



FCC EMI TEST REPORT

FCC ID : IHDT56YC1
Equipment : Mobile Cellular Phone
Brand Name : Motorola
Model Name : XT2010-1
Applicant : Motorola Mobility LLC
222 W, Merchandise Mart Plaza, Chicago IL 60654 USA
Manufacturer : Motorola Mobility LLC
222 W, Merchandise Mart Plaza, Chicago IL 60654 USA
Standard : FCC 47 CFR FCC Part 15 Subpart B

The product was received on Apr. 26, 2019 and testing was started from May 20, 2019 and completed on Jun. 04, 2019. We, SPORTON INTERNATIONAL INC. EMC & Wireless Communications Laboratory, would like to declare that the tested sample has been evaluated in accordance with the test procedures given in ANSI C63.4-2014 and has been in compliance with the applicable technical standards.

The report must not be used by the client to claim product certification, approval, or endorsement by TAF or any agency of government.

The test results in this report apply exclusively to the tested model / sample. Without written approval of SPORTON INTERNATIONAL INC. EMC & Wireless Communications Laboratory, the test report shall not be reproduced except in full.

Approved by: Jones Tsai

SPORTON INTERNATIONAL INC. EMC & Wireless Communications Laboratory

No. 52, Huaya 1st Rd., Guishan Dist., Taoyuan City, Taiwan (R.O.C.)



Table of Contents

History of this test report.....	3
Summary of Test Result.....	4
1. General Description	5
1.1. Product Feature of Equipment Under Test	5
1.2. Product Specification of Equipment Under Test	7
1.3. Modification of EUT	8
1.4. Test Location	8
1.5. Applicable Standards	9
2. Test Configuration of Equipment Under Test	10
2.1. Test Mode	10
2.2. Connection Diagram of Test System	12
2.3. Support Unit used in test configuration and system.....	14
2.4. EUT Operation Test Setup	15
3. Test Result	16
3.1. Test of AC Conducted Emission Measurement	16
3.2. Test of Radiated Emission Measurement	18
4. List of Measuring Equipment.....	20
5. Uncertainty of Evaluation	21
Appendix A. AC Conducted Emission Test Result	
Appendix B. Radiated Emission Test Result	



History of this test report

Report No.	Version	Description	Issued Date
FC942629	01	Initial issue of report	Jun. 06, 2019



Summary of Test Result

Report Clause	Ref Std. Clause	Test Items	Result (PASS/FAIL)	Remark
3.1	15.107	AC Conducted Emission	Pass	Under limit 5.01 dB at 0.152 MHz
3.2	15.109	Radiated Emission	Pass	Under limit 6.10 dB at 532.460 MHz

Declaration of Conformity:

The test results with all measurement uncertainty excluded are presented in accordance with the regulation limits or requirements declared by manufacturers.

Comments and Explanations:

The declared of product specification for EUT presented in the report are provided by the manufacturer, and the manufacturer takes all the responsibilities for the accuracy of product specification.

Reviewed by: Louis Wu

Report Producer: Elise Chang

1. General Description

1.1. Product Feature of Equipment Under Test

Product Feature			
Equipment	Mobile Cellular Phone		
Brand Name	Motorola		
Model Name	XT2010-1		
FCC ID	IHDT56YC1		
Sample 1	Single SIM		
Sample 2	Dual SIM		
IMEI Code	Conduction :	Sample 1	354156100005315
		Sample 2	354155100035371 354155100035389
	Radiation :	Sample 1	354156100005315
		Sample 2	354155100034473 354155100034481
EUT supports Radios application	GSM/EGPRS/WCDMA/HSPA/LTE/GNSS/NFC/FM WLAN 11b/g/n HT20 WLAN 11a/n HT20/HT40 WLAN 11ac VHT20/VHT40/VHT80 Bluetooth BR/EDR/LE		
HW Version	DVT2A		
EUT Stage	Identical Prototype		

Remark: The above EUT's information was declared by manufacturer.

Accessory List	
AC Adapter 1 (US)	Brand Name : Motorola
	Model Name : SC-51
	Manufacturer : Salom
AC Adapter 1 (EU)	Brand Name : Motorola
	Model Name : SC-52
	Manufacturer : Salom
AC Adapter 1 (UK)	Brand Name : Motorola
	Model Name : SC-53
	Manufacturer : Salom
AC Adapter 1 (AR)	Brand Name : Motorola
	Model Name : SC-56
	Manufacturer : Salom
AC Adapter 1 (BR)	Brand Name : Motorola
	Model Name : SC-57
	Manufacturer : Salom
AC Adapter 2 (US)	Brand Name : Motorola
	Model Name : SC-51
	Manufacturer : Chenyang
AC Adapter 2 (EU)	Brand Name : Motorola
	Model Name : SC-52
	Manufacturer : Chenyang
AC Adapter 2 (UK)	Brand Name : Motorola
	Model Name : SC-53
	Manufacturer : Chenyang
AC Adapter 2 (AR)	Brand Name : Motorola
	Model Name : SC-56
	Manufacturer : Chenyang
AC Adapter 3 (BR)	Brand Name : Motorola
	Model Name : SC-57
	Manufacturer : Flex
AC Adapter 4 (BR)	Brand Name : Motorola
	Model Name : SC-57
	Manufacturer : Cliptech
Battery 1	Brand Name : Motorola
	Model Name : KP50
	Manufacturer : SCUD
Earphone 1	Brand Name : Motorola
	Model Name : SH38C37773
	Manufacturer : Lianyun
Earphone 2	Brand Name : Motorola
	Model Name : SH38C44959
	Manufacturer : Cosonic
USB Cable 1	Brand Name : Luxshare
	Model Name : SC18C24368
USB Cable 2	Brand Name : Saibao
	Model Name : SC18C24367

1.2. Product Specification of Equipment Under Test

Standards-related Product Specification	
Tx Frequency	GSM850: 824.2 MHz ~ 848.8 MHz GSM1900: 1850.2 MHz ~ 1909.8MHz WCDMA Band V: 826.4 MHz ~ 846.6 MHz WCDMA Band II: 1852.4 MHz ~ 1907.6 MHz WCDMA Band IV: 1712.4 MHz ~ 1752.6 MHz LTE Band 2 : 1850.7 MHz ~ 1909.3 MHz LTE Band 4 : 1710.7 MHz ~ 1754.3 MHz LTE Band 5 : 824.7 MHz ~ 848.3 MHz LTE Band 7 : 2502.5 MHz ~ 2567.5 MHz LTE Band 12 : 699.7 MHz ~ 715.3 MHz LTE Band 17: 706.5 MHz ~ 713.5 MHz LTE Band 41: 2498.5 MHz ~ 2687.5 MHz LTE Band 66: 1710.7 MHz ~ 1779.3 MHz 802.11b/g/n: 2412 MHz ~ 2462 MHz 802.11a/n/ac: 5180 MHz ~ 5240 MHz; 5260 MHz ~ 5320 MHz; 5500 MHz ~ 5700 MHz ; 5725 MHz ~ 5850 MHz Bluetooth: 2402 MHz ~ 2480 MHz NFC : 13.56 MHz
Rx Frequency	GSM850: 869.2 MHz ~ 893.8 MHz GSM1900: 1930.2 MHz ~ 1989.8 MHz WCDMA Band V: 871.4 MHz ~ 891.6 MHz WCDMA Band II: 1932.4 MHz ~ 1987.6 MHz WCDMA Band IV: 2112.4 MHz ~ 2152.6 MHz LTE Band 2 : 1930.7 MHz ~ 1989.3 MHz LTE Band 4 : 2110.7 MHz ~ 2154.3 MHz LTE Band 5 : 869.7 MHz ~ 893.3 MHz LTE Band 7 : 2622.5 MHz ~ 2687.5 MHz LTE Band 12 : 729.7 MHz ~ 745.3 MHz LTE Band 17: 736.5 MHz ~ 743.5 MHz LTE Band 41: 2498.5 MHz ~ 2687.5 MHz LTE Band 66: 2110.7 MHz ~ 2199.3 MHz 802.11b/g/n: 2412 MHz ~ 2462 MHz 802.11a/n/ac: 5180 MHz ~ 5240 MHz; 5260 MHz ~ 5320 MHz; 5500 MHz ~ 5700 MHz ; 5725 MHz ~ 5850 MHz Bluetooth: 2402 MHz ~ 2480 MHz GNSS : 1559 MHz ~ 1610 MHz (GPS/Glonass) NFC : 13.56 MHz FM : 88 MHz ~ 108 MHz
Antenna Type	WWAN : Dipole Antenna WLAN : Loop Antenna Bluetooth : Loop Antenna NFC : Loop Antenna GPS/Glonass : Loop Antenna FM : Using earphone as antenna

Standards-related Product Specification	
Type of Modulation	GSM: GMSK GPRS: GMSK EDGE(MCS 0-4): GMSK / (MCS 5-9): 8PSK WCDMA: QPSK (Uplink) HSDPA: 64QAM (Downlink) HSUPA: QPSK (Uplink) LTE: QPSK / 16QAM / 64QAM 802.11b : DSSS (DBPSK / DQPSK / CCK) 802.11a/g/n : OFDM (BPSK / QPSK / 16QAM / 64QAM) 802.11ac : OFDM (BPSK / QPSK / 16QAM / 64QAM / 256QAM) Bluetooth LE : GFSK Bluetooth (1Mbps) : GFSK Bluetooth (2Mbps) : $\pi/4$ -DQPSK Bluetooth (3Mbps) : 8-DPSK GNSS : BPSK NFC: ASK FM

Note: The WLAN operation in 5600 MHz ~ 5650 MHz is notched.

1.3. Modification of EUT

No modifications are made to the EUT during all test items.

1.4. Test Location

Test Site	SPORTON INTERNATIONAL INC.
Test Site Location	No.52, Huaya 1st Rd., Guishan Dist., Taoyuan City, Taiwan (R.O.C.) TEL: +886-3-327-3456 FAX: +886-3-328-4978
Test Site No.	Sporton Site No. CO05-HY

Test Site	SPORTON INTERNATIONAL INC.
Test Site Location	No.58, Aly. 75, Ln. 564, Wenhua 3rd, Rd., Guishan Dist., Taoyuan City, Taiwan (R.O.C.) TEL: +886-3-327-0868 FAX: +886-3-327-0855
Test Site No.	Sporton Site No. 03CH10-HY

FCC Designation No. TW1093 and TW1098



1.5. Applicable Standards

According to the specifications of the manufacturer, the EUT must comply with the requirements of the following standards:

- ♦ FCC 47 CFR FCC Part 15 Subpart B
- ♦ ANSI C63.4-2014

Remark: All test items were verified and recorded according to the standards and without any deviation during the test.

2. Test Configuration of Equipment Under Test

2.1. Test Mode

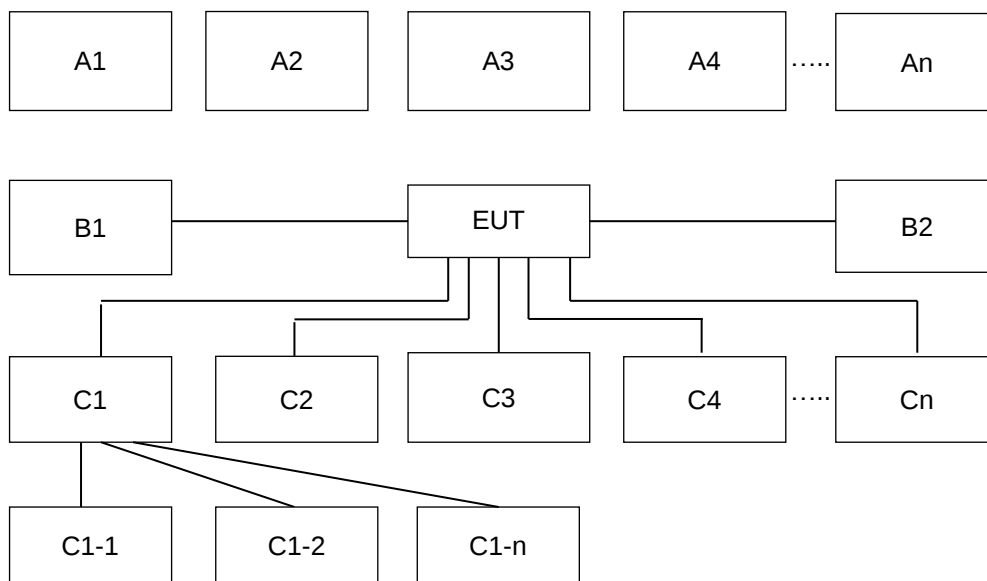
The EUT has been associated with peripherals pursuant to ANSI C63.4-2014 and configuration operated in a manner tended to maximize its emission characteristics in a typical application.

Frequency range investigated: conduction emission (150 kHz to 30 MHz), radiation emission (30MHz to the 5th harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower).

Test Items	Function Type
AC Conducted Emission	Mode 1: GSM850 Low Channel Idle + Bluetooth Idle + WLAN Idle + MPEG4 + Battery + Earphone 1 + USB Cable 1 (Charging from AC Adapter 1 (Salom_US)) for Sample 1
	Mode 2: GSM850 Middle Channel Idle + Bluetooth Idle + WLAN Idle + NFC On + Battery + Earphone 2 + USB Cable 2 (Charging from AC Adapter 2 (Chenyang_US)) for Sample 1
	Mode 3: GSM850 High Channel Idle + Bluetooth Idle + WLAN Idle + Camera (Front) + Battery + Earphone 1 + USB Cable 1 (Charging from AC Adapter 3 (Flex_BR)) for Sample 1
	Mode 4: LTE Band 12 Low Channel Idle + Bluetooth Idle + WLAN Idle + Camera (Back) + Battery + Earphone 2 + USB Cable 2 (Charging from AC Adapter 4 (Cliptech_BR)) for Sample 1
	Mode 5: LTE Band 12 Middle Channel Idle + Bluetooth Idle + WLAN Idle + GPS Rx + Battery + Earphone 1 + USB Cable 1 (Charging from AC Adapter 2 (Chenyang_US)) for Sample 1
	Mode 6: LTE Band 12 High Channel Idle + Bluetooth Idle + WLAN Idle + FM 88MHz Rx + Battery + Earphone 2 + USB Cable 2 (Charging from AC Adapter 2 (Chenyang_US)) for Sample 1
	Mode 7: GSM1900 Middle Channel Idle + Bluetooth Idle + WLAN Idle + FM 98MHz Rx + Battery + Earphone 1 + USB Cable 1 (Data Link with Notebook) for Sample 1
	Mode 8: LTE Band 7 Middle Channel Idle + Bluetooth Idle + WLAN Idle + FM 108MHz Rx + Battery + Earphone 2 + USB Cable 2 (Data Link with Notebook) for Sample 1
	Mode 9: LTE Band 12 Low Channel Idle + Bluetooth Idle + WLAN Idle + Camera (Back) + Battery + Earphone 2 + USB Cable 2 (Charging from AC Adapter 4 (Cliptech_BR)) + SIM 1 for Sample 2
	Mode 10: LTE Band 12 Low Channel Idle + Bluetooth Idle + WLAN Idle + Camera (Back) + Battery + Earphone 2 + USB Cable 2 (Charging from AC Adapter 4 (Cliptech_BR)) + SIM 2 for Sample 2

Test Items	Function Type
Radiated Emissions	Mode 1: GSM850 Low Channel Idle + Bluetooth Idle + WLAN Idle + MPEG4 + Battery + Earphone 1 + USB Cable 1 (Charging from AC Adapter 1 (Salom_US)) for Sample 1
	Mode 2: GSM850 Middle Channel Idle + Bluetooth Idle + WLAN Idle + NFC On + Battery + Earphone 2 + USB Cable 2 (Charging from AC Adapter 2 (Chenyang_US)) for Sample 1
	Mode 3: GSM850 High Channel Idle + Bluetooth Idle + WLAN Idle + Camera (Front) + Battery + Earphone 1 + USB Cable 1 (Charging from AC Adapter 3 (Flex_BR)) for Sample 1
	Mode 4: LTE Band 12 Low Channel Idle + Bluetooth Idle + WLAN Idle + Camera (Back) + Battery + Earphone 2 + USB Cable 2 (Charging from AC Adapter 4 (Cliptech_BR)) for Sample 1
	Mode 5: LTE Band 12 Middle Channel Idle + Bluetooth Idle + WLAN Idle + GPS Rx + Battery + Earphone 1 + USB Cable 1 (Charging from AC Adapter 1 (Salom_US)) for Sample 1
	Mode 6: LTE Band 12 High Channel Idle + Bluetooth Idle + WLAN Idle + FM 88MHz Rx + Battery + Earphone 2 + USB Cable 2 (Charging from AC Adapter 1 (Salom_US)) for Sample 1
	Mode 7: GSM1900 Middle Channel Idle + Bluetooth Idle + WLAN Idle + FM 98MHz Rx + Battery + Earphone 1 + USB Cable 1 (Data Link with Notebook) for Sample 1
	Mode 8: LTE Band 7 Middle Channel Idle + Bluetooth Idle + WLAN Idle + FM 108MHz Rx + Battery + Earphone 2 + USB Cable 2 (Data Link with Notebook) for Sample 1
	Mode 9: GSM1900 Middle Channel Idle + Bluetooth Idle + WLAN Idle + FM 98MHz Rx + Battery + Earphone 1 + USB Cable 1 (Data Link with Notebook) + SIM 1 for Sample 2
	Mode 10: GSM1900 Middle Channel Idle + Bluetooth Idle + WLAN Idle + FM 98MHz Rx + Battery + Earphone 1 + USB Cable 1 (Data Link with Notebook) + SIM 2 for Sample 2
Remark: 1. The worst case of AC is mode 4; only the test data of this mode was reported. 2. The worst case of RE is mode 10; only the test data of this mode was reported. 3. Data Linking with Notebook means data application transferred mode between EUT and Notebook.	

2.2. Connection Diagram of Test System



Radiation Test Setup									
No.	Wireless Station	Connection Type	Test Mode						
			1	2	3	4	5	6	7
A1	Bluetooth Earphone	Bluetooth	X	X	X	X	X	X	X
A2	System Simulator	GSM/UMTS/CDMA/ WCDMA/LTE	X	X	X	X	X	X	X
A3	GPS Station	GPS					X		
A4	AP Router	WiFi	X	X	X	X	X	X	X
No.	Power Source	Connection Type	1	2	3	4	5	6	7
B1	AC : 120V/60Hz	AC Power Cable	X	X	X	X	X	X	
No.	Setup Peripherals	Connection Type	1	2	3	4	5	6	7
C1	Notebook	USB cable							X
C1-1	AP Router	HDMI cable to C1							X
C1-2	iPod	USB Cable to C1							X
C2	Earphone	Earphone Jack	X	X	X	X	X	X	X
C3	SD card	SD I/O interface without cable	X	X	X	X	X	X	X

Radiation Test Setup									
No.	Wireless Station	Connection Type	Test Mode						
			8	9	10	-	-	-	-
A1	Bluetooth Earphone	Bluetooth	X	X	X				
A2	System Simulator	GSM/UMTS/CDMA/ WCDMA/LTE	X	X	X				
A3	GPS Station	GPS							
A4	AP Router	WiFi	X	X	X				
No.	Power Source	Connection Type	8	9	10	-	-	-	-
B1	AC : 120V/60Hz	AC Power Cable							
No.	Setup Peripherals	Connection Type	8	9	10	-	-	-	-
C1	Notebook	USB cable	X	X	X				
C1-1	AP Router	RJ45 cable to C1	X	X	X				
C1-2	iPod	USB Cable to C1	X	X	X				
C2	Earphone	Earphone Jack	X	X	X				
C3	SD card	SD I/O interface without cable	X	X					

Conduction Test Setup									
No.	Wireless Station	Connection Type	Test Mode						
			1	2	3	4	5	6	7
A1	Bluetooth Earphone	Bluetooth	X	X	X	X	X	X	X
A2	System Simulator	GSM/UMTS/CDMA/ WCDMA/LTE	X	X	X	X	X	X	X
A3	GPS Station	GPS					X		
A4	AP router	WiFi	X	X	X	X	X	X	X
No.	Power Source	Connection Type	1	2	3	4	5	6	7
B1	AC : 120V/60Hz	AC Power Cable	X	X	X	X	X	X	
No.	Setup Peripherals	Connection Type	1	2	3	4	5	6	7
C1	Notebook	USB Cable							X
C1-1	iPod	USB Cable to C1							X
C1-2	AP router	RJ-45 Cable to C1							X
C2	Earphone	Earphone Jack	X	X	X	X	X	X	X
C3	SD Card	SD I/O interface without Cable	X	X	X	X	X	X	X

Conduction Test Setup									
No.	Wireless Station	Connection Type	Test Mode						
			8	9	10	-	-	-	-
A1	Bluetooth Earphone	Bluetooth	X	X	X				
A2	System Simulator	GSM/UMTS/CDMA/ WCDMA/LTE	X	X	X				
A3	GPS Station	GPS							
A4	AP router	WiFi	X	X	X				
No.	Power Source	Connection Type	8	9	10	-	-	-	-
B1	AC : 120V/60Hz	AC Power Cable		X	X				
No.	Setup Peripherals	Connection Type	8	9	10	-	-	-	-
C1	Notebook	USB Cable	X						
C1-1	iPod	USB Cable to C1	X						
C1-2	AP Router	RJ-45 Cable to C1	X						
C2	Earphone	Earphone Jack	X	X	X				
C3	SD Card	SD I/O interface without Cable	X	X					

2.3. Support Unit used in test configuration and system

Item	Equipment	Trade Name	Model Name	FCC ID	Data Cable	Power Cord
1.	System Simulator	R&S	CMU 200	N/A	N/A	Unshielded, 1.8 m
2.	System Simulator	Anritsu	MT8820C	N/A	N/A	Unshielded, 1.8 m
3.	GPS Station	Pendulum	GSG-54	N/A	N/A	Unshielded, 1.8 m
4.	WLAN AP	ASUS	RT-AC66U	MSQ-RTAC66U	N/A	Unshielded, 1.8 m
5.	Bluetooth Earphone	Sony Ericsson	MW600	PY7DDA-2029	N/A	N/A
6.	Notebook	DELL	Latitude E6320	FCC DoC/ Contains FCC ID: QDS-BRCM1054	N/A	AC I/P: Unshielded, 1.2 m DC O/P: Shielded, 1.8 m
7.	iPod	Apple	A1199	FCC DoC	Unshielded, 1.2 m	N/A
8.	iPod	Apple	A1285	FCC DoC	Shielded, 1.0 m	N/A
9.	SD Card	SanDisk	MicroSD HC	FCC DoC	N/A	N/A

2.4. EUT Operation Test Setup

The EUT was in GSM or LTE idle mode during the testing. The EUT was synchronized with the BCCH, and had been continuous receiving mode by setting paging reorganization of the system simulator.

At the same time, the EUT was attached to the Bluetooth earphone or WLAN AP, and the following programs installed in the EUT were programmed during the test:

1. Data application is transferred between Laptop and EUT via USB cable.
2. Execute "GPS Test" to make the EUT receive continuous signals from GPS station.
3. Execute "Video Player" to play MPEG4 files.
4. Turn on camera to capture images.
5. Turn on FM function.
6. Turn on NFC function.

3. Test Result

3.1. Test of AC Conducted Emission Measurement

3.1.1 Limits of AC Conducted Emission

For equipment that 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 the limits in the following table.

Frequency of emission (MHz)	Conducted limit (dBuV)	
	Quasi-peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50

*Decreases with the logarithm of the frequency.

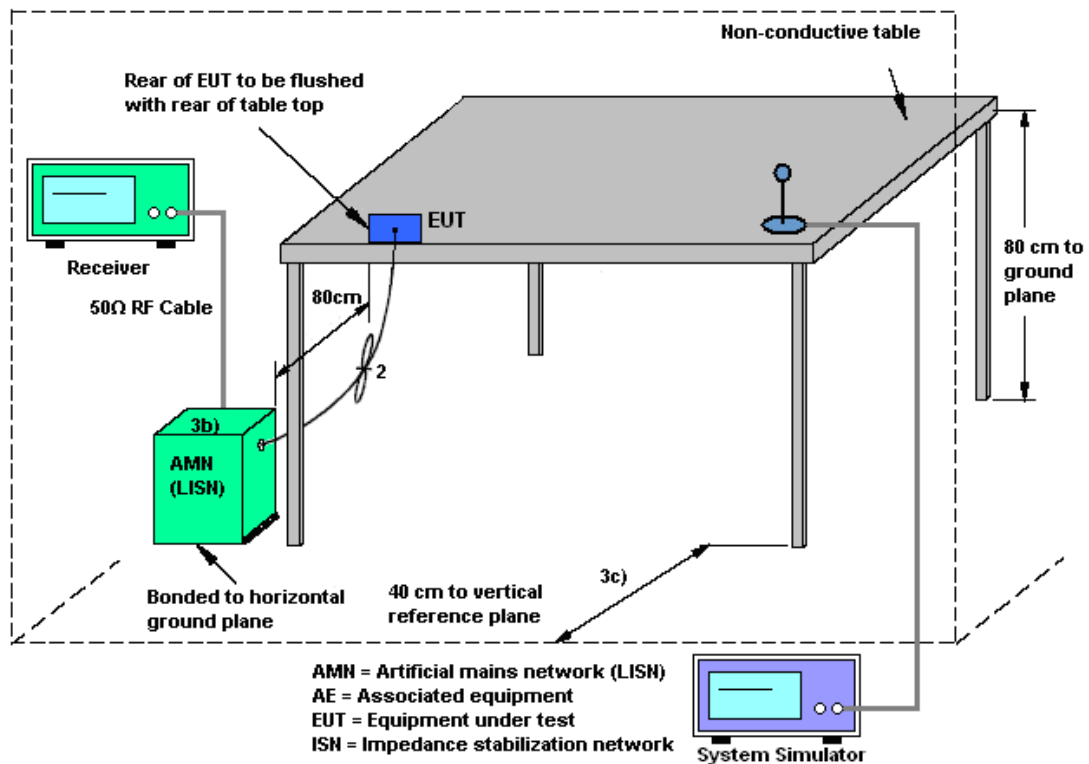
3.1.2 Measuring Instruments

Refer a test equipment and calibration data table in this test report.

3.1.3 Test Procedure

1. The EUT was placed 0.4 meter from the conducting wall of the shielding room was kept at least 80 centimeters from any other grounded conducting surface.
2. Connect EUT to the power mains through a line impedance stabilization network (LISN).
3. All the support units are connecting to the other LISN.
4. The LISN provides 50 ohm coupling impedance for the measuring instrument.
5. The FCC states that a 50 ohm, 50 microhenry LISN should be used.
6. Both sides of AC line were checked for maximum conducted interference.
7. The frequency range from 150 kHz to 30 MHz was searched.
8. Set the test-receiver system to Peak Detect Function and specified bandwidth (IF Bandwidth = 9kHz) with Maximum Hold Mode. Then measurement is also conducted by Average Detector and Quasi-Peak Detector Function respectively.

3.1.4 Test Setup



3.1.5 Test Result of AC Conducted Emission

Please refer to Appendix A.

3.2. Test of Radiated Emission Measurement

3.2.1. Limit of Radiated Emission

The emissions from an unintentional radiator shall not exceed the field strength levels specified in the following table:

Frequency (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
30 – 88	100	3
88 – 216	150	3
216 - 960	200	3
Above 960	500	3

3.2.2. Measuring Instruments

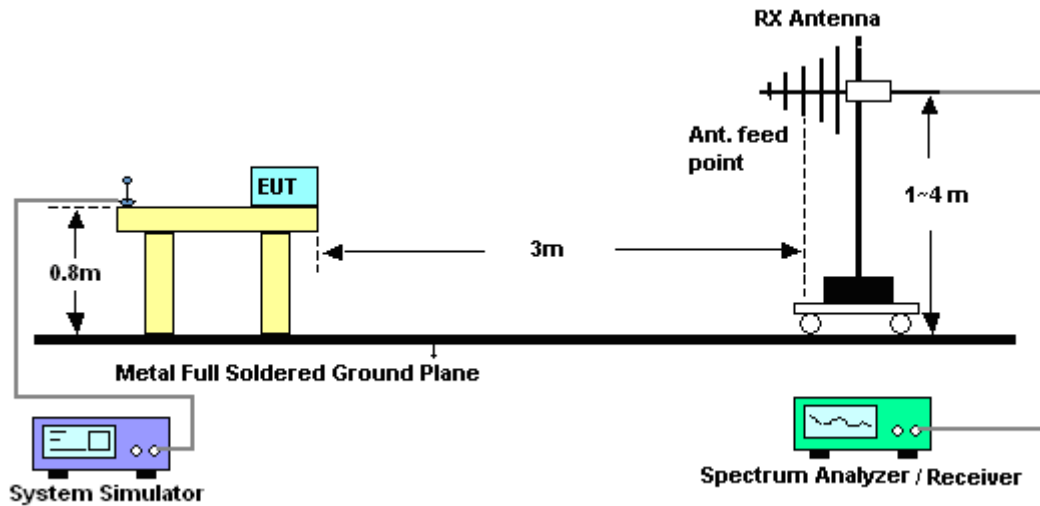
Refer a test equipment and calibration data table in this test report.

3.2.3. Test Procedures

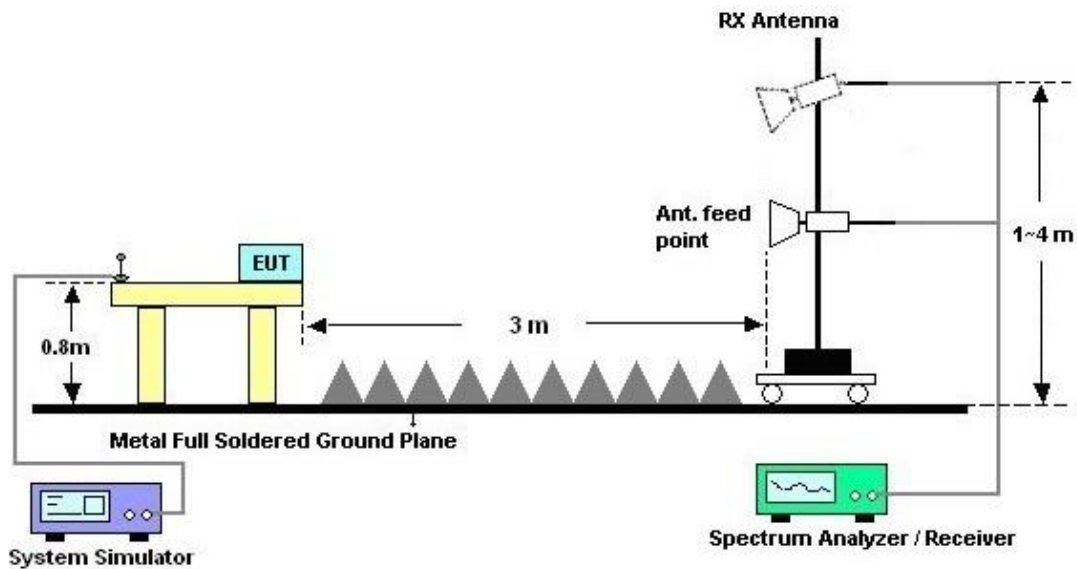
1. The EUT was placed on a turntable with 0.8 meter above ground.
2. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower.
3. The table was rotated 360 degrees to determine the position of the highest radiation.
4. The antenna height is adjusted between one to four meters above ground to find the maximum value of the field strength for both horizontal polarization and vertical polarization of the antenna.
5. For each suspected emission, the EUT was arranged to its worst case and then tune the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading.
6. Set the test-receiver system to Peak Detect Function and specified bandwidth with Maximum Hold Mode (RBW=120kHz/VBW=300kHz for frequency below 1GHz; RBW=1MHz VBW=3MHz (Peak), RBW=1MHz/VBW=10Hz (Average) for frequency above 1GHz).
7. If the emission level of the EUT in peak mode was 3 dB lower than the limit specified, peak values of EUT will be reported. Otherwise, the emission will be repeated by using the quasi-peak method and reported.
8. Emission level (dBμV/m) = 20 log Emission level (μV/m)
9. Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level

3.2.4. Test Setup of Radiated Emission

For radiated emissions from 30MHz to 1GHz



For radiated emissions above 1GHz



3.2.5. Test Result of Radiated Emission

Please refer to Appendix B.



4. List of Measuring Equipment

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
AC Power Source	ChainTek	APC-1000W	N/A	N/A	N/A	May 20, 2019~ May 27, 2019	N/A	Conduction (CO05-HY)
EMI Test Receiver	Rohde & Schwarz	ESR3	102388	9KHz~3.6GHz	Nov. 12, 2018	May 20, 2019~ May 27, 2019	Nov. 11, 2019	Conduction (CO05-HY)
LISN	Rohde & Schwarz	ENV216	100080	9kHz~30MHz	Nov. 14, 2018	May 20, 2019~ May 27, 2019	Nov. 13, 2019	Conduction (CO05-HY)
LISN	Rohde & Schwarz	ENV216	100081	9kHz~30MHz	Nov. 09, 2018	May 20, 2019~ May 27, 2019	Nov. 08, 2019	Conduction (CO05-HY)
Software	Rohde & Schwarz	EMC32 V10.30	N/A	N/A	N/A	May 20, 2019~ May 27, 2019	N/A	Conduction (CO05-HY)
LF Cable	HUBER + SUHNER	RG-214/U	LF01	N/A	Dec. 31, 2018	May 20, 2019~ May 27, 2019	Dec. 30, 2019	Conduction (CO05-HY)
Pulse Limiter	Rohde & Schwarz	ESH3-Z2	100851	N/A	Dec. 31, 2018	May 20, 2019~ May 27, 2019	Dec. 30, 2019	Conduction (CO05-HY)
Amplifier	SONOMA	310N	187311	9kHz~1GHz	Oct. 23, 2018	Jun. 04, 2019	Oct. 22, 2019	Radiation (03CH10-HY)
Bilog Antenna	TESEQ	CBL 6111D&00800 N1D01N-06	35413&02	30MHz~1GHz	Feb. 12, 2019	Jun. 04, 2019	Feb. 11, 2020	Radiation (03CH10-HY)
Horn Antenna	SCHWARZBECK	BBHA 9120 D	9120D-1325	1GHz ~ 18GHz	Oct. 02, 2018	Jun. 04, 2019	Oct. 01, 2019	Radiation (03CH10-HY)
Preamplifier	Jet-Power	JAP00101800- 30-10P	16011855000 4	1GHz~18GHz	Apr. 16, 2019	Jun. 04, 2019	Apr. 15, 2020	Radiation (03CH10-HY)
Spectrum Analyzer	Keysight	N9010A	MY54200485	10Hz ~ 44GHz	Nov. 02, 2018	Jun. 04, 2019	Nov. 01, 2019	Radiation (03CH10-HY)
Antenna Mast	EMEC	AM-BS-4500-B	N/A	1~4m	N/A	Jun. 04, 2019	N/A	Radiation (03CH10-HY)
Turn Table	EMEC	TT 2200	N/A	0~360 Degree	N/A	Jun. 04, 2019	N/A	Radiation (03CH10-HY)
Software	Audix	E3 6.2009-8-24	RK-001042	N/A	N/A	Jun. 04, 2019	N/A	Radiation (03CH10-HY)
EMI Test Receiver	Keysight	N9038A(MXE)	MY54130085	20Hz ~ 8.4GHz	Nov. 01, 2018	Jun. 04, 2019	Oct. 31, 2019	Radiation (03CH10-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 104 / 102	MY11692/4P E,MY11693/4 PE,MY2855/2	30M-1G	Nov. 08, 2018	Jun. 04, 2019	Nov. 07, 2019	Radiation (03CH10-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 104 / 102	MY11692/4P E,MY11693/4 PE,MY2855/2	1G-18G	Nov. 08, 2018	Jun. 04, 2019	Nov. 07, 2019	Radiation (03CH10-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 102	505134/2	30M~18GHz	Oct. 16, 2018	Jun. 04, 2019	Oct. 15, 2019	Radiation (03CH10-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 102	800740/2	30M~18GHz	Oct. 16, 2018	Jun. 04, 2019	Oct. 15, 2019	Radiation (03CH10-HY)
Base Station	Anritsu	MT8820C	6201432817	GSM / GPRS /WCDMA / LTE FDD/TDD with 44)	Dec. 12, 2018	Jun. 04, 2019	Dec. 11, 2020	Radiation (03CH10-HY)



5. Uncertainty of Evaluation

Uncertainty of Conducted Emission Measurement (150 kHz ~ 30 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	2.20
--	------

Uncertainty of Radiated Emission Measurement (30 MHz ~ 1000 MHz)

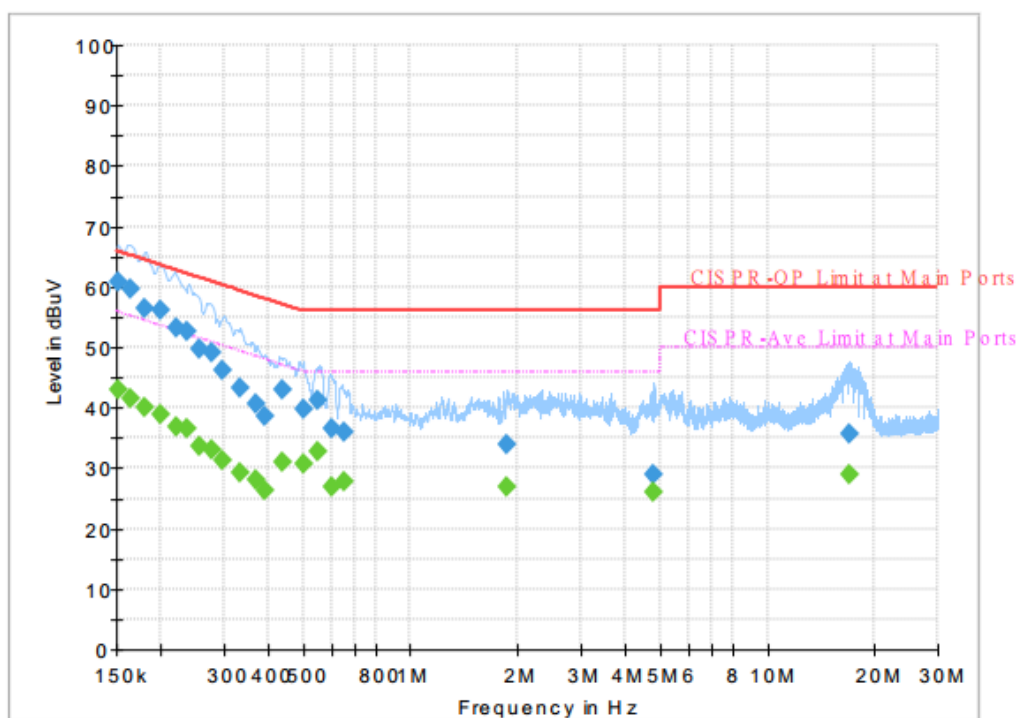
Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	5.60
--	------

Uncertainty of Radiated Emission Measurement (1000 MHz ~ 18000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	5.90
--	------

Appendix A. AC Conducted Emission Test Results

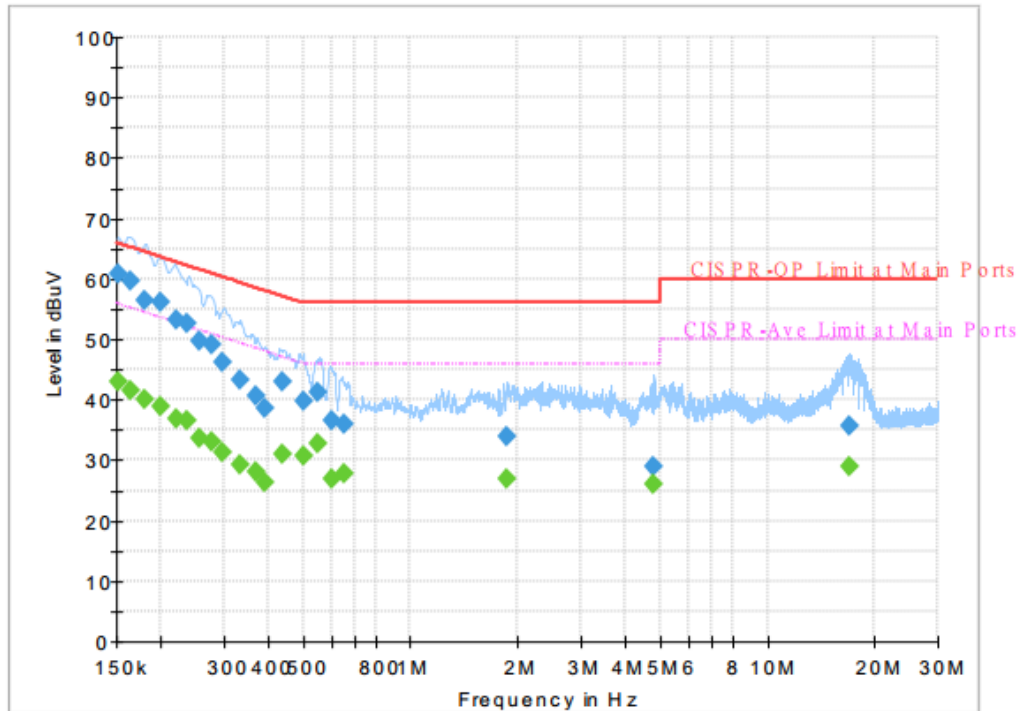
Test Engineer :	Eric Jeng and Jimmy Chang	Temperature :	22~25°C
		Relative Humidity :	52~55%
Test Voltage :	120Vac / 60Hz	Phase :	Line



Final Result

Frequency (MHz)	QuasiPeak (dBuV)	CAverage (dBuV)	Limit (dBuV)	Margin (dB)	Line	Filter	Corr. (dB)
0.152250	---	42.99	55.88	12.89	L1	OFF	19.5
0.152250	60.87	---	65.88	5.01	L1	OFF	19.5
0.163500	---	41.66	55.28	13.62	L1	OFF	19.5
0.163500	59.62	---	65.28	5.66	L1	OFF	19.5
0.179250	---	40.05	54.52	14.47	L1	OFF	19.5
0.179250	56.50	---	64.52	8.02	L1	OFF	19.5
0.199500	---	38.96	53.63	14.67	L1	OFF	19.5
0.199500	56.02	---	63.63	7.61	L1	OFF	19.5
0.219750	---	36.86	52.83	15.97	L1	OFF	19.5
0.219750	53.10	---	62.83	9.73	L1	OFF	19.5
0.237750	---	36.45	52.17	15.72	L1	OFF	19.5
0.237750	52.71	---	62.17	9.46	L1	OFF	19.5
0.255750	---	33.75	51.57	17.82	L1	OFF	19.5
0.255750	49.77	---	61.57	11.80	L1	OFF	19.5
0.278250	---	33.13	50.87	17.74	L1	OFF	19.5
0.278250	49.20	---	60.87	11.67	L1	OFF	19.5
0.298500	---	31.16	50.28	19.12	L1	OFF	19.5
0.298500	46.26	---	60.28	14.02	L1	OFF	19.5
0.334500	---	29.12	49.34	20.22	L1	OFF	19.5
0.334500	43.37	---	59.34	15.97	L1	OFF	19.5
0.370500	---	28.08	48.49	20.41	L1	OFF	19.5

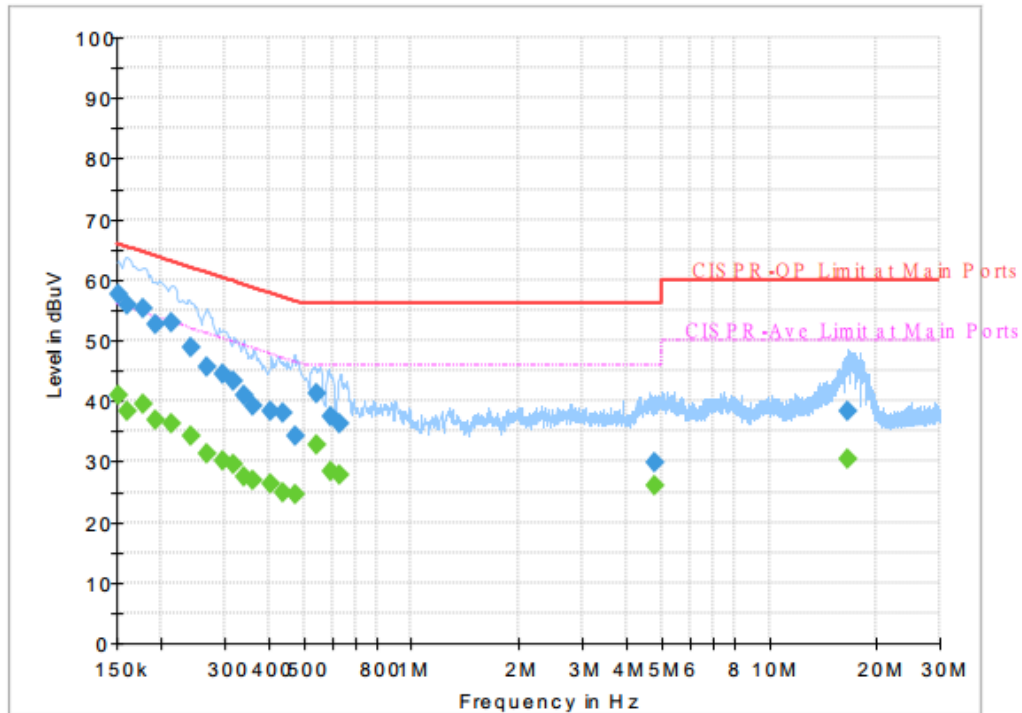
Test Engineer :	Eric Jeng and Jimmy Chang	Temperature :	22~25°C
		Relative Humidity :	52~55%
Test Voltage :	120Vac / 60Hz	Phase :	Line



Final Result

Frequency (MHz)	QuasiPeak (dBuV)	CAverage (dBuV)	Limit (dBuV)	Margin (dB)	Line	Filter	Corr. (dB)
0.370500	40.69	---	58.49	17.80	L1	OFF	19.5
0.390750	---	26.38	48.05	21.67	L1	OFF	19.5
0.390750	38.64	---	58.05	19.41	L1	OFF	19.5
0.440250	---	31.12	47.06	15.94	L1	OFF	19.5
0.440250	43.09	---	57.06	13.97	L1	OFF	19.5
0.501000	---	30.69	46.00	15.31	L1	OFF	19.5
0.501000	39.81	---	56.00	16.19	L1	OFF	19.5
0.550500	---	32.75	46.00	13.25	L1	OFF	19.5
0.550500	41.10	---	56.00	14.90	L1	OFF	19.5
0.602250	---	26.78	46.00	19.22	L1	OFF	19.6
0.602250	36.68	---	56.00	19.32	L1	OFF	19.6
0.651750	---	27.79	46.00	18.21	L1	OFF	19.6
0.651750	35.86	---	56.00	20.14	L1	OFF	19.6
1.871250	---	27.00	46.00	19.00	L1	OFF	19.6
1.871250	33.82	---	56.00	22.18	L1	OFF	19.6
4.816500	---	26.16	46.00	19.84	L1	OFF	19.7
4.816500	29.07	---	56.00	26.93	L1	OFF	19.7
16.878750	---	29.00	50.00	21.00	L1	OFF	20.2
16.878750	35.77	---	60.00	24.23	L1	OFF	20.2

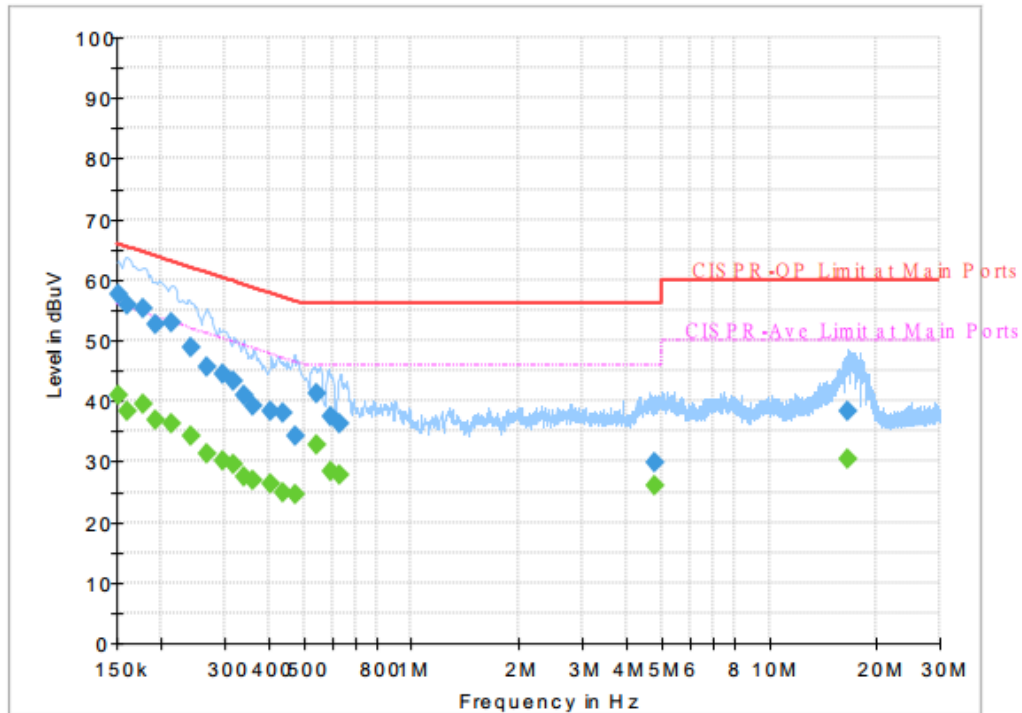
Test Engineer :	Eric Jeng and Jimmy Chang	Temperature :	22~25°C
		Relative Humidity :	52~55%
Test Voltage :	120Vac / 60Hz	Phase :	Neutral



Final Result

Frequency (MHz)	QuasiPeak (dBuV)	CAverage (dBuV)	Limit (dBuV)	Margin (dB)	Line	Filter	Corr. (dB)
0.152250	---	41.06	55.88	14.82	N	OFF	19.5
0.152250	57.61	---	65.88	8.27	N	OFF	19.5
0.161250	---	38.37	55.40	17.03	N	OFF	19.5
0.161250	55.98	---	65.40	9.42	N	OFF	19.5
0.177000	---	39.48	54.63	15.15	N	OFF	19.5
0.177000	55.28	---	64.63	9.35	N	OFF	19.5
0.192750	---	36.70	53.92	17.22	N	OFF	19.5
0.192750	52.49	---	63.92	11.43	N	OFF	19.5
0.213000	---	36.23	53.09	16.86	N	OFF	19.5
0.213000	52.87	---	63.09	10.22	N	OFF	19.5
0.242250	---	34.31	52.02	17.71	N	OFF	19.5
0.242250	48.80	---	62.02	13.22	N	OFF	19.5
0.267000	---	31.38	51.21	19.83	N	OFF	19.5
0.267000	45.72	---	61.21	15.49	N	OFF	19.5
0.298500	---	30.16	50.28	20.12	N	OFF	19.5
0.298500	44.53	---	60.28	15.75	N	OFF	19.5
0.318750	---	29.63	49.74	20.11	N	OFF	19.5
0.318750	43.22	---	59.74	16.52	N	OFF	19.5
0.339000	---	27.63	49.23	21.60	N	OFF	19.5
0.339000	40.97	---	59.23	18.26	N	OFF	19.5
0.361500	---	26.80	48.69	21.89	N	OFF	19.5

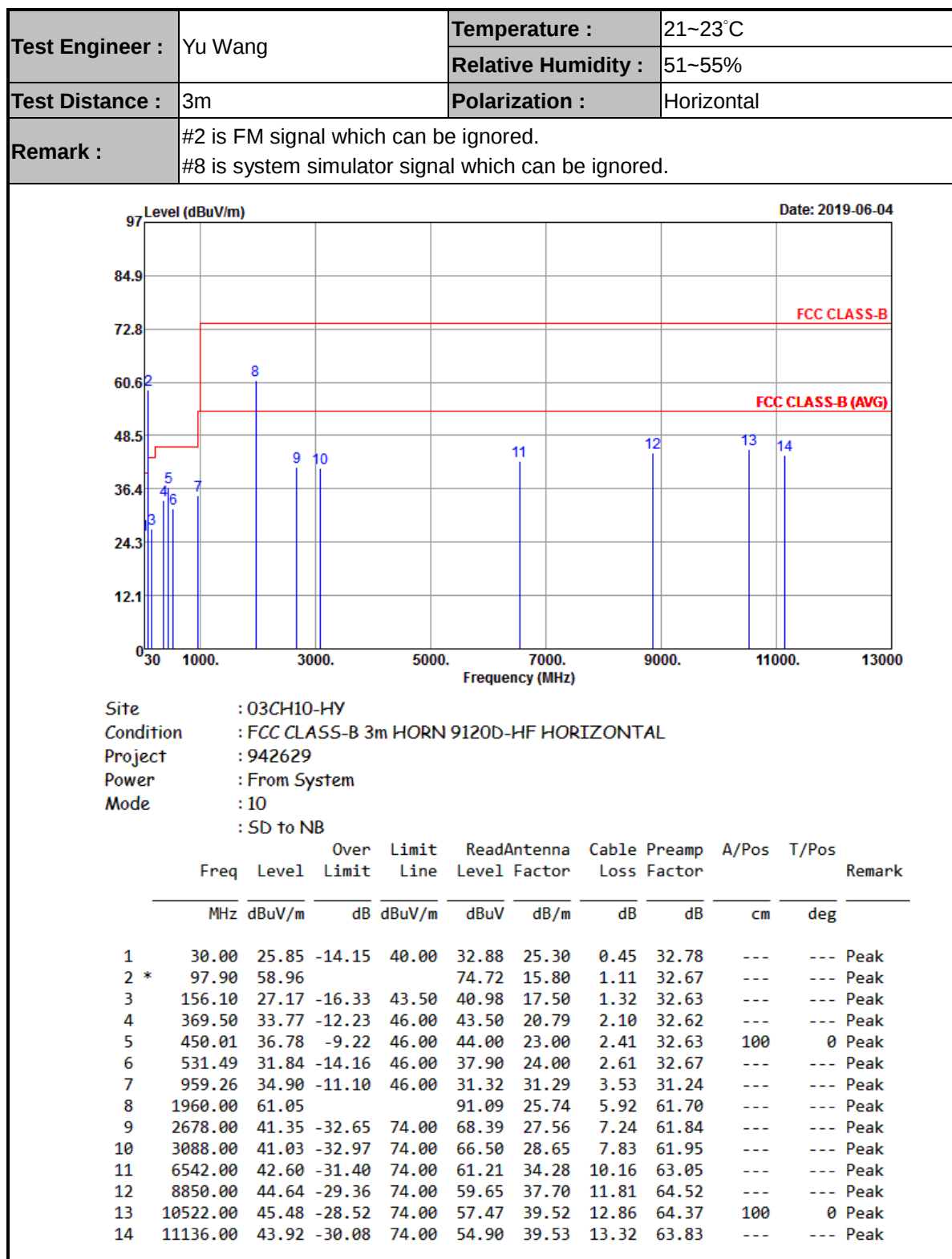
Test Engineer :	Eric Jeng and Jimmy Chang	Temperature :	22~25°C
		Relative Humidity :	52~55%
Test Voltage :	120Vac / 60Hz	Phase :	Neutral


Final Result

Frequency (MHz)	QuasiPeak (dBuV)	CAverage (dBuV)	Limit (dBuV)	Margin (dB)	Line	Filter	Corr. (dB)
0.361500	39.13	---	58.69	19.56	N	OFF	19.5
0.404250	---	26.24	47.77	21.53	N	OFF	19.5
0.404250	38.42	---	57.77	19.35	N	OFF	19.5
0.438000	---	24.95	47.10	22.15	N	OFF	19.5
0.438000	38.02	---	57.10	19.08	N	OFF	19.5
0.471750	---	24.50	46.48	21.98	N	OFF	19.5
0.471750	34.23	---	56.48	22.25	N	OFF	19.5
0.541500	---	32.86	46.00	13.14	N	OFF	19.5
0.541500	41.20	---	56.00	14.80	N	OFF	19.5
0.597750	---	28.26	46.00	17.74	N	OFF	19.5
0.597750	37.33	---	56.00	18.67	N	OFF	19.5
0.633750	---	27.81	46.00	18.19	N	OFF	19.6
0.633750	36.27	---	56.00	19.73	N	OFF	19.6
4.785000	---	26.16	46.00	19.84	N	OFF	19.7
4.785000	29.85	---	56.00	26.15	N	OFF	19.7
16.593000	---	30.41	50.00	19.59	N	OFF	20.2
16.593000	38.23	---	60.00	21.77	N	OFF	20.2

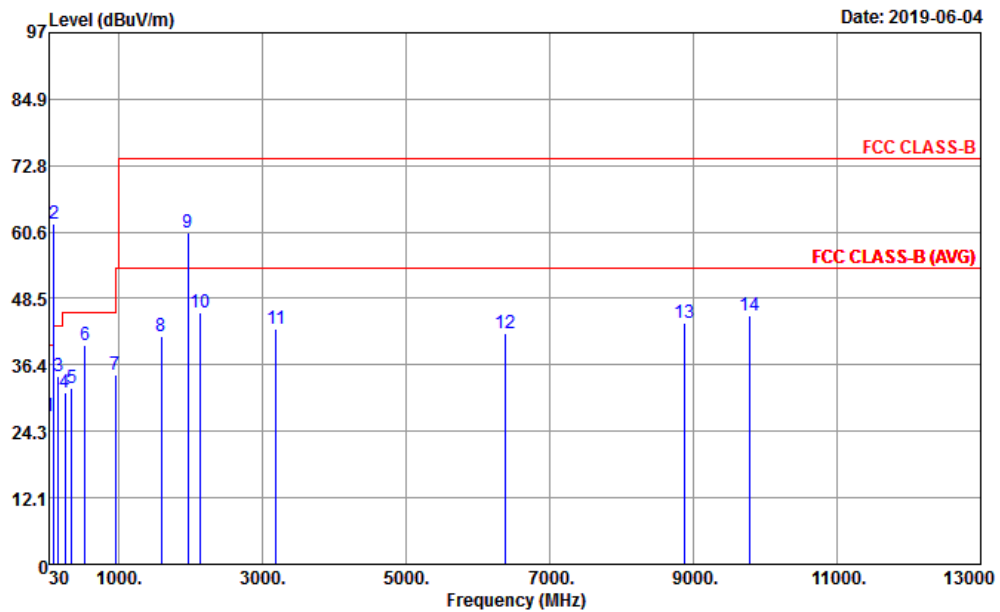


Appendix B. Radiated Emission Test Result





Test Engineer :	Yu Wang	Temperature :	21~23°C
		Relative Humidity :	51~55%
Test Distance :	3m	Polarization :	Vertical
Remark :	#2 is FM signal which can be ignored. #9 is system simulator signal which can be ignored.		



Site : 03CH10-HY
 Condition : FCC CLASS-B 3m HORN 9120D-HF VERTICAL
 Project : 942629
 Power : From System
 Mode : 10
 : SD to NB

	Freq	Level	Over Limit	Limit Line	ReadAntenna Level	Cable Preamp Loss	Factor	A/Pos	T/Pos	Remark	
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1	30.00	27.05	-12.95	40.00	34.08	25.30	0.45	32.78	---	---	Peak
2 *	97.90	62.13			77.89	15.80	1.11	32.67	---	---	Peak
3	156.10	34.23	-9.27	43.50	48.04	17.50	1.32	32.63	---	---	Peak
4	252.13	31.37	-14.63	46.00	43.40	18.80	1.77	32.60	---	---	Peak
5	345.25	32.04	-13.96	46.00	42.45	20.21	1.99	32.61	---	---	Peak
6	532.46	39.90	-6.10	46.00	45.96	24.00	2.61	32.67	100	0	Peak
7	955.38	34.58	-11.42	46.00	31.13	31.21	3.52	31.28	---	---	Peak
8	1596.00	41.66	-32.34	74.00	73.31	25.01	5.04	61.70	---	---	Peak
9	1960.00	60.48			90.52	25.74	5.92	61.70	---	---	Peak
10	2128.00	46.06	-27.94	74.00	74.34	27.14	6.31	61.73	100	0	Peak
11	3190.00	43.04	-30.96	74.00	68.53	28.62	7.90	62.01	---	---	Peak
12	6378.00	42.02	-31.98	74.00	61.49	33.57	9.94	62.98	---	---	Peak
13	8874.00	44.05	-29.95	74.00	59.19	37.60	11.81	64.55	---	---	Peak
14	9792.00	45.32	-28.68	74.00	59.09	38.82	12.17	64.76	---	---	Peak

————THE END————