APPLICATION CERTIFICATION FCC Part 15C
On Behalf of
Shenzhen Dimao Intellectual Appliance CO.,LTD.

Smart Wifi Robotic cleaner with HD camera
Model No.: S007G, S007S, S008, S009

FCC ID: 2AMM3-S007G

Prepared for	:	Shenzhen Dimao Intellectual Appliance CO.,LTD.
Address	:	Room 506-1, shenbao Apartment, No 11, Aixin Road, Longcheng Street Midtown, Longgang District, Shenzhen City, China.
Prepared by	:	ACCURATE TECHNOLOGY CO., LTD
Address	:	F1, Bldg. A&D, Chan Yuan New Material Port, Keyuan Rd. Science & Industry Park, Nan Shan, Shenzhen, Guangdong P.R. China Tel: (0755) 26503290 Fax: (0755) 26503396

Report No.	:	ATE20171108
Date of Test	:	June 15, 2017-July 03, 2017
Date of Report	:	July 04, 2017

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Test Report Certification

Applicant	:	Shenzhen Dimao Intellectual Appliance CO.,LTD.
Address	:	Room 506-1, shenbao Apartment, No 11, Aixin Road, Longcheng Street Midtown, Longgang District, Shenzhen City, China
Manufacturer	:	Shenzhen Dimao Intellectual Appliance CO.,LTD.
Address	:	Room 506-1, shenbao Apartment, No 11, Aixin Road, Longcheng Street Midtown, Longgang District, Shenzhen City, China
Product	:	Smart Wifi Robotic cleaner with HD camera
Model No.	:	S007G, S007S, S008, S009
Trade name	:	n.a

Measurement Procedure Used:

FCC Rules and Regulations Part 15 Subpart C Section 15.247: 2016
ANSI C63.10: 2013

The EUT was tested according to DTS test procedure of Apr 05, 2017 KDB558074 D01 DTS Meas Guidance v04 for compliance to FCC 47CFR 15.247 requirements

The device described above is tested by ACCURATE TECHNOLOGY CO. LTD to determine the maximum emission levels emanating from the device. The maximum emission levels are compared to the FCC Part 15 Subpart C Section 15.247 limits. The measurement results are contained in this test report and ACCURATE TECHNOLOGY CO. LTD is assumed full responsibility for the accuracy and completeness of these measurements. Also, this report shows that the Equipment Under Test (EUT) is to be technically compliant with the FCC requirements. This report applies to above tested sample only. This report shall not be reproduced in part without written approval of ACCURATE TECHNOLOGY CO. LTD.

Date of Test : June 15, 2017-July 03, 2017
Date of Report: July 04, 2017

Prepared by : (Tim Zhang, Engineer)

Approved & Authorized Signer : (Sean Liu, Manager)

1. GENERAL INFORMATION

1.1.Description of Device (EUT)

EUT	:	Smart Wifi Robotic cleaner with HD camera
Model Number	:	S007G, S007S, S008, S009
Frequency Range	:	802.11b/g/n(20MHz): 2412-2462MHz 802.11n(40MHz): 2422-2452MHz
Number of Channels	:	802.11b/g/n (20MHz):11 802.11n (40MHz): 7
Antenna Gain	:	5dBi
Type of Antenna	:	Wired Antenna
Power Supply	:	DC 19V(Powered by Adapter)
Adapter information	:	Model: K25V190100U Input: AC 100-240V 50～60Hz 0.6A Output: DC 19.0V 1.0A
Data Rate	:	802.11b: 11, 5.5, 2, 1 Mbps 802.11g: 54, 48, 36, 24, 18, 12, 9, 6 Mbps 802.11n: up to 150Mbps
Modulation Type	:	DSSS, OFDM
Applicant	:	Shenzhen Dimao Intellectual Appliance CO.,LTD.
Address	:	Room 506-1, shenbao Apartment, No 11, Aixin Road, Longcheng Street Midtown, Longgang District, Shenzhen City, China.
Manufacturer	:	Shenzhen Dimao Intellectual Appliance CO.,LTD.
Address	:	Room 506-1, shenbao Apartment, No 11, Aixin Road, Longcheng Street Midtown, Longgang District, Shenzhen City, China.
Date of sample received	:	June 15, 2017
Date of Test	:	June 15, 2017-June 22, 2017

1.2.Carrier Frequency of Channels

802.11b, 802.11g, 802.11n (20MHz)

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

802.11n (40MHz)

Channel	Frequency(MHz)	Channel	Frequency(MHz)
---	---	07	2442
---	---	08	2447
03	2422	09	2452
04	2427	---	---
05	2432	---	---
06	2437	---	---

1.3.Accessory and Auxiliary Equipment

PC	Manufacturer: LENOVO M/N: 4290-RT8 S/N: R9-FW93G 11/08

1.4.Description of Test Facility

EMC Lab	:	Listed by Federal Communications Commission (FCC) The Registration Number is 752051 Listed by Innovation, Science and Economic Development Canada (ISEDC) The Registration Number is 5077A-2 Accredited by China National Accreditation Service for Conformity Assessment (CNAS) The Registration Number is CNAS L3193 Accredited by American Association for Laboratory Accreditation (A2LA) The Certificate Number is 4297.01
Name of Firm	:	ACCURATE TECHNOLOGY CO. LTD
Site Location	:	F1, Bldg. A, Changyuan New Material Port, Keyuan Rd. Science & Industry Park, Nanshan, Shenzhen, Guangdong P.R. China

1.5.Measurement Uncertainty

Conducted Emission Expanded Uncertainty	=	2.23dB, k=2
Radiated emission expanded uncertainty (9kHz-30MHz)	=	3.08dB, k=2
Radiated emission expanded uncertainty (30MHz-1000MHz)	=	4.42dB, k=2
Radiated emission expanded uncertainty (Above 1GHz)	=	4.06dB, k=2

2. MEASURING DEVICE AND TEST EQUIPMENT

Table 1: List of Test and Measurement Equipment

Kind of equipment	Manufacturer	Type	S/N	Calibrated dates	Calibrated until
EMI Test Receiver	Rohde&Schwarz	ESCS30	100307	Jan. 07, 2017	1 Year
EMI Test Receiver	Rohde&Schwarz	ESPI3	101526/003	Jan. 07, 2017	1 Year
Spectrum Analyzer	Rohde&Schwarz	FSV-40	101495	Jan. 07, 2017	1 Year
Spectrum Analyzer	Agilent	E7405A	MY45115511	Jan. 07, 2017	1 Year
Pre-Amplifier	Rohde&Schwarz	CBLU1183540-01	3791	Jan. 07, 2017	1 Year
Loop Antenna	Schwarzbeck	FMZB1516	1516131	Jan. 13, 2017	1 Year
Bilog Antenna	Schwarzbeck	VULB9163	9163-323	Jan. 13, 2017	1 Year
Horn Antenna	Schwarzbeck	BBHA9120D	9120D-655	Jan. 13, 2017	1 Year
Horn Antenna	Schwarzbeck	BBHA9170	9170-359	Jan. 13, 2017	1 Year
Open Switch and Control Unit	Rohde&Schwarz	OSP120 + OSP-B157	101244 + 100866	Jan. 07, 2017	1 Year
LISN	Rohde&Schwarz	ESH3-Z5	100305	Jan. 07, 2017	1 Year
LISN	Schwarzbeck	NSLK8126	8126431	Jan. 07, 2017	1 Year
Highpass Filter	Wainwright Instruments	WHKX3.6/18G-10SS	N/A	Jan. 07, 2017	1 Year
Band Reject Filter	Wainwright Instruments	WRCG2400/2485-2375/2510-60/11SS	N/A	Jan. 07, 2017	1 Year

3. OPERATION OF EUT DURING TESTING

3.1.Operating Mode

The mode is used: **1.802.11b Transmitting mode**
Low Channel: 2412MHz
Middle Channel: 2437MHz
High Channel: 2462MHz

2.802.11g Transmitting mode
Low Channel: 2412MHz
Middle Channel: 2437MHz
High Channel: 2462MHz

3.802.11n (20MHz) Transmitting mode
Low Channel: 2412MHz
Middle Channel: 2437MHz
High Channel: 2462MHz

4.802.11n (40MHz) Transmitting mode
Low Channel: 2422MHz
Middle Channel: 2437MHz
High Channel: 2452MHz

3.2.Configuration and peripherals

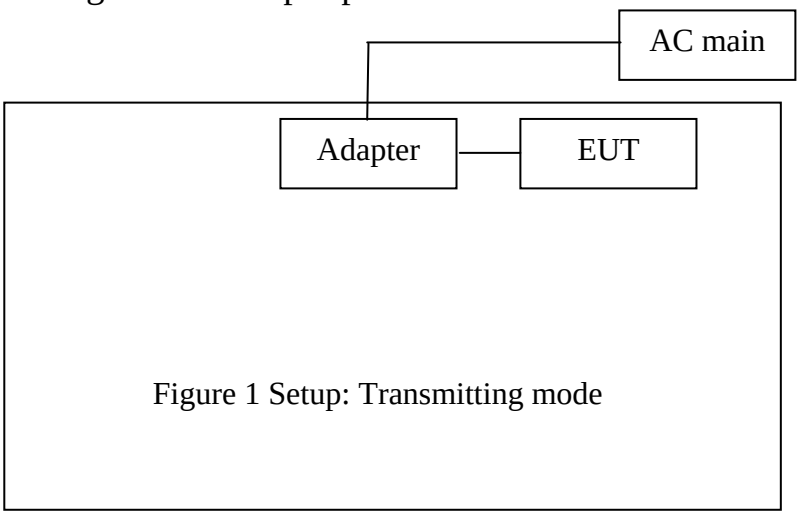


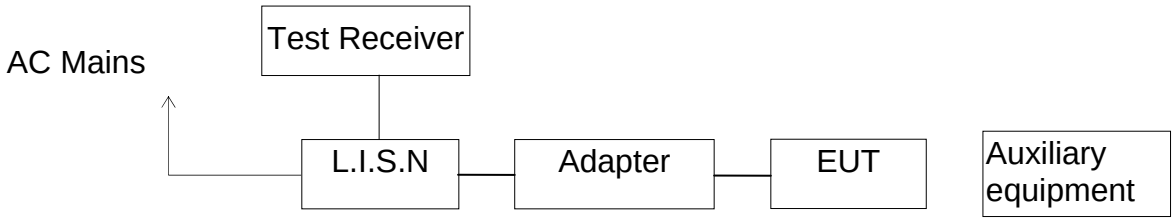
Figure 1 Setup: Transmitting mode

4. TEST PROCEDURES AND RESULTS

FCC Rules	Description of Test	Result
Section 15.207	Power Line Conducted Emission	Compliant
Section 15.247(a)(2)	6dB Bandwidth Test	Compliant
KDB558074 D01 DTS Meas Guidance v04	Duty cycle	Compliant
KDB558074 D01 DTS Meas Guidance v04	OBW	Compliant
Section 15.247(e)	Power Spectral Density Test	Compliant
Section 15.247(b)(3)	Maximum Peak Output Power Test	Compliant
Section 15.247(d)	Band Edge Compliance Test	Compliant
Section 15.247(d) Section 15.209	Radiated Spurious Emission Test	Compliant
Section 15.203	Antenna Requirement	Compliant

5. POWER LINE CONDUCTED MEASUREMENT

5.1.Block Diagram of Test Setup



(EUT: Smart Wifi Robotic cleaner with HD camera)

5.2.Power Line Conducted Emission Measurement Limits

Frequency (MHz)	Limit dB(μV)	
	Quasi-peak Level	Average Level
0.15 - 0.50	66.0 – 56.0 *	56.0 – 46.0 *
0.50 - 5.00	56.0	46.0
5.00 - 30.00	60.0	50.0
NOTE1: The lower limit shall apply at the transition frequencies. NOTE2: The limit decreases linearly with the logarithm of the frequency in the range 0.15MHz to 0.50MHz.		

5.3.Configuration of EUT on Measurement

The following equipments are installed on Power Line Conducted Emission Measurement to meet the commission requirement and operating regulations in a manner, which tends to maximize its emission characteristics in a normal application.

5.4.Operating Condition of EUT

5.4.1.Setup the EUT and simulator as shown as Section 5.1.

5.4.2.Turn on the power of all equipment.

5.4.3.Let the EUT work in test mode and measure it.

5.5. Test Procedure

The EUT is put on the plane 0.1 m high above the ground by insulating support and is connected to the power mains through a line impedance stabilization network (L.I.S.N.). This provides a 50ohm coupling impedance for the EUT system. Please refer the block diagram of the test setup and photographs. Both sides of AC lines 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 ANSI C63.10: 2013 on Conducted Emission Measurement.
The bandwidth of test receiver (R & S ESCS30) is set at 9kHz.

The frequency range from 150kHz to 30MHz is checked.

5.6. Power Line Conducted Emission Measurement Results

PASS.

The frequency range from 150kHz to 30MHz is checked.

Emissions attenuated more than 20 dB below the permissible value are not reported.

The spectral diagrams are attached as below.

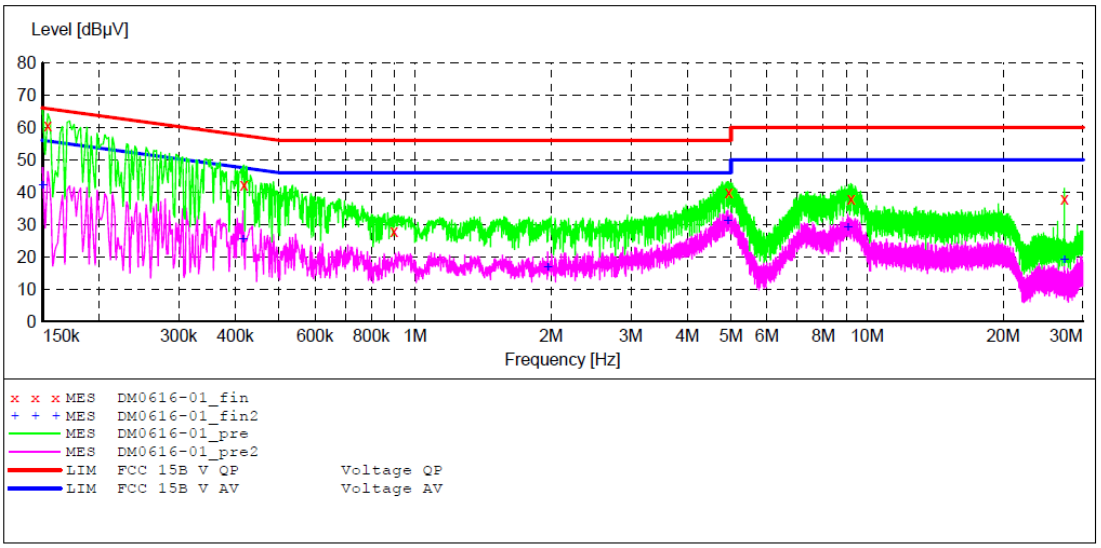
ACCURATE TECHNOLOGY CO.,LTD

CONDUCTED EMISSION STANDARD FCC PART 15B

```
EUT:                  Smart Wifi Robotic cleaner with HD camera M/N:S007G
Manufacturer:         Shenzhen DIMAO Intellectual Appliance CO.,LTD
Operating Condition:  CHARGING
Test Site:            1#Shielding Room
Operator:             DING
Test Specification:   N  120V/60Hz
Comment:              Report NO.:ATE20171108
Start of Test:        2017-6-16 / 19:20:25
```

SCAN TABLE: "V 150K-30MHz fin"

```
Short Description:                SUB STD VTERM2 1.70
Start      Stop       Step        Detector  Meas.     IF       Transducer
Frequency  Frequency  Width                 Time      Bandw.
150.0 kHz  30.0 MHz   4.5 kHz     QuasiPeak 1.0 s     9 kHz    NSLK8126 2008
                                  Average
```



MEASUREMENT RESULT: "DM0616-01_fin"

2017-6-16 19:22

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.154000	60.70	10.8	65.8	5.1	QP	N	GND
0.418000	42.40	11.0	57.5	15.1	QP	N	GND
0.898000	28.00	11.1	56	28.0	QP	N	GND
4.935000	39.90	11.4	56	16.1	QP	N	GND
9.200000	37.80	11.6	60	22.2	QP	N	GND
27.315000	38.10	11.8	60	21.9	QP	N	GND

MEASUREMENT RESULT: "DM0616-01_fin2"

2017-6-16 19:22

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.150000	42.10	10.8	56	13.9	AV	N	GND
0.416000	25.50	11.0	47.5	22.0	AV	N	GND
1.964000	16.80	11.3	46	29.2	AV	N	GND
4.920000	31.30	11.4	46	14.7	AV	N	GND
9.065000	29.40	11.6	50	20.6	AV	N	GND
27.315000	19.40	11.8	50	30.6	AV	N	GND

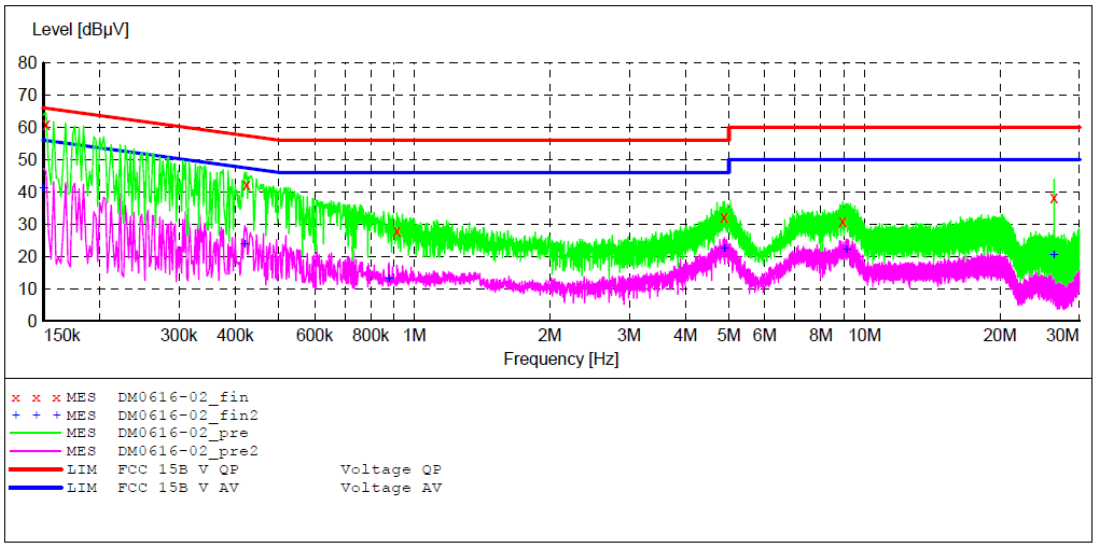
ACCURATE TECHNOLOGY CO.,LTD

CONDUCTED EMISSION STANDARD FCC PART 15B

```
EUT:                  Smart Wifi Robotic cleaner with HD camera M/N:S007G
Manufacturer:         Shenzhen DIMAO Intellectual Appliance CO.,LTD
Operating Condition:  CHARGING
Test Site:            1#Shielding Room
Operator:             DING
Test Specification:   L  120V/60Hz
Comment:              Report NO.:ATE20171108
Start of Test:        2017-6-16 / 19:17:56
```

SCAN TABLE: "V 150K-30MHz fin"

```
  Short Description:              SUB STD VTERM2 1.70
  Start      Stop       Step      Detector  Meas.     IF       Transducer
  Frequency  Frequency  Width               Time      Bandw.
  150.0 kHz  30.0 MHz   4.5 kHz   QuasiPeak 1.0 s     9 kHz    NSLK8126 2008
                                  Average
```



MEASUREMENT RESULT: "DM0616-02_fin"

2017-6-16 19:19

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.152000	61.10	10.8	65.9	4.8	QP	L1	GND
0.424000	42.40	11.0	57.4	15.0	QP	L1	GND
0.914000	28.00	11.1	56	28.0	QP	L1	GND
4.880000	32.10	11.4	56	23.9	QP	L1	GND
8.945000	31.00	11.5	60	29.0	QP	L1	GND
26.365000	38.30	11.8	60	21.7	QP	L1	GND

MEASUREMENT RESULT: "DM0616-02_fin2"

2017-6-16 19:19

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.150000	41.10	10.8	56	14.9	AV	L1	GND
0.420000	23.90	11.0	47.4	23.5	AV	L1	GND
0.878000	13.20	11.1	46	32.8	AV	L1	GND
4.880000	22.60	11.4	46	23.4	AV	L1	GND
9.105000	22.10	11.6	50	27.9	AV	L1	GND
26.365000	20.50	11.8	50	29.5	AV	L1	GND

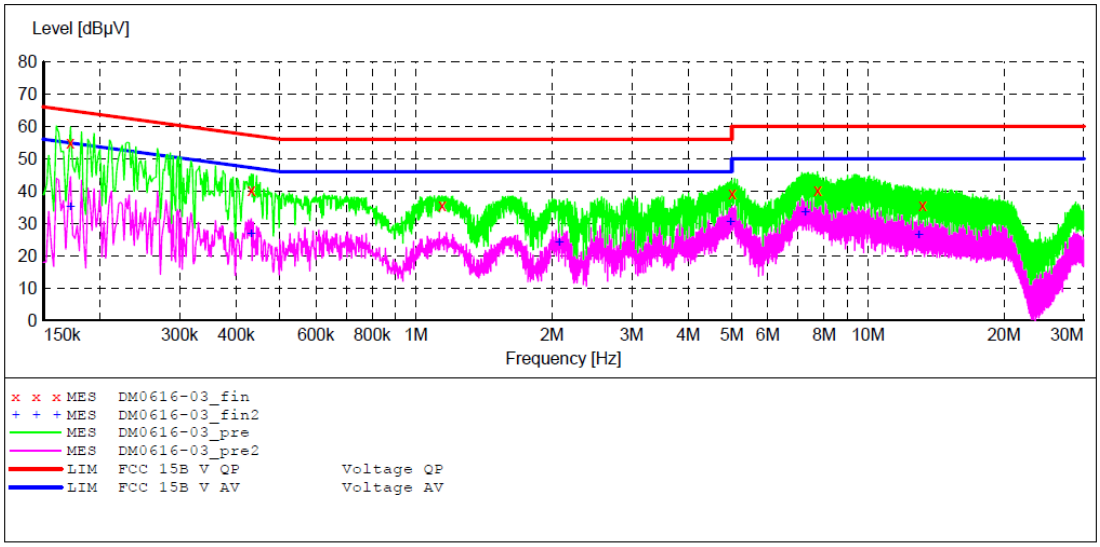
ACCURATE TECHNOLOGY CO.,LTD

CONDUCTED EMISSION STANDARD FCC PART 15B

```
EUT:                  Smart Wifi Robotic cleaner with HD camera M/N:S007G
Manufacturer:         Shenzhen DIMAO Intellectual Appliance CO.,LTD
Operating Condition:  CHARGING
Test Site:            1#Shielding Room
Operator:             DING
Test Specification:   N  240V/60Hz
Comment:              Report NO.:ATE20171108
Start of Test:        2017-6-16 / 19:23:34
```

SCAN TABLE: "V 150K-30MHz fin"

```
  Short Description:                SUB STD VTERM2 1.70
  Start      Stop       Step        Detector  Meas.     IF       Transducer
  Frequency  Frequency  Width                 Time      Bandw.
  150.0 kHz  30.0 MHz   4.5 kHz     QuasiPeak 1.0 s     9 kHz    NSLK8126 2008
                                    Average
```



MEASUREMENT RESULT: "DM0616-03_fin"

2017-6-16 19:25

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.172000	54.90	10.8	64.9	10.0	QP	N	GND
0.432000	40.40	11.0	57.2	16.8	QP	N	GND
1.142000	35.60	11.2	56	20.4	QP	N	GND
5.000000	39.40	11.4	56	16.6	QP	N	GND
7.735000	40.30	11.5	60	19.7	QP	N	GND
13.190000	35.60	11.6	60	24.4	QP	N	GND

MEASUREMENT RESULT: "DM0616-03_fin2"

2017-6-16 19:25

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.172000	35.40	10.8	54.9	19.5	AV	N	GND
0.432000	27.00	11.0	47.2	20.2	AV	N	GND
2.075000	24.40	11.3	46	21.6	AV	N	GND
4.965000	30.70	11.4	46	15.3	AV	N	GND
7.255000	33.50	11.5	50	16.5	AV	N	GND
12.940000	26.70	11.6	50	23.3	AV	N	GND

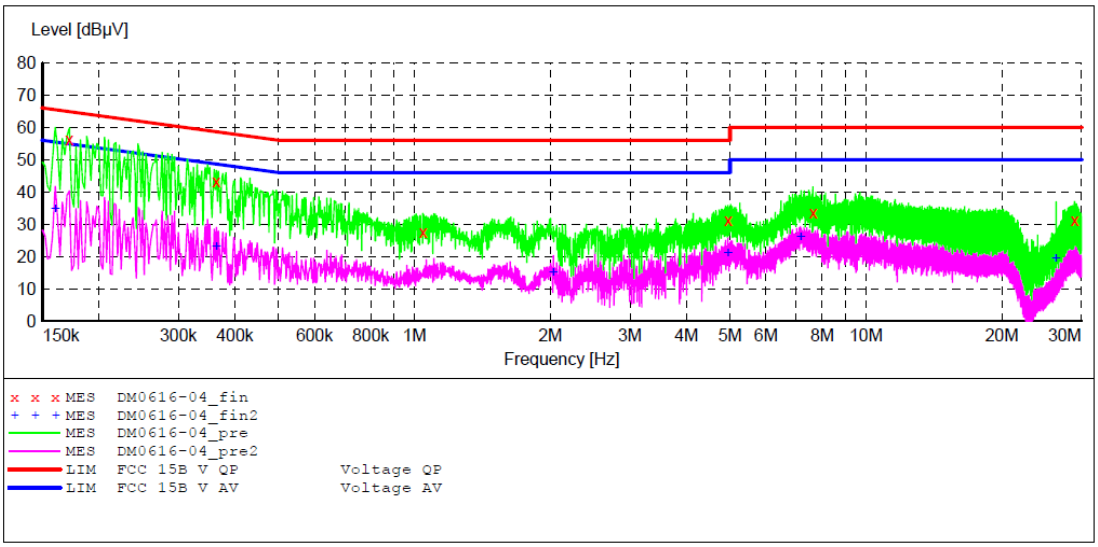
ACCURATE TECHNOLOGY CO.,LTD

CONDUCTED EMISSION STANDARD FCC PART 15B

```
EUT:                  Smart Wifi Robotic cleaner with HD camera M/N:S007G
Manufacturer:         Shenzhen DIMAO Intellectual Appliance CO.,LTD
Operating Condition:  CHARGING
Test Site:            1#Shielding Room
Operator:             DING
Test Specification:   L  240V/60Hz
Comment:              Report NO.:ATE20171108
Start of Test:        2017-6-16 / 19:26:43
```

SCAN TABLE: "V 150K-30MHz fin"

```
Short Description:                SUB STD VTERM2 1.70
Start      Stop       Step        Detector  Meas.     IF       Transducer
Frequency  Frequency  Width                 Time      Bandw.
150.0 kHz  30.0 MHz   4.5 kHz     QuasiPeak 1.0 s     9 kHz    NSLK8126 2008
                                  Average
```



MEASUREMENT RESULT: "DM0616-04_fin"

2017-6-16 19:28

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.172000	56.20	10.8	64.9	8.7	QP	L1	GND
0.364000	43.10	10.9	58.6	15.5	QP	L1	GND
1.044000	27.70	11.1	56	28.3	QP	L1	GND
4.945000	31.10	11.4	56	24.9	QP	L1	GND
7.625000	33.50	11.5	60	26.5	QP	L1	GND
28.965000	31.10	11.8	60	28.9	QP	L1	GND

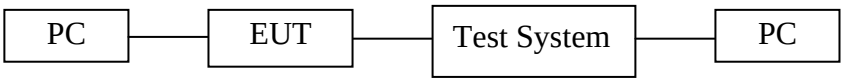
MEASUREMENT RESULT: "DM0616-04_fin2"

2017-6-16 19:28

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.160000	35.00	10.8	55.5	20.5	AV	L1	GND
0.364000	23.20	10.9	48.6	25.4	AV	L1	GND
2.030000	15.20	11.3	46	30.8	AV	L1	GND
4.945000	21.40	11.4	46	24.6	AV	L1	GND
7.155000	26.20	11.5	50	23.8	AV	L1	GND
26.365000	19.60	11.8	50	30.4	AV	L1	GND

6. 6DB BANDWIDTH MEASUREMENT

6.1. Block Diagram of Test Setup



6.2. The Requirement For Section 15.247(a)(2)

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

6.3. EUT Configuration on Measurement

The equipment are installed on the emission measurement to meet the commission requirements and operating regulations in a manner which tends to maximize its emission characteristics in normal application.

6.4. Operating Condition of EUT

6.4.1. Setup the EUT and simulator as shown as Section 6.1.

6.4.2. Turn on the power of all equipment.

6.4.3. Let the EUT work in TX modes measure it. The transmit frequency are 2412-2462 and 2422-2452MHz. We select 2412MHz, 2437MHz, 2462MHz and 2422MHz, 2437MHz, 2452MHz TX frequency to transmit.

6.5. Test Procedure

1. Set resolution bandwidth (RBW) = 100 kHz.
2. Set the video bandwidth (VBW) ≥ 3 x RBW.
3. Detector = Peak.
4. Trace mode = max hold.
5. Sweep = auto couple.
6. Allow the trace to stabilize.
7. Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

6.6.Test Result

The test was performed with 802.11b			
Channel	Frequency (MHz)	6dB Bandwidth (MHz)	Limit (MHz)
Low	2412	9.570	> 0.5MHz
Middle	2437	9.585	> 0.5MHz
High	2462	9.095	> 0.5MHz

The test was performed with 802.11g			
Channel	Frequency (MHz)	6dB Bandwidth (MHz)	Limit (MHz)
Low	2412	16.335	> 0.5MHz
Middle	2437	16.340	> 0.5MHz
High	2462	16.340	> 0.5MHz

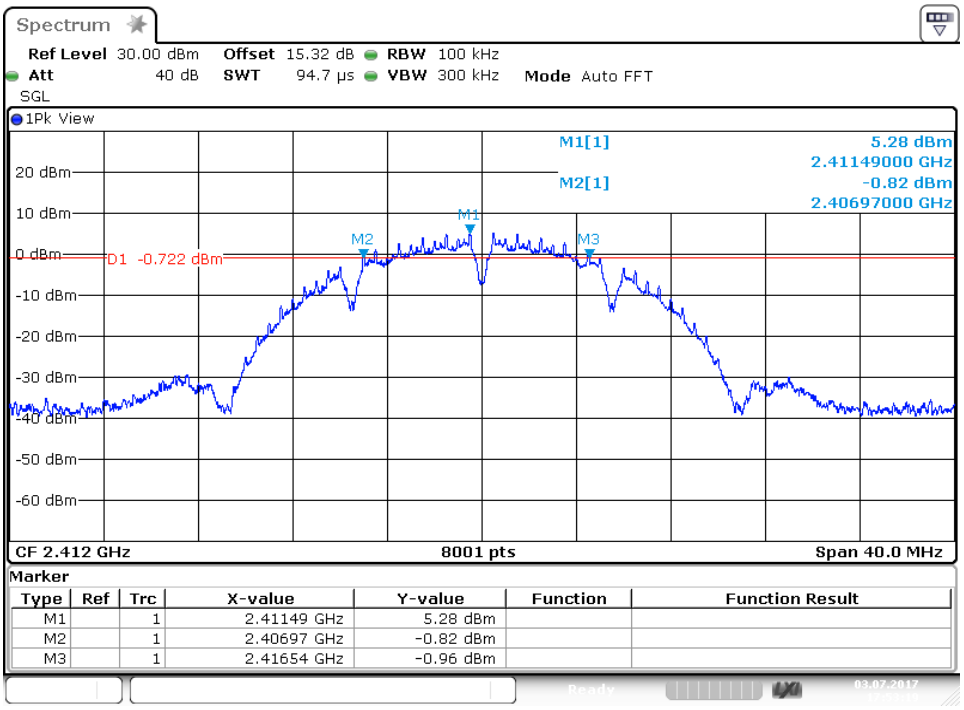
The test was performed with 802.11n (Bandwidth: 20 MHz)			
Channel	Frequency (MHz)	6dB Bandwidth (MHz)	Limit (MHz)
Low	2412	17.585	> 0.5MHz
Middle	2437	17.580	> 0.5MHz
High	2462	17.590	> 0.5MHz

The test was performed with 802.11n (Bandwidth: 40 MHz)			
Channel	Frequency (MHz)	6dB Bandwidth (MHz)	Limit (MHz)
Low	2422	35.690	> 0.5MHz
Middle	2437	35.720	> 0.5MHz
High	2452	35.720	> 0.5MHz

The spectrum analyzer plots are attached as below.

6dB Bandwidth

802.11b Channel Low 2412MHz



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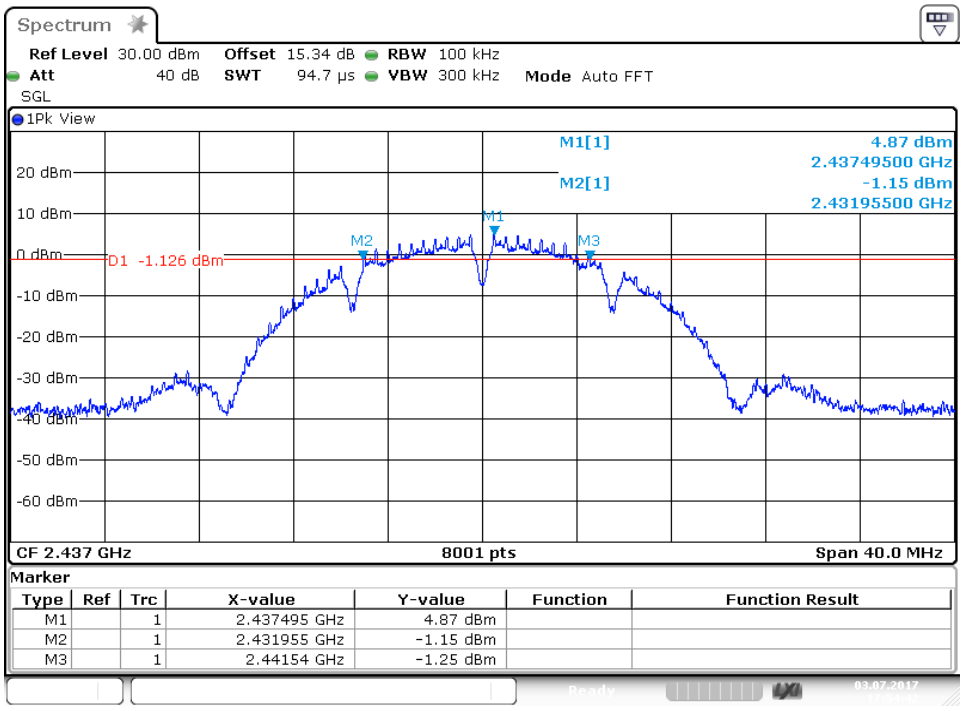
802.11b Channel Middle 2437MHz



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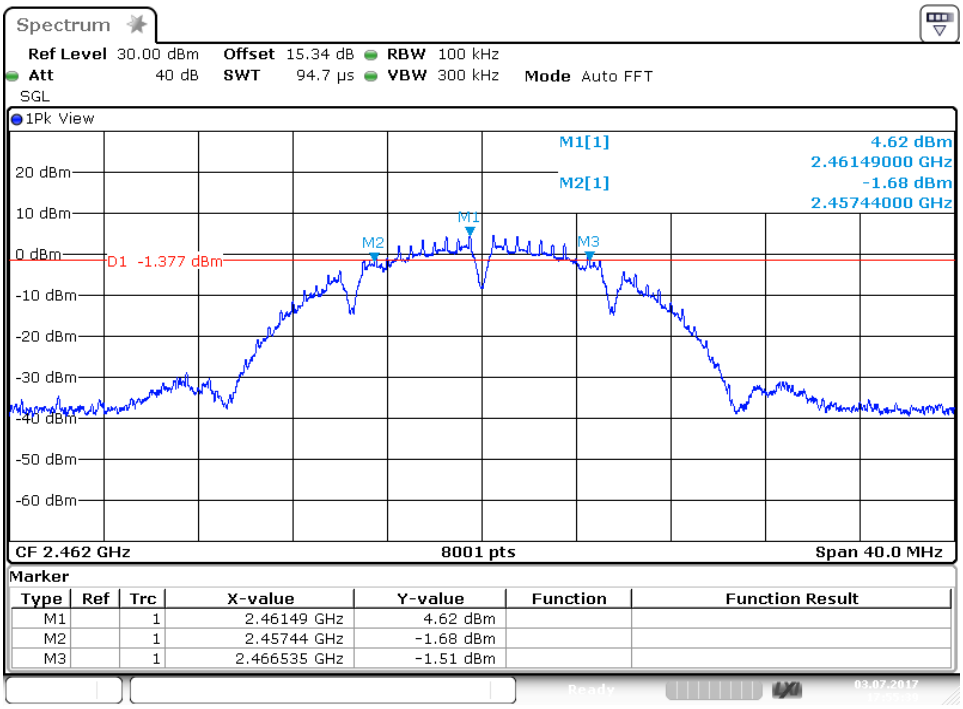
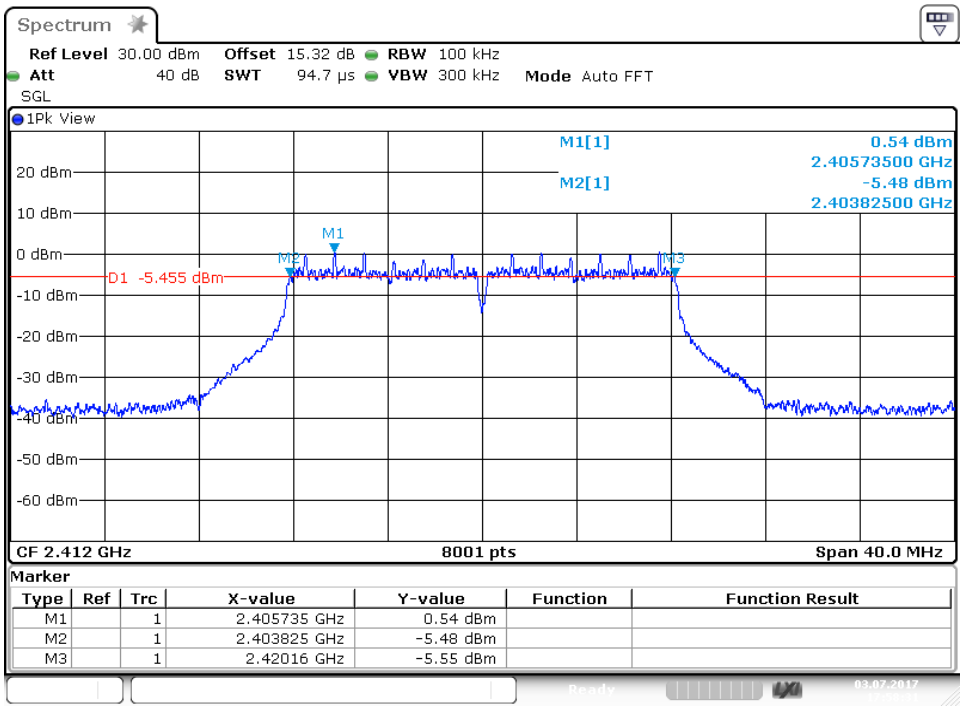
802.11b Channel High 2462MHz



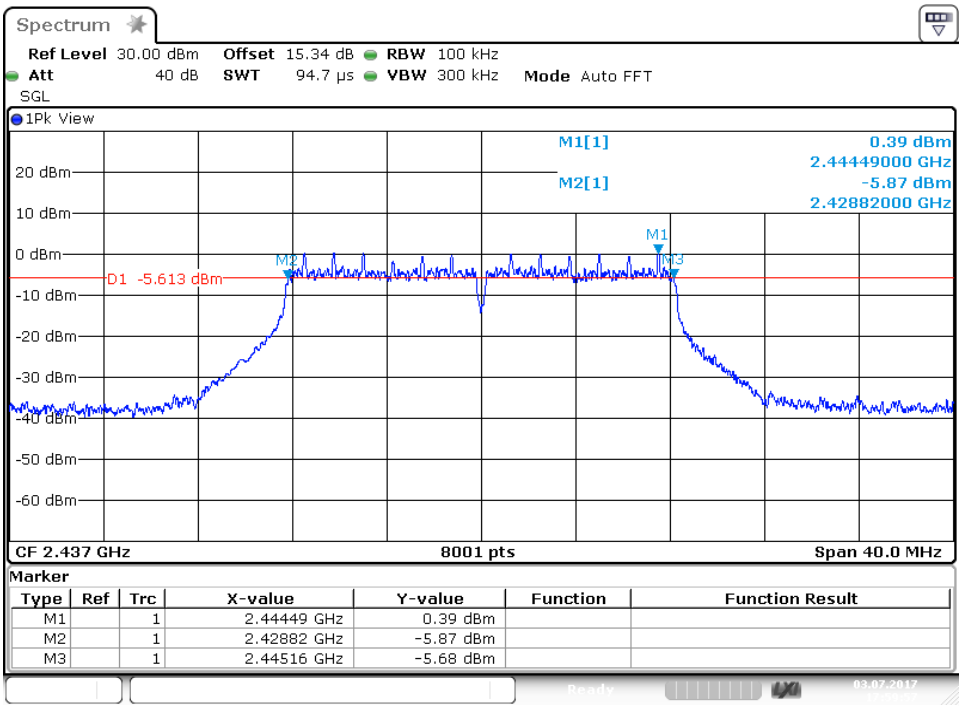
Date: 3.JUL.2017 17:55:39

802.11g Channel Low 2412MHz



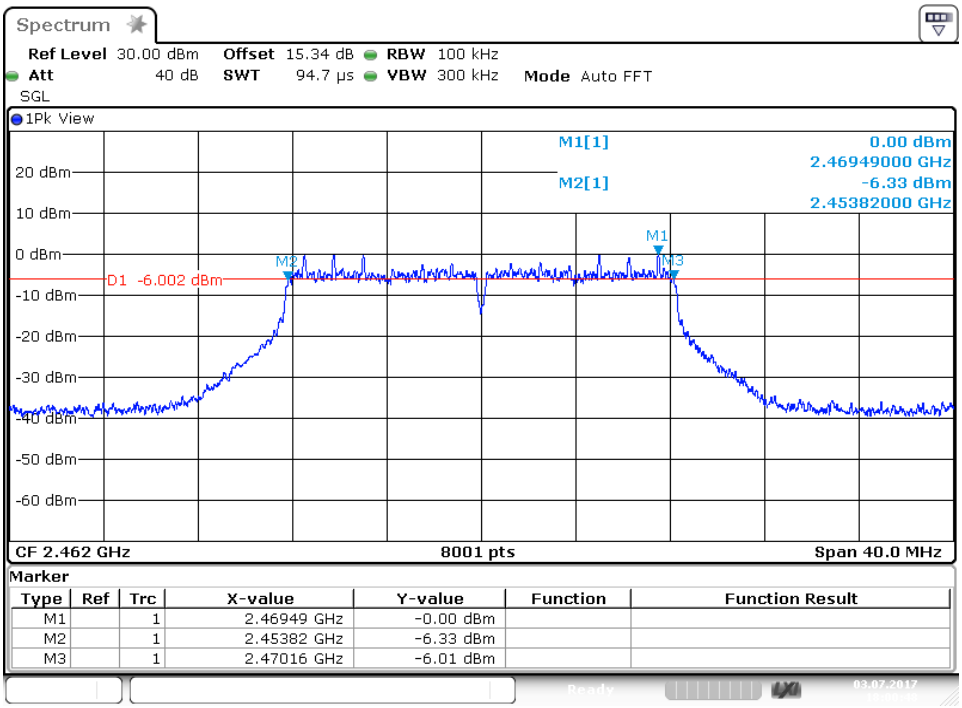
Date: 3.JUL.2017 17:58:31

802.11g Channel Middle 2437MHz



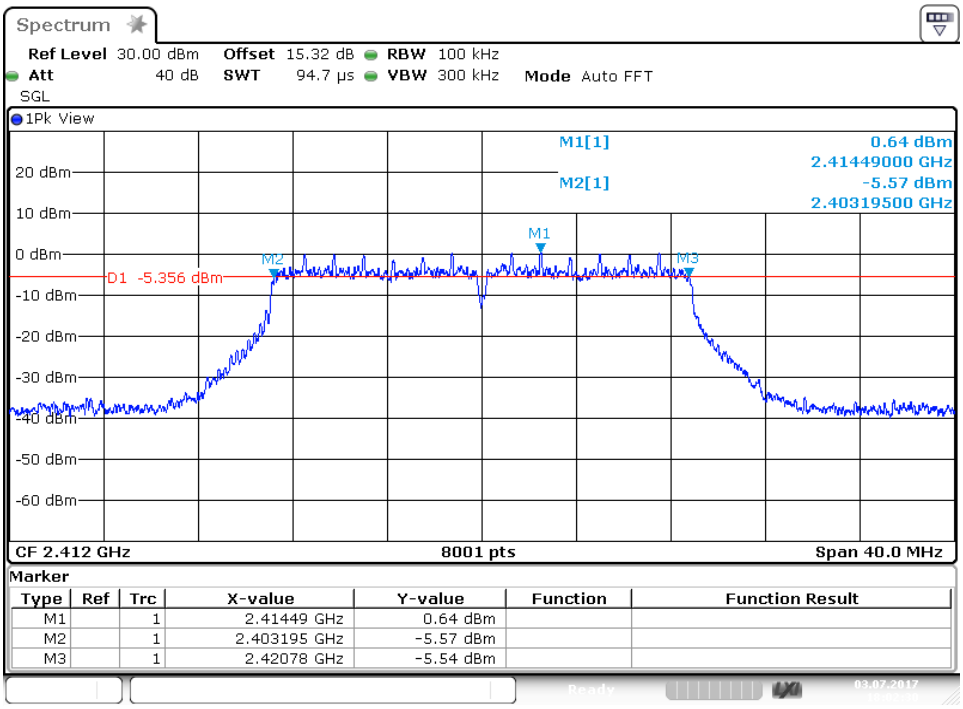
Date: 3.JUL.2017 17:59:58

802.11g Channel High 2462MHz



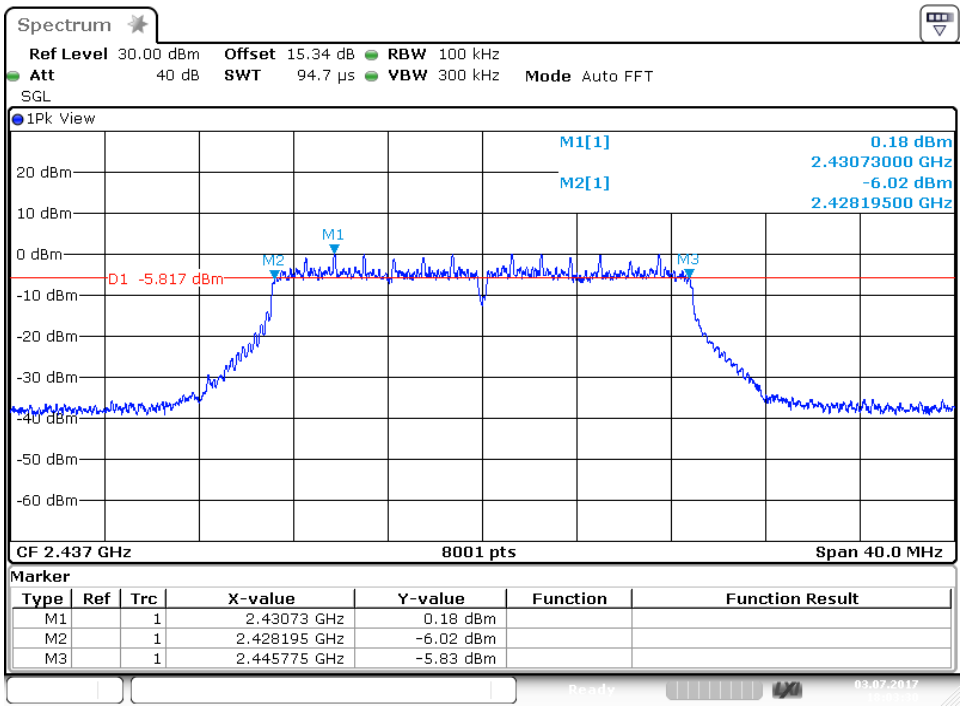
Date: 3.JUL.2017 18:00:49

802.11n Channel Low 2412MHz (20MHz)



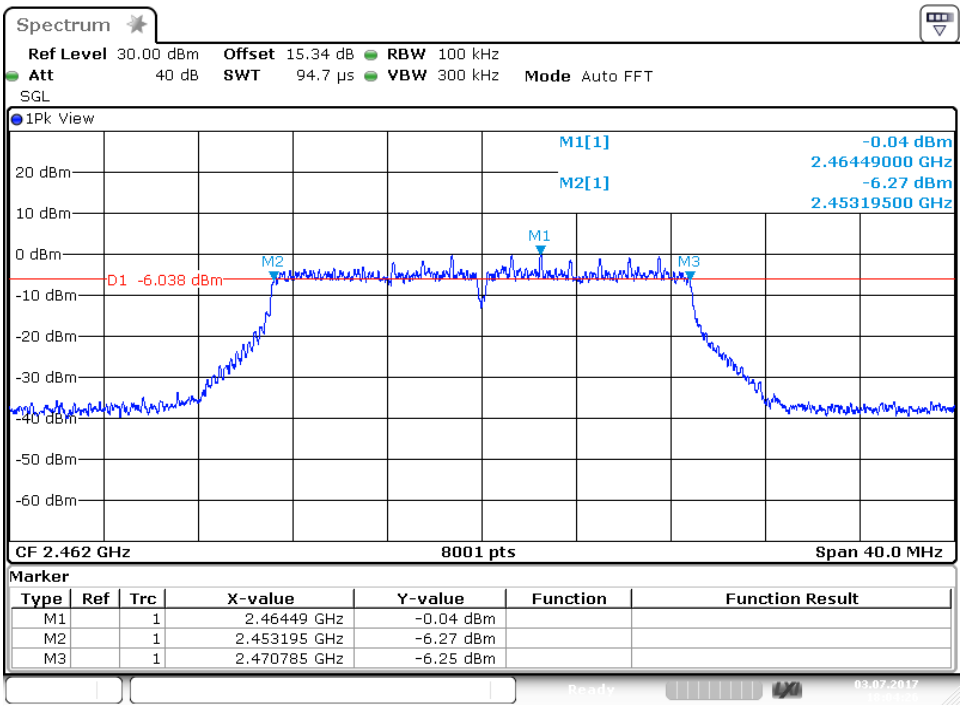
Date: 3.JUL.2017 18:02:31

802.11n Channel Middle 2437MHz(20MHz)



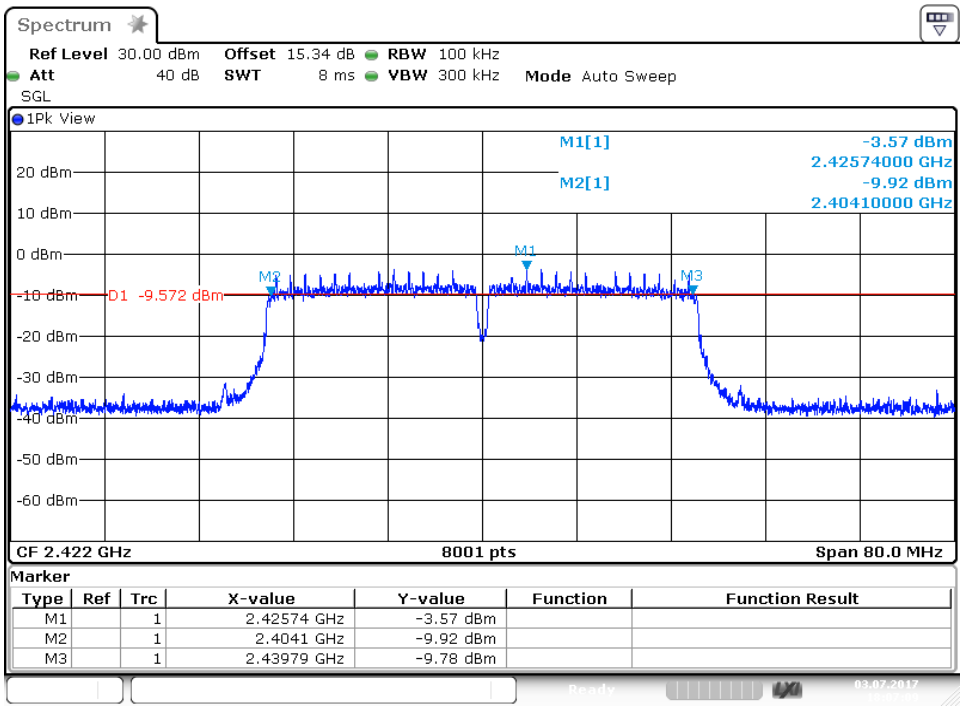
Date: 3.JUL.2017 18:03:30

802.11n Channel High 2462MHz(20MHz)



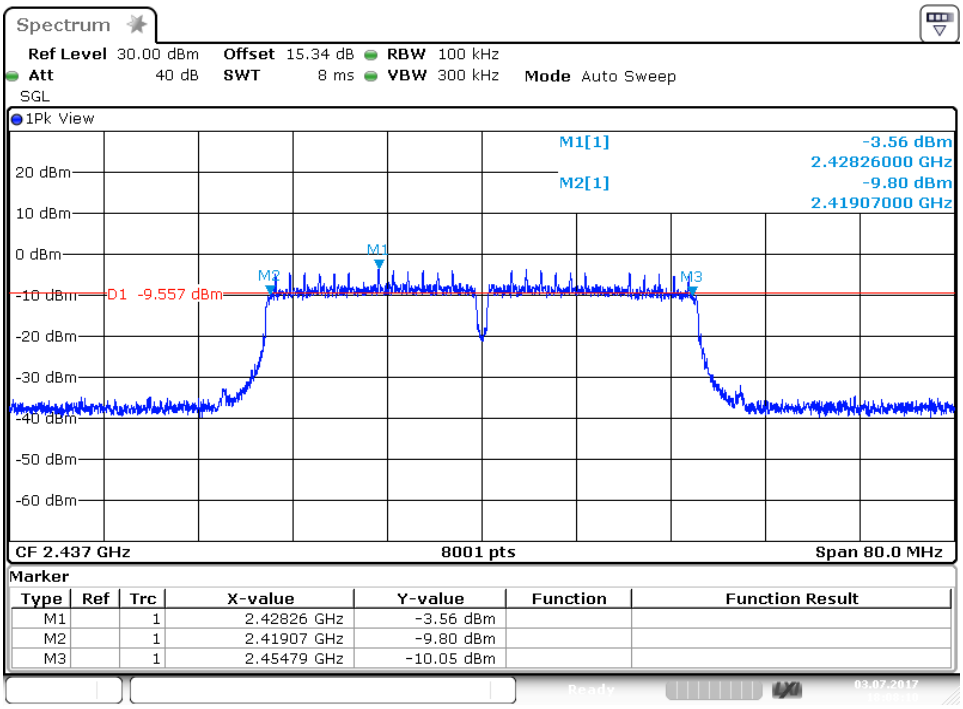
Date: 3.JUL.2017 18:04:26

802.11n Channel Low 2422MHz (40MHz)



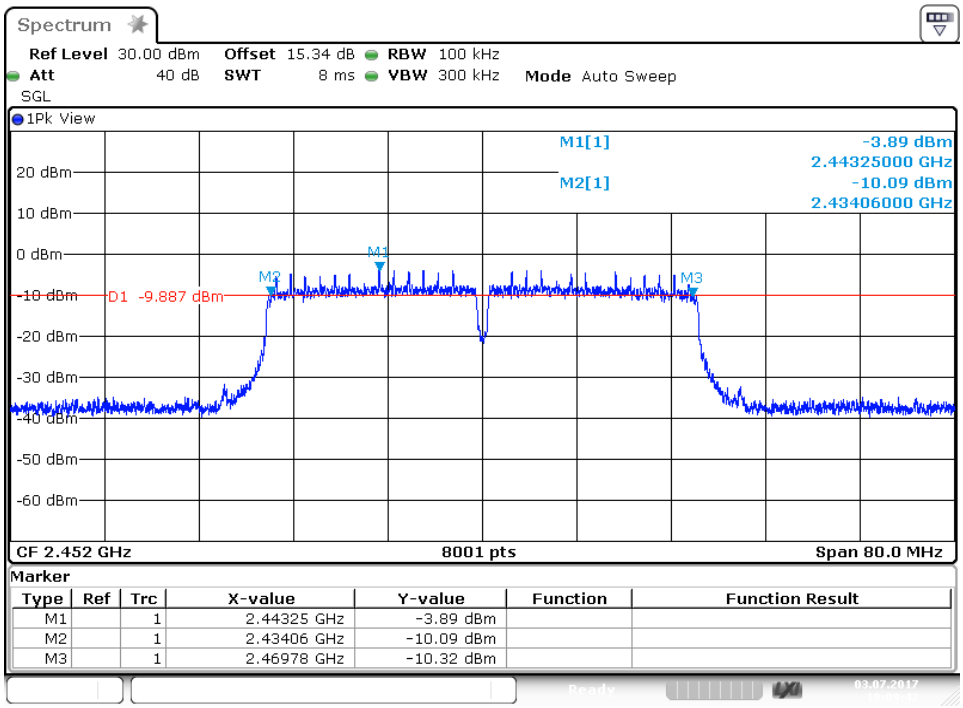
Date: 3.JUL.2017 18:07:09

802.11n Channel Middle 2437MHz(40MHz)



Date: 3.JUL.2017 18:08:10

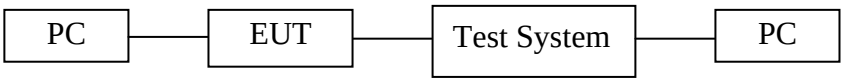
802.11n Channel High 2452MHz(40MHz)



Date: 3.JUL.2017 18:09:42

7. DUTY CYCLE MEASUREMENT

7.1.Block Diagram of Test Setup



7.2.EUT Configuration on Measurement

The equipment are installed on the emission measurement to meet the commission requirements and operating regulations in a manner which tends to maximize its emission characteristics in normal application.

7.3.Operating Condition of EUT

7.3.1.Setup the EUT and simulator as shown as Section 7.1.

7.3.2.Turn on the power of all equipment.

7.3.3.Let the EUT work in TX modes measure it. The transmit frequency are 2412-2462 and 2422-2452MHz. We select 2412MHz, 2437MHz, 2462MHz and 2422MHz, 2437MHz, 2452MHz TX frequency to transmit.

7.4.Test Procedure

Measurements of duty cycle and transmission duration shall be performed using one of the following techniques:
1. A diode detector and an oscilloscope that together have sufficiently short response time to permit accurate measurements of the on- and off-times of the transmitted signal.
2. The zero-span mode on a spectrum analyzer or EMI receiver if the response time and spacing between bins on the sweep are sufficient to permit accurate measurements of the on- and off-times of the transmitted signal
a. Set the center frequency of the instrument to the centre frequency of the transmission
b. Set RBW ≥ OBW if possible; otherwise, set RBW to the largest available value(10MHz).
c. Set detector = Peak or average.
d. The zero-span measurement method shall not be used unless both RBW and VBW are > 50/T and the number of sweep points across duration T exceeds 100.
(For example, if VBW and/or RBW are limited to 3MHz, then the zero-span method of measuring duty cycle shall not be used if T≤16.7 microseconds.)

7.5.Test Result

The test was performed with 802.11b			
Channel	Frequency (MHz)	duty cycle(x)	10log(1/x)
Low	2412	99.06%	0.04
Middle	2437	97.68%	0.10
High	2462	99.29%	0.03

The test was performed with 802.11g			
Channel	Frequency (MHz)	duty cycle(x)	10log(1/x)
Low	2412	97.20%	0.12
Middle	2437	97.20%	0.12
High	2462	97.20%	0.12

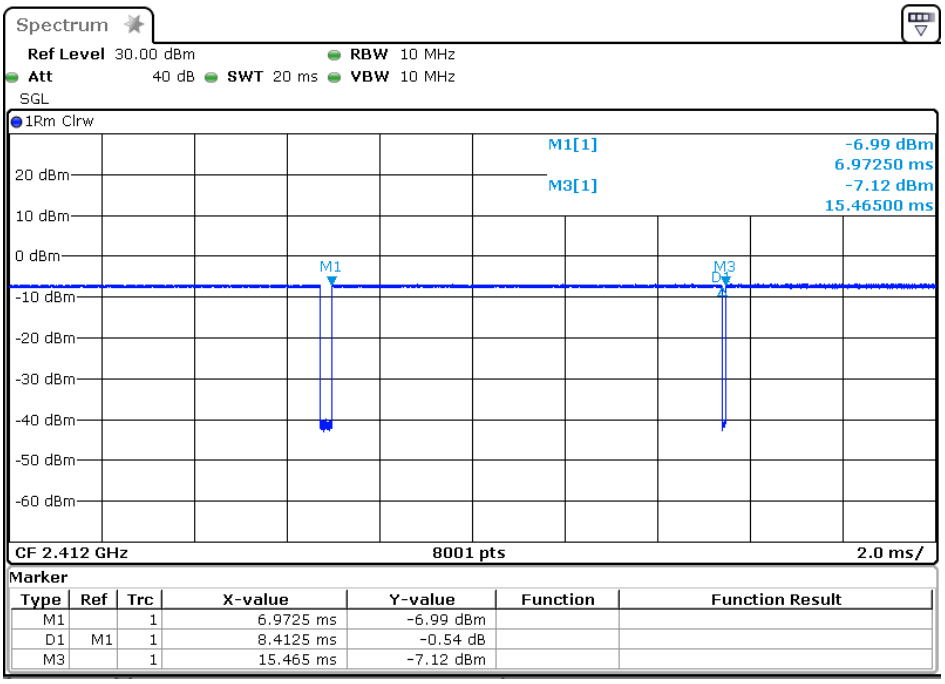
The test was performed with 802.11n (Bandwidth: 20 MHz)			
Channel	Frequency (MHz)	duty cycle(x)	10log(1/x)
Low	2412	96.82%	0.14
Middle	2437	97.00%	0.13
High	2462	97.00%	0.13

The test was performed with 802.11n (Bandwidth: 40 MHz)			
Channel	Frequency (MHz)	duty cycle(x)	10log(1/x)
Low	2422	94.14%	0.26
Middle	2437	94.14%	0.26
High	2452	94.16%	0.26

The spectrum analyzer plots are attached as below.

duty cycle

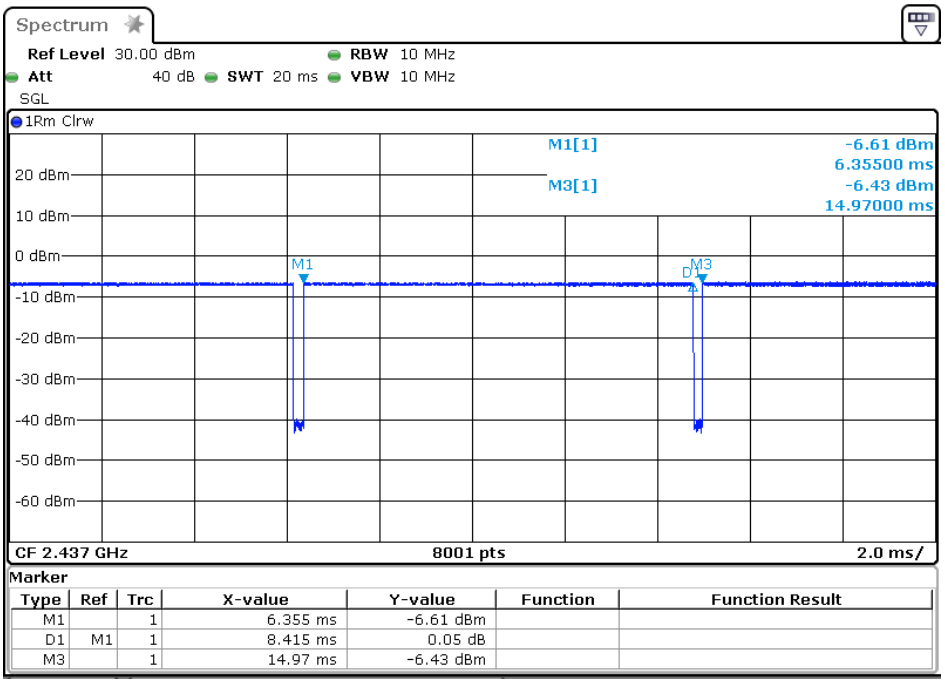
802.11b Channel Low 2412MHz



Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	6.9725 ms	-6.99 dBm		
D1	M1	1	8.4125 ms	-0.54 dB		
M3		1	15.465 ms	-7.12 dBm		

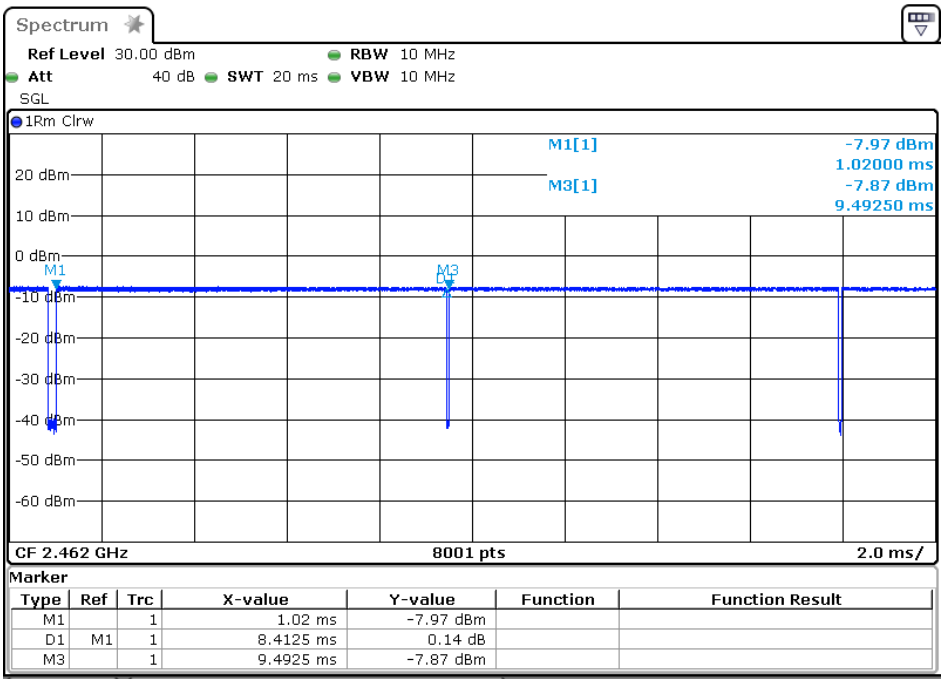
802.11b Channel Middle 2437MHz



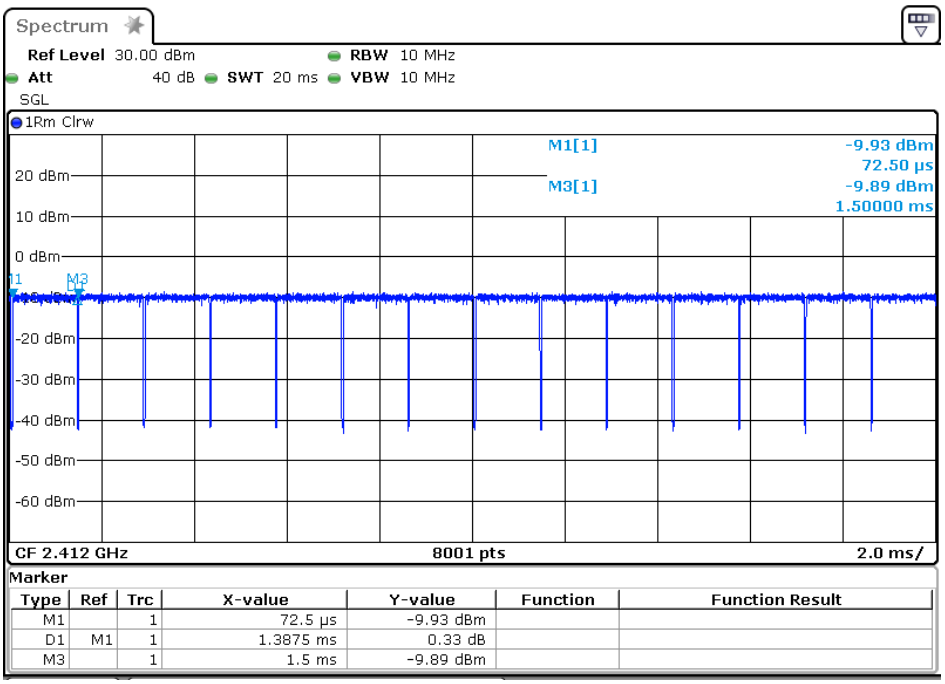
Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	6.355 ms	-6.61 dBm		
D1	M1	1	8.415 ms	0.05 dB		
M3		1	14.97 ms	-6.43 dBm		

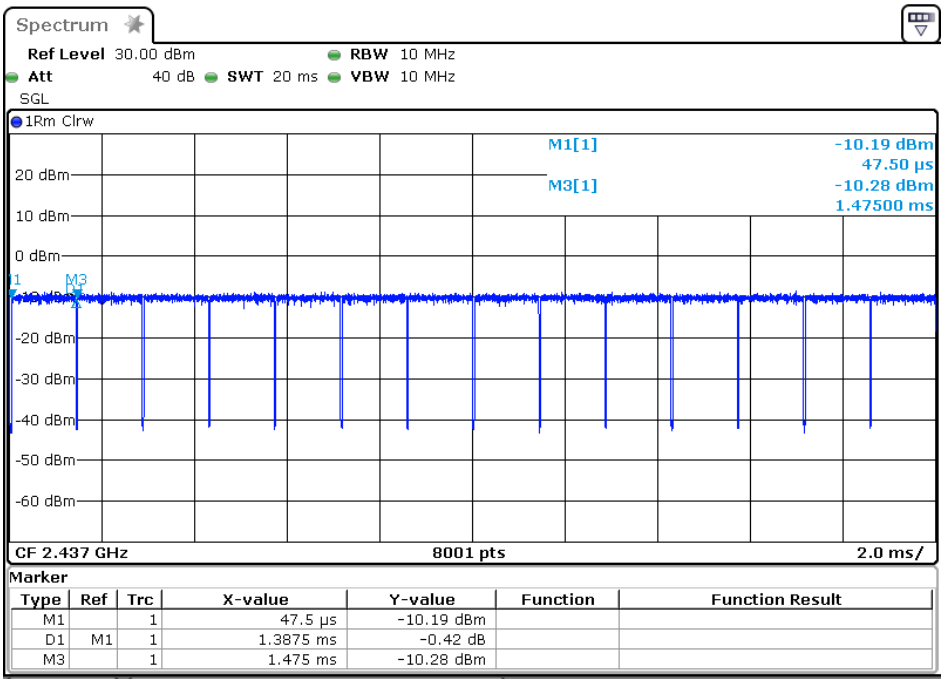
802.11b Channel High 2462MHz



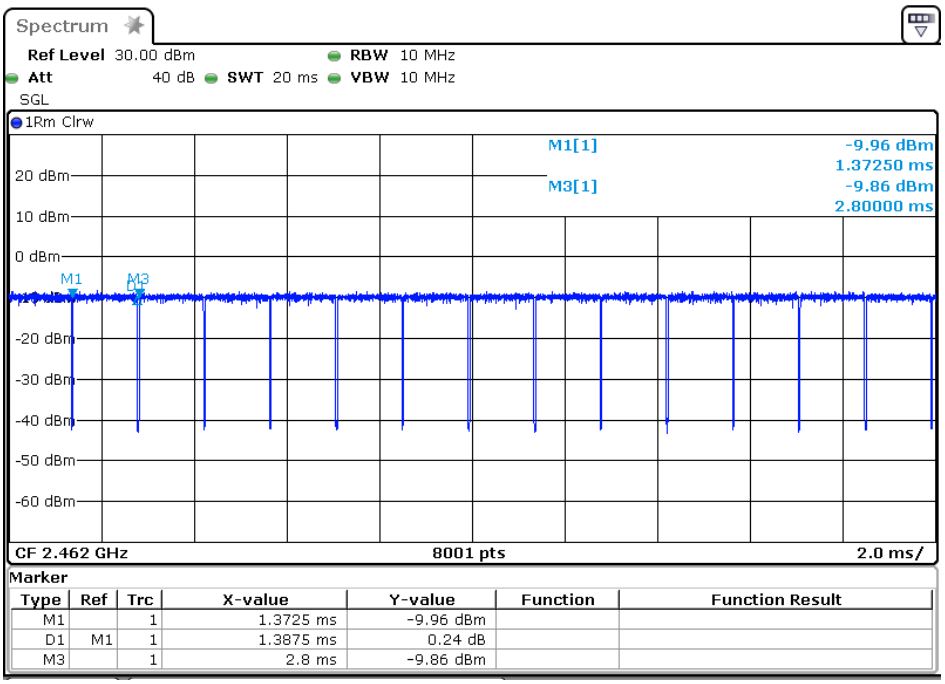
802.11g Channel Low 2412MHz



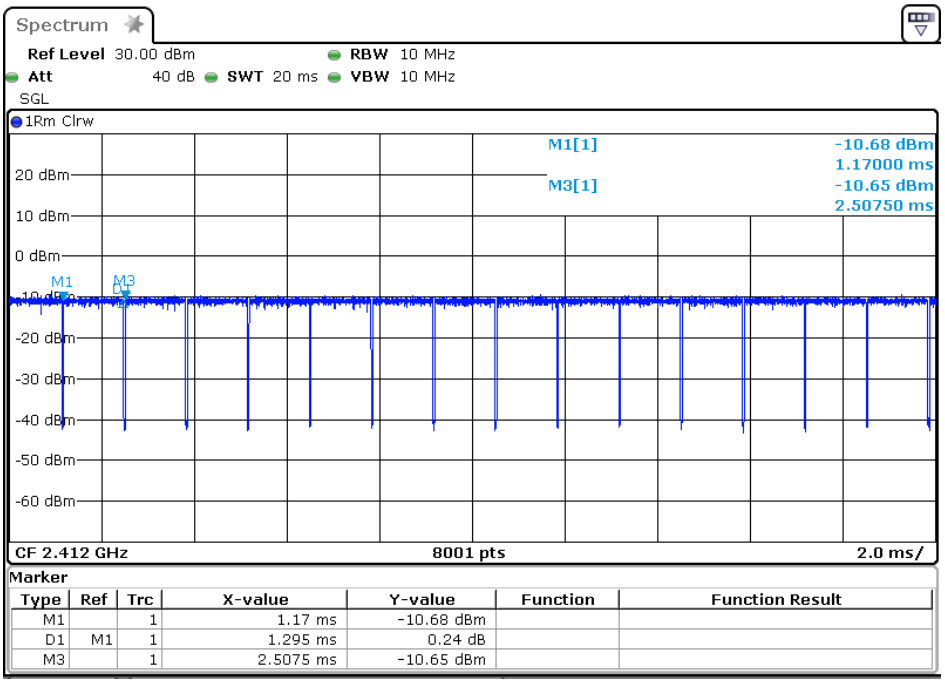
802.11g Channel Middle 2437MHz



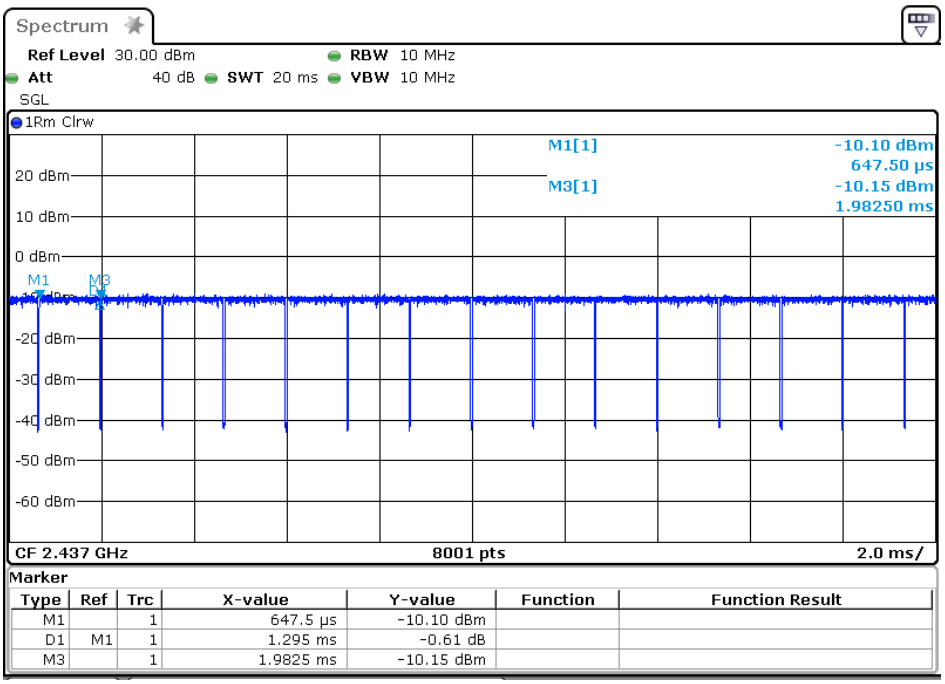
802.11g Channel High 2462MHz



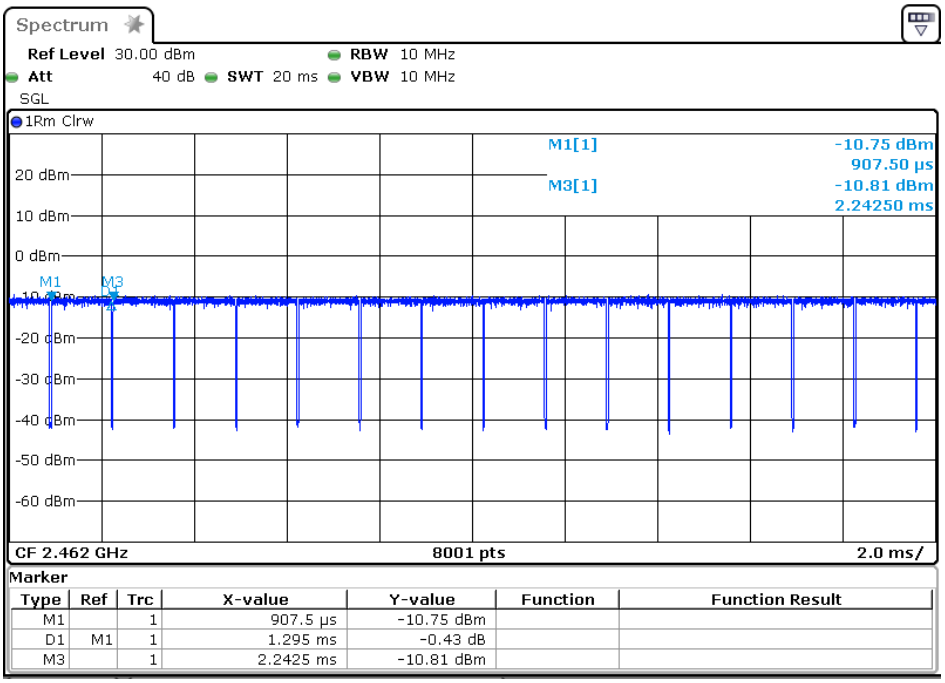
802.11n Channel Low 2412MHz (20MHz)



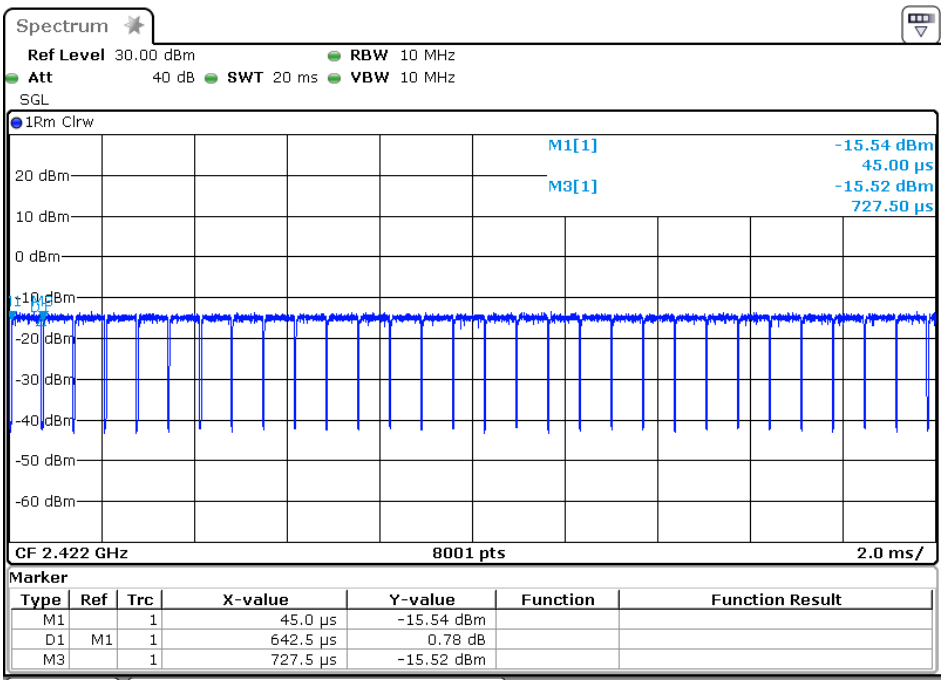
802.11n Channel Middle 2437MHz(20MHz)



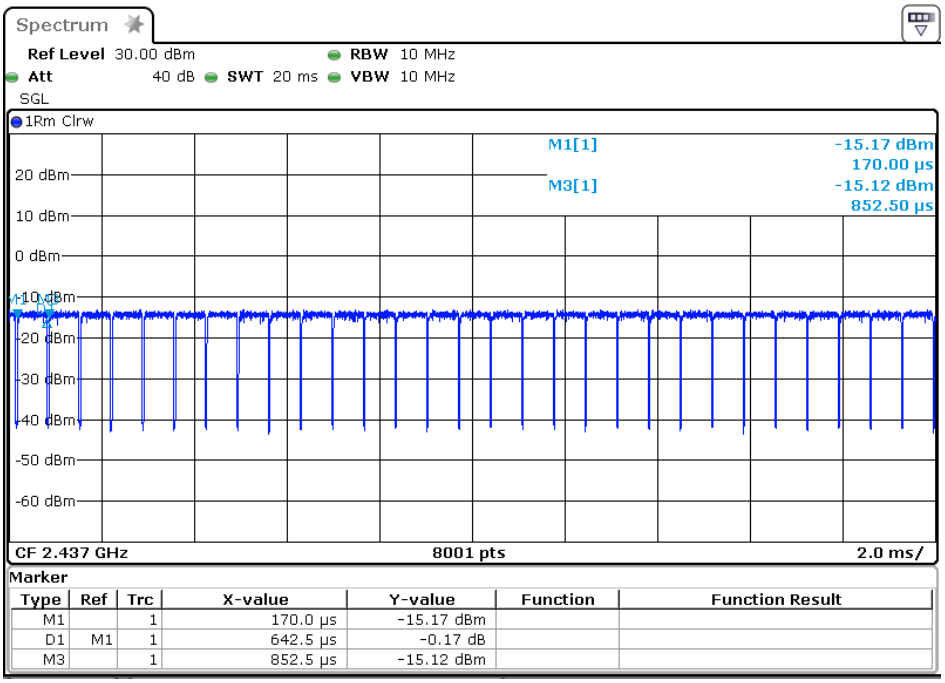
802.11n Channel High 2462MHz(20MHz)



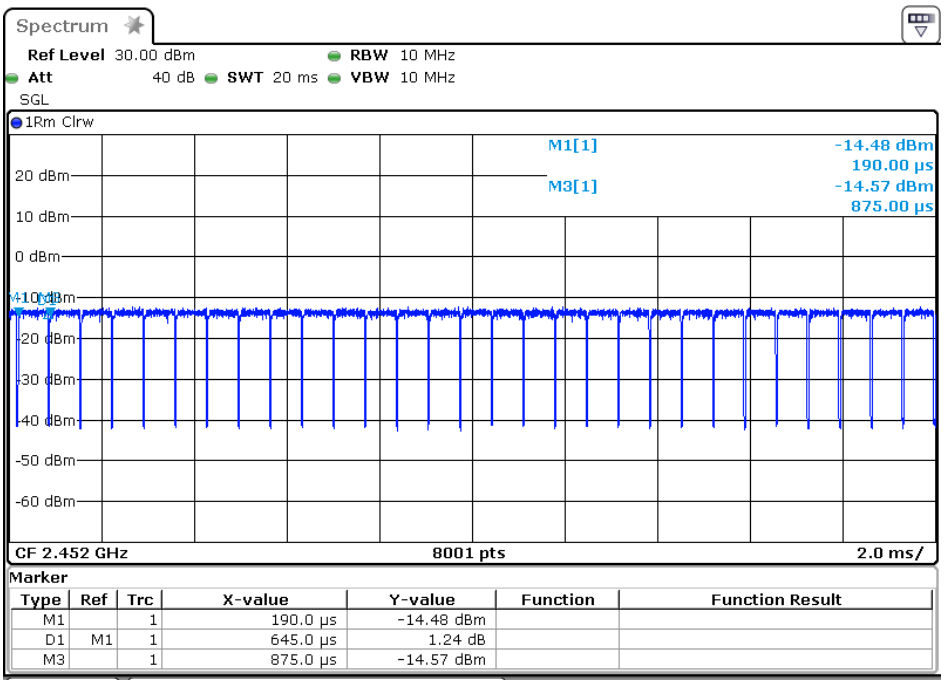
802.11n Channel Low 2422MHz (40MHz)



802.11n Channel Middle 2437MHz(40MHz)

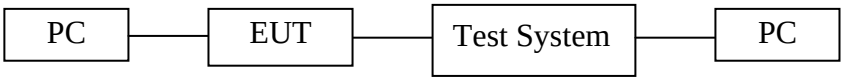


802.11n Channel High 2452MHz(40MHz)



8. MAXIMUM CONDUCTED (AVERAGE) OUTPUT POWER

8.1.Block Diagram of Test Setup



8.2.The Requirement For Section 15.247(b)(3)

Section 15.247(b)(3): For systems using digital modulation in the 902-928MHz, 2400-2483.5MHz, and 5725-5850MHz bands: 1 Watt.

8.3.EUT Configuration on Measurement

The equipment is installed on the emission Measurement to meet the commission requirements and operating regulations in a manner which tends to maximize its emission characteristics in normal application.

8.4.Operating Condition of EUT

8.4.1.Setup the EUT and simulator as shown as Section 8.1.

8.4.2.Turn on the power of all equipment.

8.4.3.Let the EUT work in TX modes measure it. The transmit frequency are 2412-2462 and 2422-2452MHz. We select 2412MHz, 2437MHz, 2462MHz and 2422MHz, 2437MHz, 2452MHz TX frequency to transmit.

8.5.Test Procedure

8.5.1.The EUT was tested according to DTS test procedure of Apr 05, 2017 KDB5580 74 D01 DTS Meas Guidance v04 for compliance to FCC 47CFR 15.247 requirements.

8.5.2.The transmitter output was connected to the spectrum analyzer through a low loss cable.

8.5.3.Set RBW = 1-5% of the OBW, not to exceed 1 MHz, VBW $\geqslant$ 3 x RBW, Sweep time = auto, Set span to at least 1.5 times the OBW, Detector = RMS.

8.5.4.Measurement the Maximum conducted (average) output power.

8.6.Test Result

Final power= Ave output power+10log(1/ duty cycle)

The test was performed with 802.11b						
Channel	Frequency (MHz)	Ave output power (dBm)	10log(1/ duty cycle)	Final power (dBm)	Final power (mW)	Limits dBm / W
Low	2412	14.79	0.04	14.83	30.41	30 dBm / 1 W
Middle	2437	14.69	0.10	14.79	30.13	30 dBm / 1 W
High	2462	14.35	0.03	14.38	27.42	30 dBm / 1 W

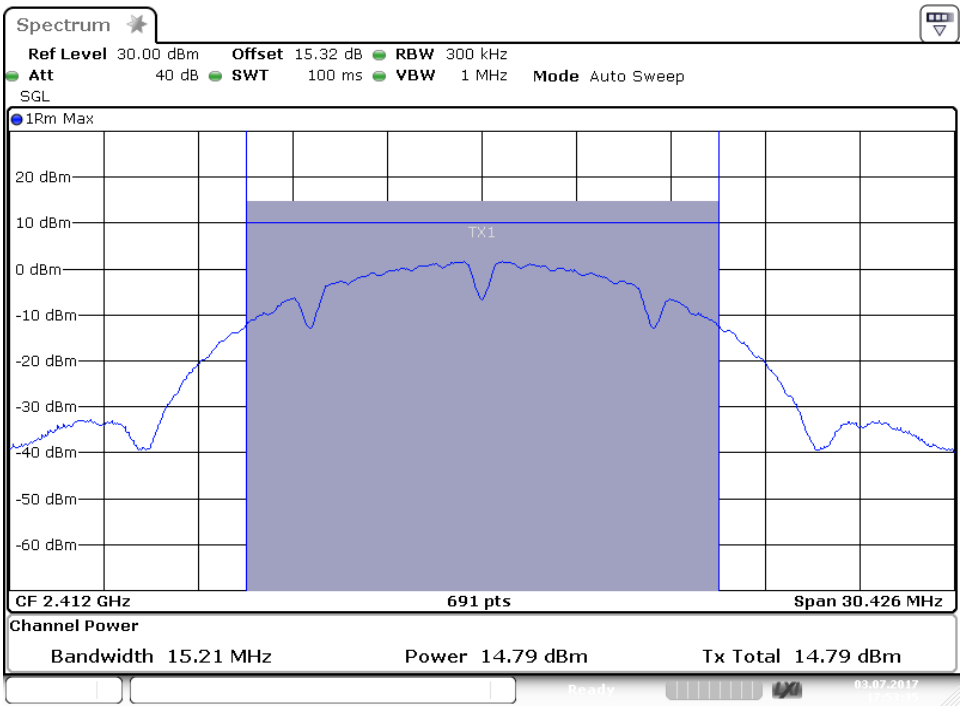
The test was performed with 802.11g						
Channel	Frequency (MHz)	Ave output power (dBm)	10log(1/ duty cycle)	Final power (dBm)	Final power (mW)	Limits dBm / W
Low	2412	12.08	0.12	12.20	16.60	30 dBm / 1 W
Middle	2437	11.98	0.12	12.10	16.22	30 dBm / 1 W
High	2462	11.72	0.12	11.84	15.28	30 dBm / 1 W

The test was performed with 802.11n (20MHz)						
Channel	Frequency (MHz)	Ave output power (dBm)	10log(1/ duty cycle)	Final power (dBm)	Final power (mW)	Limits dBm / W
Low	2412	12.41	0.14	12.55	17.99	30 dBm / 1 W
Middle	2437	12.14	0.13	12.27	16.87	30 dBm / 1 W
High	2462	11.90	0.13	12.03	15.96	30 dBm / 1 W

The test was performed with 802.11n (40MHz)						
Channel	Frequency (MHz)	Ave output power (dBm)	10log(1/ duty cycle)	Final power (dBm)	Final power (mW)	Limits dBm / W
Low	2422	10.77	0.26	11.03	12.68	30 dBm / 1 W
Middle	2437	10.64	0.26	10.90	12.30	30 dBm / 1 W
High	2452	10.54	0.26	10.80	12.02	30 dBm / 1 W

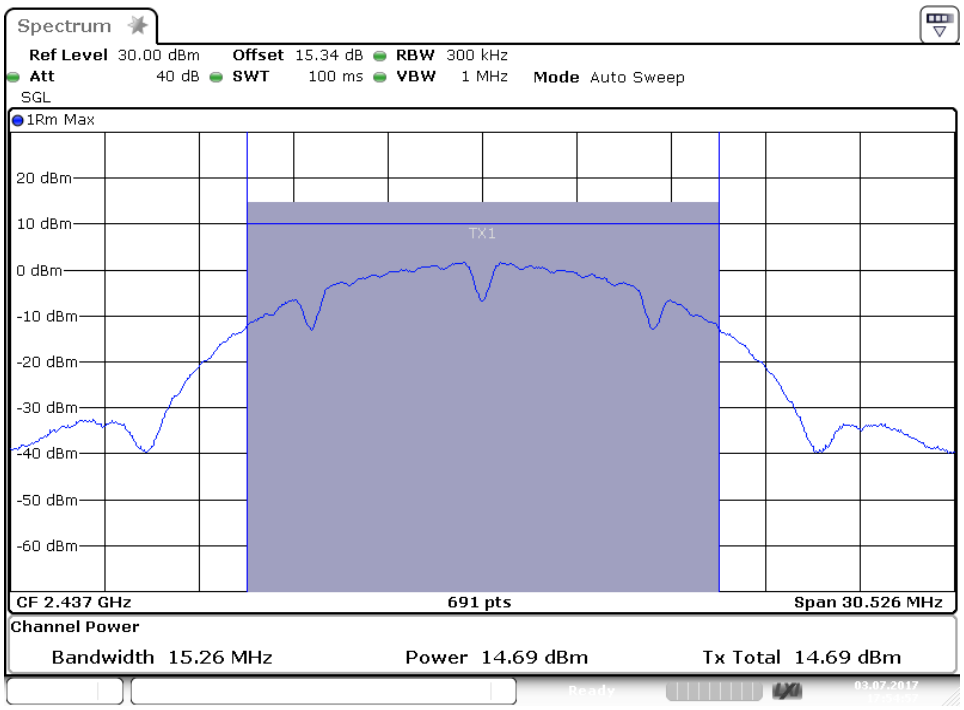
The spectrum analyzer plots are attached as below.

802.11b Channel Low 2412MHz



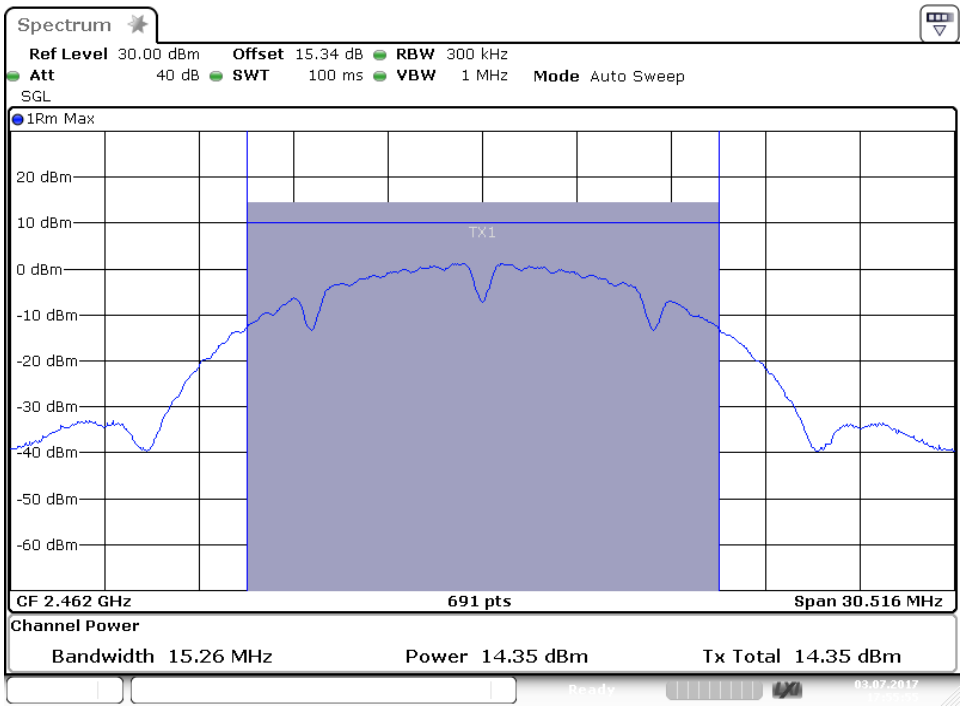
Date: 3.JUL.2017 17:53:35

802.11b Channel Middle 2437MHz



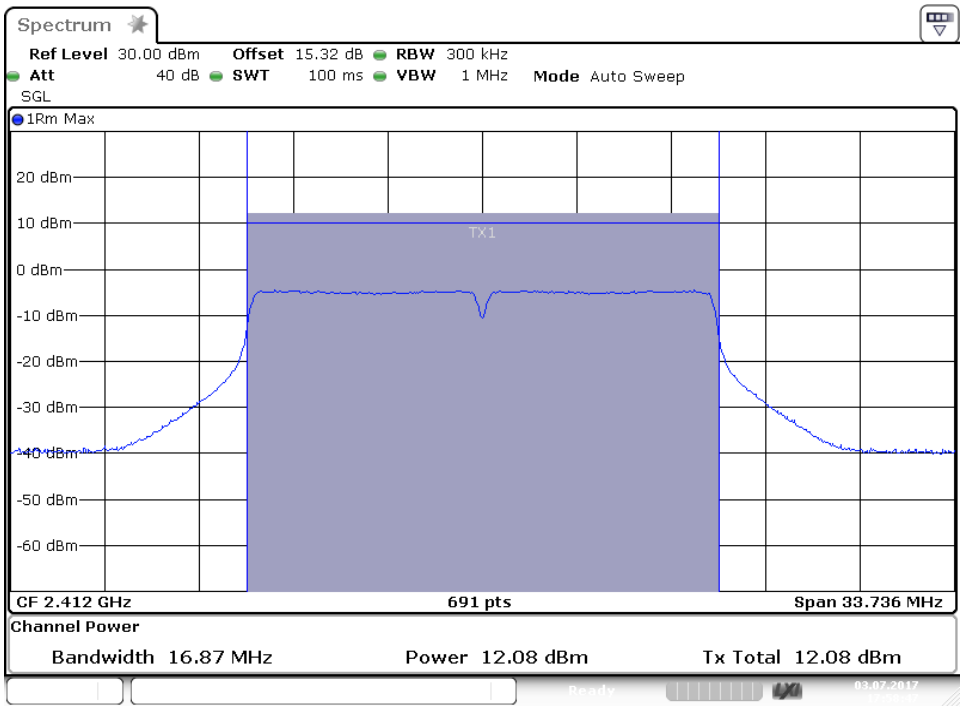
Date: 3.JUL.2017 17:54:57

802.11b Channel High 2462MHz



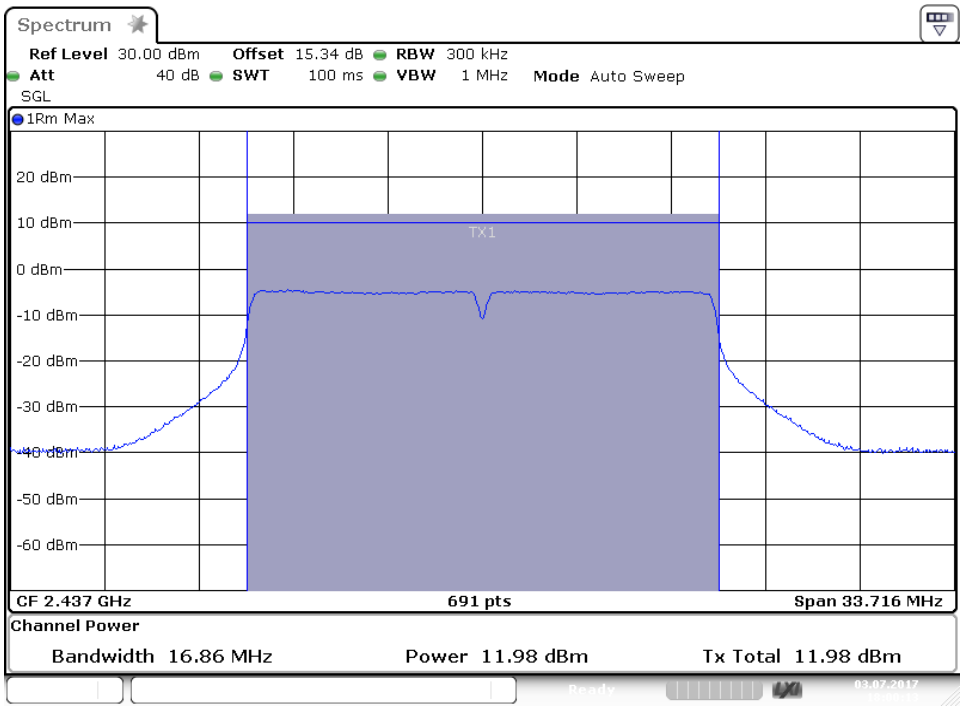
Date: 3.JUL.2017 17:55:55

802.11g Channel Low 2412MHz



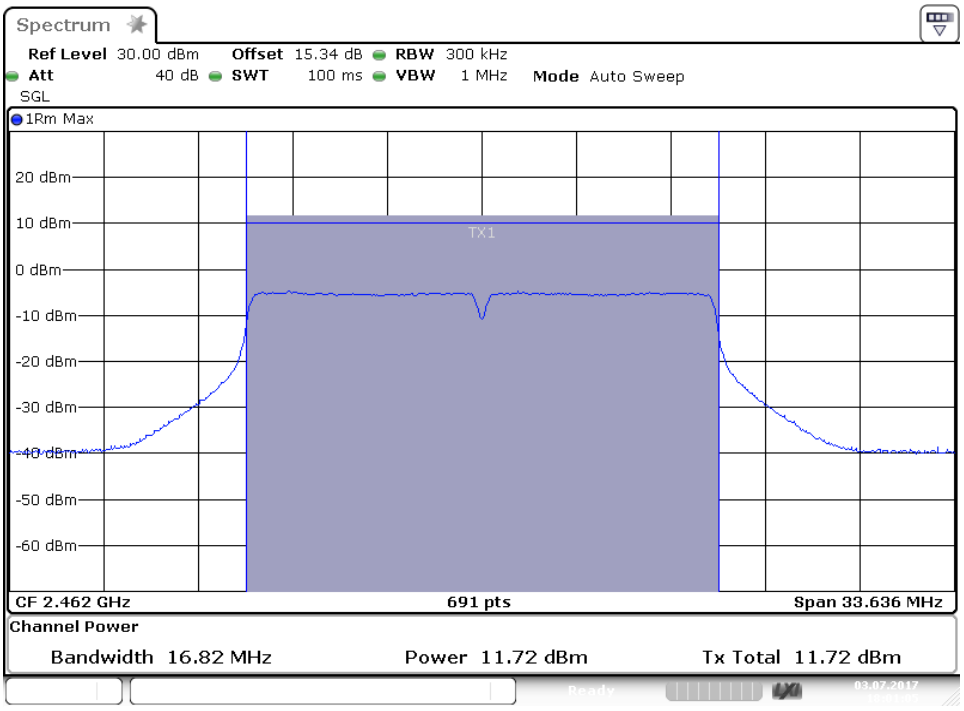
Date: 3.JUL.2017 17:58:47

802.11g Channel Middle 2437MHz



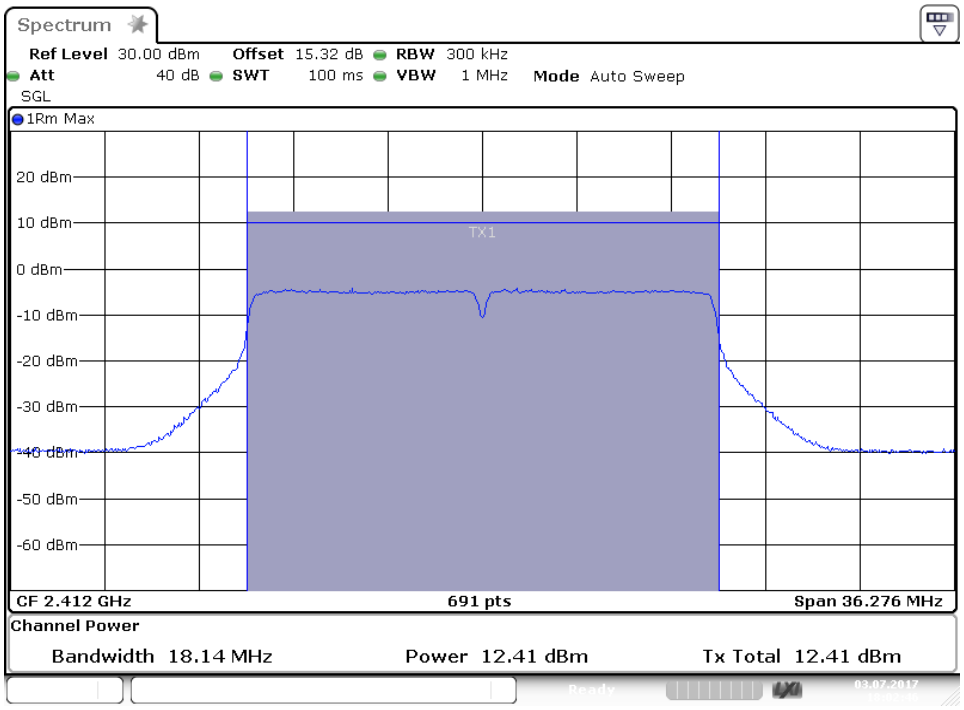
Date: 3.JUL.2017 18:00:14

802.11g Channel High 2462MHz



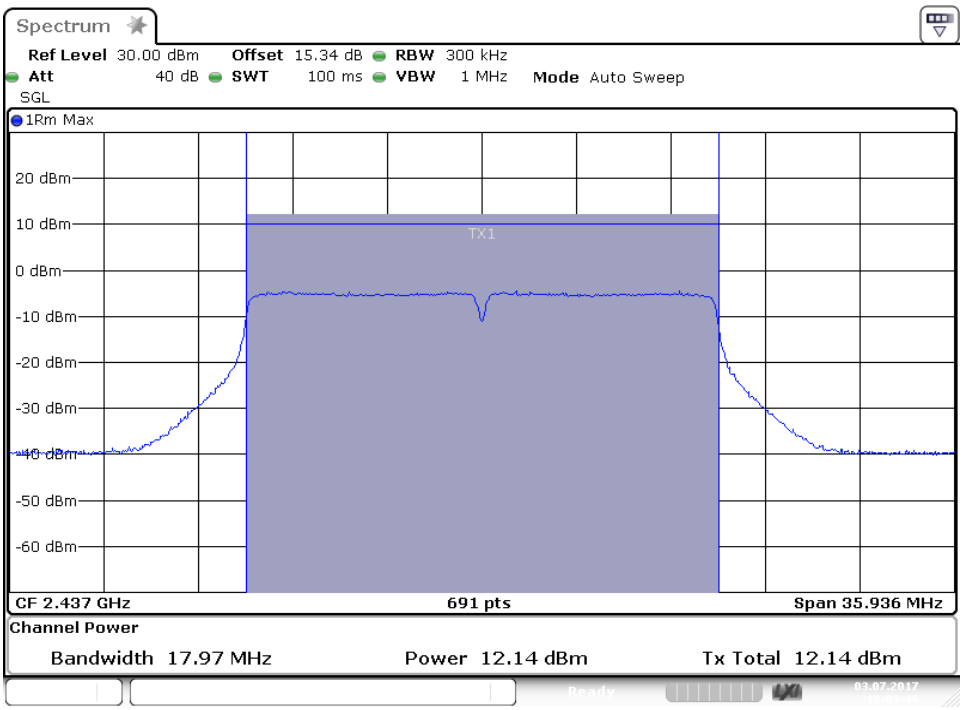
Date: 3.JUL.2017 18:01:05

802.11n Channel Low 2412MHz (20MHz)



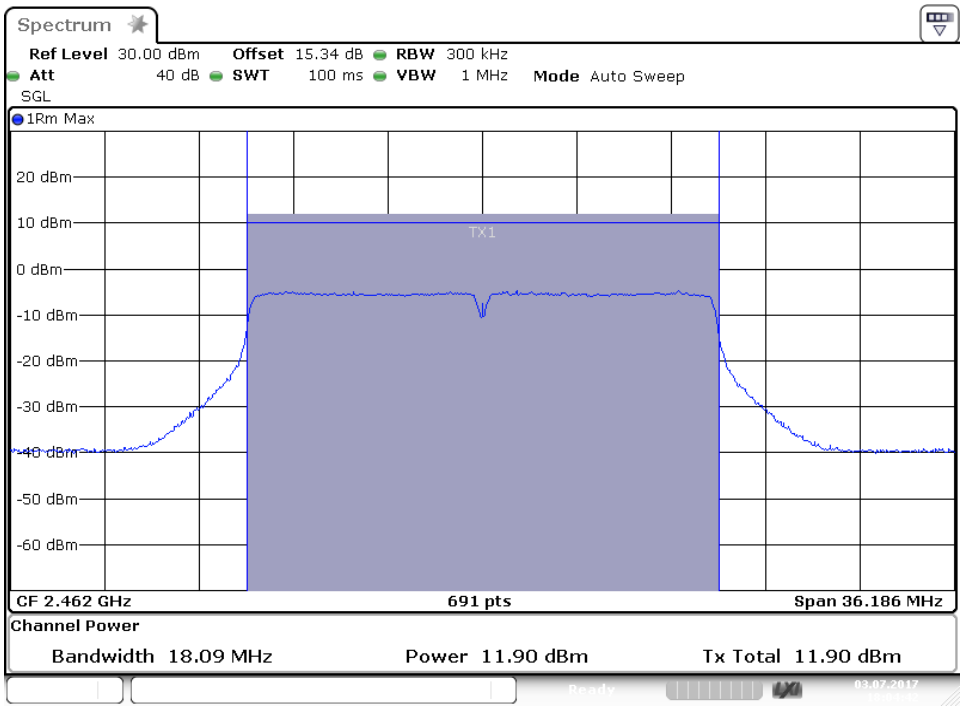
Date: 3.JUL.2017 18:02:47

802.11n Channel Middle 2437MHz (20MHz)



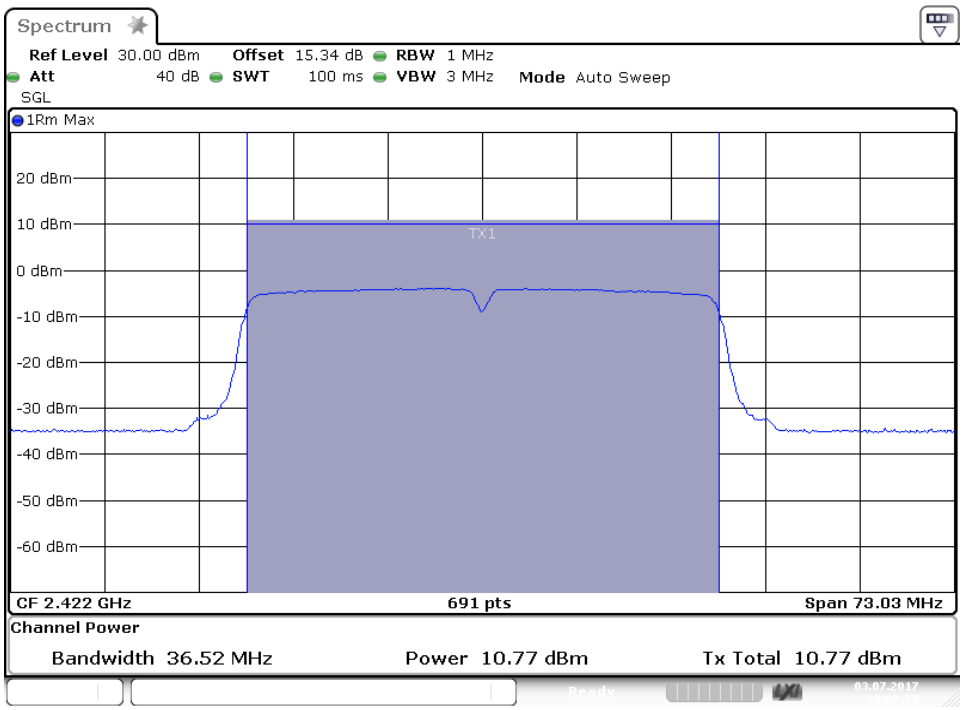
Date: 3.JUL.2017 18:03:46

802.11n Channel High 2462MHz (20MHz)



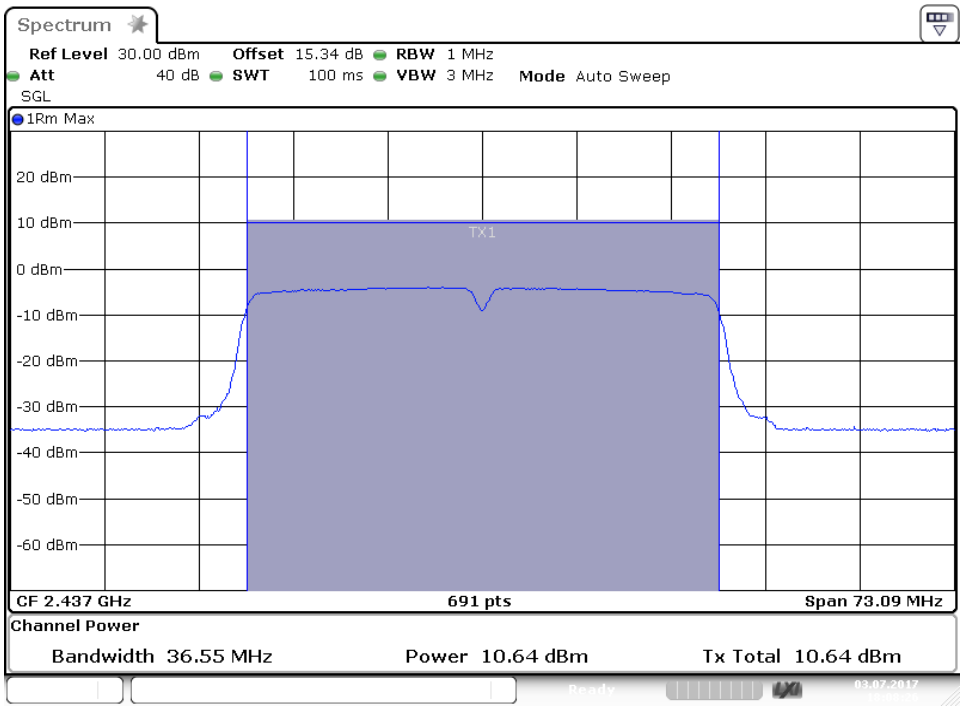
Date: 3.JUL.2017 18:04:42

802.11n Channel Low 2422MHz (40MHz)



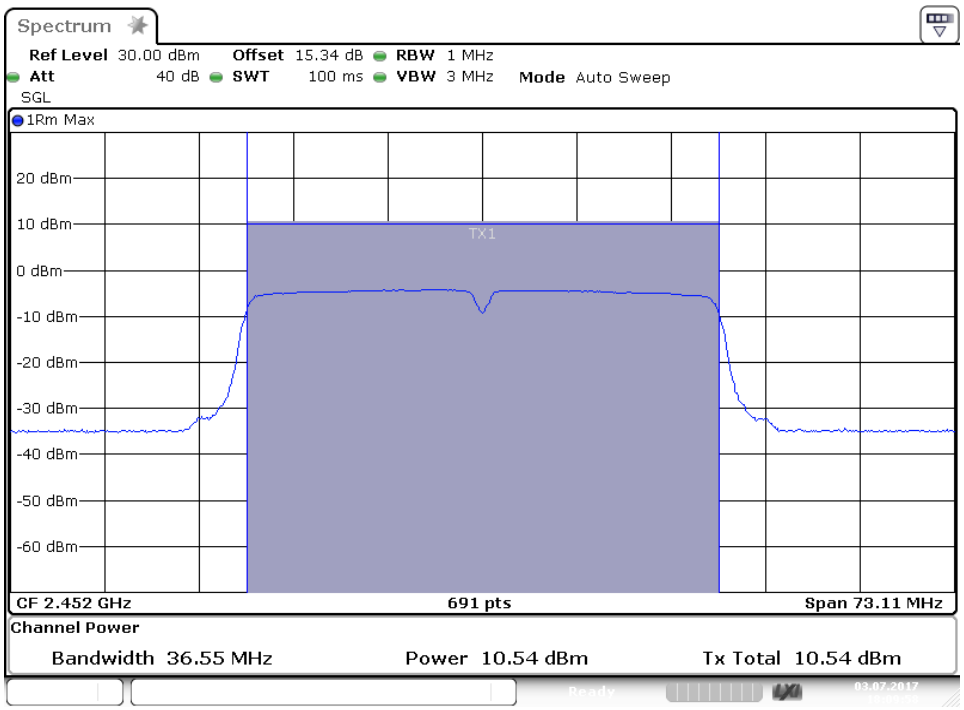
Date: 3.JUL.2017 18:07:25

802.11n Channel Middle 2437MHz (40MHz)



Date: 3.JUL.2017 18:08:26

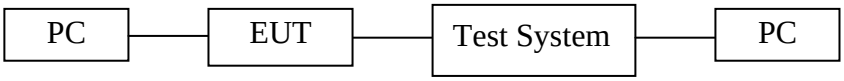
802.11n Channel High 2452MHz (40MHz)



Date: 3.JUL.2017 18:09:58

9. POWER SPECTRAL DENSITY MEASUREMENT

9.1.Block Diagram of Test Setup



9.2.The Requirement For Section 15.247(e)

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

9.3.EUT Configuration on Measurement

The equipment are installed on the emission Measurement to meet the commission requirements and operating regulations in a manner which tends to maximize its emission characteristics in normal application.

9.4.Operating Condition of EUT

9.4.1.Setup the EUT and simulator as shown as Section 9.1.

9.4.2.Turn on the power of all equipment.

9.4.3.Let the EUT work in TX modes measure it. The transmit frequency are 2412-2462 and 2422-2452MHz. We select 2412MHz, 2437MHz, 2462MHz and 2422MHz, 2437MHz, 2452MHz TX frequency to transmit.

9.5.Test Procedure

9.5.1.The transmitter output was connected to the spectrum analyzer through a low loss cable.

9.5.2.Measurement Procedure AVGPSD-2:

This procedure is applicable when the EUT cannot be configured to transmit continuously(i.e., duty cycle<98%), and when sweep triggering/signal gating cannot be used to measure only when the EUT is transmitting at its maximum power control level, and when the transmission duty is constant(i.e., duty cycle variations are less than ±2%):

Measure the dyty cycle(x) of the transmitter output signal as described in Section 6.0.

Set instrument center frequency to DTS channel center frequency.
Set span to at least 1.5×OBW.
Set RBW to: 3kHz≤ RBW≤100kHz.
Set VBW≥ 3×RBW
Detector=power averaging(RMS) or sample detector(when RMS not available).
Ensure that the number of measurement points in sweep≥2×span/RBW.
Sweep time=auto couple.
Do not use sweep triggering. Allow sweep to "free run".
Employ trace averaging(RMS) mode over a minimum of 100 traces.
Use the peak maker function to determine the maximum amplitude level.
Add 10log(1/x), where x is the duty cycle measured in step(a, to the measured PSD to compute the average PSD during the actual transmission time.
If resultant value exceeds the limit, then reduce RBW(no less than 3kHz) and repeat(note that this may require zooming in on the emission of interest and reducing the span in order to meet the minimum measurement point requirement as the RBW is reduced).

9.6.Test Result

The test was performed with 802.11b					
Channel	Frequency (MHz)	AVG Power Spectral Density (dBm)	10log(1/ duty cycle)	Final Power Spectral Density (dBm)	Limits (dBm)
Low	2412	-2.26	0.04	-2.22	8 dBm
Middle	2437	-3.89	0.10	-3.79	8 dBm
High	2462	-4.03	0.03	-4.00	8 dBm

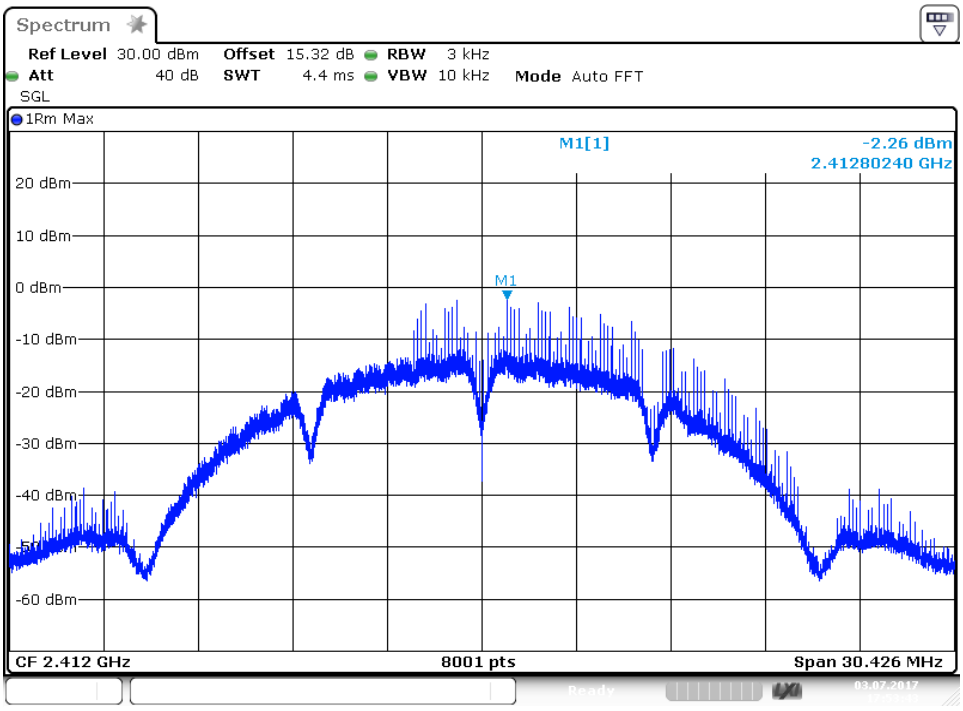
The test was performed with 802.11g					
Channel	Frequency (MHz)	AVG Power Spectral Density (dBm)	10log(1/ duty cycle)	Final Power Spectral Density (dBm)	Limits (dBm)
Low	2412	-16.01	0.12	-15.89	8 dBm
Middle	2437	-17.33	0.12	-17.21	8 dBm
High	2462	-16.86	0.12	-16.74	8 dBm

The test was performed with 802.11n (20MHz)					
Channel	Frequency (MHz)	AVG Power Spectral Density (dBm)	10log(1/ duty cycle)	Final Power Spectral Density (dBm)	Limits (dBm)
Low	2412	-16.43	0.14	-16.29	8 dBm
Middle	2437	-16.29	0.13	-16.16	8 dBm
High	2462	-16.86	0.13	-16.73	8 dBm

The test was performed with 802.11n (40MHz)					
Channel	Frequency (MHz)	AVG Power Spectral Density (dBm)	10log(1/ duty cycle)	Final Power Spectral Density (dBm)	Limits (dBm)
Low	2422	-21.11	0.26	-20.85	8 dBm
Middle	2437	-21.21	0.26	-20.95	8 dBm
High	2452	-21.25	0.26	-20.99	8 dBm

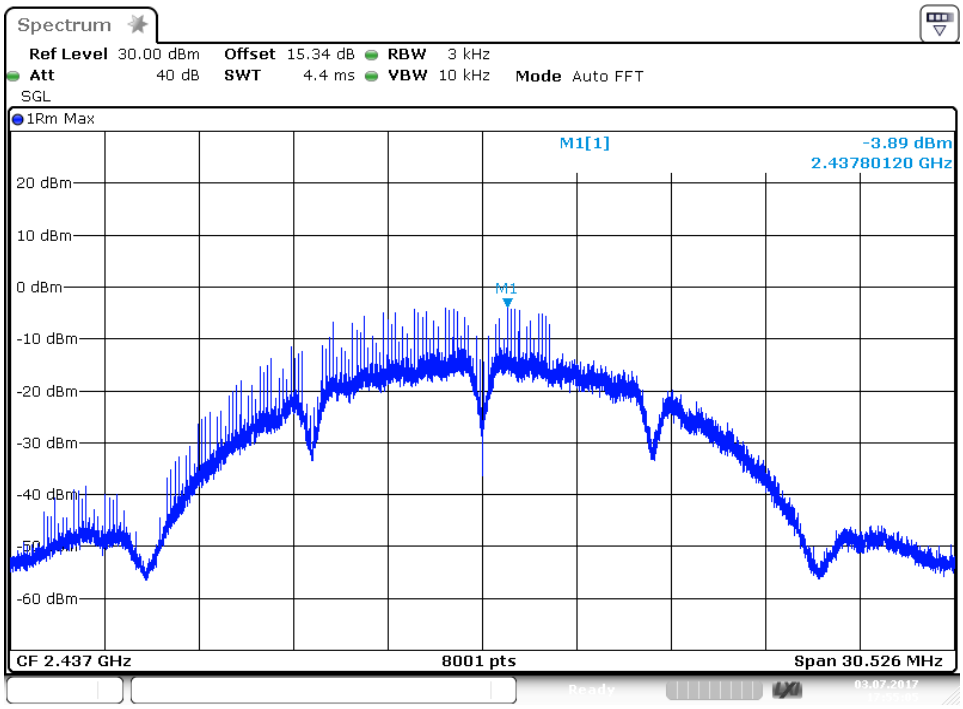
The spectrum analyzer plots are attached as below.

802.11b Channel Low 2412MHz



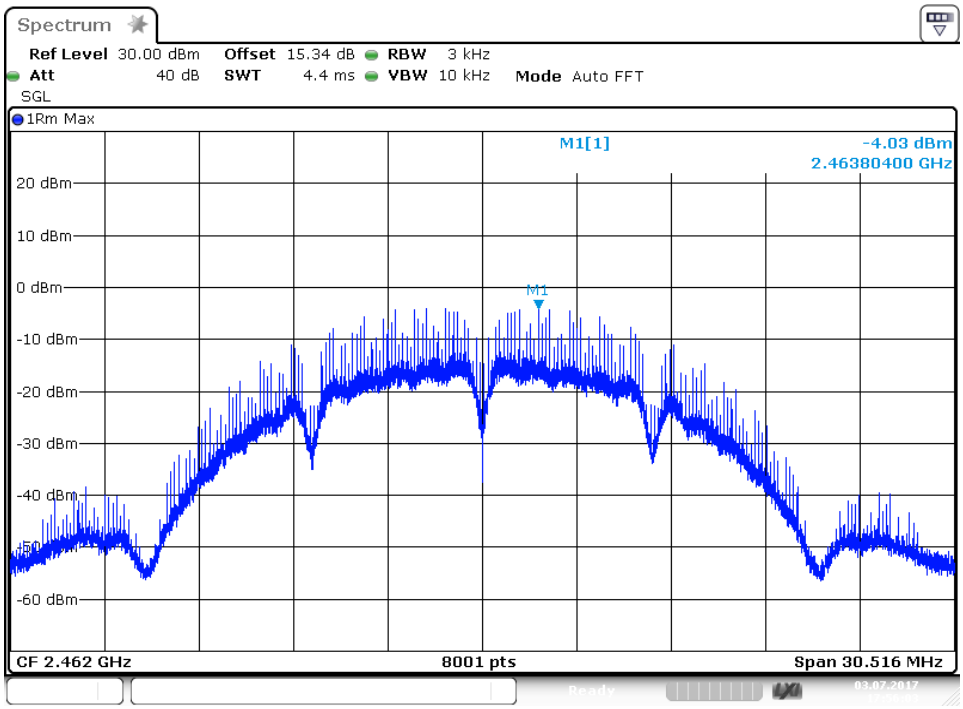
Date: 3.JUL.2017 17:53:43

802.11b Channel Middle 2437MHz



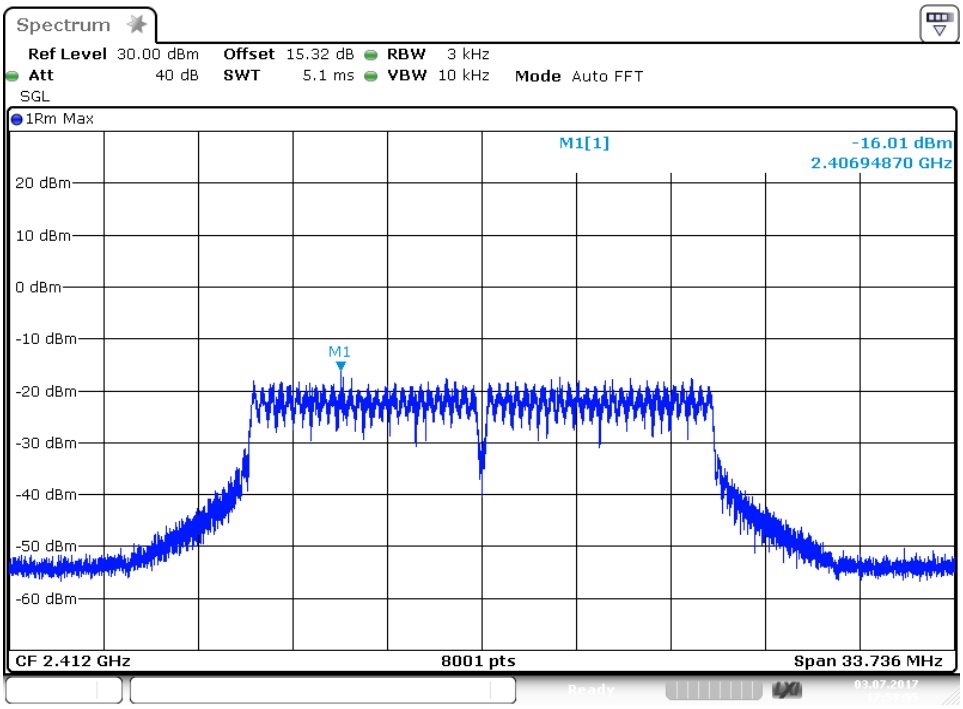
Date: 3.JUL.2017 17:55:05

802.11b Channel High 2462MHz



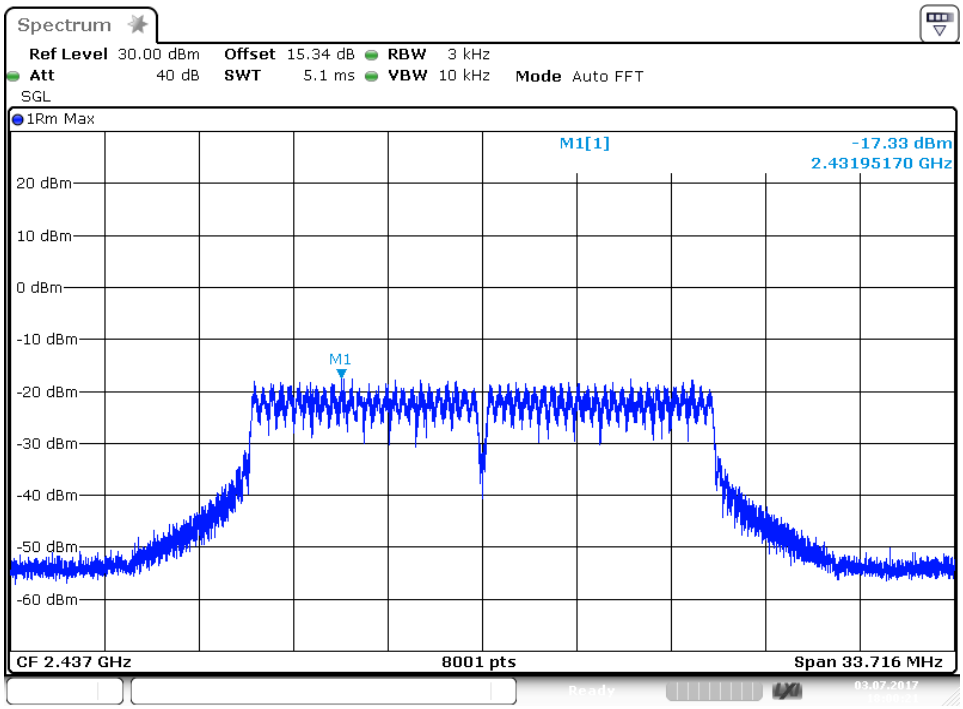
Date: 3.JUL.2017 17:56:03

802.11g Channel Low 2412MHz



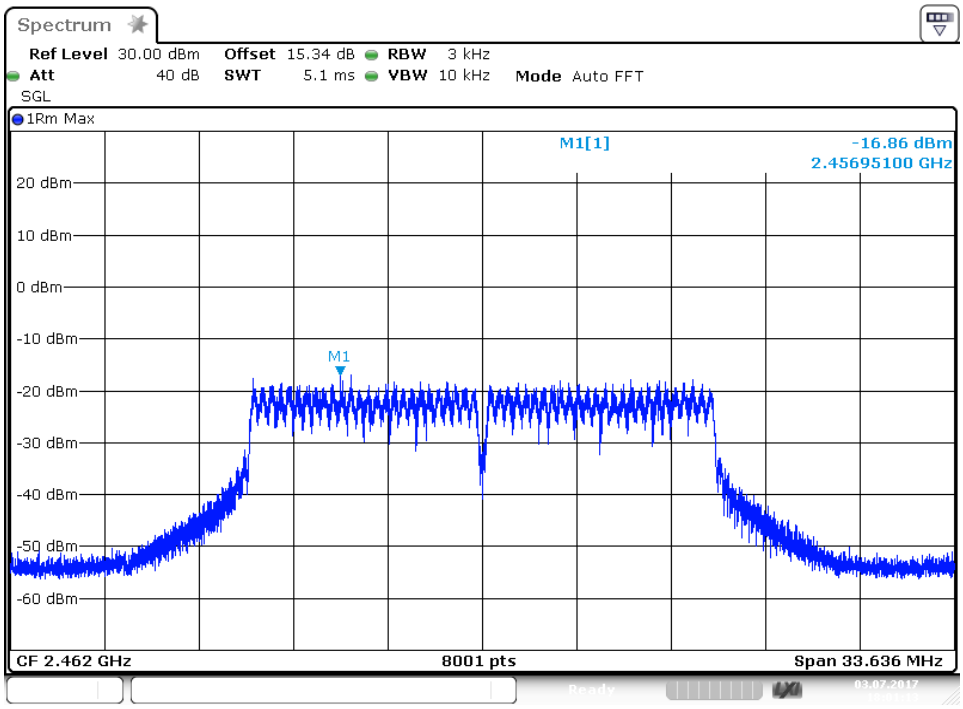
Date: 3.JUL.2017 17:58:55

802.11g Channel Middle 2437MHz



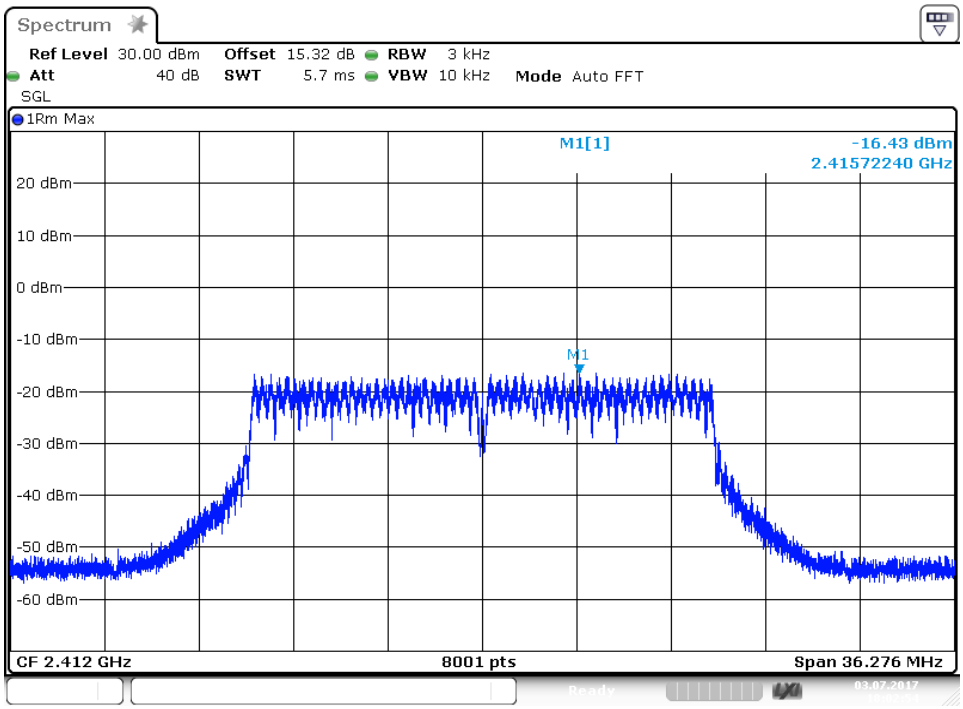
Date: 3.JUL.2017 18:00:22

802.11g Channel High 2462MHz



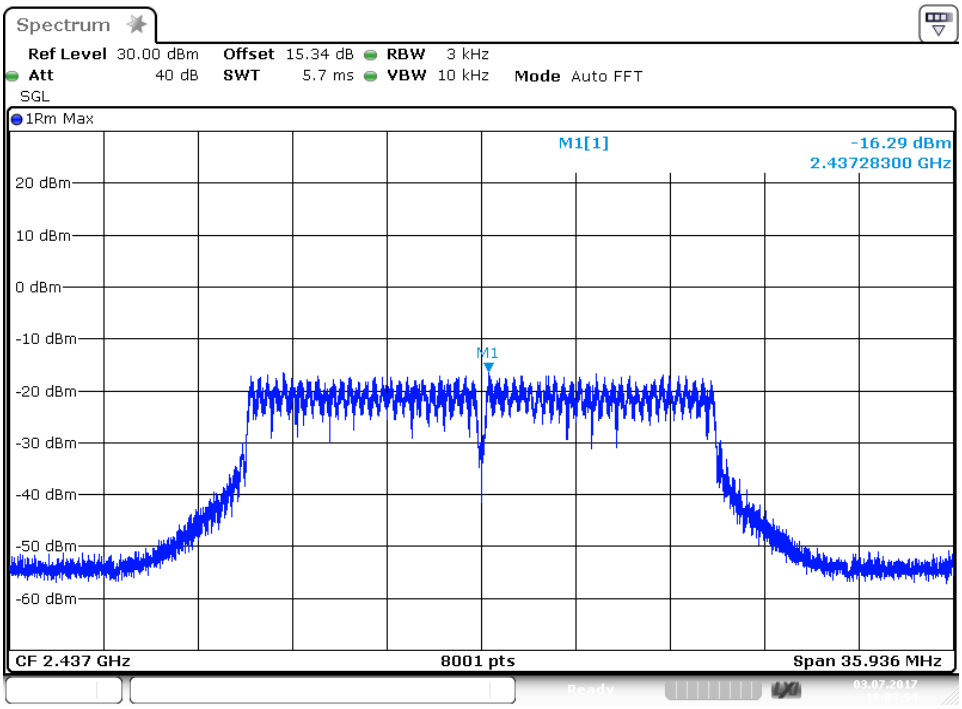
Date: 3.JUL.2017 18:01:13

802.11n Channel Low 2412MHz (20MHz)



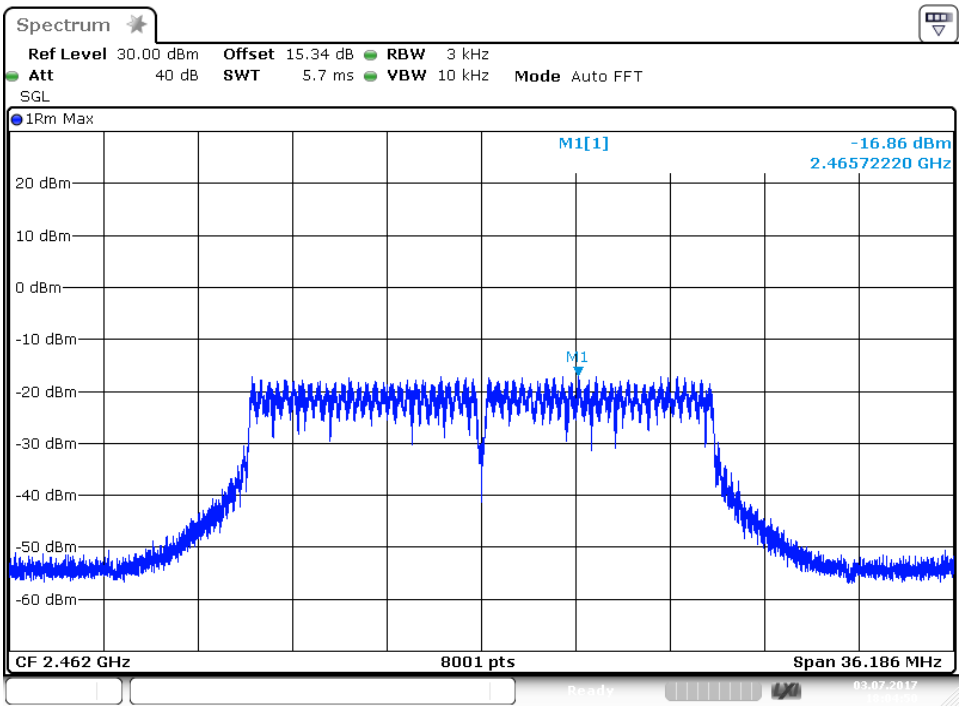
Date: 3.JUL.2017 18:02:55

802.11n Channel Middle 2437MHz (20MHz)



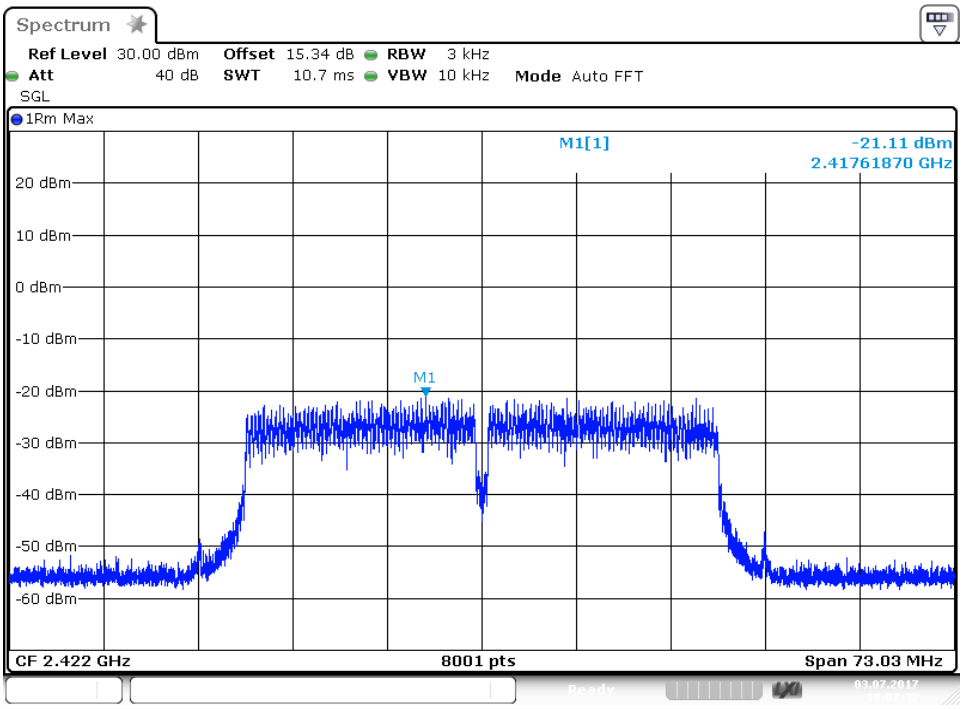
Date: 3.JUL.2017 18:03:54

802.11n Channel High 2462MHz(20MHz)



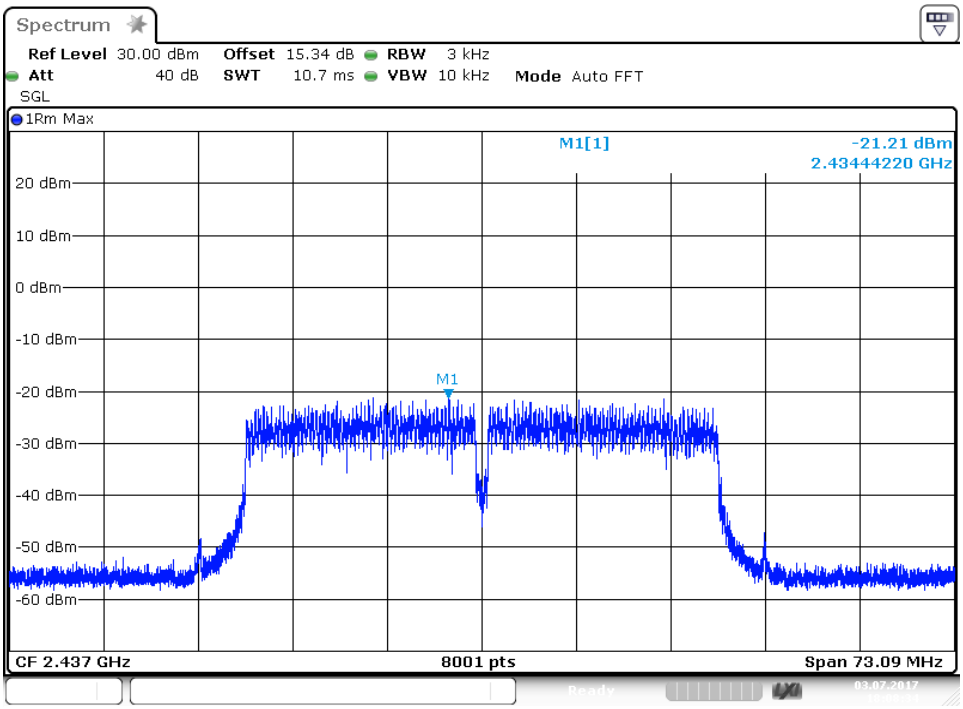
Date: 3.JUL.2017 18:04:50

802.11n Channel Low 2422MHz (40MHz)



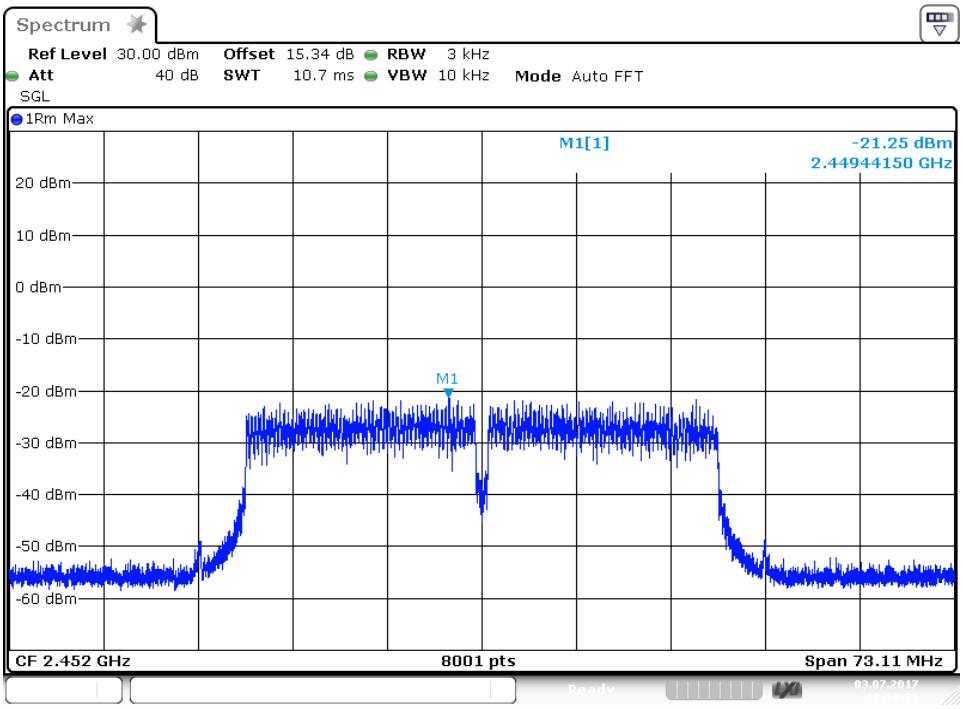
Date: 3.JUL.2017 18:07:33

802.11n Channel Middle 2437MHz(40MHz)



Date: 3.JUL.2017 18:08:34

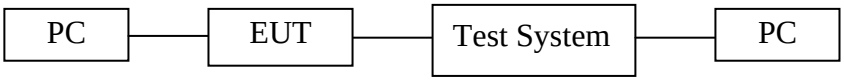
802.11n Channel High 2452MHz(40MHz)



Date: 3.JUL.2017 18:10:06

10.BAND EDGE COMPLIANCE TEST

10.1.Block Diagram of Test Setup



10.2.The Requirement For Section 15.247(d)

Section 15.247(d): In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, 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, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in Section 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a).

10.3.EUT Configuration on Measurement

The equipment are installed on the emission Measurement to meet the commission requirements and operating regulations in a manner which tends to maximize its emission characteristics in normal application.

10.4.Operating Condition of EUT

10.4.1.Setup the EUT and simulator as shown as Section 9.1.

10.4.2.Turn on the power of all equipment.

10.4.3.Let the EUT work in TX modes measure it. The transmit frequency are 2412-2462 and 2422-2452MHz MHz. We select 2412MHz, 2462MHz and 2422MHz, 2452MHz TX frequency to transmit.

10.5.Test Procedure

Conducted Band Edge:

10.5.1.The transmitter output was connected to the spectrum analyzer via a low loss cable.

10.5.2.Set RBW of spectrum analyzer to 100kHz and VBW to 300kHz.

Radiate Band Edge:

10.5.3.The EUT is placed on a turntable, which is 0.8m above the ground plane and worked at highest radiated power.

10.5.4.The turntable was rotated for 360 degrees to determine the position of maximum emission level.

10.5.5.EUT is set 3m away from the receiving antenna, which is varied from 1m to 4m to find out the highest emission.

10.5.6.Set the spectrum analyzer in the following setting in order to capture the lower and upper band-edges of the emission:

10.5.7.RBW=1MHz, VBW=1MHz

10.5.8.The band edges was measured and recorded.

10.6.Test Result

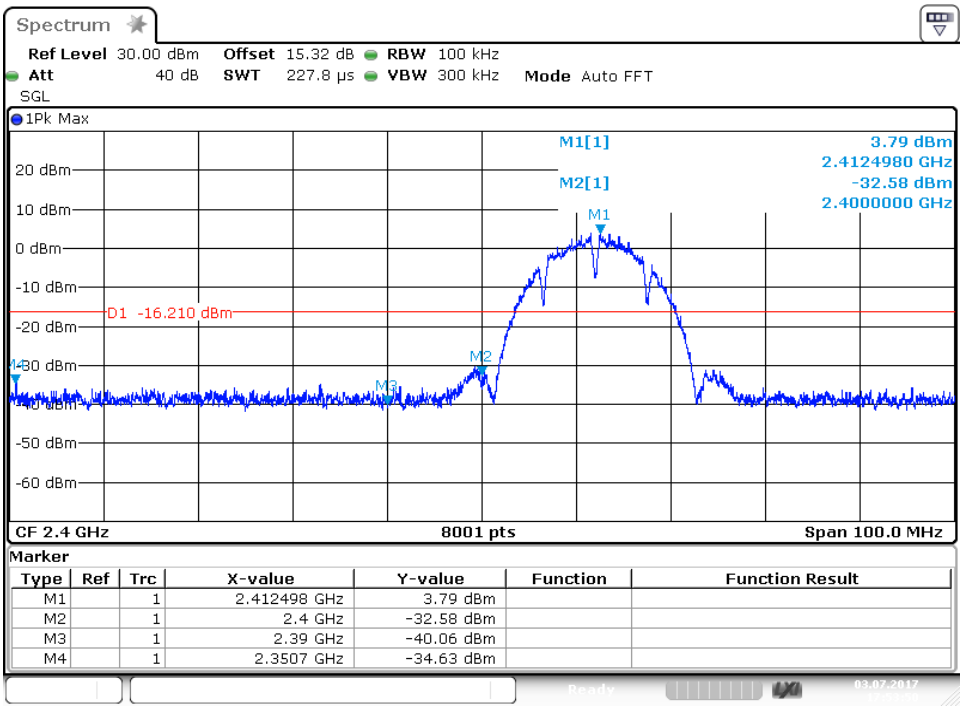
The test was performed with 802.11b		
Frequency (MHz)	Result of Band Edge (dBc)	Limit of Band Edge (dBc)
2400	36.37	> 30dBc
2483.5	43.34	> 30dBc

The test was performed with 802.11g		
Frequency (MHz)	Result of Band Edge (dBc)	Limit of Band Edge (dBc)
2400	38.00	> 30dBc
2483.5	36.75	> 30dBc

The test was performed with 802.11n (20MHz)		
Frequency (MHz)	Result of Band Edge (dBc)	Limit of Band Edge (dBc)
2400	37.19	> 30dBc
2483.5	38.84	> 30dBc

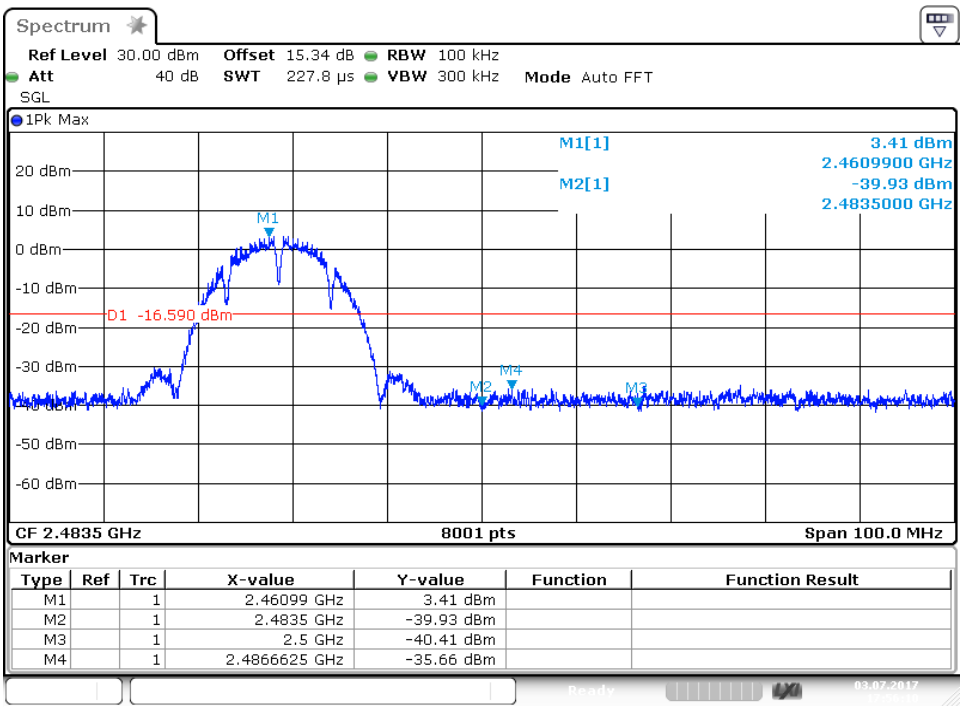
The test was performed with 802.11n (40MHz)		
Frequency (MHz)	Result of Band Edge (dBc)	Limit of Band Edge (dBc)
2400	32.68	> 30dBc
2483.5	37.39	> 30dBc

802.11b Channel Low 2412MHz



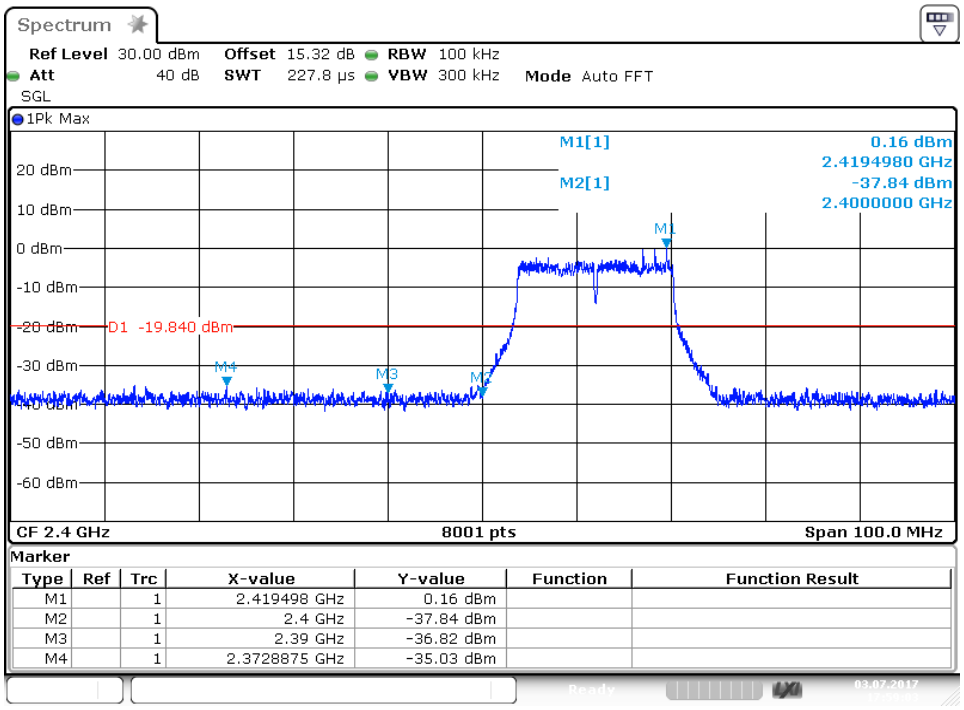
Date: 3.JUL.2017 17:53:51

802.11b Channel High 2462MHz



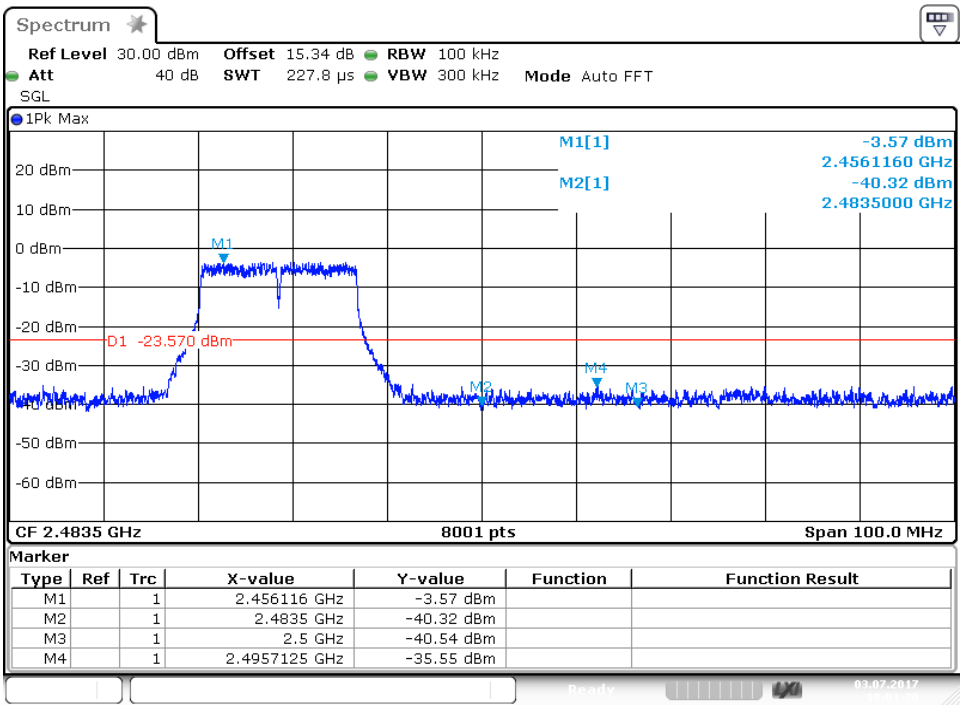
Date: 3.JUL.2017 17:56:11

802.11g Channel Low 2412MHz



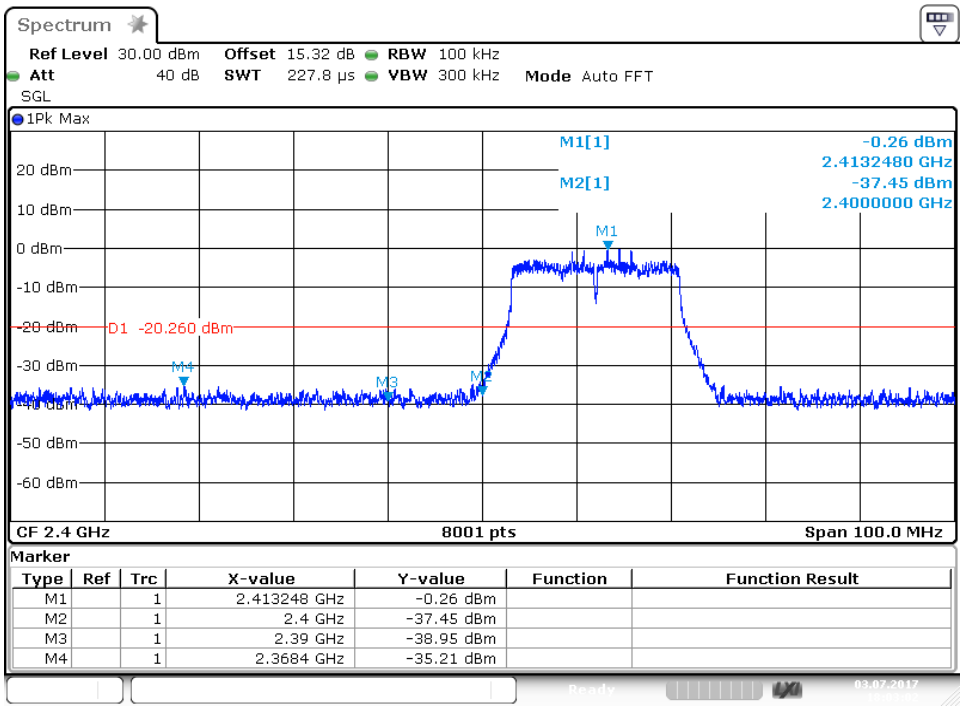
Date: 3.JUL.2017 17:59:03

802.11g Channel High 2462MHz



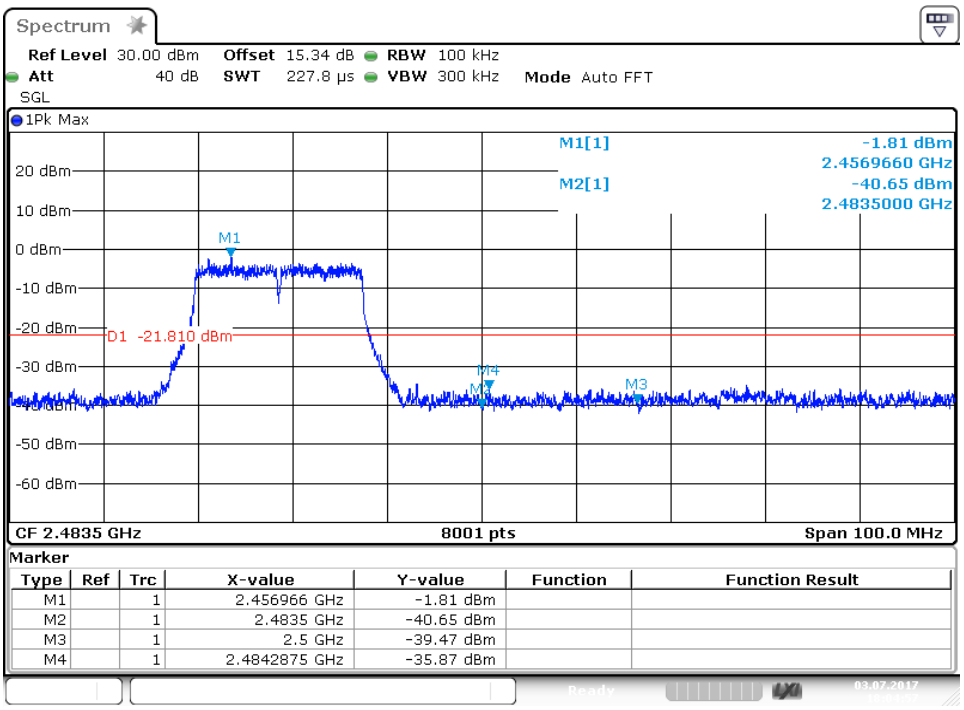
Date: 3.JUL.2017 18:01:21

802.11n Channel Low 2412MHz (20MHz)



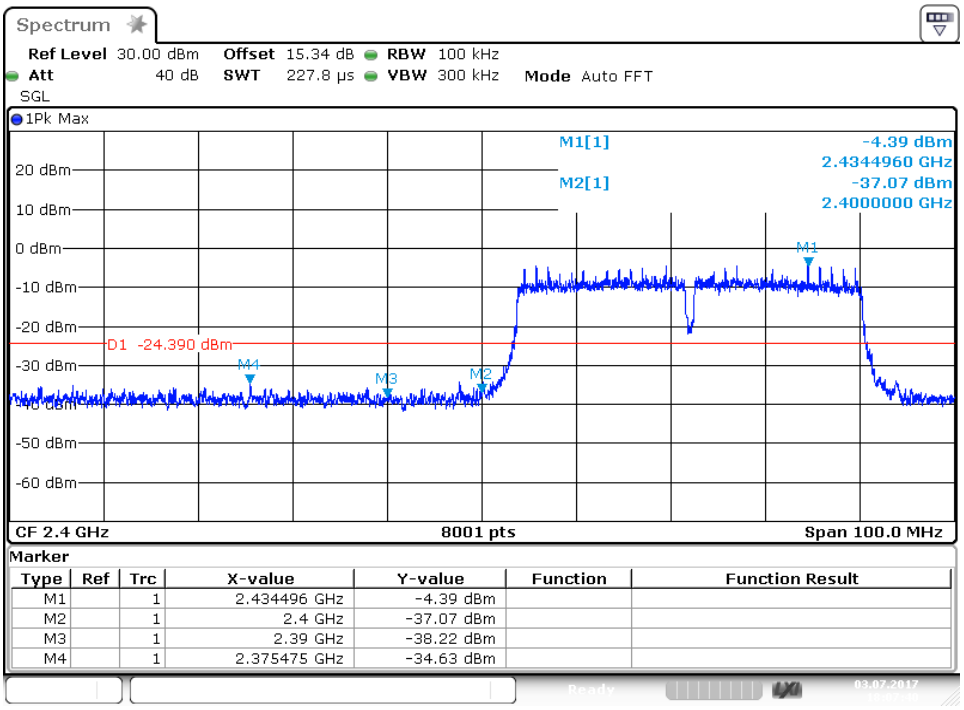
Date: 3.JUL.2017 18:03:03

802.11n Channel High 2462MHz (20MHz)



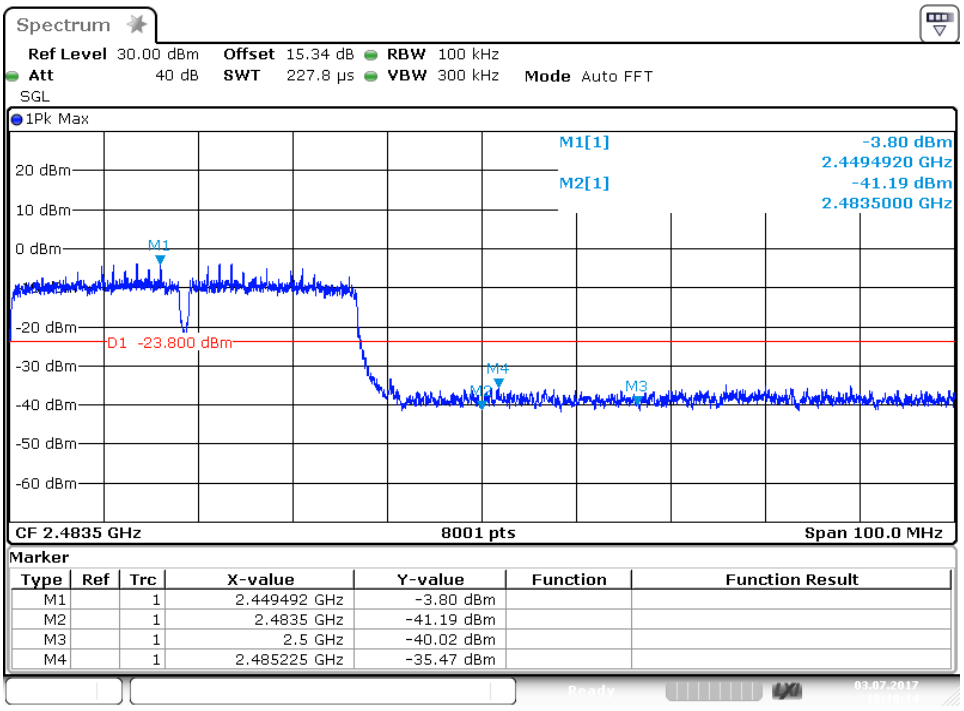
Date: 3.JUL.2017 18:04:58

802.11n Channel Low 2422MHz (40MHz)



Date: 3.JUL.2017 18:07:41

802.11n Channel High 2452MHz (40MHz)



Date: 3.JUL.2017 18:10:14

Radiated Band Edge Result

Note:

1. Emissions attenuated more than 20 dB below the permissible value are not reported.
2. The field strength is calculated by adding the antenna factor, high pass filter loss(if used) and cable loss, and subtracting the amplifier gain(if any)from the measured reading. The basic equation calculation is as follows:

   Result = Reading + Corrected Factor
3. Display the measurement of peak values.

Test Procedure:

The EUT and its simulators are placed on a turntable, which is 1.5 meter high above ground(Above 1GHz). The turntable can rotate 360 degrees to determine the position of the maximum emission level. EUT is set 3.0 meters away from the receiving antenna, which is mounted on an antenna tower. The antenna can be moved up and down between 1.0 meter and 4 meters to find out the maximum emission level. Broadband antenna (calibrated bi-log antenna) is used as receiving antenna. Both horizontal and vertical polarizations of the antenna are set on measurement. In order to find the maximum emission levels, all of the EUT location must be manipulated according to ANSI C63.10:2013 on radiated emission measurement. The EUT was tested in 3 orthogonal planes.

Let the EUT work in TX modes then measure it.
We select 2412MHz, 2462MHz TX frequency to transmit(802.11b/g/n20 mode).
We select 2422MHz, 2452MHz TX frequency to transmit(802.11n40 mode).

During the radiated emission test, the spectrum analyzer was set with the following configurations:
1.The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and video bandwidth is 3MHz for peak measurement with peak detector at frequency above 1GHz.
2.The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and video bandwidth is 10Hz for Average measurement with peak detection at frequency above 1GHz.
3.All modes of operation were investigated and the worst-case emissions are reported.

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Site: 1# Chamber
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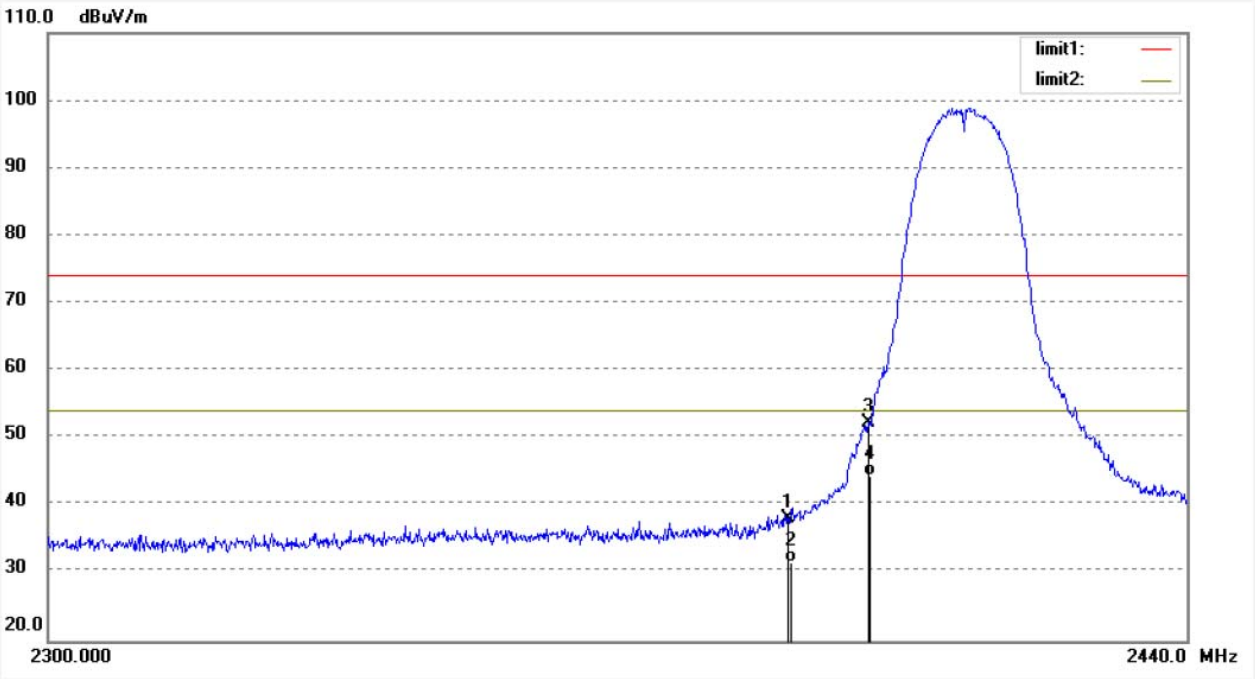
Fax:+86-0755-26503396

Job No.: ding1 #819	Polarization: Horizontal
Standard: FCC PK	Power Source: AC 120V/60Hz
Test item: Radiation Test	Date: 17/06/19/
Temp.(C)/Hum.(%) 25 C / 55 %	Time: 12/36/57
EUT: Smart Wifi Robotic cleaner with HD camera	Engineer Signature: DING
Mode: TX 2412MHz(802.11b)	Distance: 3m
Model: S007G	
Manufacturer: DIMAO	

Note: Report NO.:ATE20171108



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2390.000	44.03	-5.89	38.14	74.00	-35.86	peak	154	278	
2	2390.000	37.54	-5.89	31.65	54.00	-22.35	AVG	154	280	
3	2400.000	58.07	-5.80	52.27	74.00	-21.73	peak	156	167	
4	2400.000	50.22	-5.80	44.42	54.00	-9.58	AVG	156	172	

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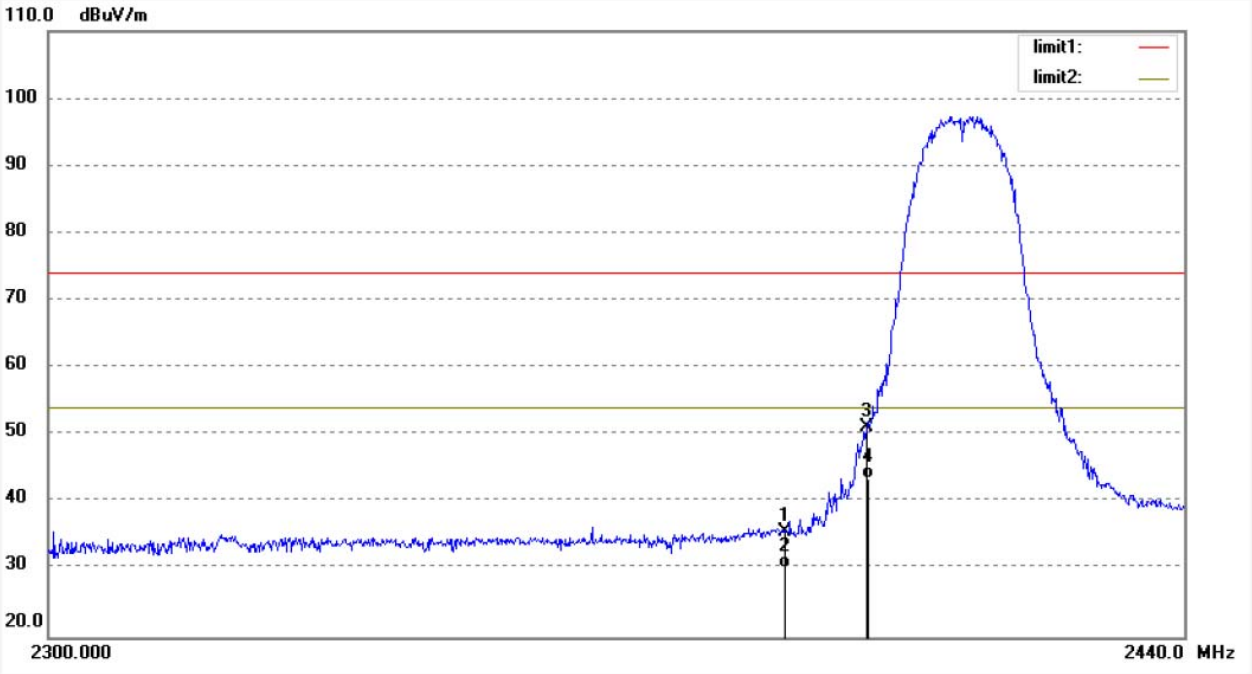
Job No.: ding1 #820	Polarization: Vertical
Standard: FCC PK	Power Source: AC 120V/60Hz
Test item: Radiation Test	Date: 17/06/19/
Temp.(C)/Hum.(%) 25 C / 55 %	Time: 12/38/31
EUT: Smart Wifi Robotic cleaner with HD camera	Engineer Signature: DING
Mode: TX 2412MHz(802.11b)	Distance: 3m
Model: S007G	
Manufacturer: DIMAO	

Note: Report NO.:ATE20171108



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2390.000	41.56	-5.89	35.67	74.00	-38.33	peak	152	178	
2	2390.000	36.12	-5.89	30.23	54.00	-23.77	AVG	152	182	
3	2400.000	56.92	-5.80	51.12	74.00	-22.88	peak	154	27	
4	2400.000	49.35	-5.80	43.55	54.00	-10.45	AVG	154	30	

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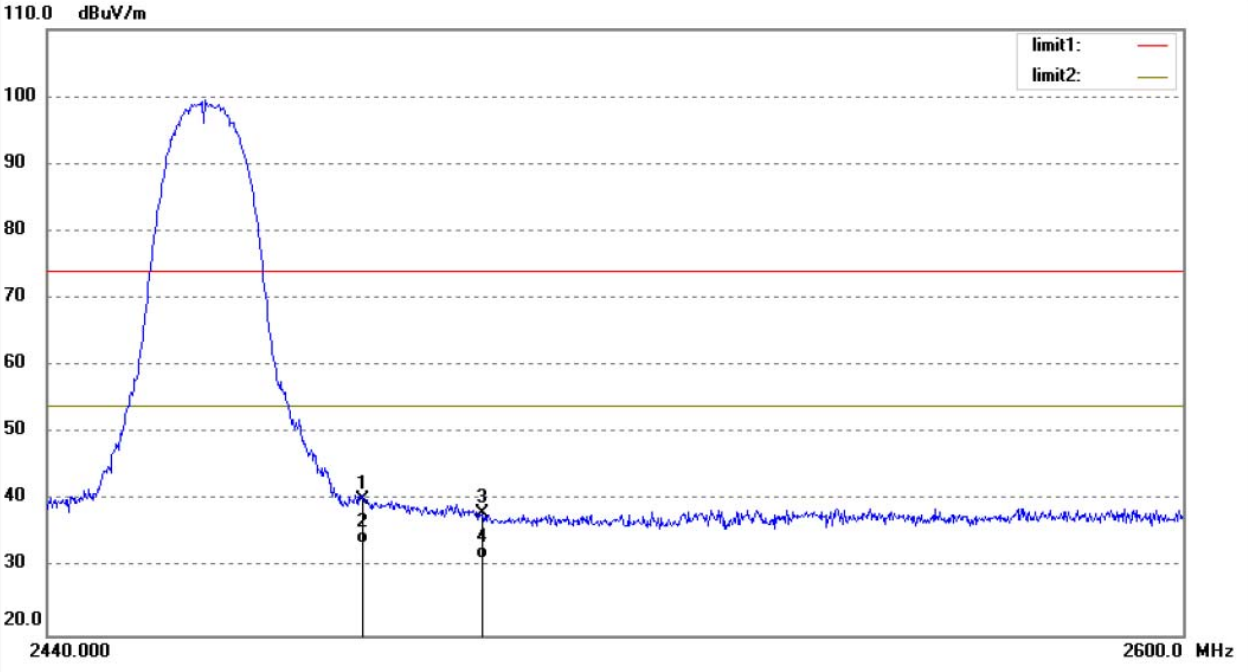
Job No.: ding1 #818
Standard: FCC PK
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: Smart Wifi Robotic cleaner with HD camera
Mode: TX 2462MHz(802.11b)
Model: S007G
Manufacturer: DIMAO

Polarization: Horizontal
Power Source: AC 120V/60Hz
Date: 17/06/19/
Time: 12/32/26
Engineer Signature: DING
Distance: 3m

Note: Report NO.:ATE20171108



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2483.500	45.56	-5.51	40.05	74.00	-33.95	peak	152	186	
2	2483.500	39.15	-5.51	33.64	54.00	-20.36	AVG	152	127	
3	2500.000	43.54	-5.50	38.04	74.00	-35.96	peak	154	277	
4	2500.000	36.78	-5.50	31.28	54.00	-22.72	AVG	154	276	

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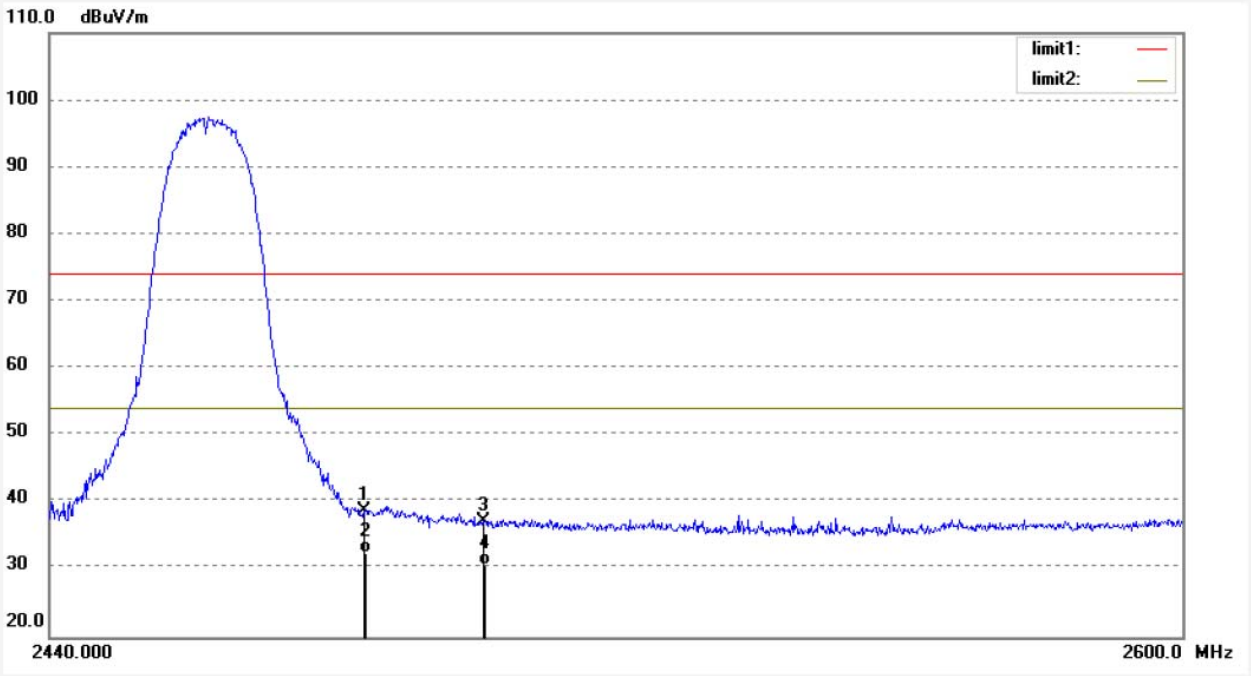
Job No.: ding1 #817	Polarization: Vertical
Standard: FCC PK	Power Source: AC 120V/60Hz
Test item: Radiation Test	Date: 17/06/19/
Temp.(C)/Hum.(%) 25 C / 55 %	Time: 12/29/38
EUT: Smart Wifi Robotic cleaner with HD camera	Engineer Signature: DING
Mode: TX 2462MHz(802.11b)	Distance: 3m
Model: S007G	
Manufacturer: DIMAO	

Note: Report NO.:ATE20171108



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2483.500	44.20	-5.51	38.69	74.00	-35.31	peak	153	278	
2	2483.500	37.96	-5.51	32.45	54.00	-21.55	AVG	153	276	
3	2500.000	42.61	-5.50	37.11	74.00	-36.89	peak	154	25	
4	2500.000	36.14	-5.50	30.64	54.00	-23.36	AVG	154	26	

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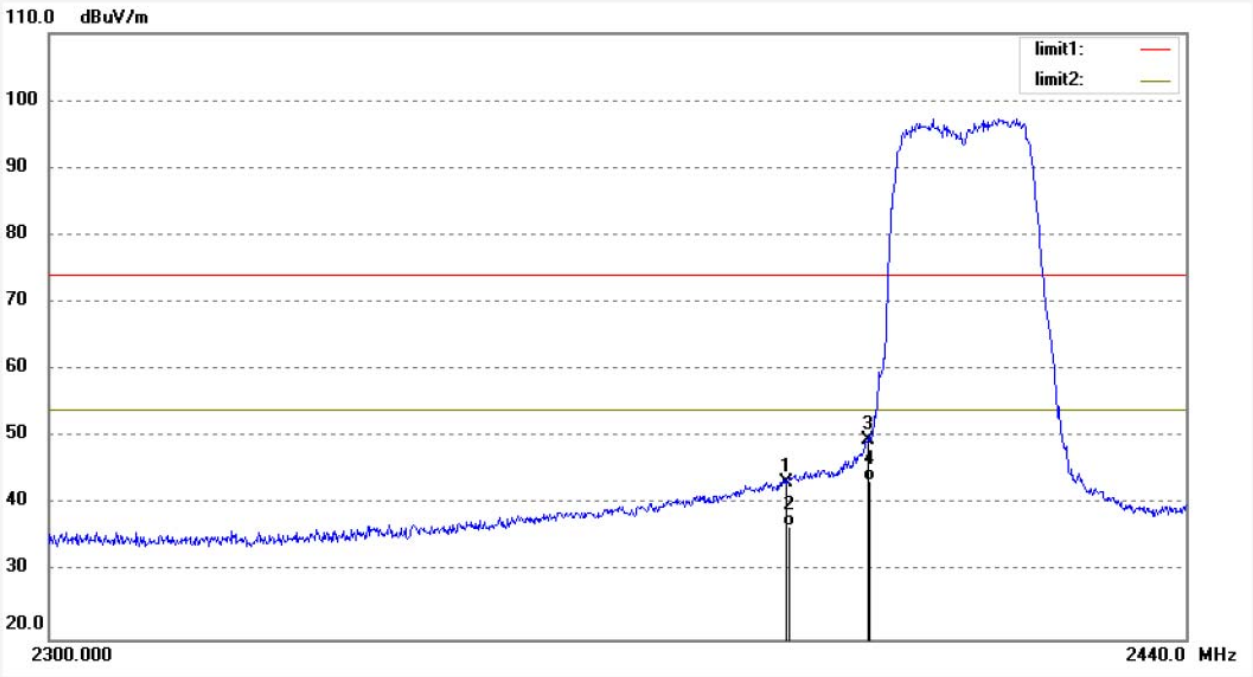
Job No.: ding1 #814	Polarization: Horizontal
Standard: FCC PK	Power Source: AC 120V/60Hz
Test item: Radiation Test	Date: 17/06/19/
Temp.(C)/Hum.(%) 25 C / 55 %	Time: 12/13/30
EUT: Smart Wifi Robotic cleaner with HD camera	Engineer Signature: DING
Mode: TX 2412MHz(802.11g)	Distance: 3m
Model: S007G	
Manufacturer: DIMAO	

Note: Report NO.:ATE20171108



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2390.000	49.16	-5.89	43.27	74.00	-30.73	peak	156	278	
2	2390.000	42.74	-5.89	36.85	54.00	-17.15	AVG	156	267	
3	2400.000	55.39	-5.80	49.59	74.00	-24.41	peak	152	18	
4	2400.000	49.23	-5.80	43.43	54.00	-10.57	AVG	152	20	

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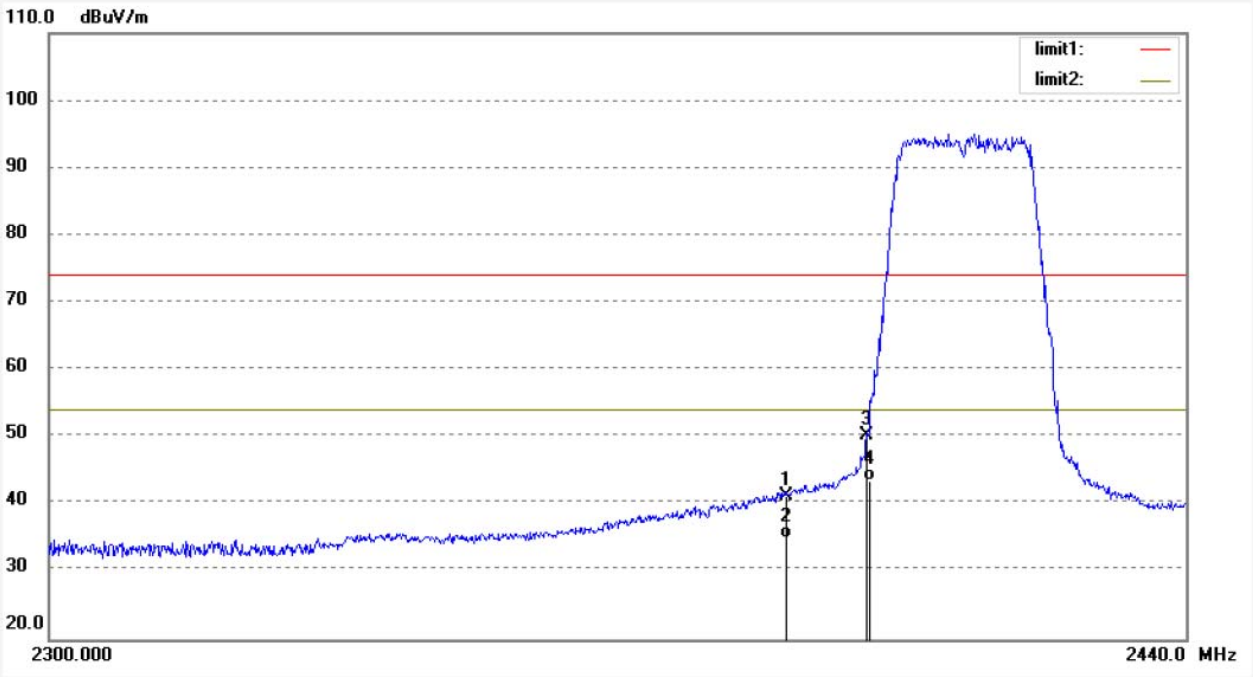
Job No.: ding1 #813	Polarization: Vertical
Standard: FCC PK	Power Source: AC 120V/60Hz
Test item: Radiation Test	Date: 17/06/19/
Temp.(C)/Hum.(%) 25 C / 55 %	Time: 12/09/19
EUT: Smart Wifi Robotic cleaner with HD camera	Engineer Signature: DING
Mode: TX 2412MHz(802.11g)	Distance: 3m
Model: S007G	
Manufacturer: DIMAO	

Note: Report NO.:ATE20171108



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2390.000	47.14	-5.89	41.25	74.00	-32.75	peak	152	42	
2	2390.000	40.85	-5.89	34.96	54.00	-19.04	AVG	152	43	
3	2400.000	56.01	-5.80	50.21	74.00	-23.79	peak	153	58	
4	2400.000	49.31	-5.80	43.51	54.00	-10.49	AVG	153	57	

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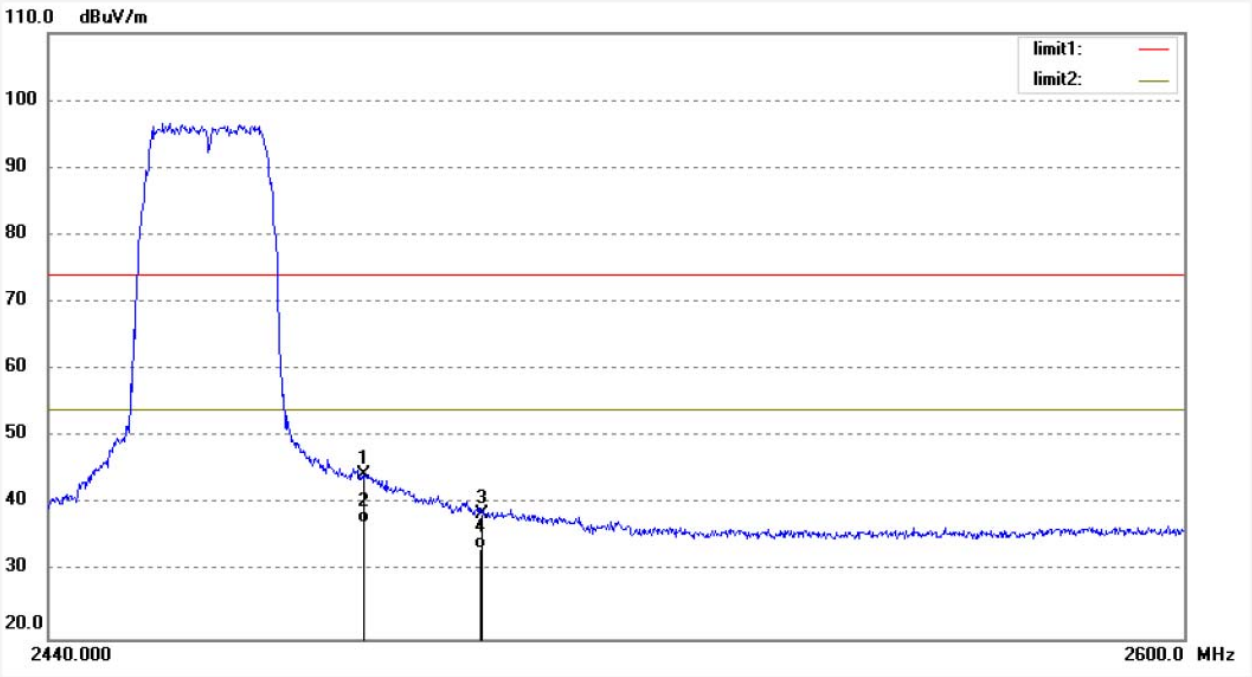
Job No.: ding1 #815	Polarization: Horizontal
Standard: FCC PK	Power Source: AC 120V/60Hz
Test item: Radiation Test	Date: 17/06/19/
Temp.(C)/Hum.(%) 25 C / 55 %	Time: 12/18/57
EUT: Smart Wifi Robotic cleaner with HD camera	Engineer Signature: DING
Mode: TX 2462MHz(802.11g)	Distance: 3m
Model: S007G	
Manufacturer: DIMAO	

Note: Report NO.:ATE20171108



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2483.500	49.95	-5.51	44.44	74.00	-29.56	peak	150	268	
2	2483.500	42.76	-5.51	37.25	54.00	-16.75	AVG	150	269	
3	2500.000	44.08	-5.50	38.58	74.00	-35.42	peak	152	178	
4	2500.000	38.94	-5.50	33.44	54.00	-20.56	AVG	152	179	

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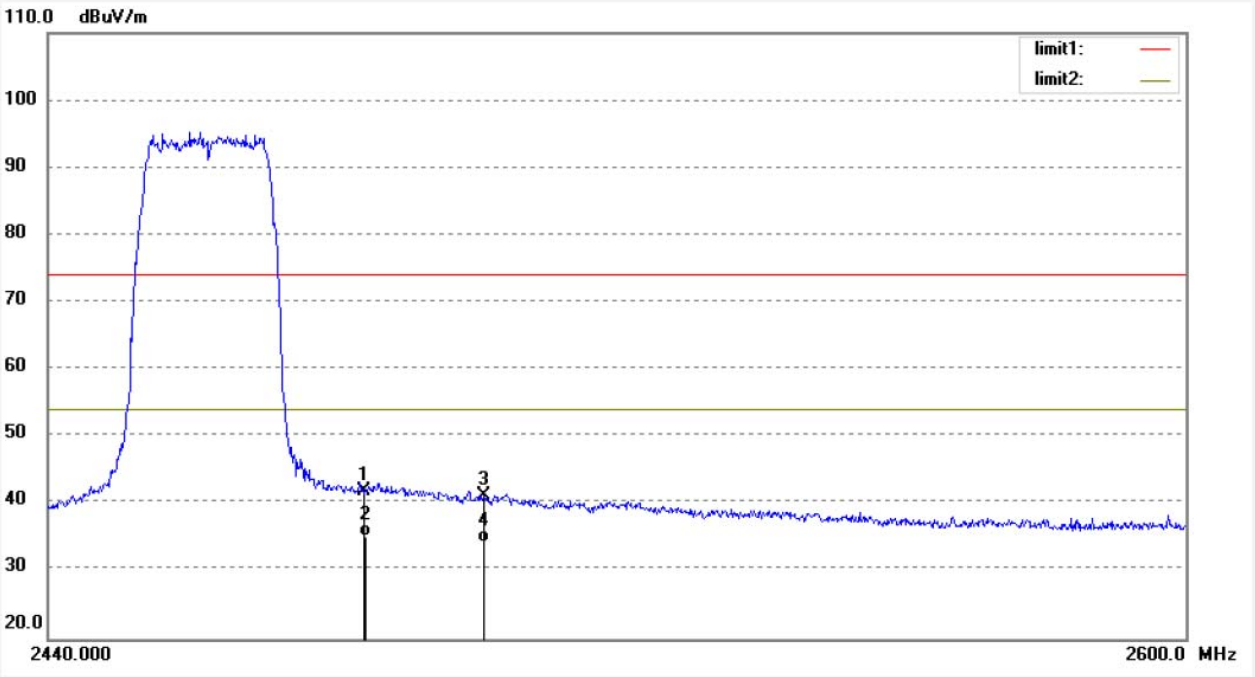
Job No.: ding1 #816	Polarization: Vertical
Standard: FCC PK	Power Source: AC 120V/60Hz
Test item: Radiation Test	Date: 17/06/19/
Temp.(C)/Hum.(%) 25 C / 55 %	Time: 12/21/34
EUT: Smart Wifi Robotic cleaner with HD camera	Engineer Signature: DING
Mode: TX 2462MHz(802.11g)	Distance: 3m
Model: S007G	
Manufacturer: DIMAO	

Note: Report NO.:ATE20171108



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2483.500	47.42	-5.51	41.91	74.00	-32.09	peak	157	192	
2	2483.500	40.69	-5.51	35.18	54.00	-18.82	AVG	157	182	
3	2500.000	46.74	-5.50	41.24	74.00	-32.76	peak	153	67	
4	2500.000	39.87	-5.50	34.37	54.00	-19.63	AVG	153	68	

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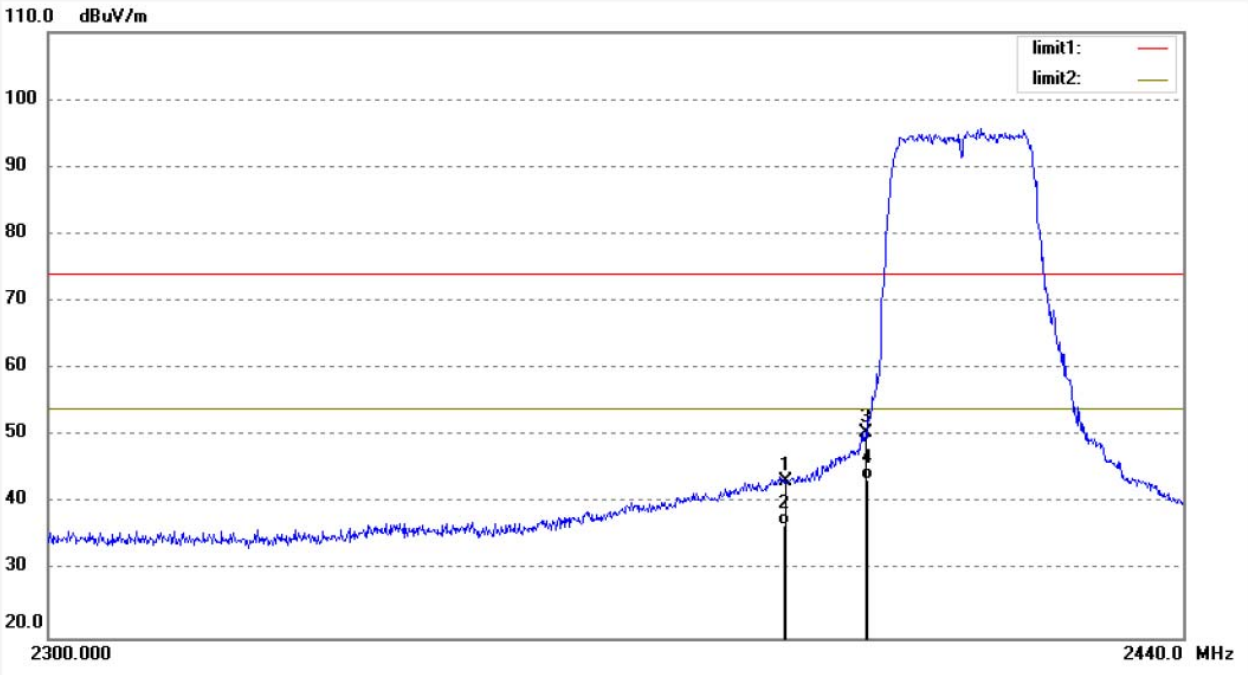
Job No.: ding1 #811
Standard: FCC PK
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: Smart Wifi Robotic cleaner with HD camera
Mode: TX 2412MHz(802.11n20)
Model: S007G
Manufacturer: DIMAO

Polarization: Horizontal
Power Source: AC 120V/60Hz
Date: 17/06/19/
Time: 11/43/07
Engineer Signature: DING
Distance: 3m

Note: Report NO.:ATE20171108



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2390.000	49.20	-5.89	43.31	74.00	-30.69	peak	153	279	
2	2390.000	42.67	-5.89	36.78	54.00	-17.22	AVG	153	198	
3	2400.000	56.35	-5.80	50.55	74.00	-23.45	peak	156	269	
4	2400.000	49.33	-5.80	43.53	54.00	-10.47	AVG	156	267	

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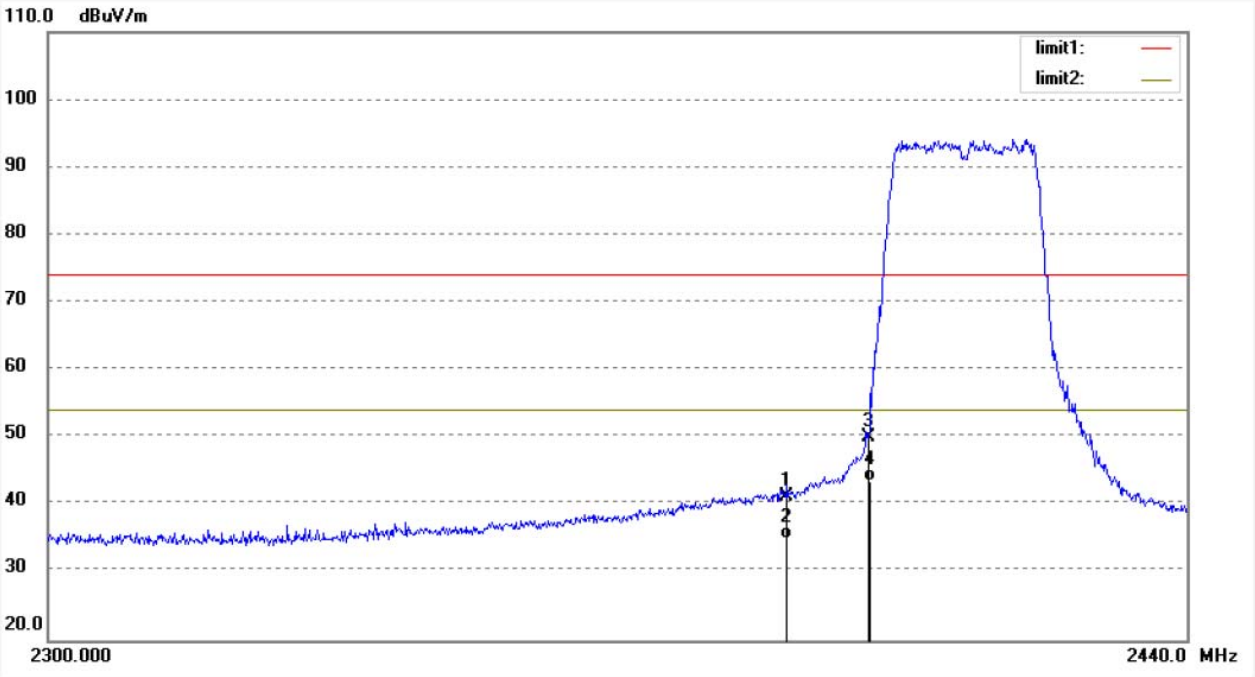
Job No.: ding1 #812	Polarization: Vertical
Standard: FCC PK	Power Source: AC 120V/60Hz
Test item: Radiation Test	Date: 17/06/19/
Temp.(C)/Hum.(%) 25 C / 55 %	Time: 11/46/28
EUT: Smart Wifi Robotic cleaner with HD camera	Engineer Signature: DING
Mode: TX 2412MHz(802.11n20)	Distance: 3m
Model: S007G	
Manufacturer: DIMAO	

Note: Report NO.:ATE20171108



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2390.000	47.20	-5.89	41.31	74.00	-32.69	peak	155	259	
2	2390.000	40.92	-5.89	35.03	54.00	-18.97	AVG	155	258	
3	2400.000	55.85	-5.80	50.05	74.00	-23.95	peak	152	62	
4	2400.000	49.21	-5.80	43.41	54.00	-10.59	AVG	152	62	

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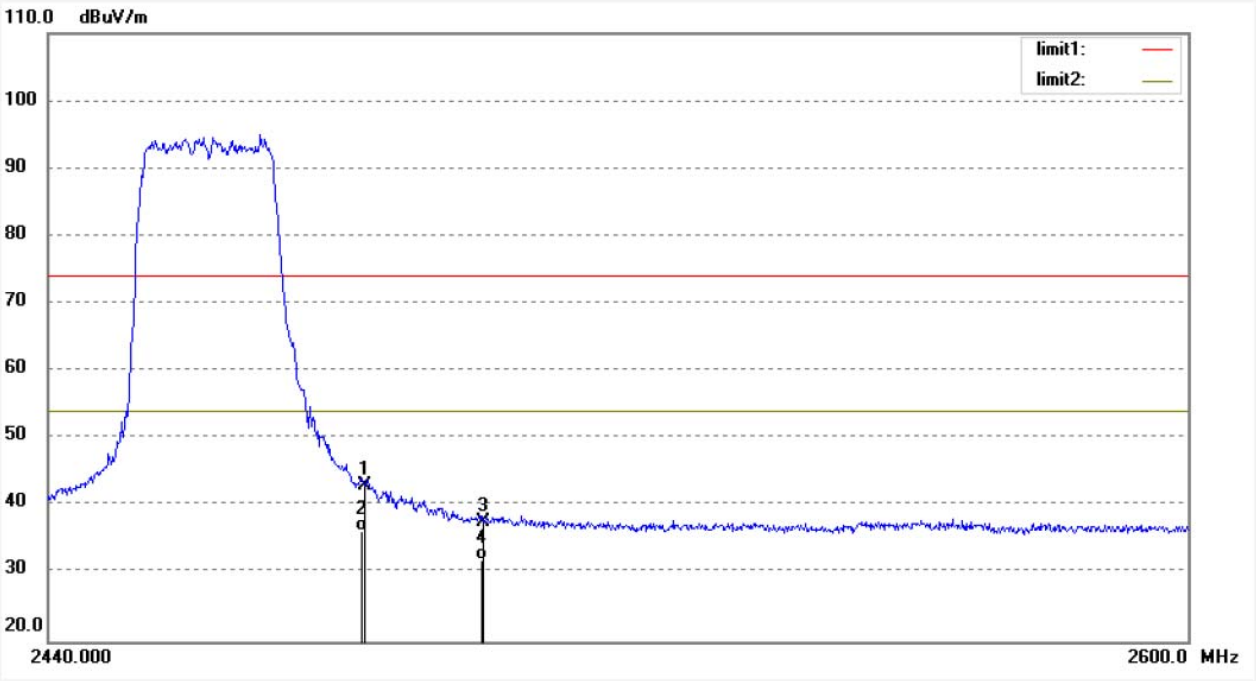
Job No.: ding1 #810
Standard: FCC PK
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: Smart Wifi Robotic cleaner with HD camera
Mode: TX 2462MHz(802.11n20)
Model: S007G
Manufacturer: DIMAO

Polarization: Horizontal
Power Source: AC 120V/60Hz
Date: 17/06/19/
Time: 11/35/39
Engineer Signature: DING
Distance: 3m

Note: Report NO.:ATE20171108



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2483.500	48.68	-5.51	43.17	74.00	-30.83	peak	157	56	
2	2483.500	41.82	-5.51	36.31	54.00	-17.69	AVG	157	57	
3	2500.000	43.10	-5.50	37.60	74.00	-36.40	peak	153	168	
4	2500.000	37.48	-5.50	31.98	54.00	-22.02	AVG	153	168	

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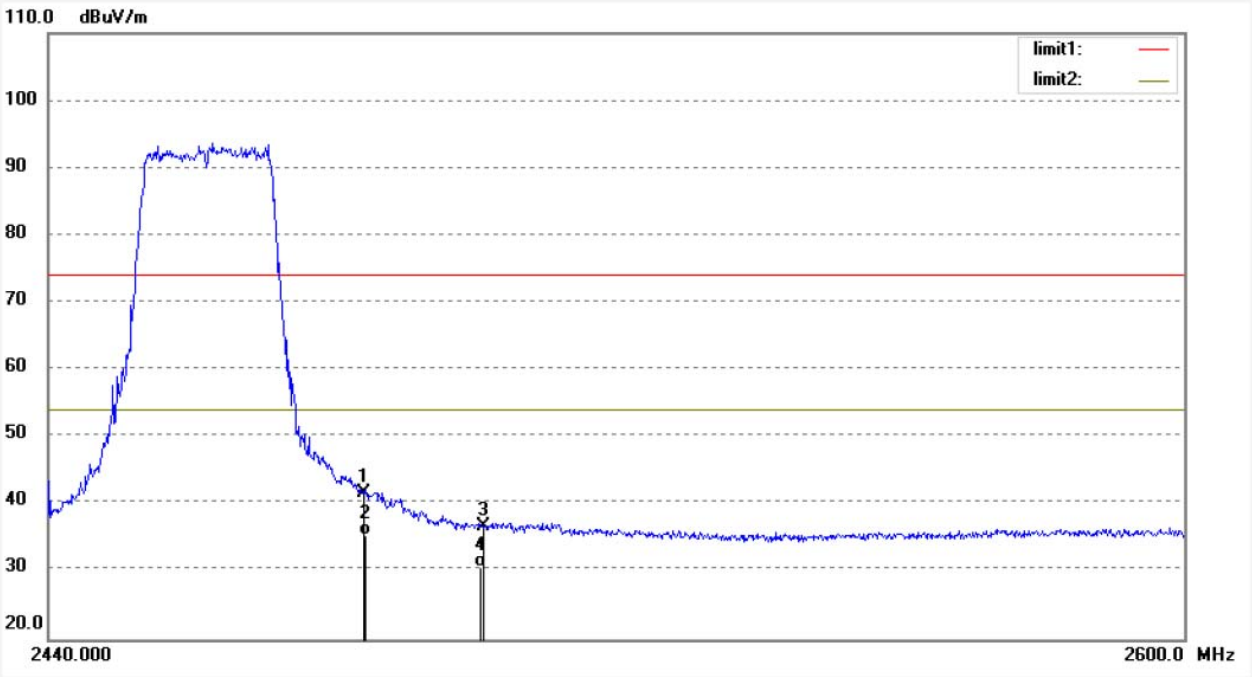
Job No.: ding1 #809	Polarization: Vertical
Standard: FCC PK	Power Source: AC 120V/60Hz
Test item: Radiation Test	Date: 17/06/19/
Temp.(C)/Hum.(%) 25 C / 55 %	Time: 11/32/30
EUT: Smart Wifi Robotic cleaner with HD camera	Engineer Signature: DING
Mode: TX 2462MHz(802.11n20)	Distance: 3m
Model: S007G	
Manufacturer: DIMAO	

Note: Report NO.:ATE20171108



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2483.500	47.32	-5.51	41.81	74.00	-32.19	peak	153	279	
2	2483.500	40.96	-5.51	35.45	54.00	-18.55	AVG	153	279	
3	2500.000	42.35	-5.50	36.85	74.00	-37.15	peak	154	65	
4	2500.000	36.19	-5.50	30.69	54.00	-23.31	AVG	154	65	

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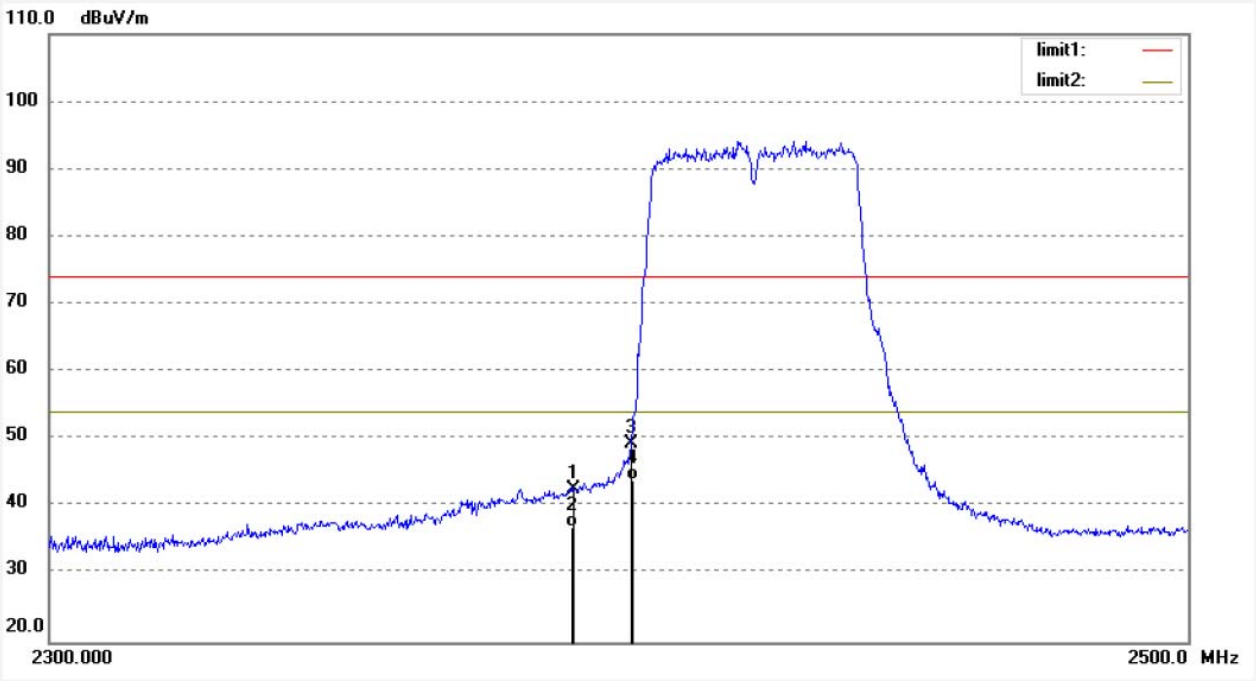
Job No.: ding1 #806
Standard: FCC PK
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: Smart Wifi Robotic cleaner with HD camera
Mode: TX 2422MHz(802.11n40)
Model: S007G
Manufacturer: DIMAO

Polarization: Horizontal
Power Source: AC 120V/60Hz
Date: 17/06/19/
Time: 10/53/33
Engineer Signature: DING
Distance: 3m

Note: Report NO.:ATE20171108



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2390.000	48.61	-5.89	42.72	74.00	-31.28	peak	154	278	
2	2390.000	42.84	-5.89	36.95	54.00	-17.05	AVG	154	278	
3	2400.000	55.11	-5.80	49.31	74.00	-24.69	peak	153	196	
4	2400.000	49.76	-5.80	43.96	54.00	-10.04	AVG	153	196	

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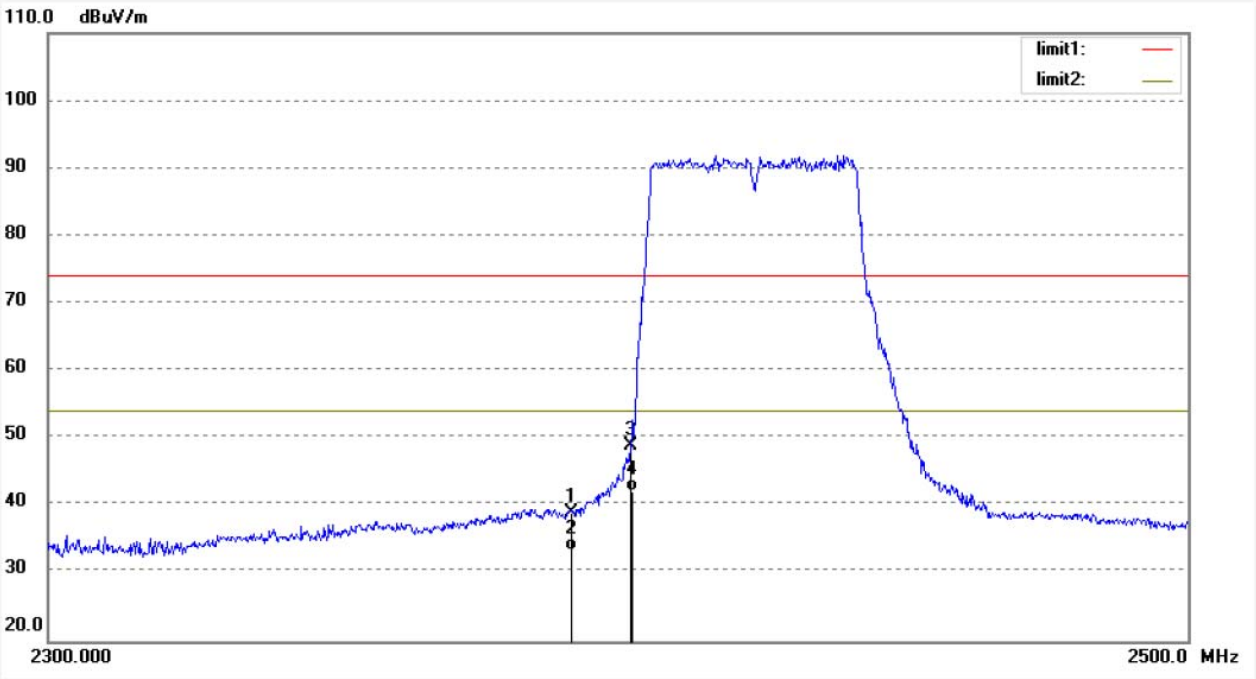
Job No.: ding1 #805	Polarization: Vertical
Standard: FCC PK	Power Source: AC 120V/60Hz
Test item: Radiation Test	Date: 17/06/19/
Temp.(C)/Hum.(%) 25 C / 55 %	Time: 10/52/31
EUT: Smart Wifi Robotic cleaner with HD camera	Engineer Signature: DING
Mode: TX 2422MHz(802.11n40)	Distance: 3m
Model: S007G	
Manufacturer: DIMAO	

Note: Report NO.:ATE20171108



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2390.000	44.90	-5.89	39.01	74.00	-34.99	peak	152	67	
2	2390.000	39.26	-5.89	33.37	54.00	-20.63	AVG	152	67	
3	2400.000	54.73	-5.80	48.93	74.00	-25.07	peak	153	128	
4	2400.000	47.86	-5.80	42.06	54.00	-11.94	AVG	153	128	

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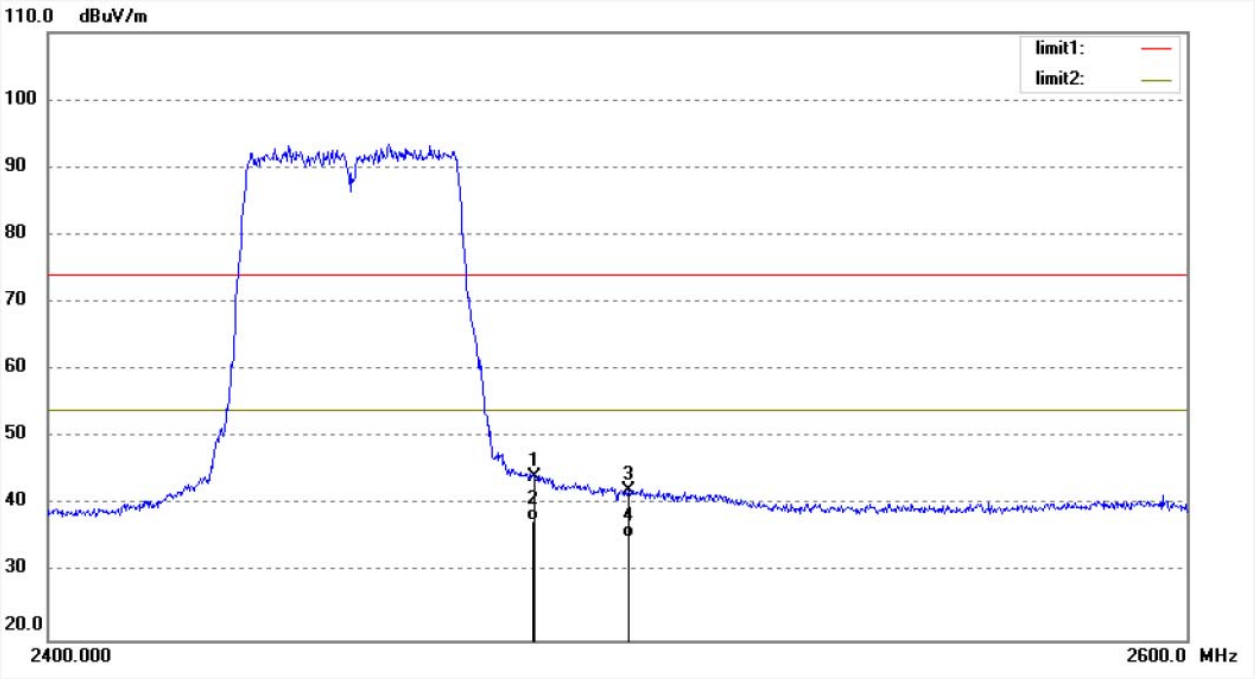
Job No.: ding1 #807	Polarization: Horizontal
Standard: FCC PK	Power Source: AC 120V/60Hz
Test item: Radiation Test	Date: 17/06/19/
Temp.(C)/Hum.(%) 25 C / 55 %	Time: 11/07/47
EUT: Smart Wifi Robotic cleaner with HD camera	Engineer Signature: DING
Mode: TX 2452MHz(802.11n40)	Distance: 3m
Model: S007G	
Manufacturer: DIMAO	

Note: Report NO.:ATE20171108



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2483.500	49.76	-5.51	44.25	74.00	-29.75	peak	152	186	
2	2483.500	43.21	-5.51	37.70	54.00	-16.30	AVG	152	186	
3	2500.000	47.58	-5.50	42.08	74.00	-31.92	peak	155	268	
4	2500.000	40.69	-5.50	35.19	54.00	-18.81	AVG	155	268	

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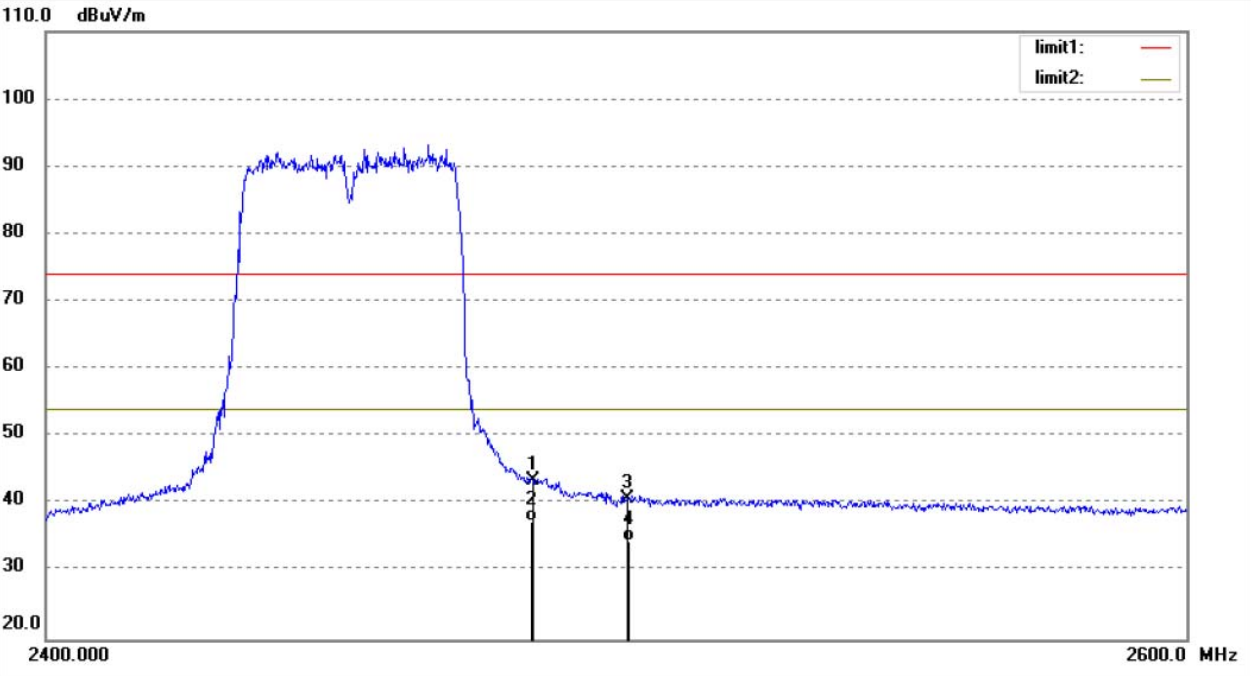
Job No.: ding1 #808
Standard: FCC PK
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: Smart Wifi Robotic cleaner with HD camera
Mode: TX 2452MHz(802.11n40)
Model: S007G
Manufacturer: DIMAO

Polarization: Vertical
Power Source: AC 120V/60Hz
Date: 17/06/19/
Time: 11/24/55
Engineer Signature: DING
Distance: 3m

Note: Report NO.:ATE20171108



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2483.500	49.12	-5.51	43.61	74.00	-30.39	peak	153	197	
2	2483.500	42.84	-5.51	37.33	54.00	-16.67	AVG	153	197	
3	2500.000	46.28	-5.50	40.78	74.00	-33.22	peak	152	26	
4	2500.000	39.97	-5.50	34.47	54.00	-19.53	AVG	152	26	

11.RADIATED SPURIOUS EMISSION TEST

11.1.Block Diagram of Test Setup

11.1.1.Block diagram of connection between the EUT and peripherals

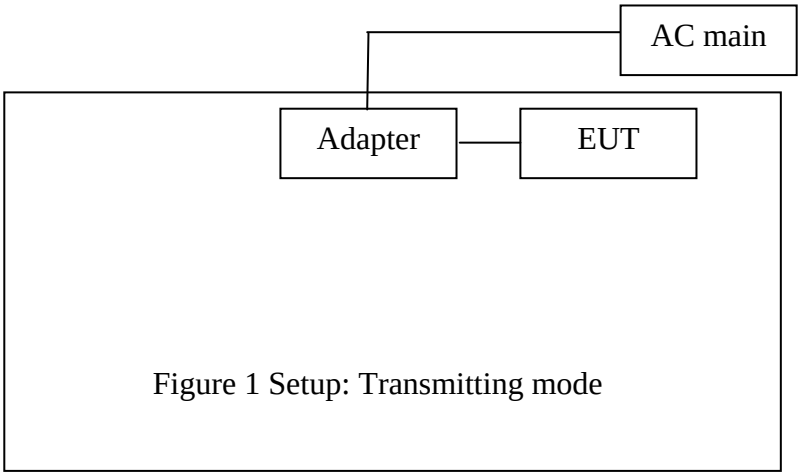
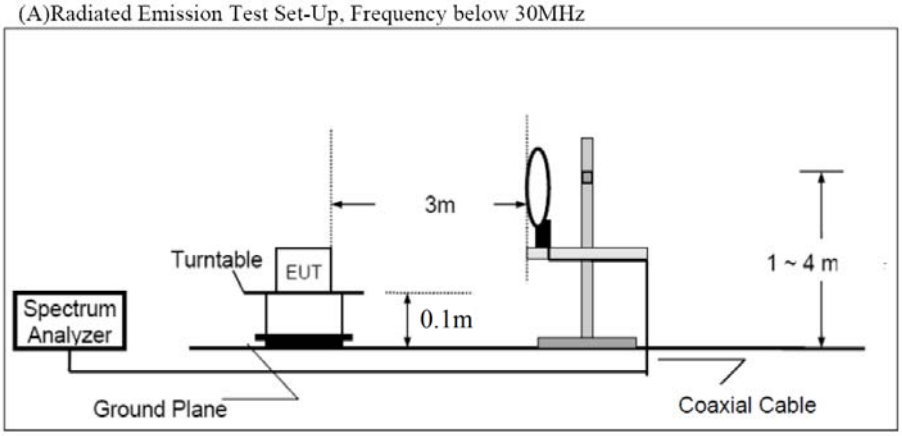


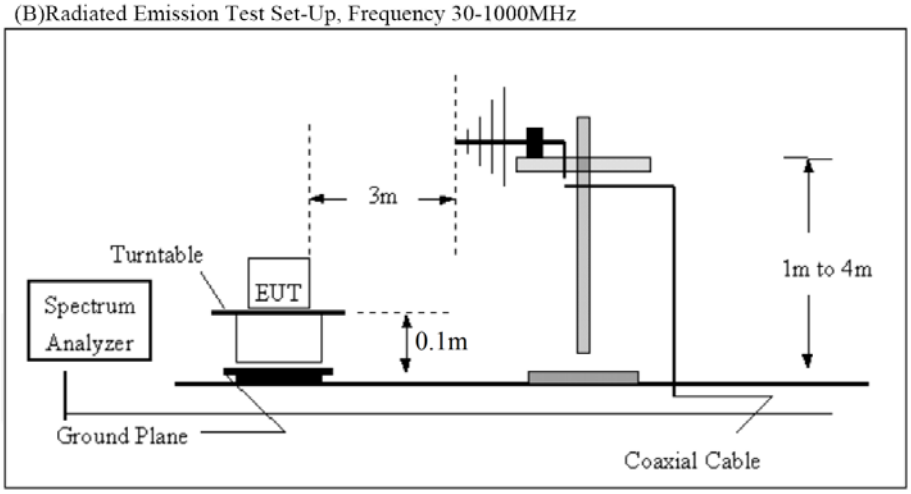
Figure 1 Setup: Transmitting mode

11.1.2.Semi-Anechoic Chamber Test Setup Diagram

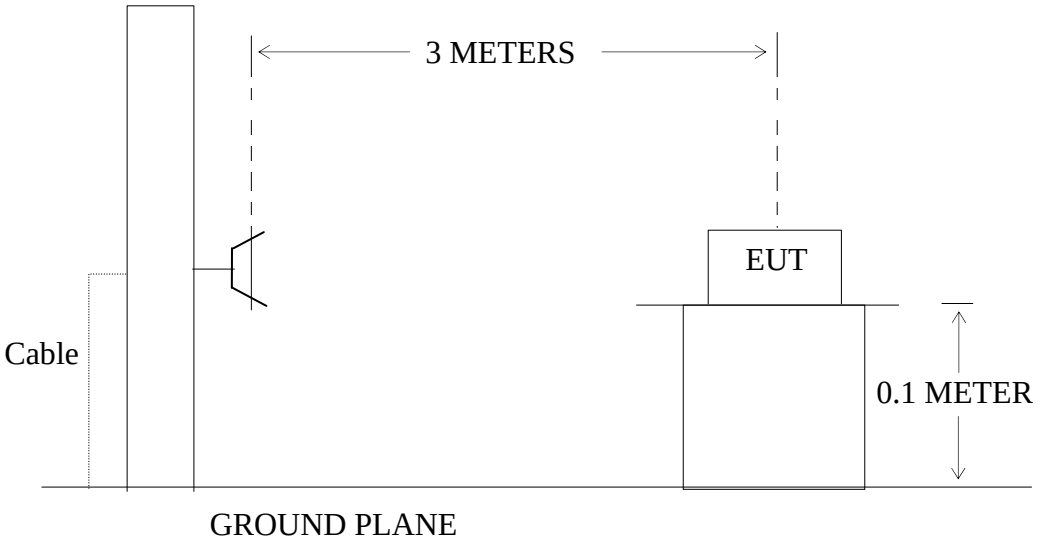
(A)Radiated Emission Test Set-Up, Frequency below 30MHz



(B)Radiated Emission Test Set-Up, Frequency 30-1000MHz



(C) Radiated Emission Test Set-Up, Frequency above 1GHz



11.2.The Limit For Section 15.247(d)

Section 15.247(d): In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, 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, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in Section 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a).

11.3.Restricted bands of operation

11.3.1.FCC Part 15.205 Restricted bands of operation

(a) Except as shown in paragraph (d) of this section, Only spurious emissions are permitted in any of the frequency bands listed below:

MHz	MHz	MHz	GHz
0.090-0.110	16.42-16.423	399.9-410	4.5-5.15
[1]0.495-0.505	16.69475-16.69525	608-614	5.35-5.46
2.1735-2.1905	16.80425-16.80475	960-1240	7.25-7.75
4.125-4.128	25.5-25.67	1300-1427	8.025-8.5
4.17725-4.17775	37.5-38.25	1435-1626.5	9.0-9.2
4.20725-4.20775	73-74.6	1645.5-1646.5	9.3-9.5
6.215-6.218	74.8-75.2	1660-1710	10.6-12.7
6.26775-6.26825	108-121.94	1718.8-1722.2	13.25-13.4
6.31175-6.31225	123-138	2200-2300	14.47-14.5
8.291-8.294	149.9-150.05	2310-2390	15.35-16.2
8.362-8.366	156.52475-156.52525	2483.5-2500	17.7-21.4
8.37625-8.38675	156.7-156.9	2690-2900	22.01-23.12
8.41425-8.41475	162.0125-167.17	3260-3267	23.6-24.0
12.29-12.293	167.72-173.2	3332-3339	31.2-31.8
12.51975-12.52025	240-285	3345.8-3358	36.43-36.5
12.57675-12.57725	322-335.4	3600-4400	([2])
13.36-13.41			

[1]Until February 1, 1999, this restricted band shall be 0.490-0.510
[2]Above 38.6

(b) Except as provided in paragraphs (d) and (e), the field strength of emission appearing within these frequency bands shall not exceed the limits shown in Section 15.209. At frequencies equal to or less than 1000MHz, Compliance with the limits in Section 15.209 shall be demonstrated using measurement instrumentation employing a CISPR quasi-peak detector. Above 1000MHz, compliance with the emission limits in Section15.209 shall be demonstrated based on the average value of the measured emissions. The provisions in Section 15.35 apply to these measurements.

11.4.Configuration of EUT on Measurement

The equipment are installed on Radiated Emission Measurement to meet the commission requirements and operating regulations in a manner which tends to maximize its emission characteristics in normal application.

11.5.Operating Condition of EUT

11.5.1.Setup the EUT and simulator as shown as Section 11.1.

11.5.2.Turn on the power of all equipment.

11.5.3.Let the EUT work in TX modes measure it. The transmit frequency are 2412-2462 and 2422-2452MHz. We select 2412MHz, 2437MHz, 2462MHz and 2422MHz, 2437MHz, 2452MHz TX frequency to transmit.

11.6.Test Procedure

The EUT and its simulators are placed on a turntable, which is 0.1 meter high above ground. The turntable can rotate 360 degrees to determine the position of the maximum emission level. EUT is set 3.0 meters away from the receiving antenna, which is mounted on an antenna tower. The antenna can be moved up and down between 1.0 meter and 4 meters to find out the maximum emission level. Broadband antenna (calibrated bi-log antenna) is used as receiving antenna. Both horizontal and vertical polarizations of the antenna are set on measurement. In order to find the maximum emission levels, all of the EUT location must be manipulated according to ANSI C63.10:2013 on radiated emission measurement. The EUT was tested in 3 orthogonal planes.

The worst-case data rate for this channel to be 1Mbps for 802.11b mode and 6Mbps for 802.11g mode and 150Mbps for 802.11n mode, based on previous with 802.11 WLAN product design architectures.

The frequency range from 30MHz to 25000MHz is checked.
Result = Reading + Corrected Factor
Where Corrected Factor = Antenna Factor + Cable Loss – Amplifier Gain
During the radiated emission test, the spectrum analyzer was set with the following configurations:

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and video bandwidth is 3MHz for peak measurement with peak detector at frequency above 1GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and video bandwidth is 10Hz for Average measurement with peak detection at frequency above 1GHz.
4. All modes of operation were investigated and the worst-case emissions are reported.

11.7.The Field Strength of Radiation Emission Measurement Results

Note: 1. Emissions attenuated more than 20 dB below the permissible value are not reported.

2. *: Denotes restricted band of operation.

3. The EUT is tested radiation emission at each test mode (802.11 b/g/n) in three axes. The worst emissions are reported in all test mode and channels.

4. The radiation emissions from 18-25GHz and 9KHz-30MHz are not reported, because the test values lower than the limits of 20dB.

5.We tested 802.11b,g,n mode and recorded the worst case data(802.11b) for radiated emission test below 1GHz.

Below 1G

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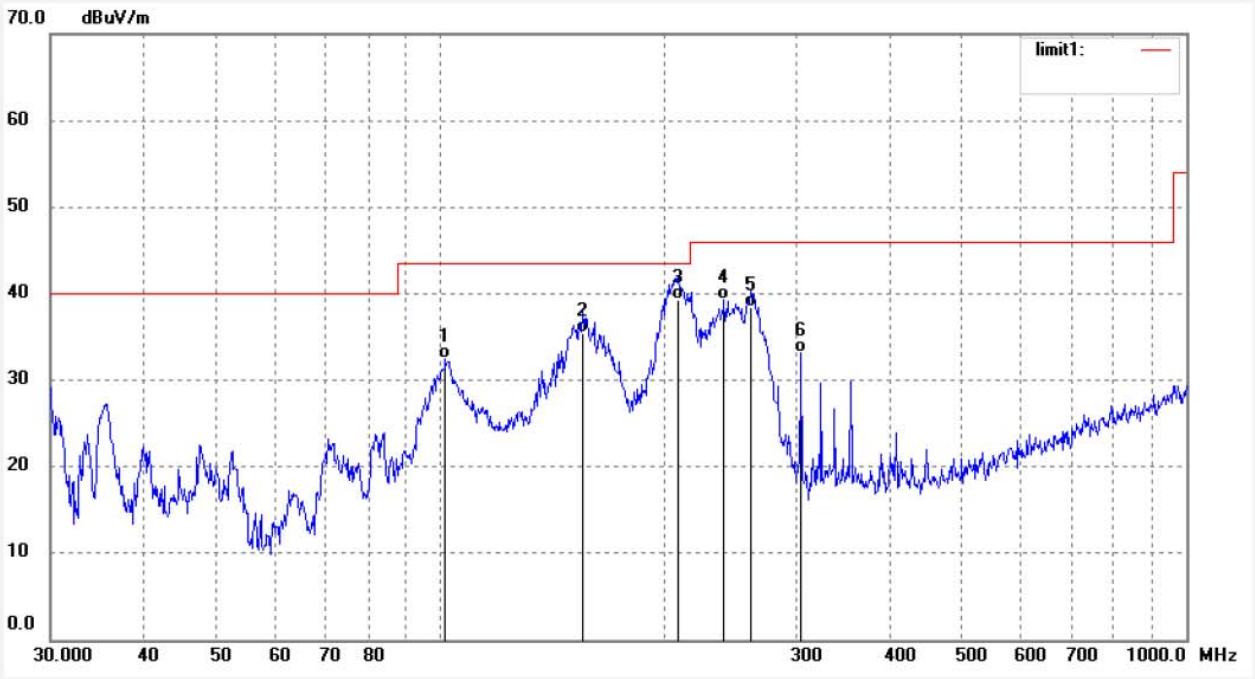
Fax:+86-0755-26503396

Job No.: ding1 #821	Polarization: Horizontal
Standard: FCC Class B 3M Radiated	Power Source: AC 120V/60Hz
Test item: Radiation Test	Date: 17/06/19/
Temp.(C)/Hum.(%) 25 C / 55 %	Time: 12/47/13
EUT: Smart Wifi Robotic cleaner with HD camera	Engineer Signature: DING
Mode: TX 2412MHz	Distance: 3m
Model: S007G	
Manufacturer: DIMAO	

Note: Report NO.:ATE20171108



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	101.5357	55.03	-22.65	32.38	43.50	-11.12	QP	100	28	
2	155.3305	57.25	-21.88	35.37	43.50	-8.13	QP	100	87	
3	207.9261	57.68	-18.47	39.21	43.50	-4.29	QP	100	179	
4	240.1442	57.48	-18.18	39.30	46.00	-6.70	QP	100	79	
5	261.2730	55.79	-17.46	38.33	46.00	-7.67	QP	100	250	
6	304.9547	48.73	-15.57	33.16	46.00	-12.84	QP	100	265	

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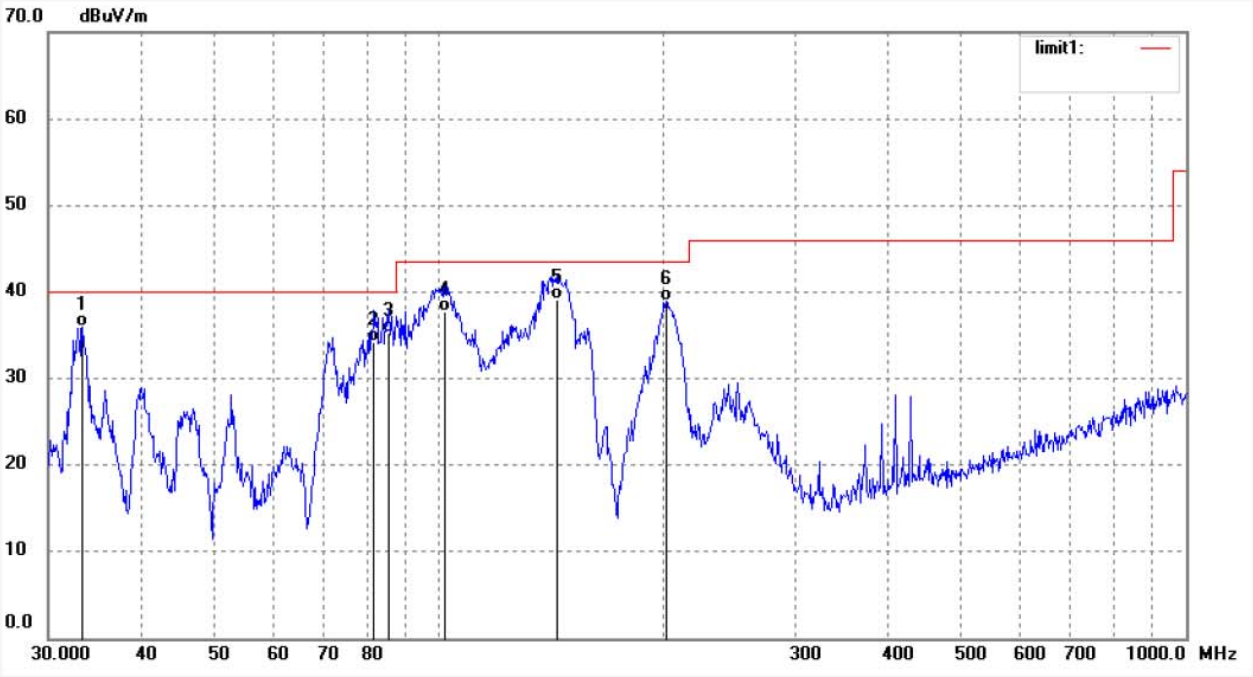
Job No.: ding1 #822	Polarization: Vertical
Standard: FCC Class B 3M Radiated	Power Source: AC 120V/60Hz
Test item: Radiation Test	Date: 17/06/19/
Temp.(C)/Hum.(%) 25 C / 55 %	Time: 12/48/30
EUT: Smart Wifi Robotic cleaner with HD camera	Engineer Signature: DING
Mode: TX 2412MHz	Distance: 3m
Model: S007G	
Manufacturer: DIMAO	

Note: Report NO.:ATE20171108



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	33.3348	51.51	-15.53	35.98	40.00	-4.02	QP	100	65	
2	81.9477	56.19	-21.98	34.21	40.00	-5.79	QP	100	19	
3	85.7777	57.22	-21.95	35.27	40.00	-4.73	QP	100	165	
4	101.8932	60.32	-22.66	37.66	43.50	-5.84	QP	100	289	
5	144.2820	61.54	-22.36	39.18	43.50	-4.32	QP	100	301	
6	201.4539	57.52	-18.61	38.91	43.50	-4.59	QP	100	94	

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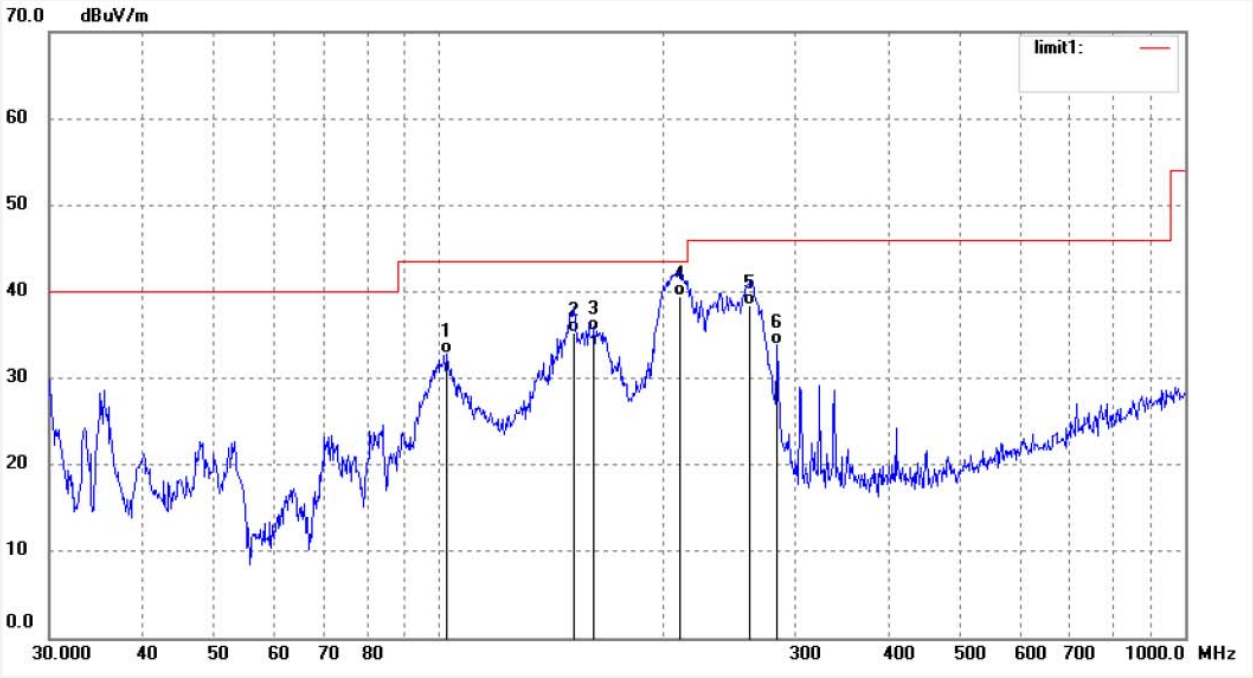
Job No.: ding1 #824
Standard: FCC Class B 3M Radiated
Test item: Radiation Test
Temp.(C)/Hum.(%) 25 C / 55 %
EUT: Smart Wifi Robotic cleaner with HD camera
Mode: TX 2437MHz
Model: S007G
Manufacturer: DIMAO

Polarization: Horizontal
Power Source: AC 120V/60Hz
Date: 17/06/19/
Time: 12/50/29
Engineer Signature: DING
Distance: 3m

Note: Report NO.:ATE20171108



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	102.2518	55.44	-22.67	32.77	43.50	-10.73	QP	100	37	
2	151.5567	57.51	-22.22	35.29	43.50	-8.21	QP	100	45	
3	162.5900	56.53	-21.10	35.43	43.50	-8.07	QP	100	126	
4	210.1294	57.95	-18.45	39.50	43.50	-4.00	QP	100	138	
5	261.2730	55.85	-17.46	38.39	46.00	-7.61	QP	100	267	
6	284.2606	50.30	-16.40	33.90	46.00	-12.10	QP	100	303	