

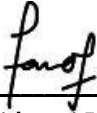
 MOTOROLA SOLUTIONS	   																														
MOTOROLA PENANG ADV. COMM. LABORATORY Motorola Solutions Malaysia Sdn. Bhd. Plot 2A Medan Bayan Lepas, Mukim 12, S.W.D. 11900 Bayan Lepas, Penang, Malaysia.	FCC / ISED TEST REPORT Report Revision : Rev.C																														
<table><tr><td>Date/s Tested</td><td>: 24-September-2024 - 19-January-2025</td></tr><tr><td>Report Issue Date</td><td>: 14-February-2025</td></tr><tr><td>Manufacturer/Location</td><td>: Motorola Solutions Malaysia Sdn Bhd Plot 2A, Medan Bayan Lepas, Mukim 12 SWD, 11900, Bayan Lepas, Penang, Malaysia</td></tr><tr><td>Requestor</td><td>: Tang Chee Leong</td></tr><tr><td>Product Type</td><td>: Body Worn Camera</td></tr><tr><td>Product Marketing Name (PMN)</td><td>: V200</td></tr><tr><td>Hardware Version Identification Number (HVIN)</td><td>: B20CJMBE2AN</td></tr><tr><td>Frequency Band</td><td>: 2.412-2.462 GHz</td></tr><tr><td>Max RF Output Power</td><td>: 802.11b - 125.89 mWatts 802.11g - 199.53 mWatts 802.11n - 158.49 mWatts</td></tr><tr><td>Applicant Name</td><td>: Motorola Solutions Inc</td></tr><tr><td>Applicant Address</td><td>: Plot 2A, Medan Bayan Lepas, Mukim 12 SWD, 11900 Bayan Lepas, Penang, Malaysia</td></tr><tr><td>FCC Registrations</td><td>: 461337</td></tr><tr><td>ISED Registrations</td><td>: MY0001</td></tr><tr><td>Firmware Version Identification Number (FVIN)</td><td>: (S/N: 663EAR0072, 663EAS0005) - PSS fs2-ARMV7A_PTF V24.4-ptf-V200-1.8-1-g501bb5026c (S/N: 952EAY0164) - PSS fs2-ARMV7A_PTF V25.1.0.0-4-g62e56dc448</td></tr></table> The equipment was tested accordance to the requirement listed below: <table><tr><td>(2.4GHz Wifi) 47CFR Part 15C ISED RSS 247 Issue 3 August 2023</td><td>PASS</td></tr></table>		Date/s Tested	: 24-September-2024 - 19-January-2025	Report Issue Date	: 14-February-2025	Manufacturer/Location	: Motorola Solutions Malaysia Sdn Bhd Plot 2A, Medan Bayan Lepas, Mukim 12 SWD, 11900, Bayan Lepas, Penang, Malaysia	Requestor	: Tang Chee Leong	Product Type	: Body Worn Camera	Product Marketing Name (PMN)	: V200	Hardware Version Identification Number (HVIN)	: B20CJMBE2AN	Frequency Band	: 2.412-2.462 GHz	Max RF Output Power	: 802.11b - 125.89 mWatts 802.11g - 199.53 mWatts 802.11n - 158.49 mWatts	Applicant Name	: Motorola Solutions Inc	Applicant Address	: Plot 2A, Medan Bayan Lepas, Mukim 12 SWD, 11900 Bayan Lepas, Penang, Malaysia	FCC Registrations	: 461337	ISED Registrations	: MY0001	Firmware Version Identification Number (FVIN)	: (S/N: 663EAR0072, 663EAS0005) - PSS fs2-ARMV7A_PTF V24.4-ptf-V200-1.8-1-g501bb5026c (S/N: 952EAY0164) - PSS fs2-ARMV7A_PTF V25.1.0.0-4-g62e56dc448	(2.4GHz Wifi) 47CFR Part 15C ISED RSS 247 Issue 3 August 2023	PASS
Date/s Tested	: 24-September-2024 - 19-January-2025																														
Report Issue Date	: 14-February-2025																														
Manufacturer/Location	: Motorola Solutions Malaysia Sdn Bhd Plot 2A, Medan Bayan Lepas, Mukim 12 SWD, 11900, Bayan Lepas, Penang, Malaysia																														
Requestor	: Tang Chee Leong																														
Product Type	: Body Worn Camera																														
Product Marketing Name (PMN)	: V200																														
Hardware Version Identification Number (HVIN)	: B20CJMBE2AN																														
Frequency Band	: 2.412-2.462 GHz																														
Max RF Output Power	: 802.11b - 125.89 mWatts 802.11g - 199.53 mWatts 802.11n - 158.49 mWatts																														
Applicant Name	: Motorola Solutions Inc																														
Applicant Address	: Plot 2A, Medan Bayan Lepas, Mukim 12 SWD, 11900 Bayan Lepas, Penang, Malaysia																														
FCC Registrations	: 461337																														
ISED Registrations	: MY0001																														
Firmware Version Identification Number (FVIN)	: (S/N: 663EAR0072, 663EAS0005) - PSS fs2-ARMV7A_PTF V24.4-ptf-V200-1.8-1-g501bb5026c (S/N: 952EAY0164) - PSS fs2-ARMV7A_PTF V25.1.0.0-4-g62e56dc448																														
(2.4GHz Wifi) 47CFR Part 15C ISED RSS 247 Issue 3 August 2023	PASS																														
This report shall not be reproduced without written approval from an officially designated representative of the Motorola Penang Adv. Comm. Laboratory. The results and statements contained in this report pertain only to the device(s) evaluated.																															
Prepared By:  Siti Nurhidayati Binti Abdul Halim Test Personnel	Approved Signatory:  Maheshvaran A/L Rajagopal Responsible Engineer																														

Table of Contents

1.0. General Information	3
1.1. Channel number and frequency information:	3
2.0. Summary of Test Results.....	4
3.0. Measurement Uncertainty	4
4.0. Equipment List	5
5.0. Test Mode Applicability and Test Channel Detail	6
6.0. Transmitter Test Parameters	9
6.1. 6dB Channel Bandwidth	9
6.1.1. Test Setup.....	9
6.1.2. Test Limits:.....	9
6.1.3. Test Data:.....	10
6.2. Conducted RF Output Power	16
6.2.1. Test Setup.....	16
6.2.2. Test Limits:.....	16
6.2.3. Test Data:.....	17
6.3. Duty Cycle of the test signal	18
6.3.1. Test Setup.....	18
6.3.2. Test Data.....	19
6.4. Maximum Peak Power Spectral Density	22
6.4.1. Test Setup.....	22
6.4.2. Test Limits	22
6.4.3. Test Result.....	23
6.5. Conducted Spurious Emission	26
6.5.1. Test Setup.....	26
6.5.2. Test Limits:.....	26
6.5.3. Test Result.....	26
6.6. Band edge Conducted Spurious Emission	45
6.6.1. Test Setup.....	45
6.6.2. Test Limits:.....	45
6.6.3. Test Result.....	46
6.7. Radiated Emission within restricted Bands.....	49
6.7.1. Test Setup.....	49
6.7.2. Test Limits:.....	50
6.7.3. Test Data:.....	51
6.8. AC Powerline Conducted Emission	96
6.8.1. Test Setup.....	104
6.8.2. Test Limits:.....	104
6.8.3. Test Result.....	106

REVISION HISTORY

Revision History	Description	Date	Originator
Rev. A	Initial Report	21-January-2025	Hidayati
Rev. B	Update Conducted RF Output Power test data	05-February-2025	Hidayati
Rev. C	Update Model Number on Radiated Emission within Restricted Bands data	14-February-2025	Hidayati

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	CHIP

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
BATTERY PACK,BATTERY PACK, BATT LIION 2500T	MOTOROLA	PMNN4578A
CABLE, DATA, USB-A TO USB-C, 1M	MOTOROLA	PMKN4294A

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

Deviation from standard

Not applicable as no deviation from standard test method

Modifications to EUT

For RF conducted measurements a pigtail was soldered out of the board while for radiated measurements there were no modifications to the device

2.0. Summary of Test Results

FCC Clause	IC Clause	Test Item	Result	Remark	Serial number tested	Tested by
15.247 (a)(2)	RSS-247 5.2(a)	DTS & 99% Channel Bandwidth	Pass	Highest 99% OCB: 802.11b: 12.377 MHz(12M4G1D) 802.11g: 16.414 MHz(16M4D1D) 802.11n: 17.533 MHz(17M5D1D)	663EAR0072	Hidayati
15.247 (b)(3)	RSS-247 5.4(d)	Conducted RF Output Power (Peak)	Pass	Highest output power: 802.11b: 20.515 dBm (112.59 mW) 802.11g: 22.185 dBm (165.39 mW) 802.11n: 21.195 dBm (135.67 mW)	663EAR0072	Hidayati
15.247(e)	RSS-247 5.2(b)	Maximum Power Spectral Density	Pass	Meet the limit requirement.	663EAR0072	Hidayati
15.247(d)	RSS-247 5.5	Conducted Spurious Emissions	Pass	Worst case emission: -41.68 dBm	663EAR0072	Hidayati
15.247 (d)	RSS-247 5.5	Band edge Conducted Spurious Emission	Pass	Worst case emission: -29.90 dBm	663EAR0072	Hidayati
15.205, 15.209, 15.247 (d)	RSS-247 5.5	Radiated Emission within Restricted Bands	Pass	Worst case emission: RBE: 47.6389 dBμV/m (Margin: 6.3611dBμV/m) RSE: 28.3507 dBμV/m (Margin: 15.1493 dBμV/m)	663EAS0005 & 952EAY0164	Nazrin, Fuad & Aiman
15.207	RSS-Gen 8.8	AC Power Line Conducted Emission	Pass	Meet the limit requirement.	952EAY0164	Shidee
15.203		Antenna requirement	NA	Internal antenna is not accessible to the enduser	NA	NA

NA → Not Available

3.0. Measurement Uncertainty

Measurement	Frequency	Expended Uncertainty (k=1.96) (±dB)
AC Power Line Conducted Spurious Emission	150KHz ~ 30MHz	3.48
Radiated Emissions up to 1 GHz	30MHz ~ 1000MHz	5.88
Radiated Emissions above 1 GHz	1GHz ~ 18GHz	5.84
	18GHz ~ 40GHz	6.02
Conducted Spurious Emissions	9kHz ~ 12.75GHz	2.82

4.0. Equipment List

Bluetooth ATE # 1 (SW Version: Ate Main_3.1.12_R1)

Description	Model	Serial Number	Calibration Date	Calibration Due Date
CHAMBER	SH-641	92003820	4-Jul-24	4-Jul-25
POWER SUPPLY	6652A	3640A02967	4-Oct-24	4-Oct-25
SPECTRUM ANALYZER	E4440A	MY46186938	29-Oct-24	29-Oct-25
PULSE POWER METER	ML2495A	1845014	20-Aug-24	20-Aug-25
PULSE SENSOR	MA2411B	1726287	20-Aug-24	20-Aug-25

Radiated Emission Station (SW Version: EMC FCC RE v1.6.5)

Description	Model	Serial Number	Calibration Date	Calibration Due Date
EMI TEST RECEIVER	ESIB40	100307	23-Oct-24	23-Oct-25
3m Semi-anechoic Chamber	NA	888032	No Cal. Req'd	No Cal. Req'd
TURNTABLE FLUSH MOUNT 2M	T-200-S	N/A	No Cal. Req'd	No Cal. Req'd
PROGRAMMING CONTROLLER	MF-7802BS	N/A	No Cal. Req'd	No Cal. Req'd
POWER SUPPLY	6674A	3126A00133	13-Mar-24	13-Mar-25
SIGNAL ANALYZER	FSV40	101432	09-Aug-24	08-Aug-25
DATA LOGGER	SDL500	A.016800	26-Jun-24	26-Jun-25
BILOG ANTENNA	CBL6112D	55546	05-Jun-24	05-Jun-25
BILOG ANTENNA	CBL 6112B	2964	08-Oct-24	08-Oct-25
DRG HORN FREQ.	SAS-571	1027	01-Jul-24	01-Jul-25
DRG HORN FREQ.	SAS-571	720	18-Apr-23	18-Apr-25
PREAMPLIFIER	PAM-0118	427	15-Nov-24	15-Nov-25
SIGNAL GENERATOR	SMB100A	181117	06-Dec-21	06-Feb-25
LOOP ANTENNA	6502	00203479	06-Mac-24	06-Mac-25
BROAD-BAND HORN ANTENNA	BBHA9170	BBHA9170255	13-Mar-24	13-Mar-25

AC Powerline Station (SW Version: EMC32 Ver.10.60.10)

Description	Model	Serial Number	Calibration Date	Calibration Due Date
DATA LOGGER	DSB	16344143	5-Jul-2024	5-Jul-2025
V-NETWORK 2-LINE	ENV216V	101268	12-Jun-24	12-Jun-25
EMI TEST RECEIVER	ESCI	100225	8-May-2024	8-May-2025
PROGRAMMABLE AC SOURCE	61604	ABR000000926	5-Aug-2024	5-Aug-2025

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)	
2.4GHz	Antenna	Primary	Secondary	Primary	Secondary	Primary	Secondary
	802.11b	√	√	x	x	x	x
	802.11g	√	√	x	x	x	x
	802.11n (HT20)	√	√	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	22.4°C, 67.9%RH
Test Mode	802.11g	1 to 11	1,6,11	OFDM	BPSK	6	SISO	22.4°C, 67.9%RH
Test Mode	802.11n (HT20)	1 to 11	1,6,11	OFDM	BPSK	6.5	SISO CDD (MIMO)	22.4°C, 67.9%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	22.4°C, 67.9%RH
Test Mode	802.11g	1 to 11	1,6,11	OFDM	BPSK	6	SISO	22.4°C, 67.9%RH
Test Mode	802.11n (HT20)	1 to 11	1,6,11	OFDM	BPSK	6.5	SISO CDD (MIMO)	22.4°C, 67.9%RH
Test Mode	802.11n (HT40)	3 to 9	3,6,9	OFDM	BPSK	6.5	SISO CDD (MIMO)	NA

Power Line Conducted Emission Test

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

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

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

Antenna Port Conducted Measurement:

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

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

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

EUT Configure Mode	Modulation	Available Channel	Tested Channel	Modulation Technology	Data Modulation Type	Data Rate (Mbps)	Mode	Environmental Conditions
Test Mode	802.11b	1 to 11	1,6,11	DSSS	QPSK	2	SISO	25°C, 54.8%RH
Test Mode	802.11g	1 to 11	1,6,11	OFDM	BPSK	6	SISO	25°C, 54.8%RH
Test Mode	802.11n (HT20)	1 to 11	1,6,11	OFDM	BPSK	6.5	SISO CDD (MIMO)	25°C, 54.8%RH
Test Mode	802.11n (HT40)	1 to 11	3,6,9	OFDM	BPSK	6.5	SISO CDD (MIMO)	NA

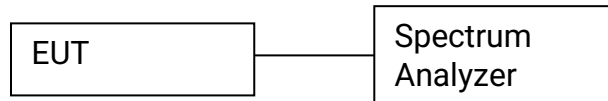
Duty Cycle of Test Signal

802.11b, 802.11g and 802.11n : Duty cycle of test signal is $\geq 98\%$. (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.

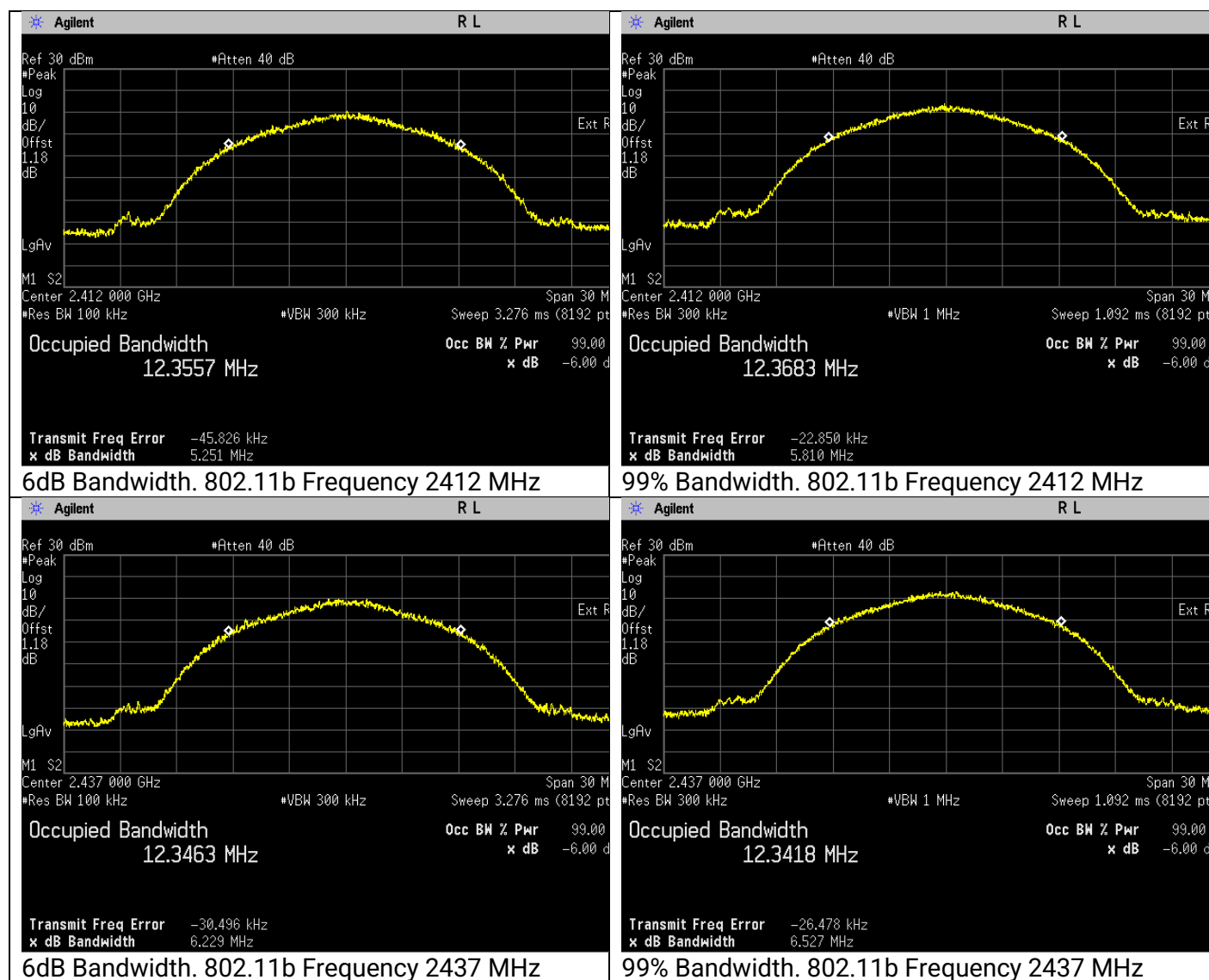
6.1.2. Test Limits:

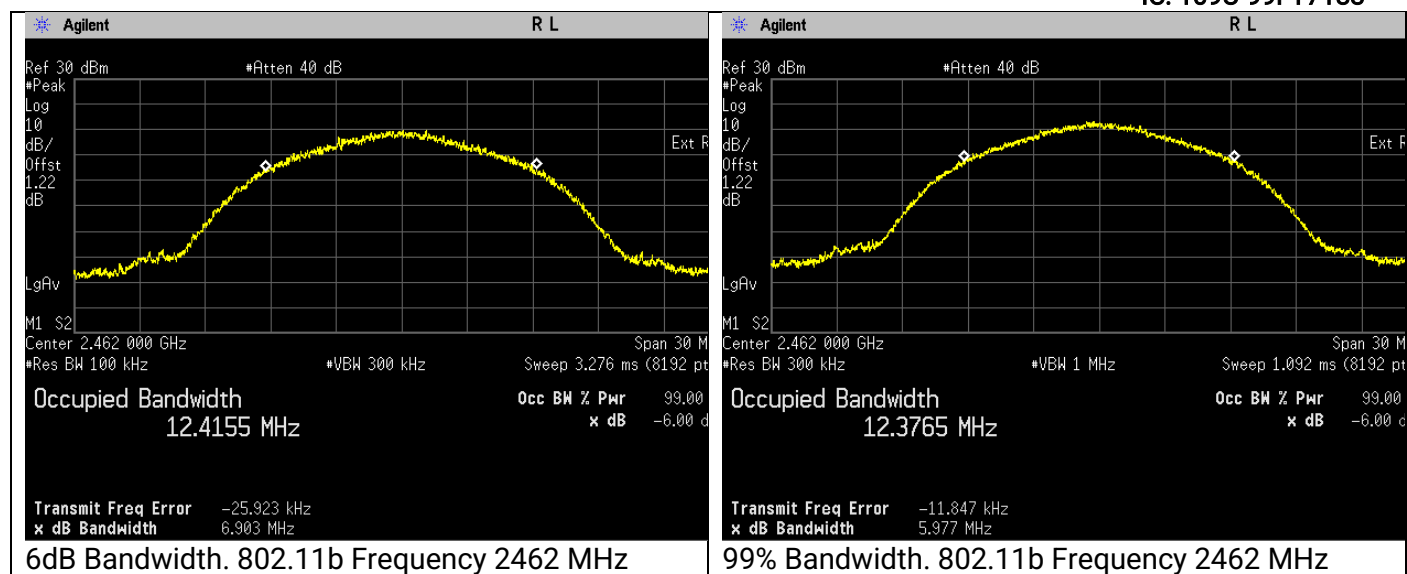
Normal Condition (25 ° C)
≥500 kHz

6.1.3. Test Data:

802.11 b

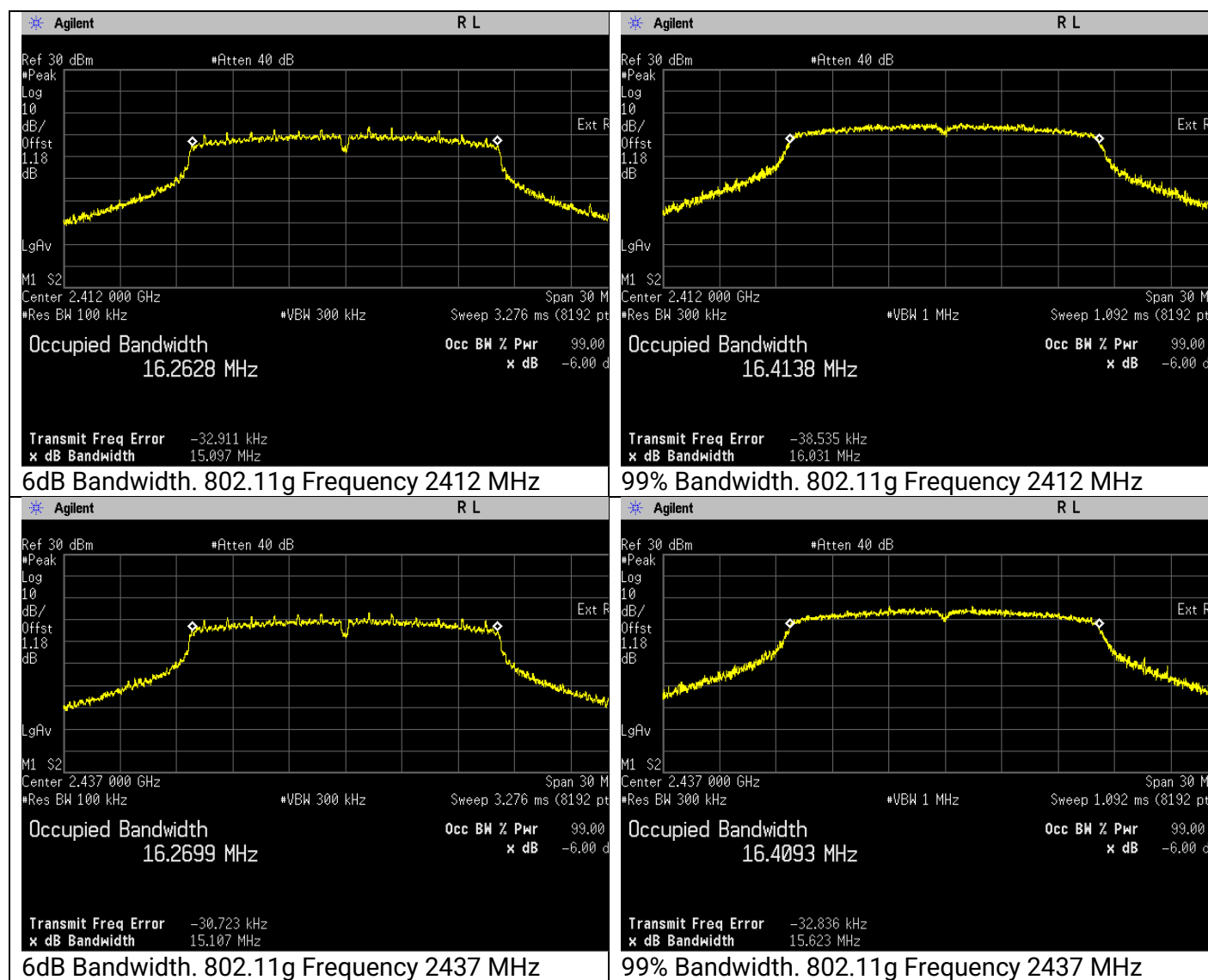
Test Conditions				Test Frequency	Results		
Standard	Modulation Type	Modulation Technology	Data Rate (mbps)	Tx (MHz)	6dB Bandwidth (MHz)	99% Bandwidth (MHz)	Status
802.11b	DSSS	QPSK	11	2412	5.251	12.368	Pass
802.11b	DSSS	QPSK	11	2437	6.229	12.342	Pass
802.11b	DSSS	QPSK	11	2462	6.903	12.377	Pass

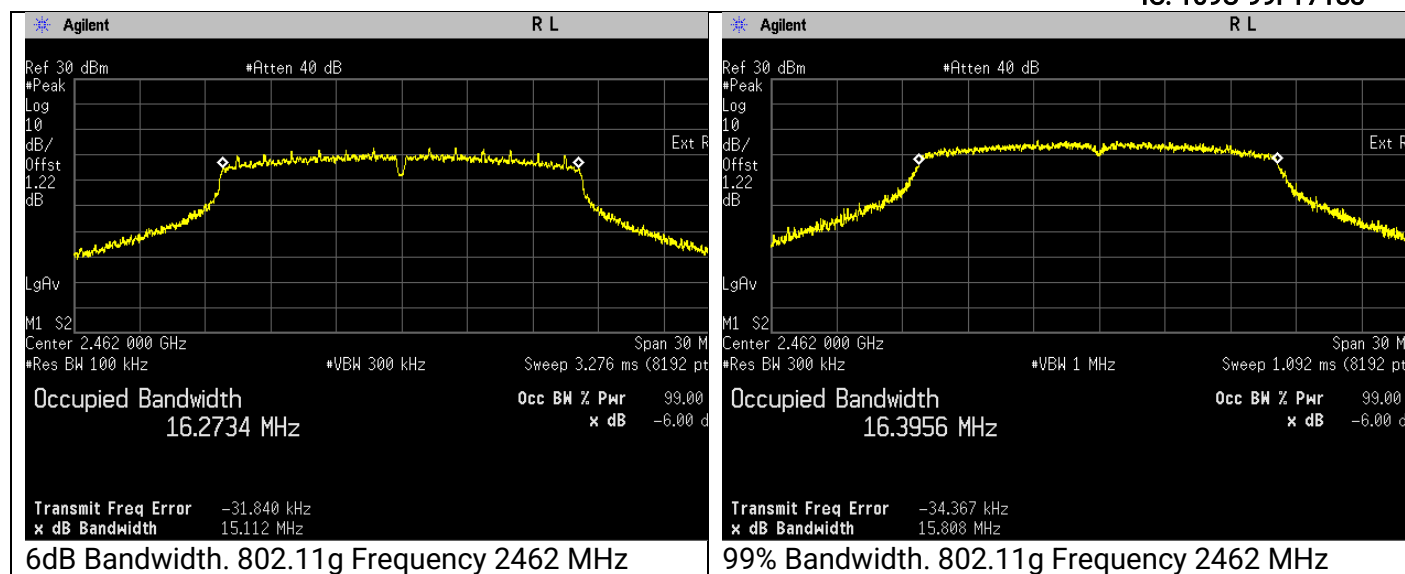




802.11g

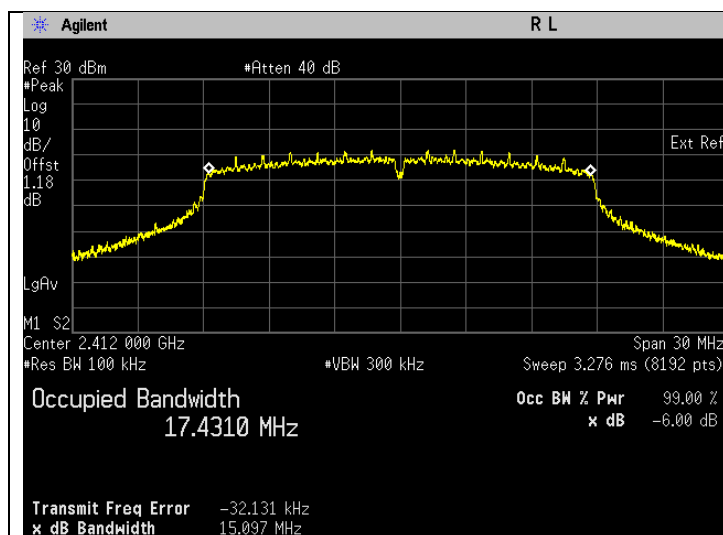
Test Conditions				Test Frequency	Results		
Standard	Modulation Type	Modulation Technology	Data Rate (mbps)	Tx (MHz)	6dB Bandwidth (MHz)	99% Bandwidth (MHz)	Status
802.11g	OFDM	BPSK	6	2412	15.097	16.414	Pass
802.11g	OFDM	BPSK	6	2437	15.107	16.409	Pass
802.11g	OFDM	BPSK	6	2462	15.112	16.396	Pass



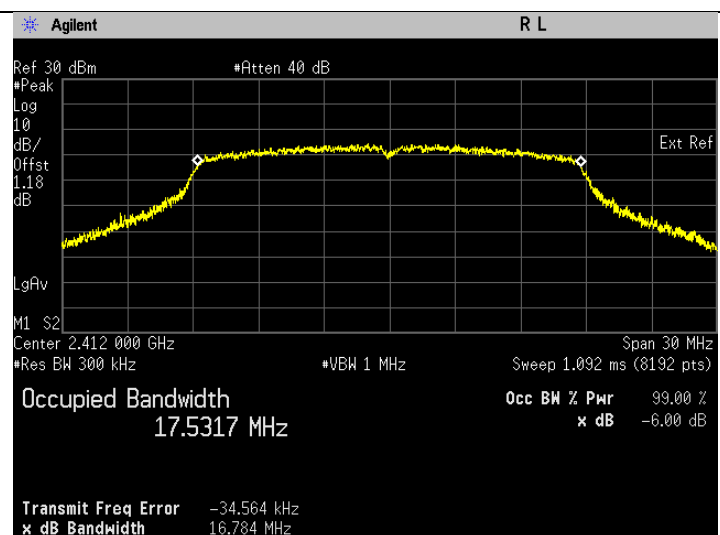


802.11n (HT20)

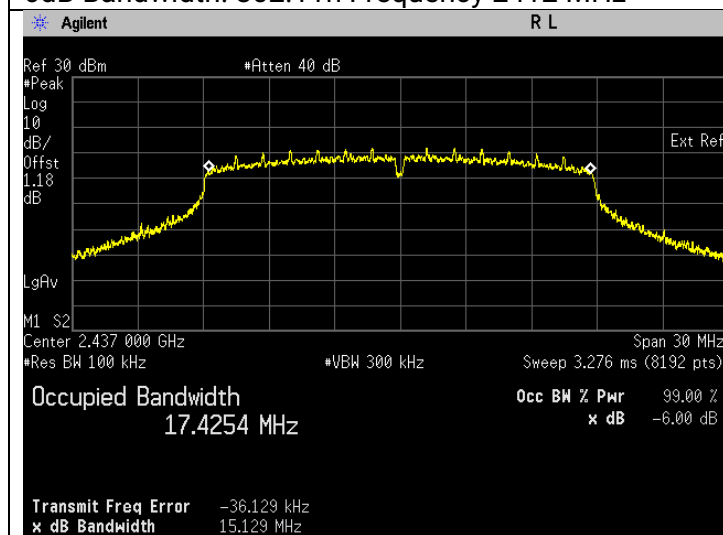
Test Conditions				Test Frequency	Results		
Standard	Modulation Type	Modulation Technology	Data Rate (mbps)	Tx (MHz)	6dB Bandwidth (MHz)	99% Bandwidth (MHz)	Status
802.11n	OFDM	BPSK	6.5	2412	15.097	17.532	Pass
802.11n	OFDM	BPSK	6.5	2437	15.129	17.516	Pass
802.11n	OFDM	BPSK	6.5	2462	15.051	17.533	Pass



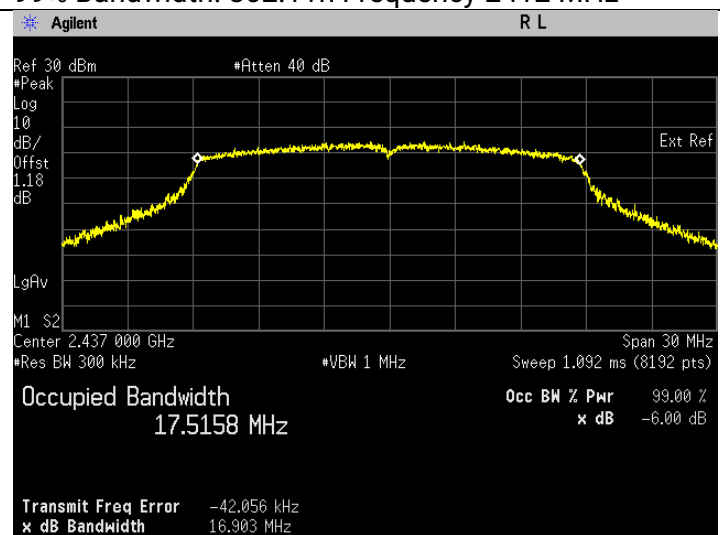
6dB Bandwidth. 802.11n Frequency 2412 MHz



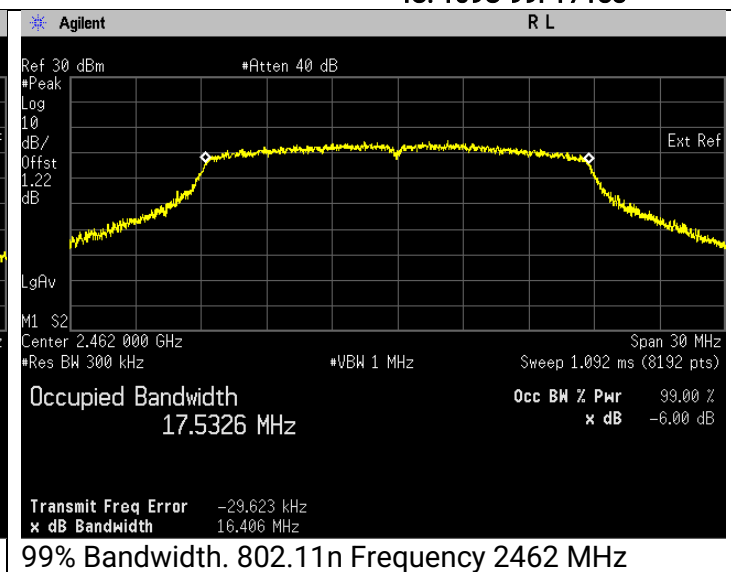
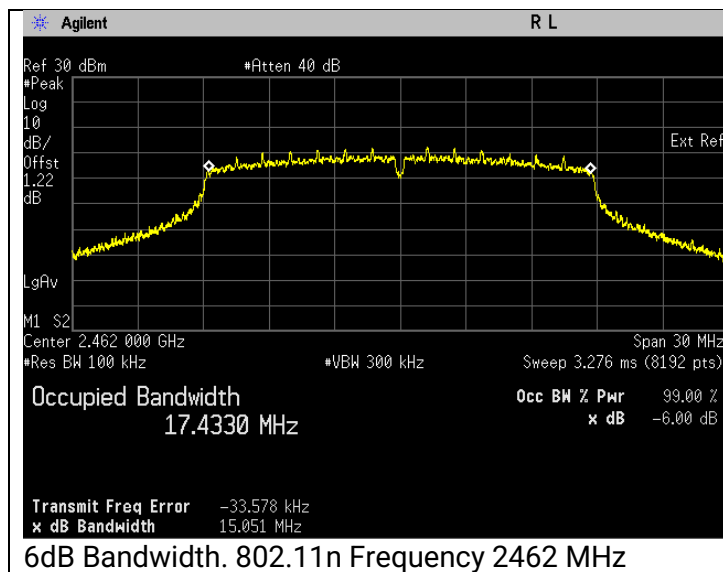
99% Bandwidth. 802.11n Frequency 2412 MHz



6dB Bandwidth. 802.11n Frequency 2437 MHz

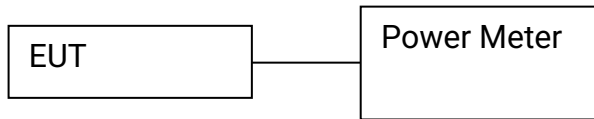


99% Bandwidth. 802.11n Frequency 2437 MHz



6.2. Conducted RF Output Power

6.2.1. Test Setup



Peak

- a) Set the following settings on the power meter:
 - a. Preset -> reset
 - b. Cal/Zero -> Zero & Cal
 - c. Preset -> 802.11g
 - d. Sensor -> Cal Factor -> Enter freq
 - e. Channel -> Trigger -> Trigger Source -> Internal, Rising Edge
 - f. Channel -> Trigger -> More -> Arming -> Automatic
 - g. Channel -> Averaging -> Averaging
 - h. Sensor -> offset -> fixed to couple for losses from ancillaries
 - i. Record peak data
- b) Key up DUT
- c) Restart averaging and read data once the numbers stabilize.
- d) Record power by reading peak data
- e) Repeat the steps in (1) (omit first 3 steps if done previously) by setting DUT to transmit at mid frequency and high frequency.

6.2.2. Test Limits:

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

6.2.3. Test Data:

Test was conducted with peak power.

802.11b

Test Conditions				Test Frequency	Results	
Standard	Modulation Type	Modulation Technology	Data Rate (mbps)	Tx (MHz)	Output Power (dBm)	Status
802.11b	DSSS	DQPSK	11	2412	20.515	Pass
802.11b	DSSS	DQPSK	11	2437	20.055	Pass
802.11b	DSSS	DQPSK	11	2462	20.100	Pass

802.11g

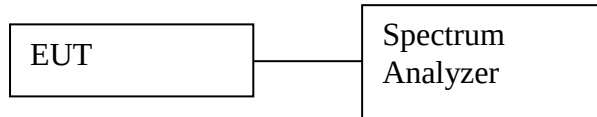
Test Conditions				Test Frequency	Results	
Standard	Modulation Type	Modulation Technology	Data Rate (mbps)	Tx (MHz)	Output Power (dBm)	Status
802.11g	OFDM	BPSK	6	2412	22.185	Pass
802.11g	OFDM	BPSK	6	2437	21.675	Pass
802.11g	OFDM	BPSK	6	2462	21.700	Pass

802.11n (HT20)

Test Conditions				Test Frequency	Results	
Standard	Modulation Type	Modulation Technology	Data Rate (mbps)	Tx (MHz)	Output Power (dBm)	Status
802.11n	OFDM	BPSK	6.5	2412	21.195	Pass
802.11n	OFDM	BPSK	6.5	2437	20.685	Pass
802.11n	OFDM	BPSK	6.5	2462	20.790	Pass

6.3.Duty Cycle of the test signal

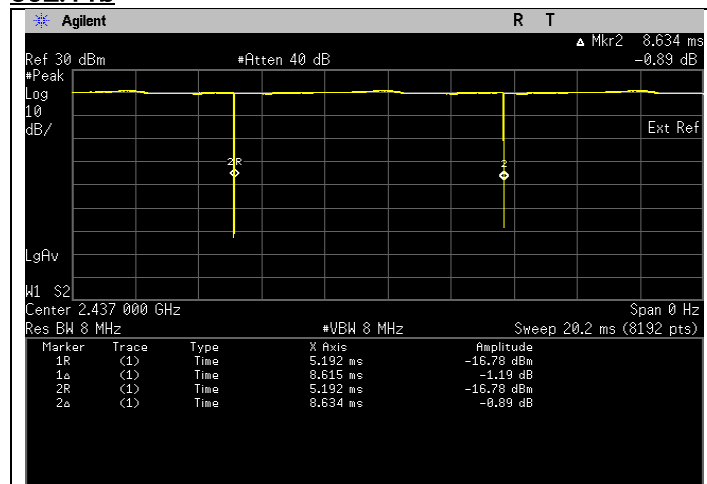
6.3.1. Test Setup



- 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 $\geq$ RBW.
 - c. Set the span $\geq [1.5 \times \text{DTS bandwidth}]$.
 - 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

802.11b



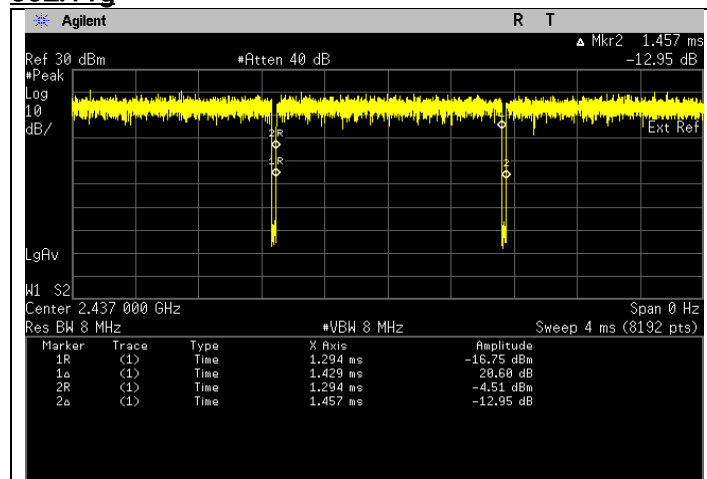
Duty Cycle

On time (ms)	8.615
On + Off Time (ms)	8.634
Duty cycle	0.9978
Duty Cycle factor	0.010

*Duty cycle = On time/ On +off time

*Duty Cycle factor = $10 \cdot \log(1/\text{Duty Cycle})$

802.11g



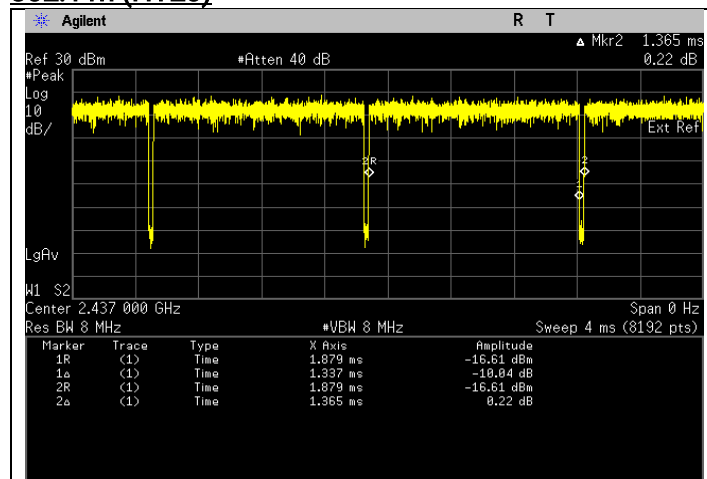
Duty Cycle

On time (ms)	1.429
On + Off Time (ms)	1.457
Duty cycle	0.9808
Duty Cycle factor	0.084

*Duty cycle = On time/ On +off time

*Duty Cycle factor = $10 \cdot \log(1/\text{Duty Cycle})$

802.11n (HT20)



Duty Cycle

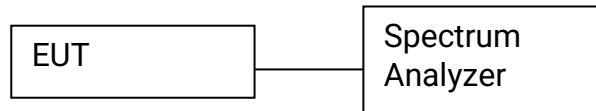
On time (ms)	1.337
On + Off Time (ms)	1.365
Duty cycle	0.9795
Duty Cycle factor	0.090

*Duty cycle = On time/ On +off time

*Duty Cycle factor = $10 \cdot \log(1/\text{Duty Cycle})$

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 $3 \text{ kHz} \leq \text{RBW} \leq 100 \text{ kHz}$.
 - d. Set the VBW $\geq [3 \times \text{RBW}]$.
 - 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.

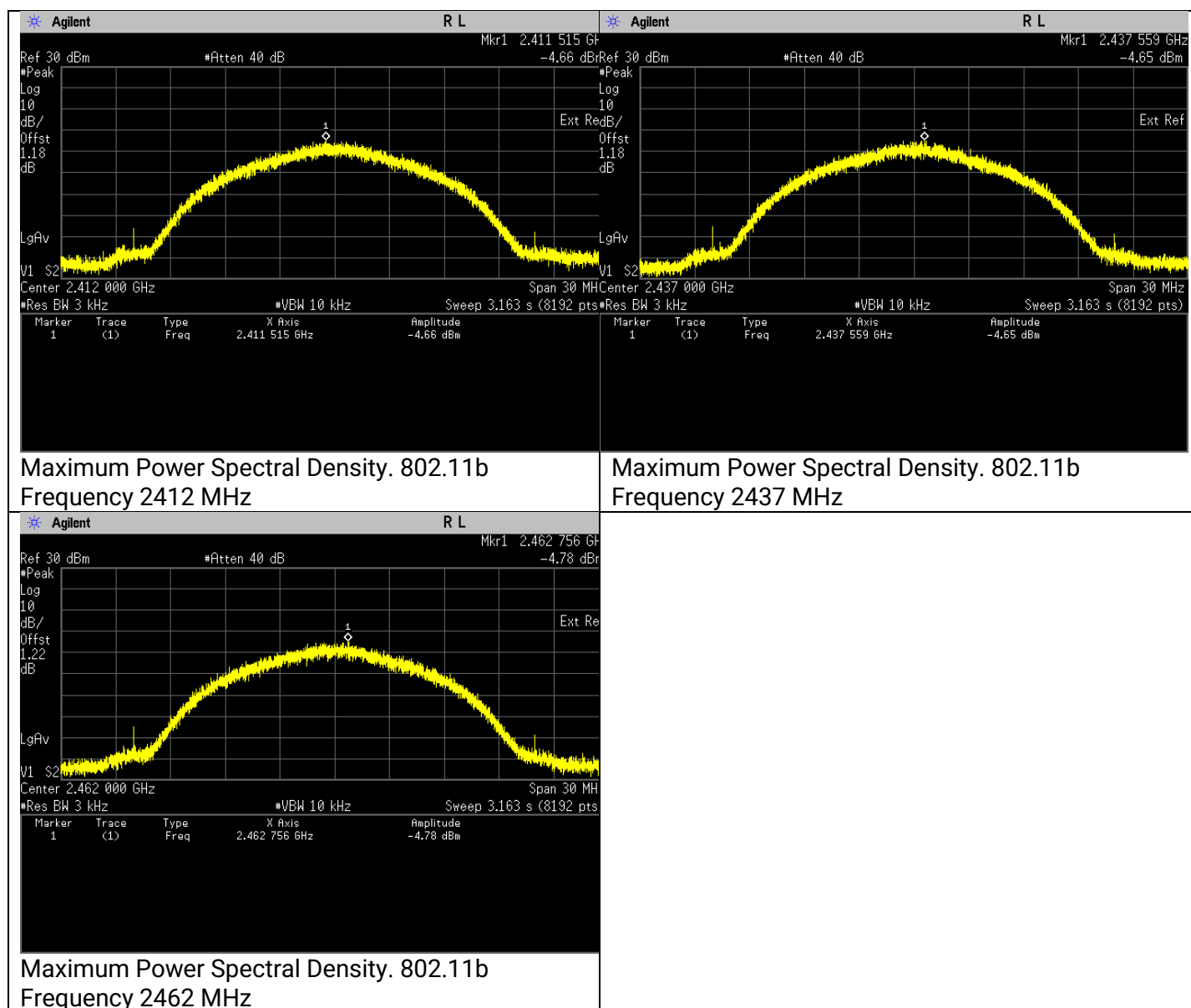
6.4.2. Test Limits

Normal Condition (25 ° C)
$\leq 8 \text{ dBm/3kHz}$

6.4.3. Test Result

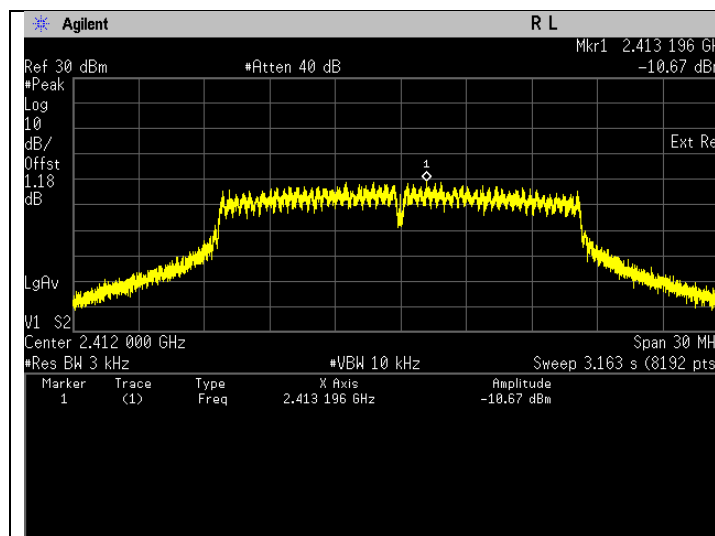
802.11b

Test Conditions				Test Frequency	Results	
Standard	Modulation Type	Modulation Technology	Data Rate (mbps)	Tx (MHz)	Power (dBm/3kHz)	Status
802.11b	DSSS	QPSK	11	2412	-4.66	Pass
802.11b	DSSS	QPSK	11	2437	-4.65	Pass
802.11b	DSSS	QPSK	11	2462	-4.78	Pass

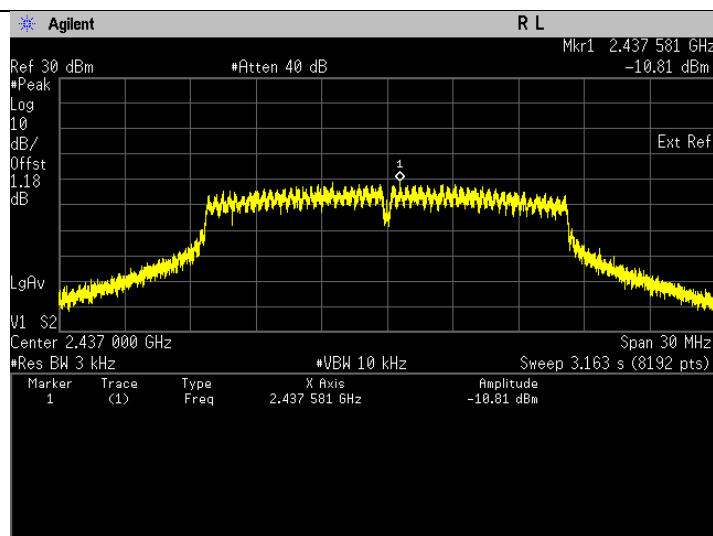


802.11g

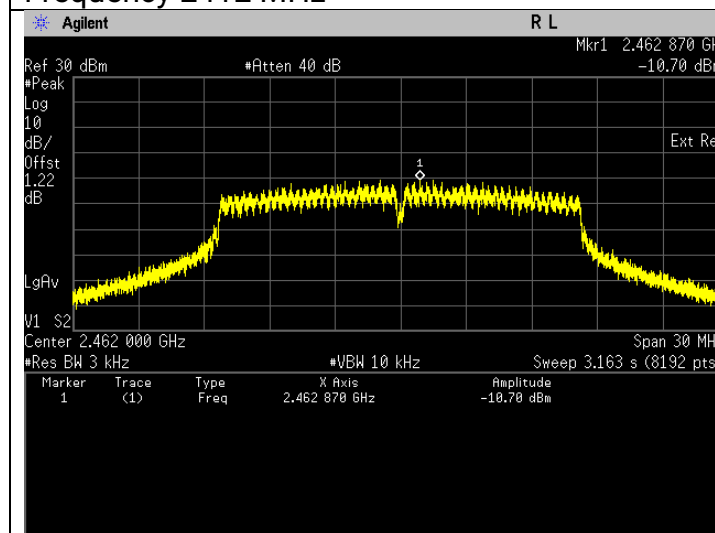
Test Conditions				Test Frequency	Results	
Standard	Modulation Type	Modulation Technology	Data Rate (mbps)	Tx (MHz)	Power (dBm/3kHz)	Status
802.11g	OFDM	BPSK	6	2412	-10.67	Pass
802.11g	OFDM	BPSK	6	2437	-10.81	Pass
802.11g	OFDM	BPSK	6	2462	-10.70	Pass



Maximum Power Spectral Density. 802.11g
Frequency 2412 MHz



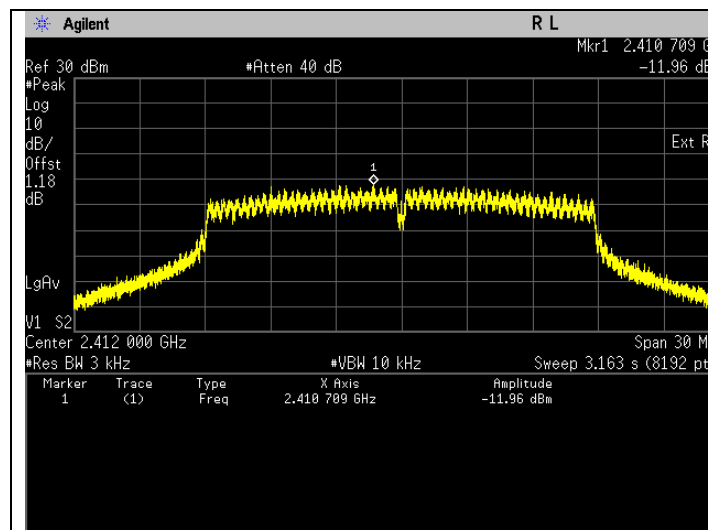
Maximum Power Spectral Density. 802.11g
Frequency 2437 MHz



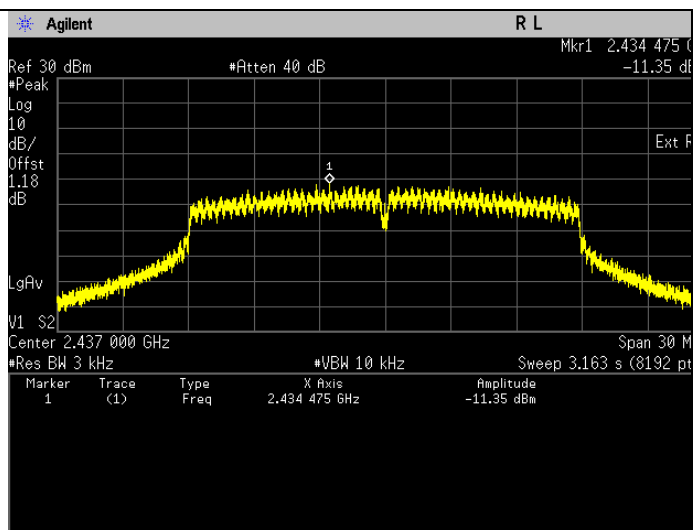
Maximum Power Spectral Density. 802.11g
Frequency 2462 MHz

802.11n (HT20)

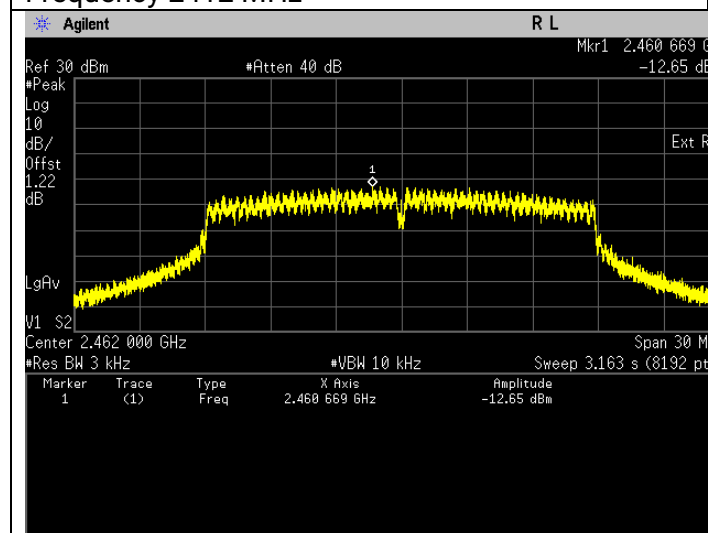
Test Conditions				Test Frequency	Results	
Standard	Modulation Type	Modulation Technology	Data Rate (mbps)	Tx (MHz)	Power (dBm/3kHz)	Status
802.11n	OFDM	BPSK	6.5	2412	-11.96	Pass
802.11n	OFDM	BPSK	6.5	2437	-11.35	Pass
802.11n	OFDM	BPSK	6.5	2462	-12.65	Pass



Maximum Power Spectral Density. 802.11n
Frequency 2412 MHz



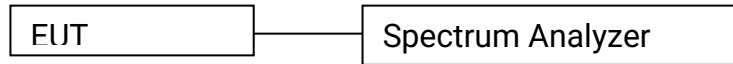
Maximum Power Spectral Density. 802.11n
Frequency 2437 MHz



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.

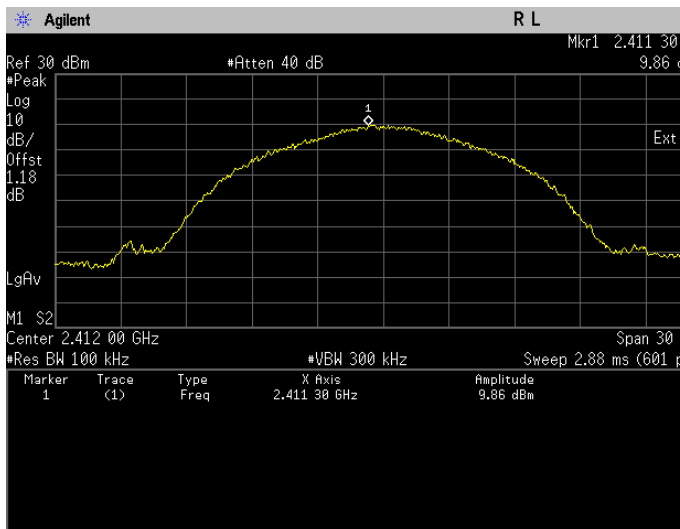
6.5.2. Test Limits:

Normal Condition (25 ° C)
Shall be at least 20 dB below max power. (Peak detector)

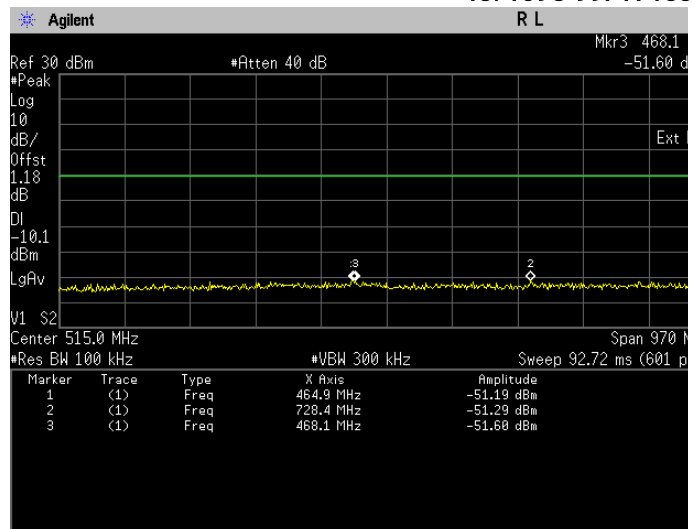
6.5.3. Test Result

802.11b

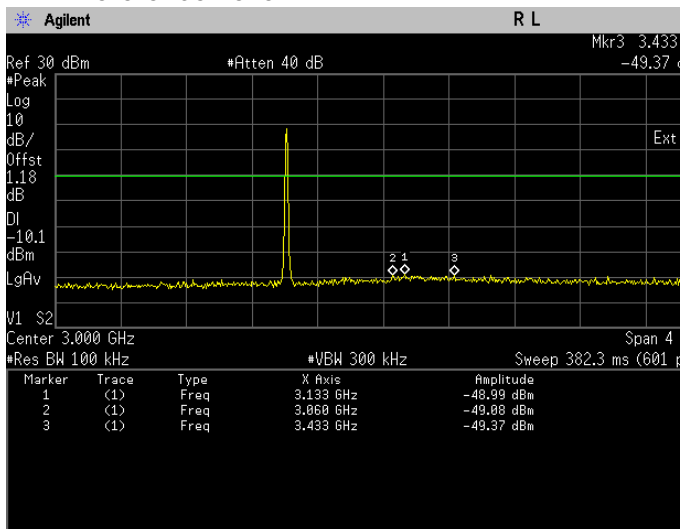
Test Conditions				Test Frequency	Results		
Standard	Modulation Type	Modulation Technology	Data Rate (mbps)	Tx (MHz)	Spurs (MHz)	Level (dBm)	Status
802.11b	DSSS	QPSK	11	2412	24308.000	-42.76	Pass
					24783.000	-43.60	Pass
					24683.000	-43.76	Pass
802.11b	DSSS	QPSK	11	2437	24908.000	-42.76	Pass
					24375.000	-42.99	Pass
					24950.000	-43.10	Pass
802.11b	DSSS	QPSK	11	2462	24800.000	-42.99	Pass
					24533.000	-43.04	Pass
					24308.000	-43.35	Pass



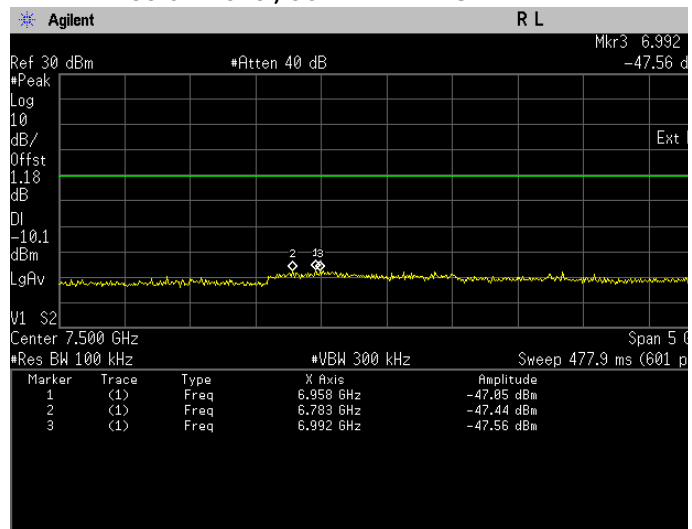
Conducted Emissions. 802.11b, Frequency 2412 MHz Reference Level



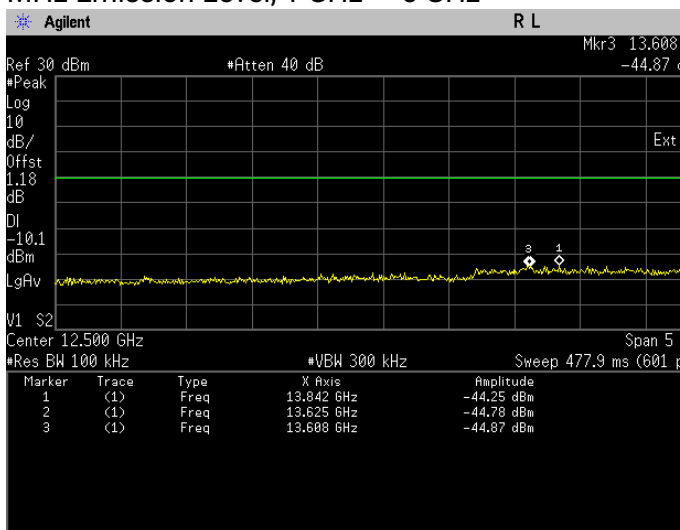
Conducted Emissions. 802.11b, Frequency 2412 MHz Emission Level, 30 MHz -> 1 GHz



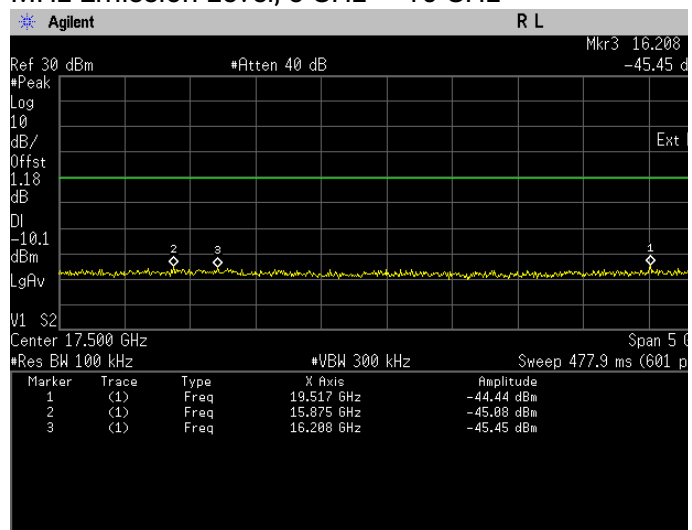
Conducted Emissions. 802.11b, Frequency 2412 MHz Emission Level, 1 GHz -> 5 GHz



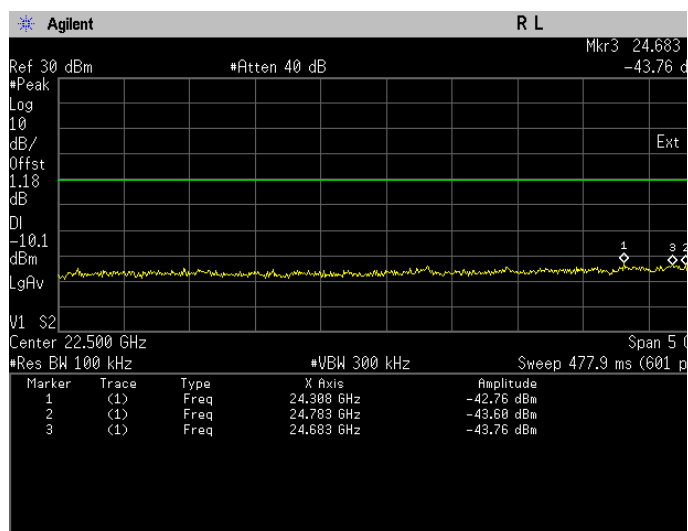
Conducted Emissions. 802.11b, Frequency 2412 MHz Emission Level, 5 GHz -> 10 GHz



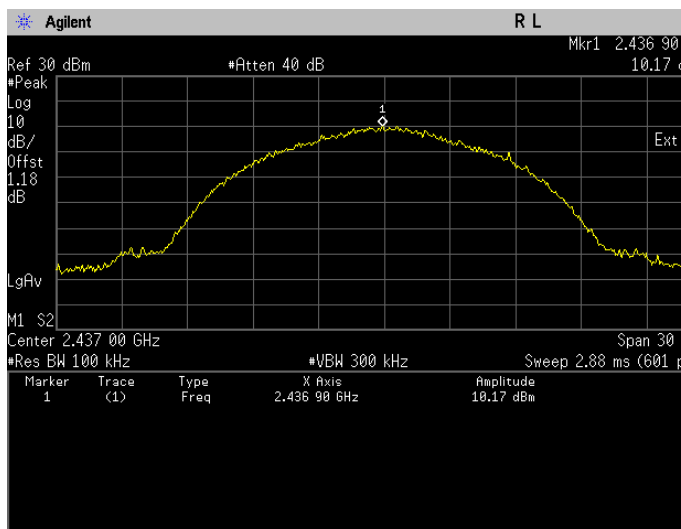
Conducted Emissions. 802.11b, Frequency 2412 MHz Emission Level, 10 GHz -> 15 GHz



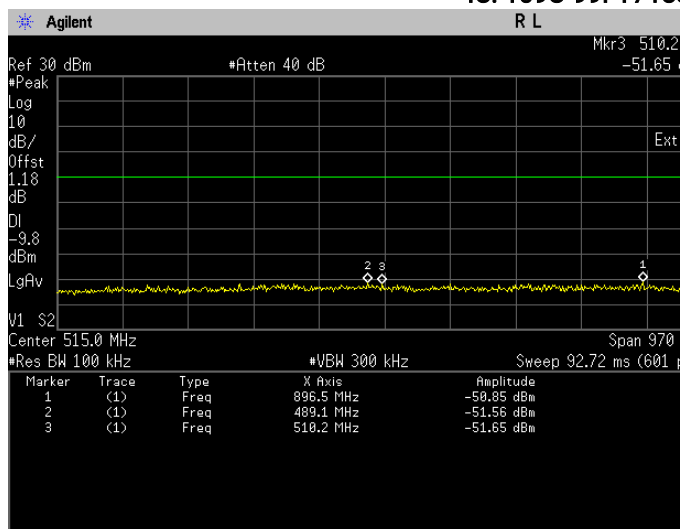
Conducted Emissions. 802.11b, Frequency 2412 MHz Emission Level, 15 GHz -> 20 GHz



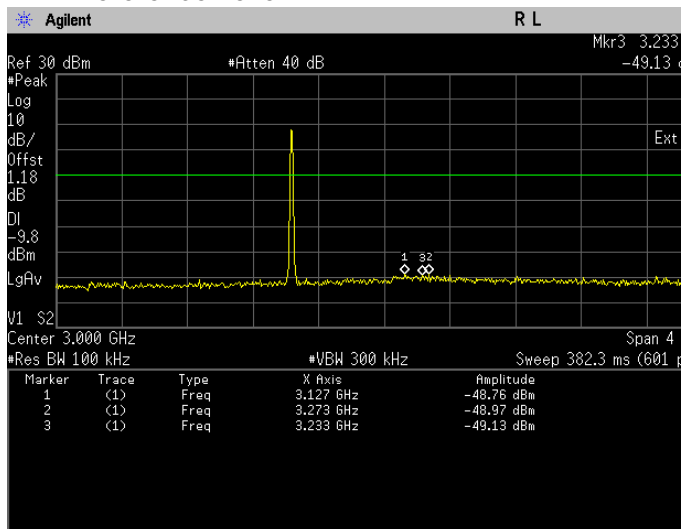
Conducted Emissions. 802.11b, Frequency 2412 MHz Emission Level, 20 GHz -> 25 GHz



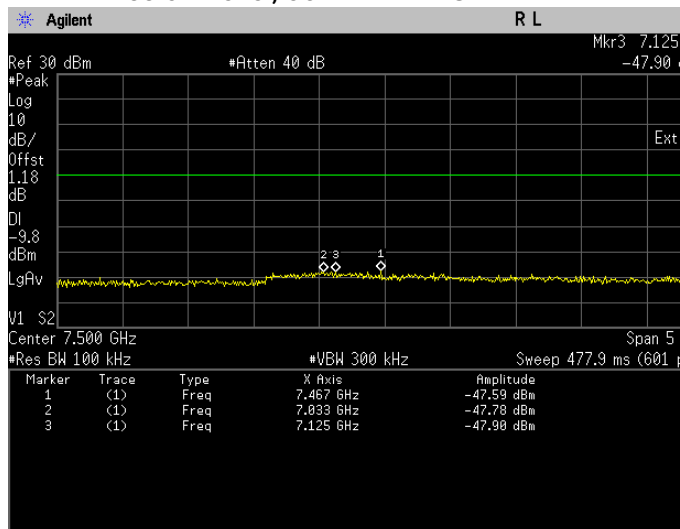
Conducted Emissions. 802.11b, Frequency 2437 MHz Reference Level



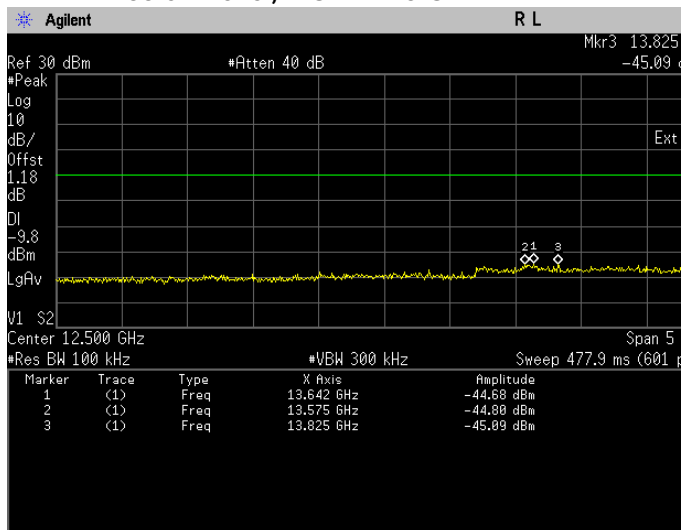
Conducted Emissions. 802.11b, Frequency 2437 MHz Emission Level, 30 MHz -> 1 GHz



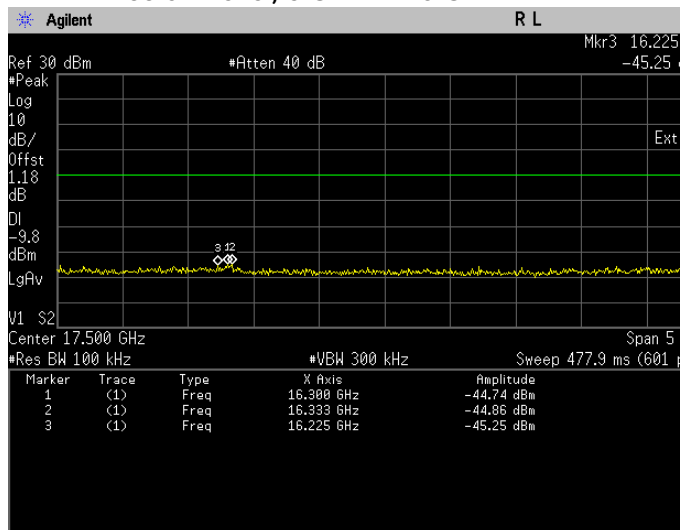
Conducted Emissions. 802.11b, Frequency 2437 MHz Emission Level, 1 GHz -> 5 GHz



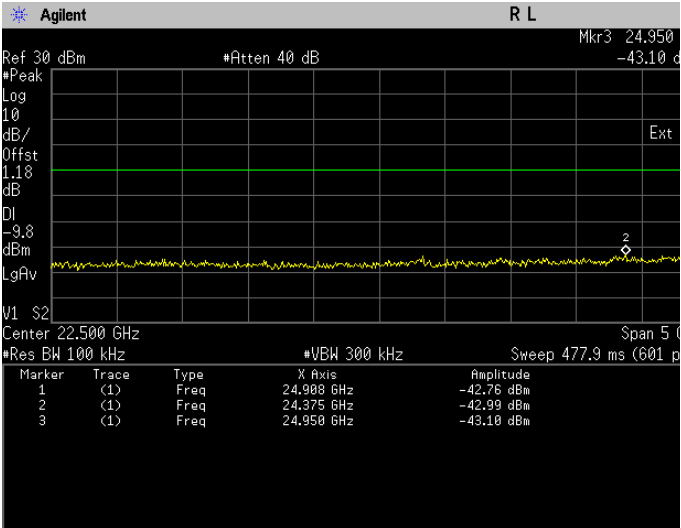
Conducted Emissions. 802.11b, Frequency 2437 MHz Emission Level, 5 GHz -> 10 GHz



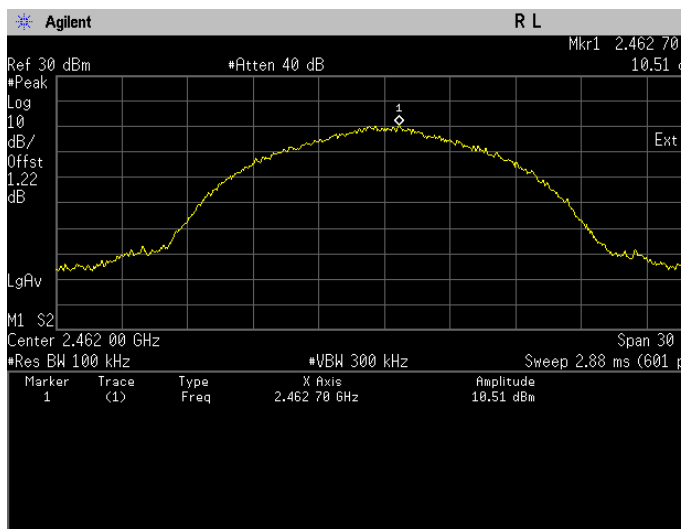
Conducted Emissions. 802.11b, Frequency 2437 MHz Emission Level, 10 GHz -> 15 GHz



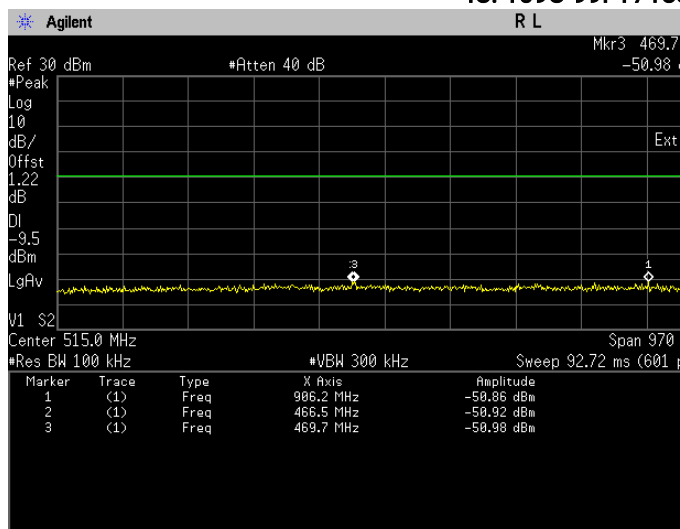
Conducted Emissions. 802.11b, Frequency 2437 MHz Emission Level, 15 GHz -> 20 GHz



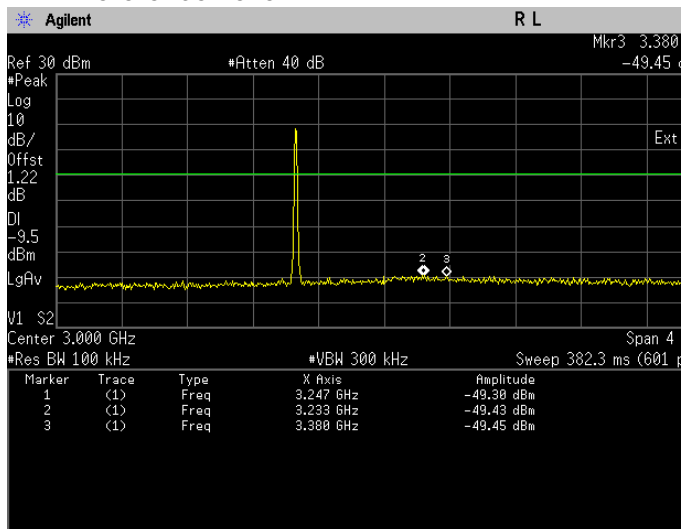
Conducted Emissions. 802.11b, Frequency 2437 MHz Emission Level, 20 GHz -> 25 GHz



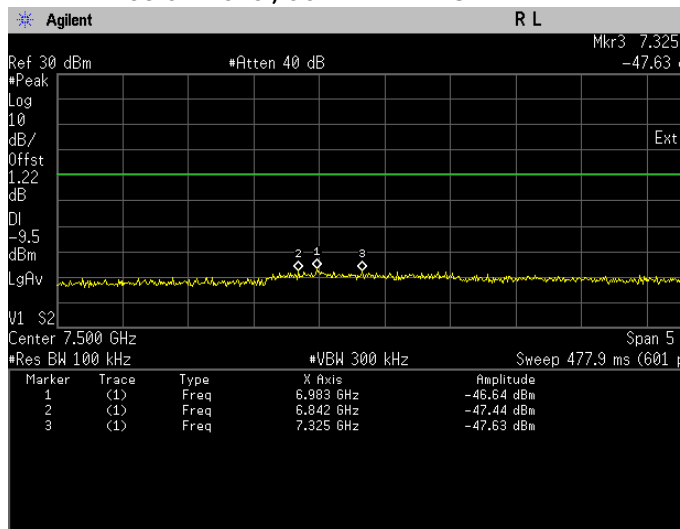
Conducted Emissions. 802.11b, Frequency 2462 MHz Reference Level



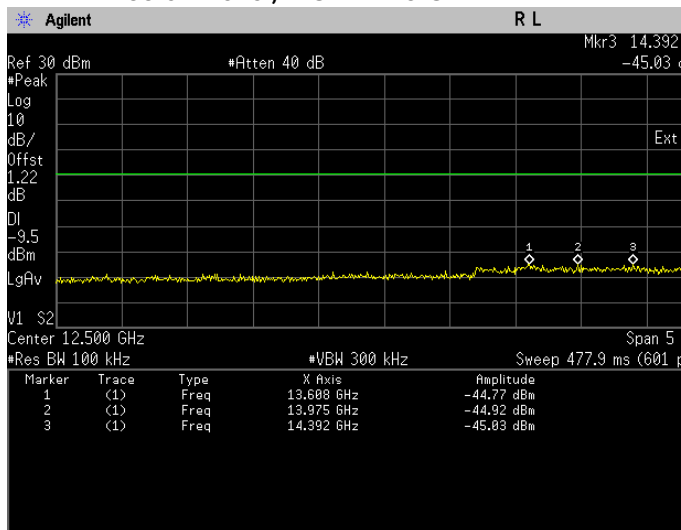
Conducted Emissions. 802.11b, Frequency 2462 MHz Emission Level, 30 MHz -> 1 GHz



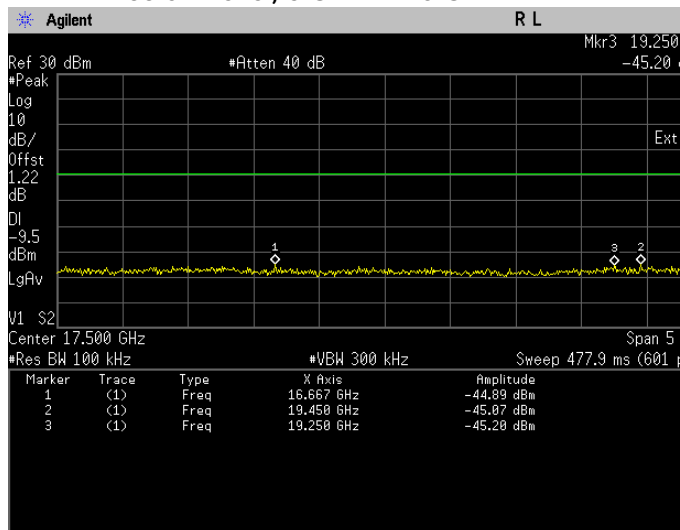
Conducted Emissions. 802.11b, Frequency 2462 MHz Emission Level, 1 GHz -> 5 GHz



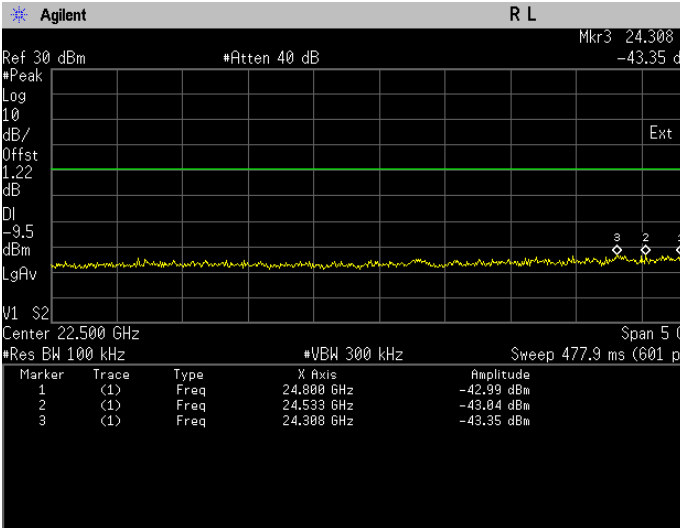
Conducted Emissions. 802.11b, Frequency 2462 MHz Emission Level, 5 GHz -> 10 GHz



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



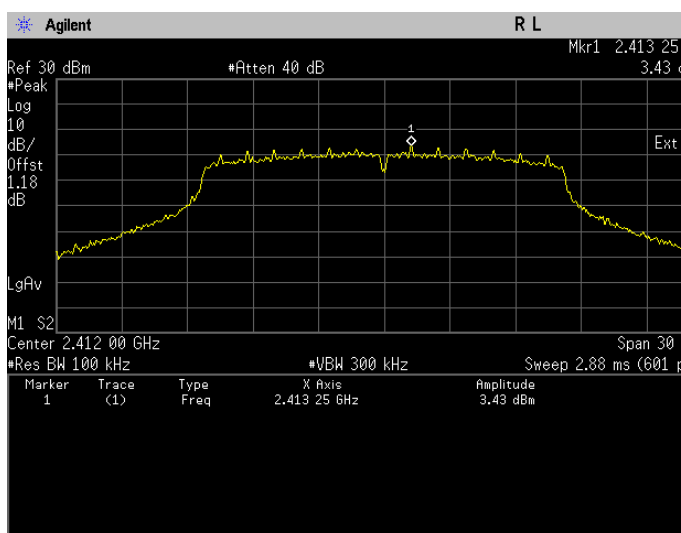
Conducted Emissions. 802.11b, Frequency 2462 MHz Emission Level, 15 GHz -> 20 GHz



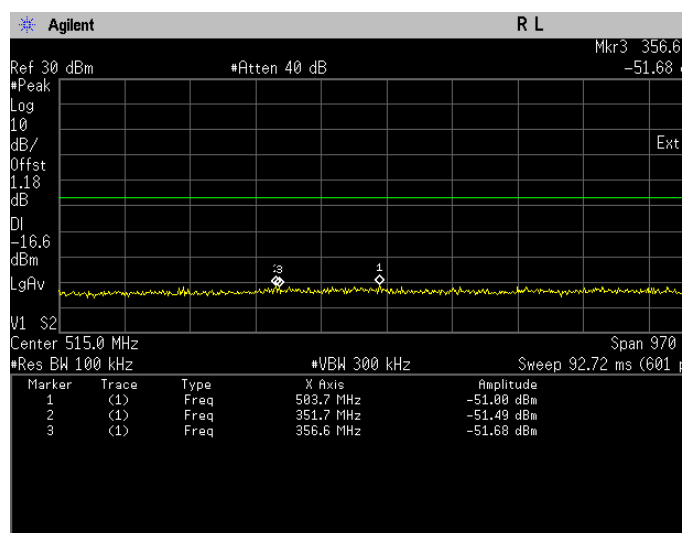
Conducted Emissions. 802.11b, Frequency 2462 MHz Emission Level, 20 GHz -> 25 GHz

802.11g

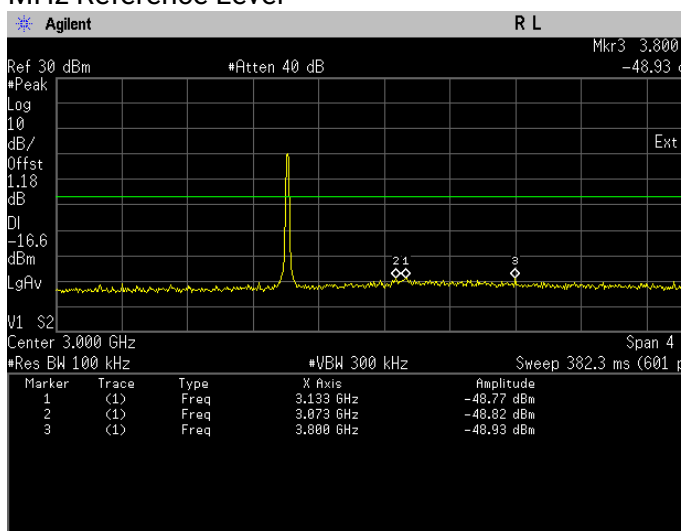
Test Conditions				Test Frequency	Results		
Standard	Modulation Type	Modulation Technology	Data Rate (mbps)	Tx (MHz)	Spurs (MHz)	Level (dBm)	Status
802.11g	OFDM	BPSK	6	2412	24950.000	-41.68	Pass
					24300.000	-42.09	Pass
					24700.000	-42.50	Pass
802.11g	OFDM	BPSK	6	2437	13600.000	-42.54	Pass
					24442.000	-42.96	Pass
					24342.000	-43.07	Pass
802.11g	OFDM	BPSK	6	2462	24942.000	-42.13	Pass
					24983.000	-42.96	Pass
					24350.000	-43.07	Pass



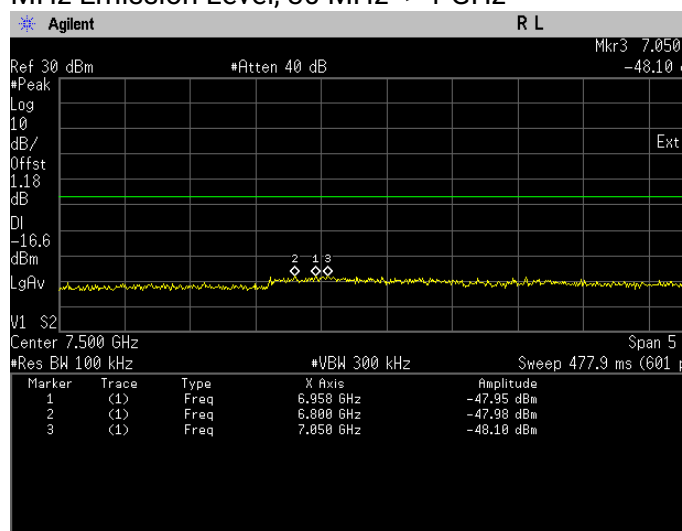
Conducted Emissions. 802.11g, Frequency 2412 MHz Reference Level



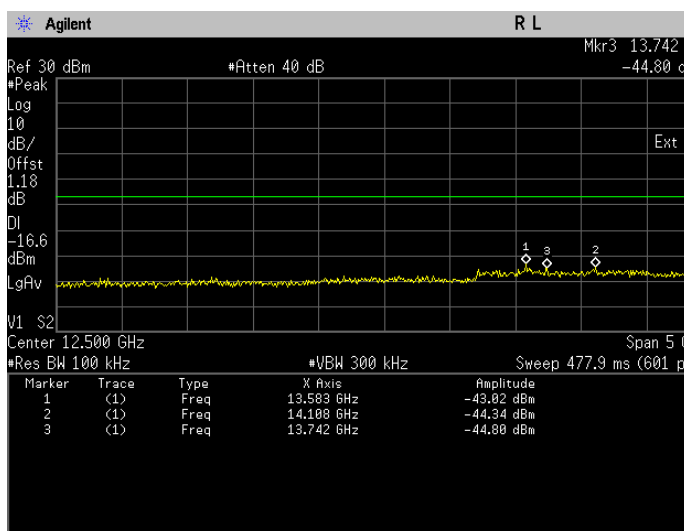
Conducted Emissions. 802.11g, Frequency 2412 MHz Emission Level, 30 MHz -> 1 GHz



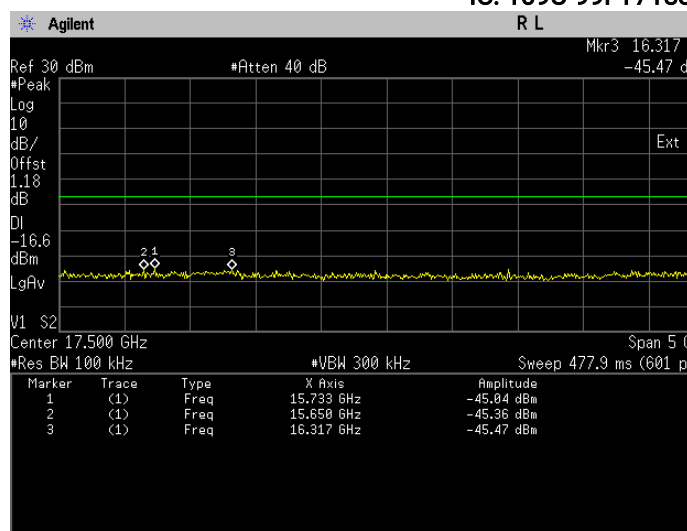
Conducted Emissions. 802.11g, Frequency 2412 MHz Emission Level, 1 GHz -> 5 GHz



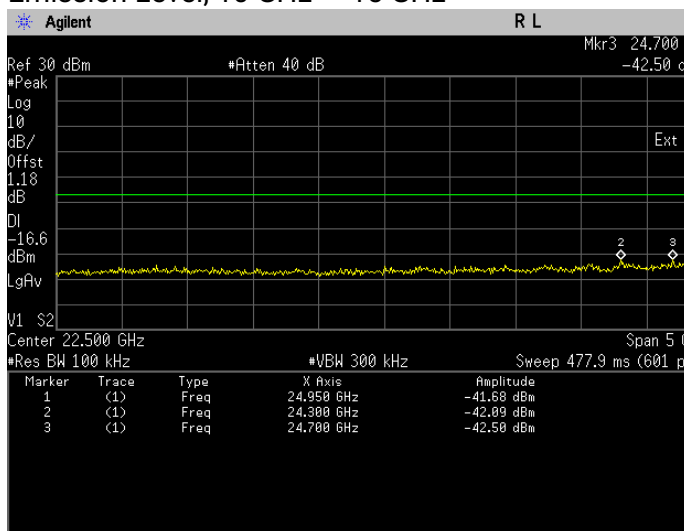
Conducted Emissions. 802.11g, Frequency 2412 MHz Emission Level, 5 GHz -> 10 GHz



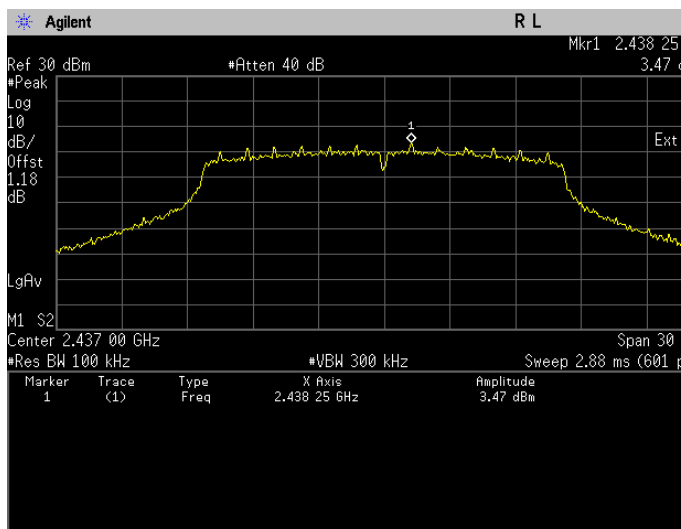
Conducted Emissions. 802.11g, Frequency 2412 MHz Emission Level, 10 GHz -> 15 GHz



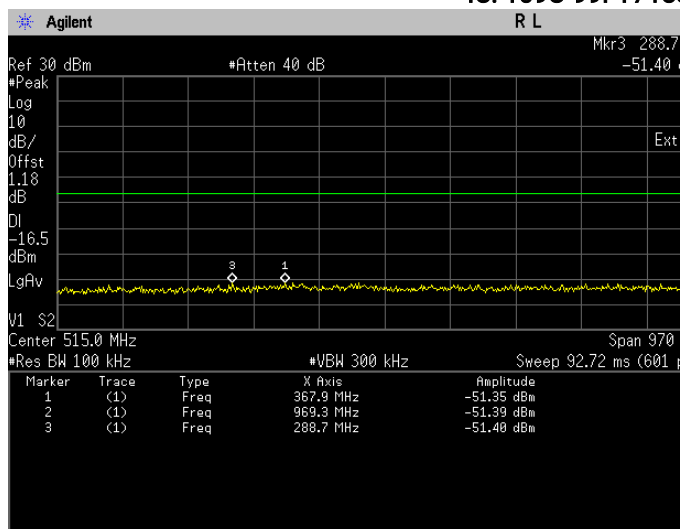
Conducted Emissions. 802.11g, Frequency 2412 MHz Emission Level, 15 GHz -> 20 GHz



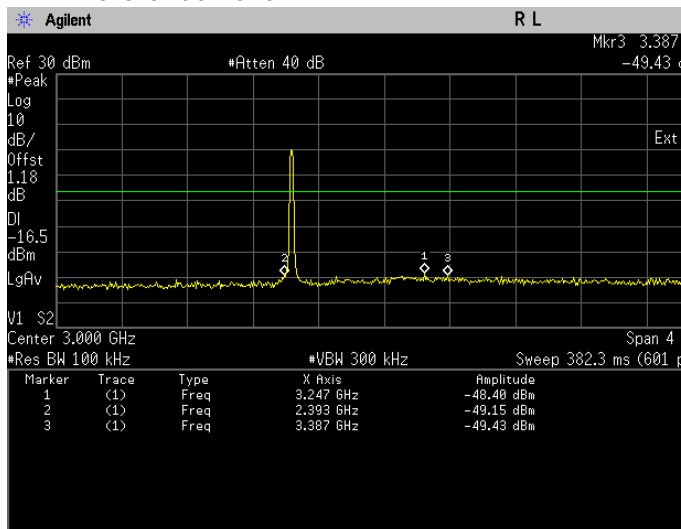
Conducted Emissions. 802.11g, Frequency 2412 MHz Emission Level, 20 GHz -> 25 GHz



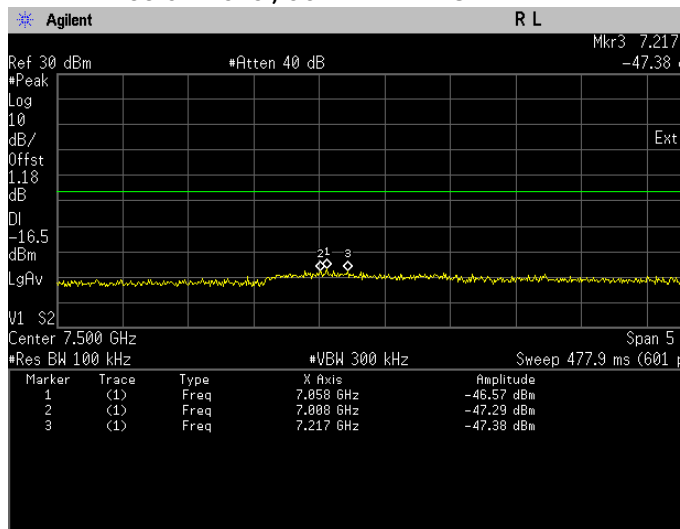
Conducted Emissions. 802.11g, Frequency 2437 MHz Reference Level



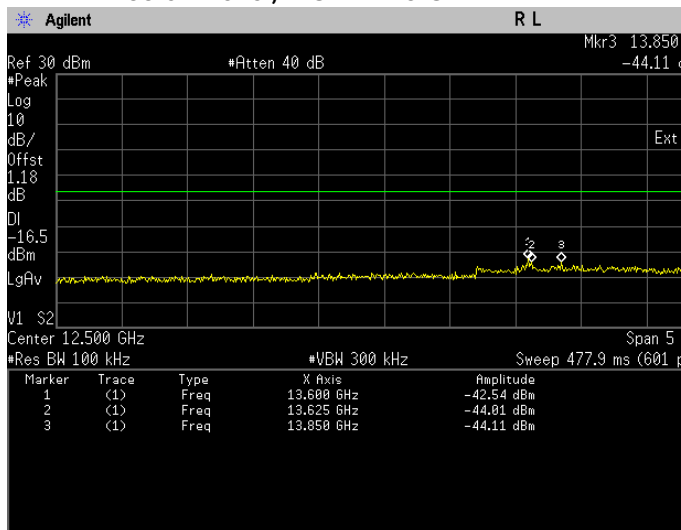
Conducted Emissions. 802.11g, Frequency 2437 MHz Emission Level, 30 MHz -> 1 GHz



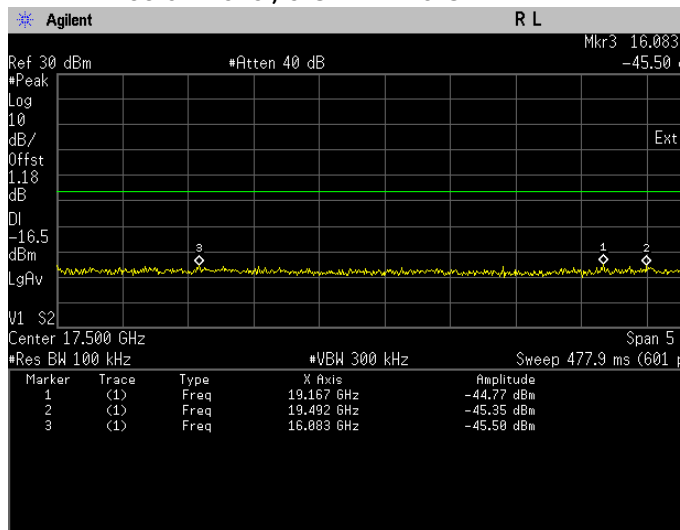
Conducted Emissions. 802.11g, Frequency 2437 MHz Emission Level, 1 GHz -> 5 GHz



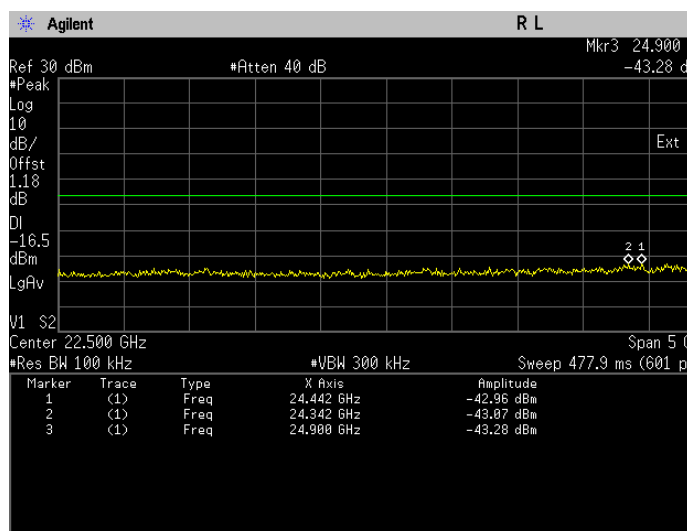
Conducted Emissions. 802.11g, Frequency 2437 MHz Emission Level, 5 GHz -> 10 GHz



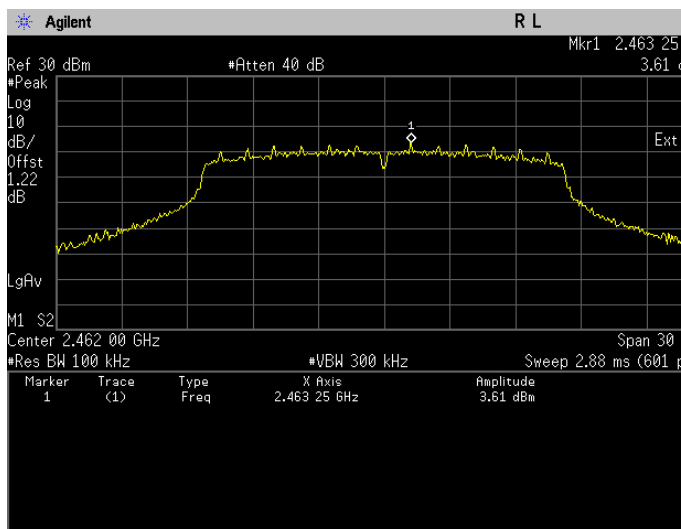
Conducted Emissions. 802.11g, Frequency 2437 MHz Emission Level, 10 GHz -> 15 GHz



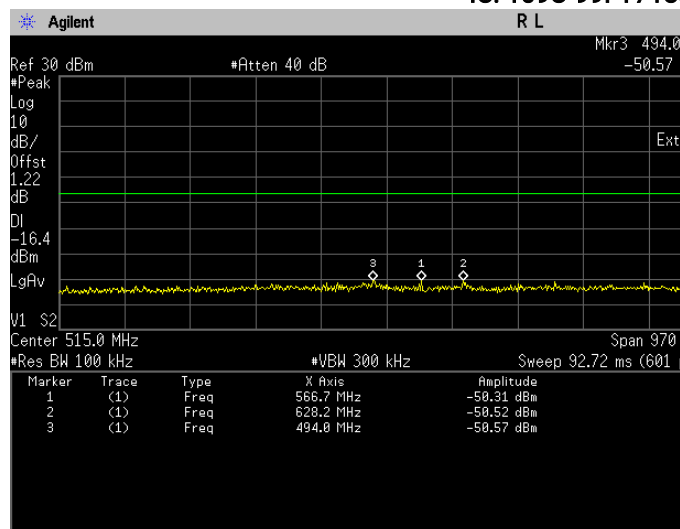
Conducted Emissions. 802.11g, Frequency 2437 MHz Emission Level, 15 GHz -> 20 GHz



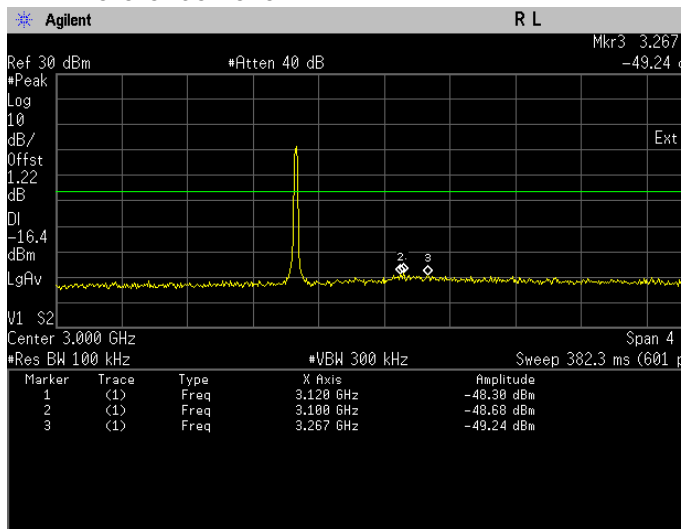
Conducted Emissions. 802.11g, Frequency 2437 MHz Emission Level, 20 GHz -> 25 GHz



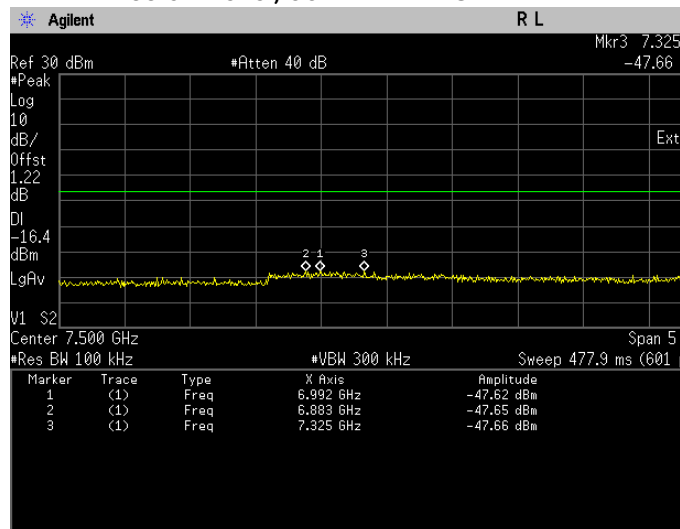
Conducted Emissions. 802.11g, Frequency 2462 MHz Reference Level



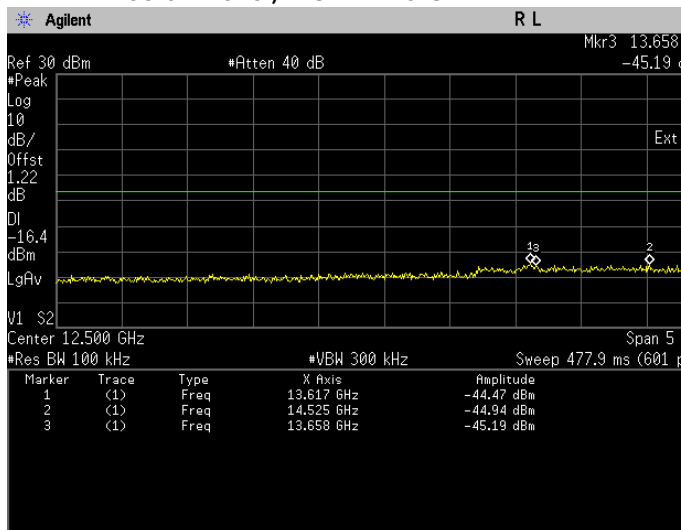
Conducted Emissions. 802.11g, Frequency 2462 MHz Emission Level, 30 MHz -> 1 GHz



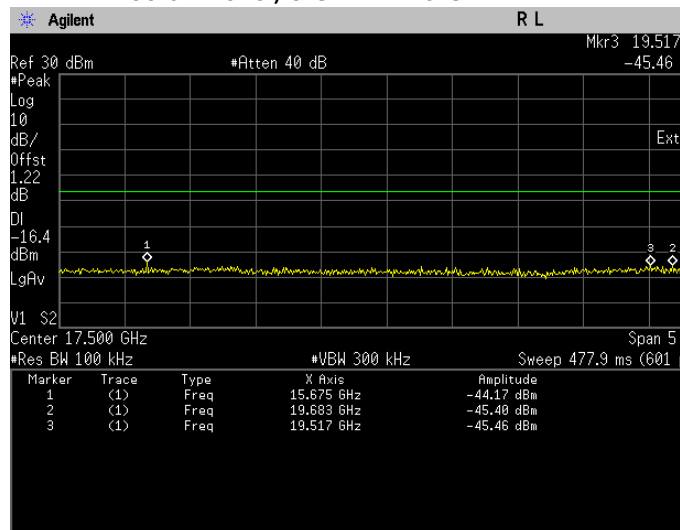
Conducted Emissions. 802.11g, Frequency 2462 MHz Emission Level, 1 GHz -> 5 GHz



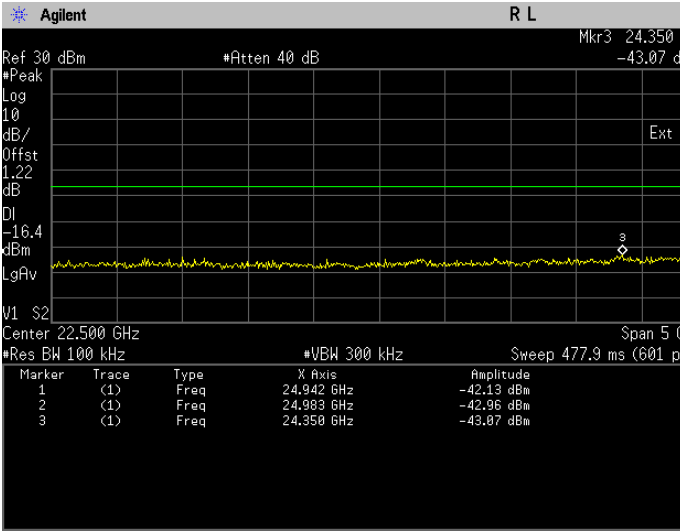
Conducted Emissions. 802.11g, Frequency 2462 MHz Emission Level, 5 GHz -> 10 GHz



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



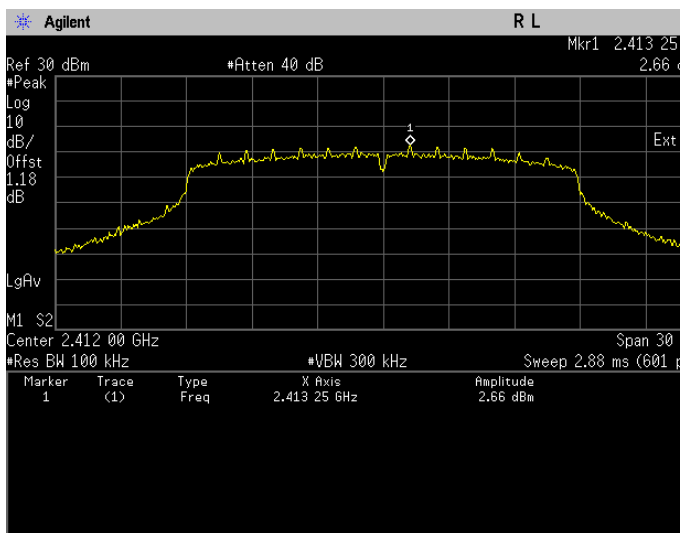
Conducted Emissions. 802.11g, Frequency 2462 MHz Emission Level, 15 GHz -> 20 GHz



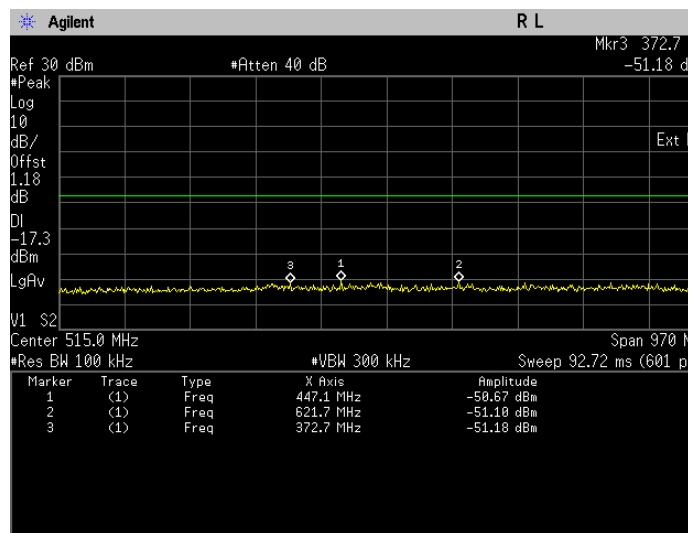
Conducted Emissions. 802.11g, Frequency 2462 MHz Emission Level, 20 GHz -> 25 GHz

802.11n (HT20)

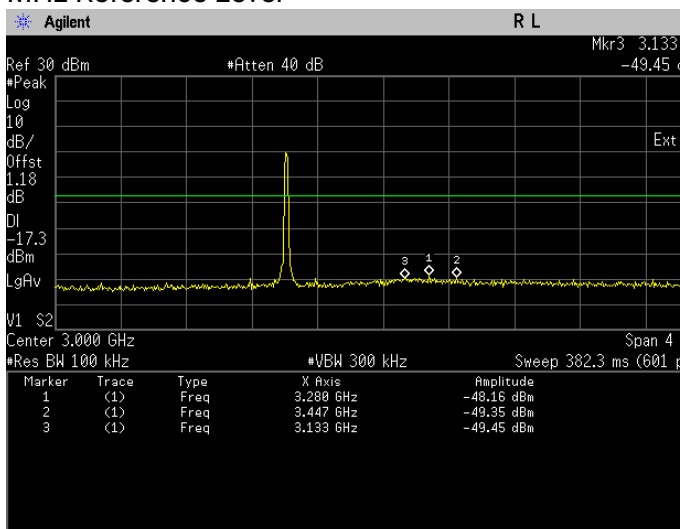
Test Conditions				Test Frequency	Results		
Standard	Modulation Type	Modulation Technology	Data Rate (mbps)	Tx (MHz)	Spurs (MHz)	Level (dBm)	Status
802.11n	OFDM	BPSK	6.5	2412	24850.000	-42.92	Pass
					23633.000	-43.01	Pass
					24867.000	-43.42	Pass
802.11n	OFDM	BPSK	6.5	2437	24908.000	-43.27	Pass
					24700.000	-43.53	Pass
					24983.000	-43.56	Pass
802.11n	OFDM	BPSK	6.5	2462	24933.000	-43.04	Pass
					24642.000	-43.28	Pass
					24625.000	-43.47	Pass



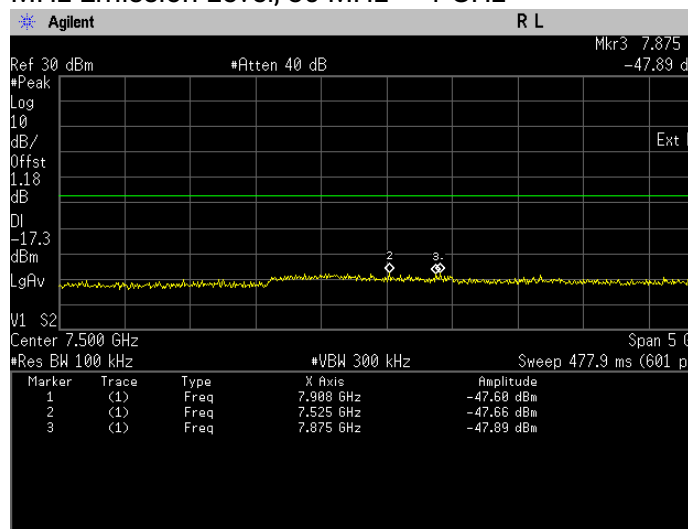
Conducted Emissions. 802.11n, Frequency 2412 MHz Reference Level



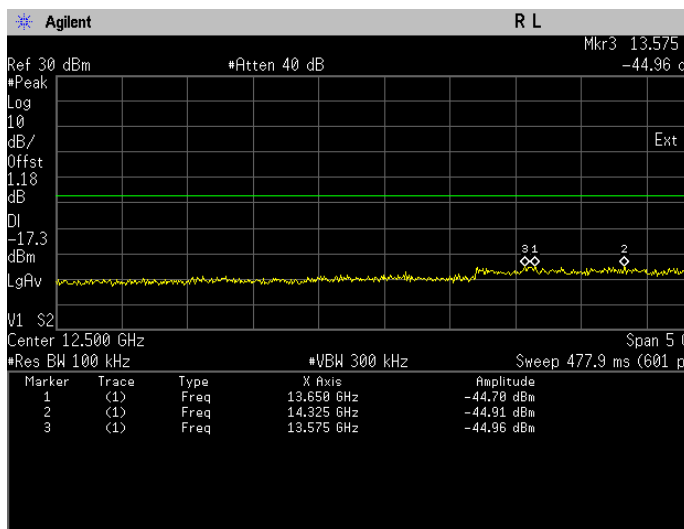
Conducted Emissions. 802.11n, Frequency 2412 MHz Emission Level, 30 MHz -> 1 GHz



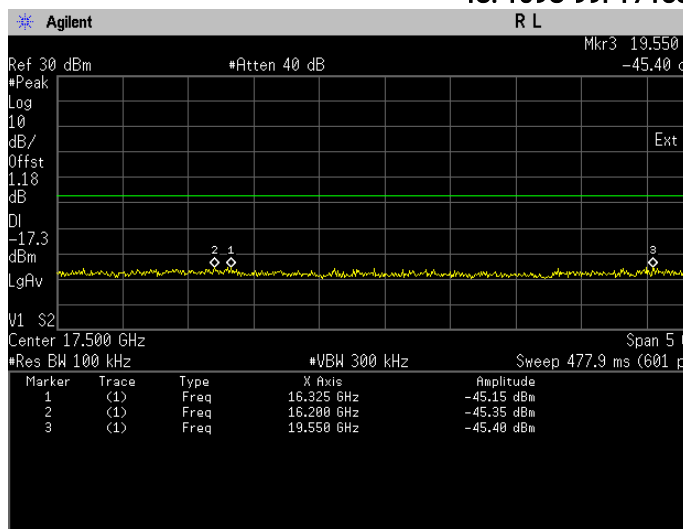
Conducted Emissions. 802.11n, Frequency 2412 MHz Emission Level, 1 GHz -> 5 GHz



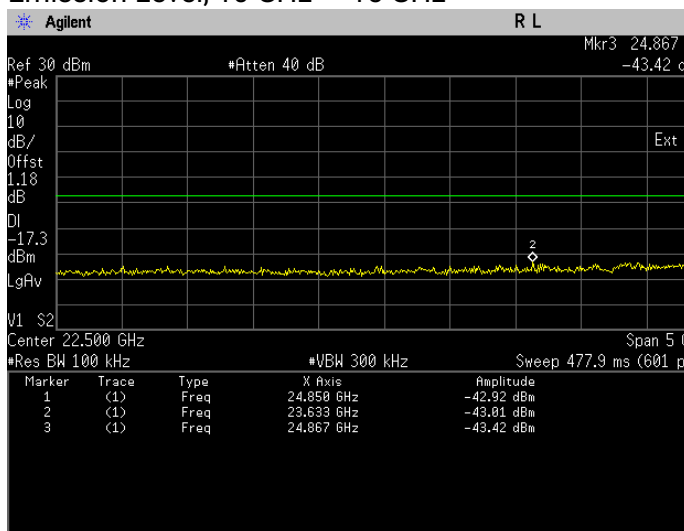
Conducted Emissions. 802.11n, Frequency 2412 MHz Emission Level, 5 GHz -> 10 GHz



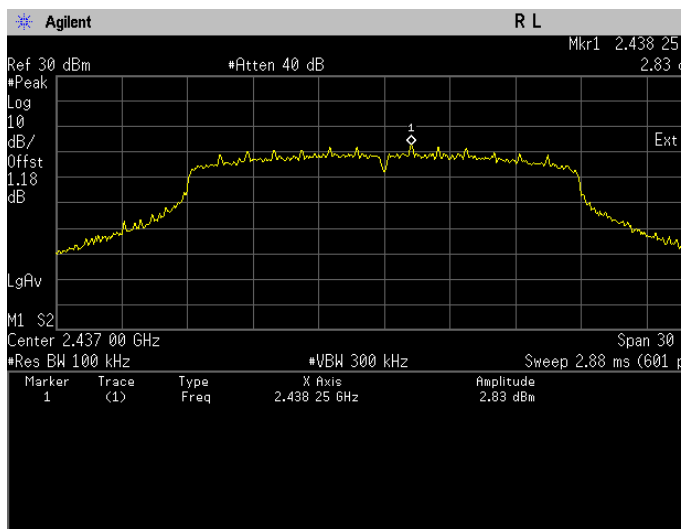
Conducted Emissions. 802.11n, Frequency 2412 MHz Emission Level, 10 GHz -> 15 GHz



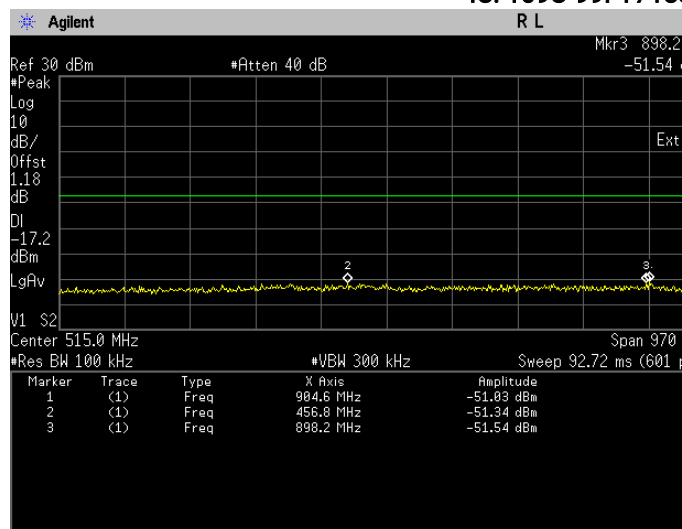
Conducted Emissions. 802.11n, Frequency 2412 MHz Emission Level, 15 GHz -> 20 GHz



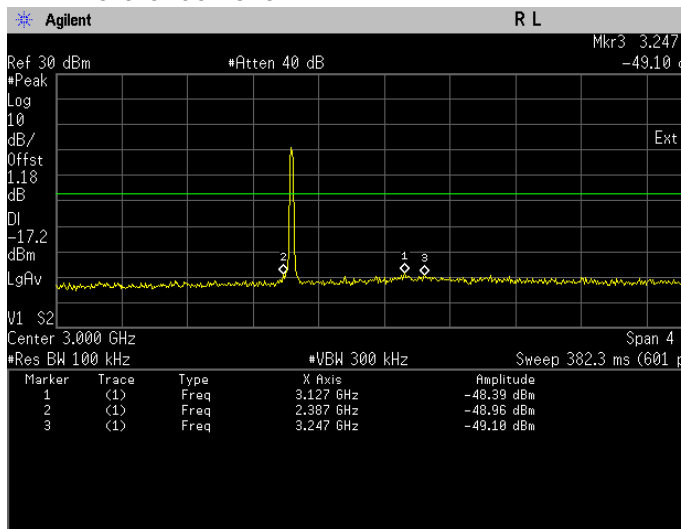
Conducted Emissions. 802.11n, Frequency 2412 MHz Emission Level, 20 GHz -> 25 GHz



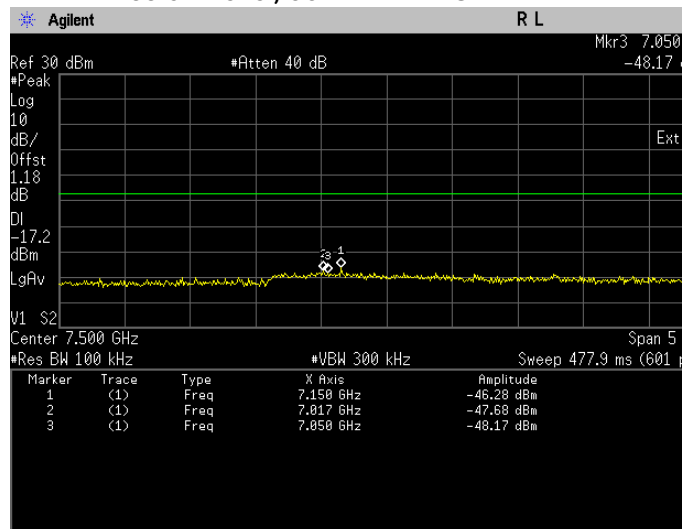
Conducted Emissions. 802.11n, Frequency 2437 MHz Reference Level



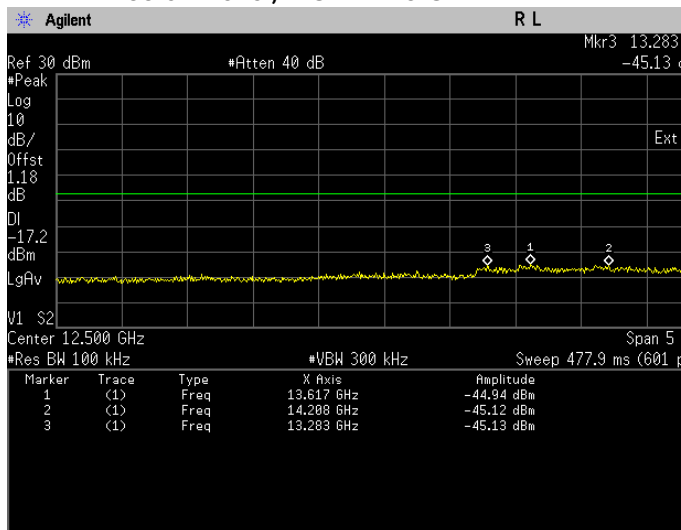
Conducted Emissions. 802.11n, Frequency 2437 MHz Emission Level, 30 MHz -> 1 GHz



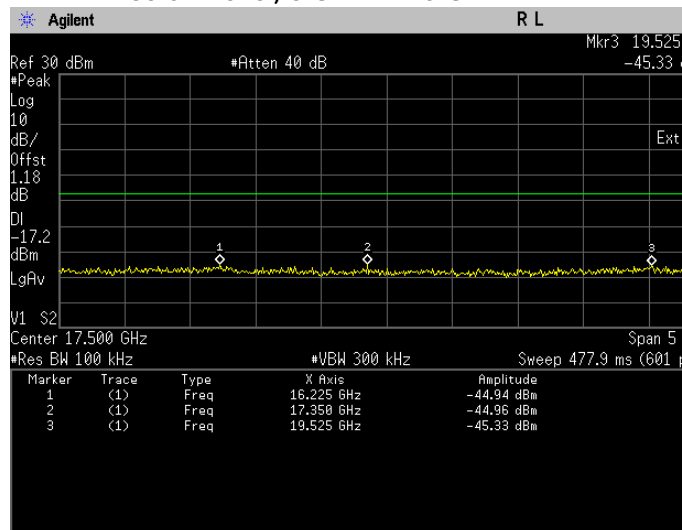
Conducted Emissions. 802.11n, Frequency 2437 MHz Emission Level, 1 GHz -> 5 GHz



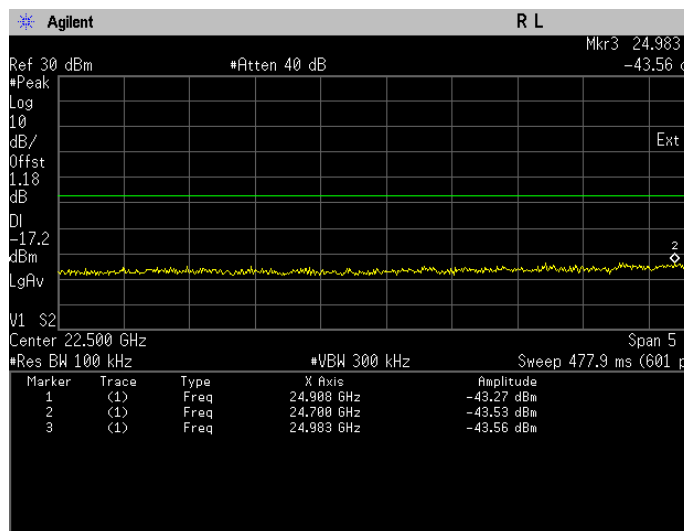
Conducted Emissions. 802.11n, Frequency 2437 MHz Emission Level, 5 GHz -> 10 GHz



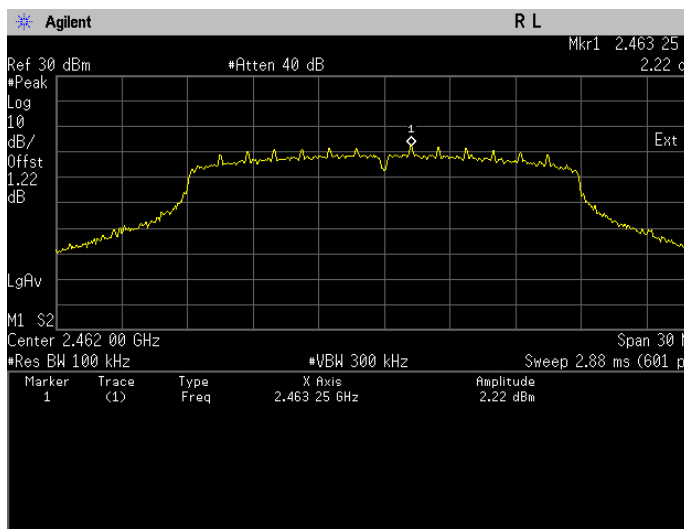
Conducted Emissions. 802.11n, Frequency 2437 MHz Emission Level, 10 GHz -> 15 GHz



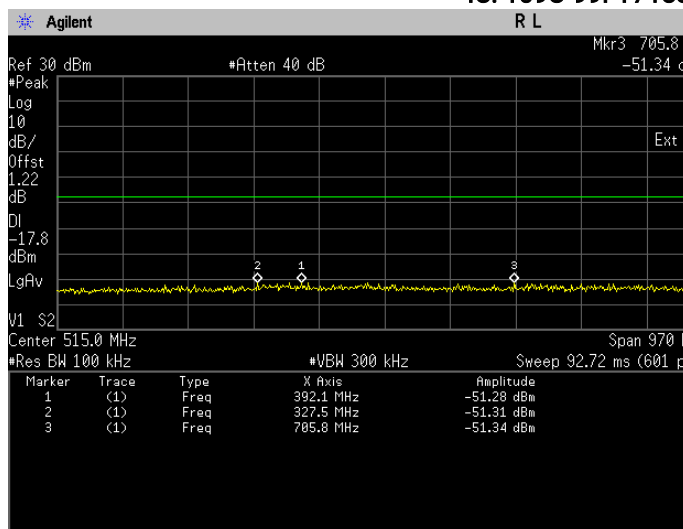
Conducted Emissions. 802.11n, Frequency 2437 MHz Emission Level, 15 GHz -> 20 GHz



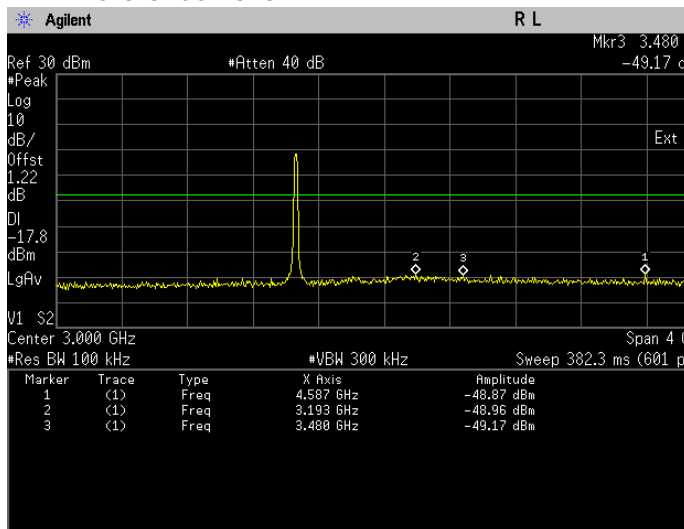
Conducted Emissions. 802.11n, Frequency 2437 MHz Emission Level, 20 GHz -> 25 GHz



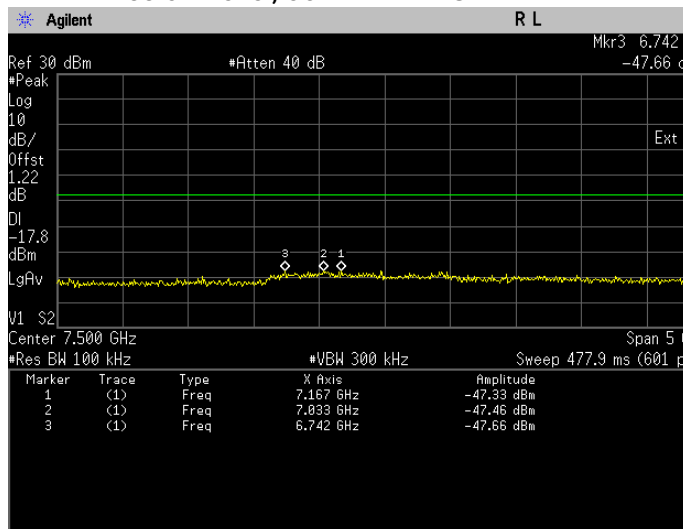
Conducted Emissions. 802.11n, Frequency 2462 MHz Reference Level



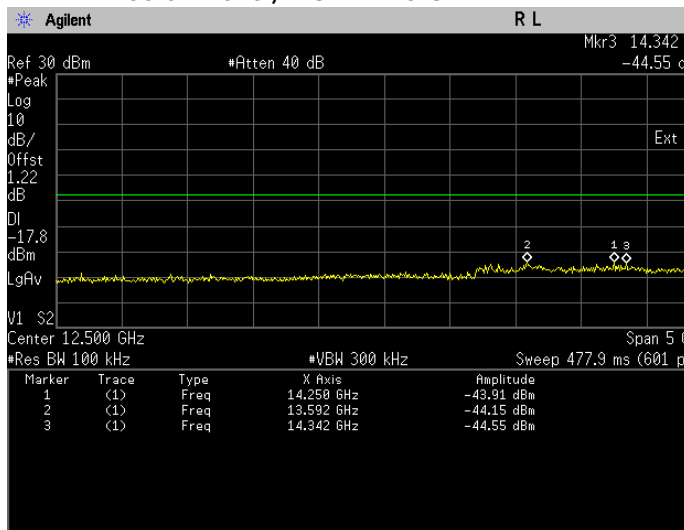
Conducted Emissions. 802.11n, Frequency 2462 MHz Emission Level, 30 MHz -> 1 GHz



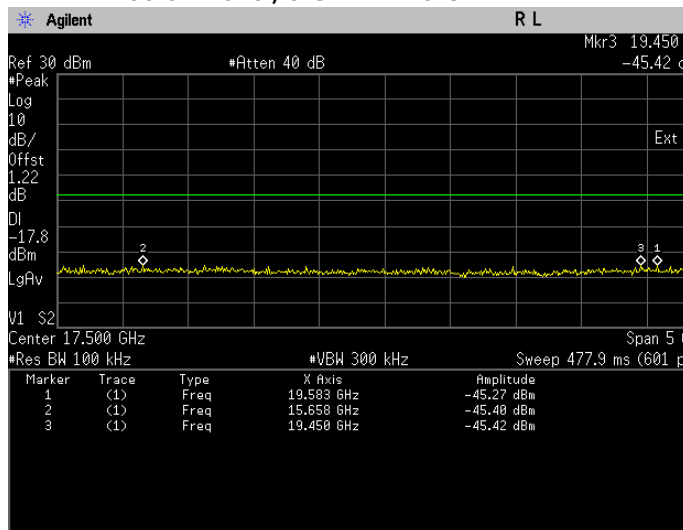
Conducted Emissions. 802.11n, Frequency 2462 MHz Emission Level, 1 GHz -> 5 GHz



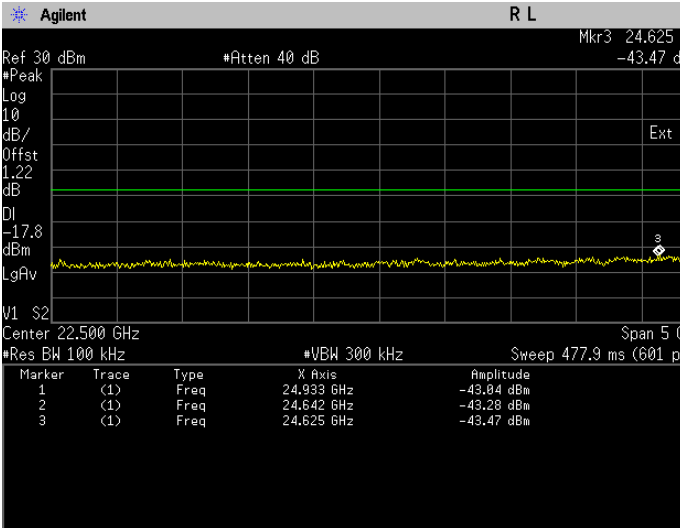
Conducted Emissions. 802.11n, Frequency 2462 MHz Emission Level, 5 GHz -> 10 GHz



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



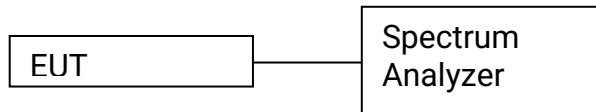
Conducted Emissions. 802.11n, Frequency 2462 MHz Emission Level, 15 GHz -> 20 GHz



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.

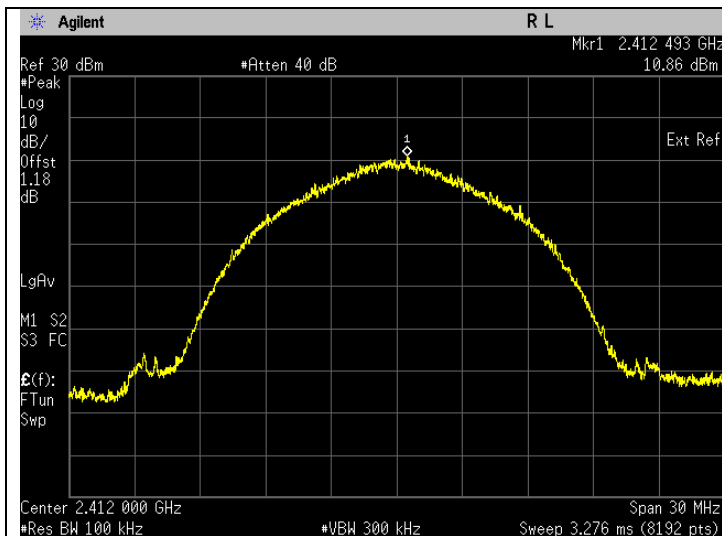
6.6.2. Test Limits:

Normal Condition (25 ° C)
Shall be at least 20 dB below max power. (Peak detector)

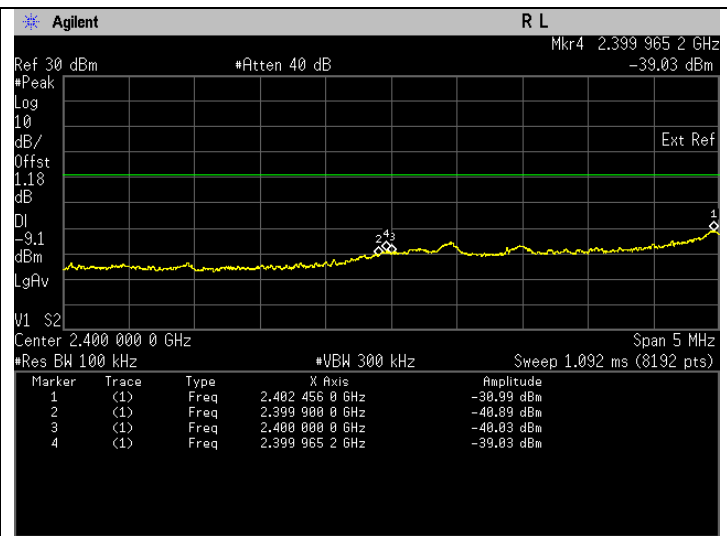
6.6.3. Test Result

802.11b

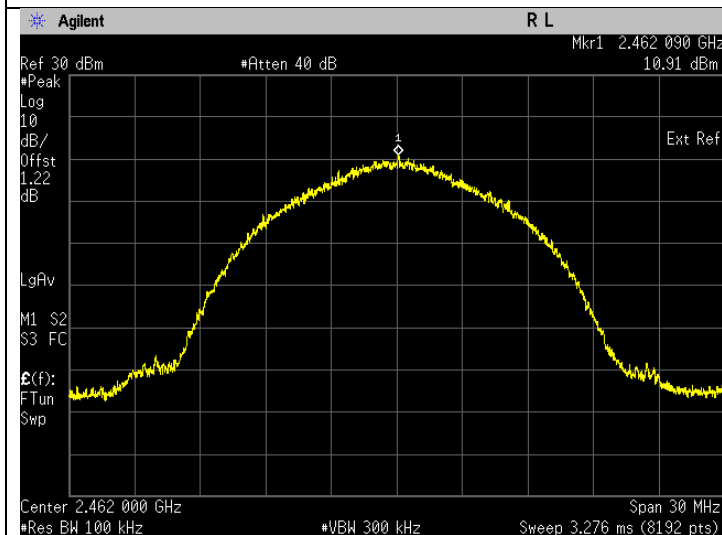
Test Conditions				Test Frequency	Results		
Standard	Modulation Type	Modulation Technology	Data Rate (mbps)	Tx (MHz)	Frequencies (MHz)	Power (dBm)	Status
802.11b	DSSS	QPSK	11	2412	2399.97	-39.03	Pass
802.11b	DSSS	QPSK	11	2462	2483.51	-47.28	Pass



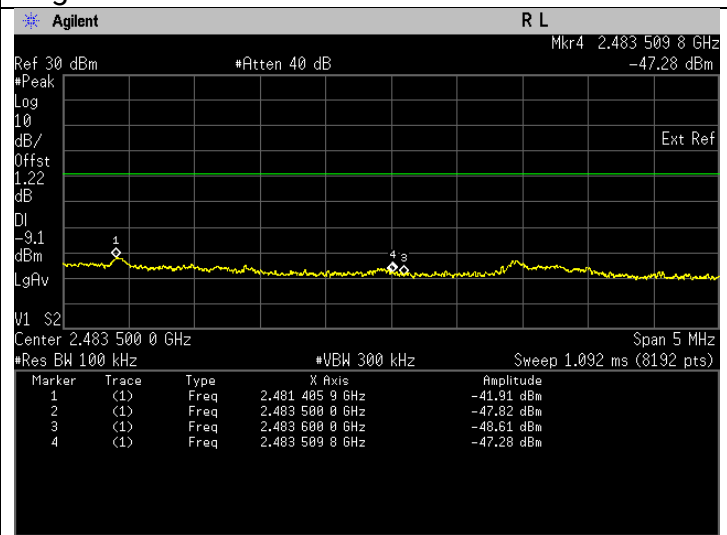
Band Edge. 802.11b Frequency 2412 MHz Reference Level



Band Edge. 802.11b Frequency 2412 MHz Band Edge



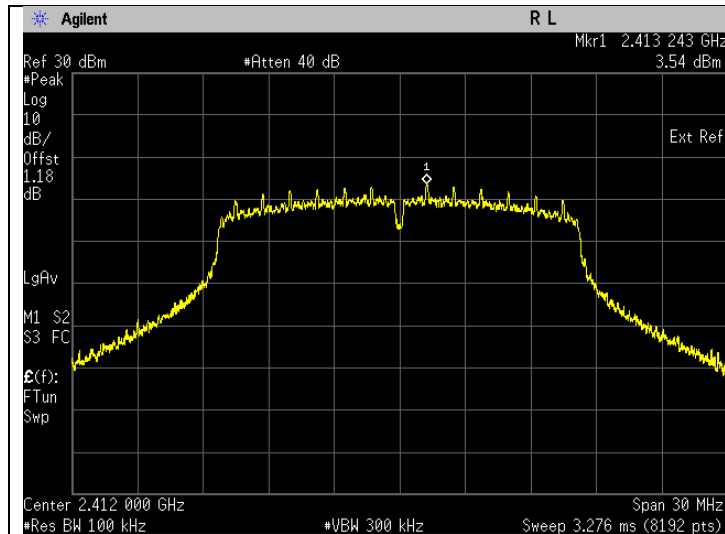
Band Edge. 802.11b Frequency 2462 MHz Reference Level



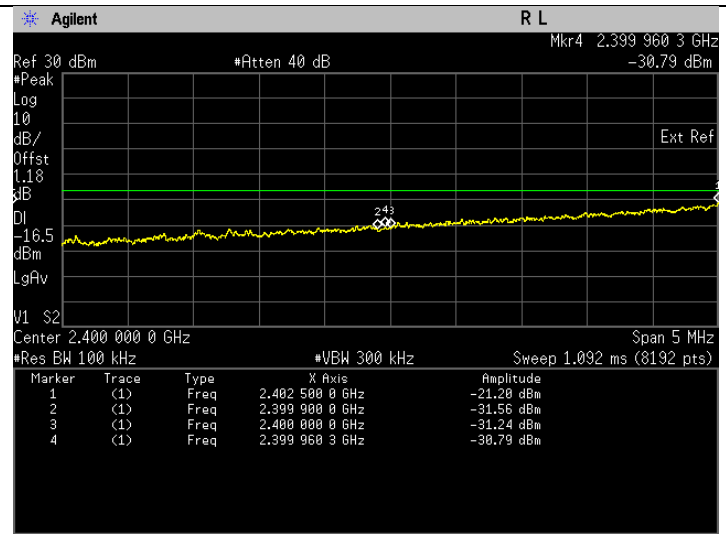
Band Edge. 802.11b Frequency 2462 MHz Band Edge

802.11g

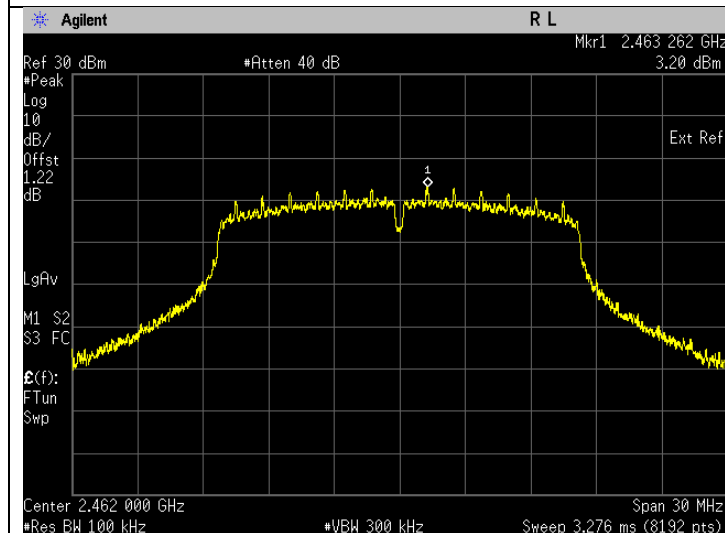
Test Conditions				Test Frequency	Results		
Standard	Modulation Type	Modulation Technology	Data Rate (mbps)	Tx (MHz)	Frequencies (MHz)	Power (dBm)	Status
802.11g	OFDM	BPSK	6	2412	2399.96	-30.79	Pass
802.11g	OFDM	BPSK	6	2462	2483.53	-42.70	Pass



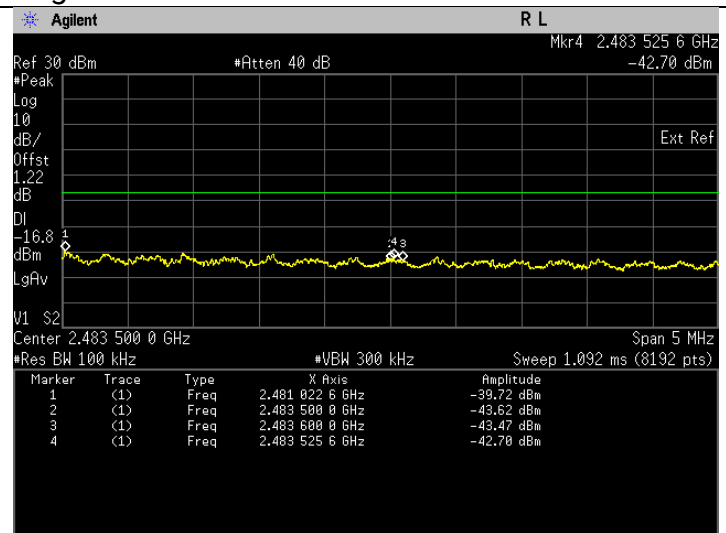
Band Edge. 802.11g Frequency 2412 MHz Reference Level



Band Edge. 802.11g Frequency 2412 MHz Band Edge



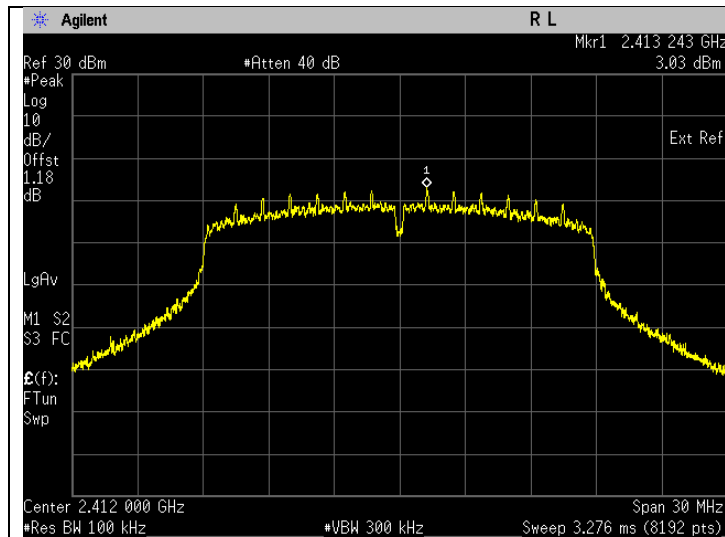
Band Edge. 802.11g Frequency 2462 MHz Reference Level



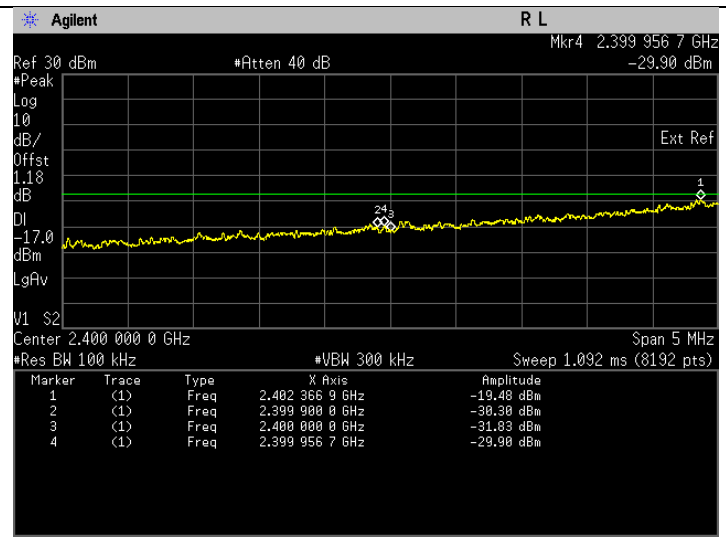
Band Edge. 802.11g Frequency 2462 MHz Band Edge

802.11n (HT20)

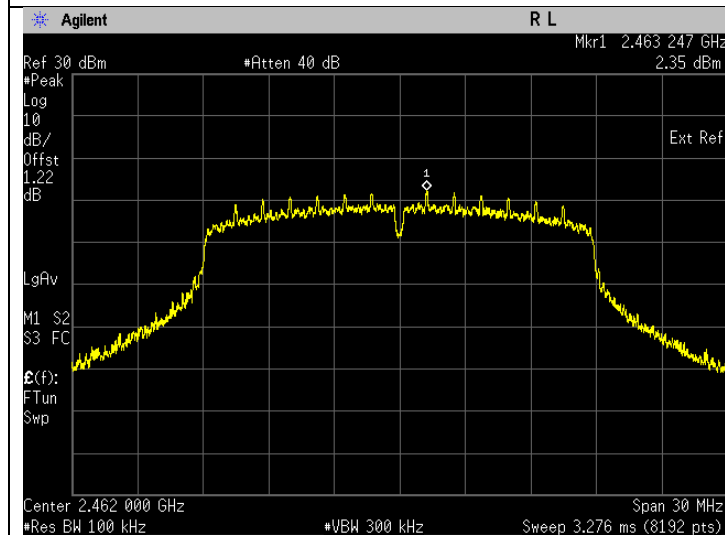
Test Conditions				Test Frequency	Results		
Standard	Modulation Type	Modulation Technology	Data Rate (mbps)	Tx (MHz)	Frequencies (MHz)	Power (dBm)	Status
802.11n	OFDM	BPSK	6.5	2412	2399.96	-29.90	Pass
802.11n	OFDM	BPSK	6.5	2462	2483.55	-42.71	Pass



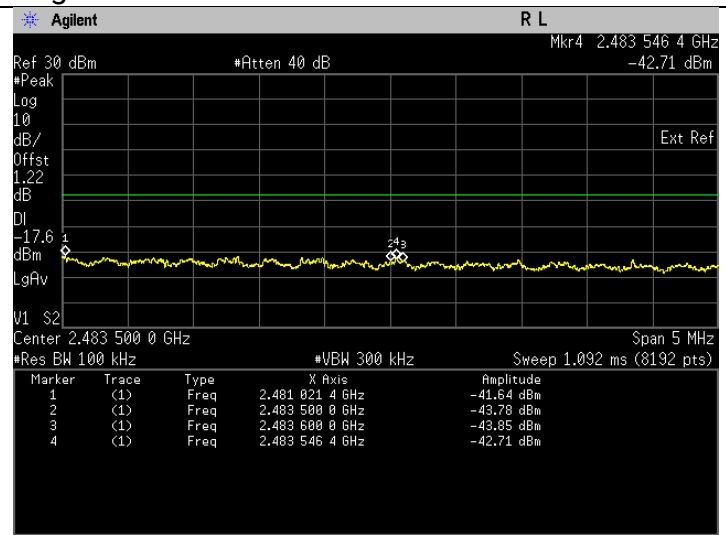
Band Edge. 802.11n Frequency 2412 MHz
Reference Level



Band Edge. 802.11n Frequency 2412 MHz Band
Edge



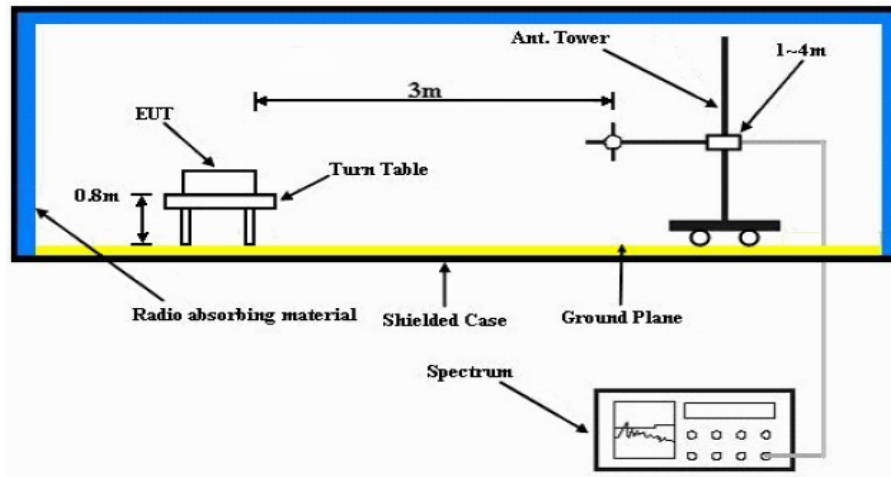
Band Edge. 802.11n Frequency 2462 MHz
Reference Level



Band Edge. 802.11n Frequency 2462 MHz Band
Edge

6.7. Radiated Emission within restricted Bands

6.7.1. Test Setup



- The EUT is placed on the top of a rotating table 0.8m above the ground ($<1\text{GHz}$) and 1.5m above the ground ($>1\text{GHz}$) at a 3m semi-anechoic chamber. The table is rotated 360 degrees to determine the position of the highest radiation.
- The EUT is set 3m away from the interference-receiving antenna, which is mounted on the top of a variable-height antenna tower.
- 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.
- 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.
- The test-receiver system is set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
- 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:

- The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120 kHz for Quasi-peak detection at frequency below 1GHz.
- 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.
- 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:

- The lower limit shall apply at the transition frequencies.
- Emission level (dBuV/m) = 20 log Emission level (uV/m).
- 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.

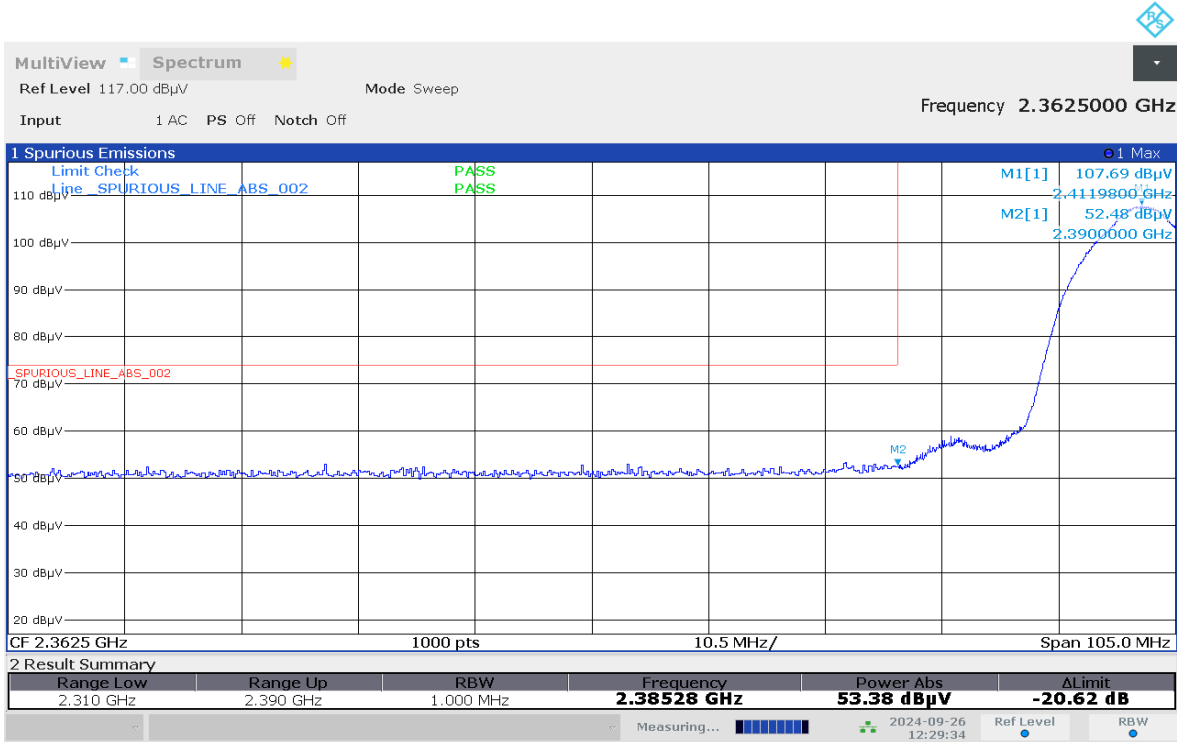
Model Number: B20CJMBE2AN S/N: 663EAS0005 EMC SR ID#: 0572N00-EMC-00013
 Battery: PMNN4578A Softpot power (17dBm) Accessory: NA
 Test Channel: Low Test Frequency: 2412.0000 MHz Test Standard: ANSI C63.10-2013
 Worst Case Plane: Z-Plane (802.11b)

[illegible]

Remarks: Pass Result	Marginal Result	Fail Result
-------------------------	-----------------	-------------

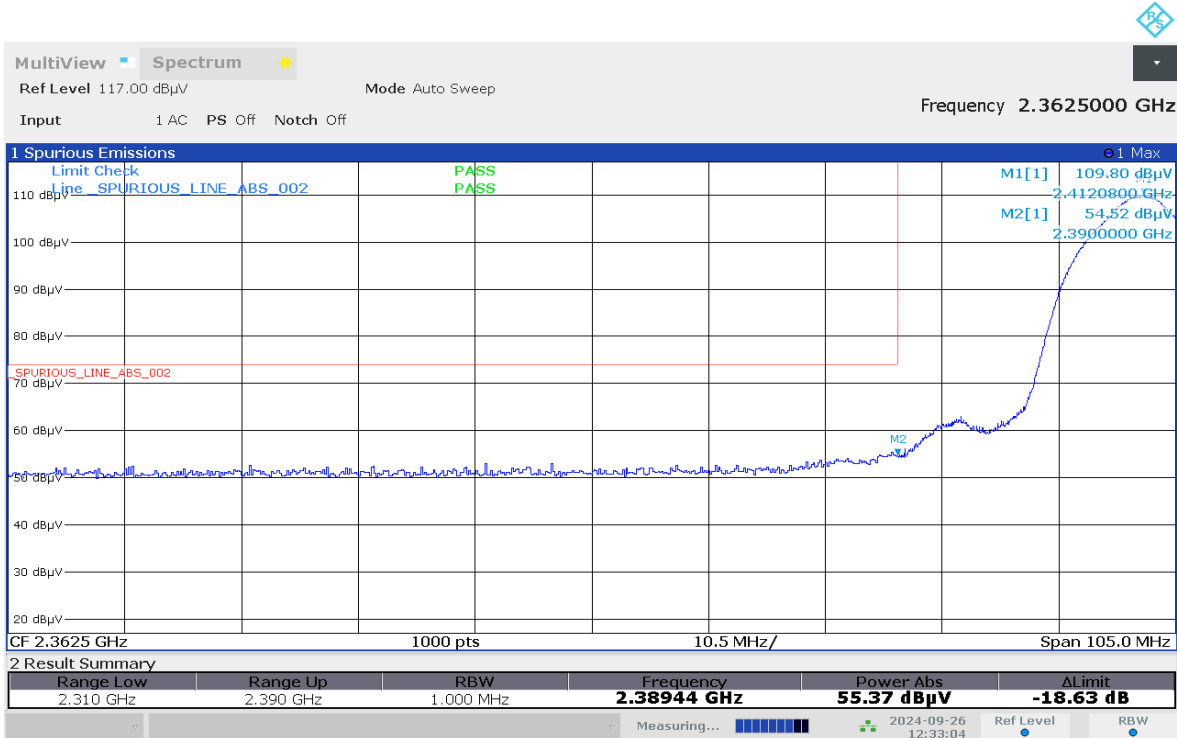
Humidity (%): 67.9
Test Date: Fri, 27 Sep, 2024

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



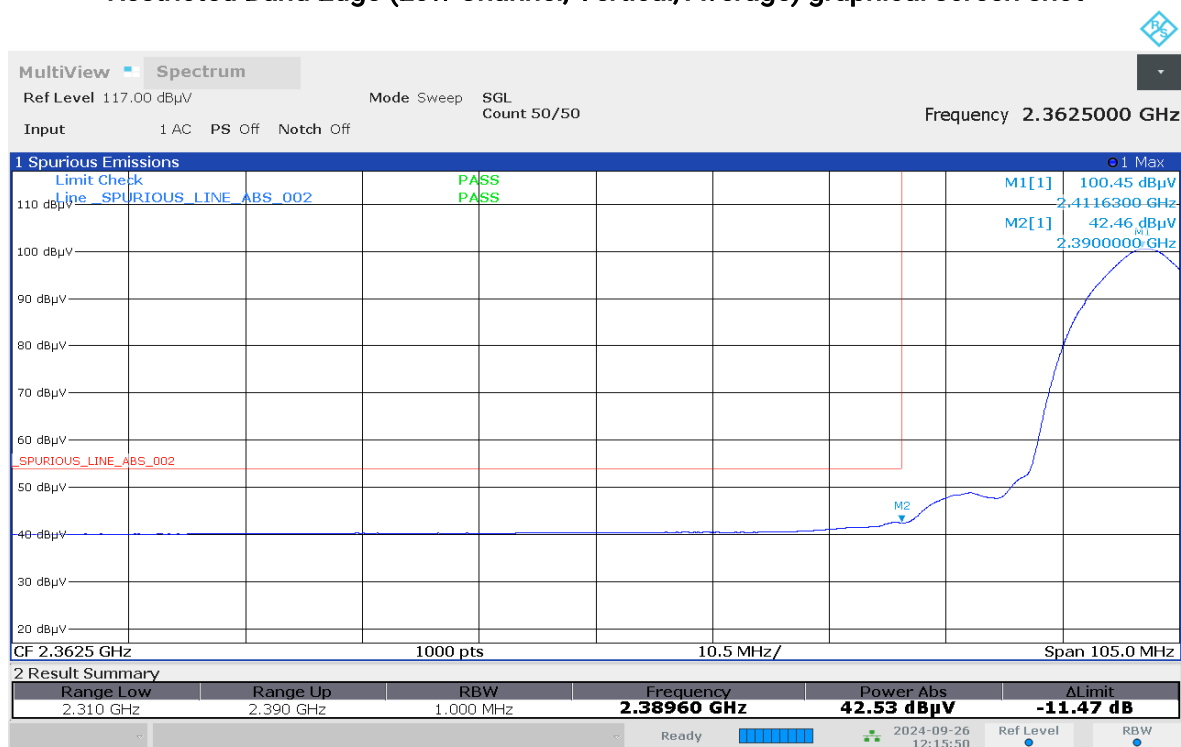
12:29:35 PM 09/26/2024

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



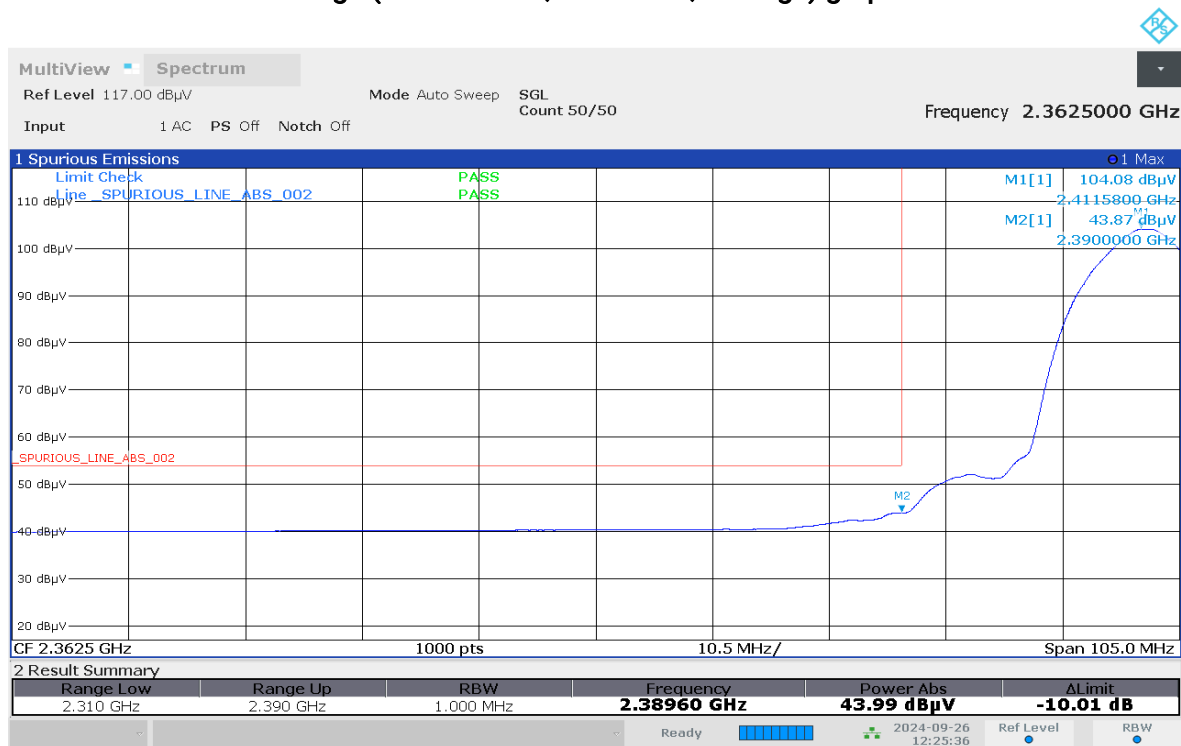
12:33:04 PM 09/26/2024

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



12:15:51 PM 09/26/2024

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



12:25:37 PM 09/26/2024

Model Number: B20CJMBE2AN Test: WIFI SAC Restricted Band Edge S/N: 663EAS0005 EMC SR ID#: 0572N00-EMC-00013
 Battery: PMNN4578A Softpot power (17dBm) Accessory: NA
 Test Channel: High Test Frequency: 2462.0000 MHz Test Standard: ANSI C63.10-2013
 Worst Case Plane: Z-Plane (802.11b)

Restricted Band Edge (High Channel) tabular data

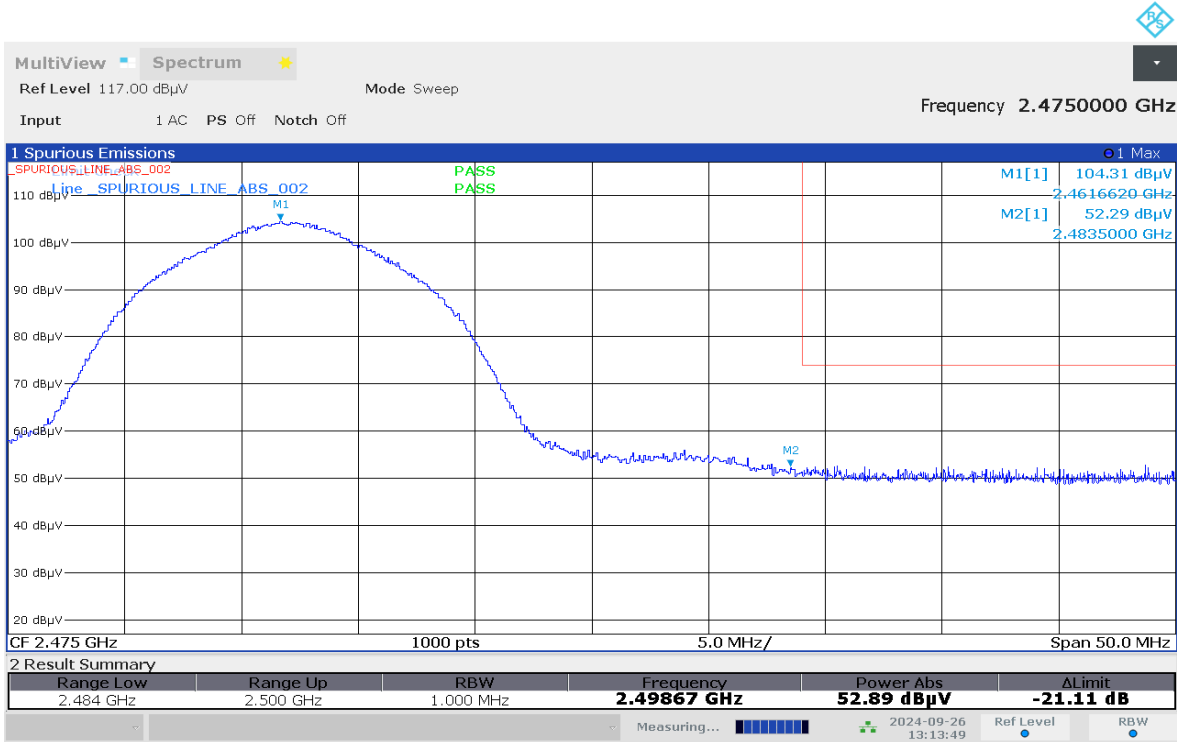
[illegible]

Remarks: Pass Result	Marginal Result	Fail Result
-------------------------	-----------------	-------------

Temperature (degC): 22.4
Test Performed by: Nazrin & Fuad
System MU: 5.84dB

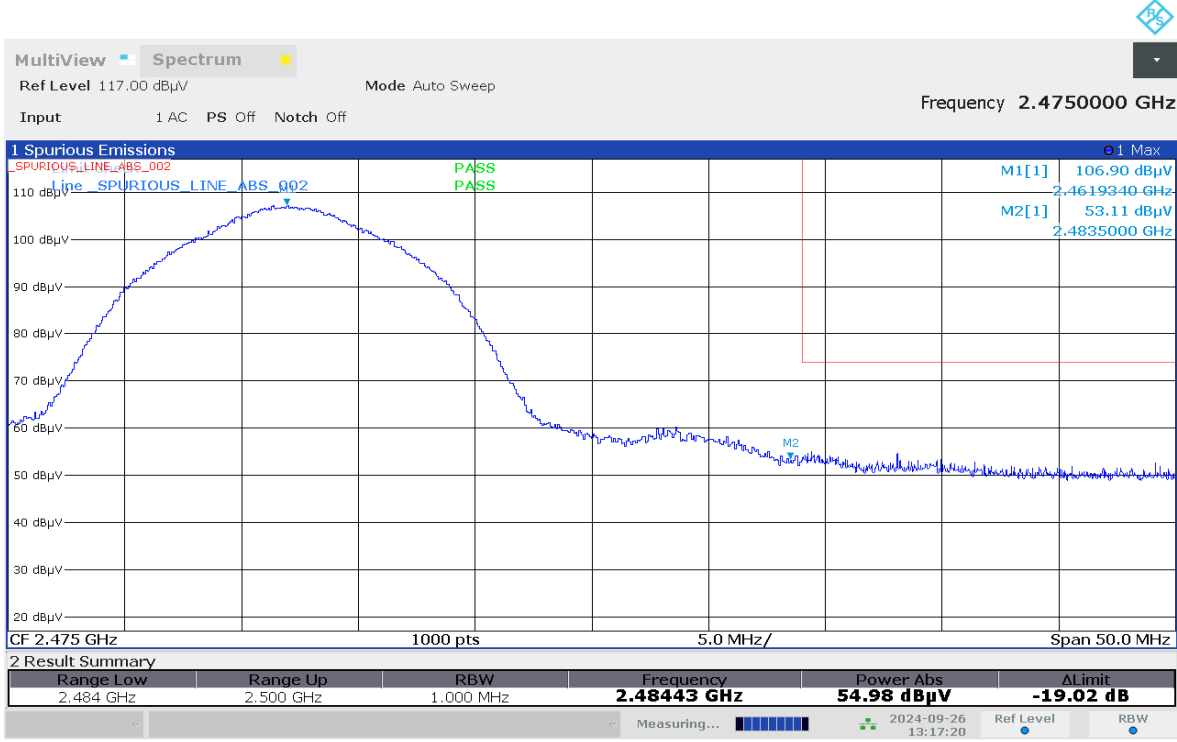
Humidity (%): 67.9
Test Date: Fri, 27 Sep, 2024

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



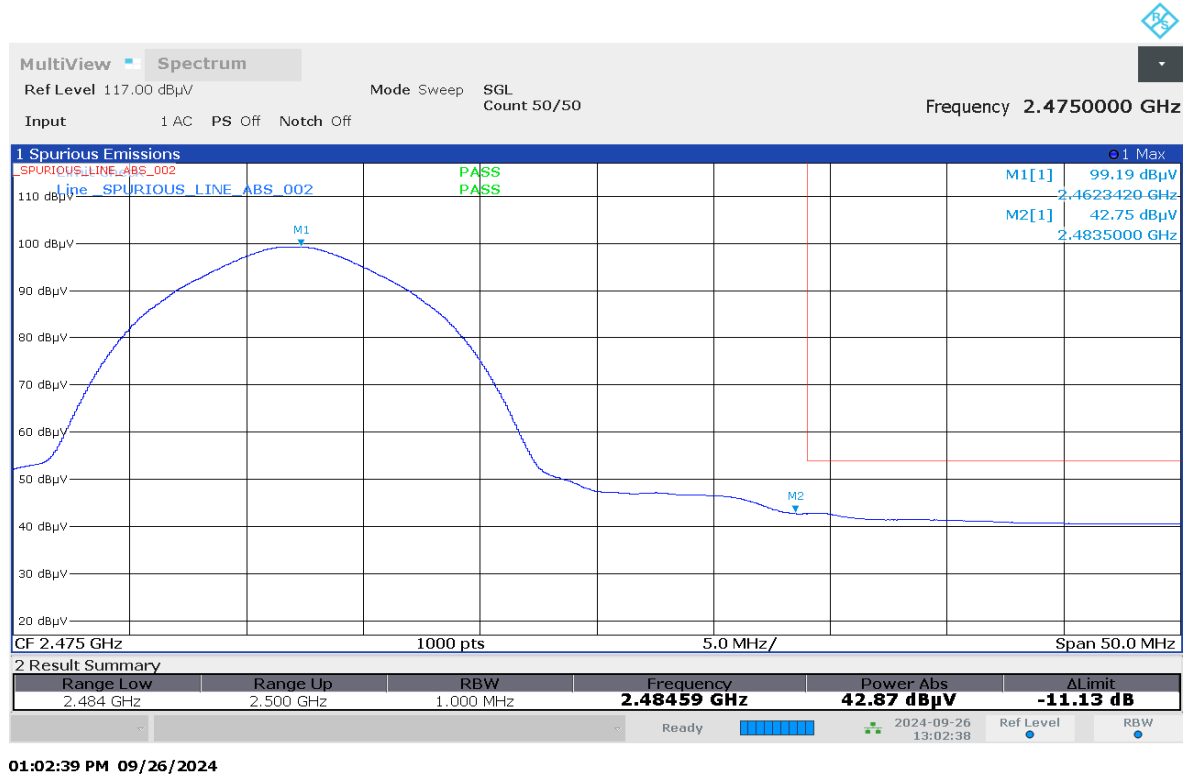
01:13:50 PM 09/26/2024

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

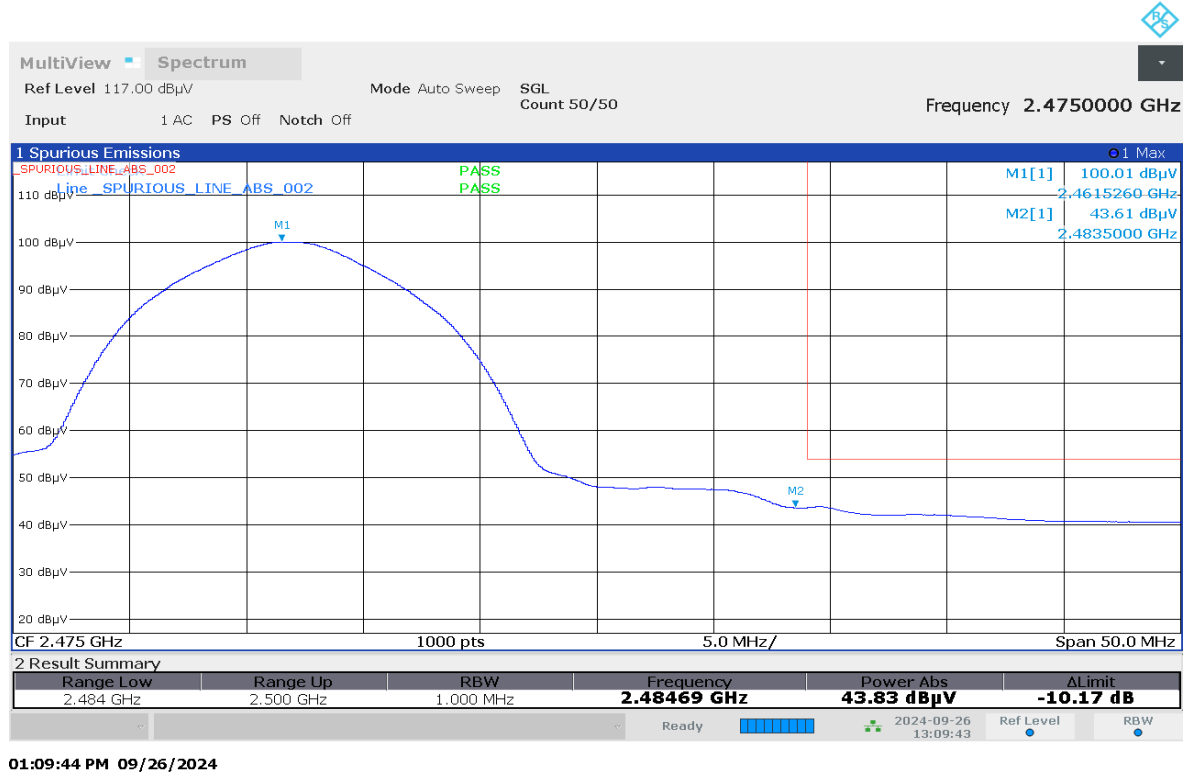


01:17:21 PM 09/26/2024

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



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



Model Number: B20CJMBE2AN		Test: WIFI SAC Restricted Band Edge		EMC SR ID#: 0572N00-EMC-00013	
Battery: PMNN4578A		S/N: 663EAS0005		Accessory: NA	
Test Channel: Low		Softpot power (13dBm)		Test Standard: ANSI C63.10-2013	
Test Frequency: 2412.0000 MHz		Worst Case Plane: Z-Plane (802.11g)			

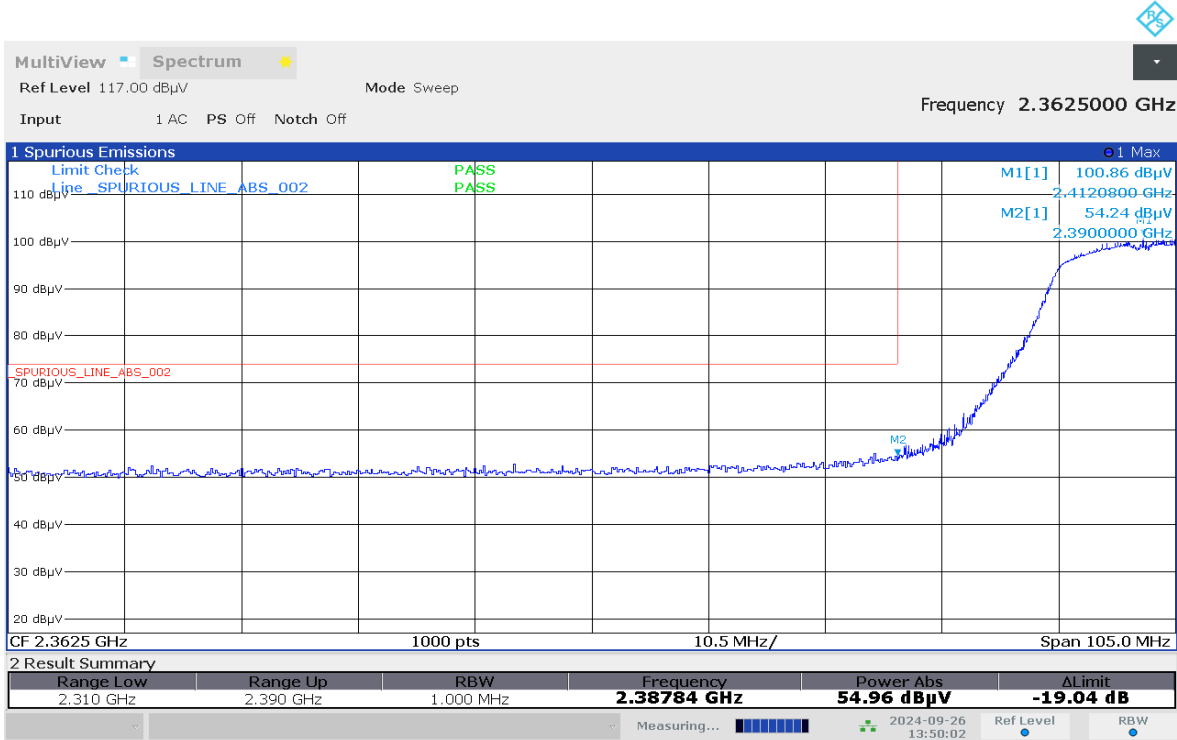
[illegible]

Remarks: Pass Result	Marginal Result	Fail Result
-------------------------	-----------------	-------------

Temperature (degC): 22.4
Test Performed by: Nazrin & Fuad
System MU: 5.84dB

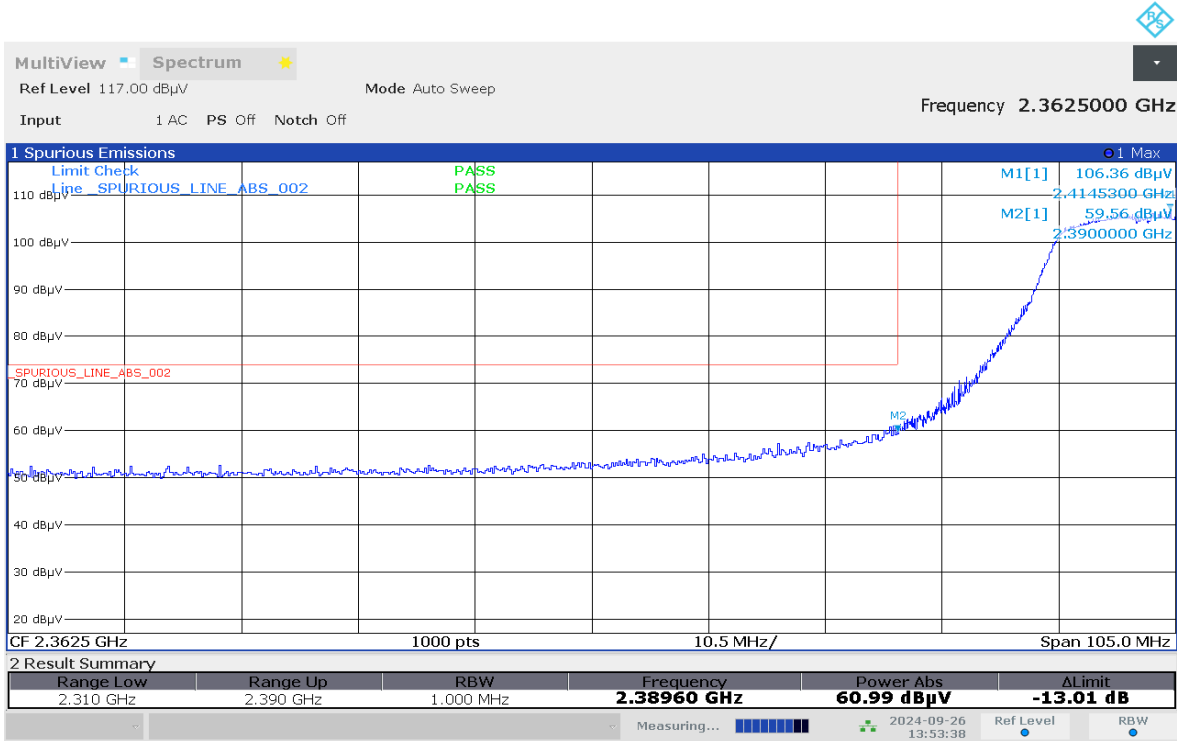
Humidity (%): 67.9
Test Date: Fri, 27 Sep, 2024

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



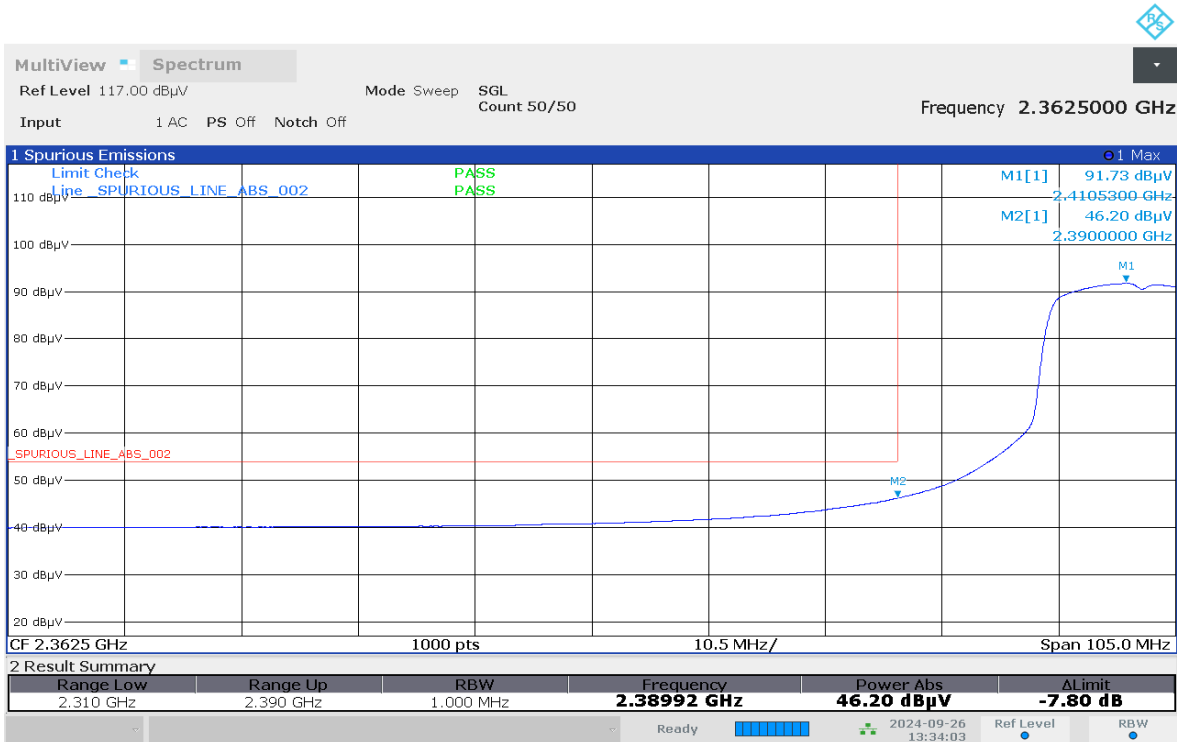
01:50:03 PM 09/26/2024

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



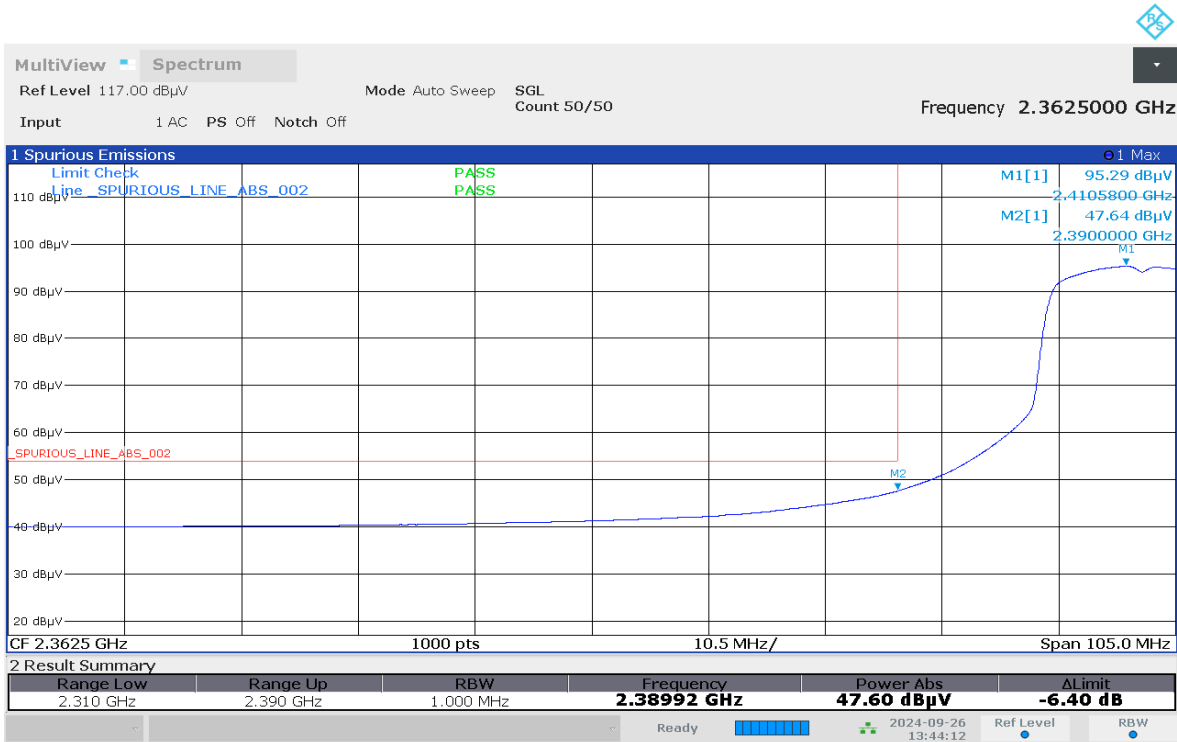
01:53:39 PM 09/26/2024

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



01:34:04 PM 09/26/2024

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



01:44:12 PM 09/26/2024

Model Number: B20CJMBE2AN Test: WIFI SAC Restricted Band Edge S/N: 663EAS0005 EMC SR ID#: 0572N00-EMC-00013
Battery: PMNN4578A Softpot power (13dBm) Accessory: NA
Test Channel: High Test Frequency: 2462.0000 MHz Test Standard: ANSI C63.10-2013
Worst Case Plane: Z-Plane (802.11g)

Restricted Band Edge (High Channel) tabular data

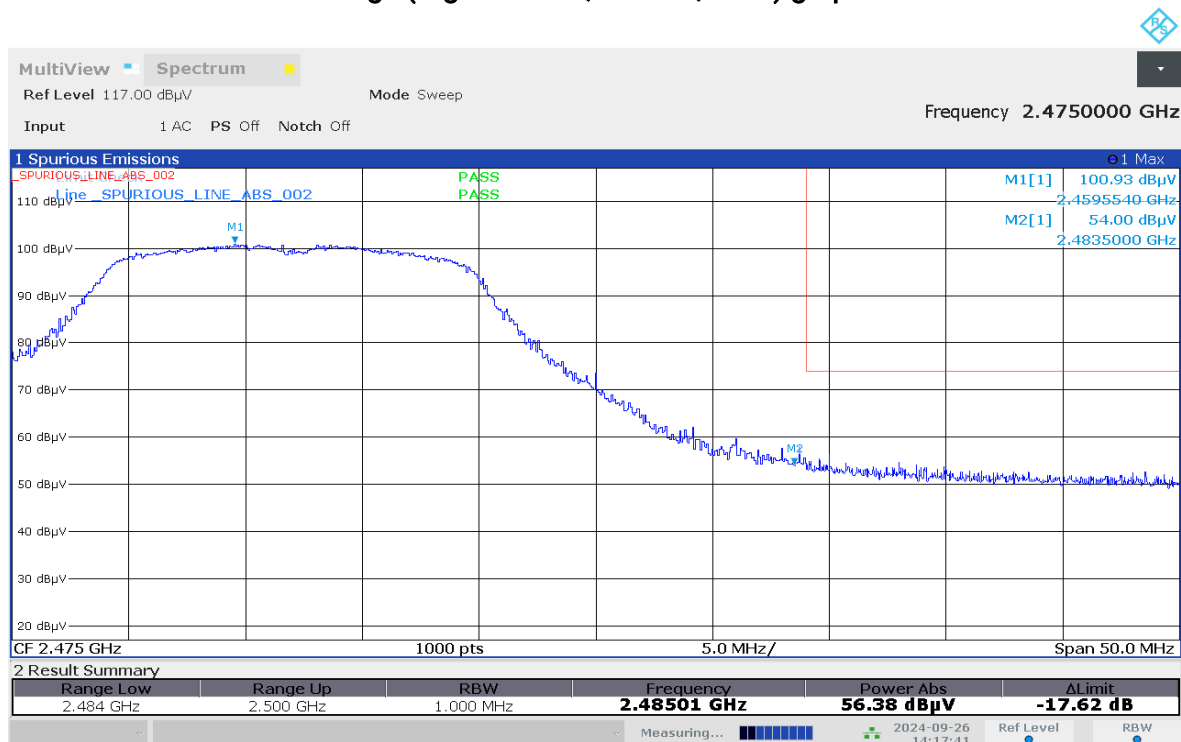
[illegible]

Remarks: Pass Result	Marginal Result	Fail Result
-------------------------	-----------------	-------------

Temperature (degC): 22.4
Test Performed by: Nazrin & Fuad
System MU: 5.84dB

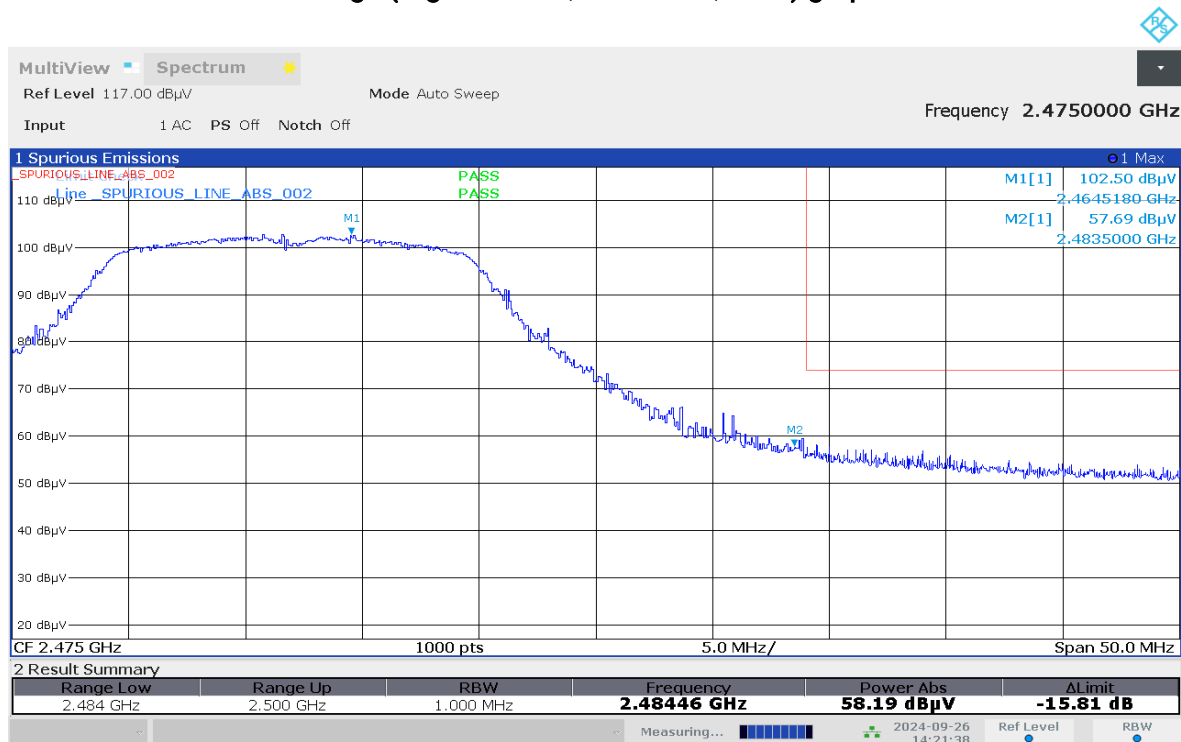
Humidity (%): 67.9
Test Date: Fri, 27 Sep, 2024

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



02:17:42 PM 09/26/2024

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



02:21:38 PM 09/26/2024



Model Number: B20CJMBE2AN S/N: 663EAS0005 EMC SR ID#: 0572N00-EMC-00013
 Battery: PMNN4578A Softpot power (12dBm) Accessory: NA
 Test Channel: Low Test Frequency: 2412.0000 MHz Test Standard: ANSI C63.10-2013
 Worst Case Plane: Z-Plane (802.11n20)

Restricted Band Edge (Low Channel) tabular data

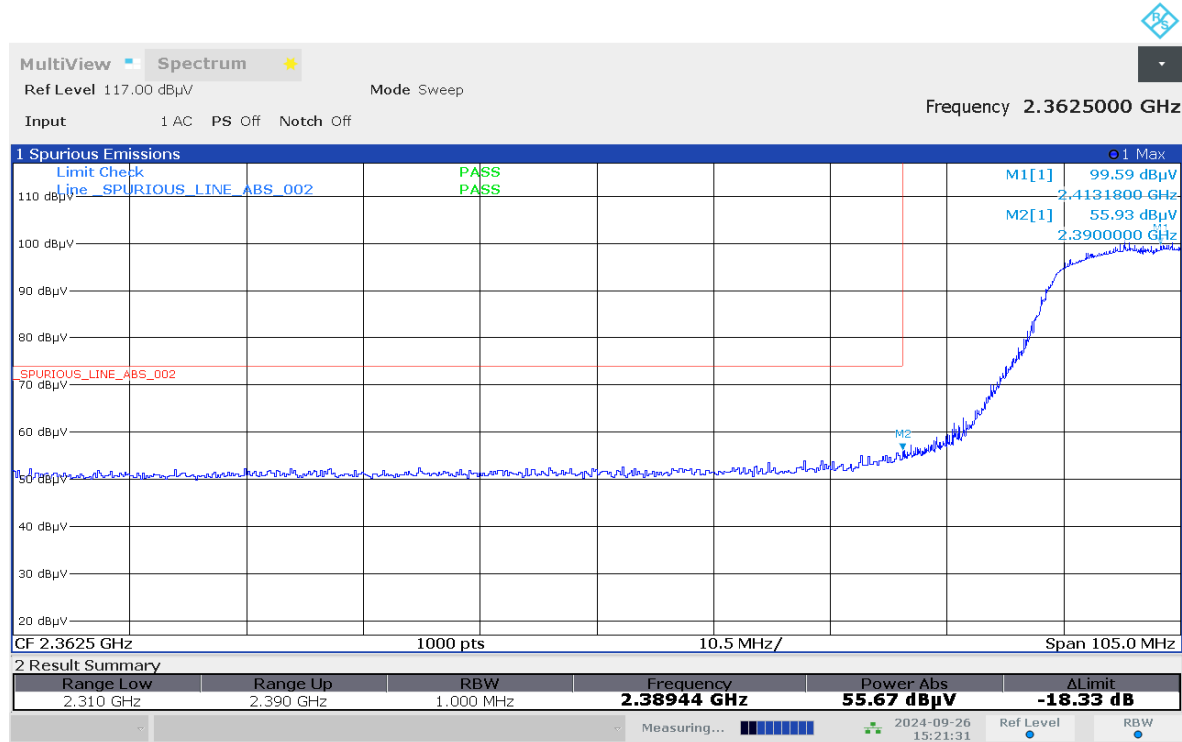
[illegible]

Remarks: Pass Result	Marginal Result	Fail Result
-------------------------	-----------------	-------------

Temperature (degC): 22.4
Test Performed by: Nazrin & Fuad
System MU: 5.84dB

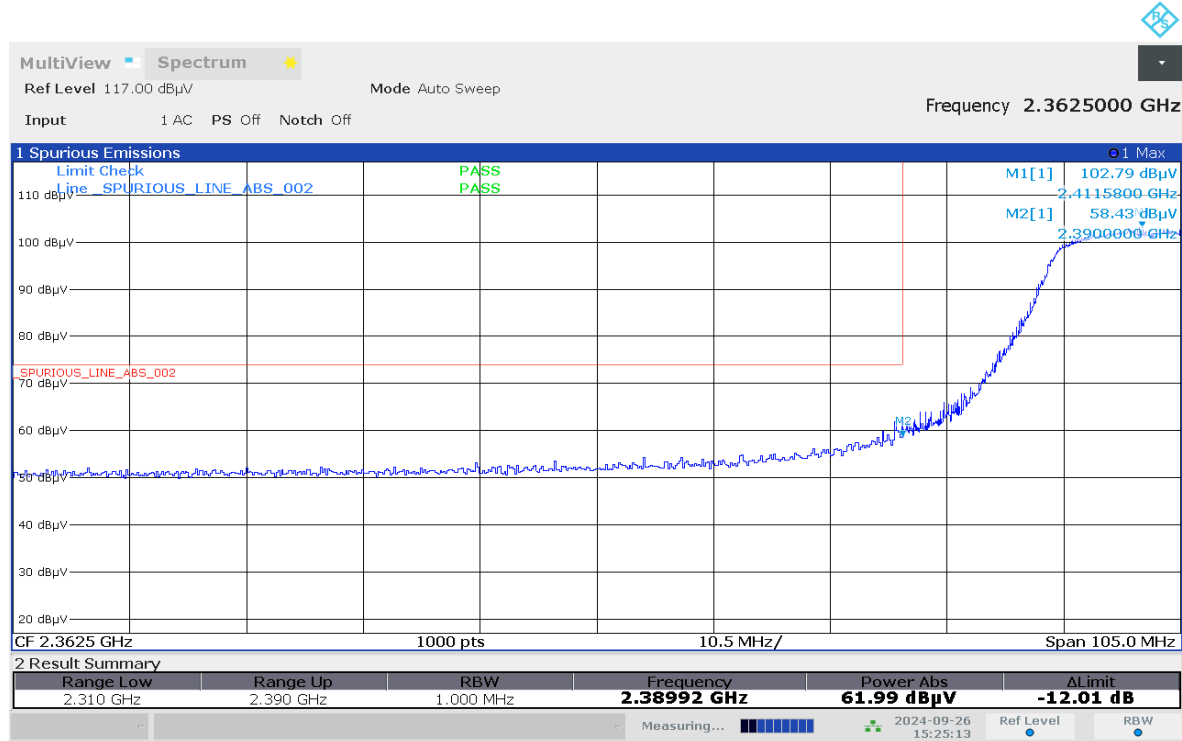
Humidity (%): 67.9
Test Date: Fri, 27 Sep, 2024

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



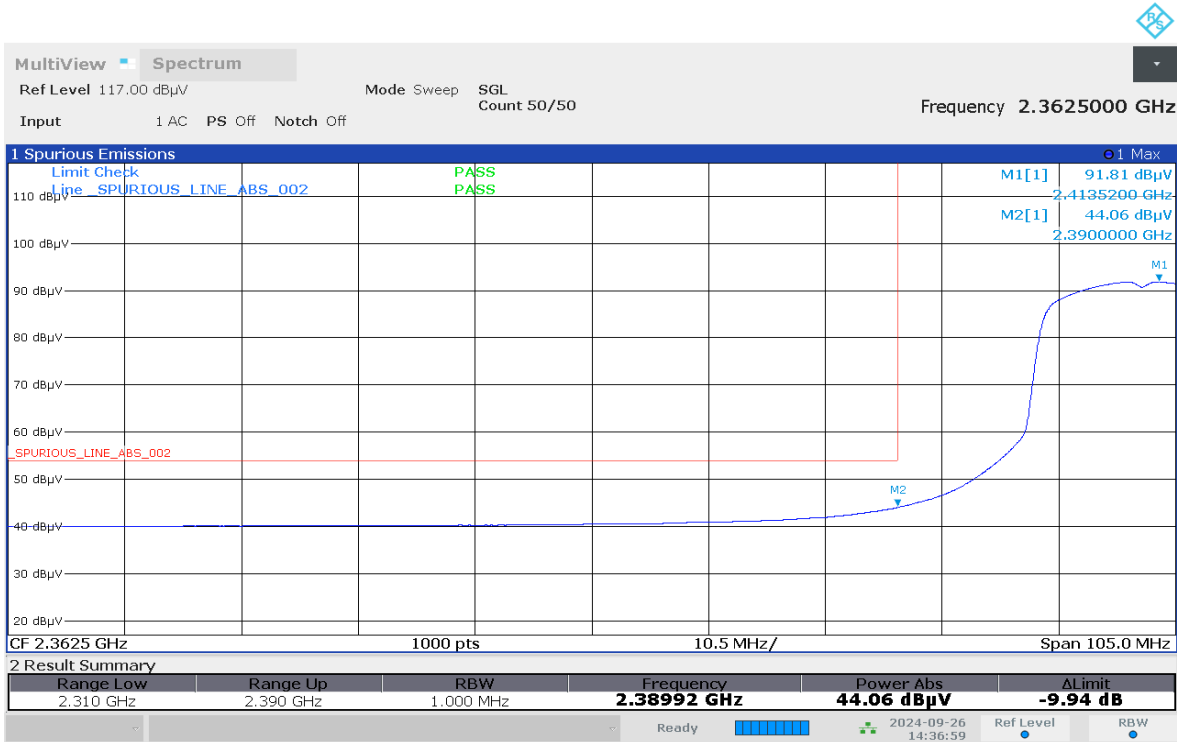
03:21:32 PM 09/26/2024

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



03:25:14 PM 09/26/2024

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



02:37:00 PM 09/26/2024

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



02:46:55 PM 09/26/2024

Model Number: B20CJMBE2AN S/N: 663EAS0005 EMC SR ID#: 0572N00-EMC-00013
 Battery: PMNN4578A Softpot power (12dBm) Accessory: NA
 Test Channel: High Test Frequency: 2462.0000 MHz Test Standard: ANSI C63.10-2013
 Worst Case Plane: Z-Plane (802.11n20)

Restricted Band Edge (High Channel) tabular data

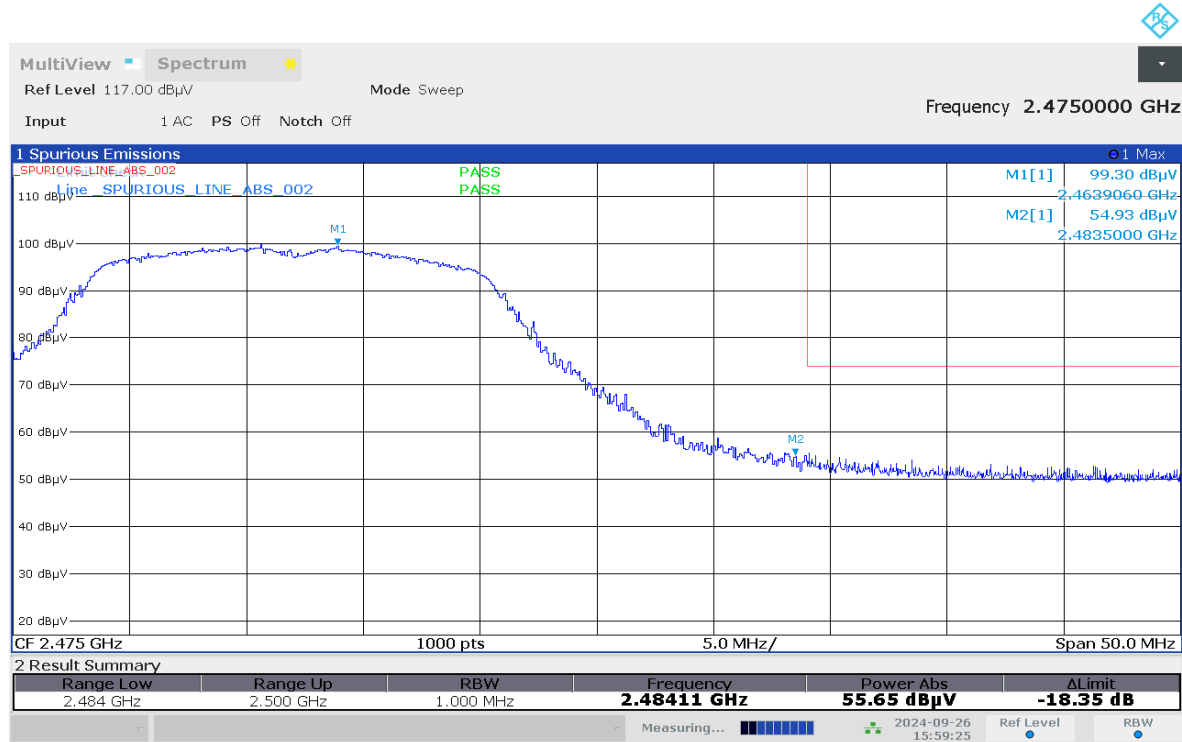
[illegible]

Remarks: Pass Result	Marginal Result	Fail Result
-------------------------	-----------------	-------------

Temperature (degC): 22.4
Test Performed by: Nazrin & Fuad
System MU: 5.84dB

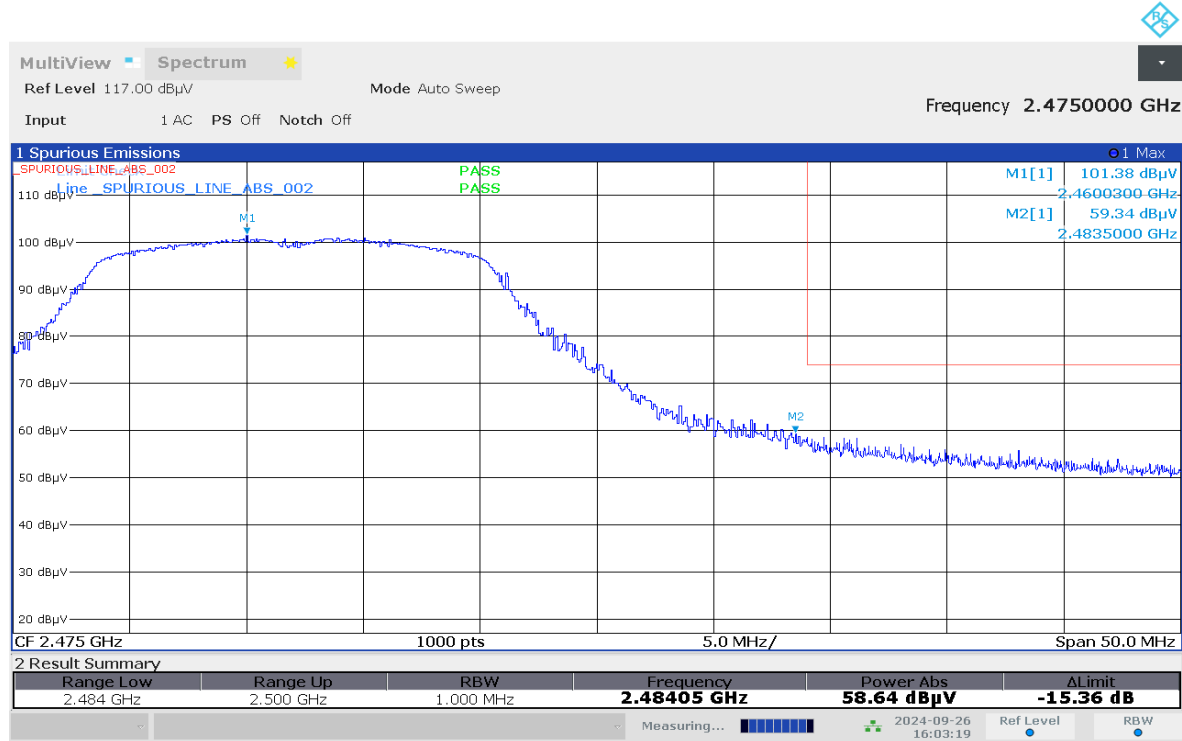
Humidity (%): 67.9
Test Date: Fri, 27 Sep, 2024

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



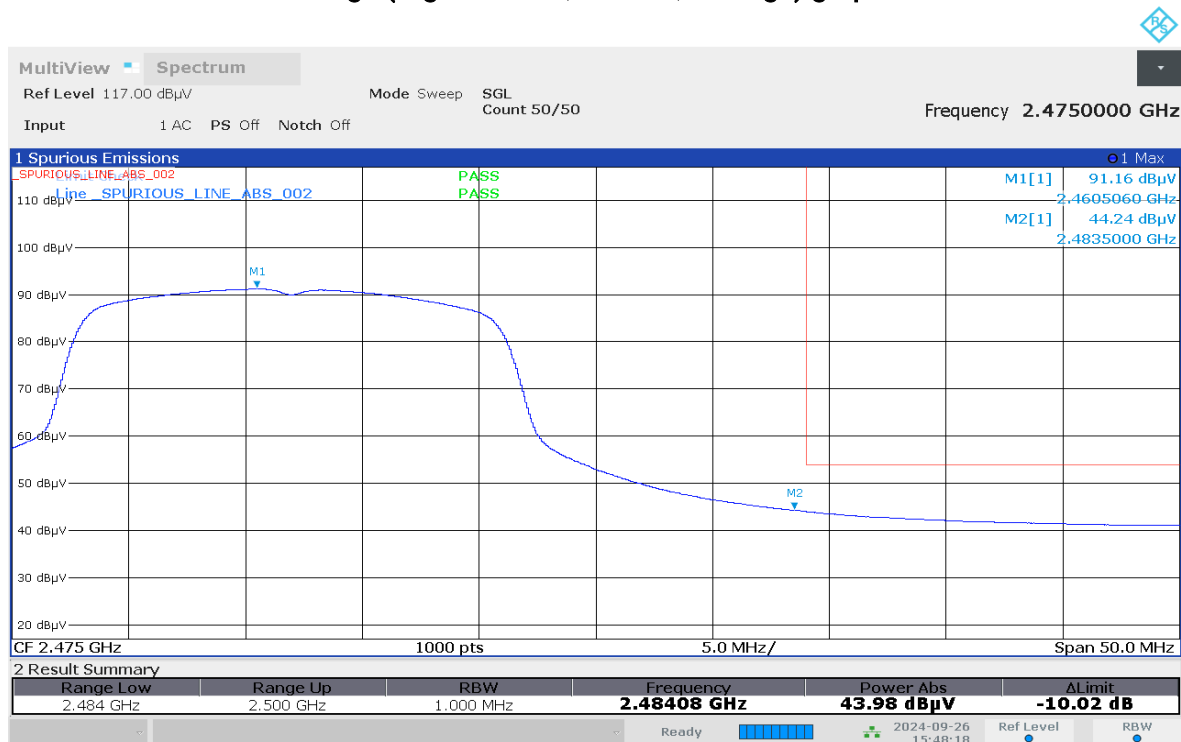
03:59:25 PM 09/26/2024

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



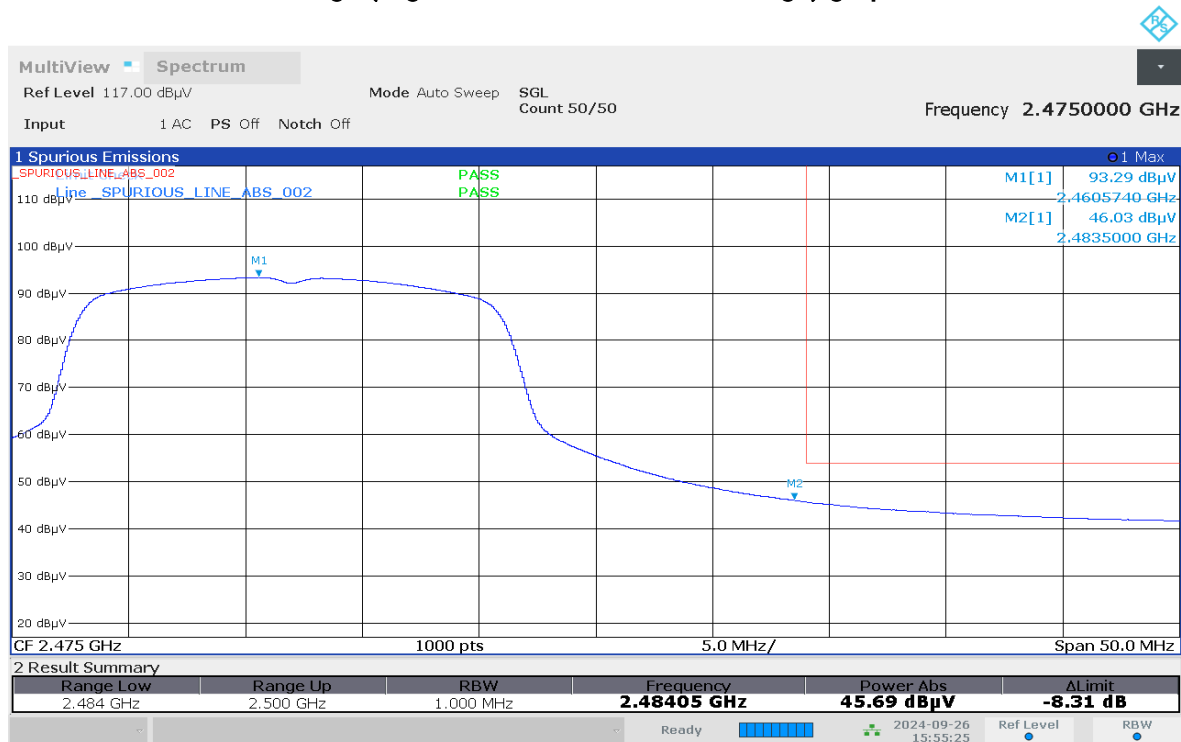
04:03:19 PM 09/26/2024

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



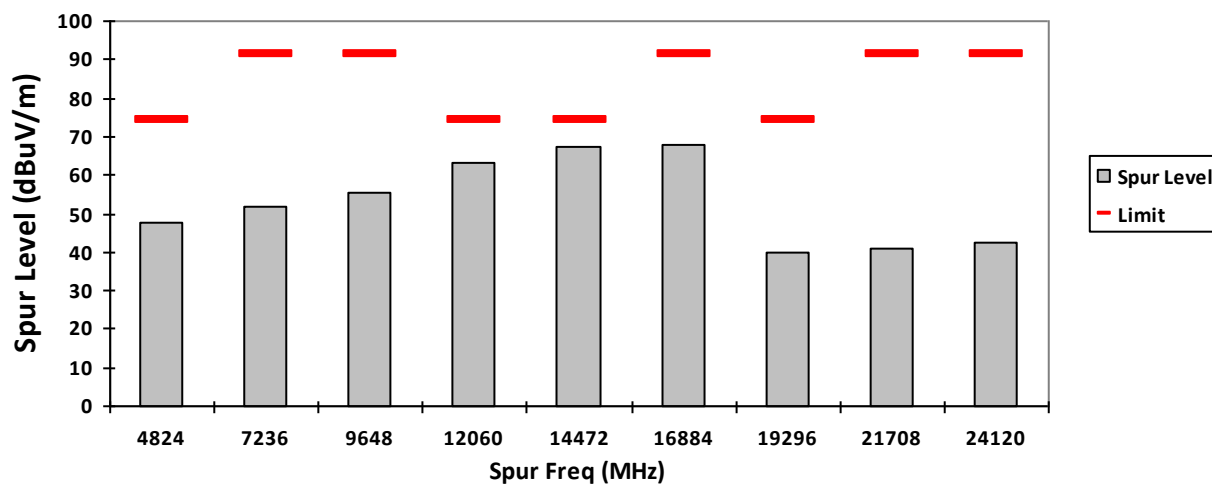
03:48:19 PM 09/26/2024

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

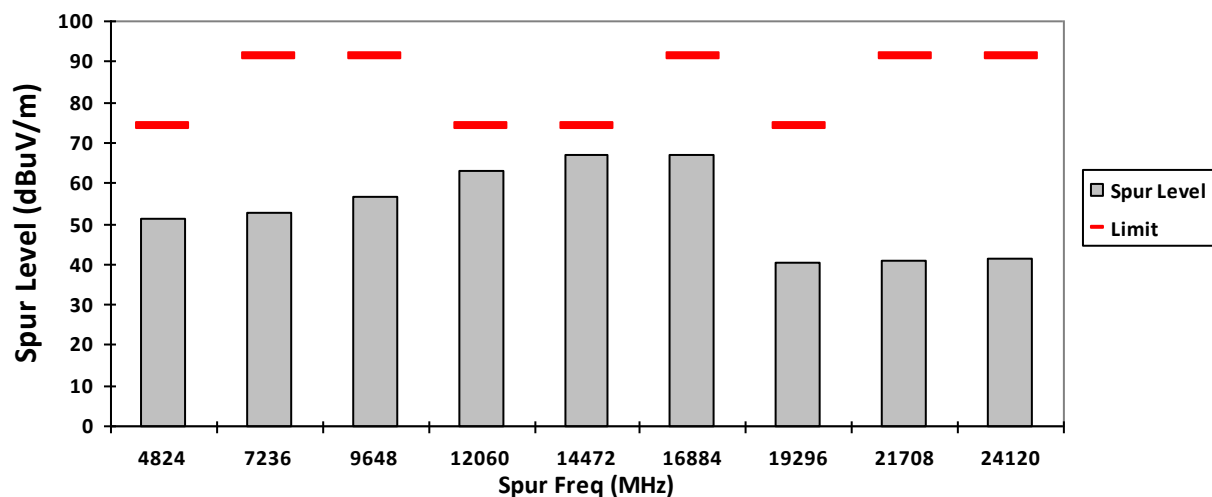


03:55:26 PM 09/26/2024

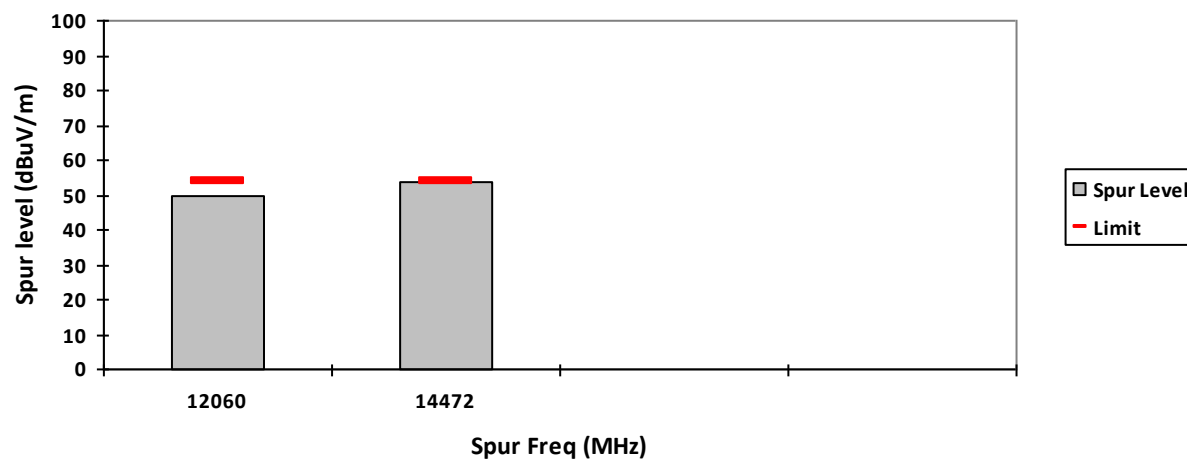
VERTICAL, PK



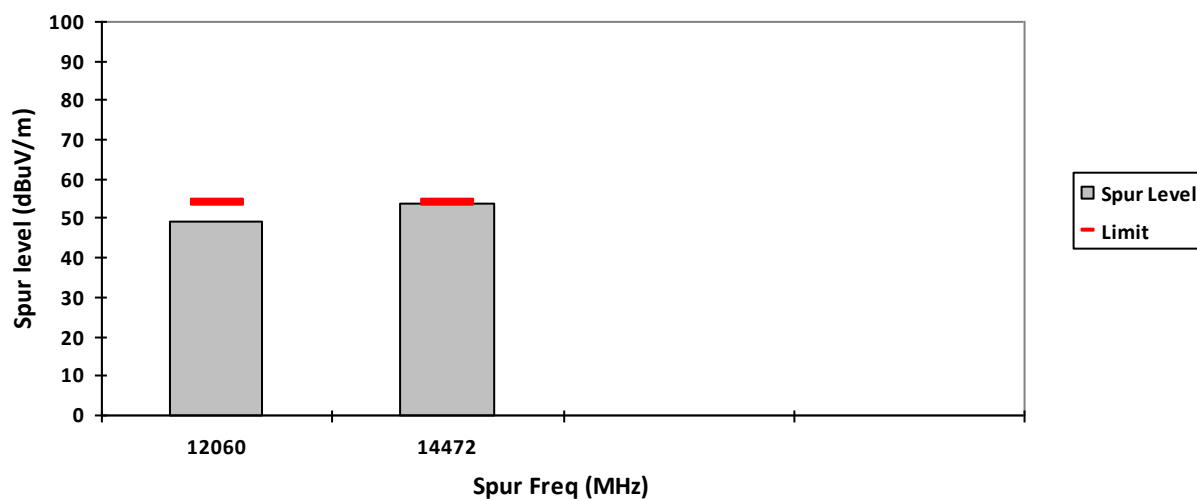
HORIZONTAL, PK



VERTICAL, AV



HORIZONTAL, AV



Test: WIFI SAC Transmitter Radiated Emission
Model Number: B20CJMBE2AN S/N: 663EAS0005 EMC SR ID#: 0572N00-EMC-00013
Battery: PMNN4578A Softpot power (17dBm) Accessory: NA
Test Channel: Mid Test Frequency: 2437.0000 MHz Test Standard: ANSI C63.10-2013
Worst Case Plane: Z-Plane (802.11b)

Radiated Emission (Mid Channel) tabular data

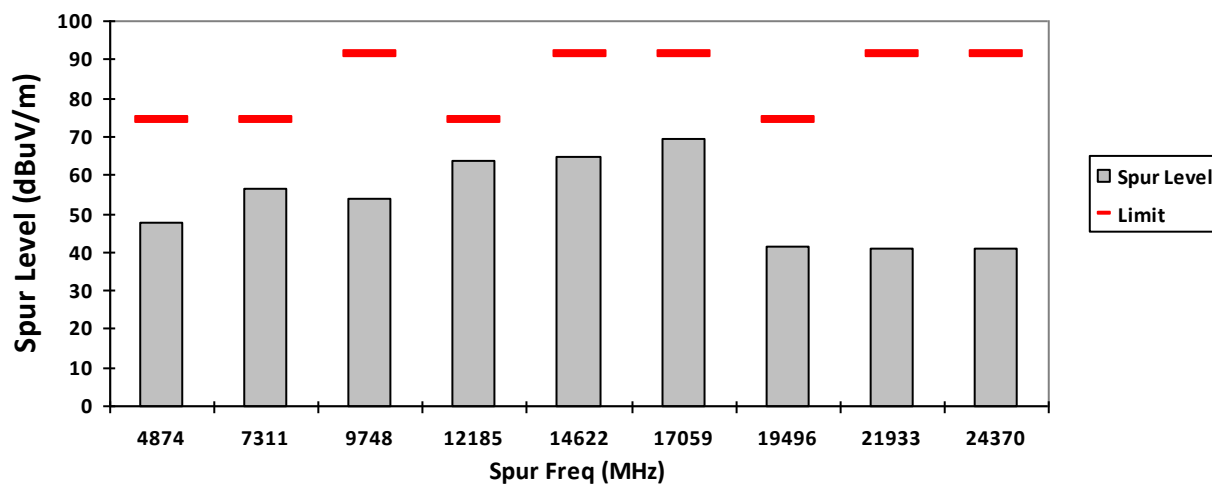
[illegible]

Remarks: Pass Result	Marginal Result	Fail Result
-------------------------	-----------------	-------------

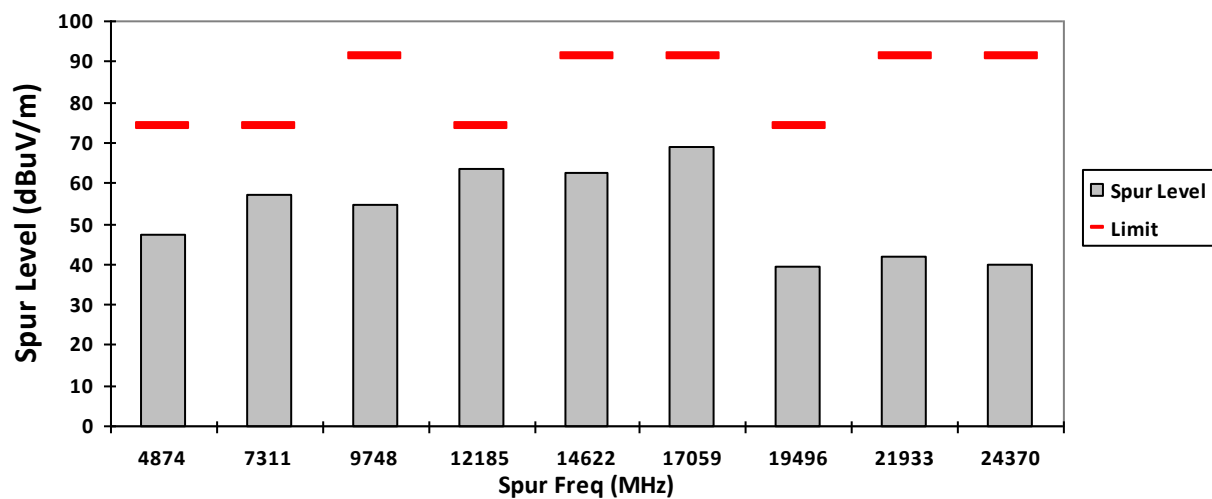
Temperature (degC): 22.4 Humidity (%): 67.9
Test Performed by: Nazrin & Fuad Test Date: Sat, 28 Sep, 2024
System MU: 5.88 dB (30-1000MHz), 5.84 dB (1000-18000MHz), 6.02 dB (18000MHz-40000MHz)

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.

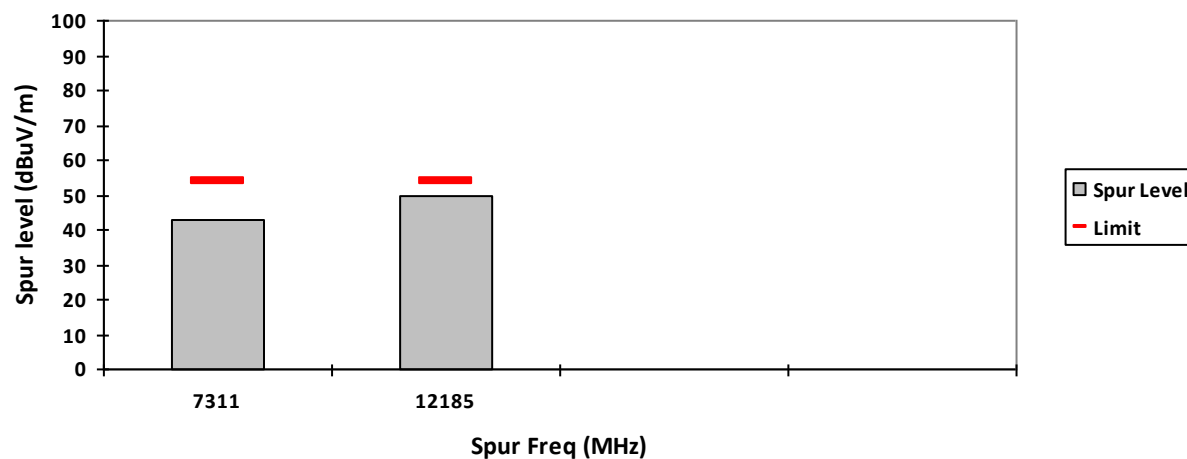
VERTICAL, PK



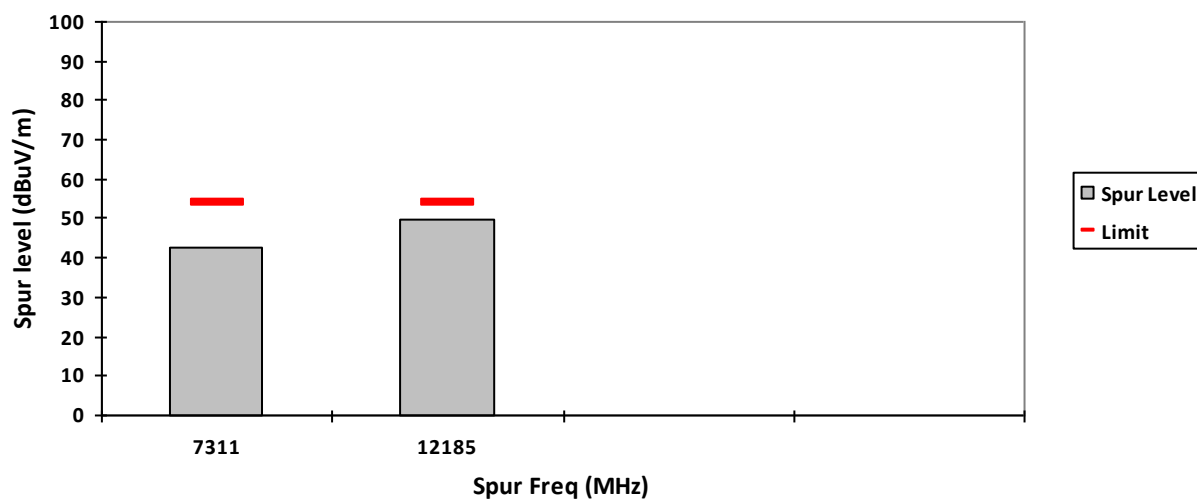
HORIZONTAL, PK



VERTICAL, AV



HORIZONTAL, AV

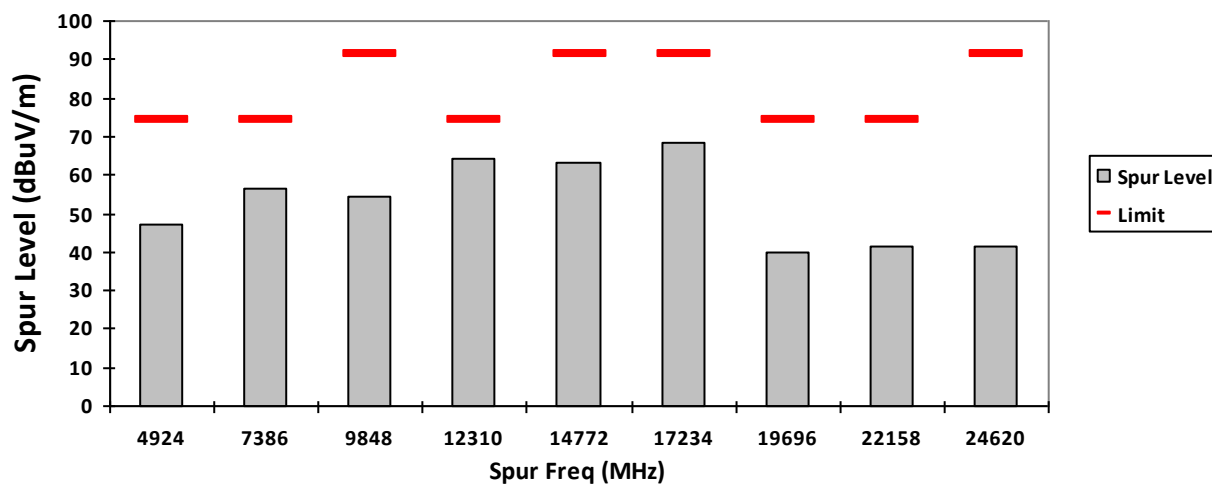


Radiated Emission (High Channel) tabular data

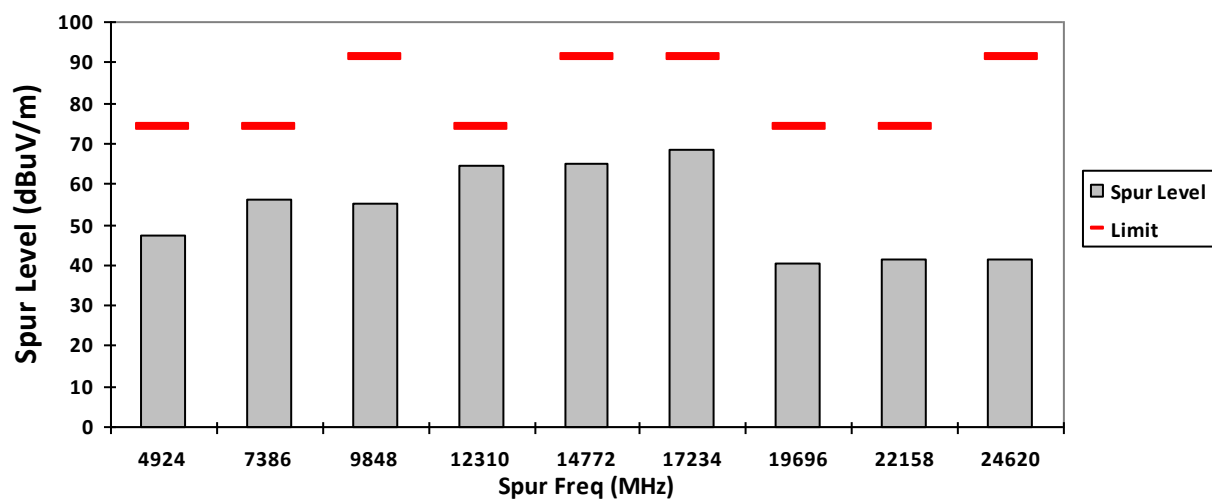
Remarks: Pass Result	Marginal Result	Fail Result
-------------------------	-----------------	-------------

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.

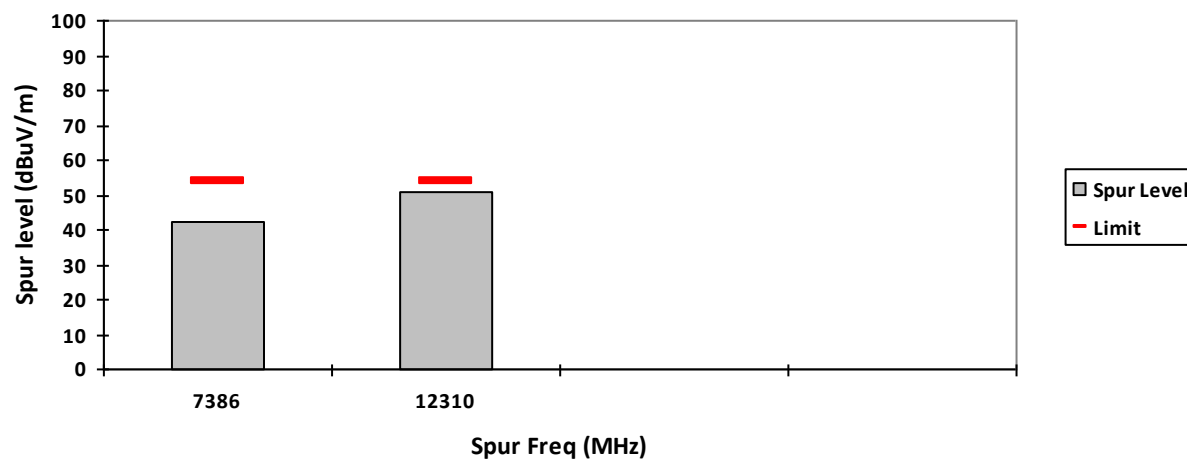
VERTICAL, PK



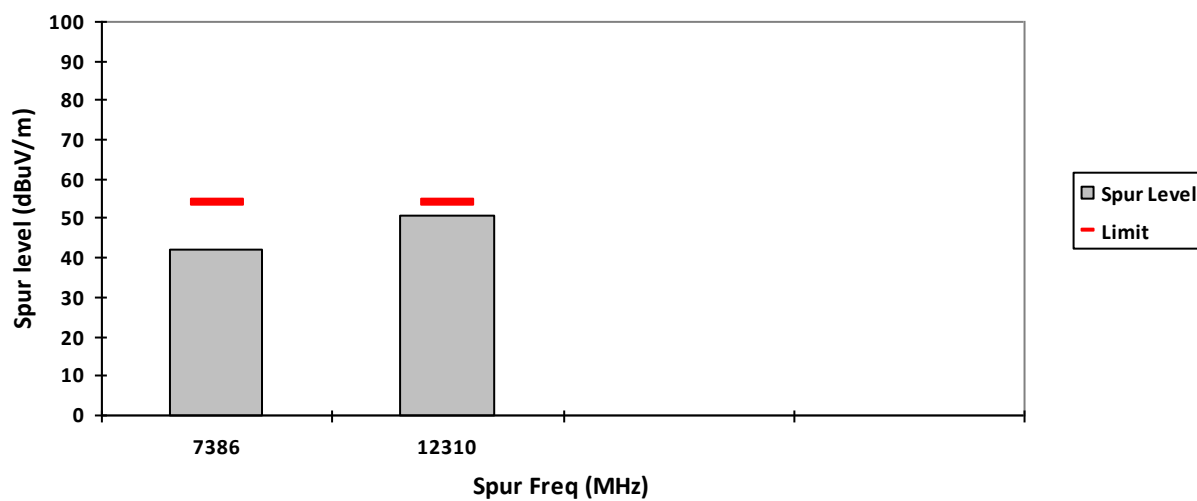
HORIZONTAL, PK



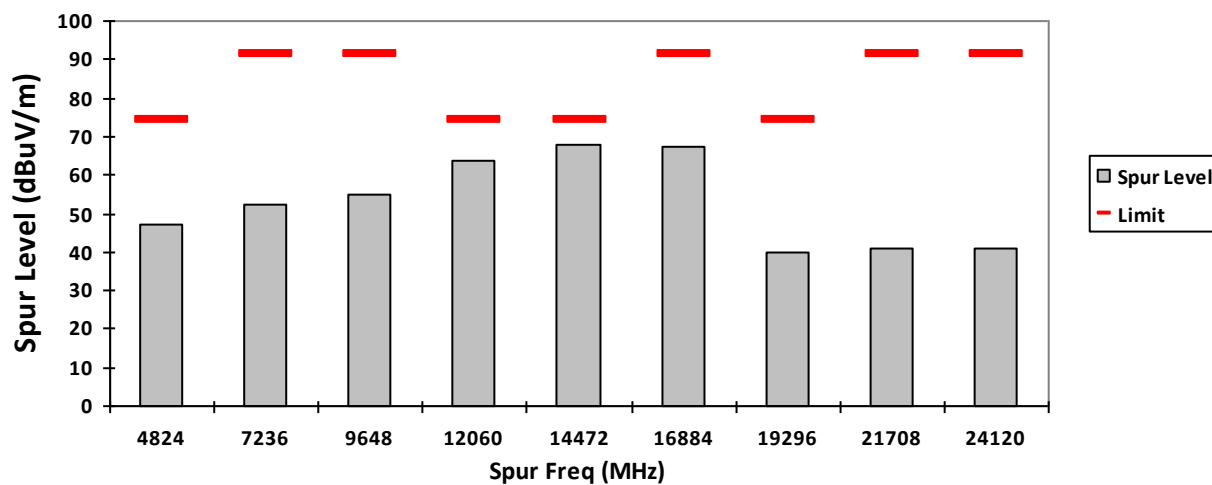
VERTICAL, AV



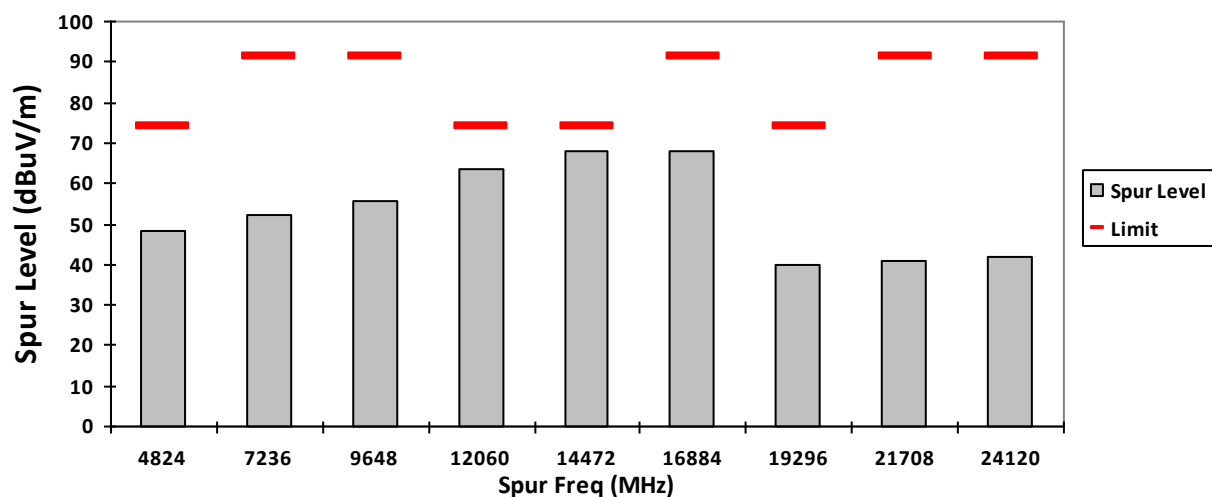
HORIZONTAL, AV



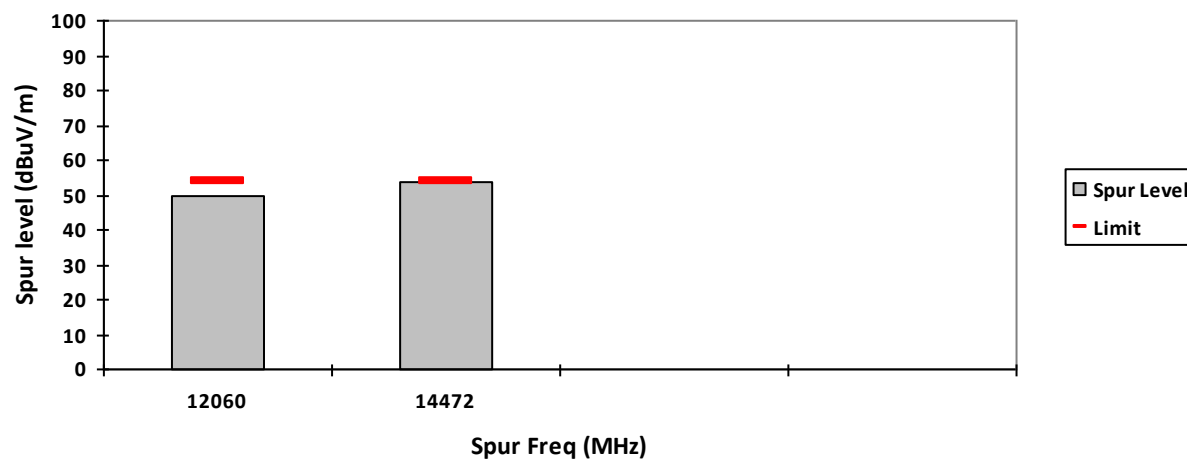
VERTICAL, PK



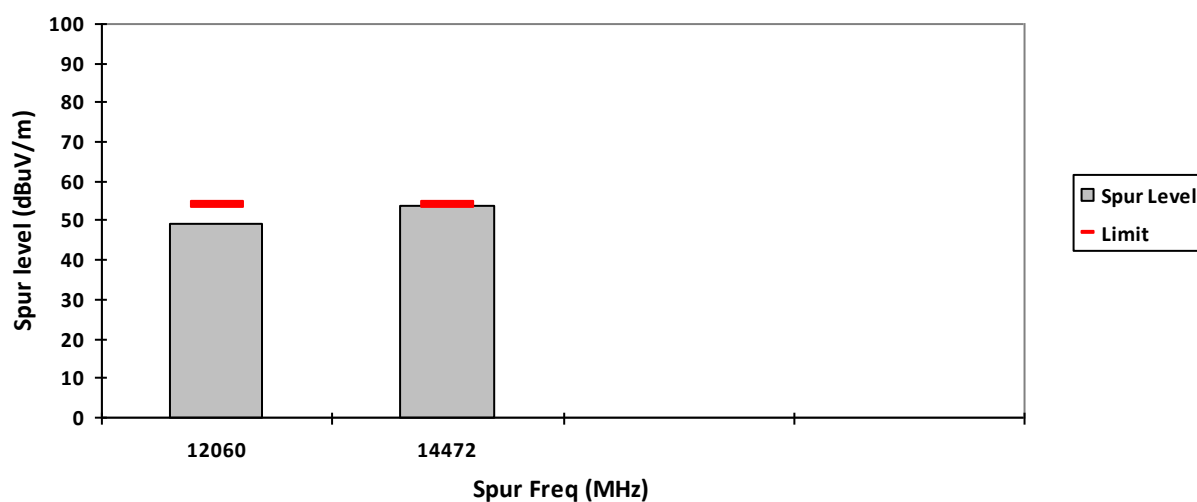
HORIZONTAL, PK

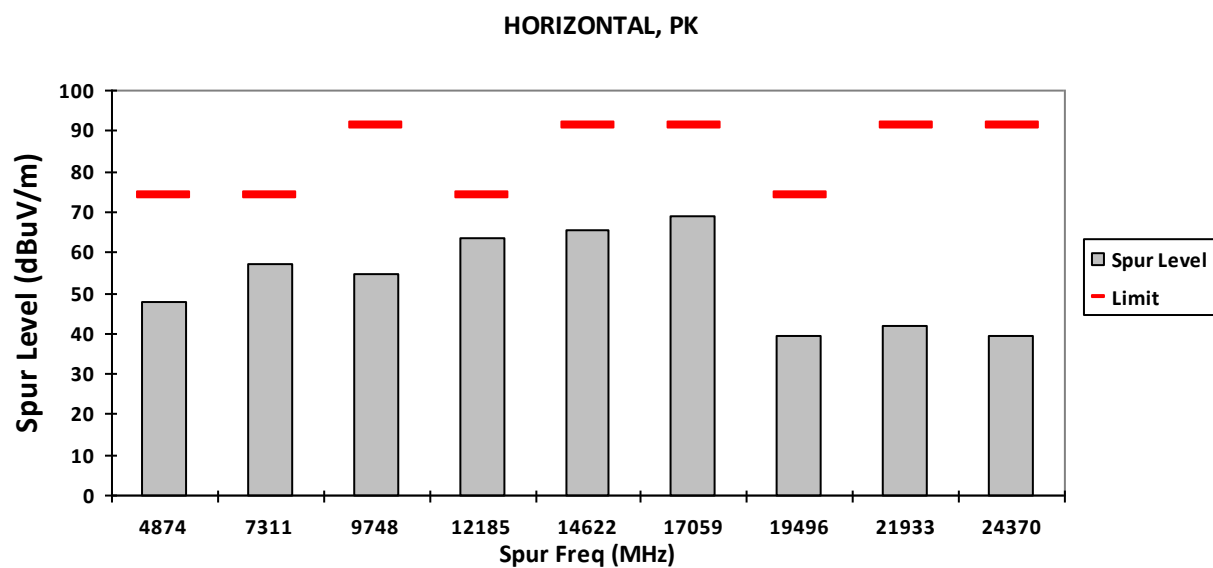
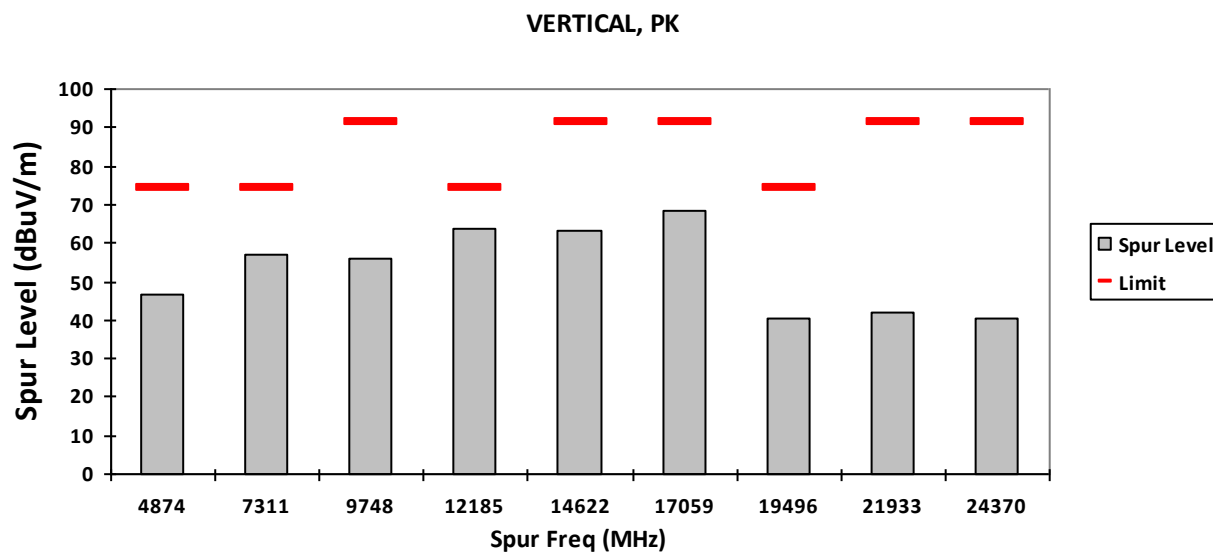


VERTICAL, AV

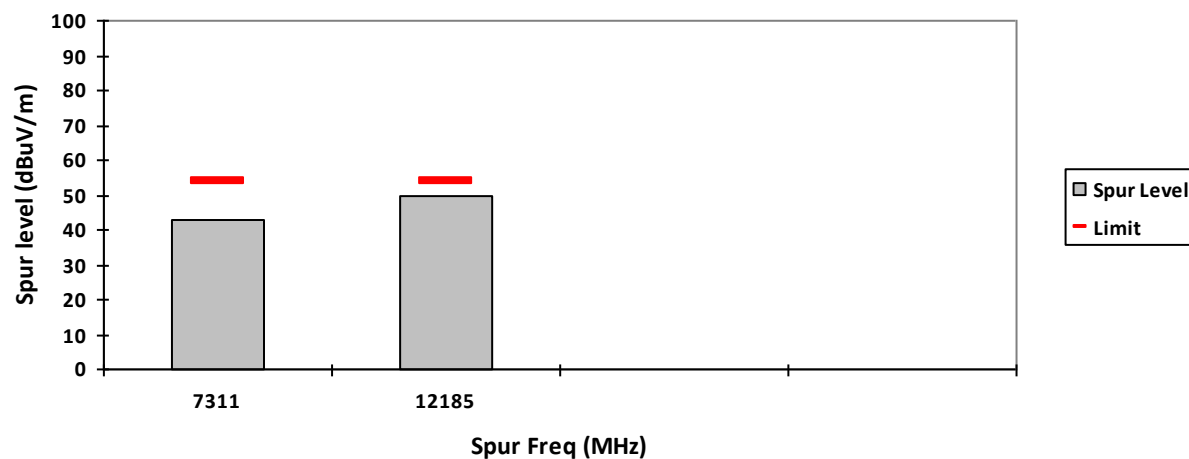


HORIZONTAL, AV

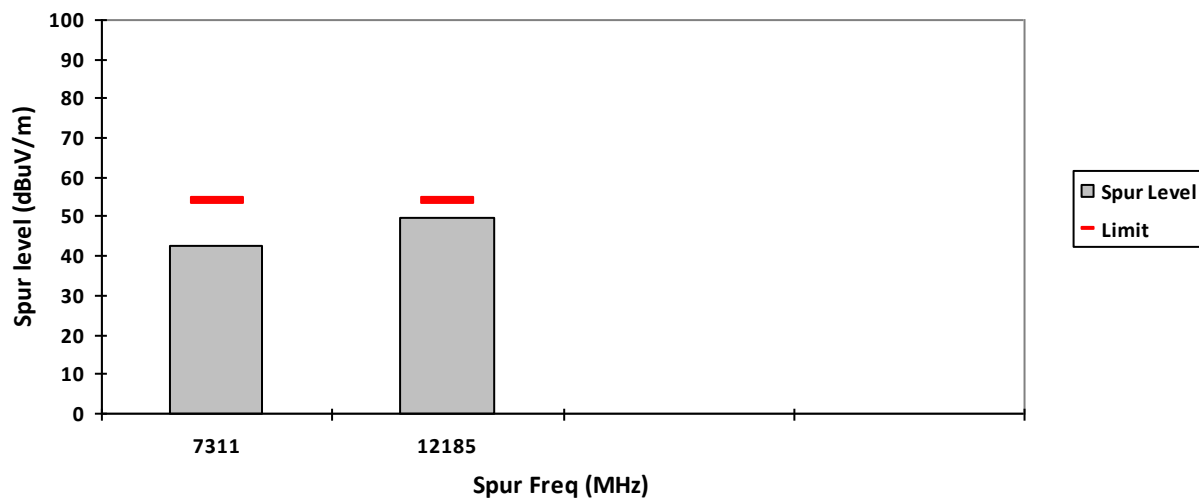


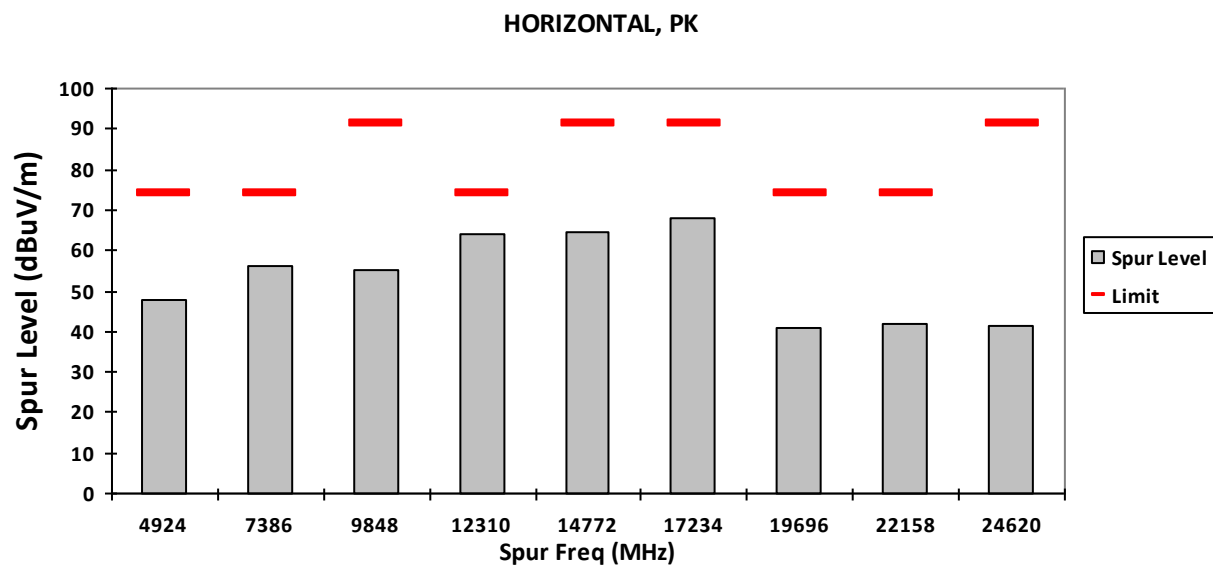
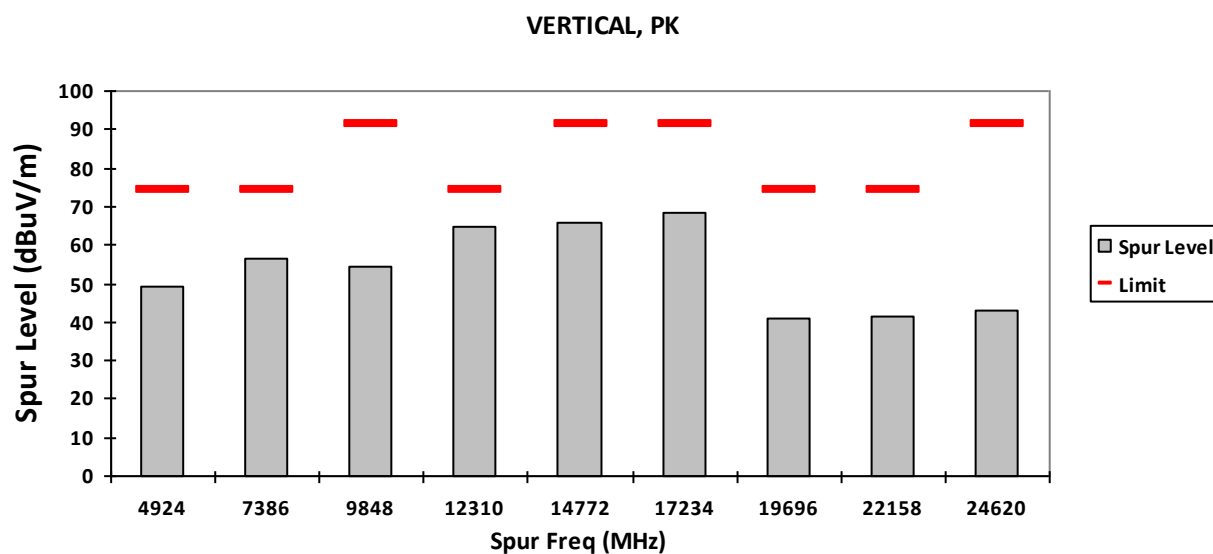


VERTICAL, AV

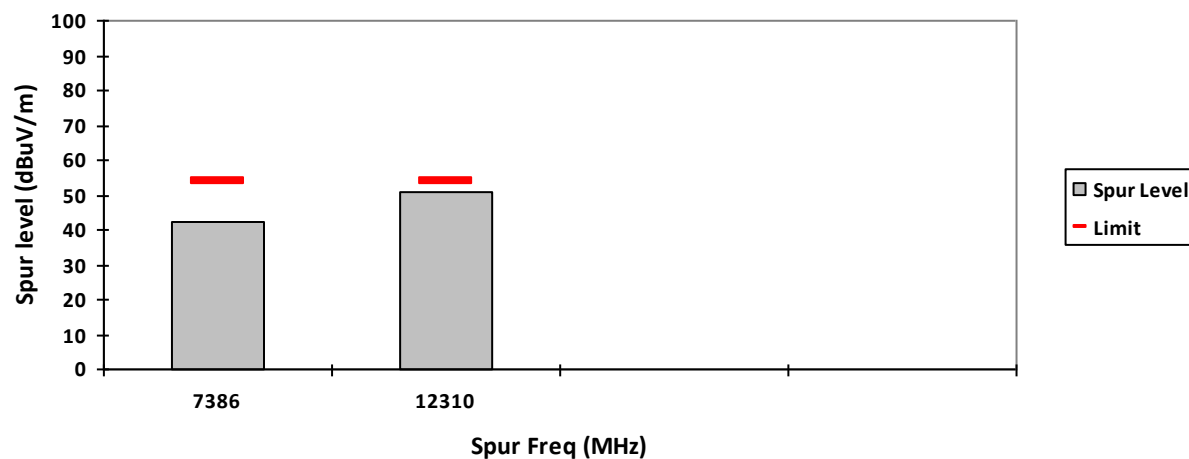


HORIZONTAL, AV

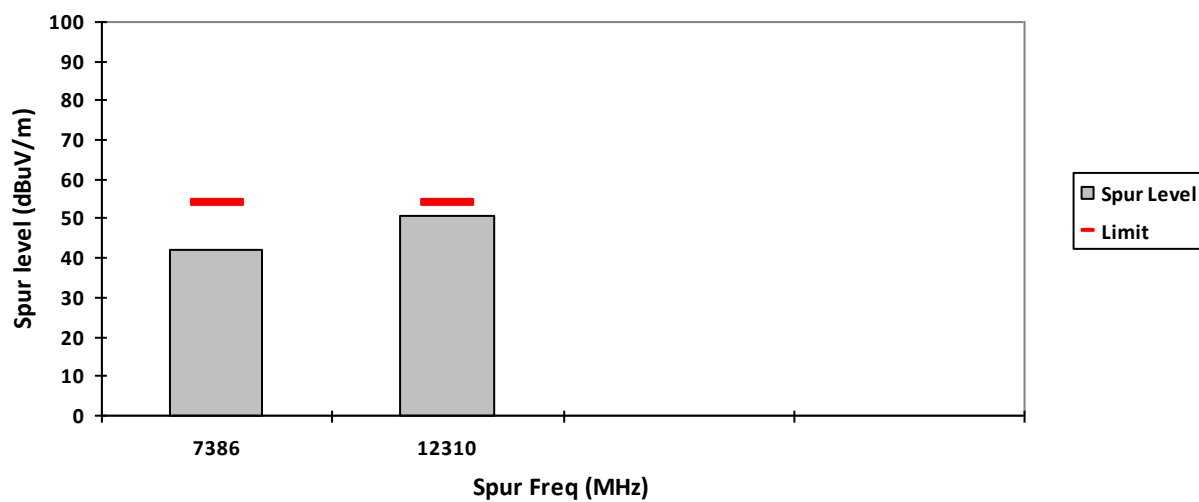




VERTICAL, AV



HORIZONTAL, AV



Test: WIFI SAC Transmitter Radiated Emission
Model Number: B20CJMBE2AN S/N: 663EAS0005 EMC SR ID#: 0572N00-EMC-00013
Battery: PMNN4578A Softpot power (12dBm) Accessory: NA
Test Channel: Low Test Frequency: 2412.0000 MHz Test Standard: ANSI C63.10-2013
Worst Case Plane: Z-Plane (802.11n20)

Radiated Emission (Low Channel) tabular data

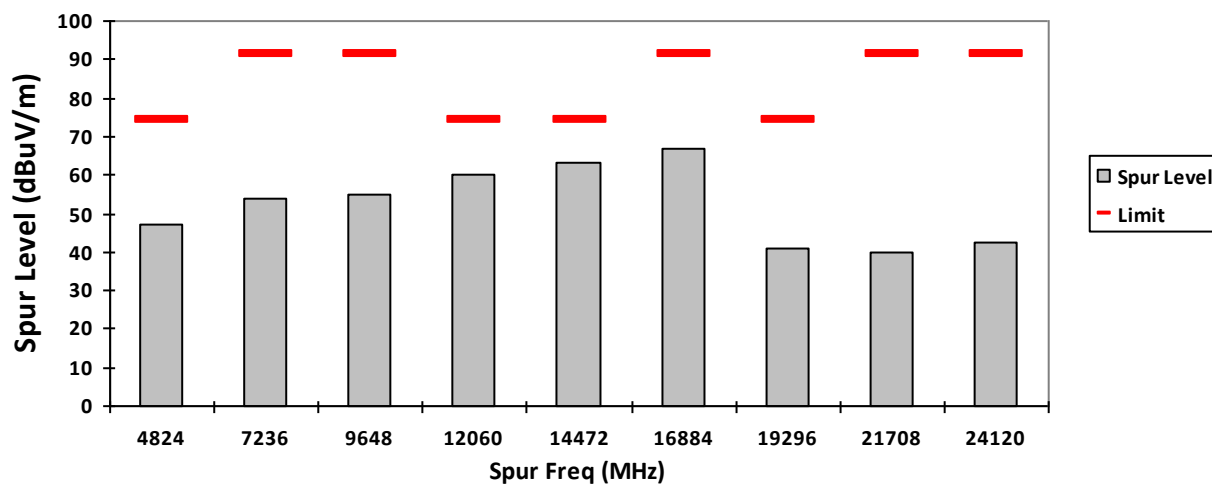
[illegible]

Remarks: Pass Result	Marginal Result	Fail Result
-------------------------	-----------------	-------------

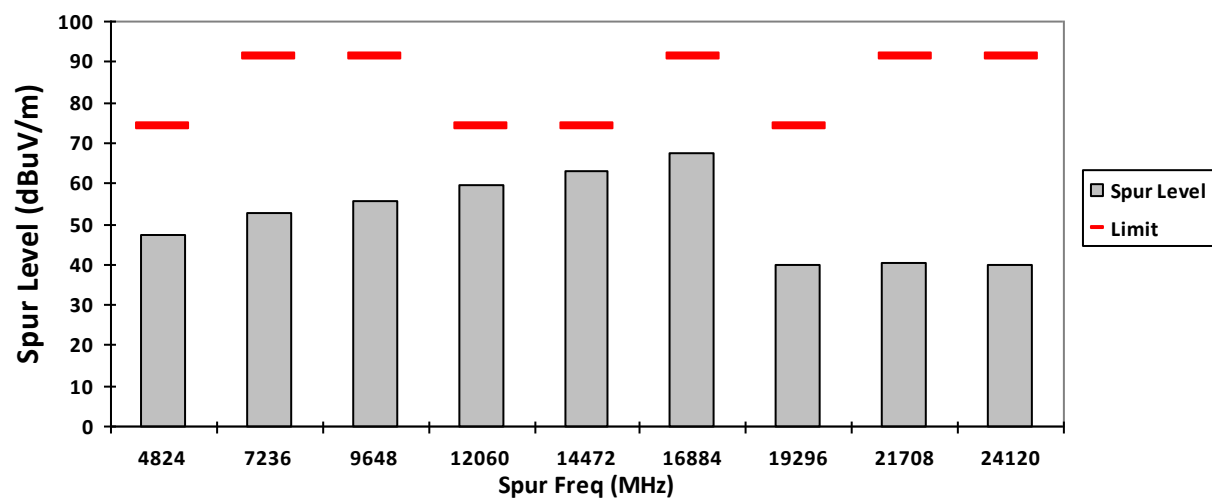
Temperature (degC): 22.4 Humidity (%): 67.9
Test Performed by: Nazrin & Fuad Test Date: Sat, 28 Sep, 2024
System MU: 5.88 dB (30-1000MHz), 5.84 dB (1000-18000MHz), 6.02 dB (18000MHz-40000MHz)

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.

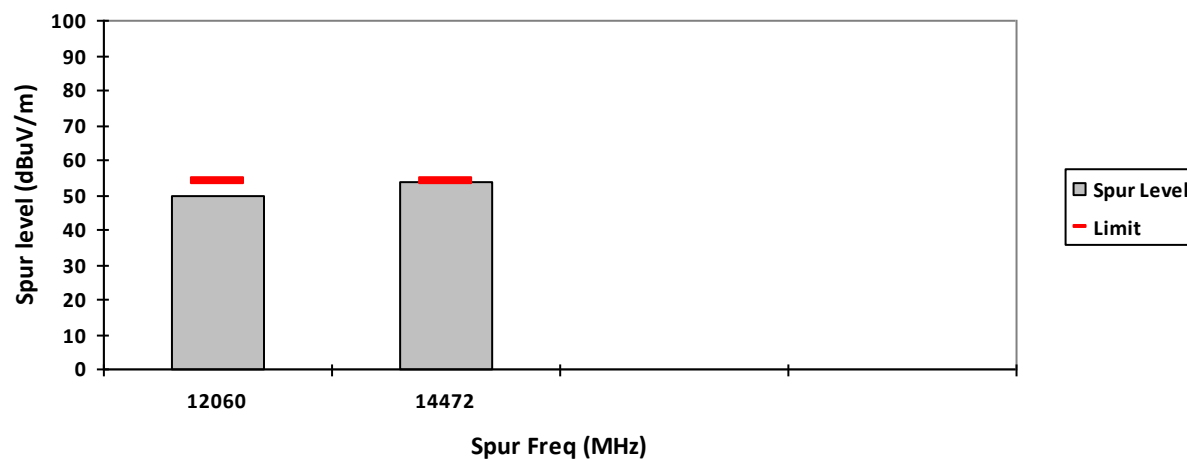
VERTICAL, PK



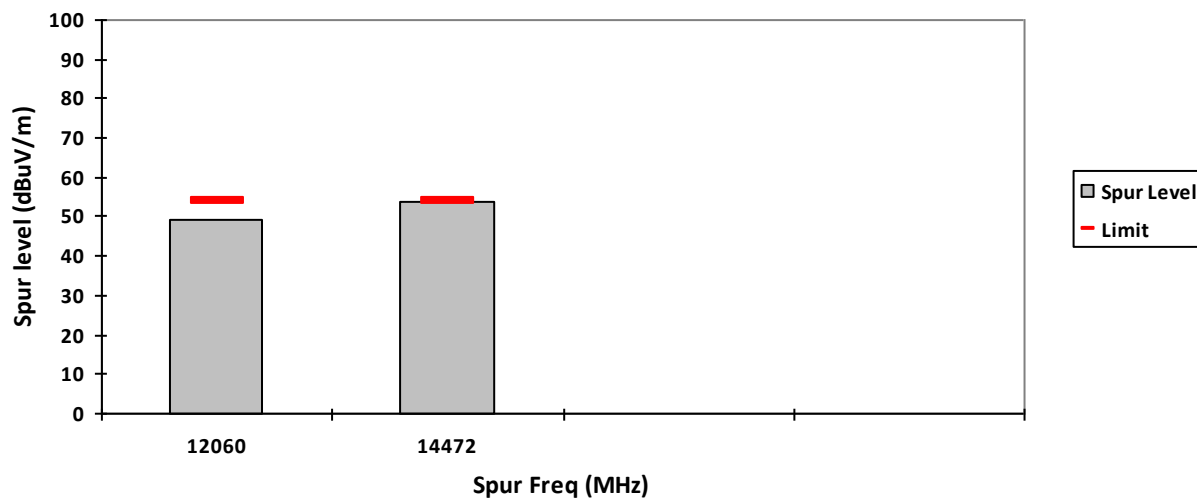
HORIZONTAL, PK



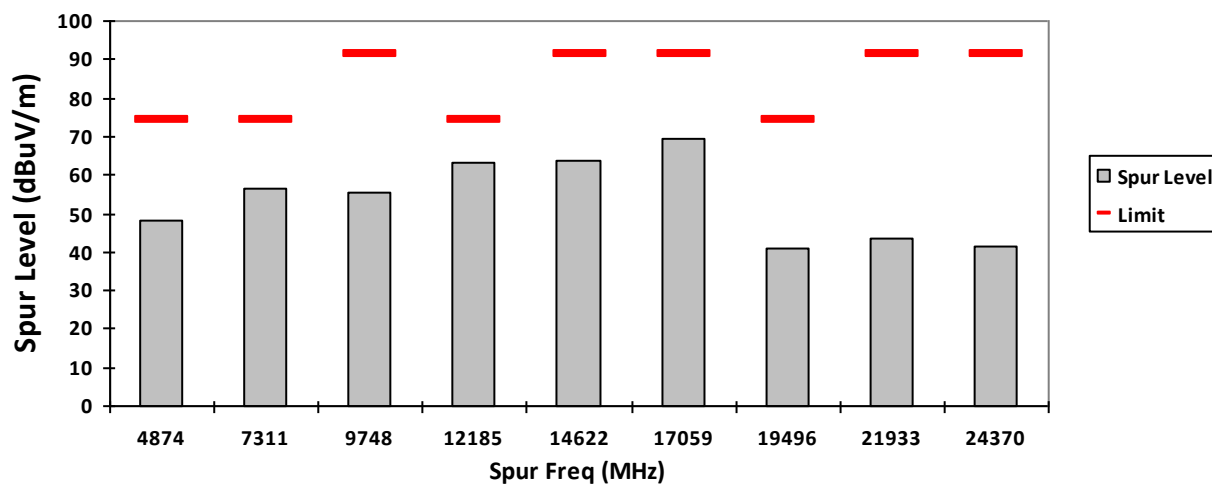
VERTICAL, AV



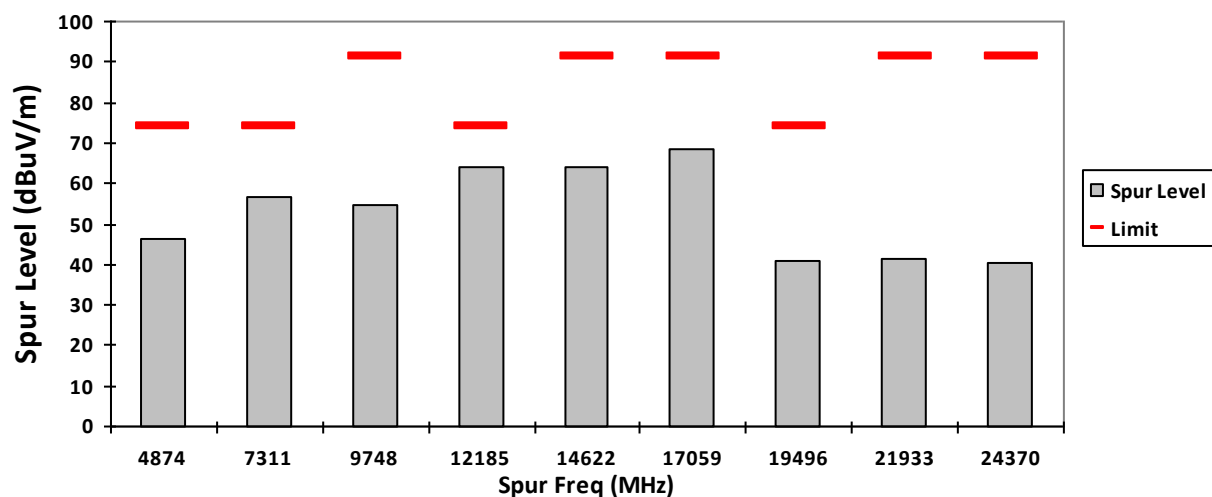
HORIZONTAL, AV



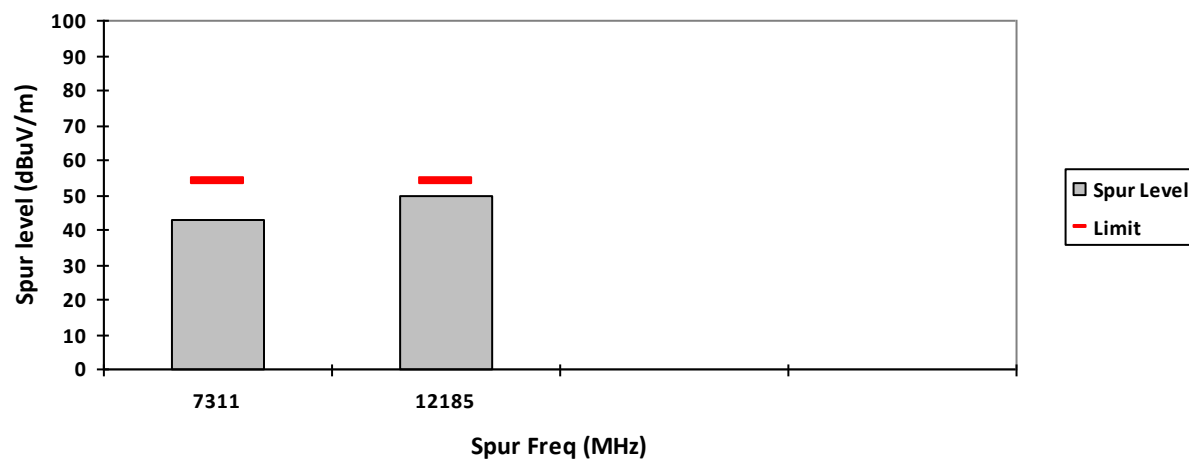
VERTICAL, PK



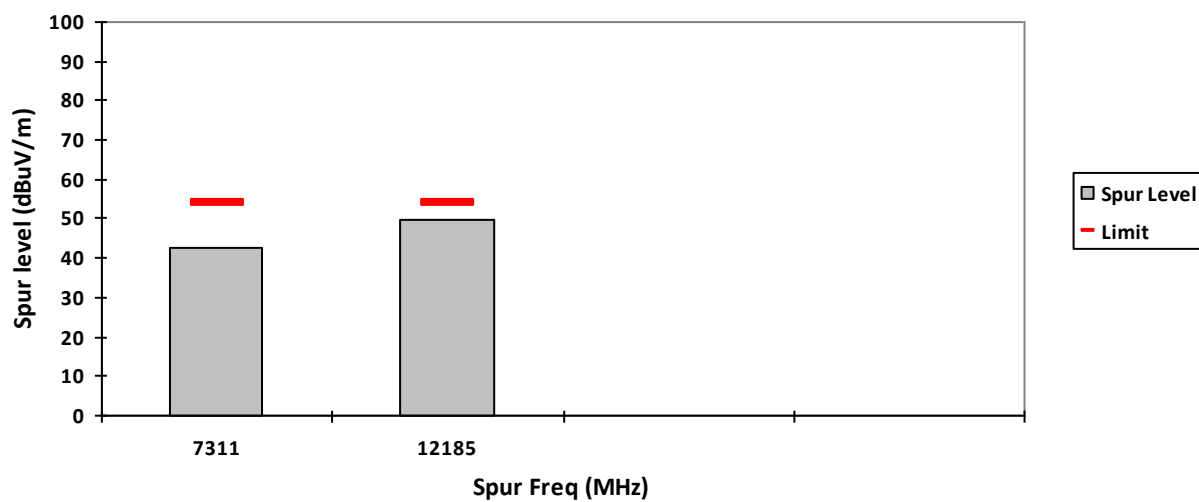
HORIZONTAL, PK

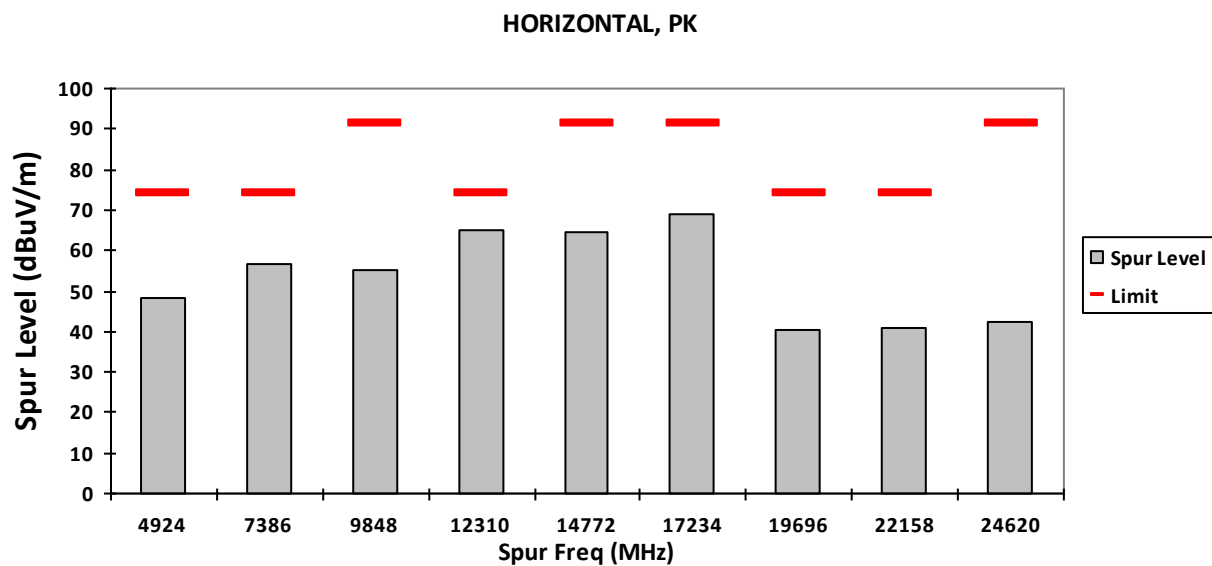
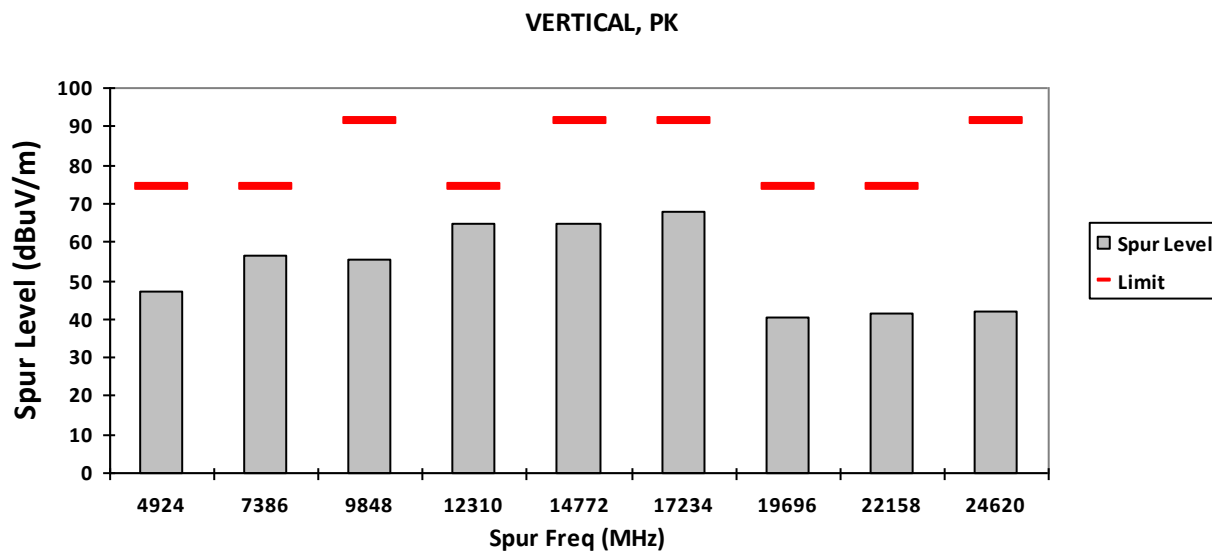


VERTICAL, AV

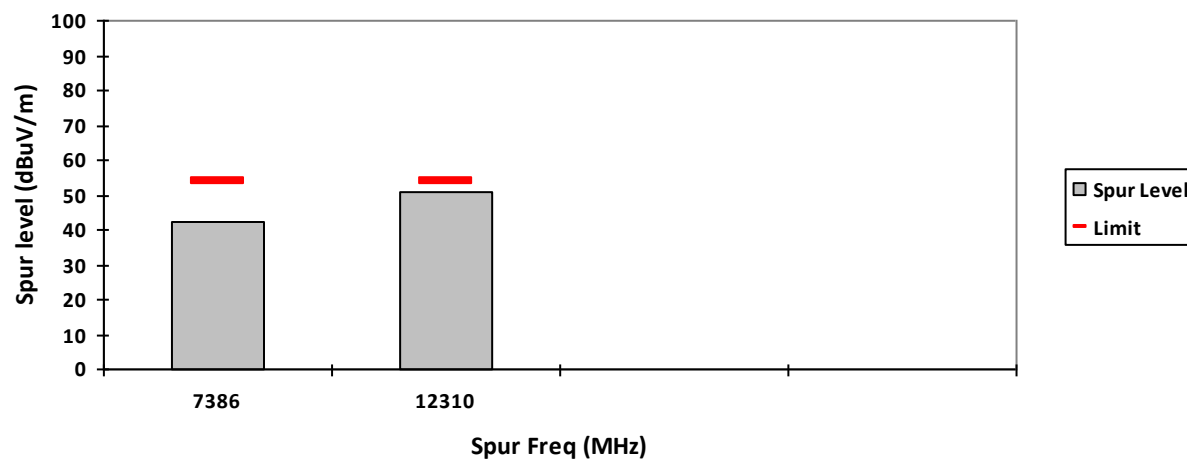


HORIZONTAL, AV

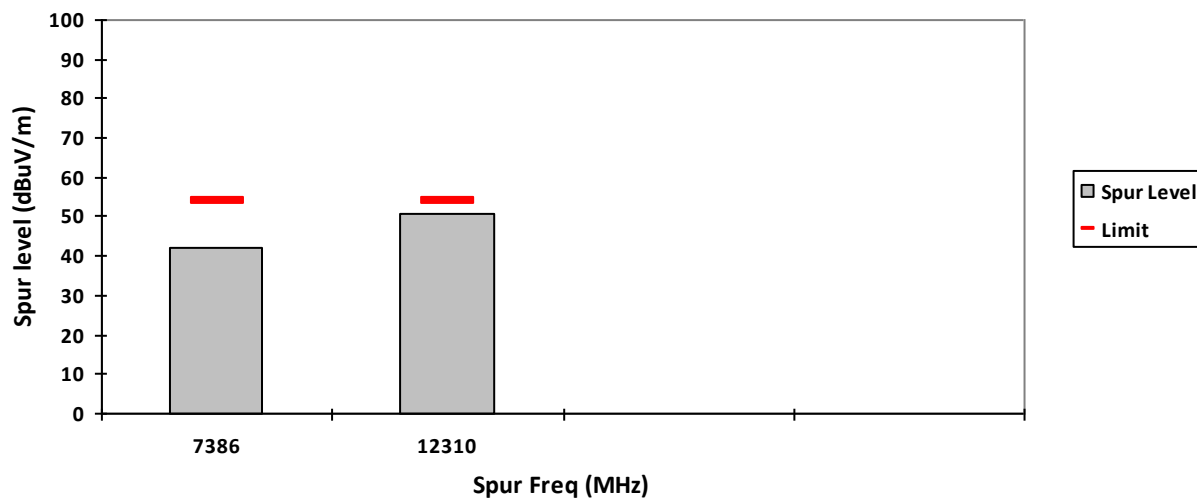




VERTICAL, AV



HORIZONTAL, AV



Test: WIFI SAC Transmitter Radiated Emission	EMC SR ID#: 0572N00-EMC-00036
Model Number: B20CJMBE2AN	S/N: 952EAY0164
Battery: PMNN4578A	
Accessory: PMKN4294A, Laptop (A1370959)	
Test Channel: Low	Test Frequency: 2412.0000 MHz
Test Standard: ANSI C63.10-2013	Worst Case Plane: Z-Plane (802.11b)

Radiated Emission (Low Channel) tabular data

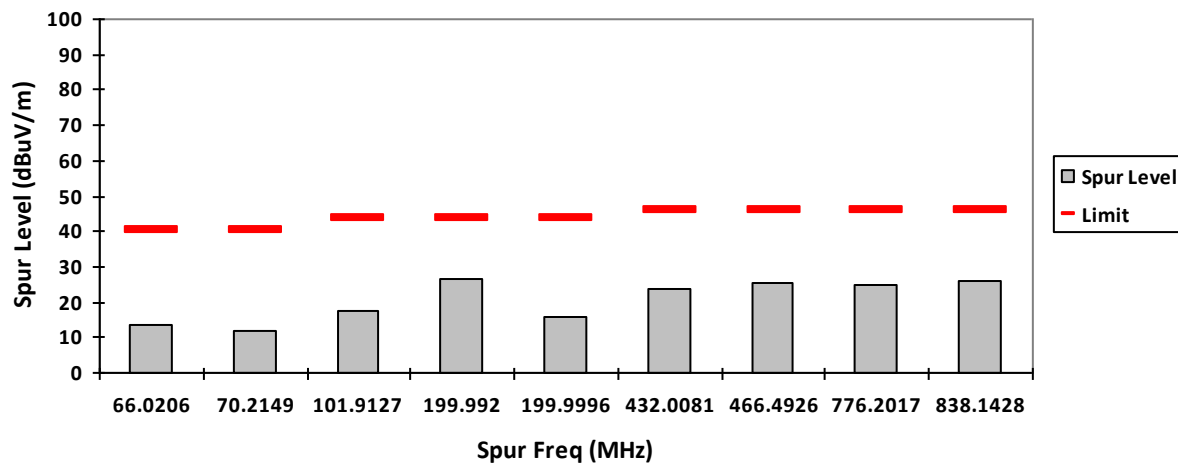
Vertical Radiated Emission Result										
Spur Freq (MHz)	Spur level QPK (dBμV/m)	Spur level PK (dBμV/m)	Spur level AV (dBμV/m)	Limit QPK (dBμV/m)	Limit PK (dBμV/m)	Limit AV (dBμV/m)	Margin QPK (dBμV/m)	Margin PK (dBμV/m)	Margin AV (dBμV/m)	Carrier PK Power (dBμV/m)
66.0206	13.4278*	-	-	40.0000	-	-	26.5722	-	-	-
70.2149	11.7404*	-	-	40.0000	-	-	28.2596	-	-	-
101.9127	17.3251*	-	-	43.5000	-	-	26.1749	-	-	-
199.9920	26.3930	-	-	43.5000	-	-	17.1070	-	-	-
199.9996	15.8597*	-	-	43.5000	-	-	27.6403	-	-	-
432.0081	23.9148*	-	-	46.0000	-	-	22.0852	-	-	-
466.4926	25.5259*	-	-	46.0000	-	-	20.4741	-	-	-
776.2017	25.1102*	-	-	46.0000	-	-	20.8898	-	-	-
838.1428	25.9844*	-	-	46.0000	-	-	20.0156	-	-	-
1332.3339	-	33.4039*	32.0989*	-	74.0000	54.0000	-	40.5961	21.9011	-
1996.4182	-	36.1849*	-	-	89.5867	-	53.4018	-	-	109.5867
Horizontal Radiated Emission Result										
65.5216	11.2000*	-	-	40.0000	-	-	28.8000	-	-	-
70.1708	17.9809*	-	-	40.0000	-	-	22.0191	-	-	-
101.3316	14.7254*	-	-	43.5000	-	-	28.7746	-	-	-
200.0020	28.3507	-	-	43.5000	-	-	15.1493	-	-	-
200.0137	15.3005*	-	-	43.5000	-	-	28.1995	-	-	-
431.9960	27.3336	-	-	46.0000	-	-	18.6664	-	-	-
466.5166	24.0161*	-	-	46.0000	-	-	21.9839	-	-	-
776.2718	25.5642*	-	-	46.0000	-	-	20.4358	-	-	-
837.3672	26.1388	-	-	46.0000	-	-	19.8612	-	-	-
1332.3069	-	33.1748*	32.0499*	-	74.0000	54.0000	-	40.8252	21.9501	-
1996.3570	-	38.7892*	-	-	89.5867	-	50.7975	-	-	109.5867

Remarks: Pass Result	Marginal Result	Fail Result
-------------------------	-----------------	-------------

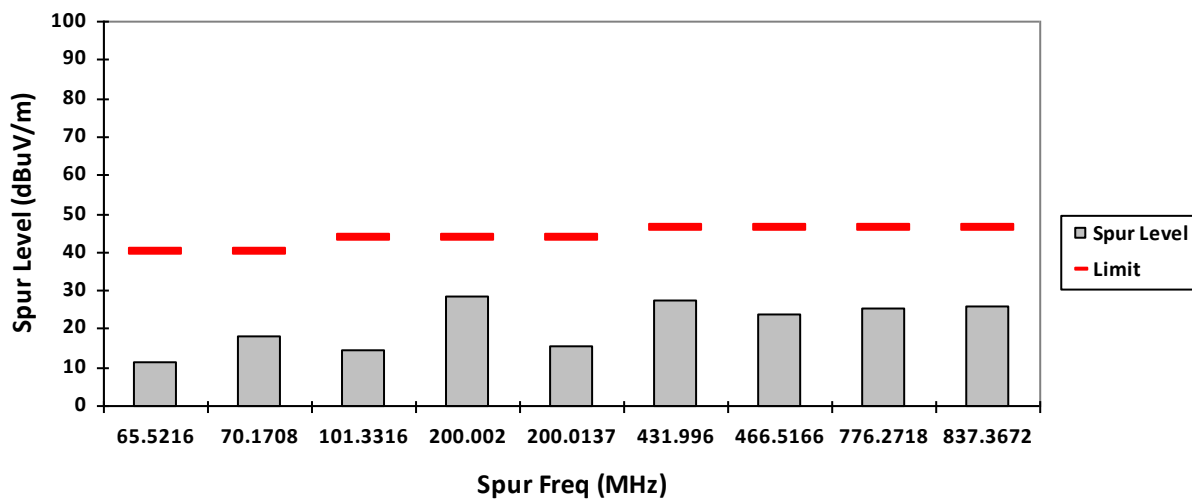
Temperature (degC): 21.9 Humidity (%): 64.2
Test Performed by: Aiman Test Date: Wed, 8 Jan, 2025
System MU: 5.88 dB (30-1000MHz), 5.84 dB (1000-18000MHz), 6.02 dB (18000MHz-40000MHz)

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.

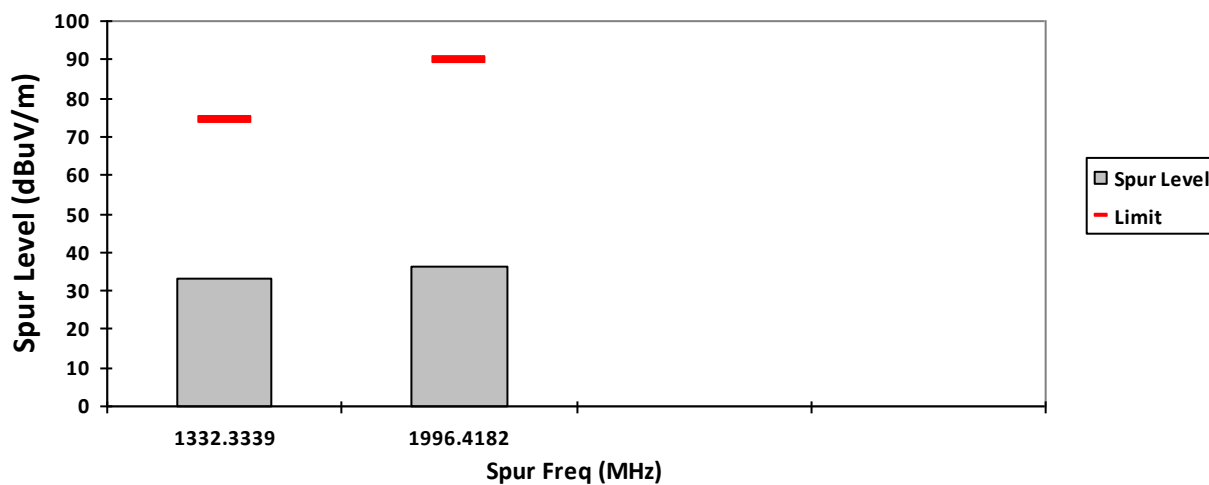
VERTICAL, QPK



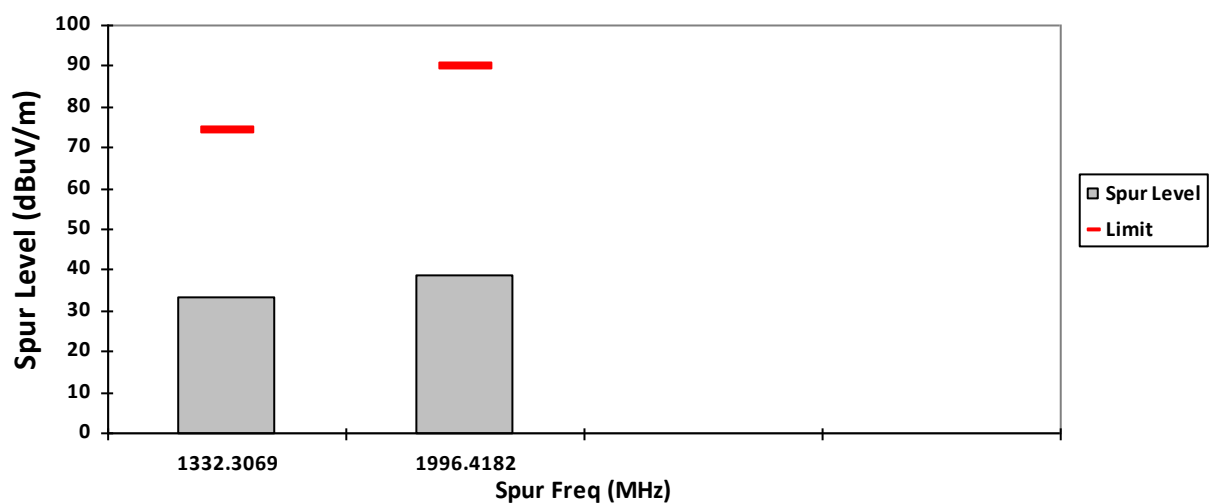
HORIZONTAL, QPK



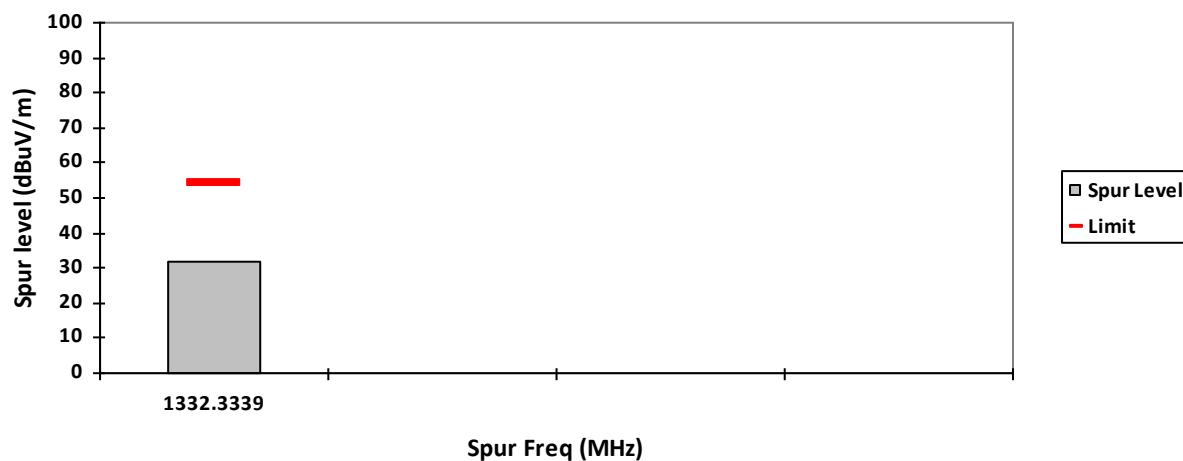
VERTICAL, PK



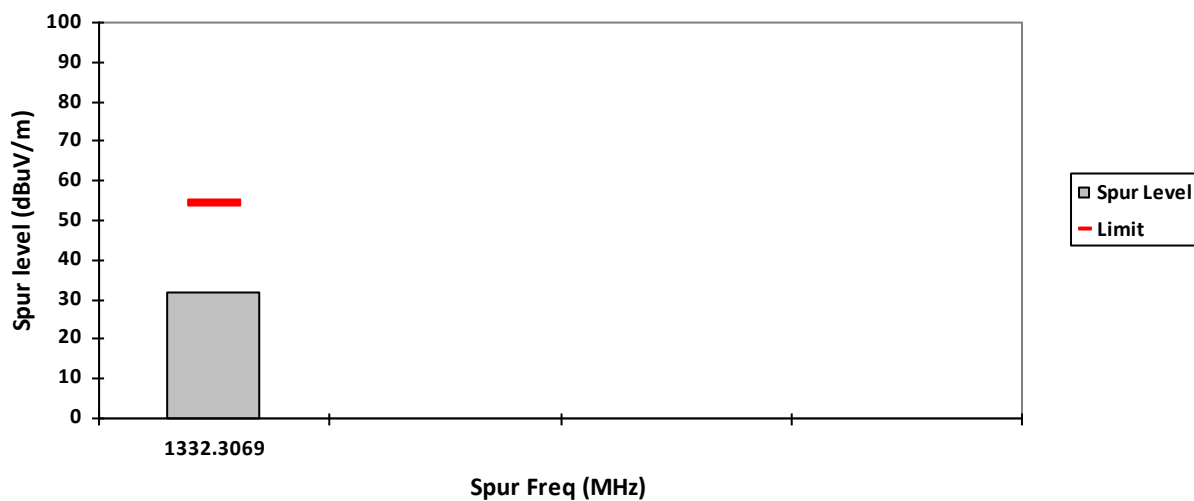
HORIZONTAL, PK



VERTICAL, AV



HORIZONTAL, AV



Test: WIFI SAC Transmitter Radiated Emission	EMC SR ID#: 0572N00-EMC-00036
Model Number: B20CJMBE2AN	S/N: 952EAY0164
Battery: PMNN4578A	
Accessory: PMKN4294A, Laptop (A1370959)	
Test Channel: Low	Test Frequency: 2412.0000 MHz
Test Standard: ANSI C63.10-2013	Worst Case Plane: Z-Plane (802.11g)

Radiated Emission (Low Channel) tabular data

[illegible]

Remarks: Pass Result	Marginal Result	Fail Result
-------------------------	-----------------	-------------

Temperature (degC): 22.5

Humidity (%): 62.3

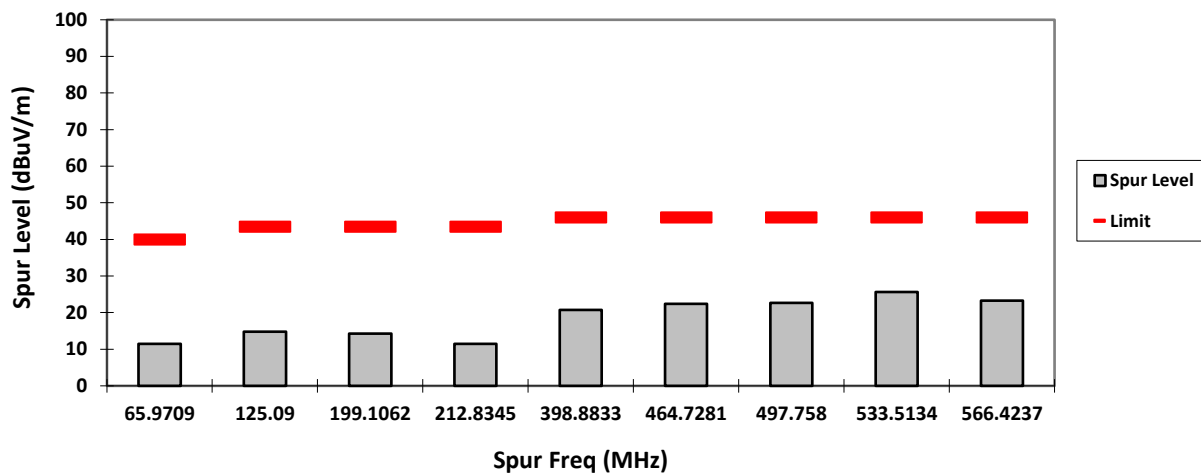
Test Performed by: Aiman

Test Date: Mon, 20 Jan, 2025

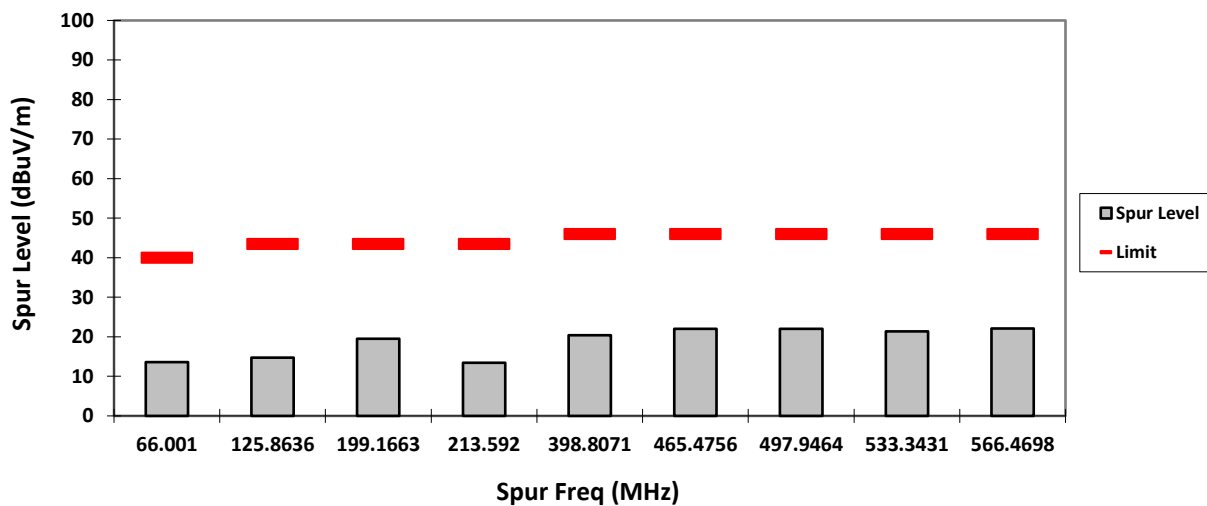
System MU: 5.88 dB (30-1000MHz), 5.84 dB (1000-18000MHz), 6.02 dB (18000MHz-40000MHz)

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



Test: WIFI SAC Transmitter Radiated Emission	EMC SR ID#: 0572N00-EMC-00036
Model Number: B20CJMBE2AN	S/N: 952EAY0164
Battery: PMNN4578A	
Accessory: PMKN4294A, Laptop (A1370959)	
Test Channel: Low	Test Frequency: 2412.0000 MHz
Test Standard: ANSI C63.10-2013	Worst Case Plane: Z-Plane (802.11n)

Radiated Emission (Low Channel) tabular data

[illegible]

Remarks: Pass Result	Marginal Result	Fail Result
-------------------------	-----------------	-------------

Temperature (degC): 22.5

Humidity (%): 62.3

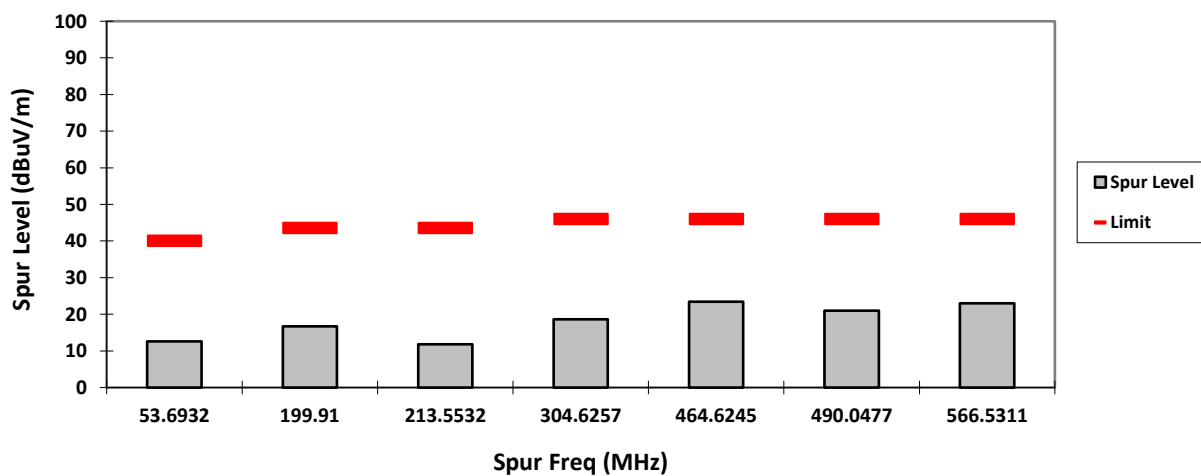
Test Performed by: Aiman

Test Date: Mon, 20 Jan, 2025

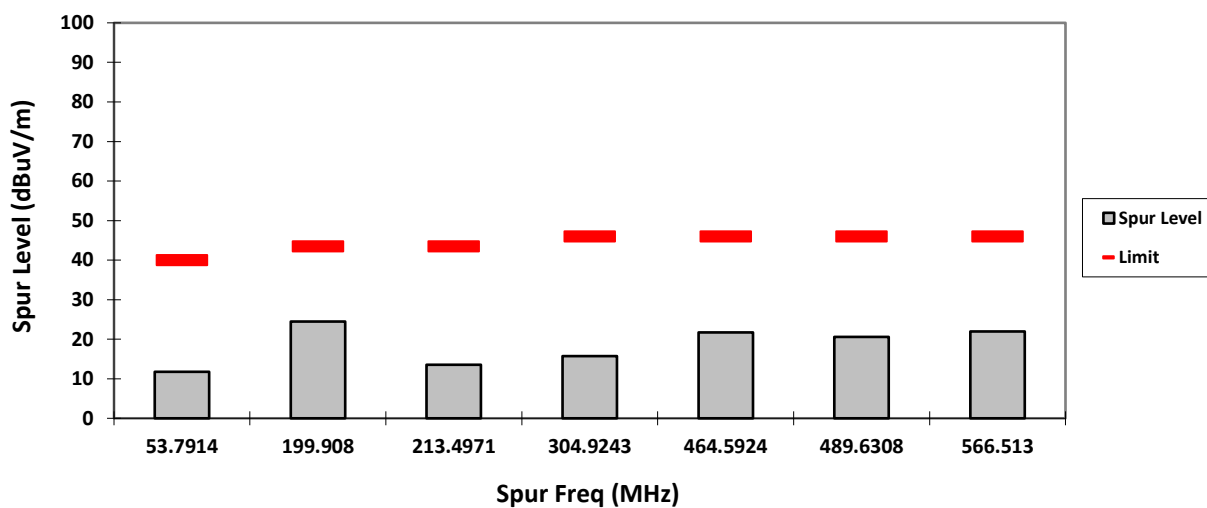
System MU: 5.88 dB (30-1000MHz), 5.84 dB (1000-18000MHz), 6.02 dB (18000MHz-40000MHz)

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

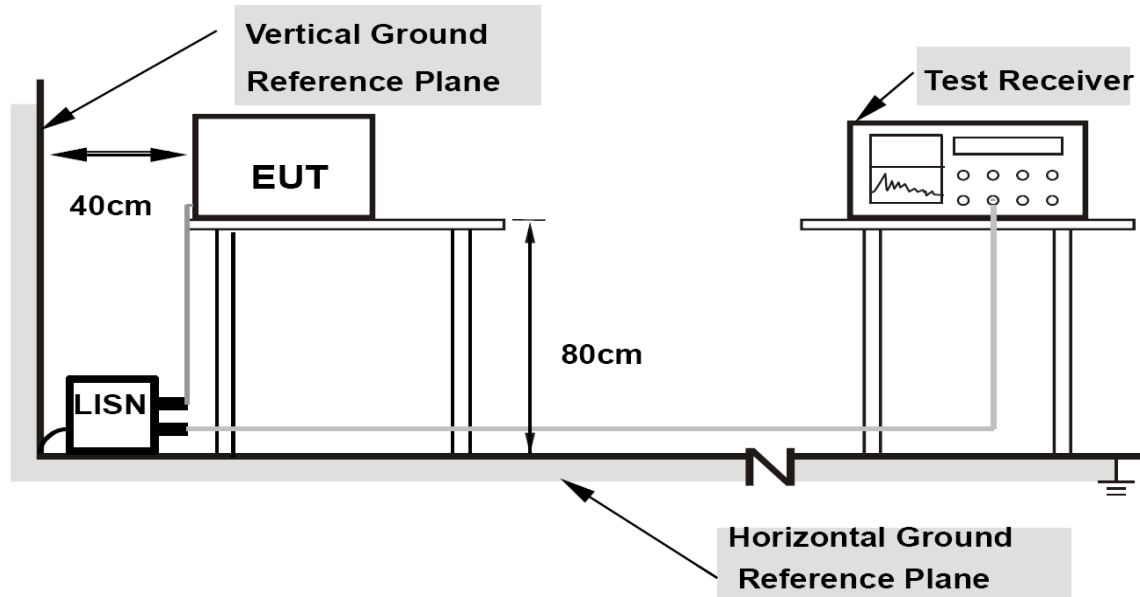


HORIZONTAL, QPK



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(μ V)	
	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.		

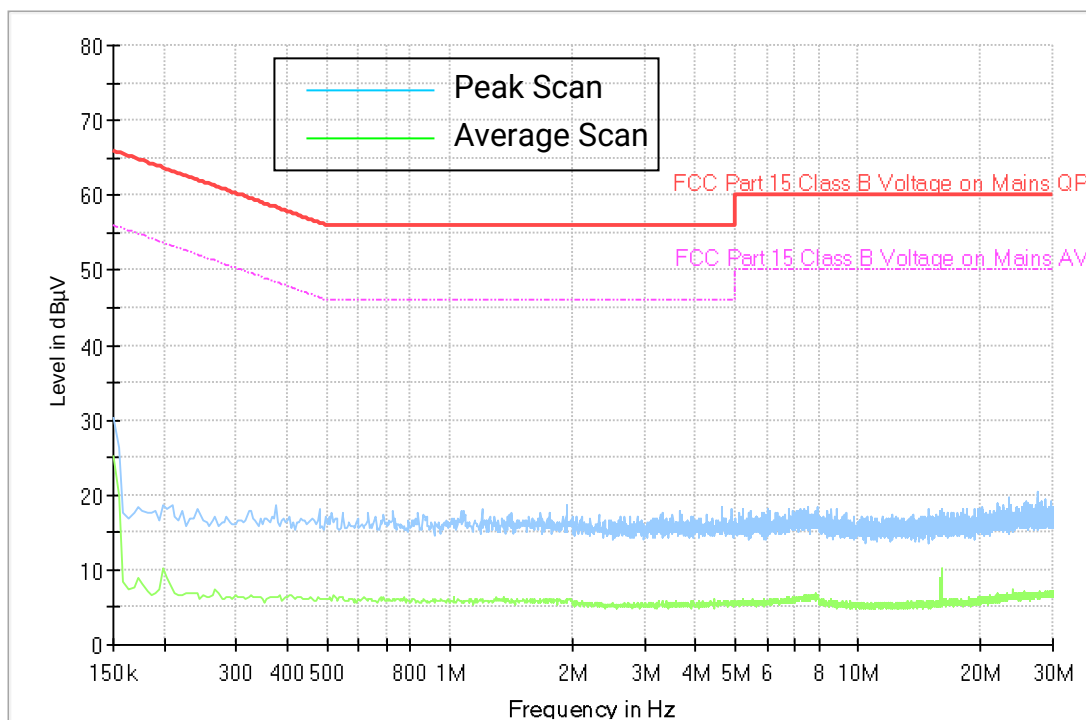
Table 2: Limits for Conducted Disturbance at the Mains Ports of Class B ITE

6.8.3. Test Result

120VAC, 60Hz

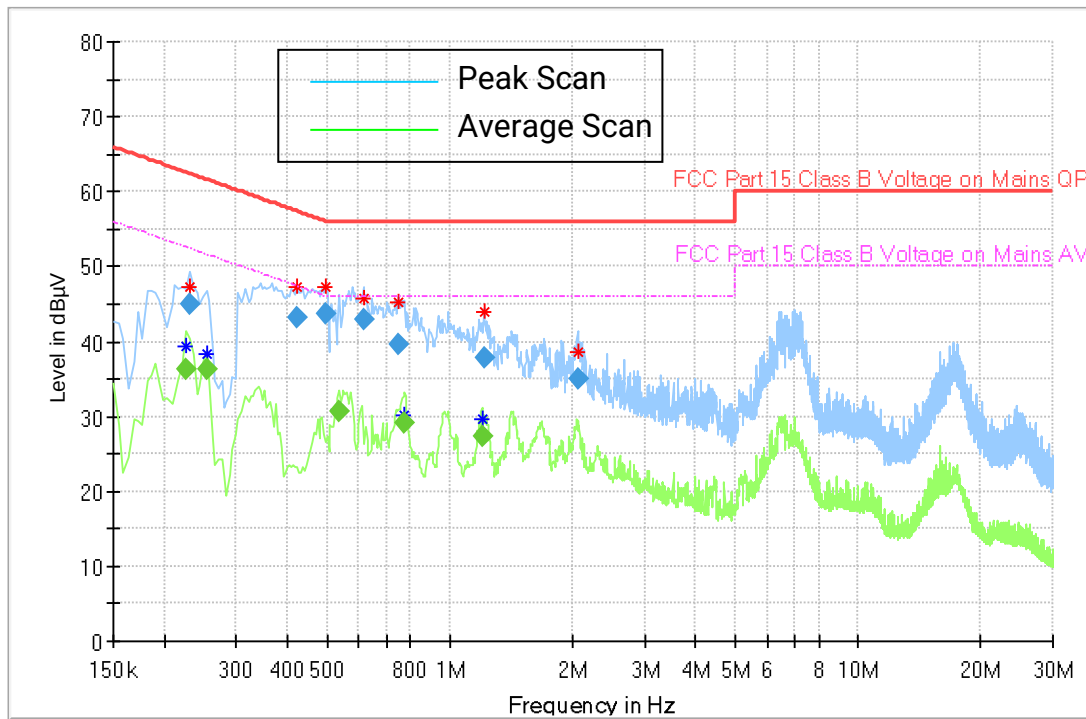
1) Ambient

Full Spectrum



2) Ambient Laptop

Full Spectrum

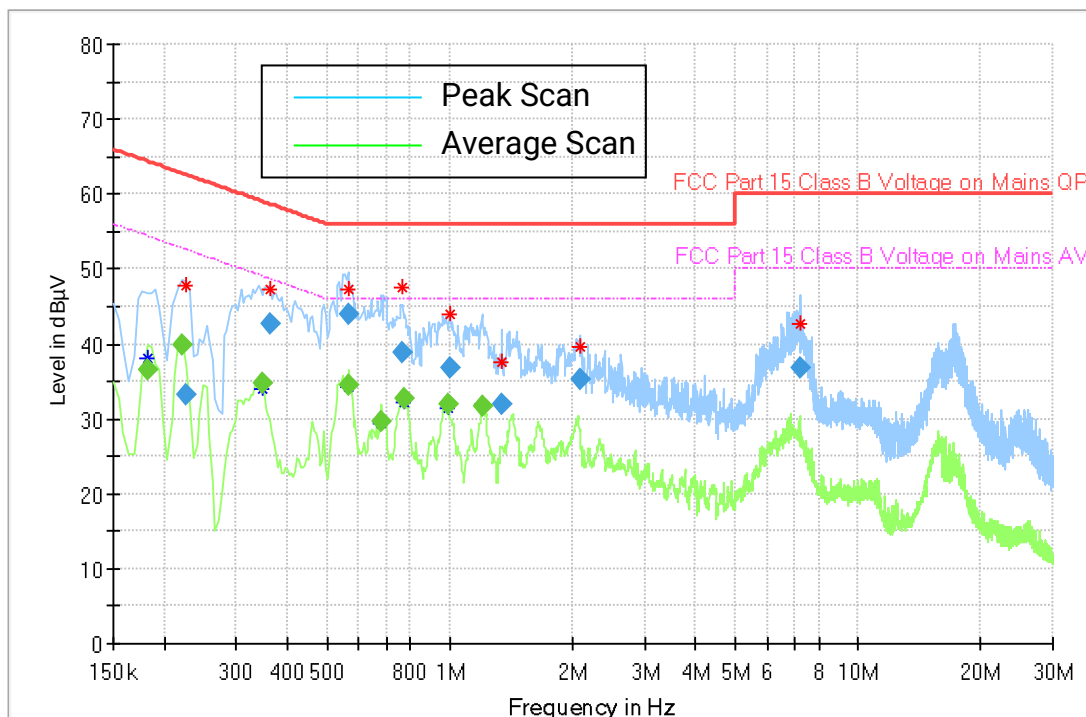


Quasipeak and Average Measurement

Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Line	Filter	Corr. (dB)
0.226500	—	36.28	52.58	16.30	L1	ON	10.3
0.231000	45.11	—	62.41	17.31	L1	ON	10.3
0.253500	—	36.35	51.64	15.29	N	ON	10.2
0.424500	43.25	—	57.36	14.11	N	ON	10.6
0.496500	43.82	—	56.06	12.24	N	ON	10.6
0.537000	—	30.78	46.00	15.22	N	ON	10.6
0.613500	42.83	—	56.00	13.17	N	ON	10.6
0.748500	39.73	—	56.00	16.27	N	ON	10.5
0.775500	—	29.22	46.00	16.78	N	ON	10.5
1.198500	—	27.36	46.00	18.64	L1	ON	10.4
1.212000	37.88	—	56.00	18.12	N	ON	10.3
2.058000	35.09	—	56.00	20.91	N	ON	10.3

3) Laptop + Camera Standby

Full Spectrum

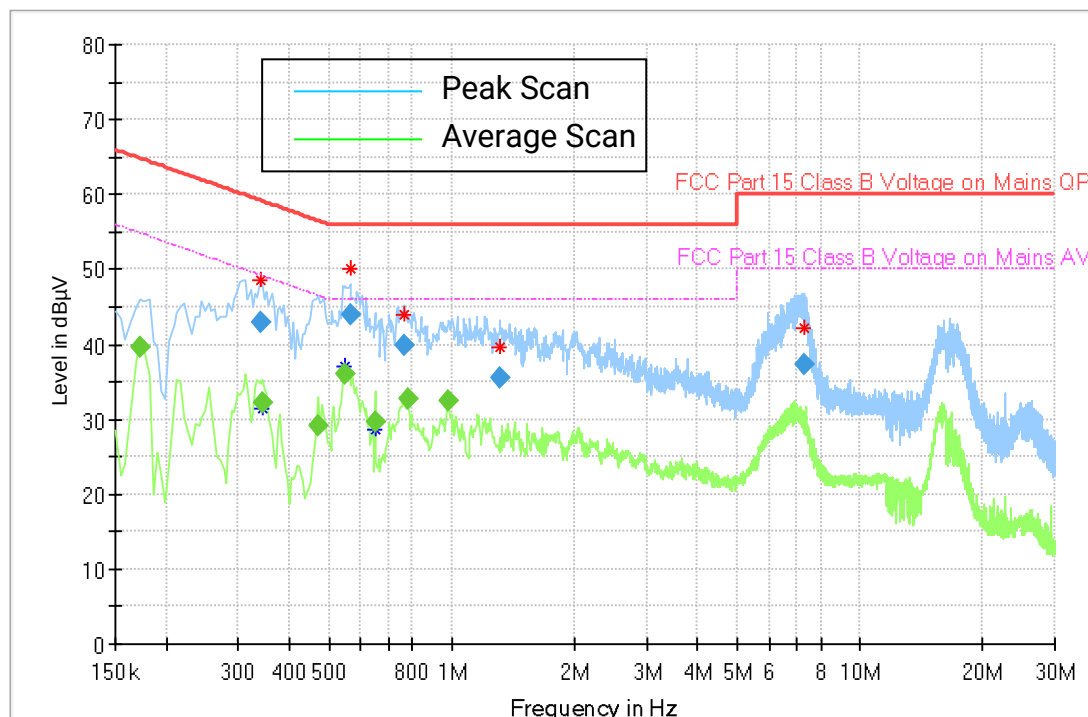


Quasipeak and Average Measurement

Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Line	Filter	Corr. (dB)
0.181500	—	36.61	54.42	17.81	N	ON	10.7
0.222000	—	39.90	52.74	12.84	N	ON	10.4
0.226500	33.11	—	62.58	29.46	N	ON	10.3
0.348000	—	34.83	49.01	14.18	N	ON	10.5
0.361500	42.67	—	58.69	16.03	N	ON	10.5
0.564000	43.92	—	56.00	12.08	N	ON	10.6
0.568500	—	34.54	46.00	11.46	N	ON	10.6
0.681000	—	29.64	46.00	16.36	N	ON	10.5
0.766500	38.95	—	56.00	17.05	N	ON	10.5
0.771000	—	32.73	46.00	13.27	L1	ON	10.5
0.987000	—	32.02	46.00	13.98	N	ON	10.4
1.000500	36.89	—	56.00	19.11	L1	ON	10.4
1.203000	—	31.59	46.00	14.41	L1	ON	10.4
1.342500	31.93	—	56.00	24.07	L1	ON	10.3
2.080500	35.33	—	56.00	20.67	N	ON	10.3
7.206000	36.92	—	60.00	23.08	L1	ON	10.4

4) Laptop + Camera TX WiFi 2.4GHz 802.11b

Full Spectrum



Quasipeak and Average Measurement

Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Line	Filter	Corr. (dB)
0.172500	—	39.54	54.84	15.30	L1	ON	10.8
0.339000	42.82	—	59.23	16.41	N	ON	10.5
0.343500	—	32.28	49.12	16.84	L1	ON	10.5
0.469500	—	29.12	46.52	17.40	L1	ON	10.6
0.550500	—	36.00	46.00	10.00	N	ON	10.6
0.564000	44.02	—	56.00	11.98	N	ON	10.6
0.649500	—	29.63	46.00	16.37	N	ON	10.5
0.762000	39.81	—	56.00	16.19	L1	ON	10.5
0.780000	—	32.64	46.00	13.36	N	ON	10.5
0.978000	—	32.51	46.00	13.49	N	ON	10.4
1.311000	35.41	—	56.00	20.59	N	ON	10.3
7.282500	37.41	—	60.00	22.59	L1	ON	10.4

END OF TEST REPORT