MOTOROLA SOLUTIONS

CERTIFICATE 2518.08

MS ISO/IEC 17025
TESTING
SAMM NO. 0825

MOTOROLA PENANG ADV. COMM. LABORATORY

Motorola Solutions Malaysia Sdn. Bhd.
Plot 2A, Medan Bayan Lepas,
Mukim 12 SWD, 11900 Bayan Lepas,
Penang, Malaysia.

FCC / ISED TEST REPORT

Report Revision : **Rev.C**

Date/s Tested	:	21-August-2019 - 01-September-2019
Report Issue Date	:	05-September-2019
Manufacturer/Location	:	Motorola Solutions Malaysia Sdn Bhd
Manufacturer/Address	:	Plot 2A, Medan Bayan Lepas, Mukim 12 SWD, 11900 Bayan Lepas, Penang, Malaysia
Requestor	:	TAI, WEN QI
Product Type	:	Hand-held
Product Version (PMN)	:	XPR 3500e
Model Number (HVIN)	:	AAH02RDH9VA1AN / PMUE3836CABNKA
Frequency Band	:	2.412-2.462 GHz
Rated / Max RF Output Power	:	802.11b - 55 mWatts / 63.1 mWatts 802.11g - 14.8 mWatts / 18.6 mWatts 802.11n (HT20) - 10 mWatts / 12.6 mWatts
Applicant Name	:	Motorola Solutions Inc
FCC Registrations	:	461337
ISED Registrations	:	MY0001
Firmware Version (FVIN)	:	D02.10.05.0012

The equipment was tested accordance to the requirement listed below:

(2.4GHz Wifi) **47CFR Part 15C** **ISED RSS 247 Issue 2** **February 2017**	**PASS**

Prepared By:

Gan Boon Teong
Test Personnel

Approved By:

Vincent Foong Chuen Kit
Deputy Technical Manager

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REVISION HISTORY

Revision History	Description	Date	Originator
Rev. A	Initial Report	**5-September-2019**	**GAN BOON TEONG**
Rev. B	Standardized address	13-December-2019	Vincent Foong
Rev. C	Added IC model, worst case radiated emission levels	19-December-2019	Vincent Foong

1.0. General Information

EUT Description:

Technologies	2.4GHz Wi-Fi
TX Frequency range	2412MHz – 2462MHz
Modulation Type	DSSS, OFDM
Connector type	PROGRAMMING, TEST & ALIGNMENT CABLE
Antenna type	INTERNAL

1.1. Channel number and frequency information:

There are two bandwidth systems.
For 20MHz Bandwidth systems (802.11b, 802.11g, 802.11n), use channel 1 ~ channel 11
For 40MHz Bandwidth systems (802.11n), use channel 3 ~ channel 9

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

The EUT contains following accessory devices and data cable:

Item	Brand	Model or P/N
BELIZE NON-TIA HIGH CAP LV LI- ION BATTERY 2950M3000T	MOTOROLA	PMNN4493A
STUBBY ANTENNA	MOTOROLA	PMAE4070A
Programming Cable Slim	MOTOROLA	PMKN4117

General Description of Applied Standards
The EUT is a RF Product. According to the specifications of the manufacturer, the EUT is to comply with the requirements of the following standards:

FCC 47 CFR Part 15 Subpart C
KDB 558074 D01 15.247 Meas Guidance v05
ANSI C63.10-2013

No modifications were done to the UUT to facilitate the tests in this report.

Deviation from standard
Not applicable as no deviation from standard test method

2.0. Summary of Test Results

FCC Clause	IC Clause	Test Item	Result	Remark	Serial number tested
15.247 (a)(2)	RSS-247 5.2(a)	DTS & 99% Channel Bandwidth	Pass	Highest 99% OCB: 802.11b: 13.515 MHz(13M5G1D) 802.11g: 16.825 MHz(16M8D1D) 802.11n: 17.961 MHz(17M9D1D)	867TVPC233
15.247 (b)(3)	RSS-247 5.4(d)	Conducted RF Output Power (Average)	Pass	Highest output power: 802.11b: 17.657 dBm 802.11g: 12.414 dBm 802.11n: 10.149 dBm	867TVPC233
15.247(e)	RSS-247 5.2(b)	Maximum Power Spectral Density	Pass	Meet the limit requirement.	867TVPC233
15.247(d)	RSS-247 5.5	Conducted Spurious Emissions	Pass	Worst case emission: -39.03 dBm	867TVPC233
15.247 (d)	RSS-247 5.5	Band edge Conducted Spurious Emission	Pass	Worst case emission: -35.98 dBm	867TVPC233
15.205, 15.209, 15.247 (d)	RSS-247 5.5	Radiated Emission within Restricted Bands	Pass	Worst case emission: 48.2656 dBuV/m	867TVPC207
15.207	RSS-Gen 8.8	AC Power Line Conducted Emission	NA	Testing is not required, radio shall turn off during charging mode	NA
15.203		Antenna requirement	NA	Internal antenna is not accessible to the enduser	NA

NA → Not Available

3.0. Measurement Uncertainty

Measurement	Frequency	Expended Uncertainty (k=1.96) (±dB)
AC Power Line Conducted Spurious Emission	150KHz ~ 30MHz	3.43
Radiated Emissions up to 1 GHz	30MHz ~ 200MHz	5.01
	200MHz ~ 1000MHz	5.01
Radiated Emissions above 1 GHz	1GHz ~ 18GHz	5.01
	18GHz ~ 25GHz	5.01

4.0. Equipment List

Bluetooth ATE # 1: (SW Version: Ate Main_3.1.10_R2)

Description	Model	Serial Number	Calibration Date	Calibration Due Date
SPECTRUM ANALYZER	FSEK30	838495/014	19-Jul-19	19-Jul-20
SPECTRUM ANALYZER	E4443A	MY46181974	9-Aug-18	9-Aug-20
POWER SUPPLY	6033A	3004A05137	24-Jul-18	24-Jul-20

Radiated Emission Station (SW Version: EMC FCC RE v1.5.2)

Description	Model	Serial Number	Calibration Date	Calibration Due Date
DRG HORN FREQ.	SAS-571	720	21-Mar-19	21-Mar-21
DRG HORN FREQ.	SAS-571	1143	14-Feb-19	14-Feb-21
POWER SUPPLY	6032A	MY41001736	25-May-19	25-May-20
SIGNAL GENERATOR	SMB 100A	181117	8-Nov-18	8-Nov-21
EMI TEST RECEIVER	ESW44	101750	24-Jul-19	24-Jul-20
EMI TEST RECEIVER	ESIB26	100017	19-Jul-19	19-Jul-20
5m Semi-anechoic Chamber	S800-HX	J2308	Not Required	Not Required
BILOG ANTENNA	CBL6112D	25224	1-Aug-18	1-Nov-19
BILOG ANTENNA	CBL6112B	2964	16-Feb-18	16-Feb-20
DATA LOGGER	SDL500	A.016800	19-Mar-19	18-Mar-20
SYSTEM CONTROLLER	SC104V	050806-1	Not Required	Not Required
TURNTABLE FLUSH MOUNT 2M	FM2011	NA	Not Required	Not Required
ANTENNA POSITIONING TOWER	TLT2	NA	Not Required	Not Required
BROAD-BAND HORN ANTENNA	BBHA9170	BBHA9170255	21-Dec-18	21-Dec-19
18 - 40GHz PREAMPLIFIER	Miteq Hi Gain Sucoflex	001	Not Required	Not Required
PREAMPLIFIER	PAM-0118	269	24-May-19	24-May-20
LOOP ANTENNA	6502	00203479	10-Dec-18	10-Dec-19

5.0. Test Mode Applicability and Test Channel Detail

The device employs MIMO technology. Below are the possible configurations.

WLAN Configurations		Mode					
		SISO		Spatial Diversity Multiplexing (MIMO)		Cyclic Delay Diversity (MIMO)	
	Antenna	Primary	Secondary	Primary	Secondary	Primary	Secondary
2.4GHz	802.11b	√	x	x	x	x	x
	802.11g	√	x	x	x	x	x
	802.11n (HT20)	√	x	x	x	x	x
	802.11n (HT40)	x	x	x	x	x	x

√ = Support;
x = NOT Support

Note: This Device supports simultaneous transmission operation, which allows for two SISO or two MIMO channels to operate independent of one another in the 2.4GHz band on each antenna. 802.11n mode is capable of transmitting simultaneously on two antennas using Cyclic Delay Diversity and Spatial Diversity Multiplexing (2x2 MIMO).
The following tables show the worst case configurations determined during testing. The data for these configurations is contained in this test report.

Radiated Emission Test (Above 1GHz)

☒Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).

☒Following channel(s) was (were) selected for the final test as listed below.

EUT Configure Mode	Modulation	Available Channel	Tested Channel	Modulation Technology	Data Modulation Type	Date Rate (Mbps)	Mode	Environmental Conditions
Test Mode	802.11b	1 to 11	1,6,11	DSSS	QPSK	2	SISO	23.3°C, 70.2%RH
Test Mode	802.11g	1 to 11	1,6,11	OFDM	BPSK	6	SISO	23.3°C, 70.2%RH
Test Mode	802.11n (HT20)	1 to 11	1,6,11	OFDM	BPSK	6.5	SISO CDD (MIMO)	23.3°C, 70.2%RH
Test Mode	802.11n (HT40)	3 to 9	3,6,9	OFDM	BPSK	6.5	SISO CDD (MIMO)	NA

Radiated Emission Test (Below 1GHz)

☒Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).

☒Following channel(s) was (were) selected for the final test as listed below.

EUT Configure Mode	Modulation	Available Channel	Tested Channel	Modulation Technology	Data Modulation Type	Date Rate (Mbps)	Mode	Environmental Conditions
Test Mode	802.11b	1 to 11	1,6,11	DSSS	QPSK	2	SISO	23.3°C, 70.2%RH
Test Mode	802.11g	1 to 11	1,6,11	OFDM	BPSK	6	SISO	23.3°C, 70.2%RH
Test Mode	802.11n (HT20)	1 to 11	1,6,11	OFDM	BPSK	6.5	SISO CDD (MIMO)	23.3°C, 70.2%RH
Test Mode	802.11n (HT40)	3 to 9	3,6,9	OFDM	BPSK	6.5	SISO CDD (MIMO)	NA

Power Line Conducted Emission Test

☐Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).

☐Following channel(s) was (were) selected for the final test as listed below.

EUT Configure Mode	Modulation	Available Channel	Tested Channel	Modulation Technology	Data Modulation Type	Date Rate (Mbps)	Environmental Conditions
Application Mode	802.11bgn mixed	1 to 11	AUTO	DSSS, OFDM	AUTO	AUTO	NA

Antenna Port Conducted Measurement:

☒This item includes all test value of each mode, but only includes spectrum plot of worst value of each mode.

☒Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).

☒Following channel(s) was (were) selected for the final test as listed below.

EUT Configure Mode	Modulation	Available Channel	Tested Channel	Modulation Technology	Data Modulation Type	Data Rate (Mbps)	Mode	Environmental Conditions
Test Mode	802.11b	1 to 11	1,6,11	DSSS	QPSK	2	SISO	24.6°C, 54%RH
Test Mode	802.11g	1 to 11	1,6,11	OFDM	BPSK	6	SISO	24.6°C, 54%RH
Test Mode	802.11n (HT20)	1 to 11	1,6,11	OFDM	BPSK	6.5	SISO CDD (MIMO)	24.6°C, 54%RH
Test Mode	802.11n (HT40)	1 to 11	3,6,9	OFDM	BPSK	6.5	SISO CDD (MIMO)	NA

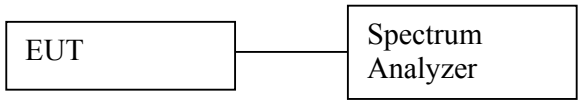
Duty Cycle of Test Signal

802.11b, 802.11g and 802.11n: Duty cycle of test signal is ≥98%. (Refer to Clause 6.3 for duty cycle test signal)

6.0. Transmitter Test Parameters

6.1. 6dB Channel Bandwidth

6.1.1. **Test Setup**



a) Check and ensure the spectrum analyzer well calibrate.
b) Turn on the DUT and set DUT to transmit maximum power.
c) Connect DUT's antenna terminal to spectrum analyzer with a low loss cable.
d) Setting of Spectrum analyzer :
    a. RBW = 100 kHz
    b. VBW = 300 kHz
    c. Detector mode = Peak
    d. Trace = Max hold
    e. Sweep = auto
e) Measure the freq different of two frequencies that were attenuated 6dB from peak of the emission & record the frequency difference as the emission bandwidth.
f) Measure every antenna port by repeat the step above for MIMO measurement.

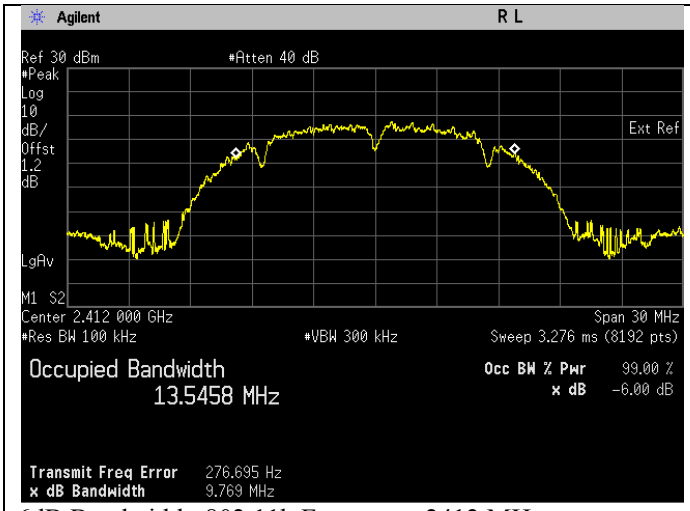
6.1.2. **Test Limits:**

Normal Condition (25 º C)
≥500 kHz

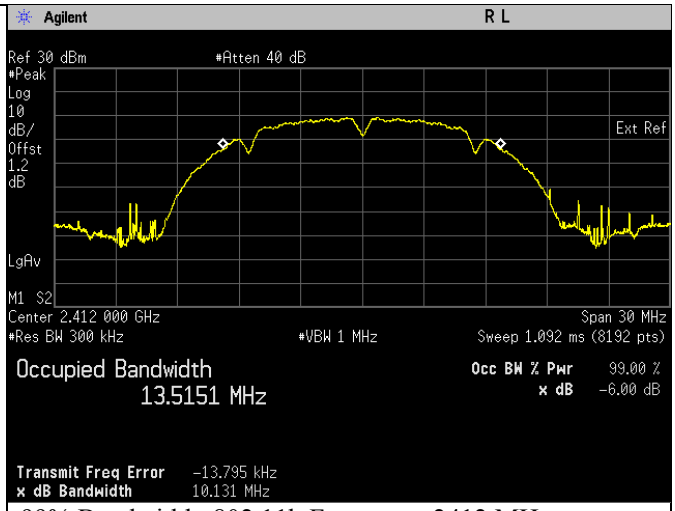
6.1.3. **Test Data:**

802.11 b

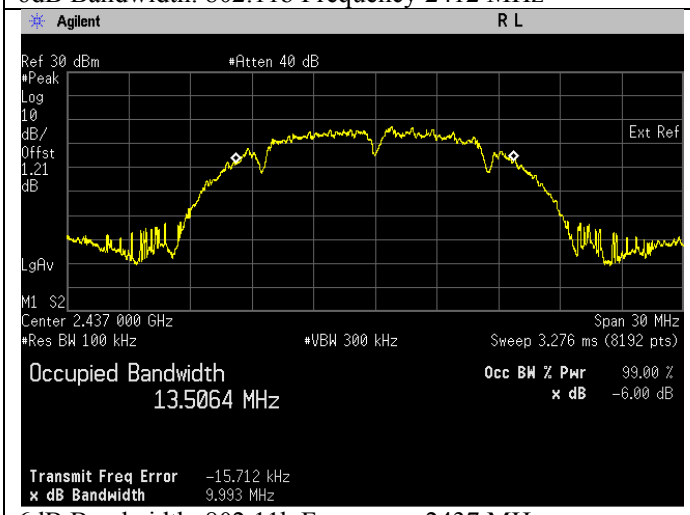
Test Conditions				Test Frequency	Results		
Standard	Modulation Type	Modulation Technology	Data Rate (mbps)	Tx (MHz)	6dB Bandwidth (MHz)	99% Bandwidth (MHz)	Status
802.11b	DSSS	QPSK	2	2412	9.769	13.515	Pass
802.11b	DSSS	QPSK	2	2437	9.993	13.514	Pass
802.11b	DSSS	QPSK	2	2462	9.777	13.466	Pass



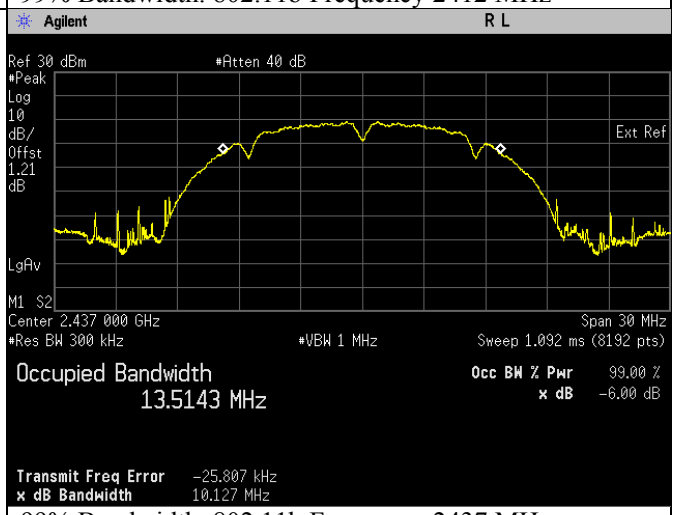
6dB Bandwidth. 802.11b Frequency 2412 MHz



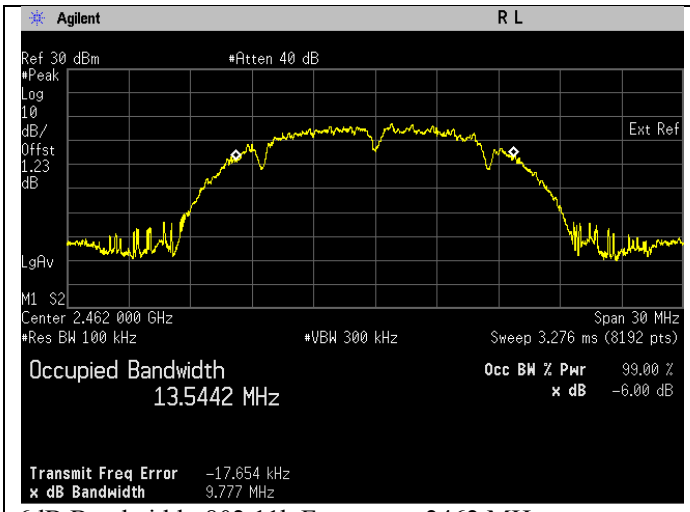
99% Bandwidth. 802.11b Frequency 2412 MHz



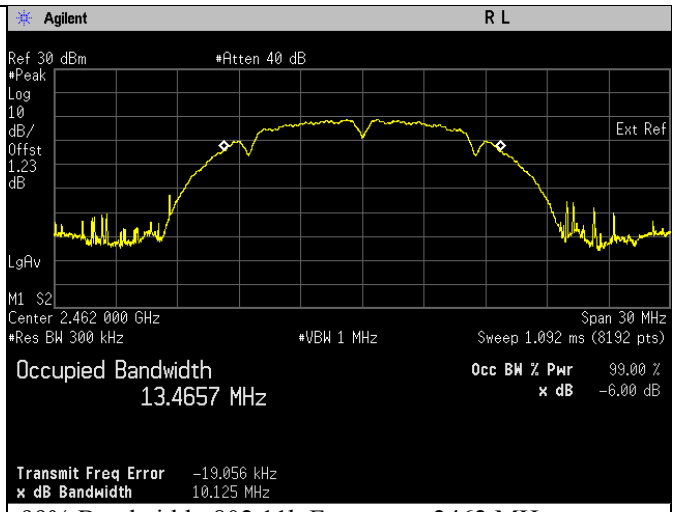
6dB Bandwidth. 802.11b Frequency 2437 MHz



99% Bandwidth. 802.11b Frequency 2437 MHz



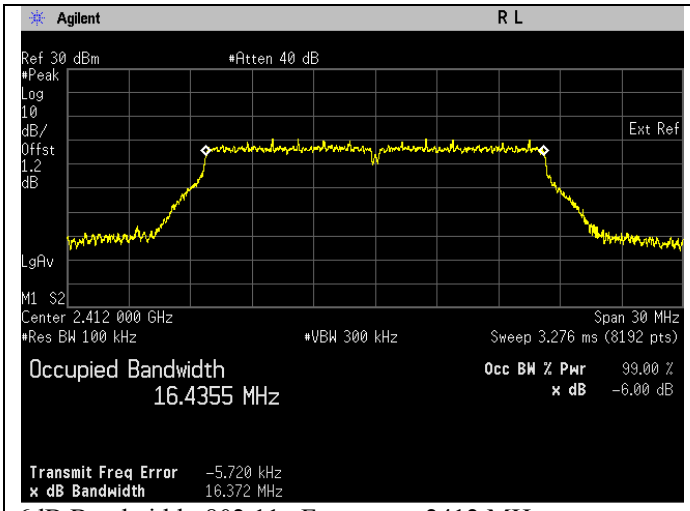
6dB Bandwidth. 802.11b Frequency 2462 MHz



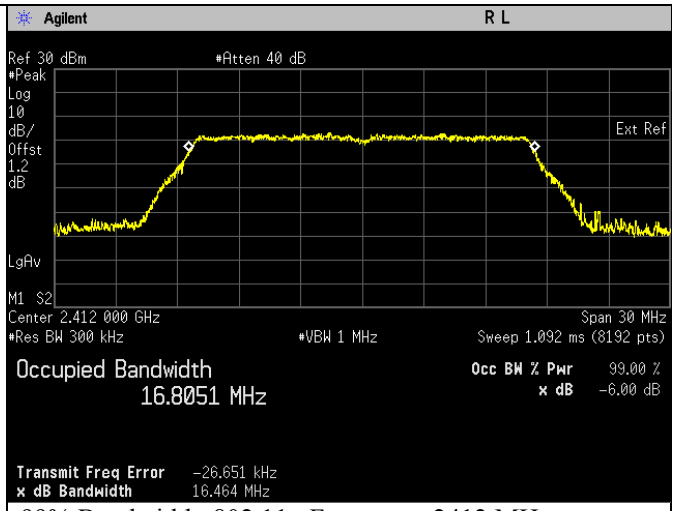
99% Bandwidth. 802.11b Frequency 2462 MHz

802.11 g

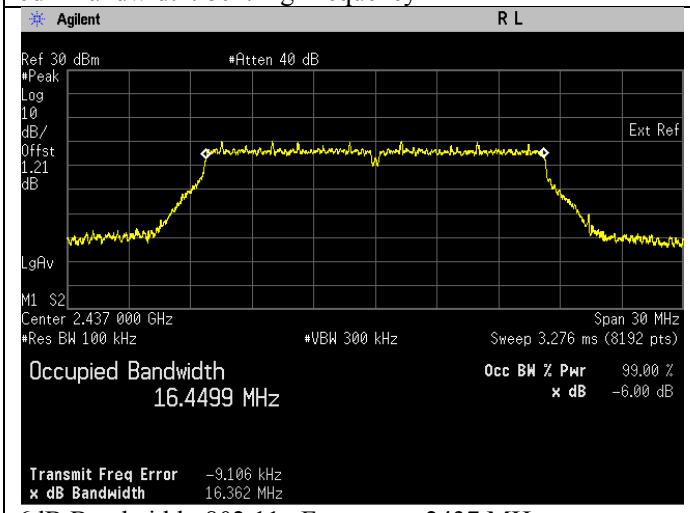
Test Conditions				Test Frequency	Results		
Standard	Modulation Type	Modulation Technology	Data Rate (mbps)	Tx (MHz)	6dB Bandwidth (MHz)	99% Bandwidth (MHz)	Status
802.11g	OFDM	BPSK	6	2412	16.372	16.805	Pass
802.11g	OFDM	BPSK	6	2437	16.363	16.825	Pass
802.11g	OFDM	BPSK	6	2462	16.373	16.777	Pass



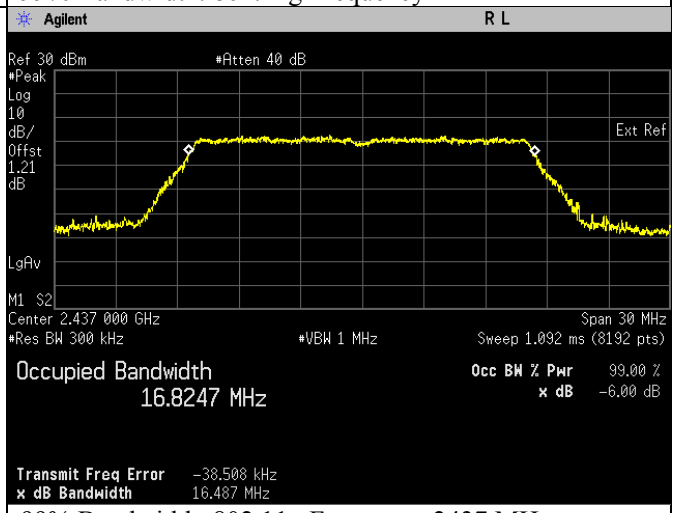
6dB Bandwidth. 802.11g Frequency 2412 MHz



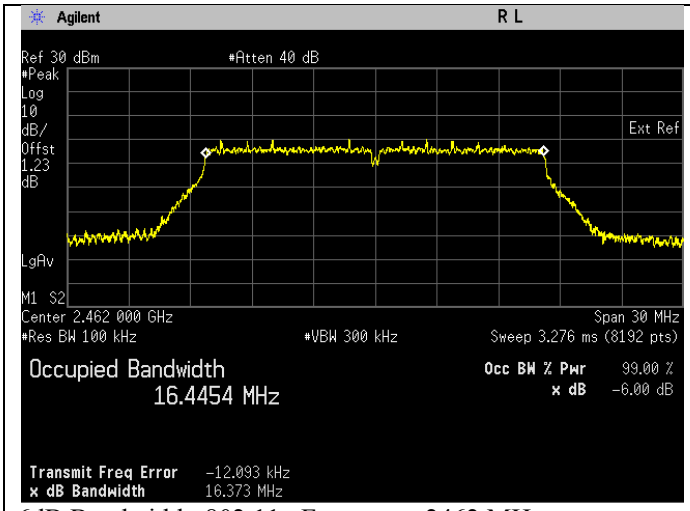
99% Bandwidth. 802.11g Frequency 2412 MHz



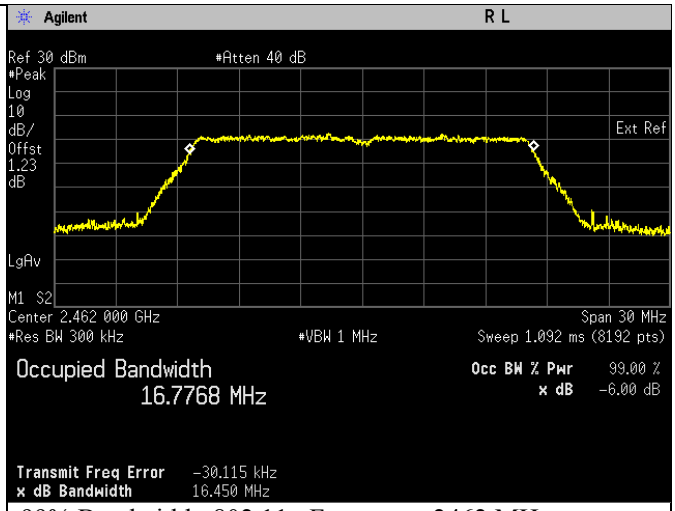
6dB Bandwidth. 802.11g Frequency 2437 MHz



99% Bandwidth. 802.11g Frequency 2437 MHz



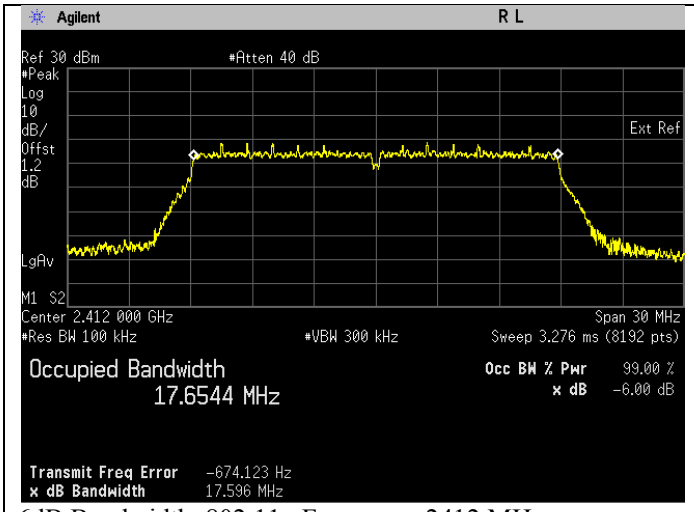
6dB Bandwidth. 802.11g Frequency 2462 MHz



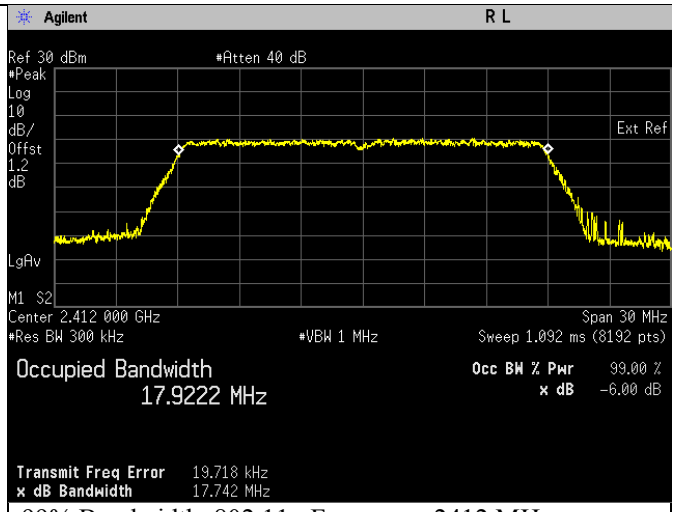
99% Bandwidth. 802.11g Frequency 2462 MHz

802.11n (HT20)

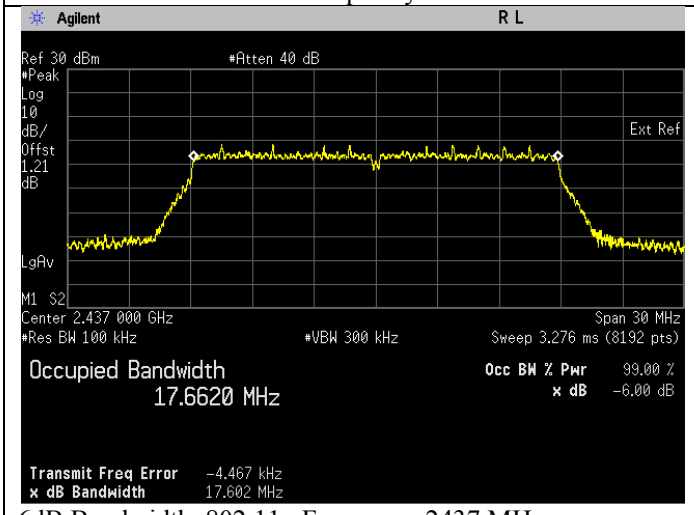
Test Conditions				Test Frequency	Results		
Standard	Modulation Type	Modulation Technology	Data Rate (mbps)	Tx (MHz)	6dB Bandwidth (MHz)	99% Bandwidth (MHz)	Status
802.11n	OFDM	BPSK	6.5	2412	17.596	17.922	Pass
802.11n	OFDM	BPSK	6.5	2437	17.602	17.961	Pass
802.11n	OFDM	BPSK	6.5	2462	17.602	17.910	Pass



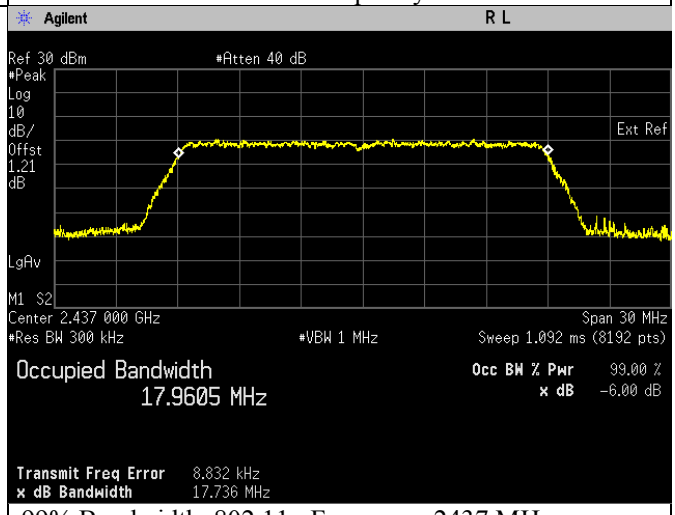
6dB Bandwidth. 802.11n Frequency 2412 MHz



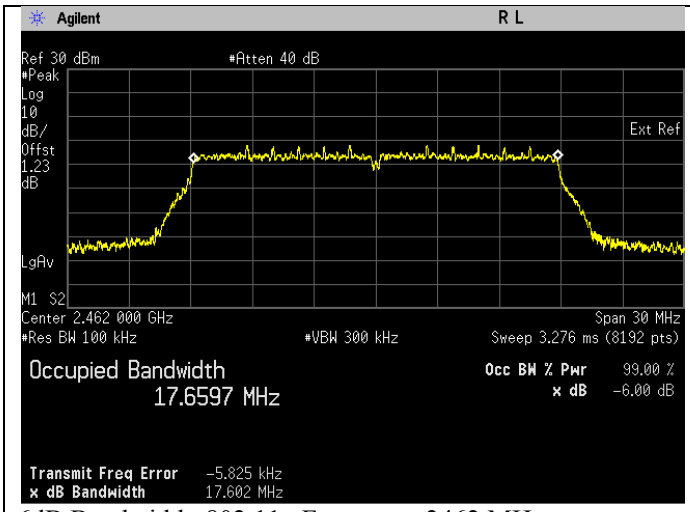
99% Bandwidth. 802.11n Frequency 2412 MHz



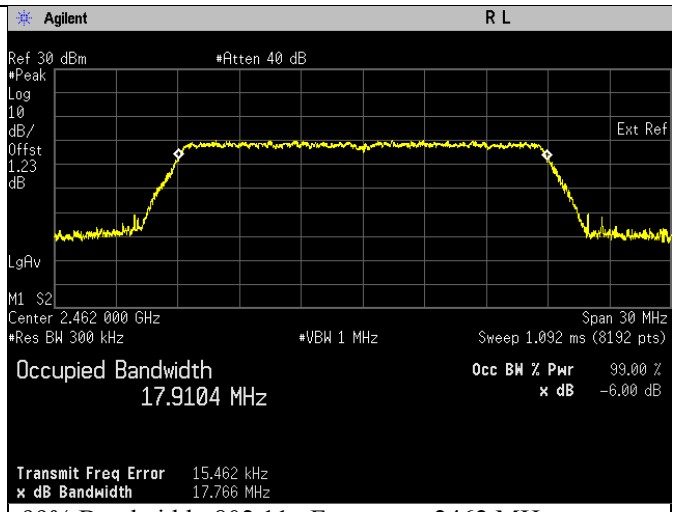
6dB Bandwidth. 802.11n Frequency 2437 MHz



99% Bandwidth. 802.11n Frequency 2437 MHz



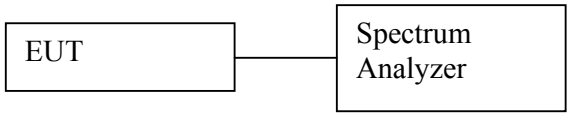
6dB Bandwidth. 802.11n Frequency 2462 MHz



99% Bandwidth. 802.11n Frequency 2462 MHz

6.2. Conducted RF Output Power

6.2.1. **Test Setup**



Average

a) Check and ensure the spectrum analyzer well calibrate.
b) Turn on the DUT and set DUT to transmit maximum power.
c) Measure the duty cycle of transmitter output signal.
d) Setting of Spectrum analyzer :
    a. Set the RBW = 300 kHz.
    b. Set the VBW ≥ [3 × RBW].
    c. Set the span ≥ [1.5 × OBW bandwidth].
    d. Detector = average.
    e. Sweep time = auto couple.
    f. Trace mode = free run.
    g. Allow trace to fully stabilize.
e) Add in duty cycle correction into final test result.
f) Duty cycle correction is calculated as below:
    10 log (1/x)
g) Measure every antenna port by repeat the step above for MIMO measurement.

6.2.2. **Test Limits:**

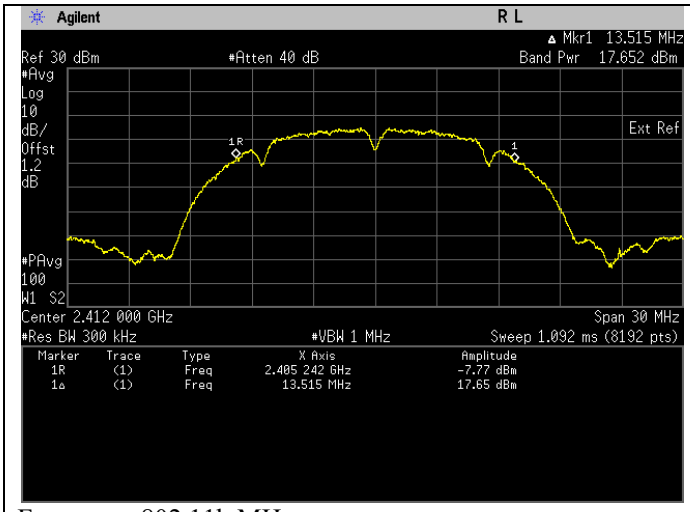
Normal Condition (25 º C)
≤1 Watt(30 dBm)

6.2.3. **Test Data:**

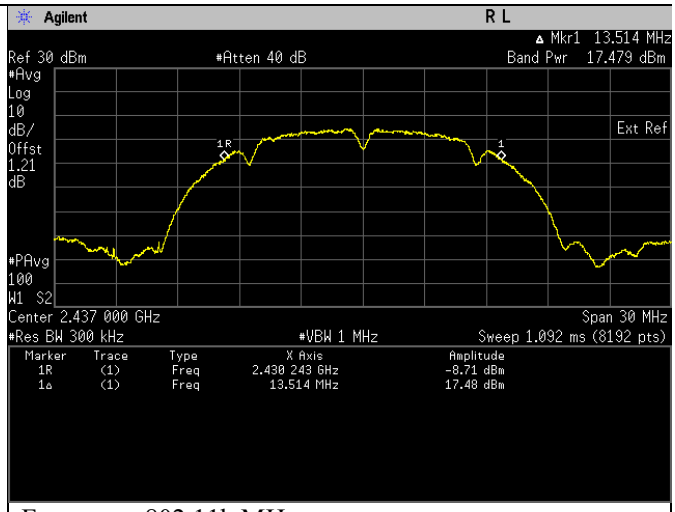
802.11b

Output Power= Band Power + Duty cycle factor
=Band Power + 0.005dB

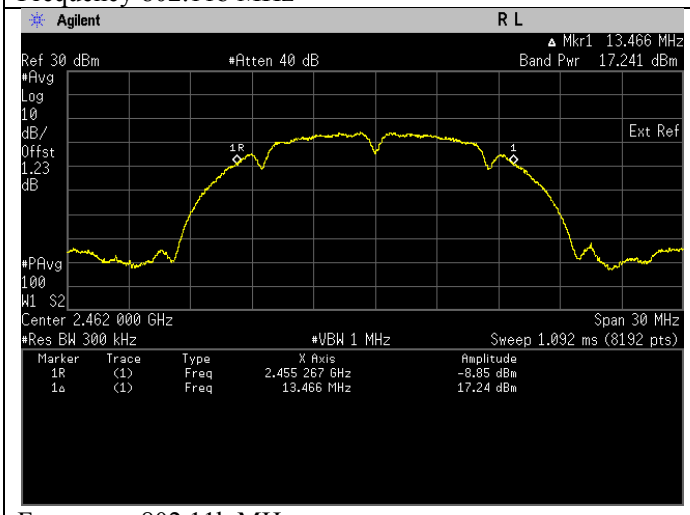
Test Conditions				Test Frequency	Results	
Standard	Modulation Type	Modulation Technology	Data Rate (mbps)	Tx (MHz)	Output Power (dBm)	Status
802.11b	DSSS	QPSK	2	2412	17.657	Pass
802.11b	DSSS	QPSK	2	2437	17.484	Pass
802.11b	DSSS	QPSK	2	2462	17.246	Pass



Frequency 802.11b MHz



Frequency 802.11b MHz

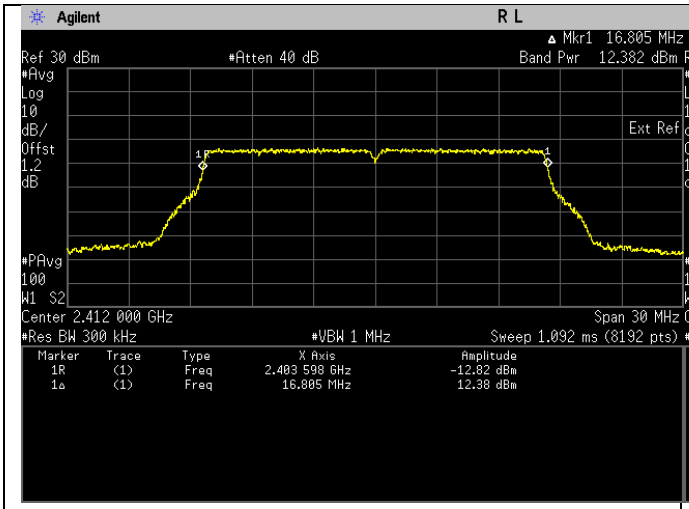


Frequency 802.11b MHz

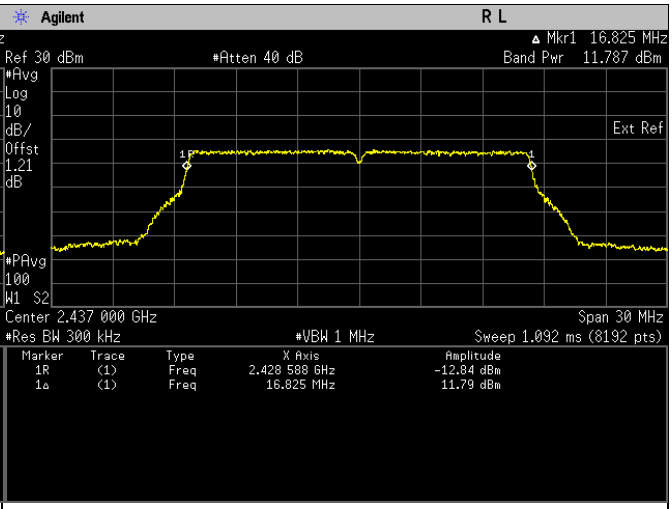
802.11g

Output Power= Band Power + Duty cycle factor
=Band Power + 0.032dB

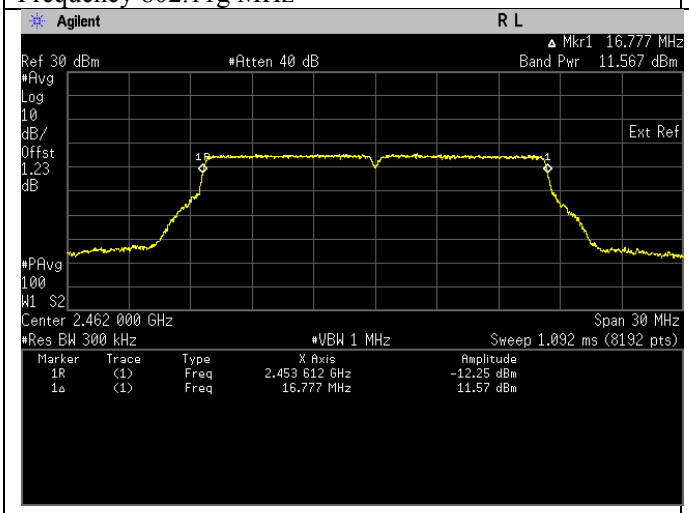
Test Conditions				Test Frequency	Results	
Standard	Modulation Type	Modulation Technology	Data Rate (mbps)	Tx (MHz)	Output Power (dBm)	Status
802.11g	OFDM	BPSK	6	2412	12.414	Pass
802.11g	OFDM	BPSK	6	2437	11.819	Pass
802.11g	OFDM	BPSK	6	2462	11.599	Pass



Frequency 802.11g MHz



Frequency 802.11g MHz

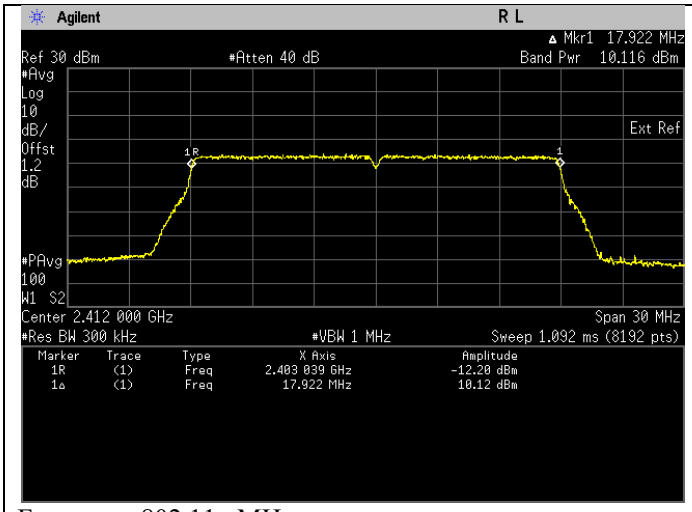


Frequency 802.11g MHz

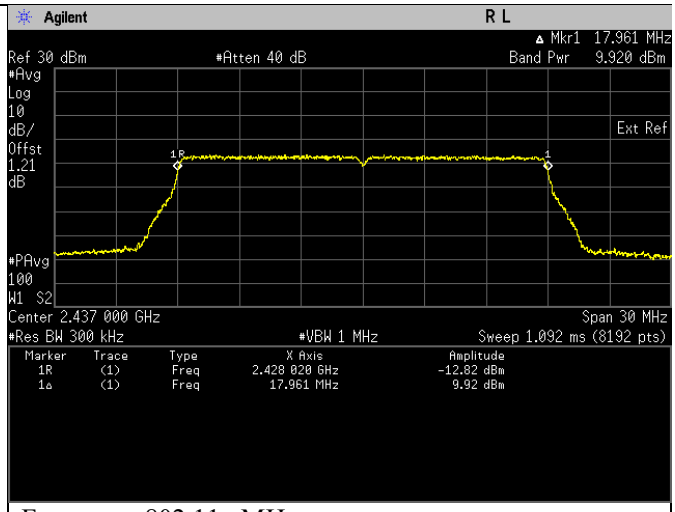
802.11n (HT20)

Output Power= Band Power + Duty cycle factor
=Band Power + 0.033dB

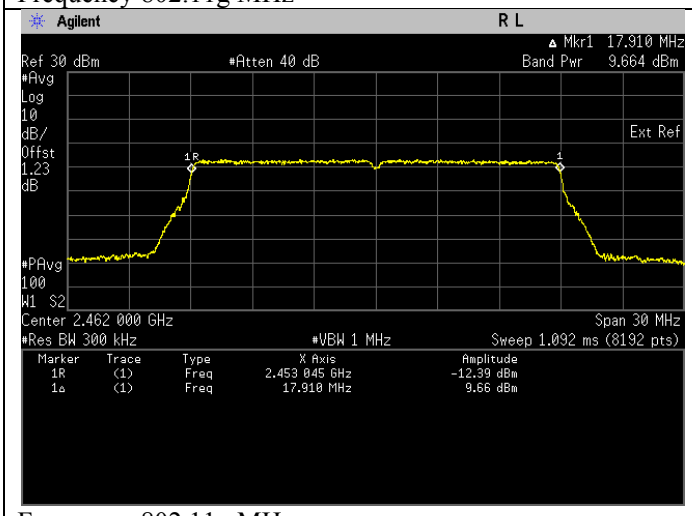
Test Conditions				Test Frequency	Results	
Standard	Modulation Type	Modulation Technology	Data Rate (mbps)	Tx (MHz)	Output Power (dBm)	Status
802.11n	OFDM	BPSK	6.5	2412	10.149	Pass
802.11n	OFDM	BPSK	6.5	2437	9.953	Pass
802.11n	OFDM	BPSK	6.5	2462	9.697	Pass



Frequency 802.11g MHz



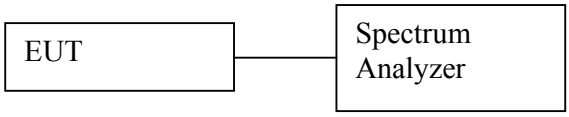
Frequency 802.11g MHz



Frequency 802.11g MHz

6.3.Duty Cycle of the test signal

6.3.1. **Test Setup**

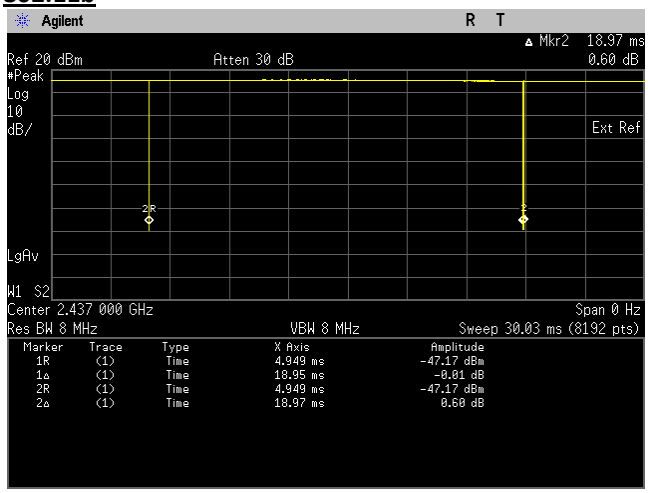


1) Check and ensure the spectrum analyzer well calibrate.
2) Turn on the DUT and set DUT to transmit maximum power.
3) Connect DUT's antenna terminal to spectrum analyzer with a low loss cable.
4) Setting of Spectrum analyzer :
    a. Set the RBW = 10 MHz or the highest RBW available on spectrum analyzer.
    b. Set the VBW ≥ RBW.
    c. Set the span ≥ [1.5 × DTS bandwidth].
    d. Detector = Peak.
    e. Sweep time = 10ms or others that allow to measure accurate duty cycle.
    f. Trace mode = max hold.
    g. Allow trace to fully stabilize.
5) Record the duty cycle as X and save the plot.
6) Measure every antenna port by repeat the step above for MIMO measurement.

6.3.2. **Test Data**

*Duty cycle = On time/ On +off time
*Duty Cycle factor = 10*log(1/Duty Cycle)

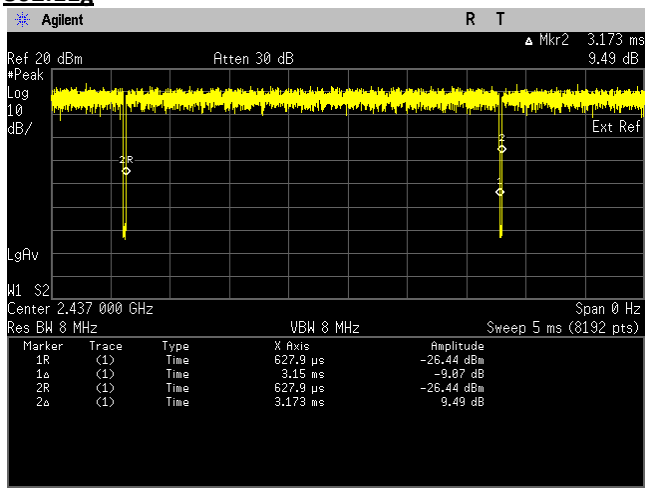
802.11b



Duty Cycle, Antenna 1

On time (ms)	18.95
On + Off Time (ms)	18.97
Duty cycle	0.9989
Duty Cycle factor	0.005

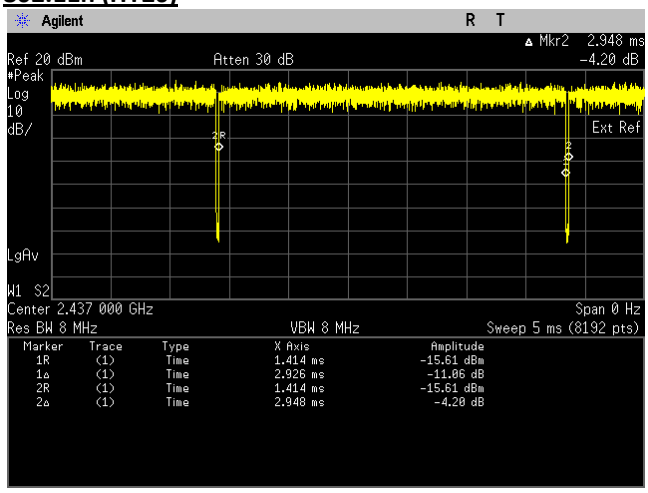
802.11g



Duty Cycle, Antenna 1

On time (ms)	3.15
On + Off Time (ms)	3.173
Duty cycle	0.9928
Duty Cycle factor	0.032

802.11n (HT20)

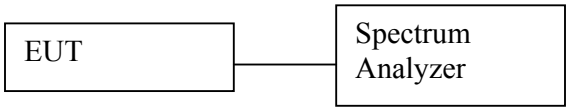


Duty Cycle, Antenna 1

On time (ms)	2.926
On + Off Time (ms)	2.948
Duty cycle	0.9925
Duty Cycle factor	0.033

6.4. Maximum Peak Power Spectral Density

6.4.1. Test Setup



Maximum Peak

a) Check and ensure the spectrum analyzer well calibrate.
b) Turn on the DUT and set DUT to transmit maximum power.
c) Connect DUT's antenna terminal to spectrum analyzer with a low loss cable.
d) Setting of Spectrum analyzer :
    a. Set analyzer center frequency to DTS channel center frequency.
    b. Set the span to 1.5 times the DTS bandwidth.
    c. Set the RBW to 3 kHz ≤ RBW ≤ 100 kHz.
    d. Set the VBW ≥ [3 × 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 amplitude level within the RBW.
    j. If measured value exceeds requirement, then reduce RBW (but no less than 3 kHz) and repeat.
e) Measure every antenna port by repeat the step above for MIMO measurement.

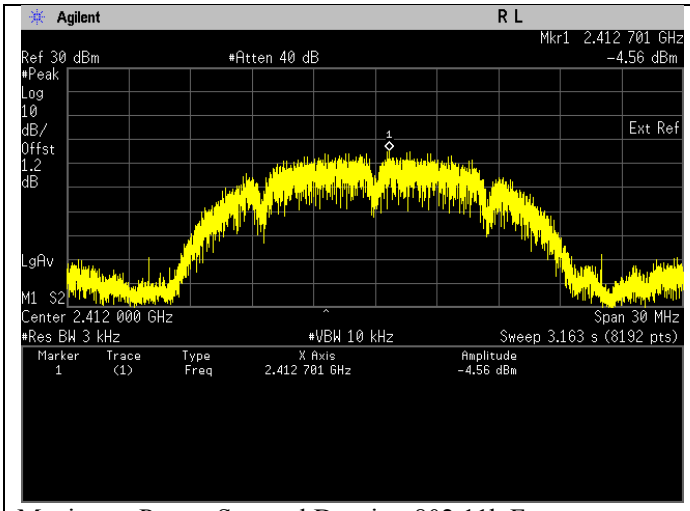
6.4.2. Test Limits

Normal Condition (25 º C)
≤ 8 dBm/3kHz

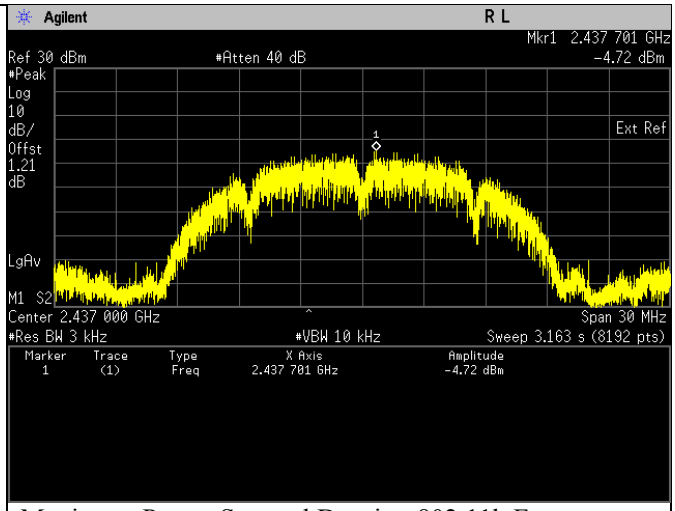
6.4.3. **Test Result**

802.11b

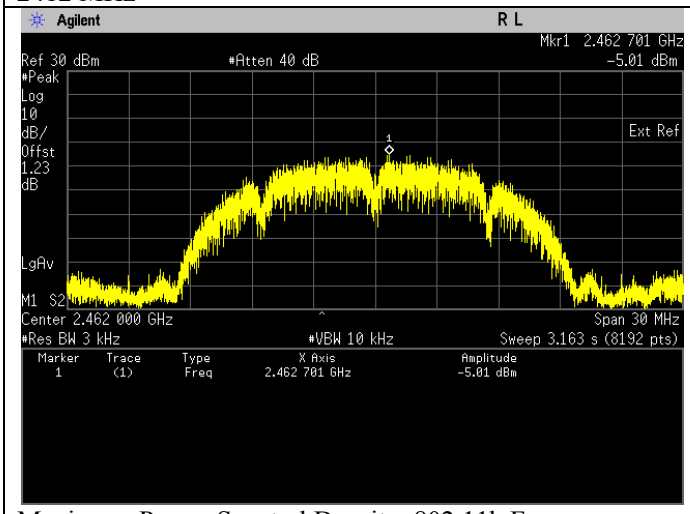
Test Conditions				Test Frequency	Results	
Standard	Modulation Type	Modulation Technology	Data Rate (mbps)	Tx (MHz)	Power (dBm/100kHz)	Status
802.11b	DSSS	QPSK	2	2412	-4.56	Pass
802.11b	DSSS	QPSK	2	2437	-4.72	Pass
802.11b	DSSS	QPSK	2	2462	-5.01	Pass



Maximum Power Spectral Density. 802.11b Frequency 2412 MHz



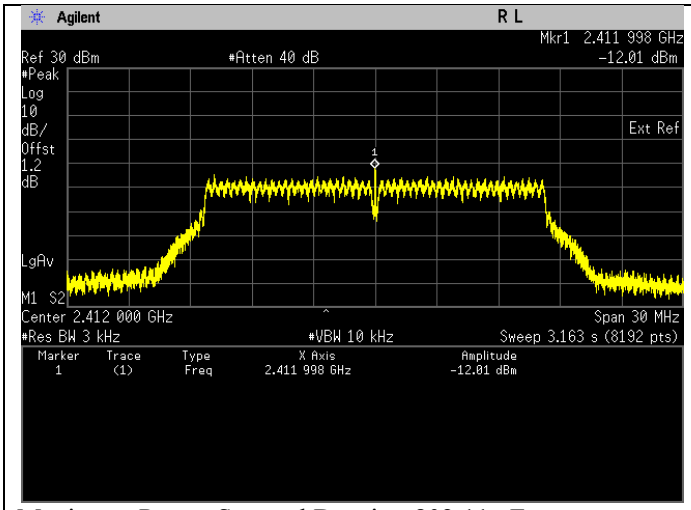
Maximum Power Spectral Density. 802.11b Frequency 2437 MHz



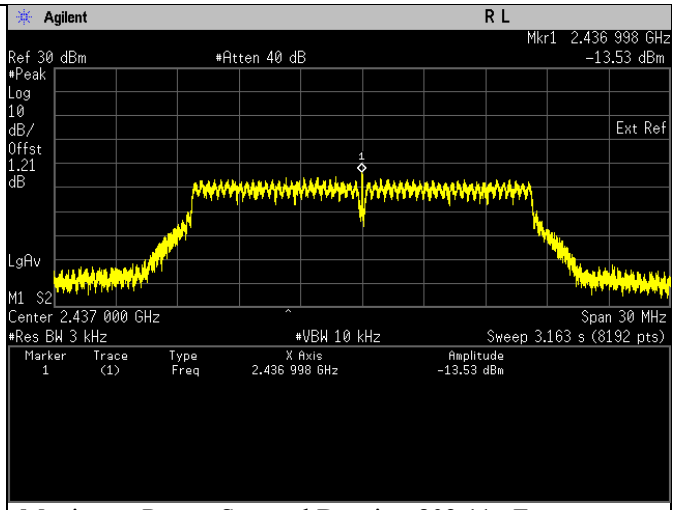
Maximum Power Spectral Density. 802.11b Frequency 2462 MHz

802.11g

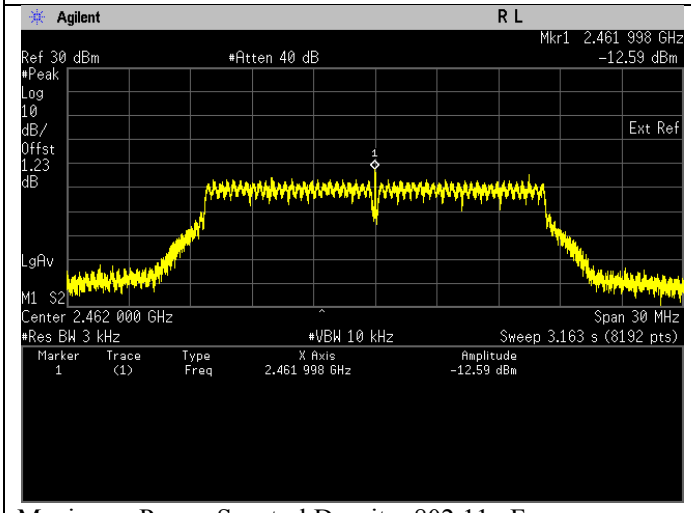
Test Conditions				Test Frequency	Results	
Standard	Modulation Type	Modulation Technology	Data Rate (mbps)	Tx (MHz)	Power (dBm/100kHz)	Status
802.11g	OFDM	BPSK	6	2412	-12.01	Pass
802.11g	OFDM	BPSK	6	2437	-13.53	Pass
802.11g	OFDM	BPSK	6	2462	-12.59	Pass



Maximum Power Spectral Density. 802.11g Frequency 2412 MHz



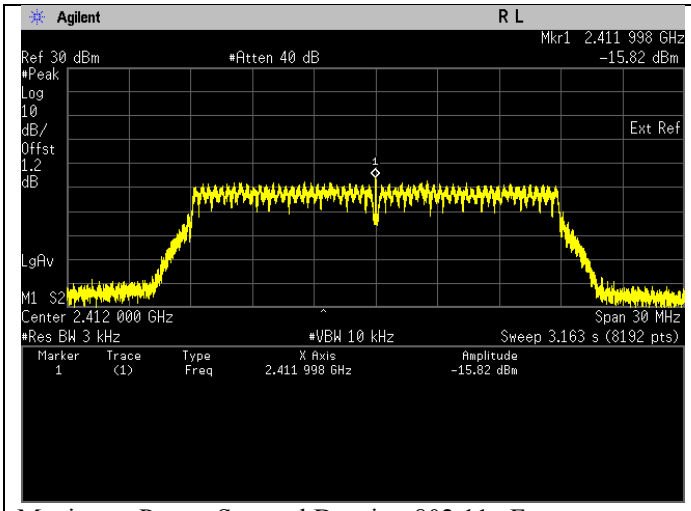
Maximum Power Spectral Density. 802.11g Frequency 2437 MHz



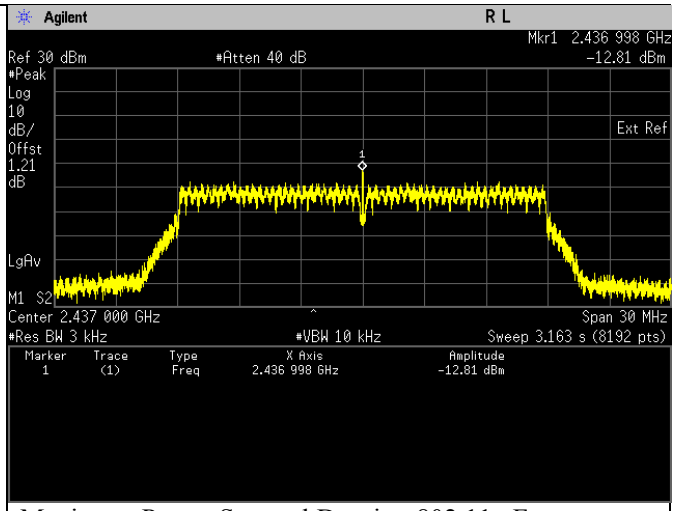
Maximum Power Spectral Density. 802.11g Frequency 2462 MHz

802.11n (HT20)

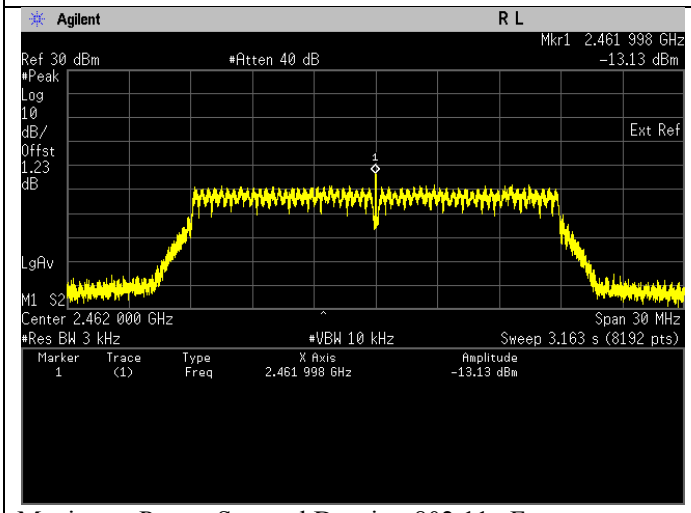
Test Conditions				Test Frequency	Results	
Standard	Modulation Type	Modulation Technology	Data Rate (mbps)	Tx (MHz)	Power (dBm/100kHz)	Status
802.11n	OFDM	BPSK	6.5	2412	-15.28	Pass
802.11n	OFDM	BPSK	6.5	2437	-12.81	Pass
802.11n	OFDM	BPSK	6.5	2462	-13.13	Pass



Maximum Power Spectral Density. 802.11n Frequency 2412 MHz



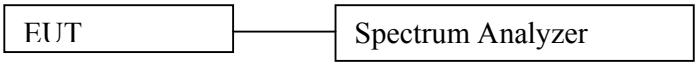
Maximum Power Spectral Density. 802.11n Frequency 2437 MHz



Maximum Power Spectral Density. 802.11n Frequency 2462 MHz

6.5. Conducted Spurious Emission

6.5.1. Test Setup



a) Check and ensure the spectrum analyzer well calibrate.
b) Turn on the DUT and set DUT to transmit maximum power.
c) Connect DUT's antenna terminal to spectrum analyzer with a low loss cable.
d) Setting of Spectrum analyzer :
    a. RBW = 100 kHz
    b. VBW = 300 kHz
    c. Detector mode = Peak
    d. Trace = Max Hold
    e. Sweep = auto
e) Use the peak marker function to measure highest emission and scan up to 10th harmonic.
f) Measure every antenna port by repeat the step above for MIMO measurement.

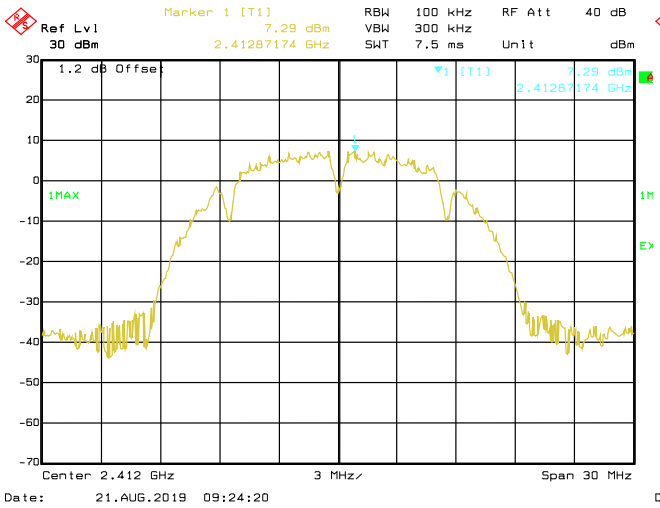
6.5.2. Test Limits:

Normal Condition (25 º C)
Shall be at least 30 dB below peak (max) power.

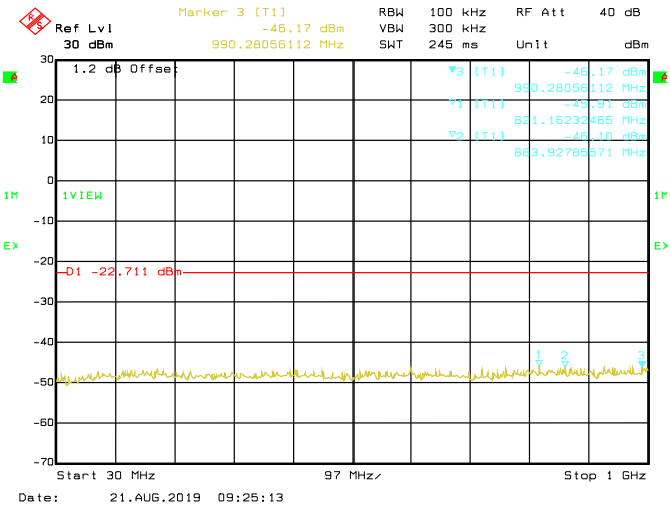
6.5.3. Test Result

802.11b

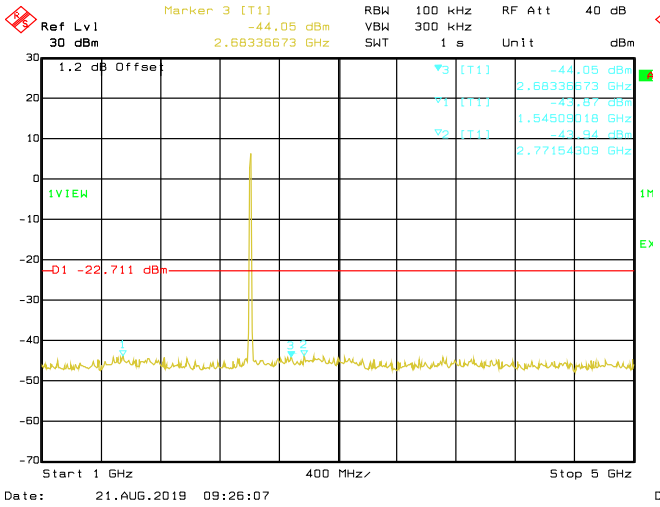
Test Conditions				Test Frequency	Results		
Standard	Modulation Type	Modulation Technology	Data Rate (mbps)	Tx (MHz)	Spurs (MHz)	Level (dBm)	Status
802.11b	DSSS	QPSK	2	2412	14188.38	-39.44	Pass
					6973.95	-40.95	Pass
					6933.87	-41.00	Pass
802.11b	DSSS	QPSK	2	2437	14188.38	-39.20	Pass
					6673.35	-40.57	Pass
					15671.34	-40.90	Pass
802.11b	DSSS	QPSK	2	2462	14188.38	-40.41	Pass
					6703.41	-41.35	Pass
					12715.43	-41.43	Pass



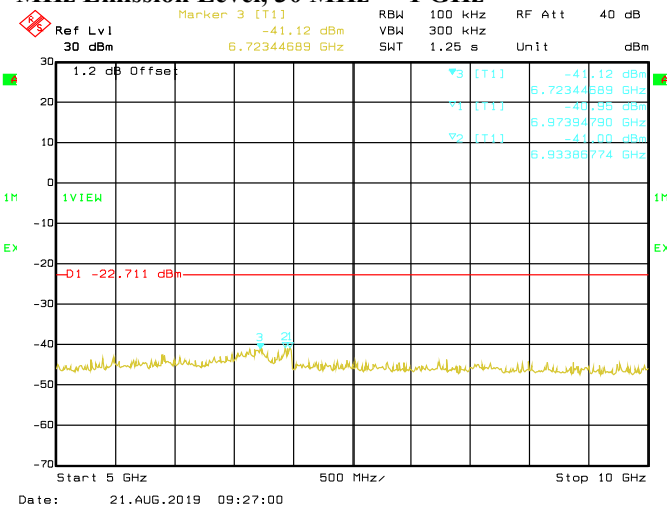
Conducted Emissions. 802.11b, Frequency 2412 MHz Reference Level



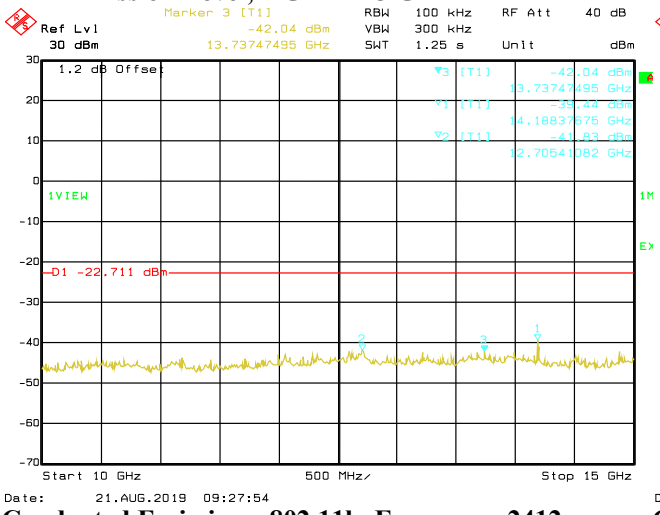
Conducted Emissions. 802.11b, Frequency 2412 MHz Emission Level, 30 MHz -> 1 GHz



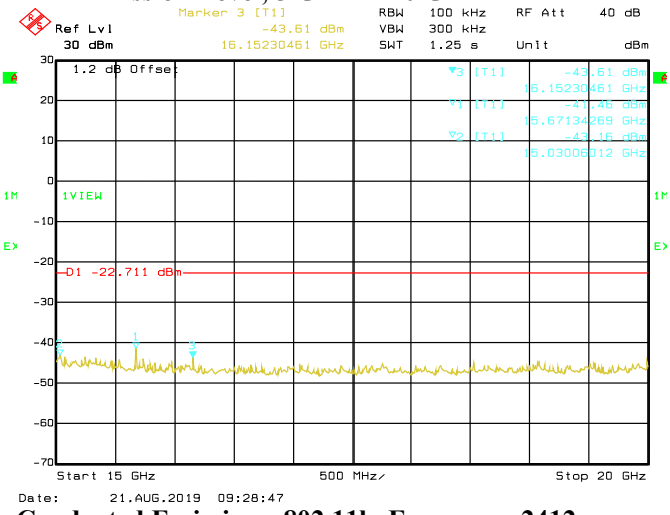
Conducted Emissions. 802.11b, Frequency 2412 MHz Emission Level, 1 GHz -> 5 GHz



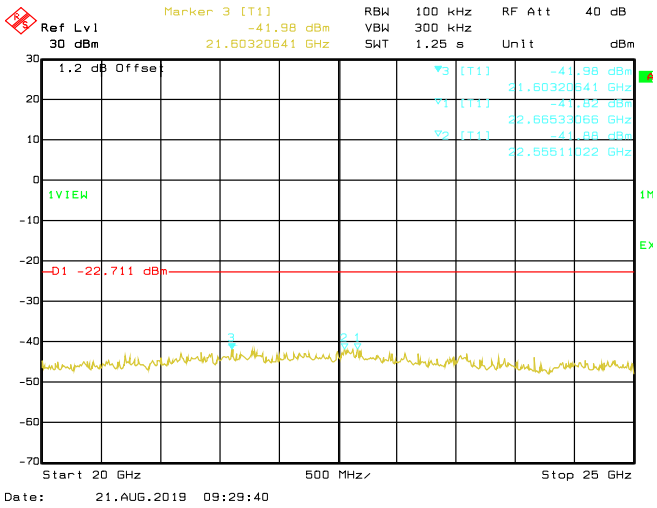
Conducted Emissions. 802.11b, Frequency 2412 MHz Emission Level, 5 GHz -> 10 GHz



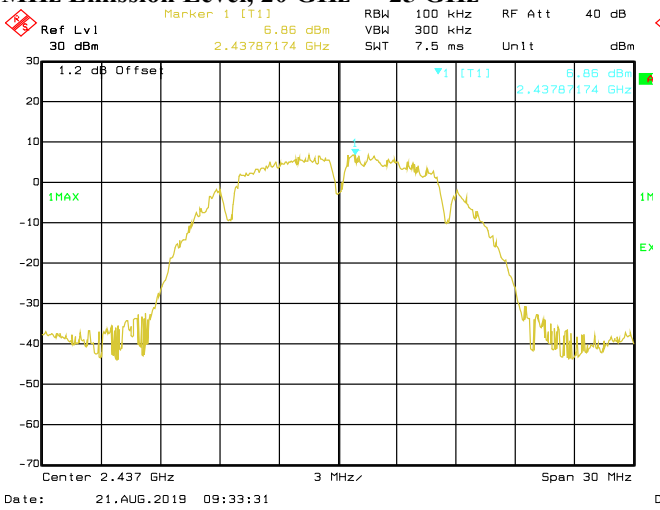
Conducted Emissions. 802.11b, Frequency 2412 Emission Level, 10 GHz -> 15 GHz



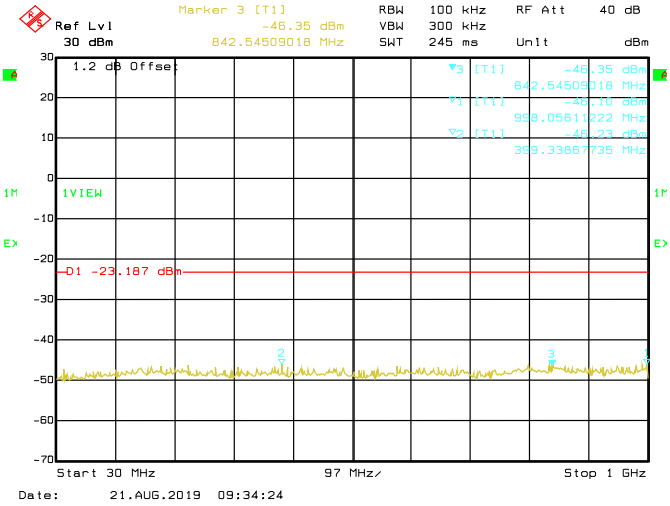
Conducted Emissions. 802.11b, Frequency 2412 MHz Emission Level, 15 GHz -> 20 GHz



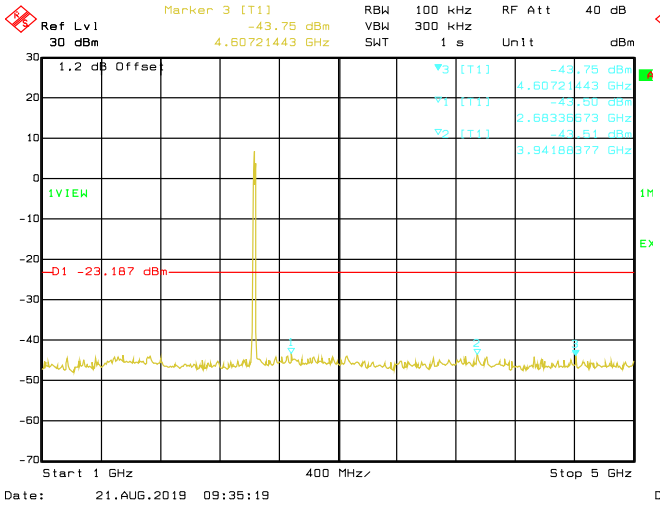
Conducted Emissions. 802.11b, Frequency 2412 MHz Emission Level, 20 GHz -> 25 GHz



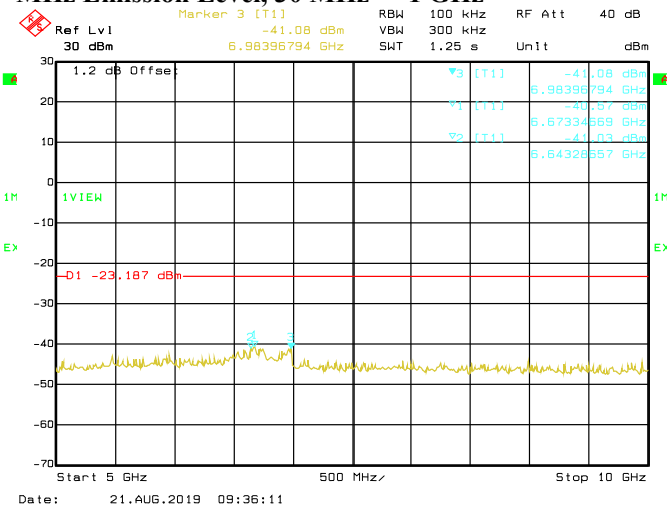
Conducted Emissions. 802.11b, Frequency 2437 MHz Reference Level



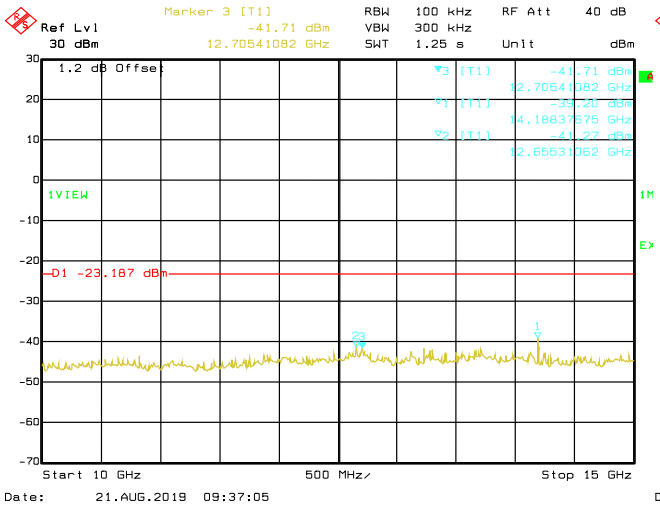
Conducted Emissions. 802.11b, Frequency 2437 MHz Emission Level, 30 MHz -> 1 GHz



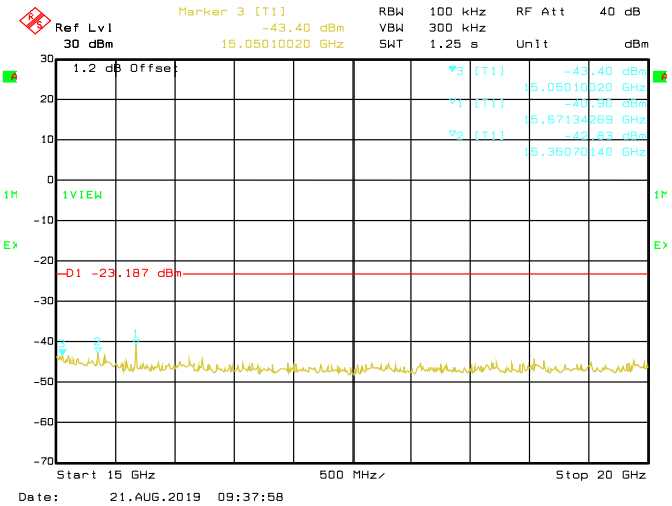
Conducted Emissions. 802.11b, Frequency 2437 MHz Emission Level, 1 GHz -> 5 GHz



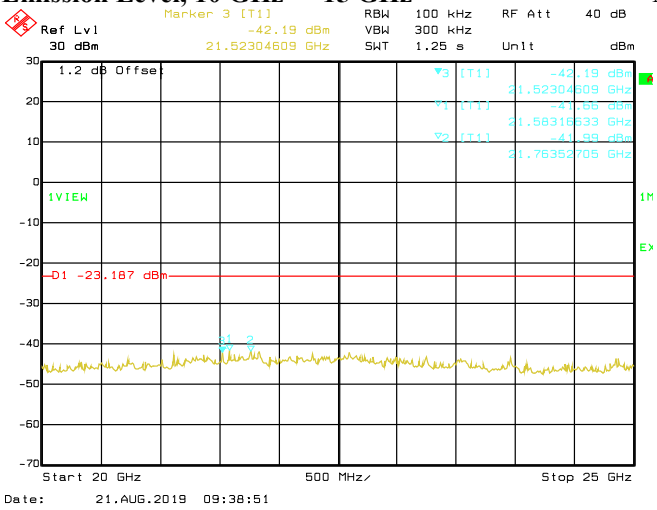
Conducted Emissions. 802.11b, Frequency 2437 MHz Emission Level, 5 GHz -> 10 GHz



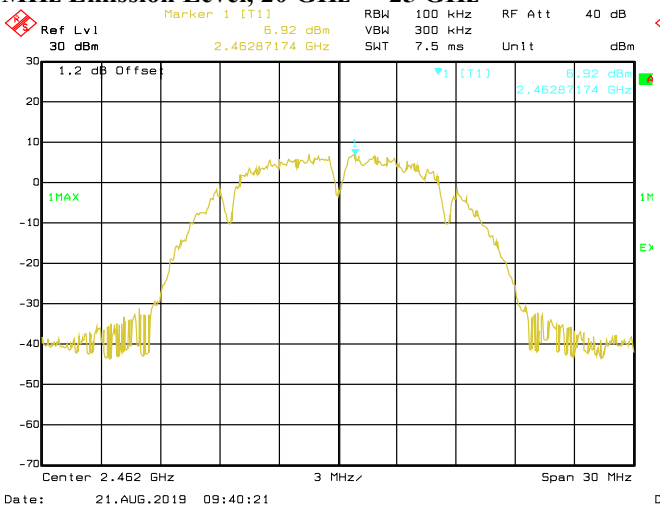
Conducted Emissions. 802.11b, Frequency 2437 Emission Level, 10 GHz -> 15 GHz



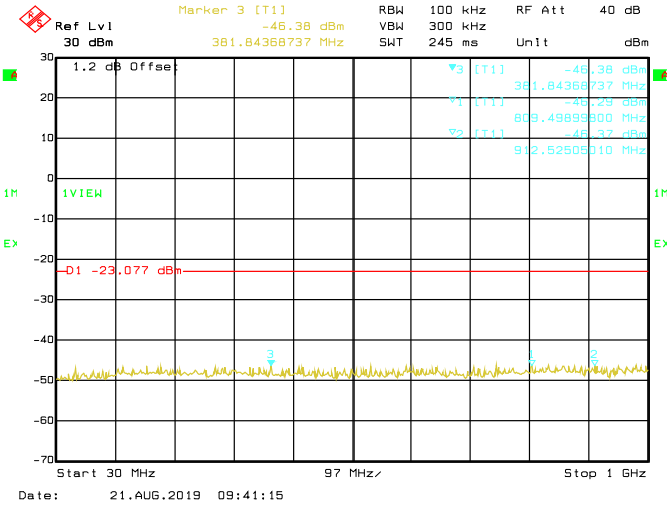
Conducted Emissions. 802.11b, Frequency 2437 MHz Emission Level, 15 GHz -> 20 GHz



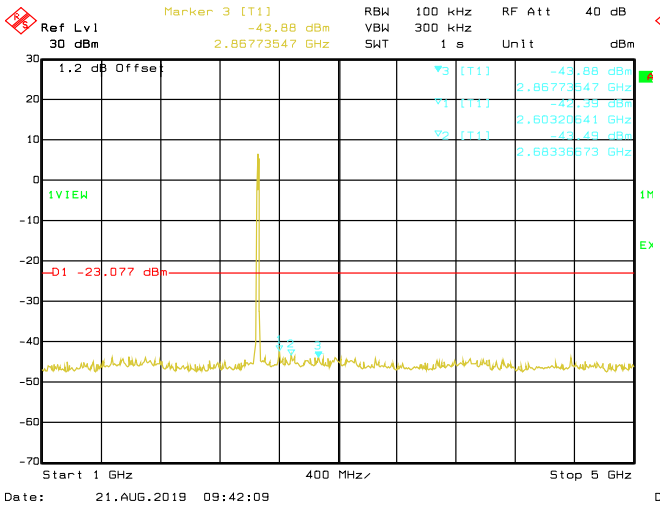
Conducted Emissions. 802.11b, Frequency 2437 MHz Emission Level, 20 GHz -> 25 GHz



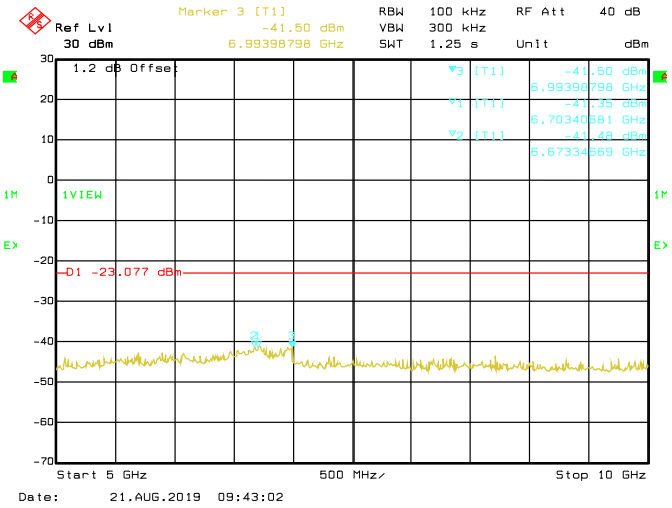
Conducted Emissions. 802.11b, Frequency 2462 MHz Reference Level



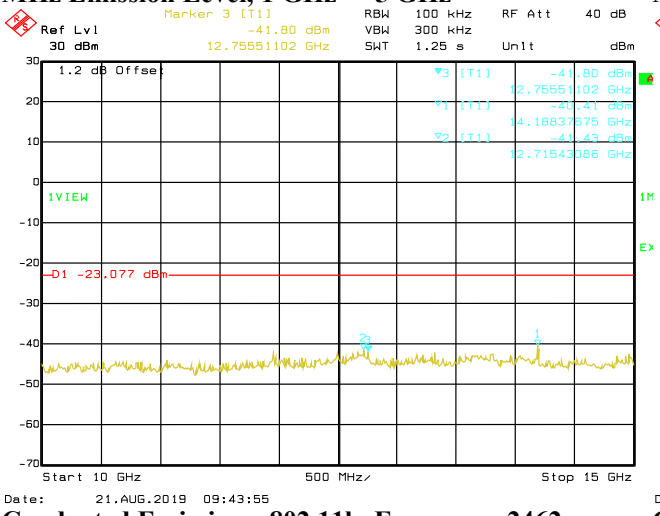
Conducted Emissions. 802.11b, Frequency 2462 MHz Emission Level, 30 MHz -> 1 GHz



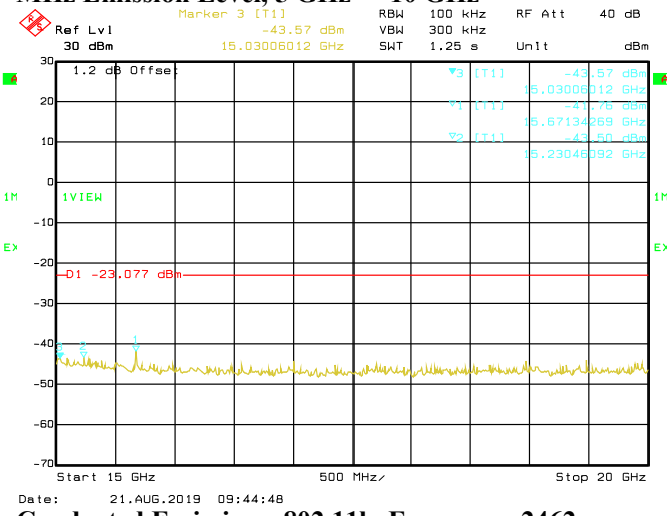
Conducted Emissions. 802.11b, Frequency 2462 MHz Emission Level, 1 GHz -> 5 GHz



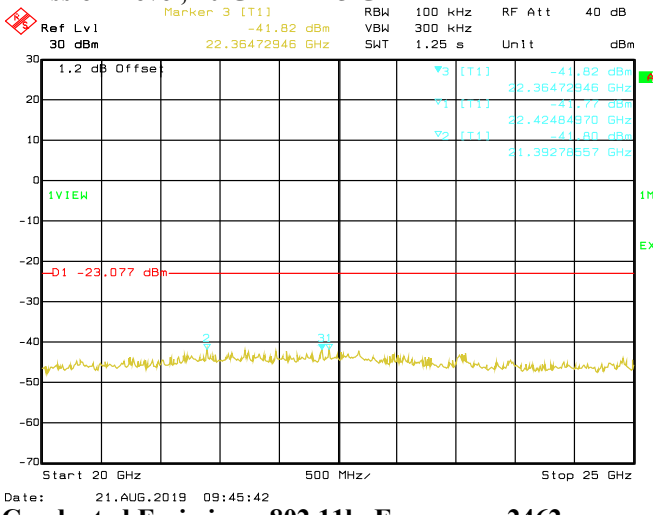
Conducted Emissions. 802.11b, Frequency 2462 MHz Emission Level, 5 GHz -> 10 GHz



Conducted Emissions. 802.11b, Frequency 2462 Emission Level, 10 GHz -> 15 GHz



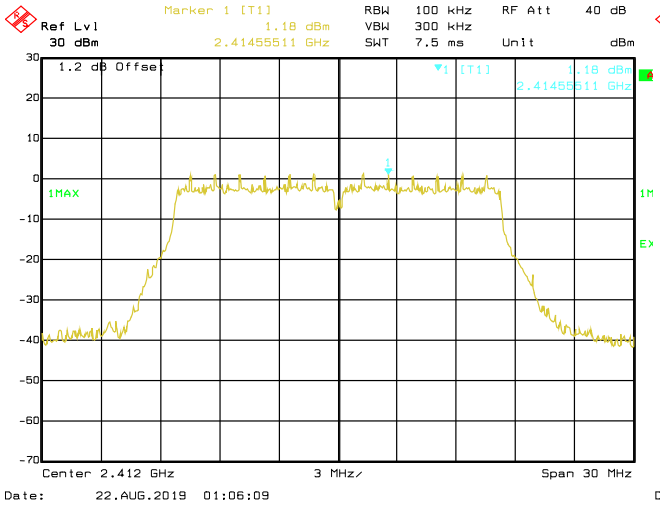
Conducted Emissions. 802.11b, Frequency 2462 MHz Emission Level, 15 GHz -> 20 GHz



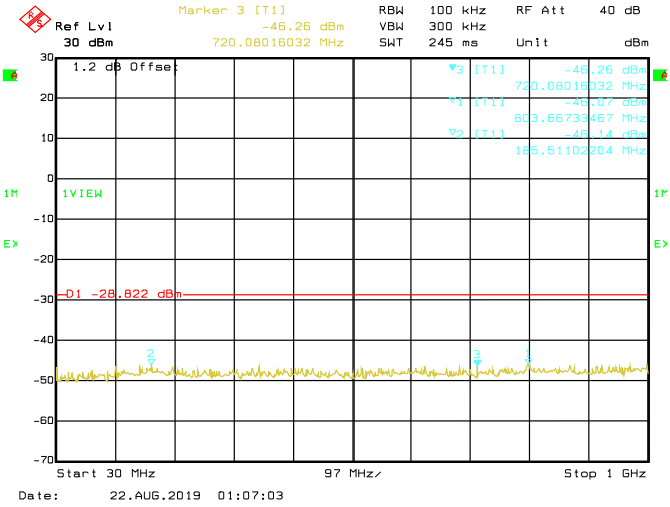
Conducted Emissions. 802.11b, Frequency 2462 MHz Emission Level, 20 GHz -> 25 GHz

802.11g

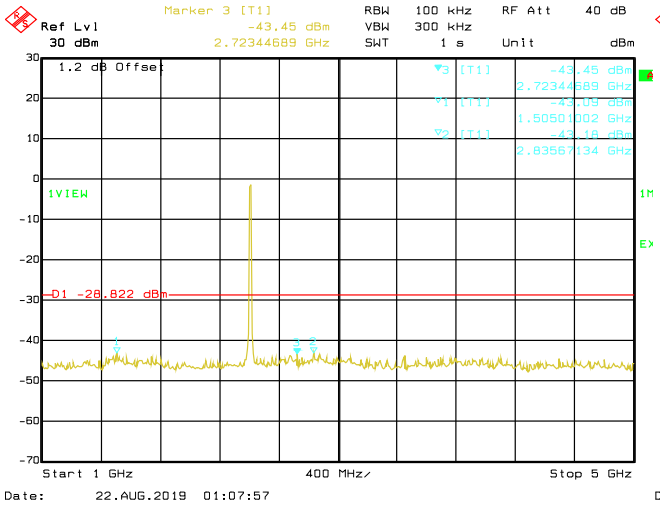
Test Conditions				Test Frequency	Results		
Standard	Modulation Type	Modulation Technology	Data Rate (mbps)	Tx (MHz)	Spurs (MHz)	Level (dBm)	Status
802.11g	OFDM	BPSK	6	2412	6673.35	-39.36	Pass
					14188.38	-39.63	Pass
					6643.29	-40.33	Pass
802.11g	OFDM	BPSK	6	2437	14188.38	-39.06	Pass
					12685.37	-40.65	Pass
					6963.93	-40.76	Pass
802.11g	OFDM	BPSK	6	2462	14188.38	-39.77	Pass
					6973.95	-40.38	Pass
					6703.41	-40.98	Pass



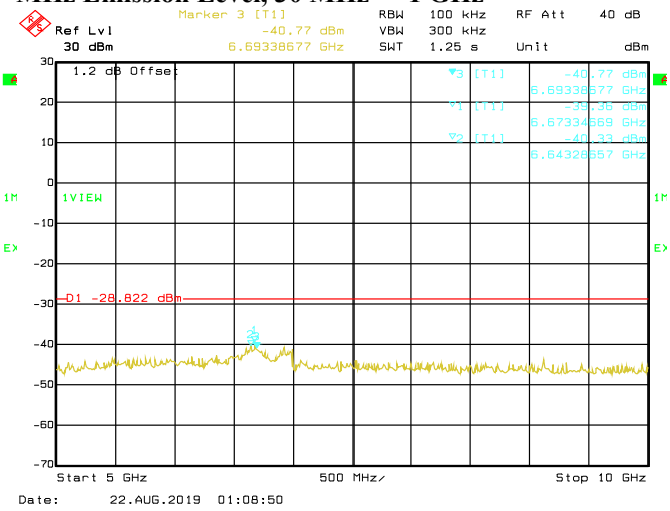
Conducted Emissions. 802.11g, Frequency 2412 MHz Reference Level



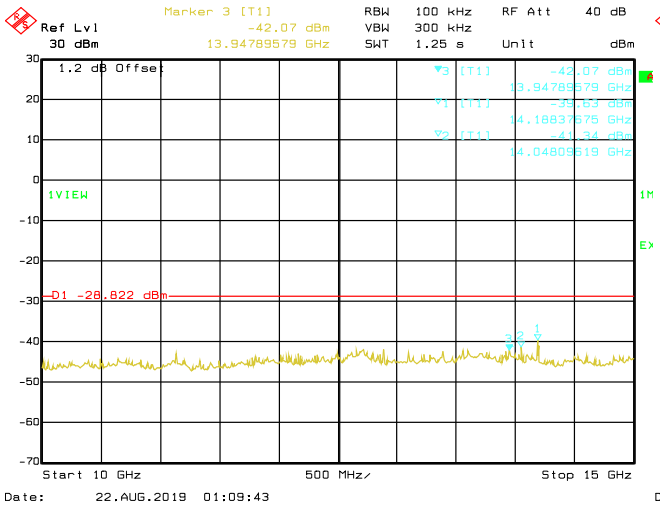
Conducted Emissions. 802.11g, Frequency 2412 MHz Emission Level, 30 MHz -> 1 GHz



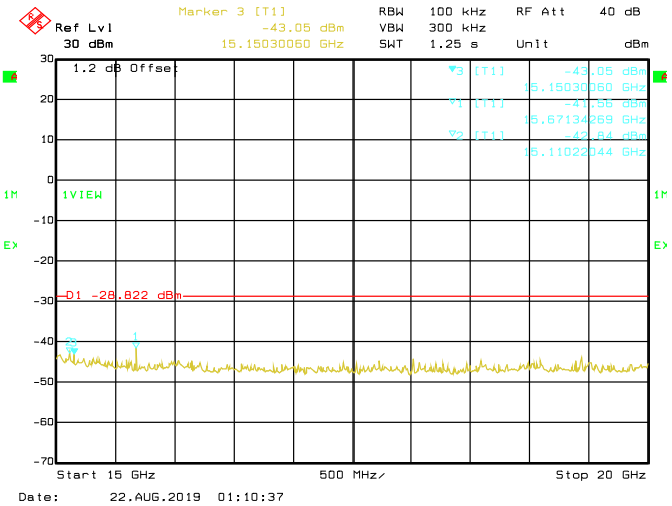
Conducted Emissions. 802.11g, Frequency 2412 MHz Emission Level, 1 GHz -> 5 GHz



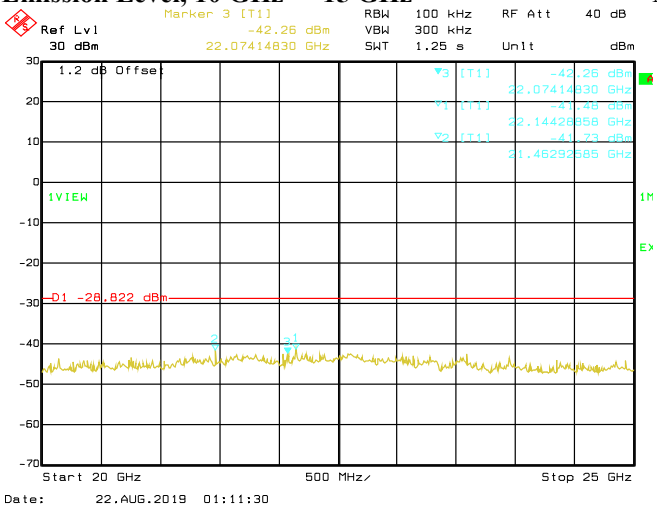
Conducted Emissions. 802.11g, Frequency 2412 MHz Emission Level, 5 GHz -> 10 GHz



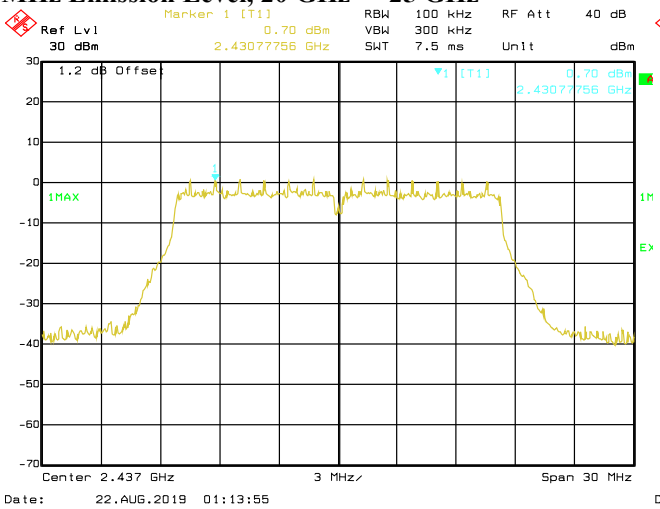
Conducted Emissions. 802.11g, Frequency 2412 Emission Level, 10 GHz -> 15 GHz



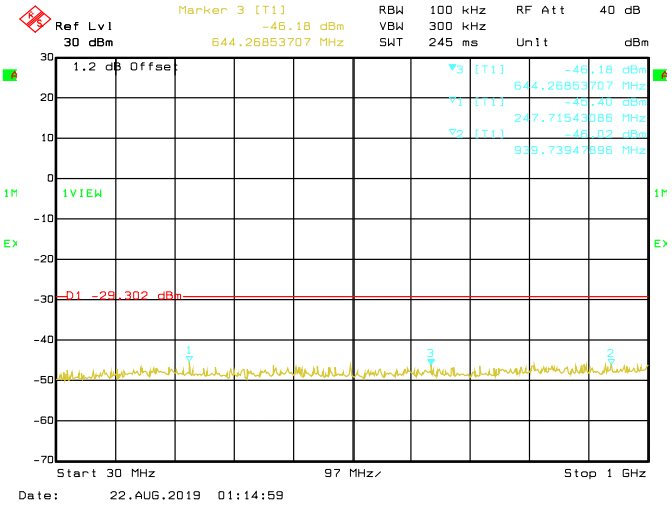
Conducted Emissions. 802.11g, Frequency 2412 MHz Emission Level, 15 GHz -> 20 GHz



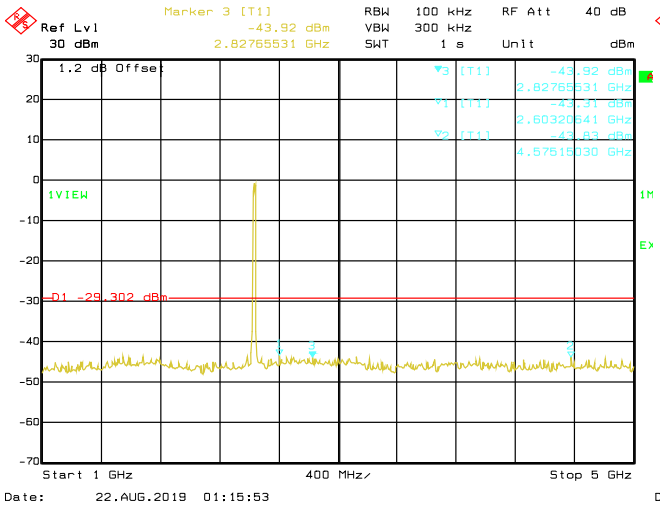
Conducted Emissions. 802.11g, Frequency 2412 MHz Emission Level, 20 GHz -> 25 GHz



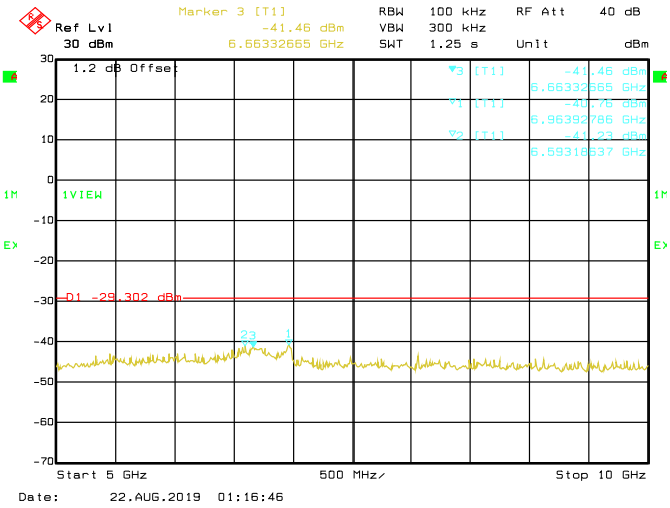
Conducted Emissions. 802.11g, Frequency 2437 MHz Reference Level



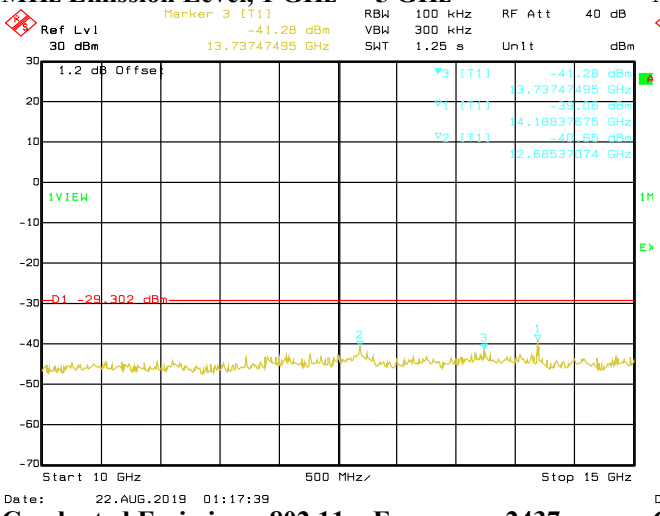
Conducted Emissions. 802.11g, Frequency 2437 MHz Emission Level, 30 MHz -> 1 GHz



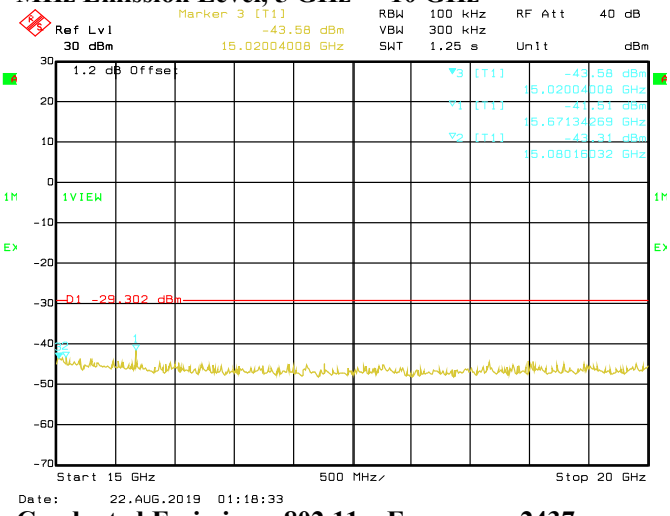
Conducted Emissions. 802.11g, Frequency 2437 MHz Emission Level, 1 GHz -> 5 GHz



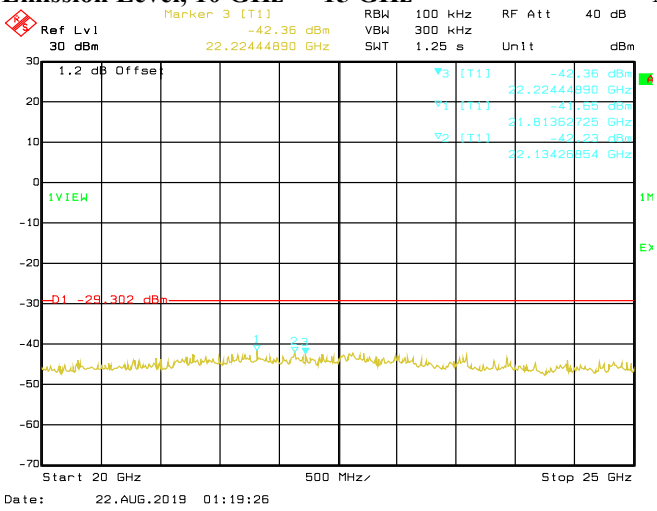
Conducted Emissions. 802.11g, Frequency 2437 MHz Emission Level, 5 GHz -> 10 GHz



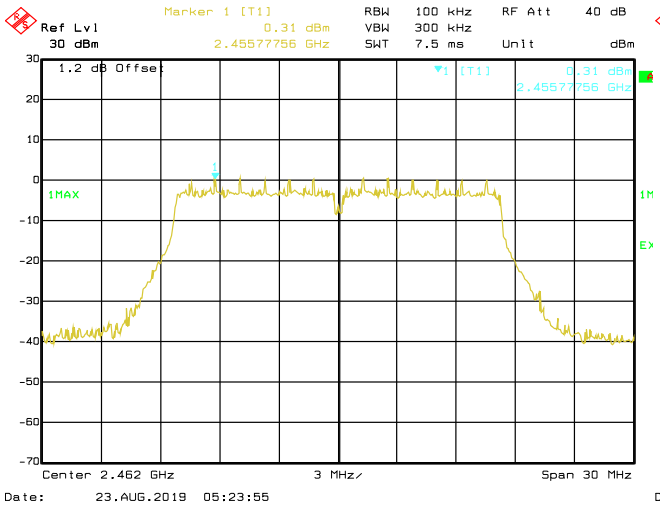
Conducted Emissions. 802.11g, Frequency 2437 Emission Level, 10 GHz -> 15 GHz



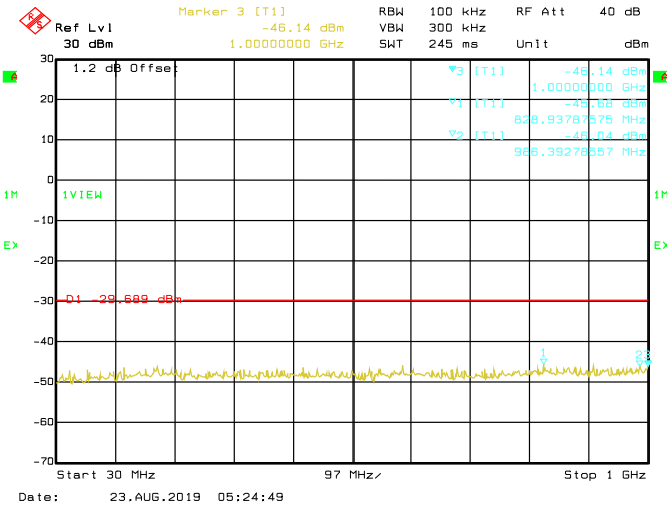
Conducted Emissions. 802.11g, Frequency 2437 MHz Emission Level, 15 GHz -> 20 GHz



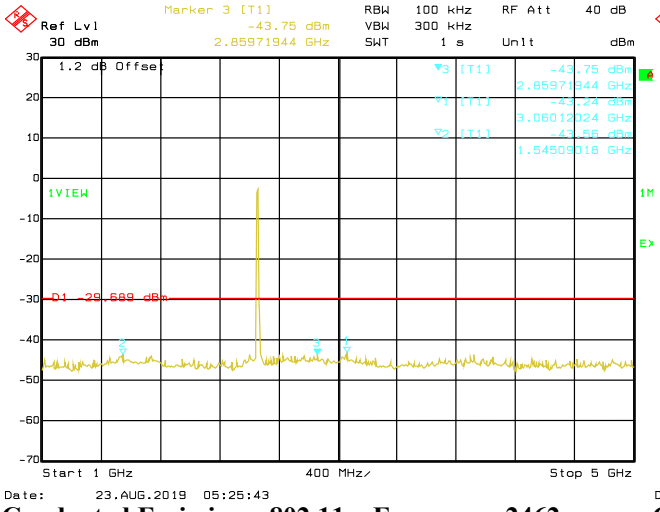
Conducted Emissions. 802.11g, Frequency 2437 MHz Emission Level, 20 GHz -> 25 GHz



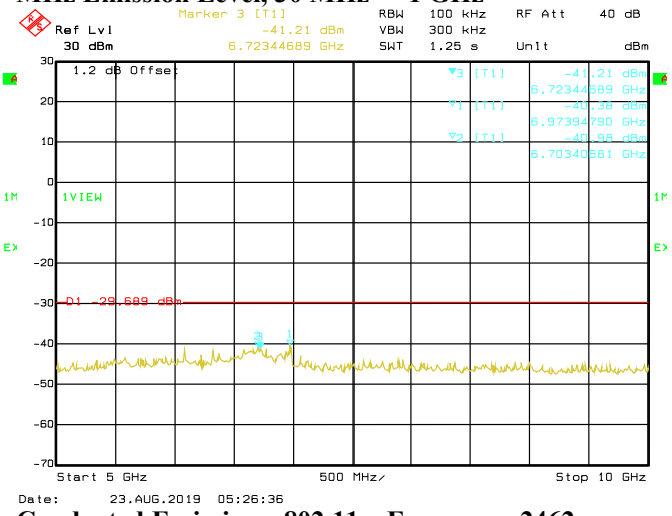
Conducted Emissions. 802.11g, Frequency 2462 MHz Reference Level



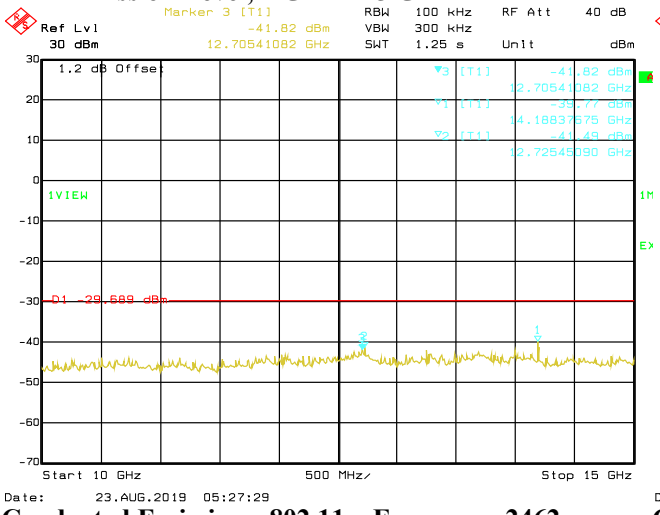
Conducted Emissions. 802.11g, Frequency 2462 MHz Emission Level, 30 MHz -> 1 GHz



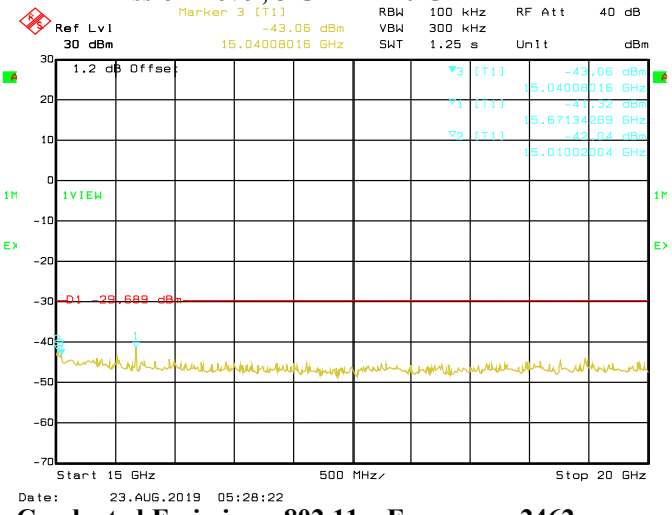
Conducted Emissions. 802.11g, Frequency 2462 MHz Emission Level, 1 GHz -> 5 GHz



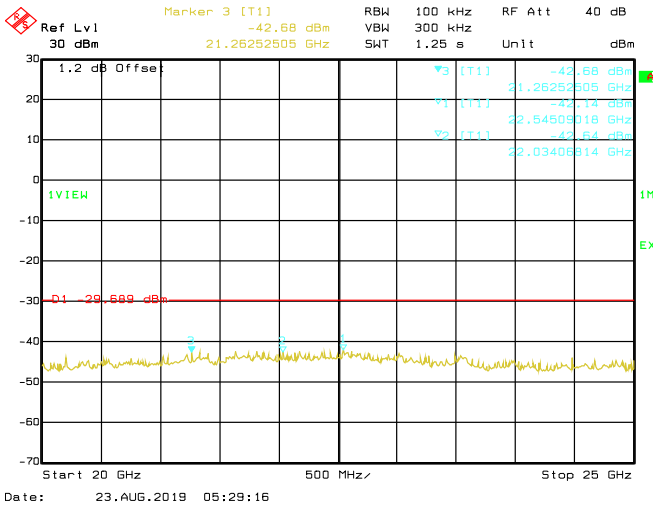
Conducted Emissions. 802.11g, Frequency 2462 MHz Emission Level, 5 GHz -> 10 GHz



Conducted Emissions. 802.11g, Frequency 2462 Emission Level, 10 GHz -> 15 GHz



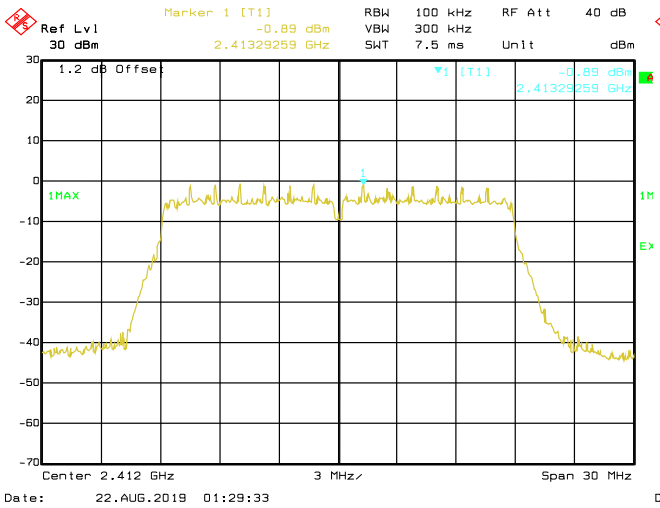
Conducted Emissions. 802.11g, Frequency 2462 MHz Emission Level, 15 GHz -> 20 GHz



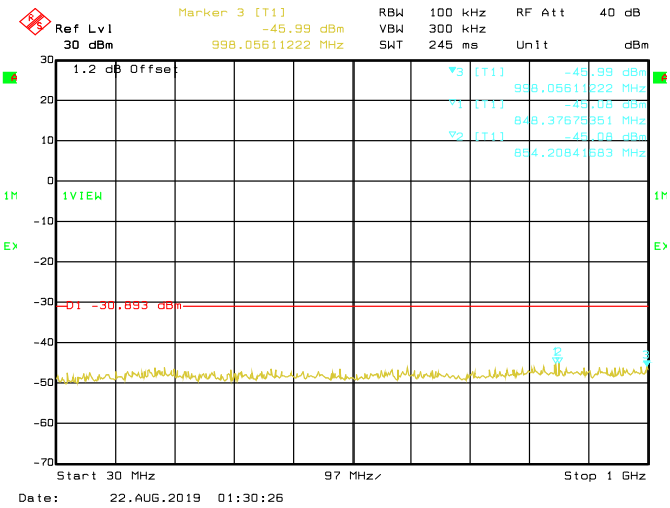
Conducted Emissions. 802.11g, Frequency 2462 MHz Emission Level, 20 GHz -> 25 GHz

802.11n (HT20)

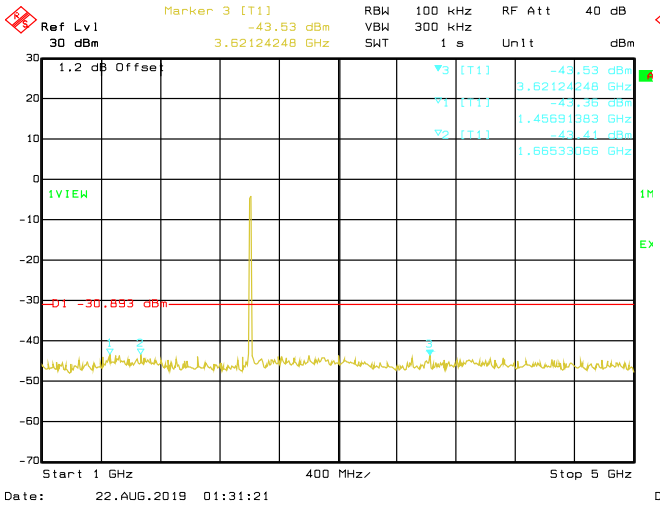
Test Conditions				Test Frequency	Results		
Standard	Modulation Type	Modulation Technology	Data Rate (mbps)	Tx (MHz)	Spurs (MHz)	Level (dBm)	Status
802.11n	OFDM	BPSK	6.5	2412	14188.38	-39.68	Pass
					6993.99	-40.42	Pass
					6733.47	-40.54	Pass
802.11n	OFDM	BPSK	6.5	2437	6983.97	-39.87	Pass
					14188.38	-40.10	Pass
					6753.51	-40.16	Pass
802.11n	OFDM	BPSK	6.5	2462	14188.38	-39.03	Pass
					6983.97	-40.75	Pass
					12695.39	-40.83	Pass



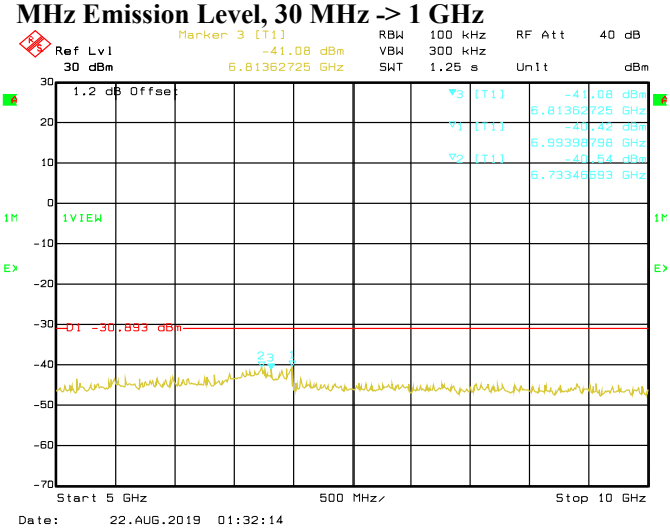
Conducted Emissions. 802.11n, Frequency 2412 MHz Reference Level



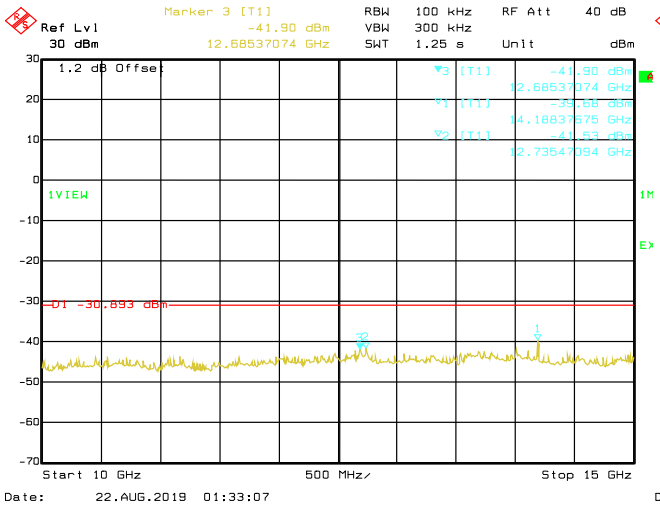
Conducted Emissions. 802.11n, Frequency 2412 MHz Emission Level, 30 MHz -> 1 GHz



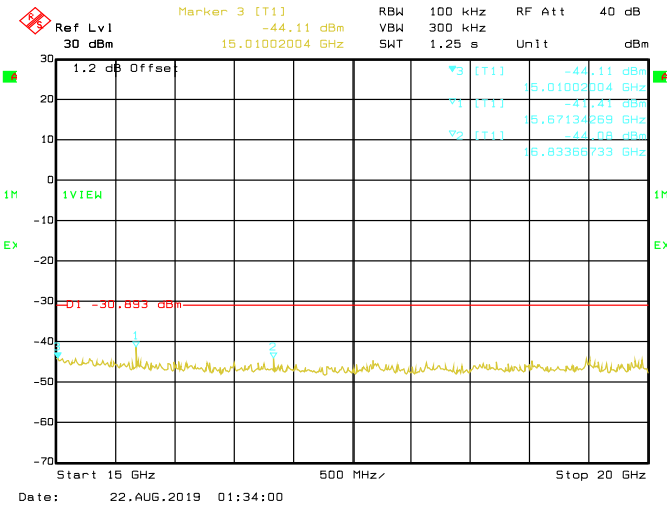
Conducted Emissions. 802.11n, Frequency 2412 MHz Emission Level, 1 GHz -> 5 GHz



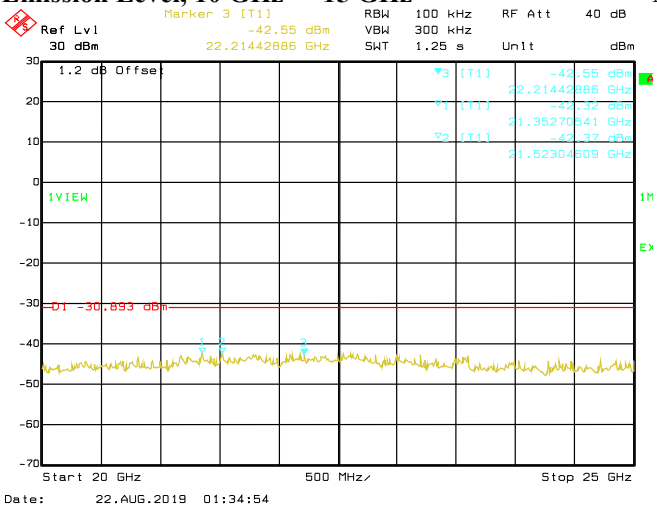
Conducted Emissions. 802.11n, Frequency 2412 MHz Emission Level, 5 GHz -> 10 GHz



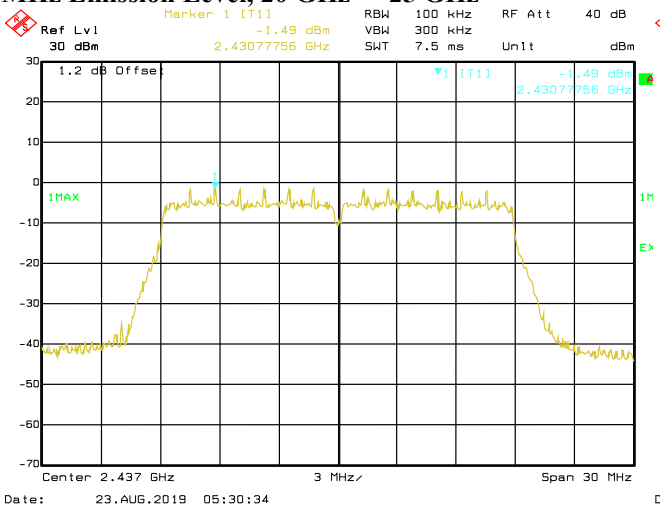
Conducted Emissions. 802.11n, Frequency 2412 Emission Level, 10 GHz -> 15 GHz



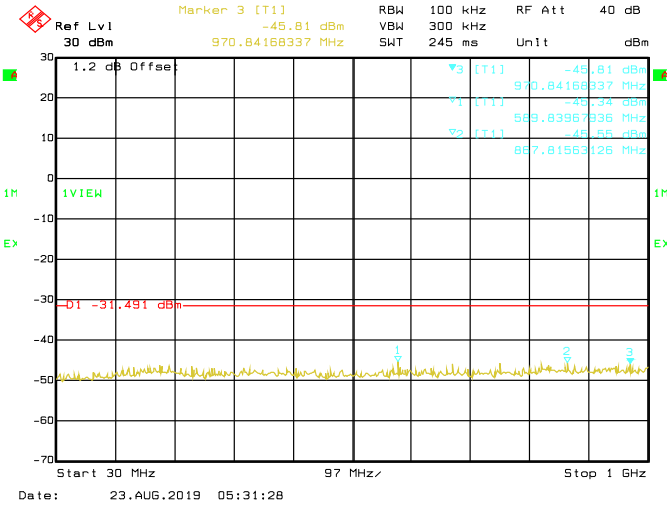
Conducted Emissions. 802.11n, Frequency 2412 MHz Emission Level, 15 GHz -> 20 GHz



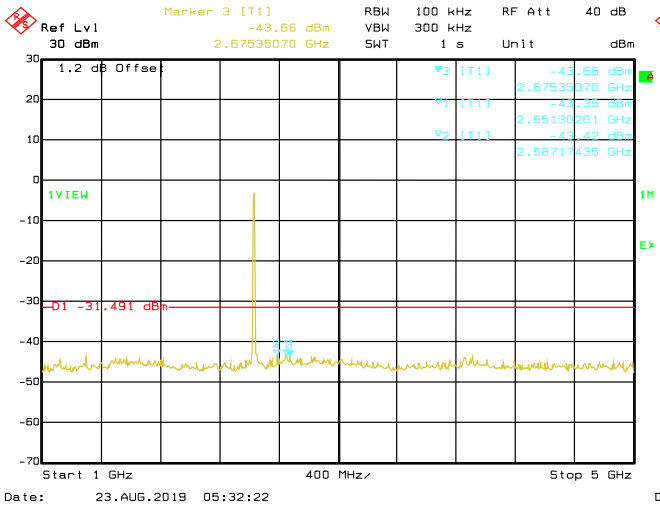
Conducted Emissions. 802.11n, Frequency 2412 MHz Emission Level, 20 GHz -> 25 GHz



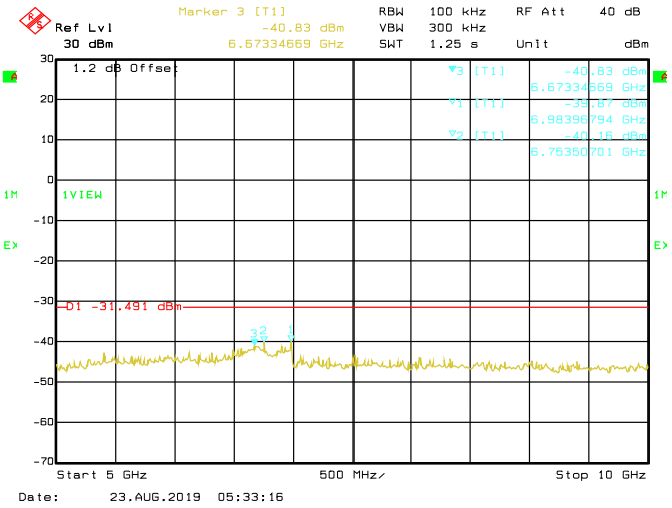
Conducted Emissions. 802.11n, Frequency 2437 MHz Reference Level



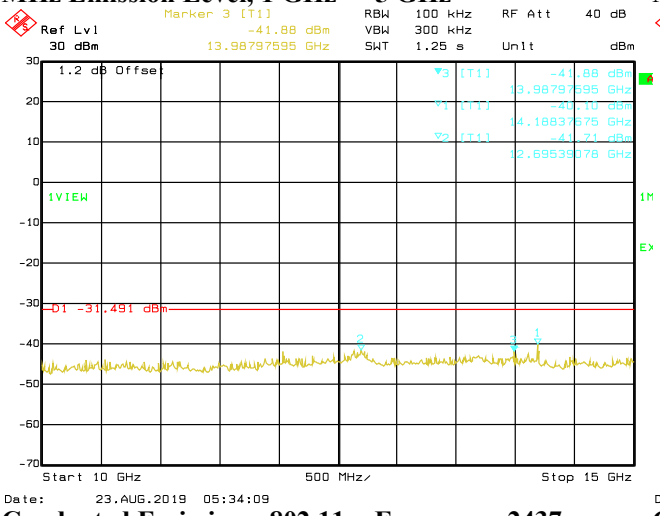
Conducted Emissions. 802.11n, Frequency 2437 MHz Emission Level, 30 MHz -> 1 GHz



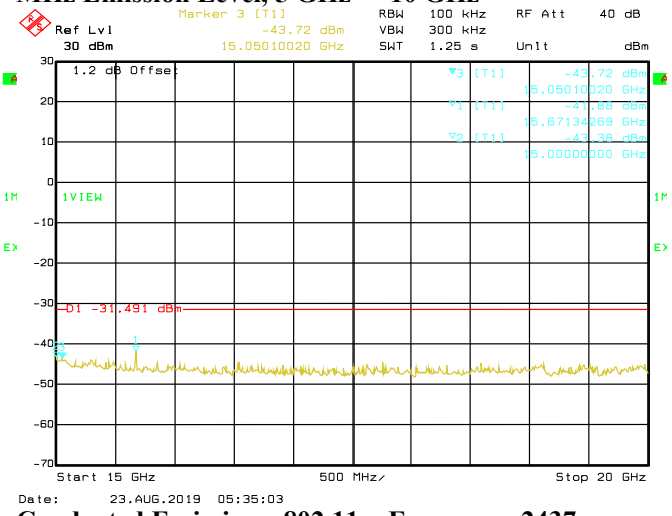
Conducted Emissions. 802.11n, Frequency 2437 MHz Emission Level, 1 GHz -> 5 GHz



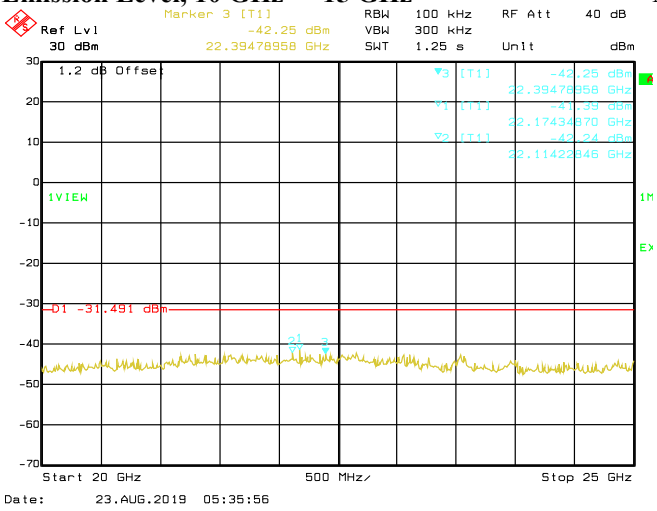
Conducted Emissions. 802.11n, Frequency 2437 MHz Emission Level, 5 GHz -> 10 GHz



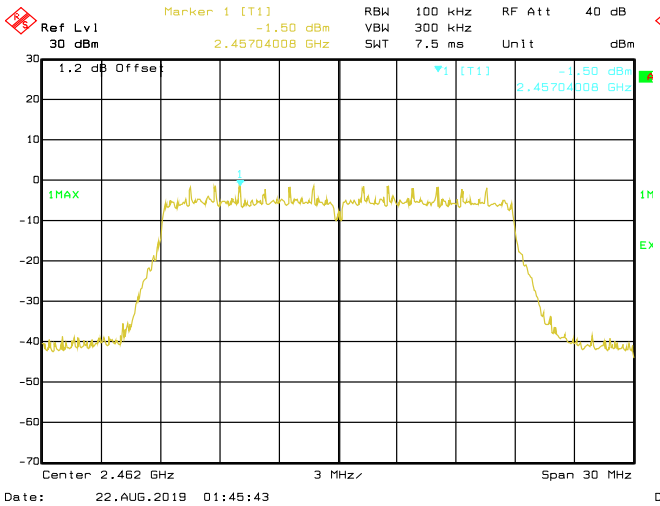
Conducted Emissions. 802.11n, Frequency 2437 Emission Level, 10 GHz -> 15 GHz



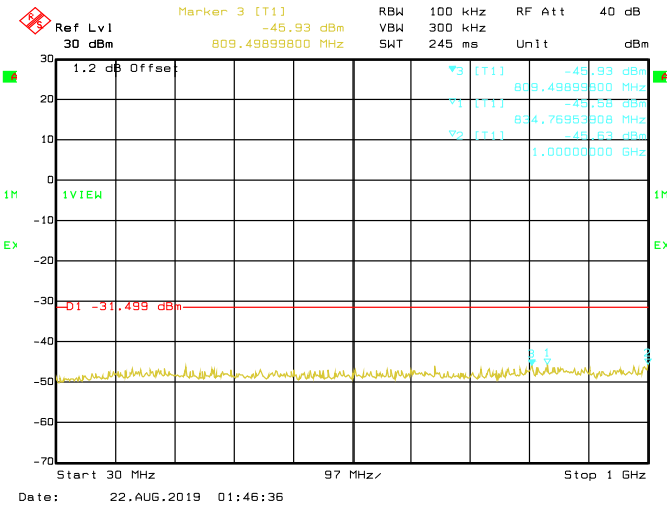
Conducted Emissions. 802.11n, Frequency 2437 MHz Emission Level, 15 GHz -> 20 GHz



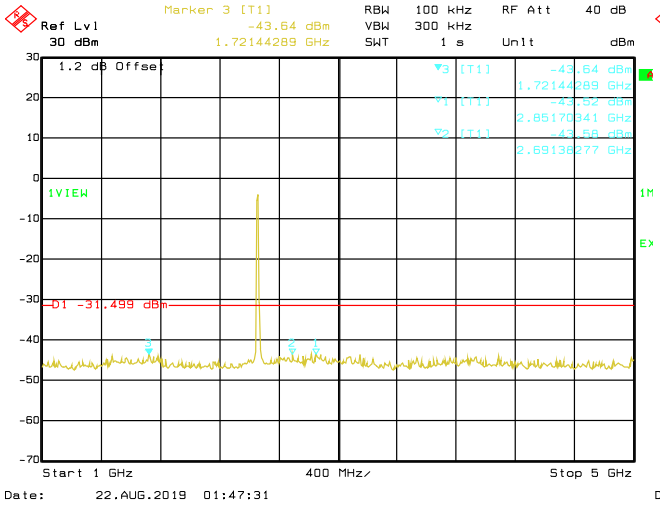
Conducted Emissions. 802.11n, Frequency 2437 MHz Emission Level, 20 GHz -> 25 GHz



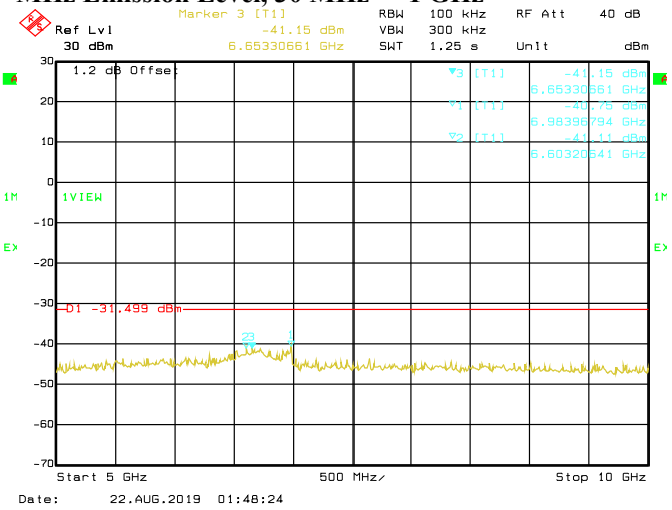
Conducted Emissions. 802.11n, Frequency 2462 MHz Reference Level



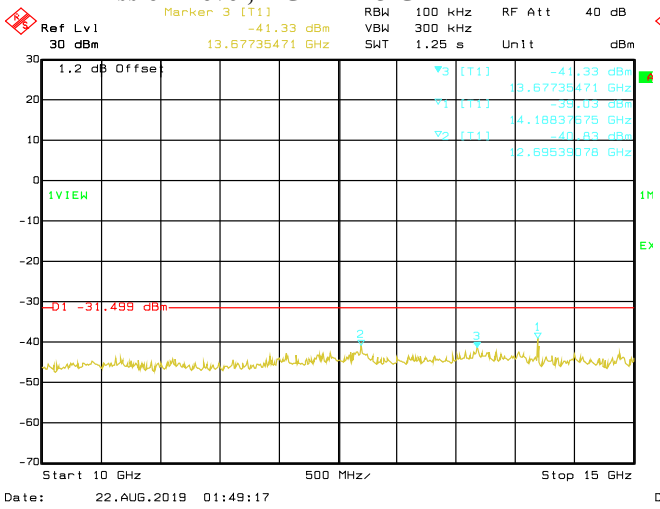
Conducted Emissions. 802.11n, Frequency 2462 MHz Emission Level, 30 MHz -> 1 GHz



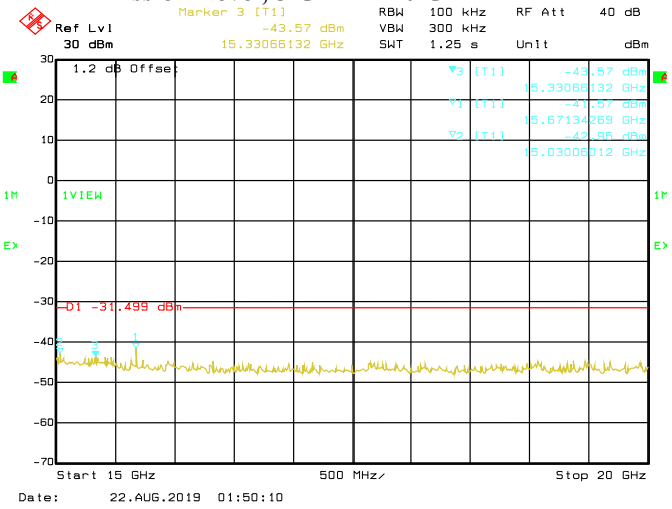
Conducted Emissions. 802.11n, Frequency 2462 MHz Emission Level, 1 GHz -> 5 GHz



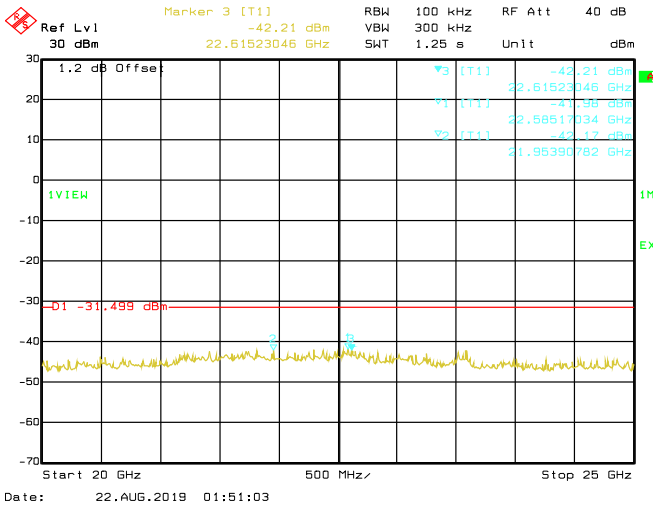
Conducted Emissions. 802.11n, Frequency 2462 MHz Emission Level, 5 GHz -> 10 GHz



Conducted Emissions. 802.11n, Frequency 2462 Emission Level, 10 GHz -> 15 GHz



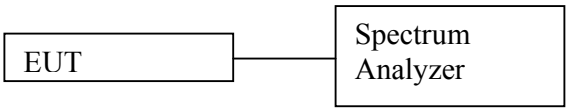
Conducted Emissions. 802.11n, Frequency 2462 MHz Emission Level, 15 GHz -> 20 GHz



Conducted Emissions. 802.11n, Frequency 2462 MHz Emission Level, 20 GHz -> 25 GHz

6.6. Band edge Conducted Spurious Emission

6.6.1. Test Setup



a) Check and ensure the spectrum analyzer well calibrate.
b) Turn on the DUT and set DUT to transmit maximum power.
c) Connect DUT's antenna terminal to spectrum analyzer with a low loss cable.
d) Setting of Spectrum analyzer :
    a. RBW = 100 kHz
    b. VBW = 300 kHz
    c. Detector mode = Peak
    d. Trace = Max Hold
    e. Sweep = auto
e) Use the peak marker function to measure highest emission.
f) Measure every antenna port by repeat the step above for MIMO measurement.

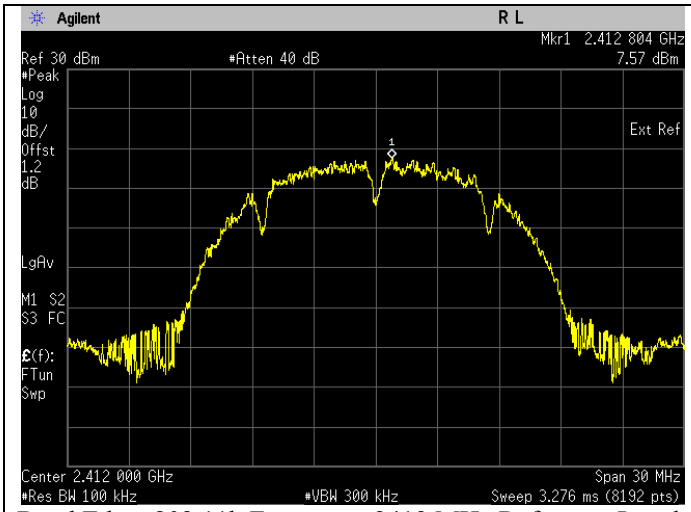
6.6.2. Test Limits:

Normal Condition (25 º C)
Shall be at least 30 dB below peak (max) power.

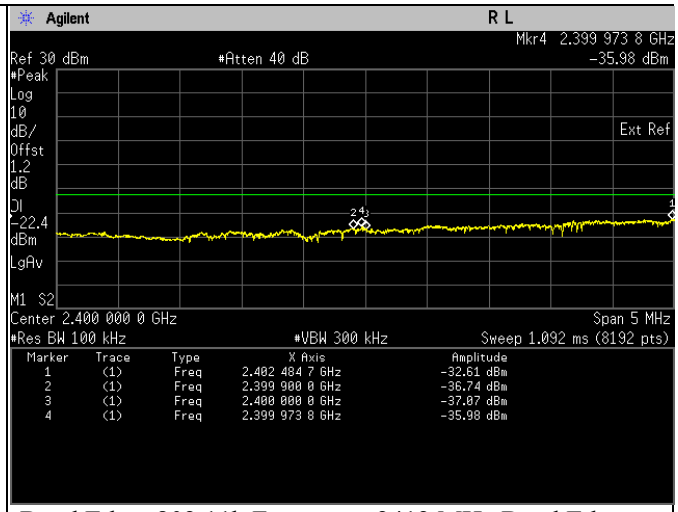
6.6.3. **Test Result**

802.11b

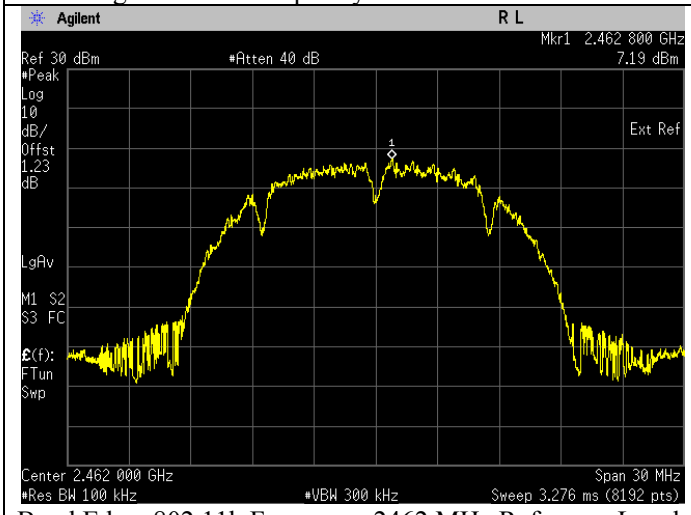
Test Conditions				Test Frequency	Results		
Standard	Modulation Type	Modulation Technology	Data Rate (mbps)	Tx (MHz)	Frequencies (MHz)	Power (dBm)	Status
802.11b	DSSS	QPSK	2	2412	2399.97	-35.98	Pass
802.11b	DSSS	QPSK	2	2462	2483.55	-49.87	Pass



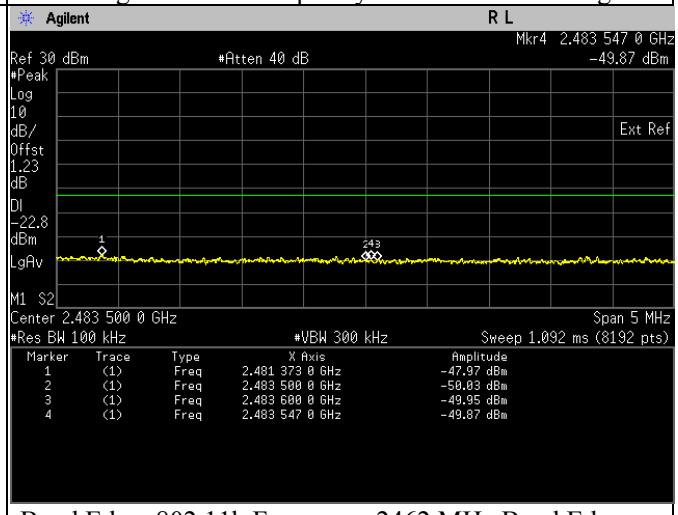
Band Edge. 802.11b Frequency 2412 MHz Reference Level



Band Edge. 802.11b Frequency 2412 MHz Band Edge



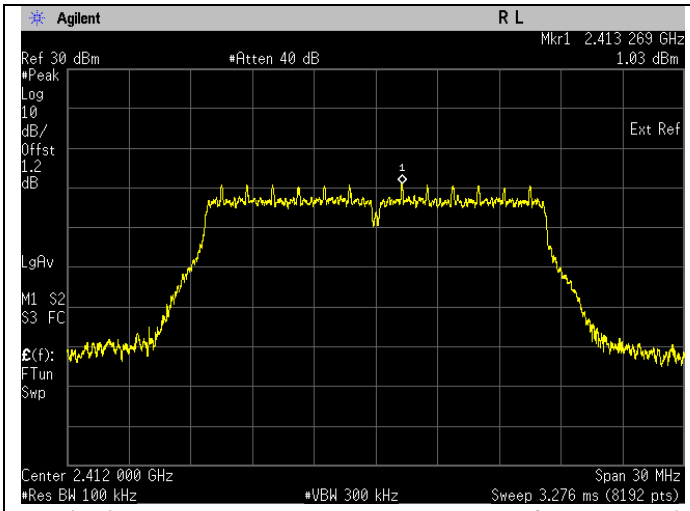
Band Edge. 802.11b Frequency 2462 MHz Reference Level



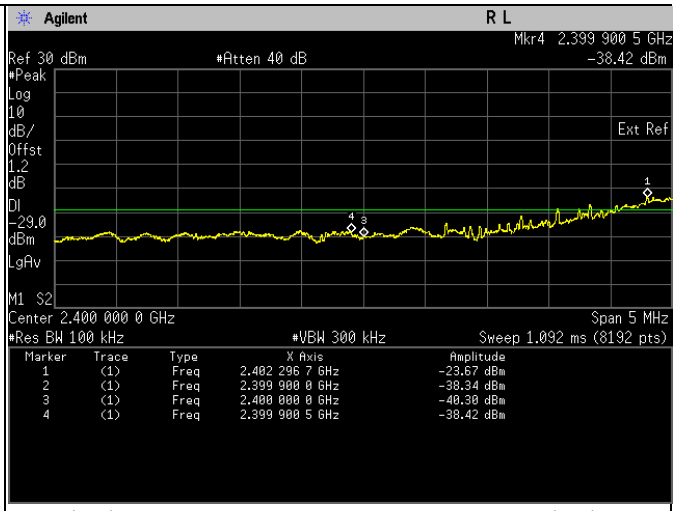
Band Edge. 802.11b Frequency 2462 MHz Band Edge

802.11g

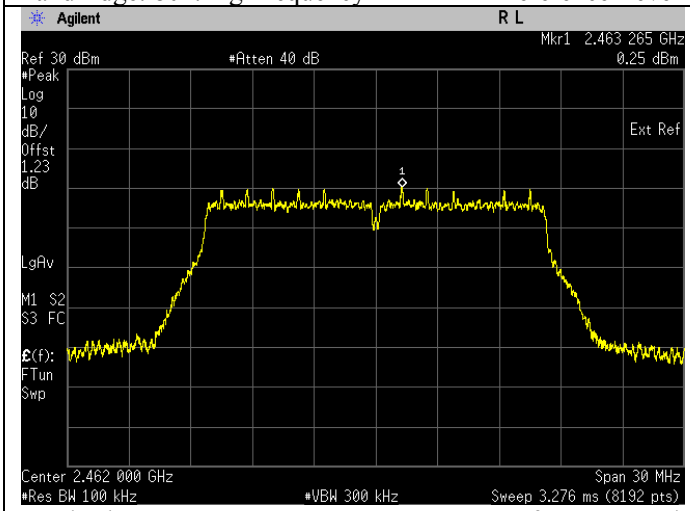
Test Conditions				Test Frequency	Results		
Standard	Modulation Type	Modulation Technology	Data Rate (mbps)	Tx (MHz)	Frequencies (MHz)	Power (dBm)	Status
802.11g	OFDM	BPSK	6	2412	2399.90	-38.42	Pass
802.11g	OFDM	BPSK	6	2462	2483.54	-46.83	Pass



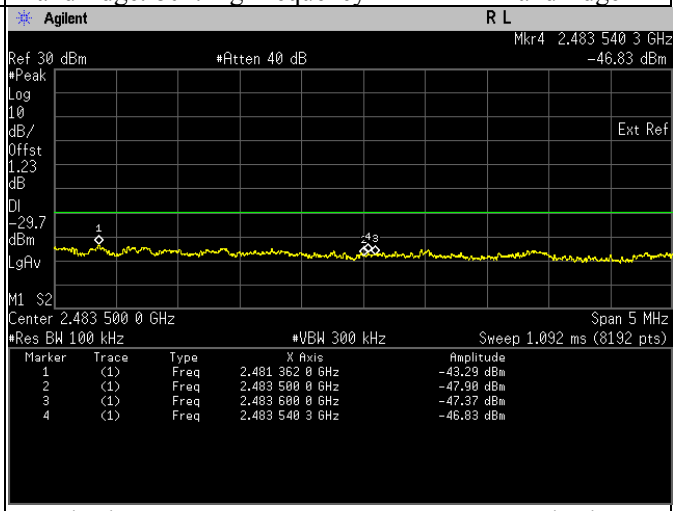
Band Edge. 802.11g Frequency 2412 MHz Reference Level



Band Edge. 802.11g Frequency 2412 MHz Band Edge



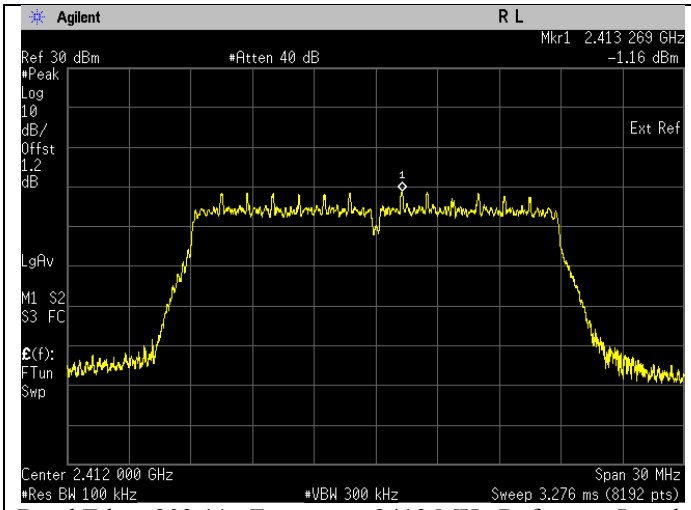
Band Edge. 802.11g Frequency 2462 MHz Reference Level



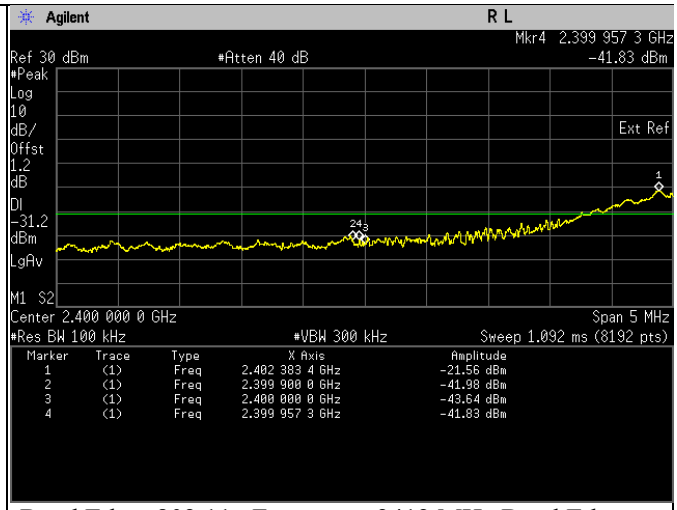
Band Edge. 802.11g Frequency 2462 MHz Band Edge

802.11n (HT20)

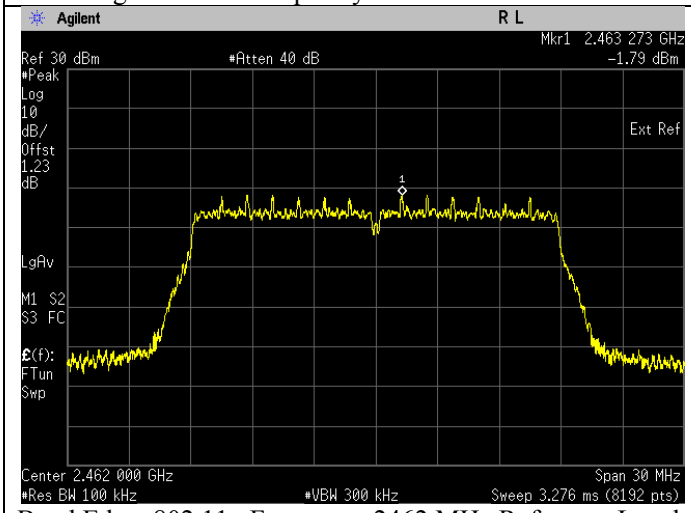
Test Conditions				Test Frequency	Results		
Standard	Modulation Type	Modulation Technology	Data Rate (mbps)	Tx (MHz)	Frequencies (MHz)	Power (dBm)	Status
802.11n	OFDM	BPSK	6.5	2412	2399.96	-41.83	Pass
802.11n	OFDM	BPSK	6.5	2462	2483.54	-47.31	Pass



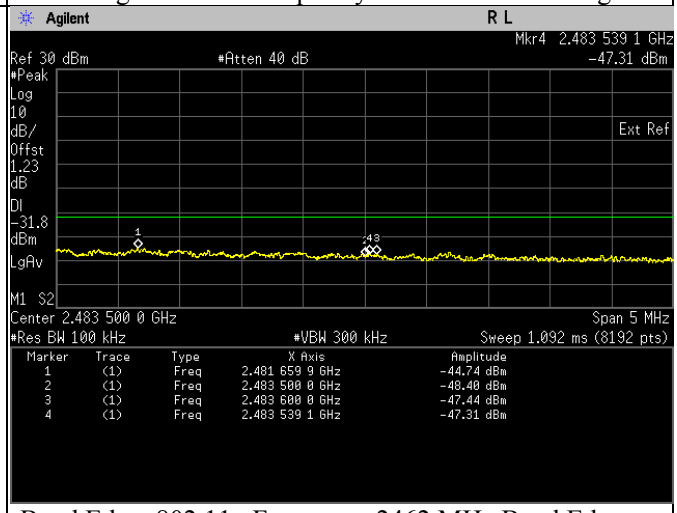
Band Edge. 802.11n Frequency 2412 MHz Reference Level



Band Edge. 802.11n Frequency 2412 MHz Band Edge



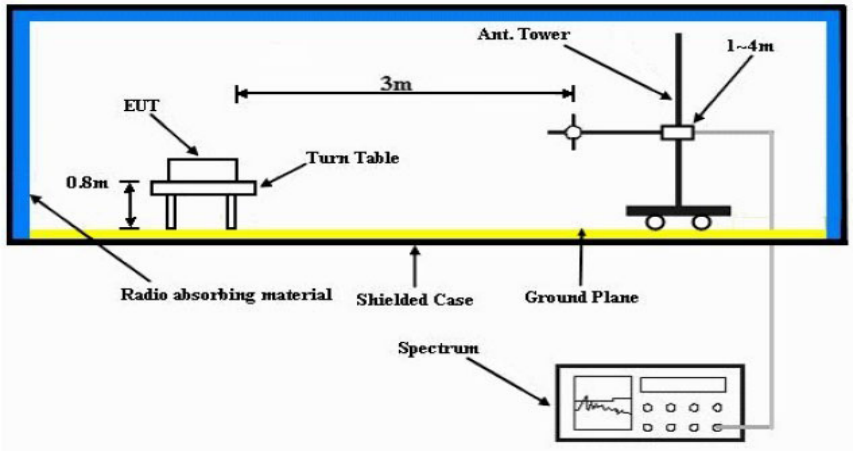
Band Edge. 802.11n Frequency 2462 MHz Reference Level



Band Edge. 802.11n Frequency 2462 MHz Band Edge

6.7. Radiated Emission within restricted Bands

6.7.1. Test Setup



a. The EUT is placed on the top of a rotating table 0.8m above the ground (<1GHz) and 1.5m above the ground (>1GHz) at a 3m semi-anechoic chamber. The table is rotated 360 degrees to determine the position of the highest radiation.
b. The EUT is set 3m away from the interference-receiving antenna, which is mounted on the top of a variable-height antenna tower.
c. The antenna is Bilog/Horn antenna depend on which frequency range uses, and its height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
d. For each suspected emission, the EUT is arranged to its worst case and then the antenna is tuned to heights from 1m to 4m and the rotatable table is turned from 0 degrees to 360 degrees to find the maximum reading.
e. The test-receiver system is set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
f. If the emission level of the EUT in peak mode is fall within the range of 10dB from the limit specified, the emissions would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet. Otherwise, the testing could be stopped and the peak values of the EUT would be reported.

NOTE:

a. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120 kHz for Quasi-peak detection at frequency below 1GHz.
b. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and video bandwidth is 3 MHz for Peak detection at frequency above 1 GHz.
c. All modes of operation were investigated and the worst-case emissions are reported.

6.7.2. **Test Limits:**

Radiated emissions which fall in the restricted bands must comply with the radiated emission limits specified as below table. Other emissions shall be at least 20dB below the highest level of the desired power.

Frequency (MHz)	Field strength (microvolts/meter)	Measurement distance (meters)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30.0	30	30
30-88	100**	3
88-216	150**	3
216-960	200**	3
Above 960	500	3

NOTE:

a. The lower limit shall apply at the transition frequencies.
b. Emission level (dBuV/m) = 20 log Emission level (uV/m).
c. For frequencies above 1000 MHz, the field strength limits are based on average detector, however, the peak field strength of any emission shall not exceed the maximum permitted average limits, specified above by more than 20dB under any condition of modulation.

6.7.3. **Test Data:**

802.11b

Test: WIFI SAC Restricted Band Edge
Model Number: AAH02RDH9VA1AN S/N: 867TVPC207 EMC SR ID#: 17779-EMC-00027
Battery: PMNN4493A Accessory: PMAE4070A
Test Channel: Low Test Frequency: 2412.0000 MHz Test Standard: ANSI C63.10-2013
Worst Case Plane: X-Plane (802.11b)

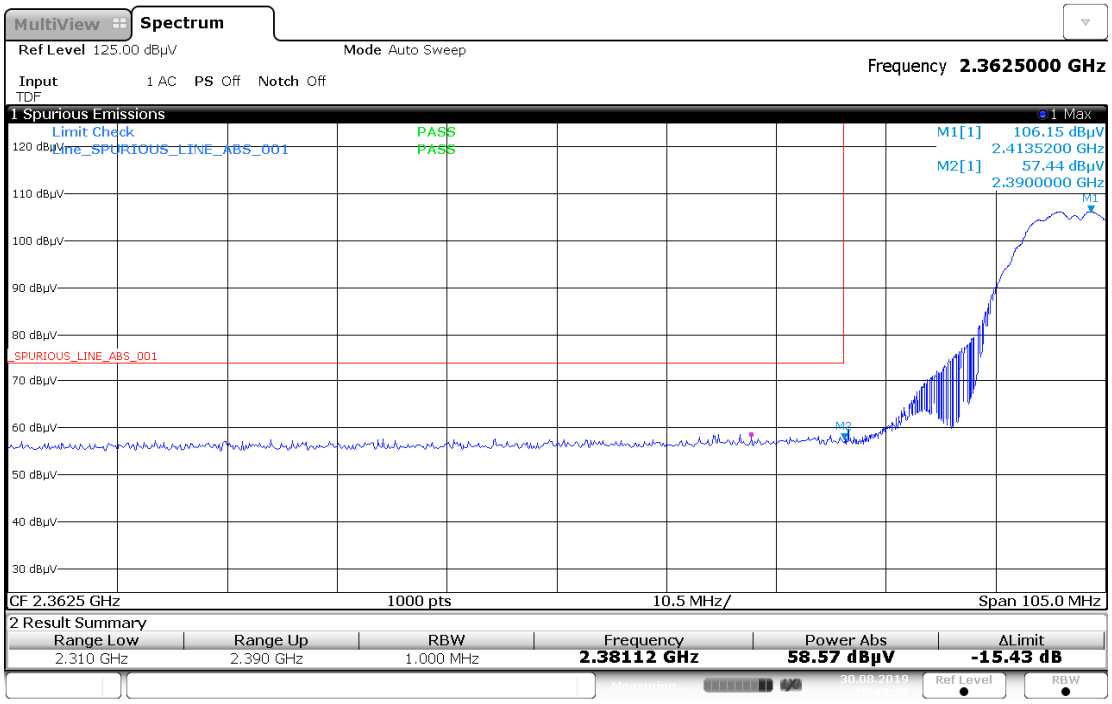
Restricted Band Edge (Low Channel) tabular data

Vertical Radiated Emission Result										
Spur Freq (MHz)	Spur level QPK (dBµV/m)	Spur level PK (dBµV/m)	Spur level AV (dBµV/m)	Limit QPK (dBµV/m)	Limit PK (dBµV/m)	Limit AV (dBµV/m)	Margin QPK (dBµV/m)	Margin PK (dBµV/m)	Margin AV (dBµV/m)	Carrier PK Power (dBµV/m)
2344.0000	-	-	42.7517	-	-	54.0000	-	-	-11.2483	-
2358.7200	-	-	42.5898	-	-	54.0000	-	-	-11.4102	-
2364.4800	-	-	42.6777	-	-	54.0000	-	-	-11.3223	-
2366.0800	-	-	42.6092	-	-	54.0000	-	-	-11.3908	-
2369.6000	-	-	42.7999	-	-	54.0000	-	-	-11.2001	-
2371.6800	-	-	42.5307	-	-	54.0000	-	-	-11.4693	-
2372.1600	-	-	42.5461	-	-	54.0000	-	-	-11.4539	-
2381.1200	-	58.5737	-	-	74.0000	-	-	-15.4263	-	-
2386.5600	-	-	43.9095	-	-	54.0000	-	-	-10.0905	-
2390.0000	-	57.4359	43.3240	-	74.0000	54.0000	-	-16.5641	-10.6760	-
Horizontal Radiated Emission Result										
2319.2000	-	-	42.6455	-	-	54.0000	-	-	-11.3545	-
2362.4000	-	-	42.4648	-	-	54.0000	-	-	-11.5352	-
2368.6400	-	-	42.6313	-	-	54.0000	-	-	-11.3687	-
2371.2000	-	-	42.4298	-	-	54.0000	-	-	-11.5702	-
2372.0000	-	-	42.7418	-	-	54.0000	-	-	-11.2582	-
2373.9200	-	-	42.6804	-	-	54.0000	-	-	-11.3196	-
2377.2800	-	-	42.5581	-	-	54.0000	-	-	-11.4419	-
2386.5600	-	-	45.3222	-	-	54.0000	-	-	-8.6778	-
2387.2000	-	58.3230	-	-	74.0000	-	-	-15.6770	-	-
2390.0000	-	56.7361	44.4793	-	74.0000	54.0000	-	-17.2639	-9.5207	-

Remarks: Pass Result	Marginal Result	Fail Result

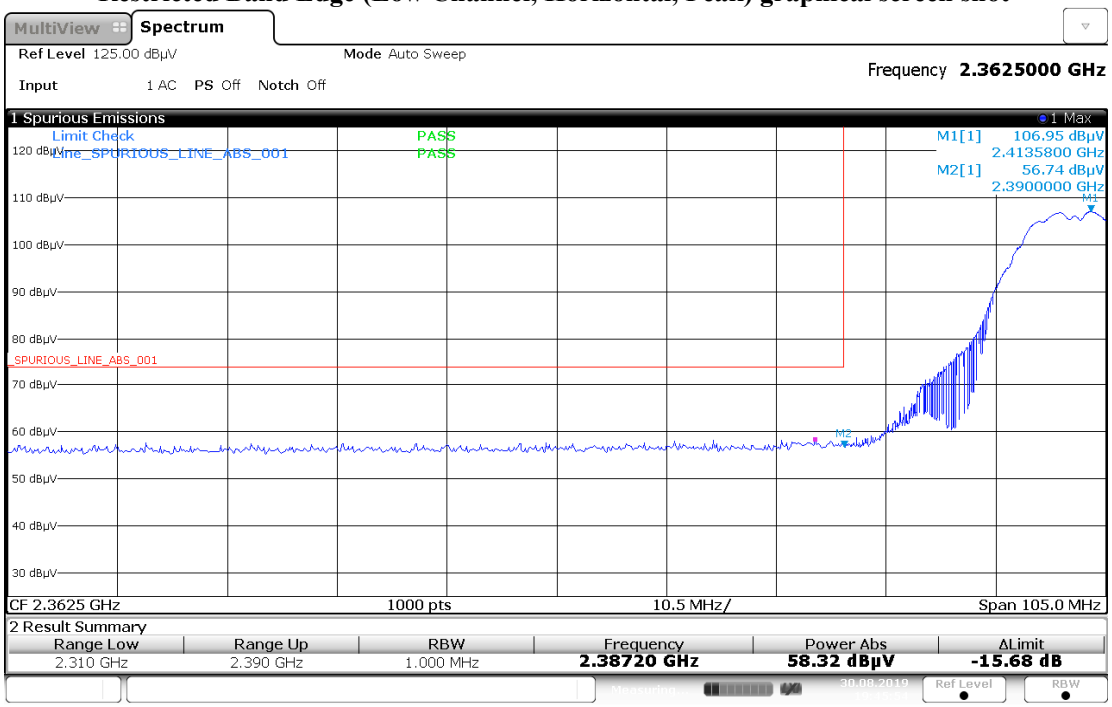
Temperature (degC):23.3 **Humidity (%): 70.2**
Test Performed by: Nazrin&Qawiman **Test Date: Tue, Sep 03, 2019**
System MU: 5.01dB

Restricted Band Edge (Low Channel, Vertical, Peak) graphical screen shot



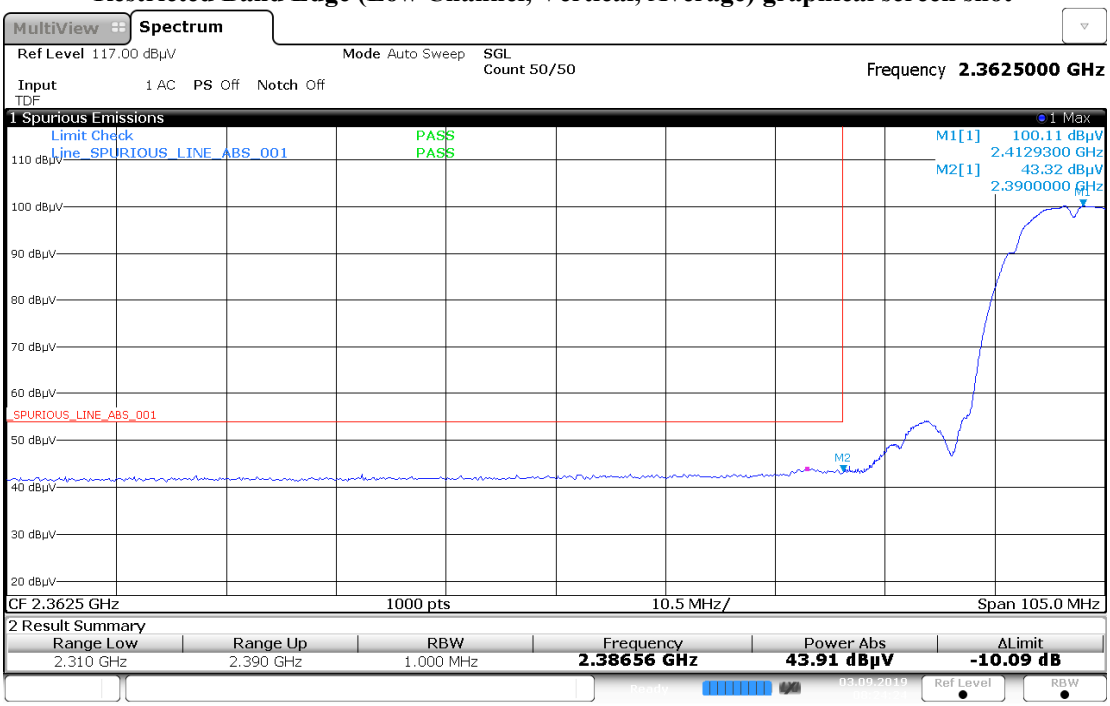
19:42:30 30.08.2019

Restricted Band Edge (Low Channel, Horizontal, Peak) graphical screen shot



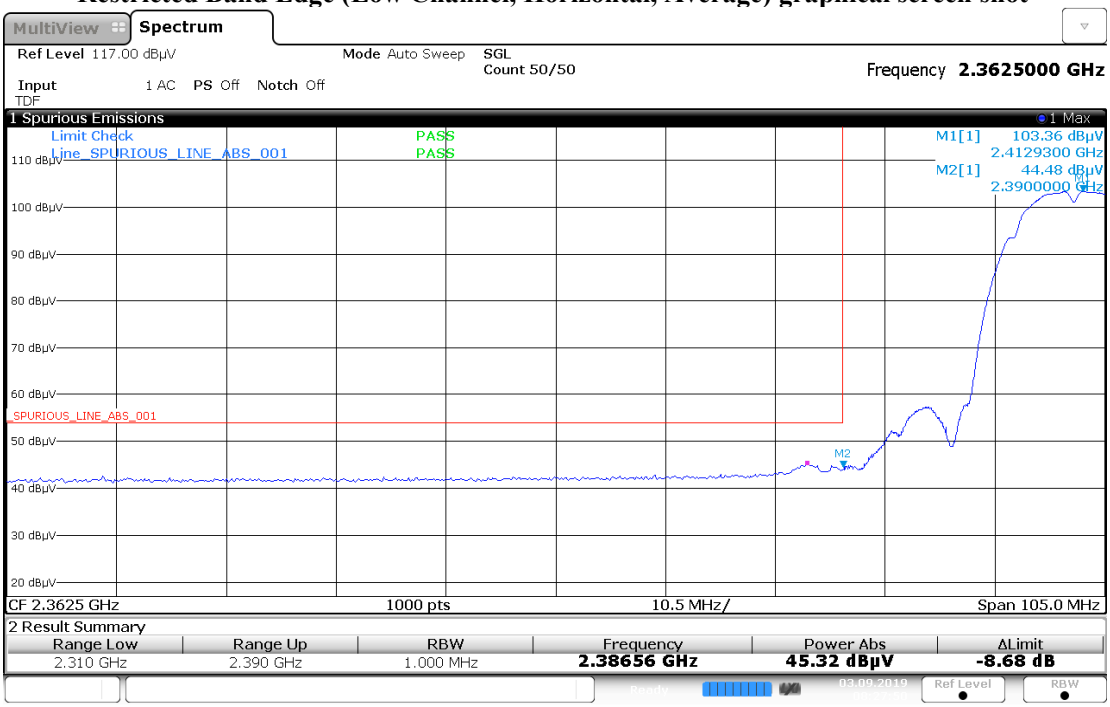
19:45:55 30.08.2019

Restricted Band Edge (Low Channel, Vertical, Average) graphical screen shot



08:24:25 03.09.2019

Restricted Band Edge (Low Channel, Horizontal, Average) graphical screen shot



08:27:50 03.09.2019

Test: WIFI SAC Restricted Band Edge
Model Number: AAH02RDH9VA1AN S/N: 867TVPC207 EMC SR ID#: 17779-EMC-00027
Battery: PMNN4493A Accessory: PMAE4070A
Test Channel: High Test Frequency: 2462.0000 MHz Test Standard: ANSI C63.10-2013
Worst Case Plane: X-Plane (802.11b)

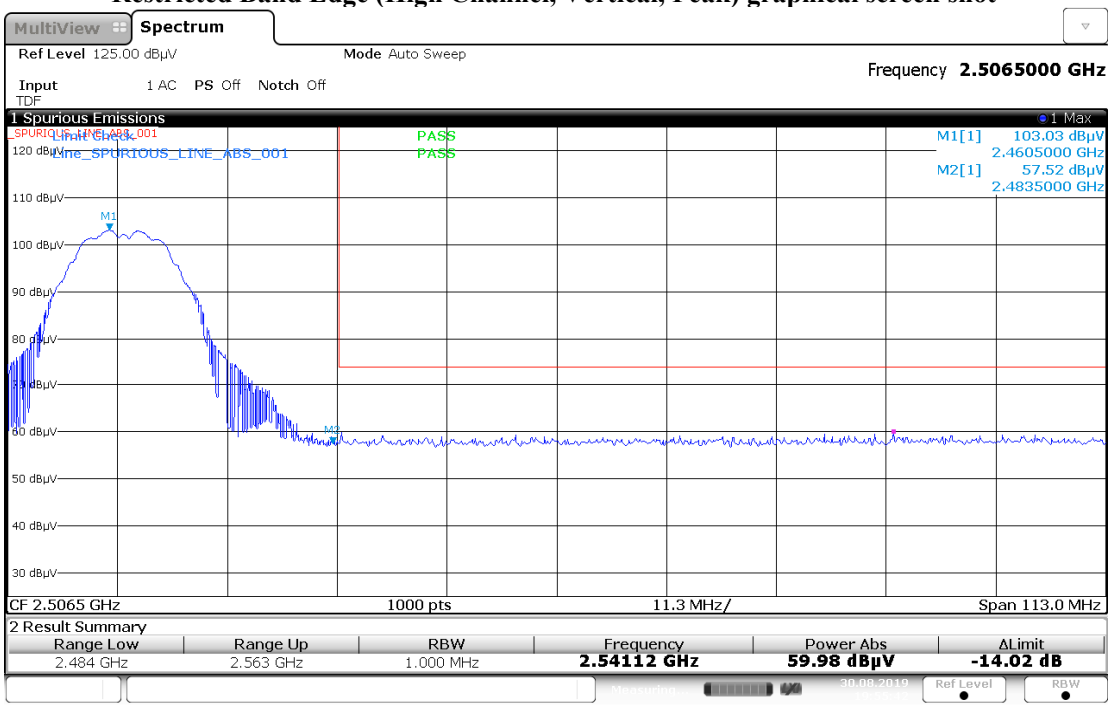
Restricted Band Edge (High Channel) tabular data

Vertical Radiated Emission Result										
Spur Freq (MHz)	Spur level QPK (dBµV/m)	Spur level PK (dBµV/m)	Spur level AV (dBµV/m)	Limit QPK (dBµV/m)	Limit PK (dBµV/m)	Limit AV (dBµV/m)	Margin QPK (dBµV/m)	Margin PK (dBµV/m)	Margin AV (dBµV/m)	Carrier PK Power (dBµV/m)
2483.5000	-	57.5177	42.9891	-	74.0000	54.0000	-	-16.4823	-11.0109	-
2541.1170	-	59.9823	-	-	74.0000	-	-	-14.0177	-	-
2552.1770	-	-	44.3040	-	-	54.0000	-	-	-9.6960	-
Horizontal Radiated Emission Result										
2483.5000	-	57.1825	43.6822	-	74.0000	54.0000	-	-16.8175	-10.3178	-
2489.4510	-	-	44.4595	-	-	54.0000	-	-	-9.5405	-
2546.6470	-	59.7827	-	-	74.0000	-	-	-14.2173	-	-

Remarks: Pass Result	Marginal Result	Fail Result

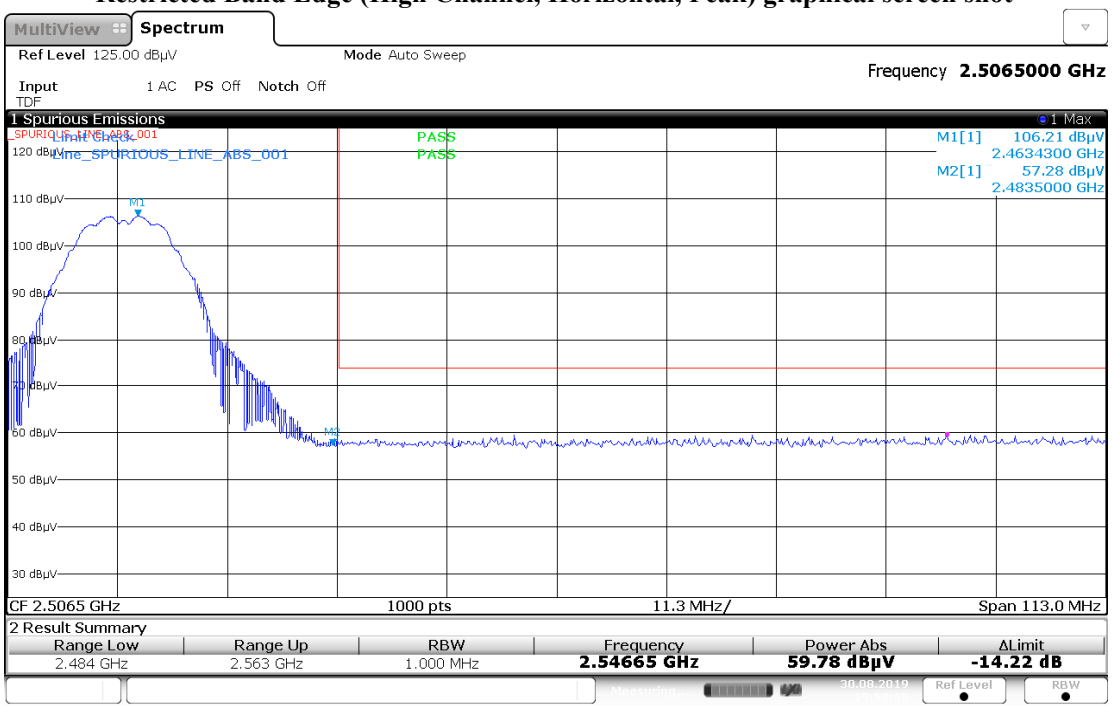
Temperature (degC):23.3 **Humidity (%): 70.2**
Test Performed by: Nazrin&Qawiman **Test Date: Tue, Sep 03, 2019**
System MU: 5.01dB

Restricted Band Edge (High Channel, Vertical, Peak) graphical screen shot



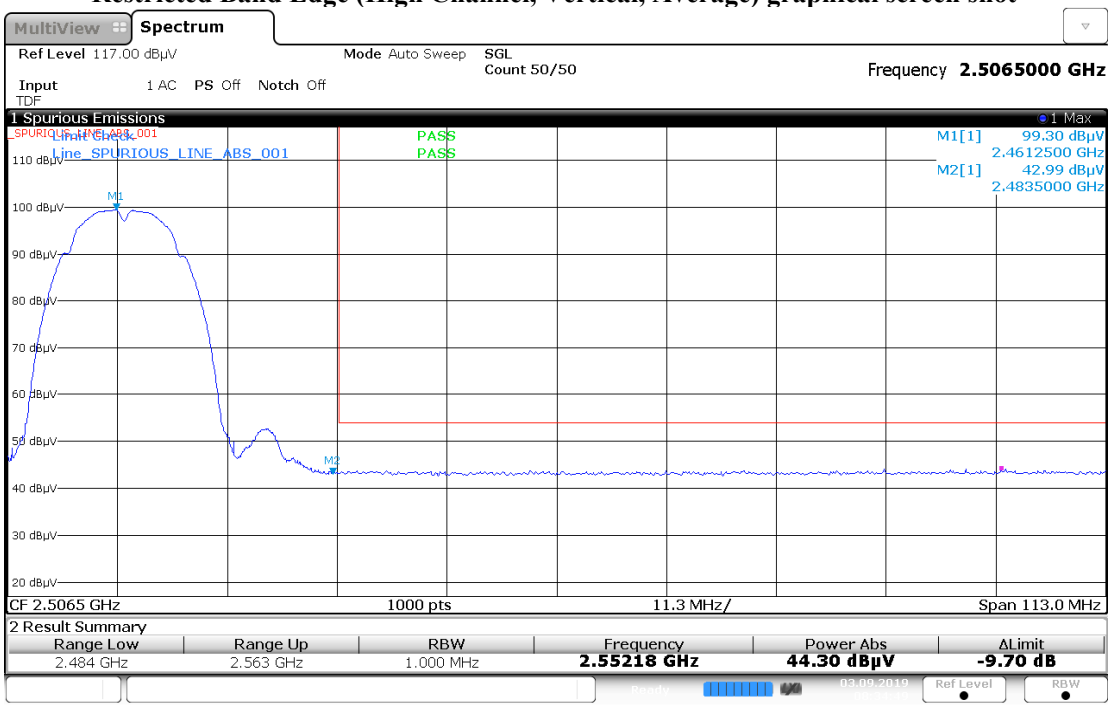
19:55:43 30.08.2019

Restricted Band Edge (High Channel, Horizontal, Peak) graphical screen shot



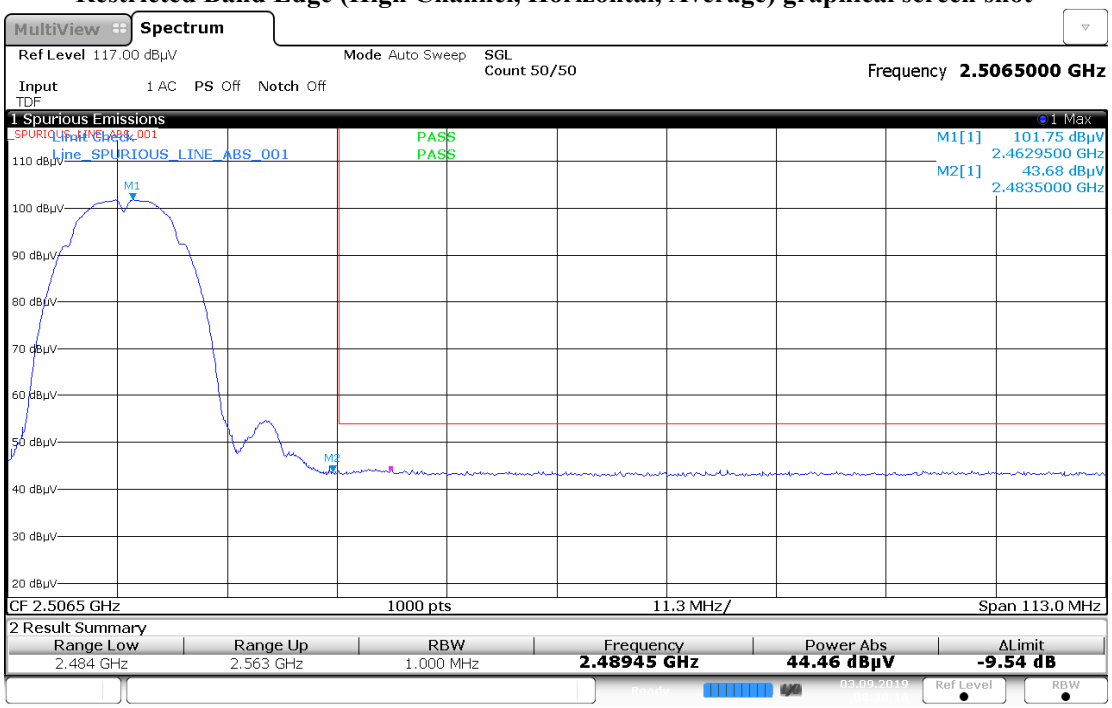
19:58:55 30.08.2019

Restricted Band Edge (High Channel, Vertical, Average) graphical screen shot



08:34:50 03.09.2019

Restricted Band Edge (High Channel, Horizontal, Average) graphical screen shot



08:38:17 03.09.2019

802.11g

Test: WIFI SAC Restricted Band Edge
Model Number: AAH02RDH9VA1AN S/N: 867TVPC207 EMC SR ID#: 17779-EMC-00027
Battery: PMNN4493A Accessory: PMAE4070A
Test Channel: Low Test Frequency: 2412.0000 MHz Test Standard: ANSI C63.10-2013
Worst Case Plane: X-Plane (802.11g)

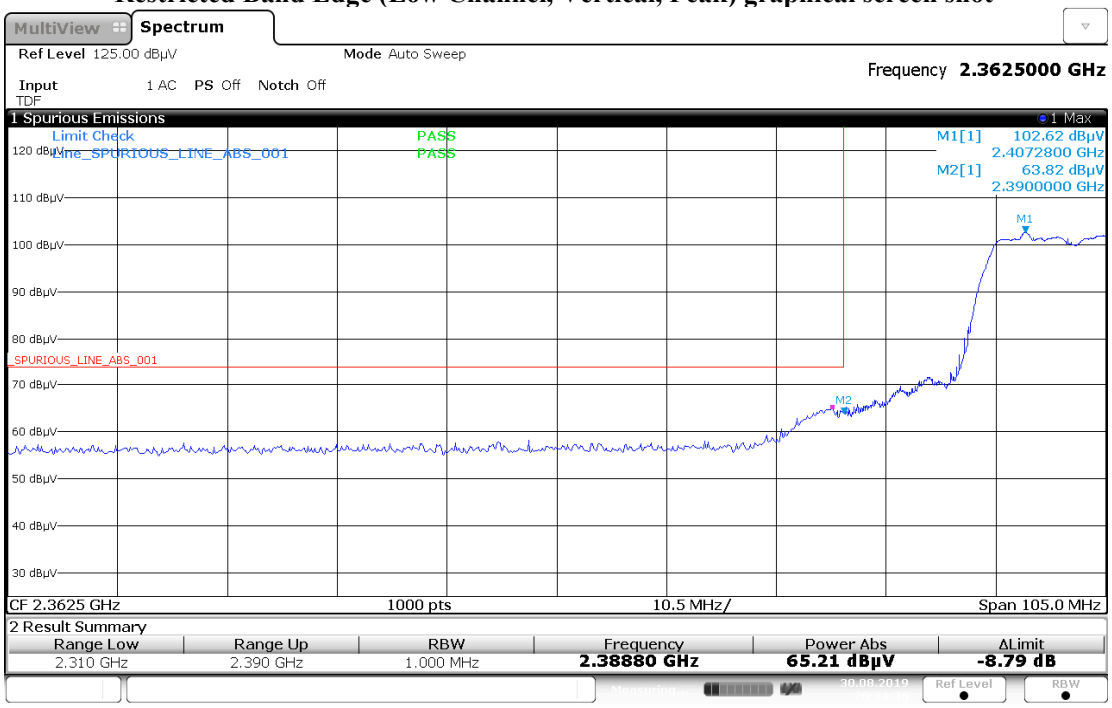
Restricted Band Edge (Low Channel) tabular data

Vertical Radiated Emission Result										
Spur Freq (MHz)	Spur level QPK (dBµV/m)	Spur level PK (dBµV/m)	Spur level AV (dBµV/m)	Limit QPK (dBµV/m)	Limit PK (dBµV/m)	Limit AV (dBµV/m)	Margin QPK (dBµV/m)	Margin PK (dBµV/m)	Margin AV (dBµV/m)	Carrier PK Power (dBµV/m)
2350.4000	-	-	42.4767	-	-	54.0000	-	-	-11.5233	-
2353.6000	-	-	42.4051	-	-	54.0000	-	-	-11.5949	-
2360.0000	-	-	42.4999	-	-	54.0000	-	-	-11.5001	-
2364.1600	-	-	42.4761	-	-	54.0000	-	-	-11.5239	-
2366.2400	-	-	42.5468	-	-	54.0000	-	-	-11.4532	-
2371.3600	-	-	42.5057	-	-	54.0000	-	-	-11.4943	-
2375.5200	-	-	42.5758	-	-	54.0000	-	-	-11.4242	-
2388.8000	-	65.2143	-	-	74.0000	-	-	-8.7857	-	-
2389.9200	-	-	47.2210	-	-	54.0000	-	-	-6.7790	-
2390.0000	-	63.8201	47.4207	-	74.0000	54.0000	-	-10.1799	-6.5793	-
Horizontal Radiated Emission Result										
2332.6400	-	-	42.4721	-	-	54.0000	-	-	-11.5279	-
2355.0400	-	-	42.4758	-	-	54.0000	-	-	-11.5242	-
2360.8000	-	-	42.5402	-	-	54.0000	-	-	-11.4598	-
2374.8800	-	-	42.6264	-	-	54.0000	-	-	-11.3736	-
2375.5200	-	-	42.4681	-	-	54.0000	-	-	-11.5319	-
2376.4800	-	-	42.6993	-	-	54.0000	-	-	-11.3007	-
2377.2800	-	-	42.2851	-	-	54.0000	-	-	-11.7149	-
2388.0000	-	66.6328	-	-	74.0000	-	-	-7.3672	-	-
2389.7600	-	-	47.9879	-	-	54.0000	-	-	-6.0121	-
2390.0000	-	64.3488	48.2656	-	74.0000	54.0000	-	-9.6512	-5.7344	-

Remarks: Pass Result	Marginal Result	Fail Result

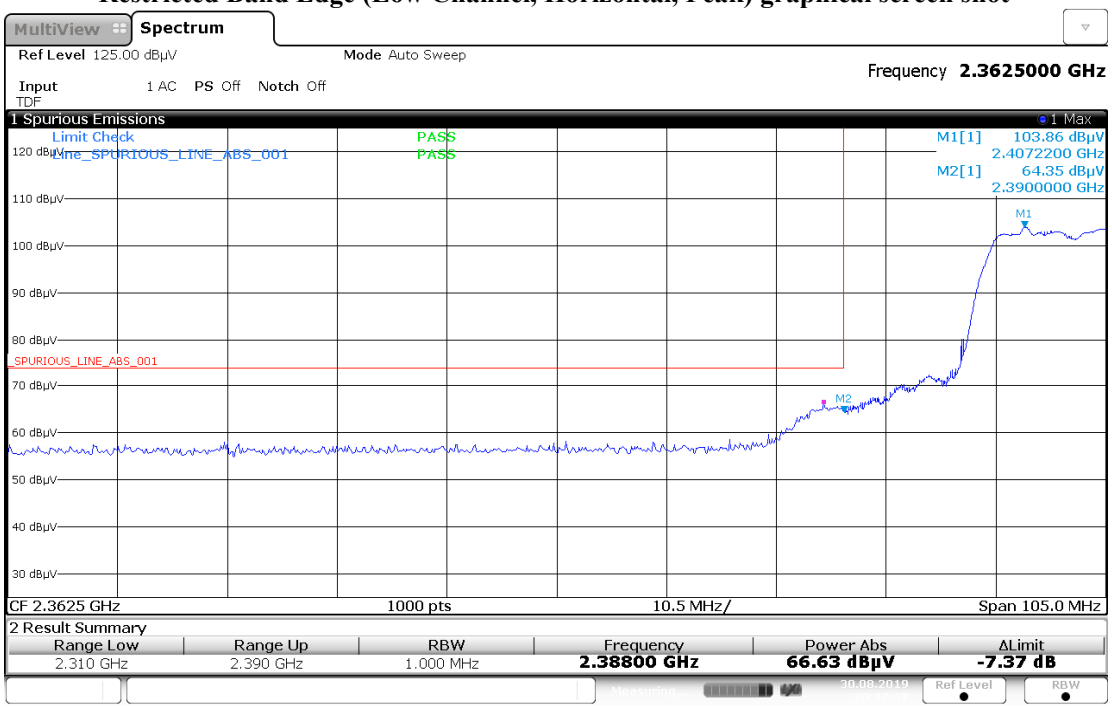
Temperature (degC):23.3 **Humidity (%): 70.2**
Test Performed by: Nazrin&Qawiman **Test Date: Tue, Sep 03, 2019**
System MU: 5.01dB

Restricted Band Edge (Low Channel, Vertical, Peak) graphical screen shot



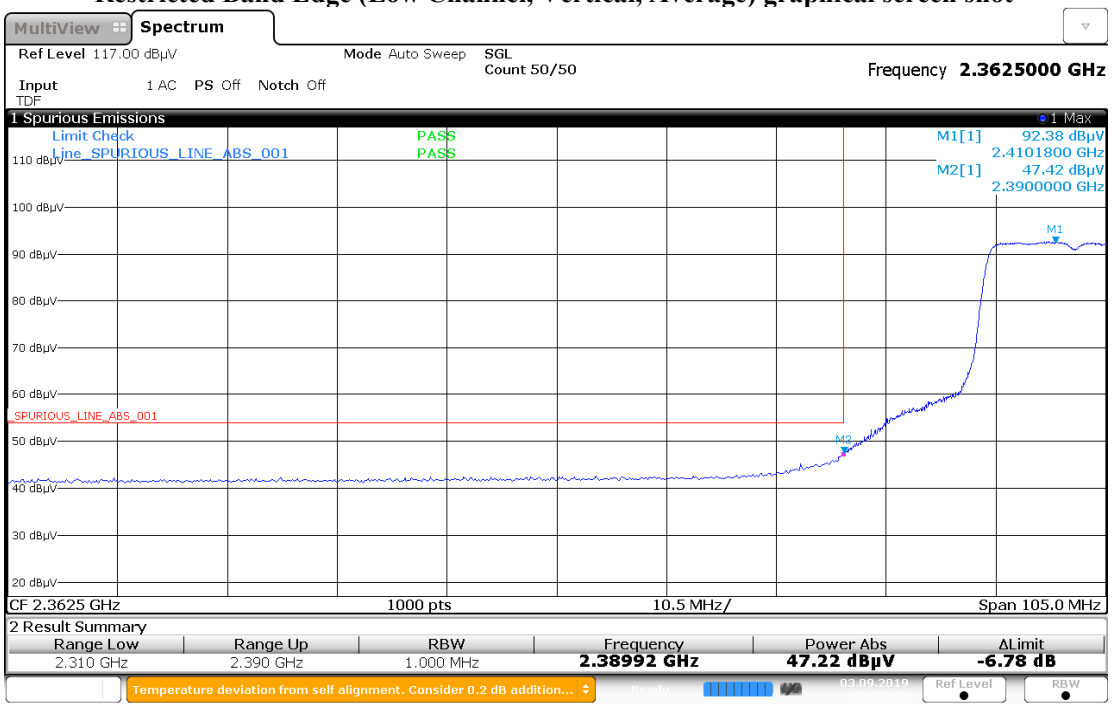
20:34:37 30.08.2019

Restricted Band Edge (Low Channel, Horizontal, Peak) graphical screen shot



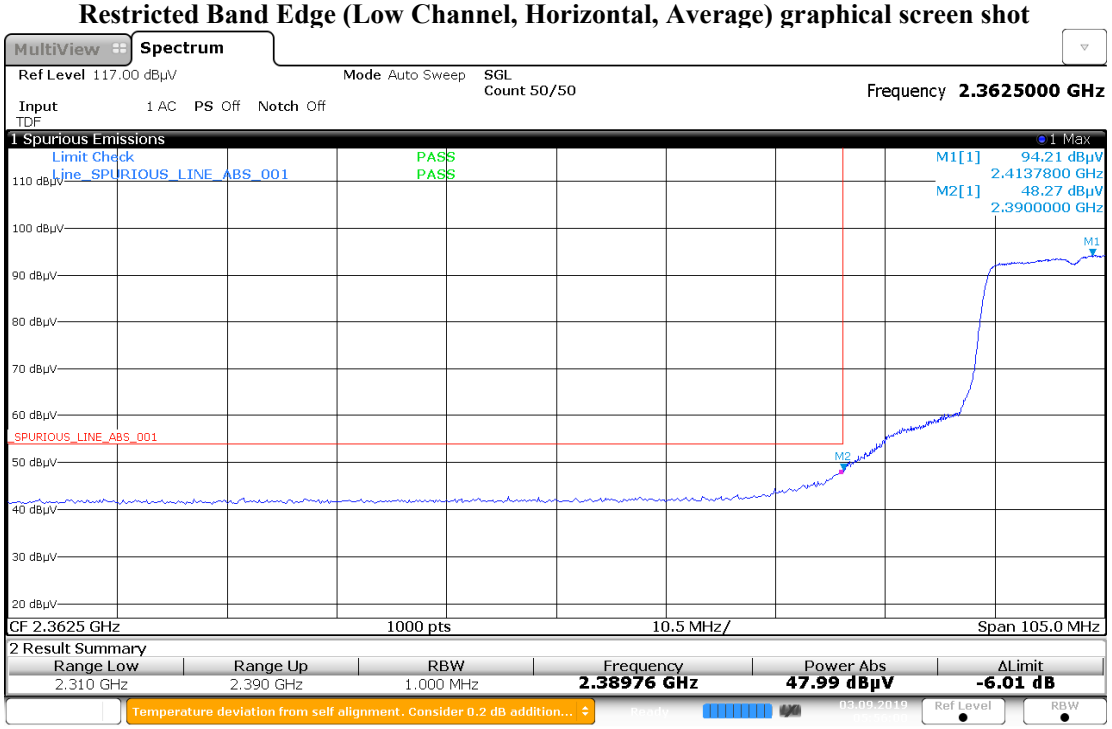
20:37:57 30.08.2019

Restricted Band Edge (Low Channel, Vertical, Average) graphical screen shot



05:52:30 03.09.2019

Restricted Band Edge (Low Channel, Horizontal, Average) graphical screen shot



05:56:00 03.09.2019

Test: WIFI SAC Restricted Band Edge
Model Number: AAH02RDH9VA1AN S/N: 867TVPC207 EMC SR ID#: 17779-EMC-00027
Battery: PMNN4493A Accessory: PMAE4070A
Test Channel: High Test Frequency: 2462.0000 MHz Test Standard: ANSI C63.10-2013
Worst Case Plane: X-Plane (802.11g)

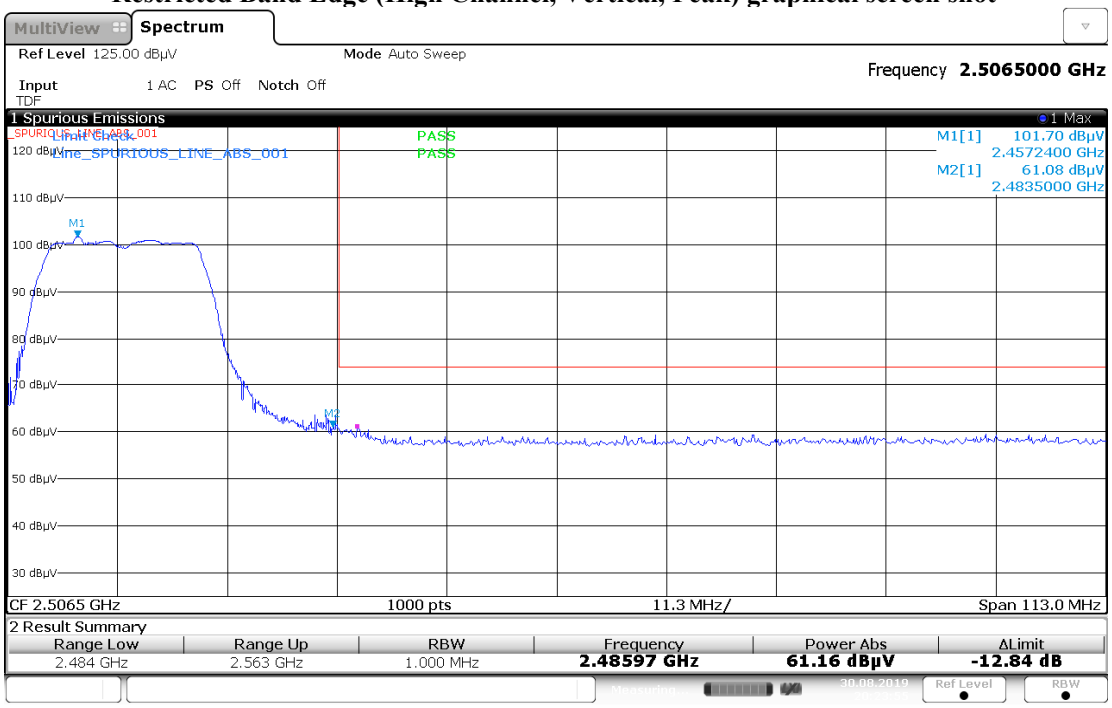
Restricted Band Edge (High Channel) tabular data

Vertical Radiated Emission Result										
Spur Freq (MHz)	Spur level QPK (dBµV/m)	Spur level PK (dBµV/m)	Spur level AV (dBµV/m)	Limit QPK (dBµV/m)	Limit PK (dBµV/m)	Limit AV (dBµV/m)	Margin QPK (dBµV/m)	Margin PK (dBµV/m)	Margin AV (dBµV/m)	Carrier PK Power (dBµV/m)
2483.5000	-	61.0846	44.4429	-	74.0000	54.0000	-	-12.9154	-9.5571	-
2484.3950	-	-	44.6637	-	-	54.0000	-	-	-9.3363	-
2485.9750	-	61.1557	-	-	74.0000	-	-	-12.8443	-	-
Horizontal Radiated Emission Result										
2483.5000	-	61.4041	46.6624	-	74.0000	54.0000	-	-12.5959	-7.3376	-
2484.7110	-	62.6872	46.9450	-	74.0000	54.0000	-	-11.3128	-7.0550	-

Remarks: Pass Result	Marginal Result	Fail Result

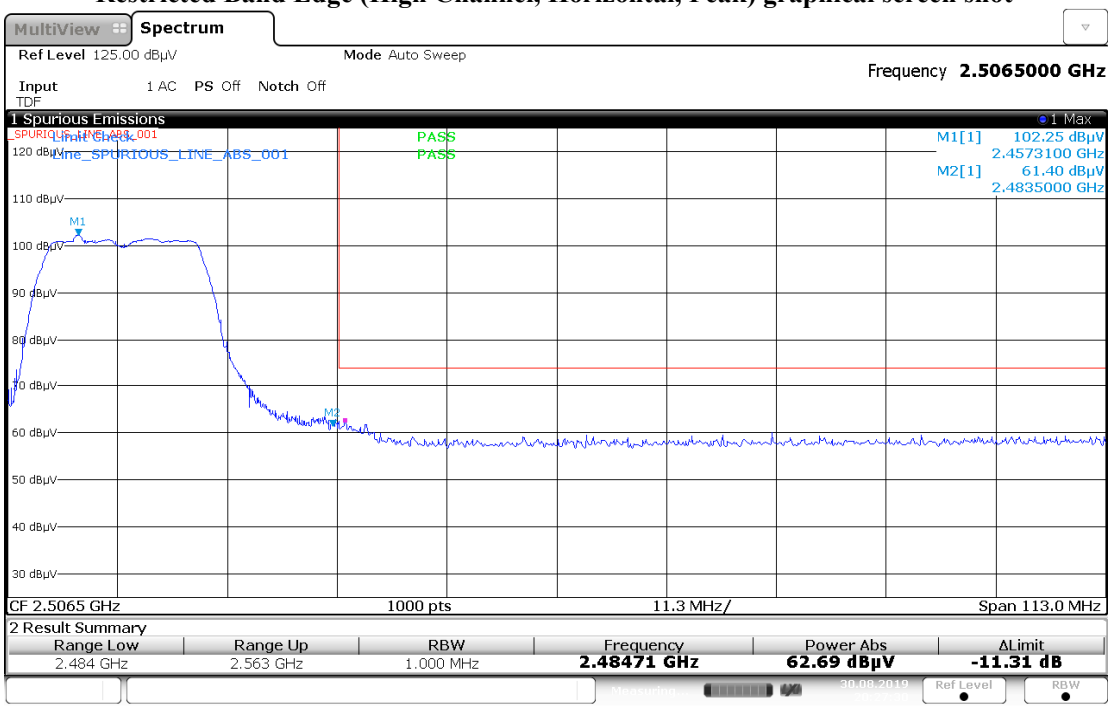
Temperature (degC):23.3 **Humidity (%): 70.2**
Test Performed by: Nazrin&Qawiman **Test Date: Tue, Sep 03, 2019**
System MU: 5.01dB

Restricted Band Edge (High Channel, Vertical, Peak) graphical screen shot



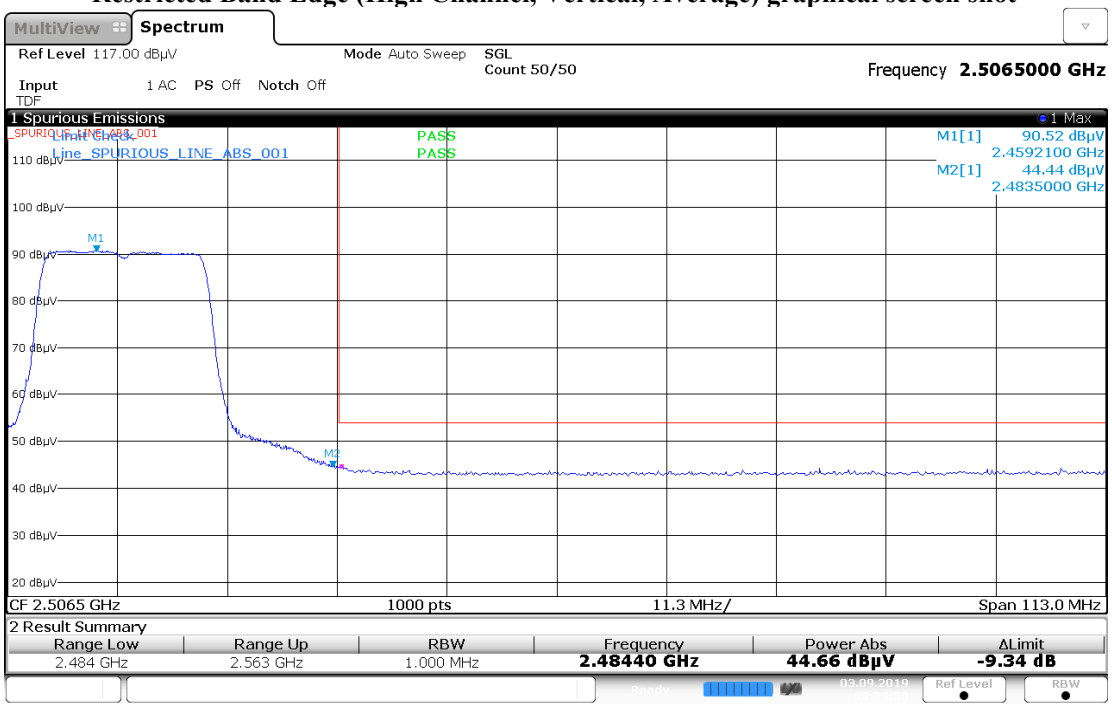
20:23:55 30.08.2019

Restricted Band Edge (High Channel, Horizontal, Peak) graphical screen shot



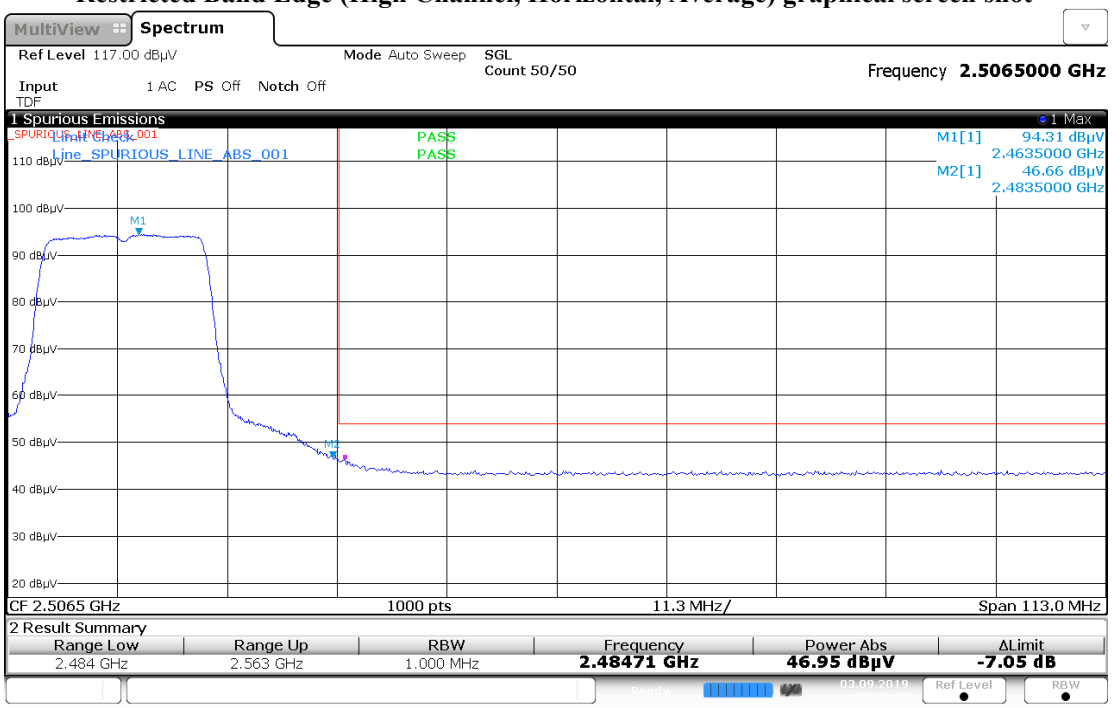
20:27:30 30.08.2019

Restricted Band Edge (High Channel, Vertical, Average) graphical screen shot



08:09:50 03.09.2019

Restricted Band Edge (High Channel, Horizontal, Average) graphical screen shot



08:13:37 03.09.2019

802.11n (HT20)

Test: WIFI SAC Restricted Band Edge
Model Number: AAH02RDH9VA1AN S/N: 867TVPC207 EMC SR ID#: 17779-EMC-00027
Battery: PMNN4493A Accessory: PMAE4070A
Test Channel: Low Test Frequency: 2412.0000 MHz Test Standard: ANSI C63.10-2013
Worst Case Plane: X-Plane (802.11n 20MHz)

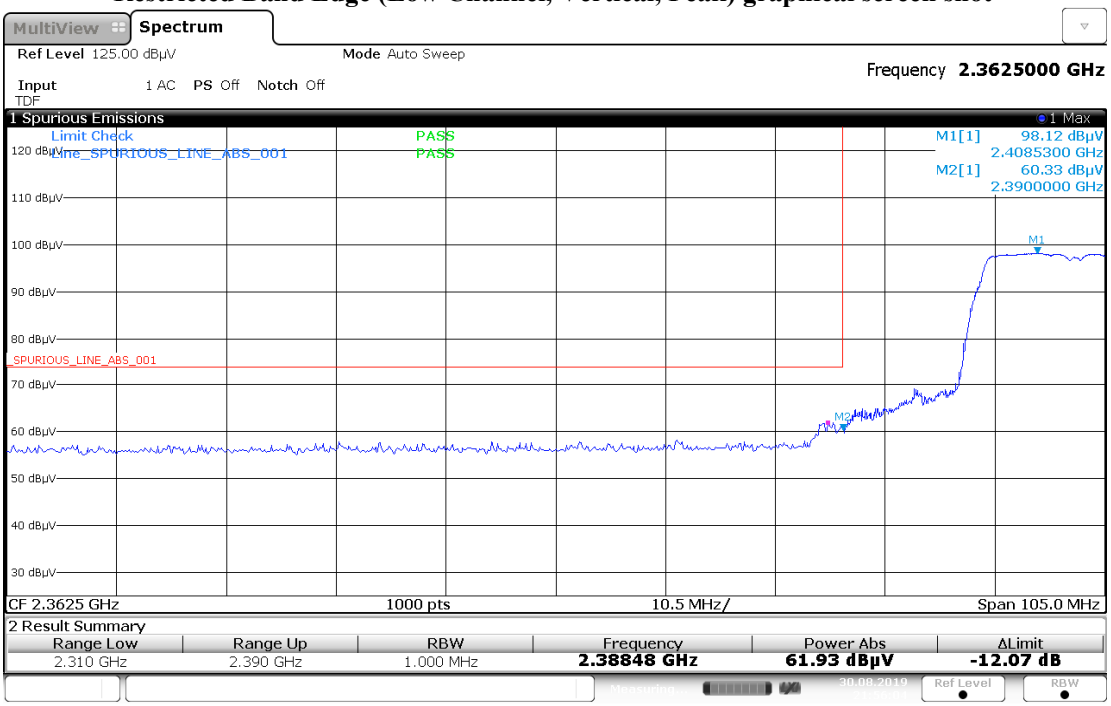
Restricted Band Edge (Low Channel) tabular data

Vertical Radiated Emission Result										
Spur Freq (MHz)	Spur level QPK (dBµV/m)	Spur level PK (dBµV/m)	Spur level AV (dBµV/m)	Limit QPK (dBµV/m)	Limit PK (dBµV/m)	Limit AV (dBµV/m)	Margin QPK (dBµV/m)	Margin PK (dBµV/m)	Margin AV (dBµV/m)	Carrier PK Power (dBµV/m)
2324.3200	-	-	42.3943	-	-	54.0000	-	-	-11.6057	-
2328.6400	-	-	42.4103	-	-	54.0000	-	-	-11.5897	-
2355.5200	-	-	42.4314	-	-	54.0000	-	-	-11.5686	-
2362.4000	-	-	42.4079	-	-	54.0000	-	-	-11.5921	-
2365.7600	-	-	42.6002	-	-	54.0000	-	-	-11.3998	-
2371.8400	-	-	42.7362	-	-	54.0000	-	-	-11.2638	-
2376.9600	-	-	42.5513	-	-	54.0000	-	-	-11.4487	-
2388.4800	-	61.9275	-	-	74.0000	-	-	-12.0725	-	-
2389.9200	-	-	46.3441	-	-	54.0000	-	-	-7.6559	-
2390.0000	-	60.3268	46.5243	-	74.0000	54.0000	-	-13.6732	-7.4757	-
Horizontal Radiated Emission Result										
2314.7200	-	-	42.5728	-	-	54.0000	-	-	-11.4272	-
2336.1600	-	-	42.4660	-	-	54.0000	-	-	-11.5340	-
2347.2000	-	-	42.4612	-	-	54.0000	-	-	-11.5388	-
2352.4800	-	-	42.4572	-	-	54.0000	-	-	-11.5428	-
2365.4400	-	-	42.6562	-	-	54.0000	-	-	-11.3437	-
2367.6800	-	-	42.4955	-	-	54.0000	-	-	-11.5045	-
2372.1600	-	-	42.7564	-	-	54.0000	-	-	-11.2436	-
2388.6400	-	63.8077	-	-	74.0000	-	-	-10.1923	-	-
2389.4400	-	-	46.9772	-	-	54.0000	-	-	-7.0228	-
2390.0000	-	61.8036	47.1950	-	74.0000	54.0000	-	-12.1964	-6.8050	-

Remarks: Pass Result	Marginal Result	Fail Result

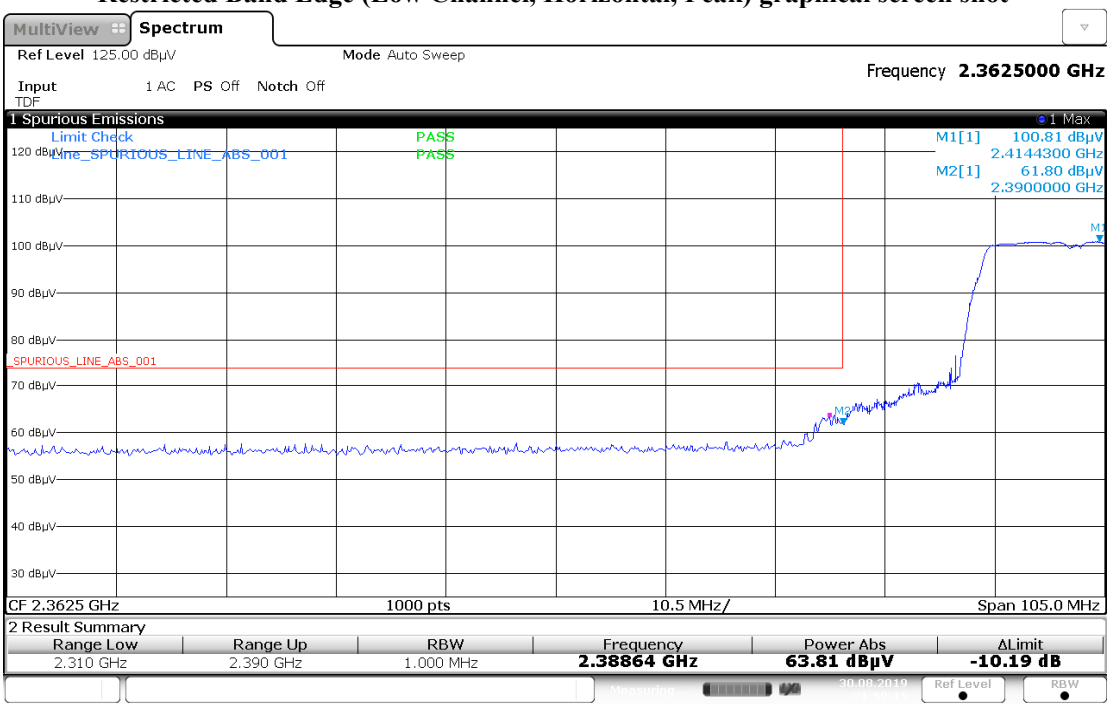
Temperature (degC):23.3 **Humidity (%): 70.2**
Test Performed by: Nazrin&Qawiman **Test Date: Tue, Sep 03, 2019**
System MU: 5.01dB

Restricted Band Edge (Low Channel, Vertical, Peak) graphical screen shot



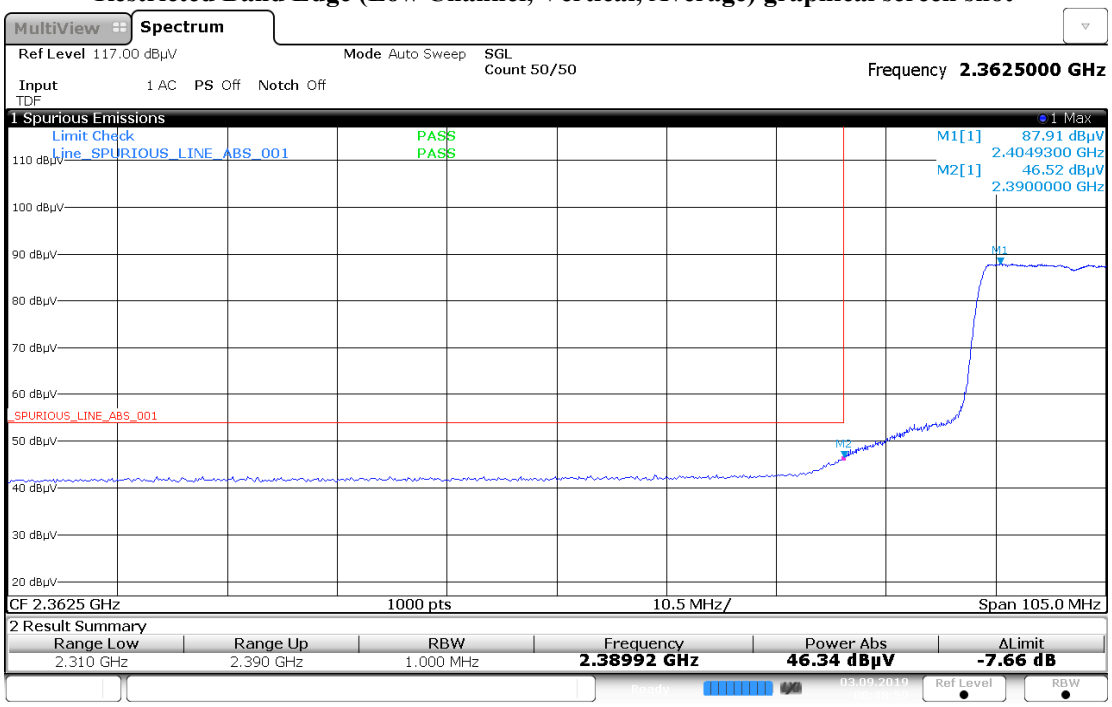
21:56:05 30.08.2019

Restricted Band Edge (Low Channel, Horizontal, Peak) graphical screen shot



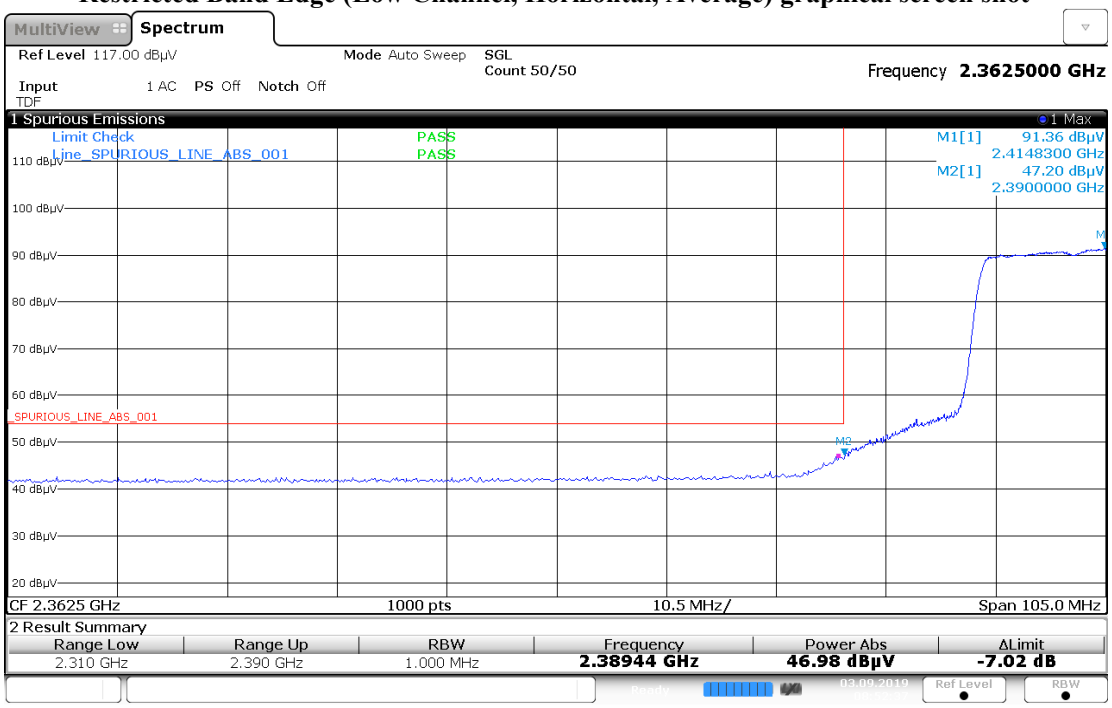
21:59:15 30.08.2019

Restricted Band Edge (Low Channel, Vertical, Average) graphical screen shot



08:49:00 03.09.2019

Restricted Band Edge (Low Channel, Horizontal, Average) graphical screen shot



08:52:37 03.09.2019

Test: WIFI SAC Restricted Band Edge
Model Number: AAH02RDH9VA1AN S/N: 867TVPC207 EMC SR ID#: 17779-EMC-00027
Battery: PMNN4493A Accessory: PMAE4070A
Test Channel: High Test Frequency: 2462.0000 MHz Test Standard: ANSI C63.10-2013
Worst Case Plane: X-Plane (802.11n 20MHz)

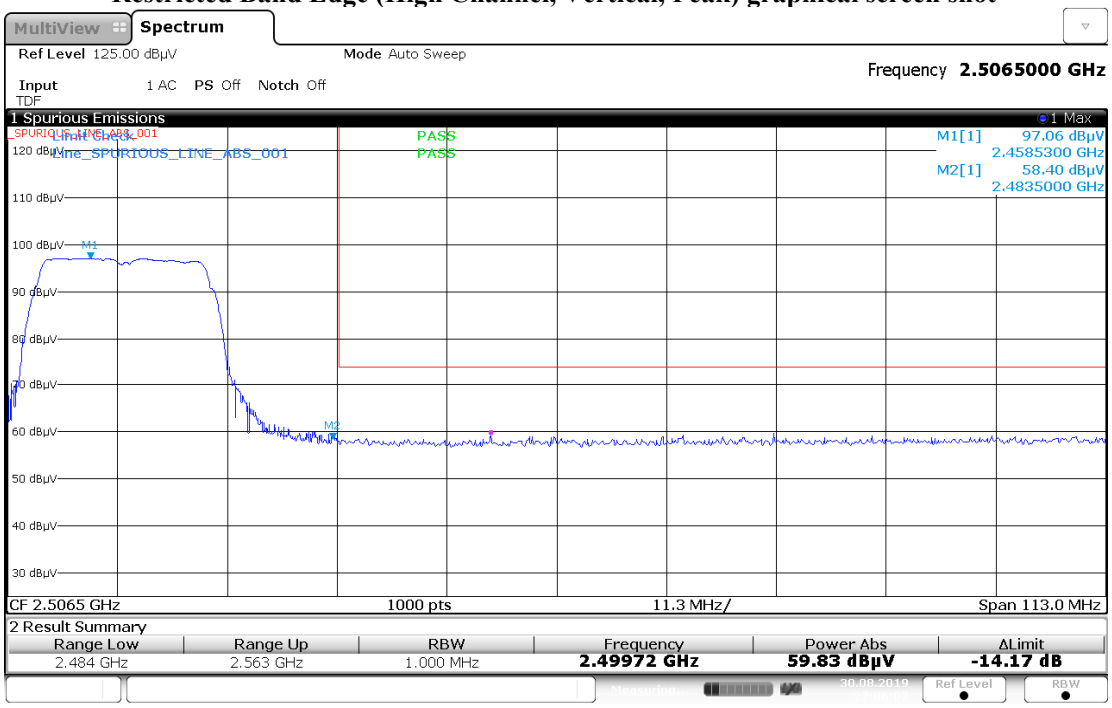
Restricted Band Edge (High Channel) tabular data

Vertical Radiated Emission Result										
Spur Freq (MHz)	Spur level QPK (dBµV/m)	Spur level PK (dBµV/m)	Spur level AV (dBµV/m)	Limit QPK (dBµV/m)	Limit PK (dBµV/m)	Limit AV (dBµV/m)	Margin QPK (dBµV/m)	Margin PK (dBµV/m)	Margin AV (dBµV/m)	Carrier PK Power (dBµV/m)
2483.5000	-	58.3961	43.8895	-	74.0000	54.0000	-	-15.6039	-10.1105	-
2499.7210	-	59.8346	-	-	74.0000	-	-	-14.1654	-	-
2559.1290	-	-	43.8972	-	-	54.0000	-	-	-10.1028	-
Horizontal Radiated Emission Result										
2483.5000	-	57.9363	43.9860	-	74.0000	54.0000	-	-16.0637	-10.0140	-
2545.2250	-	-	44.0095	-	-	54.0000	-	-	-9.9905	-
2555.0210	-	59.6793	-	-	74.0000	-	-	-14.3207	-	-

Remarks: Pass Result	Marginal Result	Fail Result

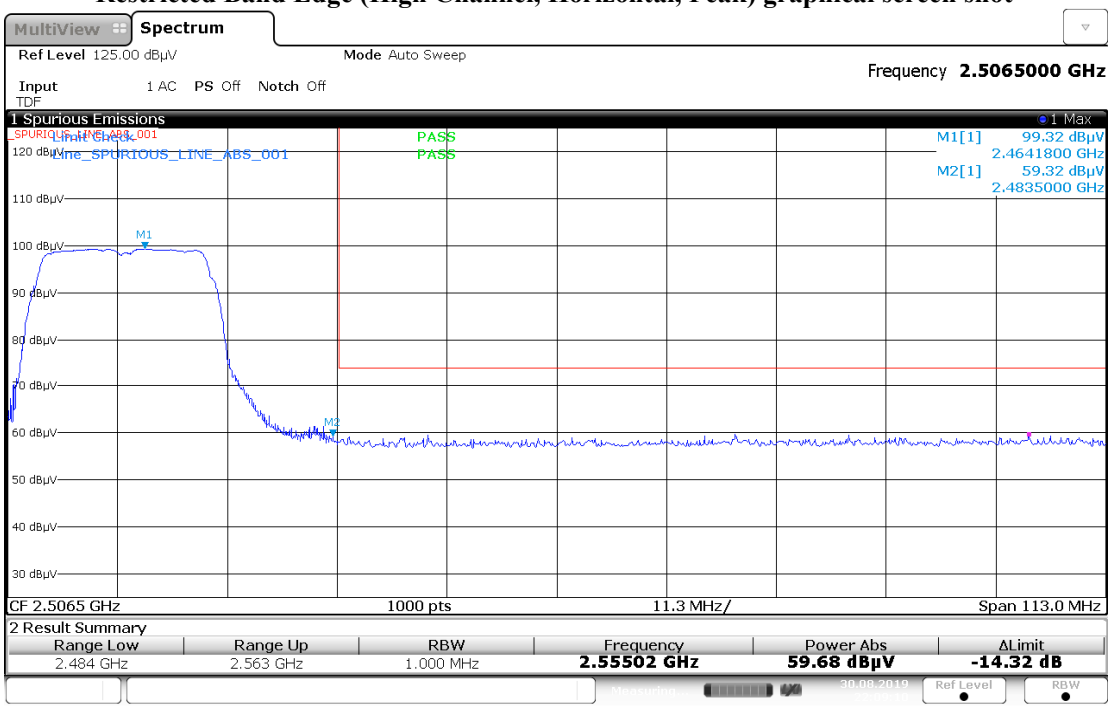
Temperature (degC):23.3 **Humidity (%): 70.2**
Test Performed by: Nazrin&Qawiman **Test Date: Tue, Sep 03, 2019**
System MU: 5.01dB

Restricted Band Edge (High Channel, Vertical, Peak) graphical screen shot



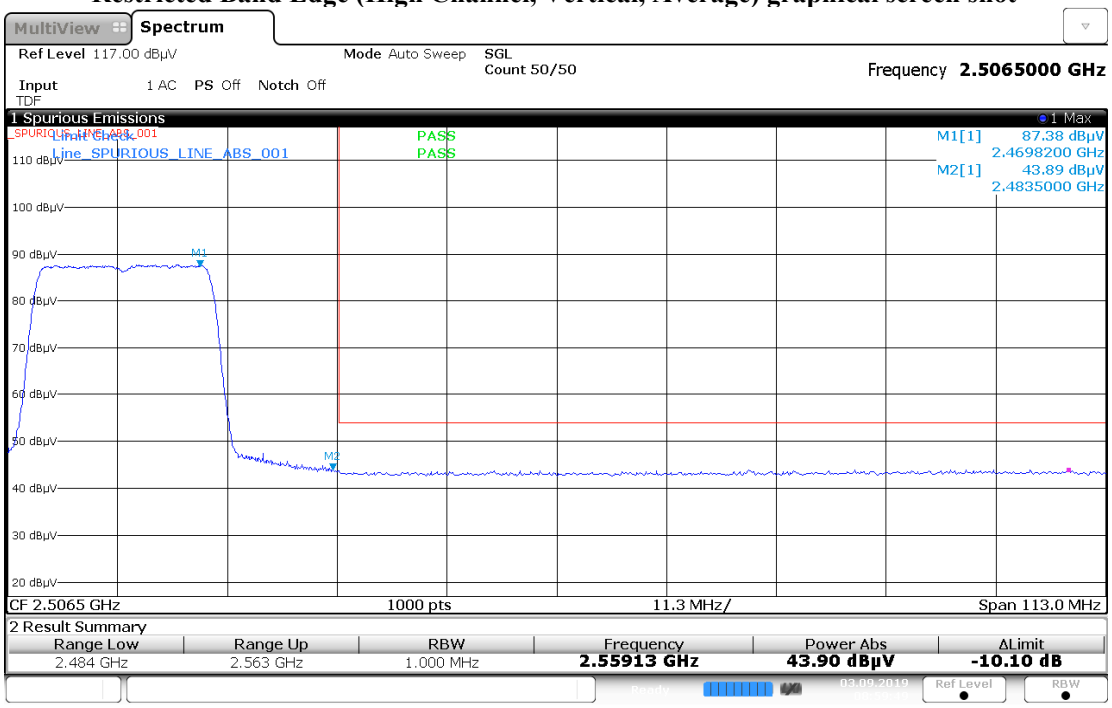
22:06:03 30.08.2019

Restricted Band Edge (High Channel, Horizontal, Peak) graphical screen shot



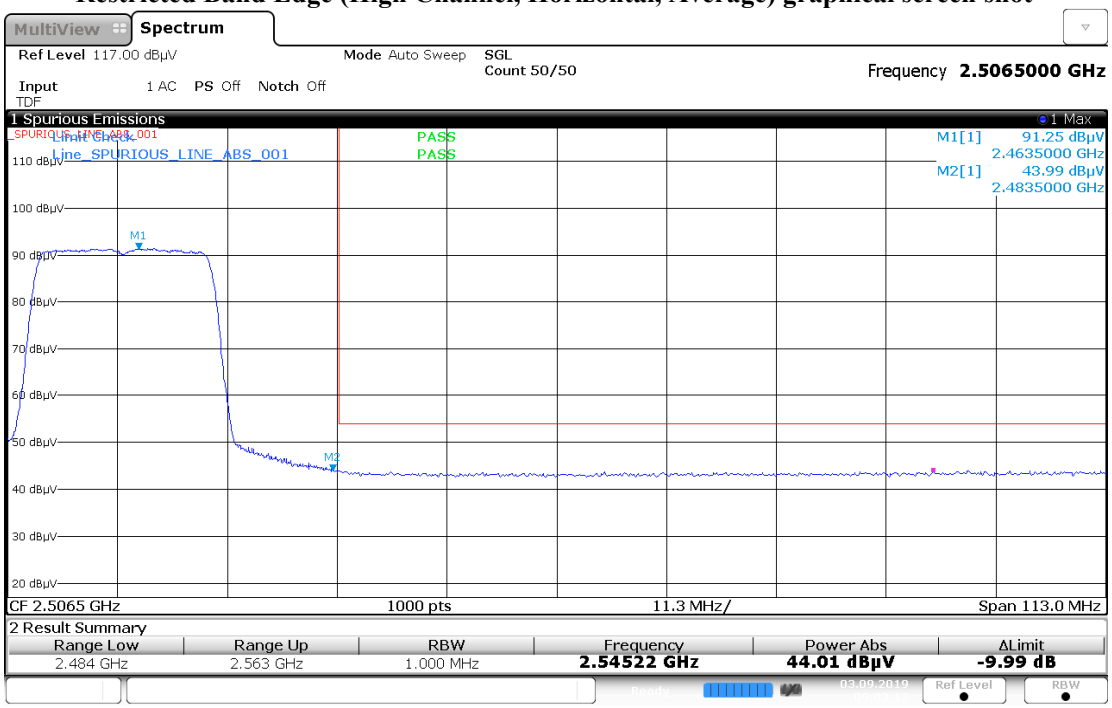
22:09:10 30.08.2019

Restricted Band Edge (High Channel, Vertical, Average) graphical screen shot



08:59:50 03.09.2019

Restricted Band Edge (High Channel, Horizontal, Average) graphical screen shot



09:03:12 03.09.2019

802.11b

Test: WIFI SAC Transmitter Radiated Emission
Model#: AAH02RDH9VA1AN S/N: 867TVPC207 EMC SR ID#: 17779-EMC-00027
Battery: PMNN4493A Accessory: PMAE4070A
Test Channel: Low Test Frequency: 2412.0000 MHz Test Standard: ANSI C63.10-2013
Worst Case Plane: X-Plane (802.11b)

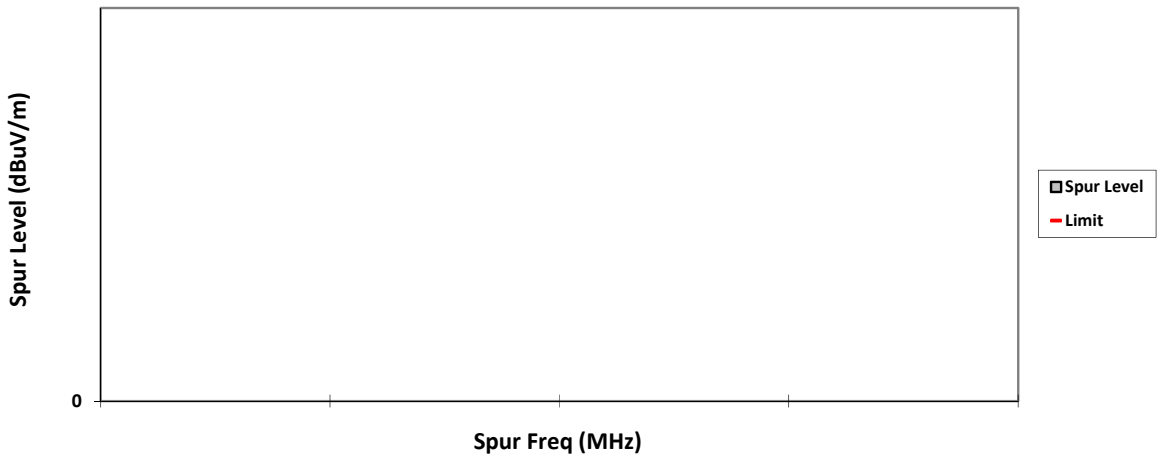
Radiated Emission (Low Channel) tabular data

Vertical Radiated Emission Result										
Spur Freq (MHz)	Spur level QPK (dBµV/m)	Spur level PK (dBµV/m)	Spur level AV (dBµV/m)	Limit QPK (dBµV/m)	Limit PK (dBµV/m)	Limit AV (dBµV/m)	Margin QPK (dBµV/m)	Margin PK (dBµV/m)	Margin AV (dBµV/m)	Carrier PK Power (dBµV/m)
4824	-	41.3197**	**	-	74	54	-	32.68**	-	-
7236	-	46.3793**	**	-	74	54	-	27.62**	-	-
9648	-	49.7187**	**	-	74	54	-	24.28**	-	-
12060	-	52.0843**	**	-	74	54	-	21.92**	-	-
14472	-	53.3228**	**	-	74	54	-	20.68**	-	-
16884	-	54.8574**	**	-	74	54	-	19.14**	-	-
19296	-	34.4958**	**	-	74	54	-	39.50**	-	-
21708	-	34.8759**	**	-	74	54	-	39.12**	-	-
24120	-	35.7201**	**	-	74	54	-	38.28**	-	-
Horizontal Radiated Emission Result										
4824	-	40.8743**	**	-	74	54	-	33.13**	-	-
7236	-	46.9193**	**	-	74	54	-	27.08**	-	-
9648	-	49.5073**	**	-	74	54	-	24.49**	-	-
12060	-	51.8982**	**	-	74	54	-	22.10**	-	-
14472	-	53.0606**	**	-	74	54	-	20.94**	-	-
16884	-	55.6606**	**	-	74	54	-	18.34**	-	-
19296	-	34.8241**	**	-	74	54	-	39.18**	-	-
21708	-	34.8181**	**	-	74	54	-	39.18**	-	-
24120	-	35.6296**	**	-	74	54	-	38.37**	-	-

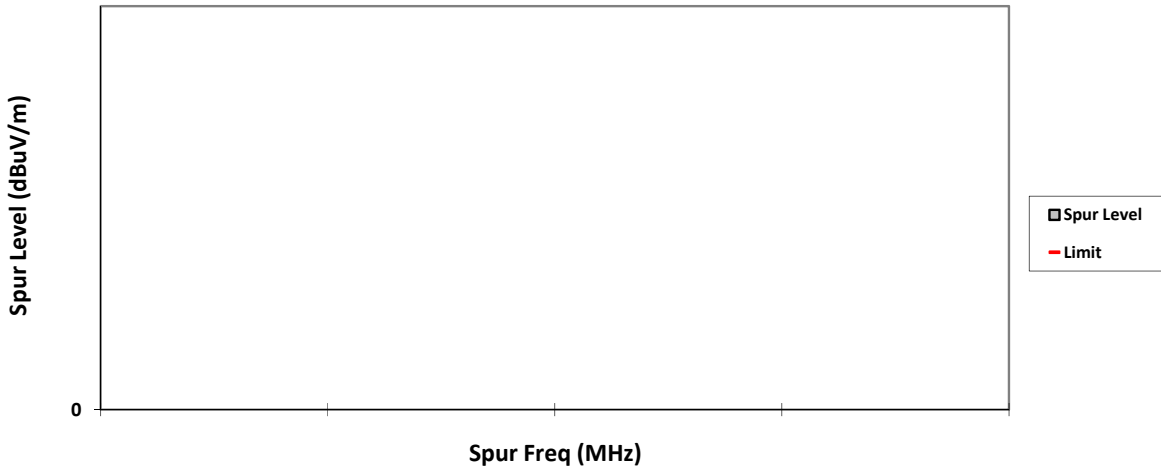
Remarks: Pass Result	Marginal Result	Fail Result

Temperature (degC): 23.3 **Humidity (%): 70.2**
Test Performed by: Nazrin&Azil **Test Date: Sun, Sep 01, 2019**
System MU: 5.01dB

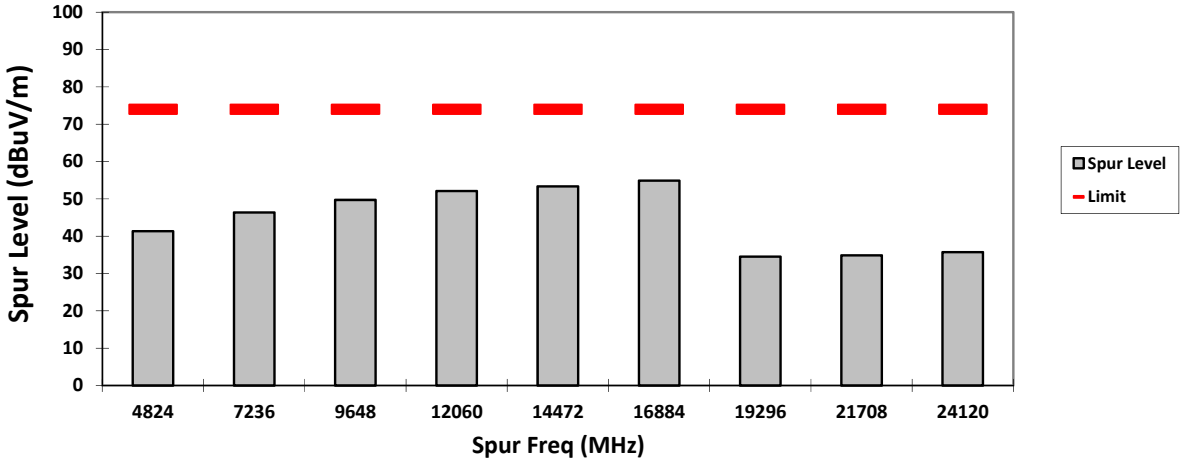
VERTICAL, QPK



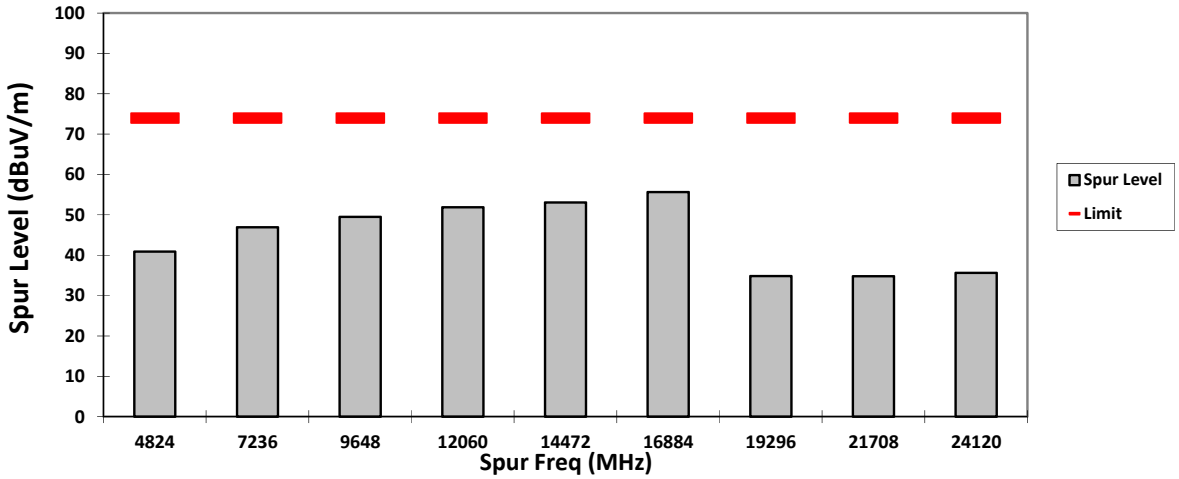
HORIZONTAL, QPK



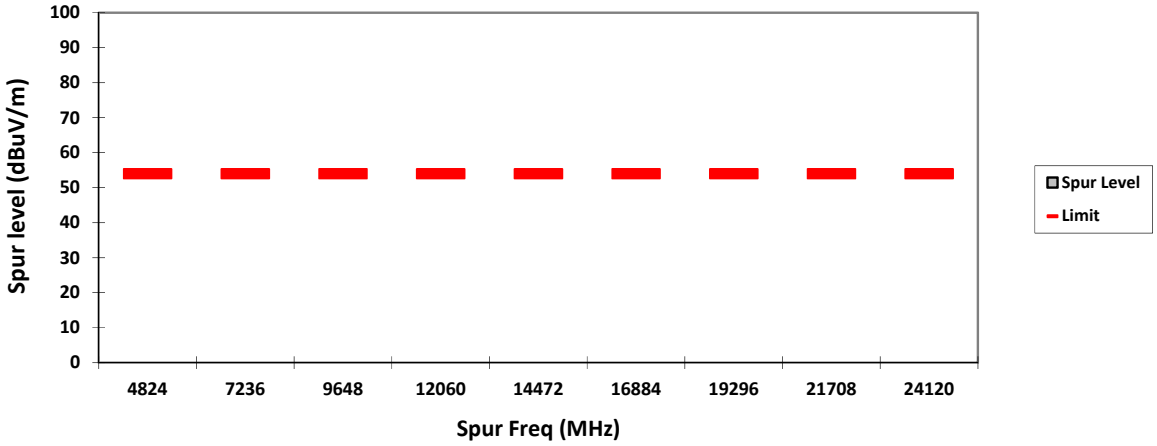
VERTICAL, PK



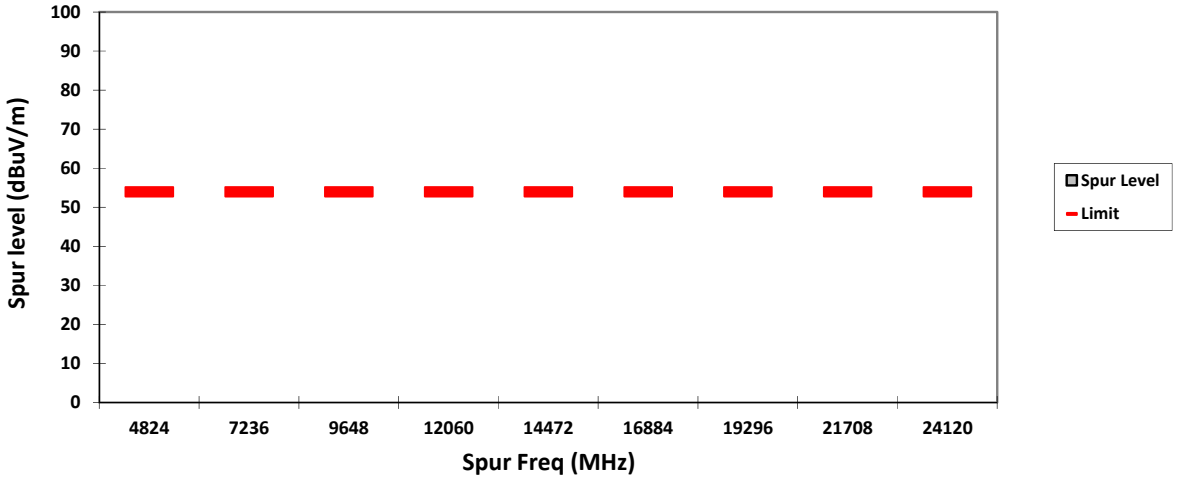
HORIZONTAL, PK



VERTICAL, AV



HORIZONTAL, AV



Test: WIFI SAC Transmitter Radiated Emission
Model#: AAH02RDH9VA1AN S/N: 867TVPC207 EMC SR ID#: 17779-EMC-00027
Battery: PMNN4493A Accessory: PMAE4070A
Test Channel: Mid Test Frequency: 2437.0000 MHz Test Standard: ANSI C63.10-2013
Worst Case Plane: X-Plane (802.11b)

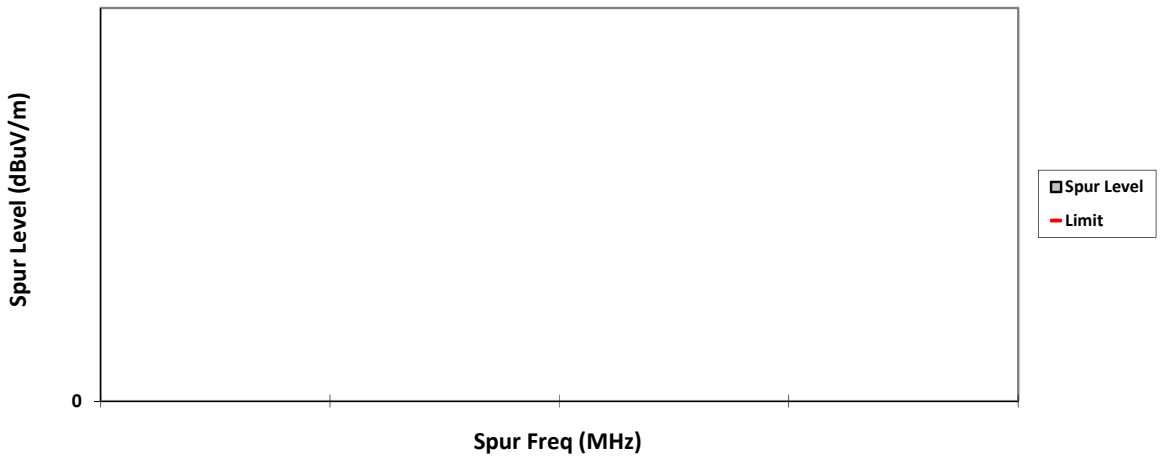
Radiated Emission (Mid Channel) tabular data

Vertical Radiated Emission Result										
Spur Freq (MHz)	Spur level QPK (dBµV/m)	Spur level PK (dBµV/m)	Spur level AV (dBµV/m)	Limit QPK (dBµV/m)	Limit PK (dBµV/m)	Limit AV (dBµV/m)	Margin QPK (dBµV/m)	Margin PK (dBµV/m)	Margin AV (dBµV/m)	Carrier PK Power (dBµV/m)
4874	-	40.9539**	**	-	74	54	-	33.05**	-	-
7311	-	46.4017**	**	-	74	54	-	27.60**	-	-
9748	-	49.5134**	**	-	74	54	-	24.49**	-	-
12185	-	51.3092**	**	-	74	54	-	22.69**	-	-
14622	-	52.7792**	**	-	74	54	-	21.22**	-	-
17059	-	54.8953**	**	-	74	54	-	19.10**	-	-
19496	-	33.5224**	**	-	74	54	-	40.48**	-	-
21933	-	35.1685**	**	-	74	54	-	38.83**	-	-
24370	-	35.3810**	**	-	74	54	-	38.62**	-	-
Horizontal Radiated Emission Result										
4874	-	41.0082**	**	-	74	54	-	32.99**	-	-
7311	-	46.6817**	**	-	74	54	-	27.32**	-	-
9748	-	49.4910**	**	-	74	54	-	24.51**	-	-
12185	-	50.8786**	**	-	74	54	-	23.12**	-	-
14622	-	53.4737**	**	-	74	54	-	20.53**	-	-
17059	-	55.2883**	**	-	74	54	-	18.71**	-	-
19496	-	33.4901**	**	-	74	54	-	40.51**	-	-
21933	-	35.4092**	**	-	74	54	-	38.59**	-	-
24370	-	35.8073**	**	-	74	54	-	38.19**	-	-

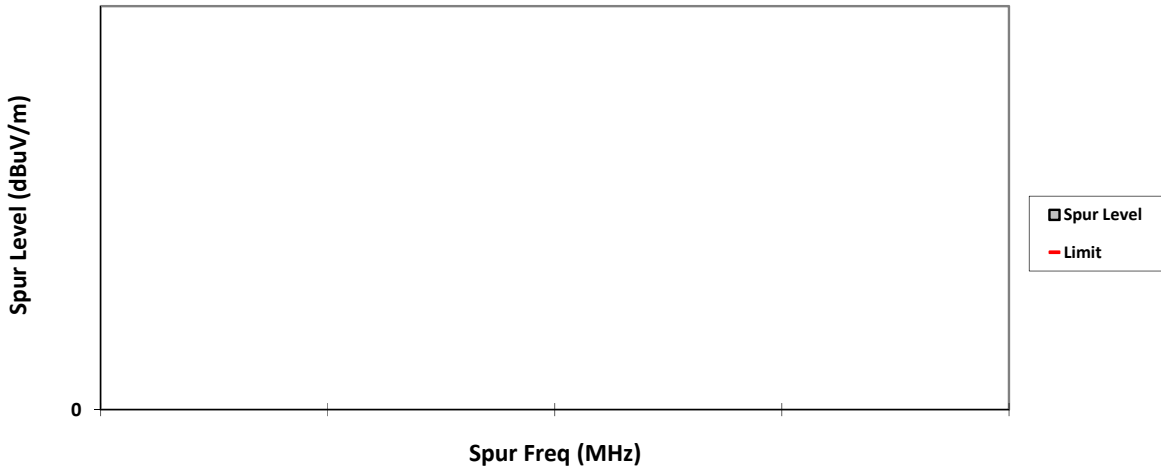
Remarks: Pass Result	Marginal Result	Fail Result

Temperature (degC): 23.3 **Humidity (%): 70.2**
Test Performed by: Nazrin&Azil **Test Date: Sun, Sep 01, 2019**
System MU: 5.01dB

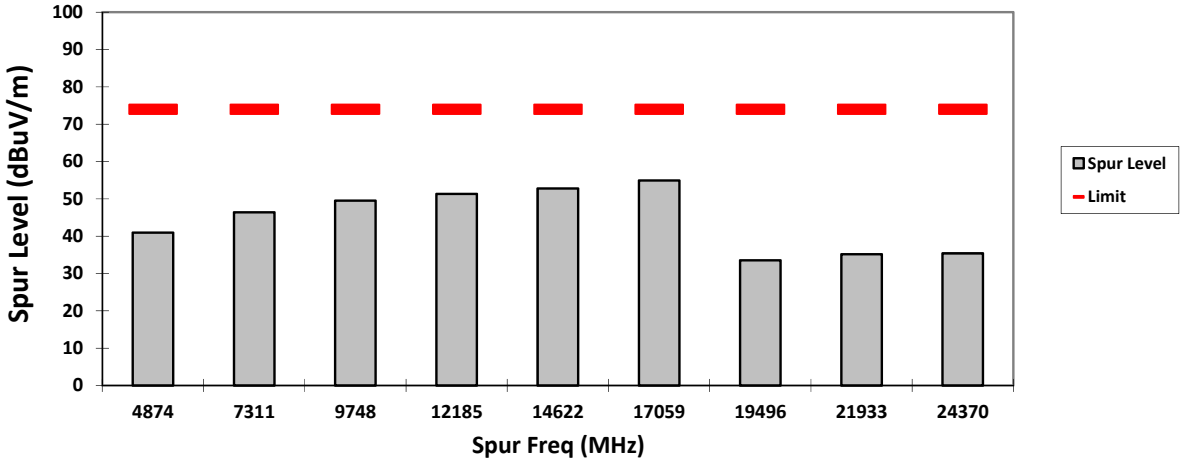
VERTICAL, QPK



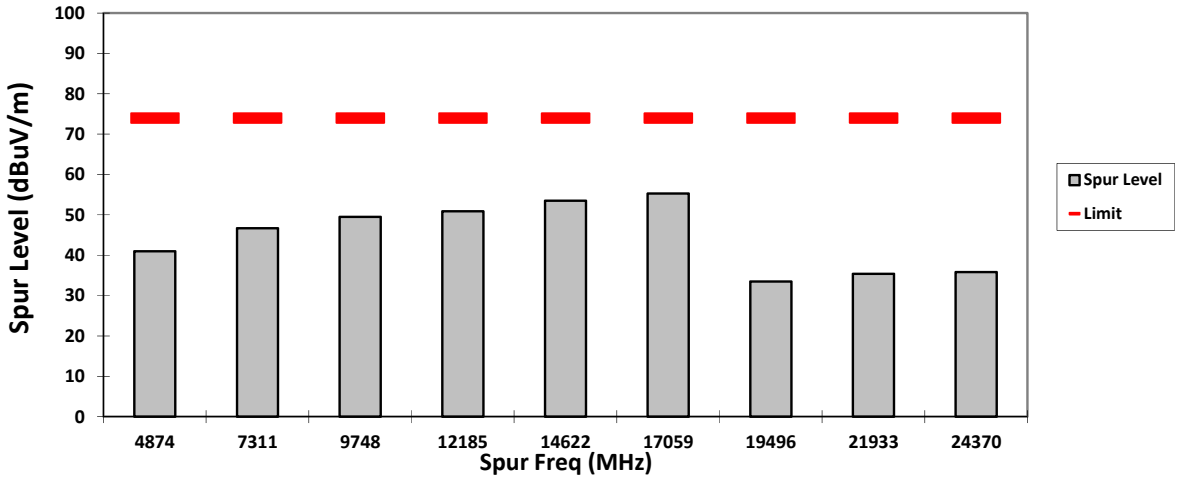
HORIZONTAL, QPK



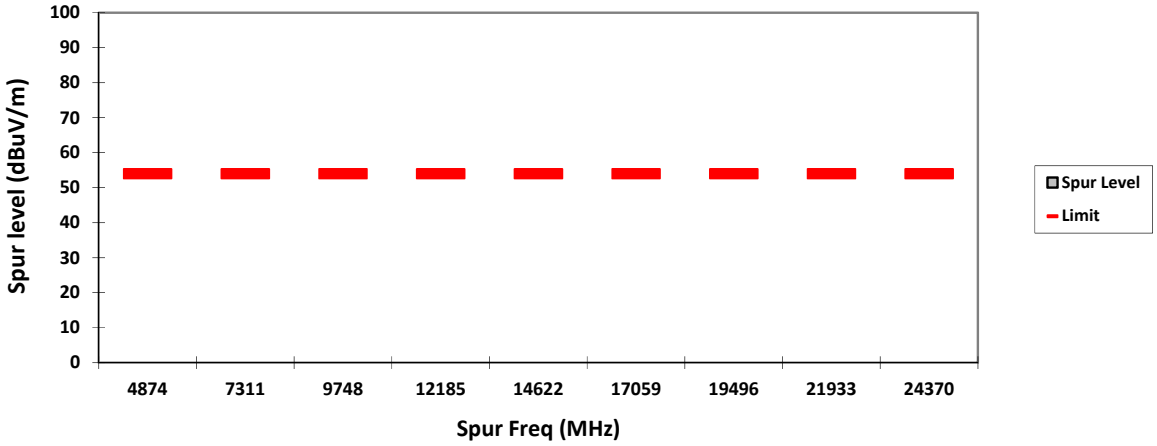
VERTICAL, PK



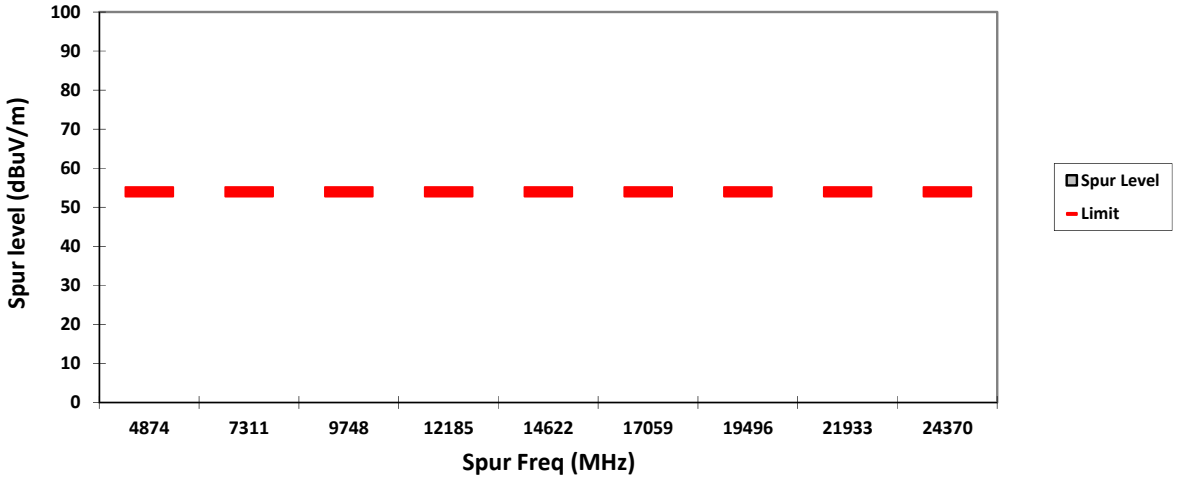
HORIZONTAL, PK



VERTICAL, AV



HORIZONTAL, AV



Test: WIFI SAC Transmitter Radiated Emission
Model#: AAH02RDH9VA1AN S/N: 867TVPC207 EMC SR ID#: 17779-EMC-00027
Battery: PMNN4493A Accessory: PMAE4070A
Test Channel: High Test Frequency: 2462.0000 MHz Test Standard: ANSI C63.10-2013
Worst Case Plane: X-Plane (802.11b)

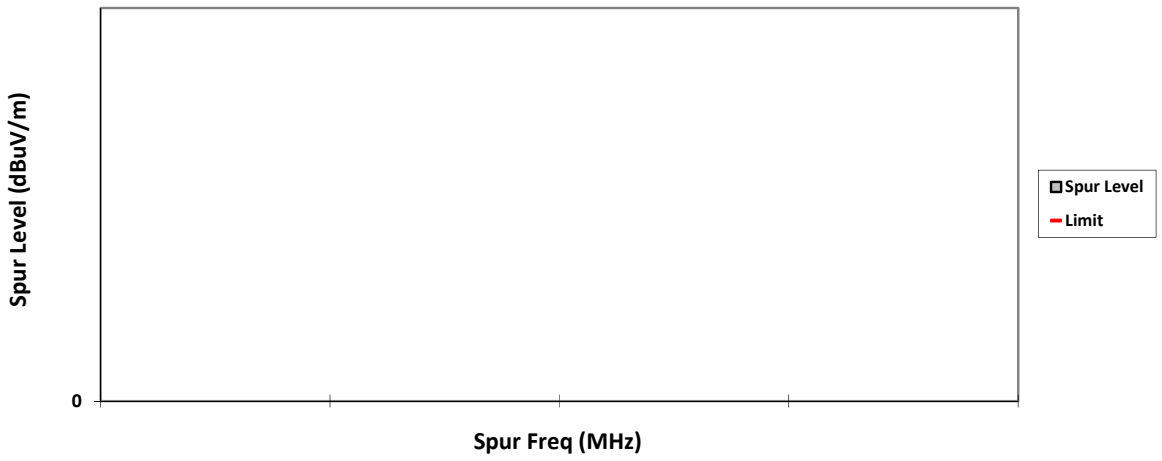
Radiated Emission (High Channel) tabular data

Vertical Radiated Emission Result										
Spur Freq (MHz)	Spur level QPK (dBµV/m)	Spur level PK (dBµV/m)	Spur level AV (dBµV/m)	Limit QPK (dBµV/m)	Limit PK (dBµV/m)	Limit AV (dBµV/m)	Margin QPK (dBµV/m)	Margin PK (dBµV/m)	Margin AV (dBµV/m)	Carrier PK Power (dBµV/m)
4924	-	42.3326**	**	-	74	54	-	31.67**	-	-
7386	-	46.9743**	**	-	74	54	-	27.03**	-	-
9848	-	49.0359**	**	-	74	54	-	24.96**	-	-
12310	-	50.7095**	**	-	74	54	-	23.29**	-	-
14772	-	53.4631**	**	-	74	54	-	20.54**	-	-
17234	-	55.3491**	**	-	74	54	-	18.65**	-	-
19696	-	34.4588**	**	-	74	54	-	39.54**	-	-
22158	-	36.0504**	**	-	74	54	-	37.95**	-	-
24620	-	36.6916**	**	-	74	54	-	37.31**	-	-
Horizontal Radiated Emission Result										
4924	-	40.9186**	**	-	74	54	-	33.08**	-	-
7386	-	46.4046**	**	-	74	54	-	27.60**	-	-
9848	-	49.0351**	**	-	74	54	-	24.96**	-	-
12310	-	51.0788**	**	-	74	54	-	22.92**	-	-
14772	-	53.0652**	**	-	74	54	-	20.93**	-	-
17234	-	55.5085**	**	-	74	54	-	18.49**	-	-
19696	-	33.9692**	**	-	74	54	-	40.03**	-	-
22158	-	35.1866**	**	-	74	54	-	38.81**	-	-
24620	-	36.6742**	**	-	74	54	-	37.33**	-	-

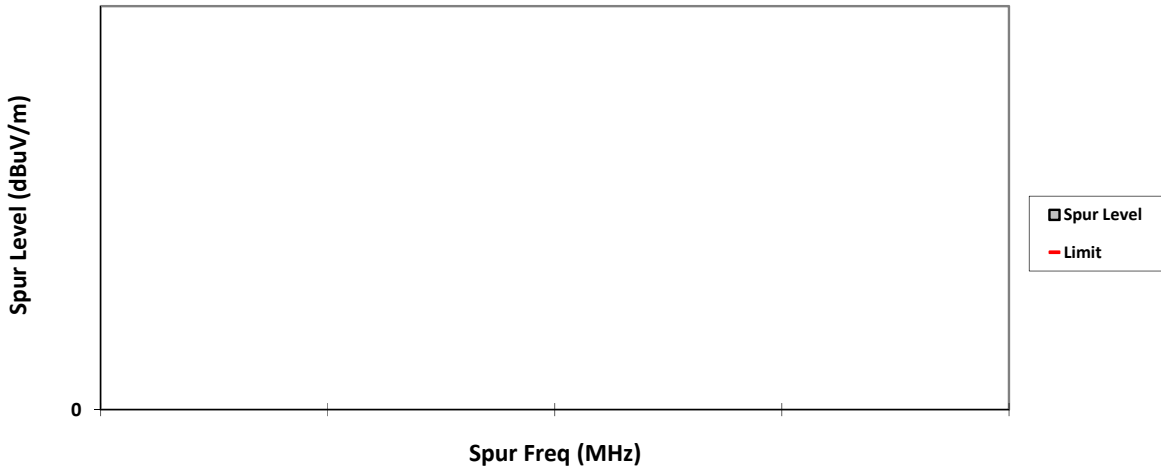
Remarks: Pass Result	Marginal Result	Fail Result

Temperature (degC): 23.3 **Humidity (%): 70.2**
Test Performed by: Nazrin&Azil **Test Date: Sun, Sep 01, 2019**
System MU: 5.01dB

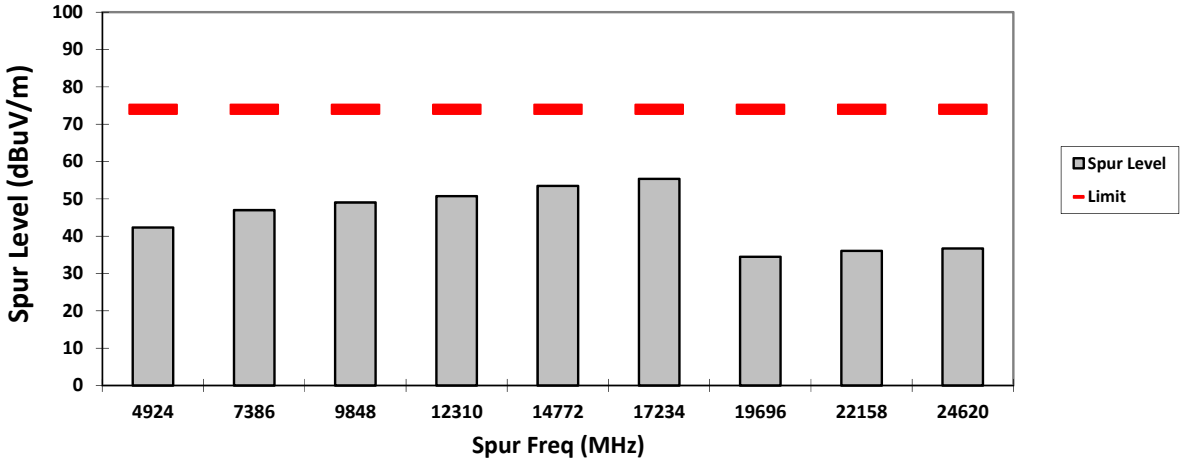
VERTICAL, QPK



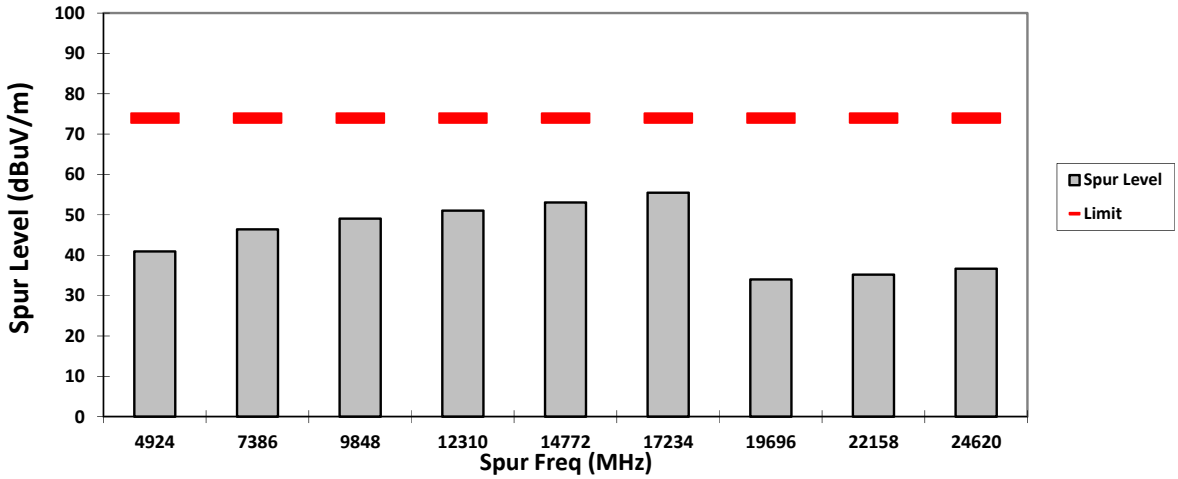
HORIZONTAL, QPK



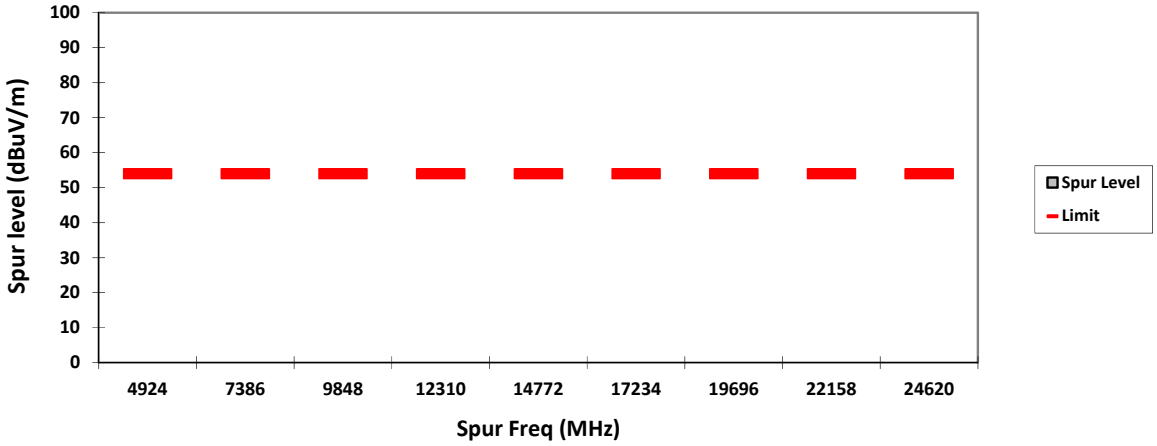
VERTICAL, PK



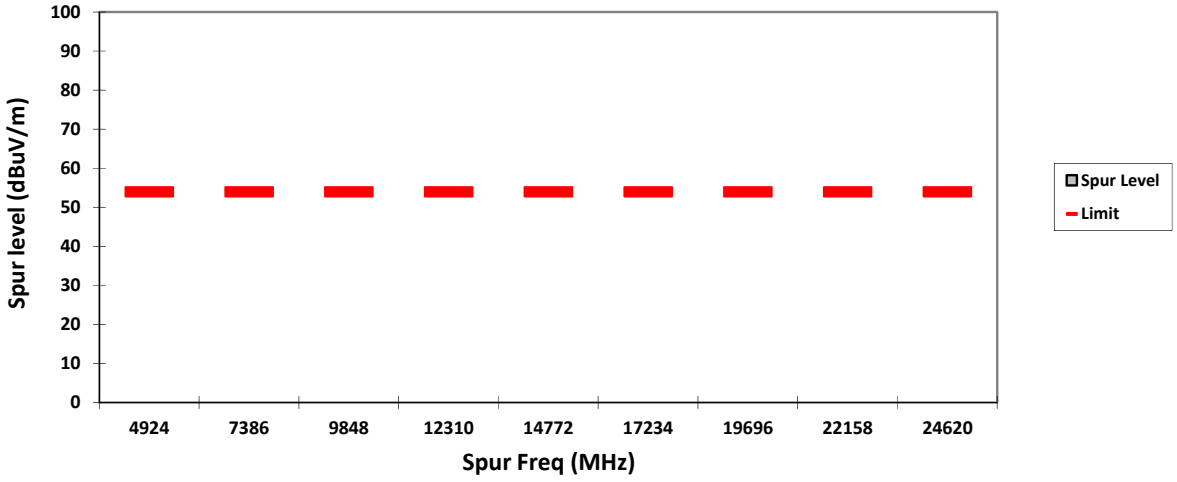
HORIZONTAL, PK



VERTICAL, AV



HORIZONTAL, AV



802.11g

Test: WIFI SAC Transmitter Radiated Emission
Model#: AAH02RDH9VA1AN S/N: 867TVPC207 EMC SR ID#: 17779-EMC-00027
Battery: PMNN4493A Accessory: PMAE4070A
Test Channel: Low Test Frequency: 2412.0000 MHz Test Standard: ANSI C63.10-2013
Worst Case Plane: X-Plane (802.11g)

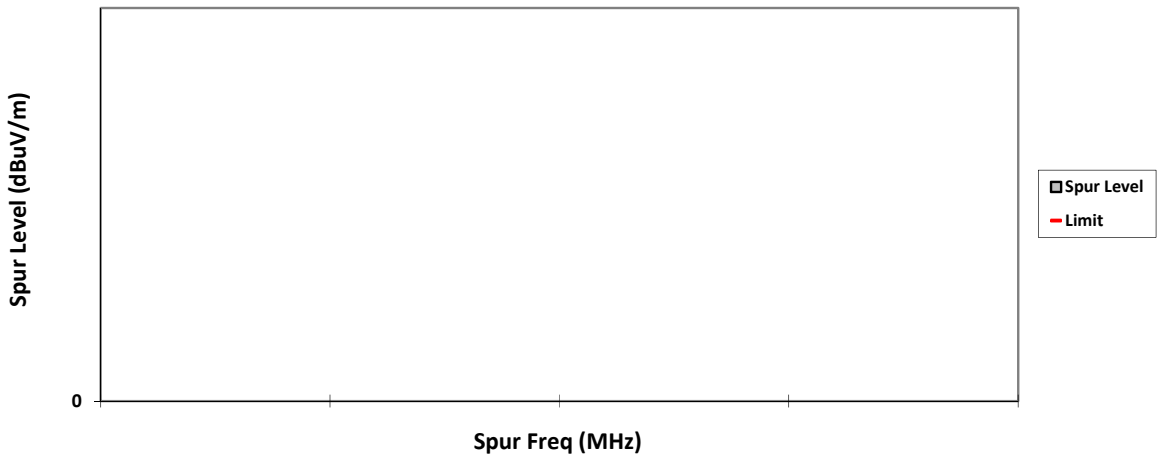
Radiated Emission (Low Channel) tabular data

Vertical Radiated Emission Result										
Spur Freq (MHz)	Spur level QPK (dBµV/m)	Spur level PK (dBµV/m)	Spur level AV (dBµV/m)	Limit QPK (dBµV/m)	Limit PK (dBµV/m)	Limit AV (dBµV/m)	Margin QPK (dBµV/m)	Margin PK (dBµV/m)	Margin AV (dBµV/m)	Carrier PK Power (dBµV/m)
4824	-	41.6178**	**	-	74	54	-	32.38**	-	-
7236	-	46.0848**	**	-	74	54	-	27.92**	-	-
9648	-	49.1668**	**	-	74	54	-	24.83**	-	-
12060	-	51.9661**	**	-	74	54	-	22.03**	-	-
14472	-	53.4753**	**	-	74	54	-	20.52**	-	-
16884	-	55.9150**	**	-	74	54	-	18.09**	-	-
19296	-	34.4982**	**	-	74	54	-	39.50**	-	-
21708	-	34.9161**	**	-	74	54	-	39.08**	-	-
24120	-	35.7732**	**	-	74	54	-	38.23**	-	-
Horizontal Radiated Emission Result										
4824	-	41.4344**	**	-	74	54	-	32.57**	-	-
7236	-	45.6321**	**	-	74	54	-	28.37**	-	-
9648	-	48.5645**	**	-	74	54	-	25.44**	-	-
12060	-	51.8741**	**	-	74	54	-	22.13**	-	-
14472	-	53.2240**	**	-	74	54	-	20.78**	-	-
16884	-	55.7050**	**	-	74	54	-	18.30**	-	-
19296	-	34.4356**	**	-	74	54	-	39.56**	-	-
21708	-	35.1482**	**	-	74	54	-	38.85**	-	-
24120	-	35.0656**	**	-	74	54	-	38.93**	-	-

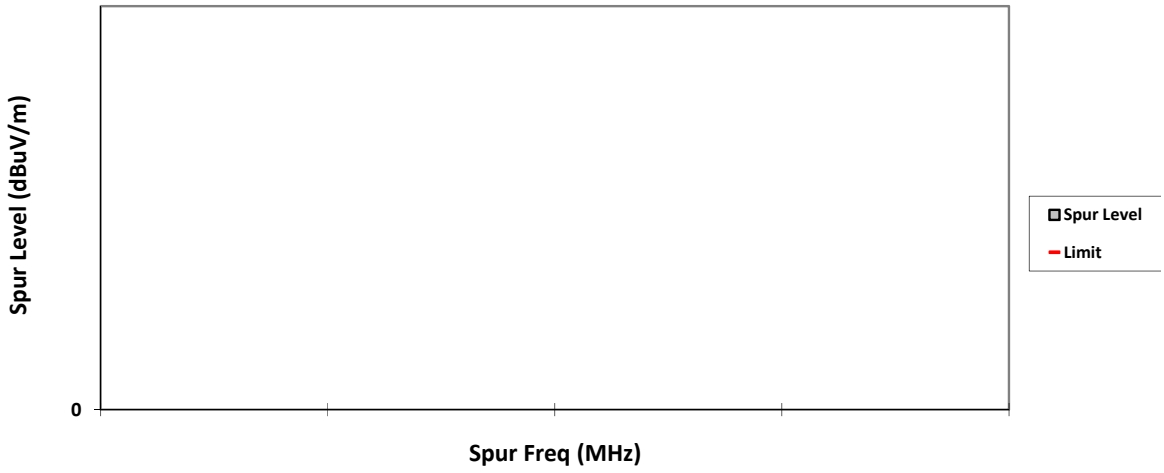
Remarks: Pass Result	Marginal Result	Fail Result

Temperature (degC): 23.3 **Humidity (%): 70.2**
Test Performed by: Nazrin&Azil **Test Date: Sun, Sep 01, 2019**
System MU: 5.01dB

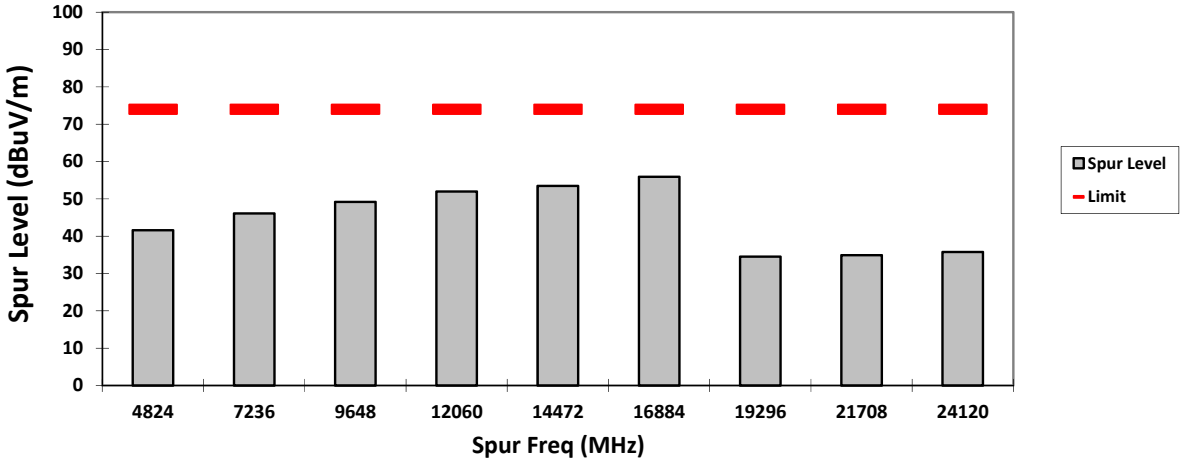
VERTICAL, QPK



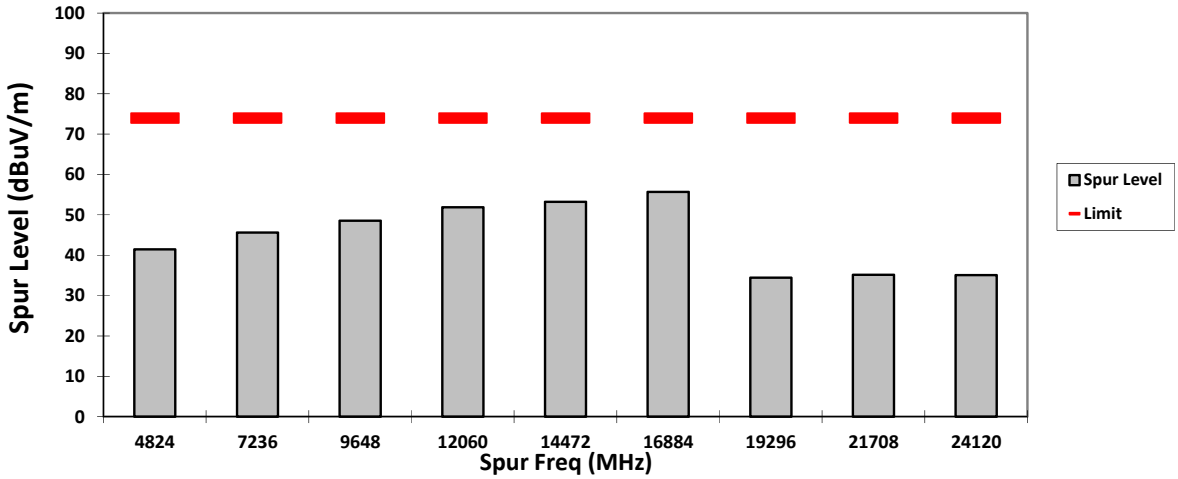
HORIZONTAL, QPK



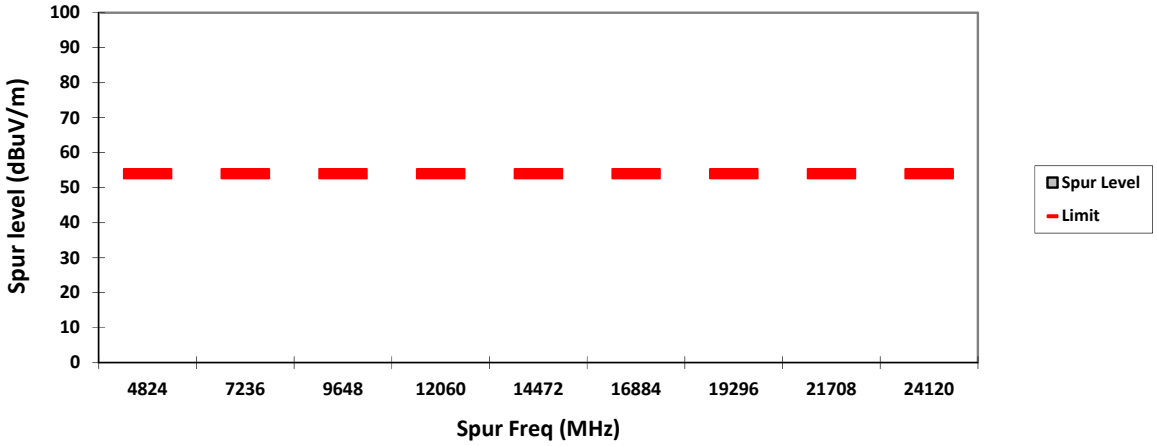
VERTICAL, PK



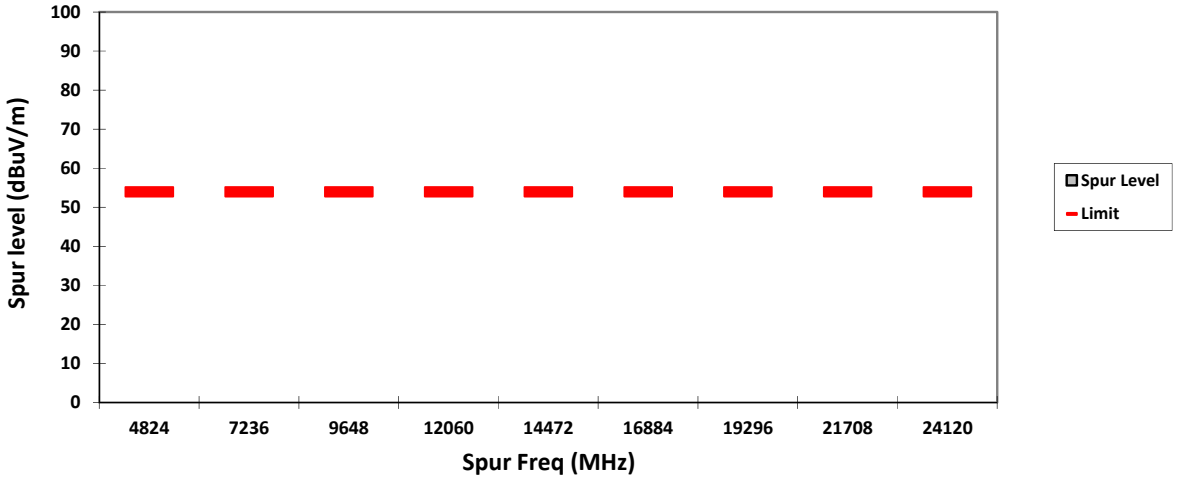
HORIZONTAL, PK



VERTICAL, AV



HORIZONTAL, AV



Test: WIFI SAC Transmitter Radiated Emission
Model#: AAH02RDH9VA1AN S/N: 867TVPC207 EMC SR ID#: 17779-EMC-00027
Battery: PMNN4493A Accessory: PMAE4070A
Test Channel: Mid Test Frequency: 2437.0000 MHz Test Standard: ANSI C63.10-2013
Worst Case Plane: X-Plane (802.11g)

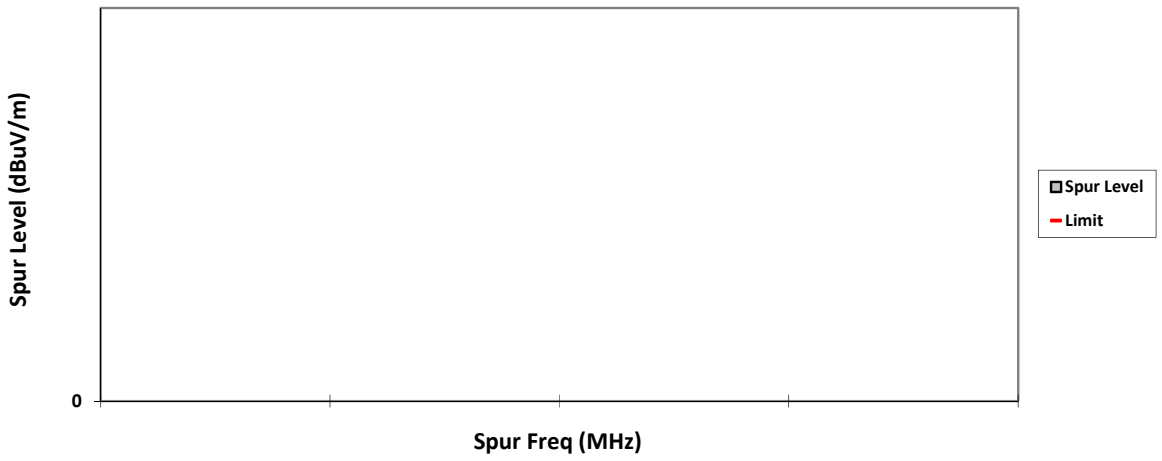
Radiated Emission (Mid Channel) tabular data

Vertical Radiated Emission Result										
Spur Freq (MHz)	Spur level QPK (dBµV/m)	Spur level PK (dBµV/m)	Spur level AV (dBµV/m)	Limit QPK (dBµV/m)	Limit PK (dBµV/m)	Limit AV (dBµV/m)	Margin QPK (dBµV/m)	Margin PK (dBµV/m)	Margin AV (dBµV/m)	Carrier PK Power (dBµV/m)
4874	-	41.6839**	**	-	74	54	-	32.32**	-	-
7311	-	45.8577**	**	-	74	54	-	28.14**	-	-
9748	-	49.1823**	**	-	74	54	-	24.82**	-	-
12185	-	52.5554**	**	-	74	54	-	21.44**	-	-
14622	-	53.0706**	**	-	74	54	-	20.93**	-	-
17059	-	55.0000**	**	-	74	54	-	19.00**	-	-
19496	-	33.8765**	**	-	74	54	-	40.12**	-	-
21933	-	35.0899**	**	-	74	54	-	38.91**	-	-
24370	-	35.9855**	**	-	74	54	-	38.01**	-	-
Horizontal Radiated Emission Result										
4874	-	41.3567**	**	-	74	54	-	32.64**	-	-
7311	-	45.7388**	**	-	74	54	-	28.26**	-	-
9748	-	50.0150**	**	-	74	54	-	23.98**	-	-
12185	-	52.2726**	**	-	74	54	-	21.73**	-	-
14622	-	53.1493**	**	-	74	54	-	20.85**	-	-
17059	-	55.2323**	**	-	74	54	-	18.77**	-	-
19496	-	34.6349**	**	-	74	54	-	39.37**	-	-
21933	-	35.6900**	**	-	74	54	-	38.31**	-	-
24370	-	36.0643**	**	-	74	54	-	37.94**	-	-

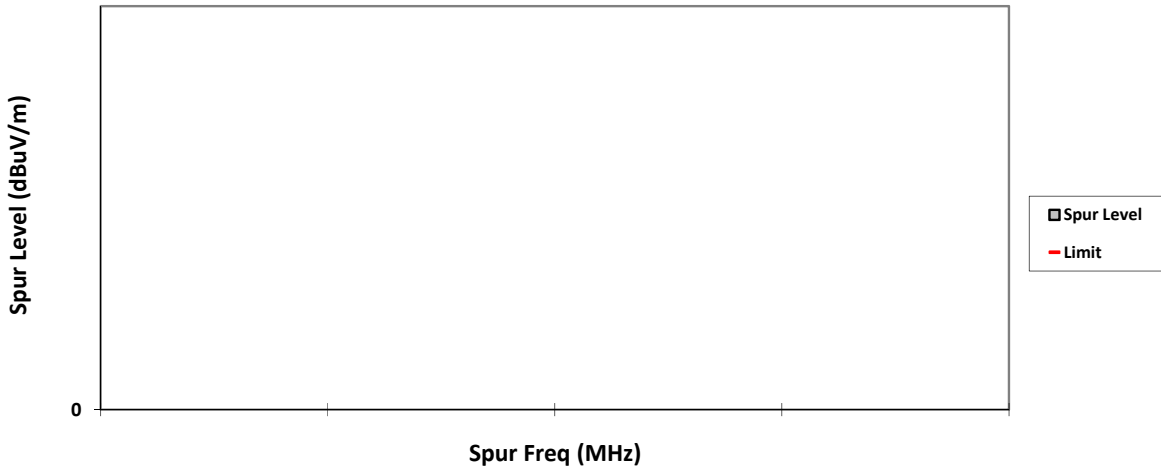
Remarks: Pass Result	Marginal Result	Fail Result

Temperature (degC): 23.3 **Humidity (%): 70.2**
Test Performed by: Nazrin&Azil **Test Date: Sun, Sep 01, 2019**
System MU: 5.01dB

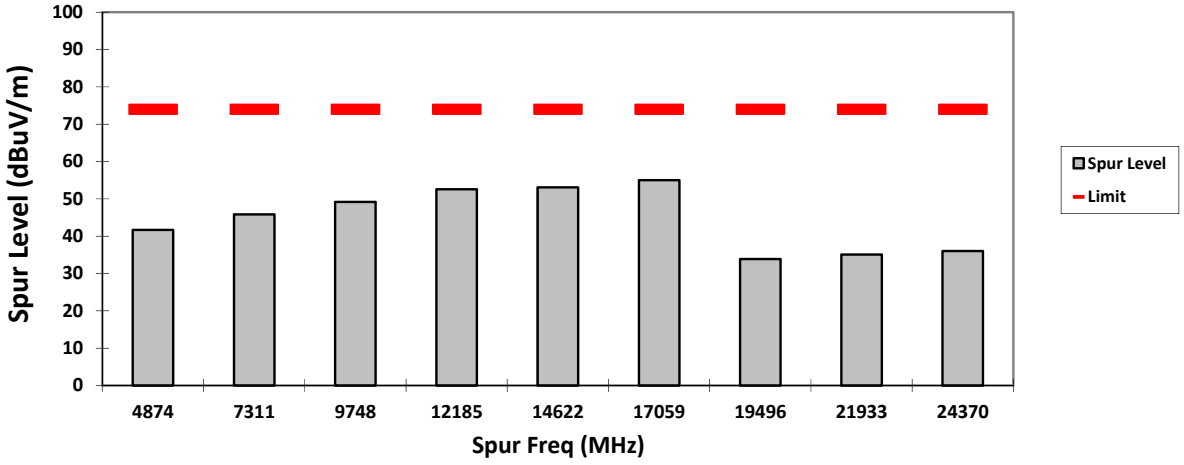
VERTICAL, QPK



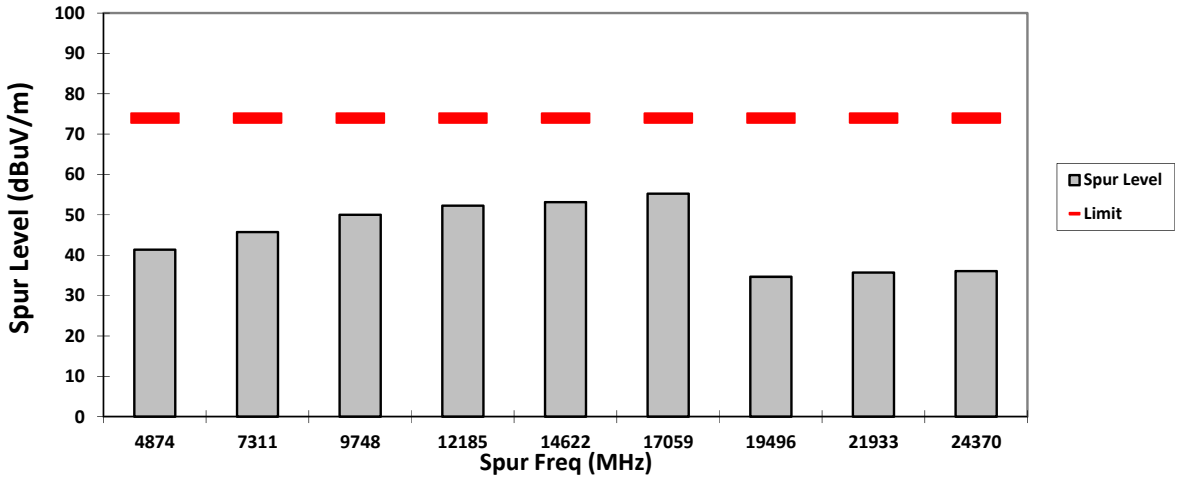
HORIZONTAL, QPK



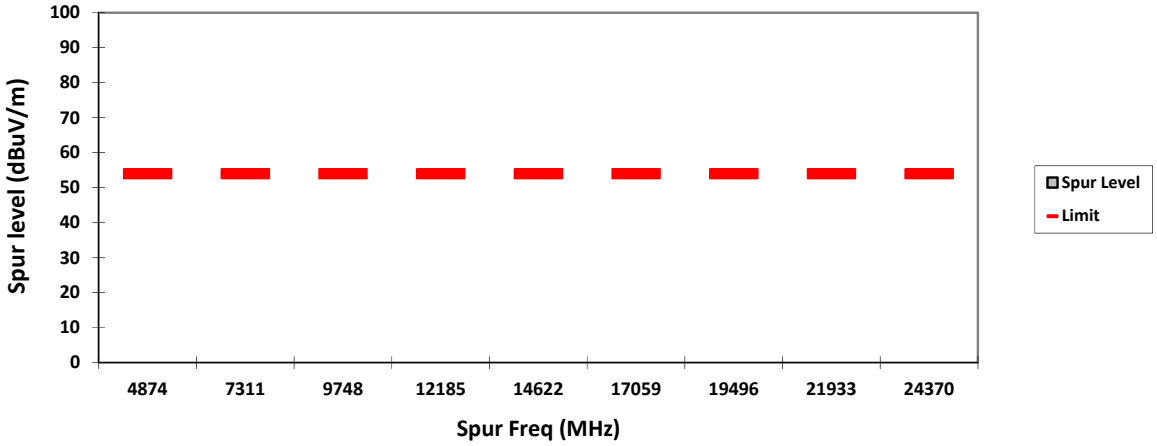
VERTICAL, PK



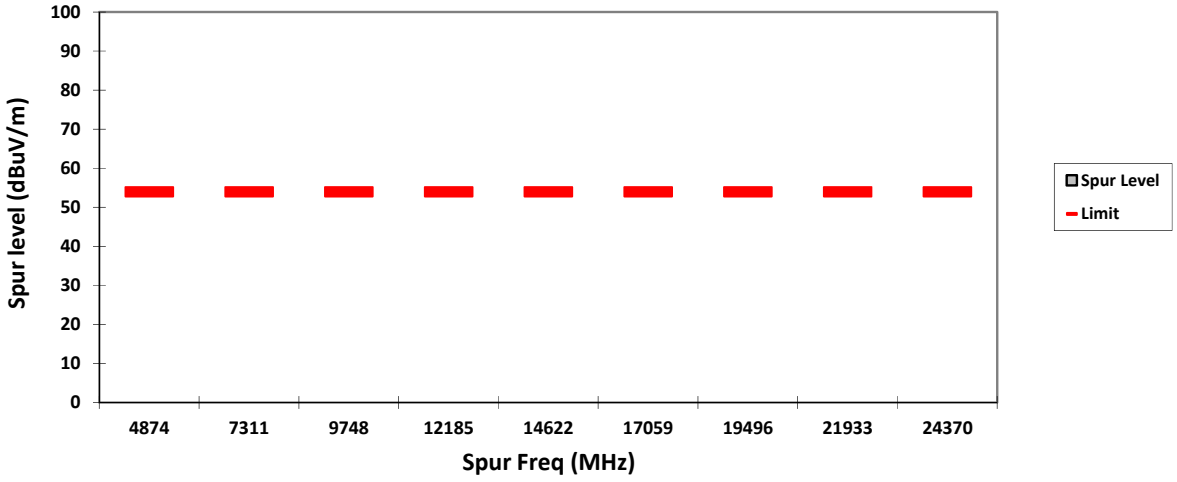
HORIZONTAL, PK



VERTICAL, AV



HORIZONTAL, AV



Test: WIFI SAC Transmitter Radiated Emission
Model#: AAH02RDH9VA1AN S/N: 867TVPC207 EMC SR ID#: 17779-EMC-00027
Battery: PMNN4493A Accessory: PMAE4070A
Test Channel: High Test Frequency: 2462.0000 MHz Test Standard: ANSI C63.10-2013
Worst Case Plane: X-Plane (802.11g)

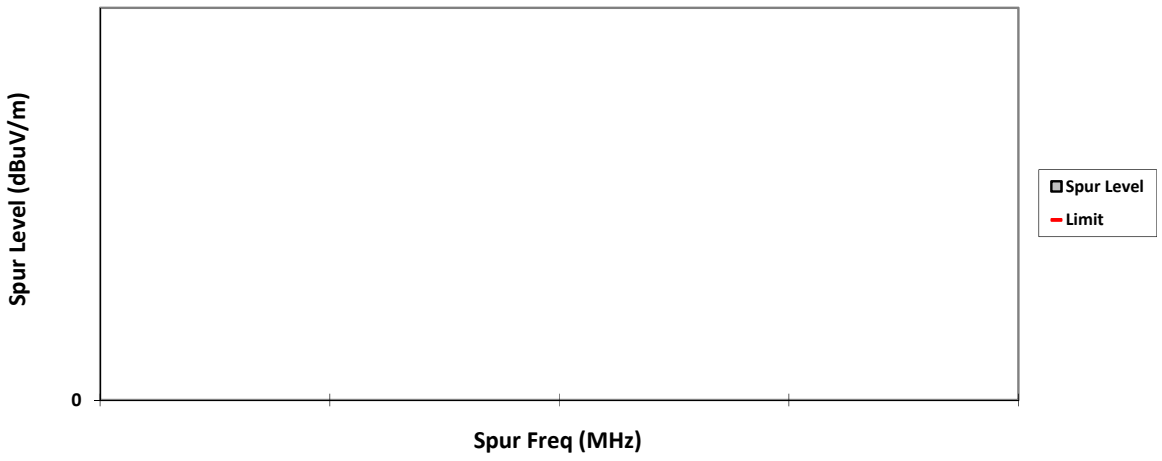
Radiated Emission (High Channel) tabular data

Vertical Radiated Emission Result										
Spur Freq (MHz)	Spur level QPK (dBµV/m)	Spur level PK (dBµV/m)	Spur level AV (dBµV/m)	Limit QPK (dBµV/m)	Limit PK (dBµV/m)	Limit AV (dBµV/m)	Margin QPK (dBµV/m)	Margin PK (dBµV/m)	Margin AV (dBµV/m)	Carrier PK Power (dBµV/m)
4924	-	41.5636**	**	-	74	54	-	32.44**	-	-
7386	-	46.2733**	**	-	74	54	-	27.73**	-	-
9848	-	50.4601**	**	-	74	54	-	23.54**	-	-
12310	-	51.1855**	**	-	74	54	-	22.81**	-	-
14772	-	52.8779**	**	-	74	54	-	21.12**	-	-
17234	-	55.8409**	**	-	74	54	-	18.16**	-	-
19696	-	34.0712**	**	-	74	54	-	39.93**	-	-
22158	-	35.1314**	**	-	74	54	-	38.87**	-	-
24620	-	36.4844**	**	-	74	54	-	37.52**	-	-
Horizontal Radiated Emission Result										
4924	-	41.4166**	**	-	74	54	-	32.58**	-	-
7386	-	46.6902**	**	-	74	54	-	27.31**	-	-
9848	-	49.2120**	**	-	74	54	-	24.79**	-	-
12310	-	51.0371**	**	-	74	54	-	22.96**	-	-
14772	-	53.1652**	**	-	74	54	-	20.83**	-	-
17234	-	55.3886**	**	-	74	54	-	18.61**	-	-
19696	-	35.1610**	**	-	74	54	-	38.84**	-	-
22158	-	35.3759**	**	-	74	54	-	38.62**	-	-
24620	-	36.9032**	**	-	74	54	-	37.10**	-	-

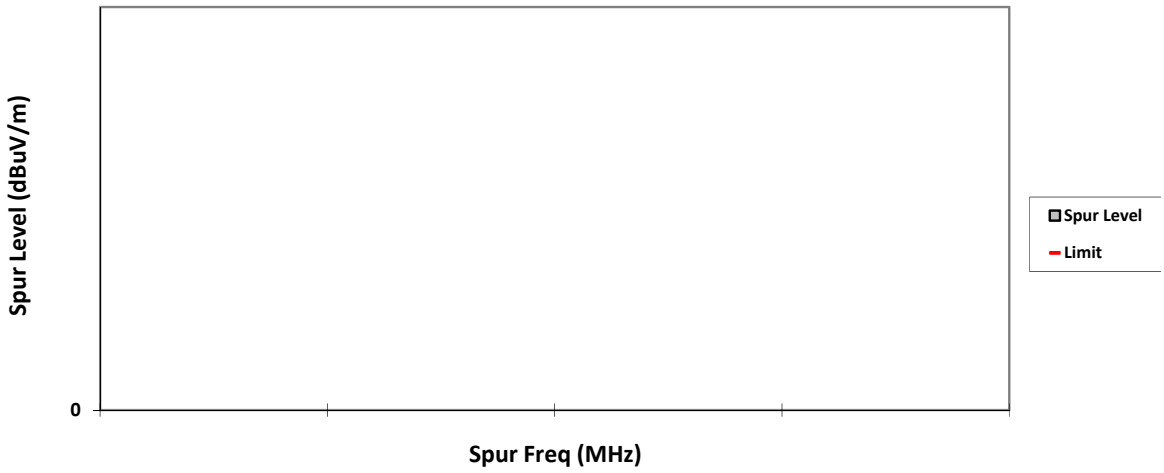
Remarks: Pass Result	Marginal Result	Fail Result

Temperature (degC): 23.3 **Humidity (%): 70.2**
Test Performed by: Nazrin&Azil **Test Date: Sun, Sep 01, 2019**
System MU: 5.01dB

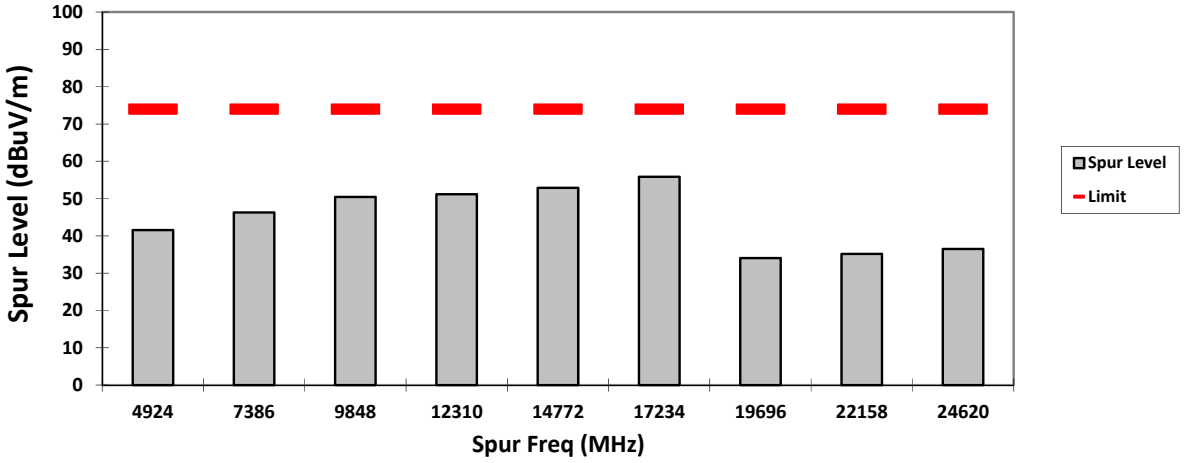
VERTICAL, QPK



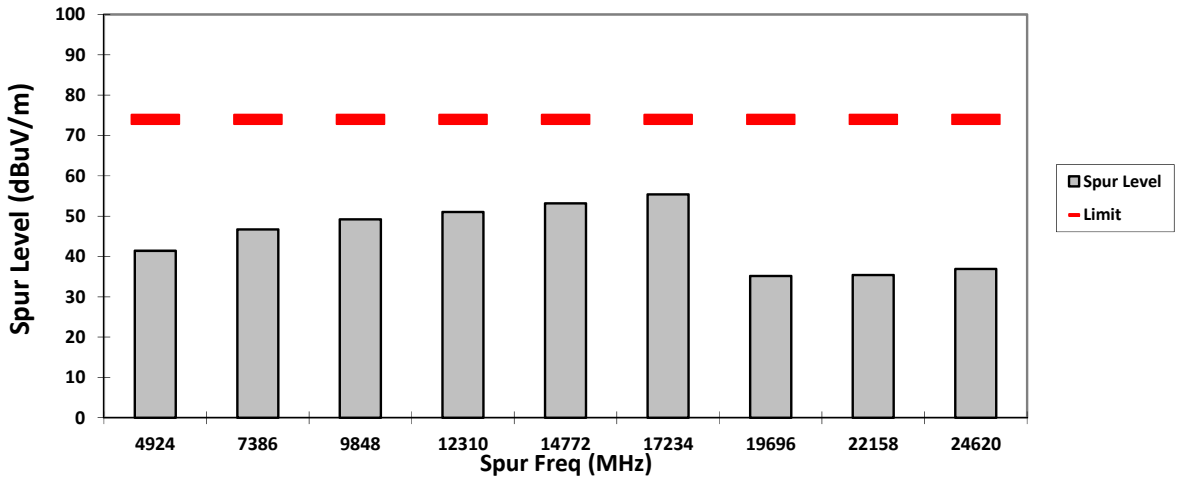
HORIZONTAL, QPK



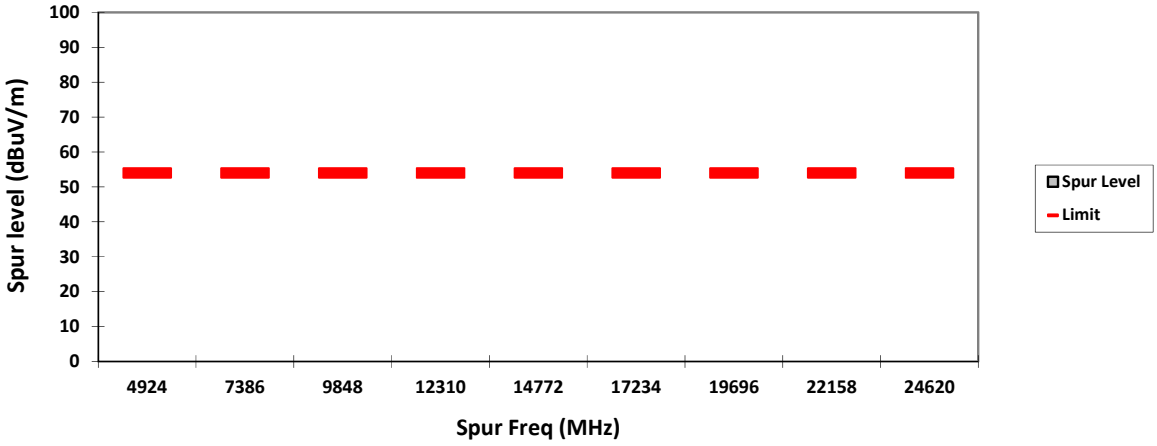
VERTICAL, PK



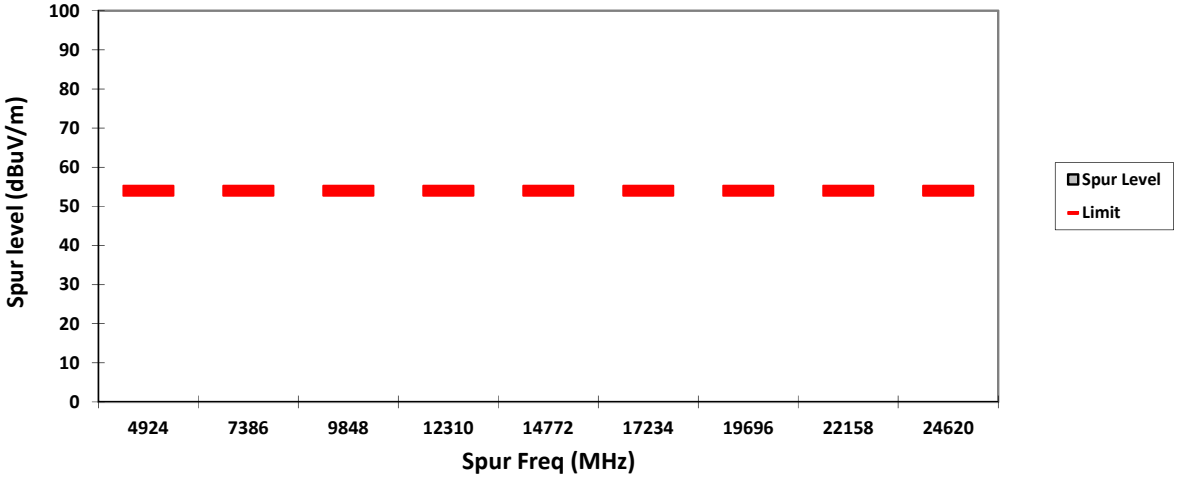
HORIZONTAL, PK



VERTICAL, AV



HORIZONTAL, AV



802.11n (HT20)

AAH02RDH9VA1AN S/N: 867TVPC207 EMC SR ID#: 17779-EMC-00027
Battery: PMNN4493A Accessory: PMAE4070A
Test Channel: Low Test Frequency: 2412.0000 MHz Test Standard: ANSI C63.10-2013
Worst Case Plane: X-Plane (802.11n 20MHz)

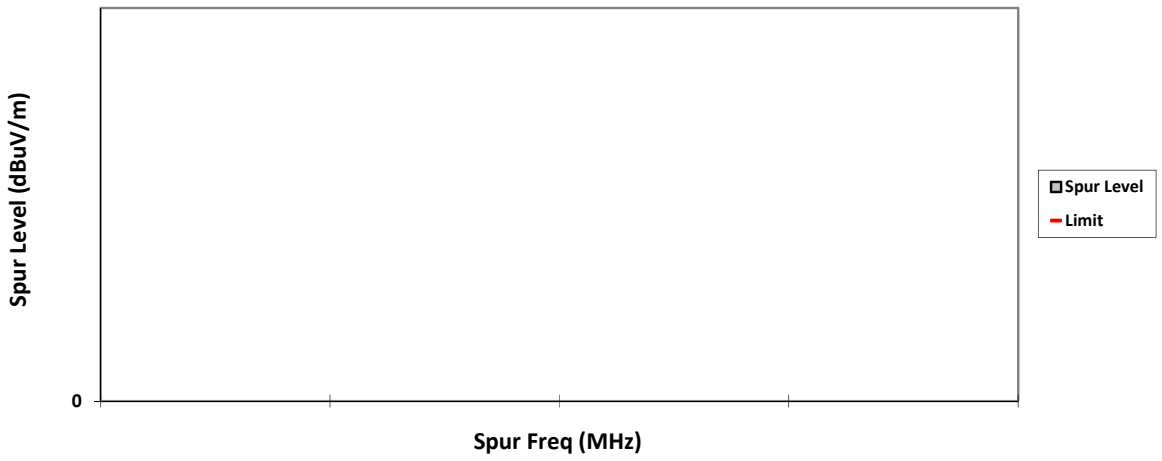
Radiated Emission (Low Channel) tabular data

Vertical Radiated Emission Result										
Spur Freq (MHz)	Spur level QPK (dBµV/m)	Spur level PK (dBµV/m)	Spur level AV (dBµV/m)	Limit QPK (dBµV/m)	Limit PK (dBµV/m)	Limit AV (dBµV/m)	Margin QPK (dBµV/m)	Margin PK (dBµV/m)	Margin AV (dBµV/m)	Carrier PK Power (dBµV/m)
4824	-	41.3063**	**	-	74	54	-	32.69**	-	-
7236	-	46.0733**	**	-	74	54	-	27.93**	-	-
9648	-	49.3956**	**	-	74	54	-	24.60**	-	-
12060	-	51.8377**	**	-	74	54	-	22.16**	-	-
14472	-	52.9266**	**	-	74	54	-	21.07**	-	-
16884	-	56.0093**	**	-	74	54	-	17.99**	-	-
19296	-	34.5411**	**	-	74	54	-	39.46**	-	-
21708	-	35.5302**	**	-	74	54	-	38.47**	-	-
24120	-	34.6997**	**	-	74	54	-	39.30**	-	-
Horizontal Radiated Emission Result										
4824	-	41.8755**	**	-	74	54	-	32.12**	-	-
7236	-	45.9015**	**	-	74	54	-	28.10**	-	-
9648	-	49.7451**	**	-	74	54	-	24.25**	-	-
12060	-	51.2058**	**	-	74	54	-	22.79**	-	-
14472	-	53.3473**	**	-	74	54	-	20.65**	-	-
16884	-	55.6155**	**	-	74	54	-	18.38**	-	-
19296	-	35.1522**	**	-	74	54	-	38.85**	-	-
21708	-	34.4042**	**	-	74	54	-	39.60**	-	-
24120	-	35.0110**	**	-	74	54	-	38.99**	-	-

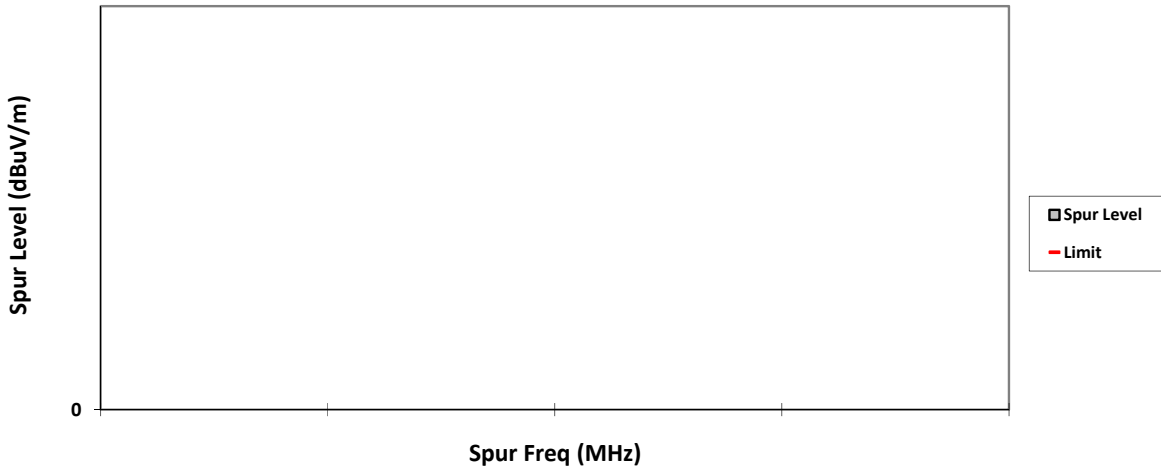
Remarks: Pass Result	Marginal Result	Fail Result

Temperature (degC): 23.3 **Humidity (%): 70.2**
Test Performed by: Nazrin&Azil **Test Date: Sun, Sep 01, 2019**
System MU: 5.01dB

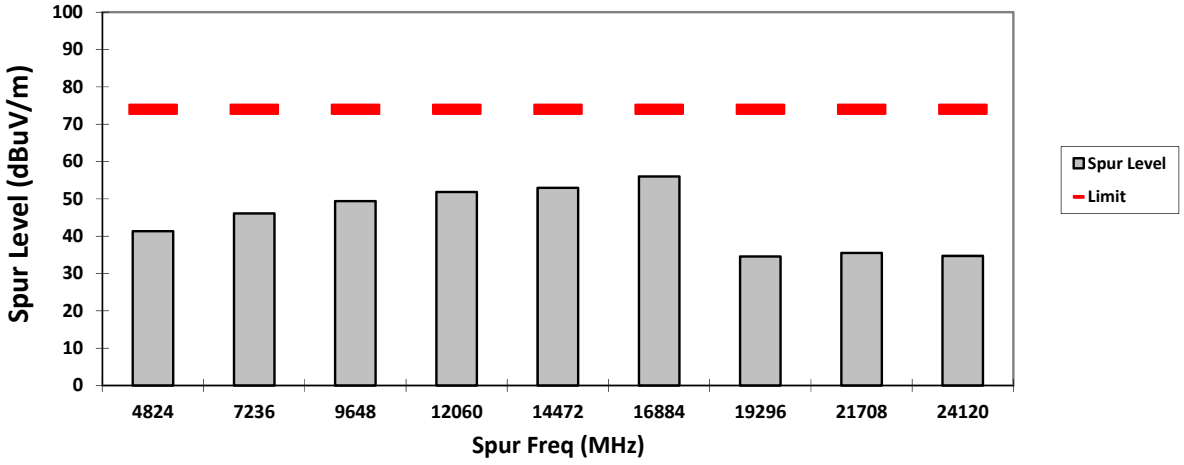
VERTICAL, QPK



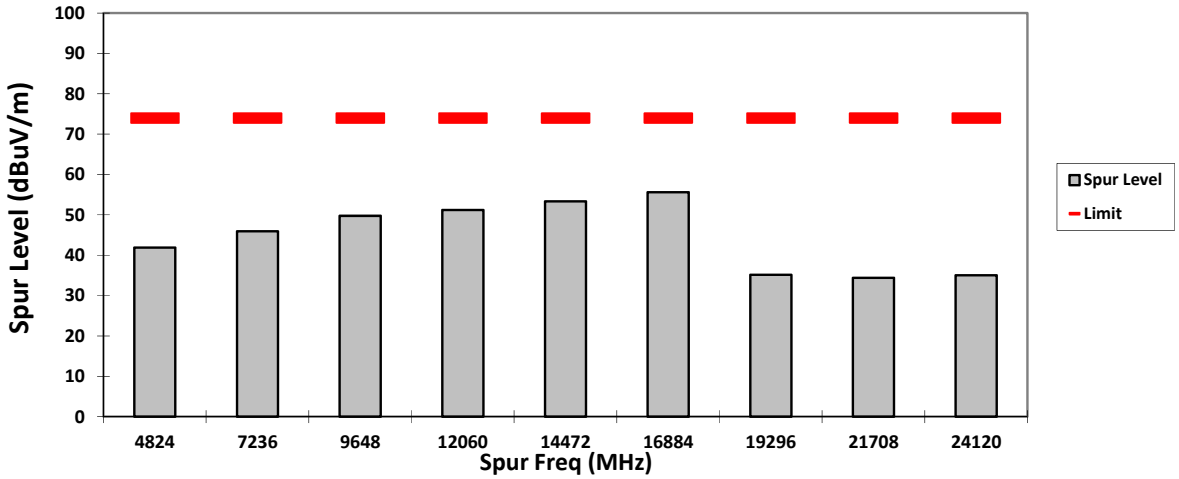
HORIZONTAL, QPK



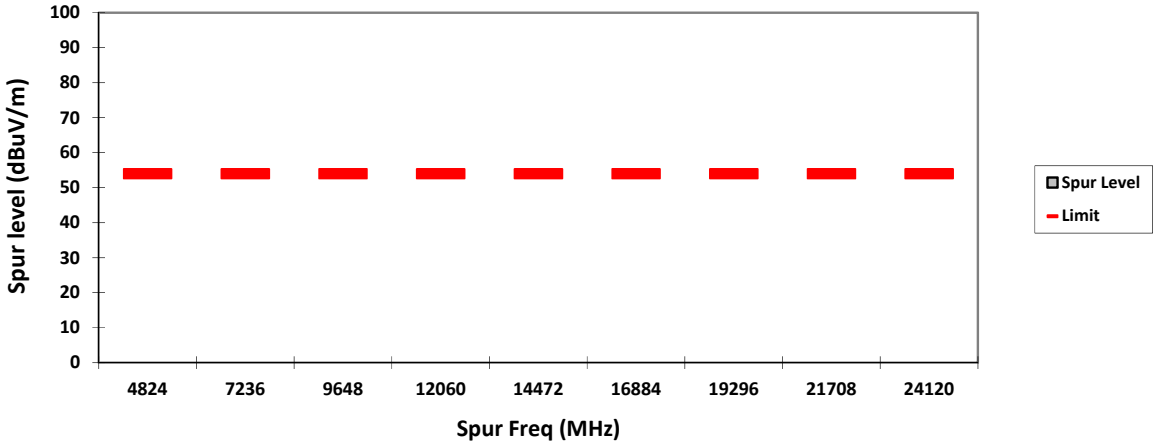
VERTICAL, PK



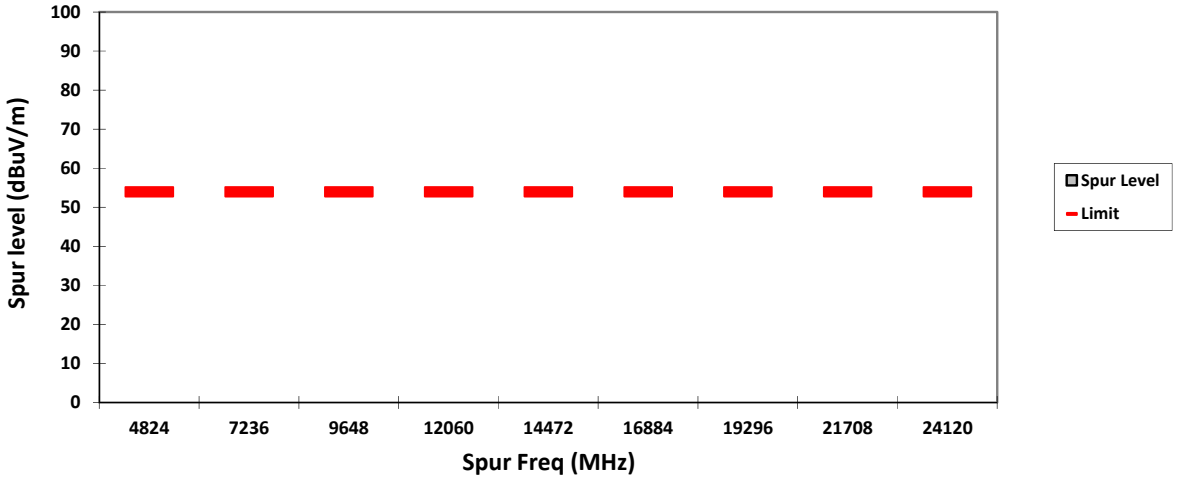
HORIZONTAL, PK



VERTICAL, AV



HORIZONTAL, AV



Test: WIFI SAC Transmitter Radiated Emission
Model#: AAH02RDH9VA1AN S/N: 867TVPC207 EMC SR ID#: 17779-EMC-00027
Battery: PMNN4493A Accessory: PMAE4070A
Test Channel: Mid Test Frequency: 2437.0000 MHz Test Standard: ANSI C63.10-2013
Worst Case Plane: X-Plane (802.11n 20MHz)

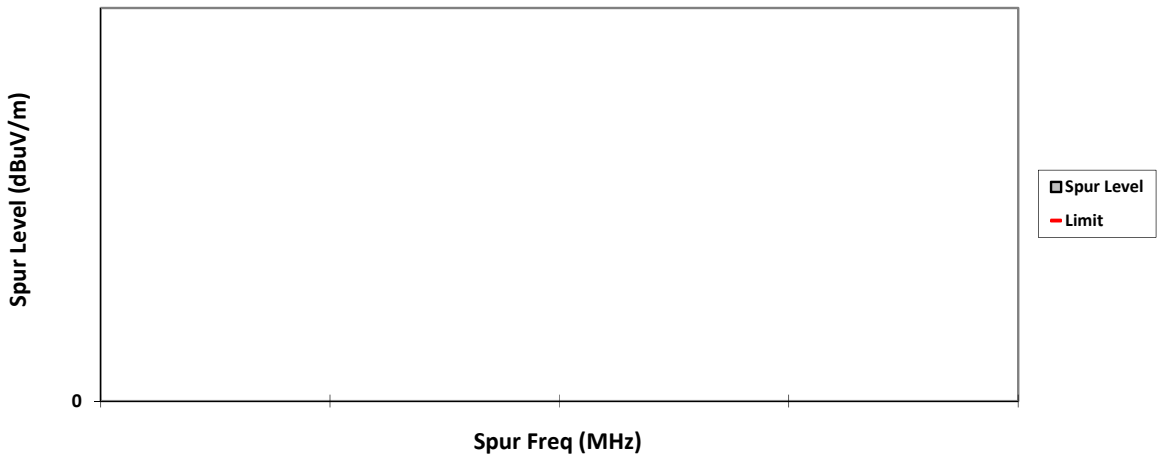
Radiated Emission (Mid Channel) tabular data

Vertical Radiated Emission Result										
Spur Freq (MHz)	Spur level QPK (dBµV/m)	Spur level PK (dBµV/m)	Spur level AV (dBµV/m)	Limit QPK (dBµV/m)	Limit PK (dBµV/m)	Limit AV (dBµV/m)	Margin QPK (dBµV/m)	Margin PK (dBµV/m)	Margin AV (dBµV/m)	Carrier PK Power (dBµV/m)
4874	-	42.1413**	**	-	74	54	-	31.86**	-	-
7311	-	46.4427**	**	-	74	54	-	27.56**	-	-
9748	-	49.3776**	**	-	74	54	-	24.62**	-	-
12185	-	51.1182**	**	-	74	54	-	22.88**	-	-
14622	-	52.9162**	**	-	74	54	-	21.08**	-	-
17059	-	55.3646**	**	-	74	54	-	18.64**	-	-
19496	-	34.8599**	**	-	74	54	-	39.14**	-	-
21933	-	35.4662**	**	-	74	54	-	38.53**	-	-
24370	-	36.0678**	**	-	74	54	-	37.93**	-	-
Horizontal Radiated Emission Result										
4874	-	41.0118**	**	-	74	54	-	32.99**	-	-
7311	-	46.3066**	**	-	74	54	-	27.69**	-	-
9748	-	49.0357**	**	-	74	54	-	24.96**	-	-
12185	-	51.2523**	**	-	74	54	-	22.75**	-	-
14622	-	52.7933**	**	-	74	54	-	21.21**	-	-
17059	-	55.1827**	**	-	74	54	-	18.82**	-	-
19496	-	33.8218**	**	-	74	54	-	40.18**	-	-
21933	-	35.3907**	**	-	74	54	-	38.61**	-	-
24370	-	35.9235**	**	-	74	54	-	38.08**	-	-

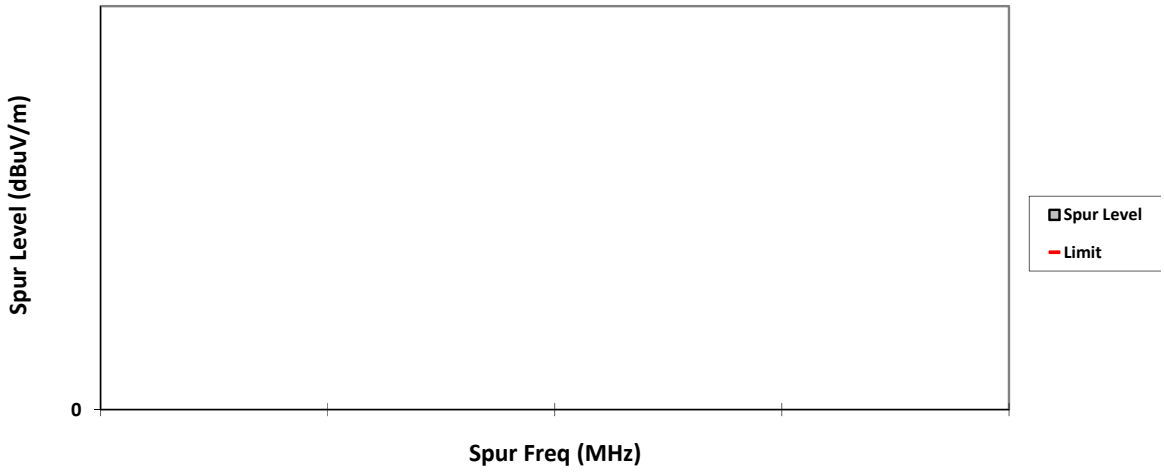
Remarks: Pass Result	Marginal Result	Fail Result

Temperature (degC): 23.3 **Humidity (%): 70.2**
Test Performed by: Nazrin&Azil **Test Date: Sun, Sep 01, 2019**
System MU: 5.01dB

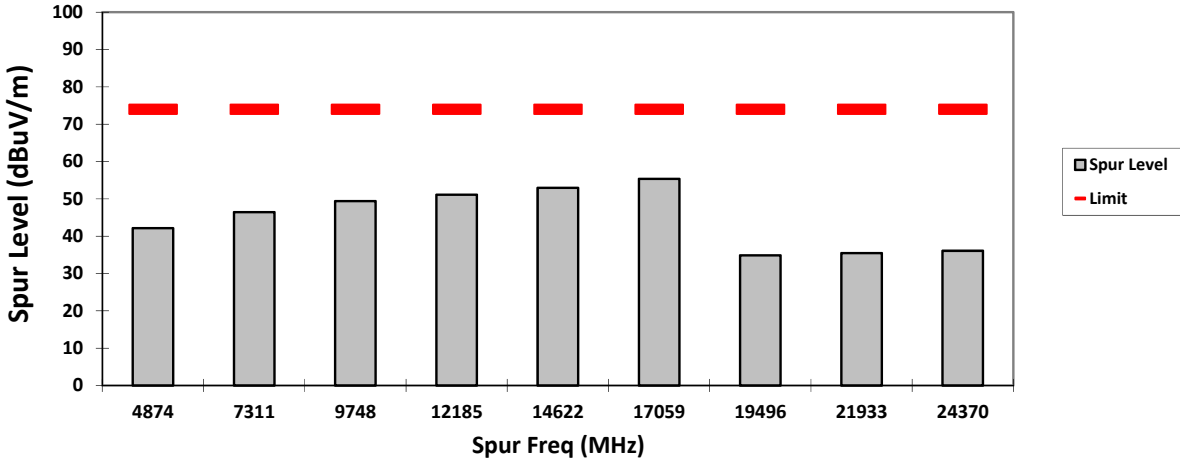
VERTICAL, QPK



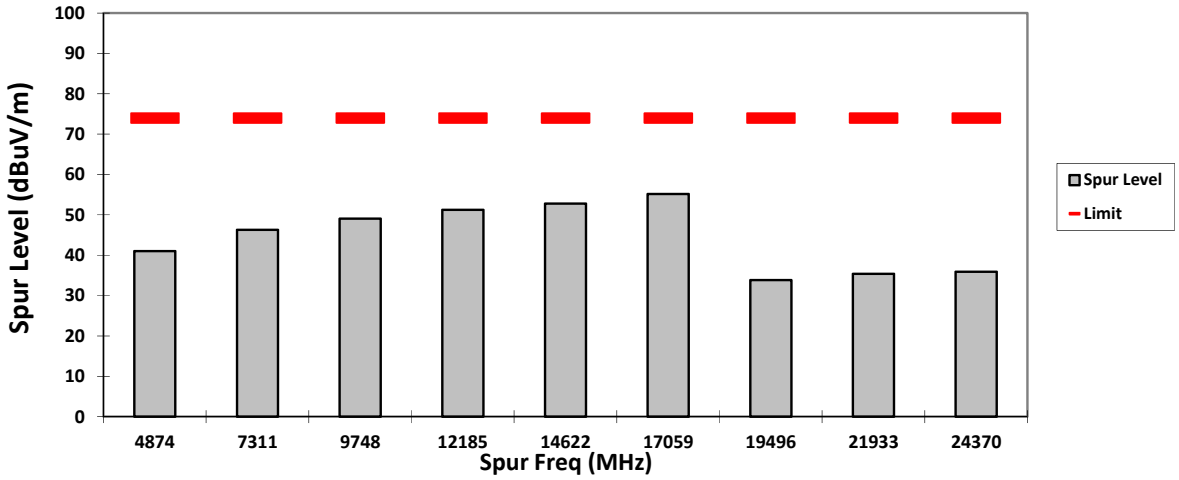
HORIZONTAL, QPK



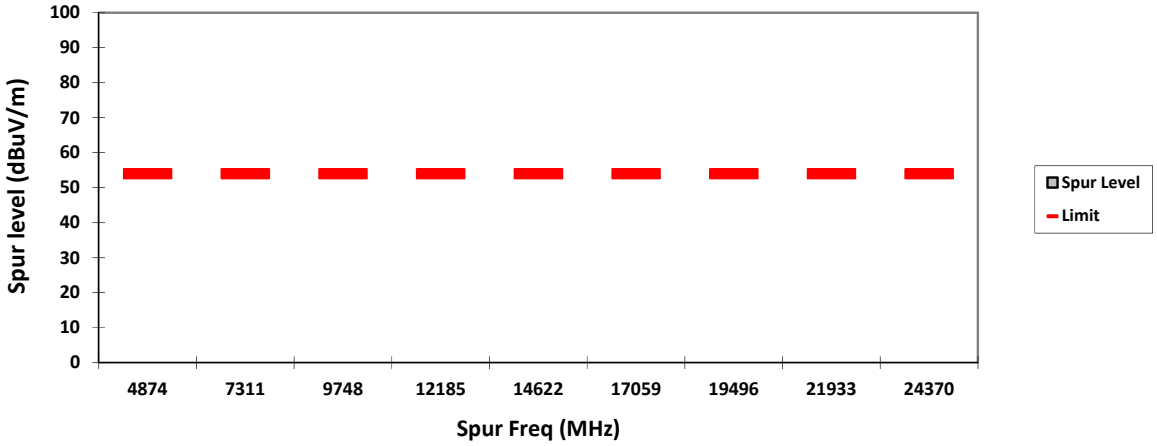
VERTICAL, PK



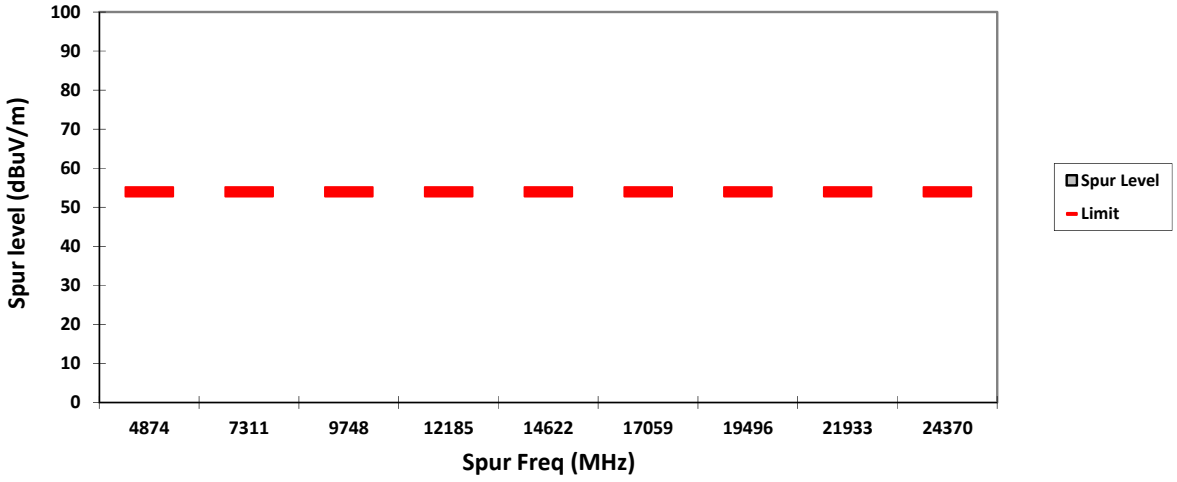
HORIZONTAL, PK



VERTICAL, AV



HORIZONTAL, AV



Test: WIFI SAC Transmitter Radiated Emission
Model#: AAH02RDH9VA1AN S/N: 867TVPC207 EMC SR ID#: 17779-EMC-00027
Battery: PMNN4493A Accessory: PMAE4070A
Test Channel: High Test Frequency: 2462.0000 MHz Test Standard: ANSI C63.10-2013
Worst Case Plane: X-Plane (802.11n 20MHz)

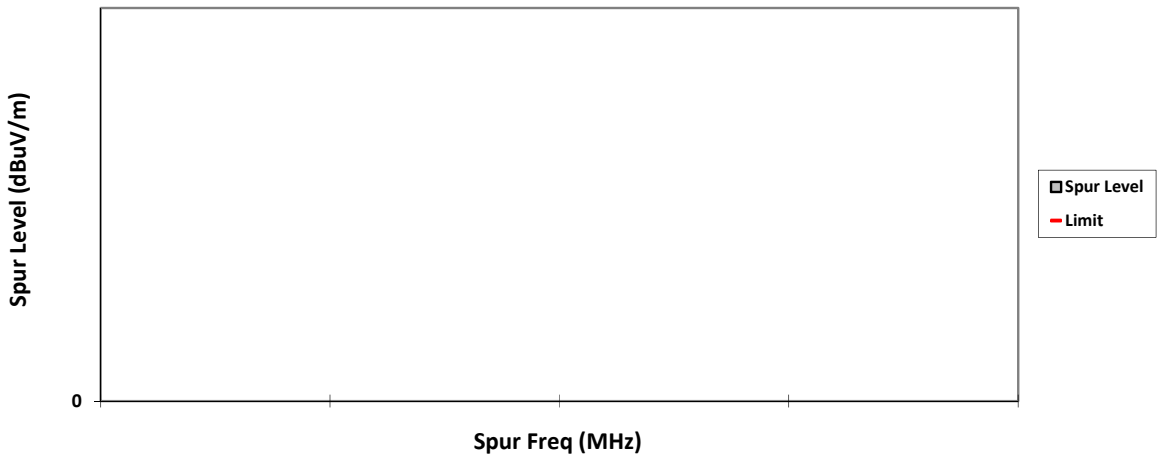
Radiated Emission (High Channel) tabular data

Vertical Radiated Emission Result										
Spur Freq (MHz)	Spur level QPK (dBµV/m)	Spur level PK (dBµV/m)	Spur level AV (dBµV/m)	Limit QPK (dBµV/m)	Limit PK (dBµV/m)	Limit AV (dBµV/m)	Margin QPK (dBµV/m)	Margin PK (dBµV/m)	Margin AV (dBµV/m)	Carrier PK Power (dBµV/m)
4924	-	40.7959**	**	-	74	54	-	33.20**	-	-
7386	-	46.2068**	**	-	74	54	-	27.79**	-	-
9848	-	49.0072**	**	-	74	54	-	24.99**	-	-
12310	-	51.5427**	**	-	74	54	-	22.46**	-	-
14772	-	53.5480**	**	-	74	54	-	20.45**	-	-
17234	-	55.2187**	**	-	74	54	-	18.78**	-	-
19696	-	34.4164**	**	-	74	54	-	39.58**	-	-
22158	-	36.0527**	**	-	74	54	-	37.95**	-	-
24620	-	36.6932**	**	-	74	54	-	37.31**	-	-
Horizontal Radiated Emission Result										
4924	-	41.9209**	**	-	74	54	-	32.08**	-	-
7386	-	48.2739**	**	-	74	54	-	25.73**	-	-
9848	-	49.9028**	**	-	74	54	-	24.10**	-	-
12310	-	51.2142**	**	-	74	54	-	22.79**	-	-
14772	-	53.5017**	**	-	74	54	-	20.50**	-	-
17234	-	55.7425**	**	-	74	54	-	18.26**	-	-
19696	-	34.0617**	**	-	74	54	-	39.94**	-	-
22158	-	35.1437**	**	-	74	54	-	38.86**	-	-
24620	-	36.4919**	**	-	74	54	-	37.51**	-	-

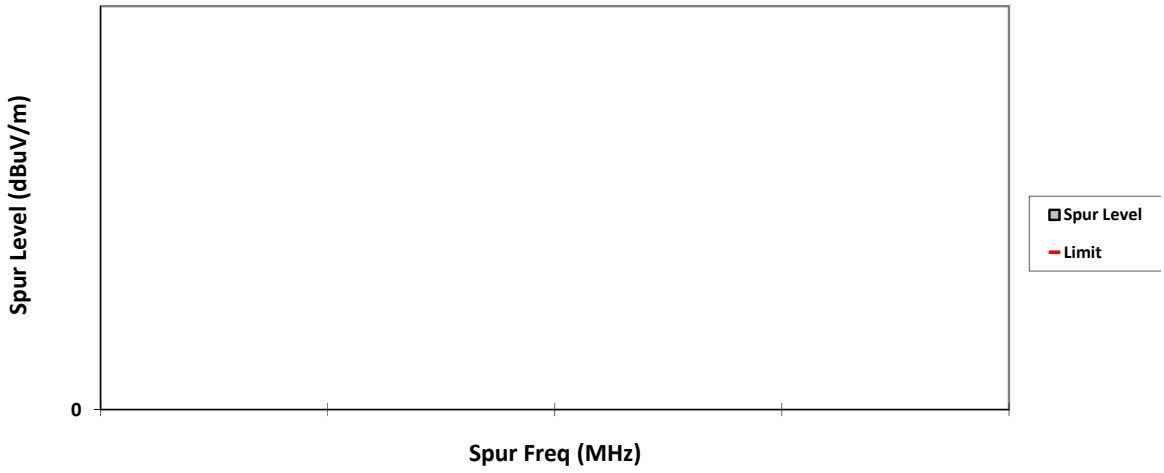
Remarks: Pass Result	Marginal Result	Fail Result

Temperature (degC): 23.3 **Humidity (%): 70.2**
Test Performed by: Nazrin&Azil **Test Date: Sun, Sep 01, 2019**
System MU: 5.01dB

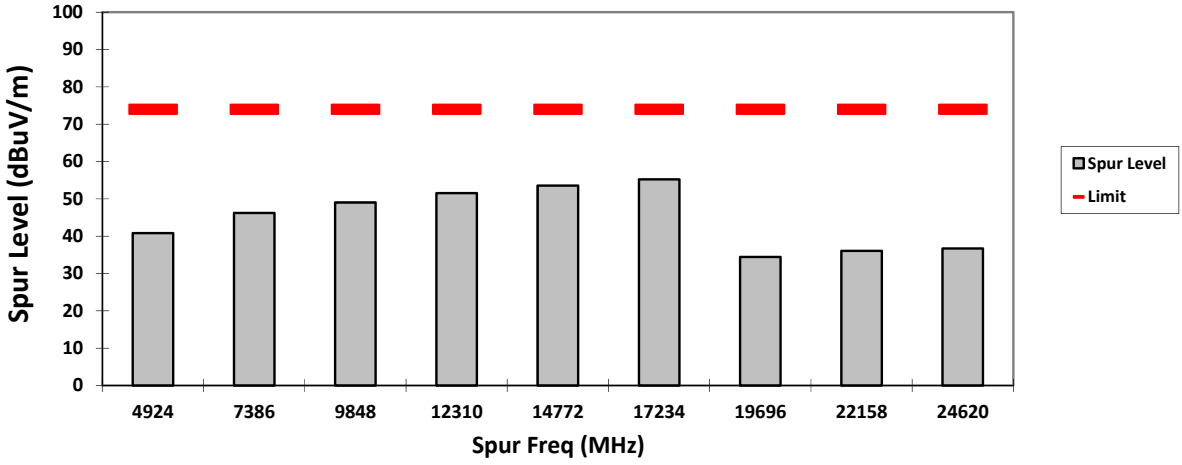
VERTICAL, QPK



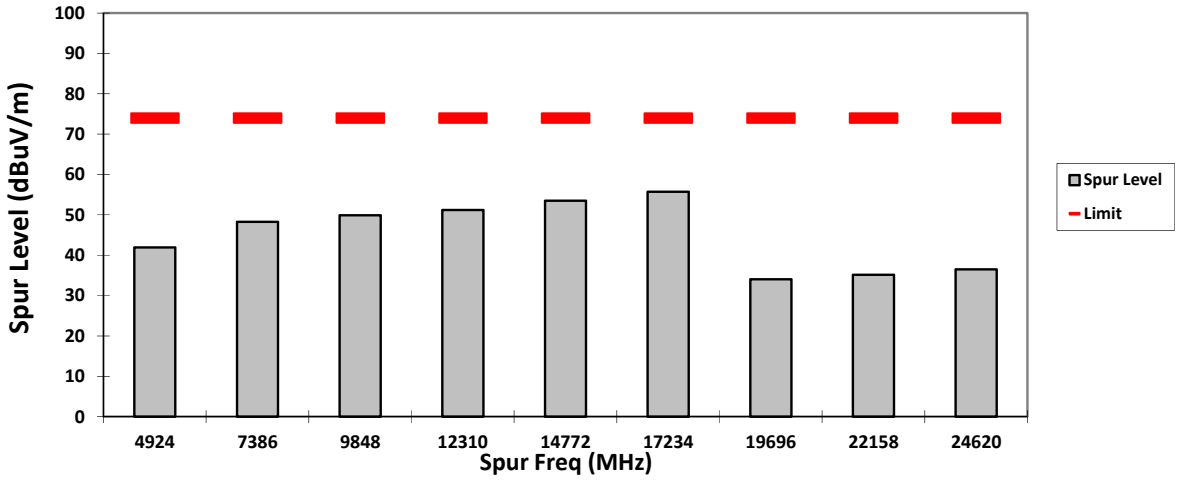
HORIZONTAL, QPK



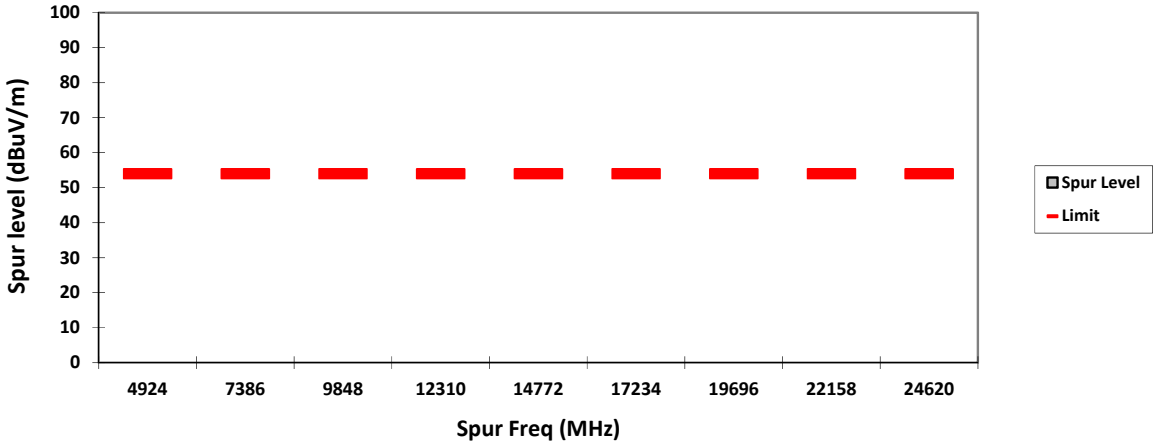
VERTICAL, PK



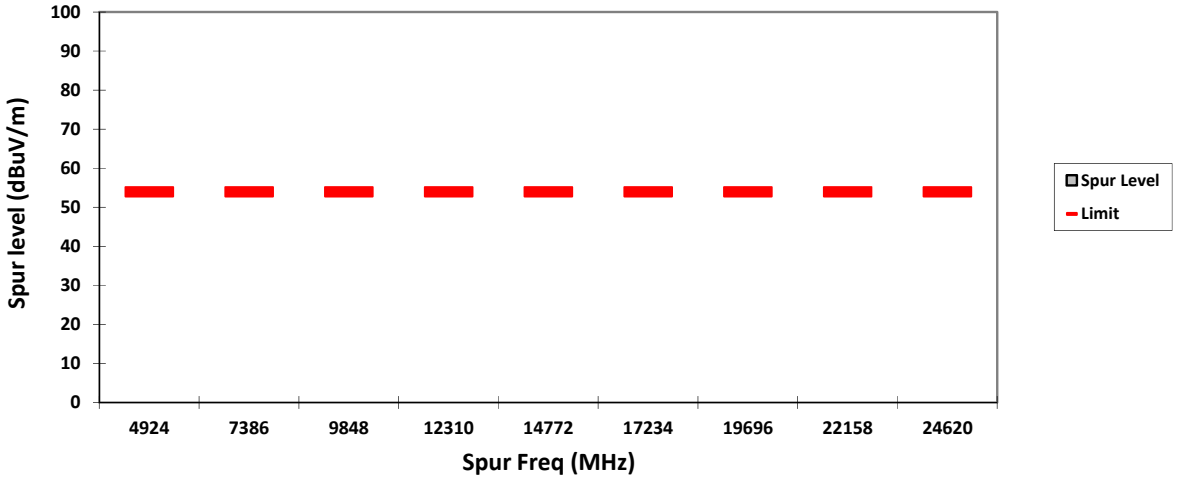
HORIZONTAL, PK



VERTICAL, AV

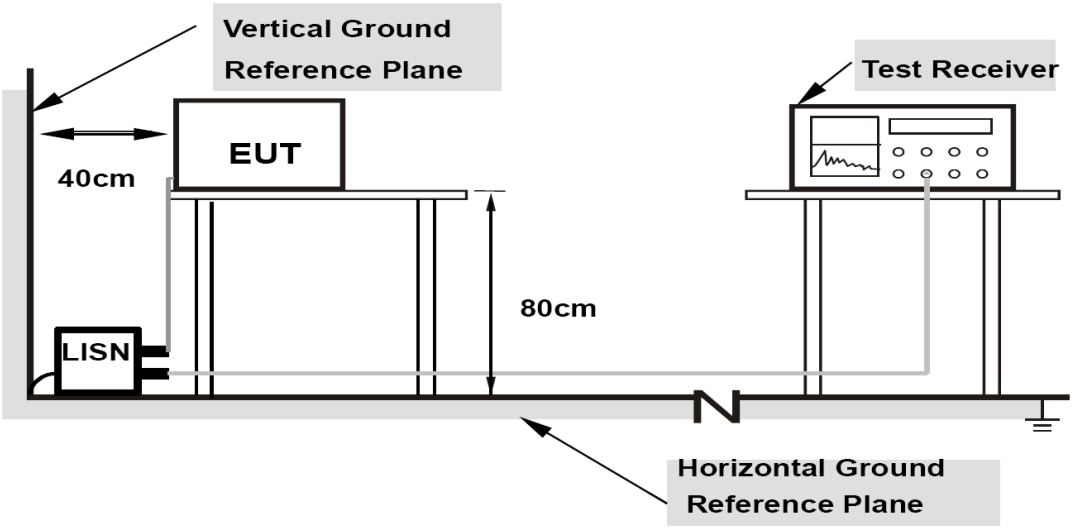


HORIZONTAL, AV



6.8. AC Powerline Conducted Emission

6.8.1. Test Setup



1) Tests were conducted for both Receive and Transmit Mode of the EUT.
2) The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/50uH of coupling impedance for the measuring instrument.
3) Both lines of the power mains connected to the EUT were checked for maximum conducted interference.
4) The frequency range from 150 kHz to 30MHz was measured.

6.8.2. Test Limits:

For AC Power Line Conducted Test Limit can be Class A or B depends on product classification.

Limits for conducted disturbance at the mains ports of class A ITE

Frequency range MHz	Limits dB(µV)	
	Quasi-peak	Average
0,15 to 0,50	79	66
0,50 to 30	73	60
NOTE The lower limit shall apply at the transition frequency.		

Table 1: Limits for Conducted Disturbance at the Mains Ports of Class A ITE.

Limits for conducted disturbance at the mains ports of class B ITE

Frequency range MHz	Limits dB(µV)	
	Quasi-peak	Average
0,15 to 0,50	66 to 56	56 to 46
0,50 to 5	56	46
5 to 30	60	50
NOTE 1 The lower limit shall apply at the transition frequencies. NOTE 2 The limit decreases linearly with the logarithm of the frequency in the range 0,15 MHz to 0,50 MHz.		

Table 2: Limits for Conducted Disturbance at the Mains Ports of Class B ITE

6.8.3. Test Result

Not Applicable. Testing is not required, radio shall turn off during charging mode.

END OF TEST REPORT