



FCC Test Report

APPLICANT : Sony Mobile Communications Inc.
EQUIPMENT : Smart phone
BRAND NAME : SONY
TYPE NAME : PM-0892-BV
FCC ID : PY7-PM0892
STANDARD : FCC 47 CFR FCC Part 15 Subpart B
CLASSIFICATION : FCC CLASS B PERSONAL
COMPUTERS AND PERIPHERALS

The product was received on Apr. 29, 2015 and testing was completed on May 21, 2015. We, SPORTON INTERNATIONAL INC., would like to declare that the tested sample has been evaluated in accordance with the test procedures given in ANSI C63.4-2009 and has been in compliance with the applicable technical standards.

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

Reviewed by: Louis Wu / Manager

Approved by: Jones Tsai / Manager



SPORTON INTERNATIONAL INC.

No. 52, Hwa Ya 1st Rd., Hwa Ya Technology Park, Kwei-Shan District, Tao Yuan City, Taiwan, R.O.C.



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REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FC542944	Rev. 01	Initial issue of report	Jul. 01, 2015



SUMMARY OF TEST RESULT

Report Section	FCC Rule	Description	Limit	Result	Remark
3.1	15.107	AC Conducted Emission	< 15.107 limits	PASS	Under limit 5.90 dB at 13.558 MHz
3.2	15.109	Radiated Emission	< 15.109 limits	PASS	Under limit 12.39 dB at 664.000 MHz



1. General Description

1.1. Applicant

Sony Mobile Communications Inc.
Nya Vattentorget, 22188 Lund, Sweden

1.2. Manufacturer

Arima Communications Corp.
6F, No. 866, Jhongjheng Rd., Jhonghe Dist., New Taipei City 23586, Taiwan

1.3. Product Feature of Equipment Under Test

The Equipment Under Test (hereafter called: EUT) is smart phone supporting, GSM/WCDMA/LTE, Wi-Fi 2.4GHz 802.11b/g/n, Wi-Fi 5GHz 802.11a/n, Bluetooth with FM Receiver, GPS, and NFC features, and below is details of information.

Product Feature	
Equipment	Smart phone
Brand Name	SONY
Type Name	PM-0892-BV
FCC ID	PY7-PM0892
GSM Operating Band(s)	GSM 850/900/1800/1900MHz
GPRS / EGPRS Multi Slot Class	GPRS Class 12, EGPRS Class 12
WCDMA Operating Band(s)	FDD Band I / II / V / VIII
WCDMA Rel. Version	Rel. 8
LTE Operating Band(s)	FDD Band I / III / V / VII / VIII / XXVIII TDD Band XL
LTE Rel. Version	Rel. 8
Wi-Fi Specification	802.11a/b/g/n (HT20/HT40)
Bluetooth Version	v3.0+EDR / v4.0-LE
NFC Specification	ISO14443A / ISO14443B / Felica
Power Supply	Battery / AC Adapter / Car Charger

Remark: The above EUT's information was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.

1.4. Details of Tested Sample (EUT) Information

Below EUT sample and accessory are used to test.

EUT Information List				
IMEI	HW Version	SW Version	S/N	Performed Test Item
004402454644489	A	29.0.A.0.76	3113W 38 210631	Conducted Emission Radiated Emission

Accessory List	
Battery	Model No. : LIS1579ERPC
Earphone 2	Model No. : MH410c
	Type No. : AG-1103
	S/N : 1411204A00BCA82C
USB Cable	Model No. : EC450
	Type No. : AI-0700
	S/N : 134912D1000585A

Note:

1. Above EUT list and accessory list used are electrically identical per declared by manufacturer.
2. Above the accessories list are used to exercise the EUT during test.
3. For other wireless features of this EUT, test report will be issued separately.

1.5. Modification of EUT

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

1.6. Test Location

Sporton Lab is accredited to ISO 17025 by Taiwan Accreditation Foundation (TAF code: 1190) and the FCC designation No. TW1022 under the FCC 2.948(e) by Mutual Recognition Agreement (MRA) in FCC Test.

Test Site	SPORTON INTERNATIONAL INC.	
Test Site Location	No. 52, Hwa Ya 1 st Rd., Hwa Ya Technology Park, Kwei-Shan District, Tao Yuan City, Taiwan, R.O.C. TEL: +886-3-327-3456 FAX: +886-3-328-4978	
Test Site No.	Sporton Site No.	
	CO05-HY	03CH06-HY



1.7. 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 C63.4-2009

Remark:

1. All test items were verified and recorded according to the standards and without any deviation during the test.
2. For FCC 15 Subpart B - Unintentional Radiators, device supporting USB interface or similar peripherals (defined as the Section 15.3 (r) Peripheral device) acting as a peripheral for personal computers shall be authorized as “The Class B personal computers and peripherals” per the Section 15.101 (a) Equipment authorization of unintentional radiators.
3. For other Unintentional Radiators features of this EUT, test reports are be issued separately. Per the Note of the Section 15.101, when device supports features (USB, FM Radio, digital devices...etc) more than one category of authorization, type of authorization shall be appropriately chosen for FCC 15B compliance rule, and the Section 15.101 (b), only those receivers that operate (tune) within the frequency range of 30-960 MHz, CB receivers and radar detectors are subject to the authorizations shown in paragraph (a) of the Section 15.101. However, receivers indicated as being subject to Declaration of Conformity that are contained within a transceiver, the transmitter portion of which is subject to certification, shall be authorized under the verification procedure.



2. Test Configuration of Equipment Under Test

2.1. Test Mode

The EUT has been associated with peripherals pursuant to ANSI C63.4-2009 and configuration operated in a manner tended to maximize its emission characteristics in a typical application.

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

The following tables are showing the test modes as the worst cases and recorded in this report.

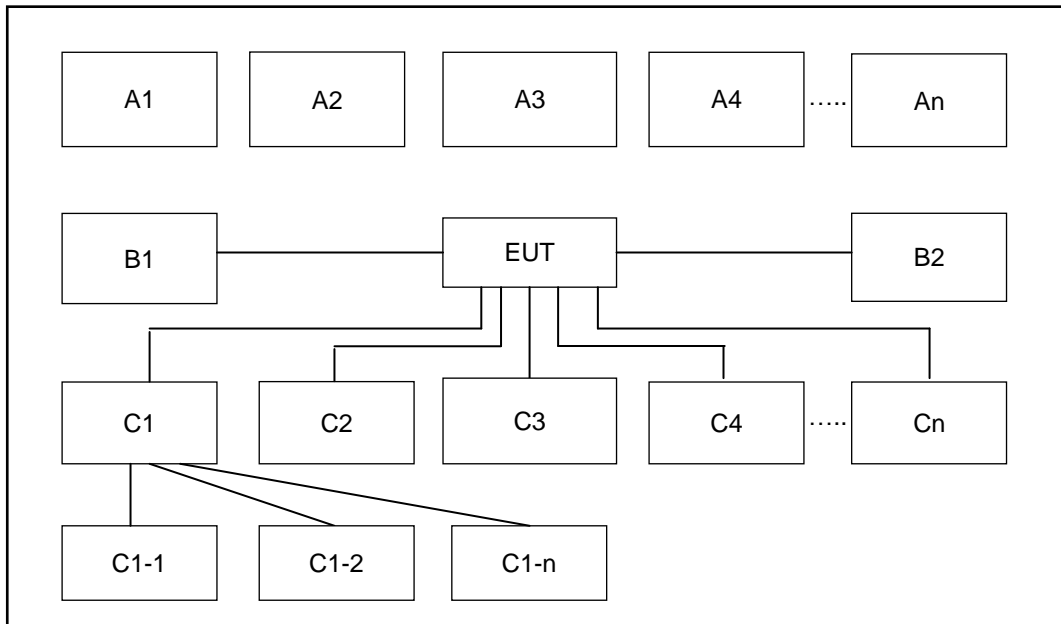
Item	EUT Configuration	Test Condition	
		EMI AC	EMI RE
1.	Data Link with Notebook	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

The data application (each file size is greater than 30Mbytes) is continuously transferred between the EUT and Notebook connected via USB cable, while GSM, WLAN, and Bluetooth and GPS idle.

Abbreviations:

- EMI AC: AC conducted emissions
- EMI RE: EUT radiated emissions

2.2. Connection Diagram of Test System



Radiation Test Setup									
No.	Wireless Station	Connection Type	Test Mode						
			1	-	-	-	-	-	-
A1	BT Earphone	Bluetooth	X						
A2	System Simulator	GSM	X						
A3	GPS Station	GPS	X						
A4	AP router	WiFi	X						
No.	Setup Peripherals	Connection Type	1	-	-	-	-	-	-
C1	Notebook	USB cable	X						
C1-1	iPod	USB Cable to C1	X						
C1-2	WLAN AP	RJ-45 Cable to C1	X						
C2	Earphone	Earphone jack	X						
C3	SD card	SD I/O interface without cable	X						



Conduction Test Setup									
No.	Wireless Station	Connection Type	Test Mode						
			1	-	-	-	-	-	-
A1	BT Earphone	Bluetooth	X						
A2	System Simulator	GSM	X						
A3	AP router	WiFi	X						
A4	NFC Card	NFC	X						
No.	Setup Peripherals	Connection Type	1	-	-	-	-	-	-
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						
C3	SD card	SD I/O interface without cable	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.	GPS Station	Pendulum	GSG-54	N/A	N/A	Unshielded, 1.8 m
4.	Bluetooth Earphone	Sony	SBH20	PY7-RD0010	Unshielded, 0.75m	N/A
5.	WLAN AP	D-Link	DIR-865L	KA2IR865LA1	N/A	Unshielded, 1.8 m
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.	SD Card	SanDisk	MicroSD HC	FCC DoC	N/A	N/A
8.	NFC Card	Metro Taipei	Easy Card	N/A	N/A	N/A
9.	iPod	Apple	A1285	FCC DoC	Shielded, 1.0 m	N/A
10.	iPod	Apple	A1199	FCC DoC	Shielded, 1.0 m	N/A

2.4. EUT Operation Test Setup

The data application (each file size is greater than 30Mbytes) is continuously transferred between the EUT and Notebook connected via USB cable, while GSM and Bluetooth, WLAN and GPS idle.



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.

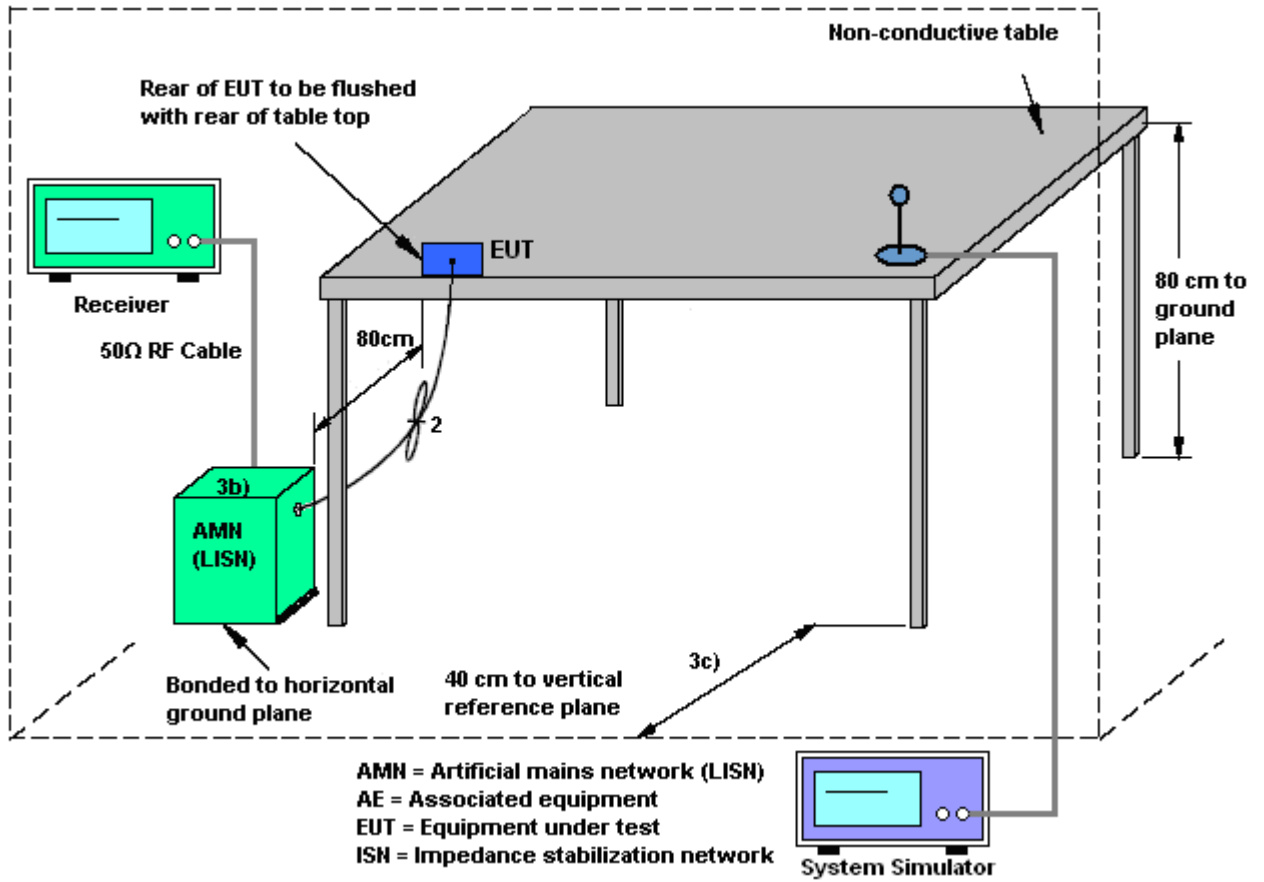
3.1.2 Measuring Instruments

The measuring equipment is listed in the section 4 of 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.

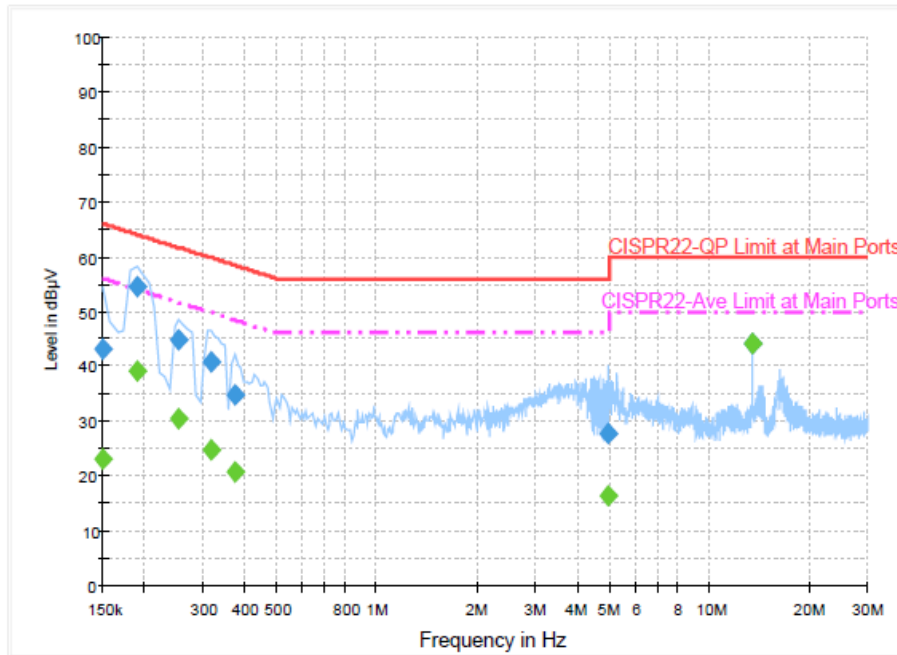
3.1.4 Test Setup





3.1.5 Test Result of AC Conducted Emission

Test Mode :	Mode 1	Temperature :	24~26°C
Test Engineer :	Eric Jeng	Relative Humidity :	53~55%
Test Voltage :	120Vac / 60Hz	Phase :	Line
Function Type :	Data Link with Notebook (with USB Cable) + WLAN (5GHz) Idle + NFC On + Earphone 2		



Final Result : Quasi-Peak

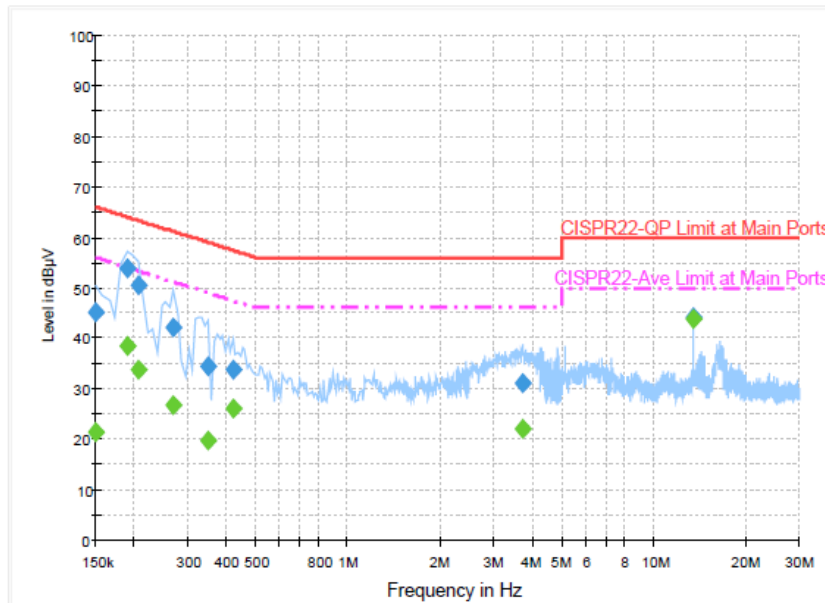
Frequency (MHz)	Quasi-Peak (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.150000	43.3	Off	L1	19.5	22.7	66.0
0.190000	54.7	Off	L1	19.5	9.3	64.0
0.254000	44.8	Off	L1	19.5	16.8	61.6
0.318000	40.7	Off	L1	19.4	19.1	59.8
0.374000	34.9	Off	L1	19.5	23.5	58.4
4.982000	27.9	Off	L1	19.8	28.1	56.0
13.558000	44.0	Off	L1	19.9	16.0	60.0

Final Result : Average

Frequency (MHz)	Average (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.150000	23.0	Off	L1	19.5	33.0	56.0
0.190000	39.1	Off	L1	19.5	14.9	54.0
0.254000	30.6	Off	L1	19.5	21.0	51.6
0.318000	24.8	Off	L1	19.4	25.0	49.8
0.374000	20.6	Off	L1	19.5	27.8	48.4
4.982000	16.5	Off	L1	19.8	29.5	46.0
13.558000	44.1	Off	L1	19.9	5.9	50.0



Test Mode :	Mode 1	Temperature :	24~26°C
Test Engineer :	Eric Jeng	Relative Humidity :	53~55%
Test Voltage :	120Vac / 60Hz	Phase :	Neutral
Function Type :	Data Link with Notebook (with USB Cable) + WLAN (5GHz) Idle + NFC On + Earphone 2		



Final Result : Quasi-Peak

Frequency (MHz)	Quasi-Peak (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.150000	45.1	Off	N	19.5	20.9	66.0
0.190000	53.8	Off	N	19.5	10.2	64.0
0.206000	50.6	Off	N	19.4	12.8	63.4
0.270000	42.1	Off	N	19.4	19.0	61.1
0.350000	34.3	Off	N	19.5	24.7	59.0
0.422000	33.8	Off	N	19.4	23.6	57.4
3.742000	31.2	Off	N	19.7	24.8	56.0
13.558000	44.1	Off	N	20.0	15.9	60.0

Final Result : Average

Frequency (MHz)	Average (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.150000	21.4	Off	N	19.5	34.6	56.0
0.190000	38.3	Off	N	19.5	15.7	54.0
0.206000	33.7	Off	N	19.4	19.7	53.4
0.270000	26.6	Off	N	19.4	24.5	51.1
0.350000	19.7	Off	N	19.5	29.3	49.0
0.422000	26.2	Off	N	19.4	21.2	47.4
3.742000	22.0	Off	N	19.7	24.0	46.0
13.558000	44.0	Off	N	20.0	6.0	50.0



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

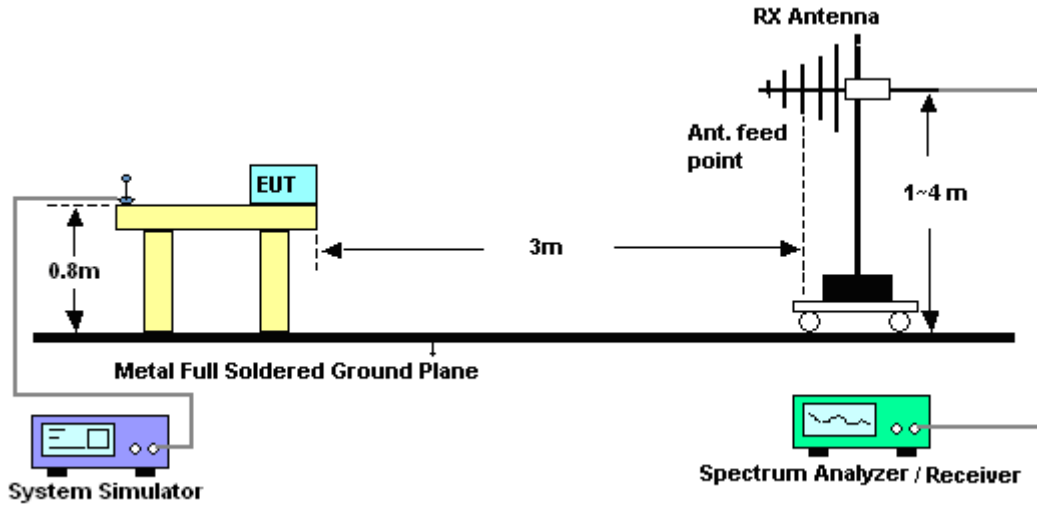
The measuring equipment is listed in the section 4 of this test report.

3.2.3. Test Procedures

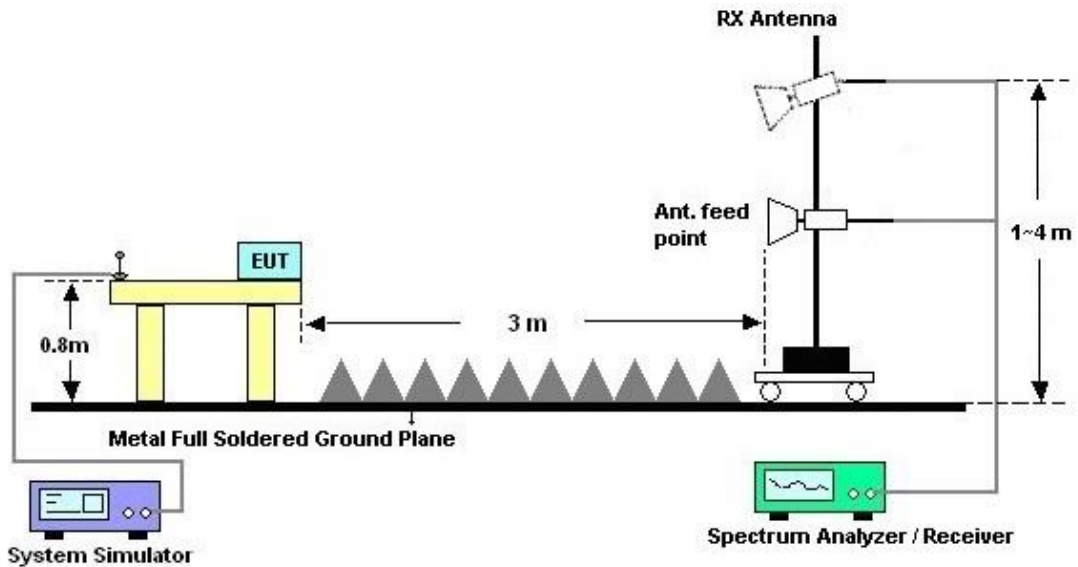
1. The EUT was placed on a turntable with 0.8 meter above ground.
2. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower.
3. The table was rotated 360 degrees to determine the position of the highest radiation.
4. The antenna 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



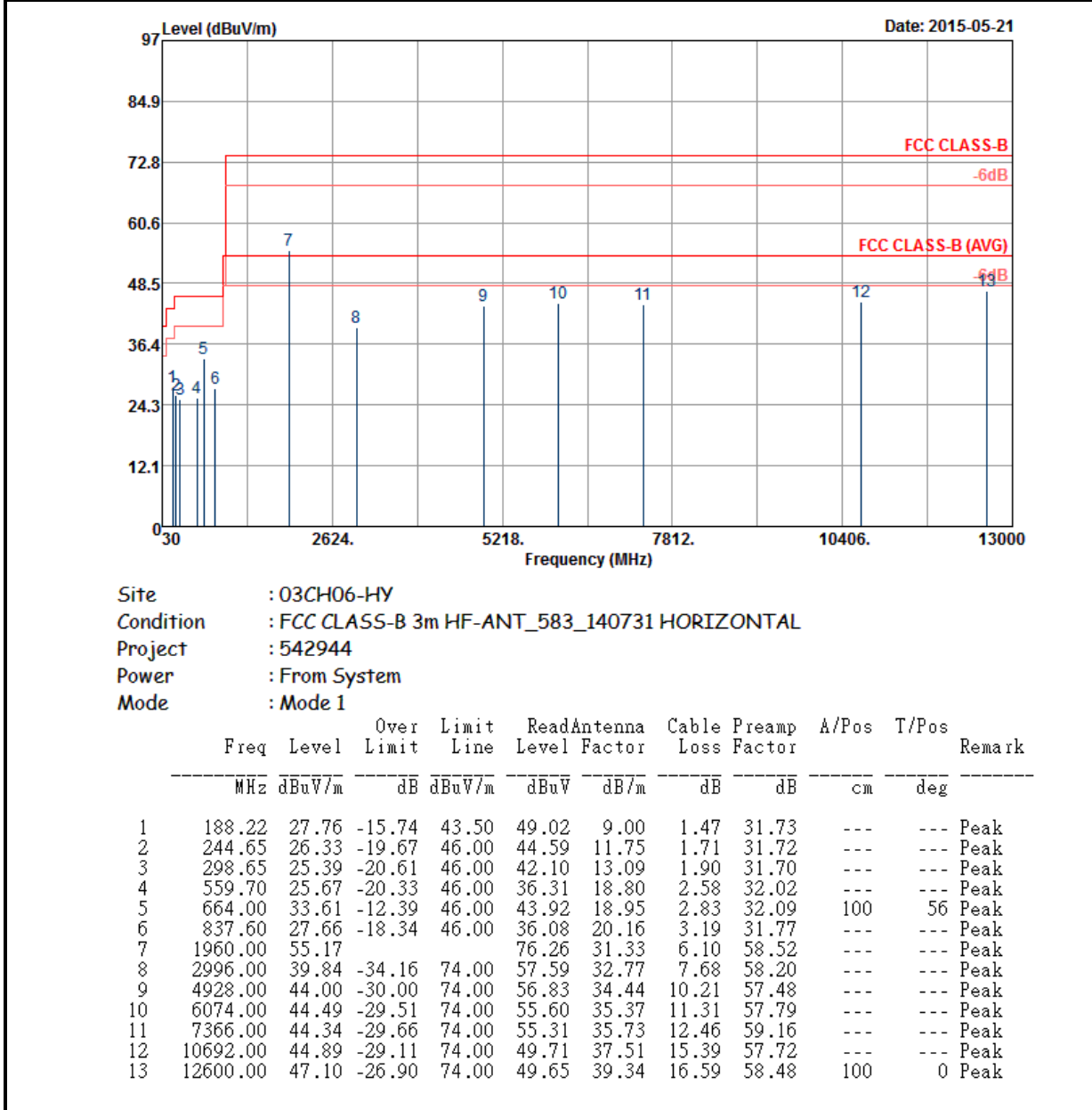
For radiated emissions above 1GHz





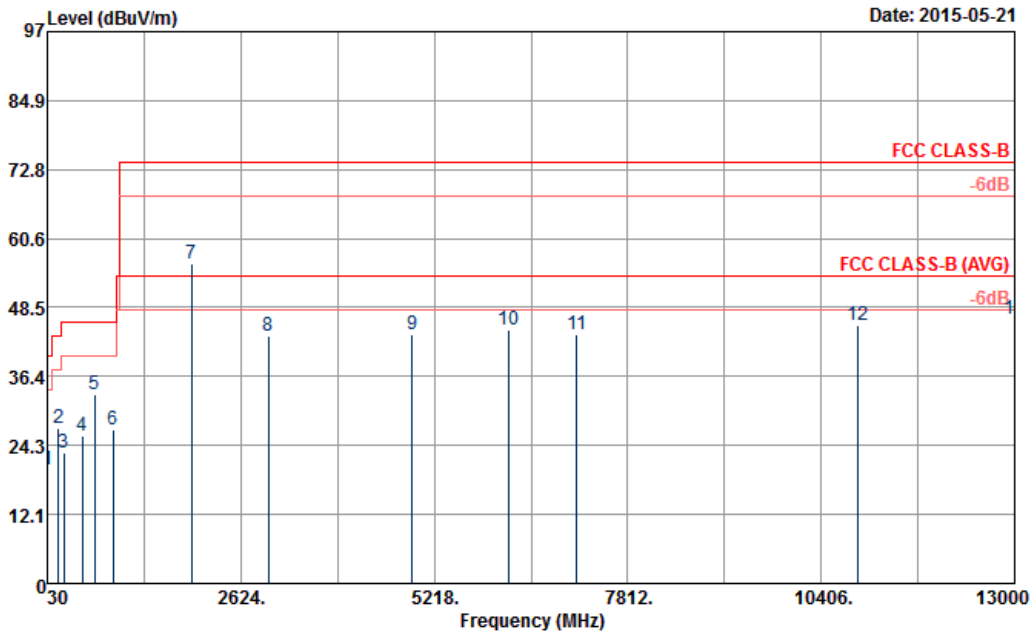
3.2.5. Test Result of Radiated Emission

Test Mode :	Mode 1	Temperature :	20~23°C
Test Engineer :	Daniel Lee	Relative Humidity :	50~53%
Test Distance :	3m	Polarization :	Horizontal
Function Type :	Data Link with Notebook (with USB Cable) + WLAN (2.4GHz) Idle + GPS Rx + Earphone 2		
Remark :	#7 is system simulator signal which can be ignored.		





Test Mode :	Mode 1	Temperature :	20~23°C
Test Engineer :	Daniel Lee	Relative Humidity :	50~53%
Test Distance :	3m	Polarization :	Vertical
Function Type :	Data Link with Notebook (with USB Cable) + WLAN (2.4GHz) Idle + GPS Rx + Earphone 2		
Remark :	#7 is system simulator signal which can be ignored.		



Site : 03CH06-HY
 Condition : FCC CLASS-B 3m HF-ANT_583_140731 VERTICAL
 Project : 542944
 Power : From System
 Mode : Mode 1

	Freq	Level	Over	Limit	Read	Antenna	Cable	Preamp	A/Pos	T/Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1	30.00	19.98	-20.02	40.00	32.72	18.40	0.64	31.78	---	---	Peak
2	183.36	27.33	-16.17	43.50	48.48	9.12	1.46	31.73	---	---	Peak
3	247.08	22.90	-23.10	46.00	40.87	12.03	1.72	31.72	---	---	Peak
4	496.00	25.99	-20.01	46.00	38.06	17.40	2.44	31.91	---	---	Peak
5	666.10	33.12	-12.88	46.00	43.42	18.96	2.83	32.09	100	331	Peak
6	915.30	27.00	-19.00	46.00	34.47	20.50	3.36	31.33	---	---	Peak
7	1960.00	56.25			77.34	31.33	6.10	58.52	---	---	Peak
8	2996.00	43.50	-30.50	74.00	61.25	32.77	7.68	58.20	---	---	Peak
9	4924.00	43.73	-30.27	74.00	56.56	34.44	10.21	57.48	---	---	Peak
10	6214.00	44.60	-29.40	74.00	55.46	35.52	11.62	58.00	---	---	Peak
11	7130.00	43.74	-30.26	74.00	54.77	35.77	12.14	58.94	---	---	Peak
12	10892.00	45.46	-28.54	74.00	49.89	37.64	15.57	57.64	---	---	Peak
13	12990.00	46.50	-27.50	74.00	48.80	39.49	16.61	58.40	100	0	Peak



4. List of Measuring Equipment

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
EMI Test Receiver	Rohde & Schwarz	ESCS 30	100356	9kHz ~ 2.75GHz	Dec. 01, 2014	May 17, 2015	Nov. 30, 2015	Conduction (CO05-HY)
LISN	Rohde & Schwarz	ENV216	100080	9kHz ~ 30MHz	Dec. 02, 2014	May 17, 2015	Dec. 01, 2015	Conduction (CO05-HY)
LISN (for auxiliary equipment)	Rohde & Schwarz	ENV216	100081	9kHz ~ 30MHz	Dec. 08, 2014	May 17, 2015	Dec. 07, 2015	Conduction (CO05-HY)
AC Power Source	ChainTek	APC-1000W	N/A	N/A	N/A	May 17, 2015	N/A	Conduction (CO05-HY)
Hygrometer	Testo	608-H1	34913912	N/A	Apr. 20, 2015	May 17, 2015	Apr. 19, 2016	Conduction (CO05-HY)
LF Cable	Shuner	RG-402	N/A	N/A	Oct. 07, 2014	May 17, 2015	Oct. 06, 2015	Conduction (CO05-HY)
Test Software	N/A	EMC32	8.40.0	N/A	N/A	May 17, 2015	N/A	Conduction (CO05-HY)
Bilog Antenna	Teseq GmbH	CBL6112D	35379	30MHz~2GHz	Sep. 27, 2014	May 21, 2015	Sep. 26, 2015	Radiation (03CH06-HY)
Double Ridge Horn Antenna	EMCO	3117	00066583	1GHz~18GHz	Jul. 24, 2014	May 21, 2015	Jul. 23, 2015	Radiation (03CH06-HY)
Hygrometer	WISEWIND	410	BU5004	N/A	May. 04, 2015	May 21, 2015	May. 03, 2016	Radiation (03CH06-HY)
Preamplifier	SONOMA	310N	186713	9kHz~1GHz	Apr. 20, 2015	May 21, 2015	Apr. 19, 2016	Radiation (03CH06-HY)
Preamplifier	MITEQ	AMF-7D-0010 1800-30-10P	1815698	1GHz~18GHz	Dec. 12, 2014	May 21, 2015	Dec. 11, 2015	Radiation (03CH06-HY)
EMI Test Receiver	Rohde & Schwarz	ESU26	100472	20Hz~26.5GHz	Jan. 19, 2015	May 21, 2015	Jan. 18, 2016	Radiation (03CH06-HY)
RF Cable	HUBER + SUHNER	RG_142_B/U	NA	30MHz ~ 1GHz	Nov. 27, 2014	May 21, 2015	Nov. 26, 2015	Radiation (03CH06-HY)
RF Cable	Infinet	LL142	Infinet CA3601-3601-1000	1GHz ~ 26.5GHz	Nov. 27, 2014	May 21, 2015	Nov. 26, 2015	Radiation (03CH06-HY)
Controller	INN-CO	CO2000	8000604	Control Turn table & Ant Mast	N/A	May 21, 2015	N/A	Radiation (03CH06-HY)
Antenna Mast	MF	MF-7802	MF780208212	1m~4m	N/A	May 21, 2015	N/A	Radiation (03CH06-HY)
Turn Table	INN-CO	DS2000	420/650/00	0 ~ 360 degree	N/A	May 21, 2015	N/A	Radiation (03CH06-HY)
Test Software	Audix	E3	Version 6.2009-8-24	N/A	N/A	May 21, 2015	N/A	Radiation (03CH06-HY)

Note: The test equipment calibration is traceable to the ISO17025.



5. Uncertainty of Evaluation

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

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	2.26
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Uncertainty of Radiated Emission Measurement (30 MHz ~ 1000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	4.50
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