

FCC TEST REPORT

Product Name: 3-in-1 Charger Stand

Trade Mark: heyday™  or

dealworthy™

Model No.: QIC37M

Add. Model No.: N/A

Report Number: 24051711551RFC-1

Test Standards: FCC 47 CFR Part 15 Subpart C

FCC ID: 2AO23-QIC37M

Test Result: PASS

Date of Issue: June 14, 2024

Prepared for:

CHUG, Inc.

7157 Shady Oak Rd, Eden Prairie MN 55344, United States

Prepared by:

Shenzhen UnionTrust Quality and Technology Co., Ltd.

Unit D/E of 9/F and 16/F, Block A, Building 6, Baoneng science and technology park, Longhua district, Shenzhen, China

TEL: +86-755-2823 0888

FAX: +86-755-2823 0886

Prepared by:

David Chen

David Chen
Senior Project Engineer

Reviewed by:

Robben Chen

Robben Chen
Assistant Manager

Approved by:



Billy Li
Technical Director

Date:

June 14, 2024

Shenzhen UnionTrust Quality and Technology Co., Ltd.

Address: Unit D/E of 9/F and 16/F, Block A, Building 6, Baoneng science and technology park, Longhua district, Shenzhen, China

Tel: +86-755-28230888

Fax: +86-755-28230886

E-mail: info@uttlab.com

<http://www.uttlab.com>

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Version

Version No.	Date	Description
V1.0	June 14, 2024	Original

**Shenzhen UnionTrust Quality and Technology Co., Ltd.**

Address: Unit D/E of 9/F and 16/F, Block A, Building 6, Baoneng science and technology park, Longhua district, Shenzhen, China

Tel: +86-755-28230888

Fax: +86-755-28230886

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1. GENERAL INFORMATION

1.1 CLIENT INFORMATION

Applicant:	CHUG, Inc.
Address of Applicant:	7157 Shady Oak Rd, Eden Prairie MN 55344, United States
Manufacturer 1:	PYS VIETNAM TECHNOLOGY COMPANY LIMITED
Address of Manufacturer 1:	CN-06,ThuanThanh II industrial zone,Mao Dien commune,ThuanThanh district, BacNinh, Vietnam
Manufacturer 2:	PYS High-Tech Co., Ltd.
Address of Manufacturer 2:	1F~12F, Block 9, Lianhua Industrial Zone, Longhua, Shenzhen,Guangdong 518109 CHINA

1.2 EUT INFORMATION

1.2.1 General Description of EUT

Product Name:	3-in-1 Charger Stand
Model No.:	QIC37M
Trade Mark:	heyday™  or dealworthy™
DUT Stage:	Identical Prototype
Rated Voltage:	Powered by Adapter: Input: 100-240V~50/60Hz, 1 A Output: 5V \equiv 3A or 9V \equiv 3A or 12V \equiv 2.91A or 15V \equiv 2.33A or 20V \equiv 1.75A
Software Version:	V1.2 (Provided by the customer)
Hardware Version:	V1.2 (Provided by the customer)
Sample Received Date:	May 17, 2024
Sample Tested Date:	May 29, 2024 to June 6, 2024
Remark:	The above EUT's information was provided by customer. Please refer to the specifications or user's manual for more detailed description.

1.2.2 Description of Accessories

Adapter	
Model No.:	PYS-D35PDJ-1CU
Input:	100-240V~50/60Hz 1A
Output:	5V \equiv 3A or 9V \equiv 3A or 12V \equiv 2.91A or 15V \equiv 2.33A or 20V \equiv 1.75A

Cable	
Connector:	USB Type-C Plug Cable
Cable Type:	Shielded without ferrite
Length:	1.8Meter

1.3 PRODUCT SPECIFICATION SUBJECTIVE TO THIS STANDARD

Frequency Range:	Transmitter 1(Airpods Wireless Charge): 115kHz to 205kHz
	Transmitter 2(I-Watch Wireless Charger): 326.5kHz
	Transmitter 3(Wireless Charging MPP):127kHz/362.5kHz
Wireless Output:	Air pods wireless Charge: 5W MAX I-Watch Charger: 5W MAX Wireless Charging MPP: 15W MAX
Modulation type:	ASK
Antenna Type: (Provided by the customer)	Induction coil antenna

1.4 DESCRIPTION OF SUPPORT UNITS

The EUT has been tested with associated equipment below.

Description	Manufacturer	Model No.	Serial Number	Supplied by
iPhone 14 Pro Max	Apple	MQ8F3CH/A	X54CD26699	UnionTrust
Apple watch	Apple	A2092	G99CCKJ7MLTK	UnionTrust
Air Pods	Apple	Air Pods 3	NA	UnionTrust

1.5 TEST LOCATION

Shenzhen UnionTrust Quality and Technology Co., Ltd.

Address: Unit D/E of 9/F and 16/F, Block A, Building 6, Baoneng science and technology park, Longhua district, Shenzhen, China

Telephone: +86 (0) 755 2823 0888

Fax: +86 (0) 755 2823 0886

1.6 TEST FACILITY

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

CNAS-Lab Code: L9069

The measuring equipment utilized to perform the tests documented in this report has been calibrated once a year or in accordance with the manufacturer's recommendations, and is traceable under the ISO/IEC 17025 to international or national standards. Equipment has been calibrated by accredited calibration laboratories.

A2LA-Lab Certificate No.: 4312.01

Shenzhen UnionTrust Quality and Technology Co., Ltd. has been accredited by A2LA for technical competence in the field of electrical testing, and proved to be in compliance with ISO/IEC 17025 General Requirements for the Competence of Testing and Calibration Laboratories and any additional program requirements in the identified field of testing.

ISED Wireless Device Testing Laboratories

CAB identifier: CN0032

FCC Accredited Lab.

Designation Number: CN1194

Test Firm Registration Number: 259480

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1.7 DEVIATION FROM STANDARDS

None.

1.8 ABNORMALITIES FROM STANDARD CONDITIONS

None.

1.9 OTHER INFORMATION REQUESTED BY THE CUSTOMER

None.

1.10 MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the Product as specified in CISPR 16-4-2. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

No.	Item	Measurement Uncertainty
1	Conducted emission 9kHz-150kHz	±3.2 dB
2	Conducted emission 150kHz-30MHz	±2.7 dB
3	Radiated emission 9kHz-30MHz	±4.7 dB
4	Radiated emission 30MHz-1GHz	±4.6 dB
5	Radiated emission 1GHz-18GHz	±4.4 dB
6	Radiated emission 18GHz-40GHz	±4.6 dB

2. TEST SUMMARY

FCC 47 CFR Part 15 Subpart C Test Cases			
Test Item	Test Requirement	Test Method	Result
Antenna Requirement	FCC 47 CFR Part 15 Subpart C Section 15.203	N/A	PASS
20DB Bandwidth	FCC 47 CFR Part 15 Subpart C Section 15.215(c)	ANSI C63.10-2013	PASS
Conducted Emission	FCC 47 CFR Part 15 Subpart C Section 15.207	ANSI C63.10-2013 Section 6.3 & 6.5 & 6.6	PASS
Radiated Emission	FCC 47 CFR Part 15 Subpart C Section 15.205/15.209	ANSI C63.10-2013	PASS

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3. EQUIPMENT LIST

Radiated Emission Test Equipment List						
Used	Equipment	Manufacturer	Model No.	Serial Number	Cal. date	Cal. Due date
<input checked="" type="checkbox"/>	3m SAC	ETS-LINDGREN	3M	Euroshiedpn-CT001270-1317	11-Nov-2023	10-Nov-2026
<input checked="" type="checkbox"/>	Receiver	R&S	ESIB26	100114	27-Oct-2023	26-Oct-2024
<input checked="" type="checkbox"/>	Loop Antenna	ETS-LINDGREN	6502	00202525	30-Oct-2023	29-Oct-2024
<input checked="" type="checkbox"/>	Broadband Antenna	ETS-LINDGREN	3142E	00201566	30-Oct-2023	29-Oct-2024
<input checked="" type="checkbox"/>	6dB Attenuator	Talent	RA6A5-N-18	18103001	30-Oct-2023	29-Oct-2024
<input checked="" type="checkbox"/>	Preamplifier	HP	8447F	2805A02960	31-Oct-2023	30-Oct-2024
<input checked="" type="checkbox"/>	Multi device Controller	ETS-LINDGREN	7006-001	00160105	N/A	N/A
<input checked="" type="checkbox"/>	Test Software	Audix	e3	Software Version: 9.160323		

Conducted Emission Test Equipment List						
Used	Equipment	Manufacturer	Model No.	Serial Number	Cal. date	Cal. Due date
<input checked="" type="checkbox"/>	Receiver	R&S	ESR7	101181	27-Oct-2023	26-Oct-2024
<input checked="" type="checkbox"/>	Pulse Limiter	R&S	ESH3-Z2	0357.8810.54	27-Oct-2023	26-Oct-2024
<input checked="" type="checkbox"/>	LISN	R&S	ESH2-Z5	860014/024	27-Oct-2023	26-Oct-2024
<input type="checkbox"/>	LISN	ETS-Lindgren	3816/2SH	00201088	27-Oct-2023	26-Oct-2024
<input checked="" type="checkbox"/>	Test Software	EZ-EMC	EZ-CON	Software Version: EMC-CON 3A1.1		

20dB BW Test Equipment List						
Used	Equipment	Manufacturer	Model No.	Serial Number	Cal. date	Cal. Due date
<input checked="" type="checkbox"/>	Spectrum analyzer	R&S	FSV40-N	101653	29-Mar-2024	28-Mar-2025
<input checked="" type="checkbox"/>	Loop Antenna	ETS-LINDGREN	6502	00202525	30-Oct-2023	29-Oct-2024

4. TEST CONFIGURATION

4.1 ENVIRONMENTAL CONDITIONS FOR TESTING

4.1.1 Normal or Extreme Test Conditions

Environment Parameter	Selected Values During Tests		
Test Condition	Ambient		
	Temperature (°C)	Voltage (V)	Relative Humidity (%)
NT/NV	+15 to +35	1. 120~60Hz 2. 240~50Hz	20 to 75
Remark: 1) NV: Normal Voltage; NT: Normal Temperature			

4.1.2 Record of Normal Environment and Test Sample

Test Item	Temp. (°C)	Relative Humidity (%)	Pressure (kPa)	Sample No.	Tested by
Radiated Emission	23.2	66.3	100.2	S20205173445-ZJA01/2	Jackson Wu
Conducted Emission	23.0	61.6	100.4		Linson Xie

4.2 TEST MODES

Test Item	EMI Test Modes
Radiated Emission	Test Mode 1: Charging from Adapter 1 (with 120V~60Hz) + Wireless charging mode with phone (15W) Test Mode 2: Charging from Adapter 1 (with 120V~60Hz) + Wireless charging mode with Air Pods (5W) Test Mode 3: Charging from Adapter 1 (with 120V~60Hz) + Wireless charging mode with iWatch (5W) Test Mode 4: Charging from Adapter 1 (with 120V~60Hz) + Wireless charging mode with phone (15W) + Air Pods (5W) Test Mode 5: Charging from Adapter 1 (with 120V~60Hz) + Wireless charging mode with phone (15W) + iWatch (5W) Test Mode 6: Charging from Adapter 1 (with 120V~60Hz) + Wireless charging mode with iWatch (5W) + Air Pods (5W)
Conducted Emission	Test Mode 7: Charging from Adapter 1 (with 120V~60Hz) + Wireless charging mode with phone (15W) + iWatch (5W) + Air Pods (5W) Test Mode 8: Charging from Adapter 1 (with 120V~60Hz) + Standby Test Mode 9: Charging from Adapter 1 (with 240V~50Hz) + Worst from Test Mode 1~8

4.3 TEST SETUP

4.3.1 For Radiated Emissions test setup

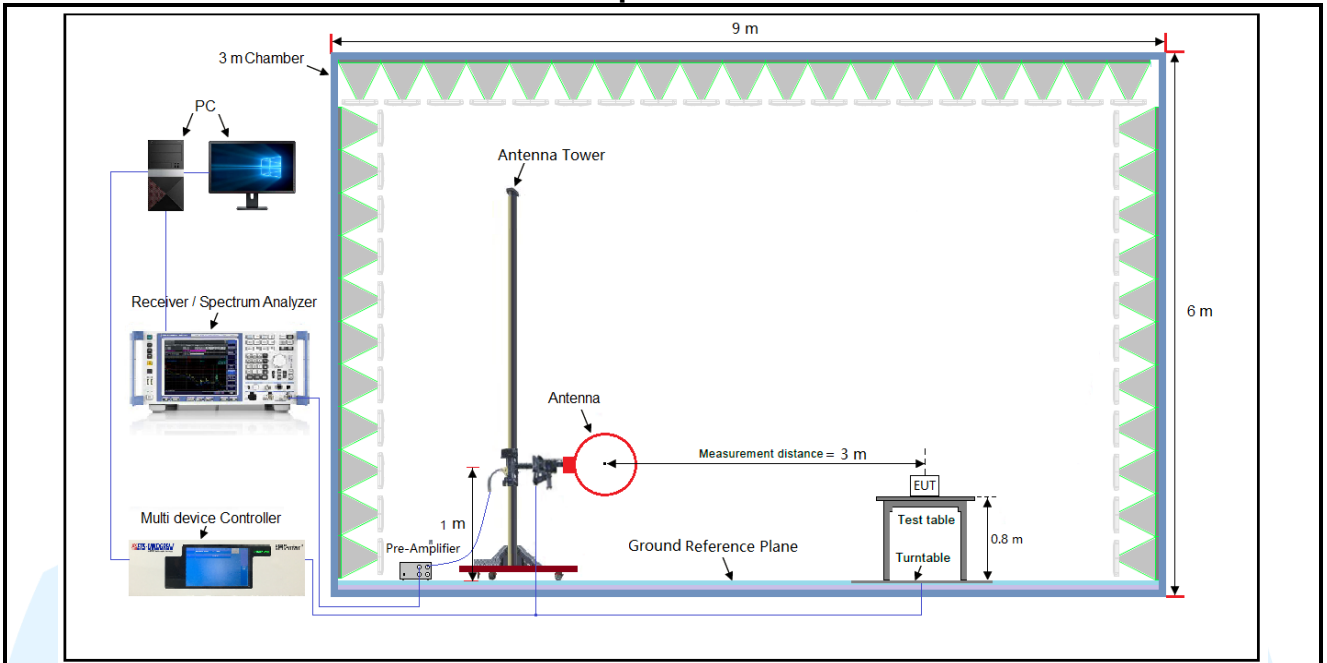
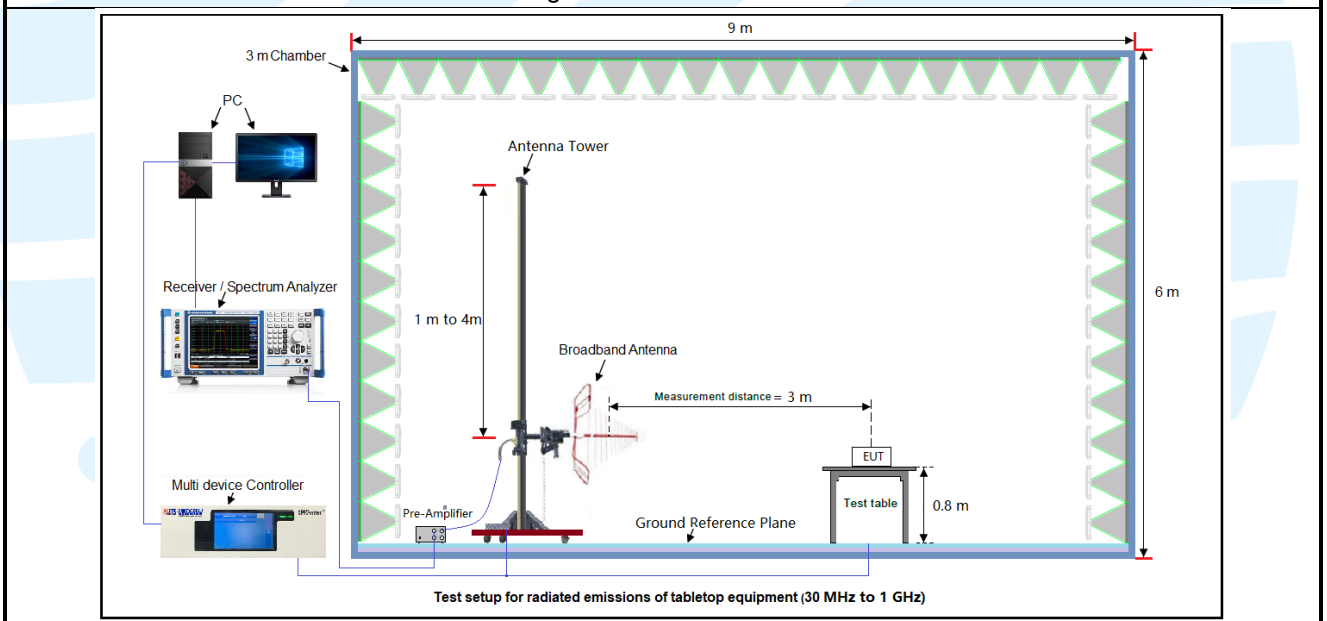


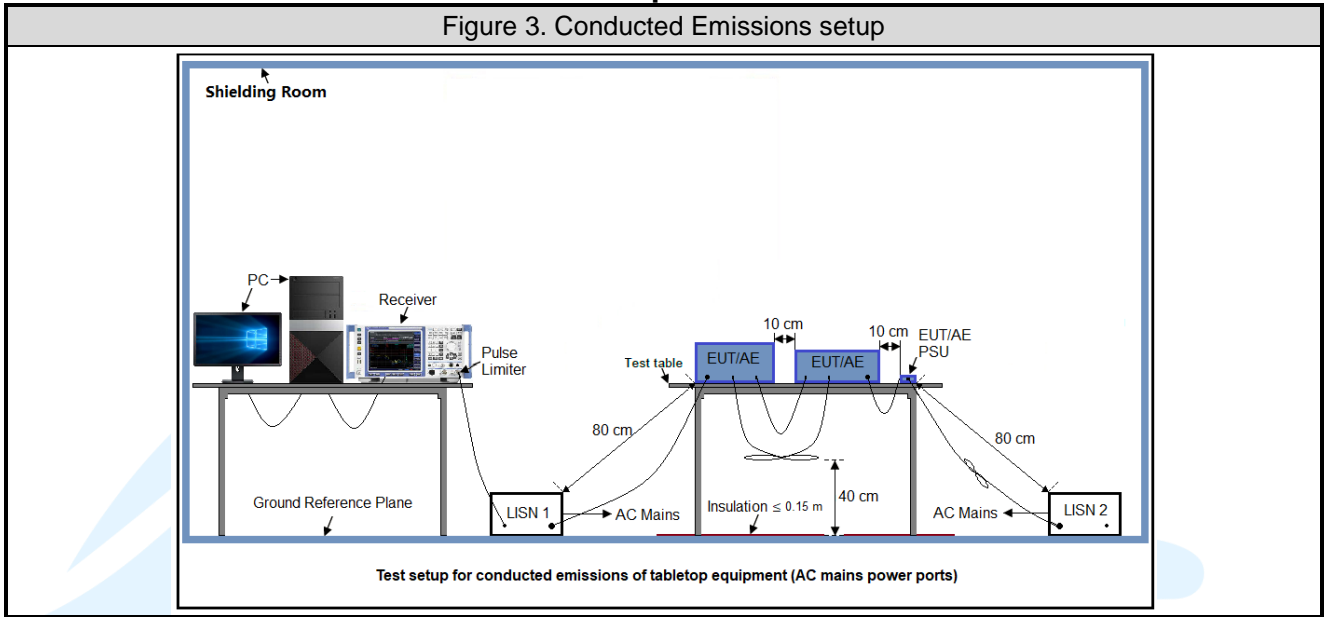
Figure 1. Below 30MHz



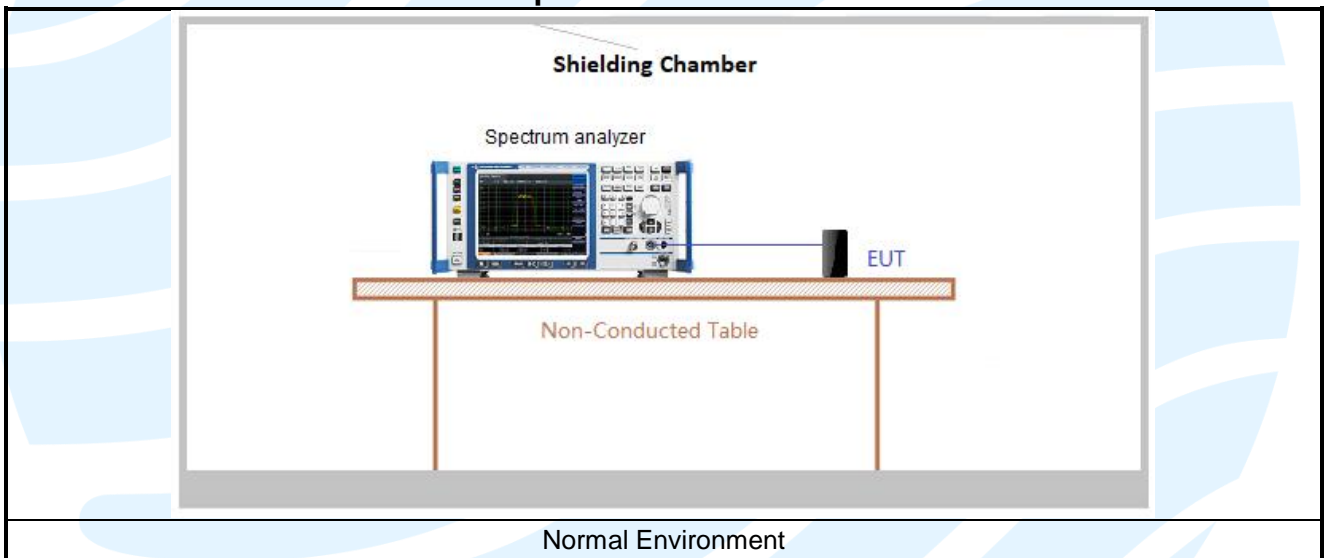
Test setup for radiated emissions of tabletop equipment (30 MHz to 1 GHz)

Figure 2. 30MHz to 1GHz

4.3.2 For Conducted Emissions test setup



4.3.3 For Conducted RF test setup



4.4 SYSTEM TEST CONFIGURATION

All readings are extrapolated back to the equivalent three meter reading using inverse scaling with distance. Analyzer resolution is 100 kHz or greater for frequencies below 1000MHz. The resolution is 1 MHz or greater for frequencies above 1000MHz. The spurious emissions more than 20 dB below the permissible value are not reported.

Radiated emission measurement were performed from the lowest radio frequency signal generated in the device which is greater than 9 kHz to the tenth harmonic (according to KDB 896810 D02 SDoC FAQ v01r01) of the highest fundamental frequency or to 40 GHz, whichever is lower.

5. REFERENCE DOCUMENTS FOR TESTING

5.1 REFERENCE DOCUMENTS FOR TESTING

No.	Identity	Document Title
1	FCC 47 CFR Part 15	Radio Frequency Devices
2	ANSI C63.10-2013	American National Standard for Testing Unlicensed Wireless Devices

5.2 ANTENNA REQUIREMENT

Standard Requirement
<p>15.203 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.</p>
<p>EUT Antenna: This product has a permanent antenna, fulfill the requirement of this section.</p>

5.3 20DB BANDWIDTH

Test Requirement: FCC 47 CFR Part 15 Subpart C Section 15.215 (c)

Test Method: ANSI C63.10

Test Procedure: Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.
Use the following spectrum analyzer settings:

- The spectrum analyzer center frequency is set to the nominal EUT channel center frequency
- Span = approximately 2 to 5 times the OBW
- RBW = 1% to 5% of the OBW
- VBW \geq 3*RBW
- Sweep = auto;
- Detector function = peak
- Trace = max hold
- All the trace to stabilize, use the marker-to-peak function to set the marker to the peak of the emission, use the marker-delta function to measure and record the 20dB down bandwidth of the emission.

Note: The cable loss and attenuator loss were offset into measure device as an amplitude offset.

Test Setup: Refer to section 4.4.3 for details.

Instruments Used: Refer to section 3 for details

Test Mode: Transmitter mode

Test Results: Pass

Test Data:

Frequency	20 dB Bandwidth (Hz)
127kHz (Transmitter 3)	159.8k
146kHz(Transmitter 1)	157.8
326.5kHz(Transmitter 2)	267.7
360kHz(Transmitter 3)	105.39

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Address: Unit D/E of 9/F and 16/F, Block A, Building 6, Baoneng science and technology park, Longhua district, Shenzhen, China

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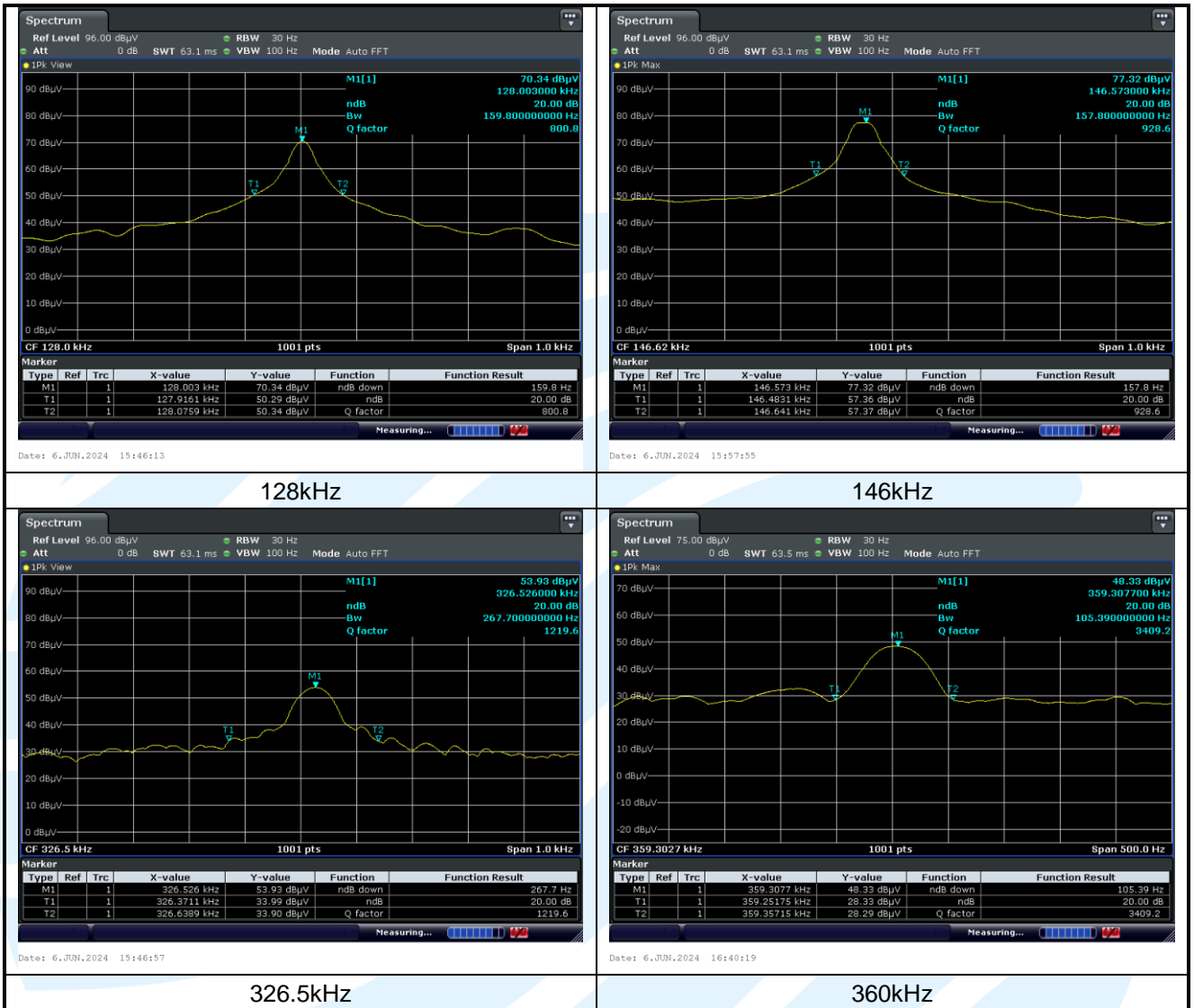
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The test plot as follows:



5.4 RADIATED EMISSION

Test Requirement: FCC 47 CFR Part 15 Subpart C Section 15.205/15.209

Test Method: ANSI C63.10-2013 Section 6.3 & 6.5

Receiver Setup:

Frequency	RBW
0.009 MHz-0.150 MHz	200/300 kHz
0.150 MHz -30 MHz	9/10 kHz
30 MHz-1 GHz	100/120 kHz
Above 1 GHz	1 MHz

Limits:

Spurious Emissions

Frequency	Field strength (microvolt/meter)	Limit (dBµV/m)	Remark	Measurement distance (m)
0.009 MHz-0.490 MHz	2400/F(kHz)	--	--	300
0.490 MHz-1.705 MHz	24000/F(kHz)	--	--	30
1.705 MHz-30 MHz	30	--	--	30
30 MHz-88 MHz	100	40.0	Quasi-peak	3
88 MHz-216 MHz	150	43.5	Quasi-peak	3
216 MHz-960 MHz	200	46.0	Quasi-peak	3
960MHz-1GHz	500	54.0	Quasi-peak	3
Above 1 GHz	500	54.0	Average	3

Remark:

- The lower limit shall apply at the transition frequencies.
- Emission level (dBµV/m) = 20 log Emission level (µV/m).
- For frequencies above 1000 MHz, the field strength limits are based on average detector, however, the peak field strength of any emission shall not exceed the maximum permitted average limits, specified above by more than 20 dB under any condition of modulation.
- For Below 30MHz, the measured field strength was extrapolated to distance 30 meters, using the formula that the limit of field strength varies as the inverse distance square (40dB per decade of distance). the measured field strength was extrapolated to distance 300 meters, using the formula that the limit of field strength varies as the inverse distance square (80dB per decade of distance)

Example:

Field strength limit for 125 kHz = 19.2 µV/m at 300m
 = 25.67 dBµV/m at 300m
 = 25.67dBµV/m + 40log(300/3) dB at 3m
 = 105.67 dBµV/m at 3m

Test Setup: Refer to section 4.4.1 for details.

Test Procedures:

- The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- 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.
- 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 rota table table was turned from 0 degrees to 360 degrees to find the maximum reading.
- The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.

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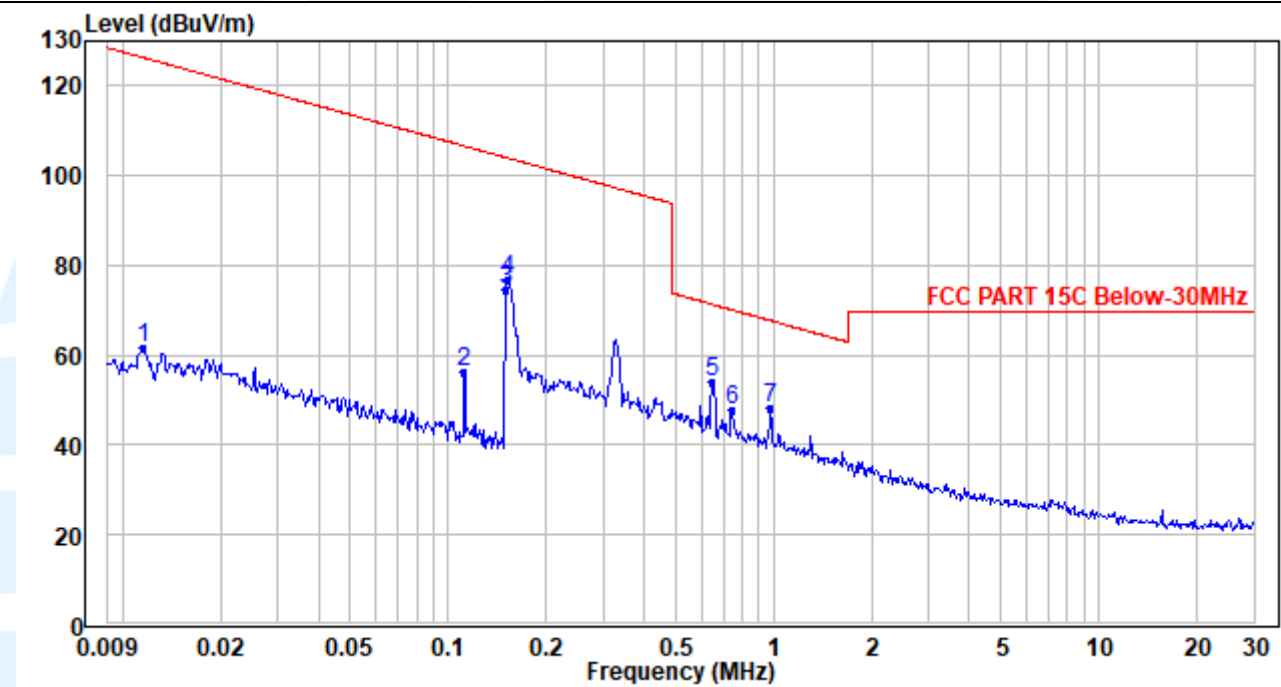
- 6) If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.
- 7) The radiation measurements are performed in X, Y, Z axis positioning. And found the X axis positioning which it is worse case, only the test worst case mode is recorded in the report.(for portable and mobile devices)

Equipment Used: Refer to section 3 for details.

Test Result: Pass

Radiated Emission Test Data (9 KHz ~ 150 KHz):

Worst Test data: Test Mode 7
Horizontal



No.	Frequency (MHz)	Reading (dBμV/m)	Correction factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector
1	0.012	73.16	-11.73	61.43	126.35	-64.92	Peak
2	0.112	74.53	-18.37	56.16	106.62	-50.46	Peak
3	0.150	92.87	-18.30	74.57	104.08	-29.51	Peak
4	0.152	95.07	-18.30	76.77	103.98	-27.21	Peak
5	0.649	72.23	-18.39	53.84	71.34	-17.50	Peak
6	0.745	66.26	-18.39	47.87	70.13	-22.26	Peak
7	0.982	66.47	-18.35	48.12	67.72	-19.60	Peak

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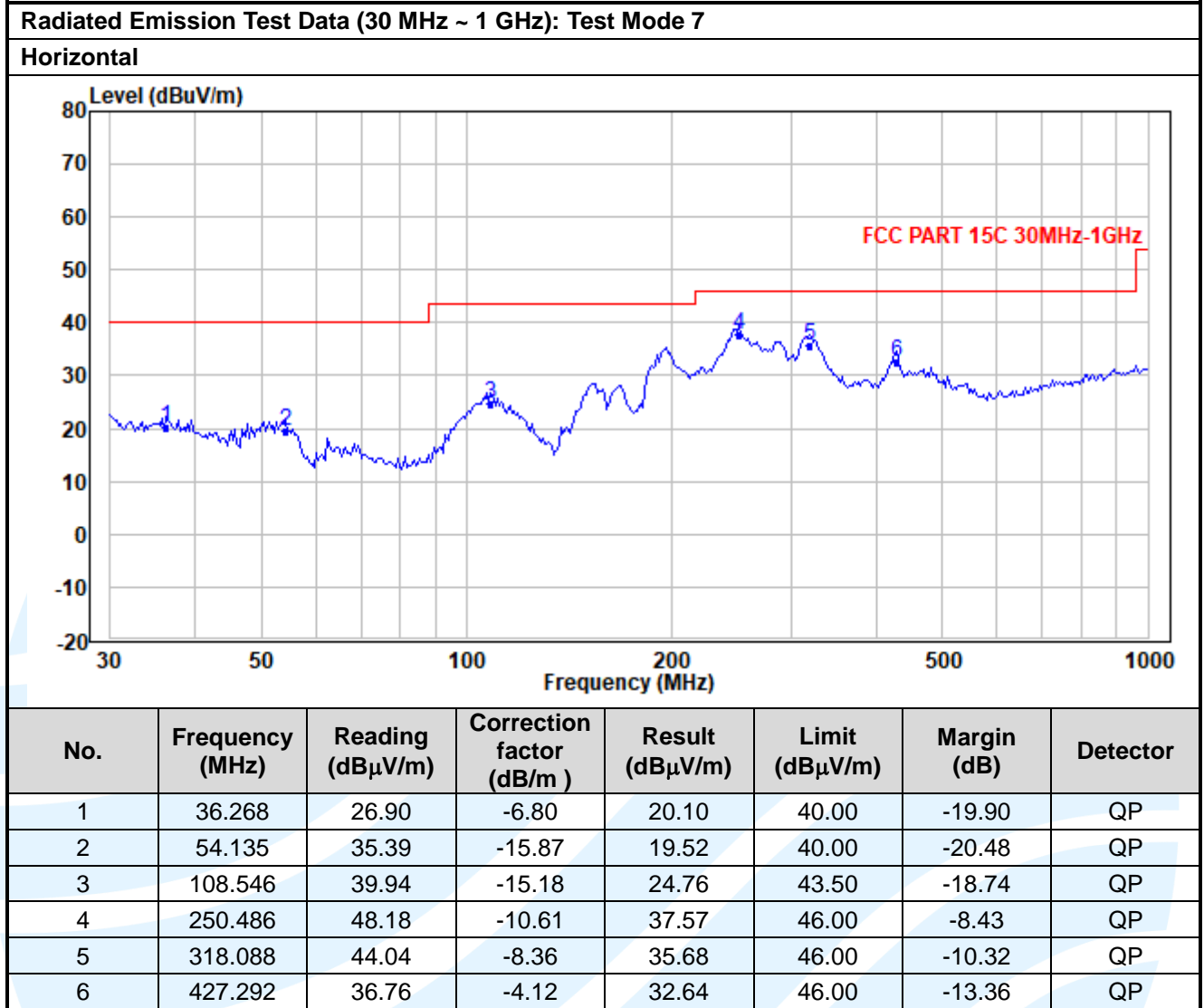
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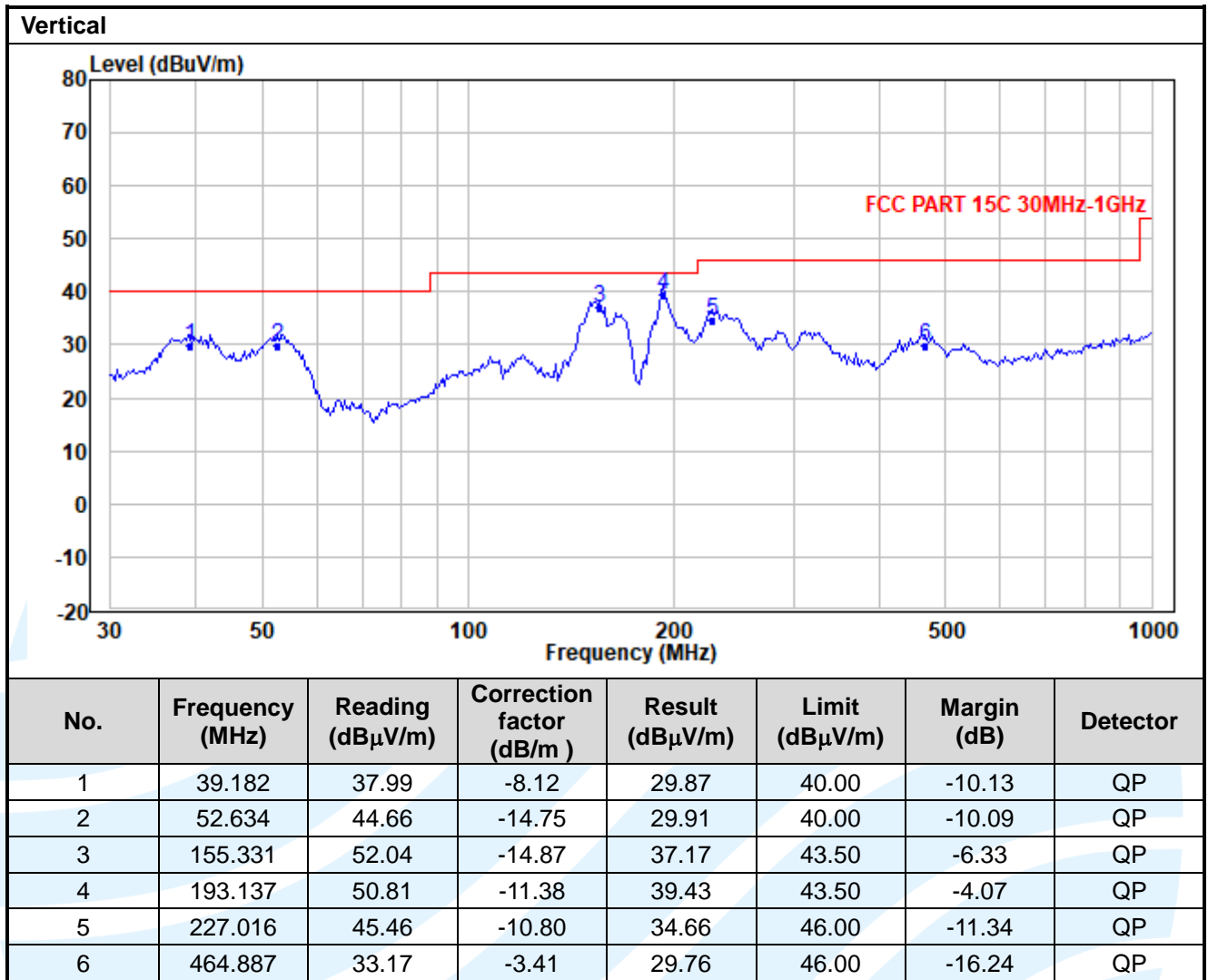
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Remark:

1. Correct Factor = Antenna Factor + Cable Loss - Amplifier Gain, the value was added to Original Receiver Reading by the software automatically.
2. Result = Reading + Correct Factor.
3. Margin = Result - Limit

5.5 CONDUCTED EMISSION

Test Requirement: FCC 47 CFR Part 15 Subpart C Section 15.207

Test Method: ANSI C63.10-2013 Section 6.2

Limits:

Frequency range (MHz)	Limits (dB(μV))	
	Quasi-peak	Average
0,15 to 0,50	66 to 56	56 to 46
0,50 to 5	56	46
5 to 30	60	50

Remark:

1. The lower limit shall apply at the transition frequencies.
2. The limit decreases linearly with the logarithm of the frequency in the range 0.15 to 0.50 MHz.

Test Setup: Refer to section 4.4.2 for details.

Test Procedures:

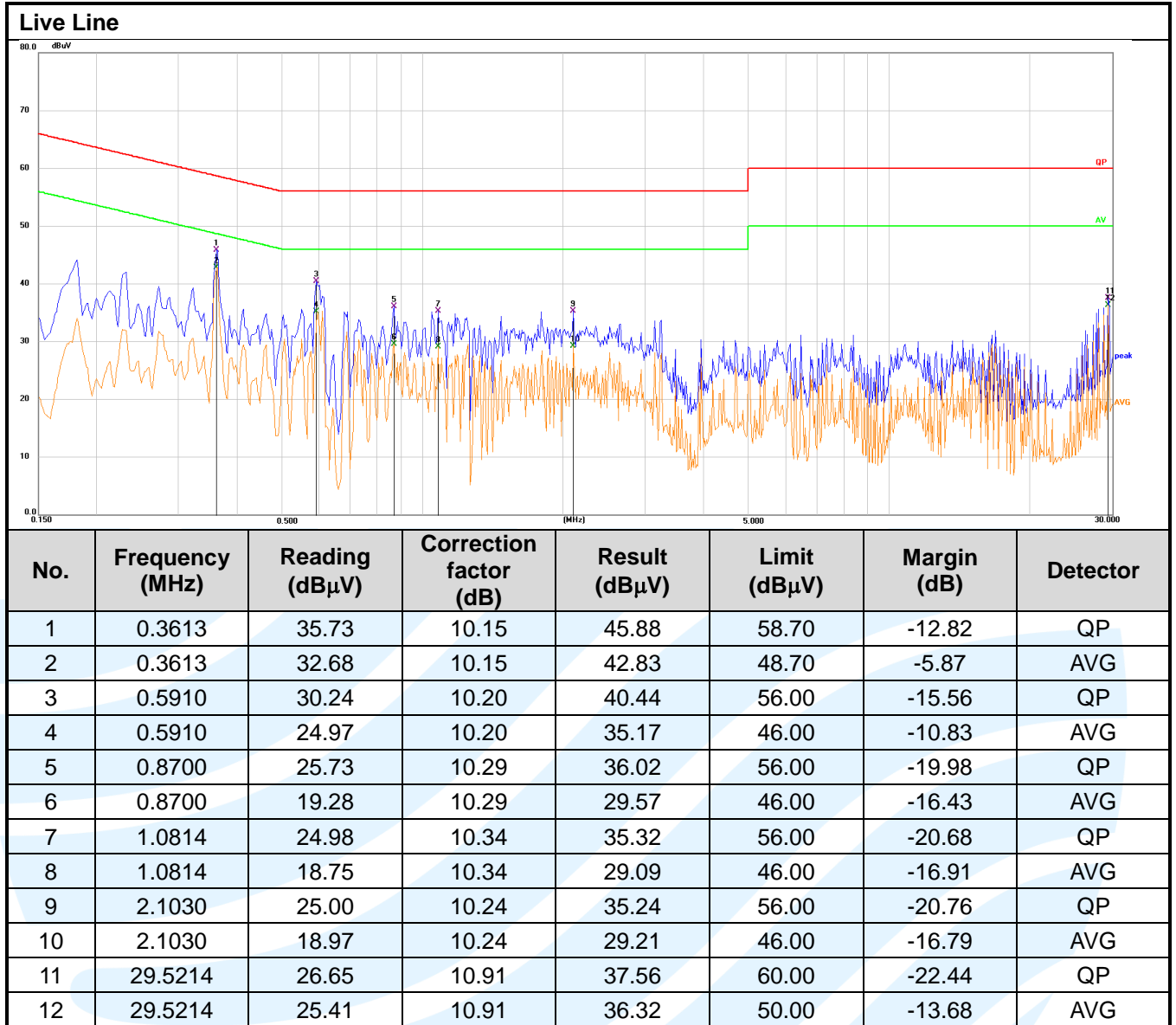
Test frequency range :150KHz-30MHz

- 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 50Ω/50μH + 5Ω 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.

Equipment Used: Refer to section 3 for details.

Test Result: Pass

The measurement data as follows:
 Quasi Peak and Average:
 Worst Test data: Test Mode 7



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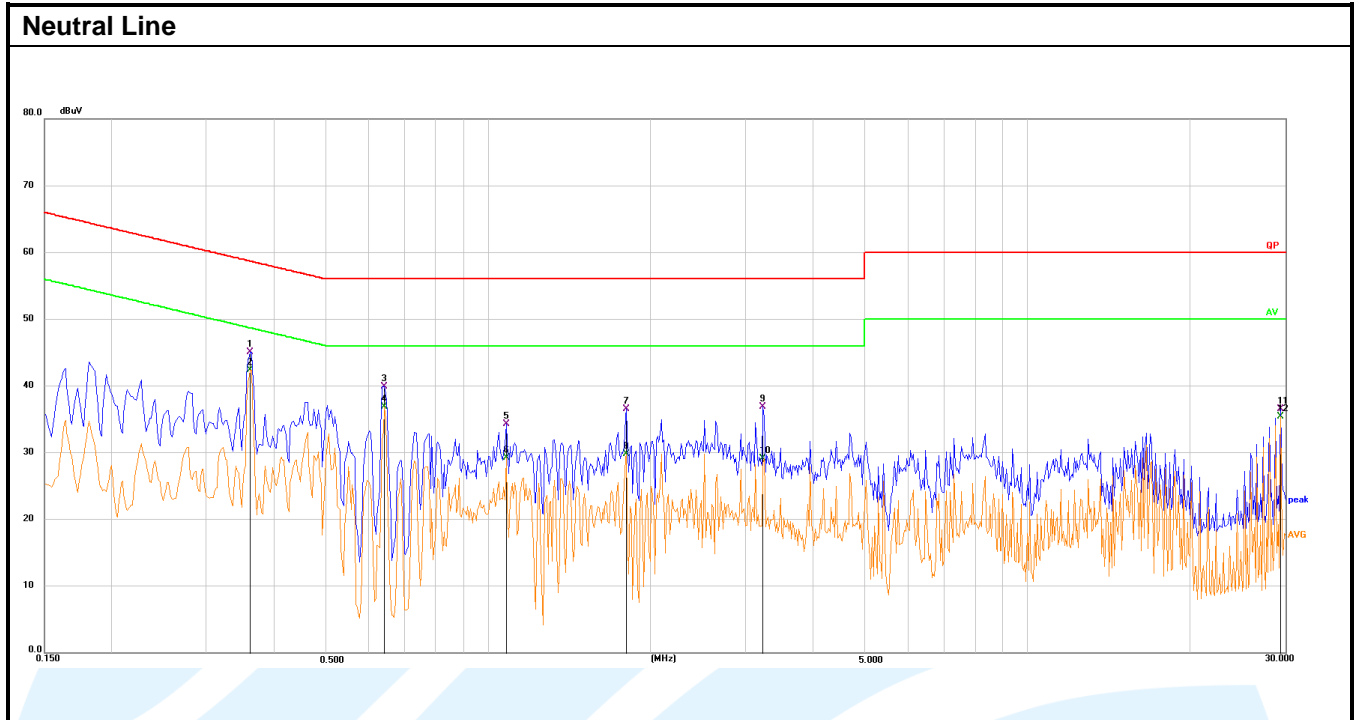
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No.	Frequency (MHz)	Reading (dBµV)	Correction factor (dB)	Result (dBµV)	Limit (dBµV)	Margin (dB)	Detector
1	0.3614	34.91	10.15	45.06	58.70	-13.64	QP
2	0.3614	32.23	10.15	42.38	48.70	-6.32	AVG
3	0.6404	29.60	10.25	39.85	56.00	-16.15	QP
4	0.6404	26.63	10.25	36.88	46.00	-9.12	AVG
5	1.0815	24.13	10.17	34.30	56.00	-21.70	QP
6	1.0815	19.10	10.17	29.27	46.00	-16.73	AVG
7	1.8015	26.26	10.30	36.56	56.00	-19.44	QP
8	1.8015	19.49	10.30	29.79	46.00	-16.21	AVG
9	3.2370	26.66	10.24	36.90	56.00	-19.10	QP
10	3.2370	18.88	10.24	29.12	46.00	-16.88	AVG
11	29.5215	25.69	10.88	36.57	60.00	-23.43	QP
12	29.5215	24.56	10.88	35.44	50.00	-14.56	AVG

Remark:

1. Correct Factor = LISN Factor + Cable Loss + Pulse Limiter Factor, the value was added to Original Receiver Reading by the software automatically.
2. Result = Reading + Correct Factor.
3. Margin = Result - Limit
4. An initial pre-scan was performed on the Phase and neutral lines with peak detector. Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission were detected.
5. All possible modes of operation were investigated, and testing at two nominal voltages of 240V/50Hz and 120V/60Hz, only the worst case emissions reported.

APPENDIX 1 PHOTOS OF TEST SETUP

See test photos attached in Appendix 1 for the actual connections between Product and support equipment.

APPENDIX 2 PHOTOS OF EUT CONSTRUCTIONAL DETAILS

Refer to Appendix 2 for EUT external and internal photos.

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

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