

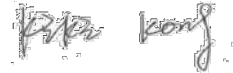
TEST REPORT

For WiFi-2.4GHz Band



Report No. : **CHTW24010103** Report Verification:
Project No...... : **SHT2310048501EW**
FCC ID..... : **2AN9S-ABX00083**
Applicant's name..... : **Arduino S.r.l.**
Address..... : Via Andrea Appiani, 25 Monza, MB, 20900 Italy
Product Name : **Arduino Nano ESP32 with headers, Arduino Nano ESP32**
Trade Mark : Arduino
Model No. : ABX00083
Listed Model(s) : ABX00092
Standard : **FCC CFR Title 47 Part 15 Subpart C § 15.247**
Date of receipt of test sample..... : Oct.23, 2023
Date of testing..... : Oct.23, 2023- Jan.30, 2024
Date of issue..... : Jan.31, 2024
Result..... : **PASS**

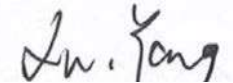
Compiled by
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Approved by
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Testing Laboratory Name : **Shenzhen Huatongwei International Inspection Co., Ltd.**

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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 CFR Title 47 Part 15 Subpart C § 15.247](#): Operation within the bands 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz
- [ANSI C63.10:2020](#): American National Standard for Testing Unlicensed Wireless Devices
- [KDB 558074 D01 15.247 Meas Guidance v05r02](#): Guidance for Compliance Measurements on Digital Transmission System, Frequency Hopping Spread Spectrum System, and Hybrid System Devices Operating under Section 15.247 of The FCC Rules

1.2. Report version

Revision No.	Date of issue	Description
N/A	2024-01-31	Original

2. TEST DESCRIPTION

Report clause	Test Items	Standard Requirement	Result	Test Engineer
5.1	Antenna Requirement	15.203/15.247(c)	PASS	Xiangyu Wei
5.2	AC Conducted Emission	15.207	PASS	JUNMAN.WANG
5.3	Peak Output Power	15.247(b)(3)	PASS	Xiangyu Wei
5.4	Power Spectral Density	15.247(e)	PASS	Xiangyu Wei
5.5	6dB Bandwidth	15.247(a)(2)	PASS	Xiangyu Wei
5.6	99% Occupied Bandwidth	-	PASS ^{*1}	Xiangyu Wei
5.7	Duty cycle	-	PASS ^{*1}	Xiangyu Wei
5.8	Conducted Band Edge and Spurious Emission	15.247(d)/15.205	PASS	Xiangyu Wei
5.9	Radiated Band Edge Emission	15.205/15.209	PASS	Yifan Wang
5.10	Radiated Spurious Emission	15.247(d)/15.205/15.209	PASS	Yifan Wang

Note:

- The measurement uncertainty is not included in the test result.
- *1: No requirement on standard, only report these test data.

3. SUMMARY

3.1. Client Information

Applicant:	Arduino S.r.l.
Address:	Via Andrea Appiani, 25 Monza, MB, 20900 Italy
Manufacturer:	Arduino S.r.l.
Address:	Via Andrea Appiani, 25 Monza, MB, 20900 Italy

3.2. Product Description

Main unit information:	
Product Name:	Arduino Nano ESP32 with headers, Arduino Nano ESP32
Trade Mark:	Arduino
Model No.:	ABX00083
Listed Model(s):	ABX00092
Power supply:	DC 5V
Hardware version:	0.3
Software version:	2.0.13

3.3. Radio Specification Description

Support type:	<input checked="" type="checkbox"/> 802.11b	<input checked="" type="checkbox"/> 802.11g	<input checked="" type="checkbox"/> 802.11n
Support bandwidth:	<input checked="" type="checkbox"/> 20MHz	<input checked="" type="checkbox"/> 40MHz	
Modulation:	802.11b: DBPSK, DQPSK, BPSK, QPSK 802.11g/n: BPSK, QPSK, 16QAM, 64QAM		
Operation frequency:	802.11b/g/n(HT20): 2412MHz~2462MHz 802.11n(HT40) 2422MHz~2452MHz		
Channel number:	802.11b/g/n(HT20): 11 802.11n(HT40) 7		
Channel separation:	5MHz		
Antenna technology:	<input checked="" type="checkbox"/> SISO	<input type="checkbox"/> MIMO	
Antenna type:	PCB Antenna		
Antenna gain:	3.00dBi		

3.4. Testing Laboratory Information

Laboratory Name	Shenzhen Huatongwei International Inspection Co., Ltd.	
Laboratory Location	Building 7, Baiwang Idea Factory, No.1051, Songbai Road, Yangguang Community, Xili Subdistrict, Nanshan District, Shenzhen, Guangdong, China	
Contact information:	Phone: 86-755-26715499 E-mail: cs@szhtw.com.cn http://www.szhtw.com.cn	
Qualifications	Type	Accreditation Number
	FCC Registration Number	762235
	FCC Designation Number	CN1181

4. TEST CONFIGURATION

4.1. Test frequency list

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

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

4.2. Test mode

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

Preliminary tests were performed in different data rates, final test modes are considering the modulation and worse data rates as below table.

Modulation	Data rate
802.11b	1Mbps
802.11g	6Mbps
802.11n(HT20)	MCS0
802.11n(HT40)	MCS0

4.3. Test sample information

Test item	HTW sample no.
RF Conducted test items	Please refer to the description in the appendix report
RF Radiated test items	YPHT23100485001
EMI test items	YPHT23100485001

Note:

RF Conducted test items: Peak Output Power, Power Spectral Density, 6dB Bandwidth, 99% Occupied Bandwidth, Duty cycle, Conducted Band Edge and Spurious Emission

RF Radiated test items: Radiated Band Edge Emission, Radiated Spurious Emission

EMI test items: AC Conducted Emission

4.4. Support unit used in test configuration and system

The EUT has been associated with peripherals and configuration operated in a manner tended to maximize its emission characteristics in a typical application.

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

Whether support unit is used?			
✓ Yes			
Item	Equipment	Trade Name	Model No.
1	Laptop	DELL	Inspiron 13-5378
2			

4.5. Testing environmental condition

Type	Requirement	Actual
Temperature:	15~35°C	25°C
Relative Humidity:	25~75%	50%
Air Pressure:	860~1060mbar	1000mbar

4.6. Statement of the measurement uncertainty

No.	Test Items	Measurement Uncertainty
1	AC Conducted Emission	3.21dB
2	Peak Output Power	1.07
3	Power Spectral Density	1.07
4	6dB Bandwidth	0.002%
5	99% Occupied Bandwidth	0.002%
6	Duty cycle	-
7	Conducted Band Edge and Spurious Emission	1.68dB
8	Radiated Band Edge Emission	4.54dB for 30MHz-1GHz 5.10dB for above 1GHz
9	Radiated Spurious Emission	4.54dB for 30MHz-1GHz 5.10dB for above 1GHz

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

4.7. Equipment Used during the Test

● RF Conducted test item							
Used	Test Equipment	Manufacturer	Equipment No.	Model No.	Serial No.	Last Cal. Date (YY-MM-DD)	Next Cal. Date (YY-MM-DD)
●	Signal and spectrum Analyzer	R&S	HTWE0242	FSV40	100048	2023/08/22	2024/08/21
●	Signal & Spectrum Analyzer	R&S	HTWE0262	FSW26	103440	2023/08/22	2024/08/21
●	Vector signal generator	R&S	HTWE0244	SMBV100A	260790	2023/05/23	2024/05/22
●	Test software	Tonscend	N/A	JS1120	N/A	N/A	N/A

● Conducted Emission							
Used	Test Equipment	Manufacturer	Equipment No.	Model No.	Serial No.	Last Cal. Date (YY-MM-DD)	Next Cal. Date (YY-MM-DD)
●	EMI Test Receiver	R&S	HTWE0111	ESCI	101247	2023/8/22	2024/8/21
●	Artificial Mains	SCHWARZBECK	HTWE0113	NNLK 8121	573	2023/8/18	2024/8/17
●	Protection Network	SCHWARZBECK	HTWE0567	VTSD9561FN	00899	2023/8/18	2024/8/17
●	ISN	FCC	HTWE0148	FCC-TLISN-T2-02	20371	2023/8/18	2024/8/17
●	ISN	FCC	HTWE0150	FCC-TLISN-T8-02	20375	2023/8/18	2024/8/17
●	Test Software	R&S	N/A	EMC32	N/A	N/A	N/A

● Radiated Emission – 9kHz~30MHz							
Used	Test Equipment	Manufacturer	Equipment No.	Model No.	Serial No.	Last Cal. Date (YY-MM-DD)	Next Cal. Date (YY-MM-DD)
●	Semi-Anechoic Chamber	Albatross projects	HTWE0127	SAC-3m-02	C11121	2023/4/6	2026/4/5
●	EMI Test Receiver	R&S	HTWE0099	ESCI 7	100900	2023/8/22	2024/8/21
●	Loop Antenna	R&S	HTWE0170	HFH2-Z2	100020	2021/4/6	2024/4/5
●	Test Software	R&S	N/A	EMC32	N/A	N/A	N/A

● Radiated Emission - 30MHz~1GHz							
Used	Test Equipment	Manufacturer	Equipment No.	Model No.	Serial No.	Last Cal. Date (YY-MM-DD)	Next Cal. Date (YY-MM-DD)
●	Semi-Anechoic Chamber	Albatross projects	HTWE0127	SAC-3m-02	C11121	2023/4/6	2026/4/5
●	EMI Test Receiver	R&S	HTWE0099	ESCI 7	100900	2023/8/22	2024/8/21
●	Ultra-Broadband Antenna	SCHWARZBECK	HTWE0119	VULB9163	546	2023/2/22	2026/2/21
●	Pre-Amplifier	SCHWARZBECK	HTWE0295	BBV 9742	/	2023/5/25	2024/5/24
●	Test Software	R&S	N/A	EMC32	N/A	N/A	N/A

● Radiated emission-Above 1GHz							
Used	Test Equipment	Manufacturer	Equipment No.	Model No.	Serial No.	Last Cal. Date (YY-MM-DD)	Next Cal. Date (YY-MM-DD)
●	Semi-Anechoic Chamber	Albatross projects	HTWE0122	SAC-3m-01	C11121	2023/4/17	2026/4/16
●	Spectrum Analyzer	R&S	HTWE0098	FSP40	100597	2023/8/22	2024/8/21
●	Horn Antenna	SCHWARZBECK	HTWE0126	BBHA 9120D	1011	2023/2/14	2026/2/13
●	Horn Antenna	SCHWARZBECK	HTWE0103	BBHA9170	BBHA9170472	2023/2/20	2026/2/19
●	Broadband Pre-amplifier	SCHWARZBECK	HTWE0201	BBV 9718	9718-248	2023/5/25	2024/5/24
●	Test Software	R&S	N/A	EMC32	N/A	N/A	N/A

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 an antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

TEST RESULT

Passed Not Applicable

The antenna type is a PCB antenna, please refer to the below antenna photo.



5.2. AC Conducted Emission

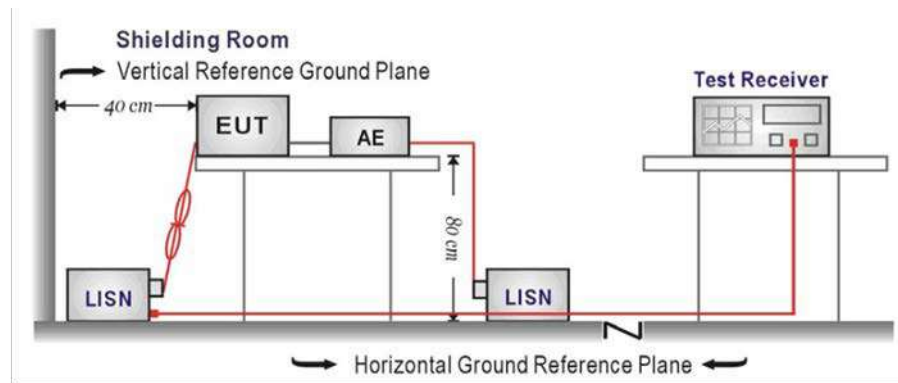
LIMIT

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 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

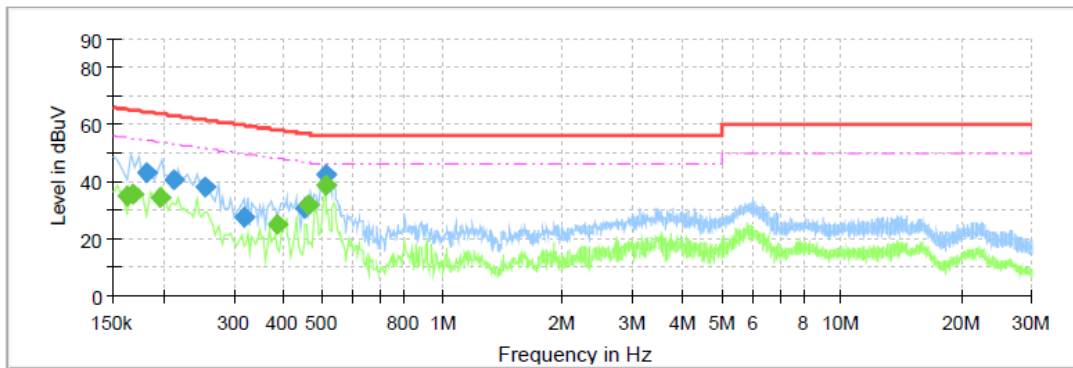
Refer to the clause 4.2

TEST RESULT

Passed Not Applicable

Test Line:

L

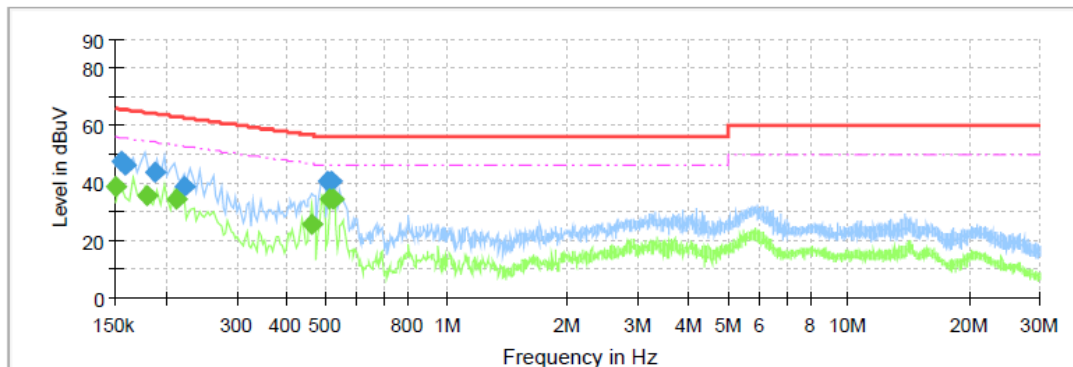


Final Result

Frequency (MHz)	QuasiPeak (dBuV)	CAverage (dBuV)	Limit (dBuV)	Margin (dB)	Line	Corr. (dB)
0.1620	---	34.73	55.36	20.63	L1	10.9
0.1675	---	35.65	55.08	19.43	L1	10.9
0.1820	43.27	---	64.39	21.12	L1	10.9
0.1955	---	34.50	53.80	19.30	L1	10.9
0.2115	40.83	---	63.15	22.32	L1	10.9
0.2555	38.37	---	61.58	23.21	L1	10.9
0.3195	27.36	---	59.72	32.36	L1	10.9
0.3875	---	25.28	48.12	22.84	L1	10.9
0.4525	30.66	---	56.83	26.17	L1	10.9
0.4595	---	32.16	46.70	14.55	L1	11.0
0.5115	---	38.66	46.00	7.35	L1	11.0
0.5115	42.24	---	56.00	13.76	L1	11.0

Test Line:

N



Final Result

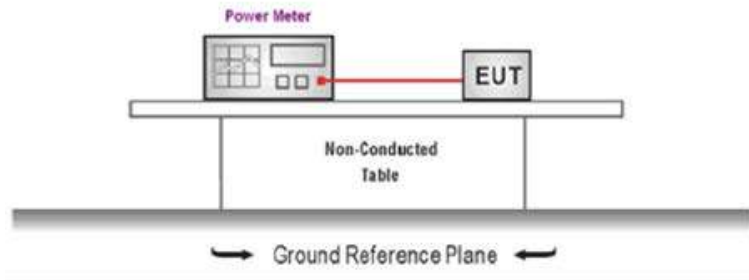
Frequency (MHz)	QuasiPeak (dBuV)	CAverage (dBuV)	Limit (dBuV)	Margin (dB)	Line	Corr. (dB)
0.1500	---	38.69	56.00	17.31	N	10.7
0.1555	47.19	---	65.70	18.51	N	10.7
0.1580	46.00	---	65.57	19.56	N	10.7
0.1795	---	35.92	54.51	18.58	N	10.7
0.1875	43.81	---	64.15	20.34	N	10.7
0.2115	---	34.54	53.15	18.61	N	10.7
0.2235	38.79	---	62.69	23.89	N	10.7
0.4635	---	25.83	46.63	20.80	N	10.7
0.5075	40.45	---	56.00	15.55	N	10.7
0.5115	---	34.32	46.00	11.68	N	10.7
0.5155	40.60	---	56.00	15.40	N	10.7
0.5235	---	34.26	46.00	11.74	N	10.7

5.3. 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 and KDB 558074 D01 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

Refer to the clause 4.2

TEST RESULT

Passed Not Applicable

TEST DATA

Refer to the appendix report

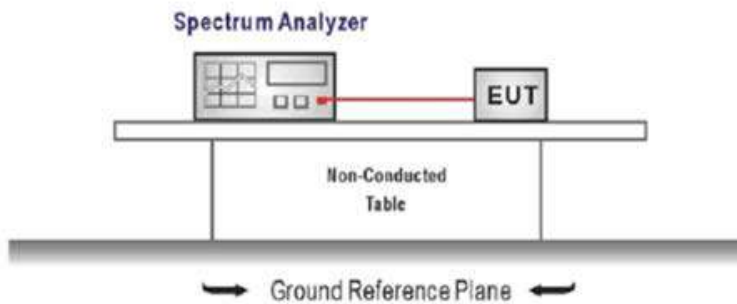
5.4. Power Spectral Density

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 8dBm 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

Refer to the clause 4.2

TEST RESULT

Passed Not Applicable

TEST DATA

Refer to the appendix report

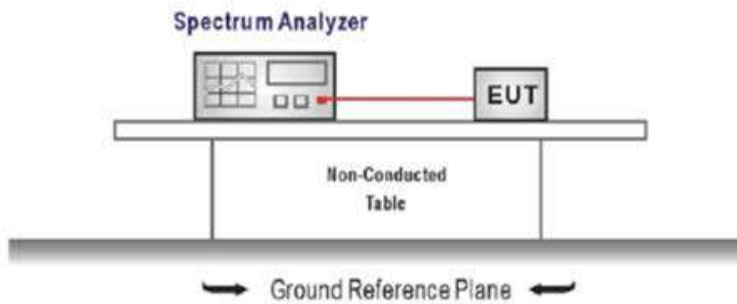
5.5. 6dB bandwidth

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 \geq 3 \times 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 waveform 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

Refer to the clause 4.2

TEST RESULT

Passed Not Applicable

TEST DATA

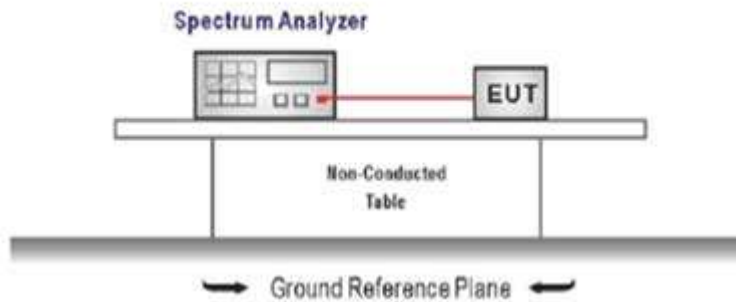
Refer to the appendix report

5.6. 99% Occupied Bandwidth

LIMIT

N/A

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 = channel center frequency
Span $\geq 1.5 \times$ OBW
RBW = 1%~5%OBW
VBW $\geq 3 \times$ 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 waveform on the spectrum analyzer.

TEST MODE

Refer to the clause 4.2

TEST RESULT

Passed Not Applicable

TEST DATA

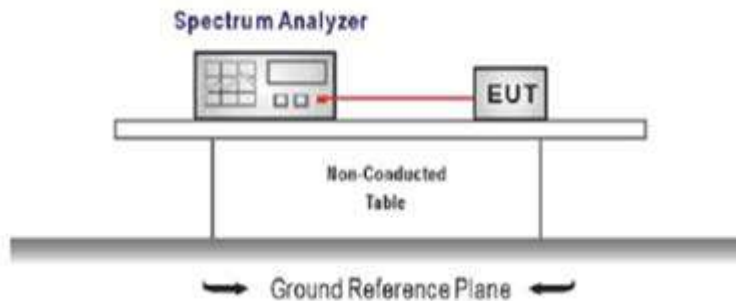
Refer to the appendix report

5.7. Duty Cycle

LIMIT

N/A

TEST CONFIGURATION



TEST PROCEDURE

1. The transmitter output was connected to the spectrum analyzer through an attenuator, the path loss was compensated to the results for each measurement.
2. Set to the maximum power setting and enable the EUT transmit continuously
3. Use the following spectrum analyzer settings:
Span=zero span, Frequency=centered channel, RBW= 1 MHz, VBW \geq RBW
Sweep=as necessary to capture the entire dwell time,
Detector function = peak, Trigger mode
4. Measure and record the duty cycle data

TEST MODE

Refer to the clause 4.2

TEST DATA

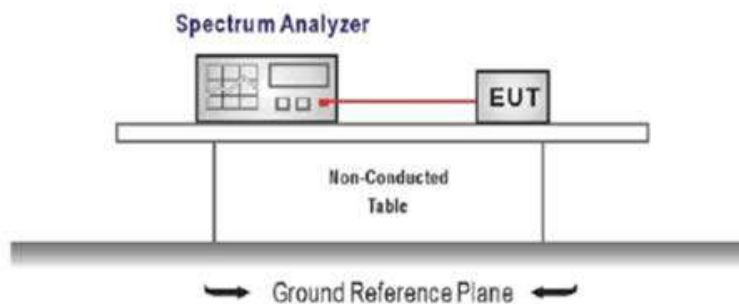
Refer to the appendix report

5.8. Conducted Band edge and Spurious Emission

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 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 \geq 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 that 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 \geq 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

Refer to the clause 4.2

TEST RESULT

Passed **Not Applicable**

TEST DATA

Refer to the appendix report

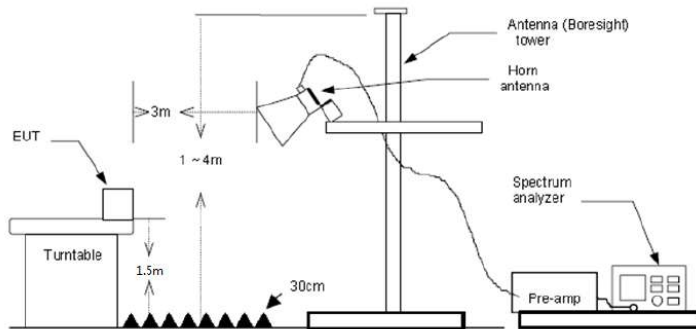
5.9. Radiated Band edge Emission

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 .
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 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. In order to find the maximum emission, all of the interface cables were manipulated according to ANSI C63.10 on radiated measurement.
5. Use the following spectrum analyzer settings:
 - a) Span shall wide enough to fully capture the emission being measured
 - b) Set RBW=100kHz for <1GHz, VBW=3*RBW, Sweep time=auto, Detector=peak, Trace=max hold
 - c) Set RBW=1MHz, VBW=3MHz for >1GHz, Sweep time=auto, Detector=peak, Trace=max hold for Peak measurement

For average measurement:

 - VBW=10Hz, When duty cycle is no less than 98 percent
 - VBW \geq 1/T, when duty cycle is less than 98 percent where T is the minimum transmission duration over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation, so refer to this clause 5.7 duty cycle.

TEST MODE

Refer to the clause 4.2

TEST RESULT

Passed Not Applicable

Note:

- 1) Level= Reading + Factor; Factor =Antenna Factor+ Cable Loss- Preamp Factor
- 2) Over Limit = Level- Limit
- 3) Average measurement was not performed if peak level is lower than average limit(54 dBuV/m).

Type		802.11b		Test channel		CH01		Polarity		Horizontal	
Mark	Frequency	Reading	Antenna	Cable	Preamp	Aux	Level	Limit	Over	Remark	
	MHz	dBuV/m	dB	dB	dB	dB	dBuV/m	dBuV/m	limit		
1	2310.00	43.67	27.86	4.01	41.80	20.00	53.74	74.00	-20.26	Peak	
2	2390.01	44.57	27.54	4.31	41.80	20.00	54.62	74.00	-19.38	Peak	
Mark	Frequency	Reading	Antenna	Cable	Preamp	Aux	Level	Limit	Over	Remark	
	MHz	dBuV/m	dB	dB	dB	dB	dBuV/m	dBuV/m	limit		
1	2310.00	37.28	27.86	4.01	41.80	20.00	47.35	54.00	-6.65	Average	
2	2390.01	37.21	27.54	4.31	41.80	20.00	47.26	54.00	-6.74	Average	
Type		802.11b		Test channel		CH01		Polarity		Vertical	
Mark	Frequency	Reading	Antenna	Cable	Preamp	Aux	Level	Limit	Over	Remark	
	MHz	dBuV/m	dB	dB	dB	dB	dBuV/m	dBuV/m	limit		
1	2310.00	42.67	27.86	4.01	41.80	20.00	52.74	74.00	-21.26	Peak	
2	2390.01	43.76	27.54	4.31	41.80	20.00	53.81	74.00	-20.19	Peak	
Mark	Frequency	Reading	Antenna	Cable	Preamp	Aux	Level	Limit	Over	Remark	
	MHz	dBuV/m	dB	dB	dB	dB	dBuV/m	dBuV/m	limit		
1	2310.00	37.72	27.86	4.01	41.80	20.00	47.79	54.00	-6.21	Average	
2	2390.01	37.07	27.54	4.31	41.80	20.00	47.12	54.00	-6.88	Average	

Type		802.11b		Test channel		CH11		Polarity		Horizontal	
Mark	Frequency	Reading	Antenna	Cable	Preamp	Aux	Level	Limit	Over	Remark	
	MHz	dBuV/m	dB	dB	dB	dB	dBuV/m	dBuV/m	limit		
1	2483.49	43.35	27.33	4.18	41.80	20.00	53.06	74.00	-20.94	Peak	
2	2500.00	43.51	27.30	4.19	41.80	20.00	53.20	74.00	-20.80	Peak	
Mark	Frequency	Reading	Antenna	Cable	Preamp	Aux	Level	Limit	Over	Remark	
	MHz	dBuV/m	dB	dB	dB	dB	dBuV/m	dBuV/m	limit		
1	2483.49	34.32	27.33	4.18	41.80	20.00	44.03	54.00	-9.97	Average	
2	2500.00	34.04	27.30	4.19	41.80	20.00	43.73	54.00	-10.27	Average	
Type		802.11b		Test channel		CH11		Polarity		Vertical	
Mark	Frequency	Reading	Antenna	Cable	Preamp	Aux	Level	Limit	Over	Remark	
	MHz	dBuV/m	dB	dB	dB	dB	dBuV/m	dBuV/m	limit		
1	2483.49	43.81	27.33	4.18	41.80	20.00	53.52	74.00	-20.48	Peak	
2	2500.00	43.08	27.30	4.19	41.80	20.00	52.77	74.00	-21.23	Peak	
Mark	Frequency	Reading	Antenna	Cable	Preamp	Aux	Level	Limit	Over	Remark	
	MHz	dBuV/m	dB	dB	dB	dB	dBuV/m	dBuV/m	limit		
1	2483.49	34.10	27.33	4.18	41.80	20.00	43.81	54.00	-10.19	Average	
2	2500.00	34.49	27.30	4.19	41.80	20.00	44.18	54.00	-9.82	Average	

Type		802.11g		Test channel		CH01		Polarity		Horizontal	
Mark	Frequency MHz	Reading dBuV/m	Antenna dB	Cable dB	Preamp dB	Aux dB	Level dBuV/m	Limit dBuV/m	Over limit	Remark	
1	2310.00	44.80	27.86	4.01	41.80	20.00	54.87	74.00	-19.13	Peak	
2	2390.01	44.02	27.54	4.31	41.80	20.00	54.07	74.00	-19.93	Peak	
Mark	Frequency MHz	Reading dBuV/m	Antenna dB	Cable dB	Preamp dB	Aux dB	Level dBuV/m	Limit dBuV/m	Over limit	Remark	
1	2310.00	37.27	27.86	4.01	41.80	20.00	47.34	54.00	-6.66	Average	
2	2390.01	36.83	27.54	4.31	41.80	20.00	46.88	54.00	-7.12	Average	

Type		802.11g		Test channel		CH01		Polarity		Vertical	
Mark	Frequency MHz	Reading dBuV/m	Antenna dB	Cable dB	Preamp dB	Aux dB	Level dBuV/m	Limit dBuV/m	Over limit	Remark	
1	2310.00	43.78	27.86	4.01	41.80	20.00	53.85	74.00	-20.15	Peak	
2	2390.01	43.50	27.54	4.31	41.80	20.00	53.55	74.00	-20.45	Peak	
Mark	Frequency MHz	Reading dBuV/m	Antenna dB	Cable dB	Preamp dB	Aux dB	Level dBuV/m	Limit dBuV/m	Over limit	Remark	
1	2310.00	37.53	27.86	4.01	41.80	20.00	47.60	54.00	-6.40	Average	
2	2390.01	37.06	27.54	4.31	41.80	20.00	47.11	54.00	-6.89	Average	

Type		802.11g		Test channel		CH11		Polarity		Horizontal	
Mark	Frequency MHz	Reading dBuV/m	Antenna dB	Cable dB	Preamp dB	Aux dB	Level dBuV/m	Limit dBuV/m	Over limit	Remark	
1	2483.49	53.61	27.33	4.18	41.80	20.00	63.32	74.00	-10.68	Peak	
2	2483.57	57.34	27.33	4.18	41.80	20.00	67.05	74.00	-6.95	Peak	
3	2500.00	43.96	27.30	4.19	41.80	20.00	53.65	74.00	-20.35	Peak	
Mark	Frequency MHz	Reading dBuV/m	Antenna dB	Cable dB	Preamp dB	Aux dB	Level dBuV/m	Limit dBuV/m	Over limit	Remark	
1	2483.49	40.96	27.33	4.18	41.80	20.00	50.67	54.00	-3.33	Average	
2	2500.00	35.16	27.30	4.19	41.80	20.00	44.85	54.00	-9.15	Average	

Type		802.11g		Test channel		CH11		Polarity		Vertical	
Mark	Frequency MHz	Reading dBuV/m	Antenna dB	Cable dB	Preamp dB	Aux dB	Level dBuV/m	Limit dBuV/m	Over limit	Remark	
1	2483.49	59.65	27.33	4.18	41.80	20.00	69.36	74.00	-4.64	Peak	
2	2500.00	45.38	27.30	4.19	41.80	20.00	55.07	74.00	-18.93	Peak	
Mark	Frequency MHz	Reading dBuV/m	Antenna dB	Cable dB	Preamp dB	Aux dB	Level dBuV/m	Limit dBuV/m	Over limit	Remark	
1	2483.49	43.92	27.33	4.18	41.80	20.00	53.63	54.00	-0.37	Average	
2	2500.00	37.05	27.30	4.19	41.80	20.00	46.74	54.00	-7.26	Average	

Type		802.11n(HT20)		Test channel		CH01		Polarity		Horizontal	
Mark	Frequency	Reading	Antenna	Cable	Preamp	Aux	Level	Limit	Over	Remark	
	MHz	dBuV/m	dB	dB	dB	dB	dBuV/m	dBuV/m	limit		
1	2310.00	43.43	27.86	4.01	41.80	20.00	53.50	74.00	-20.50	Peak	
2	2390.01	44.05	27.54	4.31	41.80	20.00	54.10	74.00	-19.90	Peak	
Mark	Frequency	Reading	Antenna	Cable	Preamp	Aux	Level	Limit	Over	Remark	
	MHz	dBuV/m	dB	dB	dB	dB	dBuV/m	dBuV/m	limit		
1	2310.00	37.83	27.86	4.01	41.80	20.00	47.90	54.00	-6.10	Average	
2	2390.01	37.47	27.54	4.31	41.80	20.00	47.52	54.00	-6.48	Average	

Type		802.11n(HT20)		Test channel		CH11		Polarity		Vertical	
Mark	Frequency	Reading	Antenna	Cable	Preamp	Aux	Level	Limit	Over	Remark	
	MHz	dBuV/m	dB	dB	dB	dB	dBuV/m	dBuV/m	limit		
1	2310.00	43.75	27.86	4.01	41.80	20.00	53.82	74.00	-20.18	Peak	
2	2390.01	44.12	27.54	4.31	41.80	20.00	54.17	74.00	-19.83	Peak	
Mark	Frequency	Reading	Antenna	Cable	Preamp	Aux	Level	Limit	Over	Remark	
	MHz	dBuV/m	dB	dB	dB	dB	dBuV/m	dBuV/m	limit		
1	2310.00	37.14	27.86	4.01	41.80	20.00	47.21	54.00	-6.79	Average	
2	2390.01	37.68	27.54	4.31	41.80	20.00	47.73	54.00	-6.27	Average	

Type		802.11n(HT20)		Test channel		CH11		Polarity		Horizontal	
Mark	Frequency	Reading	Antenna	Cable	Preamp	Aux	Level	Limit	Over	Remark	
	MHz	dBuV/m	dB	dB	dB	dB	dBuV/m	dBuV/m	limit		
1	2483.49	54.30	27.33	4.18	41.80	20.00	64.01	74.00	-9.99	Peak	
2	2500.00	43.99	27.30	4.19	41.80	20.00	53.68	74.00	-20.32	Peak	
Mark	Frequency	Reading	Antenna	Cable	Preamp	Aux	Level	Limit	Over	Remark	
	MHz	dBuV/m	dB	dB	dB	dB	dBuV/m	dBuV/m	limit		
1	2483.49	40.26	27.33	4.18	41.80	20.00	49.97	54.00	-4.03	Average	
2	2500.00	34.73	27.30	4.19	41.80	20.00	44.42	54.00	-9.58	Average	

Type		802.11n(HT20)		Test channel		CH11		Polarity		Vertical	
Mark	Frequency	Reading	Antenna	Cable	Preamp	Aux	Level	Limit	Over	Remark	
	MHz	dBuV/m	dB	dB	dB	dB	dBuV/m	dBuV/m	limit		
1	2483.49	60.20	27.33	4.18	41.80	20.00	69.91	74.00	-4.09	Peak	
2	2500.00	45.75	27.30	4.19	41.80	20.00	55.44	74.00	-18.56	Peak	
Mark	Frequency	Reading	Antenna	Cable	Preamp	Aux	Level	Limit	Over	Remark	
	MHz	dBuV/m	dB	dB	dB	dB	dBuV/m	dBuV/m	limit		
1	2483.49	44.10	27.33	4.18	41.80	20.00	53.81	54.00	-0.19	Average	
2	2500.00	36.15	27.30	4.19	41.80	20.00	45.84	54.00	-8.16	Average	

Type	802.11n(HT40)		Test channel	CH03	Polarity	Horizontal				
Mark	Frequency MHz	Reading dBuV/m	Antenna dB	Cable dB	Preamp dB	Aux dB	Level dBuV/m	Limit dBuV/m	Over limit	Remark
1	2310.00	42.99	27.86	4.01	41.80	20.00	53.06	74.00	-20.94	Peak
2	2389.99	43.44	27.54	4.31	41.80	20.00	53.49	74.00	-20.51	Peak
Mark	Frequency MHz	Reading dBuV/m	Antenna dB	Cable dB	Preamp dB	Aux dB	Level dBuV/m	Limit dBuV/m	Over limit	Remark
1	2310.00	34.19	27.86	4.01	41.80	20.00	44.26	54.00	-9.74	Average
2	2389.99	34.97	27.54	4.31	41.80	20.00	45.02	54.00	-8.98	Average

Type	802.11n(HT40)		Test channel	CH03	Polarity	Vertical				
Mark	Frequency MHz	Reading dBuV/m	Antenna dB	Cable dB	Preamp dB	Aux dB	Level dBuV/m	Limit dBuV/m	Over limit	Remark
1	2310.00	42.91	27.86	4.01	41.80	20.00	52.98	74.00	-21.02	Peak
2	2389.99	43.30	27.54	4.31	41.80	20.00	53.35	74.00	-20.65	Peak
Mark	Frequency MHz	Reading dBuV/m	Antenna dB	Cable dB	Preamp dB	Aux dB	Level dBuV/m	Limit dBuV/m	Over limit	Remark
1	2310.00	34.31	27.86	4.01	41.80	20.00	44.38	54.00	-9.62	Average
2	2389.99	34.60	27.54	4.31	41.80	20.00	44.65	54.00	-9.35	Average

Type	802.11n(HT40)		Test channel	CH09	Polarity	Horizontal				
Mark	Frequency MHz	Reading dBuV/m	Antenna dB	Cable dB	Preamp dB	Aux dB	Level dBuV/m	Limit dBuV/m	Over limit	Remark
1	2483.50	46.22	27.33	4.18	41.80	20.00	55.93	74.00	-18.07	Peak
2	2500.00	42.01	27.30	4.19	41.80	20.00	51.70	74.00	-22.30	Peak
Mark	Frequency MHz	Reading dBuV/m	Antenna dB	Cable dB	Preamp dB	Aux dB	Level dBuV/m	Limit dBuV/m	Over limit	Remark
1	2483.50	36.72	27.33	4.18	41.80	20.00	46.43	54.00	-7.57	Average
2	2500.00	34.12	27.30	4.19	41.80	20.00	43.81	54.00	-10.19	Average

Type	802.11n(HT40)		Test channel	CH09	Polarity	Vertical				
Mark	Frequency MHz	Reading dBuV/m	Antenna dB	Cable dB	Preamp dB	Aux dB	Level dBuV/m	Limit dBuV/m	Over limit	Remark
1	2483.50	42.90	27.33	4.18	41.80	20.00	52.61	74.00	-21.39	Peak
2	2500.00	40.56	27.30	4.19	41.80	20.00	50.25	74.00	-23.75	Peak
Mark	Frequency MHz	Reading dBuV/m	Antenna dB	Cable dB	Preamp dB	Aux dB	Level dBuV/m	Limit dBuV/m	Over limit	Remark
1	2483.50	34.86	27.33	4.18	41.80	20.00	44.57	54.00	-9.43	Average
2	2500.00	33.87	27.30	4.19	41.80	20.00	43.56	54.00	-10.44	Average

5.10. Radiated Spurious Emission

LIMIT

FCC CFR Title 47 Part 15 Subpart C Section 15.209

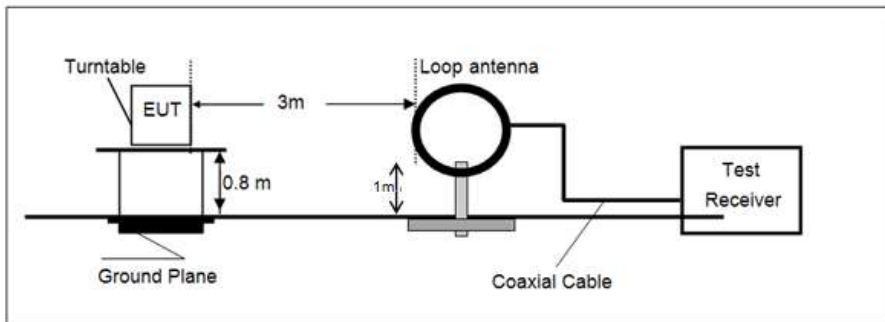
Frequency	Limit (dBuV/m)	Value
0.009 MHz ~0.49 MHz	2400/F(kHz) @300m	Quasi-peak
0.49 MHz ~ 1.705 MHz	24000/F(kHz) @30m	Quasi-peak
1.705 MHz ~30 MHz	30 @30m	Quasi-peak

Note: Limit dBuV/m @3m = Limit dBuV/m @300m + 40*log(300/3)= Limit dBuV/m @300m +80,
 Limit dBuV/m @3m = Limit dBuV/m @30m +40*log(30/3)= Limit dBuV/m @30m + 40.

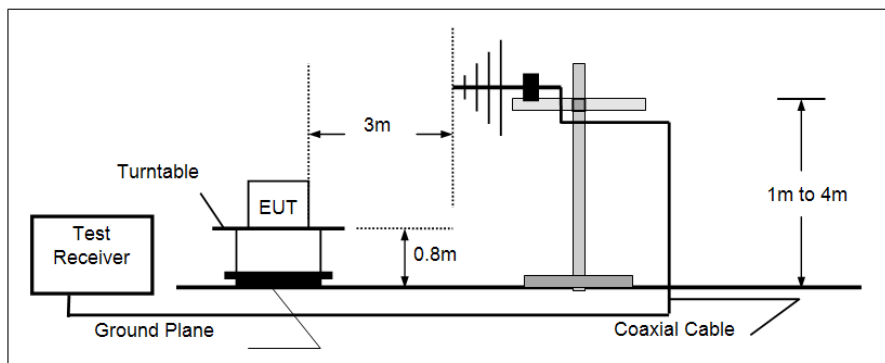
Frequency	Limit (dBuV/m @3m)	Value
30MHz~88MHz	40.00	Quasi-peak
88MHz~216MHz	43.50	Quasi-peak
216MHz~960MHz	46.00	Quasi-peak
960MHz~1GHz	54.00	Quasi-peak
Above 1GHz	54.00	Average
	74.00	Peak

TEST CONFIGURATION

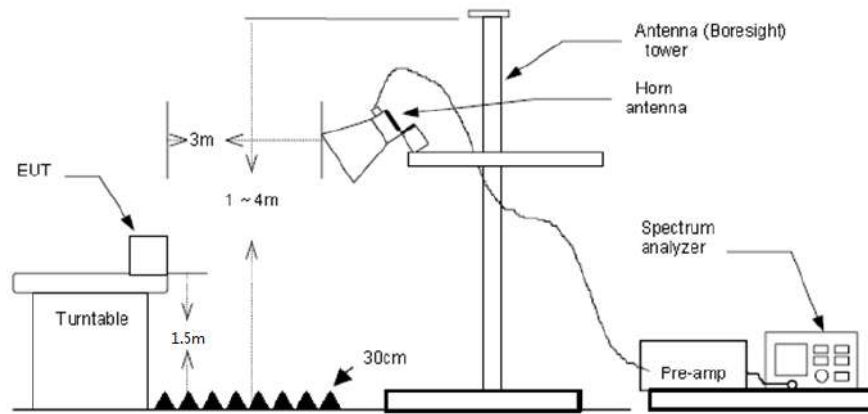
- 9 kHz ~ 30 MHz



- 30 MHz ~ 1 GHz



- Above 1 GHz



TEST PROCEDURE

1. The EUT was setup and tested according to ANSI C63.10 .
2. The EUT is placed on a turn table which is 0.8 meter above ground for below 1 GHz, and 1.5 m for above 1 GHz. The turn table is rotated 360 degrees to determine the position of the maximum emission level.
3. The EUT was set 3 meters from the receiving antenna, which was mounted on the top of a variable height antenna tower.
4. For each suspected emission, the EUT was arranged to its worst case and then tune the Antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter are used for the test in order to get better signal level to comply with the guidelines.
5. Set to the maximum power setting and enable the EUT transmit continuously.
6. Use the following spectrum analyzer settings
 - a) Span shall wide enough to fully capture the emission being measured;
 - b) Below 1 GHz:
 - RBW=120 kHz, VBW=300 kHz, Sweep=auto, Detector function=peak, Trace=max hold;
 - If the emission level of the EUT measured by the peak detector is 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.
 - c) Set RBW=1MHz, VBW=3MHz for >1GHz, Sweep time=auto, Detector=peak, Trace=max hold for Peak measurement
 - For average measurement:
 - VBW=10Hz, When duty cycle is no less than 98 percent
 - $VBW \geq 1/T$, when duty cycle is less than 98 percent where T is the minimum transmission duration over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation, so refer to this clause 5.7 duty cycle.

TEST MODE

Refer to the clause 4.2

TEST RESULT

Passed **Not Applicable**

Note:

- 1) $Level = Reading + Factor/Transd$; $Factor/Transd = Antenna\ Factor + Cable\ Loss - Preamp\ Factor$
- 2) $Over\ Limit = Level - Limit$
- 3) Average measurement was not performed if peak level is lower than average limit(54 dBuV/m) for above 1GHz.

For 9 kHz ~ 30 MHz

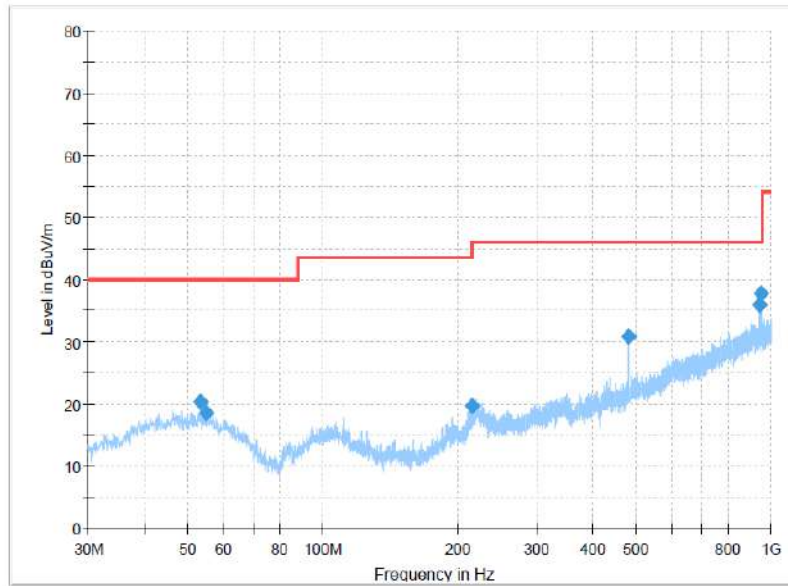
The EUT was pre-scanned this frequency band, found the radiated level 20dB lower than the limit, so don't show data on this report.

For 30 MHz ~ 1000 MHz

Have pre-scan all test channel, found CH06 of 802.11B which it was worst case, so only show the worst case's data on this report.

Polarization:

Horizontal

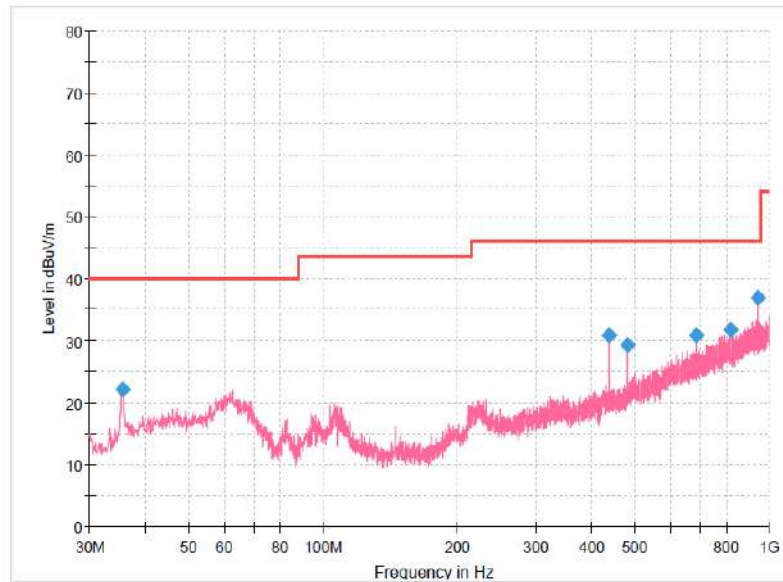


Final Result

Frequency (MHz)	MaxPeak (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
53.5225	20.27	40.00	19.73	300.0	H	289.0	-9.0
55.0988	18.52	40.00	21.48	100.0	H	305.0	-9.1
214.9063	19.71	43.50	23.79	100.0	H	70.0	-10.7
480.0800	30.73	46.00	15.27	100.0	H	113.0	-2.8
945.3163	35.90	46.00	10.10	100.0	H	0.0	7.1
948.4688	37.76	46.00	8.24	100.0	H	0.0	7.1

Polarization:

Vertical



Final Result

Frequency (MHz)	MaxPeak (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
35.4563	22.01	40.00	17.99	100.0	V	199.0	-11.6
437.5213	30.87	46.00	15.13	100.0	V	145.0	-3.3
480.0800	29.25	46.00	16.75	100.0	V	0.0	-2.8
687.5388	30.84	46.00	15.16	100.0	V	294.0	2.1
819.4588	31.79	46.00	14.21	100.0	V	38.0	4.9
945.1950	36.83	46.00	9.17	100.0	V	38.0	7.1

For 1 GHz ~ 25 GHz

Type	802.11b	Test channel	CH01	Polarity	Horizontal				
Mark	Frequency MHz	Reading dBuV/m	Antenna dB	Cable dB	Preamp dB	Level dBuV/m	Limit dBuV/m	Over limit	Remark
1	3215.56	51.28	28.81	4.88	41.60	43.37	74.00	-30.63	Peak
2	4820.54	48.38	31.26	6.00	41.33	44.31	74.00	-29.69	Peak
3	8006.65	42.26	37.00	8.01	40.80	46.47	74.00	-27.53	Peak
4	10318.78	40.65	39.66	9.66	40.75	49.22	74.00	-24.78	Peak
Type	802.11b	Test channel	CH01	Polarity	Vertical				
Mark	Frequency MHz	Reading dBuV/m	Antenna dB	Cable dB	Preamp dB	Level dBuV/m	Limit dBuV/m	Over limit	Remark
1	3215.56	50.10	28.81	4.88	41.60	42.19	74.00	-31.81	Peak
2	4820.54	48.04	31.26	6.00	41.33	43.97	74.00	-30.03	Peak
3	5767.65	50.53	31.94	6.68	40.71	48.44	74.00	-25.56	Peak
4	10917.22	40.64	40.50	9.96	42.29	48.81	74.00	-25.19	Peak
Type	802.11b	Test channel	CH06	Polarity	Horizontal				
Mark	Frequency MHz	Reading dBuV/m	Antenna dB	Cable dB	Preamp dB	Level dBuV/m	Limit dBuV/m	Over limit	Remark
1	3215.56	48.58	28.81	4.88	41.60	40.67	74.00	-33.33	Peak
2	4870.20	49.57	31.20	6.31	41.27	45.81	74.00	-28.19	Peak
3	7965.72	41.18	36.93	7.98	40.88	45.21	74.00	-28.79	Peak
4	10371.80	39.39	39.82	9.69	40.65	48.25	74.00	-25.75	Peak
Type	802.11b	Test channel	CH06	Polarity	Vertical				
Mark	Frequency MHz	Reading dBuV/m	Antenna dB	Cable dB	Preamp dB	Level dBuV/m	Limit dBuV/m	Over limit	Remark
1	3215.56	48.81	28.81	4.88	41.60	40.90	74.00	-33.10	Peak
2	4870.20	49.01	31.20	6.31	41.27	45.25	74.00	-28.75	Peak
3	8089.14	41.48	37.00	8.12	40.63	45.97	74.00	-28.03	Peak
4	10371.80	39.90	39.82	9.69	40.65	48.76	74.00	-25.24	Peak
Type	802.11b	Test channel	CH11	Polarity	Horizontal				
Mark	Frequency MHz	Reading dBuV/m	Antenna dB	Cable dB	Preamp dB	Level dBuV/m	Limit dBuV/m	Over limit	Remark
1	3215.56	49.81	28.81	4.88	41.60	41.90	74.00	-32.10	Peak
2	4920.38	46.57	31.20	6.06	41.20	42.63	74.00	-31.37	Peak
3	7945.33	40.55	36.87	7.97	40.92	44.47	74.00	-29.53	Peak
4	10451.84	38.83	39.95	9.73	40.77	47.74	74.00	-26.26	Peak
Type	802.11b	Test channel	CH11	Polarity	Vertical				
Mark	Frequency MHz	Reading dBuV/m	Antenna dB	Cable dB	Preamp dB	Level dBuV/m	Limit dBuV/m	Over limit	Remark
1	3215.56	50.59	28.81	4.88	41.60	42.68	74.00	-31.32	Peak
2	4920.38	49.19	31.20	6.06	41.20	45.25	74.00	-28.75	Peak
3	8130.70	40.53	36.88	8.09	40.54	44.96	74.00	-29.04	Peak
4	10371.80	40.94	39.82	9.69	40.65	49.80	74.00	-24.20	Peak

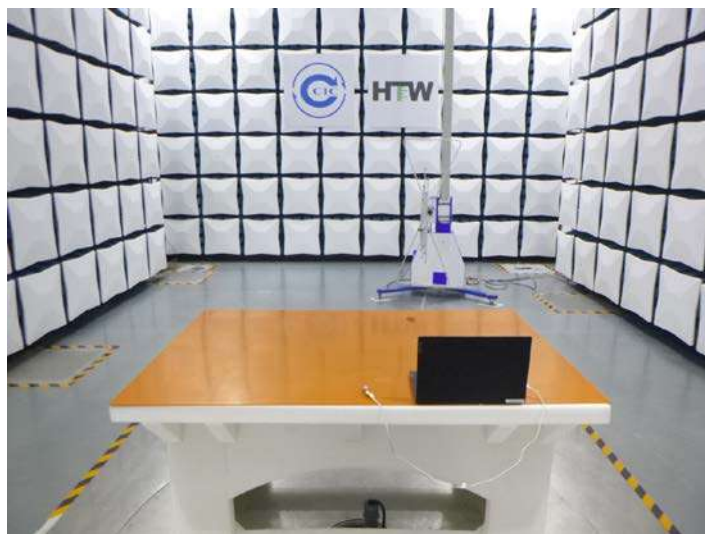
Type	802.11g		Test channel	CH01	Polarity		Horizontal		
Mark	Frequency MHz	Reading dBuV/m	Antenna dB	Cable dB	Preamp dB	Level dBuV/m	Limit dBuV/m	Over limit	Remark
1	4832.91	46.06	31.23	6.08	41.31	42.06	74.00	-31.94	Peak
2	5767.65	43.45	31.94	6.68	40.71	41.36	74.00	-32.64	Peak
3	7509.79	42.58	36.18	7.69	41.10	45.35	74.00	-28.65	Peak
4	10559.53	41.07	40.00	9.79	41.12	49.74	74.00	-24.26	Peak
Type	802.11g		Test channel	CH01	Polarity		Vertical		
Mark	Frequency MHz	Reading dBuV/m	Antenna dB	Cable dB	Preamp dB	Level dBuV/m	Limit dBuV/m	Over limit	Remark
1	3215.56	48.81	28.81	4.88	41.60	40.90	74.00	-33.10	Peak
2	4832.91	45.32	31.23	6.08	41.31	41.32	74.00	-32.68	Peak
3	5767.65	50.45	31.94	6.68	40.71	48.36	74.00	-25.64	Peak
4	10371.80	40.88	39.82	9.69	40.65	49.74	74.00	-24.26	Peak
Type	802.11g		Test channel	CH06	Polarity		Horizontal		
Mark	Frequency MHz	Reading dBuV/m	Antenna dB	Cable dB	Preamp dB	Level dBuV/m	Limit dBuV/m	Over limit	Remark
1	3215.56	45.58	28.81	4.88	41.60	37.67	74.00	-36.33	Peak
2	4870.20	48.78	31.20	6.31	41.27	45.02	74.00	-28.98	Peak
3	5767.65	50.46	31.94	6.68	40.71	48.37	74.00	-25.63	Peak
4	10478.66	39.81	39.98	9.75	40.85	48.69	74.00	-25.31	Peak
Type	802.11g		Test channel	CH06	Polarity		Vertical		
Mark	Frequency MHz	Reading dBuV/m	Antenna dB	Cable dB	Preamp dB	Level dBuV/m	Limit dBuV/m	Over limit	Remark
1	3215.56	49.11	28.81	4.88	41.60	41.20	74.00	-32.80	Peak
2	4870.20	47.30	31.20	6.31	41.27	43.54	74.00	-30.46	Peak
3	5767.65	45.90	31.94	6.68	40.71	43.81	74.00	-30.19	Peak
4	9218.50	40.58	38.91	9.29	41.00	47.78	74.00	-26.22	Peak
Type	802.11g		Test channel	CH11	Polarity		Horizontal		
Mark	Frequency MHz	Reading dBuV/m	Antenna dB	Cable dB	Preamp dB	Level dBuV/m	Limit dBuV/m	Over limit	Remark
1	4920.38	48.13	31.20	6.06	41.20	44.19	74.00	-29.81	Peak
2	5767.65	45.27	31.94	6.68	40.71	43.18	74.00	-30.82	Peak
3	7965.72	40.94	36.93	7.98	40.88	44.97	74.00	-29.03	Peak
4	11316.00	40.45	40.15	10.23	42.30	48.53	74.00	-25.47	Peak
Type	802.11g		Test channel	CH11	Polarity		Vertical		
Mark	Frequency MHz	Reading dBuV/m	Antenna dB	Cable dB	Preamp dB	Level dBuV/m	Limit dBuV/m	Over limit	Remark
1	3215.56	48.96	28.81	4.88	41.60	41.05	74.00	-32.95	Peak
2	4920.38	46.97	31.20	6.06	41.20	43.03	74.00	-30.97	Peak
3	5767.65	51.01	31.94	6.68	40.71	48.92	74.00	-25.08	Peak
4	10945.24	41.79	40.50	9.97	42.30	49.96	74.00	-24.04	Peak

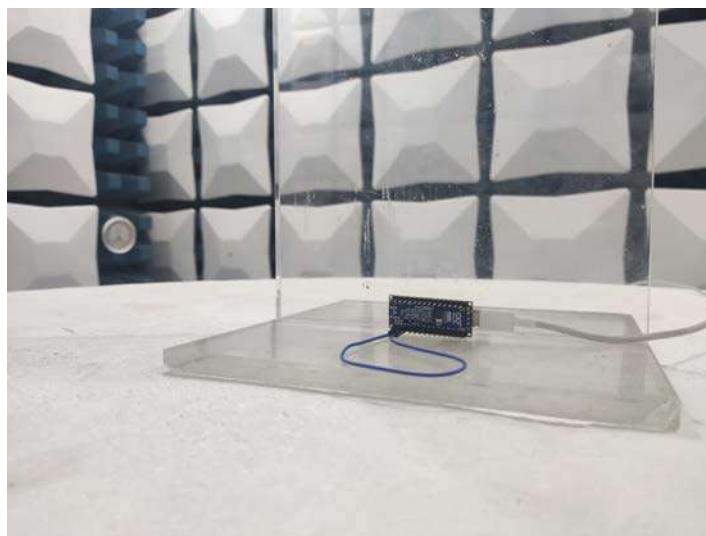
Type	802.11n(HT20)		Test channel	CH01			Polarity	Horizontal		
Mark	Frequency MHz	Reading dBuV/m	Antenna dB	Cable dB	Preamp dB	Level dBuV/m	Limit dBuV/m	Over limit	Remark	
1	3215.56	50.84	28.81	4.88	41.60	42.93	74.00	-31.07	Peak	
2	4832.91	44.94	31.23	6.08	41.31	40.94	74.00	-33.06	Peak	
3	5767.65	43.63	31.94	6.68	40.71	41.54	74.00	-32.46	Peak	
4	10505.55	40.64	40.00	9.76	40.94	49.46	74.00	-24.54	Peak	
Type	802.11n(HT20)		Test channel	CH01			Polarity	Vertical		
Mark	Frequency MHz	Reading dBuV/m	Antenna dB	Cable dB	Preamp dB	Level dBuV/m	Limit dBuV/m	Over limit	Remark	
1	3215.56	48.60	28.81	4.88	41.60	40.69	74.00	-33.31	Peak	
2	4832.91	45.71	31.23	6.08	41.31	41.71	74.00	-32.29	Peak	
3	5767.65	50.04	31.94	6.68	40.71	47.95	74.00	-26.05	Peak	
4	10318.78	40.93	39.66	9.66	40.75	49.50	74.00	-24.50	Peak	
Type	802.11n(HT20)		Test channel	CH06			Polarity	Horizontal		
Mark	Frequency MHz	Reading dBuV/m	Antenna dB	Cable dB	Preamp dB	Level dBuV/m	Limit dBuV/m	Over limit	Remark	
1	3454.76	43.48	28.73	4.96	41.60	35.57	74.00	-38.43	Peak	
2	4870.20	48.47	31.20	6.31	41.27	44.71	74.00	-29.29	Peak	
3	7376.29	40.36	36.20	7.71	41.00	43.27	74.00	-30.73	Peak	
4	9218.50	39.80	38.91	9.29	41.00	47.00	74.00	-27.00	Peak	
Type	802.11n(HT20)		Test channel	CH06			Polarity	Vertical		
Mark	Frequency MHz	Reading dBuV/m	Antenna dB	Cable dB	Preamp dB	Level dBuV/m	Limit dBuV/m	Over limit	Remark	
1	2932.19	43.98	28.50	4.61	41.70	35.39	74.00	-38.61	Peak	
2	4870.20	47.44	31.20	6.31	41.27	43.68	74.00	-30.32	Peak	
3	8130.70	39.82	36.88	8.09	40.54	44.25	74.00	-29.75	Peak	
4	10398.41	38.62	39.90	9.70	40.60	47.62	74.00	-26.38	Peak	
Type	802.11n(HT20)		Test channel	CH11			Polarity	Horizontal		
Mark	Frequency MHz	Reading dBuV/m	Antenna dB	Cable dB	Preamp dB	Level dBuV/m	Limit dBuV/m	Over limit	Remark	
1	3324.48	43.18	28.30	4.85	41.60	34.73	74.00	-39.27	Peak	
2	4920.38	48.50	31.20	6.06	41.20	44.56	74.00	-29.44	Peak	
3	8047.79	39.84	37.00	8.22	40.71	44.35	74.00	-29.65	Peak	
4	10318.78	39.03	39.66	9.66	40.75	47.60	74.00	-26.40	Peak	
Type	802.11n(HT20)		Test channel	CH11			Polarity	Vertical		
Mark	Frequency MHz	Reading dBuV/m	Antenna dB	Cable dB	Preamp dB	Level dBuV/m	Limit dBuV/m	Over limit	Remark	
1	3580.95	43.78	29.26	5.10	41.60	36.54	74.00	-37.46	Peak	
2	4920.38	47.62	31.20	6.06	41.20	43.68	74.00	-30.32	Peak	
3	8130.70	41.46	36.88	8.09	40.54	45.89	74.00	-28.11	Peak	
4	10318.78	39.14	39.66	9.66	40.75	47.71	74.00	-26.29	Peak	

Type	802.11n(HT40)		Test channel	CH03			Polarity	Horizontal	
Mark	Frequency MHz	Reading dBuV/m	Antenna dB	Cable dB	Preamp dB	Level dBuV/m	Limit dBuV/m	Over limit	Remark
1	1364.18	42.42	25.97	3.51	42.00	29.90	74.00	-44.10	Peak
2	3266.35	43.42	28.50	4.81	41.60	35.13	74.00	-38.87	Peak
3	7941.19	40.36	36.85	7.97	40.93	44.25	74.00	-29.75	Peak
4	11254.86	40.24	40.05	10.18	42.30	48.17	74.00	-25.83	Peak
Type	802.11n(HT40)		Test channel	CH03			Polarity	Vertical	
Mark	Frequency MHz	Reading dBuV/m	Antenna dB	Cable dB	Preamp dB	Level dBuV/m	Limit dBuV/m	Over limit	Remark
1	1529.75	43.85	25.58	3.19	42.20	30.42	74.00	-43.58	Peak
2	3266.35	44.86	28.50	4.81	41.60	36.57	74.00	-37.43	Peak
3	8104.56	39.25	36.98	8.11	40.59	43.75	74.00	-30.25	Peak
4	10400.86	38.29	39.90	9.71	40.60	47.30	74.00	-26.70	Peak
Type	802.11n(HT40)		Test channel	CH06			Polarity	Horizontal	
Mark	Frequency MHz	Reading dBuV/m	Antenna dB	Cable dB	Preamp dB	Level dBuV/m	Limit dBuV/m	Over limit	Remark
1	2431.21	42.44	27.44	4.24	41.80	32.32	74.00	-41.68	Peak
2	5762.24	43.04	31.92	6.66	40.71	40.91	74.00	-33.09	Peak
3	8022.46	39.37	37.00	8.07	40.76	43.68	74.00	-30.32	Peak
4	11486.41	40.01	40.49	10.35	42.30	48.55	74.00	-25.45	Peak
Type	802.11n(HT40)		Test channel	CH06			Polarity	Vertical	
Mark	Frequency MHz	Reading dBuV/m	Antenna dB	Cable dB	Preamp dB	Level dBuV/m	Limit dBuV/m	Over limit	Remark
1	1605.55	44.05	25.09	3.35	42.20	30.29	74.00	-43.71	Peak
2	5762.24	41.95	31.92	6.66	40.71	39.82	74.00	-34.18	Peak
3	7961.43	40.00	36.92	7.98	40.89	44.01	74.00	-29.99	Peak
4	10374.42	39.09	39.82	9.69	40.65	47.95	74.00	-26.05	Peak
Type	802.11n(HT40)		Test channel	CH09			Polarity	Horizontal	
Mark	Frequency MHz	Reading dBuV/m	Antenna dB	Cable dB	Preamp dB	Level dBuV/m	Limit dBuV/m	Over limit	Remark
1	2412.72	43.83	27.47	4.27	41.80	33.77	74.00	-40.23	Peak
2	4883.52	46.15	31.20	6.21	41.25	42.31	74.00	-31.69	Peak
3	8104.56	41.06	36.98	8.11	40.59	45.56	74.00	-28.44	Peak
4	10860.83	39.97	40.42	9.93	42.10	48.22	74.00	-25.78	Peak
Type	802.11n(HT40)		Test channel	CH09			Polarity	Vertical	
Mark	Frequency MHz	Reading dBuV/m	Antenna dB	Cable dB	Preamp dB	Level dBuV/m	Limit dBuV/m	Over limit	Remark
1	3525.56	43.04	29.10	5.15	41.60	35.69	74.00	-38.31	Peak
2	4908.44	47.50	31.20	6.07	41.22	43.55	74.00	-30.45	Peak
3	5762.24	47.78	31.92	6.66	40.71	45.65	74.00	-28.35	Peak
4	10534.09	39.43	40.00	9.77	41.04	48.16	74.00	-25.84	Peak

6. TEST SETUP PHOTOS

Radiated Emission





AC Conducted Emission



7. EXTERNAL AND INTERNAL PHOTOS

Refer to the test report No. CHTW24010102

8. APPENDIX REPORT

APPENDIX REPORT

Project No.	SHT2310048501EW	Radio Specification	WIFI 2.4G
Test sample No.	YPHT23100485001	Model No.	ABX00083
Start test date	2024-01-24	Finish date	2024-01-25
Temperature	24.1℃	Humidity	48%
Test Engineer	Xiangyu Wei	Auditor	Xiaodong Zheo

Appendix clause	Test item	Result
A	Conducted Peak Output Power	PASS
B	Power Spectral Density	PASS
C	6 dB Bandwidth	PASS
D	99% Occupied Bandwidth	PASS
E	Duty Cycle	PASS
F	Band edge and Spurious Emissions (conducted)	PASS

Appendix A: Conducted Peak Output Power

Type	Channel	Peak Output power (dBm)	Average Output power (dBm)	Limit (dBm)	Result
802.11b	01	14.48	14.41	≤ 30.00	Pass
	06	13.83	13.77		
	11	15.11	15.06		
802.11g	01	15.23	15.17	≤ 30.00	Pass
	06	14.39	14.30		
	11	15.63	15.55		
802.11n (HT20)	01	14.79	14.72	≤ 30.00	Pass
	06	14.06	13.99		
	11	15.33	15.28		
802.11n(HT40)	03	14.22	14.18	≤ 30.00	Pass
	06	13.81	13.74		
	09	14.44	14.38		

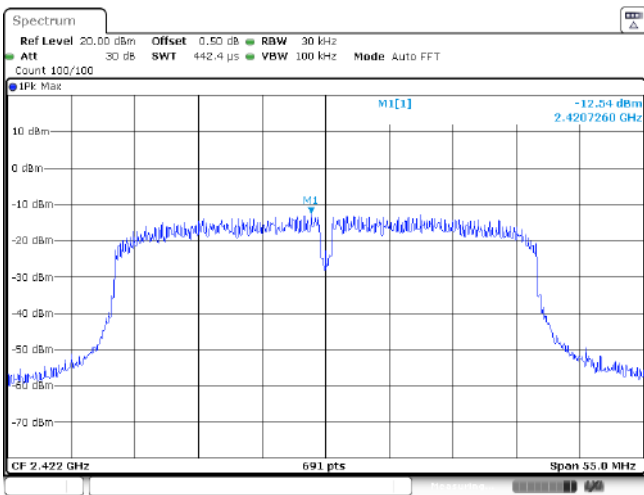
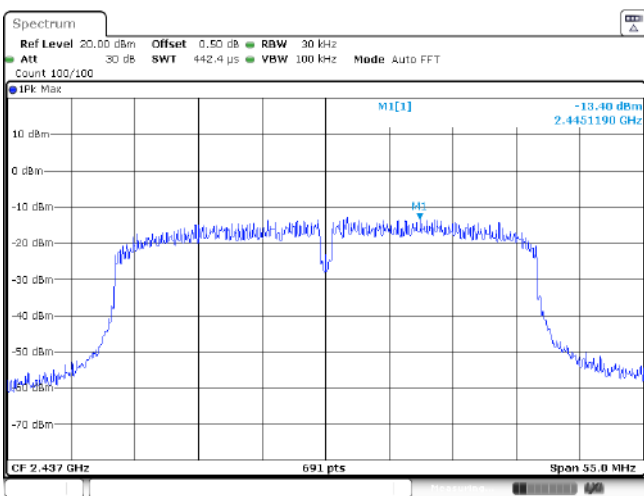
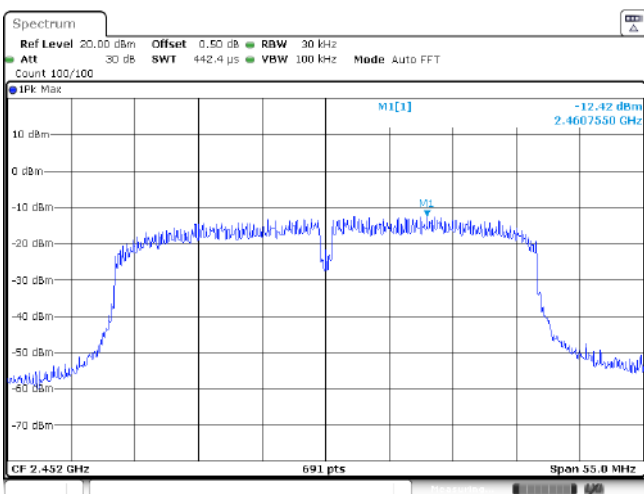
Appendix B: Power Spectral Density

Type	Channel	Power Spectral Density (dBm/30KHz)	Limit (dBm/3KHz)	Result
802.11b	01	-4.78	≤8.00	Pass
	06	-5.80		
	11	-4.00		
802.11g	01	-8.20	≤8.00	Pass
	06	-9.66		
	11	-7.99		
802.11n(HT20)	01	-8.84	≤8.00	Pass
	06	-9.81		
	11	-8.73		
802.11n(HT40)	03	-12.54	≤8.00	Pass
	06	-13.37		
	09	-12.42		

Type:	802.11 b
CH01	
CH06	
CH11	

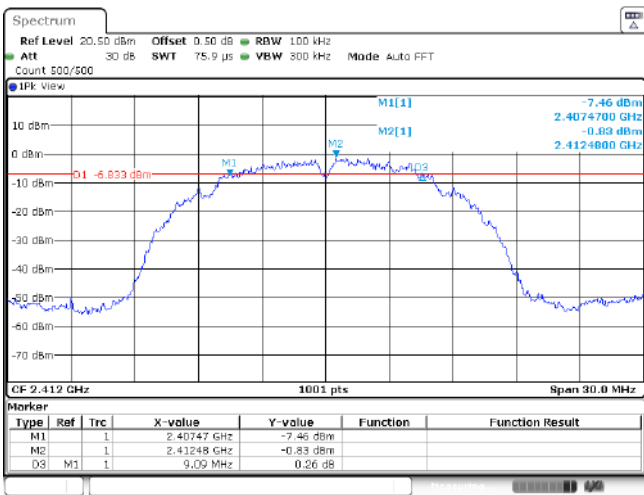
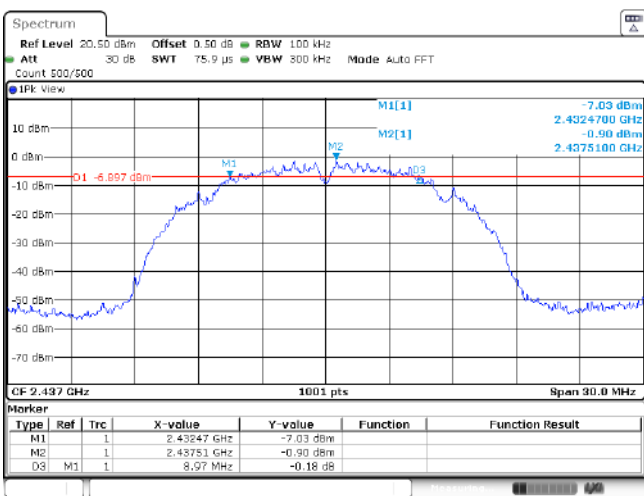
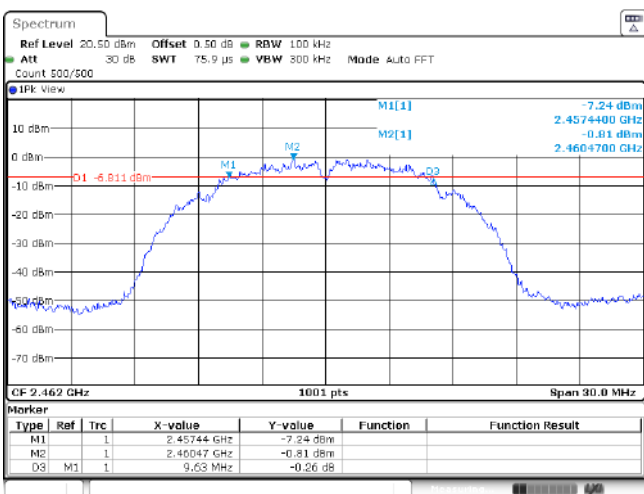
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CH01	
CH06	
CH11	

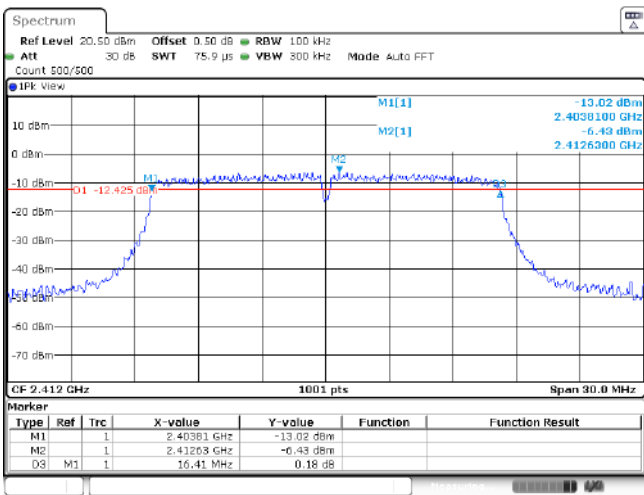
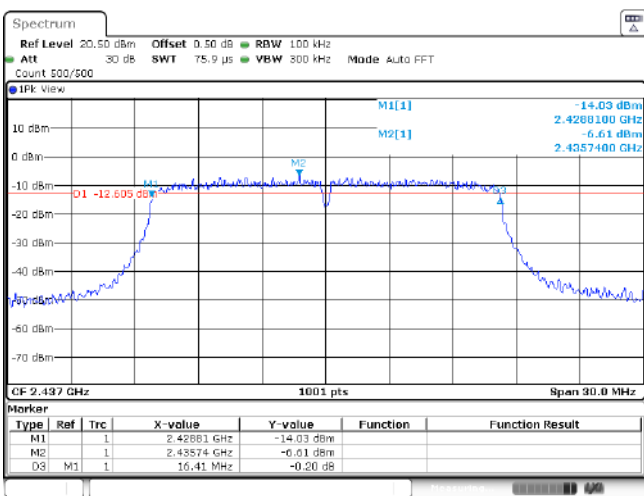
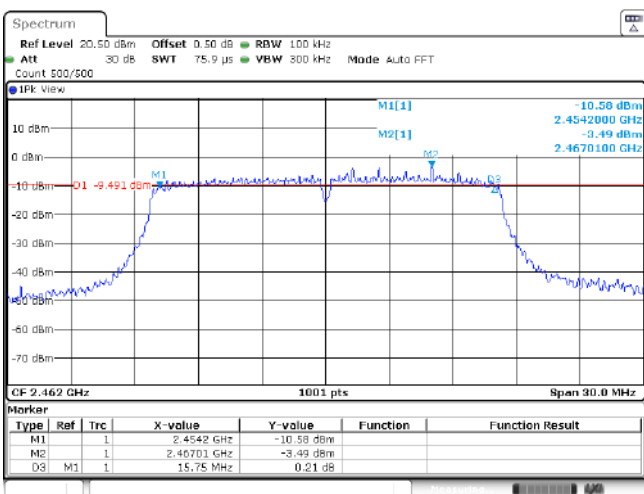
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CH01	
CH06	
CH11	

Type:	802.11n(HT40)
CH03	
CH06	
CH09	

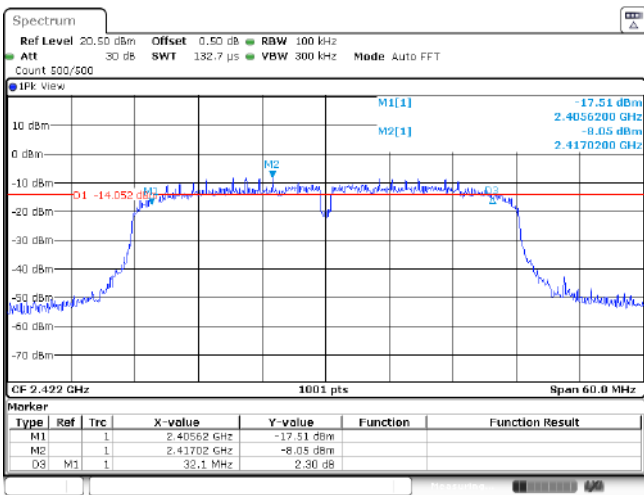
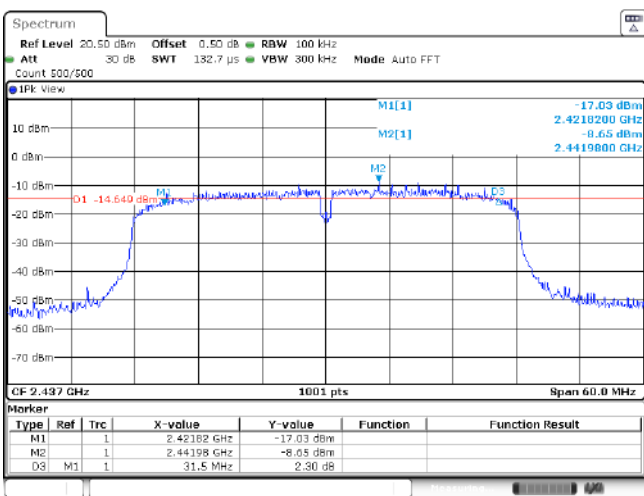
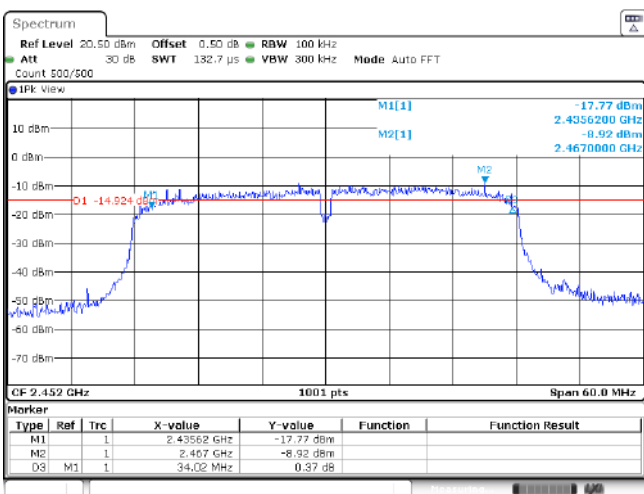
Appendix C: 6dB bandwidth

Type	Channel	6dB Bandwidth (MHz)	Limit (MHz)	Result
802.11b	01	9.09	≥0.5	Pass
	06	8.97		
	11	9.63		
802.11g	01	16.41	≥0.5	Pass
	06	16.41		
	11	15.75		
802.11n(HT20)	01	16.08	≥0.5	Pass
	06	16.98		
	11	16.11		
802.11n(HT40)	03	32.10	≥0.5	Pass
	06	31.50		
	09	34.02		

Type:	802.11 b																												
CH01	 <p>Spectrum Ref Level 20.50 dBm Offset 0.50 dB RBW 100 kHz Att 30 dB SWT 75.9 μs VBW 300 kHz Mode Auto FFT Count 500/500</p> <p>CF 2.412 GHz 1001 pts Span 30.0 MHz</p> <table border="1"> <thead> <tr> <th>Type</th> <th>Ref</th> <th>Trc</th> <th>X-value</th> <th>Y-value</th> <th>Function</th> <th>Function Result</th> </tr> </thead> <tbody> <tr> <td>M1</td> <td>1</td> <td></td> <td>2.40747 GHz</td> <td>-7.46 dBm</td> <td></td> <td></td> </tr> <tr> <td>M2</td> <td>1</td> <td></td> <td>2.41248 GHz</td> <td>-0.83 dBm</td> <td></td> <td></td> </tr> <tr> <td>OS</td> <td>M1</td> <td>1</td> <td>9.09 MHz</td> <td>0.26 dB</td> <td></td> <td></td> </tr> </tbody> </table>	Type	Ref	Trc	X-value	Y-value	Function	Function Result	M1	1		2.40747 GHz	-7.46 dBm			M2	1		2.41248 GHz	-0.83 dBm			OS	M1	1	9.09 MHz	0.26 dB		
Type	Ref	Trc	X-value	Y-value	Function	Function Result																							
M1	1		2.40747 GHz	-7.46 dBm																									
M2	1		2.41248 GHz	-0.83 dBm																									
OS	M1	1	9.09 MHz	0.26 dB																									
CH06	 <p>Spectrum Ref Level 20.50 dBm Offset 0.50 dB RBW 100 kHz Att 30 dB SWT 75.9 μs VBW 300 kHz Mode Auto FFT Count 500/500</p> <p>CF 2.437 GHz 1001 pts Span 30.0 MHz</p> <table border="1"> <thead> <tr> <th>Type</th> <th>Ref</th> <th>Trc</th> <th>X-value</th> <th>Y-value</th> <th>Function</th> <th>Function Result</th> </tr> </thead> <tbody> <tr> <td>M1</td> <td>1</td> <td></td> <td>2.43247 GHz</td> <td>-7.03 dBm</td> <td></td> <td></td> </tr> <tr> <td>M2</td> <td>1</td> <td></td> <td>2.43751 GHz</td> <td>-0.90 dBm</td> <td></td> <td></td> </tr> <tr> <td>OS</td> <td>M1</td> <td>1</td> <td>8.97 MHz</td> <td>-0.18 dB</td> <td></td> <td></td> </tr> </tbody> </table>	Type	Ref	Trc	X-value	Y-value	Function	Function Result	M1	1		2.43247 GHz	-7.03 dBm			M2	1		2.43751 GHz	-0.90 dBm			OS	M1	1	8.97 MHz	-0.18 dB		
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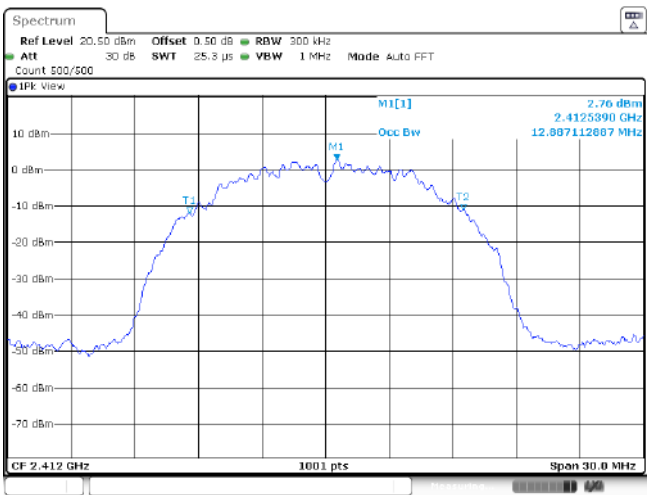
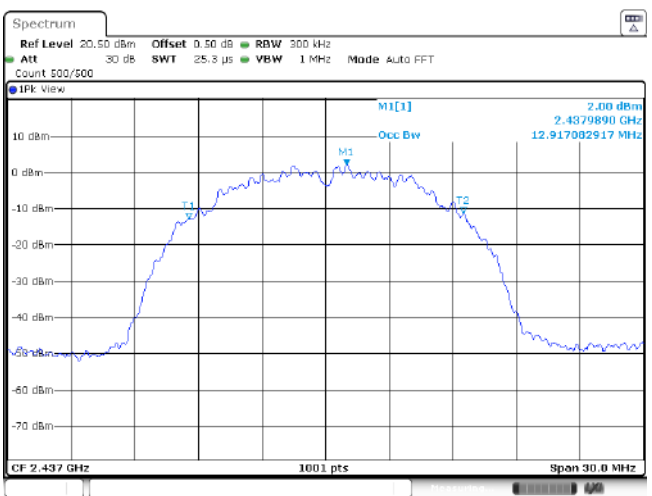
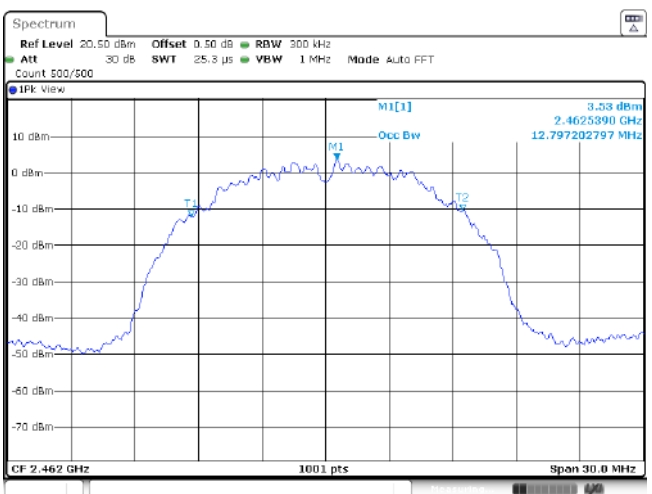
Type:	802.11 g																												
CH01	 <p>Spectrum</p> <p>Ref Level 20.50 dBm Offset 0.50 dB RBW 100 kHz Att 30 dB SWT 75.9 μs VBW 300 kHz Mode Auto FFT Count 500/500</p> <p>CF 2.412 GHz 1001 pts Span 30.0 MHz</p> <table border="1"> <thead> <tr> <th>Type</th> <th>Ref</th> <th>Trc</th> <th>X-value</th> <th>Y-value</th> <th>Function</th> <th>Function Result</th> </tr> </thead> <tbody> <tr> <td>M1</td> <td>1</td> <td></td> <td>2.40981 GHz</td> <td>-13.02 dBm</td> <td></td> <td></td> </tr> <tr> <td>M2</td> <td>1</td> <td></td> <td>2.41203 GHz</td> <td>-6.43 dBm</td> <td></td> <td></td> </tr> <tr> <td>OS</td> <td>M1</td> <td>1</td> <td>16.41 MHz</td> <td>0.18 dB</td> <td></td> <td></td> </tr> </tbody> </table>	Type	Ref	Trc	X-value	Y-value	Function	Function Result	M1	1		2.40981 GHz	-13.02 dBm			M2	1		2.41203 GHz	-6.43 dBm			OS	M1	1	16.41 MHz	0.18 dB		
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Type:	802.11n(HT20)																												
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DS	M1	1	16.11 MHz	0.29 dB																									

Type:	802.11n(HT40)																												
CH03	 <p>Spectrum Ref Level 20.50 dBm Offset 0.50 dB RBW 100 kHz Att 30 dB SWF 132.7 μs VBW 300 kHz Mode Auto FFT Count 500/500</p> <p>IFK view</p> <p>10 dBm 0 dBm -10 dBm -20 dBm -30 dBm -40 dBm -50 dBm -60 dBm -70 dBm</p> <p>CF 2.422 GHz 1001 pts Span 60.0 MHz</p> <table border="1"> <thead> <tr> <th>Type</th> <th>Ref</th> <th>Trc</th> <th>X-value</th> <th>Y-value</th> <th>Function</th> <th>Function Result</th> </tr> </thead> <tbody> <tr> <td>M1</td> <td>1</td> <td></td> <td>2.40562 GHz</td> <td>-17.51 dBm</td> <td></td> <td></td> </tr> <tr> <td>M2</td> <td>1</td> <td></td> <td>2.41702 GHz</td> <td>-8.05 dBm</td> <td></td> <td></td> </tr> <tr> <td>DS</td> <td>M1</td> <td>1</td> <td>32.1 MHz</td> <td>2.30 dB</td> <td></td> <td></td> </tr> </tbody> </table>	Type	Ref	Trc	X-value	Y-value	Function	Function Result	M1	1		2.40562 GHz	-17.51 dBm			M2	1		2.41702 GHz	-8.05 dBm			DS	M1	1	32.1 MHz	2.30 dB		
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Appendix D: 99% Occupied Bandwidth

Type	Channel	99% Bandwidth (MHz)	Limit (kHz)	Result
802.11b	01	12.89	-	Pass
	06	12.92		
	11	12.80		
802.11g	01	16.24	-	Pass
	06	16.30		
	11	16.30		
802.11n(HT20)	01	17.08	-	Pass
	06	17.08		
	11	17.08		
802.11n(HT40)	03	35.19	-	Pass
	06	35.19		
	09	35.13		

Type:	802.11 b
CH01	 <p>Spectrum plot for CH01. The plot shows a signal centered at 2.4125390 GHz with a peak level of 2.76 dBm. The plot includes parameters like Ref Level (20.50 dBm), Offset (0.50 dB), RBW (300 kHz), and Span (30.0 MHz). The plot also shows the signal's bandwidth and other characteristics.</p>
CH06	 <p>Spectrum plot for CH06. The plot shows a signal centered at 2.4379890 GHz with a peak level of 2.60 dBm. The plot includes parameters like Ref Level (20.50 dBm), Offset (0.50 dB), RBW (300 kHz), and Span (30.0 MHz). The plot also shows the signal's bandwidth and other characteristics.</p>
CH11	 <p>Spectrum plot for CH11. The plot shows a signal centered at 2.4625390 GHz with a peak level of 3.53 dBm. The plot includes parameters like Ref Level (20.50 dBm), Offset (0.50 dB), RBW (300 kHz), and Span (30.0 MHz). The plot also shows the signal's bandwidth and other characteristics.</p>

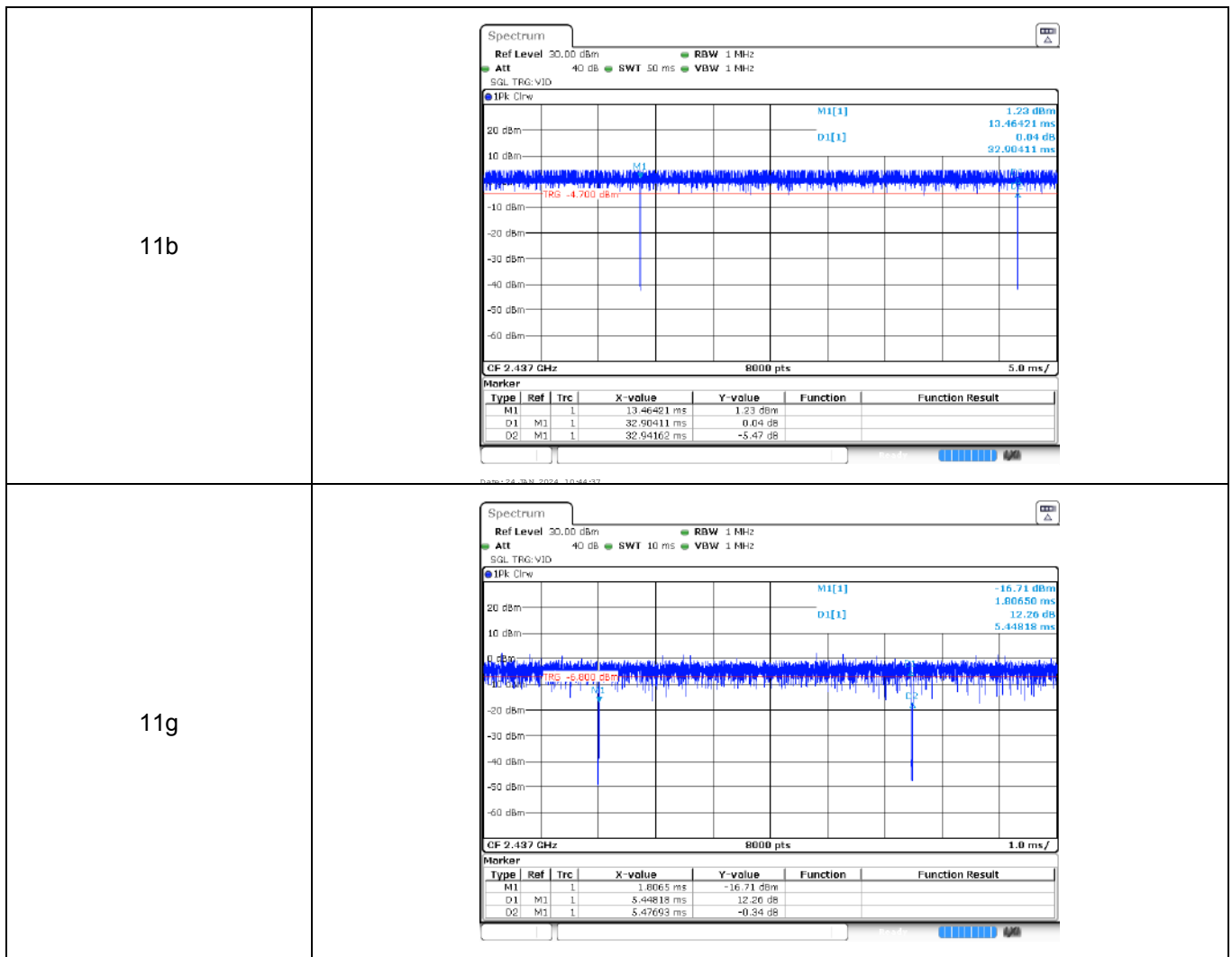
Type:	802.11 g
CH01	
CH06	
CH11	

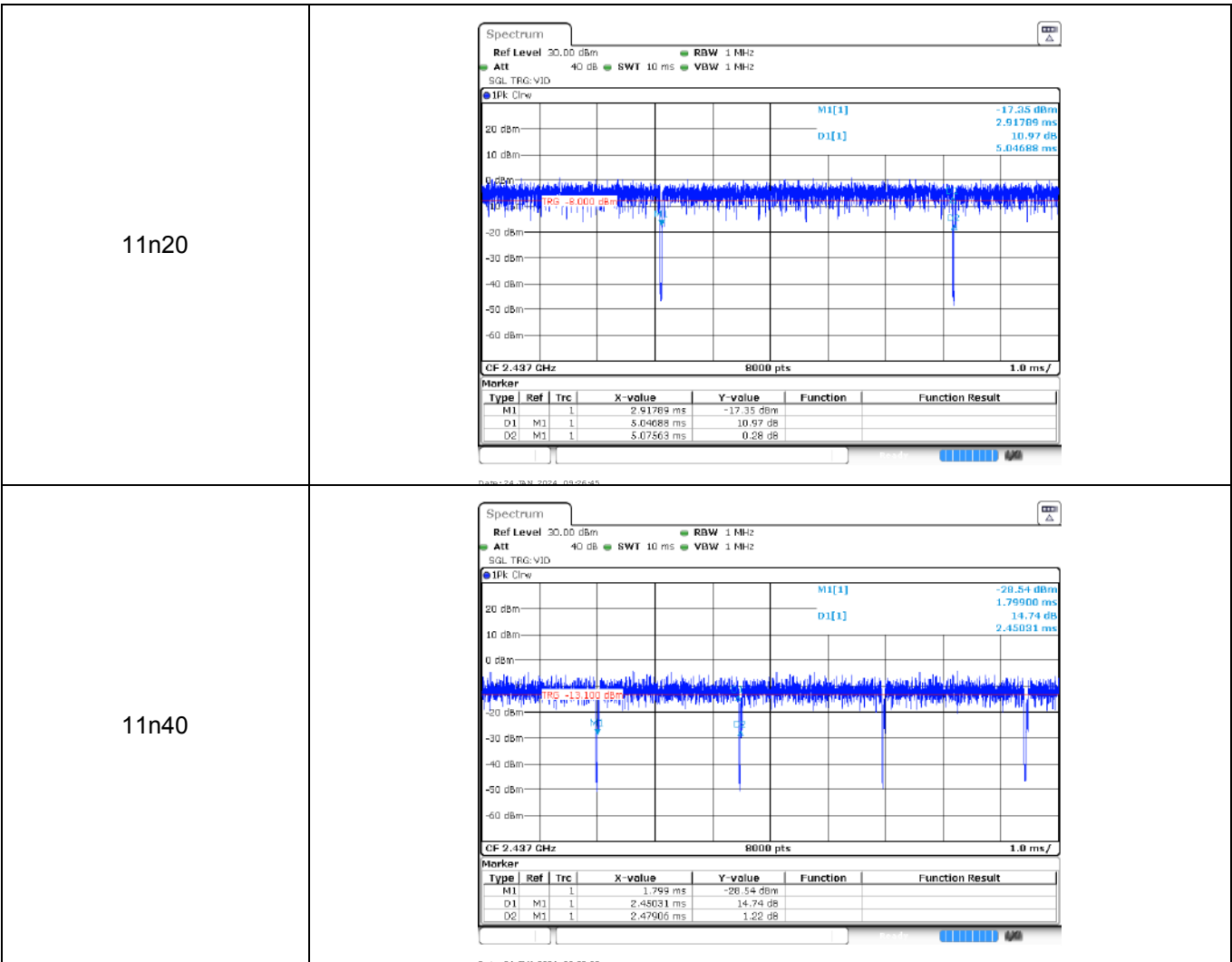
Type:	802.11n(HT20)
CH01	
CH06	
CH11	

Type:	802.11n(HT40)
CH03	<p>Spectrum plot for CH03. The plot shows a signal centered at 2.4254770 GHz with a peak level of -2.47 dBm. The plot shows a typical channel bandwidth of 60 MHz. Parameters include Ref Level 20.50 dBm, Att 30 dB, Offset 0.50 dB, RBW 500 kHz, and Span 60.0 MHz.</p>
CH06	<p>Spectrum plot for CH06. The plot shows a signal centered at 2.4404170 GHz with a peak level of -2.94 dBm. The plot shows a typical channel bandwidth of 60 MHz. Parameters include Ref Level 20.50 dBm, Att 30 dB, Offset 0.50 dB, RBW 500 kHz, and Span 60.0 MHz.</p>
CH09	<p>Spectrum plot for CH09. The plot shows a signal centered at 2.4554770 GHz with a peak level of -2.24 dBm. The plot shows a typical channel bandwidth of 60 MHz. Parameters include Ref Level 20.50 dBm, Att 30 dB, Offset 0.50 dB, RBW 500 kHz, and Span 60.0 MHz.</p>

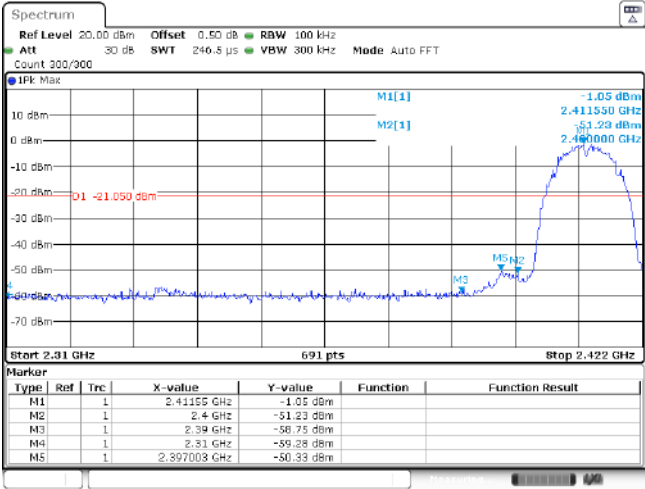
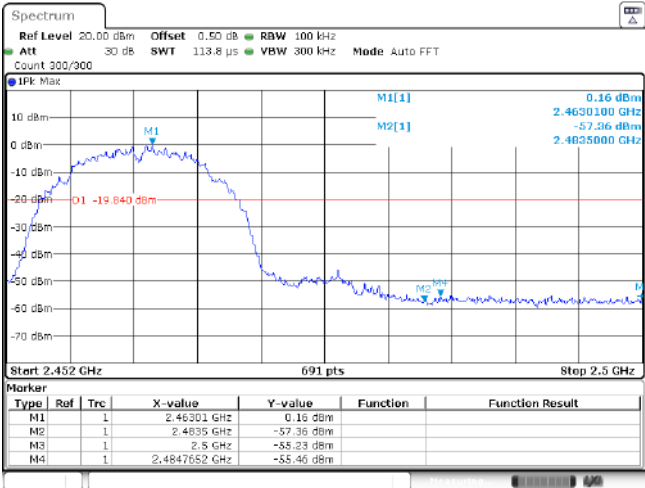
Appendix E: Duty Cycle

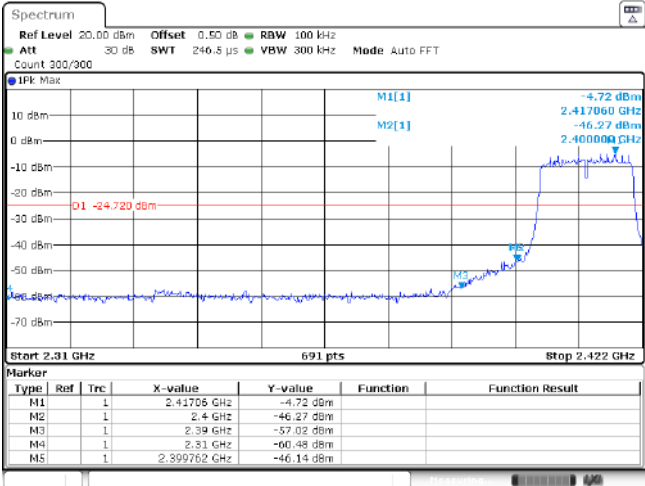
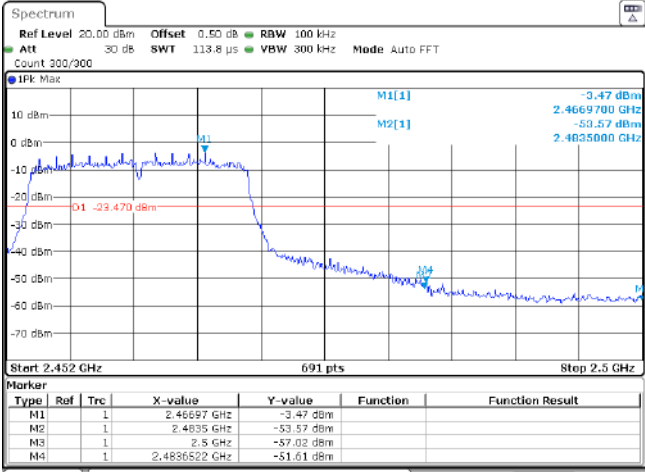
Modulation Type	Test Frequency (MHz)	T _{on time} for single burst (ms)	T _{period} (ms)	Duty cycle	1/T _{on time} (kHz)
11b	2437	32.90	32.94	99.88%	0.03
11g	2437	5.45	5.48	99.45%	0.03
11n20	2437	5.05	5.08	99.41%	0.20
11n40	2437	2.45	2.48	98.79%	0.41

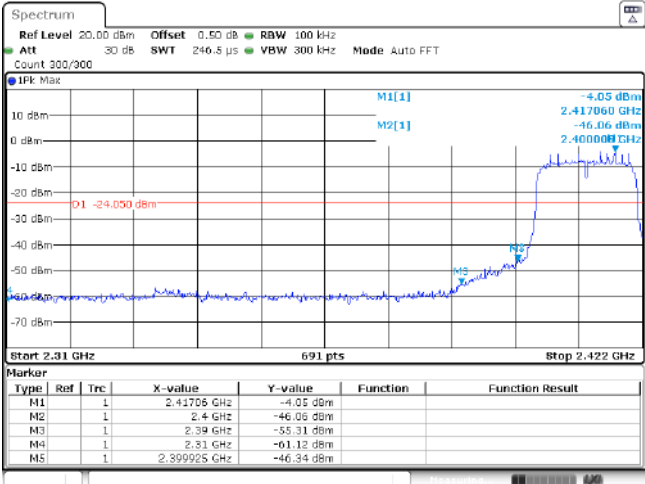
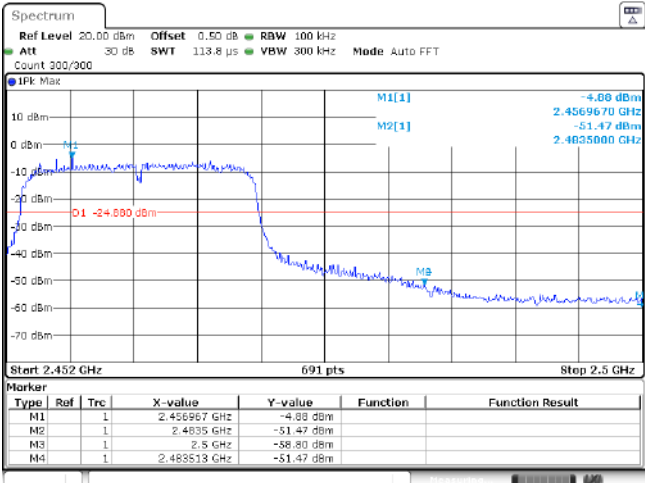


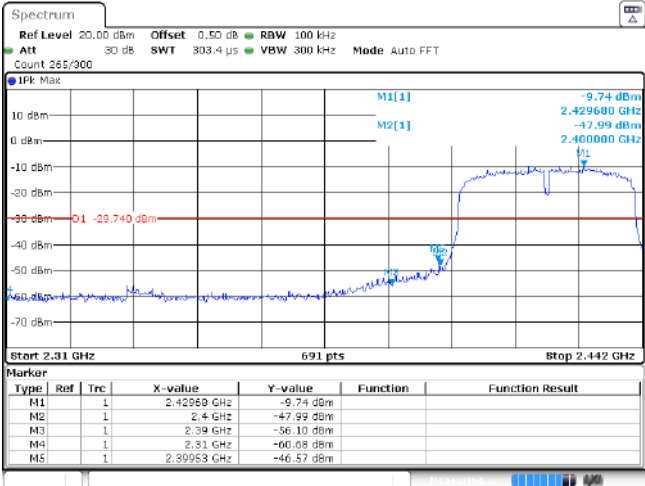
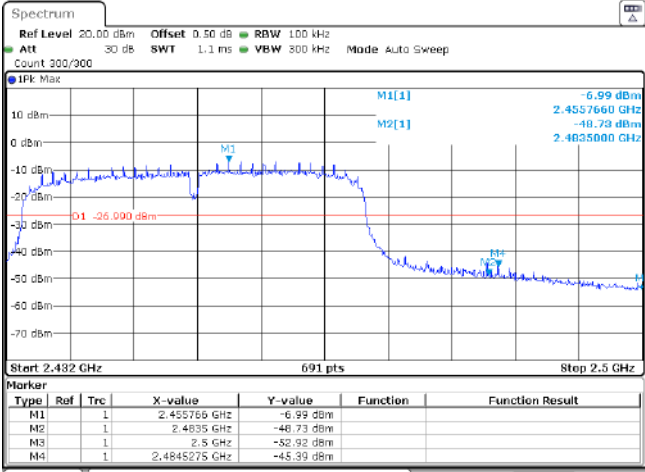


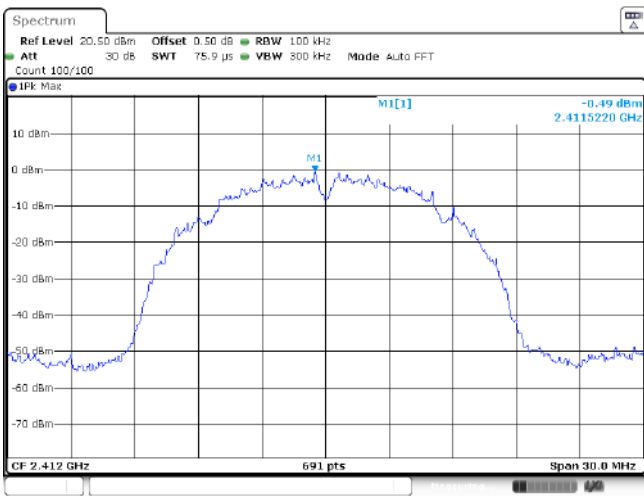
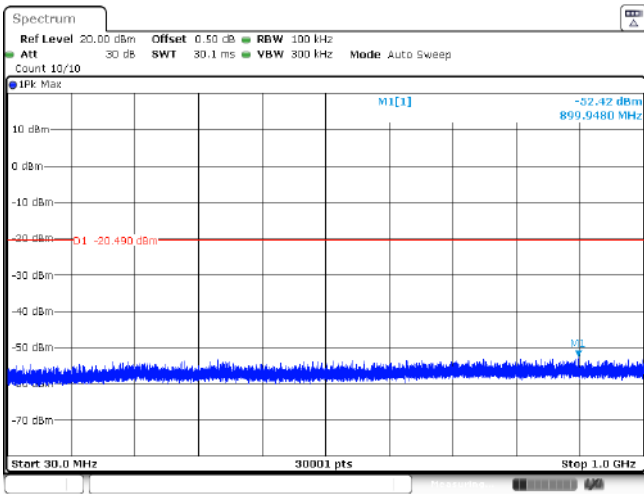
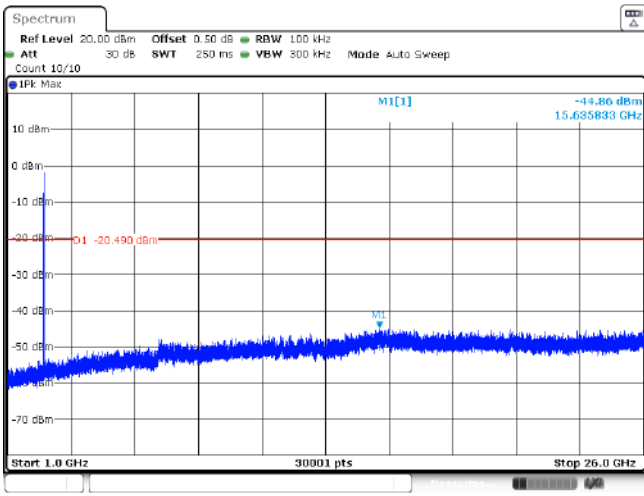
Appendix F: Band edge and Spurious Emissions (conducted)

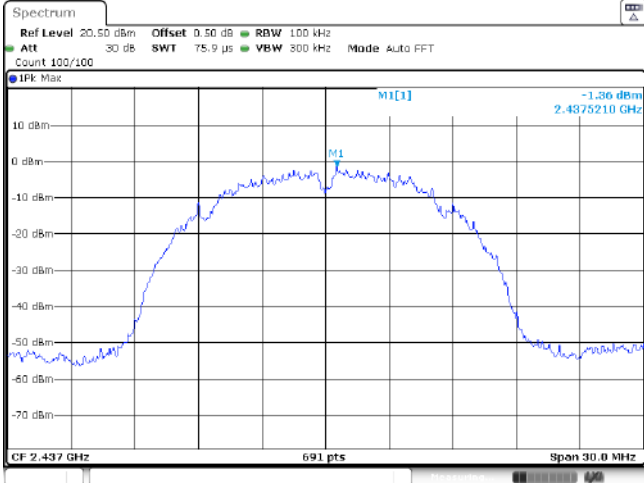
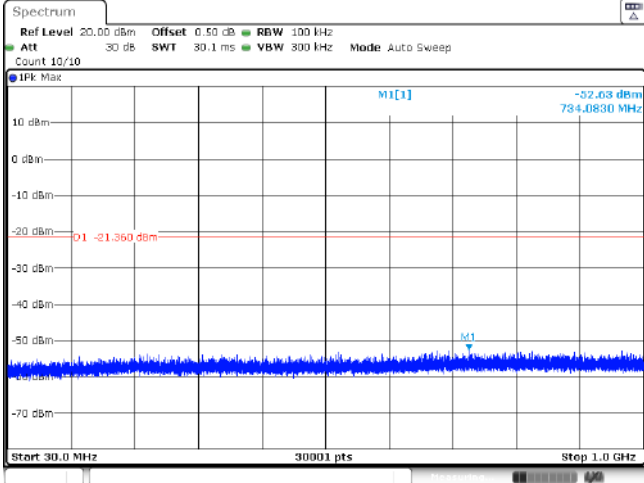
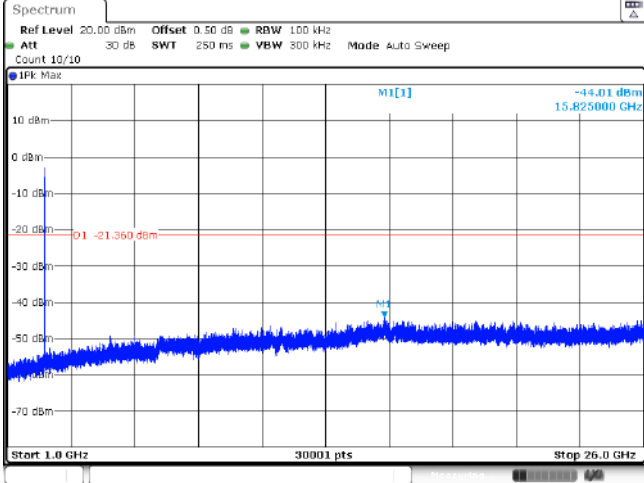
Test Item:	Bandedge	Type:	802.11 b																																										
CH01	 <p>Marker Table for CH01:</p> <table border="1"> <thead> <tr> <th>Type</th> <th>Ref</th> <th>Trc</th> <th>X-value</th> <th>Y-value</th> <th>Function</th> <th>Function Result</th> </tr> </thead> <tbody> <tr> <td>M1</td> <td>1</td> <td></td> <td>2.41155 GHz</td> <td>-1.05 dBm</td> <td></td> <td></td> </tr> <tr> <td>M2</td> <td>1</td> <td></td> <td>2.4 GHz</td> <td>-51.23 dBm</td> <td></td> <td></td> </tr> <tr> <td>M3</td> <td>1</td> <td></td> <td>2.39 GHz</td> <td>-58.75 dBm</td> <td></td> <td></td> </tr> <tr> <td>M4</td> <td>1</td> <td></td> <td>2.33 GHz</td> <td>-59.28 dBm</td> <td></td> <td></td> </tr> <tr> <td>M5</td> <td>1</td> <td></td> <td>2.397003 GHz</td> <td>-50.33 dBm</td> <td></td> <td></td> </tr> </tbody> </table>			Type	Ref	Trc	X-value	Y-value	Function	Function Result	M1	1		2.41155 GHz	-1.05 dBm			M2	1		2.4 GHz	-51.23 dBm			M3	1		2.39 GHz	-58.75 dBm			M4	1		2.33 GHz	-59.28 dBm			M5	1		2.397003 GHz	-50.33 dBm		
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CH11	 <p>Marker Table for CH11:</p> <table border="1"> <thead> <tr> <th>Type</th> <th>Ref</th> <th>Trc</th> <th>X-value</th> <th>Y-value</th> <th>Function</th> <th>Function Result</th> </tr> </thead> <tbody> <tr> <td>M1</td> <td>1</td> <td></td> <td>2.46301 GHz</td> <td>0.16 dBm</td> <td></td> <td></td> </tr> <tr> <td>M2</td> <td>1</td> <td></td> <td>2.4635 GHz</td> <td>-57.36 dBm</td> <td></td> <td></td> </tr> <tr> <td>M3</td> <td>1</td> <td></td> <td>2.5 GHz</td> <td>-55.23 dBm</td> <td></td> <td></td> </tr> <tr> <td>M4</td> <td>1</td> <td></td> <td>2.4847652 GHz</td> <td>-55.46 dBm</td> <td></td> <td></td> </tr> </tbody> </table>			Type	Ref	Trc	X-value	Y-value	Function	Function Result	M1	1		2.46301 GHz	0.16 dBm			M2	1		2.4635 GHz	-57.36 dBm			M3	1		2.5 GHz	-55.23 dBm			M4	1		2.4847652 GHz	-55.46 dBm									
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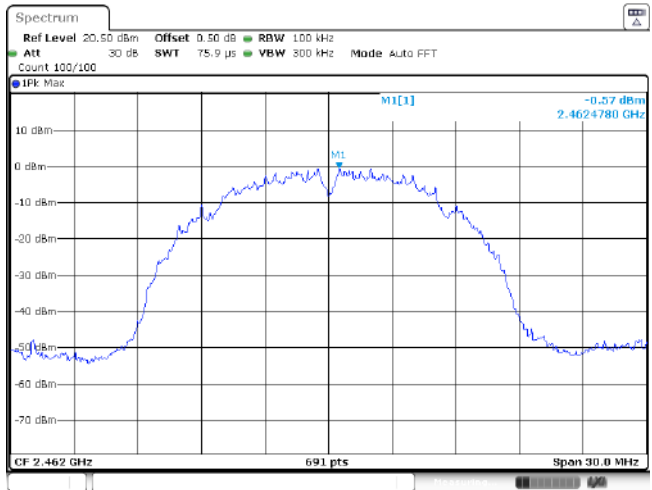
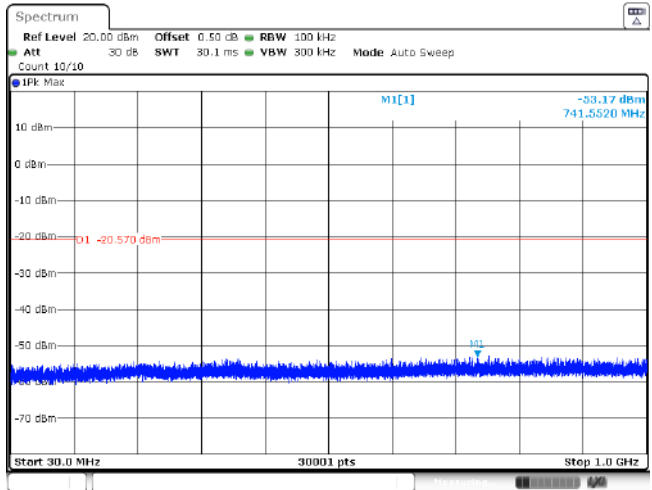
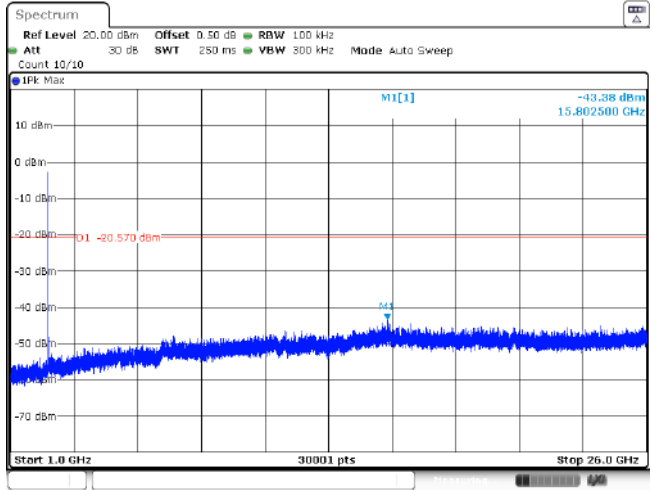
Test Item:	Bandedge	Type:	802.11 g																																										
CH01	 <p>Spectrum Ref Level 20.00 dBm Offset 0.50 dB RBW 100 kHz Att 30 dB SWT 246.5 μs VBW 300 kHz Mode Auto FFT Count 300/300 IPK Max</p> <p>10 dBm -4.72 dBm 0 dBm 2.417060 GHz -10 dBm -46.27 dBm -20 dBm 2.400000 GHz -30 dBm -24.720 dBm -40 dBm -50 dBm -60 dBm -70 dBm</p> <p>Start 2.31 GHz 691 pts Stop 2.422 GHz</p> <table border="1"> <thead> <tr> <th>Type</th> <th>Ref</th> <th>Trc</th> <th>X-value</th> <th>Y-value</th> <th>Function</th> <th>Function Result</th> </tr> </thead> <tbody> <tr> <td>M1</td> <td>1</td> <td></td> <td>2.41706 GHz</td> <td>-4.72 dBm</td> <td></td> <td></td> </tr> <tr> <td>M2</td> <td>1</td> <td></td> <td>2.4 GHz</td> <td>-46.27 dBm</td> <td></td> <td></td> </tr> <tr> <td>M3</td> <td>1</td> <td></td> <td>2.39 GHz</td> <td>-57.02 dBm</td> <td></td> <td></td> </tr> <tr> <td>M4</td> <td>1</td> <td></td> <td>2.31 GHz</td> <td>-60.48 dBm</td> <td></td> <td></td> </tr> <tr> <td>M5</td> <td>1</td> <td></td> <td>2.399762 GHz</td> <td>-46.14 dBm</td> <td></td> <td></td> </tr> </tbody> </table>			Type	Ref	Trc	X-value	Y-value	Function	Function Result	M1	1		2.41706 GHz	-4.72 dBm			M2	1		2.4 GHz	-46.27 dBm			M3	1		2.39 GHz	-57.02 dBm			M4	1		2.31 GHz	-60.48 dBm			M5	1		2.399762 GHz	-46.14 dBm		
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CH11	 <p>Spectrum Ref Level 20.00 dBm Offset 0.50 dB RBW 100 kHz Att 30 dB SWT 113.8 μs VBW 300 kHz Mode Auto FFT Count 300/300 IPK Max</p> <p>10 dBm -3.47 dBm 0 dBm 2.4669700 GHz -10 dBm -53.57 dBm -20 dBm -23.470 dBm -30 dBm -40 dBm -50 dBm -60 dBm -70 dBm</p> <p>Start 2.452 GHz 691 pts Stop 2.5 GHz</p> <table border="1"> <thead> <tr> <th>Type</th> <th>Ref</th> <th>Trc</th> <th>X-value</th> <th>Y-value</th> <th>Function</th> <th>Function Result</th> </tr> </thead> <tbody> <tr> <td>M1</td> <td>1</td> <td></td> <td>2.46697 GHz</td> <td>-3.47 dBm</td> <td></td> <td></td> </tr> <tr> <td>M2</td> <td>1</td> <td></td> <td>2.4835 GHz</td> <td>-53.57 dBm</td> <td></td> <td></td> </tr> <tr> <td>M3</td> <td>1</td> <td></td> <td>2.5 GHz</td> <td>-57.02 dBm</td> <td></td> <td></td> </tr> <tr> <td>M4</td> <td>1</td> <td></td> <td>2.4836522 GHz</td> <td>-51.61 dBm</td> <td></td> <td></td> </tr> </tbody> </table>			Type	Ref	Trc	X-value	Y-value	Function	Function Result	M1	1		2.46697 GHz	-3.47 dBm			M2	1		2.4835 GHz	-53.57 dBm			M3	1		2.5 GHz	-57.02 dBm			M4	1		2.4836522 GHz	-51.61 dBm									
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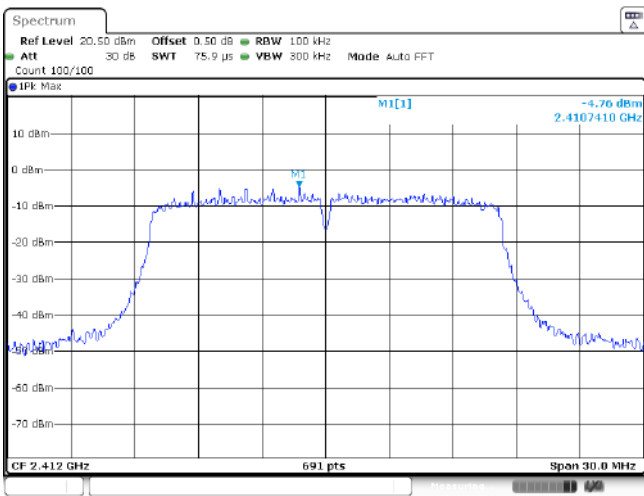
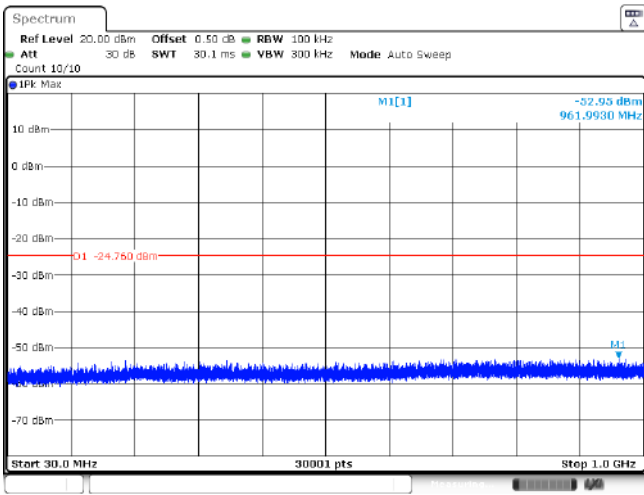
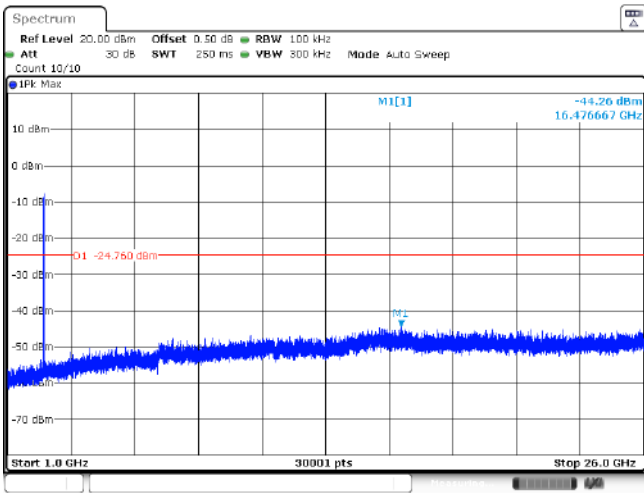
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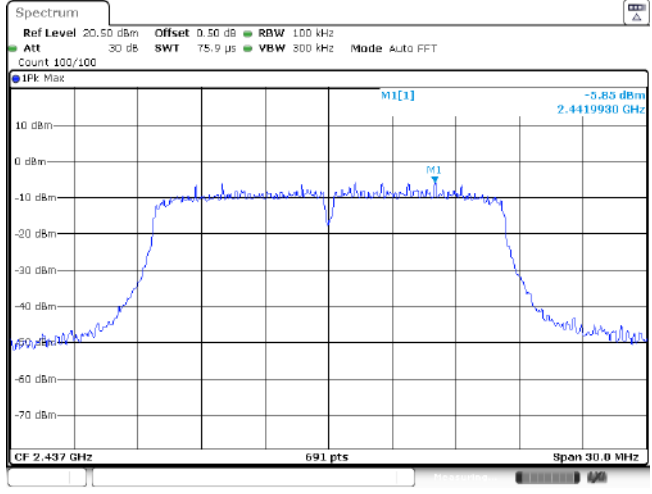
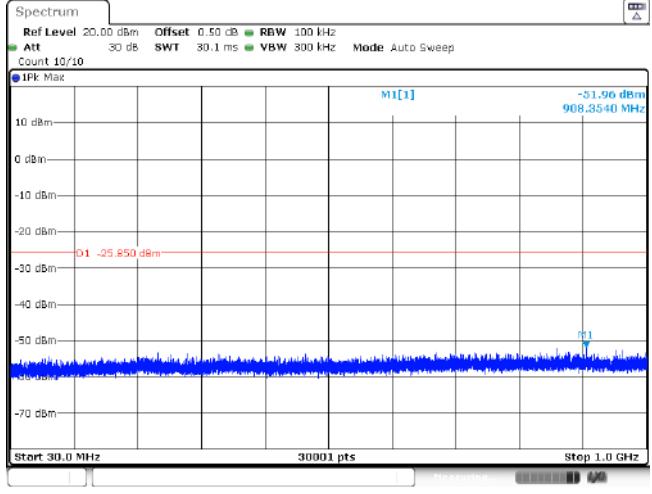
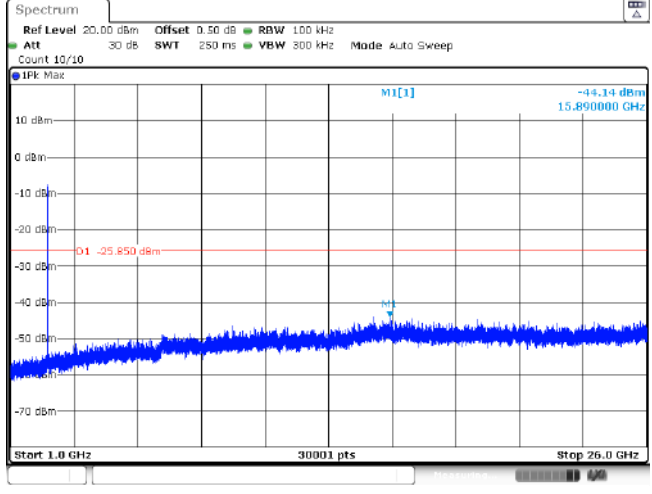
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CH03	 <p>Spectrum Ref Level 20.00 dBm Offset 0.50 dB RBW 100 kHz Att 30 dB SWI 303.4 μs VBW 300 kHz Mode Auto FFT Count 255/300</p> <p>Start 2.31 GHz 691 pts Stop 2.442 GHz</p> <table border="1"> <thead> <tr> <th>Type</th> <th>Ref</th> <th>Trc</th> <th>X-value</th> <th>Y-value</th> <th>Function</th> <th>Function Result</th> </tr> </thead> <tbody> <tr> <td>M1</td> <td>1</td> <td></td> <td>2.42968 GHz</td> <td>-9.74 dBm</td> <td></td> <td></td> </tr> <tr> <td>M2</td> <td>1</td> <td></td> <td>2.4 GHz</td> <td>-47.99 dBm</td> <td></td> <td></td> </tr> <tr> <td>M3</td> <td>1</td> <td></td> <td>2.39 GHz</td> <td>-56.10 dBm</td> <td></td> <td></td> </tr> <tr> <td>M4</td> <td>1</td> <td></td> <td>2.31 GHz</td> <td>-60.08 dBm</td> <td></td> <td></td> </tr> <tr> <td>M5</td> <td>1</td> <td></td> <td>2.39953 GHz</td> <td>-46.57 dBm</td> <td></td> <td></td> </tr> </tbody> </table>			Type	Ref	Trc	X-value	Y-value	Function	Function Result	M1	1		2.42968 GHz	-9.74 dBm			M2	1		2.4 GHz	-47.99 dBm			M3	1		2.39 GHz	-56.10 dBm			M4	1		2.31 GHz	-60.08 dBm			M5	1		2.39953 GHz	-46.57 dBm		
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CH09	 <p>Spectrum Ref Level 20.00 dBm Offset 0.50 dB RBW 100 kHz Att 30 dB SWI 1.1 ms VBW 300 kHz Mode Auto Sweep Count 302/300</p> <p>Start 2.432 GHz 691 pts Stop 2.5 GHz</p> <table border="1"> <thead> <tr> <th>Type</th> <th>Ref</th> <th>Trc</th> <th>X-value</th> <th>Y-value</th> <th>Function</th> <th>Function Result</th> </tr> </thead> <tbody> <tr> <td>M1</td> <td>1</td> <td></td> <td>2.455769 GHz</td> <td>-6.99 dBm</td> <td></td> <td></td> </tr> <tr> <td>M2</td> <td>1</td> <td></td> <td>2.4635 GHz</td> <td>-48.73 dBm</td> <td></td> <td></td> </tr> <tr> <td>M3</td> <td>1</td> <td></td> <td>2.5 GHz</td> <td>-52.92 dBm</td> <td></td> <td></td> </tr> <tr> <td>M4</td> <td>1</td> <td></td> <td>2.4845275 GHz</td> <td>-45.39 dBm</td> <td></td> <td></td> </tr> </tbody> </table>			Type	Ref	Trc	X-value	Y-value	Function	Function Result	M1	1		2.455769 GHz	-6.99 dBm			M2	1		2.4635 GHz	-48.73 dBm			M3	1		2.5 GHz	-52.92 dBm			M4	1		2.4845275 GHz	-45.39 dBm									
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Test Item:	SE	Type:	802.11b
<p>CH01 Reference level</p>		 <p>Spectrum Ref Level 20.50 dBm Offset 0.50 dB RBW 100 kHz Att 30 dB SWT 75.9 μs VBW 300 kHz Mode Auto FFT Count 100/100 IPK Max M1[1] -0.49 dBm 2.4115220 GHz CF 2.412 GHz 691 pts Span 30.0 MHz Date: 24 JUN 2024 09:13:59</p>	
<p>CH01 30MHz~1000MHz</p>		 <p>Spectrum Ref Level 20.00 dBm Offset 0.50 dB RBW 100 kHz Att 30 dB SWT 30.1 ms VBW 300 kHz Mode Auto Sweep Count 10/10 IPK Max M1[1] -52.42 dBm 899.9480 MHz Start 30.0 MHz 30001 pts Stop 1.0 GHz Date: 24 JUN 2024 09:14:24</p>	
<p>CH01 1GHz~26GHz</p>		 <p>Spectrum Ref Level 20.00 dBm Offset 0.50 dB RBW 100 kHz Att 30 dB SWT 283 ms VBW 300 kHz Mode Auto Sweep Count 10/10 IPK Max M1[1] -14.86 dBm 15.635833 GHz Start 1.0 GHz 30001 pts Stop 26.0 GHz Date: 24 JUN 2024 09:14:29</p>	

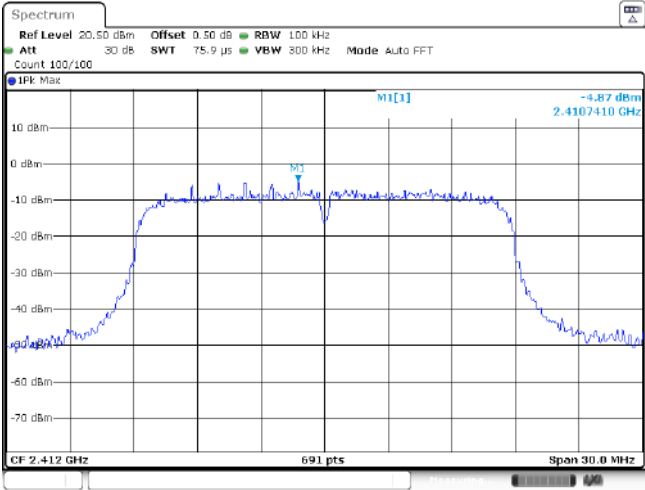
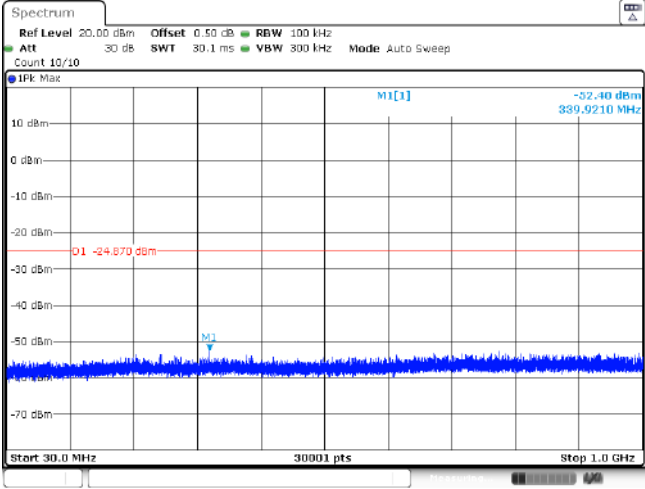
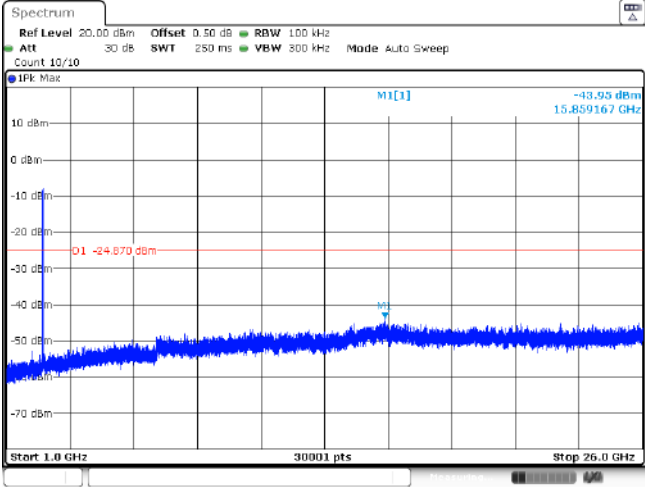
<p>CH06 Reference level</p>	 <p>Ref Level 20.50 dBm Offset 0.50 dB RBW 100 kHz Att 30 dB SWT 75.9 μs VBW 300 kHz Mode Auto FFT Count 100/100 IFK Max M1[1] -1.36 dBm 2.4875210 GHz CF 2.437 GHz 691 pts Span 30.0 MHz Date: 24 JAN 2024 09:15:56</p>
<p>CH06 30MHz~1000MHz</p>	 <p>Ref Level 20.00 dBm Offset 0.50 dB RBW 100 kHz Att 30 dB SWT 30.1 ms VBW 300 kHz Mode Auto Sweep Count 10/10 IFK Max M1[1] -52.63 dBm 784.0830 MHz D1 -1.360 dBm Start 30.0 MHz 30001 pts Step 1.0 GHz Date: 24 JAN 2024 09:15:51</p>
<p>CH06 1GHz~26GHz</p>	 <p>Ref Level 20.00 dBm Offset 0.50 dB RBW 100 kHz Att 30 dB SWT 250 ms VBW 300 kHz Mode Auto Sweep Count 10/10 IFK Max M1[1] -44.01 dBm 15.825000 GHz D1 -1.360 dBm Start 1.0 GHz 30001 pts Stop 26.0 GHz Date: 24 JAN 2024 09:16:06</p>

<p>CH11 Reference level</p>	 <p>Ref Level 20.50 dBm Offset 0.50 dB RBW 100 kHz Att 30 dB SWT 75.9 μs VBW 300 kHz Mode Auto FFT Count 100/100 IFK Max M1[1] -0.57 dBm 2.4624780 GHz CF 2.462 GHz 691 pts Span 30.0 MHz Date: 24 JAN 2024 09:17:53</p>
<p>CH11 30MHz~1000MHz</p>	 <p>Ref Level 20.00 dBm Offset 0.50 dB RBW 100 kHz Att 30 dB SWT 30.1 ms VBW 300 kHz Mode Auto Sweep Count 10/10 IFK Max M1[1] -53.17 dBm 741.5520 MHz D1 -20.570 dBm Start 30.0 MHz 30001 pts Step 1.0 GHz Date: 24 JAN 2024 09:17:58</p>
<p>CH11 1GHz~26GHz</p>	 <p>Ref Level 20.00 dBm Offset 0.50 dB RBW 100 kHz Att 30 dB SWT 250 ms VBW 300 kHz Mode Auto Sweep Count 10/10 IFK Max M1[1] -43.38 dBm 15.802500 GHz D1 -20.570 dBm Start 1.0 GHz 30001 pts Stop 26.0 GHz Date: 24 JAN 2024 09:17:43</p>

Test Item:	SE	Type:	802.11g
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<p>CH01 1GHz~26GHz</p>			

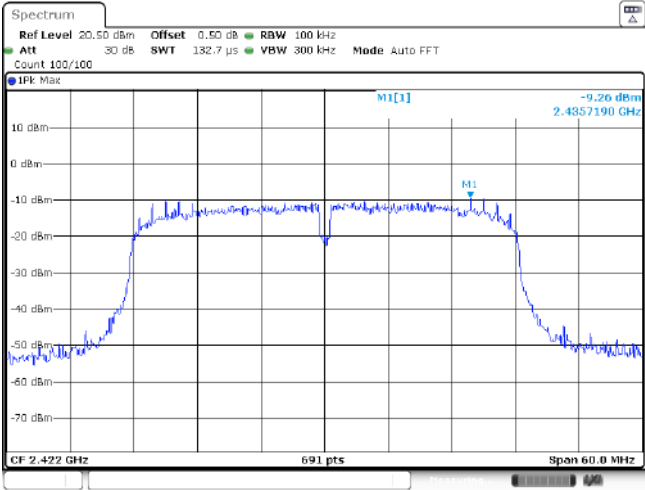
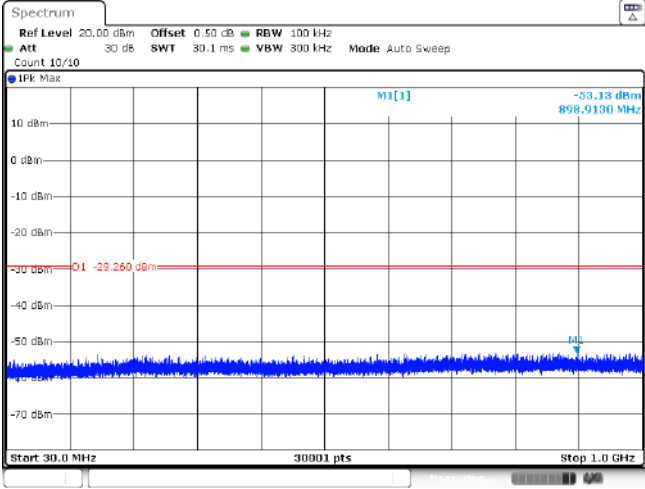
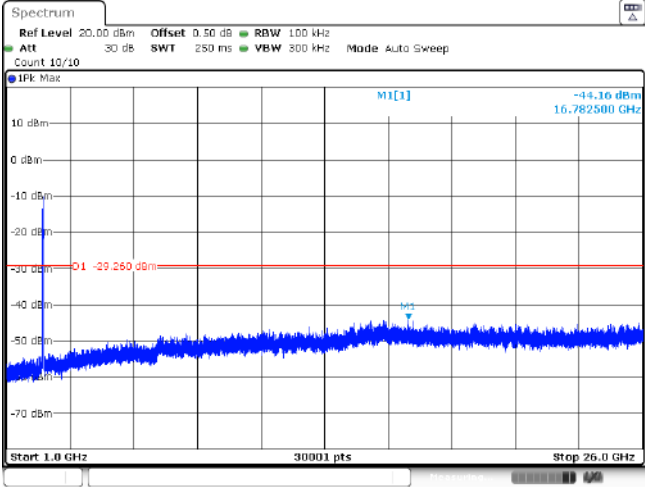
<p>CH06 Reference level</p>	 <p>Ref Level 20.50 dBm Offset 0.50 dB RBW 100 kHz Att 30 dB SWT 75.9 μs VBW 300 kHz Mode Auto FFT Count 100/100 IFK Max M1[1] -5.85 dBm 2.4419930 GHz CF 2.437 GHz 691 pts Span 30.0 MHz Date: 24 JAN 2024 09:21:22</p>
<p>CH06 30MHz~1000MHz</p>	 <p>Ref Level 20.00 dBm Offset 0.50 dB RBW 100 kHz Att 30 dB SWT 30.1 ms VBW 300 kHz Mode Auto Sweep Count 10/10 IFK Max M1[1] -51.96 dBm 908.3540 MHz D1 -25.850 dBm Start 30.0 MHz 30001 pts Step 1.0 GHz Date: 24 JAN 2024 09:21:37</p>
<p>CH06 1GHz~26GHz</p>	 <p>Ref Level 20.00 dBm Offset 0.50 dB RBW 100 kHz Att 30 dB SWT 250 ms VBW 300 kHz Mode Auto Sweep Count 10/10 IFK Max M1[1] -44.14 dBm 15.890000 GHz D1 -25.850 dBm Start 1.0 GHz 30001 pts Stop 26.0 GHz Date: 24 JAN 2024 09:21:52</p>

<p>CH11 Reference level</p>	<p>Ref Level 20.50 dBm Offset 0.50 dB RBW 100 kHz Att 30 dB SWT 75.9 μs VBW 300 kHz Mode Auto FFT Count 100/100 IFK Max M1[1] -0.02 dBm 2.4666450 GHz CF 2.462 GHz 691 pts Span 30.0 MHz Date: 24 JAN 2024 09:23:07</p>
<p>CH11 30MHz~1000MHz</p>	<p>Ref Level 20.00 dBm Offset 0.50 dB RBW 100 kHz Att 30 dB SWT 30.1 ms VBW 300 kHz Mode Auto Sweep Count 10/10 IFK Max M1[1] -52.44 dBm 759.9820 MHz O1 -25.020 dBm Start 30.0 MHz 30001 pts Step 1.0 GHz Date: 24 JAN 2024 09:23:02</p>
<p>CH11 1GHz~26GHz</p>	<p>Ref Level 20.00 dBm Offset 0.50 dB RBW 100 kHz Att 30 dB SWT 250 ms VBW 300 kHz Mode Auto Sweep Count 10/10 IFK Max M1[1] -43.70 dBm 15.835000 GHz O1 -25.020 dBm Start 1.0 GHz 30001 pts Stop 26.0 GHz Date: 24 JAN 2024 09:23:07</p>

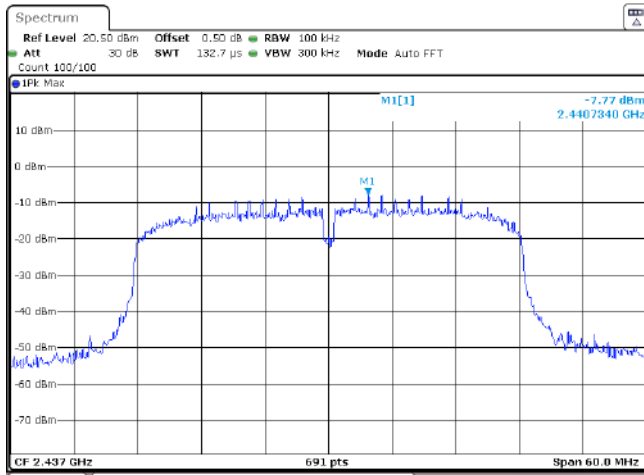
Test Item:	SE	Type:	802.11n(HT20)
<p>CH01 Reference level</p>		 <p>Ref Level 20.50 dBm Offset 0.50 dB RBW 100 kHz Att 30 dB SWT 75.9 μs VBW 300 kHz Mode Auto FFT Count 100/100 M1[1] -4.87 dBm 2.4107410 GHz CF 2.412 GHz 691 pts Span 30.0 MHz Date: 24 JUN 2024 09:25:17</p>	
<p>CH01 30MHz~1000MHz</p>		 <p>Ref Level 20.00 dBm Offset 0.50 dB RBW 100 kHz Att 30 dB SWT 30.1 ms VBW 300 kHz Mode Auto Sweep Count 10/10 M1[1] -52.40 dBm 339.9210 MHz D1 -24.070 dBm Start 30.0 MHz 30001 pts Stop 1.0 GHz Date: 24 JUN 2024 09:25:32</p>	
<p>CH01 1GHz~26GHz</p>		 <p>Ref Level 20.00 dBm Offset 0.50 dB RBW 100 kHz Att 30 dB SWT 280 ms VBW 300 kHz Mode Auto Sweep Count 10/10 M1[1] -43.95 dBm 15.859167 GHz D1 -24.070 dBm Start 1.0 GHz 30001 pts Stop 26.0 GHz Date: 24 JUN 2024 09:25:47</p>	

<p>CH06 Reference level</p>	<p>Ref Level 20.50 dBm Offset 0.50 dB RBW 100 kHz Att 30 dB SWT 75.9 μs VBW 300 kHz Mode Auto FFT Count 100/100 IFK Max M1[1] -7.14 dBm 2.4319640 GHz CF 2.437 GHz 691 pts Span 30.0 MHz Date: 24 JAN 2024 09:27:58</p>
<p>CH06 30MHz~1000MHz</p>	<p>Ref Level 20.00 dBm Offset 0.50 dB RBW 100 kHz Att 30 dB SWT 30.1 ms VBW 300 kHz Mode Auto Sweep Count 10/10 IFK Max M1[1] -52.39 dBm 788.6750 MHz O1 -27.140 dBm Start 30.0 MHz 30001 pts Step 1.0 GHz Date: 24 JAN 2024 09:27:53</p>
<p>CH06 1GHz~26GHz</p>	<p>Ref Level 20.00 dBm Offset 0.50 dB RBW 100 kHz Att 30 dB SWT 250 ms VBW 300 kHz Mode Auto Sweep Count 10/10 IFK Max M1[1] -44.01 dBm 15.122500 GHz O1 -27.140 dBm Start 1.0 GHz 30001 pts Stop 26.0 GHz Date: 24 JAN 2024 09:27:48</p>

<p>CH11 Reference level</p>	<p>Ref Level 20.50 dBm Offset 0.50 dB RBW 100 kHz Att 30 dB SWT 75.9 μs VBW 300 kHz Mode Auto FFT Count 100/100 IFK Max M1[1] -4.01 dBm 2.4607410 GHz CF 2.462 GHz 691 pts Span 30.0 MHz Date: 24 JAN 2024 09:29:07</p>
<p>CH11 30MHz~1000MHz</p>	<p>Ref Level 20.00 dBm Offset 0.50 dB RBW 100 kHz Att 30 dB SWT 30.1 ms VBW 300 kHz Mode Auto Sweep Count 10/10 IFK Max M1[1] -52.15 dBm 888.2110 MHz D1 -24.010 dBm Start 30.0 MHz 30001 pts Step 1.0 GHz Date: 24 JAN 2024 09:29:02</p>
<p>CH11 1GHz~26GHz</p>	<p>Ref Level 20.00 dBm Offset 0.50 dB RBW 100 kHz Att 30 dB SWT 250 ms VBW 300 kHz Mode Auto Sweep Count 10/10 IFK Max M1[1] -43.05 dBm 18.935000 GHz D1 -24.010 dBm Start 1.0 GHz 30001 pts Stop 26.0 GHz Date: 24 JAN 2024 09:29:07</p>

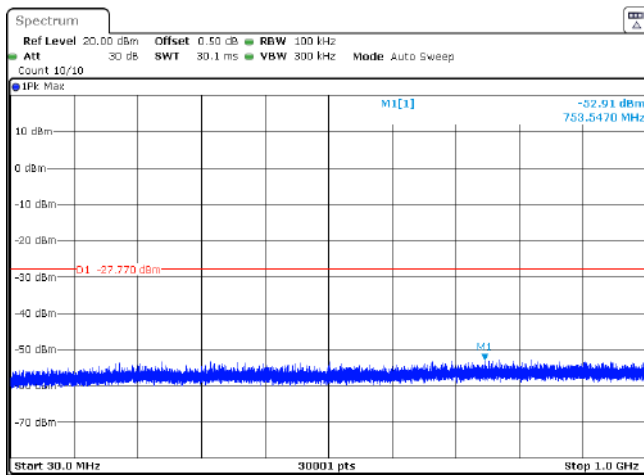
Test Item:	SE	Type:	802.11n(HT40)
<p>CH03 Reference level</p>			
<p>CH03 30MHz~1000MHz</p>			
<p>CH03 1GHz~26GHz</p>			

CH06
Reference level



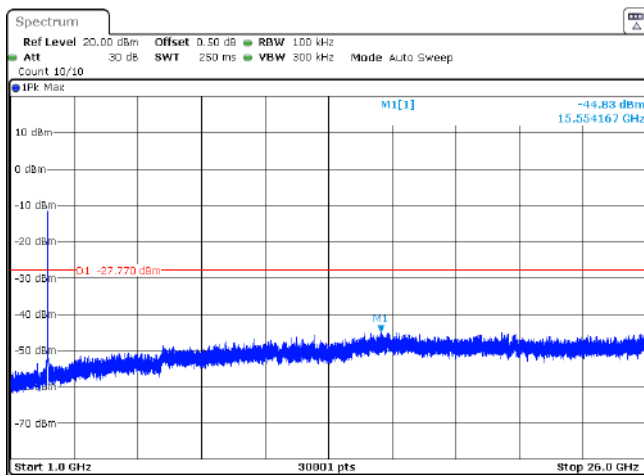
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CH06
30MHz~1000MHz



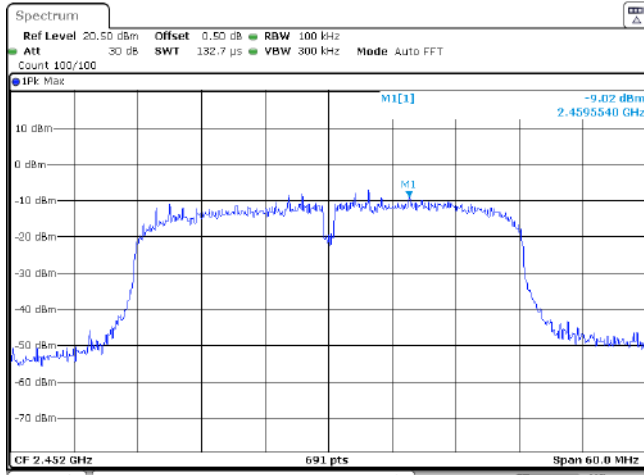
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CH06
1GHz~26GHz



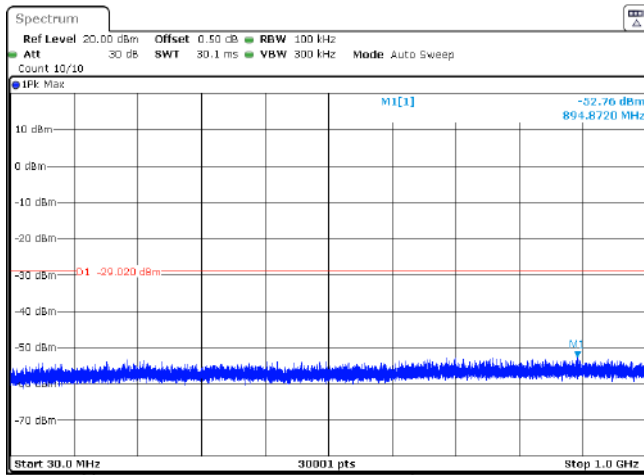
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CH09
Reference level



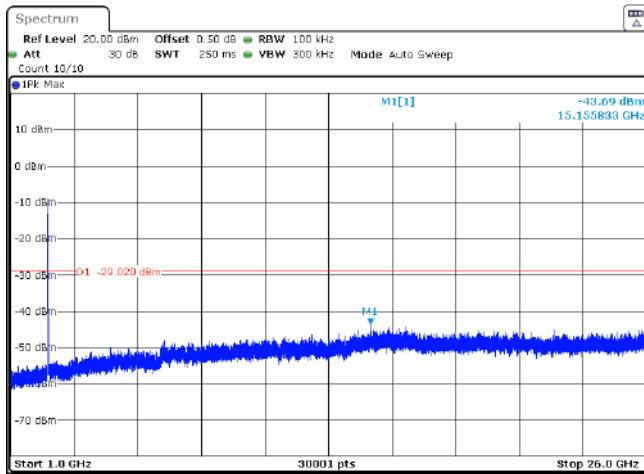
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CH09
30MHz~1000MHz



Date: 24 JAN 2024 09:34:40

CH09
1GHz~26GHz



Date: 24 JAN 2024 09:34:55

-----End of Report-----