MOTOROLA SOLUTIONS

MS ISO/IEC 17025
TESTING
SAMM No. 0825

MOTOROLA PENANG ADV. COMM. LABORATORY

Motorola Solutions Malaysia Sdn. Bhd.
Innoplex Plot 2A Medan Bayan Lepas,
Mukim 12, S.W.D. 11900 Bayan Lepas,
Penang, Malaysia.

FCC / ISED TEST REPORT

Report Revision : **Rev.A**

Date/s Tested	:	11-May-2019 - 13-Aug-2019
Report Issue Date	:	15-Aug-2019
Manufacturer/Location	:	Motorola Solutions Malaysia Sdn Bhd Innoplex Plot 2A, Medan Bayan lepas, Mukim 12, S.W.D. 11900 Bayan Lepas, Penang, Malaysia
Requestor	:	TANG, GARY
Product Type	:	Mobile
Product Marketing Name (PMN)	:	APX6500
Model Number (HVIN)	:	M25URS9PW1BN
Frequency Band	:	2.412-2.462 GHz
Rated / Max RF Output Power	:	802.11b - 31.6 mWatts / 39.8 mWatts 802.11g - 12.58 mWatts / 15.8 mWatts 802.11n (HT20) - 10 mWatts / 12.58 mWatts
Applicant Name	:	Motorola Solutions Inc
FCC Registrations	:	461337
ISED Registrations	:	109AK
Firmware Version (FVIN)	:	D19.71.02

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 Signatory:

Vincent Foong Chuen Kit
Deputy Technical Manager

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REVISION HISTORY

Revision History	Description	Date	Originator
Rev. A	Initial Report	**15-Aug-2019**	**GAN BOON TEONG**

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	Trunk(AN000163A01)

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**
ASSY,CBL,PWR	MOTOROLA	HKN4191B-2
CABLE, DATA, USB, 1-1/2M, XTL5000	MOTOROLA	HKN6163C-2
15 Watt Speaker (Water Resistant)	MOTOROLA	HSN4040A
Keypad Microphone	MOTOROLA	HMN4079G-4
ANTENNA, STUBBY,WIFI/GNSS LOW LOSS LMR240 (2.4/5 GHZ WI-FI/BT AND GNSS BT/WiFi/GPS Antenna)	MOTOROLA	AN000163A01
ANTENNA, WHIP,3DB MCYCLE 764-870 MHZ 762-870 MHZ	MOTOROLA	AN000197A10
O7 Control Head (English)	MOTOROLA	PMHN4194C
O2 Control Head (Grey)	MOTOROLA	PMHN4193F

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: 13.420 MHz(13M4G1D) 802.11g: 16.830 MHz(16M8D1D) 802.11n: 17.718 MHz(17M7D1D)	471TVF3449
15.247 (b)(3)	RSS-247 5.4(d)	Conducted RF Output Power (Average)	Pass	Highest output power: 802.11b: 15.962 dBm 802.11g: 11.815 dBm 802.11n: 10.249 dBm	471TVF3449
15.247(e)	RSS-247 5.2(b)	Maximum Power Spectral Density	Pass	Meet the limit requirement.	471TVF3449
15.247(d)	RSS-247 5.5	Conducted Spurious Emissions	Pass	Worst case emission: 802.11b: -39.33 dBm 802.11g: -39.28 dBm 802.11n: -39.75 dBm	471TVF3449
15.247 (d)	RSS-247 5.5	Band edge Conducted Spurious Emission	Pass	Worst case emission: 802.11b: -46.03 dBm 802.11g: -36.96 dBm 802.11n: -39.04 dBm	471TVF3449
15.205, 15.209, 15.247 (d)	RSS-247 5.5	Radiated Emission within Restricted Bands	Pass	Meet the limit requirement.	471TVF3482
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 end-user	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
POWER SUPPLY (0-20V / 0-25A)	6652A	MY40001437	17-Aug-17	17-Aug-19
SPECTRUM ANALYZER	FSEK30	838495/014	11-Jul-18	11-Jul-19
SPECTRUM ANALYZER	FSEK30	838495/014	19-Jul-19	19-Jul-20
STEP ATTENUATOR	RSC	102218	Not Required	Not Required
WIDEBAND RADIO COMMUNICATION TES	CMW500	154549	8-May-18	8-May-20
SPECTRUM ANALYZER	E4443A	MY46181974	9-Aug-18	9-Aug-20
CHAMBER	SH-641	92003821	30-Oct-18	30-Oct-19

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	719	18-Jul-17	18-Jul-19
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	2615A-01178	13-Jun-18	13-Jun-19
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	25-Jun-18	25-Jun-19
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	30991	23-Apr-18	23-Jul-19
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	eq Hi Gain Suc	1	Not Required	Not Required
PREAMPLIFIER	PAM-0118P	361	Not Required	Not Required
LOOP ANTENNA	6502	208416	17-Aug-18	17-Aug-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	11	SISO	23.8°C, 69.4%RH
Test Mode	802.11g	1 to 11	1,6,11	OFDM	BPSK	6	SISO	23.8°C, 69.4%RH
Test Mode	802.11n (HT20)	1 to 11	1,6,11	OFDM	BPSK	6.5	SISO CDD (MIMO)	23.8°C, 69.4%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	11	SISO	23.8°C, 69.4%RH
Test Mode	802.11g	1 to 11	1,6,11	OFDM	BPSK	6	SISO	23.8°C, 69.4%RH
Test Mode	802.11n (HT20)	1 to 11	1,6,11	OFDM	BPSK	6.5	SISO CDD (MIMO)	23.8°C, 69.4%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	11	SISO	25°C, 50%RH
Test Mode	802.11g	1 to 11	1,6,11	OFDM	BPSK	6	SISO	25°C, 50%RH
Test Mode	802.11n (HT20)	1 to 11	1,6,11	OFDM	BPSK	6.5	SISO	25°C, 50%RH
Test Mode	802.11n (HT40)	1 to 11	3,6,9	OFDM	BPSK	6.5	SISO	NA

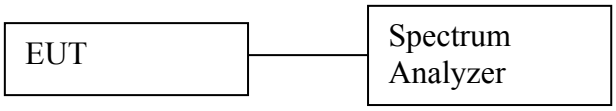
Duty Cycle of Test Signal

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.

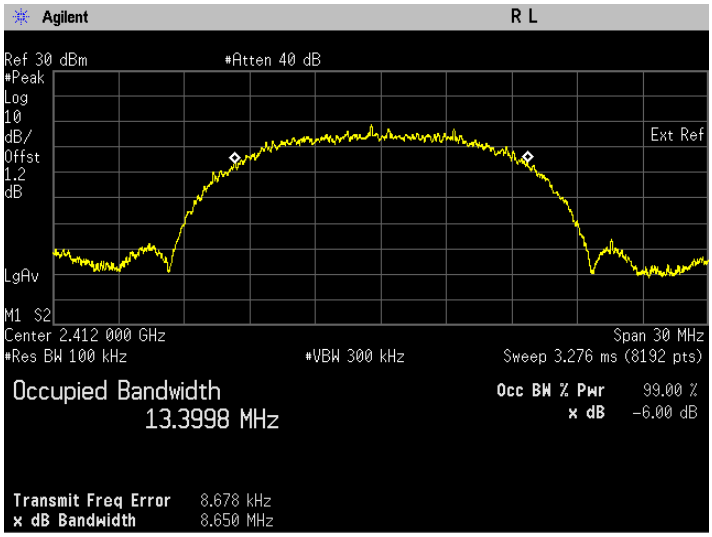
6.1.2. **Test Limits:**

Normal Condition (25 º C)
≥500 kHz

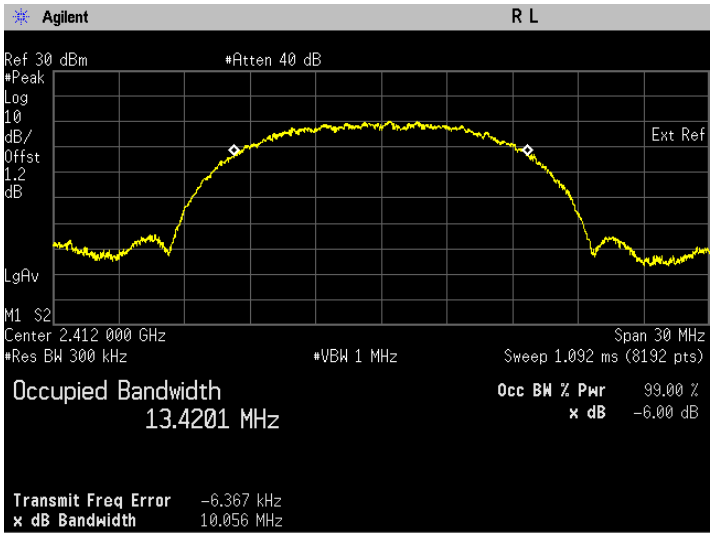
6.1.3. **Test Data:**

802.11 b

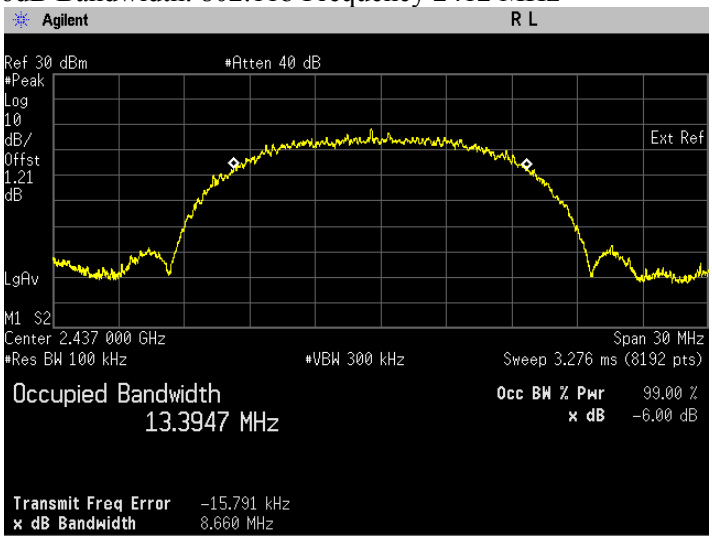
Test Conditions				Test Frequency	Results		
Standard	Modulation Type	Modulation Technology	Data Rate (mbps)	Tx (MHz)	6dB Bandwidth (MHz)	99% Bandwidth (MHz)	Status
802.11b	DSSS	QPSK	11	2412	8.650	13.420	Pass
802.11b	DSSS	QPSK	11	2437	8.660	13.392	Pass
802.11b	DSSS	QPSK	11	2462	8.626	13.418	Pass



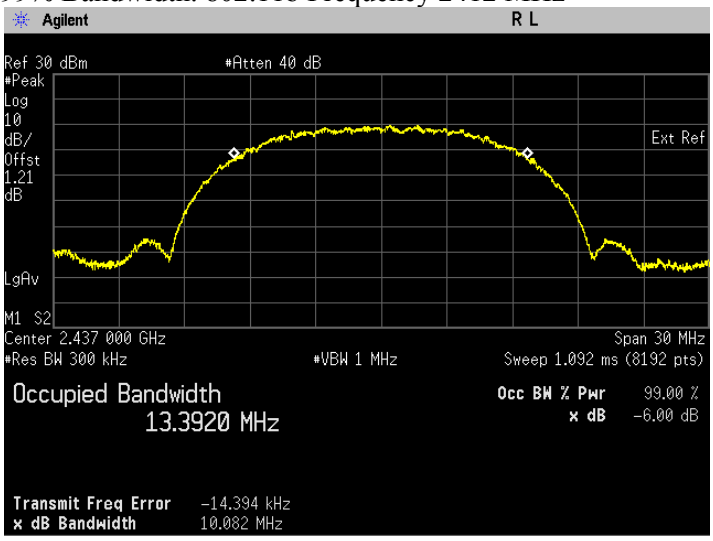
6dB Bandwidth. 802.11b Frequency 2412 MHz



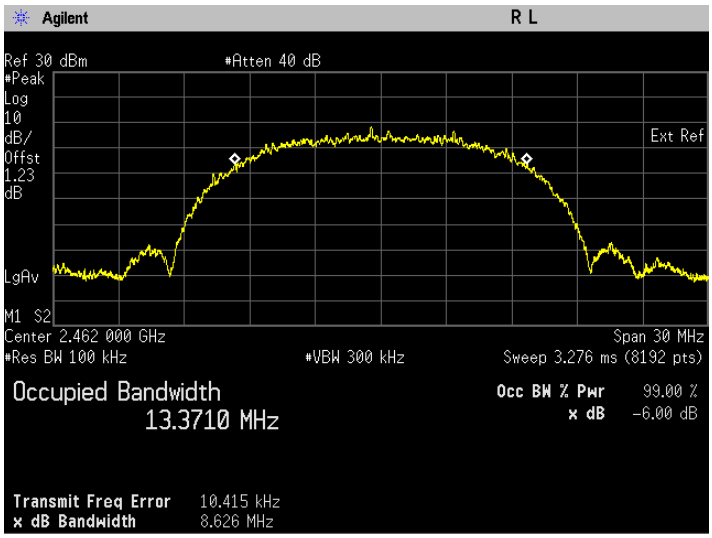
99% Bandwidth. 802.11b Frequency 2412 MHz



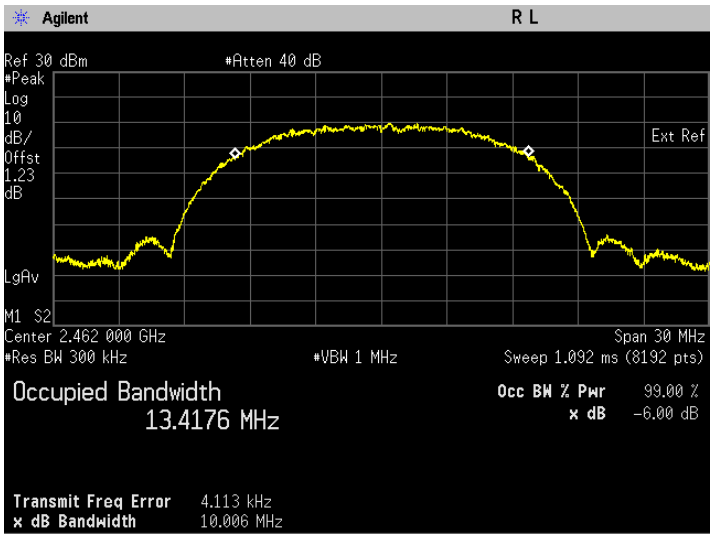
6dB Bandwidth. 802.11b Frequency 2437 MHz



99% Bandwidth. 802.11b Frequency 2437 MHz



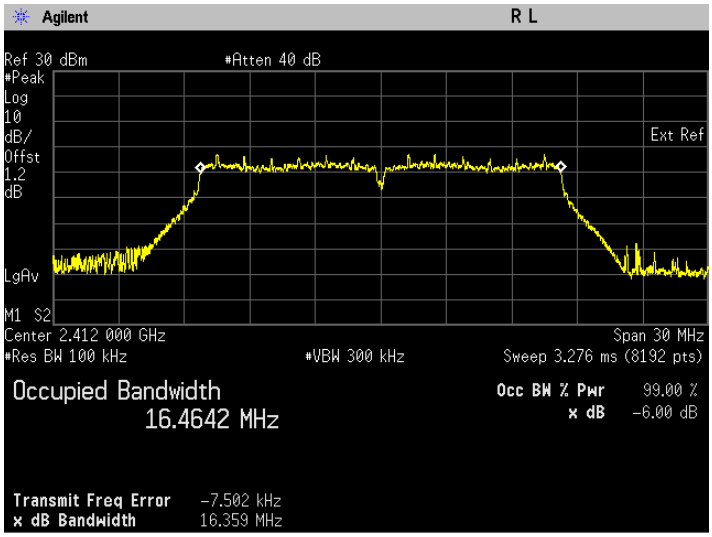
6dB Bandwidth. 802.11b Frequency 2462 MHz



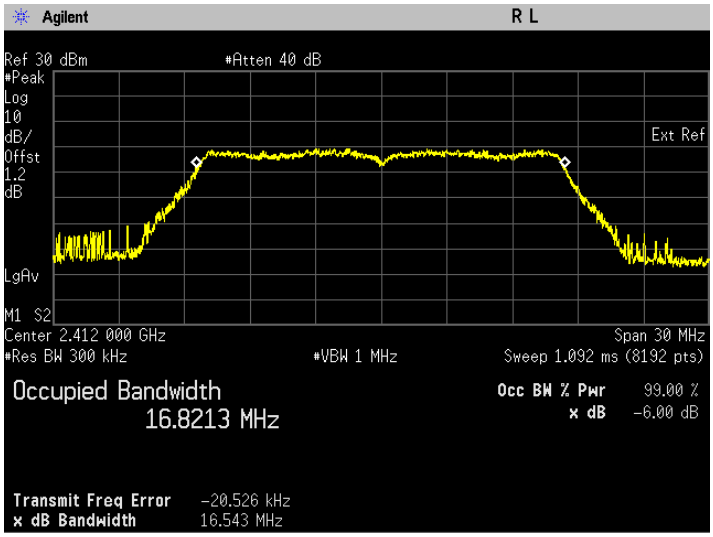
99% Bandwidth. 802.11b Frequency 2462 MHz

802.11 g

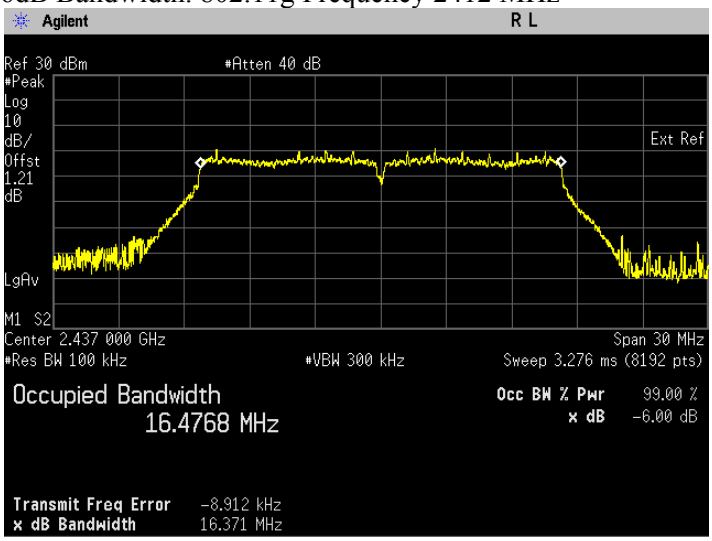
Test Conditions				Test Frequency	Results		
Standard	Modulation Type	Modulation Technology	Data Rate (mbps)	Tx (MHz)	6dB Bandwidth (MHz)	99% Bandwidth (MHz)	Status
802.11g	OFDM	BPSK	6	2412	16.359	16.821	Pass
802.11g	OFDM	BPSK	6	2437	16.371	16.830	Pass
802.11g	OFDM	BPSK	6	2462	16.359	16.795	Pass



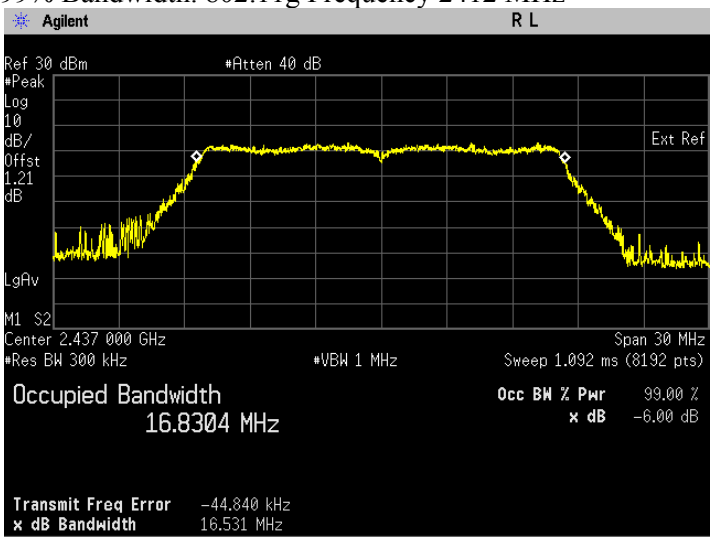
6dB Bandwidth. 802.11g Frequency 2412 MHz



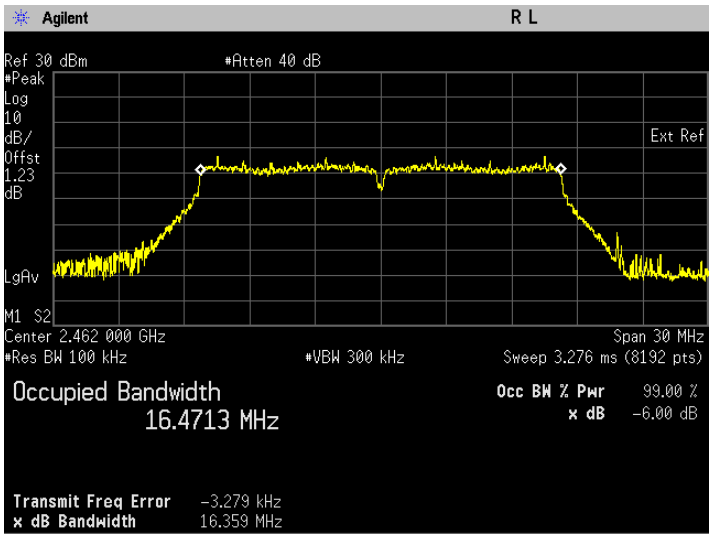
99% Bandwidth. 802.11g Frequency 2412 MHz



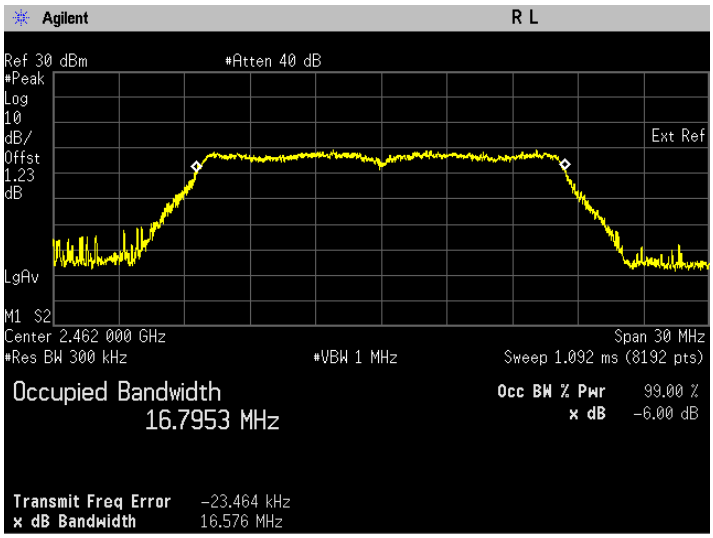
6dB Bandwidth. 802.11g Frequency 2437 MHz



99% Bandwidth. 802.11g Frequency 2437 MHz



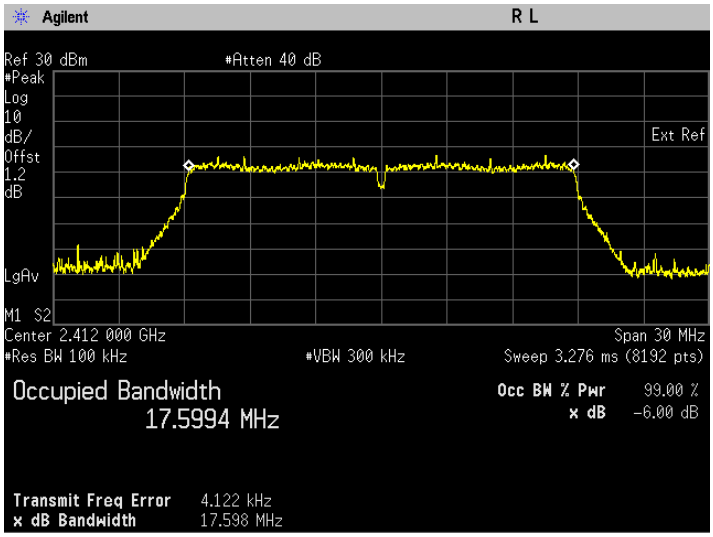
6dB Bandwidth. 802.11g Frequency 2462 MHz



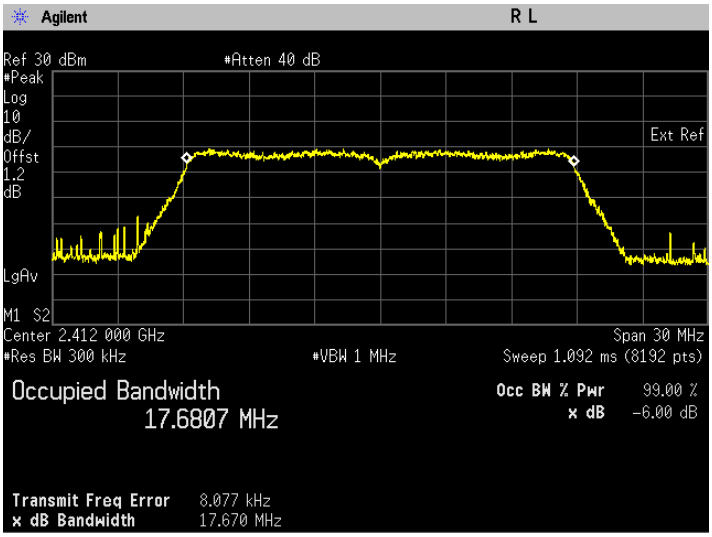
99% Bandwidth. 802.11g Frequency 2462 MHz

802.11n (HT20)

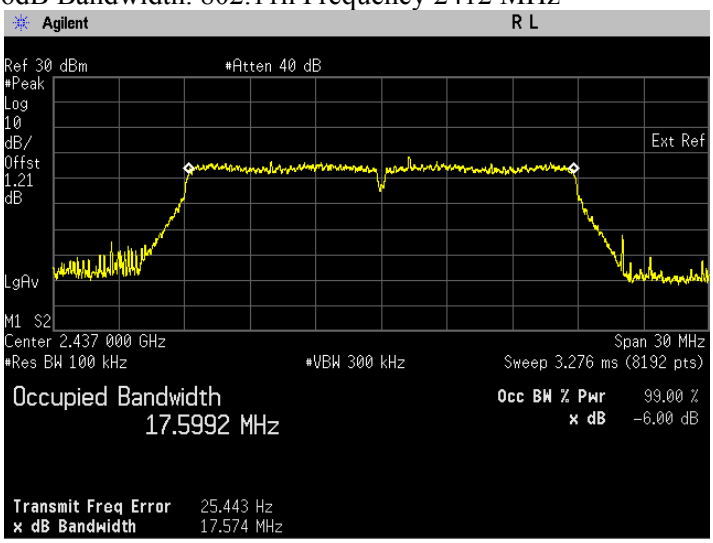
Test Conditions				Test Frequency	Results		
Standard	Modulation Type	Modulation Technology	Data Rate (mbps)	Tx (MHz)	6dB Bandwidth (MHz)	99% Bandwidth (MHz)	Status
802.11n	OFDM	DBPSK	6.5	2412	17.598	17.681	Pass
802.11n	OFDM	DBPSK	6.5	2437	17.574	17.711	Pass
802.11n	OFDM	DBPSK	6.5	2462	17.571	17.709	Pass



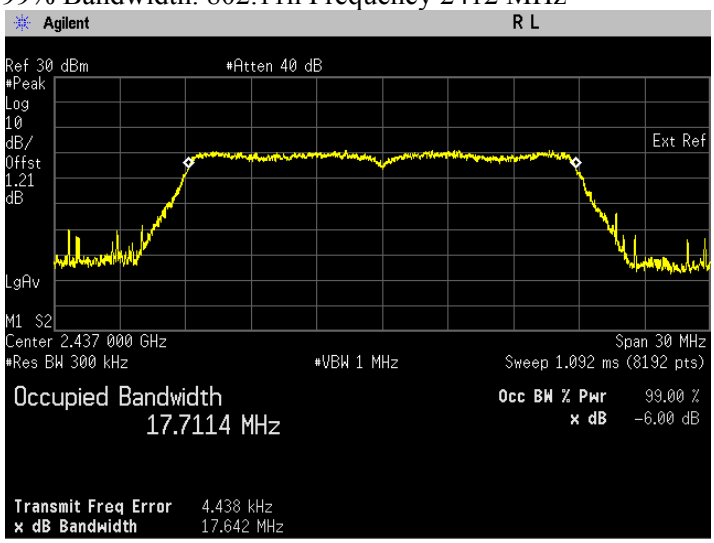
6dB Bandwidth. 802.11n Frequency 2412 MHz



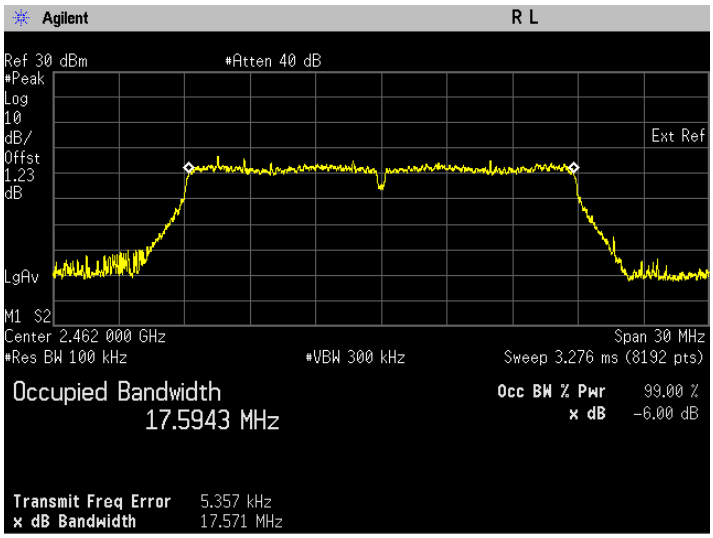
99% Bandwidth. 802.11n Frequency 2412 MHz



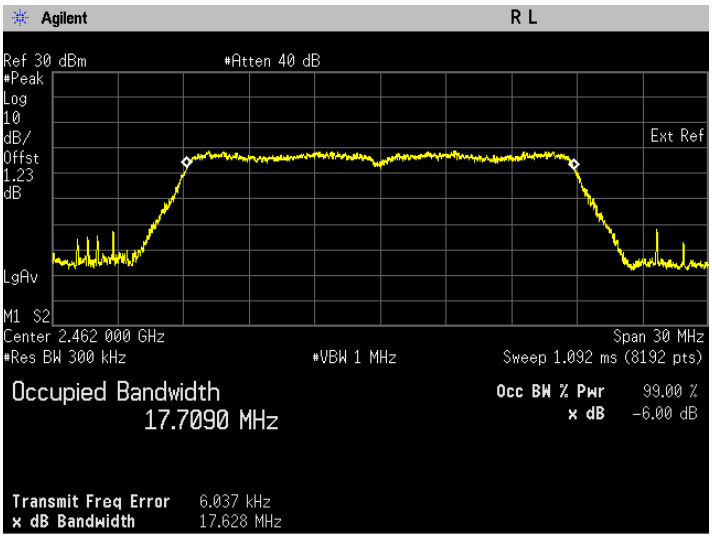
6dB Bandwidth. 802.11n Frequency 2437 MHz



99% Bandwidth. 802.11n Frequency 2437 MHz



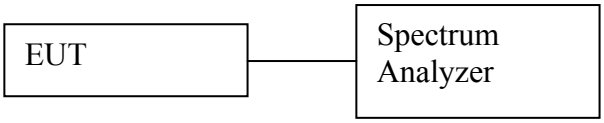
6dB Bandwidth. 802.11n Frequency 2462 MHz



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:

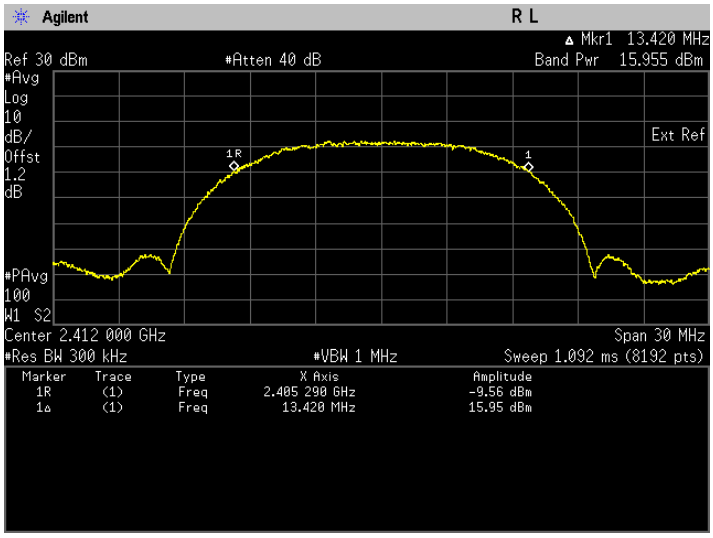
Normal Condition (25 º C)
≤1 Watt(30 dBm)

6.2.3. **Test Data:**

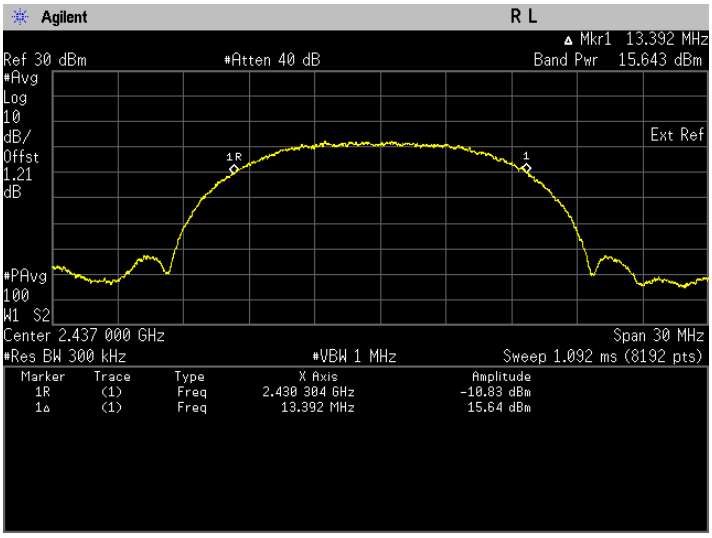
802.11b

Output power = band power +duty cycle factor
Duty cycle factor =0.007dBm

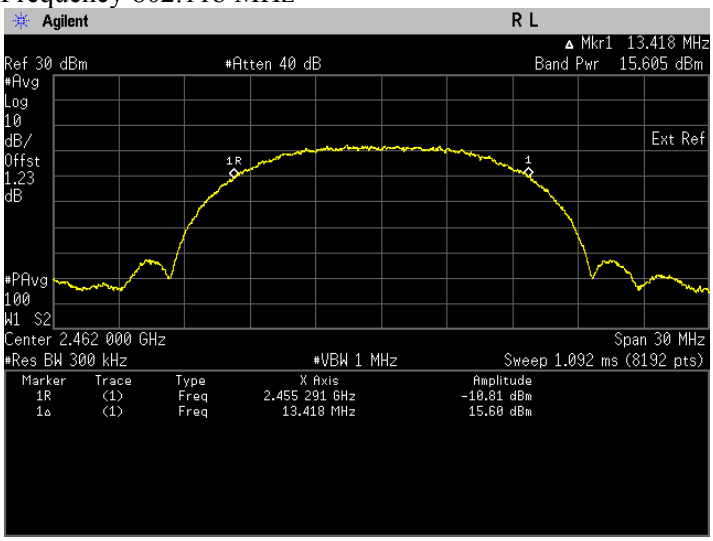
Test Conditions				Test Frequency	Results	
Standard	Modulation Type	Modulation Technology	Data Rate (mbps)	Tx (MHz)	Output Power (dBm)	Status
802.11b	DSSS	QPSK	11	2412	15.962	Pass
802.11b	DSSS	QPSK	11	2437	15.650	Pass
802.11b	DSSS	QPSK	11	2462	15.612	Pass



Frequency 802.11b MHz



Frequency 802.11b MHz

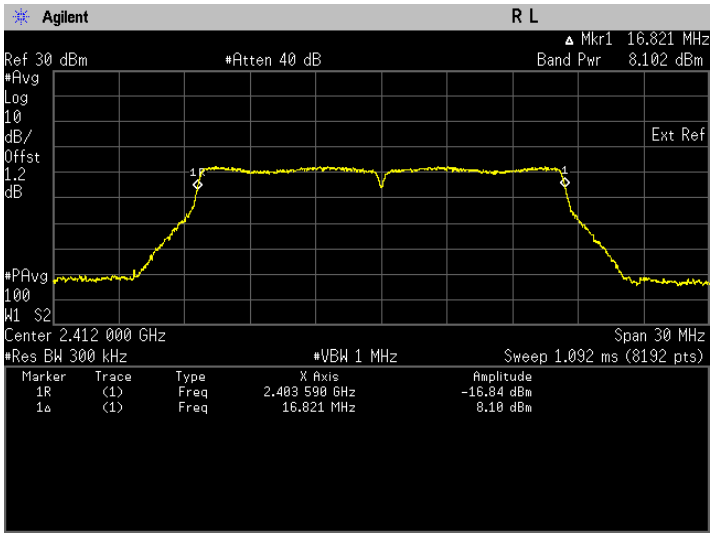


Frequency 802.11b MHz

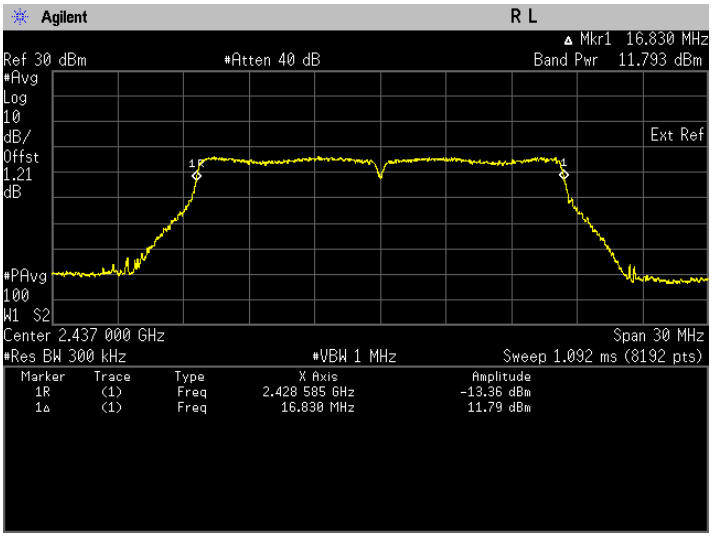
802.11g

Output power = band power +duty cycle factor
Duty cycle factor =0.022dBm

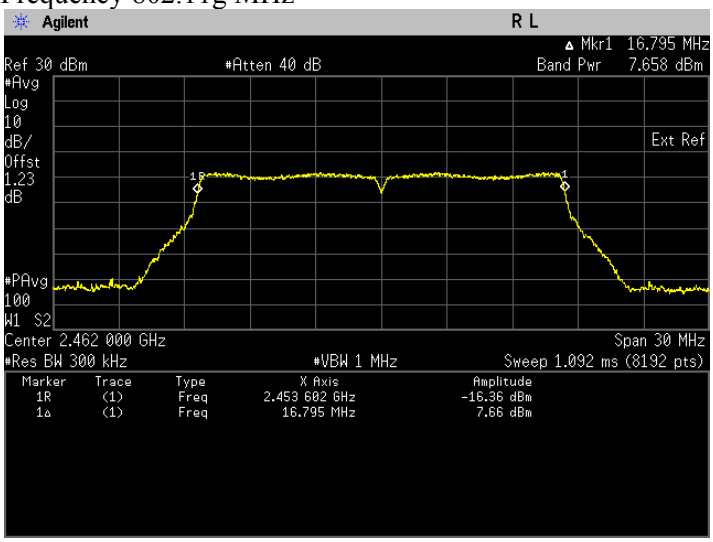
Test Conditions				Test Frequency	Results	
Standard	Modulation Type	Modulation Technology	Data Rate (mbps)	Tx (MHz)	Output Power (dBm)	Status
802.11g	OFDM	BPSK	6	2412	8.124	Pass
802.11g	OFDM	BPSK	6	2437	11.815	Pass
802.11g	OFDM	BPSK	6	2462	7.680	Pass



Frequency 802.11g MHz



Frequency 802.11g MHz

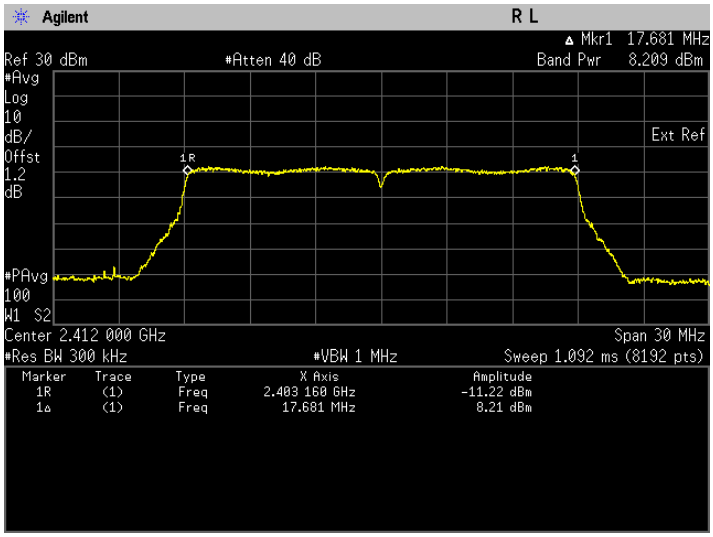


Frequency 802.11g MHz

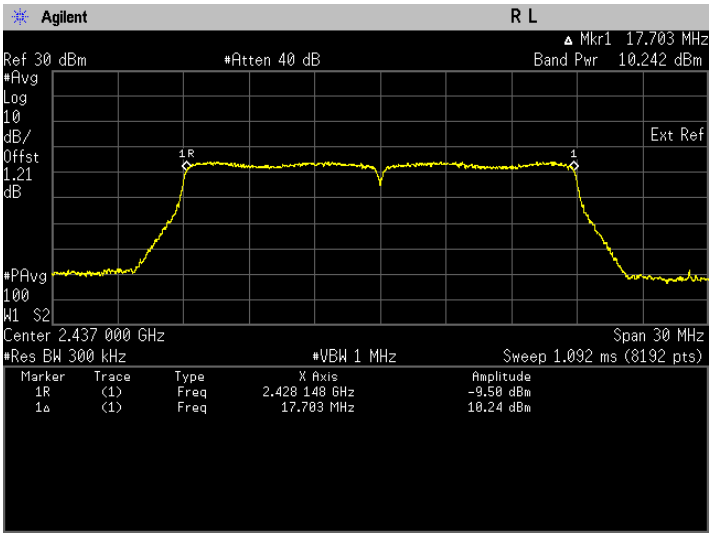
802.11n (HT20)

Output power = band power +duty cycle factor
Duty cycle factor =0.007dBm

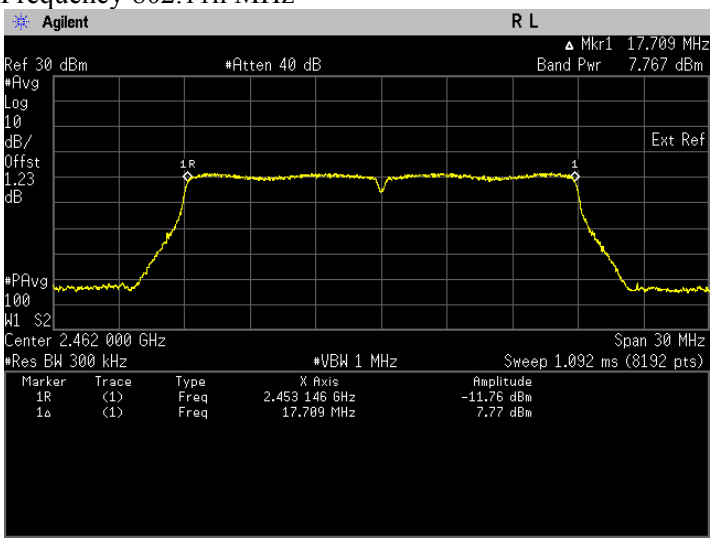
Test Conditions				Test Frequency	Results	
Standard	Modulation Type	Modulation Technology	Data Rate (mbps)	Tx (MHz)	Output Power (dBm)	Status
802.11n	OFDM	DBPSK	6.5	2412	8.216	Pass
802.11n	OFDM	DBPSK	6.5	2437	10.249	Pass
802.11n	OFDM	DBPSK	6.5	2462	7.774	Pass



Frequency 802.11n MHz



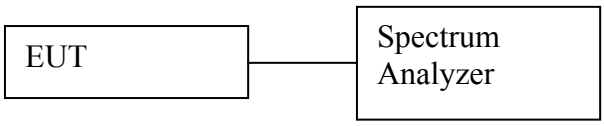
Frequency 802.11n MHz



Frequency 802.11n MHz

6.3.Duty Cycle of the test signal

6.3.1. Test Setup

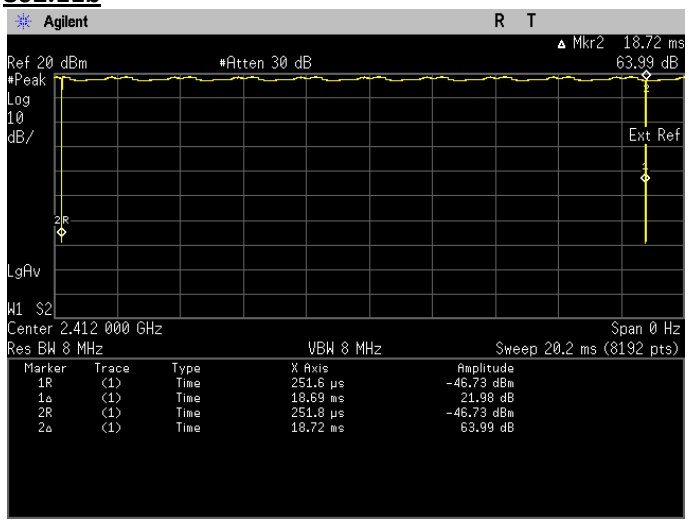


1) Check and ensure the spectrum analyzer well calibrate.
2) Turn on the DUT and set DUT to transmit maximum power.
3) Connect DUT's antenna terminal to spectrum analyzer with a low loss cable.
4) Setting of Spectrum analyzer :
    a. Set the RBW = 10 MHz or the highest RBW available on spectrum analyzer.
    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)

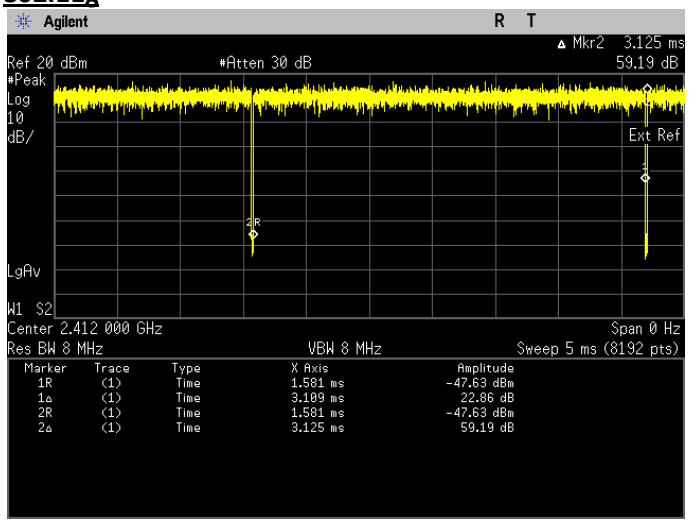
802.11b



Duty Cycle, Antenna 1

	Antenna 1
On time (ms)	18.69
On + Off Time (ms)	18.72
Duty cycle	0.9984
Duty Cycle factor	0.007

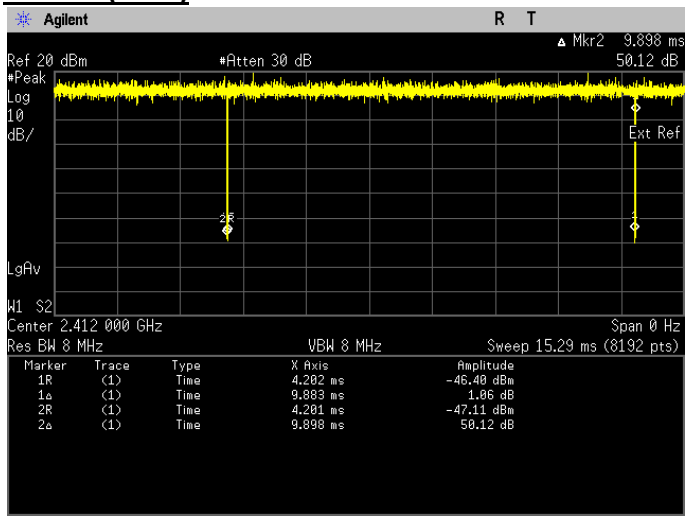
802.11g



Duty Cycle, Antenna 1

	Antenna 1
On time (ms)	3.109
On + Off Time (ms)	3.125
Duty cycle	0.9949
Duty Cycle factor	0.022

802.11n (HT20)

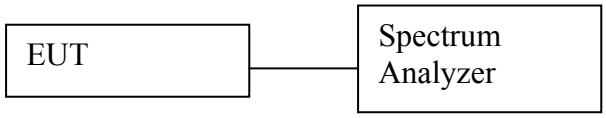


Duty Cycle, Antenna 1

	Antenna 1
On time (ms)	9.883
On + Off Time (ms)	9.898
Duty cycle	0.9985
Duty Cycle factor	0.007

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

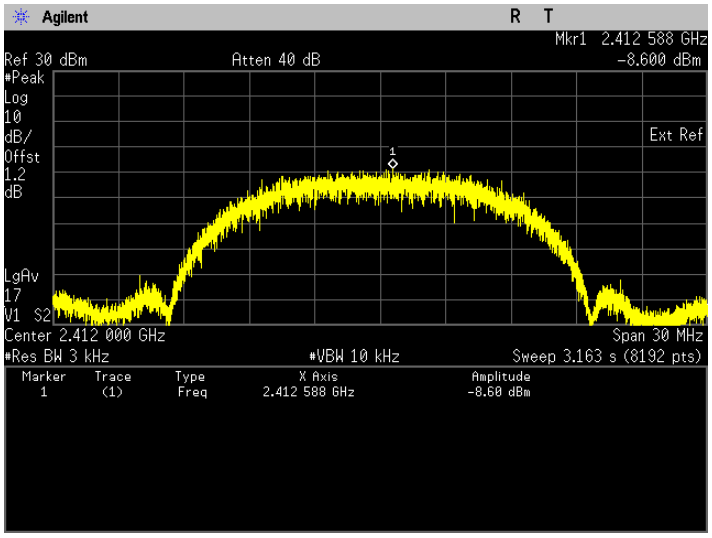
Normal Condition (25 º C)
≤ 8 dBm/3kHz

6.4.3. **Test Result**

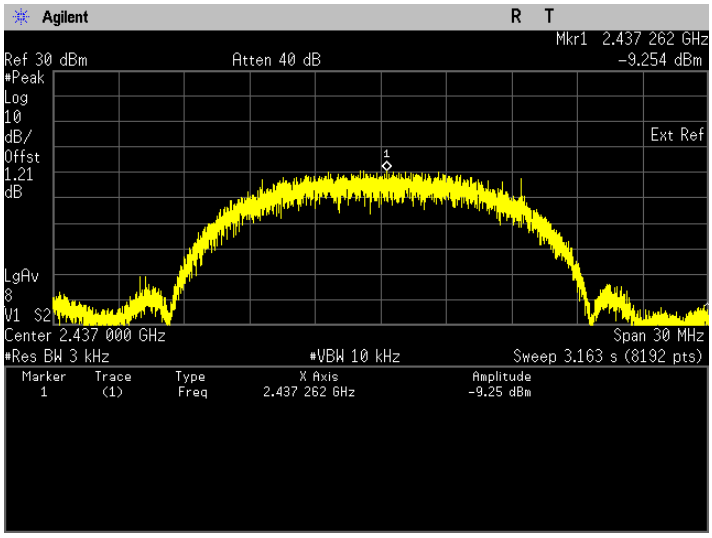
802.11b

Antenna 1:

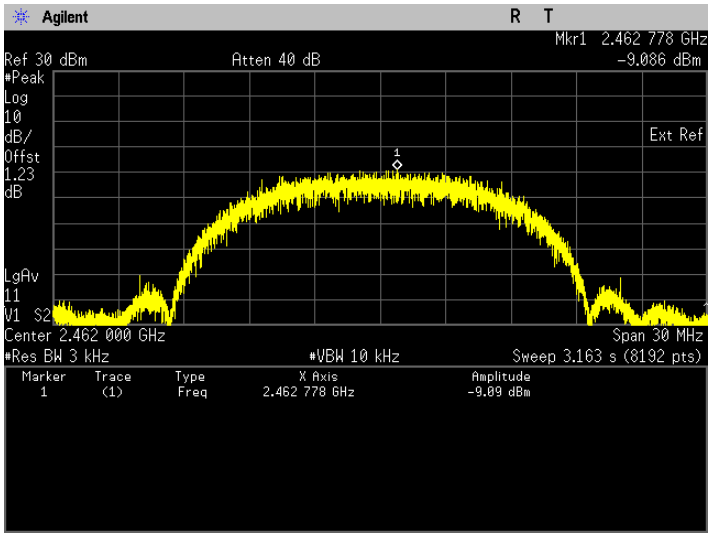
Test Conditions				Test Frequency	Results	
Standard	Modulation Type	Modulation Technology	Data Rate (mbps)	Tx (MHz)	Power (dBm/100kHz)	Status
802.11b	DSSS	QPSK	11	2412	-8.60	Pass
802.11b	DSSS	QPSK	11	2437	-9.25	Pass
802.11b	DSSS	QPSK	11	2462	-9.09	Pass



Maximum Power Spectral Density. 802.11b Frequency 2412 MHz



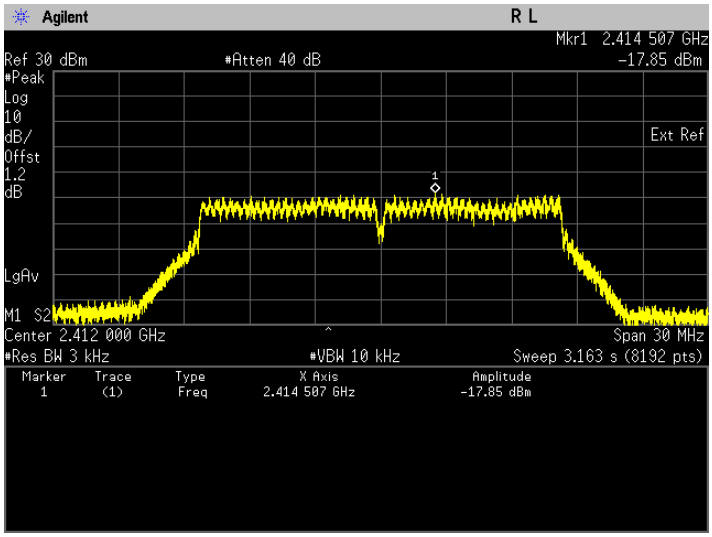
Maximum Power Spectral Density. 802.11b Frequency 2437 MHz



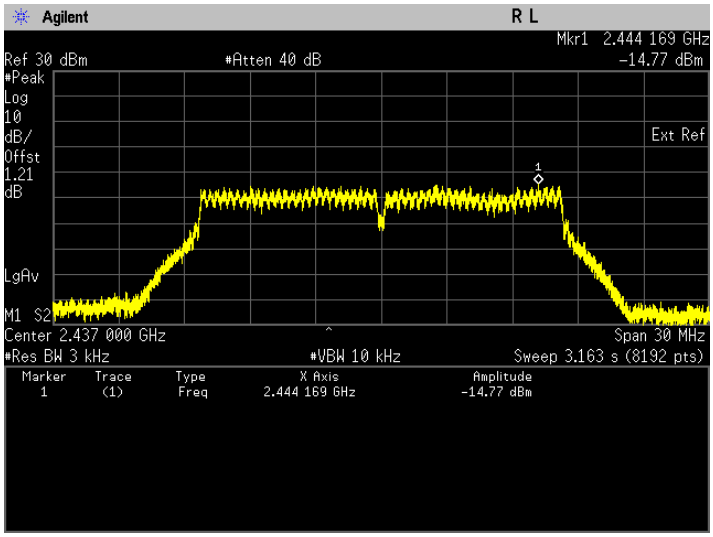
Maximum Power Spectral Density. 802.11b Frequency 2462 MHz

802.11g

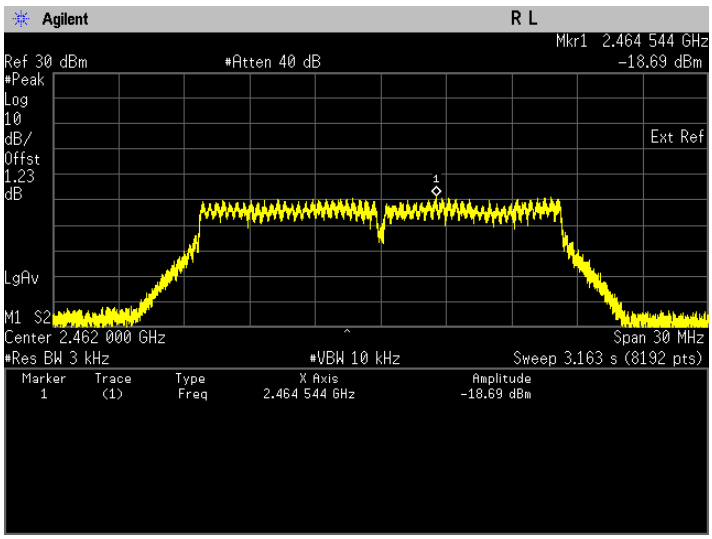
Test Conditions				Test Frequency	Results	
Standard	Modulation Type	Modulation Technology	Data Rate (mbps)	Tx (MHz)	Power (dBm/100kHz)	Status
802.11g	OFDM	BPSK	6	2412	-17.85	Pass
802.11g	OFDM	BPSK	6	2437	-14.78	Pass
802.11g	OFDM	BPSK	6	2462	-18.69	Pass



Maximum Power Spectral Density. 802.11g Frequency 2412 MHz



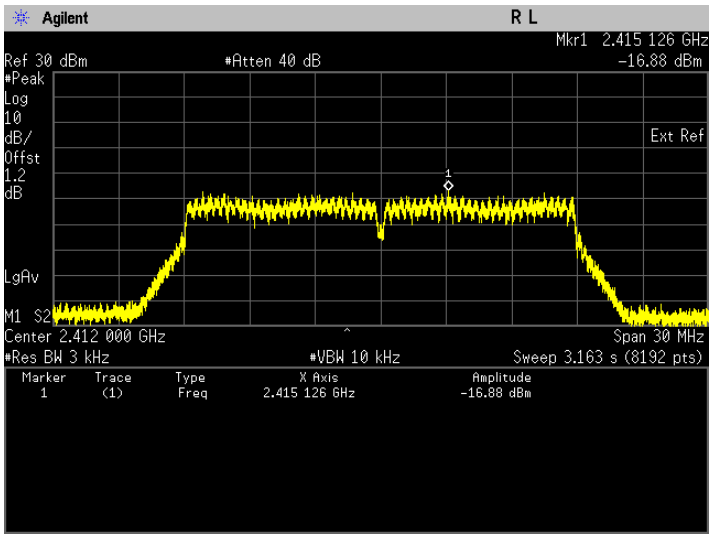
Maximum Power Spectral Density. 802.11g Frequency 2437 MHz



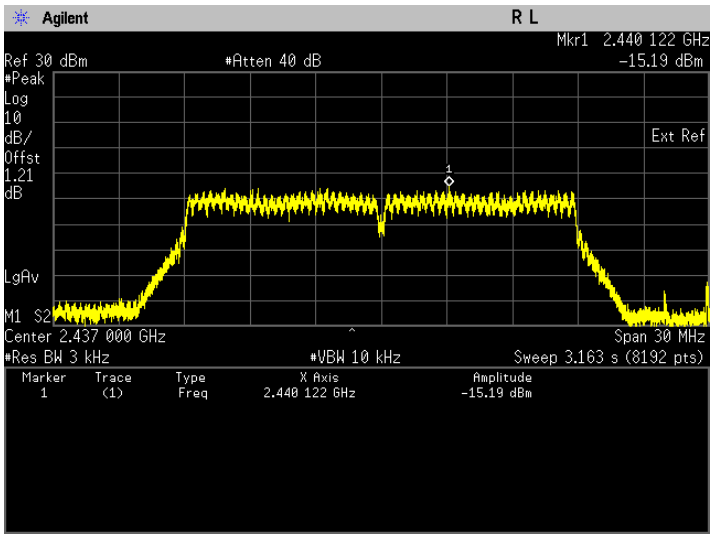
Maximum Power Spectral Density. 802.11g Frequency 2462 MHz

802.11n (HT20)

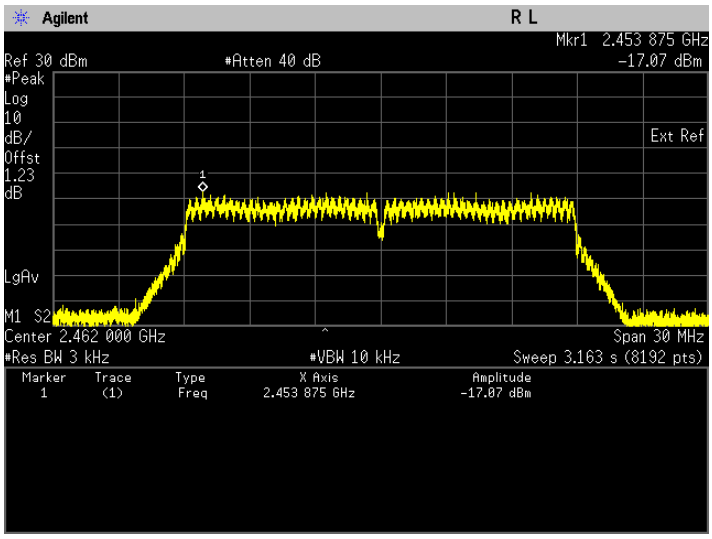
Test Conditions				Test Frequency	Results	
Standard	Modulation Type	Modulation Technology	Data Rate (mbps)	Tx (MHz)	Power (dBm/3kHz)	Status
802.11n	OFDM	DBPSK	6.5	2412	-16.88	Pass
802.11n	OFDM	DBPSK	6.5	2437	-15.19	Pass
802.11n	OFDM	DBPSK	6.5	2462	-17.07	Pass



Maximum Power Spectral Density. 802.11n Frequency 2412 MHz



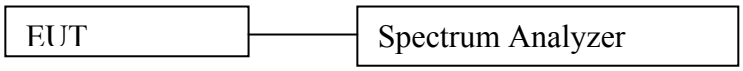
Maximum Power Spectral Density. 802.11n Frequency 2437 MHz



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:

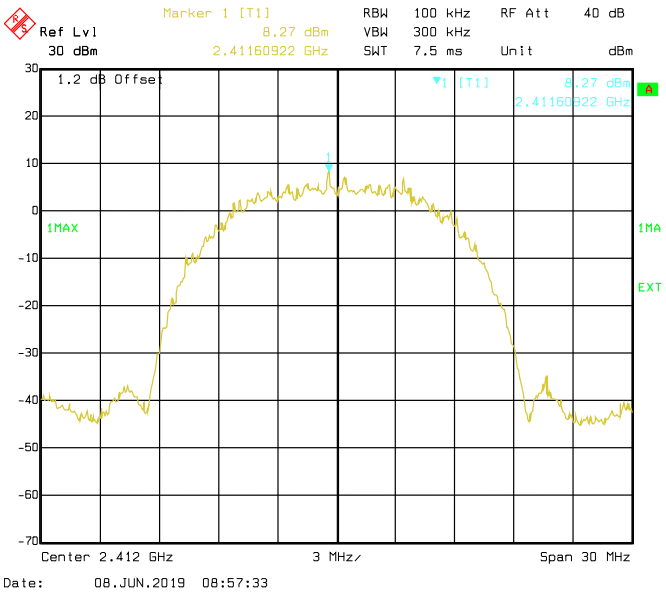
Normal Condition (25 º C)
Shall be at least 30 dB below peak (max) power.

6.5.3. Test Result

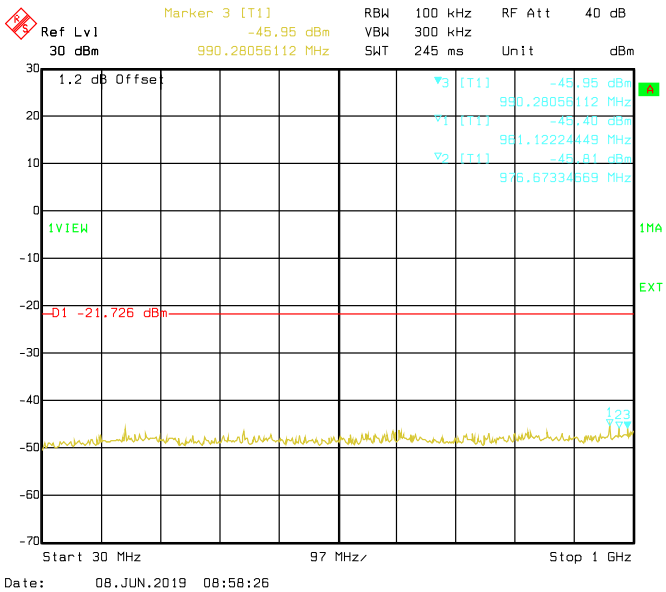
802.11b

Antenna 1:

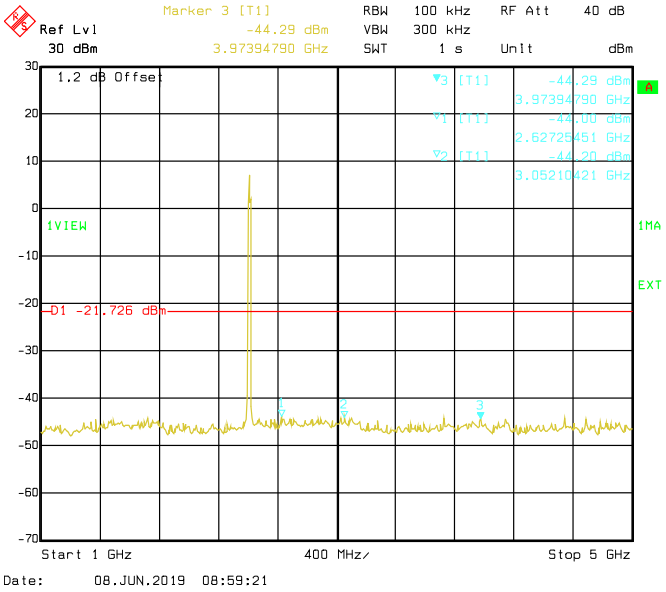
Test Conditions				Test Frequency	Results		
Standard	Modulation Type	Modulation Technology	Data Rate (mbps)	Tx (MHz)	Spurs (MHz)	Level (dBm)	Status
802.11b	DSSS	QPSK	11	2412	14198.40	-39.33	Pass
					6683.37	-39.95	Pass
					6713.43	-40.64	Pass
802.11b	DSSS	QPSK	11	2437	4879.76	-40.30	Pass
					14188.38	-40.65	Pass
					6963.93	-40.83	Pass
802.11b	DSSS	QPSK	11	2462	14188.38	-39.91	Pass
					6673.35	-40.57	Pass
					6973.95	-41.35	Pass



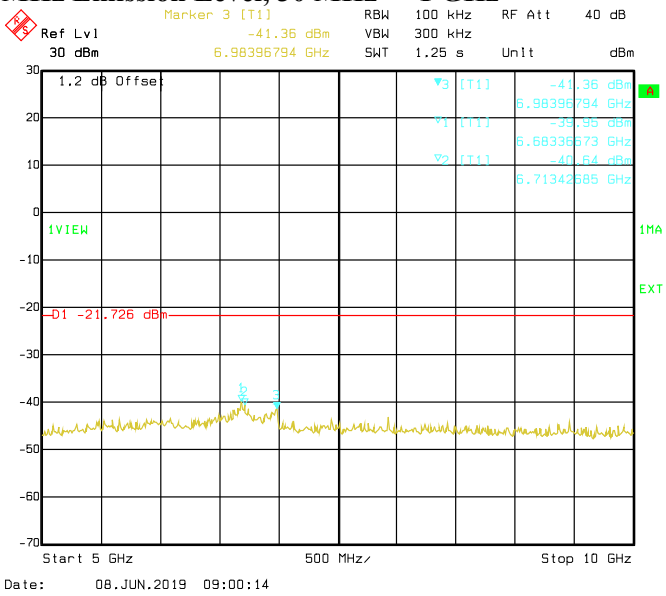
Conducted Emissions. 802.11b, Frequency 2412 MHz Reference Level



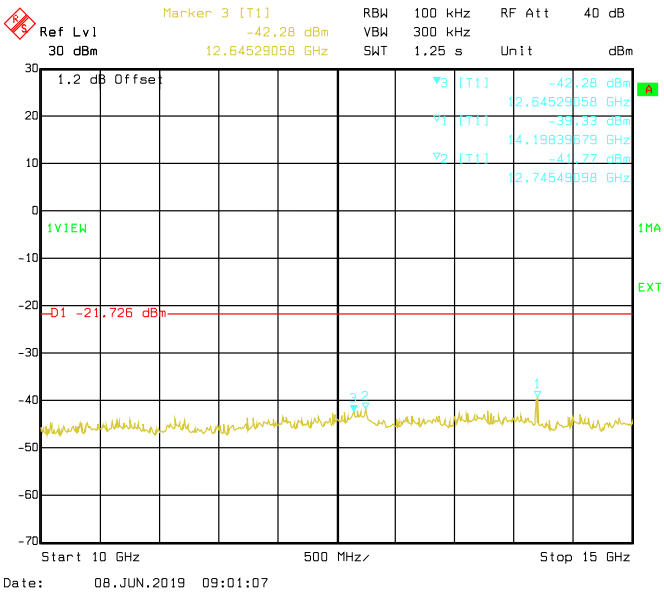
Conducted Emissions. 802.11b, Frequency 2412 MHz Emission Level, 30 MHz -> 1 GHz



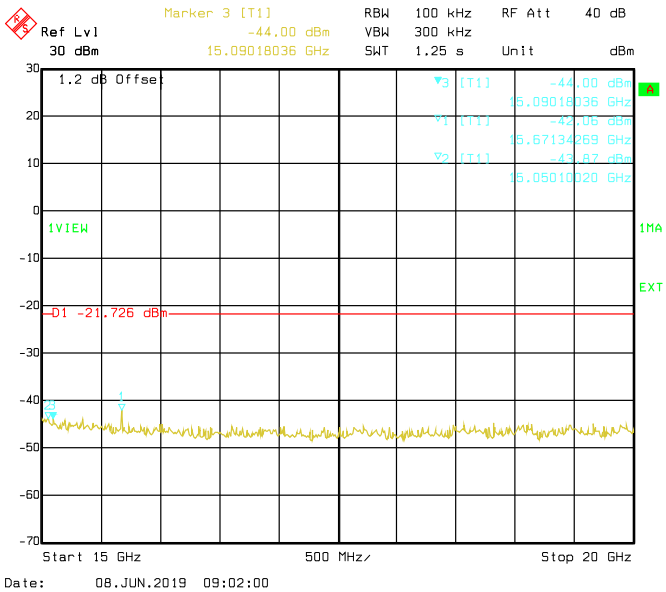
Conducted Emissions. 802.11b, Frequency 2412 MHz Emission Level, 1 GHz -> 5 GHz



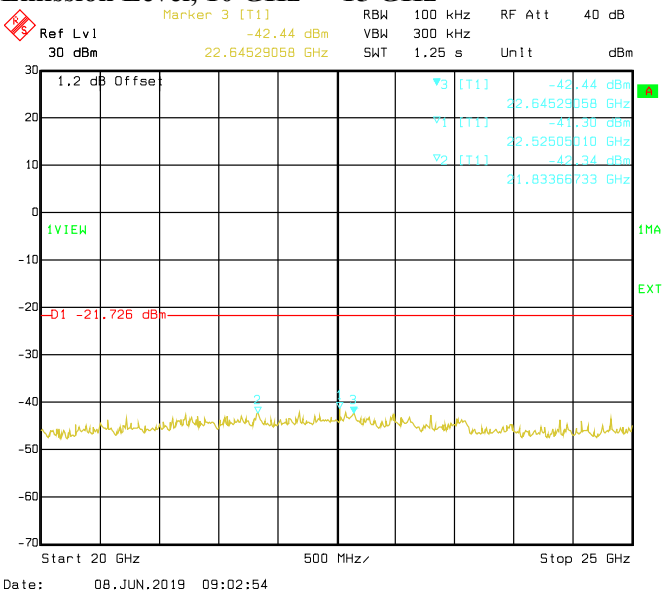
Conducted Emissions. 802.11b, Frequency 2412 MHz Emission Level, 5 GHz -> 10 GHz



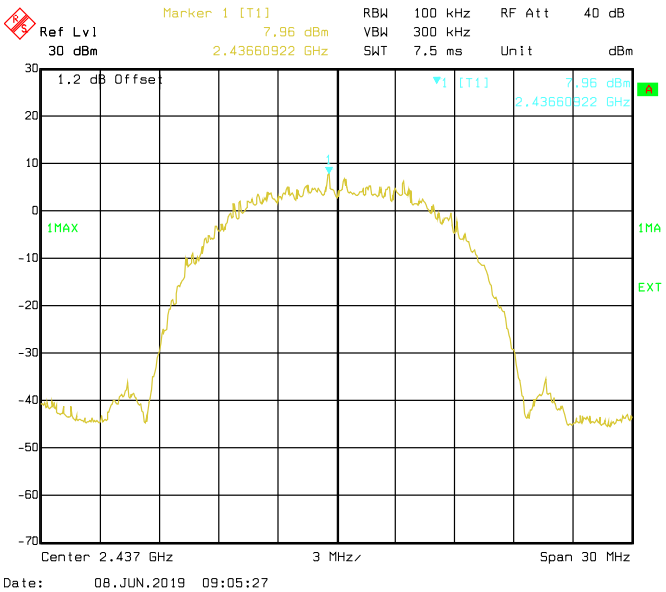
Conducted Emissions. 802.11b, Frequency 2412 Emission Level, 10 GHz -> 15 GHz



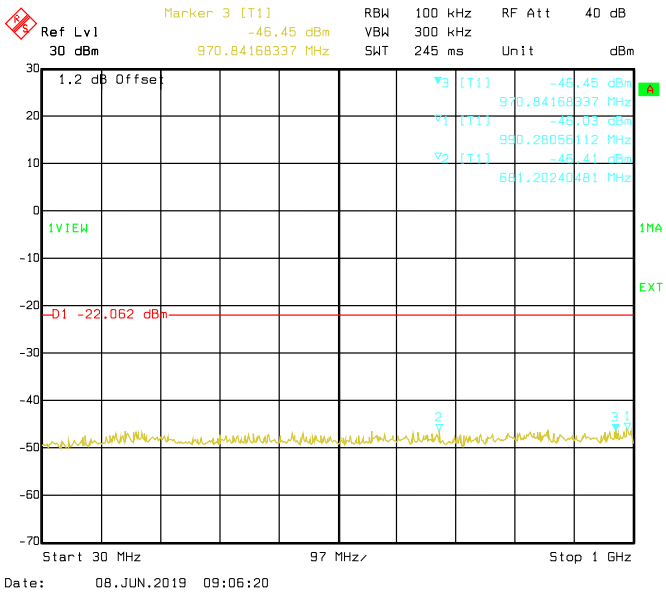
Conducted Emissions. 802.11b, Frequency 2412 MHz Emission Level, 15 GHz -> 20 GHz



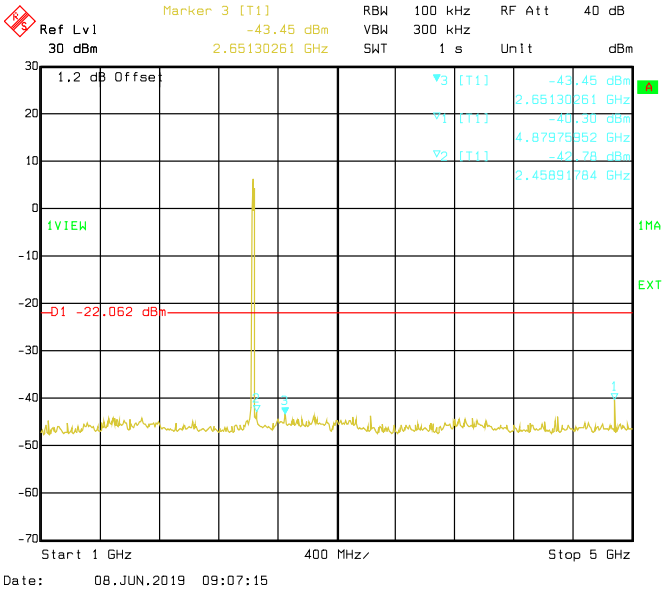
Conducted Emissions. 802.11b, Frequency 2412 MHz Emission Level, 20 GHz -> 25 GHz



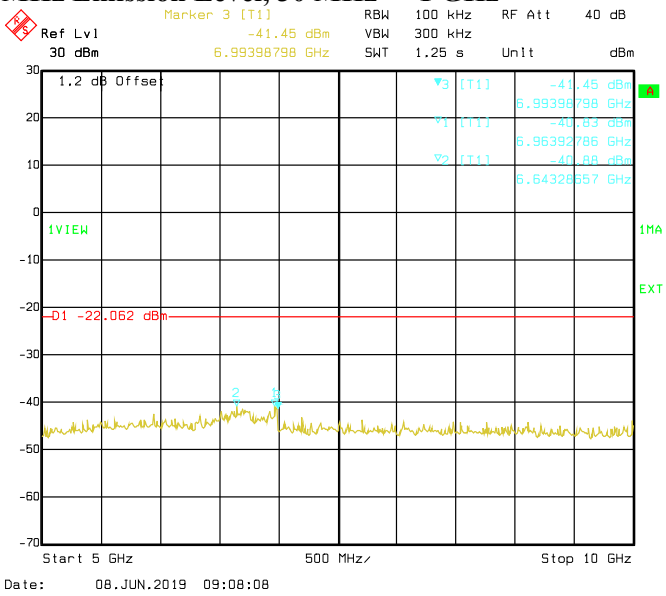
Conducted Emissions. 802.11b, Frequency 2437 MHz Reference Level



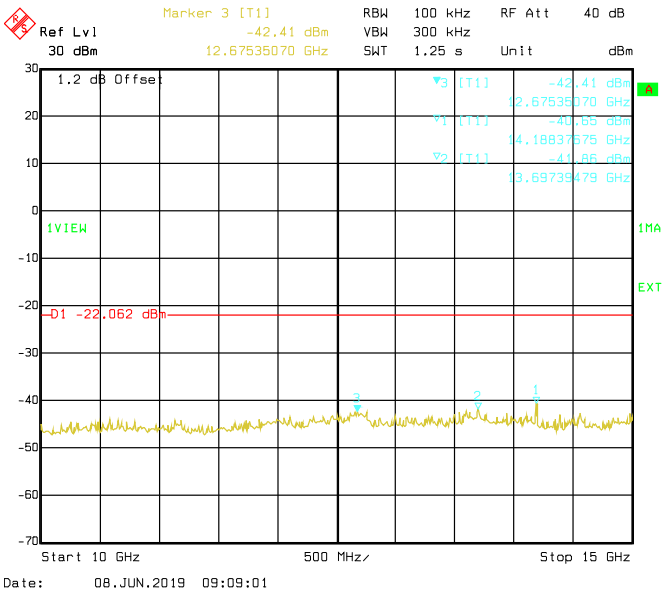
Conducted Emissions. 802.11b, Frequency 2437 MHz Emission Level, 30 MHz -> 1 GHz



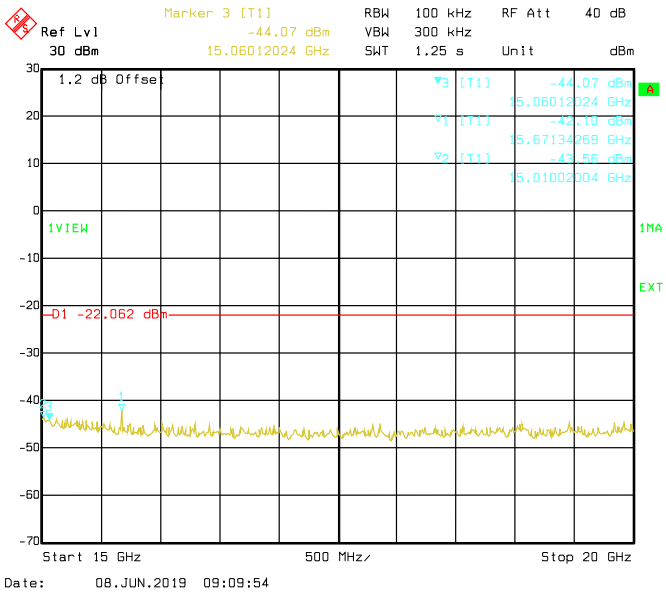
Conducted Emissions. 802.11b, Frequency 2437 MHz Emission Level, 1 GHz -> 5 GHz



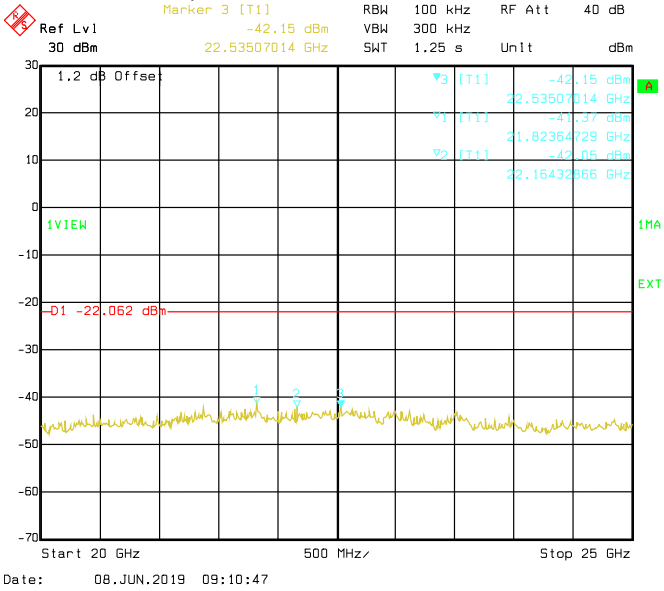
Conducted Emissions. 802.11b, Frequency 2437 MHz Emission Level, 5 GHz -> 10 GHz



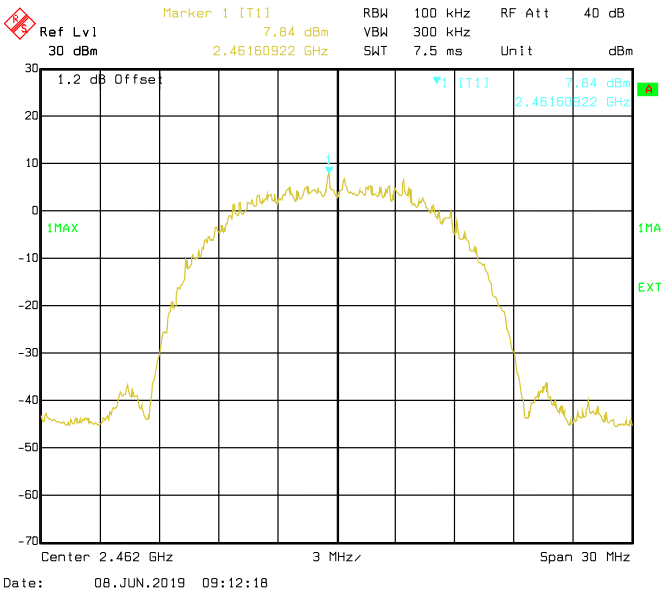
Conducted Emissions. 802.11b, Frequency 2437 Emission Level, 10 GHz -> 15 GHz



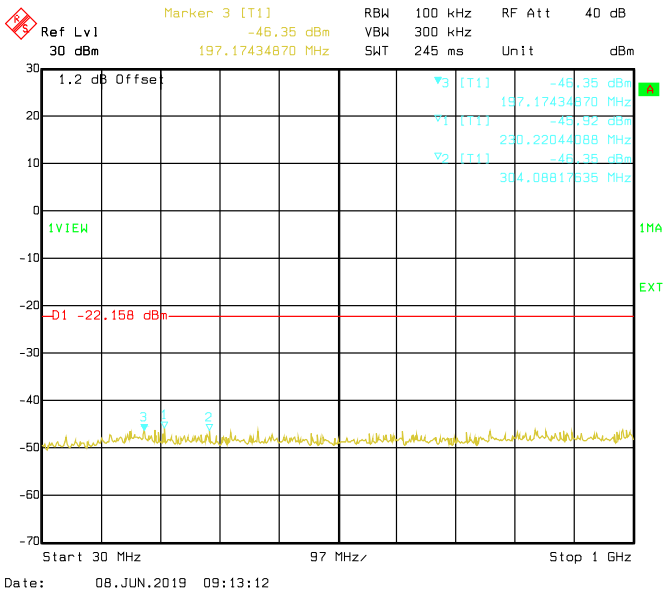
Conducted Emissions. 802.11b, Frequency 2437 MHz Emission Level, 15 GHz -> 20 GHz



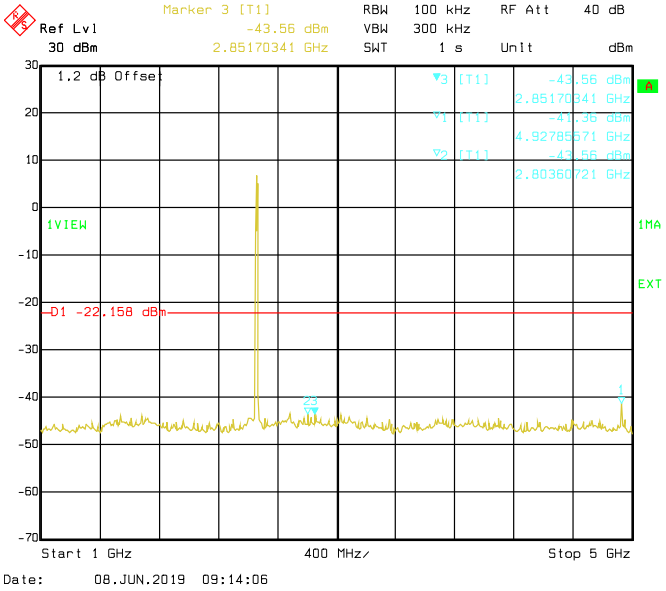
Conducted Emissions. 802.11b, Frequency 2437 MHz Emission Level, 20 GHz -> 25 GHz



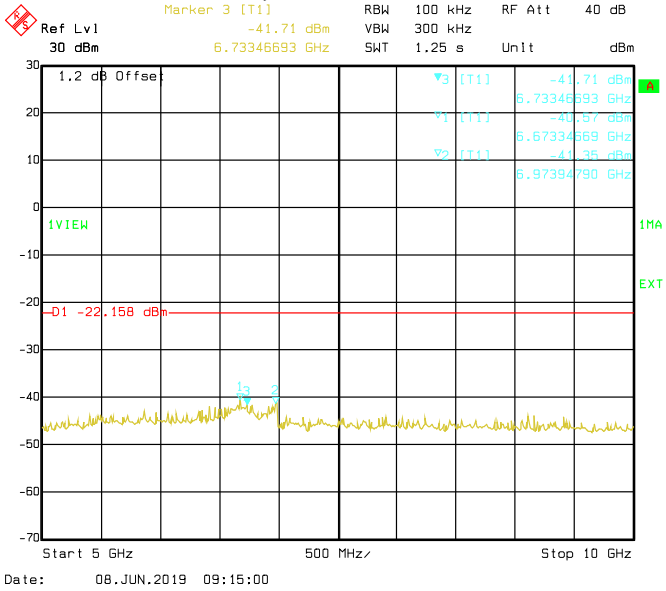
Conducted Emissions. 802.11b, Frequency 2462 MHz Reference Level



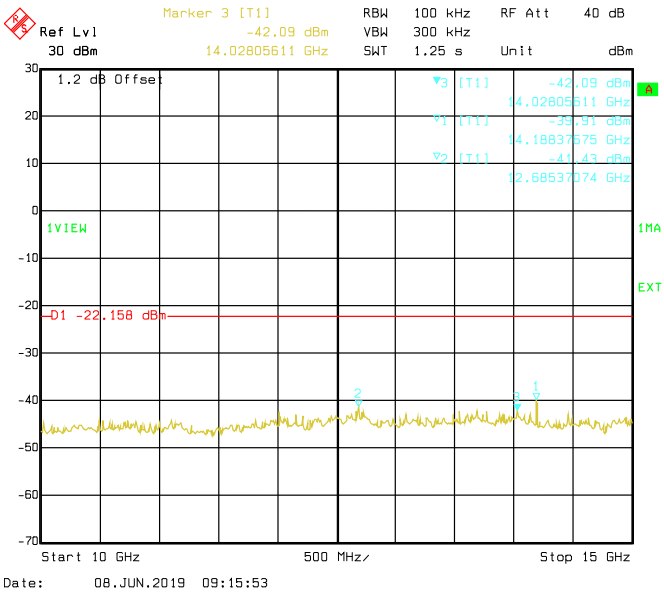
Conducted Emissions. 802.11b, Frequency 2462 MHz Emission Level, 30 MHz -> 1 GHz



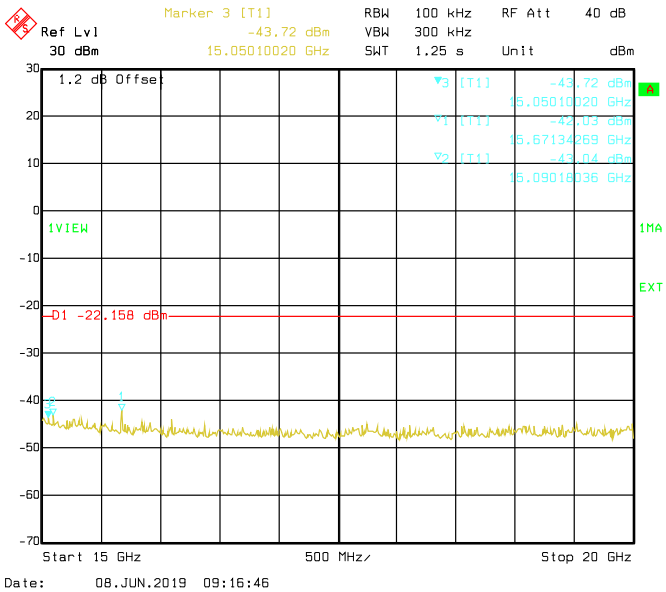
Conducted Emissions. 802.11b, Frequency 2462 MHz Emission Level, 1 GHz -> 5 GHz



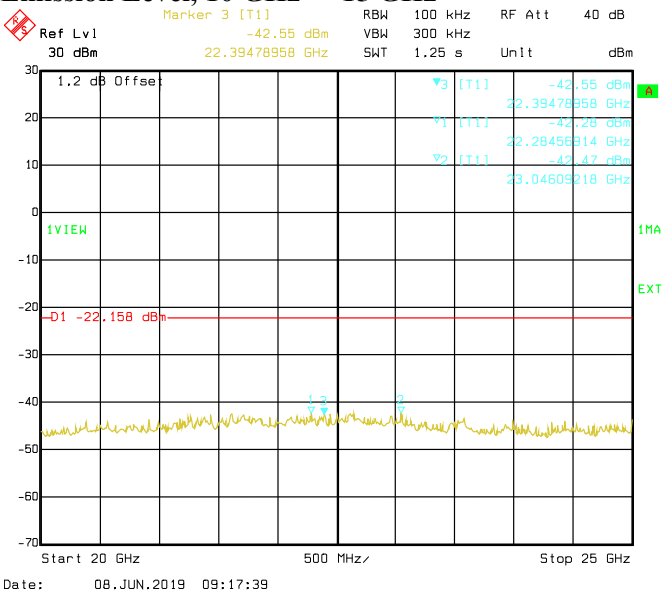
Conducted Emissions. 802.11b, Frequency 2462 MHz Emission Level, 5 GHz -> 10 GHz



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

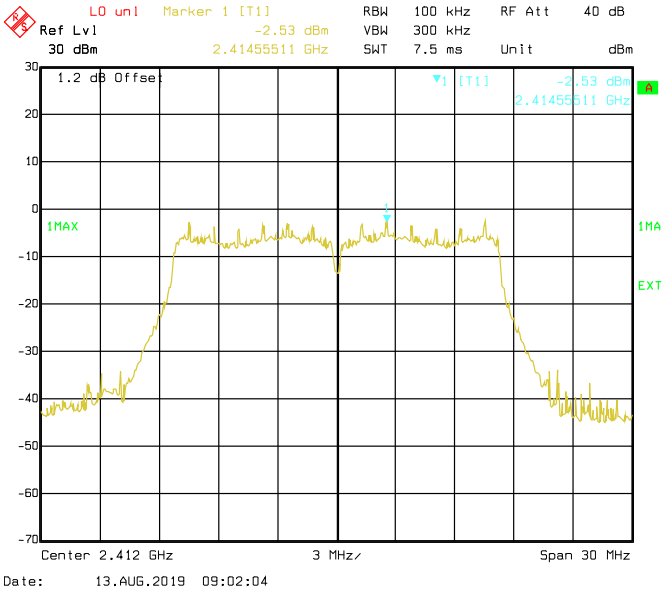


Conducted Emissions. 802.11b, Frequency 2462 MHz Emission Level, 20 GHz -> 25 GHz

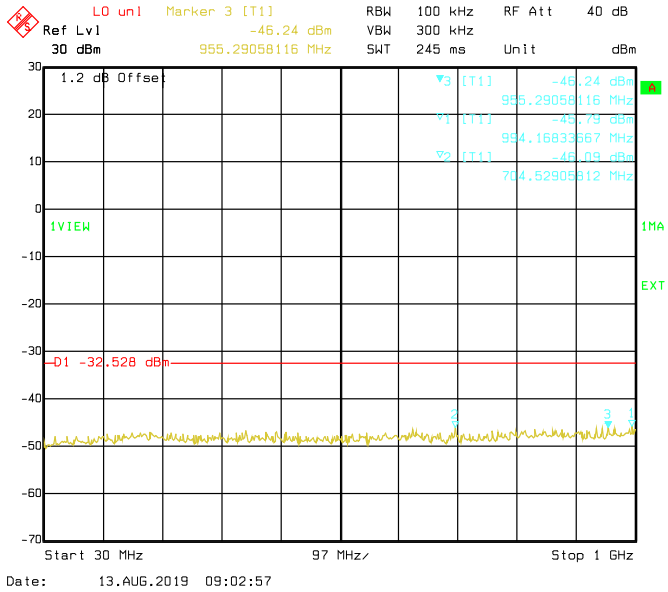
802.11g

Antenna 1:

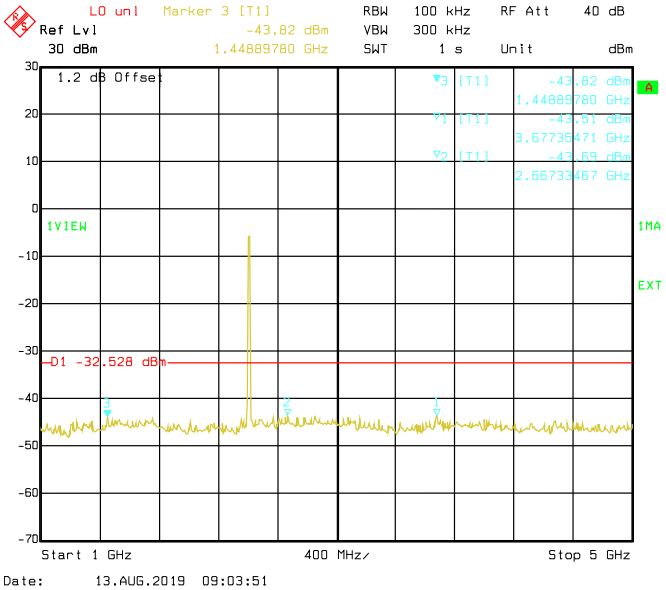
Test Conditions				Test Frequency	Results		
Standard	Modulation Type	Modulation Technology	Data Rate (mbps)	Tx (MHz)	Spurs (MHz)	Level (dBm)	Status
802.11g	OFDM	BPSK	6	2412	14188.38	-39.68	Pass
					6983.97	-40.71	Pass
					6813.63	-40.92	Pass
802.11g	OFDM	BPSK	6	2437	14188.38	-39.72	Pass
					6673.35	-40.69	Pass
					6743.49	-40.95	Pass
802.11g	OFDM	BPSK	6	2462	14188.38	-39.28	Pass
					6993.99	-39.79	Pass
					6963.93	-41.02	Pass



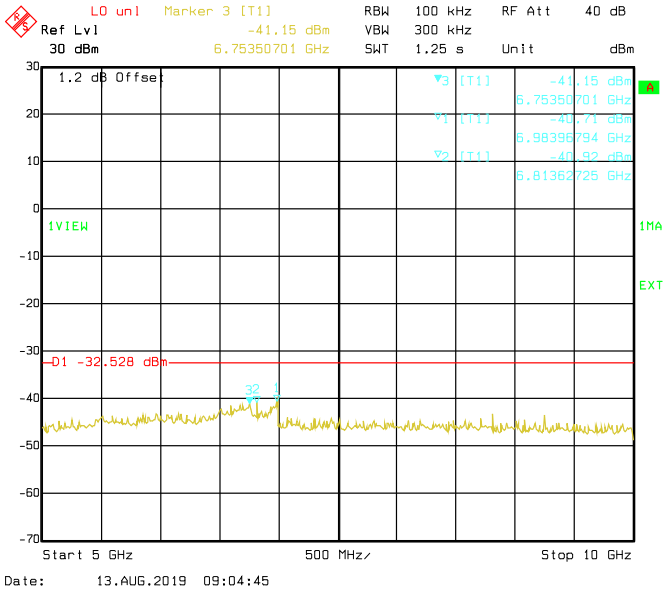
Conducted Emissions. 802.11g, Frequency 2412 MHz Reference Level



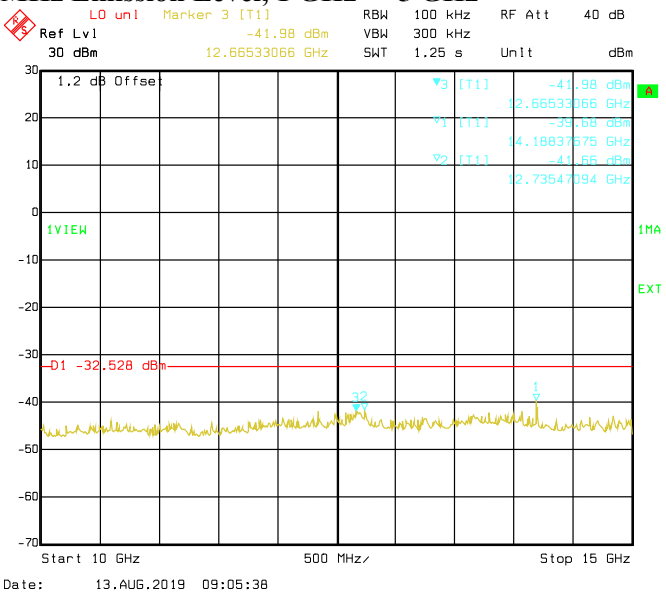
Conducted Emissions. 802.11g, Frequency 2412 MHz Emission Level, 30 MHz -> 1 GHz



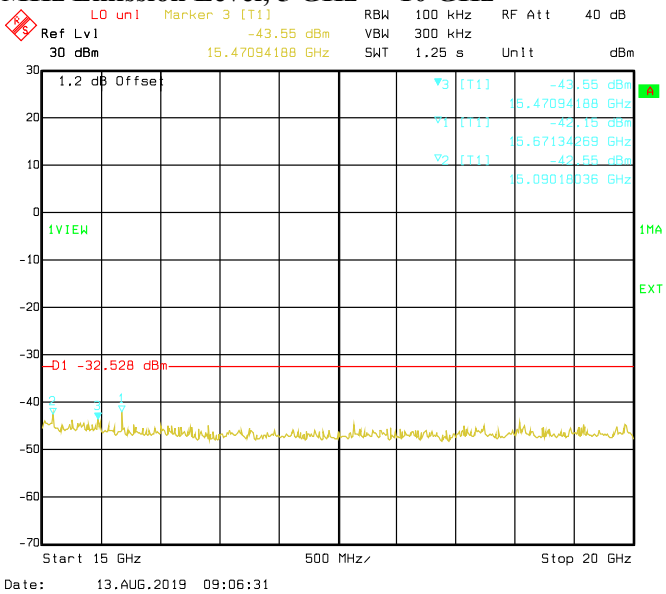
Conducted Emissions. 802.11g, Frequency 2412 MHz Emission Level, 1 GHz -> 5 GHz



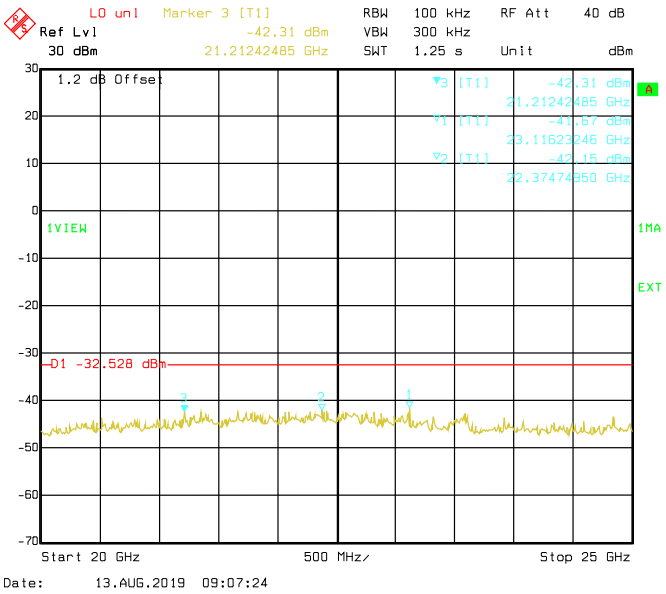
Conducted Emissions. 802.11g, Frequency 2412 MHz Emission Level, 5 GHz -> 10 GHz



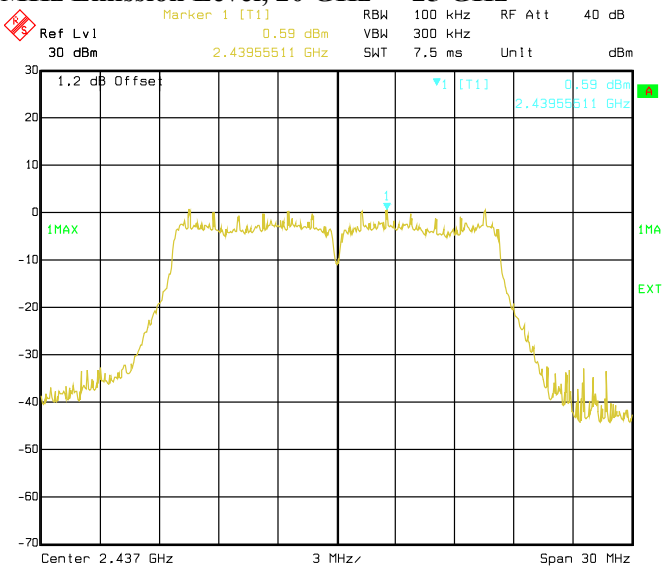
Conducted Emissions. 802.11g, Frequency 2412 Emission Level, 10 GHz -> 15 GHz



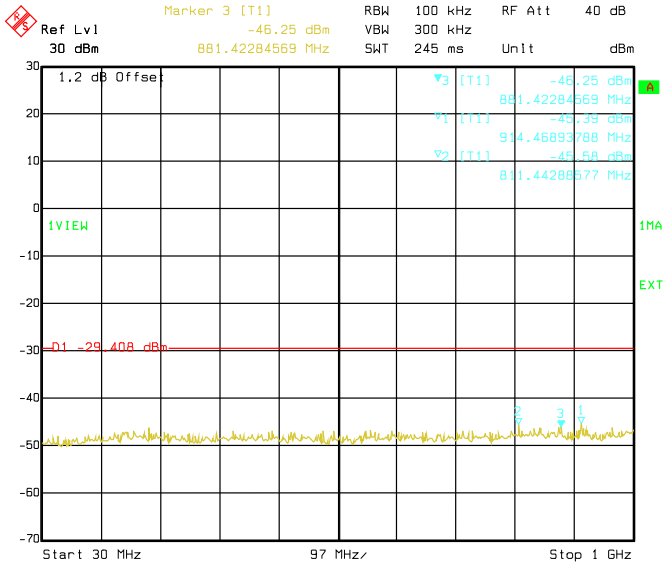
Conducted Emissions. 802.11g, Frequency 2412 MHz Emission Level, 15 GHz -> 20 GHz



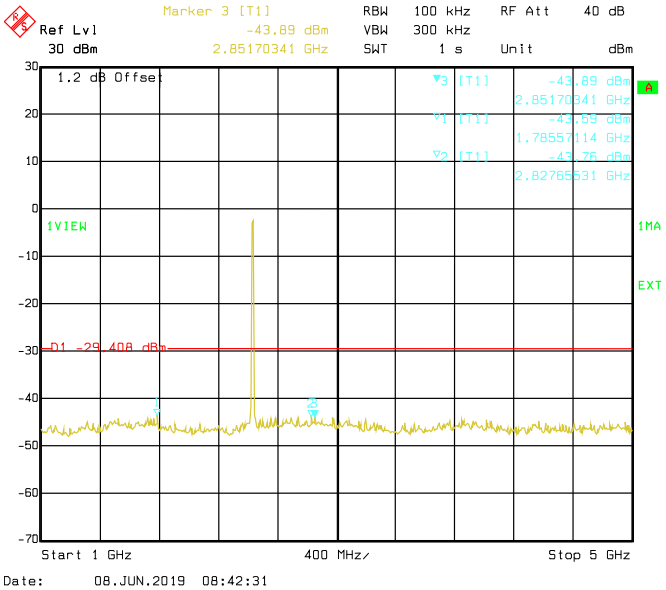
Conducted Emissions. 802.11g, Frequency 2412 MHz Emission Level, 20 GHz -> 25 GHz



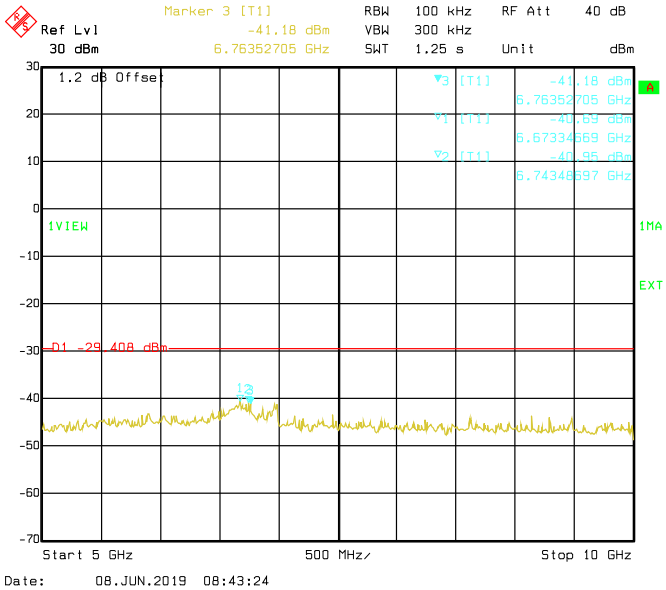
Conducted Emissions. 802.11g, Frequency 2437 MHz Reference Level



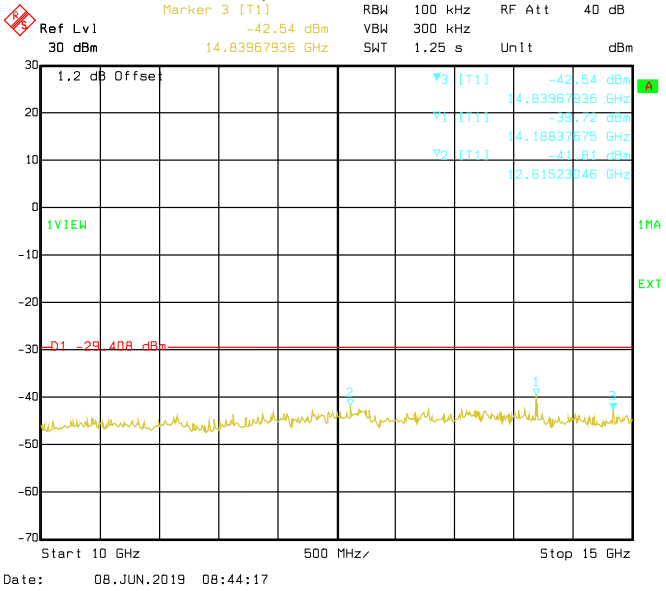
Conducted Emissions. 802.11g, Frequency 2437 MHz Emission Level, 30 MHz -> 1 GHz



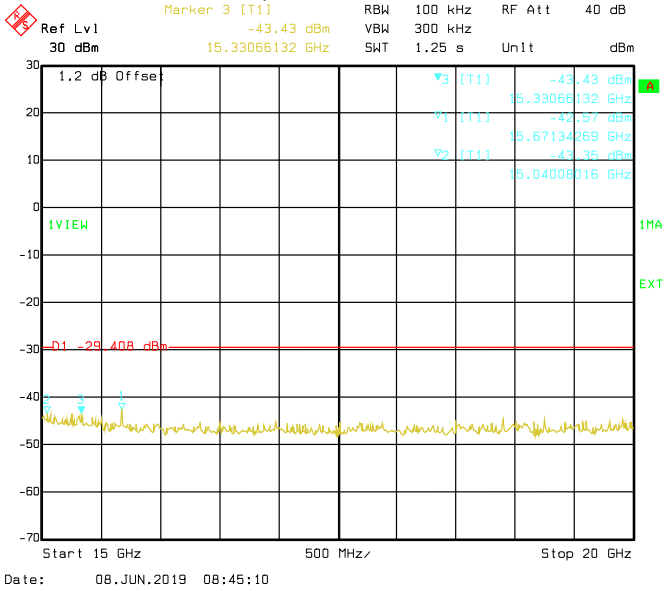
Conducted Emissions. 802.11g, Frequency 2437 MHz Emission Level, 1 GHz -> 5 GHz



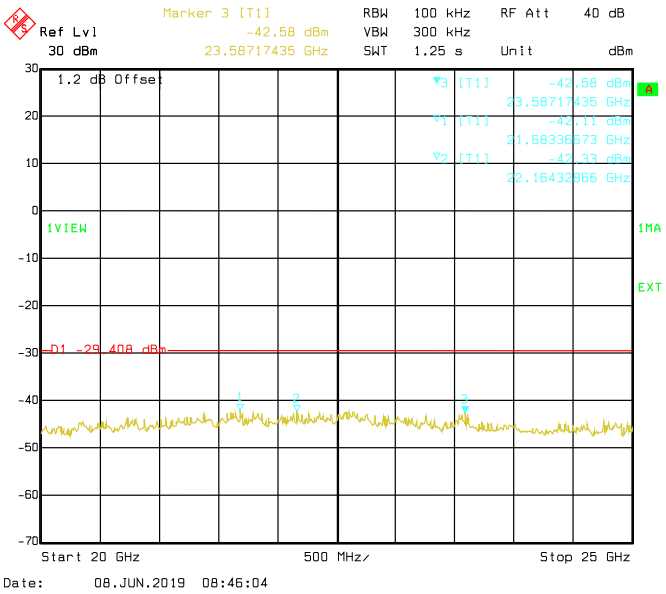
Conducted Emissions. 802.11g, Frequency 2437 MHz Emission Level, 5 GHz -> 10 GHz



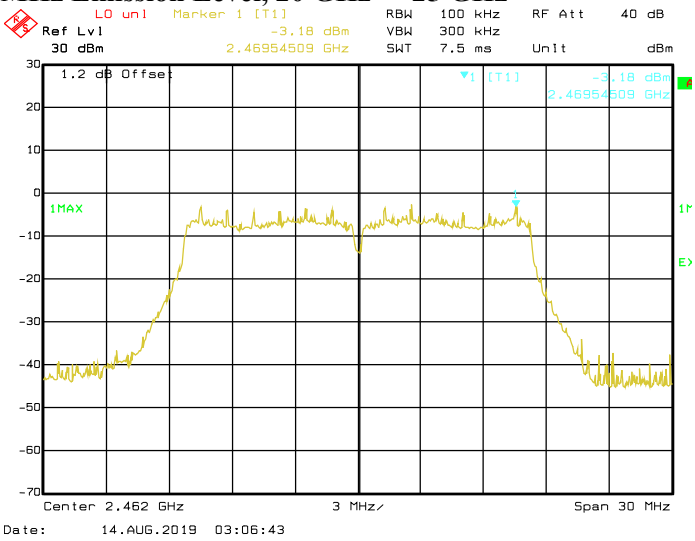
Conducted Emissions. 802.11g, Frequency 2437 Emission Level, 10 GHz -> 15 GHz



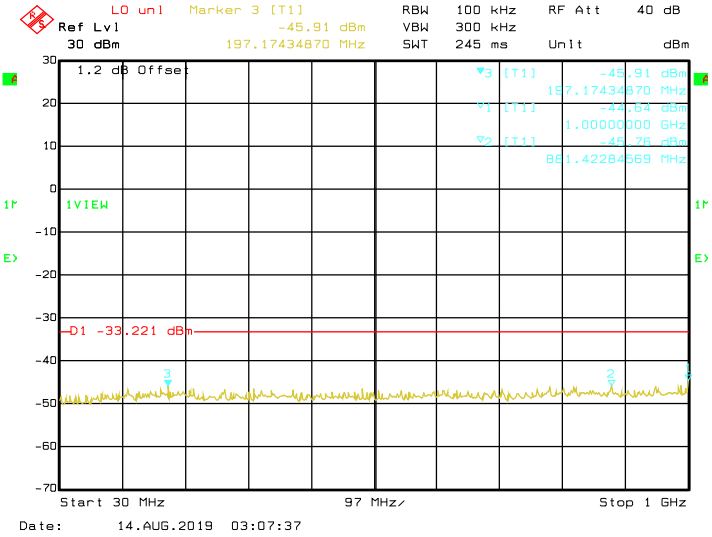
Conducted Emissions. 802.11g, Frequency 2437 MHz Emission Level, 15 GHz -> 20 GHz



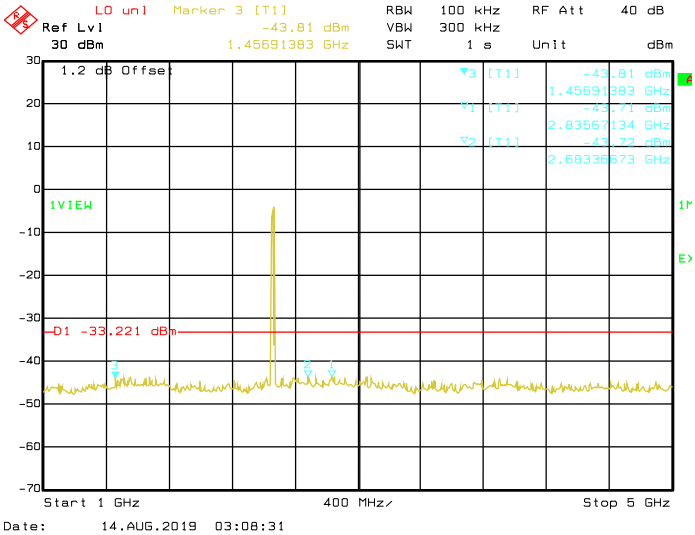
Conducted Emissions. 802.11g, Frequency 2437 MHz Emission Level, 20 GHz -> 25 GHz



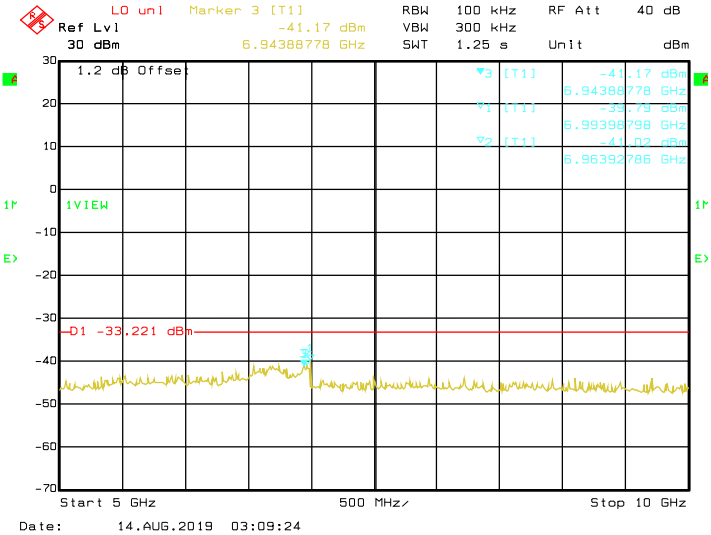
Conducted Emissions. 802.11g, Frequency 2462 MHz Reference Level



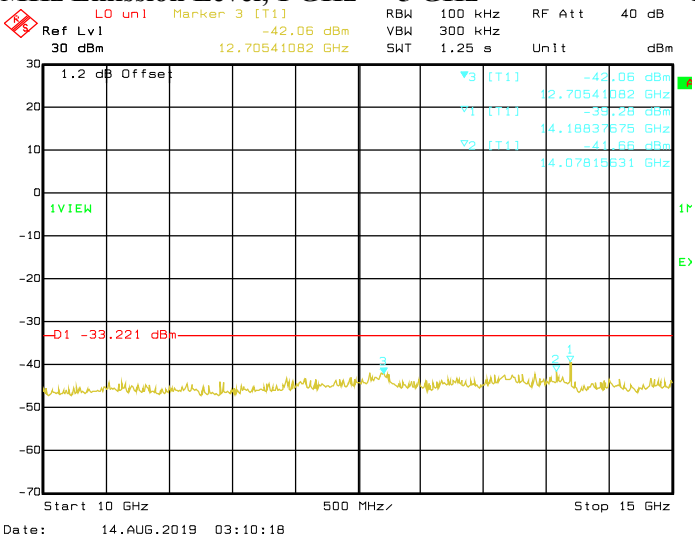
Conducted Emissions. 802.11g, Frequency 2462 MHz Emission Level, 30 MHz -> 1 GHz



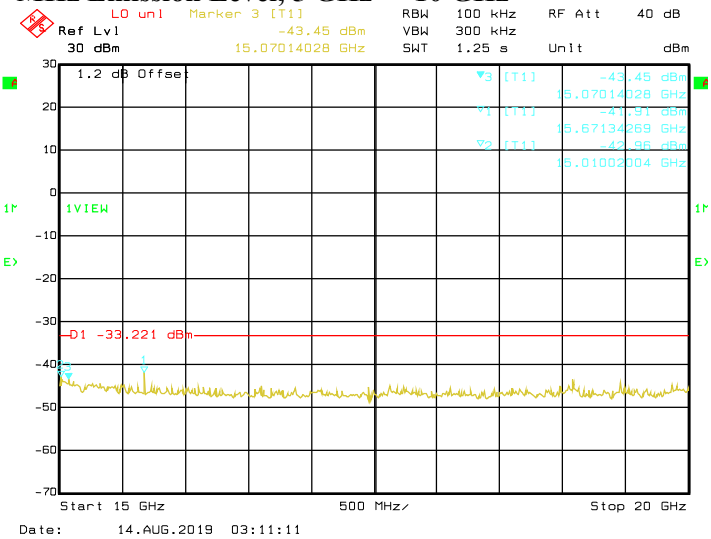
Conducted Emissions. 802.11g, Frequency 2462 MHz Emission Level, 1 GHz -> 5 GHz



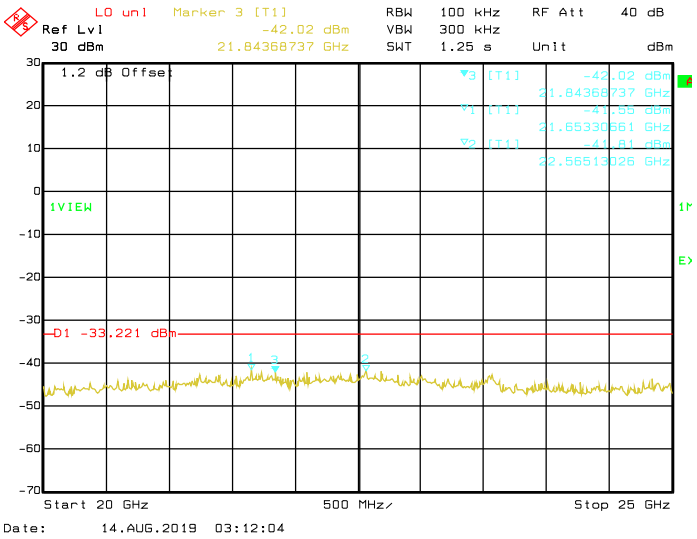
Conducted Emissions. 802.11g, Frequency 2462 MHz Emission Level, 5 GHz -> 10 GHz



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



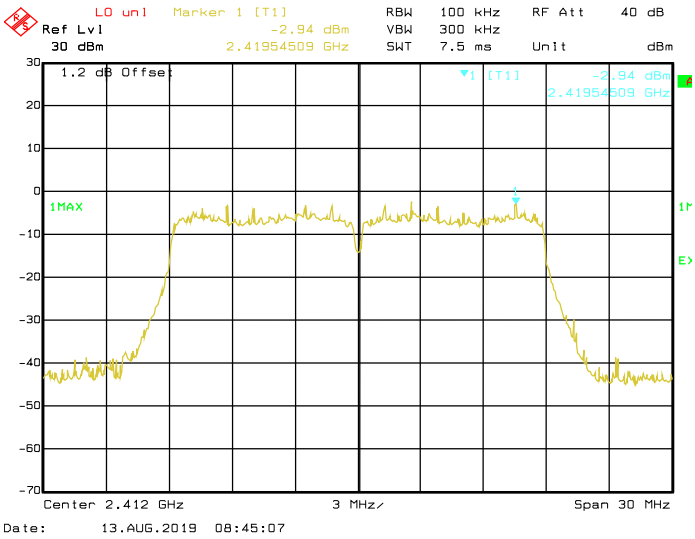
Conducted Emissions. 802.11g, Frequency 2462 MHz Emission Level, 15 GHz -> 20 GHz



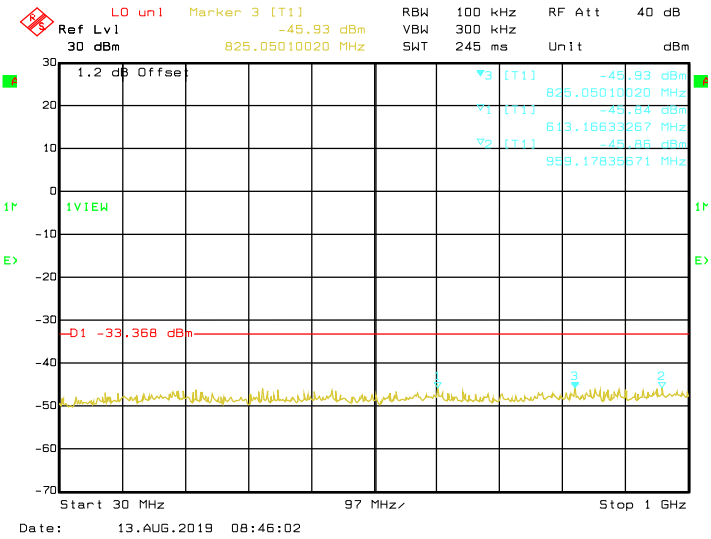
Conducted Emissions. 802.11g, Frequency 2462 MHz Emission Level, 20 GHz -> 25 GHz

802.11n (HT20)

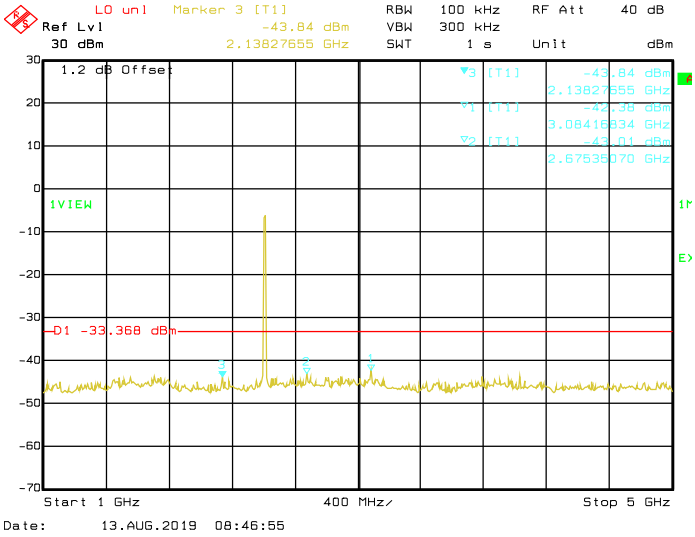
Test Conditions				Test Frequency	Results		
Standard	Modulation Type	Modulation Technology	Data Rate (mbps)	Tx (MHz)	Spurs (MHz)	Level (dBm)	Status
802.11n	OFDM	DBPSK	6.5	2412	6673.35	-39.77	Pass
					14188.38	-39.93	Pass
					6703.41	-40.66	Pass
802.11n	OFDM	DBPSK	6.5	2437	14188.38	-40.35	Pass
					6683.37	-41.04	Pass
					6983.97	-41.23	Pass
802.11n	OFDM	DBPSK	6.5	2462	14188.38	-39.75	Pass
					6983.97	-39.81	Pass
					6713.43	-41.35	Pass



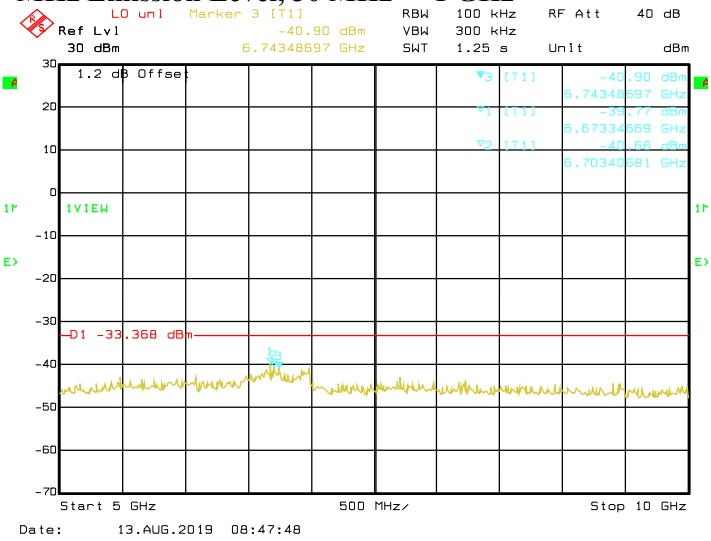
Conducted Emissions. 802.11n, Frequency 2412 MHz Reference Level



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

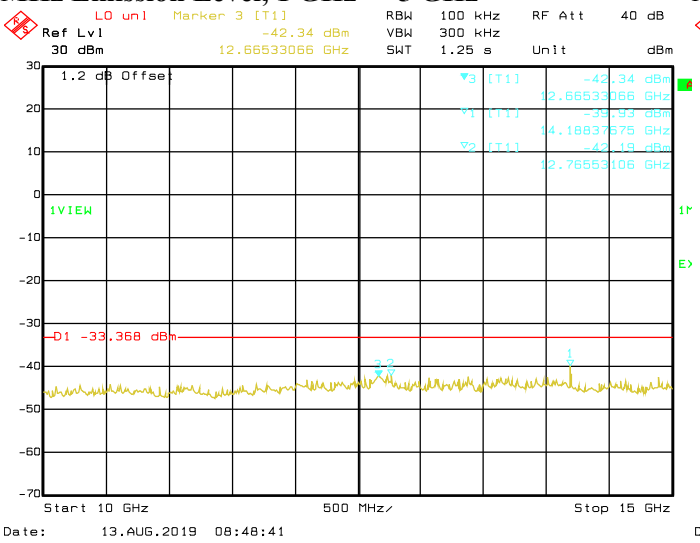


Conducted Emissions. 802.11n, Frequency 2412 MHz Reference Level

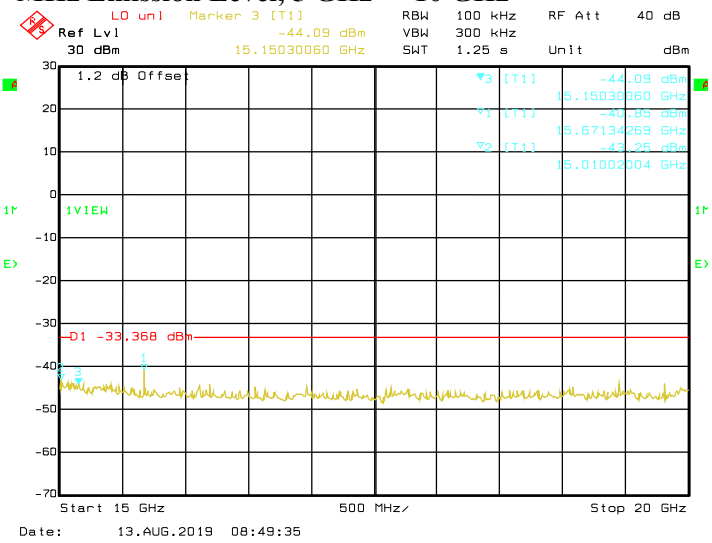


Conducted Emissions. 802.11n, Frequency 2412 MHz Emission Level, 30 MHz -> 1 GHz

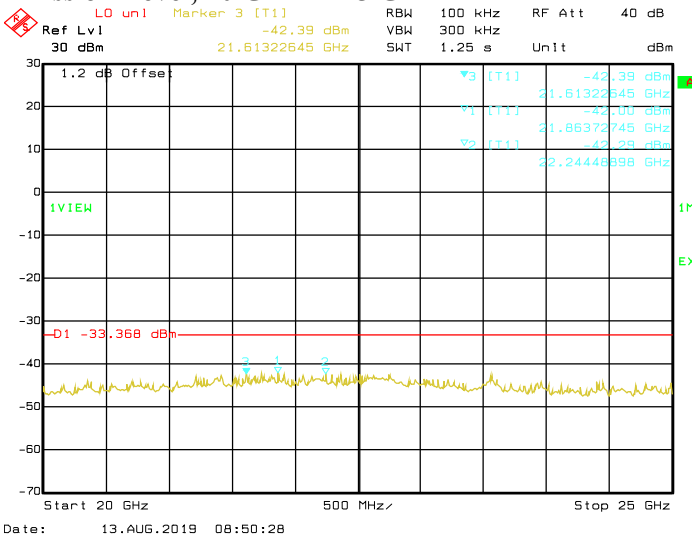
Conducted Emissions. 802.11n, Frequency 2412 MHz Emission Level, 1 GHz -> 5 GHz



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

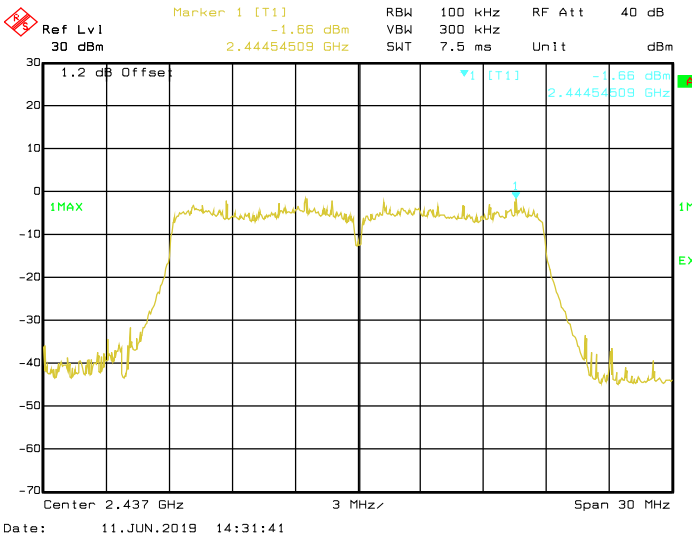


Conducted Emissions. 802.11n, Frequency 2412 Emission Level, 10 GHz -> 15 GHz

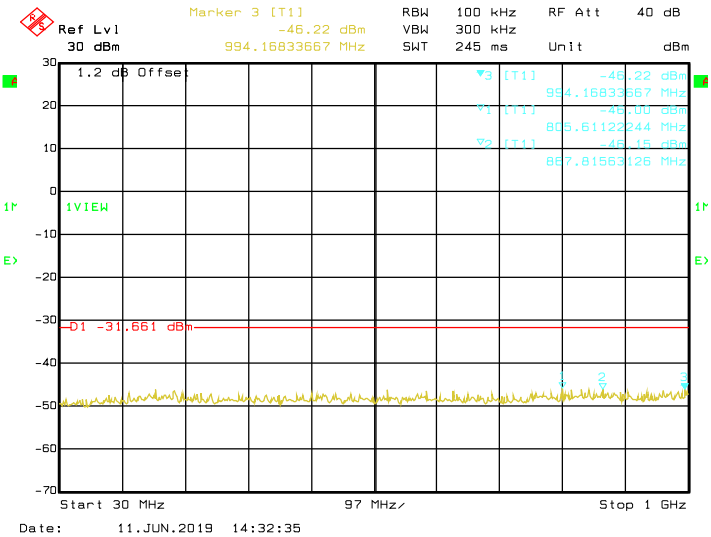


Conducted Emissions. 802.11n, Frequency 2412 MHz Emission Level, 15 GHz -> 20 GHz

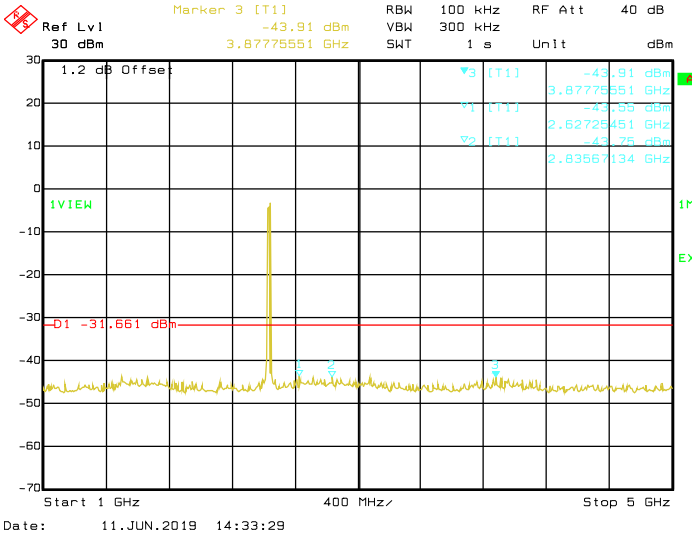
Conducted Emissions. 802.11n, Frequency 2412 MHz Emission Level, 20 GHz -> 25 GHz



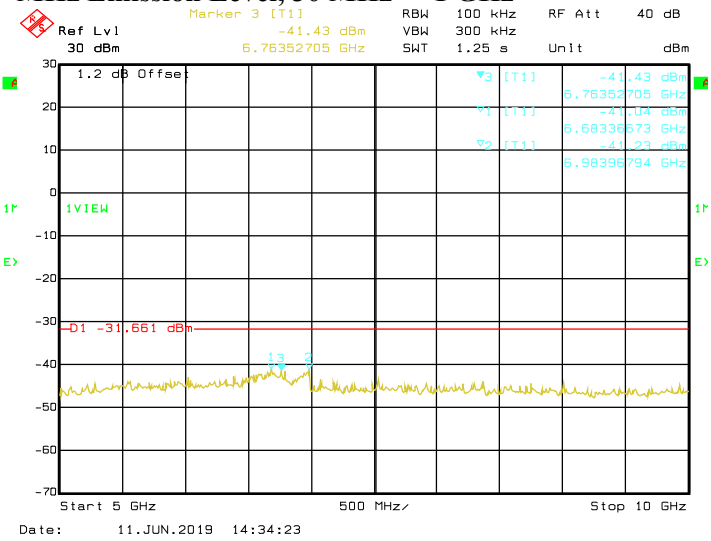
Conducted Emissions. 802.11n, Frequency 2437 MHz Reference Level



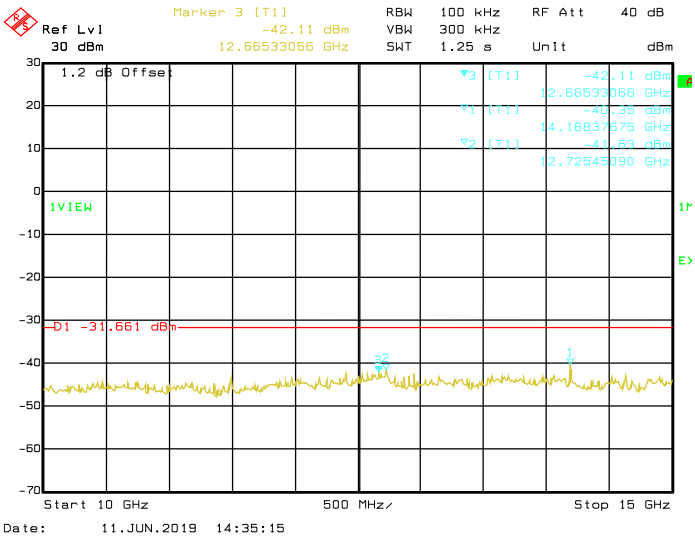
Conducted Emissions. 802.11n, Frequency 2437 MHz Emission Level, 30 MHz -> 1 GHz



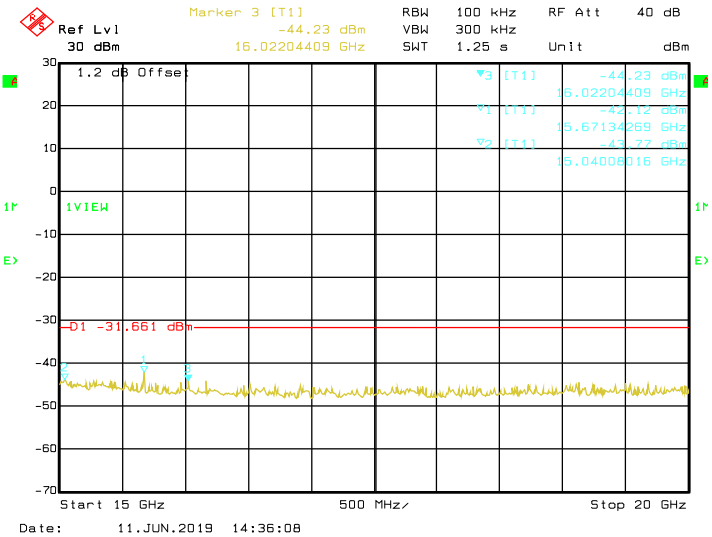
Conducted Emissions. 802.11n, Frequency 2437 MHz Emission Level, 1 GHz -> 5 GHz



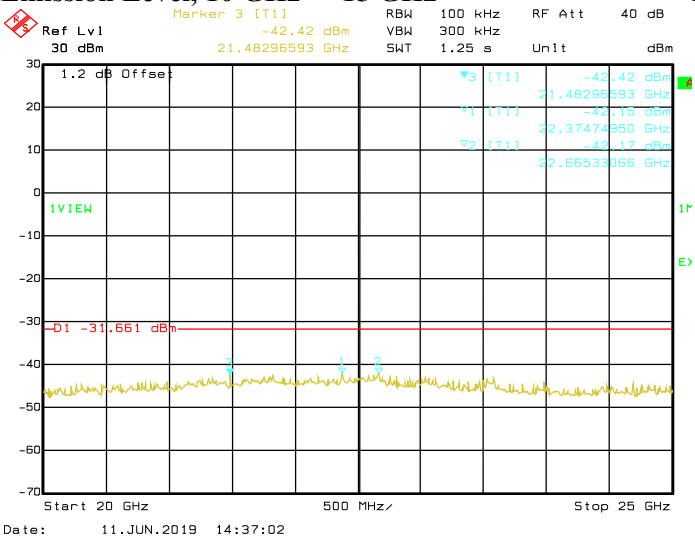
Conducted Emissions. 802.11n, Frequency 2437 MHz Emission Level, 5 GHz -> 10 GHz



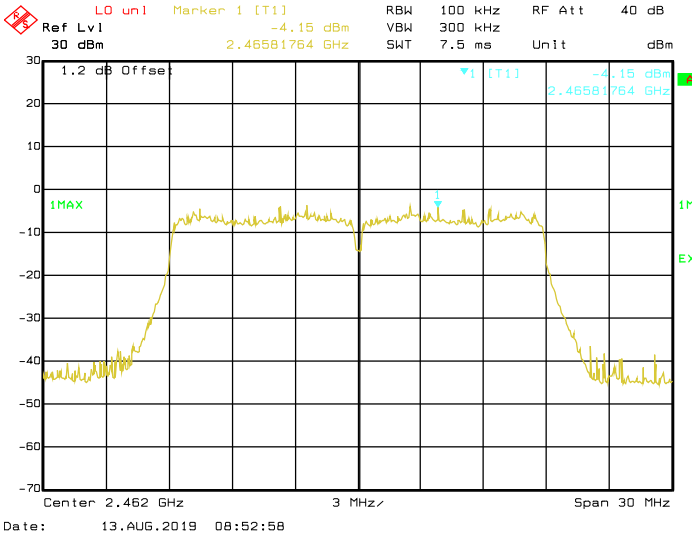
Conducted Emissions. 802.11n, Frequency 2437 Emission Level, 10 GHz -> 15 GHz



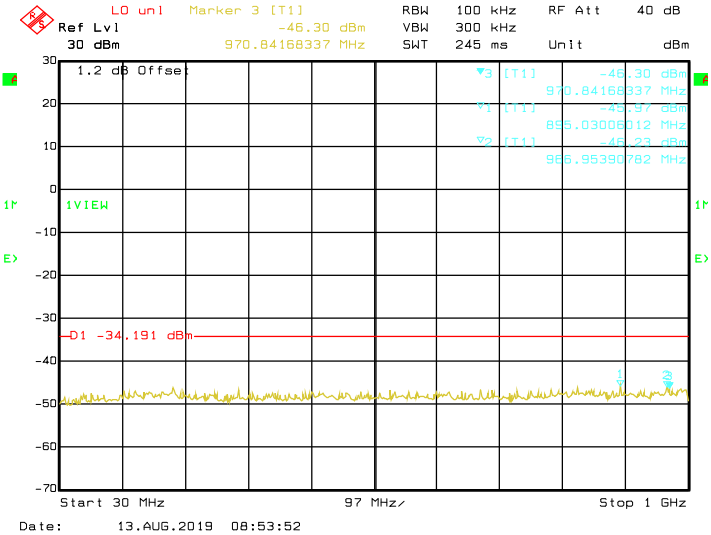
Conducted Emissions. 802.11n, Frequency 2437 MHz Emission Level, 15 GHz -> 20 GHz



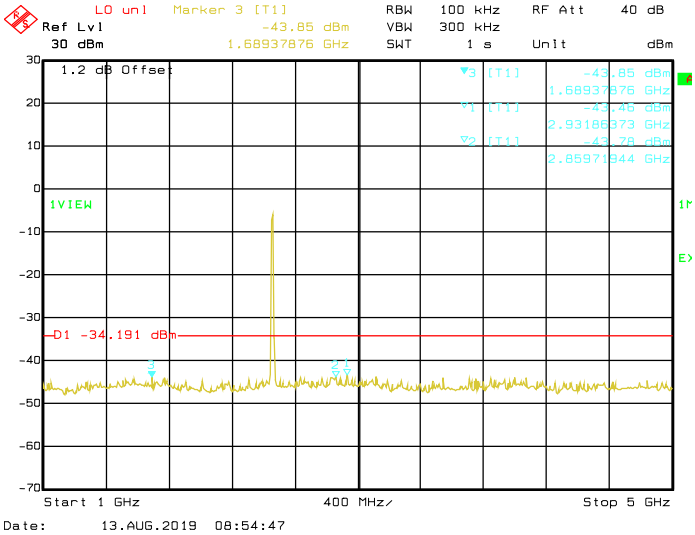
Conducted Emissions. 802.11n, Frequency 2437 MHz Emission Level, 20 GHz -> 25 GHz



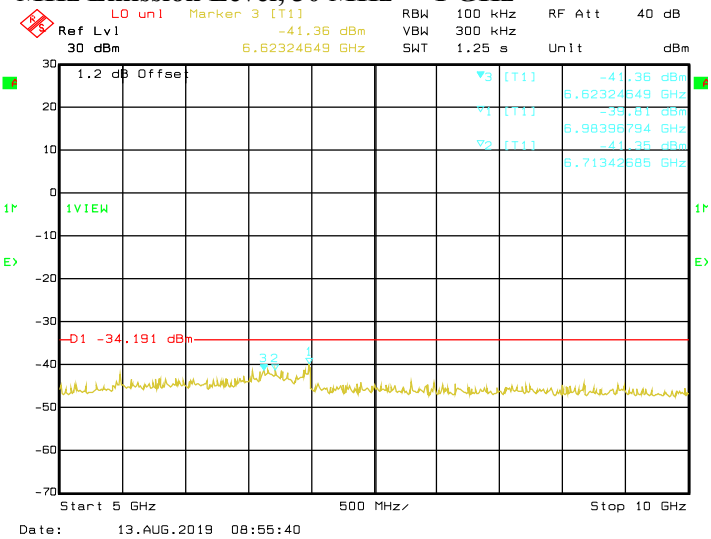
Conducted Emissions. 802.11n, Frequency 2462 MHz Reference Level



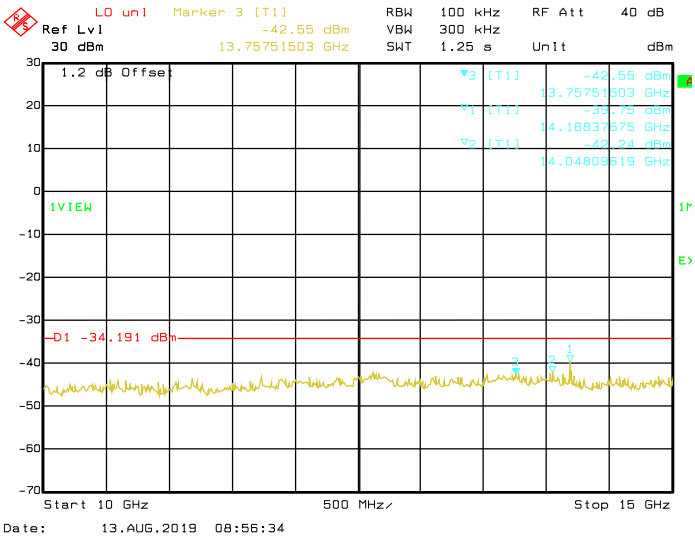
Conducted Emissions. 802.11n, Frequency 2462 MHz Emission Level, 30 MHz -> 1 GHz



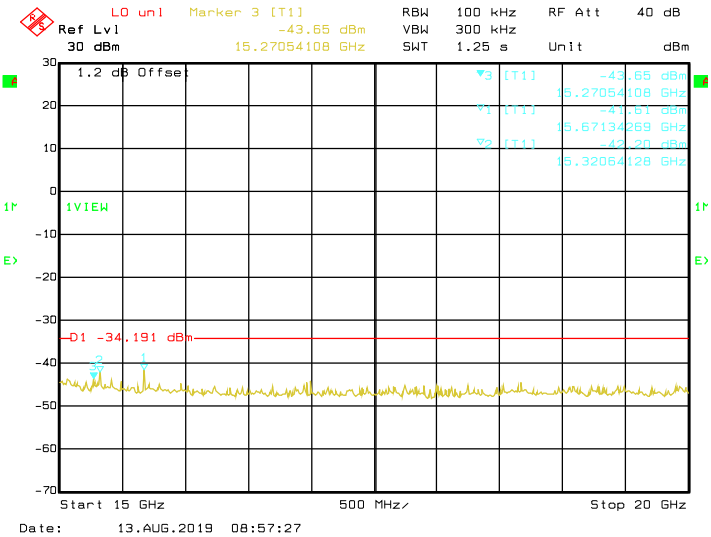
Conducted Emissions. 802.11n, Frequency 2462 MHz Emission Level, 1 GHz -> 5 GHz



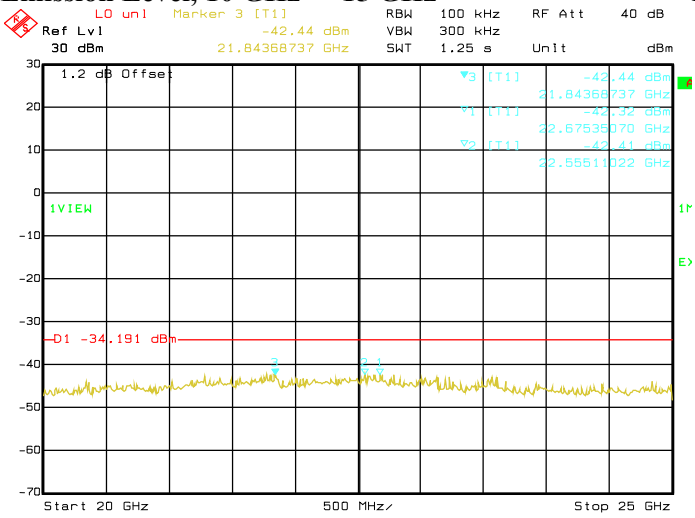
Conducted Emissions. 802.11n, Frequency 2462 MHz Emission Level, 5 GHz -> 10 GHz



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



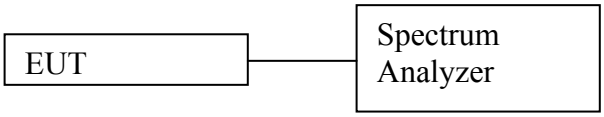
Conducted Emissions. 802.11n, Frequency 2462 MHz Emission Level, 15 GHz -> 20 GHz



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.

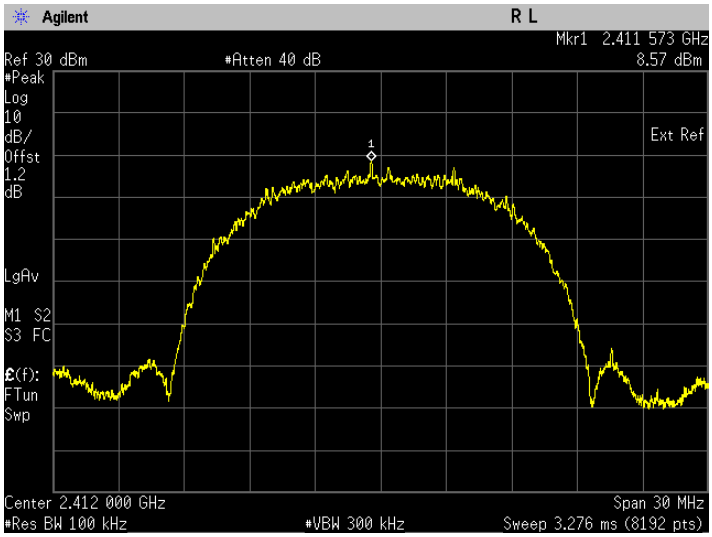
6.6.2. Test Limits:

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

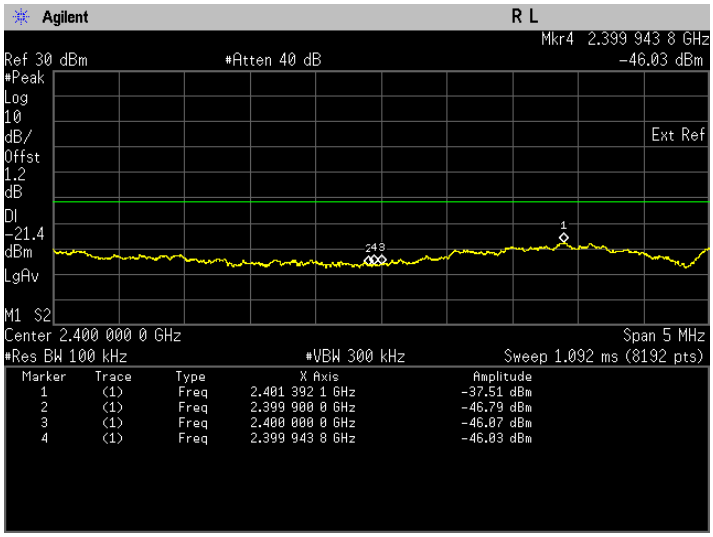
6.6.3. **Test Result**

802.11b

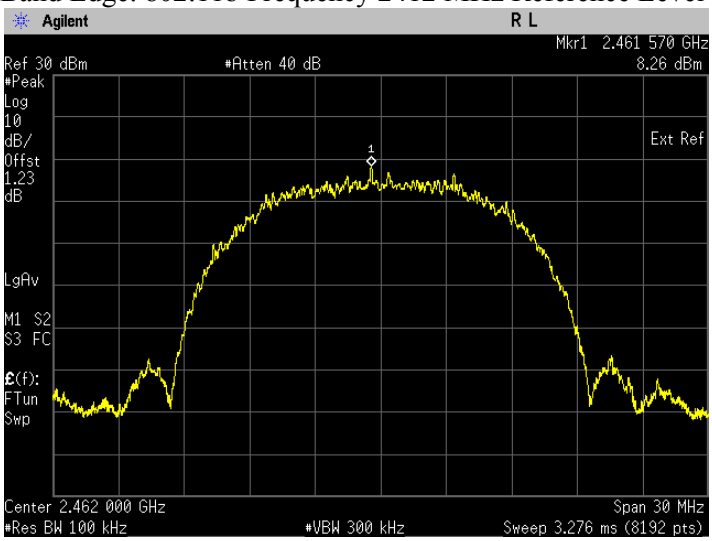
Test Conditions				Test Frequency	Results		
Standard	Modulation Type	Modulation Technology	Data Rate (mbps)	Tx (MHz)	Frequencies (MHz)	Power (dBm)	Status
802.11b	DSSS	QPSK	11	2412	2399.94	-46.03	Pass
802.11b	DSSS	QPSK	11	2462	2483.51	-49.14	Pass



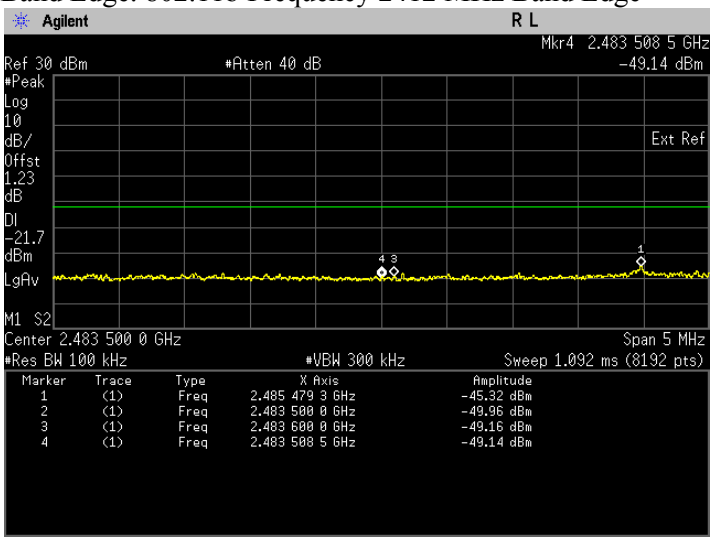
Band Edge. 802.11b Frequency 2412 MHz Reference Level



Band Edge. 802.11b Frequency 2412 MHz Band Edge



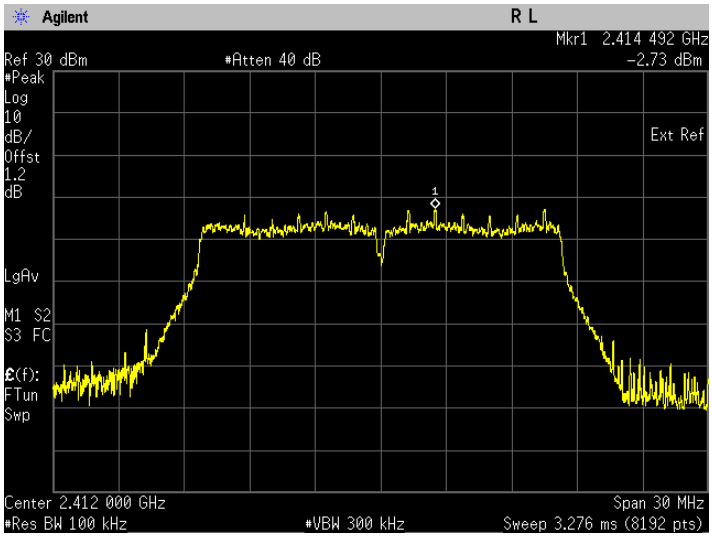
Band Edge. 802.11b Frequency 2462 MHz Reference Level



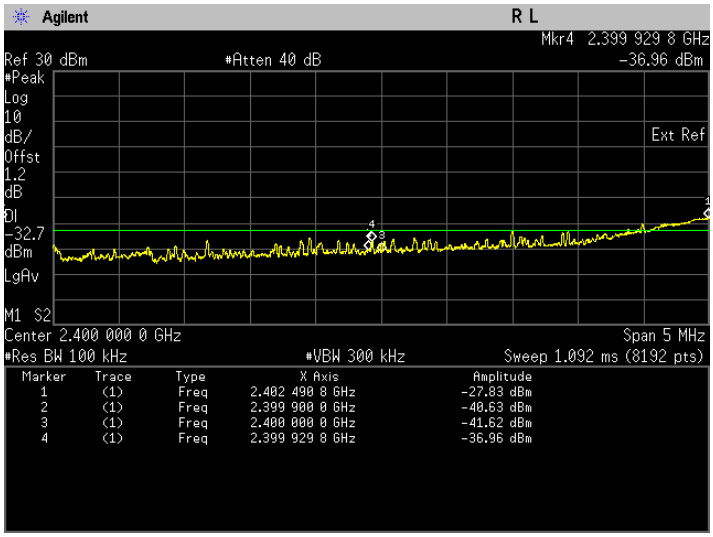
Band Edge. 802.11b Frequency 2462 MHz Band Edge

802.11g

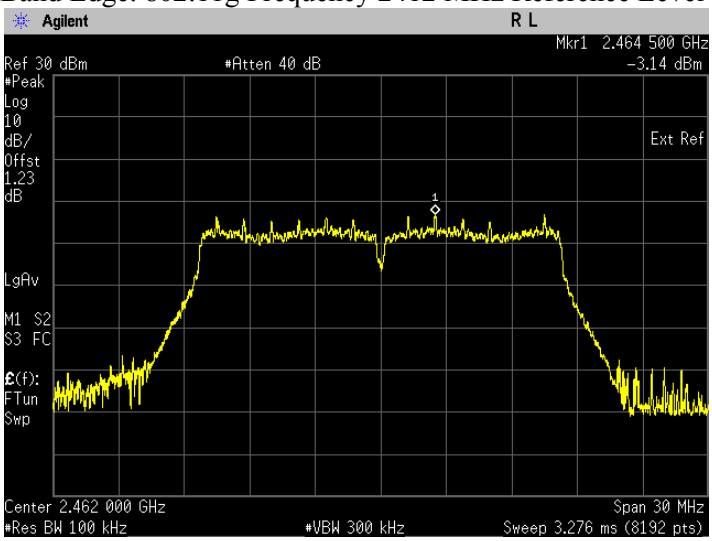
Test Conditions				Test Frequency	Results		
Standard	Modulation Type	Modulation Technology	Data Rate (mbps)	Tx (MHz)	Frequencies (MHz)	Power (dBm)	Status
802.11g	OFDM	BPSK	6	2412	2399.93	-36.96	Pass
802.11g	OFDM	BPSK	6	2462	2483.59	-47.71	Pass



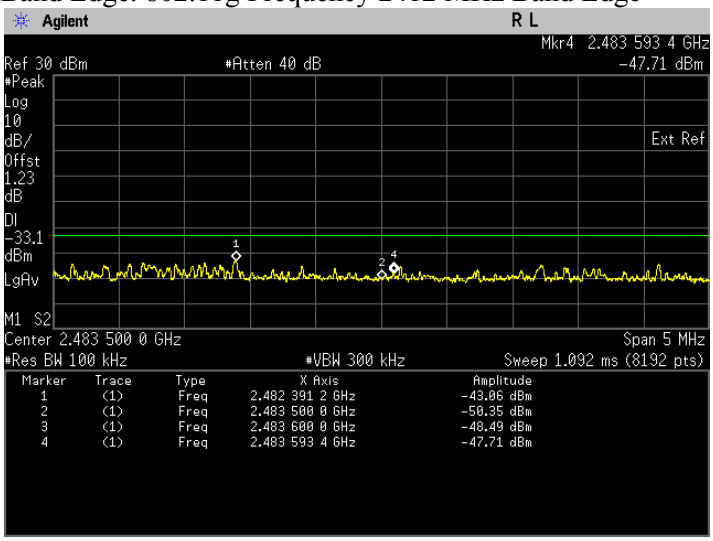
Band Edge. 802.11g Frequency 2412 MHz Reference Level



Band Edge. 802.11g Frequency 2412 MHz Band Edge



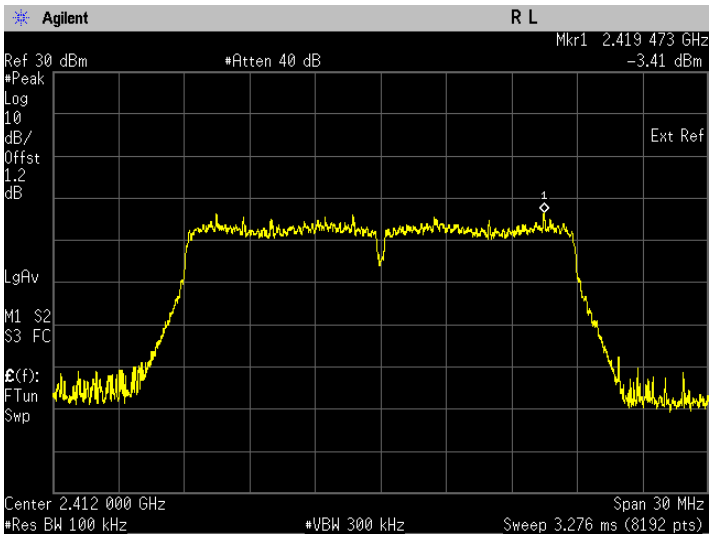
Band Edge. 802.11g Frequency 2462 MHz Reference Level



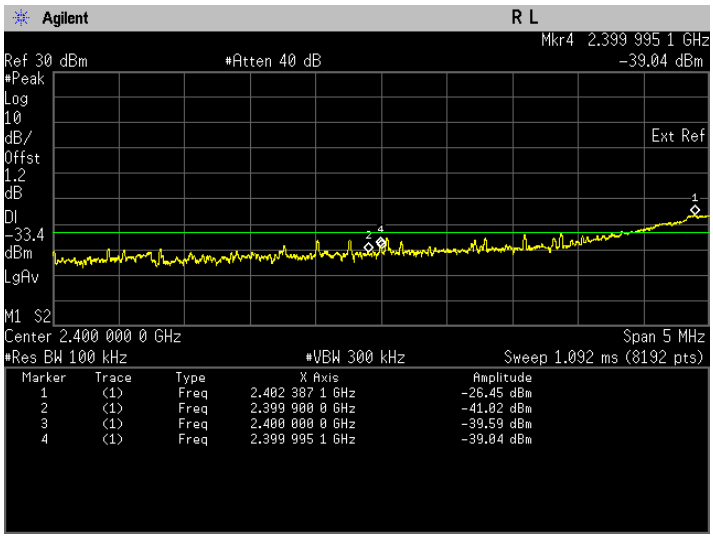
Band Edge. 802.11g Frequency 2462 MHz Band Edge

802.11n (HT20)

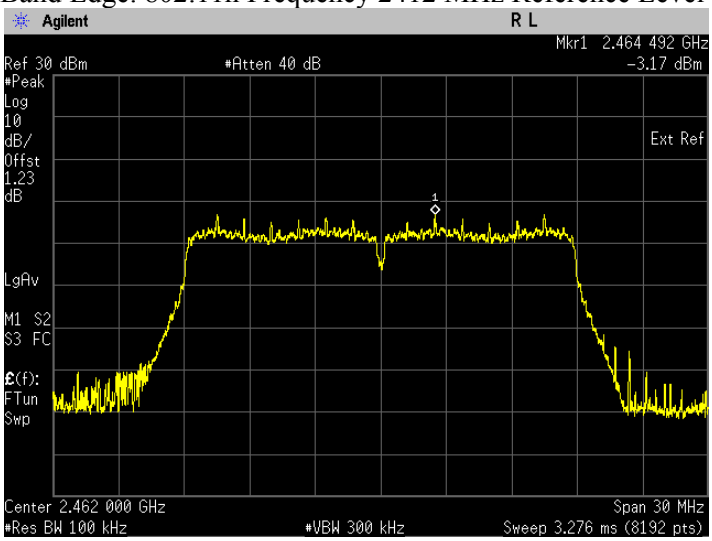
Test Conditions				Test Frequency	Results		
Standard	Modulation Type	Modulation Technology	Data Rate (mbps)	Tx (MHz)	Frequencies (MHz)	Power (dBm)	Status
802.11n	OFDM	DBPSK	6.5	2412	2400.00	-39.04	Pass
802.11n	OFDM	DBPSK	6.5	2462	2483.50	-48.78	Pass



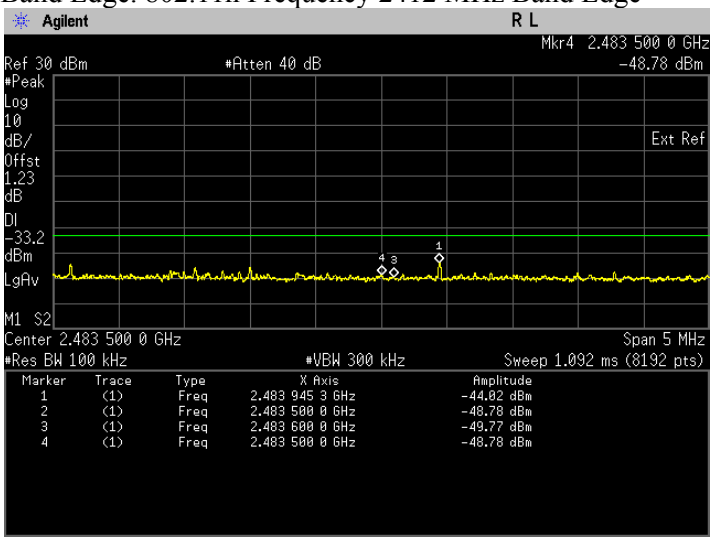
Band Edge. 802.11n Frequency 2412 MHz Reference Level



Band Edge. 802.11n Frequency 2412 MHz Band Edge



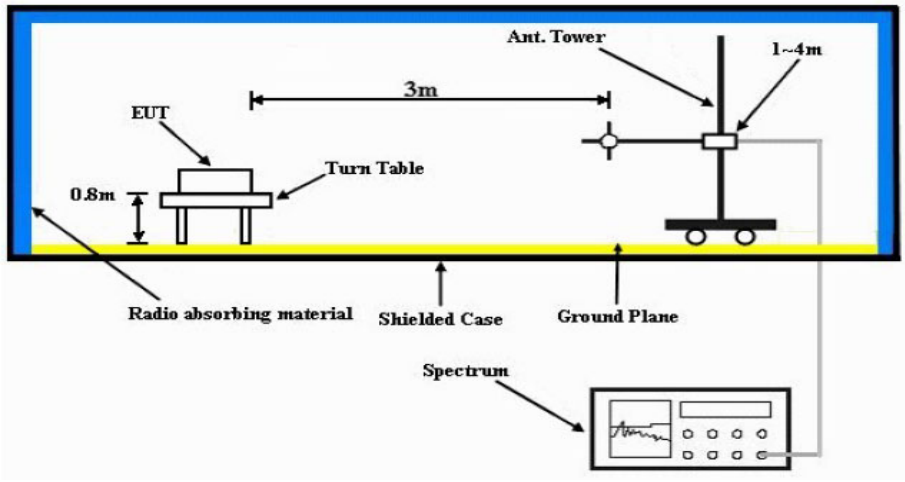
Band Edge. 802.11n Frequency 2462 MHz Reference Level



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 Transmitter Radiated Emission
Model#: M25URS9PW1BN S/N: 471TVF3482 EMC SR ID#: 14913-EMC-00050
Battery: NA Accessory: AN000163A01, AN000197A10, 3466-HMN4079G-4, HSN4040A-C4, HKN4191B-2, 3466-HKN6163C-2, PMHN4194C-CF3
Test Channel: Low Test Frequency: 2412.0000 MHz Test Standard: ANSI C63.10-2013
Worst Case Plane: Y-Plane (802.11b)

Radiated Emission (Low Channel) tabular data

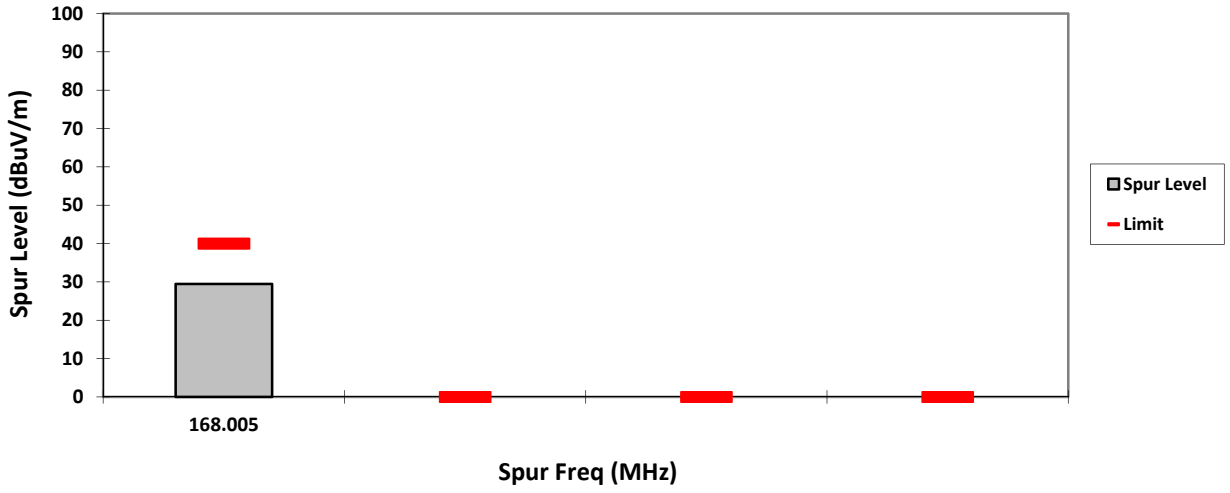
Vertical Radiated Emission Result										
Spur Freq (MHz)	Spur level QPK (dBµV/m)	Spur level PK (dBµV/m)	Spur level AV (dBµV/m)	Limit QPK (dBµV/m)	Limit PK (dBµV/m)	Limit AV (dBµV/m)	Margin QPK (dBµV/m)	Margin PK (dBµV/m)	Margin AV (dBµV/m)	Carrier PK Power (dBµV/m)
39.2513	-	37.6550	-	-	85.9763	-	-	48.3213	-	105.9763
65.6983	-	29.4795	-	-	85.9763	-	-	56.4968	-	105.9763
168.0050	29.4464	-	-	40.0000	-	-	10.5536	-	-	-
191.9910	-	35.6143	-	-	85.9763	-	-	50.3620	-	105.9763
287.9880	-	29.2070	-	-	85.9763	-	-	56.7693	-	105.9763
336.0070	-	31.1998	-	-	85.9763	-	-	54.7765	-	105.9763
4823.9101	-	53.5574	44.0403	-	74.0000	54.0000	-	20.4426	9.9597	-
Horizontal Radiated Emission Result										
39.1474	-	27.0674	-	-	85.9763	-	-	58.9089	-	105.9763
66.4475	-	28.1835	-	-	85.9763	-	-	57.7928	-	105.9763
168.0040	30.0547	-	-	40.0000	-	-	9.9453	-	-	-
192.0020	-	33.0236	-	-	85.9763	-	-	52.9527	-	105.9763
287.9920	-	31.6388	-	-	85.9763	-	-	54.3375	-	105.9763
335.9990	-	35.6233	-	-	85.9763	-	-	50.3530	-	105.9763
4824.1698	-	49.1719	37.8563	-	74.0000	54.0000	-	24.8281	16.1437	-

Remarks: Pass Result	Marginal Result	Fail Result

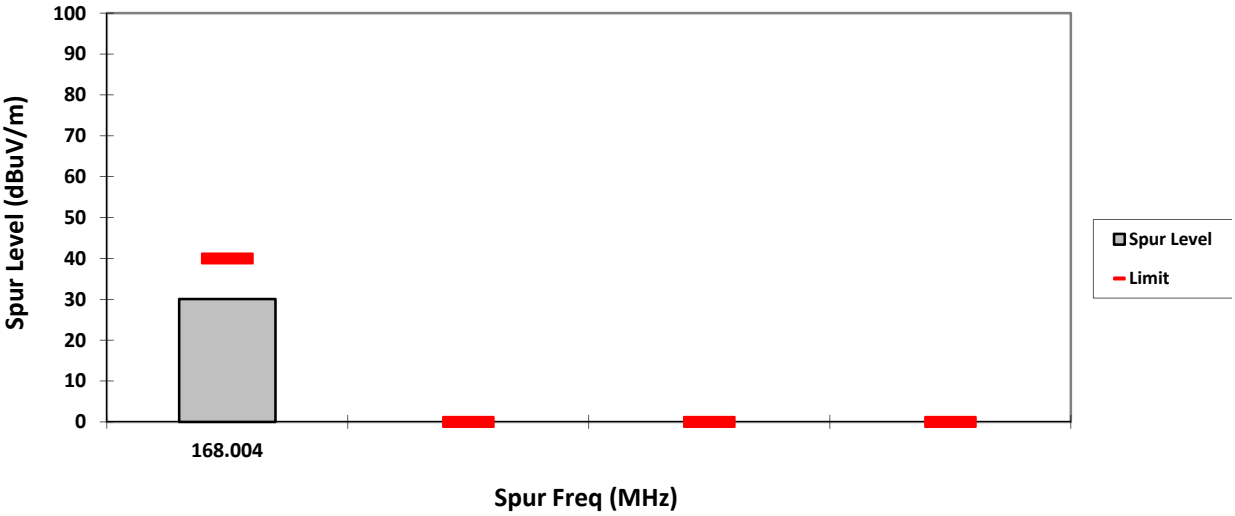
Temperature (degC): 23.4 **Humidity (%): 69.8**
Test Performed by: Qawiman&Azil **Test Date: Sun, May 12, 2019**
System MU: 5.01dB

Remarks: ** Indicates the spurious emission could not be detected due to noise limitations or ambient.
***Pursuant to CFR 47 Part 2.1057 (c), emissions attenuated more than 20 dB below the permissible limit are not reported.**

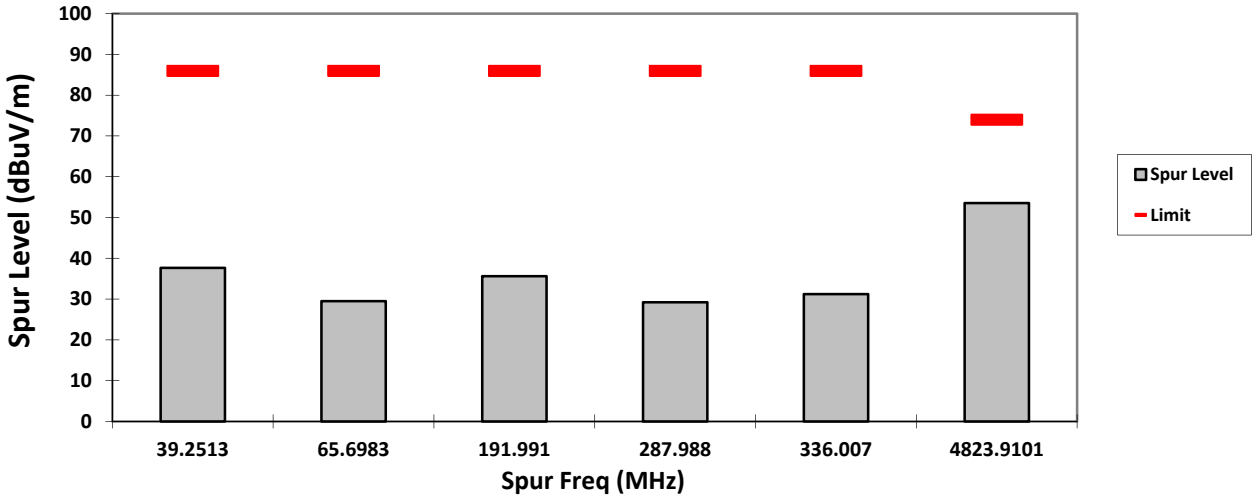
VERTICAL, QPK



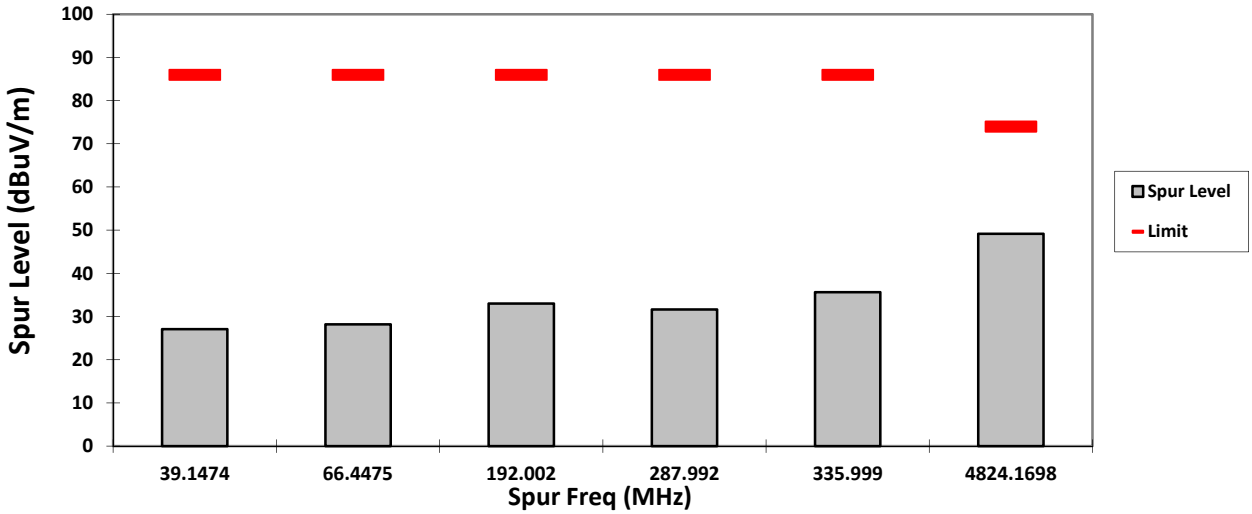
HORIZONTAL, QPK



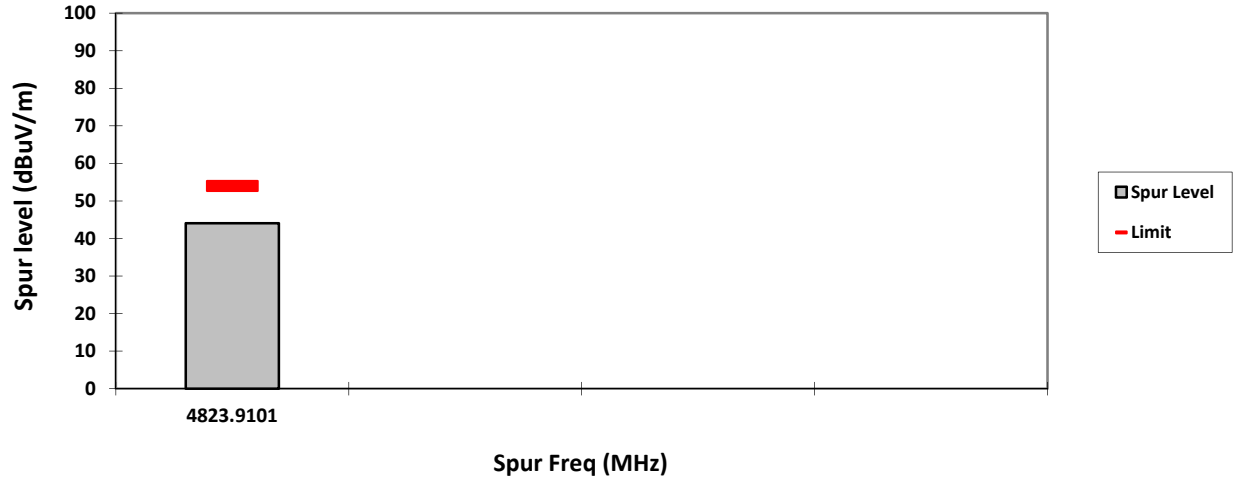
VERTICAL, PK



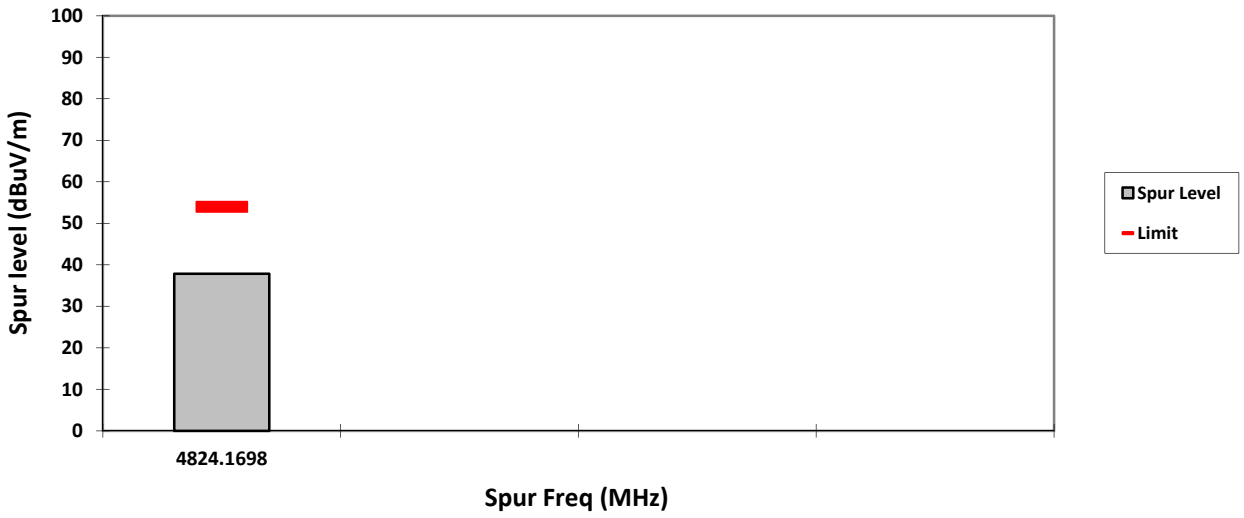
HORIZONTAL, PK



VERTICAL, AV



HORIZONTAL, AV



Test: WIFI SAC Transmitter Radiated Emission
Model#: M25URS9PW1BN S/N: 471TVF3482 EMC SR ID#: 14913-EMC-00050
Battery: NA Accessory: AN000163A01, AN000197A10, 3466-HMN4079G-4, HSN4040A-C4, HKN4191B-2, 3466-HKN6163C-2, PMHN4194C-CF3
Test Channel: Mid Test Frequency: 2437.0000 MHz Test Standard: ANSI C63.10-2013
Worst Case Plane: Y-Plane (802.11b)

Radiated Emission (Mid Channel) tabular data

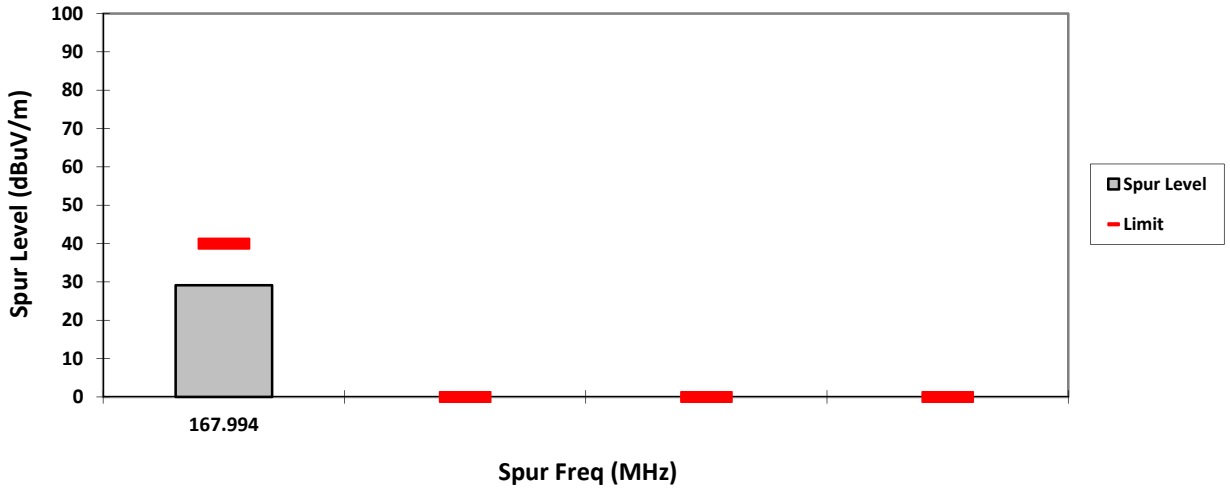
Vertical Radiated Emission Result										
Spur Freq (MHz)	Spur level QPK (dBµV/m)	Spur level PK (dBµV/m)	Spur level AV (dBµV/m)	Limit QPK (dBµV/m)	Limit PK (dBµV/m)	Limit AV (dBµV/m)	Margin QPK (dBµV/m)	Margin PK (dBµV/m)	Margin AV (dBµV/m)	Carrier PK Power (dBµV/m)
38.5796	-	35.3625	-	-	85.9763	-	-	50.6138	-	105.9763
50.6877	-	33.7657	-	-	85.9763	-	-	52.2106	-	105.9763
167.9940	29.1295	-	-	40.0000	-	-	10.8705	-	-	-
192.0010	-	35.4883	-	-	85.9763	-	-	50.4880	-	105.9763
287.9880	-	28.9943	-	-	85.9763	-	-	56.9820	-	105.9763
336.0110	-	32.6516	-	-	85.9763	-	-	53.3247	-	105.9763
4873.9151	-	53.4706	43.6510	-	74.0000	54.0000	-	20.5294	10.3490	-
Horizontal Radiated Emission Result										
38.3808	-	28.8087	-	-	85.9763	-	-	57.1676	-	105.9763
50.4510	-	25.8922	-	-	85.9763	-	-	60.0841	-	105.9763
168.0070	29.8897	-	-	40.0000	-	-	10.1103	-	-	-
192.0000	-	32.9939	-	-	85.9763	-	-	52.9824	-	105.9763
287.9999	-	30.9147	-	-	85.9763	-	-	55.0616	-	105.9763
335.9970	-	35.4710	-	-	85.9763	-	-	50.5053	-	105.9763
4871.5025	-	48.2222	37.5811	-	74.0000	54.0000	-	25.7778	16.4189	-

Remarks: Pass Result	Marginal Result	Fail Result

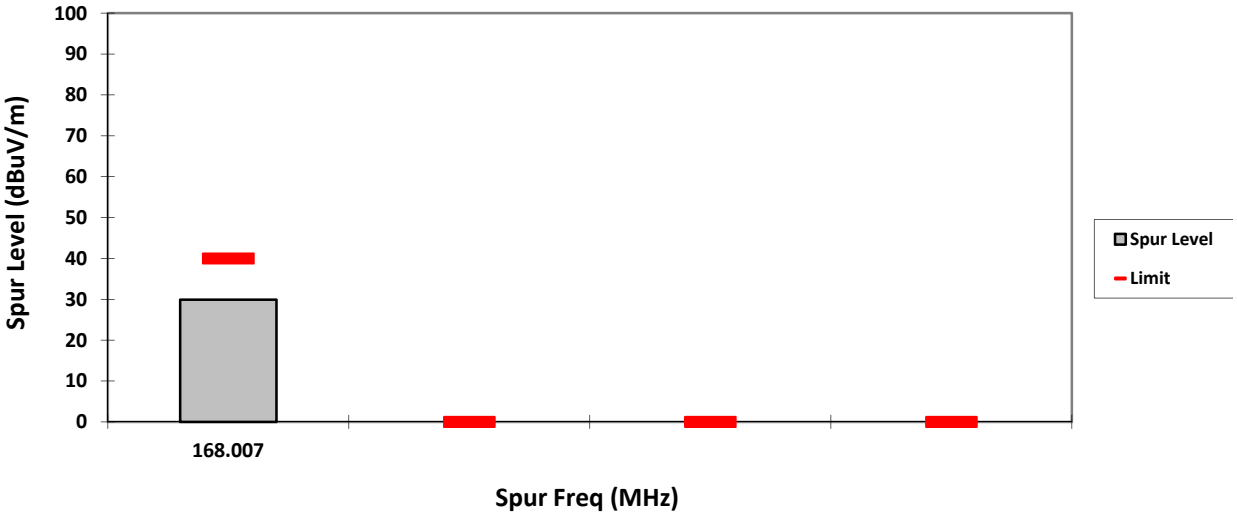
Temperature (degC): 23.4 **Humidity (%): 69.8**
Test Performed by: Qawiman&Nazrin **Test Date: Sun, May 12, 2019**
System MU: 5.01dB

Remarks: ** Indicates the spurious emission could not be detected due to noise limitations or ambient.
***Pursuant to CFR 47 Part 2.1057 (c), emissions attenuated more than 20 dB below the permissible limit are not reported.**

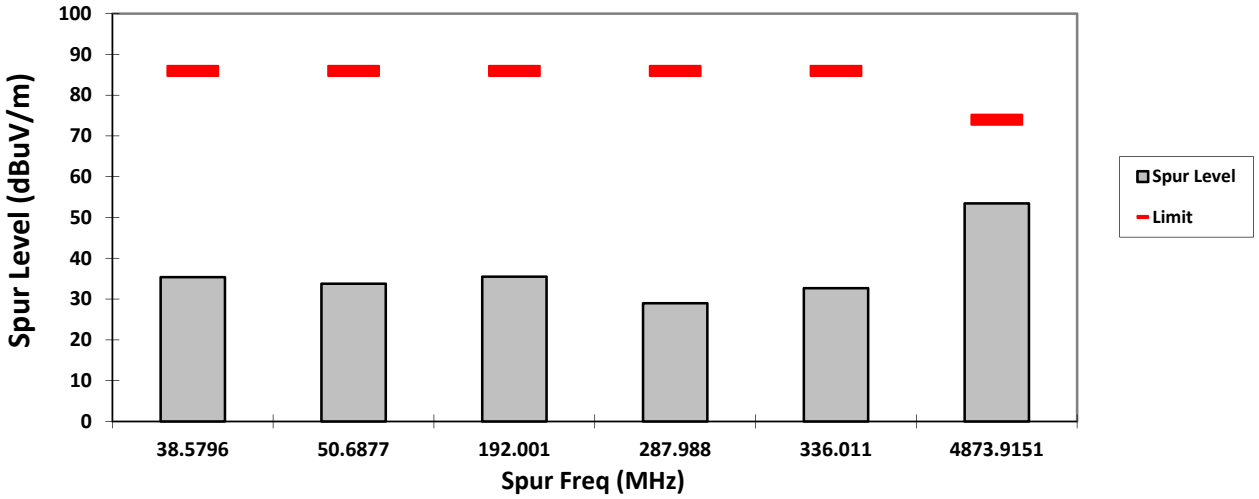
VERTICAL, QPK



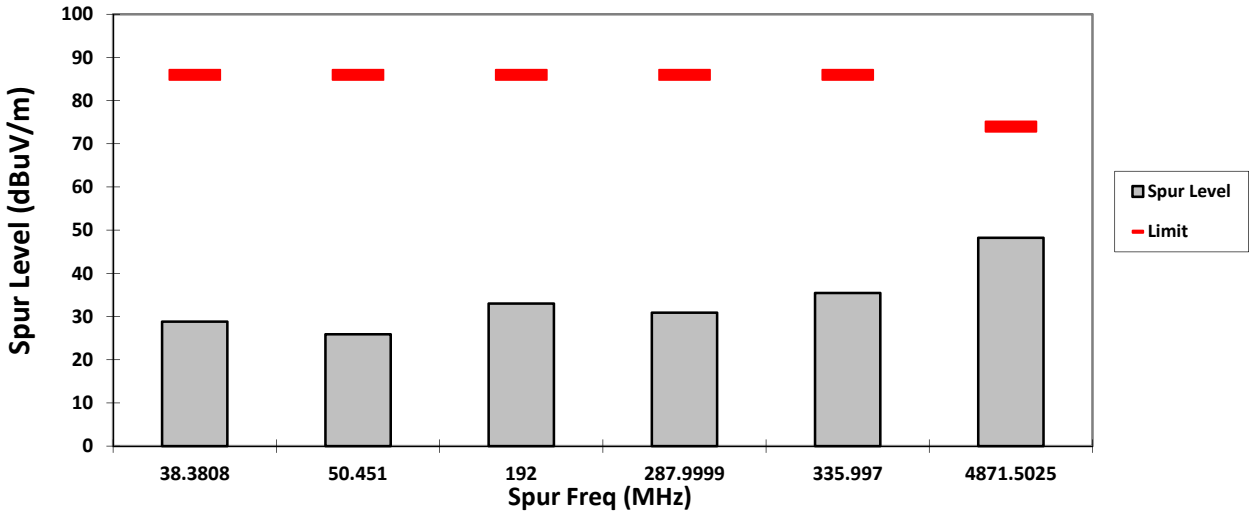
HORIZONTAL, QPK



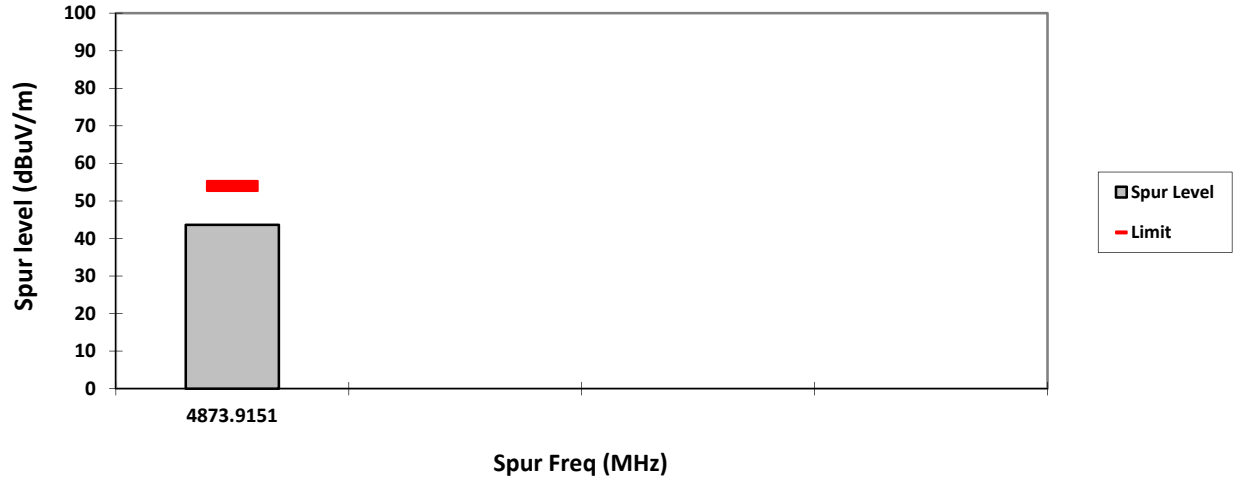
VERTICAL, PK



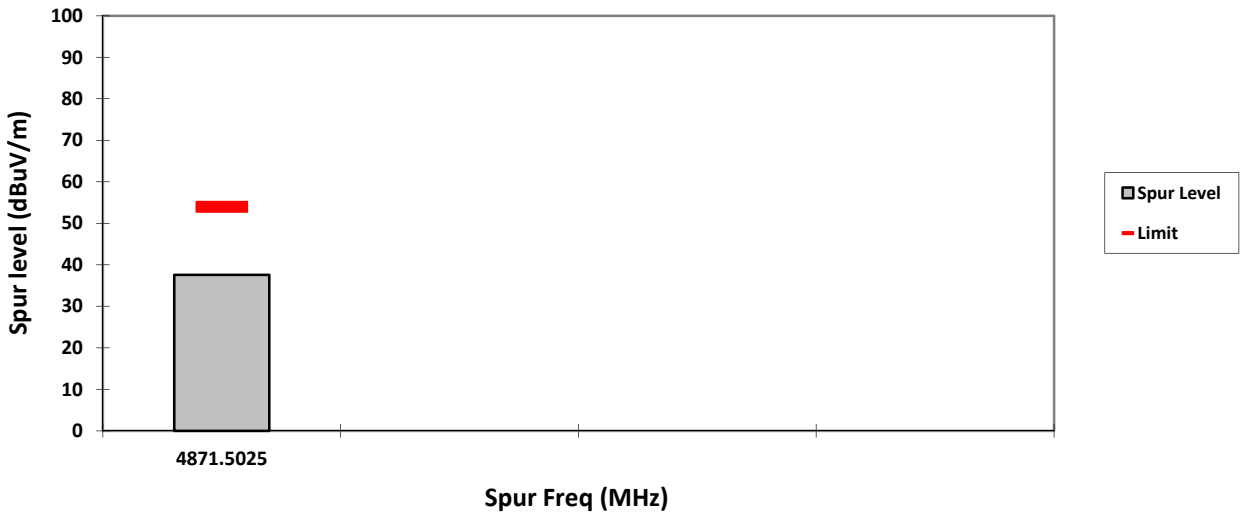
HORIZONTAL, PK



VERTICAL, AV



HORIZONTAL, AV



Test: WIFI SAC Transmitter Radiated Emission
Model#: M25URS9PW1BN S/N: 471TVF3482 EMC SR ID#: 14913-EMC-00050
Battery: NA Accessory: AN000163A01, AN000197A10, 3466-HMN4079G-4, HSN4040A-C4, HKN4191B-2, 3466-HKN6163C-2, PMHN4194C-CF3
Test Channel: High Test Frequency: 2462.0000 MHz Test Standard: ANSI C63.10-2013
Worst Case Plane: Y-Plane (802.11b)

Radiated Emission (High Channel) tabular data

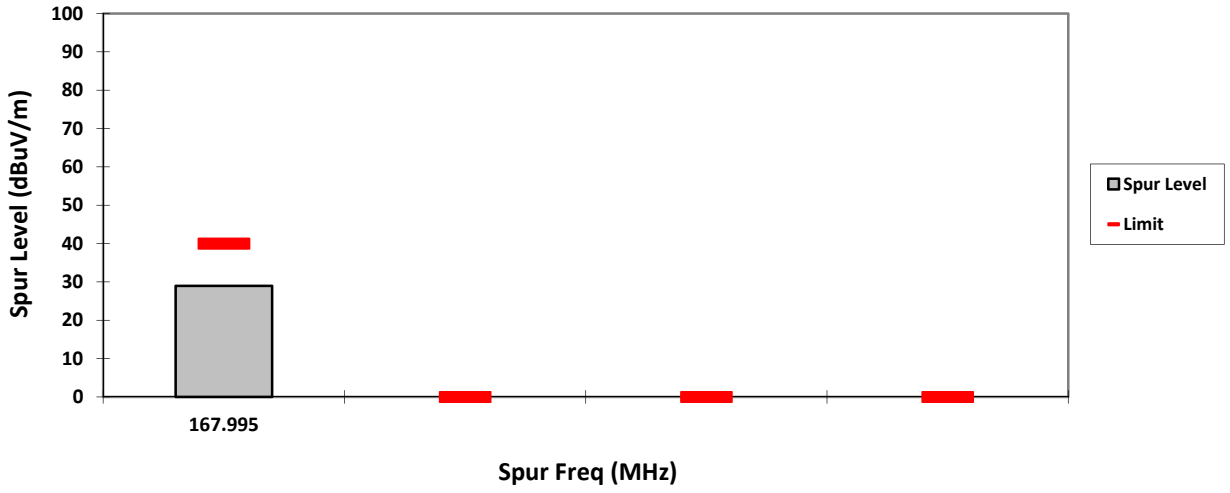
Vertical Radiated Emission Result										
Spur Freq (MHz)	Spur level QPK (dBµV/m)	Spur level PK (dBµV/m)	Spur level AV (dBµV/m)	Limit QPK (dBµV/m)	Limit PK (dBµV/m)	Limit AV (dBµV/m)	Margin QPK (dBµV/m)	Margin PK (dBµV/m)	Margin AV (dBµV/m)	Carrier PK Power (dBµV/m)
39.2465	-	37.2417	-	-	85.9763	-	-	48.7346	-	105.9763
66.2148	-	27.9803	-	-	85.9763	-	-	57.9960	-	105.9763
167.9950	28.9577	-	-	40.0000	-	-	11.0423	-	-	-
192.0080	-	35.4626	-	-	85.9763	-	-	50.5137	-	105.9763
287.9920	-	29.2601	-	-	85.9763	-	-	56.7162	-	105.9763
335.9860	-	31.0672	-	-	85.9763	-	-	54.9091	-	105.9763
4924.0000	-	55.0257	44.6160	-	74.0000	54.0000	-	18.9743	9.3840	-
Horizontal Radiated Emission Result										
40.0776	-	26.2572	-	-	85.9763	-	-	59.7191	-	105.9763
66.3976	-	27.9466	-	-	85.9763	-	-	58.0297	-	105.9763
168.0090	29.8797	-	-	40.0000	-	-	10.1203	-	-	-
192.0020	-	32.9386	-	-	85.9763	-	-	53.0377	-	105.9763
288.0109	-	30.9786	-	-	85.9763	-	-	54.9977	-	105.9763
336.0080	-	35.2672	-	-	85.9763	-	-	50.7091	-	105.9763
4922.8362	-	51.2849	40.3755	-	74.0000	54.0000	-	22.7151	13.6245	-

Remarks: Pass Result	Marginal Result	Fail Result

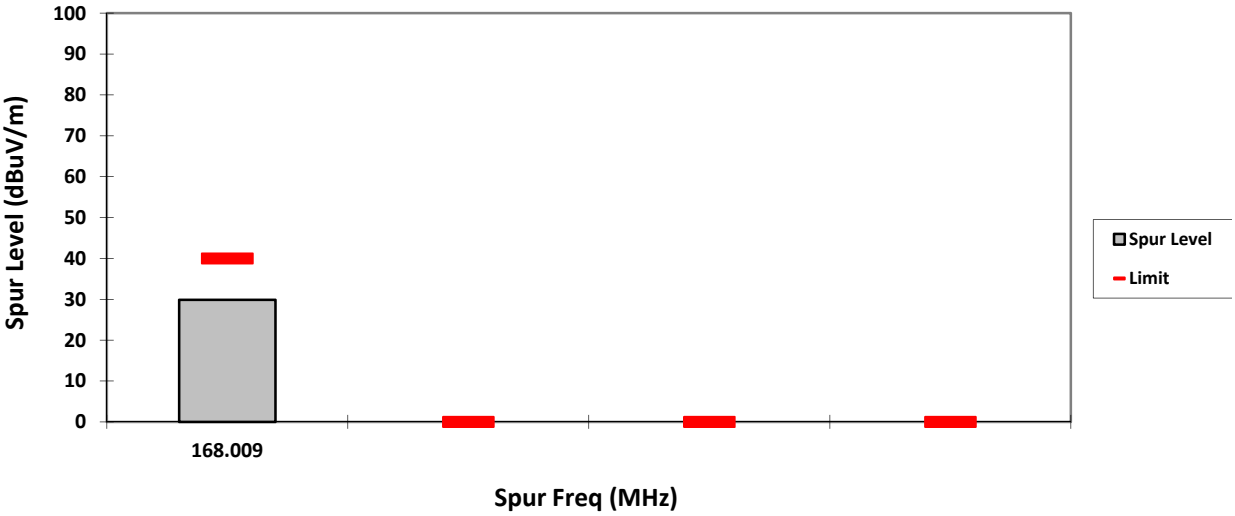
Temperature (degC): 23.4 **Humidity (%): 69.8**
Test Performed by: Qawiman&Nazrin **Test Date: Sun, May 12, 2019**
System MU: 5.01dB

Remarks: ** Indicates the spurious emission could not be detected due to noise limitations or ambient.
***Pursuant to CFR 47 Part 2.1057 (c), emissions attenuated more than 20 dB below the permissible limit are not reported.**

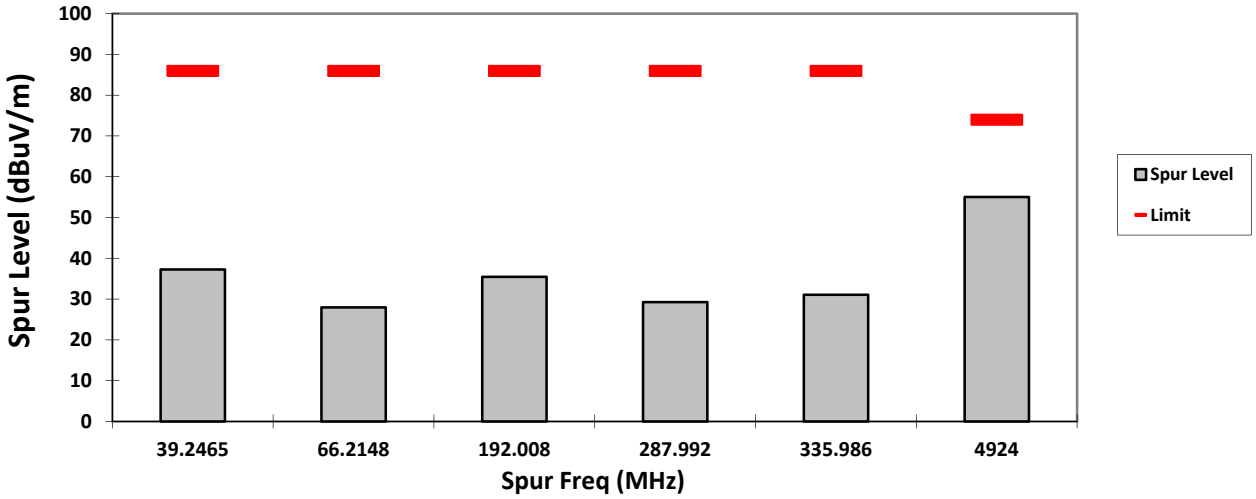
VERTICAL, QPK



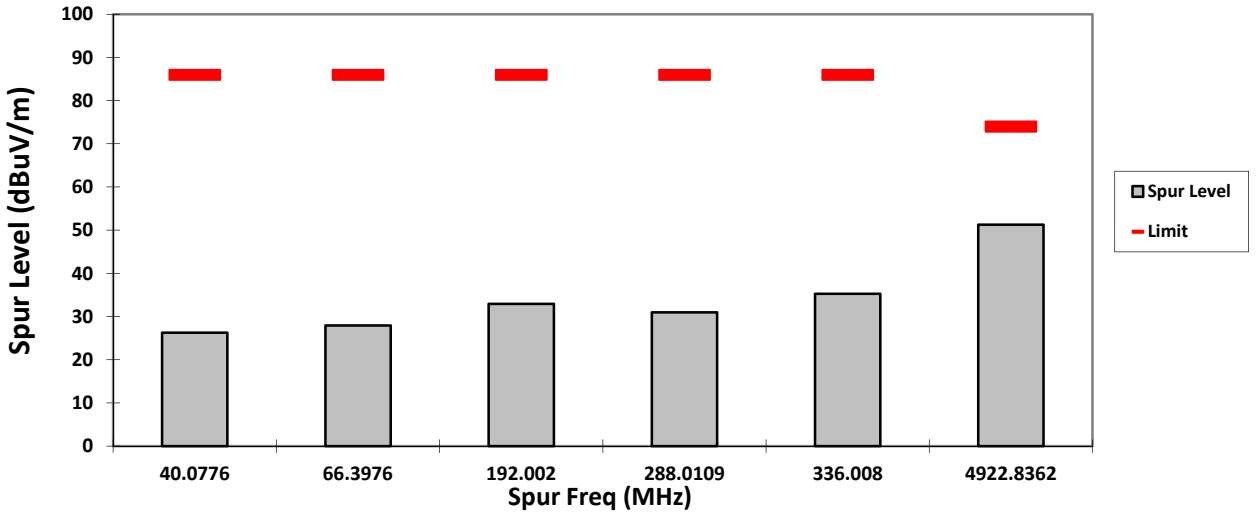
HORIZONTAL, QPK



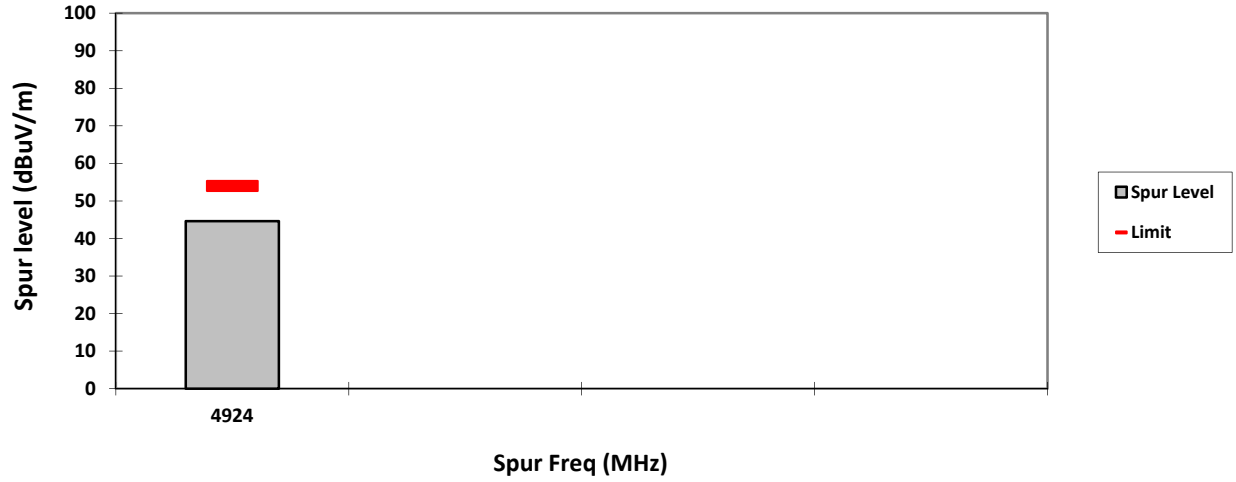
VERTICAL, PK



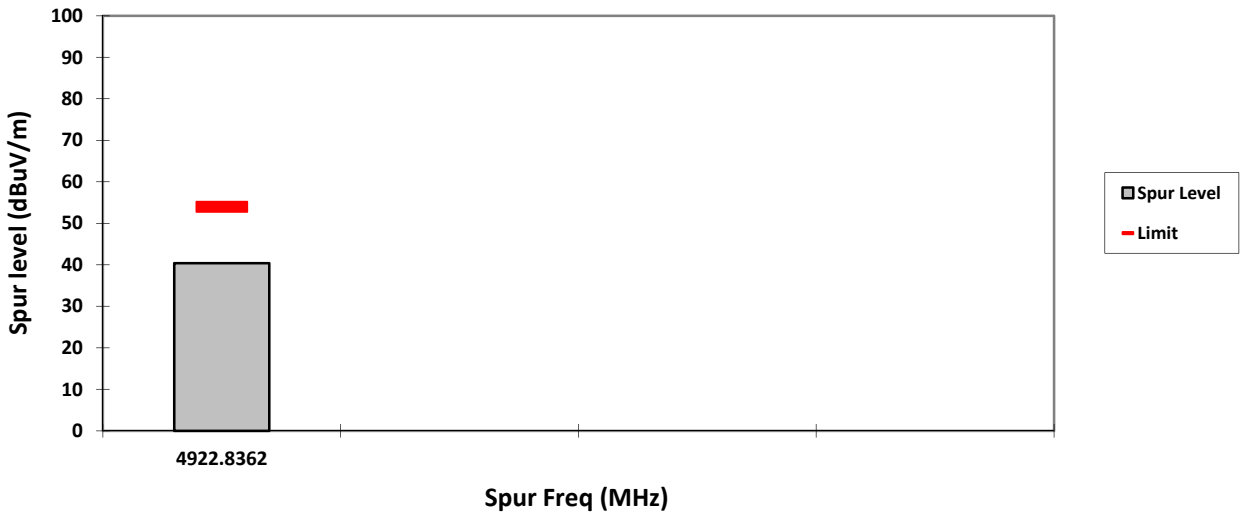
HORIZONTAL, PK



VERTICAL, AV



HORIZONTAL, AV



802.11g

Test: WIFI SAC Transmitter Radiated Emission

Model#: M25URS9PW1BN S/N: 471TVF3482 EMC SR ID#: 14913-EMC-00050

Battery: NA Accessory: AN000163A01, AN000197A10, 3466-HMN4079G-4, HSN4040A-C4, HKN4191B-2, 3466-HKN6163C-2, PMHN4194C-CF3

Test Channel: Low Test Frequency: 2412.0000 MHz Test Standard: ANSI C63.10-2013

Worst Case Plane: Y-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)
38.7264	-	38.4552	-	-	85.9763	-	-	47.5211	-	105.9763
68.1536	-	31.2246	-	-	85.9763	-	-	54.7517	-	105.9763
167.9890	29.0257	-	-	40.0000	-	-	10.9743	-	-	-
192.0010	-	35.5081	-	-	85.9763	-	-	50.4682	-	105.9763
287.9959	-	28.9471	-	-	85.9763	-	-	57.0292	-	105.9763
336.0110	-	30.8643	-	-	85.9763	-	-	55.1120	-	105.9763
Horizontal Radiated Emission Result										
38.4717	-	28.0308	-	-	85.9763	-	-	57.9455	-	105.9763
68.0127	-	32.6381	-	-	85.9763	-	-	53.3382	-	105.9763
167.9930	29.5661	-	-	40.0000	-	-	10.4339	-	-	-
191.9950	-	33.0171	-	-	85.9763	-	-	52.9592	-	105.9763
287.9830	-	30.5801	-	-	85.9763	-	-	55.3962	-	105.9763
336.0020	-	35.3888	-	-	85.9763	-	-	50.5875	-	105.9763

Remarks: Pass Result	Marginal Result	Fail Result

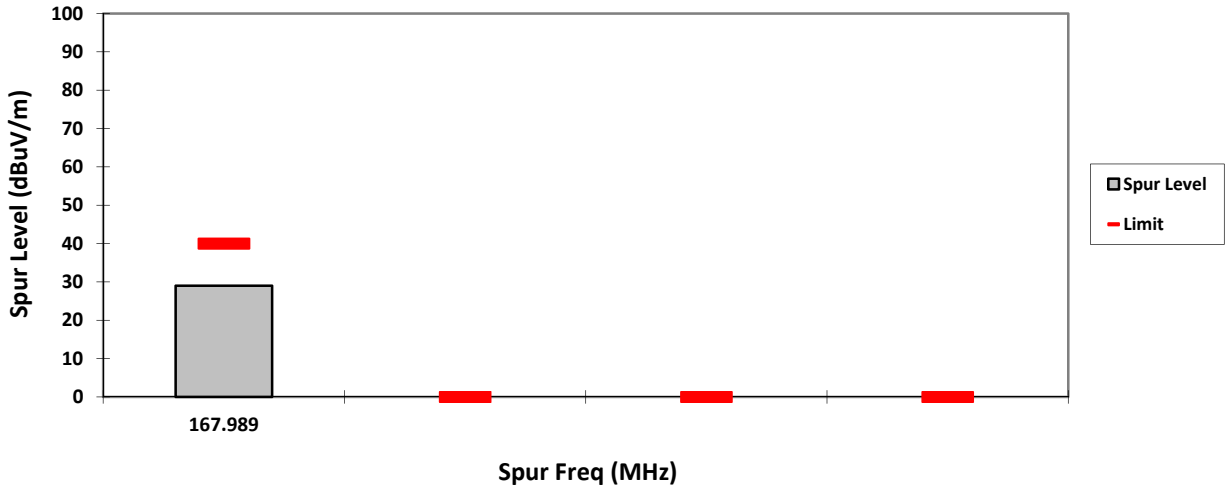
Temperature (degC): 23.4 **Humidity (%): 69.8**

Test Performed by: Qawiman&Nazrin **Test Date: Sun, May 12, 2019**

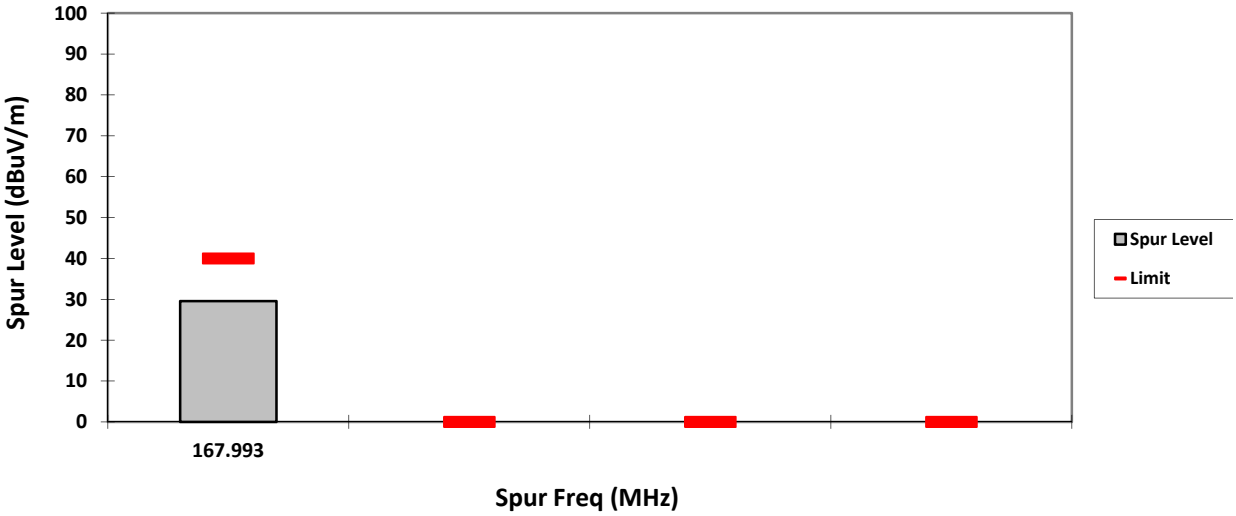
System MU: 5.01dB

Remarks: ** Indicates the spurious emission could not be detected due to noise limitations or ambient.
***Pursuant to CFR 47 Part 2.1057 (c), emissions attenuated more than 20 dB below the permissible limit are not reported.**

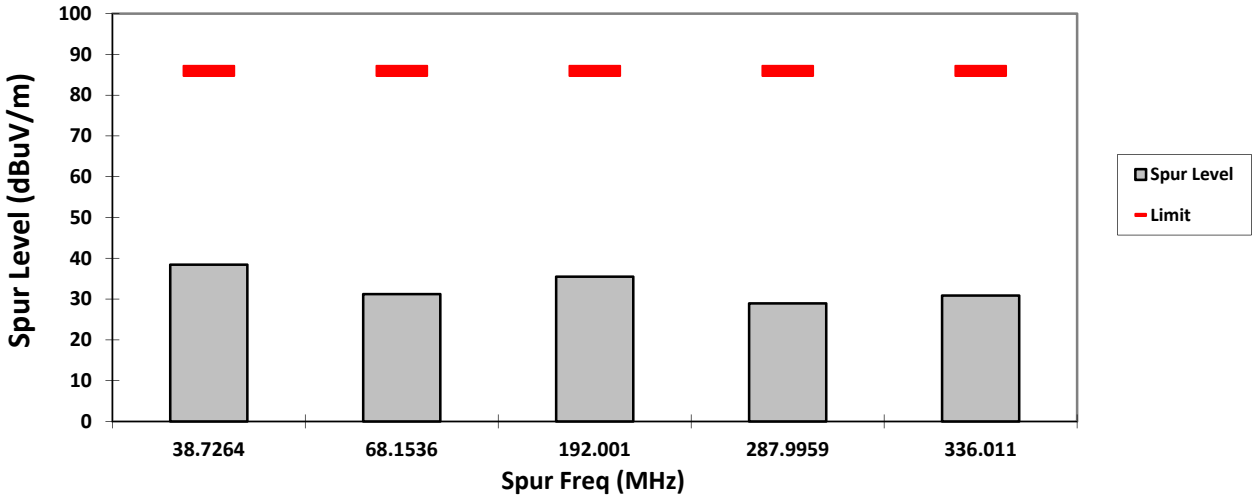
VERTICAL, QPK



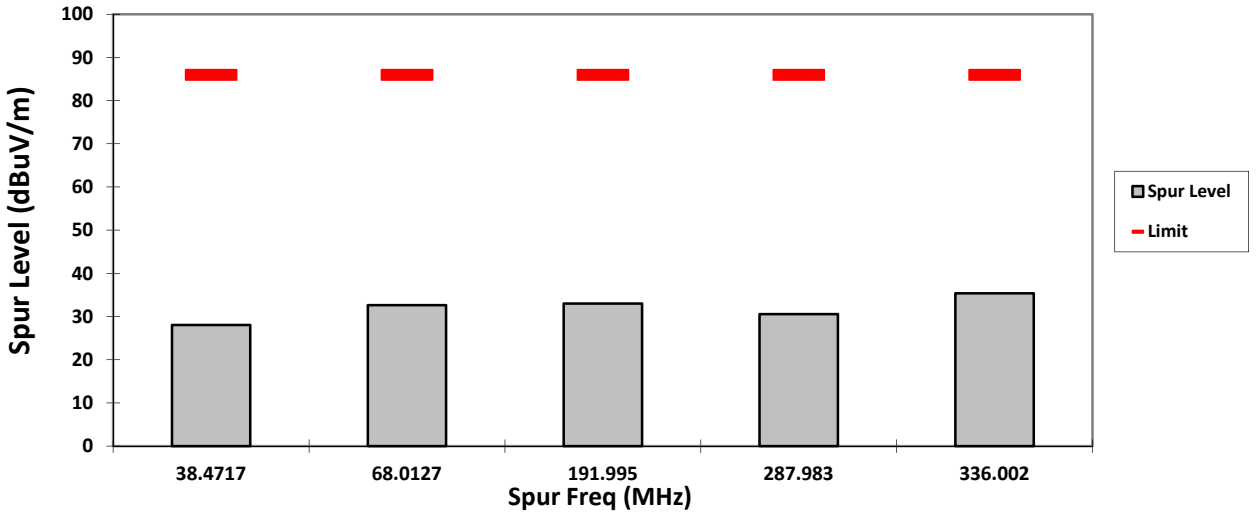
HORIZONTAL, QPK



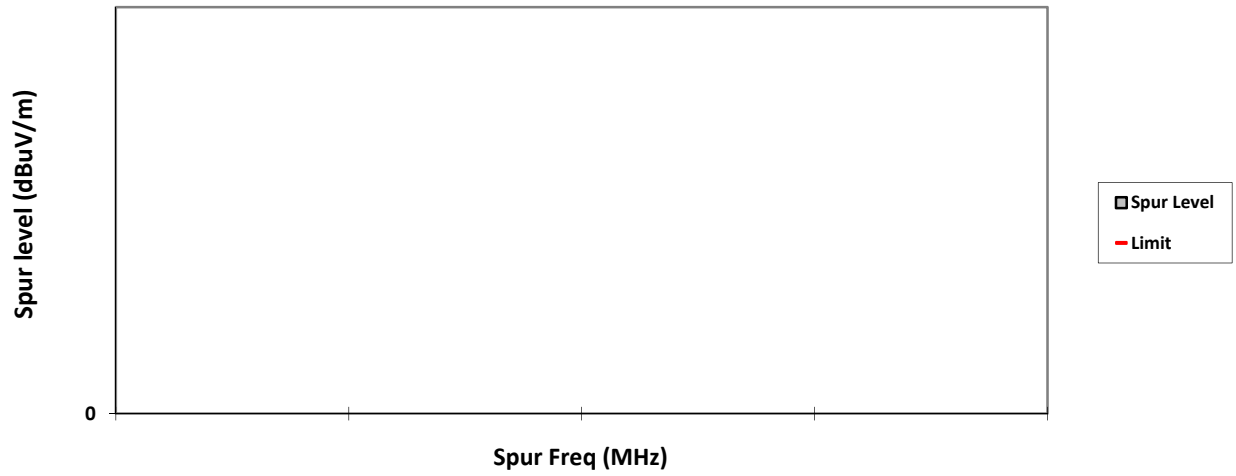
VERTICAL, PK



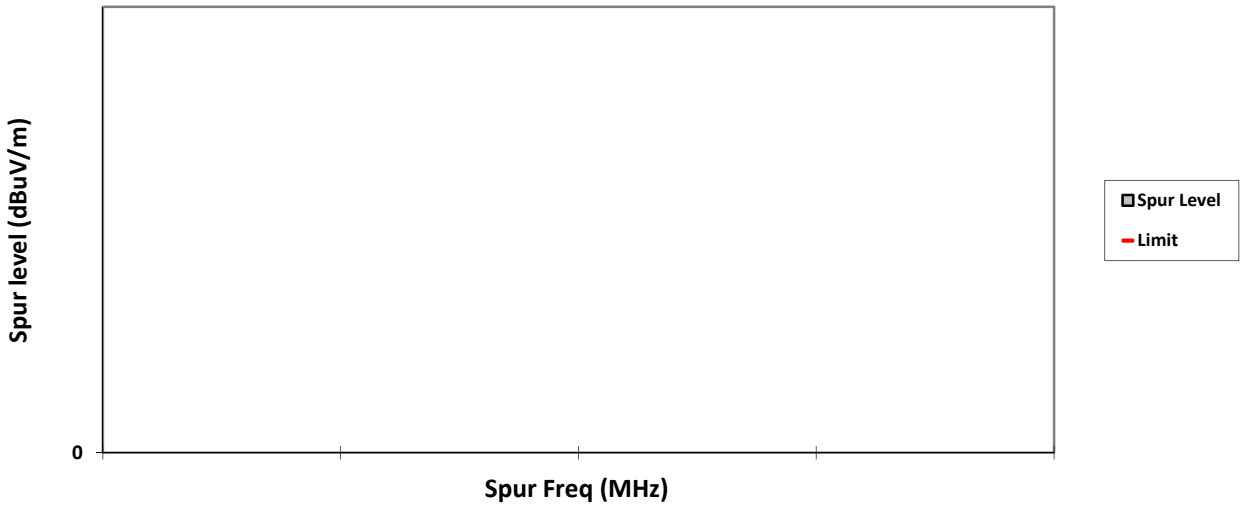
HORIZONTAL, PK



VERTICAL, AV



HORIZONTAL, AV



Test: WIFI SAC Transmitter Radiated Emission
Model#: M25URS9PW1BN S/N: 471TVF3482 EMC SR ID#: 14913-EMC-00050
Battery: NA Accessory: AN000163A01, AN000197A10, 3466-HMN4079G-4, HSN4040A-C4, HKN4191B-2, 3466-HKN6163C-2, PMHN4194C-CF3
Test Channel: Mid Test Frequency: 2437.0000 MHz Test Standard: ANSI C63.10-2013
Worst Case Plane: Y-Plane (802.11g)

Radiated Emission (Mid Channel) tabular data

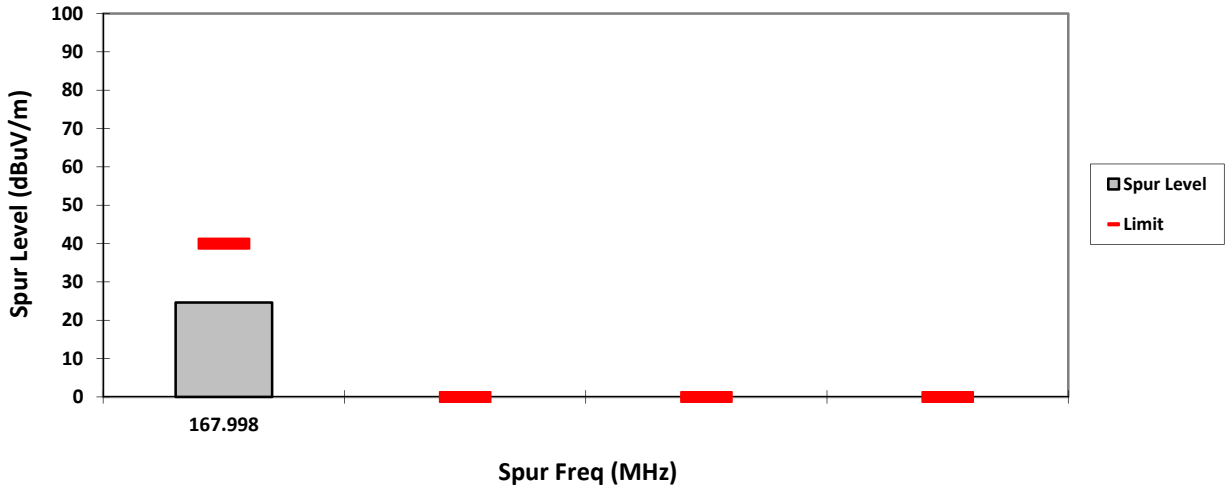
Vertical Radiated Emission Result										
Spur Freq (MHz)	Spur level QPK (dBµV/m)	Spur level PK (dBµV/m)	Spur level AV (dBµV/m)	Limit QPK (dBµV/m)	Limit PK (dBµV/m)	Limit AV (dBµV/m)	Margin QPK (dBµV/m)	Margin PK (dBµV/m)	Margin AV (dBµV/m)	Carrier PK Power (dBµV/m)
38.6489	-	38.2638	-	-	85.9763	-	-	47.7125	-	105.9763
66.2847	-	29.5579	-	-	85.9763	-	-	56.4184	-	105.9763
167.9980	24.6422	-	-	40.0000	-	-	15.3578	-	-	-
191.9930	-	35.5542	-	-	85.9763	-	-	50.4221	-	105.9763
288.0039	-	28.9048	-	-	85.9763	-	-	57.0715	-	105.9763
336.0070	-	32.5269	-	-	85.9763	-	-	53.4494	-	105.9763
Horizontal Radiated Emission Result										
38.6849	-	28.3936	-	-	85.9763	-	-	57.5827	-	105.9763
66.4825	-	24.9177	-	-	85.9763	-	-	61.0586	-	105.9763
168.0030	29.7717	-	-	40.0000	-	-	10.2283	-	-	-
192.0020	-	32.9443	-	-	85.9763	-	-	53.0320	-	105.9763
288.0029	-	31.6611	-	-	85.9763	-	-	54.3152	-	105.9763
335.9940	-	35.5964	-	-	85.9763	-	-	50.3799	-	105.9763

Remarks: Pass Result	Marginal Result	Fail Result

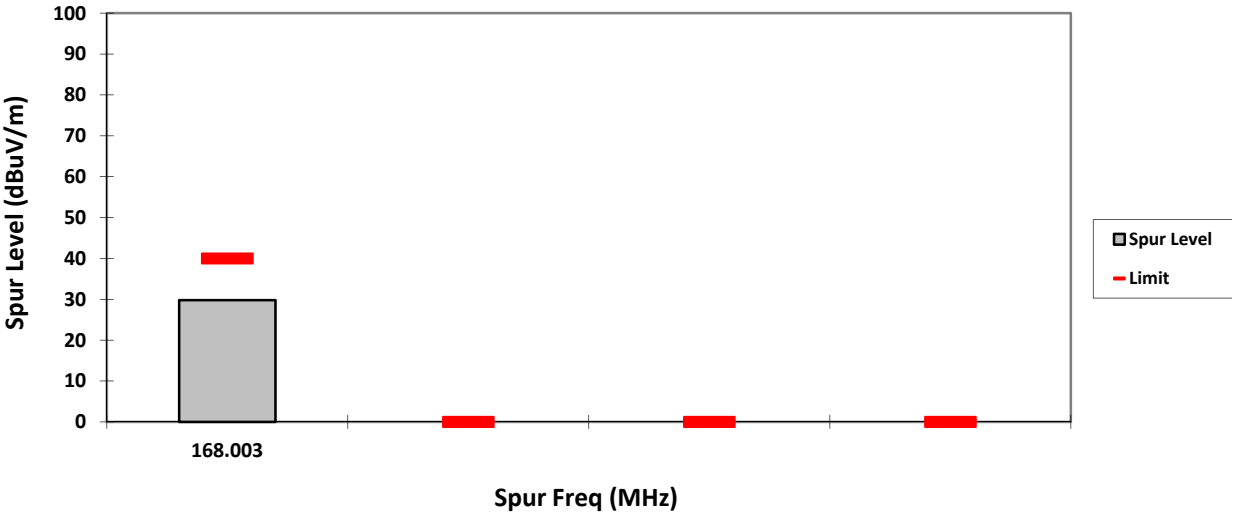
Temperature (degC): 23.4 **Humidity (%): 69.8**
Test Performed by: Qawiman&Nazrin **Test Date: Sun, May 12, 2019**
System MU: 5.01dB

Remarks: ** Indicates the spurious emission could not be detected due to noise limitations or ambient.
***Pursuant to CFR 47 Part 2.1057 (c), emissions attenuated more than 20 dB below the permissible limit are not reported.**

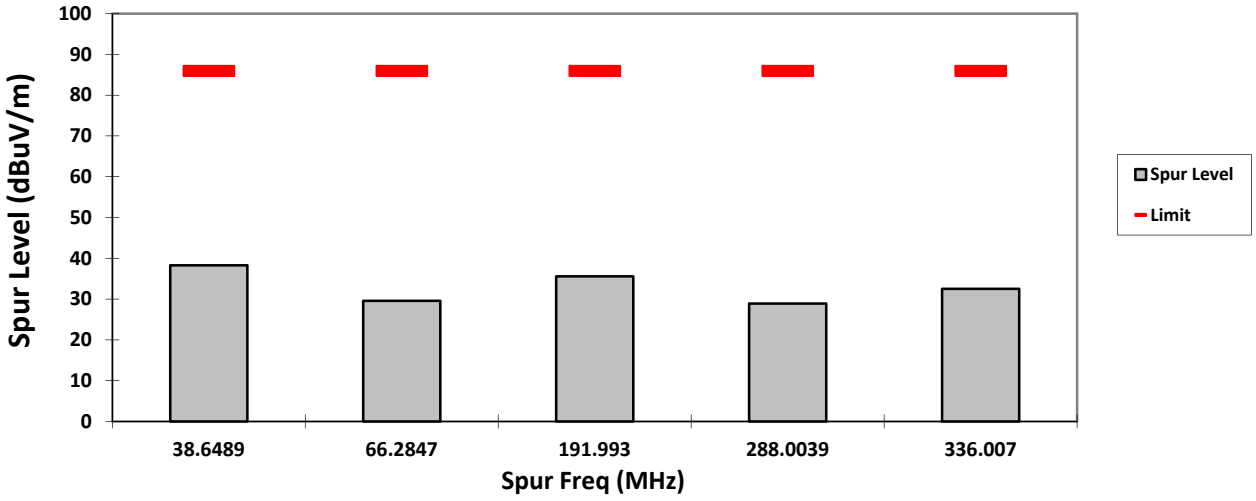
VERTICAL, QPK



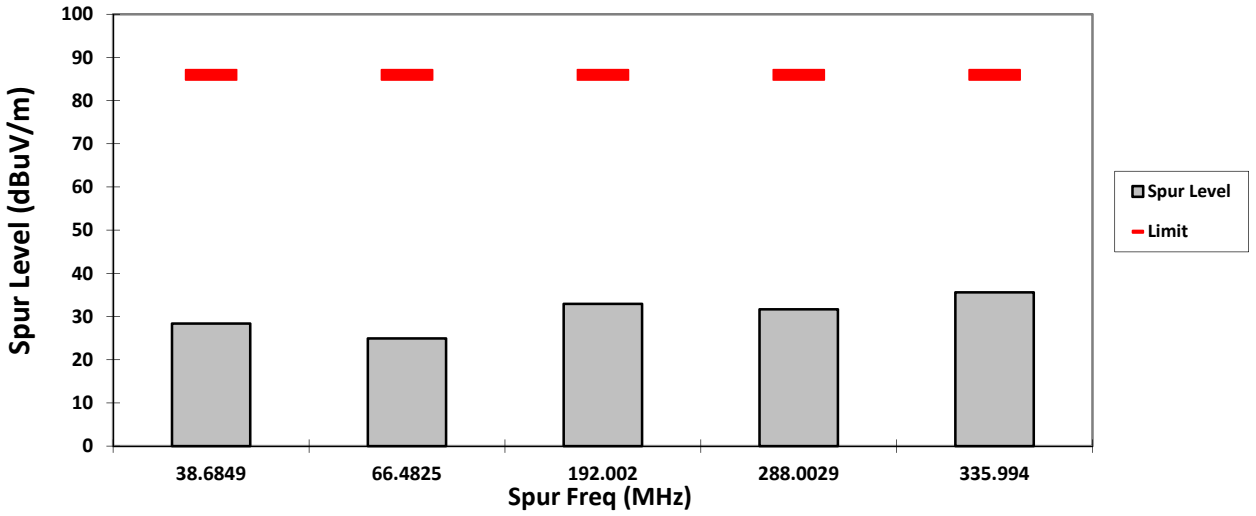
HORIZONTAL, QPK



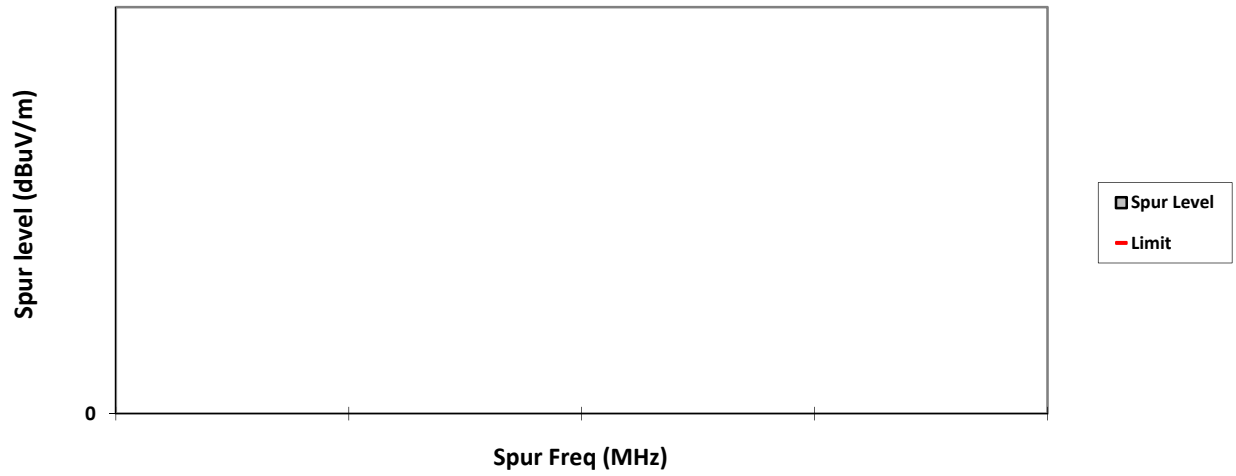
VERTICAL, PK



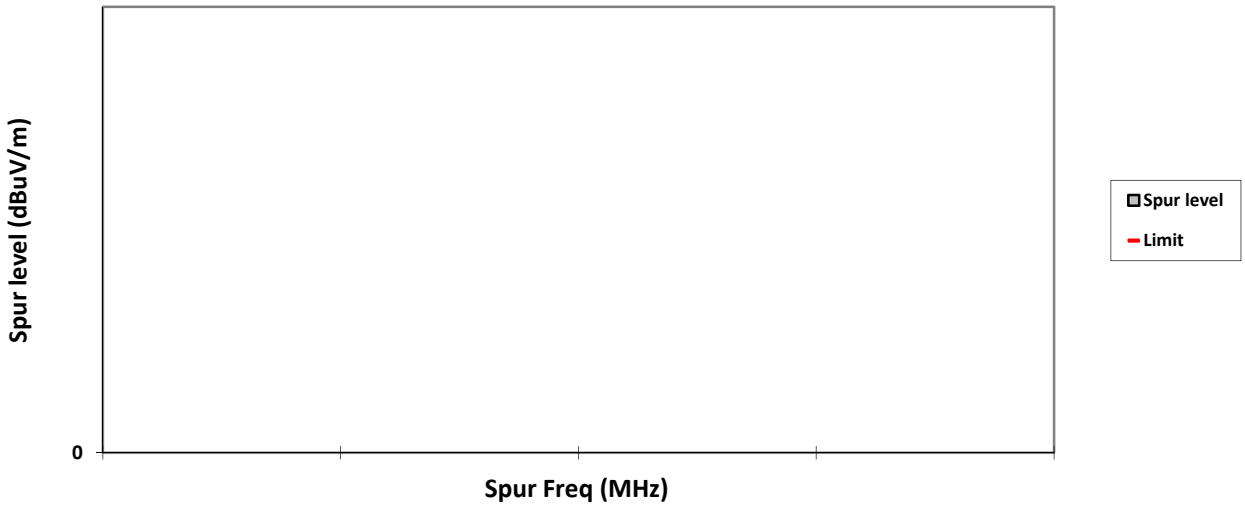
HORIZONTAL, PK



VERTICAL, AV



HORIZONTAL, AV



Test: WIFI SAC Transmitter Radiated Emission
Model#: M25URS9PW1BN S/N: 471TVF3482 EMC SR ID#: 14913-EMC-00050
Battery: NA Accessory: AN000163A01, AN000197A10, 3466-HMN4079G-4, HSN4040A-C4, HKN4191B-2, 3466-HKN6163C-2, PMHN4194C-CF3
Test Channel: High Test Frequency: 2462.0000 MHz Test Standard: ANSI C63.10-2013
Worst Case Plane: Y-Plane (802.11g)

Radiated Emission (High Channel) tabular data

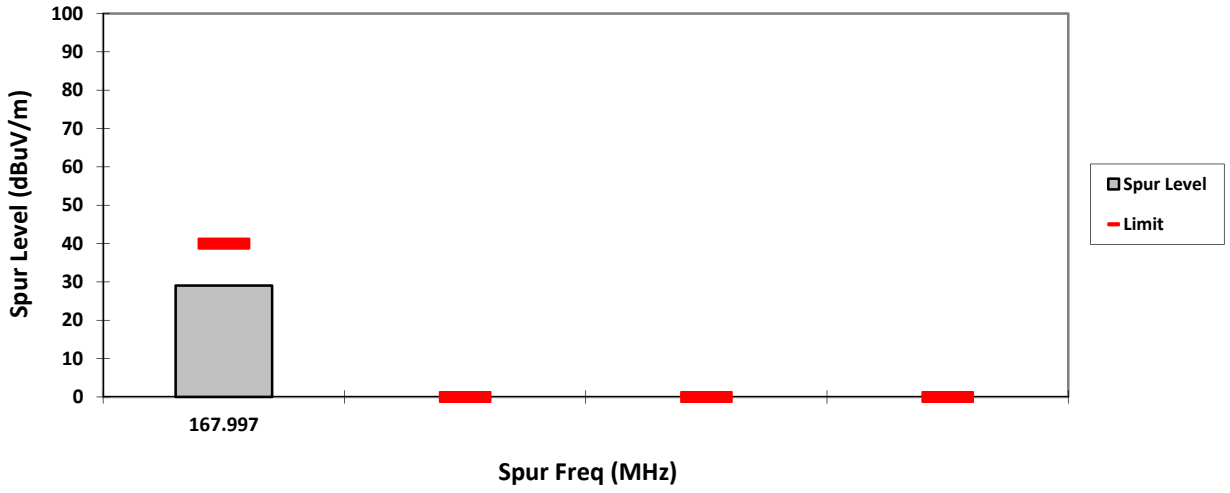
Vertical Radiated Emission Result										
Spur Freq (MHz)	Spur level QPK (dBµV/m)	Spur level PK (dBµV/m)	Spur level AV (dBµV/m)	Limit QPK (dBµV/m)	Limit PK (dBµV/m)	Limit AV (dBµV/m)	Margin QPK (dBµV/m)	Margin PK (dBµV/m)	Margin AV (dBµV/m)	Carrier PK Power (dBµV/m)
38.9984	-	39.1556	-	-	85.9763	-	-	46.8207	-	105.9763
66.2497	-	29.0999	-	-	85.9763	-	-	56.8764	-	105.9763
167.9970	29.0599	-	-	40.0000	-	-	10.9401	-	-	-
192.0060	-	35.5236	-	-	85.9763	-	-	50.4527	-	105.9763
287.9950	-	28.7510	-	-	85.9763	-	-	57.2253	-	105.9763
336.0000	-	30.9596	-	-	85.9763	-	-	55.0167	-	105.9763
Horizontal Radiated Emission Result										
39.0833	-	27.7484	-	-	85.9763	-	-	58.2279	-	105.9763
66.0000	-	26.7130	-	-	85.9763	-	-	59.2633	-	105.9763
167.9960	29.7882	-	-	40.0000	-	-	10.2118	-	-	-
192.0040	-	32.9962	-	-	85.9763	-	-	52.9801	-	105.9763
288.0089	-	31.0806	-	-	85.9763	-	-	54.8957	-	105.9763
335.9960	-	35.3247	-	-	85.9763	-	-	50.6516	-	105.9763

Remarks: Pass Result	Marginal Result	Fail Result

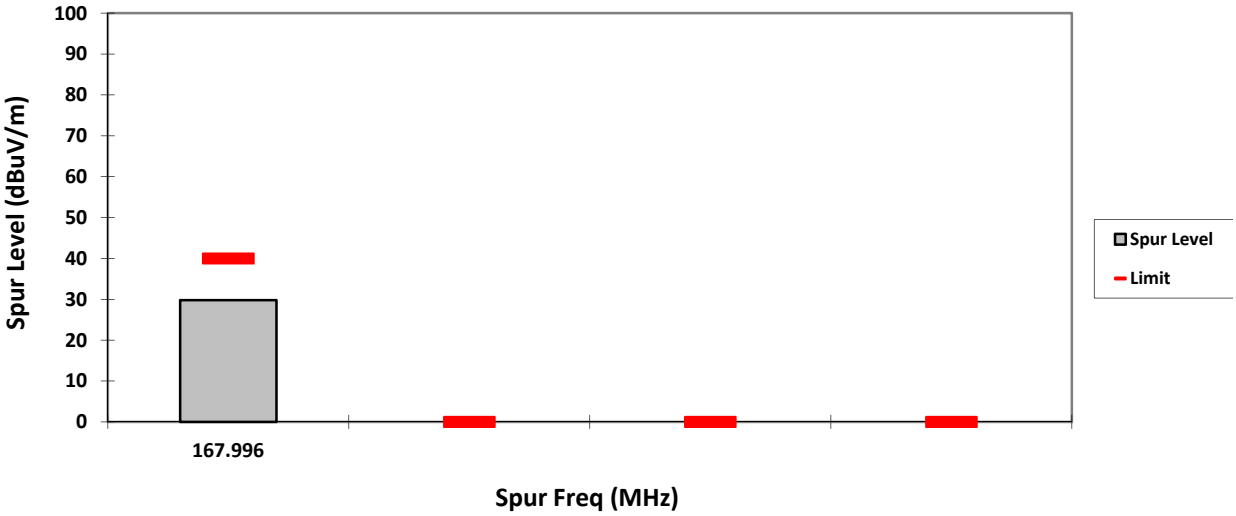
Temperature (degC): 23.4 **Humidity (%): 69.8**
Test Performed by: Qawiman&Nazrin **Test Date: Sun, May 12, 2019**
System MU: 5.01dB

Remarks: ** Indicates the spurious emission could not be detected due to noise limitations or ambient.
***Pursuant to CFR 47 Part 2.1057 (c), emissions attenuated more than 20 dB below the permissible limit are not reported.**

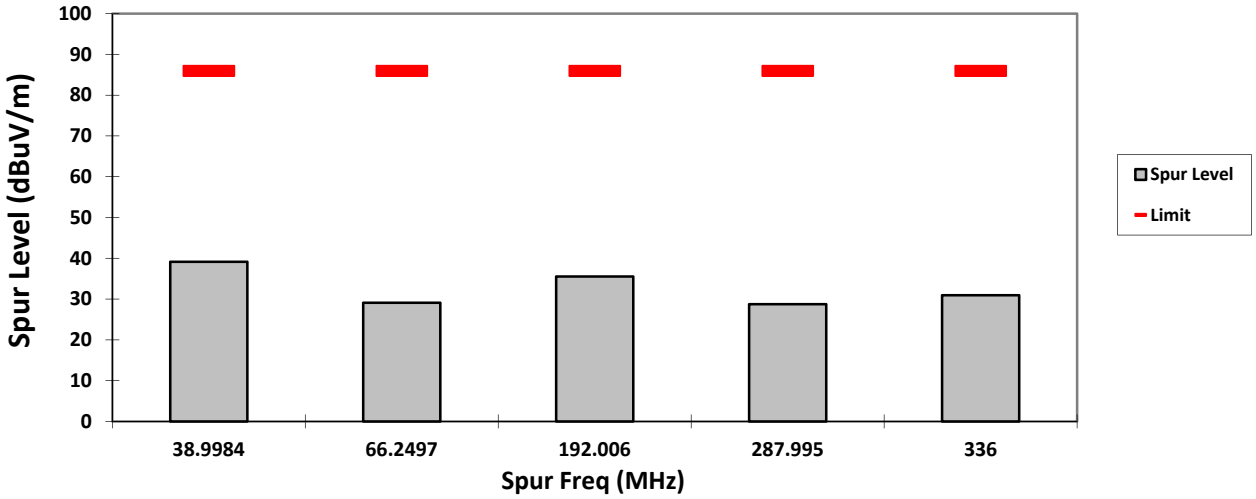
VERTICAL, QPK



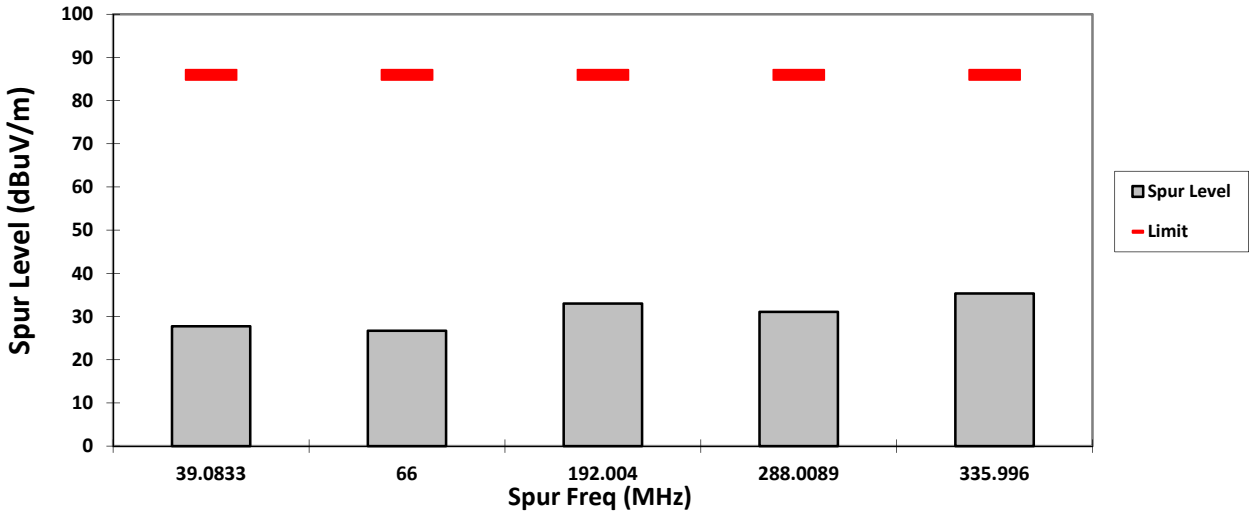
HORIZONTAL, QPK



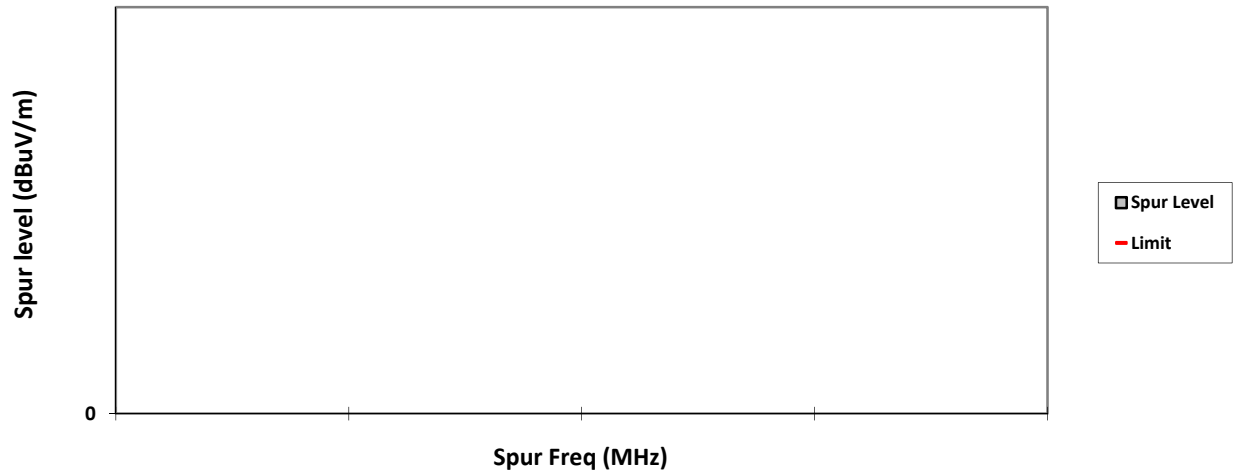
VERTICAL, PK



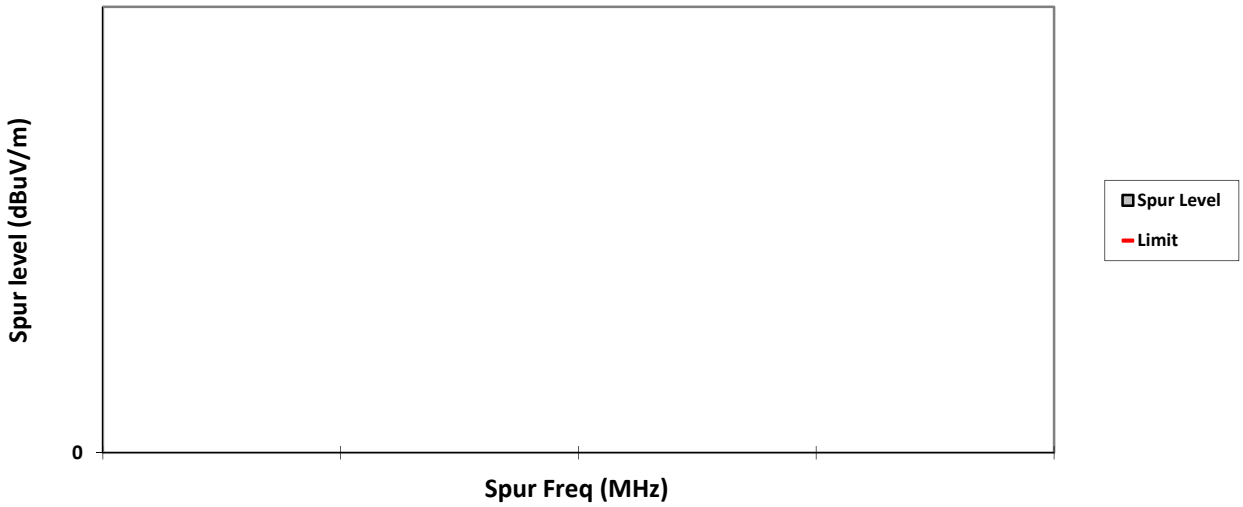
HORIZONTAL, PK



VERTICAL, AV



HORIZONTAL, AV



802.11n(HT20)

Test: WIFI SAC Transmitter Radiated Emission

Model#: M25URS9PW1BN S/N: 471TVF3482 EMC SR ID#: 14913-EMC-00050

Battery: NA Accessory: AN000163A01, AN000197A10, 3466-HMN4079G-4, HSN4040A-C4, HKN4191B-2, 3466-HKN6163C-2, PMHN4194C-CF3

Test Channel: Low Test Frequency: 2412.0000 MHz Test Standard: ANSI C63.10-2013

Worst Case Plane: Y-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)
38.4935	-	37.8551	-	-	85.9763	-	-	48.1212	-	105.9763
64.5245	-	33.0680	-	-	85.9763	-	-	52.9083	-	105.9763
191.9990	-	34.5374	-	-	85.9763	-	-	51.4389	-	105.9763
216.0000	-	29.8289	-	-	85.9763	-	-	56.1474	-	105.9763
287.9989	-	29.3064	-	-	85.9763	-	-	56.6699	-	105.9763
336.0030	-	28.3909	-	-	85.9763	-	-	57.5854	-	105.9763
Horizontal Radiated Emission Result										
38.3626	-	33.2394	-	-	85.9763	-	-	52.7369	-	105.9763
64.5115	-	24.1023	-	-	85.9763	-	-	61.8740	-	105.9763
191.9980	-	35.4862	-	-	85.9763	-	-	50.4901	-	105.9763
216.0010	-	31.3008	-	-	85.9763	-	-	54.6755	-	105.9763
287.9999	-	33.6552	-	-	85.9763	-	-	52.3211	-	105.9763
336.0030	-	35.0616	-	-	85.9763	-	-	50.9147	-	105.9763

Remarks: Pass Result	Marginal Result	Fail Result

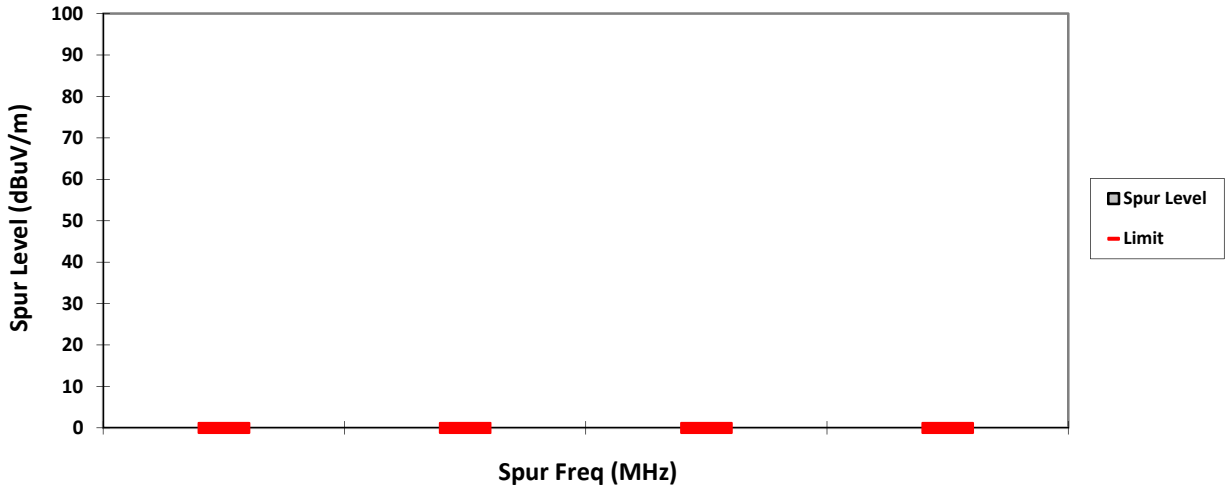
Temperature (degC): 22.9 **Humidity (%): 70.3**

Test Performed by: Qawiman&Nazrin **Test Date: Wed, May 29, 2019**

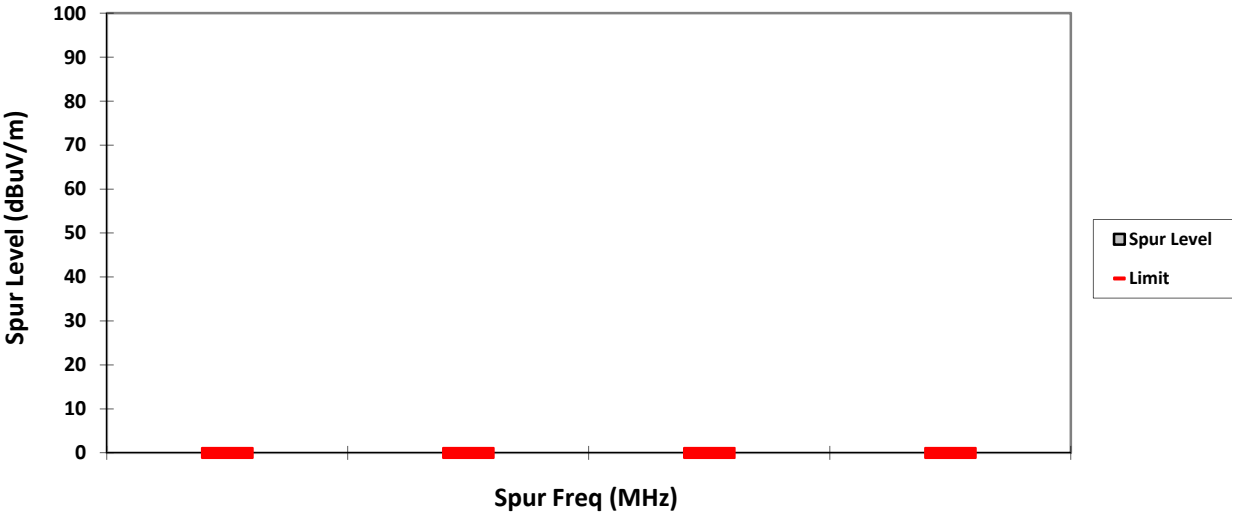
System MU: 5.01dB

Remarks: ** Indicates the spurious emission could not be detected due to noise limitations or ambient.
***Pursuant to CFR 47 Part 2.1057 (c), emissions attenuated more than 20 dB below the permissible limit are not reported.**

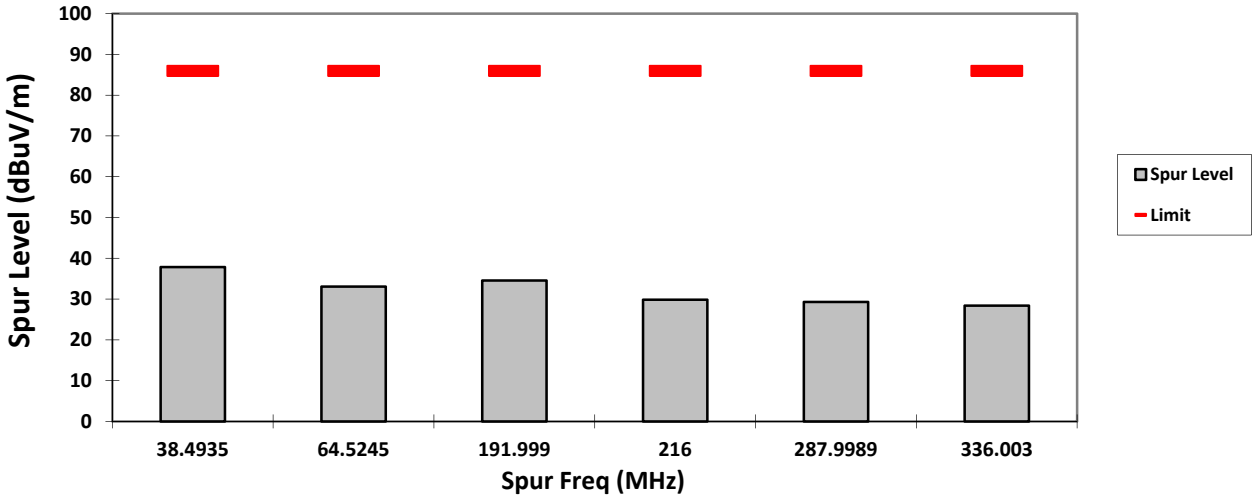
VERTICAL, QPK



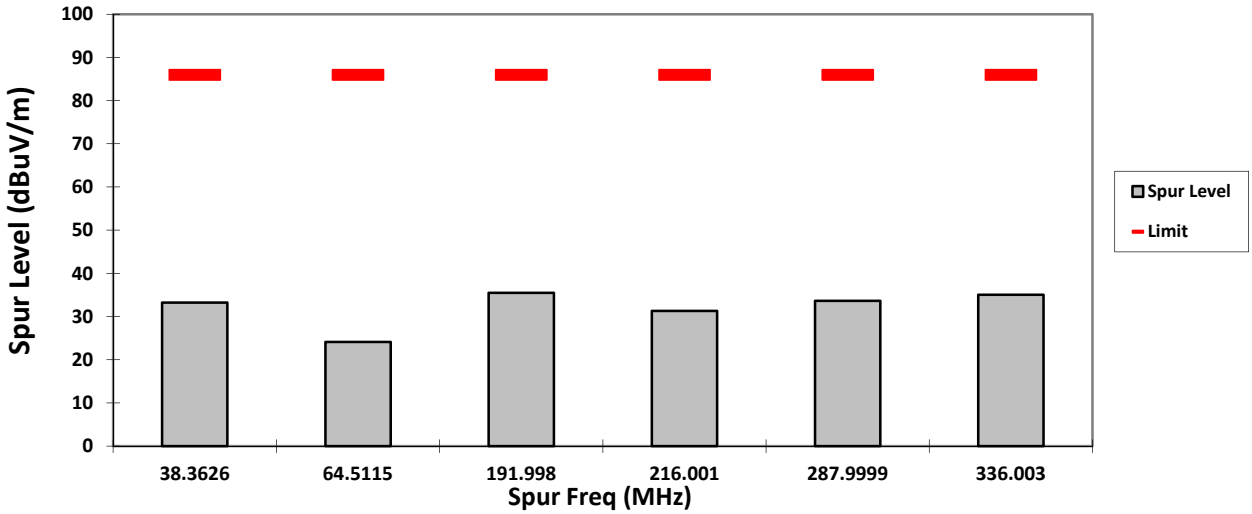
HORIZONTAL, QPK



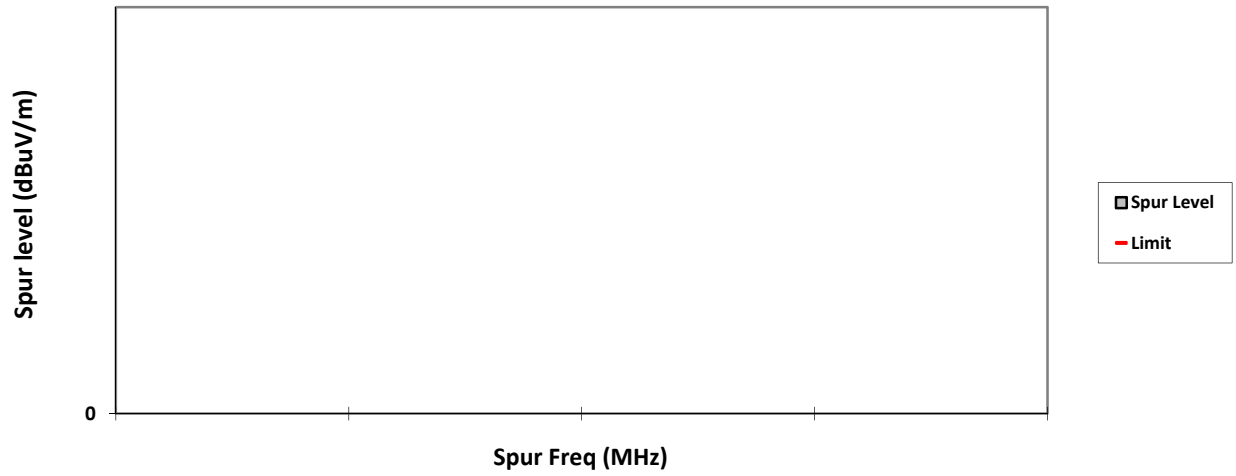
VERTICAL, PK



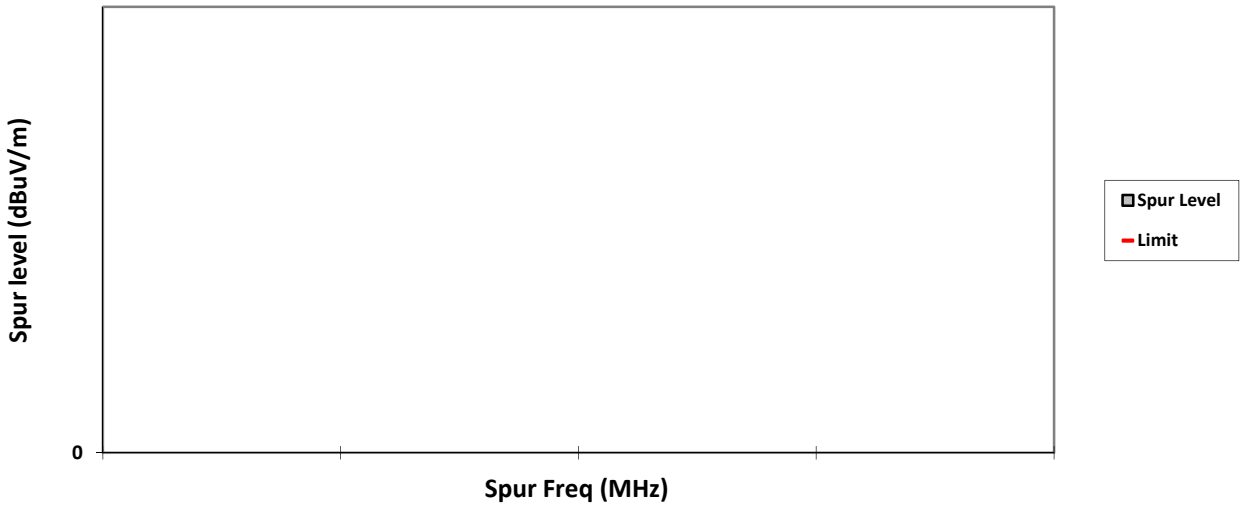
HORIZONTAL, PK



VERTICAL, AV



HORIZONTAL, AV



Test: WIFI SAC Transmitter Radiated Emission
Model#: M25URS9PW1BN S/N: 471TVF3482 EMC SR ID#: 14913-EMC-00050
Battery: NA Accessory: AN000163A01, AN000197A10, 3466-HMN4079G-4, HSN4040A-C4, HKN4191B-2, 3466-HKN6163C-2, PMHN4194C-CF3
Test Channel: Mid Test Frequency: 2437.0000 MHz Test Standard: ANSI C63.10-2013
Worst Case Plane: Y-Plane (802.11n 20MHz)

Radiated Emission (Mid Channel) tabular data

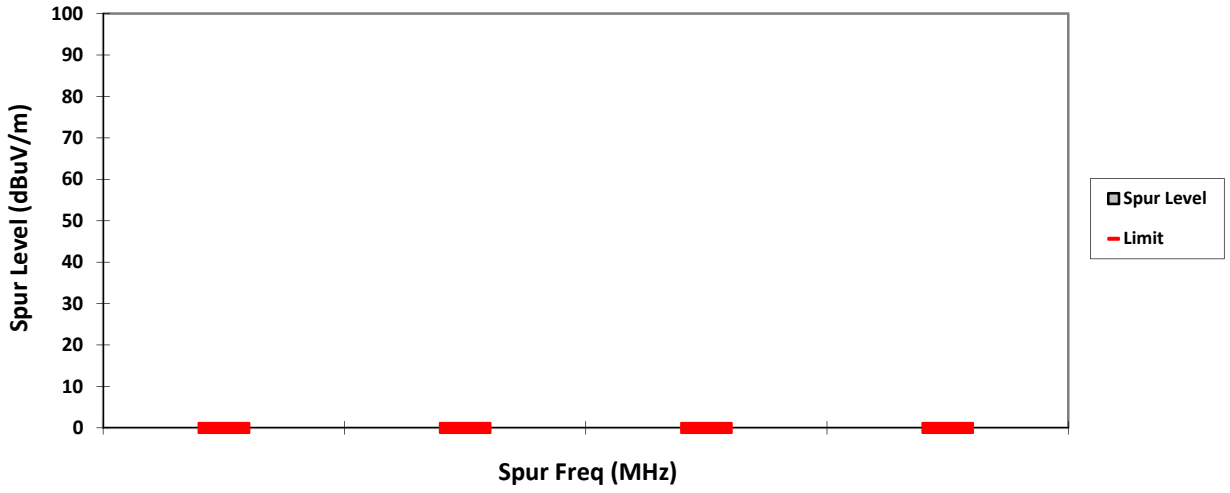
Vertical Radiated Emission Result										
Spur Freq (MHz)	Spur level QPK (dBµV/m)	Spur level PK (dBµV/m)	Spur level AV (dBµV/m)	Limit QPK (dBµV/m)	Limit PK (dBµV/m)	Limit AV (dBµV/m)	Margin QPK (dBµV/m)	Margin PK (dBµV/m)	Margin AV (dBµV/m)	Carrier PK Power (dBµV/m)
39.7290	-	35.2219	-	-	85.9763	-	-	50.7544	-	105.9763
64.9990	-	33.7118	-	-	85.9763	-	-	52.2645	-	105.9763
191.9990	-	34.4716	-	-	85.9763	-	-	51.5047	-	105.9763
215.9991	-	29.9958	-	-	85.9763	-	-	55.9805	-	105.9763
287.9969	-	29.6782	-	-	85.9763	-	-	56.2981	-	105.9763
335.9980	-	27.3550	-	-	85.9763	-	-	58.6213	-	105.9763
Horizontal Radiated Emission Result										
39.2735	-	26.4332	-	-	85.9763	-	-	59.5431	-	105.9763
64.4915	-	25.4456	-	-	85.9763	-	-	60.5307	-	105.9763
191.9980	-	35.3474	-	-	85.9763	-	-	50.6289	-	105.9763
216.0011	-	30.9678	-	-	85.9763	-	-	55.0085	-	105.9763
288.0029	-	34.0706	-	-	85.9763	-	-	51.9057	-	105.9763
336.0020	-	34.6780	-	-	85.9763	-	-	51.2983	-	105.9763

Remarks: Pass Result	Marginal Result	Fail Result

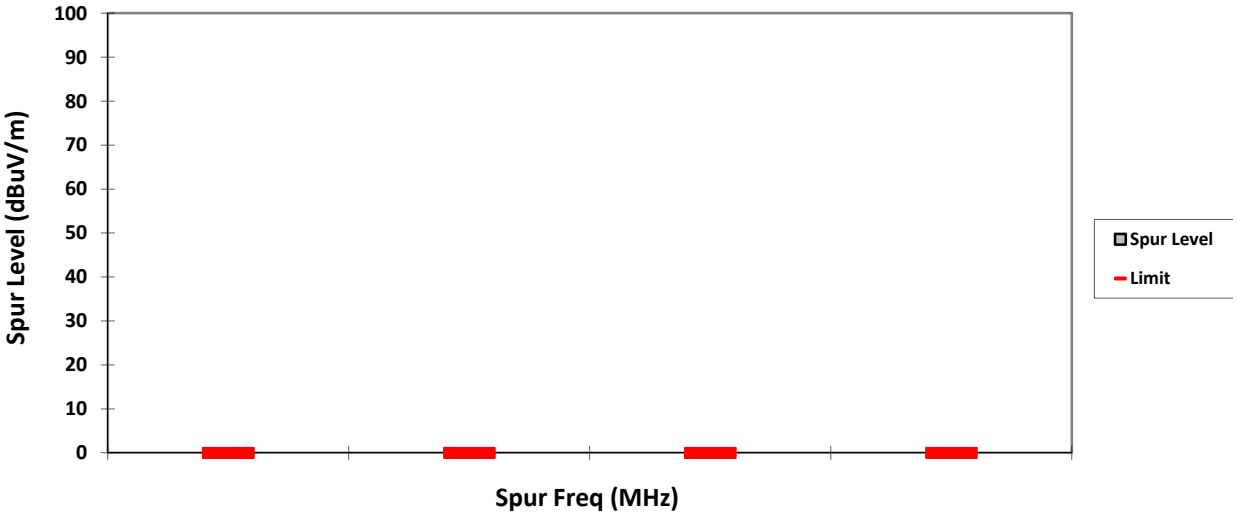
Temperature (degC): 22.9 **Humidity (%): 70.3**
Test Performed by: Qawiman&Nazrin **Test Date: Wed, May 29, 2019**
System MU: 5.01dB

Remarks: ** Indicates the spurious emission could not be detected due to noise limitations or ambient.
***Pursuant to CFR 47 Part 2.1057 (c), emissions attenuated more than 20 dB below the permissible limit are not reported.**

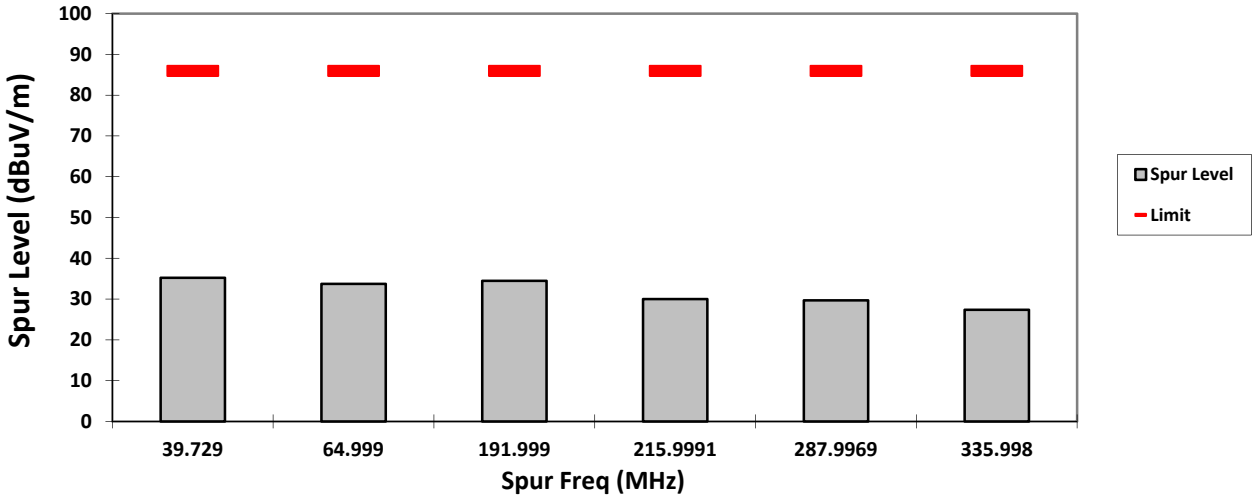
VERTICAL, QPK



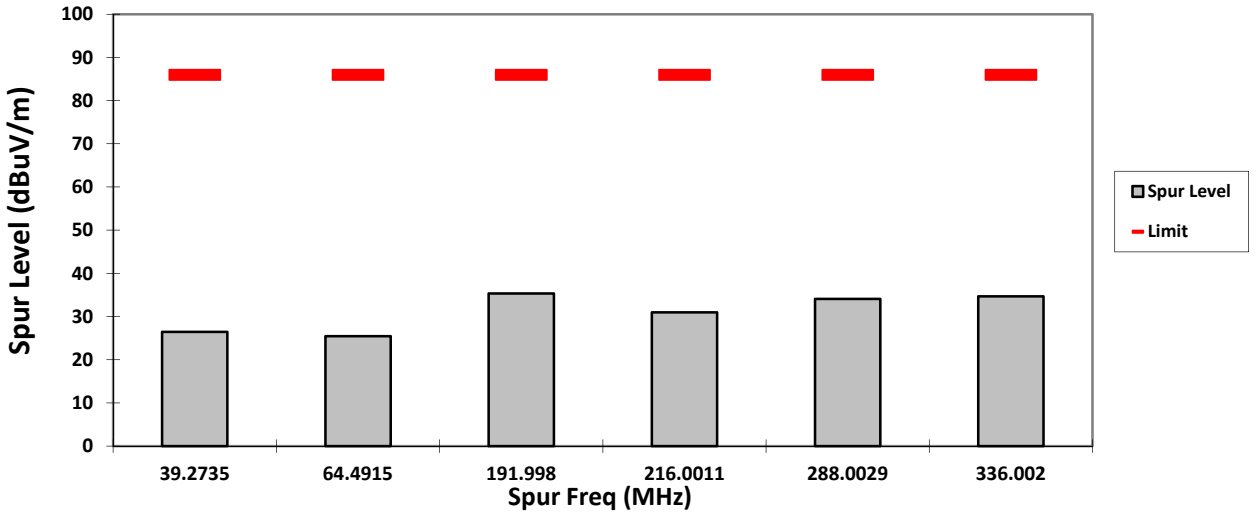
HORIZONTAL, QPK



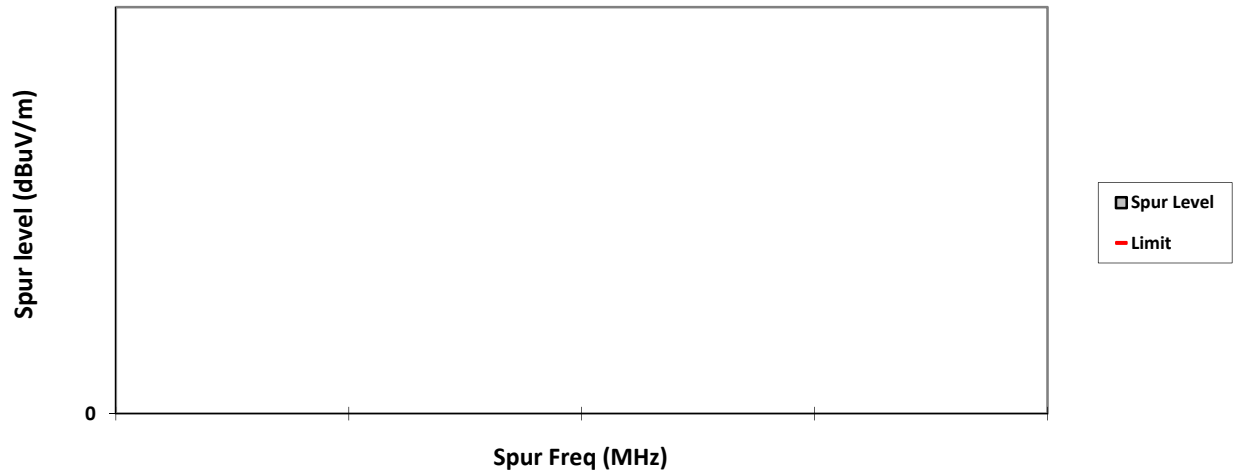
VERTICAL, PK



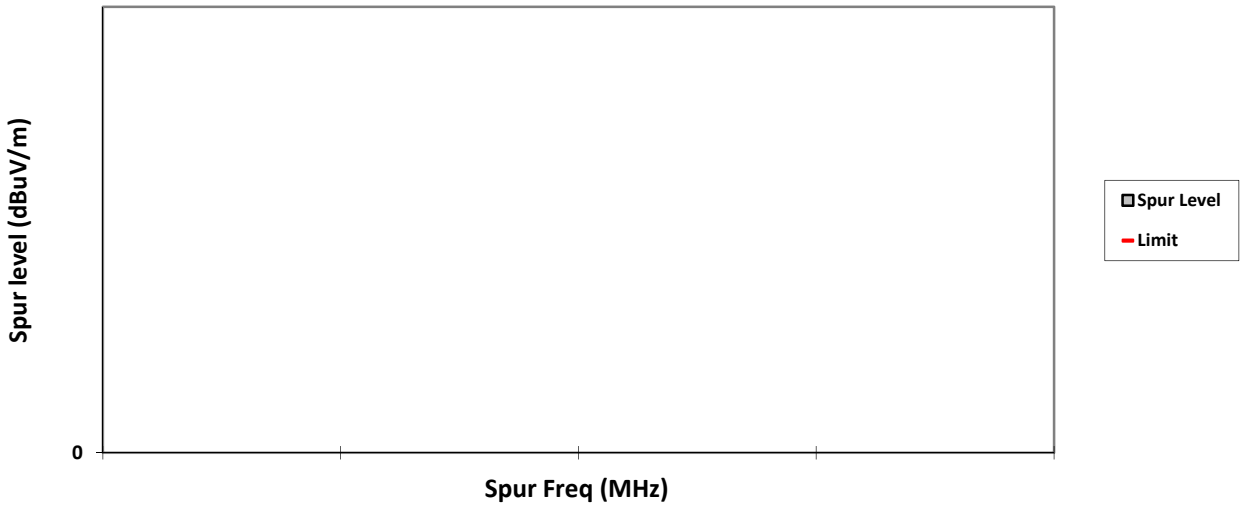
HORIZONTAL, PK



VERTICAL, AV



HORIZONTAL, AV



Test: WIFI SAC Transmitter Radiated Emission
Model#: M25URS9PW1BN S/N: 471TVF3482 EMC SR ID#: 14913-EMC-00050
Battery: NA Accessory: AN000163A01, AN000197A10, 3466-HMN4079G-4, HSN4040A-C4, HKN4191B-2, 3466-HKN6163C-2, PMHN4194C-CF3
Test Channel: High Test Frequency: 2462.0000 MHz Test Standard: ANSI C63.10-2013
Worst Case Plane: Y-Plane (802.11n 20MHz)

Radiated Emission (High Channel) tabular data

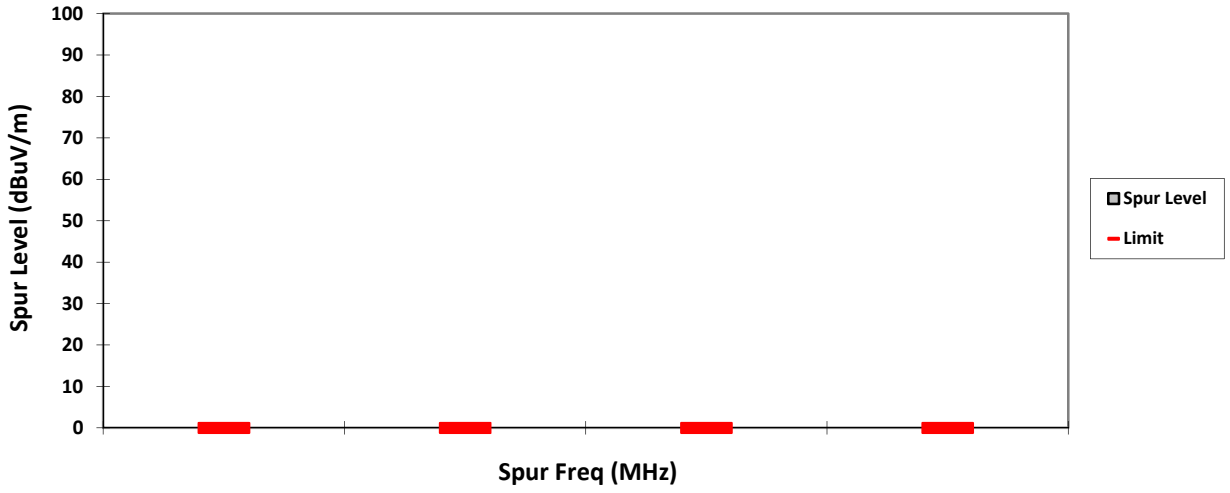
Vertical Radiated Emission Result										
Spur Freq (MHz)	Spur level QPK (dBµV/m)	Spur level PK (dBµV/m)	Spur level AV (dBµV/m)	Limit QPK (dBµV/m)	Limit PK (dBµV/m)	Limit AV (dBµV/m)	Margin QPK (dBµV/m)	Margin PK (dBµV/m)	Margin AV (dBµV/m)	Carrier PK Power (dBµV/m)
39.9948	-	35.2924	-	-	85.9763	-	-	50.6839	-	105.9763
66.0120	-	34.5632	-	-	85.9763	-	-	51.4131	-	105.9763
191.9980	-	36.3427	-	-	85.9763	-	-	49.6336	-	105.9763
287.9979	-	27.5425	-	-	85.9763	-	-	58.4338	-	105.9763
311.9991	-	27.4223	-	-	85.9763	-	-	58.5540	-	105.9763
336.0030	-	27.3291	-	-	85.9763	-	-	58.6472	-	105.9763
Horizontal Radiated Emission Result										
39.9729	-	24.9403	-	-	85.9763	-	-	61.0360	-	105.9763
66.0080	-	27.3002	-	-	85.9763	-	-	58.6761	-	105.9763
191.9990	-	37.6714	-	-	85.9763	-	-	48.3049	-	105.9763
287.9989	-	34.2874	-	-	85.9763	-	-	51.6889	-	105.9763
311.9981	-	33.7737	-	-	85.9763	-	-	52.2026	-	105.9763
336.0000	-	34.7880	-	-	85.9763	-	-	51.1883	-	105.9763

Remarks: Pass Result	Marginal Result	Fail Result

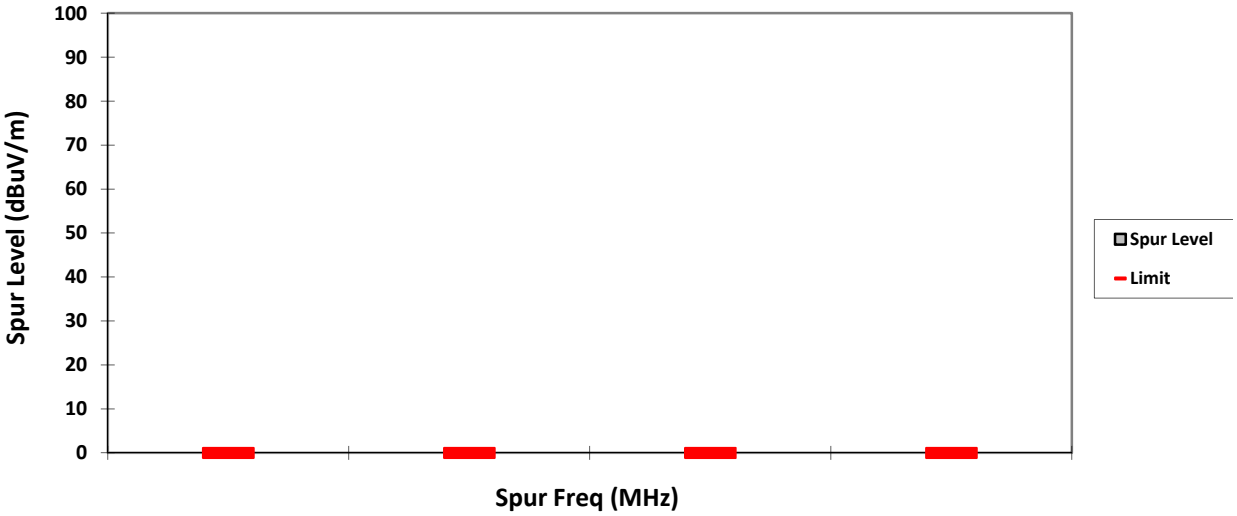
Temperature (degC): 22.9 **Humidity (%): 70.3**
Test Performed by: Qawiman&Nazrin **Test Date: Wed, May 29, 2019**
System MU: 5.01dB

Remarks: ** Indicates the spurious emission could not be detected due to noise limitations or ambient.
***Pursuant to CFR 47 Part 2.1057 (c), emissions attenuated more than 20 dB below the permissible limit are not reported.**

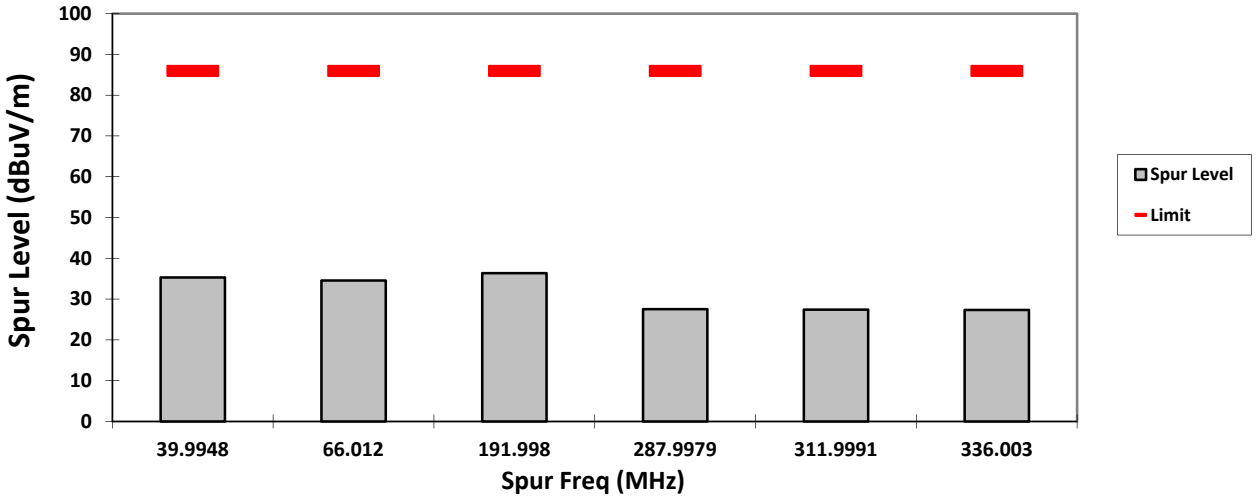
VERTICAL, QPK



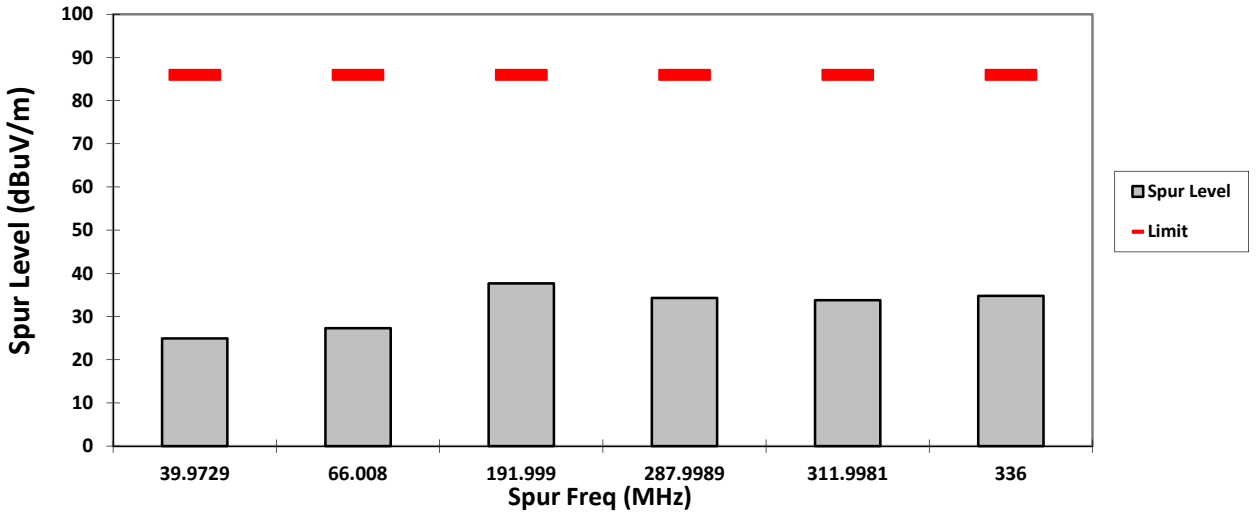
HORIZONTAL, QPK



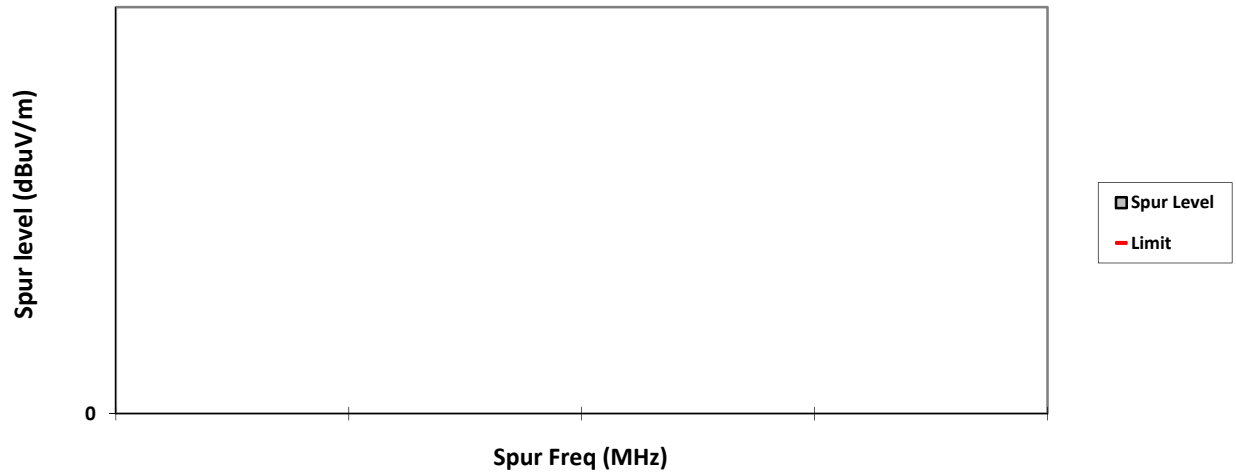
VERTICAL, PK



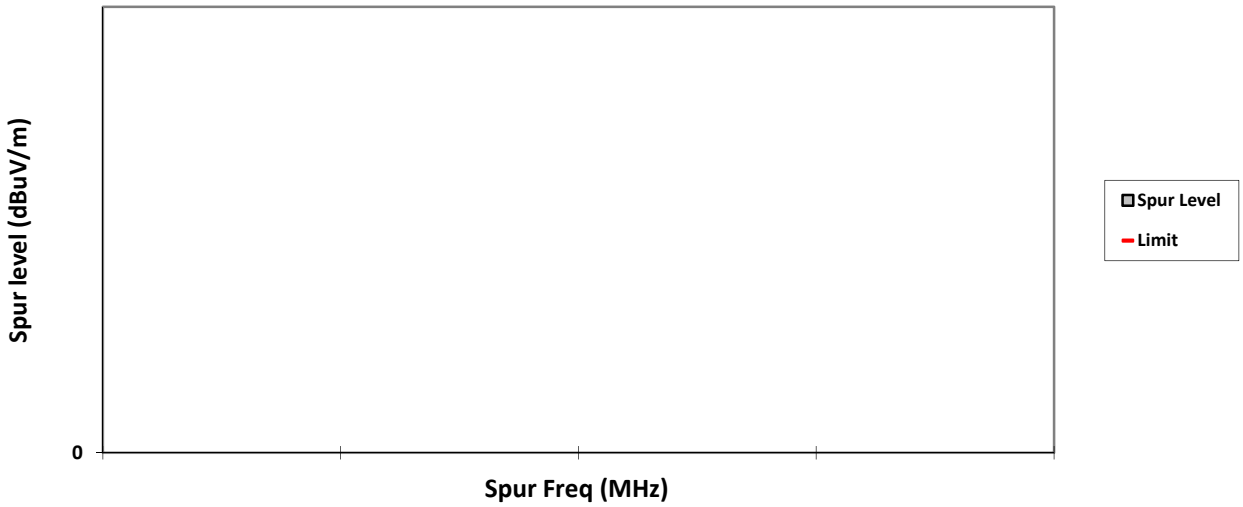
HORIZONTAL, PK



VERTICAL, AV



HORIZONTAL, AV



802.11b

Test: WIFI SAC Restricted Band Edge
Model Number: M25URS9PW1BN S/N: 471TVF3482 EMC SR ID#: 14913-EMC-00050
Battery: NA Accessory: AN000163A01, AN000197A10, 3466-HMN4079G-4, HSN4040A-C4, HKN4191B-2, 3466-HKN6163C-2, PMHN4194C-CF3
Test Channel: Low Test Frequency: 2412.0000 MHz Test Standard: ANSI C63.10-2013
Worst Case Plane: Y-Plane (802.11b)

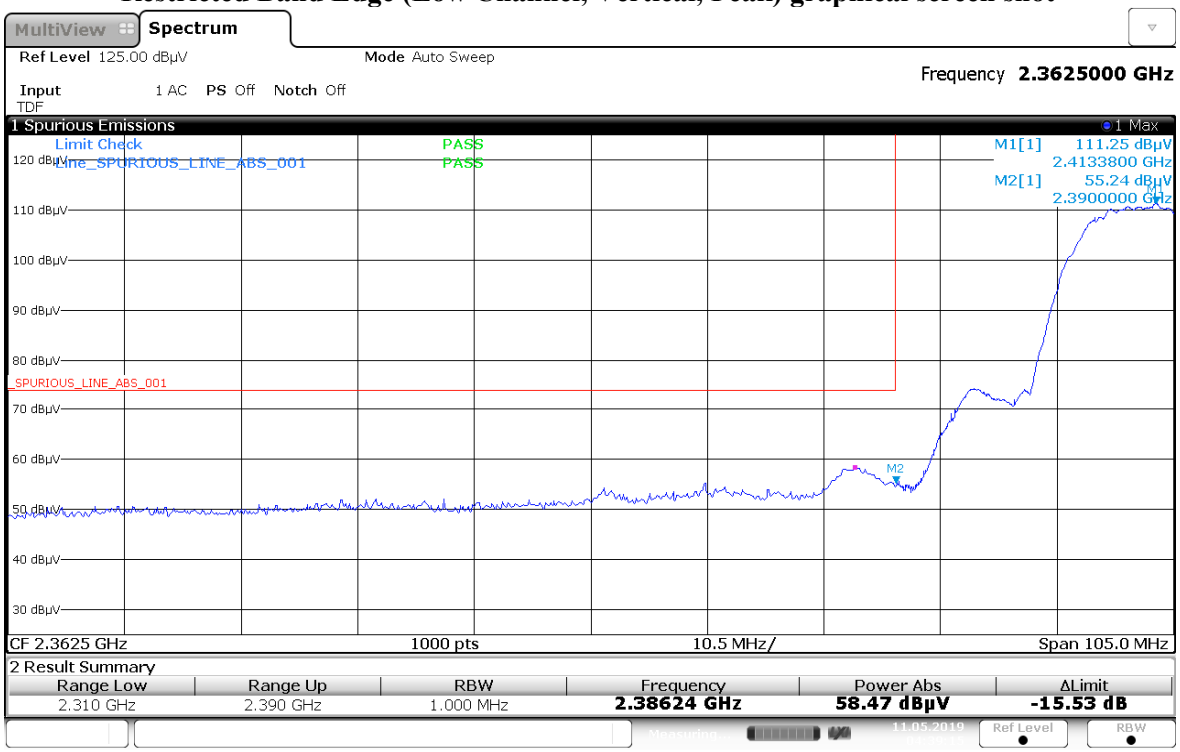
Restricted Band Edge (Low Channel) tabular data

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)
2373.1200	-	-	42.3070	-	-	54.0000	-	-	-11.6930	-
2373.4400	-	-	42.0588	-	-	54.0000	-	-	-11.9412	-
2375.3600	-	-	42.3640	-	-	54.0000	-	-	-11.6360	-
2375.6800	-	-	42.2654	-	-	54.0000	-	-	-11.7346	-
2386.2400	-	58.4690	-	-	74.0000	-	-	-15.5310	-	-
2387.3600	-	-	47.4592	-	-	54.0000	-	-	-6.5408	-
2390.0000	-	55.2391	43.3911	-	74.0000	54.0000	-	-18.7609	-10.6089	-
Horizontal Radiated Emission Result										
2388.9600	-	50.1378	-	-	74.0000	-	-	-23.8622	-	-
2390.0000	-	49.3528	38.6587	-	74.0000	54.0000	-	-24.6472	-15.3413	-

Remarks: Pass Result	Marginal Result	Fail Result

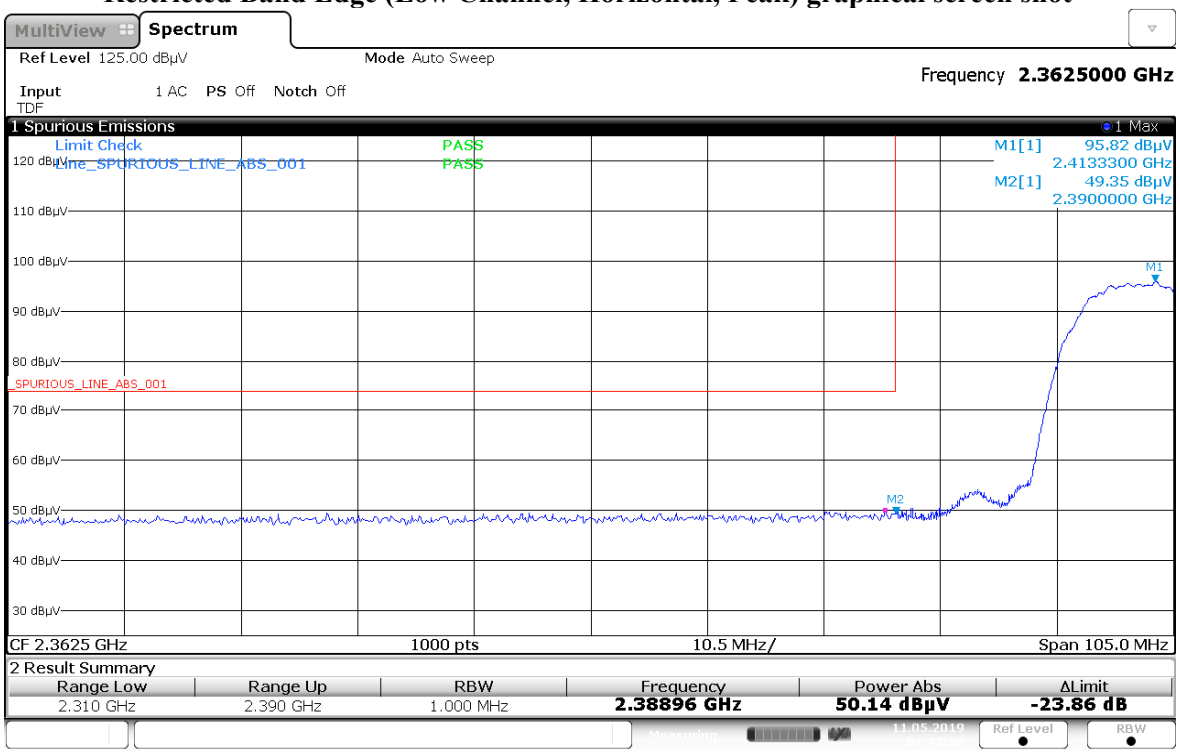
Temperature (degC):23.4 **Humidity (%): 69.8**
Test Performed by: Qawiman&Azil **Test Date: Sat, May 11, 2019**
System MU: 5.01dB

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



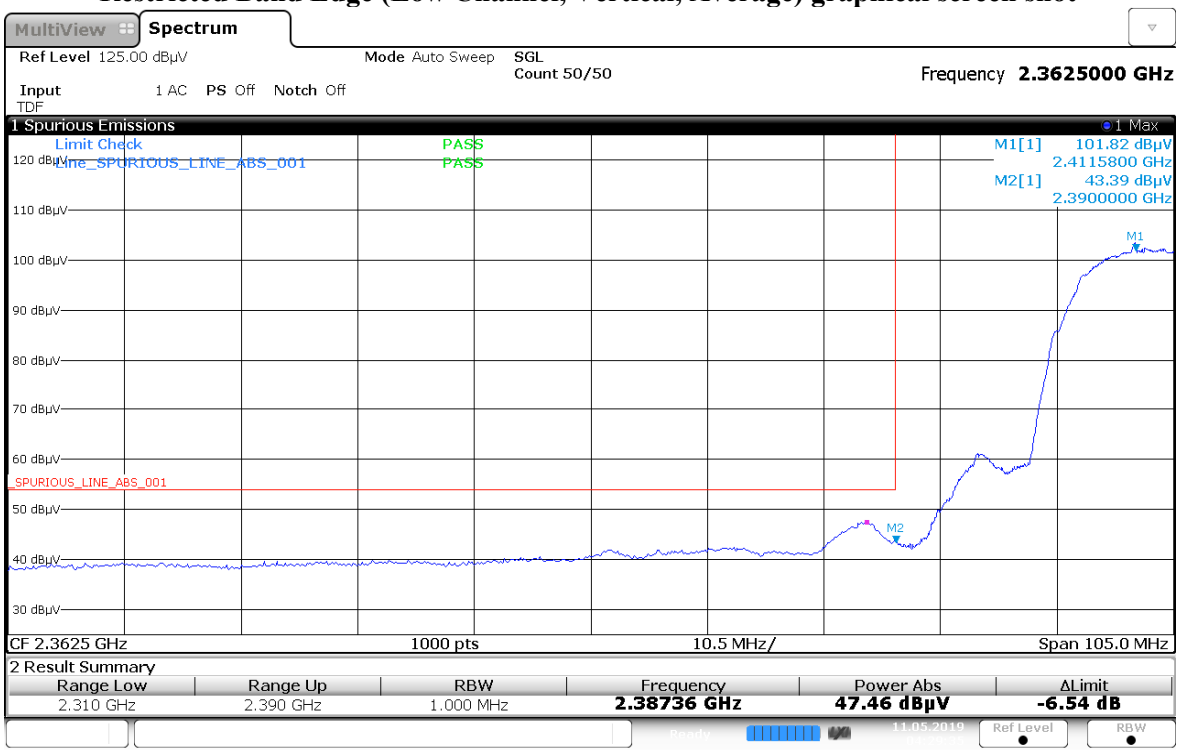
04:39:15 11.05.2019

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



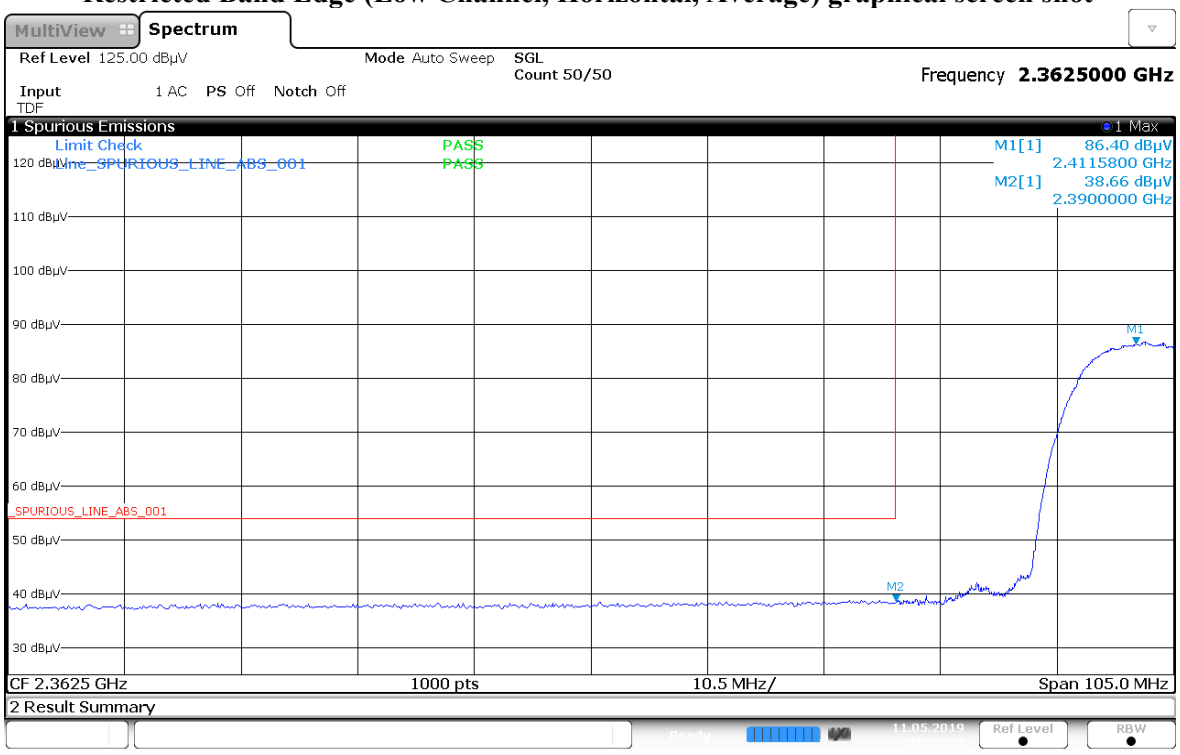
04:42:50 11.05.2019

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



04:29:35 11.05.2019

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



04:33:35 11.05.2019

Test: WIFI SAC Restricted Band Edge
Model Number: M25URS9PW1BN S/N: 471TVF3482 EMC SR ID#: 14913-EMC-00050
Battery: NA Accessory: AN000163A01, AN000197A10, 3466-HMN4079G-4, HSN4040A-C4, HKN4191B-2, 3466-HKN6163C-2, PMHN4194C-CF3
Test Channel: High Test Frequency: 2462.0000 MHz Test Standard: ANSI C63.10-2013
Worst Case Plane: Y-Plane (802.11b)

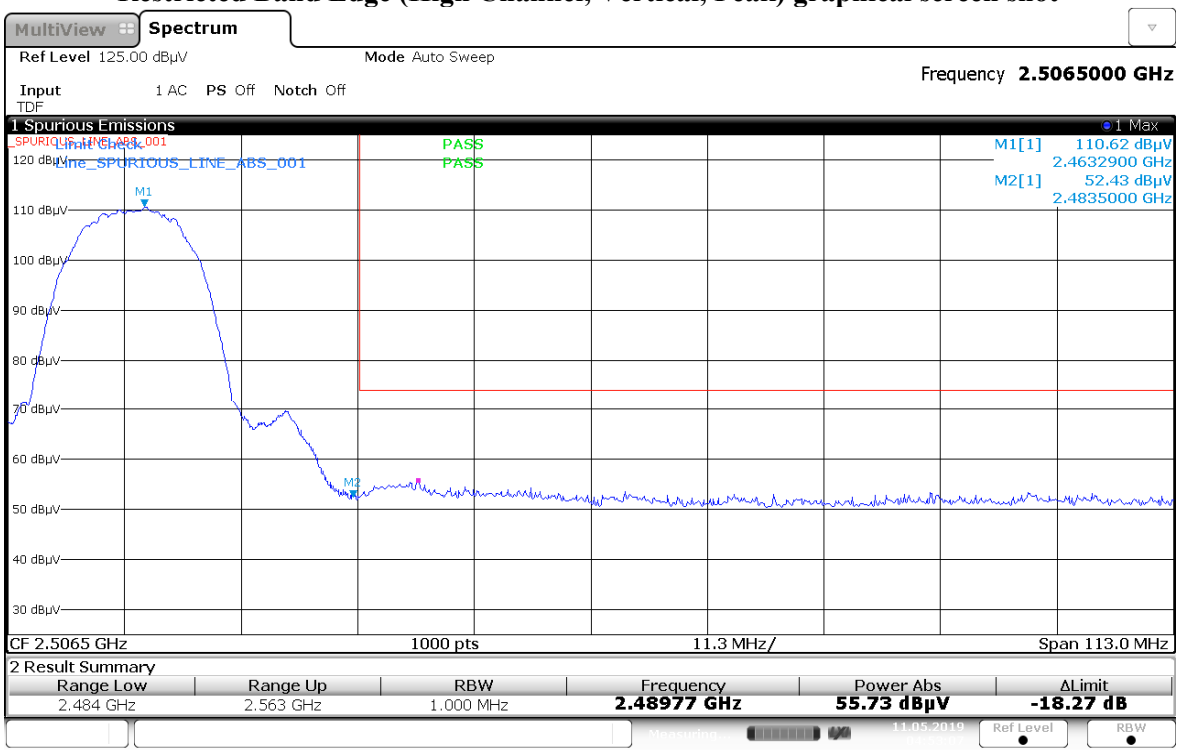
Restricted Band Edge (High Channel) tabular data

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	-	52.4306	42.7528	-	74.0000	54.0000	-	-21.5694	-11.2472	-
2486.1330	-	-	47.1531	-	-	54.0000	-	-	-6.8469	-
2489.7670	-	55.7289	-	-	74.0000	-	-	-18.2711	-	-
2502.0910	-	-	42.3033	-	-	54.0000	-	-	-11.6967	-
2503.5130	-	-	42.3656	-	-	54.0000	-	-	-11.6344	-
2504.7770	-	-	42.4316	-	-	54.0000	-	-	-11.5684	-
2505.0930	-	-	42.2796	-	-	54.0000	-	-	-11.7204	-
2505.5670	-	-	42.2603	-	-	54.0000	-	-	-11.7397	-
2509.5170	-	-	42.0671	-	-	54.0000	-	-	-11.9329	-
2511.0970	-	-	43.2462	-	-	54.0000	-	-	-10.7538	-
2521.0510	-	-	42.9620	-	-	54.0000	-	-	-11.0380	-
2540.4850	-	-	42.2466	-	-	54.0000	-	-	-11.7534	-
Horizontal Radiated Emission Result										
2483.5000	-	50.0710	38.2256	-	74.0000	54.0000	-	-23.9290	-15.7744	-
2500.5110	-	51.5909	-	-	74.0000	-	-	-22.4091	-	-

Remarks: Pass Result	Marginal Result	Fail Result

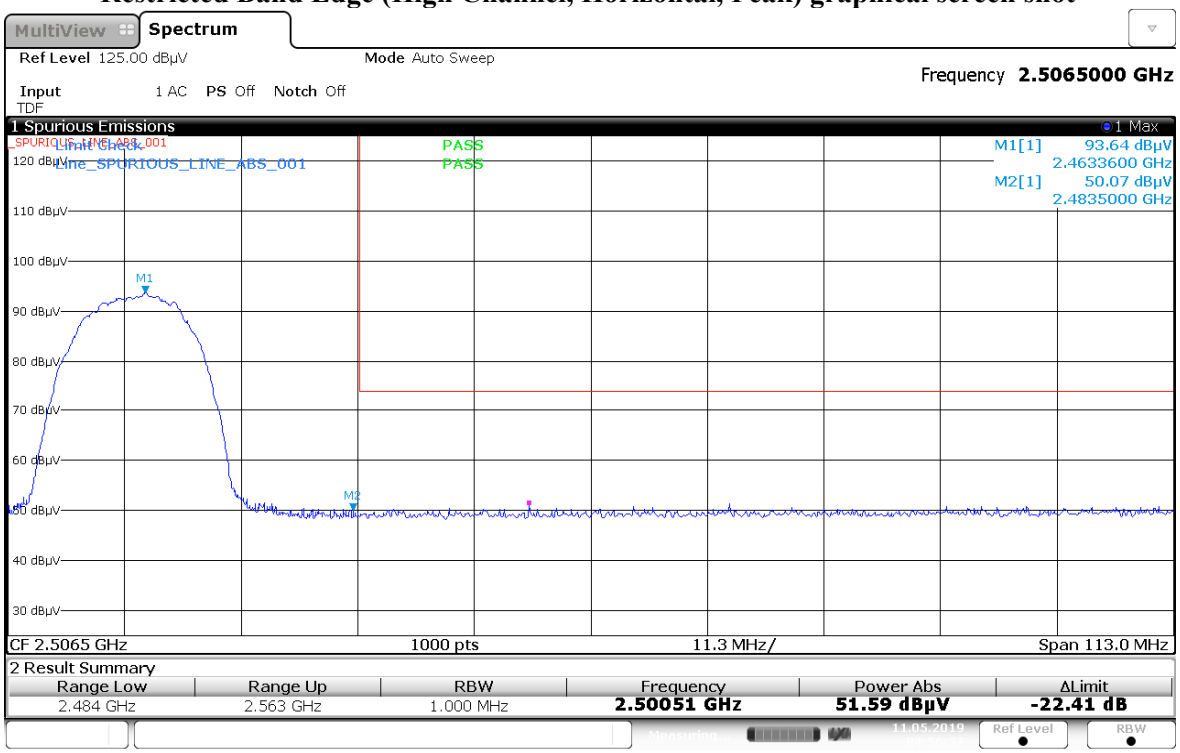
Temperature (degC):23.4 **Humidity (%): 69.8**
Test Performed by: Qawiman&Azil **Test Date: Sat, May 11, 2019**
System MU: 5.01dB

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



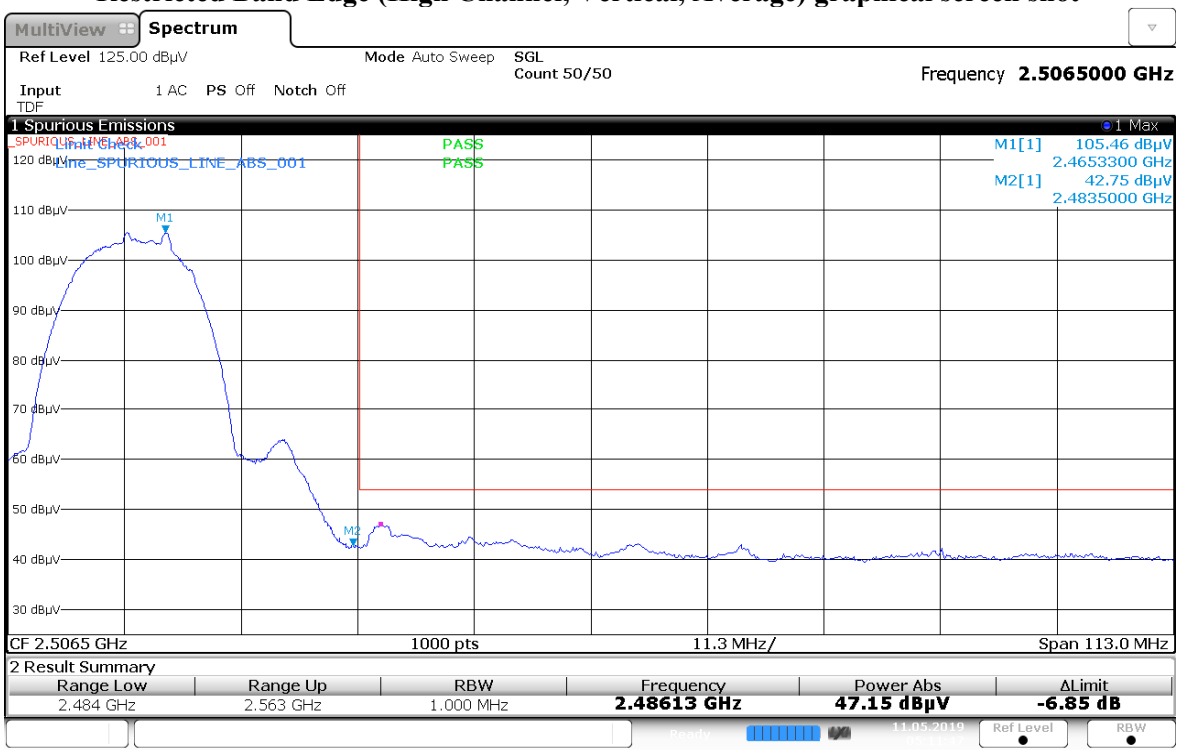
04:53:07 11.05.2019

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



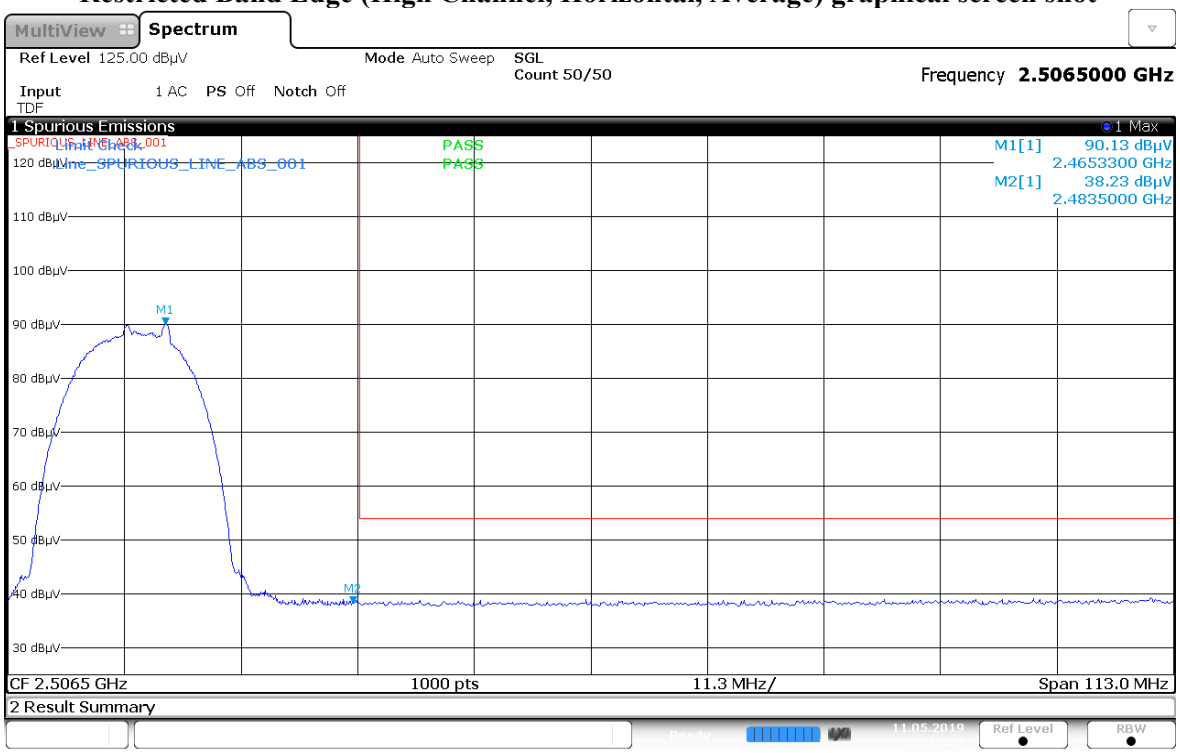
04:56:37 11.05.2019

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



05:11:47 11.05.2019

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



05:15:30 11.05.2019

802.11g

Test: WIFI SAC Restricted Band Edge

Model#: M25URS9PW1BN S/N: 471TVF3482 EMC SR ID#: 14913-EMC-00050

Battery: NA Accessory: AN000163A01, AN000197A10, 3466-HMN4079G-4, HSN4040A-C4, HKN4191B-2, 3466-HKN6163C-2, PMHN4194C-CF3

Test Channel: Low Test Frequency: 2412.0000 MHz Test Standard: ANSI C63.10-2013

Worst Case Plane: Y-Plane (802.11g)

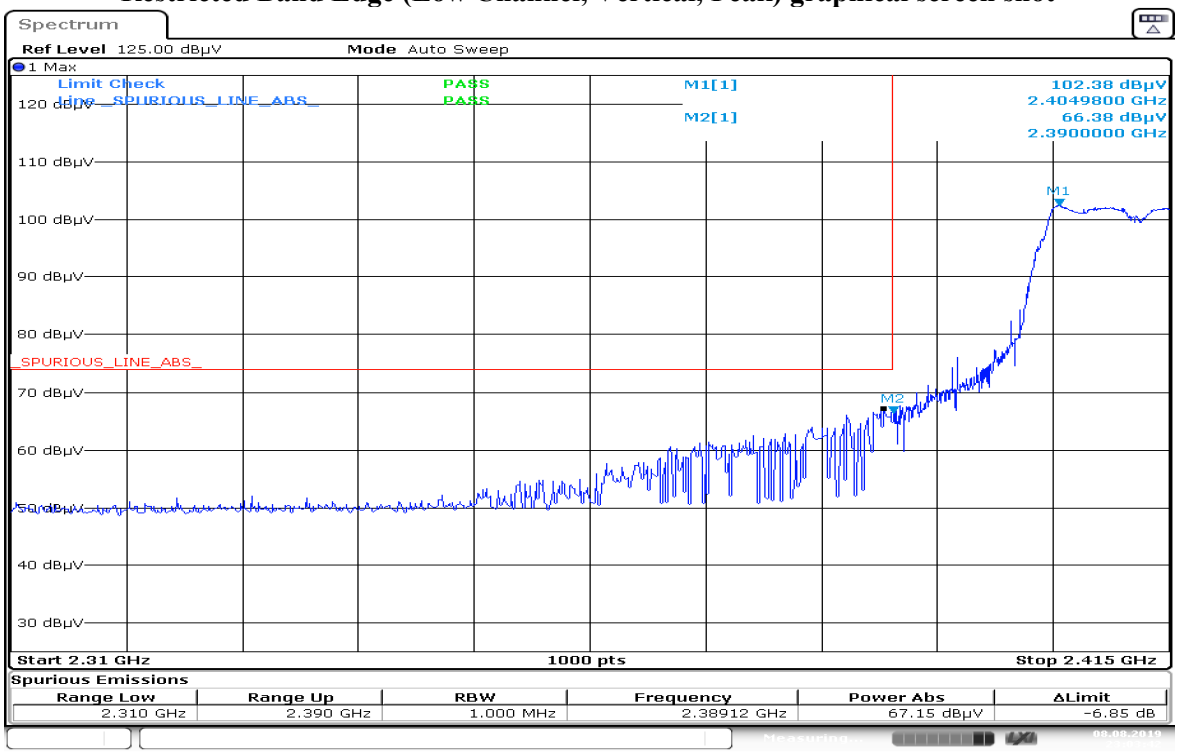
Restricted Band Edge (Low Channel) tabular data

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)
2371.0400	-	-	42.2582	-	-	54.0000	-	-	-11.7418	-
2371.5200	-	-	42.3260	-	-	54.0000	-	-	-11.6740	-
2382.5600	-	63.9732	-	-	74.0000	-	-	-10.0268	-	-
2384.6400	-	63.8290	-	-	74.0000	-	-	-10.1710	-	-
2385.4400	-	64.3805	-	-	74.0000	-	-	-9.6195	-	-
2385.7600	-	65.9914	-	-	74.0000	-	-	-8.0086	-	-
2386.7200	-	63.2143	-	-	74.0000	-	-	-10.7857	-	-
2387.0400	-	64.6809	-	-	74.0000	-	-	-9.3191	-	-
2387.6800	-	65.5742	-	-	74.0000	-	-	-8.4258	-	-
2389.1200	-	67.1548	-	-	74.0000	-	-	-6.8452	-	-
2389.9200	-	-	47.7675	-	-	54.0000	-	-	-6.2325	-
2390.0000	-	66.3835	48.3422	-	74.0000	54.0000	-	-7.6165	-5.6578	-
Horizontal Radiated Emission Result										
2387.6800	-	55.7890	-	-	74.0000	-	-	-18.2110	-	-
2390.0000	-	52.8254	40.3358	-	74.0000	54.0000	-	-21.1746	-13.6642	-

Remarks: Pass Result	Marginal Result	Fail Result

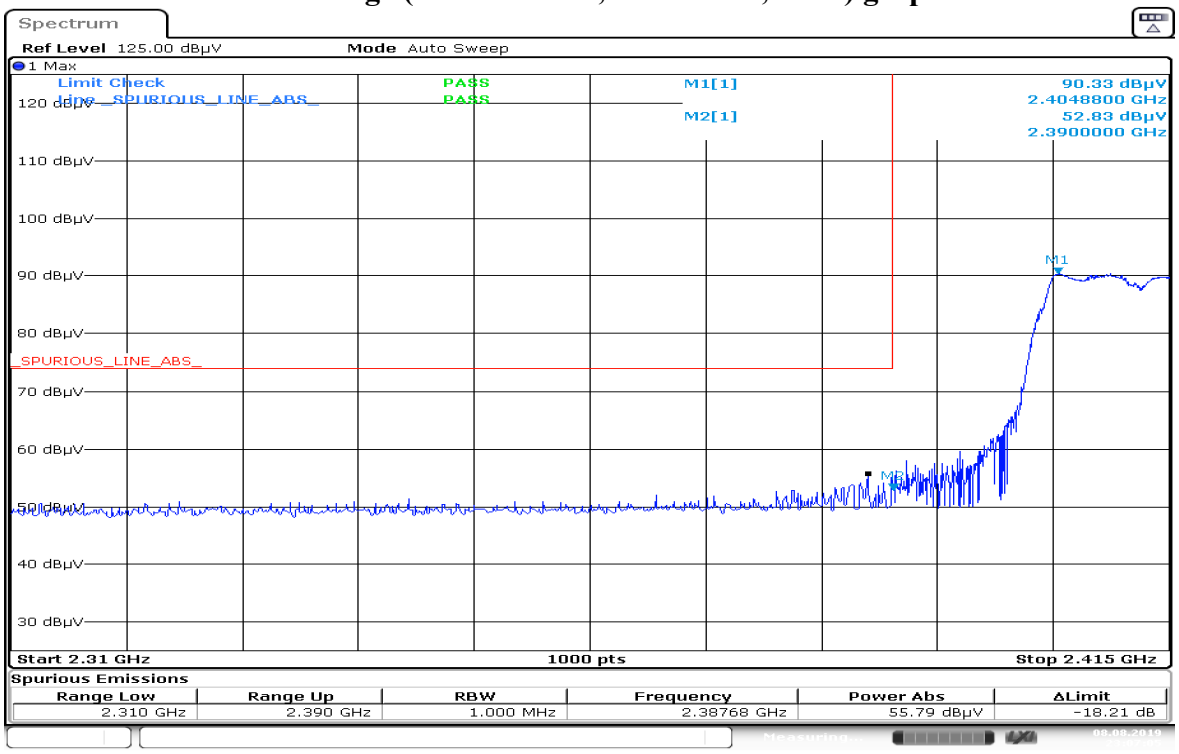
Temperature (degC):23.6 Humidity (%): 69.9
Test Performed by: Nazrin&Azil Test Date: Thu, Aug 08, 2019
System MU: 5.01dB

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



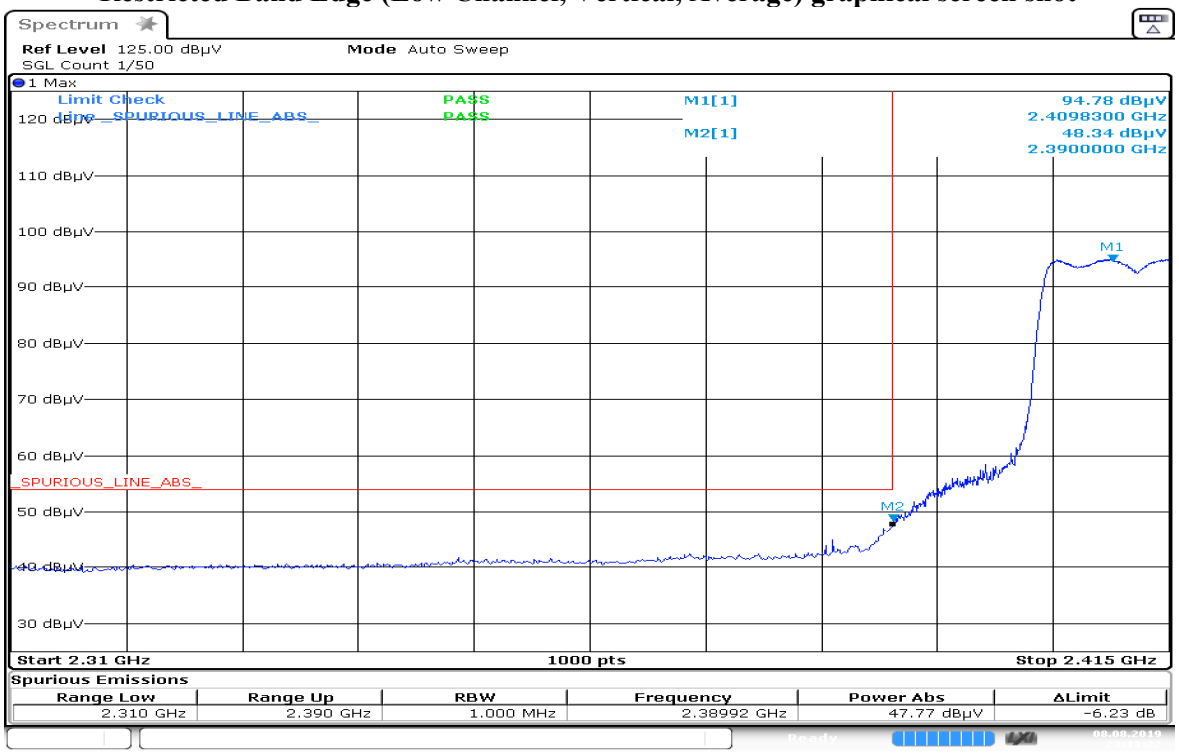
Date: 8.AUG.2019 23:03:42

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



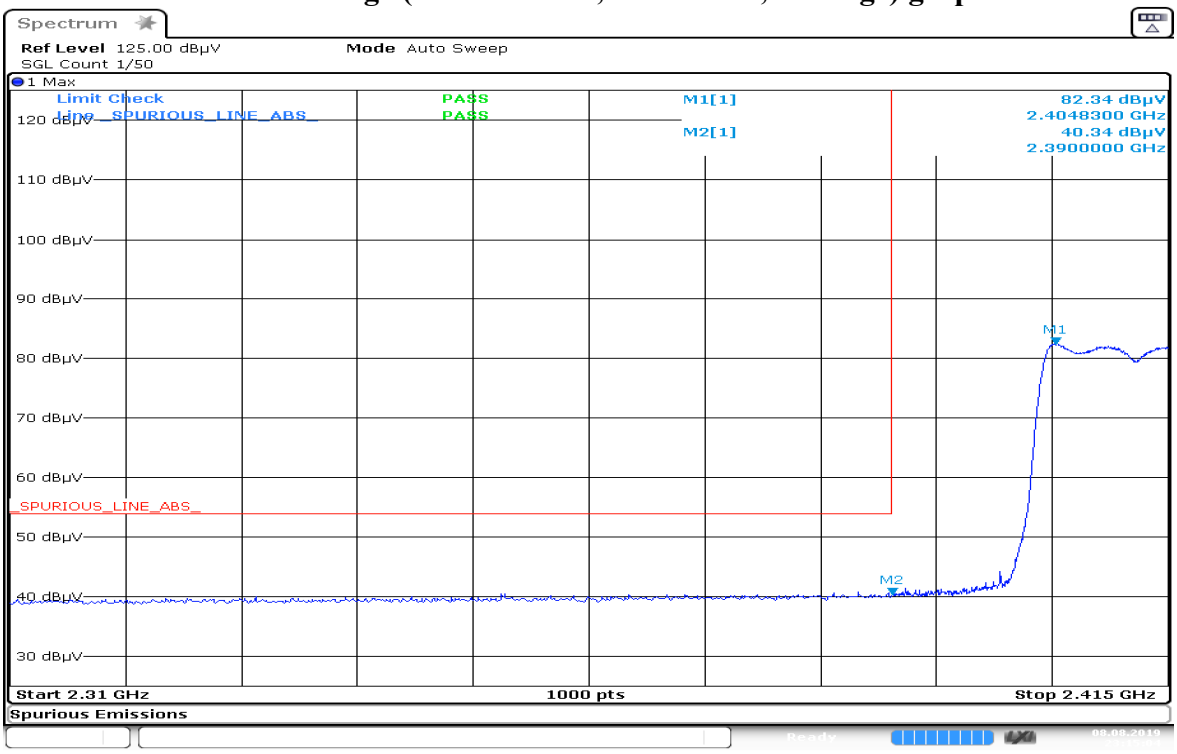
Date: 8.AUG.2019 23:07:04

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



Date: 8.AUG.2019 23:11:22

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



Date: 8.AUG.2019 23:15:05

Test: WIFI SAC Restricted Band Edge
Model Number: M25URS9PW1BN S/N: 471TVF3482 EMC SR ID#: 14913-EMC-00050
Battery: NA Accessory: AN000163A01, AN000197A10, 3466-HMN4079G-4, HSN4040A-C4, HKN4191B-2, 3466-HKN6163C-2, PMHN4194C-CF3
Test Channel: High Test Frequency: 2462.0000 MHz Test Standard: ANSI C63.10-2013
Worst Case Plane: Y-Plane (802.11g)

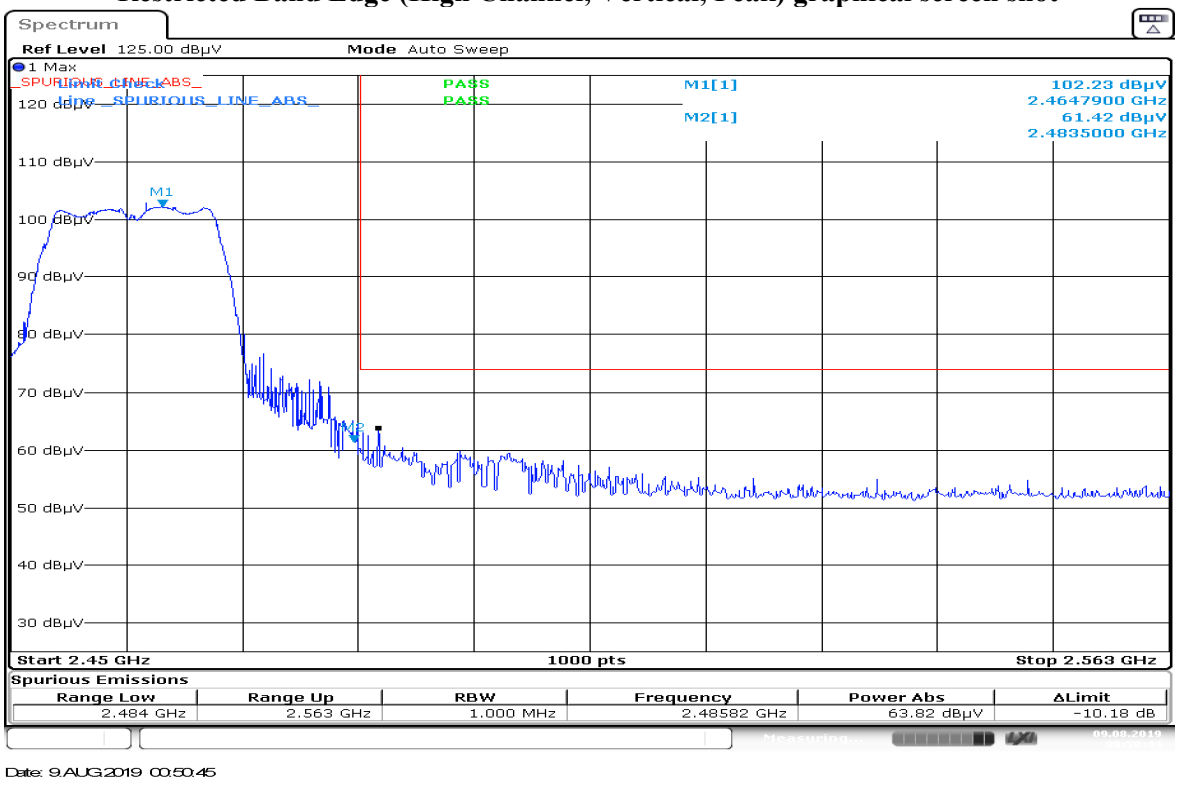
Restricted Band Edge (High Channel) tabular data

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	-	61.4247	45.9162	-	74.0000	54.0000	-	-12.5753	-8.0838	-
2484.7110	-	-	45.7054	-	-	54.0000	-	-	-8.2946	-
2485.8170	-	63.8227	-	-	74.0000	-	-	-10.1773	-	-
2502.7230	-	-	42.7592	-	-	54.0000	-	-	-11.2408	-
2504.9350	-	-	42.6693	-	-	54.0000	-	-	-11.3307	-
2506.9890	-	-	42.7187	-	-	54.0000	-	-	-11.2813	-
2517.1010	-	-	42.9133	-	-	54.0000	-	-	-11.0867	-
2524.3690	-	-	42.7715	-	-	54.0000	-	-	-11.2285	-
2526.2650	-	-	42.7654	-	-	54.0000	-	-	-11.2346	-
2528.9510	-	-	42.6958	-	-	54.0000	-	-	-11.3042	-
2544.2770	-	-	42.7556	-	-	54.0000	-	-	-11.2444	-
2561.6570	-	-	42.0162	-	-	54.0000	-	-	-11.9838	-
Horizontal Radiated Emission Result										
2483.5000	-	50.8237	41.1987	-	74.0000	54.0000	-	-23.1763	-12.8013	-
2516.1530	-	52.8759	-	-	74.0000	-	-	-21.1241	-	-

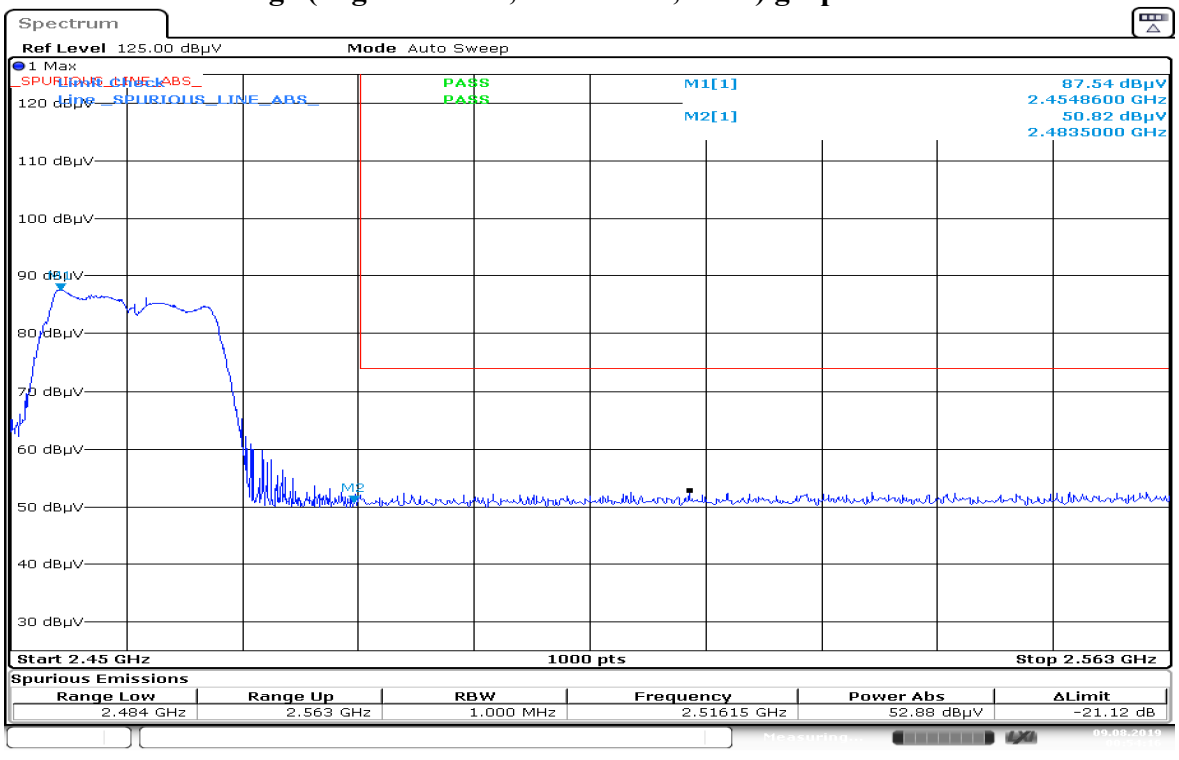
Remarks: Pass Result	Marginal Result	Fail Result

Temperature (degC):23.6 **Humidity (%): 69.9**
Test Performed by: Nazrin&Azil **Test Date: Fri, Aug 09, 2019**
System MU: 5.01dB

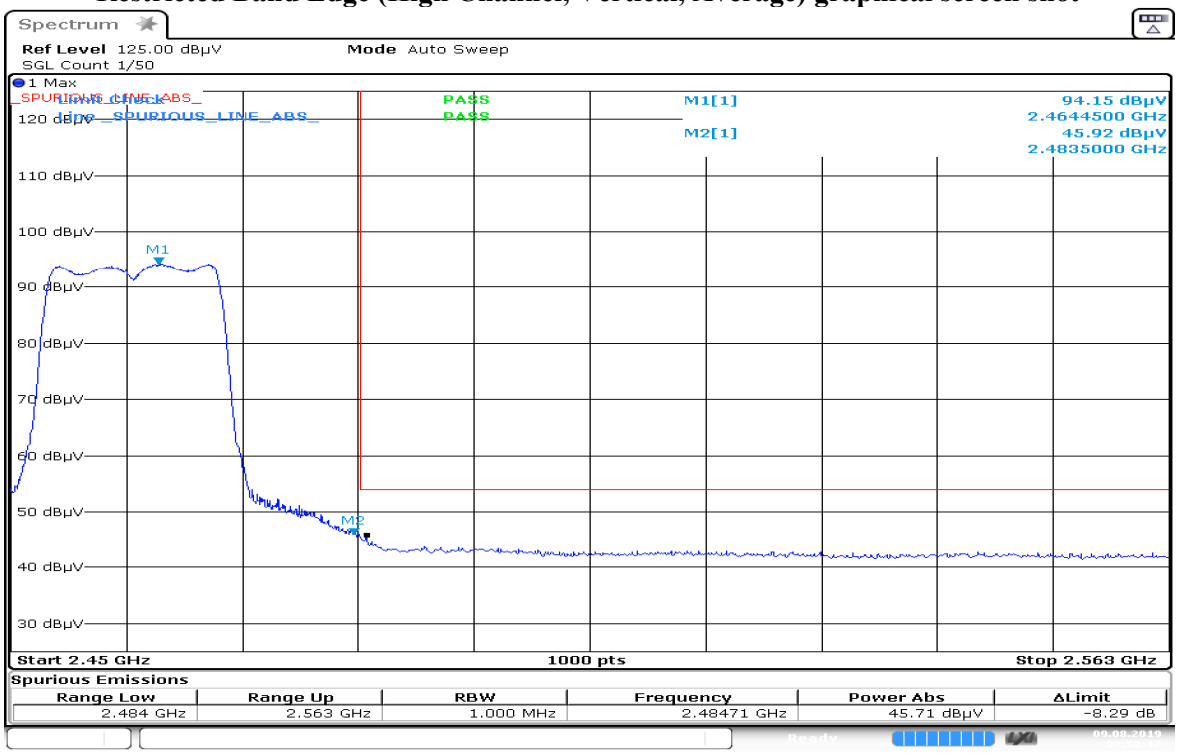
Restricted Band Edge (High Channel, Vertical, Peak) graphical screen shot



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

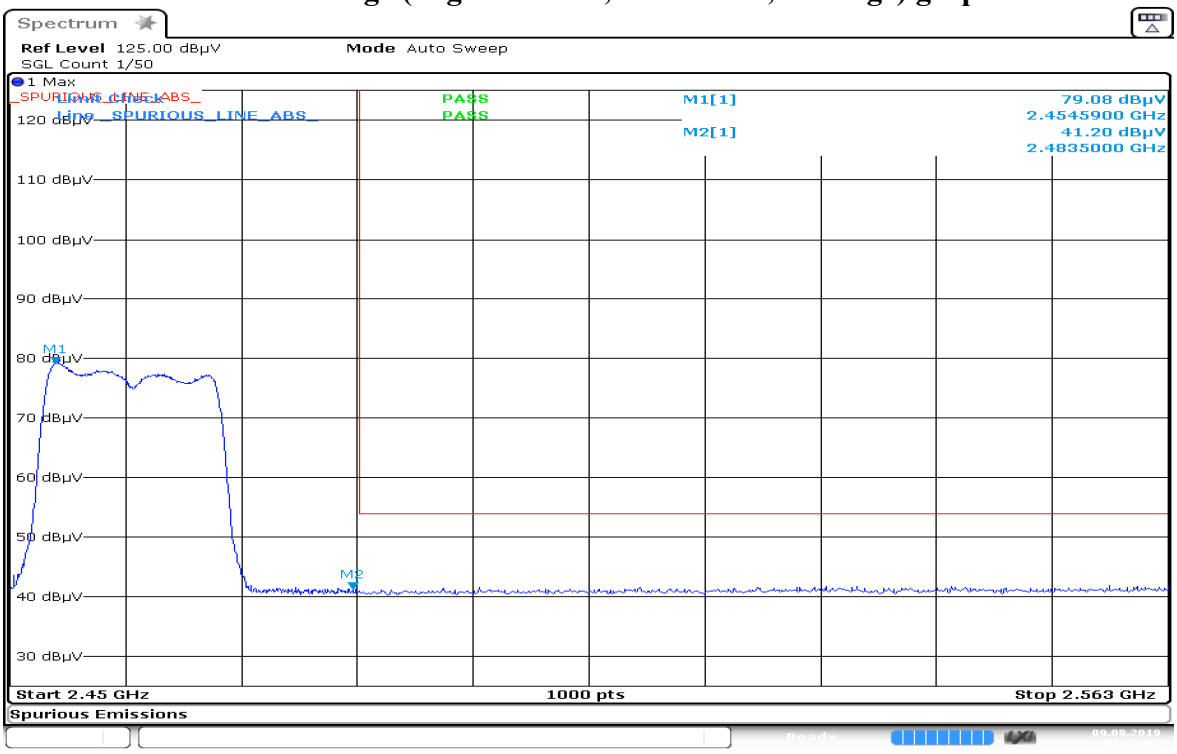


Restricted Band Edge (High Channel, Vertical, Average) graphical screen shot



Date: 9.AUG.2019 00:58:17

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



Date: 9.AUG.2019 01:02:02

802.11n(HT20)

Test: WIFI SAC Restricted Band Edge
Model Number: M25URS9PW1BN S/N: 471TVF3482 EMC SR ID#: 14913-EMC-00050
Battery: NA Accessory: AN000163A01, AN000197A10, 3466-HMN4079G-4, HSN4040A-C4, HKN4191B-2, 3466-HKN6163C-2, PMHN4194C-CF3
Test Channel: Low Test Frequency: 2412.0000 MHz Test Standard: ANSI C63.10-2013
Worst Case Plane: Y-Plane (802.11n 20MHz)

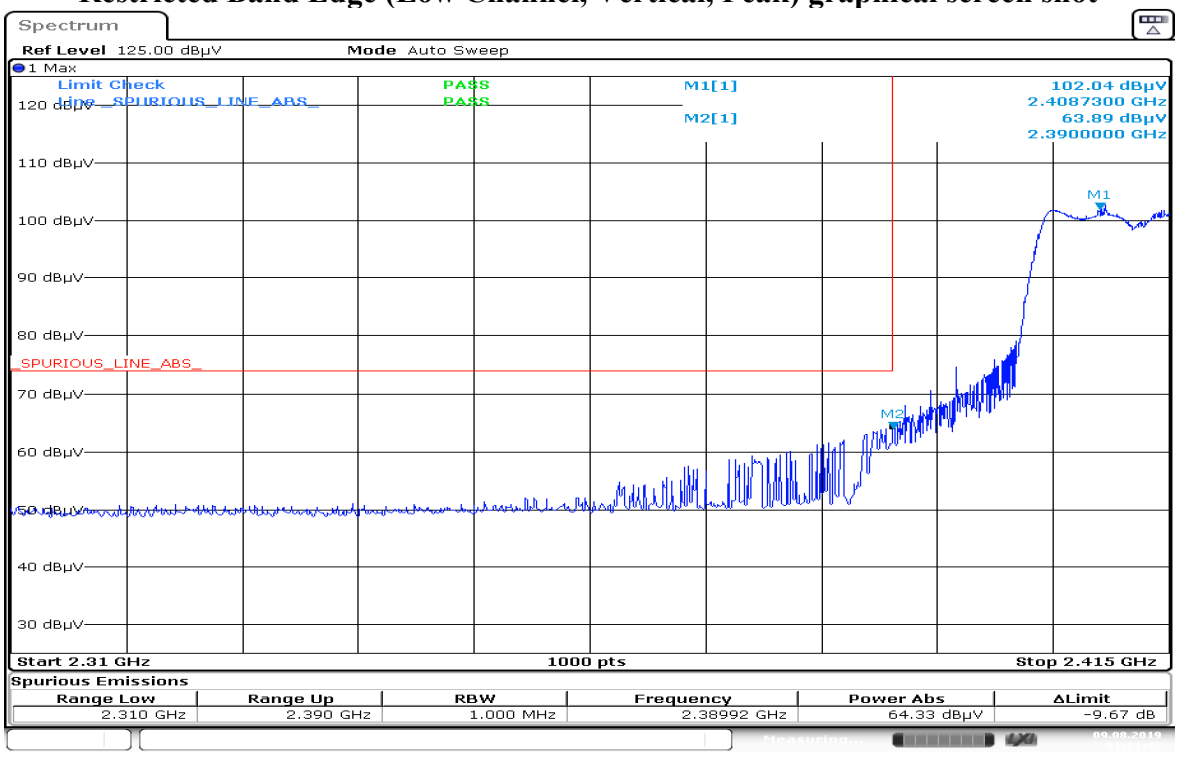
Restricted Band Edge (Low Channel) tabular data

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)
2380.3200	-	59.9482	-	-	74.0000	-	-	-14.0518	-	-
2380.6400	-	60.0337	-	-	74.0000	-	-	-13.9663	-	-
2383.0400	-	61.2948	-	-	74.0000	-	-	-12.7052	-	-
2383.3600	-	60.6601	-	-	74.0000	-	-	-13.3399	-	-
2383.6800	-	61.1628	-	-	74.0000	-	-	-12.8372	-	-
2383.8400	-	-	42.3183	-	-	54.0000	-	-	-11.6817	-
2384.1600	-	61.4811	-	-	74.0000	-	-	-12.5189	-	-
2384.6400	-	60.5182	-	-	74.0000	-	-	-13.4818	-	-
2384.9600	-	-	43.5670	-	-	54.0000	-	-	-10.4330	-
2385.4400	-	62.0297	-	-	74.0000	-	-	-11.9703	-	-
2385.6000	-	-	42.1585	-	-	54.0000	-	-	-11.8415	-
2387.3600	-	62.8253	-	-	74.0000	-	-	-11.1747	-	-
2389.9200	-	64.3295	48.7959	-	74.0000	54.0000	-	-9.6705	-5.2041	-
2390.0000	-	63.8905	48.0152	-	74.0000	54.0000	-	-10.1095	-5.9848	-
Horizontal Radiated Emission Result										
2388.1600	-	51.6817	-	-	74.0000	-	-	-22.3183	-	-
2390.0000	-	50.2941	40.3358	-	74.0000	54.0000	-	-23.7059	-13.6642	-

Remarks: Pass Result	Marginal Result	Fail Result

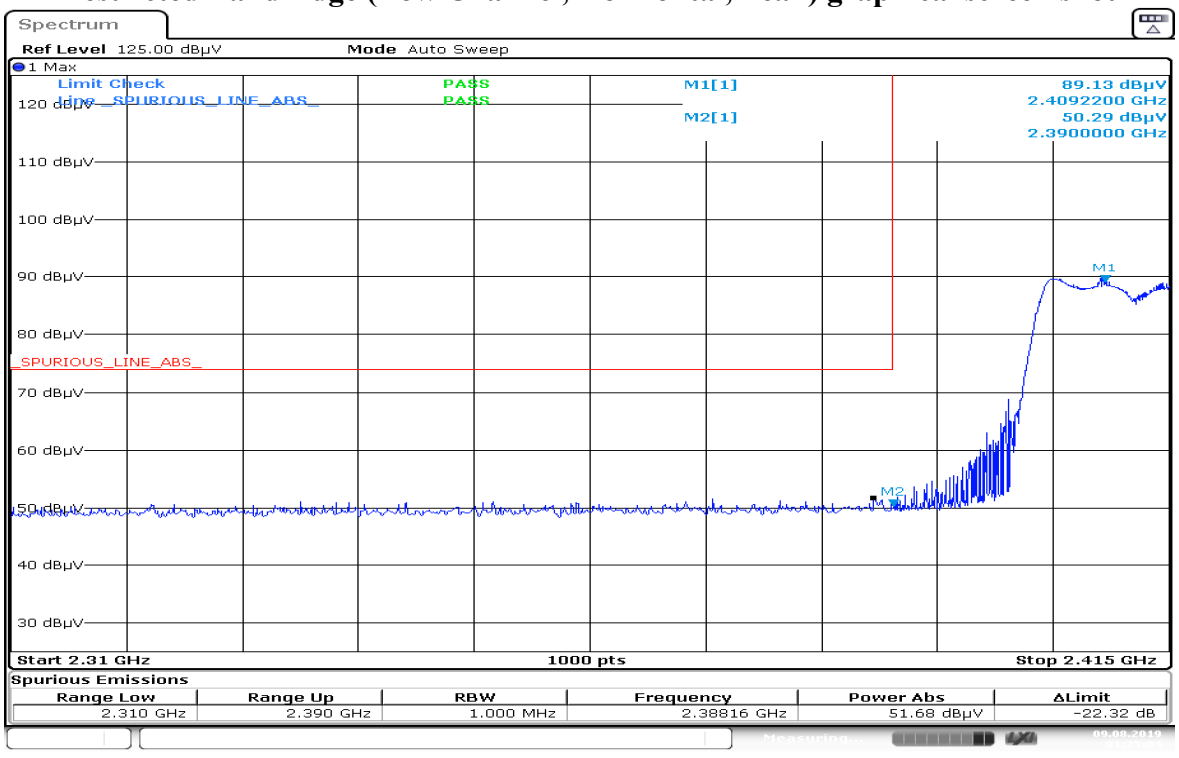
Temperature (degC):23.6 **Humidity (%): 69.9**
Test Performed by: Nazrin&Azil **Test Date: Fri, Aug 09, 2019**
System MU: 5.01dB

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



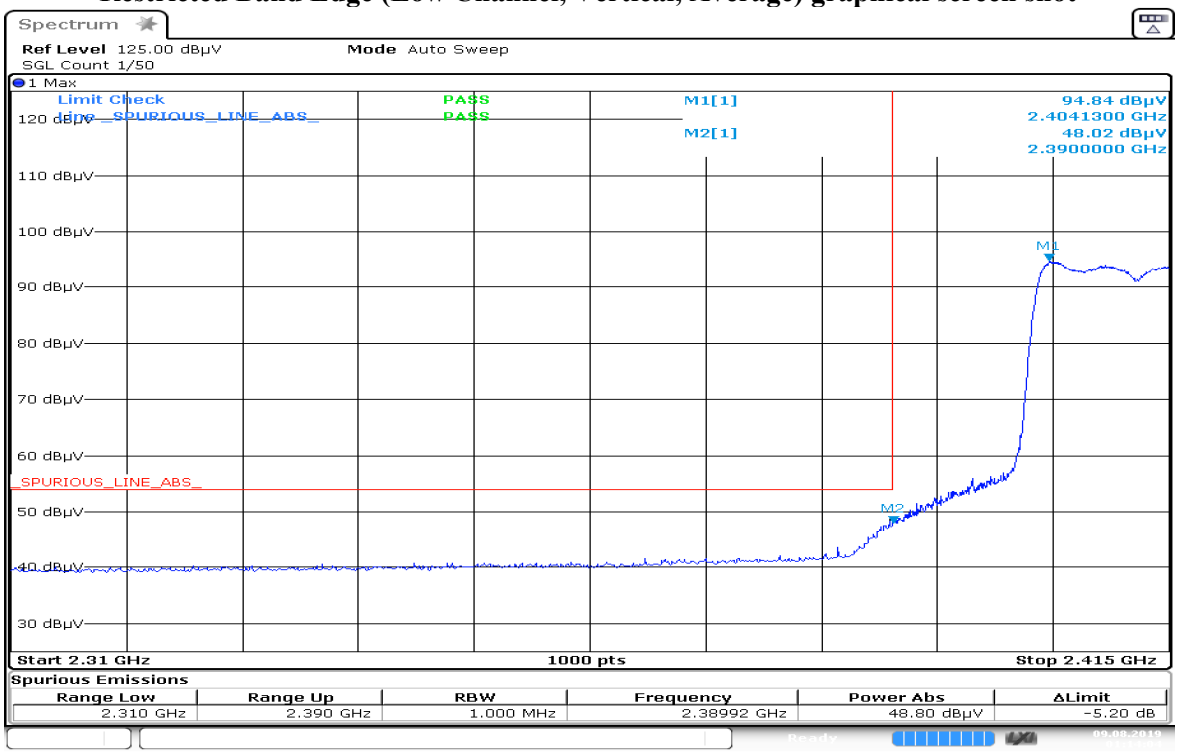
Date: 9.AUG.2019 01:21:42

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



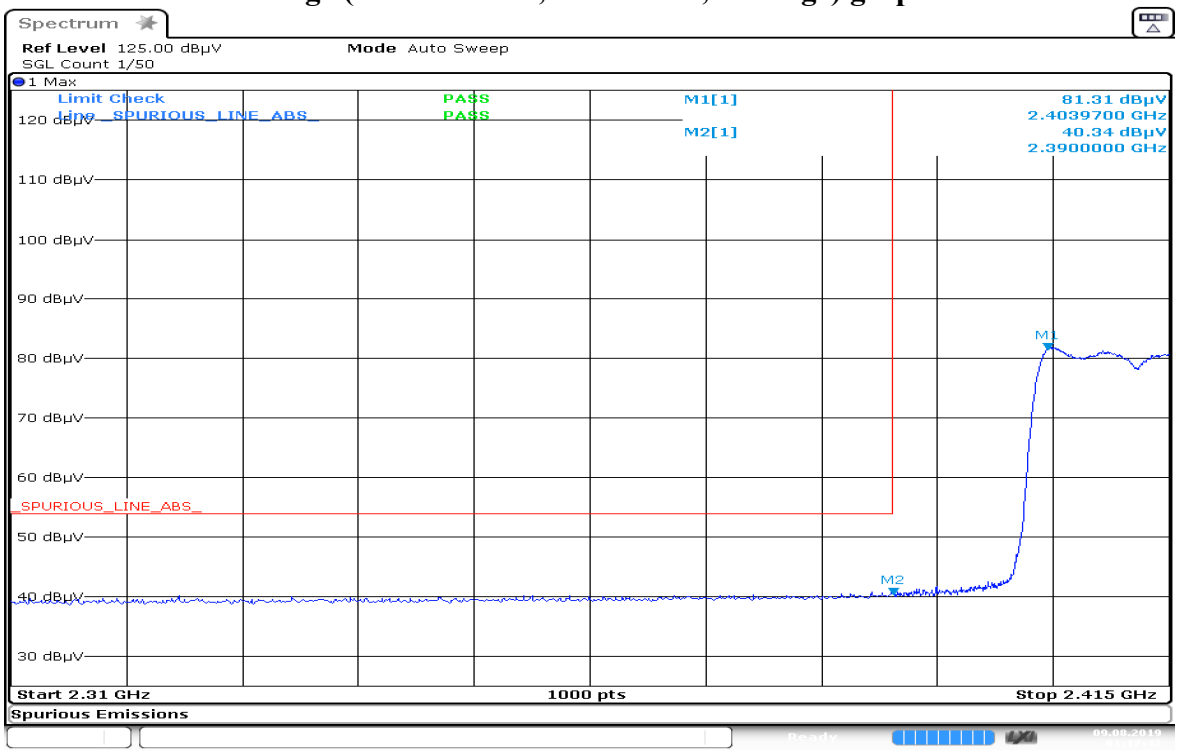
Date: 9.AUG.2019 01:25:05

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



Date: 9.AUG.2019 01:14:05

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



Date: 9.AUG.2019 01:17:42

Test: WIFI SAC Restricted Band Edge
Model Number: M25URS9PW1BN S/N: 471TVF3482 EMC SR ID#: 14913-EMC-00050
Battery: NA Accessory: AN000163A01, AN000197A10, 3466-HMN4079G-4, HSN4040A-C4, HKN4191B-2, 3466-HKN6163C-2, PMHN4194C-CF3
Test Channel: High Test Frequency: 2462.0000 MHz Test Standard: ANSI C63.10-2013
Worst Case Plane: Y-Plane (802.11n 20MHz)

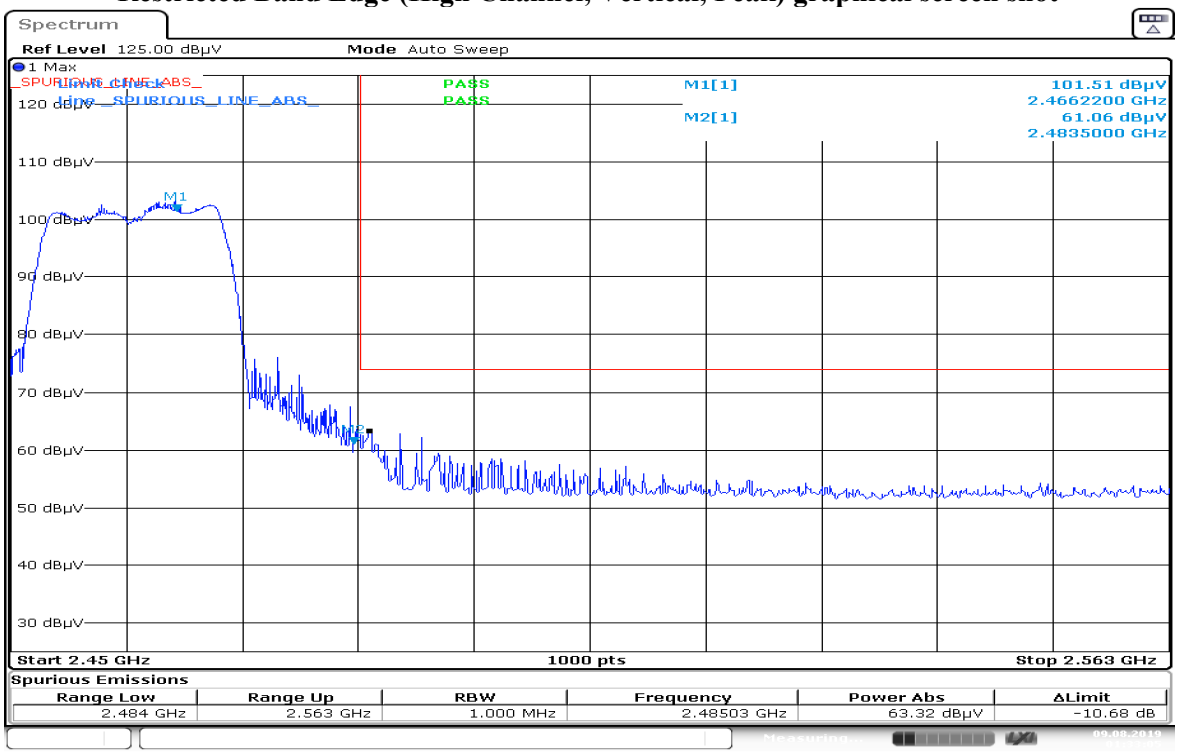
Restricted Band Edge (High Channel) tabular data

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	-	61.0554	46.7477	-	74.0000	54.0000	-	-12.9446	-7.2523	-
2484.3950	-	-	45.9259	-	-	54.0000	-	-	-8.0741	-
2485.0270	-	63.3176	-	-	74.0000	-	-	-10.6824	-	-
2488.0290	-	62.8074	-	-	74.0000	-	-	-11.1926	-	-
2490.0830	-	62.1899	-	-	74.0000	-	-	-11.8101	-	-
2506.0410	-	-	42.8034	-	-	54.0000	-	-	-11.1966	-
2510.9390	-	-	42.9466	-	-	54.0000	-	-	-11.0534	-
2515.5210	-	-	43.1158	-	-	54.0000	-	-	-10.8842	-
2520.2610	-	-	42.7253	-	-	54.0000	-	-	-11.2747	-
2526.5810	-	-	42.6988	-	-	54.0000	-	-	-11.3012	-
2555.4950	-	-	42.7994	-	-	54.0000	-	-	-11.2006	-
2558.6550	-	-	42.7062	-	-	54.0000	-	-	-11.2938	-
2560.7090	-	-	43.0589	-	-	54.0000	-	-	-10.9411	-
2562.4470	-	-	42.9999	-	-	54.0000	-	-	-11.0001	-
Horizontal Radiated Emission Result										
2483.5000	-	50.7937	40.7980	-	74.0000	54.0000	-	-23.2063	-13.2020	-
2492.1370	-	53.3189	-	-	74.0000	-	-	-20.6811	-	-
2525.4750	-	-	42.3242	-	-	54.0000	-	-	-11.6758	-

Remarks: Pass Result	Marginal Result	Fail Result

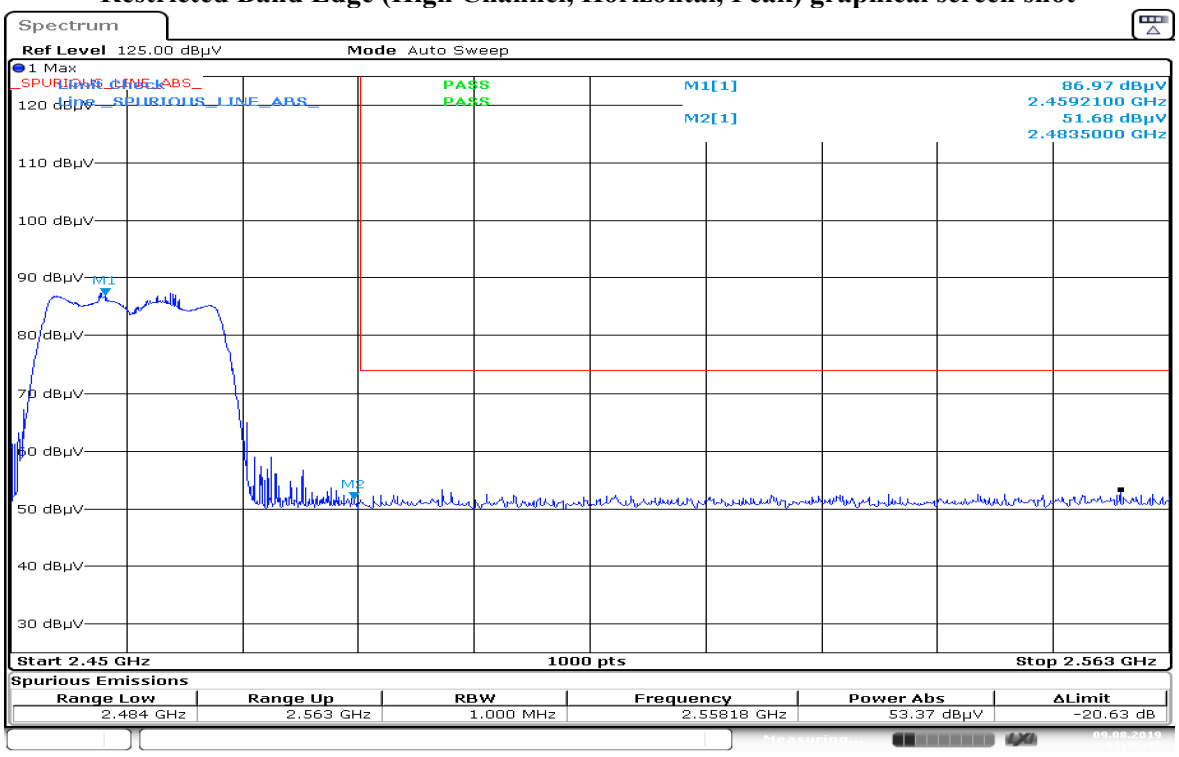
Temperature (degC):23.6 **Humidity (%): 69.9**
Test Performed by: Nazrin&Azil **Test Date: Fri, Aug 09, 2019**
System MU: 5.01dB

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



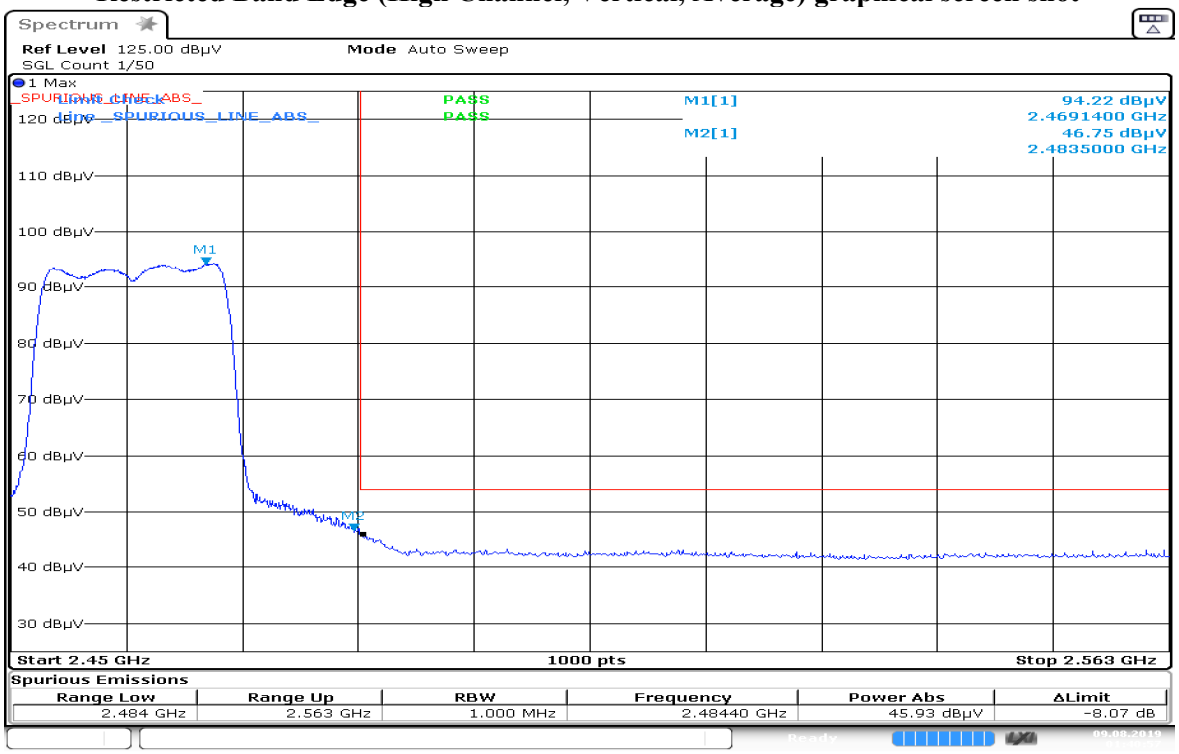
Date: 9.AUG.2019 01:33:05

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



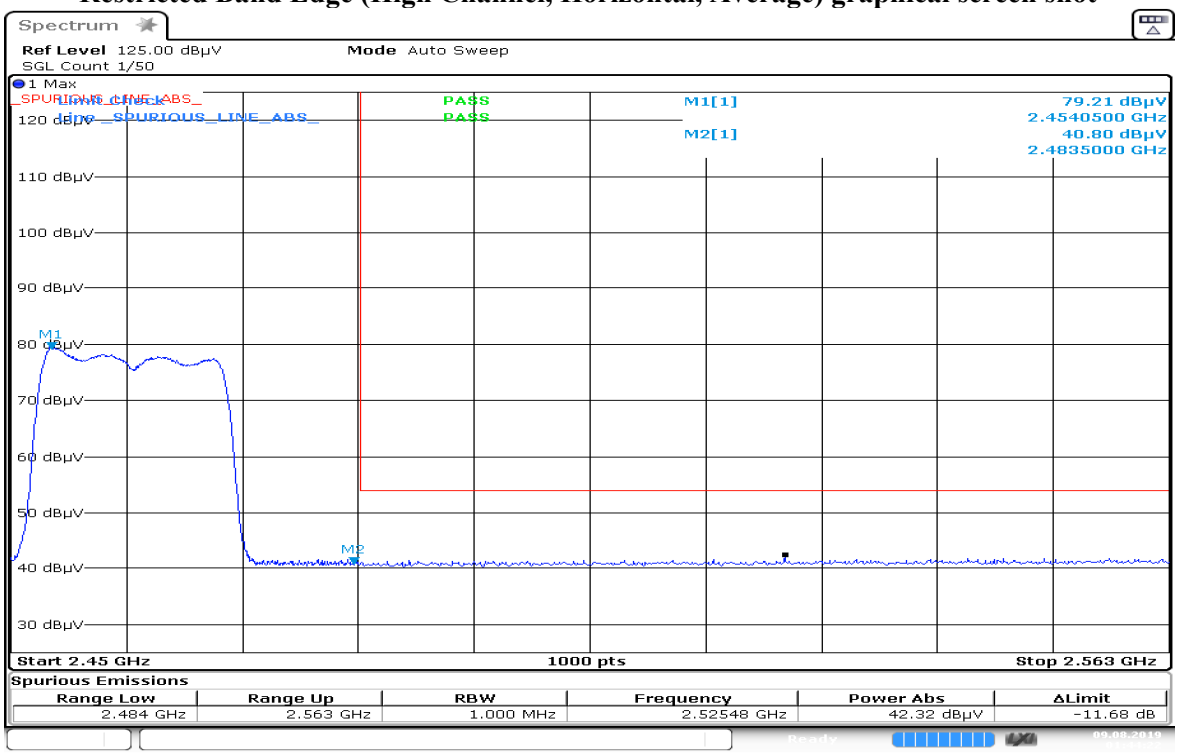
Date: 9.AUG.2019 01:36:42

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



Date: 9.AUG.2019 01:40:57

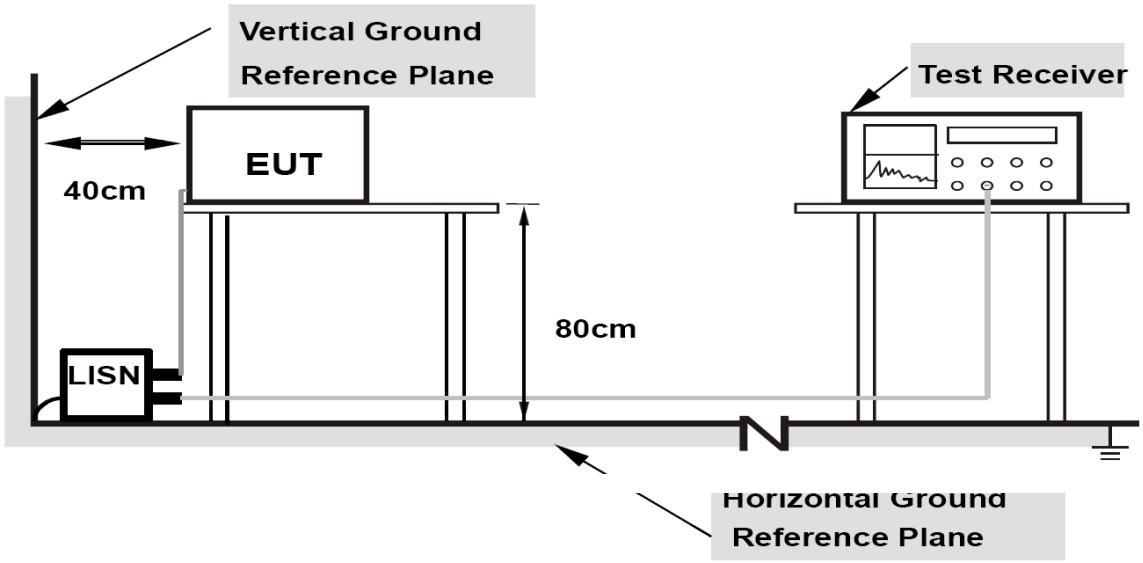
Restricted Band Edge (High Channel, Horizontal, Average) graphical screen shot



Date: 9.AUG.2019 01:44:22

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