FCC RF Test Report

APPLICANT	:	Motorola Mobility LLC
EQUIPMENT	:	Mobile Cellular Phone
BRAND NAME	:	Motorola
MODEL NAME	:	10742, 10741
FCC ID	:	IHDT56WH2
STANDARD	:	FCC Part 15 Subpart C §15.225
CLASSIFICATION	:	(DXX) Low Power Communication Device Transmitter

The product was received on Mar. 17, 2017 and testing was completed on Apr. 20, 2017. We, Sporton International (KunShan) INC., would like to declare that the tested sample has been evaluated in accordance with the test procedures 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.

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Testing Laboratory 2627

Sporton International (KunShan) INC.

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REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FR731705-01D	Rev. 01	Initial issue of report	May 31, 2017

SUMMARY OF THE TEST RESULT

Applied Standard: 47 CFR FCC Part 15 Subpart C				
Part	**FCC Rule**	**Description of Test**	**Result**	**Under Limit**
3.1	15.207	AC Power Line Conducted Emissions	Complies	10.40 dB at 0.153MHz
3.2	15.215(c)	20dB Spectrum Bandwidth	Complies	-
	-	99% OBW Spectrum Bandwidth	Complies	-
3.3	15.225(e)	Frequency Stability	Complies	-
3.4	15.225(a)(b)(c)	Field Strength of Fundamental Emissions	Complies	63.37 dB at 13.560 MHz
3.5	15.225(d) 15.209	Radiated Emissions	Complies	14.64 dB at 31.940 MHz
3.6	15.203	Antenna Requirements	Complies	-

Test Items	Uncertainty	Remark
AC Power Line Conducted Emissions	±2.5dB	Confidence levels of 95%
Radiated Emissions (30MHz~1000MHz)	±4.6dB	Confidence levels of 95%

1. GENERAL INFORMATION

1.1 Applicant

Motorola Mobility LLC

222 W, Merchandise Mart Plaza, Chicago IL 60654 USA

1.2 Manufacturer

Motorola Mobility LLC

222 W, Merchandise Mart Plaza, Chicago IL 60654 USA

1.3 Product Feature of Equipment Under Test

Product Feature	
Equipment	Mobile Cellular Phone
Brand Name	Motorola
Model Name	10742, 10741
FCC ID	IHDT56WH2
EUT supports Radios application	GSM/GPRS/EGPRS/WCDMA/HSPA/DC-HSDPA/ HSPA+(16QAM uplink is not supported)/LTE/NFC/ WLAN 2.4GHz 802.11b/g/n HT20/HT40/ WLAN 5GHz 802.11a/n HT20/HT40/ Bluetooth v3.0 + EDR/Bluetooth v4.0 LE/Bluetooth v4.1 LE
IMEI Code	Conducted: 355656080018674/355656080018682 Conduction: 355656080016330/36100856553A08 Radiation: 355656080017718/355656080017726
HW Version	DVT2
SW Version	sanders_n-userdebug 7.1.1 NPS26.85 1826 intcfg.test-keys
EUT Stage	Identical Prototype

Remark:

1. The above EUT's information was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.
2. There are two different types of EUT sample 1 and sample 2. Sample 1 is dual SIM card mobile (Model Name: 10742) and sample 2 is single SIM card mobile (Model Name: 10741). The differences between two samples are only for SIM slot. According to the difference, we choose sample 1 to perform full test.

1.4 Product Specification of Equipment Under Test

Standards-related Product Specification	
Tx/Rx Frequency Range	13.553 ~ 13.567MHz
Channel Number	1
20dBW	2.48 KHz
99%OBW	2.10 KHz
Antenna Type	Loop Antenna
Type of Modulation	ASK

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

1.5 Modification of EUT

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

1.6 Specification of Accessory

Specification of Accessory				
AC Adapter	**Brand Name**	Motorola (Salom)	**Model Name**	SC-22
	Power Rating	I/P: 100-240Vac, 500mA, O/P: 5Vdc or 9Vdc or 12Vdc, 3000mA or 1600mA or 1200mA		
Battery	**Brand Name**	Motorola (ATL)	**Model Name**	HG30
	Power Rating	3.8Vdc,3000mAh (Min/Typ)	**Type**	Li-ion, ATL404296
Earphone	**Brand Name**	Motorola(JuWei)	**Model Name**	JWEP0998-W09R
	Signal Line Type	1.23 meter, non-shielded cable, without ferrite core		
USB Cable	**Brand Name**	Motorola (hetong)	**Model Name**	HT-SJX-17030102
	Signal Line Type	1.02 meter, shielded cable, without ferrite core		

1.7 Testing Location

Test Site	Sporton International (KunShan) INC.			
Test Site Location	No.3-2, Pingxiang Road, Kunshan Development Zone, Jiangsu, China TEL: +86-0512-5790-0158 FAX: +86-0512-5790-0958			
Test Site No.	**Sporton Site No.**			**FCC Registration No.**
	TH01-KS	CO01-KS	03CH02-KS	418269
Test Engineer	Ivan Zhang	Morris Li	Genry Long	
Temperature	24~25℃	20~22℃	21~22℃	
Relative Humidity	54~55%	44~46%	41~42%	

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

1.8 Applicable Standards

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

- FCC Part 15 Subpart C §15.225
- ANSI C63.10-2013

2. TEST CONFIGURATION OF EQUIPMENT UNDER TEST

2.1 Descriptions of Test Mode

Investigation has been done on all the possible configurations for searching the worst cases.

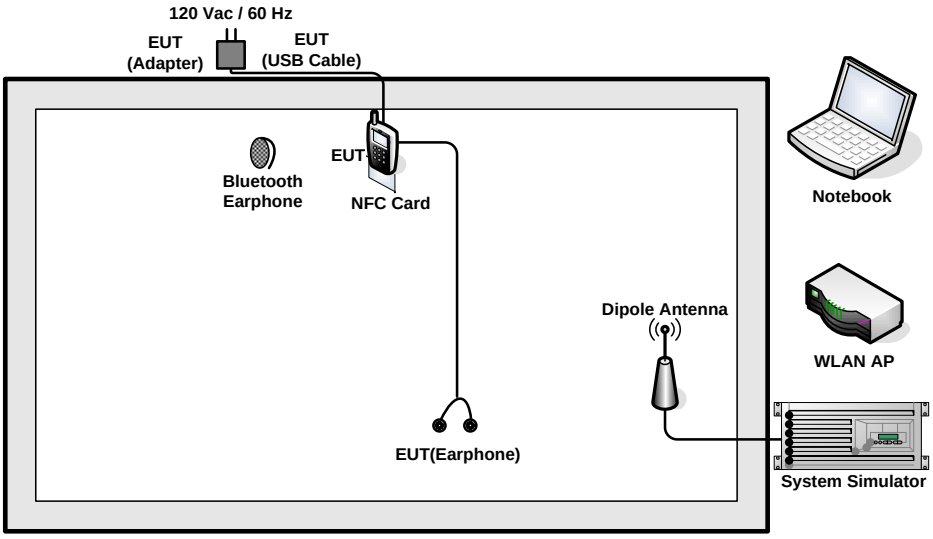
The following table is a list of the test modes shown in this test report.

Test Items	
AC Power Line Conducted Emissions	Field Strength of Fundamental Emissions
20dB Spectrum Bandwidth	Frequency Stability
Radiated Emissions 9kHz~30MHz	Radiated Emissions 30MHz~1GHz

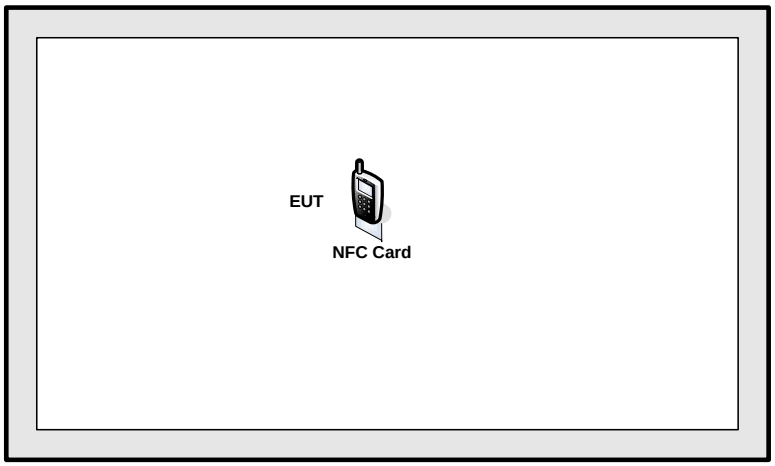
The EUT pre-scanned in four NFC type, A, B, F, V. The worst type (type F) was recorded in this report. Pre-scanned tests, X, Y, Z in three orthogonal panels to determine the final configuration (Y plane as worst plane) from all possible combinations.

2.2 Connection Diagram of Test System

<AC Conducted Emissions>



< For Fundamental Emissions and Mask and Radiated Emissions Measurement >



2.3 Table for Supporting Units

Support Unit	Manufacturer	Model	FCC ID
System Simulator	R&S	CMU 200	N/A
WLAN AP	LINKSYS	WRT600N	Q87-WRT600NV11
Bluetooth Earphone	Lenovo	LBH308	N/A
Notebook	Lenovo	G480	N/A
NFC Card	N/A	N/A	N/A

2.4 EUT Operation Test Setup

The EUT was programmed to be in continuously transmitting mode.

The ancillary equipment, NFC card, is used to make the EUT (NFC) continuously transmit at 13.56MHz and is placed around 3 cm gap to the EUT.

3. TEST RESULTS

3.1 AC Power Line Conducted Emissions Measurement

3.1.1 Limit 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 (dBμV)	
	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.

For terminal test result, the testing follows FCC KDB 174176.

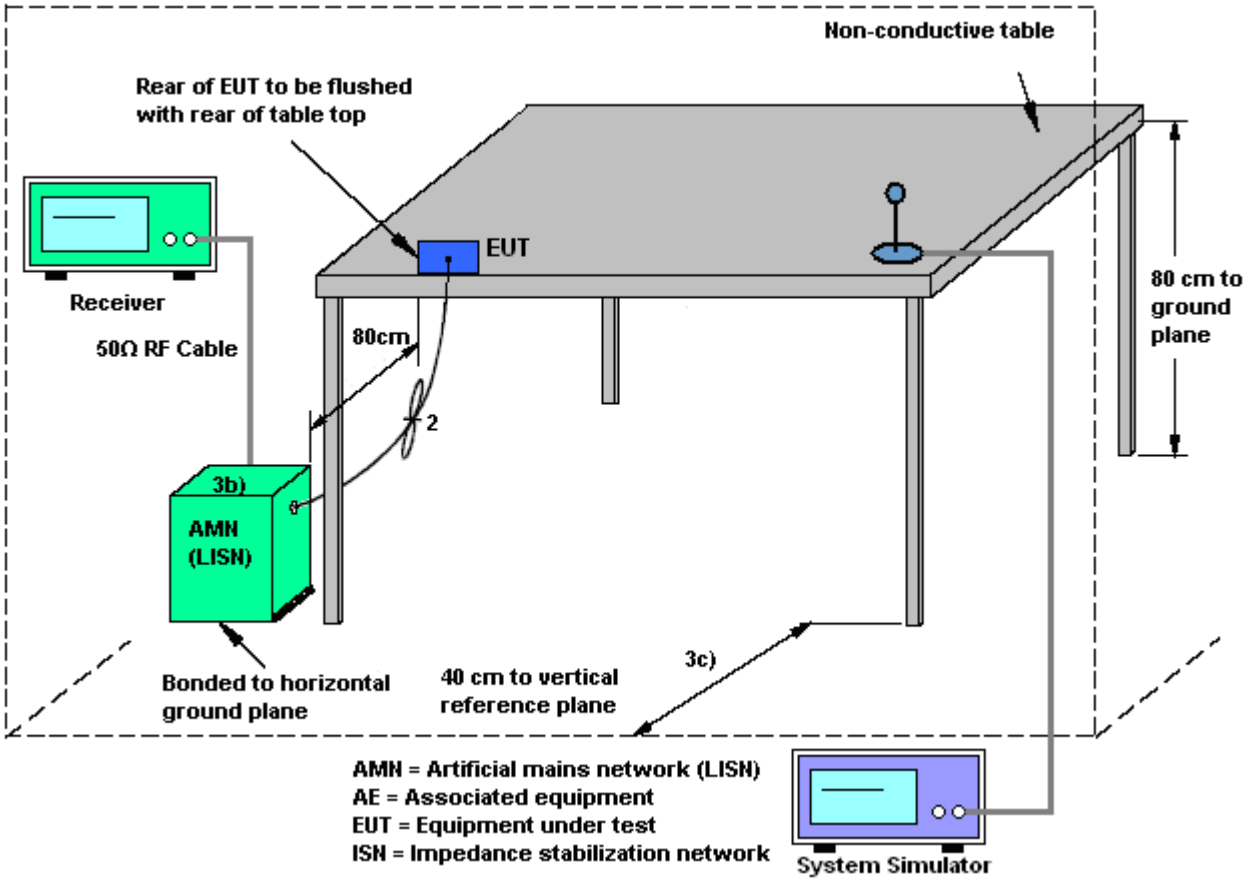
3.1.2 Measuring Instruments

See list of measuring instruments of this test report.

3.1.3 Test Procedures

1. The EUT was placed 0.4 meter from the conducting wall of the shielding room, and it 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 20dB and 99% OBW Spectrum Bandwidth Measurement

3.2.1 Limit

Intentional radiators must be designed to ensure that the 20dB and 99% emission bandwidth in the specific band 13.553~13.567MHz.

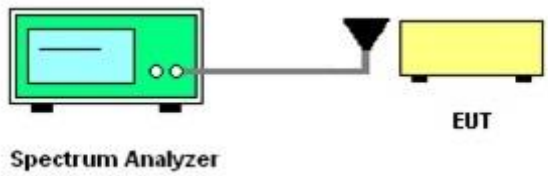
3.2.2 Measuring Instruments

See list of measuring instruments of this test report.

3.2.3 Test Procedures

1. The spectrum analyzer connected via a receive antenna placed near the EUT in peak Max hold mode.
2. The resolution bandwidth of 1 kHz and the video bandwidth of 3 kHz were used.
3. Measured the spectrum width with power higher than 20dB below carrier.
4. Measured the 99% OBW.

3.2.4 Test Setup



3.2.5 Test Result of Conducted Test Items

Please refer to Appendix B.

3.3 Frequency Stability Measurement

3.3.1 Limit

The frequency tolerance of the carrier signal shall be maintained within +/- 0.01% (100ppm) of the operating frequency over a temperature variation of -20 degrees to +50 degrees C at normal supply voltage, and for a variation in the primary supply voltage from 85% to 115% of the rated supply voltage at a temperature of 20 degrees C. For battery operated equipment, the equipment tests shall be performed using a new battery.

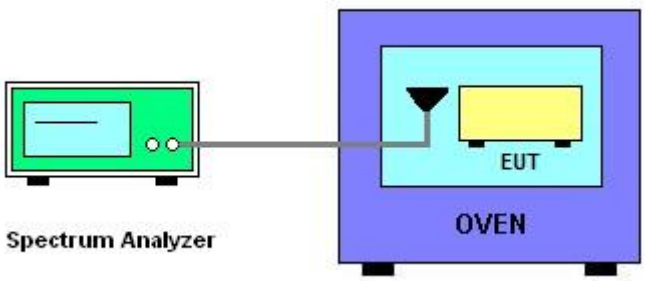
3.3.2 Measuring Instruments

See list of measuring instruments of this test report.

3.3.3 Test Procedures

1. The spectrum analyzer connected via a receive antenna placed near the EUT.
2. EUT have transmitted signal and fixed channelize.
3. Set the spectrum analyzer span to view the entire emissions bandwidth.
4. Set RBW = 1 kHz, VBW = 3 kHz with peak detector and maxhold settings.
5. The fc is declaring of channel frequency. Then the frequency error formula is $(fc-f)/fc \times 10^6$ ppm and the limit is less than ±100ppm.
6. Extreme temperature rule is -20°C~50°C.

3.3.4 Test Setup



3.3.5 Test Result of Conducted Test Items

Please refer to Appendix B.

3.4 Field Strength of Fundamental Emissions and Mask Measurement

3.4.1 Limit

Rules and specifications	FCC CFR 47 Part 15 section 15.225			
Description	Compliance with the spectrum mask is tested with RBW set to 9kHz.			
Freq. of Emission (MHz)	Field Strength (μV/m) at 30m	Field Strength (dBμV/m) at 30m	Field Strength (dBμV/m) at 10m	Field Strength (dBμV/m) at 3m
1.705~13.110	30	29.5	48.58	69.5
13.110~13.410	106	40.5	59.58	80.5
13.410~13.553	334	50.5	69.58	90.5
13.553~13.567	15848	84.0	103.08	124.0
13.567~13.710	334	50.5	69.58	90.5
13.710~14.010	106	40.5	59.58	80.5
14.010~30.000	30	29.5	48.58	69.5

3.4.2 Measuring Instruments

See list of measuring instruments of this test report.

3.4.3 Test Procedures

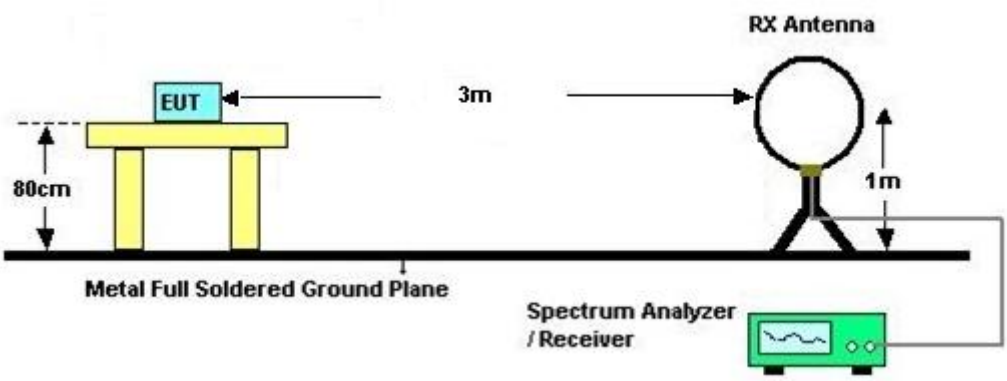
1. Configure the EUT according to ANSI C63.10. The EUT was placed on the top of the turntable 0.8 meter above ground. The phase center of the loop receiving antenna mounted antenna tower was placed 3 meters far away from the turntable.
2. Power on the EUT and all the supporting units. The turntable was rotated by 360 degrees to determine the position of the highest radiation.
3. The height of the receiving antenna was fixed at one meter above ground to find the maximum emissions field strength.
4. For Fundamental emissions, use the receiver to measure QP reading.

5. When the radiated emissions limits are expressed in terms of the average value of the emissions, and pulsed operation is employed, the measurement field strength shall be determined by averaging over one complete pulse train, including blanking intervals, as long as the pulse train does not exceed 0.1 seconds. As an alternative (provided the transmitter operates for longer than 0.1 seconds) or in cases where the pulse train exceeds 0.1 seconds, the measured field strength shall be determined from the average absolute voltage during a 0.1 second interval during which the field strength is at its maximum value.
6. Compliance with the spectrum mask is tested with RBW set to 9kHz.

   Note: Emission level (dBμV/m) = 20 log Emission level (μV/m).

3.4.4 Test Setup

For radiated emissions below 30MHz



3.4.5 Test Result of Field Strength of Fundamental Emissions and Mask

Please refer to Appendix C.

3.5 Radiated Emissions Measurement

3.5.1 Limit

The field strength of any emissions which appear outside of 13.110 ~14.010MHz band shall not exceed the general radiated emissions limits.

Frequencies (MHz)	Field Strength (μV/m)	Measurement Distance (meters)
0.009~0.490	2400/F(kHz)	300
0.490~1.705	24000/F(kHz)	30
1.705~30.0	30	30
30~88	100	3
88~216	150	3
216~960	200	3
Above 960	500	3

3.5.2 Measuring Instruments

See list of measuring instruments of this test report.

3.5.3 Measuring Instrument Setting

The following table is the setting of receiver.

Receiver Parameter	Setting
Attenuation	Auto
Frequency Range: 9kHz~150kHz	RBW 200Hz for QP
Frequency Range: 150kHz~30MHz	RBW 9kHz for QP
Frequency Range: 30MHz~1000MHz	RBW 120kHz for Peak

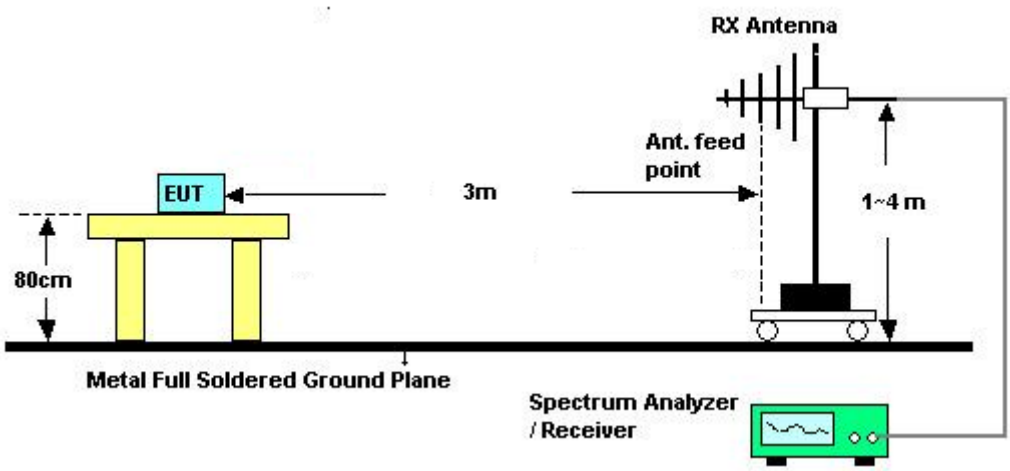
Note: The emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9-90 kHz, 110-490 kHz. Radiated emission limits in these two bands are based on measurements employing an average detector.

3.5.4 Test Procedures

1. Configure the EUT according to ANSI C63.10. The EUT was placed on the top of the turntable 0.8 meter above ground. The phase center of the receiving antenna mounted on the top of a height-variable antenna tower was placed 3 meters far away from the turntable.
2. Power on the EUT and all the supporting units. The turntable was rotated by 360 degrees to determine the position of the highest radiation.
3. The height of the broadband receiving antenna was varied between one meter and four meters above ground to find the maximum emissions field strength of both horizontal and vertical polarization.
4. For each suspected emissions, the antenna tower was scan (from 1 M to 4 M) and then the turntable was rotated (from 0 degree to 360 degrees) to find the maximum reading.
5. Set the test-receiver system to Peak or CISPR quasi-peak Detect Function with specified bandwidth under Maximum Hold Mode.
6. When the radiated emissions limits are expressed in terms of the average value of the emissions, and pulsed operation is employed, the measurement field strength shall be determined by averaging over one complete pulse train, including blanking intervals, as long as the pulse train does not exceed 0.1 seconds. As an alternative (provided the transmitter operates for longer than 0.1 seconds) or in cases where the pulse train exceeds 0.1 seconds, the measured field strength shall be determined from the average absolute voltage during a 0.1 second interval during which the field strength is at its maximum value.
7. In case the emission is lower than 30MHz, loop antenna has to be used for measurement and the recorded data should be QP measured by receiver. Antenna Requirements

3.5.5 Test Setup

For radiated emissions above 30MHz



3.5.6 Test Result of Radiated Emissions Measurement

Please refer to Appendix C.

3.6 Antenna Requirements

3.6.1 Standard Applicable

Except for special regulations, the Low-power Radio-frequency Devices must not be equipped with any jacket for installing an antenna with extension cable. An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this Section. The manufacturer may design the unit so that the user can replace a broken antenna, but the use of a standard antenna jack or electrical connector is prohibited.

The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the FCC rule.

3.6.2 Antenna Anti-Replacement Construction

An embedded-in antenna design is used.

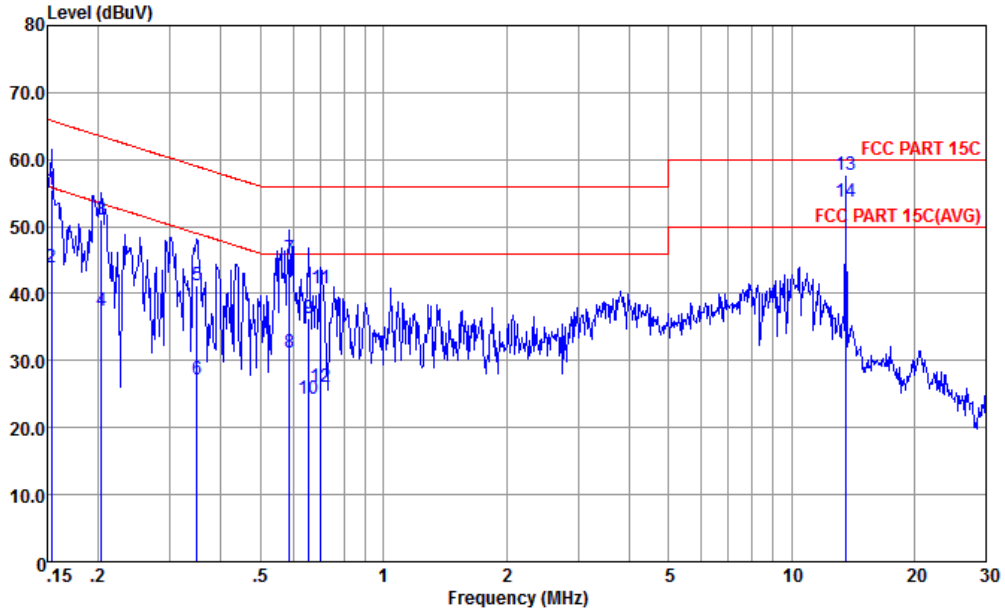
4. LIST OF MEASURING EQUIPMENT

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Spectrum Analyzer	R&S	FSV40	101040	10Hz~40GHz	Aug. 09, 2016	Apr. 20, 2017	Aug. 08, 2017	Conducted (TH01-KS)
Thermal Chamber	Ten Billion	TTC-B3S	TBN-960502	-40~+150°C	Oct. 13, 2016	Apr. 20, 2017	Oct. 12, 2017	Conducted (TH01-KS)
AC Power Source	Chroma	61602	ABP000000811	AC 0V~300V, 45Hz~1000Hz	Oct. 13, 2016	Apr. 20, 2017	Oct. 12, 2017	Conducted (TH01-KS)
EMI Test Receiver	R&S	ESR7	101403	9kHz~7GHz; Max 30dBm	Aug. 09, 2016	Apr. 14, 2017	Aug. 08, 2017	Radiation (03CH02-KS)
Loop Antenna	R&S	HFH2-Z2	100321	9kHz~30MHz	Nov. 23, 2016	Apr. 14, 2017	Nov. 22, 2017	Radiation (03CH02-KS)
Bilog Antenna	TeseQ	CBL6112D	37879	30MHz~2GHz	Aug. 20, 2016	Apr. 14, 2017	Aug. 19, 2017	Radiation (03CH02-KS)
AC Power Source	Chroma	61601	616010002473	N/A	NCR	Apr. 14, 2017	NCR	Radiation (03CH02-KS)
Turn Table	MF	MF7802	N/A	0~360 degree	NCR	Apr. 14, 2017	NCR	Radiation (03CH02-KS)
Antenna Mast	MF	MF7802	N/A	1 m~4 m	NCR	Apr. 14, 2017	NCR	Radiation (03CH02-KS)
Amplifier	com-power	PA-103A	161069	1kHz ~1000MHz / 32 dB	Apr. 22, 2016	Apr. 14, 2017	Apr. 21, 2017	Radiation (03CH02-KS)
EMI Receiver	R&S	ESCI7	100768	9kHz~7GHz	Apr. 29, 2016	Apr. 18, 2017	Apr. 28, 2017	Conduction (CO01-KS)
AC LISN	MessTec	AN3016	060103	9kHz~30MHz	Oct. 13, 2016	Apr. 18, 2017	Oct. 12, 2017	Conduction (CO01-KS)
AC LISN (for auxiliary equipment)	MessTec	AN3016	060105	9kHz~30MHz	Oct. 13, 2016	Apr. 18, 2017	Oct. 12, 2017	Conduction (CO01-KS)
AC Power Source	Chroma	61602	ABP000000811	AC 0V~300V, 45Hz~1000Hz	Oct. 13, 2016	Apr. 18, 2017	Oct. 12, 2017	Conduction (CO01-KS)

NCR: No Calibration Required

Appendix A. Test Results of Conducted Emission Test

Test Mode :	NFC Tx	Test Voltage :	120Vac / 60Hz
Function Type :	GSM850 Idle + Bluetooth Link + WLAN Link(2.4G) + USB Cable (Charging from Adapter) + Earphone + Battery + NFC Tx for Sample 1		



Site : CO01-KS
Condition : FCC PART 15C LISN-L-161017-060103 LINE

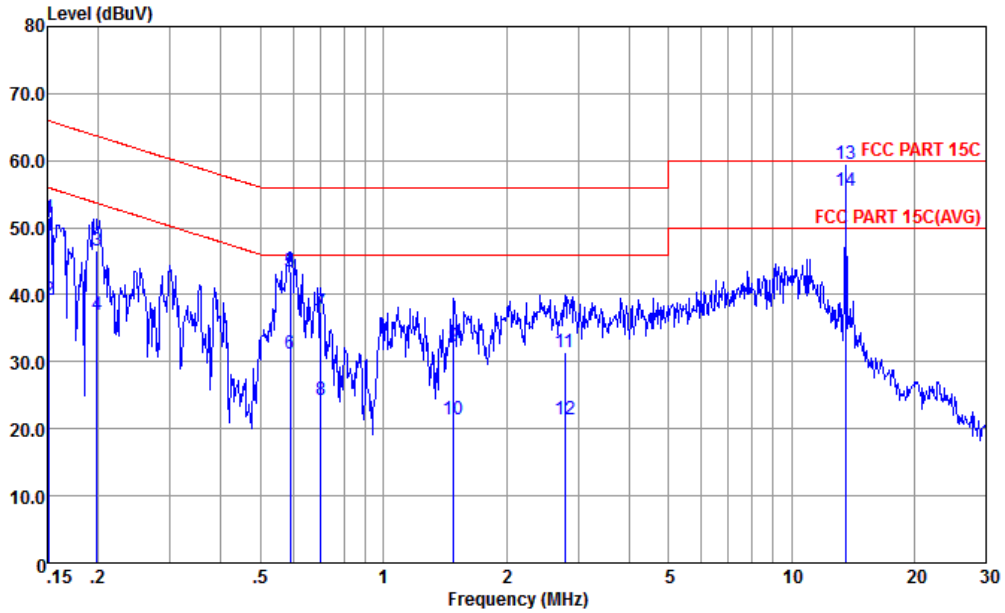
IMEI : 355656080016330/36100856553A08 #7

	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.153	55.42	-10.40	65.82	44.50	0.53	10.39	QP
2	0.153	43.82	-12.00	55.82	32.90	0.53	10.39	Average
3	0.204	51.00	-12.45	63.45	40.40	0.27	10.33	QP
4	0.204	37.50	-15.95	53.45	26.90	0.27	10.33	Average
5	0.348	41.30	-17.70	59.00	30.80	0.27	10.23	QP
6	0.348	27.30	-21.70	49.00	16.80	0.27	10.23	Average
7	0.589	45.34	-10.66	56.00	34.90	0.26	10.18	QP
8	0.589	31.24	-14.76	46.00	20.80	0.26	10.18	Average
9	0.658	36.33	-19.67	56.00	25.90	0.25	10.18	QP
10	0.658	24.33	-21.67	46.00	13.90	0.25	10.18	Average
11	0.701	40.83	-15.17	56.00	30.40	0.25	10.18	QP
12	0.701	26.13	-19.87	46.00	15.70	0.25	10.18	Average
13	13.560	57.60	-2.40	60.00	46.89	0.29	10.42	QP
14 *	13.560	53.60	3.60	50.00	42.89	0.29	10.42	Average

(1) with antenna

Remark: 13.560MHz is the NFC RF fundamental signal.

Test Mode :	NFC Tx	Test Voltage :	120Vac / 60Hz
Function Type :	GSM850 Idle + Bluetooth Link + WLAN Link(2.4G) + USB Cable (Charging from Adapter) + Earphone + Battery + NFC Tx for Sample 1		



Site : CO01-KS
Condition : FCC PART 15C LISN-N-161017-060103 NEUTRAL

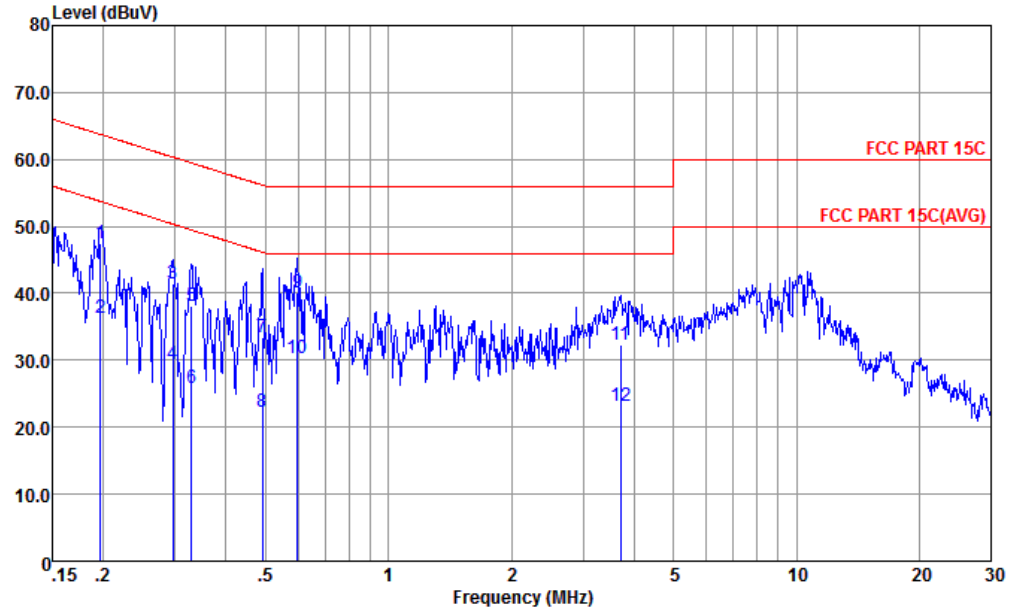
IMEI : 355656080016330/36100856553A08 #7

	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.152	51.43	-14.48	65.91	40.70	0.34	10.39	QP
2	0.152	39.33	-16.58	55.91	28.60	0.34	10.39	Average
3	0.199	46.56	-17.11	63.67	35.90	0.33	10.33	QP
4	0.199	37.06	-16.61	53.67	26.40	0.33	10.33	Average
5	0.592	43.46	-12.54	56.00	32.90	0.38	10.18	QP
6	0.592	31.26	-14.74	46.00	20.70	0.38	10.18	Average
7	0.701	37.46	-18.54	56.00	26.90	0.38	10.18	QP
8	0.701	24.36	-21.64	46.00	13.80	0.38	10.18	Average
9	1.487	32.39	-23.61	56.00	21.79	0.41	10.19	QP
10	1.487	21.49	-24.51	46.00	10.89	0.41	10.19	Average
11	2.779	31.51	-24.49	56.00	20.90	0.40	10.21	QP
12	2.779	21.41	-24.59	46.00	10.80	0.40	10.21	Average
13	13.560	59.60	-0.40	60.00	48.90	0.28	10.42	QP
14 *	13.560	55.50	5.50	50.00	44.80	0.28	10.42	Average

(1) with antenna

Remark: 13.560MHz is the NFC RF fundamental signal.

Test Mode :	NFC Tx	Test Voltage :	120Vac / 60Hz
Function Type :	GSM850 Idle + Bluetooth Link + WLAN Link(2.4G) + USB Cable (Charging from Adapter) + Earphone + Battery + NFC Tx for Sample 1		



Site : CO01-KS
Condition : FCC PART 15C LISN-L-161017-060103 LINE

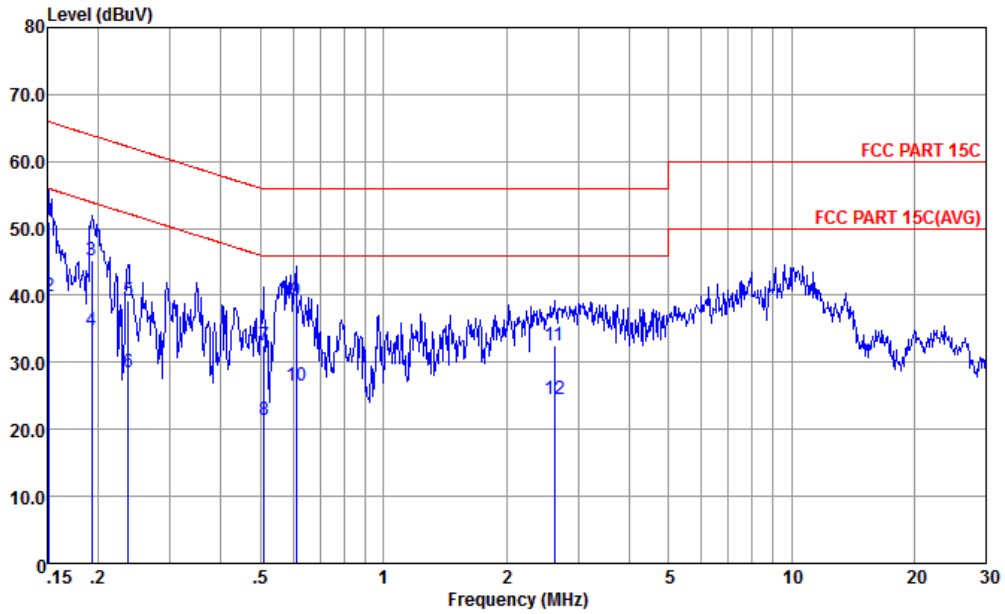
IMEI : 355656080016330/36100856553A08 #7

	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.197	47.52	-16.24	63.76	36.89	0.29	10.34	QP
2	0.197	36.42	-17.34	53.76	25.79	0.29	10.34	Average
3	0.296	41.43	-18.94	60.37	30.90	0.27	10.26	QP
4	0.296	29.33	-21.04	50.37	18.80	0.27	10.26	Average
5	0.329	38.21	-21.28	59.49	27.70	0.27	10.24	QP
6	0.329	25.91	-23.58	49.49	15.40	0.27	10.24	Average
7	0.491	33.36	-22.78	56.14	22.90	0.27	10.19	QP
8	0.491	22.26	-23.88	46.14	11.80	0.27	10.19	Average
9	0.598	40.14	-15.86	56.00	29.70	0.26	10.18	QP
10 *	0.598	30.24	-15.76	46.00	19.80	0.26	10.18	Average
11	3.700	32.34	-23.66	56.00	21.90	0.21	10.23	QP
12	3.700	23.24	-22.76	46.00	12.80	0.21	10.23	Average

(2) With dummy load

Remark: Only the fundamental NFC signal needs to be retested per C63.4.

Test Mode :	NFC Tx	Test Voltage :	120Vac / 60Hz
Function Type :	GSM850 Idle + Bluetooth Link + WLAN Link(2.4G) + USB Cable (Charging from Adapter) + Earphone + Battery + NFC Tx for Sample 1		



Site : CO01-KS
Condition : FCC PART 15C LISN-N-161017-060103 NEUTRAL

IMEI : 355656080016330/36100856553A08 #7

		Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
		MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	*	0.152	51.13	-14.78	65.91	40.40	0.34	10.39	QP
2		0.152	39.93	-15.98	55.91	29.20	0.34	10.39	Average
3		0.192	45.17	-18.76	63.93	34.50	0.33	10.34	QP
4		0.192	34.87	-19.06	53.93	24.20	0.33	10.34	Average
5		0.237	39.14	-23.08	62.22	28.50	0.34	10.30	QP
6		0.237	28.54	-23.68	52.22	17.90	0.34	10.30	Average
7		0.510	32.47	-23.53	56.00	21.90	0.38	10.19	QP
8		0.510	21.37	-24.63	46.00	10.80	0.38	10.19	Average
9		0.611	39.26	-16.74	56.00	28.70	0.38	10.18	QP
10		0.611	26.46	-19.54	46.00	15.90	0.38	10.18	Average
11		2.622	32.51	-23.49	56.00	21.90	0.40	10.21	QP
12		2.622	24.41	-21.59	46.00	13.80	0.40	10.21	Average

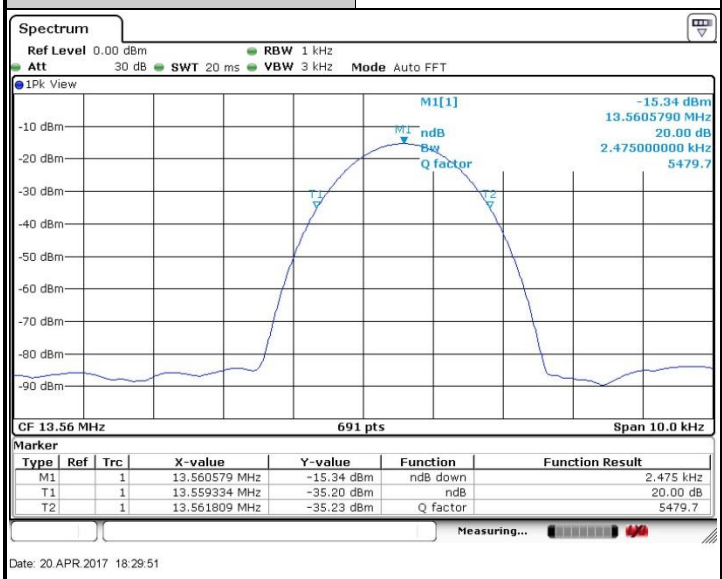
(2) With dummy load

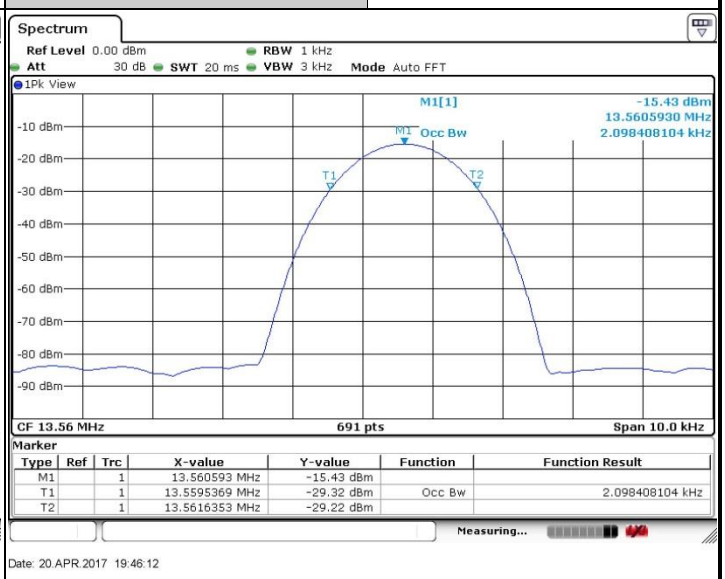
Remark: Only the fundamental NFC signal needs to be retested per C63.4.

Appendix B. Test Results of Conducted Test Items

B1. Test Result of 20dB Spectrum Bandwidth

Test mode	NFC Tx	Test Frequency (MHz)	13.56





20dB Bandwidth (kHz)	2.48	**99% Occupied BW(kHz)**	2.10
Frequency range (MHz)	**f_L > 13.553**	13.559334	**Test Result**
	f_H < 13.567	13.561809	**Complies**

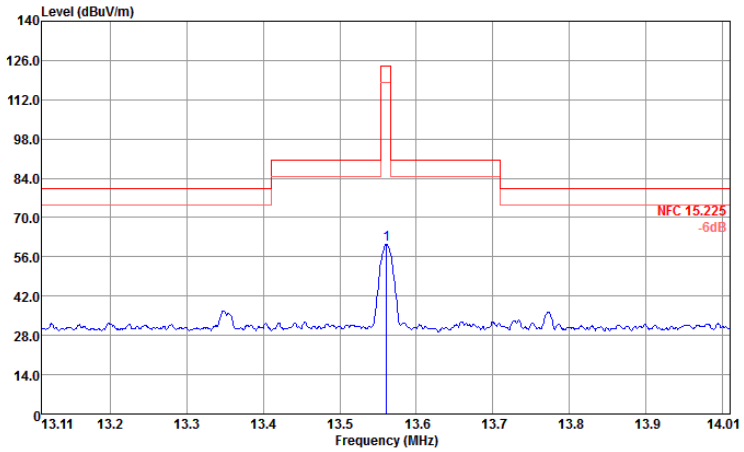
B2. Test Result of Frequency Stability

Voltage vs. Frequency Stability		Temperature vs. Frequency Stability	
Voltage (Vac)	**Measurement Frequency (MHz)**	**Temperature (℃)**	**Measurement Frequency (MHz)**
120	13.560572	-20	13.560594
102	13.560572	-10	13.560601
138	13.560572	0	13.560594
		10	13.560572
		20	13.560572
		30	13.560572
		40	13.560572
		50	13.560572
Max.Deviation (MHz)	0.000572	**Max.Deviation (MHz)**	0.000601
Max.Deviation (ppm)	42.1829	**Max.Deviation (ppm)**	44.3215
Limit	**FS < ±100 ppm**	**Limit**	**FS < ±100 ppm**
Test Result	**PASS**	**Test Result**	**PASS**

Appendix C. Test Results of Radiated Test Items

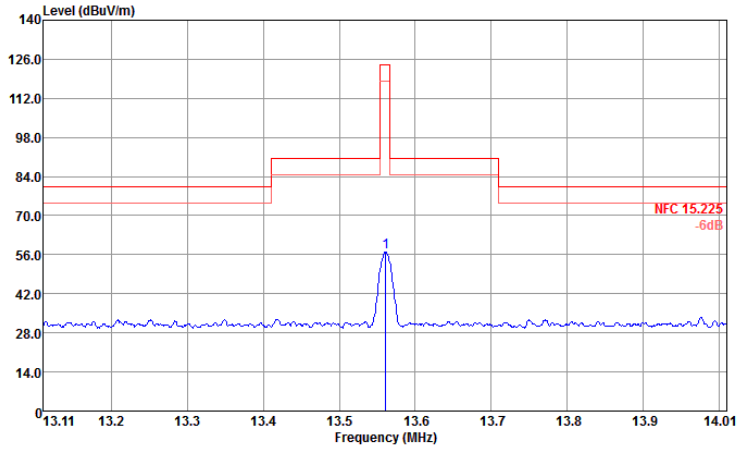
C1. Test Result of Field Strength of Fundamental Emissions

Test Mode :	NFC Tx	Test Frequency (MHz)	13.56



Site : 03CH02-KS
Condition : NFC 15.225 3m NFC ANT HORIZONTAL

	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	cm	deg		
1	13.56	60.63	-63.37	124.00	40.57	19.90	0.16	---	---	QP	HORIZONTAL



Site : 03CH02-KS
Condition : NFC 15.225 3m NFC ANT VERTICAL

	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	cm	deg		
1	13.56	57.00	-67.00	124.00	36.94	19.90	0.16	---	---	QP	VERTICAL

C2. Results of Radiated Spurious Emissions (9 kHz~30MHz)

Test Mode :	NFC Tx	Polarization :	Horizontal

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
0.0169	37.81	-85.24	123.05	17.2	20.6	0.01	-	-	Average
0.03128	40.64	-77.05	117.69	20.23	20.4	0.01	-	-	Average
0.03565	52.02	-64.54	116.56	31.61	20.4	0.01	-	-	Average
0.187	58.89	-43.26	102.15	38.45	20.43	0.01	-	-	Average
0.3498	51.71	-45	96.71	31.2	20.5	0.01	-	-	Average
0.83635	46.13	-23.01	69.14	26.45	19.66	0.02	-	-	QP

Test Mode :	NFC Tx	Polarization :	Vertical

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
0.03128	42.46	-75.23	117.69	22.05	20.4	0.01	-	-	Average
0.03579	56.28	-60.24	116.52	35.87	20.4	0.01	-	-	Average
0.05003	38.23	-75.38	113.61	17.82	20.4	0.01	-	-	Average
0.1944	56.93	-44.88	101.81	36.49	20.43	0.01	-	-	Average
0.35165	52.63	-44.03	96.66	32.12	20.5	0.01	-	-	Average
0.853	46.95	-22.02	68.97	27.27	19.66	0.02	-	-	QP

Note:

1. The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.
2. Distance extrapolation factor = 40 log (specific distance / test distance) (dB);
3. Limit line = specific limits (dBμV) + distance extrapolation factor.

C3. Results of Radiated Spurious Emissions (30MHz~1GHz)

Test Mode :	NFC Tx	Polarization :	Horizontal

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
30	21.57	-18.43	40	26.28	26.3	0.09	31.1	-	-	Peak
47.46	19.86	-20.14	40	34.31	16.4	0.6	31.45	-	-	Peak
148.34	7.18	-36.32	43.5	19.76	17.32	0.99	30.89	-	-	Peak
243.4	10.03	-35.97	46	21.84	17.6	1.78	31.19	-	-	Peak
838.01	20.11	-25.89	46	20.35	28.34	2.5	31.08	-	-	Peak
949.56	27.76	-18.24	46	25.52	30.2	3.34	31.3	100	157	Peak

Test Mode :	NFC Tx	Polarization :	Vertical

Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
31.94	25.36	-14.64	40	31.17	25.18	0.07	31.06	100	169	Peak
47.46	21.63	-18.37	40	36.08	16.4	0.6	31.45	-	-	Peak
67.83	12.54	-27.46	40	29.97	13.22	0.79	31.44	-	-	Peak
296.75	14.01	-31.99	46	23.76	19.5	2.23	31.48	-	-	Peak
921.43	22.45	-23.55	46	20.87	29.57	3.2	31.19	-	-	Peak
949.56	26	-20	46	23.76	30.2	3.34	31.3	-	-	Peak

Note:

1. The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.
2. Emission level (dBμV/m) = 20 log Emission level (μV/m).
3. Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor= Level.