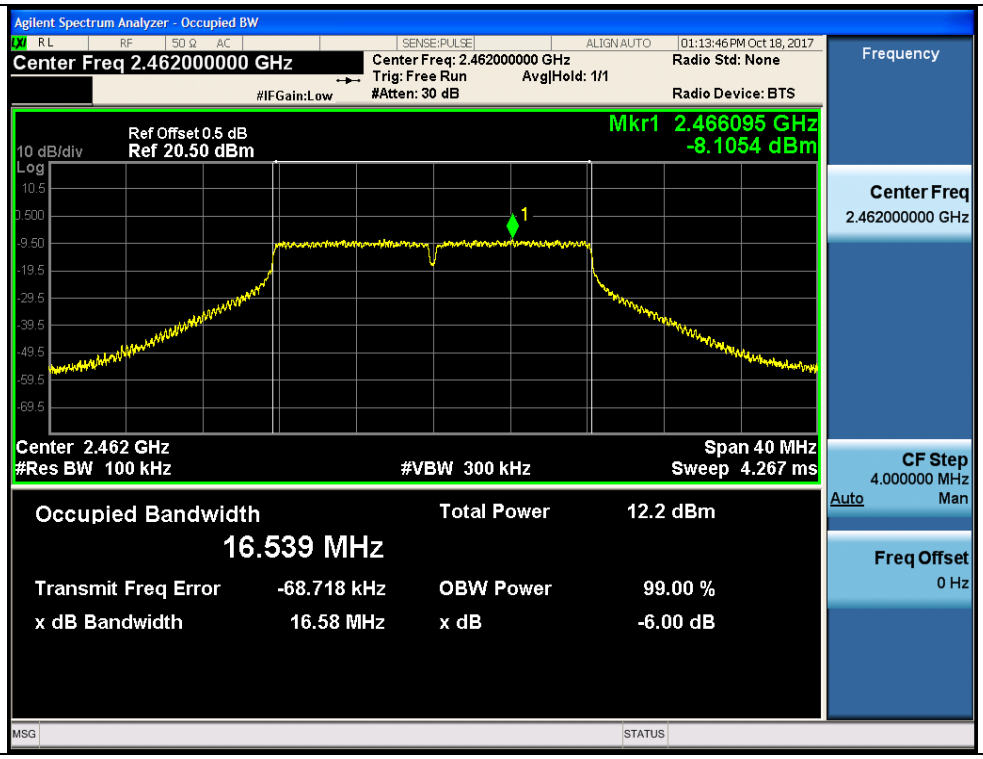
Agilent Spectrum Analyzer - Occupied BW
Center Freq 2.462000000 GHz
Center Freq: 2.462000000 GHz
Trig: Free Run
Avg|Hold: 1/1
#Atten: 30 dB
#IFGain:Low
Radio Std: None
Radio Device: BTS
11:24:18 AM Oct 18, 2017
Frequency
Ref Offset 0.5 dB
10 dB/div
Ref 20.50 dBm
Log
Mkr1 2.4614406 GHz
4.4037 dBm
Center Freq
2.462000000 GHz
Center 2.462 GHz
#Res BW 100 kHz
#VBW 300 kHz
Span 25 MHz
Sweep 2.667 ms
CF Step
2.500000 MHz
Auto
Man
Occupied Bandwidth
15.044 MHz
Total Power 20.9 dBm
Transmit Freq Error -40.655 kHz
OBW Power 99.00 %
x dB Bandwidth 10.07 MHz
x dB -6.00 dB
Freq Offset
0 Hz
MSG
STATUS

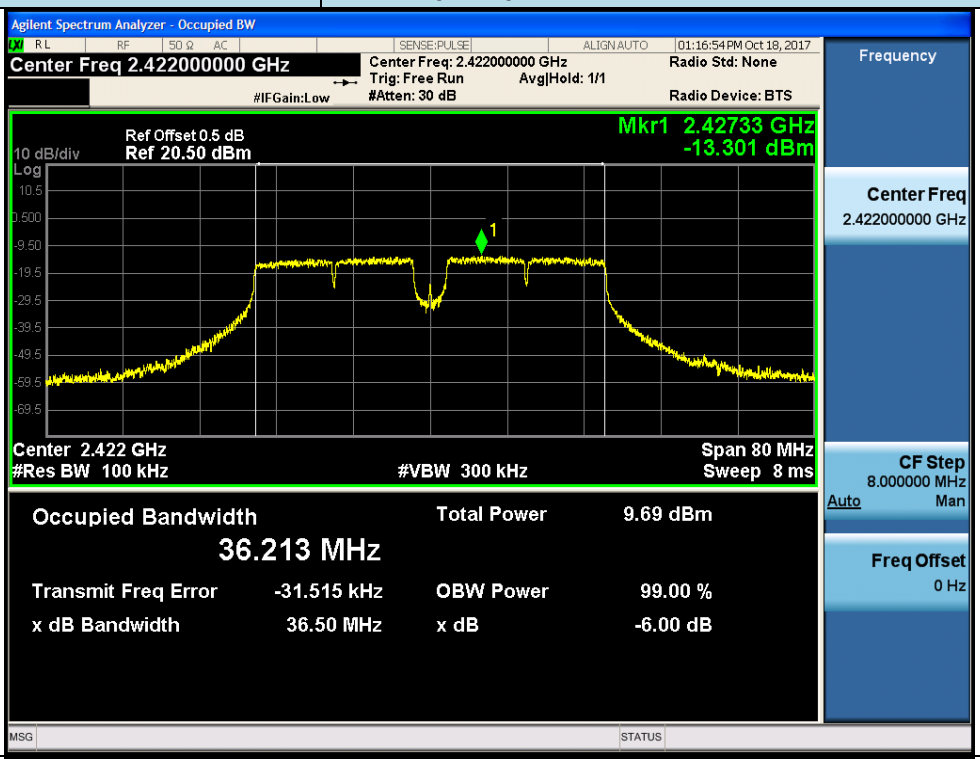
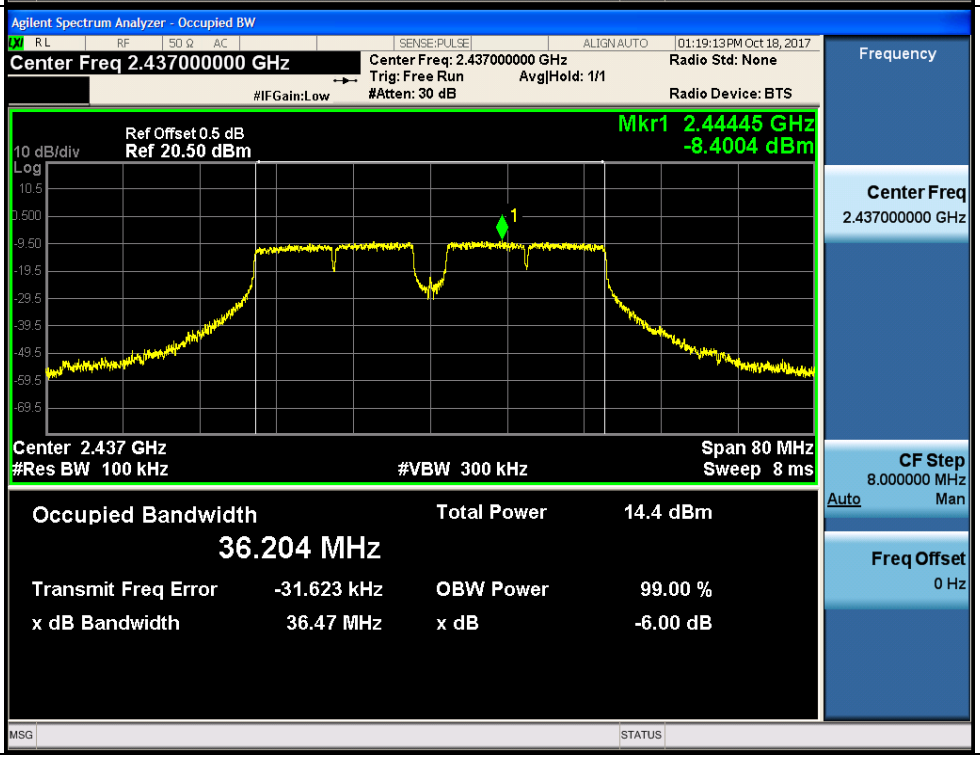
Type:	802.11 g
CH01	
CH06	

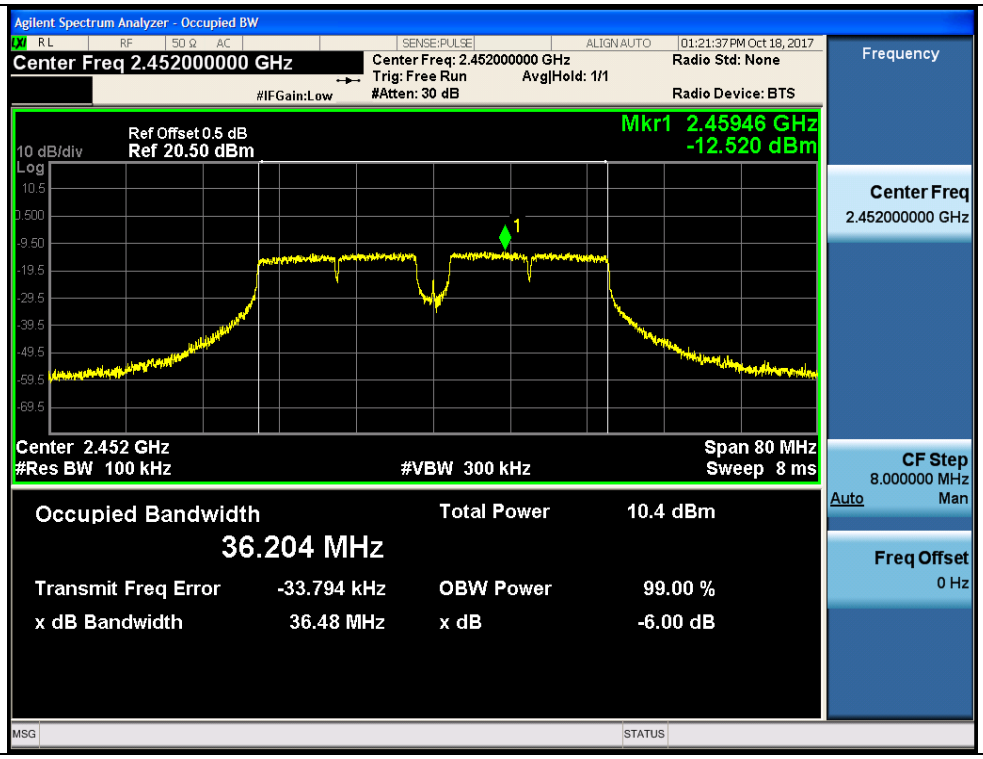
CH11	

Agilent Spectrum Analyzer - Occupied BW
Center Freq 2.462000000 GHz
Center Freq: 2.462000000 GHz
Trig: Free Run
Avg|Hold:>1/1
#Atten: 30 dB
#IFGain:Low
Radio Std: None
Radio Device: BTS
01:05:41 PM Oct 18, 2017
Frequency
Ref Offset 0.5 dB
10 dB/div
Ref 20.50 dBm
Log
Mkr1 2.46608 GHz
-6.6734 dBm
Center 2.462 GHz
#Res BW 100 kHz
#VBW 300 kHz
Span 40 MHz
Sweep 4.267 ms
Occupied Bandwidth
16.535 MHz
Total Power 13.6 dBm
Transmit Freq Error -71.545 kHz
OBW Power 99.00 %
x dB Bandwidth 16.58 MHz
x dB -6.00 dB
Center Freq
2.462000000 GHz
CF Step
4.000000 MHz
Auto Man
Freq Offset
0 Hz
MSG
STATUS

Type:	802.11n(HT20)
CH01	
CH06	

CH11	 Agilent Spectrum Analyzer - Occupied BW Center Freq 2.462000000 GHz Center Freq: 2.462000000 GHz Trig: Free Run Avg|Hold: 1/1 #Atten: 30 dB #IFGain:Low Radio Std: None Radio Device: BTS 01:13:46 PM Oct 18, 2017 Frequency Ref Offset 0.5 dB 10 dB/div Ref 20.50 dBm Log Mkr1 2.466095 GHz -8.1054 dBm Center 2.462 GHz #Res BW 100 kHz #VBW 300 kHz Span 40 MHz Sweep 4.267 ms Occupied Bandwidth 16.539 MHz Total Power 12.2 dBm Transmit Freq Error -68.718 kHz OBW Power 99.00 % x dB Bandwidth 16.58 MHz x dB -6.00 dB Center Freq 2.462000000 GHz CF Step 4.000000 MHz Auto Man Freq Offset 0 Hz MSG STATUS

Type:	802.11n(HT40)
CH03	
CH06	

CH09	

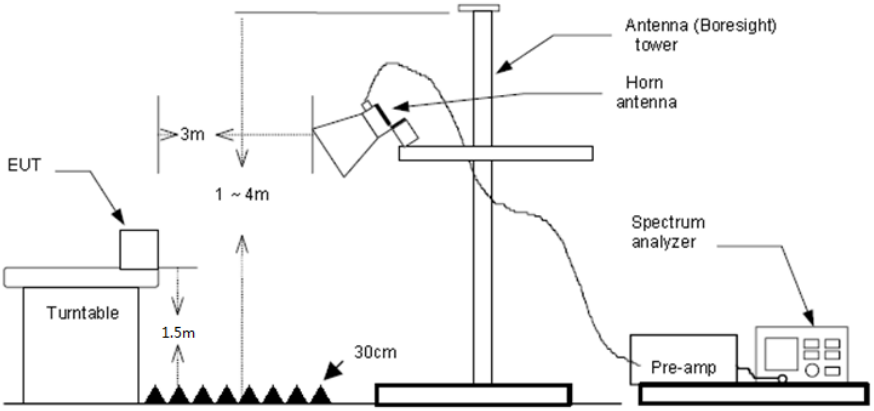
Agilent Spectrum Analyzer - Occupied BW
Center Freq 2.452000000 GHz
Center Freq: 2.452000000 GHz
Trig: Free Run
Avg|Hold: 1/1
#Atten: 30 dB
#IFGain:Low
Radio Std: None
Radio Device: BTS
01:21:37 PM Oct 18, 2017
Frequency
Ref Offset 0.5 dB
10 dB/div
Ref 20.50 dBm
Log
Mkr1 2.45946 GHz
-12.520 dBm
Center 2.452 GHz
#Res BW 100 kHz
#VBW 300 kHz
Span 80 MHz
Sweep 8 ms
Occupied Bandwidth
36.204 MHz
Total Power 10.4 dBm
Transmit Freq Error -33.794 kHz
OBW Power 99.00 %
x dB Bandwidth 36.48 MHz
x dB -6.00 dB
Center Freq
2.452000000 GHz
CF Step
8.000000 MHz
Auto Man
Freq Offset
0 Hz
MSG
STATUS

5.6. Restricted band

LIMIT

FCC CFR Title 47 Part 15 Subpart C Section 15.247 (d): In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, Radiated Emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the Radiated Emissions limits specified in §15.209(a) (see §15.205(c)).

TEST CONFIGURATION



TEST PROCEDURE

1) The EUT was setup and tested according to ANSI C63.10:2013 for compliance to FCC 47CFR 15.247 requirements.
2) The EUT is placed on a turn table which is 1.5 meter above ground. The turn table is rotated 360 degrees to determine the position of the maximum emission level.
3) The EUT waspositioned such that the distance from antenna to the EUT was 3 meters.
4) The antenna is scanned from 1 meter to 4 meters to find out the maximum emission level. Thisis repeated for both horizontal and vertical polarization of the antenna. In order to find themaximum emission, all of the interface cables were manipulated according to ANSI C63.10:2013 on radiated measurement.
5) The receiver set as follow:
   RBW=1MHz, VBW=3MHz PEAK detector for Peak value.
   RBW=1MHz, VBW=3MHz RMS detector for Average value.

TEST MODE:

Please refer to the clause 3.3

TEST RESULTS

☒ **Passed** ☐ **Not Applicable**

Note:
1) Final level= Read level + Antenna Factor+ Cable Loss- Preamp Factor

802.11b					CH01				
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization	Test value
2310.00	16.56	28.05	6.62	0.00	51.23	74.00	-22.77	Vertical	Peak
2390.01	17.53	27.65	6.75	0.00	51.93	74.00	-22.07	Vertical	Peak
2310.00	18.09	28.05	6.62	0.00	52.76	74.00	-21.24	Horizontal	Peak
2390.01	17.14	27.65	6.75	0.00	51.54	74.00	-22.46	Horizontal	Peak
2310.00	11.78	28.05	6.62	0.00	46.45	54.00	-7.55	Vertical	Average
2390.01	11.36	27.65	6.75	0.00	45.76	54.00	-8.24	Vertical	Average
2310.00	11.73	28.05	6.62	0.00	46.40	54.00	-7.60	Horizontal	Average
2390.01	11.31	27.65	6.75	0.00	45.71	54.00	-8.29	Horizontal	Average

802.11b					CH11				
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization	Test value
2483.49	17.37	27.26	6.83	0.00	51.46	74.00	-22.54	Vertical	Peak
2500.00	16.20	27.20	6.84	0.00	50.24	74.00	-23.76	Vertical	Peak
2483.49	16.01	27.26	6.83	0.00	50.10	74.00	-23.90	Horizontal	Peak
2500.00	18.08	27.20	6.84	0.00	52.12	74.00	-21.88	Horizontal	Peak
2483.49	11.33	27.26	6.83	0.00	45.42	54.00	-8.58	Vertical	Average
2500.00	11.31	27.20	6.84	0.00	45.35	54.00	-8.65	Vertical	Average
2483.49	11.30	27.26	6.83	0.00	45.39	54.00	-8.61	Horizontal	Average
2500.00	11.32	27.20	6.84	0.00	45.36	54.00	-8.64	Horizontal	Average

802.11g					CH01				
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization	Test value
2310.00	16.78	28.05	6.62	0.00	51.45	74.00	-22.55	Vertical	Peak
2390.01	18.14	27.65	6.75	0.00	52.54	74.00	-21.46	Vertical	Peak
2310.00	17.71	28.05	6.62	0.00	52.38	74.00	-21.62	Horizontal	Peak
2390.01	17.64	27.65	6.75	0.00	52.04	74.00	-21.96	Horizontal	Peak
2310.00	11.78	28.05	6.62	0.00	46.45	54.00	-7.55	Vertical	Average
2390.01	11.27	27.65	6.75	0.00	45.67	54.00	-8.33	Vertical	Average
2310.00	11.75	28.05	6.62	0.00	46.42	54.00	-7.58	Horizontal	Average
2390.01	11.33	27.65	6.75	0.00	45.73	54.00	-8.27	Horizontal	Average

802.11g					CH11				
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization	Test value
2483.49	17.30	27.26	6.83	0.00	51.39	74.00	-22.61	Vertical	Peak
2500.00	17.44	27.20	6.84	0.00	51.48	74.00	-22.52	Vertical	Peak
2483.49	17.41	27.26	6.83	0.00	51.50	74.00	-22.50	Horizontal	Peak
2500.00	18.12	27.20	6.84	0.00	52.16	74.00	-21.84	Horizontal	Peak
2483.49	11.34	27.26	6.83	0.00	45.43	54.00	-8.57	Vertical	Average
2500.00	11.30	27.20	6.84	0.00	45.34	54.00	-8.66	Vertical	Average
2483.49	11.32	27.26	6.83	0.00	45.41	54.00	-8.59	Horizontal	Average
2500.00	11.32	27.20	6.84	0.00	45.36	54.00	-8.64	Horizontal	Average

802.11n(HT20)					CH01				
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization	Test value
2310.00	17.58	28.05	6.62	0.00	52.25	74.00	-21.75	Vertical	Peak
2390.01	17.80	27.65	6.75	0.00	52.20	74.00	-21.80	Vertical	Peak
2310.00	17.11	28.05	6.62	0.00	51.78	74.00	-22.22	Horizontal	Peak
2390.01	16.69	27.65	6.75	0.00	51.09	74.00	-22.91	Horizontal	Peak
2310.00	11.76	28.05	6.62	0.00	46.43	54.00	-7.57	Vertical	Average
2390.01	11.35	27.65	6.75	0.00	45.75	54.00	-8.25	Vertical	Average
2310.00	11.77	28.05	6.62	0.00	46.44	54.00	-7.56	Horizontal	Average
2390.01	11.28	27.65	6.75	0.00	45.68	54.00	-8.32	Horizontal	Average

802.11n(HT20)					CH11				
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization	Test value
2483.49	17.45	27.26	6.83	0.00	51.54	74.00	-22.46	Vertical	Peak
2500.00	17.32	27.20	6.84	0.00	51.36	74.00	-22.64	Vertical	Peak
2483.49	16.85	27.26	6.83	0.00	50.94	74.00	-23.06	Horizontal	Peak
2500.00	16.13	27.20	6.84	0.00	50.17	74.00	-23.83	Horizontal	Peak
2483.49	11.33	27.26	6.83	0.00	45.42	54.00	-8.58	Vertical	Average
2500.00	11.28	27.20	6.84	0.00	45.32	54.00	-8.68	Vertical	Average
2483.49	11.29	27.26	6.83	0.00	45.38	54.00	-8.62	Horizontal	Average
2500.00	11.27	27.20	6.84	0.00	45.31	54.00	-8.69	Horizontal	Average

802.11n(HT40)					CH03				
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization	Test value
2310.00	18.48	28.05	6.62	0.00	53.15	74.00	-20.85	Vertical	Peak
2389.99	17.12	27.65	6.75	0.00	51.52	74.00	-22.48	Vertical	Peak
2310.00	17.11	28.05	6.62	0.00	51.78	74.00	-22.22	Horizontal	Peak
2389.99	18.24	27.65	6.75	0.00	52.64	74.00	-21.36	Horizontal	Peak
2310.00	11.73	28.05	6.62	0.00	46.40	54.00	-7.60	Vertical	Average
2389.99	11.31	27.65	6.75	0.00	45.71	54.00	-8.29	Vertical	Average
2310.00	11.70	28.05	6.62	0.00	46.37	54.00	-7.63	Horizontal	Average
2389.99	11.29	27.65	6.75	0.00	45.69	54.00	-8.31	Horizontal	Average

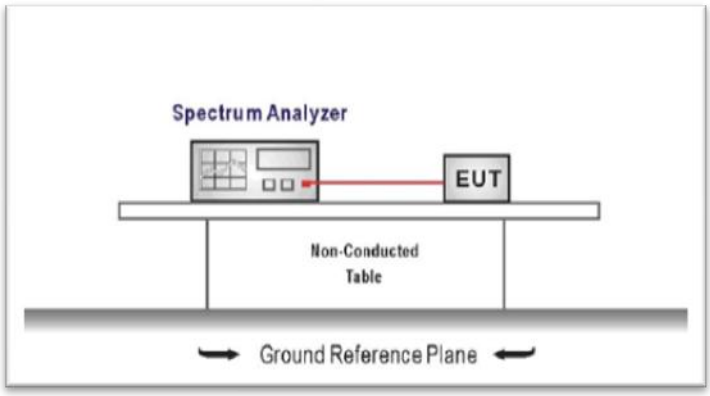
802.11n(HT40)					CH09				
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization	Test value
2483.50	18.25	27.26	6.83	0.00	52.34	74.00	-21.66	Vertical	Peak
2500.00	17.05	27.20	6.84	0.00	51.09	74.00	-22.91	Vertical	Peak
2483.50	17.20	27.26	6.83	0.00	51.29	74.00	-22.71	Horizontal	Peak
2500.00	18.54	27.20	6.84	0.00	52.58	74.00	-21.42	Horizontal	Peak
2483.50	11.40	27.26	6.83	0.00	45.49	54.00	-8.51	Vertical	Average
2500.00	11.41	27.20	6.84	0.00	45.45	54.00	-8.55	Vertical	Average
2483.50	11.40	27.26	6.83	0.00	45.49	54.00	-8.51	Horizontal	Average
2500.00	11.40	27.20	6.84	0.00	45.44	54.00	-8.56	Horizontal	Average

5.7. Band edge and Spurious Emissions (conducted)

LIMIT

FCC CFR Title 47 Part 15 Subpart C Section15.247 (d): 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 CONFIGURATION



TEST PROCEDURE

1. Connect the antenna port(s) to the spectrum analyzer input.
2. Establish a reference level by using the following procedure
   Center frequency=DTS channel center frequency
   The span = 1.5 times the DTS bandwidth.
   RBW = 100 kHz, VBW ≥ 3 x RBW
   Detector = peak, Sweep time = auto couple, Trace mode = max hold
   Allow trace to fully stabilize
   Use the peak marker function to determine the maximum PSD level

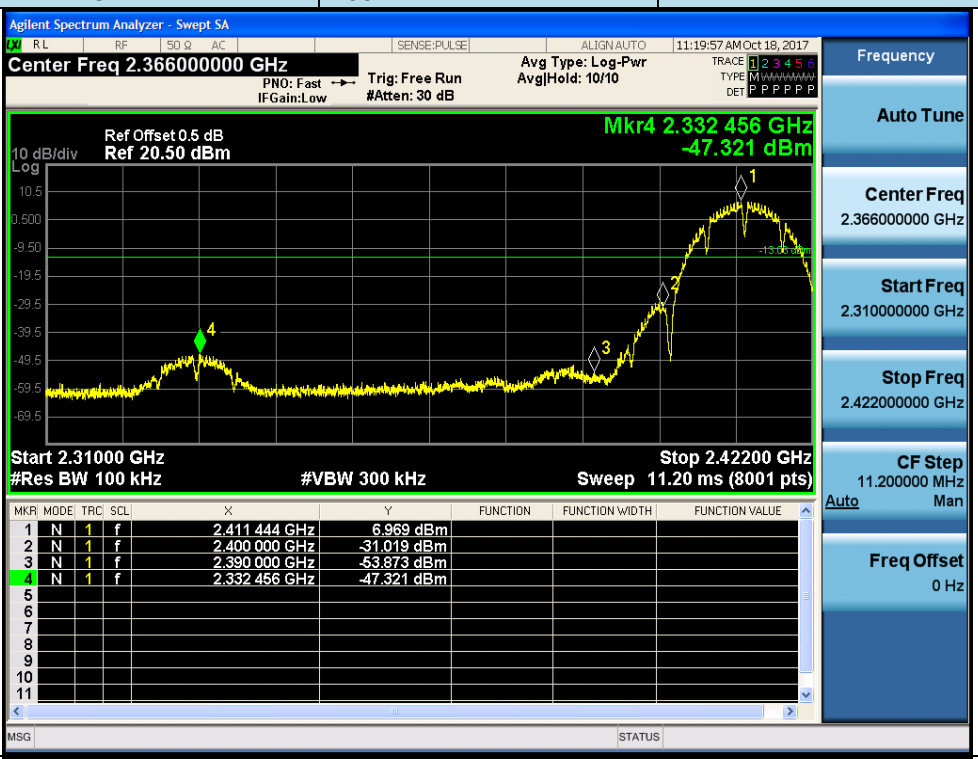
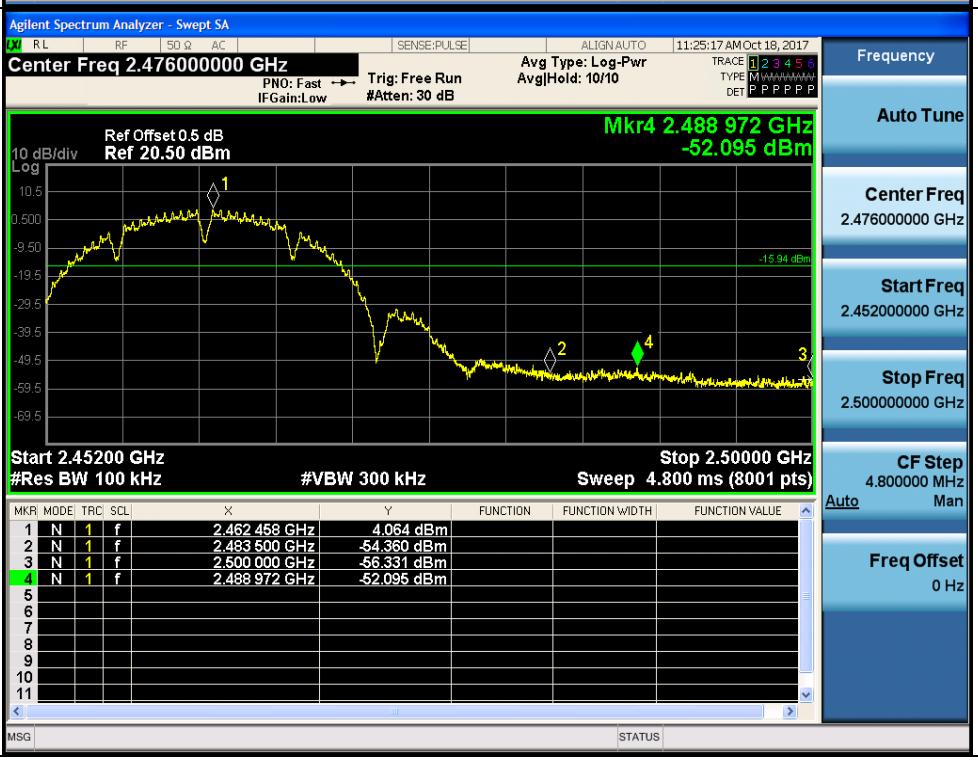
   Note: the channel found to contain the maximum PSD level can be used to establish the reference level.
3. Emission level measurement
   Set the center frequency and span to encompass frequency range to be measured
   RBW = 100 kHz, VBW ≥ 3 x RBW
   Detector = peak, Sweep time = auto couple, Trace mode = max hold
   Allow trace to fully stabilize
   Use the peak marker function to determine the maximum amplitude level.
4. Place the radio in continuous transmit mode, allow the trace to stabilize, view the transmitter waveform on the spectrum analyzer.
5. Ensure that the amplitude of all unwanted emission outside of the authorized frequency band excluding restricted frequency bands) are attenuated by at least the minimum requirements specified (at least 20 dB relative to the maximum in-band peak PSD level in 100 kHz). Report the three highest emission relative to the limit.

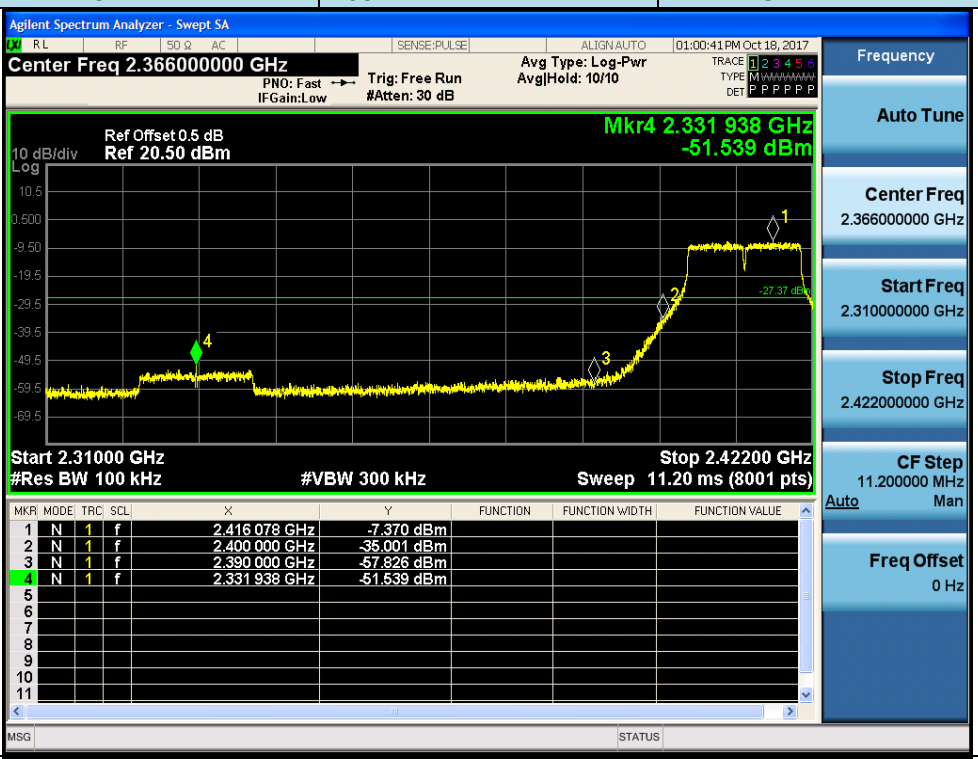
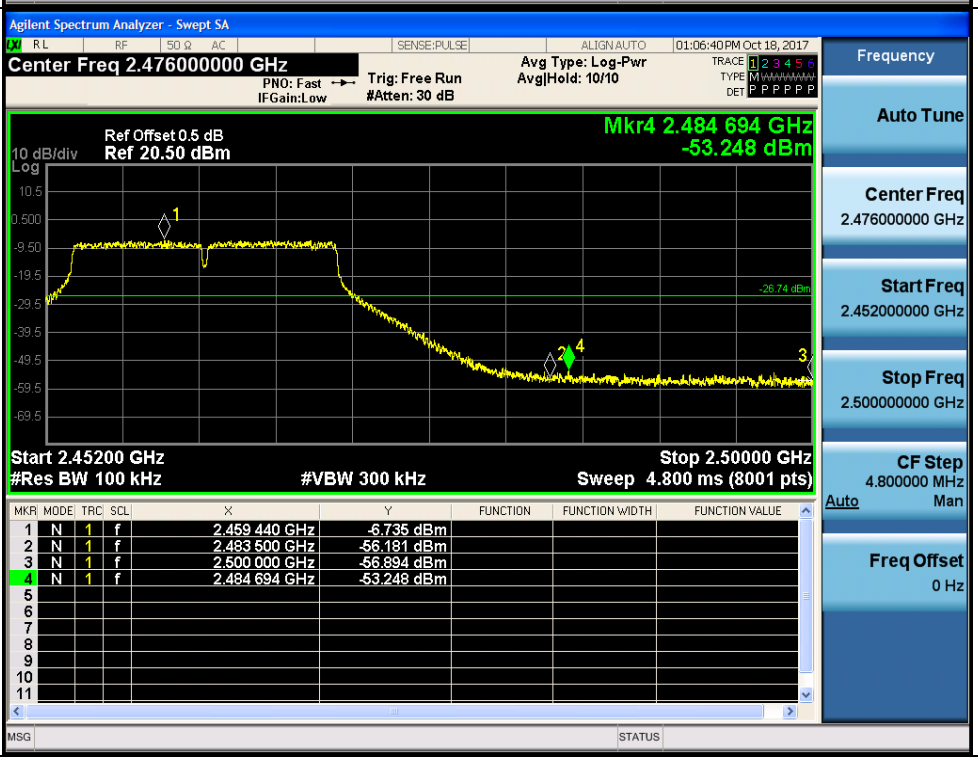
TEST MODE:

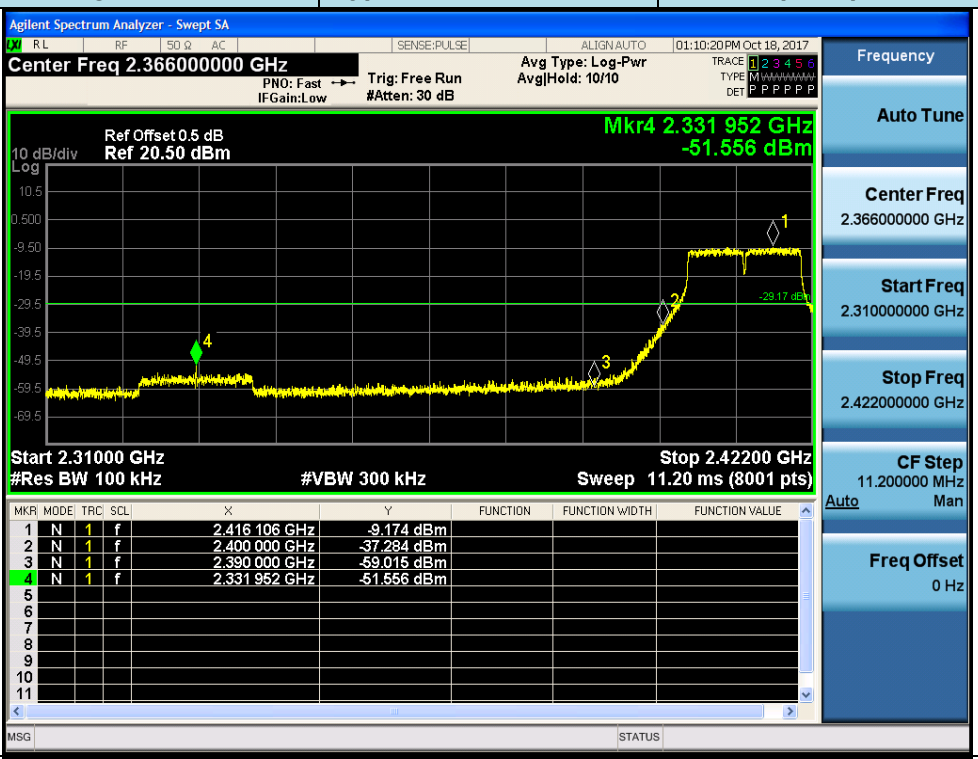
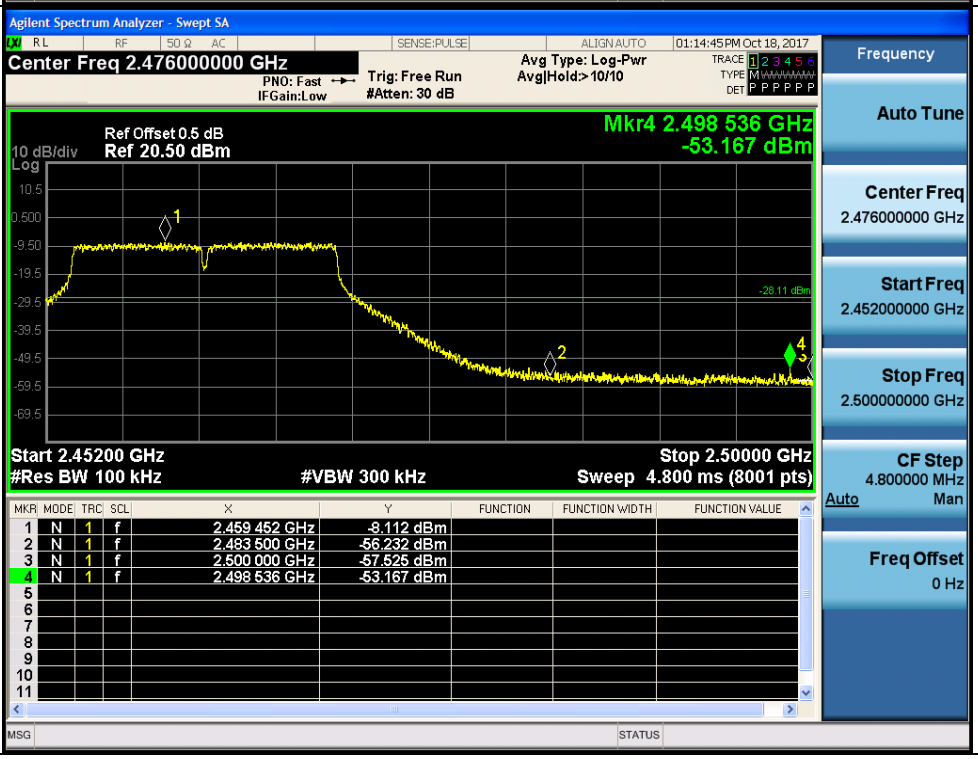
Please refer to the clause 3.3

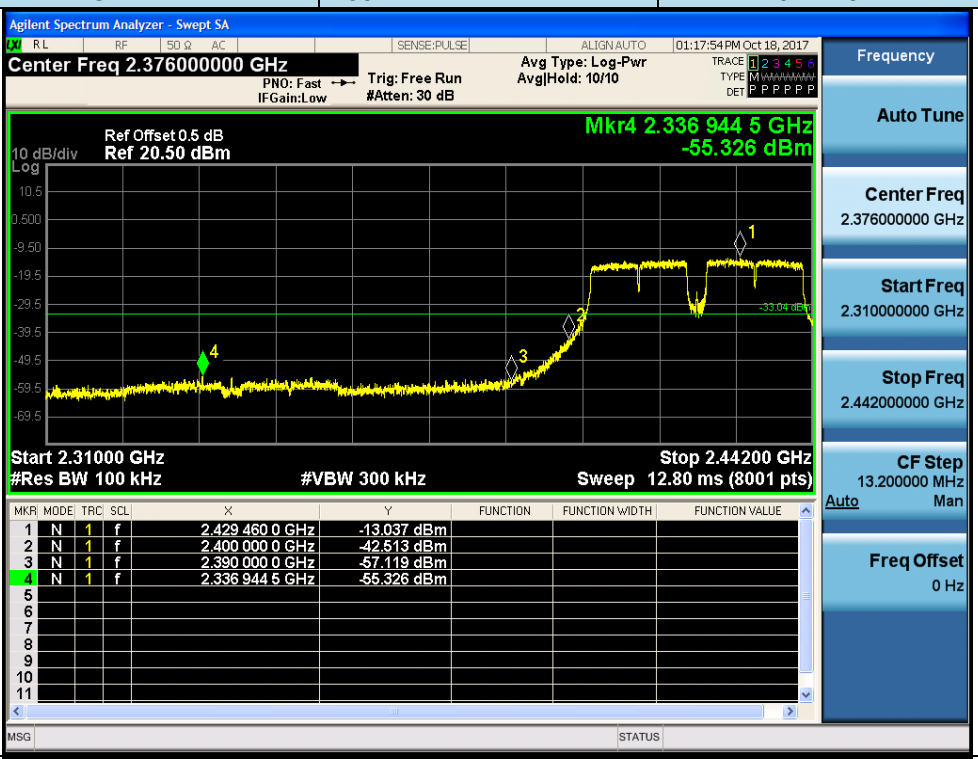
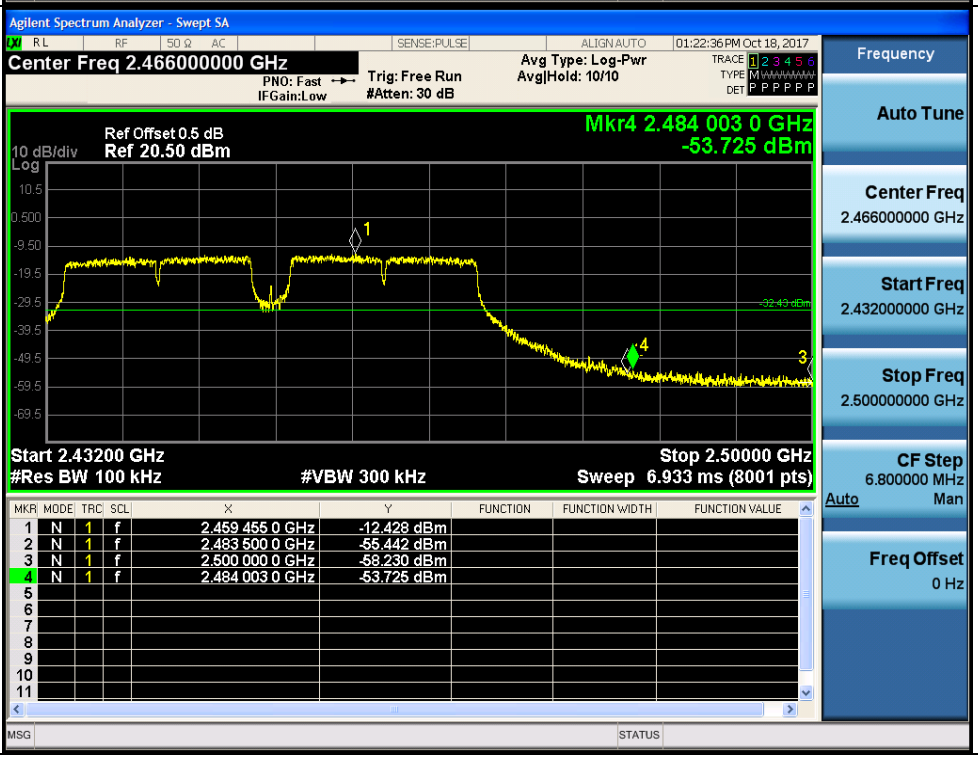
TEST RESULTS

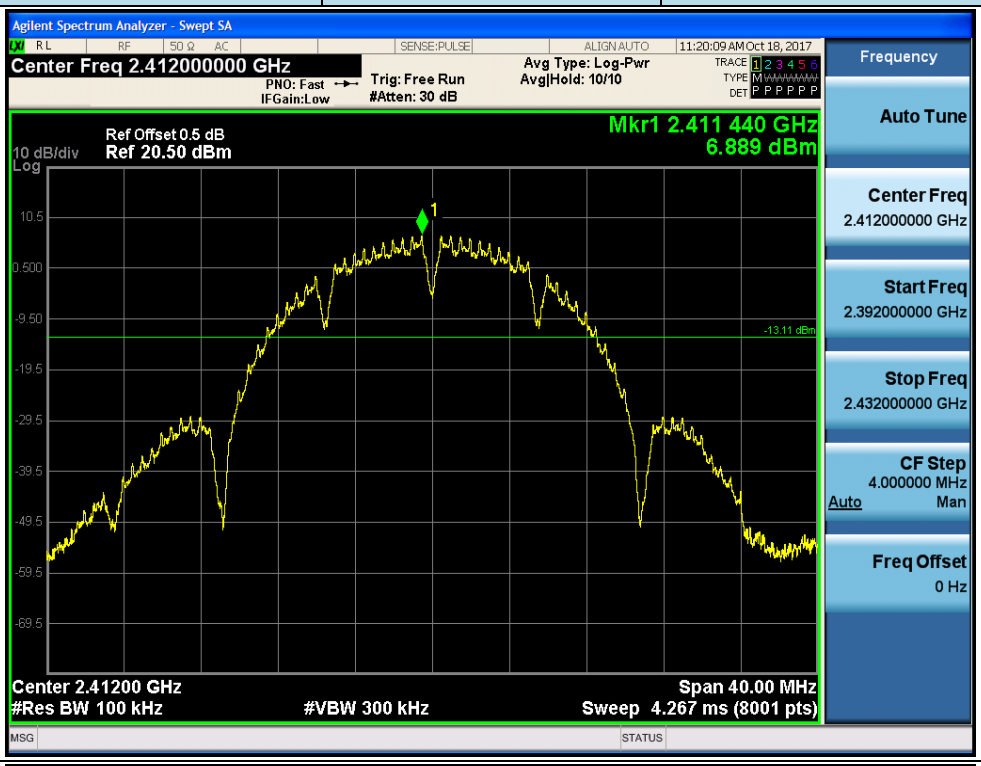
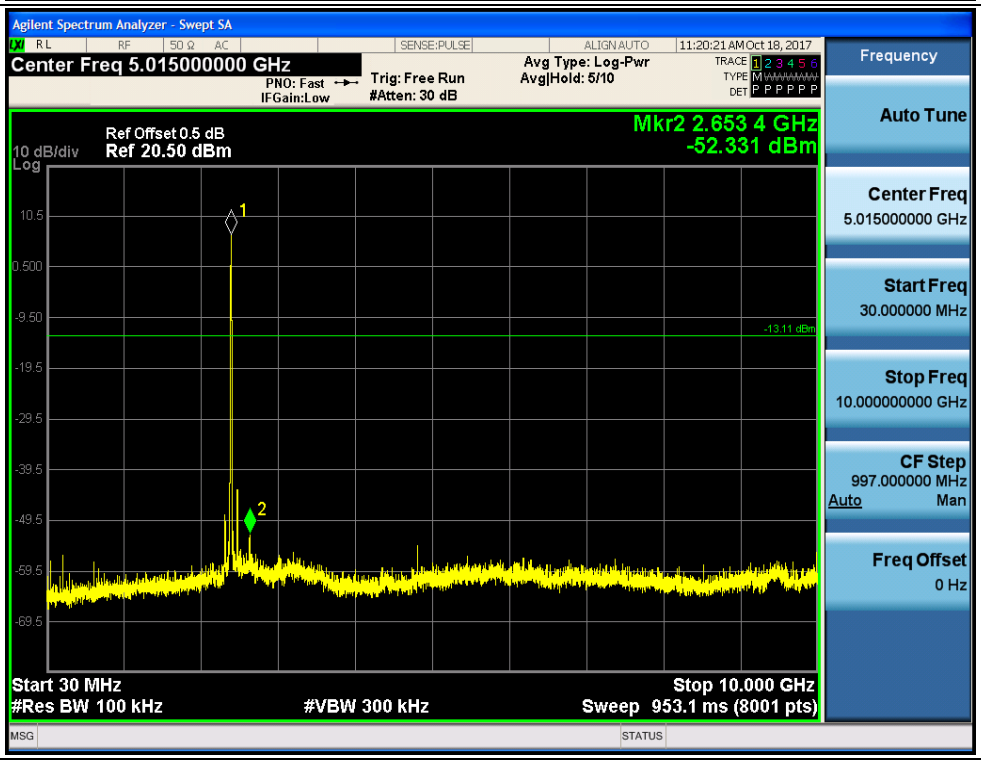
☒ **Passed** ☐ **Not Applicable**

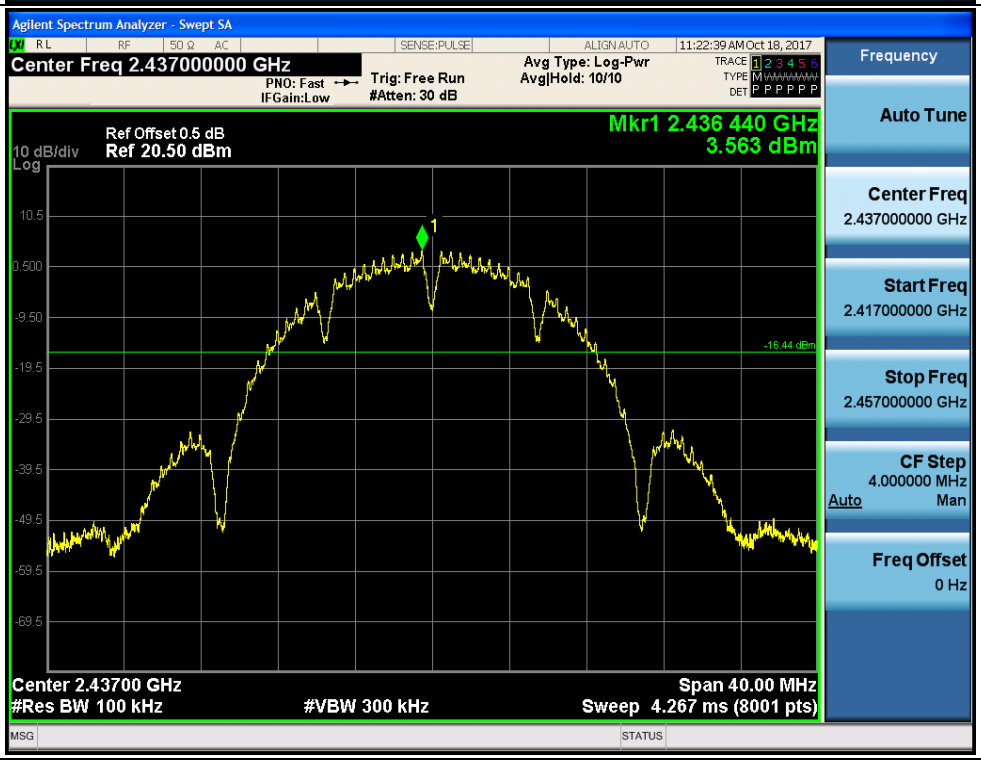
Test Item:	Bandedge	Type:	802.11 b
CH01			
CH11			

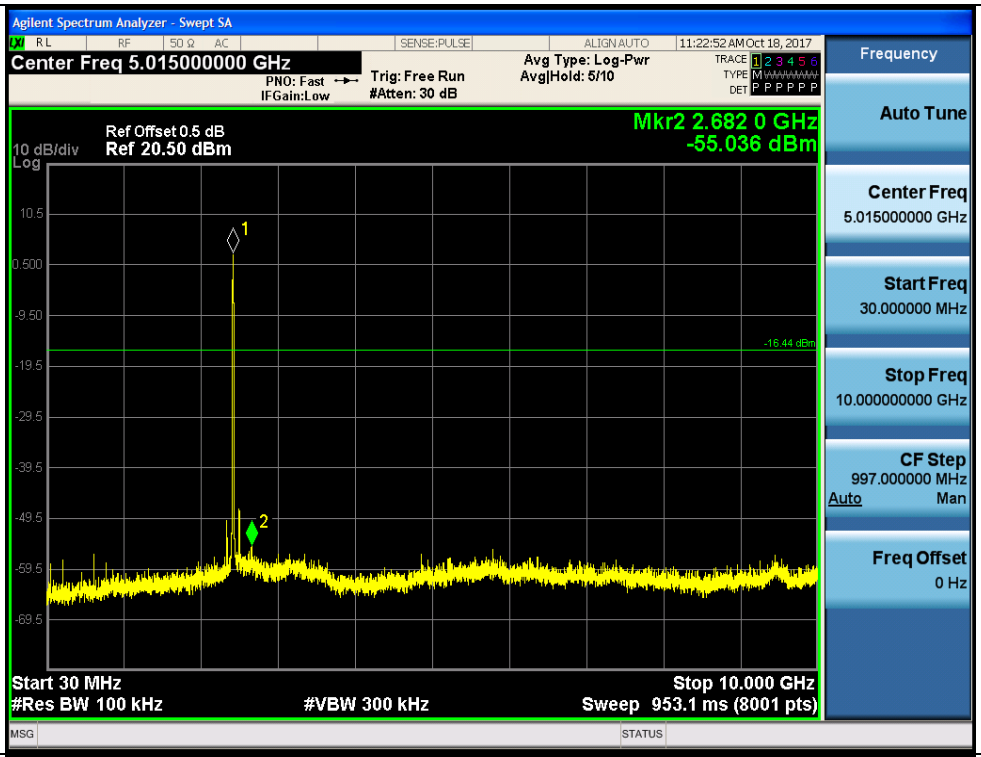
Test Item:	Bandedge	Type:	802.11 g
CH01			
CH11			

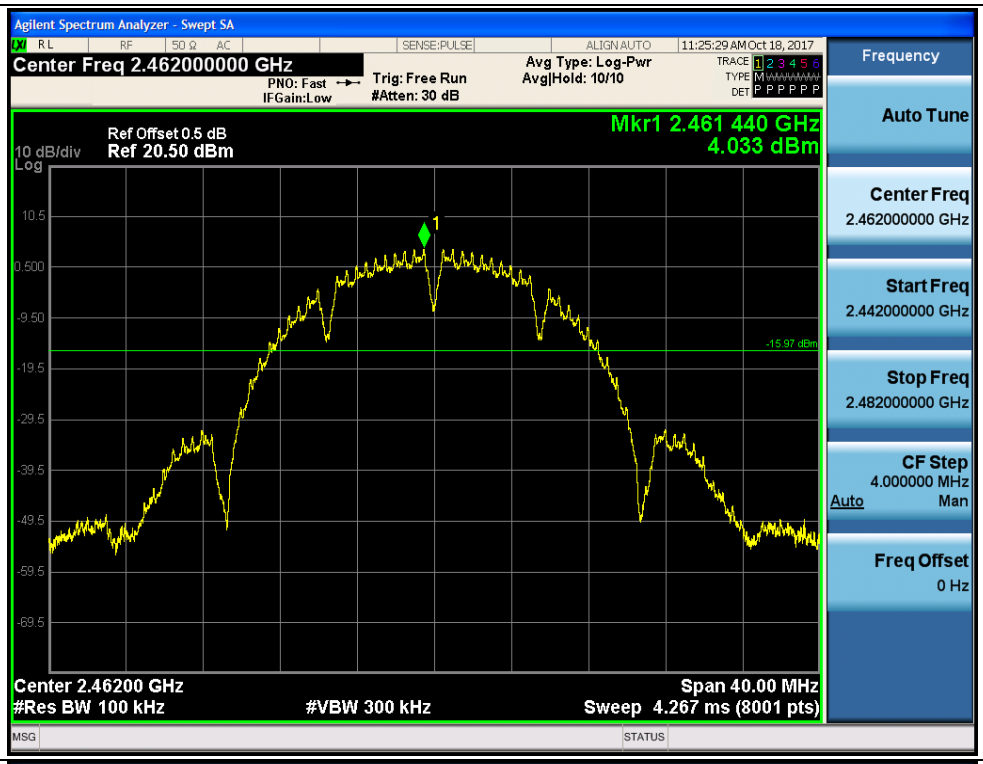
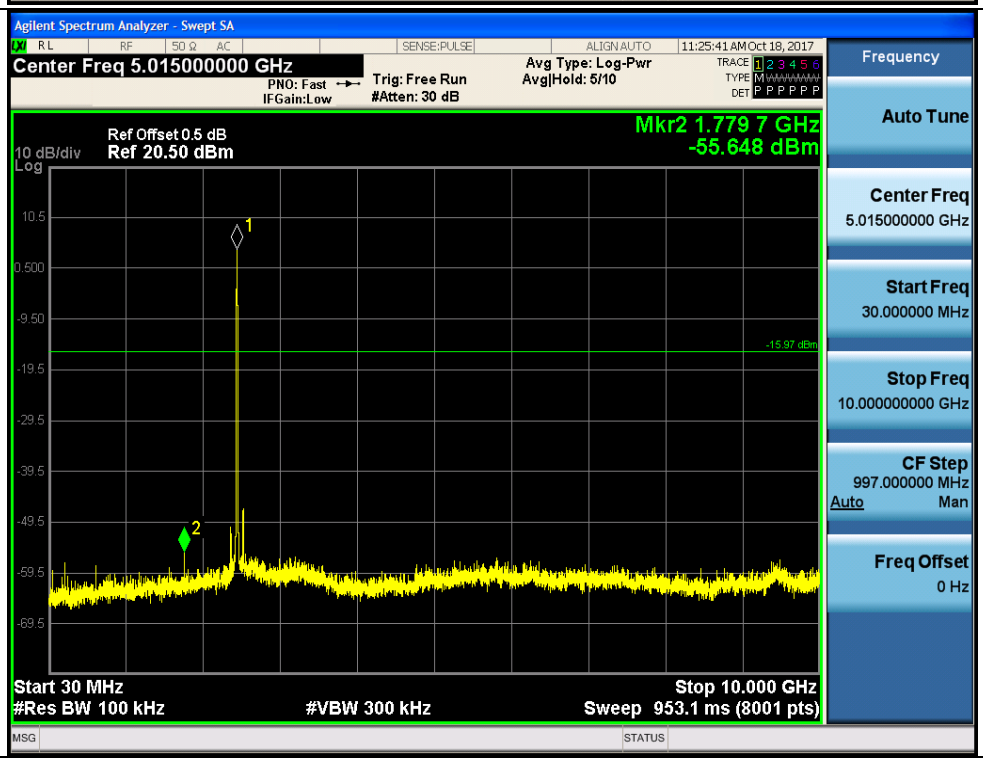
Test Item:	Bandedge	Type:	802.11 n(HT20)
CH01			
CH11			

Test Item:	Bandedge	Type:	802.11 n(HT40)
CH03			
CH09			

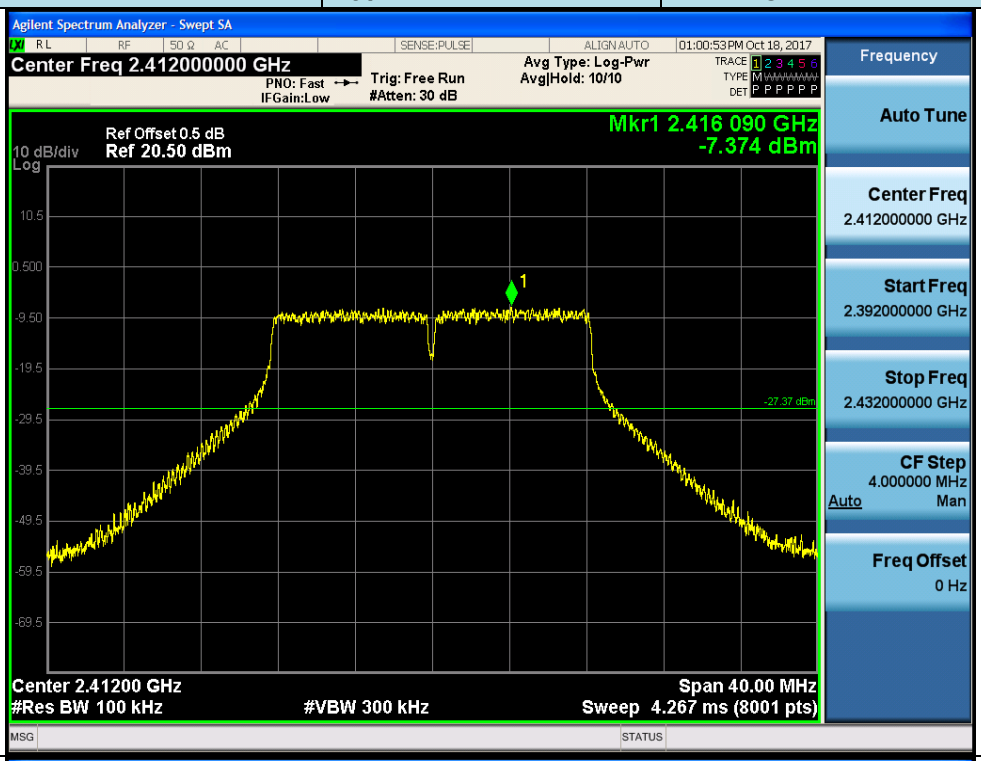
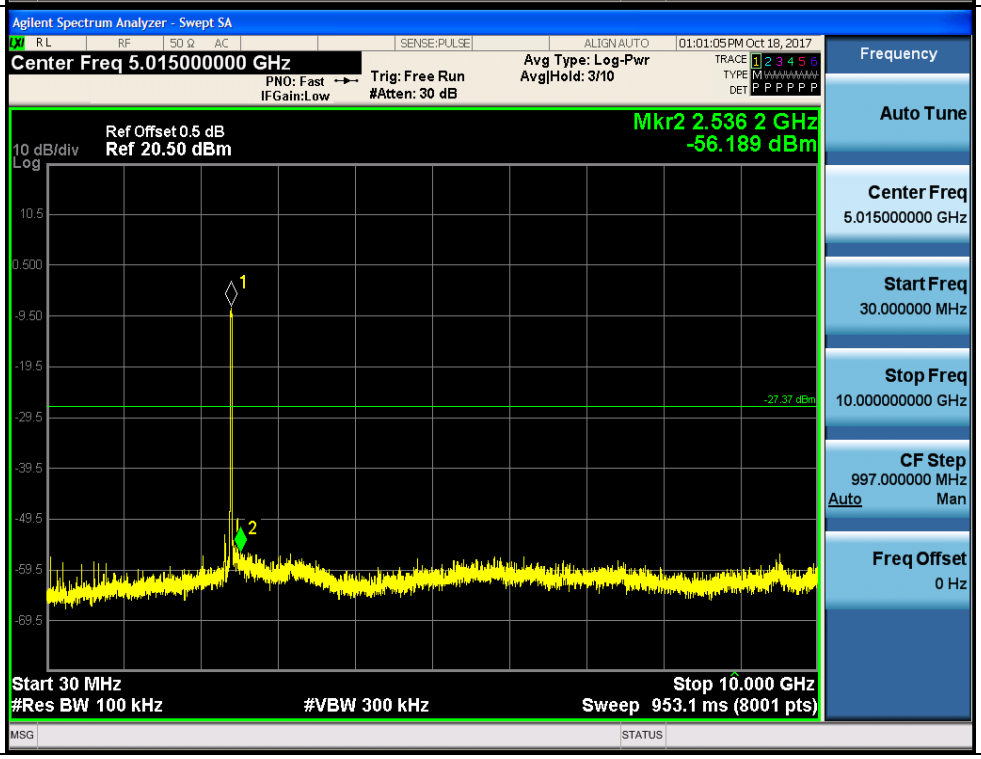
Test Item:	SE	Type:	802.11 b
CH01 Reference Level			
CH01 30MHz~10GHz			

CH01 10GHz~26GHz	
CH06 Reference Level	

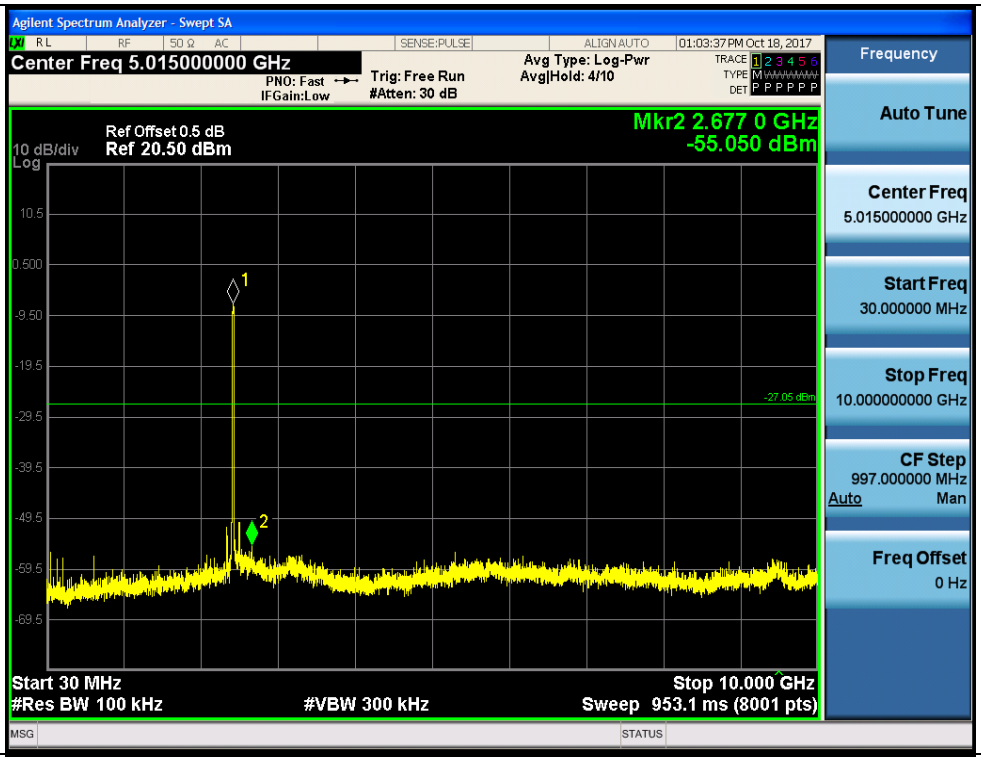
CH06 30MHz~10GHz	
CH06 10GHz~26GHz	

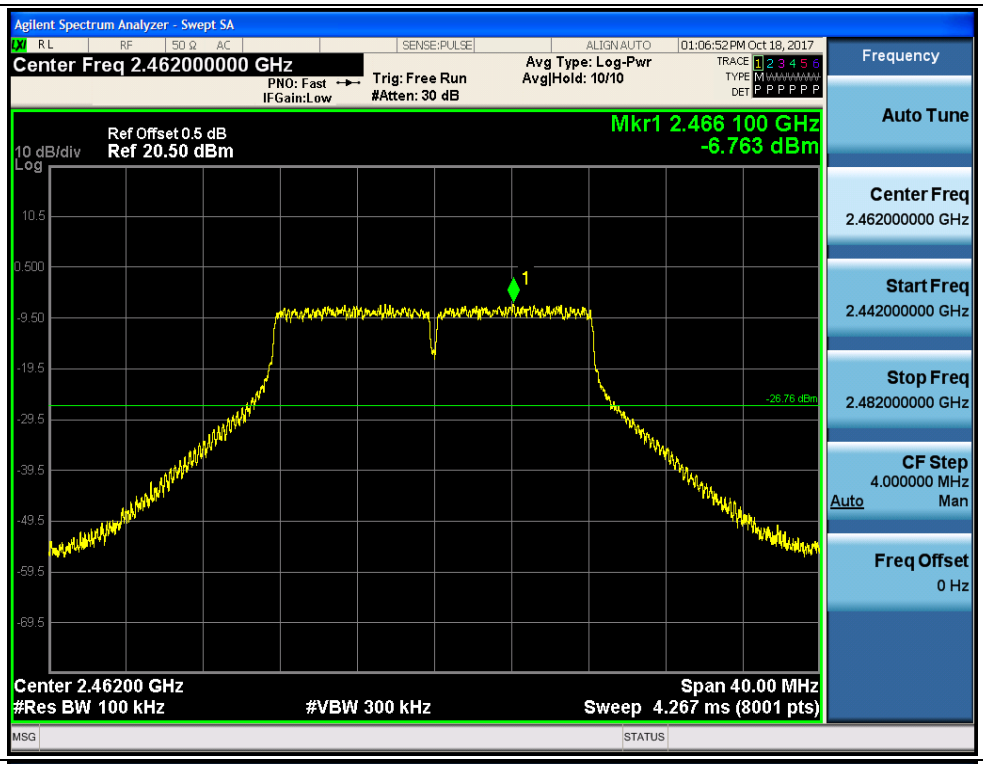
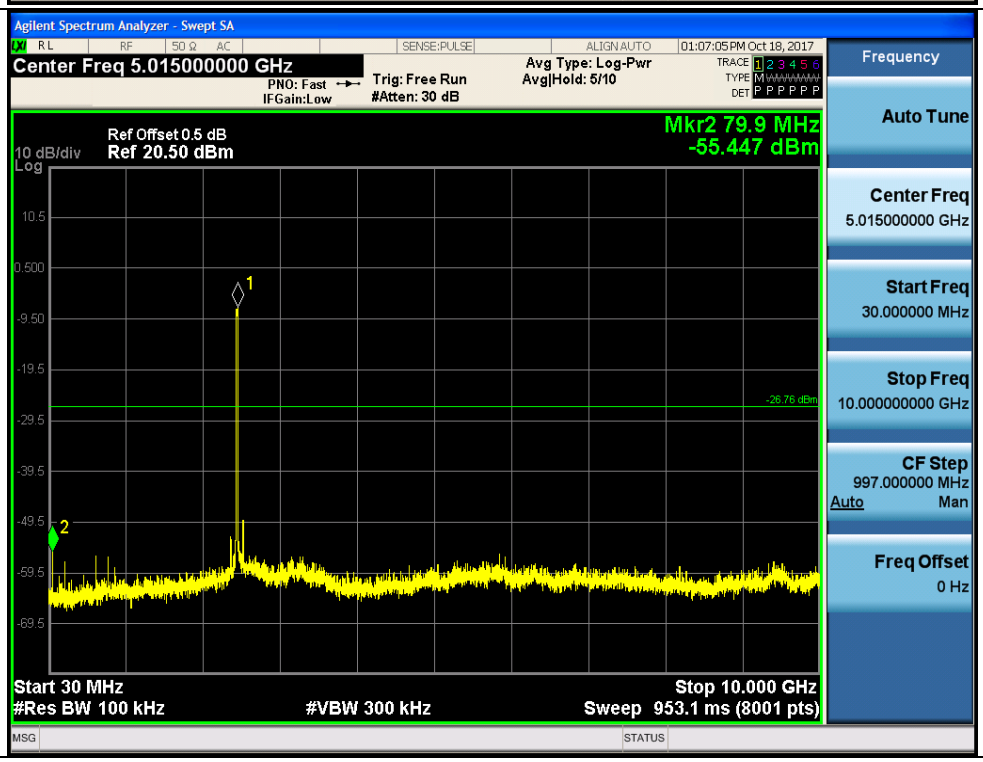
CH11 Reference Level	
CH11 30MHz~10GHz	

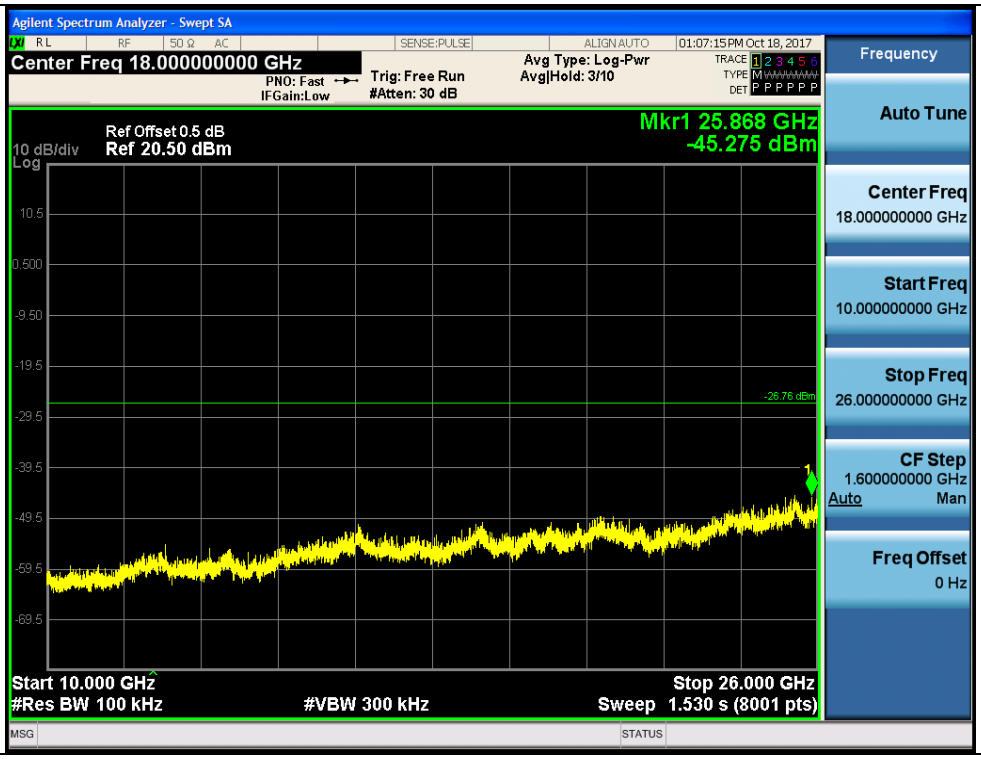
CH11 10GHz~26GHz	

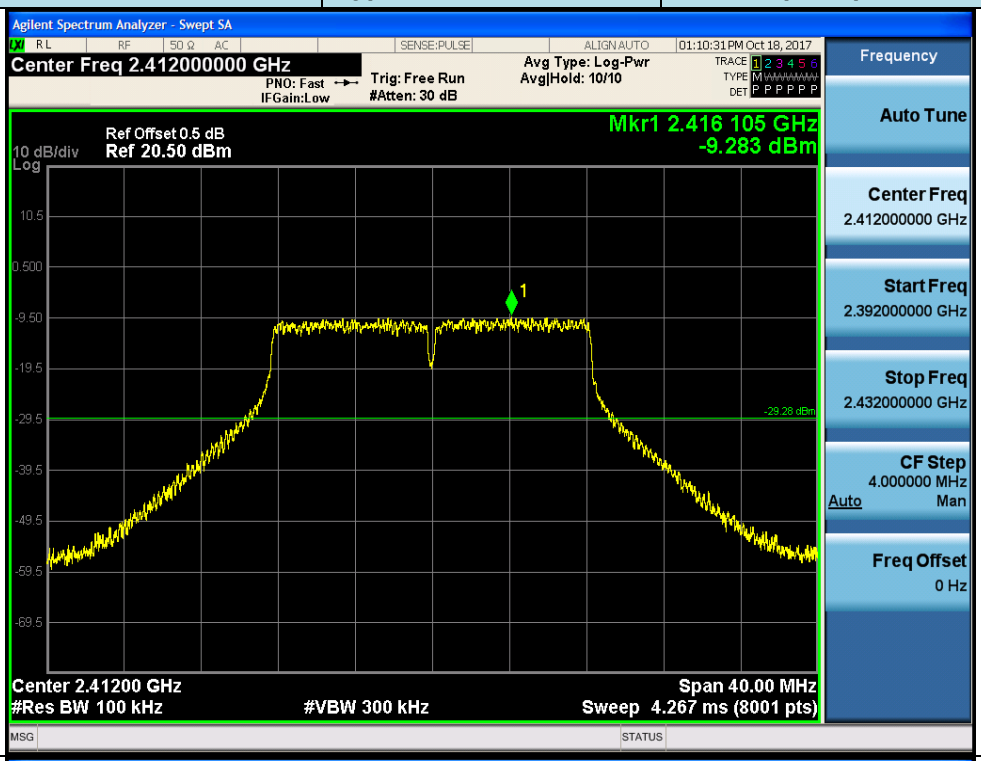
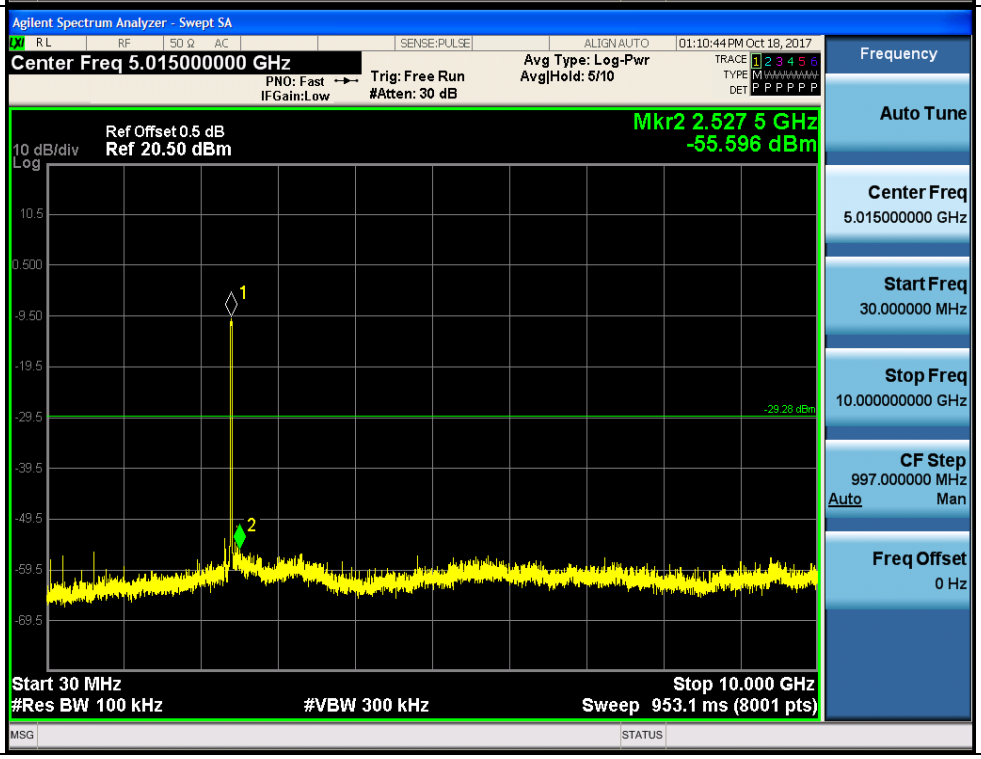
Test Item:	SE	Type:	802.11 g
CH01 Reference Level			
CH01 30MHz~10GHz			

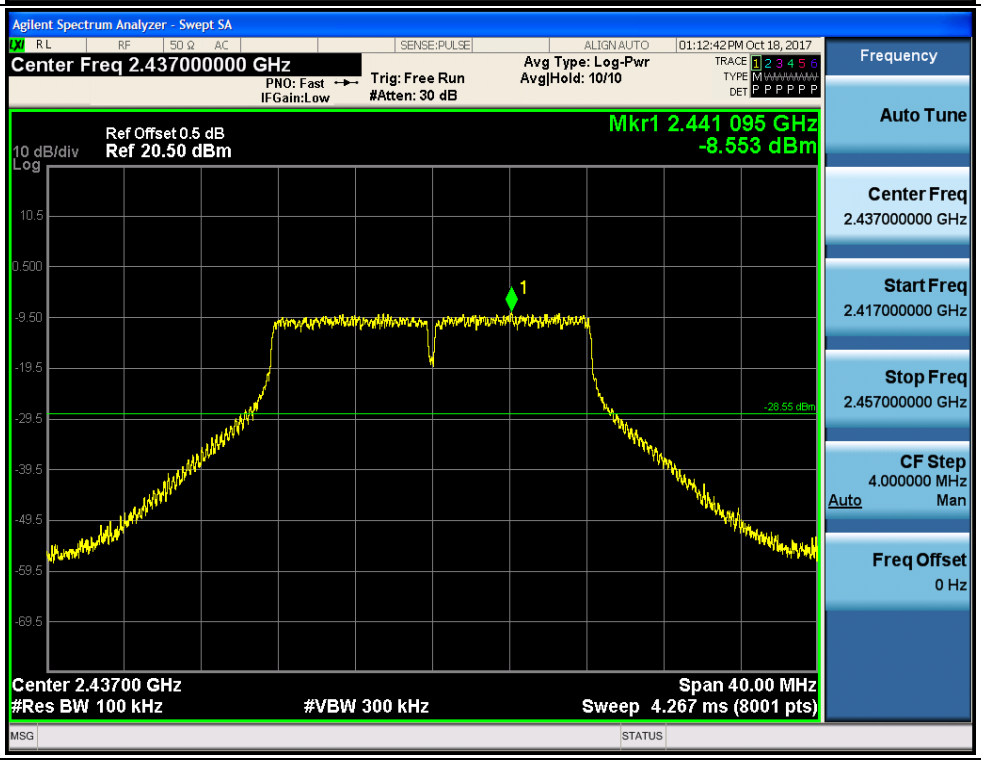
CH01 10GHz~26GHz	
CH06 Reference Level	

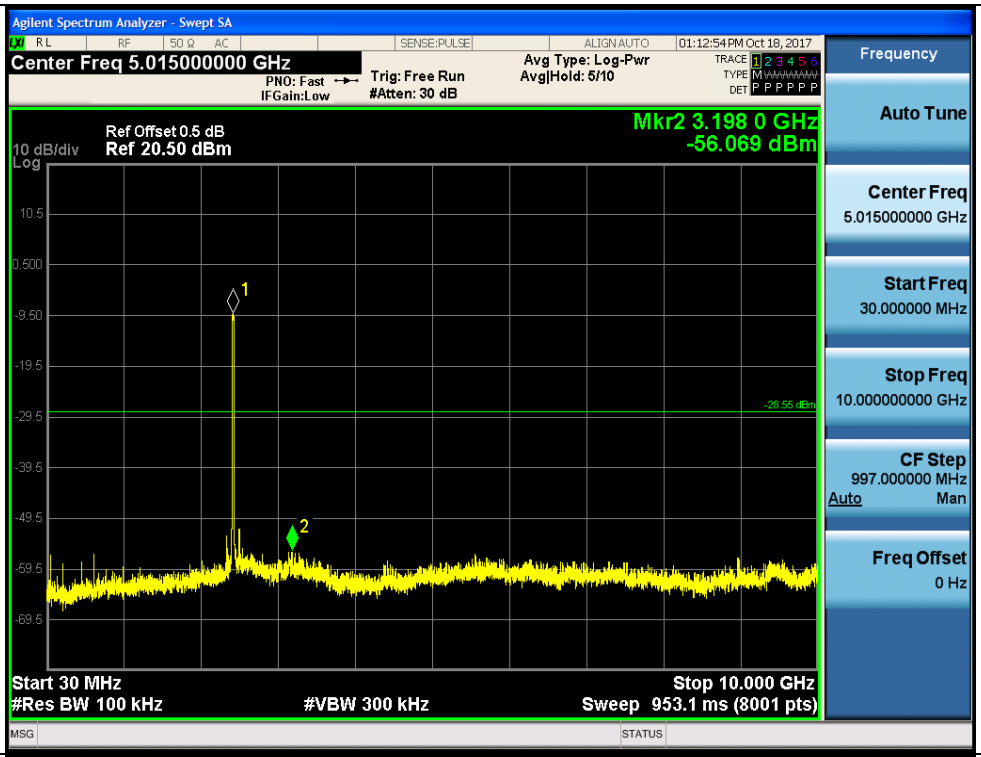
CH06 30MHz~10GHz	
CH06 10GHz~26GHz	

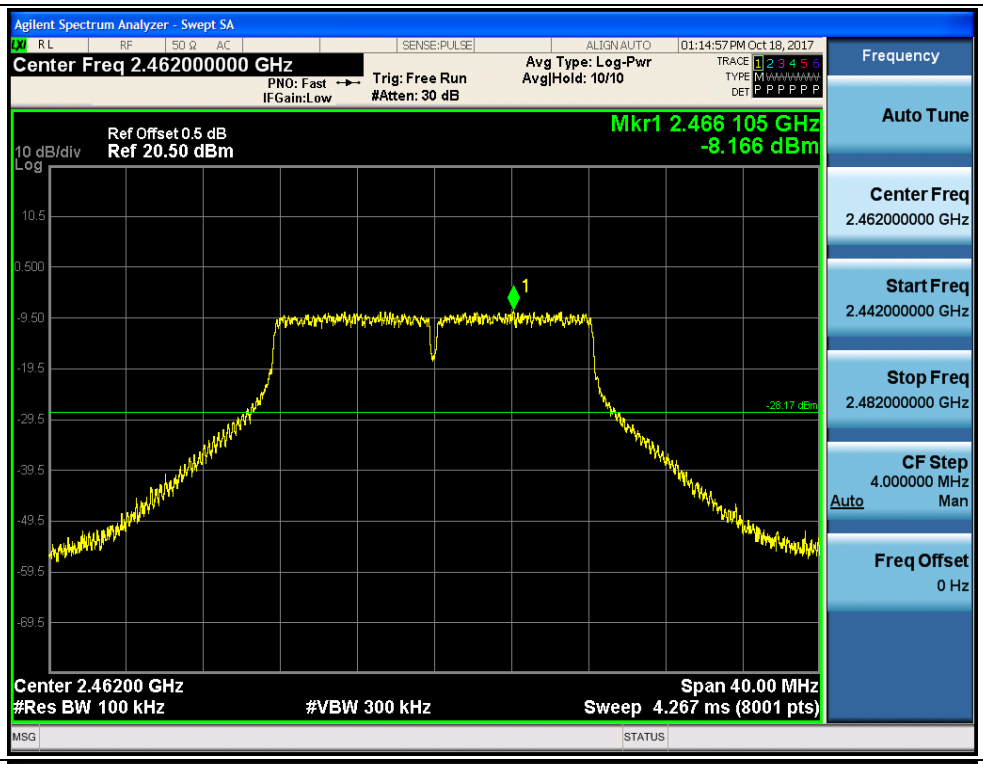
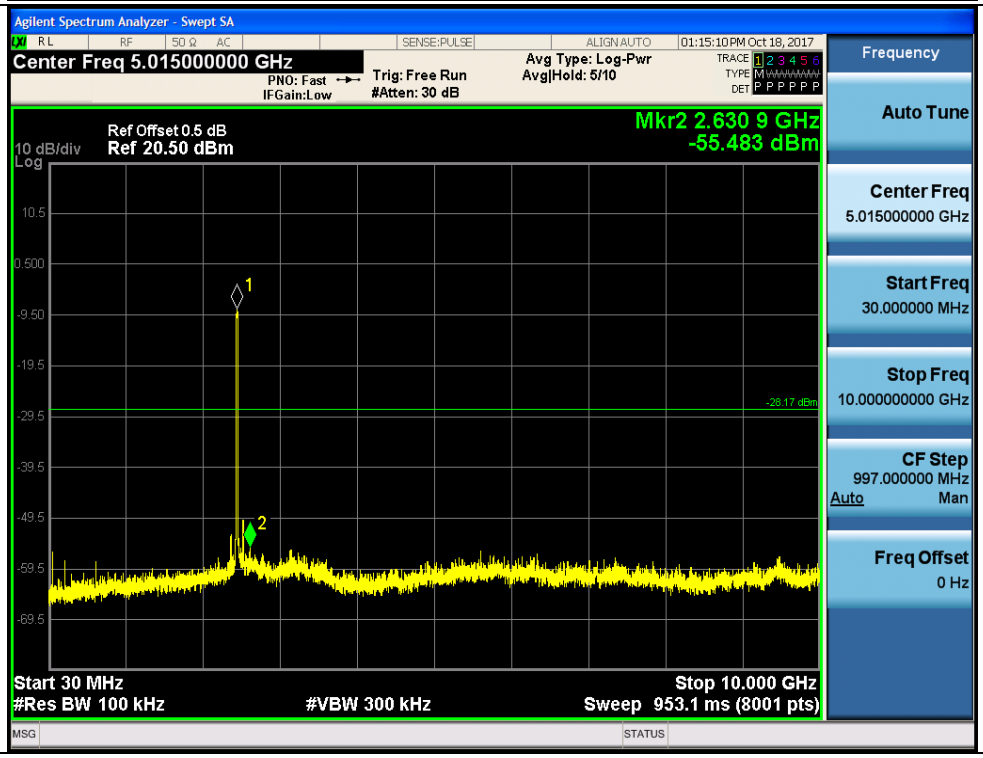
CH11 Reference Level	
CH11 30MHz~10GHz	

CH11 10GHz~26GHz	

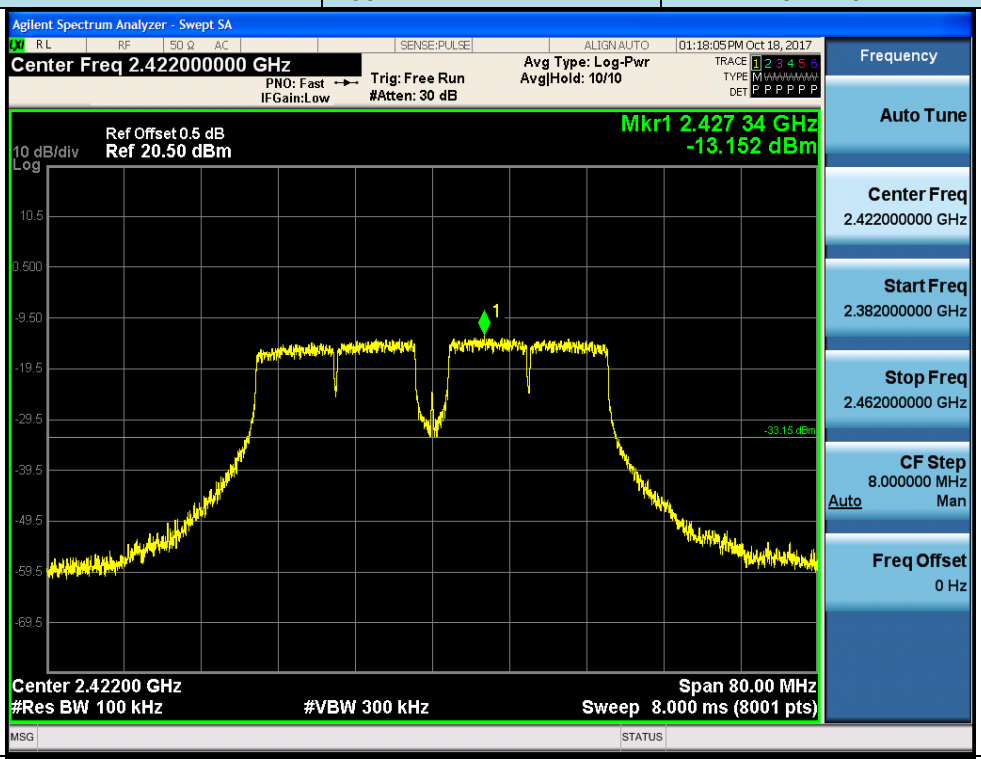
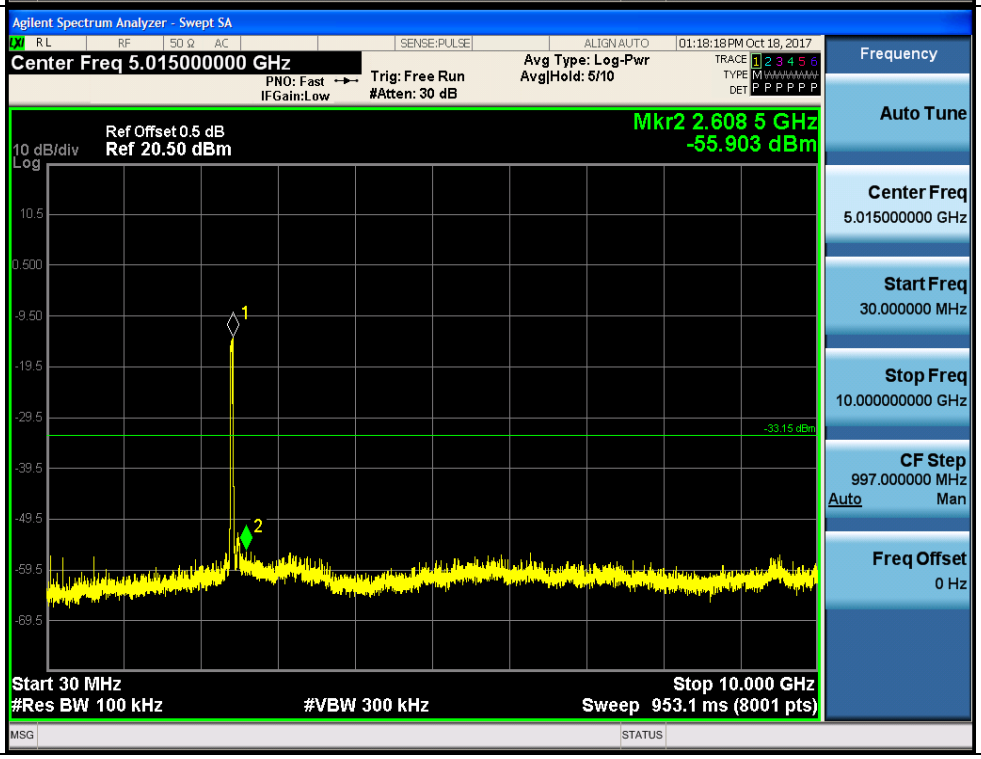
Test Item:	SE	Type:	802.11 n(HT20)
CH01 Reference Level			
CH01 30MHz~10GHz			

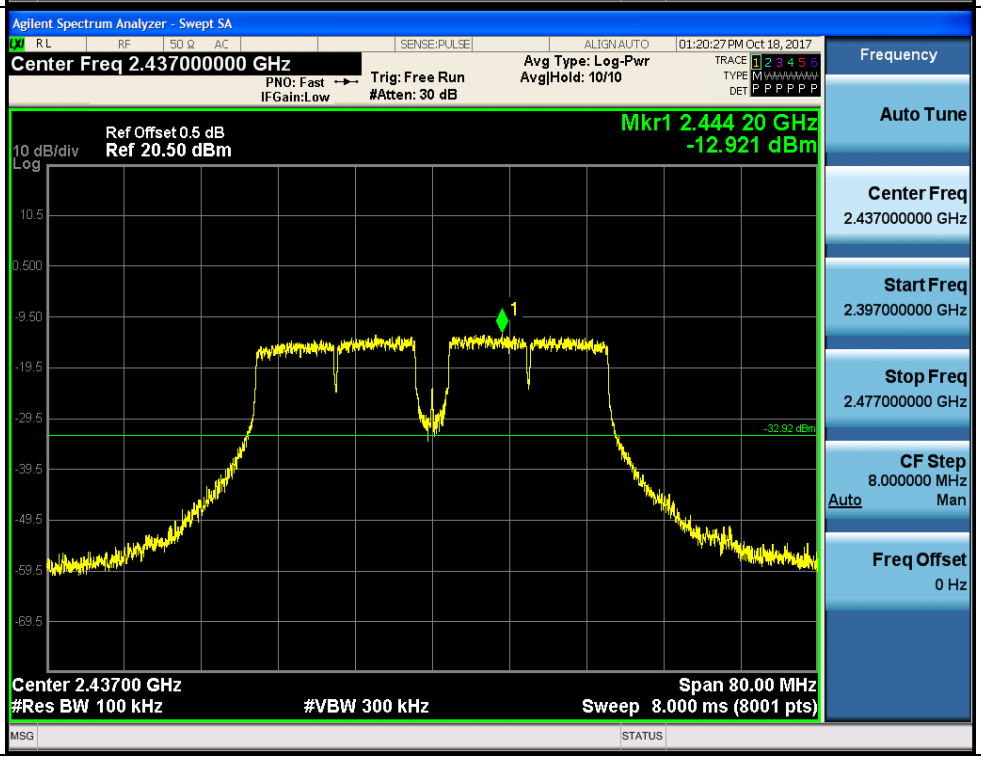
CH01 10GHz~26GHz	
CH06 Reference Level	

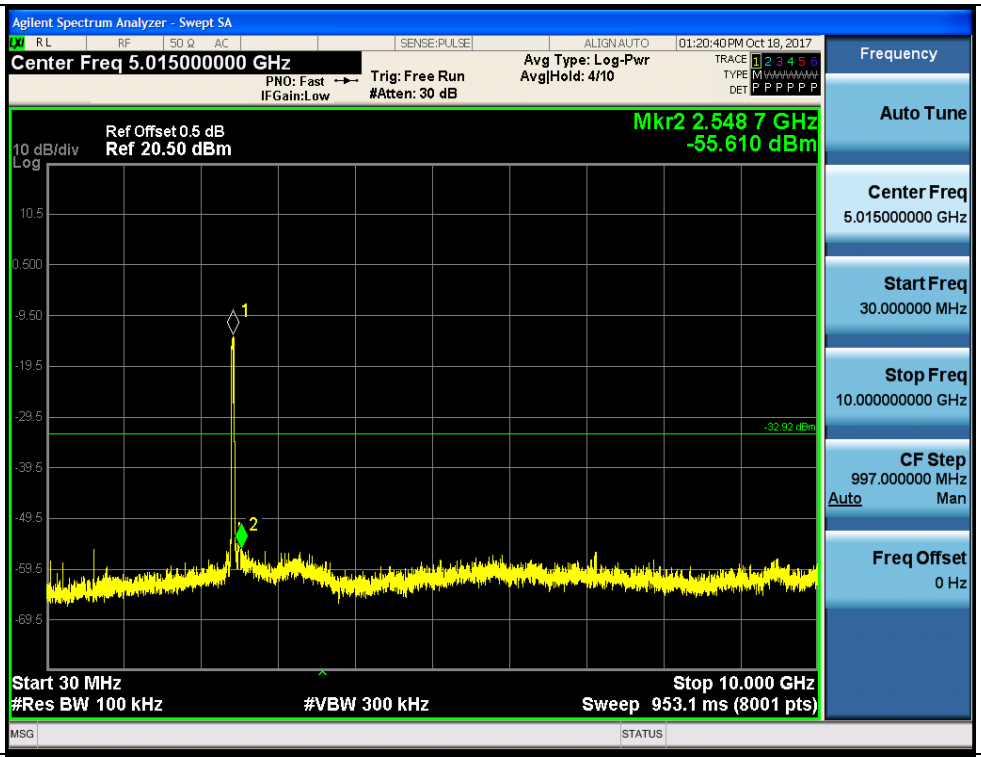
CH06 30MHz~10GHz	
CH06 10GHz~26GHz	

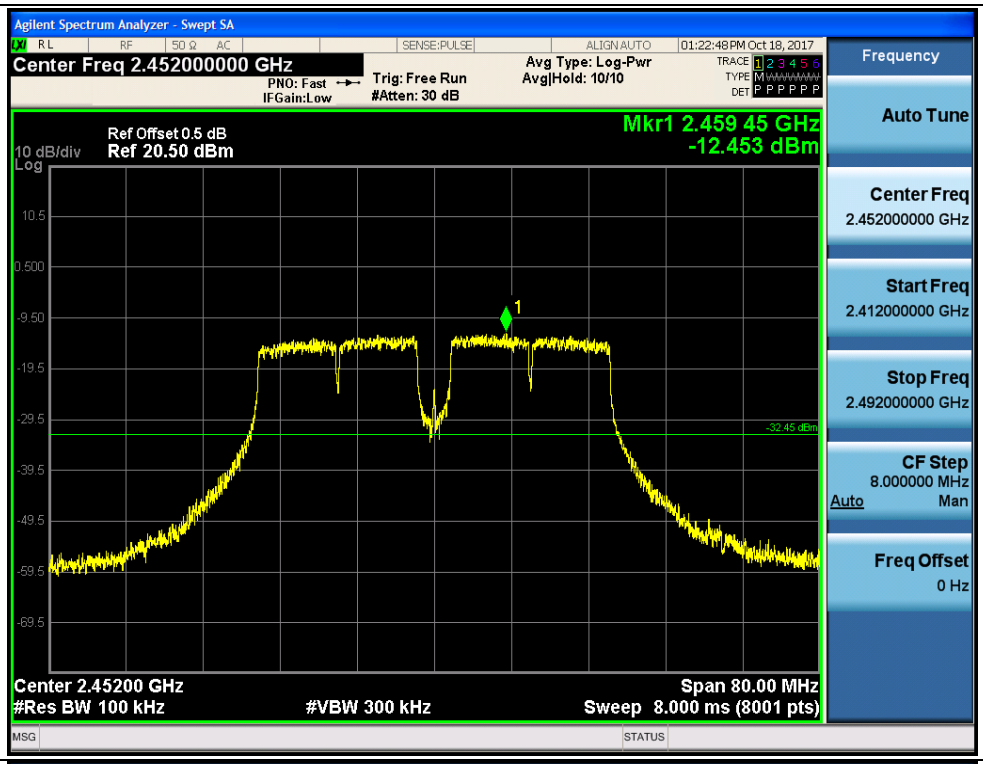
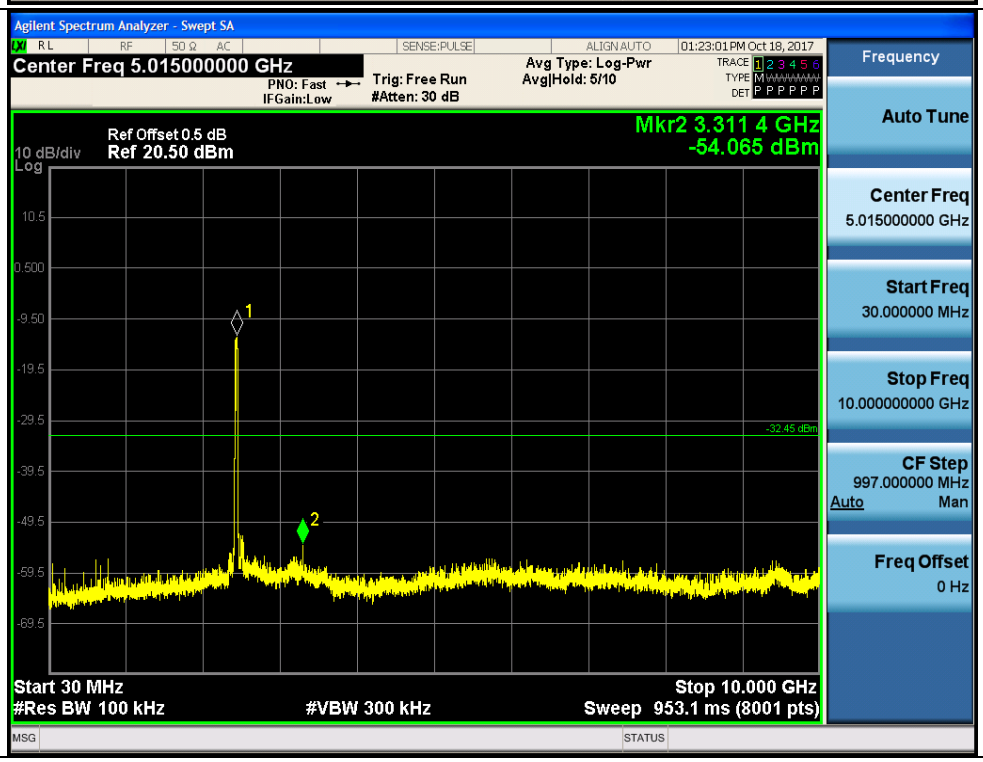
CH11 Reference Level	
CH11 30MHz~10GHz	

CH11 10GHz~26GHz	

Test Item:	SE	Type:	802.11 n(HT40)
CH03 Reference Level			
CH03 30MHz~10GHz			

CH01 10GHz~26GHz	
CH06 Reference Level	

CH06 30MHz~10GHz	
CH06 10GHz~26GHz	

CH09 Reference Level	
CH09 30MHz~10GHz	

CH09 10GHz~26GHz	

5.8. Spurious Emissions (radiated)

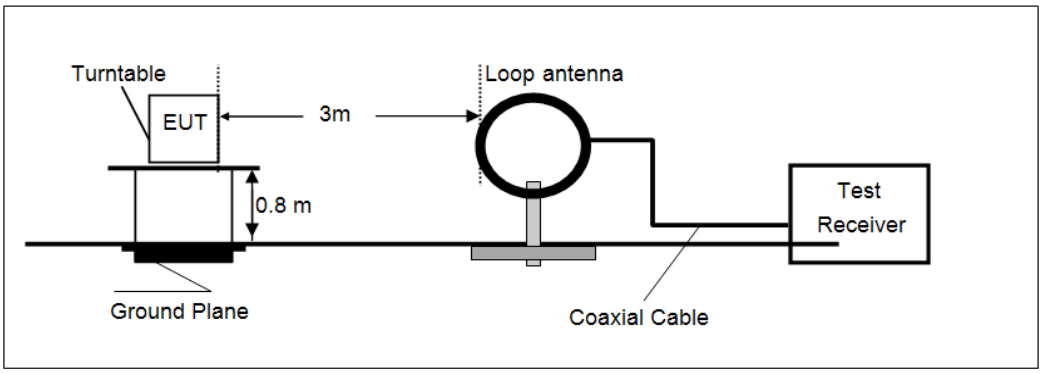
LIMIT

FCC CFR Title 47 Part 15 Subpart C Section 15.209

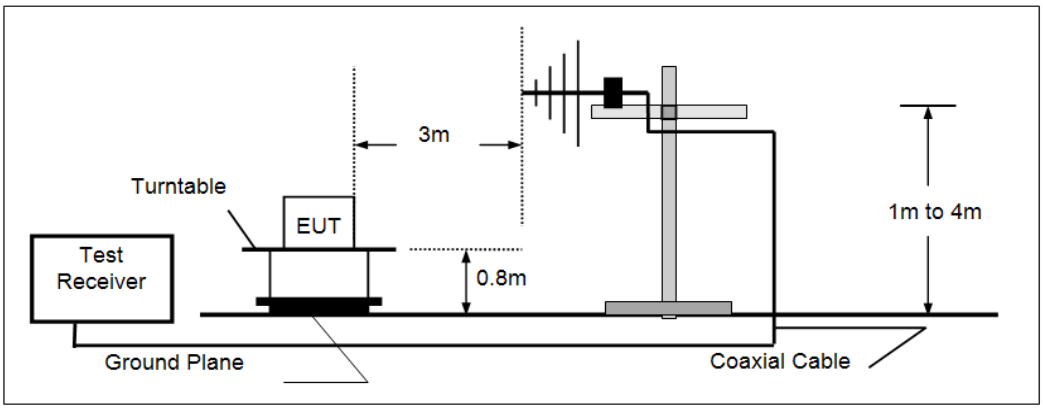
Frequency	Limit (dBuV/m @3m)	Value
30MHz-88MHz	40.00	Quasi-peak
88MHz-216MHz	43.50	Quasi-peak
216MHz-960MHz	46.00	Quasi-peak
960MHz-1GHz	54.00	Quasi-peak
Above 1GHz	54.00	Average
	74.00	Peak

TEST CONFIGURATION

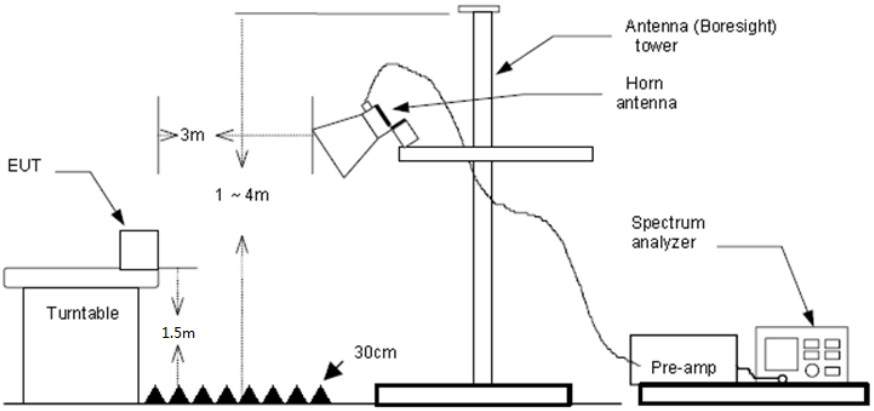
➢ 9kHz ~30MHz



➢ 30MHz ~ 1GHz



➢ Above 1GHz



TEST PROCEDURE

1. The EUT was tested according to ANSI C63.10:2013 for compliance to FCC 47CFR 15.247 requirements.
2. The EUT is placed on a turn table which is 0.8 meter above ground. The turn table is rotated 360 degrees to determine the position of the maximum emission level.
3. The EUT was positioned such that the distance from antenna to the EUT was 3 meters.
4. The antenna is scanned from 1 meter to 4 meters to find out the maximum emission level. This is repeated for both horizontal and vertical polarization of the antenna.
5. Use the following spectrum analyzer settings
   (1) Span shall wide enough to fully capture the emission being measured;
   (2) Below 1GHz, RBW=120kHz, VBW=300kHz, Sweep=auto, Detector function=peak, Trace=max hold;
   If the emission level of the EUT measured by the peak detectoris 3 dB lower than the applicable limit, the peak emission level will be reported. Otherwise, the emission measurement will be repeated using the quasi-peak detector and reported.
   (3) Above 1GHz, RBW=1MHz, VBW=3MHz PEAK detector for Peak value.
   RBW=1MHz, VBW=3MHz RMS detector for Average value.

TEST MODE:

Please refer to the clause 3.3

TEST RESULTS

☒ **Passed** ☐ **Not Applicable**

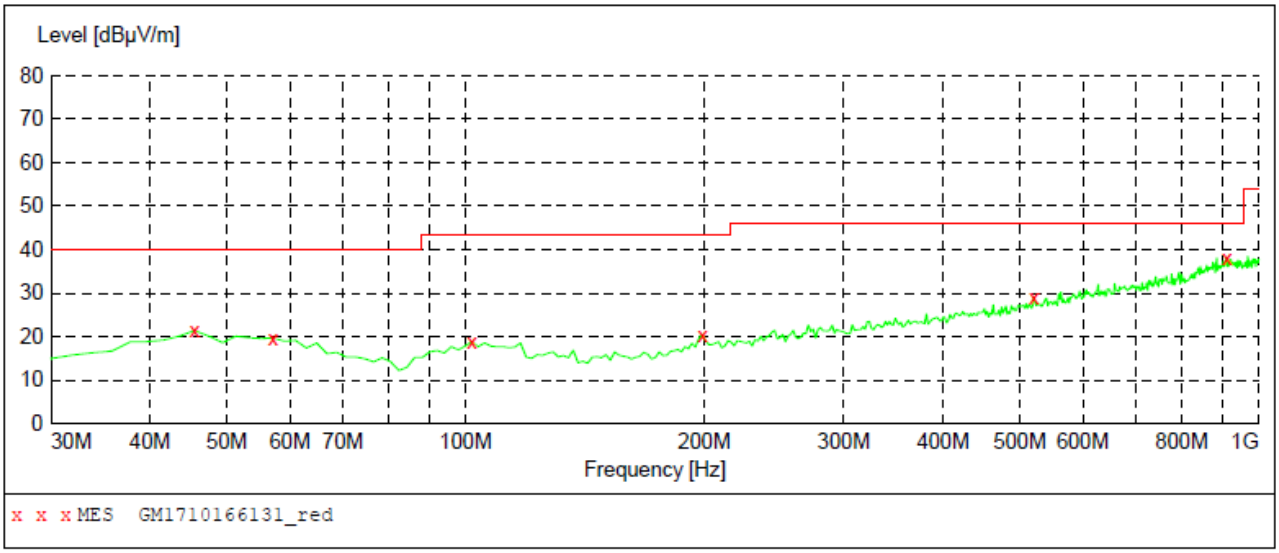
Note:
1) Final Level =Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor
2) The emission levels of other frequencies are very lower than the limit and not show in test report.

- **9kHz ~ 30MHz**
  The EUT was pre-scanned the frequency band (9kHz~30MHz), found the radiated level lower than the limit, so don't show on the report.

- **30MHz ~1000MHz**
  Have pre-scan all modulation mode, found the 802.11b mode CH01 which it was worst case, so only the worst case's data on the test report.

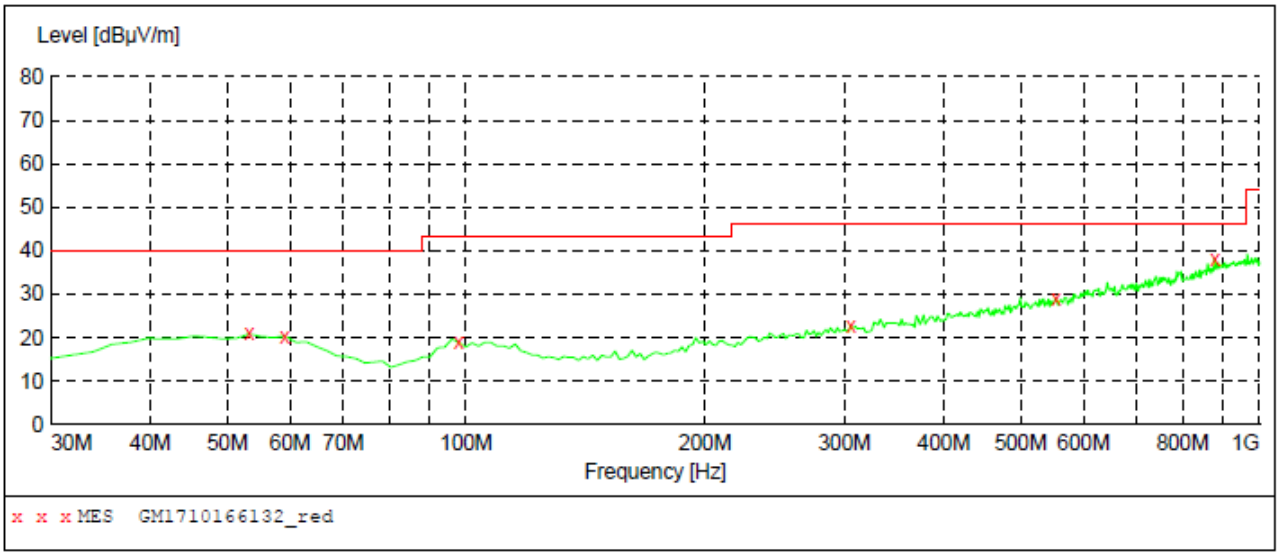
➢ **30MHz ~ 1GHz**

Polarization:	Vertical



Frequency MHz	Level dBµV/m	Transd dB	Limit dBµV/m	Margin dB	Det.	Height cm	Azimuth deg	Polarization
45.520000	21.40	-8.8	40.0	18.6	QP	100.0	22.00	VERTICAL
57.160000	19.70	-9.4	40.0	20.3	QP	100.0	62.00	VERTICAL
101.780000	18.80	-10.5	43.5	24.7	QP	100.0	222.00	VERTICAL
198.780000	20.50	-9.8	43.5	23.0	QP	100.0	232.00	VERTICAL
520.820000	29.00	-1.3	46.0	17.0	QP	100.0	302.00	VERTICAL
910.760000	38.20	6.9	46.0	7.8	QP	100.0	85.00	VERTICAL

Polarization:	Horizontal



Frequency MHz	Level dBµV/m	Transd dB	Limit dBµV/m	Margin dB	Det.	Height cm	Azimuth deg	Polarization
53.280000	20.90	-9.0	40.0	19.1	QP	100.0	28.00	HORIZONTAL
59.100000	20.40	-9.8	40.0	19.6	QP	100.0	270.00	HORIZONTAL
97.900000	19.00	-10.8	43.5	24.5	QP	300.0	193.00	HORIZONTAL
305.480000	22.80	-7.2	46.0	23.2	QP	100.0	80.00	HORIZONTAL
553.800000	29.10	-0.7	46.0	16.9	QP	100.0	357.00	HORIZONTAL
877.780000	38.10	6.2	46.0	7.9	QP	100.0	0.00	HORIZONTAL

➢ **1GHz~ 25GHz**

802.11b					CH01				
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization	Test value
1680.83	37.31	25.14	5.73	36.89	31.29	74.00	-42.71	Vertical	Peak
3003.17	48.75	28.61	7.48	38.23	46.61	74.00	-27.39	Vertical	Peak
4821.76	39.31	31.56	9.55	36.90	43.52	74.00	-30.48	Vertical	Peak
7508.69	35.19	36.11	12.42	34.91	48.81	74.00	-25.19	Vertical	Peak
1746.25	36.23	25.29	5.86	37.03	30.35	74.00	-43.65	Horizontal	Peak
3598.09	37.34	29.29	8.27	38.27	36.63	74.00	-37.37	Horizontal	Peak
4821.76	34.80	31.56	9.55	36.90	39.01	74.00	-34.99	Horizontal	Peak
7045.74	31.50	35.44	11.85	34.86	43.93	74.00	-30.07	Horizontal	Peak

802.11b					CH06				
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization	Test value
1685.12	36.02	25.16	5.74	36.90	30.02	74.00	-43.98	Vertical	Peak
3003.17	44.49	28.61	7.48	38.23	42.35	74.00	-31.65	Vertical	Peak
3598.09	39.37	29.29	8.27	38.27	38.66	74.00	-35.34	Vertical	Peak
6678.99	32.76	34.20	11.45	35.21	43.20	74.00	-30.80	Vertical	Peak
1676.56	37.14	25.13	5.72	36.88	31.11	74.00	-42.89	Horizontal	Peak
3299.78	41.01	28.20	7.84	38.37	38.68	74.00	-35.32	Horizontal	Peak
4871.10	40.00	31.46	9.59	36.76	44.29	74.00	-29.71	Horizontal	Peak
8002.06	33.43	37.10	12.30	34.53	48.30	74.00	-25.70	Horizontal	Peak

802.11b					CH11				
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization	Test value
1693.72	36.70	25.18	5.75	36.92	30.71	74.00	-43.29	Vertical	Peak
2263.96	35.67	27.89	6.55	37.52	32.59	74.00	-41.41	Vertical	Peak
4202.50	36.20	30.01	8.94	37.65	37.50	74.00	-36.50	Vertical	Peak
7508.69	31.55	36.11	12.42	34.91	45.17	74.00	-28.83	Vertical	Peak
1764.12	41.42	25.33	5.89	37.06	35.58	74.00	-38.42	Horizontal	Peak
2995.54	43.97	28.60	7.48	38.23	41.82	74.00	-32.18	Horizontal	Peak
4920.96	37.81	31.42	9.62	36.62	42.23	74.00	-31.77	Horizontal	Peak
7413.73	32.58	36.27	12.11	34.83	46.13	74.00	-27.87	Horizontal	Peak

Remark:
1. Final Level =Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor
2. The peak level is lower than average limit(54 dBuV/m), this data is the too weak instrument of signal is unable to test.
3. The emission levels of other frequencies(test frequency band is 1GHz to 25 GHz) are very lower than the limit and not show in test report.

802.11g					CH01				
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization	Test value
1782.18	36.78	25.37	5.93	37.10	30.98	74.00	-43.02	Vertical	Peak
2995.54	39.55	28.60	7.48	38.23	37.40	74.00	-36.60	Vertical	Peak
5125.52	33.03	31.80	9.77	36.27	38.33	74.00	-35.67	Vertical	Peak
7245.81	34.60	36.25	11.91	35.02	47.74	74.00	-26.26	Vertical	Peak
1732.97	36.40	25.27	5.83	37.00	30.50	74.00	-43.50	Horizontal	Peak
3003.17	39.33	28.61	7.48	38.23	37.19	74.00	-36.81	Horizontal	Peak
3903.44	36.14	29.70	8.64	38.17	36.31	74.00	-37.69	Horizontal	Peak
4821.76	34.82	31.56	9.55	36.90	39.03	74.00	-34.97	Horizontal	Peak

802.11g					CH06				
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization	Test value
1948.25	44.49	25.79	6.19	37.26	39.21	74.00	-34.79	Vertical	Peak
3003.17	44.67	28.61	7.48	38.23	42.53	74.00	-31.47	Vertical	Peak
4871.10	34.81	31.46	9.59	36.76	39.10	74.00	-34.90	Vertical	Peak
6235.36	34.01	32.97	11.01	35.29	42.70	74.00	-31.30	Vertical	Peak
1728.56	36.18	25.26	5.82	36.99	30.27	74.00	-43.73	Horizontal	Peak
3299.78	40.09	28.20	7.84	38.37	37.76	74.00	-36.24	Horizontal	Peak
5546.36	32.74	31.85	10.23	36.12	38.70	74.00	-35.30	Horizontal	Peak
6903.71	31.38	34.72	11.73	34.89	42.94	74.00	-31.06	Horizontal	Peak

802.11g					CH11				
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization	Test value
2184.70	34.59	27.38	6.43	37.34	31.06	74.00	-42.94	Vertical	Peak
3543.55	36.48	29.13	8.18	38.35	35.44	74.00	-38.56	Vertical	Peak
4983.99	41.79	31.48	9.66	36.44	46.49	74.00	-27.51	Vertical	Peak
7702.28	31.93	36.10	13.00	35.03	46.00	74.00	-28.00	Vertical	Peak
1948.25	40.56	25.79	6.19	37.26	35.28	74.00	-38.72	Horizontal	Peak
2995.54	40.76	28.60	7.48	38.23	38.61	74.00	-35.39	Horizontal	Peak
4920.96	36.86	31.42	9.62	36.62	41.28	74.00	-32.72	Horizontal	Peak
7045.74	31.40	35.44	11.85	34.86	43.83	74.00	-30.17	Horizontal	Peak

Remark:
1. Final Level =Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor
2. The peak level is lower than average limit(54 dBuV/m), this data is the too weak instrument of signal is unable to test.
3. The emission levels of other frequencies(test frequency band is 1GHz to 25 GHz) are very lower than the limit and not show in test report.

802.11n(HT20)					CH01				
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization	Test value
1672.30	37.42	25.12	5.71	36.87	31.38	74.00	-42.62	Vertical	Peak
3003.17	44.89	28.61	7.48	38.23	42.75	74.00	-31.25	Vertical	Peak
3903.44	39.79	29.70	8.64	38.17	39.96	74.00	-34.04	Vertical	Peak
5703.86	34.88	31.62	10.44	35.58	41.36	74.00	-32.64	Vertical	Peak
1823.48	37.06	25.38	6.00	37.16	31.28	74.00	-42.72	Horizontal	Peak
3480.97	36.50	28.85	8.09	38.44	35.00	74.00	-39.00	Horizontal	Peak
4821.76	32.68	31.56	9.55	36.90	36.89	74.00	-37.11	Horizontal	Peak
7154.17	32.86	35.93	11.86	35.01	45.64	74.00	-28.36	Horizontal	Peak

802.11n(HT20)					CH06				
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization	Test value
1719.78	36.12	25.24	5.80	36.97	30.19	74.00	-43.81	Vertical	Peak
2201.45	35.37	27.51	6.44	37.34	31.98	74.00	-42.02	Vertical	Peak
2995.54	40.44	28.60	7.48	38.23	38.29	74.00	-35.71	Vertical	Peak
5138.58	33.49	31.74	9.78	36.26	38.75	74.00	-35.25	Vertical	Peak
1659.57	36.60	25.08	5.69	36.85	30.52	74.00	-43.48	Horizontal	Peak
2995.54	39.90	28.60	7.48	38.23	37.75	74.00	-36.25	Horizontal	Peak
3598.09	39.58	29.29	8.27	38.27	38.87	74.00	-35.13	Horizontal	Peak
4871.10	35.85	31.46	9.59	36.76	40.14	74.00	-33.86	Horizontal	Peak

802.11n(HT20)					CH11				
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization	Test value
1948.25	38.13	25.79	6.19	37.26	32.85	74.00	-41.15	Vertical	Peak
2995.54	43.62	28.60	7.48	38.23	41.47	74.00	-32.53	Vertical	Peak
3903.44	38.45	29.70	8.64	38.17	38.62	74.00	-35.38	Vertical	Peak
4920.96	36.09	31.42	9.62	36.62	40.51	74.00	-33.49	Vertical	Peak
1514.25	35.05	25.67	5.33	36.61	29.44	74.00	-44.56	Horizontal	Peak
2218.32	35.88	27.61	6.47	37.39	32.57	74.00	-41.43	Horizontal	Peak
2995.54	38.68	28.60	7.48	38.23	36.53	74.00	-37.47	Horizontal	Peak
4920.96	36.95	31.42	9.62	36.62	41.37	74.00	-32.63	Horizontal	Peak

Remark:
1. Final Level =Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor
2. The peak level is lower than average limit(54 dBuV/m), this data is the too weak instrument of signal is unable to test.
3. The emission levels of other frequencies(test frequency band is 1GHz to 25 GHz) are very lower than the limit and not show in test report.

802.11n(HT40)					CH03				
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization	Test value
1755.16	37.16	25.31	5.87	37.05	31.29	74.00	-42.71	Vertical	Peak
2995.54	40.79	28.60	7.48	38.23	38.64	74.00	-35.36	Vertical	Peak
3903.44	38.94	29.70	8.64	38.17	39.11	74.00	-34.89	Vertical	Peak
7394.88	33.11	36.30	12.06	34.83	46.64	74.00	-27.36	Vertical	Peak
1948.25	43.83	25.79	6.19	37.26	38.55	74.00	-35.45	Horizontal	Peak
2995.54	41.03	28.60	7.48	38.23	38.88	74.00	-35.12	Horizontal	Peak
4983.99	39.67	31.48	9.66	36.44	44.37	74.00	-29.63	Horizontal	Peak
6678.99	33.30	34.20	11.45	35.21	43.74	74.00	-30.26	Horizontal	Peak

802.11n(HT40)					CH06				
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization	Test value
1728.56	36.46	25.26	5.82	36.99	30.55	74.00	-43.45	Vertical	Peak
2995.54	45.78	28.60	7.48	38.23	43.63	74.00	-30.37	Vertical	Peak
3903.44	37.57	29.70	8.64	38.17	37.74	74.00	-36.26	Vertical	Peak
6511.12	31.89	34.02	11.20	35.34	41.77	74.00	-32.23	Vertical	Peak
1773.13	44.93	25.35	5.91	37.08	39.11	74.00	-34.89	Horizontal	Peak
3299.78	38.96	28.20	7.84	38.37	36.63	74.00	-37.37	Horizontal	Peak
3598.09	38.63	29.29	8.27	38.27	37.92	74.00	-36.08	Horizontal	Peak
5504.17	32.44	31.90	10.20	36.32	38.22	74.00	-35.78	Horizontal	Peak

802.11n(HT40)					CH09				
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization	Test value
1948.25	37.79	25.79	6.19	37.26	32.51	74.00	-41.49	Vertical	Peak
2995.54	46.46	28.60	7.48	38.23	44.31	74.00	-29.69	Vertical	Peak
3598.09	38.98	29.29	8.27	38.27	38.27	74.00	-35.73	Vertical	Peak
6203.70	32.46	32.91	11.01	35.29	41.09	74.00	-32.91	Vertical	Peak
1728.56	36.31	25.26	5.82	36.99	30.40	74.00	-43.60	Horizontal	Peak
3003.17	38.83	28.61	7.48	38.23	36.69	74.00	-37.31	Horizontal	Peak
3299.78	42.13	28.20	7.84	38.37	39.80	74.00	-34.20	Horizontal	Peak
6921.30	32.12	34.83	11.75	34.87	43.83	74.00	-30.17	Horizontal	Peak

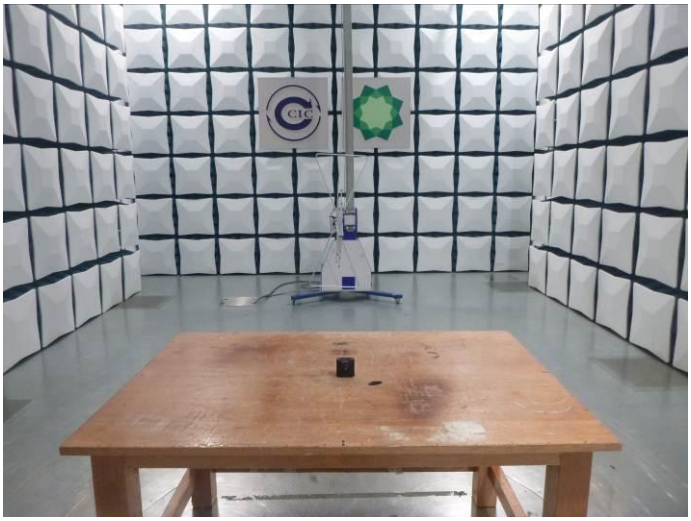
Remark:

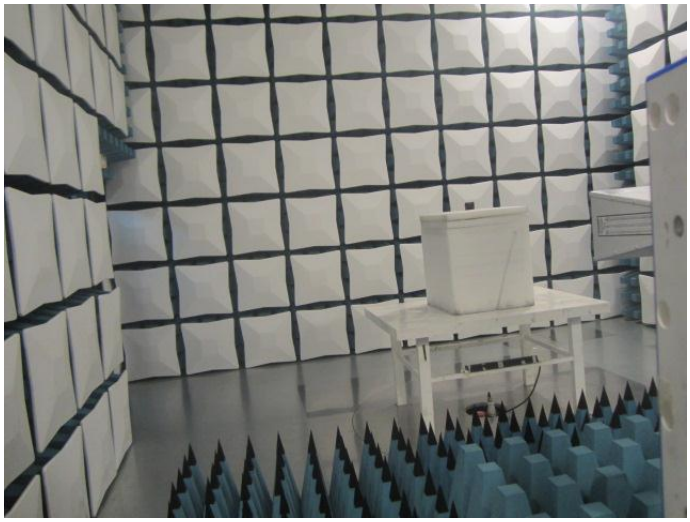
1. Final Level =Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor
2. The peak level is lower than average limit(54 dBuV/m), this data is the too weak instrument of signal is unable to test.
3. The emission levels of other frequencies(test frequency band is 1GHz to 25 GHz) are very lower than the limit and not show in test report.

6. TEST SETUP PHOTOS

Conducted Emissions

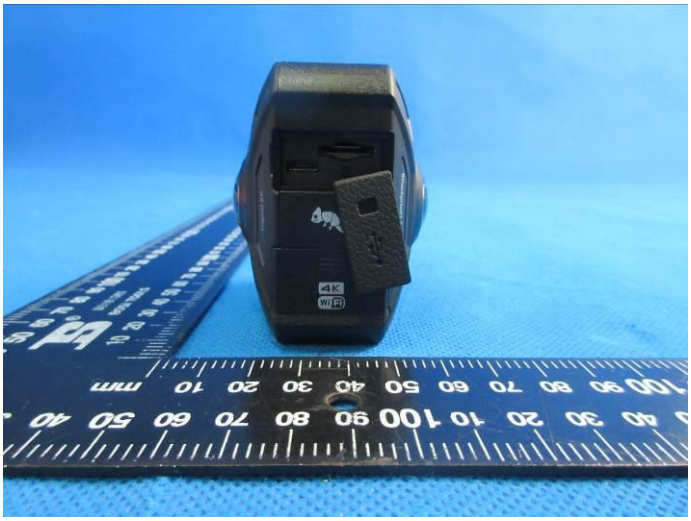
Radiated Emissions

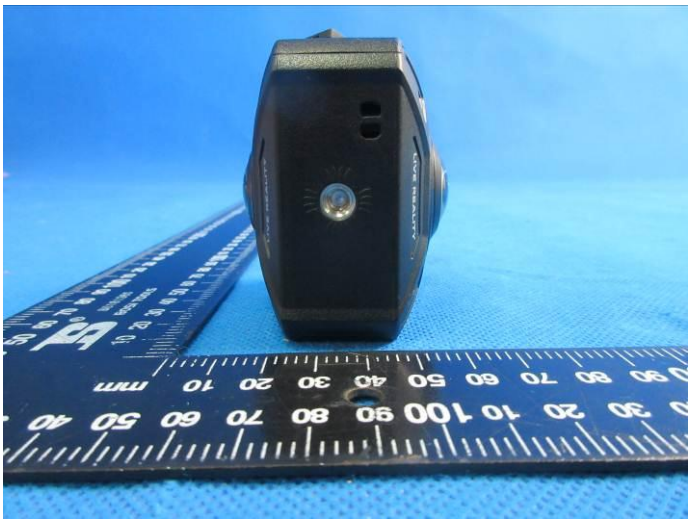




7. EXTERANAL AND INTERNAL PHOTOS

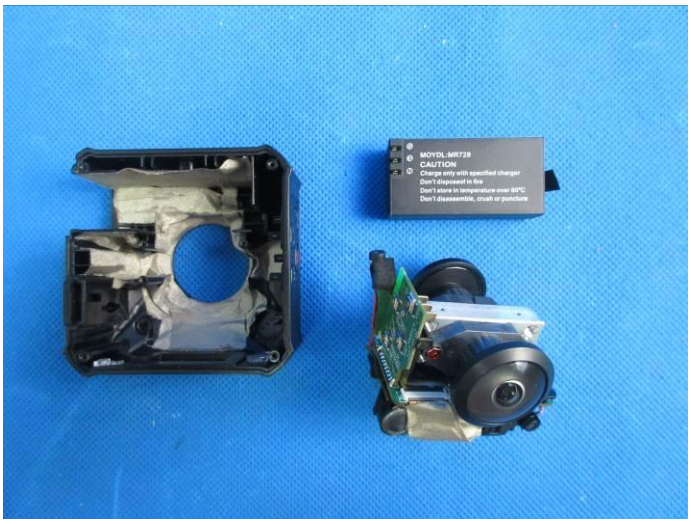
EXTERANAL PHOTOS





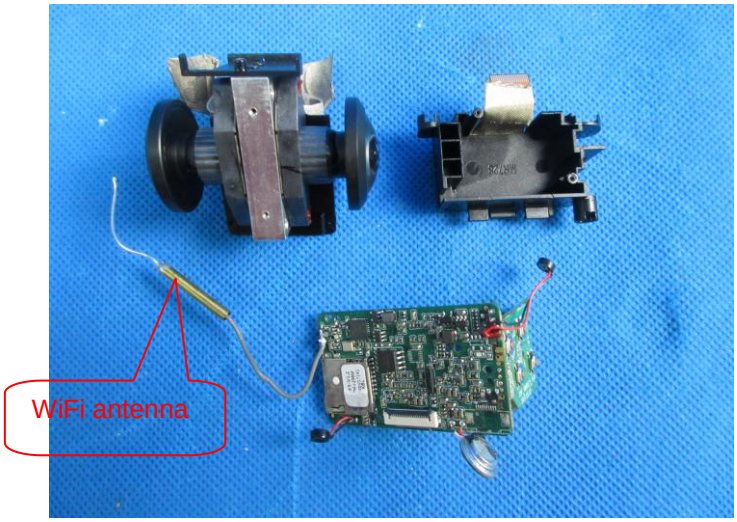
BUSY
CHARGE

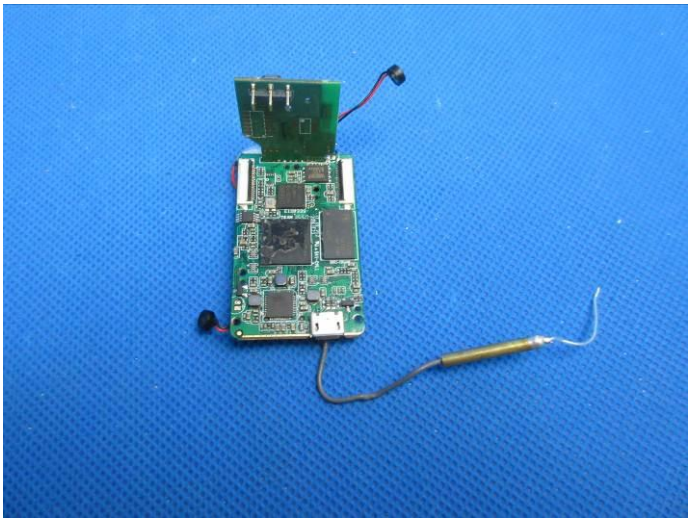
INTERNAL PHOTOS

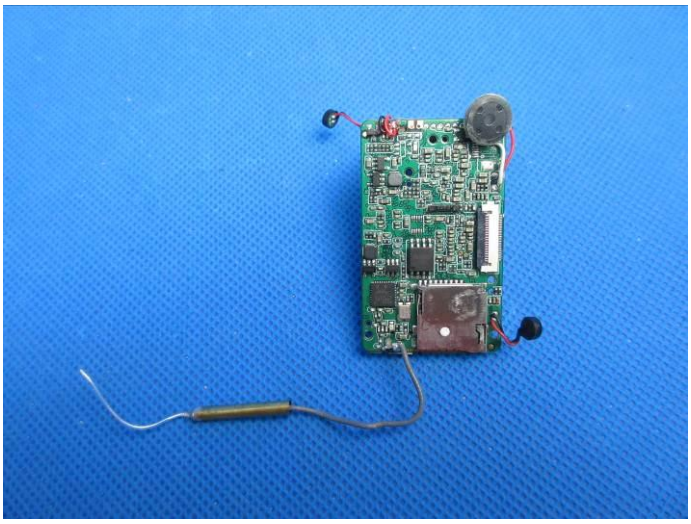


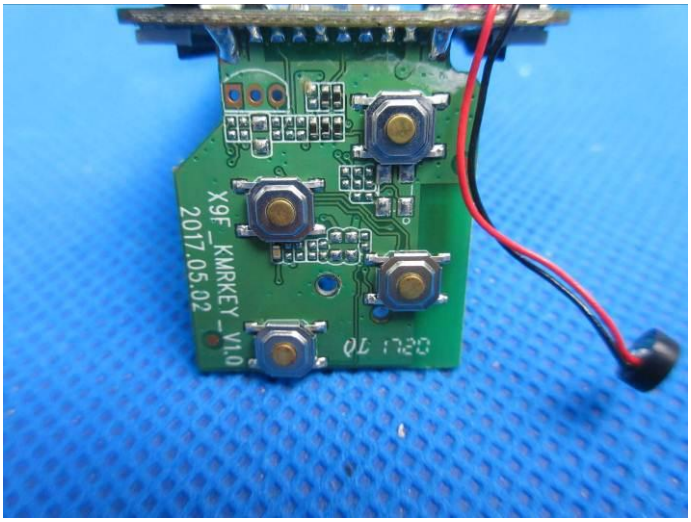
MOYDL:MR728
CAUTION
Charge only with specified charger
Don't disposeof in fire
Don't store in temperature over 60°C
Don't disassemble, crush or puncture

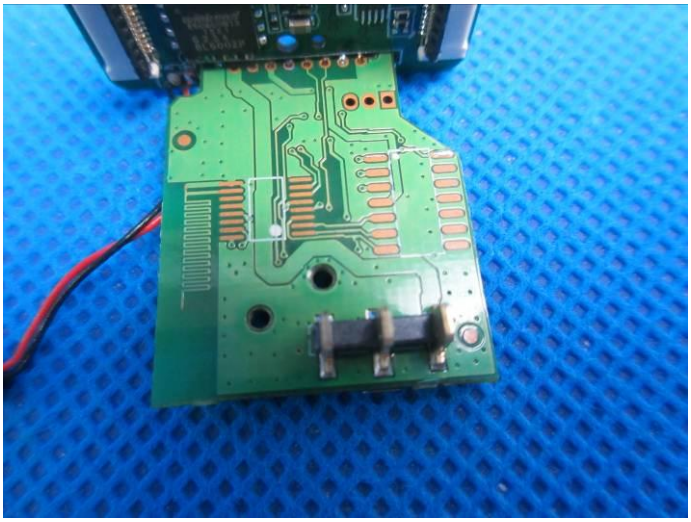
Rechargeable
Li-ion Battery Pack
3.7V⎓1350mAh 5.00Wh

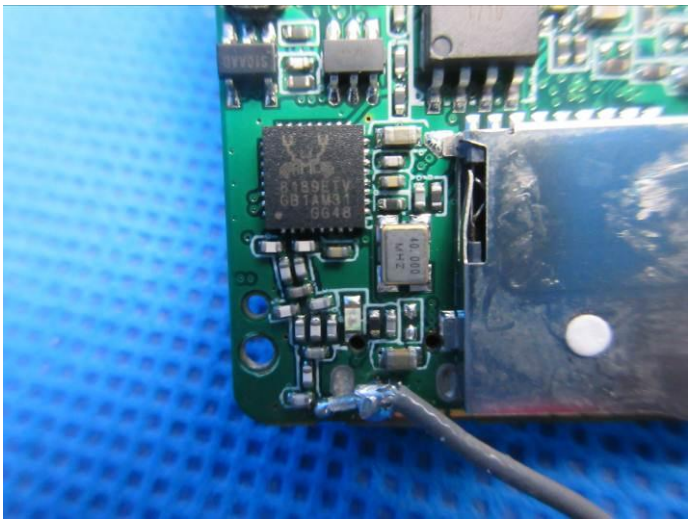

WiFi antenna






X9F_KMRKEY_V1.0
2017.05.02





.....End of Report.....