TEST REPORT

Report Reference No. ..... :	80260100023001
Sample ID ..... :	BLC-01-0946117-002
Date of issue ..... :	16/04/2026
Total number of pages ..... :	74
Testing Laboratory ..... :	TUV SUD South Asia Pvt Ltd
Address ..... :	Plot No. 3-P1-B, Hitech Defence & Aerospace Park, KIADB Industrial Area, BK Palya, Bengaluru, Bengaluru North Taluk | Pin code – 562149 India
Applicant's name..... :	Exicom Tele-Systems Limited
Address ..... :	3rd Floor, Plot No 38, Sector 32, Gurugram, Haryana 122001 India
Client Representative……..:	Surya Kant Singh
Test specification Standard……:	FCC Part 15 Subpart C 15.203, 15.205, 15.207, 15.209 & 15.247
Test Method ..... :	ANSI C63.10-2020
Non-standard test method…… :	NA
Test Report Form Number……..:	LAB_F(EE)_138-51
Product Name……..……..:	EV AC Charger
Test Item Description……..…..:	Electric Vehicle Supply Equipment
Manufacturer ……..……..:	Exicom Tele-Systems Limited
Model Number…...……...:	SpinAirUL11K240-1T48-W-M-R-ET
Serial Number……...:	HE531296#D32210417040844
Ratings…...……...:	208/240 VAC, 50/60 Hz
FCC ID……..……..:	2BUQR-SPINAIR-WMRET

Tested by (Name + Signature) .....:	Nikhil G	
Reviewed & Approved by (Name + Signature) .....:	Raghunath M N	

TEST REPORT

Report Reference. No.: 80260100023001

Possible test case verdicts:

- test case does not apply to the test object ....: N/A
- test object does meet the requirement .....: Pass
- test object does not meet the requirement ....: Fail

Testing:

Condition of the EUT on Receipt.....: Good

Date of receipt of test item .....: 06/10/2025

Date (s) of performance of tests.....: 17/11/2025 to 09/02/2026

General remarks:

1. The submitted sample(s) were not drawn by laboratory.
2. The test results presented in this report relate only to the object tested.
3. The results contained in this report reflect the results for this particular model and serial number. It is the responsibility of the manufacturer to ensure that all production models meet the intent of the requirements detailed within this report.
4. The correctness of the information related to sample(s) in the Test Request Form/Customer letterhead/E-mail is the customer's responsibility. The laboratory reports the said information in the test report and is not liable for the same.
5. The laboratory will retain the sample(s) for 45 days except for the mandatory retention period specified by the Regulatory Bodies and unless otherwise specified by the client.
6. This report shall not be reproduced, except in full, without the written approval of the Issuing testing laboratory. "(see Enclosure #)" refers to additional information appended to the report. "(see appended table)" refers to a table appended to the report.
7. Throughout this report a point is used as the decimal separator.

Use of uncertainty of measurement for decisions on conformity (decision rule): ~~Yes~~/No

☒ No decision rule is specified by the IEC/EN standard, when comparing the measurement result with the applicable limit according to the specification in that standard. The decisions on conformity are made without applying the measurement uncertainty ("simple acceptance" decision rule, previously known as "accuracy method").

☐ Other: (to be specified)

Decisions on conformity: Decision on conformity of results is based on as per standard limits or criteria.

Summary of compliance: The Product comply with the requirements of FCC Part 15 Subpart C 15.203, 15.205, 15.207, 15.209 & 15.247

Revision History of Records

Test Report Number	Version	Reason for Change	Date Issued
80260100023001	01	Initial Report	16/04/2026

TEST REPORT

Report Reference. No.: 80260100023001

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1 TEST LABORATORY

1.1 Test Facility

TUV SUD South Asia Pvt Ltd
Plot No. 3-P1-B, Hitech Defence & Aerospace Park, KIADB Industrial Area, BK Palya, Bengaluru, Bengaluru North Taluk | Pin code – 562149 India

FCC Registration Number: 553113
ISED Wireless Testing Laboratory: 33098

2 GENERAL INFORMATION

2.1 Appendices

The following documents are appended to this report as separate attachments:

Test Setup Photographs, External and Internal Photographs of the EUT, Label and its Location, Block Diagram, EUT Specifications, Schematic Diagrams, Bill of Materials, User Manual, and Maximum Permissible Exposure (MPE) information.

3 TEST SUMMARY

Table 1: Test Summary

Sl.no	Requirement – Test	Basic Standard	Result
		FCC	
1.	Maximum conducted (Peak) output power	FCC 15.247 (b)(3)	Pass
2.	Maximum Power Spectral Density	FCC 15.247(e)	*N/T
3.	DTS Bandwidth & 99% Bandwidth	FCC 15.247(a)(2)	*N/T
4.	Emissions in non-restricted frequency bands	FCC 15.247(d)	*N/T
5.	Spurious Radiated Emissions and Restricted Bands of Operation	FCC 15.247 (d) / 15.209 / 15.205	Pass
6.	Conducted Emissions on AC Power Lines	FCC 15.207	Pass
7.	Antenna Requirement	FCC 15.203	Pass

Antenna Requirement:

The module uses a PCB trace antenna or a flex antenna connected via an internal U.FL connector that is not accessible to the end user. This prevents antenna replacement or modification, ensuring compliance with FCC 15.203.

Note:

The model - **SpinAirUL11K240-1T48-W-M-R-ET, SpinAirUL11K240-1T40-W-M-R-ET, SpinAirUL11K240-1T32-W-M-R-ET,**have been included, as the manufacturer's specifications detailed in the **Product Model Similarities/Differentiating Characteristics** confirm either no changes or changes that do not necessitate separate testing.

***NA -** Not Applicable

***N/T -** Not Tested - These test cases are not tested, the product uses certified Wi-Fi module from Murata Manufacturing Co., Ltd. With FCC ID: XMR20211108FC41D issued by the Quectel Wireless Solutions Co., Ltd.

4 MEASUREMENT UNCERTAINTY

Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k = 2

Table 2: Measurement Uncertainty

No.	Item	Uncertainty
1	Conducted Emission Test	2.25dB
2	Radiated Emission Test	4.71 dB

5 TEST EQUIPMENT USED

Table 3: Test Equipment Used

Sl. No	Test Equipment	Manufacturer	Model No	Serial No	Calibration Due Date
1.	Active Loop Antenna	Schwarzbeck Mess-Elektronik	FMZB 1519C	43	23/03/2027
2.	Biconical Antenna	Schwarzbeck Mess-Elektronik	VHBB 9124	1940	13/03/2027
3.	Log-Periodic Antenna	Schwarzbeck Mess-Elektronik	VUSLP 9111 B	735	16/03/2027
4.	Double Ridge Horn Antenna	Schwarzbeck Mess-Elektronik	BBHA 9120D	2732	20/03/2027
5.	Double Ridge Broadband Horn Antenna	Schwarzbeck Mess-Elektronik	BBHA 9120L	18	15/05/2026
6.	EMI Test Receiver	ROHDE & SCHWARZ	ESR3	103112	28/03/2027
7.	EMI Test Receiver	ROHDE & SCHWARZ	ESR26	101821	09/07/2026
8.	Open Switch and Control Platform	ROHDE & SCHWARZ	OSP150	101158	30/03/2027
9.	EMI Test Receiver	ROHDE & SCHWARZ	ESW44	103295	17/03/2027
10.	Signal controlling unit	ROHDE & SCHWARZ	SCU01F	100507	--
11.	Signal Conditioning Unit	ROHDE & SCHWARZ	SCU18F	101037	--
12.	Signal controlling unit	ROHDE & SCHWARZ	SCU40F1	100653	--
13.	LISN	Scientific Mes - Technik Pvt. Ltd.	SMLIN32-2	2303007	20/01/2027
14.	Pulse Limiter	ROHDE & SCHWARZ	ESH3-Z2	103167	19/01/2027
15.	Humidity/Barometer/Temperature. Data Recorder	Lutron	MHB-382SD	074523	09/09/2026

Table 4: Instrument application Software versions

Sl. No	Test Type	Application software and version
1	Antenna Port conducted measurement: TS8997 system	WMS 32 V11.60.00
2	Radiated spurious emission measurement- 10-meter Semi Anechoic Chamber	Elektra V5.03.0

6 EQUIPMENT INFORMATION

6.1 Product Function

The SPIN Air, as well as its various models and configurations. It provides essential guidance for the following activities:
Installation of the charger
Operation of the charger
Performing fundamental maintenance procedures.

6.2 Product Model Similarities/Differentiating Characteristics

Table 5: Product Model Similarities/Differentiating Characteristics

Block features/Model No.	Similarity	Differences
Voltage and current connection		
SpinAirUL7K240-NT32-W-M-R-ET	Input/ Output Voltage-L1+L2+GND: 208/240V nominal 50/60Hz.	Input/ Output Current 32A, 7.4kW Max, with (L1, L2) 8/6AWG, GND 10AWG
SpinAirUL9K240-NT40-W-M-R-ET		Input/ Output Current 40A, 9.6kW Max (L1, L2) 6AWG, GND 10AWG
SpinAirUL11K240-1T48-W-M-R-ET		Input/ Output Current 48A, 11.5 kW Max (L1, L2) 6AWG, GND 10AWG.
Input Plug/ Output Connection		
SpinAirUL7K240-1T32N6-W-M-R-ET	NEMA plug 6-50P with Wi-Fi and BLE, LTE, RFID, and Ethernet	With an AC type 1 Gun
SpinAirUL7K240-NT32N6-W-M-R-ET		With the Tesla (NACS) output Gun
SpinAirUL7K240-1T32N14-W-M-R-ET	NEMA plug 14-50P with Wi-Fi and BLE, LTE, RFID, and Ethernet	With an AC type 1 Gun
SpinAirUL7K240-NT32N14-W-M-R-ET		With the Tesla (NACS) output Gun
SpinAirUL7K240-1T32-W-M-R-ET	L1-L2 (6AWG) wire fixed GND (8AWG) connection (conduit) with Wi-Fi, BLE, LTE, RFID, and Ethernet	With an AC type 1 Gun
SpinAirUL7K240-NT32-W-M-R-ET		With the Tesla (NACS) output Gun
SpinAirUL9K240-1T40N6-W-M-R-ET	NEMA plug 6-50P with Wi-Fi and BLE, LTE, RFID, and Ethernet	With an AC type 1 Gun
SpinAirUL9K240-NT40N6-W-M-R-ET		With the Tesla (NACS) output Gun
SpinAirUL9K240-1T40N14-W-M-R-ET	NEMA plug 14-50P with Wi-Fi and BLE, LTE, RFID, and Ethernet	With an AC type 1 Gun
SpinAirUL9K240-NT40N14-W-M-R-ET		With the Tesla (NACS) output Gun
SpinAirUL9K240-1T40-W-M-R-ET	L1-L2 (6AWG) wire fixed GND (8AWG) connection (conduit) with Wi-Fi, BLE, LTE, RFID, and Ethernet	With an AC type 1 Gun
SpinAirUL9K240-NT40-W-M-R-ET		With the Tesla (NACS) output Gun
SpinAirUL11K240-1T48-W-M-R-ET	L1-L2 (6AWG) wire fixed GND (8AWG) connection (conduit) with Wi-Fi, BLE, LTE, RFID, and Ethernet	With an AC type 1 Gun
SpinAirUL11K240-NT48-W-M-R-ET		With the Tesla (NACS) output Gun
Signal Conditioning for voltage and current input/ output and power supply	No differences	All hardware is the same except differences.
Measurement and microcontroller	No differences	Common Software and hardware
Peripheral (LED, Key, Memory)	No differences	Common Software and hardware

6.3 General Information of EUT

Table 6: EUT details as declared by client*

EUT Name	EV AC Charger		
Model	SpinAirUL11K240-1T48-W-M-R-ET		
Series Model	HE531296#D32210417040844		
Protocol	Bluetooth Low Energy		Wi-Fi 2.4GHz
Operating Frequency Range	2402MHz-2480MHz		2412MHz to 2462MHz
Channel Spacing	2MHz		5MHz
No. of Channels	40		11
Environmental conditions	Storage	-58°F to +158°F (-30°C to +50°C)	
	Operating	-22°F to +122°F (-30°C to +50°C)	
Supply Voltage	208/240 VAC with 60 Hz		
Maximum Measured Power (dBm)	6.58dBm 2440 (MHz)@2Mbps		21.61dBm 2437 (MHz) @g Mode_6Mbps
Modulation	GFSK		802.11b: DSSS, 802.11g/n: OFDM, 802.11ax: OFDMA
Number of antennas	1		1
Antenna Type	PCB Chip Antenna		PCB Chip Antenna
Antenna Gain	-1.8 dBi		-1.8 dBi
EUT Dimension (LxWxH)	246mm x 246mm x 133mm		

***Disclaimer:** The TÜV SÜD is not responsible for the accuracy of the customer declared specification.

7 TEST DESCRIPTION

7.1 Test Operation and software mode

Hardware Version Identification number (HVIN): V.35
Software Version: V.35.36.1.4

7.2 Principle of Configuration Selection

Transmission was enabled with highest possible duty cycle on low, mid and high channels.
Software used to configure: Tera Term tool was used to configure the EUT and to control the test modes during the evaluation.

7.3 Accessories and Auxiliary Equipment

Table 7: Accessories and Auxiliary Equipment

Description	Manufacturer	Model	S/N	Rating
Laptop	DELL	P144G201	5510FX3	230V AC
AC Source	AMETEK	SQ0030G1D1-0100000	2420A01660	300V AC, 60 Hz, 30 kW

Note:
As declared by the manufacturer, an AC source was used to provide the required split-phase input of 208/240 VAC at 60 Hz.

7.4 List of frequencies

Table 8: List of BLE 2.4GHz Centre frequencies

Frequency Band (GHz)	Channel No.	Frequency (MHz)
BLE (2.4-2.4835)	**0**	**2402**
	1	2404
	2	2406
	3	2408
	:	:
	:	:
	18	2438
	19	**2440**
	20	2442
	:	:
	:	:
	36	2474
	37	2476
	38	2478
	39	**2480**

Channel used for BLE testing

Channel low: 2402MHz

Channel mid: 2440MHz

Channel high: 2480MHz

Table 9: List of Wi-Fi 2.4GHz Centre frequencies

Frequency Band (MHz)	Channel No.	Channel Frequency (MHz)
2412 – 2462	**1**	**2412**
	2	2417
	3	2422
	4	2427
	5	2432
	6	**2437**
	7	2442
	8	2447
	9	2452
	10	2457
	11	**2462**

Channel used for Wi-Fi 2.4GHz testing

Protocol: WLAN 802.11b_11Mbps
Channel Low : 2412 MHz
Channel Mid : 2437 MHz
Channel High : 2462 MHz

Protocol: WLAN 802. 11n_HT20_MCS0
Channel Low : 2412 MHz
Channel Mid : 2437 MHz
Channel High : 2462 MHz

Protocol: WLAN 802.11g_6Mbps
Channel Low : 2412 MHz
Channel Mid : 2437 MHz
Channel High : 2462 MHz

8 OPERATIONAL DESCRIPTION

Its an EV AC charger which operate over AC mains supply. 208/240VAC nominal (167-264VAC) 50/60Hz, wired with L1,L2, GND NEMA Plug. EV charger power to the EV with SAE J1772(Type 1) and NACS. This product provide degree of protection to the end user (Over Current, Over Voltage, Under Voltage, Ground Fault, Surge Protection, Leakage Current Detection, Short Circuit Protection, Over Temperature). User can authenticate Electric Vehicle with EV charger to initiate charge with authentication with RFID, Plug & Play, via Spin Control mobile app. or 3rd party CMS/CMS based application. EV Charger facilitate with BLE/Wi-Fi/GSM/LTE/ ETHERNET (optional) connectivity for end user. EV Charger work over OCPP 1.6J protocols.

9 TEST METHODOLOGY

9.1 Conducted Spurious Emission Test on AC Power Lines

AC powerline conducted emissions were measured across the 50Ω LISN port connected to the Equipment Under Test (EUT). Emission voltage and current measurements were performed on each current-carrying conductor at the EUT power cord plug using mating plugs and receptacles on the LISN. The EUT was tested using manufacturer-supplied or recommended power cords, ensuring equivalent electrical and shielding characteristics. The device will be positioned on a test table 80cm above the reference ground plane, with a vertical conducting plane located 40cm to its rear. AC conducted emission measurements were conducted over a frequency range of 150kHz to 30MHz, utilizing an AC adapter with a 110V AC 60Hz supply.

9.1.1 Test Setup Configuration

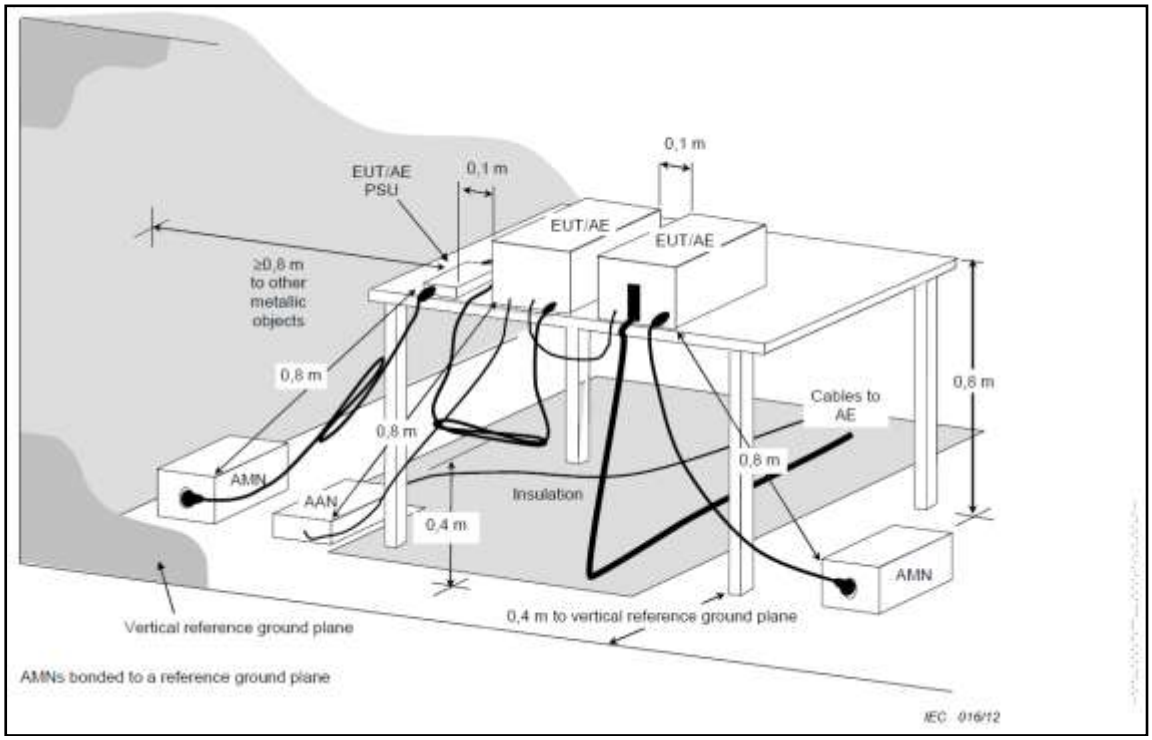


Figure 1: Conducted Spurious Emission Test on AC Power Lines

9.2 Radiated Emission Test

The radiated emission measurement was performed according to the procedures in ANSI C63.10-2020. The equipment under test (EUT) was placed at the middle of the 1mtr high turntable for below 1 GHz and the EUT is 3 meters far from the measuring antenna. The turntable was rotated 360 ˚ for obtaining the maximum emission. The height of the measuring antennas was scanned between 1 m and 4 m, and the antenna rotated to repeat the measurements for both the horizontal and vertical antenna polarizations. Repeat the measurement steps until the maximum emissions were obtained. The measurement above 1GHz was performed by Horn Antenna, the measurement below 30 MHz was performed by loop antenna, Measurement from 30 MHz to 1000 MHz was performed by Broadband Trilog Antenna.

The EUT was rotated around the X-, Y-, and Z-Axis and the results from worst case axis are recorded

9.2.1 Test Setup Configuration

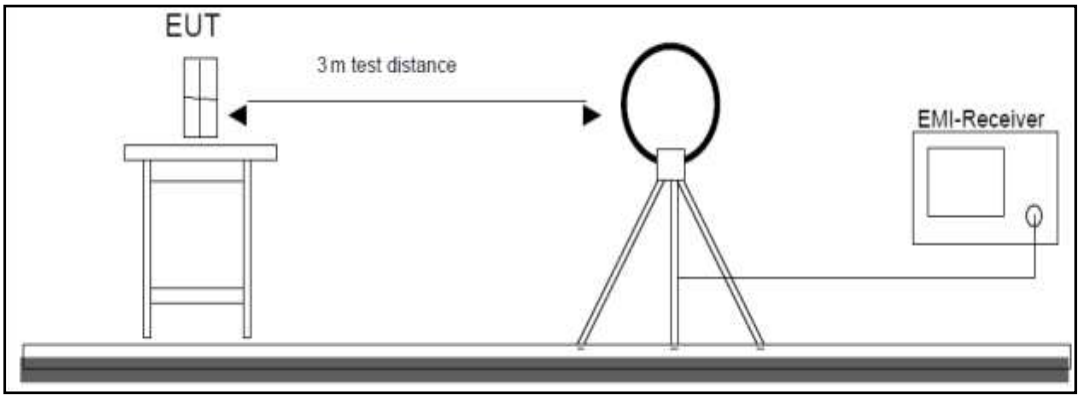


Figure 2: Frequency Range 9kHz- 30MHz

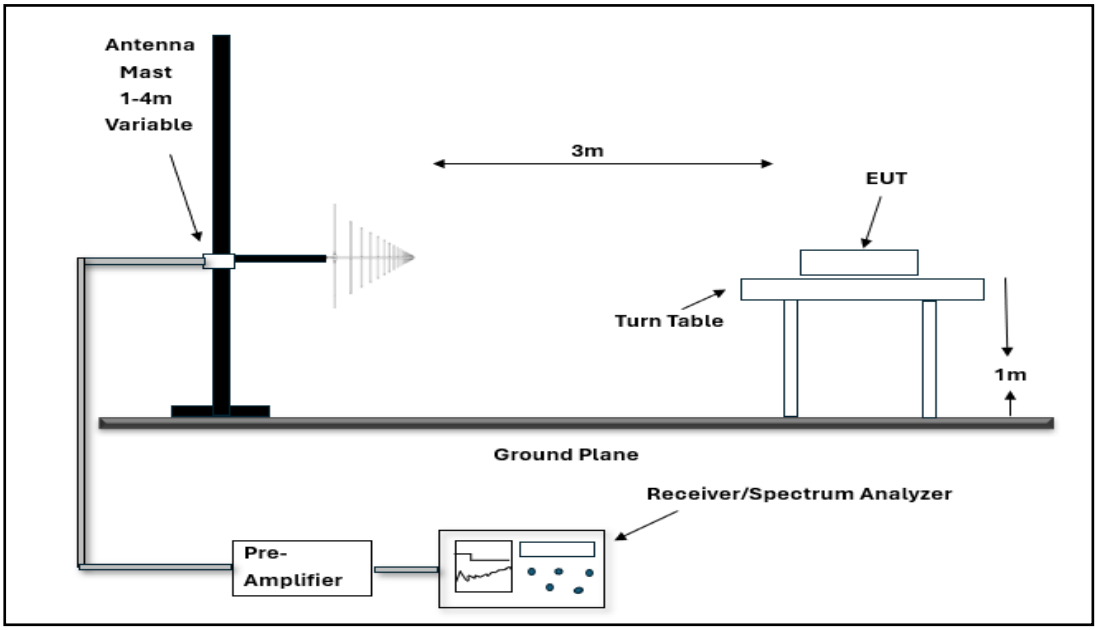


Figure 3: Frequency Range 30MHz - 1GHz

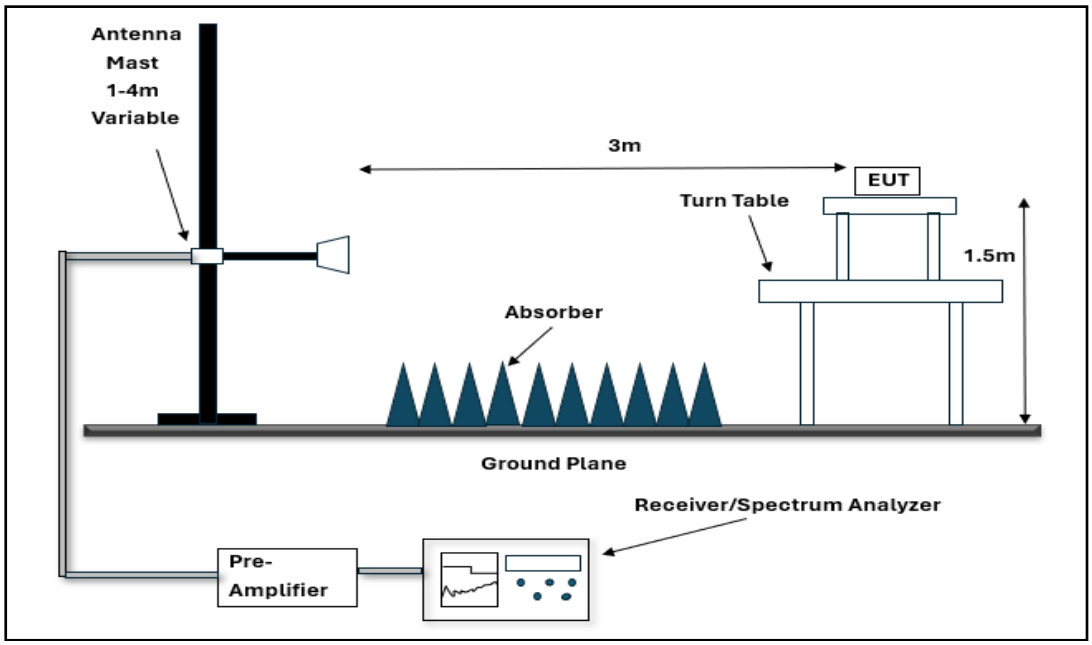
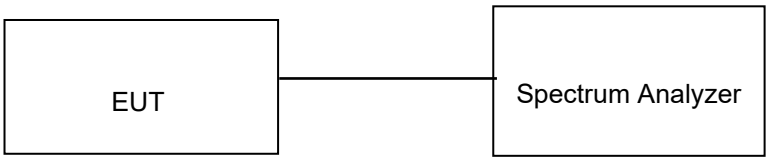


Figure 4: Frequency Range above 1GHz

10 TEST CONDITIONS AND RESULTS FOR BLE– MAXIMUM PEAK CONDUCTED OUTPUT POWER

Test Specification	FCC part 15 Subpart C 15.247 (b)(3)
Test Method	Subclause 11.9.1.1 of ANSI C63.10-2020
Measurement Bandwidth	1MHz
Detector	Peak
Port of testing	Antenna port
Requirement	Power ≤ 1 W (30 dBm)

Test Setup:



10.1 Environmental Conditions

Temperature	:	24°C
Relative humidity	:	52%
Power supply	:	208/240 VAC, 60 Hz

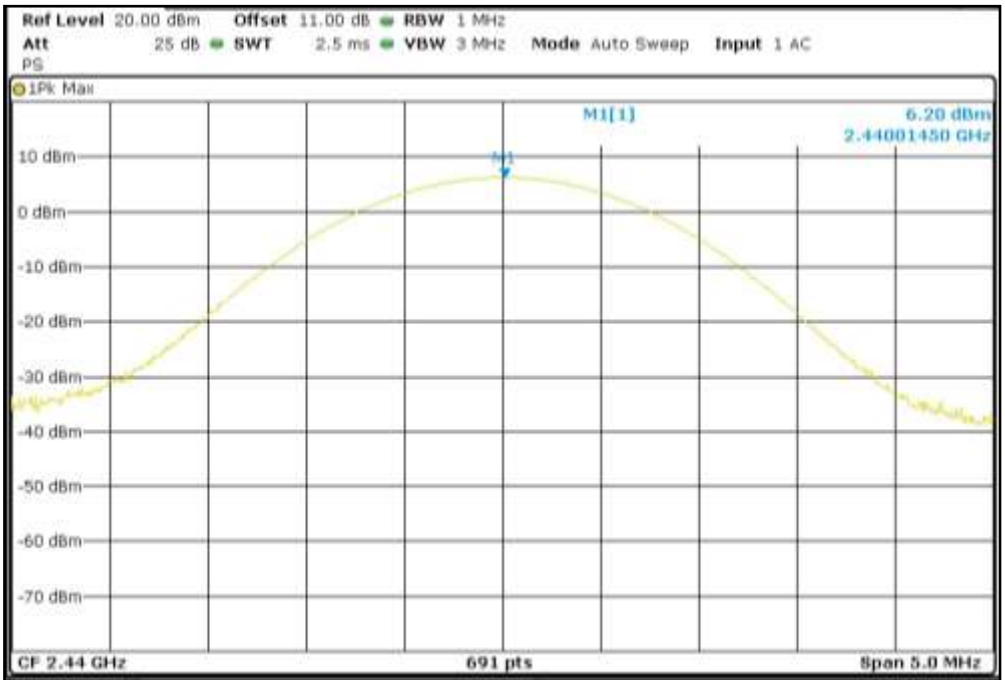
10.2 Test results

Data rate	Channel Frequency (MHz)	Measured Average Power (dBm)	Limit (dBm)
1Mbps	2402	6.01	30
	2440	6.20	30
	2480	5.06	30
2Mbps	2402	6.31	30
	2440	6.58	30
	2480	5.25	30

Test plots:

Data rate: 1Mbps

Channel Frequency: 2402MHz



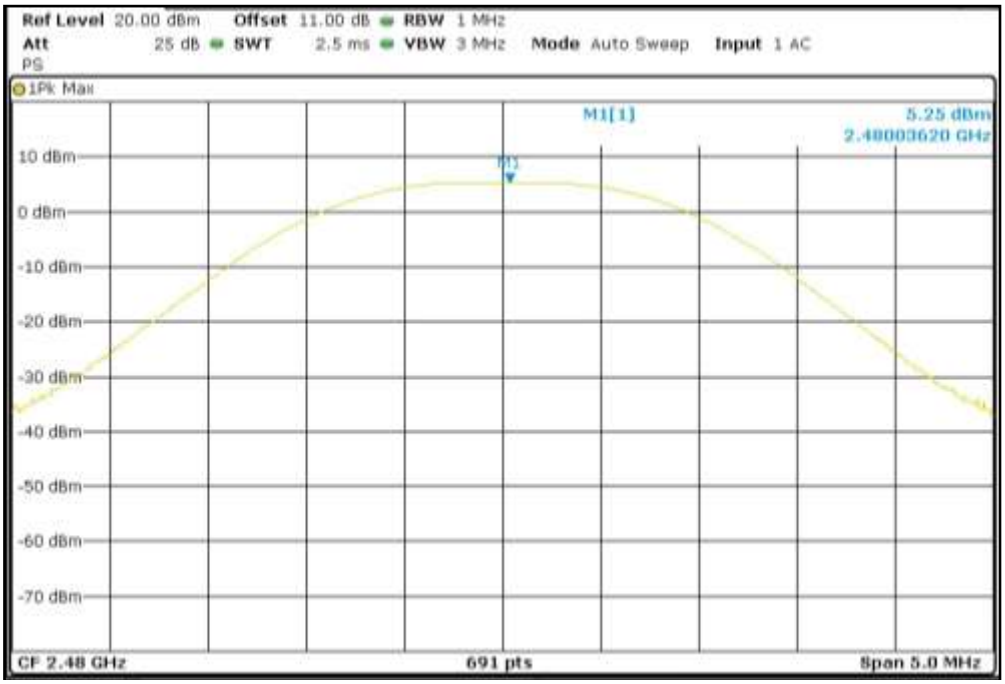
Channel Frequency: 2440MHz

Channel Frequency: 2480MHz

Data rate: 2Mbps

Channel Frequency: 2402MHz

Channel Frequency: 2440MHz



Channel Frequency: 2480MHz

11 TEST CONDITIONS AND RESULTS – SPURIOUS RADIATED EMISSIONS & RESTRICTED BANDS OF OPERATION

Test Specification	FCC part 15 Subpart C 15.247 (d) / (15.209 & 15.205)
Test Method	ANSI C63.10-2020
Testing Location	Semi Anechoic Chamber 9kHz - 1 GHz Fully Anechoic Chamber 1 GHz - 26GHz
Measurement Bandwidth	100 kHz for frequency range < 1GHz 1 MHz for Frequency range >1GHz
Measuring Distance	3 m
Requirement	As per the limits mentioned in the below table
Test Setup	Refer TEST METHODOLOGY

Table 10: Transmitter limits for Radiated emission

Frequency (MHz)	Field strength (µV/m)	Field strength (dBµV/m)	Distance of Measurement (m)
0.009 – 0.490	2400/F(kHz)	48.50 – 13.80	300*
0.490 – 1.705	24000/F(kHz)	33.80 – 23.00	30*
1.705 -30	30	29.54	30*
30-88	100	40.0	3
88-216	150	43.5	3
216-960	200	46.0	3
Above 960	500	54.0	3

Remark: * The limit shows in the table above of frequency range 0.009 – 0.490, 0.490 – 1.705 MHz and 1.705-30MHz is at 300-meter, 30-meter and 30-meter range respectively, which corresponds to 128.51 – 93.80, 73.80 – 62.96 and 69.54 dBµV/m at 3m range by extrapolation calculation and the measurement of loop antenna.

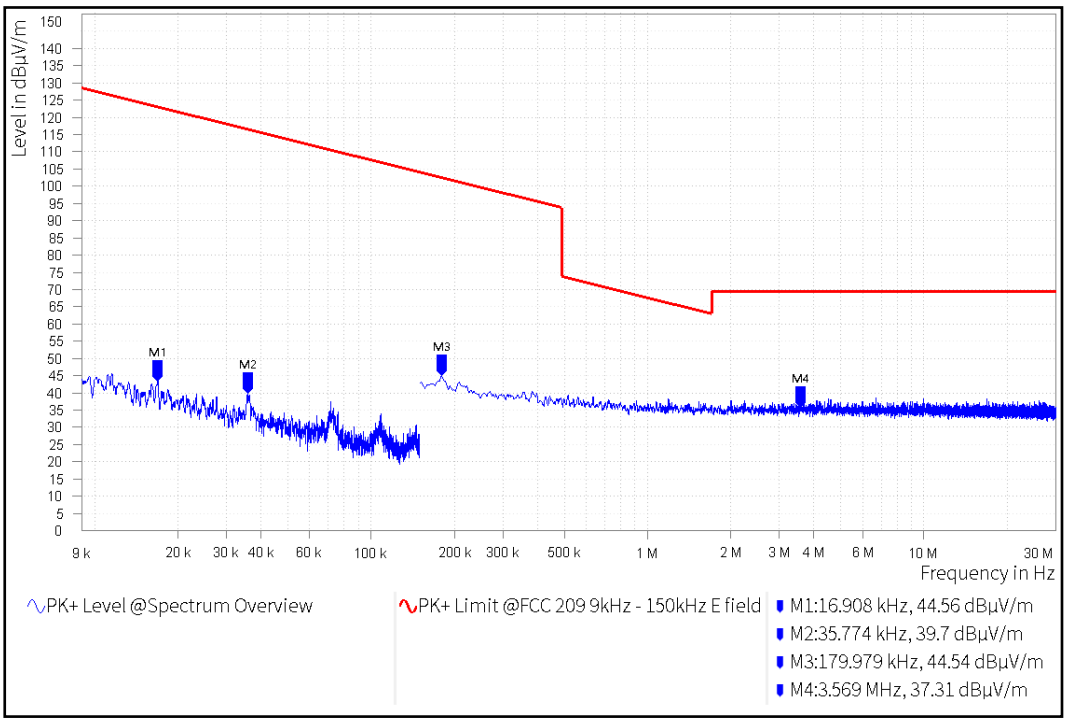
The emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9–90 kHz, 110–490 kHz and above 1000 MHz Radiated emission limits in these three bands are based on measurements employing an average detector.

11.1 Environmental Conditions

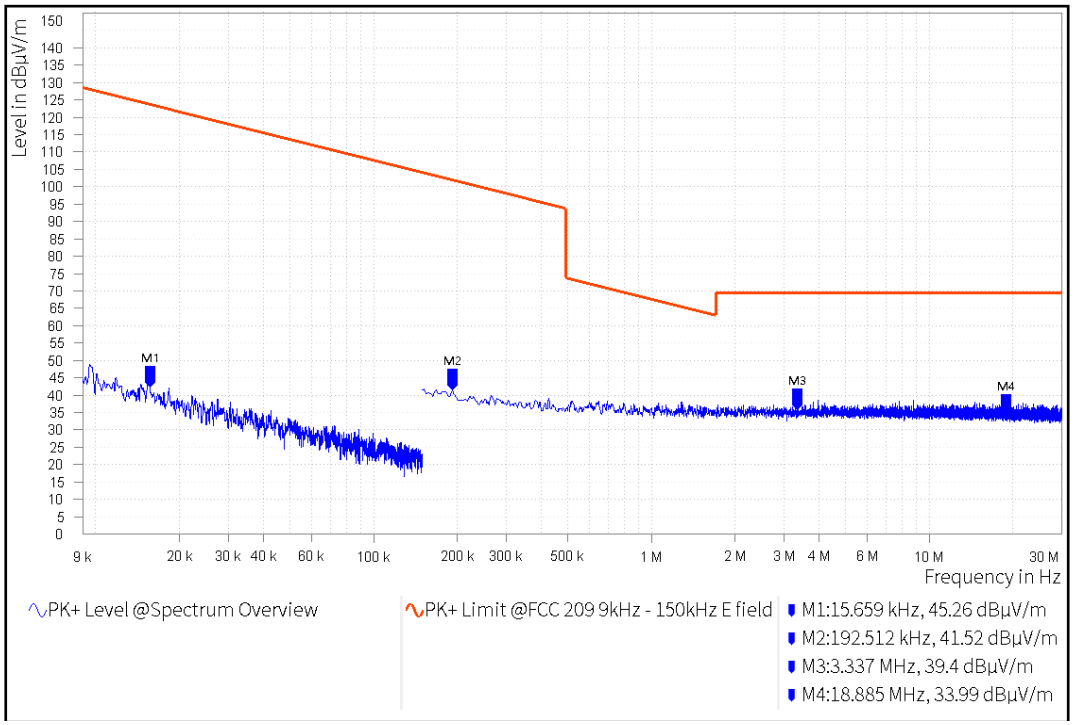
Temperature	:	24°C
Relative humidity	:	52%
Power supply	:	208/240 VAC, 60 Hz

11.2 Test result:

Test results for frequency range 9kHz – 30MHz



Frequency range: 9kHz - 30MHz Polarization: Parallel



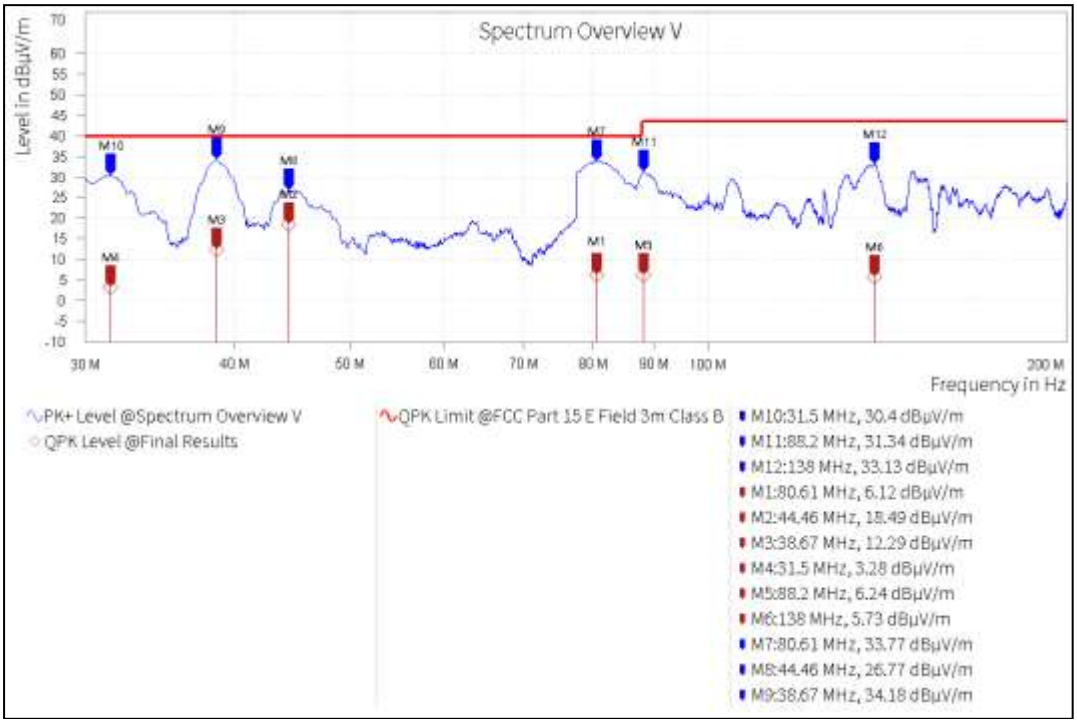
Frequency range: 9kHz - 30MHz Polarization: Perpendicular

Test results for frequency range 30MHz – 1GHz

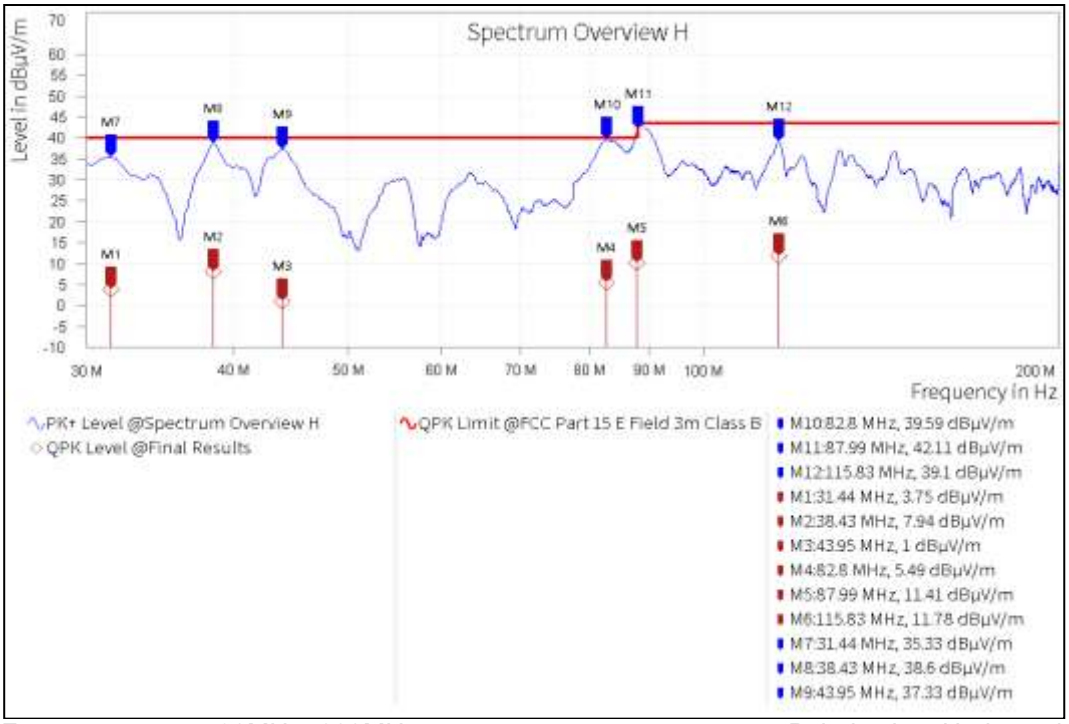
Table 11: Test results for frequency range 30MHz – 1GHz

Antenna Polarization	Measured Frequency (MHz)	Measured Quasi Peak value (dBµV/m)	Limit (dBµV/m)	Margin (dB)
Vertical	31.50	3.28(QP)	40	-36.72
	38.67	12.29(QP)	40	-27.71
	44.46	18.49(QP)	40	-21.51
	80.61	6.12(QP)	40	-33.88
	88.20	6.24(QP)	43.5	-37.26
	138.00	5.73(QP)	43.5	-37.77
	240.79	32.55	46	-13.45
	352.55	31.42	46	-14.58
	433.91	33.77	46	-12.23
	599.99	30.88	46	-15.12
	950.00	31.20	46	-14.80
Horizontal	31.44	3.75(QP)	40	-36.25
	38.43	7.94(QP)	40	-32.06
	43.95	1.00(QP)	40	-39.00
	82.80	5.49(QP)	40	-34.51
	87.99	11.41(QP)	40	-28.59
	115.83	11.78(QP)	43.5	-31.72
	240.79	32.55	46	-13.45
	352.55	31.42	46	-14.58
	433.91	33.77	46	-12.23
	599.99	30.88	46	-15.12
	950.00	31.20	46	-14.80

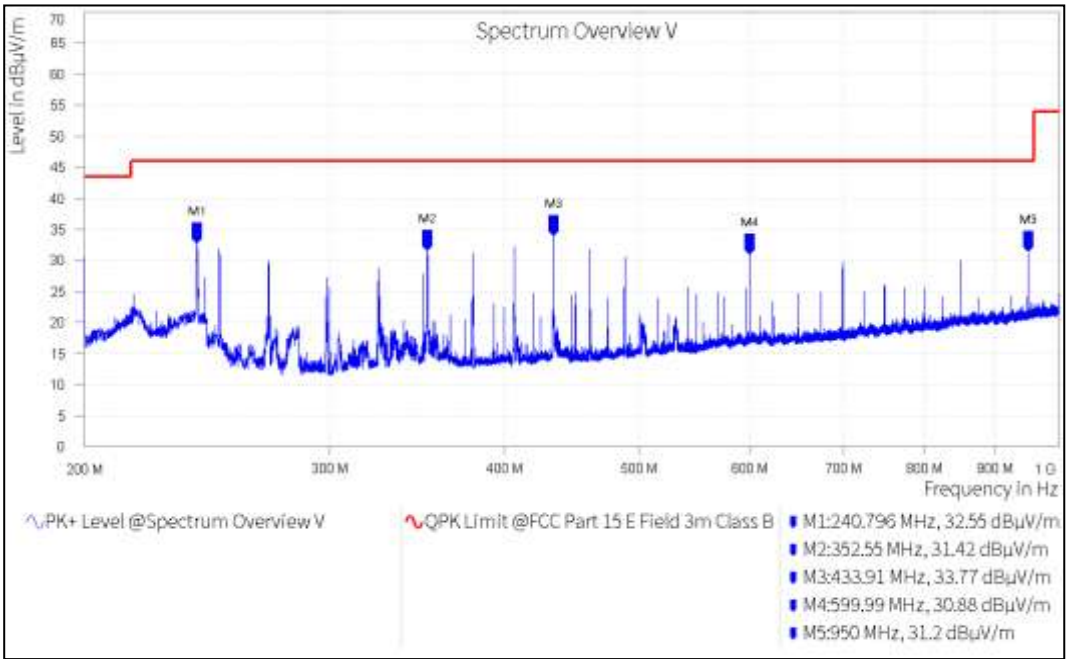
Test Plots:



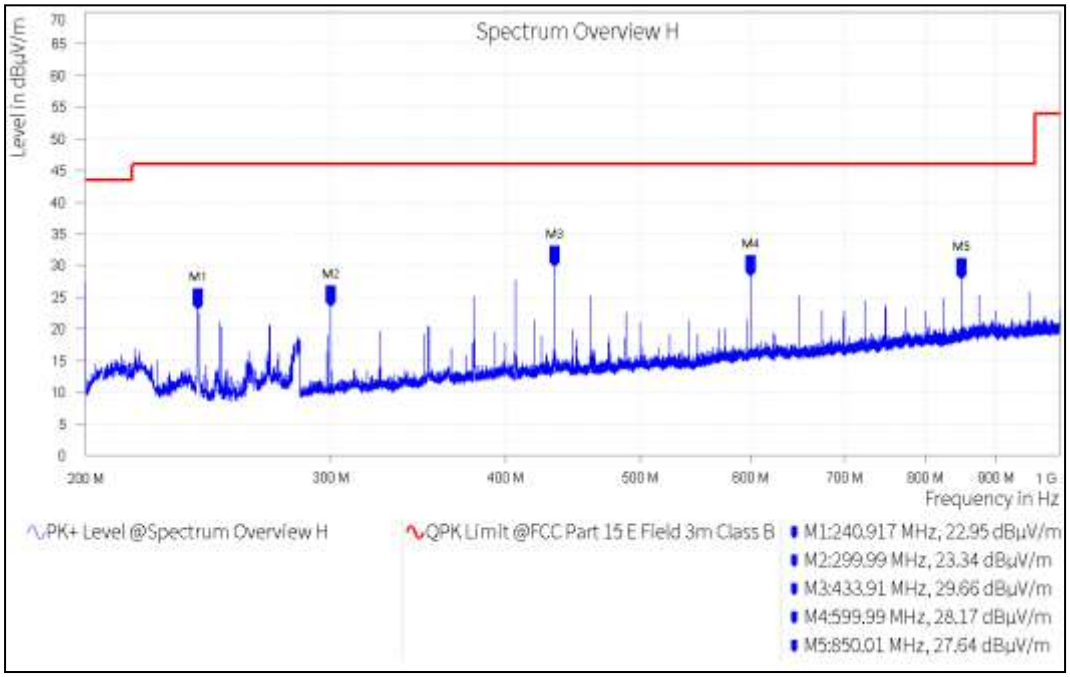
Frequency range: 30MHz -200MHz Polarization: Vertical



Frequency range: 30MHz -200MHz Polarization: Horizontal



Frequency range: 200MHz – 1GHz Polarization: Vertical



Frequency range: 200MHz – 1GHz Polarization: Horizontal

Table 12: Test results for frequency above 1GHz

Data Rate: 1Mbps

Channel Frequency (MHz)	Frequency (MHz)	Antenna Polarization	Emission level (dBµV/m)	Limit (dBµV/m)	Margin (dB)
2402	2402(Pk)	Vertical	101.56	-	-
	2402(Av)		96.45	-	-
	2390(Pk)		42.54	74*	-31.46
	2390(Av)		29.27	54*	-24.73
	4804(Pk)		42.80	74	-31.20
	4804(Av)		31.09	54	-22.91
	7206(Pk)		48.93	74	-25.07
	7206(Av)		36.69	54	-17.31
	2402(Pk)	Horizontal	101.82	-	-
	2402(Av)		96.86	-	-
	2390(Pk)		45.24	74*	-28.76
	2390(Av)		30.60	54*	-23.40
	4804(Pk)		42.80	74	-31.20
	4804(Av)		30.84	54	-23.16
	7206(Pk)		48.90	74	-25.10
	7206(Av)		37.00	54	-17.00
2440	2440(Pk)	Vertical	102.05	-	-
	2440(Av)		97.08	-	-
	4880(Pk)		43.29	74	-30.71
	4880(Av)		31.48	54	-22.52
	7320(Pk)		48.27	74	-25.73
	7320(Av)		36.52	54	-17.48
	2440(Pk)	Horizontal	102.07	-	-
	2440(Av)		97.14	-	-
	4880(Pk)		42.05	74	-31.95
	4880(Av)		30.82	54	-23.18
	7320(Pk)		48.79	74	-25.21
	7320(Av)		36.67	54	-17.33
2480	2480(Pk)	Vertical	100.89	-	-
	2480(Av)		95.95	-	-
	2483.5(Pk)		51.32	74*	-22.68
	2483.5(Av)		37.21	54*	-16.79
	4960(Pk)		43.41	74	-30.59
	4960(Av)		31.69	54	-22.31
	7440(Pk)		48.83	74	-25.17
	7440(Av)		36.64	54	-17.36
	2480(Pk)	Horizontal	101.93	-	-
	2480(Av)		97.00	-	-
	2483.5(Pk)		52.27	74*	-21.73
	2483.5(Av)		38.73	54*	-15.27
	4960(Pk)		42.28	74	-31.72
	4960(Av)		31.29	54	-22.71
	7440(Pk)		47.80	74	-26.20
	7440(Av)		36.25	54	-17.75

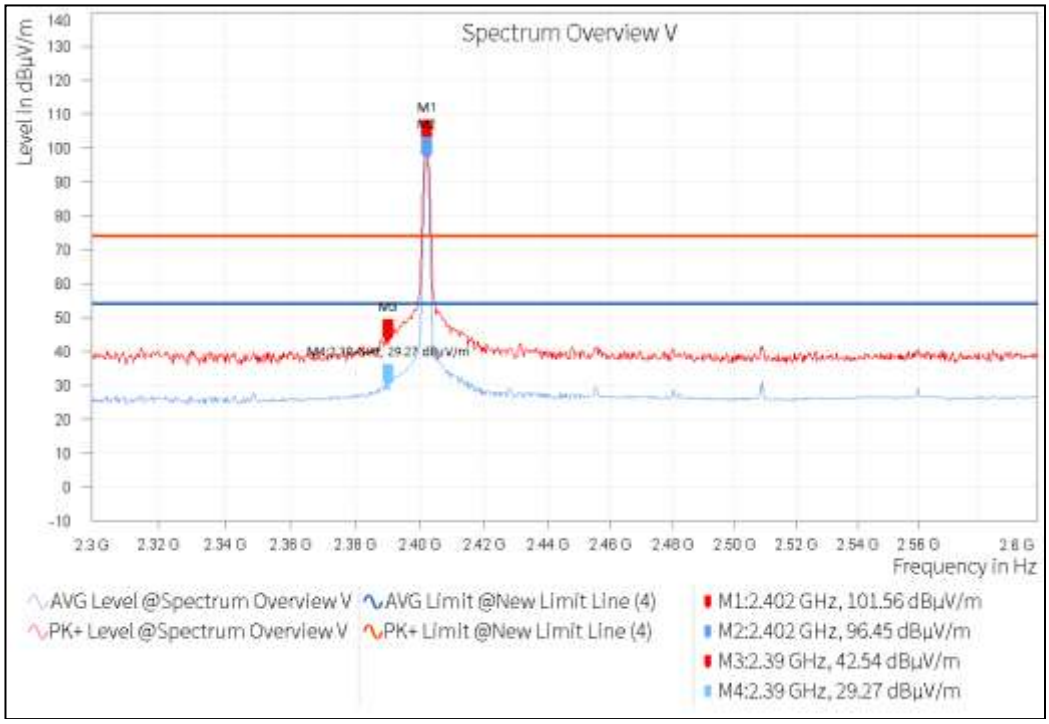
Data Rate: 2Mbps

Channel Frequency (MHz)	Frequency (MHz)	Antenna Polarization	Emission level (dBµV/m)	Limit (dBµV/m)	Margin (dB)
2402	2402(Pk)	Vertical	101.43	-	-
	2402(Av)		97.10	-	-
	2390(Pk)		41.53	74*	-32.47
	2390(Av)		29.13	54*	-24.87
	4804(Pk)		42.68	74	-31.32
	4804(Av)		30.95	54	-23.05
	7206(Pk)		48.06	74	-25.94
	7206(Av)		36.64	54	-17.36
	2402(Pk)	Horizontal	101.66	-	-
	2402(Av)		97.36	-	-
	2390(Pk)		43.81	74*	-30.19
	2390(Av)		30.31	54*	-23.69
	4804(Pk)		43.04	74	-30.96
	4804(Av)		30.99	54	-23.01
	7206(Pk)		48.53	74	-25.47
	7206(Av)		36.91	54	-17.09
2440	2440(Pk)	Vertical	102.00	-	-
	2440(Av)		97.72	-	-
	4880(Pk)		42.49	74	-31.51
	4880(Av)		31.63	54	-22.37
	7320(Pk)		48.23	74	-25.77
	7320(Av)		36.69	54	-17.31
	2440(Pk)	Horizontal	101.47	-	-
	2440(Av)		97.76	-	-
	4880(Pk)		43.31	74	-30.69
	4880(Av)		30.97	54	-23.03
	7320(Pk)		48.00	74	-26.00
	7320(Av)		36.53	54	-17.47
2480	2480(Pk)	Vertical	101.13	-	-
	2480(Av)		96.82	-	-
	2483.5(Pk)		52.48	74*	-21.52
	2483.5(Av)		37.49	54*	-16.51
	4960(Pk)		43.82	74	-30.18
	4960(Av)		32.08	54	-21.92
	7440(Pk)		48.40	74	-25.60
	7440(Av)		36.73	54	-17.27
	2480(Pk)	Horizontal	101.93	-	-
	2480(Av)		97.73	-	-
	2483.5(Pk)		52.74	74*	-21.26
	2483.5(Av)		38.20	54*	-15.80
	4960(Pk)		42.54	74	-31.46
	4960(Av)		31.34	54	-22.66
	7440(Pk)		47.80	74	-26.20
	7440(Av)		36.49	54	-17.51

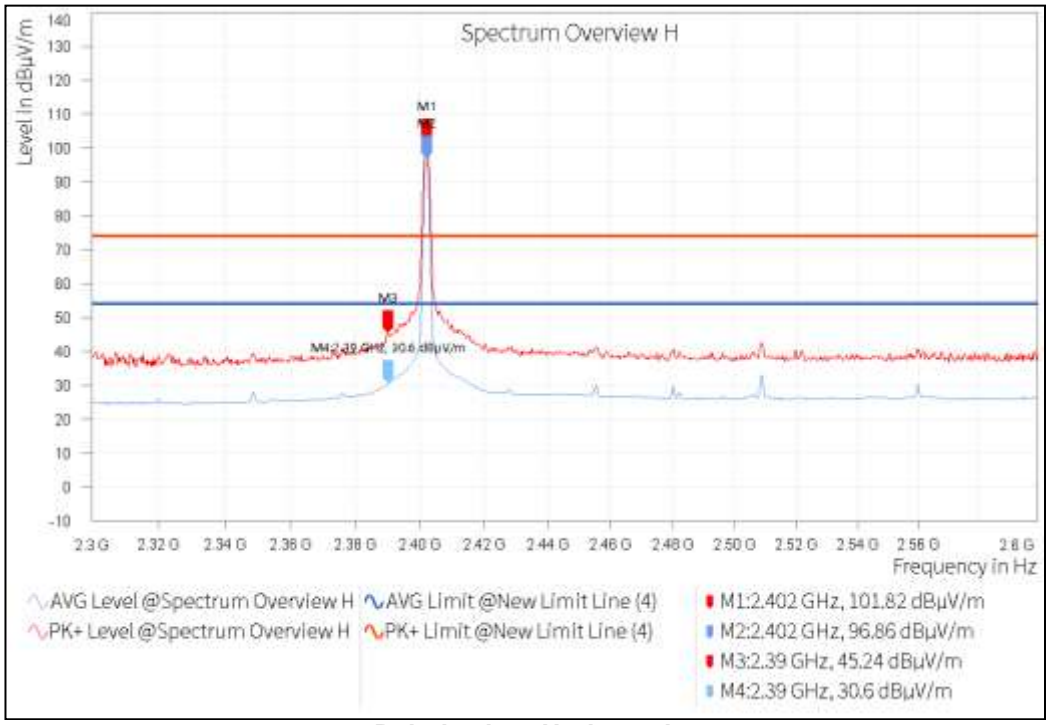
Test Plots:

Data rate: 1Mbps

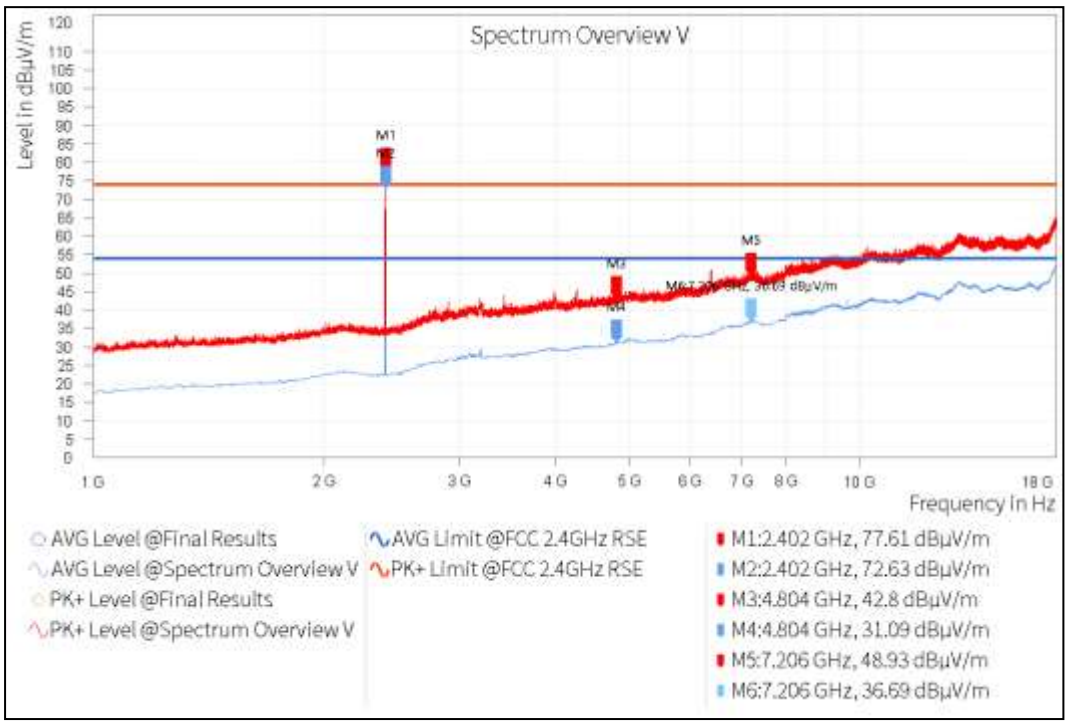
Channel Frequency: 2402MHz



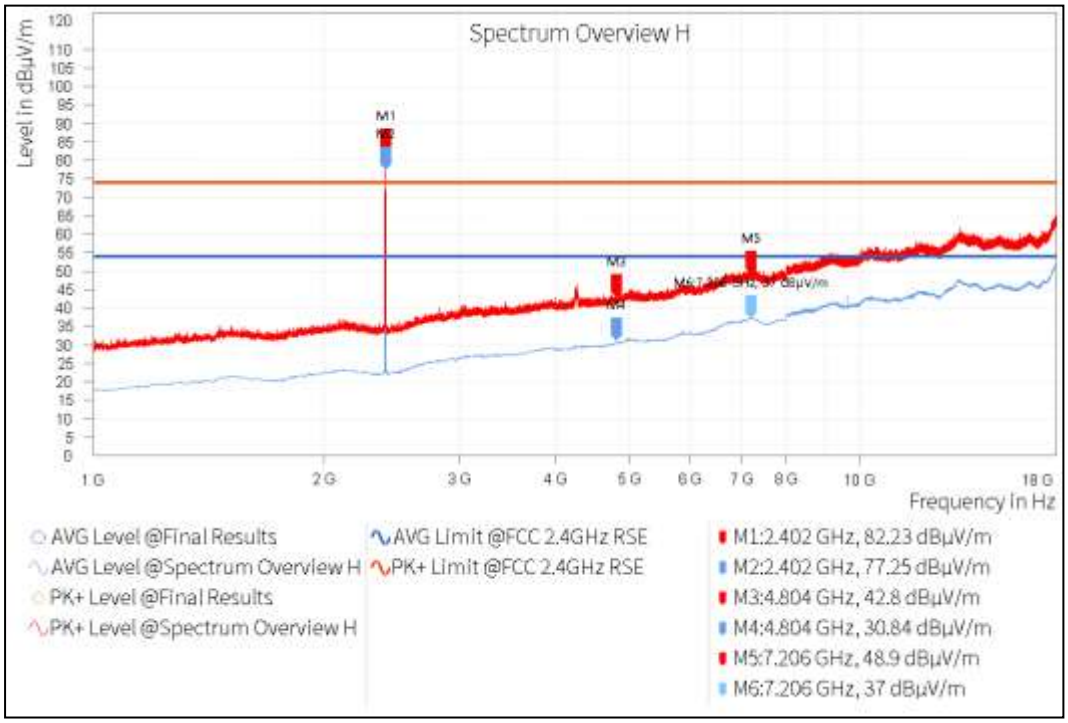
Polarization: Vertical



Polarization: Horizontal

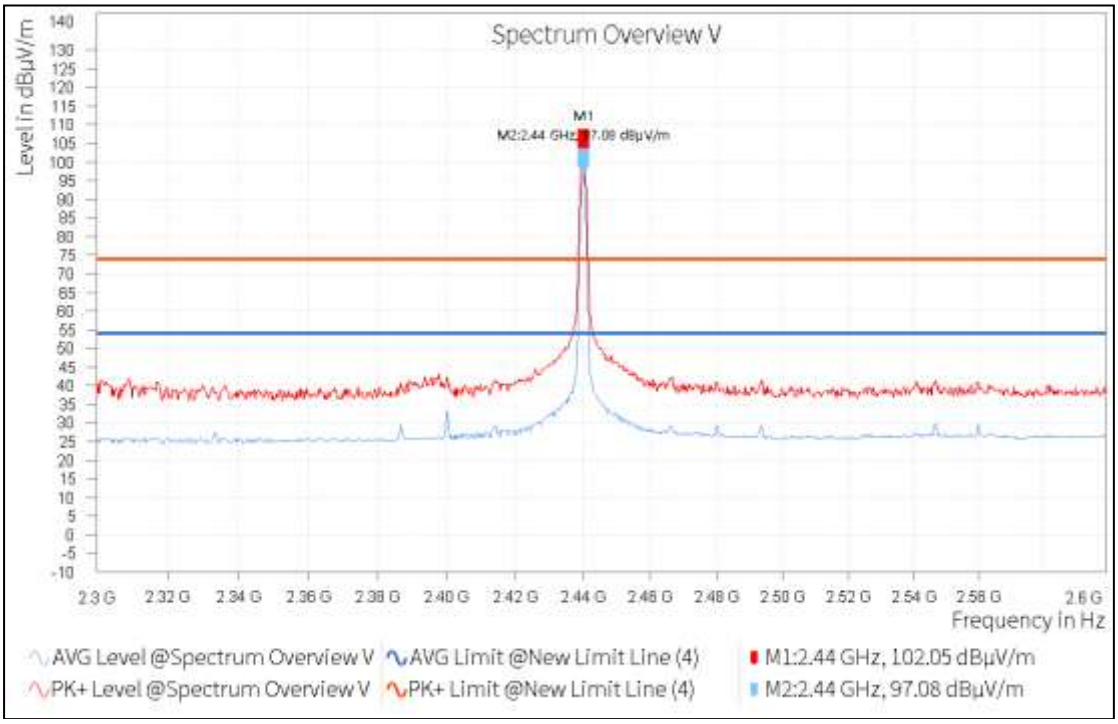


Frequency Range: 1GHz-18GHz **Polarization: Vertical**

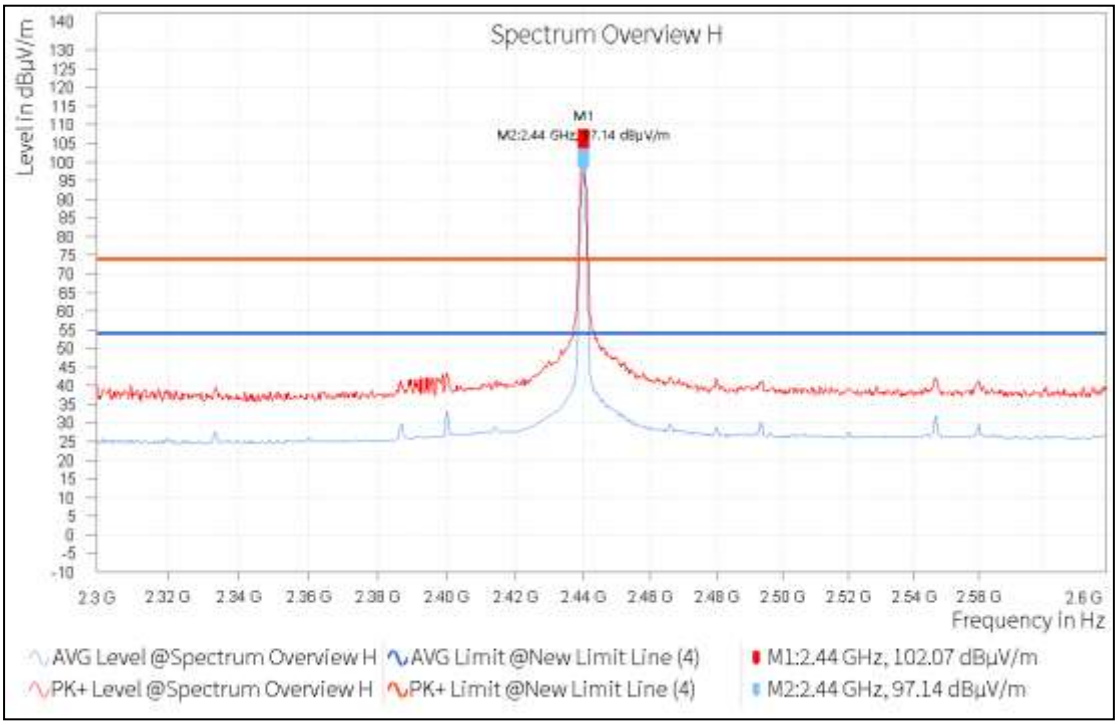


Frequency Range: 1GHz-18GHz **Polarization: Horizontal**

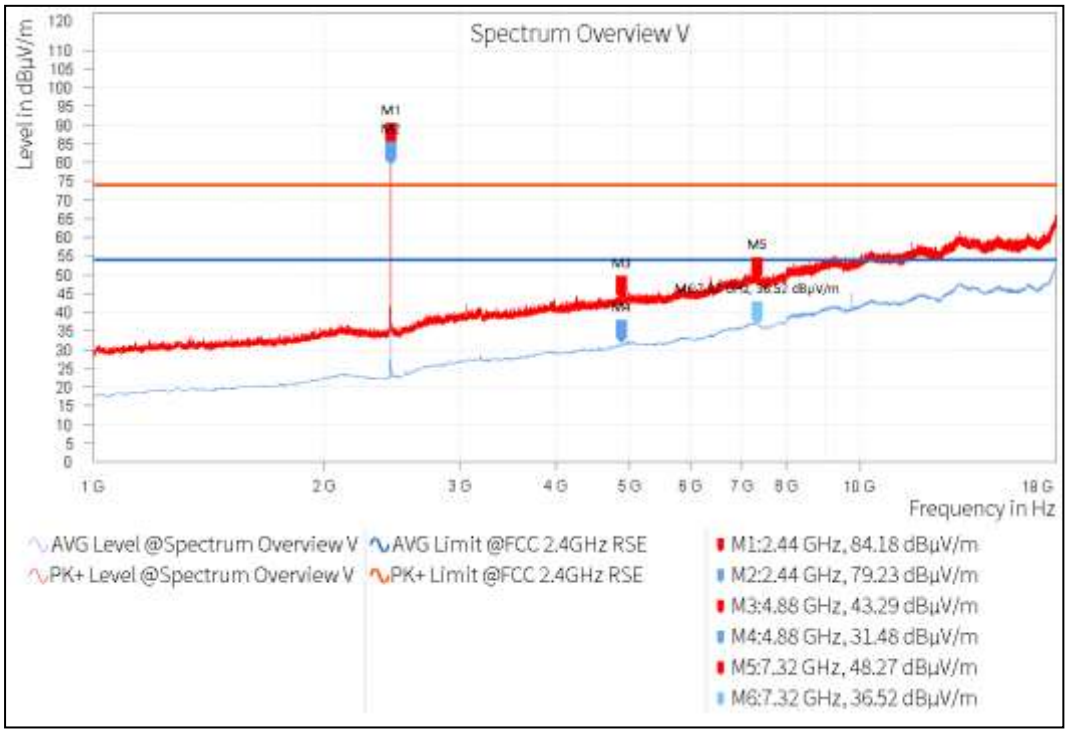
Channel Frequency: 2440MHz



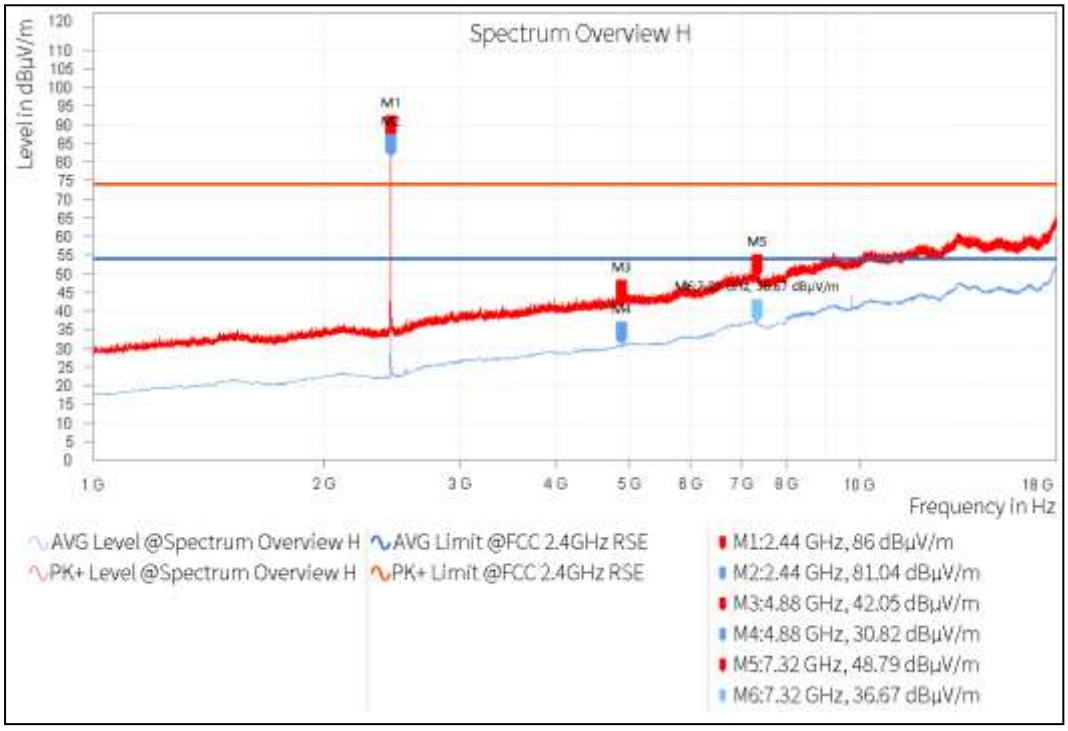
Polarization: Vertical



Polarization: Horizontal

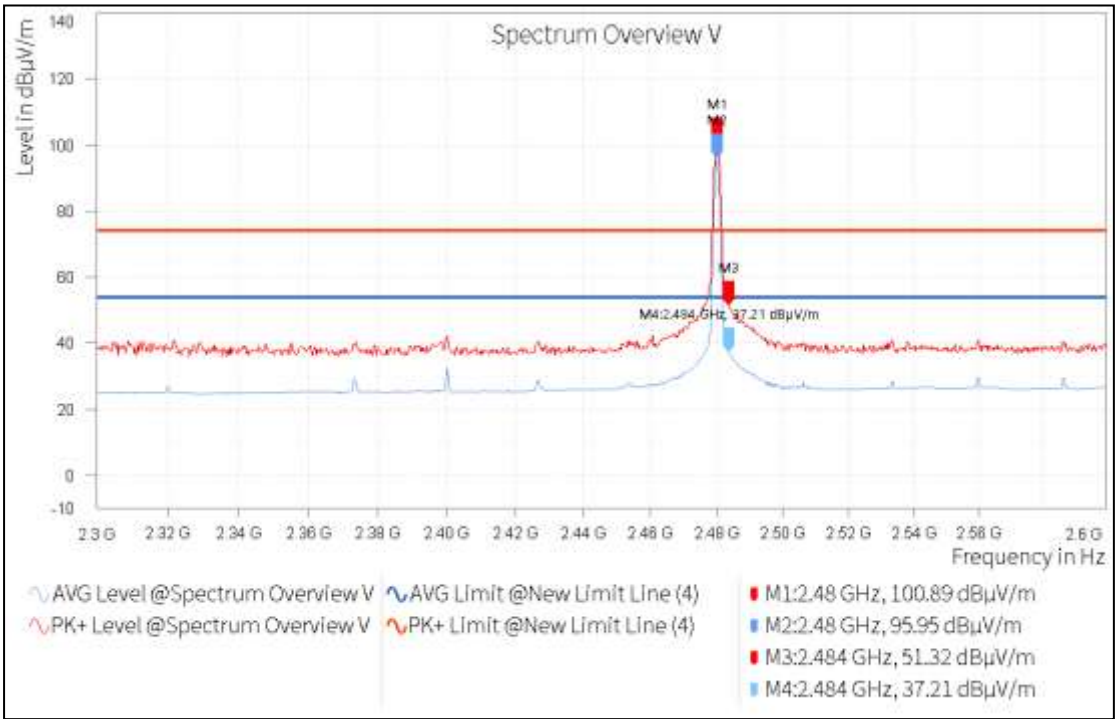


Frequency Range: 1GHz-18GHz **Polarization: Vertical**

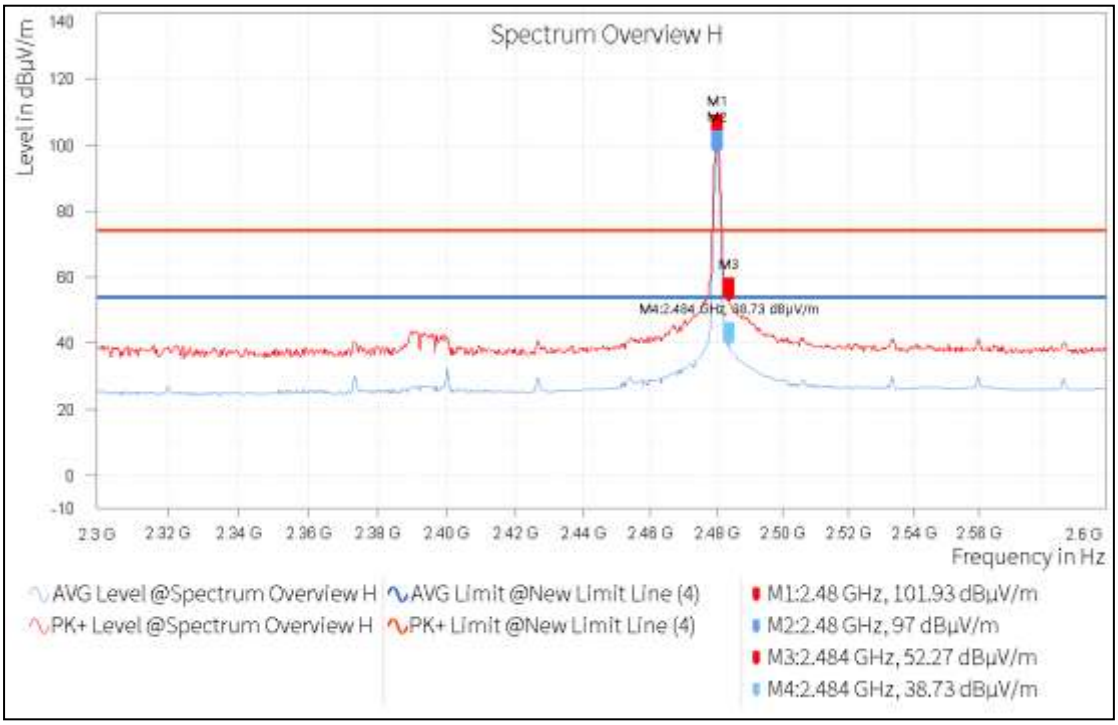


Frequency Range: 1GHz-18GHz **Polarization: Horizontal**

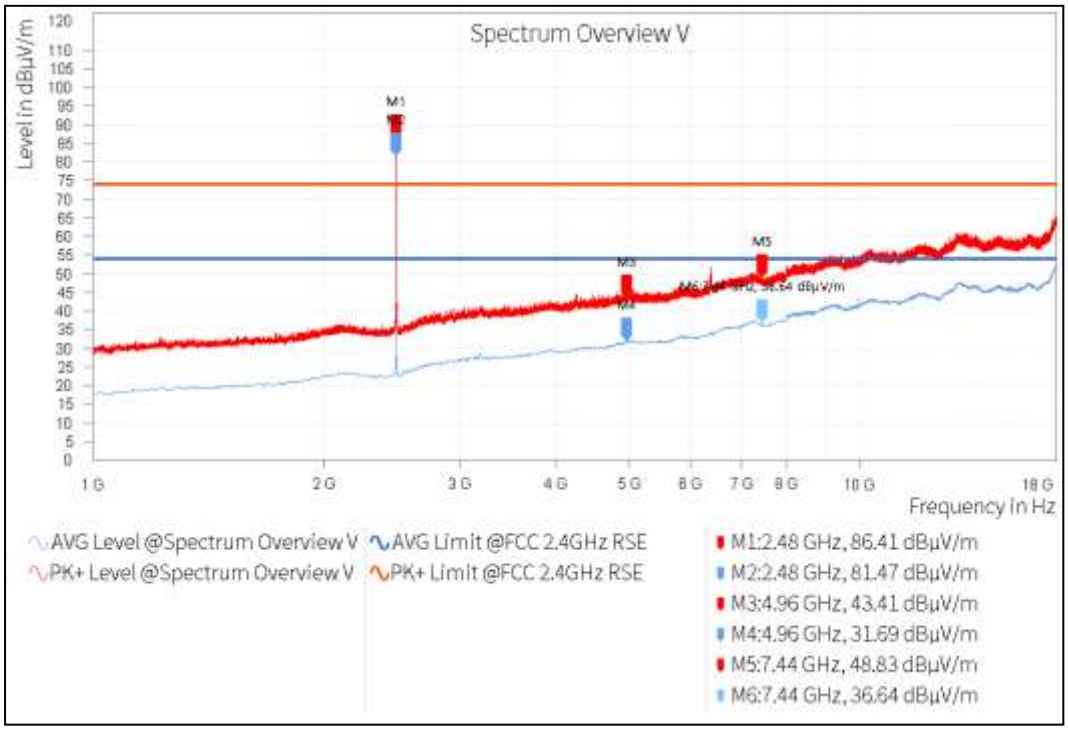
Channel Frequency: 2480MHz



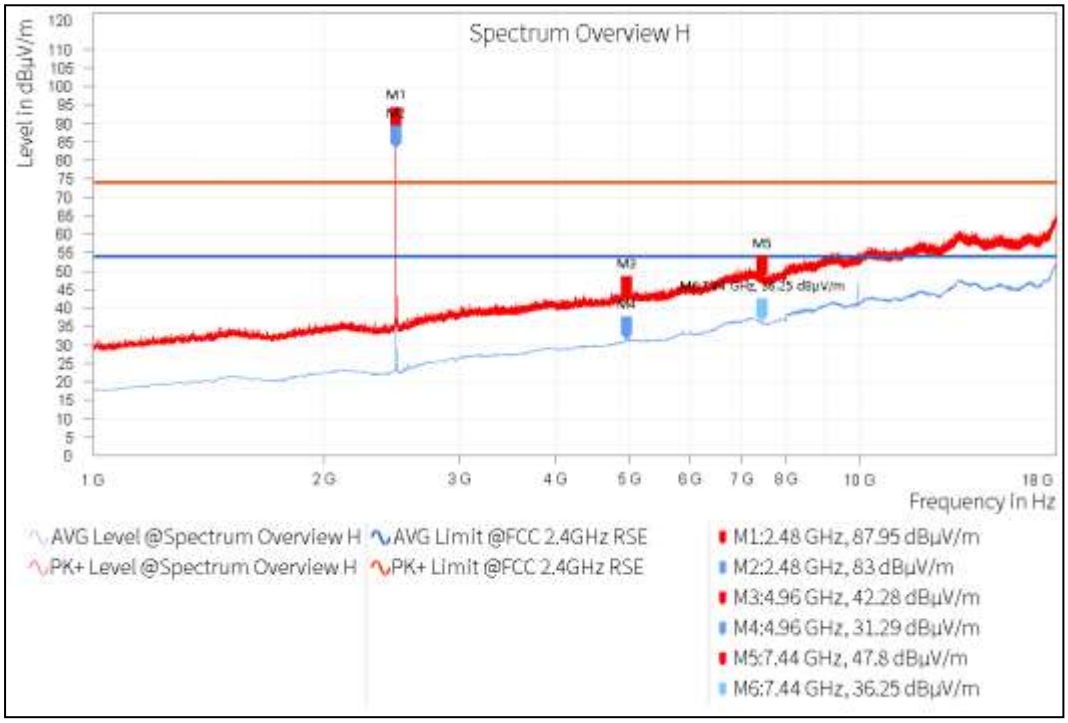
Polarization: Vertical



Polarization: Horizontal



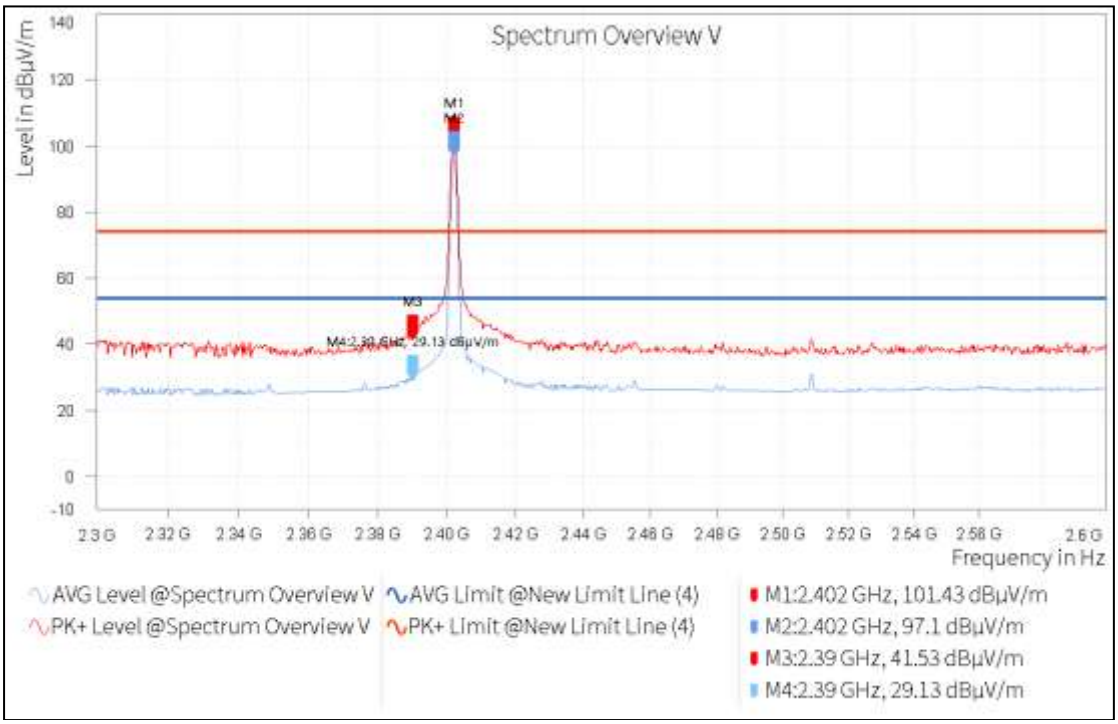
Frequency Range: 1GHz-18GHz **Polarization: Vertical**



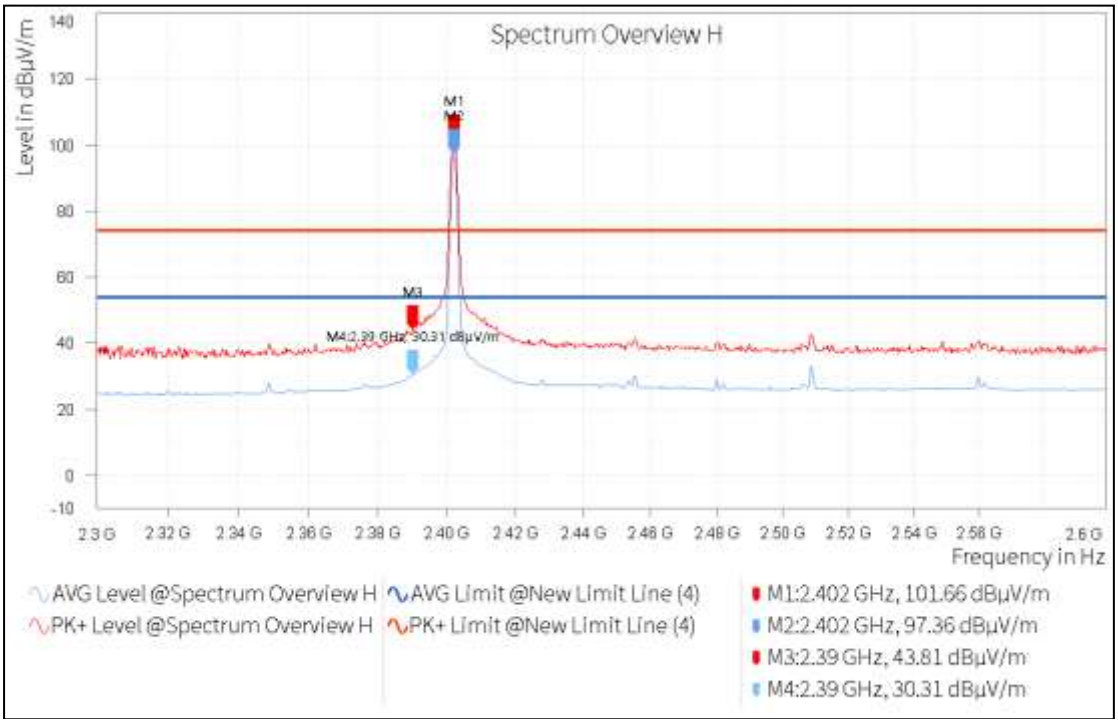
Frequency Range: 1GHz-18GHz **Polarization: Horizontal**

Data rate: 2Mbps

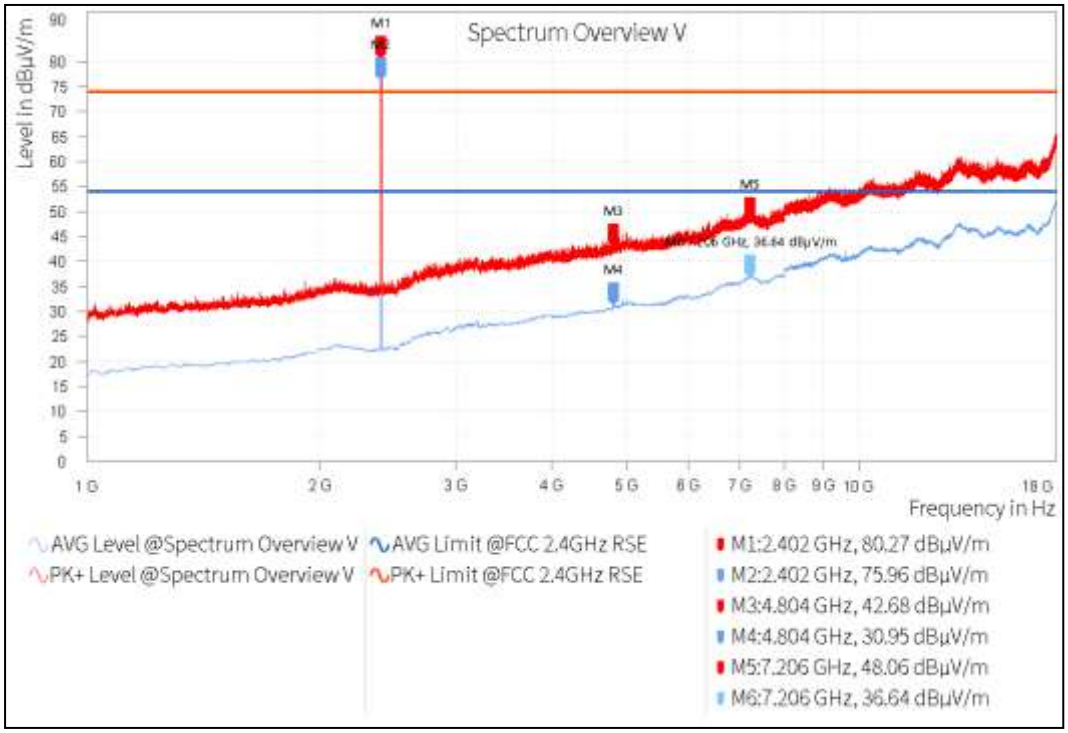
Channel Frequency: 2402MHz



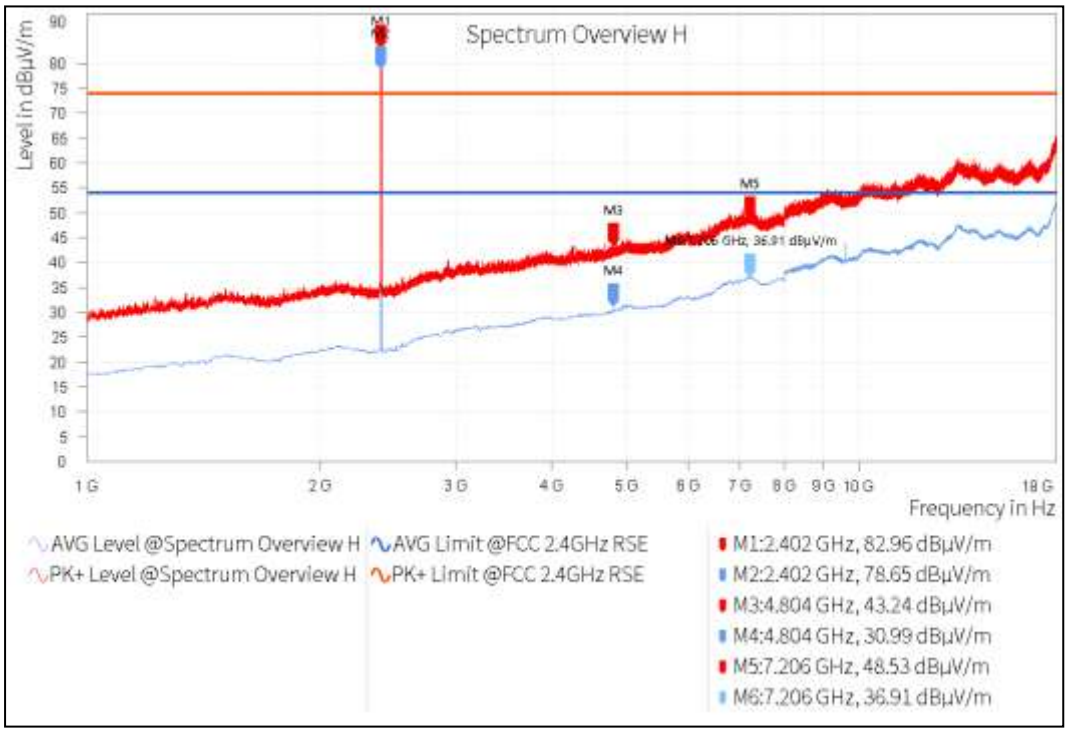
Polarization: Vertical



Polarization: Horizontal

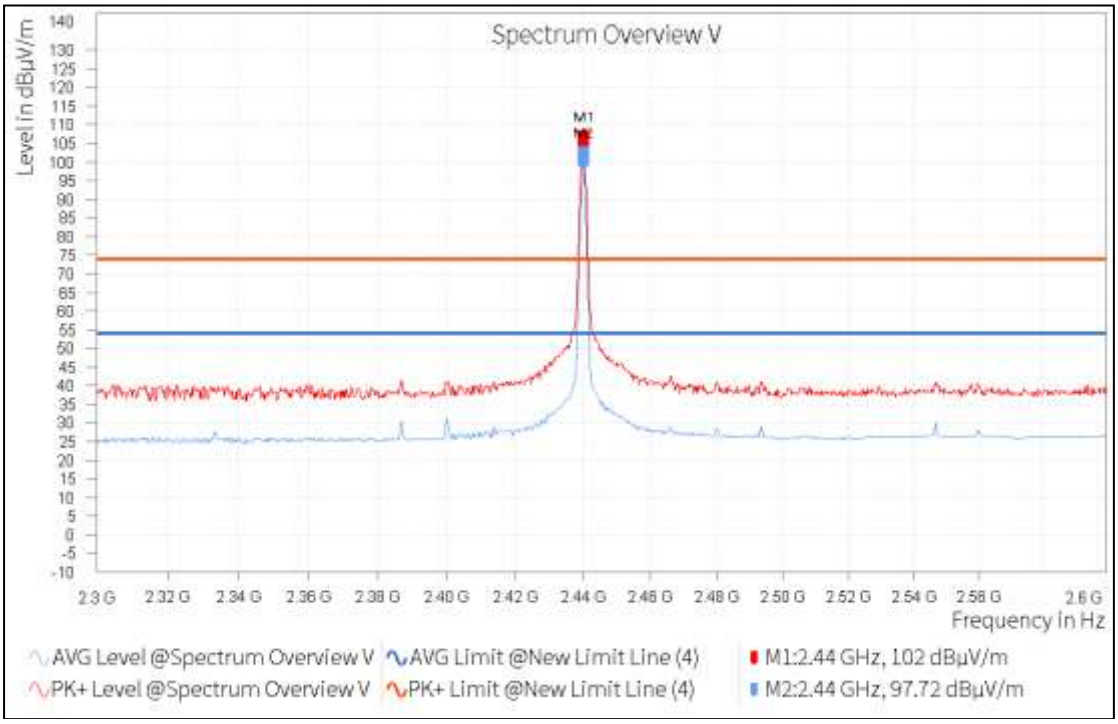


Frequency Range: 1GHz-18GHz **Polarization: Vertical**

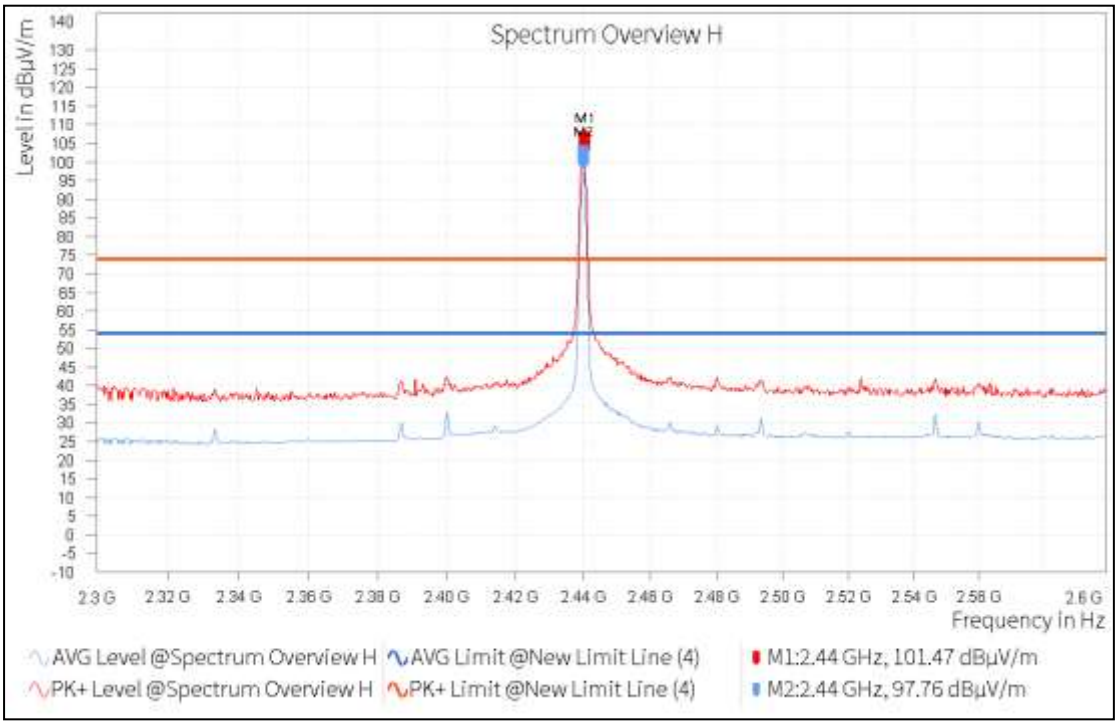


Frequency Range: 1GHz-18GHz **Polarization: Horizontal**

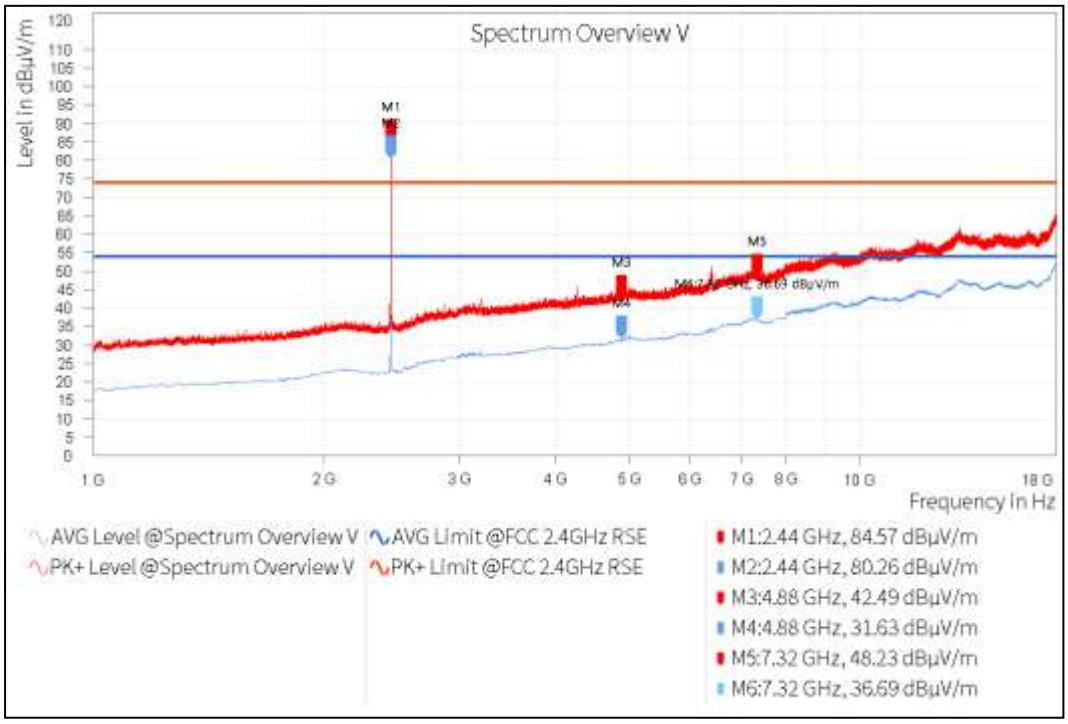
Channel Frequency: 2440MHz



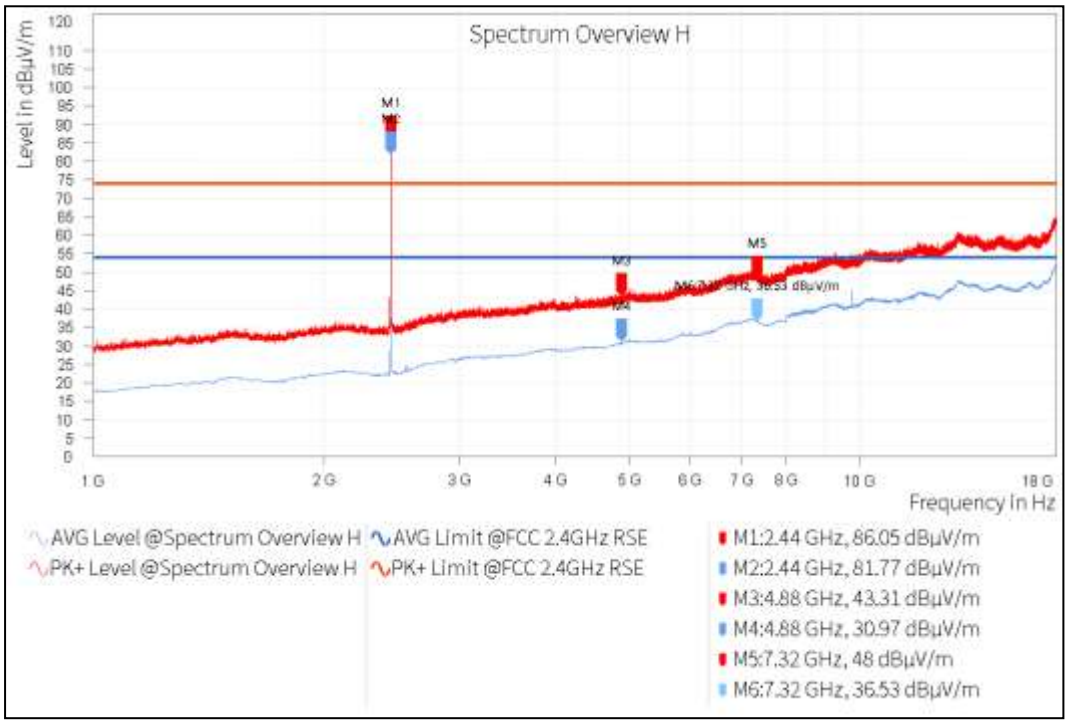
Polarization: Vertical



Polarization: Horizontal

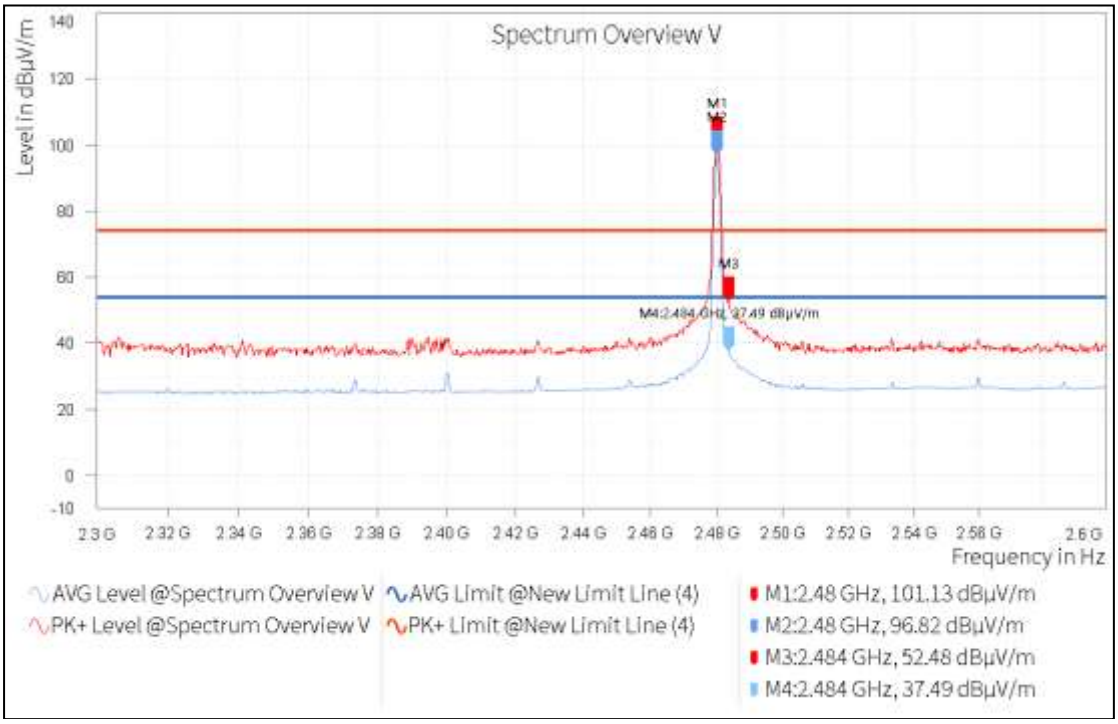


Frequency Range: 1GHz-18GHz **Polarization: Vertical**

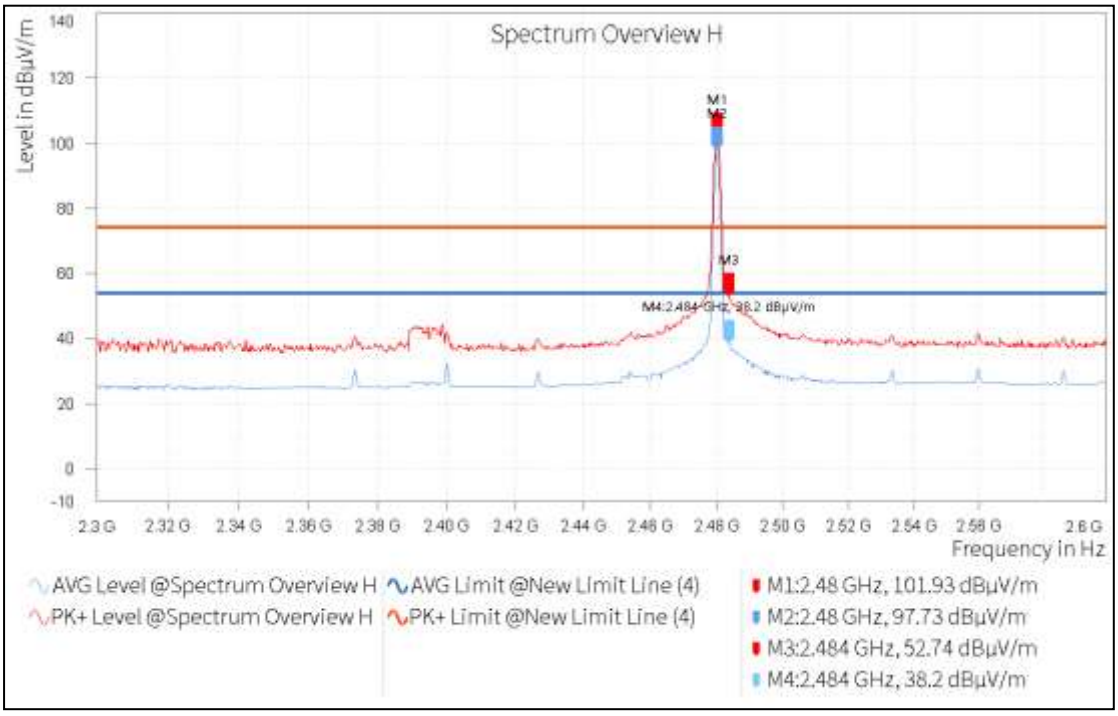


Frequency Range: 1GHz-18GHz **Polarization: Horizontal**

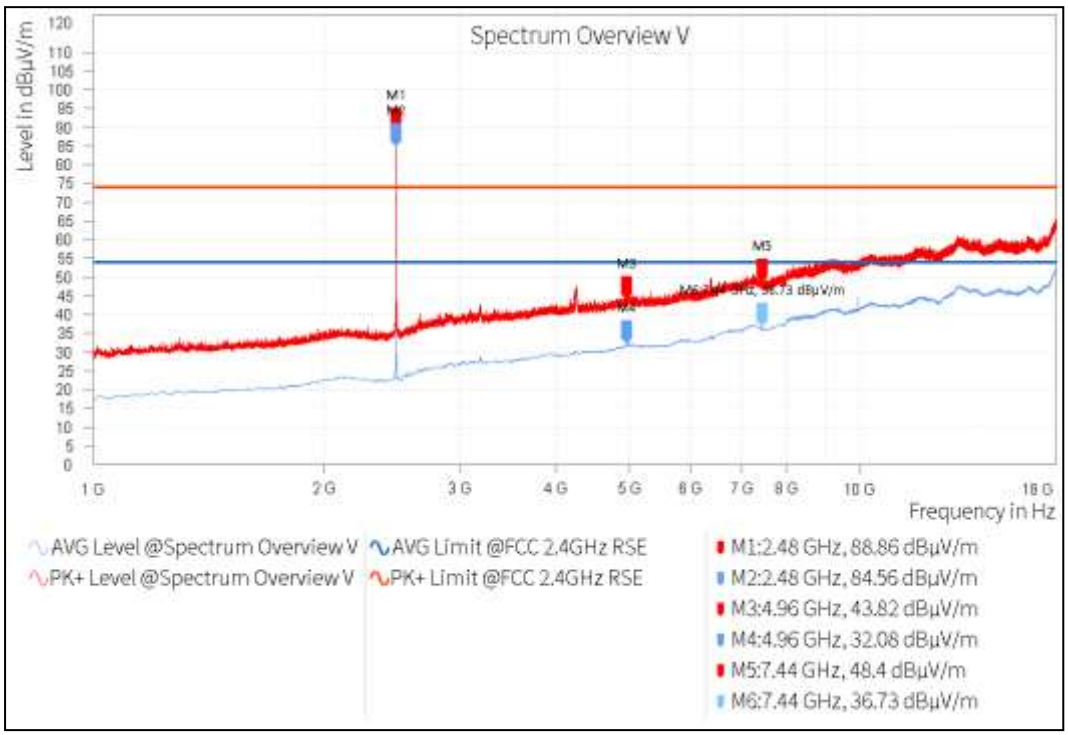
Channel Frequency: 2480MHz



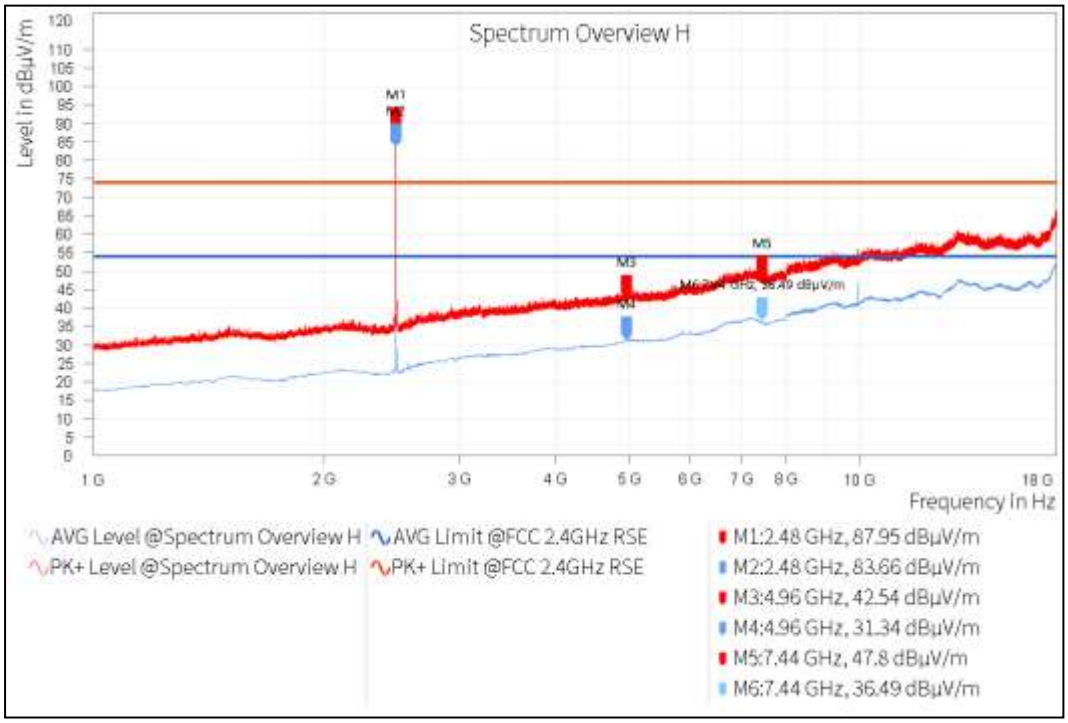
Polarization: Vertical



Polarization: Horizontal



Frequency Range: 1GHz-18GHz **Polarization: Vertical**

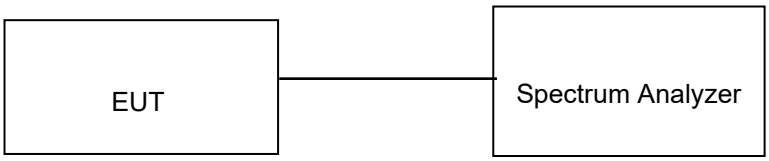


Frequency Range: 1GHz-18GHz **Polarization: Horizontal**

12 TEST CONDITIONS AND RESULTS FOR Wi-Fi– MAXIMUM AVERAGE CONDUCTED OUTPUT POWER

Test Specification	FCC part 15 Subpart C 15.247 (b)(3)
Test Method	Subclause 11.9.2.2.2 of ANSI C63.10-2020
Detector	Average (Gated RMS)
Port of testing	Antenna port
Requirement	Power ≤ 1 W (30 dBm)

Test Setup:



12.1 Environmental Conditions

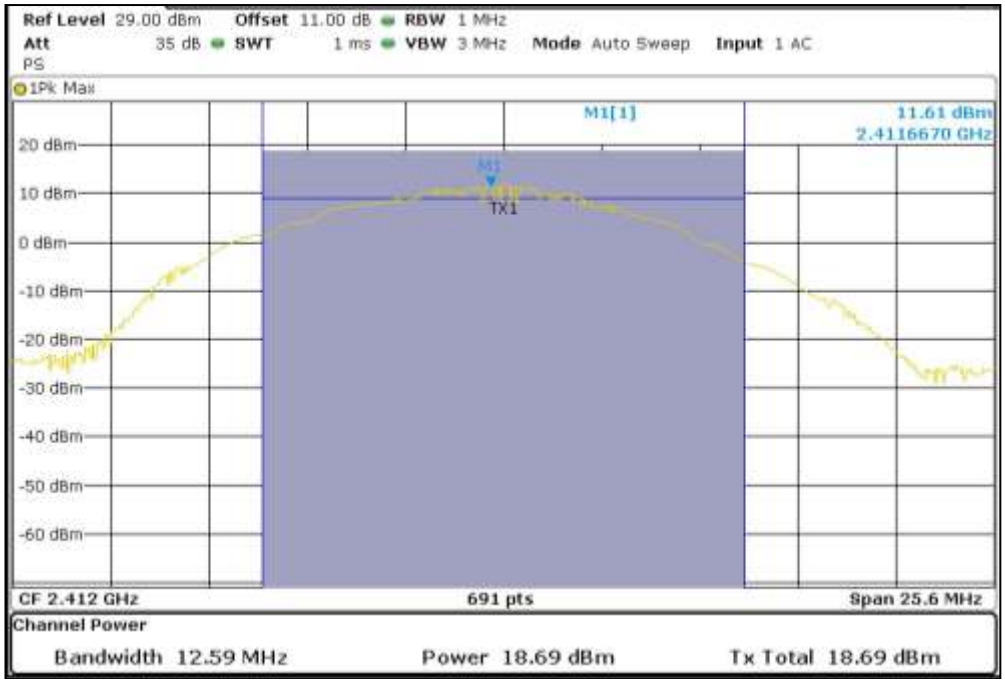
Temperature	:	24°C
Relative humidity	:	52%
Power supply	:	208/240 VAC, 60 Hz

12.2 Test results

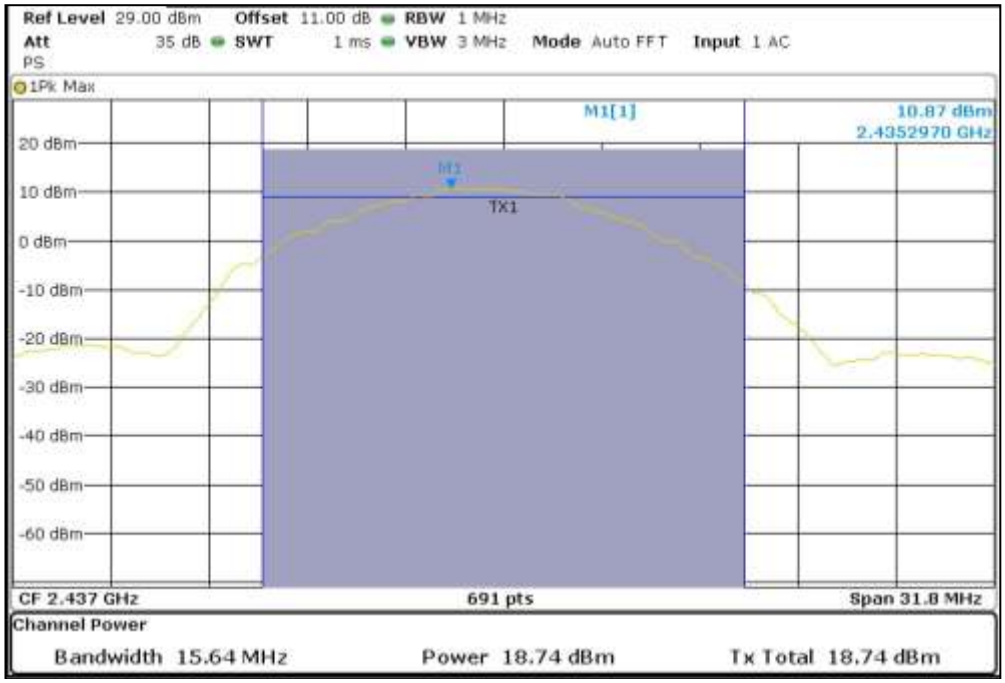
Bandwidth	Mode	Data rate	Channel Frequency (MHz)	Measured Average Power (dBm)	Limit (dBm)
20MHz	b	1Mbps	2412	18.69	30
			2437	18.74	30
			2462	18.58	30
	g	6Mbps	2412	21.44	30
			2437	21.61	30
			2462	21.52	30
	n	MCS0	2412	20.67	30
			2437	20.67	30
			2462	20.63	30

Test Plots:

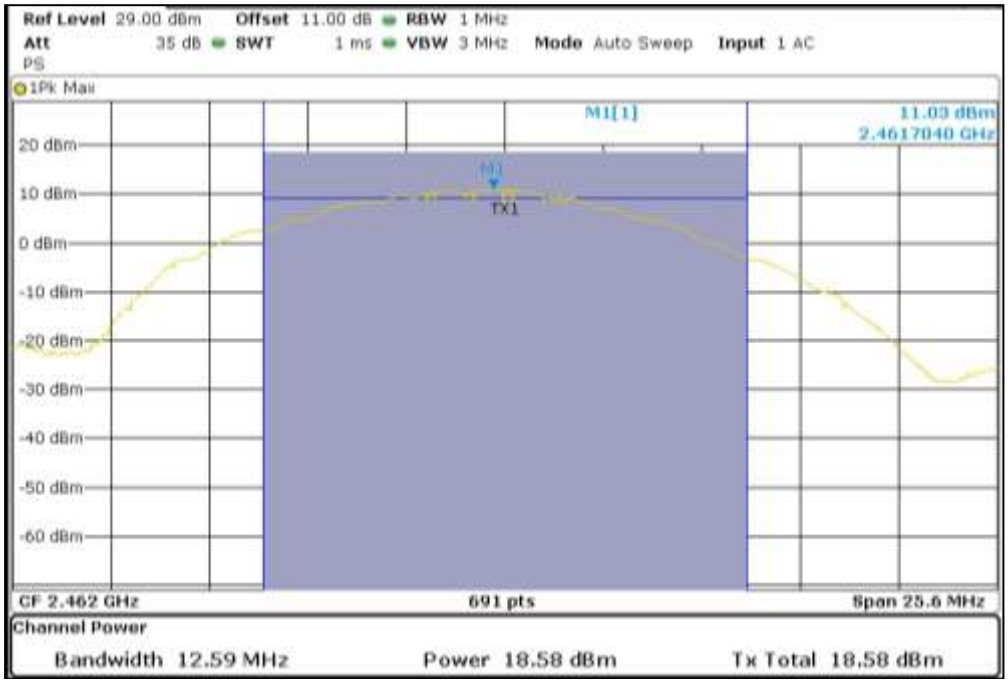
Modulation: b Mode
Data rate: 1Mbps



Channel Frequency: 2412MHz

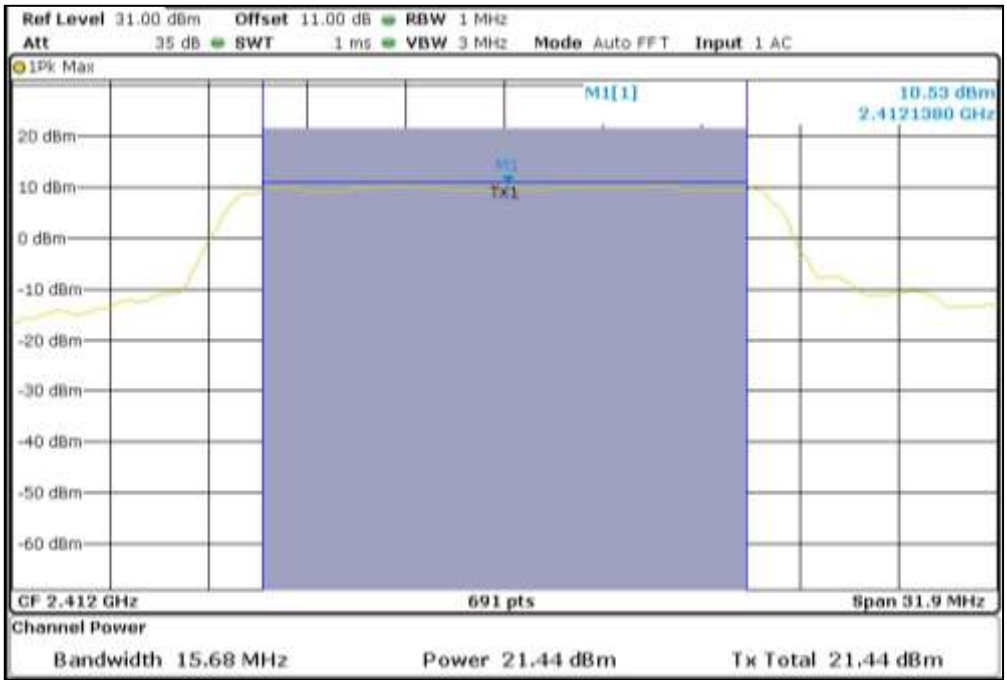


Channel Frequency: 2437MHz

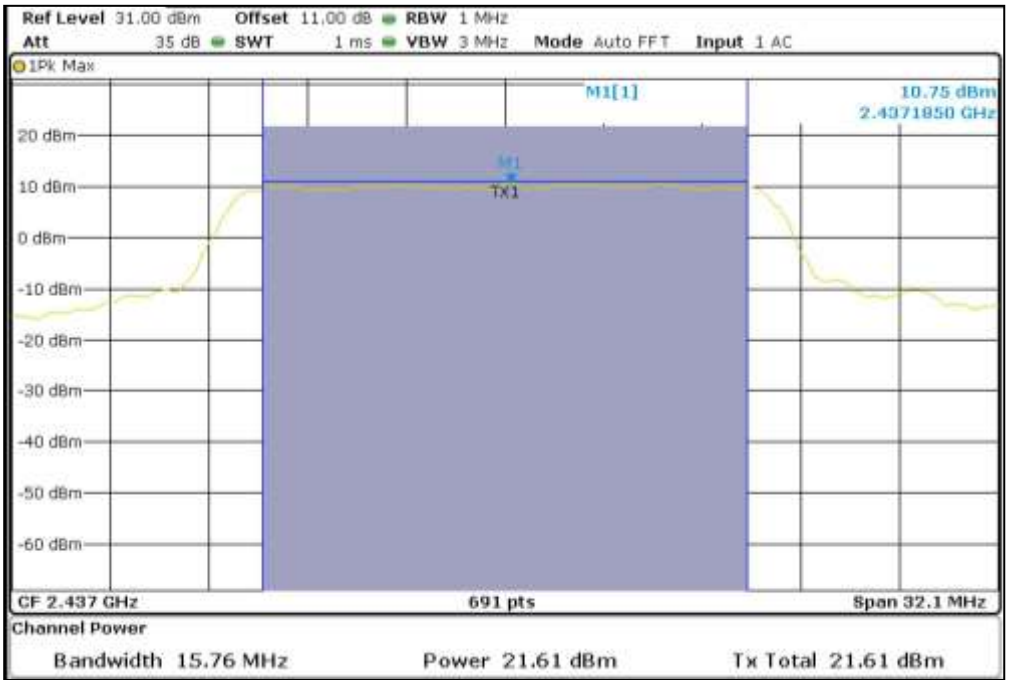


Channel Frequency: 2462MHz

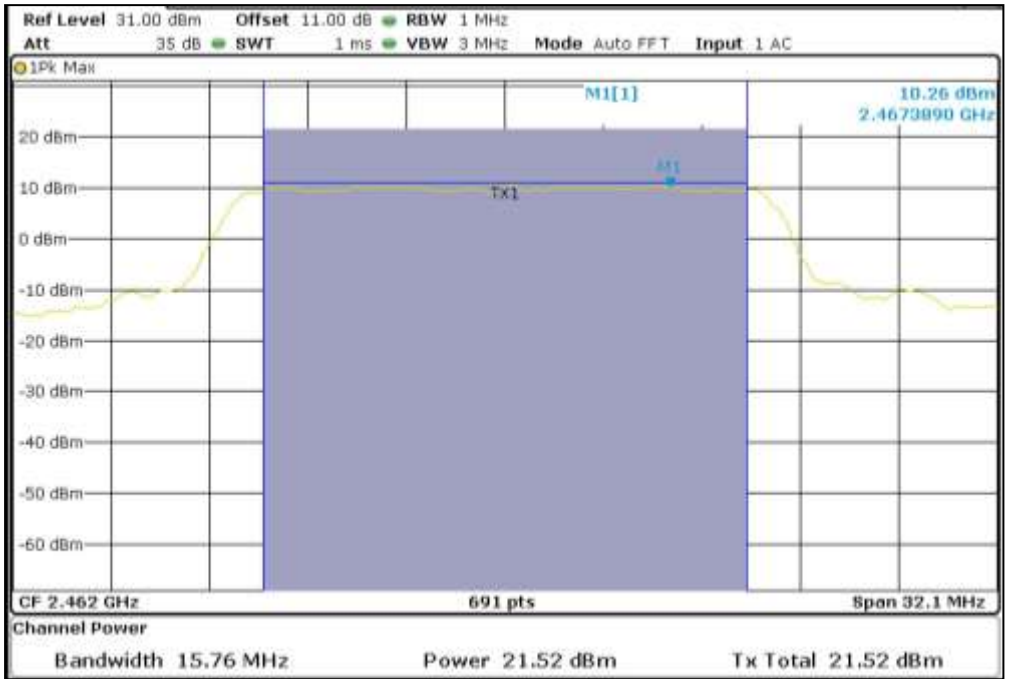
Modulation: g Mode
Data rate: 6Mbps



Channel Frequency: 2412MHz

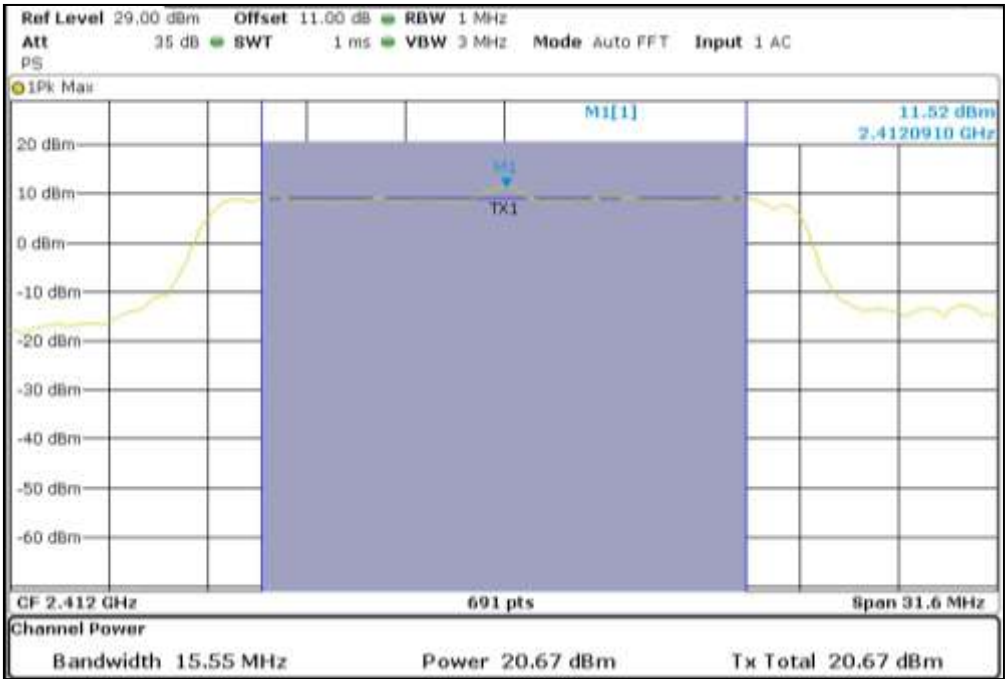


Channel Frequency: 2437MHz

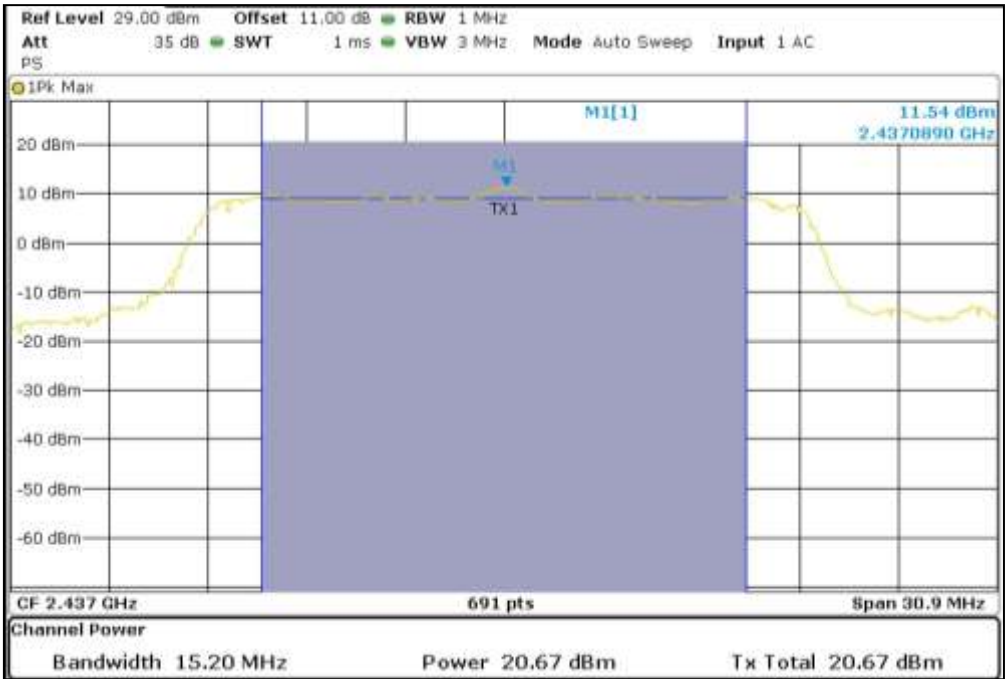


Channel Frequency: 2462MHz

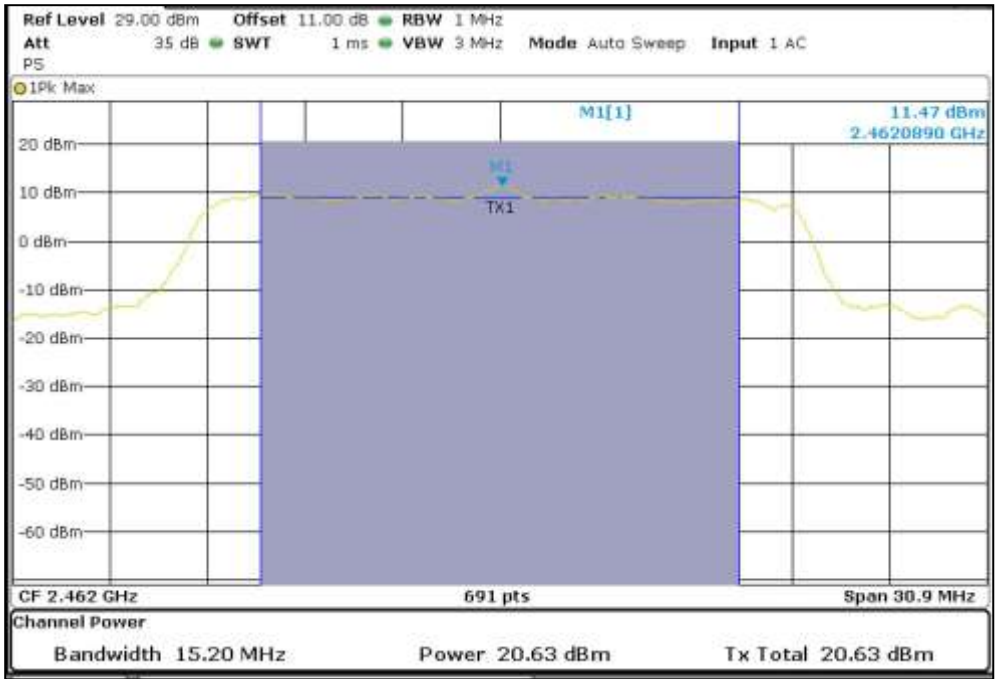
Modulation: n Mode
Data rate: MCS0



Channel Frequency: 2412MHz



Channel Frequency: 2437MHz



Channel Frequency: 2462MHz

13 TEST CONDITIONS AND RESULTS – SPURIOUS RADIATED EMISSIONS & RESTRICTED BANDS OF OPERATION

Test Specification	FCC part 15 Subpart C 15.247 (d) / (15.209 & 15.205)
Test Method	ANSI C63.10-2020
Testing Location	Semi Anechoic Chamber 9kHz - 1 GHz Fully Anechoic Chamber 1 GHz - 26GHz
Measurement Bandwidth	100 kHz for frequency range < 1GHz 1 MHz for Frequency range >1GHz
Measuring Distance	3 m
Requirement	As per the limits mentioned in the below table
Test Setup	Refer TEST METHODOLOGY

Table 13: Transmitter limits for Radiated emission

Frequency (MHz)	Field strength (μV/m)	Field strength (dBμV/m)	Distance of Measurement (m)
0.009 – 0.490	2400/F(kHz)	48.50 – 13.80	300*
0.490 – 1.705	24000/F(kHz)	33.80 – 23.00	30*
1.705 -30	30	29.54	30*
30-88	100	40.0	3
88-216	150	43.5	3
216-960	200	46.0	3
Above 960	500	54.0	3

Remark: * The limit shows in the table above of frequency range 0.009 – 0.490, 0.490 – 1.705 MHz and 1.705-30MHz is at 300-meter, 30-meter and 30-meter range respectively, which corresponds to 128.51 – 93.80, 73.80 – 62.96 and 69.54 dBμV/m at 3m range by extrapolation calculation and the measurement of loop antenna.

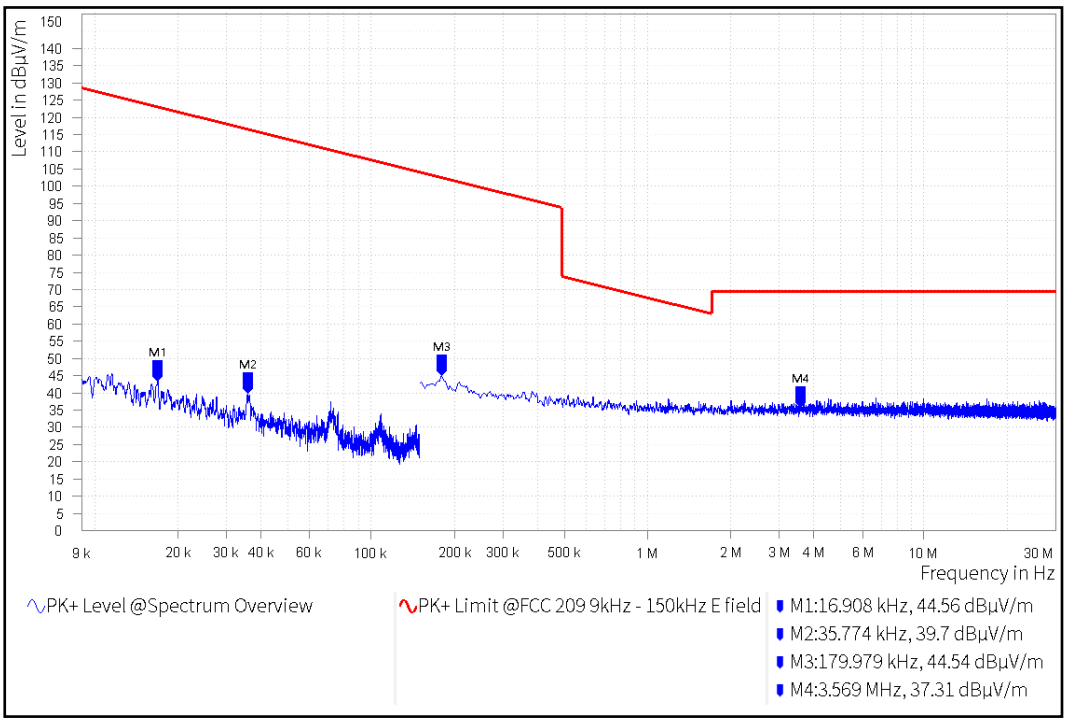
The emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9–90 kHz, 110–490 kHz and above 1000 MHz Radiated emission limits in these three bands are based on measurements employing an average detector.

13.1 Environmental Conditions

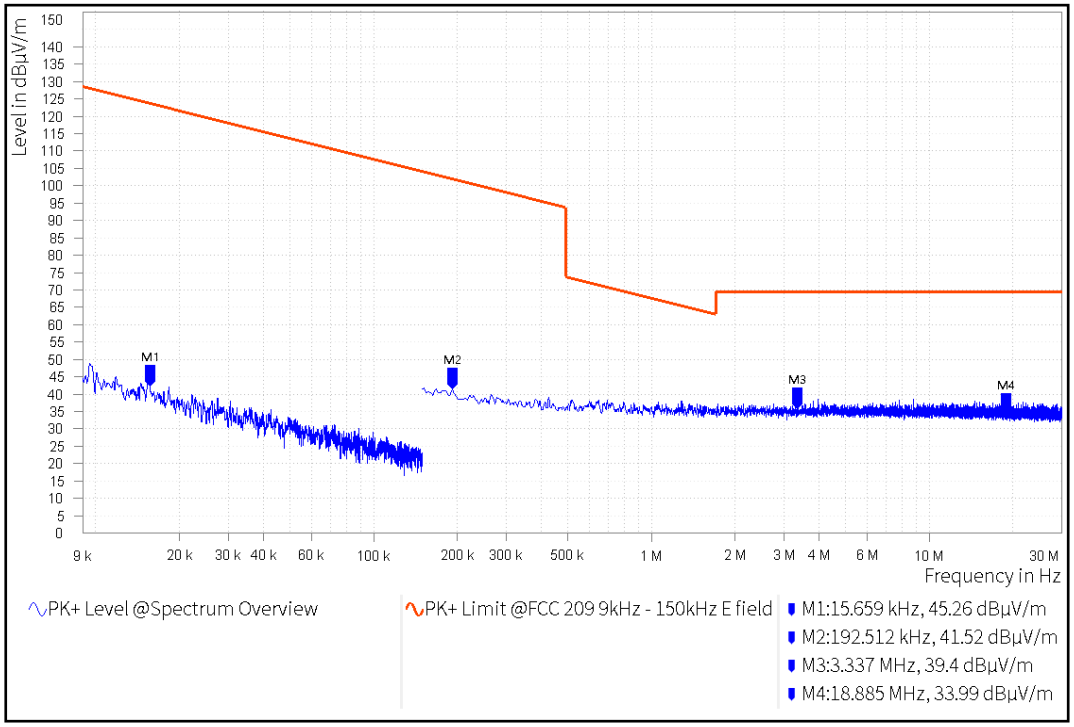
Temperature	:	24°C
Relative humidity	:	52%
Power supply	:	208/240 VAC, 60 Hz

13.2 Test result:

Test results for frequency range 9kHz – 30MHz



Frequency range: 9kHz - 30MHz Polarization: Parallel

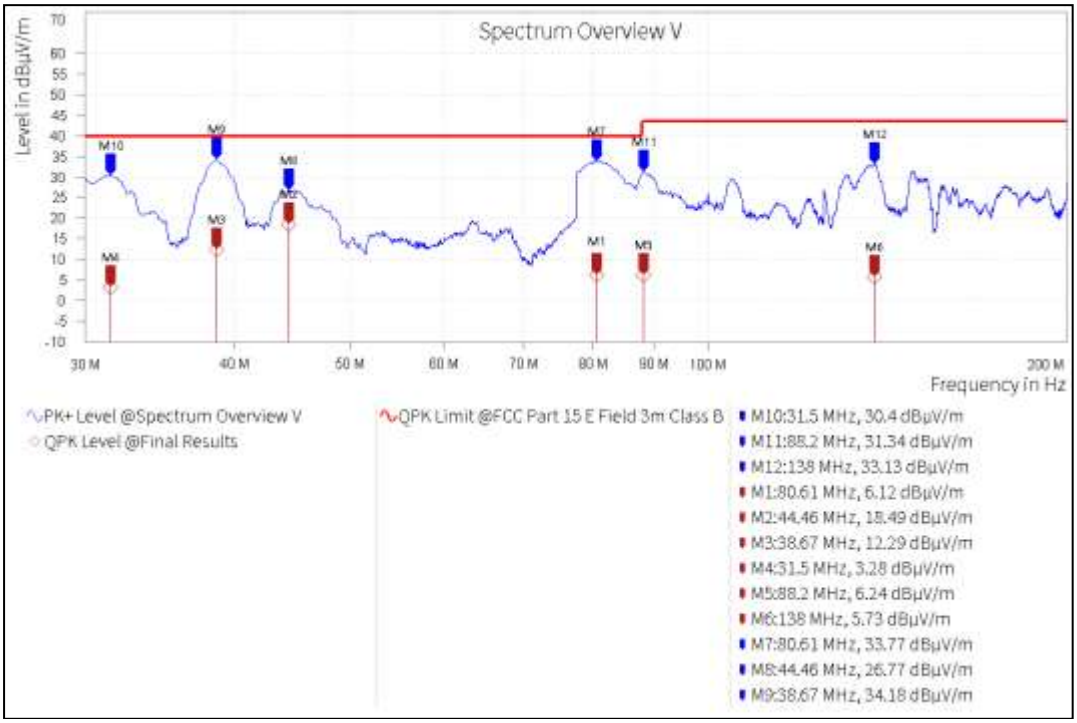


Frequency range: 9kHz - 30MHz Polarization: Perpendicular

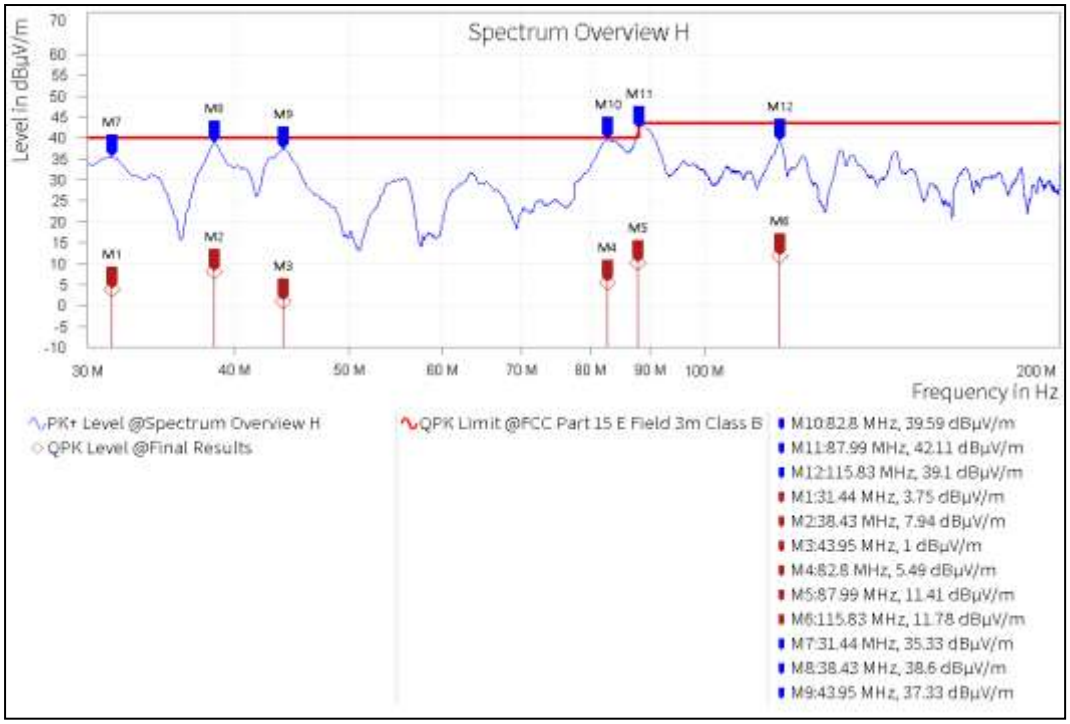
Test results for frequency range 30MHz – 1GHz

Antenna Polarization	Measured Frequency (MHz)	Measured Quasi Peak value (dBµV/m)	Limit (dBµV/m)	Margin (dB)
Vertical	31.50	3.28(QP)	40	-36.72
	38.67	12.29(QP)	40	-27.71
	44.46	18.49(QP)	40	-21.51
	80.61	6.12(QP)	40	-33.88
	88.20	6.24(QP)	43.5	-37.26
	138.00	5.73(QP)	43.5	-37.77
	240.79	32.55	46	-13.45
	352.55	31.42	46	-14.58
	433.91	33.77	46	-12.23
	599.99	30.88	46	-15.12
	950.00	31.20	46	-14.80
Horizontal	31.44	3.75(QP)	40	-36.25
	38.43	7.94(QP)	40	-32.06
	43.95	1.00(QP)	40	-39.00
	82.80	5.49(QP)	40	-34.51
	87.99	11.41(QP)	40	-28.59
	115.83	11.78(QP)	43.5	-31.72
	240.79	32.55	46	-13.45
	352.55	31.42	46	-14.58
	433.91	33.77	46	-12.23
	599.99	30.88	46	-15.12
	950.00	31.20	46	-14.80

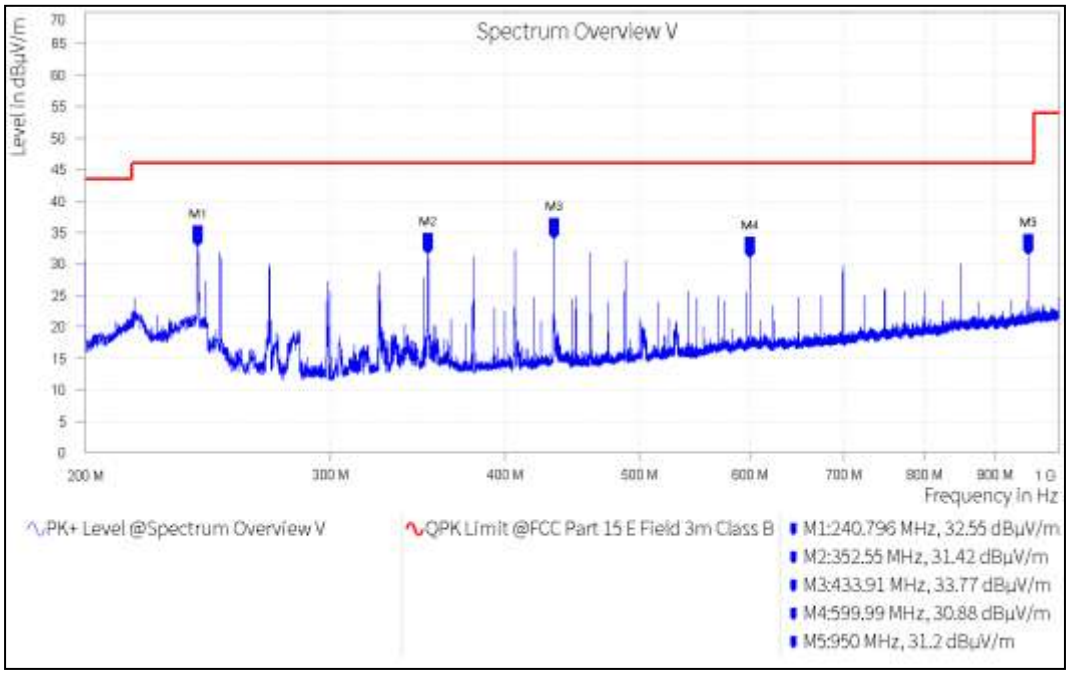
Test Plots:



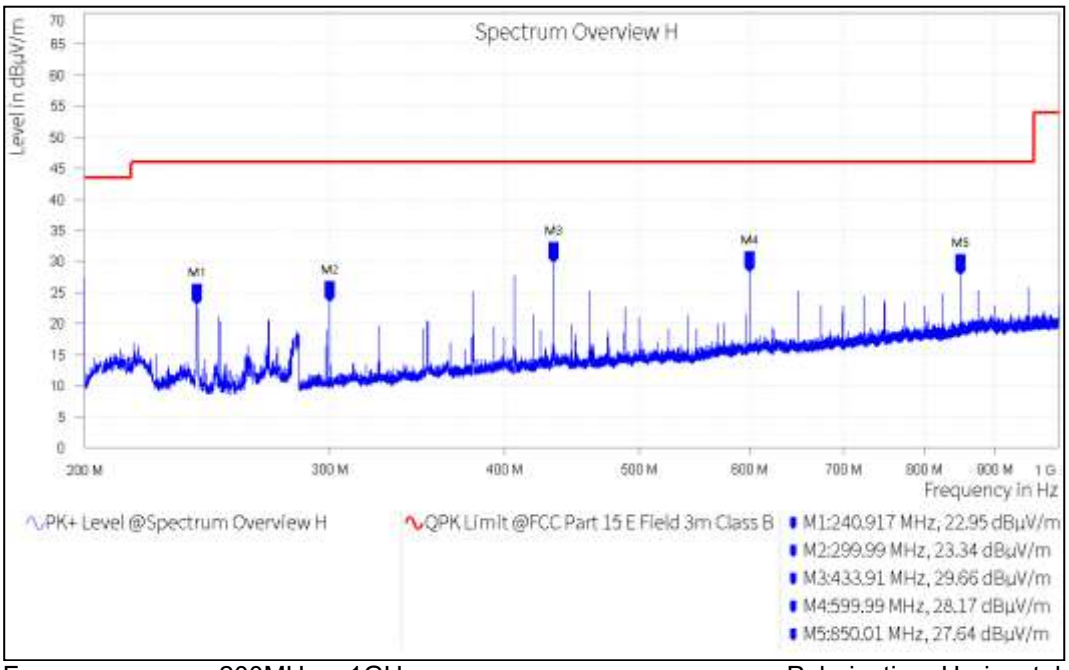
Frequency range: 30MHz -200MHz Polarization: Vertical



Frequency range: 30MHz -200MHz Polarization: Horizontal



Frequency range: 200MHz – 1GHz Polarization: Vertical



Frequency range: 200MHz – 1GHz Polarization: Horizontal

Test results for the frequencies above 1GHz:

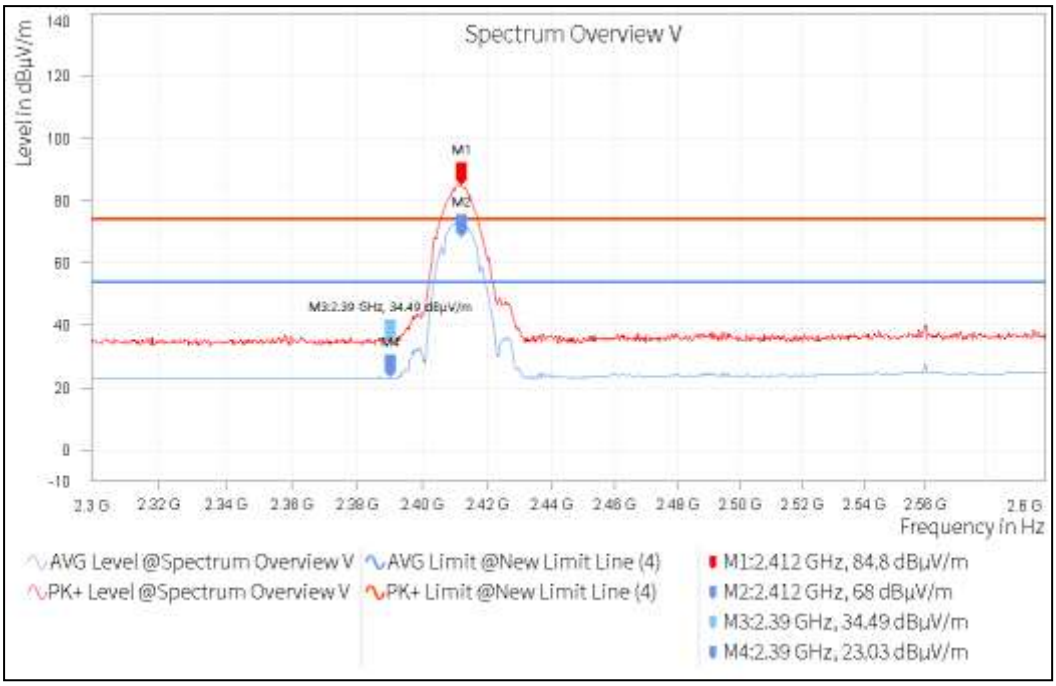
Modulation: b Mode
Data rate: 1Mbps

Channel Frequency (MHz)	Measured Frequency (MHz)	antenna Polarization	Emission (dBµV/m)	Limit (dBµV/m)	Margin (dB)
2412	2412(Pk)	Vertical	84.80	-	-
	2412(Av)		68.00	-	-
	2390(Pk)		34.49	74	-39.51
	2390(Av)		23.03	54	-30.97
	4824(Pk)		60.97	74	-13.03
	4824(Av)		52.42	54	-1.58
	7236(Pk)		50.40	74	-23.60
	7236(Av)		38.11	54	-15.89
	2412(Pk)	Horizontal	87.63	-	-
	2412(Av)		70.75	-	-
	2390(Pk)		36.20	74	-37.80
	2390(Av)		24.03	54	-29.97
	4824(Pk)		66.01	74	-7.99
	4824(Av)		57.53	54	3.53
	7236(Pk)		50.31	74	-23.69
	7236(Av)		37.23	54	-16.77
2437	2437(Pk)	Vertical	86.31	-	-
	2437(Av)		74.37	-	-
	4874(Pk)		50.89	74	-23.11
	4874(Av)		41.08	54	-12.92
	7311(Pk)		59.79	74	-14.21
	7311(Av)		41.38	54	-12.62
	2437(Pk)	Horizontal	83.80	-	-
	2437(Av)		73.66	-	-
	4874(Pk)		66.05	74	-7.95
	4874(Av)		53.28	54	-0.72
	7311(Pk)		53.61	74	-20.39
	7311(Av)		40.15	54	-13.85
2462	2462(Pk)	Vertical	85.52	-	-
	2462(Av)		71.43	-	-
	2483.5(Pk)		50.40	74	-23.60
	2483.5(Av)		37.26	54	-16.74
	4924(Pk)		47.16	74	-26.84
	4924(Av)		35.58	54	-18.42
	7386(Pk)		64.46	74	-9.54
	7386(Av)		48.67	54	-5.33
	2462(Pk)	Horizontal	95.76	-	-
	2462(Av)		80.18	-	-
	2483.5(Pk)		55.64	74	-18.36
	2483.5(Av)		42.86	54	-11.14
	4924(Pk)		48.06	74	-25.94
	4924(Av)		37.49	54	-16.51
	7386(Pk)		57.18	74	-16.82
	7386(Av)		43.01	54	-10.99

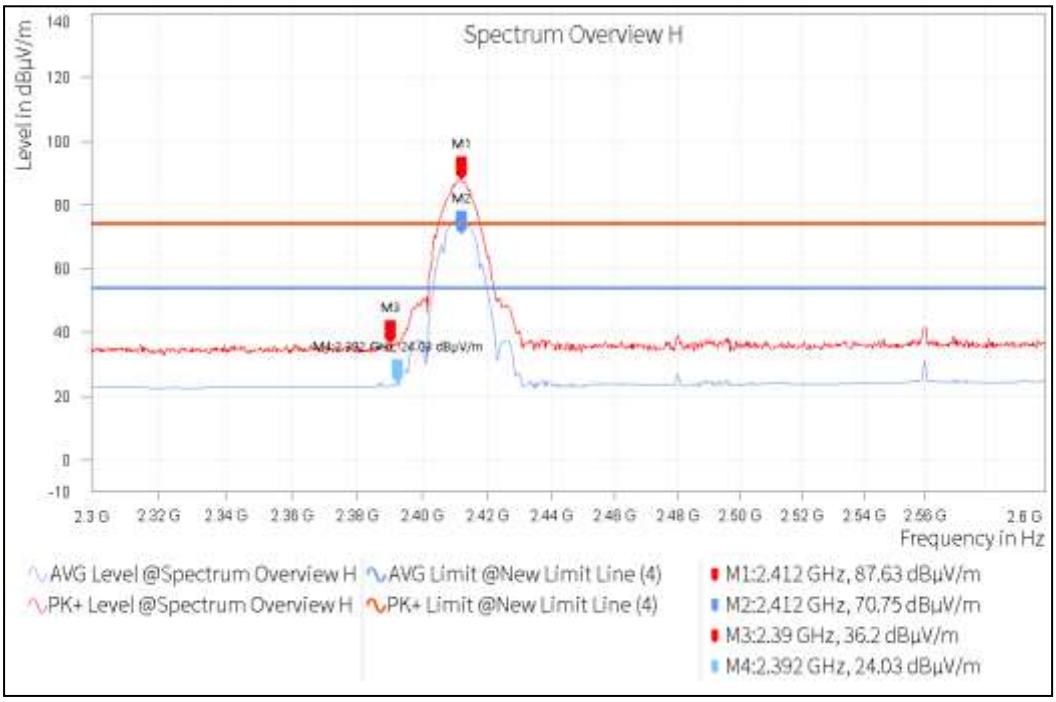
Test Plots:

Modulation: b Mode
Data rate: 1Mbps

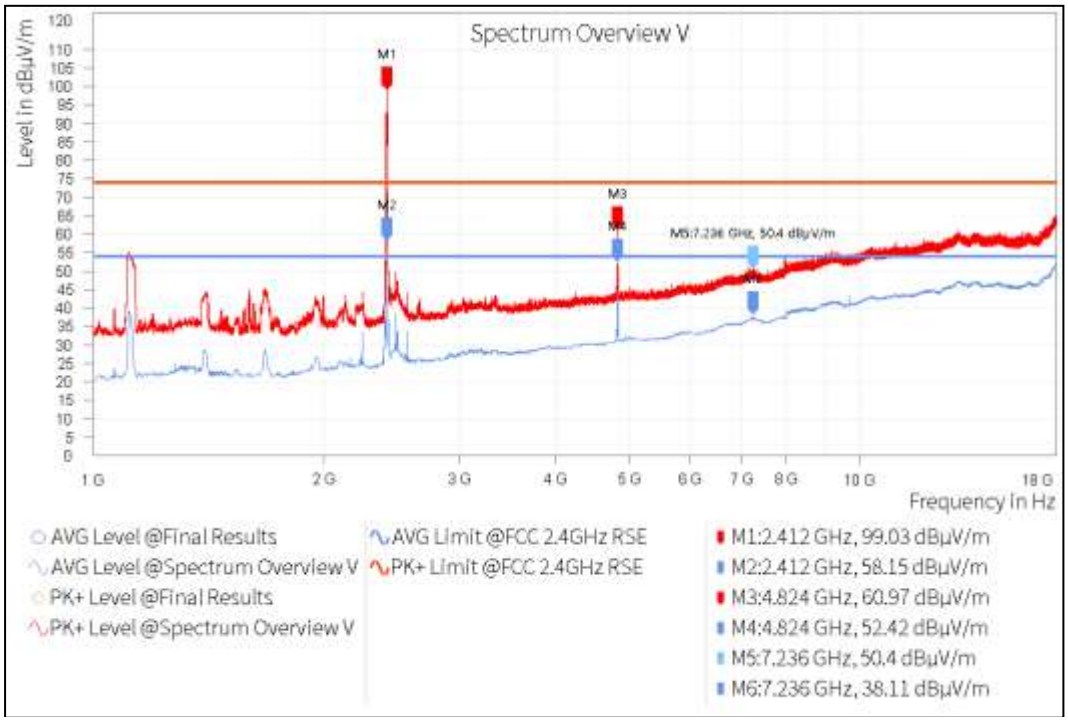
Channel Frequency: 2412MHz



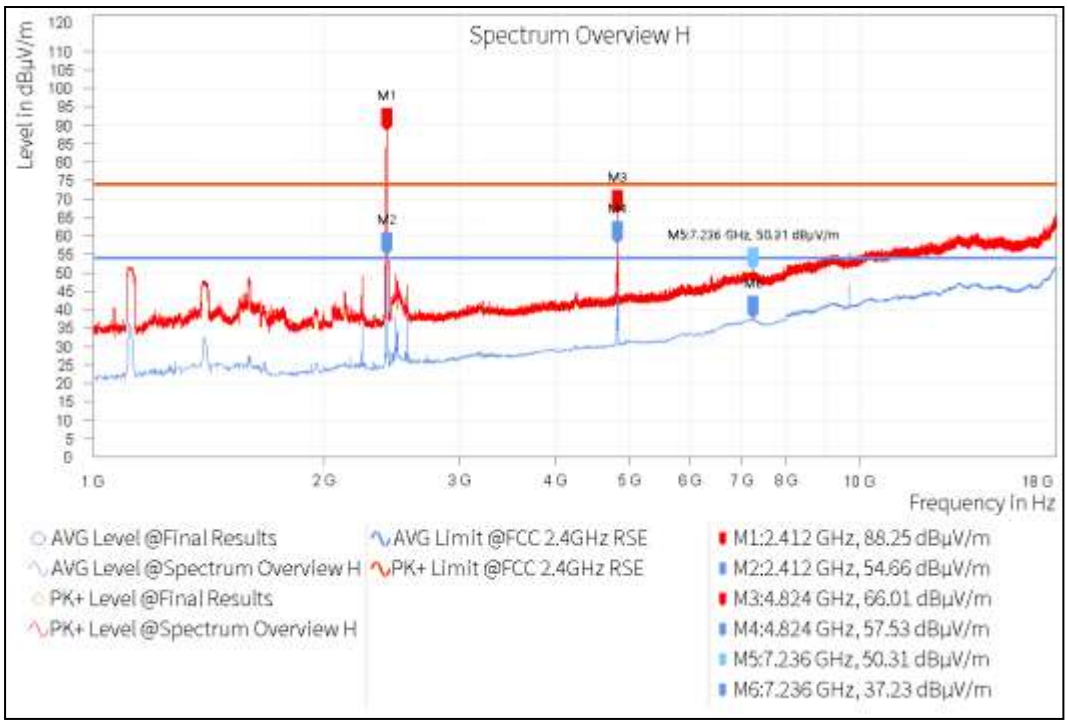
Polarization: Vertical



Polarization: Horizontal

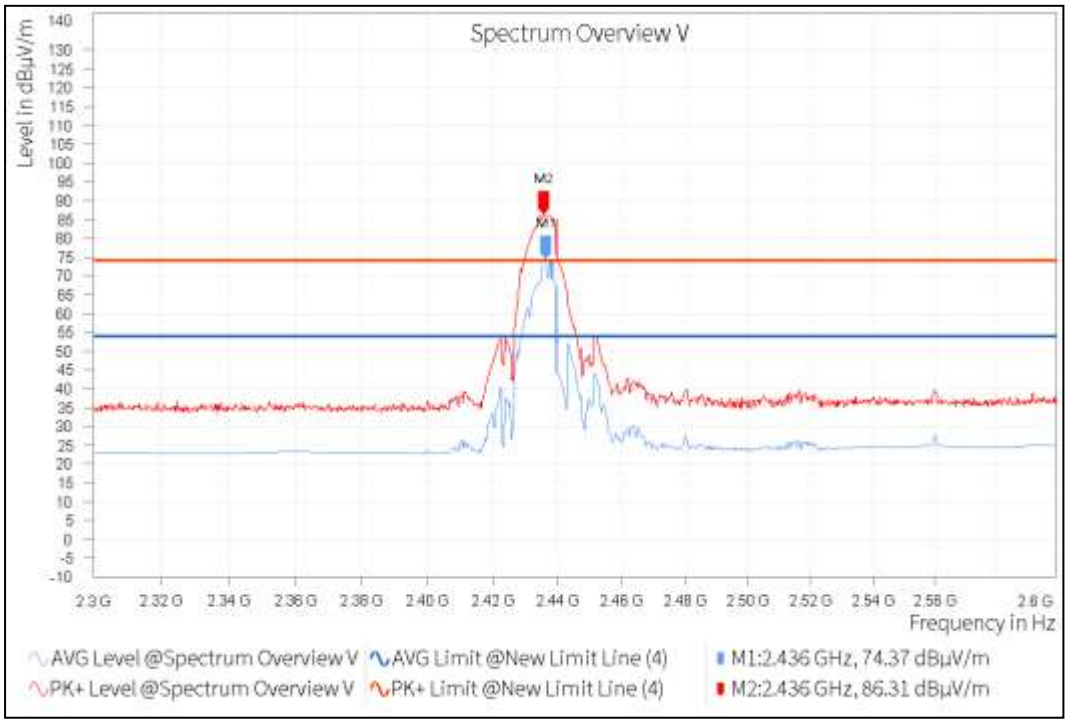


Frequency Range: 1GHz-18GHz **Polarization: Vertical**

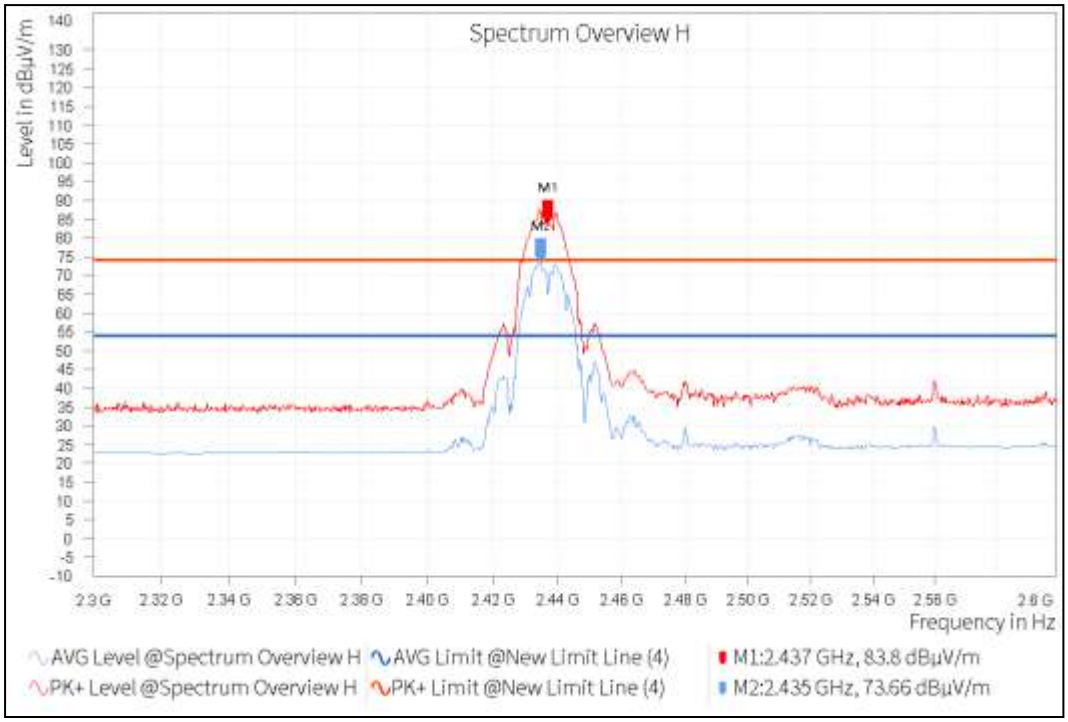


Frequency Range: 1GHz-18GHz **Polarization: Horizontal**

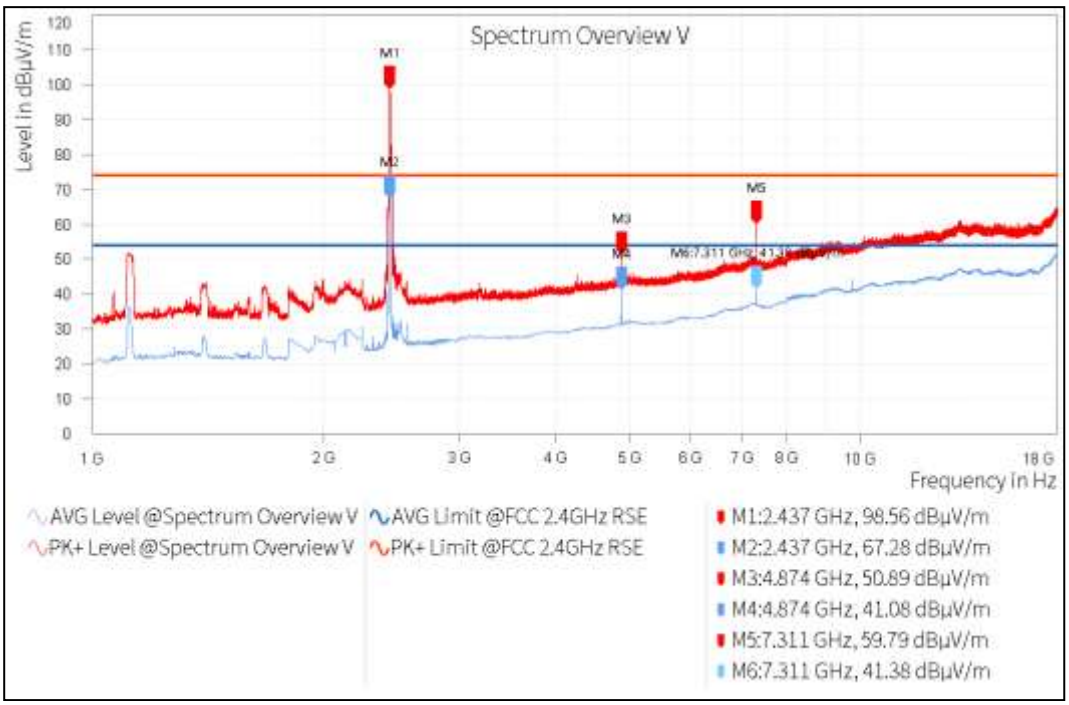
Channel Frequency: 2437MHz



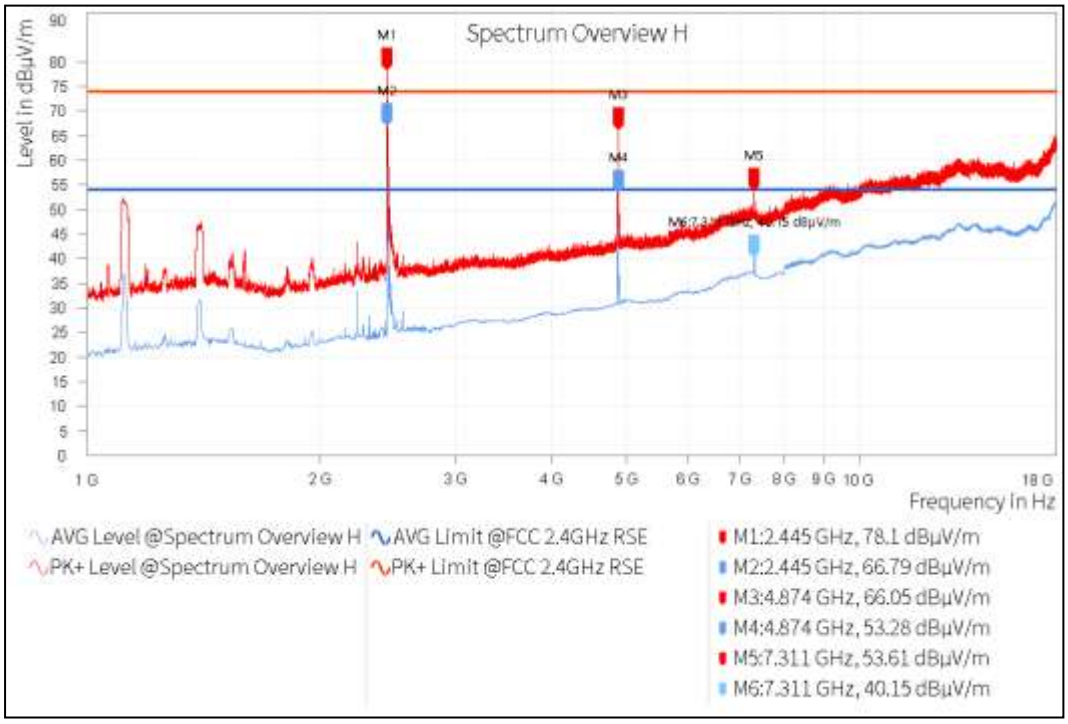
Polarization: Vertical



Polarization: Horizontal

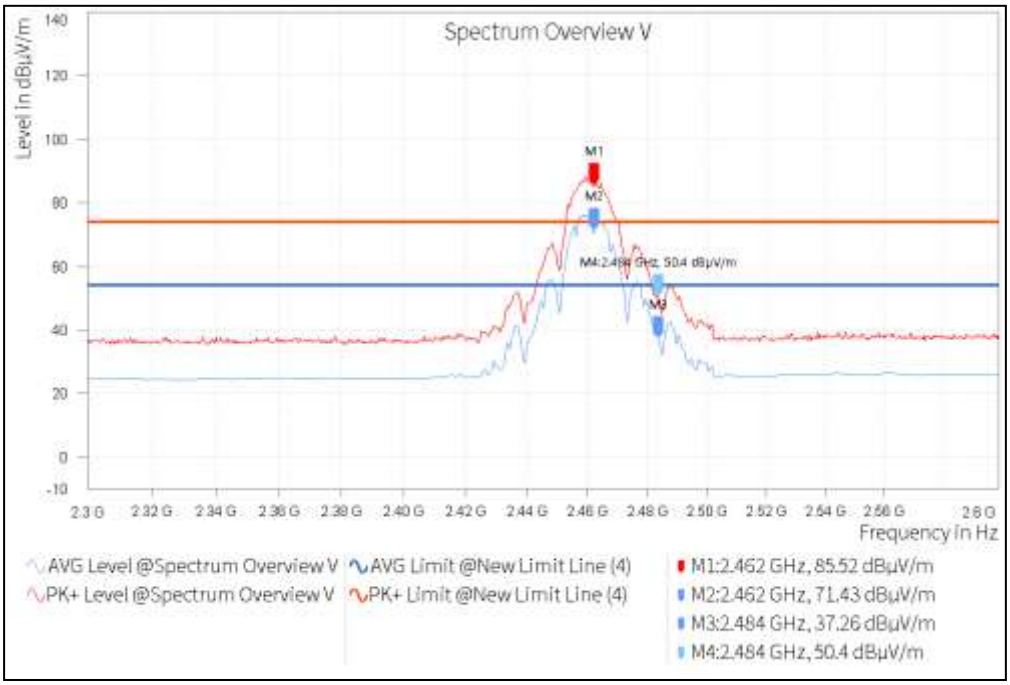


Frequency Range: 1GHz-18GHz **Polarization: Vertical**

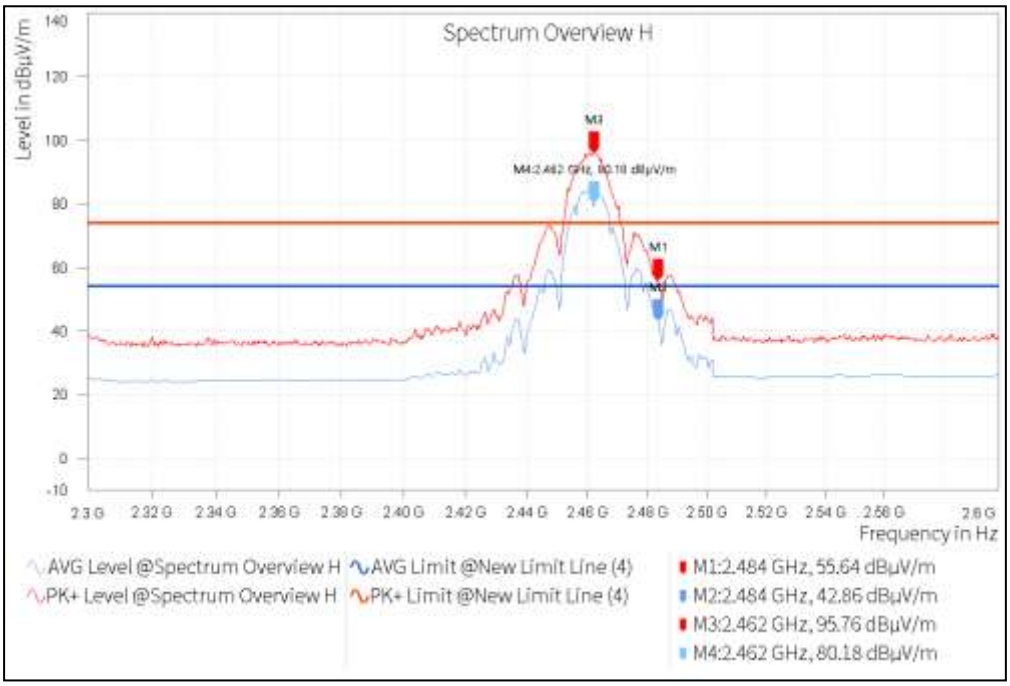


Frequency Range: 1GHz-18GHz **Polarization: Horizontal**

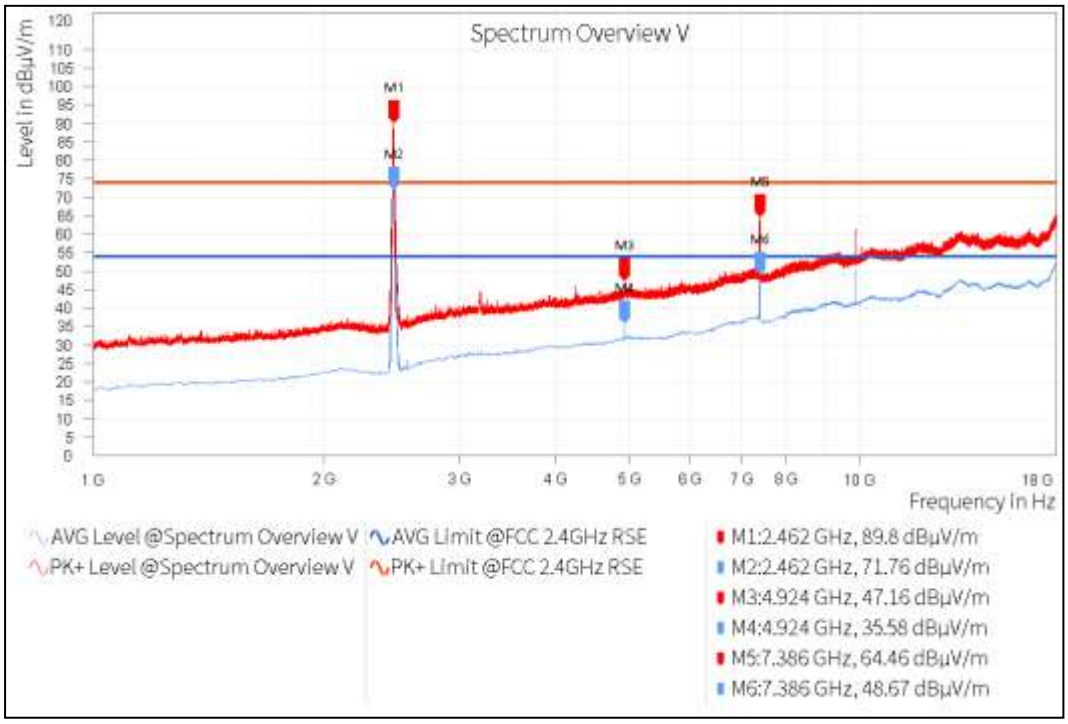
Channel Frequency: 2462MHz



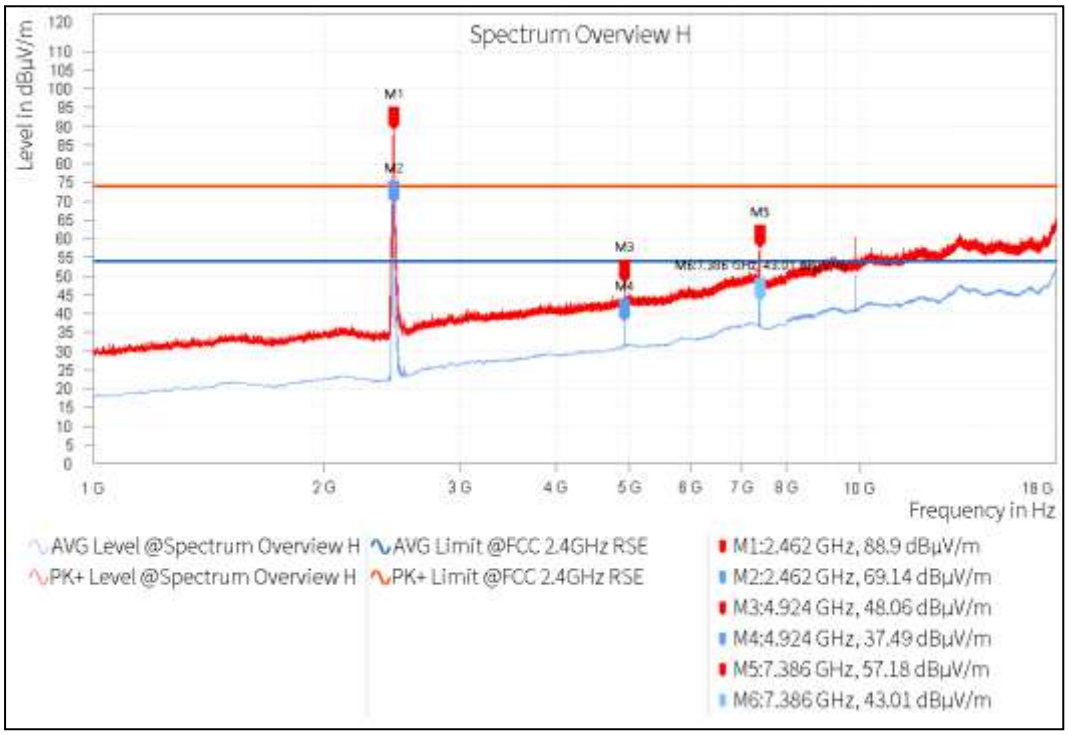
Polarization: Vertical



Polarization: Horizontal



Frequency Range: 1GHz-18GHz **Polarization: Vertical**

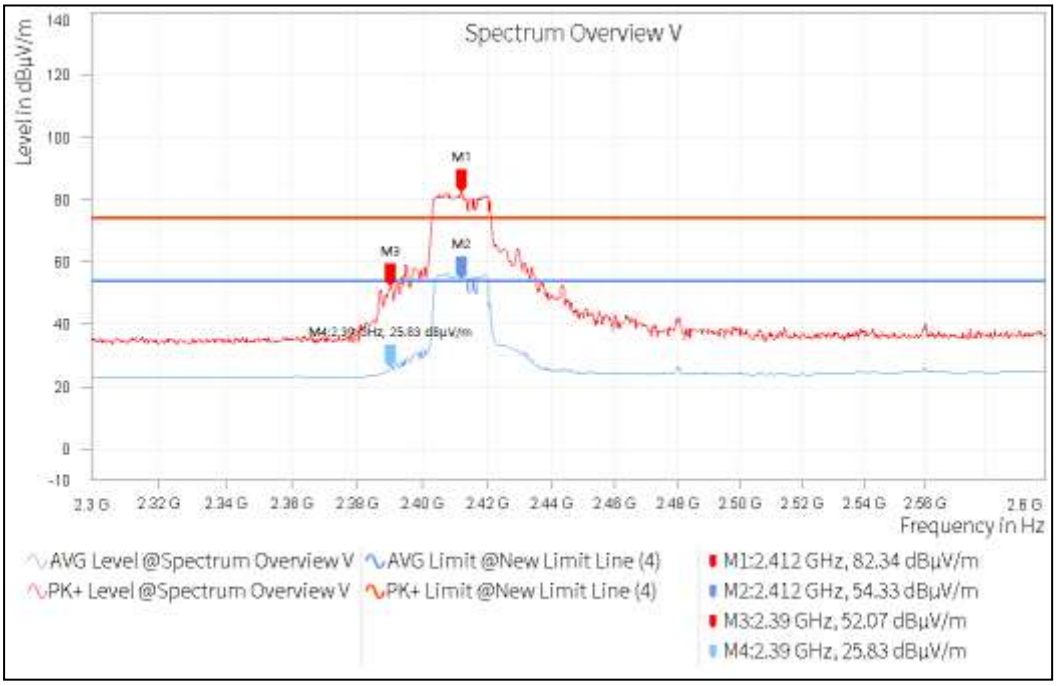


Frequency Range: 1GHz-18GHz **Polarization: Horizontal**

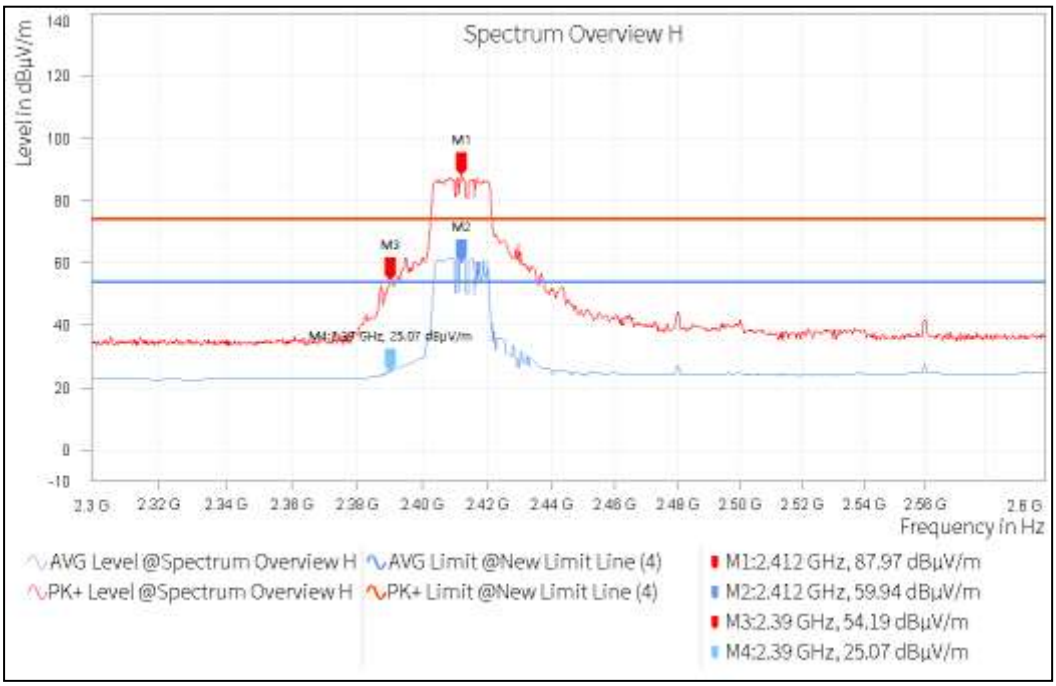
Modulation: g Mode
Data rate: 6Mbps

Channel Frequency (MHz)	Frequency (MHz)	antenna Polarization	Emission (dBμV/m)	Limit (dBμV/m)	Margin (dB)
2412	2412(Pk)	Vertical	82.34	-	-
	2412(Av)		54.33	-	-
	2390(Pk)		52.07	74	-21.93
	2390(Av)		25.83	54	-28.17
	4824(Pk)		64.06	74	-9.94
	4824(Av)		38.14	54	-15.86
	7236(Pk)		57.09	74	-16.91
	7236(Av)		37.92	54	-16.08
	2412(Pk)	Horizontal	87.97	-	-
	2412(Av)		59.94	-	-
	2390(Pk)		54.19	74	-19.81
	2390(Av)		25.07	54	-28.93
	4824(Pk)		65.17	74	-8.83
	4824(Av)		36.63	54	-17.37
	7236(Pk)		55.39	74	-18.61
	7236(Av)		37.67	54	-16.33
2437	2437(Pk)	Vertical	89.10	-	-
	2437(Av)		61.32	-	-
	4874(Pk)		59.05	74	-14.95
	4874(Av)		35.60	54	-18.40
	7311(Pk)		61.94	74	-12.06
	7311(Av)		38.75	54	-15.25
	2437(Pk)	Horizontal	89.34	-	-
	2437(Av)		61.69	-	-
	4874(Pk)		68.06	74	-5.94
	4874(Av)		41.64	54	-12.36
	7311(Pk)		52.91	74	-21.09
	7311(Av)		37.55	54	-16.45
2462	2462(Pk)	Vertical	82.15	-	-
	2462(Av)		51.42	-	-
	2483.5(Pk)		52.82	74	-21.18
	2483.5(Av)		27.33	54	-26.67
	4924(Pk)		43.74	74	-30.26
	4924(Av)		31.66	54	-22.34
	7386(Pk)		50.35	74	-23.65
	7386(Av)		37.01	54	-16.99
	2462(Pk)	Horizontal	90.53	-	-
	2462(Av)		60.05	-	-
	2483.5(Pk)		**58.65**	74	-15.35
	2483.5(Av)		**29.13**	54	-24.87
	4924(Pk)		43.09	74	-30.91
	4924(Av)		31.00	54	-23.00
	7386(Pk)		47.45	74	-26.55
	7386(Av)		36.26	54	-17.74

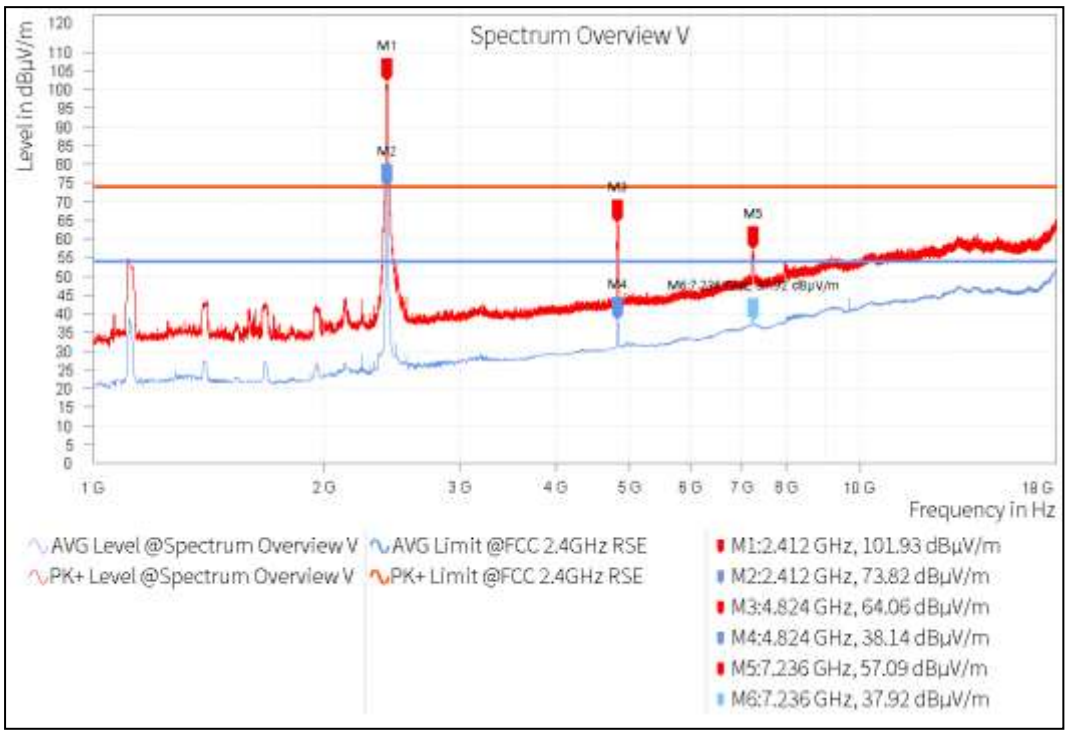
Channel Frequency: 2412MHz



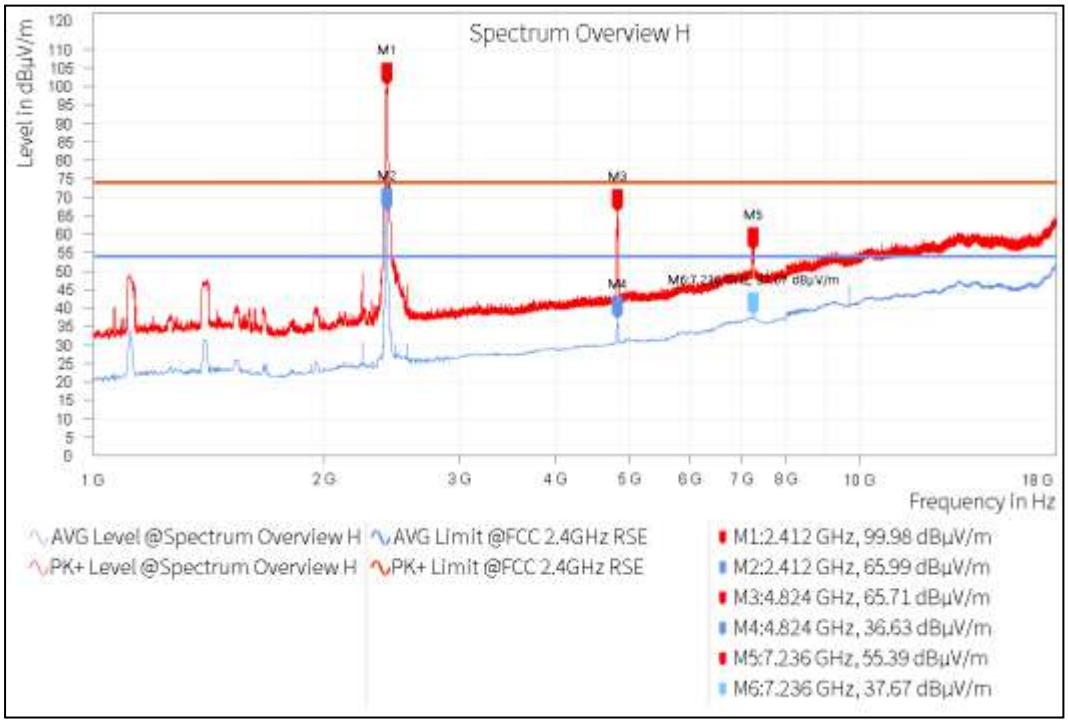
Polarization: Vertical



Polarization: Horizontal

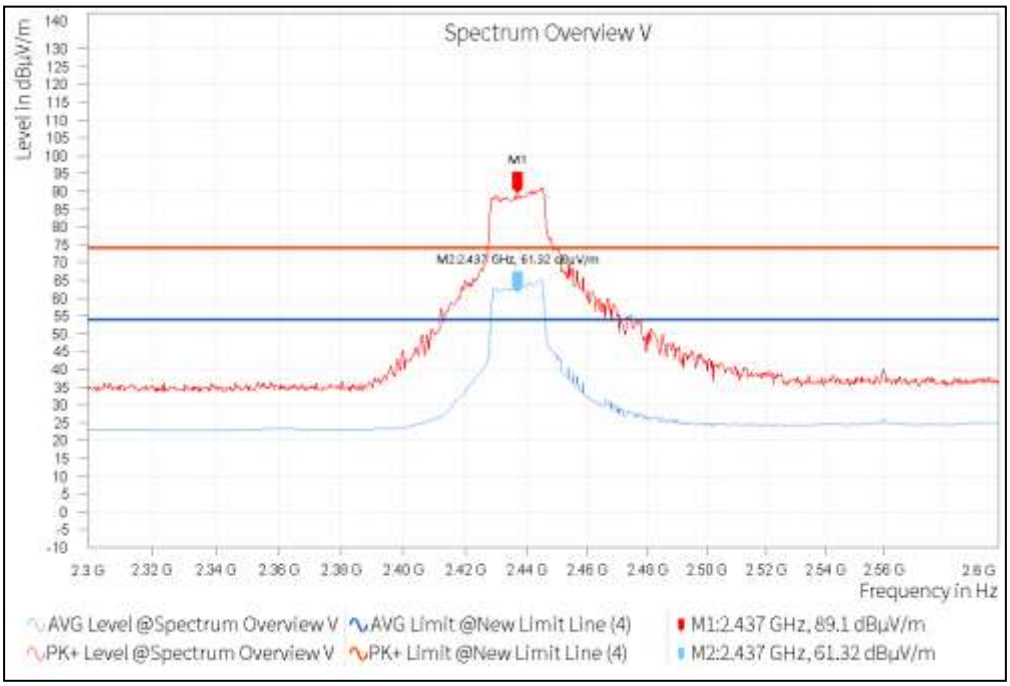


Frequency Range: 1GHz-18GHz **Polarization: Vertical**

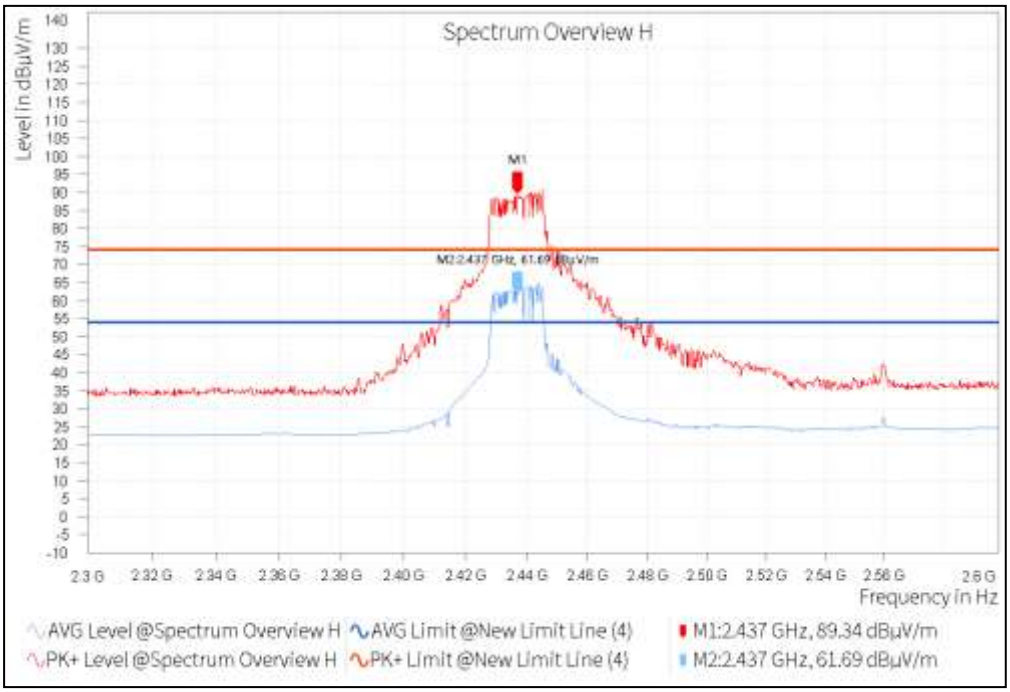


Frequency Range: 1GHz-18GHz **Polarization: Horizontal**

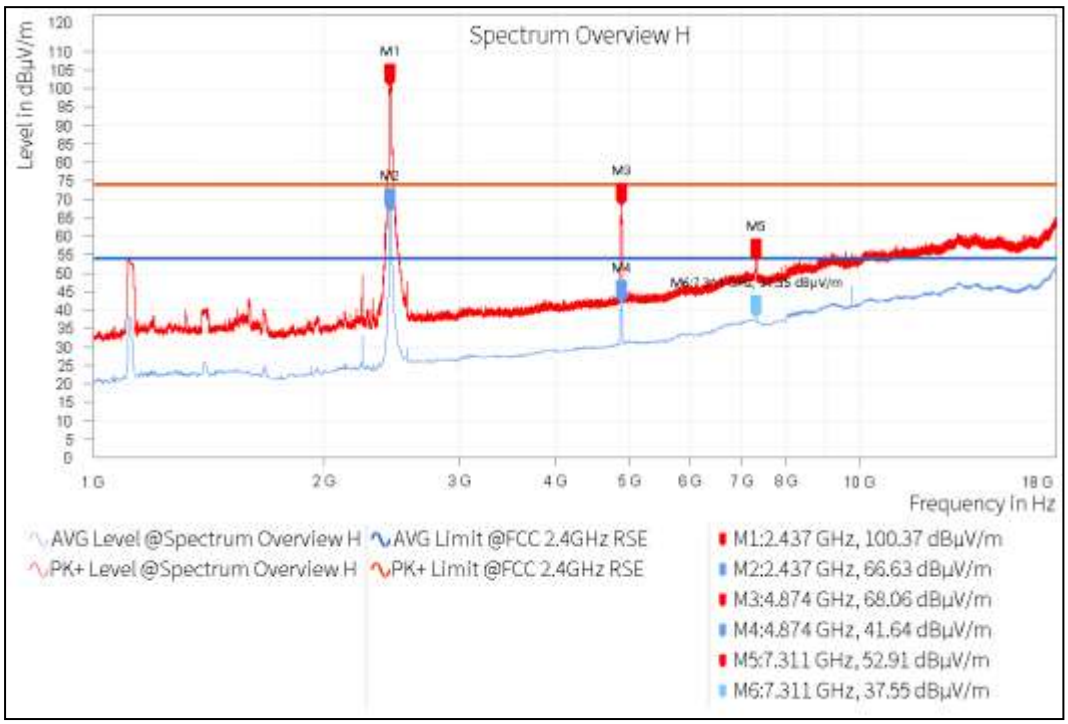
Channel Frequency: 2437MHz



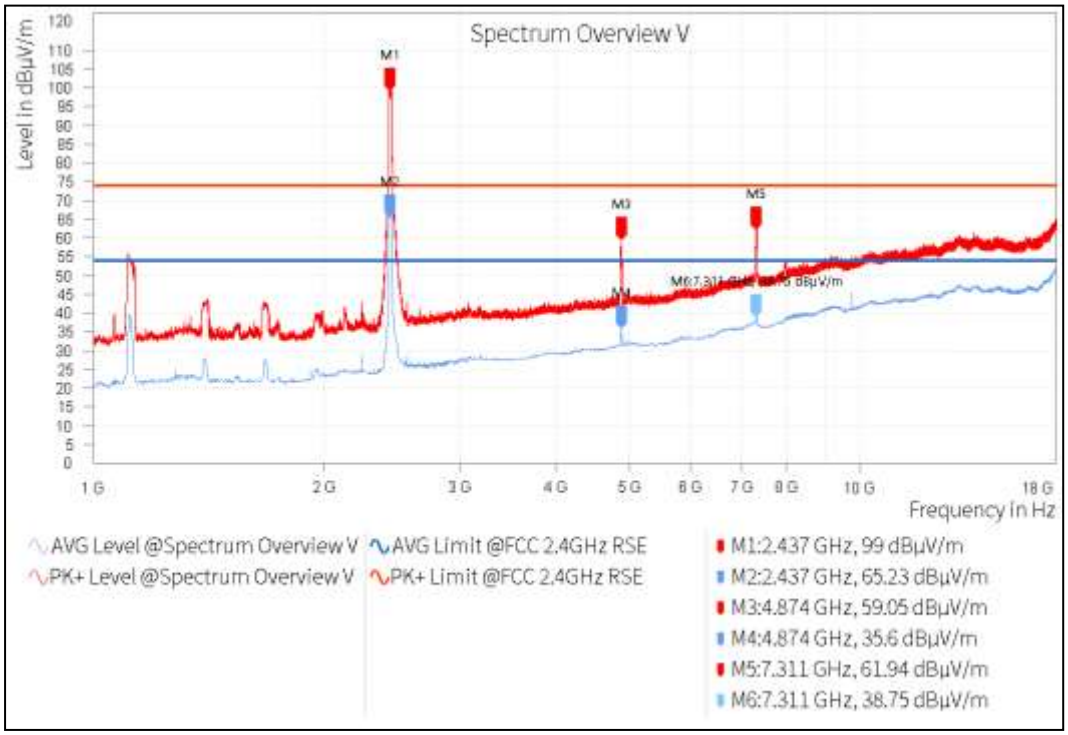
Polarization: Vertical



Polarization: Horizontal

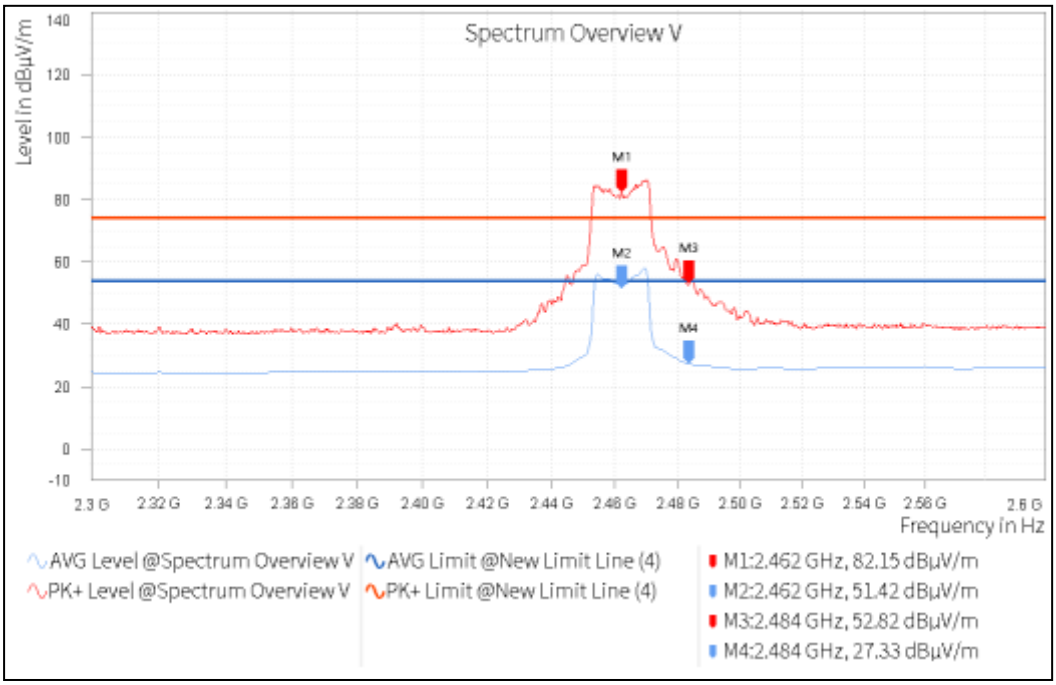


Frequency Range: 1GHz-18GHz **Polarization: Vertical**

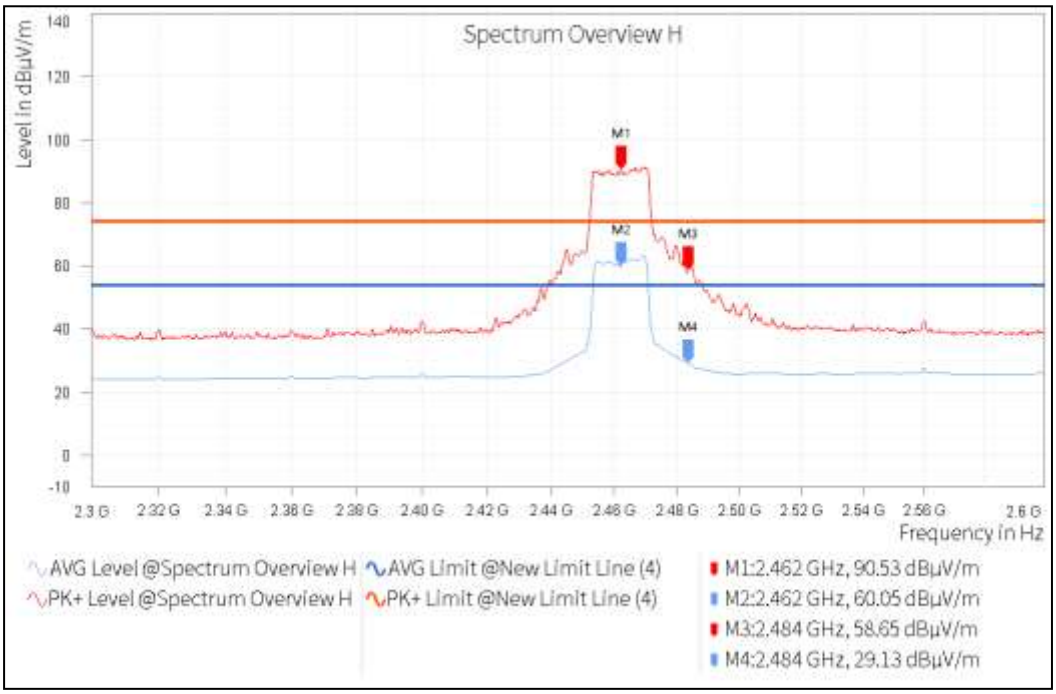


Frequency Range: 1GHz-18GHz **Polarization: Horizontal**

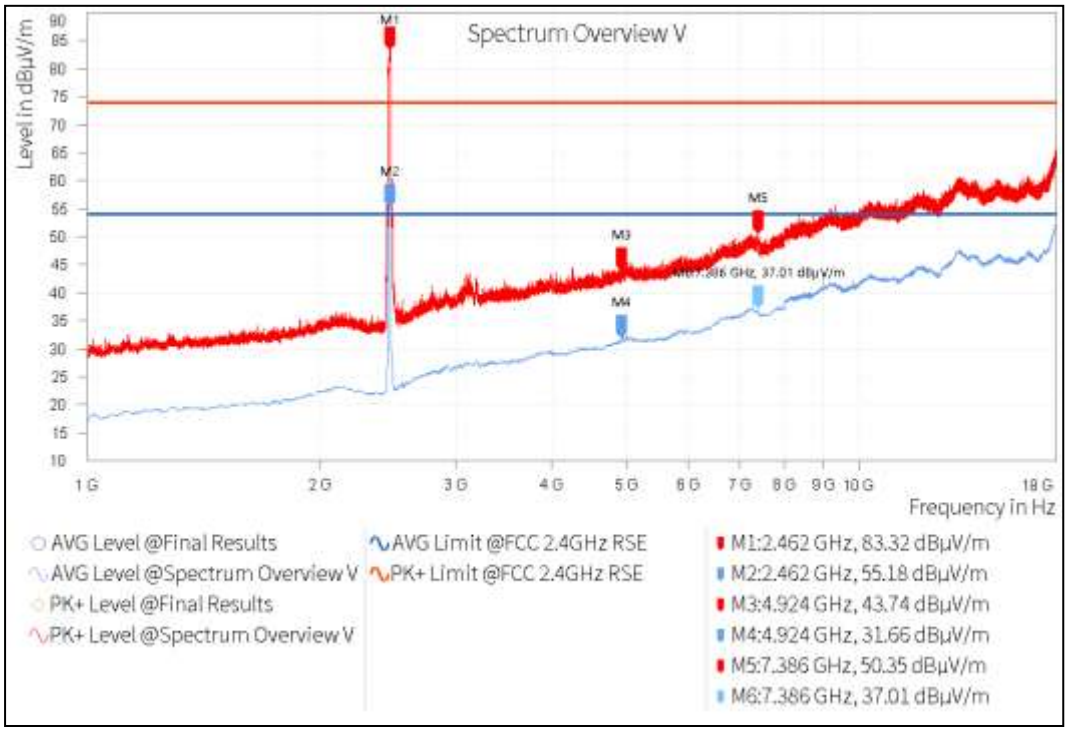
Channel Frequency: 2462MHz



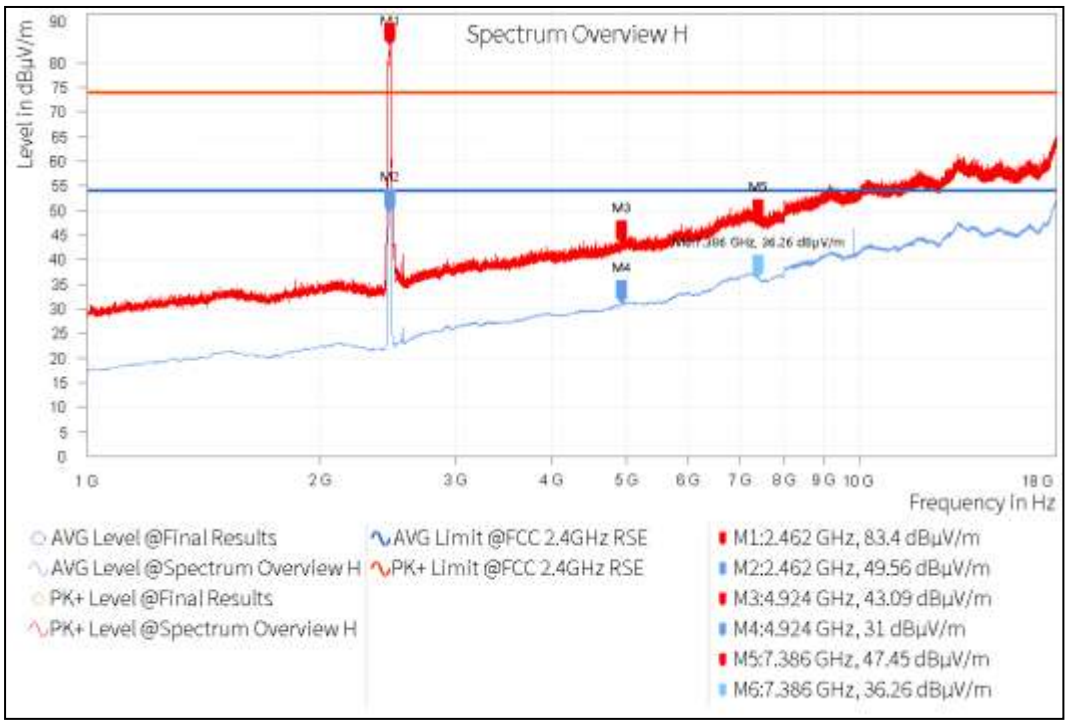
Polarization: Vertical



Polarization: Horizontal



Frequency Range: 1GHz-18GHz **Polarization: Vertical**

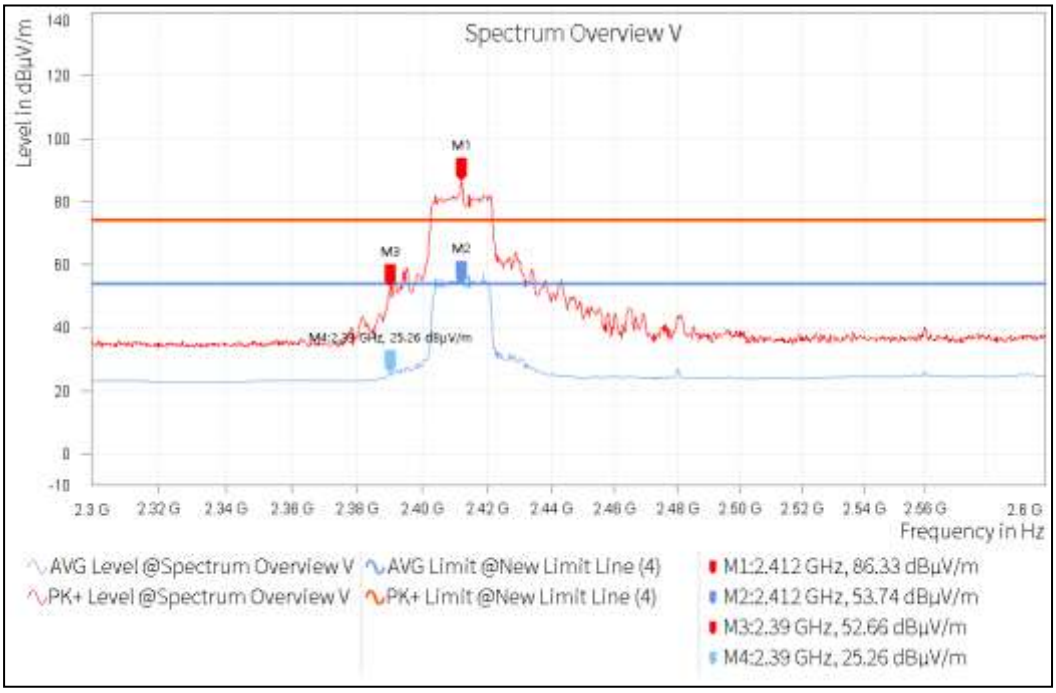


Frequency Range: 1GHz-18GHz **Polarization: Horizontal**

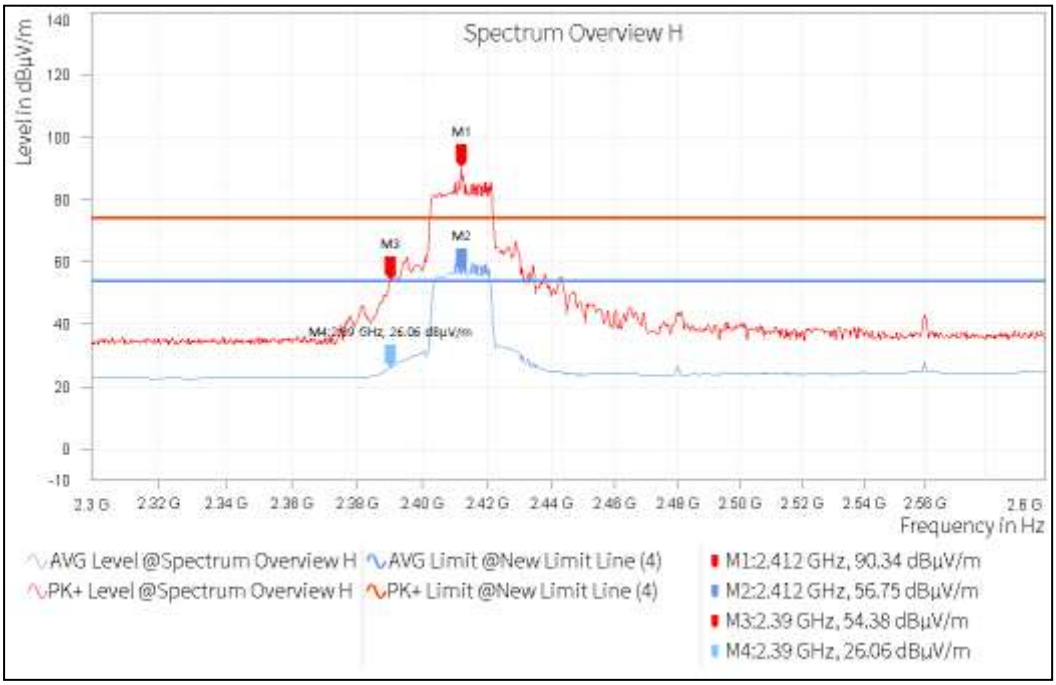
Modulation: n Mode
Data rate: MCS0

Channel Frequency (MHz)	Frequency (MHz)	antenna Polarization	Emission (dBµV/m)	Limit (dBµV/m)	Margin (dB)
2412	2412(Pk)	Vertical	86.33	-	-
	2412(Av)		53.74	-	-
	2390(Pk)		52.66	74	-21.34
	2390(Av)		25.26	54	-28.74
	4824(Pk)		66.97	74	-7.03
	4824(Av)		36.82	54	-17.18
	7236(Pk)		53.75	74	-20.25
	7236(Av)		37.33	54	-16.67
	2412(Pk)	Horizontal	90.34	-	-
	2412(Av)		56.75	-	-
	2390(Pk)		54.38	74	-19.62
	2390(Av)		26.06	54	-27.94
	4824(Pk)		64.60	74	-9.40
	4824(Av)		31.00	54	-23.00
	7236(Pk)		55.88	74	-18.12
	7236(Av)		37.72	54	-16.28
2437	2437(Pk)	Vertical	91.26	-	-
	2437(Av)		59.85	-	-
	4874(Pk)		67.76	74	-6.24
	4874(Av)		38.47	54	-15.53
	7311(Pk)		60.38	74	-13.62
	7311(Av)		37.97	54	-16.03
	2437(Pk)	Horizontal	85.37	-	-
	2437(Av)		52.56	-	-
	4874(Pk)		66.02	74	-7.98
	4874(Av)		37.14	54	-16.86
	7311(Pk)		52.68	74	-21.32
	7311(Av)		37.70	54	-16.30
2462	2462(Pk)	Vertical	84.98	-	-
	2462(Av)		51.51	-	-
	2483.5(Pk)		56.51	74	-17.49
	2483.5(Av)		27.53	54	-26.47
	4924(Pk)		43.00	74	-31.00
	4924(Av)		31.33	54	-22.67
	7386(Pk)		52.16	74	-21.84
	7386(Av)		36.76	54	-17.24
	2462(Pk)	Horizontal	93.90	-	-
	2462(Av)		60.02	-	-
	2483.5(Pk)		62.85	74	-11.15
	2483.5(Av)		29.57	54	-24.43
	4924(Pk)		42.71	74	-31.29
	4924(Av)		31.08	54	-22.92
	7386(Pk)		48.05	74	-25.95
	7386(Av)		36.25	54	-17.75

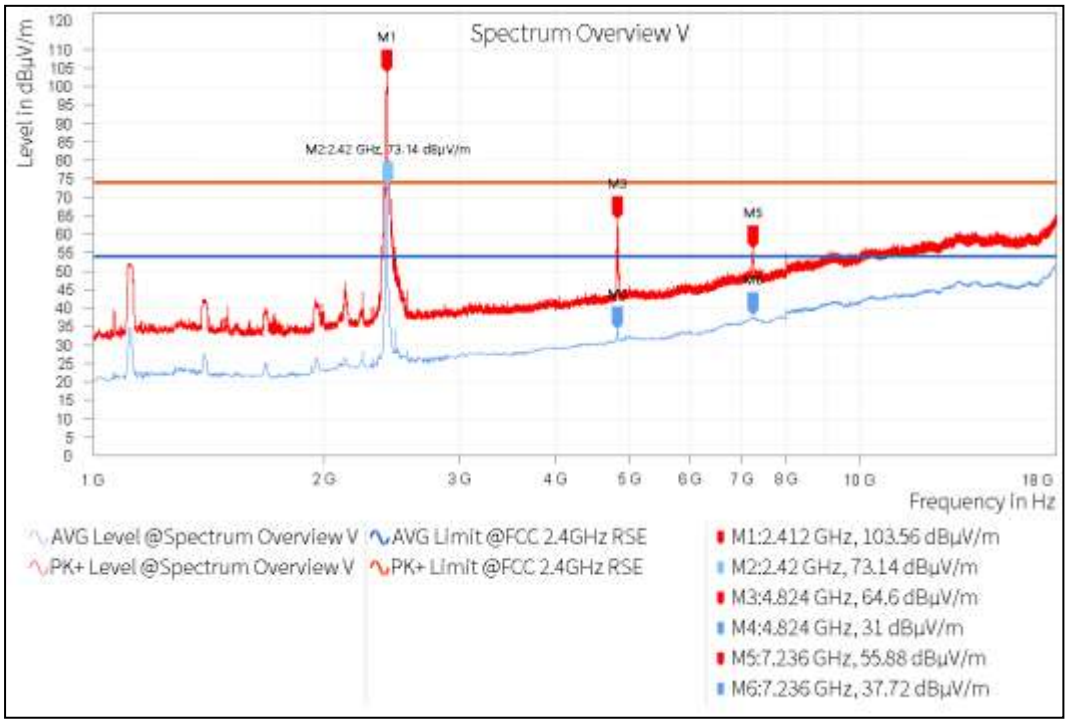
Channel Frequency: 2412MHz



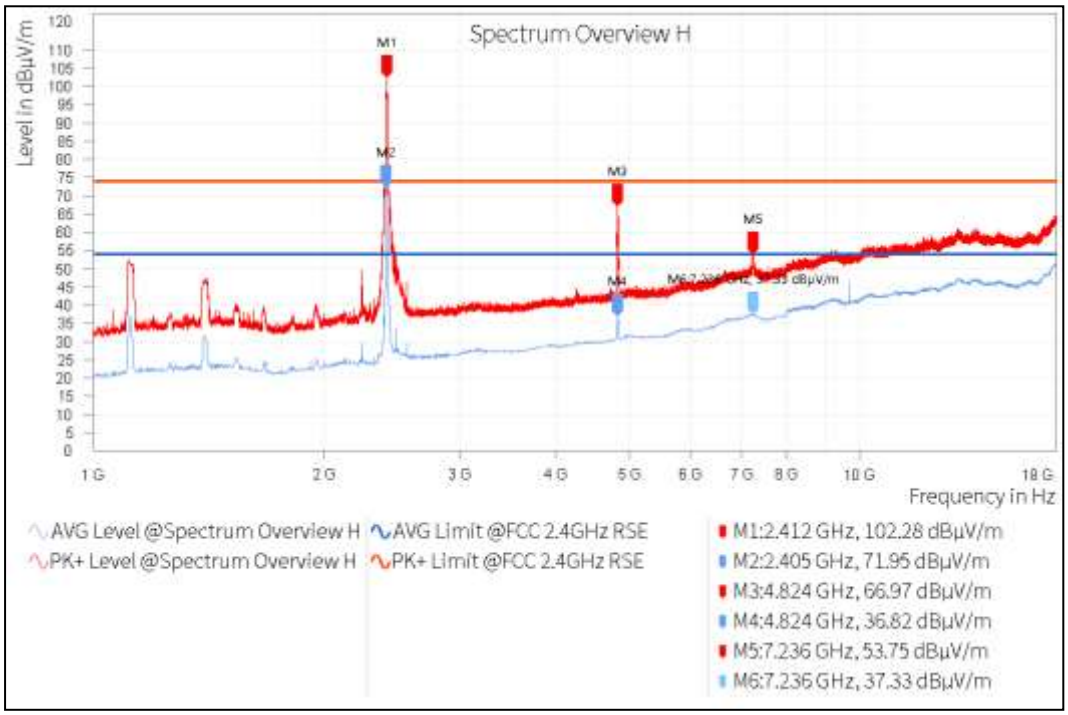
Polarization: Vertical



Polarization: Horizontal

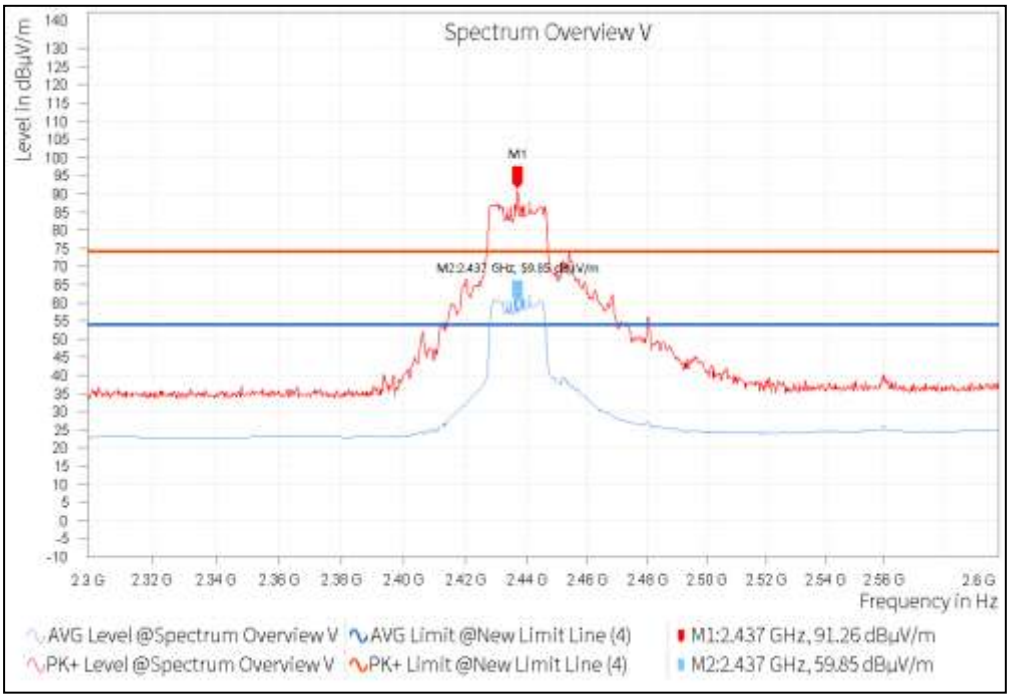


Frequency Range: 1GHz-18GHz **Polarization: Vertical**

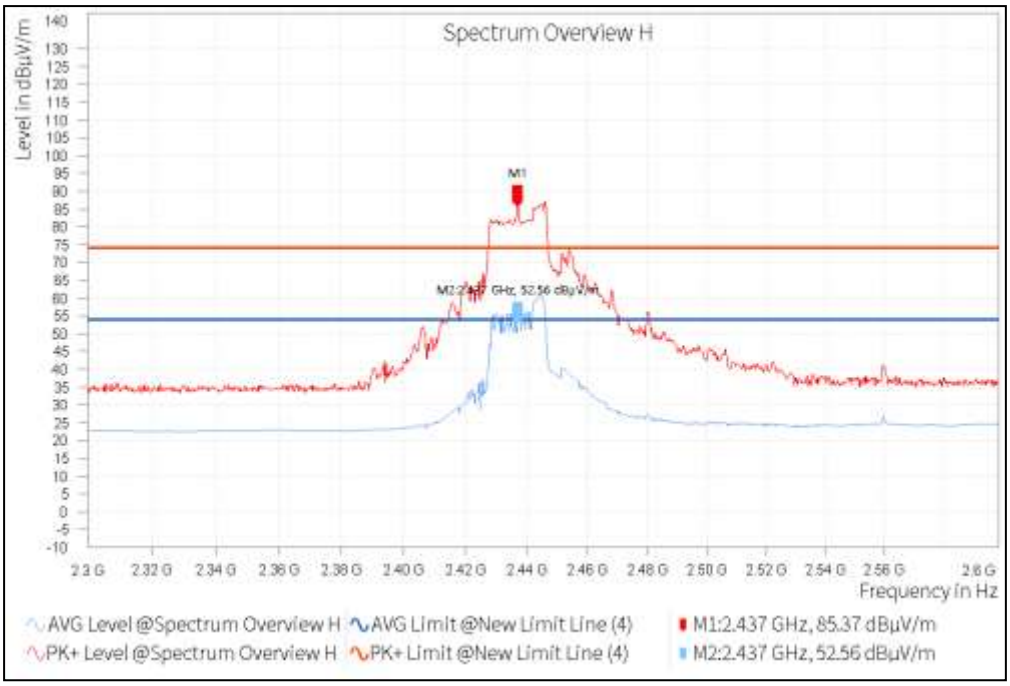


Frequency Range: 1GHz-18GHz **Polarization: Horizontal**

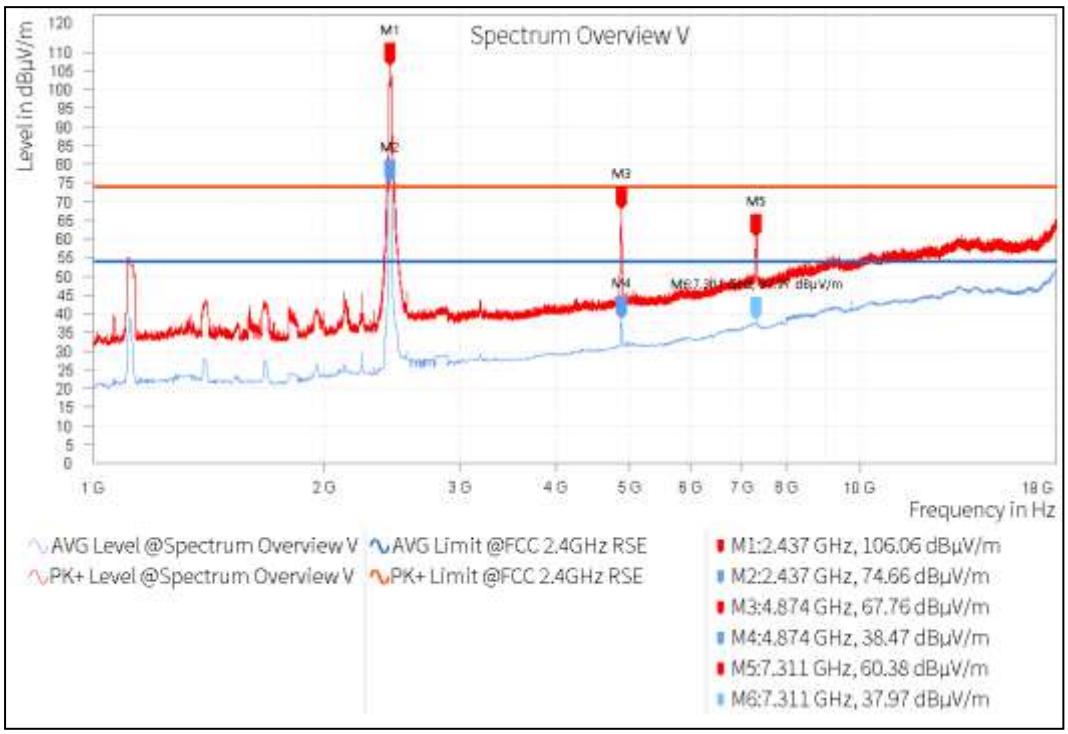
Channel Frequency: 2437MHz



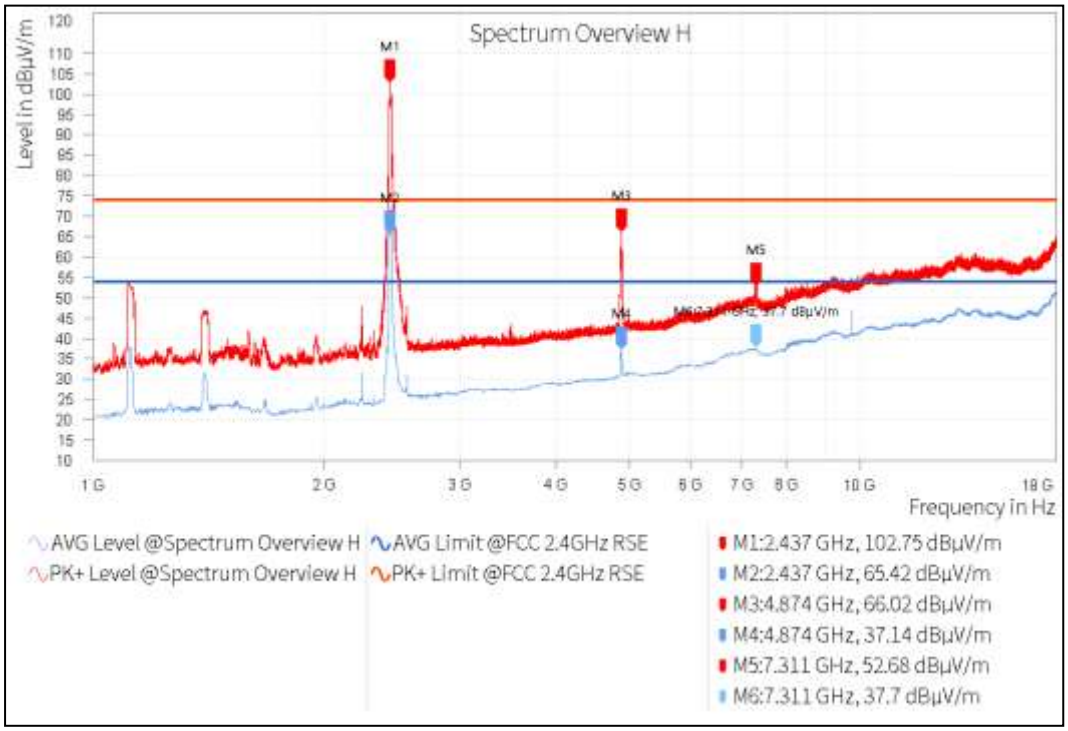
Polarization: Vertical



Polarization: Horizontal

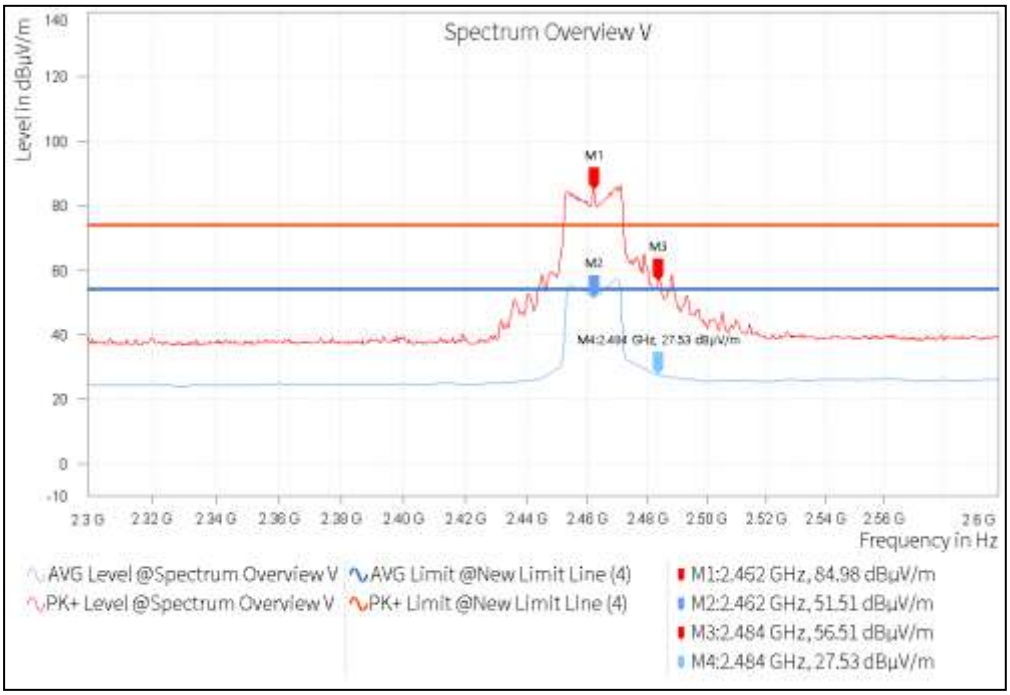


Frequency Range: 1GHz-18GHz **Polarization: Vertical**

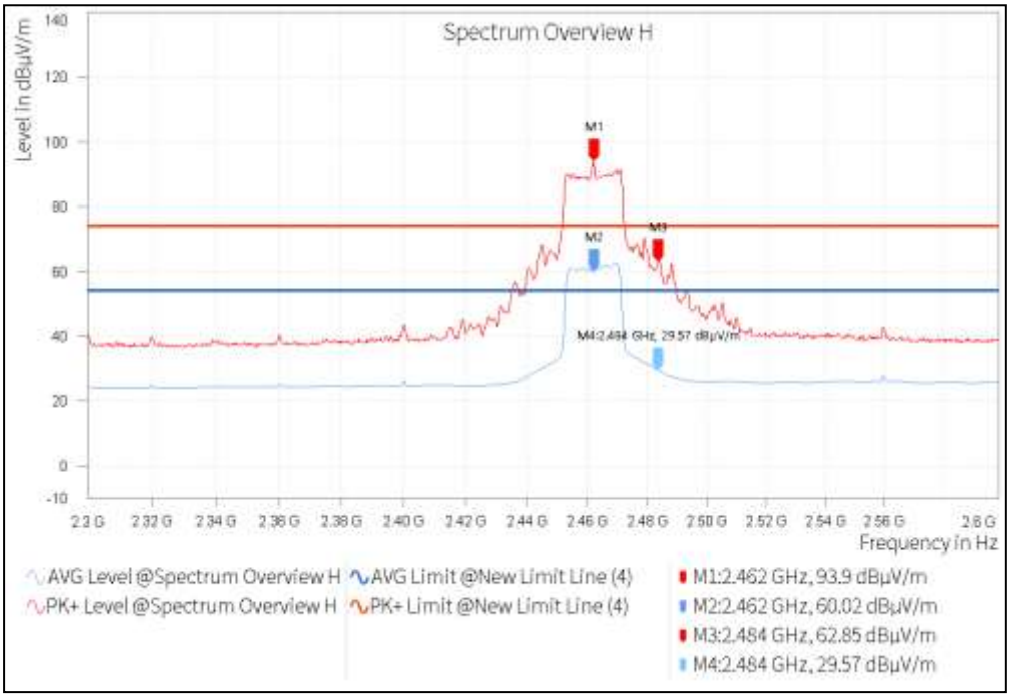


Frequency Range: 1GHz-18GHz **Polarization: Horizontal**

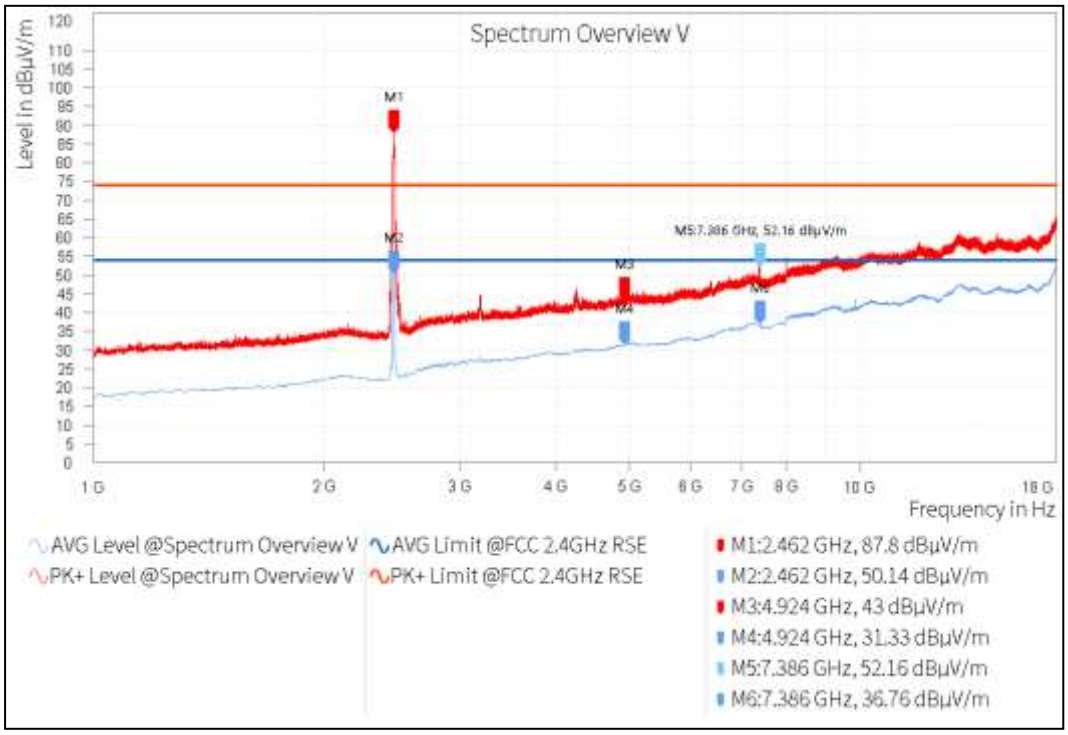
Channel Frequency: 2462MHz



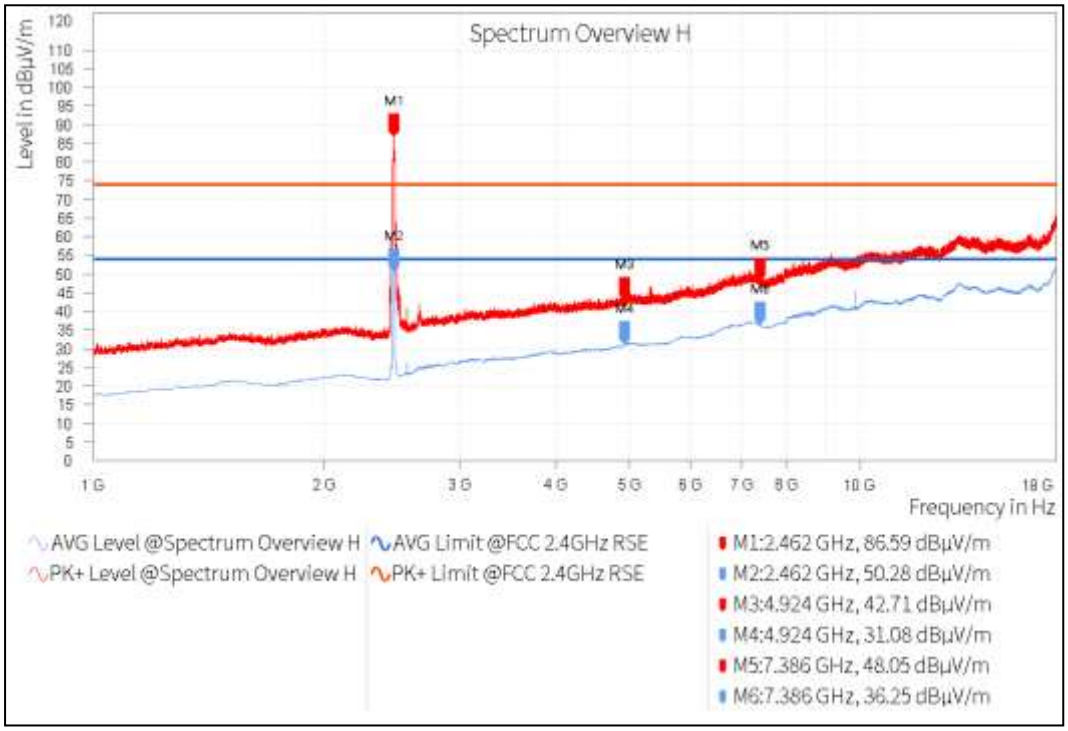
Polarization: Vertical



Polarization: Horizontal



Frequency Range: 1GHz-18GHz **Polarization: Vertical**



Frequency Range: 1GHz-18GHz **Polarization: Horizontal**

14 TEST CONDITIONS AND RESULTS – CONDUCTED SPURIOUS EMISSION TEST ON AC POWER LINE

Test Specification	FCC Part 15 Section 15.207
Test Method	ANSI C63.10-2020
Testing Location	Shielded Room
Measurement Bandwidth	9kHz
Frequency Range	150kHz – 30MHz
Test Setup	Refer TEST METHODOLOGY

Table 14: Limits of section 15.207

Frequency of emission (MHz)	Conducted limit (dBµV)	
	Quasi-peak (dBµV)	Average (dBµV)
0.15-0.5	66-56*	56-46*
0.5-5	56	46
5-30	60	50

* Decreases with the logarithm of the frequency

14.1 Environmental Conditions

Temperature	:	24°C
Relative humidity	:	52%
Power supply	:	208/240 VAC, 60 Hz

14.2 Test result:

Note:

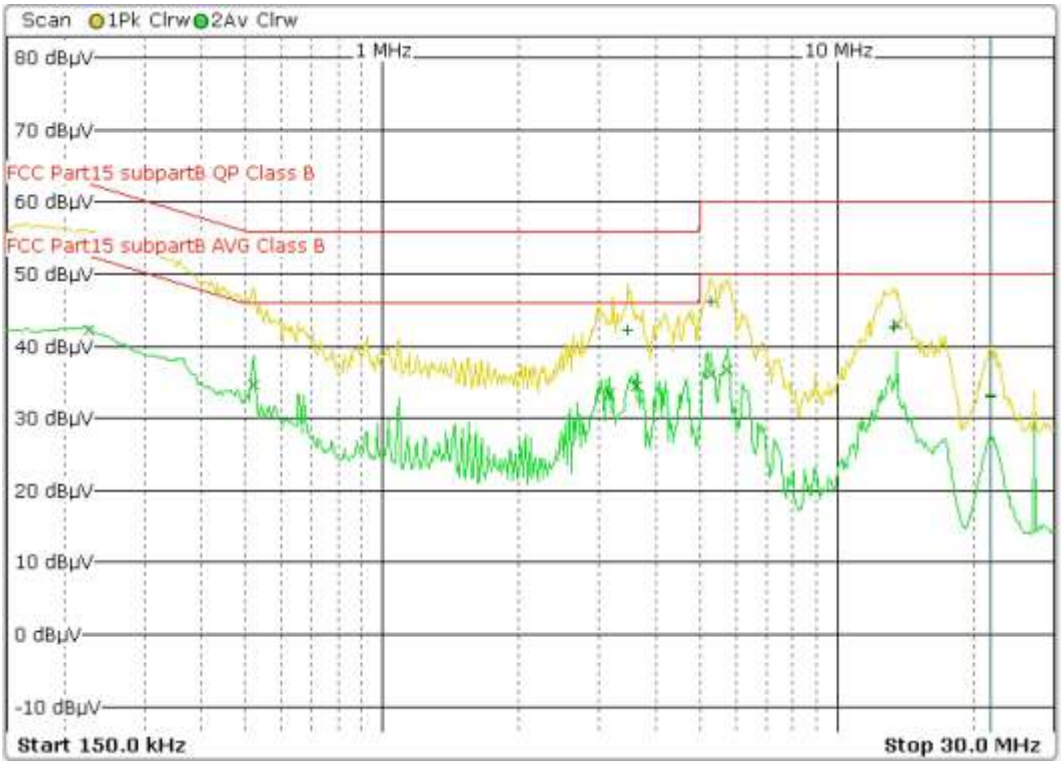
The EUT is powered by a split-phase supply (L1, L2, PE) with no Neutral. Conducted emissions were measured only on L1 and L2, as no Neutral conductor is provided.

Power: 120VAC_ 60Hz_LINE 1

Table 15: Power - 120VAC_ 60Hz_LINE 1 Results

Trace	Frequency	Level (dBµV)	Detector	Delta Limit/dB
1	166.000000000 kHz	54.31	Quasi Peak	-10.85
2	226.000000000 kHz	42.34	Average	-10.26
2	522.000000000 kHz	34.67	Average	-11.33
2	3.154000000 MHz	33.33	Average	-12.67
1	3.458000000 MHz	42.21	Quasi Peak	-13.79
2	3.614000000 MHz	34.4	Average	-11.6
2	5.278000000 MHz	36.25	Average	-13.75
1	5.282000000 MHz	46.22	Quasi Peak	-13.78
2	5.738000000 MHz	36.77	Average	-13.23
1	13.274000000 MHz	42.75	Quasi Peak	-17.25
2	13.562000000 MHz	43.06	Average	-6.94
1	21.734000000 MHz	33.29	Quasi Peak	-26.71
1	21.734000000 MHz	39.89	Quasi Peak	-20.11

Test Plot:

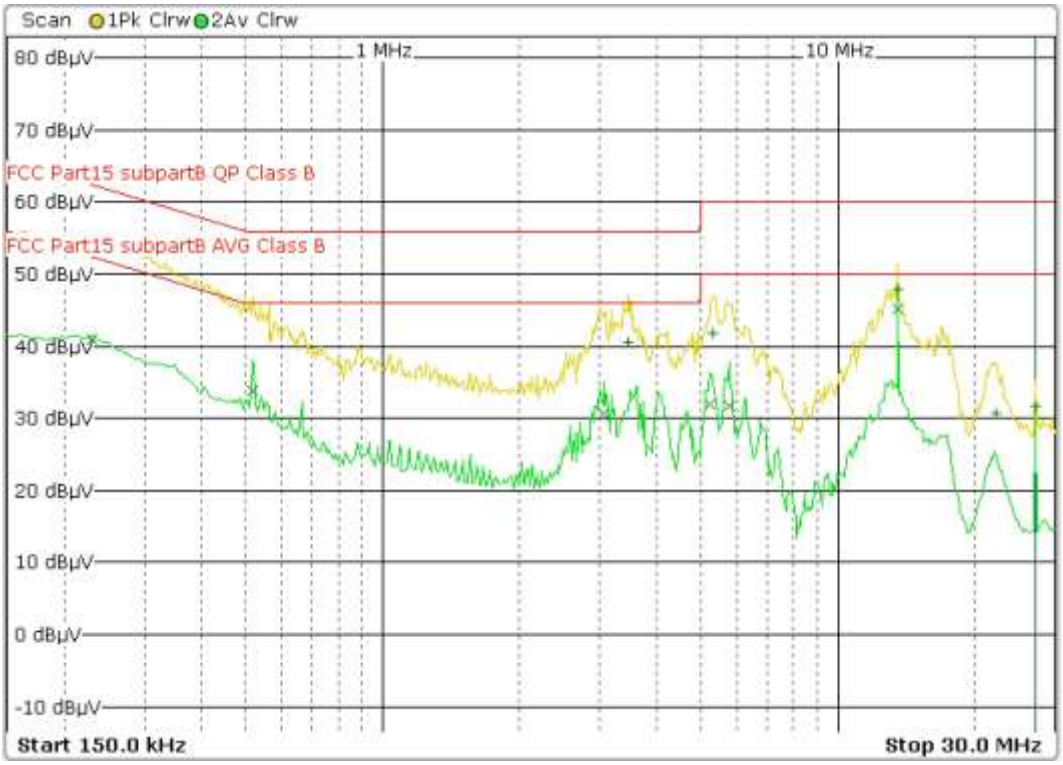


Power: 120VAC_ 60Hz_LINE 2

Table 16: Power - 120VAC_ 60Hz_LINE 2 Results

Trace	Frequency	Level (dBµV)	Detector	Delta Limit/dB
1	162.000000000 kHz	53.28	Quasi Peak	-12.08
2	230.000000000 kHz	41.08	Average	-11.37
2	518.000000000 kHz	33.74	Average	-12.26
2	3.066000000 MHz	30.62	Average	-15.38
1	3.474000000 MHz	40.53	Quasi Peak	-15.47
2	5.242000000 MHz	31.91	Average	-18.09
1	5.326000000 MHz	41.91	Quasi Peak	-18.09
2	5.774000000 MHz	31.73	Average	-18.27
1	13.558000000 MHz	47.83	Quasi Peak	-12.17
2	13.558000000 MHz	45.1	Average	-4.90
1	22.234000000 MHz	30.6	Quasi Peak	-29.40
1	27.118000000 MHz	31.74	Quasi Peak	-28.26

Test Plot:



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----------**End of Report**----------