

FCC Test Report

APPLICANT : HMD Global Oy
EQUIPMENT : Smart Phone
BRAND NAME : NOKIA
MODEL NAME : TA-1038
FCC ID : 2AJOTTA-1038
STANDARD : FCC 47 CFR FCC Part 15 Subpart B
CLASSIFICATION : Certification

The product was received on Jan. 18, 2017 and testing was completed on Feb. 21, 2017. We, SPORTON INTERNATIONAL (KUNSHAN) 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 test results in this report apply exclusively to the tested model / sample. Without written approval of SPORTON INTERNATIONAL (KUNSHAN) INC., the test report shall not be reproduced except in full.



Prepared by: James Huang / Manager



Approved by: Jones Tsai / Manager



SPORTON INTERNATIONAL (KUNSHAN) INC.
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REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FC711304-01	Rev. 01	Initial issue of report	Mar. 10, 2017



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 15.48 dB at 0.510 MHz
3.2	15.109	Radiated Emission	< 15.109 limits	PASS	Under limit 3.67 dB at 134.760 MHz for Quasi-Peak



1. General Description

1.1. Applicant

HMD Global Oy
Karaportti 2, 02610 Espoo, Finland

1.2. Manufacturer

HMD Global Oy
Karaportti 2, 02610 Espoo, Finland

1.3. Product Feature of Equipment Under Test

Product Feature	
Equipment	Smart Phone
Brand Name	NOKIA
Model Name	TA-1038
FCC ID	2AJOTTA-1038
EUT supports Radios application	GSM/GPRS/EGPRS/WCDMA/HSPA/DC-HSDPA/ HSPA+/LTE/NFC WLAN 2.4GHz 802.11b/g/n HT20/ WLAN 5GHz 802.11a/n HT20/HT40 Bluetooth v3.0 + EDR/ Bluetooth v 4.0 LE/ Bluetooth v4.1 LE / Bluetooth v4.2 LE
IMEI Code	Conduction/Radiation: 356805080001664/356805080001672
HW Version	DVT1.5
SW Version	000C_1_26A
EUT Stage	Production Unit

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. 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 IV : 1712.4 MHz ~ 1752.6 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 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 38 : 2572.5 MHz ~ 2617.5 MHz 802.11b/g/n: 2412 MHz ~ 2462 MHz 802.11a/n: 5180 MHz ~ 5240 MHz; 5260 MHz ~ 5320 MHz; 5500 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 IV : 2112.4 MHz ~ 2152.6 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 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 38: 2572.5 MHz ~ 2617.5 MHz 802.11b/g/n: 2412 MHz ~ 2462 MHz 802.11a/n: 5180 MHz ~ 5240 MHz; 5260 MHz ~ 5320 MHz; 5500 MHz ~ 5700 MHz; 5745 MHz ~ 5825 MHz Bluetooth: 2402 MHz ~ 2480 MHz GPS : 1.57542 GHz NFC : 13.56 MHz
Antenna Type	WWAN : IFA Antenna WLAN : Loop Antenna Bluetooth : Loop Antenna GPS: Loop Antenna NFC : Loop Antenna
Type of Modulation	GSM: GMSK GPRS: GMSK EDGE(MCS 0-4): GMSK / (MCS 5-9): 8PSK WCDMA : BPSK (Uplink) HSDPA/DC-HSDPA : QPSK (Uplink) HSUPA : QPSK (Uplink) HSPA+ : 16QAM DC-HSDPA : 64QAM 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
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Note: 5500 MHz ~ 5700 MHz without 5600 MHz ~ 5650MHz

1.5. Modification of EUT

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

1.6. Test Location

Test Site	SPORTON INTERNATIONAL (KUNSHAN) INC.		
Test Site Location	No. 3-2, PingXiang Road, Kunshan, Jiangsu Province, P. R. China TEL: +86-0512-5790-0158 FAX: +86-0512-5790-0958		
Test Site No.	Sporton Site No.		FCC Registration No.
	CO01-KS	03CH02-KS	418269

Note: The test site complies with ANSI C63.4 2014 requirement.

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 C63.4-2014

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

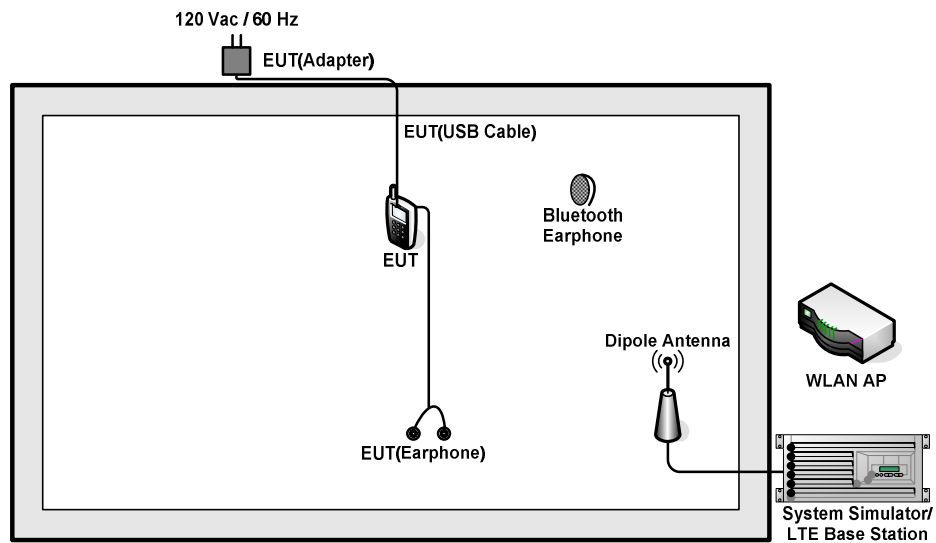
2.1. Test Mode

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.

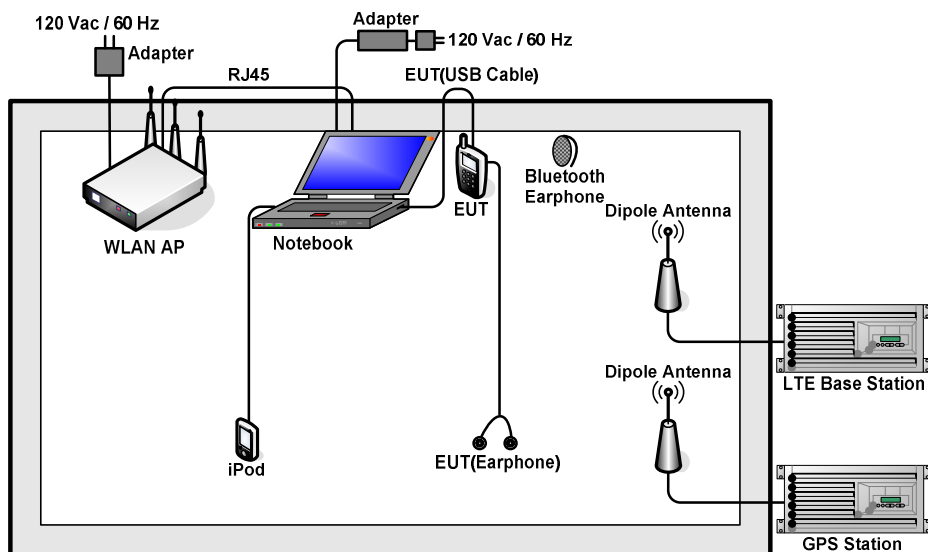
Frequency range investigated: conduction (150 kHz to 30 MHz), radiation (30MHz to the 5th harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower).

Test Items	Function Type
AC Conducted Emission	Mode 1: GSM850 Idle + Bluetooth Idle + WLAN Idle(2.4G) + USB Cable (Charging from Adapter) + Earphone + Camera(Rear) + SIM1<Fig.1> Mode 2: GSM1900 Idle + Bluetooth Idle + WLAN Idle(5G) + USB Cable (Charging from Adapter) + Earphone + Camera(Front) + SIM2<Fig.1> Mode 3: WCDMA Band V Idle + Bluetooth Idle + WLAN Idle(2.4G) + USB Cable (Charging from Adapter) + Earphone + MPEG4 + SIM1<Fig.1> Mode 4: LTE Band 4 Idle + Bluetooth Idle + WLAN Idle(5G) + USB Cable (Charging from Adapter) + Earphone + NFC On + SIM2<Fig.1> Mode 5: LTE Band 2 Idle + Bluetooth Idle + WLAN Idle(2.4G) + USB Cable (Data Link with Notebook) + Earphone + GPS Rx + SIM1<Fig.2>
Radiated Emissions < 1GHz	Mode 1: GSM850 Idle + Bluetooth Idle + WLAN Idle(2.4G) + USB Cable (Charging from Adapter) + Earphone + Camera(Rear) + SIM1<Fig.1> Mode 2: GSM1900 Idle + Bluetooth Idle + WLAN Idle(5G) + USB Cable (Charging from Adapter) + Earphone + Camera(Front) + SIM2<Fig.1> Mode 3: WCDMA Band V Idle + Bluetooth Idle + WLAN Idle(2.4G) + USB Cable (Charging from Adapter) + Earphone + MPEG4 + SIM1<Fig.1> Mode 4: LTE Band 4 Idle + Bluetooth Idle + WLAN Idle(5G) + USB Cable (Charging from Adapter) + Earphone + NFC On + SIM2<Fig.1> Mode 5: LTE Band 2 Idle + Bluetooth Idle + WLAN Idle(2.4G) + USB Cable (Data Link with Notebook) + Earphone + GPS Rx + SIM1<Fig.2>
Radiated Emissions ≥ 1GHz	Mode 1: LTE Band 2 Idle + Bluetooth Idle + WLAN Idle(2.4G) + USB Cable (Data Link with Notebook) + Earphone + GPS Rx + SIM1<Fig.2>
Remark: <ol style="list-style-type: none"> The worst case of AC is mode 1; and the USB link mode of AC is mode 5, the test data of these modes were reported. The worst case of RE < 1G is mode 5; only the test data of this mode was reported. Data Link with Notebook means data application transferred mode between EUT and Notebook. 	

2.2. Connection Diagram of Test System



<Fig.1>



<Fig.2>

2.3. Support Unit used in test configuration and system

Item	Equipment	Trade Name	Model Name	FCC ID	Data Cable	Power Cord
1.	LTE Base Station	Anritsu	MT8820C	N/A	N/A	Unshielded, 1.8 m
2.	GPS Station	ADIVIC	MP9000	N/A	N/A	Unshielded, 1.8 m
3.	WLAN AP	D-link	DIR855	KA2DIR855A2	N/A	Unshielded, 1.8 m
4.	WLAN AP	TP-Link	TL-WDR5600	N/A	N/A	Unshielded, 1.8 m
5.	Bluetooth Earphone	Lenovo	LBH308	N/A	N/A	N/A
6.	Bluetooth Earphone	Lenovo	LBH301	N/A	N/A	N/A
7.	Notebook	Lenovo	G480	N/A	N/A	AC I/P: Unshielded, 1.8 m DC O/P: Shielded, 1.8 m
8.	Notebook	DELL	Latitude3440	N/A	N/A	AC I/P: Unshielded, 1.8 m DC O/P: Shielded, 1.8 m
9.	SD Card	Kingston	4GB	N/A	N/A	N/A
10.	SD Card	Kingston	SD4 8GB	N/A	N/A	N/A
11.	iPod	Apple	A1199	FCC DoC	Unshielded, 1.2 m	N/A

2.4. EUT Operation Test Setup

The EUT was in GSM or WCDMA or LTE idle mode during the testing. The EUT was synchronized to the BCCH, and is in continuous receiving mode by setting system simulator's paging reorganization.

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 Notebook and EUT via USB cable.
2. Turn on GPS function 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 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.

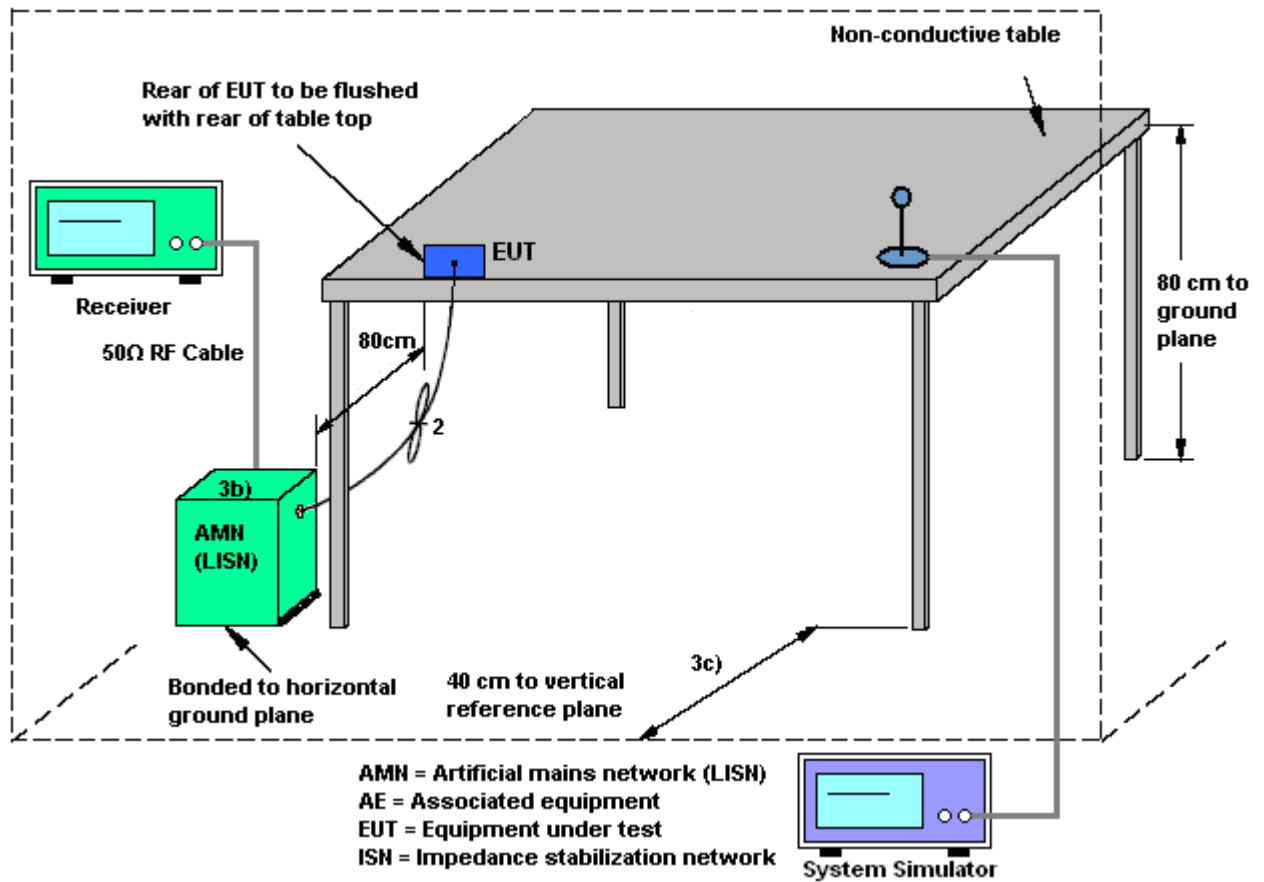
3.1.2 Measuring Instruments

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

3.1.3 Test Procedure

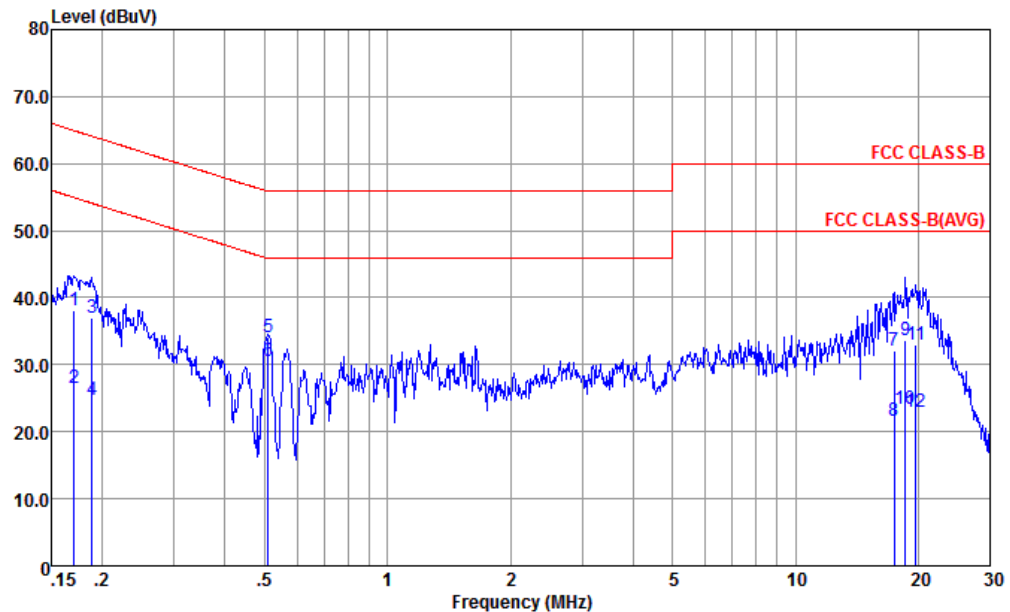
1. The EUT was placed 0.4 meter from the conducting wall of the shielding room was kept at least 80 centimeters from any other grounded conducting surface.
2. Connect EUT to the power mains through a line impedance stabilization network (LISN).
3. All the support units are connecting to the other LISN.
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 :	20~22℃
Test Engineer :	Peter Wei	Relative Humidity :	40~42%
Test Voltage :	120Vac / 60Hz	Phase :	Line
Function Type :	GSM850 Idle + Bluetooth Idle + WLAN Idle(2.4G) + USB Cable (Charging from Adapter) + Earphone + Camera(Rear) + SIM1		

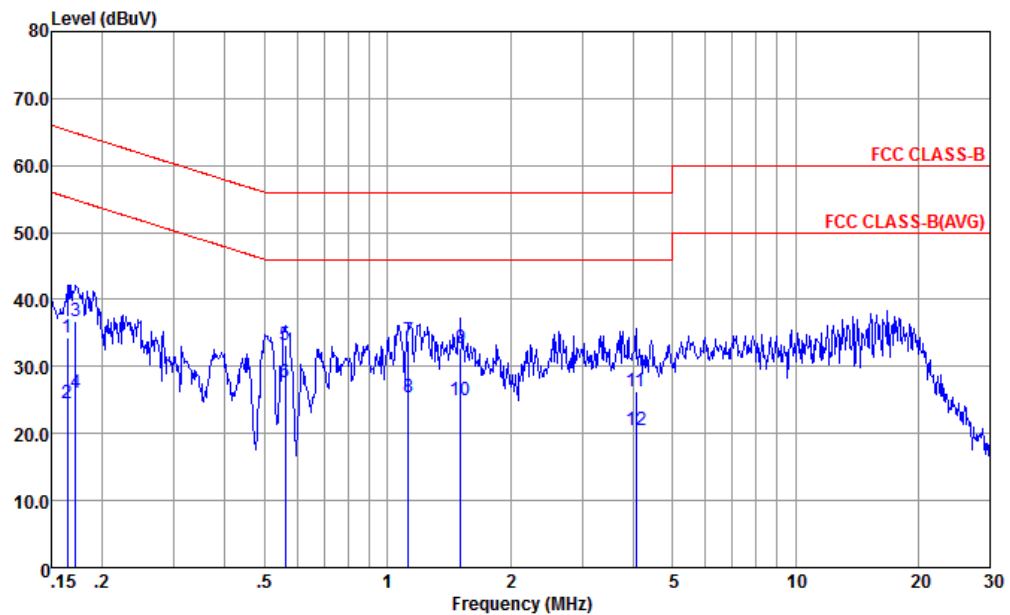


Site : CO01-KS
 Condition : FCC CLASS-B LISN-L-20151024 LINE
 Project : (FC) 711304-01
 mode : Mode 1
 IMEI : 356805080001664/356805080001672 #8

	Freq	Level	Over	Limit	Read	LISN	Cable	
	MHz	dBuV	Limit	Line	Level	Factor	Loss	Remark
1	0.170	38.06	-26.88	64.94	27.30	0.39	10.37	QP
2	0.170	26.56	-28.38	54.94	15.80	0.39	10.37	Average
3	0.188	36.93	-27.18	64.11	26.30	0.28	10.35	QP
4	0.188	24.83	-29.28	54.11	14.20	0.28	10.35	Average
5	0.510	34.02	-21.98	56.00	23.60	0.23	10.19	QP
6 *	0.510	30.52	-15.48	46.00	20.10	0.23	10.19	Average
7	17.475	32.16	-27.84	60.00	21.20	0.27	10.69	QP
8	17.475	21.56	-28.44	50.00	10.60	0.27	10.69	Average
9	18.622	33.56	-26.44	60.00	22.50	0.27	10.79	QP
10	18.622	23.36	-26.64	50.00	12.30	0.27	10.79	Average
11	19.740	32.95	-27.05	60.00	21.80	0.27	10.88	QP
12	19.740	22.85	-27.15	50.00	11.70	0.27	10.88	Average



Test Mode :	Mode 1	Temperature :	20~22℃
Test Engineer :	Peter Wei	Relative Humidity :	40~42%
Test Voltage :	120Vac / 60Hz	Phase :	Neutral
Function Type :	GSM850 Idle + Bluetooth Idle + WLAN Idle(2.4G) + USB Cable (Charging from Adapter) + Earphone + Camera(Rear) + SIM1		

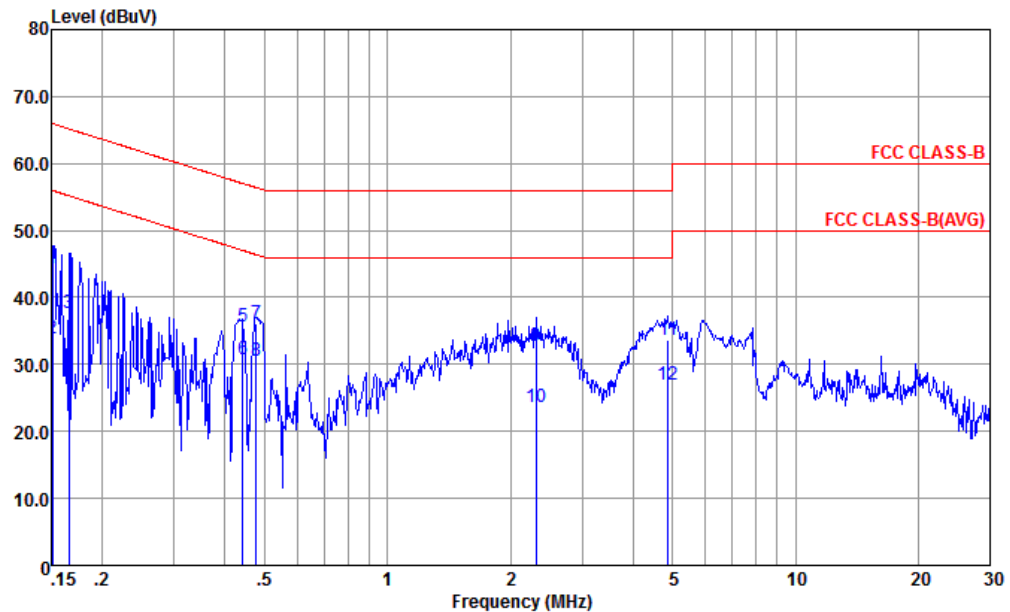


Site : CO01-KS
Condition : FCC CLASS-B LISN-N-20151024 NEUTRAL
Project : (FC) 711304-01
mode : Mode 1
IMEI : 356805080001664/356805080001672 #8

	Freq	Level	Over Limit	Limit	Read	LISN	Cable	Remark
	MHz	dBuV		dB	dBuV	dB	dB	
1	0.164	34.28	-30.97	65.25	23.61	0.30	10.37	QP
2	0.164	24.48	-30.77	55.25	13.81	0.30	10.37	Average
3	0.172	36.87	-27.99	64.86	26.21	0.30	10.36	QP
4	0.172	26.17	-28.69	54.86	15.51	0.30	10.36	Average
5	0.561	33.31	-22.69	56.00	22.80	0.33	10.18	QP
6 *	0.561	27.71	-18.29	46.00	17.20	0.33	10.18	Average
7	1.123	33.96	-22.04	56.00	23.40	0.37	10.19	QP
8	1.123	25.36	-20.64	46.00	14.80	0.37	10.19	Average
9	1.511	32.66	-23.34	56.00	22.09	0.38	10.19	QP
10	1.511	24.86	-21.14	46.00	14.29	0.38	10.19	Average
11	4.070	26.40	-29.60	56.00	15.80	0.36	10.24	QP
12	4.070	20.40	-25.60	46.00	9.80	0.36	10.24	Average



Test Mode :	Mode 5	Temperature :	20~22℃
Test Engineer :	Peter Wei	Relative Humidity :	40~42%
Test Voltage :	120Vac / 60Hz	Phase :	Line
Function Type :	LTE Band 2 Idle + Bluetooth Idle + WLAN Idle(2.4G) + USB Cable (Data Link with Notebook) + Earphone + GPS Rx + SIM1		

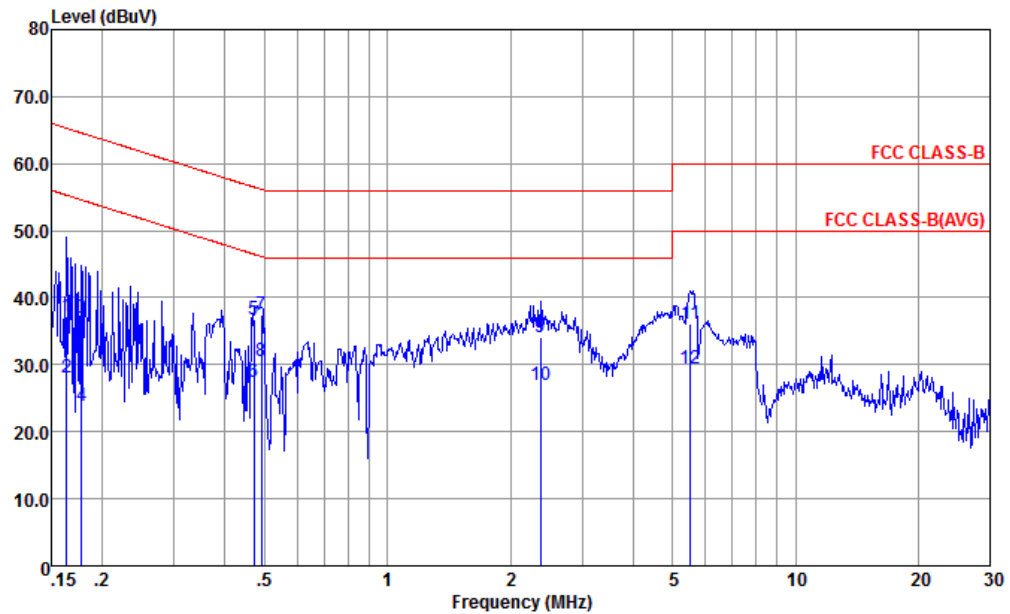


Site : CO01-KS
 Condition : FCC CLASS-B LISN-L-20151024 LINE
 Project : (FC) 711304-01
 mode : Mode 5
 IMEI : 356805080001664/356805080001672 #8

	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV		dBuV	dBuV	dB	dB	
1	0.151	44.42	-21.54	65.96	33.50	0.53	10.39	QP
2	0.151	33.92	-22.04	55.96	23.00	0.53	10.39	Average
3	0.166	37.60	-27.56	65.16	26.81	0.42	10.37	QP
4	0.166	27.90	-27.26	55.16	17.11	0.42	10.37	Average
5	0.442	35.62	-21.40	57.02	25.20	0.23	10.19	QP
6	0.442	30.72	-16.30	47.02	20.30	0.23	10.19	Average
7	0.476	36.02	-20.39	56.41	25.60	0.23	10.19	QP
8 *	0.476	30.42	-15.99	46.41	20.00	0.23	10.19	Average
9	2.309	32.68	-23.32	56.00	22.30	0.18	10.20	QP
10	2.309	23.58	-22.42	46.00	13.20	0.18	10.20	Average
11	4.874	33.63	-22.37	56.00	23.20	0.19	10.24	QP
12	4.874	26.93	-19.07	46.00	16.50	0.19	10.24	Average



Test Mode :	Mode 5	Temperature :	20~22℃
Test Engineer :	Peter Wei	Relative Humidity :	40~42%
Test Voltage :	120Vac / 60Hz	Phase :	Neutral
Function Type :	LTE Band 2 Idle + Bluetooth Idle + WLAN Idle(2.4G) + USB Cable (Data Link with Notebook) + Earphone + GPS Rx + SIM1		



Site : CO01-KS
Condition : FCC CLASS-B LISN-N-20151024 NEUTRAL
Project : (FC) 711304-01
mode : Mode 5
IMEI : 356805080001664/356805080001672 #8

	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.163	37.28	-28.02	65.30	26.60	0.30	10.38	QP
2	0.163	28.18	-27.12	55.30	17.50	0.30	10.38	Average
3	0.178	37.06	-27.53	64.59	26.39	0.31	10.36	QP
4	0.178	23.76	-30.83	54.59	13.09	0.31	10.36	Average
5	0.471	36.81	-19.68	56.49	26.30	0.32	10.19	QP
6	0.471	27.31	-19.18	46.49	16.80	0.32	10.19	Average
7	0.491	37.41	-18.73	56.14	26.90	0.32	10.19	QP
8 *	0.491	30.61	-15.53	46.14	20.10	0.32	10.19	Average
9	2.371	34.18	-21.82	56.00	23.60	0.38	10.20	QP
10	2.371	26.98	-19.02	46.00	16.40	0.38	10.20	Average
11	5.535	36.19	-23.81	60.00	25.60	0.34	10.25	QP
12	5.535	29.49	-20.51	50.00	18.90	0.34	10.25	Average

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

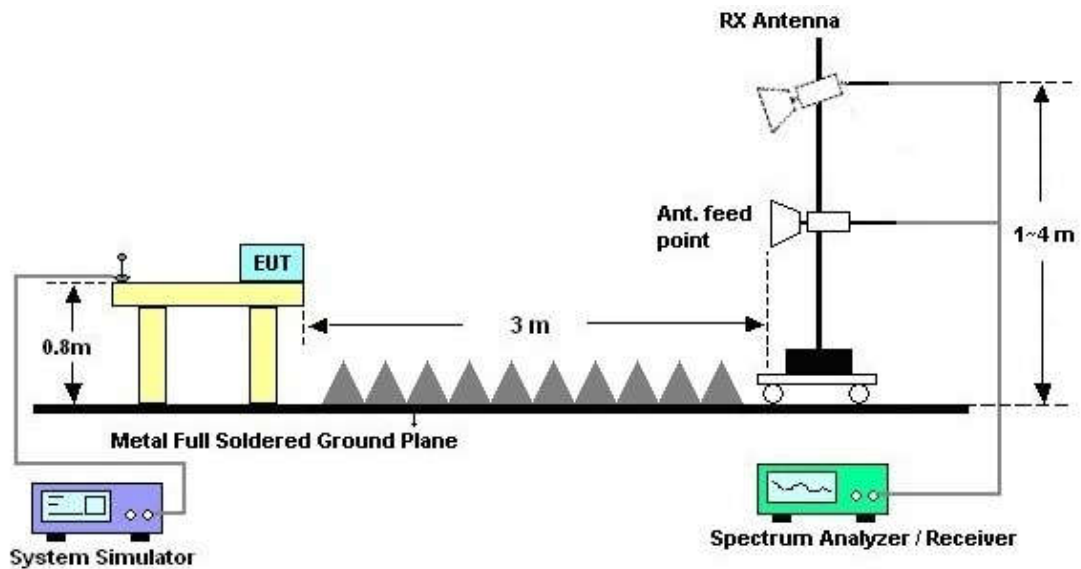
1. The EUT was placed on a turntable with 0.8 meter above ground.
2. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower.
3. The table was rotated 360 degrees to determine the position of the highest radiation.
4. The antenna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



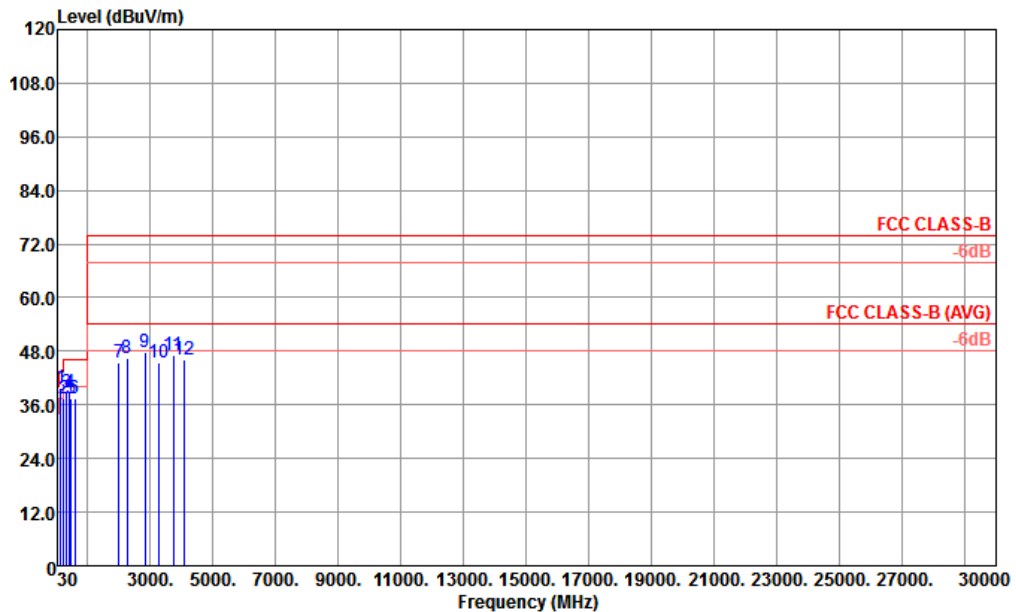
For radiated emissions above 1GHz





3.2.5. Test Result of Radiated Emission

Test Mode :	Mode 5	Temperature :	21~22°C
Test Engineer :	Leo Liao	Relative Humidity :	41~42%
Test Distance :	3m	Polarization :	Horizontal
Function Type :	LTE Band 2 Idle + Bluetooth Idle + WLAN Idle(2.4G) + USB Cable (Data Link with Notebook) + Earphone + GPS Rx + SIM1		

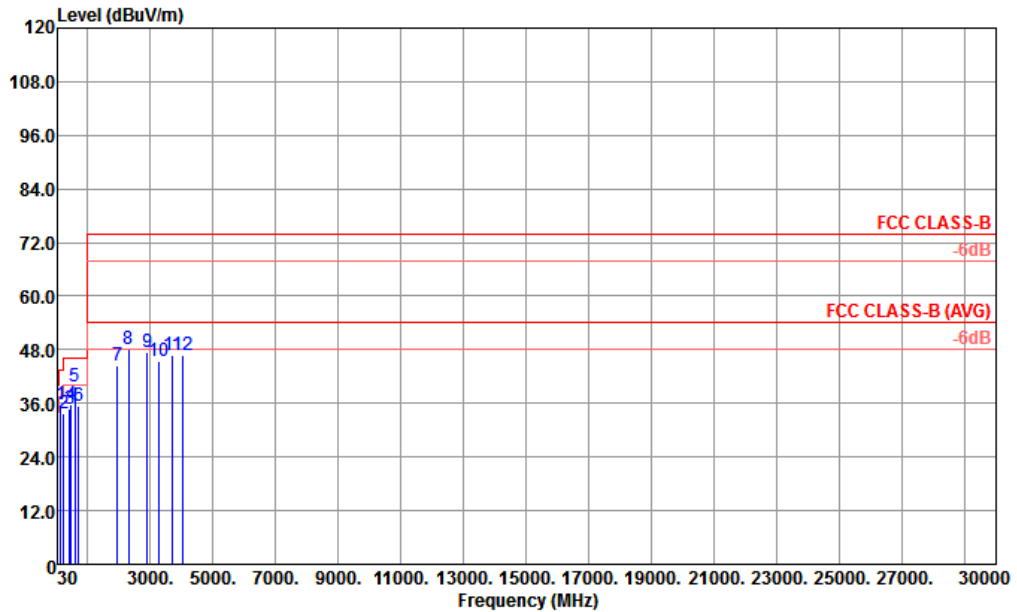


Site : 03CH02-KS
Condition : FCC CLASS-B 3m 966-02 LF ANT HORIZONTAL
Project : (FC) 711304-01
Mode : 5
IMEI : 356805080001664 356805080001672 #8

	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 !	134.76	39.83	-3.67	43.50	53.20	17.81	0.30	31.48	200	68 QP
2	225.94	37.58	-8.42	46.00	51.79	16.39	0.46	31.06	---	Peak
3	328.76	38.73	-7.27	46.00	49.39	19.30	0.66	30.62	---	Peak
4	419.94	38.85	-7.15	46.00	43.05	24.98	0.94	30.12	---	Peak
5	480.08	37.50	-8.50	46.00	42.91	23.37	0.92	29.70	---	Peak
6	600.36	37.59	-8.41	46.00	41.24	24.34	0.90	28.89	---	Peak
7	1988.00	45.43	-28.57	74.00	45.33	30.36	4.46	34.72	---	Peak
8	2264.00	46.41	-27.59	74.00	43.34	31.25	5.72	33.90	---	Peak
9	2826.00	47.88	-26.12	74.00	40.76	32.14	2.76	27.78	---	Peak
10	3258.00	45.42	-28.58	74.00	36.96	33.49	6.02	31.05	---	Peak
11	3744.00	47.23	-26.77	74.00	37.90	34.43	6.39	31.49	---	Peak
12	4071.00	46.26	-27.74	74.00	36.78	34.96	6.31	31.79	---	Peak



Test Mode :	Mode 5	Temperature :	21~22°C
Test Engineer :	Leo Liao	Relative Humidity :	41~42%
Test Distance :	3m	Polarization :	Vertical
Function Type :	LTE Band 2 Idle + Bluetooth Idle + WLAN Idle(2.4G) + USB Cable (Data Link with Notebook) + Earphone + GPS Rx + SIM1		



Site : 03CH02-KS
 Condition : FCC CLASS-B 3m 966-02 LF ANT VERTICAL
 Project : (FC) 711304-01
 Mode : 5
 IMEI : 356805080001664 356805080001672 #8

	Freq	Level	Over Limit	Limit Line	ReadAntenna Level Factor	Cable Loss	Preamp Factor	A/Pos	T/Pos	Remark	
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1	134.76	35.87	-7.63	43.50	49.24	17.81	0.30	31.48	---	---	Peak
2	239.52	33.71	-12.29	46.00	47.36	16.96	0.48	31.09	---	---	Peak
3	418.97	34.71	-11.29	46.00	38.91	25.00	0.94	30.14	---	---	Peak
4	480.08	35.73	-10.27	46.00	41.14	23.37	0.92	29.70	---	---	Peak
5	600.36	39.86	-6.14	46.00	43.51	24.34	0.90	28.89	100	0	Peak
6	706.09	35.48	-10.52	46.00	35.74	26.72	1.20	28.18	---	---	Peak
7	1936.00	44.55	-29.45	74.00	45.13	29.93	4.49	35.00	---	---	Peak
8	2316.00	48.30	-25.70	74.00	44.94	31.31	5.67	33.62	---	---	Peak
9	2900.00	47.52	-26.48	74.00	40.50	32.35	2.95	28.28	---	---	Peak
10	3261.00	45.42	-28.58	74.00	36.96	33.49	6.02	31.05	---	---	Peak
11	3705.00	46.82	-27.18	74.00	37.52	34.30	6.34	31.34	---	---	Peak
12	4050.00	46.70	-27.30	74.00	37.34	34.91	6.24	31.79	---	---	Peak



4. List of Measuring Equipment

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
EMI Receiver	R&S	ESCI7	100768	9kHz~7GHz	Apr. 29, 2016	Feb. 21, 2017	Apr. 28, 2017	Conduction (CO01-KS)
AC LISN	MessTec	AN3016	060103	9kHz~30MHz	Oct. 13, 2016	Feb. 21, 2017	Oct. 12, 2017	Conduction (CO01-KS)
AC LISN (for auxiliary equipment)	MessTec	AN3016	060105	9kHz~30MHz	Oct. 13, 2016	Feb. 21, 2017	Oct. 12, 2017	Conduction (CO01-KS)
AC Power Source	Chroma	61602	ABP0000008 11	AC 0V~300V, 45Hz~1000Hz	Oct. 13, 2016	Feb. 21, 2017	Oct. 12, 2017	Conduction (CO01-KS)
EMI Test Receiver	R&S	ESR7	101403	9kHz~7GHz; Max 30dBm	Aug. 09, 2016	Jan. 31, 2017	Aug. 08, 2017	Radiation (03CH02-KS)
EXA Spectrum Analyzer	Keysight	N9010A	MY55150208	10Hz~44GHz, MAX 30dB	Apr. 22, 2016	Jan. 31, 2017	Apr. 21, 2017	Radiation (03CH02-KS)
Bilog Antenna	TeseQ	CBL6112D	37879	30MHz~2GHz	Aug. 20, 2016	Jan. 31, 2017	Aug. 19, 2017	Radiation (03CH02-KS)
Double Ridge Horn Antenna	ETS-Lindgren	3117	75957	1GHz~18GHz	Oct. 22, 2016	Jan. 31, 2017	Oct. 21, 2017	Radiation (03CH02-KS)
SHF-EHF Horn	Schwarzbeck	BBHA 9170	BBHA170249	15GHz~40GHz	Mar. 03, 2016	Jan. 31, 2017	Mar. 02, 2017	Radiation (03CH02-KS)
Amplifier	MITEQ	TTA1840-35-H G	1887435	18GHz~40GHz	Jan. 20, 2017	Jan. 31, 2017	Jan. 19, 2018	Radiation (03CH02-KS)
Amplifier	com-power	PA-103A	161069	1kHz~1000MHz / 32 dB	Apr. 22, 2016	Jan. 31, 2017	Apr. 21, 2017	Radiation (03CH02-KS)
Amplifier	Agilent	8449B	3008A02384	1-26.5GHz Gain 30dB	Oct. 13, 2016	Jan. 31, 2017	Oct. 12, 2017	Radiation (03CH02-KS)
AC Power Source	Chroma	61601	61601000247 3	N/A	NCR	Jan. 31, 2017	NCR	Radiation (03CH02-KS)
Turn Table	MF	MF7802	N/A	0~360 degree	NCR	Jan. 31, 2017	NCR	Radiation (03CH02-KS)
Antenna Mast	MF	MF7802	N/A	1 m~4 m	NCR	Jan. 31, 2017	NCR	Radiation (03CH02-KS)

NCR: No Calibration Required

5. Uncertainty of Evaluation

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

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2U_c(y)$)	2.3dB
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Uncertainty of Radiated Emission Measurement (30 MHz ~ 1000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2U_c(y)$)	5.2dB
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Uncertainty of Radiated Emission Measurement (1GHz ~ 18GHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2U_c(y)$)	4.7dB
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Uncertainty of Radiated Emission Measurement (18GHz ~ 40GHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2U_c(y)$)	5.3dB
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