

FCC TEST REPORT  
FOR

Shenzhen Merrytek Technology Co.,LTD

Lighting Control Switch(Motion Sensor)

Test Model No.: MC083V

Additional Model No.: MC083V RC, MC083S RC

Prepared for : Shenzhen Merrytek Technology Co.,LTD  
Address : 2nd and 3rd Floor, No.3 building, 380 Xiangshan Avenue, Luotian,  
Yanluo, Baoan, Shenzhen, China

Prepared by : Shenzhen LCS Compliance Testing Laboratory Ltd  
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Date of receipt of test sample : April 10, 2020  
Number of tested samples : 1  
Sample number : 200327048A  
Date of Test : April 10, 2020 ~ April 27, 2020  
Date of Report : April 29, 2020

FCC TEST REPORT
FCC CFR 47 PART 15 C (15.249)

Report Reference No. : LCS200327048AEA

Date of Issue : April 29, 2020

Testing Laboratory Name : Shenzhen LCS Compliance Testing Laboratory Ltd.

Address : 101, 201 Bldg A & 301 Bldg C, Juji Industrial Park Shajing Street, Baoan District, Shenzhen, China

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

Applicant's Name : Shenzhen Merrytek Technology Co.,LTD

Address : 2nd and 3rd Floor, No.3 building, 380 Xiangshan Avenue, Luotian, Yanluo, Baoan, Shenzhen, China

Test Specification

Standard : FCC CFR 47 PART 15 C (15.249) / ANSI C63.10

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 : Lighting Control Switch(Motion Sensor)

Trade Mark : Merrytek

Test Model : MC083V

Ratings : Input : 120/277Vac 50/60Hz
Output : 120Vac 50/60Hz 2A Ballast
277Vac 50/60Hz 2A Ballast

Result : Positive

Compiled by:

Linda He

Linda He/ File administrators

Supervised by:

Jin Wang

Jin Wang/ Technique principal

Approved by:

Gavin Liang

Gavin Liang/ Manager

## FCC -- TEST REPORT

<b>Test Report No. :</b> <b>LCS200327048AEA</b>	<u>April 29, 2020</u> Date of issue
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Test Model.....	: MC083V
EUT.....	: Lighting Control Switch(Motion Sensor)
<b>Applicant.....</b>	<b>: Shenzhen Merrytek Technology Co.,LTD</b>
Address.....	: 2nd and 3rd Floor, No.3 building, 380 Xiangshan Avenue, Luotian, Yanluo, Baoan, Shenzhen, China
Telephone.....	: /
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<b>Manufacturer.....</b>	<b>: Shenzhen Merrytek Technology Co.,LTD</b>
Address.....	: 2nd and 3rd Floor, No.3 building, 380 Xiangshan Avenue, Luotian, Yanluo, Baoan, Shenzhen, China
Telephone.....	: /
Fax.....	: /
<b>Factory.....</b>	<b>: Shenzhen Merrytek Technology Co.,LTD</b>
Address.....	: 2nd and 3rd Floor, No.3 building, 380 Xiangshan Avenue, Luotian, Yanluo, Baoan, Shenzhen, China
Telephone.....	: /
Fax.....	: /

<b>Test Result</b>	<b>Positive</b>
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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 29, 2020	Initial Issue	Gavin Liang

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# 1. GENERAL INFORMATION

## 1.1 Description of Device (EUT)

EUT : Lighting Control Switch(Motion Sensor)  
 Test Model : MC083V  
 Additional Model No. : MC083V RC, MC083S RC  
 Model Declaration : See Note 1  
 Power Supply : Input: 120/277Vac 50/60Hz  
 Output: 120Vac 50/60Hz 2A Ballast  
 277Vac 50/60Hz 2A Ballast  
 MC083V: B0  
 Hardware Version : MC083V RC: A1  
 MC083S RC: A1  
 Software Version : REV01  
 SRD :  
 Frequency Range : 5800MHz (±75 MHz)  
 Channel number : 1 channels  
 Modulation Type : ASK  
 Antenna Description : Internal Antenna, 0dBi(max.)

Note 1: The main circuit structure of all model is the same, and the functional circuit differences are as follows:

Model No.	Description of functional differences			
	Infrared remote control	Light-controlled shutdown	1-10V	Waiting time
MC083V	No	Yes	Yes	Yes
MC083V RC	Yes	No	Yes	Yes
MC083S RC	Yes	No	No	No

## 1.2 Support equipment List

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

## 1.3 External I/O Cable

I/O Port Description	Quantity	Cable
--	--	--

### 1.4 Description of Test Facility

FCC Registration Number is 254912.  
 Industry Canada Registration Number is 9642A.  
 EMSD 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 Accreditation Code is 600167-0.  
 FCC Designation Number is CN5024  
 CAB identifier: CN0071

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)

(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 operates in the unlicensed ISM band at 5.8GHz. The following operating modes were applied for the related test items.

All test modes were tested, only the result of the worst case was recorded in the report.

The EUT is considered a portable unit and was set to transmit at 100% duty cycle. It was pre-tested on the positioned of each 3 axis. The worst case was found positioned on X-plane.

Mode of operations	Transmitting frequency (MHz)
ASK	5800
For Conducted Emission	
Test Mode	TX Mode
For Radiated Emission	
Test Mode	TX Mode

Worst-case mode and channel used for 150 KHz-30 MHz power line conducted emissions was the mode and channel with the highest output power that was determined to be TX (3Mbps).

Worst-case mode and channel used for 9 KHz-1000 MHz radiated emissions was the mode and channel with the highest output power, which was determined to be TX-5725MHz.

Pre-test AC conducted emission at both voltage AC 120V/60Hz and AC 240V/50Hz, recorded worst case.

\*\*\*Note: Using a temporary antenna connector for the EUT when the conducted measurements are performed.

### 1.8. Channel List and Frequency:

Test Mode	Channel	Frequency Range (MHz)
TX	1	5800
Standby	--	--



## 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 15.203, 15.205, 15.207, 15.209 and 15.249 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 FCC ANSI C63.10 for 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, which is 0.8 m above ground plane. 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 FCC MP-5 for radiated emission.

### 3. SYSTEM TEST CONFIGURATION

#### 3.1 Justification

The system was configured for testing in a continuous transmit condition. Continuous transmitting. The EUT After the power is switched on, the hand is placed over the microwave module, and the continuous transmit signal.

#### 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 RESULT

FCC Rules	Description Of Test	Result
§15.203	Antenna Requirement	Compliant
§15.207(a)	Power Line Conducted Emissions	Compliant
§15.205(a), §15.209(a), §15.249(a), §15.249(c)	Radiated Emissions Measurement	Compliant
§15.205	Band Edges Measurement	Compliant
§15.249, §15.215	20 dB Bandwidth	Compliant

Remark;

\*\* - Restricted bands far away from fundamental frequency, results within radiated emission;

## 5. SUMMARY OF TEST EQUIPMENT

Item	Equipment	Manufacturer	Model No.	Serial No.	Cal Date	Due Date
1	MXA Signal Analyzer	Agilent	N9020A	MY49100060	2019-11-15	2020-11-14
2	DC Power Supply	Agilent	E3642A	N/A	2019-11-15	2020-11-14
3	Temperature & Humidity Chamber	GUANGZHOU GOGN WEN	GDS-100	70932	2019-10-10	2020-10-09
4	EMI Test Software	AUDIX	E3	/	N/A	N/A
5	3m Semi Anechoic Chamber	SIDT FRANKONIA	SAC-3M	03CH03-HY	2019-06-12	2020-06-11
6	Positioning Controller	MF	MF-7082	/	2019-06-12	2020-06-11
7	Active Loop Antenna	SCHWARZBECK	FMZB 1519B	00005	2019-07-26	2020-07-25
8	By-log Antenna	SCHWARZBECK	VULB9163	9163-470	2019-07-26	2020-07-25
9	Horn Antenna	SCHWARZBECK	BBHA 9120D	9120D-1925	2019-07-02	2020-07-01
10	EMI Test Receiver	R&S	ESR 7	101181	2019-06-12	2020-06-11
11	RS SPECTRUM ANALYZER	R&S	FSP40	100503	2019-11-15	2020-11-14
12	Broadband Preamplifier	/	BP-01M18G	P190501	2019-07-01	2020-06-30
13	RF Cable-R03m	Jye Bao	RG142	CB021	2019-06-12	2020-06-11
14	RF Cable-HIGH	SUHNER	SUCOFLEX 106	03CH03-HY	2019-06-12	2020-06-11
15	EMI Test Receiver	R&S	ESPI	101840	2019-06-11	2020-06-10
16	Artificial Mains	R&S	ENV216	101288	2019-06-12	2020-06-11
17	10dB Attenuator	SCHWARZBECK	MTS-IMP-136	261115-001-0032	2019-06-11	2020-06-10

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

## 6. ANTENNA REQUIREMENT

### 6.1. Standard Applicable

According to § 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 replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

### 6.2. Antenna Connected Construction

The directional gains of internal antenna used for transmitting is 0dBi, and the antenna is connect to PCB board and no consideration of replacement, meet FCC §15.203 antenna requirement.

### 6.3. Result

Compliance.

## 7. RADIATED EMISSION MEASUREMENT

### 7.1. Standard Applicable

Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in §15.209, whichever is the lesser attenuation.

20dBc in any 100 kHz bandwidth outside the operating frequency band. In case the emission fall within the restricted band specified on 15.205(a), then the 15.209(a) and 15.249 limit in the table below has to be followed.

Fundamental Frequency	Field Strength of fundamental (millivolts/meter)	Field Strength of harmonics (microvolts/meter)
902-928 MHz	50	500
2400-2483.5 MHz	50	500
5725-5875 MHz	50	500
24.0-24.25 GHz	250	2500

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

### 7.2. 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 <sup>th</sup> carrier harmonic
RB / VB (Emission in restricted band)	1MHz / 1MHz for Peak, 1 MHz / 1/T kHz for Average
RB / VB (Emission in non-restricted band)	1MHz / 1MHz for Peak, 1 MHz / 1/T 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

## 7.3. Test Procedure

### 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.

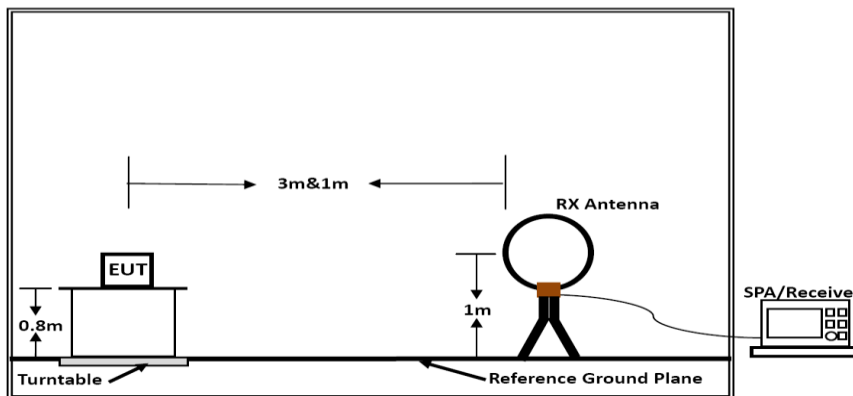
##### Premeasurement:

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

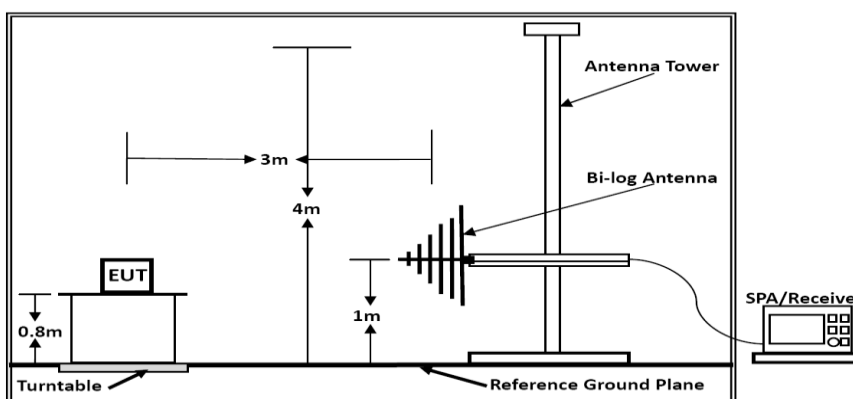
##### Final measurement:

- 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.

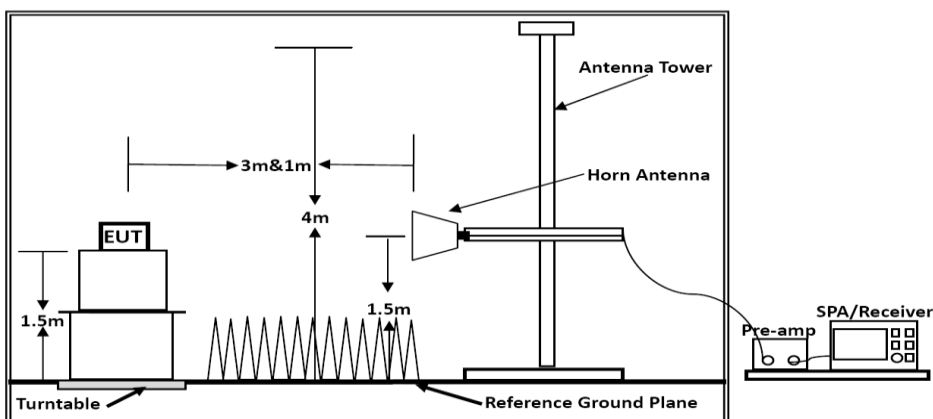
### 7.4. Block Diagram of Test Setup



Below 30MHz



Below 1GHz



Above 1GHz

Above 18 GHz shall be extrapolated to the specified distance using an extrapolation factor of 20 dB/decade from 3m to 1m.

Distance extrapolation factor =  $20 \log(\text{specific distance [3m]} / \text{test distance [1m]})$  (dB);

Limit line = specific limits (dBuV) + distance extrapolation factor [6 dB].

7.5. Test Results of Radiated Emissions (9 KHz~30MHz)

Frequency (MHz)	Level (dBUV)	Over Limit (dB)	Over Limit (dBUV)	Remark
-	-	-	-	See Note

Note:

The radiated emissions from 9 KHz to 30 MHz are at least 20dB below the official limit and no need to report.

Distance extrapolation factor = 40 log (specific distance / test distance) (dB);

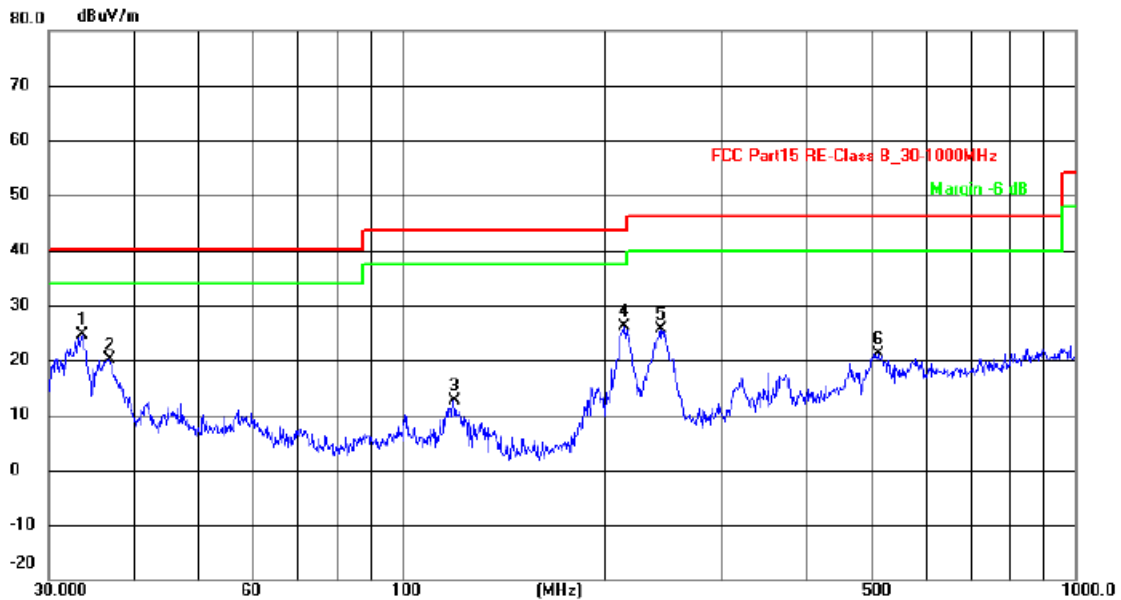
Limit line = specific limits (dBUV) + distance extrapolation factor.

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

Temperature	23.4°C	Humidity	53.1%
Test Engineer	Diamond Lu	Test Mode	TX

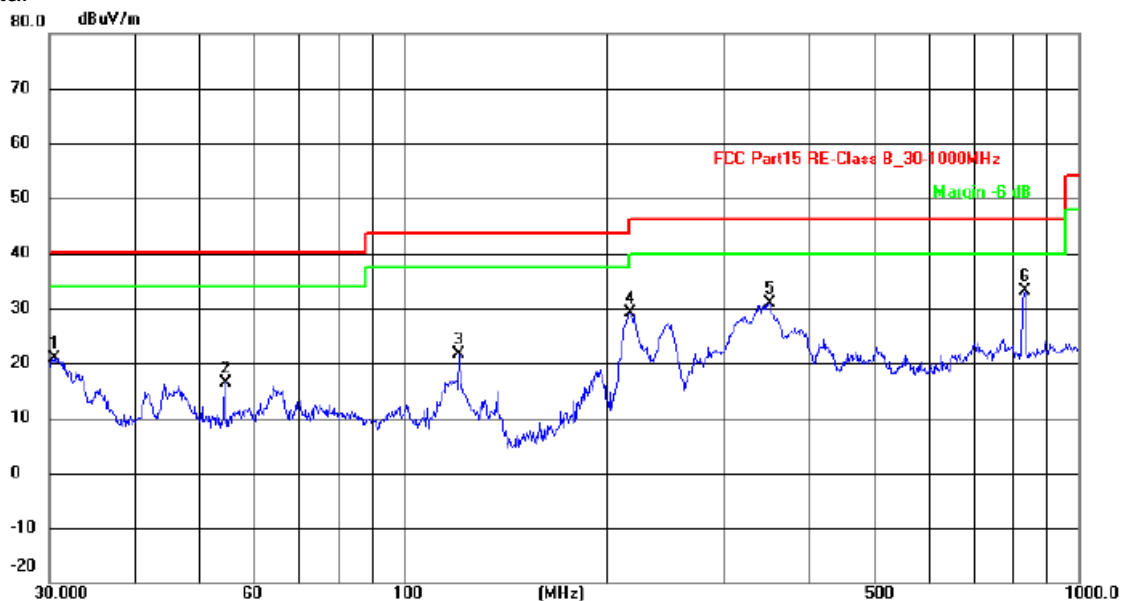
For MC083V

Vertical



No.	Frequency (MHz)	Reading (dBUV)	Factor (dB/m)	Level (dBUV/m)	Limit (dBUV/m)	Margin (dB)	Detector
1	33.5624	43.77	-19.06	24.71	40.00	-15.29	QP
2	36.7662	38.55	-18.44	20.11	40.00	-19.89	QP
3	119.4361	32.74	-20.05	12.69	43.50	-30.81	QP
4	213.7634	44.02	-17.81	26.21	43.50	-17.29	QP
5	242.5253	42.58	-16.96	25.62	46.00	-20.38	QP
6	510.0436	32.49	-11.26	21.23	46.00	-24.77	QP

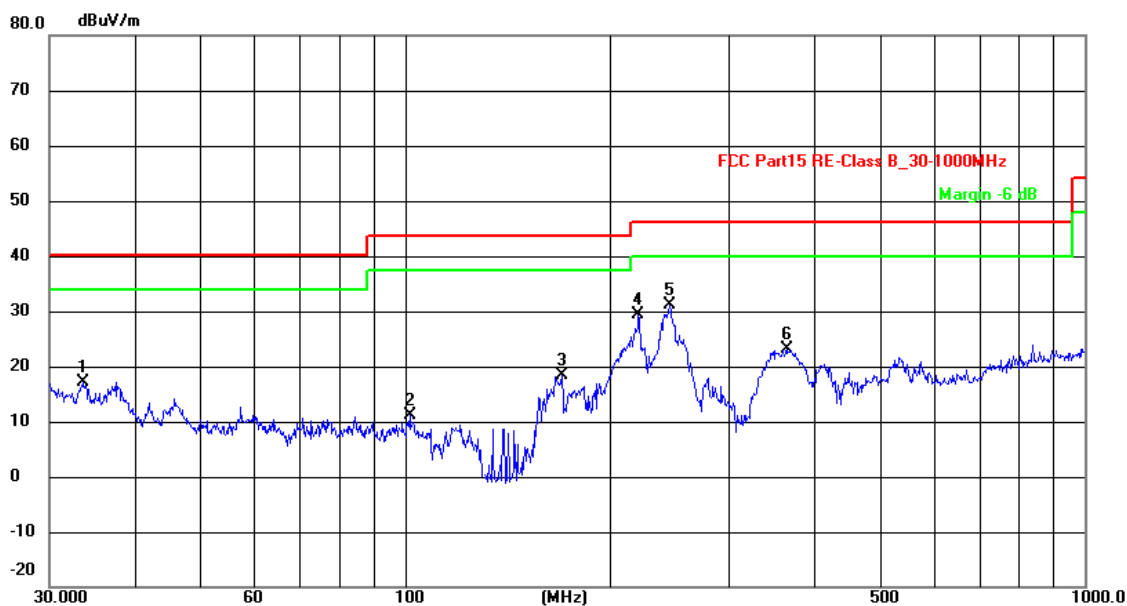
Horizontal



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	30.4238	40.14	-19.18	20.96	40.00	-19.04	QP
2	54.4516	33.41	-17.10	16.31	40.00	-23.69	QP
3	121.1231	41.87	-20.30	21.57	43.50	-21.93	QP
4	217.5443	46.90	-17.73	29.17	46.00	-16.83	QP
5	349.2500	45.20	-14.42	30.78	46.00	-15.22	QP
6	836.2443	39.60	-6.55	33.05	46.00	-12.95	QP

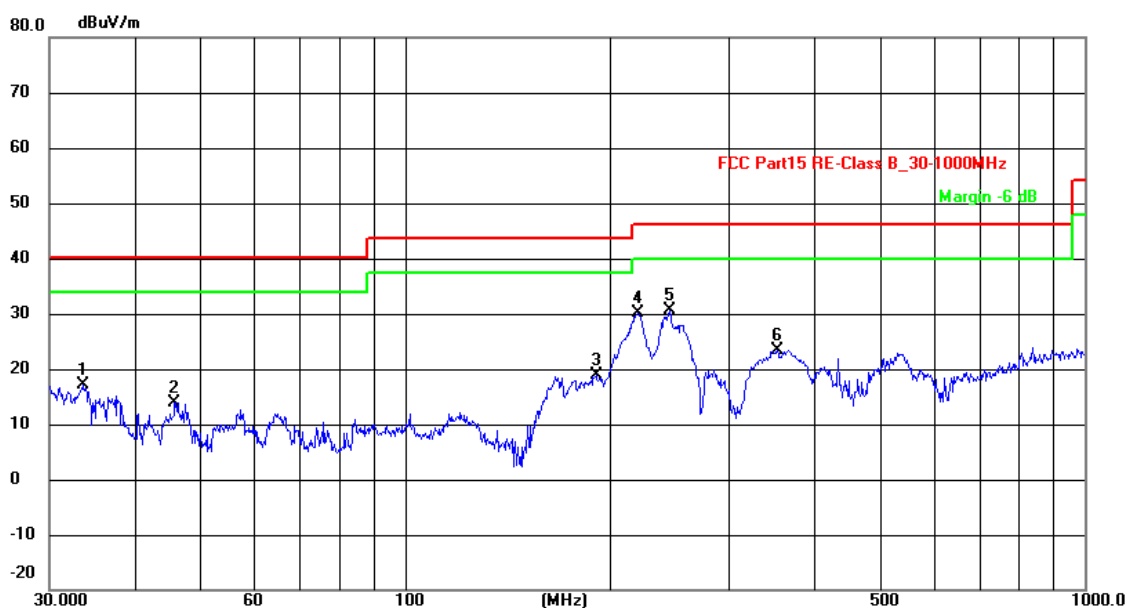
For MC083V RC

Vertical



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	33.6802	36.29	-19.05	17.24	40.00	-22.76	QP
2	101.6443	29.45	-18.37	11.08	43.50	-32.42	QP
3	170.1947	39.10	-20.70	18.40	43.50	-25.10	QP
4	220.6171	47.13	-17.66	29.47	46.00	-16.53	QP
5	245.0900	47.94	-16.88	31.06	46.00	-14.94	QP
6	364.2595	37.15	-14.13	23.02	46.00	-22.98	QP

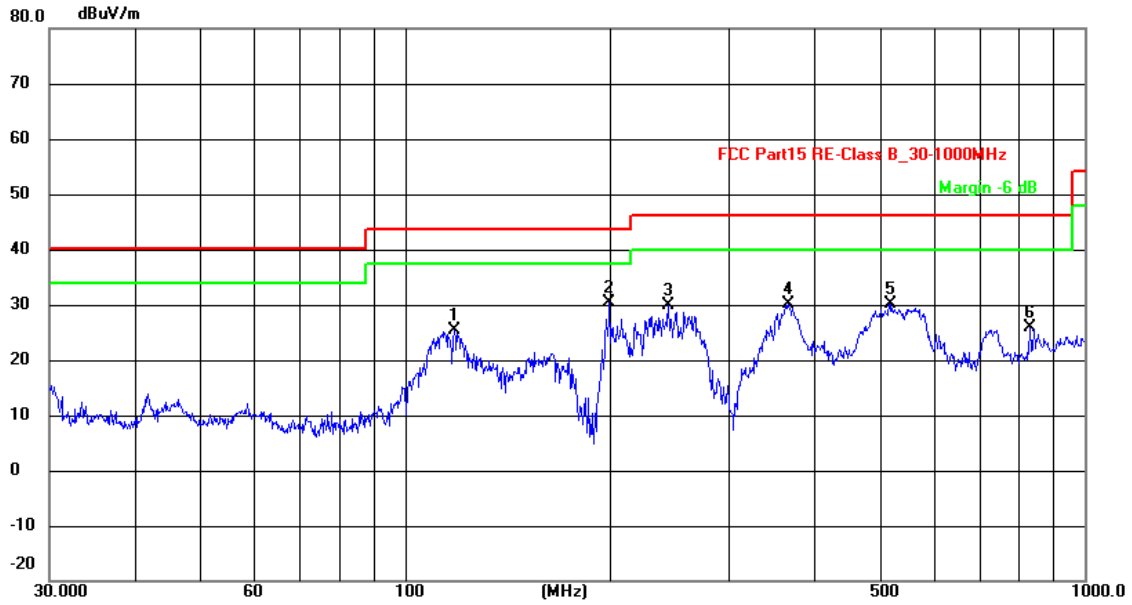
Horizontal



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	33.6802	36.29	-19.05	17.24	40.00	-22.76	QP
2	45.8553	30.31	-16.44	13.87	40.00	-26.13	QP
3	191.0738	37.85	-19.05	18.80	43.50	-24.70	QP
4	220.6171	47.86	-17.66	30.20	46.00	-15.80	QP
5	245.0900	47.44	-16.88	30.56	46.00	-15.44	QP
6	352.9433	37.75	-14.36	23.39	46.00	-22.61	QP

For MC083S RC

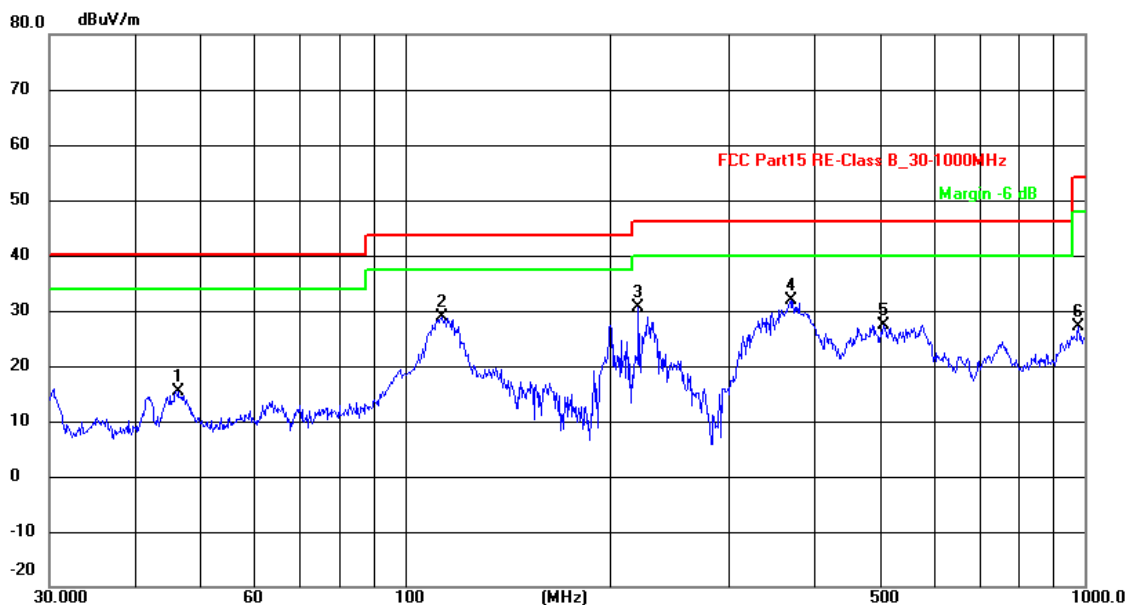
Vertical



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	118.1860	45.10	-19.83	25.27	43.50	-18.23	QP
2	199.9855	48.57	-18.10	30.47	43.50	-13.03	QP
3	244.2321	46.67	-16.90	29.77	46.00	-16.23	QP
4	366.8231	44.08	-14.07	30.01	46.00	-15.99	QP
5	519.0647	41.26	-11.09	30.17	46.00	-15.83	QP
6	830.4000	32.49	-6.64	25.85	46.00	-20.15	QP



Horizontal



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	46.3402	31.69	-16.43	15.26	40.00	-24.74	QP
2	113.3161	47.75	-18.96	28.79	43.50	-14.71	QP
3	220.6170	48.33	-17.66	30.67	46.00	-15.33	QP
4	369.4045	45.77	-14.01	31.76	46.00	-14.24	QP
5	506.4789	38.81	-11.33	27.48	46.00	-18.52	QP
6	979.1803	32.37	-5.27	27.10	54.00	-26.90	QP

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). Level=Reading level + Factor  
Margin=Level - Limit

7.7. Results for Radiated Emissions (1 – 26 GHz)

Field Strength of Fundamental (TX-5725MHz)						
Frequency (MHz)	Pol.	Measure Result (PK, dBuV/m)	Measure Result (AVG, dBuV/m)	Peak Limit (dBuV/m)	AVG Limit (dBuV/m)	Result
5800.00	H	87.53	75.21	114.00	94.00	PASS
5800.00	V	82.34	70.65	114.00	94.00	PASS

Freq. MHz	Reading dBuV	Ant. Fac dB/m	Pre. Fac. dB	Cab. Loss dB	Measured dBuV/m	Limit dBuV/m	Margin dB	Remark	Pol.
11600	49.47	33.16	35.15	3.96	51.44	74.00	-22.56	Peak	Horizontal
11600	39.77	33.16	35.15	3.96	41.74	54.00	-12.26	Average	Horizontal
11600	50.99	33.26	35.17	3.98	53.06	74.00	-20.94	Peak	Vertical
11600	41.47	33.26	35.17	3.98	43.54	54.00	-10.46	Average	Vertical

Notes:

- 1). Measuring frequencies from 9 KHz - 10<sup>th</sup> harmonic (ex. 40GHz), No emission found between lowest internal used/generated frequency to 30 MHz.
- 2). Radiated emissions measured in frequency range from 9 KHz - 10<sup>th</sup> harmonic (ex. 40GHz) were made with an instrument using Peak detector mode.
- 3). 18~40GHz at least have 20dB margin. No recording in the test report.

Measured=Reading level - Pre.factor + Ant. Factor + cable loss

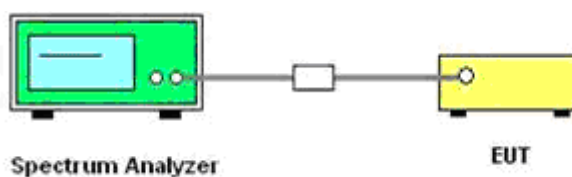
Margin=measured - limited

## 8. 99% AND 20 DB BANDWIDTH MEASUREMENT

### 8.1. Standard Applicable

No Limit

### 8.2. Block Diagram of Test Setup



### 8.3. Test Procedure

Use the following spectrum analyzer settings:

Span = 3 MHz

RBW = 100 KHz

VBW = 300 KHz

Sweep = auto

Detector function = peak

Trace = max hold

The EUT should be transmitting at its maximum data rate. Allow the trace to stabilize. Use the marker-to-peak function to set the marker to the peak of the emission. Use the marker-delta function to measure 20 dB down one side of the emission. Reset the marker-delta function, and move the marker to the other side of the emission, until it is (as close as possible to) even with the reference marker level. The marker-delta reading at this point is the 20 dB bandwidth of the emission. If this value varies with different modes of operation (e.g., data rate, modulation format, etc.), repeat this test for each variation. The limit is specified in one of the subparagraphs of this Section. Submit this plot(s).

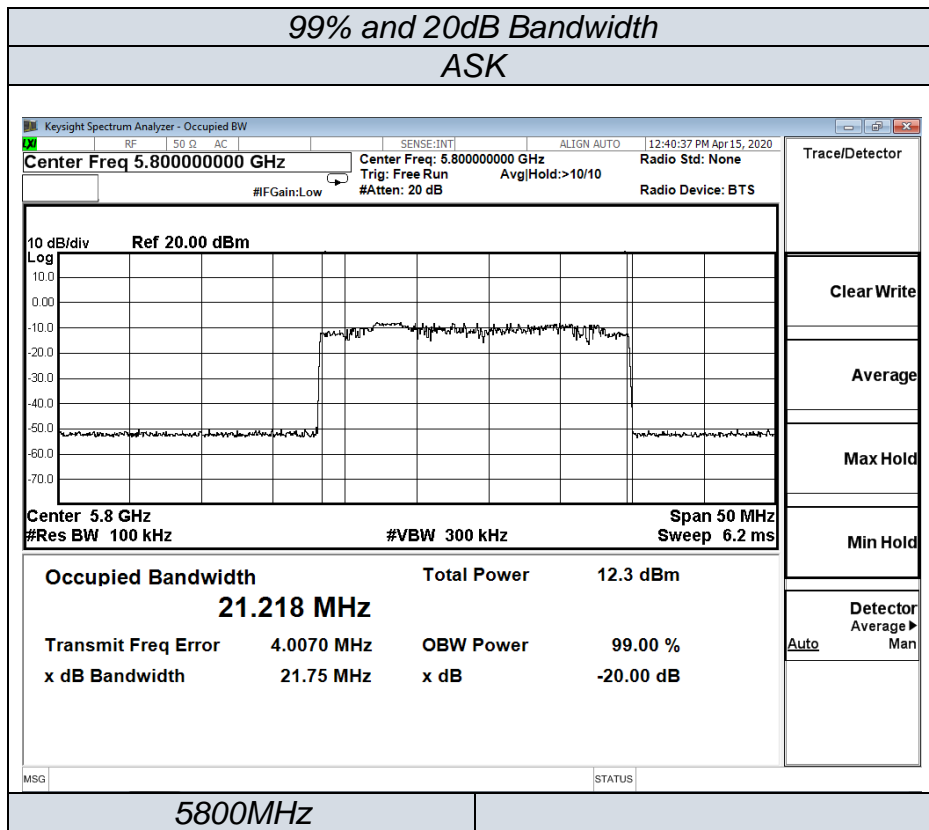
### 8.4. Test Results

Temperature	23.8°C	Humidity	52.7%
Test Engineer	Diamond Lu	Test Mode	TX

99% and 20dB Bandwidth			
Test Frequency (MHz)	99% Bandwidth (MHz)	20dB Bandwidth (MHz)	Limit (MHz)
5800	21.218	21.75	Non-Specified

Remark:

1. Test results including cable loss;
2. Please refer to following plots;



## 9. AC POWER LINE CONDUCTED EMISSIONS

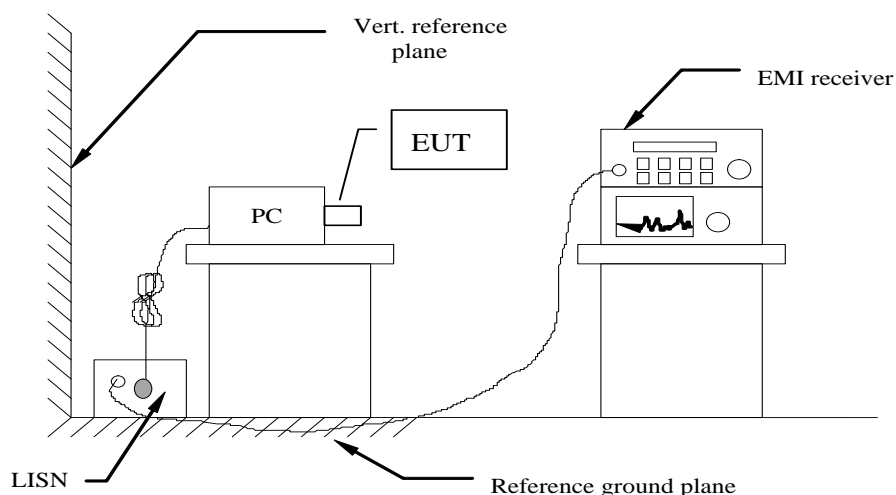
### 9.1 Standard Applicable

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

### 9.2 Block Diagram of Test Setup



### 9.3 Test Results

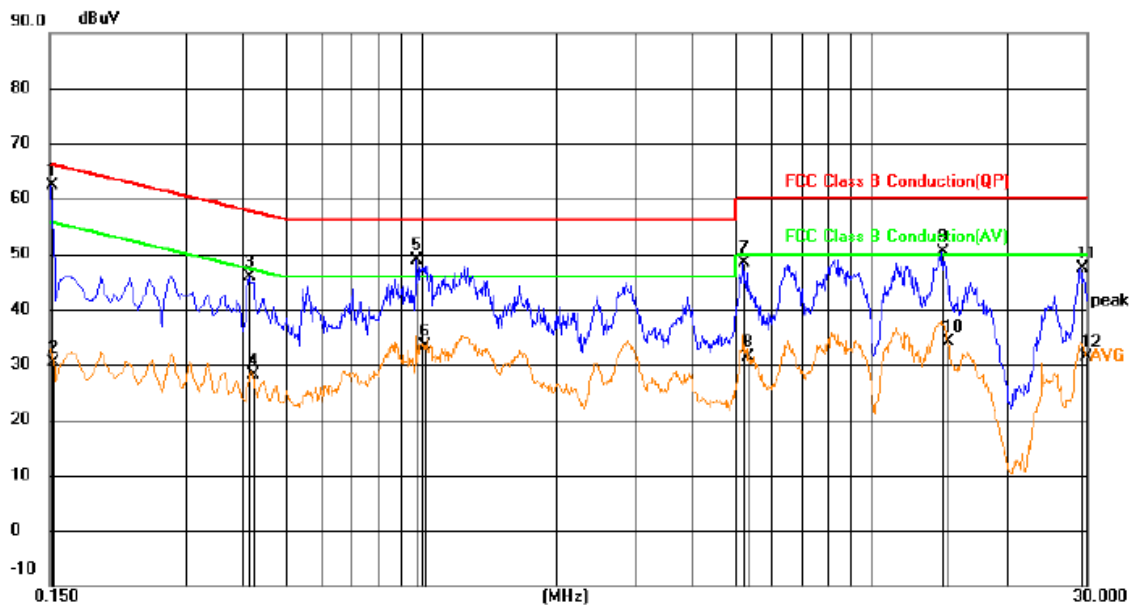
**PASS.**

The test data please refer to following page.

Temperature	23.6°C	Humidity	52.6%
Test Engineer	Diamond Lu	Test Mode	TX

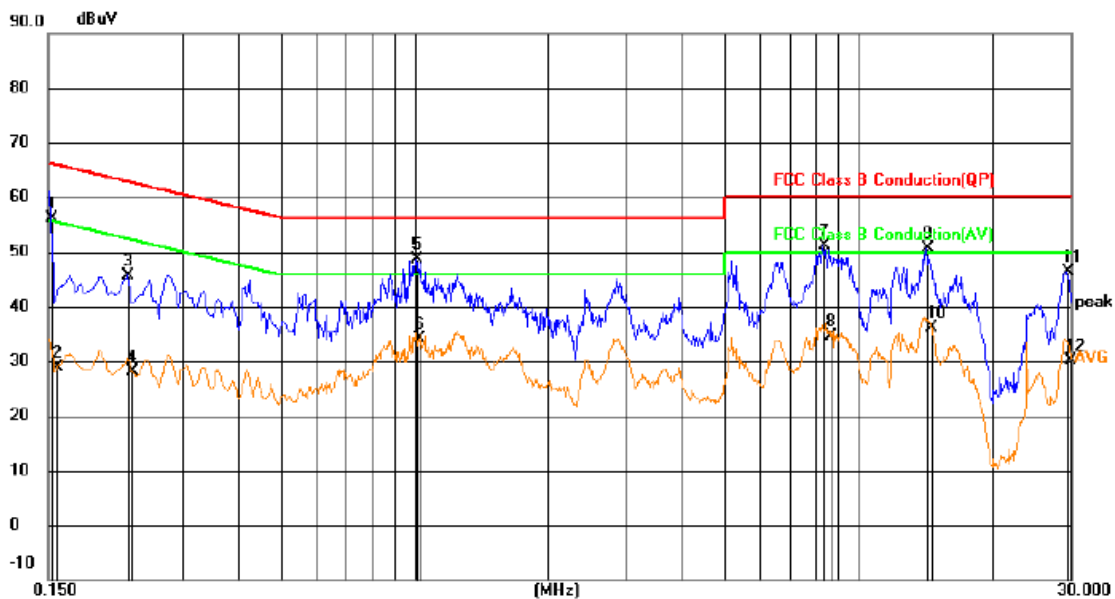
**For MC083V**

Line



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Margin dB	Detector	Comment
1	*	0.1508	43.17	19.14	62.31	65.96	-3.65	QP	
2		0.1524	11.29	19.14	30.43	55.87	-25.44	AVG	
3		0.4155	26.45	19.32	45.77	57.54	-11.77	QP	
4		0.4215	8.79	19.32	28.11	47.42	-19.31	AVG	
5		0.9780	29.56	19.27	48.83	56.00	-7.17	QP	
6		1.0184	14.02	19.26	33.28	46.00	-12.72	AVG	
7		5.2080	28.79	19.50	48.29	60.00	-11.71	QP	
8		5.3205	11.97	19.51	31.48	50.00	-18.52	AVG	
9		14.3925	30.20	20.07	50.27	60.00	-9.73	QP	
10		14.7795	14.05	20.12	34.17	50.00	-15.83	AVG	
11		29.2380	27.17	20.12	47.29	60.00	-12.71	QP	peak
12		30.0000	11.31	20.09	31.40	50.00	-18.60	AVG	AVG

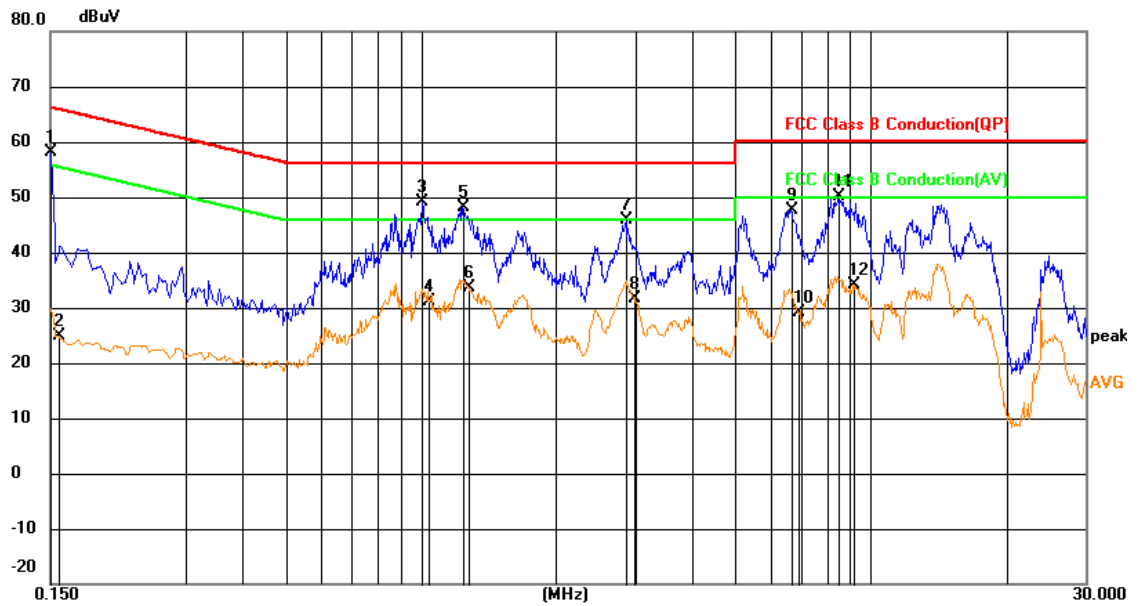
Neutral



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Margin dB	Detector	Comment
1		0.1516	36.98	19.14	56.12	65.91	-9.79	QP	
2		0.1573	9.74	19.15	28.89	55.61	-26.72	AVG	
3		0.2265	26.54	19.21	45.75	62.58	-16.83	QP	
4		0.2310	8.93	19.21	28.14	52.41	-24.27	AVG	
5	*	1.0050	29.41	19.25	48.66	56.00	-7.34	QP	
6		1.0230	14.91	19.25	34.16	46.00	-11.84	AVG	
7		8.3580	31.61	19.64	51.25	60.00	-8.75	QP	
8		8.6820	15.05	19.64	34.69	50.00	-15.31	AVG	
9		14.2485	30.63	20.06	50.69	60.00	-9.31	QP	
10		14.6265	16.10	20.12	36.22	50.00	-13.78	AVG	
11		29.5485	26.33	20.14	46.47	60.00	-13.53	QP	
12		30.0000	10.11	20.14	30.25	50.00	-19.75	AVG	

For MC083V RC

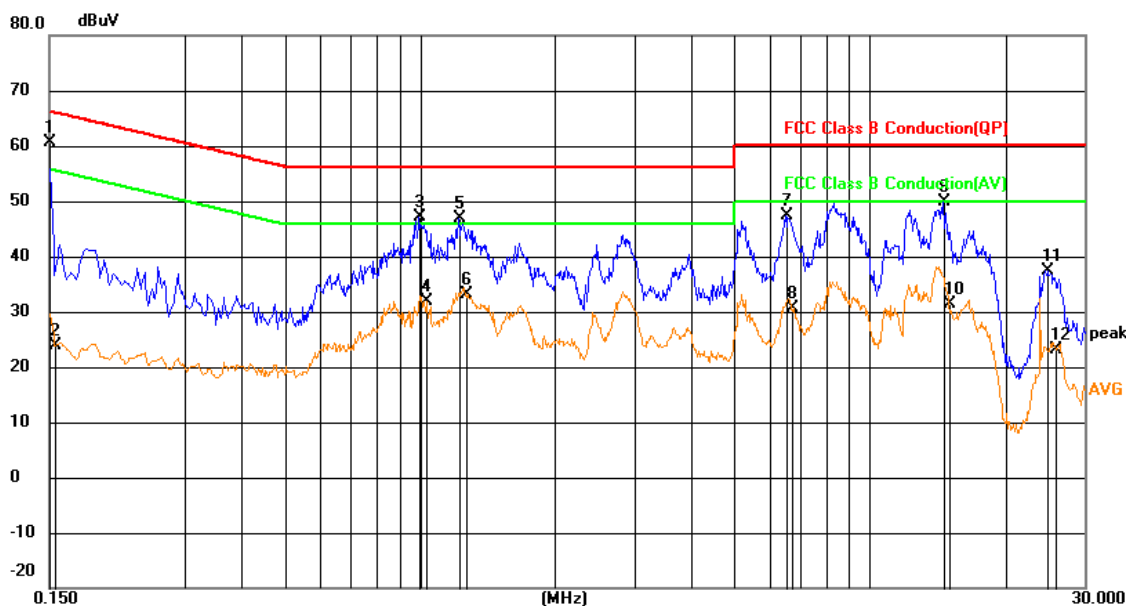
Line



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Margin dB	Detector	Comment
1		0.1507	38.87	19.14	58.01	65.96	-7.95	QP	
2		0.1564	5.74	19.15	24.89	55.65	-30.76	AVG	
3	*	1.0048	29.86	19.26	49.12	56.00	-6.88	QP	
4		1.0408	11.95	19.27	31.22	46.00	-14.78	AVG	
5		1.2388	28.94	19.29	48.23	56.00	-7.77	QP	
6		1.2794	14.26	19.30	33.56	46.00	-12.44	AVG	
7		2.8635	26.44	19.46	45.90	56.00	-10.10	QP	
8		2.9624	12.28	19.47	31.75	46.00	-14.25	AVG	
9		6.6345	28.08	19.56	47.64	60.00	-12.36	QP	
10		6.8910	9.66	19.58	29.24	50.00	-20.76	AVG	
11		8.4570	30.57	19.65	50.22	60.00	-9.78	QP	
12		9.1635	14.38	19.67	34.05	50.00	-15.95	AVG	



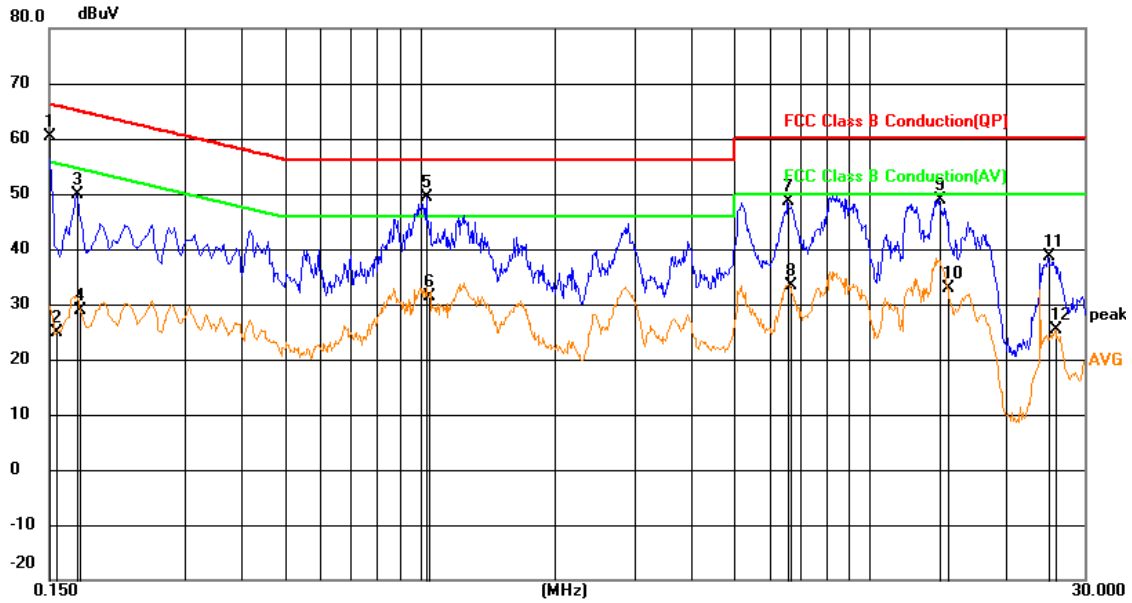
Neutral



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Margin	Detector	Comment
		MHz	dBuV	dB	dBuV	dBuV	dB		
1	*	0.1500	41.37	19.14	60.51	66.00	-5.49	QP	
2		0.1547	4.84	19.14	23.98	55.74	-31.76	AVG	
3		0.9959	27.80	19.25	47.05	56.00	-8.95	QP	
4		1.0363	12.51	19.25	31.76	46.00	-14.24	AVG	
5		1.2209	27.51	19.28	46.79	56.00	-9.21	QP	
6		1.2659	13.89	19.29	33.18	46.00	-12.82	AVG	
7		6.5084	27.77	19.55	47.32	60.00	-12.68	QP	
8		6.7244	11.01	19.56	30.57	50.00	-19.43	AVG	
9		14.5589	29.71	20.11	49.82	60.00	-10.18	QP	
10		15.0404	11.25	20.17	31.42	50.00	-18.58	AVG	
11		24.8009	17.30	20.12	37.42	60.00	-22.58	QP	
12		25.8990	3.00	20.08	23.08	50.00	-26.92	AVG	peak

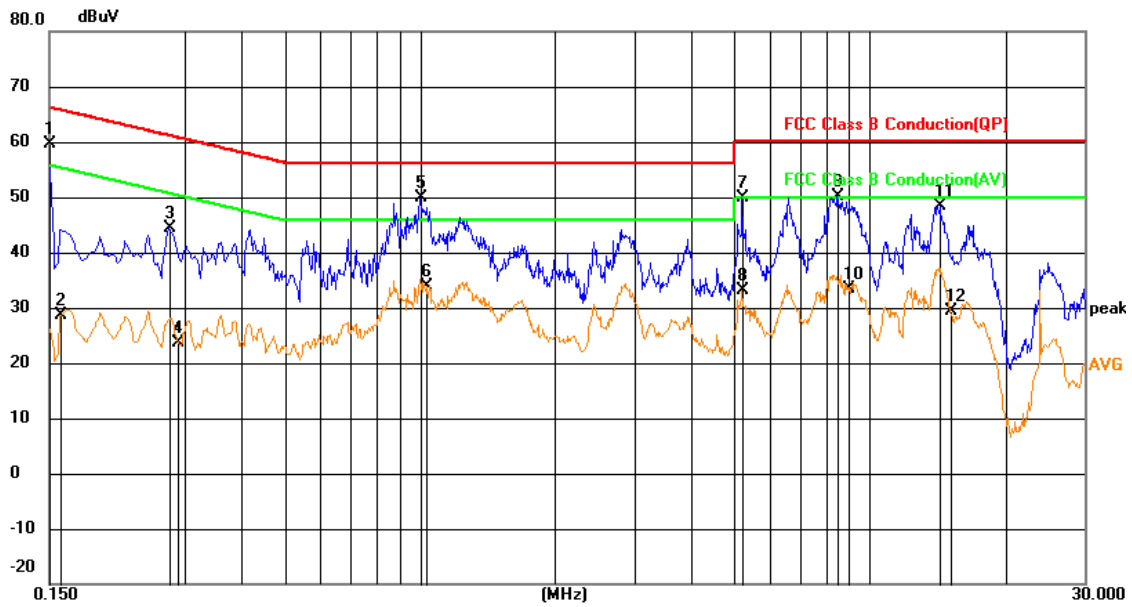
For MC083S RC

Line



No. Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Margin dB	Detector	Comment
1 *	0.1500	41.18	19.14	60.32	66.00	-5.68	QP	
2	0.1556	5.73	19.15	24.88	55.70	-30.82	AVG	
3	0.1725	30.73	19.16	49.89	64.84	-14.95	QP	
4	0.1758	9.76	19.17	28.93	54.68	-25.75	AVG	
5	1.0363	30.06	19.25	49.31	56.00	-6.69	QP	
6	1.0454	12.14	19.26	31.40	46.00	-14.60	AVG	
7	6.5850	29.15	19.55	48.70	60.00	-11.30	QP	
8	6.6435	13.77	19.55	33.32	50.00	-16.68	AVG	
9	14.2575	28.94	20.06	49.00	60.00	-11.00	QP	
10	14.8560	12.76	20.15	32.91	50.00	-17.09	AVG	
11	24.9990	18.38	20.13	38.51	60.00	-21.49	QP	
12	25.8765	5.26	20.09	25.35	50.00	-24.65	AVG	

Neutral



No. Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measurement dBuV	Limit dBuV	Margin dB	Detector	Comment
1	0.1500	40.38	19.14	59.52	66.00	-6.48	QP	
2	0.1590	9.42	19.15	28.57	55.52	-26.95	AVG	
3	0.2760	25.18	19.25	44.43	60.94	-16.51	QP	
4	0.2894	4.47	19.26	23.73	50.54	-26.81	AVG	
5 *	1.0003	30.54	19.25	49.79	56.00	-6.21	QP	
6	1.0319	14.71	19.25	33.96	46.00	-12.04	AVG	
7	5.2035	30.42	19.50	49.92	60.00	-10.08	QP	
8	5.2035	13.60	19.50	33.10	50.00	-16.90	AVG	
9	8.4570	30.40	19.64	50.04	60.00	-9.96	QP	
10	8.9205	13.82	19.65	33.47	50.00	-16.53	AVG	
11	14.3384	28.37	20.08	48.45	60.00	-11.55	QP	
12	15.0764	9.21	20.17	29.38	50.00	-20.62	AVG	

\*\*\*Note: Measure= Reading level + Correct factor  
 Margin= Measure - Limit

## **10. TEST SETUP PHOTOGRAPHS**

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-----