

TEST REPORT

Applicant: DALS Lighting, Inc

Address of Applicant: 80 De La Seigneurie East, Blainville, Quebec, J7C 4N1, Canada

Manufacturer: Meko Lighting Company Limited

Address of Manufacturer: No.2, Songlin East Road, Zeng Tian Village, Xin An District, Chang An Town Dongguan Guangdong 523883 China (Peoples Republic Of)

Equipment Under Test (EUT)

Product Name: Axis Digital Stick

Model No.: SM-STTL20-XX, SM-STFL50-XX
(XX stands for color finishes)

Trade Mark: DALS

FCC ID: 2AQSN-SMSTKD

Applicable standards: FCC CFR Title 47 Part 15 Subpart C Section 15.247

Date of sample receipt: March 6, 2023

Date of Test: March 17~29, 2023

Date of report issued: March 29, 2023

Test Result : PASS *

* In the configuration tested, the EUT complied with the standards specified above.

Authorized Signature:



Robinson Luo

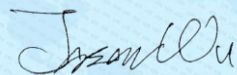
Laboratory Manager

This results shown in this test report refer only to the sample(s) tested, this test report cannot be reproduced, except in full, without prior written permission of the company. The report would be invalid without specific stamp of test institute and the signatures of compiler and approver.

2 Version

Version No.	Date	Description
00	2023-3-29	Original

Prepared By:



Project Engineer

Date:

2023-3-29

Check By:



Reviewer

Date:

2023-3-29

3 Contents

	Page
1 COVER PAGE	1
2 VERSION	2
3 CONTENTS	3
4 TEST SUMMARY	4
5 GENERAL INFORMATION	5
5.1 GENERAL DESCRIPTION OF EUT	5
5.2 TEST MODE	7
5.3 DESCRIPTION OF SUPPORT UNITS	7
5.4 DEVIATION FROM STANDARDS	7
5.5 ABNORMALITIES FROM STANDARD CONDITIONS	7
5.6 TEST FACILITY	7
5.7 TEST LOCATION	7
5.8 ADDITIONAL INSTRUCTIONS	7
6 TEST INSTRUMENTS LIST	8
7 TEST RESULTS AND MEASUREMENT DATA	10
7.1 ANTENNA REQUIREMENT	10
7.2 CONDUCTED EMISSIONS	11
7.3 CONDUCTED PEAK OUTPUT POWER	16
7.4 CHANNEL BANDWIDTH & 99% OCCUPY BANDWIDTH	17
7.5 POWER SPECTRAL DENSITY	23
7.6 BAND EDGES	26
7.6.1 Conducted Emission Method	26
7.6.2 Radiated Emission Method	29
7.7 SPURIOUS EMISSION	34
7.7.1 Conducted Emission Method	34
7.7.2 Radiated Emission Method	39
8 TEST SETUP PHOTO	52
9 EUT CONSTRUCTIONAL DETAILS	52

4 Test Summary

Test Item	Section	Result
Antenna requirement	FCC part 15.203/15.247 (c)	Pass
AC Power Line Conducted Emission	FCC part 15.207	Pass
Conducted Peak Output Power	FCC part 15.247 (b)(3)	Pass
Channel Bandwidth & 99% OCB	FCC part 15.247 (a)(2)	Pass
Power Spectral Density	FCC part 15.247 (e)	Pass
Band Edge	FCC part 15.247(d)	Pass
Spurious Emission	FCC part 15.205/15.209	Pass

Remark: Test according to ANSI C63.10:2013

Pass: The EUT complies with the essential requirements in the standard.

Measurement Uncertainty

No.	Item	Measurement Uncertainty
1	Radio Frequency	1×10^{-7}
2	Duty cycle	0.37%
3	Occupied Bandwidth	3%
4	RF conducted power	0.75dB
5	RF power density	3dB
6	Conducted Spurious emissions	2.58dB
7	AC Power Line Conducted Emission	3.44dB (0.15MHz ~ 30MHz)
8	Radiated Spurious emission test	3.1dB (9kHz-30MHz)
		3.8039dB (30MHz-200MHz)
		3.9679dB (200MHz-1GHz)
		4.29dB (1GHz-18GHz)
		3.30dB (18GHz-40GHz)

Note (1): The measurement uncertainty is for coverage factor of k=2 and a level of confidence of 95%.

5 General Information

5.1 General Description of EUT

Product Name:	Axis Digital Stick
Model No.:	SM-STTL20-XX, SM-STFL50-XX (XX stands for color finishes)
Test Model No.:	SM-STTL20-BK, SM-STFL50-BK
Test sample(s) ID:	GTSL2023030488-1(SM-STTL20-BK), GTSL2023030488-2(SM-STFL50-BK)
Serial No.:	N/A
Hardware Version:	V1.0
Software Version:	1.0.18
Sample(s) Status	Engineer sample
Operation Frequency:	802.11b/802.11g/802.11n(H20): 2412MHz~2462MHz 802.11n(HT40): 2422MHz~2452MHz
Channel separation:	5MHz
Modulation technology:	802.11b: Direct Sequence Spread Spectrum (DSSS) 802.11g/802.11n(H20)/802.11n(HT40): Orthogonal Frequency Division Multiplexing (OFDM)
Antenna Type:	Internal antenna
Antenna gain:	0dBi
Power supply:	DC 12V (Powered by adapter)
Adapter Information	Manufacturer: XING YUAN ELECTRONICS CO., LTD MODEL NO.: XY24SE-120150VQ-UW INPUT: 100-240V~ 50/60Hz 0.5A Max OUTPUT: 12.0V  1.5A

Operation Frequency each of channel							
Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
1	2412MHz	4	2427MHz	7	2442MHz	10	2457MHz
2	2417MHz	5	2432MHz	8	2447MHz	11	2462MHz
3	2422MHz	6	2437MHz	9	2452MHz		

Note:

In section 15.31(m), regards to the operating frequency range over 10 MHz, the Lowest frequency, the middle frequency, and the highest frequency of channel were selected to perform the test, and the selected channel see below:

Test channel	Frequency (MHz)	
	802.11b/802.11g/802.11n(HT20)	802.11n(HT40)
Lowest channel	2412MHz	2422MHz
Middle channel	2437MHz	2437MHz
Highest channel	2462MHz	2452MHz

5.2 Test mode

Transmitting mode	Keep the EUT in continuously transmitting mode
<i>Remark: During the test, the dutycycle >98%, the test voltage was tuned from 85% to 115% of the nominal rated supply voltage, and found that the worst case was under the nominal rated supply condition. So the report just shows that condition's data.</i>	

We have verified the construction and function in typical operation. All the test modes were carried out with the EUT in transmitting operation, which was shown in this test report and defined as follows:

Pre-scan all kind of data rate in lowest channel, and found the follow list which it was worst case.

Mode	802.11b	802.11g	802.11n(HT20)	802.11n(HT40)
Data rate	1Mbps	6Mbps	6.5Mbps	13Mbps

5.3 Description of Support Units

None.

5.4 Deviation from Standards

None.

5.5 Abnormalities from Standard Conditions

None.

5.6 Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

- **FCC—Registration No.: 381383**

Designation Number: CN5029

Global United Technology Services Co., Ltd., Shenzhen EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in files.

- **IC —Registration No.: 9079A**

CAB identifier: CN0091

The 3m Semi-anechoic chamber of Global United Technology Services Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing

- **NVLAP (LAB CODE:600179-0)**

Global United Technology Services Co., Ltd., is accredited by the National Voluntary Laboratory Accreditation Program (NVLAP).

5.7 Test Location

All tests were performed at:

Global United Technology Services Co., Ltd.

Address: No. 123-128, Tower A, Jinyuan Business Building, No.2, Laodong Industrial Zone, Xixiang Road, Baoan District, Shenzhen, Guangdong, China 518102

Tel: 0755-27798480

Fax: 0755-27798960

5.8 Additional Instructions

Test Software	Beken Wi-Fi Test Tool V1.6.0
Power level setup	802.11b: 12 802.11g/802.11n(H20)/ 802.11n(H40): 30

6 Test Instruments list

Radiated Emission:						
Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal.Date (mm-dd-yy)	Cal.Due date (mm-dd-yy)
1	3m Semi- Anechoic Chamber	ZhongYu Electron	9.2(L)*6.2(W)* 6.4(H)	GTS250	July 02, 2020	July 01, 2025
2	Control Room	ZhongYu Electron	6.2(L)*2.5(W)* 2.4(H)	GTS251	N/A	N/A
3	EMI Test Receiver	Rohde & Schwarz	ESU26	GTS203	April 22, 2022	April 21, 2023
4	BiConiLog Antenna	SCHWARZBECK MESS-ELEKTRONIK	VULB9168	GTS640	March 20, 2023	March 19, 2025
5	Double -ridged waveguide horn	SCHWARZBECK MESS-ELEKTRONIK	BBHA 9120 D	GTS208	June 12, 2022	June 11, 2023
6	Horn Antenna	ETS-LINDGREN	3160	GTS217	June 23, 2022	June 22, 2023
7	EMI Test Software	AUDIX	E3	N/A	N/A	N/A
8	Coaxial Cable	GTS	N/A	GTS213	April 22, 2022	April 21, 2023
9	Coaxial Cable	GTS	N/A	GTS211	April 22, 2022	April 21, 2023
10	Coaxial cable	GTS	N/A	GTS210	April 22, 2022	April 21, 2023
11	Coaxial Cable	GTS	N/A	GTS212	April 22, 2022	April 21, 2023
12	Amplifier(100kHz-3GHz)	HP	8347A	GTS204	April 22, 2022	April 21, 2023
13	Amplifier (18-26GHz)	Rohde & Schwarz	AFS33-18002 650-30-8P-44	GTS218	June 23, 2022	June 22, 2023
14	Band filter	Amindeon	82346	GTS219	June 23, 2022	June 22, 2023
15	Power Meter	Anritsu	ML2495A	GTS540	June 23, 2022	June 22, 2023
16	Power Sensor	Anritsu	MA2411B	GTS541	June 23, 2022	June 22, 2023
17	Wideband Radio Communication Tester	Rohde & Schwarz	CMW500	GTS575	April 22, 2022	April 21, 2023
18	Splitter	Agilent	11636B	GTS237	June 23, 2022	June 22, 2023
19	Loop Antenna	ZHINAN	ZN30900A	GTS534	Nov. 29, 2022	Nov. 28, 2023
20	Broadband Preamplifier	SCHWARZBECK	BBV9718	GTS535	April 22, 2022	April 21, 2023
21	Breitband hornantenna	SCHWARZBECK	BBHA 9170	GTS579	Oct. 16, 2022	Oct. 15, 2023
22	Amplifier	TDK	PA-02-02	GTS574	Oct. 16, 2022	Oct. 15, 2023
23	Amplifier	TDK	PA-02-03	GTS576	Oct. 16, 2022	Oct. 15, 2023
24	PSA Series Spectrum Analyzer	Rohde & Schwarz	FSP	GTS578	June 23, 2022	June 22, 2023
25	Amplifier(1GHz-26.5GHz)	HP	8449B	GTS601	April 22, 2022	April 21, 2023

Conducted Emission						
Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal.Date (mm-dd-yy)	Cal.Due date (mm-dd-yy)
1	Shielding Room	ZhongYu Electron	7.3(L)x3.1(W)x2.9(H)	GTS252	May 14, 2022	May 13, 2025
2	EMI Test Receiver	R&S	ESCI 7	GTS552	April 24, 2022	April 23, 2023
3	Coaxial Switch	ANRITSU CORP	MP59B	GTS225	June 23, 2022	June 22, 2023
4	ENV216 2-L-V-NETZNACHB.DE	ROHDE&SCHWARZ	ENV216	GTS226	April 22, 2022	April 21, 2023
5	Coaxial Cable	GTS	N/A	GTS227	N/A	N/A
6	EMI Test Software	AUDIX	E3	N/A	N/A	N/A
7	Thermo meter	JINCHUANG	GSP-8A	GTS639	April 28, 2022	April 27, 2023
8	Absorbing clamp	Elektronik-Feinmechanik	MDS21	GTS229	April 15, 2022	April 14, 2023
9	ISN	SCHWARZBECK	NTFM 8158	GTS565	April 22, 2022	April 21, 2023
10	High voltage probe	SCHWARZBECK	TK9420	GTS537	April 22, 2022	April 21, 2023

RF Conducted Test:						
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Cal.Date (mm-dd-yy)	Cal.Due date (mm-dd-yy)
1	MXA Signal Analyzer	Agilent	N9020A	GTS566	April 22, 2022	April 21, 2023
2	EMI Test Receiver	R&S	ESCI 7	GTS552	April 22, 2022	April 21, 2023
3	Spectrum Analyzer	Agilent	E4440A	GTS536	April 22, 2022	April 21, 2023
4	MXG vector Signal Generator	Agilent	N5182A	GTS567	April 22, 2022	April 21, 2023
5	ESG Analog Signal Generator	Agilent	E4428C	GTS568	April 22, 2022	April 21, 2023
6	USB RF Power Sensor	DARE	RPR3006W	GTS569	April 22, 2022	April 21, 2023
7	RF Switch Box	Shongyi	RFSW3003328	GTS571	April 22, 2022	April 21, 2023
8	Programmable Constant Temp & Humi Test Chamber	WEWON	WHTH-150L-40-880	GTS572	April 22, 2022	April 21, 2023

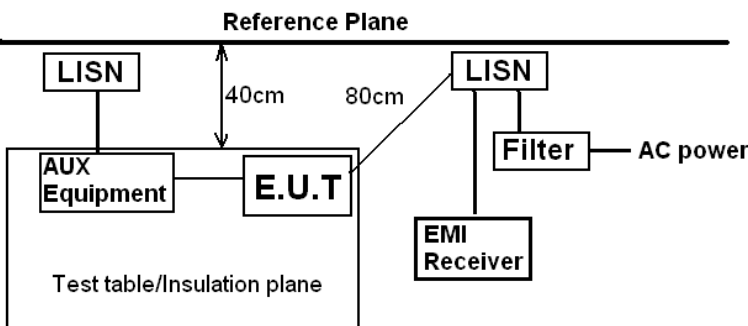
General used equipment:						
Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal.Date (mm-dd-yy)	Cal.Due date (mm-dd-yy)
1	Humidity/ Temperature Indicator	KTJ	TA328	GTS243	April 25, 2022	April 24, 2023
2	Barometer	KUMAO	SF132	GTS647	July 26, 2022	July 25, 2023

7 Test results and Measurement Data

7.1 Antenna requirement

Standard requirement:	FCC Part15 C Section 15.203 /247(c)
15.203 requirement: 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.	
15.247(c) (1)(i) requirement: (i) Systems operating in the 2400-2483.5 MHz band that is used exclusively for fixed. Point-to-point operations may employ transmitting antennas with directional gain greater than 6dBi provided the maximum conducted output power of the intentional radiator is reduced by 1 dB for every 3 dB that the directional gain of the antenna exceeds 6dBi.	
EUT Antenna:	
The antennas are Internal antenna, the best case gain of the antennas are 0dBi, reference to the appendix II for details	

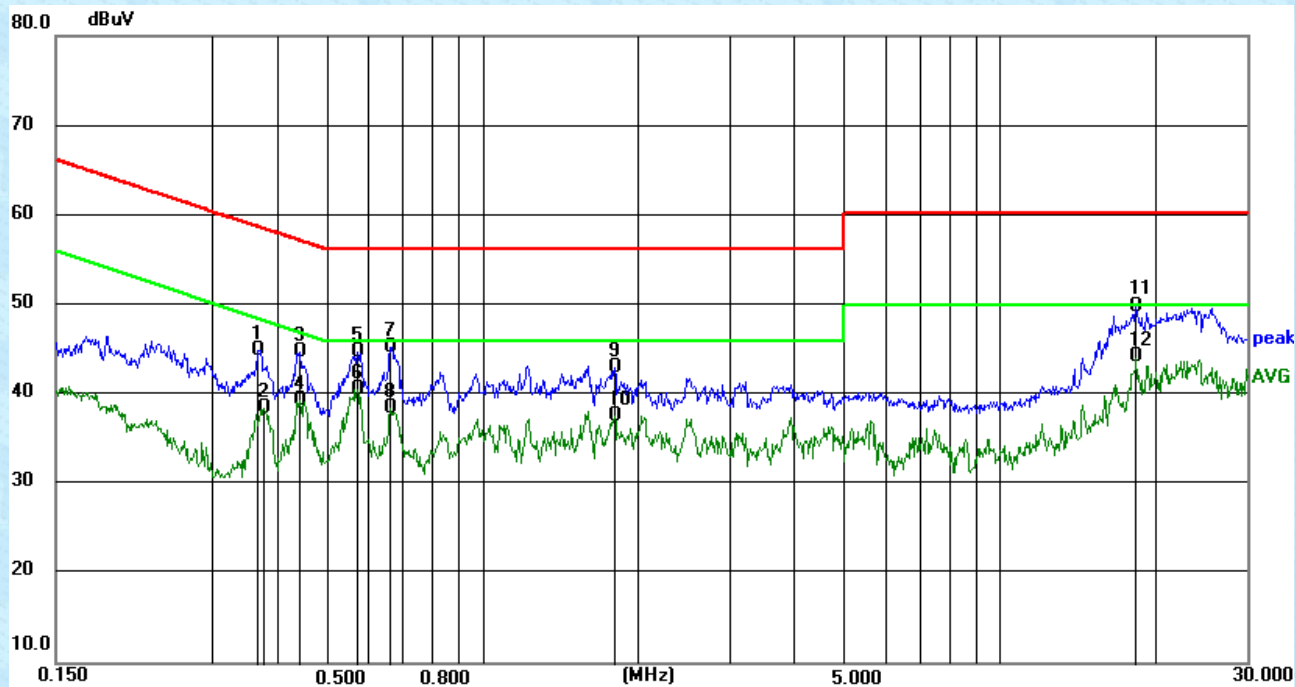
7.2 Conducted Emissions

Test Requirement:	FCC Part15 C Section 15.207					
Test Method:	ANSI C63.10:2013					
Test Frequency Range:	150kHz to 30MHz					
Receiver setup:	RBW=9kHz, VBW=30kHz, Sweep time=auto					
Limit:	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 setup:	Reference Plane  Remark: E.U.T: Equipment Under Test LISN: Line Impedance Stabilization Network Test table height=0.1m					
Test procedure:	1. The E.U.T and simulators are connected to the main power through a line impedance stabilization network (L.I.S.N.). This provides a 50ohm/50uH coupling impedance for the measuring equipment. 2. The peripheral devices are also connected to the main power through a LISN that provides a 50ohm/50uH coupling impedance with 50ohm termination. (Please refer to the block diagram of the test setup and photographs). 3. Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.10:2013 on conducted measurement.					
Test Instruments:	Refer to section 6.0 for details					
Test mode:	Refer to section 5.2 for details					
Test environment:	Temp.:	25 °C	Humid.:	52%	Press.:	1012mbar
Test voltage:	AC 120V, 60Hz					
Test results:	Pass					

Measurement data

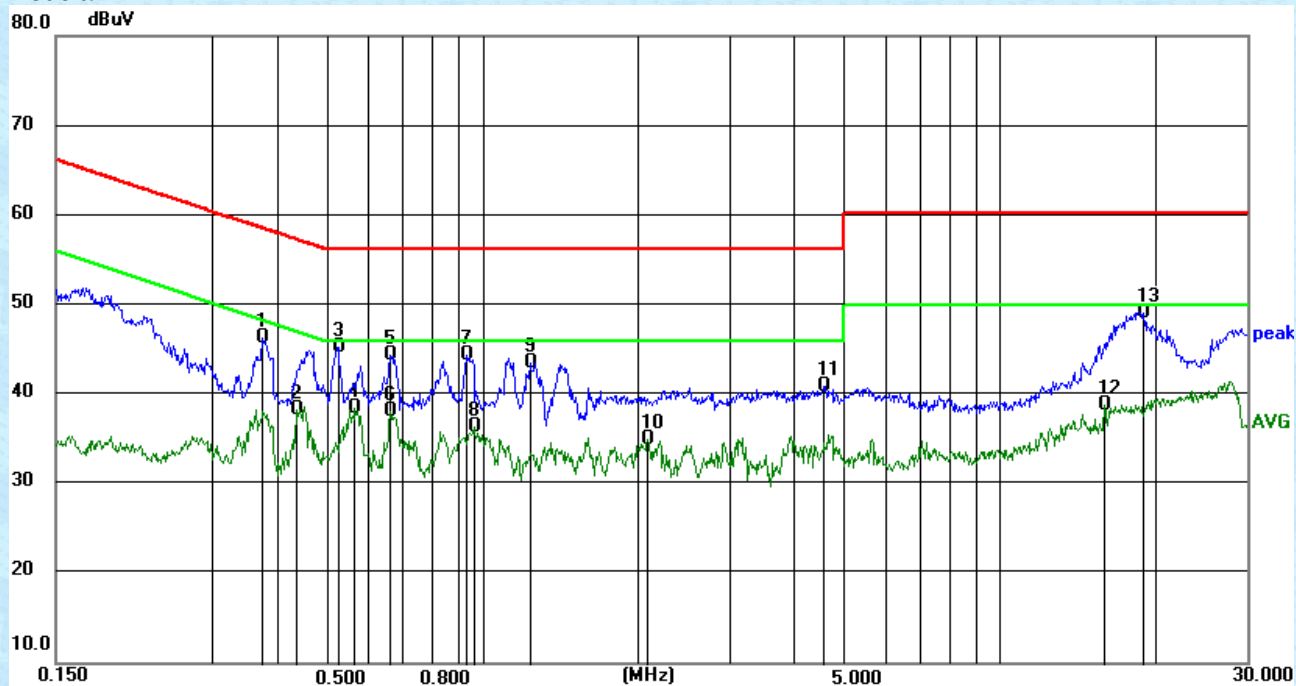
SM-STTL20-BK

Line:



Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Remark
0.3689	34.92	10.01	44.93	58.53	13.6	QP
0.379	28.47	10.01	38.48	48.3	9.82	AVG
0.4444	34.8	10.01	44.81	56.98	12.17	QP
0.4444	29.33	10.01	39.34	46.98	7.64	AVG
0.5731	34.76	10.02	44.78	56	11.22	QP
0.5731	30.54	10.02	40.56	46	5.44	AVG
0.6643	35.31	10.02	45.33	56	10.67	QP
0.6643	28.52	10.02	38.54	46	7.46	AVG
1.8	32.9	10.05	42.95	56	13.05	QP
1.8	27.51	10.05	37.56	46	8.44	AVG
18.3277	39.4	10.45	49.85	60	10.15	QP
18.3277	33.68	10.45	44.13	50	5.87	AVG

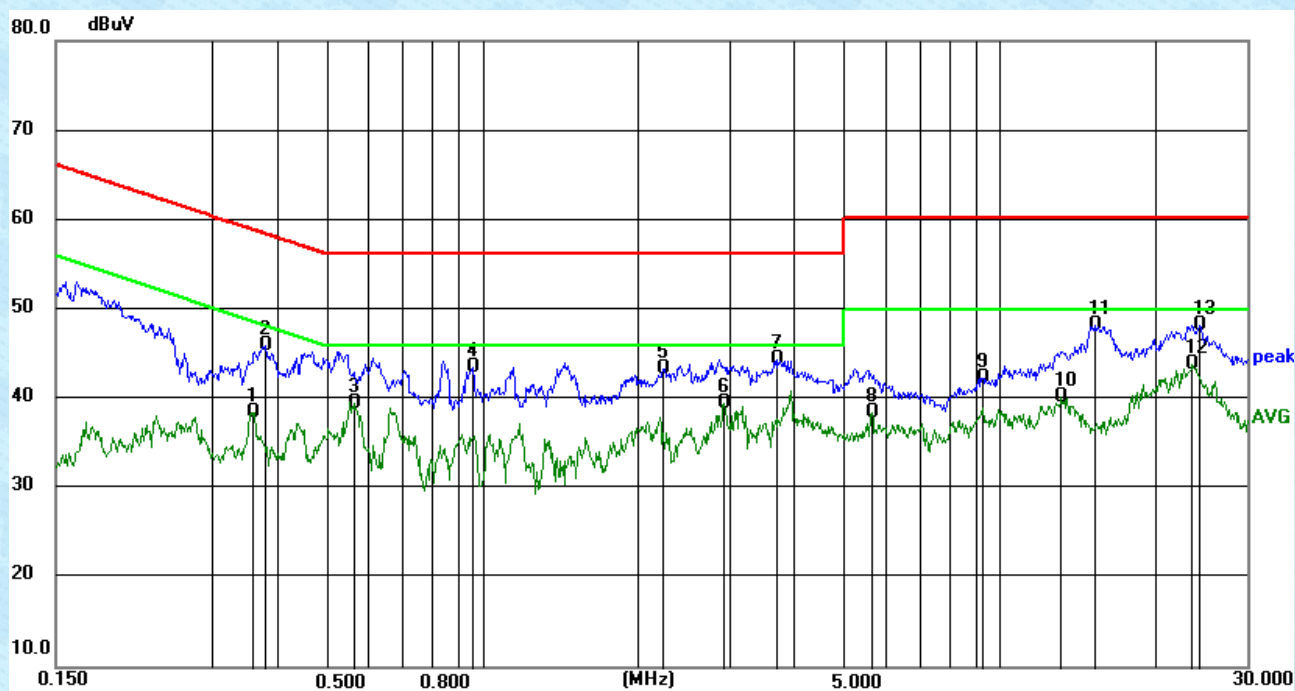
Neutral:



Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Remark
0.375	36.24	10.01	46.25	58.39	12.14	QP
0.4374	28.24	10.01	38.25	47.11	8.86	AVG
0.5262	35.3	10.02	45.32	56	10.68	QP
0.5664	28.45	10.02	38.47	46	7.53	AVG
0.6643	34.31	10.02	44.33	56	11.67	QP
0.6643	28.02	10.02	38.04	46	7.96	AVG
0.9331	34.41	10.03	44.44	56	11.56	QP
0.9627	26.42	10.03	36.45	46	9.55	AVG
1.2356	33.45	10.04	43.49	56	12.51	QP
2.0878	24.86	10.06	34.92	46	11.08	AVG
4.5734	30.77	10.14	40.91	56	15.09	QP
15.8853	28.44	10.4	38.84	50	11.16	AVG
18.9204	38.59	10.46	49.05	60	10.95	QP

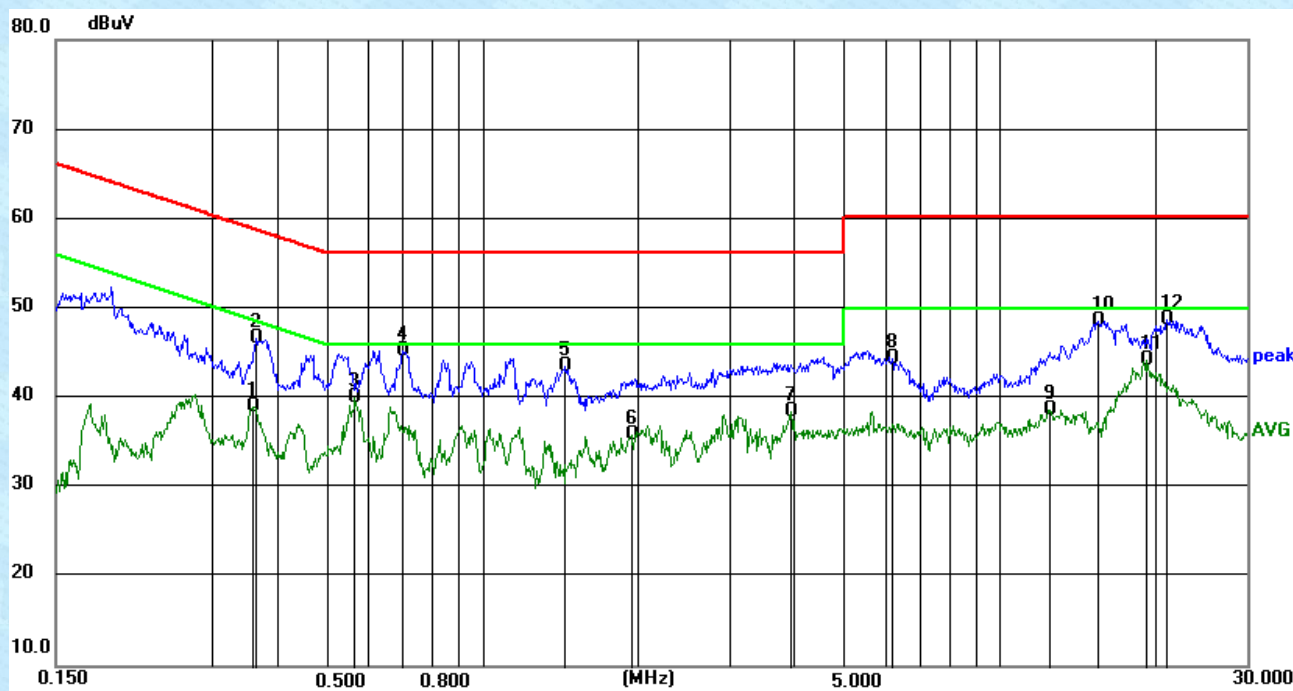
SM-STFL50-BK

Line:



Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Remark
0.3613	28.54	10.01	38.55	48.7	10.15	AVG
0.381	35.92	10.01	45.93	58.26	12.33	QP
0.5664	29.45	10.02	39.47	46	6.53	AVG
0.9576	33.41	10.03	43.44	56	12.56	QP
2.2366	33.33	10.07	43.4	56	12.6	QP
2.9305	29.51	10.09	39.6	46	6.4	AVG
3.7197	34.26	10.11	44.37	56	11.63	QP
5.6531	28.26	10.17	38.43	50	11.57	AVG
9.253	32.1	10.28	42.38	60	17.62	QP
13.1265	29.78	10.35	40.13	50	9.87	AVG
15.2261	37.89	10.39	48.28	60	11.72	QP
23.5106	33.34	10.54	43.88	50	6.12	AVG
24.27	37.69	10.55	48.24	60	11.76	QP

Neutral:

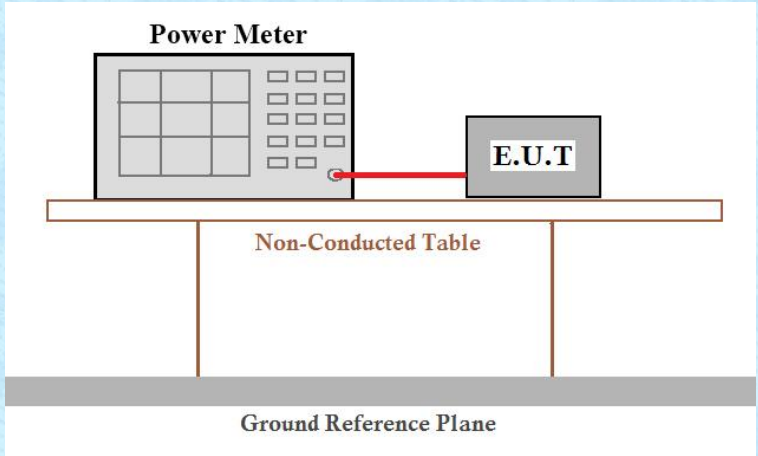


Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Remark
0.3613	29.04	10.01	39.05	48.7	9.65	AVG
0.3653	36.69	10.01	46.7	58.61	11.91	QP
0.5664	29.95	10.02	39.97	46	6.03	AVG
0.7006	35.18	10.02	45.2	56	10.8	QP
1.4475	33.42	10.04	43.46	56	12.54	QP
1.9386	25.83	10.06	35.89	46	10.11	AVG
3.9428	28.3	10.12	38.42	46	7.58	AVG
6.1859	34.2	10.19	44.39	60	15.61	QP
12.5152	28.36	10.34	38.7	50	11.3	AVG
15.47	38.14	10.4	48.54	60	11.46	QP
19.1219	33.73	10.46	44.19	50	5.81	AVG
20.9237	38.21	10.49	48.7	60	11.3	QP

Notes:

1. An initial pre-scan was performed on the line and neutral lines with peak detector.
2. Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission.
3. Final Level = Receiver Read level + LISN Factor + Cable Loss
4. If the average limit is met when using a quasi-peak detector receiver, the EUT shall be deemed to meet both limits and measurement with the average detector receiver is unnecessary.

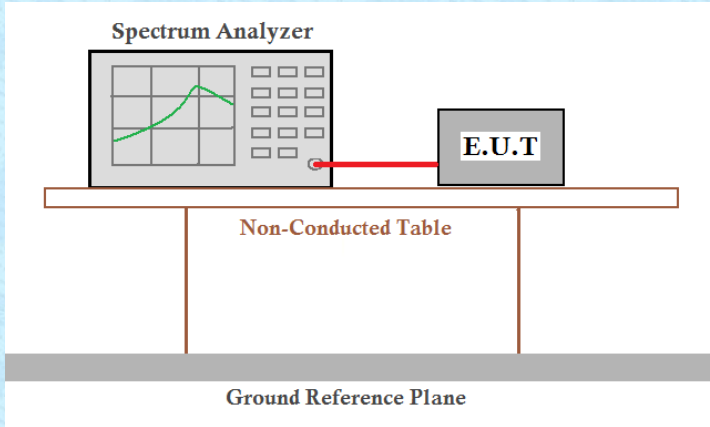
7.3 Conducted Peak Output Power

Test Requirement:	FCC Part15 C Section 15.247 (b)(3)
Test Method:	KDB558074 D01 15.247 Meas Guidance v05r02
Limit:	30dBm
Test setup:	 The diagram illustrates the test setup. A Power Meter is connected to an E.U.T. (Equipment Under Test) via a red cable. Both the Power Meter and the E.U.T. are placed on a Non-Conducted Table. The table is supported by a Ground Reference Plane.
Test Instruments:	Refer to section 6.0 for details
Test mode:	Refer to section 5.2 for details
Test results:	Pass

Measurement Data

Test CH	Peak Output Power (dBm)				Limit(dBm)	Result
	802.11b	802.11g	802.11n(HT20)	802.11n(HT40)		
Lowest	14.99	14.464	14.488	13.2	30.00	Pass
Middle	14.879	14.182	14.253	12.699		
Highest	13.91	13.151	13.359	12.08		

7.4 Channel Bandwidth & 99% Occupy Bandwidth

Test Requirement :	FCC Part15 C Section 15.247 (a)(2)
Test Method :	KDB558074 D01 15.247 Meas Guidance v05r02
Limit:	>500kHz
Test setup:	 The diagram illustrates the test setup. A Spectrum Analyzer, showing a frequency spectrum on its screen, is connected to an Equipment Under Test (E.U.T.) by a red cable. Both the Spectrum Analyzer and the E.U.T. are positioned on a Non-Conducted Table. This table is supported by a Ground Reference Plane, which is represented by a thick grey bar at the bottom of the setup.
Test Instruments:	Refer to section 6.0 for details
Test mode:	Refer to section 5.2 for details
Test results:	Pass

Measurement Data

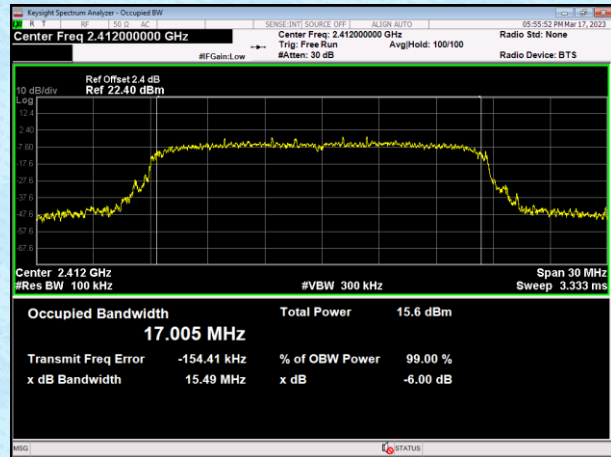
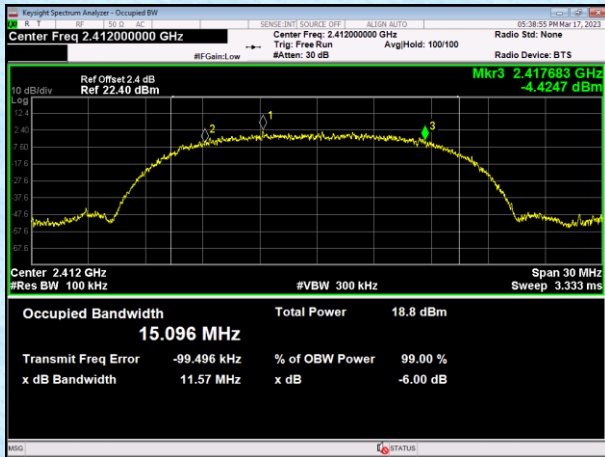
Test CH	Channel Bandwidth (MHz)				Limit (kHz)	Result
	802.11b	802.11g	802.11n(HT20)	802.11n(HT40)		
Lowest	11.57	15.49	15.02	35.05	>500	Pass
Middle	11.75	15.32	15.06	35.05		
Highest	12.7	15.57	13.22	32.55		

Test CH	99% Occupy Bandwidth (MHz)				Result
	802.11b	802.11g	802.11n(HT20)	802.11n(HT40)	
Lowest	15.277	17.112	17.983	35.655	Pass
Middle	15.196	17.118	17.967	35.586	
Highest	15.2	17.005	17.99	35.618	

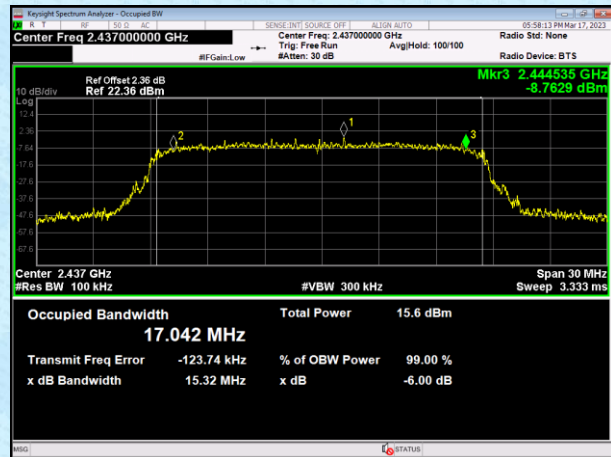
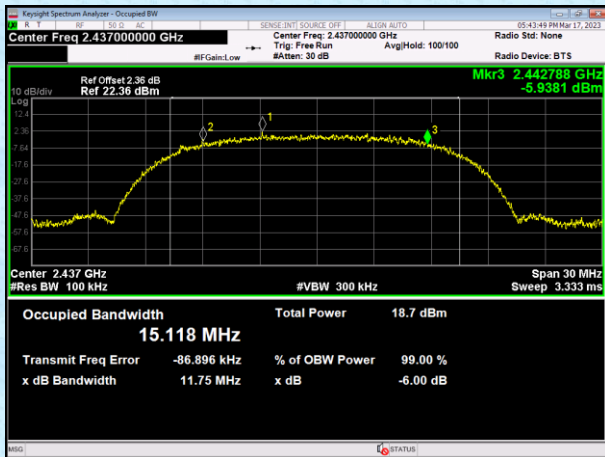
Test plot as follows:

-6dB BW

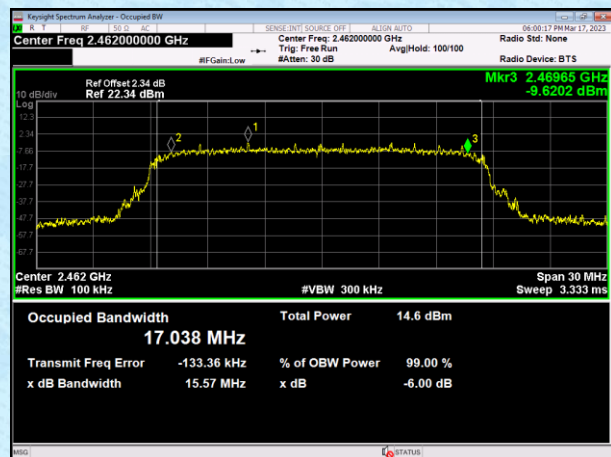
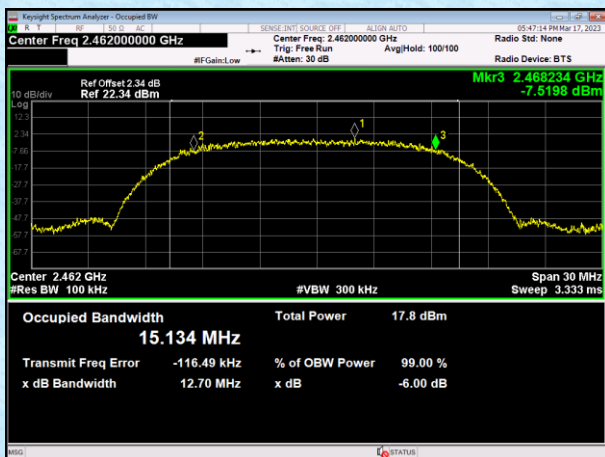
802.11b		802.11g	
---------	--	---------	--



Lowest channel

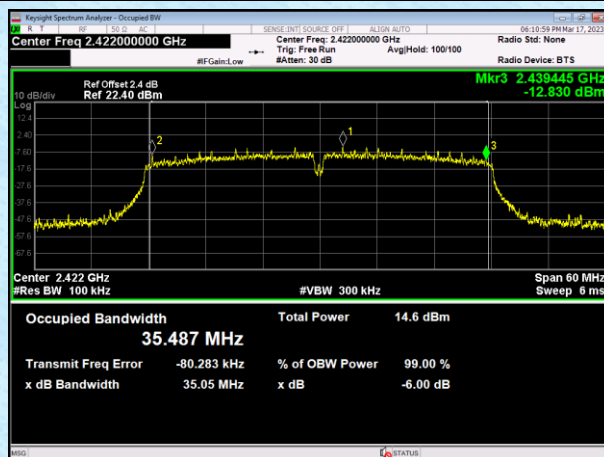
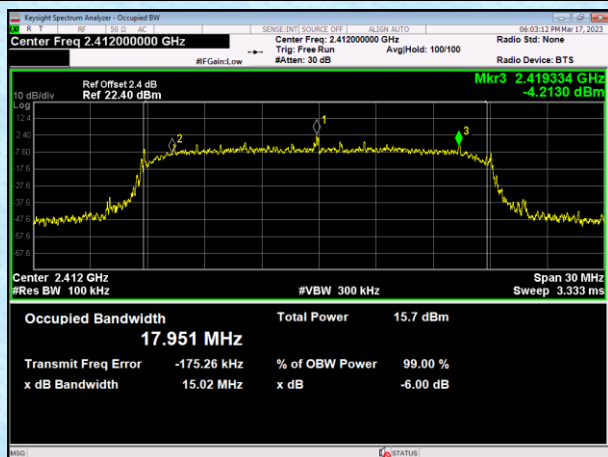


Middle channel

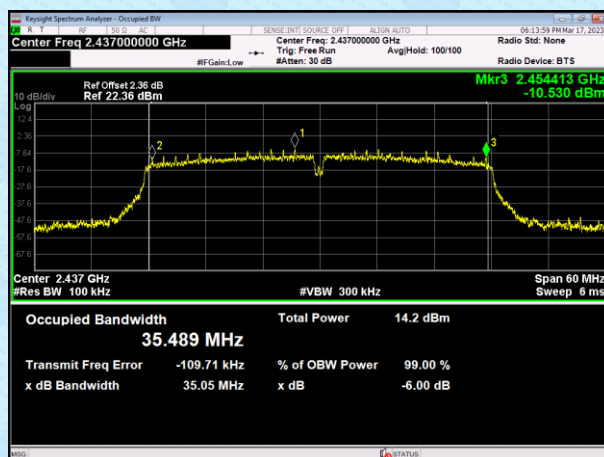
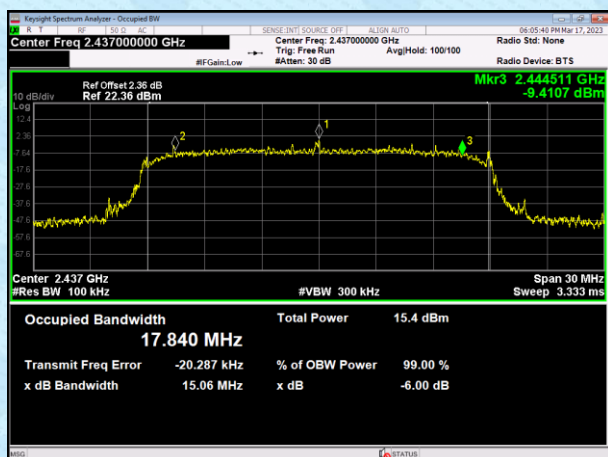


Highest channel

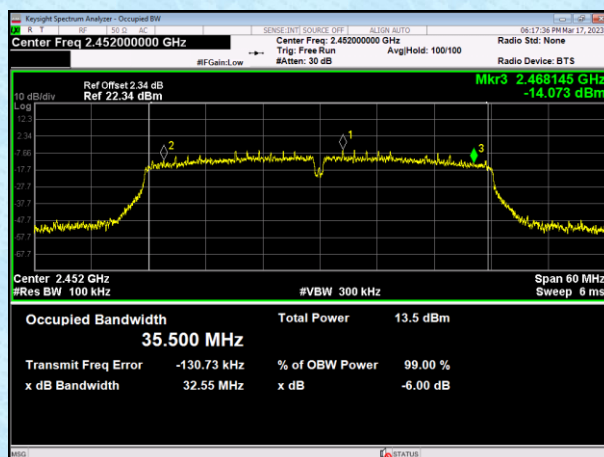
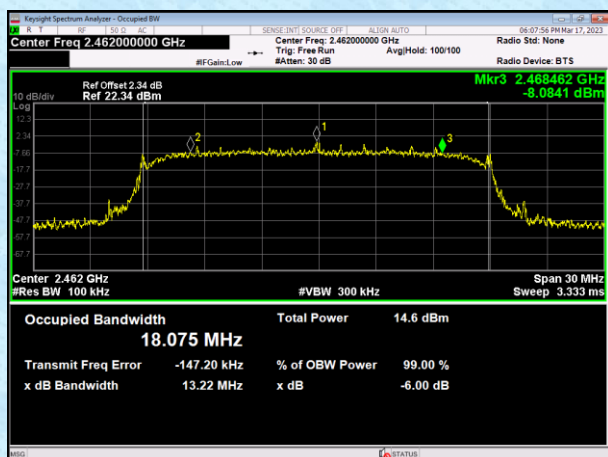
802.11n(HT20)		802.11n(HT40)	
---------------	--	---------------	--



Lowest channel



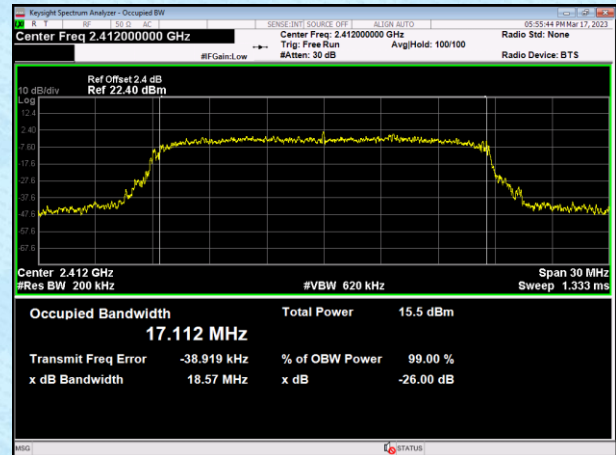
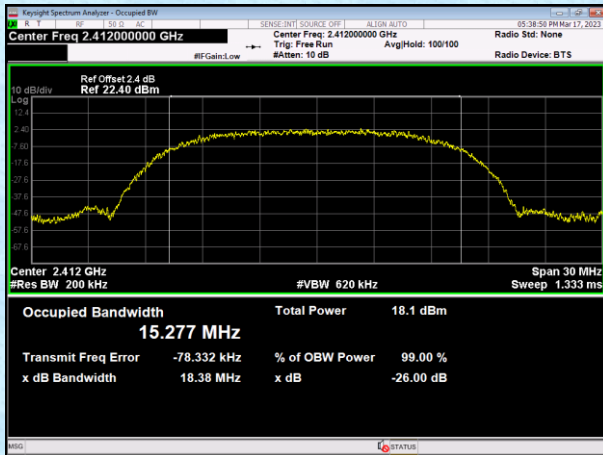
Middle channel



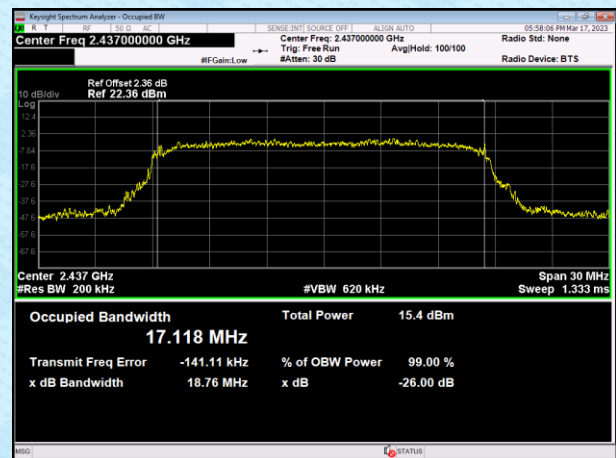
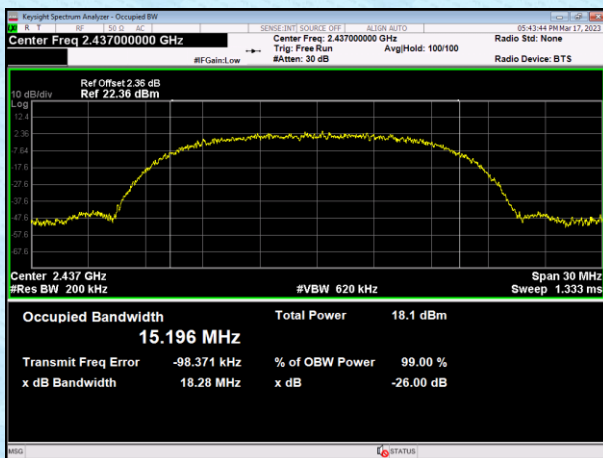
Highest channel

99% BW

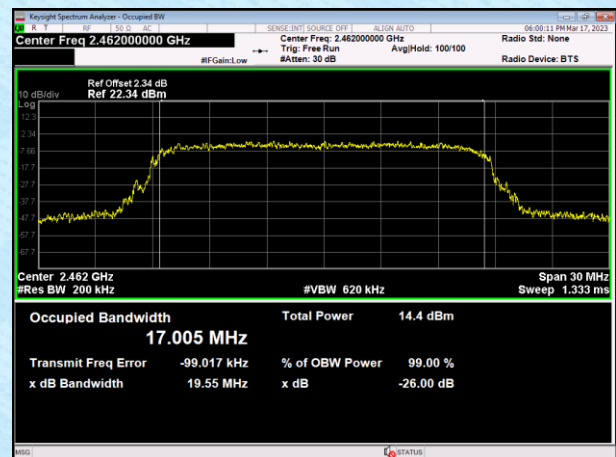
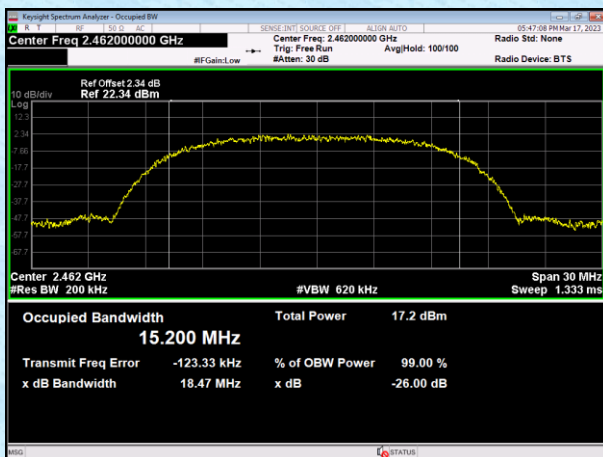
802.11b	802.11g
---------	---------



Lowest channel

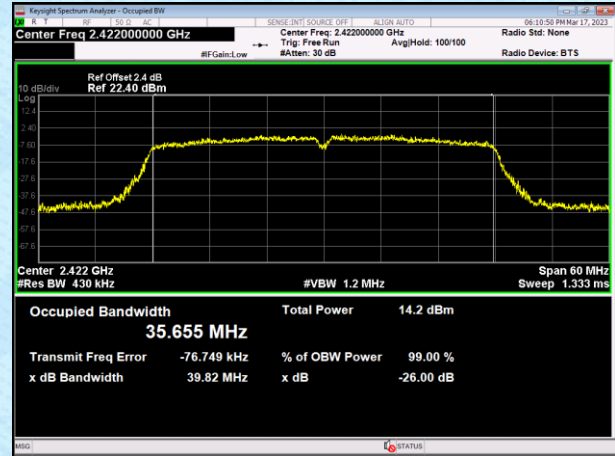
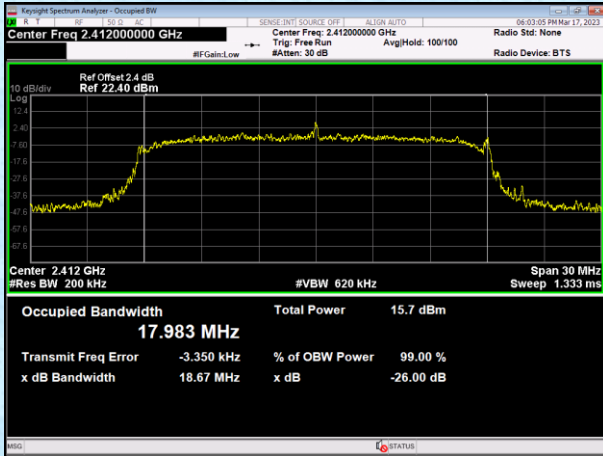


Middle channel

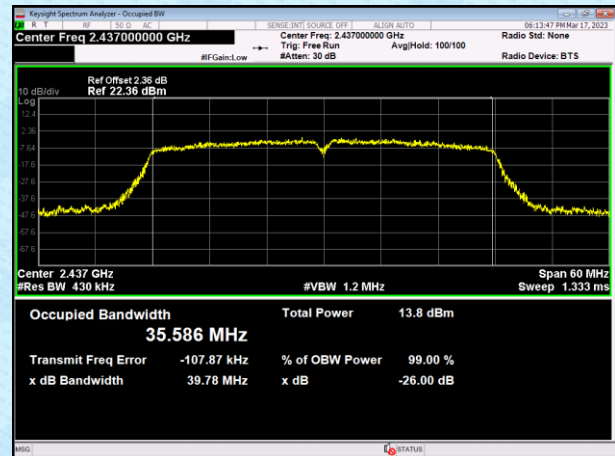
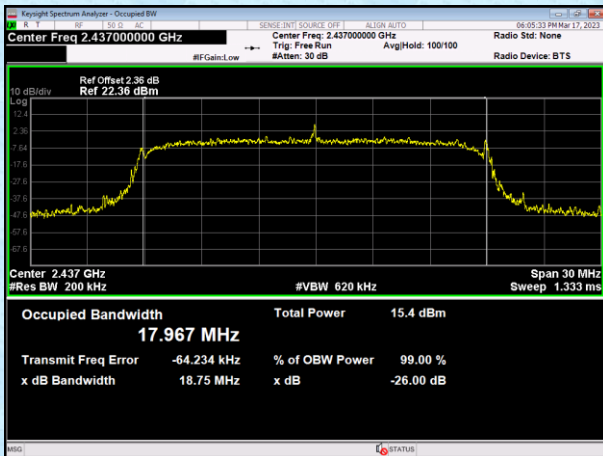


Highest channel

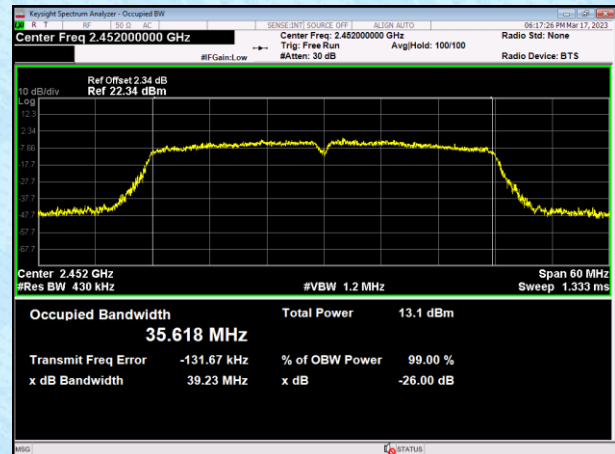
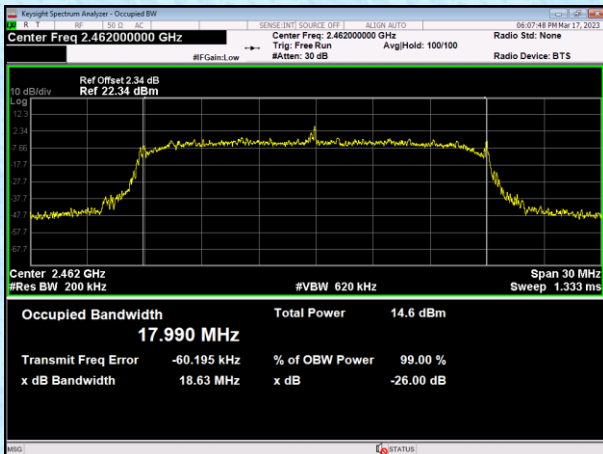
802.11n(HT20)		802.11n(HT40)	
---------------	--	---------------	--



Lowest channel

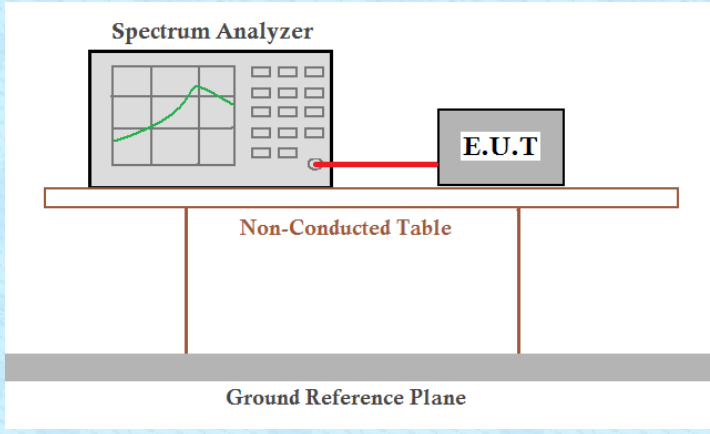


Middle channel



Highest channel

7.5 Power Spectral Density

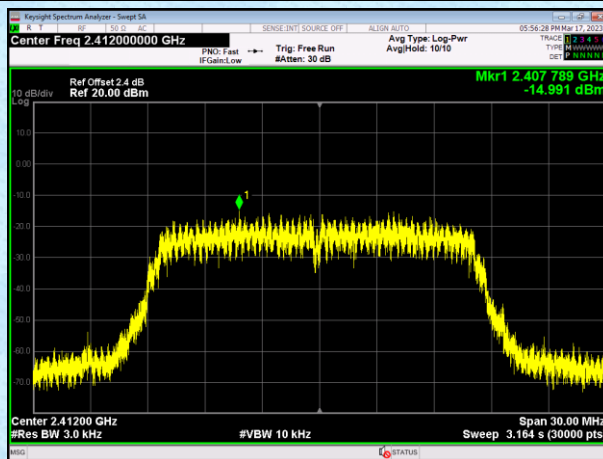
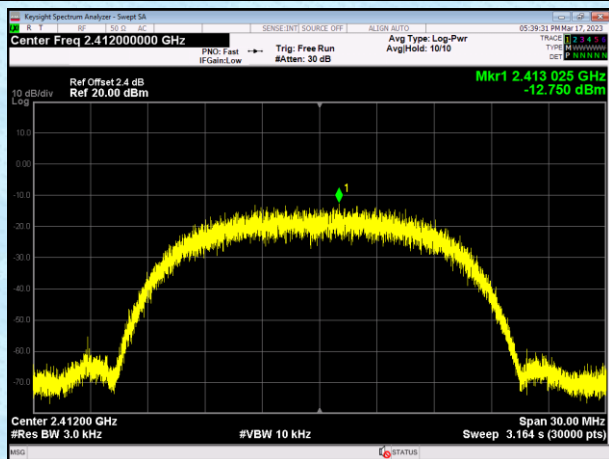
Test Requirement:	FCC Part15 C Section 15.247 (e)
Test Method:	KDB558074 D01 15.247 Meas Guidance v05r02
Limit:	8dBm/3kHz
Test setup:	
Test Instruments:	Refer to section 6.0 for details
Test mode:	Refer to section 5.2 for details
Test results:	Pass

Measurement Data

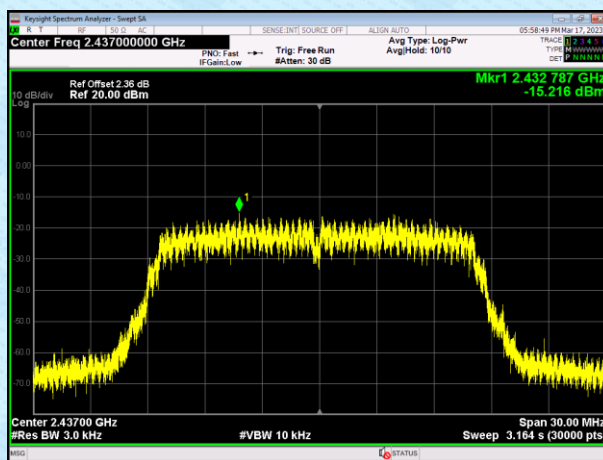
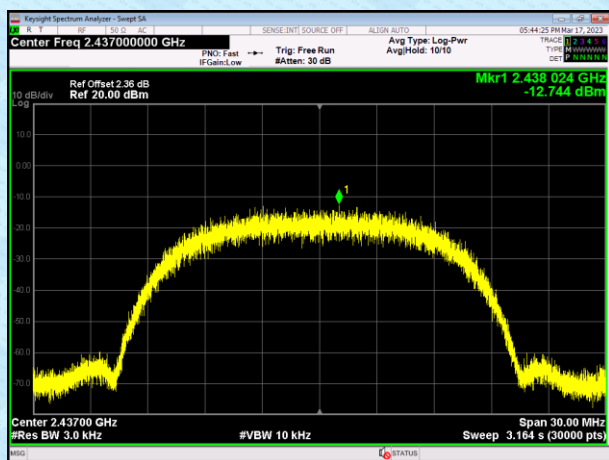
Test CH	Power Spectral Density (dBm/3kHz)				Limit (dBm/3kHz)	Result
	802.11b	802.11g	802.11n(HT20)	802.11n(HT40)		
Lowest	-12.75	-14.991	-14.508	-17.84	8.00	Pass
Middle	-12.744	-15.216	-14.746	-19.225		
Highest	-13.967	-15.526	-15.477	-19.889		

Test plot as follows:

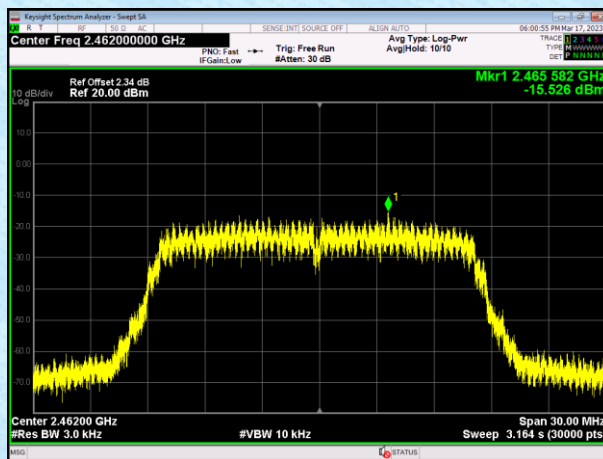
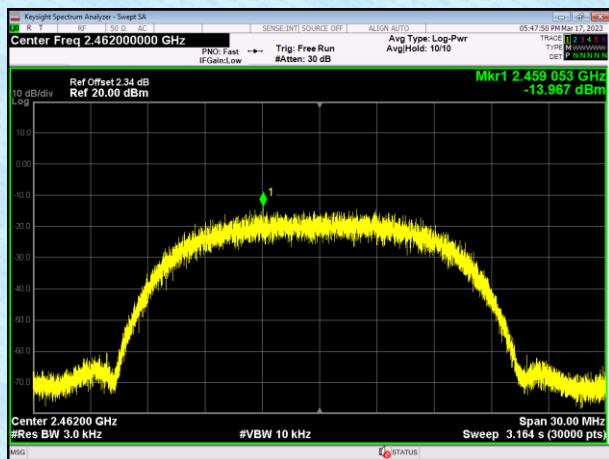
802.11b		802.11g	
---------	--	---------	--



Lowest channel

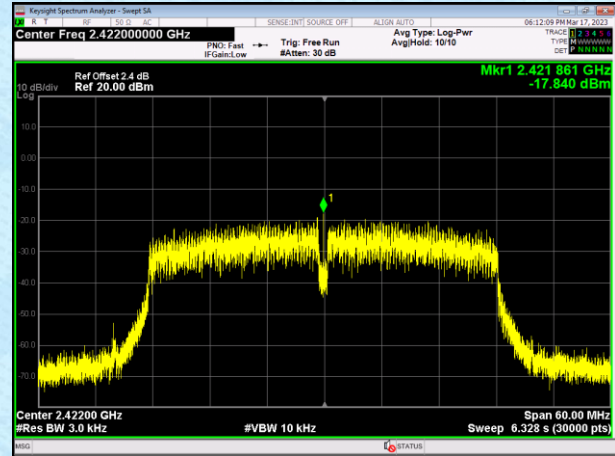
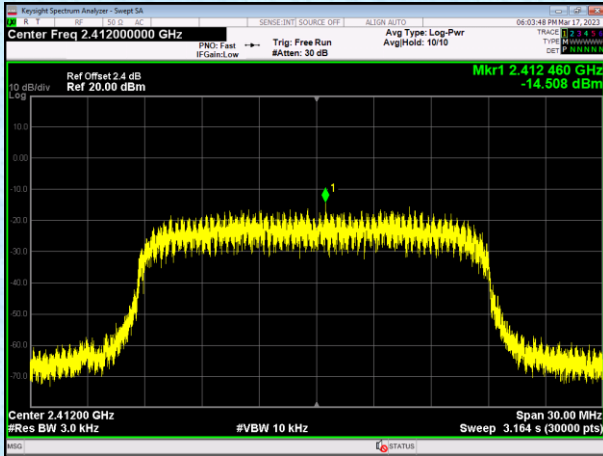


Middle channel

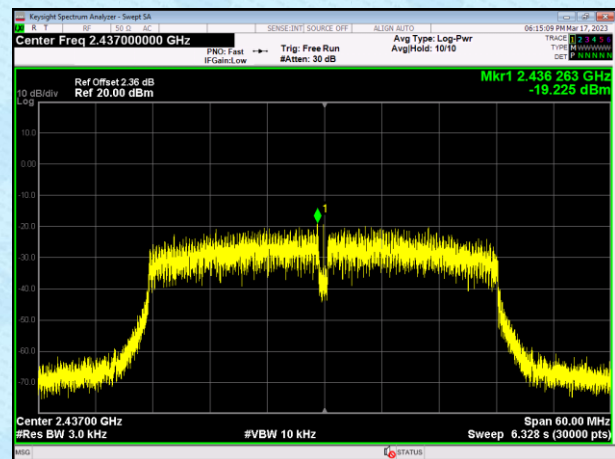
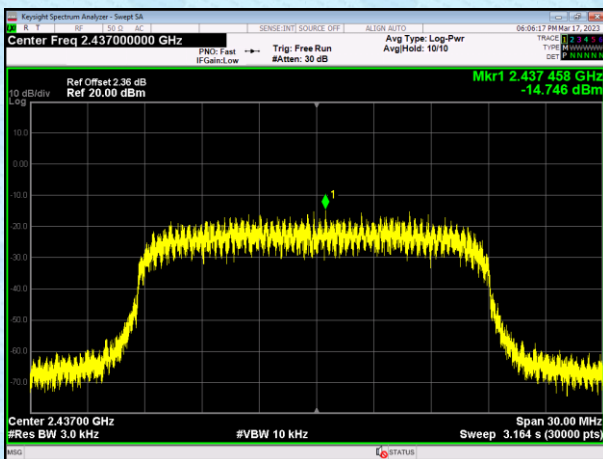


Highest channel

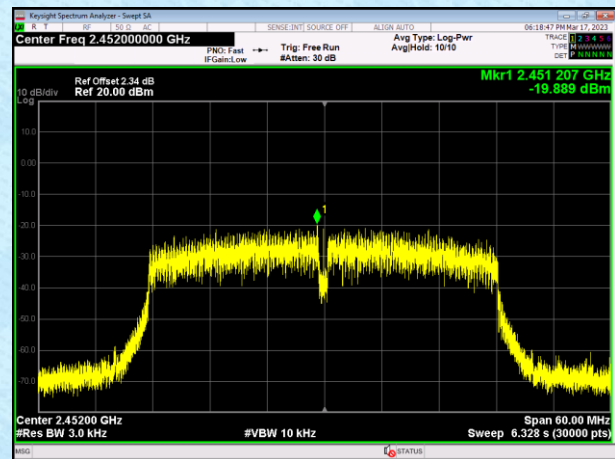
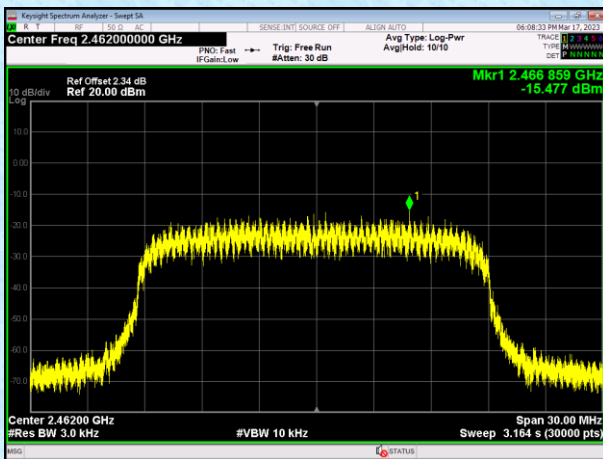
802.11n(HT20)		802.11n(HT40)	
---------------	--	---------------	--



Lowest channel



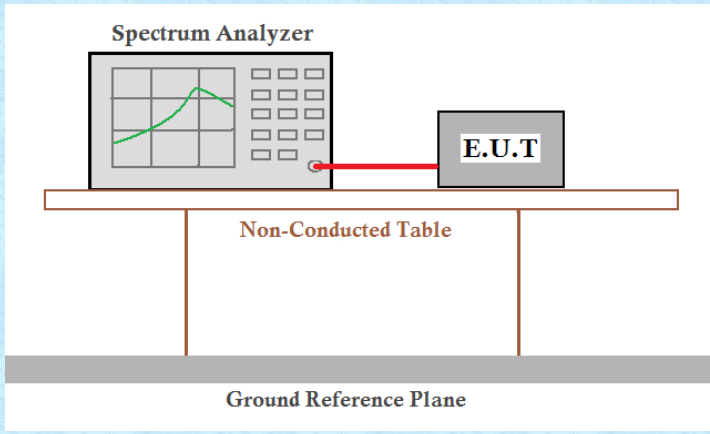
Middle channel



Highest channel

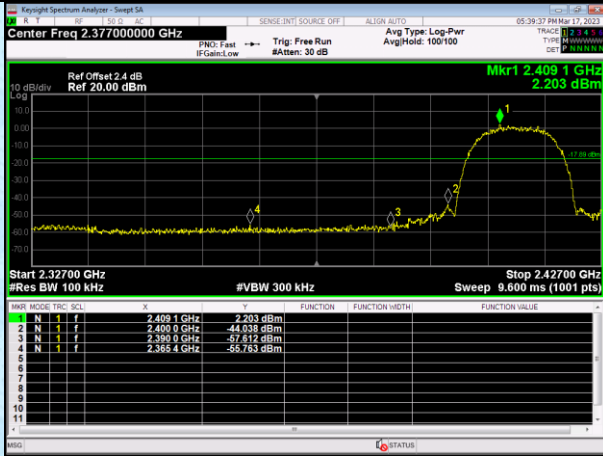
7.6 Band edges

7.6.1 Conducted Emission Method

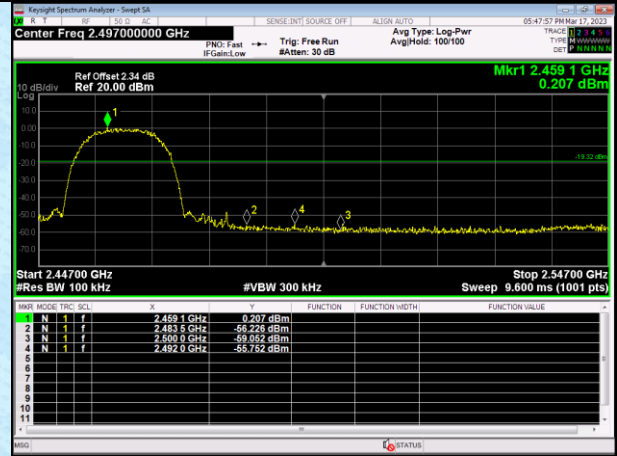
Test Requirement:	FCC Part15 C Section 15.247 (d)
Test Method:	KDB558074 D01 15.247 Meas Guidance v05r02
Limit:	In any 100 kHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall 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 setup:	 The diagram illustrates the test setup. A Spectrum Analyzer is connected to an E.U.T. (Equipment Under Test) via a red cable. Both the Spectrum Analyzer and the E.U.T. are placed on a Non-Conducted Table. The table is supported by a Ground Reference Plane.
Test Instruments:	Refer to section 6.0 for details
Test mode:	Refer to section 5.2 for details
Test results:	Pass

Test plot as follows:

Test mode: 802.11b

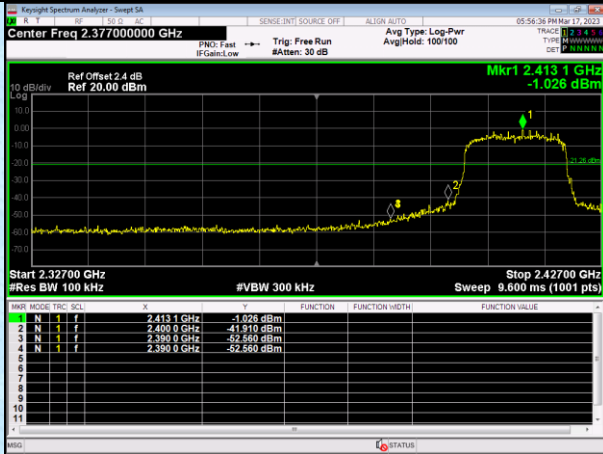


Lowest channel

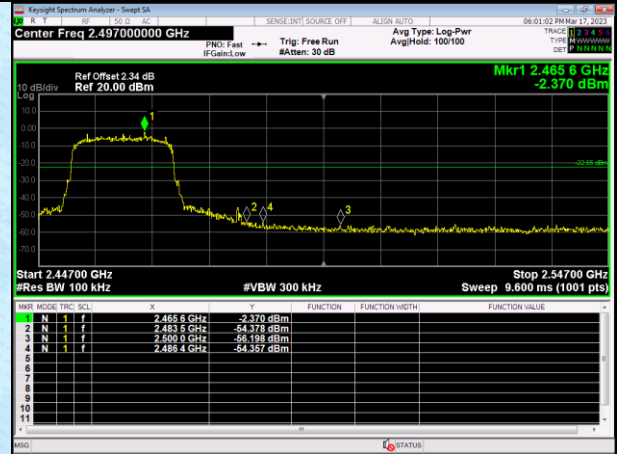


Highest channel

Test mode: 802.11g



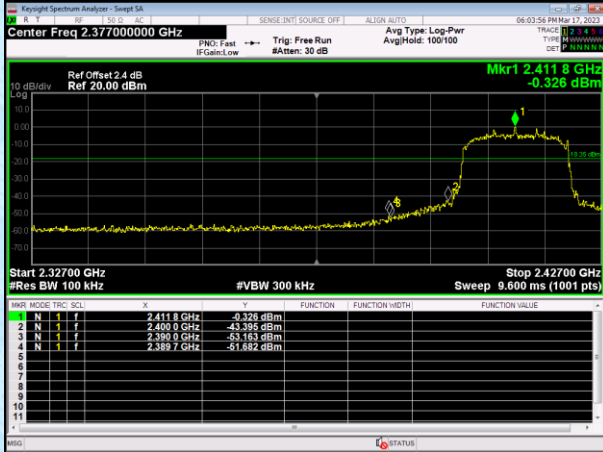
Lowest channel



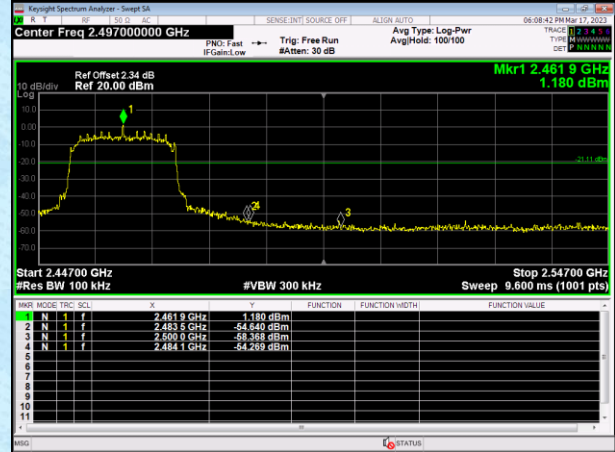
Highest channel

Test mode:

802.11n(HT20)



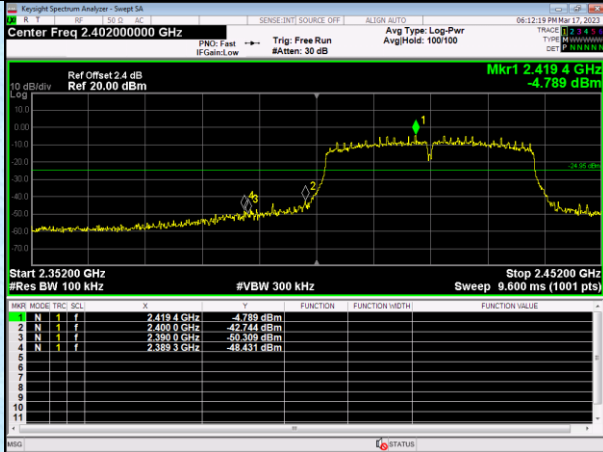
Lowest channel



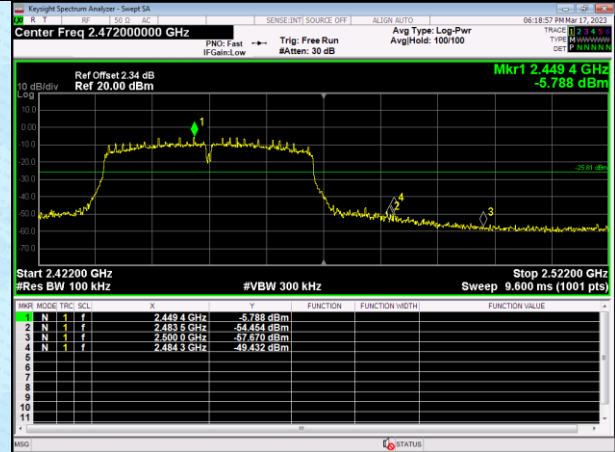
Highest channel

Test mode:

802.11n(HT40)

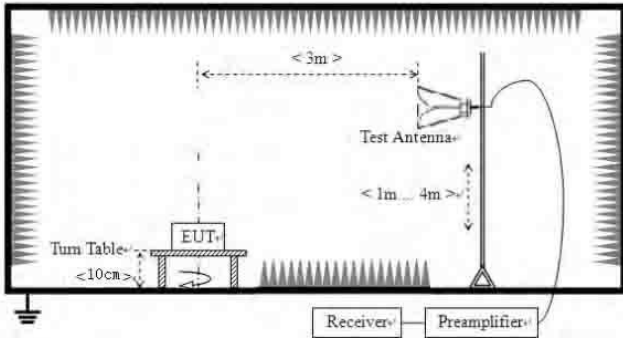


Lowest channel



Highest channel

7.6.2 Radiated Emission Method

Test Requirement:	FCC Part15 C Section 15.209 and 15.205				
Test Method:	ANSI C63.10: 2013				
Test Frequency Range:	All of the restrict bands were tested, only the worst band's (2310MHz to 2500MHz) data was showed.				
Test site:	Measurement Distance: 3m				
Receiver setup:	Frequency	Detector	RBW	VBW	Value
	Above 1GHz	Peak	1MHz	3MHz	Peak
		Average	1MHz	3MHz	Average
Limit:	Frequency		Limit (dBuV/m @3m)		Value
	Above 1GHz		54.00		Average
			74.00		Peak
Test setup:					
Test Procedure:	1. The EUT was placed on the top of a rotating table 1.5 meters above the ground at a 3 meter camber. The table was rotated 360 degrees to determine the position of the highest radiation. 2. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower. 3. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement. 4. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rota table was turned from 0 degrees to 360 degrees to find the maximum reading. 5. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode. 6. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet. 7. The radiation measurements are performed in X, Y, Z axis positioning. And found the Y axis positioning which it is worse case, only the test worst case mode is recorded in the report.				
Test Instruments:	Refer to section 6.0 for details				
Test mode:	Refer to section 5.2 for details				
Test results:	Pass				

Measurement data:
■ SM-STTL20-BK

Test mode:	802.11b	Test channel:	Lowest
------------	---------	---------------	--------

Peak value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
2310	48.91	27.14	6.19	42.04	40.2	74	-33.8	Horizontal
2390	51.41	27.37	6.31	42.11	42.98	74	-31.02	Horizontal
2310	48.42	27.14	6.19	42.04	39.71	74	-34.29	Vertical
2390	60.58	27.37	6.31	42.11	52.15	74	-21.85	Vertical

Test mode:	802.11b	Test channel:	Highest
------------	---------	---------------	---------

Peak value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
2483.5	52.32	27.66	6.45	42.01	44.42	74	-29.58	Horizontal
2500	48	27.7	6.47	42	40.17	74	-33.83	Horizontal
2483.5	58.47	27.66	6.45	42.01	50.57	74	-23.43	Vertical
2500	48.96	27.7	6.47	42	41.13	74	-32.87	Vertical

Test mode:	802.11g	Test channel:	Lowest
------------	---------	---------------	--------

Peak value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
2310	49.31	27.14	6.19	42.04	40.6	74	-33.4	Horizontal
2390	51.68	27.37	6.31	42.11	43.25	74	-30.75	Horizontal
2310	48.89	27.14	6.19	42.04	40.18	74	-33.82	Vertical
2390	60.79	27.37	6.31	42.11	52.36	74	-21.64	Vertical

Test mode:	802.11g	Test channel:	Highest
------------	---------	---------------	---------

Peak value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
2483.5	52.93	27.66	6.45	42.01	45.03	74	-28.97	Horizontal
2500	48.8	27.7	6.47	42	40.97	74	-33.03	Horizontal
2483.5	58.87	27.66	6.45	42.01	50.97	74	-23.03	Vertical
2500	49.67	27.7	6.47	42	41.84	74	-32.16	Vertical

Test mode:	802.11n(HT20)	Test channel:	Lowest
------------	---------------	---------------	--------

Peak value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
2310	49.54	27.14	6.19	42.04	40.83	74	-33.17	Horizontal
2390	51.61	27.37	6.31	42.11	43.18	74	-30.82	Horizontal
2310	48.18	27.14	6.19	42.04	39.47	74	-34.53	Vertical
2390	61.26	27.37	6.31	42.11	52.83	74	-21.17	Vertical

Test mode:	802.11n(HT20)	Test channel:	Highest
------------	---------------	---------------	---------

Peak value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
2483.5	52.59	27.66	6.45	42.01	44.69	74	-29.31	Horizontal
2500	47.86	27.7	6.47	42	40.03	74	-33.97	Horizontal
2483.5	57.97	27.66	6.45	42.01	50.07	74	-23.93	Vertical
2500	49.38	27.7	6.47	42	41.55	74	-32.45	Vertical

Test mode:	802.11n(HT40)	Test channel:	Lowest
------------	---------------	---------------	--------

Peak value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
2310	48.64	27.14	6.19	42.04	39.93	74	-34.07	Horizontal
2390	50.61	27.37	6.31	42.11	42.18	74	-31.82	Horizontal
2310	48.16	27.14	6.19	42.04	39.45	74	-34.55	Vertical
2390	61.05	27.37	6.31	42.11	52.62	74	-21.38	Vertical

Test mode:	802.11n(HT40)	Test channel:	Highest
------------	---------------	---------------	---------

Peak value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
2483.5	52.38	27.66	6.45	42.01	44.48	74	-29.52	Horizontal
2500	47.09	27.7	6.47	42	39.26	74	-34.74	Horizontal
2483.5	57.54	27.66	6.45	42.01	49.64	74	-24.36	Vertical
2500	48.8	27.7	6.47	42	40.97	74	-33.03	Vertical

Remarks:

- The pre-test were performed on lowest, middle and highest frequencies, only the worst case's (lowest and highest frequencies) data was showed.
- Final Level =Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor
- The emission levels of other frequencies are very lower than the limit and not show in test report.

■ SM-STFL50-BK

Test mode:	802.11b	Test channel:	Lowest
------------	---------	---------------	--------

Peak value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
2310	49.33	27.14	6.19	42.04	40.62	74	-33.38	Horizontal
2390	52.12	27.37	6.31	42.11	43.69	74	-30.31	Horizontal
2310	48.58	27.14	6.19	42.04	39.87	74	-34.13	Vertical
2390	61.46	27.37	6.31	42.11	53.03	74	-20.97	Vertical

Test mode:	802.11b	Test channel:	Highest
------------	---------	---------------	---------

Peak value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
2483.5	52.82	27.66	6.45	42.01	44.92	74	-29.08	Horizontal
2500	48.47	27.7	6.47	42	40.64	74	-33.36	Horizontal
2483.5	59.33	27.66	6.45	42.01	51.43	74	-22.57	Vertical
2500	49.21	27.7	6.47	42	41.38	74	-32.62	Vertical

Test mode:	802.11g	Test channel:	Lowest
------------	---------	---------------	--------

Peak value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
2310	48.83	27.14	6.19	42.04	40.12	74	-33.88	Horizontal
2390	50.99	27.37	6.31	42.11	42.56	74	-31.44	Horizontal
2310	48.29	27.14	6.19	42.04	39.58	74	-34.42	Vertical
2390	60.21	27.37	6.31	42.11	51.78	74	-22.22	Vertical

Test mode:	802.11g	Test channel:	Highest
------------	---------	---------------	---------

Peak value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
2483.5	52.28	27.66	6.45	42.01	44.38	74	-29.62	Horizontal
2500	48.68	27.7	6.47	42	40.85	74	-33.15	Horizontal
2483.5	58.37	27.66	6.45	42.01	50.47	74	-23.53	Vertical
2500	49.67	27.7	6.47	42	41.84	74	-32.16	Vertical

Test mode:	802.11n(HT20)	Test channel:	Lowest
------------	---------------	---------------	--------

Peak value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
2310	49.32	27.14	6.19	42.04	40.61	74	-33.39	Horizontal
2390	50.82	27.37	6.31	42.11	42.39	74	-31.61	Horizontal
2310	48.09	27.14	6.19	42.04	39.38	74	-34.62	Vertical
2390	60.69	27.37	6.31	42.11	52.26	74	-21.74	Vertical

Test mode:	802.11n(HT20)	Test channel:	Highest
------------	---------------	---------------	---------

Peak value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
2483.5	61.76	27.66	6.45	52.01	43.86	74	-30.14	Horizontal
2500	47.02	27.7	6.47	42	39.19	74	-34.81	Horizontal
2483.5	57.75	27.66	6.45	42.01	49.85	74	-24.15	Vertical
2500	48.68	27.7	6.47	42	40.85	74	-33.15	Vertical

Test mode:	802.11n(HT40)	Test channel:	Lowest
------------	---------------	---------------	--------

Peak value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
2310	47.78	27.14	6.19	42.04	39.07	74	-34.93	Horizontal
2390	49.84	27.37	6.31	42.11	41.41	74	-32.59	Horizontal
2310	47.55	27.14	6.19	42.04	38.84	74	-35.16	Vertical
2390	60.94	27.37	6.31	42.11	52.51	74	-21.49	Vertical

Test mode:	802.11n(HT40)	Test channel:	Highest
------------	---------------	---------------	---------

Peak value:

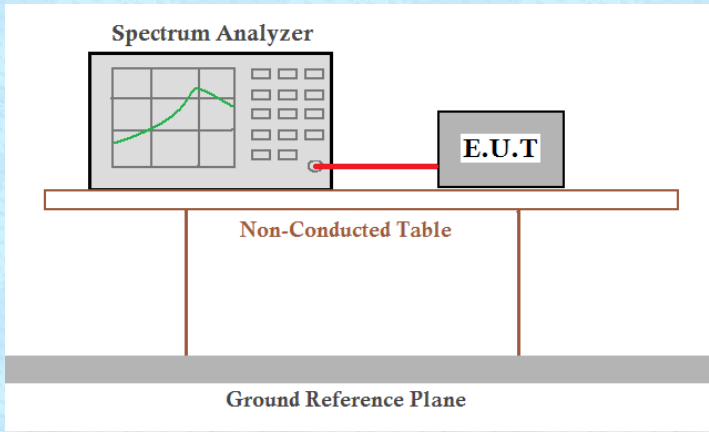
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
2483.5	51.41	27.66	6.45	42.01	43.51	74	-30.49	Horizontal
2500	46.91	27.7	6.47	42	39.08	74	-34.92	Horizontal
2483.5	57.36	27.66	6.45	42.01	49.46	74	-24.54	Vertical
2500	48.06	27.7	6.47	42	40.23	74	-33.77	Vertical

Remarks:

- The pre-test were performed on lowest, middle and highest frequencies, only the worst case's (lowest and highest frequencies) data was showed.
- Final Level =Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor
- The emission levels of other frequencies are very lower than the limit and not show in test report.

7.7 Spurious Emission

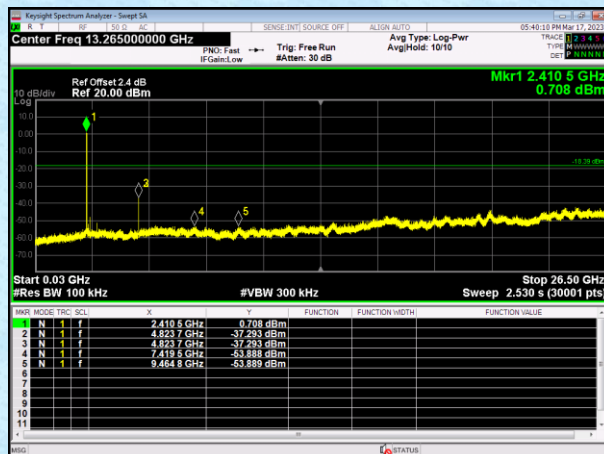
7.7.1 Conducted Emission Method

Test Requirement:	FCC Part15 C Section 15.247 (d)
Test Method:	KDB558074 D01 15.247 Meas Guidance v05r02
Limit:	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 30 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 setup:	 The diagram illustrates the test setup. A Spectrum Analyzer is connected to an E.U.T. (Equipment Under Test) via a red cable. Both the Spectrum Analyzer and the E.U.T. are placed on a Non-Conducted Table. The table is supported by a Ground Reference Plane.
Test Instruments:	Refer to section 6.0 for details
Test mode:	Refer to section 5.2 for details
Test results:	Pass

Test plot as follows:

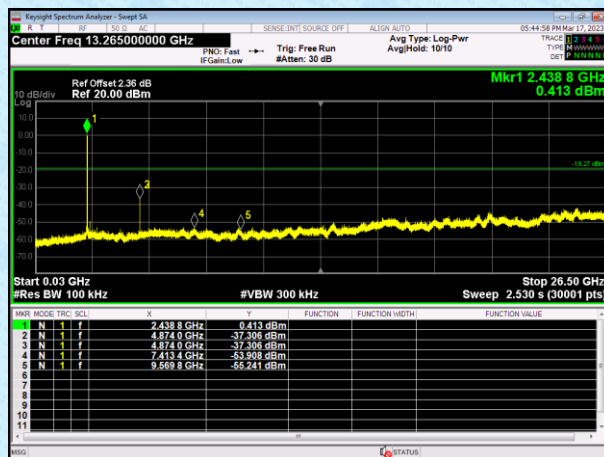
802.11b

Lowest channel



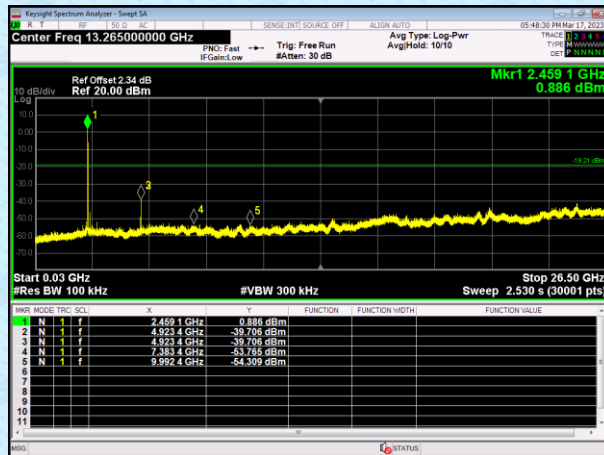
30MHz~25GHz

Middle channel



30MHz~25GHz

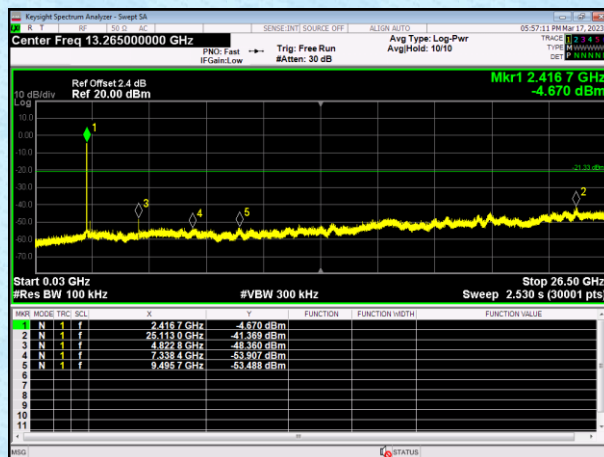
Highest channel



30MHz~25GHz

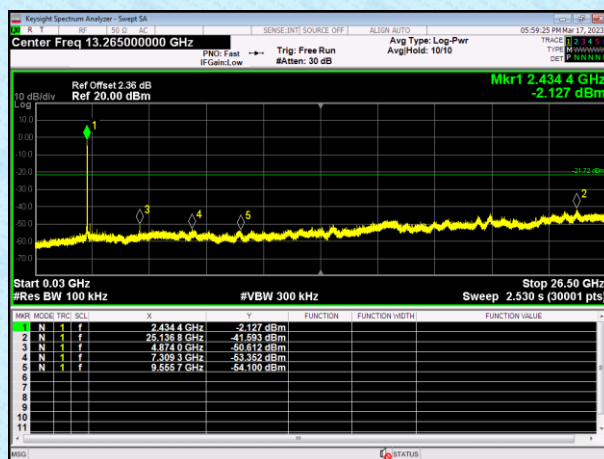
802.11g

Lowest channel



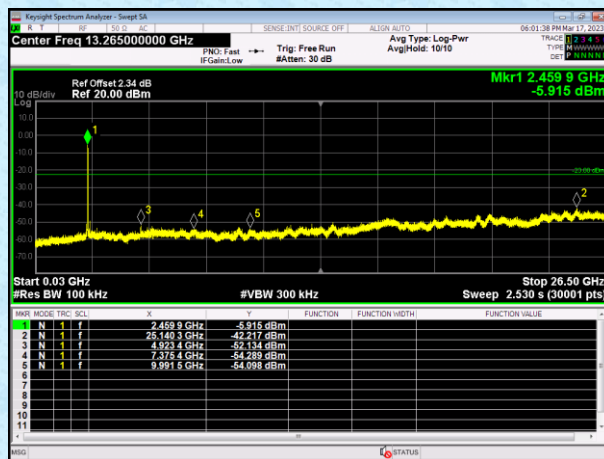
30MHz~25GHz

Middle channel



30MHz~25GHz

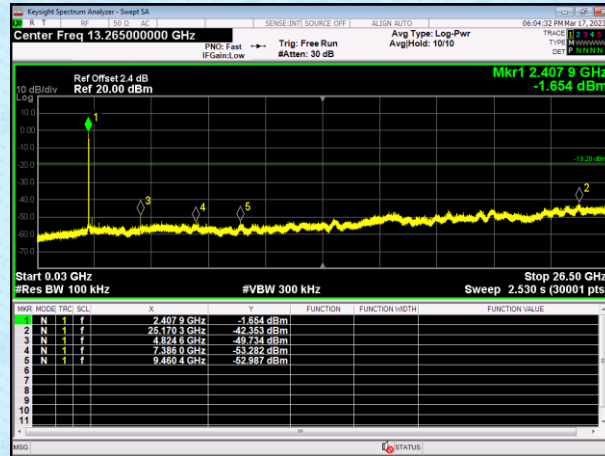
Highest channel



30MHz~25GHz

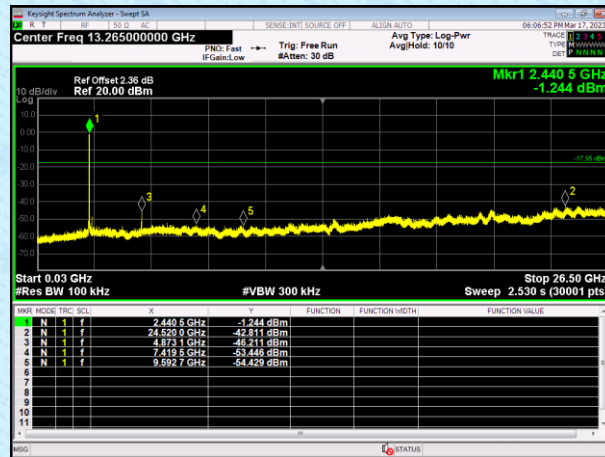
802.11n(HT20)

Lowest channel



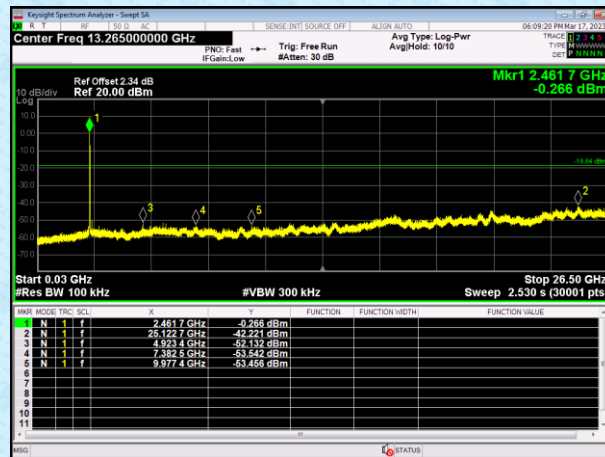
30MHz~25GHz

Middle channel



30MHz~25GHz

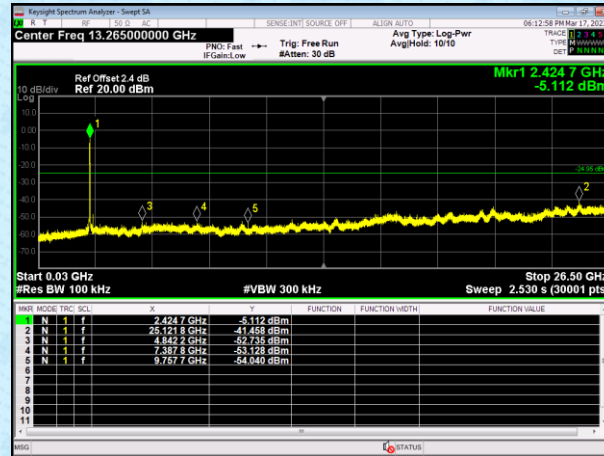
Highest channel



30MHz~25GHz

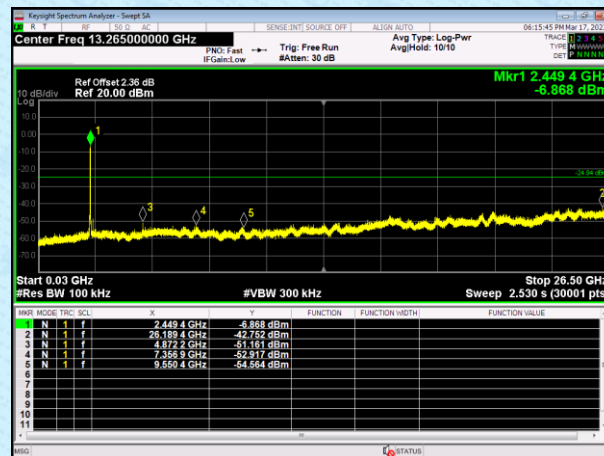
802.11n(HT40)

Lowest channel



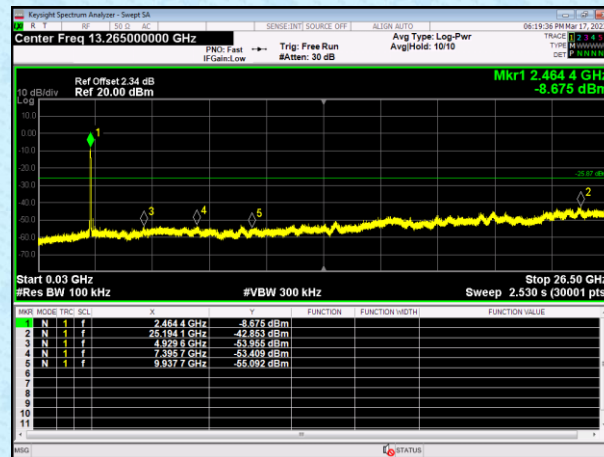
30MHz~25GHz

Middle channel



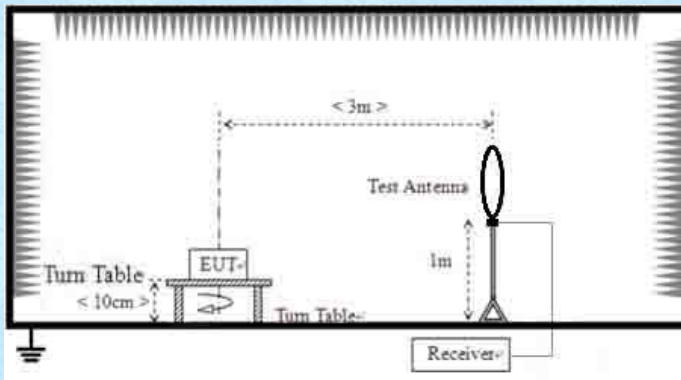
30MHz~25GHz

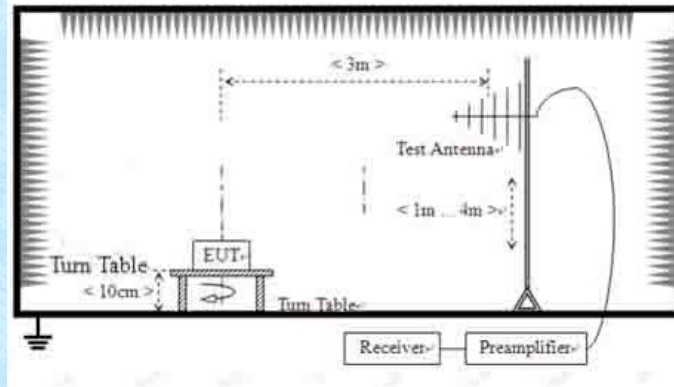
Highest channel



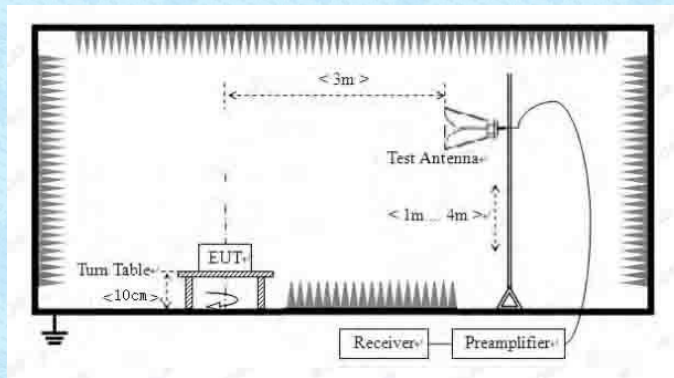
30MHz~25GHz

7.7.2 Radiated Emission Method

Test Requirement:	FCC Part15 C Section 15.209				
Test Method:	ANSI C63.10: 2013				
Test Frequency Range:	9kHz to 25GHz				
Test site:	Measurement Distance: 3m				
Receiver setup:	Frequency	Detector	RBW	VBW	Value
	9kHz-150kHz	Quasi-peak	200Hz	600Hz	Quasi-peak
	150kHz-30MHz	Quasi-peak	9kHz	30kHz	Quasi-peak
	30MHz-1GHz	Quasi-peak	120kHz	300kHz	Quasi-peak
	Above 1GHz	Peak	1MHz	3MHz	Peak
		Peak	1MHz	10Hz	Average
Limit:	Frequency	Limit (uV/m)		Value	Measurement Distance
	0.009MHz-0.490MHz	2400/F(kHz)		QP	300m
	0.490MHz-1.705MHz	24000/F(kHz)		QP	300m
	1.705MHz-30MHz	30		QP	30m
	30MHz-88MHz	100		QP	3m
	88MHz-216MHz	150		QP	
	216MHz-960MHz	200		QP	
	960MHz-1GHz	500		QP	
	Above 1GHz	500		Average	
		5000		Peak	
Test setup:	For radiated emissions from 9kHz to 30MHz				
					
	For radiated emissions from 30MHz to 1GHz				



For radiated emissions above 1GHz



Test Procedure:

1. The EUT was placed on the top of a rotating table (0.1m) above the ground at a 3 meter camber. The table was rotated 360 degrees to determine the position of the highest radiation.
2. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
3. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
4. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rota table was turned from 0 degrees to 360 degrees to find the maximum reading.
5. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
6. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.

Test Instruments:

Refer to section 6.0 for details

Test mode:

Refer to section 5.2 for details

Test environment:	Temp.:	25 °C	Humid.:	52%	Press.:	1012mbar
Test voltage:	AC 120V, 60Hz					
Test results:	Pass					

Remarks:

1. Pre-scan all kind of the place mode (X-axis, Y-axis, Z-axis), and found the Y-axis which it is worse case.

Measurement data:

■ **9kHz~30MHz**

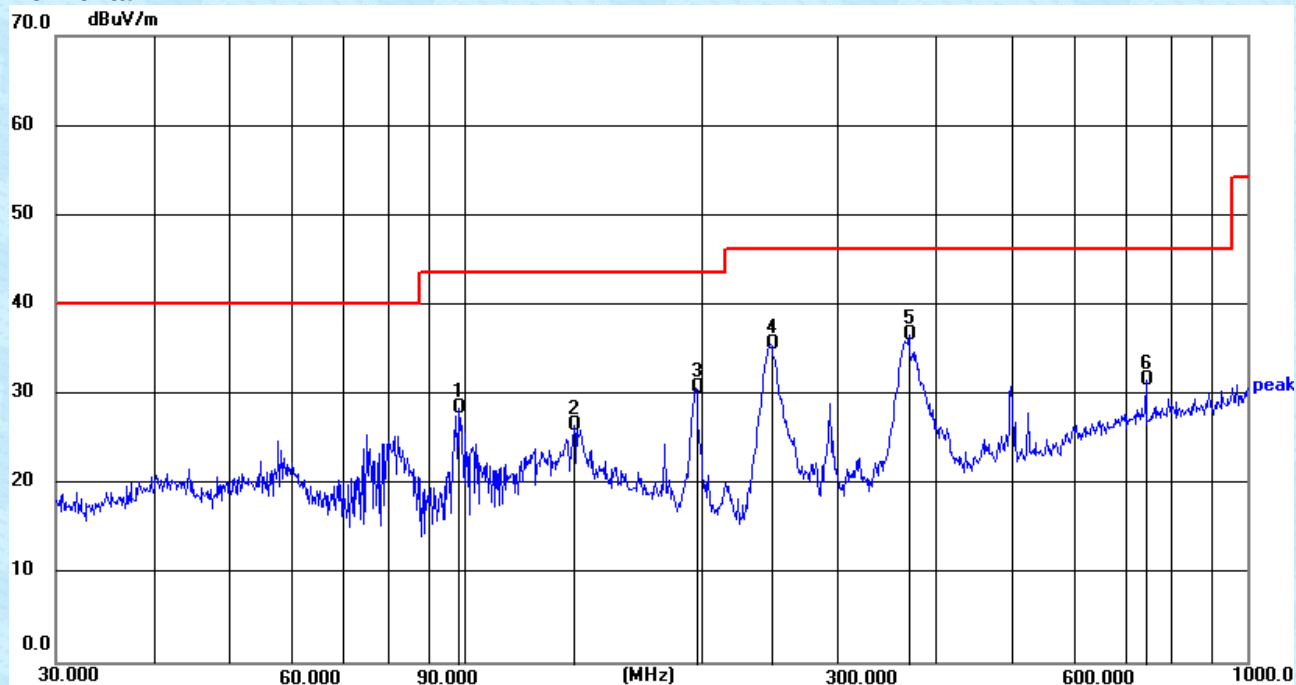
The emission from 9 kHz to 30MHz was pre-tested and found the result was 20dB lower than the limit, and according to 15.31(o) & RSS-Gen 6.13, the test result no need to reported.

■ SM-STTL20-BK

Below 1GHz

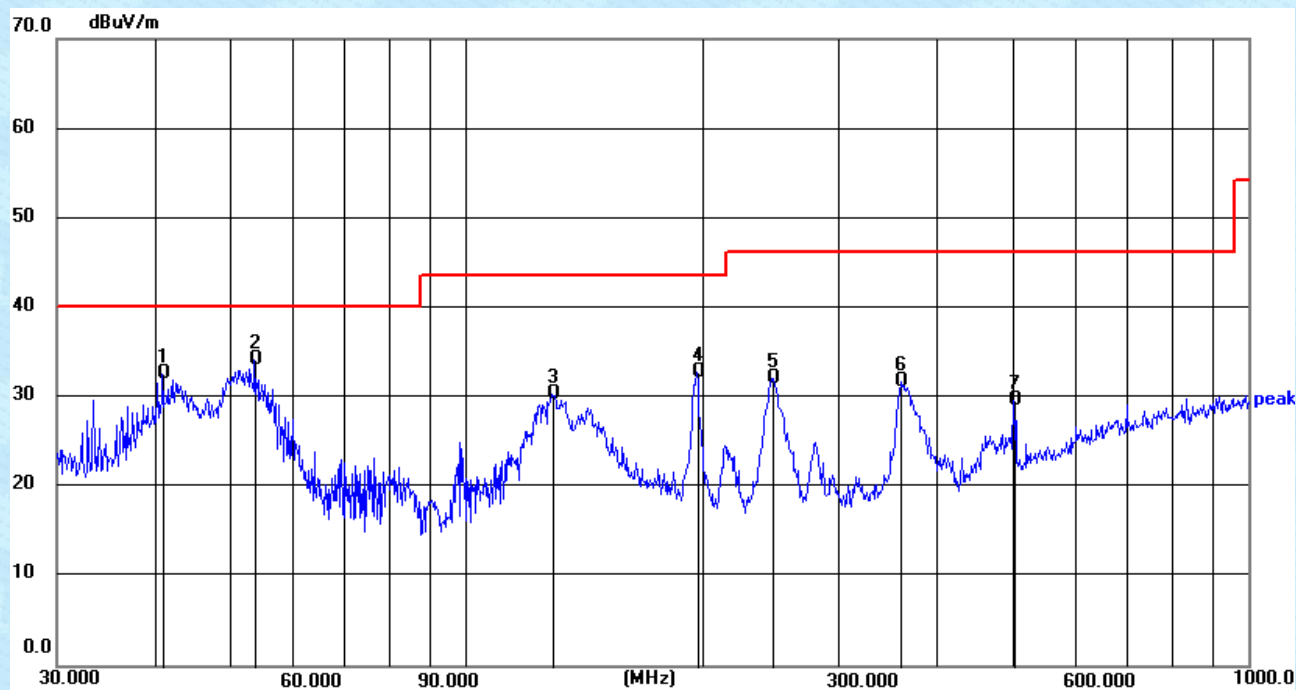
Pre-scan all test modes, found worst case at 802.11b 2462MHz, and so only show the test result of 802.11b 2462MHz

Horizontal:



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	98.1419	16.66	11.79	28.45	43.50	15.05	QP
2	137.9028	12.48	14.00	26.48	43.50	17.02	QP
3	197.2001	18.73	11.94	30.67	43.50	12.83	QP
4	245.9509	22.14	13.45	35.59	46.00	10.41	QP
5	369.4047	20.43	16.22	36.65	46.00	9.35	QP
6	742.2587	9.20	22.47	31.67	46.00	14.33	QP

Vertical:



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	40.9881	18.65	14.02	32.67	40.00	7.33	QP
2	53.6932	19.92	14.31	34.23	40.00	5.77	QP
3	129.0146	15.87	14.56	30.43	43.50	13.07	QP
4	197.2001	20.84	11.94	32.78	43.50	10.72	QP
5	245.9509	18.68	13.45	32.13	46.00	13.87	QP
6	360.4476	15.70	16.03	31.73	46.00	14.27	QP
7	501.1790	11.07	18.64	29.71	46.00	16.29	QP

■ Above 1GHz

Test mode:	802.11b	Test channel:	Lowest
------------	---------	---------------	--------

Peak value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
4824	39.79	31.79	8.62	32.1	48.1	74	-25.9	Vertical
4824	39.39	31.79	8.62	32.1	47.7	74	-26.3	Horizontal

Test mode:	802.11b	Test channel:	Middle
------------	---------	---------------	--------

Peak value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
4874	37.02	31.85	8.66	32.12	45.41	74	-28.59	Vertical
4874	36.134	31.85	8.66	32.12	44.524	74	-29.47	Horizontal

Test mode:	802.11b	Test channel:	Highest
------------	---------	---------------	---------

Peak value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
4924	36.36	31.9	8.7	32.15	44.81	74	-29.19	Vertical
4924	35.38	31.9	8.7	32.15	43.83	74	-30.17	Horizontal

Test mode:	802.11g	Test channel:	lowest
------------	---------	---------------	--------

Peak value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
4824	39.62	31.79	8.62	32.1	47.93	74	-26.07	Vertical
4824	38.67	31.79	8.62	32.1	46.98	74	-27.02	Horizontal

Test mode:	802.11g	Test channel:	Middle
------------	---------	---------------	--------

Peak value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
4874	36.93	31.85	8.66	32.12	45.32	74	-28.68	Vertical
4874	35.35	31.85	8.66	32.12	43.74	74	-30.26	Horizontal

Test mode:	802.11g	Test channel:	Highest
------------	---------	---------------	---------

Peak value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
4924	35.79	31.9	8.7	32.15	44.24	74	-29.76	Vertical
4924	34.9	31.9	8.7	32.15	43.35	74	-30.65	Horizontal

Test mode:	802.11n(HT20)	Test channel:	Lowest
------------	---------------	---------------	--------

Peak value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
4824	38.83	31.79	8.62	32.1	47.14	74	-26.86	Vertical
4824	38.36	31.79	8.62	32.1	46.67	74	-27.33	Horizontal

Test mode:	802.11n(HT20)	Test channel:	Middle
------------	---------------	---------------	--------

Peak value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
4874	36.86	31.85	8.66	32.12	45.25	74	-28.75	Vertical
4874	34.91	31.85	8.66	32.12	43.3	74	-30.7	Horizontal

Test mode:	802.11n(HT20)	Test channel:	Highest
------------	---------------	---------------	---------

Peak value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
4924	35.03	31.9	8.7	32.15	43.48	74	-30.52	Vertical
4924	34.81	31.9	8.7	32.15	43.26	74	-30.74	Horizontal

Test mode:	802.11n(HT40)	Test channel:	Lowest
------------	---------------	---------------	--------

Peak value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
4844	38.19	31.81	8.63	32.11	46.52	74	-27.48	Vertical
4844	37.77	31.81	8.63	32.11	46.1	74	-27.9	Horizontal

Test mode:	802.11n(HT40)	Test channel:	Middle
------------	---------------	---------------	--------

Peak value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
4874	36.1	31.85	8.66	32.12	44.49	74	-29.51	Vertical
4874	34.82	31.85	8.66	32.12	43.21	74	-30.79	Horizontal

Test mode:	802.11n(HT40)	Test channel:	Highest
------------	---------------	---------------	---------

Peak value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
4904	34.1	31.88	8.68	32.13	42.53	74	-31.47	Vertical
4904	34.79	31.88	8.68	32.13	43.22	74	-30.78	Horizontal

Remark:

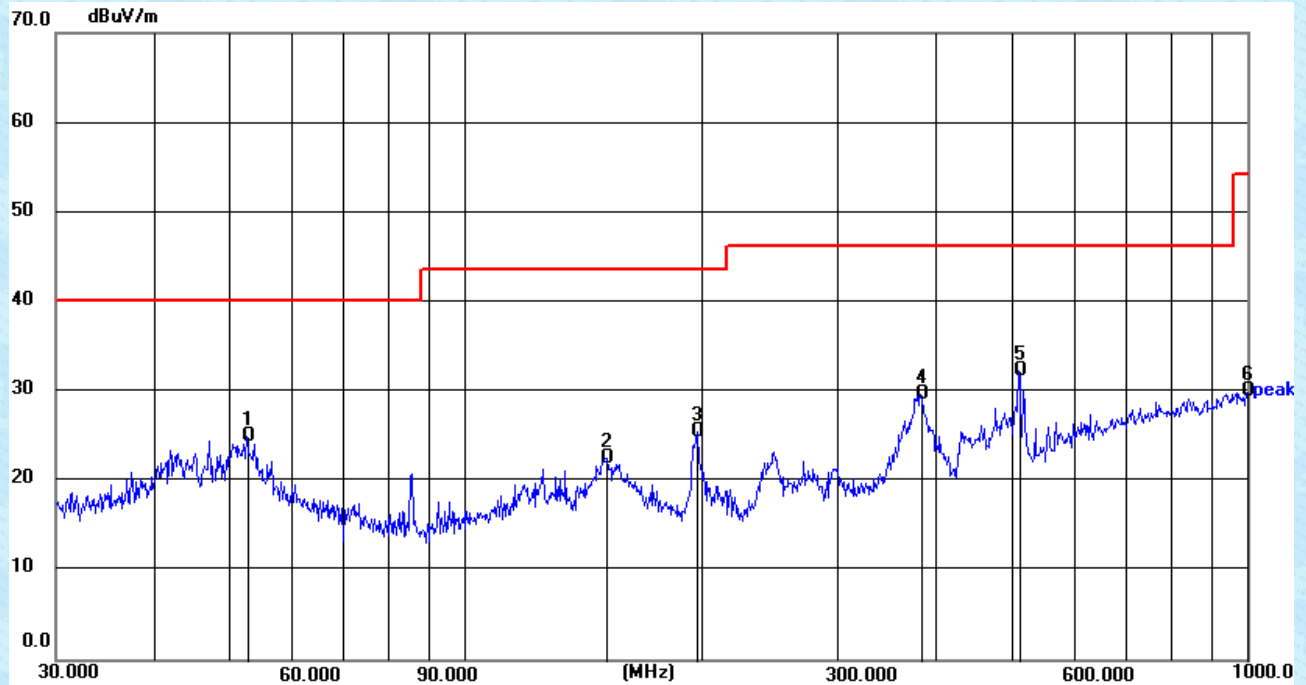
- 1 Final Level =Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor
- 2 other emissions are attenuated 20dB below the limits, so it does not reported.

■ SM-STFL50-BK

Below 1GHz

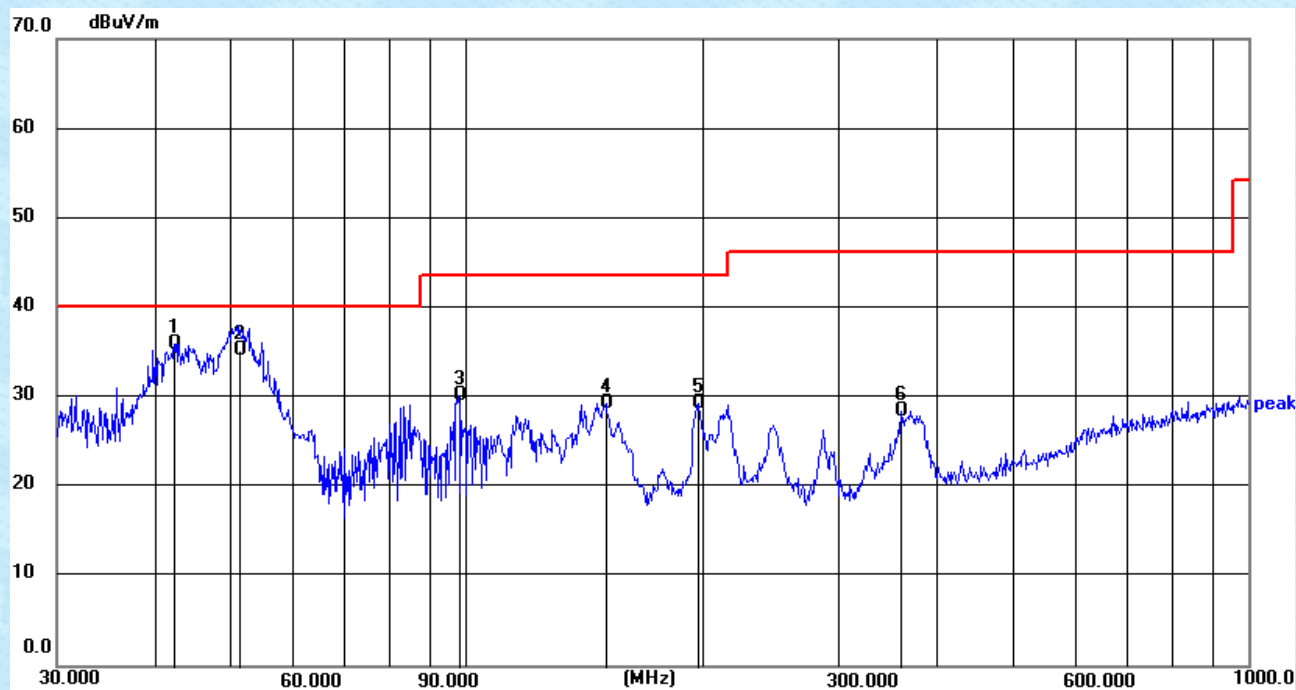
Pre-scan all test modes, found worst case at 802.11b 2462MHz, and so only show the test result of 802.11b 2462MHz

Horizontal:



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	52.5753	10.59	14.38	24.97	40.00	15.03	QP
2	151.5972	6.62	16.00	22.62	43.50	20.88	QP
3	197.8928	13.66	11.90	25.56	43.50	17.94	QP
4	382.5879	13.14	16.47	29.61	46.00	16.39	QP
5	510.0436	13.48	18.81	32.29	46.00	13.71	QP
6	1000.0000	5.27	24.73	30.00	54.00	24.00	QP

Vertical:



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	42.4508	21.78	14.22	36.00	40.00	4.00	QP
2	51.3005	20.74	14.46	35.20	40.00	4.80	QP
3	97.7983	18.49	11.75	30.24	43.50	13.26	QP
4	151.0666	13.42	16.00	29.42	43.50	14.08	QP
5	197.8928	17.43	11.90	29.33	43.50	14.17	QP
6	360.4476	12.51	16.03	28.54	46.00	17.46	QP

■ Above 1GHz

Test mode:	802.11b	Test channel:	Lowest
------------	---------	---------------	--------

Peak value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
4824	39.01	31.79	8.62	32.1	47.32	74	-26.68	Vertical
4824	39.24	31.79	8.62	32.1	47.55	74	-26.45	Horizontal

Test mode:	802.11b	Test channel:	Middle
------------	---------	---------------	--------

Peak value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
4874	36.33	31.85	8.66	32.12	44.72	74	-29.28	Vertical
4874	35.42	31.85	8.66	32.12	43.81	74	-30.19	Horizontal

Test mode:	802.11b	Test channel:	Highest
------------	---------	---------------	---------

Peak value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
4924	35.44	31.9	8.7	32.15	43.89	74	-30.11	Vertical
4924	34.95	31.9	8.7	32.15	43.4	74	-30.6	Horizontal

Test mode:	802.11g	Test channel:	lowest
------------	---------	---------------	--------

Peak value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
4824	39.34	31.79	8.62	32.1	47.65	74	-26.35	Vertical
4824	38.05	31.79	8.62	32.1	46.36	74	-27.64	Horizontal

Test mode:	802.11g	Test channel:	Middle
------------	---------	---------------	--------

Peak value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
4874	36.08	31.85	8.66	32.12	44.47	74	-29.53	Vertical
4874	34.4	31.85	8.66	32.12	42.79	74	-31.21	Horizontal

Test mode:	802.11g	Test channel:	Highest
------------	---------	---------------	---------

Peak value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
4924	36.32	31.9	8.7	32.15	44.77	74	-29.23	Vertical
4924	34.59	31.9	8.7	32.15	43.04	74	-30.96	Horizontal

Test mode:	802.11n(HT20)	Test channel:	Lowest
------------	---------------	---------------	--------

Peak value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
4824	39.3	31.79	8.62	32.1	47.61	74	-26.39	Vertical
4824	37.94	31.79	8.62	32.1	46.25	74	-27.75	Horizontal

Test mode:	802.11n(HT20)	Test channel:	Middle
------------	---------------	---------------	--------

Peak value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
4874	36.36	31.85	8.66	32.12	44.75	74	-29.25	Vertical
4874	34.57	31.85	8.66	32.12	42.96	74	-31.04	Horizontal

Test mode:	802.11n(HT20)	Test channel:	Highest
------------	---------------	---------------	---------

Peak value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
4924	35.2	31.9	8.7	32.15	43.65	74	-30.35	Vertical
4924	34.66	31.9	8.7	32.15	43.11	74	-30.89	Horizontal

Test mode:	802.11n(HT40)	Test channel:	Lowest
------------	---------------	---------------	--------

Peak value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
4844	37.84	31.81	8.63	32.11	46.17	74	-27.83	Vertical
4844	37.6	31.81	8.63	32.11	45.93	74	-28.07	Horizontal

Test mode:	802.11n(HT40)	Test channel:	Middle
------------	---------------	---------------	--------

Peak value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
4874	35.83	31.85	8.66	32.12	44.22	74	-29.78	Vertical
4874	34.4	31.85	8.66	32.12	42.79	74	-31.21	Horizontal

Test mode:	802.11n(HT40)	Test channel:	Highest
------------	---------------	---------------	---------

Peak value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
4904	33.51	31.88	8.68	32.13	41.94	74	-32.06	Vertical
4904	34.7	31.88	8.68	32.13	43.13	74	-30.87	Horizontal

Remark:

- 1 Final Level =Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor
- 2 other emissions are attenuated 20dB below the limits, so it does not reported.

8 Test Setup Photo

Reference to the **appendix I** for details.

9 EUT Constructional Details

Reference to the **appendix II** for details.

-----End-----