



Report No.: TBR-C-202407-0262-3

Page: 1 of 17

# Radio Test Report

**FCC ID: XMF-MID1058**

**Change II**

Report No.	:	TBR-C-202407-0262-3
Applicant	:	Lightcomm Technology Co., Ltd.
Equipment Under Test (EUT)		
EUT Name	:	10.1" Tablet
Model No.	:	DL1050
Series Model No.	:	MID1058-AD
Brand Name	:	N/A
Sample ID	:	HC-C-202407-0263-01-01&HC-C-202407-0263-01-02
Receipt Date	:	2024-08-06
Test Date	:	2024-08-06 to 2024-08-14
Issue Date	:	2024-08-14
Standards	:	FCC Part 15 Subpart C 15.247
Test Method	:	ANSI C63.10: 2013 KDB 558074 D01 15.247 Meas Guidance v05r02
Conclusions	:	<b>PASS</b>
In the configuration tested, the EUT complied with the standards specified above.		

Test By	:	Mike Yan
Reviewed By	:	Henry Huang
Approved By	:	Ivan Su



This report details the results of the testing carried out on one sample. The results contained in this test report do not relate to other samples of the same product. The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in the report.

TB-RF-074-1.0



## Contents

<b>CONTENTS .....</b>	<b>2</b>
<b>1. GENERAL INFORMATION ABOUT EUT .....</b>	<b>4</b>
1.1 Client Information .....	4
1.2 General Description of EUT (Equipment Under Test) .....	4
1.3 Block Diagram Showing the Configuration of System Tested.....	5
1.4 Description of Support Units .....	6
1.5 Description of Test Mode .....	6
1.6 Description of Test Software Setting .....	7
1.7 Measurement Uncertainty .....	7
1.8 Test Facility.....	8
<b>2. TEST SUMMARY.....</b>	<b>9</b>
<b>3. TEST SOFTWARE .....</b>	<b>9</b>
<b>4. TEST EQUIPMENT AND TEST SITE .....</b>	<b>10</b>
<b>5. RADIATED AND CONDUCTED UNWANTED EMISSIONS.....</b>	<b>11</b>
6.1 Test Standard and Limit .....	11
6.2 Test Setup.....	12
6.3 Test Procedure .....	13
6.4 Deviation From Test Standard.....	14
6.5 EUT Operating Mode .....	14
6.6 Test Data.....	14
<b>6. ANTENNA REQUIREMENT .....</b>	<b>15</b>
11.1 Test Standard and Limit .....	15
11.2 Deviation From Test Standard .....	15
11.3 Antenna Connected Construction.....	15
11.4 Test Data .....	15
<b>ATTACHMENT A--UNWANTED EMISSIONS DATA.....</b>	<b>16</b>





### Revision History

Report No.	Version	Description	Issued Date
TBR-C-202407-0262-3	Rev.01	Initial issue of report	2024-08-14





# 1. General Information about EUT

## 1.1 Client Information

<b>Applicant</b>	:	Lightcomm Technology Co., Ltd.
<b>Address</b>	:	UNIT 1306 13/F ARION COMMERCIAL CENTRE,2-12 QUEEN'S ROAD WEST,SHEUNG WAN HK,CHINA
<b>Manufacturer</b>	:	Huizhou Hengdu Electronics Co., Ltd
<b>Address</b>	:	No.8 Huitai Road, Huinan High-tech Industrial Park, Huiao Avenue, Huizhou, Guangdong.China.

## 1.2 General Description of EUT (Equipment Under Test)

<b>EUT Name</b>	:	10.1" Tablet
<b>Models No.</b>	:	DL1050, MID1058-AD
<b>Model Different</b>	:	All these models are identical in the same PCB, layout and electrical circuit, The only difference is model name, brand name and product name.
<b>Product Description</b>	Operation Frequency:	Bluetooth (BLE): 2402MHz~2480MHz
	Number of Channel:	Bluetooth (BLE): 40 channels
	Antenna Gain:	0.23dBi FPC Antenna
	Modulation Type:	GFSK
	Bit Rate of Transmitter:	1Mbps&2Mbps
<b>Power Rating</b>	:	AC Adapter (Model: TEKA-UCA20US) Input: 100-240V~50/60Hz, 0.35A Output: 5.0V=2.0A DC 3.8V 6000mAh Rechargeable Li-ion battery
<b>Software Version</b>	:	Android 14
<b>Hardware Version</b>	:	BND-C30 V1.1
<b>Remark:</b> The adapter provided by the TOBY ,the antenna gain from the manufacturer, the verified for the RF conduction test provided by TOBY test lab.The above antenna information is declared by manufacturer and for more detailed features description, please refer to the manufacturer's specifications, the laboratory shall not be held responsible.		

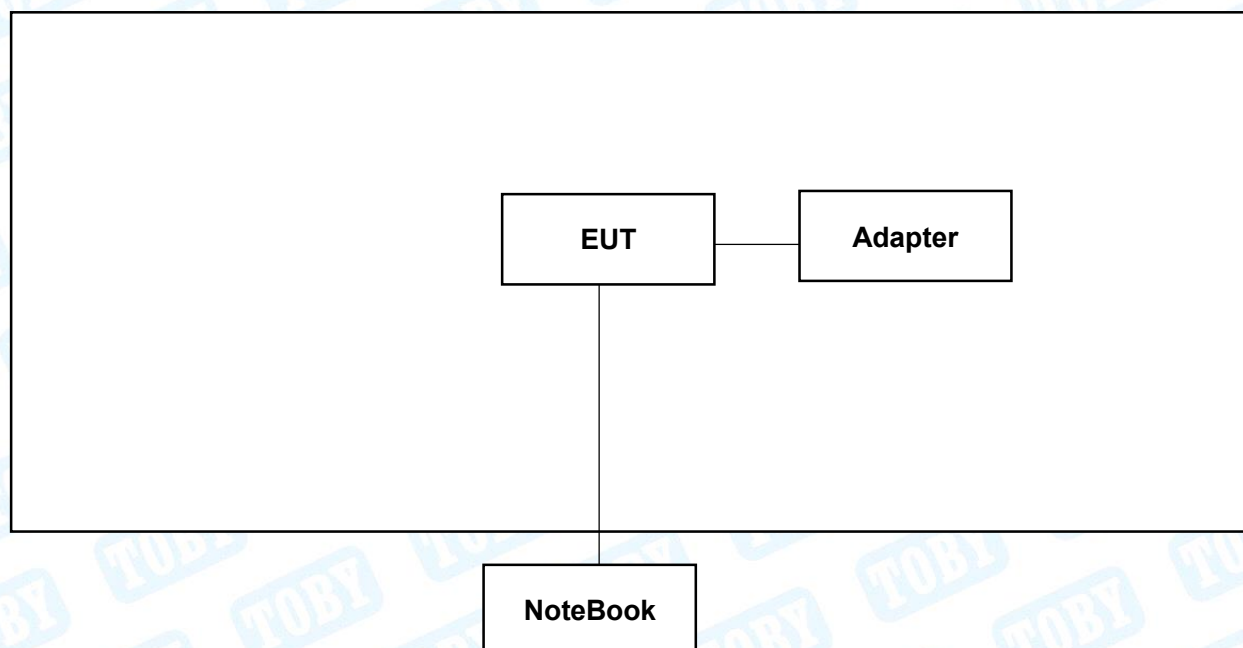




(1) Channel List:

Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
00	2402	14	2430	28	2458
01	2404	15	2432	29	2460
02	2406	16	2434	30	2462
03	2408	17	2436	31	2464
04	2410	18	2438	32	2466
05	2412	19	2440	33	2468
06	2414	20	2442	34	2470
07	2416	21	2444	35	2472
08	2418	22	2446	36	2474
09	2420	23	2448	37	2476
10	2422	24	2450	38	2478
11	2424	25	2452	39	2480
12	2426	26	2454		
13	2428	27	2456		

1.3 Block Diagram Showing the Configuration of System Tested



## 1.4 Description of Support Units

Equipment Information				
Name	Model	S/N	Manufacturer	Used “√”
Notebook	HYLR-WFQ9	AAMFPM1418000165	honour	√

## 1.5 Description of Test Mode

To investigate the maximum EMI emission characteristics generates from EUT, the test system was pre-scanning tested base on the consideration of following EUT operation mode or test configuration mode which possible have effect on EMI emission level. Each of these EUT operation mode(s) or test configuration mode(s) mentioned follow was evaluated respectively.

For Conducted Test(AC POWER)	
Final Test Mode	Description
Mode 1	TX Mode
For Radiated and RF Conducted Test	
Final Test Mode	Description
Mode 2	TX Mode
Mode 3	TX 1Mbps Mode (Channel 00/19/39)
Mode 4	TX 2Mbps Mode (Channel 00/19/39)

### Note:

- (1) For all test, we have verified the construction and function in typical operation. And all the test modes were carried out with the EUT in transmitting operation in maximum power with all kinds of data rate.  
According to ANSI C63.10 standards, the measurements are performed at the highest, middle, lowest available channels, and the worst case data rate as follows:  
BLE Mode: GFSK Modulation Transmitting mode.
- (2) During the testing procedure, the continuously transmitting with the maximum power mode was programmed by the customer.
- (3) The EUT is considered a Mobile unit; in normal use it was positioned on X-plane. The worst case was found positioned on X-plane. Therefore only the test data of this X-plane was used for radiated emission measurement test.





## 1.6 Description of Test Software Setting

During testing channel& Power controlling software provided by the customer was used to control the operating channel as well as the output power level. The RF output power selection is for the setting of RF output power expected by the customer and is going to be fixed on the firmware of the final end product power parameters of RF setting.

Test Software Version	adb command		
Frequency	2402 MHz	2440MHz	2480 MHz
BLE 1M	DEF	DEF	DEF
BLE 2M	DEF	DEF	DEF

## 1.7 Measurement Uncertainty

The reported uncertainty of measurement  $y \pm U$ , where expended uncertainty  $U$  is based on a standard uncertainty multiplied by a coverage factor of  $k=2$ , providing a level of confidence of approximately 95 %.

Test Item	Parameters	Expanded Uncertainty ( $U_{Lab}$ )
Conducted Emission	Level Accuracy: 9kHz~150kHz 150kHz to 30MHz	$\pm 3.50$ dB $\pm 3.10$ dB
Radiated Emission	Level Accuracy: 9kHz to 30 MHz	$\pm 4.60$ dB
Radiated Emission	Level Accuracy: 30MHz to 1000 MHz	$\pm 4.50$ dB
Radiated Emission	Level Accuracy: Above 1000MHz	$\pm 4.20$ dB





## 1.8 Test Facility

The testing report were performed by the Shenzhen Toby Technology Co., Ltd., in their facilities located at 1/F., Building 6, Rundongsheng Industrial Zone, Longzhu, Xixiang, Bao'an District, Shenzhen, Guangdong, China. At the time of testing, the following bodies accredited the Laboratory:

### **CNAS (L5813)**

The Laboratory has been accredited by CNAS to ISO/IEC 17025: 2017 General Requirements for the Competence of Testing and Calibration Laboratories for the competence in the field of testing. And the Registration No.: CNAS L5813.

### **A2LA Certificate No.: 4750.01**

The laboratory has been accredited by American Association for Laboratory Accreditation(A2LA) to ISO/IEC 17025: 2017 General Requirements for the Competence of Testing and Calibration Laboratories for the technical competence in the field of Electrical Testing. And the A2LA Certificate No.: 4750.01.FCC Accredited Test Site Number: 854351. Designation Number: CN1223.

### **IC Registration No.: (11950A)**

The Laboratory has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing. The site registration: Site# 11950A. CAB identifier: CN0056.





## 2. Test Summary

Standard Section	Test Item	Test Sample(s)	Judgment	Remark
FCC 15.207(a)	Conducted Emission	HC-C-202407-0263-01-02	N/A	N/A <sub>(note2)</sub>
FCC 15.209 & 15.247(d)	Radiated Unwanted Emissions	HC-C-202407-0263-01-02	PASS	N/A
FCC 15.203	Antenna Requirement	HC-C-202407-0263-01-01	N/A	N/A <sub>(note2)</sub>
FCC 15.247(a)(2)	6dB Bandwidth	HC-C-202407-0263-01-01	N/A	N/A <sub>(note2)</sub>
/	99% Occupied bandwidth	HC-C-202407-0263-01-01	N/A	N/A <sub>(note2)</sub>
FCC 15.247(b)(3)	Peak Output Power and E.I.R.P	HC-C-202407-0263-01-01	N/A	N/A <sub>(note2)</sub>
FCC 15.247(e)	Power Spectral Density	HC-C-202407-0263-01-01	N/A	N/A <sub>(note2)</sub>
FCC 15.247(d)	Band Edge Measurements	HC-C-202407-0263-01-01	N/A	N/A <sub>(note2)</sub>
FCC 15.207(a)	Conducted Unwanted Emissions	HC-C-202407-0263-01-01	N/A	N/A <sub>(note2)</sub>
FCC 15.247(d)	Emissions in Restricted Bands	HC-C-202407-0263-01-01	N/A	N/A <sub>(note2)</sub>
/	On Time and Duty Cycle	HC-C-202407-0263-01-01	/	N/A <sub>(note2)</sub>

Note:

(1) N/A is an abbreviation for Not Applicable.

(2) This report is Class II change report for the original equipment have changed, the transmitter module itself has not changed. More information about the test data please refer to the original test report.

(3) As there is no change regard RF transmitter portion and Antenna assembly, the change will not have effect on Radiated emission below 1GHz by judging for experience, thus testing is performed up to 1GHz only.

## 3. Test Software

Test Item	Test Software	Manufacturer	Version No.
Conducted Emission	EZ-EMC	EZ	CDI-03A2
Radiation Emission	EZ-EMC	EZ	FA-03A2RE
Radiation Emission	EZ-EMC	EZ	FA-03A2RE+
RF Conducted Measurement	MTS-8310	MWRFTtest	V2.0.0.0
RF Test System	JS1120	Tonscend	V3.2.22





## 4. Test Equipment and Test Site

Test Site				
No.	Test Site	Manufacturer	Specification	Used
TB-EMCSR001	Shielding Chamber #1	YIHENG	7.5*4.0*3.0 ( m )	X
TB-EMCSR002	Shielding Chamber #2	YIHENG	8.0*4.0*3.0 ( m )	X
TB-EMCCA001	3m Anechoic Chamber #A	ETS	9.0*6.0*6.0 ( m )	X
TB-EMCCB002	3m Anechoic Chamber #B	YIHENG	9.0*6.0*6.0 ( m )	√

Conducted Emission Test					
Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Due Date
EMI Test Receiver	Rohde & Schwarz	ESCI	100321	Jun. 17, 2024	Jun. 16, 2025
RF Switching Unit	Compliance Direction Systems Inc	RSU-A4	34403	Jun. 17, 2024	Jun. 16, 2025
AMN	SCHWARZBECK	NNBL 8226-2	8226-2/164	Jun. 17, 2024	Jun. 16, 2025
LISN	Rohde & Schwarz	ENV216	101131	Jun. 17, 2024	Jun. 16, 2025

Radiation Emission Test(B Site)					
Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Due Date
Spectrum Analyzer	Agilent	N9020A	MY49100060	Aug. 30, 2023	Aug. 29, 2024
Spectrum Analyzer	Rohde & Schwarz	FSV40-N	102197	Jun. 17, 2024	Jun. 16, 2025
EMI Test Receiver	Rohde & Schwarz	ESU-8	100472/008	Feb. 23, 2024	Feb.22, 2025
Bilog Antenna	SCHWARZBECK	VULB 9168	1225	Nov. 13, 2023	Nov. 12, 2025
Horn Antenna	SCHWARZBECK	BBHA 9120 D	2463	Jun. 14, 2024	Jun. 13, 2026
Horn Antenna	SCHWARZBECK	BBHA 9170	1118	Feb. 27, 2024	Feb.26, 2026
Loop Antenna	SCHWARZBECK	FMZB 1519 B	1519B-059	Jun. 14, 2024	Jun. 13, 2026
HF Amplifier	Tonscend	TAP9E6343	AP21C806117	Aug. 30, 2023	Aug. 29, 2024
HF Amplifier	Tonscend	TAP051845	AP21C806141	Aug. 30, 2023	Aug. 29, 2024
HF Amplifier	Tonscend	TAP0184050	AP21C806129	Aug. 30, 2023	Aug. 29, 2024
Highpass Filter	CD	HPM-6.4/18G	---	N/A	N/A
Highpass Filter	CD	HPM-2.8/18G	---	N/A	N/A
Highpass Filter	XINBO	XBLBQ-HTA67(8-25G)	22052702-1	N/A	N/A

Antenna Conducted Emission					
Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Due Date
Spectrum Analyzer	Rohde & Schwarz	FSV40-N	102197	Jun. 17, 2024	Jun. 16, 2025
MXA Signal Analyzer	KEYSIGHT	N9020B	MY60110172	Aug. 30, 2023	Aug. 29, 2024
MXA Signal Analyzer	Agilent	N9020A	MY47380425	Aug. 30, 2023	Aug. 29, 2024
RF Power Sensor	DARE!! Instruments	RadiPowerRPR3006W	17I00015SNO26	Aug. 30, 2023	Aug. 29, 2024
	DARE!! Instruments	RadiPowerRPR3006W	17I00015SNO29	Aug. 30, 2023	Aug. 29, 2024
	DARE!! Instruments	RadiPowerRPR3006W	17I00015SNO31	Aug. 30, 2023	Aug. 29, 2024
	DARE!! Instruments	RadiPowerRPR3006W	17I00015SNO33	Aug. 30, 2023	Aug. 29, 2024
Temperature and Humidity Chamber	ZhengHang	ZH-QTH-1500	ZH2107264	Jun. 17, 2024	Jun. 16, 2025





## 5. Radiated and Conducted Unwanted Emissions

### 5.1 Test Standard and Limit

#### 5.1.1 Test Standard

**FCC Part 15.209 & FCC Part 15.247(d)**

#### 5.1.2 Test Limit

General field strength limits at frequencies Below 30MHz			
Frequency (MHz)	Field Strength (μA/m)*	Field Strength (microvolt/meter)**	Measurement Distance (meters)
0.009~0.490	6.37/F (F in kHz)	2400/F(KHz)	300
0.490~1.705	63.7/F (F in kHz)	24000/F(KHz)	30
1.705~30.0	0.08	30	30

**Note:** 1, The emission limits for the ranges 9-90 kHz and 110-490 kHz are based on measurements employing a linear average detector.  
2, \*is for RSS Standard, \*\*is for FCC Standard.

General field strength limits at frequencies above 30 MHz		
Frequency (MHz)	Field strength (μV/m at 3 m)	Measurement Distance (meters)
30~88	100	3
88~216	150	3
216~960	200	3
Above 960	500	3

General field strength limits at frequencies Above 1000MHz		
Frequency (MHz)	Distance of 3m (dBuV/m)	
	Peak	Average
Above 1000	74	54

**Note:**  
(1) The tighter limit applies at the band edges.  
(2) Emission Level(dBuV/m)=20log Emission Level(μV/m)

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated device is operating, the RF power that is produced shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided that the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of root-mean-square averaging over a time interval, as permitted under section 5.4(d), the attenuation required shall be 30 dB instead of 20 dB.





## 5.2 Test Setup

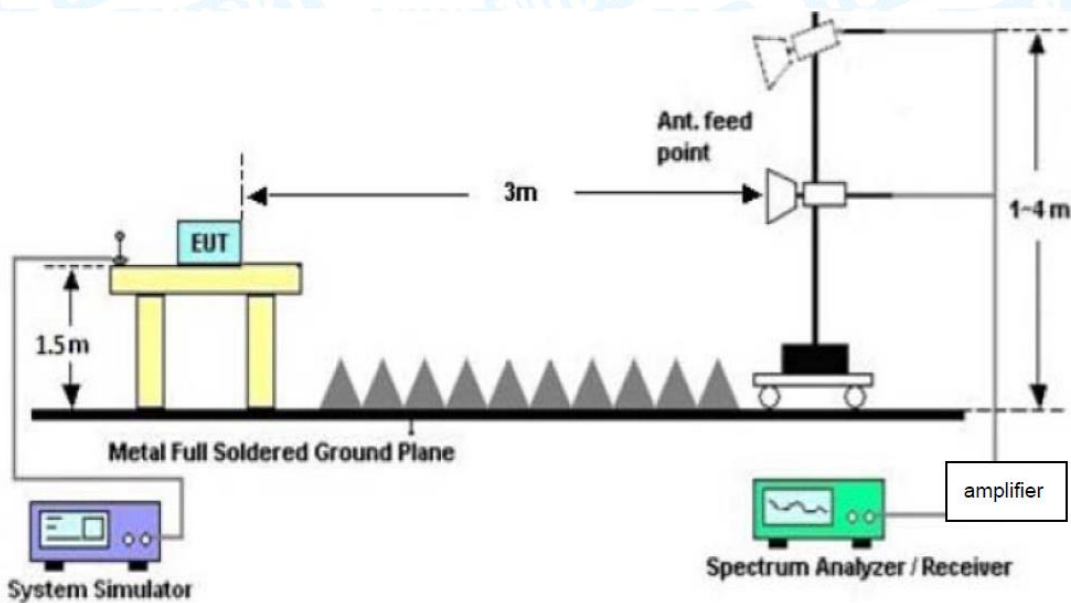
### Radiated measurement



### Below 30MHz Test Setup



### Below 1000MHz Test Setup

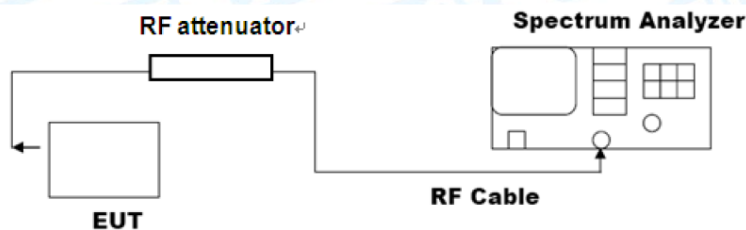


### Above 1GHz Test Setup





### Conducted measurement



## 5.3 Test Procedure

### ---Radiated measurement

● The measuring distance of 3m shall be used for measurements at frequency up to 1GHz and above 1 GHz. The EUT was placed on a rotating 0.8m high above ground, the table was rotated 360 degrees to determine the position of the highest radiation.

● Measurements at frequency above 1GHz. The EUT was placed on a rotating 1.5m high above the ground. RF absorbers covered the ground plane with a minimum area of 3.0m by 3.0m between the EUT and measurement receiver antenna. The RF absorber shall not exceed 30cm in high above the conducting floor. The table was rotated 360 degrees to determine the position of the highest radiation.

● The Test antenna shall vary between 1m and 4m, Both Horizontal and Vertical antenna are set to make measurement.

● The initial step in collecting conducted emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured.

● If the Peak Mode measured value compliance with and lower than Quasi Peak Mode Limit Below 1 GHz, the EUT shall be deemed to meet QP Limits and then no additional QP Mode measurement performed. But the Peak Value and average value both need to comply with applicable limit above 1 GHz.

● Testing frequency range 30MHz-1GHz the measuring instrument use VBW=120 kHz with Quasi-peak detection. Testing frequency range 9KHz-150Hz the measuring instrument use VBW=200Hz with Quasi-peak detection. Testing frequency range 9KHz-30MHz the measuring instrument use VBW=9kHz with Quasi-peak detection.

● Testing frequency range above 1GHz the measuring instrument use RBW=1 MHz and VBW=3 MHz with Peak Detector for Peak Values, and use RBW=1 MHz and VBW=10 Hz with Peak Detector for Average Values.

● For the actual test configuration, please see the test setup photo.

### --- Conducted measurement

#### ●Reference level measurement

Establish a reference level by using the following procedure:

- Set instrument center frequency to DTS channel center frequency.
- Set the span to  $\geq 1.5$  times the DTS bandwidth.
- Set the RBW = 100 kHz.
- Set the VBW  $\geq [3 \times \text{RBW}]$ .
- Detector = peak.
- Sweep time = auto couple.
- Trace mode = max hold.
- Allow trace to fully stabilize.
- Use the peak marker function to determine the maximum PSD level.

Note that the channel found to contain the maximum PSD level can be used to establish the reference level.

#### ●Emission level measurement

Establish an emission level by using the following procedure:

- Set the center frequency and span to encompass frequency range to be measured.
- Set the RBW = 100 kHz.
- Set the VBW  $\geq [3 \times \text{RBW}]$ .
- Detector = peak.





- e) Sweep time = auto couple.
  - f) Trace mode = max hold.
  - g) Allow trace to fully stabilize.
  - h) Use the peak marker function to determine the maximum amplitude level.
- Ensure that the amplitude of all unwanted emissions outside of the authorized frequency band (excluding restricted frequency bands) is attenuated by at least the minimum requirements specified in 11.11. Report the three highest emissions relative to the limit.

#### 5.4 Deviation From Test Standard

No deviation

#### 5.5 EUT Operating Mode

Please refer to the description of test mode.

#### 5.6 Test Data

Radiated measurement please refer to the Attachment A inside test report.





## 6. Antenna Requirement

### 6.1 Test Standard and Limit

#### 6.1.1 Test Standard

##### **FCC Part 15.203**

#### 6.1.2 Requirement

An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator 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 replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

### 6.2 Deviation From Test Standard

No deviation

### 6.3 Antenna Connected Construction

The gains of the antenna used for transmitting is 0.23dBi, and the antenna de-signed with permanent attachment and no consideration of replacement. Please see the EUT photo for details.

### 6.4 Test Data

The EUT antenna is a FPC Antenna. It complies with the standard requirement.

Antenna Type
<input checked="" type="checkbox"/> Permanent attached antenna
<input type="checkbox"/> Unique connector antenna
<input type="checkbox"/> Professional installation antenna





## Attachment A--Unwanted Emissions Data

### ---Radiated Unwanted Emissions

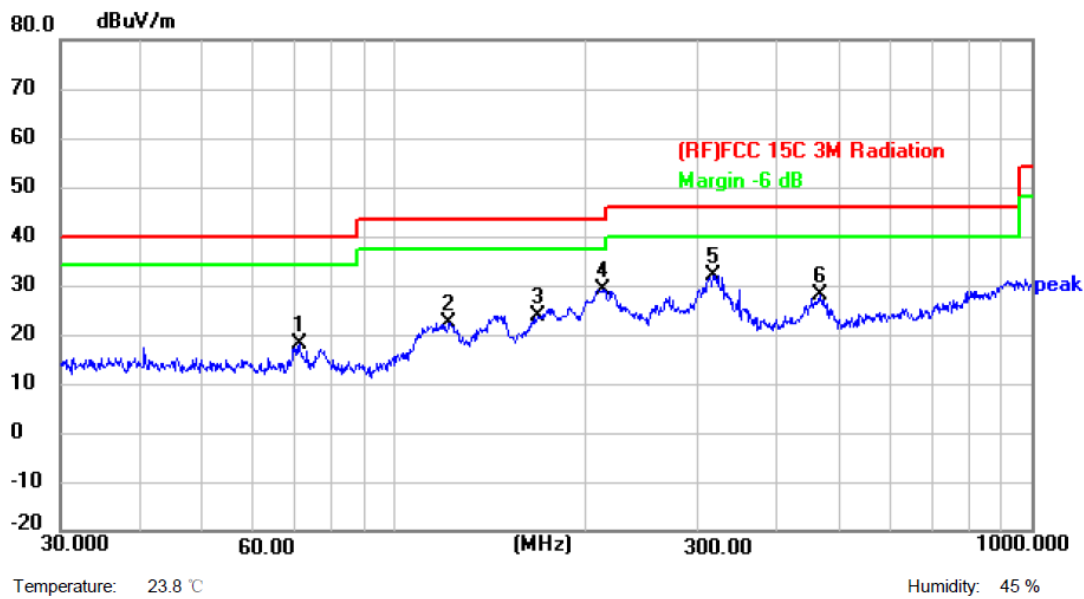
#### 9 KHz~30 MHz

From 9 KHz to 30 MHz: Conclusion: PASS

Note: The amplitude of spurious emissions which are attenuated by more than 20dB Below the permissible value has no need to be reported.

#### 30MHz~1GHz

Test Voltage:	AC 120V/60Hz
Ant. Pol.	Horizontal
Test Mode:	Mode 1
Remark:	Only worse case is reported.



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F
1	71.0803	44.52	-26.50	18.02	40.00	-21.98	peak	P
2	121.9755	45.65	-23.28	22.37	43.50	-21.13	peak	P
3	167.8242	45.96	-22.08	23.88	43.50	-19.62	peak	P
4	213.0151	53.67	-24.44	29.23	43.50	-14.27	peak	P
5 *	316.5890	52.42	-20.46	31.96	46.00	-14.04	peak	P
6	465.5994	45.38	-17.29	28.09	46.00	-17.91	peak	P

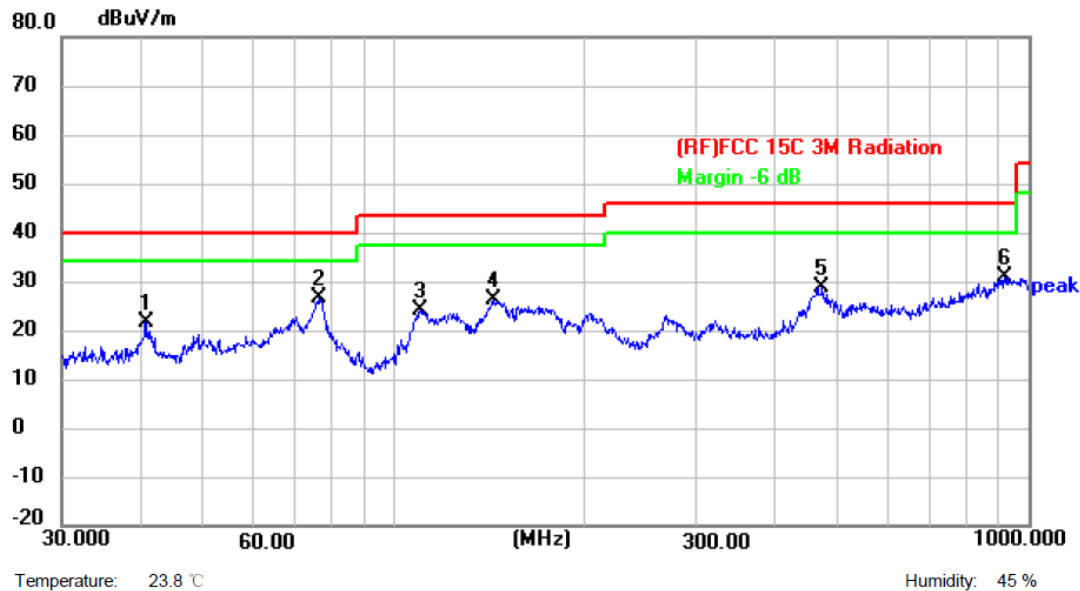
#### Remark:

1. Corr. = Antenna Factor (dB/m) + Cable Loss (dB)
2. QuasiPeak (dBuV/m) = Corr. (dB/m) + Read Level (dBuV)
3. Margin (dB) = QuasiPeak (dBuV/m) - Limit QPK (dBuV/m)





Test Voltage:	AC 120V/60Hz
Ant. Pol.	Vertical
Test Mode:	Mode 1
Remark:	Only worse case is reported.



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F
1	40.7016	45.42	-23.81	21.61	40.00	-18.39	peak	P
2 *	76.2442	53.54	-26.98	26.56	40.00	-13.44	peak	P
3	110.1816	48.97	-24.82	24.15	43.50	-19.35	peak	P
4	143.3260	48.19	-21.85	26.34	43.50	-17.16	peak	P
5	473.8346	45.62	-16.82	28.80	46.00	-17.20	peak	P
6	916.0686	38.21	-7.30	30.91	46.00	-15.09	peak	P

**Remark:**

1. Corr. = Antenna Factor (dB/m) + Cable Loss (dB)
2. QuasiPeak (dBuV/m)= Corr. (dB/m)+ Read Level (dBuV)
3. Margin (dB) = QuasiPeak (dBuV/m)-Limit QPK(dBuV/m)

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

