

FCC TEST REPORT
FOR
Technaxx Deutschland GmbH & Co. KG
Wireless Charger Car Kit
Model No.: FMT1200BT
Additional Model No.: C61W, C61F, TE17

Prepared for : Technaxx Deutschland GmbH & Co. KG
Address : Kruppstrasse 105 60388 Frankfurt am Main Germany

Prepared by : Shenzhen LCS Compliance Testing Laboratory Ltd.
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Date of receipt of test sample : November 29, 2018
Number of tested samples : 1
Serial number : Prototype
Date of Test : November 29, 2018 ~ April 15, 2019
Date of Report : April 15, 2019

FCC TEST REPORT
FCC CFR 47 PART 15.239

Report Reference No. : **LCS181129011AED**

Date of Issue : April 15, 2019

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 : **Technaxx Deutschland GmbH & Co. KG**

Address : Kruppstrasse 105 60388 Frankfurt am Main Germany

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 2019-03

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Test Item Description..... : **Wireless Charger Car Kit**

Trade Mark : N/A

Model/ Type reference : FMT1200BT

Ratings : Input: DC 12-24V
Output: DC 5V, 2.4A (MAX)

Result : **Positive**

Compiled by:




Dick Su / File administrators

Supervised by:



Calvin Weng / Technique principal

Approved by:



Gavin Liang/ Manager

FCC -- TEST REPORT

Test Report No. : LCS181129011AED	<u>April 15, 2019</u> Date of issue
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Type / Model.....	: FMT1200BT
EUT.....	: Wireless Charger Car Kit
Applicant.....	: Technaxx Deutschland GmbH & Co. KG
Address.....	: Kruppstrasse 105 60388 Frankfurt am Main Germany
Telephone.....	: /
Fax.....	: /
Manufacturer.....	: Technaxx Deutschland GmbH & Co. KG
Address.....	: Kruppstrasse 105 60388 Frankfurt am Main Germany
Telephone.....	: /
Fax.....	: /
Factory.....	: Technaxx Deutschland GmbH & Co. KG
Address.....	: Kruppstrasse 105 60388 Frankfurt am Main Germany
Telephone.....	: /
Fax.....	: /

Test Result	Positive
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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
000	April 15, 2019	Initial Issue	Gavin Liang

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1. GENERAL INFORMATION

1.1 Description of Device (EUT)

EUT	: Wireless Charger Car Kit
Test Model	: FMT1200BT
Additional Model	: C61W, C61F, TE17
Model Declaration	: PCB board, structure and internal of these model(s) are the same, So no additional models were tested.
Hardware Version	: C61-Qi-v03
Software Version	: HW-S4903-TX-S10-V2.38
BT:	
Bluetooth Operation frequency	: 2402MHz-2480MHz
Bluetooth Version	: V4.2
Bluetooth Channel Number	: 79 Channels for Bluetooth V4.2 (BT Classics) 40 Channels for Bluetooth V4.2 (BT LE)
Bluetooth Channel Spacing	: 1MHz for Bluetooth V4.2 (BT Classics) 2MHz for Bluetooth V4.2 (DTS)
Bluetooth Modulation Type	: GFSK, $\pi/4$ -DQPSK for Bluetooth V4.2 (BT Classics) GFSK for Bluetooth V4.2 (DTS)
Antenna Description	: PCB Antenna, -0.58dBi
WPT:	
Operating Frequency	: 110-205KHz
Modulation Type	: CW
Antenna Type	: Coil Antenna
FM:	
Frequency Range	: 88.1~107.9MHz
Channel number	: 199
Channel Spacing	: 100KHz
Channel frequency	: 88.1~107.9MHz(Channel Number: 199, Channel Frequency=88.1+0.1(K-1), K=1, 2, 3199)
Modulation Type	: FM
Antenna Gain	: Internal antenna, 0 dBi(Max.)
Input/output	: Input: DC 12-24V Output: DC 5V, 2.4A (MAX)

1.2. Host System Configuration List and Details

Manufacturer	Description	Model	Serial Number	Certificate
Apple	Mobile Phone	iPhone 8 Plus	--	FCC ID
G&J INDUSTRY LIMITED	Car Charger	GJ-2034	--	FCC VOC
--	--	--	--	--

1.3. External I/O Cable

I/O Port Description	Quantity	Cable
USB Port	1	1.0m, unshielded

1.4. Description of Test Facility

FCC Registration Number. is 254912.

Industry Canada Registration Number. is 9642A-1.

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

NVLAP Registration Code is 600167-0

The 3m-Semi anechoic test site fulfils CISPR 16-1-4 according to ANSI C63.10:2013 and CISPR 16-1-4:2010 SVSWR requirement for radiated emission above 1GHz.

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 EUT has been tested under operating condition.

This test was performed with EUT in X, Y, Z position and the worst case was found when EUT in X position.

The FM Transmitter is powered by a Car Charger (Model: GJ-2034) which is powered by DC 12V. It works in TX mode (88.1MHz, 98.0MHz and 107.9MHz).

Test Modes		
Mode 1	Car Charge (5V/2.4A) + EUT + Mobile Phone iPhone 8 Plus (Battery Status: <1%)	Pre-tested
Mode 2	Car Charge (5V/2.4A) + EUT + Mobile Phone iPhone 8 Plus (Battery Status: <50%)	Pre-tested
Mode 3	Car Charge (5V/2.4A) + EUT + Mobile Phone iPhone 8 Plus (Battery Status: 100%)	Pre-tested
Mode 4	Car Charge (5V/2.4A) + EUT + BT Connection + Mobile Phone iPhone 8 Plus (Battery Status: <1%)	No-tested
Mode 5	Car Charge (5V/2.4A) + EUT + BT Connection + Mobile Phone iPhone 8 Plus (Battery Status: <50%)	No-tested
Mode 6	Car Charge (5V/2.4A) + EUT + BT Connection + Mobile Phone iPhone 8 Plus (Battery Status: 100%)	No-tested
Mode 7	Car Charge (5V/2.4A) + EUT + FM TX + Mobile Phone iPhone 8 Plus (Battery Status: <1%)	Pre-tested
Mode 8	Car Charge (5V/2.4A) + EUT + FM TX + Mobile Phone iPhone 8 Plus (Battery Status: <50%)	Pre-tested
Mode 9	Car Charge (5V/2.4A) + EUT + FM TX + Mobile Phone iPhone 8 Plus (Battery Status: 100%)	Pre-tested
Mode 10	Car Charge (5V/2.4A) + EUT + BT Connection + FM TX + Mobile Phone iPhone 8 Plus (Battery Status: <1%)	Recorded
Mode 11	Car Charge (5V/2.4A) + EUT + BT Connection + FM TX + Mobile Phone iPhone 8 Plus (Battery Status: <50%)	Pre-tested
Mode 12	Car Charge (5V/2.4A) + EUT + BT Connection + FM TX + Mobile Phone iPhone 8 Plus (Battery Status: 100%)	Pre-tested
Mode 13	Car Charge (5V/2.4A) + EUT + BT Connection + FM TX	Pre-tested
Mode 14	Car Charge (5V/2.4A) + EUT + BT Connection + FM TX	Pre-tested
Mode 15	Car Charge (5V/2.4A) + EUT + BT Connection + FM TX	Pre-tested
Note: All test modes were pre-tested, but we only recorded the worst case in this report.		

2. TEST METHODOLOGY

All measurements contained in this report were conducted with ANSI C63.10-2013, American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices.

The radiated testing was performed at an antenna-to-EUT distance of 3 meters. All radiated and conducted emissions measurement was performed at Shenzhen LCS Compliance Testing Laboratory Ltd.

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.

2.4. Test Sample

The application provides 2 samples to meet requirement;

Sample Number	Description
Sample 1	Engineer sample – continuous transmit with RF connector
Sample 2	Engineer sample – continuous transmit with antenna

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. SUMMARY OF TEST RESULTS

Applied Standard: FCC Part 15 Subpart C: §15.239				
FCC Rules	Description of Test	Test Sample	Result	Remark
§15.239(a)	99% and 20dB Occupied Bandwidth	Sample 1	Compliant	Note 1
§15.239(b)	Field strength of fundamental	Sample 2	Compliant	Note 1
§15.239(c) §15.209	Radiated Emission	Sample 2	Compliant	Note 1
§15.207	AC Conducted Emissions	Sample 1	N/A*	Note 3
§15.203	Antenna Requirements	-/-	Compliant	Note 1
§15.247(i)§2.1091	RF Exposure Evaluation	-/-	Compliant	Note 2

Remark:

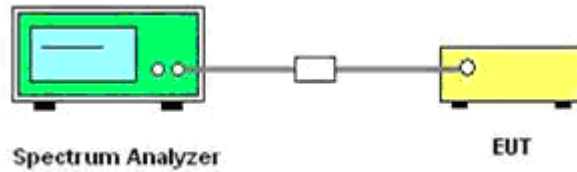
1. Note 1 – Test results inside test report;
2. Note 2 – Test results in other test report (RF Exposure Evaluation).
3. Note 3 – Not Applicable!!!

5. 99% AND 20 DB BANDWIDTH

5.1 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.

5.2 Block Diagram of Test Setup



5.3 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
- c. VBW \geq RBW.
- d. Detector function = peak.
- e. Trace = max hold.

5.4 Test Results

PASS

Frequency (MHz)	99% Occupied Bandwidth (KHz)	20dB Bandwidth (KHz)	Limit (KHz)	Conclusion
88.1	0.13757	0.17630	200	Pass
98.1	0.11268	0.15200	200	Pass
107.9	0.13243	0.18720	200	Pass

Remark:

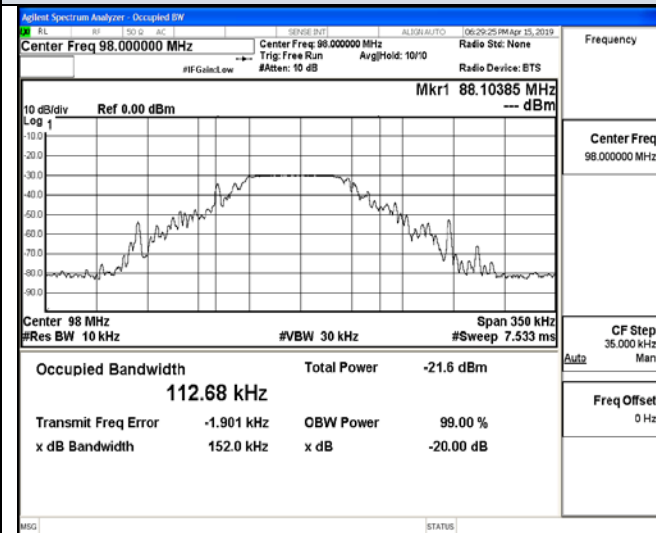
- 1) Test results including cable loss;
- 2) Please refer to following test plots;

99% and 20dB Bandwidth

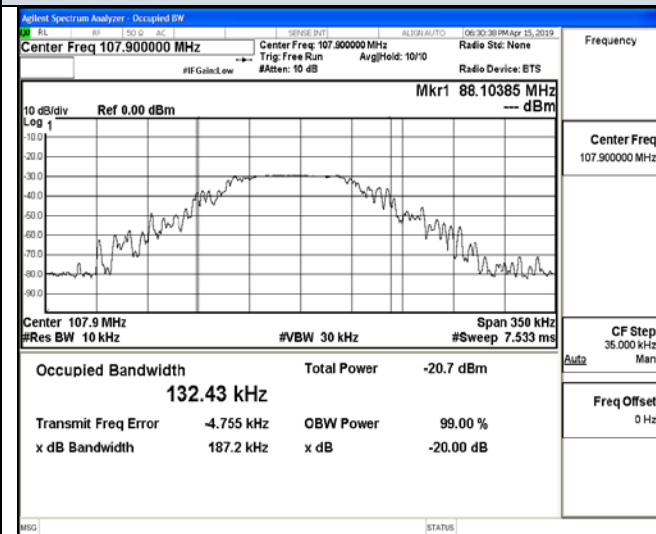
FM



88.10 MHz



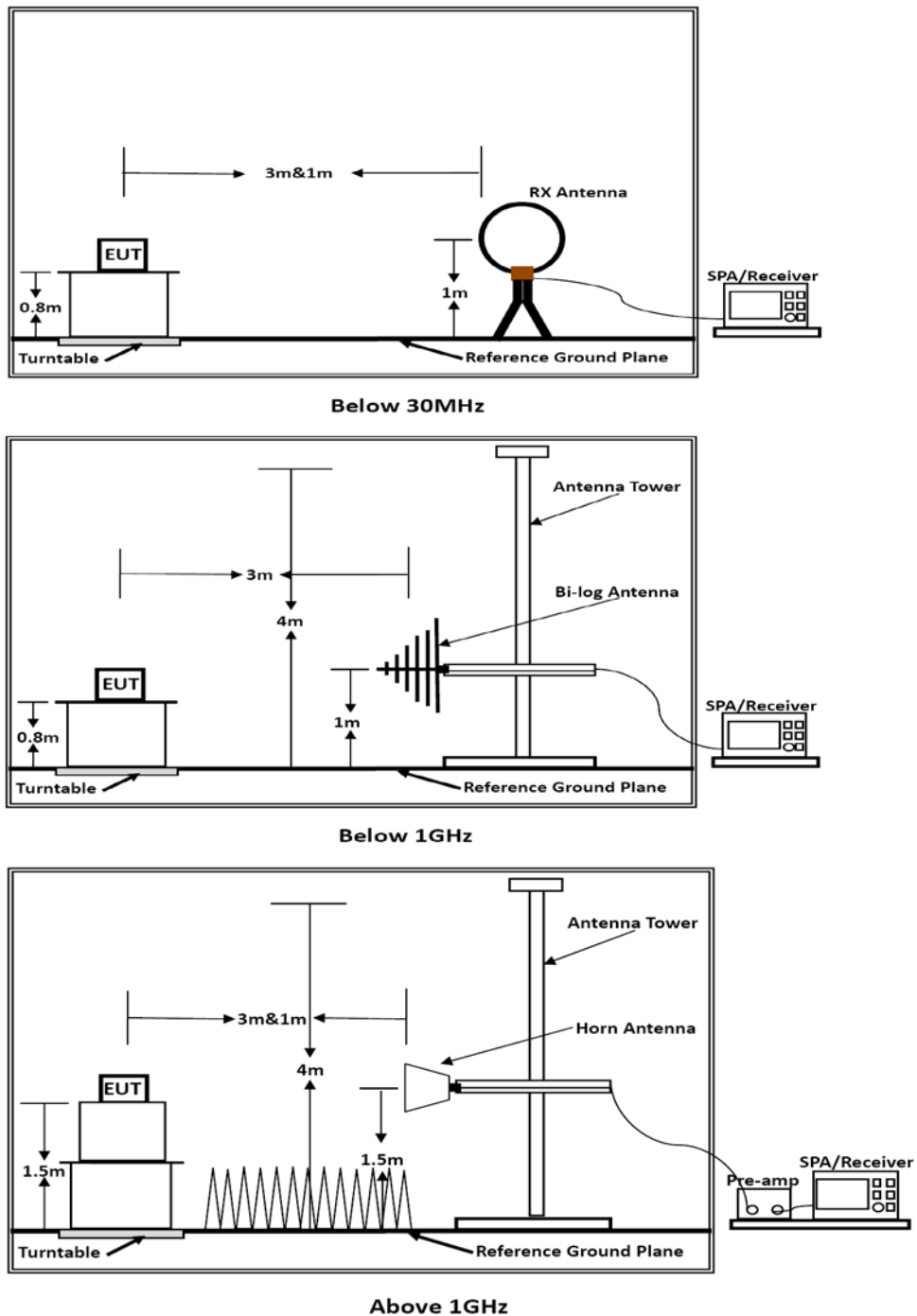
98.10 MHz



107.90 MHz

6. RADIATED MEASUREMENT

6.1 Block Diagram of Test Setup



6.2 Standard Applicable

According to FCC part §15.205 (b): The field strength of any emissions within the permitted 200 kHz band shall not exceed 250 microvolts/meter at 3 meters. The emission limit in this paragraph is based on measurement instrumentation employing an average detector. The provisions in §15.35 for limiting peak emissions apply.

According to §15.205 (c): The field strength of any emissions radiated on any frequency outside of the specified 200 kHz band shall not exceed the general radiated emission limits in §15.209.

Frequencies (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
0.009~0.490	2400/F(KHz)	300
0.490~1.705	24000/F(KHz)	30
1.705~30.0	30	30
30~88	100	3
88~216	150	3
216~960	200	3
Above 960	500	3

Remark:

- (1) Emission level dBµV = 20 log Emission level µV/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.

6.3 Instruments Setting

Please refer to equipment list in this report. The following table is the setting of spectrum analyzer and receiver.

Spectrum Parameter	Setting
Attenuation	Auto
Start Frequency	1000 MHz
Stop Frequency	10 th carrier harmonic
RB / VB (Emission in restricted band)	1MHz / 1MHz for Peak, 1 MHz / 1/B kHz for Average
RB / VB (Emission in non-restricted band)	1MHz / 1MHz for Peak, 1 MHz / 1/B kHz for Average

Receiver Parameter	Setting
Attenuation	Auto
Start ~ Stop Frequency	9kHz~150kHz / RB/VB 200Hz/1KHz for QP/AVG
Start ~ Stop Frequency	150kHz~30MHz / RB/VB 9kHz/30KHz for QP/AVG
Start ~ Stop Frequency	30MHz~1000MHz / RB/VB 120kHz/1MHz for QP

6.4 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 18 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 scan range is 1 meter to 2.5 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 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. This procedure is repeated for both antenna polarizations.
- The final measurement will be done in the position (turntable, EUT-table and antenna polarization) causing the highest emissions with Peak and Average 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 18 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 polarizations of the antenna.

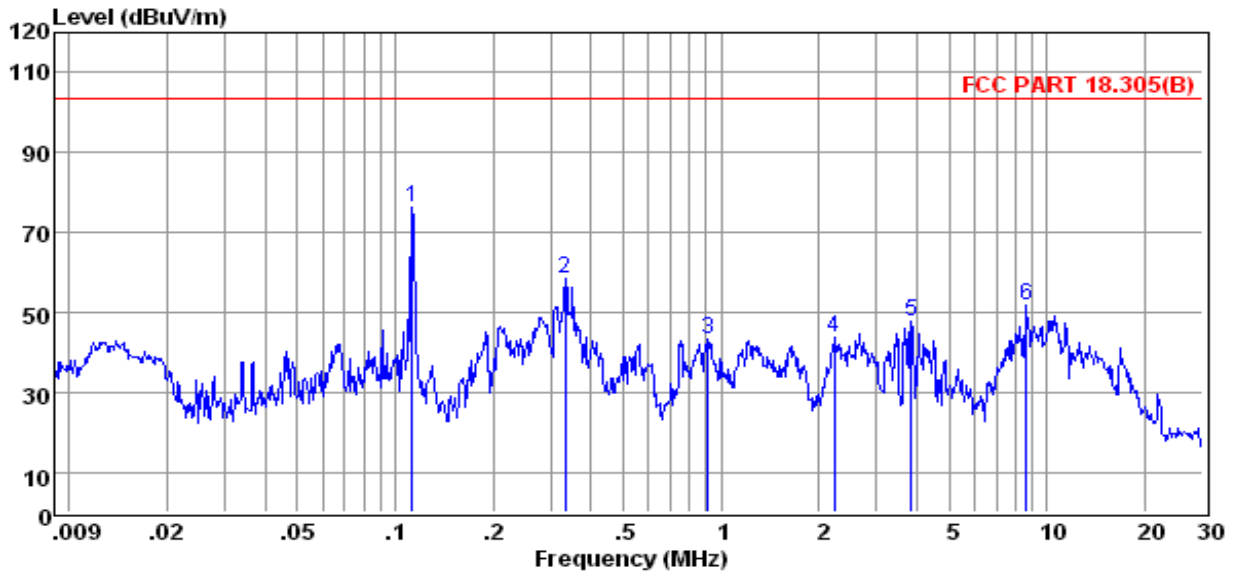
Final measurement:

- 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 Average 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.

6.5. EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

6.6 Results of Radiated Emissions (9 KHz~30MHz)



	Freq	Reading	CabLos	Antfac	Measured	Limit	Over	Remark
	MHz	dBuV	dB	dB/m	dBuV/m	dBuV/m	dB	
1	0.11	52.49	0.30	23.52	76.31	103.50	-27.19	QP
2	0.33	36.63	0.30	21.41	58.34	103.50	-45.16	QP
3	0.91	22.07	0.30	20.97	43.34	103.50	-60.16	QP
4	2.22	22.26	0.30	21.09	43.65	103.50	-59.85	QP
5	3.82	25.88	0.30	21.62	47.80	103.50	-55.70	QP
6	8.67	28.40	0.30	23.08	51.78	103.50	-51.72	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

Remark: Measured at antenna position 0 degree and 90 degree, recorded worst case at 90 degree.

6.7. Results of Radiated Emissions (30 – 1000 MHz)

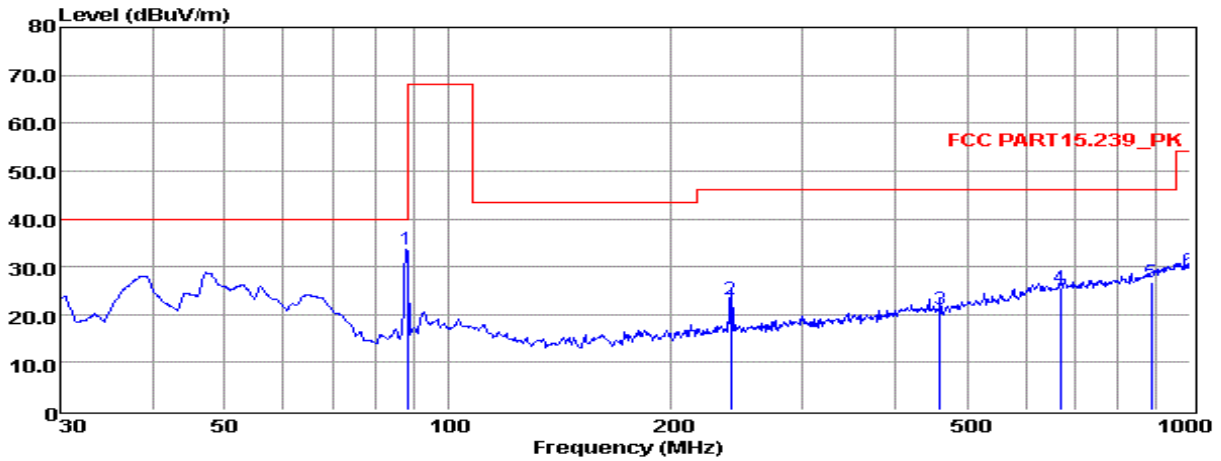
PASS.

Only record the worst test result in this report.

The test data please refer to following page.

88.1 MHz

Vertical

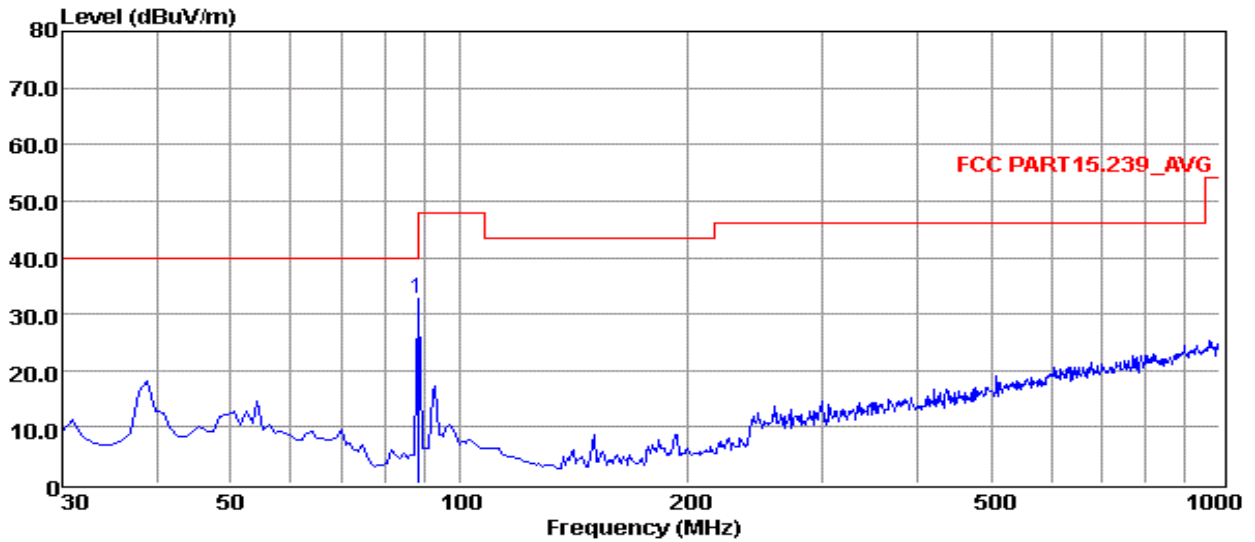


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VERTICAL

	Freq	Reading	CabLos	Antfac	Measured	Limit	Over	Remark
	MHz	dBuV	dB	dB/m	dBuV/m	dBuV/m	dB	
1	88.10	21.54	0.68	11.30	33.52	68.00	-34.48	Peak
2	240.49	10.06	1.01	12.09	23.16	46.00	-22.84	QP
3	460.68	4.18	1.36	15.61	21.15	46.00	-24.85	QP
4	667.29	5.19	1.71	18.69	25.59	46.00	-20.41	QP
5	886.51	4.09	1.87	20.95	26.91	46.00	-19.09	QP
6	999.03	5.44	2.02	21.73	29.19	54.00	-24.81	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



pol:

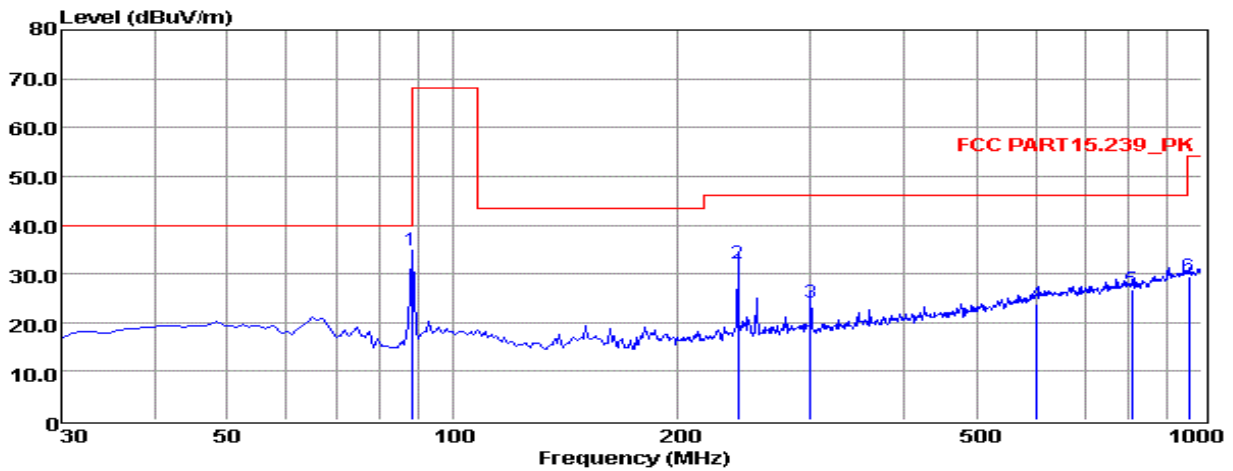
VERTICAL

	Freq	Reading	CabLos	Antfac	Measured	Limit	Over	Remark
	MHz	dBuV	dB	dB/m	dBuV/m	dBuV/m	dB	
1	88.10	20.75	0.68	11.30	32.73	48.00	-15.27	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

88.1 MHz

Horizontal

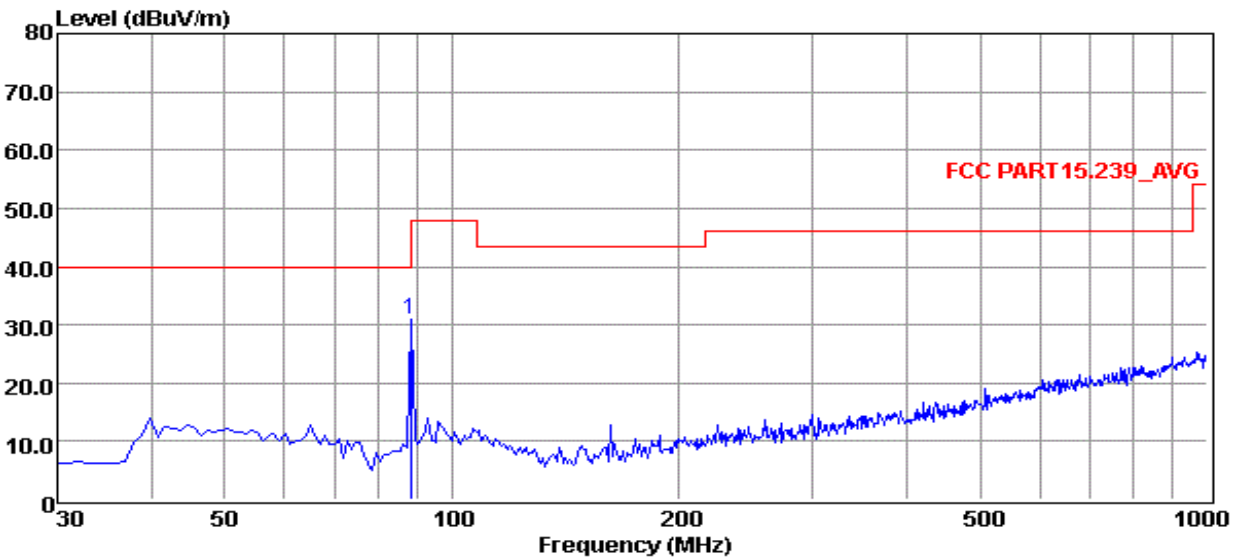


pol:

HORIZONTAL

	Freq	Reading	CabLos	Antfac	Measured	Limit	Over	Remark
	MHz	dBuV	dB	dB/m	dBuV/m	dBuV/m	dB	
1	88.10	22.87	0.68	11.30	34.85	68.00	-33.15	Peak
2	240.49	18.95	1.01	12.09	32.05	46.00	-13.95	QP
3	300.63	9.97	1.13	13.07	24.17	46.00	-21.83	QP
4	602.30	3.83	1.55	18.46	23.84	46.00	-22.16	QP
5	806.97	4.89	1.76	20.13	26.78	46.00	-19.22	QP
6	961.20	5.86	2.01	21.49	29.36	54.00	-24.64	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



pol:

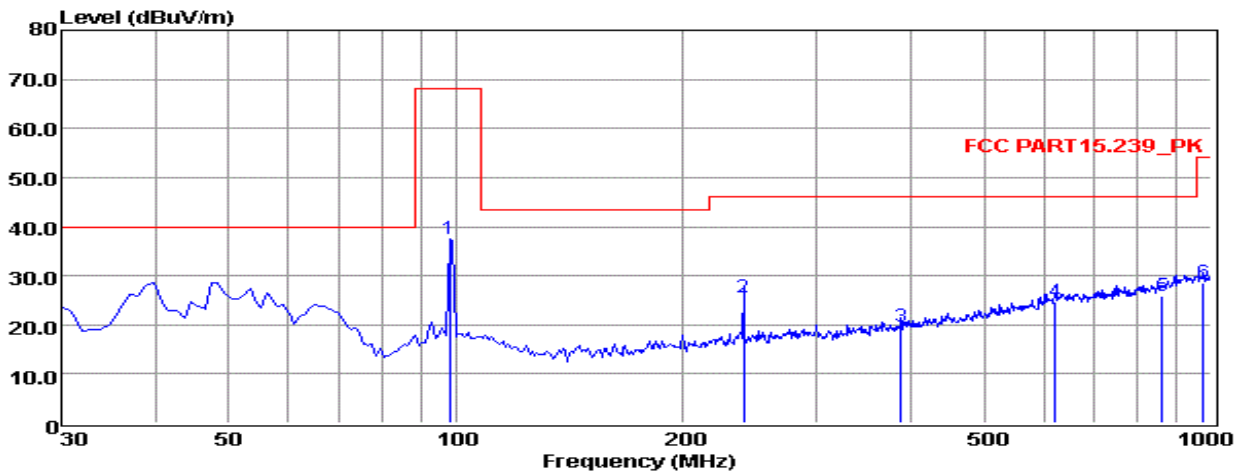
HORIZONTAL

	Freq	Reading	CabLos	Antfac	Measured	Limit	Over	Remark
	MHz	dBuV	dB	dB/m	dBuV/m	dBuV/m	dB	
1	88.10	18.90	0.68	11.30	30.88	48.00	-17.12	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

98.1 MHz

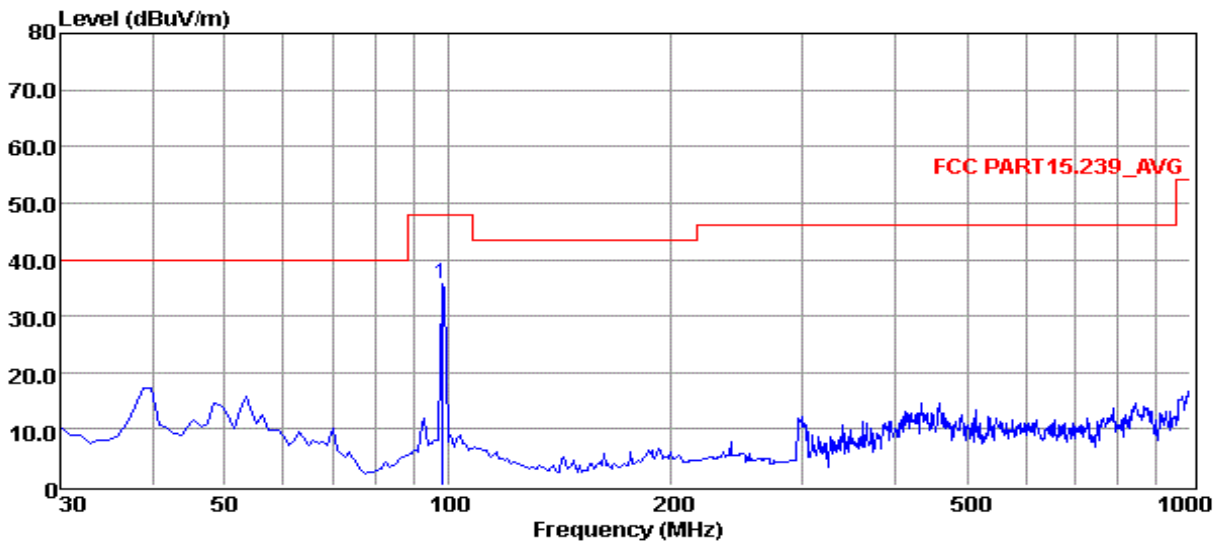
Vertical



pol: VERTICAL

	Freq	Reading	CabLos	Antfac	Measured	Limit	Over	Remark
	MHz	dBuV	dB	dB/m	dBuV/m	dBuV/m	dB	
1	98.00	23.88	0.61	13.03	37.52	68.00	-30.48	Peak
2	240.49	12.40	1.01	12.09	25.50	46.00	-20.50	QP
3	388.90	3.56	1.17	14.80	19.53	46.00	-26.47	QP
4	622.67	4.54	1.49	18.53	24.56	46.00	-21.44	QP
5	862.26	3.47	1.84	20.70	26.01	46.00	-19.99	QP
6	977.69	4.97	1.94	21.59	28.50	54.00	-25.50	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



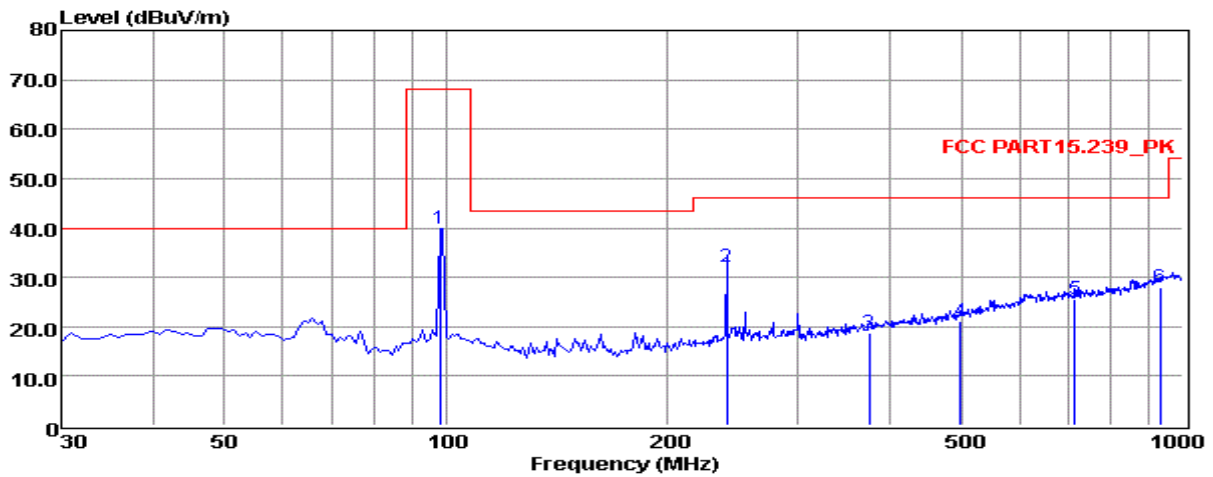
pol: VERTICAL

	Freq	Reading	CabLos	Antfac	Measured	Limit	Over	Remark
	MHz	dBuV	dB	dB/m	dBuV/m	dBuV/m	dB	
1	98.00	22.10	0.61	13.03	35.74	48.00	-12.26	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

98.1 MHz

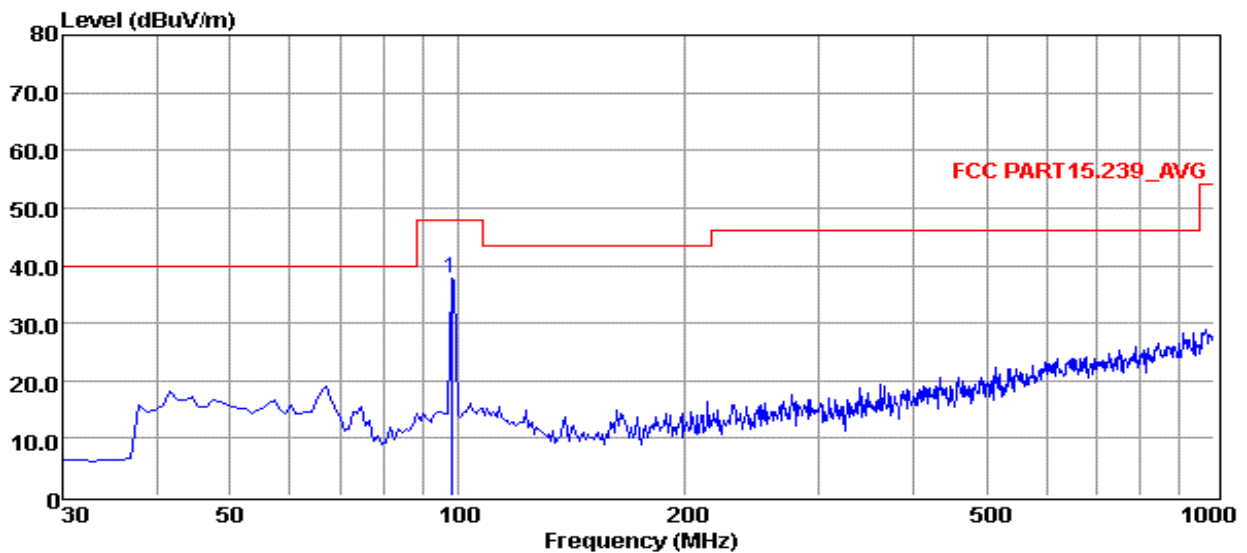
Horizontal



pol: HORIZONTAL

	Freq	Reading	CabLos	Antfac	Measured	Limit	Over	Remark
	MHz	dBuV	dB	dB/m	dBuV/m	dBuV/m	dB	
1	98.00	26.29	0.61	13.03	39.93	68.00	-28.07	Peak
2	240.49	18.97	1.01	12.09	32.07	46.00	-13.93	QP
3	375.32	3.02	1.10	14.55	18.67	46.00	-27.33	QP
4	499.48	3.24	1.34	16.57	21.15	46.00	-24.85	QP
5	713.85	5.06	1.63	18.98	25.67	46.00	-20.33	QP
6	931.13	4.72	1.92	21.29	27.93	46.00	-18.07	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



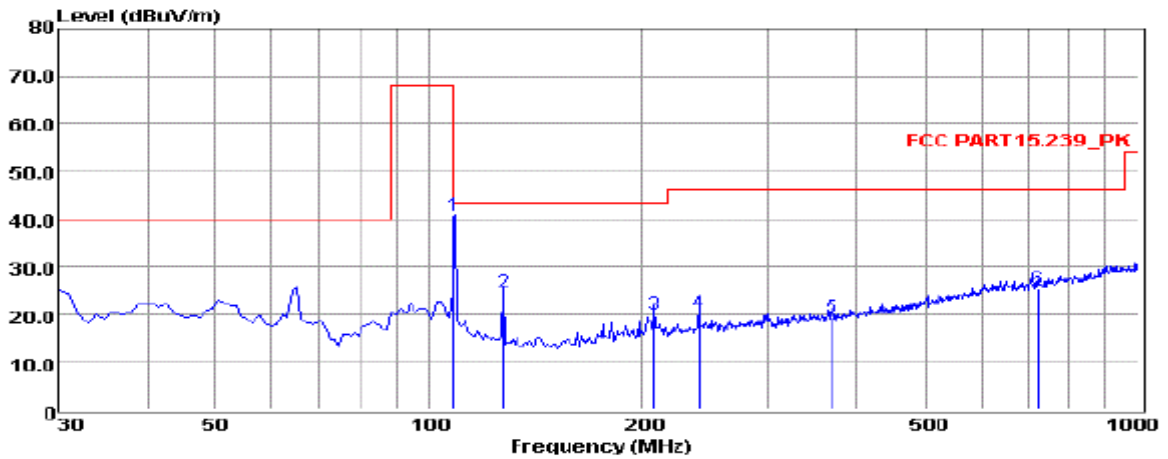
pol: HORIZONTAL

	Freq	Reading	CabLos	Antfac	Measured	Limit	Over	Remark
	MHz	dBuV	dB	dB/m	dBuV/m	dBuV/m	dB	
1	98.00	24.23	0.61	13.03	37.87	48.00	-10.13	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

107.9 MHz

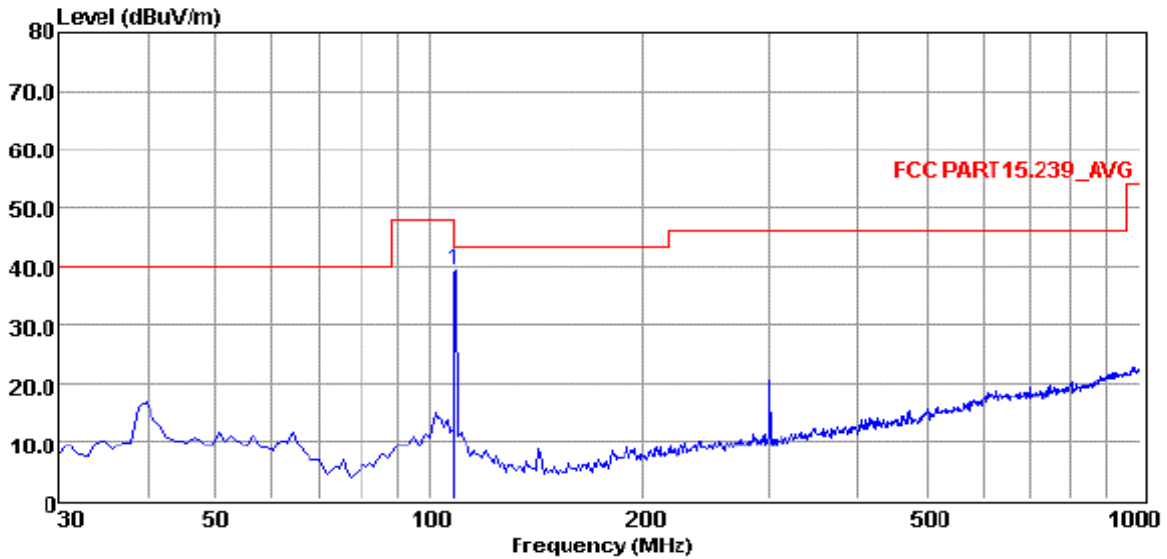
Vertical



pol: VERTICAL

	Freq	Reading	CabLos	Antfac	Measured	Limit	Over	Remark
	MHz	dBuV	dB	dB/m	dBuV/m	dBuV/m	dB	
1	107.89	27.64	0.68	12.44	40.76	68.00	-27.24	Peak
2	127.00	14.62	0.67	9.40	24.69	43.50	-18.81	QP
3	207.51	8.18	0.86	10.81	19.85	43.50	-23.65	QP
4	240.49	7.08	1.01	12.09	20.18	46.00	-25.82	QP
5	370.47	3.54	1.20	14.51	19.25	46.00	-26.75	QP
6	720.64	4.68	1.63	19.07	25.38	46.00	-20.62	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



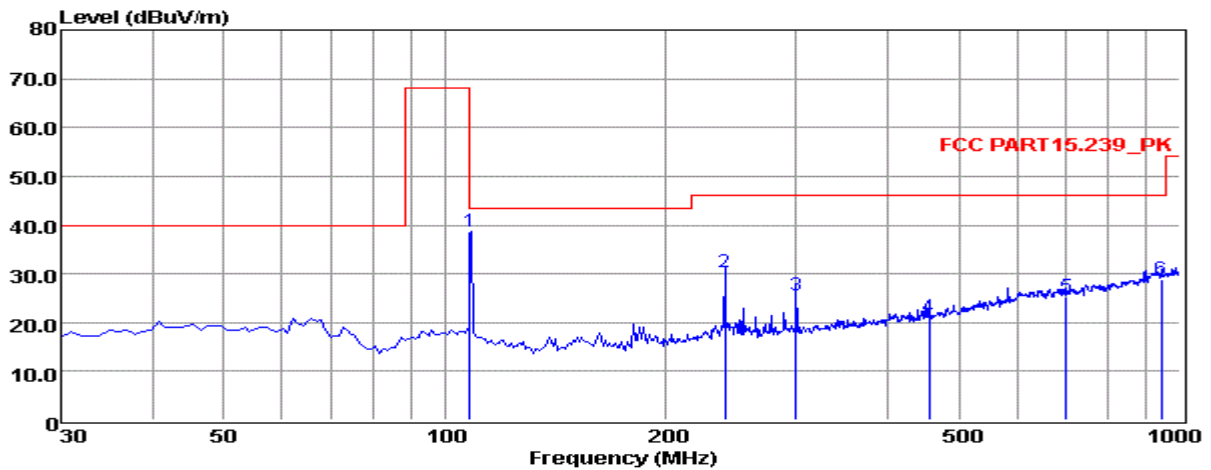
pol: VERTICAL

	Freq	Reading	CabLos	Antfac	Measured	Limit	Over	Remark
	MHz	dBuV	dB	dB/m	dBuV/m	dBuV/m	dB	
1	107.90	26.26	0.68	12.44	39.38	48.00	-8.62	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

107.9 MHz

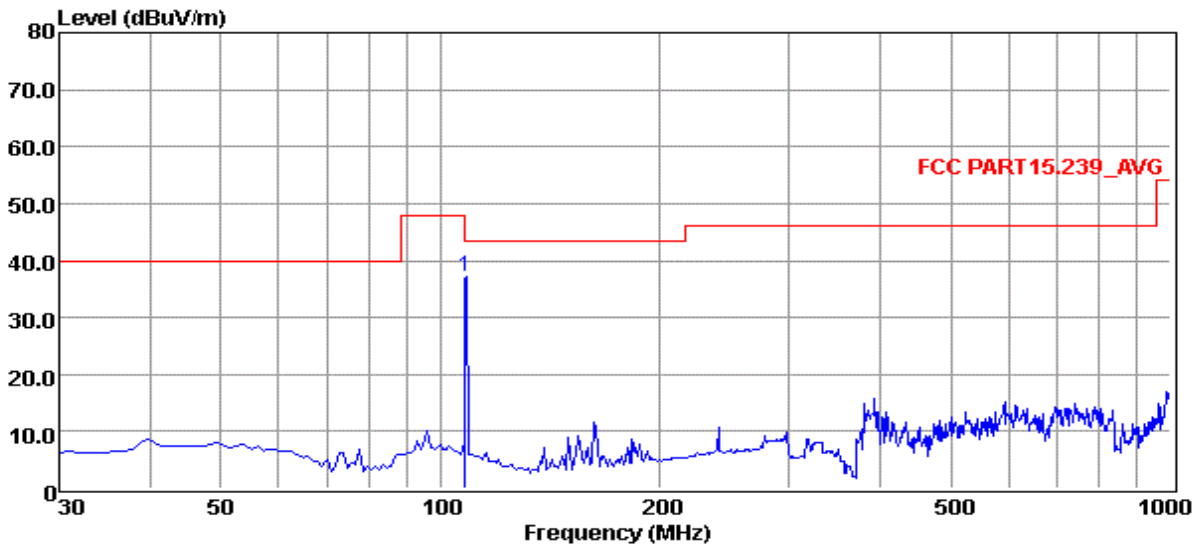
Horizontal



pol: HORIZONTAL

	Freq	Reading	CabLos	Antfac	Measured	Limit	Over	Remark
	MHz	dBuV	dB	dB/m	dBuV/m	dBuV/m	dB	
1	107.90	25.62	0.68	12.44	38.74	68.00	-29.26	Peak
2	240.49	17.35	1.01	12.09	30.45	46.00	-15.55	QP
3	300.63	11.50	1.13	13.07	25.70	46.00	-20.30	QP
4	455.83	4.27	1.39	15.58	21.24	46.00	-24.76	QP
5	701.24	4.68	1.70	18.83	25.21	46.00	-20.79	QP
6	944.71	5.56	1.95	21.38	28.89	46.00	-17.11	QP

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



pol: HORIZONTAL

	Freq	Reading	CabLos	Antfac	Measured	Limit	Over	Remark
	MHz	dBuV	dB	dB/m	dBuV/m	dBuV/m	dB	
1	107.90	23.99	0.68	12.44	37.11	48.00	-10.89	Average

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

Note:

- 1). Pre-scan all modes and recorded the worst case results in this report.*
- 2). Emission level (dBuV/m) = 20 log Emission level (uV/m).*
- 3). Corrected Reading: Antenna Factor + Cable Loss + Read Level = Level.*

6.8. Results of Radiated Emissions (1 GHz – 2 GHz)

Not recorded as emission levels at least 20dB lower than limit.

7. POWER LINE CONDUCTED EMISSIONS (NOT APPLICABLE)

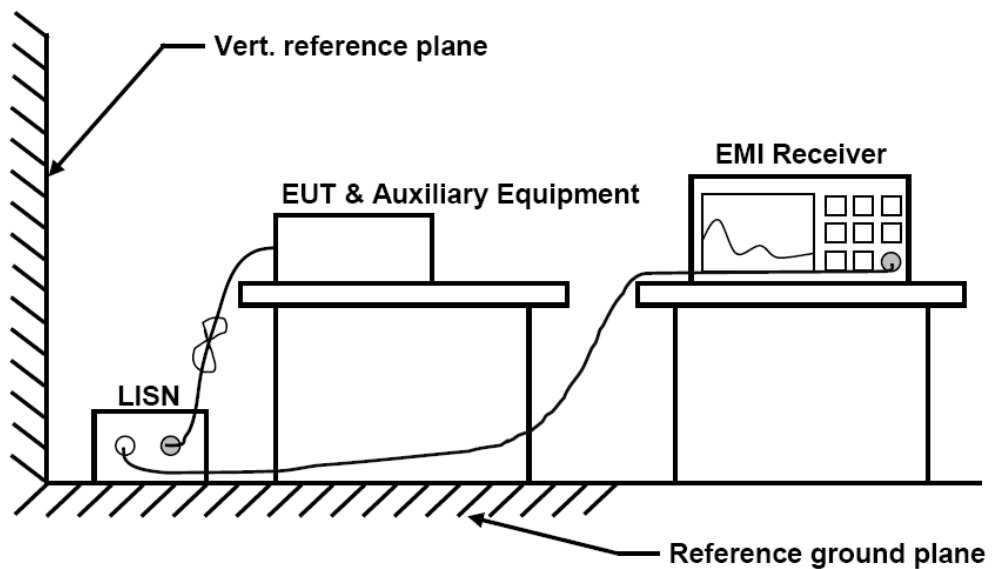
7.1 Standard Applicable

According to §15.207 (a): For an intentional radiator which is designed to be connected to the public utility 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

* Decreasing linearly with the logarithm of the frequency

7.2 Block Diagram of Test Setup



7.3 Test Results

Not Applicable!!!

The device was powered by DC!!!

8. ANTENNA REQUIREMENT

8.1 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.

8.2 Antenna Connected Construction

8.2.1. 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.

8.2.2. Antenna Connector Construction

The directional gains of antenna used for transmitting is 0dBi, and the antenna is connect to PCB board and no consideration of replacement. Please see EUT photo for details.

8.2.3. Results: Compliance.

9. LIST OF TEST EQUIPMENT

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
1	Spectrum Analyzer	Agilent	E4407B	MY41440292	2018-06-16	2019-06-15
2	MXA Signal Analyzer	Agilent	N9020A	MY50510140	2018-06-16	2019-06-15
3	RF Cable	Hubersuhner	Sucoflex104	FP2RX2	2018-06-15	2019-06-17
4	DC Filter	MPE	23872C	N/A	2018-06-15	2019-06-17
5	3m Semi Anechoic Chamber	SIDT FRANKONIA	SAC-3M	03CH03-HY	2018-06-15	2019-06-17
6	Amplifier	SCHAFFNER	COA9231A	18667	2018-06-15	2019-06-17
7	Amplifier	Agilent	8449B	3008A02120	2018-06-16	2019-06-15
8	Amplifier	MITEQ	AMF-6F-260400	9121372	2018-06-16	2019-06-15
9	Loop Antenna	R&S	HFH2-Z2	860004/001	2018-06-15	2019-06-17
10	By-log Antenna	SCHWARZBECK	VULB9163	9163-470	2018-06-10	2019-06-09
11	Horn Antenna	EMCO	3115	6741	2018-06-10	2019-06-09
12	Horn Antenna	SCHWARZBECK	BBHA9170	BBHA9170154	2018-06-10	2019-06-09
13	RF Cable-R03m	Jye Bao	RG142	CB021	2018-06-15	2019-06-17
14	RF Cable-HIGH	SUHNER	SUCOFLEX 106	03CH03-HY	2018-06-15	2019-06-17
15	EMI Test Receiver	R&S	ESCI	101142	2018-06-18	2019-06-18
16	EMI Test Receiver	R&S	ESPI	101840	2018-06-18	2019-06-18
17	Artificial Mains	R&S	ENV216	101288	2018-06-18	2019-06-18
18	EMI Test Software	AUDIX	E3	N/A	N/A	N/A

Note: All equipment is calibrated through GUANGZHOU LISAI CALIBRATION AND TEST CO.,LTD.

10. TEST SETUP PHOTOGRAPHS OF THE EUT

Please refer to separated files for Test Setup Photos of the EUT.

11. EXTERIOR PHOTOGRAPHS OF THE EUT

Please refer to separated files for External Photos of the EUT.

12. INTERIOR PHOTOGRAPHS OF THE EUT

Please refer to separated files for Internal Photos of the EUT.

-----THE END OF REPORT-----