

TEST REPORT

Application No.: KSCR2412002626AT
FCC ID: 2AL8S-0235C9RE
Applicant: Zhejiang Uniview Technologies Co., Ltd.
Address of Applicant: No. 369, Xietong Road, Xixing Sub-district, Binjiang District, Hangzhou City, 310051, Zhejiang Province, China
Manufacturer: Zhejiang Uniview Technologies Co., Ltd.
Address of Manufacturer: No. 369, Xietong Road, Xixing Sub-district, Binjiang District, Hangzhou City, 310051, Zhejiang Province, China
Equipment Under Test (EUT):
EUT Name: Doorbell
Model No.: ED-525B-WB, ED-525B-WB-xxxxxxx-yyy-yyyy-zzz ("x", "y", "z" can be 0-9, A-Z, a-z or blank; "-" may be blank) ♣
♣ Please refer to section 2 of this report which indicates which model was actually tested and which were electrically identical.
Trade Mark: unv
Standard(s) : 47 CFR Part 15, Subpart C 15.247
Date of Receipt: 2024-12-24
Date of Test: 2024-12-26 to 2025-01-14
Date of Issue: 2025-01-20

Test Result:**Pass***

* In the configuration tested, the EUT complied with the standards specified above.

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Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 30 days only.

Revision Record			
Version	Description	Date	Remark
00	Original	2025-01-20	/

Authorized for issue by:			
Tested By		Maker Qi	
		Maker_Qi/Project Engineer	
Approved By		Terry Hou	
		Terry Hou /Reviewer	

2 Test Summary

Radio Spectrum Technical Requirement					
Item	Standard	Method	Requirement	Result	Test Lab*
Antenna Requirement	47 CFR Part 15, Subpart C 15.247	N/A	47 CFR Part 15, Subpart C 15.203 & 15.247(b)(4)	Customer Declaration	N/A

Radio Spectrum Matter Part					
Item	Standard	Method	Requirement	Result	Test Lab*
Conducted Emissions at AC Power Line (150kHz-30MHz)	47 CFR Part 15, Subpart C 15.247	ANSI C63.10 (2013) Section 6.2	47 CFR Part 15, Subpart C 15.207	Pass	B
Radiated Emissions which fall in the restricted bands		ANSI C63.10 (2013) Section 6.10.5	47 CFR Part 15, Subpart C 15.205 & 15.209	Pass	B
Radiated Spurious Emissions Below 1GHz		ANSI C63.10 (2013) Section 6.4,6.5	47 CFR Part 15, Subpart C 15.205 & 15.209	Pass	B
Radiated Spurious Emissions Above 1GHz		ANSI C63.10 (2013) Section 6.6	47 CFR Part 15, Subpart C 15.205 & 15.209	Pass	B
Conducted Average Output Power		ANSI C63.10 (2013) Section 11.9.2	47 CFR Part 15, Subpart C 15.247(b)(3)	Pass	A
Minimum 6dB Bandwidth		ANSI C63.10 (2013) Section 11.8.1	47 CFR Part 15, Subpart C 15.247a(2)	Pass	A
Power Spectrum Density		ANSI C63.10 (2013) Section 11.10.2	47 CFR Part 15, Subpart C 15.247(e)	Pass	A
Conducted Band Edges Measurement		ANSI C63.10 (2013) Section 11.13.3.2	47 CFR Part 15, Subpart C 15.247(d)	Pass	A
Conducted Spurious Emissions		ANSI C63.10 (2013) Section 11.11	47 CFR Part 15, Subpart C 15.247(d)	Pass	A

Declaration of EUT Family Grouping:

Note: There are series models mentioned in this report, and they are identical in electrical and electronic characters. Only the model ED-525B-WB was tested since their differences were the model numbe.

3 Contents

	Page
1 COVER PAGE	1
2 Test Summary	3
3 Contents.....	4
4 General Information.....	5
4.1 Details of E.U.T.	5
4.2 Power level setting using in test:.....	5
4.3 Description of Support Units	5
4.4 Measurement Uncertainty	6
4.5 Test Location.....	7
4.6 Test Facility	8
4.7 Deviation from Standards.....	8
4.8 Abnormalities from Standard Conditions.....	8
5 Equipment List	9
6 Radio Spectrum Technical Requirement.....	11
6.1 Antenna Requirement	11
7 Radio Spectrum Matter Test Results	12
7.1 Conducted Emissions at AC Power Line (150kHz-30MHz).....	12
7.2 Radiated Emissions which fall in the restricted bands	16
7.3 Radiated Spurious Emissions Below 1GHz	67
7.4 Radiated Spurious Emissions Above 1GHz.....	71
7.5 Conducted Peak Output Power.....	109
7.6 Minimum 6dB Bandwidth	111
7.7 Power Spectrum Density.....	112
7.8 Conducted Band Edges Measurement	113
7.9 Conducted Spurious Emissions	114
8 Test Setup Photo	115
9 EUT Constructional Details (EUT Photos).....	115
10 Appendix.....	116

4 General Information

4.1 Details of E.U.T.

Power supply:	~12-24V,50-60Hz,1.0A
Test voltage:	AC 120V/60Hz
Operation Frequency:	802.11b/g/n(HT20)/ax(HE20):2412MHz to 2462MHz; 802.11n(HT40)/ax(HE40):2422MHz to 2452MHz
Modulation Type:	802.11b: DSSS (CCK, DQPSK, DBPSK), 802.11g/n: OFDM (64QAM, 16QAM, QPSK, BPSK), 802.11ax: OFDMA (BPSK, BPSK_DCM, QPSK, QPSK_DCM, 16QAM, 16QAM_DCM, 64QAM, 256QAM, 1024-QAM)
Number of Channels:	802.11b/g/n(HT20)/ax(HE20):11;802.11n(HT40)/ax(HE40):7
Channel Spacing:	5MHz
Antenna Type:	Internal antenna
Antenna Gain:	3.9dBi (Provided by the manufacturer)

4.2 Power level setting using in test:

Channel	802.11b	802.11g	802.11n(HT20)	802.11n(HT40)
	Ant 1	Ant 1	Ant 1	Ant 1
L	7	9	10	9
M	9	9	9	9
H	9	7	7	10
Channel	802.11AX(HE20)	802.11AX(HE40)		
	Ant 1	Ant 1		
L	8	8		
M	8	8		
H	6	8		

4.3 Description of Support Units

Description	Manufacturer	Model No.	Serial No.
Notebook	LENOVO	K27	EB24537645

4.4 Measurement Uncertainty

Lab A:

No.	Item	Measurement Uncertainty
1	Radio Frequency	8.4×10^{-8}
2	Timeout	2s
3	Duty Cycle	0.37%
4	Occupied Bandwidth	3%
5	RF Conducted Power	0.6dB
6	RF Power Density	2.9dB
7	Conducted Spurious Emissions	0.75dB
8	RF Radiated Power	5.2dB (Below 1GHz) 5.9dB (Above 1GHz)
9	Radiated Spurious Emission Test	4.2dB (Below 30MHz) 4.5dB (30MHz-1GHz) 5.1dB (1GHz-18GHz) 5.4dB (Above 18GHz)
10	Temperature Test	1°C
11	Humidity Test	3%
12	Supply Voltages	1.5%
13	Time	3%

Note: The measurement uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

Lab B:

For a 95% confidence level (k = 2), the measurement expanded uncertainties for defined systems, in accordance with the recommendations of ISO 17025 as following:

No.	Item	Measurement Uncertainty
1	Total RF power, conducted	$\pm 0.54\text{dB}$
2	RF power density, conducted	$\pm 1.03\text{dB}$
3	Spurious emissions, conducted	$\pm 0.54\text{dB}$
4	Radio Frequency	$\pm 1.0 \%$
5	Duty Cycle	$\pm 0.37\%$
6	Occupied Bandwidth	$\pm 1.0 \%$
7	Radiated Emission	$\pm 3.13\text{dB}$ (9k -30MHz) $\pm 4.8\text{dB}$ (30M -1GHz) $\pm 4.8\text{dB}$ (1GHz to 18 GHz) $\pm 4.8\text{dB}$ (Above 18GHz)

Remark:

The U_{lab} (lab Uncertainty) is less than $U_{\text{CISPR/ETSI}}$ (CISPR/ETSI Uncertainty), so the test results
– compliance is deemed to occur if no measured disturbance level exceeds the disturbance limit;
– non-compliance is deemed to occur if any measured disturbance level exceeds the disturbance limit.

4.5 Test Location

Lab A:

Compliance Certification Services (Kunshan) Inc.

No.10 Weiye Rd, Innovation park, Eco&Tec, Development Zone, Kunshan City, Jiangsu, China.

Tel: +86 512 5735 5888 Fax: +86 512 5737 0818

Lab B:

Conducted Emissions at AC Power Line (150kHz-30MHz); Radiated Emissions; Radiated Emissions which fall in the restricted bands test at:

SGS-CSTC Standards Technical Services (Suzhou) Co., Ltd.

South of No. 6 Plant, No. 1, Runsheng Road, Suzhou Industrial Park, Suzhou Area, China (Jiangsu) Pilot Free Trade Zone

Note:

1. SGS is not responsible for wrong test results due to incorrect information (e.g., max. internal working frequency, antenna gain, cable loss, etc) is provided by the applicant. (If applicable).
2. SGS is not responsible for the authenticity, integrity and the validity of the conclusion based on results of the data provided by applicant. (If applicable).
3. Sample source: sent by customer.

4.6 Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

Lab A:

• **A2LA**

Compliance Certification Services (Kunshan) Inc. is accredited by the American Association for Laboratory Accreditation (A2LA). Certificate No. 2541.01.

• **FCC**

Compliance Certification Services (Kunshan) Inc. has been recognized as an accredited testing laboratory. Designation Number: CN1172.

• **ISED**

Compliance Certification Services (Kunshan) Inc. has been recognized by Innovation, Science and Economic Development Canada (ISED) as an accredited testing laboratory. Company Number: 2324E

• **VCCI**

The 3m and 10m Semi-anechoic chamber and Shielded Room of Compliance Certification Services (Kunshan) Inc. has been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: R-20134, R-11600, C-11707, T-11499, G-10216 respectively.

Lab B:

• **A2LA (Certificate No. 6336.01)**

SGS-CSTC STANDARDS TECHNICAL SERVICES (SUZHOU) CO., LTD. is accredited by the American Association for Laboratory Accreditation(A2LA). Certificate No. 6336.01.

• **Innovation, Science and Economic Development Canada**

SGS-CSTC STANDARDS TECHNICAL SERVICES (SUZHOU) CO., LTD. has been recognized by ISED as an accredited testing laboratory.

CAB identifier: CN0120.

IC#: 27594.

• **FCC –Designation Number: CN1312**

SGS-CSTC STANDARDS TECHNICAL SERVICES (SUZHOU) CO., LTD. has been recognized as an accredited testing laboratory.

Designation Number: CN1312.

Test Firm Registration Number: 717327

4.7 Deviation from Standards

None

4.8 Abnormalities from Standard Conditions

None

5 Equipment List

Lab A:

Item	Equipment	Manufacturer	Model	Inventory No	Cal Date	Cal. Due Date
RF Conducted Test						
1	Spectrum Analyzer	Keysight	N9020A	KUS1911E004-2	08/01/2024	07/31/2025
2	Spectrum Analyzer	Keysight	N9020A	KUS2001M001-2	08/01/2024	07/31/2025
3	Spectrum Analyzer	Keysight	N9030B	KSEM021-1	01/15/2024	01/14/2025
4	Signal Generator	R&S	SMBV100B	KSEM032	03/19/2024	03/18/2025
5	Signal Generator	R&S	SMW200A	KSEM020-1	08/02/2024	08/01/2025
6	Signal Generator	Agilent	N5182A	KUS2001M001-1	08/01/2024	07/31/2025
7	Signal Generator	Agilent	E8257C	KS301066	08/06/2024	08/05/2025
8	Radio Communication Test Station	Anritsu	MT8000A	KSEM001-1	08/01/2024	07/31/2025
9	Radio Communication Analyzer	Anritsu	MT8821C	KSEM002-1	03/19/2024	03/18/2025
10	Universal Radio Communication Tester	R&S	CMW500	KUS1911E004-1	08/12/2024	08/11/2025
11	Switcher	TST	FY562	KUS2001M001-4	01/15/2024	01/14/2025
12	Conducted Test Cable	Thermax	RF01-RF04	CZ301111- CZ301120	01/15/2024	01/14/2025
13	Temp. / Humidity Chamber	TERCHY	MHK-120AK	KS301190	08/26/2024	08/25/2025
14	Temperature & Humidity Recorder	Renke Control	RS-WS-N01-6J	KSEM024-5	03/19/2024	03/18/2025
15	Software	BST	TST-PASS	/	NCR	NCR

Lab B:

Item	Equipment	Manufacturer	Model	Inventory No	Cal Date	Cal. Due Date
Conducted Emission at Mains Terminals						
1	Test receiver	ROHDE&SCHWARZ	ESR7	SUWI-01-10-01	2/1/2024	1/31/2025
2	Temperature and humidity meter	MingGao	TH101B	SUWI-01-01-06	2/8/2024	2/7/2025
3	Artificial network	ROHDE&SCHWARZ	ENV216	SUWI-01-19-03	2/4/2024	2/3/2025
4	Artificial network	ROHDE&SCHWARZ	ENV216	SUWI-01-19-04	2/4/2024	2/3/2025
5	Measurement Software	Tonscend	JS32-CE	SUWI-02-09-05	NCR	NCR
RF Radiated Test						
1	Semi-Anechoic Chamber	Brilliant-emc	N/A	SUWI-04-02-02	11/25/2024	11/24/2027
2	Temperature and humidity meter	MingGao	TH101B	SUWI-01-01-13	2/8/2024	2/7/2025
3	Signal Analyzer	ROHDE&SCHWARZ	FSW43	SUWI-01-02-04	5/8/2024	5/7/2025
4	Signal Analyzer	KEYSIGHT	N9020A	SUWI-01-02-06	11/21/2024	11/20/2025
5	Test receiver	ROHDE&SCHWARZ	ESR7	SUWI-01-10-01	2/1/2024	1/31/2025
6	Receiving antenna	SCHWRZBECK MESS-ELEKTRONIK	VULB 9168	SUWI-01-11-04	11/25/2023	11/24/2025
7	Receiving antenna	SCHWRZBECK MESS-ELEKTRONIK	BBHA 9120D	SUWI-01-11-05	11/25/2023	11/24/2025
8	Receiving antenna	SCHWRZBECK MESS-ELEKTRONIK	BBHA 9170	SUWI-01-11-03	5/12/2023	5/11/2025
9	Active Loop Antenna	SCHWRZBECK MESS-ELEKTRONIK	FMZB 1519B	SUWI-01-21-01	5/13/2023	5/12/2025
10	Amplifier	Tonscend	TAP9K3G40	SUWI-01-14-01	2/1/2024	1/31/2025
11	Amplifier	Tonscend	TAP01018050	SUWI-01-14-02	2/1/2024	1/31/2025
12	Amplifier	Tonscend	TAP18040048	SUWI-01-14-03	2/1/2024	1/31/2025
13	Measurement Software	Tonscend	JS32-RE	SUWI-02-09-04	NCR	NCR
14	Measurement Software	Tonscend	JS32-RSE	SUWI-02-09-06	NCR	NCR

6 Radio Spectrum Technical Requirement

6.1 Antenna Requirement

6.1.1 Test Requirement:

47 CFR Part 15, Subpart C 15.203 & 15.247(b)(4)

6.1.2 Conclusion

Standard Requirement:

An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

15.247(b) (4) requirement:

The conducted output power limit specified in paragraph (b) of this section is based on the use of antennas with directional gains that do not exceed 6 dBi. Except as shown in paragraph (c) of this section, if transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced below the stated values in paragraphs (b)(1), (b)(2), and (b)(3) of this section, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

EUT Antenna:

The antenna is Internal antenna on the main PCB and no consideration of replacement. The best case gain of the antenna is 3.9 dBi.

Antenna location: Refer to internal photo.

7 Radio Spectrum Matter Test Results

7.1 Conducted Emissions at AC Power Line (150kHz-30MHz)

Test Requirement 47 CFR Part 15, Subpart C 15.207

Test Method: ANSI C63.10 (2013) Section 6.2

Limit:

Frequency of emission(MHz)	Conducted limit(dBμV)	
	Quasi-peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50
*Decreases with the logarithm of the frequency.		
Detector: Peak for pre-scan (9kHz resolution bandwidth) 0.15M to 30MHz		

7.1.1 E.U.T. Operation

Operating Environment:

Temperature: 21.6 °C

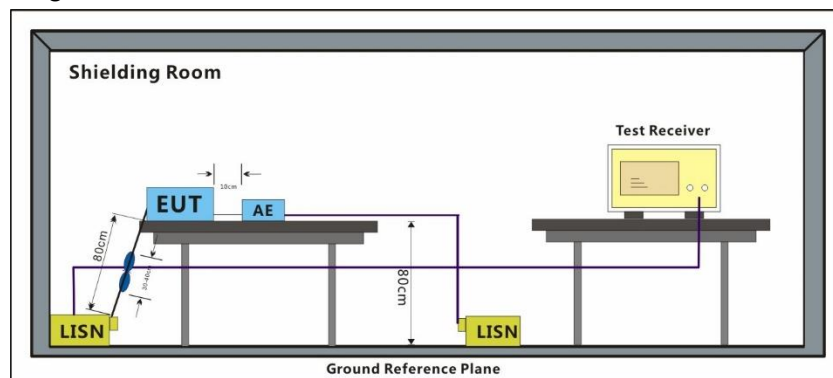
Humidity: 48.3 % RH

Atmospheric Pressure: 1010 mbar

7.1.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	00	TX mode_Keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 1Mbps is the worst case of IEEE 802.11b; data rate @ 6Mbps is the worst case of IEEE 802.11g; data rate @ 6.5Mbps is the worst case of IEEE 802.11n(HT20); data rate @ 13.5Mbps is the worst case of IEEE 802.11n(HT40); data rate @ MCS0 is the worst case of IEEE 802.11ax(HE20); data rate @ MCS0 is the worst case of IEEE 802.11ax(HE40). Only the data of worst case is recorded in the report.

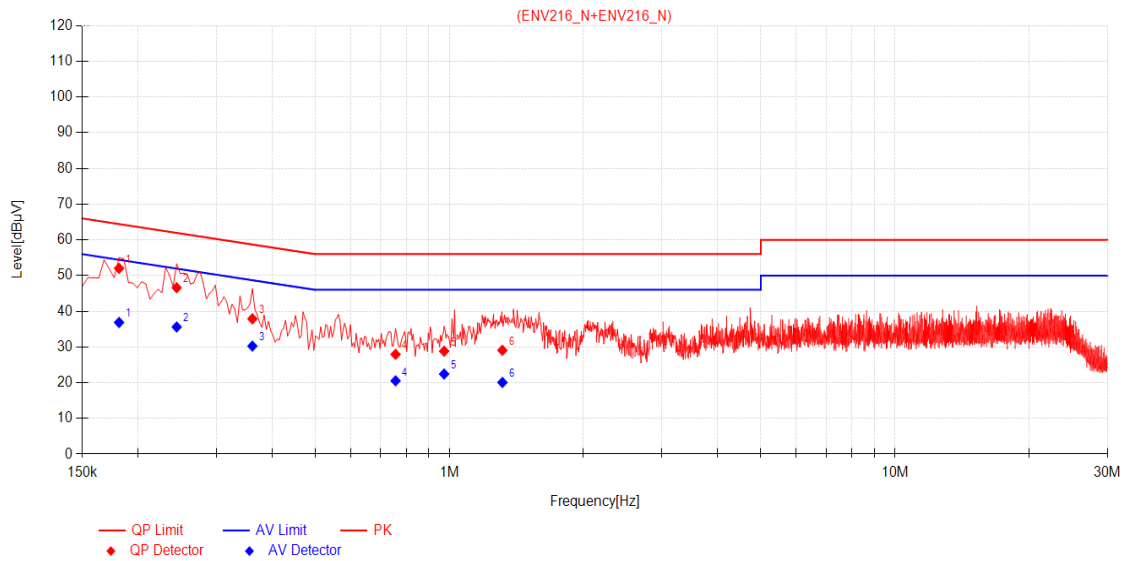
7.1.3 Test Setup Diagram



7.1.4 Measurement Procedure and Data

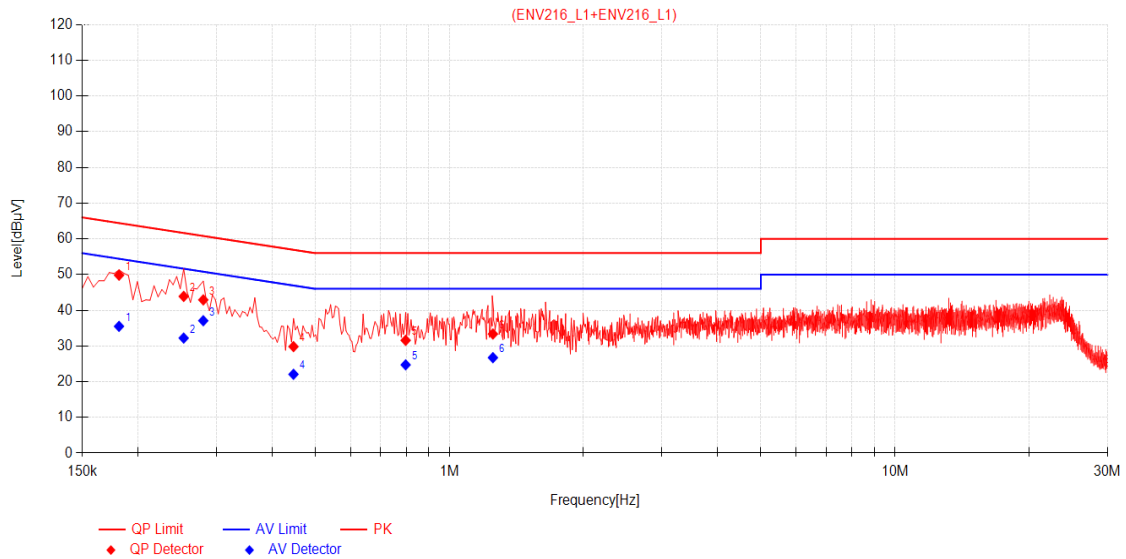
- 1) The mains terminal disturbance voltage test was conducted in a shielded room.
- 2) The EUT was connected to AC power source through a LISN 1 (Line Impedance Stabilization Network) which provides a 50ohm/50μH + 5ohm linear impedance. The power cables of all other units of the EUT were connected to a second LISN 2, which was bonded to the ground reference plane in the same way as the LISN 1 for the unit being measured. A multiple socket outlet strip was used to connect multiple power cables to a single LISN provided the rating of the LISN was not exceeded.
- 3) The tabletop EUT was placed upon a non-metallic table 0.8m above the ground reference plane. And for floor-standing arrangement, the EUT was placed on the horizontal ground reference plane.
- 4) The test was performed with a vertical ground reference plane. The rear of the EUT shall be 0.4 m from the vertical ground reference plane. The vertical ground reference plane was bonded to the horizontal ground reference plane. The LISN 1 was placed 0.8 m from the boundary of the unit under test and bonded to a ground reference plane for LISNs mounted on top of the ground reference plane. This distance was between the closest points of the LISN 1 and the EUT. All other units of the EUT and associated equipment was at least 0.8 m from the LISN 2.
- 5) In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.10 on conducted measurement.

Remark: Level=Read Level+ Cable Loss+ LISN Factor



Final Data List

NO.	Frequency [MHz]	Factor [dB]	QP Reading [dBμV]	QP Value [dBμV]	QP Limit [dBμV]	QP Margin [dB]	AV Reading [dBμV]	AV Value [dBμV]	AV Limit [dBμV]	AV Margin [dB]	Verdict
1	0.1815	10.19	41.83	52.02	64.42	12.40	26.67	36.86	54.42	17.56	PASS
2	0.2445	10.16	36.43	46.59	61.94	15.35	25.44	35.60	51.94	16.34	PASS
3	0.3615	10.16	27.72	37.88	58.69	20.81	20.09	30.25	48.69	18.44	PASS
4	0.7575	10.18	17.76	27.94	56.00	28.06	10.35	20.53	46.00	25.47	PASS
5	0.9735	10.10	18.73	28.83	56.00	27.17	12.33	22.43	46.00	23.57	PASS
6	1.3155	10.10	18.97	29.07	56.00	26.93	9.96	20.06	46.00	25.94	PASS



Final Data List

NO.	Frequency [MHz]	Factor [dB]	QP Reading [dBμV]	QP Value [dBμV]	QP Limit [dBμV]	QP Margin [dB]	AV Reading [dBμV]	AV Value [dBμV]	AV Limit [dBμV]	AV Margin [dB]	Verdict
1	0.1815	10.19	39.64	49.83	64.42	14.59	25.31	35.50	54.42	18.92	PASS
2	0.2535	10.15	33.73	43.88	61.64	17.76	22.06	32.21	51.64	19.43	PASS
3	0.2805	10.15	32.76	42.91	60.80	17.89	26.92	37.07	50.80	13.73	PASS
4	0.4470	10.17	19.65	29.82	56.93	27.11	11.90	22.07	46.93	24.86	PASS
5	0.7980	10.15	21.44	31.59	56.00	24.41	14.57	24.72	46.00	21.28	PASS
6	1.2525	10.08	23.28	33.36	56.00	22.64	16.64	26.72	46.00	19.28	PASS

7.2 Radiated Emissions which fall in the restricted bands

Test Requirement 47 CFR Part 15, Subpart C 15.205 & 15.209

Test Method: ANSI C63.10 (2013) Section 6.10.5

Measurement Distance: 3m

Limit:

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

Remark: The emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9-90kHz, 110-490kHz and above 1000 MHz. Radiated emission limits in these three bands are based on measurements employing an average detector, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation.

7.2.1 E.U.T. Operation

Operating Environment:

Temperature: 21.6 °C

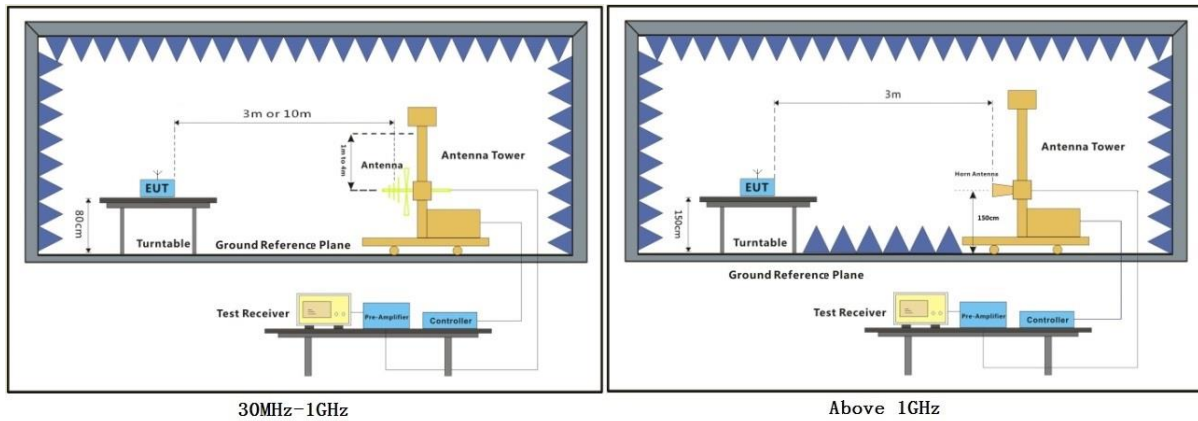
Humidity: 48.3 % RH

Atmospheric Pressure: 1010 mbar

7.2.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	00	TX mode_Keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 1Mbps is the worst case of IEEE 802.11b; data rate @ 6Mbps is the worst case of IEEE 802.11g; data rate @ 6.5Mbps is the worst case of IEEE 802.11n(HT20); data rate @ 13.5Mbps is the worst case of IEEE 802.11n(HT40); data rate @ MCS0 is the worst case of IEEE 802.11ax(HE20); data rate @ MCS0 is the worst case of IEEE 802.11ax(HE40). Only the data of worst case is recorded in the report.

7.2.3 Test Setup Diagram



7.2.4 Measurement Procedure and Data

- a. For below 1GHz, the EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 or 10 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. For above 1GHz, the EUT was placed on the top of a rotating table 1.5 meters above the ground at a 3 meter fully-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- c. The EUT was set 3 or 10 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- d. The antenna 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.
- e. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters (for the test frequency of below 30MHz, the antenna was tuned to heights 1 meter) and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- f. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
- g. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.
- h. Test the EUT in the lowest channel, the middle channel, the Highest channel.
- i. The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, and found the X axis positioning which it is the worst case.
- j. Repeat above procedures until all frequencies measured was complete.

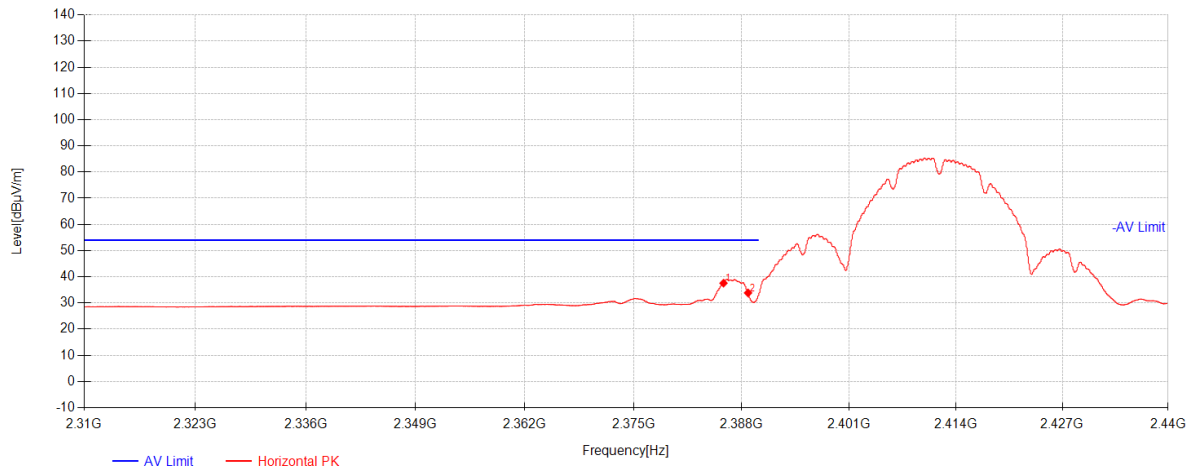
Remark 1: $\text{Level} = \text{Read Level} + \text{Cable Loss} + \text{Antenna Factor} - \text{Preamp Factor}$

Remark 2: For frequencies above 1GHz, the field strength limits are based on average limits. However, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation. For the emissions whose peak level is lower than the average limit, only the peak measurement is shown in the report.

Remark 3: The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is 3MHz for Peak detection (PK) and Average detection (AV) at frequency above 1GHz.

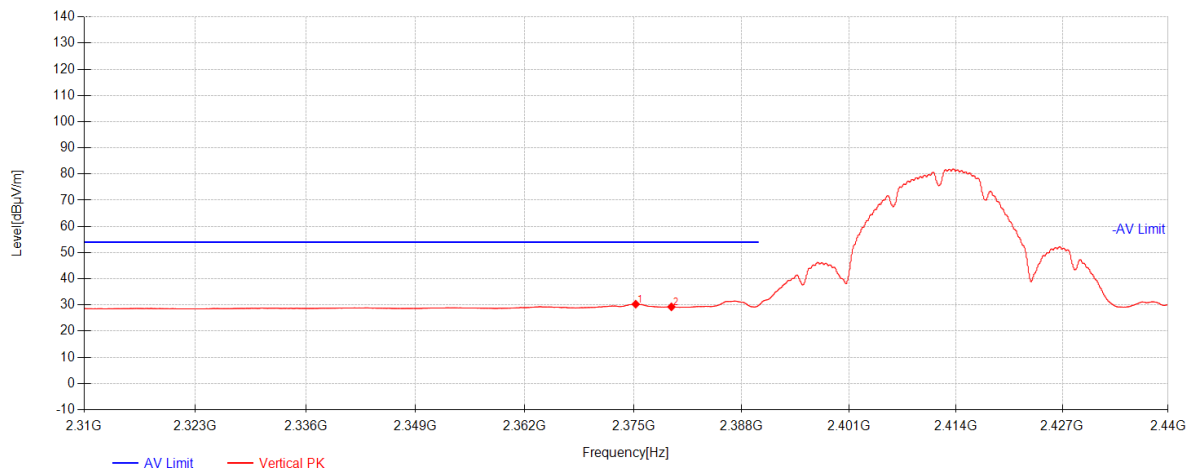
Remark 4: For fundamental and harmonic signal measurement, the resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is $\geq 1/T$ (Duty cycle $< 98\%$) or 10Hz (Duty cycle $\geq 98\%$) for Average detection (AV) at frequency above 1GHz.

802.11b_Channel 01



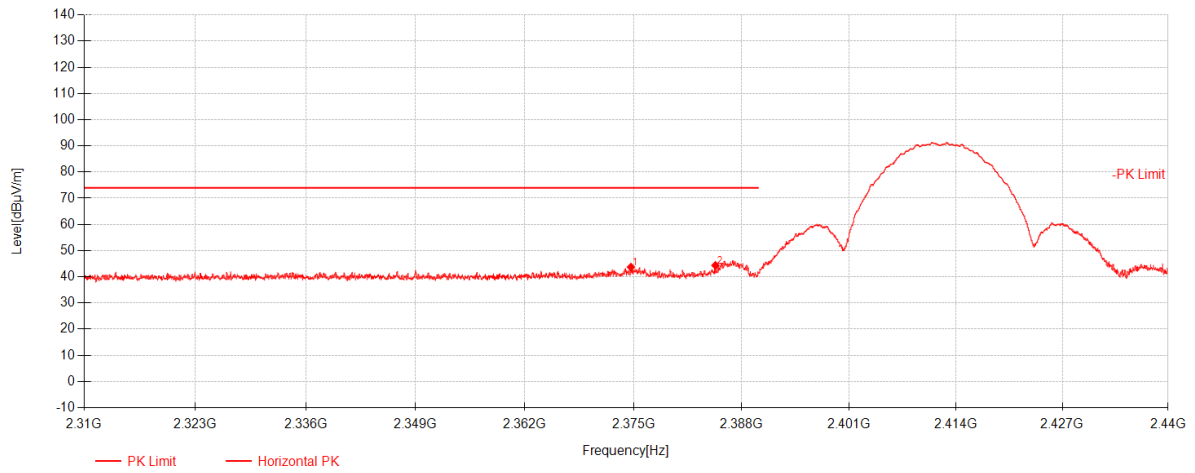
Data List								
NO.	Frequency [MHz]	Reading [dBμV]	AF [dB/m]	Factor [dB]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Polarity
1	2385.8225	34.16	26.97	-23.57	37.56	54.00	16.44	Horizontal
2	2388.78	30.43	26.98	-23.57	33.84	54.00	20.16	Horizontal

802.11b Channel 01



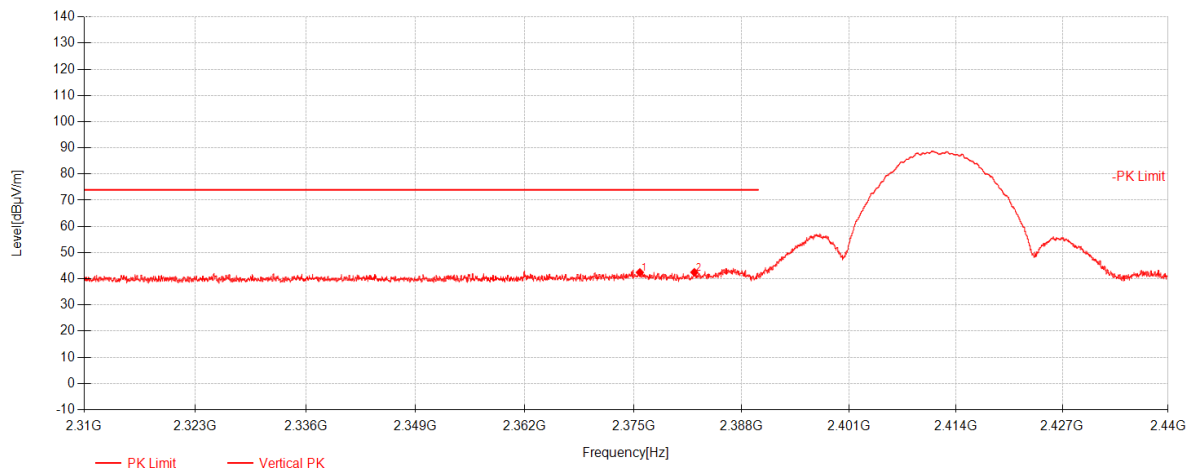
Data List								
NO.	Frequency [MHz]	Reading [dBμV]	AF [dB/m]	Factor [dB]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Polarity
1	2375.26	26.91	26.95	-23.57	30.29	54.00	23.71	Vertical
2	2379.55	25.89	26.96	-23.57	29.28	54.00	24.72	Vertical

802.11b Channel 01



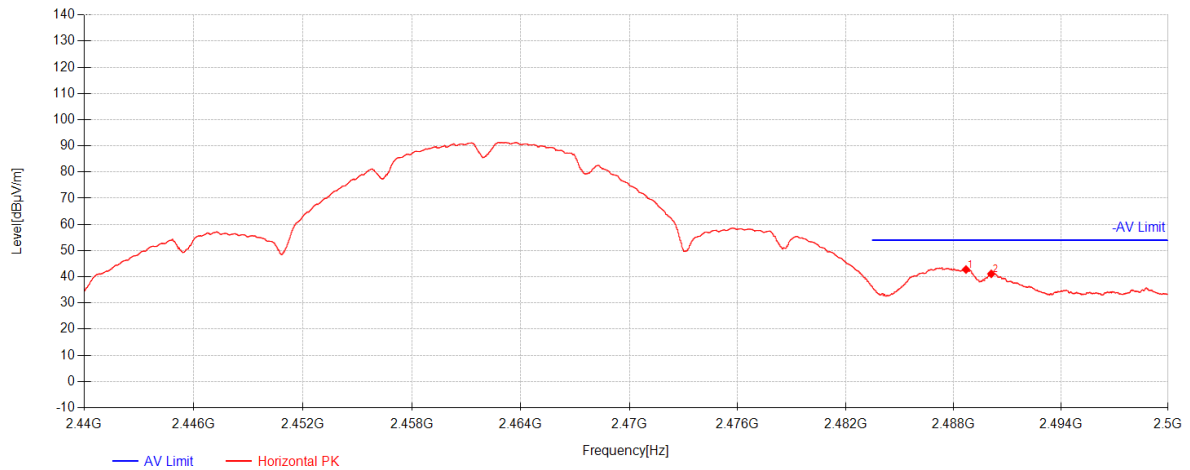
Data List								
NO.	Frequency [MHz]	Reading [dBμV]	AF [dB/m]	Factor [dB]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Polarity
1	2374.6912	40.33	26.95	-23.57	43.71	74.00	30.29	Horizontal
2	2384.8475	40.95	26.97	-23.57	44.35	74.00	29.65	Horizontal

802.11b Channel 01



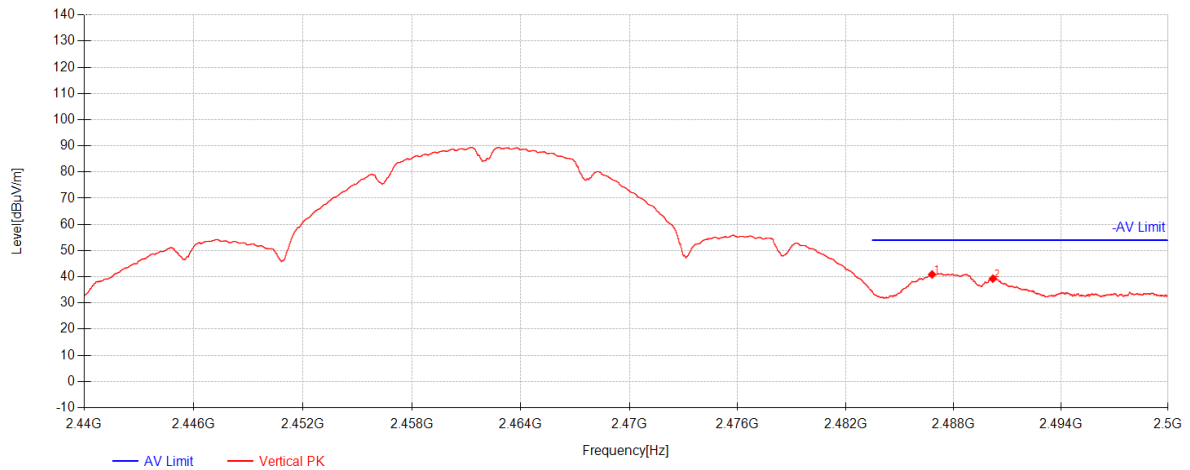
Data List								
NO.	Frequency [MHz]	Reading [dBμV]	AF [dB/m]	Factor [dB]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Polarity
1	2375.7638	39.04	26.95	-23.57	42.42	74.00	31.58	Vertical
2	2382.3125	39.08	26.96	-23.57	42.47	74.00	31.53	Vertical

802.11b Channel 11



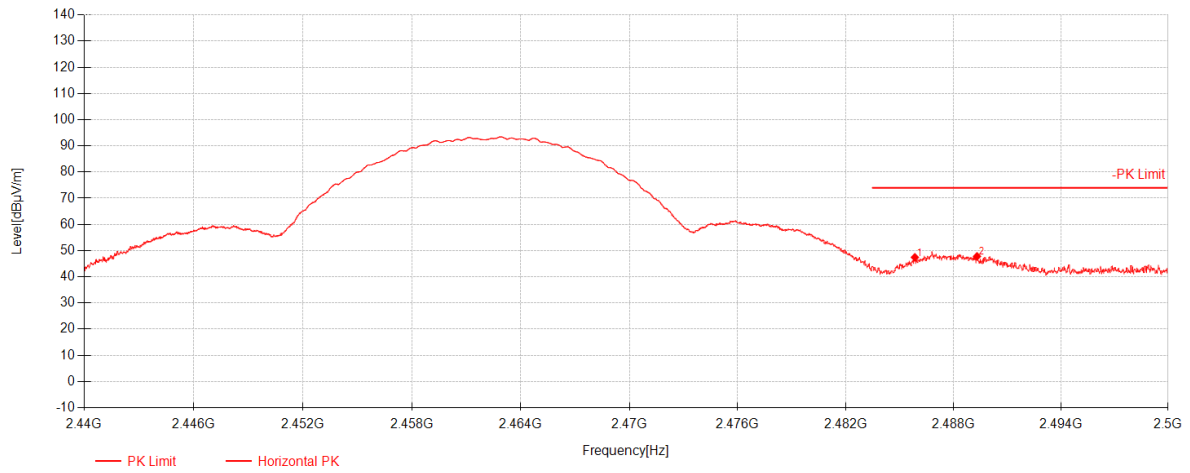
Data List								
NO.	Frequency [MHz]	Reading [dBμV]	AF [dB/m]	Factor [dB]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Polarity
1	2488.705	39.14	27.18	-23.54	42.77	54.00	11.23	Horizontal
2	2490.115	37.49	27.18	-23.54	41.13	54.00	12.87	Horizontal

802.11b Channel 11



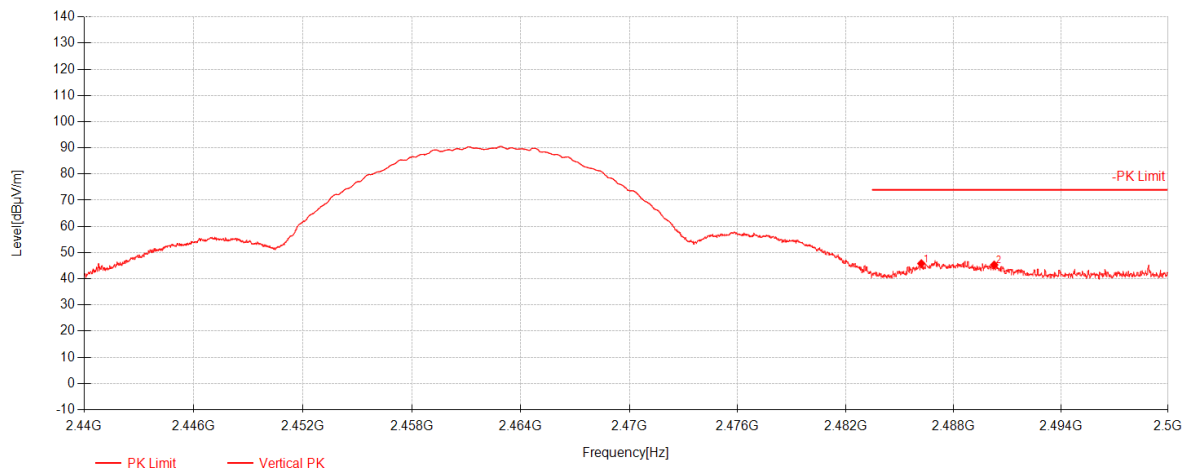
Data List								
NO.	Frequency [MHz]	Reading [dBμV]	AF [dB/m]	Factor [dB]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Polarity
1	2486.815	37.26	27.17	-23.54	40.89	54.00	13.11	Vertical
2	2490.205	35.64	27.18	-23.54	39.28	54.00	14.72	Vertical

802.11b Channel 11



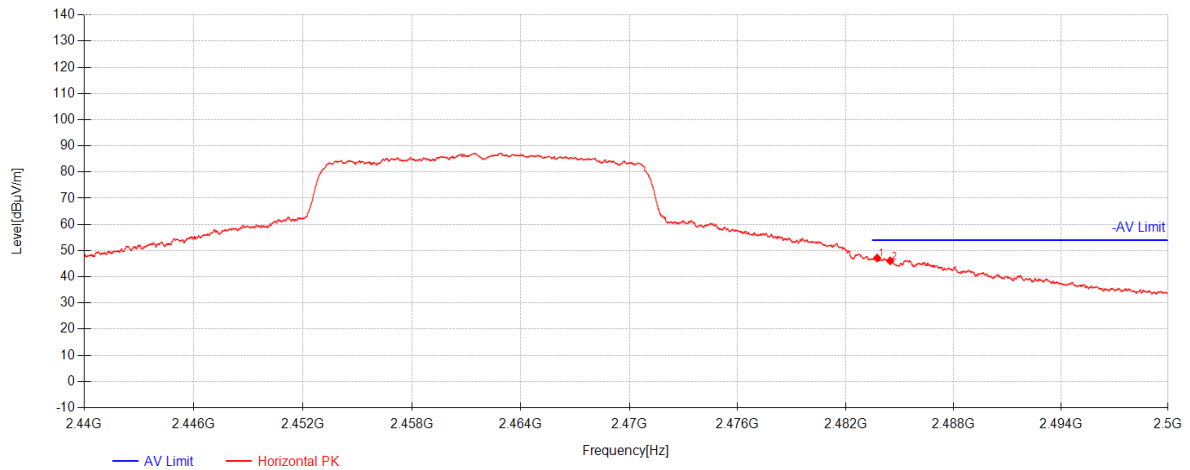
Data List								
NO.	Frequency [MHz]	Reading [dBμV]	AF [dB/m]	Factor [dB]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Polarity
1	2485.855	43.79	27.17	-23.54	47.42	74.00	26.58	Horizontal
2	2489.32	44.15	27.18	-23.54	47.79	74.00	26.21	Horizontal

802.11b Channel 11



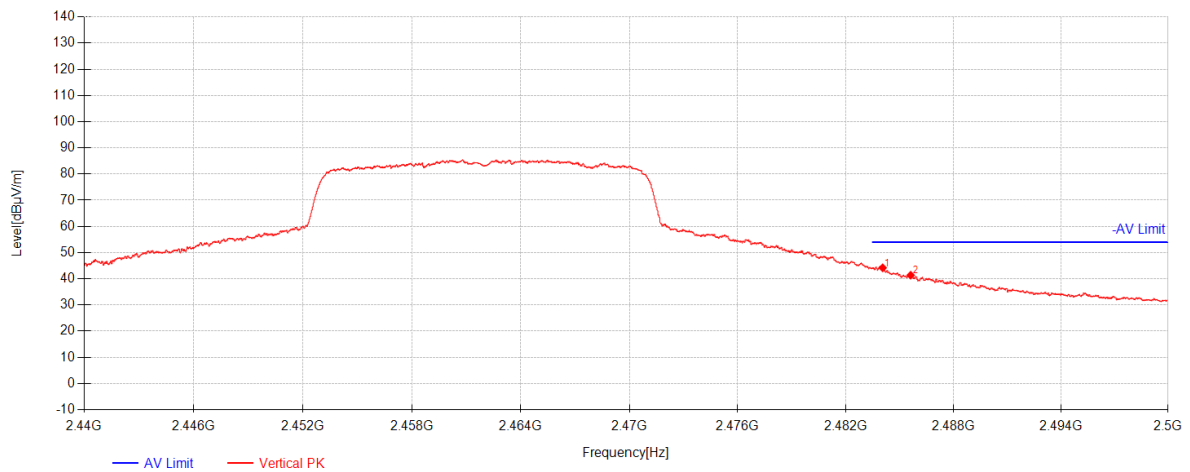
Data List								
NO.	Frequency [MHz]	Reading [dBμV]	AF [dB/m]	Factor [dB]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Polarity
1	2486.215	42.19	27.17	-23.54	45.82	74.00	28.18	Vertical
2	2490.28	41.67	27.18	-23.54	45.31	74.00	28.69	Vertical

802.11n20 Channel 11



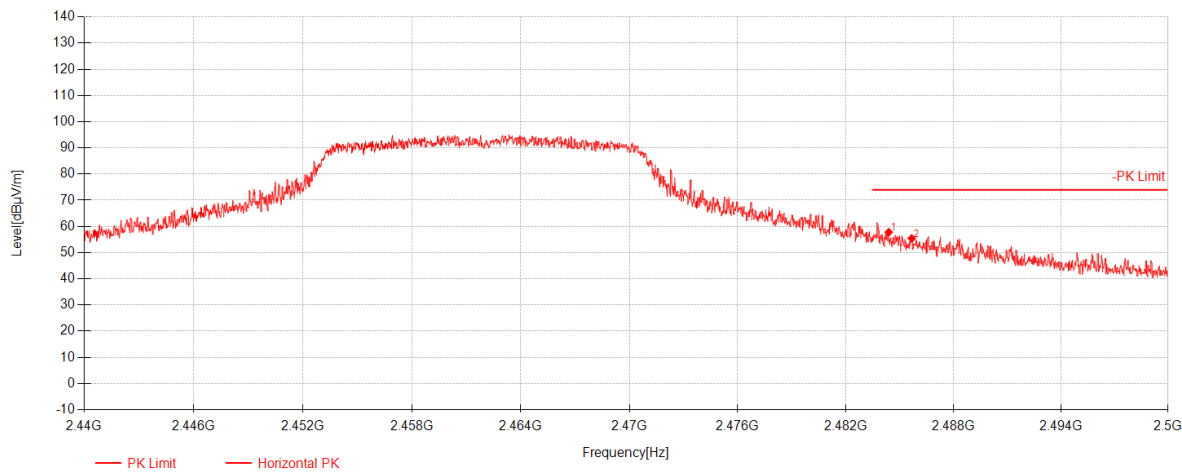
Data List								
NO.	Frequency [MHz]	Reading [dBμV]	AF [dB/m]	Factor [dB]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Polarity
1	2483.755	43.55	27.17	-23.54	47.17	54.00	6.83	Horizontal
2	2484.475	42.46	27.17	-23.54	46.08	54.00	7.92	Horizontal

802.11n20 Channel 11



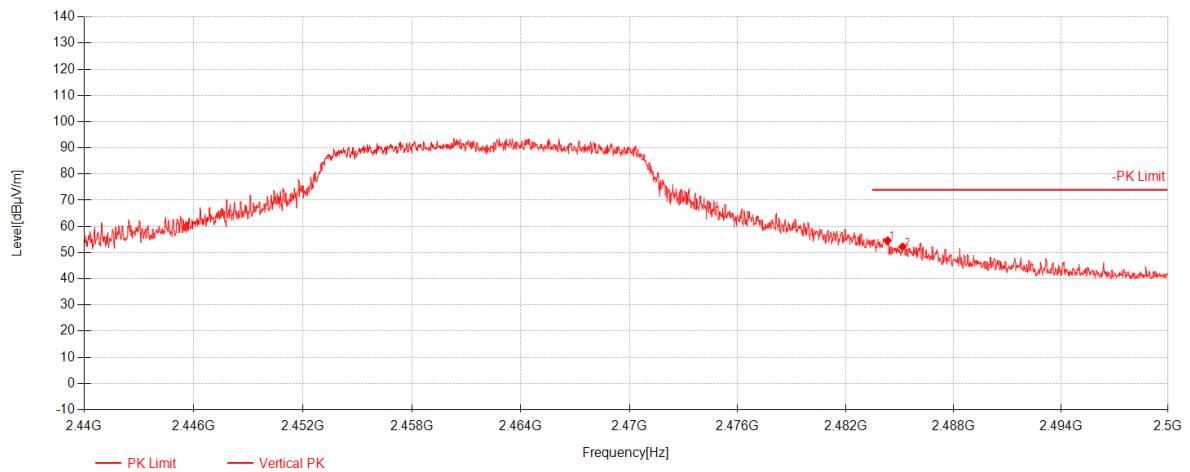
Data List								
NO.	Frequency [MHz]	Reading [dBμV]	AF [dB/m]	Factor [dB]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Polarity
1	2484.0625	40.56	27.17	-23.54	44.18	54.00	9.82	Vertical
2	2485.6225	37.73	27.17	-23.54	41.36	54.00	12.64	Vertical

802.11n20 Channel 11



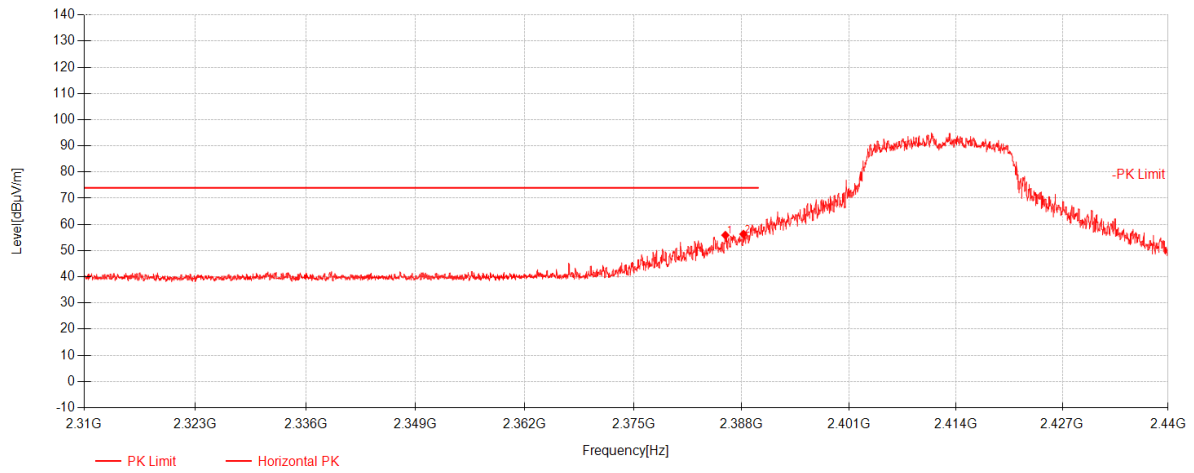
Data List								
NO.	Frequency [MHz]	Reading [dBμV]	AF [dB/m]	Factor [dB]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Polarity
1	2484.4	54.18	27.17	-23.54	57.80	74.00	16.20	Horizontal
2	2485.675	51.79	27.17	-23.54	55.42	74.00	18.58	Horizontal

802.11n20 Channel 11



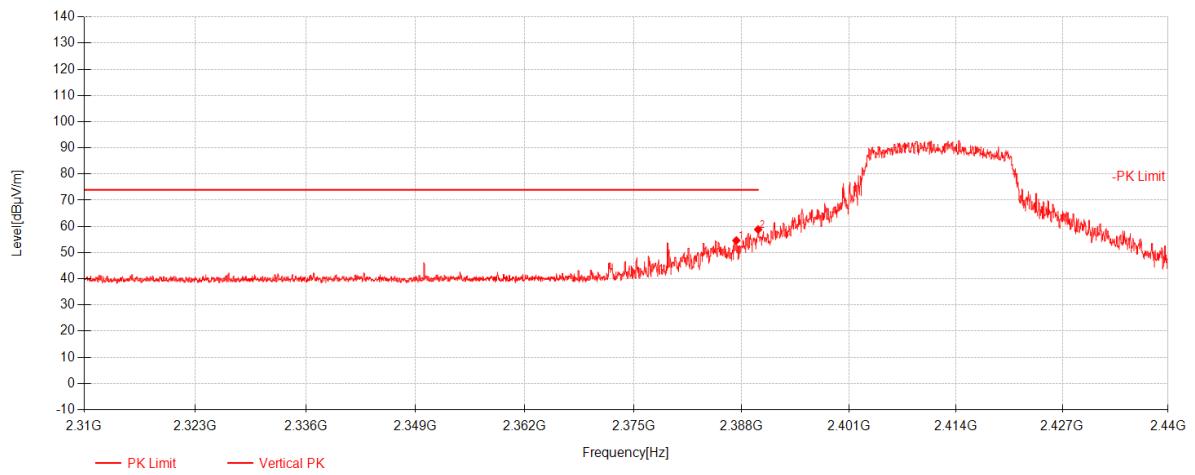
Data List								
NO.	Frequency [MHz]	Reading [dBμV]	AF [dB/m]	Factor [dB]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Polarity
1	2484.34	50.99	27.17	-23.54	54.61	74.00	19.39	Vertical
2	2485.165	48.61	27.17	-23.54	52.24	74.00	21.76	Vertical

802.11n20 Channel 01



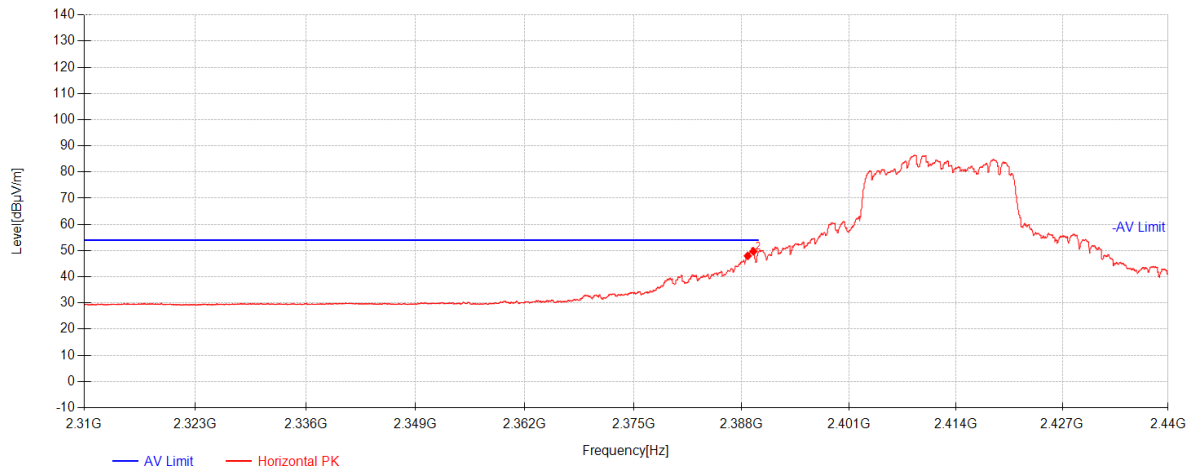
Data List								
NO.	Frequency [MHz]	Reading [dBμV]	AF [dB/m]	Factor [dB]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Polarity
1	2386.05	52.49	26.97	-23.57	55.89	74.00	18.11	Horizontal
2	2388.2275	52.89	26.98	-23.57	56.30	74.00	17.70	Horizontal

802.11n20 Channel 01



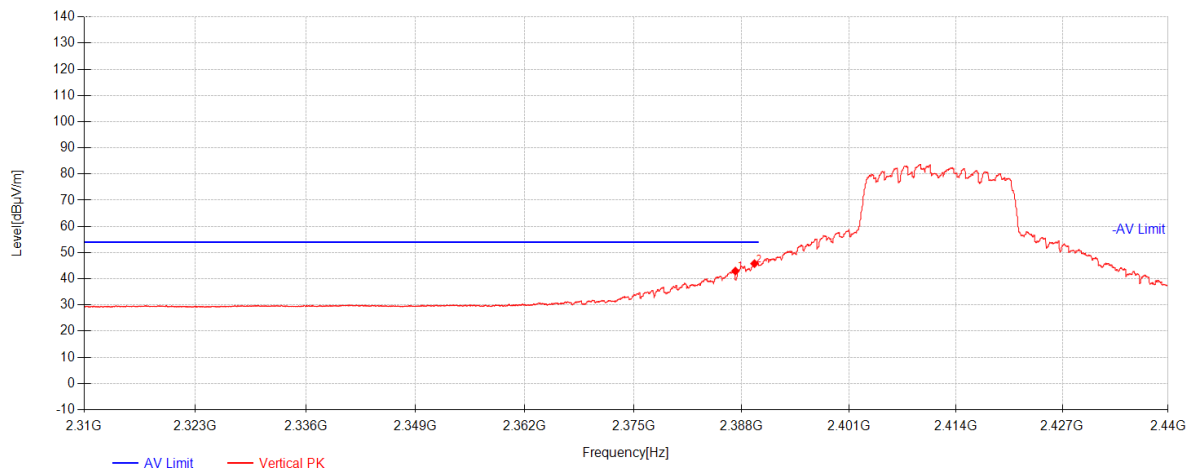
Data List								
NO.	Frequency [MHz]	Reading [dBμV]	AF [dB/m]	Factor [dB]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Polarity
1	2387.3662	51.21	26.97	-23.57	54.61	74.00	19.39	Vertical
2	2389.9988	55.42	26.98	-23.57	58.83	74.00	15.17	Vertical

802.11n20 Channel 01



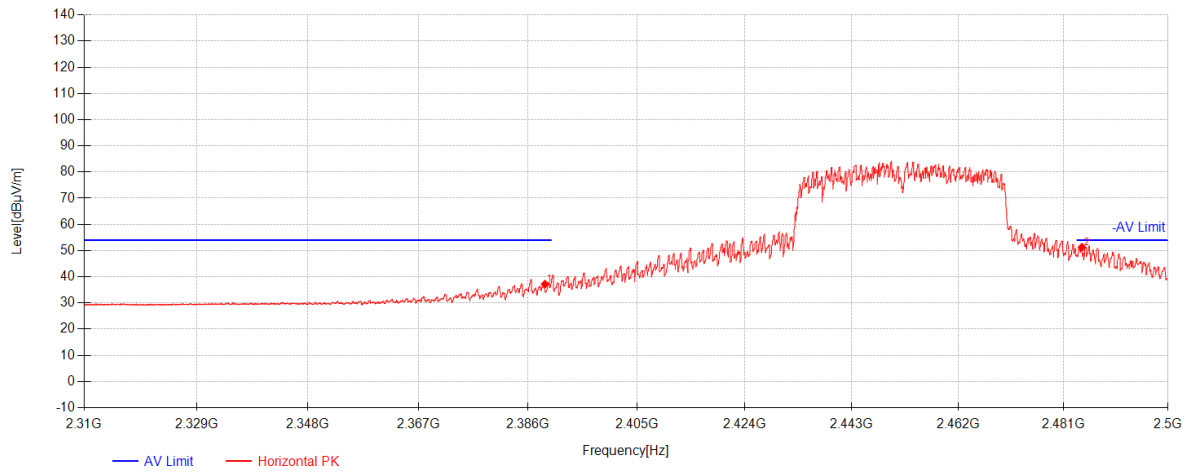
Data List								
NO.	Frequency [MHz]	Reading [dBμV]	AF [dB/m]	Factor [dB]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Polarity
1	2388.7475	44.55	26.98	-23.57	47.96	54.00	6.04	Horizontal
2	2389.43	46.30	26.98	-23.57	49.71	54.00	4.29	Horizontal

802.11n20 Channel 01



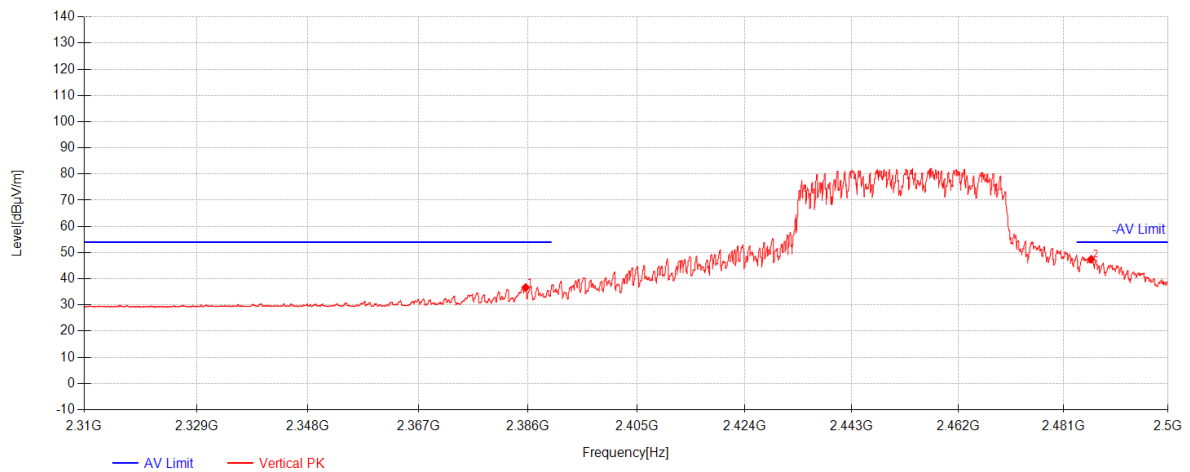
Data List								
NO.	Frequency [MHz]	Reading [dBμV]	AF [dB/m]	Factor [dB]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Polarity
1	2387.2525	39.55	26.97	-23.57	42.95	54.00	11.05	Vertical
2	2389.56	42.38	26.98	-23.57	45.79	54.00	8.21	Vertical

802.11n40 Channel 09



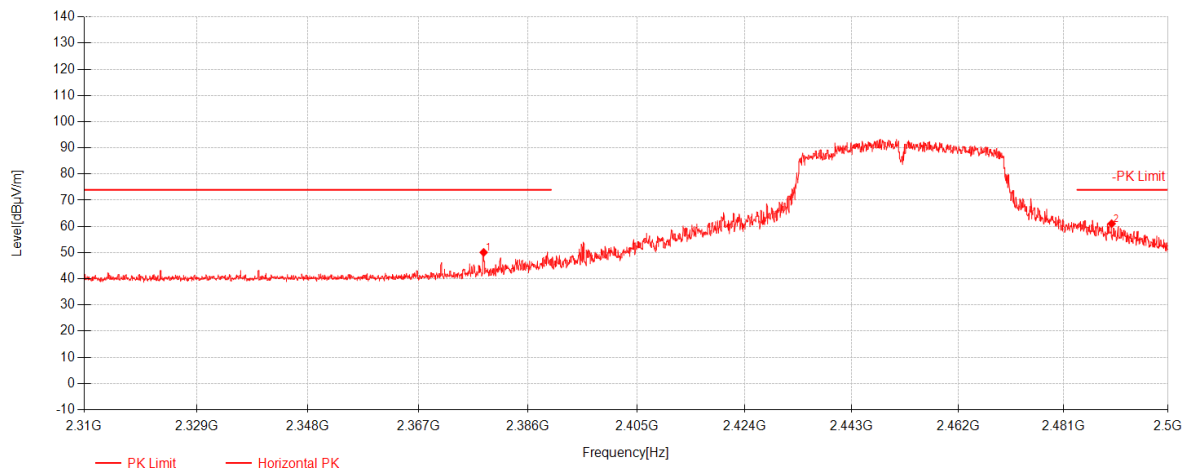
Data List								
NO.	Frequency [MHz]	Reading [dBμV]	AF [dB/m]	Factor [dB]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Polarity
1	2388.9533	33.78	26.98	-23.57	37.19	54.00	16.81	Horizontal
2	2484.34	47.70	27.17	-23.54	51.32	54.00	2.68	Horizontal

802.11n40 Channel 09



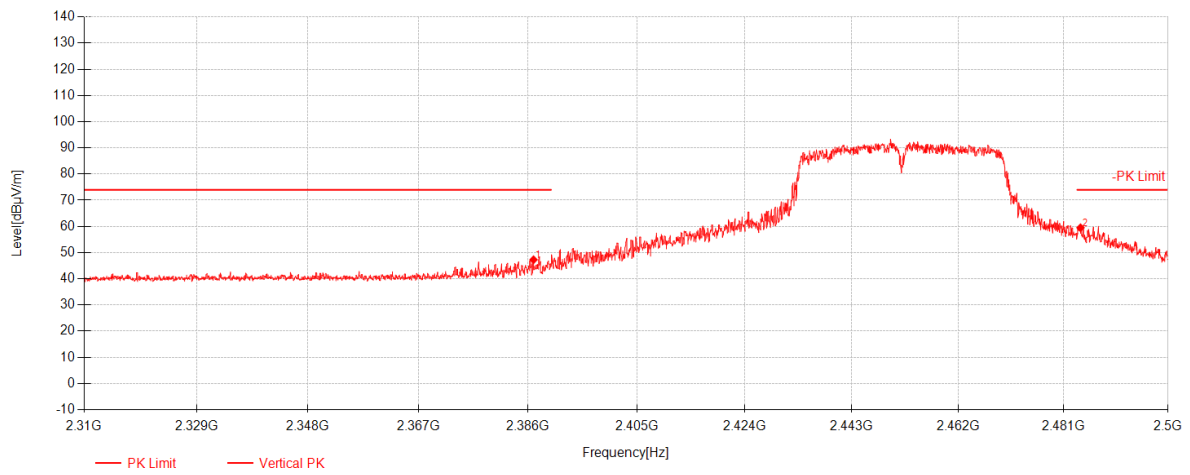
Data List								
NO.	Frequency [MHz]	Reading [dBμV]	AF [dB/m]	Factor [dB]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Polarity
1	2385.5733	33.31	26.97	-23.57	36.71	54.00	17.29	Vertical
2	2486.02	43.84	27.17	-23.54	47.47	54.00	6.53	Vertical

802.11n40 Channel 09



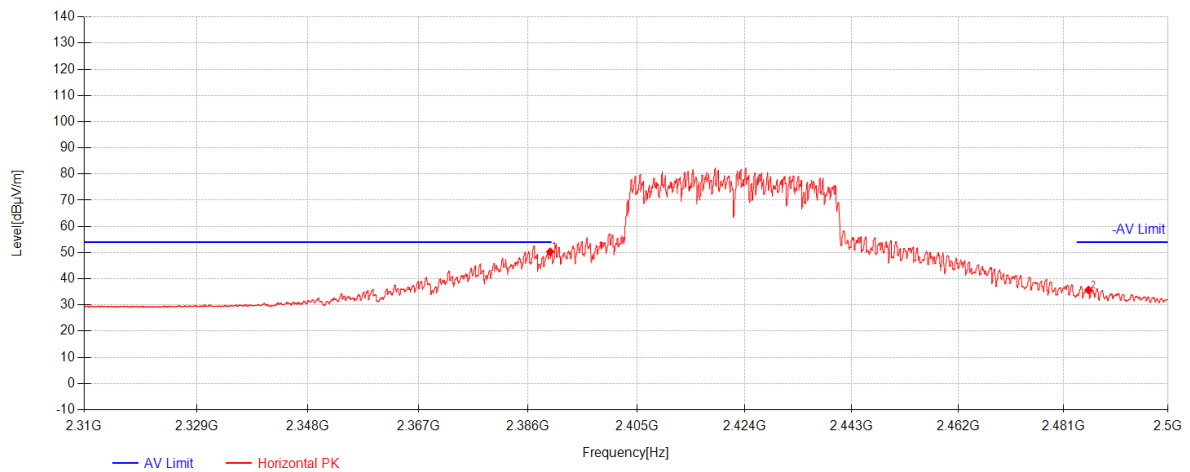
Data List								
NO.	Frequency [MHz]	Reading [dBμV]	AF [dB/m]	Factor [dB]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Polarity
1	2378.2933	46.70	26.96	-23.57	50.08	74.00	23.92	Horizontal
2	2489.74	57.41	27.18	-23.54	61.05	74.00	12.95	Horizontal

802.11n40 Channel 09



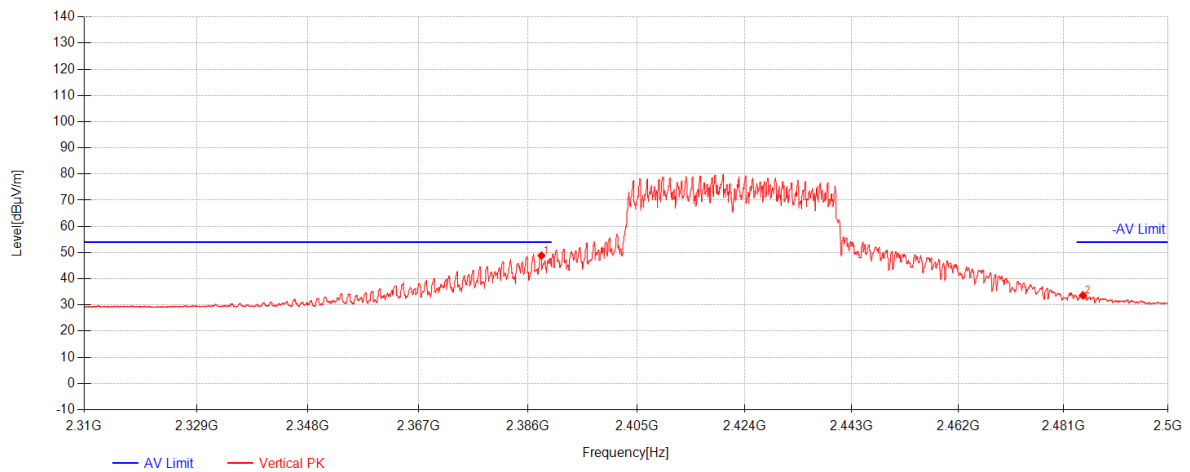
Data List								
NO.	Frequency [MHz]	Reading [dBμV]	AF [dB/m]	Factor [dB]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Polarity
1	2386.96	43.88	26.97	-23.57	47.28	74.00	26.72	Vertical
2	2484.1	55.88	27.17	-23.54	59.50	74.00	14.50	Vertical

802.11n40 Channel 03



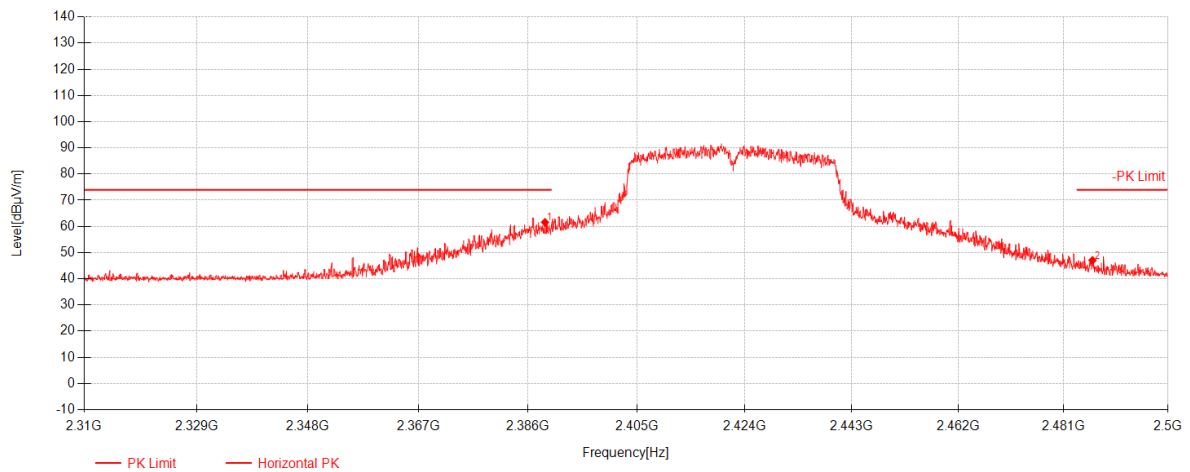
Data List								
NO.	Frequency [MHz]	Reading [dBμV]	AF [dB/m]	Factor [dB]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Polarity
1	2389.8633	46.94	26.98	-23.57	50.35	54.00	3.65	Horizontal
2	2485.54	32.08	27.17	-23.54	35.71	54.00	18.29	Horizontal

802.11n40 Channel 03



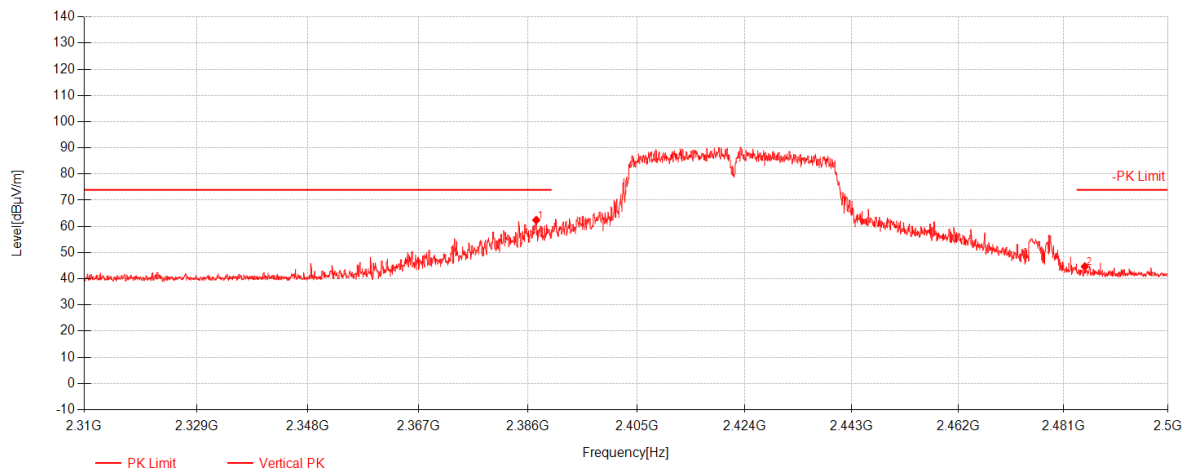
Data List								
NO.	Frequency [MHz]	Reading [dBμV]	AF [dB/m]	Factor [dB]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Polarity
1	2388.3467	45.46	26.98	-23.57	48.87	54.00	5.13	Vertical
2	2484.52	30.05	27.17	-23.54	33.67	54.00	20.33	Vertical

802.11n40 Channel 03



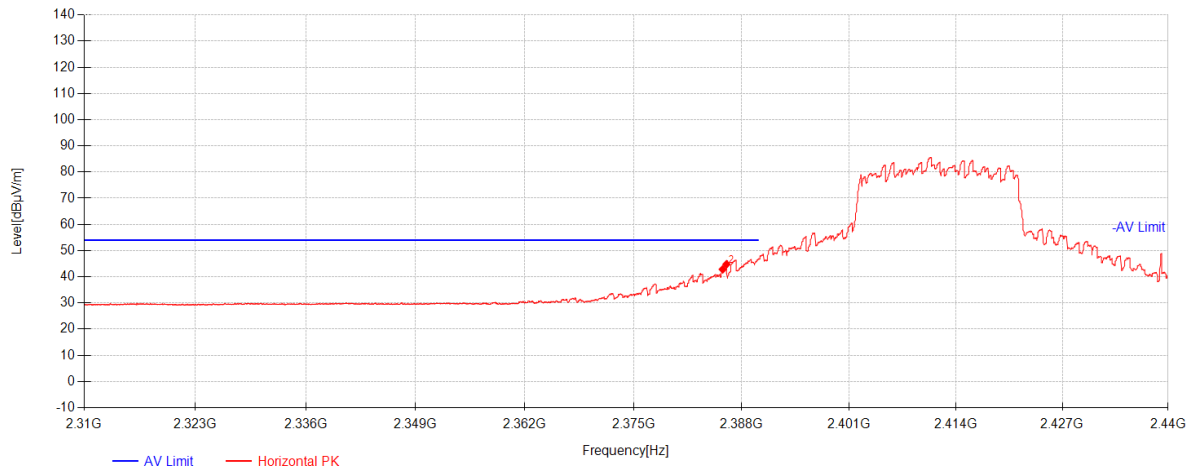
Data List								
NO.	Frequency [MHz]	Reading [dBμV]	AF [dB/m]	Factor [dB]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Polarity
1	2388.9533	58.17	26.98	-23.57	61.58	74.00	12.42	Horizontal
2	2486.26	43.41	27.17	-23.54	47.04	74.00	26.96	Horizontal

802.11n40 Channel 03



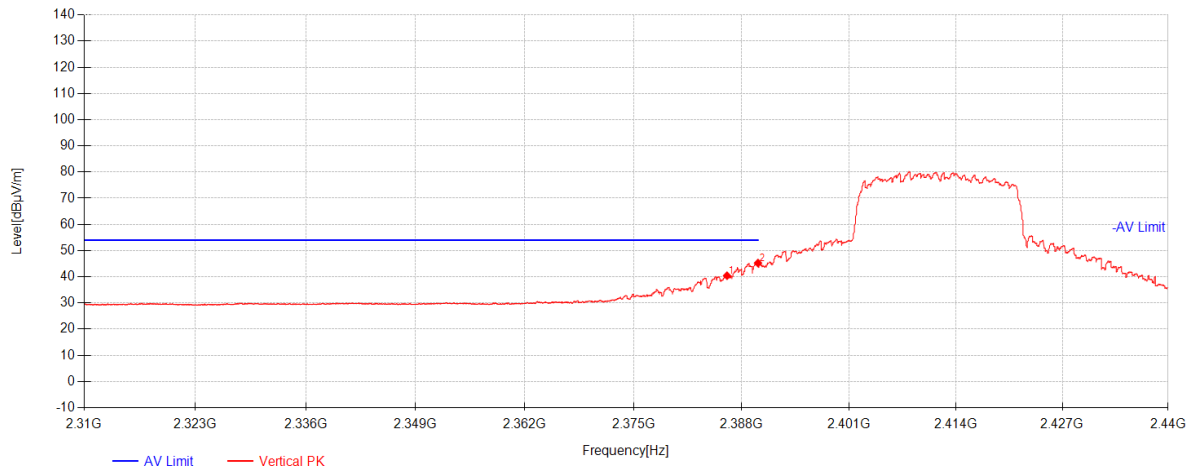
Data List								
NO.	Frequency [MHz]	Reading [dBμV]	AF [dB/m]	Factor [dB]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Polarity
1	2387.4367	59.03	26.97	-23.57	62.43	74.00	11.57	Vertical
2	2484.88	41.06	27.17	-23.54	44.69	74.00	29.31	Vertical

802.11ax20 Channel 01



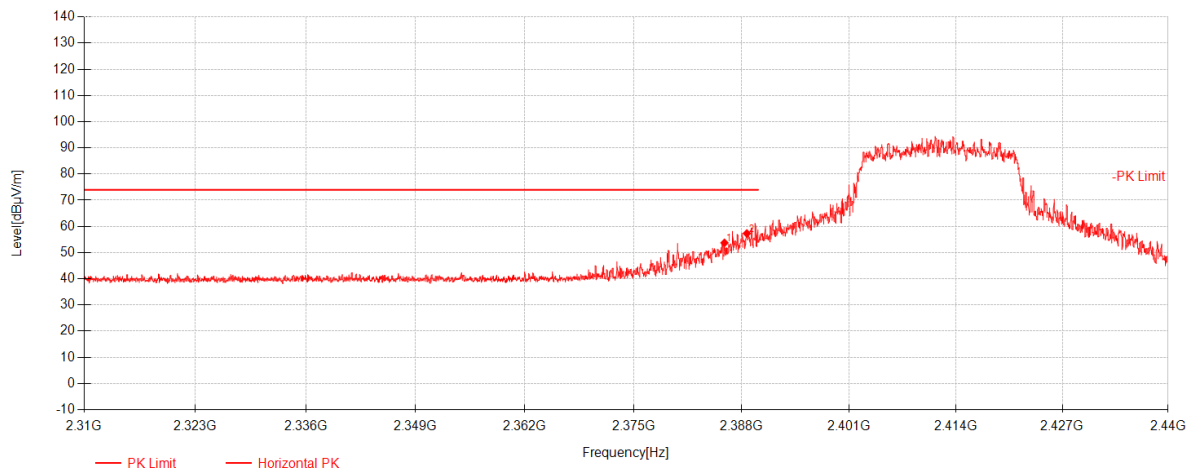
Data List								
NO.	Frequency [MHz]	Reading [dBμV]	AF [dB/m]	Factor [dB]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Polarity
1	2385.725	39.44	26.97	-23.57	42.84	54.00	11.16	Horizontal
2	2386.18	41.38	26.97	-23.57	44.78	54.00	9.22	Horizontal

802.11ax20 Channel 01



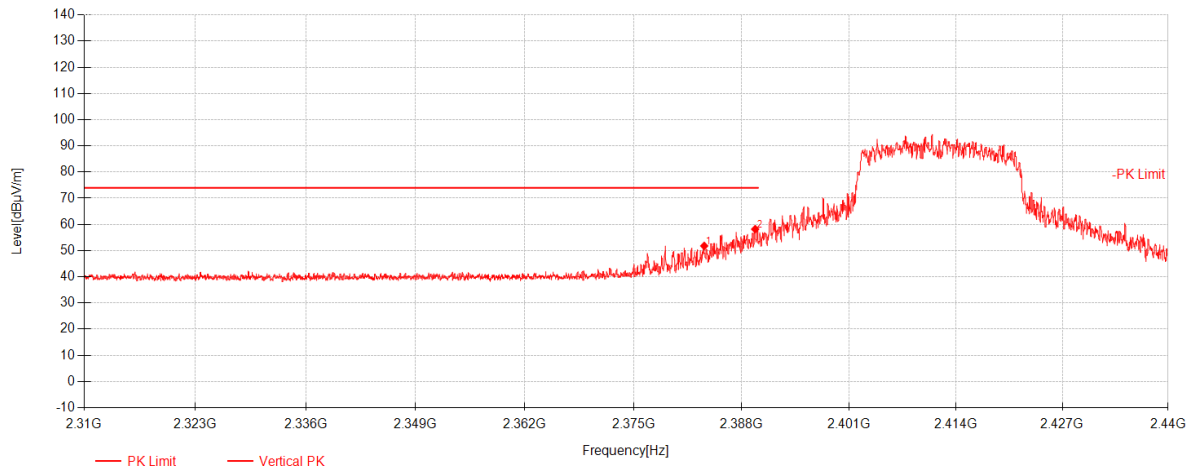
Data List								
NO.	Frequency [MHz]	Reading [dBμV]	AF [dB/m]	Factor [dB]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Polarity
1	2386.245	37.01	26.97	-23.57	40.41	54.00	13.59	Vertical
2	2389.9825	41.84	26.98	-23.57	45.25	54.00	8.75	Vertical

802.11ax20 Channel 01



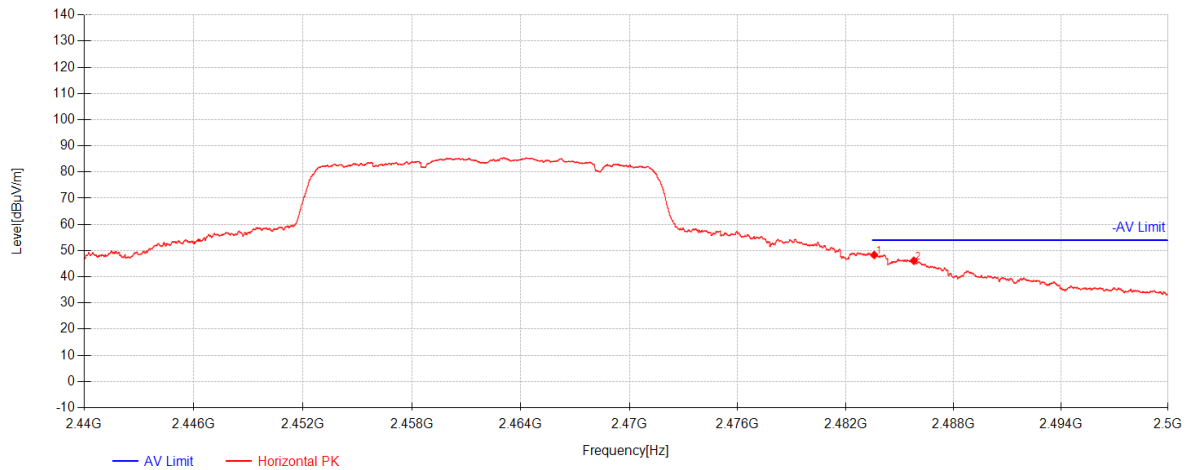
Data List								
NO.	Frequency [MHz]	Reading [dBμV]	AF [dB/m]	Factor [dB]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Polarity
1	2385.9363	50.33	26.97	-23.57	53.73	74.00	20.27	Horizontal
2	2388.6338	53.90	26.98	-23.57	57.31	74.00	16.69	Horizontal

802.11ax20 Channel 01



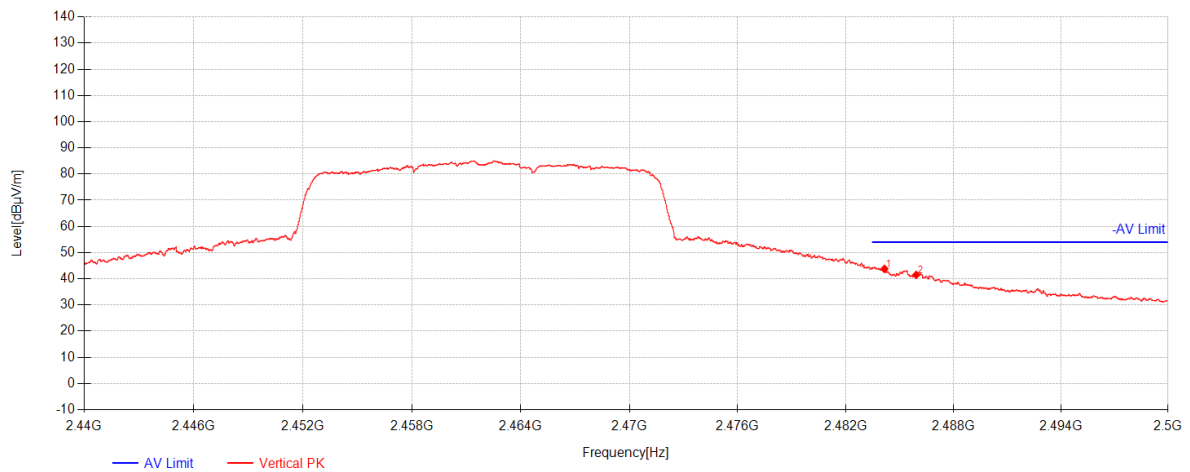
Data List								
NO.	Frequency [MHz]	Reading [dBμV]	AF [dB/m]	Factor [dB]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Polarity
1	2383.4988	48.39	26.97	-23.57	51.79	74.00	22.21	Vertical
2	2389.6412	54.78	26.98	-23.57	58.19	74.00	15.81	Vertical

802.11ax20 Channel 11



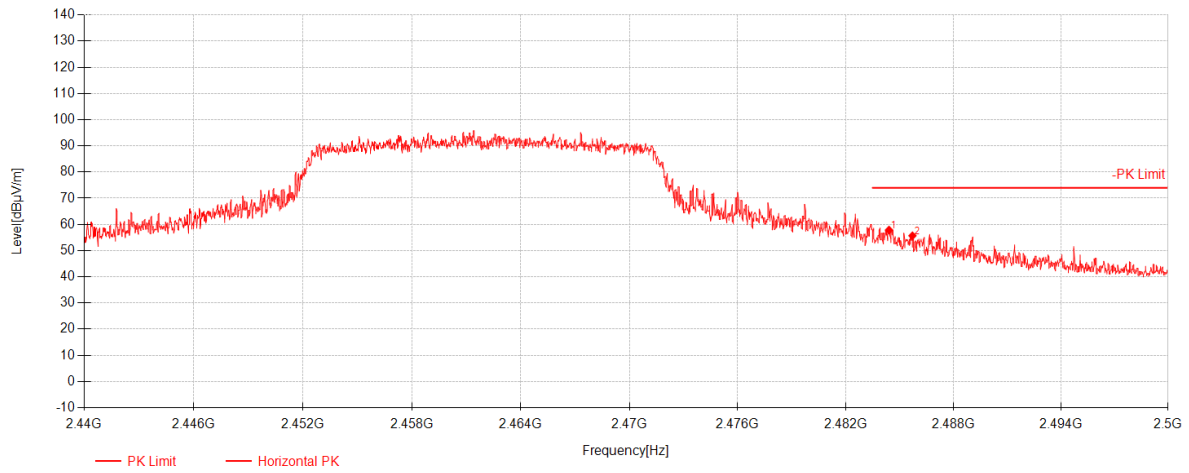
Data List								
NO.	Frequency [MHz]	Reading [dBμV]	AF [dB/m]	Factor [dB]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Polarity
1	2483.59	44.70	27.17	-23.54	48.32	54.00	5.68	Horizontal
2	2485.795	42.49	27.17	-23.54	46.12	54.00	7.88	Horizontal

802.11ax20 Channel 11



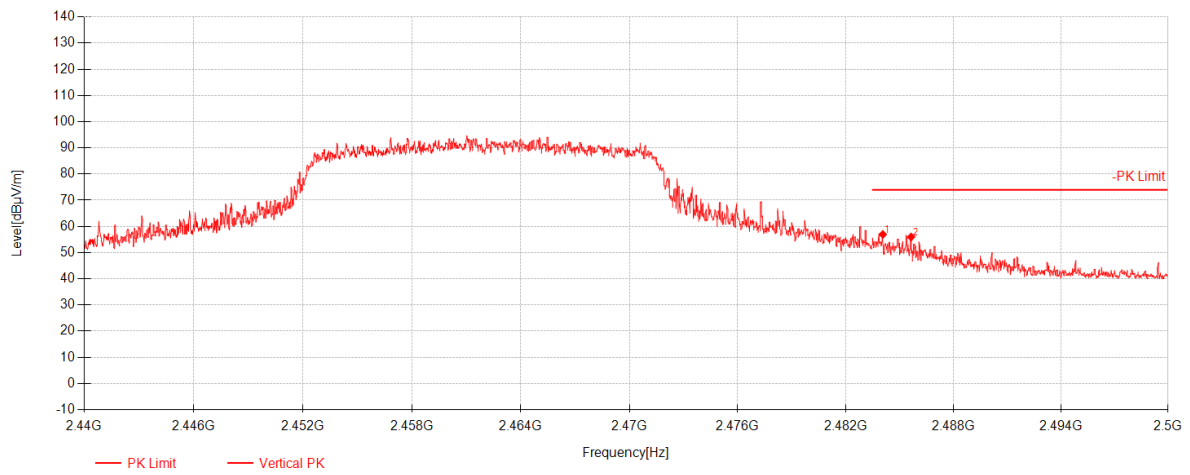
Data List								
NO.	Frequency [MHz]	Reading [dBμV]	AF [dB/m]	Factor [dB]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Polarity
1	2484.16	40.16	27.17	-23.54	43.78	54.00	10.22	Vertical
2	2485.93	37.86	27.17	-23.54	41.49	54.00	12.51	Vertical

802.11ax20 Channel 11



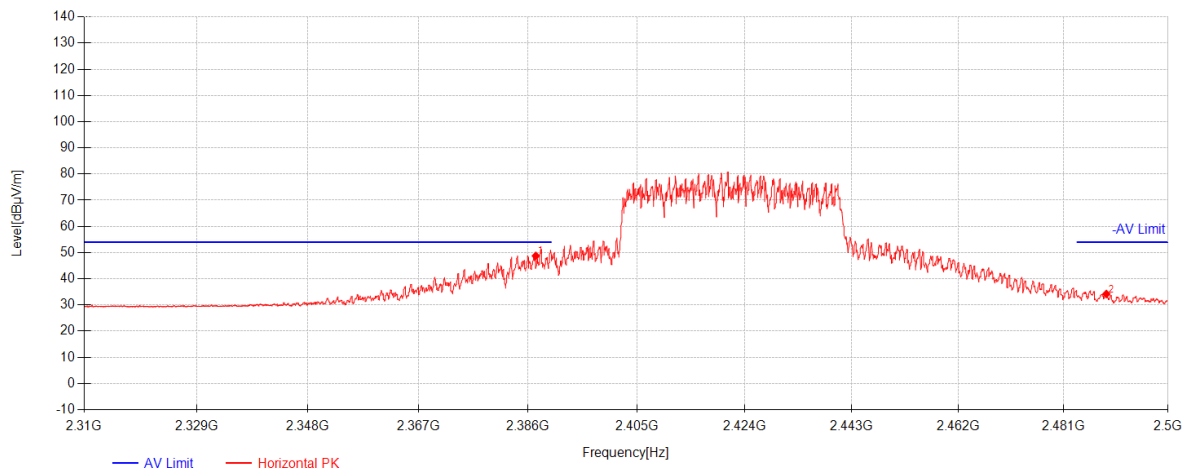
Data List								
NO.	Frequency [MHz]	Reading [dBμV]	AF [dB/m]	Factor [dB]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Polarity
1	2484.415	54.24	27.17	-23.54	57.86	74.00	16.14	Horizontal
2	2485.72	52.05	27.17	-23.54	55.68	74.00	18.32	Horizontal

802.11ax20 Channel 11



Data List								
NO.	Frequency [MHz]	Reading [dBμV]	AF [dB/m]	Factor [dB]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Polarity
1	2484.07	53.32	27.17	-23.54	56.94	74.00	17.06	Vertical
2	2485.645	52.35	27.17	-23.54	55.98	74.00	18.02	Vertical

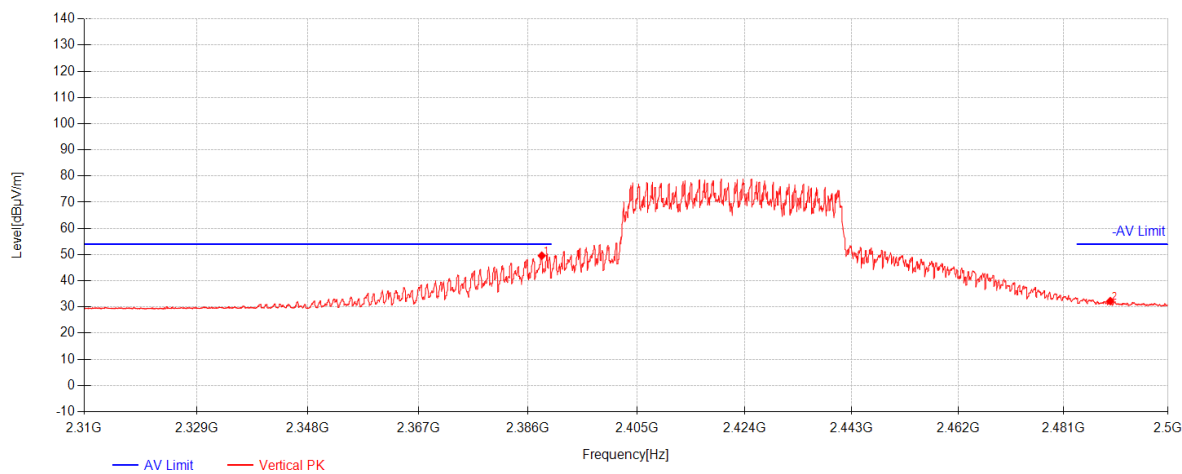
802.11ax40 Channel 03



Data List								
NO.	Frequency [MHz]	Reading [dBμV]	AF [dB/m]	Factor [dB]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Polarity
1	2387.35	45.35	26.97	-23.57	48.75	54.00	5.25	Horizontal
2	2488.78	30.56	27.18	-23.54	34.19	54.00	19.81	Horizontal

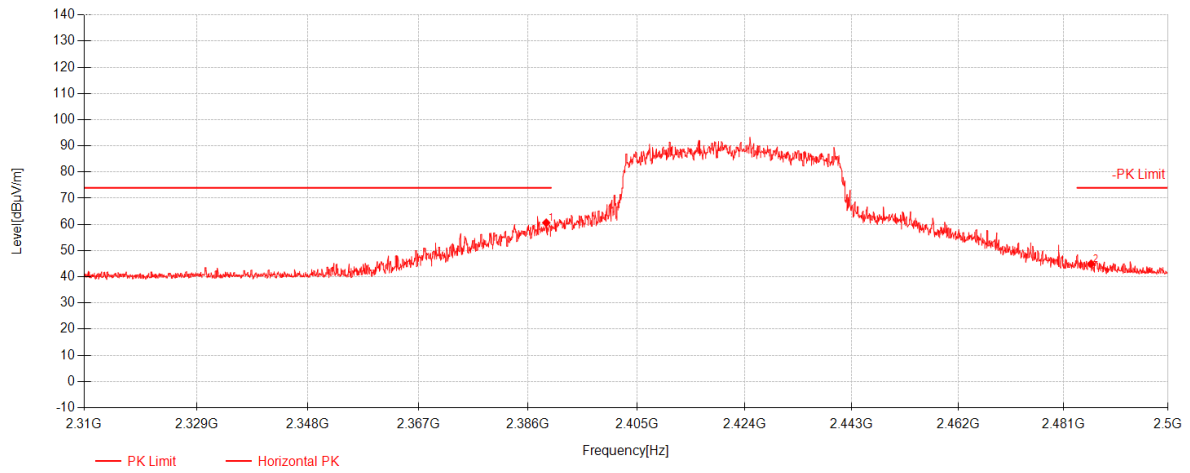


802.11ax40 Channel 03



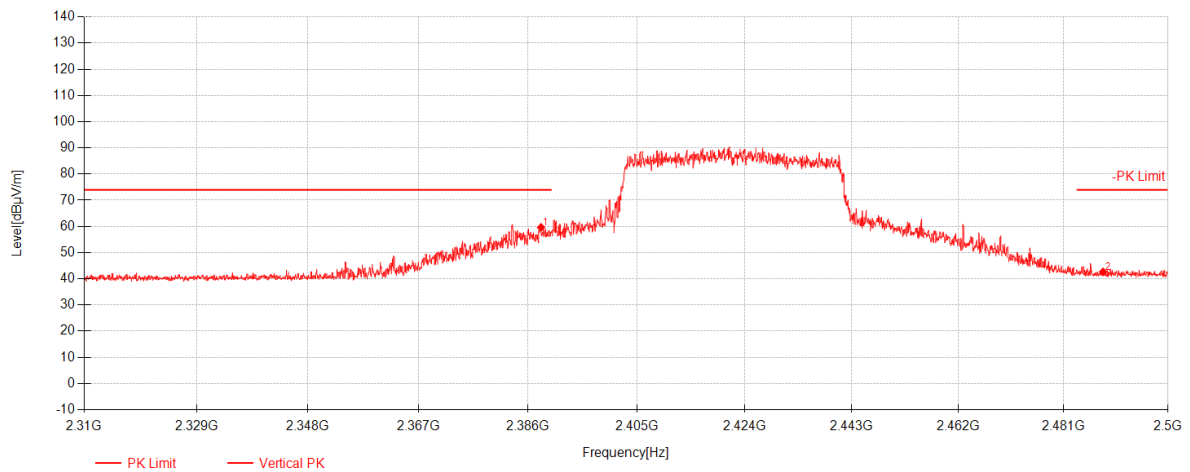
Data List								
NO.	Frequency [MHz]	Reading [dBμV]	AF [dB/m]	Factor [dB]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Polarity
1	2388.39	46.18	26.98	-23.57	49.59	54.00	4.41	Vertical
2	2489.5	28.61	27.18	-23.54	32.25	54.00	21.75	Vertical

802.11ax40 Channel 03



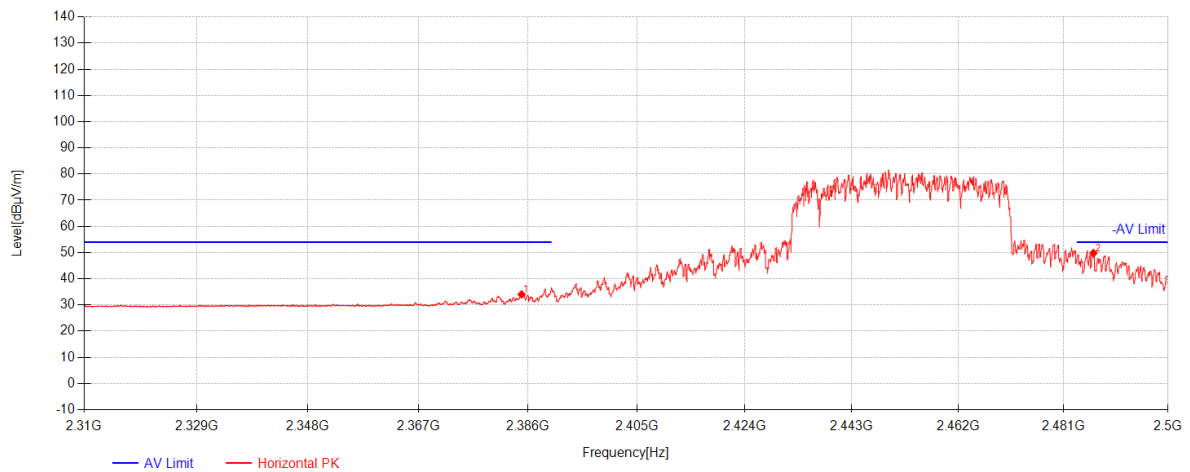
Data List								
NO.	Frequency [MHz]	Reading [dBμV]	AF [dB/m]	Factor [dB]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Polarity
1	2389.17	57.22	26.98	-23.57	60.63	74.00	13.37	Horizontal
2	2486.02	41.30	27.17	-23.54	44.93	74.00	29.07	Horizontal

802.11ax40 Channel 03



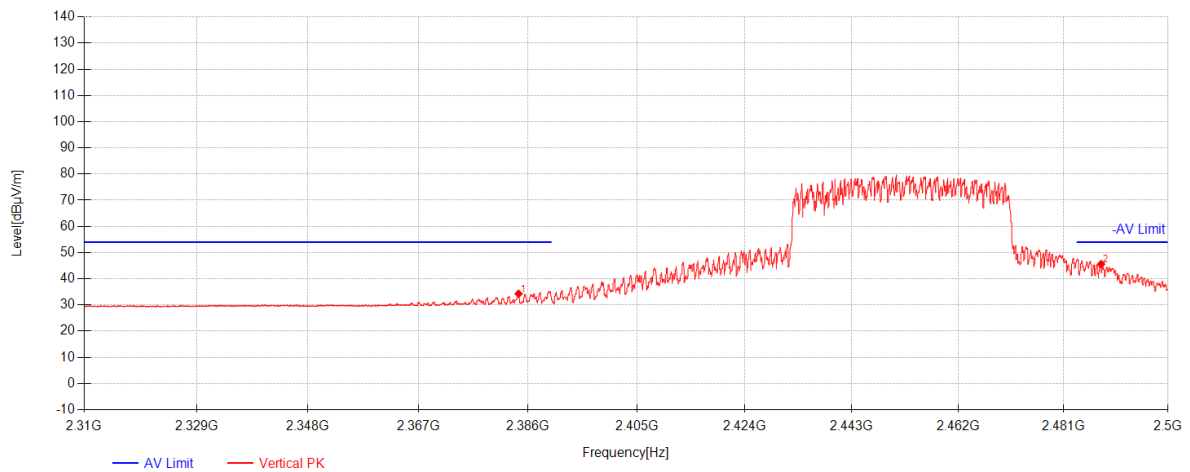
Data List								
NO.	Frequency [MHz]	Reading [dBμV]	AF [dB/m]	Factor [dB]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Polarity
1	2388.26	56.23	26.98	-23.57	59.64	74.00	14.36	Vertical
2	2488.18	39.00	27.18	-23.54	42.63	74.00	31.37	Vertical

802.11ax40 Channel 09



Data List								
NO.	Frequency [MHz]	Reading [dBμV]	AF [dB/m]	Factor [dB]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Polarity
1	2384.88	30.63	26.97	-23.57	34.03	54.00	19.97	Horizontal
2	2486.44	46.18	27.17	-23.54	49.81	54.00	4.19	Horizontal

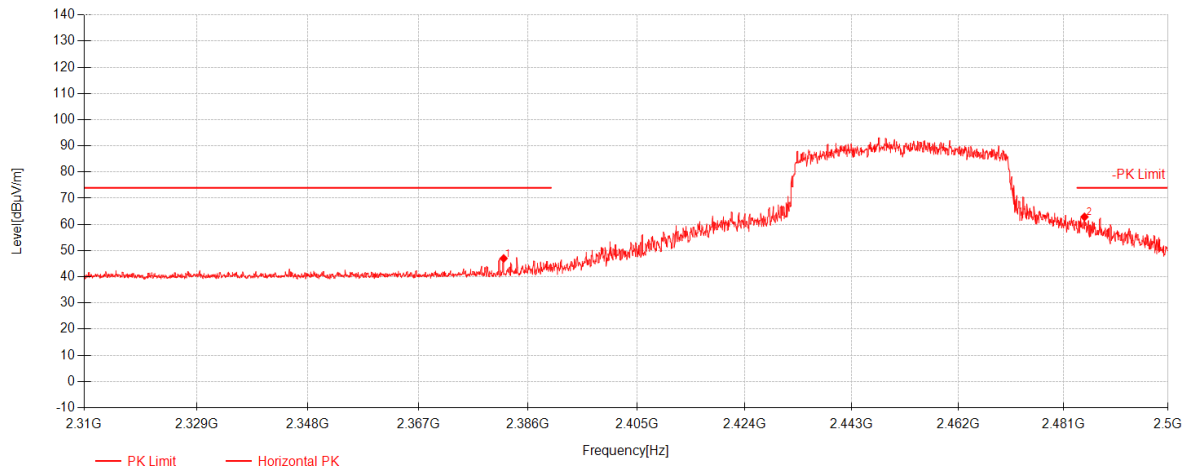
802.11ax40 Channel 09



Data List								
NO.	Frequency [MHz]	Reading [dBμV]	AF [dB/m]	Factor [dB]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Polarity
1	2384.36	30.88	26.97	-23.57	34.28	54.00	19.72	Vertical
2	2487.82	41.96	27.18	-23.54	45.59	54.00	8.41	Vertical

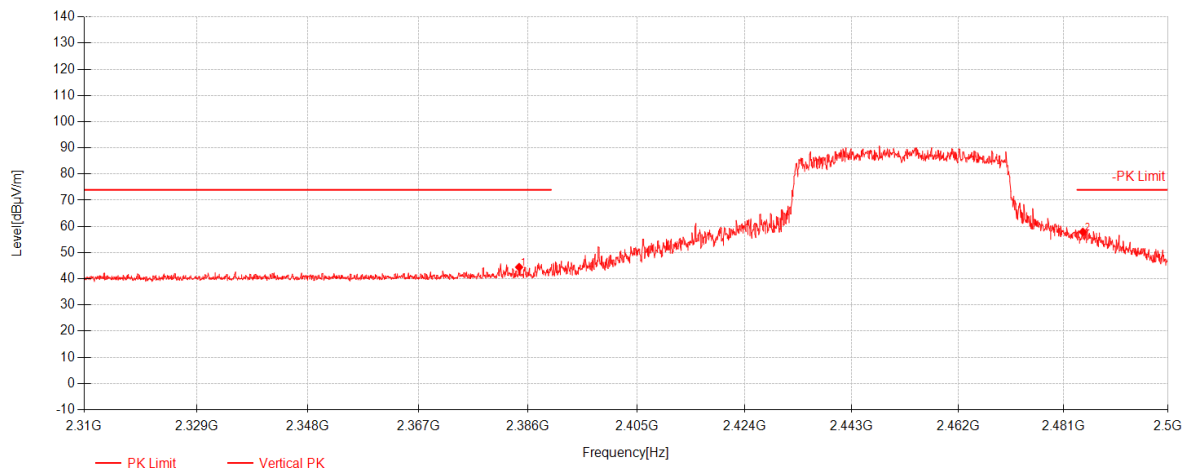


802.11ax40 Channel 09



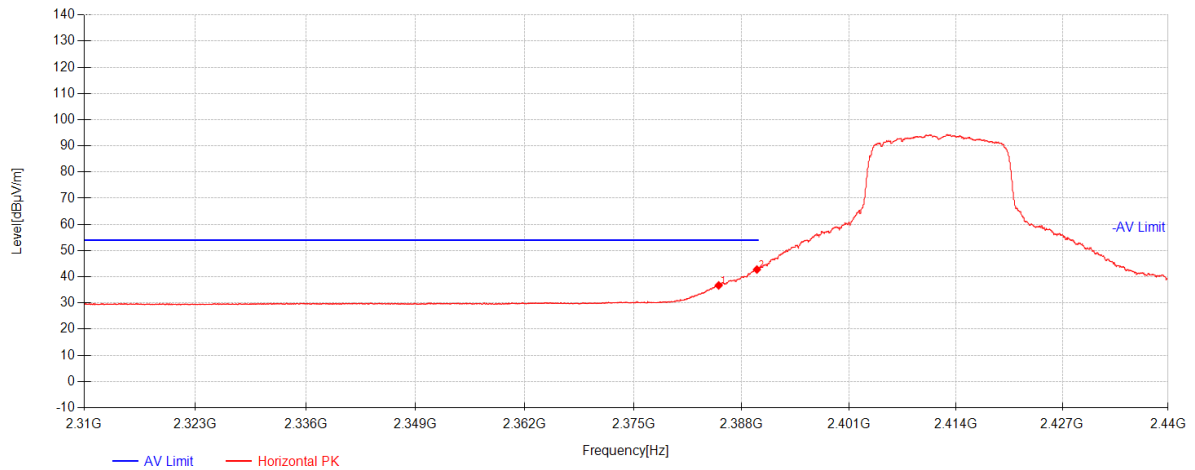
Data List								
NO.	Frequency [MHz]	Reading [dBμV]	AF [dB/m]	Factor [dB]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Polarity
1	2381.76	43.63	26.96	-23.57	47.02	74.00	26.98	Horizontal
2	2484.82	59.24	27.17	-23.54	62.87	74.00	11.13	Horizontal

802.11ax40 Channel 09



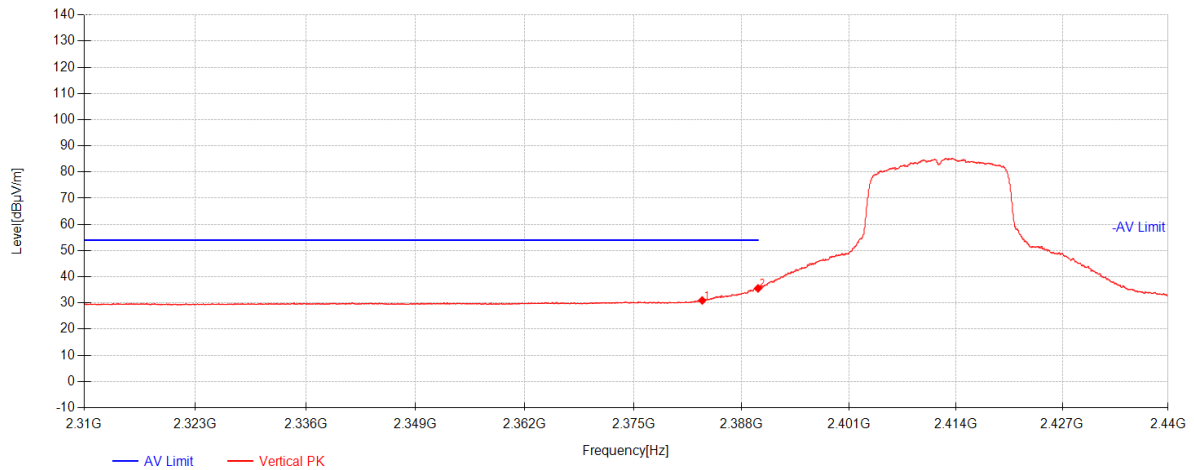
Data List								
NO.	Frequency [MHz]	Reading [dBμV]	AF [dB/m]	Factor [dB]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Polarity
1	2384.4467	41.03	26.97	-23.57	44.43	74.00	29.57	Vertical
2	2484.52	54.28	27.17	-23.54	57.90	74.00	16.10	Vertical

802.11g Channel 01



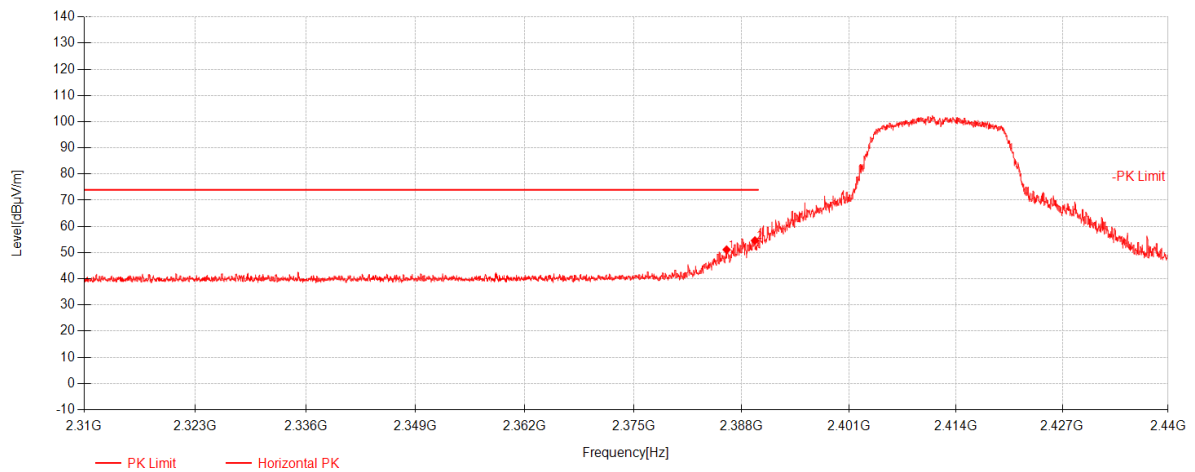
Data List								
NO.	Frequency [MHz]	Reading [dBμV]	AF [dB/m]	Factor [dB]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Polarity
1	2385.2375	33.30	26.97	-23.57	36.70	54.00	17.30	Horizontal
2	2389.8525	39.35	26.98	-23.57	42.76	54.00	11.24	Horizontal

802.11g Channel 01



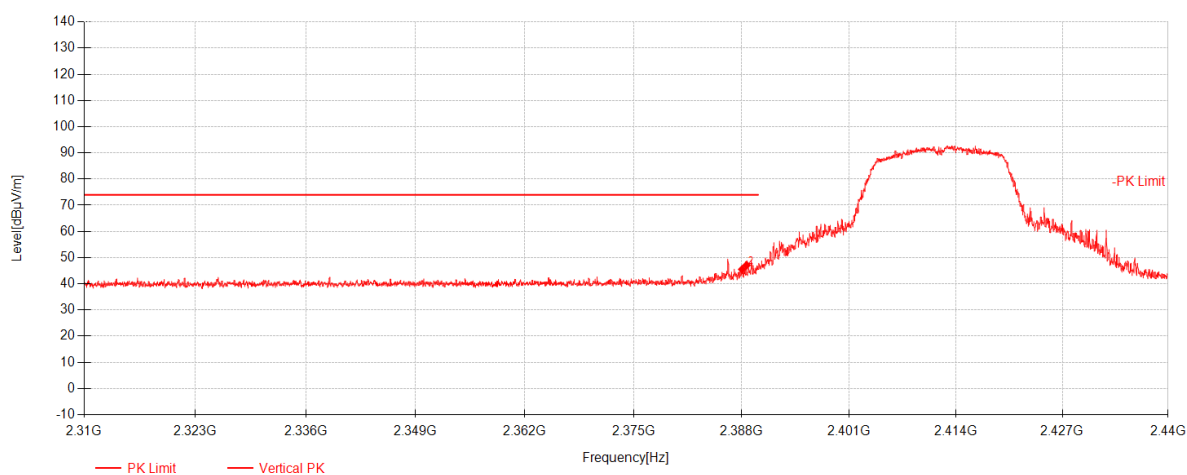
Data List								
NO.	Frequency [MHz]	Reading [dBμV]	AF [dB/m]	Factor [dB]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Polarity
1	2383.255	27.58	26.97	-23.57	30.97	54.00	23.03	Vertical
2	2389.9825	32.16	26.98	-23.57	35.57	54.00	18.43	Vertical

802.11g Channel 01



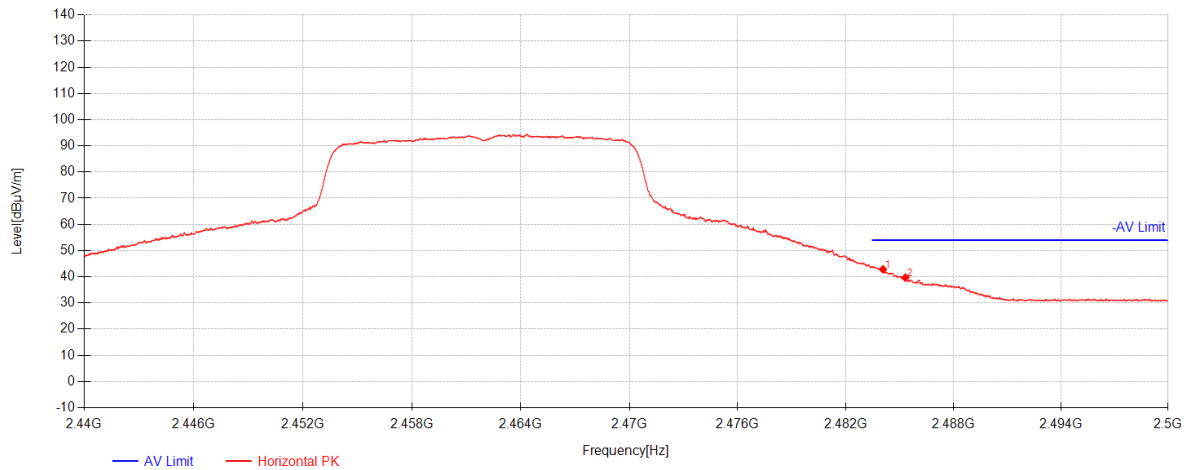
Data List								
NO.	Frequency [MHz]	Reading [dBμV]	AF [dB/m]	Factor [dB]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Polarity
1	2386.1962	47.71	26.97	-23.57	51.11	74.00	22.89	Horizontal
2	2389.6088	51.18	26.98	-23.57	54.59	74.00	19.41	Horizontal

802.11g Channel 01



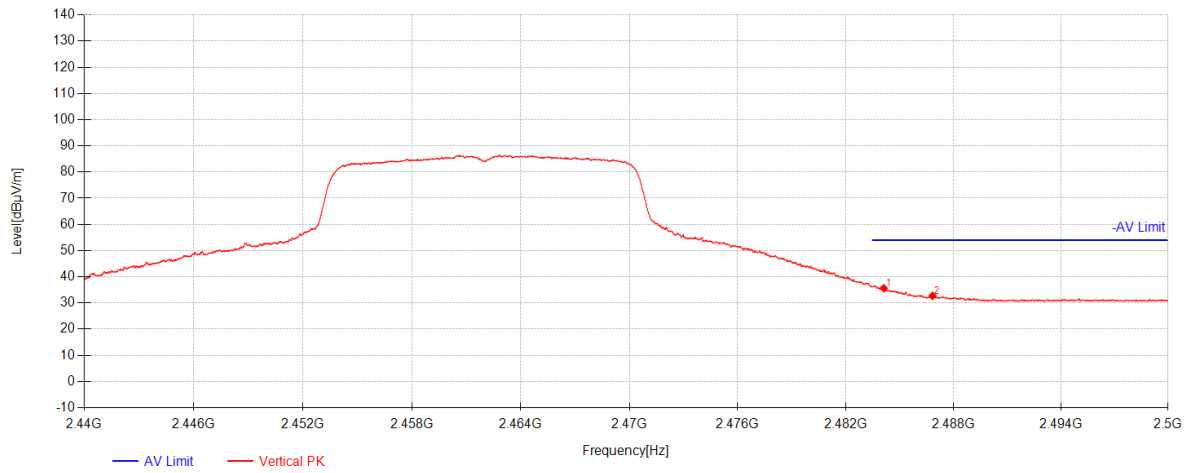
Data List								
NO.	Frequency [MHz]	Reading [dBμV]	AF [dB/m]	Factor [dB]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Polarity
1	2388.065	42.11	26.98	-23.57	45.51	74.00	28.49	Vertical
2	2388.6012	43.68	26.98	-23.57	47.09	74.00	26.91	Vertical

802.11g Channel 11



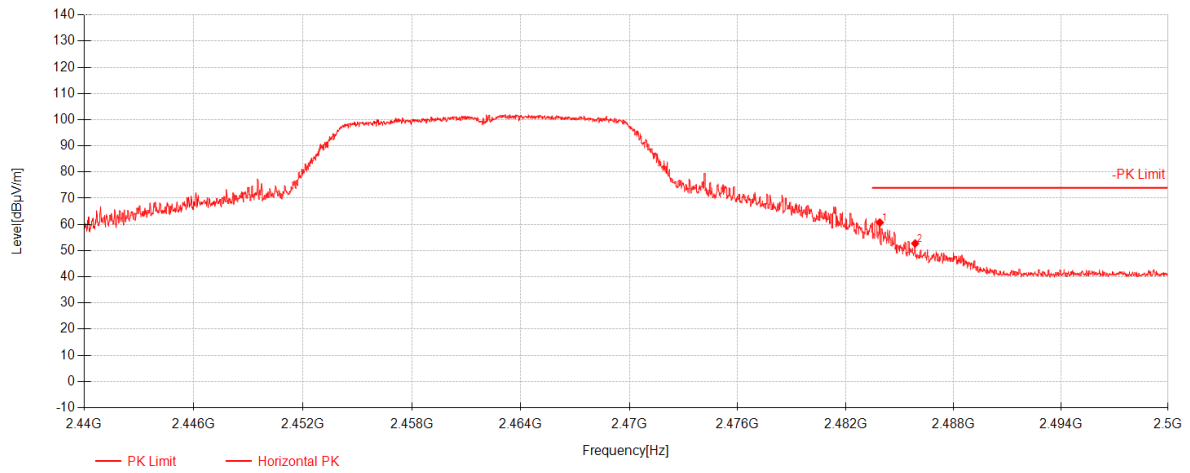
Data List								
NO.	Frequency [MHz]	Reading [dBμV]	AF [dB/m]	Factor [dB]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Polarity
1	2484.0775	39.24	27.17	-23.54	42.86	54.00	11.14	Horizontal
2	2485.3225	36.04	27.17	-23.54	39.67	54.00	14.33	Horizontal

802.11g Channel 11



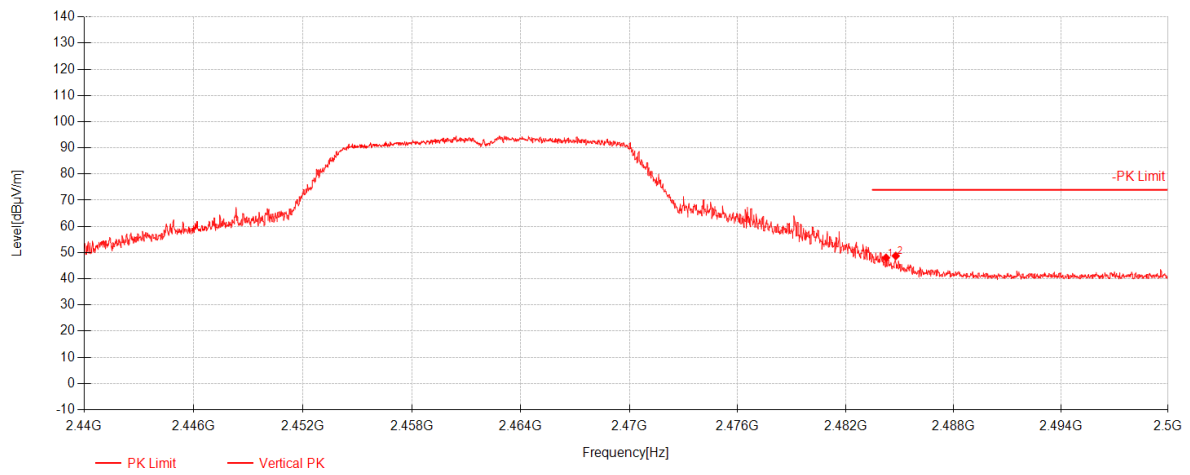
Data List								
NO.	Frequency [MHz]	Reading [dBμV]	AF [dB/m]	Factor [dB]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Polarity
1	2484.1225	32.03	27.17	-23.54	35.65	54.00	18.35	Vertical
2	2486.8375	29.10	27.17	-23.54	32.73	54.00	21.27	Vertical

802.11g Channel 11



Data List								
NO.	Frequency [MHz]	Reading [dBμV]	AF [dB/m]	Factor [dB]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Polarity
1	2483.905	57.09	27.17	-23.54	60.71	74.00	13.29	Horizontal
2	2485.87	49.09	27.17	-23.54	52.72	74.00	21.28	Horizontal

802.11g Channel 11



Data List								
NO.	Frequency [MHz]	Reading [dBμV]	AF [dB/m]	Factor [dB]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Polarity
1	2484.25	44.39	27.17	-23.54	48.01	74.00	25.99	Vertical
2	2484.79	45.10	27.17	-23.54	48.73	74.00	25.27	Vertical

7.3 Radiated Spurious Emissions Below 1GHz

Test Requirement 47 CFR Part 15, Subpart C 15.205 & 15.209

Test Method: ANSI C63.10 (2013) Section 6.4,6.5

Measurement Distance: 3m

Limit:

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
960-1000	500	3

7.3.1 E.U.T. Operation

Operating Environment:

Temperature: 21.6 °C

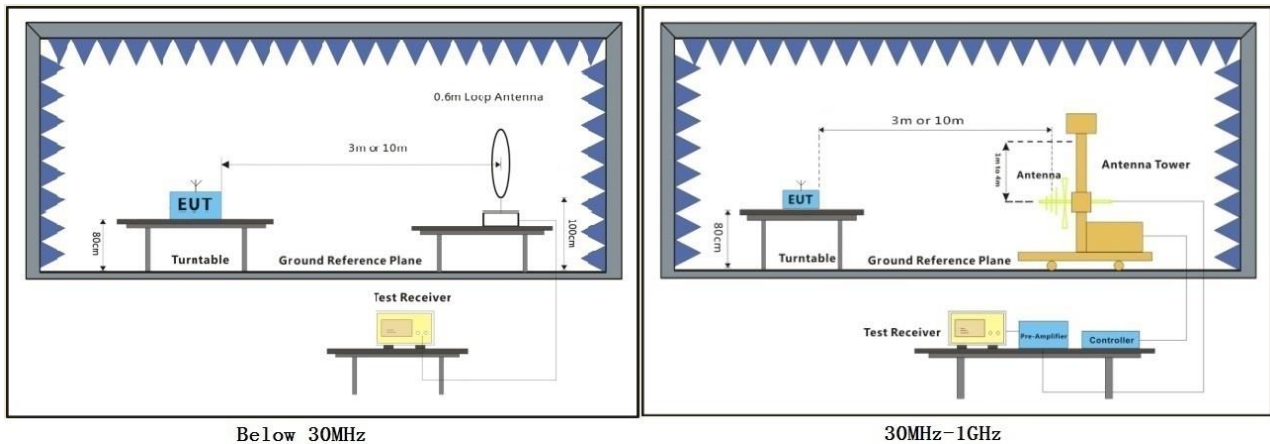
Humidity: 48.3 % RH

Atmospheric Pressure: 1010 mbar

7.3.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	00	TX mode_Keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 1Mbps is the worst case of IEEE 802.11b; data rate @ 6Mbps is the worst case of IEEE 802.11g; data rate @ 6.5Mbps is the worst case of IEEE 802.11n(HT20); data rate @ 13.5Mbps is the worst case of IEEE 802.11n(HT40); data rate @ MCS0 is the worst case of IEEE 802.11ax(HE20); data rate @ MCS0 is the worst case of IEEE 802.11ax(HE40). Only the data of worst case is recorded in the report.

7.3.3 Test Setup Diagram



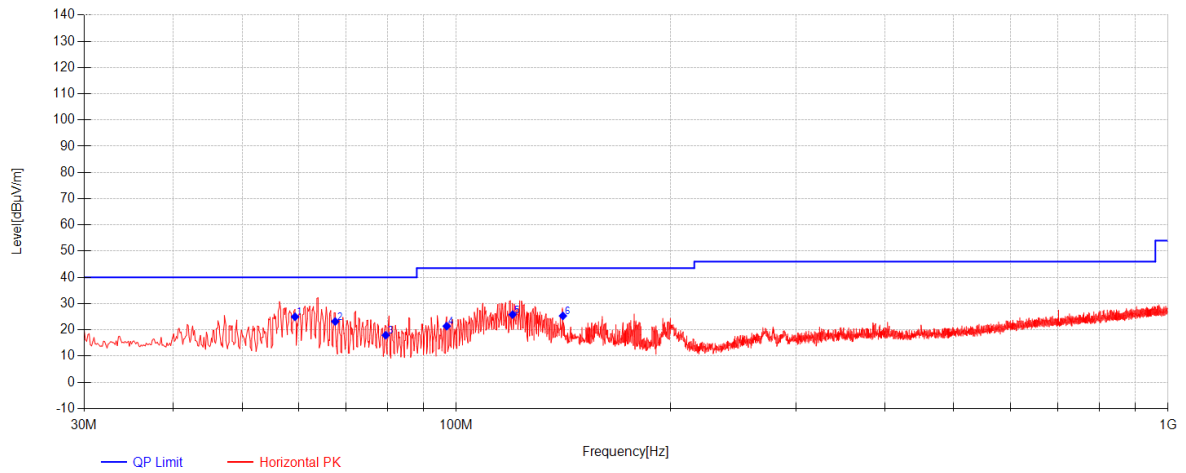
7.3.4 Measurement Procedure and Data

- a. For below 1GHz, the EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 or 10 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 or 10 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters (for the test frequency of below 30MHz, the antenna was tuned to heights 1 meter) and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
- f. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using quasi-peak method as specified and then reported in a data sheet.
- g. Test the EUT in the lowest channel, the middle channel, the Highest channel.
- h. The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, and found the X axis positioning which it is the worst case.
- i. Repeat above procedures until all frequencies measured was complete.

Remark:

1. Level= Read Level+ Cable Loss+ Antenna Factor- Preamp Factor
2. Scan from 9kHz to 30MHz, the disturbance below 30MHz was very low. The points marked on above plots are the highest emissions could be found when testing, so only above points had been displayed. The amplitude of spurious emissions from the radiator which are attenuated more than 20dB below the limit need not be reported.

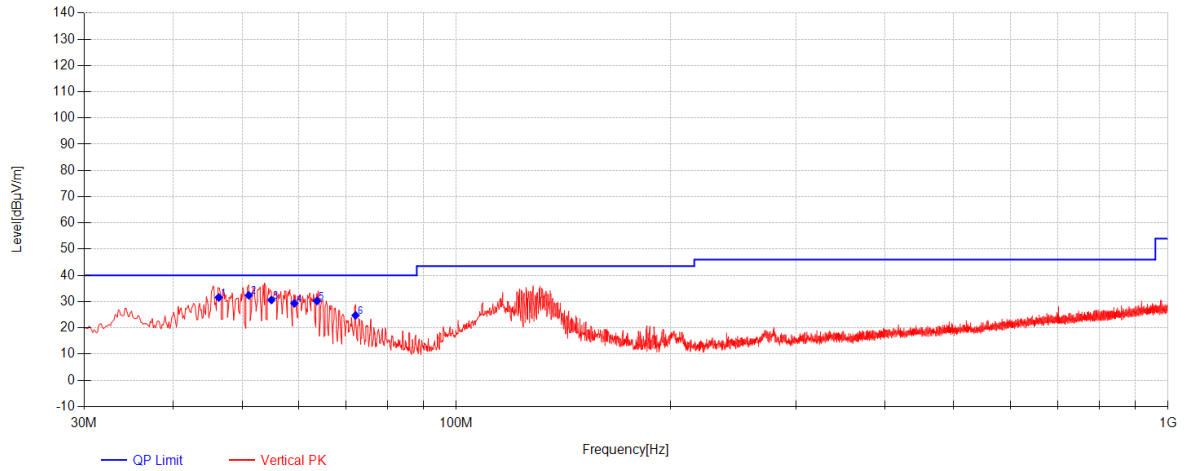
11b Channel 11 worse



Final Data List

NO.	Frequency [MHz]	Reading [dBμV]	Factor [dB]	AF [dB/m]	QP Value [dBμV/m]	QP Limit [dBμV/m]	QP Margin [dB]	Polarity
1	59.3425	41.26	-33.87	17.57	24.96	40.00	15.04	Horizontal
2	67.5875	40.01	-33.77	16.92	23.16	40.00	16.84	Horizontal
3	79.5912	36.56	-33.66	15.02	17.92	40.00	22.08	Horizontal
4	96.93	40.59	-33.51	14.29	21.38	43.50	22.12	Horizontal
5	119.9675	42.33	-33.34	16.79	25.78	43.50	17.72	Horizontal
6	141.1862	40.11	-33.23	18.44	25.31	43.50	18.19	Horizontal

11b Channel 11 worse



Final Data List

NO.	Frequency [MHz]	Reading [dBμV]	Factor [dB]	AF [dB/m]	QP Value [dBμV/m]	QP Limit [dBμV/m]	QP Margin [dB]	Polarity
1	46.3688	46.53	-33.99	19.03	31.57	40.00	8.43	Vertical
2	51.0975	47.86	-33.97	18.49	32.38	40.00	7.62	Vertical
3	54.9775	46.33	-33.92	18.20	30.61	40.00	9.39	Vertical
4	59.2212	45.63	-33.87	17.58	29.34	40.00	10.66	Vertical
5	63.7075	46.53	-33.82	17.53	30.24	40.00	9.76	Vertical
6	72.195	42.32	-33.72	16.14	24.74	40.00	15.26	Vertical

7.4 Radiated Spurious Emissions Above 1GHz

Test Requirement 47 CFR Part 15, Subpart C 15.205 & 15.209

Test Method: ANSI C63.10 (2013) Section 6.6

Measurement Distance: 3m

Limit:

Frequency(MHz)	Field strength(microvolts/meter)	Measurement distance(meters)
Above 1000	500	3

7.4.1 E.U.T. Operation

Operating Environment:

Temperature: 21.6 °C

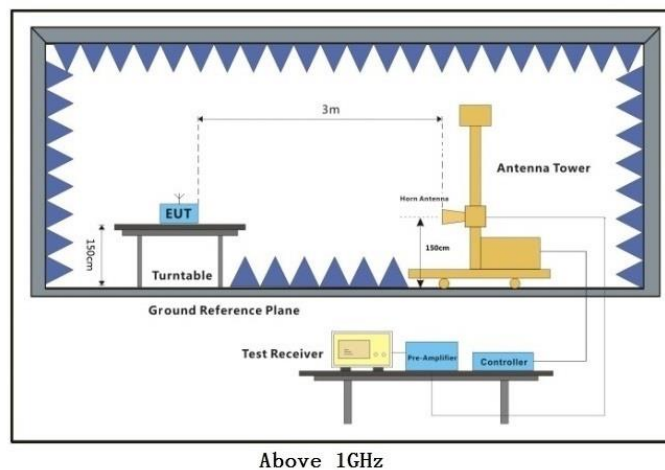
Humidity: 48.3 % RH

Atmospheric Pressure: 1010 mbar

7.4.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	00	TX mode_Keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 1Mbps is the worst case of IEEE 802.11b; data rate @ 6Mbps is the worst case of IEEE 802.11g; data rate @ 6.5Mbps is the worst case of IEEE 802.11n(HT20); data rate @ 13.5Mbps is the worst case of IEEE 802.11n(HT40); data rate @ MCS0 is the worst case of IEEE 802.11ax(HE20); data rate @ MCS0 is the worst case of IEEE 802.11ax(HE40). Only the data of worst case is recorded in the report.

7.4.3 Test Setup Diagram



7.4.4 Measurement Procedure and Data

- a. For above 1GHz, the EUT was placed on the top of a rotating table 1.5 meters above the ground at a 3 meter fully-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters (for the test frequency of below 30MHz, the antenna was tuned to heights 1 meter) and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
- f. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak or average method as specified and then reported in a data sheet.
- g. Test the EUT in the lowest channel, the middle channel, the Highest channel.
- h. The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, and found the X axis positioning which it is the worst case.
- i. Repeat above procedures until all frequencies measured was complete.

Remark:

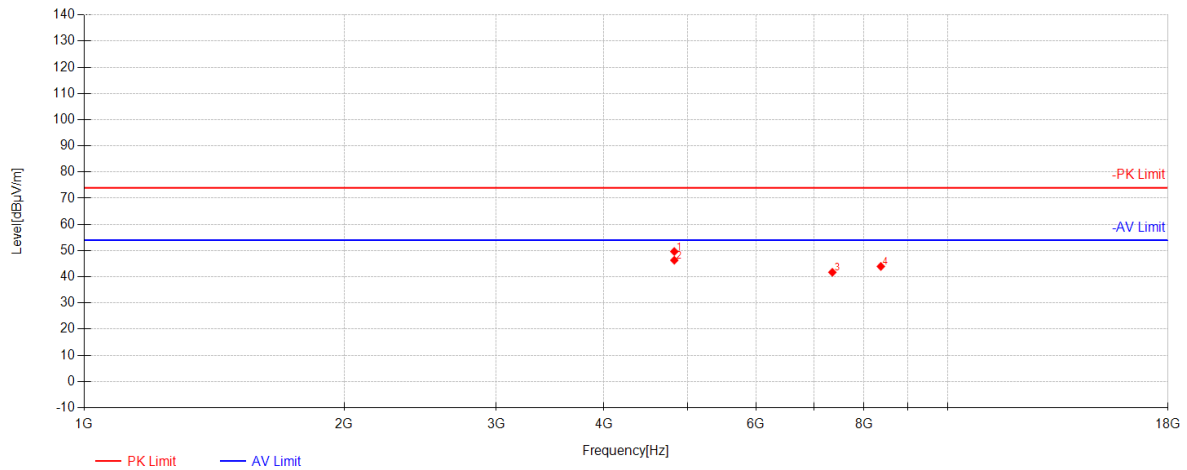
1. $\text{Level} = \text{Read Level} + \text{Cable Loss} + \text{Antenna Factor} - \text{Preamp Factor}$
2. Scan from 1GHz to 25GHz, the disturbance above 18GHz was very low. The points marked on above plots are the highest emissions could be found when testing, so only above points had been displayed. The amplitude of spurious emissions from the radiator which are attenuated more than 20dB below the limit need not be reported.
3. As shown in this section, for frequencies above 1GHz, the field strength limits are based on average limits. However, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation. For the emissions whose peak level is lower than the average limit, only the peak measurement is shown in the report.
4. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is 3MHz for Peak detection (PK) and Average detection (AV) at frequency above 1GHz.
- 5: For fundamental and harmonic signal measurement, the resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is $\geq 1/T$ (Duty cycle $< 98\%$) or 10Hz (Duty cycle $\geq 98\%$) for Average detection (AV) at frequency above 1GHz.



Report No.: KSCR241200262601

Page: 73 of 182

802.11b_Channel 01



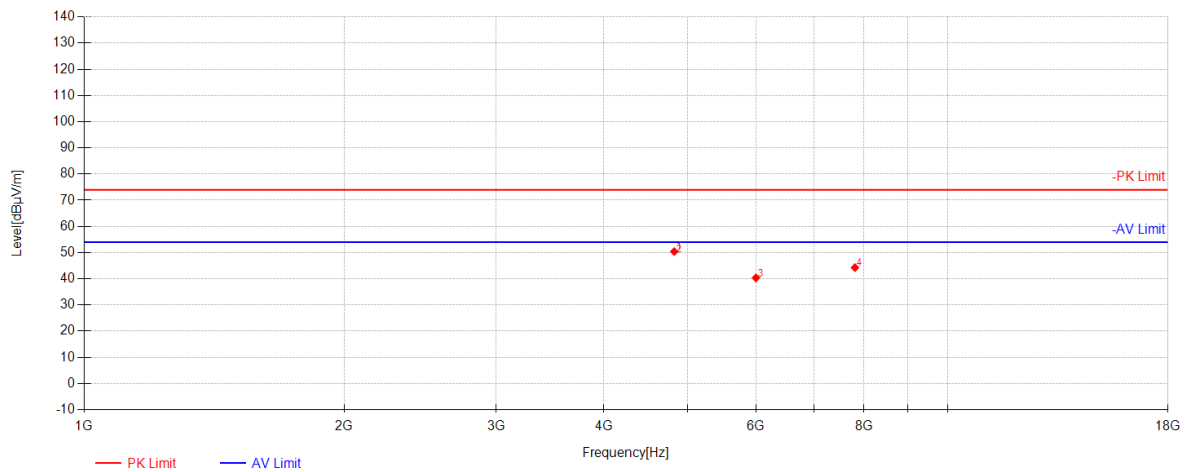
Data List								
NO.	Frequency [MHz]	Reading [dBμV]	AF [dB/m]	Factor [dB]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Polarity
1	4824.375	64.07	31.12	-45.54	49.65	74.00	24.35	Horizontal
2	4824.75	60.73	31.12	-45.54	46.31	54.00	7.69	Horizontal
3	7353.75	49.29	35.99	-43.57	41.71	74.00	32.29	Horizontal
4	8370	48.69	36.88	-41.62	43.95	74.00	30.05	Horizontal



Report No.: KSCR241200262601

Page: 74 of 182

802.11b Channel 01



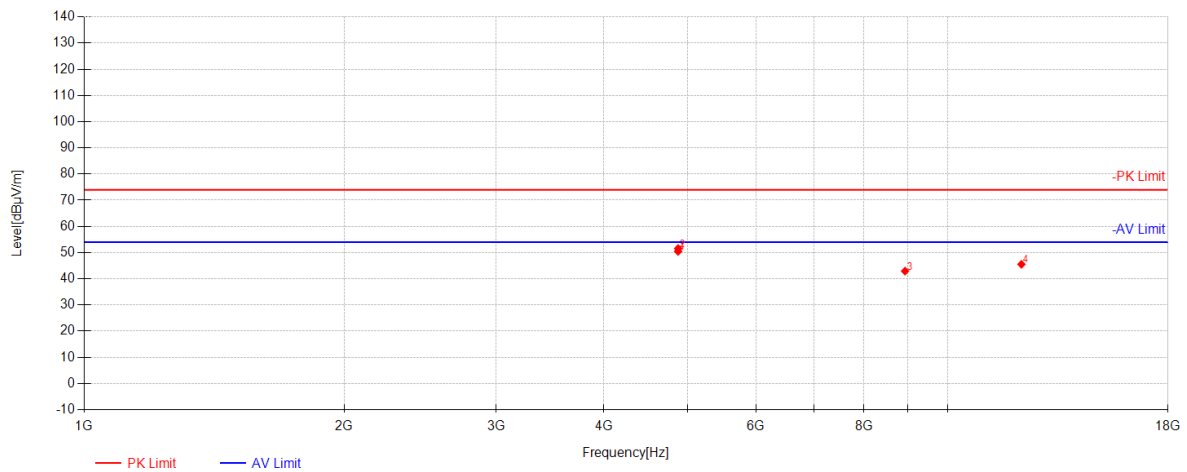
Data List								
NO.	Frequency [MHz]	Reading [dBμV]	AF [dB/m]	Factor [dB]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Polarity
1	4823.625	64.81	31.12	-45.54	50.39	74.00	23.61	Vertical
2	4824.75	64.06	31.12	-45.54	49.64	54.00	4.36	Vertical
3	5997	52.77	32.40	-44.83	40.34	74.00	33.66	Vertical
4	7810.875	49.79	36.84	-42.37	44.26	74.00	29.74	Vertical



Report No.: KSCR241200262601

Page: 75 of 182

802.11b Channel 06



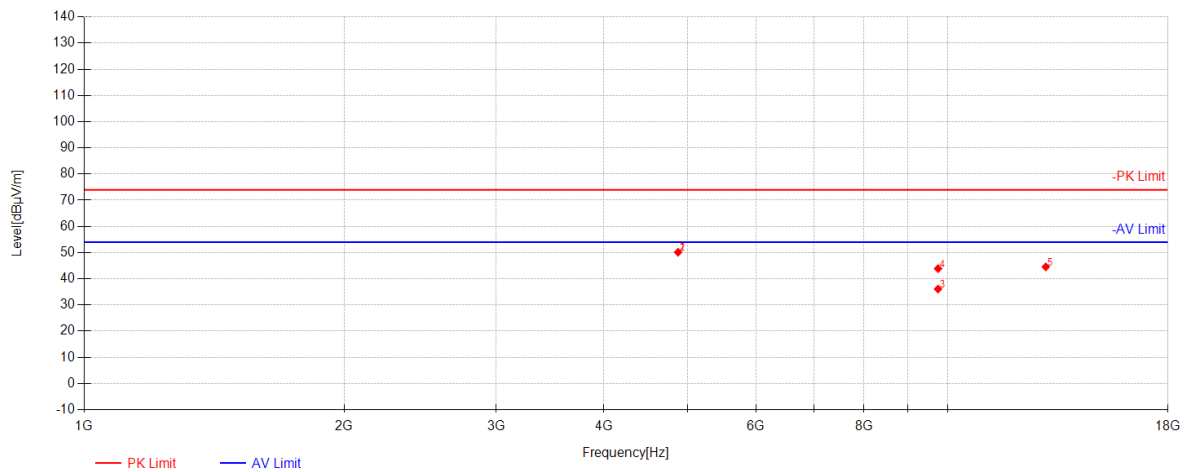
Data List								
NO.	Frequency [MHz]	Reading [dBμV]	AF [dB/m]	Factor [dB]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Polarity
1	4873.5	64.81	31.20	-45.53	50.47	74.00	23.53	Horizontal
2	4874.625	65.91	31.20	-45.53	51.58	54.00	2.42	Horizontal
3	8926.125	47.57	36.54	-41.18	42.94	74.00	31.06	Horizontal
4	12176.25	43.83	39.15	-37.45	45.53	74.00	28.47	Horizontal



Report No.: KSCR241200262601

Page: 76 of 182

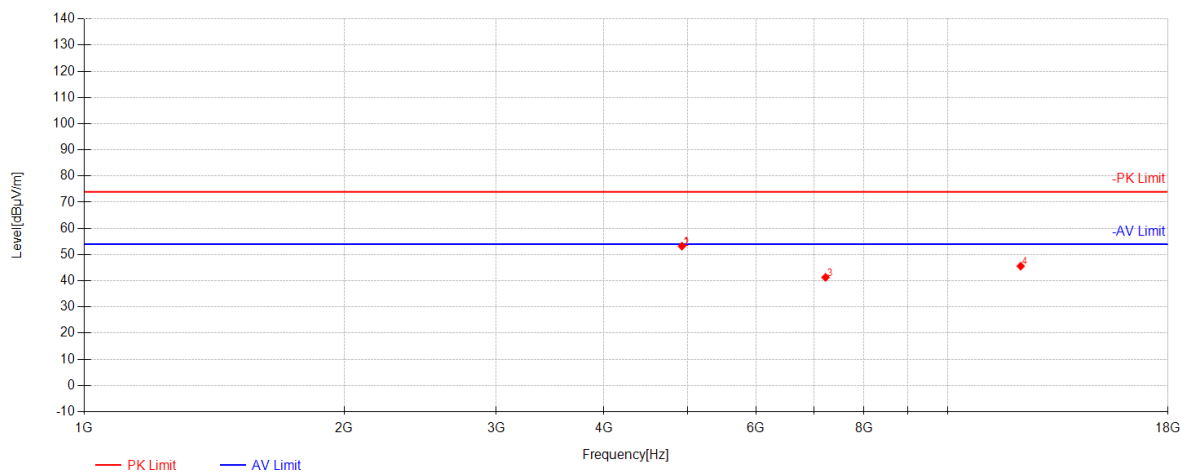
802.11b Channel 06



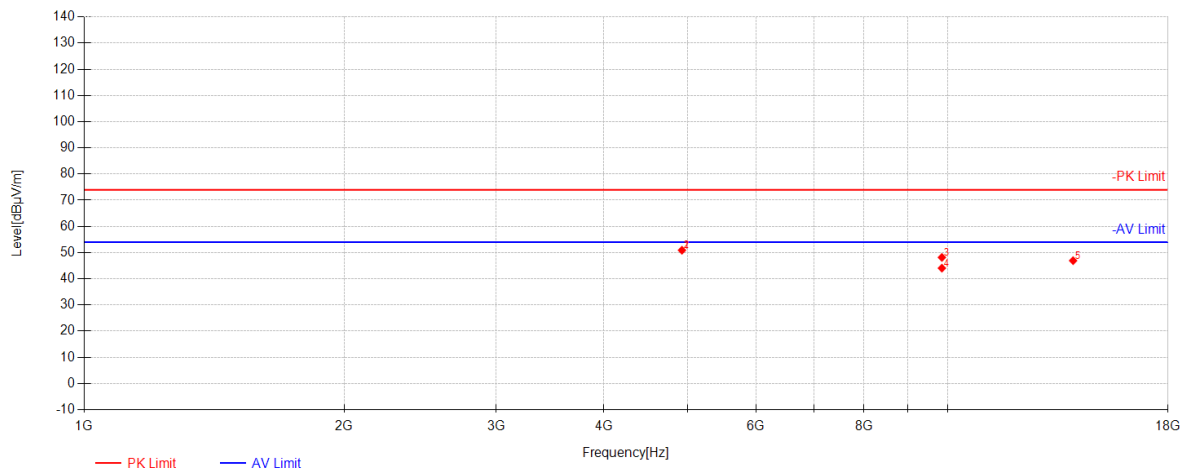
Data List								
NO.	Frequency [MHz]	Reading [dBμV]	AF [dB/m]	Factor [dB]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Polarity
1	4873.5	64.48	31.20	-45.53	50.14	74.00	23.86	Vertical
2	4874.625	64.47	31.20	-45.53	50.14	54.00	3.86	Vertical
3	9747.75	37.56	38.00	-39.46	36.10	54.00	17.90	Vertical
4	9748.5	45.35	38.00	-39.46	43.89	74.00	30.11	Vertical
5	12990.375	42.45	39.40	-37.31	44.54	74.00	29.46	Vertical



802.11b Channel 11



Data List								
NO.	Frequency [MHz]	Reading [dBμV]	AF [dB/m]	Factor [dB]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Polarity
1	4923.75	67.52	31.28	-45.56	53.24	74.00	20.76	Horizontal
2	4924.125	67.09	31.28	-45.56	52.81	54.00	1.19	Horizontal
3	7221.375	49.17	35.62	-43.49	41.30	74.00	32.70	Horizontal
4	12151.125	43.87	39.15	-37.42	45.60	74.00	28.40	Horizontal

802.11b Channel 11

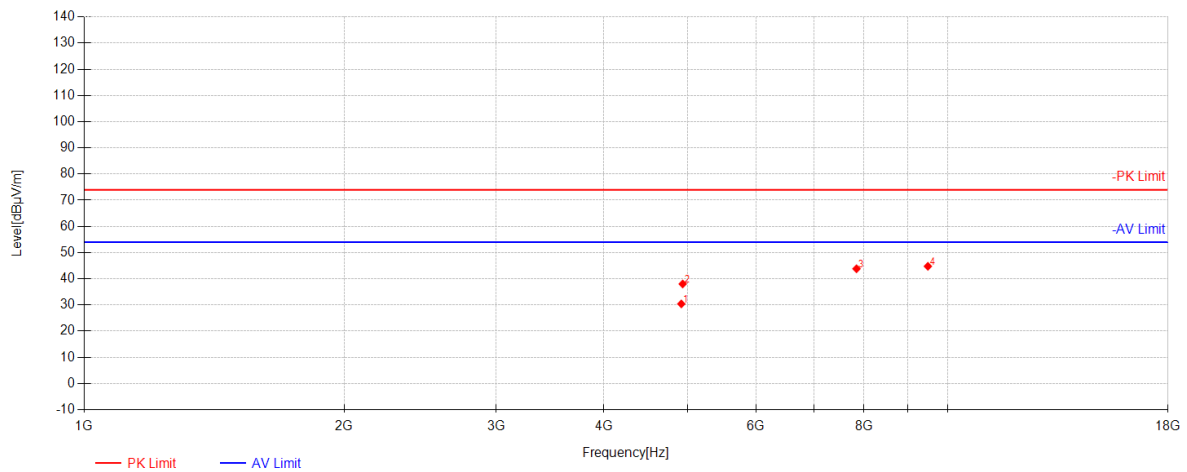
Data List								
NO.	Frequency [MHz]	Reading [dBμV]	AF [dB/m]	Factor [dB]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Polarity
1	4924.125	65.19	31.28	-45.56	50.91	54.00	3.09	Vertical
2	4924.5	65.50	31.28	-45.56	51.22	74.00	22.78	Vertical
3	9848.25	49.37	38.20	-39.41	48.16	74.00	25.84	Vertical
4	9848.625	45.28	38.20	-39.41	44.07	54.00	9.93	Vertical
5	13974	41.82	40.76	-35.65	46.93	74.00	27.07	Vertical



Report No.: KSCR241200262601

Page: 79 of 182

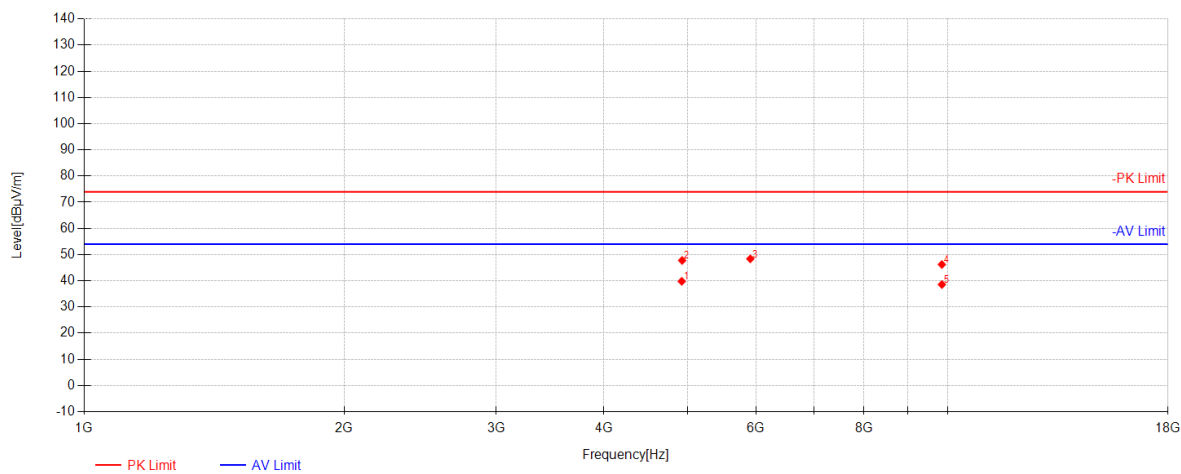
802.11n20 Channel 11



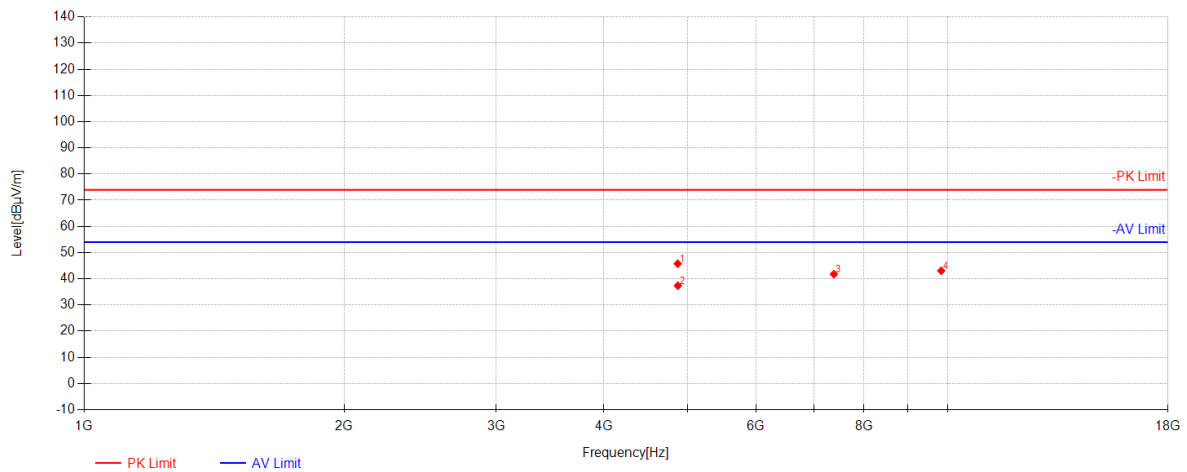
Data List								
NO.	Frequency [MHz]	Reading [dBμV]	AF [dB/m]	Factor [dB]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Polarity
1	4915.875	44.69	31.27	-45.55	30.41	54.00	23.59	Horizontal
2	4933.875	52.29	31.29	-45.57	38.02	74.00	35.98	Horizontal
3	7842.75	49.47	36.88	-42.53	43.82	74.00	30.18	Horizontal
4	9486.75	47.47	37.47	-40.18	44.77	74.00	29.23	Horizontal



802.11n20 Channel 11



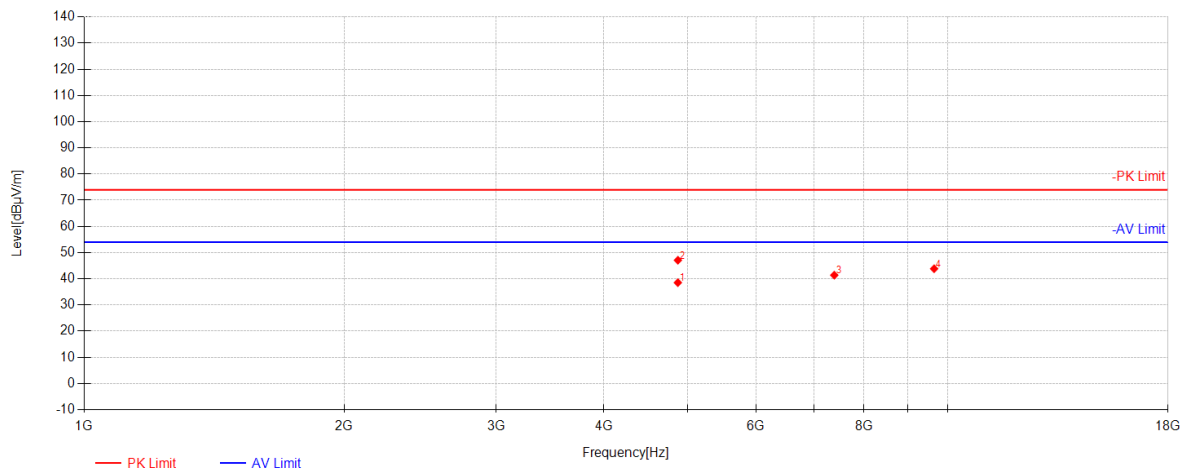
Data List								
NO.	Frequency [MHz]	Reading [dBμV]	AF [dB/m]	Factor [dB]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Polarity
1	4921.125	54.08	31.27	-45.55	39.80	54.00	14.20	Vertical
2	4926.375	62.04	31.28	-45.56	47.76	74.00	26.24	Vertical
3	5908.5	60.95	32.38	-44.96	48.37	74.00	25.63	Vertical
4	9848.25	47.43	38.20	-39.41	46.22	74.00	27.78	Vertical
5	9848.625	39.79	38.20	-39.41	38.58	54.00	15.42	Vertical

802.11n20 Channel 06

Data List								
NO.	Frequency [MHz]	Reading [dBμV]	AF [dB/m]	Factor [dB]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Polarity
1	4869	60.10	31.19	-45.53	45.76	74.00	28.24	Horizontal
2	4870.875	51.69	31.19	-45.53	37.35	54.00	16.65	Horizontal
3	7383.375	49.15	36.07	-43.47	41.76	74.00	32.24	Horizontal
4	9831.375	44.33	38.16	-39.43	43.06	74.00	30.94	Horizontal



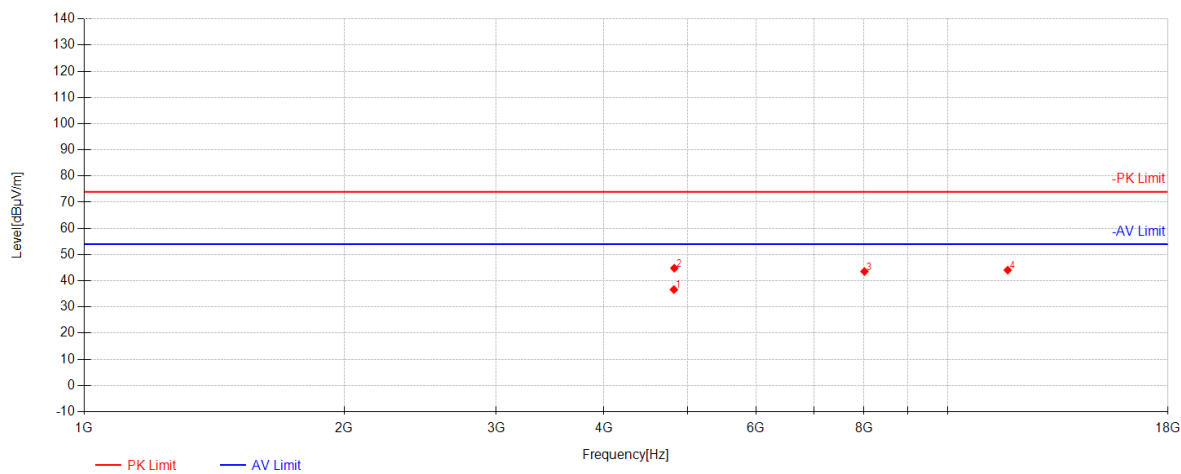
802.11n20 Channel 06



Data List								
NO.	Frequency [MHz]	Reading [dBμV]	AF [dB/m]	Factor [dB]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Polarity
1	4870.5	52.87	31.19	-45.53	38.53	54.00	15.47	Vertical
2	4871.25	61.42	31.19	-45.53	47.08	74.00	26.92	Vertical
3	7392	48.72	36.10	-43.44	41.38	74.00	32.62	Vertical
4	9646.875	45.61	37.79	-39.56	43.84	74.00	30.16	Vertical



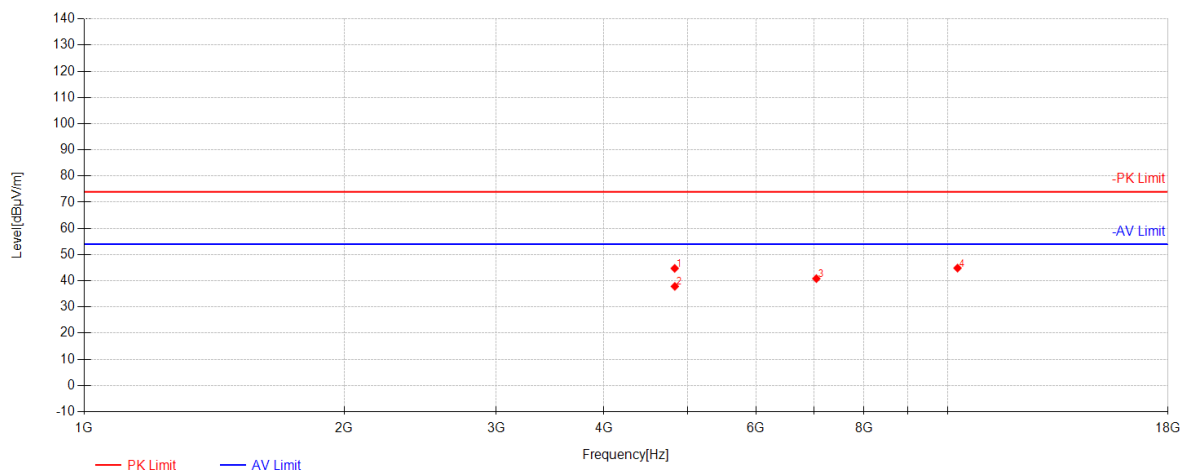
802.11n20 Channel 01



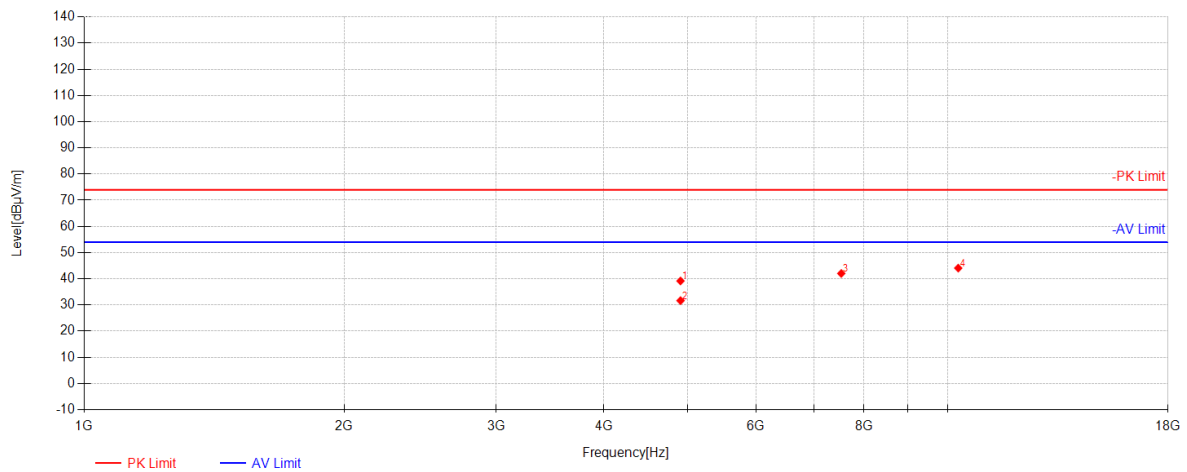
Data List								
NO.	Frequency [MHz]	Reading [dBμV]	AF [dB/m]	Factor [dB]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Polarity
1	4819.875	51.06	31.11	-45.54	36.63	54.00	17.37	Horizontal
2	4825.125	59.23	31.12	-45.54	44.81	74.00	29.19	Horizontal
3	8011.5	48.69	37.09	-42.24	43.55	74.00	30.45	Horizontal
4	11738.25	42.04	38.97	-36.95	44.06	74.00	29.94	Horizontal



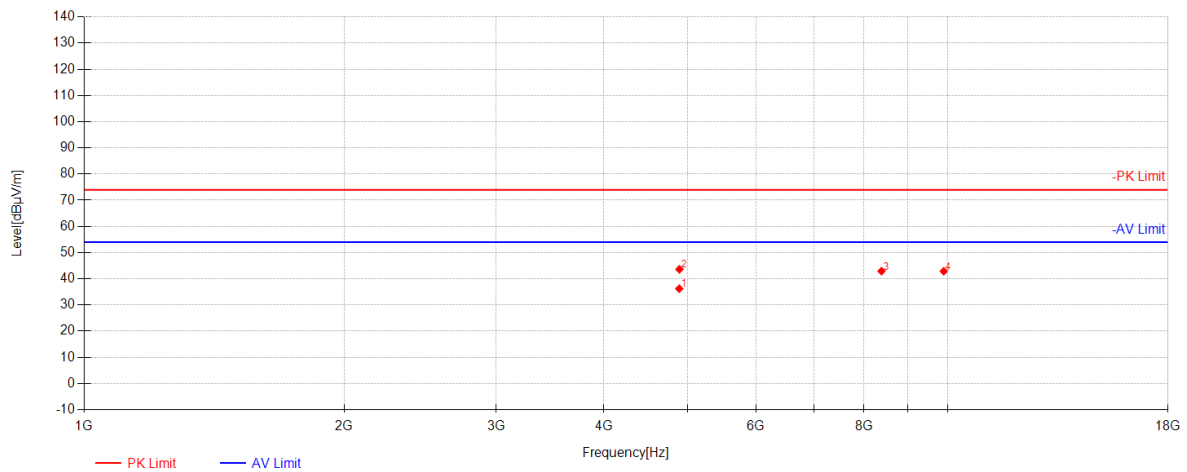
802.11n20 Channel 01



Data List								
NO.	Frequency [MHz]	Reading [dBμV]	AF [dB/m]	Factor [dB]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Polarity
1	4829.625	59.15	31.13	-45.54	44.74	74.00	29.26	Vertical
2	4831.5	52.26	31.13	-45.54	37.85	54.00	16.15	Vertical
3	7046.625	49.56	35.13	-43.86	40.83	74.00	33.17	Vertical
4	10267.875	45.54	38.53	-39.22	44.85	74.00	29.15	Vertical

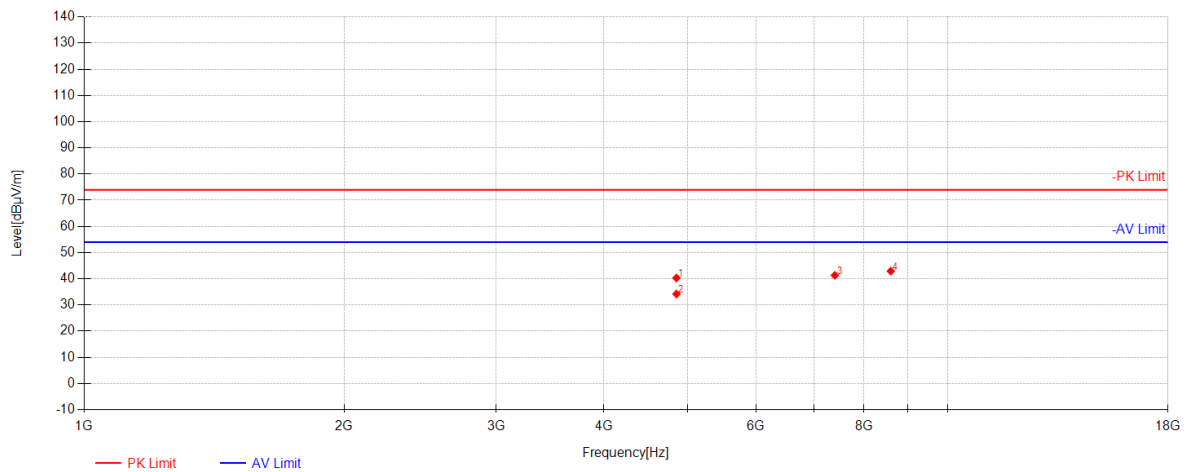
802.11n40 Channel 09

Data List								
NO.	Frequency [MHz]	Reading [dBμV]	AF [dB/m]	Factor [dB]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Polarity
1	4905	53.45	31.25	-45.54	39.16	74.00	34.84	Horizontal
2	4905.375	45.95	31.25	-45.54	31.66	54.00	22.34	Horizontal
3	7531.125	48.67	36.44	-43.07	42.04	74.00	31.96	Horizontal
4	10287	44.69	38.53	-39.14	44.08	74.00	29.92	Horizontal

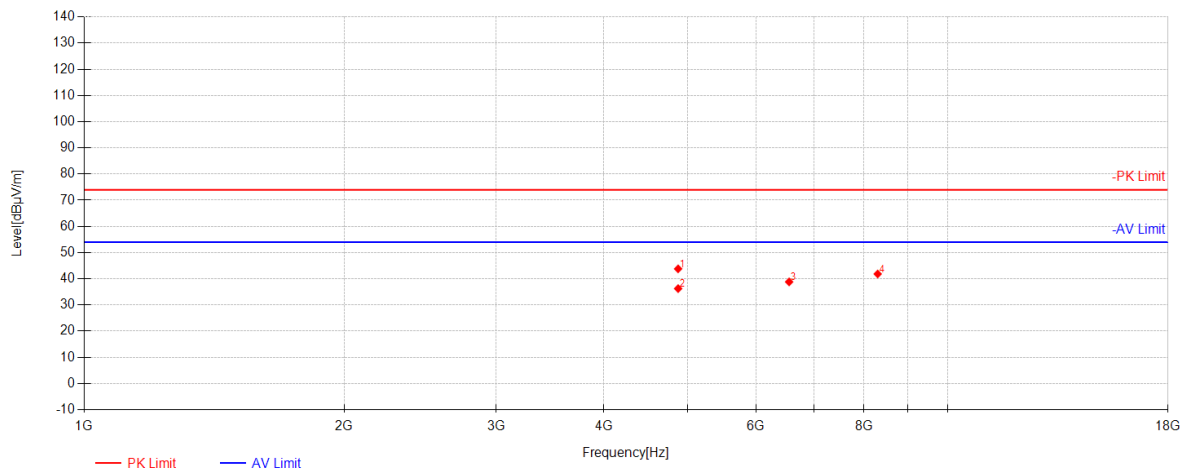
802.11n40 Channel 09

Data List								
NO.	Frequency [MHz]	Reading [dBμV]	AF [dB/m]	Factor [dB]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Polarity
1	4888.5	50.53	31.22	-45.53	36.22	54.00	17.78	Vertical
2	4890.75	57.92	31.23	-45.53	43.61	74.00	30.39	Vertical
3	8383.875	47.59	36.87	-41.54	42.92	74.00	31.08	Vertical
4	9897	43.93	38.29	-39.33	42.89	74.00	31.11	Vertical

802.11n40 Channel 06



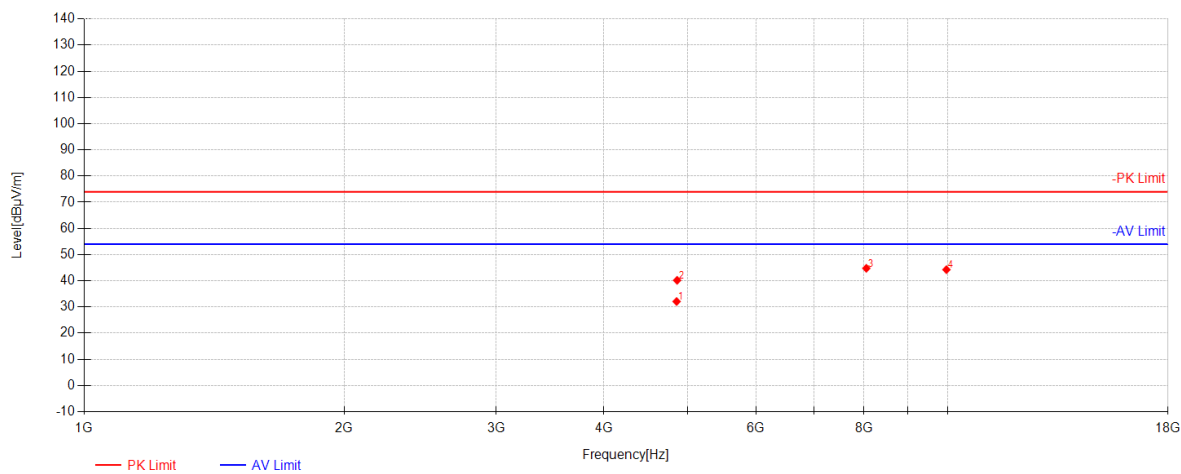
Data List								
NO.	Frequency [MHz]	Reading [dBμV]	AF [dB/m]	Factor [dB]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Polarity
1	4852.125	54.67	31.16	-45.53	40.30	74.00	33.70	Horizontal
2	4852.125	48.54	31.16	-45.53	34.17	54.00	19.83	Horizontal
3	7402.125	48.60	36.13	-43.40	41.32	74.00	32.68	Horizontal
4	8593.125	47.52	36.74	-41.35	42.91	74.00	31.09	Horizontal

802.11n40 Channel 06

Data List								
NO.	Frequency [MHz]	Reading [dBμV]	AF [dB/m]	Factor [dB]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Polarity
1	4873.875	58.13	31.20	-45.53	43.80	74.00	30.20	Vertical
2	4874.25	50.59	31.20	-45.53	36.26	54.00	17.74	Vertical
3	6553.125	49.09	34.20	-44.47	38.81	74.00	35.19	Vertical
4	8298.75	46.93	36.92	-42.01	41.84	74.00	32.16	Vertical



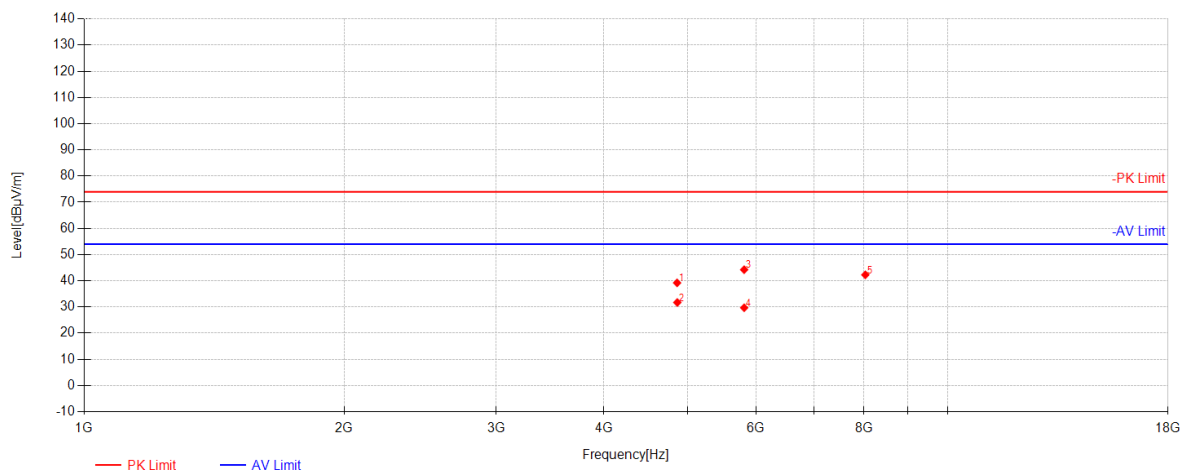
802.11n40 Channel 03



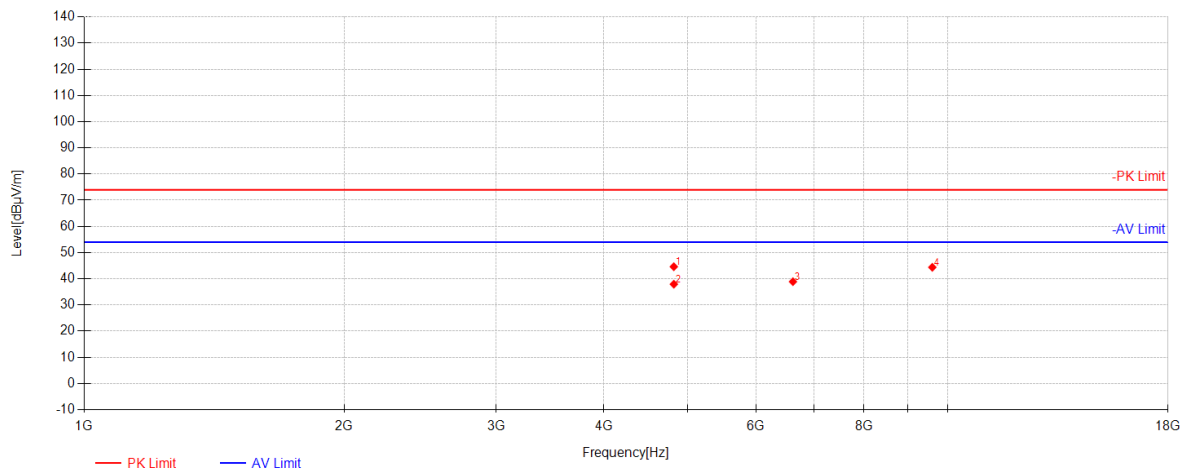
Data List								
NO.	Frequency [MHz]	Reading [dBμV]	AF [dB/m]	Factor [dB]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Polarity
1	4854.375	46.45	31.17	-45.53	32.08	54.00	21.92	Horizontal
2	4861.125	54.54	31.18	-45.53	40.18	74.00	33.82	Horizontal
3	8051.625	49.54	37.07	-41.84	44.77	74.00	29.23	Horizontal
4	9968.625	45.08	38.44	-39.27	44.25	74.00	29.75	Horizontal



802.11n40 Channel 03

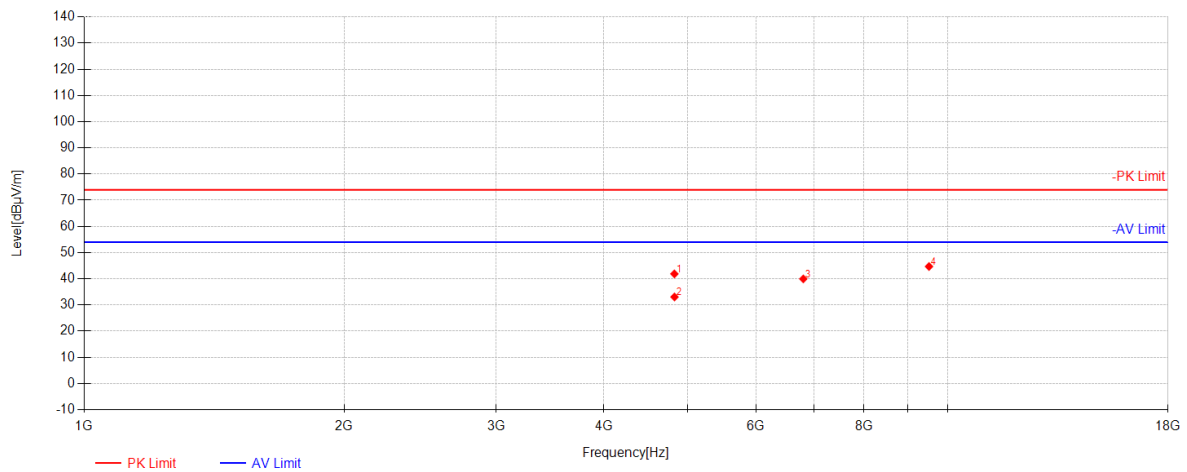


Data List								
NO.	Frequency [MHz]	Reading [dBμV]	AF [dB/m]	Factor [dB]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Polarity
1	4860.75	53.56	31.18	-45.53	39.20	74.00	34.80	Vertical
2	4863.375	46.06	31.18	-45.53	31.71	54.00	22.29	Vertical
3	5812.5	56.66	32.36	-44.78	44.24	74.00	29.76	Vertical
4	5812.875	42.12	32.36	-44.78	29.70	54.00	24.30	Vertical
5	8029.875	47.25	37.08	-42.05	42.28	74.00	31.72	Vertical

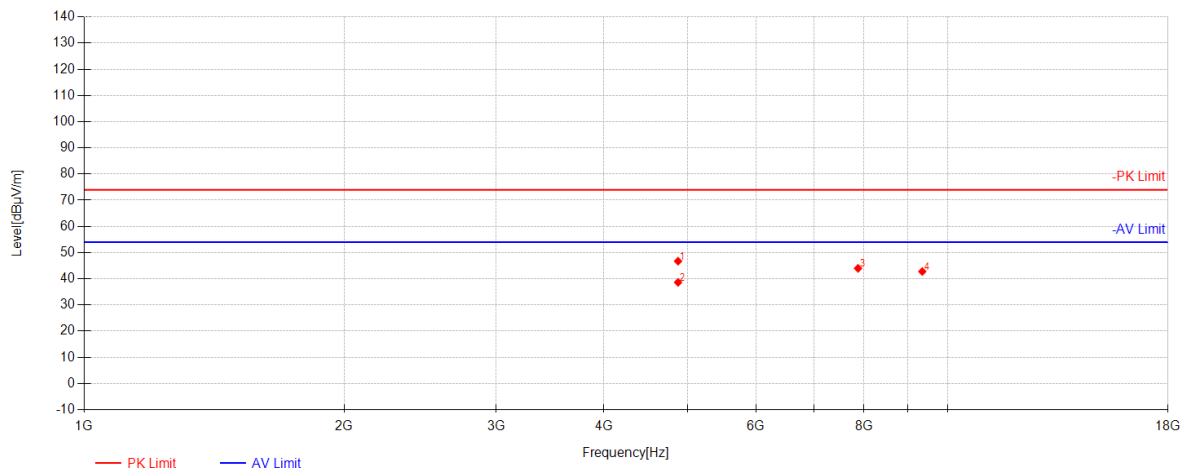
802.11ax20 Channel 01

Data List								
NO.	Frequency [MHz]	Reading [dBμV]	AF [dB/m]	Factor [dB]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Polarity
1	4818.375	59.03	31.11	-45.54	44.60	74.00	29.40	Horizontal
2	4818.75	52.36	31.11	-45.54	37.93	54.00	16.07	Horizontal
3	6620.25	48.81	34.32	-44.24	38.89	74.00	35.11	Horizontal
4	9600	46.36	37.70	-39.67	44.39	74.00	29.61	Horizontal

802.11ax20 Channel 01



Data List								
NO.	Frequency [MHz]	Reading [dBμV]	AF [dB/m]	Factor [dB]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Polarity
1	4825.875	56.29	31.12	-45.54	41.87	74.00	32.13	Vertical
2	4827	47.46	31.12	-45.54	33.05	54.00	20.95	Vertical
3	6805.5	49.47	34.65	-44.17	39.95	74.00	34.05	Vertical
4	9516.75	47.29	37.53	-40.14	44.69	74.00	29.31	Vertical

802.11ax20 Channel 06

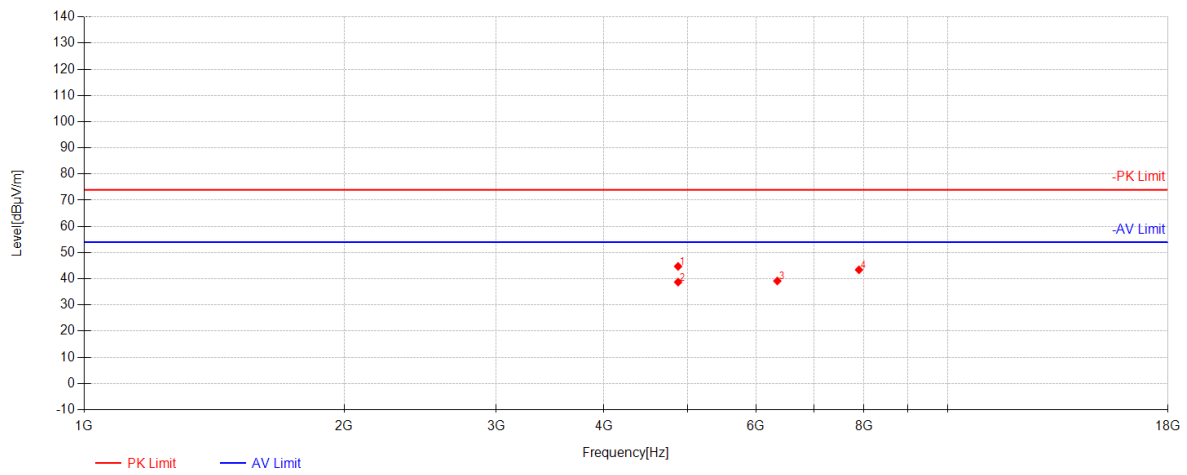
Data List								
NO.	Frequency [MHz]	Reading [dBμV]	AF [dB/m]	Factor [dB]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Polarity
1	4873.125	61.07	31.20	-45.53	46.73	74.00	27.27	Horizontal
2	4873.125	52.96	31.20	-45.53	38.62	54.00	15.38	Horizontal
3	7875	49.76	36.93	-42.69	43.99	74.00	30.01	Horizontal
4	9346.5	45.64	37.19	-40.04	42.79	74.00	31.21	Horizontal



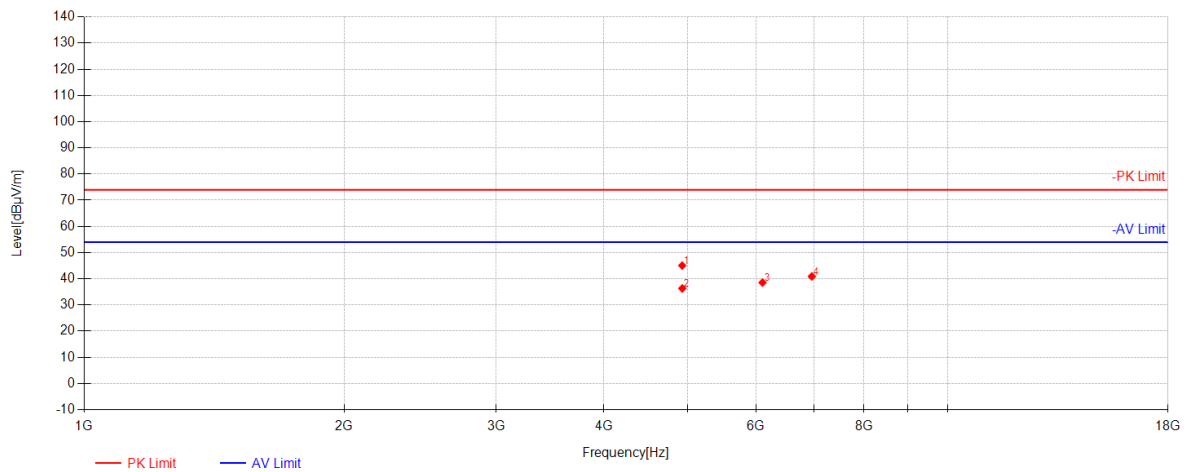
Report No.: KSCR241200262601

Page: 94 of 182

802.11ax20 Channel 06



Data List								
NO.	Frequency [MHz]	Reading [dBμV]	AF [dB/m]	Factor [dB]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Polarity
1	4873.125	59.07	31.20	-45.53	44.73	74.00	29.27	Vertical
2	4873.875	53.06	31.20	-45.53	38.73	54.00	15.27	Vertical
3	6350.25	50.05	33.59	-44.47	39.17	74.00	34.83	Vertical
4	7895.25	49.26	36.95	-42.80	43.42	74.00	30.58	Vertical

802.11ax20 Channel 11

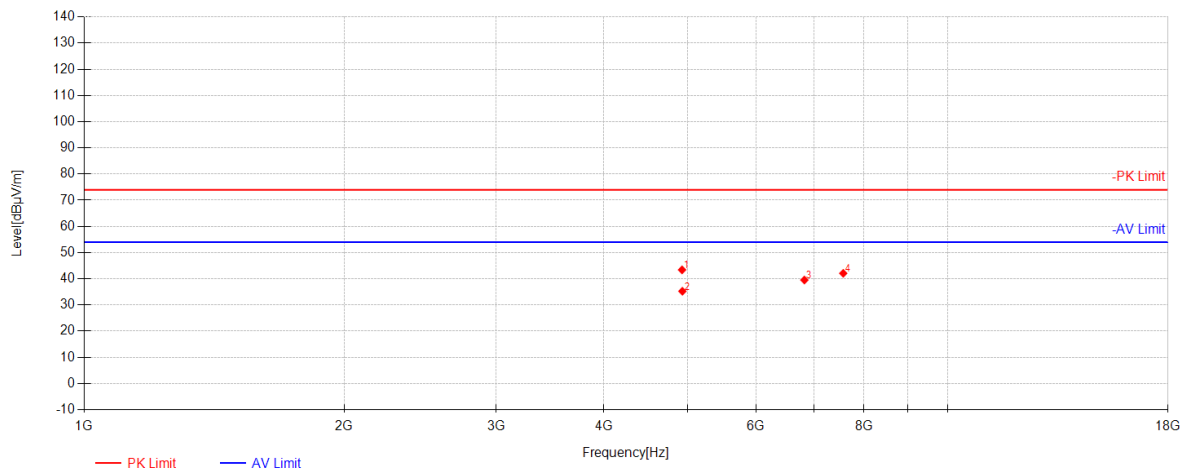
Data List								
NO.	Frequency [MHz]	Reading [dBμV]	AF [dB/m]	Factor [dB]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Polarity
1	4927.5	59.33	31.28	-45.56	45.05	74.00	28.95	Horizontal
2	4928.25	50.60	31.29	-45.56	36.32	54.00	17.68	Horizontal
3	6104.25	50.27	32.75	-44.46	38.56	74.00	35.44	Horizontal
4	6962.25	49.73	34.93	-43.76	40.90	74.00	33.10	Horizontal



Report No.: KSCR241200262601

Page: 96 of 182

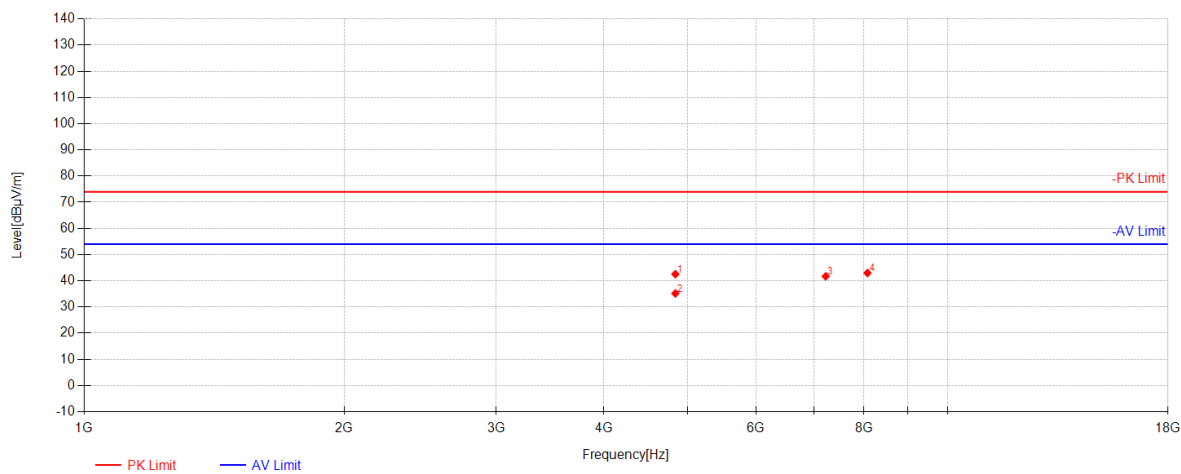
802.11ax20 Channel 11



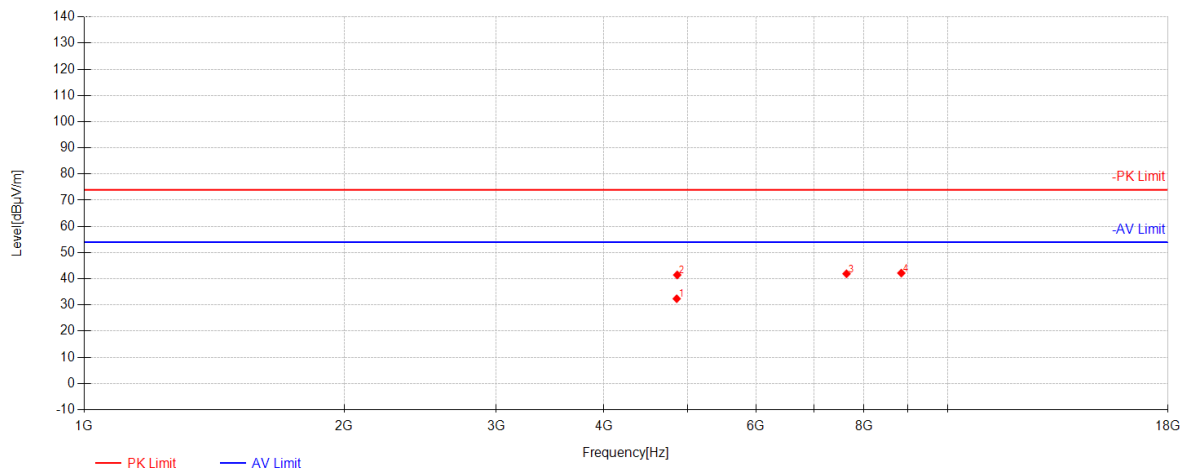
Data List								
NO.	Frequency [MHz]	Reading [dBμV]	AF [dB/m]	Factor [dB]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Polarity
1	4925.25	57.69	31.28	-45.56	43.41	74.00	30.59	Vertical
2	4929.75	49.52	31.29	-45.56	35.24	54.00	18.76	Vertical
3	6825.375	49.00	34.69	-44.15	39.53	74.00	34.47	Vertical
4	7570.5	48.57	36.50	-42.99	42.08	74.00	31.92	Vertical



802.11ax40 Channel 03



Data List								
NO.	Frequency [MHz]	Reading [dBμV]	AF [dB/m]	Factor [dB]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Polarity
1	4838.25	56.92	31.14	-45.54	42.53	74.00	31.47	Horizontal
2	4838.625	49.55	31.14	-45.54	35.16	54.00	18.84	Horizontal
3	7224	49.59	35.63	-43.50	41.72	74.00	32.28	Horizontal
4	8076.375	47.50	37.05	-41.59	42.96	74.00	31.04	Horizontal

802.11ax40 Channel 03

Data List								
NO.	Frequency [MHz]	Reading [dBμV]	AF [dB/m]	Factor [dB]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Polarity
1	4855.875	46.75	31.17	-45.53	32.38	54.00	21.62	Vertical
2	4862.25	55.81	31.18	-45.53	41.46	74.00	32.54	Vertical
3	7636.875	48.32	36.59	-43.00	41.91	74.00	32.09	Vertical
4	8838.75	46.82	36.60	-41.25	42.17	74.00	31.83	Vertical