



FCC TEST REPORT

FCC ID : IHDT56XP3
Equipment : Mobile Cellular Phone
Brand Name : Motorola
Model Name : XT1962-5
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 Sep. 08, 2018 and testing was started from Sep. 24, 2018 and completed on Oct. 17, 2018. We, SPORTON INTERNATIONAL INC., 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.)



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History of this test report

Report No.	Version	Description	Issued Date
FC890804-02	01	Initial issue of report	Oct. 31, 2018



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 9.94 dB at 0.195 MHz
3.2	15.109	Radiated Emission	Pass	Under limit 3.26 dB at 84.270 MHz

Reviewed by: Louis Wu

Report Producer: Natasha Hsieh



1. General Description

1.1. Product Feature of Equipment Under Test

Product Feature	
Equipment	Mobile Cellular Phone
Brand Name	Motorola
Model Name	XT1962-5
Sample 1	Dual SIM
Sample 2	Single SIM
FCC ID	IHDT56XP3
IMEI Code	Conduction : MEI 1: 359505090015277 IMEI 2: 359505090015285 IMEI : 359504090002666 Radiation : IMEI 1: 359505090015632 IMEI 2: 359505090015640 IMEI : 359504090002682
EUT supports Radios application	GSM/EGPRS/WCDMA/HSPA/LTE/GNSS/NFC/FM WLAN 11b/g/n HT20 WLAN 11a/n HT20/HT40 Bluetooth BR/EDR/LE
HW Version	DVT1B
EUT Stage	Identical Prototype

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

Accessory List	
AC Adapter 1	Brand Name : Motorola
	Model Name : SC-51
	Manufacturer : Salom
AC Adapter 1	Brand Name : Motorola
	Model Name : SC-52
	Manufacturer : Salom
AC Adapter 1	Brand Name : Motorola
	Model Name : SC-55
	Manufacturer : Salom
AC Adapter 1	Brand Name : Motorola
	Model Name : SC-53
	Manufacturer : Salom
AC Adapter 2	Brand Name : Motorola
	Model Name : SC-51
	Manufacturer : Chenyang
AC Adapter 2	Brand Name : Motorola
	Model Name : SC-52
	Manufacturer : Chenyang
AC Adapter 2	Brand Name : Motorola
	Model Name : SC-55
	Manufacturer : Chenyang
AC Adapter 2	Brand Name : Motorola
	Model Name : SC-53
	Manufacturer : Chenyang
Battery	Brand Name : Motorola
	Model Name : JG30
	Manufacturer : Amperex
Earphone	Brand Name : Motorola
	Model Name : SH38C37773
	Manufacturer : Lyand
USB Cable 1	Brand Name : Cabletech
	Model Name : SKN6473A
USB Cable 2	Brand Name : Saibao
	Model Name : SKN6473A
USB Cable 3	Brand Name : Luxshare
	Model Name : SKN6473A

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 ~ 1909.8 MHz WCDMA Band V: 826.4 MHz ~ 846.6 MHz WCDMA Band II: 1852.4 MHz ~ 1907.6 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 26: 814.7 MHz ~ 848.3 MHz LTE Band 38: 2572.5 MHz ~ 2617.5 MHz LTE Band 41: 2537.5 MHz ~ 2652.5 MHz 802.11b/g/n: 2412 MHz ~ 2462 MHz 802.11a/n: 5180 MHz ~ 5240 MHz; 5260 MHz ~ 5320 MHz; 5500 MHz ~ 5580 MHz and 5660 MHz ~ 5700 MHz ; 5745 MHz ~ 5825 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 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 26: 869.7 MHz ~ 893.3 MHz LTE Band 38: 2572.5 MHz ~ 2617.5 MHz LTE Band 41: 2537.5 MHz ~ 2652.5 MHz 802.11b/g/n: 2412 MHz ~ 2462 MHz 802.11a/n: 5180 MHz ~ 5240 MHz; 5260 MHz ~ 5320 MHz; 5500 MHz ~ 5580 MHz and 5660 MHz ~ 5700 MHz ; 5745 MHz ~ 5825 MHz Bluetooth: 2402 MHz ~ 2480 MHz GNSS : 1559 MHz ~ 1610 MHz (GPS/Glonass) NFC : 13.56 MHz FM : 88 MHz ~ 108 MHz

Standards-related Product Specification	
Antenna Type	WWAN : Main : Fixed Internal Antenna and Dipole Antenna Aux. : Fixed Internal Antenna and Dipole Antenna WLAN : Monopole Antenna Bluetooth : Monopole Antenna GPS/Glonass: Monopole Antenna NFC: Coil Antenna FM : Using earphone as antenna
Type of Modulation	GSM: GMSK GPRS: GMSK EDGE(MCS 0-4): GMSK / (MCS 5-9): 8PSK WCDMA: QPSK (Uplink) HSDPA: 16QAM (Downlink) HSUPA: QPSK (Uplink) LTE: QPSK / 16QAM 802.11b : DSSS (DBPSK / DQPSK / CCK) 802.11a/g/n : OFDM (BPSK / QPSK / 16QAM / 64QAM) Bluetooth LE : GFSK Bluetooth (1Mbps) : GFSK Bluetooth (2Mbps) : $\pi/4$ -DQPSK Bluetooth (3Mbps) : 8-DPSK GPS : BPSK NFC: ASK FM

1.3. Modification of EUT

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

1.4. Test Location

Sporton Lab is accredited to ISO 17025 by Taiwan Accreditation Foundation (TAF code : 1190) and the FCC designation No. TW1093 and TW1098 under the FCC 2.948(e) by Mutual Recognition Agreement (MRA) in FCC Test.

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

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

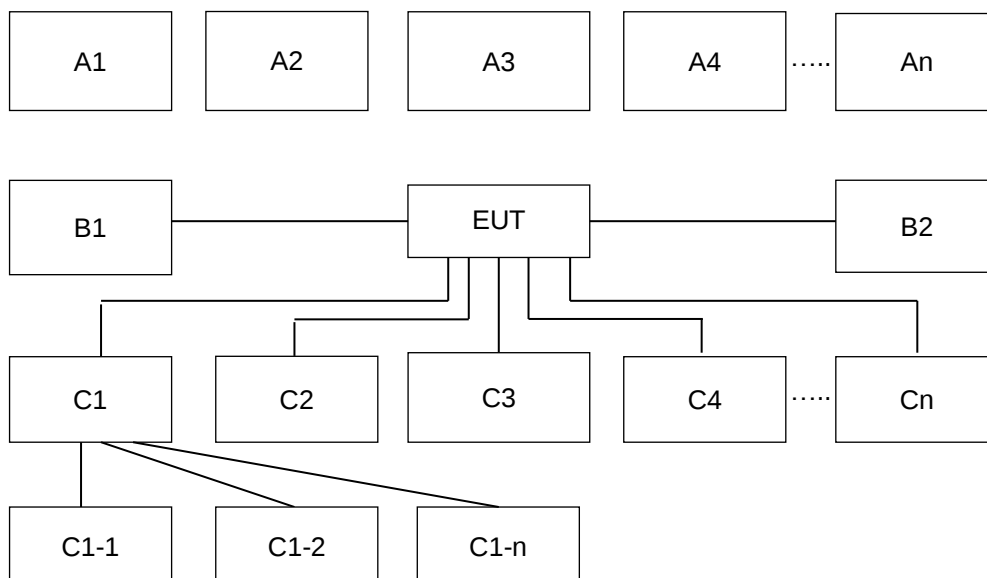
The EUT has been associated with peripherals pursuant to ANSI C63.4-2014 and configuration operated in a manner tended to maximize its emission characteristics in a typical application.

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 Idle + Bluetooth Idle + WLAN Idle + MPEG4 + Earphone + USB Cable 1 Type C (Charging from Adapter 1) + Battery < 10% + SIM 1 for Sample 1
	Mode 2 :WCDMA Band V Idle + Bluetooth Idle + WLAN Link + Wireless Display + Earphone + USB Cable 2 Type C (Charging from Adapter 2) + Battery 50% + SIM 2 for Sample 1
	Mode 3 :GSM1900 Idle + Bluetooth Idle + WLAN Idle + Camera (Front) + Earphone + USB Cable 3 Type C (Charging from Adapter 1) + Battery > 90% + SIM 1 for Sample 1
	Mode 4 :WCDMA Band II Idle + Bluetooth Idle + WLAN Idle + Camera (Back) + Earphone + USB Cable 1 Type C (Charging from Adapter 2) + Battery < 10% + SIM 1 for Sample 1
	Mode 5 :GSM1900 Idle + Bluetooth Idle + WLAN Idle + NFC On + Earphone + USB Cable 3 Type C (Charging from Adapter 1) + Battery > 90% for Sample 2
	Mode 6 :FM Rx (88 MHz) + Earphone + USB Cable 1 Type C (Charging from Adapter 1) + Battery < 10% for Sample 1
	Mode 7 :FM Rx (98 MHz) + Earphone + USB Cable 2 Type C (Charging from Adapter 2) + Battery 50% for Sample 1
	Mode 8 :FM Rx (108 MHz) + Earphone + USB Cable 3 Type C (Charging from Adapter 1) + Battery > 90% for Sample 1
	Mode 9 :FM Rx (88 MHz) + Earphone + USB Cable 1 Type C (Charging from Adapter 1) + Battery < 10% for Sample 2
	Mode 10 :GSM850 Idle + Bluetooth Idle + WLAN Idle + Earphone + USB Cable 1 Type C (Data Link with Notebook) + SIM 1 for Sample 1
	Mode 11 :WCDMA Band V Idle + Bluetooth Idle + WLAN Idle + Earphone + USB Cable 2 Type C (Data Link with Notebook) + SIM 2 for Sample 1
	Mode 12 :GSM 1900 Idle + Bluetooth Idle + WLAN Idle + Earphone + USB Cable 3 Type C (Data Link with Notebook) + SIM 1 for Sample 1
	Mode 13 :GSM850 Idle + Bluetooth Idle + WLAN Idle + Earphone + USB Cable 1 Type C (Data Link with Notebook) for Sample 2

Test Items	Function Type
Radiated Emissions	Mode 1 :GSM850 Idle + Bluetooth Idle + WLAN Idle + MPEG4 + Earphone + USB Cable 1 Type C (Charging from Adapter 1) + Battery < 10% + SIM 1 for Sample 1
	Mode 2 :WCDMA Band V Idle + Bluetooth Idle + WLAN Link + Wireless Display + Earphone + USB Cable 2 Type C (Charging from Adapter 2) + Battery 50% + SIM 2 for Sample 1
	Mode 3 :GSM1900 Idle + Bluetooth Idle + WLAN Idle + Camera (Front) + Earphone + USB Cable 3 Type C (Charging from Adapter 1) + Battery > 90% + SIM 1 for Sample 1
	Mode 4 :WCDMA Band II Idle + Bluetooth Idle + WLAN Idle + Camera (Back) + Earphone + USB Cable 1 Type C (Charging from Adapter 2) + Battery < 10% + SIM 1 for Sample 1
	Mode 5 :WCDMA Band V Idle + Bluetooth Idle + WLAN Link + NFC On + Wireless Display + Earphone + USB Cable 2 Type C (Charging from Adapter 2) + Battery 50% for Sample 1
	Mode 6 :FM Rx (88 MHz) + Earphone + USB Cable 1 Type C (Charging from Adapter 1) + Battery < 10% for Sample 1
	Mode 7 :FM Rx (98 MHz) + Earphone + USB Cable 2 Type C (Charging from Adapter 2) + Battery 50% for Sample 1
	Mode 8 :FM Rx (88 MHz) + Earphone + USB Cable 1 Type C (Charging from Adapter 1) + Battery < 10% for Sample 2
	Mode 9 :FM Rx (88 MHz) + Earphone + USB Cable 1 Type C (Charging from Adapter 2 (IN Local Build)) + Battery < 10%
	Mode 10 :GSM850 Idle + Bluetooth Idle + WLAN Idle + Earphone + USB Cable 1 Type C (Data Link with Notebook) + SIM 1 for Sample 1
	Mode 11 :WCDMA Band V Idle + Bluetooth Idle + WLAN Idle + Earphone + USB Cable 2 Type C (Data Link with Notebook) + SIM 2 for Sample 1
	Mode 12 :GSM 1900 Idle + Bluetooth Idle + WLAN Idle + Earphone + USB Cable 3 Type C (Data Link with Notebook) + SIM 1 for Sample 1
	Mode 13 :GSM850 Idle + Bluetooth Idle + WLAN Idle + Earphone + USB Cable 1 Type C (Data Link with Notebook) for Sample 2
Remark: 1. The worst case of AC is mode 13; only the test data of this mode was reported. 2. The worst case of RE is mode 13; 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



Conduction Test Setup									
No.	Wireless Station	Connection Type	Test Mode						
			1	2	3	4	5	6	7
A1	BT Earphone	Bluetooth	X	X	X	X	X		
A2	System Simulator	GSM/UMTS/CDMA/WCDMA/LTE/FM	X	X	X	X	X	X	X
A3	AP router	WiFi	X	X	X	X	X	-	-
A4	Wireless Display	Wireless WiFi	-	X	-	-	-	-	-
A5	Notebook	WiFi	-	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	X
B2	Power from system	AC Power Cable	-	-	-	-	-	-	-
No.	Setup Peripherals	Connection Type	1	2	3	4	5	6	7
C1	Earphone	Earphone jack	X	X	X	X	X	X	X
C2	SD card	SD I/O interface without Cable	X	X	X	X	X	X	X
C3	Notebook	USB Cable	-	-	-	-	-	-	-
C3-1	iPod	USB Cable to C1	-	-	-	-	-	-	-
C3-2	Notebook	RJ-45 Cable to C1	-	-	-	-	-	-	-
C3-3	AP router	RJ-45 Cable to C1	-	-	-	-	-	-	-

Conduction Test Setup									
No.	Wireless Station	Connection Type	Test Mode						
			8	9	10	11	12	13	
A1	BT Earphone	Bluetooth			X	X	X	X	
A2	System Simulator	GSM/UMTS/CDMA/ WCDMA/LTE/FM	X	X	X	X	X	X	
A3	AP router	WiFi	-	-	X	X	X	X	
A4	Wireless Display	Wireless WiFi	-	-	-	-	-	-	
A5	Notebook	WiFi	-	-	-	-	-	-	
No.	Power Source	Connection Type	8	9	10	11	12	13	
B1	AC : 120V/60Hz	AC Power Cable	X	X	-	-	-	-	
B2	Power from system	AC Power Cable	-	-	X	X	X	X	
No.	Setup Peripherals	Connection Type	8	9	10	11	12	13	
C1	Earphone	Earphone jack	X	X	X	X	X	X	
C2	SD card	SD I/O interface without Cable	X	X	X	X	X	X	
C3	Notebook	USB Cable	-	-	X	X	X	X	
C3-1	iPod	USB Cable to C1	-	-	X	X	X	X	
C3-2	Notebook	RJ-45 Cable to C1	-	-	X	X	X	X	
C3-3	AP router	RJ-45 Cable to C1	-	-	X	X	X	X	

Radiation Test Setup									
No.	Wireless Station	Connection Type	Test Mode						
			1	2	3	4	5	6	7
A1	BT Earphone	Bluetooth	X	X	X	X	X		
A2	System Simulator	GSM/UMTS/CDMA/ WCDMA/LTE/FM	X	X	X	X	X	X	X
A3	AP router	WiFi	X	X	X	X	X	-	-
A4	Wireless Display	Wireless WiFi	-	X	-	-	X	-	-
A5	Notebook	WiFi	-	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	X
B2	Power from system	AC Power Cable	-	-	-	-	-	-	-
No.	Setup Peripherals	Connection Type	1	2	3	4	5	6	7
C1	Earphone	Earphone jack	X	X	X	X	X	X	X
C2	SD card	SD I/O interface without Cable	X	X	X	X	X	X	X
C3	Notebook	USB Cable	-	-	-	-	-	-	-
C3-1	iPod	USB Cable to C1	-	-	-	-	-	-	-
C3-2	Notebook	RJ-45 Cable to C1	-	-	-	-	-	-	-
C3-3	AP router	RJ-45 Cable to C1	-	-	-	-	-	-	-

Radiation Test Setup									
No.	Wireless Station	Connection Type	Test Mode						
			8	9	10	11	12	13	
A1	BT Earphone	Bluetooth			X	X	X	X	
A2	System Simulator	GSM/UMTS/CDMA/WCDMA/LTE/FM	X	X	X	X	X	X	
A3	AP router	WiFi	-	-	X	X	X	X	
A4	Wireless Display	Wireless WiFi	-	-	-	-	-	-	
A5	Notebook	WiFi	-	-	-	-	-	-	
No.	Power Source	Connection Type	8	9	10	11	12	13	
B1	AC : 120V/60Hz	AC Power Cable	X	X	-	-	-	-	
B2	Power from system	AC Power Cable	-	-	X	X	X	X	
No.	Setup Peripherals	Connection Type	8	9	10	11	12	13	
C1	Earphone	Earphone jack	X	X	X	X	X	X	
C2	SD card	SD I/O interface without Cable	X	X	X	X	X	X	
C3	Notebook	USB Cable	-	-	X	X	X	X	
C3-1	iPod	USB Cable to C1	-	-	X	X	X	X	
C3-2	Notebook	RJ-45 Cable to C1	-	-	X	X	X	X	
C3-3	AP router	RJ-45 Cable to C1	-	-	X	X	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	Anritsu	MT8820C	N/A	N/A	Unshielded, 1.8 m
2.	System Simulator	R&S	CMU 200	N/A	N/A	Unshielded, 1.8 m
3.	Bluetooth Earphone	Sony Ericsson	MW600	PY7DDA-2029	N/A	N/A
4.	WLAN AP	ASUS	RT-AC66U	MSQ-RTAC66U	N/A	Unshielded, 1.8 m
5.	LCD Monitor	DELL	U2410	FCC DoC	Shielded, 1.6 m	Unshielded, 1.8 m
6.	iPod	Apple	A1285	FCC DoC	Shielded, 1.0 m	N/A
7.	Wireless Display	Google	N/A	N/A	N/A	N/A
8.	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
9.	Notebook	DELL	Latitude 5480	FCC DoC	N/A	AC I/P: Unshielded, 1.2 m DC O/P: Shielded, 1.8 m
10.	SD Card	Transcend	MicroSD HC	FCC DoC	N/A	N/A
11.	SD Card	SanDisk	MicroSD HC	FCC DoC	N/A	N/A



2.4. EUT Operation Test Setup

The EUT was in GSM or WCDMA 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 "Video player" to play MPEG4 files.
3. Turn on camera to capture images.
4. Turn on FM function.
5. Picture synchronization on LCD Monitor via Wireless Display.
6. EUT links with Notebook and executes ping

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.

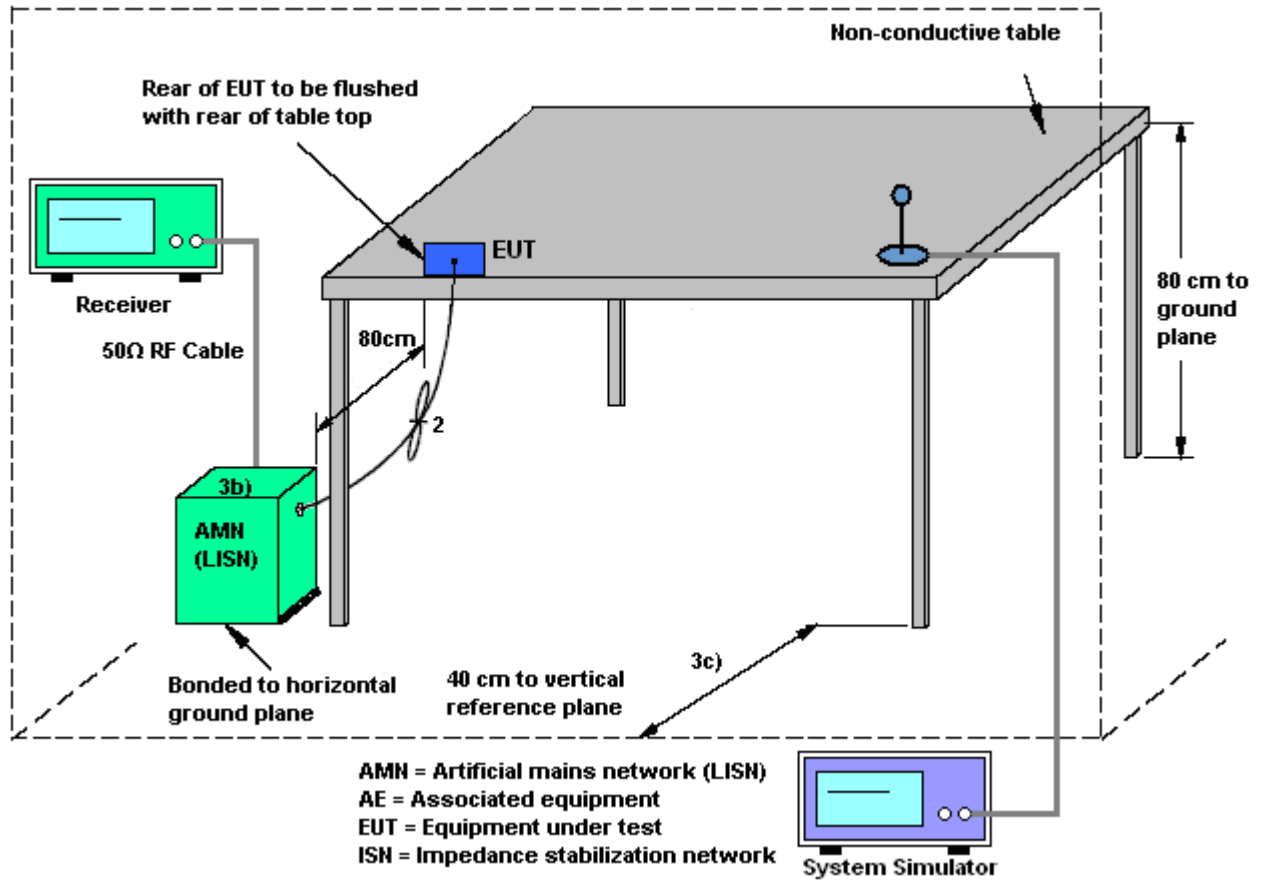
3.1.2 Measuring Instruments

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

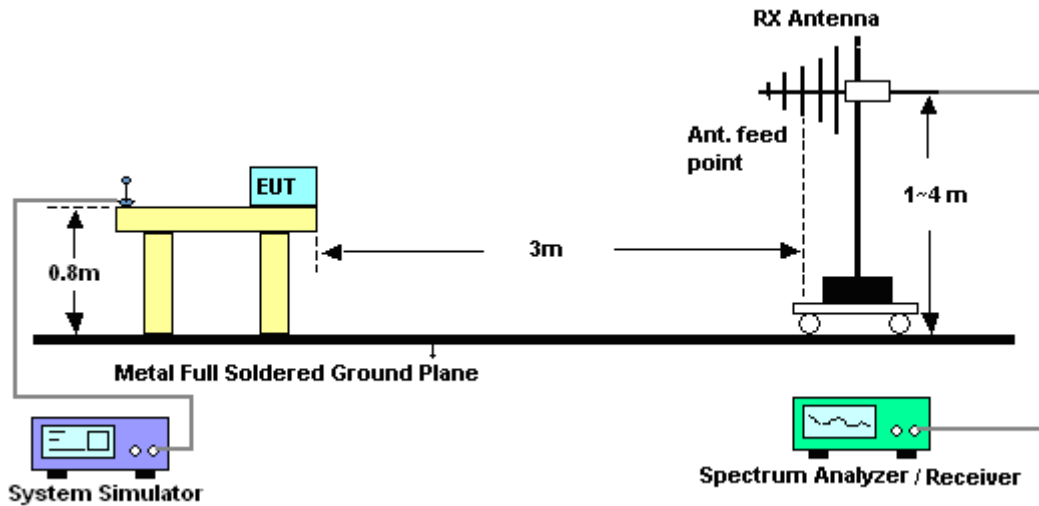
Refer a test equipment and calibration data table in this test report.

3.2.3. Test Procedures

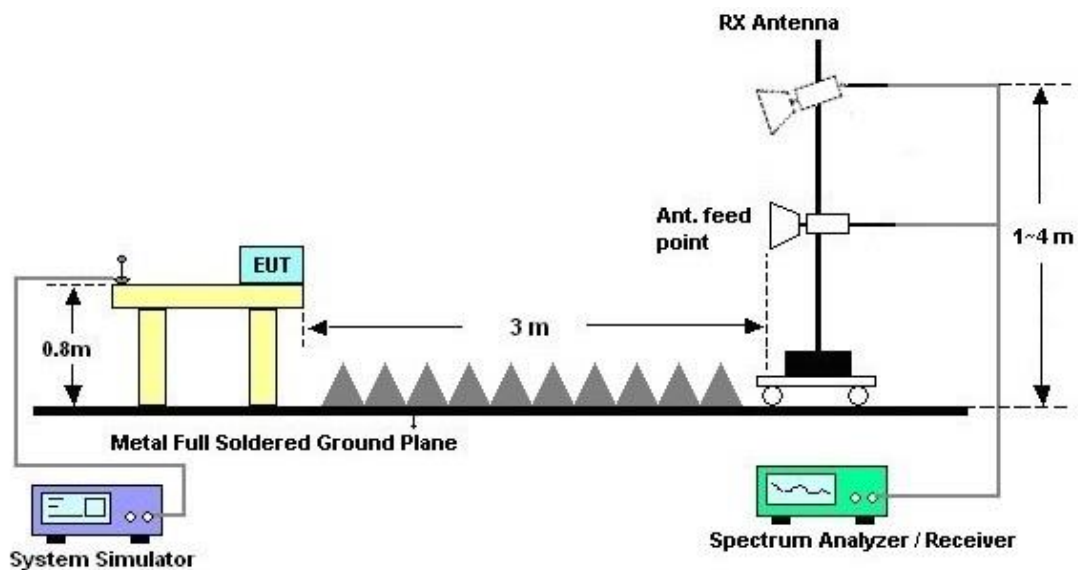
1. The EUT was placed on a turntable with 0.8 meter above ground.
2. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower.
3. The table was rotated 360 degrees to determine the position of the highest radiation.
4. The antenna is a Bi-Log antenna and its 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	Sep. 24, 2018~ Oct. 17, 2018	N/A	Conduction (CO05-HY)
EMI Test Receiver	Rohde & Schwarz	ESR3	102388	9KHz~3.6GHz	Dec. 08, 2017	Sep. 24, 2018~ Oct. 17, 2018	Dec. 07, 2018	Conduction (CO05-HY)
Hygrometer	Testo	608-H1	34913912	N/A	Mar. 06, 2018	Sep. 24, 2018~ Oct. 17, 2018	Mar. 05, 2019	Conduction (CO05-HY)
LISN	Rohde & Schwarz	ENV216	100080	9kHz~30MHz	Nov. 30, 2017	Sep. 24, 2018~ Oct. 17, 2018	Nov. 29, 2018	Conduction (CO05-HY)
Software	Rohde & Schwarz	EMC32 V10.30	N/A	N/A	N/A	Sep. 24, 2018~ Oct. 17, 2018	N/A	Conduction (CO05-HY)
LF Cable	HUBER + SUHNER	RG-214/U	LF01	N/A	Jan. 03, 2018	Sep. 24, 2018~ Oct. 17, 2018	Jan. 02, 2019	Conduction (CO05-HY)
Pulse Limiter	Rohde & Schwarz	ESH3-Z2	100851	N/A	Jan. 03, 2018	Sep. 24, 2018~ Oct. 17, 2018	Jan. 02, 2019	Conduction (CO05-HY)
Amplifier	SONOMA	310N	187311	9kHz~1GHz	Oct. 19, 2017	Sep. 24, 2018~ Oct. 10, 2018	Oct. 18, 2018	Radiation (03CH10-HY)
Bilog Antenna	TESEQ	CBL 6111D&0080 0N1D01N-06	35413&02	30MHz~1GHz	Dec. 18, 2017	Sep. 24, 2018~ Oct. 10, 2018	Dec. 17, 2018	Radiation (03CH10-HY)
Horn Antenna	SCHWARZBE CK	BBHA 9120 D	9120D-1522	1GHz ~ 18GHz	Sep. 07, 2018	Sep. 24, 2018~ Oct. 10, 2018	Sep. 06, 2019	Radiation (03CH10-HY)
Hygrometer	TECPEL	DTM-303B	TP140320	N/A	Oct. 12, 2017	Sep. 24, 2018~ Oct. 10, 2018	Oct. 11, 2018	Radiation (03CH10-HY)
Preamplifier	Jet-Power	JAP0010180 0-30-10P	1601185500 04	1GHz~18GHz	Apr. 17, 2018	Sep. 24, 2018~ Oct. 10, 2018	Apr. 16, 2019	Radiation (03CH10-HY)
Spectrum Analyzer	Keysight	N9010A	MY5420048 5	10Hz ~ 44GHz	Oct. 31, 2017	Sep. 24, 2018~ Oct. 10, 2018	Oct. 30, 2018	Radiation (03CH10-HY)
Controller	EMEC	EM 1000	N/A	Control Turn table & Ant Mast	N/A	Sep. 24, 2018~ Oct. 10, 2018	N/A	Radiation (03CH10-HY)
Antenna Mast	EMEC	AM-BS-4500 -B	N/A	1~4m	N/A	Sep. 24, 2018~ Oct. 10, 2018	N/A	Radiation (03CH10-HY)
Turn Table	EMEC	TT 2200	N/A	0~360 Degree	N/A	Sep. 24, 2018~ Oct. 10, 2018	N/A	Radiation (03CH10-HY)
Software	Audix	E3 6.2009-8-24	RK-001042	N/A	N/A	Sep. 24, 2018~ Oct. 10, 2018	N/A	Radiation (03CH10-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 104 / 102	MY11692/4P E, MY11693/4P E, MY2855/2	30M-1G	Nov. 14, 2017	Sep. 24, 2018~ Oct. 10, 2018	Nov. 13, 2018	Radiation (03CH10-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 104 / 102	MY11692/4P E, MY11693/4P E, MY2855/2	1G-18G	Nov. 14, 2017	Sep. 24, 2018~ Oct. 10, 2018	Nov. 13, 2018	Radiation (03CH10-HY)
EMI Test Receiver	Agilent	N9038A (MXE)	MY5329005 3	20Hz to 26.5GHz	Jan. 16, 2018	Sep. 24, 2018~ Oct. 10, 2018	Jan. 15, 2019	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
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Uncertainty of Radiated Emission Measurement (30 MHz ~ 1000 MHz)

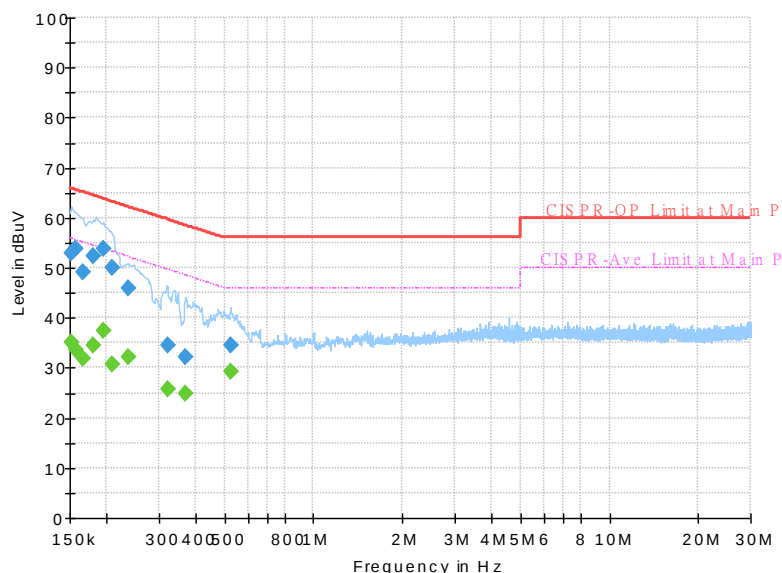
Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	5.70
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Uncertainty of Radiated Emission Measurement (1000 MHz ~ 18000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	5.50
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Appendix A. AC Conducted Emission Test Results

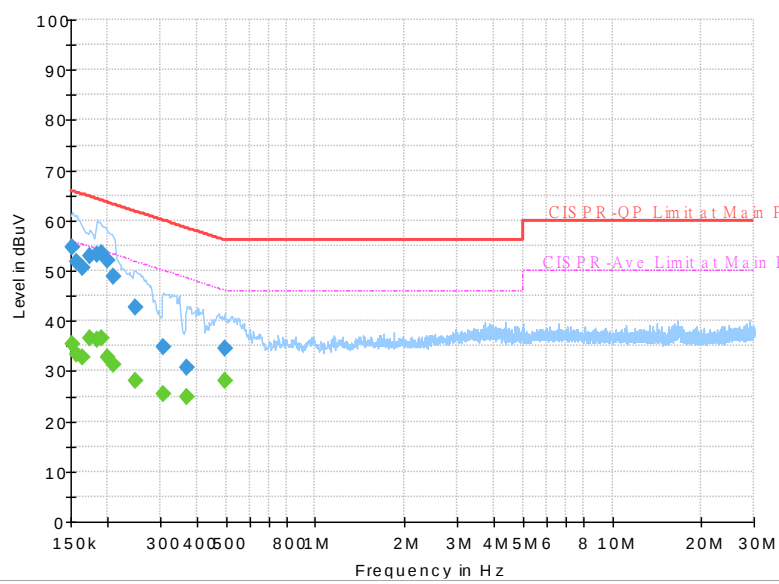
Test Engineer :	Jimmy Chang	Temperature :	24~26°C
		Relative Humidity :	51~53%
Test Voltage :	120Vac / 60Hz	Phase :	Line



Final Result :

Frequency (MHz)	QuasiPeak (dBuV)	CAverage (dBuV)	Limit (dBuV)	Margin (dB)	Line	Filter	Corr. (dB)
0.152250	---	35.17	55.88	20.71	L1	OFF	19.5
0.152250	52.99	---	65.88	12.89	L1	OFF	19.5
0.156750	---	33.60	55.63	22.03	L1	OFF	19.5
0.156750	53.69	---	65.63	11.94	L1	OFF	19.5
0.165750	---	31.96	55.17	23.21	L1	OFF	19.5
0.165750	49.25	---	65.17	15.92	L1	OFF	19.5
0.179250	---	34.48	54.52	20.04	L1	OFF	19.5
0.179250	52.31	---	64.52	12.21	L1	OFF	19.5
0.195000	---	37.51	53.82	16.31	L1	OFF	19.5
0.195000	53.88	---	63.82	9.94	L1	OFF	19.5
0.208500	---	30.71	53.27	22.56	L1	OFF	19.5
0.208500	50.03	---	63.27	13.24	L1	OFF	19.5
0.235500	---	32.17	52.25	20.08	L1	OFF	19.5
0.235500	45.79	---	62.25	16.46	L1	OFF	19.5
0.321000	---	25.74	49.68	23.94	L1	OFF	19.5
0.321000	34.53	---	59.68	25.15	L1	OFF	19.5
0.368250	---	24.80	48.54	23.74	L1	OFF	19.5
0.368250	32.14	---	58.54	26.40	L1	OFF	19.5
0.525750	---	29.16	46.00	16.84	L1	OFF	19.5
0.525750	34.47	---	56.00	21.53	L1	OFF	19.5

Test Engineer :	Jimmy Chang	Temperature :	24~26°C
		Relative Humidity :	51~53%
Test Voltage :	120Vac / 60Hz	Phase :	Neutral



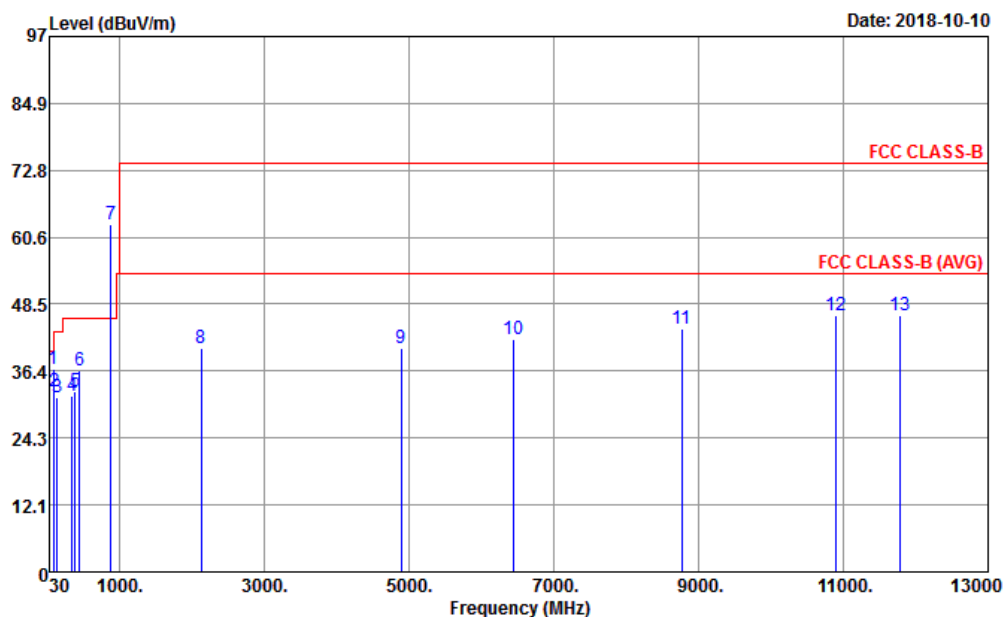
Final Result :

Frequency (MHz)	QuasiPeak (dBuV)	CAverage (dBuV)	Limit (dBuV)	Margin (dB)	Line	Filter	Corr. (dB)
0.152250	---	35.36	55.88	20.52	N	OFF	19.5
0.152250	54.71	---	65.88	11.17	N	OFF	19.5
0.156750	---	33.41	55.63	22.22	N	OFF	19.5
0.156750	51.86	---	65.63	13.77	N	OFF	19.5
0.163500	---	32.85	55.28	22.43	N	OFF	19.5
0.163500	50.59	---	65.28	14.69	N	OFF	19.5
0.174750	---	36.50	54.73	18.23	N	OFF	19.5
0.174750	53.04	---	64.73	11.69	N	OFF	19.5
0.183750	---	36.32	54.31	17.99	N	OFF	19.5
0.183750	53.18	---	64.31	11.13	N	OFF	19.5
0.190500	---	36.56	54.02	17.46	N	OFF	19.5
0.190500	53.60	---	64.02	10.42	N	OFF	19.5
0.199500	---	32.71	53.63	20.92	N	OFF	19.5
0.199500	52.12	---	63.63	11.51	N	OFF	19.5
0.208500	---	31.30	53.27	21.97	N	OFF	19.5
0.208500	48.93	---	63.27	14.34	N	OFF	19.5
0.246750	---	27.95	51.87	23.92	N	OFF	19.5
0.246750	42.73	---	61.87	19.14	N	OFF	19.5
0.307500	---	25.44	50.04	24.60	N	OFF	19.5
0.307500	34.90	---	60.04	25.14	N	OFF	19.5
0.370500	---	24.72	48.49	23.77	N	OFF	19.5
0.370500	30.77	---	58.49	27.72	N	OFF	19.5
0.494250	---	28.08	46.10	18.02	N	OFF	19.5
0.494250	34.42	---	56.10	21.68	N	OFF	19.5



Appendix B. Radiated Emission Test Result

Test Engineer :	Daniel Lee and Lewis He	Temperature :	20~23°C
		Relative Humidity :	50~53%
Test Distance :	3m	Polarization :	Horizontal
Remark :	#7 is system simulator signal which can be ignored.		



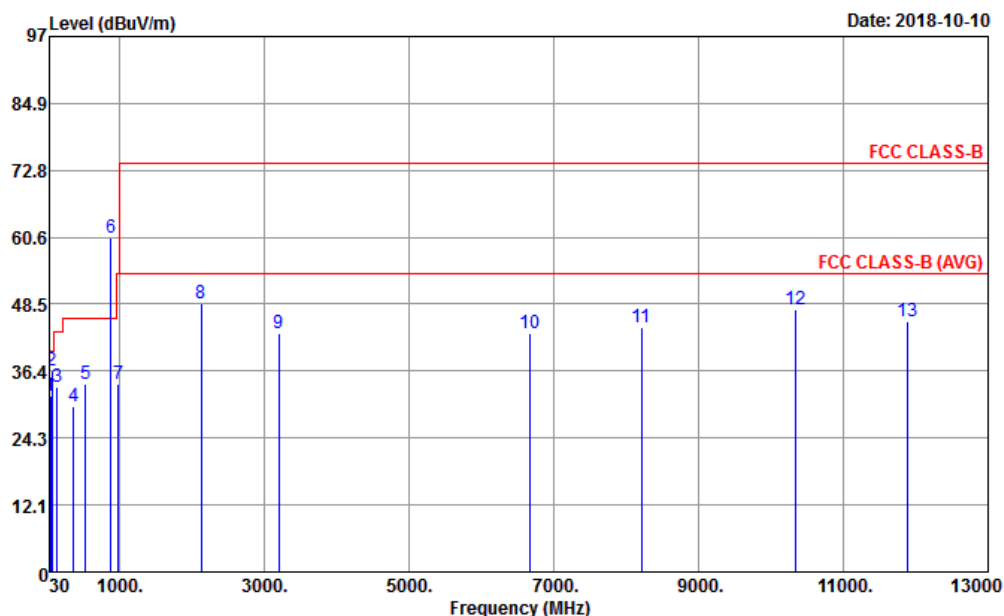
Site : 03CH10-HY
Condition : FCC CLASS-B 3m HORN 9120D-HF HORIZONTAL
Project : 890804-02
Power : From System

: SD to NB

	Freq	Level	Over Limit	Limit Line	ReadAntenna Level	Cable Loss	Preamplifier Factor	A/Pos	T/Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg
1	84.27	36.74	-3.26	40.00	54.35	13.88	1.00	32.73	100	0 Peak
2	101.01	32.81	-10.69	43.50	48.18	16.05	1.05	32.71	---	--- Peak
3	137.19	31.60	-11.90	43.50	45.25	17.47	1.24	32.68	---	--- Peak
4	345.50	31.76	-14.24	46.00	41.78	20.19	1.97	32.59	---	--- Peak
5	390.30	32.75	-13.25	46.00	41.52	21.36	2.06	32.60	---	--- Peak
6	445.60	36.43	-9.57	46.00	43.38	22.98	2.24	32.62	---	--- Peak
7 *	881.70	62.85			62.10	29.09	3.16	32.19	---	--- Peak
8	2130.00	40.46	-33.54	74.00	69.98	27.16	5.05	61.73	---	--- Peak
9	4894.00	40.46	-33.54	74.00	63.37	31.01	8.38	62.30	---	--- Peak
10	6442.00	42.11	-31.89	74.00	61.71	33.87	9.52	62.99	---	--- Peak
11	8772.00	44.13	-29.87	74.00	60.20	37.64	10.72	64.43	---	--- Peak
12	10888.00	46.44	-27.56	74.00	58.16	39.99	12.22	63.93	100	0 Peak
13	11792.00	46.43	-27.57	74.00	58.95	38.62	12.99	64.13	---	--- Peak



Test Engineer :	Daniel Lee and Lewis He	Temperature :	20~23°C
		Relative Humidity :	50~53%
Test Distance :	3m	Polarization :	Vertical
Remark :	#6 is system simulator signal which can be ignored.		



Site : 03CH10-HY
Condition : FCC CLASS-B 3m HORN 9120D-HF VERTICAL
Project : 890804-02
Power : From System

: SD to NB

	Freq	Level	Over Limit	Limit Line	ReadAntenna Level	Cable Factor	Preamp Loss	A/Pos	T/Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg
1	42.96	31.85	-8.15	40.00	45.82	17.90	0.78	32.77	---	---
2	63.48	36.48	-3.52	40.00	56.28	11.92	0.88	32.75	100	0
3	137.19	33.40	-10.10	43.50	47.05	17.47	1.24	32.68	---	---
4	365.80	30.09	-15.91	46.00	39.50	20.76	2.02	32.60	---	---
5	531.70	34.00	-12.00	46.00	39.62	24.10	2.43	32.70	---	---
6 *	881.70	60.43			59.68	29.09	3.16	32.19	---	---
7	982.50	34.17	-19.83	54.00	30.34	30.84	3.34	31.16	---	---
8	2128.00	48.74	-25.26	74.00	78.28	27.14	5.05	61.73	100	0
9	3198.00	43.23	-30.77	74.00	70.25	28.60	6.40	62.02	---	---
10	6676.00	43.29	-30.71	74.00	62.63	34.40	9.47	63.21	---	---
11	8214.00	44.38	-29.62	74.00	61.03	36.74	10.42	63.81	---	---
12	10332.00	47.64	-26.36	74.00	61.09	39.33	11.75	64.53	---	---
13	11880.00	45.48	-28.52	74.00	58.03	38.60	13.05	64.20	---	---