



REPORT No.: SZ25080103W01

TEST REPORT

APPLICANT : TWELVE SOUTH, LLC

PRODUCT NAME : PowerCapsule

MODEL NAME : PC5K

BRAND NAME : N/A

FCC ID : 2AREBPC5K

STANDARD(S) : 47 CFR Part 15 Subpart C

RECEIPT DATE : 2025-08-07

TEST DATE : 2025-08-18 to 2025-10-24

ISSUE DATE : 2025-11-20



Edited by:

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MORLAB

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Change History		
Version	Date	Reason for change
1.0	2025-11-20	First edition



1. Technical Information

Note: Provide by applicant.

1.1. Applicant and Manufacturer Information

Applicant:	TWELVE SOUTH, LLC
Applicant Address:	1503 KING ST STE201 Charleston, SC29405, USA
Manufacturer:	TWELVE SOUTH, LLC
Manufacturer Address:	1503 KING ST STE201 Charleston, SC29405, USA

1.2. Equipment Under Test (EUT) Description

Product Name:	PowerCapsule
Sample No.:	1#, 2#
Hardware Version:	V1.0
Software Version:	V1.0
Operating Frequency:	Wireless charging 1: 115 kHz ~ 205 kHz Wireless charging 2: 360 kHz
Modulation Type:	ASK
Antenna Type:	Coil Antenna

Note 1: The EUT description presented in the report are provided by applicant and/or manufacturer, and the test laboratory is not responsible for the accuracy of the information. For a more detailed description, please refer to Specification or User's Manual supplied by the applicant and/or manufacturer.



1.3. Test Standards and Results

The objective of the report is to perform testing according to 47 CFR Part 15 Subpart C for the EUT FCC ID Certification:

No.	Identity	Document Title
1	47 CFR Part 15 (10-1-15 Edition)	Radio Frequency Devices

Test detailed items/section required by FCC rules and results are as below:

No.	Section	Description	Test Date	Test Engineer	Result	Remark
1	15.203	Antenna Requirement	N/A	N/A	PASS	/
2	15.207	Conducted Emission	Aug. 18, 2025 to Oct. 20, 2025	Wang Yapeng	PASS	/
3	15.209 15.225(a) (b) (c)(d)	Radiated Emission	Aug. 21, 2025 to Oct. 20, 2025	Gao Jianrou	PASS	/
4	15.215(c)	20dB Bandwidth	Oct. 24, 2025	Gao Jianrou	PASS	/

Note 1: The tests were performed according to the method of measurements prescribed in ANSI C63.10-2020. The EUT has been tested under continuous operating condition.

Note 2: Any additions, deviation, or exclusions from the method shall be noted in the "Remark".

1.4. Environmental Conditions

During the measurement, the environmental conditions were within the listed ranges:

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



2. 47 CFR Part 15C Requirements

2.1. Antenna Requirement

2.1.1. Applicable Standard

According to FCC 15.203, 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 shall be considered sufficient to comply with the provisions of this section.

2.1.2. Test Result: Compliant

Antenna location	Antenna Type	Coupling Method
☒ Internal ☐ External	☐ FPC Antenna ☐ Spring Antenna ☐ Ceramic Antenna ☐ Integrated Antenna ☐ Dipole Antenna ☐ PCB Antenna ☒ Coil Antenna	☐ I-PEX Connector ☐ SMA Connector ☐ RP-SMA Connector ☐ Metal Shrapnel ☒ Layout

2.2. Conducted Emission

2.2.1. Test Requirement

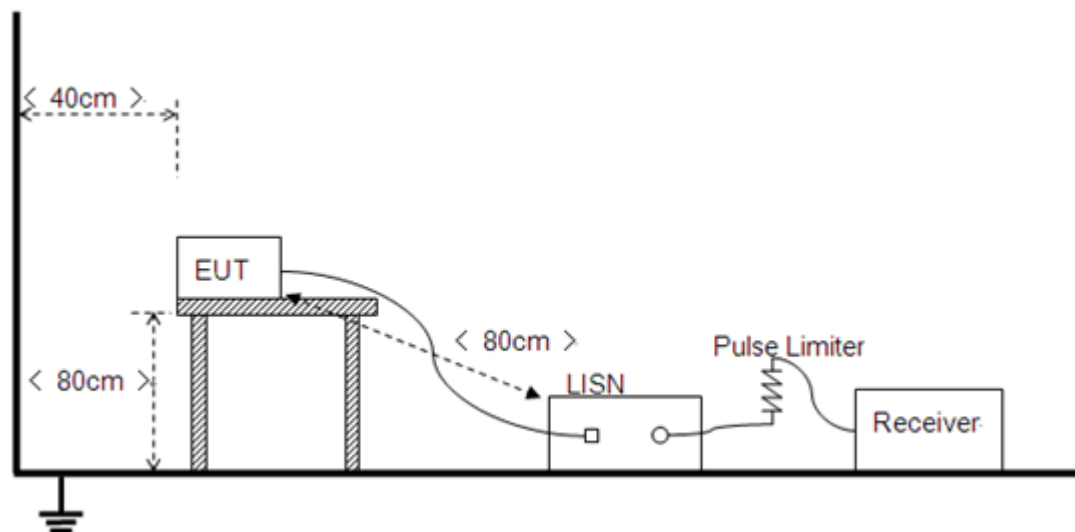
According to FCC section 15.207, the radio frequency voltage that is conducted back onto the AC power line on any frequency within the band 150kHz to 30MHz shall not exceed the limits in the following table, as measured using a 50 μ H/50 Ω line impedance stabilization network (LISN).

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.

2.2.2. Test Setup



The EUT is placed on a 0.8m high insulating table, which stands on the grounded conducting floor, and keeps 0.4m away from the grounded conducting wall. The EUT is connected to the power mains through a LISN which provides 50 Ω /50 μ H of coupling impedance for the measuring instrument. A Pulse Limiter is used to protect the measuring instrument. The factors of the whole test system are calibrated to correct the reading.



2.2.3. Test Result

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+Adapter+Data cable+Mobile phone+Wireless charging mode

Test voltage: AC 120V/60Hz

The measurement results are obtained as below:

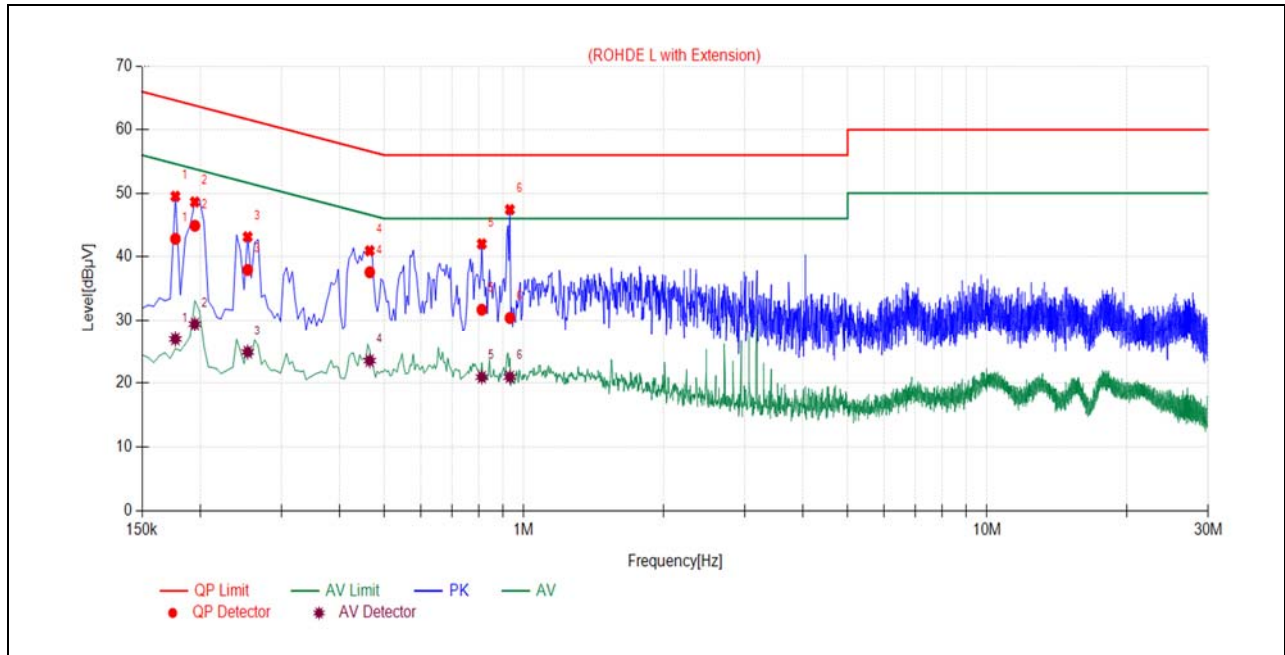
$$E \text{ [dB}\mu\text{V]} = U_R + L_{\text{Cable loss}} \text{ [dB]} + A_{\text{Factor}}$$

U_R : Receiver Reading

A_{Factor} : Voltage division factor of LISN

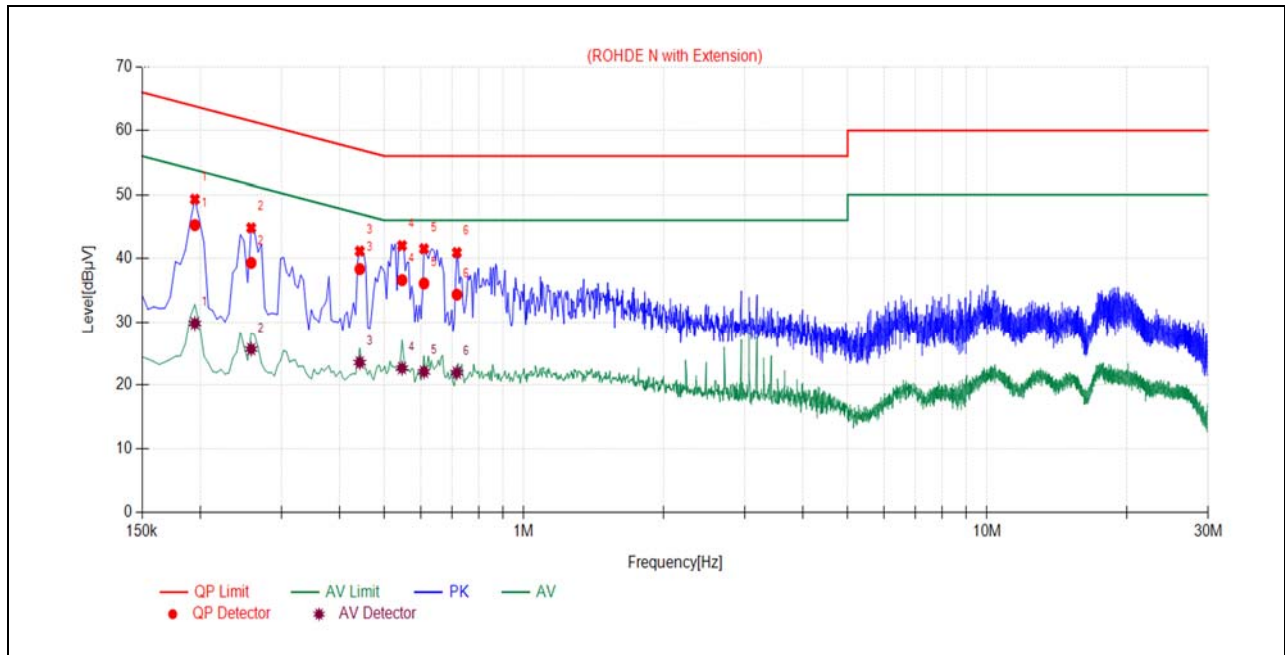
115 kHz ~ 205 kHz

B.Test Plot:



(L Phase)

No.	Fre. (MHz)	Emission Level (dBμV)		Limit (dBμV)		Power-line	Verdict
		Quai-peak	Average	Quai-peak	Average		
1	0.1770	42.82	26.89	64.62	54.62	Line	PASS
2	0.1950	44.88	29.38	63.82	53.82		PASS
3	0.2535	37.93	24.85	61.64	51.64		PASS
4	0.4650	37.55	23.49	56.60	46.60		PASS
5	0.8115	31.65	20.91	56.00	46.00		PASS
6	0.9330	30.36	20.94	56.00	46.00		PASS



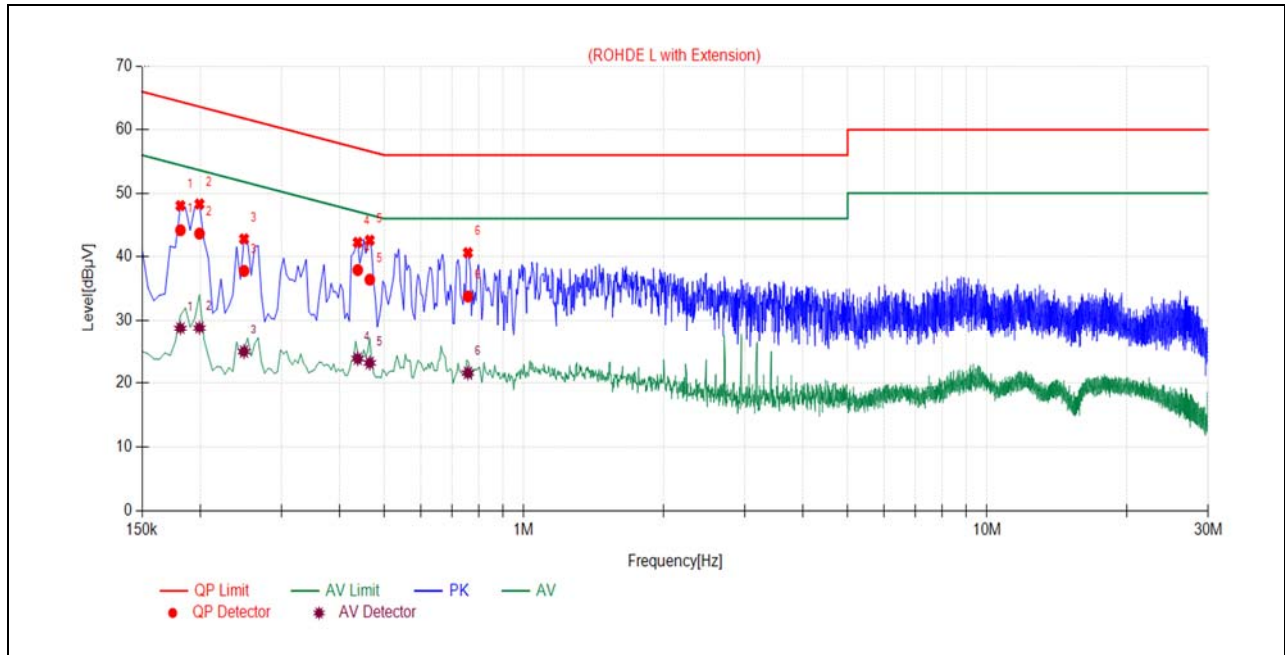
(N Phase)

No.	Fre. (MHz)	Emission Level (dBμV)		Limit (dBμV)		Power-line	Verdict
		Quai-peak	Average	Quai-peak	Average		
1	0.1950	45.26	29.81	63.82	53.82	Neutral	PASS
2	0.2580	39.32	25.64	61.50	51.50		PASS
3	0.4425	38.35	23.52	57.02	47.02		PASS
4	0.5460	36.62	22.63	56.00	46.00		PASS
5	0.6090	36.10	22.06	56.00	46.00		PASS
6	0.7171	34.34	21.92	56.00	46.00		PASS



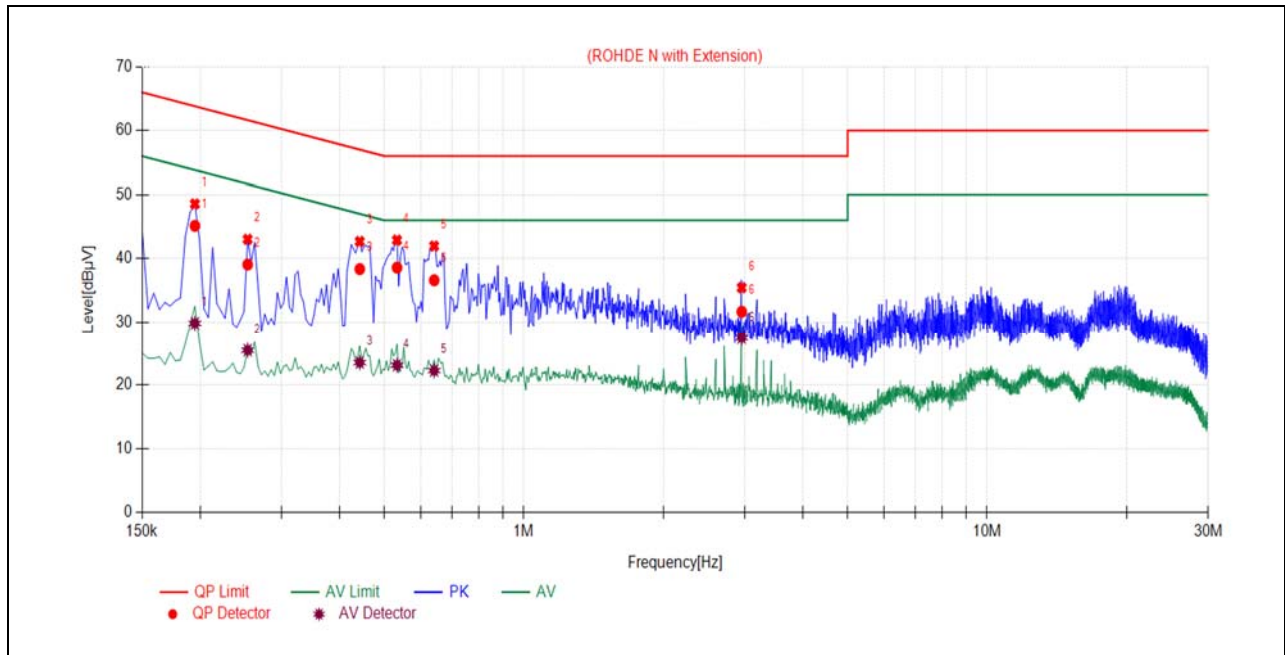
360 kHz

B.Test Plot:



(L Phase)

No.	Fre. (MHz)	Emission Level (dBμV)		Limit (dBμV)		Power-line	Verdict
		Quai-peak	Average	Quai-peak	Average		
1	0.1815	44.18	28.69	64.42	54.42	Line	PASS
2	0.1995	43.65	28.75	63.63	53.63		PASS
3	0.2490	37.76	24.92	61.79	51.79		PASS
4	0.4380	37.90	23.81	57.10	47.10		PASS
5	0.4650	36.39	23.13	56.60	46.60		PASS
6	0.7575	33.74	21.56	56.00	46.00		PASS



(N Phase)

No.	Fre. (MHz)	Emission Level (dBμV)		Limit (dBμV)		Power-line	Verdict
		Quai-peak	Average	Quai-peak	Average		
1	0.1950	45.15	29.82	63.82	53.82	Neutral	PASS
2	0.2535	39.06	25.47	61.64	51.64		PASS
3	0.4425	38.35	23.51	57.02	47.02		PASS
4	0.5325	38.58	23.10	56.00	46.00		PASS
5	0.6405	36.60	22.24	56.00	46.00		PASS
6	2.9532	31.65	27.44	56.00	46.00		PASS

2.3. Radiated Emission

2.3.1. Test Requirement

Radiated Emission <30MHz (9 kHz-30MHz, E-field)

According to FCC section 15.225, for <30MHz, Radiated emissions were measured according to ANSIC63.4. The EUT was set to transmit at the highest output power. The loop antenna was positioned 1 meter above the ground from the center of the loop. The measuring bandwidth was set to 10KHz. (Note: During testing the receive antenna was rotated about its axis to maximize the emission from the EUT)

There was no detected Restricted bands and Radiated Spurious emission below 30MHz. The 30m or 300m limit was converted to 3m Limit using square factor(x) as it was found by measurements as follows:

For 300m,

$$3 \text{ m Limit(dBuA/m)} = 300 \text{ m Limit(dBuA/m)} + 40\log(300/3)$$

For 30m,

$$3 \text{ m Limit(dBuA/m)} = 30 \text{ m Limit(dBuA/m)} + 40\log(30/3)$$

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 range (MHz)	E-Field	E-Field @3m
	$\mu\text{V/m}$	$\text{dB}\mu\text{V/m}$
0.009 ~ 0.490	2400/F(kHz) @300m	128.5 ~ 93.8
0.490 ~ 1.705	24000/F(kHz) @30m	73.8 ~ 62.9
1.705 ~ 30	30 @30m	69.6

NOTE: a) Field Strength ($\text{dB}\mu\text{V/m}$) = $40 \cdot \log[\text{Field Strength } (\mu\text{V/m})]$.

b) In the emission tables above, the tighter limit applies at the band edges.

Radiated Emission >30MHz (30MHz-1GHz, E-field)

According to FCC section 15.205, the field strength of radiated emissions from intentional radiators at a distance of 3 meters shall not exceed the following values:

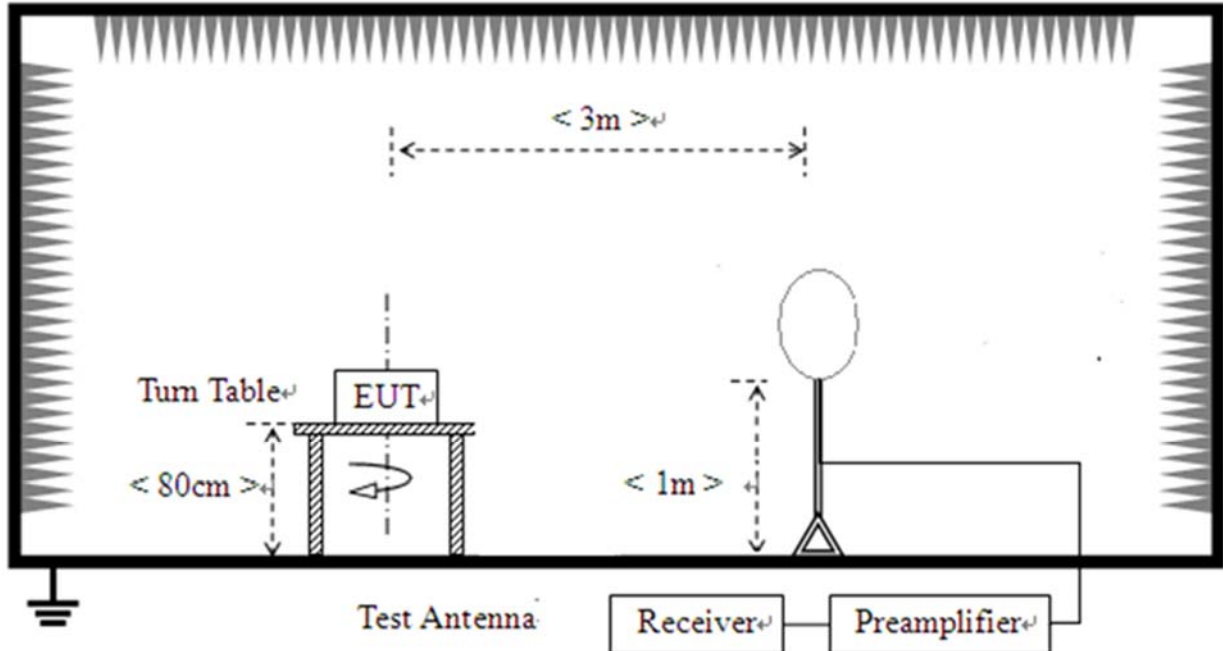
Frequency Range (MHz)	Field Strength	
	$\mu\text{V/m}$	$\text{dB}\mu\text{V/m}$
30 - 88	100	40
88 - 216	150	43.5
216 - 960	200	46
Above 960	500	54

NOTE: a) Field Strength ($\text{dB}\mu\text{V/m}$) = $20 \cdot \log[\text{Field Strength } (\mu\text{V/m})]$.

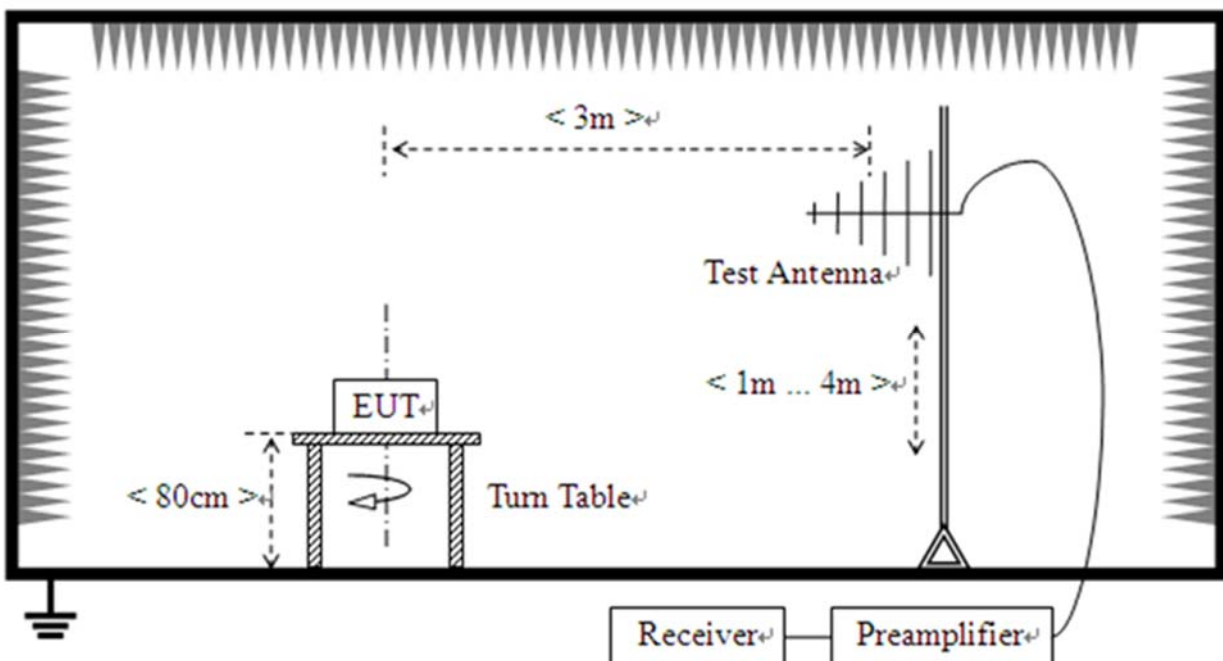
b) In the emission tables above, the tighter limit applies at the band edges.

2.3.2. Test Setup

1) For radiated emissions below 30MHz



2) For radiated emissions from 30MHz to 1GHz



The test is performed in a 3m Semi-Anechoic Chamber; the antenna factor, cable loss and so on of the site (factors) is calculated to correct the reading. The EUT is placed on a 0.8m high insulating



Turn Table, and keeps 3m away from the Test Antenna, which is mounted on a variable-height antenna master tower.

For the test Antenna:

In the frequency range of 9 kHz to 30MHz, magnetic field is measured with Loop Test Antenna. The Test Antenna is positioned with its plane vertical at 1m distance from the EUT. The center of the Loop Test Antenna is 1m above the ground. During the measurement the Loop Test Antenna rotates about its vertical axis for maximum response at each azimuth about the EUT.

In the frequency range above 30MHz, Bi-Log Test Antenna (30MHz to 1GHz) was used. 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. The emission levels at both horizontal and vertical polarizations should be tested.

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 frequency range from 0.009MHz to 0.15MHz, the resolution bandwidth is set to 200Hz. For measurements frequency range from 0.15MHz to 30MHz the resolution bandwidth is set to 9kHz.

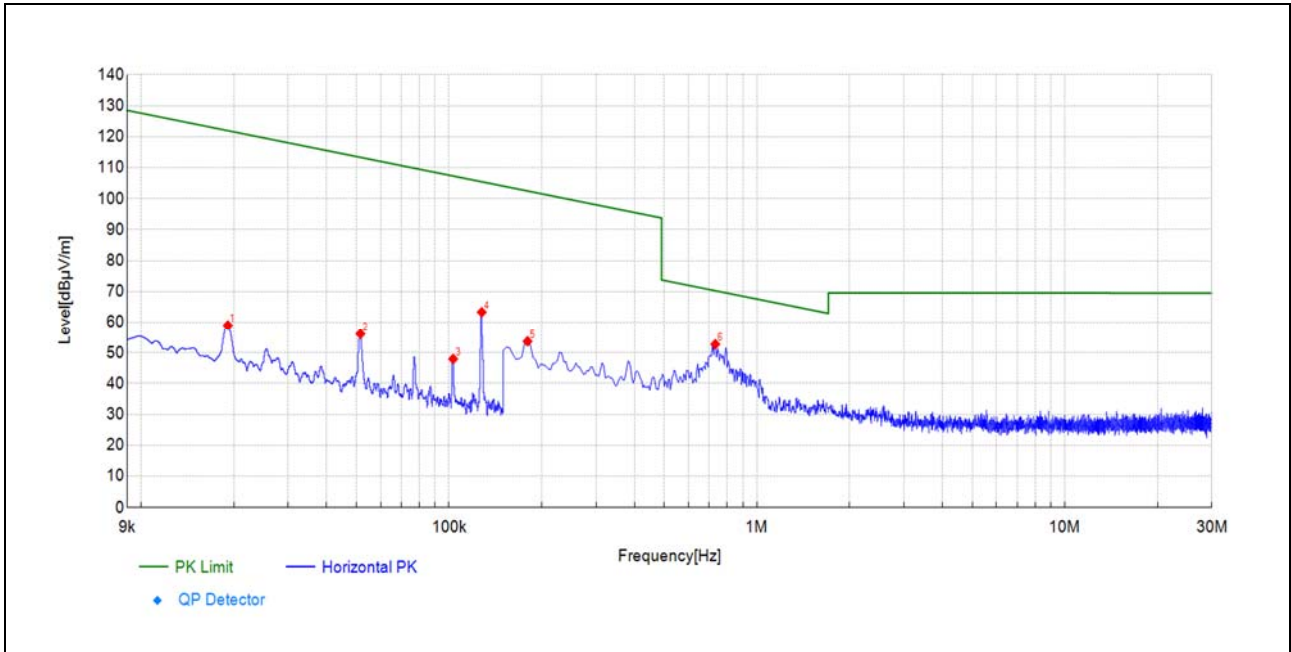
For measurements below 1GHz the resolution bandwidth is set to 100kHz for peak detection measurements or 120kHz for quasi-peak detection measurements. Peak detection is used unless otherwise noted as quasi-peak.

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

2.3.3. Test Result

115 kHz ~ 205 kHz

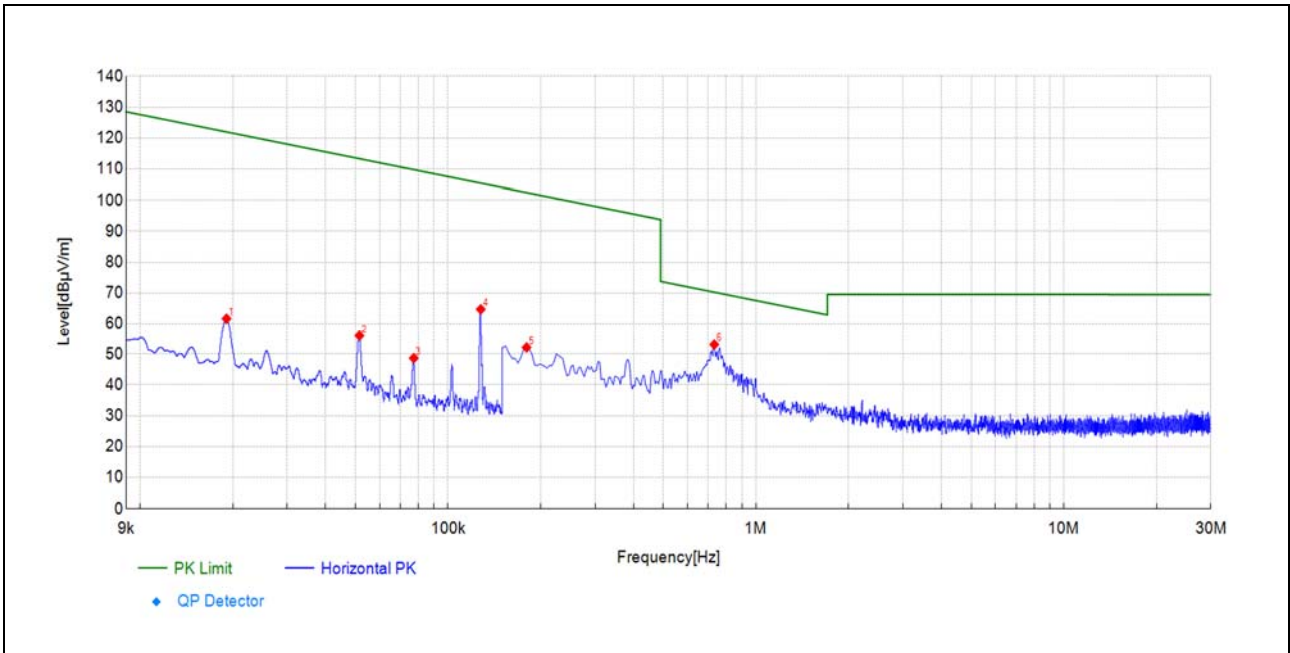
A.Radiated Emission <30MHz (9kHz-30MHz, parallel)



Frequency [MHz]	Reading [dBμV]	Level [dBμV/m]	Factor [dB/m]	Limit [dBμV/m]	Margin [dB]	Angle [°]	Detector	Polarity	Verdict
0.02	39.5	59.03	19.500	127.79	68.76	220	PK	Horizontal	PASS
0.05	36.3	56.14	19.880	125.45	69.31	360	PK	Horizontal	PASS
0.10	28.2	47.95	19.800	121.73	73.78	110	PK	Horizontal	PASS
0.13	43.6	63.37	19.810	119.95	56.58	80	PK	Horizontal	PASS
0.18	33.9	53.69	19.830	116.19	62.50	170	PK	Horizontal	PASS
0.73	32.7	52.75	20.020	71.64	18.89	10	PK	Horizontal	PASS



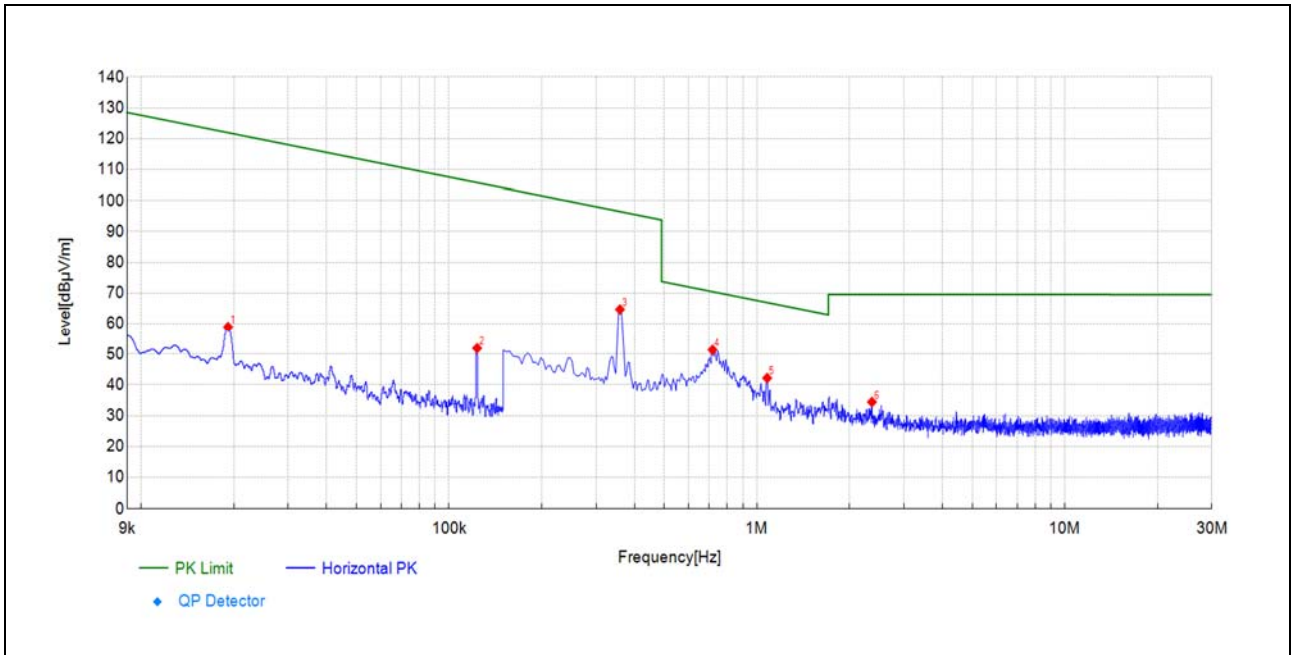
B.Radiated Emission <30MHz (9kHz-30MHz, perpendicular)



Frequency [MHz]	Reading [dBμV]	Level [dBμV/m]	Factor [dB/m]	Limit [dBμV/m]	Margin [dB]	Angle [°]	Detector	Polarity	Verdict
0.02	42.2	61.73	19.500	127.79	66.06	30	PK	Horizontal	PASS
0.05	36.1	55.94	19.880	125.45	69.51	240	PK	Horizontal	PASS
0.08	29.0	48.63	19.660	123.59	74.96	300	PK	Horizontal	PASS
0.13	45.0	64.77	19.810	119.95	55.18	70	PK	Horizontal	PASS
0.18	32.3	52.10	19.830	116.19	64.09	280	PK	Horizontal	PASS
0.73	33.0	53.04	20.020	71.64	18.60	60	PK	Horizontal	PASS

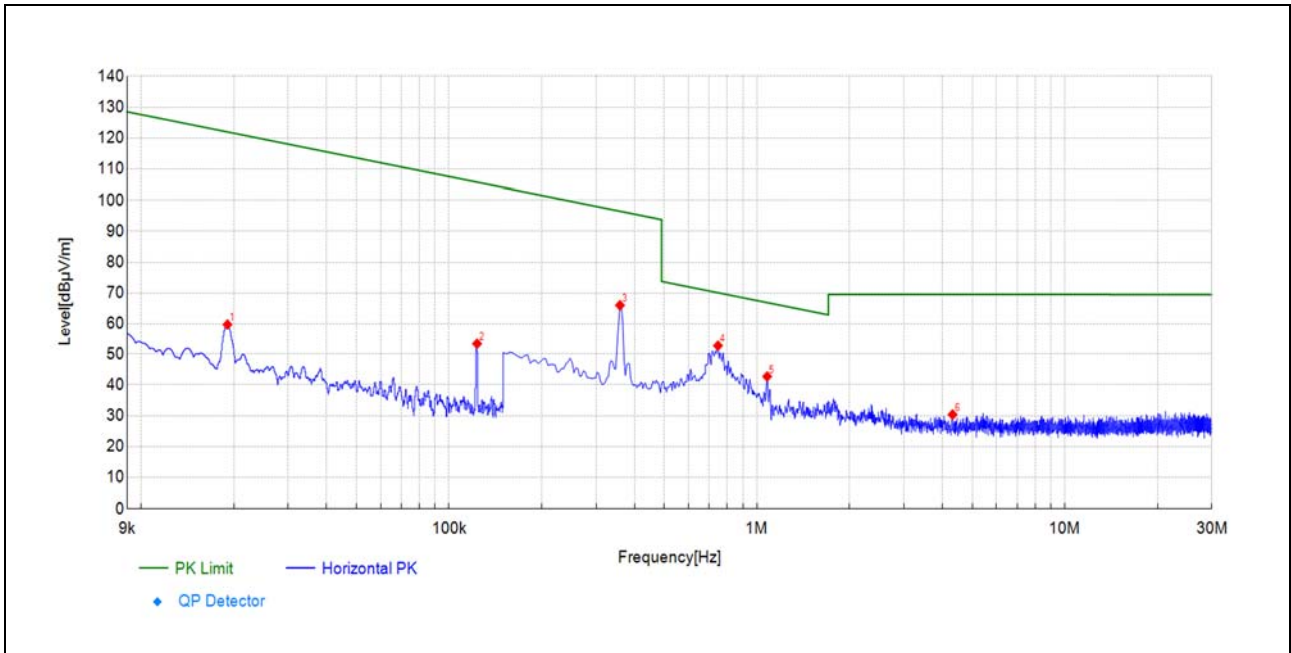
360 kHz

A.Radiated Emission <30MHz (9kHz-30MHz, parallel)



Frequency [MHz]	Reading [dBμV]	Level [dBμV/m]	Factor [dB/m]	Limit [dBμV/m]	Margin [dB]	Angle [°]	Detector	Polarity	Verdict
0.02	39.5	58.96	19.500	127.79	68.83	10	PK	Horizontal	PASS
0.12	32.1	51.88	19.830	120.27	68.39	320	PK	Horizontal	PASS
0.36	44.8	64.72	19.930	103.26	38.54	350	PK	Horizontal	PASS
0.72	31.3	51.33	20.020	71.77	20.44	150	PK	Horizontal	PASS
1.08	22.1	42.18	20.040	68.55	26.37	170	PK	Horizontal	PASS
2.36	14.2	34.42	20.210	69.54	35.12	260	PK	Horizontal	PASS

B.Radiated Emission <30MHz (9kHz-30MHz, perpendicular)

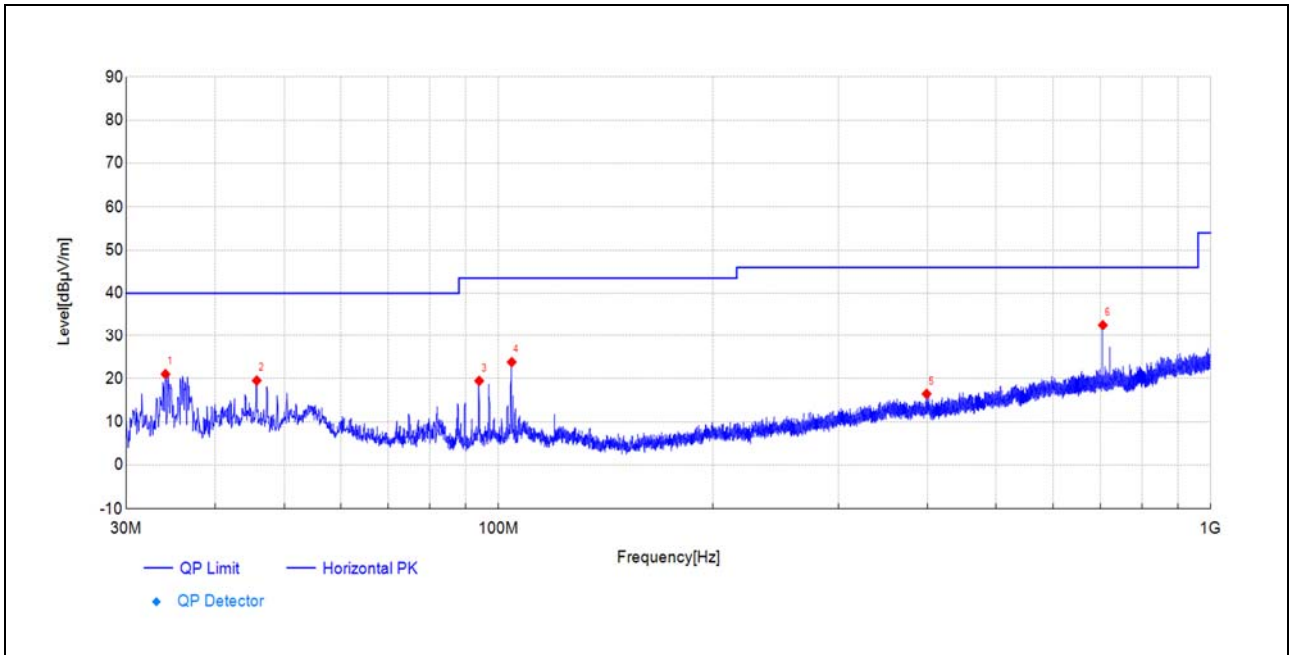


Frequency [MHz]	Reading [dBμV]	Level [dBμV/m]	Factor [dB/m]	Limit [dBμV/m]	Margin [dB]	Angle [°]	Detector	Polarity	Verdict
0.02	40.3	59.83	19.500	127.79	67.96	300	PK	Horizontal	PASS
0.12	33.5	53.32	19.830	120.27	66.95	250	PK	Horizontal	PASS
0.36	46.2	66.08	19.930	103.26	37.18	150	PK	Horizontal	PASS
0.75	32.7	52.67	20.020	71.51	18.84	290	PK	Horizontal	PASS
1.08	22.7	42.69	20.040	68.55	25.86	120	PK	Horizontal	PASS
4.32	10.1	30.35	20.260	69.54	39.19	130	PK	Horizontal	PASS



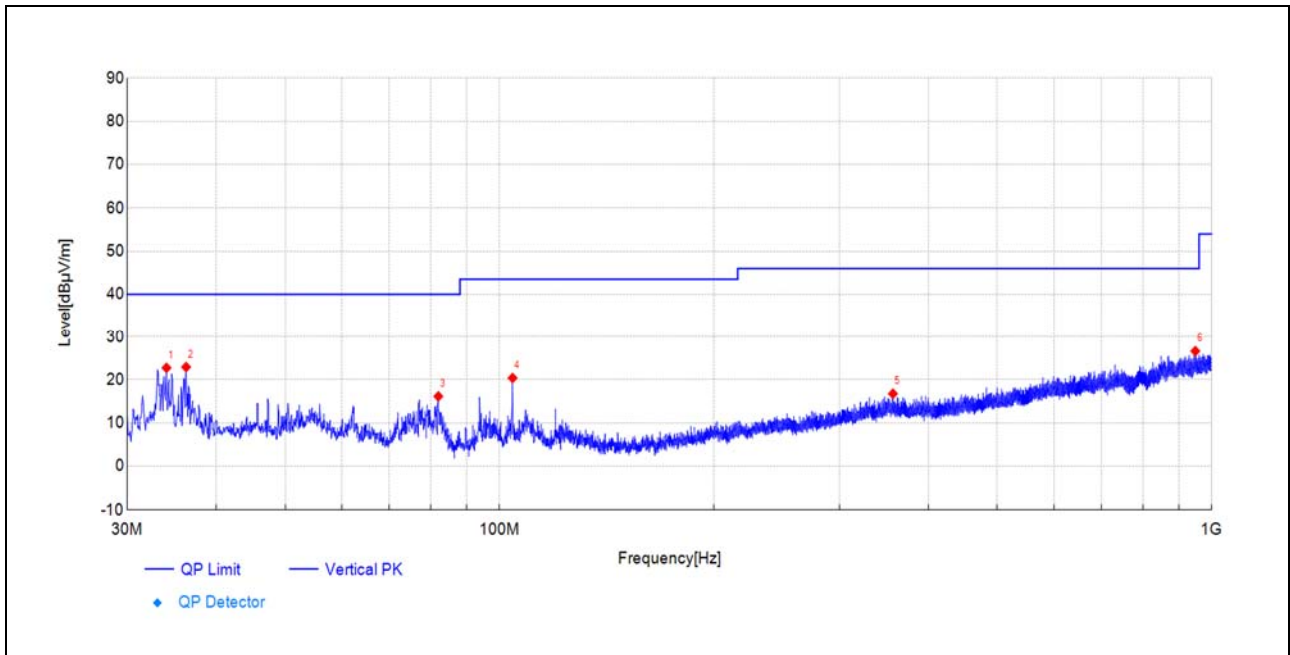
115 kHz ~ 205 kHz

A.Radiated Emission >30MHz (30MHz-1GHz)



(30MHz – 1GHz, Test Antenna Horizontal)

Frequency [MHz]	Reading [dBμV]	Level [dBμV/m]	Factor [dB/m]	Limit [dBμV/m]	Margin [dB]	Angle [°]	Detector	Polarity	Verdict
34.07	50.9	21.03	-29.850	40.00	18.97	96	PK	Horizontal	PASS
45.76	47.9	19.54	-28.380	40.00	20.46	42	PK	Horizontal	PASS
93.93	50.0	19.47	-30.570	43.50	24.03	145	PK	Horizontal	PASS
104.35	53.3	23.80	-29.490	43.50	19.70	351	PK	Horizontal	PASS
399.05	38.9	16.45	-22.400	46.00	29.55	103	PK	Horizontal	PASS
705.49	48.2	32.59	-15.610	46.00	13.41	172	PK	Horizontal	PASS



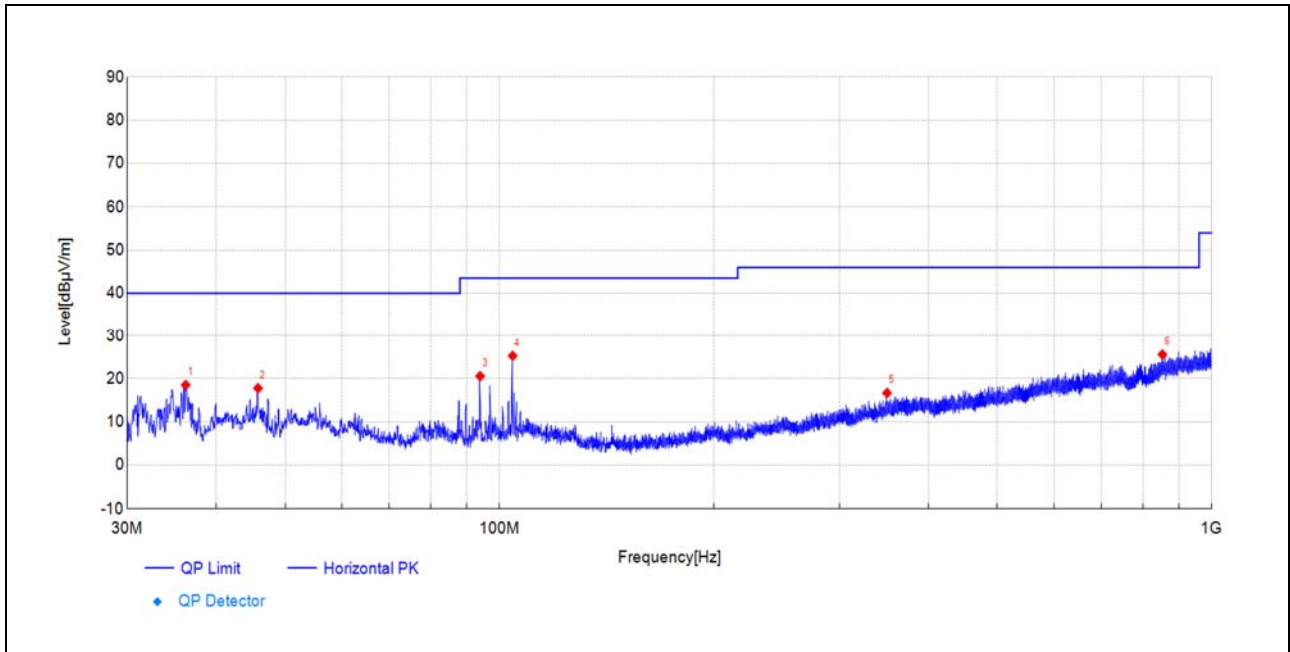
(30MHz – 1GHz, Test Antenna Vertical)

Frequency [MHz]	Reading [dBμV]	Level [dBμV/m]	Factor [dB/m]	Limit [dBμV/m]	Margin [dB]	Angle [°]	Detector	Polarity	Verdict
34.07	52.6	22.74	-29.850	40.00	17.26	214	PK	Vertical	PASS
36.31	52.4	22.92	-29.500	40.00	17.08	357	PK	Vertical	PASS
82.04	48.0	16.15	-31.810	40.00	23.85	187	PK	Vertical	PASS
104.31	49.9	20.38	-29.520	43.50	23.12	291	PK	Vertical	PASS
356.76	40.3	16.75	-23.540	46.00	29.25	85	PK	Vertical	PASS
948.25	37.6	26.62	-10.990	46.00	19.38	78	PK	Vertical	PASS



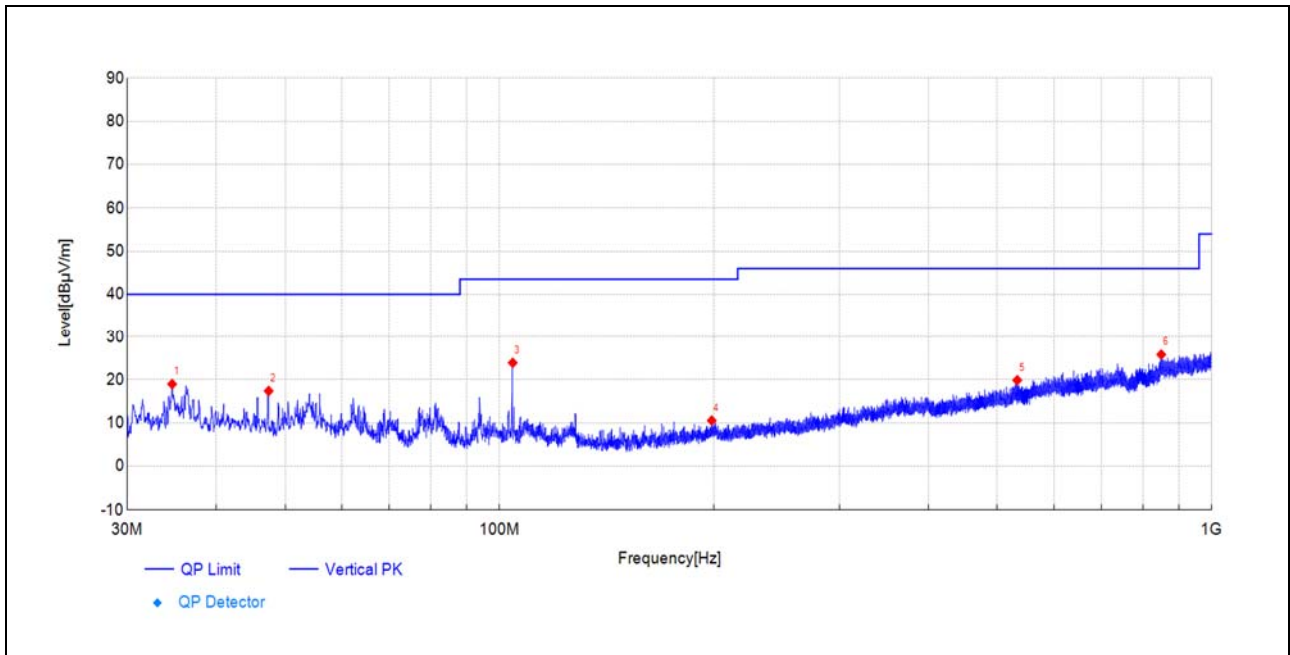
360 kHz

A.Radiated Emission >30MHz (30MHz-1GHz)



(30MHz – 1GHz, Test Antenna Horizontal)

Frequency [MHz]	Reading [dBμV]	Level [dBμV/m]	Factor [dB/m]	Limit [dBμV/m]	Margin [dB]	Angle [°]	Detector	Polarity	Verdict
36.26	48.0	18.52	-29.510	40.00	21.48	94	PK	Horizontal	PASS
45.81	46.2	17.77	-28.390	40.00	22.23	195	PK	Horizontal	PASS
93.93	51.1	20.55	-30.570	43.50	22.95	74	PK	Horizontal	PASS
104.35	54.8	25.26	-29.490	43.50	18.24	255	PK	Horizontal	PASS
350.02	40.6	16.67	-23.890	46.00	29.33	120	PK	Horizontal	PASS
852.31	38.2	25.59	-12.560	46.00	20.41	19	PK	Horizontal	PASS



(30MHz – 1GHz, Test Antenna Vertical)

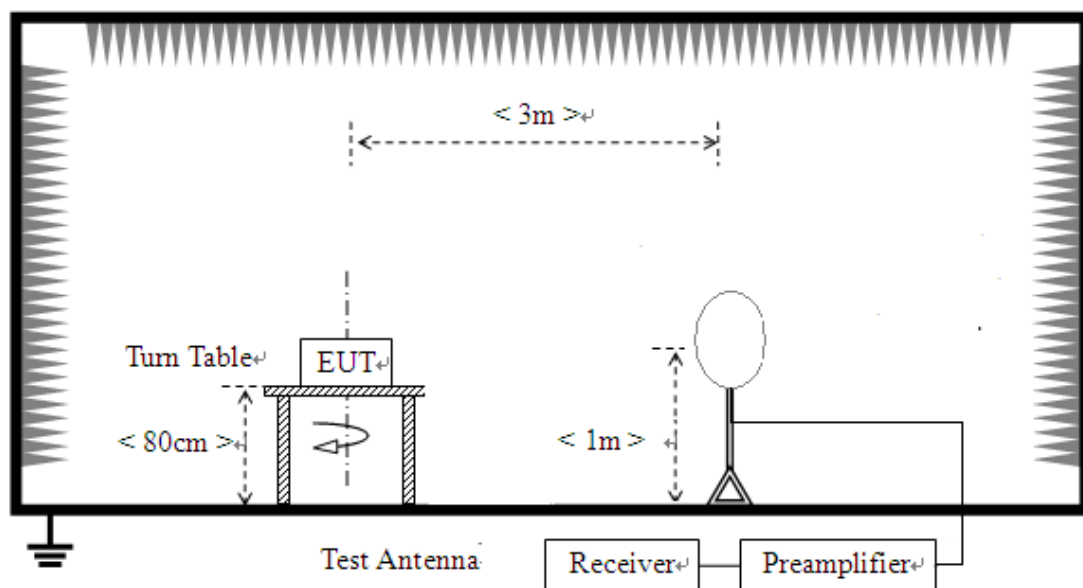
Frequency [MHz]	Reading [dBμV]	Level [dBμV/m]	Factor [dB/m]	Limit [dBμV/m]	Margin [dB]	Angle [°]	Detector	Polarity	Verdict
34.70	49.0	18.99	-29.960	40.00	21.01	95	PK	Vertical	PASS
47.41	45.8	17.39	-28.420	40.00	22.61	296	PK	Vertical	PASS
104.35	53.4	23.91	-29.490	43.50	19.59	275	PK	Vertical	PASS
198.59	39.6	10.56	-29.020	43.50	32.94	225	PK	Vertical	PASS
533.16	38.9	19.88	-19.020	46.00	26.12	35	PK	Vertical	PASS
849.30	38.6	25.81	-12.740	46.00	20.19	270	PK	Vertical	PASS

2.4. 20 dB Bandwidth

2.4.1. Standard Applicable

According to FCC section 15.215(c), the 20dB bandwidth should be contained within the frequency band designated in the rule section under which the EUT is operated, it was measured with a spectrum analyzer connected the EUT while the EUT is operating in transmission mode.

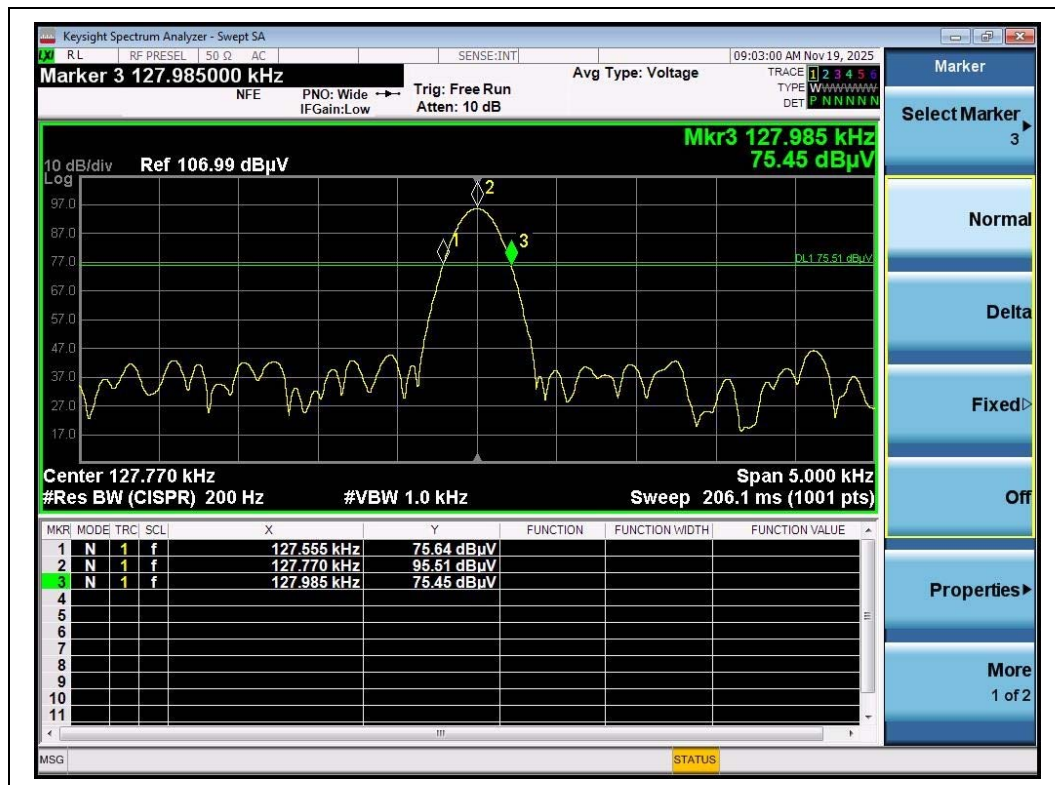
2.4.2. Test Setup



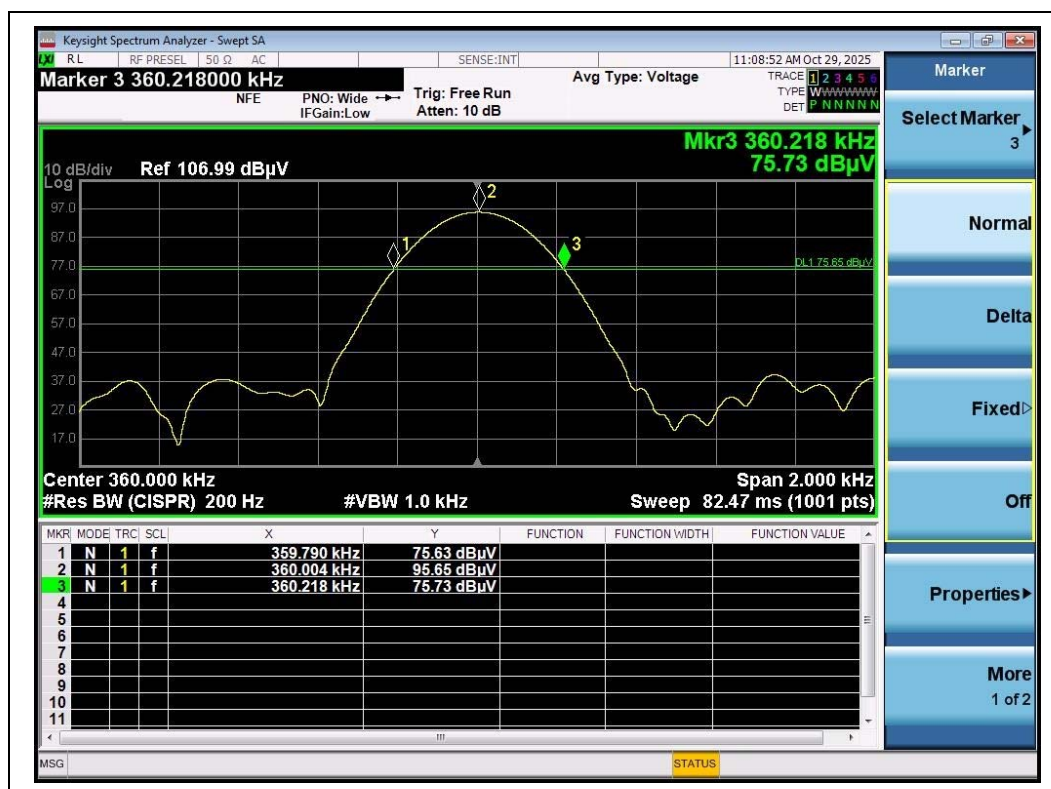


2.4.3. Test Result

Frequency(kHz)	20 dB Bandwidth (kHz)	Verdict
115-205kHz	0.430	PASS
360kHz	0.428	PASS



(115-205kHz)



(360kHz)



Annex A Test Uncertainty

The uncertainty is calculated using the methods suggested in the "Guide to the Expression of Uncertainty in Measurement" (GUM) published by ISO.

Radiated Emission:	$\pm 3.1\text{dB}$
Conducted Emission:	$\pm 1.8\text{dB}$
Bandwidth:	$\pm 5\%$
Frequency Tolerance:	$\pm 5\%$



Annex B Testing Laboratory Information

1. Identification of the Responsible 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

2. Identification of the Responsible Testing Location

Name:	Shenzhen Morlab Communications Technology Co., Ltd.
Address:	FL.3, Building A, FeiYang Science Park, No.8 LongChang Road, Block 67, BaoAn District, ShenZhen, GuangDong Province, P. R. China

3. Facilities and Accreditations

All measurement facilities used to collect the measurement data are located at FL.3, Building A, FeiYang Science Park, Block 67, BaoAn District, Shenzhen, 518101 P. R. China. The test site is constructed in conformance with the requirements of ANSI C63.10-2020 and CISPR Publication 22; the FCC designation number is CN1192, the test firm registration number is 226174.



4. Test Equipment Utilized

4.1 Test Equipment

Equipment Name	Serial No.	Type	Manufacturer	Cal. Date	Due Date
Signal Analyzer	MY56060145	N9020A	Agilent	2025.05.13	2026.05.12
Test Antenna - Bi-Log	9163-274	VULB 9163	Schwarzbeck	2025.06.28	2026.06.27
Test Antenna - Loop	1519-022	FMZB1519	Schwarzbeck	2025.05.16	2026.05.15
Anechoic Chamber	N/A	9m*6m*6m	CRT	2025.06.21	2028.06.20
Anechoic Chamber	N/A	9m*6m*6m	CRT	2022.11.30	2025.11.29

4.2 Conducted Emission Test Equipment

Equipment	Serial No.	Type	Manufacturer	Cal. Date	Due Date
Receiver	101052	ESPI	R&S	2025.05.15	2026.05.14
LISN	103131	ENV 216	R&S	2025.03.20	2026.03.19
RF Coaxial Cable (DC-100MHz)	EMC-CE-00514	N/A	N/A	2025.05.06	2026.05.05

4.3 Test Software Utilized

Description	Software Version	Manufacturer
JS32-RE	Version 5.0.0	Tonscend
TS+ -[JS32-CE]	Version 2.5.0.0	Tonscend
PMM Emission Suite	Version 2.02	narda

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