

FCC TEST REPORT
FOR
UP(Guangzhou) Electronics Co., Ltd.
HEADREST LCD MONITOR DVD PLAYER
TEST Model No.: HDVD-94

Additional Model No.: HDVD-94T, H-94, HDVD-74, HDVD-74T, H-74

Prepared for	:	UP(Guangzhou) Electronics Co., Ltd.
Address	:	2nd & 3rd Floor, No.2 Shigulang, Guanghua Road, Yayao, Huadu Dist., Guangzhou, Guangdong Province, China
Prepared by	:	Shenzhen LCS Compliance Testing Laboratory Ltd.
Address	:	1/F., Xingyuan Industrial Park, Tongda Road, Bao'an Avenue, Bao'an District, Shenzhen, Guangdong, China
Tel	:	(+86)755-82591330
Fax	:	(+86)755-82591332
Web	:	www.LCS-cert.com
Mail	:	webmaster@LCS-cert.com
Date of receipt of test sample	:	March 22, 2016
Number of tested samples	:	1
Serial number	:	Prototype
Date of Test	:	March 22, 2016 – April 05, 2016
Date of Report	:	April 05, 2016

FCC TEST REPORT
FCC CFR 47 PART 15.239

Report Reference No. : LCS1603231852E

Date of Issue : April 05, 2016

Testing Laboratory Name..... : Shenzhen LCS Compliance Testing Laboratory Ltd.

Address : 1/F., Xingyuan Industrial Park, Tongda Road, Bao'an Avenue,
Bao'an District, Shenzhen, Guangdong, China

Testing Location/ Procedure..... : Full application of Harmonised standards ☒
Partial application of Harmonised standards ☐
Other standard testing method ☐

Applicant's Name : UP(Guangzhou) Electronics Co., Ltd.

Address : 2nd & 3rd Floor, No.2 Shigulang, Guanghua Road, Yayao,
Huadu Dist., Guangzhou, Guangdong Province, China

Test Specification

Standard : FCC CFR 47 Part 15.239

Test Report Form No. : LCSEMC-1.0

TRF Originator : Shenzhen LCS Compliance Testing Laboratory Ltd.

Master TRF..... : Dated 2011-03

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Test Item Description. : HEADREST LCD MONITOR DVD PLAYER

Trade Mark : N/A

Model/ Type reference..... : HDVD-94

Ratings : DC 12V

Result : Positive

Compiled by:



Dick Su/ File administrators

Supervised by:



Glin Lu/ Technique principal

Approved by:



Gavin Liang/ Manager

FCC -- TEST REPORT**Test Report No. : LCS1603231852E**April 05, 2016

Date of issue

Type / Model..... : HDVD-94

EUT..... : HEADREST LCD MONITOR DVD PLAYER

Applicant..... : UP(Guangzhou) Electronics Co., Ltd.Address..... : 2nd & 3rd Floor, No.2 Shigulang, Guanghua Road, Yayao,
Huadu Dist., Guangzhou, Guangdong Province, China

Telephone..... : /

Fax..... : /

Manufacturer..... : Guangzhou Chuanzhou Electronic Technology Co., Ltd.Address..... : 2nd & 3rd Floor, No.2 Shigulang, Guanghua Road, Yayao,
Huadu Dist., Guangzhou, Guangdong Province, China

Telephone..... : /

Fax..... : /

Factory..... : Guangzhou Chuanzhou Electronic Technology Co., Ltd.Address..... : 2nd & 3rd Floor, No.2 Shigulang, Guanghua Road, Yayao,
Huadu Dist., Guangzhou, Guangdong Province, China

Telephone..... : /

Fax..... : /

Test Result**Positive**

The test report merely corresponds to the test sample.

It is not permitted to copy extracts of these test result without the written permission of the test laboratory.

Revision History

Revision	Issue Date	Revisions	Revised By
00	2016-04-05	Initial Issue	Gavin Liang

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1. GENERAL INFORMATION

1.1 Description of Device (EUT)

EUT ; HEADREST LCD MONITOR DVD PLAYER

Model No. : HDVD-94

Frequency Range : 88.1~88.7MHz

Channel number : 4

Channel Spacing : 200KHz

Channel frequency : 88.1~88.7MHz(Channel Number: 4,
Channel Frequency=88.1+0.2(K-1), K=1, 2, 3, 4)

Modulation Type : WFM

Antenna Gain : External antenna, 1.0dBi(Max.)

Input Voltage : DC 12V

1.2 Support equipment List

Manufacturer	Description	Model	Serial Number	Certificate
--	--	--	--	--

1.3 External I/O Cable

I/O Port Description	Quantity	Cable
Earphone Port	1	--
USB	1	--
SD Card	1	--
Aux Port	1	--

1.4 Description of Test Facility

Site Description

EMC Lab.

: CNAS Registration Number. is L4595.
 FCC Registration Number. is 899208.
 Industry Canada Registration Number. is 9642A-1.
 VCCI Registration Number. is C-4260 and R-3804.
 ESMD Registration Number. is ARCB0108.
 UL Registration Number. is 100571-492.
 TUV SUD Registration Number. is SCN1081.
 TUV RH Registration Number. is UA 50296516-001

1.5 Statement of The Measurement Uncertainty

The data and results referenced in this document are true and accurate. The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities. The measurement uncertainty was calculated for all measurements listed in this test report acc. To CISPR 16 – 4 “Specification for radio disturbance and immunity measuring apparatus and methods – Part 4: Uncertainty in EMC Measurements” and is documented in the LCS quality system acc. To DIN EN ISO/IEC 17025. Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.

1.6 Measurement Uncertainty

Test Item		Frequency Range	Uncertainty	Note
Radiation Uncertainty	:	9KHz~30MHz	3.10dB	(1)
		30MHz~200MHz	2.96dB	(1)
		200MHz~1000MHz	3.10dB	(1)
		1GHz~26.5GHz	3.80dB	(1)
		26.5GHz~40GHz	3.90dB	(1)
Conduction Uncertainty	:	150kHz~30MHz	1.63dB	(1)
Power disturbance	:	30MHz~300MHz	1.60dB	(1)

(1). This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

1.7 Description Of Test Modes

The FM Transmitter is powered by a battery which is DC 12V. In the audio port and MIC port give a 2.5 kHz tone at a level 16 dB higher than that required to produce a frequency deviation of +/-37.5KHz kHz and make it works in TX mode(88.1MHz, 88.3MHz and 88.7MHz).

2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with ANSI C63.10-2013, FCC CFR PART 15C 15.207, 15.209 and 15.239 and DA 00-705.

2.1 EUT Configuration

The EUT configuration for testing is installed on RF field strength measurement to meet the Commissions requirement and operating in a manner that intends to maximize its emission characteristics in a continuous normal application.

2.2 EUT Exercise

The EUT was operated in the engineering mode to fix the TX frequency that was for the purpose of the measurements.

According to its specifications, the EUT must comply with the requirements of the Section 15.207, 15.209, 15.239 under the FCC Rules Part 15 Subpart C.

2.3 General Test Procedures

2.3.1 Conducted Emissions

The EUT is placed on the turntable, which is 0.8 m above ground plane. According to the requirements in Section 6.2.1 of ANSI C63.10-2013 Conducted emissions from the EUT measured in the frequency range between 0.15 MHz and 30MHz using Quasi-peak and average detector modes.

2.3.2 Radiated Emissions

The EUT is placed on a turn table 0.8 meter above ground for below 1GHz and 1.5m for above 1GHz. The turntable shall rotate 360 degrees to determine the position of maximum emission level. EUT is set 3m away from the receiving antenna, which varied from 1m to 4m to find out the highest emission. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical. In order to find out the maximum emissions, exploratory radiated emission measurements were made according to the requirements in Section 6.3 of ANSI C63.10-2013

3. SYSTEM TEST CONFIGURATION

3.1 Justification

The system was configured for testing in a continuous transmit condition.

3.2 EUT Exercise Software

N/A.

3.3 Special Accessories

N/A.

3.4 Block Diagram/Schematics

Please refer to the related document.

3.5 Equipment Modifications

Shenzhen LCS Compliance Testing Laboratory Ltd. has not done any modification on the EUT.

3.6 Test Setup

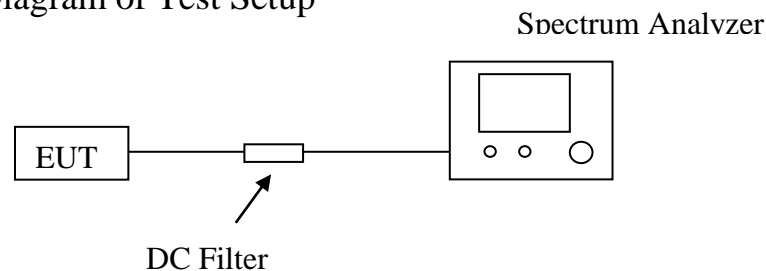
Please refer to the test setup photo.

4. 20 DB BANDWIDTH

4.1 Limit

According to §15.239 (a) Emissions from the intentional radiator shall be confined within a band 200 kHz wide centered on the operating frequency. The 200 kHz band shall lie wholly within the frequency range of 88-108 MHz.

4.2 Block Diagram of Test Setup

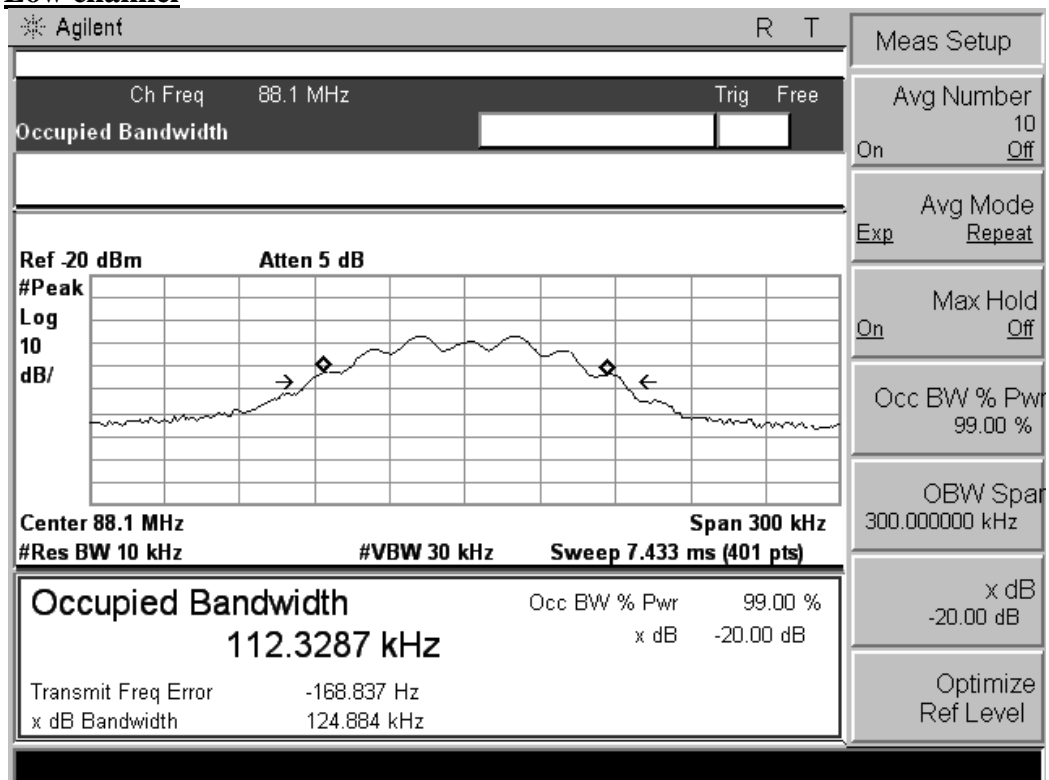
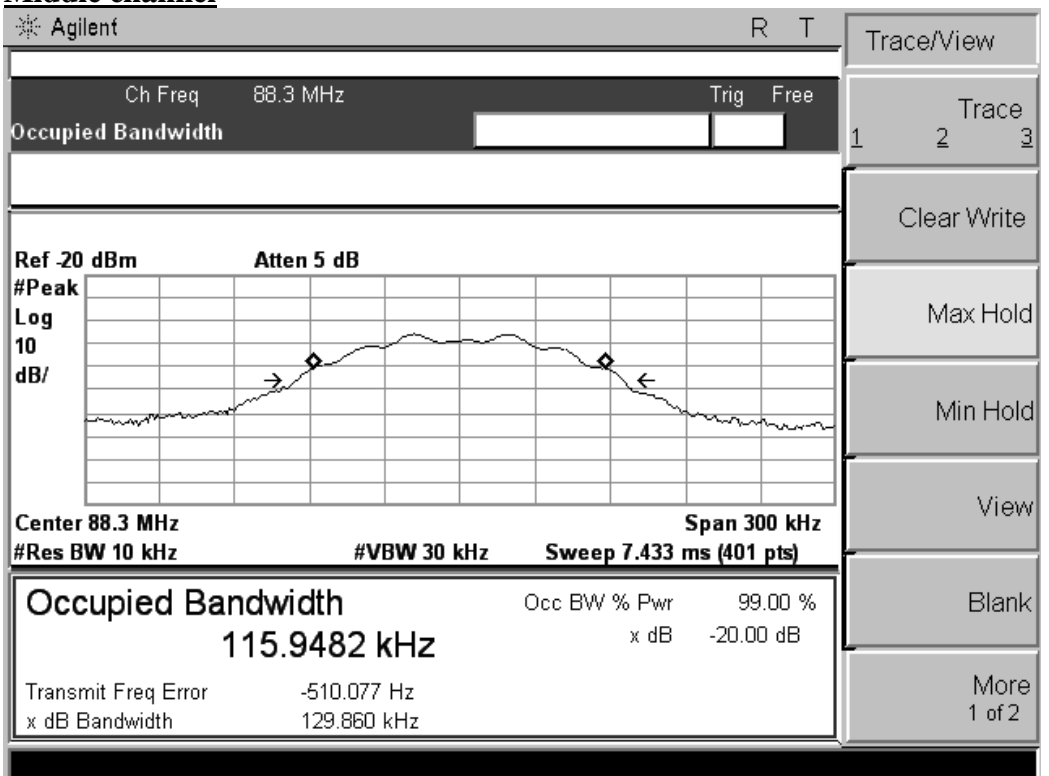


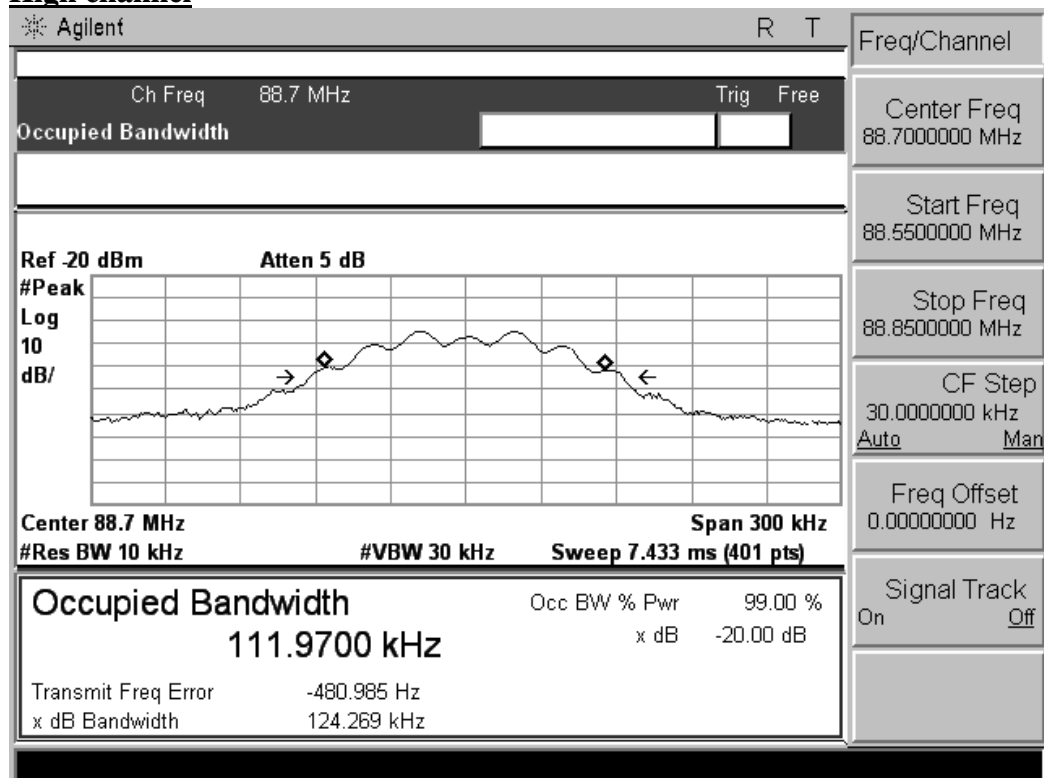
4.3 Test Procedure

- A. Span = approximately 2 to 3 times the 20dB bandwidth, centered on a hopping channel.
- B. RBW \geq 1% of the 20dB bandwidth, VBW \geq RBW.
- C. Detector function = peak.
- D. Trace = max hold.

4.4 Test Results

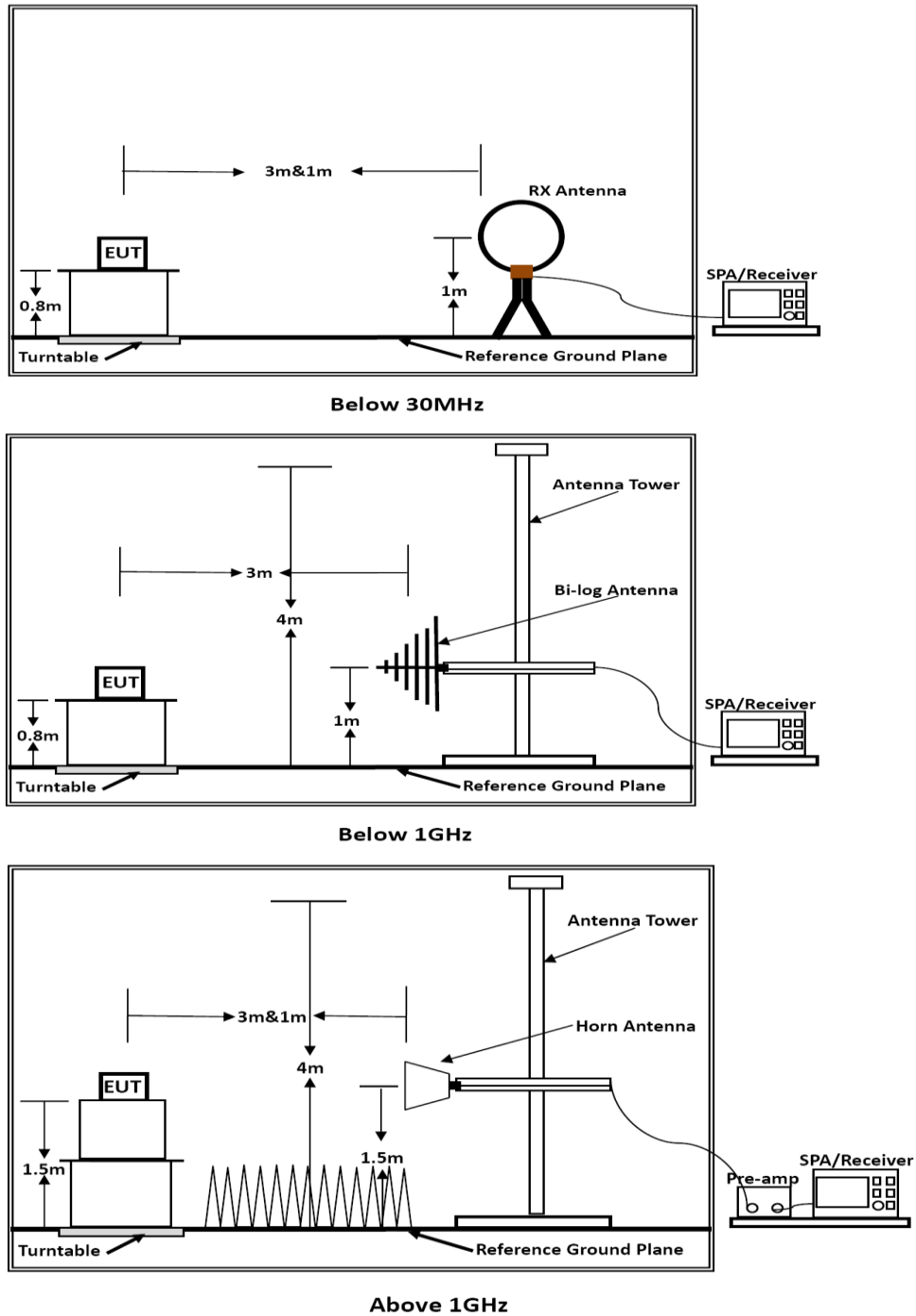
Frequency (MHz)	Bandwidth (KHz)	Limit (KHz)	Conclusion
88.1	124.884	200	Pass
88.3	129.860	200	Pass
88.7	124.269	200	Pass

Low channel**Middle channel**

High channel

5. RADIATED MEASUREMENT

5.1 Block Diagram of Test Setup



5.2 Radiated Emission Limit 30~1000MHz

Frequency (MHz)	Distances (Meters)	Field Strength LiMIT	
		μ V/m	dB(μ V)/m
30~88	3	100	40.0
80~108		250	48.0(Average) 68.0(Peak)
88~216		150	43.5
216~960		200	46.0
960~1000		500	54.0

- Remark : (1) Emission level dB μ V = 20 log Emission level μ V/m
 (2) The smaller limit shall apply at the cross point between two frequency bands.
 (3) Distance is the distance in meters between the measuring instrument, antenna and the closest point of any part of the device or system.

5.3 Instruments Setting

The following table is the setting of spectrum analyzer and receiver.

Spectrum Parameter	Setting
Attenuation	Auto
Start Frequency	30 MHz
Stop Frequency	1000 MHz
RB / VB (Emission in restricted band)	120KHz / 1MHz for Peak, 120 KHz / 10Hz for Average
RB / VB (Emission in non-restricted band)	120KHz / 1MHz for Peak, 120 KHz / 10Hz for Average

Receiver Parameter	Setting
Attenuation	Auto
Start ~ Stop Frequency	9kHz~150kHz / RB 200Hz for QP
Start ~ Stop Frequency	150kHz~30MHz / RB 9kHz for QP
Start ~ Stop Frequency	30MHz~1000MHz / RB 100kHz for QP

5.4 Test Procedures

1) Sequence of testing 9 kHz to 30 MHz

Setup:

- The equipment was set up to simulate a typical usage like described in the user manual or described by manufacturer.
- If the EUT is a tabletop system, a rotatable table with 0.8 m height is used.
- If the EUT is a floor standing device, it is placed on the ground.
- Auxiliary equipment and cables were positioned to simulate normal operation conditions.
- The AC power port of the EUT (if available) is connected to a power outlet below the turntable.
- The measurement distance is 3 meter.
- The EUT was set into operation.

Premeasurement:

- The turntable rotates from 0 ° to 315 ° using 45 ° steps.
- The antenna height is 0.8 meter.
- At each turntable position the analyzer sweeps with peak detection to find the maximum of all emissions

Final measurement:

- Identified emissions during the premeasurement the software maximizes by rotating the turntable position (0 ° to 360 °) and by rotating the elevation axes (0 ° to 360 °).
- The final measurement will be done in the position (turntable and elevation) causing the highest emissions with QPK detector.
- The final levels, frequency, measuring time, bandwidth, turntable position, correction factor, margin to the limit and limit will be recorded. Also a plot with the graph of the premeasurement and the limit will be stored.

2) Sequence of testing 30 MHz to 1 GHz

Setup:

- The equipment was set up to simulate a typical usage like described in the user manual or described by manufacturer.
- If the EUT is a tabletop system, a table with 0.8 m height is used, which is placed on the ground plane.
- If the EUT is a floor standing device, it is placed on the ground plane with insulation between both.
- Auxiliary equipment and cables were positioned to simulate normal operation conditions
- The AC power port of the EUT (if available) is connected to a power outlet below the

turntable.

--- The measurement distance is 3 meter.

--- The EUT was set into operation.

Premeasurement:

--- The turntable rotates from 0 ° to 315 ° using 45 ° steps.

--- The antenna is polarized vertical and horizontal.

--- The antenna height changes from 1 to 3 meter.

--- At each turntable position, antenna polarization and height the analyzer sweeps three times in peak to find the maximum of all emissions.

Final measurement:

--- The final measurement will be performed with minimum the six highest peaks.

--- According to the maximum antenna and turntable positions of premeasurement the software maximize the peaks by changing turntable position ($\pm 45^\circ$) and antenna movement between 1 and 4 meter.

--- The final measurement will be done with QP detector with an EMI receiver.

--- The final levels, frequency, measuring time, bandwidth, antenna height, antenna polarization, turntable angle, correction factor, margin to the limit and limit will be recorded. Also a plot with the graph of the premeasurement with marked maximum final measurements and the limit will be stored.

3) Sequence of testing 1 GHz to 12.75 GHz

Setup:

--- The equipment was set up to simulate a typical usage like described in the user manual or described by manufacturer.

--- If the EUT is a tabletop system, a rotatable table with 1.5 m height is used.

--- If the EUT is a floor standing device, it is placed on the ground plane with insulation between both.

--- Auxiliary equipment and cables were positioned to simulate normal operation conditions

--- The AC power port of the EUT (if available) is connected to a power outlet below the turntable.

--- The measurement distance is 3 meter.

--- The EUT was set into operation.

Premeasurement:

--- The turntable rotates from 0 ° to 315 ° using 45 ° steps.

--- The antenna is polarized vertical and horizontal.

--- The antenna height is 1.5 meter.

--- At each turntable position and antenna polarization the analyzer sweeps with peak detection to find the maximum of all emissions.

Final measurement:

- The final measurement will be performed with minimum the six highest peaks.
- According to the maximum found antenna polarisation and turntable position of the premeasurement the software maximizes the peaks by rotating the turntable position (0 ° to 360 °). This measurement is repeated for different EUT-table positions (0 ° to 150 ° in 30 °-steps). This procedure is repeated for both antenna polarisations.
- The final measurement will be done in the position (turntable, EUT-table and antenna polarization) causing the highest emissions with Peak and RMS detector.
- The final levels, frequency, measuring time, bandwidth, turntable position, EUT-table position, antenna polarization, correction factor, margin to the limit and limit will be recorded. Also a plot with the graph of the premeasurement with marked maximum final measurements and the limit will be stored.

4) Sequence of testing above 12.75 GHz**Setup:**

- The equipment was set up to simulate a typical usage like described in the user manual or described by manufacturer.
- If the EUT is a tabletop system, a rotatable table with 1.5 m height is used.
- If the EUT is a floor standing device, it is placed on the ground plane with insulation between both.
- Auxiliary equipment and cables were positioned to simulate normal operation conditions
- The AC power port of the EUT (if available) is connected to a power outlet below the turntable.
- The measurement distance is 1 meter.
- The EUT was set into operation.

Premeasurement:

- The antenna is moved spherical over the EUT in different polarisations of the antenna.

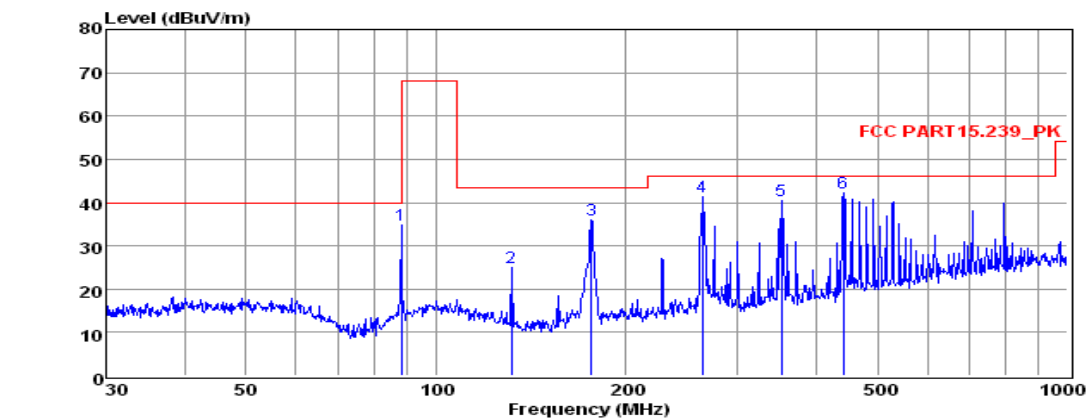
Final measurement:

- The final measurement will be performed at the position and antenna orientation for all detected emissions that were found during the premeasurements with Peak and RMS detector.
- The final levels, frequency, measuring time, bandwidth, correction factor, margin to the limit and limit will be recorded. Also a plot with the graph of the premeasurement and the limit will be stored.

5.5 Results for Radiated Emissions**PASS.**

Only record the worst test result in this report.

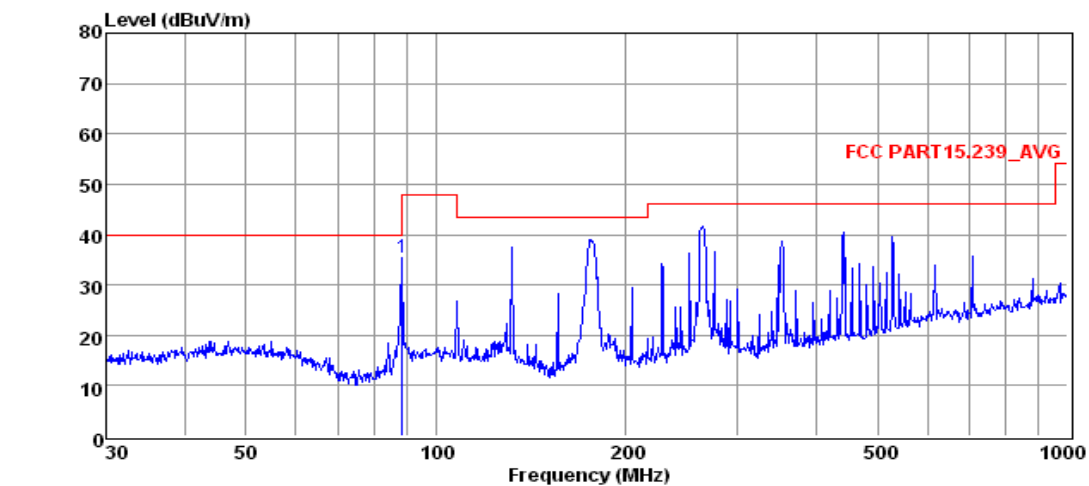
The test data please refer to following page:

Below 1GHz

Env./Ins: 24°C/56%
 Power Rating: DC 12V
 Test Mode: TX-88.1
 pol: VERTICAL

	Freq	Reading	CabLos	Antfac	Measured	Limit	Over	Remark
	MHz	dBuV	dB	dB/m	dBuV/m	dBuV/m	dB	
1	88.09	22.86	0.68	11.27	34.81	68.00	-33.19	Peak
2	131.76	15.39	0.76	8.80	24.95	43.50	-18.55	QP
3	176.27	25.76	0.73	9.42	35.91	43.50	-7.59	QP
4	263.82	28.02	1.03	12.17	41.22	46.00	-4.78	QP
5	352.94	25.12	1.15	14.32	40.59	46.00	-5.41	QP
6	441.74	25.53	1.25	15.56	42.34	46.00	-3.66	QP

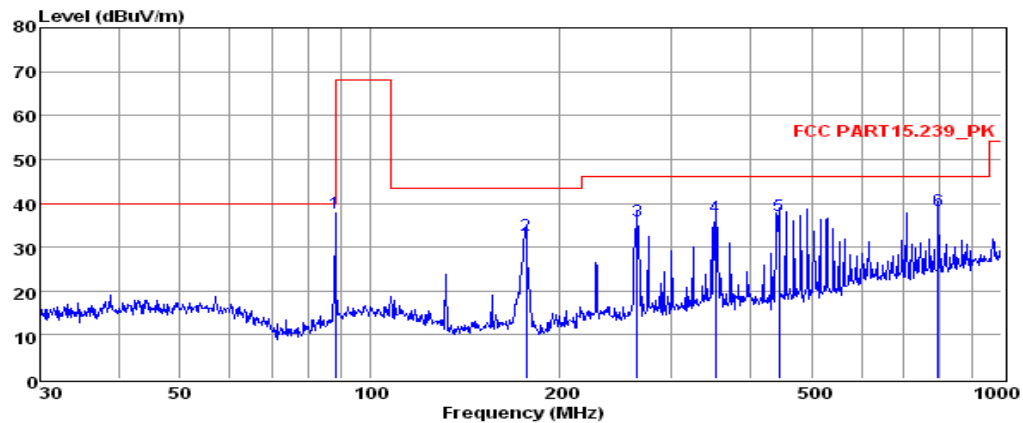
Note: 1. All readings are Quasi-peak values.
 2. Measured= Reading + Antenna Factor + Cable Loss
 3. The emission that at 20db below the official limit are not reported



Env./Ins: 24°C/56%
 Power Rating: DC 12V
 Test Mode: TX-88.1
 pol: HORIZONTAL

	Freq	Reading	CabLos	Antfac	Measured	Limit	Over	Remark
	MHz	dBuV	dB	dB/m	dBuV/m	dBuV/m	dB	
1	88.09	23.25	0.68	11.37	35.30	48.00	-12.70	Average

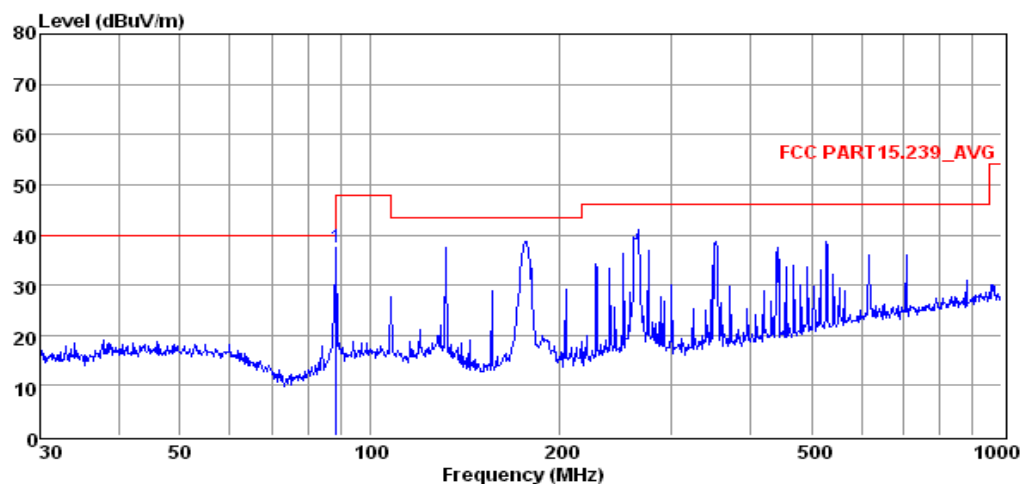
Note: 1. All readings are Quasi-peak values.
 2. Measured= Reading + Antenna Factor + Cable Loss
 3. The emission that at 20db below the official limit are not reported



Env./Ins: 24°C/56%
 Power Rating: DC 12V
 Test Mode: TX-88.1
 pol: HORIZONTAL

	Freq	Reading	CabLos	Antfac	Measured	Limit	Over	Remark
	MHz	dBuV	dB	dB/m	dBuV/m	dBuV/m	dB	
1	88.03	25.90	0.68	11.27	37.85	68.00	-30.15	Peak
2	176.89	22.44	0.73	9.46	32.63	43.50	-10.87	QP
3	264.75	22.88	1.03	12.20	36.11	46.00	-9.89	QP
4	352.94	21.31	1.15	14.32	36.78	46.00	-9.22	QP
5	444.85	20.09	1.42	15.57	37.08	46.00	-8.92	QP
6	793.40	16.63	1.73	19.98	38.34	46.00	-7.66	QP

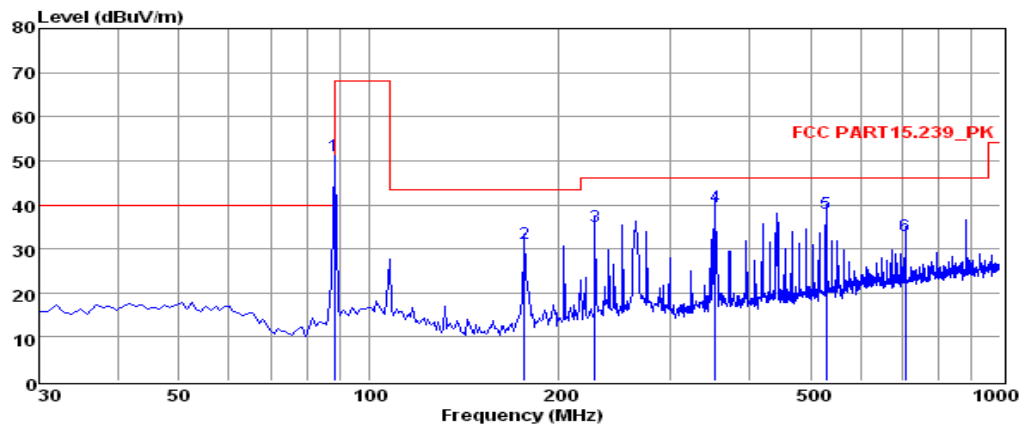
Note: 1. All readings are Quasi-peak values.
 2. Measured= Reading + Antenna Factor + Cable Loss
 3. The emission that ate 20db blow the official limit are not reported



Env./Ins: 24°C/56%
 Power Rating: DC 12V
 Test Mode: TX-88.1
 pol: HORIZONTAL

	Freq	Reading	CabLos	Antfac	Measured	Limit	Over	Remark
	MHz	dBuV	dB	dB/m	dBuV/m	dBuV/m	dB	
1	88.03	25.46	0.68	11.37	37.51	48.00	-10.49	Average

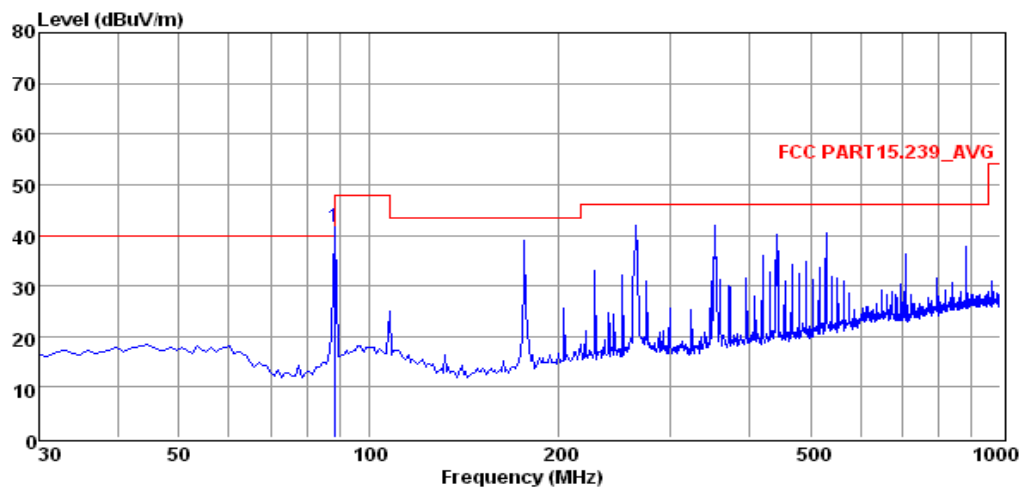
Note: 1. All readings are Quasi-peak values.
 2. Measured= Reading + Antenna Factor + Cable Loss
 3. The emission that ate 20db blow the official limit are not reported



Env./Ins: 24°C/56%
Power Rating: DC 12V
Test Mode: TX-88.3
pol: VERTICAL

	Freq	Reading	CabLos	Antfac	Measured	Limit	Over	Remark
	MHz	dBuV	dB	dB/m	dBuV/m	dBuV/m	dB	
1	88.20	39.17	0.68	11.33	51.18	68.00	-16.82	Peak
2	176.47	21.04	0.73	9.43	31.20	43.50	-12.30	QP
3	227.88	22.72	0.93	11.55	35.20	46.00	-10.80	QP
4	353.01	24.18	1.15	14.32	39.65	46.00	-6.35	QP
5	529.55	19.60	1.46	17.13	38.19	46.00	-7.81	QP
6	707.06	12.45	1.60	18.90	32.95	46.00	-13.05	QP

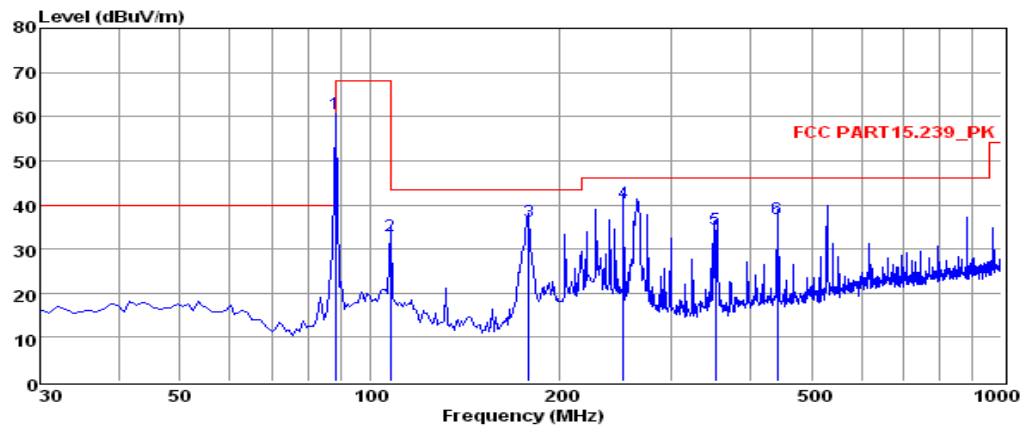
Note: 1. All readings are Quasi-peak values.
2. Measured= Reading + Antenna Factor + Cable Loss
3. The emission that are 20db below the official limit are not reported



Env./Ins: 24°C/56%
Power Rating: DC 12V
Test Mode: TX-88.3
pol: VERTICAL

	Freq	Reading	CabLos	Antfac	Measured	Limit	Over	Remark
	MHz	dBuV	dB	dB/m	dBuV/m	dBuV/m	dB	
1	88.20	29.51	0.68	11.33	41.52	48.00	-6.48	Average

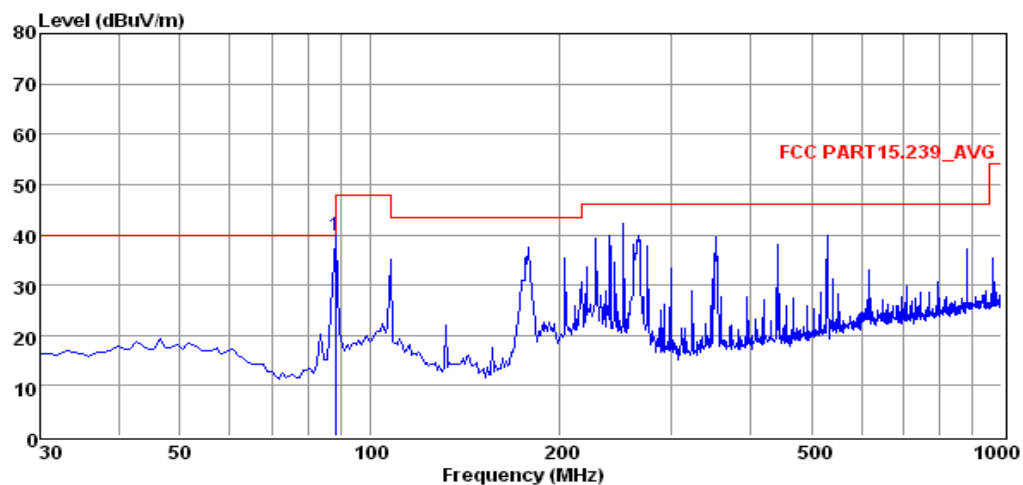
Note: 1. All readings are Quasi-peak values.
2. Measured= Reading + Antenna Factor + Cable Loss
3. The emission that are 20db below the official limit are not reported



Env./Ins: 24°C/56%
 Power Rating: DC 12V
 Test Mode: TX-88.3
 pol: HORIZONTAL

	Freq	Reading	CabLos	Antfac	Measured	Limit	Over	Remark
	MHz	dBuV	dB	dB/m	dBuV/m	dBuV/m	dB	
1	88.20	48.73	0.68	11.33	60.74	68.00	-7.26	Peak
2	107.60	19.98	0.68	12.47	33.13	68.00	-34.87	QP
3	178.41	25.68	0.89	9.57	36.14	43.50	-7.36	QP
4	252.13	27.42	0.90	12.07	40.39	46.00	-5.61	QP
5	352.04	19.16	1.15	14.31	34.62	46.00	-11.38	QP
6	441.28	20.07	1.27	15.56	36.90	46.00	-9.10	QP

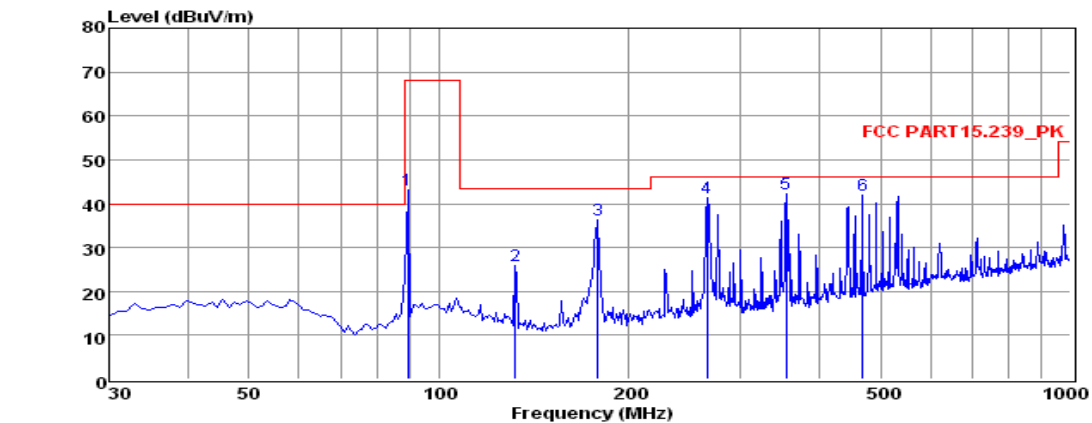
Note: 1. All readings are Quasi-peak values.
 2. Measured= Reading + Antenna Factor + Cable Loss
 3. The emission that are 20db below the official limit are not reported



Env./Ins: 24°C/56%
 Power Rating: DC 12V
 Test Mode: TX-88.3
 pol: HORIZONTAL

	Freq	Reading	CabLos	Antfac	Measured	Limit	Over	Remark
	MHz	dBuV	dB	dB/m	dBuV/m	dBuV/m	dB	
1	88.20	27.76	0.68	11.33	39.77	48.00	-8.23	Average

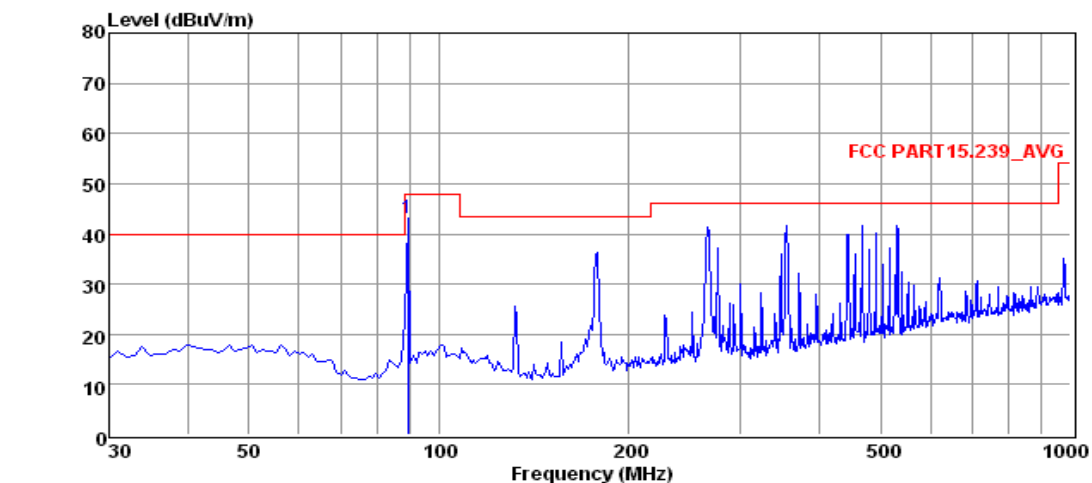
Note: 1. All readings are Quasi-peak values.
 2. Measured= Reading + Antenna Factor + Cable Loss
 3. The emission that are 20db below the official limit are not reported



Env./Ins: 24°C/56%
 Power Rating: DC 12V
 Test Mode: TX-88.7
 pol: VERTICAL

	Freq	Reading	CabLos	Antfac	Measured	Limit	Over	Remark
	MHz	dBuV	dB	dB/m	dBuV/m	dBuV/m	dB	
1	89.17	30.81	0.68	11.64	43.13	68.00	-24.87	Peak
2	131.85	16.42	0.76	8.79	25.97	43.50	-17.53	QP
3	178.41	25.88	0.89	9.57	36.34	43.50	-7.16	QP
4	265.71	27.98	1.03	12.23	41.24	46.00	-4.76	QP
5	354.95	26.61	1.15	14.35	42.11	46.00	-3.89	QP
6	468.44	24.70	1.38	15.79	41.87	46.00	-4.13	QP

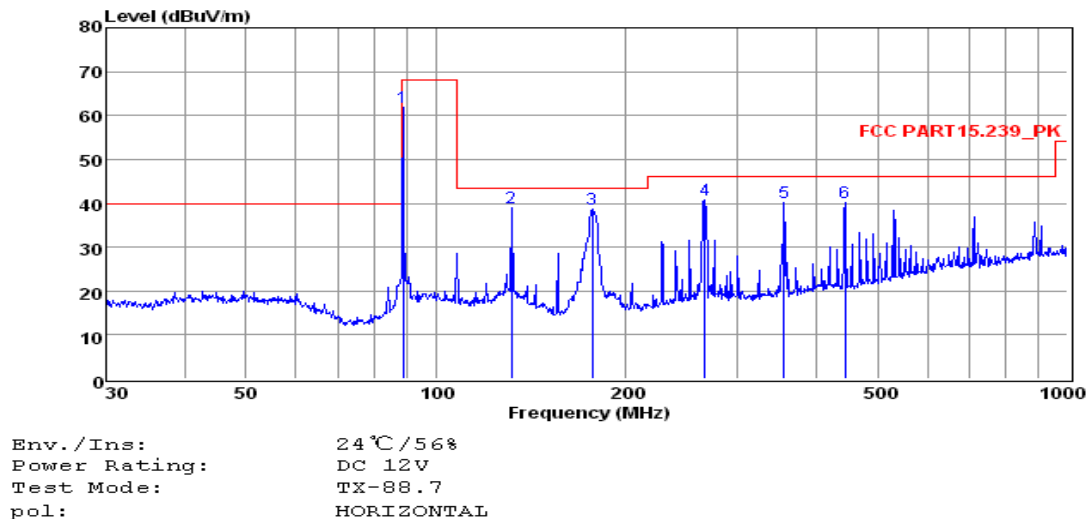
Note: 1. All readings are Quasi-peak values.
 2. Measured= Reading + Antenna Factor + Cable Loss
 3. The emission that are 20db below the official limit are not reported



Env./Ins: 24°C/56%
 Power Rating: DC 12V
 Test Mode: TX-88.7
 pol: VERTICAL

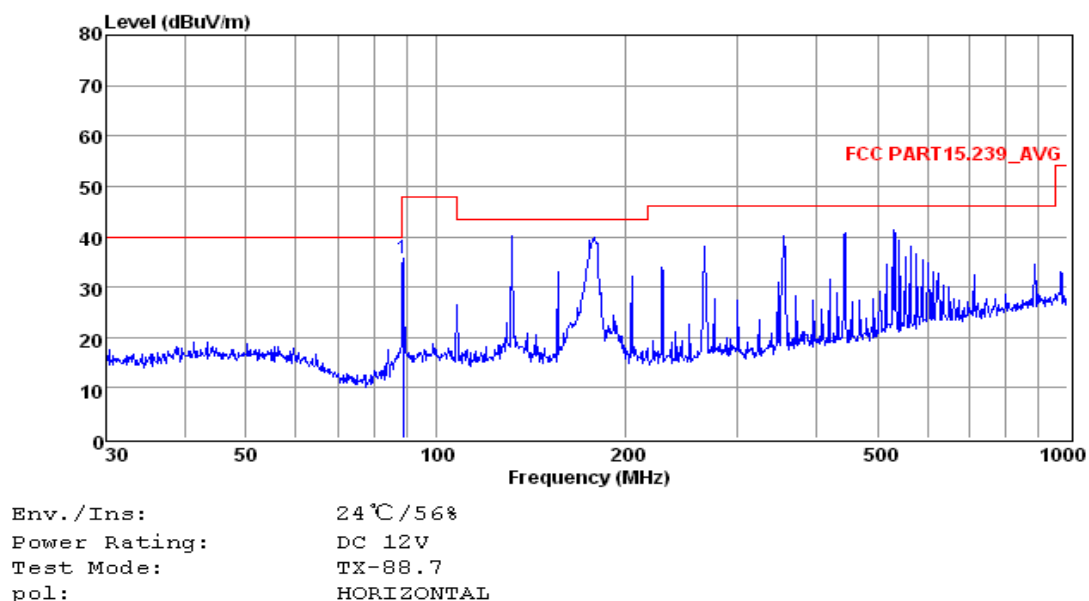
	Freq	Reading	CabLos	Antfac	Measured	Limit	Over	Remark
	MHz	dBuV	dB	dB/m	dBuV/m	dBuV/m	dB	
1	89.17	30.78	0.68	11.64	43.10	48.00	-4.90	Average

Note: 1. All readings are Quasi-peak values.
 2. Measured= Reading + Antenna Factor + Cable Loss
 3. The emission that are 20db below the official limit are not reported



	Freq	Reading	CabLos	Antfac	Measured	Limit	Over	Remark
	MHz	dBuV	dB	dB/m	dBuV/m	dBuV/m	dB	
1	88.65	49.56	0.68	11.47	61.71	68.00	-6.29	Peak
2	131.76	29.28	0.76	8.80	38.84	43.50	-4.66	QP
3	176.89	28.51	0.73	9.46	38.70	43.50	-4.80	QP
4	266.61	27.43	1.00	12.25	40.68	46.00	-5.32	QP
5	355.43	24.53	1.18	14.36	40.07	46.00	-5.93	QP
6	444.85	23.15	1.42	15.57	40.14	46.00	-5.86	QP

Note: 1. All readings are Quasi-peak values.
 2. Measured= Reading + Antenna Factor + Cable Loss
 3. The emission that at 20db blow the official limit are not reported



	Freq	Reading	CabLos	Antfac	Measured	Limit	Over	Remark
	MHz	dBuV	dB	dB/m	dBuV/m	dBuV/m	dB	
1	88.65	23.48	0.68	11.47	35.63	48.00	-12.37	Average

Note: 1. All readings are Quasi-peak values.
 2. Measured= Reading + Antenna Factor + Cable Loss
 3. The emission that at 20db blow the official limit are not reported

Note: The result below 30MHz and above 1GHz is too low so there is no record. The test setup show in the test setup photograph is the worst case.

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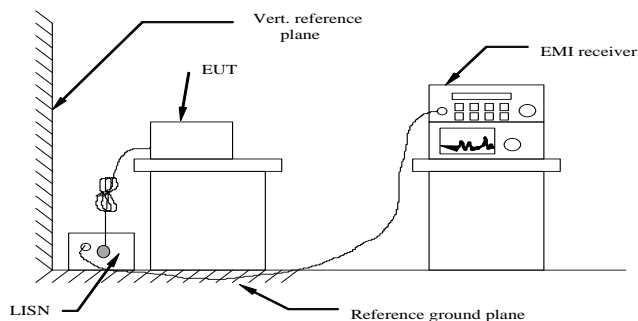
6. POWER LINE CONDUCTED EMISSIONS

6.1 Standard Applicable

According to §15.207 (a): For an intentional radiator which 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 or frequencies within the band 150 kHz to 30 MHz shall not exceed 250 microvolts (The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.50 MHz). The limits at specific frequency range is listed as follows:

Frequency Range (MHz)	Limits (dB μ V)	
	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

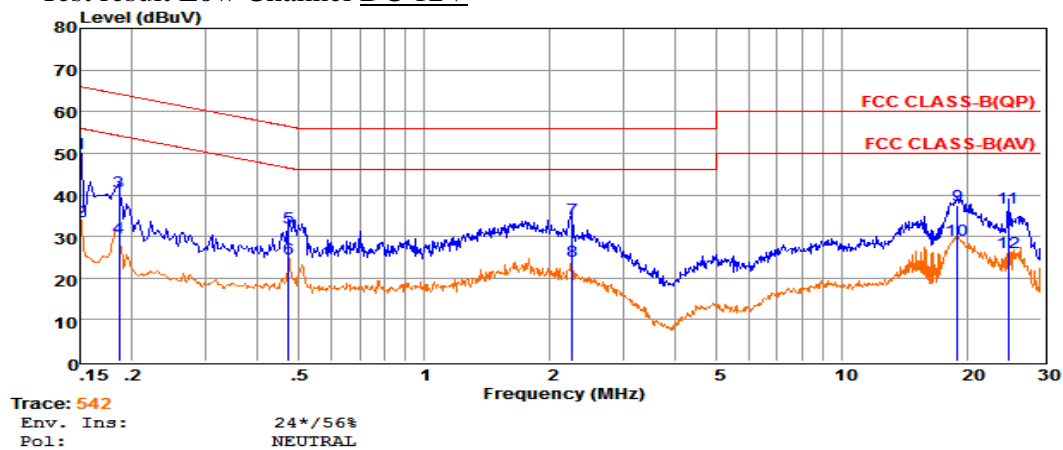
6.2 Block Diagram of Test Setup



6.3 Test Results

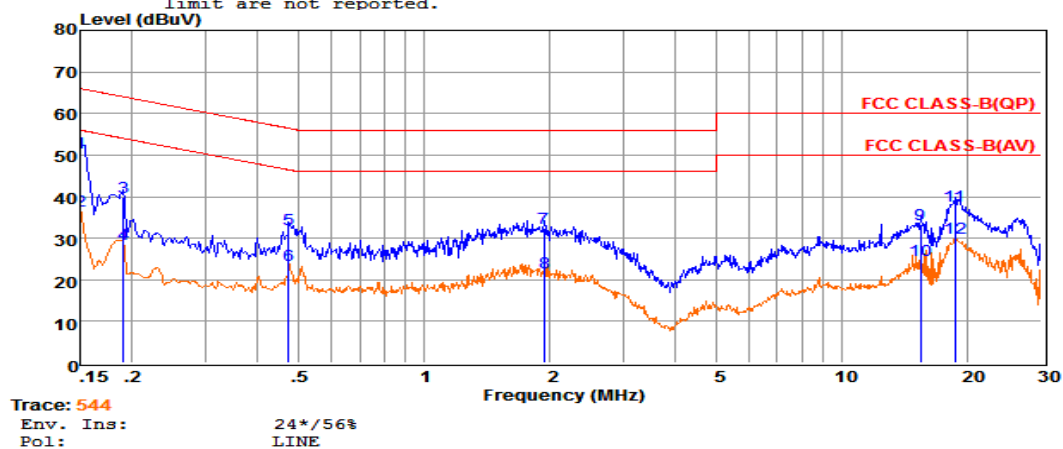
PASS.

Test result Low Channel DC 12V



	Freq	Reading	LisnFac	CabLos	Atten_Fac	Measured	Limit	Over	Remark
	MHz	dBuV	dB	dB	dB	dBuV	dBuV	dB	
1	0.15000	30.29	9.70	0.02	10.00	50.01	66.00	-15.99	QP
2	0.15010	13.76	9.70	0.02	10.00	33.48	55.99	-22.51	Average
3	0.18639	21.16	9.62	0.02	10.00	40.80	64.20	-23.40	QP
4	0.18649	9.99	9.62	0.02	10.00	29.63	54.19	-24.56	Average
5	0.47360	12.57	9.62	0.04	10.00	32.23	56.45	-24.22	QP
6	0.47370	5.14	9.62	0.04	10.00	24.80	46.45	-21.65	Average
7	2.26057	14.38	9.63	0.05	10.00	34.06	56.00	-21.94	QP
8	2.26157	4.49	9.63	0.05	10.00	24.17	46.00	-21.83	Average
9	18.92046	17.55	9.85	0.11	10.00	37.51	60.00	-22.49	QP
10	18.92146	9.08	9.85	0.11	10.00	29.04	50.00	-20.96	Average
11	125.05453	16.92	9.83	0.13	10.00	36.88	60.00	-23.12	QP
12	125.05553	6.16	9.83	0.13	10.00	26.12	50.00	-23.88	Average

Remarks: 1. Measured = Reading + Lisn Factor +Cable Loss+Atten_Fac.
2. The emission levels that are 20dB below the official limit are not reported.



	Freq	Reading	LisnFac	CabLos	Atten_Fac	Measured	Limit	Over	Remark
	MHz	dBuV	dB	dB	dB	dBuV	dBuV	dB	
1	0.15000	30.85	9.57	0.02	10.00	50.44	66.00	-15.56	QP
2	0.15010	16.95	9.57	0.02	10.00	36.54	55.99	-19.45	Average
3	0.19039	20.10	9.62	0.02	10.00	39.74	64.02	-24.28	QP
4	0.19049	9.06	9.62	0.02	10.00	28.70	54.02	-25.32	Average
5	0.47360	12.38	9.62	0.04	10.00	32.04	56.45	-24.41	QP
6	0.47370	3.73	9.62	0.04	10.00	23.39	46.45	-23.06	Average
7	1.93860	12.63	9.64	0.05	10.00	32.32	56.00	-23.68	QP
8	1.93960	1.91	9.64	0.05	10.00	21.60	46.00	-24.40	Average
9	15.38833	13.52	9.71	0.10	10.00	33.33	60.00	-26.67	QP
10	15.38933	4.77	9.71	0.10	10.00	24.58	50.00	-25.42	Average
11	118.62210	17.88	9.75	0.11	10.00	37.74	60.00	-22.26	QP
12	118.62310	10.03	9.75	0.11	10.00	29.89	50.00	-20.11	Average

Remarks: 1. Measured = Reading + Lisn Factor +Cable Loss+Atten_Fac.
2. The emission levels that are 20dB below the official limit are not reported.

Note: Only record the worst result.

7. ANTENNA REQUIREMENT

7.1 Standard Applicable

According to antenna requirement of §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. The manufacturer may design the unit so that a broken antenna can be re-placed by the user, but the use of a standard antenna jack or electrical connector is prohibited. This requirement does not apply to carrier current devices or to devices operated under the provisions of Sections 15.211, 15.213, 15.217, 15.219, or 15.221. Further, this requirement does not apply to intentional radiators that must be professionally installed, such as perimeter protection systems and some field disturbance sensors, or to other intentional radiators which, in accordance with Section 15.31(d), must be measured at the installation site. However, the installer shall be responsible for ensuring that the proper antenna is employed so that the limits in this Part are not exceeded.

7.2 Antenna Connected Construction

7.2.1. Standard Applicable

According to § 15.203 & RSS-Gen, 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.

7.2.2. Antenna Connector Construction

The directional gains of antenna used for transmitting is 1.0 dBi, and the antenna is connect to PCB board and no consideration of replacement. Please see EUT photo for details.

7.2.3. Results: Compliance.

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8. LIST OF TEST EQUIPMENT

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
1	Spectrum Analyzer	Agilent	E4407B	MY41440292	2015-06-16	2016-06-15
2	Signal analyzer	Agilent	E4448A(External mixers to 40GHz)	US44300469	2015-06-16	2016-06-15
3	RF Cable	Hubersuhne	Sucoflex104	FP2RX2	2015-06-18	2016-06-17
4	DC Filter	MPE	23872C	N/A	2015-06-18	2016-06-17
5	3m Semi Anechoic Chamber	SIDT FRANKONIA	SAC-3M	03CH03-HY	2015-06-18	2016-06-17
6	Amplifier	SCHAFFNER	COA9231A	18667	2015-06-18	2016-06-17
7	Amplifier	Agilent	8449B	3008A02120	2015-06-16	2016-06-15
8	Amplifier	MITEQ	AMF-6F-260400	9121372	2015-06-16	2016-06-15
9	Spectrum Analyzer	Agilent	E4407B	MY41440292	2015-06-16	2016-06-15
10	Signal analyzer	Agilent	E4448A(External mixers to 40GHz)	US44300469	2015-06-16	2016-06-15
11	Loop Antenna	R&S	HFH2-Z2	860004/001	2015-06-18	2016-06-17
12	By-log Antenna	SCHWARZBECK	VULB9163	9163-470	2015-06-10	2016-06-09
13	Horn Antenna	EMCO	3115	6741	2015-06-10	2016-06-09
14	Horn Antenna	SCHWARZBECK	BBHA9170	BBHA9170154	2015-06-10	2016-06-09
15	RF Cable-R03m	Jye Bao	RG142	CB021	2015-06-18	2016-06-17
16	RF Cable-HIGH	SUHNER	SUCOFLEX 106	03CH03-HY	2015-06-18	2016-06-17
17	EMI Test Receiver	ROHDE & SCHWARZ	ESCI	101142	2015/06/18	2016/06/18
18	EMI Test Receiver	ROHDE & SCHWARZ	ESPI	101840	2015/06/18	2016/06/18
19	Artificial Mains	ROHDE & SCHWARZ	ENV216	101288	2015/06/18	2016/06/18
20	EMI Test Software	AUDIX	E3	N/A	2015/06/18	2016/06/18

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