TEST REPORT

For

LINKHUB

Model Number: HH41NH

FCC ID: 2ACCJB106

Report Number : WT188005742

Test Laboratory	:	Shenzhen Academy of Metrology and Quality Inspection
Site Location	:	NETC Building, No.4 Tongfa Rd., Xili, Nanshan, Shenzhen, China
Tel	:	0086-755-86928965
Fax	:	0086-755-86009898-31396
Web	:	www.smq.com.cn
E-mail	:	emcrf@smq.com.cn

TEST REPORT DECLARATION

Applicant	:	TCL Communication Ltd
Address	:	7/F, Block F4, TCL International E City Zhong Shan Yuan Road, Nanshan District Shenzhen, China
Manufacturer	:	TCL Communication Ltd
Address	:	7/F, Block F4, TCL International E City Zhong Shan Yuan Road, Nanshan District Shenzhen, China
EUT Description	:	LINKHUB
Model No	:	HH41NH
Trade mark	:	Alcatel
Serial Number	:	/
FCC ID	:	2ACCJB106

Test Standards:

FCC Part 15 15.207, 15.209, 15.247(2017)

The EUT described above is tested by Shenzhen Academy of Metrology and Quality Inspection EMC Laboratory to determine the maximum emissions from the EUT. Shenzhen Academy of Metrology and Quality Inspection EMC Laboratory is assumed full responsibility for the accuracy of the test results. The test data, data evaluation, test procedures, and equipment configurations shown in this report were made in accordance with the procedures given in ANSI C63.10 (2013) and the energy emitted by the sample EUT tested as described in this report is in compliance with FCC Rules Part 15.207, 15.209, 15.247 .
The test report is valid for above tested sample only and shall not be reproduced in part without written approval of the laboratory.

Project Engineer:	(Chen Silin 陈司林)	Date:	Oct.29, 2018
Checked by:	(Lin Yixiang 林奕翔)	Date:	Oct.29, 2018
Approved by:	(Lin Bin 林斌)	Date:	Oct.29, 2018

TABLE OF CONTENTS

1. TEST RESULTS SUMMARY

Table 1 Test Results Summary

Test Items	FCC Rules	Test Results
6dB DTS bandwidth measurement	15.247 (a) (2)	Pass
Maximum Peak Conducted Power	15.247 (b) (3)	Pass
Maximum Power Spectral Density Level	15.247 (3)	Pass
Conducted Bandedge and Spurious	15.247 (d)	Pass
Radiated Bandedge and Spurious	15.247 (d) 15.209 15.205	Pass
Conducted emission test for AC power port	15.207	Pass
Antenna Requirment	15.203	Pass

Remark: “N/A” means “Not applicable.”

2. GENERAL INFORMATION

2.1. Report information

This report is not a certificate of quality; it only applies to the sample of the specific product/equipment given at the time of its testing. The results are not used to indicate or imply that they are application to the similar items. In addition, such results must not be used to indicate or imply that SMQ approves recommends or endorses the manufacture, supplier or use of such product/equipment, or that SMQ in any way guarantees the later performance of the product/equipment.

The sample/s mentioned in this report is/are supplied by Applicant, SMQ therefore assumes no responsibility for the accuracy of information on the brand name, model number, origin of manufacture or any information supplied.

Additional copies of the report are available to the Applicant at an additional fee. No third part can obtain a copy of this report through SMQ, unless the applicant has authorized SMQ in writing to do so.

2.2. Laboratory Accreditation and Relationship to Customer

The testing report were performed by the Shenzhen Academy of Metrology and quality Inspection EMC Laboratory (Guangdong EMC compliance testing center), in their facilities located at NETC Building, No.4 Tongfa Rd., Xili, Nanshan, Shenzhen, China. At the time of testing, Laboratory is accredited by the following organizations:

China National Accreditation Service for Conformity Assessment (CNAS) accredits the Laboratory for conformance to FCC standards, EMC international standards and EN standards. The Registration Number is CNAS L0579.

The Laboratory is Accredited Testing Laboratory of FCC with Designation number

CN1165 and Site registration number 582918.

The Laboratory is registered to perform emission tests with Industry Canada (IC), and the registration number is 11177A.

2.3. Measurement Uncertainty

Conducted Emission
9kHz~30MHz 3.5dB

Radiated Emission
30MHz~1000MHz 4.5dB
1GHz~26.5GHz 4.6dB

3. PRODUCT DESCRIPTION

3.1.EUT Description

Description	:	LINKHUB
Manufacturer	:	TCL Communication Ltd
Model Number	:	HH41NH
Operate Frequency	:	2.412GHz~2.462GHz
Antenna Designation	:	ANT 0:PIFA antenna 1.5dBi, ANT 1:PIFA antenna 1.5dBi

Remark: This is test report is for application of FCC ID:2ACCJB106, which consists of reuse data of FCC ID: 2ACCJB092. The PCB layout is not modified, while the B4 TX & RX SAW Filter is changed to B66 TX & RX SAW Filter.In this test report,only conducted power & 6dB DTS bandwidth measurement was re-tested, test data from Test Report: WT178002938 are reused in this report to cover other test items.

WLAN :

Table 2 Working Frequency List(802.11b, 802.11g,802.11n HT20)

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

Table 3 Working Frequency List(802.11n HT40)

Channel	Frequency	Channel	Frequency
3	2422MHz	8	2447MHz
4	2427MHz	9	2452MHz
5	2432MHz	---	---
6	2437MHz	---	---
7	2442MHz	---	---

3.2. Related Submittal(s) / Grant (s)

This submittal(s) (test report) is intended for FCC ID: **2ACCJB106** filing to comply with Section 15.207，15.209，15.247 of the FCC Part 15, Subpart C Rules.

3.3. Block Diagram of EUT Configuration

Figure 1 EUT setup

3.4. Operating Condition of EUT

The Radiated spurious emission measurements were carried out in semi-anechoic chamber with 3-meter test range, and EUT is rotated on three test planes to find out the worst emission (X plane).
Worst-case mode and channel used for 30-1000 MHz radiated and power line conducted emissions was the mode and channel with the highest output power.
Worst-case data rates as provided by the client were:
802.11b mode: 1 Mbps
802.11g mode: 6 Mbps
802.11n HT20 mode: MCS0
802.11n HT40 mode: MCS0
802.11b and 802.11g operates in SISO mode. For SISO conducted measurements, the modes tested in this report will be considered as a worst case mode.
802.11n operate in SISO mode. For SISO conducted measurements, the modes tested in this report will be considered as a worst case mode.
The EUT support a WIFI MIMO function.

Antenna	Single(TX)	Two(TX)
IEEE 802.11b	support	No support
IEEE 802.11g	support	No support
IEEE 802.11n HT20	support	support
IEEE 802.11n HT40	support	support

For RSE and bandedge test, both of Single(TX) and Two(TX) mode are evaluated, only the worst case is recorded in this report

3.5. Directional Antenna Gain

Directional gain need NOT to be considered.

3.6. Support Equipment List

Table 4 Support Equipment List

Name	Model No	S/N	Manufacturer
Adaptor 1# for EUT	UC13US	---	AOHAI
Adaptor 2# for EUT	UC13US	---	TEN PAO

3.7. Test Conditions

Date of test：May.24,2017- Jun.19, 2017　Sep.25, 2018 – Oct.27, 2018
Date of EUT Receive：May.24,2017
Temperature: 18 ~ 24 ℃
Relative Humidity: 42-56%

3.8. Special Accessories

Not available for this EUT intended for grant.

3.9. Equipment Modifications

Not available for this EUT intended for grant.

4. TEST EQUIPMENT USED

Table 5 Test Equipment

No.	Equipment	Manufacturer	Model No.	Last Cal.	Cal. Interval
SB3319	EMI Test Receiver	Rohde & Schwarz	ESCS30	Nov.28, 2017	1 Year
SB4357	AMN	Rohde & Schwarz	ESH2-Z5	Sep.04, 2018	1 Year
SB3436	EMI Test Receiver	Rohde & Schwarz	ESI26	Nov.28, 2017	1 Year
SB8501/09	EMI Test Receiver	Rohde & Schwarz	ESU40	Mar.20, 2018	1 Year
SB8501/04	Bilog Antenna	Schwarzbeck	VULB9163	Jun.12, 2018	1 Year
SB3955	Bilog Antenna	Schwarzbeck	VULB9163	Jun.12, 2018	1 Year
SB3435	Horn Antenna	Rohde & Schwarz	HF906	Jan.02, 2018	1 Year
SB8501/01	Horn Antenna	Rohde & Schwarz	HF907	Mar.08, 2018	1 Year
SB8501/11	Horn Antenna	ETS-Lindgren	3160-09	Mar.21,2017	3 Year
SB3345	Loop Antenna	Schwarzbeck	FMZB1516	Mar.22, 2017	2 Years
SB8501/17	Preamplifier	Rohde & Schwarz	SCU-18	Mar.05, 2018	1 Year
SB8501/16	Preamplifier	Rohde & Schwarz	SCU-26	Mar.05, 2018	1 Year
SB8501/14	Preamplifier	Rohde & Schwarz	SCU-03	Mar.07, 2018	1 Year
SB9721/05	Power Meter	Agilent	N1913A	Dec.04, 2017	1 Year
SB9721/06	Power Sensor	Agilent	E9304A	Dec.04, 2017	1 Year
SB9060	Signal Analyzer	Rohde & Schwarz	FSQ	Feb.27,2018	1 Year

5. DUTY CYCLE

5.1. LIMITS OF DUTY CYCLE

None; for reporting purposes only

5.2. TEST PROCEDURE

1. Set span = Zero
2. RBW = 10MHz
3. VBW = 10MHz,
4. Detector = Peak

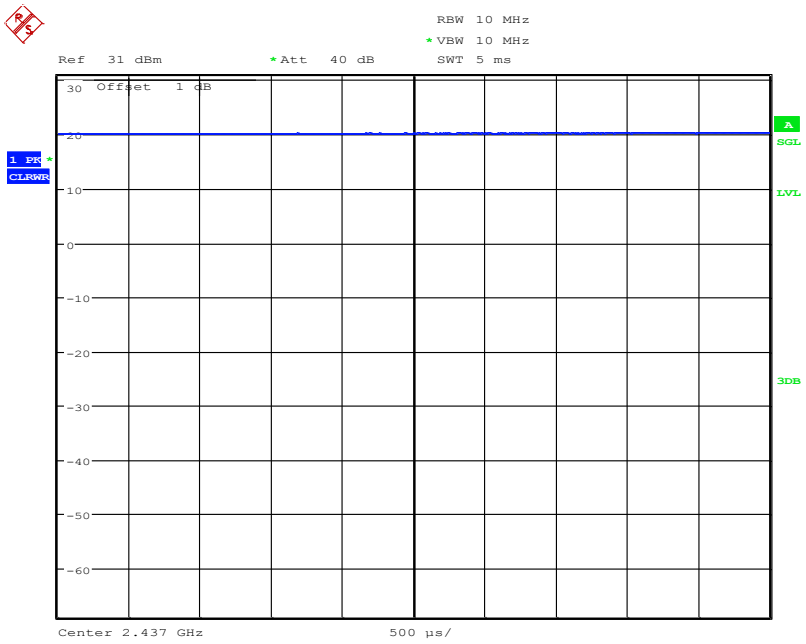
5.3. TEST SETUP

5.4. TEST DATA

Table 6 Duty Cycle Test Data

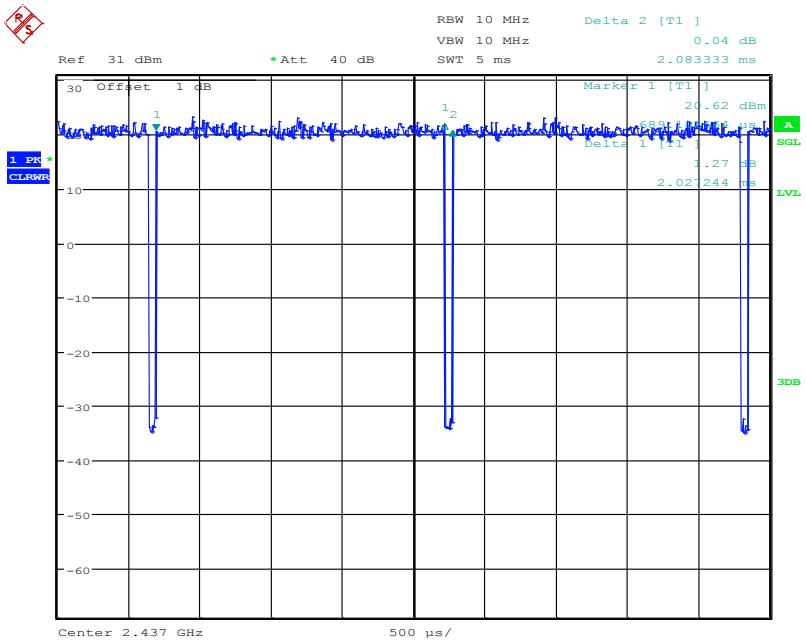
Mode	On Time (ms)	Duty Cycle(%)	Duty Factor	1/T Minimum VBW (kHz)
802.11b	5	100	0	0.01
802.11g	2.03	97.6%	0.1	1
802.11n HT20	1.88	96.9%	0.13	1
802.11N HT40	0.929	96.5%	0.15	1

802.11b



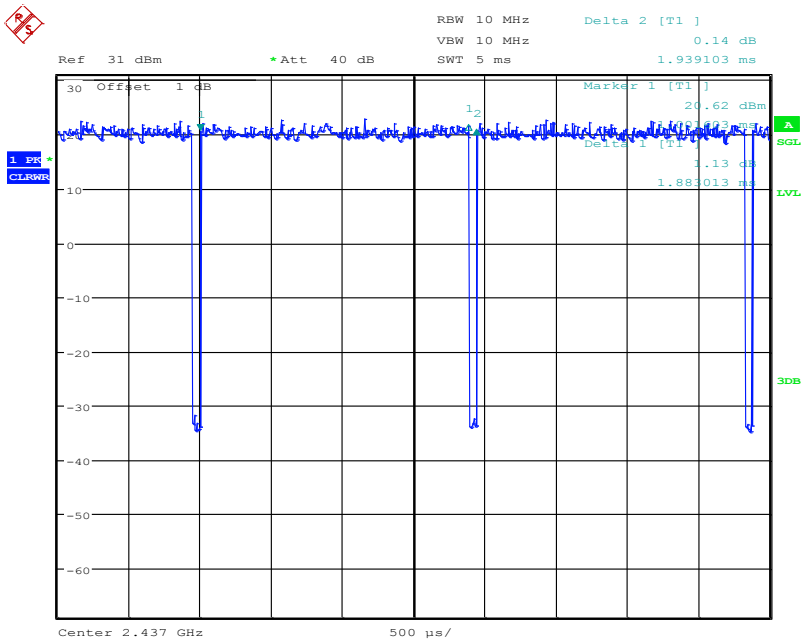
Date: 9.JUN.2017 08:52:24

802.11g



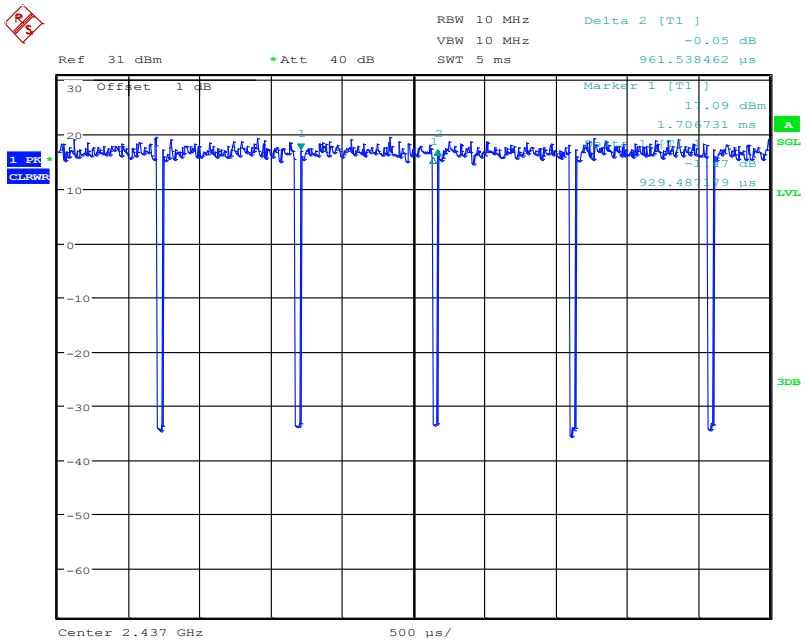
Date: 9.JUN.2017 08:57:38

802.11n HT20



Date: 9.JUN.2017 08:58:30

802.11n HT40



Date: 9.JUN.2017 08:59:55

6. 6DB BANDWIDTH MEASUREMENT

6.1. LIMITS OF 6dB BANDWIDTH MEASUREMENT

CFR 47 (FCC) part 15.247 (a) (2) , 558074 D01 DTS Meas Guidance v03r05

6.2. TEST PROCEDURE

The transmitter output was connected to the spectrum analyzer.
a) Set RBW = 100 kHz.

b) Set the video bandwidth (VBW) ≥ 3 x RBW.

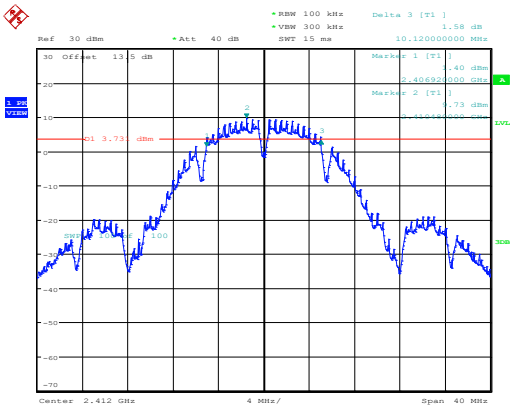
c)Detector = Peak.
d)Trace mode = max hold.
e)Sweep = auto couple.
f)Allow the trace to stabilize.
g)Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

6.3. TEST SETUP

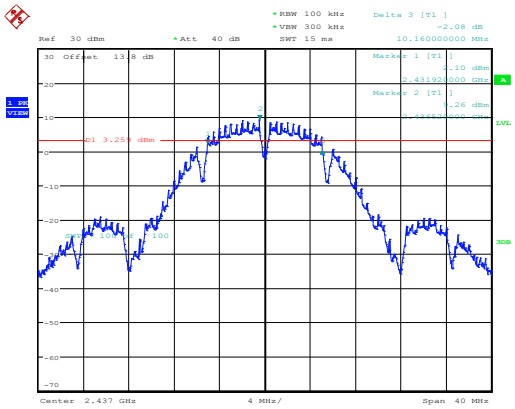
Test Data

Table 7 6dB Bandwidth Test Data 802.11b @Ant 0

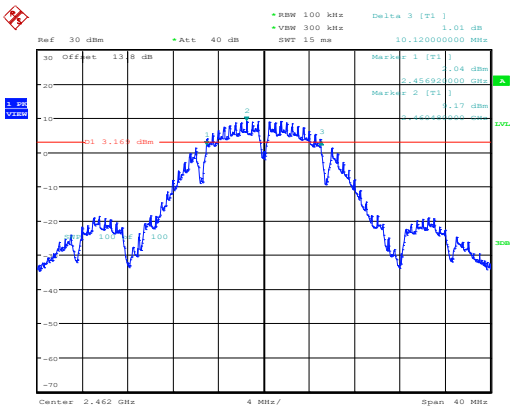
CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	results
2412	10.120	Pass
2437	10.160	Pass
2462	10.120	Pass



Date: 26.OCT.2018 16:27:11



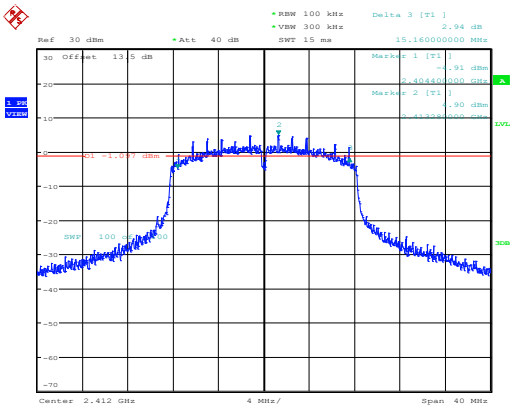
Date: 26.OCT.2018 16:28:25



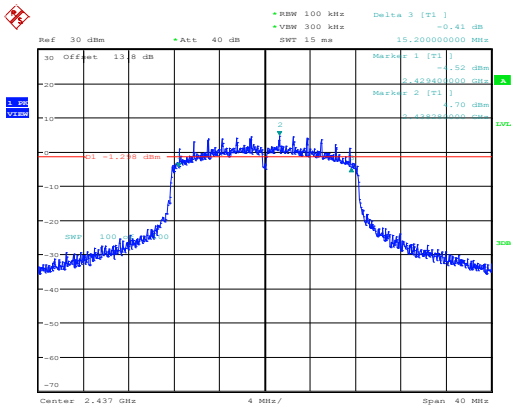
Date: 26.OCT.2018 16:35:47

Table 8 6dB Bandwidth Test Data 802.11g @Ant 0

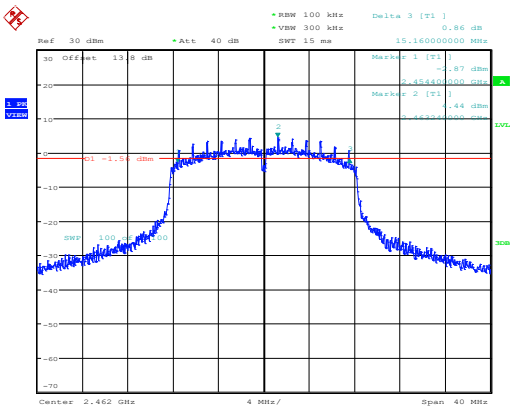
CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	results
2412	15.160	Pass
2437	15.200	Pass
2462	15.160	Pass



Date: 26.OCT.2018 16:38:01



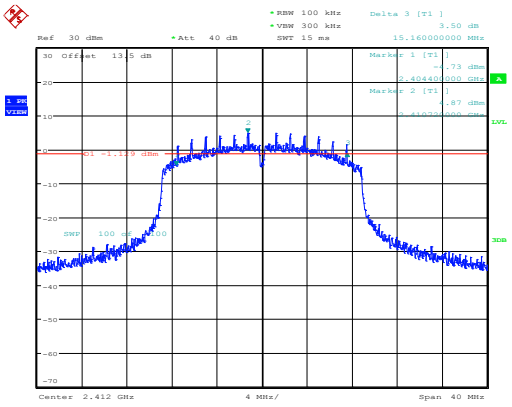
Date: 26.OCT.2018 16:38:59



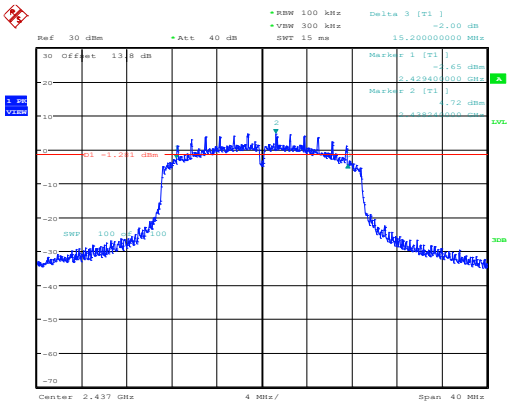
Date: 26.OCT.2018 16:41:17

Table 9 6dB Bandwidth Test Data 802.11n HT20 @Ant 0

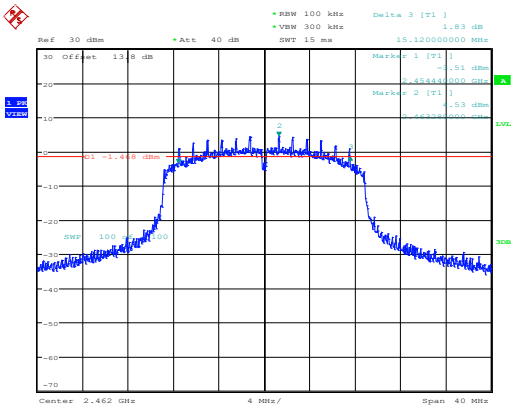
CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	results
2412	15.160	Pass
2437	15.200	Pass
2462	15.120	Pass



Date: 26.OCT.2018 16:44:41



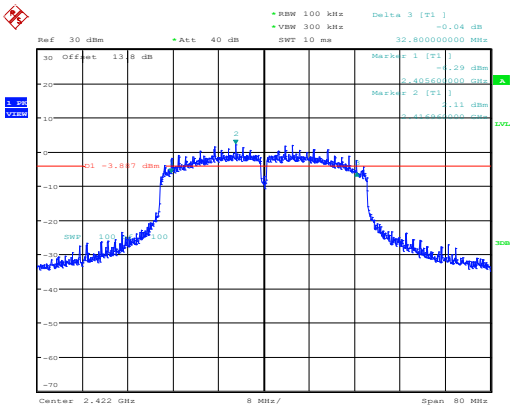
Date: 26.OCT.2018 16:46:13



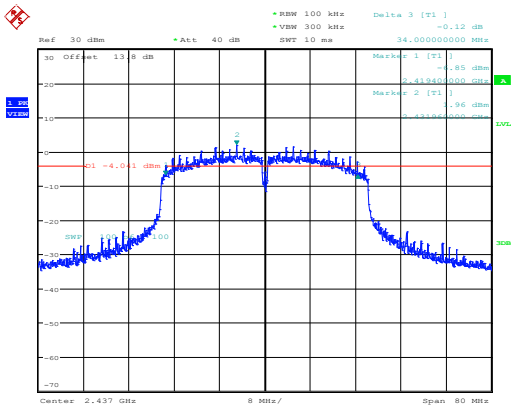
Date: 26.OCT.2018 16:47:46

Table 10 6dB Bandwidth Test Data 802.11n HT40 @Ant 0

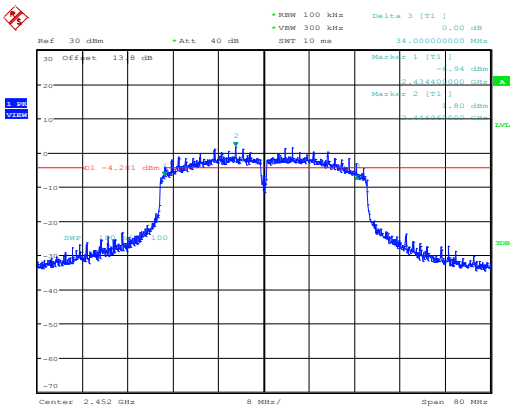
CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	results
2422	32.800	Pass
2437	34.000	Pass
2452	34.000	Pass



Date: 26.OCT.2018 16:56:01



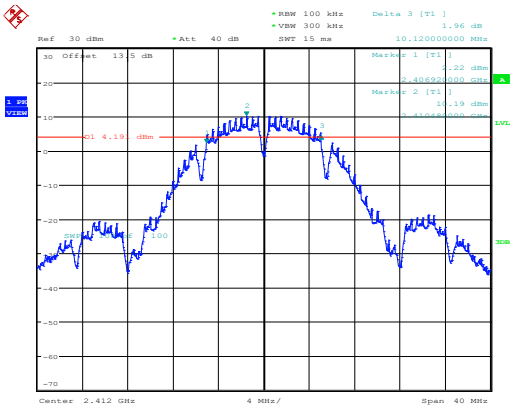
Date: 26.OCT.2018 17:01:44



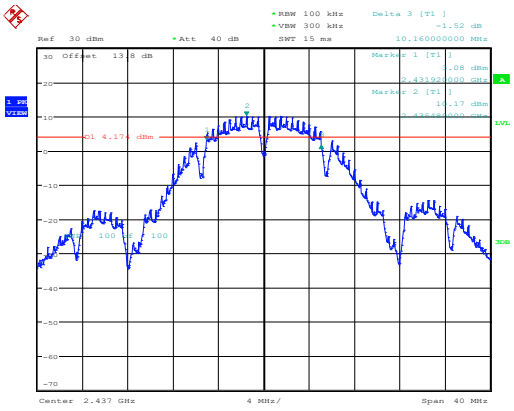
Date: 26.OCT.2018 17:03:57

Table 11 6dB Bandwidth Test Data 802.11b @Ant 1

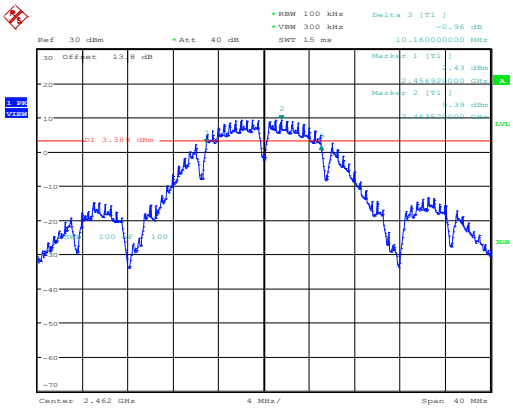
CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	results
2412	10.120	Pass
2437	10.160	Pass
2462	10.160	Pass



Date: 26.OCT.2018 17:05:38



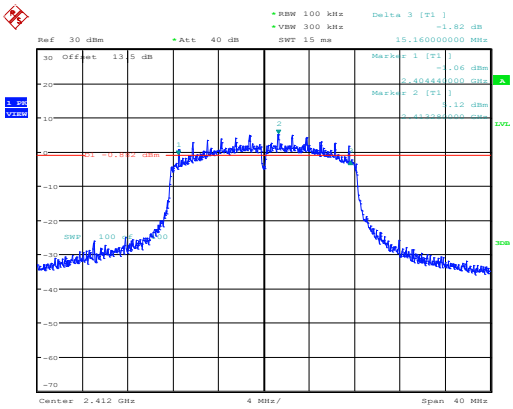
Date: 26.OCT.2018 17:08:00



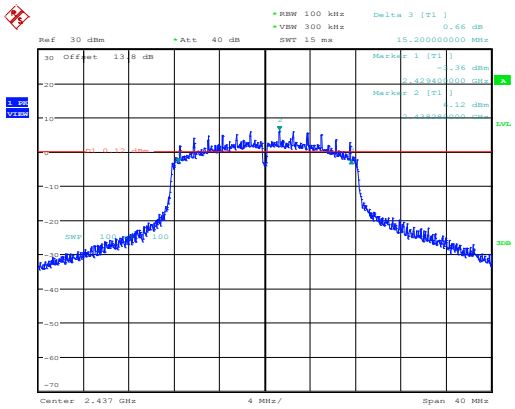
Date: 26.OCT.2018 17:09:56

Table 12 6dB Bandwidth Test Data 802.11g @Ant 1

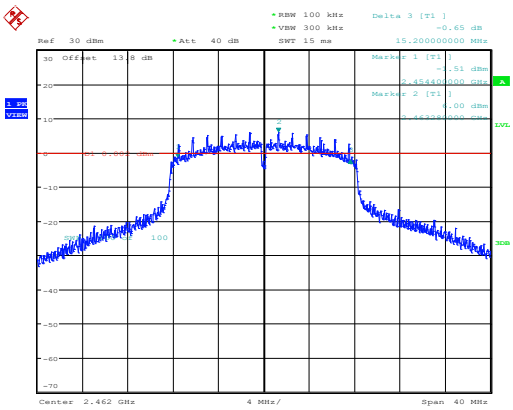
CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	results
2412	15.160	Pass
2437	15.200	Pass
2462	15.200	Pass



Date: 26.OCT.2018 17:15:59



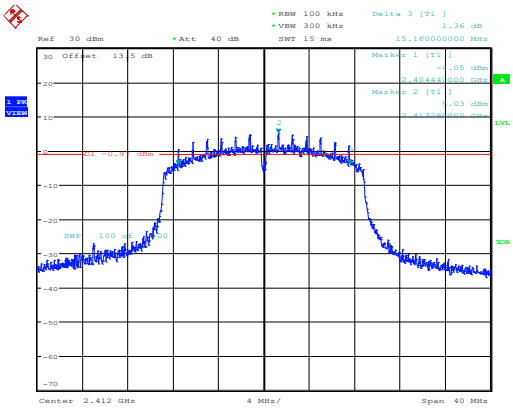
Date: 26.OCT.2018 17:17:33



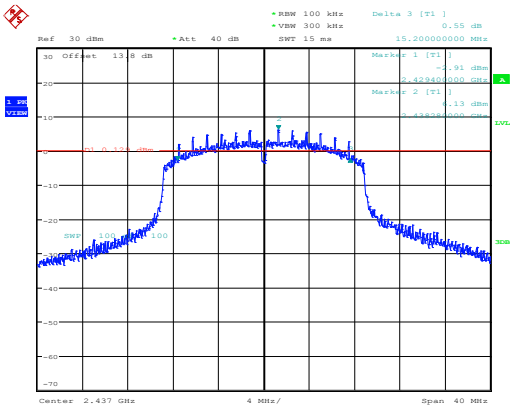
Date: 26.OCT.2018 17:18:53

Table 13 6dB Bandwidth Test Data 802.11n HT20 @Ant 1

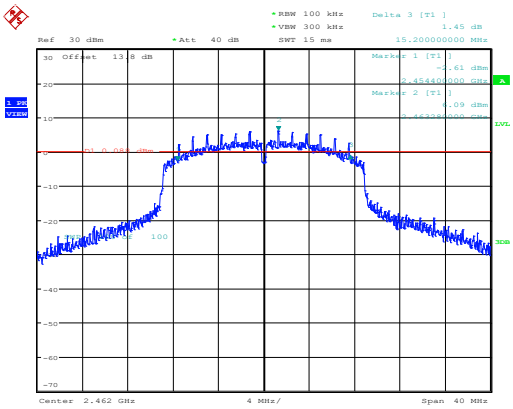
CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	results
2412	15.160	Pass
2437	15.200	Pass
2462	15.200	Pass



Date: 26.OCT.2018 17:20:04



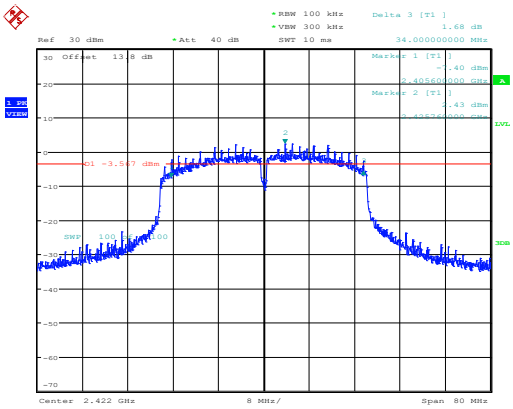
Date: 26.OCT.2018 17:22:53



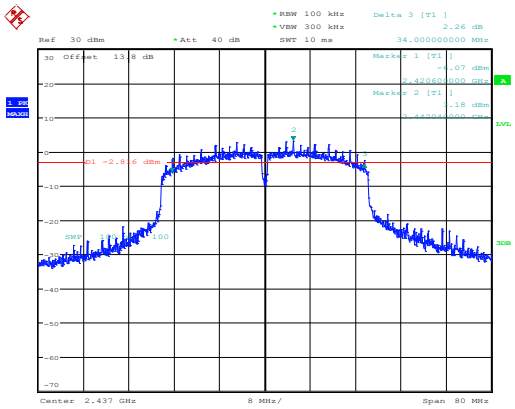
Date: 26.OCT.2018 17:24:52

Table 14 6dB Bandwidth Test Data 802.11n HT40 @Ant 1

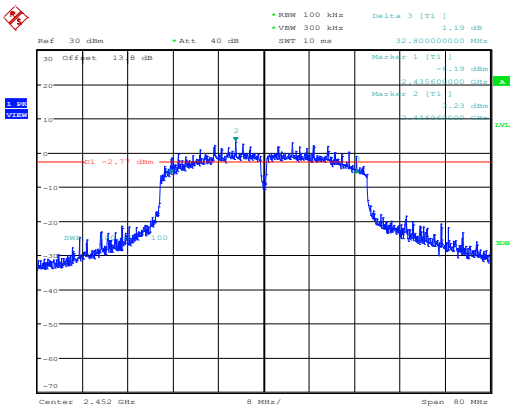
CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	results
2422	34.000	Pass
2437	34.000	Pass
2452	32.800	Pass



Date: 26.OCT.2018 17:27:08



Date: 26.OCT.2018 17:29:58



Date: 26.OCT.2018 17:31:31

7. MAXIMUM CONDUCTED OUTPUT POWER MEASUREMENT

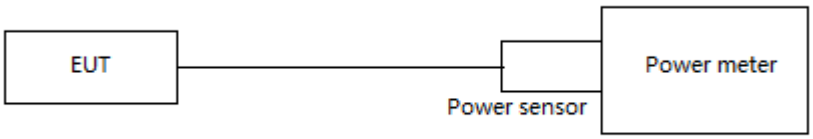
7.1. LIMITS OF Maximum Conducted Output Power Measurement

CFR 47 (FCC) part 15.247 (b) (3), 558074 D01 DTS Meas Guidance v03r05

7.2. TEST PROCEDURE

The transmitter output was connected to the RF power meter.
a) Using a wideband RF power meter with a thermocouple detector or equivalent if all of the conditions listed below are satisfied.
1) The EUT is configured to transmit continuously, or to transmit with a constant duty factor.
2) At all times when the EUT is transmitting, it shall be transmitting at its maximum power control level.
3) The integration period of the power meter exceeds the repetition period of the transmitted signal by at least a factor of five.
b) If the transmitter does not transmit continuously, measure the duty cycle (x) of the transmitter output signal as described in Section 6.0.
c) Measure the average power of the transmitter. This measurement is an average over both the on and off periods of the transmitter.
d) Adjust the measurement in dBm by adding 10log (1/x), where x is the duty cycle to the measurement result.

7.3. TEST SETUP



7.4. TEST DATA

Table 15 Maximum Conducted Output Power Test Data 802.11b @ Ant 0

Center Freq.[MHz]	Meas. Level (Cond.) [dBm]	Duty Factor	Maximum Conducted Output Power(Average) [dBm]	Limit [dBm]	Result
2412	18.27	0	18.27	< 30	Pass
2437	18.48	0	18.48	< 30	Pass
2462	17.51	0	17.51	< 30	Pass

Table 16 Maximum Conducted Output Power Test Data 802.11b @ Ant 1

Center Freq.[MHz]	Meas. Level (Cond.) [dBm]	Duty Factor	Maximum Conducted Output Power(Average) [dBm]	Limit [dBm]	Result
2412	16.83	0	16.83	< 30	Pass
2437	17.17	0	17.17	< 30	Pass
2462	16.87	0	16.87	< 30	Pass

Table 17 Maximum Conducted Output Power Test Data 802.11g @Ant 0

Center Freq.[MHz]	Meas. Level (Cond.) [dBm]	Duty Factor	Maximum Conducted Output Power(Average) [dBm]	Limit [dBm]	Result
2412	16.13	0.1	16.23	< 30	Pass
2437	16.21	0.1	16.31	< 30	Pass
2462	15.89	0.1	15.99	< 30	Pass

Table 18 Maximum Conducted Output Power Test Data 802.11g @Ant 1

Center Freq.[MHz]	Meas. Level (Cond.) [dBm]	Duty Factor	Maximum Conducted Output Power(Average) [dBm]	Limit [dBm]	Result
2412	15.13	0.1	15.23	< 30	Pass
2437	15.09	0.1	15.19	< 30	Pass
2462	15.24	0.1	15.34	< 30	Pass

Table 19 Maximum Conducted Output Power Test Data 802.11n HT20 @Ant 0

Center Freq.[MHz]	Meas. Level (Cond.) [dBm]	Duty Factor	Maximum Conducted Output Power(Average) [dBm]	Limit [dBm]	Result
2412	15.73	0.13	15.86	< 30	Pass
2437	16.38	0.13	16.51	< 30	Pass
2462	15.71	0.13	15.84	< 30	Pass

Table 20 Maximum Conducted Output Power Test Data 802.11n HT20 @Ant 1

Center Freq.[MHz]	Meas. Level (Cond.) [dBm]	Duty Factor	Maximum Conducted Output Power(Average) [dBm]	Limit [dBm]	Result
2412	14.84	0.13	14.97	< 30	Pass
2437	14.75	0.13	14.88	< 30	Pass
2462	14.88	0.13	15.01	< 30	Pass

Table 21 Maximum Conducted Output Power Test Data 802.11n HT20 @ Ant 0 +Ant 1

Center Freq.[MHz]	Maximum Conducted Output Power(Average) [dBm]	Limit [dBm]	Result
2412	18.45	< 30	Pass
2437	18.65	< 30	Pass
2462	18.32	< 30	Pass

Table 22 Maximum Conducted Output Power Test Data 802.11n HT40 @Ant 0

Center Freq.[MHz]	Meas. Level (Cond.) [dBm]	Duty Factor	Maximum Conducted Output Power(Average) [dBm]	Limit [dBm]	Result
2422	12.47	0.15	12.62	< 30	Pass
2437	12.61	0.15	12.76	< 30	Pass
2452	12.70	0.15	12.85	< 30	Pass

Table 23 Maximum Conducted Output Power Test Data 802.11n HT40 @Ant 1

Center Freq.[MHz]	Meas. Level (Cond.) [dBm]	Duty Factor	Maximum Conducted Output Power(Average) [dBm]	Limit [dBm]	Result
2422	14.12	0.15	14.27	< 30	Pass
2437	14.92	0.15	15.07	< 30	Pass
2452	15.30	0.15	15.45	< 30	Pass

Table 24 Maximum Conducted Output Power Test Data 802.11n HT40 @ Ant 0 +Ant 1

Center Freq.[MHz]	Maximum Conducted Output Power(Average) [dBm]	Limit [dBm]	Result
2422	16.53	< 30	Pass
2437	17.08	< 30	Pass
2452	17.35	< 30	Pass

8. MAXIMUM POWER SPECTRAL DENSITY LEVEL MEASUREMENT

8.1. LIMITS OF Maximum Power Spectral Density Level Measurement

CFR 47 (FCC) part 15.247 (e) , 558074 D01 DTS Meas Guidance v03r05

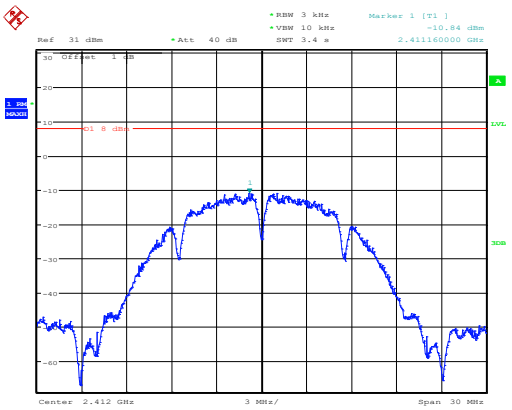
8.2. TEST PROCEDURE

The transmitter output was connected to the spectrum analyzer.
a)Set analyzer center frequency to DTS channel center frequency.
b) Set span to at least 1.5 times the OBW.
c) Set RBW to：3kHz≤RBW≤100 kHz
d) Set VBW ≥ 3 x RBW.
e)Detector = power averaging (RMS) or sample detector
f) Number of points in sweep ≥ 2 span / RBW. (This gives bin-to-bin spacing ≤ RBW/2, so that narrowband signals are not lost between frequency bins.)
g)Sweep time = auto couple.
h)Allow trace to fully stabilize.
i)Use the peak marker function to determine the maximum amplitude level within the RBW.
j)If measured value exceeds limit, reduce RBW (no less than 3 kHz) and repeat.

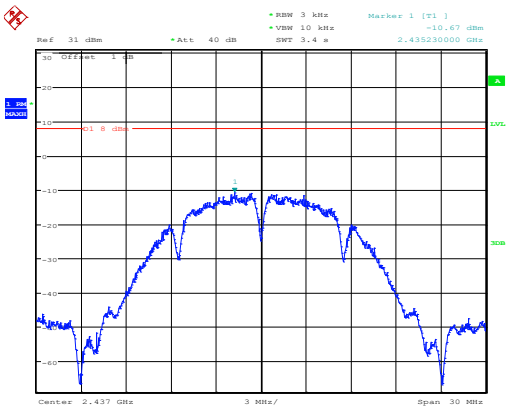
8.3. TEST DATA

Table 25 Maximum Power Spectral Density Level Test Data 802.11b @Ant 0

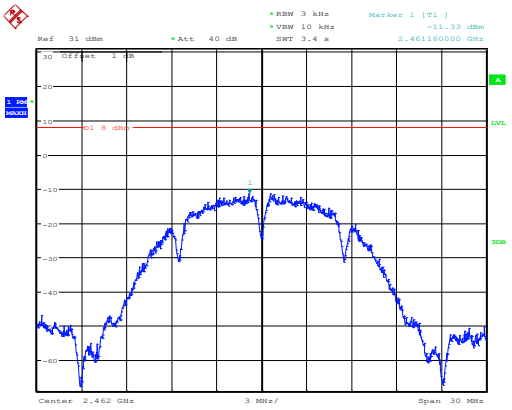
Center Freq.[MHz]	Meas.Level [dBm]	Duty Factor	Maximum Power Spectral Density [dBm]	Limit [dBm]	Result
2412	-10.84	0	-10.84	8	Pass
2437	-10.67	0	-10.67	8	Pass
2462	-11.33	0	-11.33	8	Pass



Date: 13.JUN.2017 08:18:55



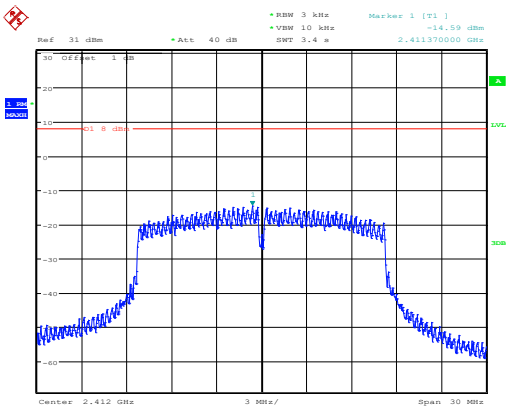
Date: 13.JUN.2017 08:19:51

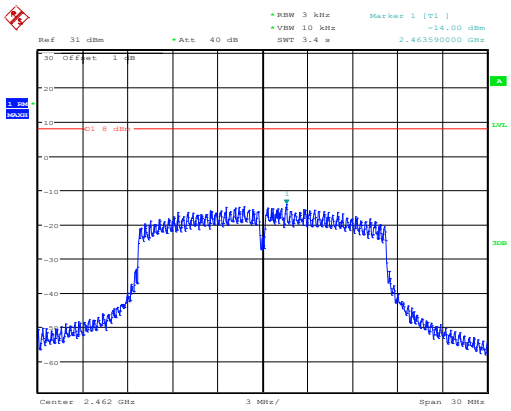


Date: 13.JUN.2017 08:20:56

Table 26 Maximum Power Spectral Density Level Test Data 802.11g @Ant 0

Center Freq.[MHz]	Meas.Level [dBm]	Duty Factor	Maximum Power Spectral Density [dBm]	Limit [dBm]	Result
2412	-14.59	0.1	-14.49	8	Pass
2437	-14.00	0.1	-13.90	8	Pass
2462	-14.27	0.1	-14.17	8	Pass





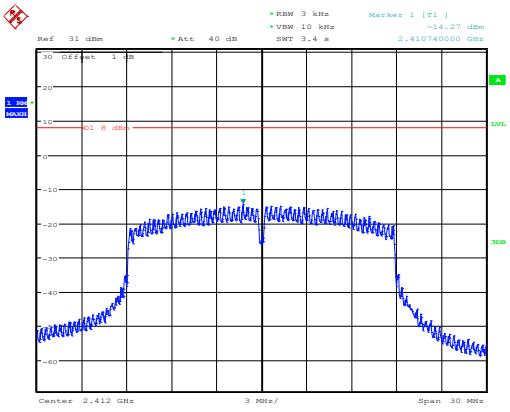
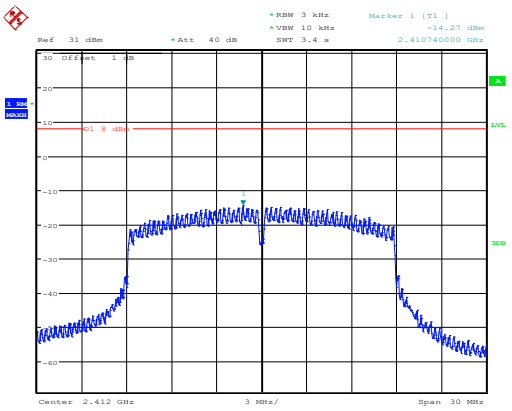
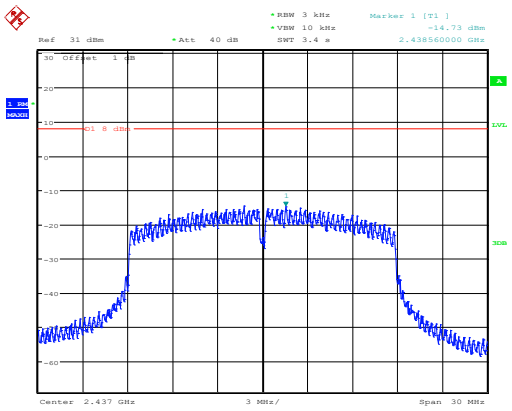


Table 27 Maximum Power Spectral Density Level Test Data 802.11n HT20 @Ant 0

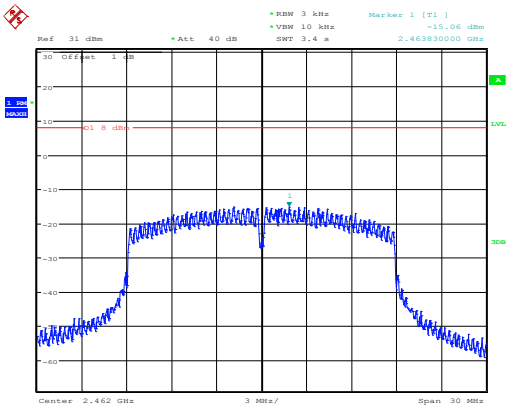
Center Freq.[MHz]	Meas.Level [dBm]	Duty Factor	Maximum Power Spectral Density [dBm]	Limit [dBm]	Result
2412	-14.27	0.13	-14.14	8	Pass
2437	-14.73	0.13	-14.60	8	Pass
2462	-15.06	0.13	-14.93	8	Pass



Date: 13.JUN.2017 08:27:16



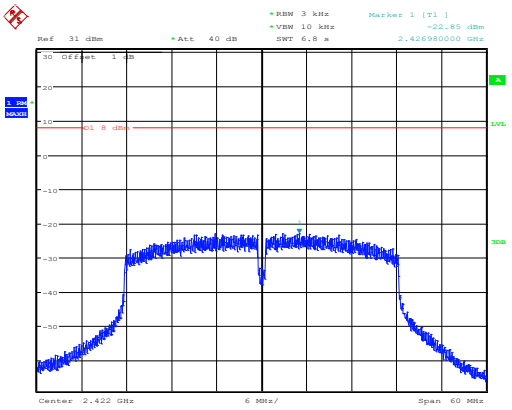
Date: 13.JUN.2017 08:28:08



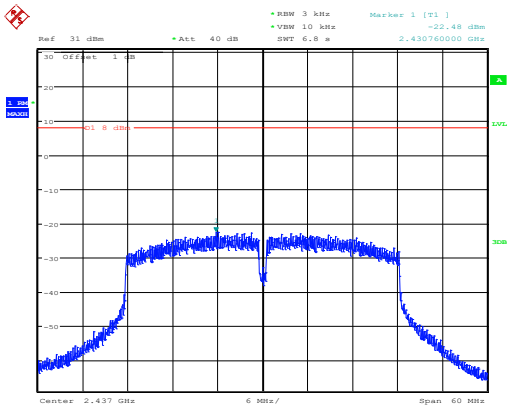
Date: 13.JUN.2017 08:29:29

Table 28 Maximum Power Spectral Density Level Test Data 802.11n HT40 @Ant 0

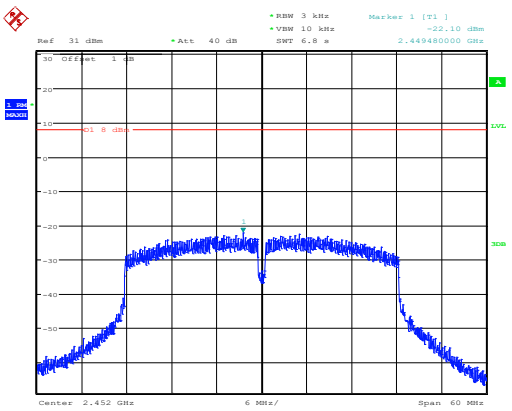
Center Freq.[MHz]	Meas.Level [dBm]	Duty Factor	Maximum Power Spectral Density [dBm]	Limit [dBm]	Result
2422	-22.85	0.15	-22.70	8	Pass
2437	-22.48	0.15	-22.33	8	Pass
2452	-22.10	0.15	-21.95	8	Pass



Date: 13.JUN.2017 08:33:14



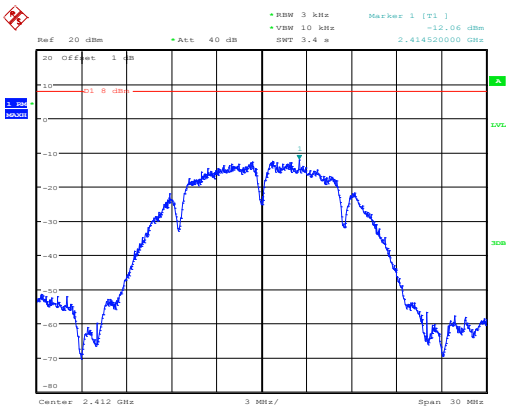
Date: 13.JUN.2017 08:34:19



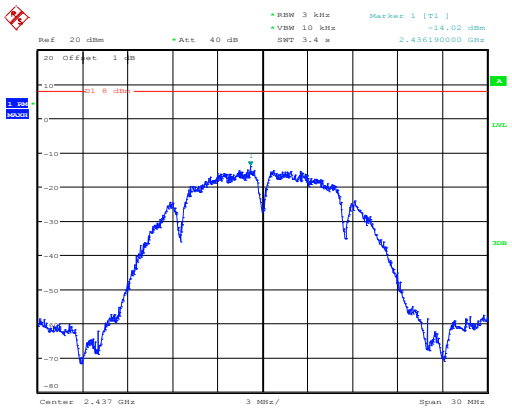
Date: 13.JUN.2017 08:35:16

Table 29 Maximum Power Spectral Density Level Test Data 802.11b @Ant 1

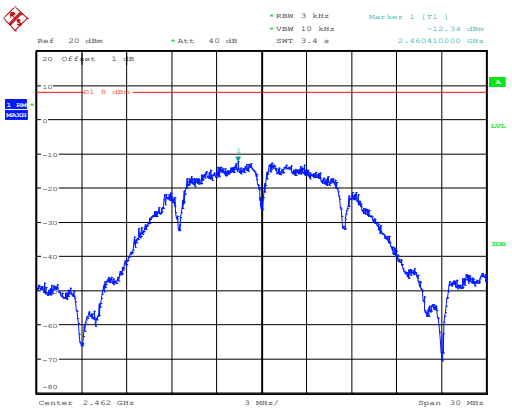
Center Freq.[MHz]	Meas.Level [dBm]	Duty Factor	Maximum Power Spectral Density [dBm]	Limit [dBm]	Result
2412	-12.06	0	-12.06	8	Pass
2437	-14.02	0	-14.02	8	Pass
2462	-12.34	0	-12.34	8	Pass



Date: 13.JUN.2017 08:39:25



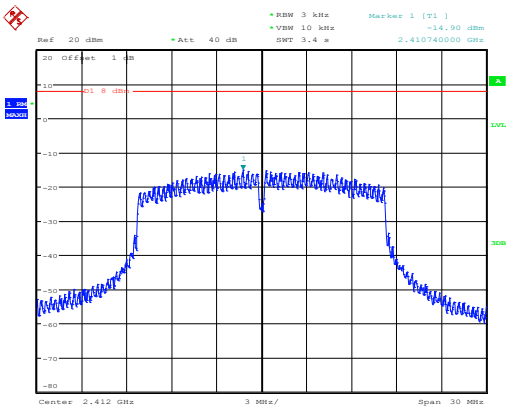
Date: 13.JUN.2017 08:37:38



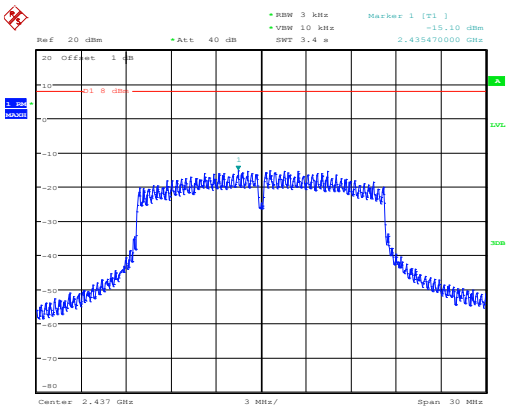
Date: 13.JUN.2017 08:40:37

Table 30 Maximum Power Spectral Density Level Test Data 802.11g @Ant 1

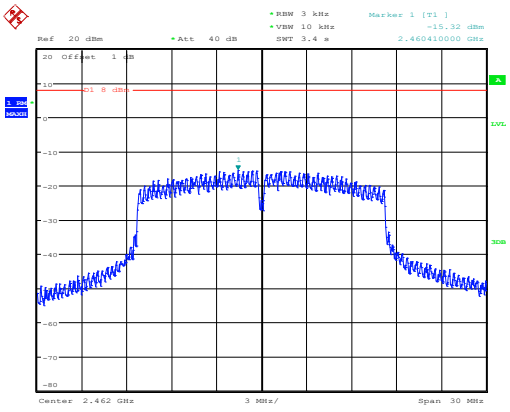
Center Freq.[MHz]	Meas.Level [dBm]	Duty Factor	Maximum Power Spectral Density [dBm]	Limit [dBm]	Result
2412	-14.90	0.1	-14.80	8	Pass
2437	-15.10	0.1	-15.00	8	Pass
2462	-15.32	0.1	-15.22	8	Pass



Date: 13.JUN.2017 08:41:37



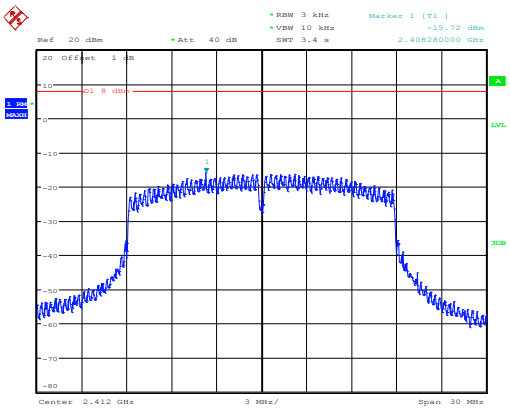
Date: 13.JUN.2017 08:42:55



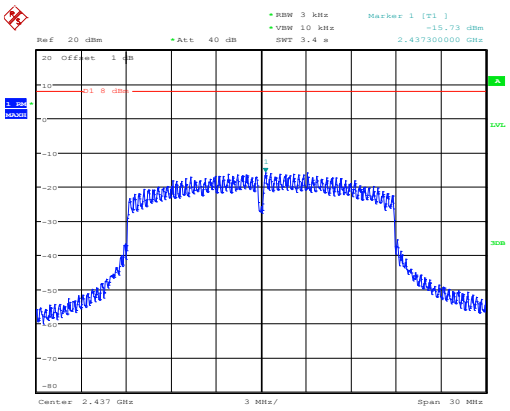
Date: 13.JUN.2017 08:44:11

Table 31 Maximum Power Spectral Density Level Test Data 802.11n HT20 @Ant 1

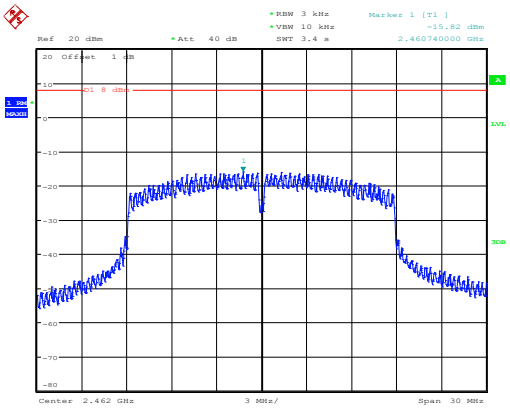
Center Freq.[MHz]	Meas.Level [dBm]	Duty Factor	Maximum Power Spectral Density [dBm]	Limit [dBm]	Result
2412	-15.72	0.13	-15.59	8	Pass
2437	-15.73	0.13	-15.60	8	Pass
2462	-15.82	0.13	-15.69	8	Pass



Date: 13.JUN.2017 08:45:25



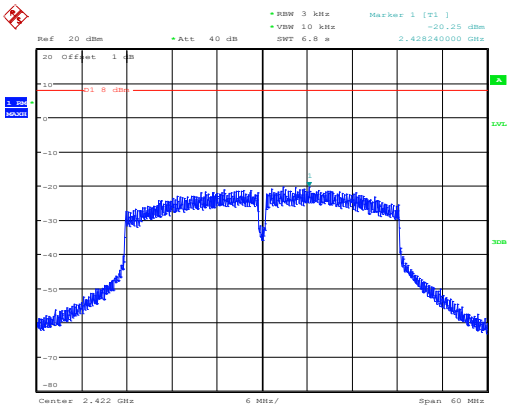
Date: 13.JUN.2017 08:46:36

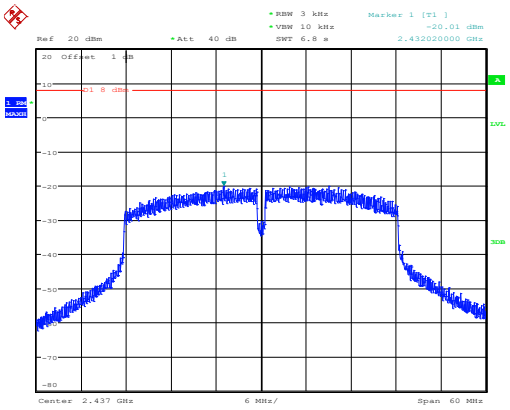


Date: 13.JUN.2017 08:47:50

Table 32 Maximum Power Spectral Density Level Test Data 802.11n HT40 @Ant 1

Center Freq.[MHz]	Meas.Level [dBm]	Duty Factor	Maximum Power Spectral Density [dBm]	Limit [dBm]	Result
2422	-20.25	0.15	-20.10	8	Pass
2437	-20.01	0.15	-19.86	8	Pass
2452	-19.84	0.15	-69	8	Pass





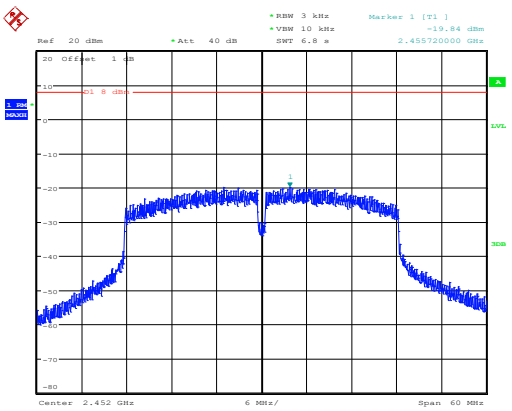


Table 33 Maximum Power Spectral Density Level Test Data 802.11n HT20 @ Ant 0+Ant 1

Center Freq.[MHz]	Maximum Power Spectral Density [dBm]	Limit [dBm]	Result
2412	-11.79	8	Pass
2437	-12.06	8	Pass
2462	-12.28	8	Pass

Table 34 Maximum Power Spectral Density Level Test Data 802.11n HT40 @ Ant 0+Ant 1

Center Freq.[MHz]	Maximum Power Spectral Density [dBm]	Limit [dBm]	Result
2412	-18.29	8	Pass
2437	-18.00	8	Pass
2462	-17.75	8	Pass

9. CONDUCTED BANDEDGE AND SPURIOUS MEASURMENT

9.1. LIMITS OF Conducted Bandedge and Spurious Measurement

CFR 47 (FCC) part 15.247 (d) and 558074 D01 DTS Meas Guidance v03r05

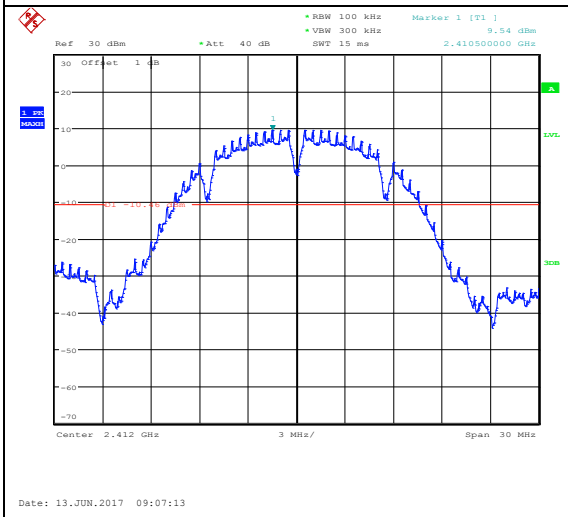
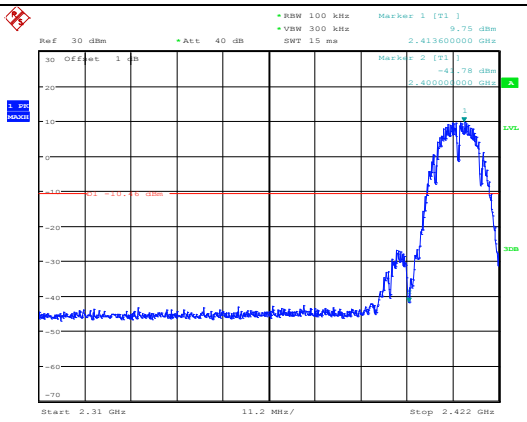
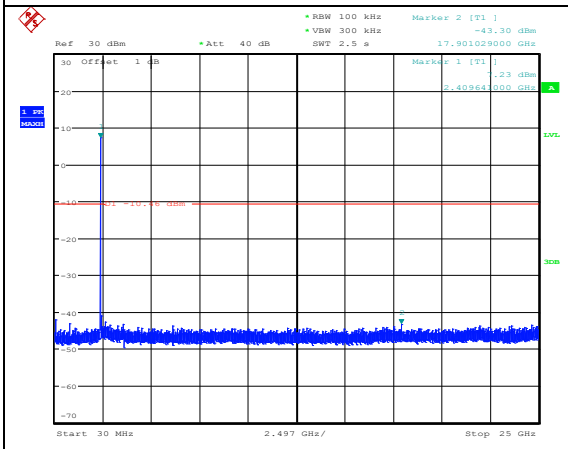
9.2. TEST PROCEDURE

The transmitter output was connected to the spectrum analyzer.
Establish a reference level by using the following procedure:
a)Set instrument center frequency to DTS channel center frequency.
b)Set the span to ≥ 1.5 times the DTS bandwidth.
c)Set the RBW = 100 kHz.
d)Set the VBW ≥ 3 x RBW.
e)Detector = peak.
f)Sweep time = auto couple.
g)Trace mode = max hold.
h)Allow trace to fully stabilize.
i)Use the peak marker function to determine the maximum PSD level.
Emission level measurement
a)Set the center frequency and span to encompass frequency range to be measured.
b)Set the RBW = 100 kHz.
c)Set the VBW ≥ 3 x RBW.
d)Detector = peak.
e)Ensure that the number of measurement points ≥ span/RBW
f)Sweep time = auto couple.
g)Trace mode = max hold.
h)Allow trace to fully stabilize.
i)Use the peak marker function to determine the maximum amplitude level.

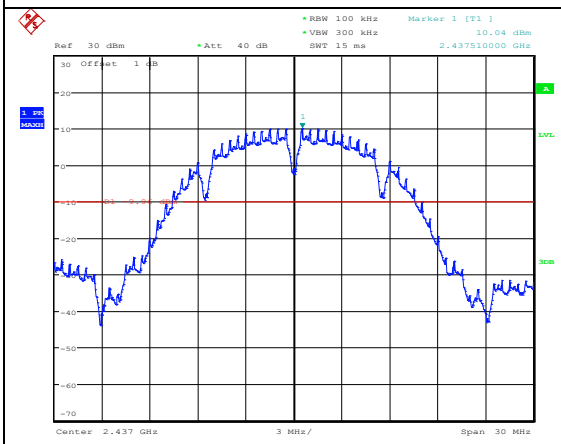
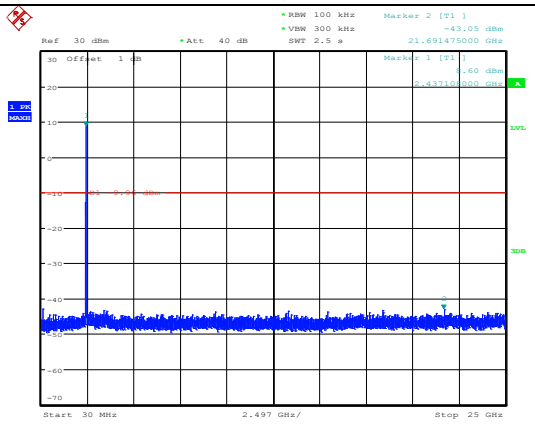
Test Result ： ALL emission outside of 2400-2483.5 are lower at least 20dB than fundamental frequency.

9.3.TEST DATA

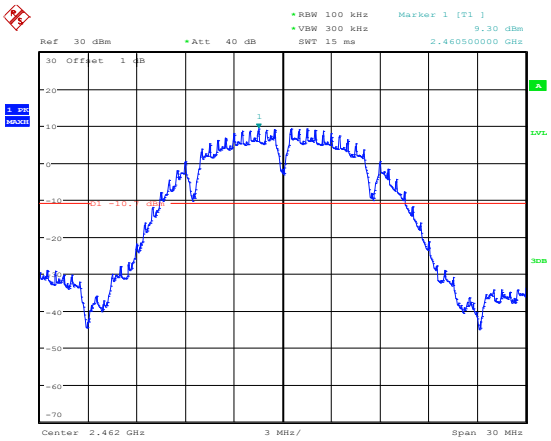
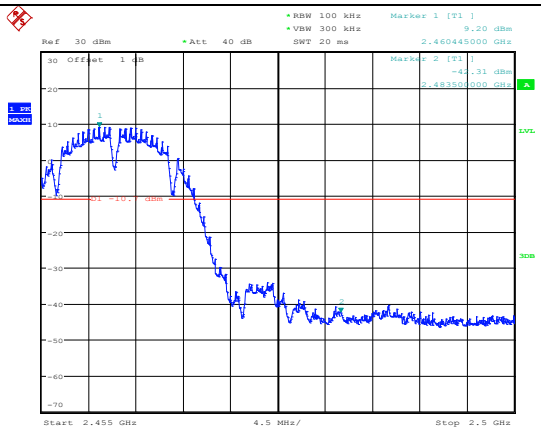
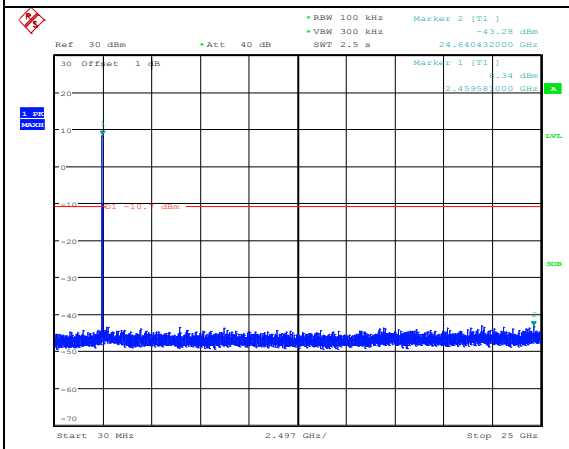
802.11b CH1 @Ant 0

Pref	Lower Edge
	
30MHz-25GHz	---
	---

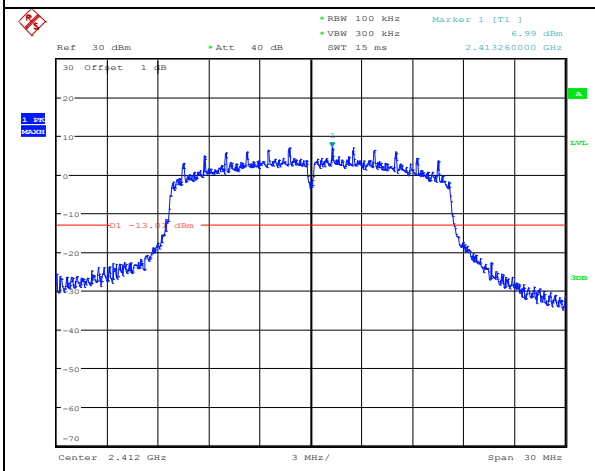
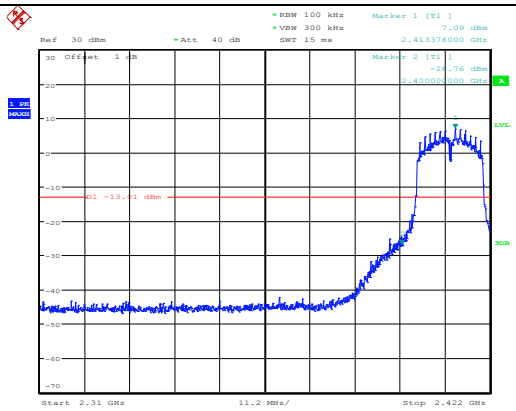
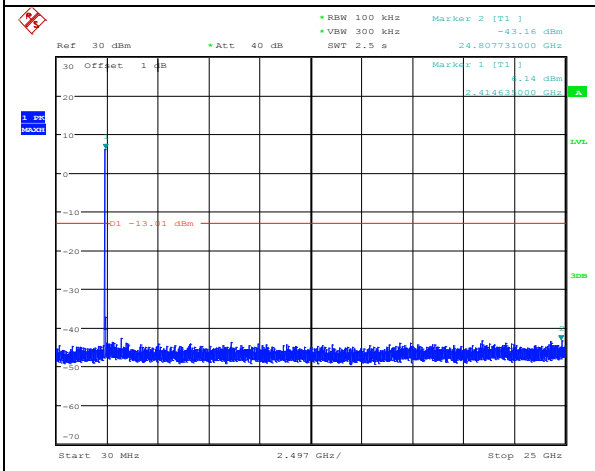
802.11b CH6 @Ant 0

Pref	30MHz-25GHz
 Date: 13.JUN.2017 09:09:50	 Date: 13.JUN.2017 09:10:30

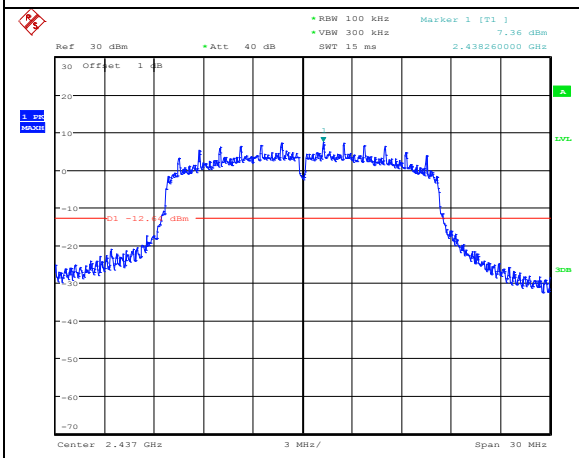
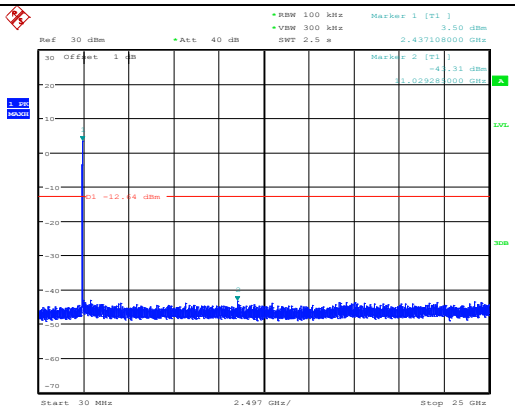
802.11b CH11 @Ant 0

Pref	Upper Edge
 Date: 13.JUN.2017 09:12:13	 Date: 13.JUN.2017 09:12:49
30MHz-25GHz	---
 Date: 13.JUN.2017 09:13:27	---

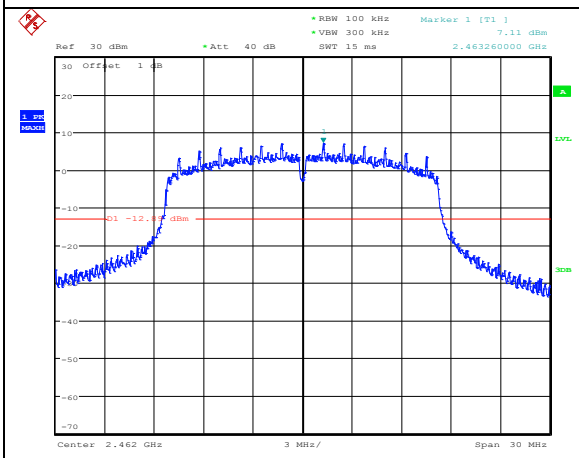
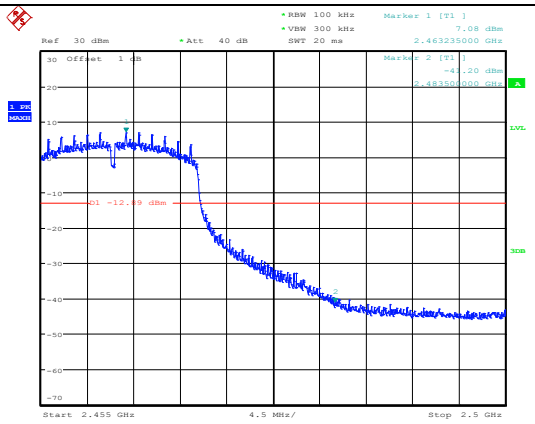
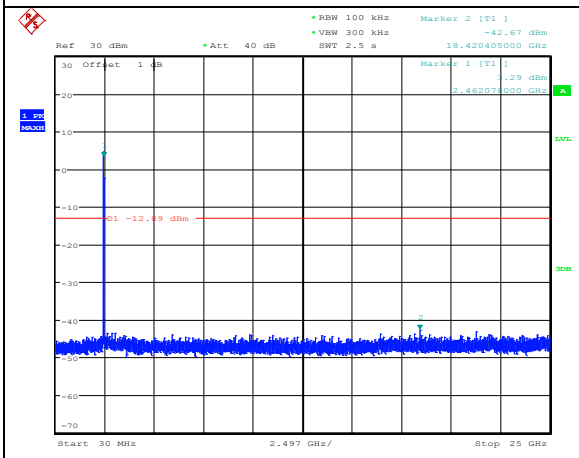
802.11g CH1 @Ant 0

Pref	Lower Edge
 Date: 13.JUN.2017 09:14:34	 Date: 13.JUN.2017 09:15:12
30MHz-25GHz	---
 Date: 13.JUN.2017 09:15:47	---

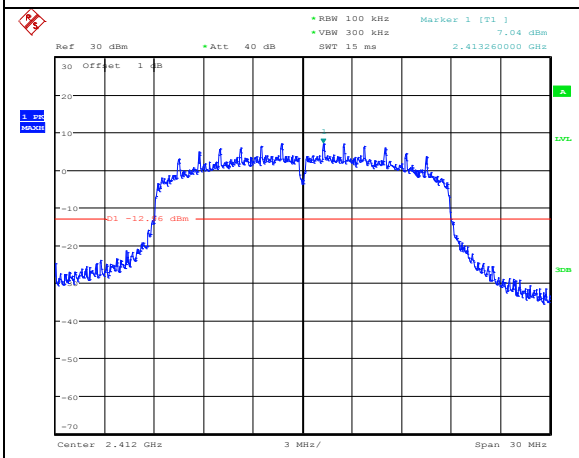
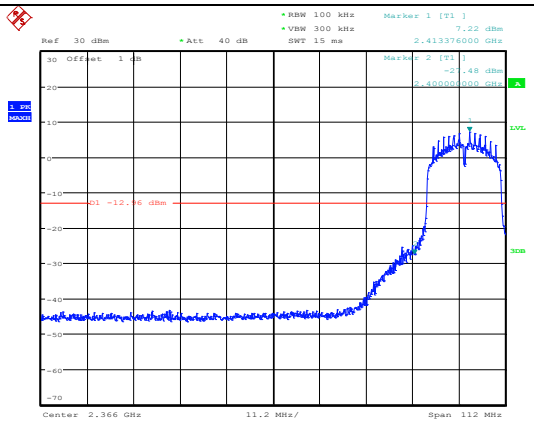
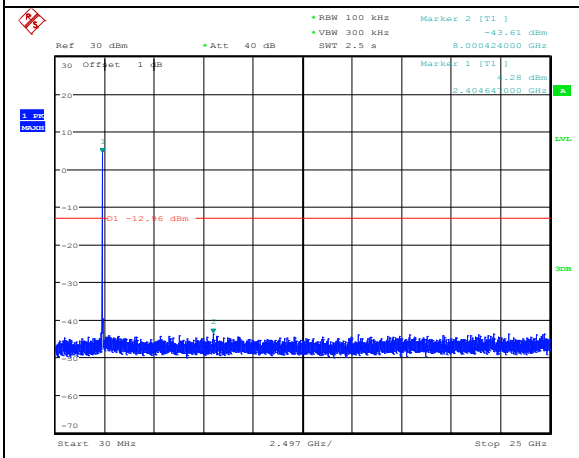
802.11g CH6 @ Ant 0

Pref	30MHz-25GHz
	

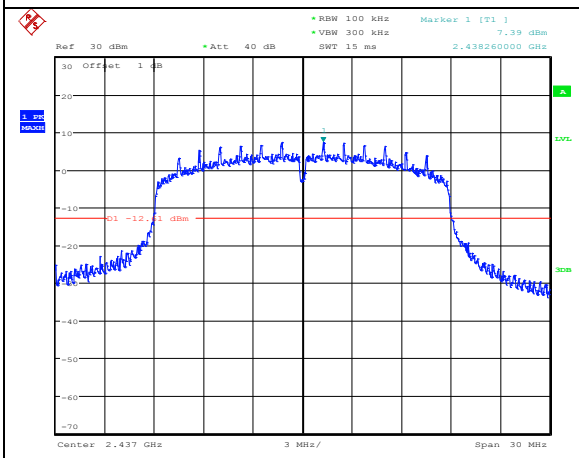
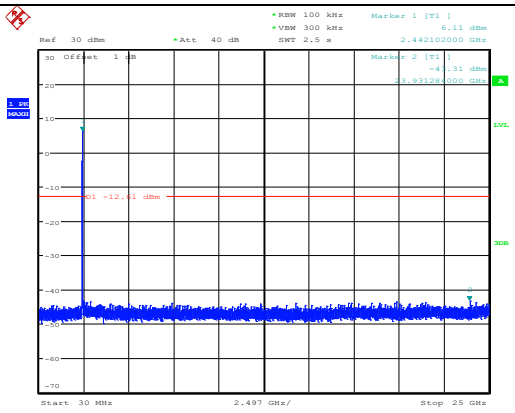
802.11g CH11 @Ant 0

Pref	Upper Edge
 Date: 13.JUN.2017 09:18:39	 Date: 13.JUN.2017 09:19:37
30MHz-25GHz	---
 Date: 13.JUN.2017 09:20:10	---

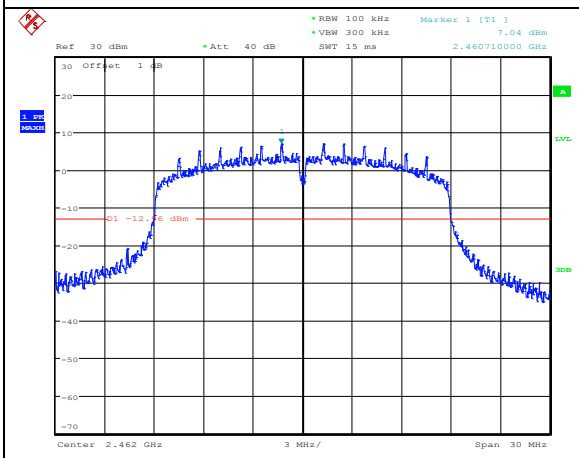
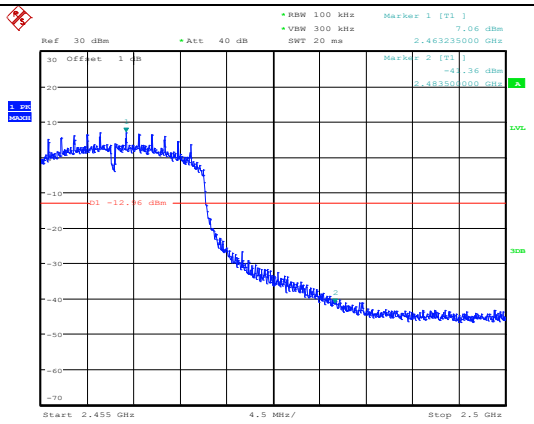
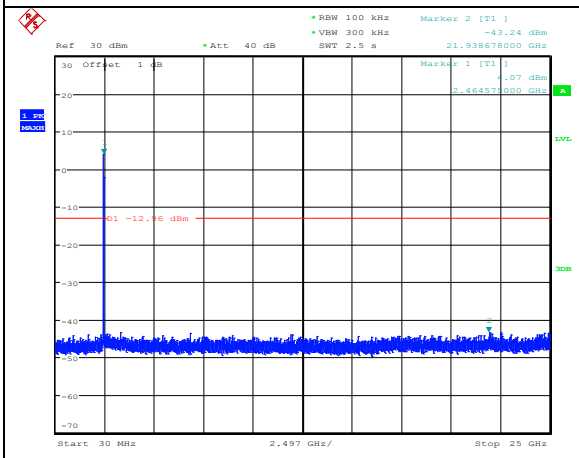
802.11n HT20 CH1 @Ant 0

Pref	Lower Edge
	
30MHz-25GHz	---
	---

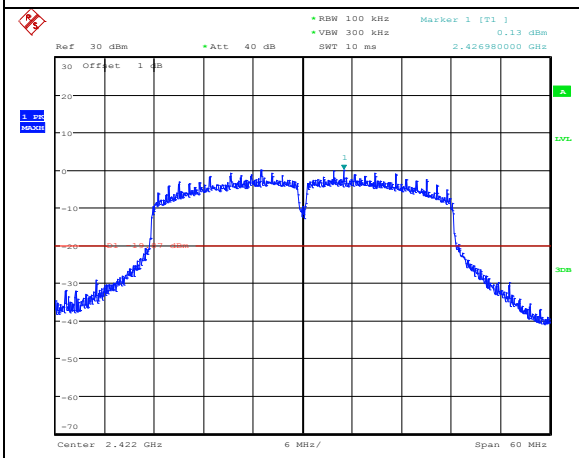
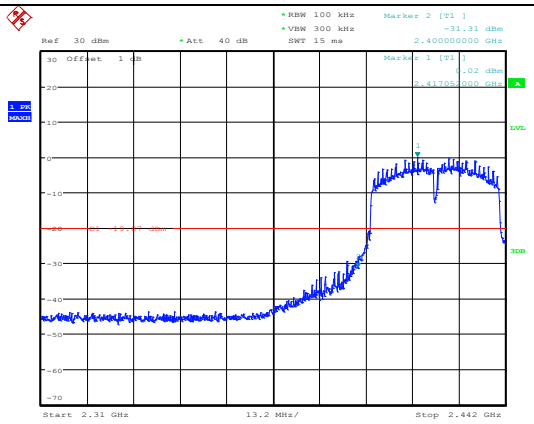
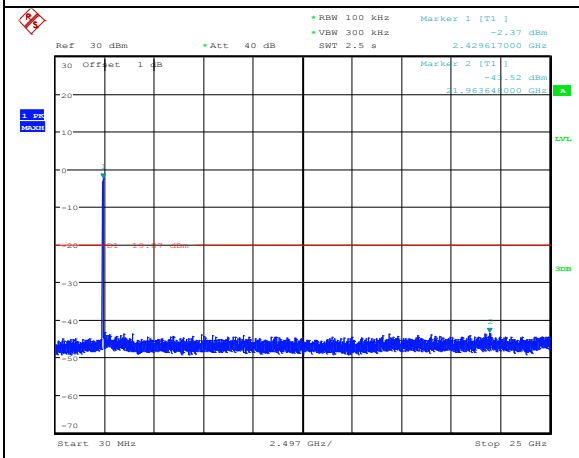
802.11n HT20 CH6 @Ant 0

Pref	30MHz-25GHz
	

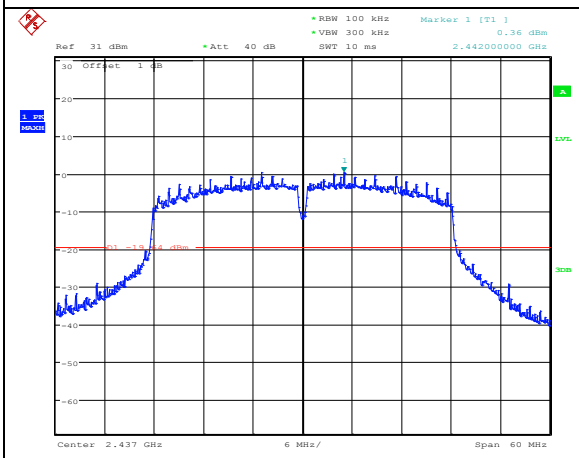
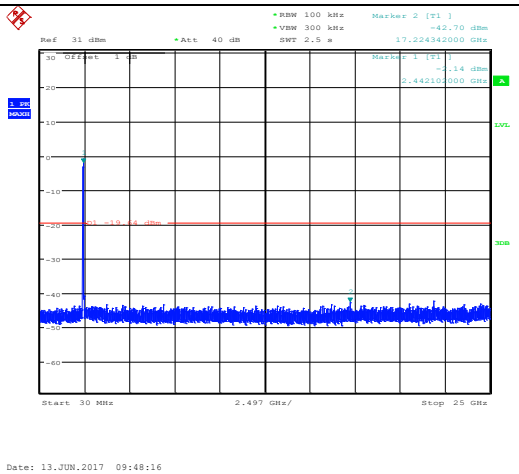
802.11n HT20 CH11 @Ant 0

Pref	Upper Edge
 Date: 13.JUN.2017 09:26:14	 Date: 13.JUN.2017 09:26:49
30MHz-25GHz	---
 Date: 13.JUN.2017 09:27:29	---

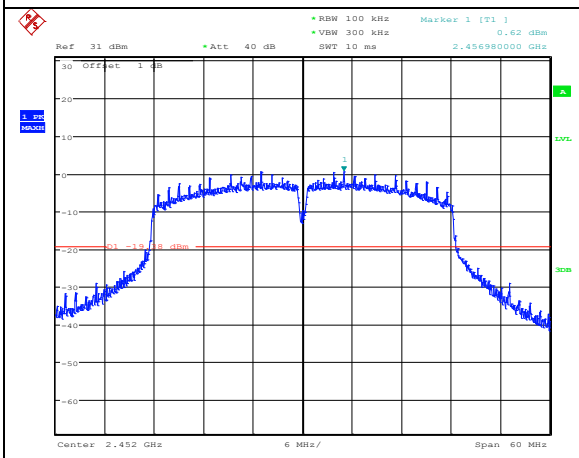
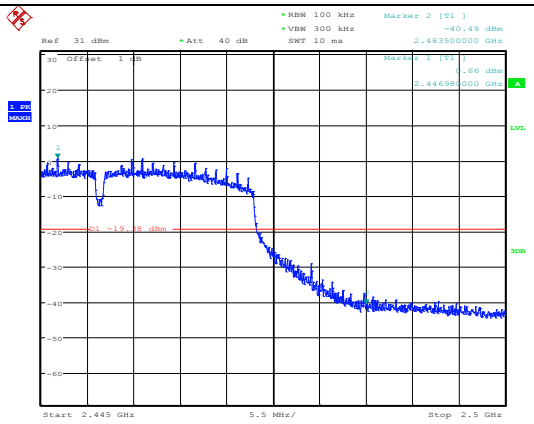
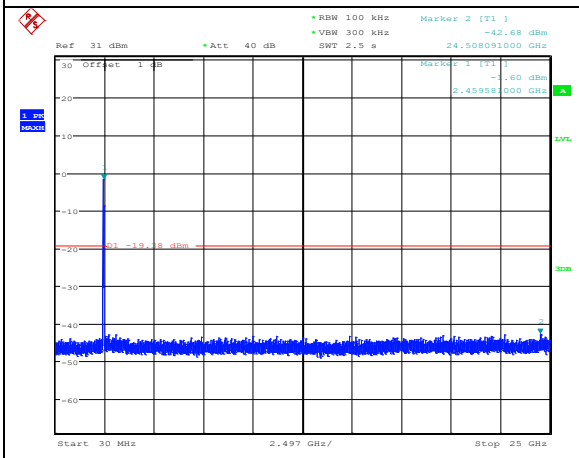
802.11n HT40 CH3 @Ant 0

Pref	Lower Edge
 Date: 13.JUN.2017 09:31:46	 Date: 13.JUN.2017 09:32:46
30MHz-25GHz	---
 Date: 13.JUN.2017 09:33:24	---

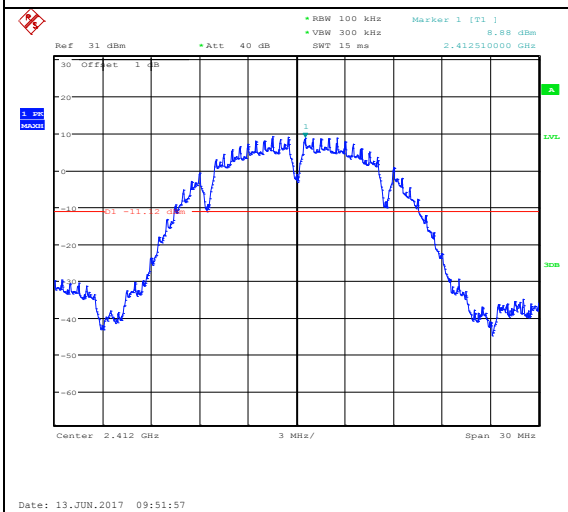
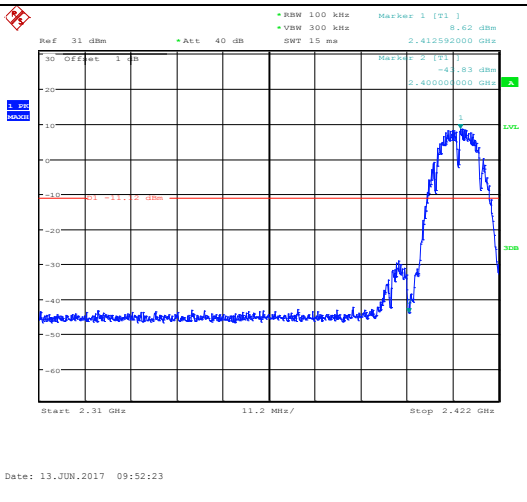
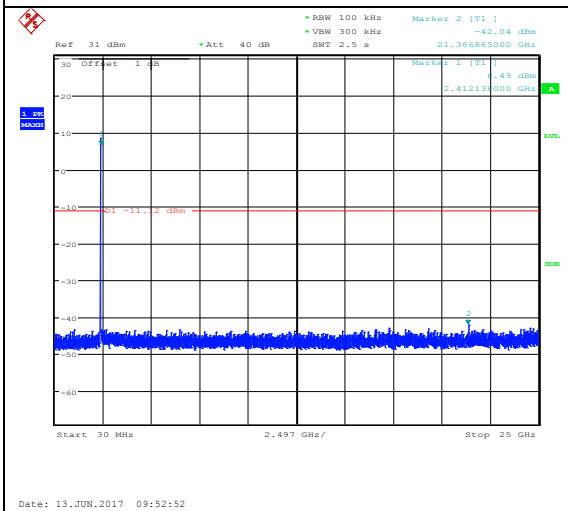
802.11n HT40 CH6 @Ant 0

Pref	30MHz-25GHz
	

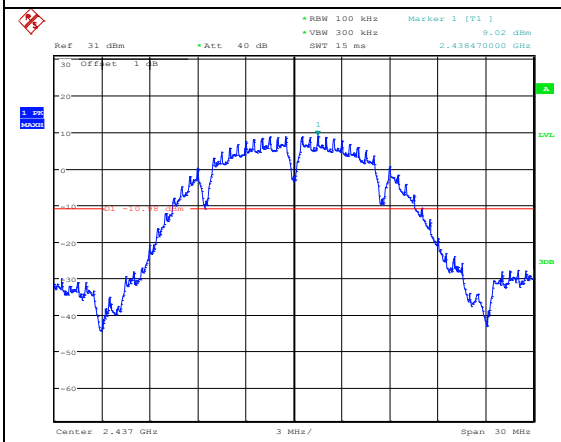
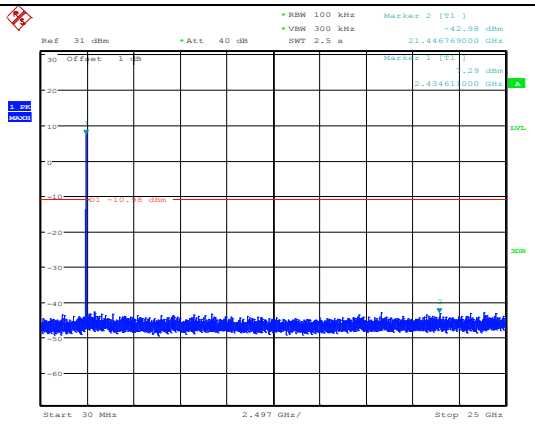
802.11n HT40 CH9 @Ant 0

Pref	Upper Edge
	
30MHz-25GHz	---
	---

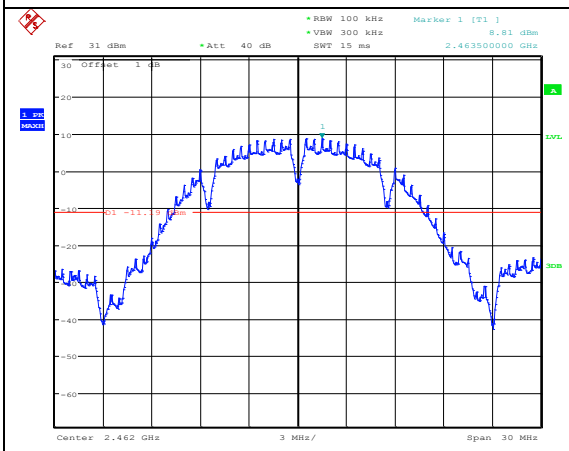
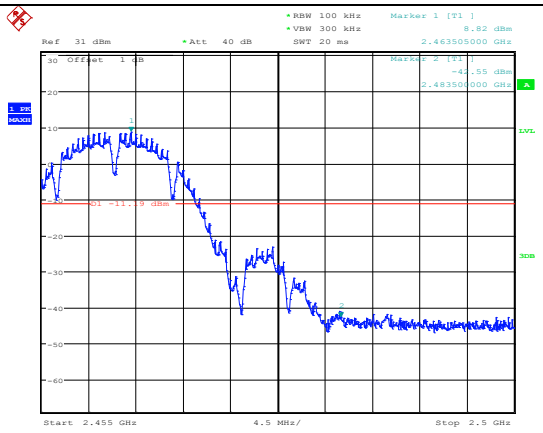
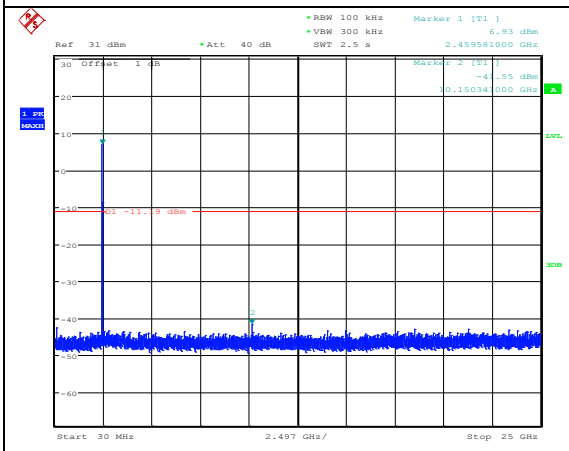
802.11b CH1 @Ant 1

Pref	Lower Edge
	
30MHz-25GHz	---
	---

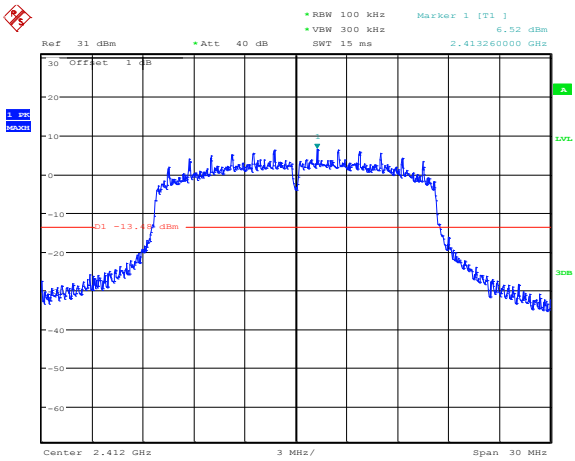
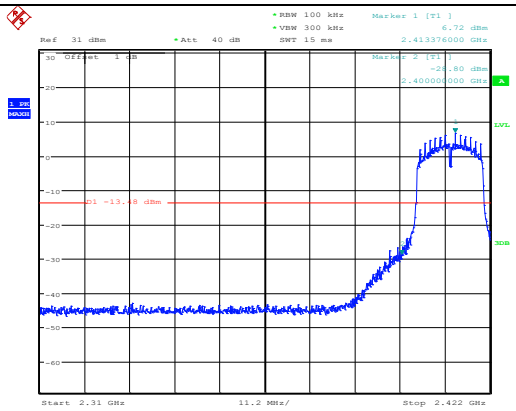
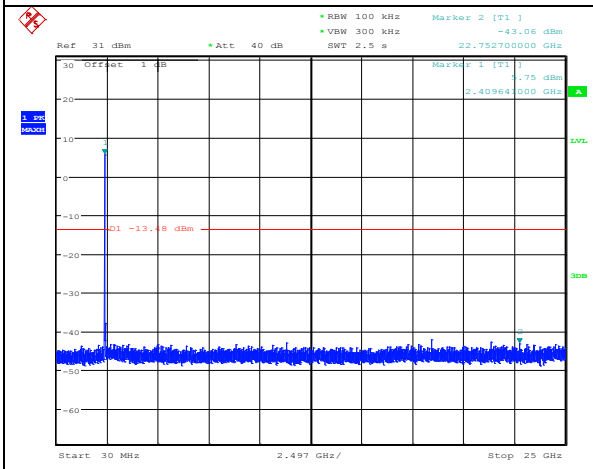
802.11b CH6 @Ant 1

Pref	30MHz-25GHz
 Date: 13.JUN.2017 09:53:39	 Date: 13.JUN.2017 09:54:09

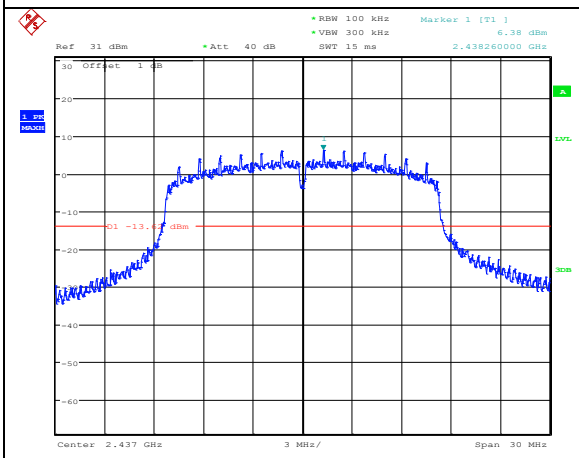
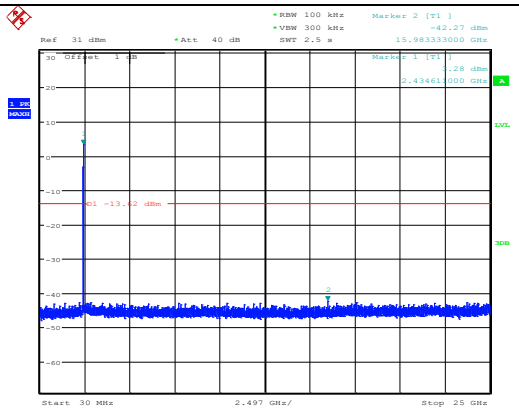
802.11b CH11 @Ant 1

Pref	Upper Edge
 Date: 13.JUN.2017 09:55:47	 Date: 13.JUN.2017 09:56:10
30MHz-25GHz	---
 Date: 13.JUN.2017 09:56:39	---

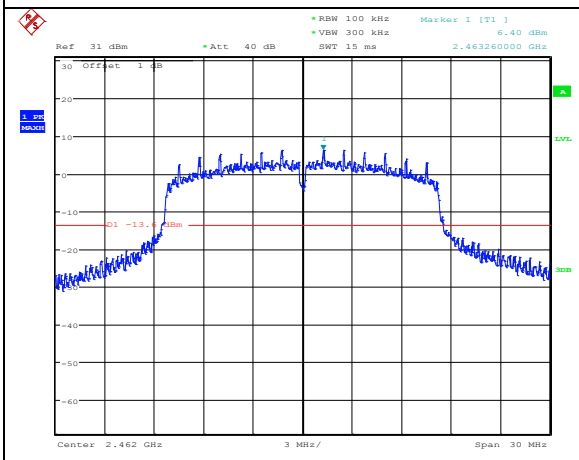
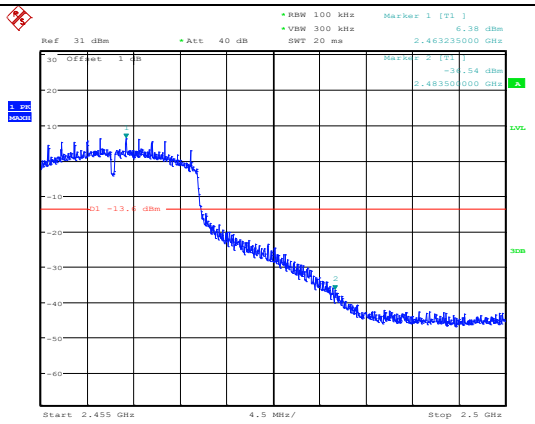
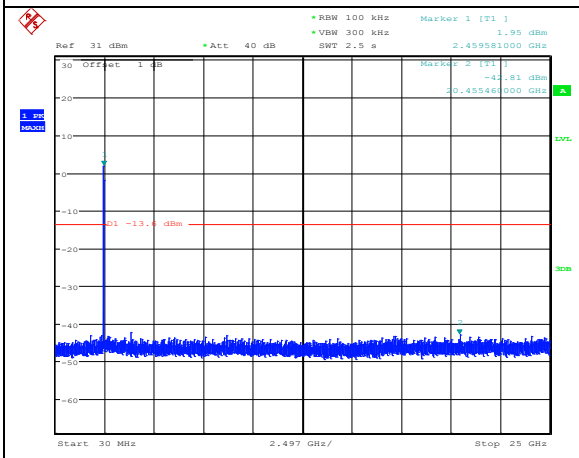
802.11g CH1 @Ant 1

Pref	Lower Edge
 Date: 13.JUN.2017 09:57:25	 Date: 13.JUN.2017 09:57:57
30MHz-25GHz	---
 Date: 13.JUN.2017 09:58:36	---

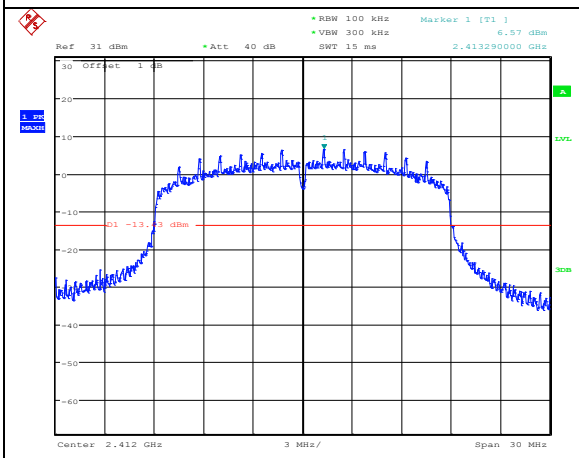
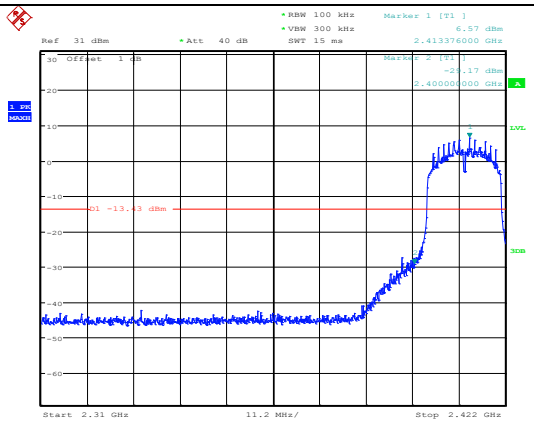
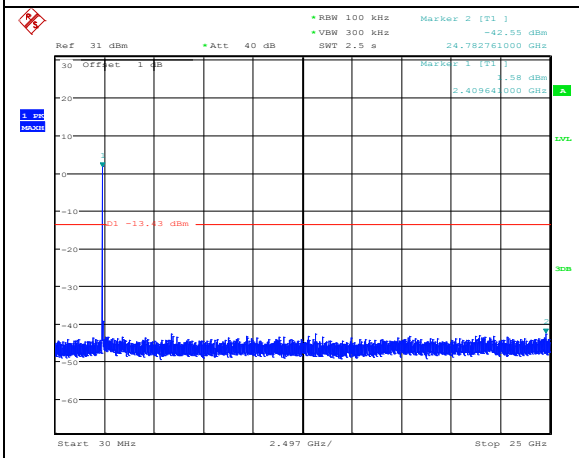
802.11g CH6 @ Ant 1

Pref	30MHz-25GHz
 Date: 13.JUN.2017 09:59:28	 Date: 13.JUN.2017 10:01:23

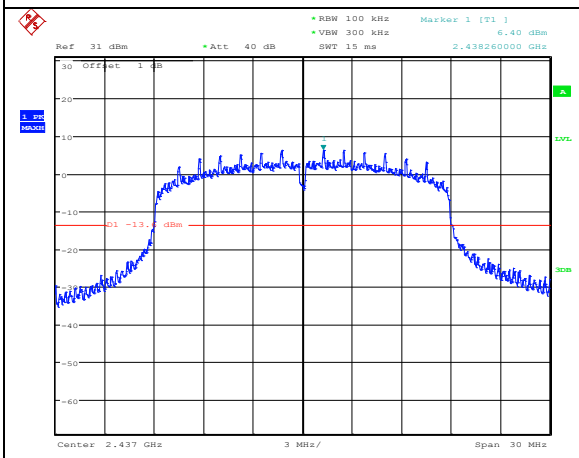
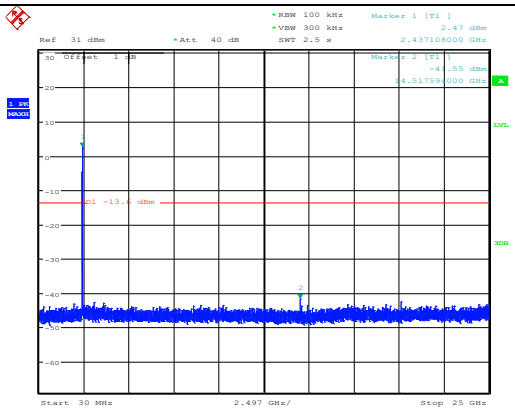
802.11g CH11 @Ant 1

Pref	Upper Edge
 Date: 13.JUN.2017 10:02:08	 Date: 13.JUN.2017 10:02:26
30MHz-25GHz	---
 Date: 13.JUN.2017 10:02:52	---

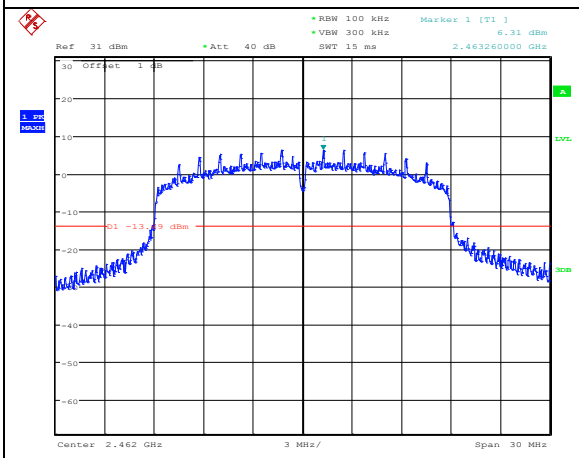
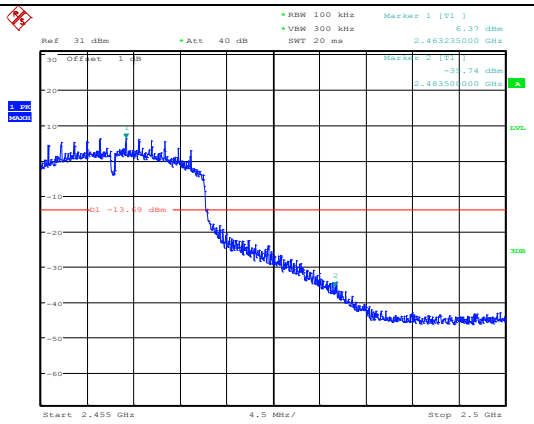
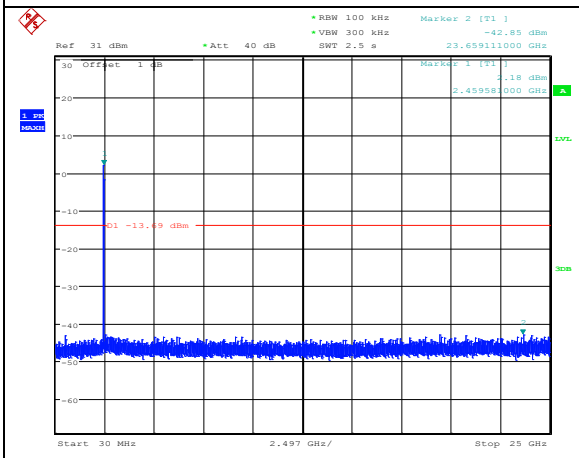
802.11n HT20 CH1 @Ant 1

Pref	Lower Edge
 Date: 13.JUN.2017 10:04:32	 Date: 13.JUN.2017 10:04:56
30MHz-25GHz	---
 Date: 13.JUN.2017 10:05:22	---

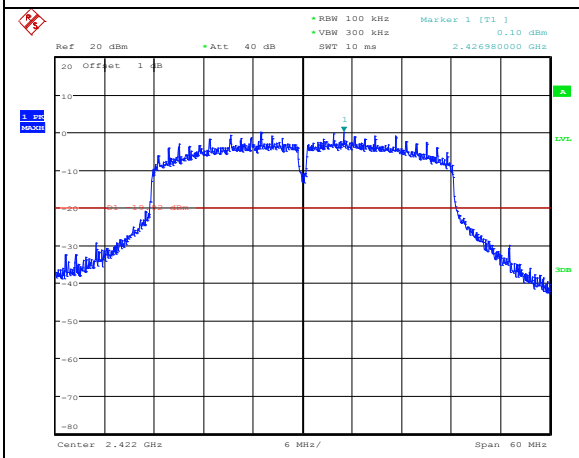
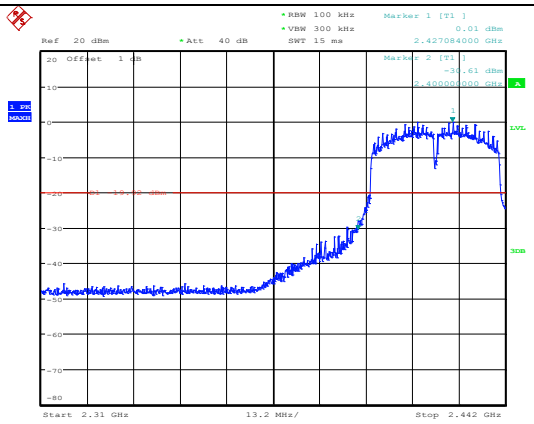
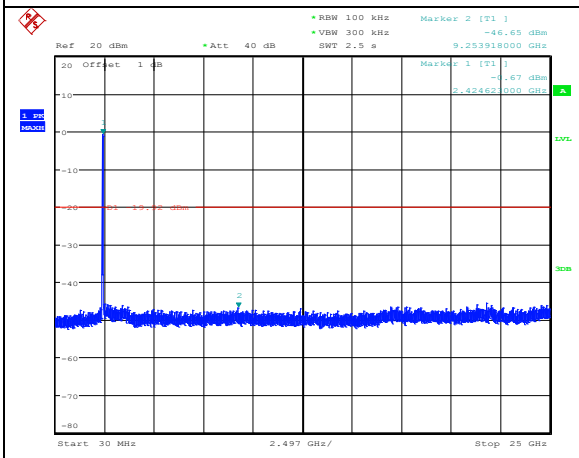
802.11n HT20 CH6 @Ant 1

Pref	30MHz-25GHz
	

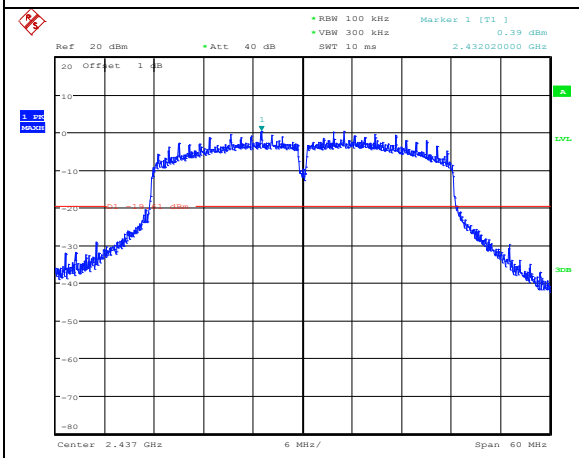
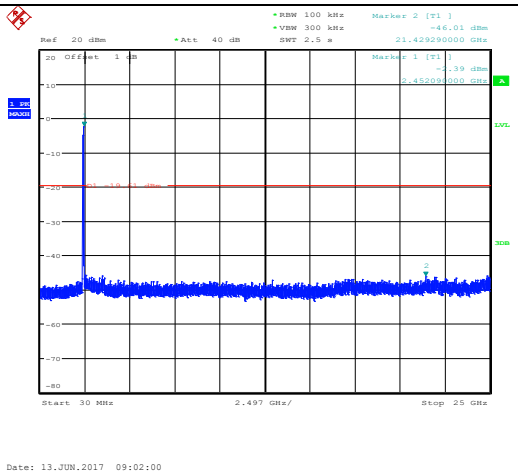
802.11n HT20 CH11 @Ant 1

Pref	Upper Edge
 Date: 13.JUN.2017 10:08:19	 Date: 13.JUN.2017 10:08:39
30MHz-25GHz	---
 Date: 13.JUN.2017 10:09:01	---

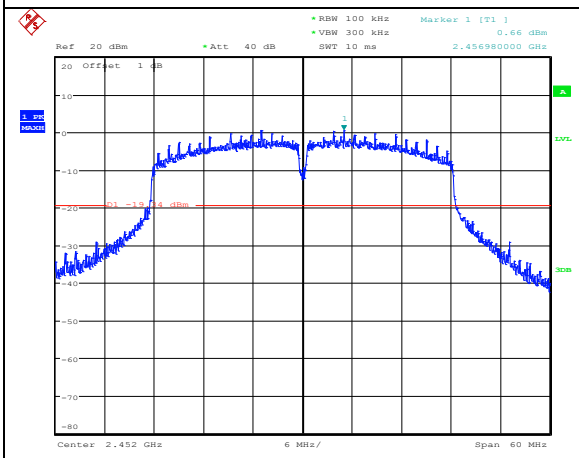
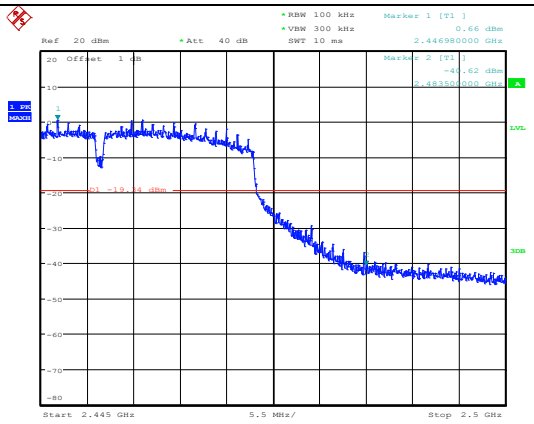
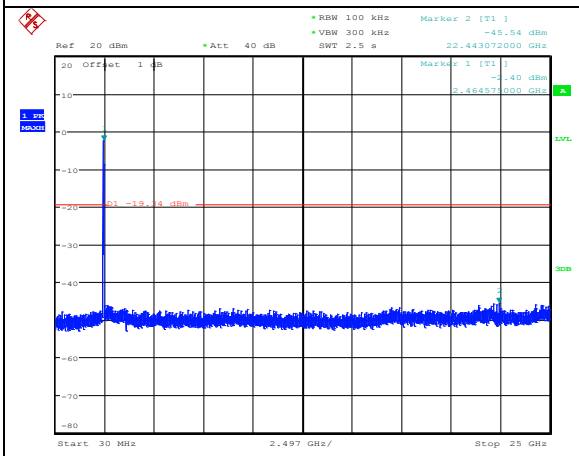
802.11n HT40 CH3 @Ant 1

Pref	Lower Edge
	
30MHz-25GHz	---
	---

802.11n HT40 CH6 @Ant 1

Pref	30MHz-25GHz
	

802.11n HT40 CH9 @Ant 1

Pref	Upper Edge
 Date: 13.JUN.2017 09:03:25	 Date: 13.JUN.2017 09:04:06
30MHz-25GHz	---
 Date: 13.JUN.2017 09:04:42	---

10. RADIATED BANDEDGE AND SPURIOUS MEASUREMENT

10.1. LIMITS OF Radiated Bandedge and Spurious Measurement

CFR 47 (FCC) part 15.247 (d) and 558074 D01 DTS Meas Guidance v03r05

10.2. TEST PROCEDURE

1. The testing follows the guidelines in ANSI C63.10-2013.
2. The EUT was arranged to its worst case and then tune the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter are used for the test in order to get better signal level.
3. For measurement below 1GHz, the EUT was placed on a turntable with 0.8 meter,above ground. For measurement above 1 GHz, test at FAR, the EUT is placed on a non-conductive table, which is 1.5 meter above ground.
4. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower.
5. Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level
6. For measurement below 1GHz, If the emission level of the EUT measured by the peak detector is 3 dB lower than the applicable limit, the peak emission level will be reported. Otherwise, the emission measurement will be repeated using the quasi-peak detector and reported.
7. Use the following spectrum analyzer settings:
(1) Span shall wide enough to fully capture the emission being measured;
(2) Set RBW=100 kHz for f < 1 GHz; VBW >= RBW; Sweep = auto; Detector function = peak; Trace = max hold;
(3) Set RBW = 1 MHz, VBW= 3MHz for f > 1 GHz for peak measurement.
Set RBW = 1 MHz, and 1/T (on time) for average measurement.

TEST DATA

Adaptor for EUT：UC13US AOHAI

9KHz-30MHz

The low frequency, which started from 9 kHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit line per 15.31(o) was not reported.

Table 35 Radiated Emission Test Data 9k Hz-30MHz

Frequency MHz	Cable Loss(dB)	Antenna Factor(dB)	Readings(dBμV/m)	Level(dBμV/m)	Polarity(H/V)	Turntable Angle(deg)	Antenna Height(m)	Limits(dBμV/m)	Margin(dB)
--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--

30MHz-1GHz

Worst case is shown below for 30MHz-1GHz only.

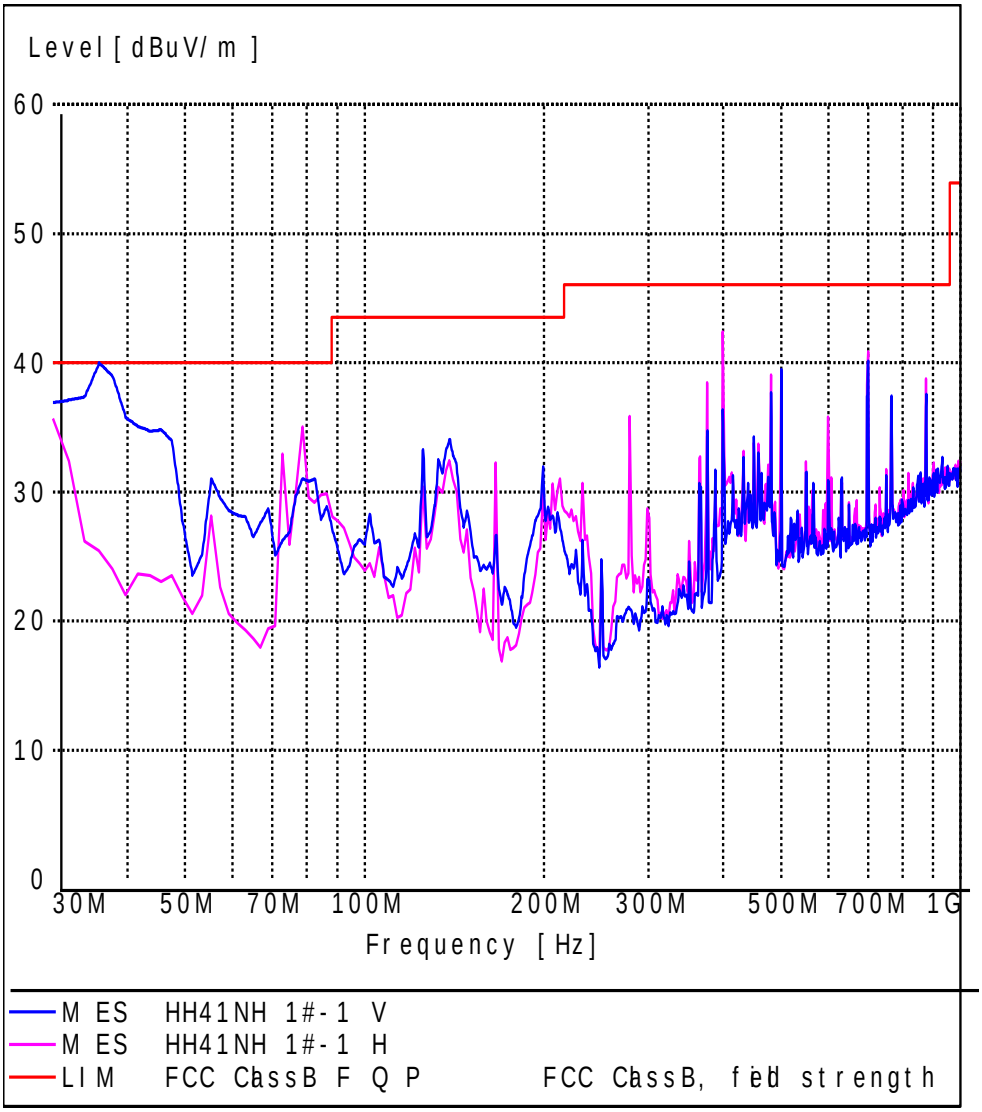
The emissions don’t show in following result tables are more than 20dB below the limits.

Table 36 Radiated Emission Test Data 30MHz-1GHz

Frequency MHz	Cable Loss(dB)	Antenna Factor(dB)	Readings(dBμV/m)	Level(dBμV/m)	Polarity(H/V)	Turntable Angle(deg)	Antenna Height(m)	Limits(dBμV/m)	Margin(dB)
30.856	0.6	12.3	16.0	28.9	H	20	2.0	40.0	11.1
72.756	1.0	8.7	17.6	27.3	H	30	2.0	40.0	12.7
79.023	1.0	7.8	21.3	30.1	H	30	2.0	40.0	9.9
376.011	2.3	14.3	18.1	34.7	H	60	1.0	46.0	11.3
400.027	2.4	15.1	24.8	42.3	H	50	1.0	46.0	3.7
700.641	3.3	18.8	17.4	39.5	H	30	1.0	46.0	6.5
32.409	0.7	12.3	21.9	34.9	V	50	1.0	40	5.1
36.947	0.6	12.3	23.3	36.2	V	60	1.0	40	3.8
45.631	0.8	13.6	17.4	31.8	V	50	1.0	40	8.2
138.851	1.3	8.9	20.1	30.3	V	30	1.0	43.5	13.2
500.421	2.7	16.6	17.1	36.4	V	30	1.0	46	9.6
700.623	3.3	18.8	15.0	37.1	V	50	1.0	46	8.9

Radiated Emission

EUT Name: HH41NH
Mode: Transmitting
Test site: SMQ NETC EMC Lab.
Antenna Position: Horizontal & Vertical
Comment: AC 120V/60Hz



Adaptor for EUT：UC13US TEN PAO

9KHz-30MHz

The low frequency, which started from 9 kHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit line per 15.31(o) was not reported.

Table 37 Radiated Emission Test Data 9k Hz-30MHz

Frequency MHz	Cable Loss(dB)	Antenna Factor(dB)	Readings(dBμV/m)	Level(dBμV/m)	Polarity(H/V)	Turntable Angle(deg)	Antenna Height(m)	Limits(dBμV/m)	Margin(dB)
--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--

30MHz-1GHz

Worst case is shown below for 30MHz-1GHz only.

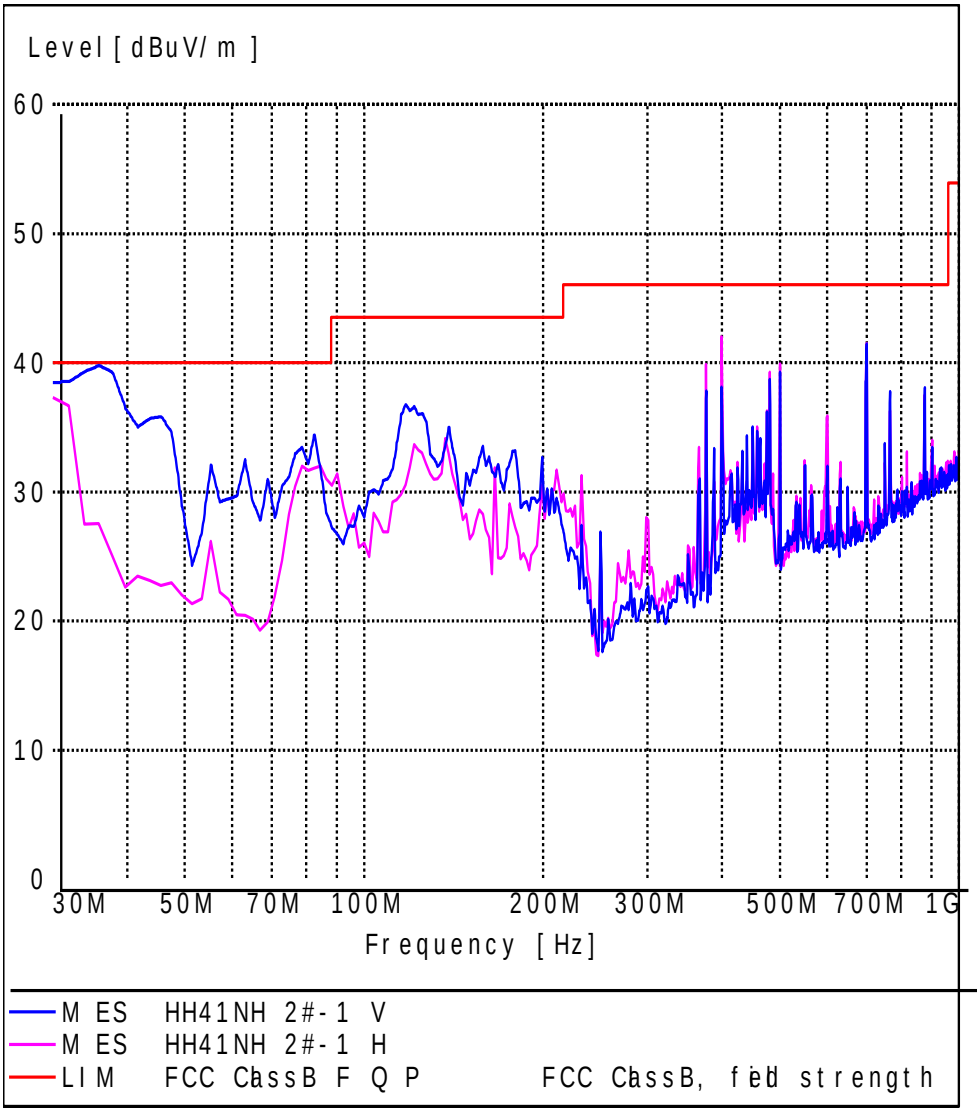
The emissions don’t show in following result tables are more than 20dB below the limits.

Table 38 Radiated Emission Test Data 30MHz-1GHz

Frequency MHz	Cable Loss(dB)	Antenna Factor(dB)	Readings(dBμV/m)	Level(dBμV/m)	Polarity(H/V)	Turntable Angle(deg)	Antenna Height(m)	Limits(dBμV/m)	Margin(dB)
31.077	0.6	12.3	21.3	34.2	H	30	2.0	40.0	5.8
78.566	1.1	7.8	19.9	28.8	H	30	2.0	40.0	11.2
121.363	1.3	10.5	18.3	30.1	H	20	2.0	43.5	13.4
376.33	2.3	14.3	22.1	38.7	H	60	1.0	46.0	7.3
400.057	2.4	15.1	24.2	41.7	H	50	1.0	46.0	4.3
700.643	3.3	18.8	17.5	39.6	H	30	1.0	46.0	6.4
30.323	0.6	12.3	21.1	34.0	V	20	3.0	40	6.0
35.514	0.6	12.3	22.4	35.3	V	30	3.0	40	4.7
45.633	0.8	13.6	17.6	32.0	V	30	3.0	40	8.0
117.474	1.3	12.3	18.9	32.5	V	30	2.0	43.5	11.0
500.421	2.7	16.6	17.0	36.3	V	20	1.0	46	9.7
700.544	3.3	18.8	15.7	37.8	V	30	1.0	46	8.2

Radiated Emission

EUT Name: HH41NH
Mode: Transmitting
Test site: SMQ NETC EMC Lab.
Antenna Position: Horizontal & Vertical
Comment: AC 120V/60Hz



1-18G

11b

Ch1

Radiated Emission

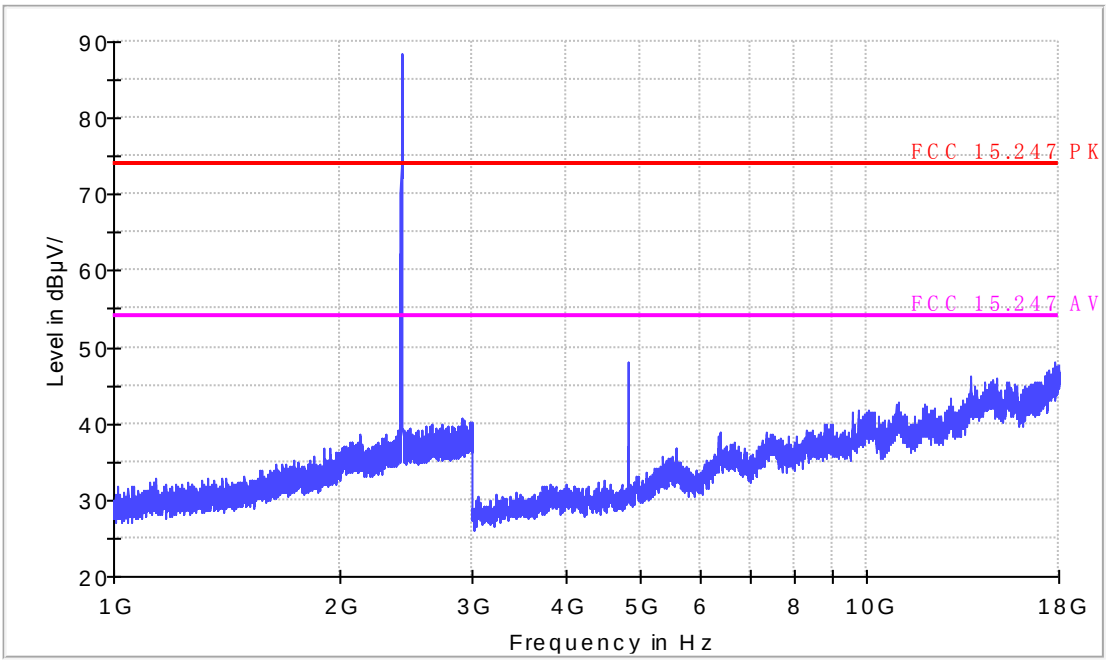
EUT Information

EUT Model Name:	HH41NH
Operation mode:	Wifi 11b CH1
Test Voltage:	
Comment:	

Common Information

Test Site:	SMO EMC Lab.
Environment	
Antenna Polarization:	Horizontal
Operator Name:	
Comment:	

FCC Electric Field Strength 1-18GHz operate on 2.4GHz



Radiated Emission

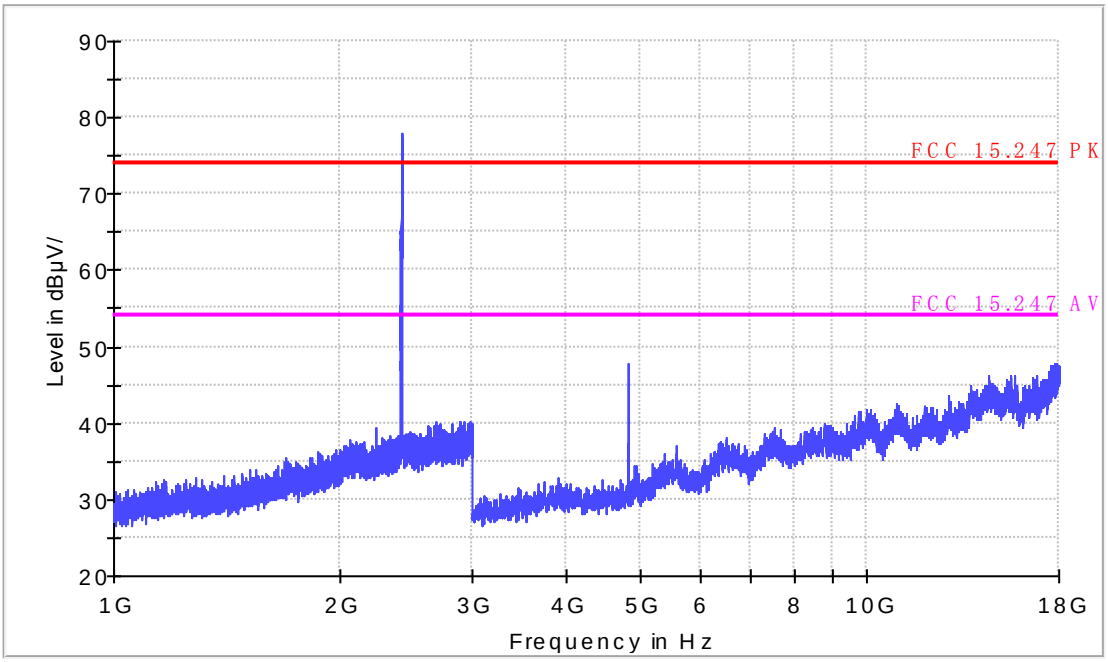
EUT Information

EUT Model Name:	HH41NH
Operation mode:	Wifi 11b CH1
Test Voltage:	
Comment:	

Common Information

Test Site:	SMQ EMC Lab.
Environment	
Antenna Polarization:	Vertical
Operator Name:	
Comment:	

FCC Electric Field Strength 1-18GHz operate on 2.4GHz



1-18G

11b

CH6

Radiated Emission

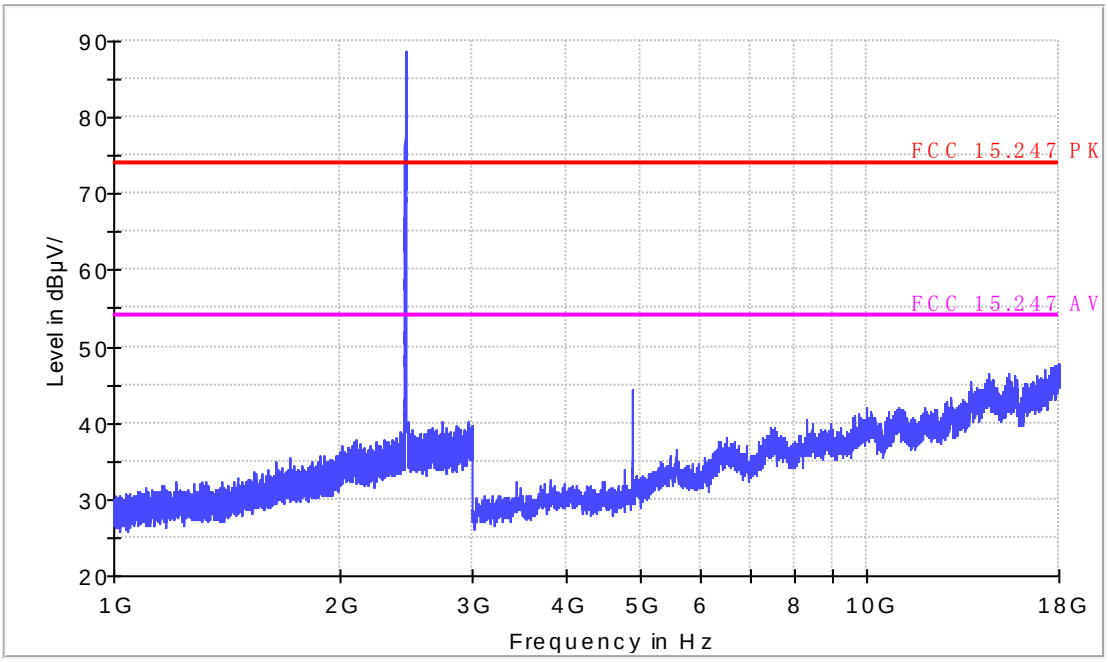
EUT Information

EUT Model Name:	HH41NH
Operation mode:	Wifi 11b CH6
Test Voltage:	
Comment:	

Common Information

Test Site:	SMQ EMC Lab.
Environment	
Antenna Polarization:	Horizontal
Operator Name:	
Comment:	

FCC Electric Field Strength 1-18GHz operate on 2.4GHz



Radiated Emission

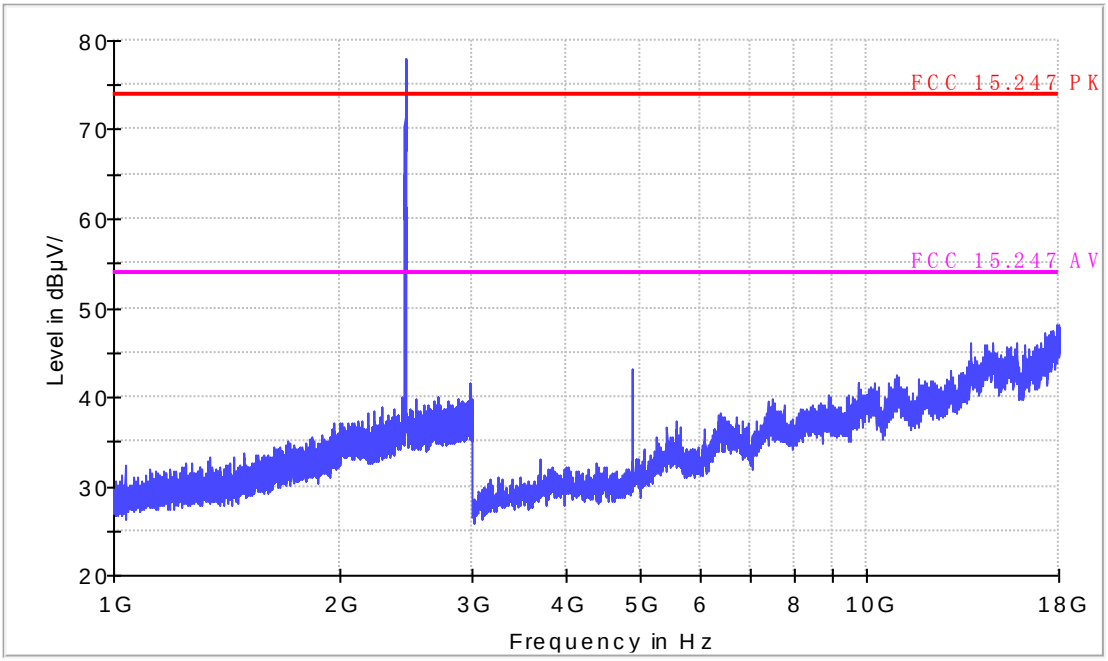
EUT Information

EUT Model Name:	HH41NH
Operation mode:	Wifi 11b CH6
Test Voltage:	
Comment:	

Common Information

Test Site:	SMO EMC Lab.
Environment	
Antenna Polarization:	Vertical
Operator Name:	
Comment:	

FCC Electric Field Strength 1-18GHz operate on 2.4GHz



1-18G

11b

CH11

Radiated Emission

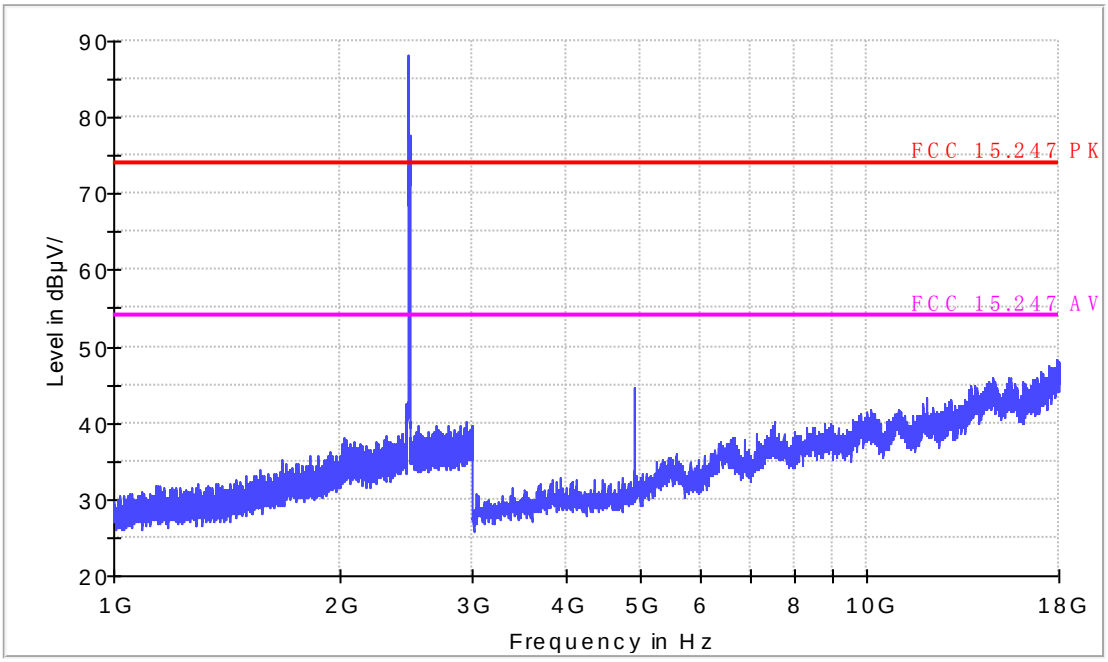
EUT Information

EUT Model Name:	HH41NH
Operation mode:	Wifi 11b CH11
Test Voltage:	
Comment:	

Common Information

Test Site:	SMQ EMC Lab.
Environment	
Antenna Polarization:	Horizontal
Operator Name:	
Comment:	

FCC Electric Field Strength 1-18GHz operate on 2.4GHz



Radiated Emission

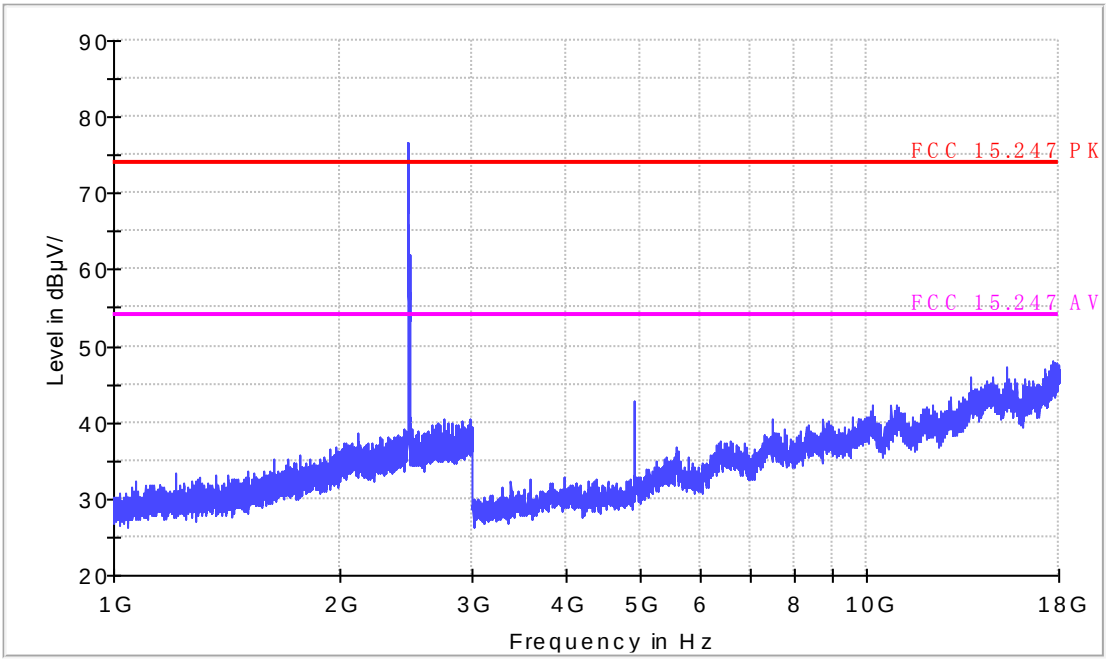
EUT Information

EUT Model Name:	HH41NH
Operation mode:	Wifi 11b CH11
Test Voltage:	
Comment:	

Common Information

Test Site:	SMO EMC Lab.
Environment	
Antenna Polarization:	Vertical
Operator Name:	
Comment:	

FCC Electric Field Strength 1-18GHz operate on 2.4GHz



1-18G

11g

CH1

Radiated Emission

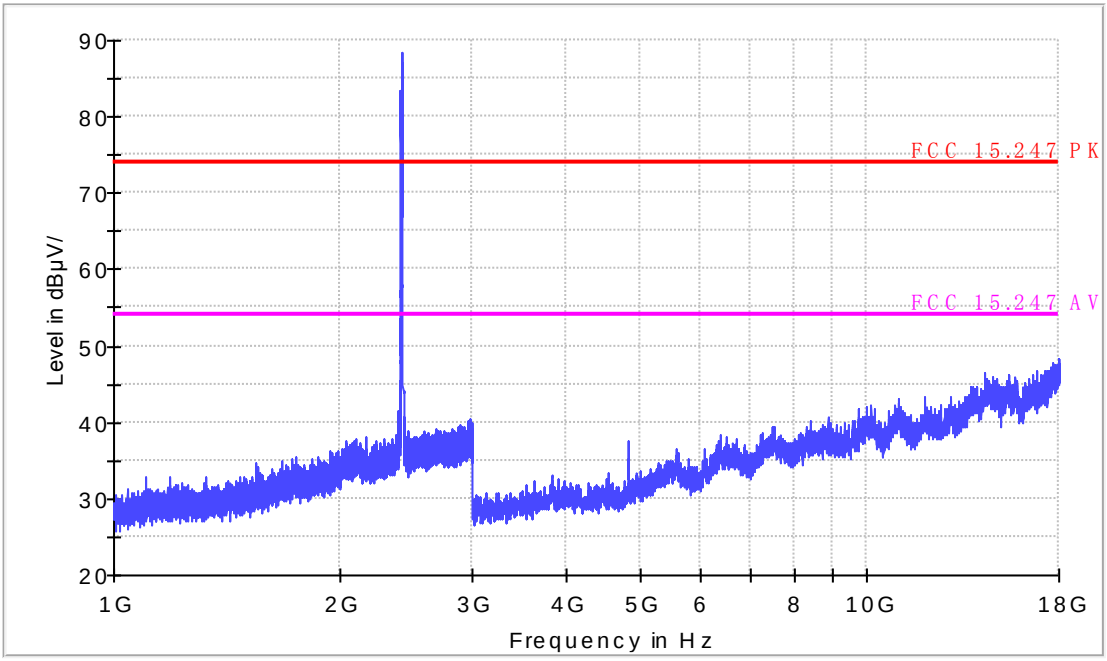
EUT Information

EUT Model Name:	HH41NH
Operation mode:	Wifi 11g CH1
Test Voltage:	
Comment:	

Common Information

Test Site:	SMQ EMC Lab.
Environment	
Antenna Polarization:	Horizontal
Operator Name:	
Comment:	

FCC Electric Field Strength 1-18GHz operate on 2.4GHz



Radiated Emission

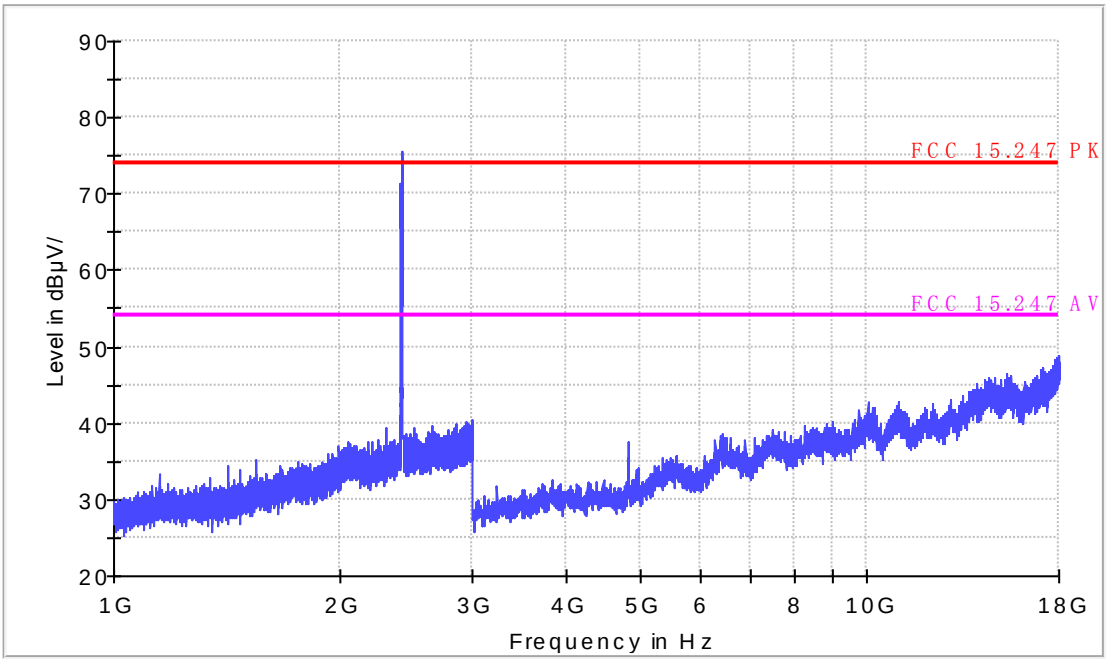
EUT Information

EUT Model Name:	HH41NH
Operation mode:	Wifi 11g CH1
Test Voltage:	
Comment:	

Common Information

Test Site:	SMQ EMC Lab.
Environment	
Antenna Polarization:	Vertical
Operator Name:	
Comment:	

FCC Electric Field Strength 1-18GHz operate on 2.4GHz



1-18G

11g

CH6

Radiated Emission

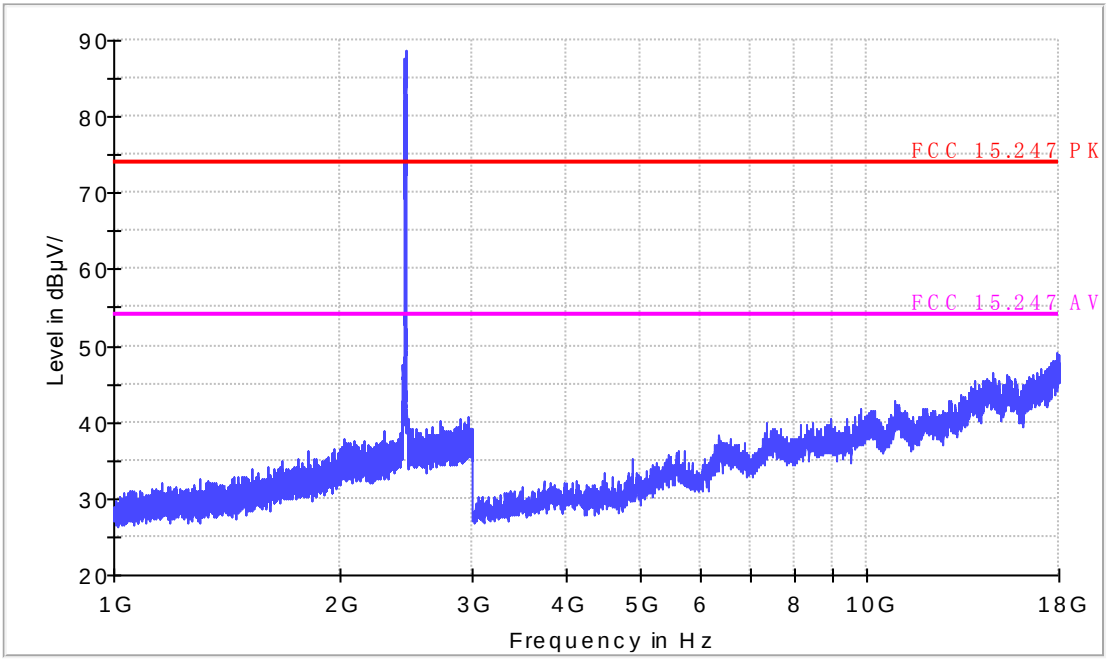
EUT Information

EUT Model Name:	HH41NH
Operation mode:	Wifi 11g CH6
Test Voltage:	
Comment:	

Common Information

Test Site:	SMQ EMC Lab.
Environment	
Antenna Polarization:	Horizontal
Operator Name:	
Comment:	

FCC Electric Field Strength 1-18GHz operate on 2.4GHz



Radiated Emission

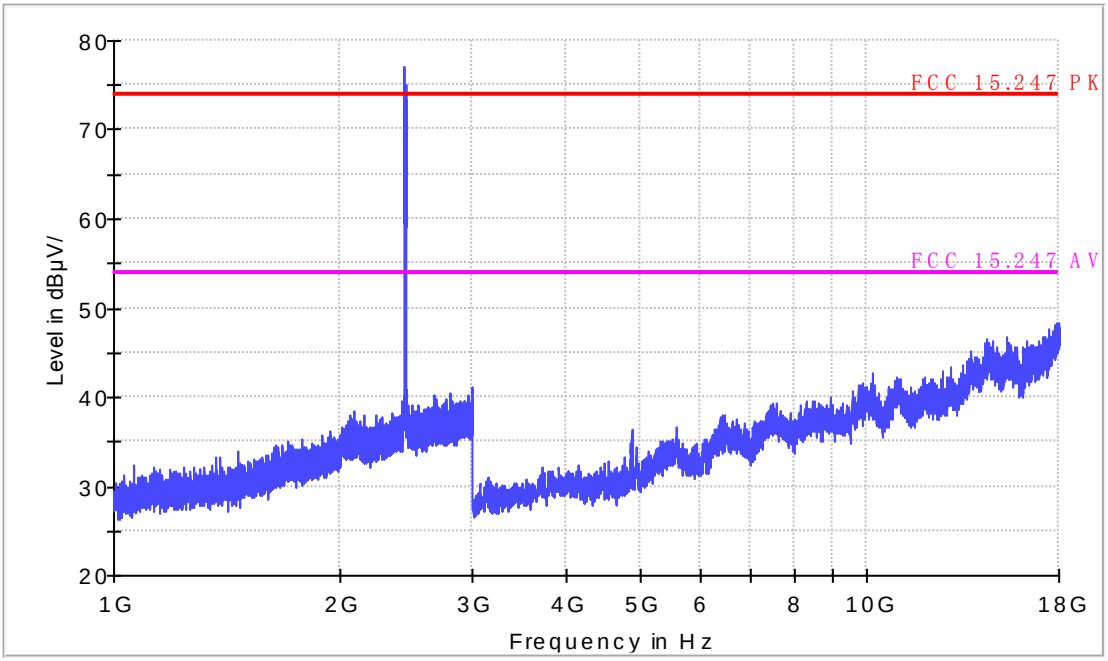
EUT Information

EUT Model Name:	HH41NH
Operation mode:	Wifi 11g CH6
Test Voltage:	
Comment:	

Common Information

Test Site:	SMO EMC Lab.
Environment	
Antenna Polarization:	Vertical
Operator Name:	
Comment:	

FCC Electric Field Strength 1-18GHz operate on 2.4GHz



1-18G

11g

CH11

Radiated Emission

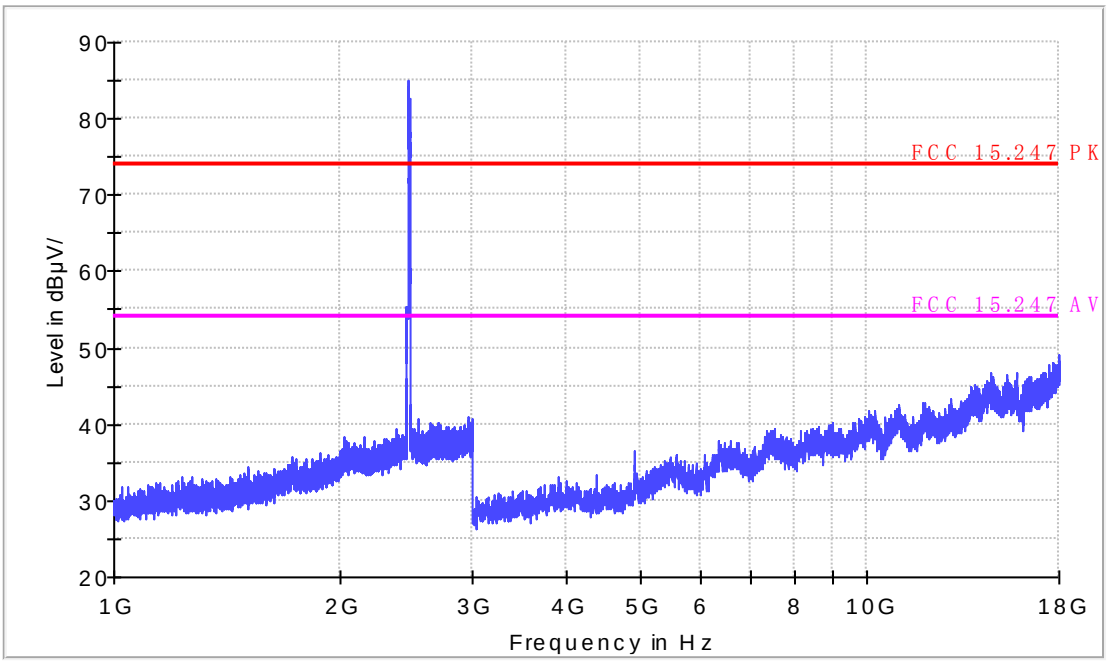
EUT Information

EUT Model Name:	HH41NH
Operation mode:	Wifi 11g CH11
Test Voltage:	
Comment:	

Common Information

Test Site:	SMQ EMC Lab.
Environment	
Antenna Polarization:	Horizontal
Operator Name:	
Comment:	

FCC Electric Field Strength 1-18GHz operate on 2.4GHz



Radiated Emission

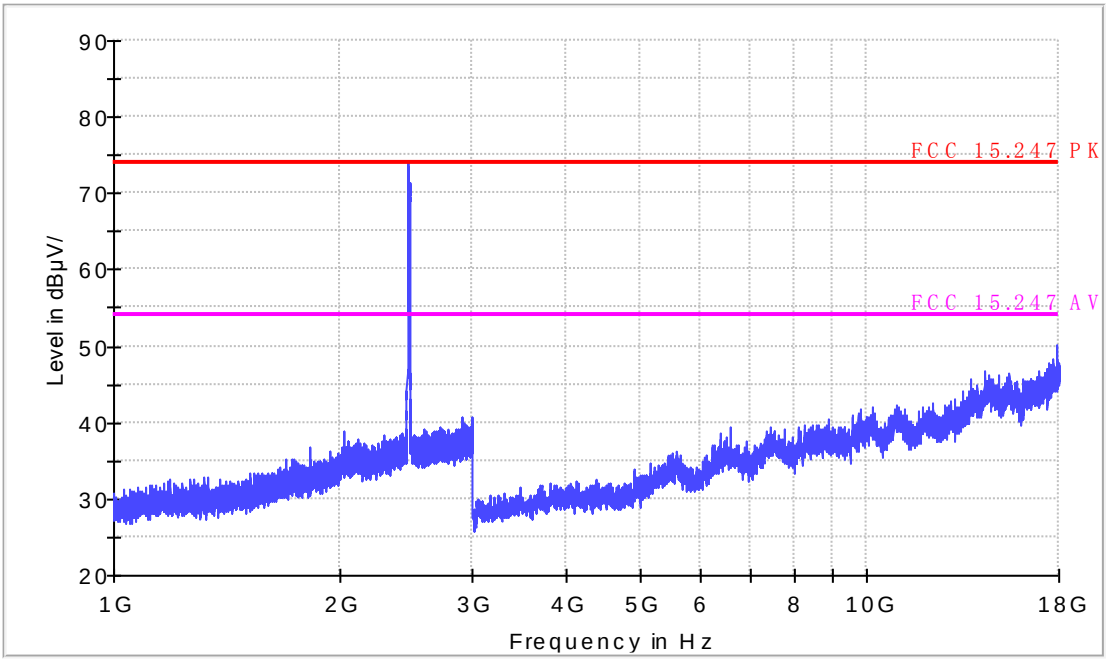
EUT Information

EUT Model Name:	M HH41NH
Operation mode:	Wifi 11g CH11
Test Voltage:	
Comment:	

Common Information

Test Site:	SMO EMC Lab.
Environment	
Antenna Polarization:	Vertical
Operator Name:	
Comment:	

FCC Electric Field Strength 1-18GHz operate on 2.4GHz



1-18G

11n-HT20

CH1

Radiated Emission

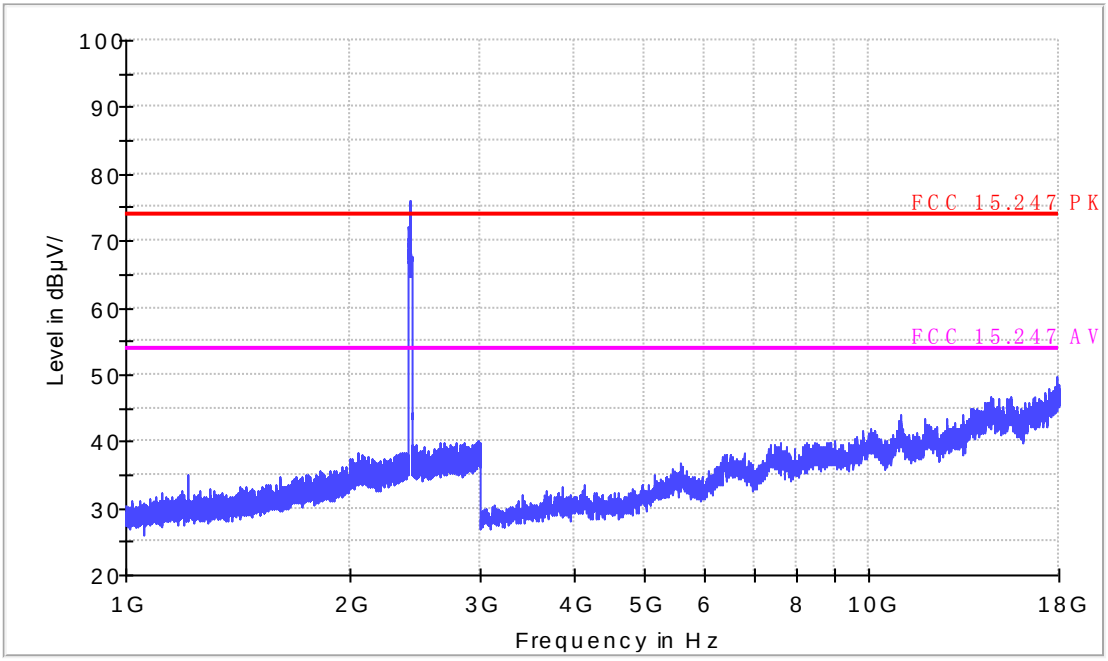
EUT Information

EUT Model Name:	HH41NH
Operation mode:	2TX Mode in Wifi 11n HT20 CH1 Chain 0 + 1
Test Voltage:	
Comment:	

Common Information

Test Site:	SMQ EMC Lab.
Environment	
Antenna Polarization:	Horizontal
Operator Name:	
Comment:	

FCC Electric Field Strength 1-18GHz operate on 2.4GHz



Radiated Emission

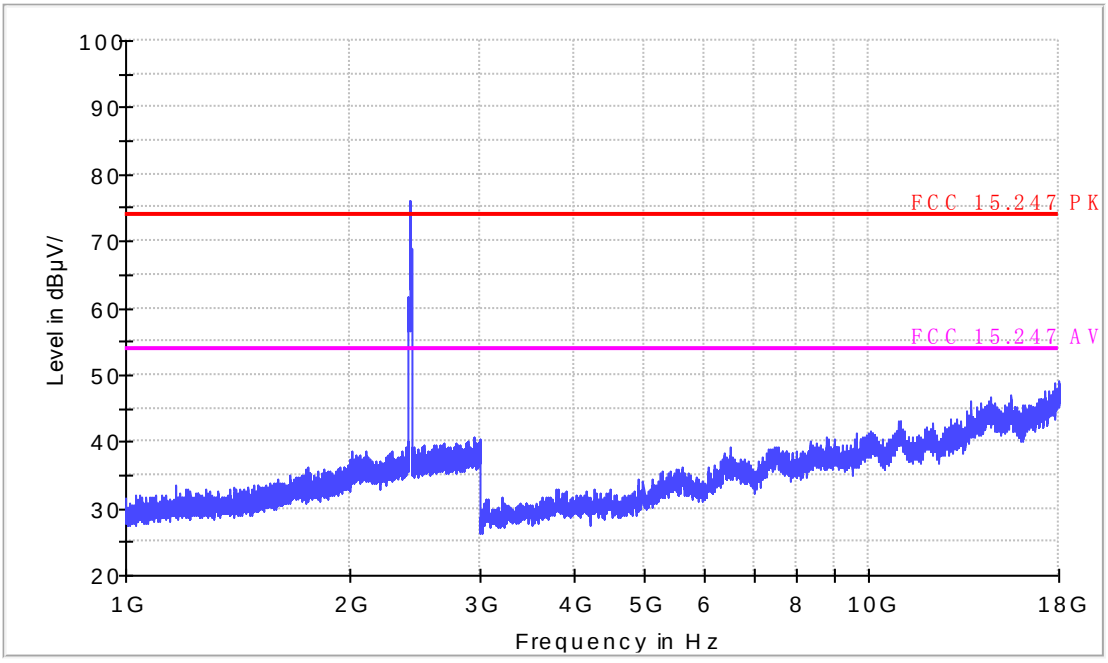
EUT Information

EUT Model Name:	HH41NH
Operation mode:	2TX Mode in Wifi 11n HT20 CH1 Chain 0 + 1
Test Voltage:	
Comment:	

Common Information

Test Site:	SMO EMC Lab.
Environment	
Antenna Polarization:	Vertical
Operator Name:	
Comment:	

FCC Electric Field Strength 1-18GHz operate on 2.4GHz



1-18G

11n-HT20

CH6

Radiated Emission

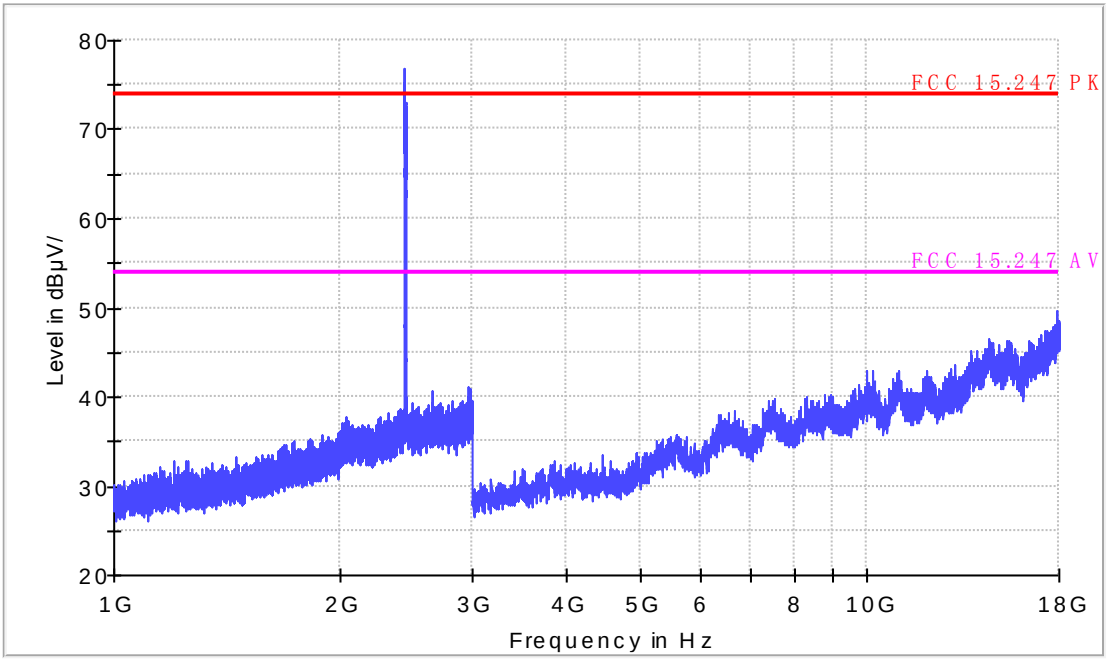
EUT Information

EUT Model Name:	HH41NH
Operation mode:	2TX Mode in Wifi 11n HT20 CH6 Chain 0 + 1
Test Voltage:	
Comment:	

Common Information

Test Site:	SMQ EMC Lab.
Environment	
Antenna Polarization:	Horizontal
Operator Name:	
Comment:	

FCC Electric Field Strength 1-18GHz operate on 2.4GHz



Radiated Emission

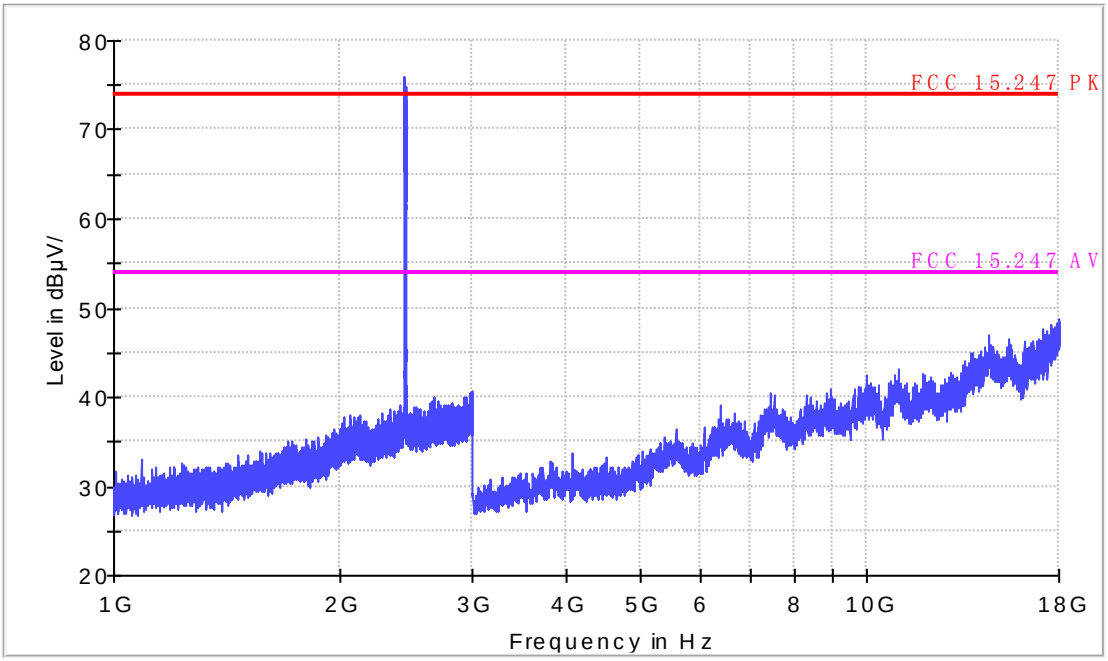
EUT Information

EUT Model Name:	HH41NH
Operation mode:	2TX Mode in Wifi 11n HT20 CH6 Chain 0 + 1
Test Voltage:	
Comment:	

Common Information

Test Site:	SMO EMC Lab.
Environment	
Antenna Polarization:	Vertical
Operator Name:	
Comment:	

FCC Electric Field Strength 1-18GHz operate on 2.4GHz



1-18G

11n-HT20

CH11

Radiated Emission

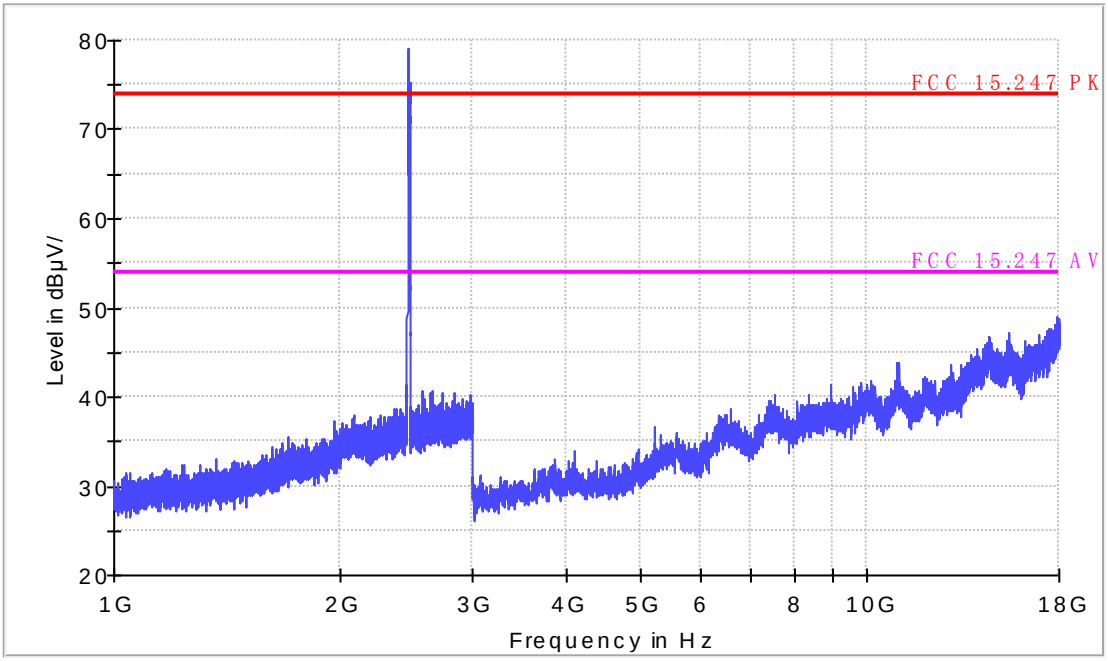
EUT Information

EUT Model Name:	HH41NH
Operation mode:	2TX Mode in Wifi 11n HT20 CH11 Chain 0 + 1
Test Voltage:	
Comment:	

Common Information

Test Site:	SMQ EMC Lab.
Environment	
Antenna Polarization:	Horizontal
Operator Name:	
Comment:	

FCC Electric Field Strength 1-18GHz operate on 2.4GHz



Radiated Emission

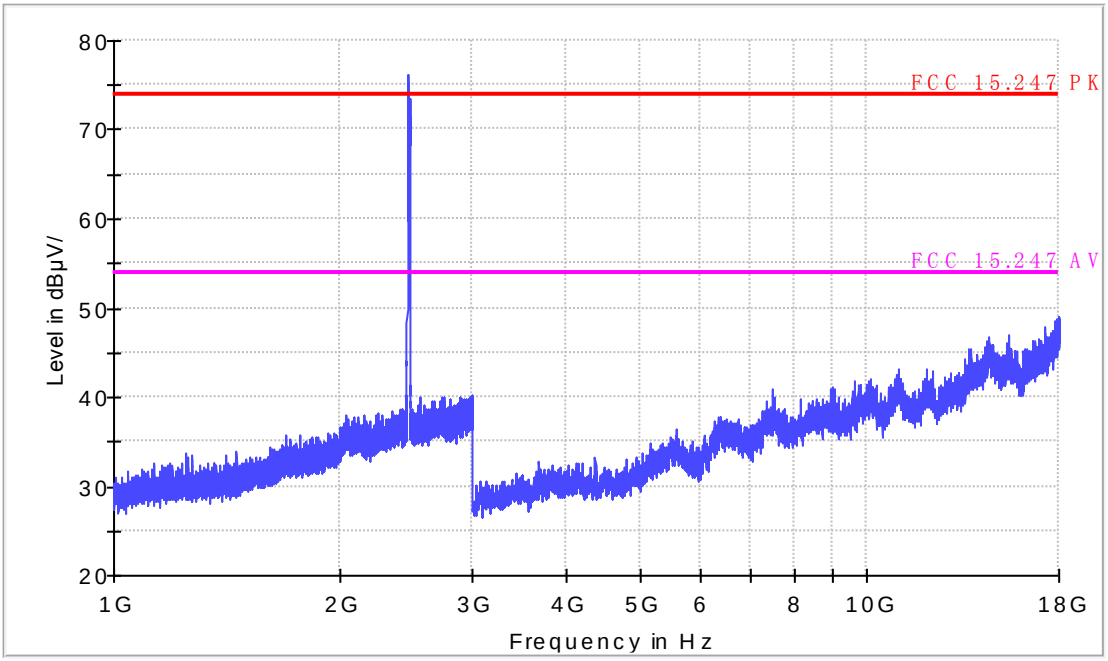
EUT Information

EUT Model Name:	HH41NH
Operation mode:	2TX Mode in Wifi 11n HT20 CH11 Chain 0 + 1
Test Voltage:	
Comment:	

Common Information

Test Site:	SMO EMC Lab.
Environment	
Antenna Polarization:	Vertical
Operator Name:	
Comment:	

FCC Electric Field Strength 1-18GHz operate on 2.4GHz



1-18G

11n-HT40

CH3

Radiated Emission

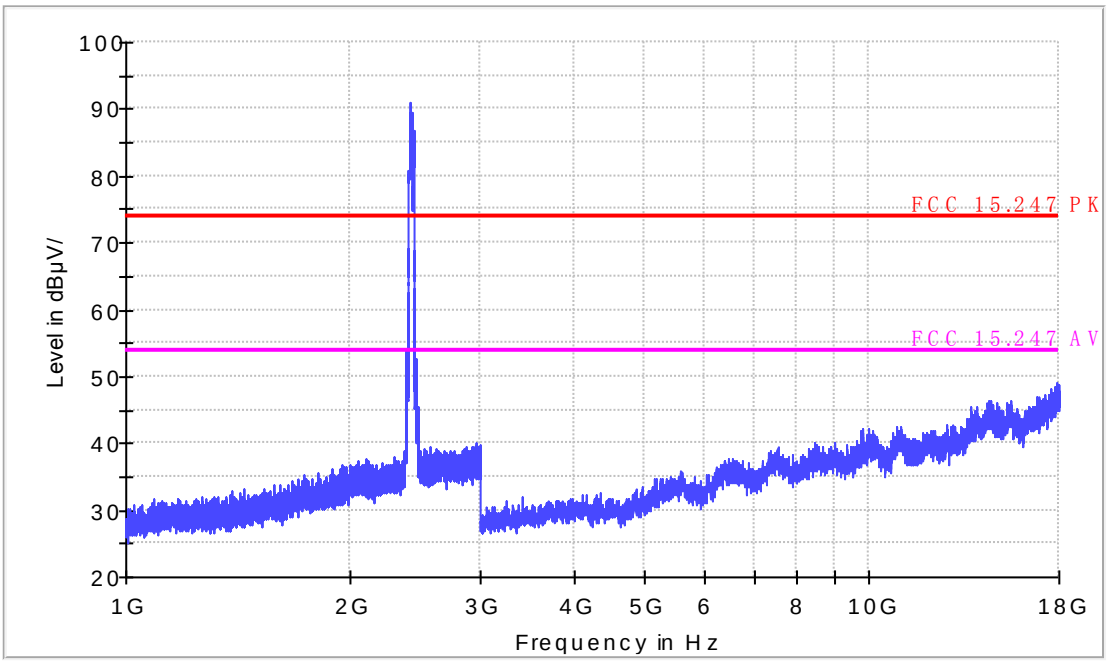
EUT Information

EUT Model Name:	HH41NH
Operation mode:	2TX Mode in Wifi 11n HT40 CH3 Chain 0 + 1
Test Voltage:	
Comment:	

Common Information

Test Site:	SMQ EMC Lab.
Environment	
Antenna Polarization:	Horizontal
Operator Name:	
Comment:	

FCC Electric Field Strength 1-18GHz operate on 2.4GHz



Radiated Emission

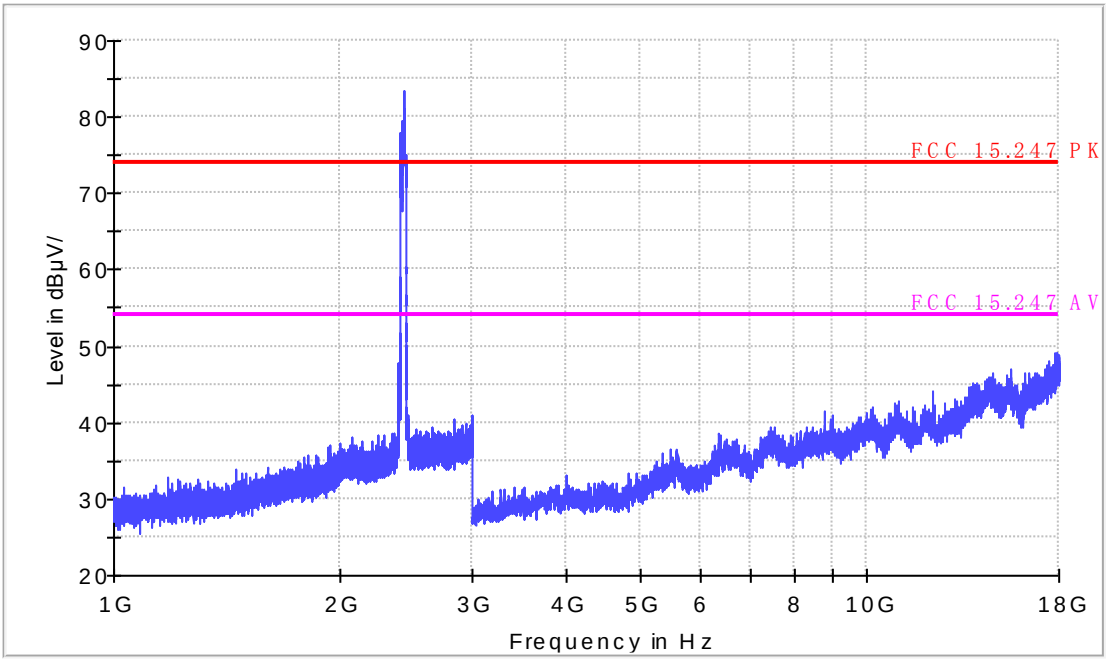
EUT Information

EUT Model Name:	HH41NH
Operation mode:	2TX Mode in Wifi 11n HT40 CH3 Chain 0 + 1
Test Voltage:	
Comment:	

Common Information

Test Site:	SMO EMC Lab.
Environment	
Antenna Polarization:	Vertical
Operator Name:	
Comment:	

FCC Electric Field Strength 1-18GHz operate on 2.4GHz



1-18G

11n-HT40

CH6

Radiated Emission

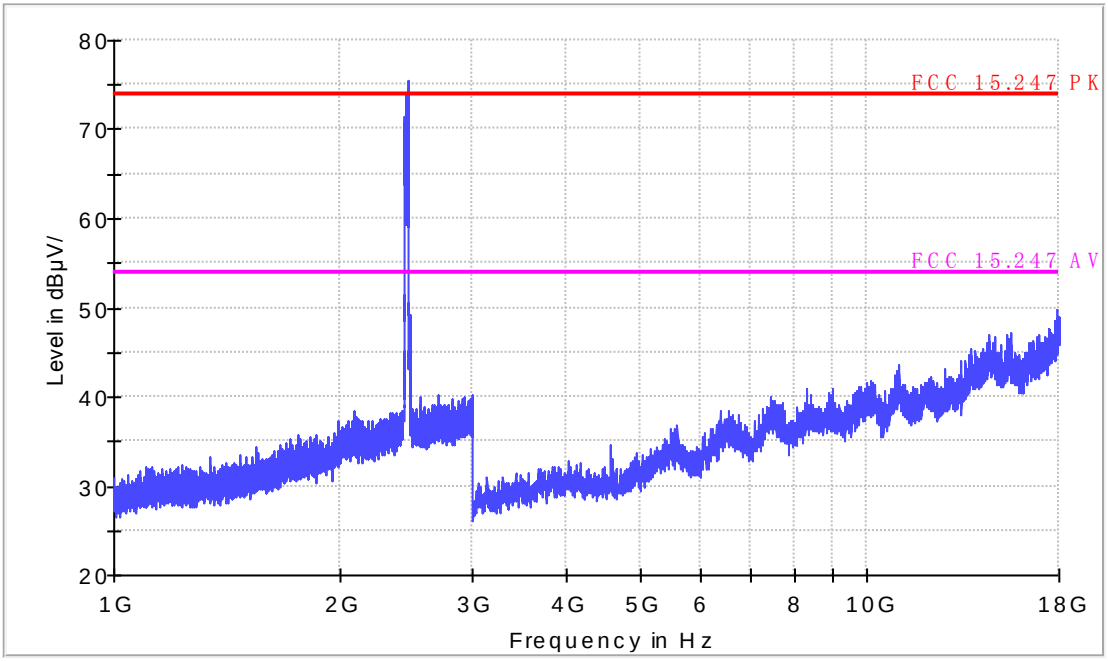
EUT Information

EUT Model Name:	HH41NH
Operation mode:	2TX Mode in Wifi 11n HT40 CH6 Chain 0 + 1
Test Voltage:	
Comment:	

Common Information

Test Site:	SMQ EMC Lab.
Environment	
Antenna Polarization:	Horizontal
Operator Name:	
Comment:	

FCC Electric Field Strength 1-18GHz operate on 2.4GHz



Radiated Emission

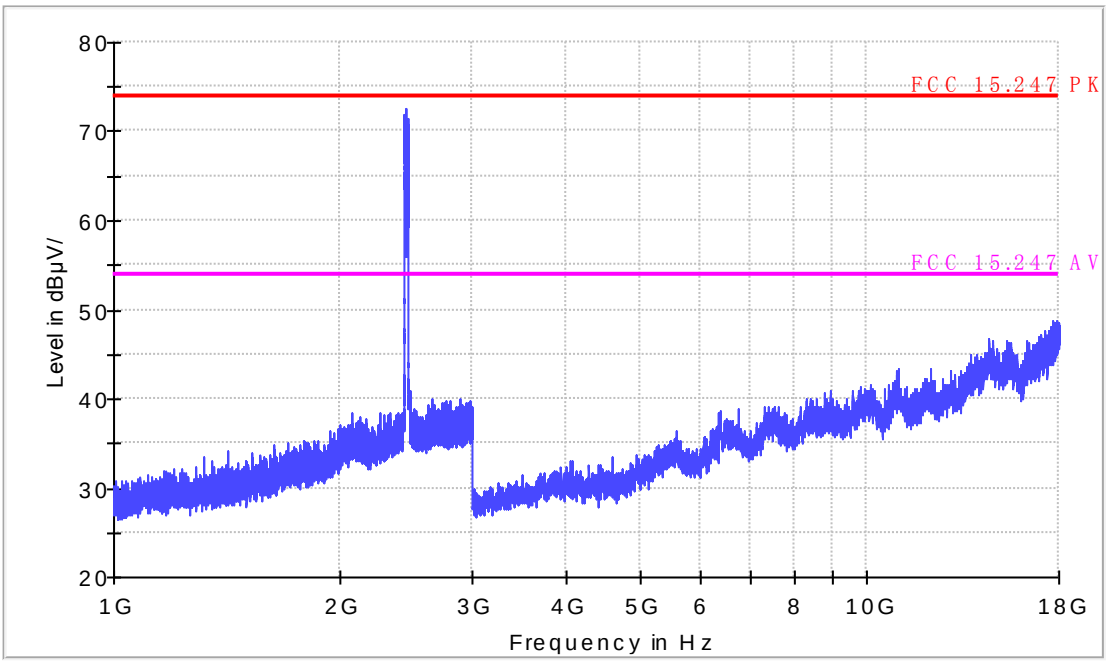
EUT Information

EUT Model Name:	HH41NH
Operation mode:	2TX Mode in Wifi 11n HT40 CH6 Chain 0 + 1
Test Voltage:	
Comment:	

Common Information

Test Site:	SMQ EMC Lab.
Environment	
Antenna Polarization:	Vertical
Operator Name:	
Comment:	

FCC Electric Field Strength 1-18GHz operate on 2.4GHz



1-18G

11n-HT40

CH9

Radiated Emission

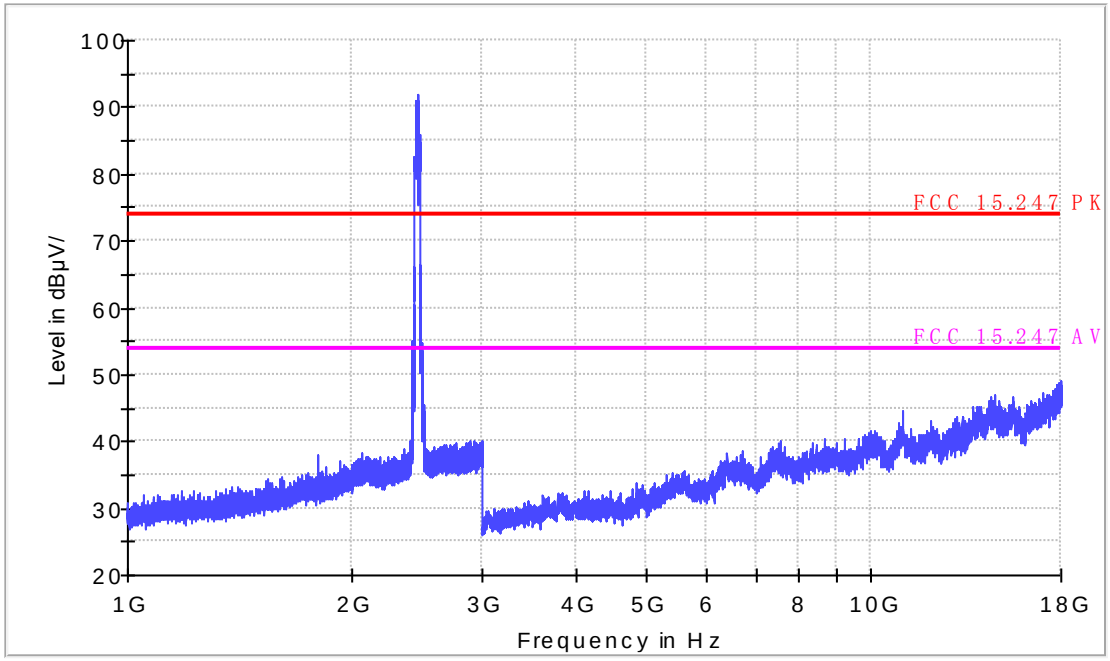
EUT Information

EUT Model Name:	HH41NH
Operation mode:	2TX Mode in Wifi 11n HT40 CH9 Chain 0 + 1
Test Voltage:	
Comment:	

Common Information

Test Site:	SMQ EMC Lab.
Environment	
Antenna Polarization:	Horizontal
Operator Name:	
Comment:	

FCC Electric Field Strength 1-18GHz operate on 2.4GHz



Radiated Emission

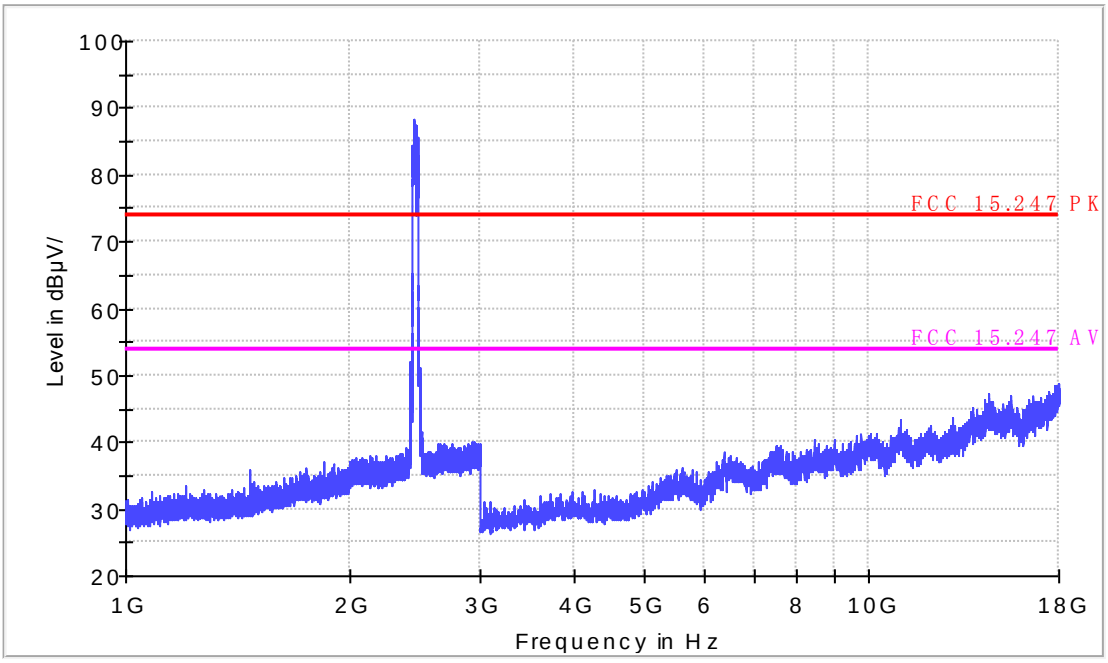
EUT Information

EUT Model Name:	HH41NH
Operation mode:	2TX Mode in Wifi 11n HT40 CH9 Chain 0 + 1
Test Voltage:	
Comment:	

Common Information

Test Site:	SMQ EMC Lab.
Environment	
Antenna Polarization:	Vertical
Operator Name:	
Comment:	

FCC Electric Field Strength 1-18GHz operate on 2.4GHz



Radiated Emission

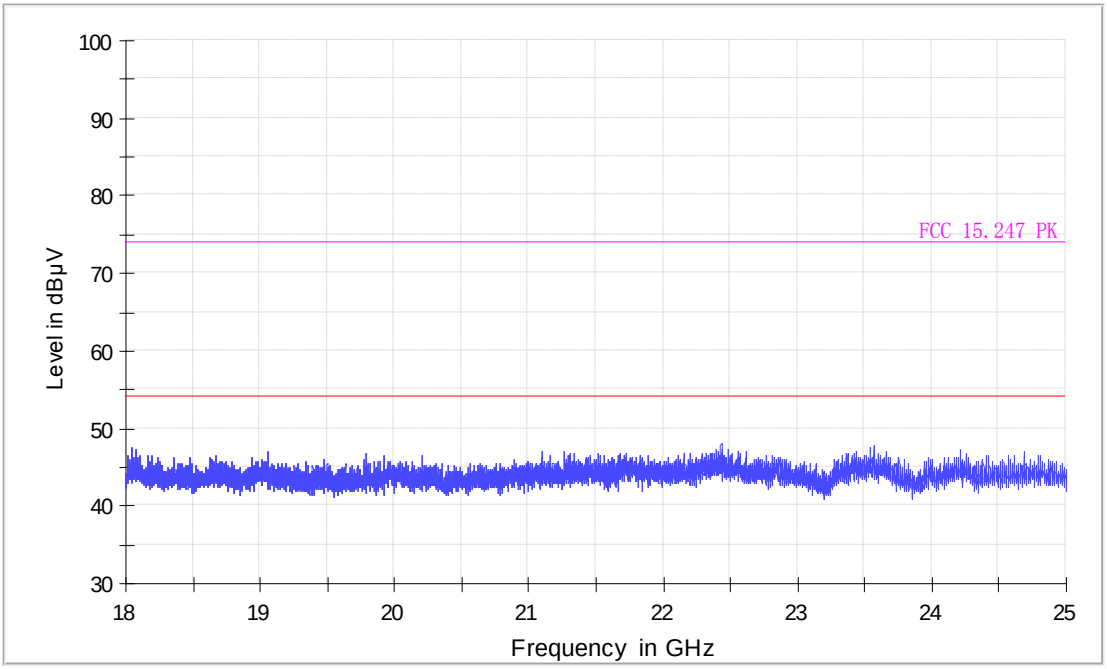
EUT Information

EUT Model Name:	HH41NH
Operation mode:	Wifi 11b CH1
Test Voltage:	
Comment:	

Common Information

Test Site:	SMO EMC Lab.
Environment	
Antenna Polarization:	Horizontal
Operator Name:	
Comment:	

FCC Electric Field Strength 18-26.5GHz



Radiated Emission

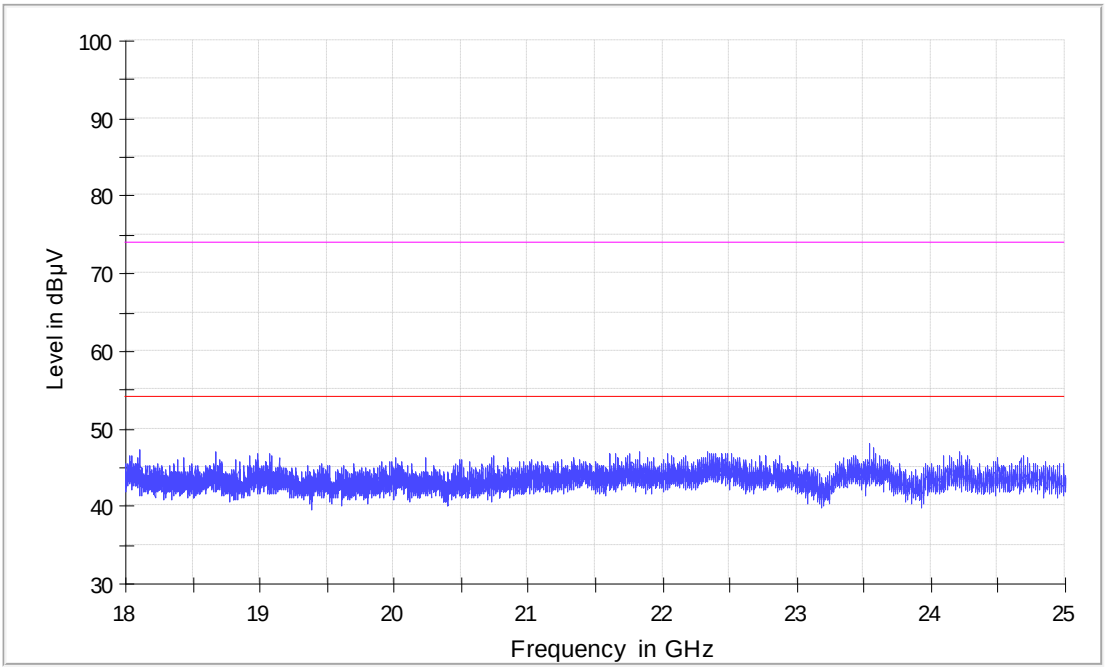
EUT Information

EUT Model Name:	HH41NH
Operation mode:	Wifi 11b CH1
Test Voltage:	
Comment:	

Common Information

Test Site:	SMQ EMC Lab.
Environment	
Antenna Polarization:	Vertical
Operator Name:	
Comment:	

FCC Electric Field Strength 18-26.5GHz



Radiated Emission

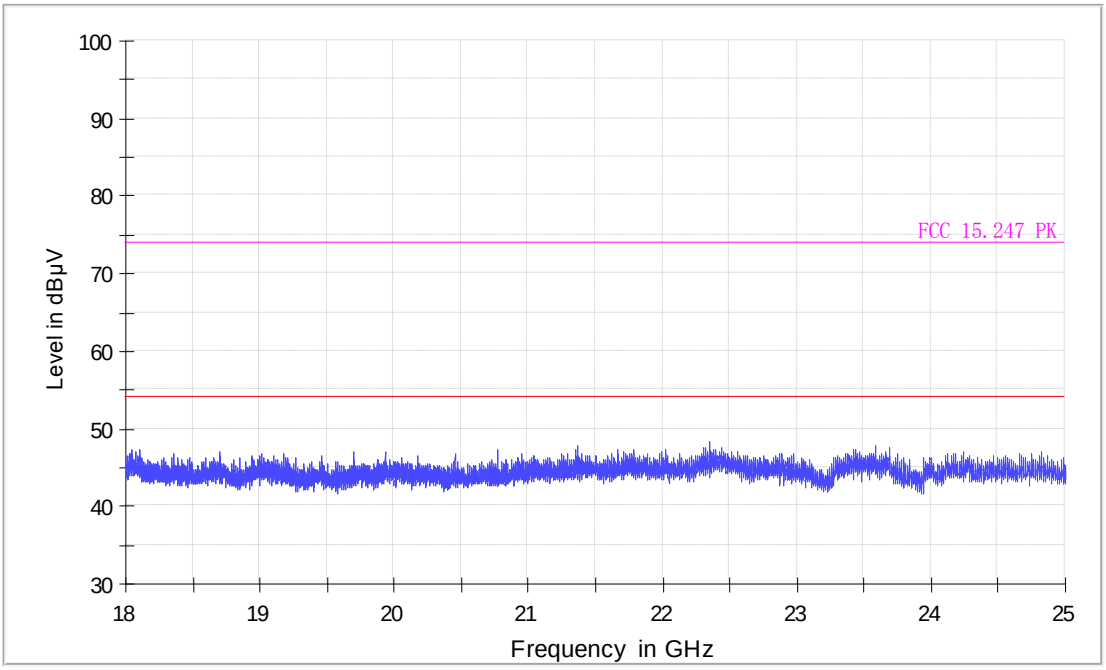
EUT Information

EUT Model Name:	HH41NH
Operation mode:	Wifi 11b CH6
Test Voltage:	
Comment:	

Common Information

Test Site:	SMQ EMC Lab.
Environment	
Antenna Polarization:	Horizontal
Operator Name:	
Comment:	

FCC Electric Field Strength 18-26.5GHz



Radiated Emission

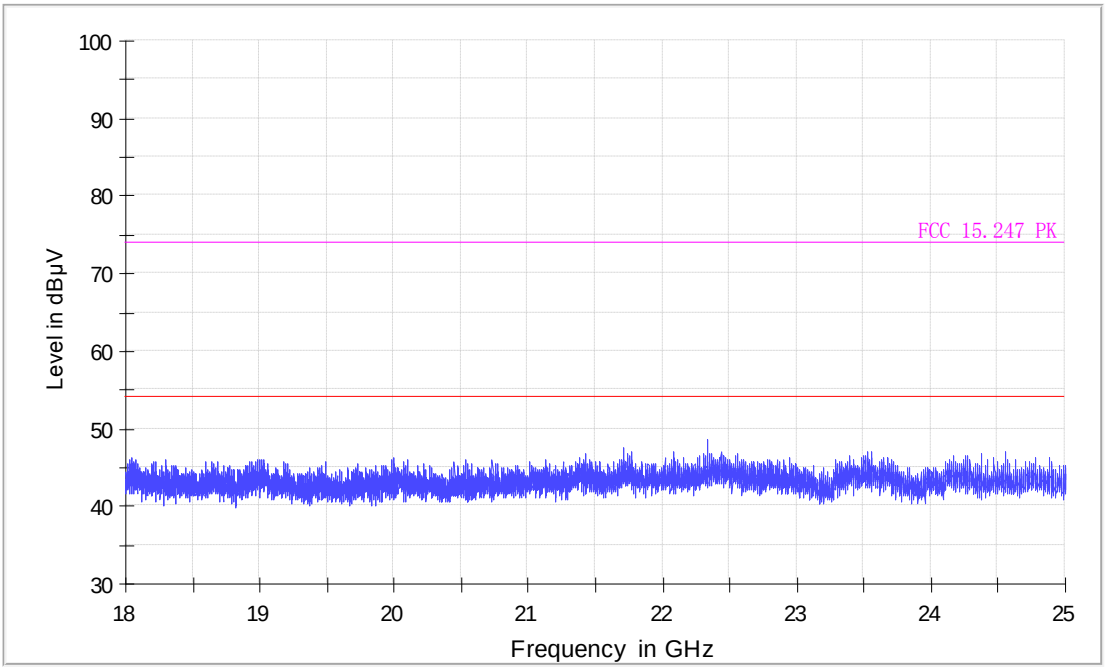
EUT Information

EUT Model Name:	HH41NH
Operation mode:	Wifi 11b CH6
Test Voltage:	
Comment:	

Common Information

Test Site:	SMQ EMC Lab.
Environment	
Antenna Polarization:	Vertical
Operator Name:	
Comment:	

FCC Electric Field Strength 18-26.5GHz



Radiated Emission

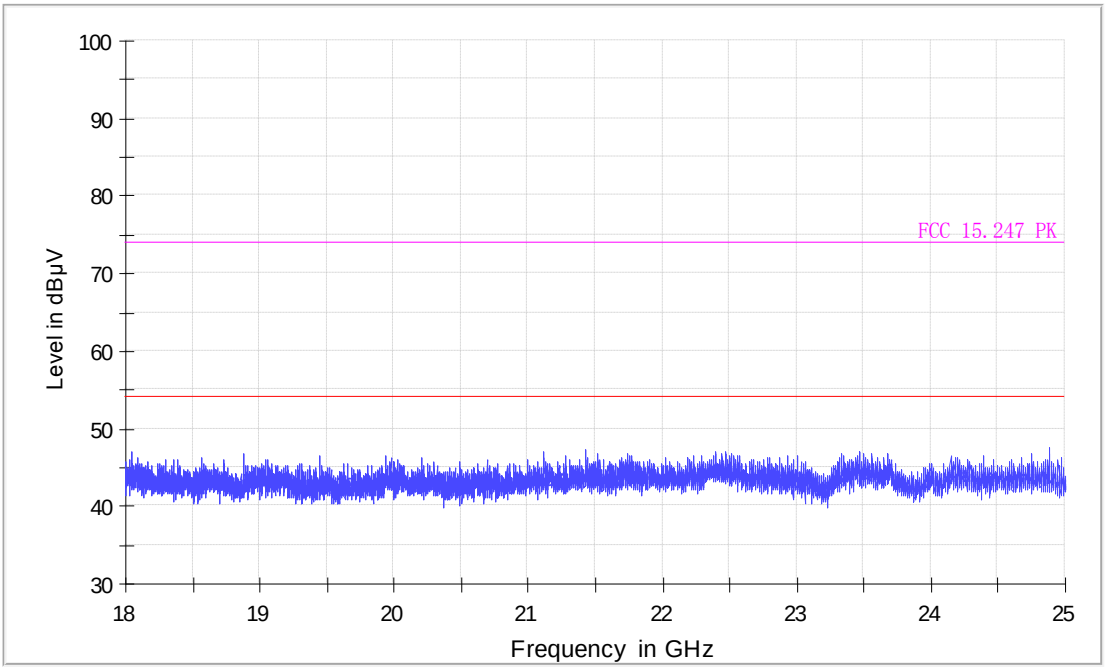
EUT Information

EUT Model Name:	HH41NH
Operation mode:	Wifi 11b CH11
Test Voltage:	
Comment:	

Common Information

Test Site:	SMQ EMC Lab.
Environment	
Antenna Polarization:	Horizontal
Operator Name:	
Comment:	

FCC Electric Field Strength 18-26.5GHz



Radiated Emission

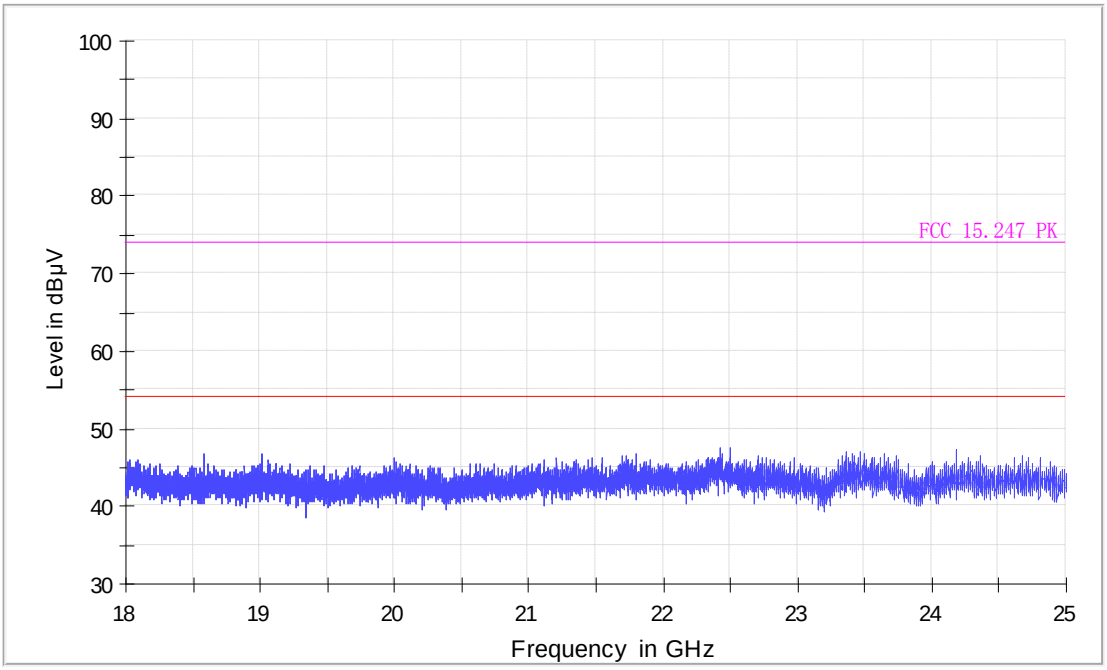
EUT Information

EUT Model Name:	HH41NH
Operation mode:	Wifi 11b CH11
Test Voltage:	
Comment:	

Common Information

Test Site:	SMQ EMC Lab.
Environment	
Antenna Polarization:	Vertical
Operator Name:	
Comment:	

FCC Electric Field Strength 18-26.5GHz



Radiated Emission

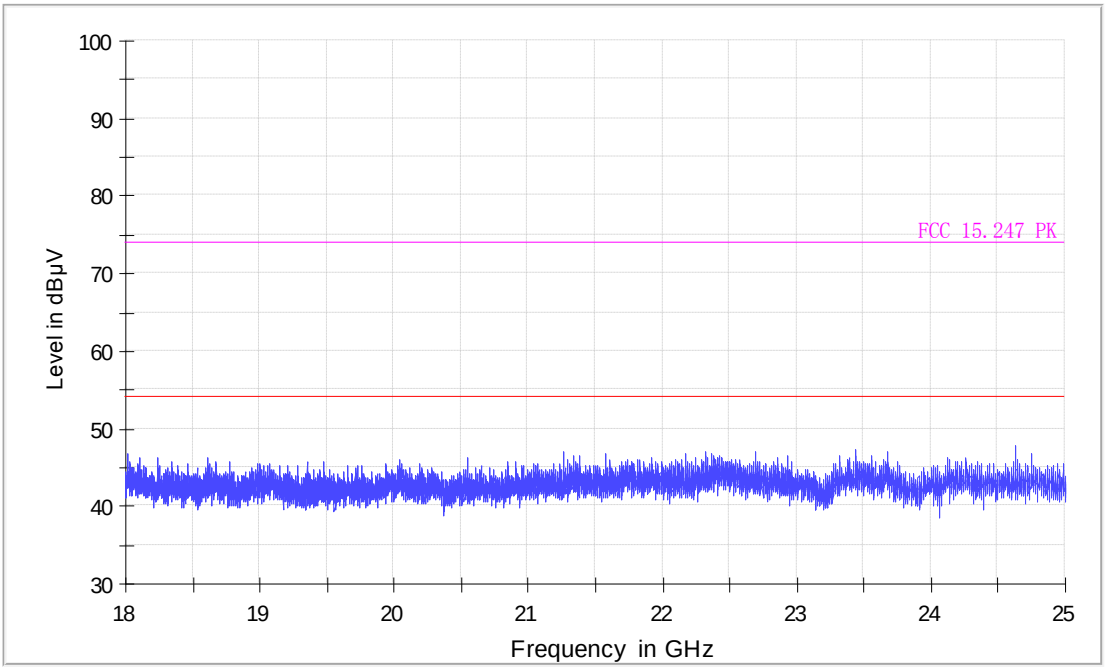
EUT Information

EUT Model Name:	HH41NH
Operation mode:	Wifi 11g CH1
Test Voltage:	
Comment:	

Common Information

Test Site:	SMQ EMC Lab.
Environment	
Antenna Polarization:	Horizontal
Operator Name:	
Comment:	

FCC Electric Field Strength 18-26.5GHz



Radiated Emission

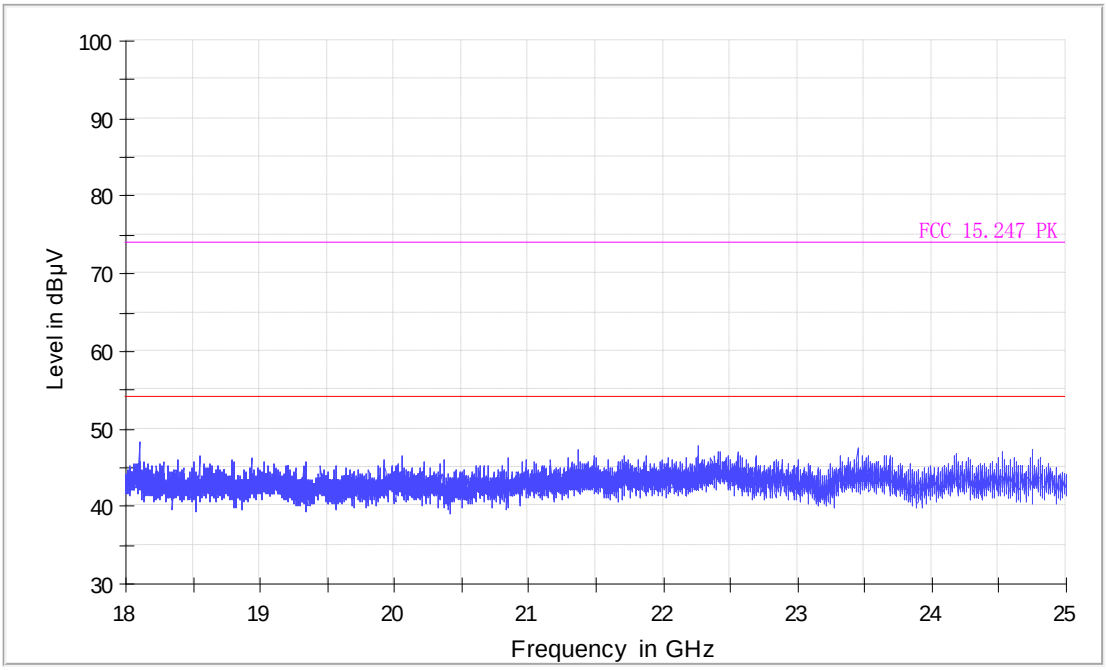
EUT Information

EUT Model Name:	HH41NH
Operation mode:	Wifi 11g CH1
Test Voltage:	
Comment:	

Common Information

Test Site:	SMQ EMC Lab.
Environment	
Antenna Polarization:	Vertical
Operator Name:	
Comment:	

FCC Electric Field Strength 18-26.5GHz



Radiated Emission

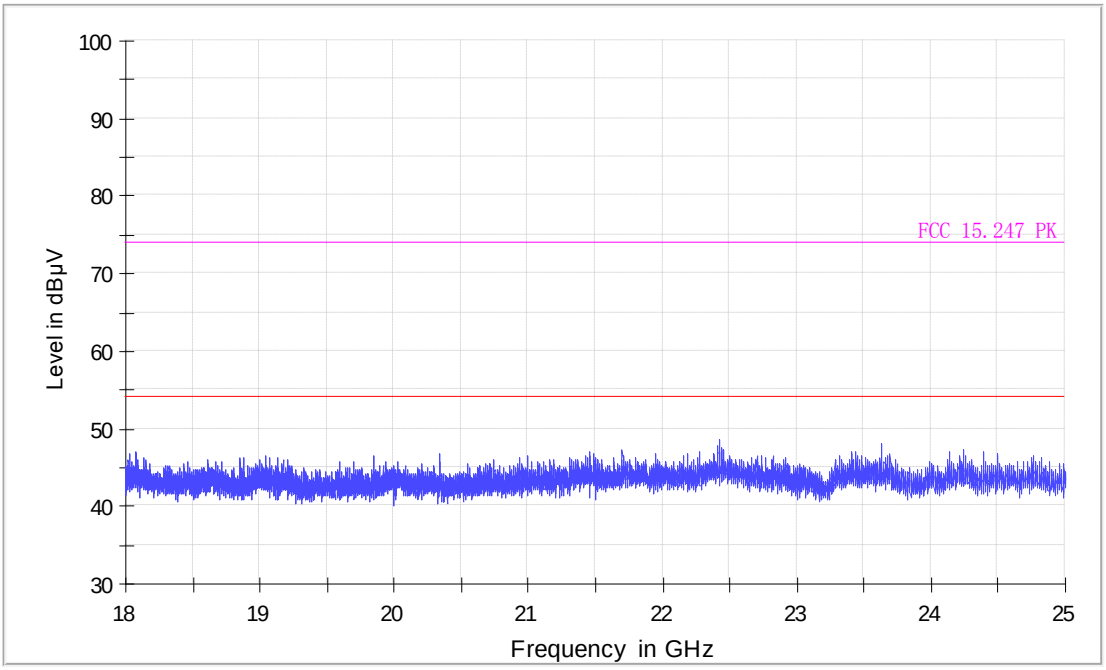
EUT Information

EUT Model Name:	HH41NH
Operation mode:	Wifi 11g CH6
Test Voltage:	
Comment:	

Common Information

Test Site:	SMQ EMC Lab.
Environment	
Antenna Polarization:	Horizontal
Operator Name:	
Comment:	

FCC Electric Field Strength 18-26.5GHz



Radiated Emission

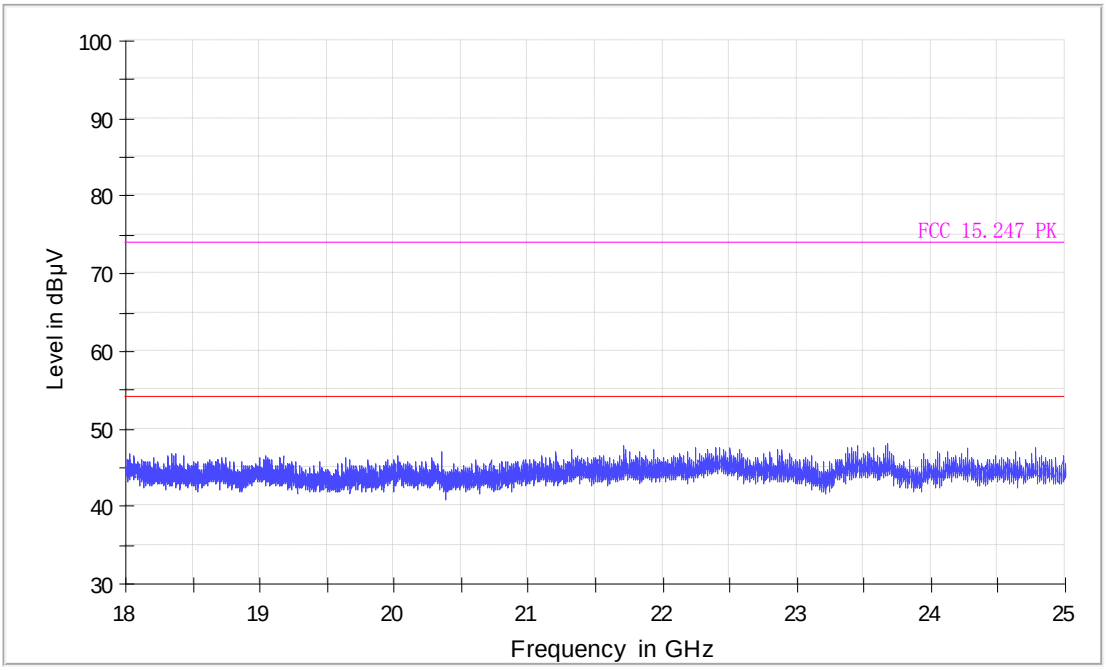
EUT Information

EUT Model Name:	HH41NH
Operation mode:	Wifi 11g CH6
Test Voltage:	
Comment:	

Common Information

Test Site:	SMQ EMC Lab.
Environment	
Antenna Polarization:	Vertical
Operator Name:	
Comment:	

FCC Electric Field Strength 18-26.5GHz



Radiated Emission

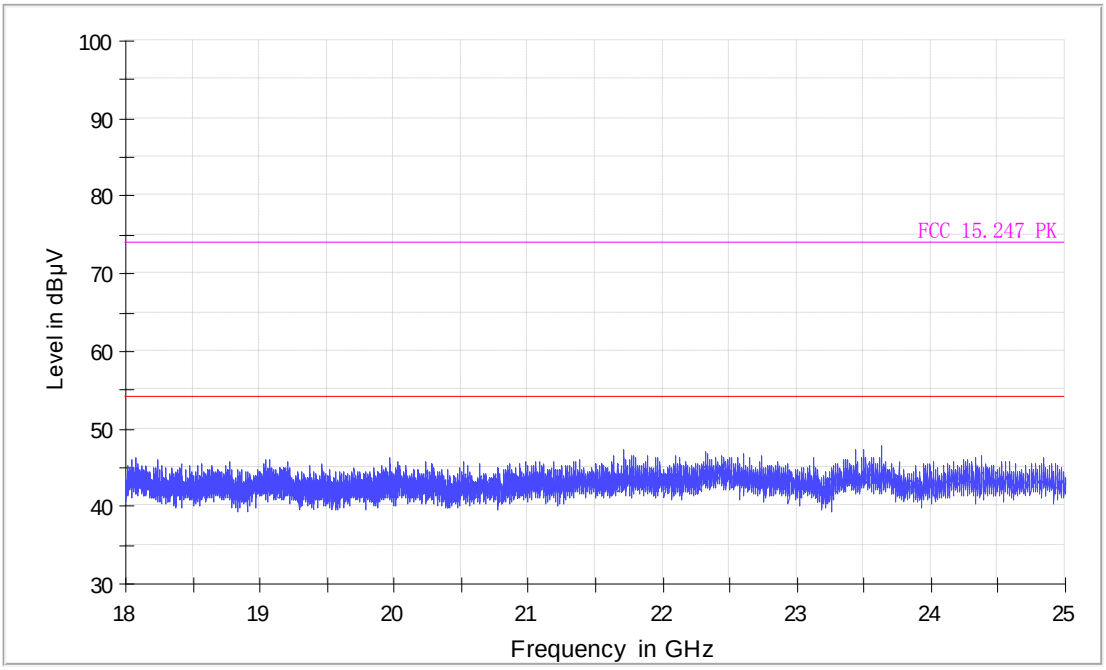
EUT Information

EUT Model Name:	HH41NH
Operation mode:	Wifi 11g CH11
Test Voltage:	
Comment:	

Common Information

Test Site:	SMQ EMC Lab.
Environment	
Antenna Polarization:	Horizontal
Operator Name:	
Comment:	

FCC Electric Field Strength 18-26.5GHz



Radiated Emission

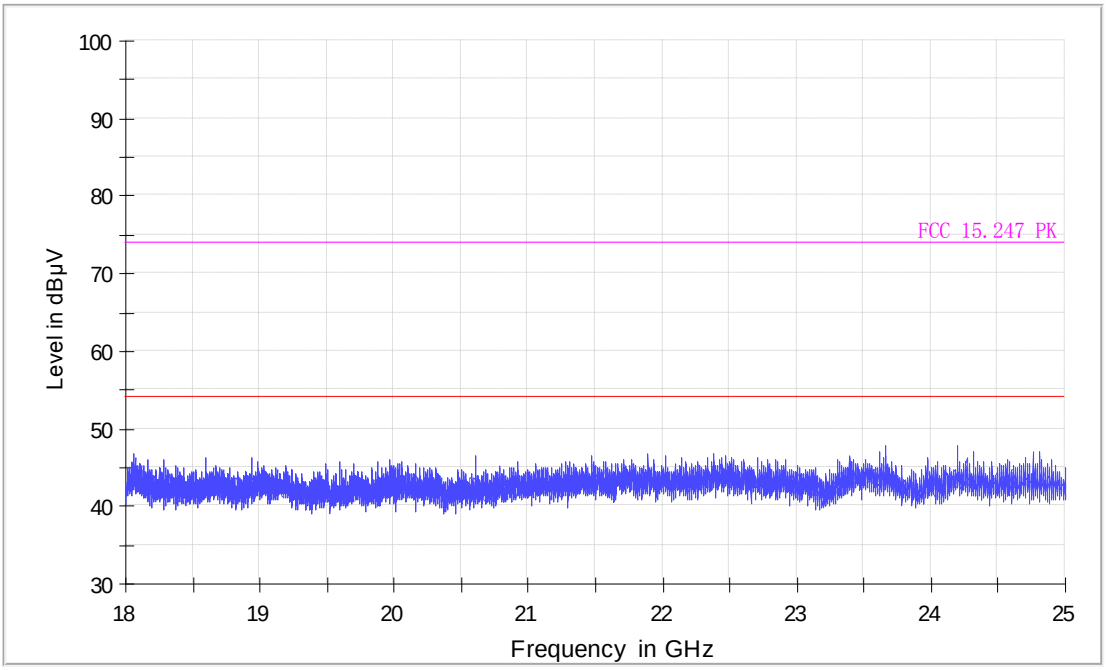
EUT Information

EUT Model Name:	HH41NH
Operation mode:	Wifi 11g CH11
Test Voltage:	
Comment:	

Common Information

Test Site:	SMQ EMC Lab.
Environment	
Antenna Polarization:	Vertical
Operator Name:	
Comment:	

FCC Electric Field Strength 18-26.5GHz



Radiated Emission

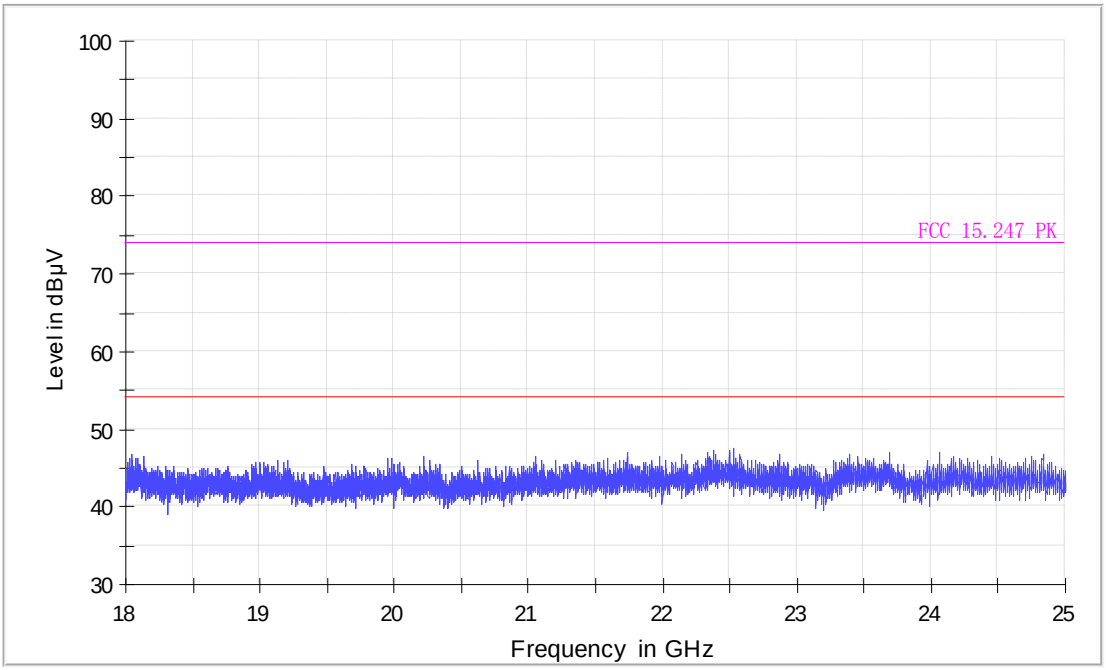
EUT Information

EUT Model Name:	HH41NH
Operation mode:	2TX Mode in Wifi 11n HT20 CH1 Chain 0 + 1
Test Voltage:	
Comment:	

Common Information

Test Site:	SMQ EMC Lab.
Environment	
Antenna Polarization:	Horizontal
Operator Name:	
Comment:	

FCC Electric Field Strength 18-26.5GHz



Radiated Emission

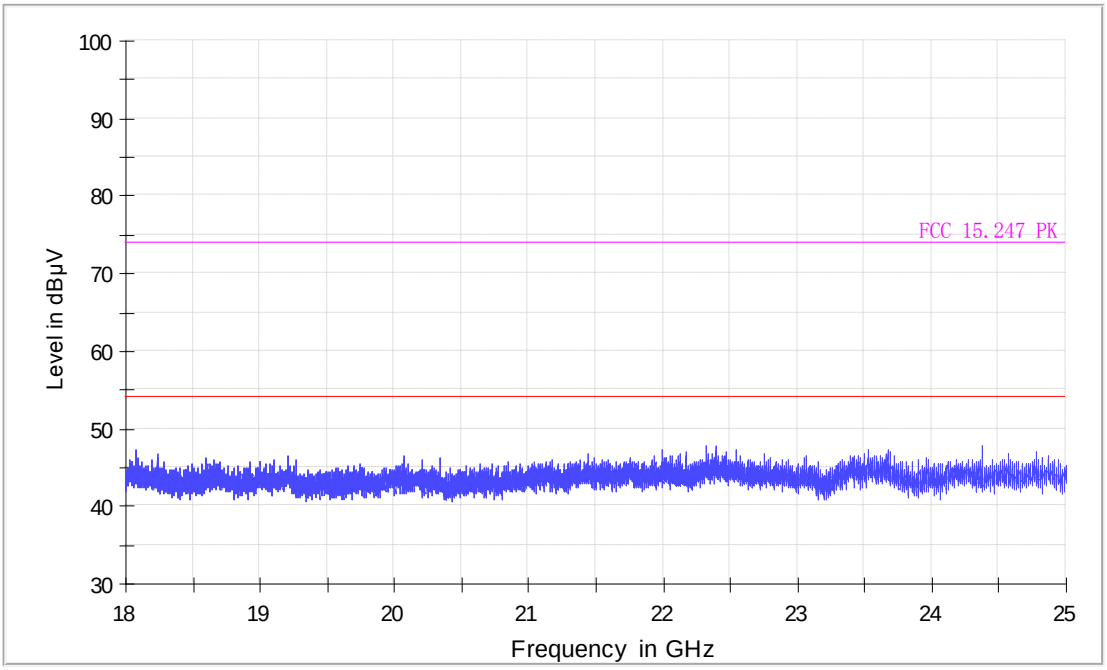
EUT Information

EUT Model Name:	HH41NH
Operation mode:	2TX Mode in Wifi 11n HT20 CH1 Chain 0 + 1
Test Voltage:	
Comment:	

Common Information

Test Site:	SMQ EMC Lab.
Environment	
Antenna Polarization:	Vertical
Operator Name:	
Comment:	

FCC Electric Field Strength 18-26.5GHz



Radiated Emission

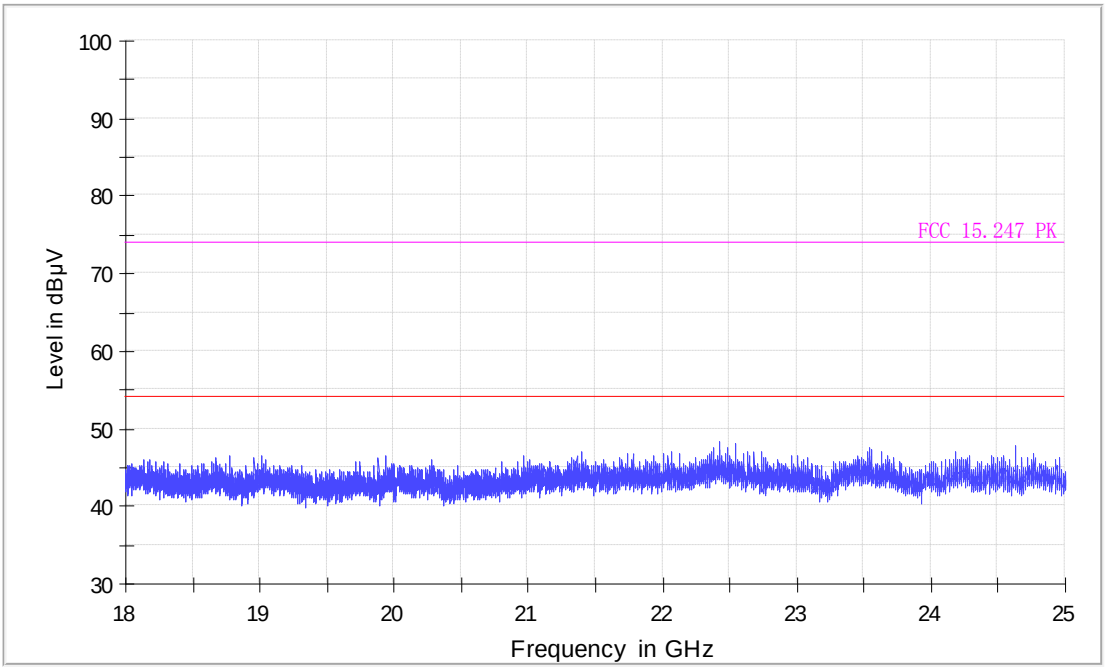
EUT Information

EUT Model Name:	HH41NH
Operation mode:	2TX Mode in Wifi 11n HT20 CH6 Chain 0 + 1
Test Voltage:	
Comment:	

Common Information

Test Site:	SMQ EMC Lab.
Environment	
Antenna Polarization:	Horizontal
Operator Name:	
Comment:	

FCC Electric Field Strength 18-26.5GHz



Radiated Emission

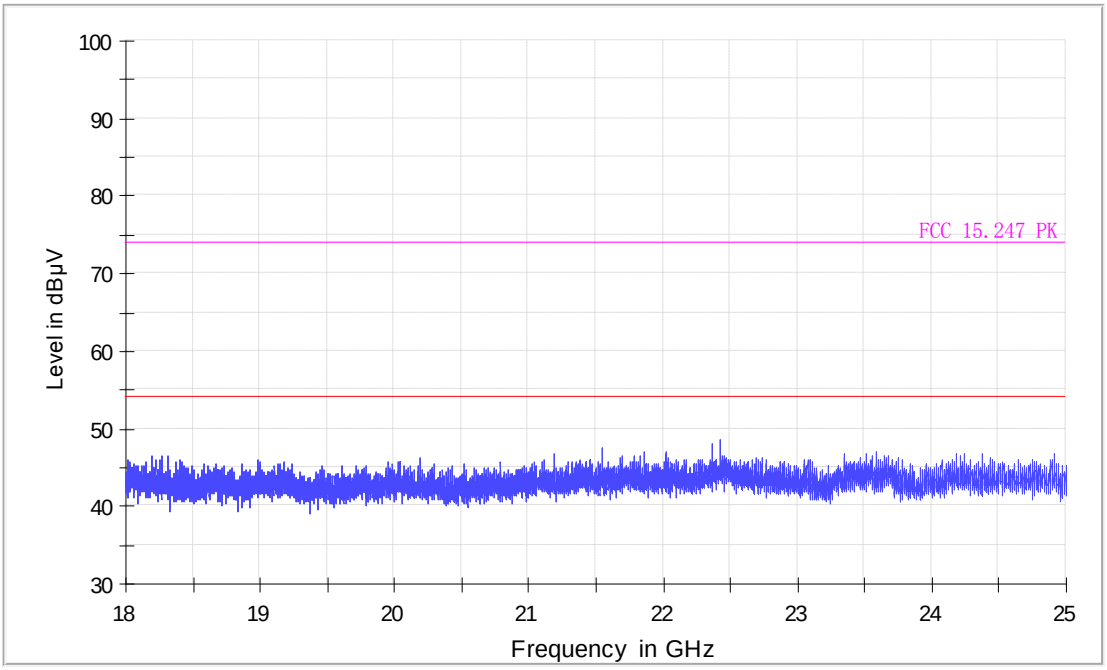
EUT Information

EUT Model Name:	HH41NH
Operation mode:	2TX Mode in Wifi 11n HT20 CH6 Chain 0 + 1
Test Voltage:	
Comment:	

Common Information

Test Site:	SMQ EMC Lab.
Environment	
Antenna Polarization:	Vertical
Operator Name:	
Comment:	

FCC Electric Field Strength 18-26.5GHz



Radiated Emission

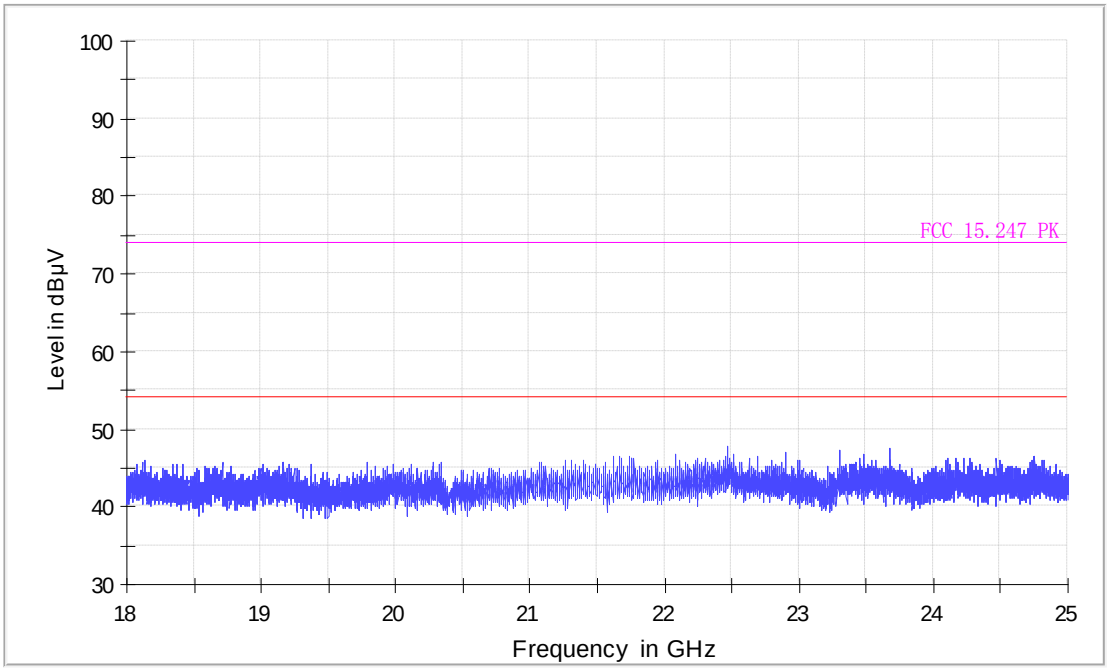
EUT Information

EUT Model Name:	HH41NH
Operation mode:	2TX Mode in Wifi 11n HT20 CH11 Chain 0 + 1
Test Voltage:	
Comment:	

Common Information

Test Site:	SMQ EMC Lab.
Environment	
Antenna Polarization:	Horizontal
Operator Name:	
Comment:	

FCC Electric Field Strength 18-26.5GHz



Radiated Emission

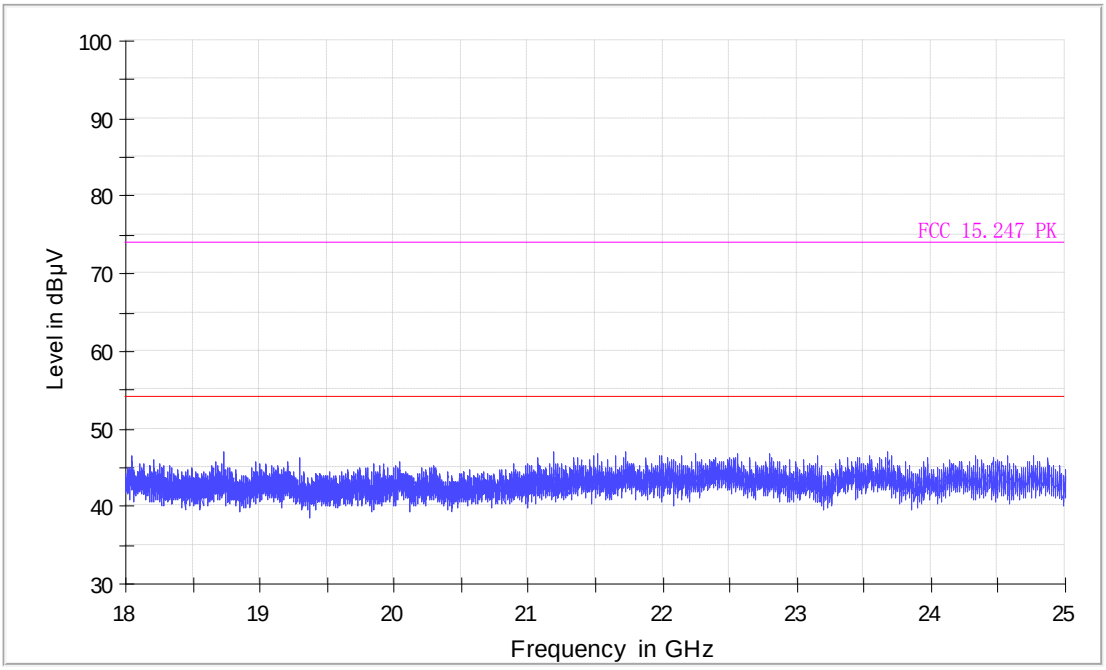
EUT Information

EUT Model Name:	HH41NH
Operation mode:	2TX Mode in Wifi 11n HT20 CH11 Chain 0 + 1
Test Voltage:	
Comment:	

Common Information

Test Site:	SMQ EMC Lab.
Environment	
Antenna Polarization:	Vertical
Operator Name:	
Comment:	

FCC Electric Field Strength 18-26.5GHz



Radiated Emission

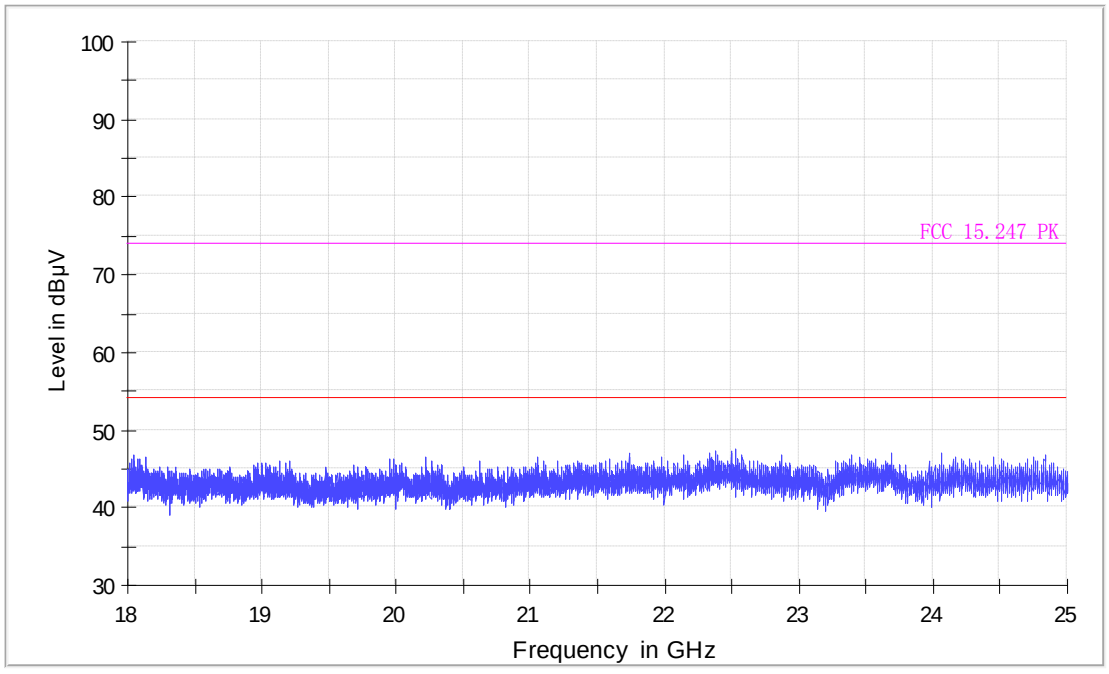
EUT Information

EUT Model Name:	HH41NH
Operation mode:	2TX Mode in Wifi 11n HT40 CH3 Chain 0 + 1
Test Voltage:	
Comment:	

Common Information

Test Site:	SMQ EMC Lab.
Environment	
Antenna Polarization:	Horizontal
Operator Name:	
Comment:	

FCC Electric Field Strength 18-26.5GHz



Radiated Emission

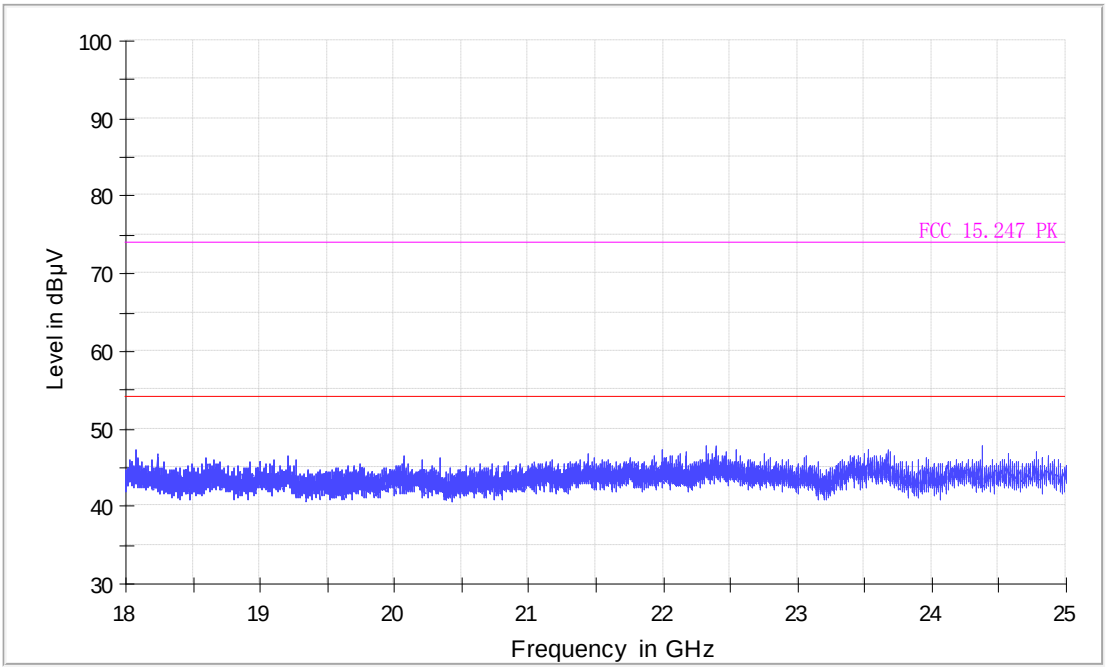
EUT Information

EUT Model Name:	HH41NH
Operation mode:	2TX Mode in Wifi 11n HT40 CH3 Chain 0 + 1
Test Voltage:	
Comment:	

Common Information

Test Site:	SMQ EMC Lab.
Environment	
Antenna Polarization:	Vertical
Operator Name:	
Comment:	

FCC Electric Field Strength 18-26.5GHz



Radiated Emission

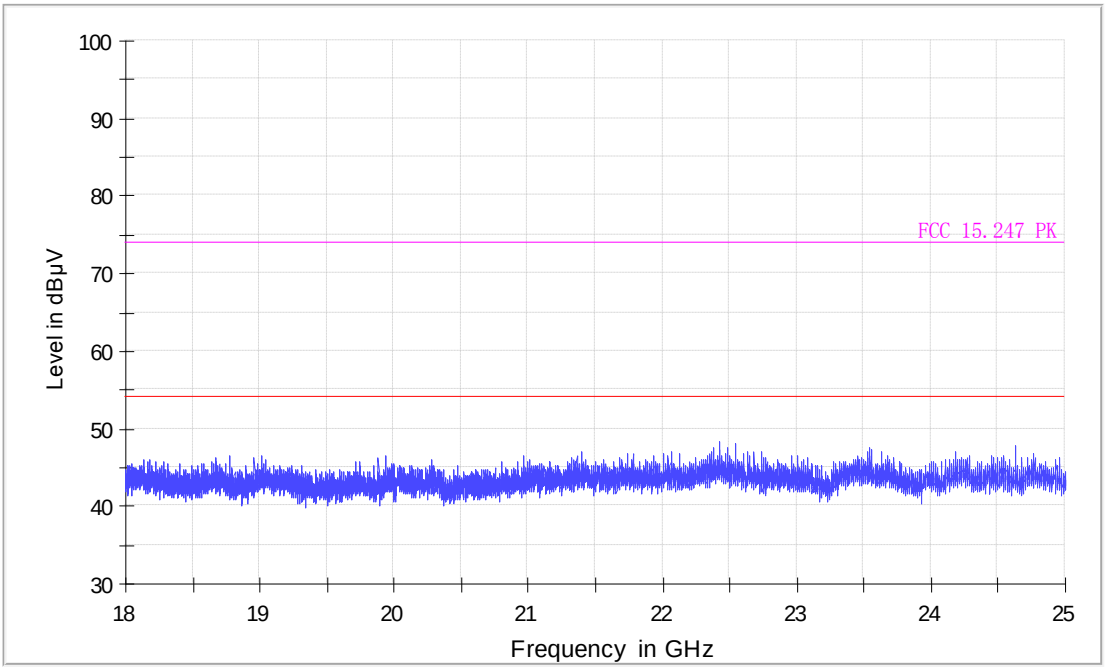
EUT Information

EUT Model Name:	HH41NH
Operation mode:	2TX Mode in Wifi 11n HT40 CH6 Chain 0 + 1
Test Voltage:	
Comment:	

Common Information

Test Site:	SMQ EMC Lab.
Environment	
Antenna Polarization:	Horizontal
Operator Name:	
Comment:	

FCC Electric Field Strength 18-26.5GHz



Radiated Emission

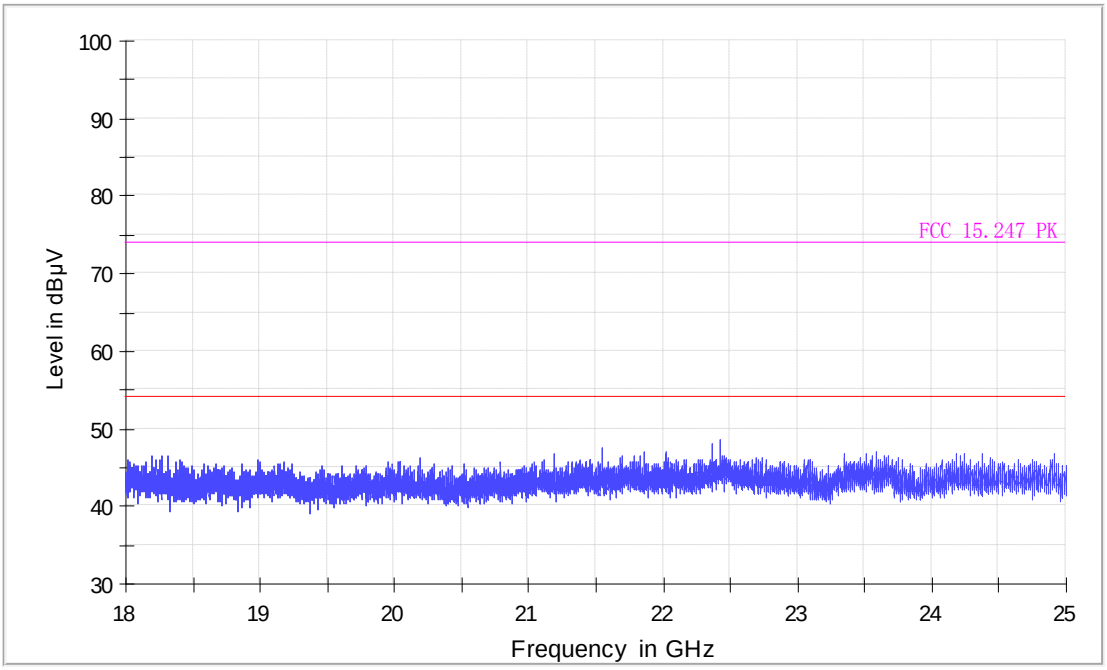
EUT Information

EUT Model Name:	HH41NH
Operation mode:	2TX Mode in Wifi 11n HT40 CH6 Chain 0 + 1
Test Voltage:	
Comment:	

Common Information

Test Site:	SMQ EMC Lab.
Environment	
Antenna Polarization:	Vertical
Operator Name:	
Comment:	

FCC Electric Field Strength 18-26.5GHz



Radiated Emission

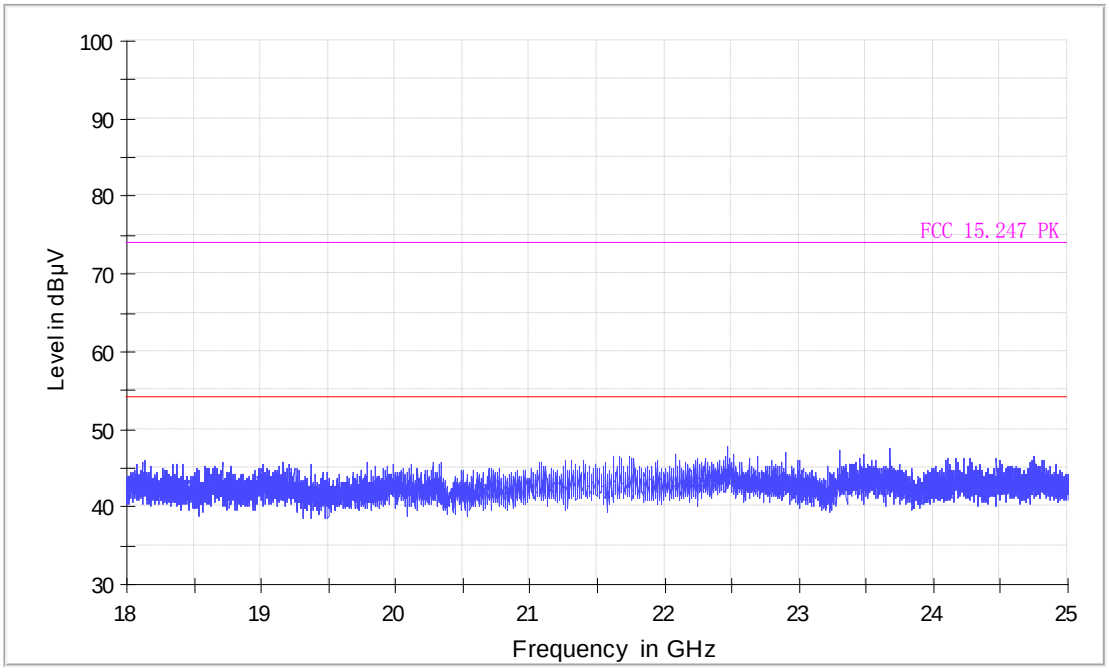
EUT Information

EUT Model Name:	HH41NH
Operation mode:	2TX Mode in Wifi 11n HT40 CH9 Chain 0 + 1
Test Voltage:	
Comment:	

Common Information

Test Site:	SMQ EMC Lab.
Environment	
Antenna Polarization:	Horizontal
Operator Name:	
Comment:	

FCC Electric Field Strength 18-26.5GHz



Radiated Emission

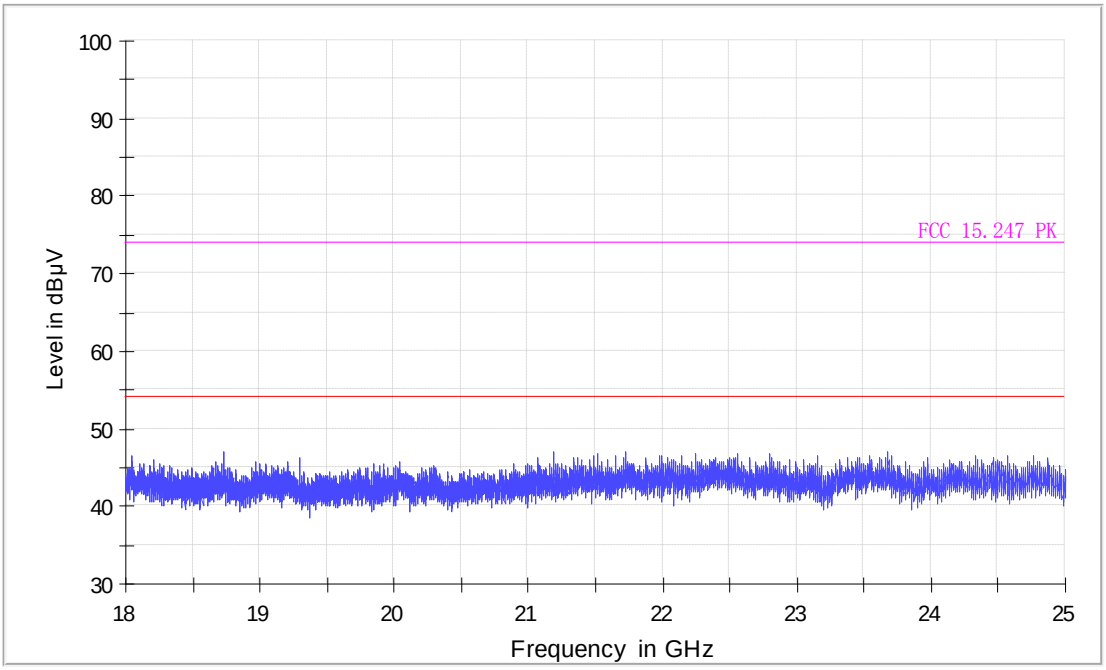
EUT Information

EUT Model Name:	HH41NH
Operation mode:	2TX Mode in Wifi 11n HT40 CH9 Chain 0 + 1
Test Voltage:	
Comment:	

Common Information

Test Site:	SMQ EMC Lab.
Environment	
Antenna Polarization:	Vertical
Operator Name:	
Comment:	

FCC Electric Field Strength 18-26.5GHz



Band edge

11b

CH1

Radiated Emission

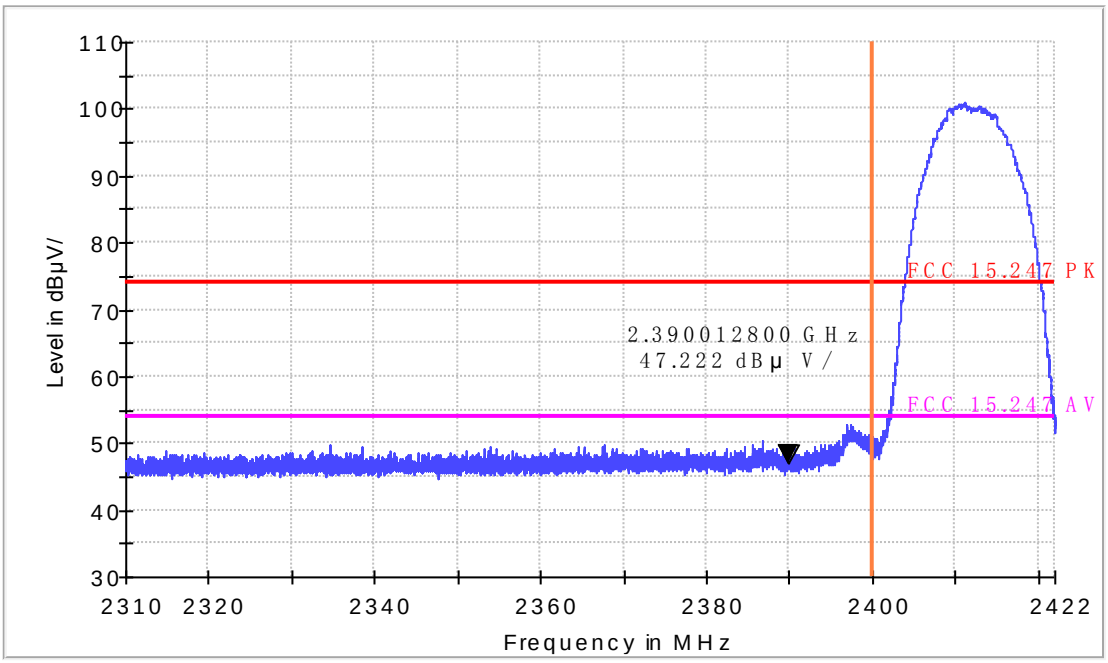
EUT Information

EUT Model Name:	HH41NH
Operation mode:	Wifi 11b CH1
Test Voltage:	
Comment:	

Common Information

Test Site:	SMQ EMC Lab.
Environment	
Antenna Polarization:	Horizontal
Operator Name:	
Comment:	

FCC Electric Field Strength 2.4GHz Bandedge-PK



Radiated Emission

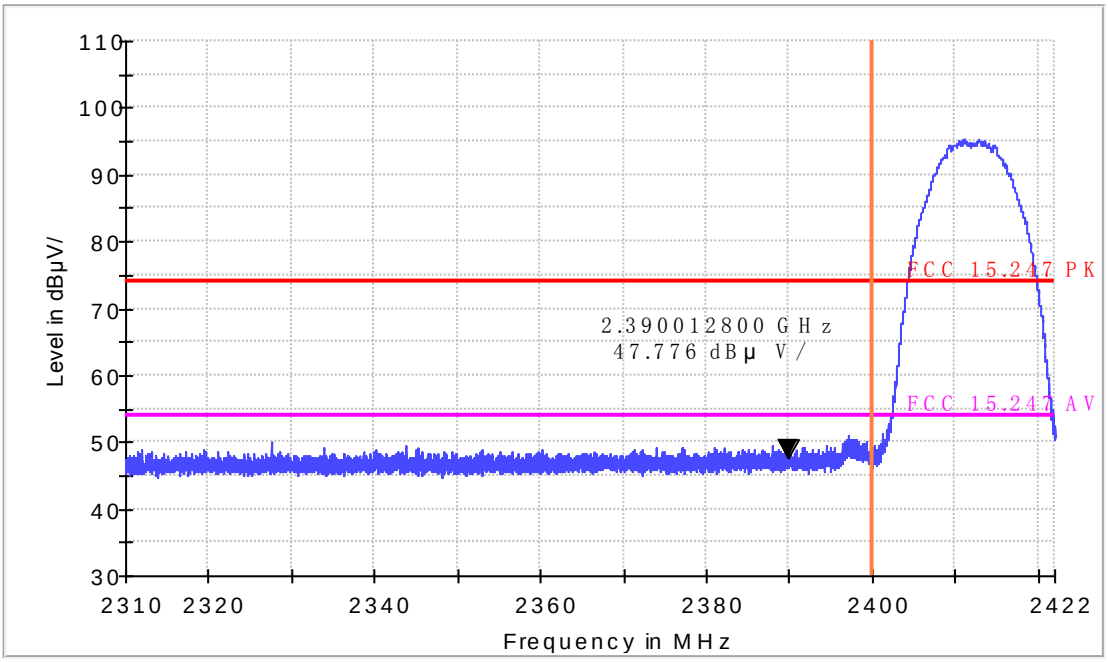
EUT Information

EUT Model Name:	HH41NH
Operation mode:	Wifi 11b CH1
Test Voltage:	
Comment:	

Common Information

Test Site:	SMQ EMC Lab.
Environment	
Antenna Polarization:	Vertical
Operator Name:	
Comment:	

FCC Electric Field Strength 2.4GHz Bandedge-PK



Radiated Emission

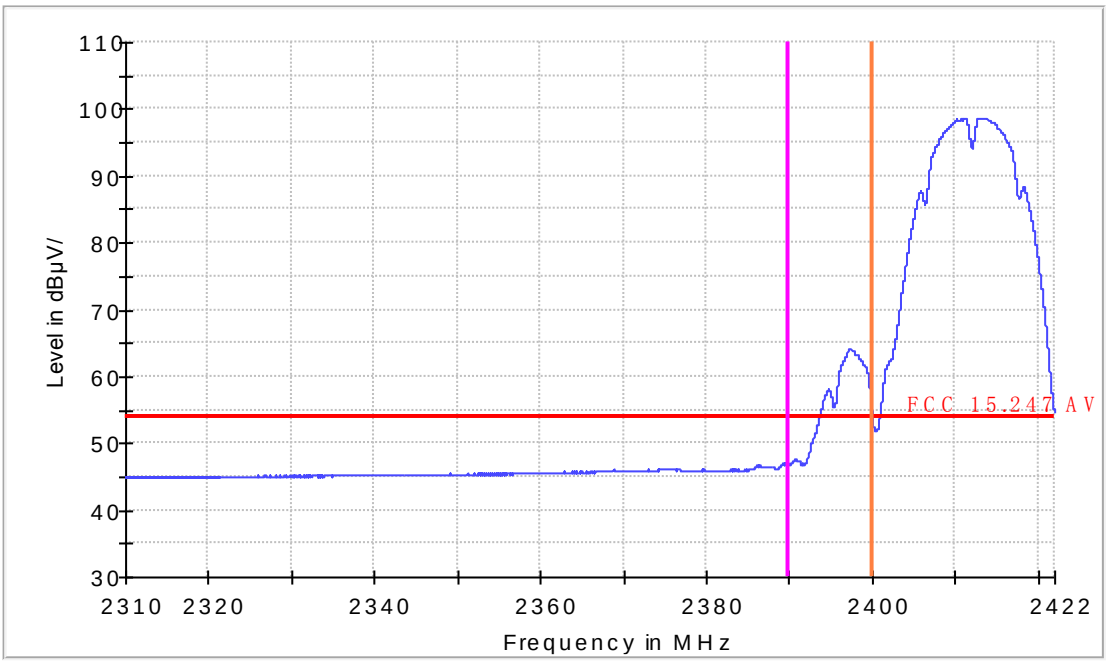
EUT Information

EUT Model Name:	HH41NH
Operation mode:	Wifi 11b CH1
Test Voltage:	
Comment:	

Common Information

Test Site:	SMQ EMC Lab.
Environment	
Antenna Polarization:	Horizontal
Operator Name:	
Comment:	

FCC Electric Field Strength 2.4GHz Bandedge-AV



Radiated Emission

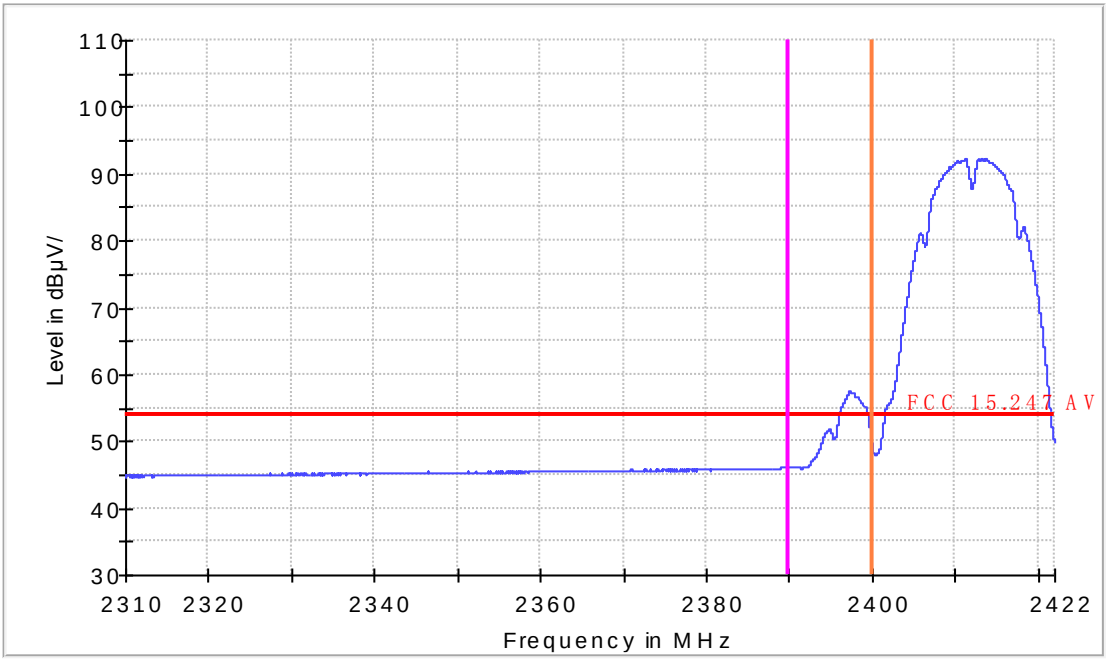
EUT Information

EUT Model Name:	HH41NH
Operation mode:	Wifi 11b CH1
Test Voltage:	
Comment:	

Common Information

Test Site:	SMQ EMC Lab.
Environment	
Antenna Polarization:	Vertical
Operator Name:	
Comment:	

FCC Electric Field Strength 2.4GHz Bandedge-AV



Band edge

11g

CH1

Radiated Emission

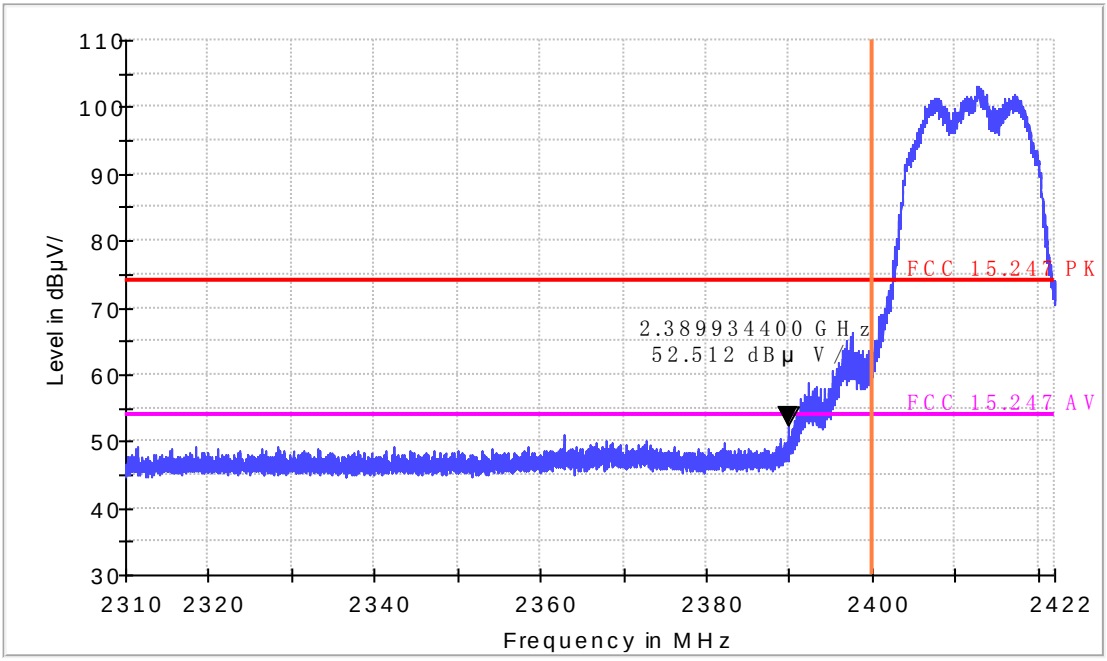
EUT Information

EUT Model Name:	HH41NH
Operation mode:	Wifi 11g CH1
Test Voltage:	
Comment:	

Common Information

Test Site:	SMQ EMC Lab.
Environment	
Antenna Polarization:	Horizontal
Operator Name:	
Comment:	

FCC Electric Field Strength 2.4GHz Bandedge-PK



Radiated Emission

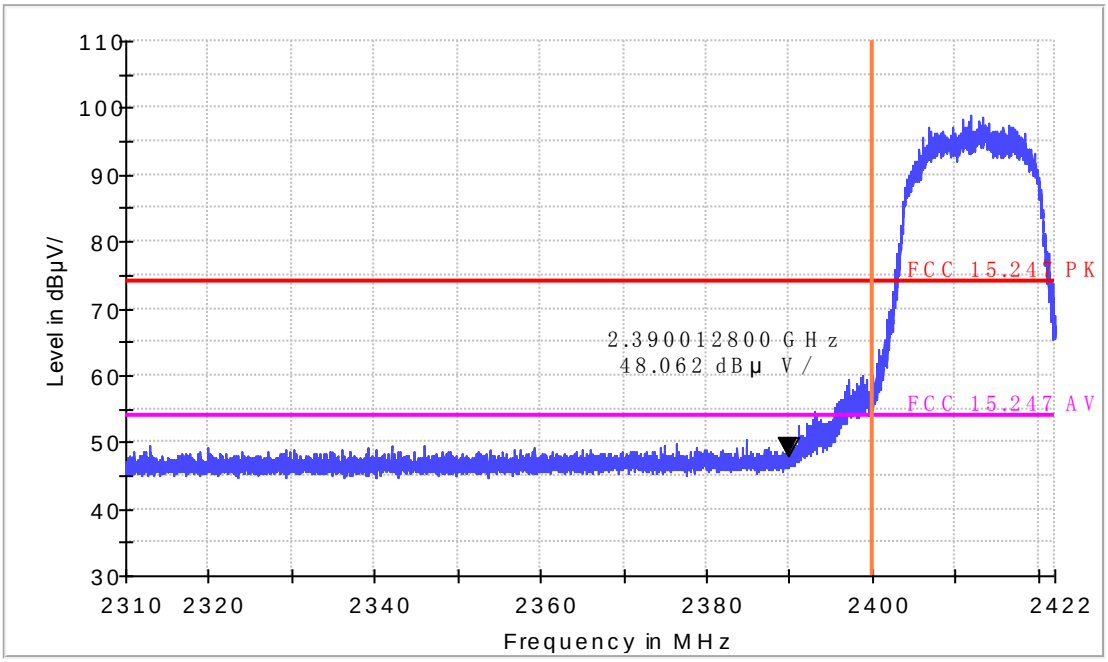
EUT Information

EUT Model Name:	HH41NH
Operation mode:	Wifi 11g CH1
Test Voltage:	
Comment:	

Common Information

Test Site:	SMQ EMC Lab.
Environment	
Antenna Polarization:	Vertical
Operator Name:	
Comment:	

FCC Electric Field Strength 2.4GHz Bandedge-PK



Radiated Emission

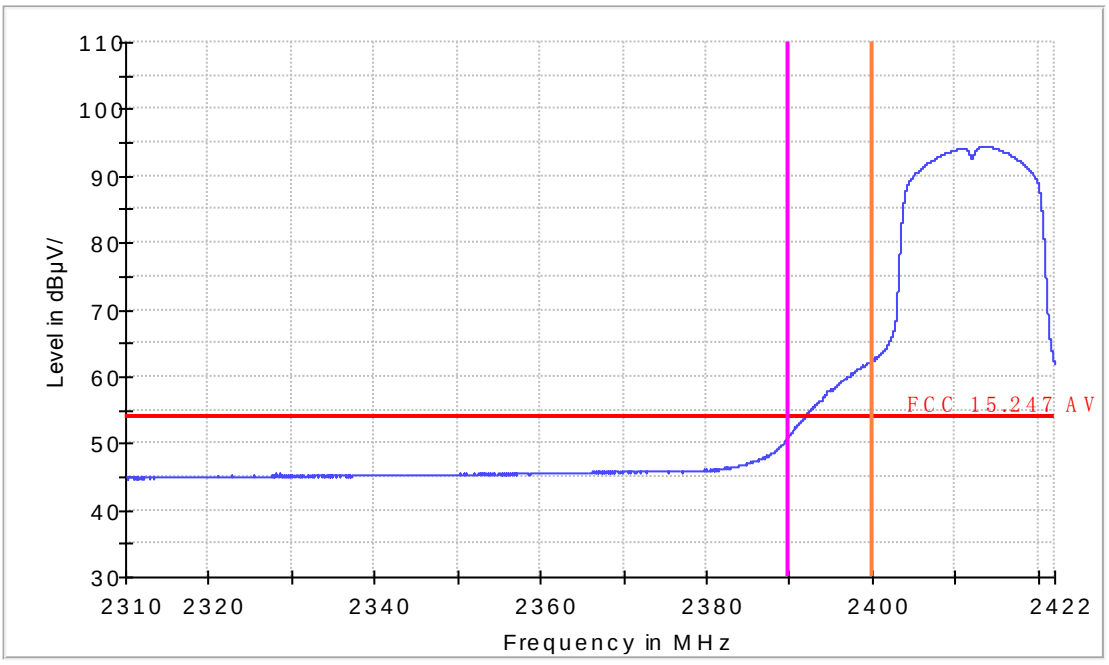
EUT Information

EUT Model Name:	HH41NH
Operation mode:	Wifi 11g CH1
Test Voltage:	
Comment:	

Common Information

Test Site:	SMQ EMC Lab.
Environment	
Antenna Polarization:	Horizontal
Operator Name:	
Comment:	

FCC Electric Field Strength 2.4GHz Bandedge-AV



Radiated Emission

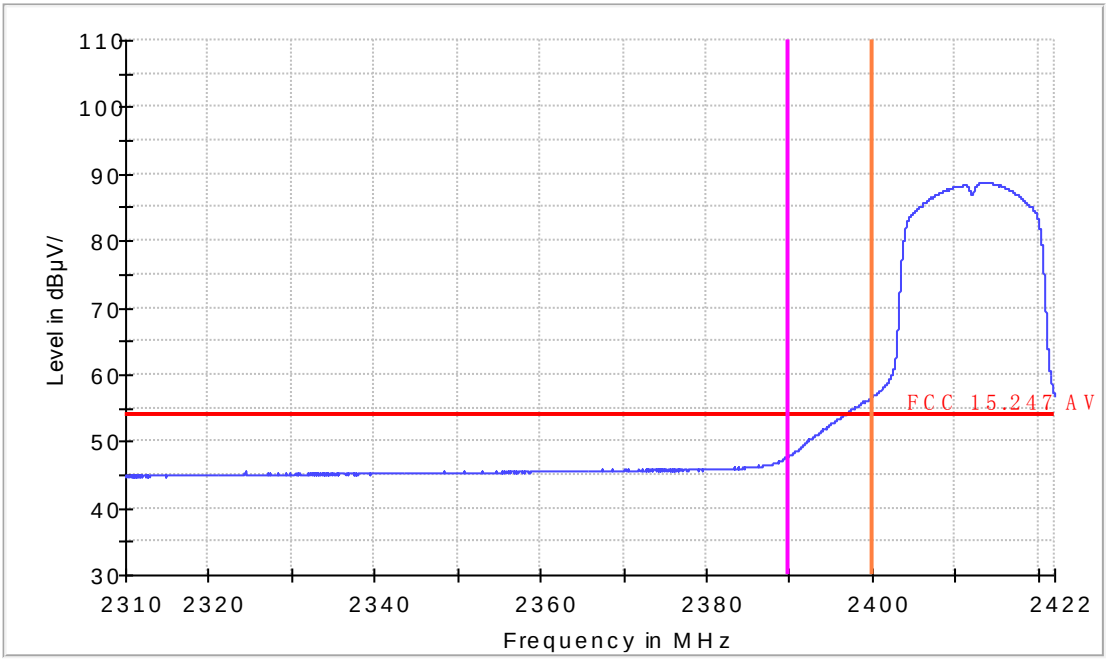
EUT Information

EUT Model Name:	HH41NH
Operation mode:	Wifi 11g CH1
Test Voltage:	
Comment:	

Common Information

Test Site:	SMQ EMC Lab.
Environment	
Antenna Polarization:	Vertical
Operator Name:	
Comment:	

FCC Electric Field Strength 2.4GHz Bandedge-AV



Band edge

11n-HT20

CH1

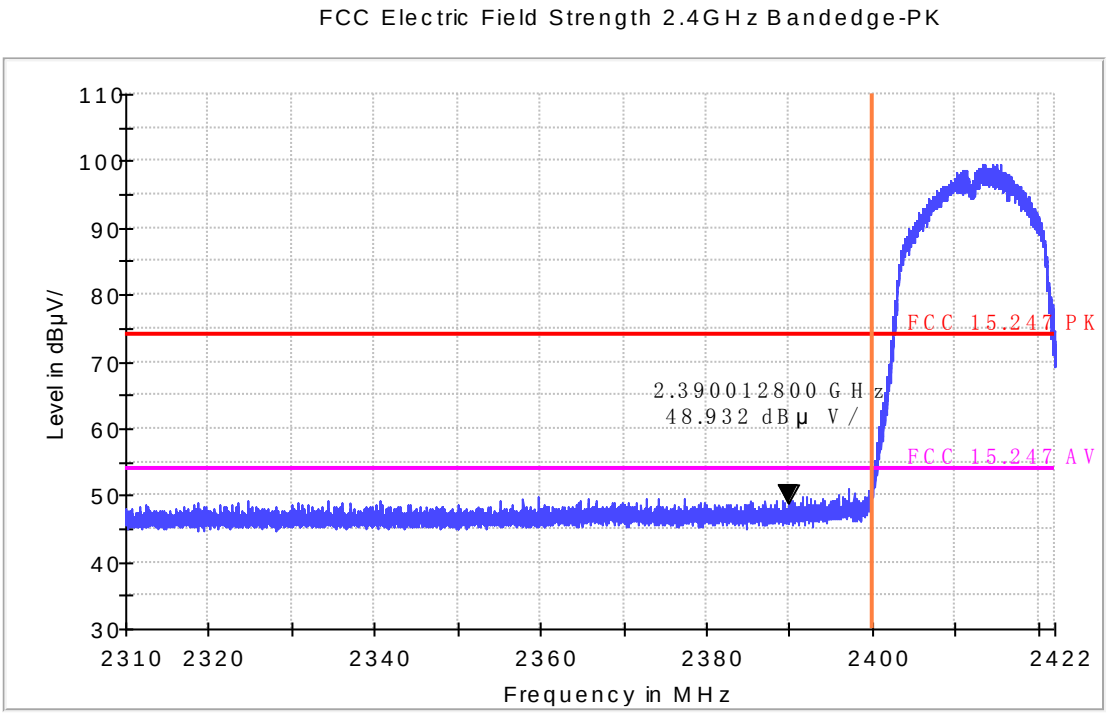
Radiated Emission

EUT Information

EUT Model Name:	HH41NH
Operation mode:	2TX Mode in Wifi 11n HT20 CH1 Chain 0 + 1
Test Voltage:	
Comment:	

Common Information

Test Site:	SMQ EMC Lab.
Environment	
Antenna Polarization:	Horizontal
Operator Name:	
Comment:	



Radiated Emission

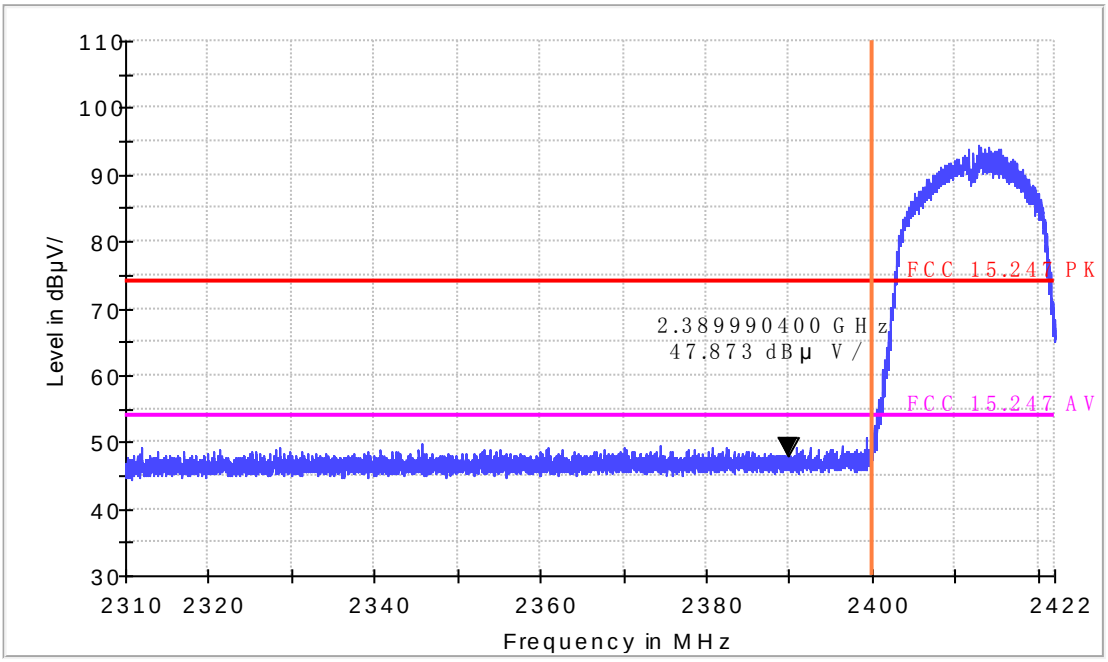
EUT Information

EUT Model Name:	HH41NH
Operation mode:	2TX Mode in Wifi 11n HT20 CH1 Chain 0 + 1
Test Voltage:	
Comment:	

Common Information

Test Site:	SMQ EMC Lab.
Environment	
Antenna Polarization:	Vertical
Operator Name:	
Comment:	

FCC Electric Field Strength 2.4GHz Bandedge-PK



Radiated Emission

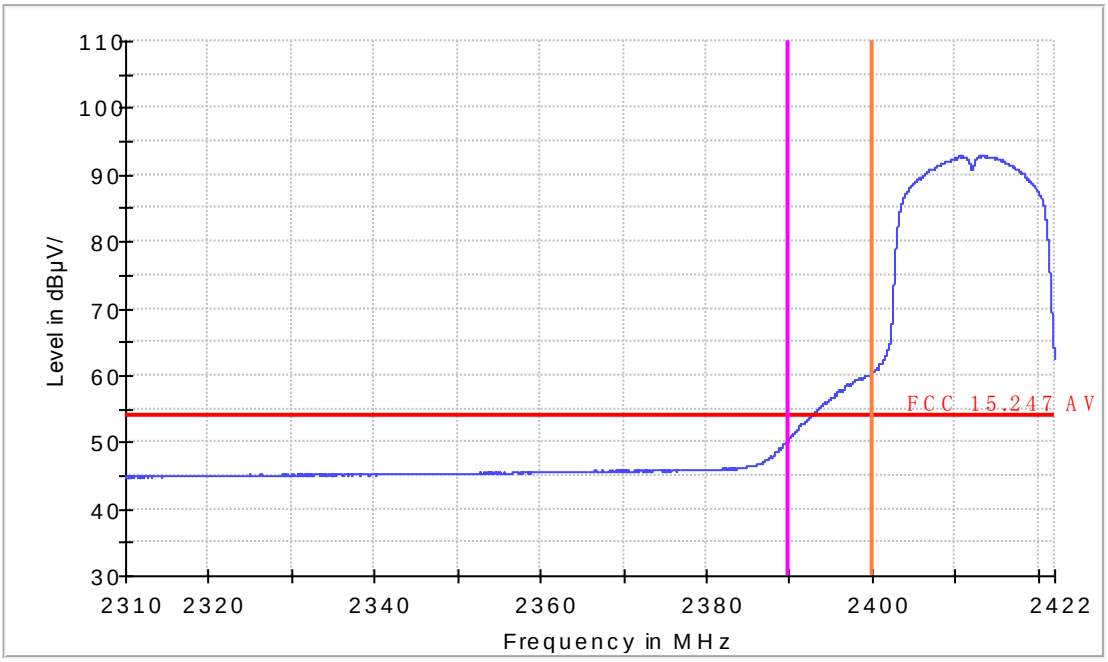
EUT Information

EUT Model Name:	HH41NH
Operation mode:	2TX Mode in Wifi 11n HT20 CH1 Chain 0 + 1
Test Voltage:	
Comment:	

Common Information

Test Site:	SMQ EMC Lab.
Environment	
Antenna Polarization:	Horizontal
Operator Name:	
Comment:	

FCC Electric Field Strength 2.4GHz Bandedge-AV



Radiated Emission

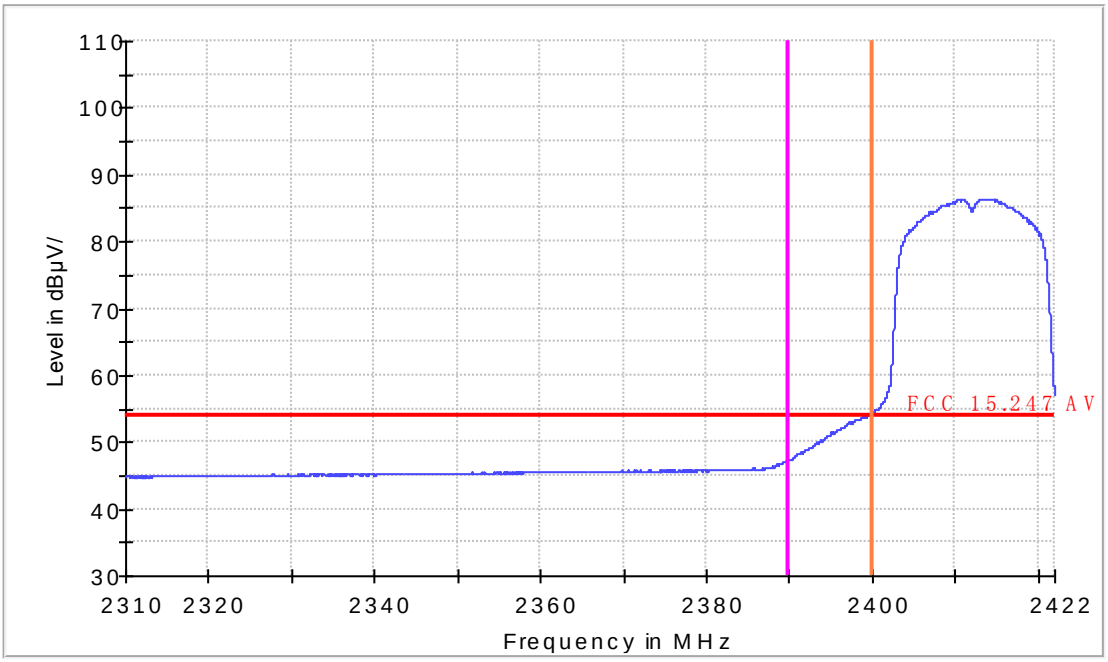
EUT Information

EUT Model Name:	HH41NH
Operation mode:	2TX Mode in Wifi 11n HT20 CH1 Chain 0 + 1
Test Voltage:	
Comment:	

Common Information

Test Site:	SMQ EMC Lab.
Environment	
Antenna Polarization:	Vertical
Operator Name:	
Comment:	

FCC Electric Field Strength 2.4GHz Bandedge-AV



Band edge

11n-HT40

CH3

Radiated Emission

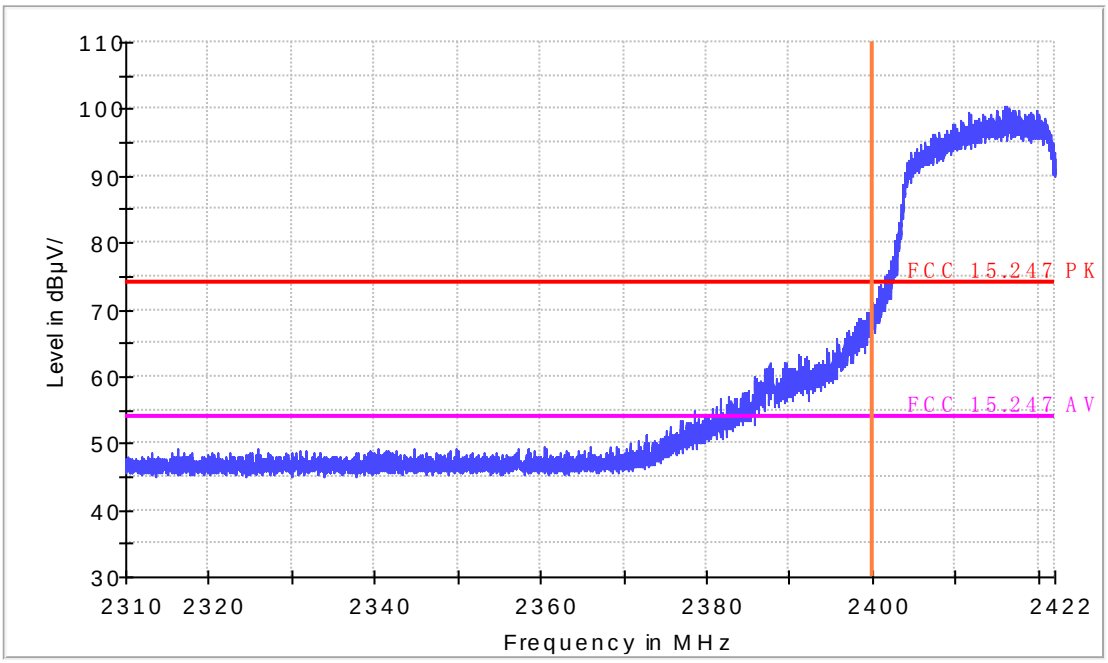
EUT Information

EUT Model Name:	HH41NH
Operation mode:	2TX Mode in Wifi 11n HT40 CH3 Chain 0 + 1
Test Voltage:	
Comment:	

Common Information

Test Site:	SMQ EMC Lab.
Environment	
Antenna Polarization:	Horizontal
Operator Name:	
Comment:	

FCC Electric Field Strength 2.4GHz Bandedge-PK



Radiated Emission

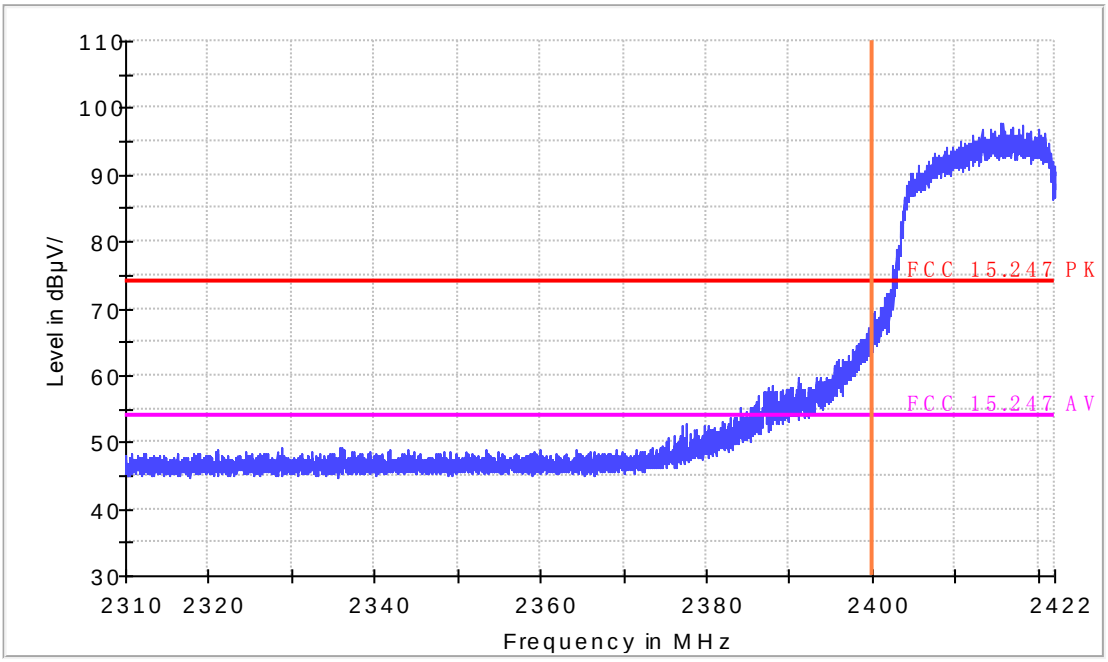
EUT Information

EUT Model Name:	HH41NH
Operation mode:	2TX Mode in Wifi 11n HT40 CH3 Chain 0 + 1
Test Voltage:	
Comment:	

Common Information

Test Site:	SMQ EMC Lab.
Environment	
Antenna Polarization:	Vertical
Operator Name:	
Comment:	

FCC Electric Field Strength 2.4GHz Bandedge-PK



Radiated Emission

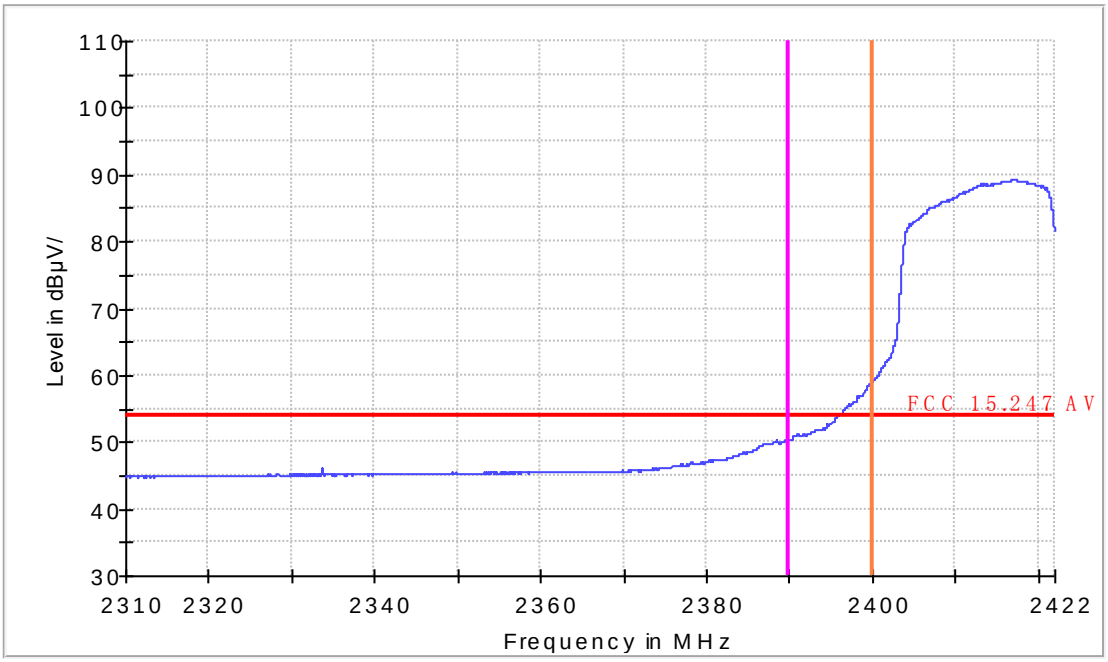
EUT Information

EUT Model Name:	HH41NH
Operation mode:	2TX Mode in Wifi 11n HT40 CH3 Chain 0 + 1
Test Voltage:	
Comment:	

Common Information

Test Site:	SMQ EMC Lab.
Environment	
Antenna Polarization:	Horizontal
Operator Name:	
Comment:	

FCC Electric Field Strength 2.4GHz Bandedge-AV



Radiated Emission

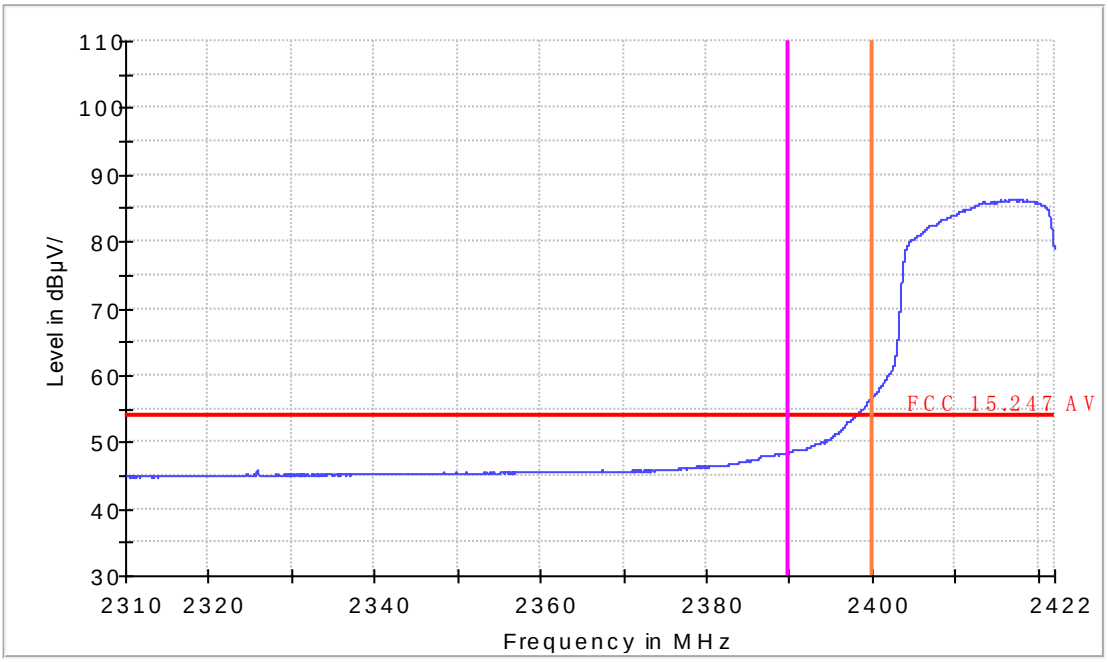
EUT Information

EUT Model Name:	HH41NH
Operation mode:	2TX Mode in Wifi 11n HT40 CH3 Chain 0 + 1
Test Voltage:	
Comment:	

Common Information

Test Site:	SMQ EMC Lab.
Environment	
Antenna Polarization:	Vertical
Operator Name:	
Comment:	

FCC Electric Field Strength 2.4GHz Bandedge-AV



Band edge

11b

CH11

Radiated Emission

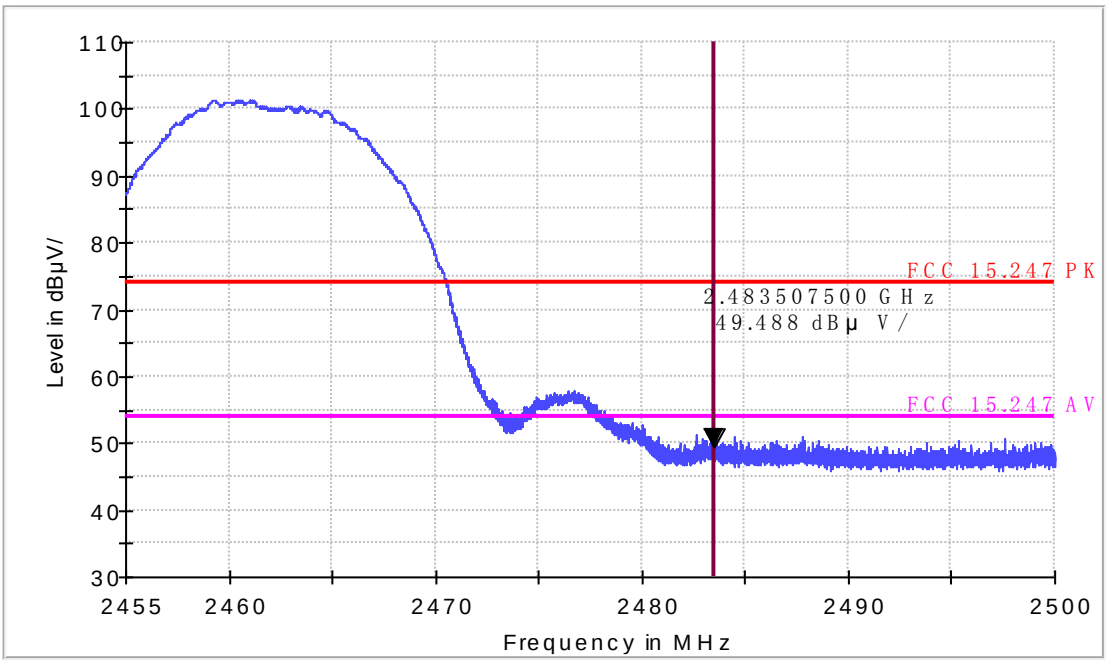
EUT Information

EUT Model Name:	HH41NH
Operation mode:	Wifi 11b CH11
Test Voltage:	
Comment:	

Common Information

Test Site:	SMQ EMC Lab.
Environment	
Antenna Polarization:	Horizontal
Operator Name:	
Comment:	

FCC Electric Field Strength 2.4GHz Bandedge-PK



Radiated Emission

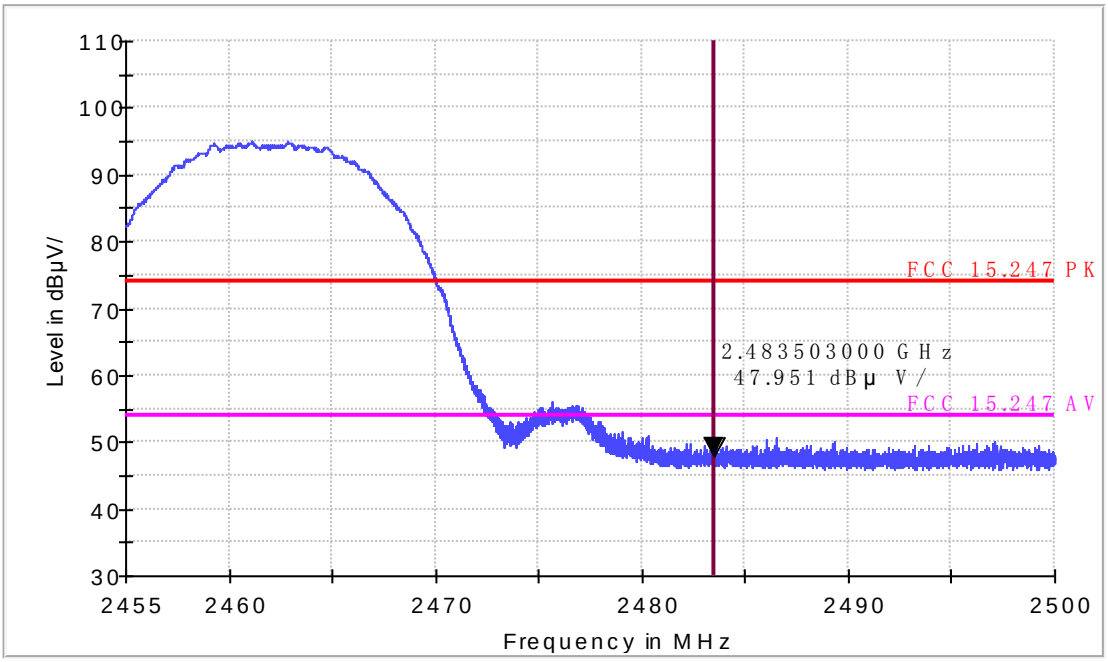
EUT Information

EUT Model Name:	HH41NH
Operation mode:	Wifi 11b CH11
Test Voltage:	
Comment:	

Common Information

Test Site:	SMQ EMC Lab.
Environment	
Antenna Polarization:	Vertical
Operator Name:	
Comment:	

FCC Electric Field Strength 2.4GHz Bandedge-PK



Radiated Emission

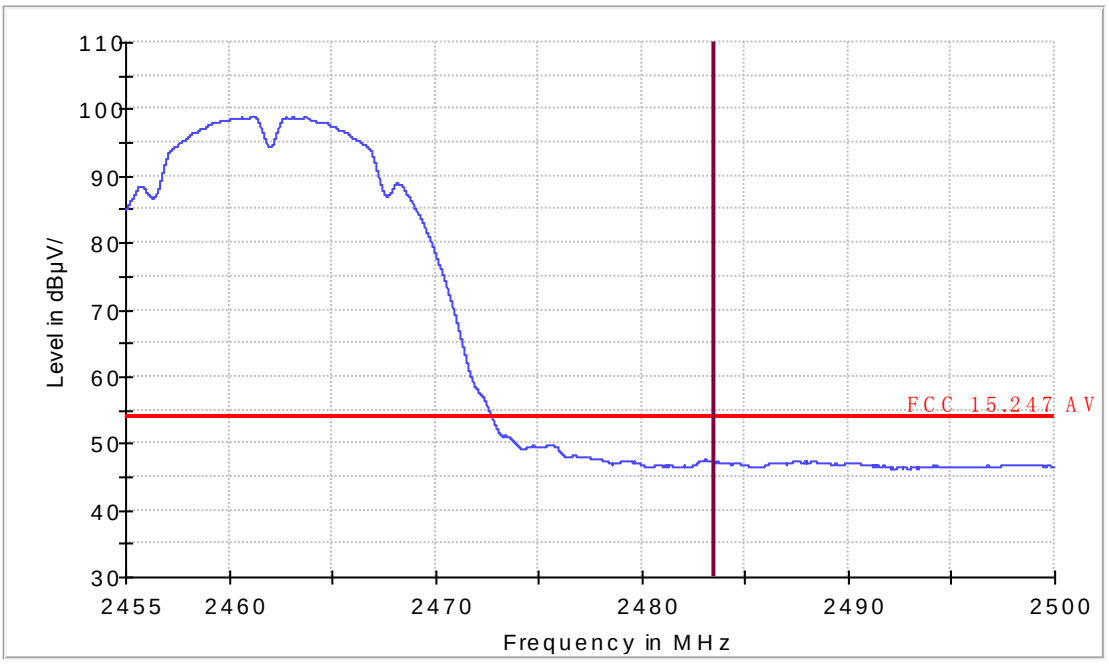
EUT Information

EUT Model Name:	HH41NH
Operation mode:	Wifi 11b CH11
Test Voltage:	
Comment:	

Common Information

Test Site:	SMQ EMC Lab.
Environment	
Antenna Polarization:	Horizontal
Operator Name:	
Comment:	

FCC Electric Field Strength 2.4GHz Bandedge-AV



Radiated Emission

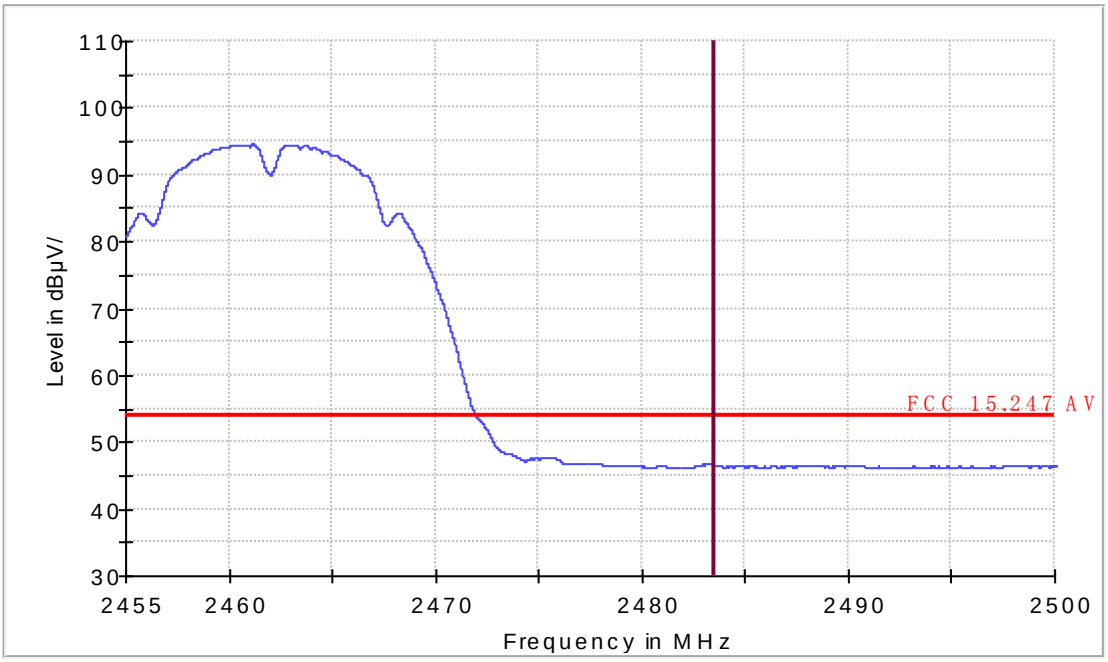
EUT Information

EUT Model Name:	HH41NH
Operation mode:	Wifi 11b CH11
Test Voltage:	
Comment:	

Common Information

Test Site:	SMQ EMC Lab.
Environment	
Antenna Polarization:	Vertical
Operator Name:	
Comment:	

FCC Electric Field Strength 2.4GHz Bandedge-AV



Band edge

11g

CH11

Radiated Emission

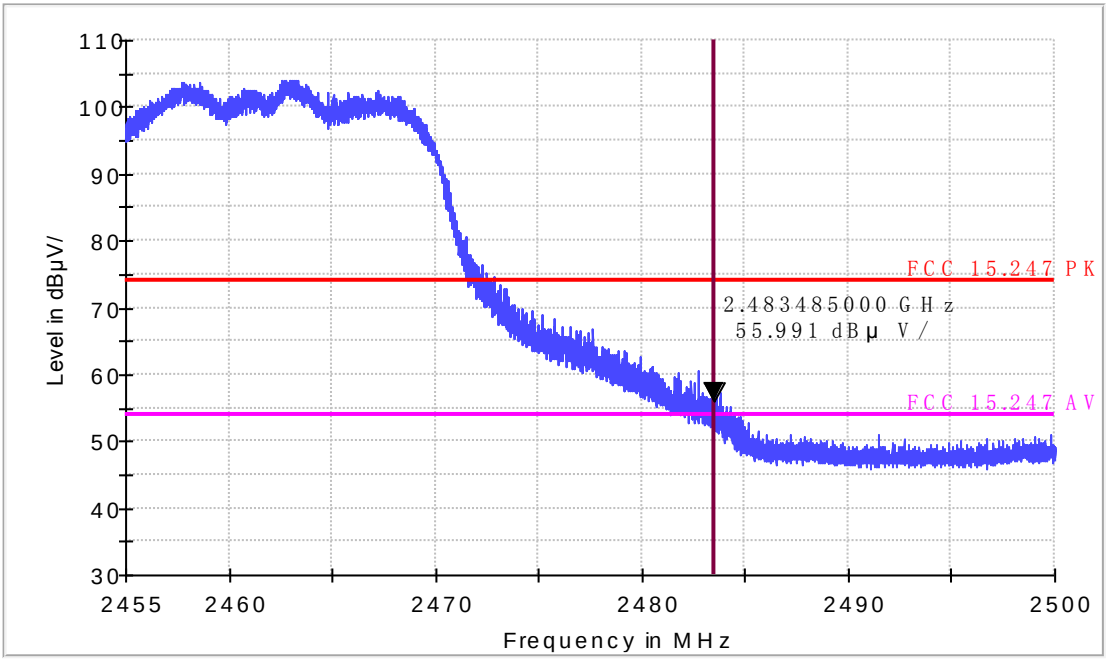
EUT Information

EUT Model Name:	HH41NH
Operation mode:	Wifi 11g CH11
Test Voltage:	
Comment:	

Common Information

Test Site:	SMQ EMC Lab.
Environment	
Antenna Polarization:	Horizontal
Operator Name:	
Comment:	

FCC Electric Field Strength 2.4GHz Bandedge-PK



Radiated Emission

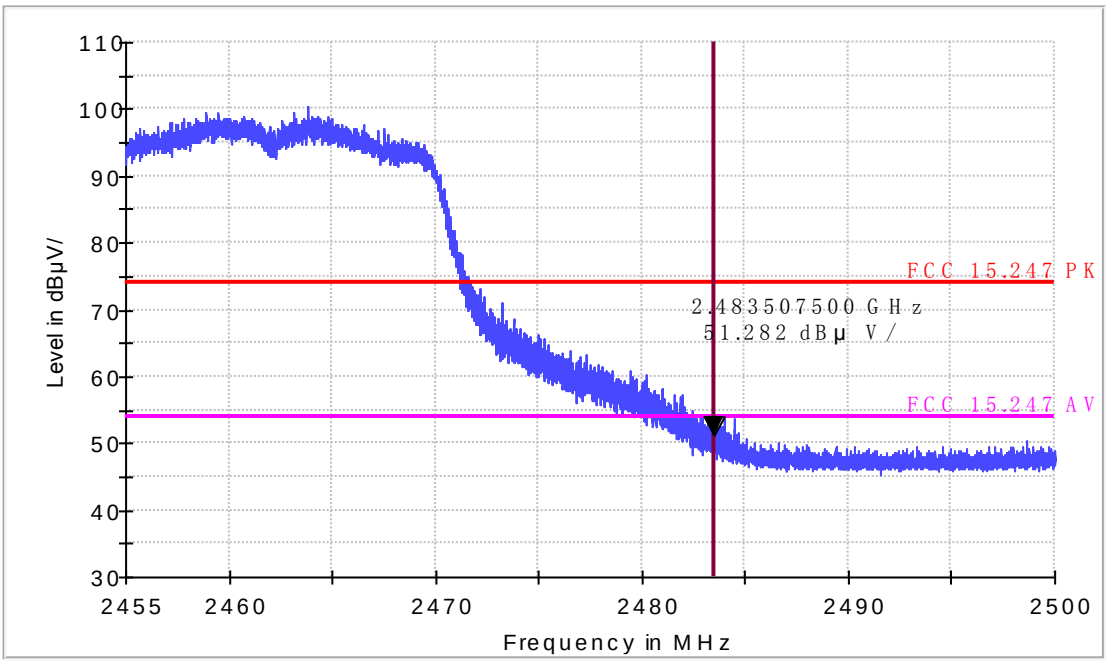
EUT Information

EUT Model Name:	HH41NH
Operation mode:	Wifi 11g CH11
Test Voltage:	
Comment:	

Common Information

Test Site:	SMQ EMC Lab.
Environment	
Antenna Polarization:	Vertical
Operator Name:	
Comment:	

FCC Electric Field Strength 2.4GHz Bandedge-PK



Radiated Emission

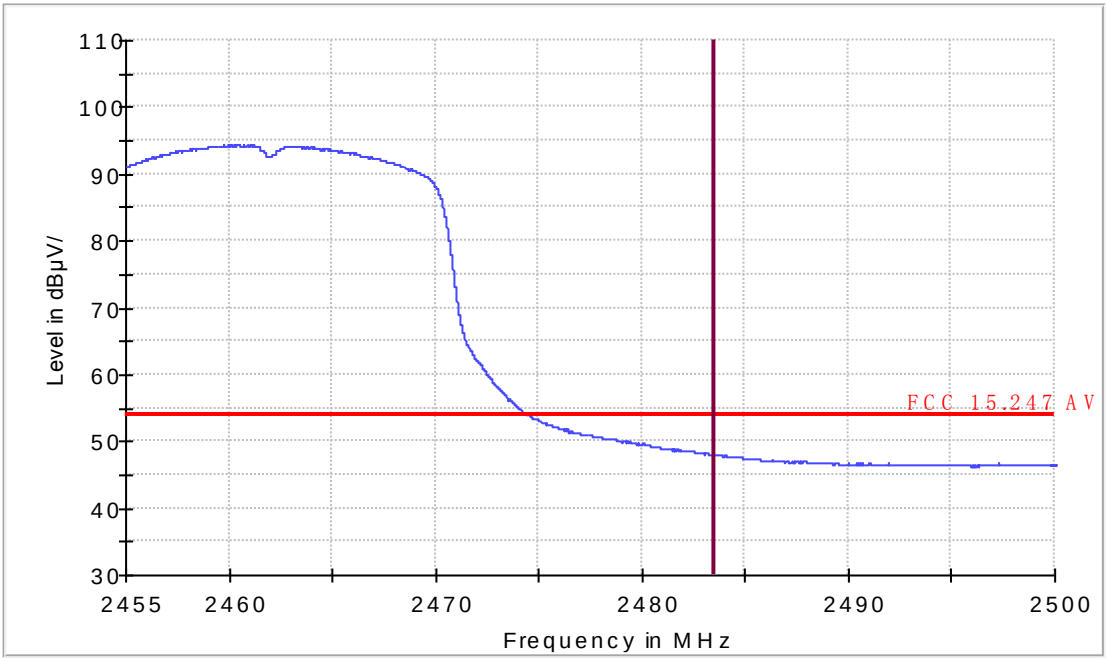
EUT Information

EUT Model Name:	HH41NH
Operation mode:	Wifi 11g CH11
Test Voltage:	
Comment:	

Common Information

Test Site:	SMQ EMC Lab.
Environment	
Antenna Polarization:	Horizontal
Operator Name:	
Comment:	

FCC Electric Field Strength 2.4GHz Bandedge-AV



Radiated Emission

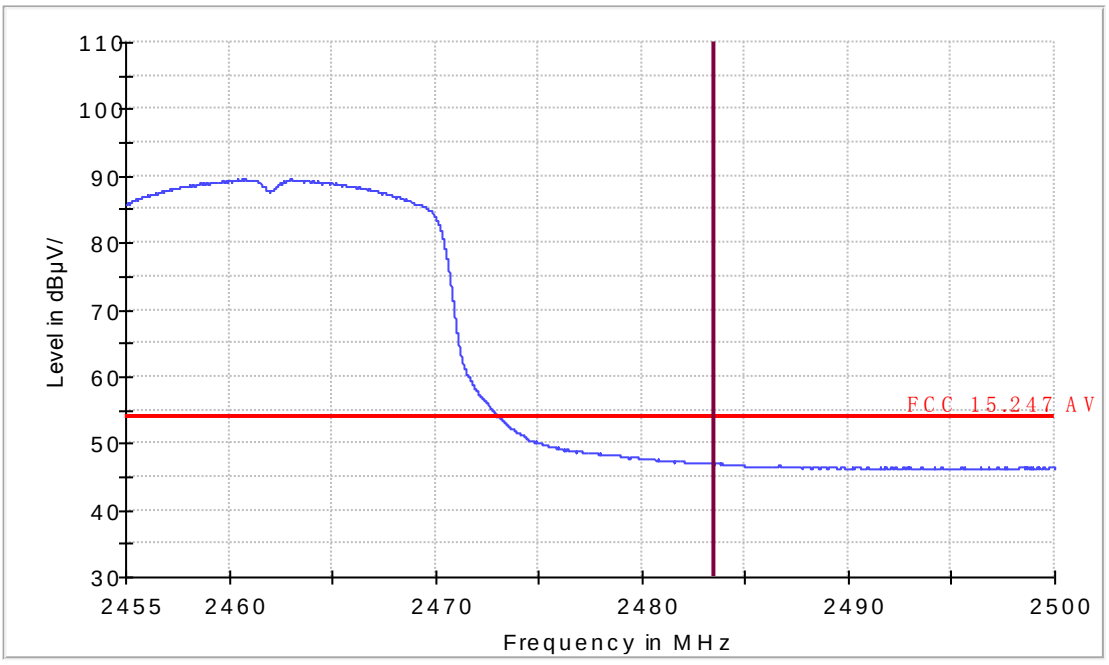
EUT Information

EUT Model Name:	HH41NH
Operation mode:	Wifi 11g CH11
Test Voltage:	
Comment:	

Common Information

Test Site:	SMQ EMC Lab.
Environment	
Antenna Polarization:	Vertical
Operator Name:	
Comment:	

FCC Electric Field Strength 2.4GHz Bandedge-AV



Band edge

11n-HT20

CH11

Radiated Emission

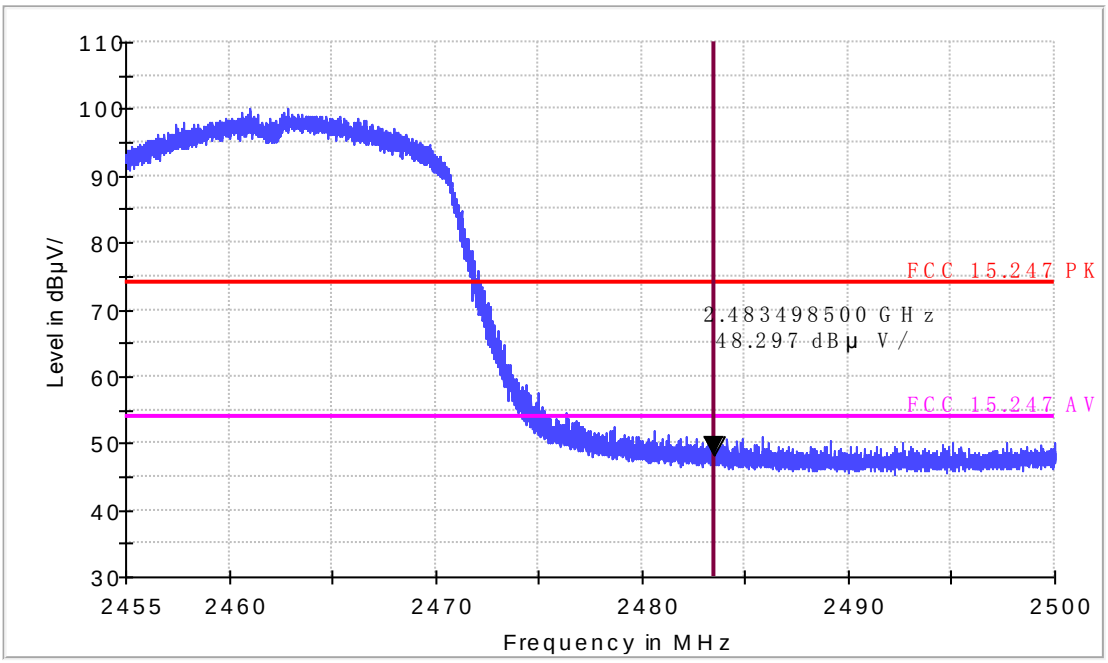
EUT Information

EUT Model Name:	HH41NH
Operation mode:	2TX Mode in Wifi 11n HT20 CH11 Chain 0 + 1
Test Voltage:	
Comment:	

Common Information

Test Site:	SMQ EMC Lab.
Environment	
Antenna Polarization:	Horizontal
Operator Name:	
Comment:	

FCC Electric Field Strength 2.4GHz Bandedge-PK



Radiated Emission

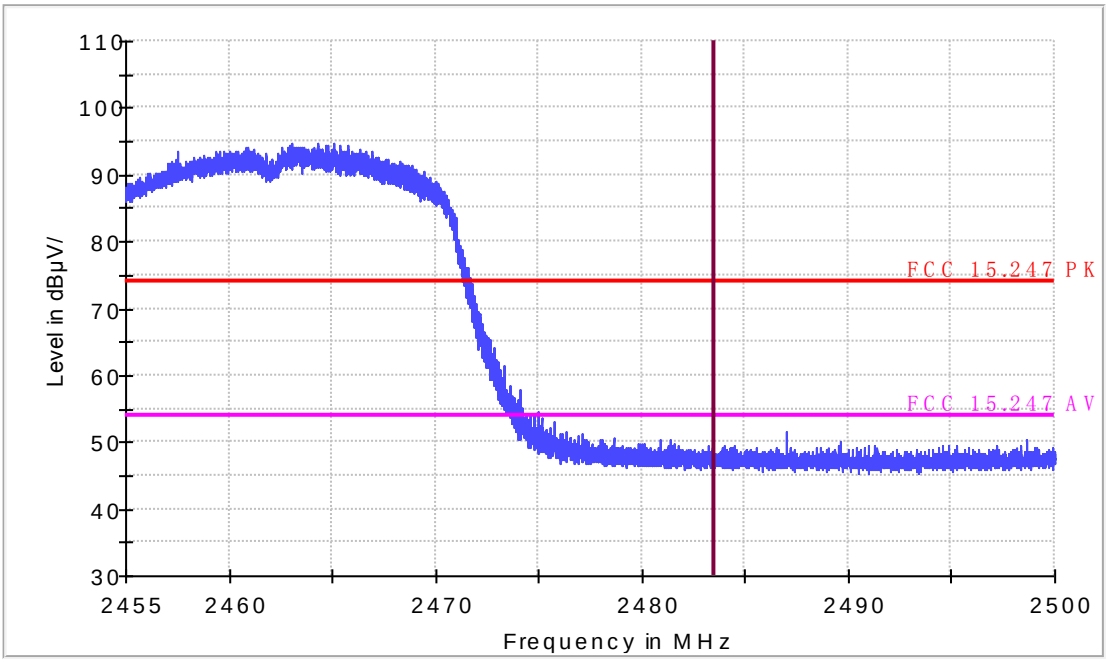
EUT Information

EUT Model Name:	HH41NH
Operation mode:	2TX Mode in Wifi 11n HT20 CH11 Chain 0 + 1
Test Voltage:	
Comment:	

Common Information

Test Site:	SMQ EMC Lab.
Environment	
Antenna Polarization:	Vertical
Operator Name:	
Comment:	

FCC Electric Field Strength 2.4GHz Bandedge-PK



Radiated Emission

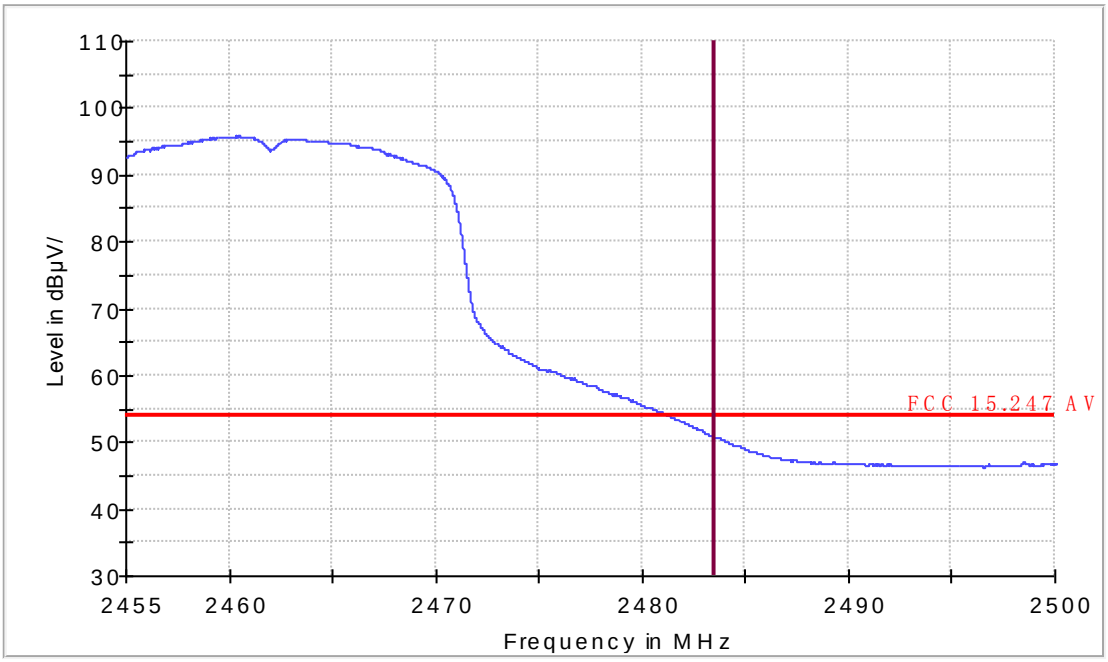
EUT Information

EUT Model Name:	HH41NH
Operation mode:	2TX Mode in Wifi 11n HT20 CH11 Chain 0 + 1
Test Voltage:	
Comment:	

Common Information

Test Site:	SMQ EMC Lab.
Environment	
Antenna Polarization:	Horizontal
Operator Name:	
Comment:	

FCC Electric Field Strength 2.4GHz Bandedge-AV



Radiated Emission

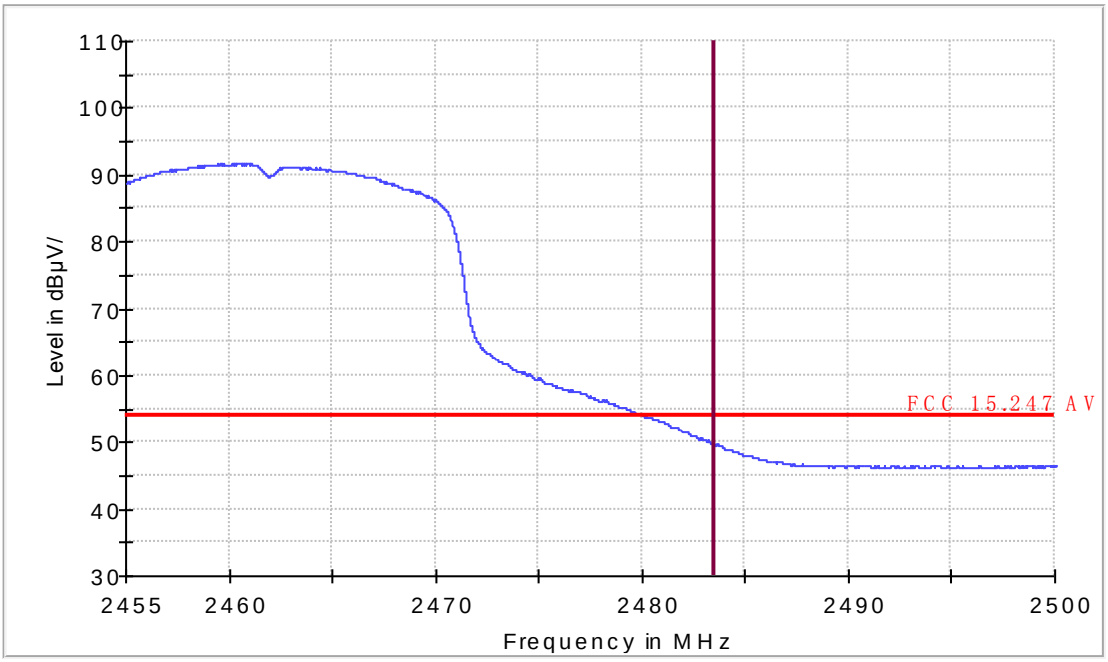
EUT Information

EUT Model Name:	HH41NH
Operation mode:	2TX Mode in Wifi 11n HT20 CH11 Chain 0 + 1
Test Voltage:	
Comment:	

Common Information

Test Site:	SMQ EMC Lab.
Environment	
Antenna Polarization:	Vertical
Operator Name:	
Comment:	

FCC Electric Field Strength 2.4GHz Bandedge-AV



Band edge

11n-HT40

CH9

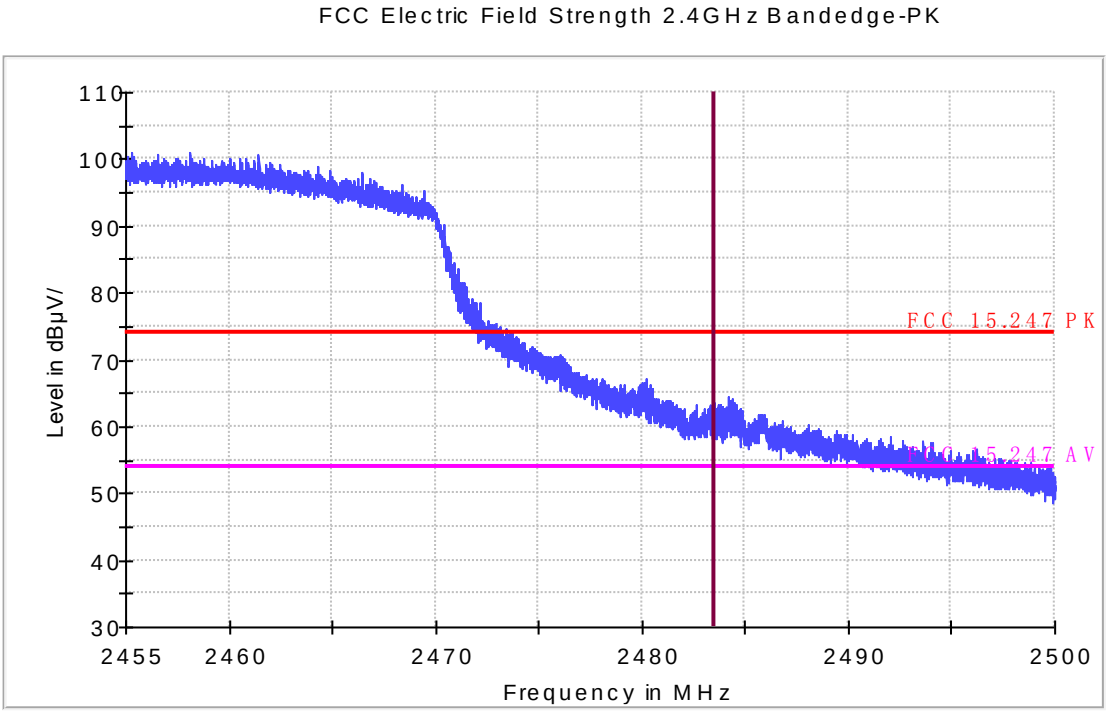
Radiated Emission

EUT Information

EUT Model Name:	HH41NH
Operation mode:	2TX Mode in Wifi 11n HT40 CH9 Chain 0 + 1
Test Voltage:	
Comment:	

Common Information

Test Site:	SMQ EMC Lab.
Environment	
Antenna Polarization:	Horizontal
Operator Name:	
Comment:	



Radiated Emission

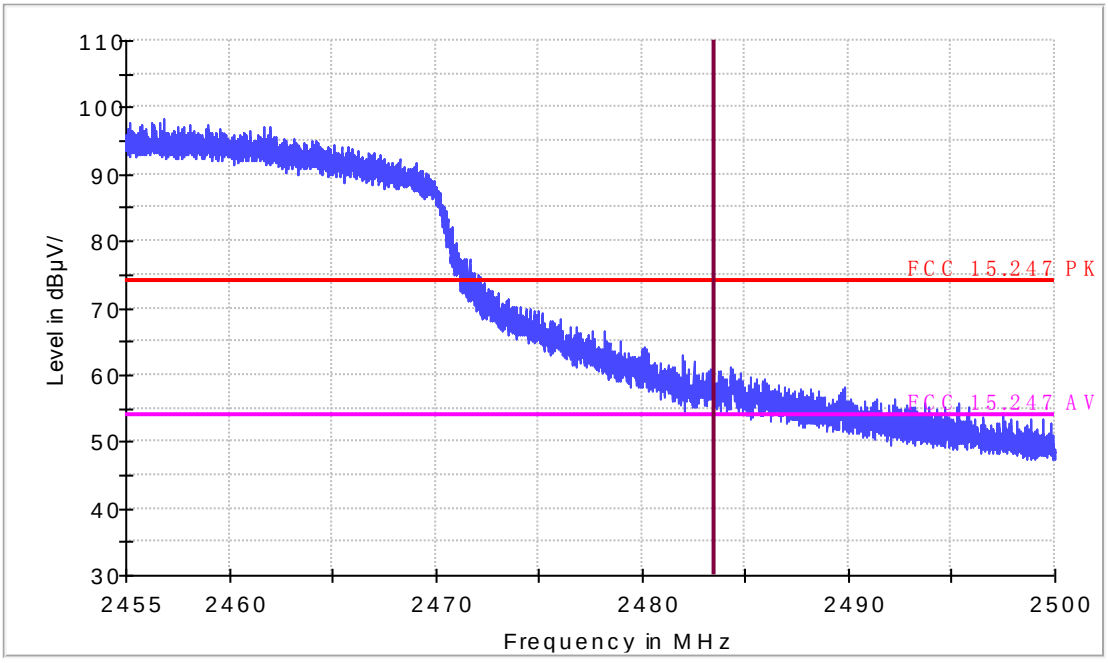
EUT Information

EUT Model Name:	HH41NH
Operation mode:	2TX Mode in Wifi 11n HT20 CH11 Chain 0 + 1
Test Voltage:	
Comment:	

Common Information

Test Site:	SMO EMC Lab.
Environment	
Antenna Polarization:	Vertical
Operator Name:	
Comment:	

FCC Electric Field Strength 2.4GHz Bandedge-PK



Radiated Emission

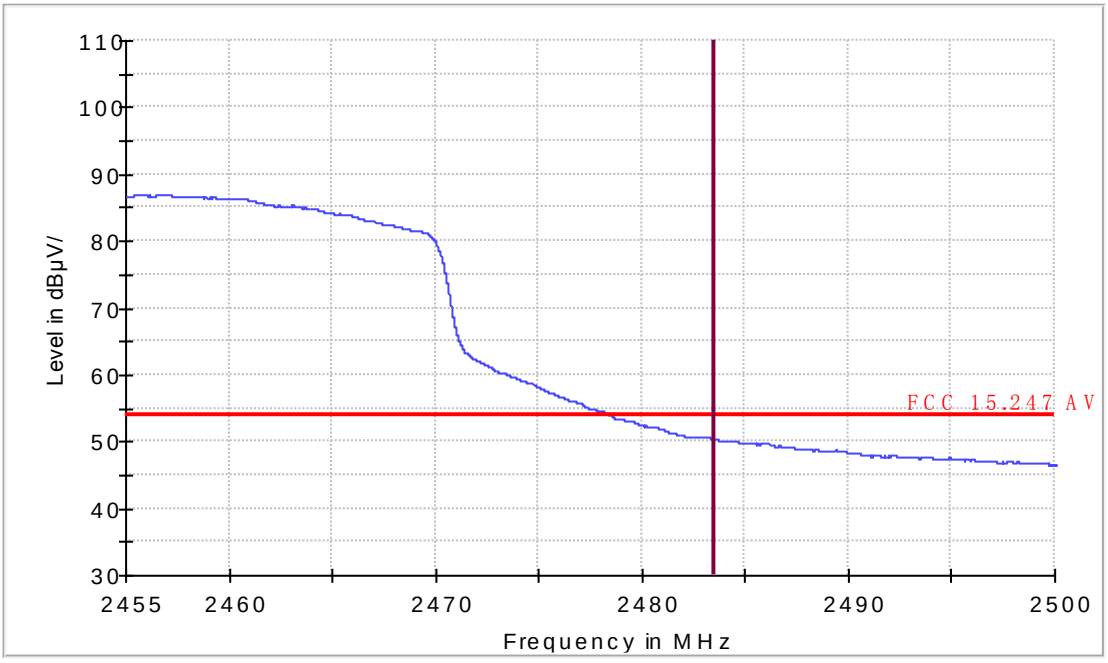
EUT Information

EUT Model Name:	HH41NH
Operation mode:	2TX Mode in Wifi 11n HT20 CH11 Chain 0 + 1
Test Voltage:	
Comment:	

Common Information

Test Site:	SMO EMC Lab.
Environment	
Antenna Polarization:	Horizontal
Operator Name:	
Comment:	

FCC Electric Field Strength 2.4GHz Bandedge-AV



Radiated Emission

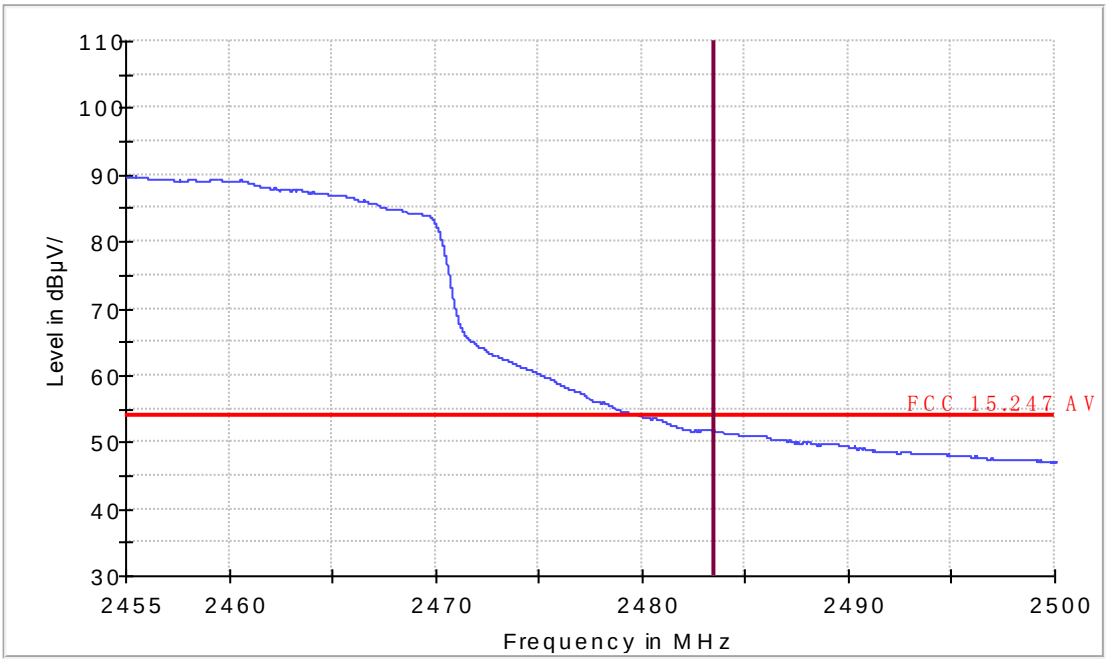
EUT Information

EUT Model Name:	HH41NH
Operation mode:	2TX Mode in Wifi 11n HT20 CH11 Chain 0 + 1
Test Voltage:	
Comment:	

Common Information

Test Site:	SMQ EMC Lab.
Environment	
Antenna Polarization:	Vertical
Operator Name:	
Comment:	

FCC Electric Field Strength 2.4GHz Bandedge-AV



11. CONDUCTED EMISSION TEST FOR AC POWER PORT MEASUREMENT

11.1. Test Standard and Limit

11.1.1. Test Standard

FCC Part 15 15.207

11.1.2. Test Limit

Table 39 Conducted Disturbance Test Limit

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

* Decreasing linearly with logarithm of the frequency
* The lower limit shall apply at the transition frequency.

11.2. Test Procedure

The EUT is put on a table of non-conducting material that is 80cm high. The vertical conducting wall of shielding is located 40cm to the rear of the EUT. The power line of the EUT is connected to the AC mains through a Artificial Mains Network (A.M.N.). A EMI test receiver (R&S Test Receiver ESCS30) is used to test the emissions form both sides of AC line. According to the requirements of ANSI C63.10-2013.Conducted emissions from the EUT measured in the frequency range between 0.15 MHz and 30MHz using CISPR Quasi-Peak and average detector mode.
The bandwidth of EMI test receiver is set at 9kHz.

11.3. Test Arrangement

The arrangement of the equipment is installed to meet the standards and operating in a manner, which tends to maximize its emission characteristics in a normal application. The detailed information refers to test picture.

11.4. Test Data

The emissions don’t show in below are too low against the limits. Refer to the test curves.

Adaptor for EUT: UC13US AOHAI

Table 40 Conducted Disturbance Test Data

Model No.: HH41NH

Test mode: Charging and transmitting

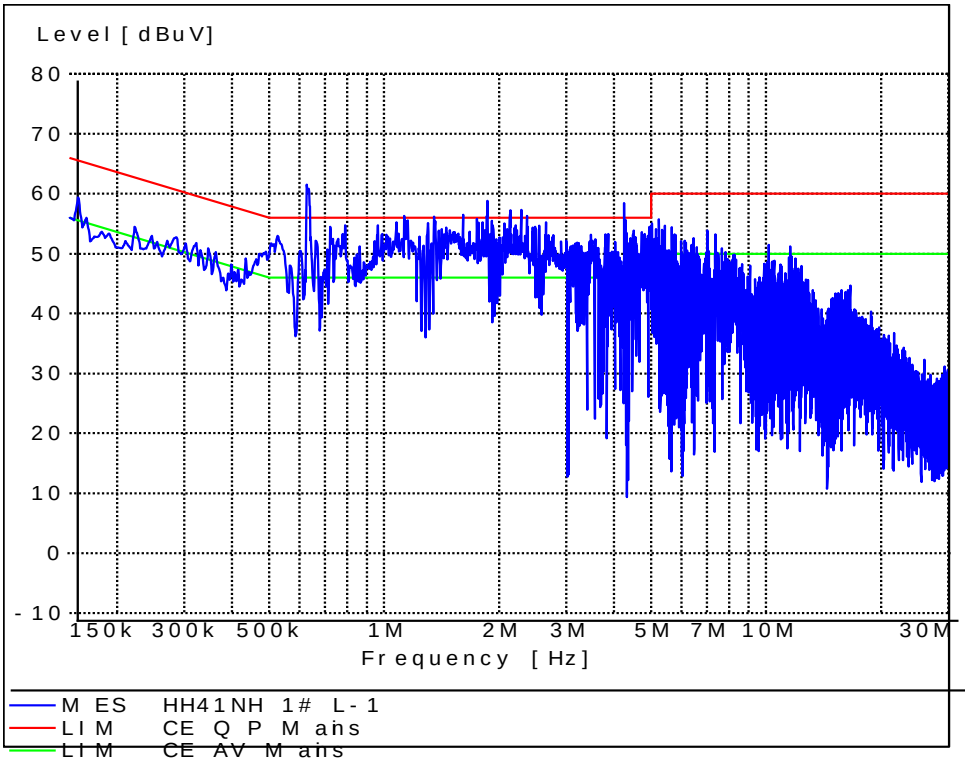
	Frequency (MHz)	Correction Factor (dB)	Quasi-Peak			Average		
			Reading (dBμV)	Emission Level (dBμV)	Limits (dBμV)	Reading (dBμV)	Emission Level (dBμV)	Limits (dBμV)
Line	0.158	9.7	41.9	51.6	65.6	30.6	40.3	55.6
	0.362	9.7	33.1	42.8	58.7	23.0	32.7	48.7
	0.626	9.8	43.6	53.4	56	34.5	44.3	46
	1.866	9.8	41.9	51.7	56	33.4	43.2	46
	4.248	9.9	33.8	43.7	56	22.3	32.2	46
	5.24	10.0	39.6	49.6	60	26.9	36.9	50
Neutral	0.17	9.7	39.1	48.8	65.0	19.8	29.5	55.0
	0.218	9.7	39.0	48.7	62.9	21.0	30.7	52.9
	0.63	9.8	42.3	52.1	56	27.5	37.3	46
	2.266	9.9	33.8	43.7	56	18.6	28.5	46
	3.644	9.9	34.7	44.6	56	18.5	28.4	46
	5.34	10.0	36.7	46.7	60	19.3	29.3	50

REMARKS: 1. Emission level(dBuV)=Read Value(dBuV) + Correction Factor(dB)

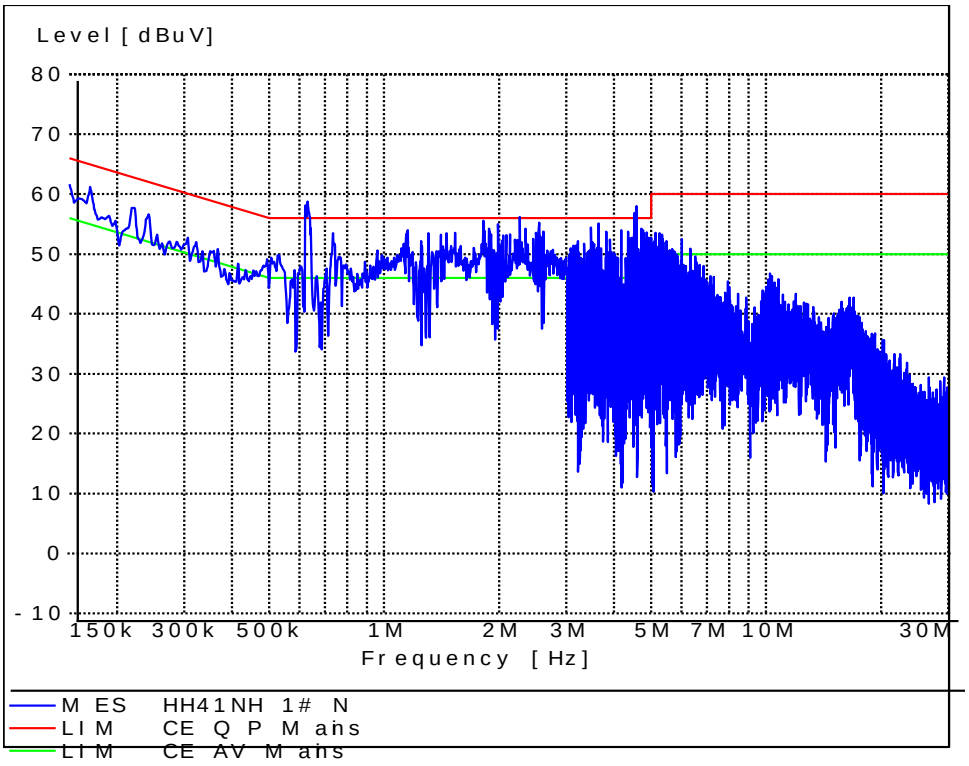
2. Correction Factor(dB) =LISN Factor (dB) + Cable Factor (dB)+Limiter Factor(dB)

3. The other emission levels were very low against the limit.

EUT: HH41NH
Manufacturer:
Operating Condition: Transmitting
Test Site:
Operator:
Test Specification: L
Comment: AC 120V/60Hz



EUT: HH41NH
Manufacturer:
Operating Condition: Transmitting
Test Site:
Operator:
Test Specification: N
Comment: AC 120V/60Hz



Adaptor for EUT: UC13US TEN PAO

Table 41 Conducted Disturbance Test Data

Model No.: HH41NH

Test mode: Charging and transmitting

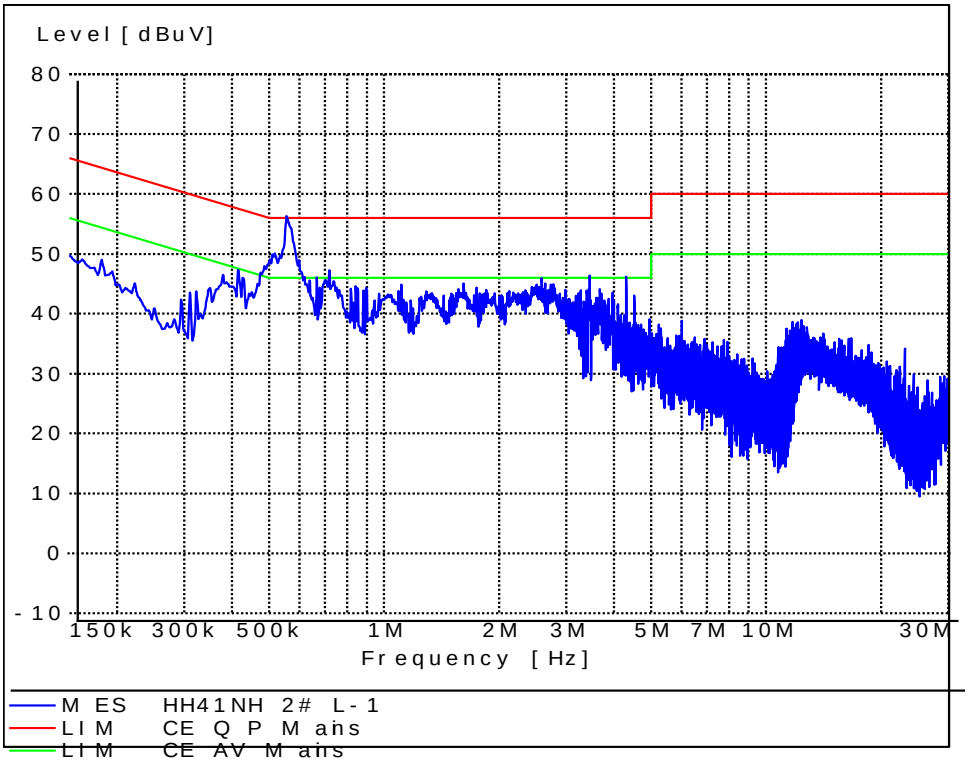
	Frequency (MHz)	Correction Factor (dB)	Quasi-Peak			Average		
			Reading (dBμV)	Emission Level (dBμV)	Limits (dBμV)	Reading (dBμV)	Emission Level (dBμV)	Limits (dBμV)
Line	0.182	9.7	31.1	40.8	64.4	22.4	32.1	54.4
	0.414	9.7	29.9	39.6	57.6	22.3	32	47.6
	0.554	9.8	41.1	50.9	56	34.2	44	46
	0.718	9.8	31.3	41.1	56	24.5	34.3	46
	3.448	9.9	32.5	42.4	56	24.6	34.5	46
	6.024	10.0	25.8	35.8	60	20.6	30.6	50
Neutral	0.158	9.7	32.3	42	65.6	14.4	24.1	55.6
	0.402	9.7	29.9	39.6	57.8	15.7	25.4	47.8
	0.558	9.8	37.2	47	56	24.0	33.8	46
	2.582	9.9	30.8	40.7	56	16.0	25.9	46
	3.444	9.9	34.6	44.5	56	19.8	29.7	46
	12.488	9.9	21.8	31.7	60	15.4	25.3	50

REMARKS: 1. Emission level(dBuV)=Read Value(dBuV) + Correction Factor(dB)

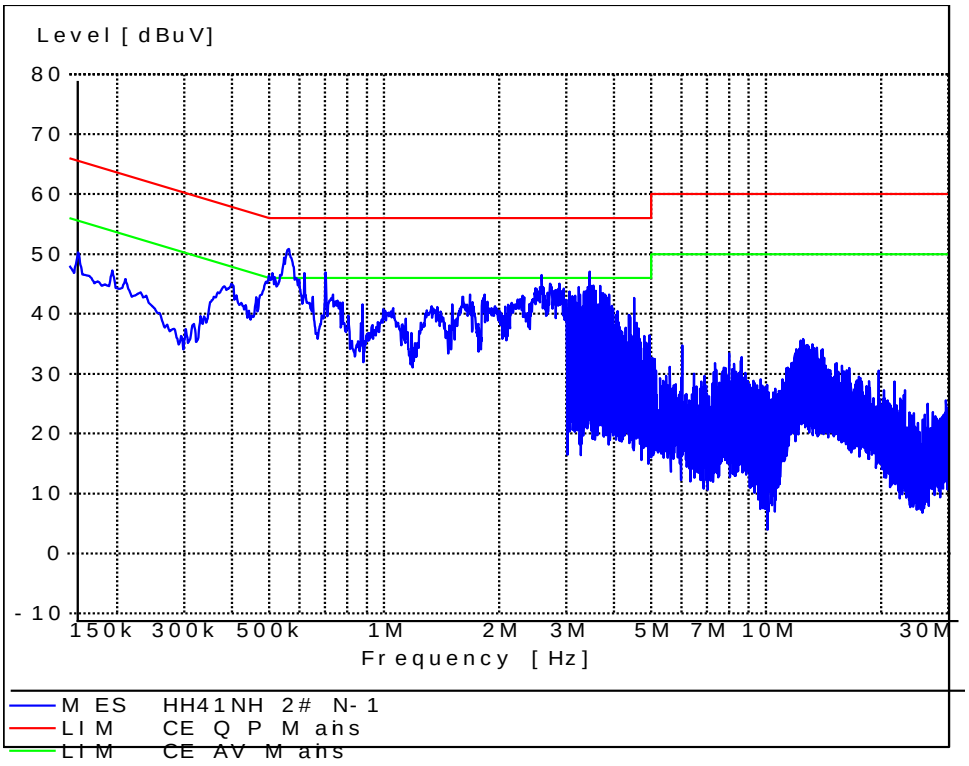
2. Correction Factor(dB) =LISN Factor (dB) + Cable Factor (dB)+Limiter Factor(dB)

3. The other emission levels were very low against the limit.

EUT: HH41NH
Manufacturer:
Operating Condition: Transmitting
Test Site:
Operator:
Test Specification: L
Comment: AC 120V/60Hz



EUT: HH41NH
Manufacturer:
Operating Condition: Transmitting
Test Site:
Operator:
Test Specification: N
Comment: AC 120V/60Hz



12. ANTENNA REQUIREMENTS

12.1. Applicable requirements

If directional gain of transmitting antennas is greater than 6dBi, the power shall be reduced by the same level in dB comparing to gain minus 6dBi. For the fixed point-to-point operation, the power shall be reduced by one dB for every 3 dB that the directional gain of the antenna exceeds 6 dBi. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the FCC rule.

12.2. Antenna Connector

Antenna Connector is on the PCB within enclosure and not accessible to user.

12.3. Antenna Gain

The antenna gain of EUT is less than 6 dBi.