FCC TEST REPORT

FOR

Artsun Enterprise Company Limited

Low Profile Bluetooth FM Transmitter

Test Model: VM-201

Prepared for	:	Artsun Enterprise Company Limited
Address	:	19H Maxgrand plaza, No.3 Tai Yau Street, San Po Kong, Kowloon, HongKong

Prepared by	:	Shenzhen LCS Compliance Testing Laboratory Ltd.
Address	:	101, 201 Bldg A & 301 Bldg C, Juji Industrial Park Yabianxueziwei, Shajing Street, Baoan District, Shenzhen, 518000, 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	:	August 01, 2024
Number of tested samples	:	2
Sample No.	:	A240731002-1, A240731002-2
Serial number	:	Prototype
Date of Test	:	August 01, 2024 ~ August 21, 2024
Date of Report	:	August 21, 2024

FCC TEST REPORT

FCC CFR 47 PART 15.239

Report Reference No.	:	**LCSA08014079EB**
Date of Issue.....	:	August 21, 2024
Testing Laboratory Name.....	:	**Shenzhen LCS Compliance Testing Laboratory Ltd.**
Address.....	:	101, 201 Bldg A & 301 Bldg C, Juji Industrial Park Yabianxueziwei, Shajing Street, Baoan District, Shenzhen, 518000, China
Testing Location/ Procedure.....	:	Full application of Harmonised standards ■ Partial application of Harmonised standards □ Other standard testing method □
Applicant's Name.....	:	**Artsun Enterprise Company Limited**
Address.....	:	19H Maxgrand plaza, No.3 Tai Yau Street, San Po Kong, Kowloon, HongKong
Test Specification		
Standard.....	:	FCC CFR 47 PART 15.239 / ANSI C63.10: 2013
Test Report Form No.....	:	TRF-4-E-182 A/0
TRF Originator.....	:	Shenzhen LCS Compliance Testing Laboratory Ltd.
Master TRF.....	:	Dated 2011-03

Shenzhen LCS Compliance Testing Laboratory Ltd. All rights reserved.

This publication may be reproduced in whole or in part for non-commercial purposes as long as the Shenzhen LCS Compliance Testing Laboratory Ltd. is acknowledged as copyright owner and source of the material. Shenzhen LCS Compliance Testing Laboratory Ltd. takes no responsibility for and will not assume liability for damages resulting from the reader's interpretation of the reproduced material due to its placement and context.

Test Item Description.....	:	**Low Profile Bluetooth FM Transmitter**
Trade Mark.....	:	AUTO DRIVE
Test Model.....	:	VM-201
Ratings.....	:	Input: DC 12-24V 2A Output:5V⎓2.1A Max
Result	:	**Positive**

Compiled by:	Supervised by:	Approved by:
Diamond Lu/ Administrator	Cary Luo/ Technique principal	Gavin Liang/ Manager

FCC -- TEST REPORT

Test Report No. :	**LCSA08014079EB**	August 21, 2024 Date of issue

Test Model.....	:	VM-201
EUT.....	:	Low Profile Bluetooth FM Transmitter
Applicant.....	:	**Artsun Enterprise Company Limited**
Address.....	:	19H Maxgrand plaza, No.3 Tai Yau Street, San Po Kong, Kowloon, HongKong
Telephone.....	:	/
Fax.....	:	/
Manufacturer.....	:	**Artsun Enterprise Company Limited**
Address.....	:	19H Maxgrand plaza, No.3 Tai Yau Street, San Po Kong, Kowloon, HongKong
Telephone.....	:	/
Fax.....	:	/
Factory.....	:	**TELSTAR VIETNAM COMPANY LIMITED**
Address.....	:	CN-07-01 factory，lot CN-07, Van Trung Industrial Park, Van Trung Ward, Viet Yen District, Bac Giang Province, Viet Nam
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

Report Version	Issue Date	Revision Content	Revised By
000	August 21, 2024	Initial Issue	---

TABLE OF CONTENTS

Description Page

1. GENERAL INFORMATION

1.1 Description of Device (EUT)

EUT	:	Low Profile Bluetooth FM Transmitter
Test Model	:	VM-201
Hardware Version	:	REV:02
Software Version	:	V2012_p4
Power Supply	:	Input: DC 12-24V 2A Output:5V⎓2.1A Max
Bluetooth	:	
Frequency Range	:	2402MHz~2480MHz
Channel Number	:	79 channels for Bluetooth V5.3(DSS)
Channel Spacing	:	1MHz for Bluetooth V5.3 (DSS)
Modulation Type	:	GFSK, π/4-DQPSK for Bluetooth V5.3(DSS)
Bluetooth Version	:	V5.3
Antenna Description	:	PCB Antenna, -0.68dBi(Max.)
Low Profile Bluetooth FM Transmitter	:	
Frequency Range	:	88.1 MHz~107.9 MHz
Channel Number	:	199
Channel Spacing	:	100 KHz
Channel frequency	:	88.1MHz~107.9MHz (Channel Number: 199, Channel Frequency=88.1+0.1*(K-1), K=1, 2, 3, 4, ..., 199)
Modulation Type	:	FM
Antenna Type	:	Internal Antenna
Antenna Gain	:	0dBi(Max.)

1.2 Support equipment List

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

1.3 External I/O Cable

I/O Port Description	Quantity	Cable
USB Port	2	N/A
Micro SD Port	1	N/A
AUX IN Port	1	N/A

1.4 Description of Test Facility

NVLAP Accreditation Code is 600167-0.
FCC Designation Number is CN5024.
CAB identifier is CN0071.
CNAS Registration Number is L4595.
ISED Designation Number is 9642A.

The 3m-Semi anechoic test site fulfils CISPR 16-1-4 according to ANSI C63.4:2014 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)
Occupied Channel Bandwidth	:	1GHz-40GHz	±5%	(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 Low Profile Bluetooth FM Transmitter is powered by 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 75 KHz and make it works in TX mode (88.1.1 MHz, 98.0 MHz and 107.9 MHz).

Worst-case mode and channel used for 9 KHz-1000 MHz radiated emissions was the mode and channel with the highest output power, that was determined to be TX.

Radiated emission performed at both DC power supply and AC power adapter, recorded worst case;

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.

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(A240731002-1)	Engineer sample – continuous transmit
Sample 2(A240731002-2)	Normal sample – Intermittent transmit

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

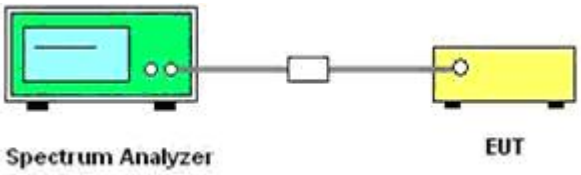
Applied Standard: FCC CFR 47 PART 15.239		
FCC Rules	Description of Test	Result
15.239 (a)	Occupied Bandwidth	Compliant
15.239 (b)	Field Strength of Fundamental frequency	Compliant
15.205 (a) 15.209 (a)	Radiated Spurious Emissions	Compliant
15.207 (a)	AC Conducted Emissions	N/A
15.203	Antenna Requirements	Compliant

5. 99% 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 88.1-107.9MHz.

5.2 Block Diagram of Test Setup



5.3 Test Procedure

1) The transmitter shall be operated at its maximum carrier power measured under normal test conditions

2) The span of the analyzer shall be set to capture all products of the modulation process, including the emission skirts.

4) Detector function = peak.

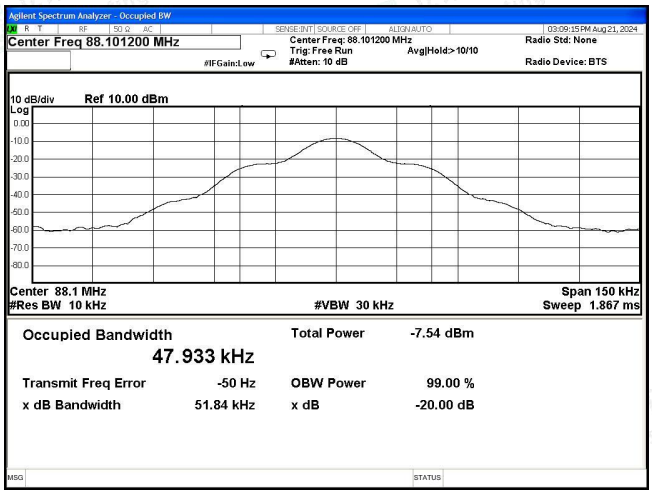
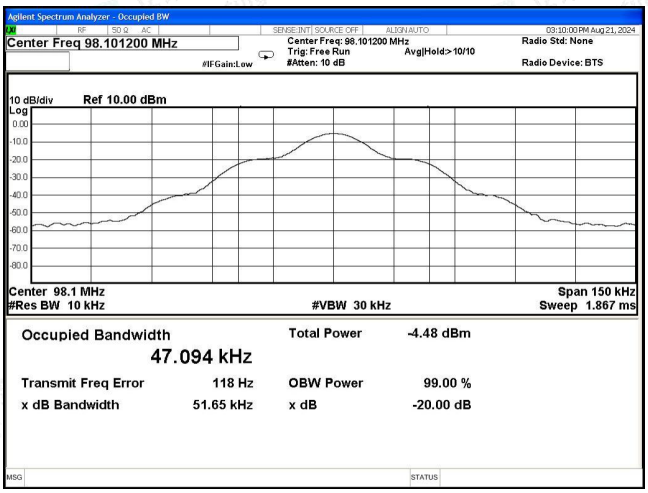
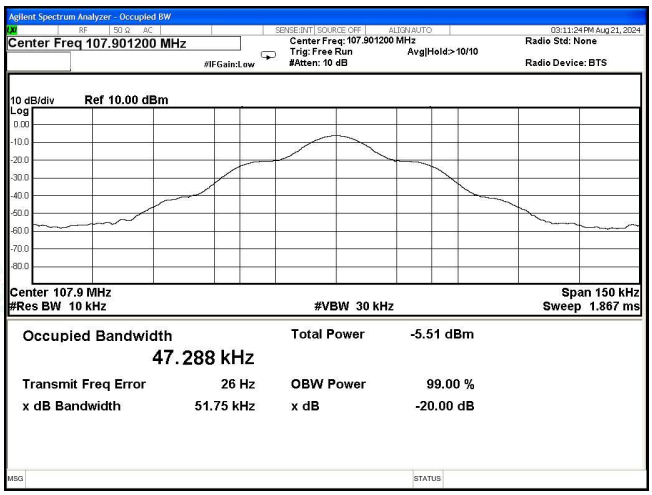
5) Trace = max hold.

5.4 Test Results

Frequency (MHz)	20dB Bandwidth (KHz)	99% Bandwidth (KHz)	Limit (KHz)	Conclusion
88.1	51.84	47.933	200.00	PASS
98.1	51.65	47.094	200.00	PASS
107.9	51.75	47.288	200.00	PASS

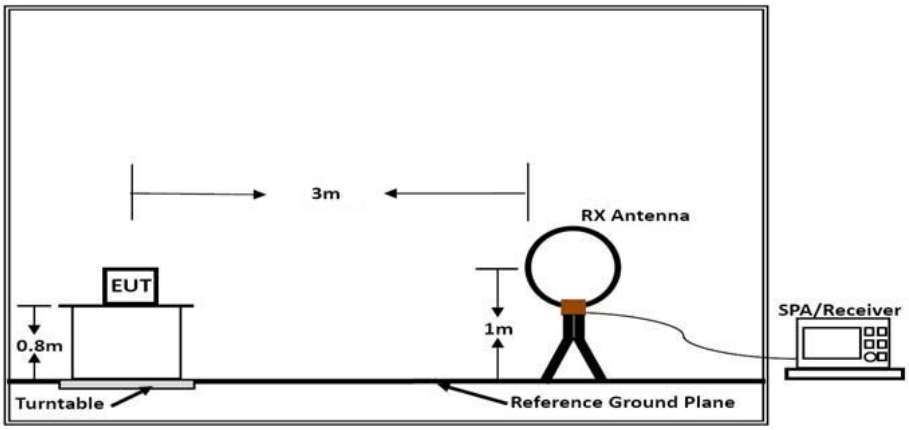
Remark:
1. Test results including cable loss;
2. Please refer to the following page.

Temperature	21.1℃	Humidity	52.2%
Test Engineer	Jose Zhu	Configurations	FM

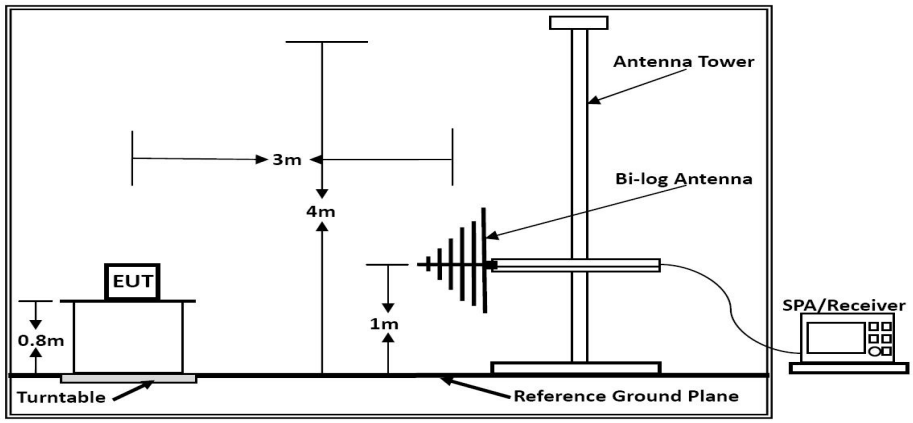
99% and 20dB Bandwidth	
	
Low Channel / 88.1 MHz	*Middle Channel / 98.1 MHz*
	
High Channel / 107.9 MHz	

6. RADIATED MEASUREMENT

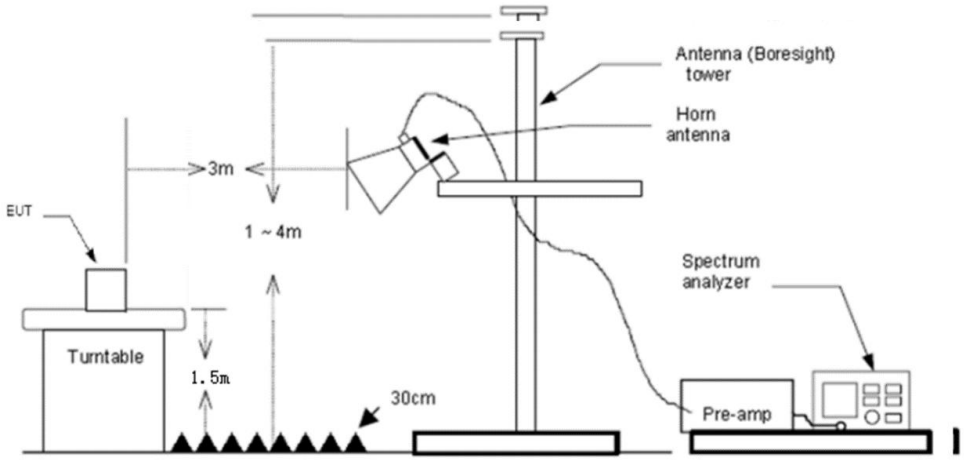
6.1 Block Diagram of Test Setup



Below 30MHz



Below 1GHz



6.2 Radiated Fundamental Frequency Limit

According to §15.239 (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.

In case the emission fall within the restricted band specified on 15.205(a), then the 15.209(a) limit in the table below has to be followed.

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.

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 120kHz 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 1.0 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 (± 45°) 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 (± 45°) 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.

5.5 Results for Radiated Emissions

PASS.

Only record the worst test result in this report.

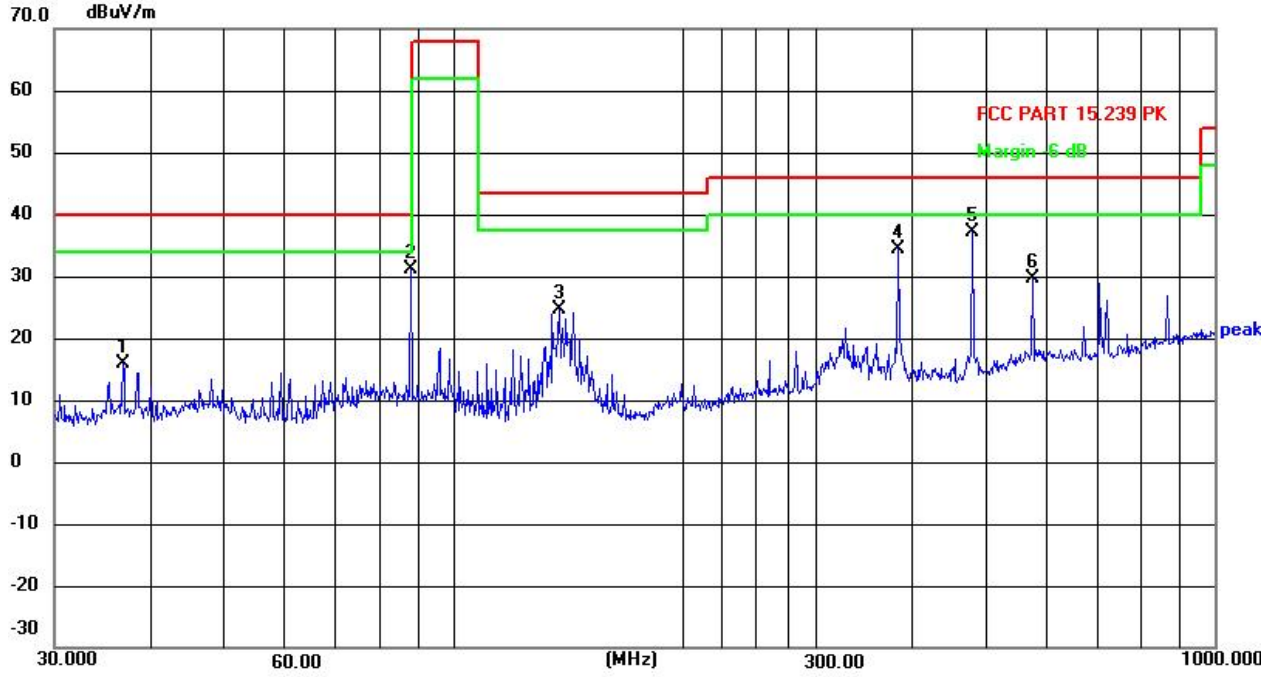
The test data please refer to following page:

Temperature	23.8℃	Humidity	52.1%
Test Engineer	Jose Zhu	Configurations	FM

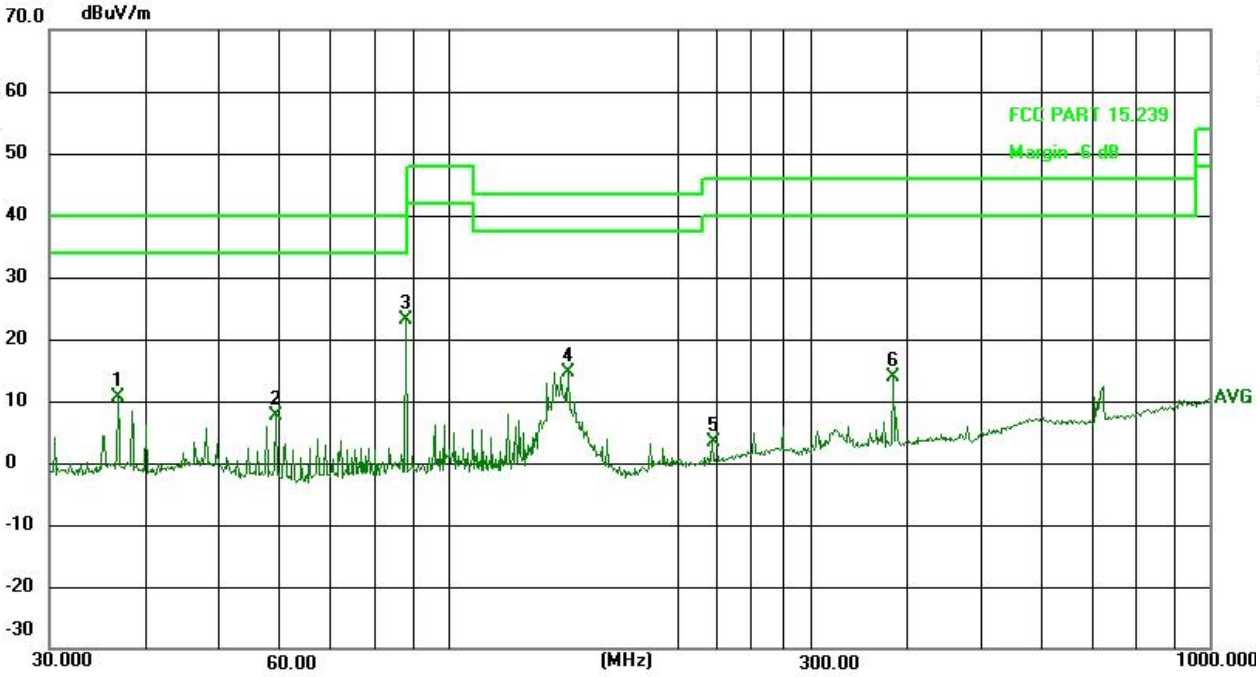
Below 1GHz

TX-88.1MHz

Horizontal

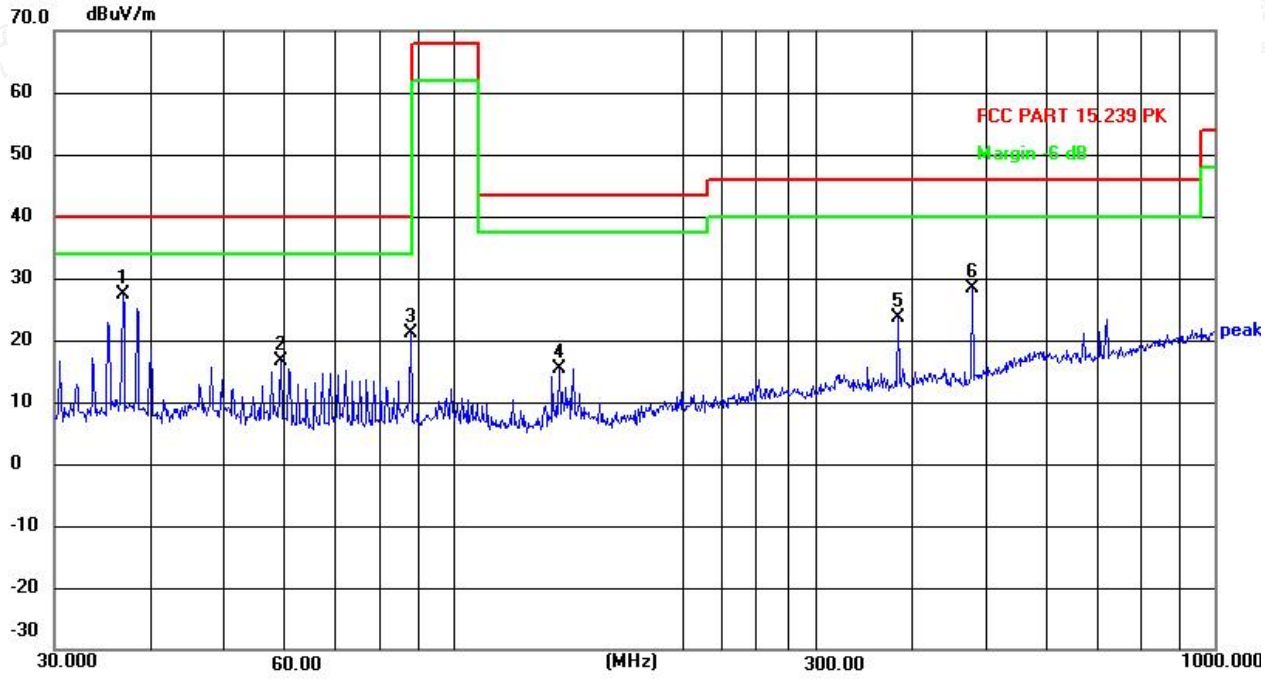


No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	36.8953	33.69	-17.69	16.00	40.00	-24.00	peak
2	88.0329	50.32	-19.08	31.24	40.00	-8.76	peak
3	137.9028	45.51	-20.83	24.68	43.50	-18.82	peak
4	383.9318	48.94	-14.63	34.31	46.00	-11.69	peak
5	480.5276	51.39	-14.18	37.21	46.00	-8.79	peak
6	576.6443	40.37	-10.83	29.54	46.00	-16.46	peak

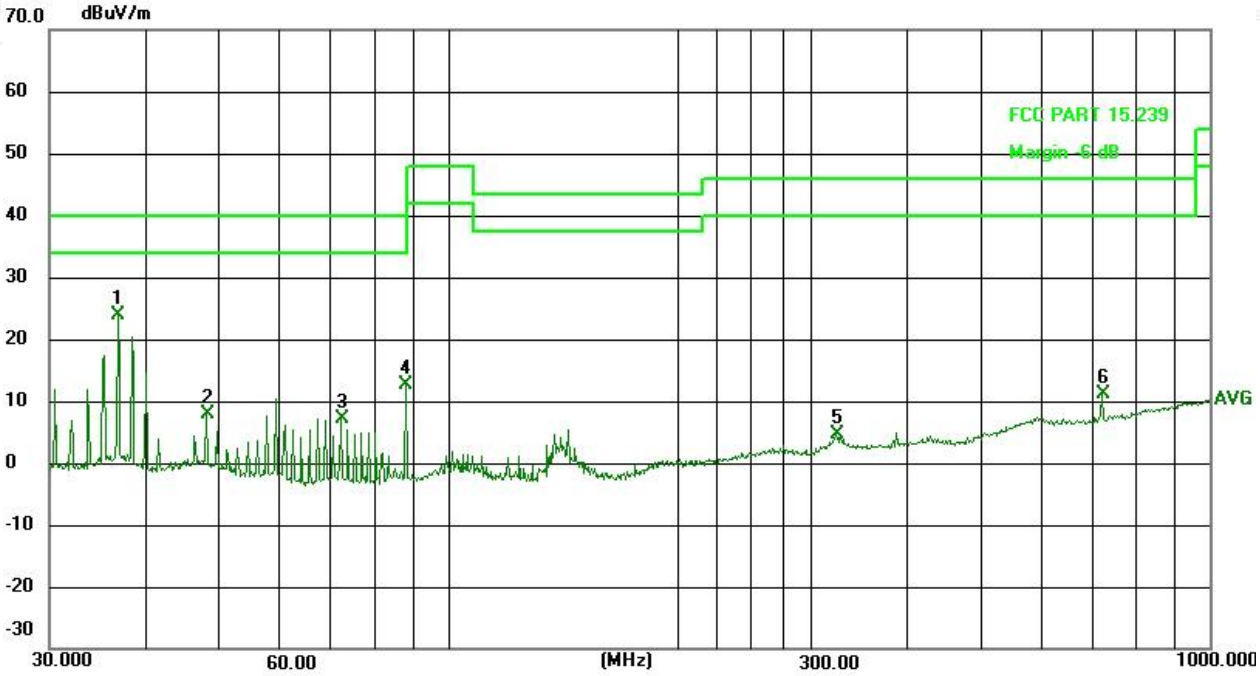


No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	36.8953	28.38	-17.69	10.69	40.00	-29.31	AVG
2	59.4405	26.42	-18.75	7.67	40.00	-32.33	AVG
3	88.0329	42.17	-19.08	23.09	40.00	-16.91	AVG
4	143.8295	35.06	-20.49	14.57	43.50	-28.93	AVG
5	222.1698	20.29	-16.82	3.47	46.00	-42.53	AVG
6	383.9318	28.58	-14.63	13.95	46.00	-32.05	AVG

Vertical



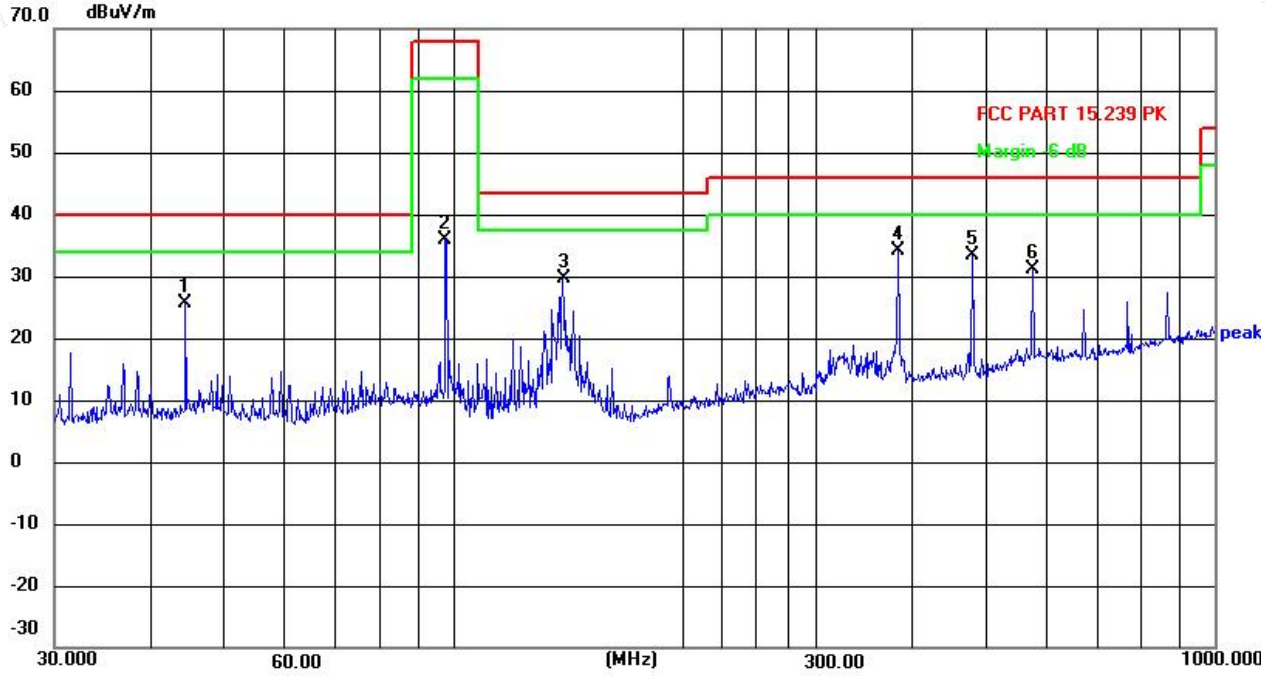
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	36.8953	45.10	-17.69	27.41	40.00	-12.59	peak
2	59.4405	35.30	-18.75	16.55	40.00	-23.45	peak
3	88.0329	40.29	-19.08	21.21	40.00	-18.79	peak
4	137.9028	36.25	-20.83	15.42	43.50	-28.08	peak
5	383.9318	38.26	-14.63	23.63	46.00	-22.37	peak
6	480.5276	42.46	-14.18	28.28	46.00	-17.72	peak



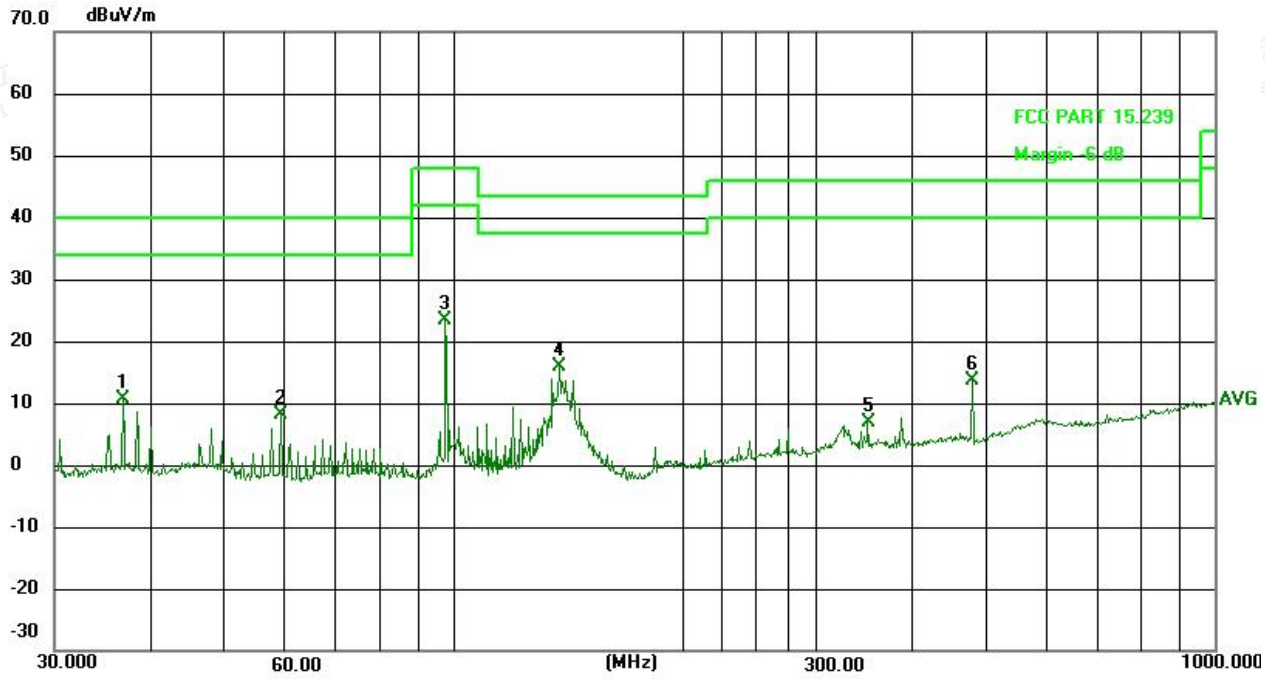
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	36.8953	41.45	-17.69	23.76	40.00	-16.24	AVG
2	48.1626	24.87	-16.98	7.89	40.00	-32.11	AVG
3	72.3376	26.75	-19.56	7.19	40.00	-32.81	AVG
4	88.0329	31.69	-19.08	12.61	40.00	-27.39	AVG
5	323.3204	18.92	-14.28	4.64	46.00	-41.36	AVG
6	721.7259	21.81	-10.58	11.23	46.00	-34.77	AVG

TX-98.1MHz

Horizontal

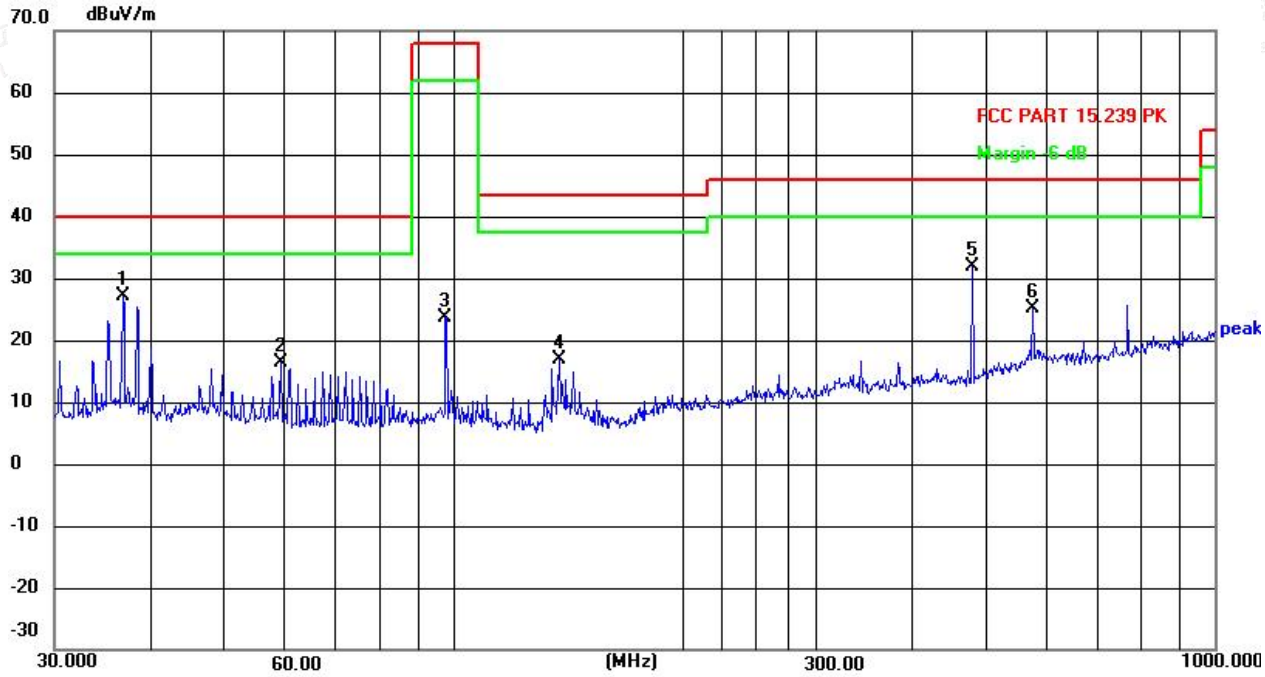


No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	44.5868	42.47	-16.94	25.53	40.00	-14.47	peak
2	97.7983	54.11	-18.33	35.78	68.00	-32.22	peak
3	139.3613	50.41	-20.88	29.53	43.50	-13.97	peak
4	383.9318	48.73	-14.63	34.10	46.00	-11.90	peak
5	480.5276	47.47	-14.18	33.29	46.00	-12.71	peak
6	576.6443	41.90	-10.83	31.07	46.00	-14.93	peak

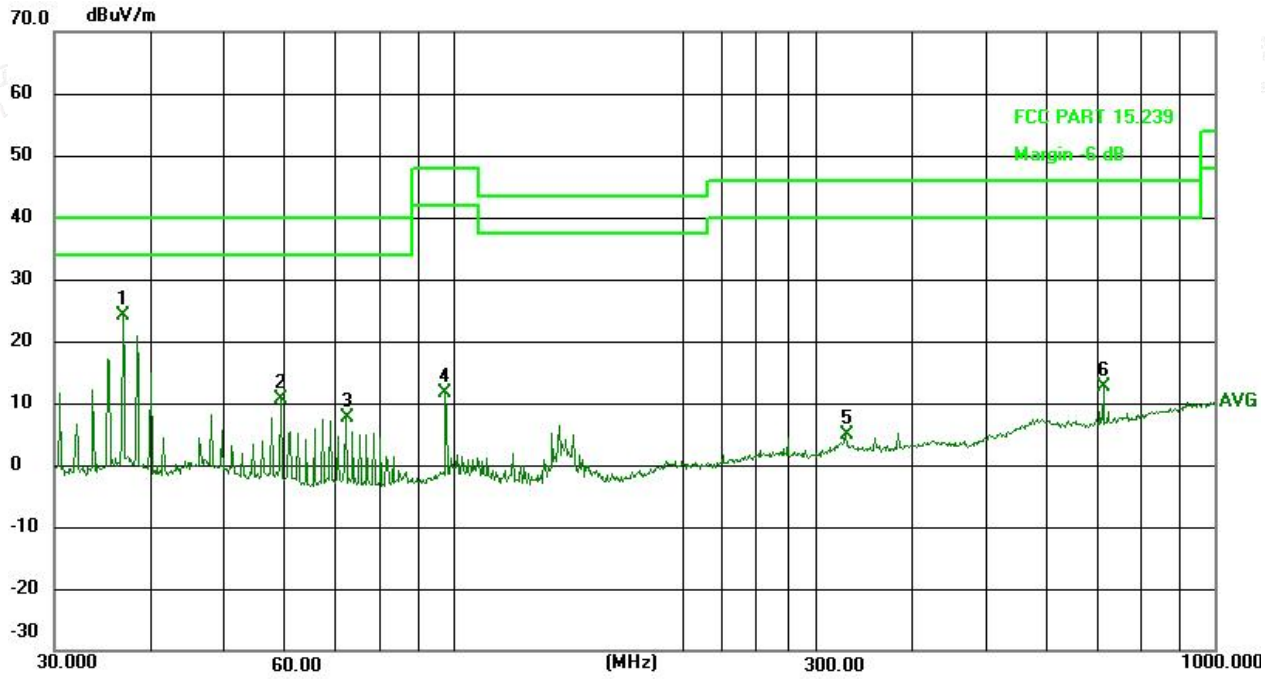


No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	36.8953	28.39	-17.69	10.70	40.00	-29.30	AVG
2	59.4405	26.80	-18.75	8.05	40.00	-31.95	AVG
3	97.7983	41.62	-18.33	23.29	48.00	-24.71	AVG
4	137.9028	36.77	-20.83	15.94	43.50	-27.56	AVG
5	350.4768	21.73	-14.87	6.86	46.00	-39.14	AVG
6	480.5276	27.73	-14.18	13.55	46.00	-32.45	AVG

Vertical



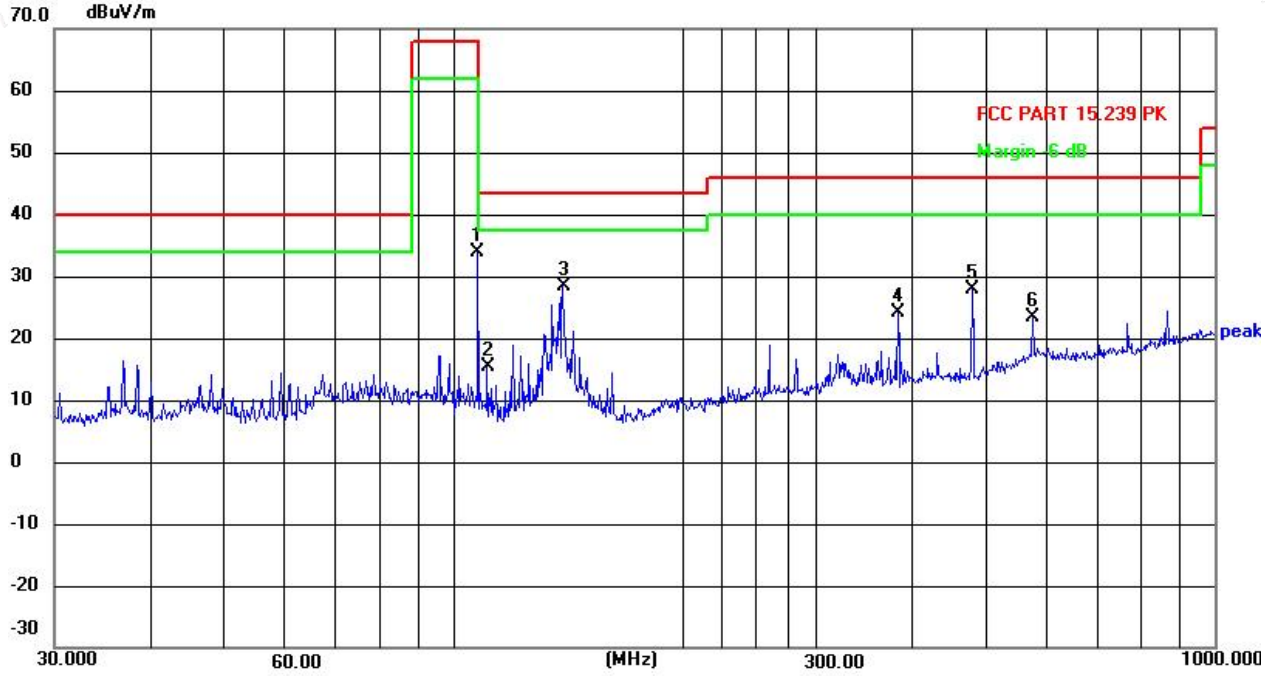
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	36.8953	44.92	-17.69	27.23	40.00	-12.77	peak
2	59.4405	35.22	-18.75	16.47	40.00	-23.53	peak
3	97.7983	42.06	-18.33	23.73	68.00	-44.27	peak
4	137.9028	37.63	-20.83	16.80	43.50	-26.70	peak
5	480.5276	46.05	-14.18	31.87	46.00	-14.13	peak
6	576.6443	35.85	-10.83	25.02	46.00	-20.98	peak



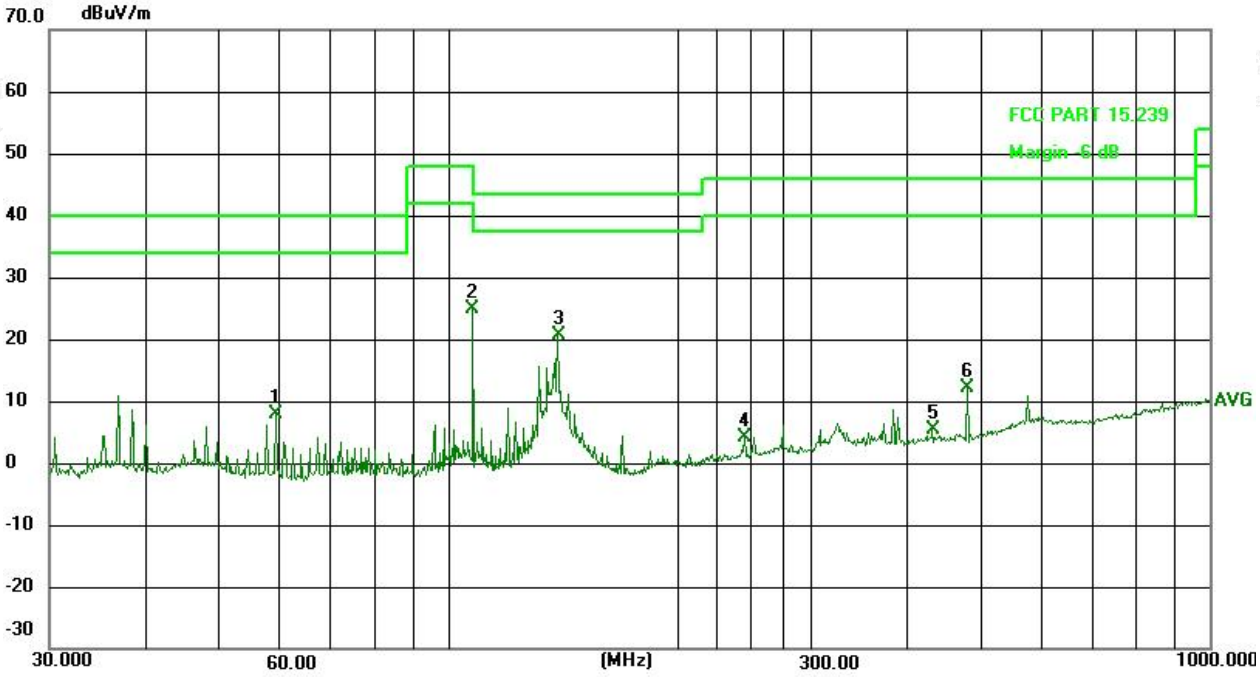
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	36.8953	41.81	-17.69	24.12	40.00	-15.88	AVG
2	59.4405	29.40	-18.75	10.65	40.00	-29.35	AVG
3	72.3376	27.07	-19.56	7.51	40.00	-32.49	AVG
4	97.7983	29.89	-18.33	11.56	48.00	-36.44	AVG
5	327.8873	19.15	-14.28	4.87	46.00	-41.13	AVG
6	714.1734	23.31	-10.69	12.62	46.00	-33.38	AVG

TX-107.9MHz

Horizontal

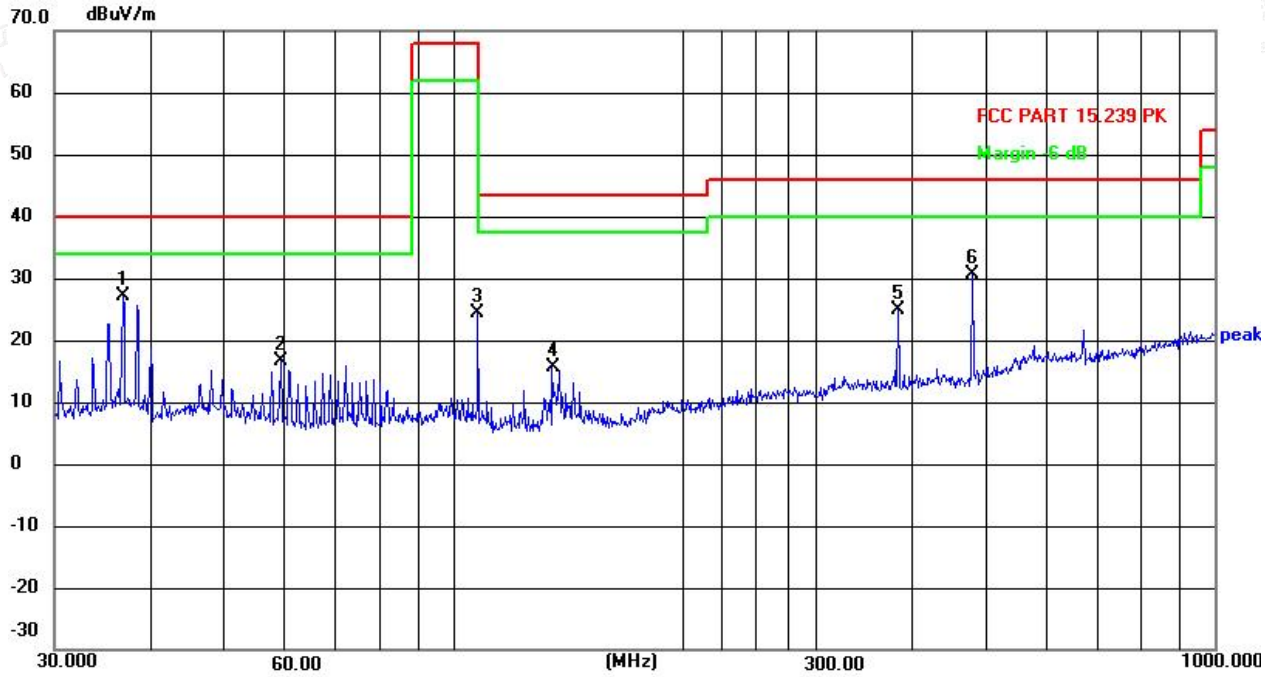


No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	107.8877	52.87	-18.87	34.00	68.00	-34.00	peak
2	110.9571	34.51	-19.15	15.36	43.50	-28.14	peak
3	139.3613	49.23	-20.88	28.35	43.50	-15.15	peak
4	383.9318	38.83	-14.63	24.20	46.00	-21.80	peak
5	480.5276	42.15	-14.18	27.97	46.00	-18.03	peak
6	576.6443	34.27	-10.83	23.44	46.00	-22.56	peak

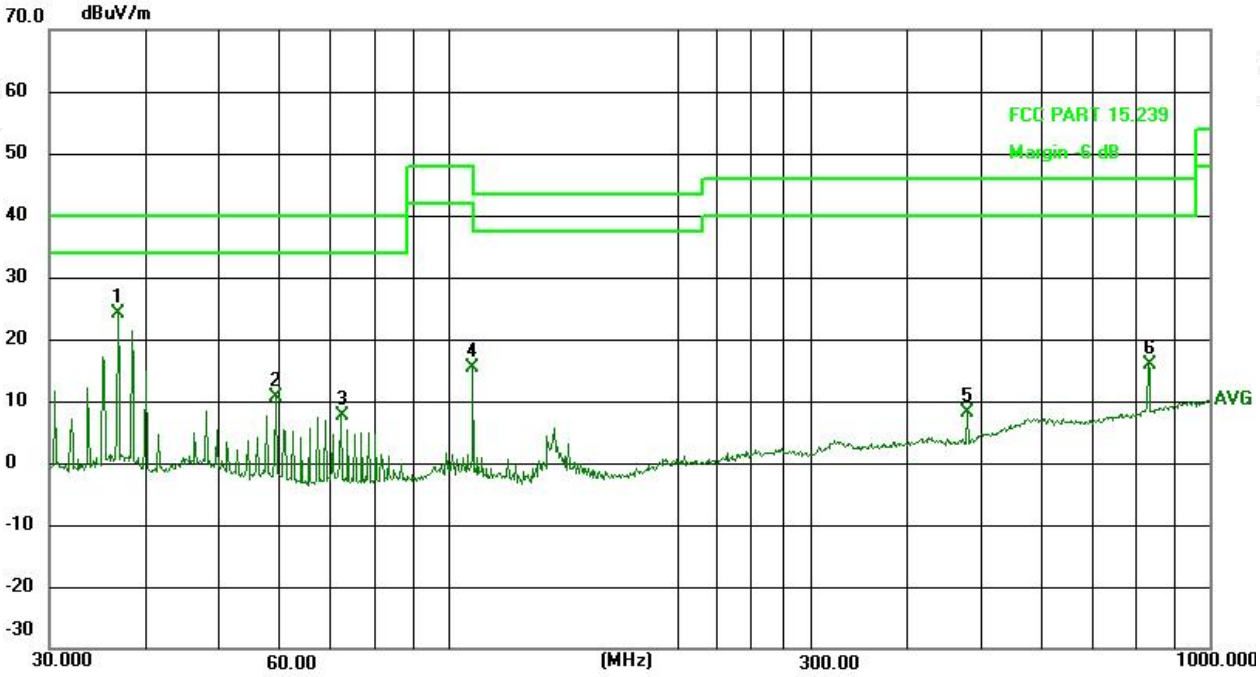


No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	59.4405	26.68	-18.75	7.93	40.00	-32.07	AVG
2	107.8877	43.70	-18.87	24.83	48.00	-23.17	AVG
3	139.3613	41.54	-20.88	20.66	43.50	-22.84	AVG
4	245.0900	20.03	-15.84	4.19	46.00	-41.81	AVG
5	432.5457	19.11	-13.78	5.33	46.00	-40.67	AVG
6	480.5276	26.42	-14.18	12.24	46.00	-33.76	AVG

Vertical



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	36.8953	44.78	-17.69	27.09	40.00	-12.91	peak
2	59.4405	35.38	-18.75	16.63	40.00	-23.37	peak
3	107.8877	43.35	-18.87	24.48	68.00	-43.52	peak
4	135.0319	36.41	-20.73	15.68	43.50	-27.82	peak
5	383.9318	39.48	-14.63	24.85	46.00	-21.15	peak
6	480.5276	44.92	-14.18	30.74	46.00	-15.26	peak



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	36.8953	41.86	-17.69	24.17	40.00	-15.83	AVG
2	59.4405	29.27	-18.75	10.52	40.00	-29.48	AVG
3	72.3376	27.24	-19.56	7.68	40.00	-32.32	AVG
4	107.8877	34.36	-18.87	15.49	48.00	-32.51	AVG
5	480.5276	22.38	-14.18	8.20	46.00	-37.80	AVG
6	830.4002	25.04	-9.05	15.99	46.00	-30.01	AVG

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.

6. POWER LINE CONDUCTED EMISSIONS

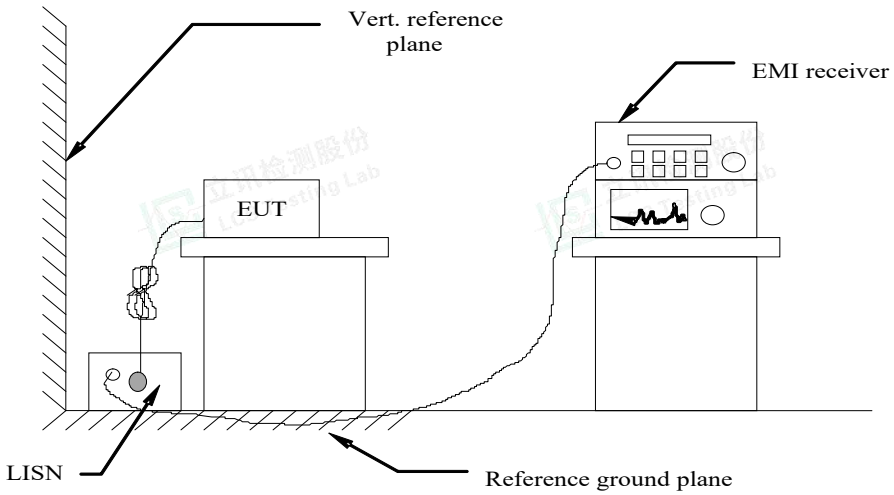
6.1 Standard Applicable

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 are listed as follows:

Frequency Range (MHz)	Limits (dBμV)	
	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

6.2 Block Diagram of Test Setup



6.3 Test Results

Not applicable.

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 Issue 4, 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 0dBi, and the antenna is an Internal Antenna connect to PCB board and no consideration of replacement. Please see EUT photo for details.

7.2.3. Results: Compliance.

8. LIST OF TEST EQUIPMENT

Item	Equipment	Manufacturer	Model No.	Serial No.	Cal Date	Due Date
1	MXA Signal Analyzer	Agilent	N9020A	MY49100060	2023-10-18	2024-10-17
2	DC Power Supply	Agilent	E3642A	N/A	2023-10-18	2024-10-17
3	Temperature & Humidity Chamber	GUANGZHOU GOGNWEN	GDS-100	70932	2023-10-05	2024-10-04
4	EMI Test Software	AUDIX	E3	/	N/A	N/A
5	3m Semi Anechoic Chamber	SIDT FRANKONIA	SAC-3M	03CH03-HY	2024-06-06	2025-06-05
6	Positioning Controller	Max-Full	MF7802BS	MF780208586	N/A	N/A
7	Active Loop Antenna	SCHWARZBECK	FMZB 1519B	00005	2024-07-13	2027-07-12
8	By-log Antenna	SCHWARZBECK	VULB9163	9163-470	2021-09-12	2024-09-11
9	Horn Antenna	SCHWARZBECK	BBHA 9120D	9120D-1925	2021-09-05	2024-09-04
10	EMI Test Receiver	R&S	ESR 7	101181	2024-06-06	2025-06-05
11	RS SPECTRUM ANALYZER	R&S	FSP40	100503	2024-06-06	2025-06-05
12	Low-frequency amplifier	SchwarzZBECK	BBV9745	00253	2023-10-18	2024-10-17
13	High-frequency amplifier	JS Denki Pte	PA0118-43	JSPA21009	2023-10-18	2024-10-17
14	EMI Test Receiver	R&S	ESPI	101940	2024-06-06	2025-06-05
15	Artificial Mains	R&S	ENV216	101288	2024-06-06	2025-06-05
16	10dB Attenuator	SCHWARZBECK	MTS-IMP-136	261115-001-0032	2024-06-06	2025-06-05
17	EMI Test Software	Farad	EZ	/	N/A	N/A
18	Antenna Mast	Max-Full	MFA-515BSN	1308572	N/A	N/A
19	Pulse Limiter	R&S	ESH3-Z2	102750-NB	2024-06-06	2025-06-05

9. TEST SETUP PHOTOGRAPHS OF EUT

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

10. EXTERIOR PHOTOGRAPHS OF THE EUT

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

11. INTERIOR PHOTOGRAPHS OF THE EUT

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

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