



REPORT No.: SZ25020263W05

TEST REPORT

APPLICANT : Linkplay Technology Inc.

PRODUCT NAME : WiiM Amp Ultra

MODEL NAME : AMP003

BRAND NAME : WiiM

FCC ID : 2BABF-AMP003

STANDARD(S) : 47 CFR Part 15 Subpart E

RECEIPT DATE : 2025-03-19

TEST DATE : 2025-04-15 to 2025-05-09

ISSUE DATE : 2025-05-19

Edited by:

Zeng Xiaoying
Zeng Xiaoying (Rapporteur)

Approved by:

Shen Junsheng
Shen Junsheng (Supervisor)

NOTE: This document is issued by Shenzhen Morlab Communications Technology Co., Ltd., the test report shall not be reproduced except in full without prior written permission of the company. The test results apply only to the particular sample(s) tested and to the specific tests carried out which is available on request for validation and information confirmed at our website.

MORLAB

Shenzhen Morlab Communications Technology Co., Ltd.
FL.1-3, Building A, FeiYang Science Park, No.8 LongChang Road,
Block67, BaoAn District, ShenZhen, Guangdong Province, P. R. China

Tel: 86-755-36698555

Http://www.morlab.cn

Fax: 86-755-36698525

E-mail: service@morlab.cn





DIRECTORY

1. Summary of Test Results	3
1.1. Testing Applied Standards and Methods	4
1.2. Test Equipment List	5
1.3. Measurement Uncertainty	7
1.4. Testing Laboratory	7
2. General Description	8
2.1. Information of Applicant and Manufacturer	8
2.2. Information of EUT	8
2.3. Channel Center Frequency of EUT	9
2.4. Test Configuration of EUT	10
2.5. Test Conditions	11
2.6. Test Setup Layout Diagram	12
3. Description of Test Items and Results	14
3.1. Conducted Emission	14
3.2. Restricted Frequency Bands	15
3.3. Radiated Emission	17
Annex A Test Data and Result	19

Change History		
Version	Date	Reason for change
1.0	2025-05-19	First edition



Summary of Test Results

No.	Section	Description	Test Date	Test Engineer	Result	Method Determination /Remark
1	15.203	Antenna Requirement	N/A	N/A	N/A _{Note1}	N/A
2	ANSI C63.10	Duty Cycle of the Test Signal	N/A	N/A	N/A _{Note1}	N/A
3	15.407(a)	Conducted Output Power and E.I.R.P.	N/A	N/A	N/A _{Note1}	N/A
4	15.407(a)	Occupied Bandwidth and Emission Bandwidth	N/A	N/A	N/A _{Note1}	N/A
5	15.407(a)	Power Spectral Density	N/A	N/A	N/A _{Note1}	N/A
6	15.407(b)	Emission Mask	N/A	N/A	N/A _{Note1}	N/A
7	15.407(d)	Contention Based Protocol	N/A	N/A	N/A _{Note1}	N/A
8	15.407(g)	Frequency Stability	N/A	N/A	N/A _{Note1}	N/A
9	15.207	Conducted Emission	May 09, 2025	Fan Shengquan	PASS	No deviation
10	15.407(b)	Restricted Frequency Bands	Apr. 11, 2025	Gao Jianrou	PASS	No deviation
11	15.407(b)	Radiated Emission	Apr. 23, 2025	Gao Jianrou	PASS	No deviation

Note 1: The test results of all conducted test items please refer to the module IC test report (Report No.: SZ24040154W05), which issued on Jul. 26, 2024.

Note 2: Additions to, deviation, or exclusions from the method shall be judged in the “method determination” column of add, deviate or exclude from the specific method shall be explained in the “Remark” of the above table.

Note 3: When the test result is a critical value, we will use the measurement uncertainty give the judgment result based on the 95% confidence intervals.



Testing Applied Standards and Methods

According to the specifications of the manufacturer, the EUT must comply with the requirements of the following standards:

No.	Standards or Methods	Description
1	47 CFR Part 15 Subpart E	FCC Technical Requirements
2	ANSI C63.10	Procedures for Compliance Testing of Unlicensed Wireless Devices
3	KDB 789033 D02	Guidelines for compliance testing of U-NII devices
4	KDB 987594 D01	General guideline for U-NII 5,6,7,8 bands under Part 15 Subpart E
5	KDB 987594 D02	Guidelines for compliance testing of U-NII 6GHz devices
6	KDB 987594 D03	Questions and Answers for U-NII 5,6,7,8 bands under Part 15 Subpart E
7	KDB 662911 D01	Emissions Testing of Transmitters with Multiple Outputs in the Same Band



Test Equipment List

1.2.1 Conducted Emission Test Equipment

Equipment	Serial No.	Type	Manufacturer	Cal. Date	Due Date
Receiver	MY56400093	N9038A	KEYSIGHT	2025.01.06	2026.01.05
LISN	8127449	NSLK 8127	Schwarzbeck	2025.01.09	2026.01.08
Pulse Limiter (10dB)	VTSD 9561 F-B #206	VTSD 9561-F	Schwarzbeck	2024.05.30	2025.05.29
RF Coaxial Cable (DC-100MHz)	BNC	MRE04	Qualwave	2024.07.02	2025.07.01

1.2.2 List of Software Used

Description	Manufacturer	Software Version
JS32-RE	Tonscend	5.0.0
TS+ -[JS32-CE]	Tonscend	2.5.0.0

**1.2.3 Radiated Test Equipment**

Equipment	Serial No.	Type	Manufacturer	Cal. Date	Due Date
Signal Analyzer	MY56060145	N9020A	Agilent	2024.05.30	2025.05.29
Test Antenna - Bi-Log	9163-519	VULB 9163	Schwarzbeck	2024.06.22	2025.06.21
Test Antenna - Loop	1519-022	FMZB1519	Schwarzbeck	2024.06.03	2025.06.02
Test Antenna – Horn	01774	BBHA 9120D	Schwarzbeck	2024.06.22	2025.06.21
Test Antenna – Horn	BBHA9170 #773	BBHA9170	Schwarzbeck	2024.06.22	2025.06.21
Preamplifier (10MHz-6GHz)	46732	S10M100L38 02	LUCIX CORP.	2024.05.30	2025.05.29
Preamplifier (2GHz-18GHz)	61171/61172	S020180L32 03	LUCIX CORP.	2024.05.30	2025.05.29
Preamplifier (18GHz-40GHz)	DS77209	DCLNA0118-40C-S	Decentest	2024.05.30	2025.05.29
RF Coaxial Cable (DC-18GHz)	MRE001	PE330	Pasternack	2024.05.30	2025.05.29
RF Coaxial Cable (DC-18GHz)	MRE002	CLU18	Pasternack	2024.05.30	2025.05.29
RF Coaxial Cable (DC-18GHz)	MRE003	CLU18	Pasternack	2024.05.30	2025.05.29
RF Coaxial Cable (DC-40GHz)	22290045	QA360-40-KK-0.5	Qualwave	2024.07.03	2025.07.02
RF Coaxial Cable (DC-40GHz)	22290046	QA360-40-KKF-2	Qualwave	2024.07.03	2025.07.02
RF Coaxial Cable (DC-18GHz)	22120181	QA500-18-NN-5	Qualwave	2024.07.03	2025.07.02
Anechoic Chamber	N/A	9m*6m*6m	CRT	2025.04.19	2028.04.18
Anechoic Chamber	N/A	9m*6m*6m	CRT	2022.11.30	2025.11.29



Measurement Uncertainty

Test Items	Uncertainty	Remark
Restricted Frequency Bands	$\pm 5\%$	Confidence levels of 95%
Radiated Emission	$\pm 2.95\text{dB}$	Confidence levels of 95%
Conducted Emission	$\pm 2.44\text{dB}$	Confidence levels of 95%

Testing Laboratory

Laboratory Name	Shenzhen Morlab Communications Technology Co., Ltd.
Laboratory Address	FL.3, Building A, FeiYang Science Park, No.8 LongChang Road, Block 67, BaoAn District, ShenZhen, GuangDong Province, P. R. China
Telephone	+86 755 36698555
Facsimile	+86 755 36698525
FCC Designation Number	CN1192
FCC Test Firm Registration Number	226174



General Description

Information of Applicant and Manufacturer

Applicant	Linkplay Technology Inc.
Applicant Address	8000 Jarvis Avenue Suite #130, Newark, CA 94560
Manufacturer	Linkplay Technology Inc.
Manufacturer Address	8000 Jarvis Avenue Suite #130, Newark, CA 94560

Information of EUT

Product Name	WiiM Amp Ultra	
Sample No.	4#, 25#	
Hardware Version	A98D V02+Main Board V02	
Software Version	Linkplay.5.2.708867	
Modulation Technology	OFDMA	
Modulation Mode	802.11ax (HEW20), 802.11ax (HEW40), 802.11ax (HEW80)	
U-NII Band	☒ U-NII 5 (5925-6425MHz), ☒ U-NII 6 (6425-6525MHz), ☒ U-NII 7 (6525-6875MHz), ☒ U-NII 8 (6875-7125MHz).	
Operating Frequency Range	U-NII 5 (5955-6415MHz), U-NII 6 (6435-6515MHz), U-NII 7 (6535-6855MHz), U-NII 8 (6875-7115MHz).	
Equipment Class	☒ Low Power Device	☐ 6ID ☐ 6PP ☒ 6XD ☐ 6CD
	☐ Standard Power Device	☐ 6SD ☐ 6FX ☐ 6FC
Antenna Type	PIFA Antenna	
Antenna Gain (dBi)	ANT1: 3.51dBi; ANT2: 3.51dBi	

Note 1: The test results of all conducted test items please refer to the module FCC test report (Report No.: SZ24040154W05), which issued on Jul. 26, 2024. We only recorded the radiated test result in this report.

Note 2: The EUT has two antennas that cannot transmit simultaneously. Both of the two antennas were evaluated separately, only the worst test result (ANT2) were recorded in the test report.

Note 3: The dedicated software was used to control the EUT continuous transmission.

Note 4: For more detailed description, please refer to Specification or User's Manual supplied by the applicant and/or manufacturer.

Channel Center Frequency of EUT

Channel center frequency of different bandwidths

Channel Center Frequency = 5950MHz + 5 x n _{ch} ; 1 ≤ n _{ch} ≤ 233	
Bandwidth	Value of n _{ch}
20MHz	1 + 4(n-1); 1 ≤ n ≤ 59
40MHz	3 + 8(n-1); 1 ≤ n ≤ 29
80MHz	7 + 16(n-1); 1 ≤ n ≤ 14
160MHz	15 + 32(n-1); 1 ≤ n ≤ 7

Center Frequency of Low Middle and High Channel in each U-NII band

Bandwidth	LCH/MCH/HCH	n/n _{ch} /Frequency@MHz			
		U-NII 5	U-NII 6	U-NII 7	U-NII 8
20MHz	LCH	1/1/5955	25/97/6435	30/117/6535	47/185/6875
	MCH	12/45/6175	27/105/6475	38/149/6695	53/209/6995
	HCH	24/93/6415	29/113/6515	46/181/6855	59/233/7115
40MHz	LCH	1/3/5965	13/99/6445	16/123/6565	24/187/6885
	MCH	7/51/6205	-/-/-	19/147/6685	26/203/6965
	HCH	12/91/6405	14/107/6485	23/179/6845	29/227/7085
80MHz	LCH	1/7/5985	-/-/-	9/135/6625	13/199/6945
	MCH	4/55/6225	7/103/6465	10/151/6705	-/-/-
	HCH	6/87/6385	-/-/-	11/167/6785	14/215/7025



Test Configuration of EUT

Modulation Type and Data Rate of EUT

Mode	Bandwidth (MHz)	Modulation Technology	Modulation Type	Data Rate
802.11ax	20/40/80 (HEW20/40/80)	OFDMA	BPSK	MSC0~MCS11
			QPSK	
			16QAM	
			64QAM	
			256QAM	
			1024QAM	

Evaluation of The Worst Case

Investigation has been done on all the possible configurations for searching the worst cases. The following table is a list of the test modes shown in this test report.

Test Items	Mode
Conducted Emission	Normal Use
Restricted Frequency Bands	ax80 in U-NII 5&8
Radiated Emission	ax20

Note 1: The worst-case mode in all data rates has been determined during the pre-scan, only the test data of the worst-case were recorded in this report.



Operation and Transmitter Power Level Setting

The EUT was tested while in a continues transmitter/receiver mode under the control of tool which is provided by manufacturer, all the items of transmitter were tested under the power setting as below:

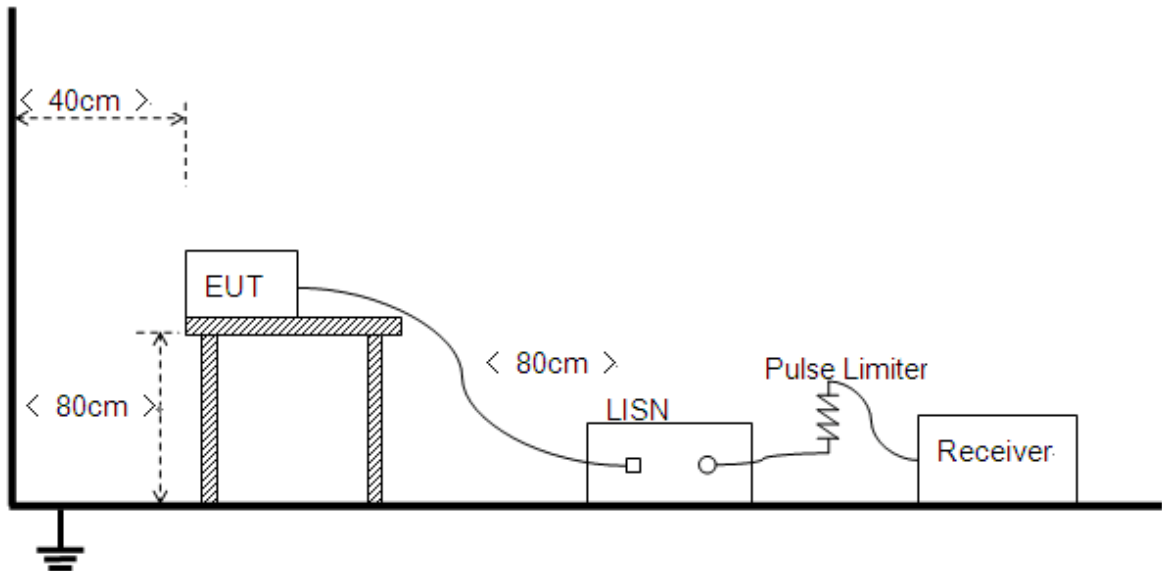
Modulation Technology	Power Setting (U-NII 5/6/7/8)	
	ANT 1	ANT 2
OFDMA (802.11ax (HE20))	9/9/8/6	8/8/8/5
OFDMA (802.11ax (HE40))	10/10/10/6	9/9/9/7
OFDMA (802.11ax (HE80))	13/13/13/12	13/13/13/12

Test Conditions

Temperature (°C)	15-35
Relative Humidity (%)	30-60
Atmospheric Pressure (kPa)	86-106

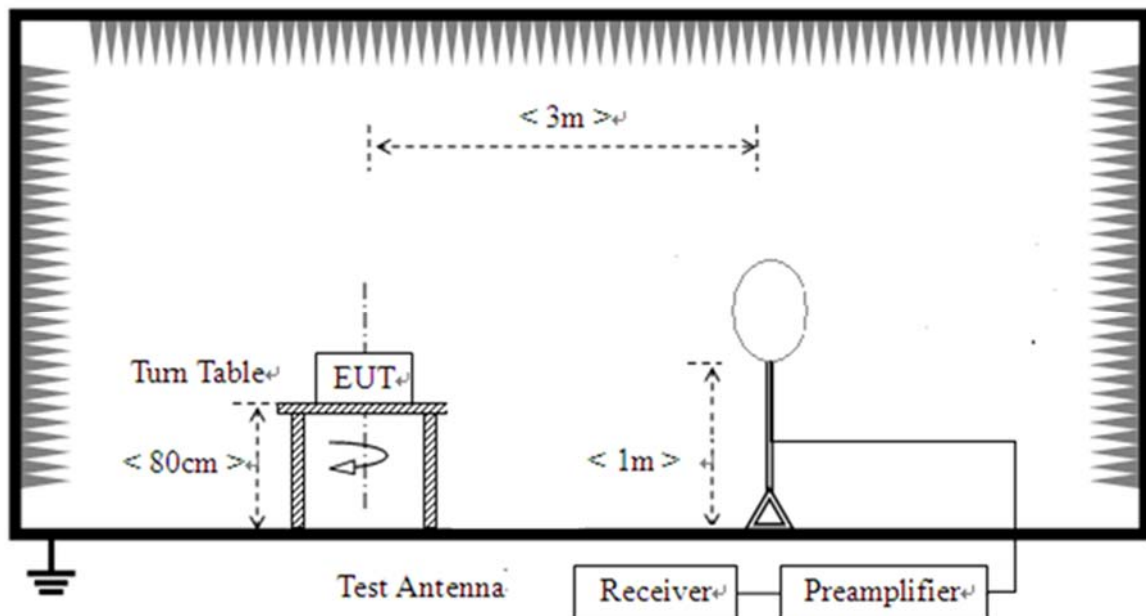
Test Setup Layout Diagram

Conducted Emission Measurement

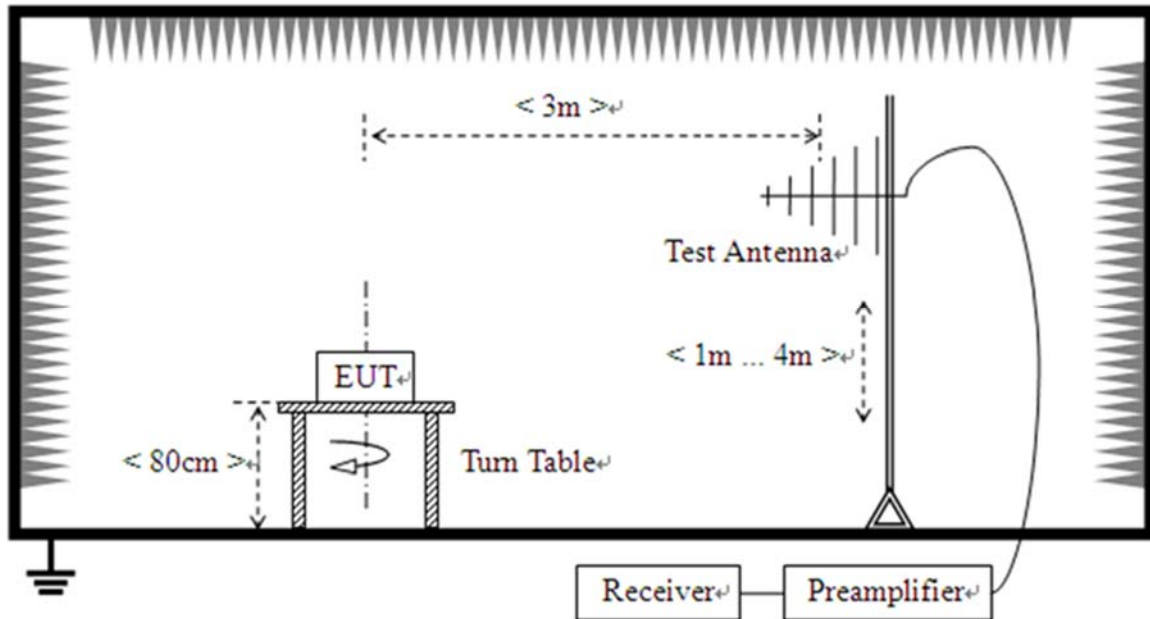


Radiation Measurement

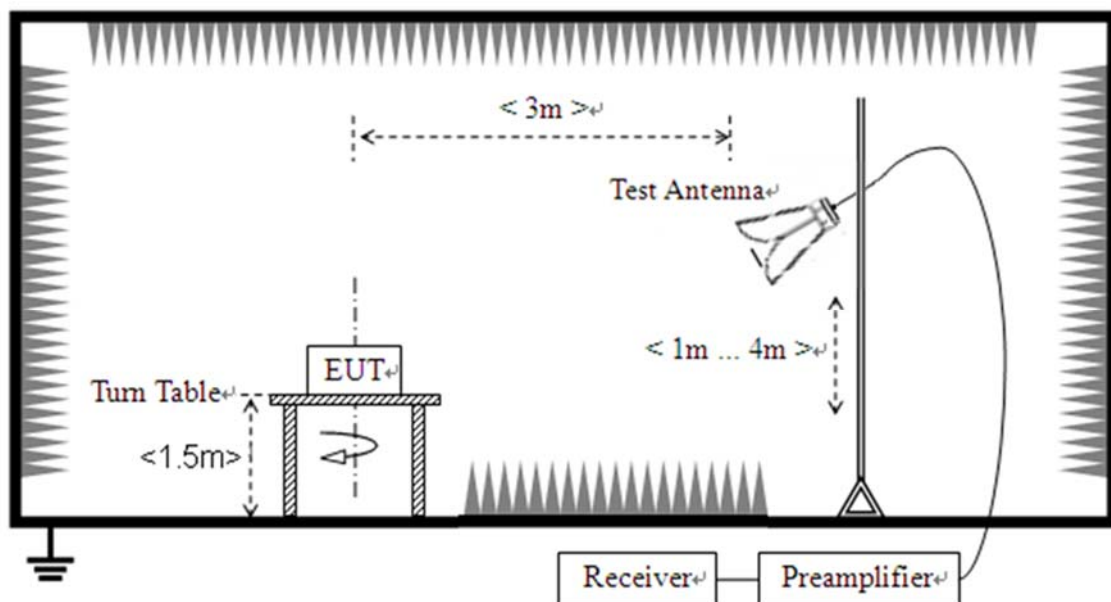
- 1) For radiated emissions from 9kHz to 30MHz



2) For radiated emissions from 30MHz to1GHz



3) For radiated emissions above 1GHz



Description of Test Items and Results

Conducted Emission

Requirement

According to FCC section 15.207, for an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency within the band 150kHz to 30MHz shall not exceed the limits in the following table, as measured using a 50 μ H/50 Ω line impedance stabilization network (LISN).

Frequency Range (MHz)	Conducted Limit (dB μ V)	
	Quai-peak	Average
0.15 - 0.50	66 to 56	56 to 46
0.50 - 5	56	46
5 - 30	60	50

Note:

- (a) The lower limit shall apply at the band edges.
- (b) The limit decreases linearly with the logarithm of the frequency in the range 0.15 - 0.50MHz.

Test Procedures

The Table-top EUT was placed upon a non-metallic table 0.8m above the horizontal metal reference ground plane. EUT was connected to LISN and LISN was connected to reference Ground Plane. EUT was 80cm from LISN. The set-up and test methods were according to ANSI C63.10.

Test Setup Layout

Refer to chapter 2.6.2 in this report.

Test Result

Refer to Annex A.1 in this report.

Restricted Frequency Bands

Requirement

Radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), should comply with the radiated emission limits specified in Section 15.209(a) (below table).

Frequency (MHz)	Field Strength (μV/m)	Measurement Distance (m)
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

The following formula is used to convert the equipment isotropic radiated power(e.i.r.p.) to field strength (dBμV/m):

$$E = 1000000 \times \sqrt{30P} / 3 \mu\text{V/m}$$

where P is the EIRP in Watts

Therefore: -27 dBm/MHz = 68.23 dBuV/m

Unwanted emissions below 1 GHz must comply with the general field strength limits set forth in § 15.209. According to FCC section 15.209 (a), except as provided elsewhere in this subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the above table.

For Above 1000MHz, the emission limit in above is based on measurement instrumentation employing an average detector, measurement using instrumentation with a peak detector function, corresponding to 20dB above the maximum permitted average limit.

Test Procedures

The EUT is located in a 3m Semi-Anechoic Chamber; the antenna factors, cable loss and so on of the site as factors are calculated to correct the reading.



KDB 789033 Section H) 3)5)6(d)) was used in order to prove compliance

For the Test Antenna:

Test Antenna is 3m away from the EUT. Test Antenna height is varied from 1m to 4m above the ground to determine the maximum value of the field strength.

Test Setup Layout

Refer to chapter 2.6.3 in this report.

Test Result

Refer to Annex A.2 in this report.

Radiated Emission

Requirement

For transmitters operating within the 5.925–7.125 GHz band: Any emissions outside of the 5.925–7.125 GHz band must not exceed an e.i.r.p. of –27 dBm/MHz.

The following formula is used to convert the equipment isotropic radiated power(e.i.r.p.) to field strength (dBμV/m);

$$E = 1000000 \times \sqrt{30P} / 3 \mu\text{V/m}$$

where P is the EIRP in Watts

Therefore: -27 dBm/MHz = 68.23 dBuV/m

Unwanted emissions below 1 GHz must comply with the general field strength limits set forth in § 15.209. According to FCC section 15.209 (a), except as provided elsewhere in this subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

Frequency (MHz)	Field Strength (μV/m)	Measurement Distance (m)
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

For Above 1000MHz, the emission limit in this paragraph is based on measurement instrumentation employing an average detector, measurement using instrumentation with a peak detector function, corresponding to 20dB above the maximum permitted average limit.

Test Procedures

The EUT is placed on a non-conducting table 80 cm above the ground plane for measurement below 1GHz; 1.5 m above the ground plane for measurement above 1GHz.The antenna to EUT



distance is 3meters. The EUT is configured in accordance with ANSI C63.10. The EUT is set to transmit in a continuous mode.

For measurements below 30MHz, the emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9kHz-90 kHz, 110kHz-490 kHz. Radiated emission limits in these two bands are based on measurements employing an average detector.

For measurements below 1GHz the resolution bandwidth is set to 100kHz for peak detection measurements or 120kHz for quasi-peak detection measurements. Peak detection is used unless otherwise noted as quasi-peak.

For measurements above 1GHz the resolution bandwidth is set to 1MHz, the video band width is set to 3MHz for peak measurements and as applicable for average measurements.

The EUT is rotated through 360 degrees to maximize emissions received. The antenna is scanned from 1 to 4 meters above the ground plane to further maximize the emission. Measurements are made with the antenna polarized in both the vertical and the horizontal positions. For measurements above 1 GHz, keeping the measurement antenna aimed at the source of emissions at each frequency of significant emissions, with polarization oriented for maximum response.

Test Setup Layout

Refer to chapter 2.6.3 in this report.

Test Result

Refer to Annex A.3 in this report.



Annex A Test Data and Result

A.1. Conducted Emission

The maximum conducted interference is searched using Peak (PK), if the emission levels more than the AV and QP limits, and that have narrow margins from the AV and QP limits will be re-measured with AV and QP detectors. Tests for both L phase and N phase lines of the power mains connected to the EUT are performed. Set RBW=9kHz, VBW=30kHz. Refer to recorded points and plots below.

Note: Both of the test voltage AC 120V/60Hz and AC 230V/50Hz were considered and tested respectively, only the results of the worst case AC 120V/60Hz were recorded in this report.

A. Test Setup:

Test Mode: EUT+TV+HDMI cable+Load+Fiber box+Mobile phone+Audio+U disk+WIFI TX

Test voltage: AC 120V/60Hz

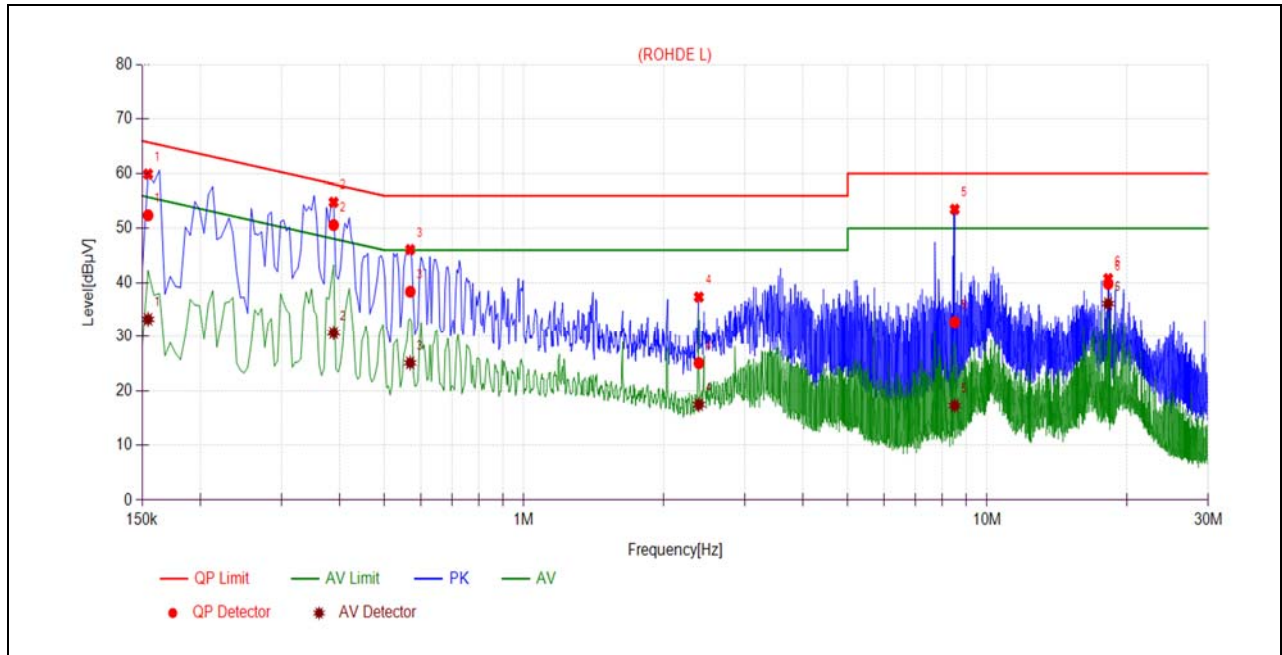
The measurement results are obtained as below:

$$E [\text{dB}\mu\text{V}] = U_R + L_{\text{Cable loss}} [\text{dB}] + A_{\text{Factor}}$$

U_R : Receiver Reading

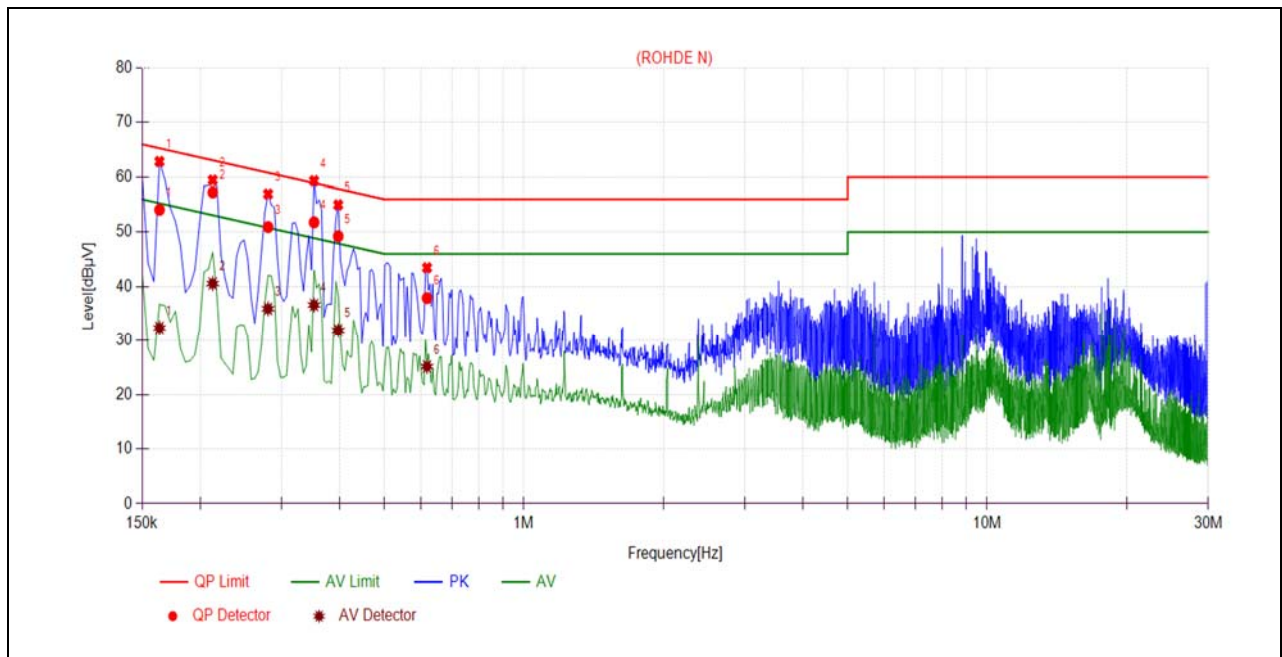
A_{Factor} : Voltage division factor of LISN

B. Test Plot:



(L Phase)

No.	Fre. (MHz)	Emission Level (dBμV)		Limit (dBμV)		Power-line	Verdict
		Quai-peak	Average	Quai-peak	Average		
1	0.1545	52.42	33.26	65.75	55.75	Line	PASS
2	0.3885	50.62	30.68	58.10	48.10		PASS
3	0.5685	38.35	25.09	56.00	46.00		PASS
4	2.3865	25.04	17.43	56.00	46.00		PASS
5	8.5112	32.73	17.23	60.00	50.00		PASS
6	18.2435	39.80	36.17	60.00	50.00		PASS



(N Phase)

No.	Fre. (MHz)	Emission Level (dBμV)		Limit (dBμV)		Power-line	Verdict
		Quai-peak	Average	Quai-peak	Average		
1	0.1635	54.09	32.39	65.28	55.28	Neutral	PASS
2	0.2130	57.28	40.57	63.09	53.09		PASS
3	0.2805	50.94	35.92	60.80	50.80		PASS
4	0.3525	51.80	36.61	58.90	48.90		PASS
5	0.3975	49.25	31.93	57.90	47.90		PASS
6	0.6180	37.90	25.14	56.00	46.00		PASS

A.2. Restricted Frequency Bands

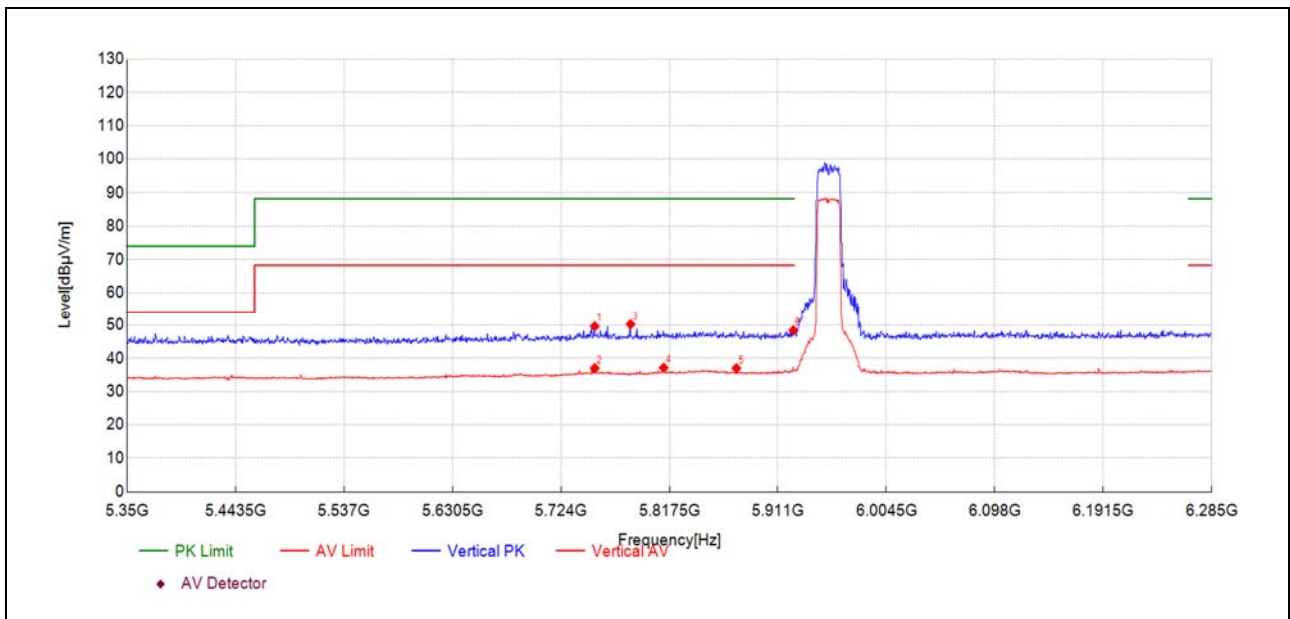
Note 1: Restricted Frequency Bands were performed when antenna was at vertical and horizontal polarity, and only the worse test condition (Horizontal) was recorded in this test report.

Note 2: Restricted Frequency Bands were performed in X, Y, Z axis direction, and only the worst axis (X axis) test condition was recorded in this test report.

Note 3: All test modes and bandwidth were considered and evaluated respectively by performing full test, only the worst data were recorded.

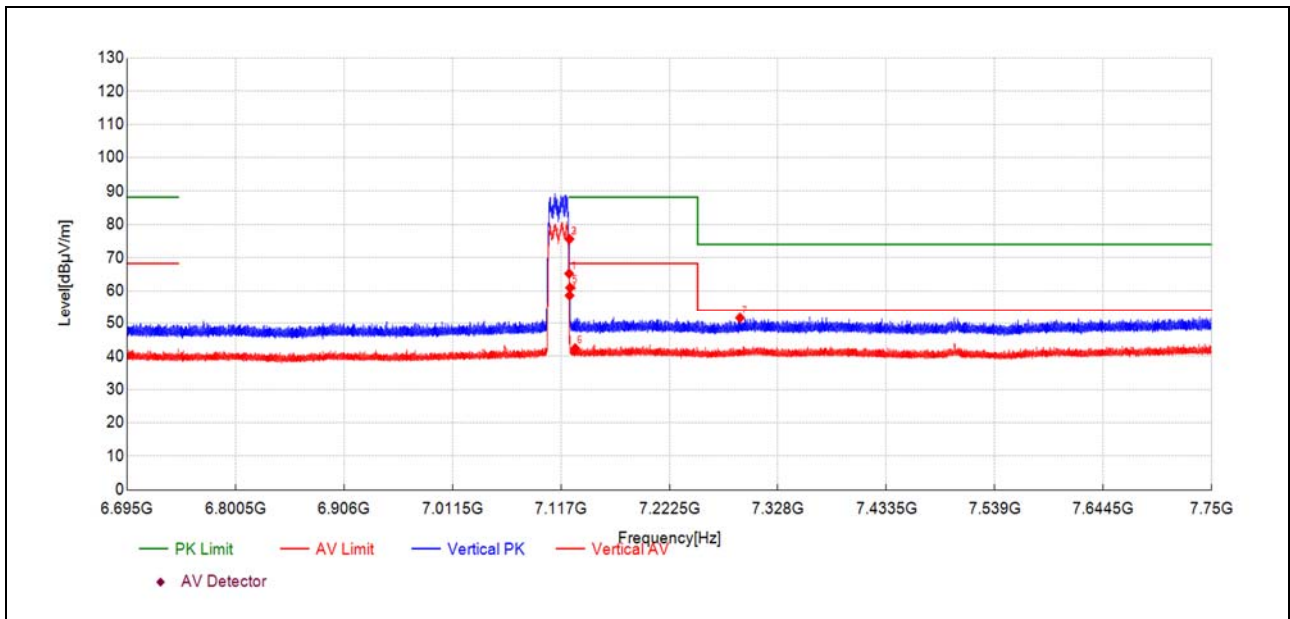
802.11ax (HEW20) Mode

Plot for Channel 1



Fre. (MHz)	Reading [dBμV]	Level [dBμV/m]	Factor [dB/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector	Verdict
5753.19	40.0	49.64	9.640	88.23	38.59	150	191	PK	PASS
5753.19	27.4	37.00	9.640	68.23	31.23	150	191	AV	PASS
5784.06	40.6	50.25	9.680	88.23	37.98	150	212	PK	PASS
5812.59	27.2	37.13	9.890	68.23	31.10	150	343	AV	PASS
5875.27	26.9	36.99	10.090	68.23	31.24	150	9	AV	PASS
5924.38	38.5	48.43	9.920	88.23	39.80	150	283	PK	PASS

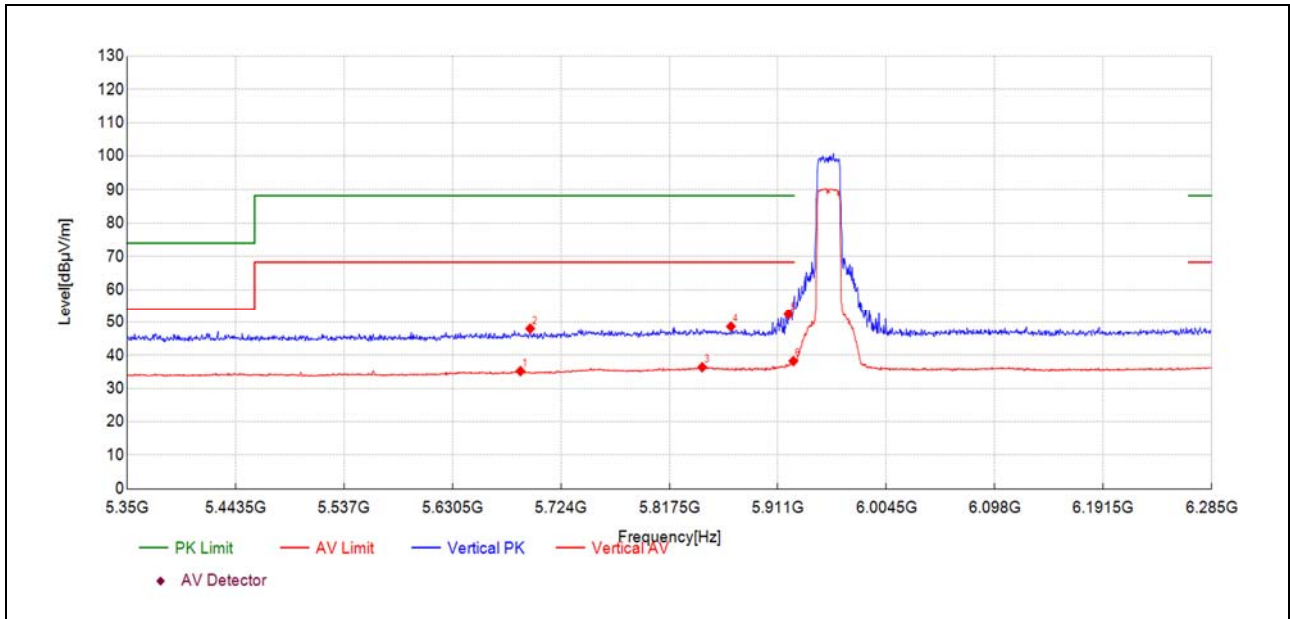
Plot for Channel 233



Fre. (MHz)	Reading [dBμV]	Level [dBμV/m]	Factor [dB/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector	Verdict
7125.02	52.1	65.19	13.110	68.23	3.04	150	357	AV	PASS
7125.28	62.5	75.61	13.110	88.23	12.62	150	246	PK	PASS
7125.28	62.5	75.61	13.110	88.23	12.62	150	246	PK	PASS
7125.41	45.5	58.57	13.110	68.23	9.66	150	357	AV	PASS
7125.89	47.8	60.92	13.120	88.23	27.31	150	81	PK	PASS
7130.98	29.2	42.34	13.160	68.23	25.89	150	6	AV	PASS
7291.23	38.1	51.56	13.490	74.00	22.44	150	221	PK	PASS

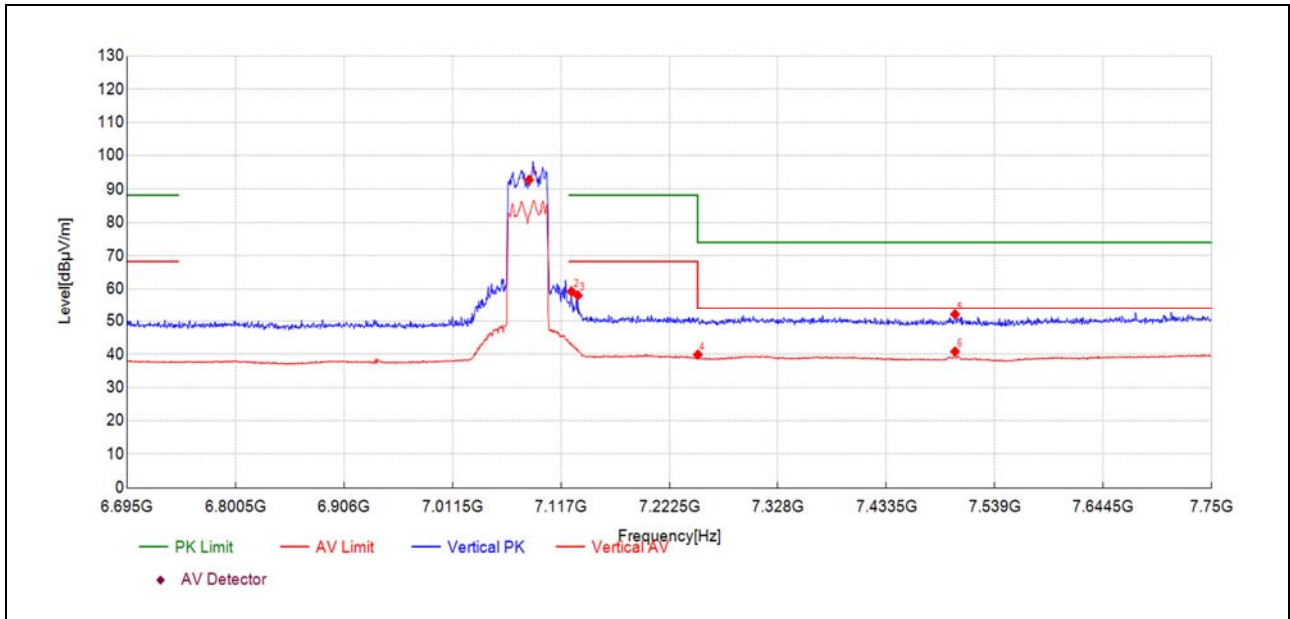
**802.11ax (HEW40) Mode**

Plot for Channel 3



Fre. (MHz)	Reading [dBμV]	Level [dBμV/m]	Factor [dB/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector	Verdict
5689.11	26.3	35.22	8.910	68.23	33.01	150	357	AV	PASS
5697.53	39.1	48.00	8.880	88.23	40.23	150	219	PK	PASS
5845.80	26.0	36.38	10.390	68.23	31.85	150	291	AV	PASS
5870.59	38.5	48.63	10.150	88.23	39.60	150	0	PK	PASS
5920.17	42.5	52.41	9.880	88.23	35.82	150	86	PK	PASS
5924.38	28.3	38.24	9.920	68.23	29.99	150	209	AV	PASS

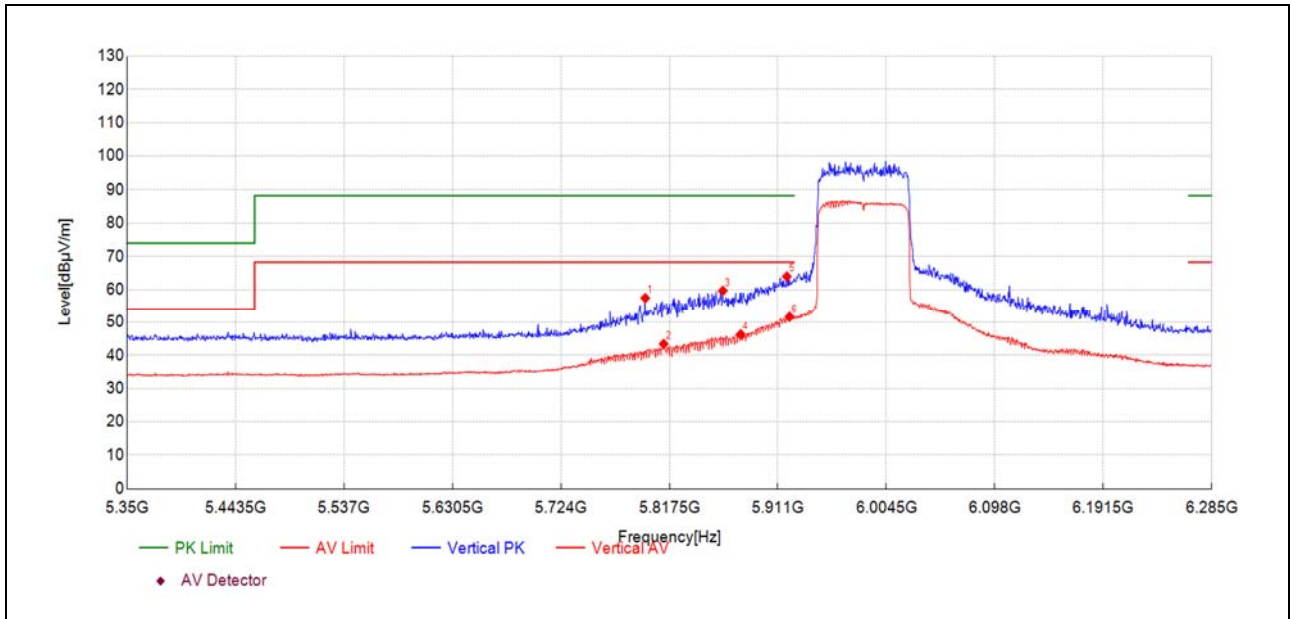
Plot for Channel 227



Fre. (MHz)	Reading [dBμV]	Level [dBμV/m]	Factor [dB/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector	Verdict
7086.07	80.0	92.87	12.850	-	-	150	350	PK	NA
7127.24	46.1	59.19	13.130	88.23	29.04	150	354	PK	PASS
7133.57	44.8	58.00	13.180	88.23	30.23	150	350	PK	PASS
7250.21	26.8	39.88	13.120	54.00	14.12	150	4	AV	PASS
7500.37	39.0	52.02	12.980	74.00	21.98	150	354	PK	PASS
7500.37	27.8	40.81	12.980	54.00	13.19	150	142	AV	PASS

**802.11ax (HEW80) Mode**

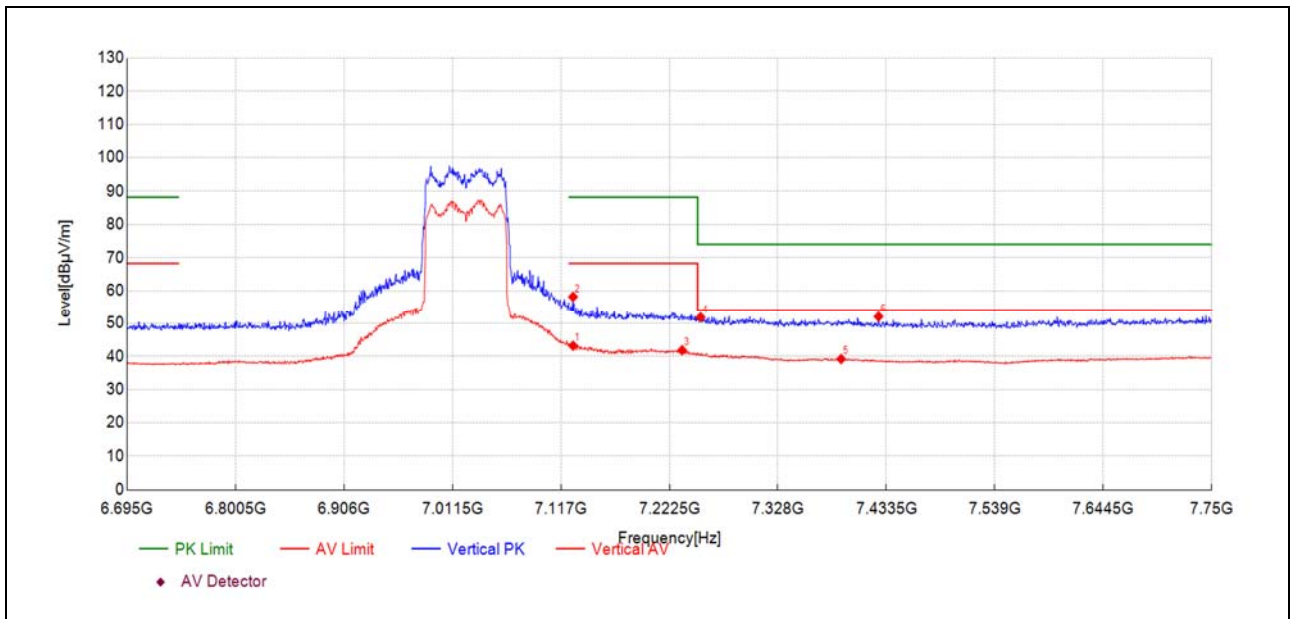
Plot for Channel 7



Fre. (MHz)	Reading [dBμV]	Level [dBμV/m]	Factor [dB/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector	Verdict
5796.69	47.7	57.43	9.700	88.23	30.80	150	207	PK	PASS
5812.59	33.5	43.38	9.890	68.23	24.85	150	115	AV	PASS
5863.57	49.4	59.65	10.260	88.23	28.58	150	207	PK	PASS
5879.01	36.3	46.31	10.030	68.23	21.92	150	207	AV	PASS
5918.76	54.1	63.95	9.870	88.23	24.28	150	207	PK	PASS
5921.10	41.7	51.61	9.890	68.23	16.62	150	207	AV	PASS



Plot for Channel 215



Fre. (MHz)	Reading [dBμV]	Level [dBμV/m]	Factor [dB/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector	Verdict
7128.82	30.0	43.18	13.140	68.23	25.05	150	357	AV	PASS
7128.82	45.0	58.13	13.140	88.23	30.10	150	351	PK	PASS
7234.90	28.5	41.82	13.280	68.23	26.41	150	197	AV	PASS
7252.85	38.7	51.80	13.140	74.00	22.20	150	96	PK	PASS
7389.54	25.9	39.18	13.240	54.00	14.82	150	189	AV	PASS
7425.95	39.0	51.99	12.950	74.00	22.01	150	289	PK	PASS



A.3. Radiated Emission

According to ANSI C63.10, because of peak detection will yield amplitudes equal to or greater than amplitudes measured with the quasi-peak (or average) detector, the measurement data from a spectrum analyzer peak detector will represent the worst-case results, if the peak measured value complies with the quasi-peak (or average) limit, it is unnecessary to perform a quasi-peak measurement (or average).

The measurement results are obtained as below:

$$E [\text{dB}\mu\text{V/m}] = U_R + A_T + A_{\text{Factor}} [\text{dB}]; A_T = L_{\text{Cable loss}} [\text{dB}] - G_{\text{preamp}} [\text{dB}]$$

A_T : Total correction Factor except Antenna

U_R : Receiver Reading

G_{preamp} : Preamplifier Gain

A_{Factor} : Antenna Factor at 3m

During the test, the total correction Factor A_T and A_{Factor} were built in test software.

Note1: All radiated emission tests were performed in X, Y, Z axis direction. And only the worst axis test condition was recorded in this test report.

Note2: For the frequency, which started from 9kHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit was not recorded.

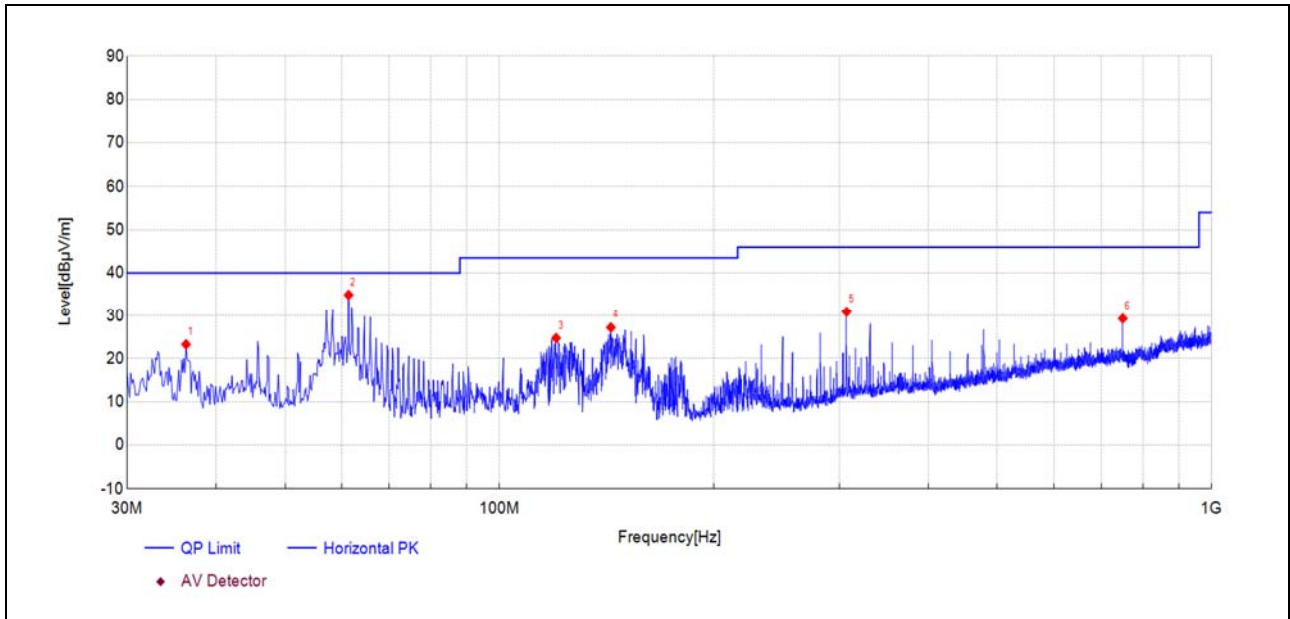
Note3: For the frequency, which started from 18GHz to 40GHz, was pre-scanned and the result which was 20dB lower than the limit was not recorded.

Note 4: All test modes, bandwidth and channel were considered and evaluated respectively by performing full test, only the worst data were recorded.



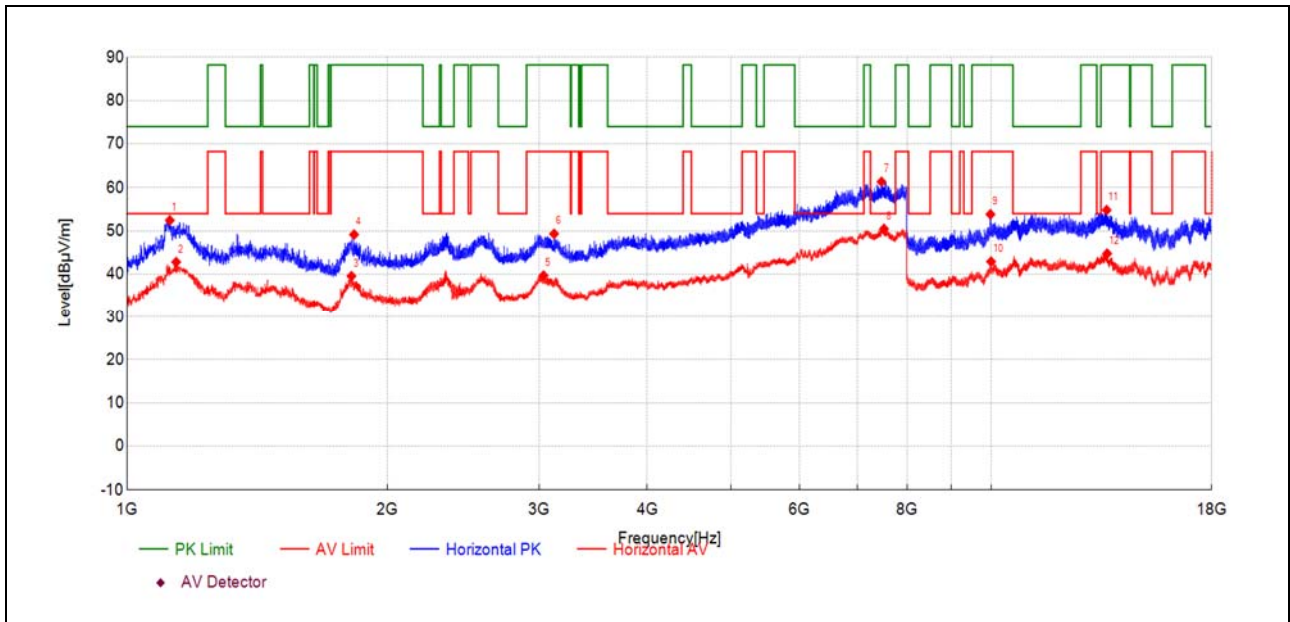
802.11ax (HEW20) Mode

Plot for Channel 45



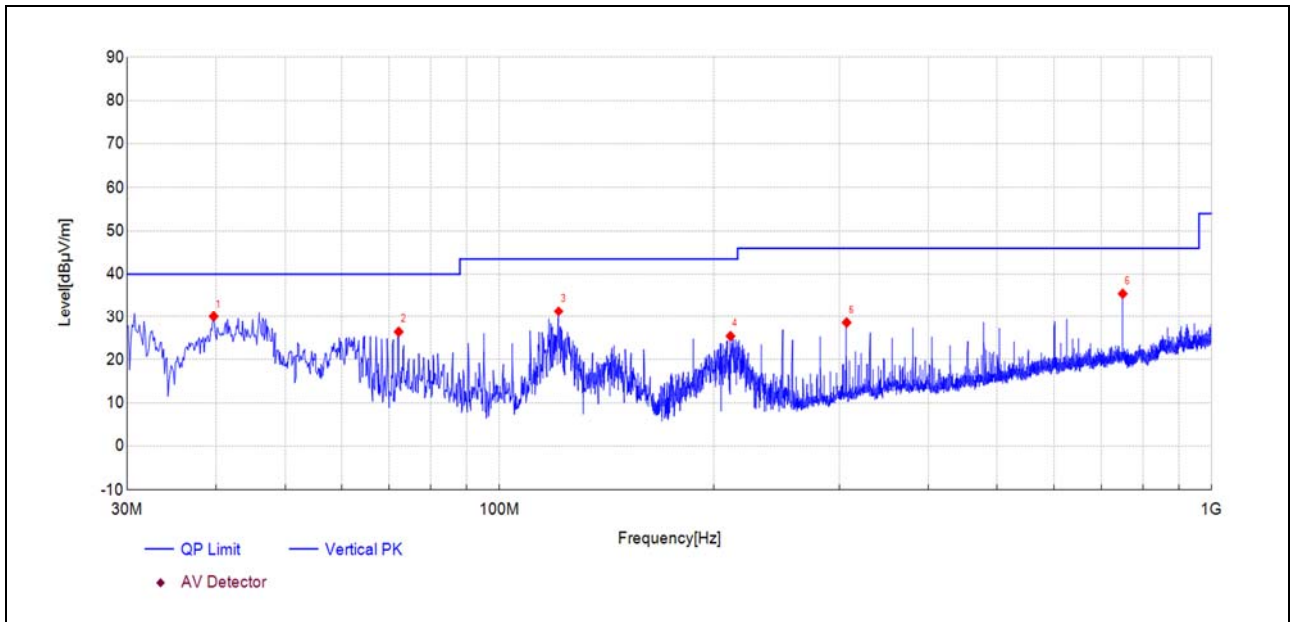
(Antenna Horizontal, 30MHz to 1GHz)

Fre. (MHz)	Reading [dBμV]	Level [dBμV/m]	Factor [dB/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector	Verdict
36.31	52.8	23.28	-29.500	40.00	16.72	150	128	PK	PASS
61.41	63.6	34.89	-28.710	40.00	5.11	150	0	PK	PASS
120.10	55.3	24.75	-30.510	43.50	18.75	150	99	PK	PASS
143.38	58.7	27.22	-31.460	43.50	16.28	150	28	PK	PASS
307.21	56.2	30.92	-25.240	46.00	15.08	150	110	PK	PASS
749.95	44.2	29.31	-14.840	46.00	16.69	150	0	PK	PASS



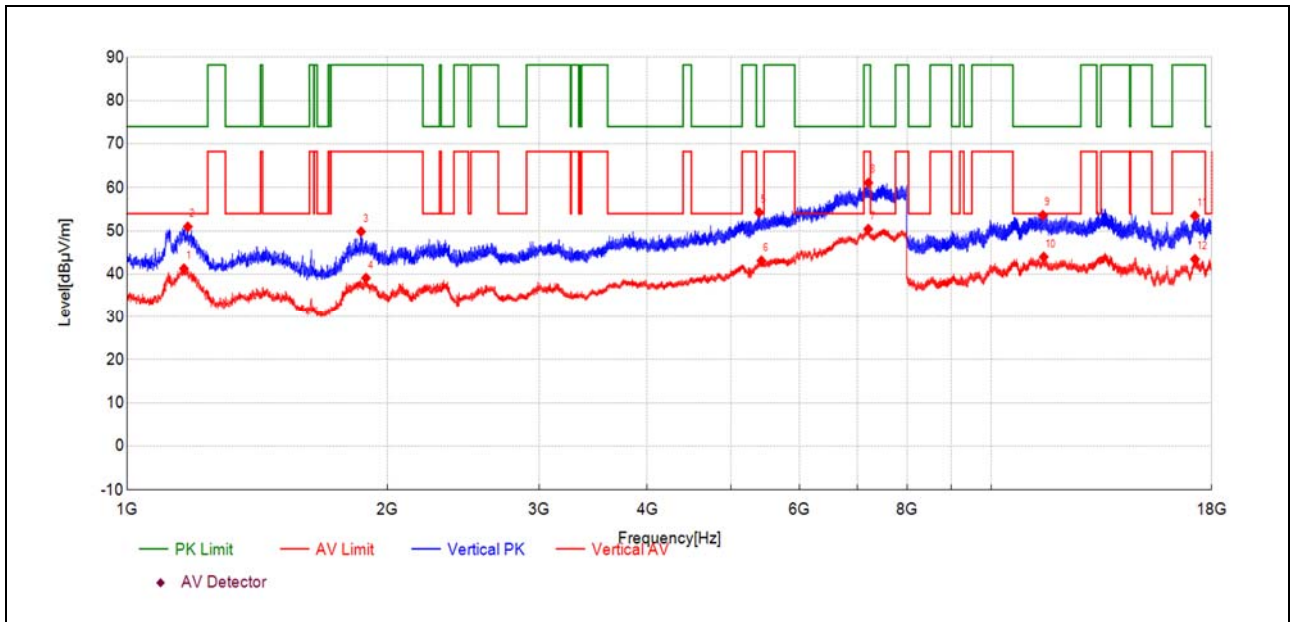
(Antenna Horizontal, 1GHz to 18GHz)

Fre. (MHz)	Reading [dBμV]	Level [dBμV/m]	Factor [dB/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector	Verdict
1120.87	54.4	52.45	-1.990	74.00	21.55	150	79	PK	PASS
1140.01	44.6	42.80	-1.840	54.00	11.20	150	68	AV	PASS
1818.59	38.1	39.55	1.470	68.23	28.68	150	122	AV	PASS
1831.19	47.6	49.16	1.560	88.23	39.07	150	122	PK	PASS
3034.34	31.2	39.68	8.450	68.23	28.55	150	360	AV	PASS
3120.67	40.5	49.33	8.840	88.23	38.90	150	14	PK	PASS
7467.50	35.2	61.36	26.180	74.00	12.64	150	132	PK	PASS
7515.57	24.2	50.47	26.240	54.00	3.53	150	58	AV	PASS
9982.00	43.8	53.84	10.060	88.23	34.39	150	7	PK	PASS
9998.19	32.6	42.91	10.350	68.23	25.32	150	304	AV	PASS
13605.03	37.8	54.81	17.060	88.23	33.42	150	32	PK	PASS
13621.22	27.9	44.76	16.910	68.23	23.47	150	32	AV	PASS



(Antenna Vertical, 30MHz to 1GHz)

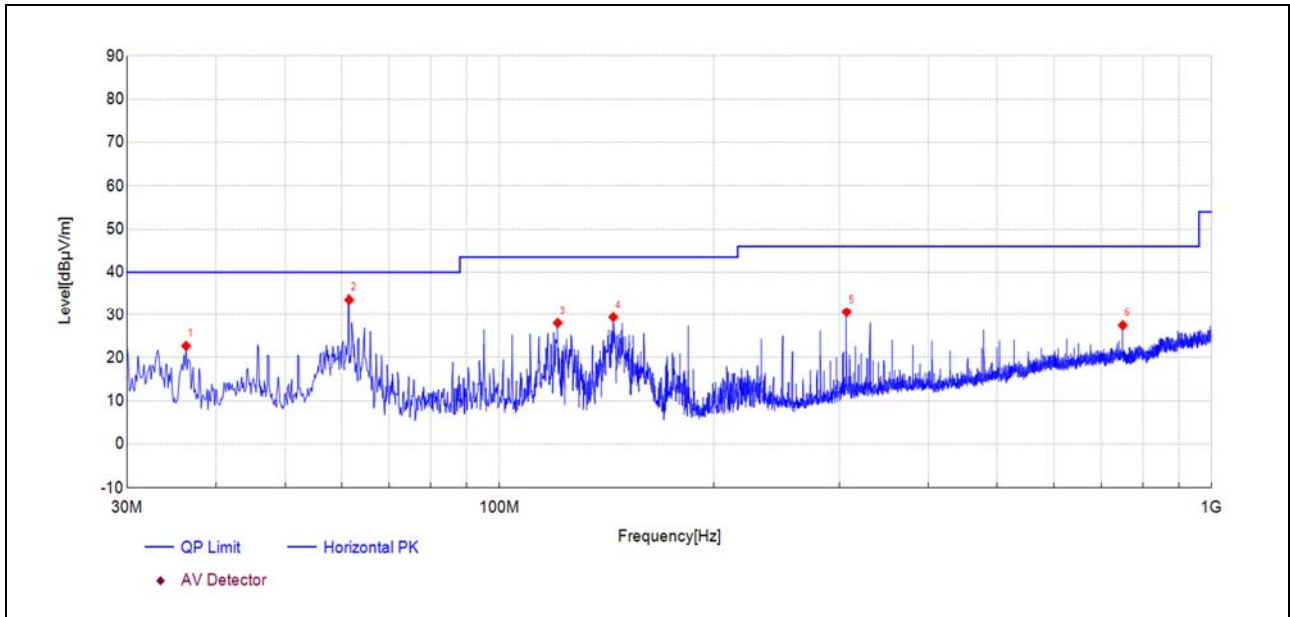
Fre. (MHz)	Reading [dBμV]	Level [dBμV/m]	Factor [dB/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector	Verdict
39.70	58.8	30.02	-28.820	40.00	9.98	150	192	PK	PASS
72.20	58.0	26.44	-31.540	40.00	13.56	150	62	PK	PASS
121.07	61.9	31.29	-30.640	43.50	12.21	150	359	PK	PASS
211.05	54.8	25.44	-29.390	43.50	18.06	150	221	PK	PASS
307.21	53.8	28.58	-25.240	46.00	17.42	150	86	PK	PASS
749.95	50.3	35.47	-14.840	46.00	10.53	150	121	PK	PASS



(Antenna Vertical, 1GHz to 18GHz)

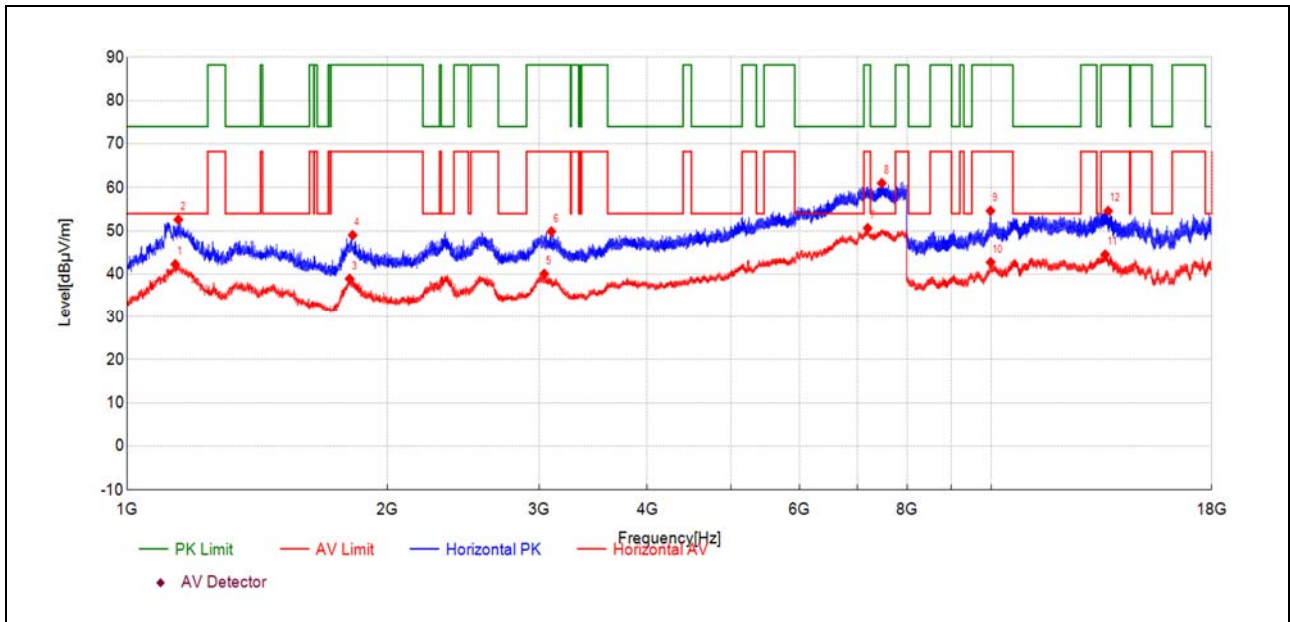
Fre. (MHz)	Reading [dBμV]	Level [dBμV/m]	Factor [dB/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector	Verdict
1163.81	42.8	41.29	-1.510	54.00	12.71	150	109	AV	PASS
1175.95	52.3	50.97	-1.290	74.00	23.03	150	109	PK	PASS
1865.72	48.0	49.85	1.820	88.23	38.38	150	163	PK	PASS
1890.46	37.1	39.11	2.010	68.23	29.12	150	152	AV	PASS
5386.96	36.4	54.27	17.920	74.00	19.73	150	185	PK	PASS
5421.96	25.2	43.10	17.900	54.00	10.90	150	326	AV	PASS
7206.61	24.3	50.44	26.100	68.23	17.79	150	120	AV	PASS
7208.95	35.1	61.12	26.060	88.23	27.11	150	356	PK	PASS
11478.74	39.4	53.61	14.250	74.00	20.39	150	355	PK	PASS
11504.45	29.7	43.99	14.270	54.00	10.01	150	355	AV	PASS
17209.01	37.5	53.49	15.950	88.23	34.74	150	0	PK	PASS
17212.34	27.5	43.46	15.920	68.23	24.77	150	12	AV	PASS

Plot for Channel 105



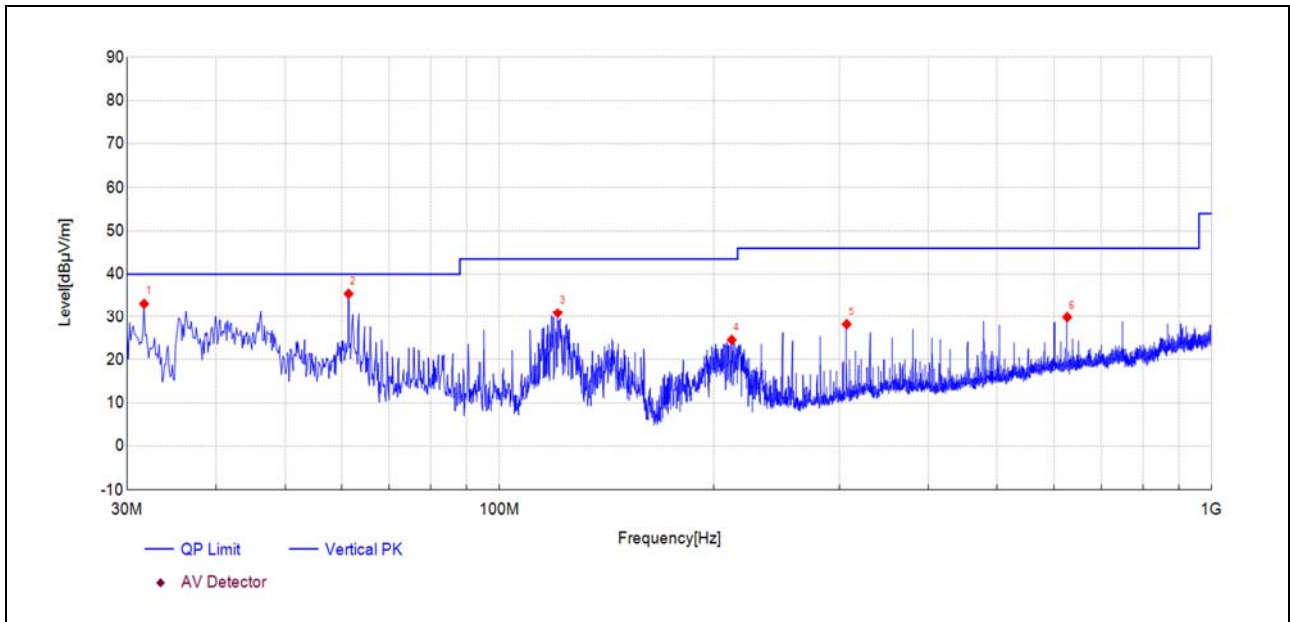
(Antenna Horizontal, 30MHz to 1GHz)

Fre. (MHz)	Reading [dBμV]	Level [dBμV/m]	Factor [dB/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector	Verdict
36.31	52.2	22.70	-29.500	40.00	17.30	150	351	PK	PASS
61.53	62.2	33.57	-28.670	40.00	6.43	150	4	PK	PASS
120.71	58.6	28.00	-30.570	43.50	15.50	150	351	PK	PASS
144.47	60.7	29.37	-31.340	43.50	14.13	150	25	PK	PASS
307.21	55.8	30.58	-25.240	46.00	15.42	150	119	PK	PASS
749.95	42.3	27.46	-14.840	46.00	18.54	150	232	PK	PASS



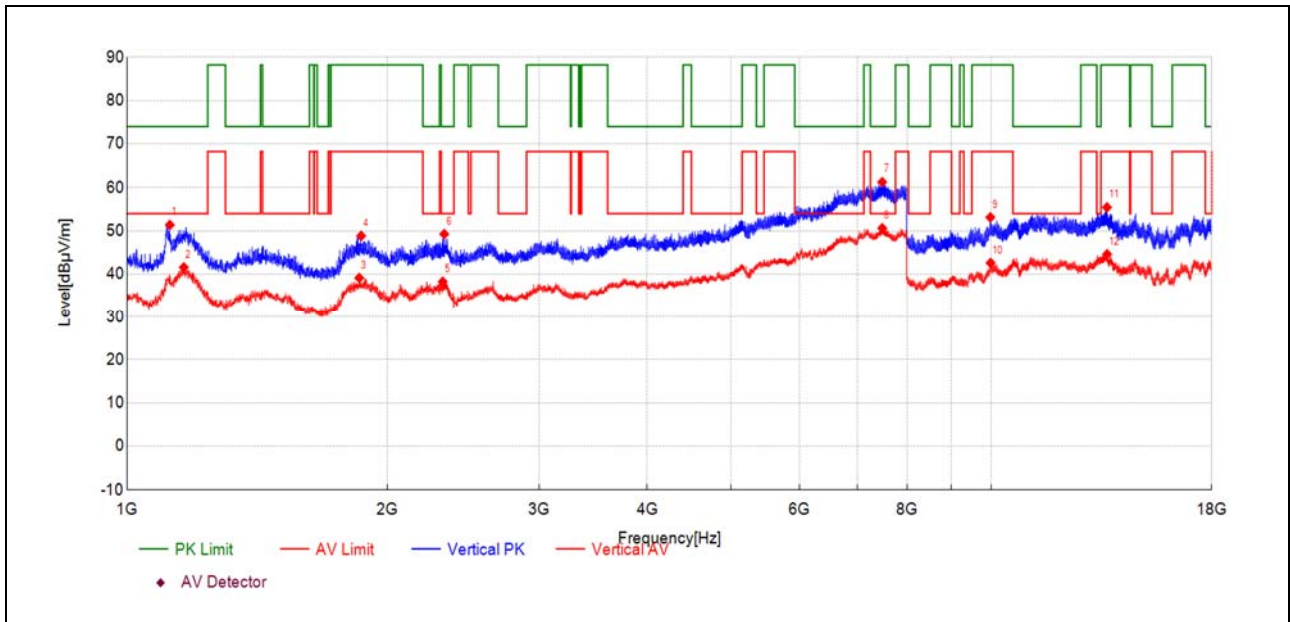
(Antenna Horizontal, 1GHz to 18GHz)

Fre. (MHz)	Reading [dBμV]	Level [dBμV/m]	Factor [dB/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector	Verdict
1137.21	44.2	42.30	-1.870	54.00	11.70	150	58	AV	PASS
1146.54	54.4	52.61	-1.790	74.00	21.39	150	68	PK	PASS
1809.72	37.5	38.92	1.400	68.23	29.31	150	111	AV	PASS
1824.65	47.5	49.03	1.510	88.23	39.20	150	122	PK	PASS
3039.94	31.6	40.06	8.460	68.23	28.17	150	359	AV	PASS
3097.81	41.2	49.86	8.690	88.23	38.37	150	360	PK	PASS
7197.75	24.5	50.64	26.180	68.23	17.59	150	218	AV	PASS
7472.16	34.8	61.03	26.210	74.00	12.97	150	337	PK	PASS
9982.00	44.6	54.64	10.060	88.23	33.59	150	2	PK	PASS
9987.24	32.6	42.75	10.160	68.23	25.48	150	2	AV	PASS
13553.12	27.5	44.54	17.090	68.23	23.69	150	164	AV	PASS
13660.27	38.1	54.61	16.550	88.23	33.62	150	74	PK	PASS



(Antenna Vertical, 30MHz to 1GHz)

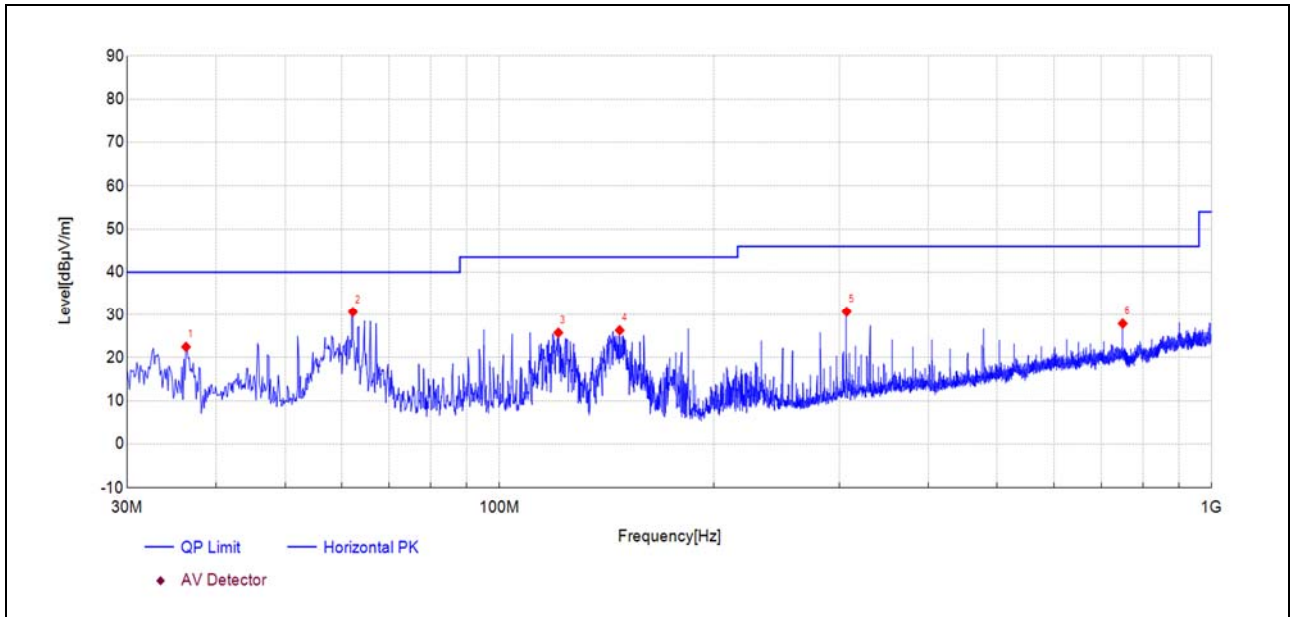
Fre. (MHz)	Reading [dBμV]	Level [dBμV/m]	Factor [dB/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector	Verdict
31.70	63.7	33.13	-30.550	40.00	6.87	150	66	PK	PASS
61.41	64.2	35.45	-28.710	40.00	4.55	150	238	PK	PASS
120.71	61.5	30.88	-30.570	43.50	12.62	150	351	PK	PASS
211.90	53.8	24.56	-29.270	43.50	18.94	150	3	PK	PASS
307.21	53.4	28.19	-25.240	46.00	17.81	150	66	PK	PASS
626.75	47.1	29.83	-17.310	46.00	16.17	150	238	PK	PASS



(Antenna Vertical, 1GHz to 18GHz)

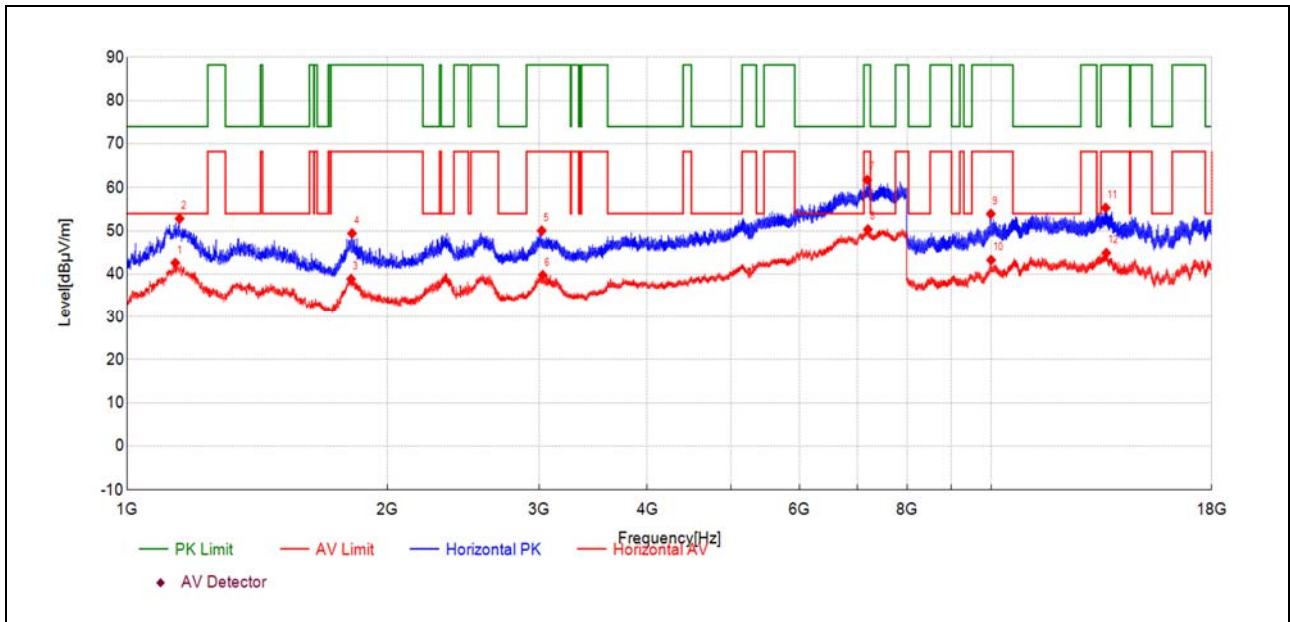
Fre. (MHz)	Reading [dBμV]	Level [dBμV/m]	Factor [dB/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector	Verdict
1120.87	53.4	51.39	-1.990	74.00	22.61	150	152	PK	PASS
1163.34	43.1	41.58	-1.520	54.00	12.42	150	110	AV	PASS
1856.86	37.4	39.12	1.750	68.23	29.11	150	152	AV	PASS
1866.19	47.0	48.85	1.820	88.23	39.38	150	142	PK	PASS
2319.35	33.2	38.25	5.030	54.00	15.75	150	164	AV	PASS
2328.69	44.1	49.27	5.130	74.00	24.73	150	164	PK	PASS
7481.03	35.0	61.31	26.280	74.00	12.69	150	282	PK	PASS
7481.97	24.3	50.63	26.290	54.00	3.37	150	35	AV	PASS
9979.14	43.1	53.14	10.020	88.23	35.09	150	2	PK	PASS
9985.33	32.5	42.59	10.120	68.23	25.64	150	128	AV	PASS
13616.46	38.5	55.45	16.960	88.23	32.78	150	305	PK	PASS
13621.70	27.7	44.60	16.900	68.23	23.63	150	61	AV	PASS

Plot for Channel 149



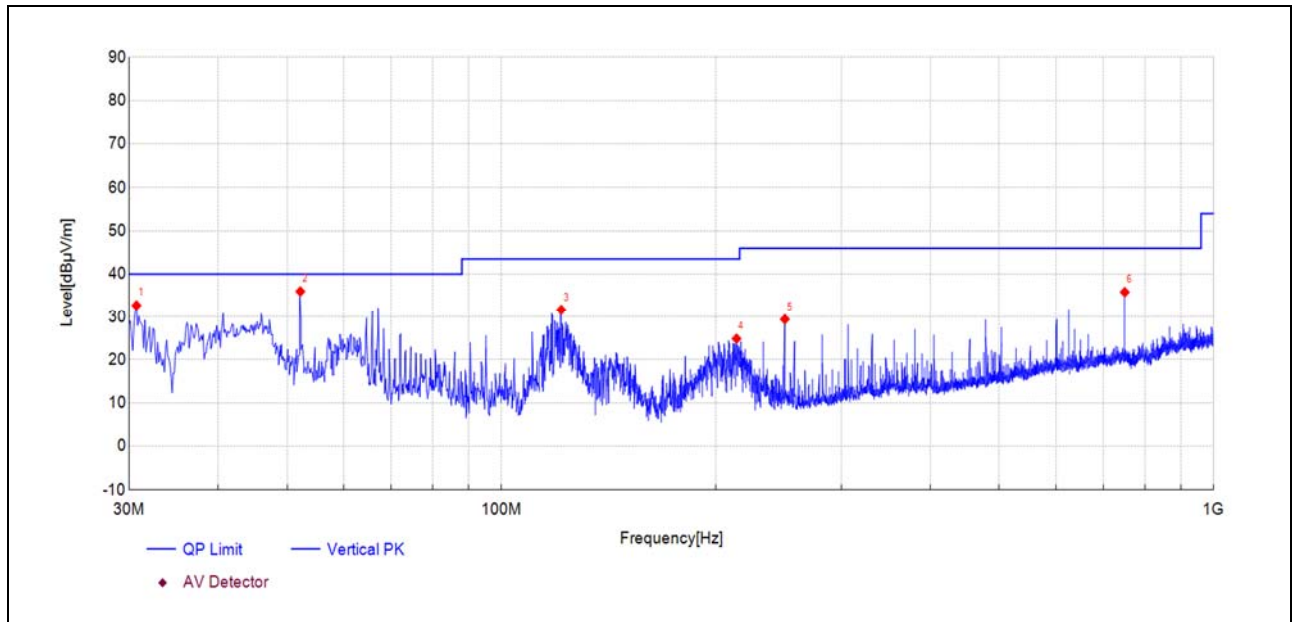
(Antenna Horizontal, 30MHz to 1GHz)

Fre. (MHz)	Reading [dBμV]	Level [dBμV/m]	Factor [dB/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector	Verdict
36.31	52.0	22.47	-29.500	40.00	17.53	150	104	PK	PASS
62.26	59.3	30.65	-28.660	40.00	9.35	150	304	PK	PASS
120.95	56.4	25.76	-30.590	43.50	17.74	150	360	PK	PASS
147.51	58.1	26.31	-31.800	43.50	17.19	150	51	PK	PASS
307.21	56.0	30.71	-25.240	46.00	15.29	150	110	PK	PASS
749.95	42.7	27.88	-14.840	46.00	18.12	150	175	PK	PASS



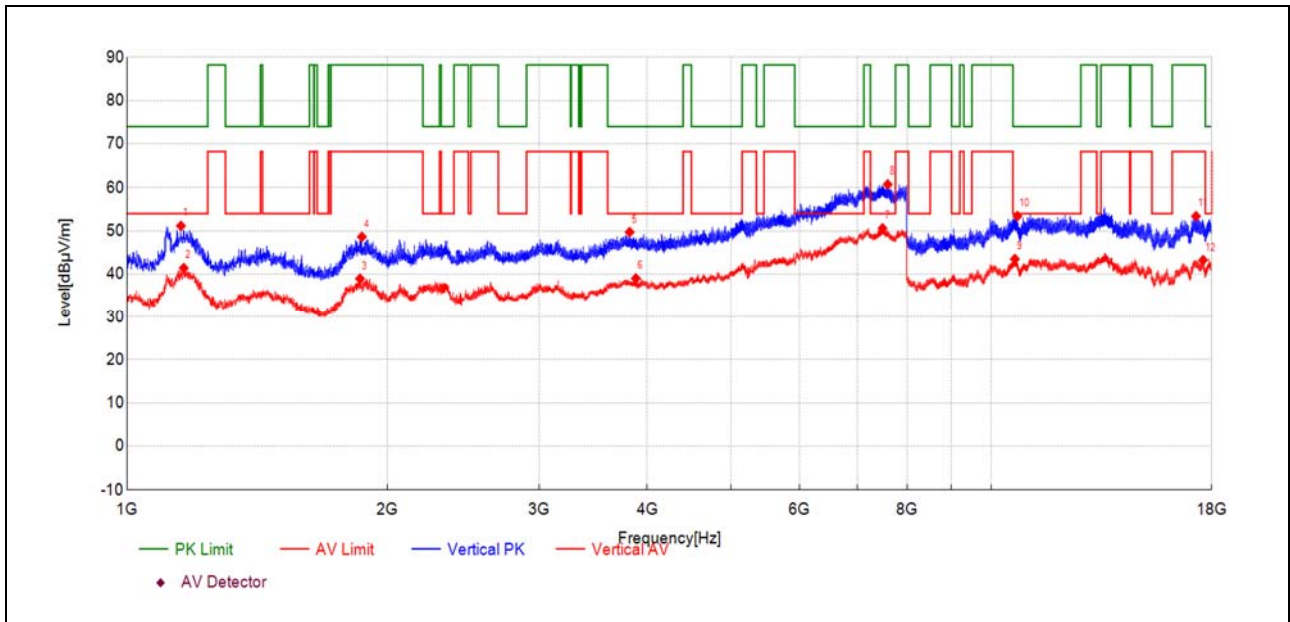
(Antenna Horizontal, 1GHz to 18GHz)

Fre. (MHz)	Reading [dBμV]	Level [dBμV/m]	Factor [dB/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector	Verdict
1137.21	44.5	42.60	-1.870	54.00	11.40	150	67	AV	PASS
1150.28	54.6	52.84	-1.760	74.00	21.16	150	78	PK	PASS
1816.72	37.4	38.84	1.450	68.23	29.39	150	121	AV	PASS
1821.39	47.9	49.43	1.490	88.23	38.80	150	121	PK	PASS
3019.40	41.6	50.05	8.410	88.23	38.18	150	14	PK	PASS
3027.34	31.3	39.77	8.430	68.23	28.46	150	14	AV	PASS
7187.95	35.7	61.80	26.120	88.23	26.43	150	273	PK	PASS
7200.55	24.2	50.36	26.180	68.23	17.87	150	229	AV	PASS
9991.05	43.7	53.94	10.220	88.23	34.29	150	61	PK	PASS
9999.14	32.9	43.27	10.370	68.23	24.96	150	2	AV	PASS
13564.55	38.2	55.32	17.100	88.23	32.91	150	100	PK	PASS
13589.79	27.8	44.89	17.110	68.23	23.34	150	215	AV	PASS



(Antenna Vertical, 30MHz to 1GHz)

Fre. (MHz)	Reading [dBμV]	Level [dBμV/m]	Factor [dB/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector	Verdict
30.73	63.4	32.70	-30.740	40.00	7.30	150	204	PK	PASS
52.19	63.9	35.98	-27.930	40.00	4.02	150	358	PK	PASS
121.31	62.4	31.64	-30.790	43.50	11.86	150	334	PK	PASS
213.84	53.9	24.86	-29.000	43.50	18.64	150	181	PK	PASS
249.97	56.9	29.40	-27.490	46.00	16.60	150	334	PK	PASS
750.07	50.7	35.81	-14.840	46.00	10.19	150	92	PK	PASS

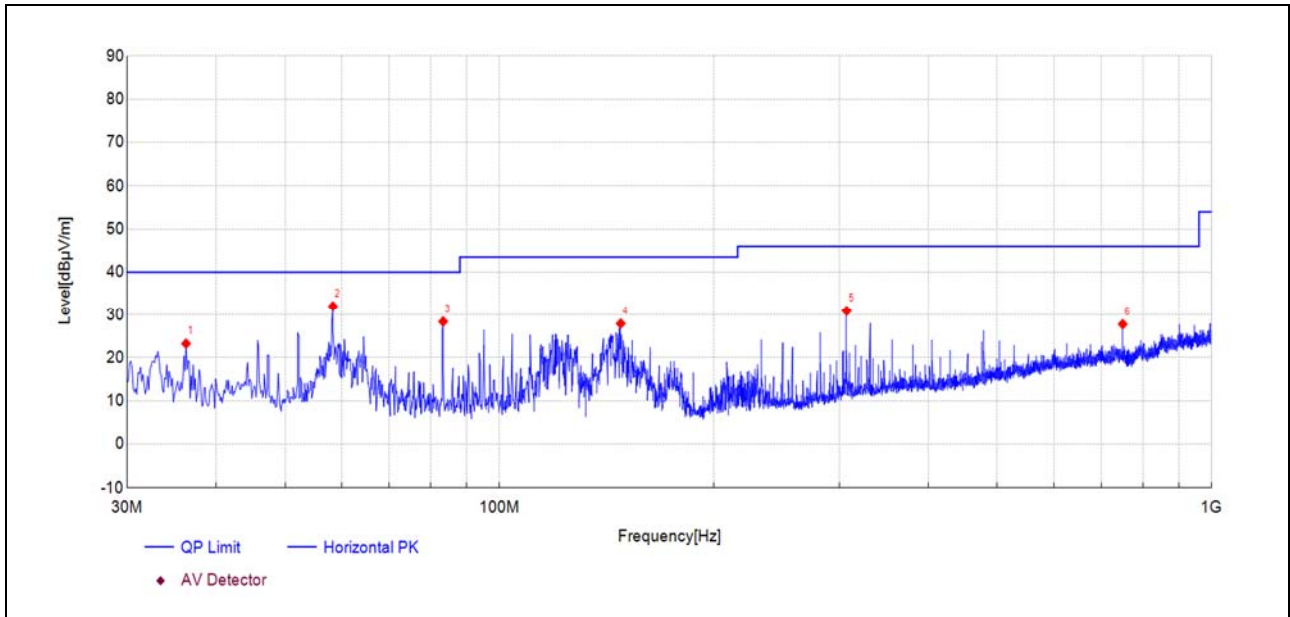


(Antenna Vertical, 1GHz to 18GHz)

Fre. (MHz)	Reading [dBμV]	Level [dBμV/m]	Factor [dB/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector	Verdict
1154.48	52.9	51.17	-1.680	74.00	22.83	150	109	PK	PASS
1163.34	42.9	41.42	-1.520	54.00	12.58	150	109	AV	PASS
1860.59	37.2	38.95	1.780	68.23	29.28	150	141	AV	PASS
1869.92	46.8	48.63	1.850	88.23	39.60	150	163	PK	PASS
3816.52	38.1	49.72	11.650	74.00	24.28	150	292	PK	PASS
3880.46	27.4	39.02	11.670	54.00	14.98	150	120	AV	PASS
7487.57	24.3	50.61	26.320	54.00	3.39	150	45	AV	PASS
7590.71	34.5	60.76	26.230	74.00	13.24	150	323	PK	PASS
10653.46	31.2	43.51	12.310	54.00	10.49	150	49	AV	PASS
10724.89	41.2	53.44	12.280	74.00	20.56	150	242	PK	PASS
17263.30	38.0	53.41	15.410	88.23	34.82	150	254	PK	PASS
17590.46	25.8	43.24	17.440	68.23	24.99	150	150	AV	PASS

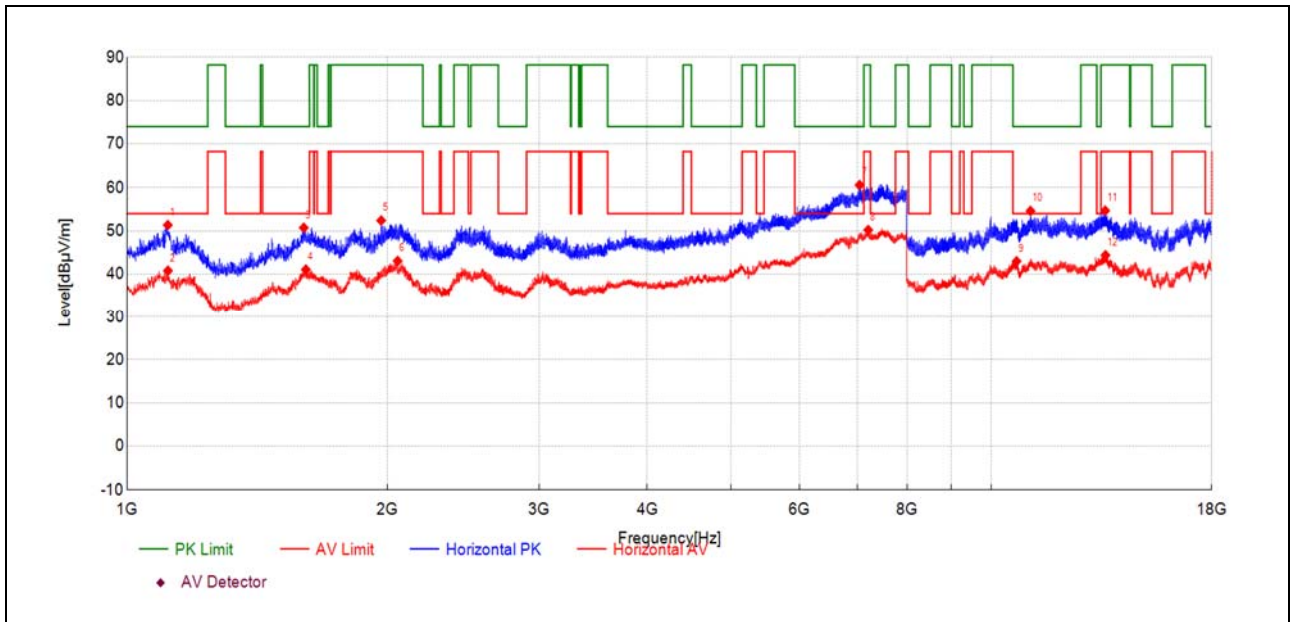


Plot for Channel 209



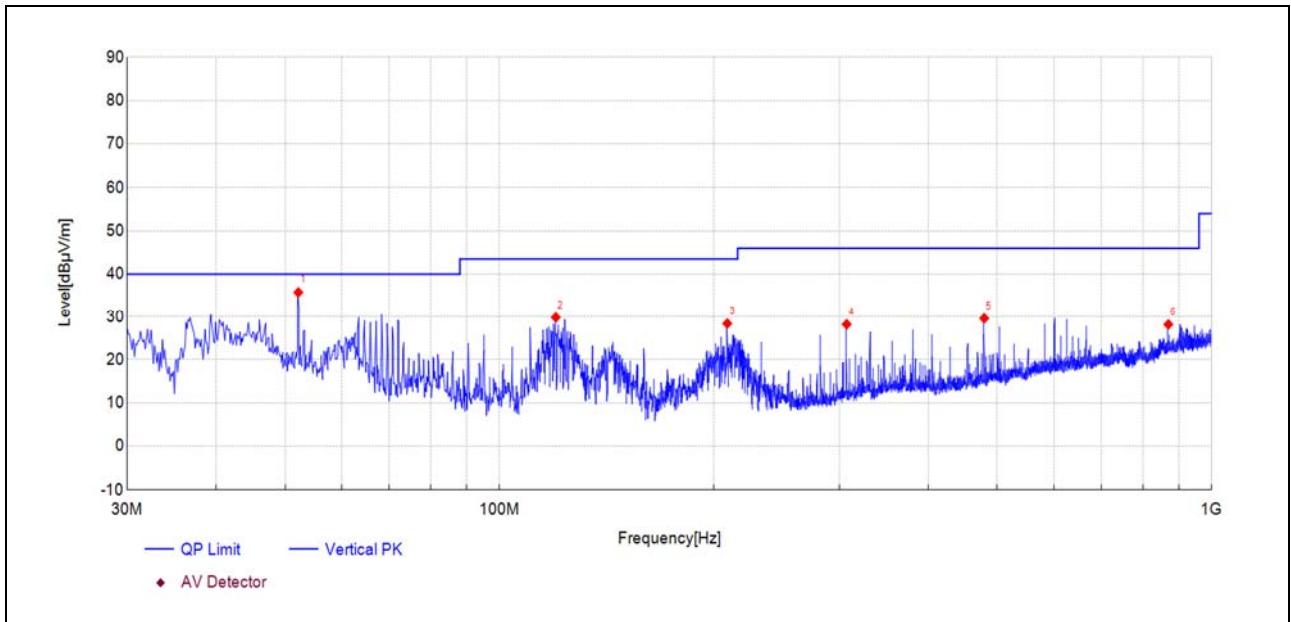
(Antenna Horizontal, 30MHz to 1GHz)

Fre. (MHz)	Reading [dBμV]	Level [dBμV/m]	Factor [dB/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector	Verdict
36.31	52.7	23.24	-29.500	40.00	16.76	150	321	PK	PASS
58.38	60.3	32.00	-28.270	40.00	8.00	150	345	PK	PASS
83.36	60.2	28.38	-31.790	40.00	11.62	150	152	PK	PASS
147.99	59.8	27.90	-31.890	43.50	15.60	150	39	PK	PASS
307.21	56.1	30.90	-25.240	46.00	15.10	150	116	PK	PASS
749.95	42.6	27.76	-14.840	46.00	18.24	150	251	PK	PASS



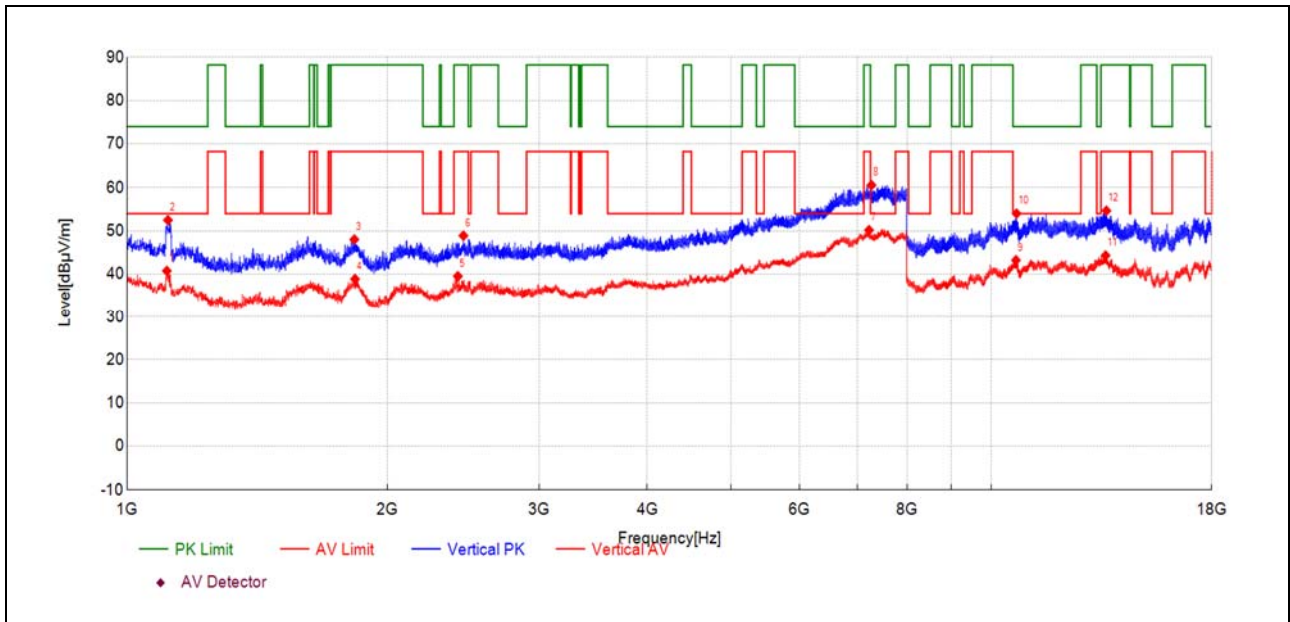
(Antenna Horizontal, 1GHz to 18GHz)

Fre. (MHz)	Reading [dBμV]	Level [dBμV/m]	Factor [dB/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector	Verdict
1114.81	53.3	51.35	-1.960	74.00	22.65	150	159	PK	PASS
1115.27	42.7	40.79	-1.950	54.00	13.21	150	159	AV	PASS
1601.57	50.8	50.74	-0.090	74.00	23.26	150	192	PK	PASS
1610.44	41.1	41.06	-0.020	54.00	12.94	150	192	AV	PASS
1968.40	49.7	52.41	2.740	88.23	35.82	150	203	PK	PASS
2056.60	39.6	43.05	3.410	68.23	25.18	150	203	AV	PASS
7042.80	35.2	60.62	25.440	74.00	13.38	150	8	PK	PASS
7207.08	24.2	50.22	26.060	68.23	18.01	150	116	AV	PASS
10702.99	30.5	42.98	12.480	54.00	11.02	150	251	AV	PASS
11106.34	41.1	54.62	13.530	74.00	19.38	150	237	PK	PASS
13549.79	37.6	54.69	17.090	88.23	33.54	150	212	PK	PASS
13563.60	27.3	44.38	17.090	68.23	23.85	150	107	AV	PASS



(Antenna Vertical, 30MHz to 1GHz)

Fre. (MHz)	Reading [dBμV]	Level [dBμV/m]	Factor [dB/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector	Verdict
52.19	63.7	35.76	-27.930	40.00	4.24	150	292	PK	PASS
119.98	60.3	29.81	-30.500	43.50	13.69	150	26	PK	PASS
208.87	57.9	28.38	-29.500	43.50	15.12	150	192	PK	PASS
307.21	53.4	28.19	-25.240	46.00	17.81	150	80	PK	PASS
479.29	50.8	29.59	-21.160	46.00	16.41	150	251	PK	PASS
869.15	40.6	28.16	-12.410	46.00	17.84	150	121	PK	PASS



(Antenna Vertical, 1GHz to 18GHz)

Fre. (MHz)	Reading [dBμV]	Level [dBμV/m]	Factor [dB/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Detector	Verdict
1112.01	42.8	40.77	-1.980	54.00	13.23	150	130	AV	PASS
1115.27	54.5	52.50	-1.950	74.00	21.50	150	130	PK	PASS
1832.59	46.4	48.03	1.630	88.23	40.20	150	64	PK	PASS
1835.86	37.2	38.87	1.650	68.23	29.36	150	64	AV	PASS
2414.56	33.7	39.53	5.850	68.23	28.70	150	97	AV	PASS
2450.96	42.4	48.89	6.470	88.23	39.34	150	97	PK	PASS
7222.95	24.3	50.18	25.870	68.23	18.05	150	172	AV	PASS
7269.62	35.1	60.60	25.550	74.00	13.40	150	355	PK	PASS
10683.94	30.8	43.22	12.450	54.00	10.78	150	68	AV	PASS
10699.65	41.5	54.02	12.510	74.00	19.98	150	224	PK	PASS
13565.98	27.2	44.31	17.090	68.23	23.92	150	250	AV	PASS
13595.50	37.6	54.67	17.110	88.23	33.56	150	359	PK	PASS

END OF REPORT