SGS-CSTC Standards Technical Services Co., Ltd.

198 Kezhu Road, Scientech Park, Guangzhou Economic & Technological Development District, Guangzhou, China 510663
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TEST REPORT

Application No.:	GZEM1407003316RF
Applicant:	Salcomp (Shenzhen) Co., Ltd.
Manufacturer:	Salcomp (Shenzhen) Co., Ltd.
Factory:	Salcomp (Shenzhen) Co., Ltd. Salcomp Industrial Eletrônica da Amazônia Ltda Salcomp Manufacturing India Pvt Ltd.
FCC ID:	SZQ-T101
Product Name:	Vu
Product Description:	Low Power Transmitter
Model No.:	VUx-T, the x is color code , which may be “BK”,”G”,”RD”and”BL”,BK=Black, G=Green ,RD=Red, BL= Blue ♣
♣	Please refer to section 3 of this report for further details.
Trade Mark:	TYLT
Standards:	CFR 47 FCC PART 15 SUBPART C:2013 section 15.207 CFR 47 FCC PART 15 SUBPART C:2013 section 15.209
Date of Receipt:	2014-07-04
Date of Test:	2014-07-04 to 2014-07-11
Date of Issue:	2014-07-14
Test Result :	**Pass***

* In the configuration tested, the EUT detailed in this report complied with the standards specified above. Please refer to section 3 of this report for further details.

Authorized Signature:

Richard Li
Manager

The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report. If the product in this report is used in any configuration other than that detailed in the report, the manufacturer must ensure the new system complies with all relevant standards.

The report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the federal government. All test results in this report can be traceable to National or International Standards.

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2 Version

Revision Record				
Version	**Chapter**	**Date**	**Modifier**	**Remark**
00		2014-07-14		Original

Authorized for issue by:				
Tested By		(Jack Liang) /Project Engineer		2014-07-04 to 2014-07-11 **Date**
Prepared By		(Jack Liang) /Project Engineer		2014-07-11 **Date**
Checked By		(Fred Zhu) /Reviewer		2014-07-14 **Date**

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3 Test Summary

ELECTROMAGNETIC INTERFERENCE (EMI)				
Test	**Test Requirement**	**Test Method**	**Class / Severity**	**Result**
Radiated Emission (9 kHz to30MHz)	FCC PART 15 C section 15.209	ANSI C 63.10: Clause 6.4	Section 15.209	PASS
Radiated Emission (30MHz to 1GHz)	FCC PART 15 section 15.209	ANSI C 63.10: Clause 6.4	section 15.209	PASS
Conducted Emission (150 KHz to 30 MHz)	FCC PART 15 section 15.207	ANSI C63.10: Clause 6.2	section 15.207	PASS

Remark:

EUT: In this whole report EUT means Equipment Under Test.
N/A: not applicable. Refer to the relative section for the details.
Tx: In this whole report Tx (or tx) means Transmitter.
Rx: In this whole report Rx (or rx) means Receiver.
RF: In this whole report RF means Radio Frequency.

♣ Model No.: VUx-T, the x is color code , which may be “BK”,”G”,”RD”and”BL”,BK=Black, G=Green ,RD=Red, BL= Blue
According to the declaration from the applicant, the electrical circuit design, layout, components used and internal wiring were identical for all models, with only difference being the outer color.
Therefore only one model **VUBK-T** was tested in this report.

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5 General Information

5.1 Client Information

Applicant:	Salcomp (Shenzhen) Co., Ltd.
Address of Applicant:	Salcomp Road, Furong Industrial Area, Xinqiao, Shajing, Baoan District, Shenzhen 518125 CHINA
Manufacturer:	Salcomp (Shenzhen) Co., Ltd.
Address of Manufacturer	Salcomp Road, Furong Industrial Area, Xinqiao, Shajing, Baoan District, Shenzhen 518125 CHINA
Factory:	Salcomp (Shenzhen) Co., Ltd.
Address of Factory:	Salcomp Road, Furong Industrial Area, Xinqiao, Shajing, BaoanDistrict, Shenzhen 518125 CHINA
Factory:	Salcomp Industrial Eletrônica da Amazônia Ltda
Address of Factory:	Av. dos Oitis, no. 4,145, Distrito Industrial 69075-842 Manaus, Amazonas BRAZIL
Factory:	Salcomp Manufacturing India Pvt Ltd
Address of Factory:	Nokia Telecom SEZ SIPCOT Industrial Park Phase III Chennai – Bangalore Highway Sriperumbudur, Tamil Nadu-602 105

5.2 General Description of E.U.T.

Product Name:	Vu
Model No.:	VUBK-T
Product Description:	Low Power Transmitter

5.3 Details of E.U.T.

Power Supply:	DC 12V(supplied by adaptor)
Transmitter details	Model: VUBK-T, Input: DC12V,750mA. Output:5W.

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5.4 Description of Support Units

The EUT has been tested with simulate receiver, resistor and adapter provided by applicant.

Adapter details	Model: S15A02 Input: AC 100-240V 50/60Hz 0.3A Output: DC 12V 0.75A

5.5 Deviation from Standards

None.

5.6 Abnormalities from Standard Conditions

None.

5.7 Test Location

All tests were performed at:

SGS-CSTC Standards Technical Services Co., Ltd., Guangzhou EMC Laboratory,
198 Kezhu Road, Scientech Park, Guangzhou Economic & Technology Development District,
Guangzhou, China 510663
Tel: +86 20 82155555 Fax: +86 20 82075059

No tests were sub-contracted.

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5.8 Test Facility

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

- **NVLAP (Lab Code: 200611-0)**

  SGS-CSTC Standards Technical Services Co., Ltd., Guangzhou EMC Laboratory is accredited by the National Voluntary Laboratory Accreditation Program (NVLAP/NIST). NVLAP Code: 200611-0.

  The report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the Federal Government.

- **ACMA**

  SGS-CSTC Standards Technical Services Co., Ltd., EMC Laboratory can also perform testing for the Australian C-Tick mark as a result of our NVLAP accreditation.

- **SGS UK(Certificate No.: 32), SGS-TUV SAARLAND and SGS-FIMKO**

  Have approved SGS-CSTC Standards Technical Services Co., Ltd., EMC Laboratory as a supplier of EMC TESTING SERVICES and SAFETY TESTING SERVICES.

- **CNAS (Lab Code: L0167)**

  SGS-CSTC Standards Technical Services Co., Ltd., EMC Laboratory has been assessed and in compliance with CNAS-CL01:2006 accreditation criteria for testing laboratories (identical to ISO/IEC 17025:2005 General Requirements) for the Competence of Testing Laboratories.

- **FCC (Registration No.: 282399)**

  SGS-CSTC Standards Technical Services Co., Ltd., EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Registration 282399, May 31, 2002.

- **Industry Canada (Registration No.: 4620B-1)**

  The 3m/10m Alternate Semi-anechoic chamber of SGS-CSTC Standards Technical Services Co., Ltd., has been registered by Certification and Engineering of Industry Canada for radio equipment testing with Registration No. 4620B-1.

- **VCCI (Registration No.: R-2460, C-2584, G-449 and T-1179)**

  The 10m Semi-anechoic chamber and Shielded Room of SGS-CSTC Standards Technical Services Co. Ltd. have been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: R-2460, C-2584，G-449 and T-1179 respectively.

- **CBTL (Lab Code: TL129)**

  SGS-CSTC Standards Technical Services Co., Ltd., E&E Laboratory has been assessed and fully comply with the requirements of ISO/IEC 17025:2005, the Basic Rules, IECEE 01:2006-10 and Rules of procedure IECEE 02:2006-10, and the relevant IECEE CB-Scheme Operational documents.

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6 Equipment Used during Test

Conducted Emission						
No.	Test Equipment	Manufacturer	Model No.	Serial No.	Cal. date (YYYY-MM-DD)	Cal.Due date (YYYY-MM-DD)
EMC0306	Shielding Room	Zhong Yu	8 x 3 x 3.8 m^3	N/A	N/A	N/A
EMC0118	Two-line v-netwok	R&S	ENV216	100359	2014-03-03	2015-03-03
EMC0102	LISN	SCHAFFNER CHASE	MN2050D/1	1421	2013-08-31	2014-08-31
EMC2046	Artificial Mains Network (LISN)	AFJ Instruments	LT32C	S.N.32031120150	2014-03-03	2015-03-03
EMC0506	EMI Test Receiver	Rohde & Schwarz	ESCS30	100085	2014-03-03	2015-03-03
EMC0107	Coaxial Cable	SGS	2m	N/A	2012-07-25	2014-07-25
EMC0106	Voltage Probe	SGS	N/A	N/A	2014-4-19	2015-4-19
EMC0120	8 Line ISN	Fischer Custom Communications	FCC-TLISN-T8-02	20550	2013-08-31	2014-08-31
EMC0121	4 Line ISN	Fischer Custom Communications	FCC-TLISN-T4-02	20549	2013-08-31	2014-08-31
EMC0122	2 Line ISN	Fischer Custom Communications	FCC-TLISN-T2-02	20548	2013-08-31	2014-08-31
EMC2047	CDN	Elektronik-Feinmechanik	L-801:AF2	2793	2011-11-11	2014-11-11
EMC2048	CDN	Elektronik-Feinmechanik	L-801:M2/M3	2738	2011-11-11	2014-11-11
EMC2062	6dB Attenuator	HP	8491A	24487	2014-04-19	2015-04-19
EMC167	Conical metal housing	SGS-EMC	N/A	N/A	2014-02-16	2016-02-16

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RE in Chamber						
No.	Test Equipment	Manufacturer	Model No.	Serial No.	Cal. date (YYYY-MM-DD)	Cal.Due date (YYYY-MM-DD)
EMC0525	Compact Semi-Anechoic Chamber	ChangZhou ZhongYu	N/A	N/A	2012-08-30	2014-08-30
EMC0522	EMI Test Receiver	Rohde & Schwarz	ESIB26	100283	2014-04-19	2015-04-19
EMC0056	EMI Test Receiver	Rohde & Schwarz	ESCI	100236	2014-03-03	2015-03-03
EMC0528	RI High frequency Cable	SGS	20 m	N/A	2014-05-09	2015-05-09
EMC2025	Trilog Broadband Antenna 30-3000MHz	SCHWARZBECK MESS-ELEKTRONIK	VULB 9163	9163-450	2013-08-31	2016-08-31
EMC0524	Bi-log Type Antenna	Schaffner -Chase	CBL6112B	2966	2013-08-31	2016-08-31
EMC0519	Bilog Type Antenna	Schaffner -Chase	CBL6143	5070	2012-06-02	2015-06-02
EMC2026	Horn Antenna 1-18GHz	SCHWARZBECK MESS-ELEKTRONIK	BBHA 9120D	9120D-841	2013-08-31	2016-08-31
EMC0518	Horn Antenna	Rohde & Schwarz	HF906	100096	2012-07-01	2015-07-01
EMC0521	1-26.5 GHz Pre-Amplifier	Agilent	8449B	3008A01649	2014-03-03	2015-03-03
EMC2065	Amplifier	HP	8447F	N/A	2013-08-31	2014-08-31
EMC2063	1-26GHz Pre Amplifier	Compliance Direction System Inc.	PAP-1G26-48	6279.628	2013-07-29	2014-07-29
EMC0075	310N Amplifier	Sonama	310N	272683	2014-03-03	2015-03-03
EMC0523	Active Loop Antenna	EMCO	6502	42963	2014-03-03	2016-03-03
EMC2041	Broad-Band Horn Antenna (14)15-26.5(40)GHz	SCHWARZBECK MESS-ELEKTRONI	BBHA 9170	9170-375	2014-05-26	2017-05-26
EMC2069	2.4GHz filter	Micro-Tronics	BRM 50702	149	2014-04-19	2015-04-19
EMC0530	10m Semi-Anechoic Chamber	ETS	N/A	N/A	2014-05-03	2016-05-03

General used equipment						
No.	Test Equipment	Manufacturer	Model No.	Serial No.	Cal. date (YYYY-MM-DD)	Cal.Due date (YYYY-MM-DD)
EMC0006	DMM	Fluke	73	70681569	2013-09-13	2014-09-13
EMC0007	DMM	Fluke	73	70671122	2013-09-13	2014-09-13

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7 Emission Test Results

7.1 Radiated Emissions

Test Requirement: FCC Part15 C

Test Method: ANSI C63.10:2009

Frequency Range: 9 kHz to1GHz

Measurement Distance: 3 m

Detector: peak and average for pre-scan

Class / Limit:

Frequency range MHz	**Field strength (uV/m)**	**Measurement Distance (meters)**
0.009 to 0.490	2400/F(kHz)	300
0.490 to 1.705	24000/F(kHz)	30
1.705 to 30.0	30	30
30 to 88	100	3
88 to 216	150	3
216 to 960	200	3
Above 960	500	3

Correction factor used due to measurement distance of 3m:

Frequency range MHz	**Field strength (dBuV/m)**	**Measurement Distance (meters)**
0.009 to 0.490	67.6-20log(f)(kHz)+40	3
0.490 to 1.705	87.6-20log(f)(kHz)+20	3
1.705 to 30.0	49.5	3
30 to 88	40.0	3
88 to 216	43.5	3
216 to 960	46.0	3
Above 960	49.0	3

7.1.1 E.U.T. Operation

Operating Environment:

Temperature: 22.0 °C Humidity: 51 %RH Atmospheric Pressure: 1006 mbar

EUT Operation: Test the EUT in charging &standby mode.

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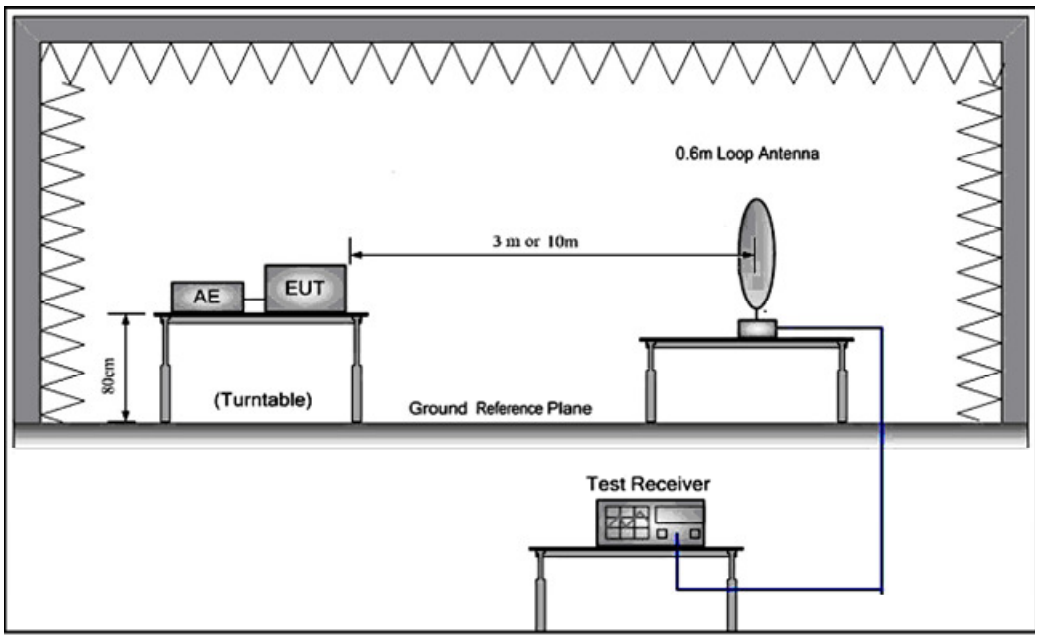
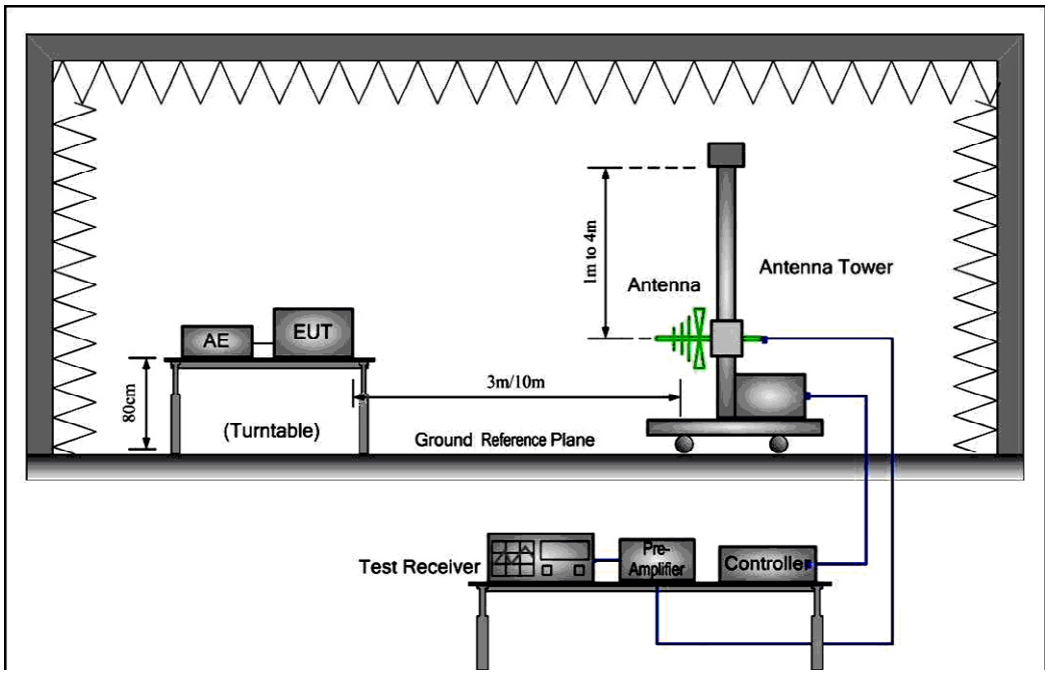
Test Configuration:

1)9 kHz to 30 MHz emissions:



2)30 MHz to 1 GHz emissions:



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Test Procedure:

1) 9 kHz to 30 MHz emissions:

For testing performed with the loop antenna. The center of the loop was positioned 1 m above the ground and positioned with its plane vertical at the specied distance from the EUT.During testing the loop was rotated about its vertical axis for maximum response at each azimuth and also investigated with the loop positioned in the horizontal plane.

2) 30 MHz to 1 GHz emissions:

For testing perfomed with the bi-log type antenna. The measurement is performed with the EUT rotated 360º, the antenna height scaned between 1m and 4m, and the antenna rotated to repeat the measurement for both the horizontal and vertical antenna polarizations.

Detector Peak for pre-scan

Test Receiver test setup	Detector		
	9 kHz-150 kHz	150 kHz-30 MHz	30 MHz-1000 MHz
RBW	200 Hz	9 kHz	120 kHz
VBW	≥ RBW	≥ RBW	≥ RBW
Sweep	auto	auto	auto
Detector function	QP	QP	QP
Trace	max hold	max hold	max hold

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7.1.2 Spurious Emission: below 30 MHz

Charging with max load mode

No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Over limit (dB)	Remark
1	0.02	58.17	0.02	58.19	81.58	-23.39	PK
2	0.74	41.24	0.07	41.31	50.22	-8.91	PK
3	1.75	31.96	0.09	32.05	49.50	-17.45	PK
4	4.92	22.89	0.10	22.99	49.50	-26.51	PK
5	6.65	22.33	0.10	22.43	49.50	-27.07	PK
6	25.63	23.28	0.10	23.38	49.50	-26.12	PK

Charging with mid load mode

No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Over limit (dB)	Remark
1	0.03	58.56	0.02	58.58	78.06	-19.48	PK
2	0.64	41.23	0.07	41.30	51.48	-10.18	PK
3	1.79	31.13	0.09	31.22	49.50	-18.28	PK
4	4.13	22.54	0.10	22.64	49.50	-26.86	PK
5	6.46	22.34	0.10	22.44	49.50	-27.06	PK
6	25.25	23.65	0.10	23.75	49.50	-25.75	PK

Charging with min load mode

No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Over limit (dB)	Remark
1	0.04	58.28	0.02	58.30	75.56	-17.26	PK
2	0.88	41.19	0.07	41.26	48.71	-7.45	PK
3	1.16	31.69	0.09	31.78	49.50	-17.72	PK
4	4.87	22.28	0.10	22.38	49.50	-27.12	PK
5	6.45	22.16	0.10	22.26	49.50	-27.24	PK
6	25.63	23.14	0.10	23.24	49.50	-26.26	PK

Standby mode

No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Over limit (dB)	Remark
1	0.09	57.28	0.02	57.30	68.52	-11.22	PK
2	0.87	42.34	0.07	42.41	48.81	-6.40	PK
3	1.88	31.93	0.09	32.02	49.50	-17.48	PK
4	5.99	23.82	0.10	23.92	49.50	-25.58	PK
5	7.94	23.43	0.10	23.53	49.50	-25.97	PK
6	28.24	23.54	0.10	23.64	49.50	-25.86	PK

Remark:

Result = Reading+ Correct Factor

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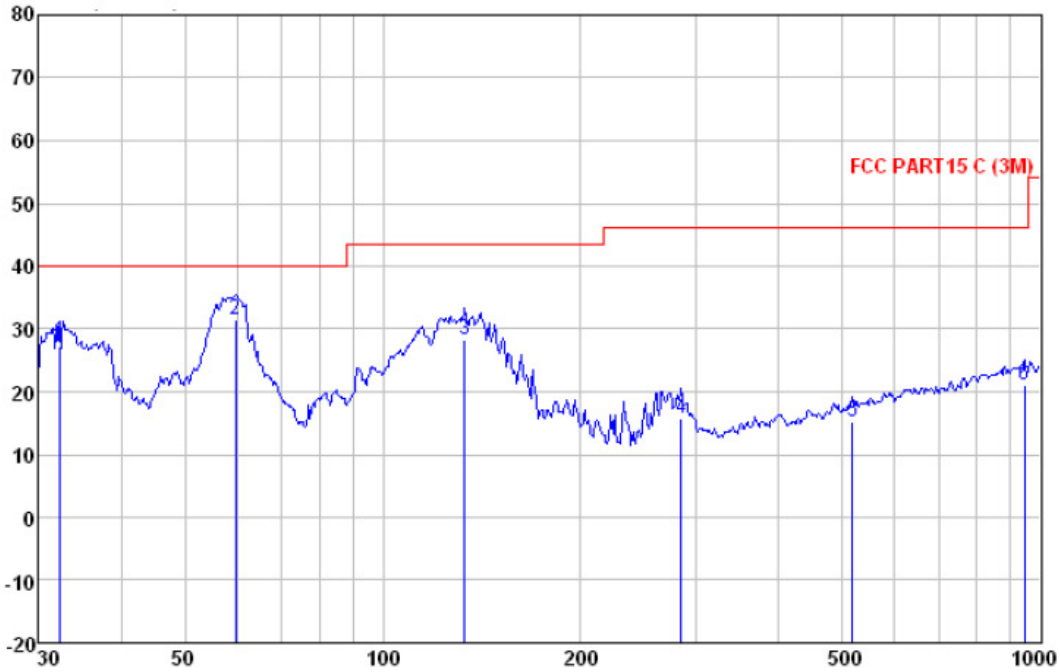
7.1.3 Spurious Emssion: above 30 MHz

Charging with max load mode

Vertical:

Peak scan

Level (dBµV/m)



Quasi-peak measurement

Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Remark
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
32.179	45.03	12.32	0.84	31.02	27.17	40.00	-12.83	QP
59.649	48.73	12.73	1.10	31.00	31.56	40.00	-8.44	QP
133.151	49.12	8.67	1.51	31.03	28.27	43.50	-15.23	QP
283.979	31.56	12.75	2.36	31.01	15.66	46.00	-30.34	QP
517.248	26.09	16.94	3.11	30.98	15.16	46.00	-30.84	QP
945.440	26.48	21.40	4.08	30.82	21.14	46.00	-24.86	QP

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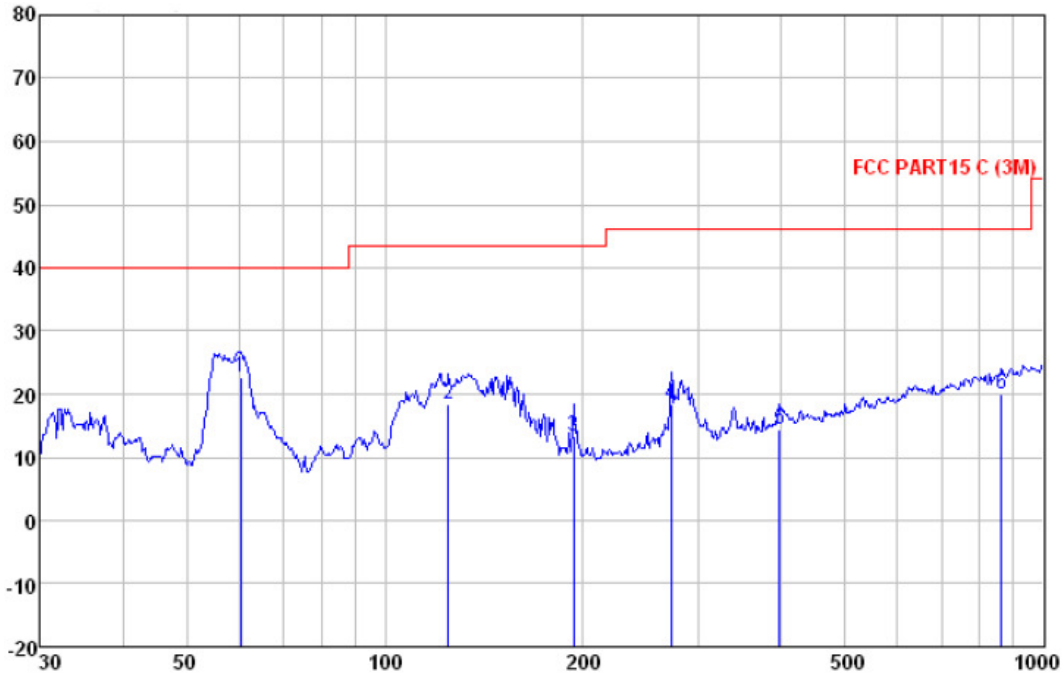
Horizontal:

Peak scan

Level (dBµV/m)



Quasi-peak measurement

Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Remark
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
60.492	40.12	12.56	1.10	31.00	22.78	40.00	-17.22	QP
125.007	38.13	9.70	1.47	31.02	18.28	43.50	-25.22	QP
193.095	32.10	10.56	1.88	31.10	13.44	43.50	-30.06	QP
272.278	34.71	12.46	2.32	31.02	18.47	46.00	-27.53	QP
397.633	27.59	15.01	2.80	30.90	14.50	46.00	-31.50	QP
863.056	26.14	20.73	3.95	30.90	19.92	46.00	-26.08	QP

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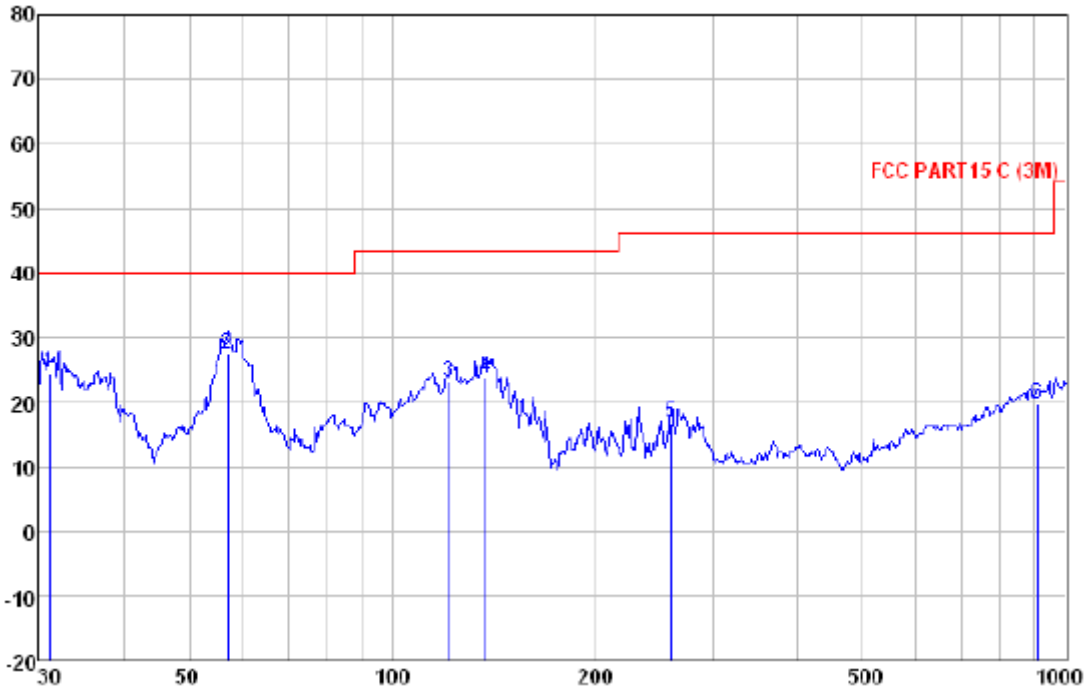
Charging with mid load mode

Vertical:

Peak scan

Level (dBµV/m)



Quasi-peak measurement

Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Remark
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
31.071	42.33	12.32	0.82	31.02	24.45	40.00	-15.55	QP
56.991	44.43	12.89	1.10	31.00	27.42	40.00	-12.58	QP
121.549	42.70	10.19	1.46	31.02	23.33	43.50	-20.17	QP
137.903	44.95	8.35	1.54	31.04	23.80	43.50	-19.70	QP
259.234	33.54	12.05	2.24	31.03	16.80	46.00	-29.20	QP
906.482	25.49	21.15	4.01	30.88	19.77	46.00	-26.23	QP

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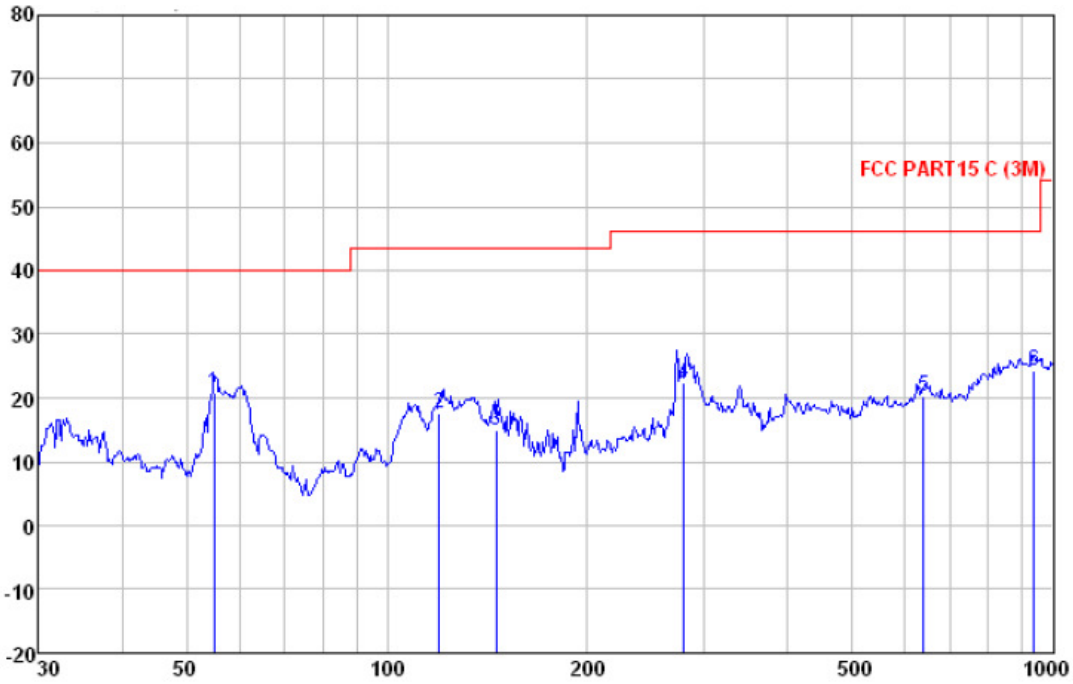
Horizontal:

Peak scan

Level (dBµV/m)



Quasi-peak measurement

Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Remark
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
55.027	37.72	13.02	1.10	31.00	20.84	40.00	-19.16	QP
119.856	36.68	10.48	1.46	31.02	17.60	43.50	-25.90	QP
145.861	36.15	8.23	1.59	31.06	14.91	43.50	-28.59	QP
279.044	38.32	12.63	2.34	31.01	22.28	46.00	-23.72	QP
638.369	29.36	18.59	3.28	30.90	20.33	46.00	-25.67	QP
935.546	29.79	21.34	4.05	30.84	24.34	46.00	-21.66	QP

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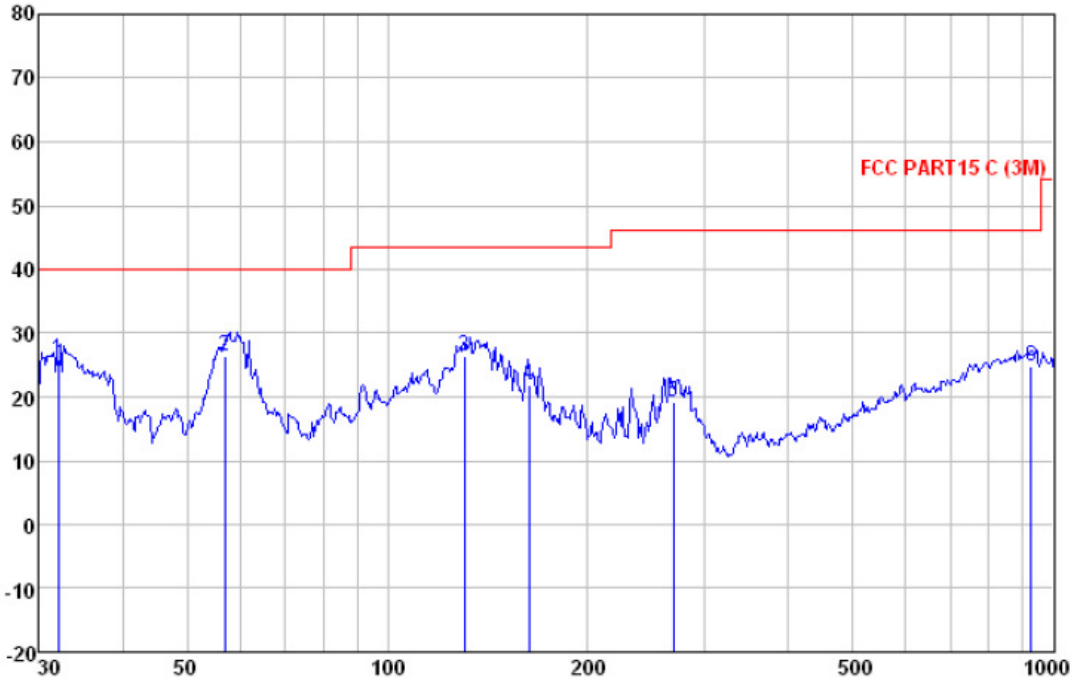
Charging with min load mode

Vertical:

Peak scan

Level (dBµV/m)



Quasi-peak measurement

Freq	ReadLevel	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Remark
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
32.067	43.78	12.32	0.84	31.02	25.92	40.00	-14.08	QP
56.991	43.43	12.89	1.10	31.00	26.42	40.00	-13.58	QP
130.379	47.13	8.93	1.49	31.03	26.52	43.50	-16.98	QP
163.182	42.48	8.77	1.77	31.08	21.94	43.50	-21.56	QP
268.485	35.68	12.34	2.30	31.02	19.30	46.00	-26.70	QP
925.756	30.33	21.28	4.03	30.86	24.78	46.00	-21.22	QP

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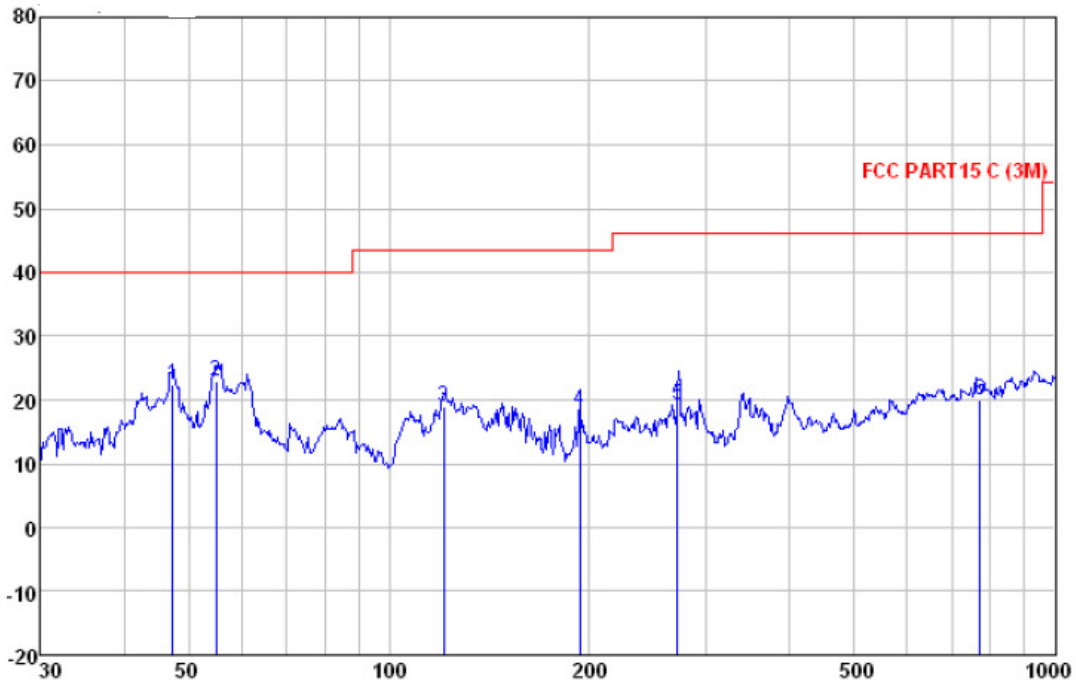
Horizontal:

Peak scan

Level (dBµV/m)



Quasi-peak measurement

Freq	ReadAntenna Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Remark
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
47.326	39.02	13.41	1.07	31.00	22.50	40.00	-17.50	QP
55.027	39.72	13.02	1.10	31.00	22.84	40.00	-17.16	QP
120.699	38.14	10.38	1.46	31.02	18.96	43.50	-24.54	QP
193.095	37.10	10.56	1.88	31.10	18.44	43.50	-25.06	QP
271.325	35.59	12.42	2.31	31.02	19.30	46.00	-26.70	QP
771.449	27.45	19.72	3.75	30.90	20.02	46.00	-25.98	QP

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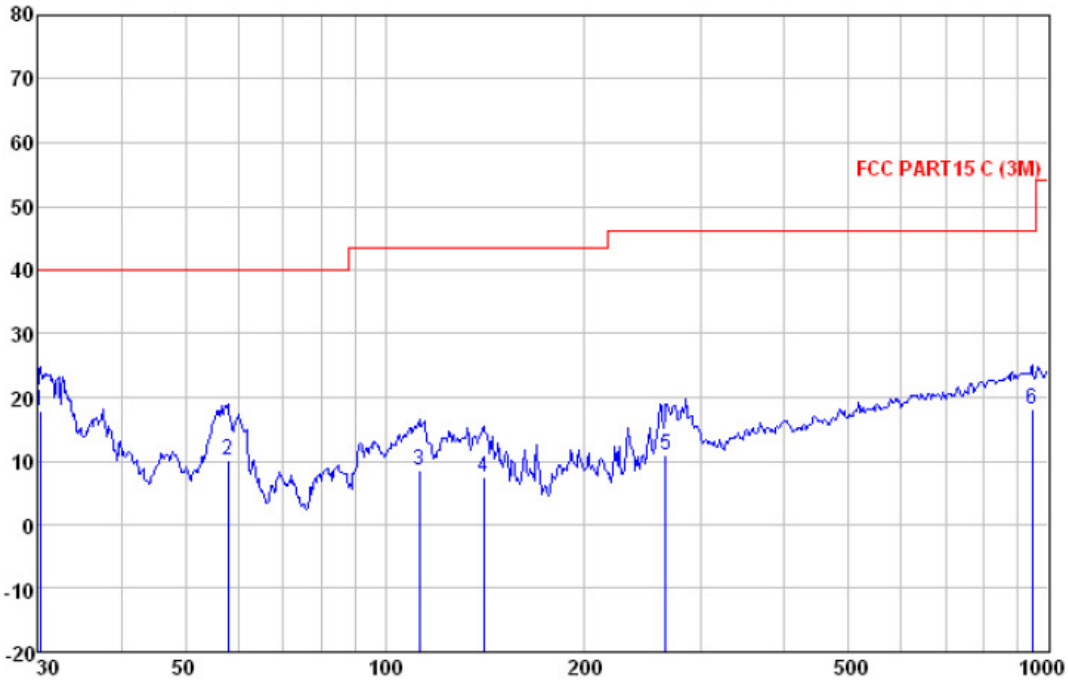
Standby mode:

Vertical:

Peak scan

Level (dBµV/m)



Quasi-peak measurement

Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Remark
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
30.211	35.70	12.33	0.80	31.02	17.81	40.00	-22.19	QP
57.999	27.13	12.82	1.10	31.00	10.05	40.00	-29.95	QP
112.524	26.30	11.83	1.43	31.01	8.55	43.50	-34.95	QP
140.835	28.85	8.20	1.56	31.05	7.56	43.50	-35.94	QP
264.746	27.56	12.22	2.28	31.02	11.04	46.00	-34.96	QP
945.440	23.48	21.40	4.08	30.82	18.14	46.00	-27.86	QP

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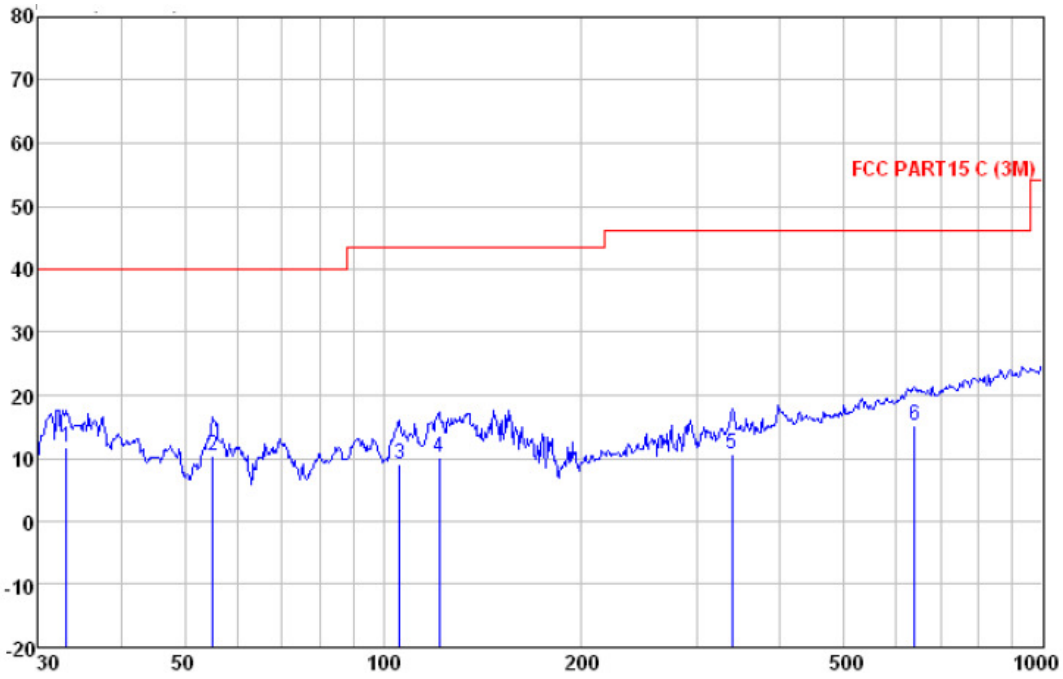
Horizontal:

Peak scan

Level (dBµV/m)



Quasi-peak measurement

Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Remark
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
33.095	29.52	12.31	0.86	31.01	11.68	40.00	-28.32	QP
55.221	27.32	13.00	1.10	31.00	10.42	40.00	-29.58	QP
106.013	25.94	12.59	1.41	31.00	8.94	43.50	-34.56	QP
121.549	29.63	10.19	1.46	31.02	10.26	43.50	-33.24	QP
338.400	25.17	14.05	2.51	30.96	10.77	46.00	-35.23	QP
638.369	24.36	18.59	3.28	30.90	15.33	46.00	-30.67	QP

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7.2 Conducted Emissions at Mains Terminals 150 kHz to 30 MHz

Test Requirement: FCC Part 15 C section 15.207

Test Method: ANSI C63.10: Clause 6.2

Frequency Range: 150 kHz to 30 MHz

Detector: Peak for pre-scan (9 kHz Resolution Bandwidth)

Test Limit

Limits for conducted disturbance at the mains ports of class B

Frequency Range (MHz)	Class B Limit 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
NOTE 1 The limit decreases linearly with the logarithm of the frequency in the range 0,15 MHz to 0,50 MHz.		

EUT Operation: Test the EUT in charging & standby mode. For intentional radiators, measurements of the variation of the input power or the radiated signal level of the fundamental frequency component of the emission, as appropriate, shall be performed with the supply voltage varied between 85% and 115% of the nominal rated supply voltage.

Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).

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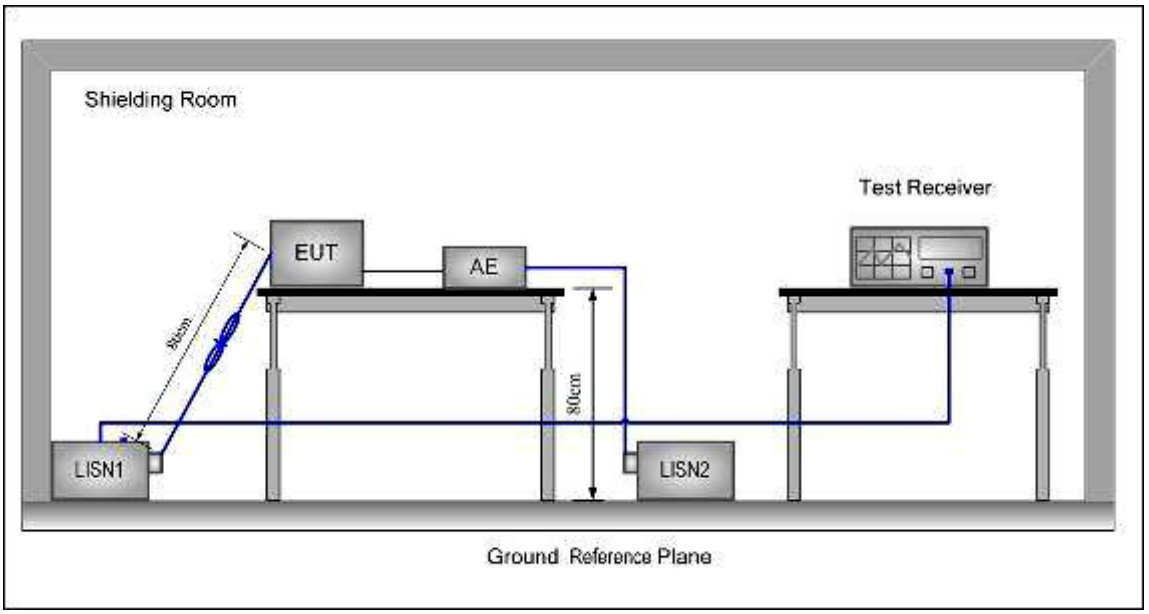
Test Configuration:



Test procedure:

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, but separated from metallic contact with the ground reference plane by 0.1m of insulation.

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.

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7.2.1 Measurement Data

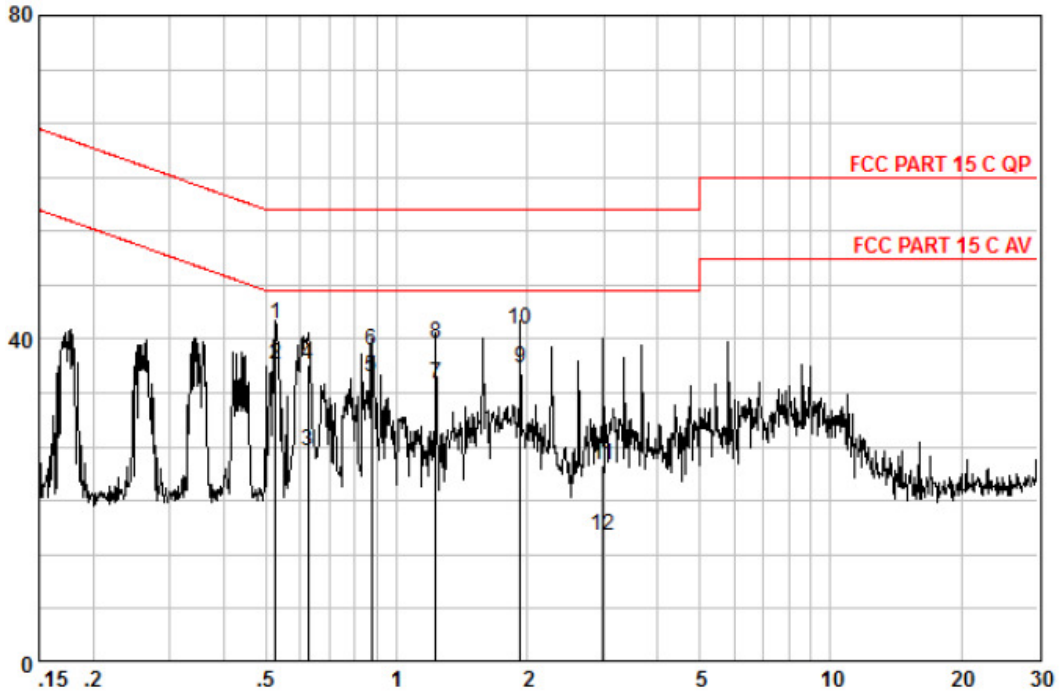
An initial pre-scan was performed on the live and neutral lines with peak detector.

Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission were detected. For EUT the communicating was worst case mode.

The following Quasi-Peak and Average measurements were performed on the EUT: Charging with max load mode

Neutral Line

Level(dBµV)



Measure data:

Freq	Read Level	Cable Loss	LISN Factor	Level	Limit Line	Over Limit	Remark
MHz	dBuV	dB	dB	dBuV	dBuV	dB	
0,527	32,18	0,07	9,70	41,95	56,00	-14,05	QP
0,527	27,10	0,07	9,70	36,87	46,00	-9,13	AVERAGE
0,624	16,39	0,07	9,70	26,16	46,00	-19,84	AVERAGE
0,624	27,14	0,07	9,70	36,91	56,00	-19,09	QP
0,876	25,59	0,05	9,70	35,34	46,00	-10,66	AVERAGE
0,876	28,86	0,05	9,70	38,61	56,00	-17,39	QP
1,229	24,72	0,05	9,70	34,47	46,00	-11,53	AVERAGE
1,229	29,74	0,05	9,70	39,49	56,00	-16,51	QP
1,928	26,64	0,05	9,70	36,39	46,00	-9,61	AVERAGE
1,928	31,36	0,05	9,70	41,11	56,00	-14,89	QP
2,993	14,48	0,15	9,70	24,33	56,00	-31,67	QP
2,993	5,91	0,15	9,70	15,76	46,00	-30,24	AVERAGE

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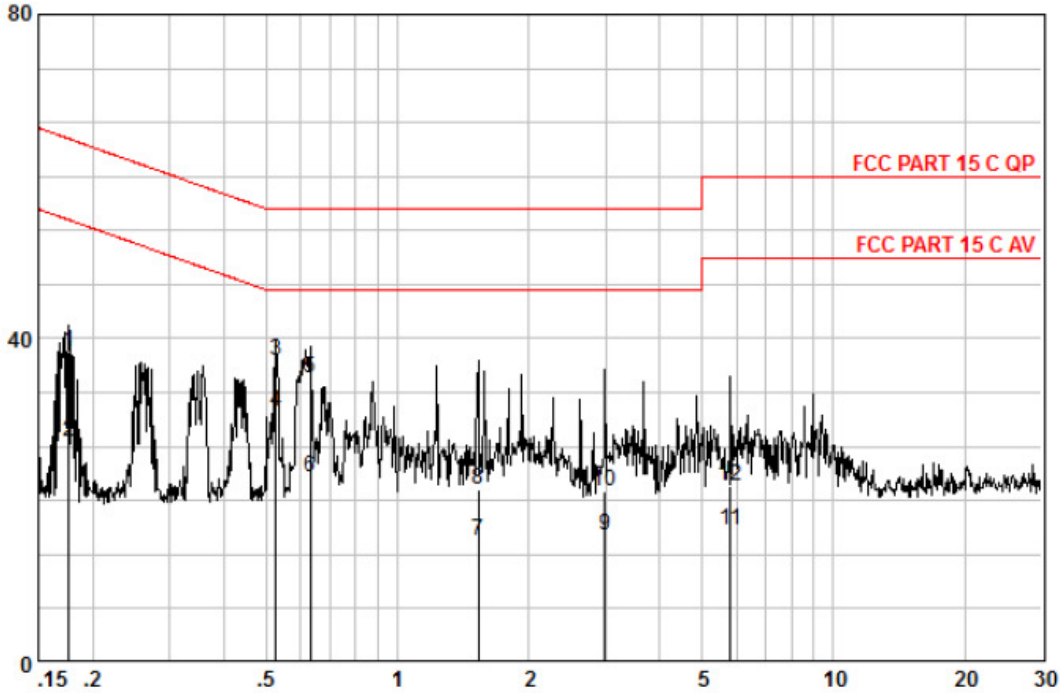
Live Line

Level(dBμV)



Measure result:

Freq	Read Level	Cable Loss	LISN Factor	Level	Limit Line	Over Limit	Remark
MHz	dBuV	dB	dB	dBuV	dBuV	dB	
0.176	28.70	0.10	9.66	38.46	64.68	-26.22	QP
0.176	17.43	0.10	9.66	27.19	54.68	-27.49	AVERAGE
0.527	27.54	0.07	9.66	37.27	56.00	-18.73	QP
0.527	21.13	0.07	9.66	30.86	46.00	-15.14	AVERAGE
0.630	25.38	0.07	9.67	35.12	56.00	-20.88	QP
0.630	13.12	0.07	9.67	22.86	46.00	-23.14	AVERAGE
1.535	5.24	0.05	9.68	14.97	46.00	-31.03	AVERAGE
1.535	11.70	0.05	9.68	21.43	56.00	-34.57	QP
2.993	5.84	0.15	9.70	15.69	46.00	-30.31	AVERAGE
2.993	11.26	0.15	9.70	21.11	56.00	-34.89	QP
5.805	6.53	0.18	9.72	16.43	50.00	-33.57	AVERAGE
5.805	11.92	0.18	9.72	21.82	60.00	-38.18	QP

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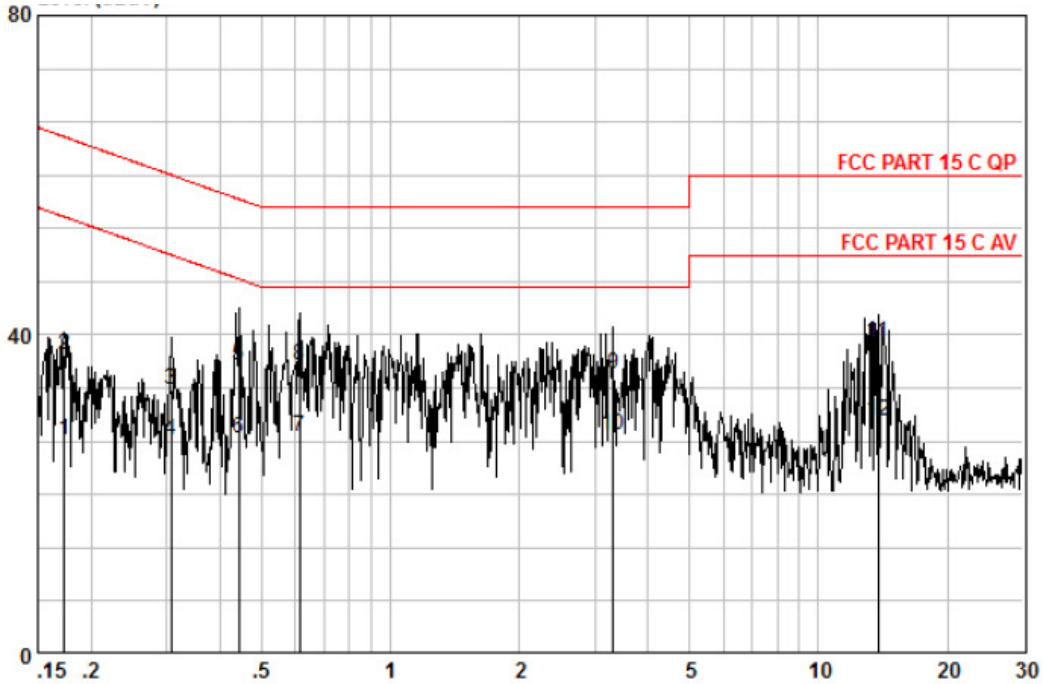
Charging with mid load mode

Neutral Line

Level(dBμV)



Measure data:

Freq	Read Level	Cable Loss	LISN Factor	Level	Limit Line	Over Limit	Remark
MHz	dBuV	dB	dB	dBuV	dBuV	dB	
0.173	17.05	0.09	9.66	26.80	54.81	-28.01	AVERAGE
0.173	27.80	0.09	9.66	37.55	64.81	-27.26	QP
0.307	23.36	0.10	9.66	33.12	60.06	-26.94	QP
0.307	17.01	0.10	9.66	26.77	50.06	-23.29	AVERAGE
0.442	26.56	0.06	9.66	36.28	57.02	-20.74	QP
0.442	17.20	0.06	9.66	26.92	47.02	-20.10	AVERAGE
0.614	17.51	0.07	9.67	27.25	46.00	-18.75	AVERAGE
0.614	26.52	0.07	9.67	36.26	56.00	-19.74	QP
3.310	25.18	0.15	9.70	35.04	56.00	-20.96	QP
3.310	17.56	0.15	9.70	27.42	46.00	-18.58	AVERAGE
13.768	28.86	0.24	9.97	39.08	60.00	-20.92	QP
13.768	19.06	0.24	9.97	29.28	50.00	-20.72	AVERAGE

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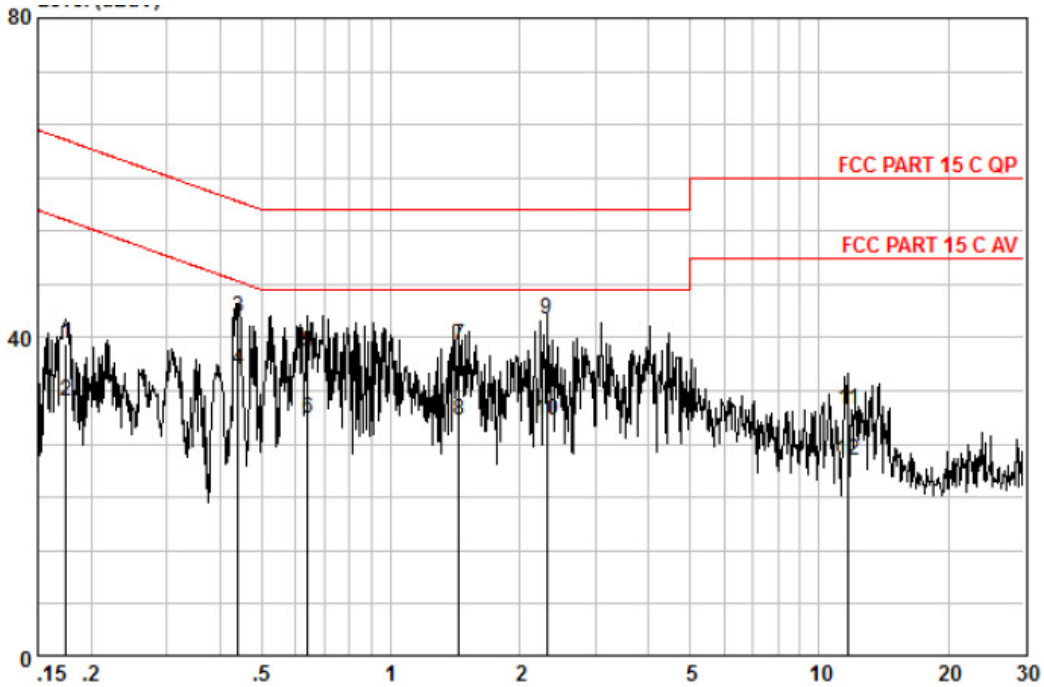
Live Line

Level(dBμV)



Measure result:

Freq	Read Level	Cable Loss	LISN Factor	Level	Limit Line	Over Limit	Remark
MHz	dBuV	dB	dB	dBuV	dBuV	dB	
0.175	29.54	0.10	9.60	39.24	64.72	-25.49	QP
0.175	22.41	0.10	9.60	32.11	54.72	-22.62	AVERAGE
0.440	32.72	0.06	9.64	42.42	57.07	-14.64	QP
0.440	26.21	0.06	9.64	35.91	47.07	-11.15	AVERAGE
0.641	28.36	0.07	9.70	38.13	56.00	-17.87	QP
0.641	20.20	0.07	9.70	29.97	46.00	-16.03	AVERAGE
1.441	29.26	0.05	9.70	39.01	56.00	-16.99	QP
1.441	19.89	0.05	9.70	29.64	46.00	-16.36	AVERAGE
2.309	32.42	0.09	9.70	42.21	56.00	-13.79	QP
2.309	19.76	0.09	9.70	29.55	46.00	-16.45	AVERAGE
11.683	20.84	0.20	9.84	30.88	60.00	-29.12	QP
11.683	14.52	0.20	9.84	24.56	50.00	-25.44	AVERAGE

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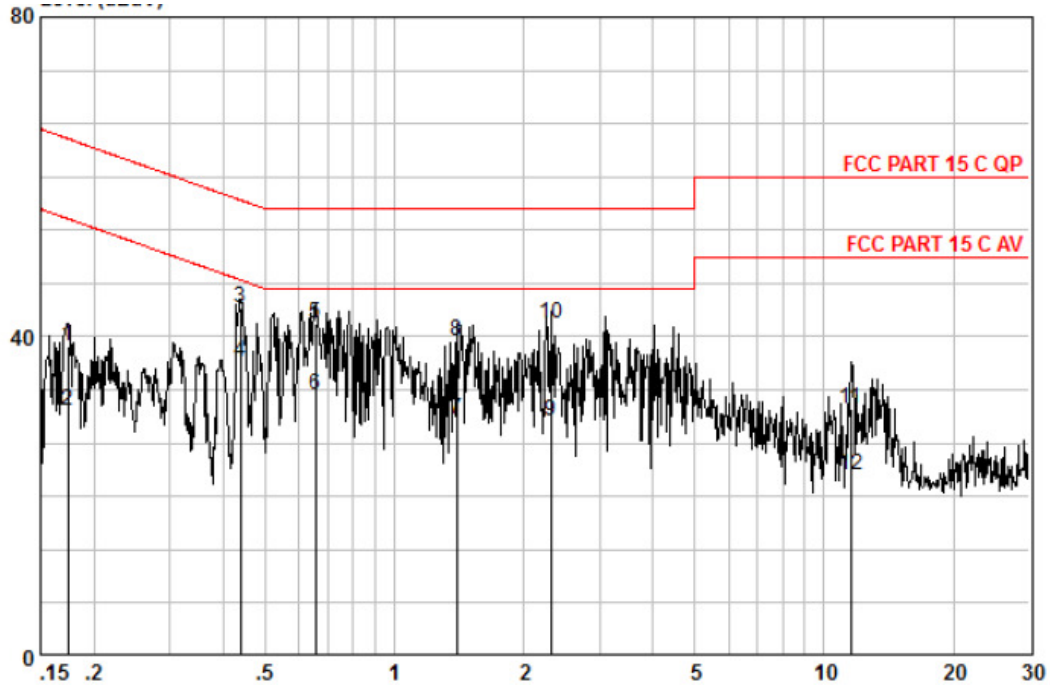
Charging with min load mode

Neutral Line

Level(dBμV)



Measure data:

Freq	Read Level	Cable Loss	LISN Factor	Level	Limit Line	Over Limit	Remark
MHz	dBuV	dB	dB	dBuV	dBuV	dB	
0.174	29.14	0.10	9.60	38.84	64.77	-25.93	QP
0.174	20.95	0.10	9.60	30.65	54.77	-24.12	AVERAGE
0.437	33.90	0.06	9.64	43.60	57.11	-13.51	QP
0.437	27.10	0.06	9.64	36.80	47.11	-10.31	AVERAGE
0.654	31.86	0.06	9.70	41.62	56.00	-14.38	QP
0.654	22.88	0.06	9.70	32.64	46.00	-13.36	AVERAGE
1.396	19.97	0.05	9.70	29.72	46.00	-16.28	AVERAGE
1.396	29.62	0.05	9.70	39.37	56.00	-16.63	QP
2.309	19.63	0.09	9.70	29.42	46.00	-16.58	AVERAGE
2.309	31.84	0.09	9.70	41.63	56.00	-14.37	QP
11.559	20.86	0.20	9.83	30.89	60.00	-29.11	QP
11.559	12.74	0.20	9.83	22.77	50.00	-27.23	AVERAGE

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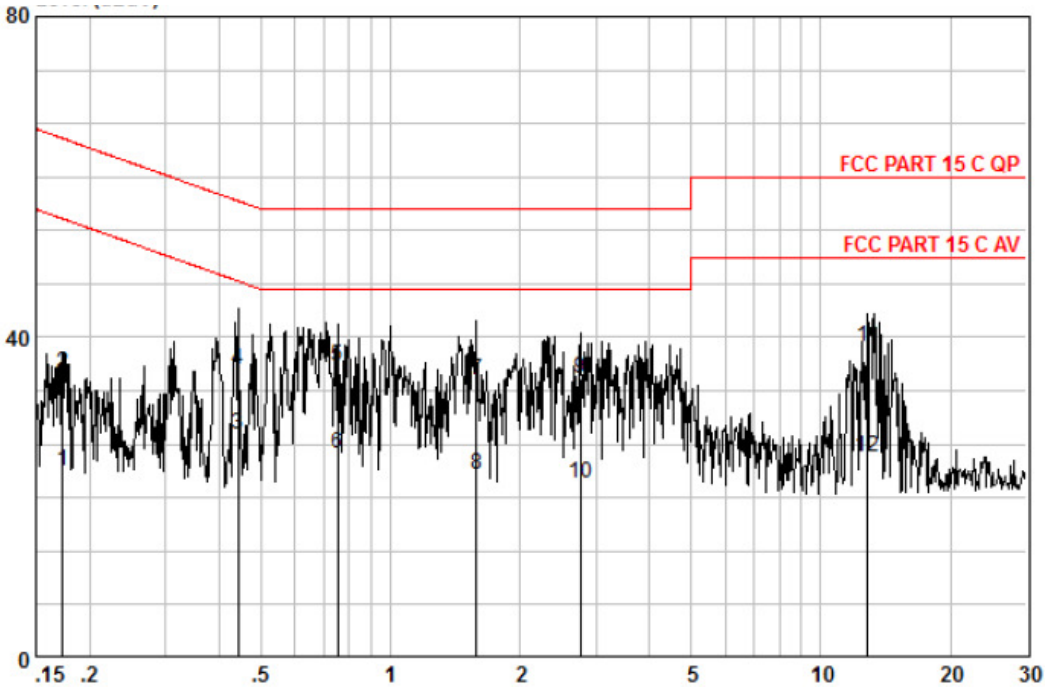
Live Line

Level(dBμV)



Measure result:

Freq	Read Level	Cable Loss	LISN Factor	Level	Limit Line	Over Limit	Remark
MHz	dBuV	dB	dB	dBuV	dBuV	dB	
0.173	13.66	0.09	9.66	23.41	54.81	-31.40	AVERAGE
0.173	25.82	0.09	9.66	35.57	64.81	-29.24	QP
0.442	18.23	0.06	9.66	27.95	47.02	-19.07	AVERAGE
0.442	26.16	0.06	9.66	35.88	57.02	-21.14	QP
0.755	26.58	0.06	9.67	36.31	56.00	-19.69	QP
0.755	15.73	0.06	9.67	25.46	46.00	-20.54	AVERAGE
1.585	24.84	0.05	9.68	34.57	56.00	-21.43	QP
1.585	13.12	0.05	9.68	22.85	46.00	-23.15	AVERAGE
2.765	25.02	0.13	9.70	34.85	56.00	-21.15	QP
2.765	12.00	0.13	9.70	21.83	46.00	-24.17	AVERAGE
12.852	28.66	0.22	9.95	38.82	60.00	-21.18	QP
12.852	14.96	0.22	9.95	25.12	50.00	-24.88	AVERAGE

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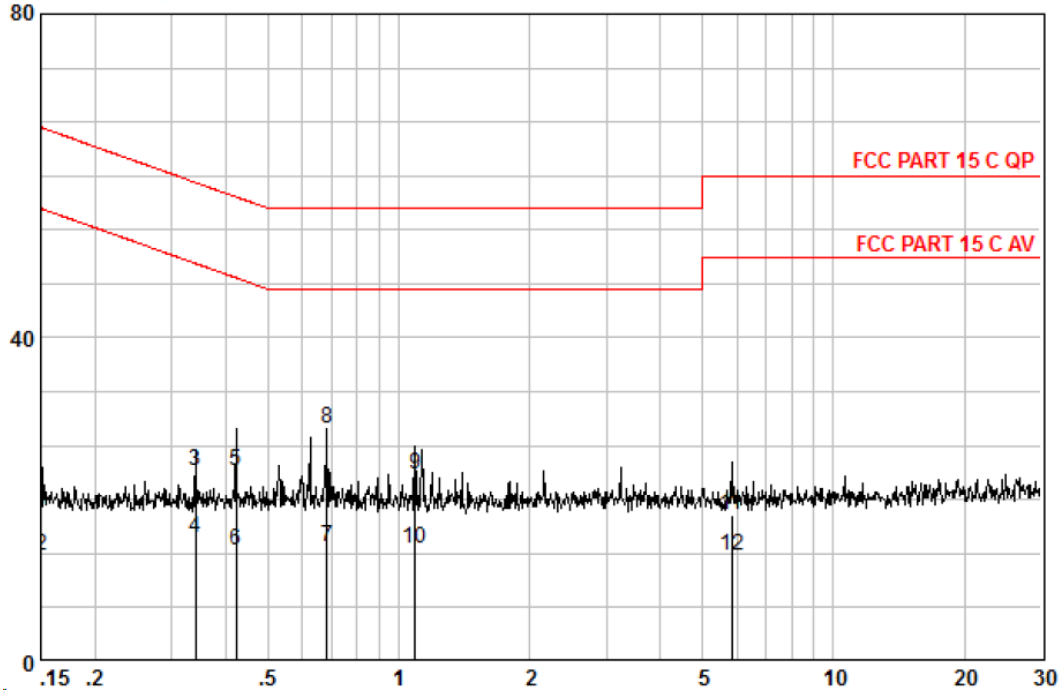
Standby mode:

Neutral Line

Level(dBµV)



Measure data:

Freq	Read Level	Cable Loss	LISN Factor	Level	Limit Line	Over Limit	Remark
MHz	dBuV	dB	dB	dBuV	dBuV	dB	
0,150	9,04	0,07	9,66	18,77	66,00	-47,23	QP
0,150	3,30	0,07	9,66	13,03	56,00	-42,97	AVERAGE
0,341	13,80	0,08	9,66	23,54	59,18	-35,64	QP
0,341	5,57	0,08	9,66	15,31	49,18	-33,87	AVERAGE
0,421	13,92	0,06	9,66	23,64	57,42	-33,78	QP
0,421	3,91	0,06	9,66	13,63	47,42	-33,79	AVERAGE
0,683	4,44	0,06	9,67	14,17	46,00	-31,83	AVERAGE
0,683	19,04	0,06	9,67	28,77	56,00	-27,23	QP
1,088	13,44	0,05	9,68	23,17	56,00	-32,83	QP
1,088	4,30	0,05	9,68	14,03	46,00	-31,97	AVERAGE
5,836	8,18	0,18	9,72	18,08	60,00	-41,92	QP
5,836	3,24	0,18	9,72	13,14	50,00	-36,86	AVERAGE

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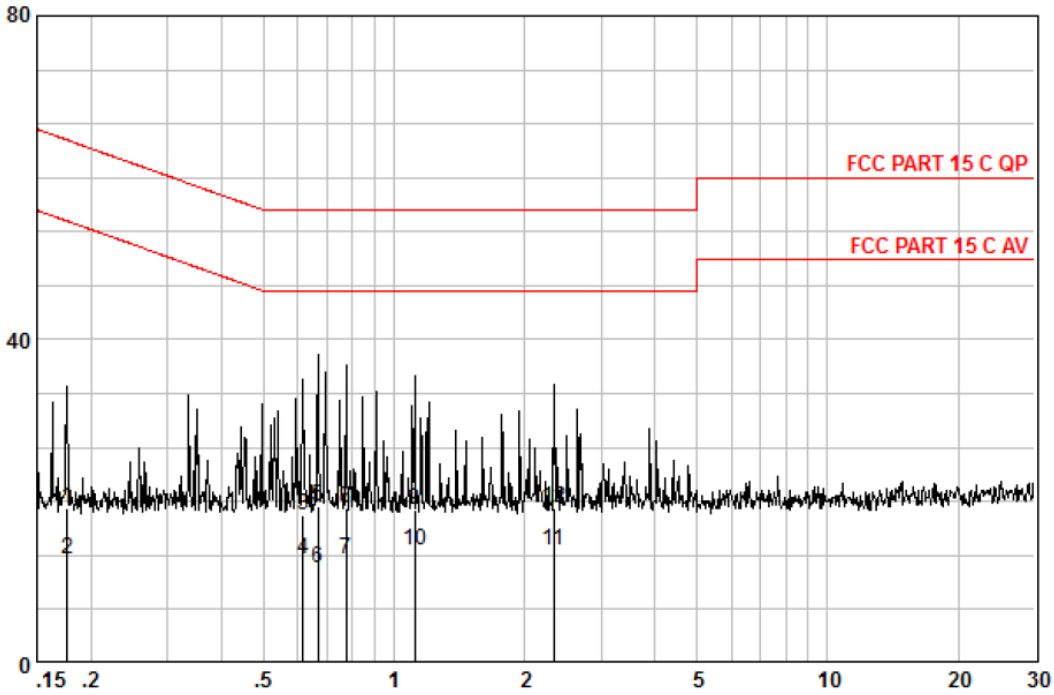
Live Line

Level(dBμV)



Measure result:

Freq	Read Level	Cable Loss	LISN Factor	Level	Limit Line	Over Limit	Remark
MHz	dBuV	dB	dB	dBuV	dBuV	dB	
0.176	9.40	0.10	9.60	19.10	64.68	-45.58	QP
0.176	3.24	0.10	9.60	12.94	54.68	-41.74	AVERAGE
0.617	8.48	0.07	9.70	18.25	56.00	-37.75	QP
0.617	3.10	0.07	9.70	12.87	46.00	-33.13	AVERAGE
0.668	9.66	0.06	9.70	19.42	56.00	-36.58	QP
0.668	2.03	0.06	9.70	11.79	46.00	-34.21	AVERAGE
0.775	3.17	0.06	9.70	12.93	46.00	-33.07	AVERAGE
0.775	9.48	0.06	9.70	19.24	56.00	-36.76	QP
1.117	9.24	0.05	9.70	18.99	56.00	-37.01	QP
1.117	4.10	0.05	9.70	13.85	46.00	-32.15	AVERAGE
2.334	4.10	0.09	9.70	13.89	46.00	-32.11	AVERAGE
2.334	9.36	0.09	9.70	19.15	56.00	-36.85	QP

--End of Report--

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