TEST REPORT NUMBER: (8517)089-0801(B) **FCC ID:2ALZK504953**

TEST REPORT

TO:	Technolabs LLC	Fax:	--
ATTN:	Robart Grossman	E-mail:	rgrossman@godronold.com
ADDRESS	524 Broadway 7th Floor, NY 10012, USA		
TEST DATE	10 JULY 2017		

MANUFACTURER OR SUPPLIER NAME	--
MANUFACTURER OR SUPPLIER ADDRESS:	--
SAMPLE DESCRIPTION:	WIFI Camera
MODEL OR STYLE NUMBER:	504953
RATED VOLTAGE:	3.7V d.c.(Li-Lion *1)
REMARKS:	---

The submitted sample of the above equipment has been tested according to the requirements of follow standards

47 CFR PART 15 OCT, 2016
ANSI C63.10:2013

CONCLUSION: The submitted sample was found to COMPLY with the test requirement

Assistant Manager

Name : Nick Lung
Date : 10 July 2017

TABLE OF CONTENTS

1.TEST STANDARDS

The tests were performed according to following standards:

■ **47 CFR PART 15 OCT, 2016;** ■ **ANSI C63.10:2013**

2.SUMMARY

2.1 GENERAL REMARKS

Date of receipt of test sample	10 April 2017
Testing commenced on	10~April~10 July 2017
Testing concluded on	10 July 2017

2.2 FINAL ASSESSMENT

The FCC/IC requirements pertaining to the technical standards and tested operation modes are

■ - fulfilled.

☐ - **not** fulfilled.

The equipment under test

■ - fulfils the FCC requirements cited on page 1.

☐ - **does not** fulfil the FCC requirements cited on page 1.

3.EQUIPMENT UNDER TEST

3.1 Power supply system utilised

Power supply voltage : ■ Battery 3.7V,

3.2 Short description of the Equipment under Test (EUT)

Number of tested samples: **1**
Serial number: Prototype

3.3 EUT operation mode

The equipment under test was operated during the measurement under the following conditions:

☐ TX- Y position

☐ TX- Z position

■ TX- X position

802.11b/g/n(20M):TX-X Position Low (2412.0 MHz) 11, 54, 72Mbps worst case ,
TX-X Position Middle (2437.0 MHz) 11, 54, 72Mbps worst case,
TX-X Position High (2462.0 MHz) 11, 54, 72Mbps worst case
802.11b/g/n(40M) TX-X Position Low (2422.0 MHz) 130Mbps worst case ,
TX-X Position Middle (2437.0 MHz) 130Mbps worst case,
TX-X Position High (2452.0 MHz) 130Mbps worst case

Note:Operation mode 1 TX -X position of EUT is the radiated test worst case; so only these test results be recorded in the test report.

3.4 EUT configuration

3.4.1. Description of configuration (EUT)

Description	:	WIFI Camera
Model Number	:	504953
Operation frequency	:	802.11 b/g/n(20M):2412.0 MHZ~2462.0 MHz 802.11 n(40M):2422.0 MHZ~2452.0 MHz
WiFi	:	802.11:b/g/n
Modulation Technology	:	DBPSK, DQPSK, CCK, OFDM, 16-QAM, 64QAM
Date Rate		802.11b: 11,5.5, 2, 1 Mbps 802.11g: 54, 48, 36, 24, 18, 12, 9, 6 Mbps 802.11n20: 72Mbps 802.11n40: 130Mbps

3.4.2. Tested Supporting System Details

3.4.2.1. Notebook

M/N	:	F83VF
S/N	:	N/A
Manufacturer	:	AUSU
Power Cord	:	/
FCC ID	:	ID

4.TEST ENVIRONMENT

4.1 Address of the test laboratory

Centre of Testing Service Co, Ltd .- a Bureau Veritas Company
CTS (Ningbo) Testing Service Technology Co., Ltd. - a Bureau Veritas Company

A101，No.65，Zhuji Highway,Tianhe District，Guangzhou, China

Tel：+86-20-85543113 (32 lines) Fax：+86-20-38780406

4.2 Test facility

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

FCC-Registration No.: 971995

CENTRE OF TESTING SERVICE CO., LTD, EMC Laboratory has been registered and fully described in a report filed with the FCC (Federal Communications Commission). The acceptance letter from the FCC is maintained in our files. Registration No.791995, May 22 ,2015.

IC-Registration No.: 8374A

The 3m Alternate Test Site of CTS (Ningbo) Testing Service Technology Co., Ltd. Has been registered by Certification and Engineering Bureau of Industry Canada for the performance of radiated measurements with Registration No. 8374A on May 22, 2014.

4.3 Environmental conditions

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

Temperature:	15~35 ° C
Humidity:	25~75 %
Atmospheric pressure:	86~106 kPa

4.4 Definitions of symbols used in this test report

■ - The black square indicates that the listed condition, standard or equipment is applicable for this report.
□ - The empty square indicates that the listed condition, standard or equipment is **not** applicable for this report.

4.5 Statement of the measurement uncertainty

The data and results referenced in this document are true and accurate. The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities. The measurement uncertainty was calculated for all measurements listed in this test report acc. to CISPR 16 - 4 “Specification for radio disturbance and immunity measuring apparatus and methods – Part 4: Uncertainty in EMC Measurements” and is documented in the CTS quality system acc. to DIN EN ISO/IEC 17025. Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.

4.6 Measurement Uncertainty

Test Item	Frequency Range	Uncertainty	Note
Conduction disturbance	150kHz~30MHz	±1.22dB	(1)
Power disturbance	30MHz~300MHz	±1.38dB	(1)
Radiation emission (3m)	30MHz~300MHz	±3.14dB	(1)
	300MHz~1000MHz	±3.18dB	(1)
	1GHz~26.5GHz	±3.54dB	(1)

(1).This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

5.Summary of standards and results

5.1.Description of Standards and Results

The EUT have been tested according to the applicable standards as referenced below.

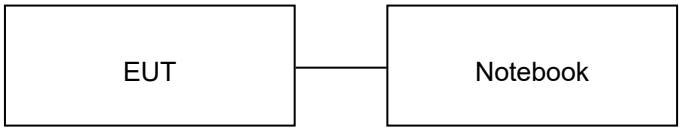
EMISSION		
Description of Test Item	**Standard**	**Results**
Conducted Emission Test	FCC Part 15 : 15.207 ANSI C63.10:2013	PASSED
6dB Bandwidth Measurement	FCC Part 15.247(a)(2) ANSI C63.10:2013	PASSED
Output Power	FCC Part 15.247(b)(3)(4) ANSI C63.10:2013	PASSED
Peak Power Spectral Density	FCC Part 15.247(e) ANSI C63.10:2013	PASSED
Band edges measurement	FCC Part 15.247(d) ANSI C63.10:2013	PASSED
Spurious Emissions	FCC Part 15: 15.209 ANSI C63.10:2013	PASSED
Antenna Requirements	FCC Part 15: 15.203 ANSI C63.10:2013	PASSED
N/A is an abbreviation for Not Applicable.		

6.0 Power Line Conducted Emission Test

6.1.Test Equipment

Conducted Disturbance					
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.
1	EMI Test Receiver	ROHDE & SCHWARZ	ESHS10	842884/012	2016/10
2	Artificial Mains	ROHDE & SCHWARZ	ESH3-Z5	832479/025	2016/10
3	Artificial Mains	ROHDE & SCHWARZ	ESH3-Z5	832479/026	2016/10
4	Pulse Limiter	ROHDE & SCHWARZ	ESHSZ2	100301	2016/10
5	EMI Test Software	EZ-EMC	Farad	N/A	N/A

6.2. Block Diagram of Test Setup



(EUT: WIFI CAMERA*)*

6.3. Power Line Conducted Emission Test Limits

Standard: FCC Part 15 : 15.207,ANSI C63.10-2013

Frequency	Maximum RF Line Voltage	
	Quasi-Peak Level dB(μV)	Average Level dB(μV)
150kHz ~ 500kHz	66 ~ 56*	56 ~ 46*
500kHz ~ 5MHz	56	46
5MHz ~ 30MHz	60	50

Notes: 1. * Decreasing linearly with logarithm of frequency.
2. The lower limit shall apply at the transition frequencies.

6.4.Test Procedure

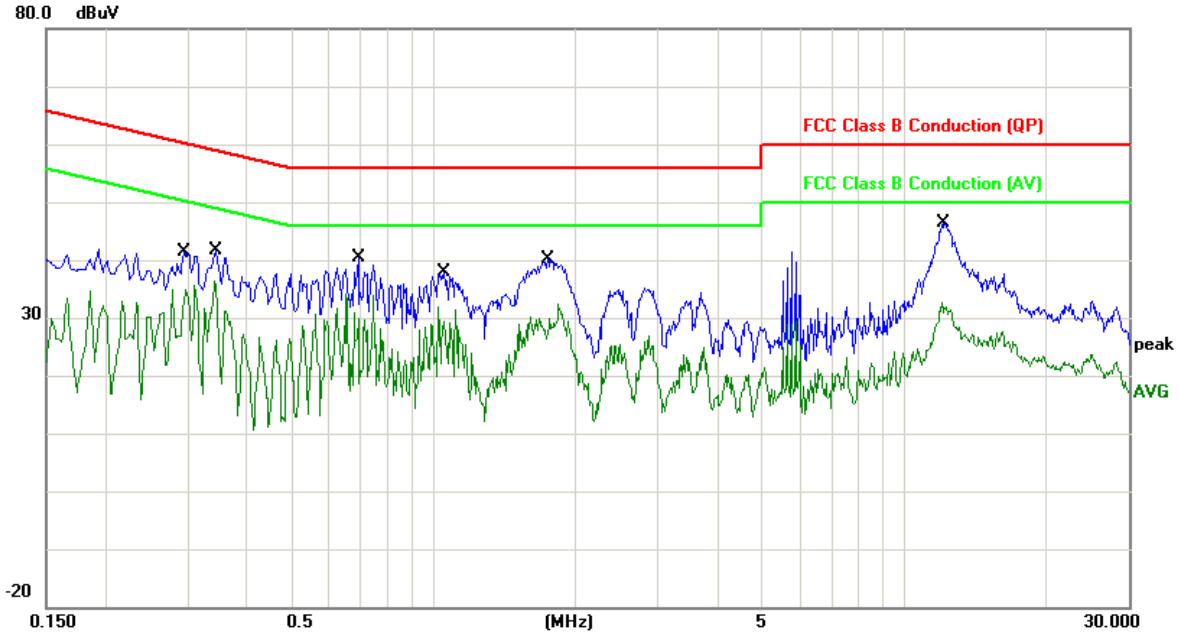
The EUT Power connected to the power mains through a line impedance stabilization network (L.I.S.N.#2). This provides a 50 ohm coupling impedance for the EUT. Please refer the block diagram of the test setup and photographs. The other peripheral devices power cord connected to the power mains through a line impedance stabilization network (L.I.S.N.#1). Power on the PC and let it work normally, we use a keyboard test soft ware, let EUT working in test mode, then test it. Both sides of AC line are checked to find out the maximum conducted emission. In order to find the maximum emission levels, the relative positions of equipment and all of the interface cables shall be changed according to FCC Part 15C on Conducted Emission Test.

6.5. Power Line Conducted Emission Test Results

PASSED.

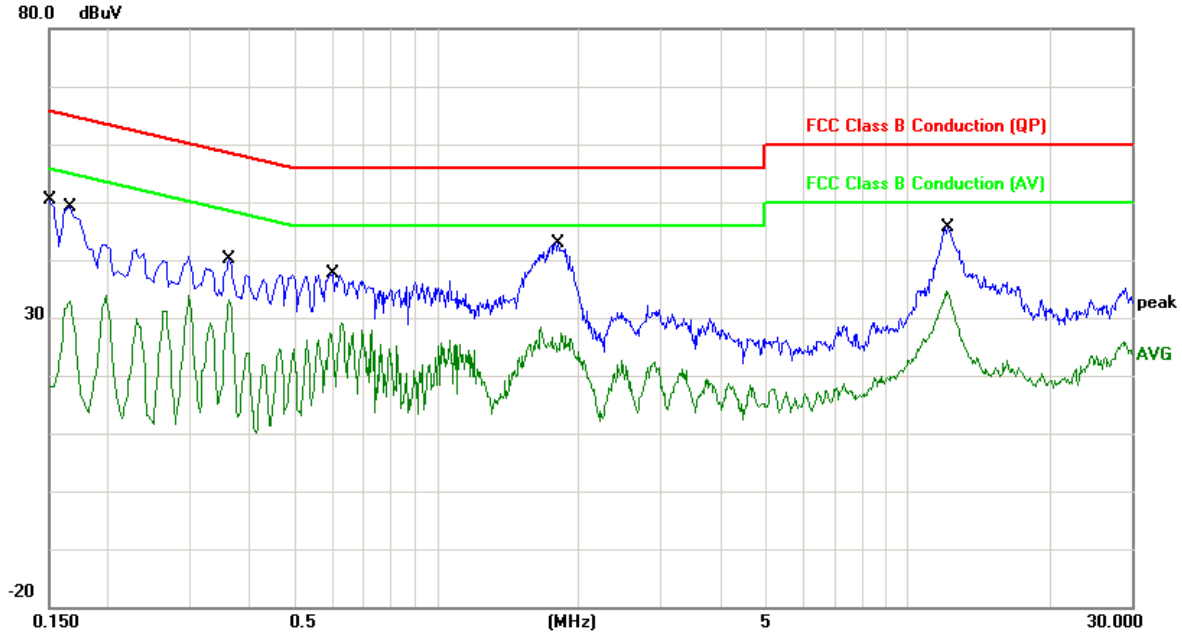
The frequency range from 150KHz~30MHz is investigated. Please see the following pages.

Test point:	L	Result:	■ - passed □ - not passed
Frequency range:	0.15MHz~30MHz		



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	0.2940	10.21	27.83	38.04	60.41	-22.37	QP
2	0.2940	10.21	20.20	30.41	50.41	-20.00	AVG
3	0.3460	10.20	22.89	33.09	59.06	-25.97	QP
4	0.3460	10.20	8.55	18.75	49.06	-30.31	AVG
5	0.6900	10.24	23.44	33.68	56.00	-22.32	QP
6	0.6900	10.24	9.93	20.17	46.00	-25.83	AVG
7	1.0540	10.32	25.06	35.38	56.00	-20.62	QP
8	1.0540	10.32	14.51	24.83	46.00	-21.17	AVG
9	1.7500	10.39	25.94	36.33	56.00	-19.67	QP
10	1.7500	10.39	16.25	26.64	46.00	-19.36	AVG
11	12.1499	11.20	30.00	41.20	60.00	-18.80	QP
12	12.1499	11.20	19.00	30.20	50.00	-19.80	AVG
Remark: Other frequency mini margin all >6 dB of Limit							

Test point:	N	Result:	■ - passed □ - not passed
Frequency range:	0.15MHz~30MHz		



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	0.1500	10.30	21.90	32.20	65.99	-33.79	QP
2	0.1500	10.30	5.23	15.53	55.99	-40.46	AVG
3	0.1660	10.30	29.50	39.80	65.15	-25.35	QP
4	0.1660	10.30	18.28	28.58	55.15	-26.57	AVG
5	0.3620	10.31	25.19	35.50	58.68	-23.18	QP
6	0.3620	10.31	19.02	29.33	48.68	-19.35	AVG
7	0.6020	10.33	19.84	30.17	56.00	-25.83	QP
8	0.6020	10.33	10.66	20.99	46.00	-25.01	AVG
9	1.8140	10.50	27.41	37.91	56.00	-18.09	QP
10	1.8140	10.50	14.31	24.81	46.00	-21.19	AVG
11	12.2180	11.20	29.04	40.24	60.00	-19.76	QP
12	12.2180	11.20	21.73	32.93	50.00	-17.07	AVG
Remark: Other frequency mini margin all >6 dB of Limit							

7.0 6dB BANDWIDTH MEASUREMENT

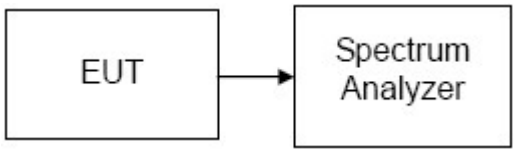
7.1 LIMITS

According to §15.247(a)(2), systems using digital modulation techniques may operate in the 902 - 928 MHz, 2400 - 2483.5 MHz, and 5725 - 5850 MHz bands. The minimum 6dB bandwidth shall be at least 500 kHz.

7.2 MEASUREMENT EQUIPMENT USED

6dB Bandwidth					
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.
1	Signal analyzer	ROHDE & SCHWARZ	FSIQ26	100311	2017/03

7.3 TEST CONFIGURATION



7.4 TEST PROCEDURE

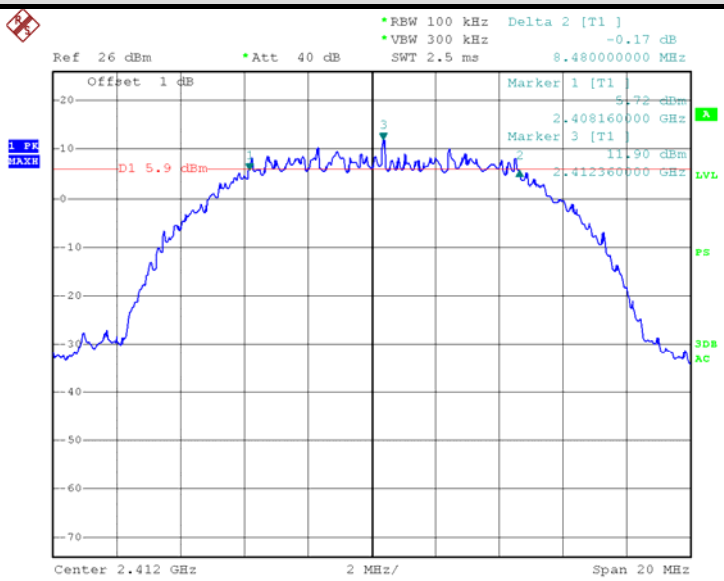
1. Place the EUT on the table and set it in the transmitting mode.
2. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.
3. Set the spectrum analyzer as RBW = 100kHz, VBW = 300kHz, Span =1.5 times of bandwidth, Sweep = auto.
4. Mark the peak frequency and –6dB (upper and lower) frequency.
5. Repeat until all the rest channels are investigated

7.5 TEST RESULTS

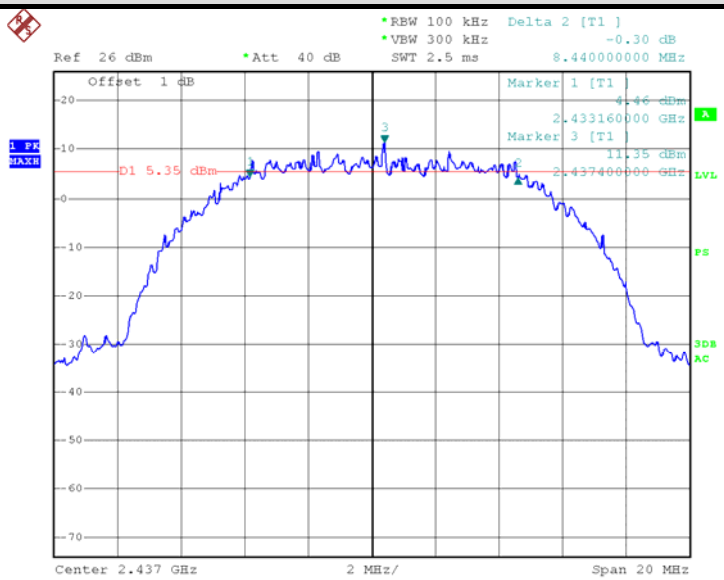
Modulation Standard	Channel	Frequency (MHz)	Bandwidth (MHz)	Limit (KHz)	Result
802.11b: 11Mbps (Worst Case)	Low	2412	8.48	>500	PASSED
	Middle	2437	8.44		PASSED
	High	2462	8.44		PASSED
802.11g: 54Mbps (Worst Case)	Low	2412	16.56	>500	PASSED
	Middle	2437	16.56		PASSED
	High	2462	16.56		PASSED
802.11n(20): 72Mbps (Worst Case)	Low	2412	17.68	>500	PASSED
	Middle	2437	17.68		PASSED
	High	2462	17.68		PASSED
802.11n(40): 130Mbps (Worst Case)	Low	2422	36.09	>500	PASSED
	Middle	2437	36.11		PASSED
	High	2452	36.09		PASSED
Remark:The Bandwidth is Delta 2 of following the graph. And the Delta 2 is Marker 2 subtract Marker 1.					

Test Plot

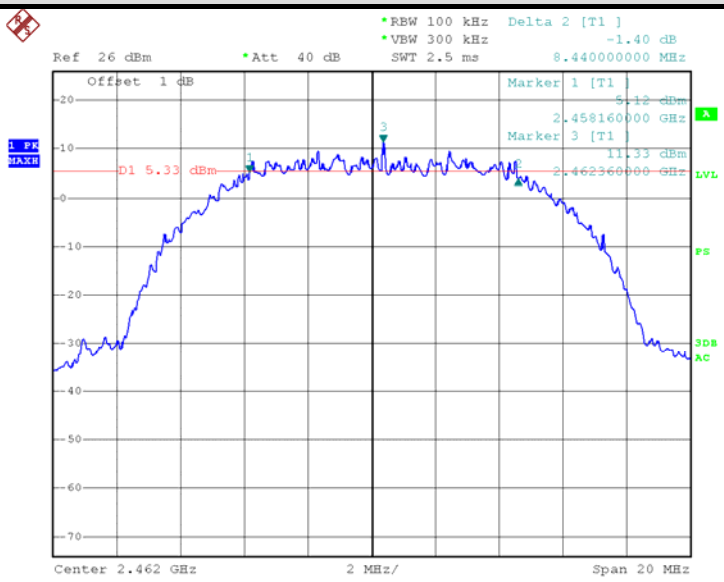
Modulation Standard: 802.11b 6dB Bandwidth CH Low



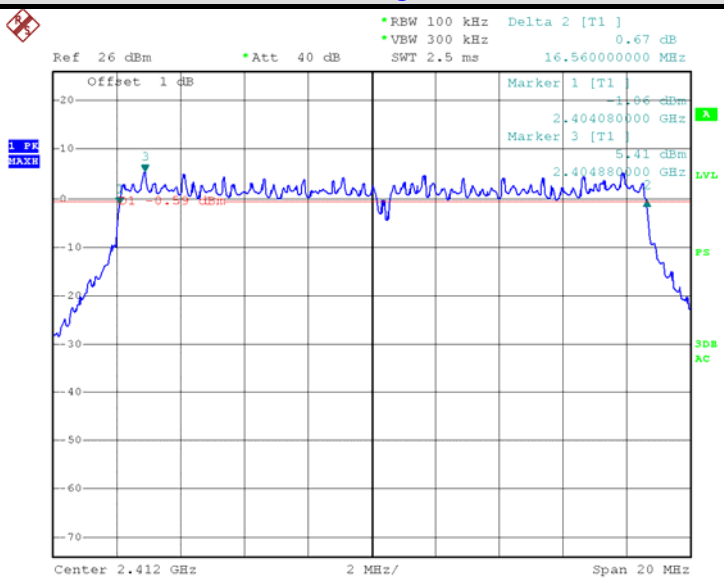
Modulation Standard: 802.11b 6dB Bandwidth CH Middle



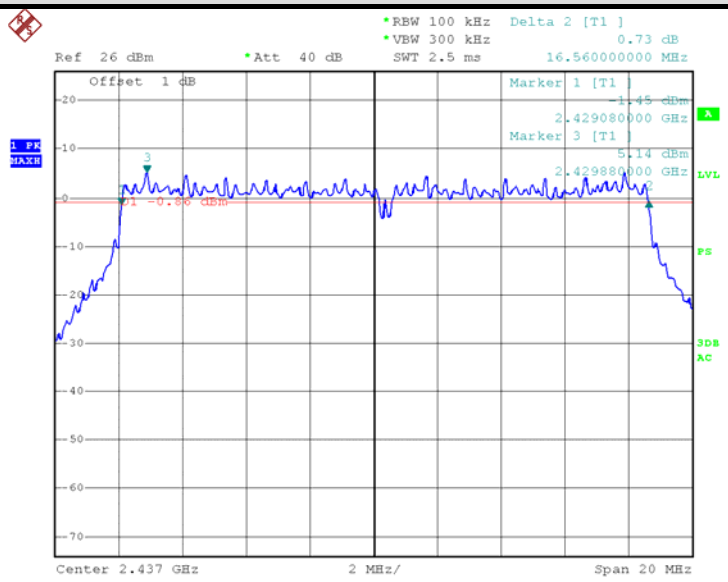
Modulation Standard: 802.11b 6dB Bandwidth CH High



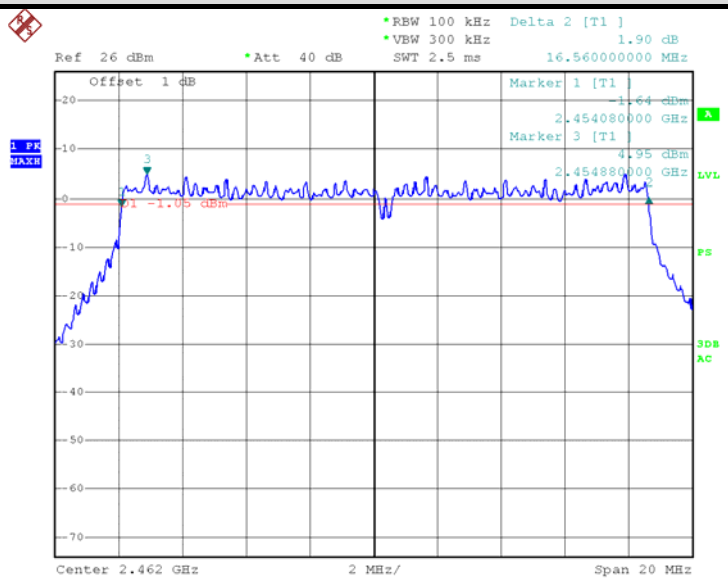
Modulation Standard: 802.11g 6dB Bandwidth CH Low



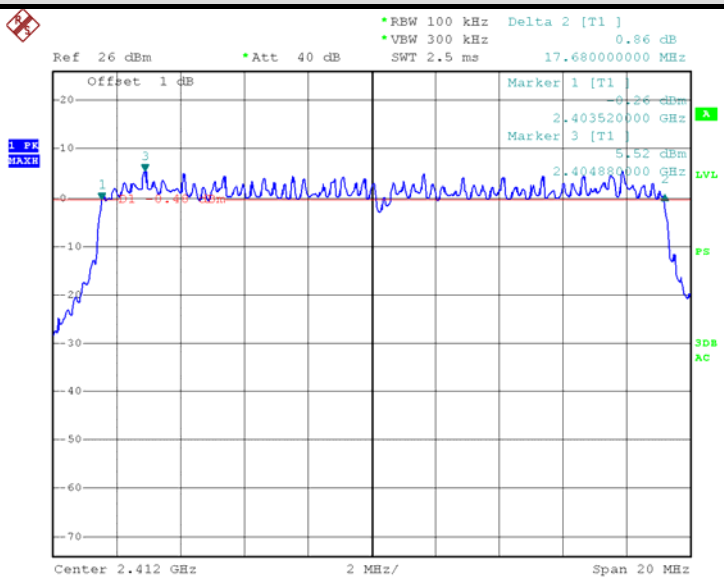
Modulation Standard: 802.11g 6dB Bandwidth CH Middle



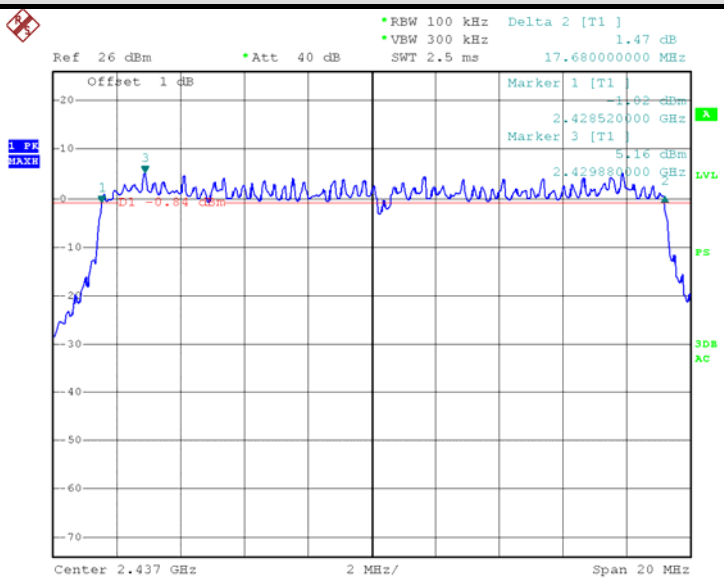
Modulation Standard: 802.11g 6dB Bandwidth CH High



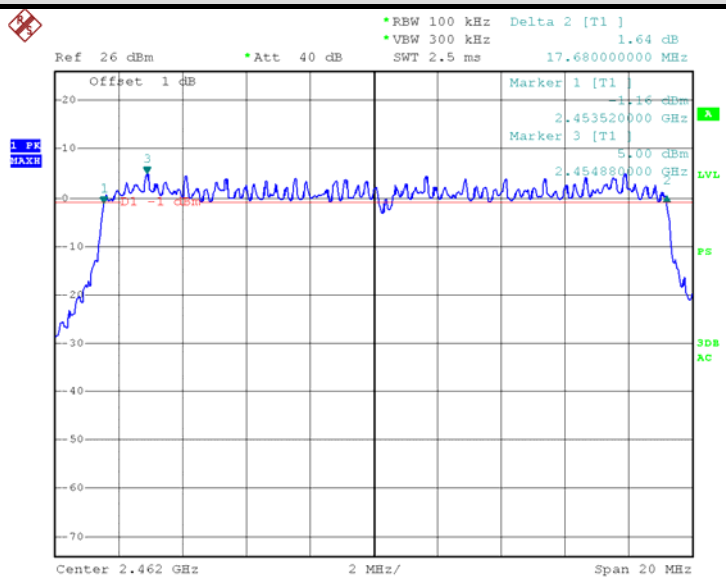
Modulation Standard: 802.11n HT-20 6dB Bandwidth CH Low



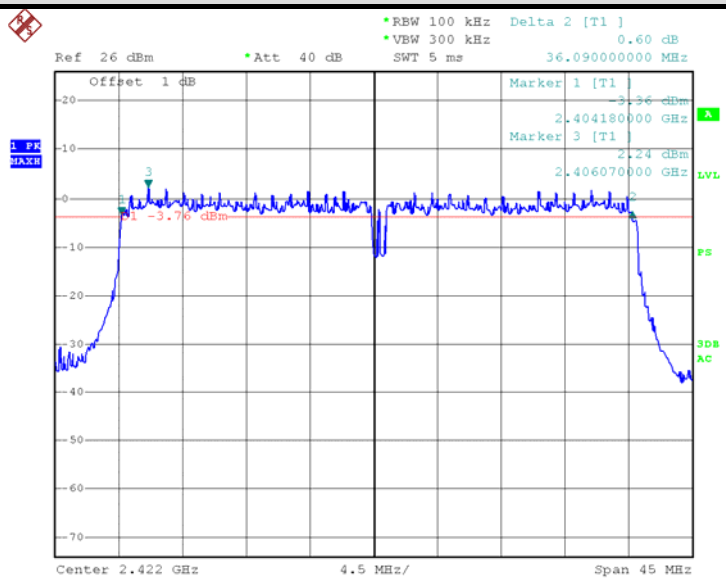
Modulation Standard: 802.11 n HT-20 6dB Bandwidth CH Middle



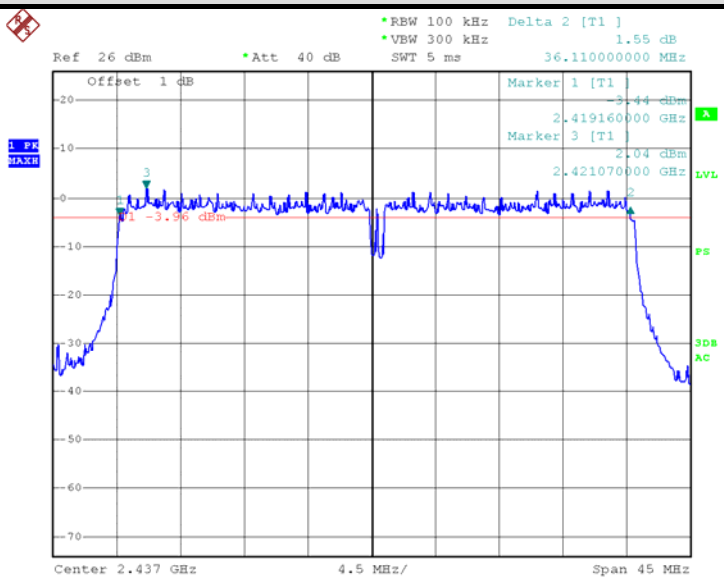
Modulation Standard: 802.11 n HT-20 6dB Bandwidth CH High



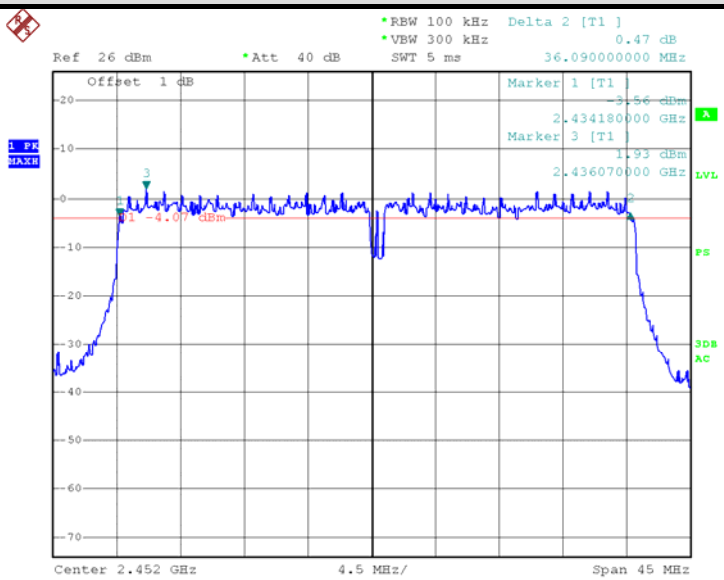
Modulation Standard: 802.11n HT-40 6dB Bandwidth CH Low



Modulation Standard: 802.11 n HT-40 6dB Bandwidth CH Middle



Modulation Standard: 802.11 n HT-40 6dB Bandwidth CH High



8.0 OUTPUT POWER

8.1 LIMIT

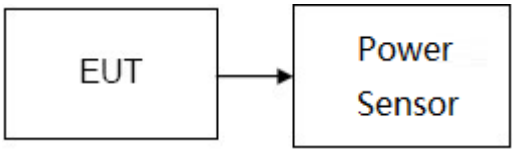
The maximum output power of the intentional radiator shall not exceed the following:

1. According to §15.247(b)(3),for systems using digital modulation in the bands of 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz: 1 Watt.
2. According to §15.247(b)(4), the conducted output power limit specified in paragraph (b) of this section is based on the use of antennas with directional gains that do not exceed 6 dBi. Except as shown in paragraph (c) of this section, if transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced below the stated values in paragraphs (b)(1), (b)(2), and (b)(3) of this section, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

8.2 MEASUREMENT EQUIPMENT USED

Peak Power					
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.
1	Power meter	ROHDE & SCHWARZ	NRVS	842856/049	2017/03
2	Power Sensor	ROHDE & SCHWARZ	NRP-Z21	1137.6000.02	2017/03

8.3 TEST CONDIGURATION



8.4 TEST PROCEDURE

1. According to KDB 558074 D01 Setup the Power Sensor on Average mode.
2. Set the EUT on transmit continuously mode.

8.5 TEST RESULTS

Passed

Test Data

Modulation Standard	Channel	Frequency (MHz)	Average Output Power (dBm)	Limit (dBm)	Result
802.11b: 11Mbps (Worst Case)	Low	2412	16.35	30dBm	PASSED
	Middle	2437	16.07		PASSED
	High	2462	15.71		PASSED
802.11g: 54Mbps (Worst Case)	Low	2412	14.39		PASSED
	Middle	2437	14.00		PASSED
	High	2462	14.05		PASSED
802.11n(20): 72Mbps (Worst Case)	Low	2412	14.30		PASSED
	Middle	2437	13.66		PASSED
	High	2462	13.68		PASSED
802.11n(40): 130Mbps (Worst Case)	Low	2422	11.81		PASSED
	Middle	2437	11.75		PASSED
	High	2452	11.70		PASSED

9.0 PEAK POWER SPECTRAL DENSITY

9.1 LIMIT

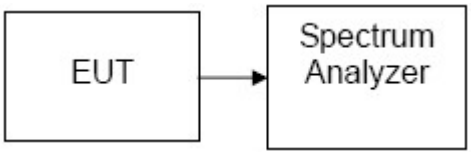
1. According to §15.247(e), For DTSs include systems that employ digital modulation techniques resulting in spectral characteristics similar to direct sequence systems. The following applies to the bands 902-928 MHz and 2400-2483.5 MHz1:

   The transmitter power spectral density conducted from the transmitter to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission. This power spectral density shall be determined in accordance with the provisions of Section 5.4(4), (i.e. the power spectral density shall be determined using the same method as is used to determine the conducted output power).

9.2 MEASUREMENT EQUIPMENT USED

Peak Power Spectral Density					
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.
1	Signal analyzer	ROHDE & SCHWARZ	FSIQ26	100311	2017/03

9.3 TEST CONFIGURATION



9.4 TEST PROCEDURE

1. Place the EUT on the table and set it in transmitting mode.
2. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.
3. Set the spectrum analyzer as RBW = 3kHz, VBW = 10kHz, Span = 1.5 times the bandwidth, Sweep=Auto couple
4. Record the max. reading.
5. Repeat the above procedure until the measurements for all frequencies are completed.

9.5 TEST RESULTS

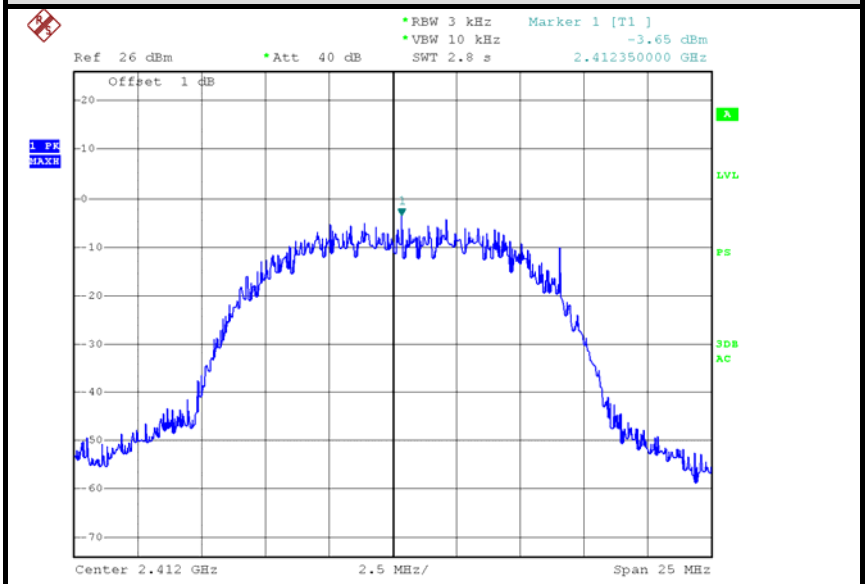
PASSED

Test Data

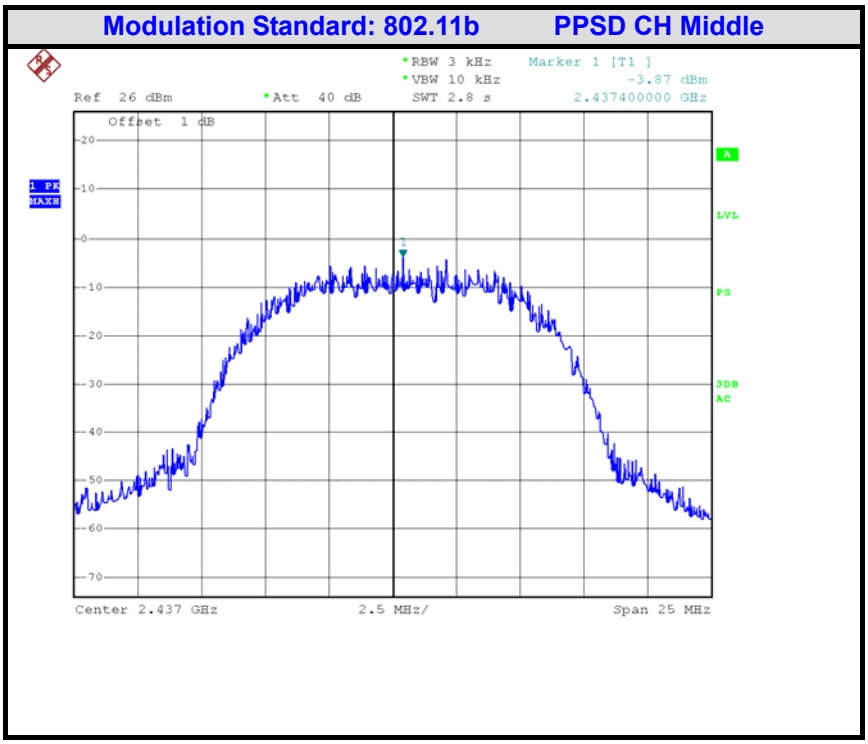
Modulation Standard	Channel	Frequency (MHz)	PPSD (dBm/3KHz)	Limit (dBm/3KHz)	Result
802.11b: 11Mbps (Worst Case)	Low	2412	-3.65	8	PASSED
	Middle	2437	-3.87		PASSED
	High	2462	-1.88		PASSED
802.11g: 54Mbps (Worst Case)	Low	2412	-7.67		PASSED
	Middle	2437	-8.28		PASSED
	High	2462	-8.34		PASSED
802.11n(20): 72Mbps (Worst Case)	Low	2412	-8.26		PASSED
	Middle	2437	-8.65		PASSED
	High	2462	-8.70		PASSED
802.11n(40): 130Mbps (Worst Case)	Low	2422	-12.70		PASSED
	Middle	2437	-12.61		PASSED
	High	2452	-12.89		PASSED

Test Plot

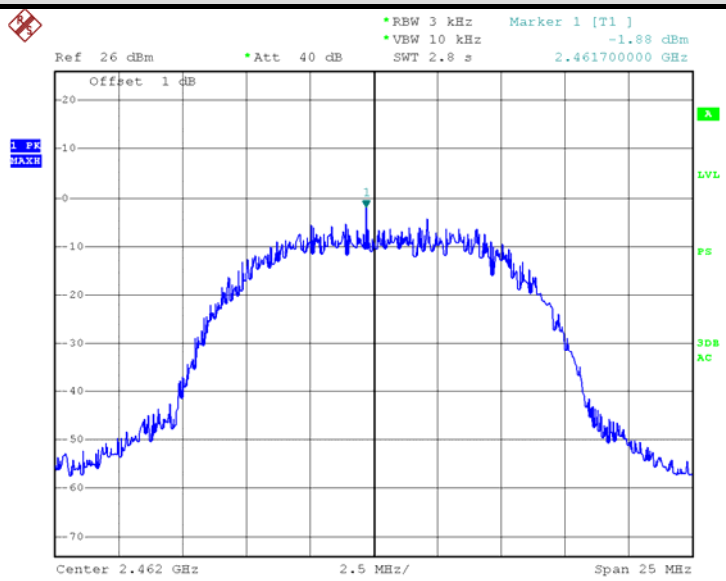
Modulation Standard: 802.11b PPSD CH Low



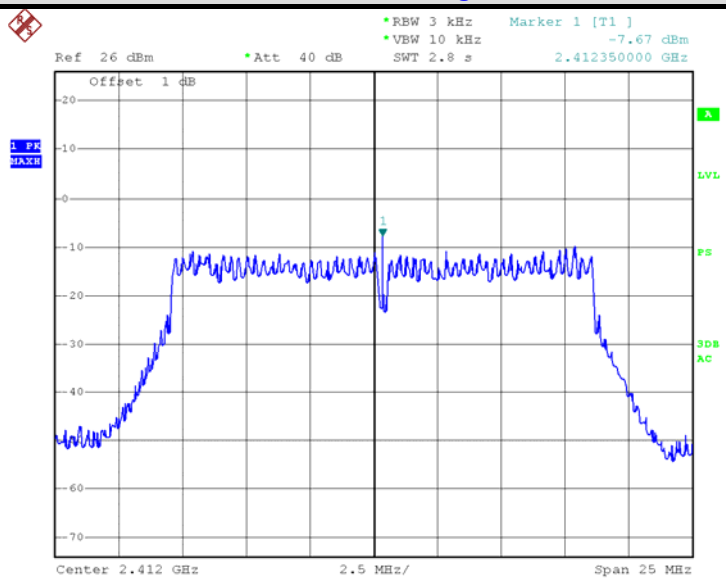
Modulation Standard: 802.11b PPSD CH Middle



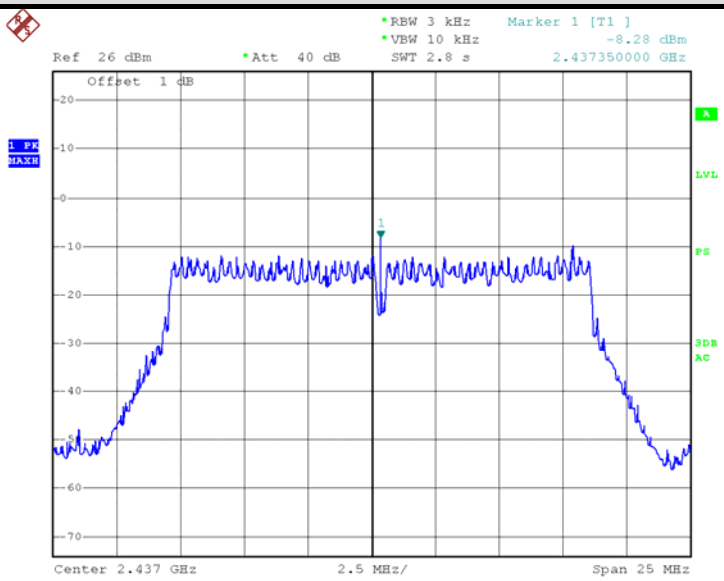
Modulation Standard: 802.11b PPSD CH High



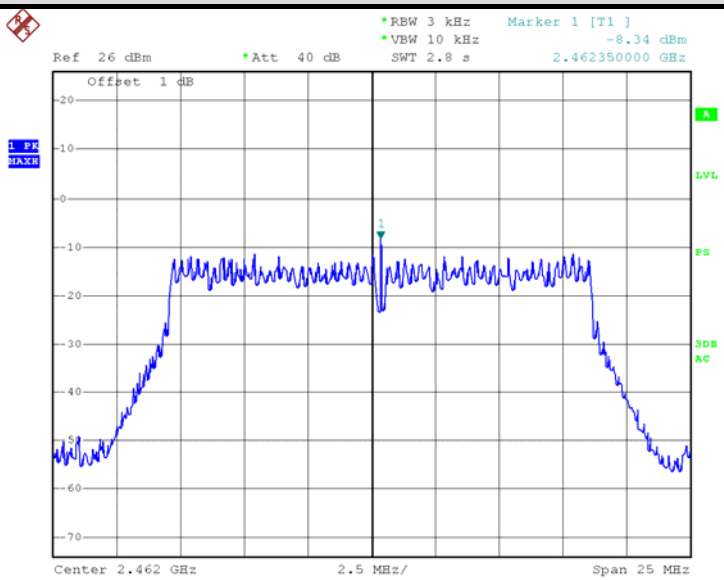
Modulation Standard: 802.11g PPSD CH Low



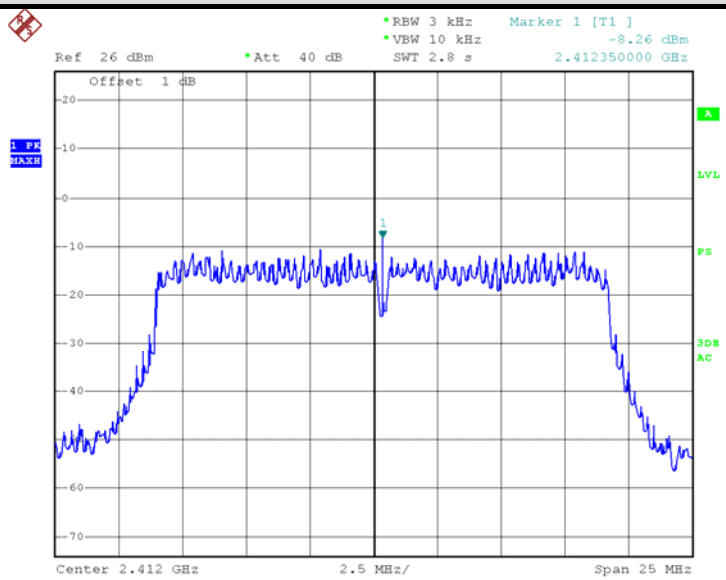
Modulation Standard: 802.11g PPSD CH Middle



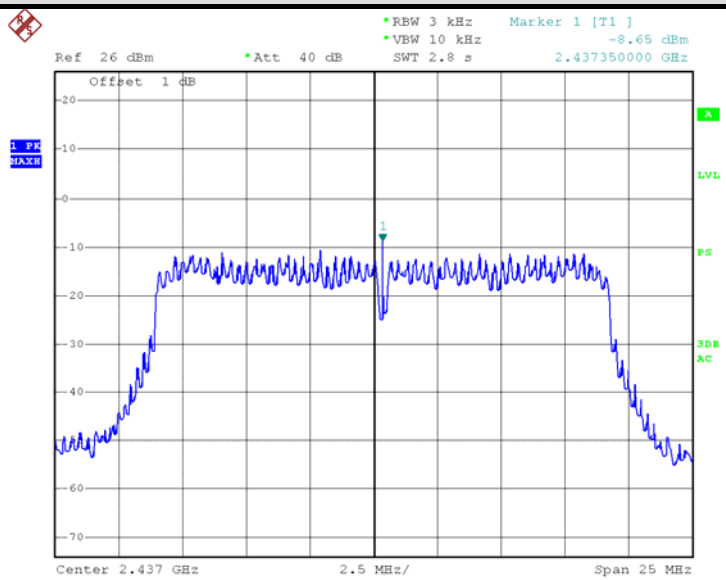
Modulation Standard: 802.11g PPSD CH High



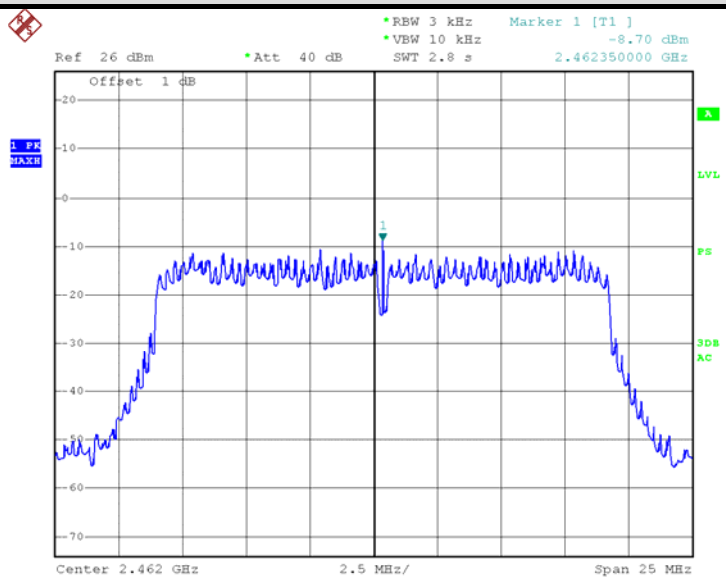
Modulation Standard: 802.11n HT-20 PPSD CH Low



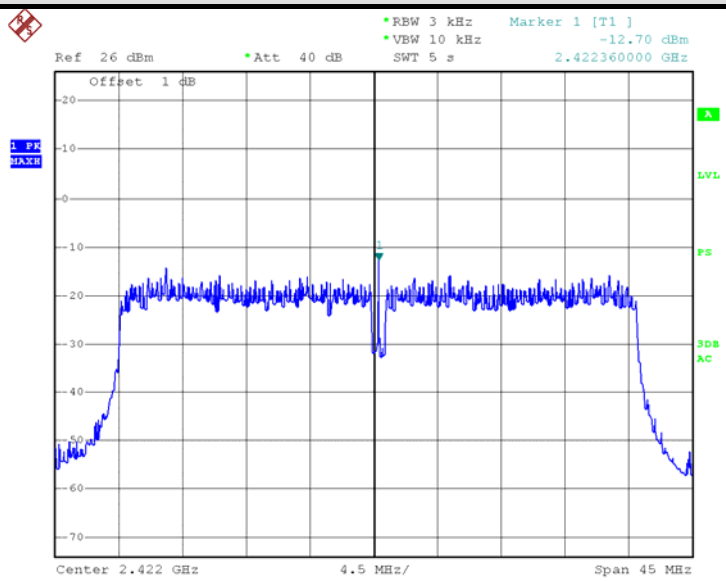
Modulation Standard: 802.11 n HT-20 PPSD CH Middle



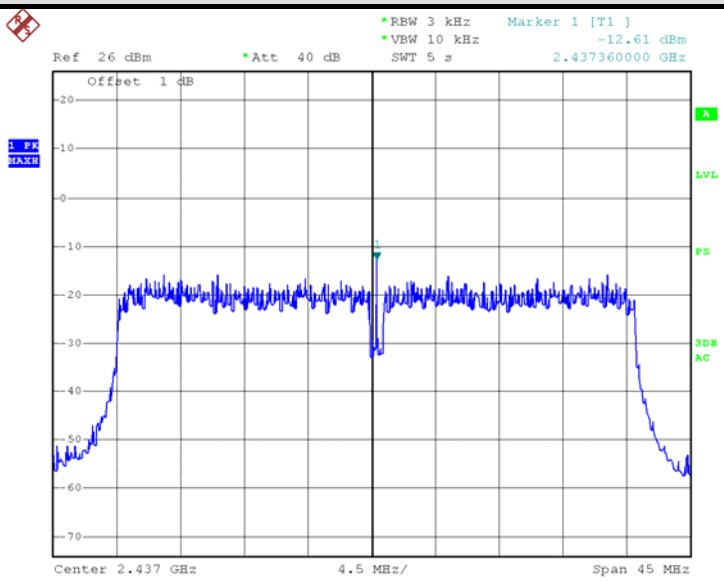
Modulation Standard: 802.11 n HT-20 PPSD CH High



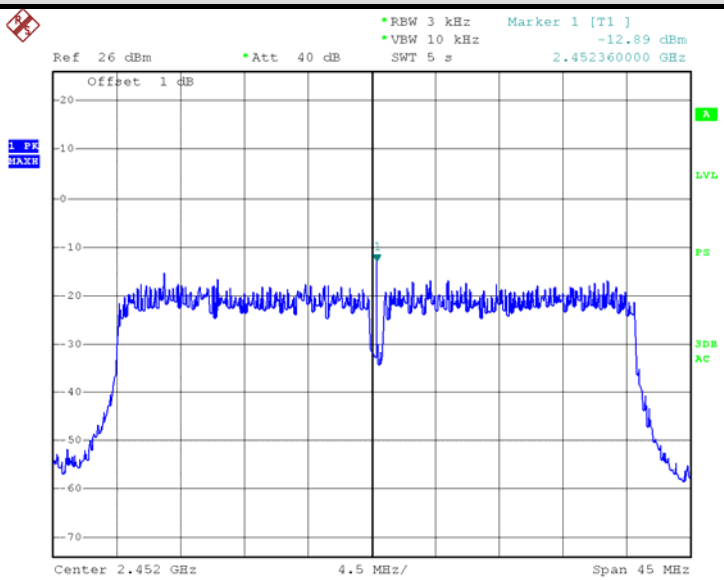
Modulation Standard: 802.11n HT-40 PPSD CH Low



Modulation Standard: 802.11 n HT-40 PPSD CH Middle



Modulation Standard: 802.11 n HT-40 PPSD CH High



10.0 BAND EDGES MEASUREMENT

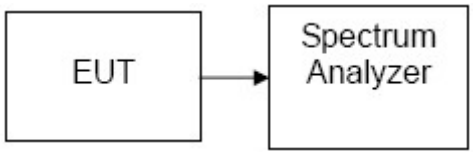
10.1 LIMIT

According to§15.247(d), In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated device is operating, the RF power that is produced 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, provided that the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of root-mean-square averaging over a time interval, as permitted under Section 5.4(4), the attenuation required shall be 30 dB instead of 20 dB. Attenuation below the general field strength limits specified in RSS-Gen is not required..

10.2 MEASUREMENT EQUIPMENT USED

Radiated disturbance (electric field)					
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.
1	Signal analyzer	ROHDE & SCHWARZ	FSIQ26	100311	2017/03

10.3 Test Configuration



10.4 TEST PROCEDURE

1. Place the EUT on the table and set it in transmitting mode.
2. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.
3. Set the spectrum analyzer as RBW = 100kHz, VBW = 100kHz, Sweep=Auto couple
4. Record the max. reading.
5. Repeat the above procedure until the measurements for all frequencies are

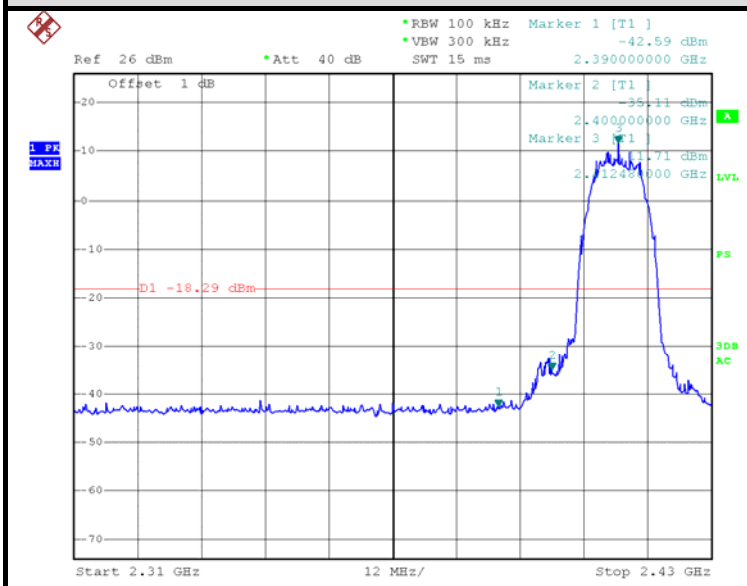
10.5 TEST RESULTS

Refer to attach spectrum analyzer data chart.

Test Polt:

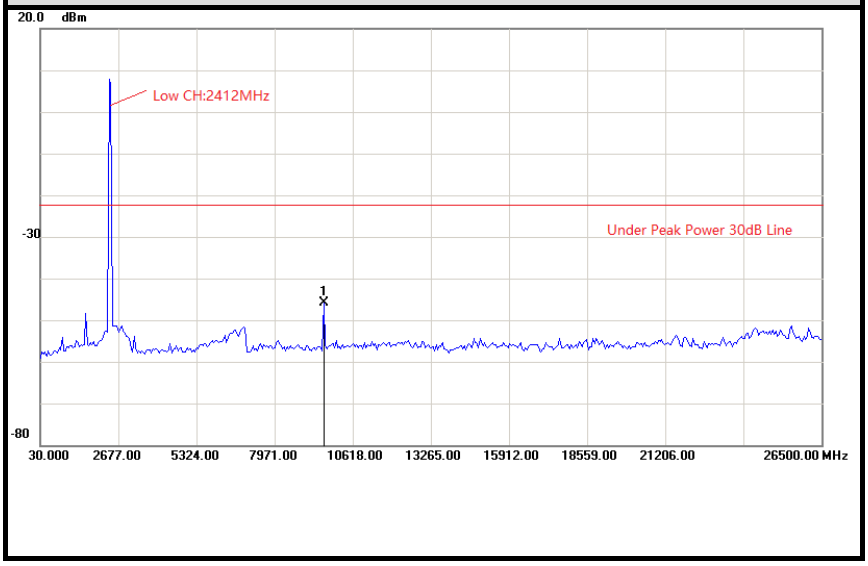
Band-edge Conducted Measurment

Modulation Standard: 802.11 b CH-Low:2412MHz



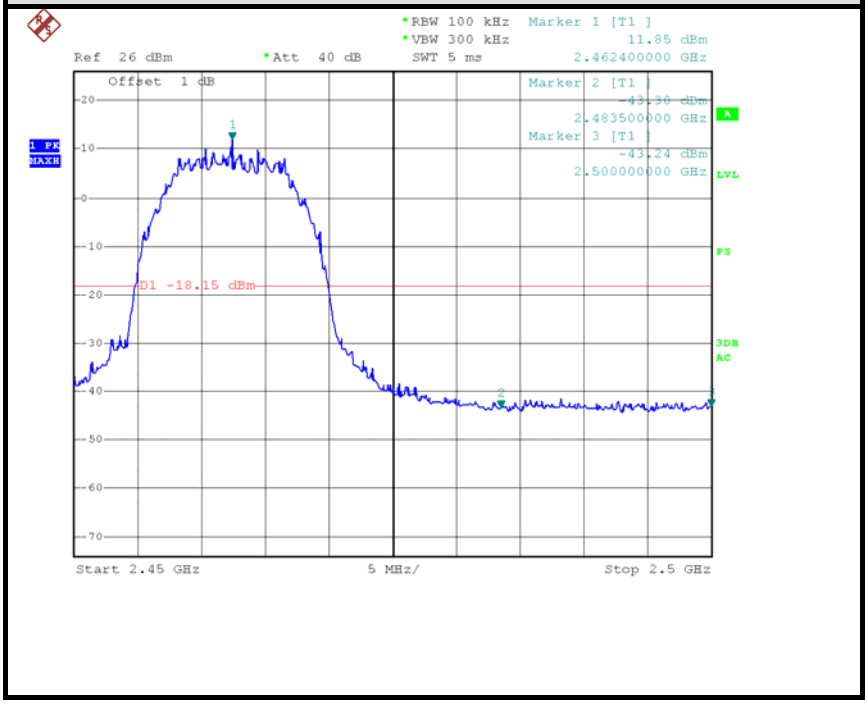
Spurious Emission Conducted Measurment

Modulation Standard: 802.11 b CH-Low:2412MHz



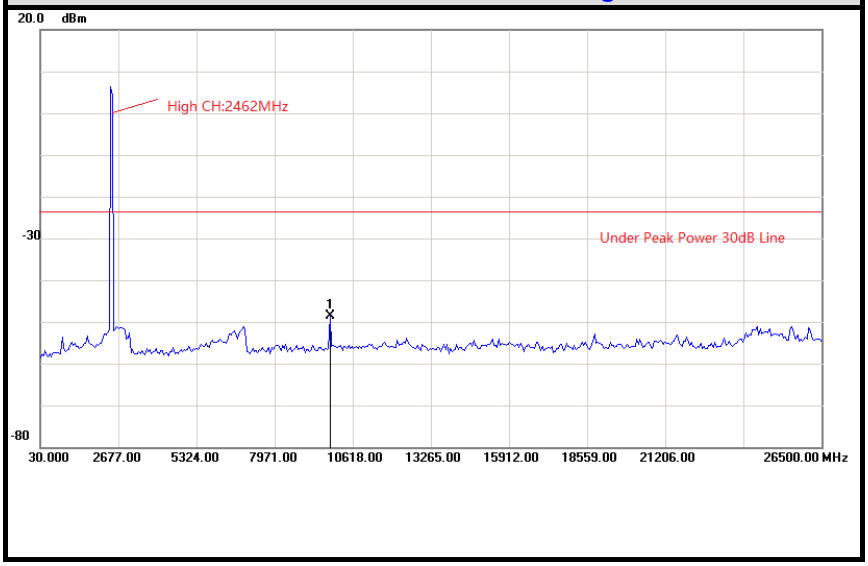
Band-edge Conducted Measurment

Modulation Standard: 802.11 b CH-High:2462MHz



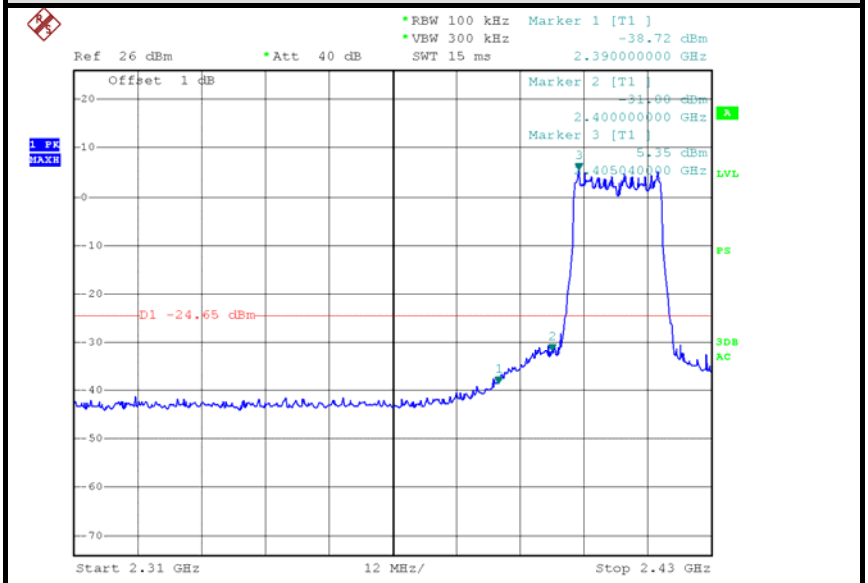
Spurious Emission Conducted Measurment

Modulation Standard: 802.11 b CH-High:2462MHz



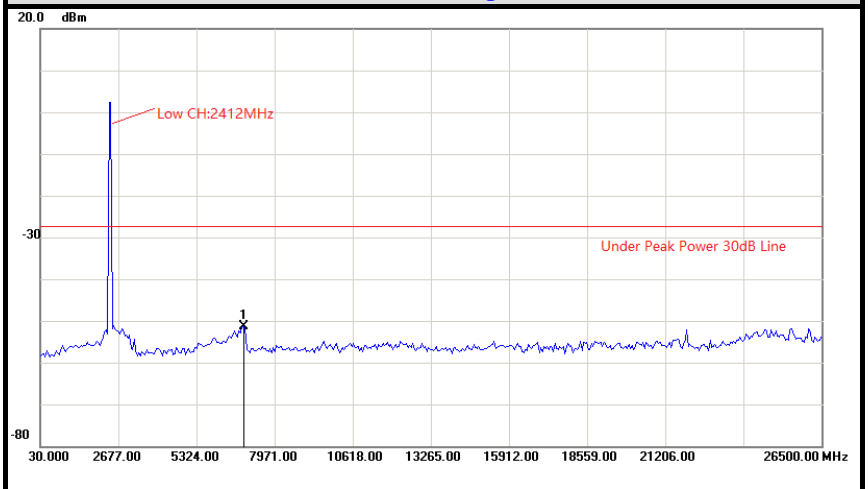
Band-edge Conducted Measurment

Modulation Standard: 802.11 g CH-Low:2412MHz



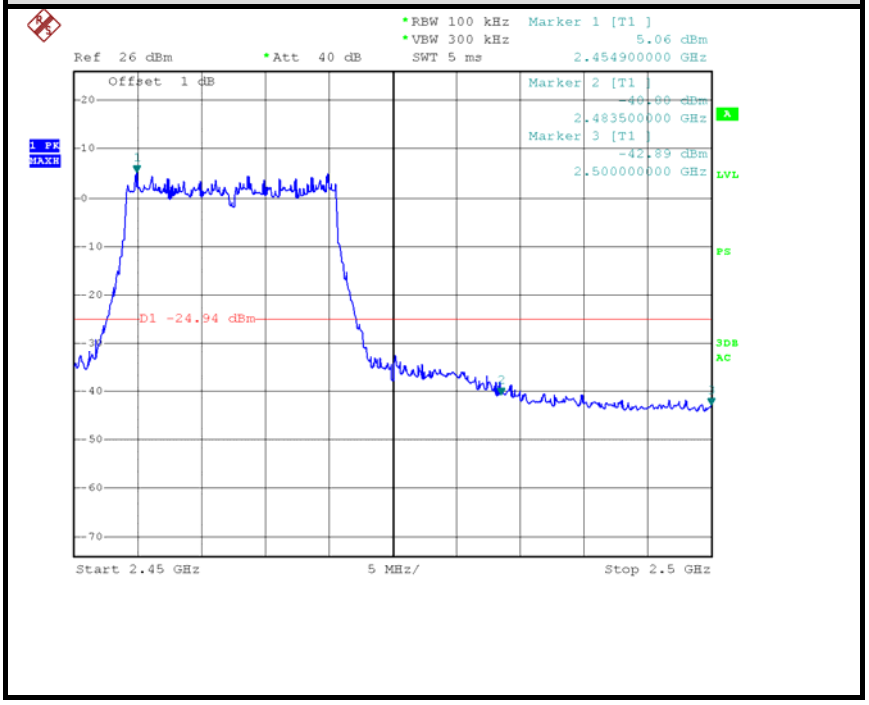
Spurious Emission Conducted Measurment

Modulation Standard: 802.11 g CH-Low:2412MHz



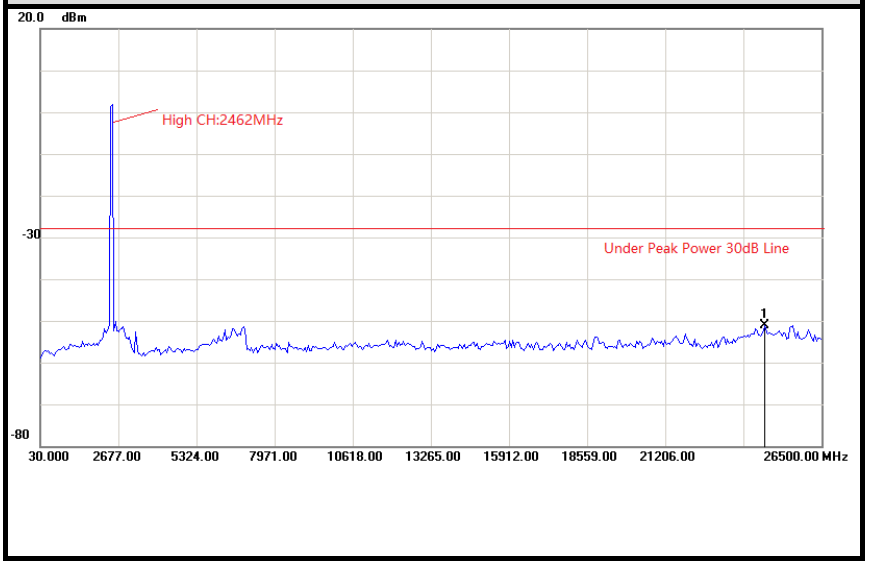
Band-edge Conducted Measurment

Modulation Standard: 802.11 g CH-High:2462MHz



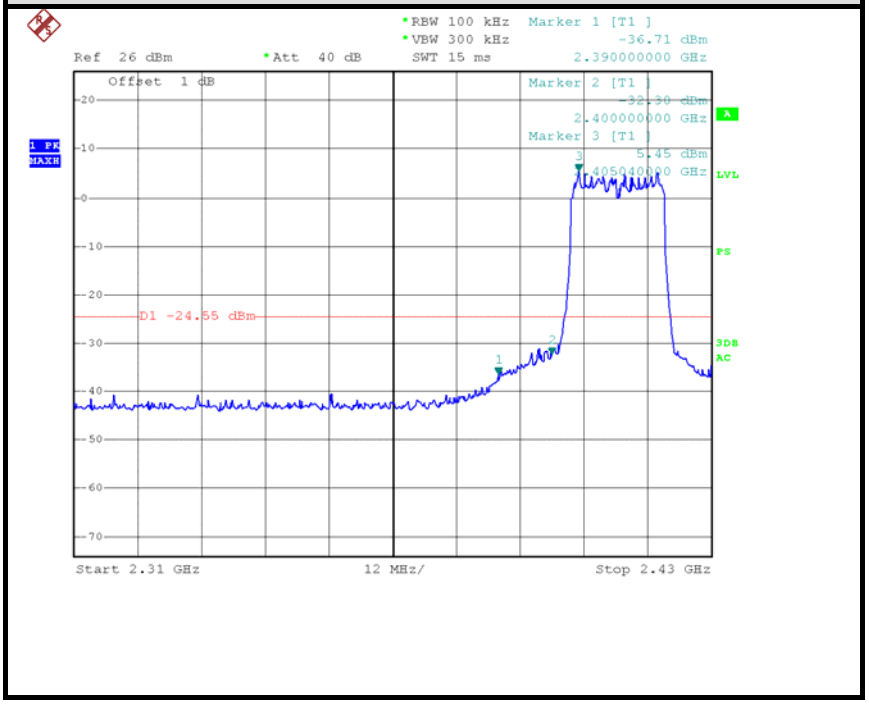
Spurious Emission Conducted Measurment

Modulation Standard: 802.11 g CH-High:2462MHz



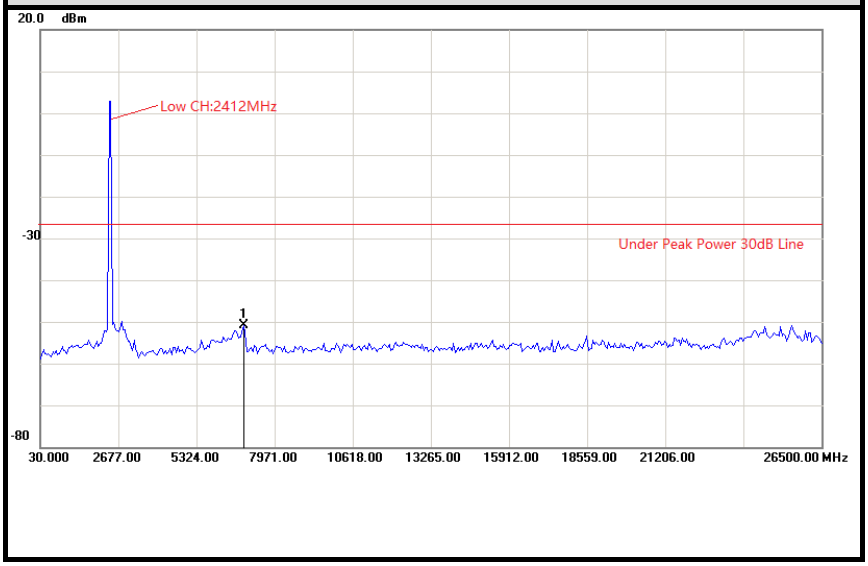
Band-edge Conducted Measurment

Modulation Standard: 802.11 n-HT20 CH-Low:2412MHz



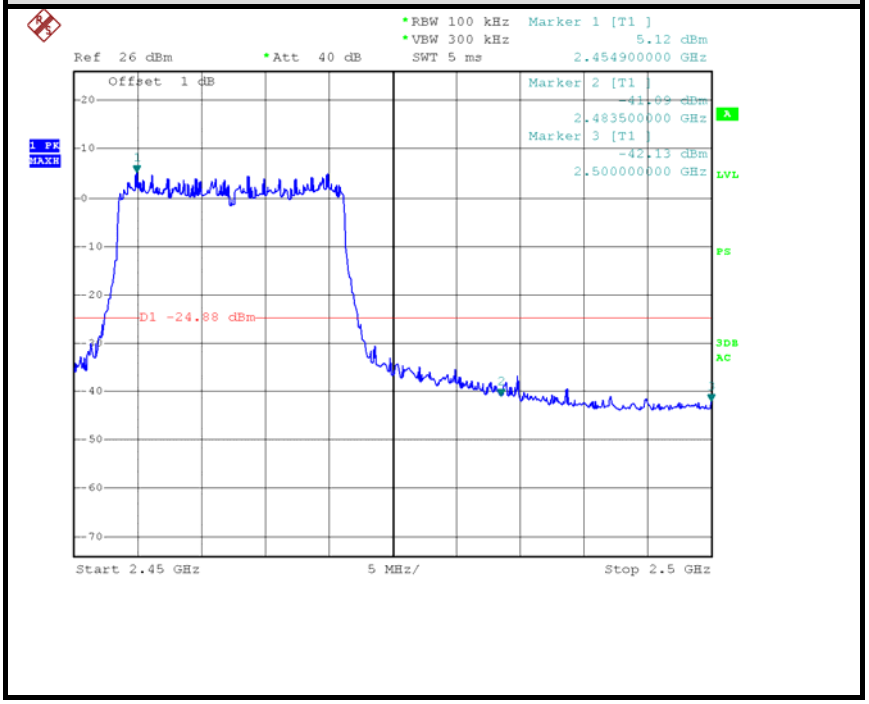
Spurious Emission Conducted Measurment

Modulation Standard: 802.11 n-HT20 CH-Low:2412MHz



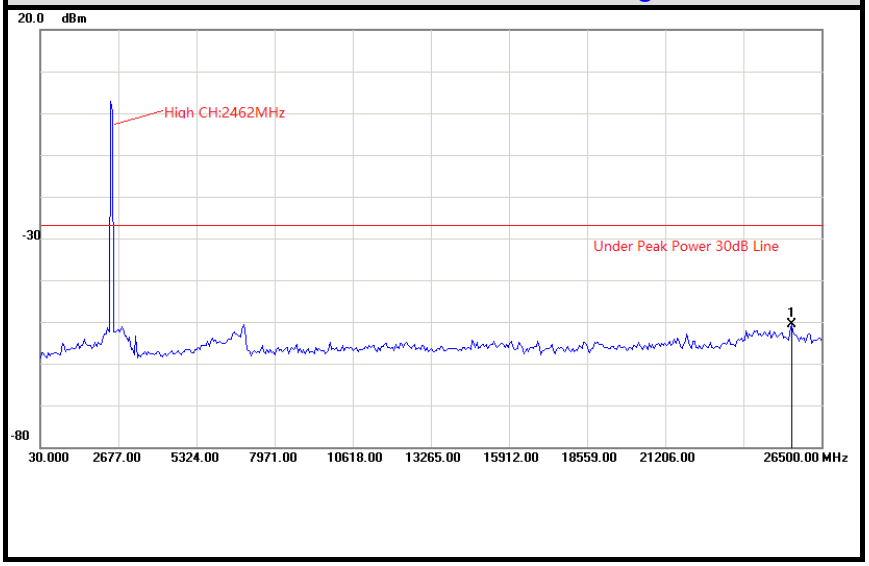
Band-edge Conducted Measurment

Modulation Standard: 802.11 n-HT20 CH-High:2462MHz



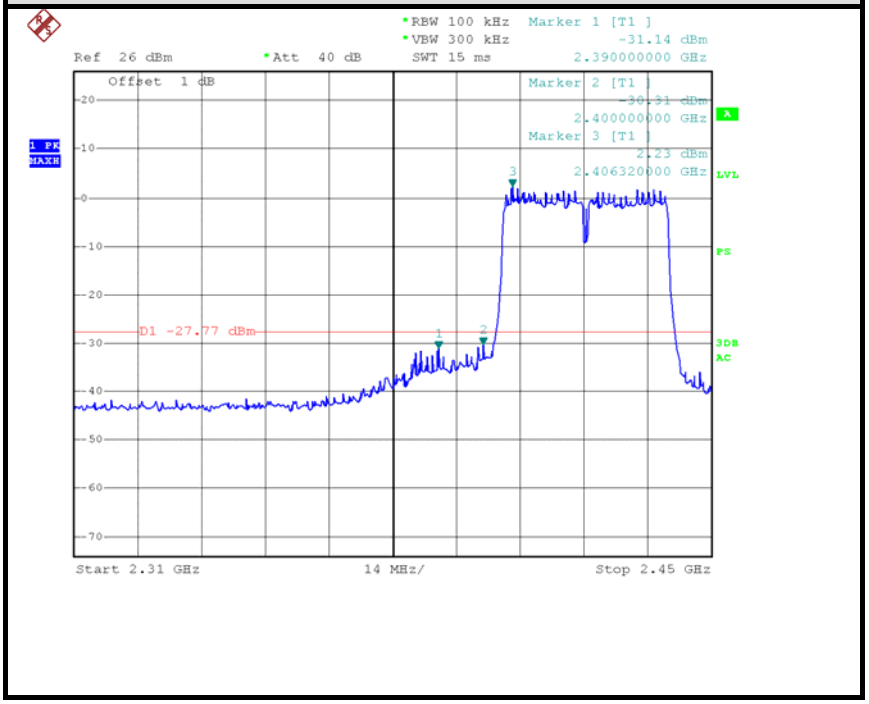
Spurious Emission Conducted Measurment

Modulation Standard: 802.11 n-HT20 CH-High:2462MHz



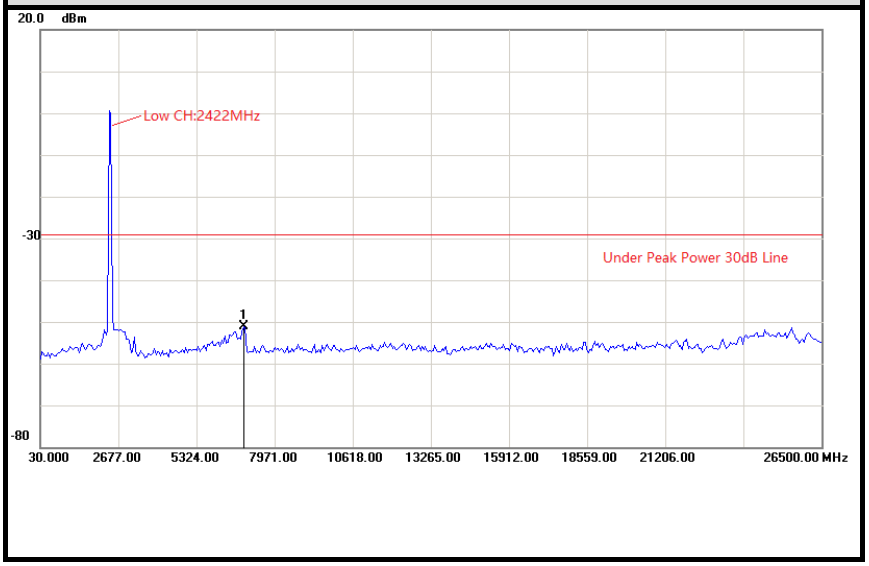
Band-edge Conducted Measurment

Modulation Standard: 802.11 n-HT40 CH-Low:2422MHz



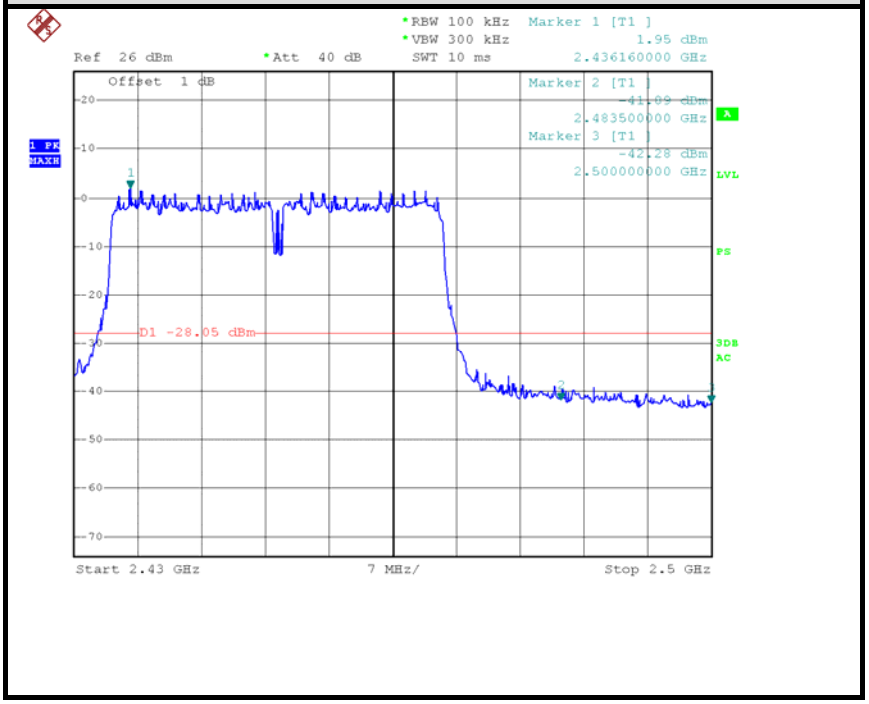
Spurious Emission Conducted Measurment

Modulation Standard: 802.11 n-HT40 CH-Low:2422MHz



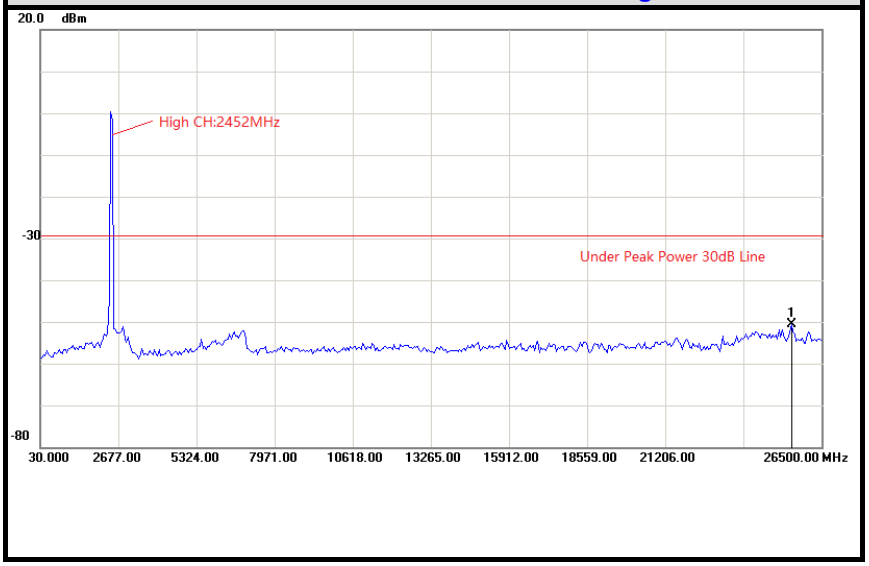
Band-edge Conducted Measurment

Modulation Standard: 802.11 n-HT40 CH-High:2452MHz



Spurious Emission Conducted Measurment

Modulation Standard: 802.11 n-HT40 CH-High:2452MHz



11.0 SPURIOUS EMISSIONS

11.1 LIMIT

Except as provided elsewhere in this Subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

FREQUENCY MHz	DISTANCE Meters	FIELD STRENGTHS LIMIT	
		μV/m	dB(μV)/m
0.009 ~ 0.490	300	2400/F(kHz)	---
0.490 ~ 1.705	30	24000/F(kHz)	---
1.705 ~ 30	30	30	---
30 ~ 88	3	100	40.0
88 ~ 216	3	150	43.5
216 ~ 960	3	200	46.0
960 ~ 1000	3	500	54.0
Above 1000	3	Other:74.0 dB(μV)/m (Peak) 54.0 dB(μV)/m (Average)	

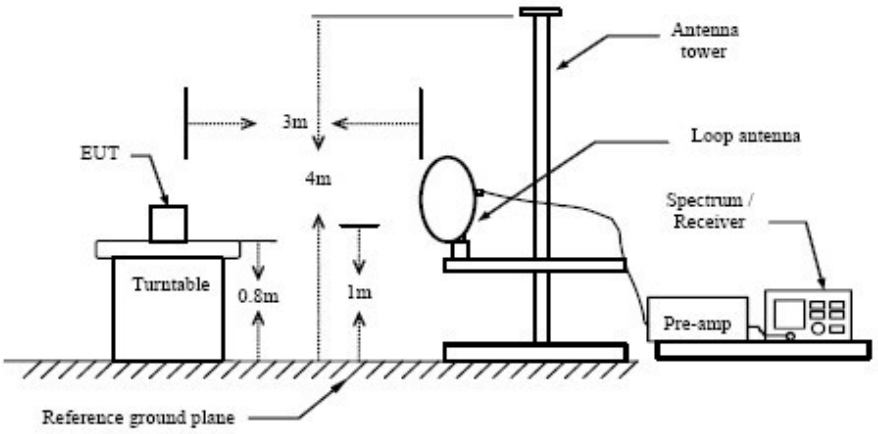
Note: Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this Section shall not be located in the frequency bands54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this Part, e.g.

11.2 Test Equipment

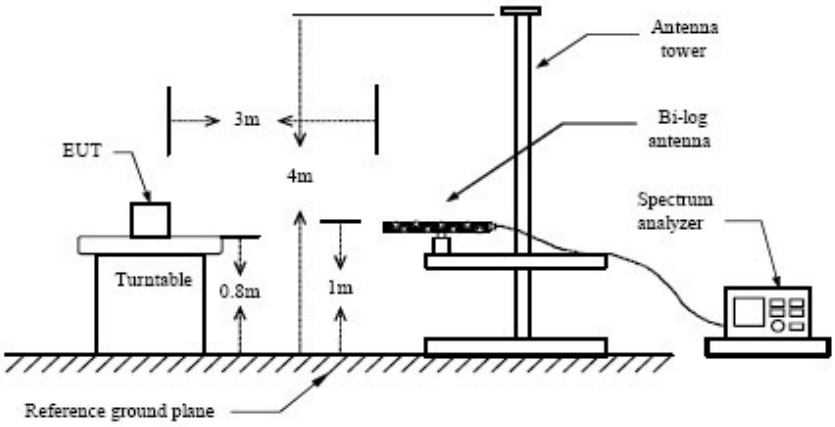
Radiated disturbance (electric field)					
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.
1	EMI Test Receiver	ROHDE & SCHWARZ	ESCI	100868	2016/10
2	Log per Antenna	ETS	3142C	00060447	2017/03
3	Log per Antenna	ROHDE & SCHWARZ	HL050	100186	2017/03
4	Signal analyzer	ROHDE & SCHWARZ	FSIQ26	100311	2017/03
5	Loop Antenna	A.R.A	PLA-1030/B	1030	2016/10
6	EMI Test Software	EZ-EMC	Farad	N/A	N/A

11.3 TEST CONFIGURATION

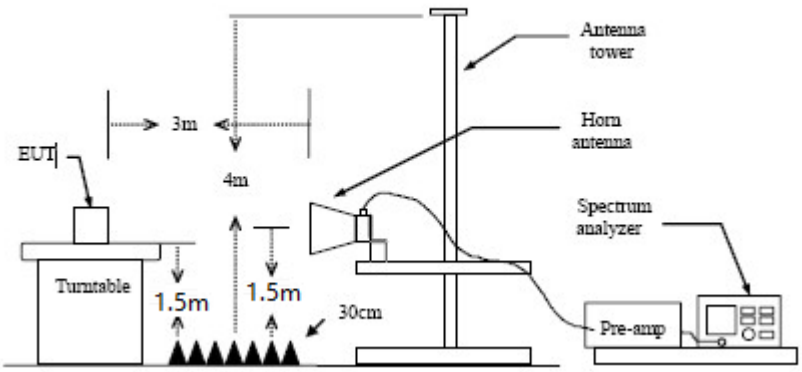
Below 30MHz



Below 1 GHz



Above 1 GHz



11.4 TEST PROCEDURE

1. The EUT is placed on a turntable, which is 0.8m (1.5m for Above 1GHz) above ground plane.
2. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
3. EUT is set 3m away from the receiving antenna, which is varied from 1m to 4m to find out the highest emissions.
4. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
5. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
6. Repeat above procedures until the measurements for all frequencies are complete.

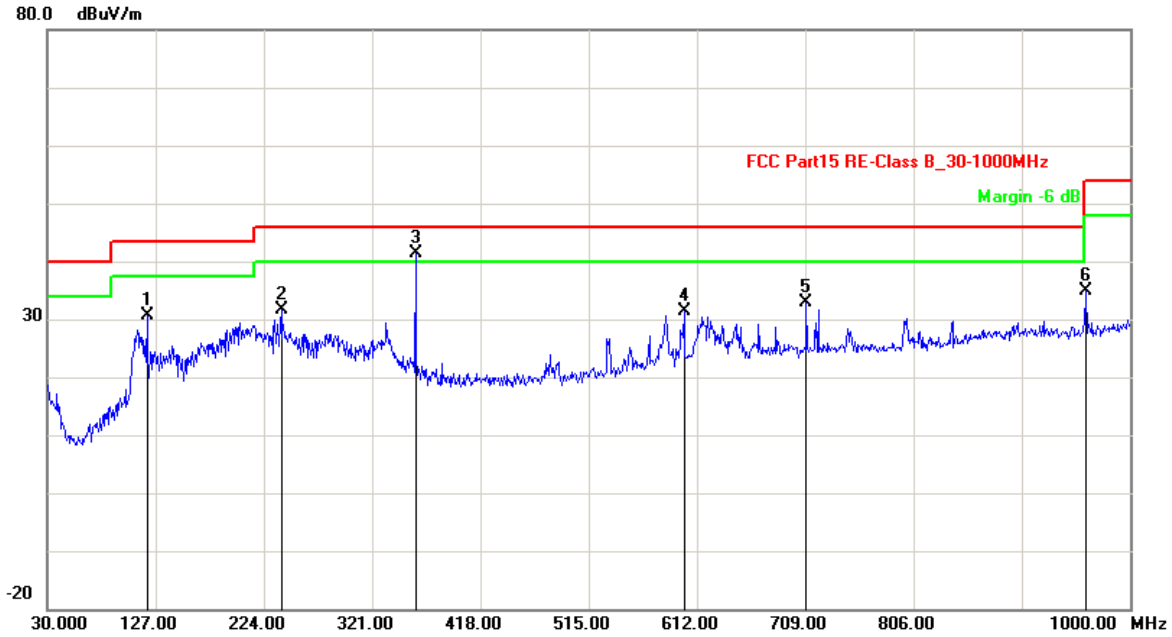
11.5 TEST RESULTS

The frequency range from 9KHz~30MHz,30MHz to 230MHz, 230MHz to 1000MHz and above 1GHz. is investigated. Please see the following pages.

Test Mode:	TX –X Position Mode	Result:	■ - passed □ - not passed
Frequency range:	9KHz~30MHz		

No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
Remark: The test result reading value is to low, margin all > 20dB of the limit.							

Channel:	TX –X Position	Result:	■ - passed □ - not passed
Test point:	Horizontal		
Frequency range:	30MHz-1GHz		



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	119.2400	-19.45	50.02	30.57	43.50	-12.93	QP
2	239.5200	-15.00	46.66	31.66	46.00	-14.34	QP
3	359.8000	-11.03	52.42	41.39	46.00	-4.61	QP
4	600.3600	-5.83	37.25	31.42	46.00	-14.58	QP
5	709.9699	-3.31	36.19	32.88	46.00	-13.12	QP
6	960.2300	0.13	34.84	34.97	54.00	-19.03	QP
Remark: Other frequency mini margin all >6 dB of Limit							

Modulation Standard:	802.11 b	Result:	■ - passed □ - not passed
Channel:	Low Channel		
Test point:	Horizontal		
Frequency range:	1GHz-26.5GHz		

No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	1211.64	-0.82	43.46	42.65	74.00	-31.35	peak
2	1211.64	-0.82	28.77	27.95	54.00	-26.05	AVG
3	5551.18	7.56	37.68	45.24	74.00	-28.76	peak
4	5551.18	7.56	23.24	30.80	54.00	-23.20	AVG
Remark: Other frequency mini margin all >20 dB of Limit							

Modulation Standard:	802.11 b	Result:	■ - passed □ - not passed
Channel:	Middle Channel		
Test point:	Horizontal		
Frequency range:	1GHz-26.5GHz		

No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	1308.70	0.07	42.47	42.54	74.00	-31.46	peak
2	1308.70	0.07	28.42	28.49	54.00	-25.51	AVG
3	5905.51	8.60	36.18	44.79	74.00	-29.21	peak
4	5905.51	8.60	22.14	30.74	54.00	-23.26	AVG
Remark: Other frequency mini margin all >20 dB of Limit							

Modulation Standard:	802.11 b	Result:	■ - passed □ - not passed
Channel:	High Channel		
Test point:	Horizontal		
Frequency range:	1GHz-26.5GHz		

No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	17	1692.22	2.93	40.28	43.22	74.00	-30.78
2	18	1692.22	2.93	26.26	29.20	54.00	-24.80
3	19	5284.85	6.77	37.24	44.01	74.00	-29.99
4	20	5284.85	6.77	22.69	29.46	54.00	-24.54
Remark: Other frequency mini margin all >20 dB of Limit							

Modulation Standard:	802.11 g	Result:	■ - passed □ - not passed
Channel:	Low Channel		
Test point:	Horizontal		
Frequency range:	1GHz-26.5GHz		

No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	1189.02	-1.02	41.26	40.24	74.00	-33.76	peak
2	1189.02	-1.02	26.40	25.38	54.00	-28.62	AVG
3	5696.30	7.98	38.57	46.55	74.00	-27.45	peak
4	5696.30	7.98	24.16	32.14	54.00	-21.86	AVG
Remark: Other frequency mini margin all >20 dB of Limit							

Modulation Standard:	802.11 g	Result:	■ - passed □ - not passed
Channel:	Middle Channel		
Test point:	Horizontal		
Frequency range:	1GHz-26.5GHz		

No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	1556.77	2.15	40.68	42.83	74.00	-31.17	peak
2	1556.77	2.15	26.06	28.21	54.00	-25.79	AVG
3	5258.50	6.69	39.47	46.16	74.00	-27.84	peak
4	5258.50	6.69	24.72	31.41	54.00	-22.59	AVG
Remark: Other frequency mini margin all >20 dB of Limit							

Modulation Standard:	802.11 g	Result:	■ - passed □ - not passed
Channel:	High Channel		
Test point:	Horizontal		
Frequency range:	1GHz-26.5GHz		

No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	1800.79	3.56	39.60	43.17	74.00	-30.83	peak
2	1800.79	3.56	25.15	28.71	54.00	-25.29	AVG
3	5036.91	6.04	39.71	45.75	74.00	-28.25	peak
4	5036.91	6.04	25.63	31.67	54.00	-22.33	AVG
Remark: Other frequency mini margin all >20 dB of Limit							

Modulation Standard:	802.11n-HT20	Result:	■ - passed □ - not passed
Channel:	Low Channel		
Test point:	Horizontal		
Frequency range:	1GHz-26.5GHz		

No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	1707.82	3.03	40.21	43.23	74.00	-30.77	peak
2	1707.82	3.03	25.50	28.53	54.00	-25.47	AVG
3	5555.61	7.57	36.68	44.25	74.00	-29.75	peak
4	5555.61	7.57	22.09	29.66	54.00	-24.34	AVG
Remark: Other frequency mini margin all >20 dB of Limit							

Modulation Standard:	802.11n-HT20	Result:	■ - passed □ - not passed
Channel:	Middle Channel		
Test point:	Horizontal		
Frequency range:	1GHz-26.5GHz		

No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	1164.55	-1.25	44.15	42.91	74.00	-31.09	peak
2	1164.55	-1.25	29.85	28.61	54.00	-25.39	AVG
3	5865.41	8.48	35.58	44.07	74.00	-29.93	peak
4	5865.41	8.48	21.42	29.90	54.00	-24.10	AVG
Remark: Other frequency mini margin all >20 dB of Limit							

Modulation Standard:	802.11n-HT20	Result:	■ - passed □ - not passed
Channel:	High Channel		
Test point:	Horizontal		
Frequency range:	1GHz-26.5GHz		

No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	1075.39	-2.06	44.77	42.71	74.00	-31.29	peak
2	1075.39	-2.06	30.11	28.05	54.00	-25.95	AVG
3	5067.82	6.13	37.33	43.46	74.00	-30.54	peak
4	5067.82	6.13	23.27	29.40	54.00	-24.60	AVG
Remark: Other frequency mini margin all >20 dB of Limit							

Modulation Standard:	802.11n-HT40	Result:	■ - passed □ - not passed
Channel:	Low Channel		
Test point:	Horizontal		
Frequency range:	1GHz-26.5GHz		

No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	1759.88	3.33	39.67	43.00	74.00	-31.00	peak
2	1759.88	3.33	25.03	28.36	54.00	-25.64	AVG
3	5504.21	7.42	35.99	43.41	74.00	-30.59	peak
4	5504.21	7.42	21.65	29.07	54.00	-24.93	AVG
Remark: Other frequency mini margin all >20 dB of Limit							

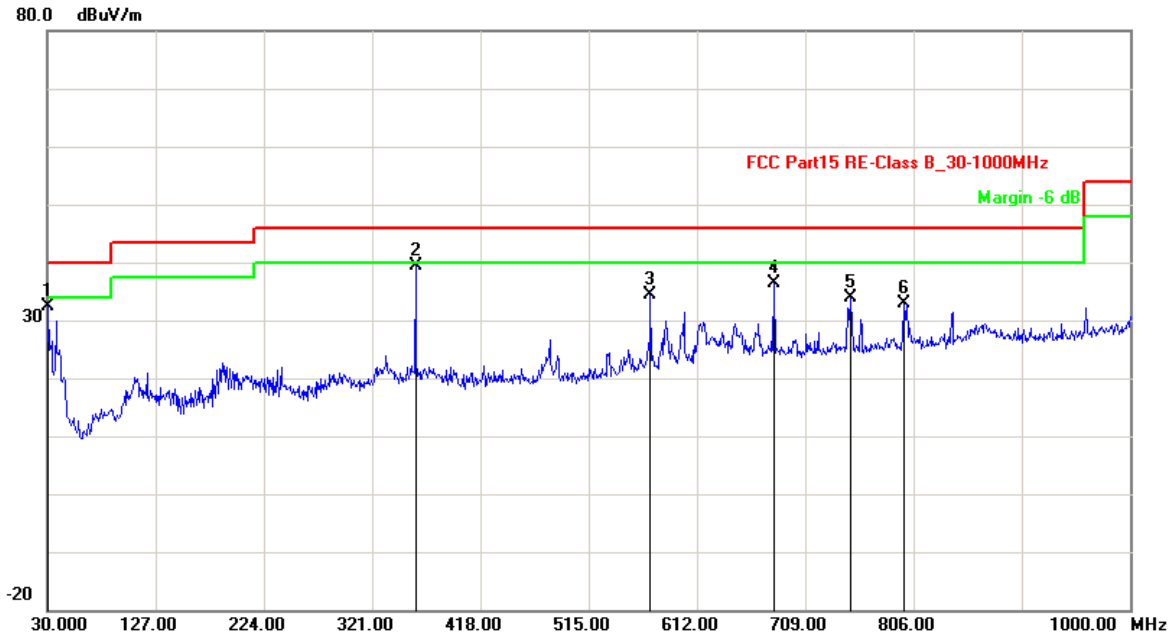
Modulation Standard:	802.11n-HT40	Result:	■ - passed □ - not passed
Channel:	Middle Channel		
Test point:	Horizontal		
Frequency range:	1GHz-26.5GHz		

No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	1998.27	4.71	35.95	40.66	74.00	-33.34	peak
2	1998.27	4.71	21.15	25.86	54.00	-28.14	AVG
3	5032.55	6.03	37.29	43.31	74.00	-30.69	peak
4	5032.55	6.03	23.15	29.18	54.00	-24.82	AVG
Remark: Other frequency mini margin all >20 dB of Limit							

Modulation Standard:	802.11n-HT40	Result:	■ - passed □ - not passed
Channel:	High Channel		
Test point:	Horizontal		
Frequency range:	1GHz-26.5GHz		

No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	1373.33	0.66	41.09	41.75	74.00	-32.25	peak
2	1373.33	0.66	26.13	26.79	54.00	-27.21	AVG
3	5142.54	6.35	38.58	44.93	74.00	-29.07	peak
4	5142.54	6.35	24.37	30.72	54.00	-23.28	AVG
Remark: Other frequency mini margin all >20 dB of Limit							

Channel:	TX –X Position	Result:	■ - passed □ - not passed
Test point:	Vertical		
Frequency range:	30MHz-1GHz		



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	30.9700	-11.12	43.53	32.41	40.00	-7.59	QP
2	359.8000	-11.03	50.51	39.48	46.00	-6.52	QP
3	570.2900	-6.41	40.89	34.48	46.00	-11.52	QP
4	680.8700	-3.89	40.36	36.47	46.00	-9.53	QP
5	749.7400	-2.73	36.61	33.88	46.00	-12.12	QP
6	797.2700	-2.29	35.09	32.80	46.00	-13.20	QP
Remark: Other frequency mini margin all >6 dB of Limit							

Modulation Standard:	802.11 b	Result:	■ - passed □ - not passed
Channel:	Low Channel		
Test point:	Vertical		
Frequency range:	1GHz-26.5GHz		

No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	1431.35	1.19	40.12	41.32	74.00	-32.68	peak
2	1431.35	1.19	25.20	26.39	54.00	-27.61	AVG
3	5681.70	7.94	38.16	46.10	74.00	-27.90	peak
4	5681.70	7.94	23.54	31.48	54.00	-22.52	AVG
Remark: Other frequency mini margin all >20 dB of Limit							

Modulation Standard:	802.11 b	Result:	■ - passed □ - not passed
Channel:	Middle Channel		
Test point:	Vertical		
Frequency range:	1GHz-26.5GHz		

No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	1085.17	-1.97	44.66	42.69	74.00	-31.31	peak
2	1085.17	-1.97	30.25	28.27	54.00	-25.73	AVG
3	5129.98	6.31	38.67	44.99	74.00	-29.01	peak
4	5129.98	6.31	23.89	30.21	54.00	-23.79	AVG
Remark: Other frequency mini margin all >20 dB of Limit							

Modulation Standard:	802.11 b	Result:	■ - passed □ - not passed
Channel:	High Channel		
Test point:	Vertical		
Frequency range:	1GHz-26.5GHz		

No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	1783.33	3.46	37.13	40.59	74.00	-33.41	peak
2	1783.33	3.46	22.99	26.45	54.00	-27.55	AVG
3	5166.47	6.42	37.61	44.03	74.00	-29.97	peak
4	5166.47	6.42	22.90	29.32	54.00	-24.68	AVG
Remark: Other frequency mini margin all >20 dB of Limit							

Modulation Standard:	802.11 g	Result:	■ - passed □ - not passed
Channel:	Low Channel		
Test point:	Vertical		
Frequency range:	1GHz-26.5GHz		

No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	1554.75	2.14	37.87	40.00	74.00	-34.00	peak
2	1554.75	2.14	22.90	25.04	54.00	-28.96	AVG
3	5979.77	8.82	36.16	44.98	74.00	-29.02	peak
4	5979.77	8.82	21.86	30.68	54.00	-23.32	AVG
Remark: Other frequency mini margin all >20 dB of Limit							

Modulation Standard:	802.11 g	Result:	■ - passed □ - not passed
Channel:	Middle Channel		
Test point:	Vertical		
Frequency range:	1GHz-26.5GHz		

No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	1760.89	3.33	39.66	42.99	74.00	-31.01	peak
2	1760.89	3.33	24.78	28.11	54.00	-25.89	AVG
3	5922.29	8.65	38.23	46.88	74.00	-27.12	peak
4	5922.29	8.65	23.29	31.94	54.00	-22.06	AVG
Remark: Other frequency mini margin all >20 dB of Limit							

Modulation Standard:	802.11 g	Result:	■ - passed □ - not passed
Channel:	High Channel		
Test point:	Vertical		
Frequency range:	1GHz-26.5GHz		

No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	1209.47	-0.84	44.64	43.80	74.00	-30.20	peak
2	1209.47	-0.84	29.93	29.09	54.00	-24.91	AVG
3	5475.59	7.33	38.09	45.43	74.00	-28.57	peak
4	5475.59	7.33	23.14	30.47	54.00	-23.53	AVG
Remark: Other frequency mini margin all >20 dB of Limit							

Modulation Standard:	802.11n-HT20	Result:	■ - passed □ - not passed
Channel:	Low Channel		
Test point:	Vertical		
Frequency range:	1GHz-26.5GHz		

No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	1107.11	-1.77	43.55	41.78	74.00	-32.22	peak
2	1107.11	-1.77	28.67	26.90	54.00	-27.10	AVG
3	5268.23	6.72	37.26	43.98	74.00	-30.02	peak
4	5268.23	6.72	22.90	29.62	54.00	-24.38	AVG
Remark: Other frequency mini margin all >20 dB of Limit							

Modulation Standard:	802.11n-HT20	Result:	■ - passed □ - not passed
Channel:	Middle Channel		
Test point:	Vertical		
Frequency range:	1GHz-26.5GHz		

No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	1490.74	1.74	40.53	42.26	74.00	-31.74	peak
2	1490.74	1.74	26.51	28.25	54.00	-25.75	AVG
3	5218.36	6.57	36.53	43.10	74.00	-30.90	peak
4	5218.36	6.57	21.73	28.30	54.00	-25.70	AVG
Remark: Other frequency mini margin all >20 dB of Limit							

Modulation Standard:	802.11n-HT20	Result:	■ - passed □ - not passed
Channel:	High Channel		
Test point:	Vertical		
Frequency range:	1GHz-26.5GHz		

No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	1377.19	0.70	41.87	42.57	74.00	-31.43	peak
2	1377.19	0.70	27.85	28.55	54.00	-25.45	AVG
3	5196.22	6.51	40.45	46.96	74.00	-27.04	peak
4	5196.22	6.51	25.97	32.48	54.00	-21.52	AVG
Remark: Other frequency mini margin all >20 dB of Limit							

Modulation Standard:	802.11n-HT40	Result:	■ - passed □ - not passed
Channel:	Low Channel		
Test point:	Vertical		
Frequency range:	1GHz-26.5GHz		

No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	1590.68	2.35	38.04	40.38	74.00	-33.62	peak
2	1590.68	2.35	23.64	25.98	54.00	-28.02	AVG
3	5458.98	7.28	36.95	44.24	74.00	-29.76	peak
4	5458.98	7.28	22.46	29.74	54.00	-24.26	AVG
Remark: Other frequency mini margin all >20 dB of Limit							

Modulation Standard:	802.11n-HT40	Result:	■ - passed □ - not passed
Channel:	Middle Channel		
Test point:	Vertical		
Frequency range:	1GHz-26.5GHz		

No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	1715.34	3.07	38.26	41.33	74.00	-32.67	peak
2	1715.34	3.07	23.76	26.83	54.00	-27.17	AVG
3	5998.76	8.88	35.48	44.35	74.00	-29.65	peak
4	5998.76	8.88	20.62	29.50	54.00	-24.50	AVG
Remark: Other frequency mini margin all >20 dB of Limit							

Modulation Standard:	802.11n-HT40	Result:	■ - passed □ - not passed
Channel:	High Channel		
Test point:	Vertical		
Frequency range:	1GHz-26.5GHz		

No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	1231.40	-0.63	44.05	43.42	74.00	-30.58	peak
2	1231.40	-0.63	29.33	28.70	54.00	-25.30	AVG
3	5270.30	6.73	36.65	43.38	74.00	-30.62	peak
4	5270.30	6.73	22.60	29.32	54.00	-24.68	AVG
Remark: Other frequency mini margin all >20 dB of Limit							

12.0 Antenna Requirements

12.1 Standard Applicable

For intentional device with External Brass antenna, according to FCC 47 CFR 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.
And according to FCC 47 CFR Section 15.247 (b), if transmitting antennas of directional gain greater than 6dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

12.2 Antenna Construction and Directional Gain

Antenna type:External Brass Antenna
Antenna Gain: 2dBi

13.0 Deviation to test specifications

The following identical model(s):

N/A

Belong to the tested device:

Product description: **WIFI CAMERA**
Model name: **WIFI CAMERA**