



TEST REPORT

For WiFi-2.4GHz Band



Report No. : CHTW24010053 Report Verification:
Project No..... : SHT2312050602W
FCC ID..... : 2ASWW-STAR9PRO
Applicant's name..... : XINCHUANGXIN INTERNATIONAL CO. LTD
Address..... : ROOM 605 6/F, FA YUEN COMMERCIAL BUILDING, 75-77 FA
YUEN STREET MONGKOK KL
Product Name : Tablet
Trade Mark : CORN
Model No. : Star9 Pro
Listed Model(s) : -
Standard : FCC CFR Title 47 Part 15 Subpart C § 15.247
Date of receipt of test sample..... : Dec. 18, 2023
Date of testing..... : Dec. 19, 2023- Jan. 19, 2024
Date of issue..... : Jan. 23, 2024
Result..... : PASS

Compiled by
(Position+Printed name+Signature): File administrators Xiaodong Zhao

Xiaodong Zhao

Supervised by
(Position+Printed name+Signature): Project Engineer Xiaodong Zhao

Xiaodong Zhao

Approved by
(Position+Printed name+Signature): Manager Xu Yang

Xu Yang

Testing Laboratory Name : Shenzhen Huatongwei International Inspection Co., Ltd.

Address..... : Building 7, Baiwang Idea Factory, No.1051, Songbai Road,
Yangguang Community, Xili Subdistrict, Nanshan District,
Shenzhen, Guangdong, China

Shenzhen Huatongwei International Inspection Co., Ltd. All rights reserved.

This publication may be reproduced in whole or in part for non-commercial purposes as long as the Shenzhen Huatongwei International Inspection Co., Ltd. is acknowledged as copyright owner and source of the material. Shenzhen Huatongwei International Inspection Co., Ltd. takes no responsibility for and will not assume liability for damages resulting from the reader's interpretation of the reproduced material due to its placement and context.

The test report merely correspond to the test sample.

Contents

<u>1.</u>	<u>TEST STANDARDS AND REPORT VERSION</u>	<u>3</u>
1.1.	Test Standards	3
1.2.	Report version	3
<u>2.</u>	<u>TEST DESCRIPTION</u>	<u>4</u>
<u>3.</u>	<u>SUMMARY</u>	<u>5</u>
3.1.	Client Information	5
3.2.	Product Description	5
3.3.	Radio Specification Description	5
3.4.	Testing Laboratory Information	6
<u>4.</u>	<u>TEST CONFIGURATION</u>	<u>7</u>
4.1.	Test frequency list	7
4.2.	Test mode	7
4.3.	Test sample information	8
4.4.	Support unit used in test configuration and system	8
4.5.	Testing environmental condition	8
4.6.	Statement of the measurement uncertainty	9
4.7.	Equipment Used during the Test	10
<u>5.</u>	<u>TEST CONDITIONS AND RESULTS</u>	<u>11</u>
5.1.	Antenna Requirement	11
5.2.	AC Conducted Emission	12
5.3.	Peak Output Power	15
5.4.	Power Spectral Density	16
5.5.	6dB bandwidth	17
5.6.	99% Occupied Bandwidth	18
5.7.	Duty Cycle	19
5.8.	Conducted Band edge and Spurious Emission	20
5.9.	Radiated Band edge Emission	22
5.10.	Radiated Spurious Emission	26
<u>6.</u>	<u>TEST SETUP PHOTOS</u>	<u>33</u>
<u>7.</u>	<u>EXTERNAL AND INTERNAL PHOTOS</u>	<u>35</u>
<u>8.</u>	<u>APPENDIX REPORT</u>	<u>35</u>

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	2024-01-23	Original

2. TEST DESCRIPTION

Report clause	Test Items	Standard Requirement	Result	Test Engineer
5.1	Antenna Requirement	15.203/15.247(c)	PASS	Xiaodong Zhao
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:	XINCHUANGXIN INTERNATIONAL CO. LTD
Address:	ROOM 605 6/F, FA YUEN COMMERCIAL BUILDING, 75-77 FA YUEN STREET MONGKOK KL
Manufacturer:	Shenzhen Chiteng Technology Co.,LTD
Address:	Second Floor,Area A, Building 4, Huiye Technology Workshop, Guanguang Road, Tangjia Community, Gongming Street, Guangming New District, Shenzhen, Guangdong

3.2. Product Description

Main unit information:	
Product Name:	Tablet
Trade Mark:	CORN
Model No.:	Star9 Pro
Listed Model(s):	-
Power supply:	DC 3.7V from Battery
Hardware version:	S866T-T310-V2.0
Software version:	CORN_Star9_Pro_V01_20240109
Accessory unit information:	
Battery information:	JJY30100105/3.7V/24 4000mAh /14.8Wh /CB
Adapter information:	Model: ENGY Pro 24 INPUT: 100~240V-50/60Hz 0.35A OUTPUT: DC 5.0V 2A

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 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	
Channel number:	802.11b/g/n(HT20):	11	
Channel separation:	5MHz		
Antenna technology:	<input checked="" type="checkbox"/> SISO	<input type="checkbox"/> MIMO	
Antenna type:	PIFA		
Antenna gain:	0.8dBi		

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:	Tel: 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)	
Channel	Frequency (MHz)
01	2412
02	2417
· : 03	· : 2422
06	2437
· : 07	· : 2442
10	2457
11	2462

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

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	YPHT23120506001
EMI test items	YPHT23120506001

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?			
✓ No			
Item	Equipment	Trade Name	Model No.
1			
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

● 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

● 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

● 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	2023/08/22	2024/08/21
●	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	2023/08/22	2024/08/21
●	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

5. TEST CONDITIONS AND RESULTS

5.1. Antenna Requirement

REQUIREMENT

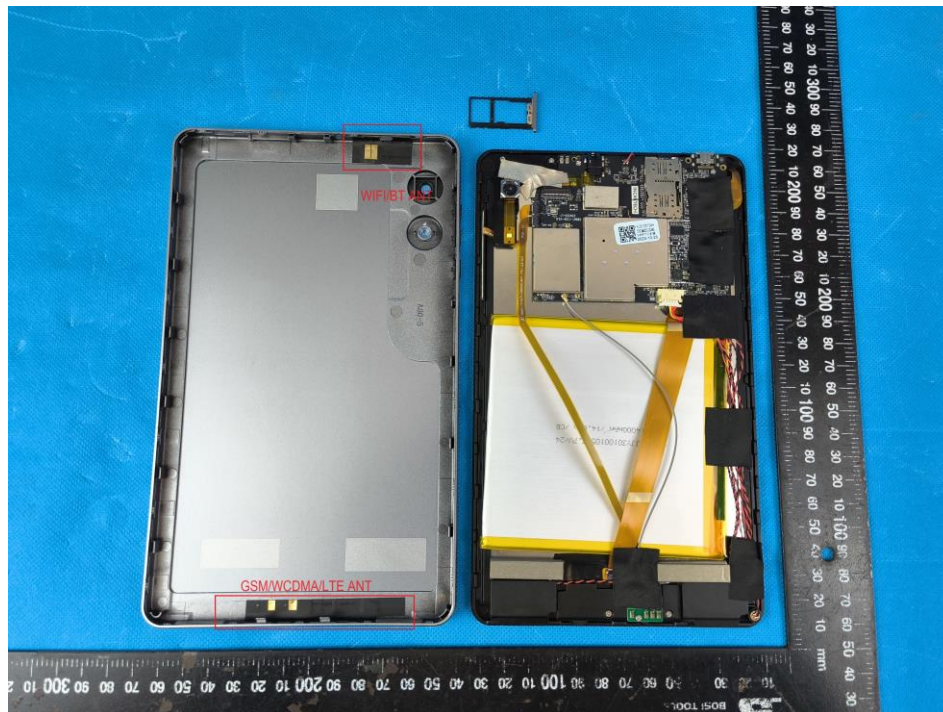
FCC CFR Title 47 Part 15 Subpart C Section 15.203:

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 PIFA antenna, please refer to the below antenna photo.



5.2. AC Conducted Emission

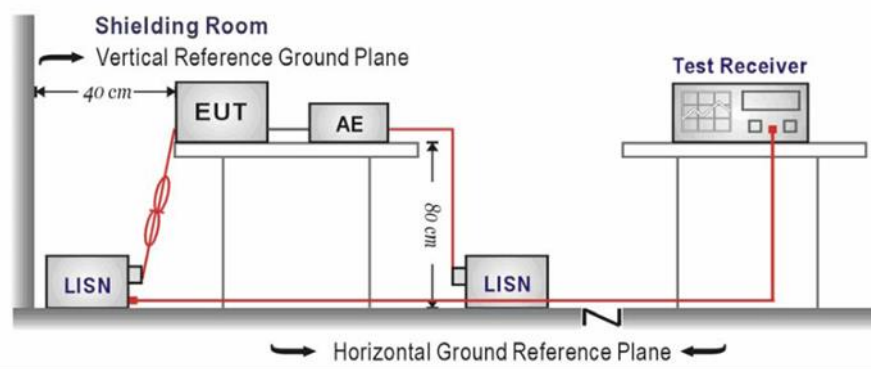
LIMIT

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

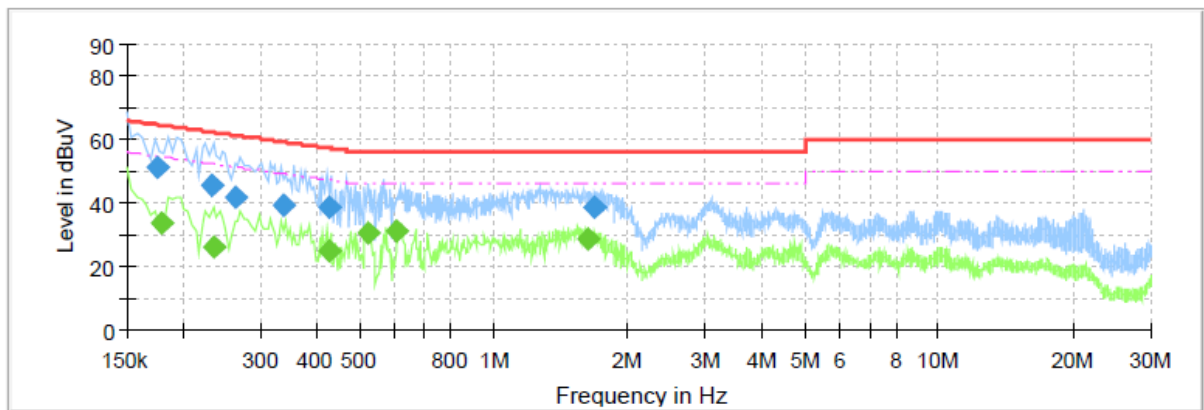
Refer to the clause 4.2

TEST RESULT

☒ Passed ☐ Not Applicable

Test Line:

L

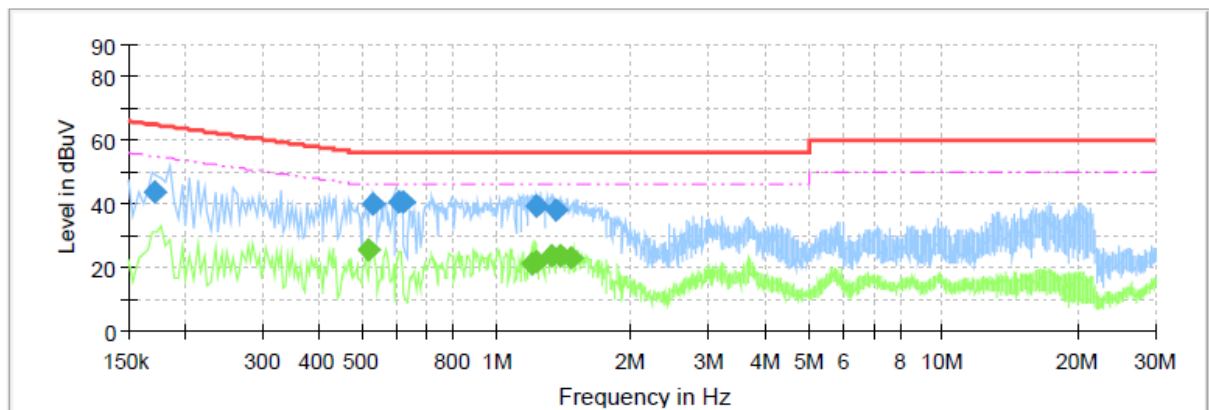


Final Result

Frequency (MHz)	QuasiPeak (dBuV)	CAverage (dBuV)	Limit (dBuV)	Margin (dB)	Line	Corr. (dB)
0.1755	51.17	---	64.70	13.52	L1	10.9
0.1795	---	33.92	54.51	20.59	L1	10.9
0.2315	45.84	---	62.40	16.55	L1	10.9
0.2355	---	26.26	52.25	25.99	L1	10.9
0.2635	41.66	---	61.32	19.66	L1	10.9
0.3355	39.08	---	59.31	20.24	L1	10.9
0.4275	---	24.78	47.30	22.52	L1	10.9
0.4275	39.04	---	57.30	18.26	L1	10.9
0.5235	---	30.62	46.00	15.38	L1	11.0
0.6075	---	31.13	46.00	14.87	L1	11.0
1.6315	---	28.54	46.00	17.46	L1	11.0
1.6755	38.58	---	56.00	17.42	L1	11.0

Test Line:

N



Final Result

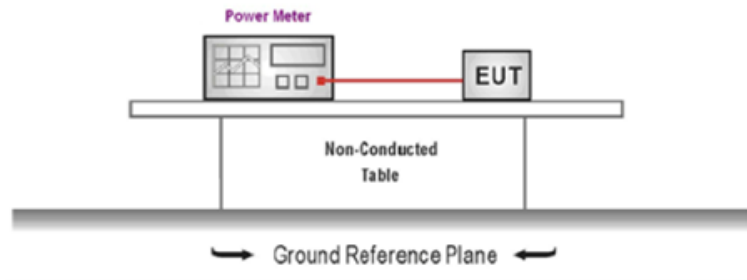
Frequency (MHz)	QuasiPeak (dBuV)	CAverage (dBuV)	Limit (dBuV)	Margin (dB)	Line	Corr. (dB)
0.1715	43.67	---	64.89	21.21	N	10.7
0.5195	---	25.40	46.00	20.60	N	10.7
0.5275	40.09	---	56.00	15.91	N	10.7
0.6035	40.46	---	56.00	15.54	N	10.8
0.6155	40.52	---	56.00	15.48	N	10.8
1.1955	---	21.26	46.00	24.74	N	10.8
1.2235	---	22.15	46.00	23.85	N	10.8
1.2285	39.47	---	56.00	16.53	N	10.8
1.3285	---	23.67	46.00	22.33	N	10.8
1.3645	38.05	---	56.00	17.95	N	10.8
1.3835	---	23.59	46.00	22.41	N	10.8
1.4795	---	23.35	46.00	22.65	N	10.8

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

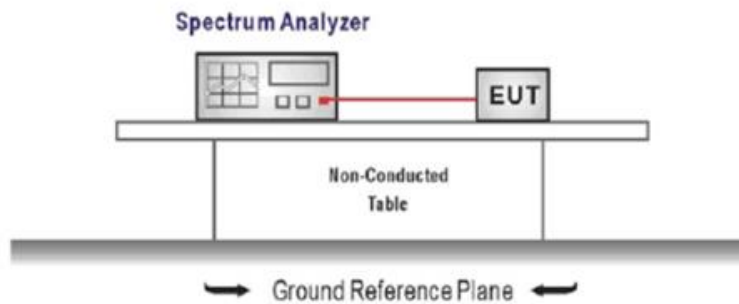
5.4. Power Spectral Density

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
 $RBW = 3 \text{ kHz} \leq RBW \leq 100 \text{ kHz}$, $VBW \geq 3 \times RBW$
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 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

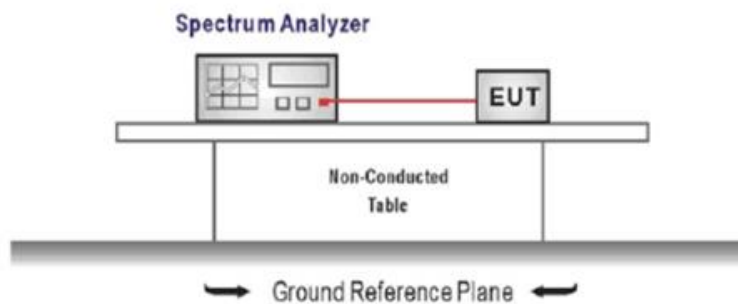
5.5. 6dB bandwidth

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

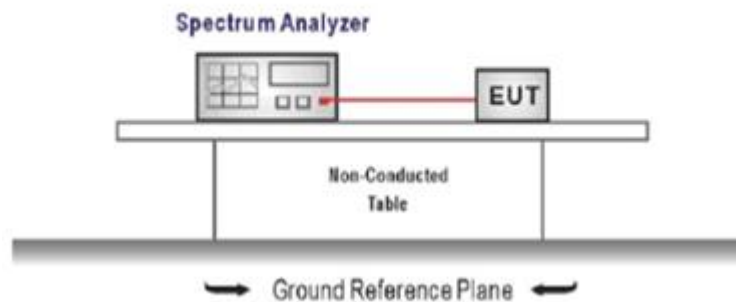
Refer to the appendix report

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 $\geq 1.5 \times \text{OBW}$
RBW = 1%~5%OBW
VBW $\geq 3 \times \text{RBW}$
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

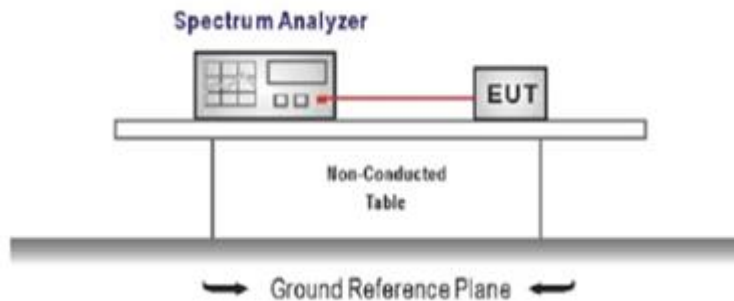
Refer to the appendix report

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

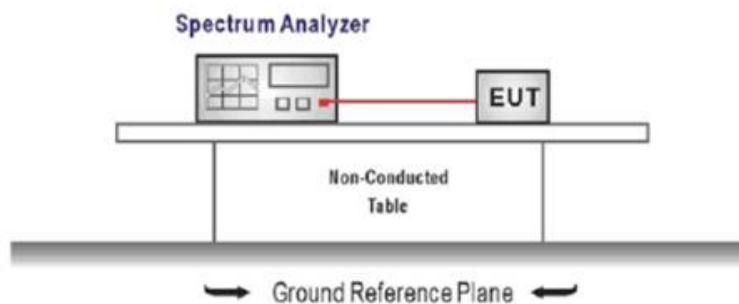
Refer to the appendix report

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 $\geq 3 \times$ 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 $\geq 3 \times$ 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 MHz	Reading dBuV/m	Antenna dB	Cable dB	Preamp dB	Aux dB	Level dBuV/m	Limit dBuV/m	Over limit	Remark	
1	2310.00	43.20	27.86	4.01	41.80	20.00	53.27	74.00	-20.73	Peak	
2	2390.01	42.83	27.54	4.31	41.80	20.00	52.88	74.00	-21.12	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	32.12	27.86	4.01	41.80	20.00	42.19	54.00	-11.81	Average	
2	2390.01	32.11	27.54	4.31	41.80	20.00	42.16	54.00	-11.84	Average	
Type		802.11b		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	42.93	27.86	4.01	41.80	20.00	53.00	74.00	-21.00	Peak	
2	2390.01	43.14	27.54	4.31	41.80	20.00	53.19	74.00	-20.81	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	32.00	27.86	4.01	41.80	20.00	42.07	54.00	-11.93	Average	
2	2390.01	31.86	27.54	4.31	41.80	20.00	41.91	54.00	-12.09	Average	

Type		802.11b		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	43.44	27.33	4.18	41.80	20.00	53.15	74.00	-20.85	Peak	
2	2500.00	43.27	27.30	4.19	41.80	20.00	52.96	74.00	-21.04	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	32.56	27.33	4.18	41.80	20.00	42.27	54.00	-11.73	Average	
2	2500.00	32.20	27.30	4.19	41.80	20.00	41.89	54.00	-12.11	Average	
Type		802.11b		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	44.26	27.33	4.18	41.80	20.00	53.97	74.00	-20.03	Peak	
2	2500.00	43.17	27.30	4.19	41.80	20.00	52.86	74.00	-21.14	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	32.67	27.33	4.18	41.80	20.00	42.38	54.00	-11.62	Average	
2	2500.00	32.16	27.30	4.19	41.80	20.00	41.85	54.00	-12.15	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	42.91	27.86	4.01	41.80	20.00	52.98	74.00	-21.02	Peak
2	2390.01	48.81	27.54	4.31	41.80	20.00	58.86	74.00	-15.14	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	33.96	27.86	4.01	41.80	20.00	44.03	54.00	-9.97	Average
2	2390.01	34.08	27.54	4.31	41.80	20.00	44.13	54.00	-9.87	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	43.20	27.86	4.01	41.80	20.00	53.27	74.00	-20.73	Peak
2	2390.01	46.82	27.54	4.31	41.80	20.00	56.87	74.00	-17.13	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	33.87	27.86	4.01	41.80	20.00	43.94	54.00	-10.06	Average
2	2390.01	34.83	27.54	4.31	41.80	20.00	44.88	54.00	-9.12	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	56.36	27.33	4.18	41.80	20.00	66.07	74.00	-7.93	Peak
2	2500.00	43.62	27.30	4.19	41.80	20.00	53.31	74.00	-20.69	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	37.19	27.33	4.18	41.80	20.00	46.90	54.00	-7.10	Average
2	2500.00	33.02	27.30	4.19	41.80	20.00	42.71	54.00	-11.29	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	56.69	27.33	4.18	41.80	20.00	66.40	74.00	-7.60	Peak
2	2500.00	42.98	27.30	4.19	41.80	20.00	52.67	74.00	-21.33	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	38.33	27.33	4.18	41.80	20.00	48.04	54.00	-5.96	Average
2	2500.00	33.54	27.30	4.19	41.80	20.00	43.23	54.00	-10.77	Average

Type	802.11n(HT20)			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	43.19	27.86	4.01	41.80	20.00	53.26	74.00	-20.74	Peak
2	2390.01	49.40	27.54	4.31	41.80	20.00	59.45	74.00	-14.55	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	31.47	27.86	4.01	41.80	20.00	41.54	54.00	-12.46	Average
2	2390.01	32.45	27.54	4.31	41.80	20.00	42.50	54.00	-11.50	Average

Type	802.11n(HT20)			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	42.81	27.86	4.01	41.80	20.00	52.88	74.00	-21.12	Peak
2	2389.79	53.02	27.54	4.31	41.80	20.00	63.07	74.00	-10.93	Peak
3	2390.01	49.18	27.54	4.31	41.80	20.00	59.23	74.00	-14.77	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	31.33	27.86	4.01	41.80	20.00	41.40	54.00	-12.60	Average
2	2390.01	32.72	27.54	4.31	41.80	20.00	42.77	54.00	-11.23	Average

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	2483.49	59.19	27.33	4.18	41.80	68.90	74.00	-5.10	Peak		
2	2483.66	61.25	27.33	4.18	41.80	70.96	74.00	-3.04	Peak		
3	2500.00	42.71	27.30	4.19	41.80	52.40	74.00	-21.60	Peak		
Mark	Frequency MHz	Reading dBuV/m	Antenna dB	Cable dB	Preamp dB	Level dBuV/m	Limit dBuV/m	Over limit	Remark		
1	2483.49	36.80	27.33	4.18	41.80	46.51	54.00	-7.49	Average		
2	2500.00	31.38	27.30	4.19	41.80	41.07	54.00	-12.93	Average		

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	2483.49	55.61	27.33	4.18	41.80	65.32	74.00	-8.68	Peak		
2	2483.62	59.53	27.33	4.18	41.80	69.24	74.00	-4.76	Peak		
3	2500.00	42.63	27.30	4.19	41.80	52.32	74.00	-21.68	Peak		
Mark	Frequency MHz	Reading dBuV/m	Antenna dB	Cable dB	Preamp dB	Level dBuV/m	Limit dBuV/m	Over limit	Remark		
1	2483.49	36.91	27.33	4.18	41.80	46.62	54.00	-7.38	Average		
2	2500.00	31.36	27.30	4.19	41.80	41.05	54.00	-12.95	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

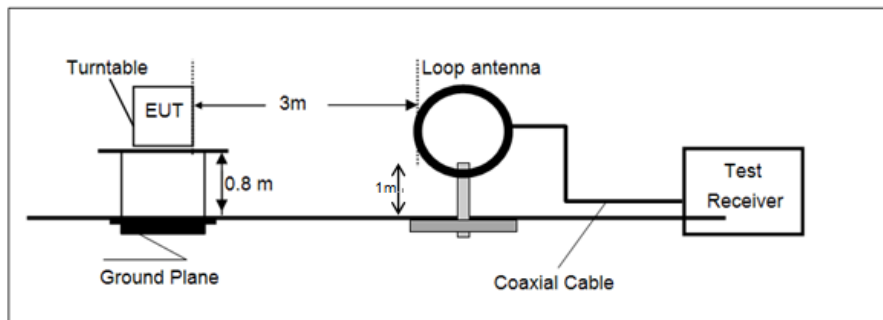
Note: Limit dBuV/m @3m = Limit dBuV/m @300m + 40*log(300/3)= Limit dBuV/m @300m +80,

Limit dBuV/m @3m = Limit dBuV/m @30m +40*log(30/3)= Limit dBuV/m @30m + 40.

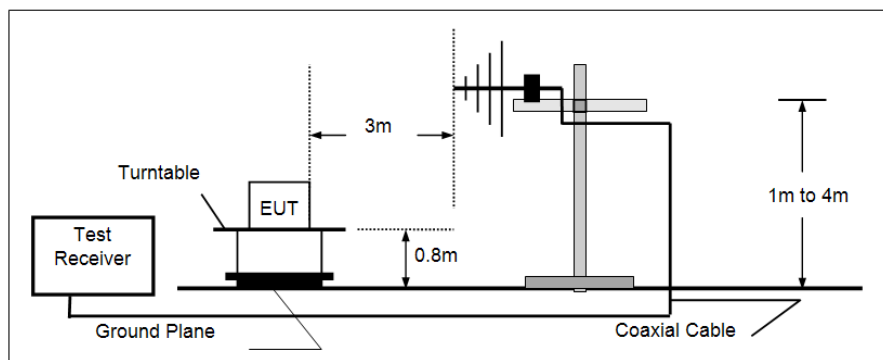
Frequency	Limit (dBuV/m @3m)	Value
30MHz~88MHz	40.00	Quasi-peak
88MHz~216MHz	43.50	Quasi-peak
216MHz~960MHz	46.00	Quasi-peak
960MHz~1GHz	54.00	Quasi-peak
Above 1GHz	54.00	Average
	74.00	Peak

TEST CONFIGURATION

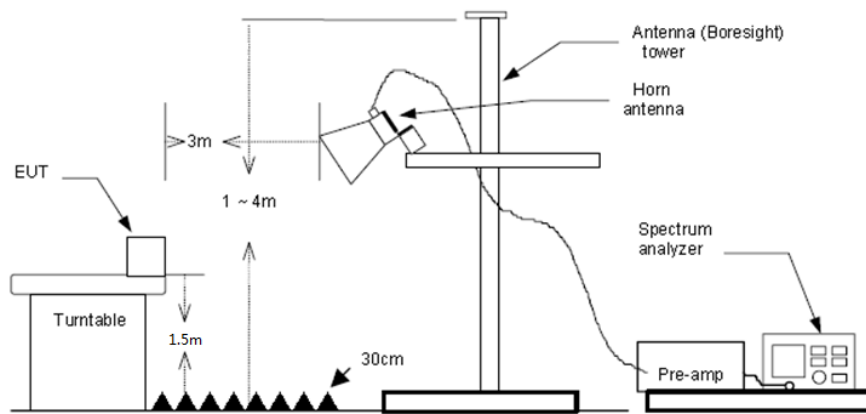
- 9 kHz ~ 30 MHz



- 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

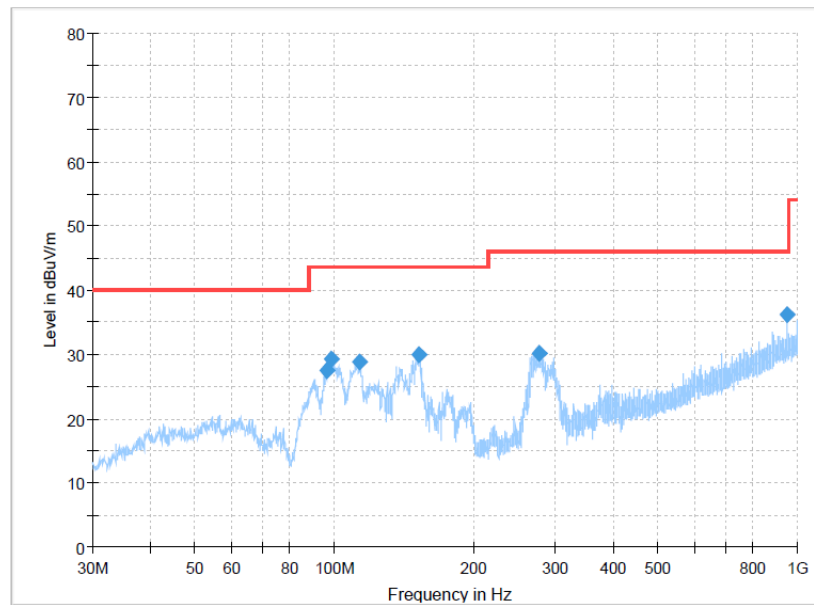
The EUT was pre-scanned this frequency band, found the radiated level 20dB lower than the limit, so don't show data on this report.

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:

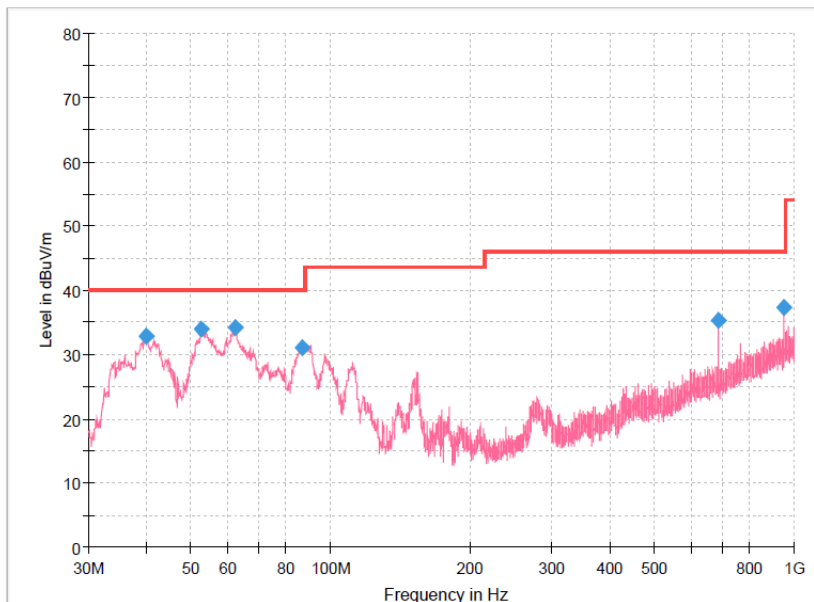
Horizontal

**Final Result**

Frequency (MHz)	MaxPeak (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
96.0813	27.50	43.50	16.00	300.0	H	199.0	-11.3
98.2638	29.19	43.50	14.31	300.0	H	210.0	-11.0
113.5413	28.93	43.50	14.57	300.0	H	222.0	-11.7
152.7050	29.99	43.50	13.51	300.0	H	210.0	-14.0
277.2288	30.17	46.00	15.83	100.0	H	322.0	-8.2
948.4688	36.29	46.00	9.71	100.0	H	20.0	7.1

Polarization:

Vertical

**Final Result**

Frequency (MHz)	MaxPeak (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
40.0638	32.89	40.00	7.11	100.0	V	232.0	-9.8
52.6738	33.93	40.00	6.07	100.0	V	1.0	-8.9
62.2525	34.10	40.00	5.90	100.0	V	225.0	-10.5
86.8663	31.07	40.00	8.93	100.0	V	326.0	-14.0
687.5388	35.36	46.00	10.64	100.0	V	1.0	2.1
948.4688	37.21	46.00	8.79	100.0	V	295.0	7.1

For 1 GHz ~ 25 GHz

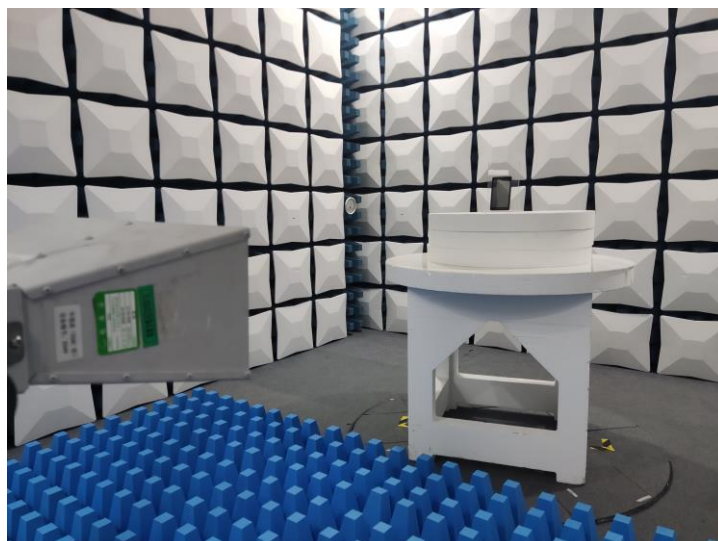
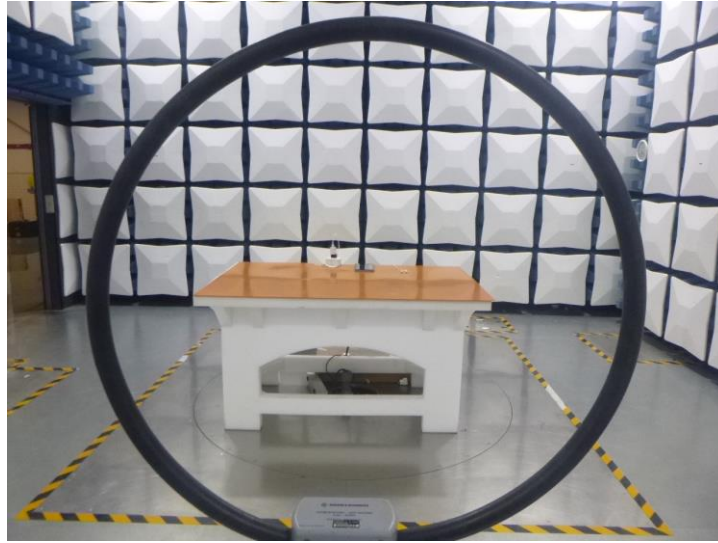
Type	802.11b		Test channel	CH01		Polarity		Horizontal	
Mark	Frequency MHz	Reading dBuV/m	Antenna dB	Cable dB	Preamp dB	Level dBuV/m	Limit dBuV/m	Over limit	Remark
1	3844.28	47.63	29.58	5.35	41.54	41.02	74.00	-32.98	Peak
2	4821.76	47.33	31.26	6.00	41.33	43.26	74.00	-30.74	Peak
3	7245.81	46.68	36.00	7.61	40.96	49.33	74.00	-24.67	Peak
4	10348.05	41.37	39.74	9.68	40.70	50.09	74.00	-23.91	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	3662.78	44.82	29.20	5.09	41.60	37.51	74.00	-36.49	Peak
2	4821.76	47.92	31.26	6.00	41.33	43.85	74.00	-30.15	Peak
3	7245.81	46.07	36.00	7.61	40.96	48.72	74.00	-25.28	Peak
4	10400.86	41.00	39.90	9.71	40.60	50.01	74.00	-23.99	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	2980.33	44.73	28.50	4.75	41.66	36.32	74.00	-37.68	Peak
2	4871.10	48.75	31.20	6.30	41.27	44.98	74.00	-29.02	Peak
3	7319.00	48.30	36.14	7.74	40.98	51.20	54.00	-2.80	Average
4	7319.96	53.25	36.14	7.74	40.98	56.15	74.00	-17.85	Peak
5	10400.86	40.77	39.90	9.71	40.60	49.78	74.00	-24.22	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	3570.71	43.93	29.24	5.13	41.60	36.70	74.00	-37.30	Peak
2	4871.10	50.52	31.20	6.30	41.27	46.75	74.00	-27.25	Peak
3	7319.96	48.52	36.14	7.74	40.98	51.42	74.00	-22.58	Peak
4	11603.96	41.03	40.28	10.43	42.30	49.44	74.00	-24.56	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	2912.82	44.72	28.50	4.57	41.71	36.08	74.00	-37.92	Peak
2	4920.96	47.38	31.20	6.06	41.20	43.44	74.00	-30.56	Peak
3	7394.00	49.97	36.20	7.78	41.00	52.95	54.00	-1.05	Average
4	7394.88	54.03	36.20	7.78	41.00	57.01	74.00	-16.99	Peak
5	11486.41	41.46	40.49	10.35	42.30	50.00	74.00	-24.00	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	3192.37	43.90	28.90	4.80	41.60	36.00	74.00	-38.00	Peak
2	4920.96	45.96	31.20	6.06	41.20	42.02	74.00	-31.98	Peak
3	7394.00	47.24	36.20	7.78	41.00	50.22	54.00	-3.78	Average
4	7394.88	50.92	36.20	7.78	41.00	53.90	74.00	-20.10	Peak
5	11603.96	40.89	40.28	10.43	42.30	49.30	74.00	-24.70	Peak

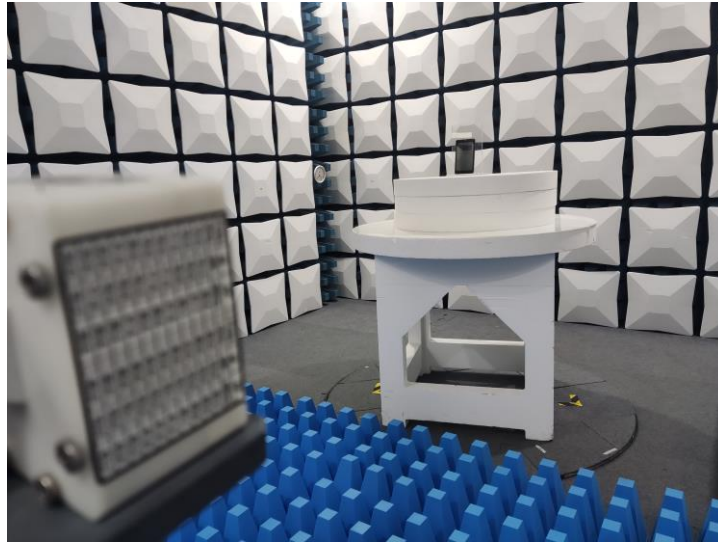
Type	802.11g		Test channel	CH01		Polarity	Horizontal		
Mark	Frequency MHz	Reading dBuV/m	Antenna dB	Cable dB	Preamp dB	Level dBuV/m	Limit dBuV/m	Over limit	Remark
1	3216.84	43.89	28.80	4.88	41.60	35.97	74.00	-38.03	Peak
2	4821.76	43.85	31.26	6.00	41.33	39.78	74.00	-34.22	Peak
3	7245.81	41.94	36.00	7.61	40.96	44.59	74.00	-29.41	Peak
4	10374.42	40.25	39.82	9.69	40.65	49.11	74.00	-24.89	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	3072.77	46.86	28.69	4.64	41.60	38.59	74.00	-35.41	Peak
2	3844.28	48.55	29.58	5.35	41.54	41.94	74.00	-32.06	Peak
3	4664.81	48.51	31.03	5.87	41.40	44.01	74.00	-29.99	Peak
4	10916.26	41.14	40.50	9.96	42.28	49.32	74.00	-24.68	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	3192.37	43.73	28.90	4.80	41.60	35.83	74.00	-38.17	Peak
2	4871.10	43.44	31.20	6.30	41.27	39.67	74.00	-34.33	Peak
3	7319.96	48.00	36.14	7.74	40.98	50.90	74.00	-23.10	Peak
4	10374.42	40.53	39.82	9.69	40.65	49.39	74.00	-24.61	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	3208.66	44.04	28.85	4.87	41.60	36.16	74.00	-37.84	Peak
2	4605.81	47.53	30.91	5.87	41.40	42.91	74.00	-31.09	Peak
3	7319.96	45.54	36.14	7.74	40.98	48.44	74.00	-25.56	Peak
4	11486.41	40.78	40.49	10.35	42.30	49.32	74.00	-24.68	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	3184.25	43.47	28.90	4.76	41.60	35.53	74.00	-38.47	Peak
2	5164.81	41.48	31.81	6.32	41.04	38.57	74.00	-35.43	Peak
3	7413.73	47.65	36.20	7.84	41.02	50.67	74.00	-23.33	Peak
4	10400.86	39.93	39.90	9.71	40.60	48.94	74.00	-25.06	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	2935.15	44.46	28.50	4.62	41.69	35.89	74.00	-38.11	Peak
2	5177.97	42.14	31.73	6.32	41.03	39.16	74.00	-34.84	Peak
3	7394.88	47.61	36.20	7.78	41.00	50.59	74.00	-23.41	Peak
4	10507.31	40.44	40.00	9.76	40.95	49.25	74.00	-24.75	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	3854.08	43.31	29.61	5.35	41.54	36.73	74.00	-37.27	Peak	
2	4834.05	44.41	31.23	6.09	41.31	40.42	74.00	-33.58	Peak	
3	7245.81	43.21	36.00	7.61	40.96	45.86	74.00	-28.14	Peak	
4	11486.41	40.99	40.49	10.35	42.30	49.53	74.00	-24.47	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	3516.59	43.71	29.07	5.14	41.60	36.32	74.00	-37.68	Peak	
2	4821.76	42.82	31.26	6.00	41.33	38.75	74.00	-35.25	Peak	
3	7981.72	41.07	36.96	7.99	40.85	45.17	74.00	-28.83	Peak	
4	11486.41	40.44	40.49	10.35	42.30	48.98	74.00	-25.02	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	3308.19	44.83	28.30	4.85	41.60	36.38	74.00	-37.62	Peak	
2	4871.10	43.15	31.20	6.30	41.27	39.38	74.00	-34.62	Peak	
3	7319.96	46.91	36.14	7.74	40.98	49.81	74.00	-24.19	Peak	
4	11545.04	40.80	40.41	10.39	42.30	49.30	74.00	-24.70	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	3662.78	43.71	29.20	5.09	41.60	36.40	74.00	-37.60	Peak	
2	4871.10	43.27	31.20	6.30	41.27	39.50	74.00	-34.50	Peak	
3	7319.96	44.40	36.14	7.74	40.98	47.30	74.00	-26.70	Peak	
4	11457.21	40.54	40.46	10.33	42.30	49.03	74.00	-24.97	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	2935.15	44.67	28.50	4.62	41.69	36.10	74.00	-37.90	Peak	
2	5191.17	41.52	31.65	6.31	41.02	38.46	74.00	-35.54	Peak	
3	7394.88	47.57	36.20	7.78	41.00	50.55	74.00	-23.45	Peak	
4	10480.59	39.91	39.98	9.75	40.86	48.78	74.00	-25.22	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	3844.28	50.36	29.58	5.35	41.54	43.75	74.00	-30.25	Peak	
2	4664.81	43.84	31.03	5.87	41.40	39.34	74.00	-34.66	Peak	
3	7394.88	47.91	36.20	7.78	41.00	50.89	74.00	-23.11	Peak	
4	11574.46	40.57	40.35	10.41	42.30	49.03	74.00	-24.97	Peak	

6. TEST SETUP PHOTOS

Radiated Emission





AC Conducted Emission



7. EXTERNAL AND INTERNAL PHOTOS

Refer to the test report No.: CHTW24010048

8. APPENDIX REPORT

APPENDIX REPORT

Project No.	SHT2312050602W	Radio Specification	WIFI 2.4G
Test sample No.	YPHT23120506001_01	Model No.	Star9 Pro
Start test date	2023-12-20	Finish date	2023-12-26
Temperature	25℃	Humidity	48%
Test Engineer	Xiangyu Wei	Auditor	Xiaodong Zheo

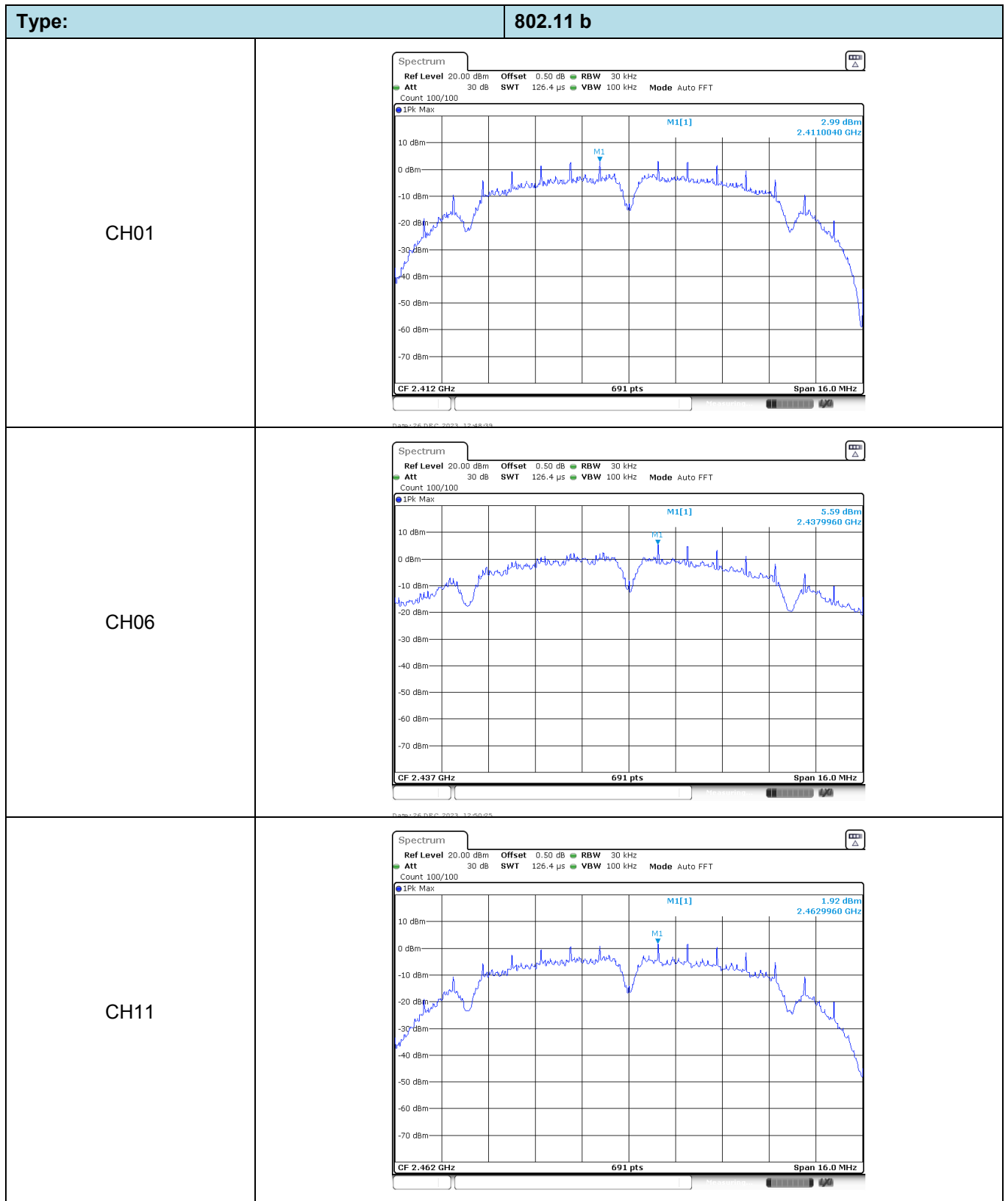
Appendix clause	Test item	Result
A	Conducted Peak Output Power	PASS
B	Power Spectral Density	PASS
C	6 dB Bandwidth	PASS
D	99% Occupied Bandwidth	PASS
E	Duty Cycle	PASS
F	Band edge and Spurious Emissions (conducted)	PASS

Appendix A: Conducted Peak Output Power

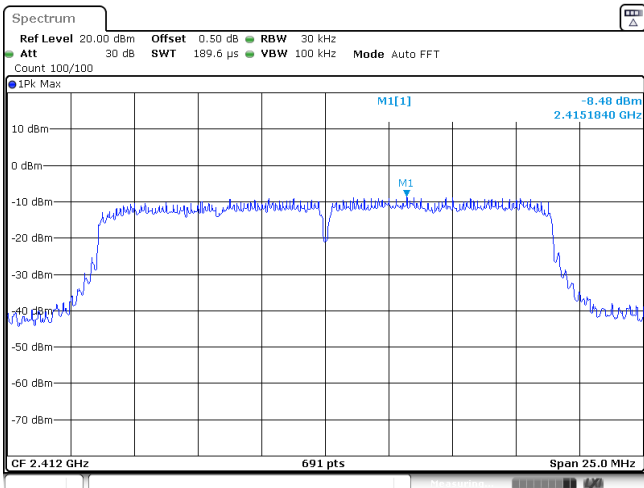
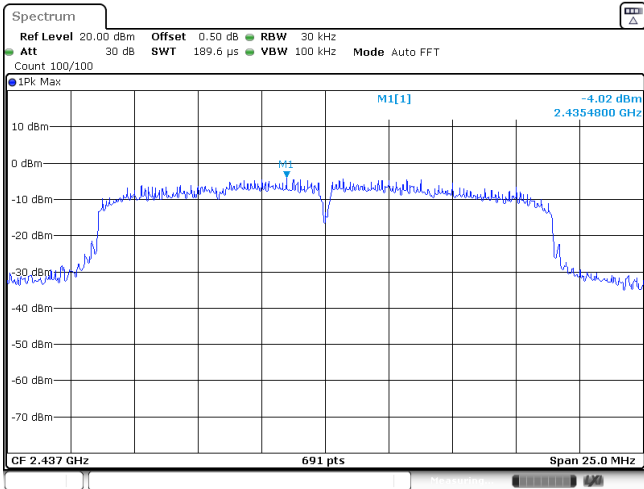
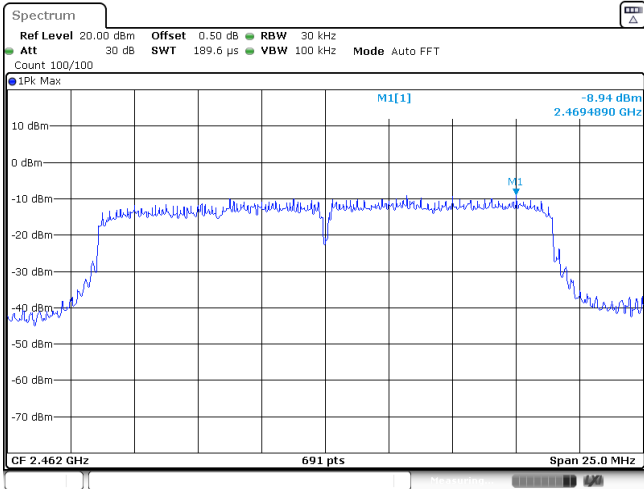
Type	Channel	Peak Output power (dBm)	Average Output power (dBm)	Limit (dBm)	Result
802.11b	01	14.30	14.25	≤ 30.00	Pass
	06	17.47	17.42		
	11	13.36	13.34		
802.11g	01	15.65	15.63	≤ 30.00	Pass
	06	19.85	19.83		
	11	14.62	14.59		
802.11n (HT20)	01	15.64	15.61	≤ 30.00	Pass
	06	19.35	19.33		
	11	14.89	14.87		

Appendix B: Power Spectral Density

Type	Channel	Power Spectral Density (dBm/30KHz)	Limit (dBm/3KHz)	Result
802.11b	01	2.99	≤8.00	Pass
	06	5.59		
	11	1.92		
802.11g	01	-7.16	≤8.00	Pass
	06	-2.41		
	11	-8.46		
802.11n(HT20)	01	-8.37	≤8.00	Pass
	06	-4.02		
	11	-8.94		



Type:		802.11 g
CH01		
CH06		
CH11		

Type:		802.11n(HT20)
CH01		
CH06		
CH11		

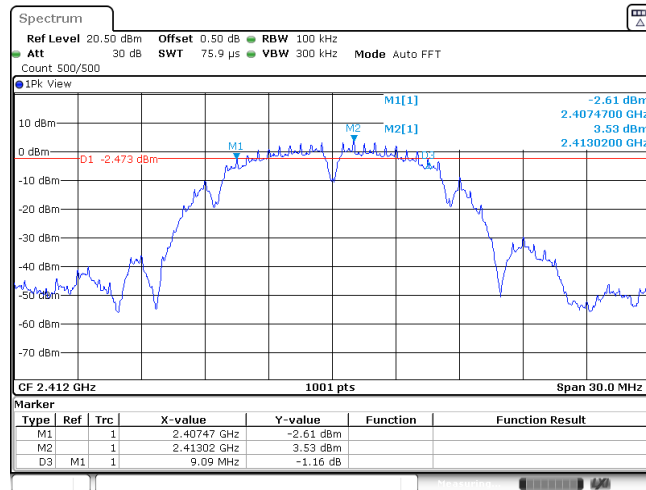
Appendix C: 6dB bandwidth

Type	Channel	6dB Bandwidth (MHz)	Limit (MHz)	Result
802.11b	01	9.09	≥0.5	Pass
	06	8.61		
	11	8.61		
802.11g	01	16.38	≥0.5	Pass
	06	15.18		
	11	16.35		
802.11n(HT20)	01	17.46	≥0.5	Pass
	06	15.24		
	11	17.34		

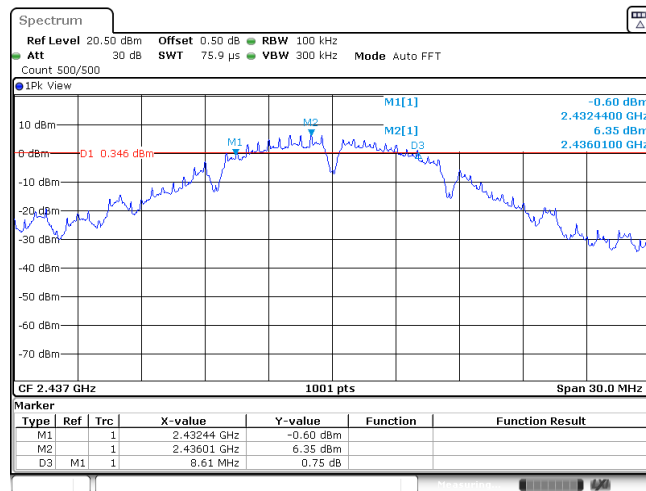
Type:

802.11 b

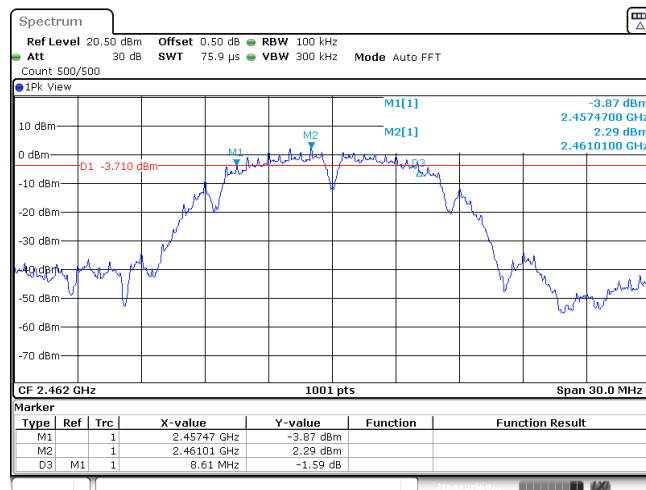
CH01



CH06



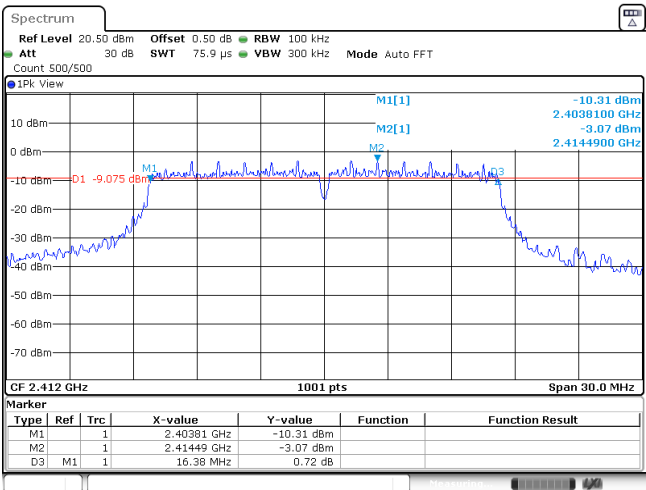
CH11



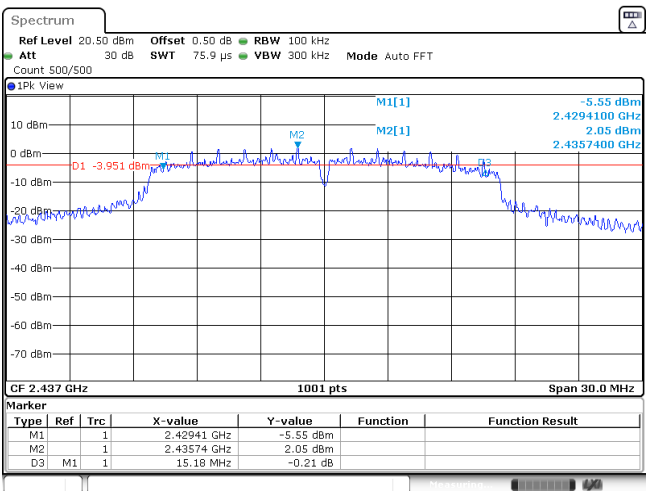
Type:

802.11 g

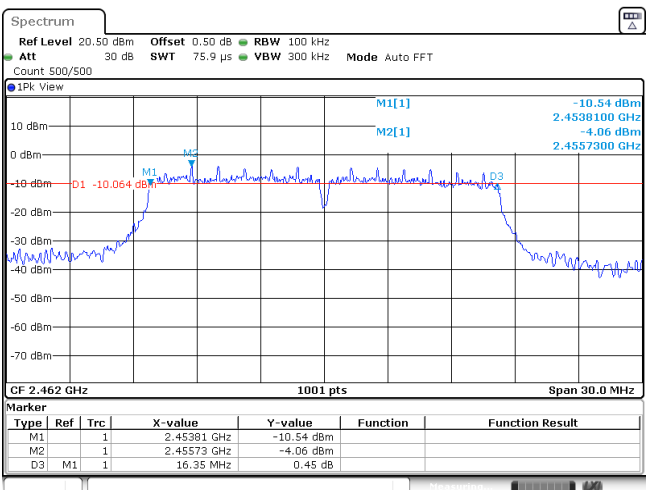
CH01



CH06



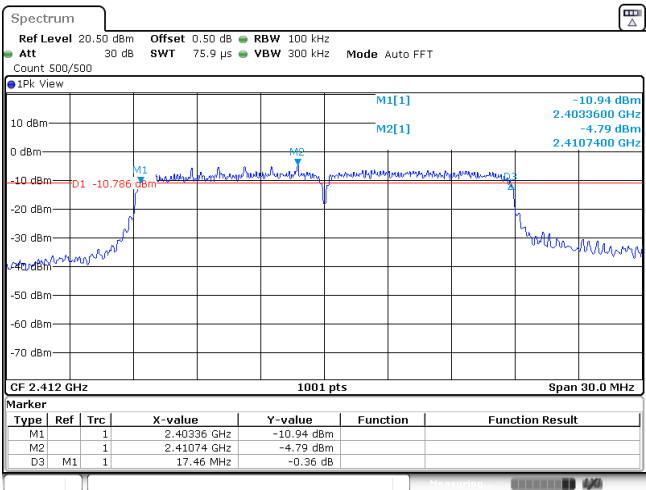
CH11



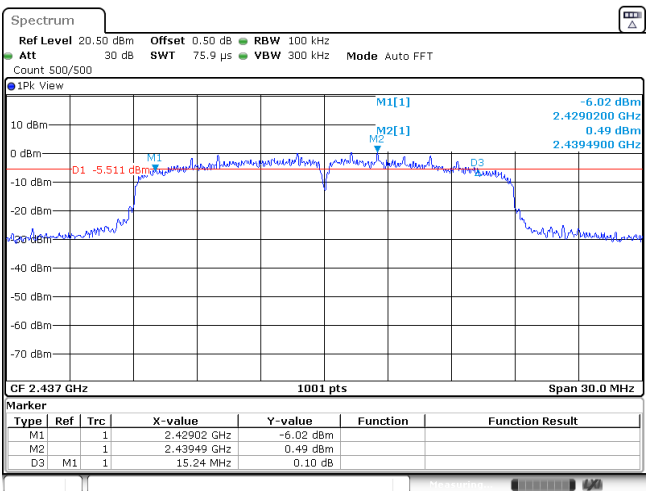
Type:

802.11n(HT20)

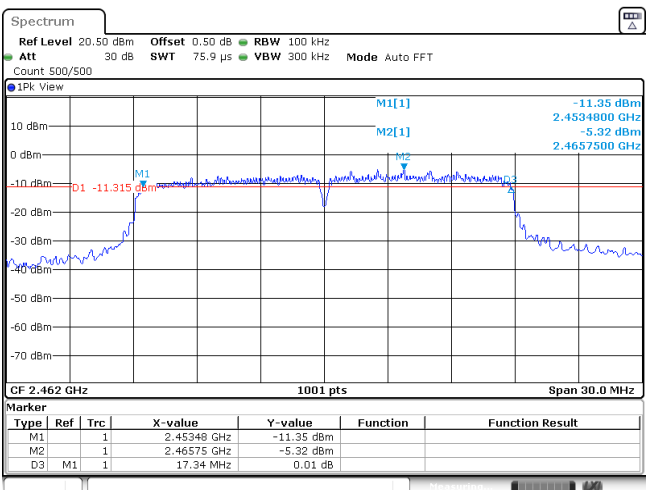
CH01



CH06

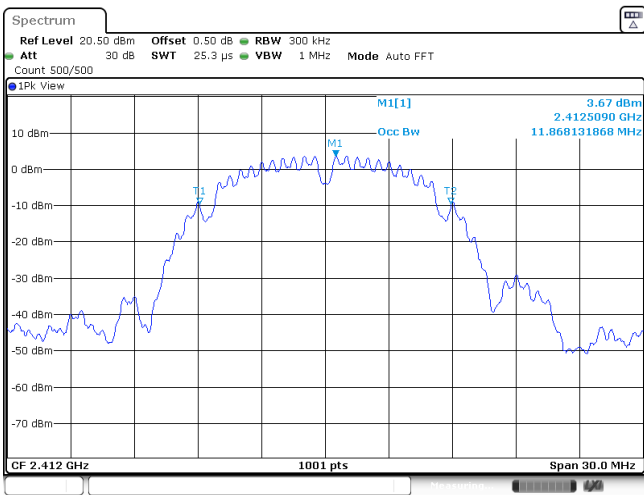
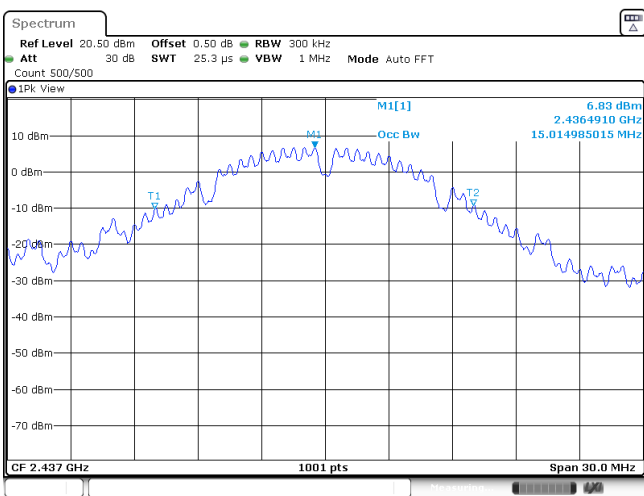
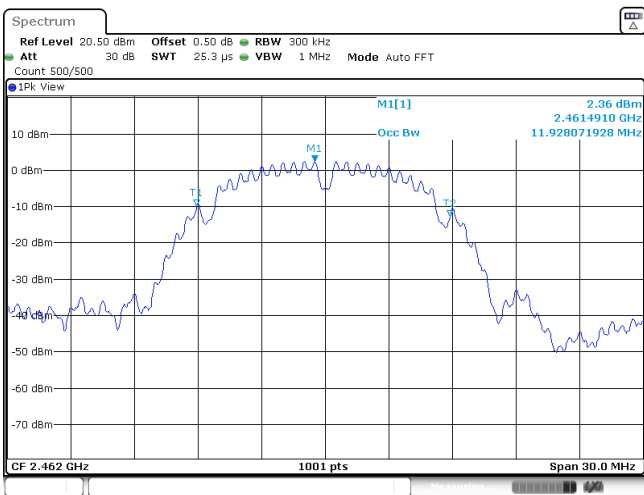


CH11

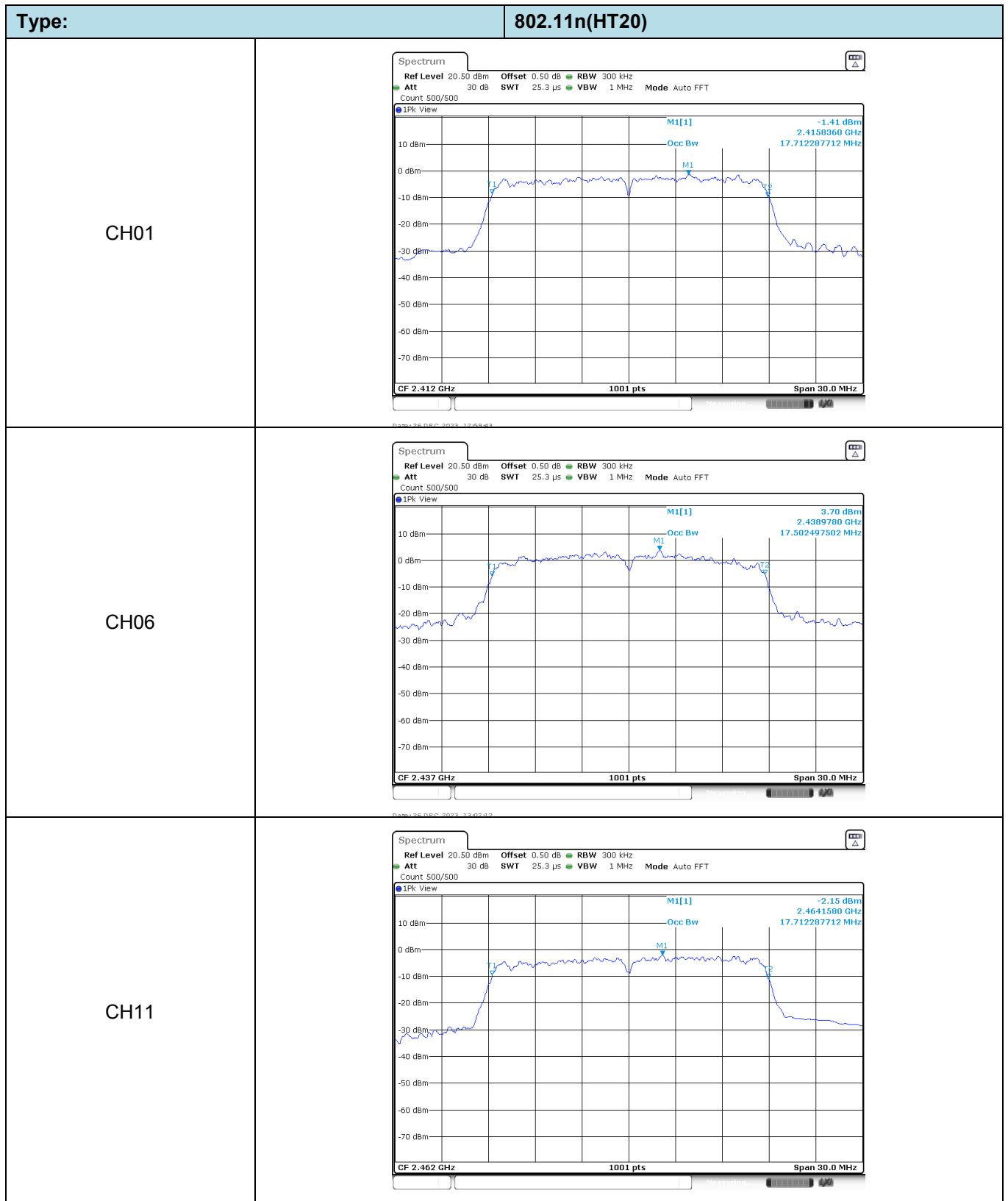


Appendix D: 99% Occupied Bandwidth

Type	Channel	99% Bandwidth (MHz)	Limit (MHz)	Result
802.11b	01	11.87	-	Pass
	06	15.02		
	11	11.93		
802.11g	01	16.81	-	Pass
	06	19.42		
	11	16.81		
802.11n(HT20)	01	17.71	-	Pass
	06	17.50		
	11	17.71		

Type:	802.11 b
CH01	 <p>Spectrum plot for CH01. The plot shows a signal centered at 2.412 GHz. The peak level is 9.67 dBm. The plot includes a 10 dBm reference line and a 30 dBm reference line. The signal is labeled M1[1] and the offset is 0.50 dB. The RBW is 300 kHz. The Mode is Auto FFT. The Count is 500/500. The Span is 30.0 MHz. The CF is 2.412 GHz. The plot also shows a 1001 pts measurement.</p>
CH06	 <p>Spectrum plot for CH06. The plot shows a signal centered at 2.437 GHz. The peak level is 6.83 dBm. The plot includes a 10 dBm reference line and a 30 dBm reference line. The signal is labeled M1[1] and the offset is 0.50 dB. The RBW is 300 kHz. The Mode is Auto FFT. The Count is 500/500. The Span is 30.0 MHz. The CF is 2.437 GHz. The plot also shows a 1001 pts measurement.</p>
CH11	 <p>Spectrum plot for CH11. The plot shows a signal centered at 2.462 GHz. The peak level is 2.36 dBm. The plot includes a 10 dBm reference line and a 30 dBm reference line. The signal is labeled M1[1] and the offset is 0.50 dB. The RBW is 300 kHz. The Mode is Auto FFT. The Count is 500/500. The Span is 30.0 MHz. The CF is 2.462 GHz. The plot also shows a 1001 pts measurement.</p>

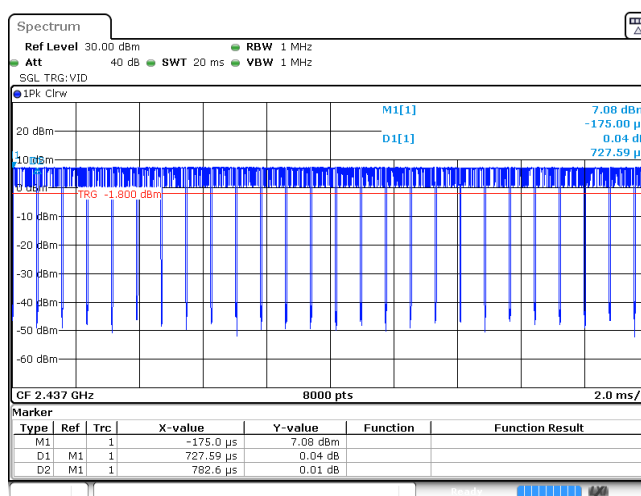
Appendix report page: 13 of 28



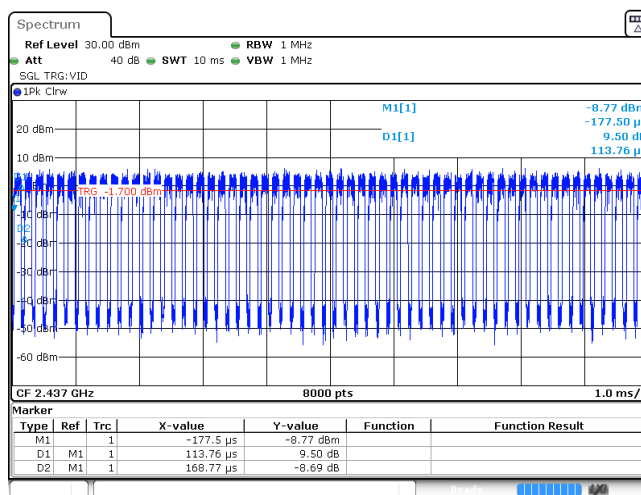
Appendix E: Duty Cycle

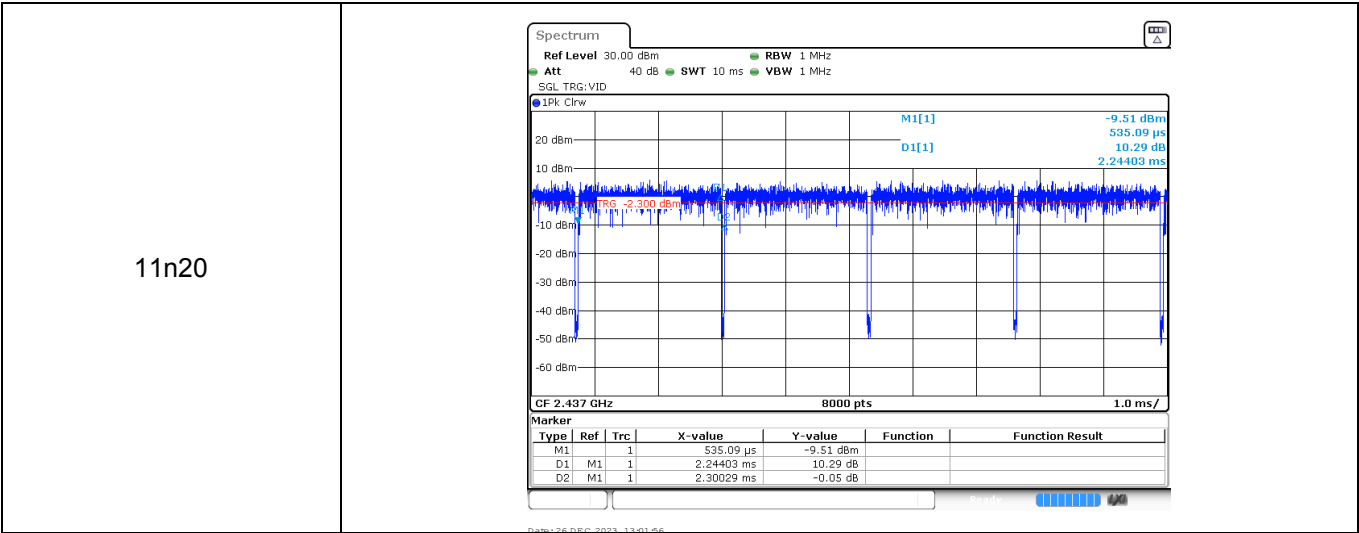
Modulation Type	Test Frequency (MHz)	T _{on time} for single burst (ms)	T _{period} (ms)	Duty cycle	1/T _{on time} (kHz)
11b	2437	0.73	0.78	93.59%	1.37
11g	2437	0.11	0.17	64.71%	9.09
11n20	2437	2.24	2.30	97.39%	0.41

11b



11g

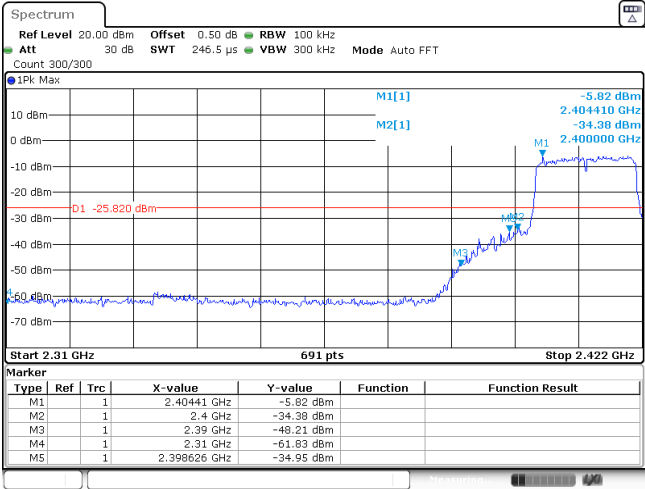
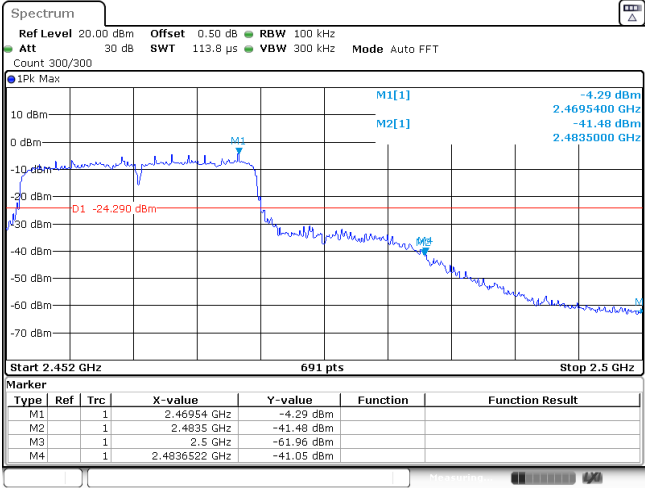


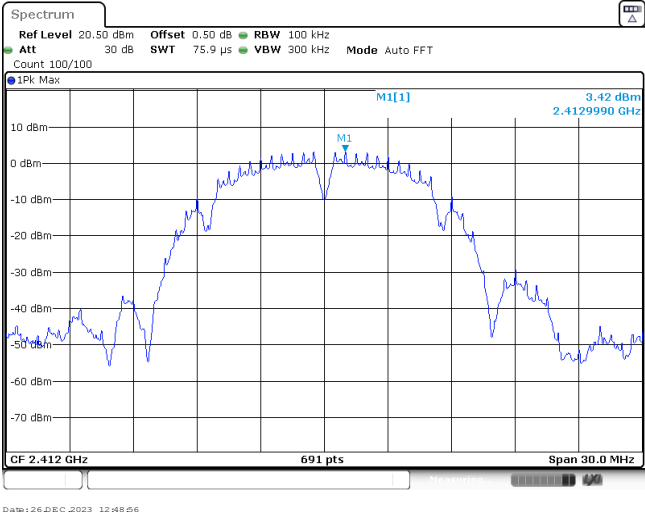
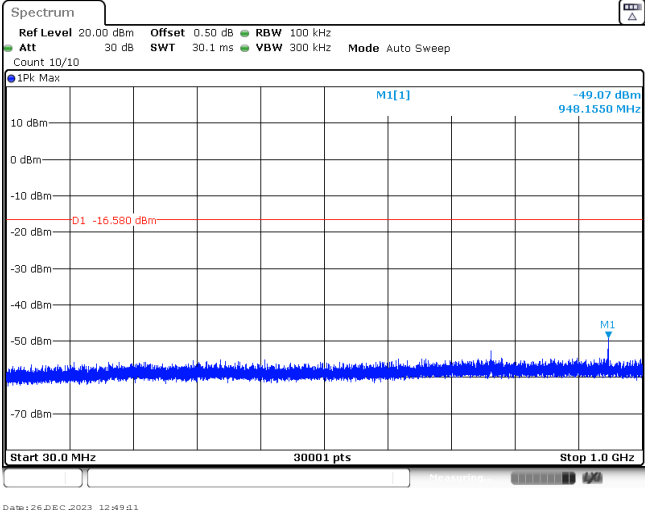
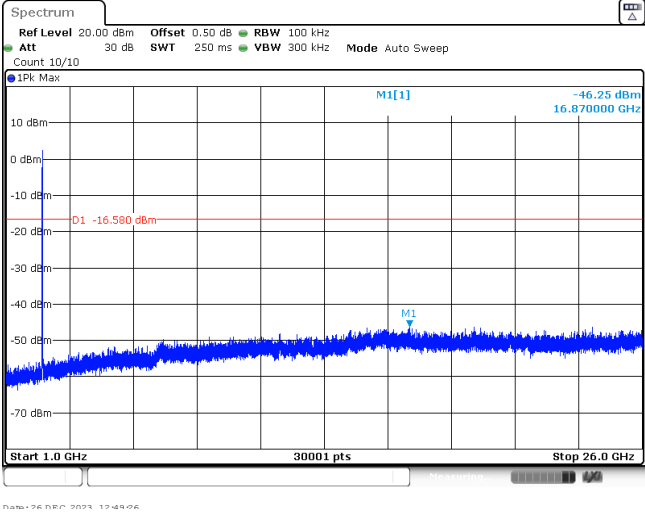


Appendix F: Band edge and Spurious Emissions (conducted)

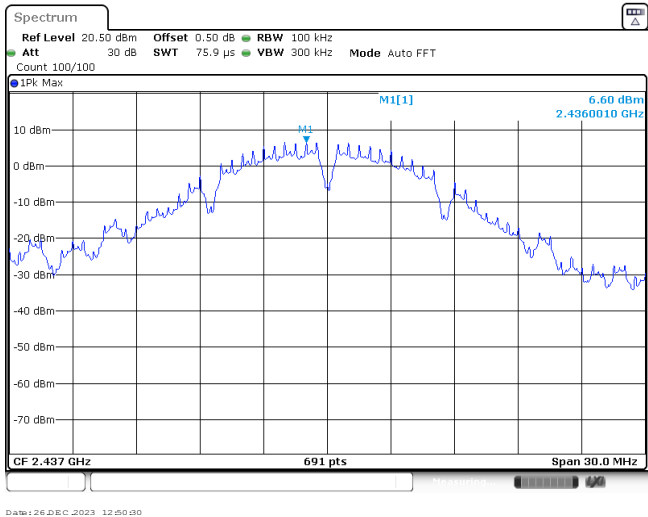
Test Item:	Bandedge	Type:	802.11 b																																										
CH01	<div><div>Spectrum</div><div><div>Ref Level 20.00 dBm</div><div>Offset 0.50 dB</div><div>RBW 100 kHz</div><div>Att 30 dB</div><div>SWT 246.5 μs</div><div>VBW 300 kHz</div><div>Mode Auto FFT</div><div>Count 300/300</div></div><div><div>1Pk Max</div><div><div><div>10 dBm</div><div>0 dBm</div><div>-10 dBm</div><div>-20 dBm</div><div>-30 dBm</div><div>-40 dBm</div><div>-50 dBm</div><div>-60 dBm</div><div>-70 dBm</div></div><div><div>M1[1]</div><div>M2[1]</div><div>M3</div><div>M4</div><div>M5</div><div>D1</div></div><div><div>3.12 dBm</div><div>2.413980 GHz</div><div>-43.20 dBm</div><div>2.399925 GHz</div><div>-44.51 dBm</div><div>-16.880 dBm</div></div></div><div><div>Start 2.31 GHz</div><div>691 pts</div><div>Stop 2.422 GHz</div></div><div><div>Marker</div><table><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>2.41398 GHz</td><td>3.12 dBm</td><td></td><td></td></tr><tr><td>M2</td><td>1</td><td></td><td>2.4 GHz</td><td>-43.20 dBm</td><td></td><td></td></tr><tr><td>M3</td><td>1</td><td></td><td>2.39 GHz</td><td>-57.87 dBm</td><td></td><td></td></tr><tr><td>M4</td><td>1</td><td></td><td>2.31 GHz</td><td>-60.54 dBm</td><td></td><td></td></tr><tr><td>M5</td><td>1</td><td></td><td>2.399925 GHz</td><td>-44.51 dBm</td><td></td><td></td></tr></tbody></table></div></div></div>			Type	Ref	Trc	X-value	Y-value	Function	Function Result	M1	1		2.41398 GHz	3.12 dBm			M2	1		2.4 GHz	-43.20 dBm			M3	1		2.39 GHz	-57.87 dBm			M4	1		2.31 GHz	-60.54 dBm			M5	1		2.399925 GHz	-44.51 dBm		
Type	Ref	Trc	X-value	Y-value	Function	Function Result																																							
M1	1		2.41398 GHz	3.12 dBm																																									
M2	1		2.4 GHz	-43.20 dBm																																									
M3	1		2.39 GHz	-57.87 dBm																																									
M4	1		2.31 GHz	-60.54 dBm																																									
M5	1		2.399925 GHz	-44.51 dBm																																									
CH11	<div><div>Spectrum</div><div><div>Ref Level 20.00 dBm</div><div>Offset 0.50 dB</div><div>RBW 100 kHz</div><div>Att 30 dB</div><div>SWT 113.8 μs</div><div>VBW 300 kHz</div><div>Mode Auto FFT</div><div>Count 300/300</div></div><div><div>1Pk Max</div><div><div><div>10 dBm</div><div>0 dBm</div><div>-10 dBm</div><div>-20 dBm</div><div>-30 dBm</div><div>-40 dBm</div><div>-50 dBm</div><div>-60 dBm</div><div>-70 dBm</div></div><div><div>M1[1]</div><div>M2[1]</div><div>M3</div><div>M4</div><div>D1</div></div><div><div>1.78 dBm</div><div>2.4614820 GHz</div><div>-57.63 dBm</div><div>2.4835000 GHz</div><div>-19.280 dBm</div></div></div><div><div>Start 2.452 GHz</div><div>691 pts</div><div>Stop 2.5 GHz</div></div><div><div>Marker</div><table><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>2.461482 GHz</td><td>1.78 dBm</td><td></td><td></td></tr><tr><td>M2</td><td>1</td><td></td><td>2.4835 GHz</td><td>-57.63 dBm</td><td></td><td></td></tr><tr><td>M3</td><td>1</td><td></td><td>2.5 GHz</td><td>-62.40 dBm</td><td></td><td></td></tr><tr><td>M4</td><td>1</td><td></td><td>2.4845565 GHz</td><td>-55.20 dBm</td><td></td><td></td></tr></tbody></table></div></div></div>			Type	Ref	Trc	X-value	Y-value	Function	Function Result	M1	1		2.461482 GHz	1.78 dBm			M2	1		2.4835 GHz	-57.63 dBm			M3	1		2.5 GHz	-62.40 dBm			M4	1		2.4845565 GHz	-55.20 dBm									
Type	Ref	Trc	X-value	Y-value	Function	Function Result																																							
M1	1		2.461482 GHz	1.78 dBm																																									
M2	1		2.4835 GHz	-57.63 dBm																																									
M3	1		2.5 GHz	-62.40 dBm																																									
M4	1		2.4845565 GHz	-55.20 dBm																																									

Test Item:	Bandedge	Type:	802.11 g																																										
CH01	<div><div>Spectrum</div><div><div>Ref Level 20.00 dBm</div><div>Offset 0.50 dB</div><div>RBW 100 kHz</div><div>Att 30 dB</div><div>SWT 246.5 μs</div><div>VBW 300 kHz</div><div>Mode Auto FFT</div><div>Count 300/300</div></div><div><div>1Pk Max</div><div><div><div>10 dBm</div><div>0 dBm</div><div>-10 dBm</div><div>-20 dBm</div><div>-30 dBm</div><div>-40 dBm</div><div>-50 dBm</div><div>-60 dBm</div><div>-70 dBm</div></div><div><div>M1[1]</div><div>M2[1]</div><div>M3[1]</div><div>M4[1]</div><div>M5[1]</div></div><div><div>-3.03 dBm</div><div>2.414460 GHz</div><div>-34.90 dBm</div><div>2.400000 GHz</div><div>-59.62 dBm</div><div>2.398951 GHz</div><div>-31.74 dBm</div><div>2.31 GHz</div></div></div><div><div>D1 -23.030 dBm</div></div><div><div>Start 2.31 GHz</div><div>691 pts</div><div>Stop 2.422 GHz</div></div><div><div>Marker</div><table><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><tr><td>M1</td><td>1</td><td></td><td>2.41446 GHz</td><td>-3.03 dBm</td><td></td><td></td></tr><tr><td>M2</td><td>1</td><td></td><td>2.4 GHz</td><td>-34.90 dBm</td><td></td><td></td></tr><tr><td>M3</td><td>1</td><td></td><td>2.39 GHz</td><td>-49.54 dBm</td><td></td><td></td></tr><tr><td>M4</td><td>1</td><td></td><td>2.31 GHz</td><td>-59.62 dBm</td><td></td><td></td></tr><tr><td>M5</td><td>1</td><td></td><td>2.398951 GHz</td><td>-31.74 dBm</td><td></td><td></td></tr></table></div></div></div>			Type	Ref	Trc	X-value	Y-value	Function	Function Result	M1	1		2.41446 GHz	-3.03 dBm			M2	1		2.4 GHz	-34.90 dBm			M3	1		2.39 GHz	-49.54 dBm			M4	1		2.31 GHz	-59.62 dBm			M5	1		2.398951 GHz	-31.74 dBm		
Type	Ref	Trc	X-value	Y-value	Function	Function Result																																							
M1	1		2.41446 GHz	-3.03 dBm																																									
M2	1		2.4 GHz	-34.90 dBm																																									
M3	1		2.39 GHz	-49.54 dBm																																									
M4	1		2.31 GHz	-59.62 dBm																																									
M5	1		2.398951 GHz	-31.74 dBm																																									
CH11	<div><div>Spectrum</div><div><div>Ref Level 20.00 dBm</div><div>Offset 0.50 dB</div><div>RBW 100 kHz</div><div>Att 30 dB</div><div>SWT 113.8 μs</div><div>VBW 300 kHz</div><div>Mode Auto FFT</div><div>Count 300/300</div></div><div><div>1Pk Max</div><div><div><div>10 dBm</div><div>0 dBm</div><div>-10 dBm</div><div>-20 dBm</div><div>-30 dBm</div><div>-40 dBm</div><div>-50 dBm</div><div>-60 dBm</div><div>-70 dBm</div></div><div><div>M1[1]</div><div>M2[1]</div><div>M3[1]</div><div>M4[1]</div></div><div><div>-4.13 dBm</div><div>2.4569670 GHz</div><div>-44.68 dBm</div><div>2.4835000 GHz</div><div>-62.41 dBm</div><div>2.5 GHz</div></div></div><div><div>D1 -24.130 dBm</div></div><div><div>Start 2.452 GHz</div><div>691 pts</div><div>Stop 2.5 GHz</div></div><div><div>Marker</div><table><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><tr><td>M1</td><td>1</td><td></td><td>2.456967 GHz</td><td>-4.13 dBm</td><td></td><td></td></tr><tr><td>M2</td><td>1</td><td></td><td>2.4835 GHz</td><td>-44.68 dBm</td><td></td><td></td></tr><tr><td>M3</td><td>1</td><td></td><td>2.5 GHz</td><td>-62.41 dBm</td><td></td><td></td></tr><tr><td>M4</td><td>1</td><td></td><td>2.483513 GHz</td><td>-44.68 dBm</td><td></td><td></td></tr></table></div></div></div>			Type	Ref	Trc	X-value	Y-value	Function	Function Result	M1	1		2.456967 GHz	-4.13 dBm			M2	1		2.4835 GHz	-44.68 dBm			M3	1		2.5 GHz	-62.41 dBm			M4	1		2.483513 GHz	-44.68 dBm									
Type	Ref	Trc	X-value	Y-value	Function	Function Result																																							
M1	1		2.456967 GHz	-4.13 dBm																																									
M2	1		2.4835 GHz	-44.68 dBm																																									
M3	1		2.5 GHz	-62.41 dBm																																									
M4	1		2.483513 GHz	-44.68 dBm																																									

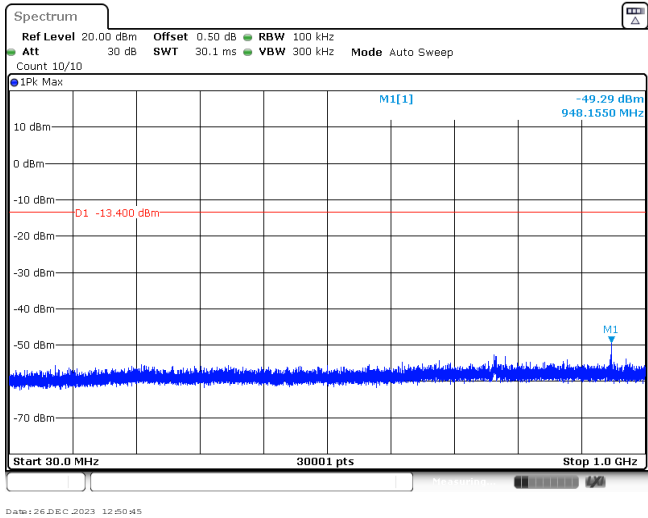
Test Item:	Bandedge	Type:	802.11 n(HT20)
CH01			
CH11			

Test Item:	Spurious Emissions	Type:	802.11 b
CH01 Reference level			
CH01 30MHz~1000MHz			
CH01 1GHz~26GHz			

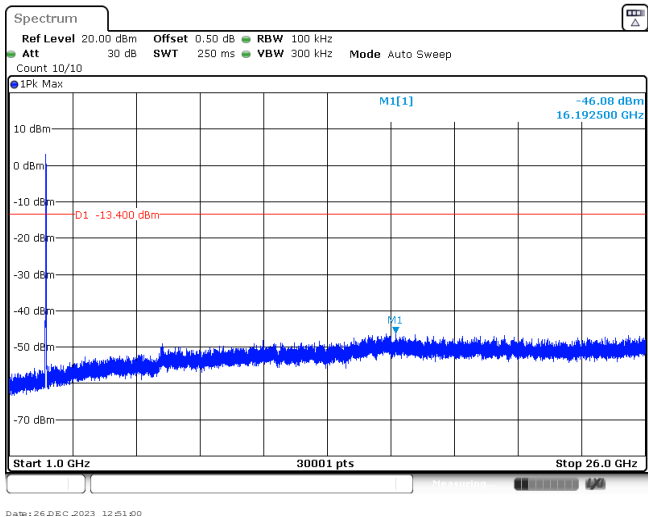
CH06
Reference level



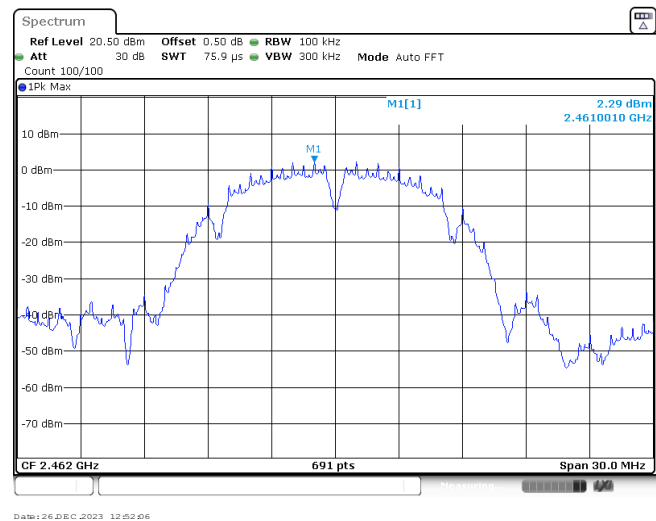
CH06
30MHz~1000MHz



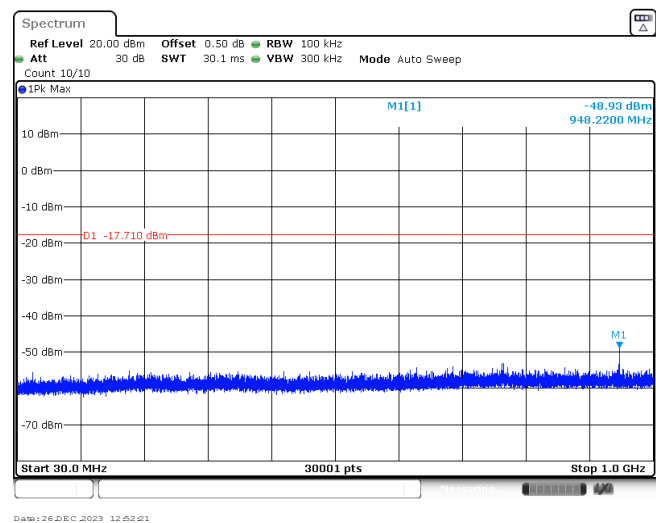
CH06
1GHz~26GHz



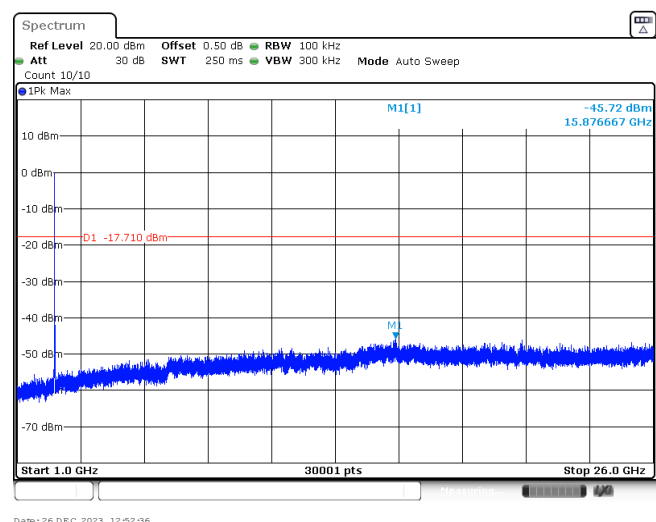
CH11
Reference level

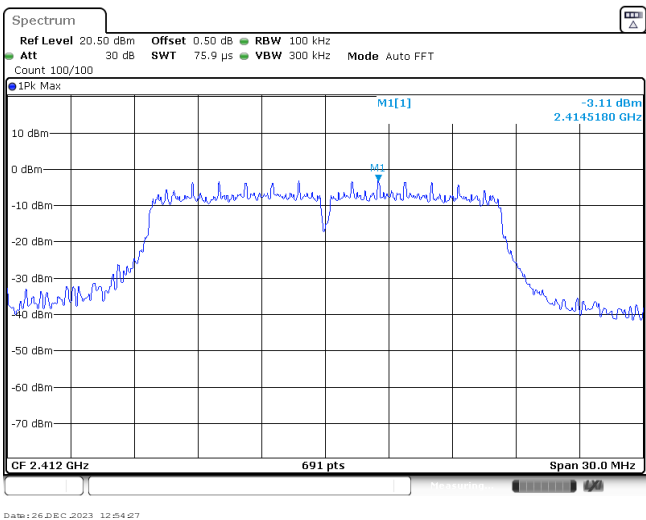
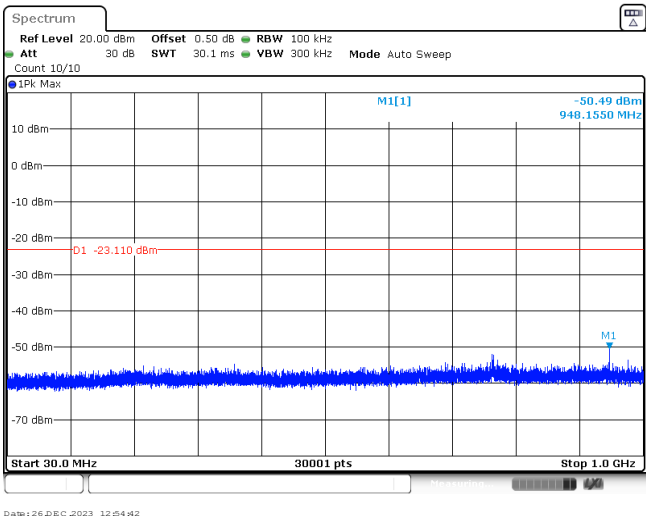
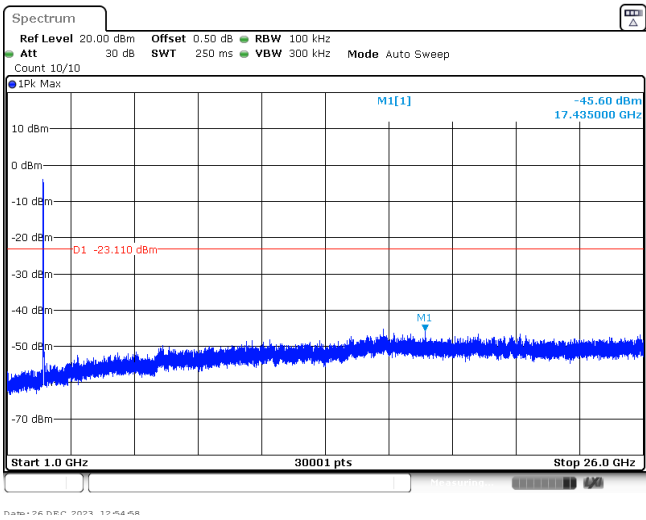


CH11
30MHz~1000MHz

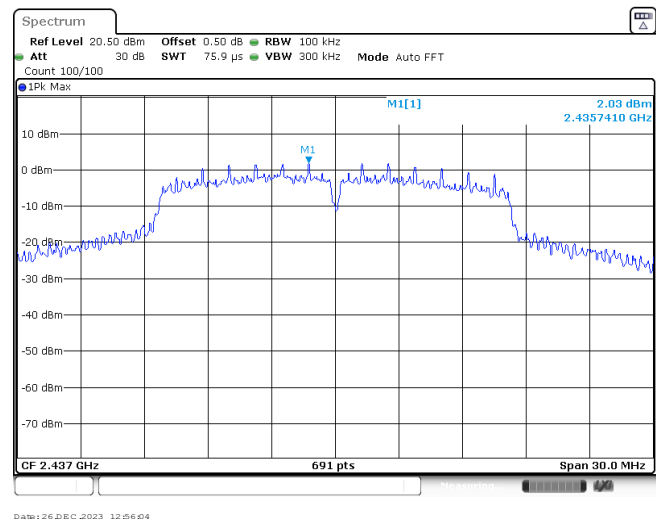


CH11
1GHz~26GHz

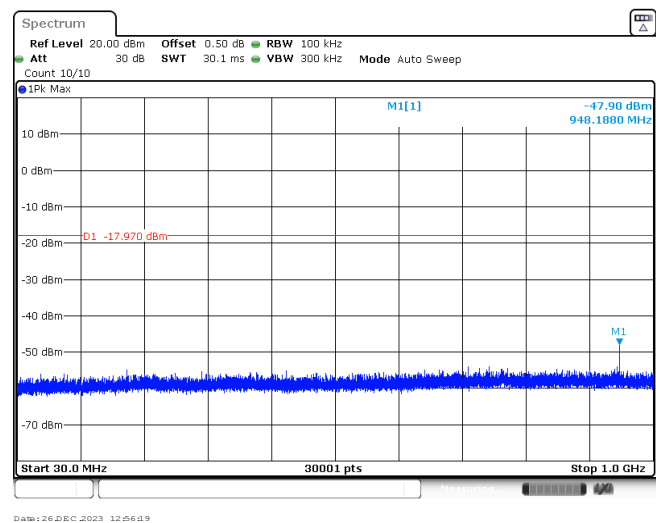


Test Item:	Spurious Emissions	Type:	802.11 g
CH01 Reference level			
CH01 30MHz~1000MHz			
CH01 1GHz~26GHz			

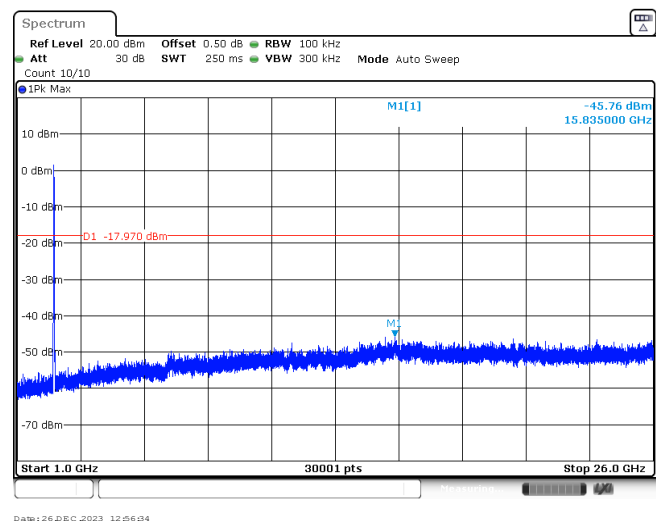
CH06
Reference level



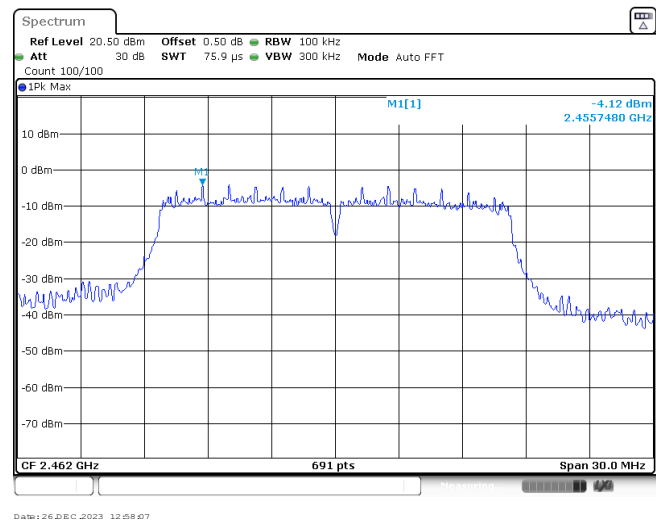
CH06
30MHz~1000MHz



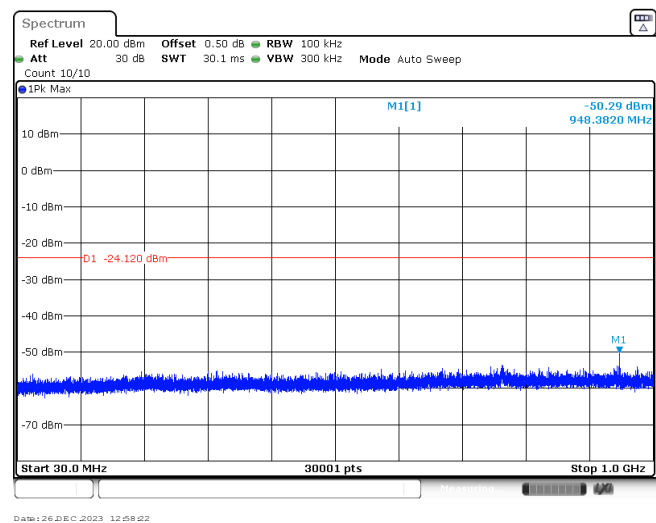
CH06
1GHz~26GHz



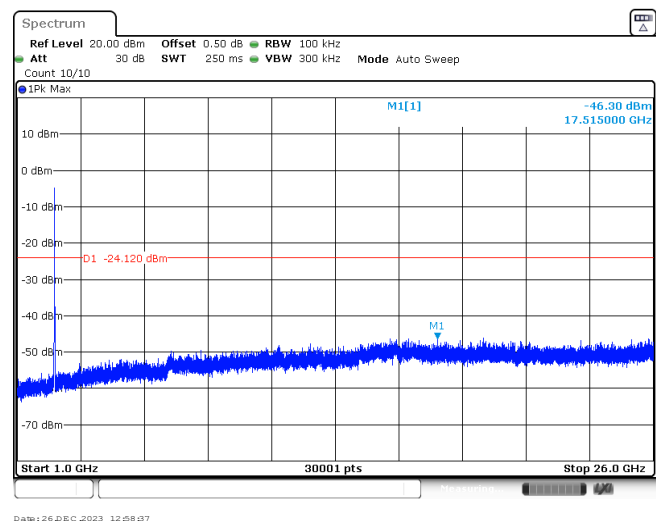
CH11
Reference level

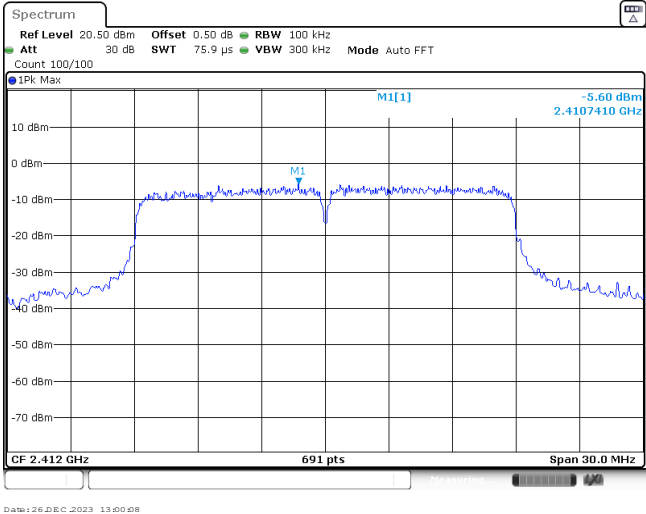
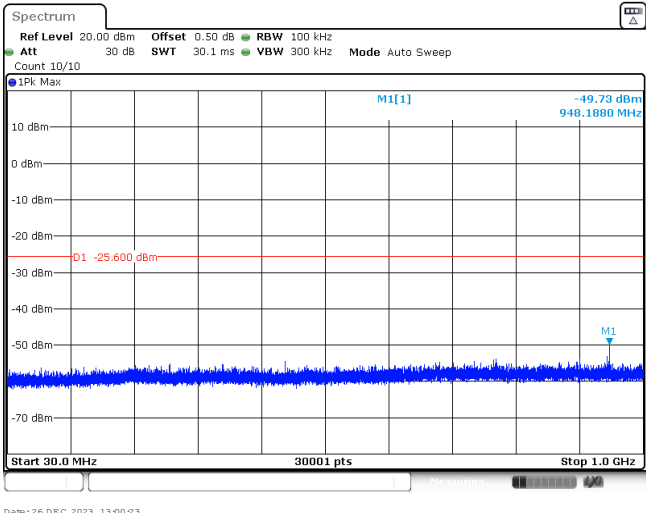
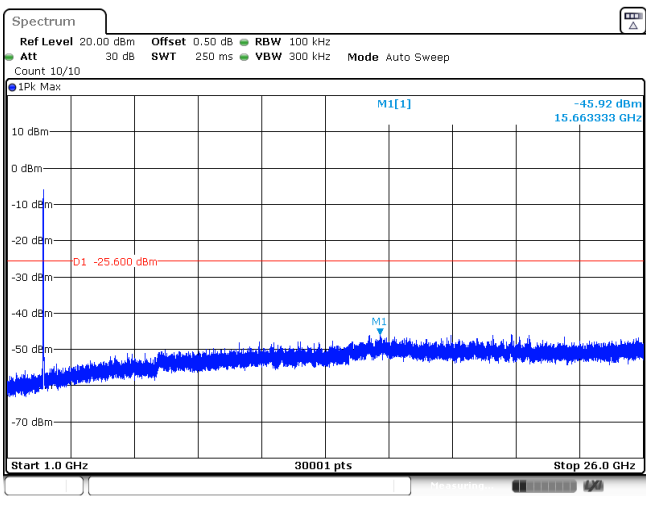


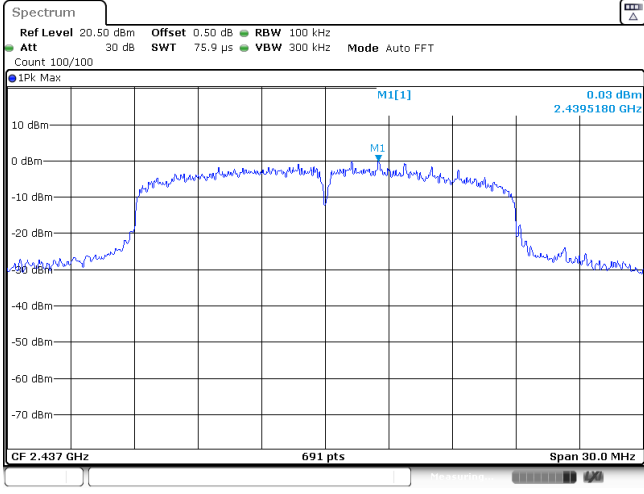
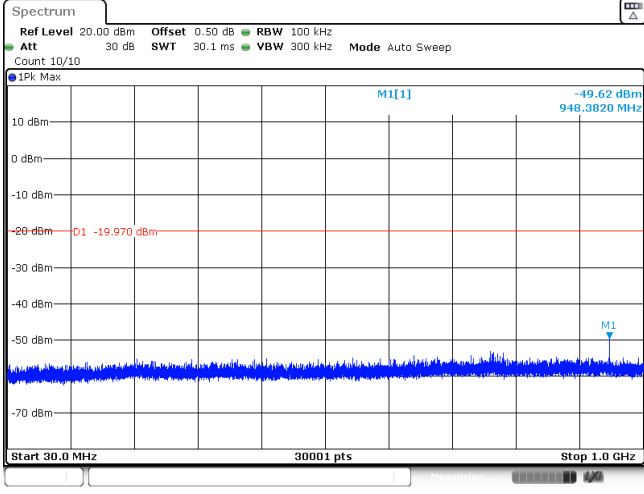
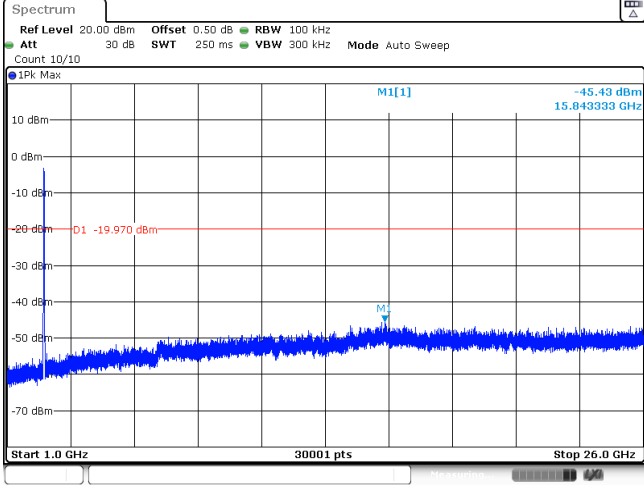
CH11
30MHz~1000MHz

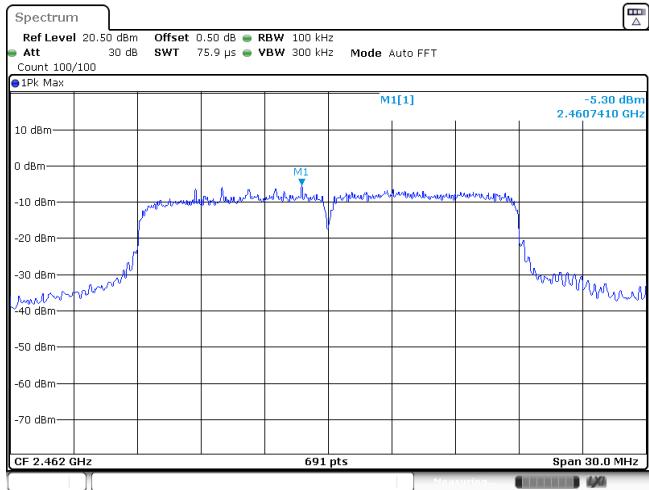
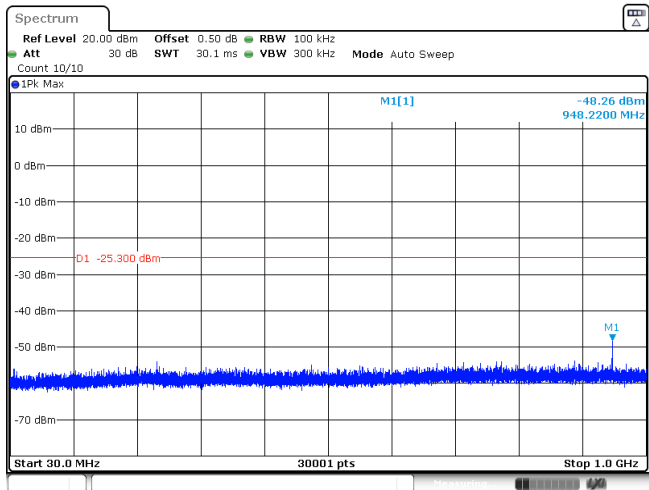
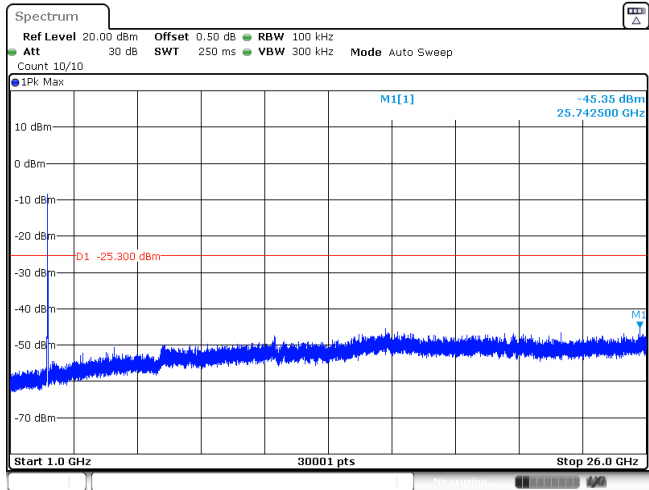


CH11
1GHz~26GHz



Test Item:	Spurious Emissions	Type:	802.11 n(HT20)
CH01 Reference level			
CH01 30MHz~1000MHz			
CH01 1GHz~26GHz			

<p>CH06 Reference level</p>	 <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 100/100</p> <p>1Pk Max</p> <p>M1[1] 0.03 dBm 2.4395180 GHz</p> <p>CF 2.437 GHz 691 pts Span 30.0 MHz</p> <p>Date: 26 DEC 2023 13:02:29</p>
<p>CH06 30MHz~1000MHz</p>	 <p>Spectrum</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</p> <p>1Pk Max</p> <p>M1[1] -49.62 dBm 948.3820 MHz</p> <p>D1 -19.970 dBm</p> <p>Start 30.0 MHz 30001 pts Stop 1.0 GHz</p> <p>Date: 26 DEC 2023 13:02:44</p>
<p>CH06 1GHz~26GHz</p>	 <p>Spectrum</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</p> <p>1Pk Max</p> <p>M1[1] -45.43 dBm 15.843333 GHz</p> <p>D1 -19.970 dBm</p> <p>Start 1.0 GHz 30001 pts Stop 26.0 GHz</p> <p>Date: 26 DEC 2023 13:02:59</p>

<p>CH11 Reference level</p>	
<p>CH11 30MHz~1000MHz</p>	
<p>CH11 1GHz~26GHz</p>	

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