FCC RF Test Report

APPLICANT	:	VERTU Corporation Limited
EQUIPMENT	:	GSM 4 Band/CDMA/EVDO 2 Band/TD-SCDMA 2Band/UMTS 5 Band/HSUPA/HSDPA/LTE 21 Band/WLAN/BT/NFC mobile phone
BRAND NAME	:	VERTU
MODEL NAME	:	CONSTELLATION X
TYPE NAME	:	VM-08
FCC ID	:	P7QVM-08
STANDARD	:	FCC Part 15 Subpart C §15.225
CLASSIFICATION	:	(DXX) Low Power Communication Device Transmitter

The product was received on Jul. 20, 2016 and testing was completed on Dec. 30, 2016. 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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Prepared by: James Huang / Manager

Jones Tsai

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ilac-MRA TAF Testing Laboratory 2627

SPORTON INTERNATIONAL (KUNSHAN) INC.

No. 3-2, PingXiang Road, Kunshan, Jiangsu Province, P. R. China

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REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FR672003D	Rev. 01	Initial issue of report	Feb. 17, 2017

SUMMARY OF THE TEST RESULT

Applied Standard: 47 CFR FCC Part 15 Subpart C / IC RSS-210 issue 9					
Part	**FCC Rule**	**IC Rule**	**Description of Test**	**Result**	**Under Limit**
3.1	15.207	RSS-GEN 8.8	AC Power Line Conducted Emissions	Complies	5.82 dB at 13.560MHz
3.2	15.215(c)	-	20dB Spectrum Bandwidth	Complies	-
	-	RSS-GEN 6.6	99% OBW Spectrum Bandwidth	Complies	-
3.3	15.225(e)	B.6	Frequency Stability	Complies	-
3.4	15.225(a)(b)(c)	B.6	Field Strength of Fundamental Emissions	Complies	67.06 dB at 13.560 MHz
3.5	15.225(d) 15.209	B.6	Radiated Emissions	Complies	12.46 dB at 40.670 MHz
3.6	15.203	-	Antenna Requirements	Complies	-

Test Items	Uncertainty	Remark
AC Power Line Conducted Emissions	2.3dB	Confidence levels of 95%
Radiated Emissions (30MHz~1000MHz)	5.1dB	Confidence levels of 95%

1. GENERAL INFORMATION

1.1 Applicant

VERTU Corporation Limited

Beacon Hill Road, Church Crookham, Hampshire GU52 8DY, United Kingdom.

1.2 Manufacturer

VERTU Corporation Limited

Beacon Hill Road, Church Crookham, Hampshire GU52 8DY, United Kingdom.

1.3 Product Feature of Equipment Under Test

	Product Feature
Equipment	GSM 4 Band/CDMA/EVDO 2 Band/TD-SCDMA 2Band/UMTS 5 Band/HSUPA/HSDPA/LTE 21 Band/WLAN/BT/NFC mobile phone
Brand Name	VERTU
Model Name	CONSTELLATION X
Type Name	VM-08
FCC ID	P7QVM-08
GSM Operating Band(s)	GSM 850/900/1800/1900MHz
WCDMA Operating Band(s)	FDD Band I / II / IV / V /VIII
CDMA Operating Band(s)	CDMA2000 BC0/BC1
LTE Operating Band(s)	FDD Band 1/2/3/4/5/7/8/12/13/17/19/20/25/26/28/29/30 TDD Band 38/39/40/41
GPRS / EGPRS Multi Slot Class	GPRS Class 33, EGPRS Class 33
Wi-Fi Specification	2.4GHz 802.11b/g/n HT20 5GHz 802.11a/n HT20/HT40 5GHz 802.11ac VHT20/VHT40/VHT80
Bluetooth Version	Bluetooth v3.0 + EDR / Bluetooth v4.0 LE/ Bluetooth v4.2 LE
NFC Type	A, B, F, V
IMEI Code	Conducted: 004402550120590/004402550120608 Conduction:004402550120376/004402550120384 Radiation: 004402550120491/004402550120509
HW Version	PIO2
SW Version	6.0.1_1.434.0.070
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. Manufacturer’s declaration LTE band 40 disabled by software.

1.4 Product Specification of Equipment Under Test

Standards-related Product Specification	
Tx/Rx Frequency Range	13.553 ~ 13.567MHz
Channel Number	1
20dBW	2.49 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 Testing 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/IC Registration No.
	TH01-KS	CO01-KS	03CH02-KS	418269/4086E
Test Engineer	Silent Hai	Peter Wei	Dream Lee	
Temperature	21~25℃	22~24℃	23~25℃	
Relative Humidity	51~55%	40~42%	42~45%	

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 Part 15 Subpart C §15.225
- ANSI C63.10-2013
- IC RSS-210 Issue 9
- IC RSS-Gen Issue 4

1.8 Specification of Accessory

Specification of Accessory				
AC Adapter	**Brand Name**	VERTU	**Model Name**	AC-32V
	Power Rating	I/P: 100-240Vac, 450mA, O/P: 5Vdc, 2000mA		
Battery	**Brand Name**	VERTU	**Model Name**	VBL-04
	Power Rating	3.82Vdc, 3200mAh		
USB Cable	**Brand Name**	VERTU	**Model Name**	VC-02
	Signal Line Type	1.20m shielded cable, without ferrite core		
Earphone 1	**Brand Name**	VERTU	**Model Name**	WH5-V
	Signal Line Type	1.20m Unshielded cable, without ferrite core		
Earphone 2	**Brand Name**	VERTU	**Model Name**	HP-1V
	Signal Line Type	1.57m Unshielded cable, without ferrite core		
Earphone 3	**Brand Name**	VERTU	**Model Name**	HP-1V
	Signal Line Type	1.55m Unshielded cable, without ferrite core		
Wireless Charger Pad	**Brand Name**	VERTU	**Model Name**	AC-35V
	Power Rating	I/P: 5Vac, 1800mA		
Car Charger	**Brand Name**	VERTU	**Model Name**	DC-30V
	Power Rating	I/P: 12/24Vdc, 1.35A MAX, O/P: 5.15Vdc, 2.1AMAX		
Bluetooth Travel Speaker	**Brand Name**	VERTU	**Model Name**	SP-1V
	Power Rating	I/P: 5Vdc, 2Ah		
Portable Battery Charger	**Brand Name**	VERTU	**Model Name**	DC-10V
	Power Rating	I/P: 5Vdc, 2A, O/P: 5Vdc, 1.5/2.1A		

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.

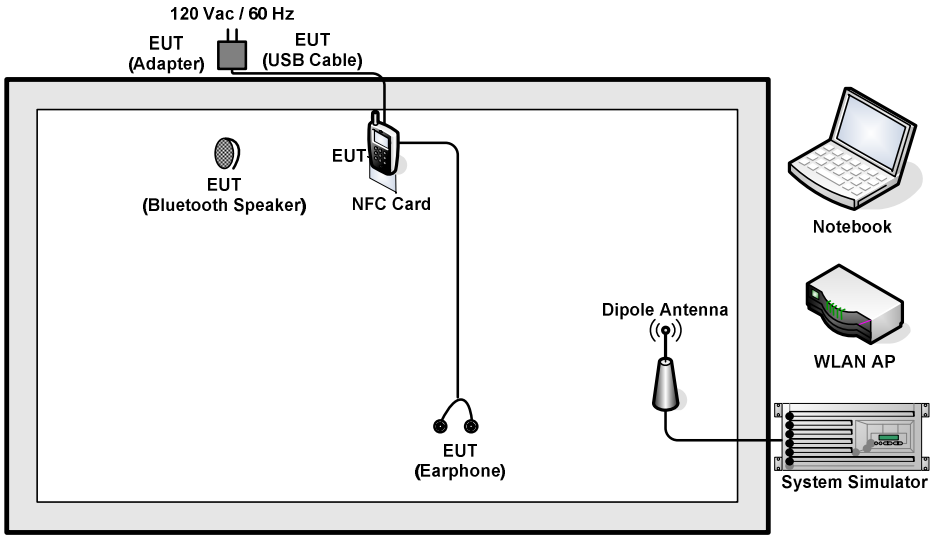
The following table is a list of the test modes shown in this test report.

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

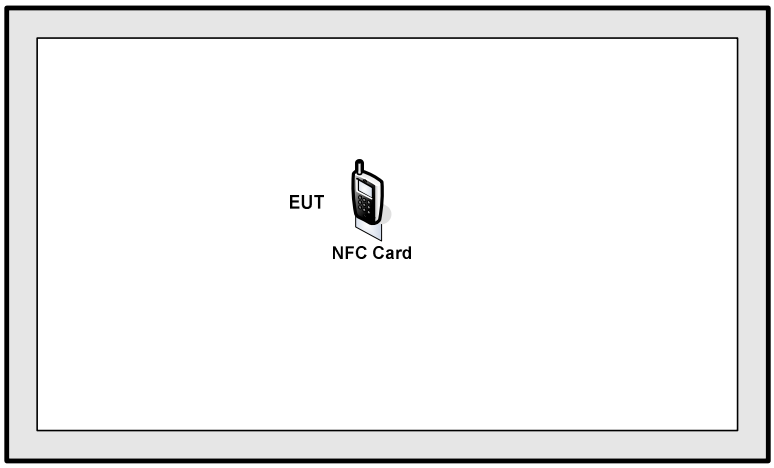
The EUT pre-scanned in four NFC type, A, B, F, V. The worst type (type F) was recorded in this report. Pre-scanned tests, X, Y, Z in three orthogonal panels to determine the final configuration (Y plane as worst plane) from all possible combinations.

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	Anritsu	MT8820C	N/A
WLAN AP	Linksys	WRT600N	Q87-WRT600NV11
NFC Card	N/A	N/A	N/A
Notebook	Lenovo	G480	FCC DoC

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.

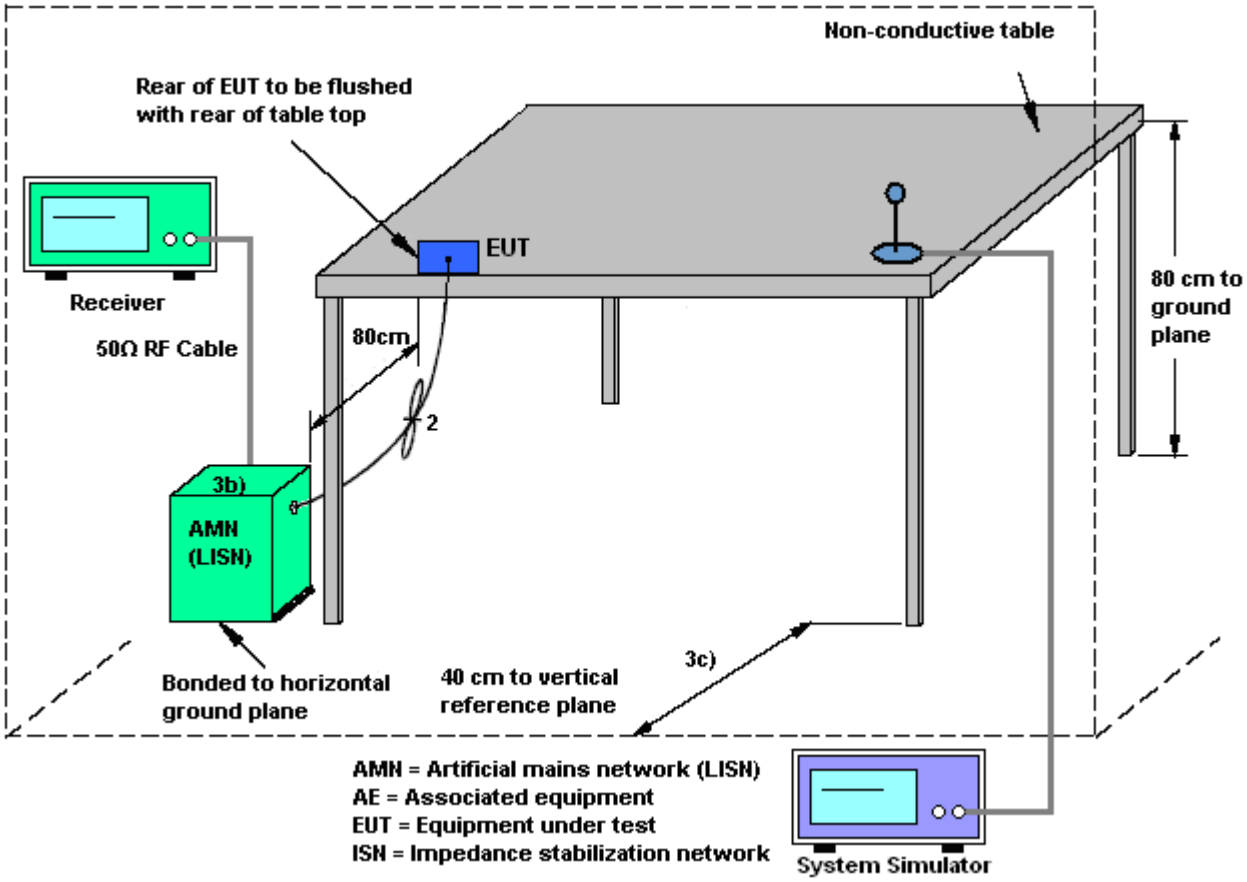
3.1.2 Measuring Instruments

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.

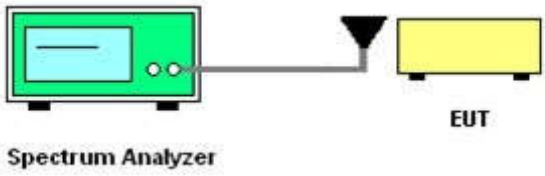
3.2.2 Measuring Instruments

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.

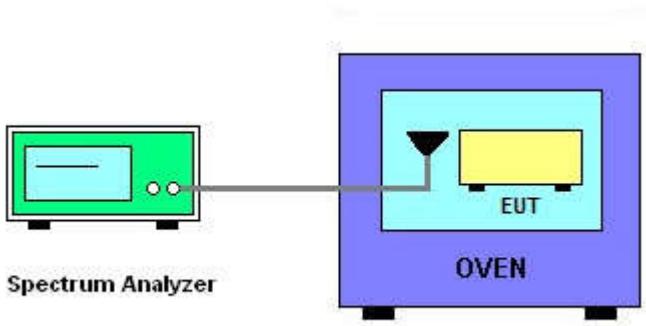
3.3.2 Measuring Instruments

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 × 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 IC RSS-210 B.6			
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.

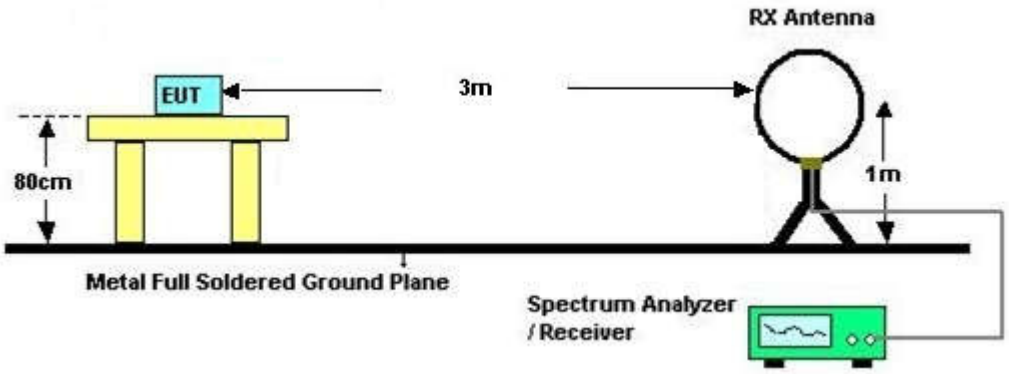
3.4.3 Test Procedures

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

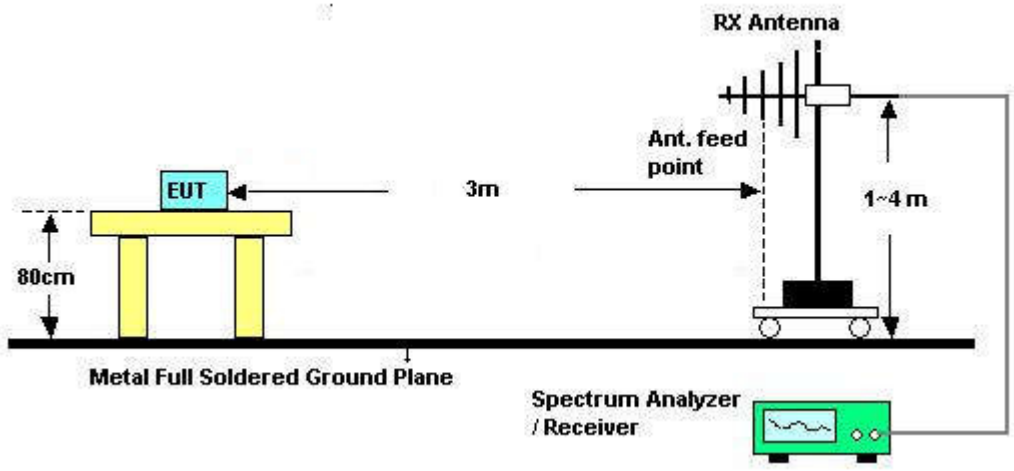
Note: The emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9-90 kHz, 110-490 kHz. Radiated emission limits in these two bands are based on measurements employing an average detector.

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.

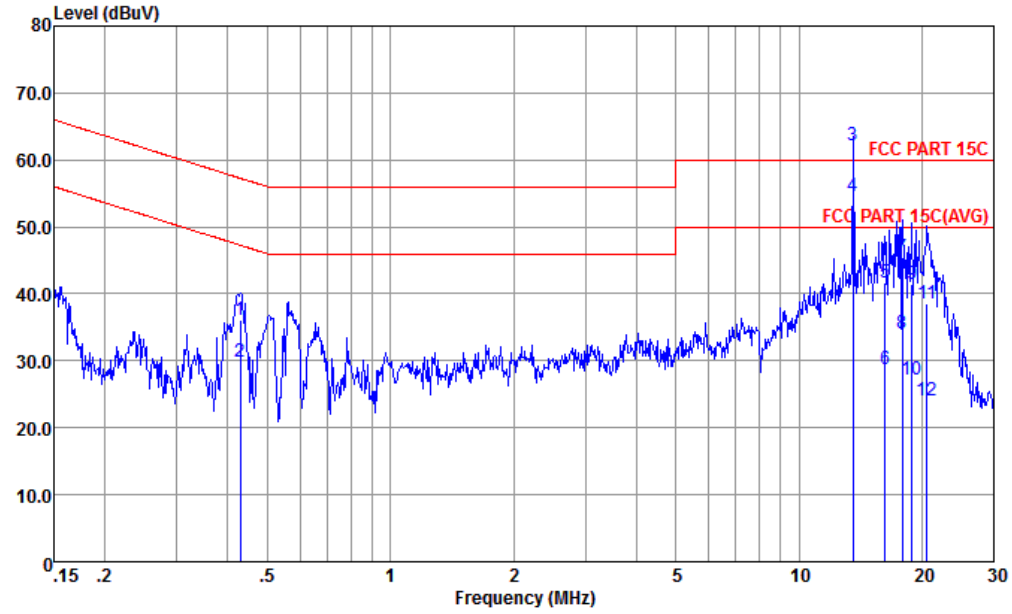
4. LIST OF MEASURING EQUIPMENT

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	Dec. 06, 2016	Aug. 08, 2017	Conducted (TH01-KS)
Thermal Chamber	Ten Billion	TTC-B3S	TBN-960502	-40~+150°C	Oct. 13, 2016	Dec. 06, 2016	Oct. 12, 2017	Conducted (TH01-KS)
AC Power Source	Chroma	61602	ABP000000811	AC 0V~300V, 45Hz~1000Hz	Oct. 13, 2016	Dec. 06, 2016	Oct. 12, 2017	Conducted (TH01-KS)
EMI Test Receiver	R&S	ESR7	101403	9kHz~7GHz; Max 30dBm	Aug. 09, 2016	Dec. 30, 2016	Aug. 08, 2017	Radiation (03CH02-KS)
Loop Antenna	R&S	HFH2-Z2	100321	9kHz~30MHz	Nov. 23, 2016	Dec. 30, 2016	Nov. 22, 2017	Radiation (03CH02-KS)
Bilog Antenna	TeseQ	CBL6112D	37879	30MHz~2GHz	Aug. 20, 2016	Dec. 30, 2016	Aug. 19, 2017	Radiation (03CH02-KS)
Amplifier	com-power	PA-103A	161069	1kHz ~1000MHz / 32 dB	Apr. 22, 2016	Dec. 30, 2016	Apr. 21, 2017	Radiation (03CH02-KS)
AC Power Source	Chroma	61601	616010002473	N/A	NCR	Dec. 30, 2016	NCR	Radiation (03CH02-KS)
Turn Table	MF	MF7802	N/A	0~360 degree	NCR	Dec. 30, 2016	NCR	Radiation (03CH02-KS)
Antenna Mast	MF	MF7802	N/A	1 m~4 m	NCR	Dec. 30, 2016	NCR	Radiation (03CH02-KS)
EMI Receiver	R&S	ESCI7	100768	9kHz~7GHz	Apr. 29, 2016	Dec. 20, 2016	Apr. 28, 2017	Conduction (CO01-KS)
AC LISN	MessTec	AN3016	060103	9kHz~30MHz	Oct. 13, 2016	Dec. 20, 2016	Oct. 12, 2017	Conduction (CO01-KS)
AC LISN (for auxiliary equipment)	MessTec	AN3016	060105	9kHz~30MHz	Oct. 13, 2016	Dec. 20, 2016	Oct. 12, 2017	Conduction (CO01-KS)
AC Power Source	Chroma	61602	ABP000000811	AC 0V~300V, 45Hz~1000Hz	Oct. 13, 2016	Dec. 20, 2016	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 (2.4G) Link + USB Cable (Charging from Adapter) + Earphone 2 + NFC Tx		



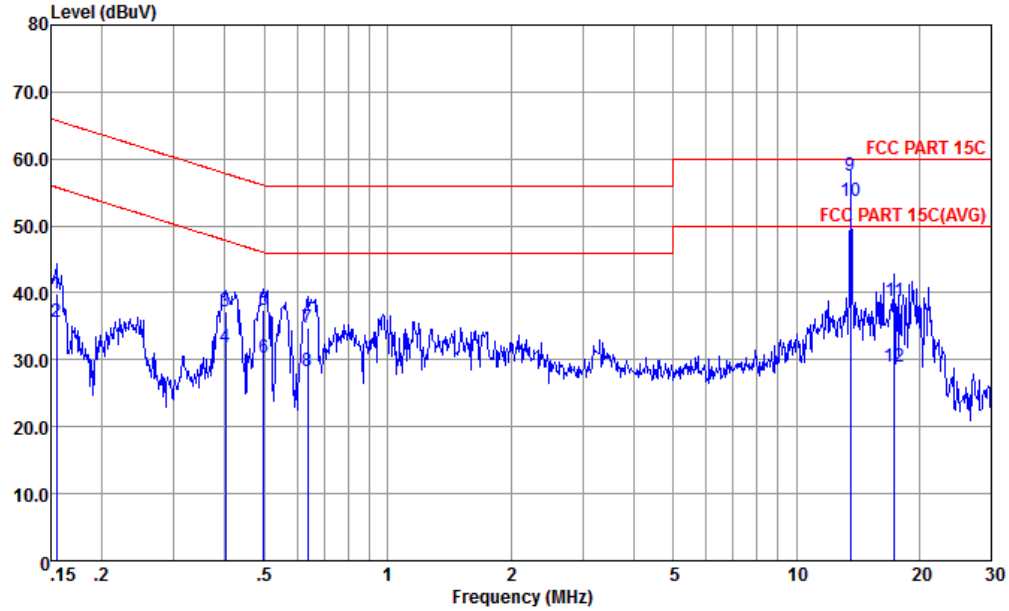
Site : CO01-KS
Condition : FCC PART 15C LISN-L-20151024 LINE

		Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
		MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1		0.428	36.02	-21.27	57.29	25.59	0.23	10.20	QP
2		0.428	29.92	-17.37	47.29	19.49	0.23	10.20	Average
3	*	13.560	62.18	2.18	60.00	51.50	0.26	10.42	QP
4	*	13.560	54.68	4.68	50.00	44.00	0.26	10.42	Average
5		16.226	41.74	-18.26	60.00	30.90	0.26	10.58	QP
6		16.226	28.64	-21.36	50.00	17.80	0.26	10.58	Average
7		17.944	45.50	-14.50	60.00	34.50	0.27	10.73	QP
8		17.944	34.20	-15.80	50.00	23.20	0.27	10.73	Average
9		18.920	41.38	-18.62	60.00	30.29	0.27	10.82	QP
10		18.920	27.18	-22.82	50.00	16.09	0.27	10.82	Average
11		20.594	38.54	-21.46	60.00	27.40	0.26	10.88	QP
12		20.594	24.04	-25.96	50.00	12.90	0.26	10.88	Average

(1) with antenna

Remark: 13.56MHz is the NFC RF fundamental signal.

Test Mode :	NFC Tx	Test Voltage :	120Vac / 60Hz
Function Type :	GSM850 Idle + Bluetooth Link + WLAN (2.4G) Link + USB Cable (Charging from Adapter) + Earphone 2 + NFC Tx		



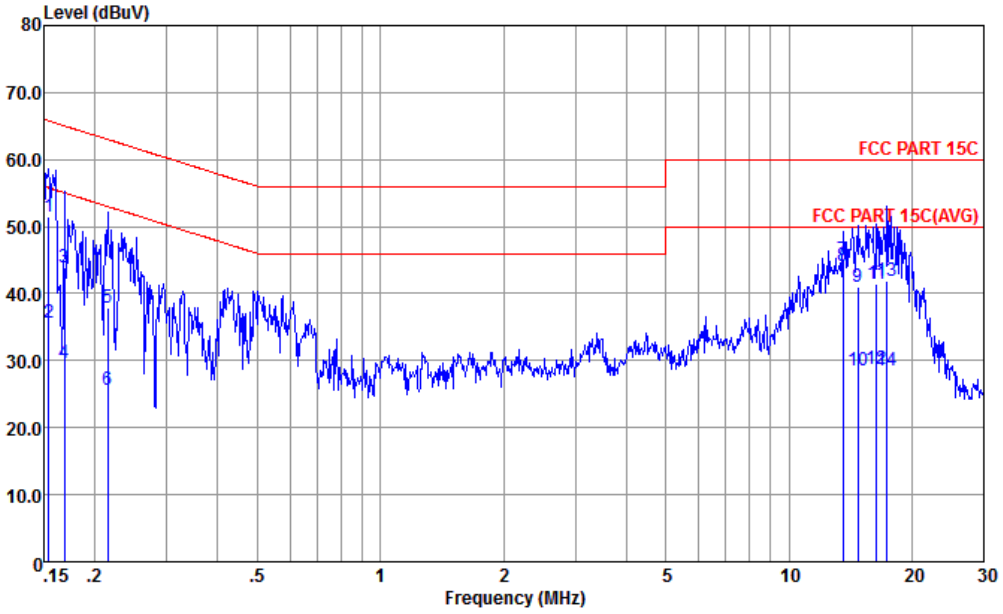
Site : CO01-KS
Condition : FCC PART 15C LISN-N-20151024 NEUTRAL

		Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
		MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1		0.155	39.79	-25.95	65.74	29.10	0.30	10.39	QP
2		0.155	35.69	-20.05	55.74	25.00	0.30	10.39	Average
3		0.402	37.32	-20.49	57.81	26.80	0.32	10.20	QP
4		0.402	31.82	-15.99	47.81	21.30	0.32	10.20	Average
5		0.497	37.41	-18.64	56.05	26.90	0.32	10.19	QP
6		0.497	30.31	-15.74	46.05	19.80	0.32	10.19	Average
7		0.637	34.71	-21.29	56.00	24.20	0.33	10.18	QP
8		0.637	28.31	-17.69	46.00	17.80	0.33	10.18	Average
9		13.560	57.49	-2.51	60.00	46.80	0.27	10.42	QP
10	*	13.560	53.79	3.79	50.00	43.10	0.27	10.42	Average
11		17.383	38.84	-21.16	60.00	27.90	0.26	10.68	QP
12		17.383	28.94	-21.06	50.00	18.00	0.26	10.68	Average

(1) with antenna

Remark: 13.56MHz is the NFC RF fundamental signal.

Test Mode :	NFC Tx	Test Voltage :	120Vac / 60Hz
Function Type :	GSM850 Idle + Bluetooth Link + WLAN (2.4G) Link + USB Cable (Charging from Adapter) + Earphone 2 + NFC Tx		



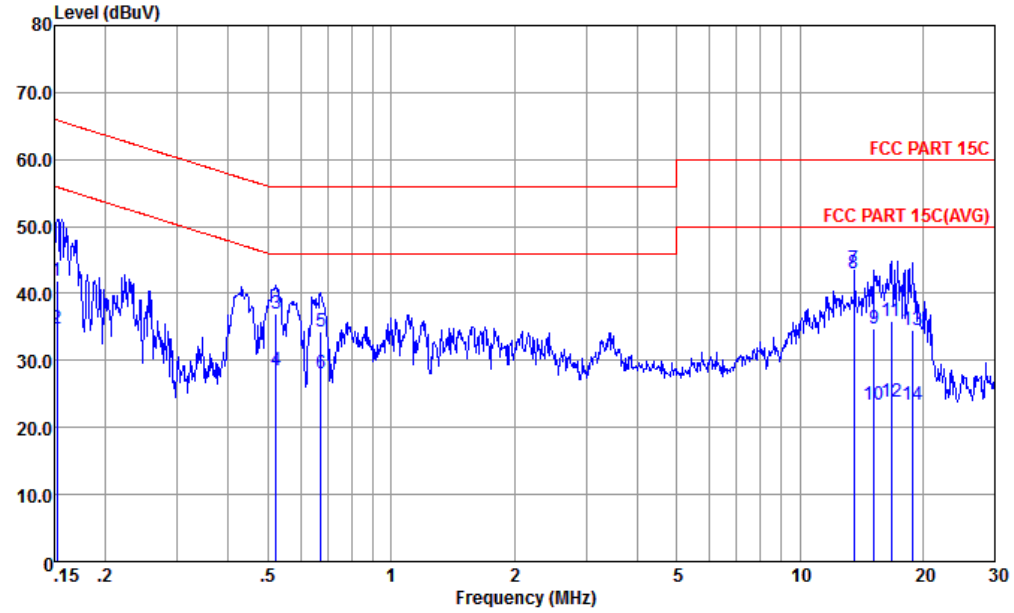
Site : CO01-KS
Condition : FCC PART 15C LISN-L-20151024 LINE

	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.154	51.39	-14.39	65.78	40.50	0.50	10.39	QP
2	0.154	35.69	-20.09	55.78	24.80	0.50	10.39	Average
3	0.169	43.98	-21.05	65.03	33.20	0.41	10.37	QP
4	0.169	29.68	-25.35	55.03	18.90	0.41	10.37	Average
5	0.215	37.84	-25.17	63.01	27.30	0.22	10.32	QP
6	0.215	25.54	-27.47	53.01	15.00	0.22	10.32	Average
7	13.560	45.08	-14.92	60.00	34.40	0.26	10.42	QP
8 *	13.560	44.18	-5.82	50.00	33.50	0.26	10.42	Average
9	14.750	41.11	-18.89	60.00	30.40	0.26	10.45	QP
10	14.750	28.61	-21.39	50.00	17.90	0.26	10.45	Average
11	16.398	41.46	-18.54	60.00	30.61	0.26	10.59	QP
12	16.398	28.66	-21.34	50.00	17.81	0.26	10.59	Average
13	17.383	41.95	-18.05	60.00	31.00	0.27	10.68	QP
14	17.383	28.55	-21.45	50.00	17.60	0.27	10.68	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 (2.4G) Link + USB Cable (Charging from Adapter) + Earphone 2 + NFC Tx		



Site : CO01-KS
Condition : FCC PART 15C LISN-N-20151024 NEUTRAL

		Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
		MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1		0.152	41.89	-23.98	65.87	31.20	0.30	10.39	QP
2		0.152	34.69	-21.18	55.87	24.00	0.30	10.39	Average
3		0.524	36.91	-19.09	56.00	26.40	0.32	10.19	QP
4		0.524	28.61	-17.39	46.00	18.10	0.32	10.19	Average
5		0.672	34.32	-21.68	56.00	23.80	0.34	10.18	QP
6		0.672	28.12	-17.88	46.00	17.60	0.34	10.18	Average
7		13.560	43.69	-16.31	60.00	33.00	0.27	10.42	QP
8	*	13.560	42.99	-7.01	50.00	32.30	0.27	10.42	Average
9		15.226	34.75	-25.25	60.00	24.00	0.27	10.48	QP
10		15.226	23.45	-26.55	50.00	12.70	0.27	10.48	Average
11		16.750	35.89	-24.11	60.00	25.00	0.26	10.63	QP
12		16.750	23.89	-26.11	50.00	13.00	0.26	10.63	Average
13		18.920	34.47	-25.53	60.00	23.40	0.25	10.82	QP
14		18.920	23.37	-26.63	50.00	12.30	0.25	10.82	Average

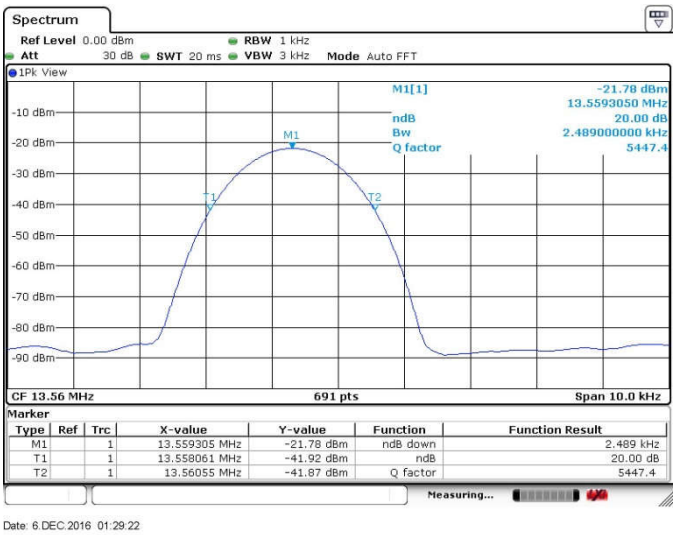
(2) with dummy load

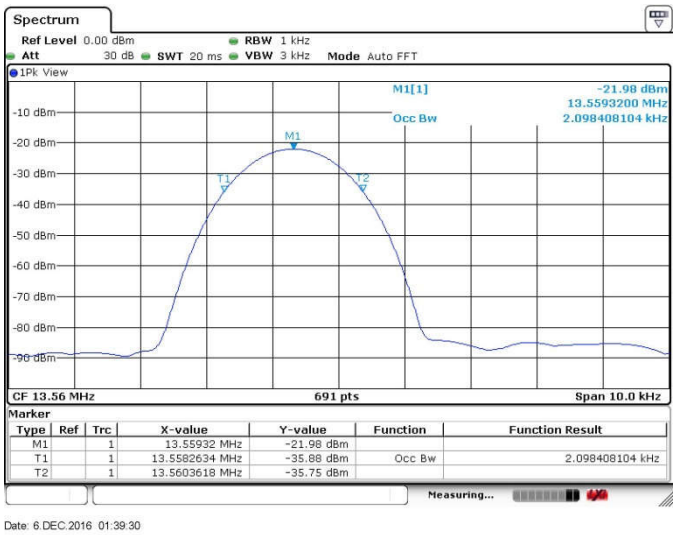
Remark: Only the fundamental NFC signal needs to be retested per C63.4.

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)	2.49	**99% OccupiedBW(kHz)**	2.10
Frequency range (MHz)	**f_L > 13.553**	13.558061	**Test Result**
	f_H < 13.567	13.560550	**Complies**

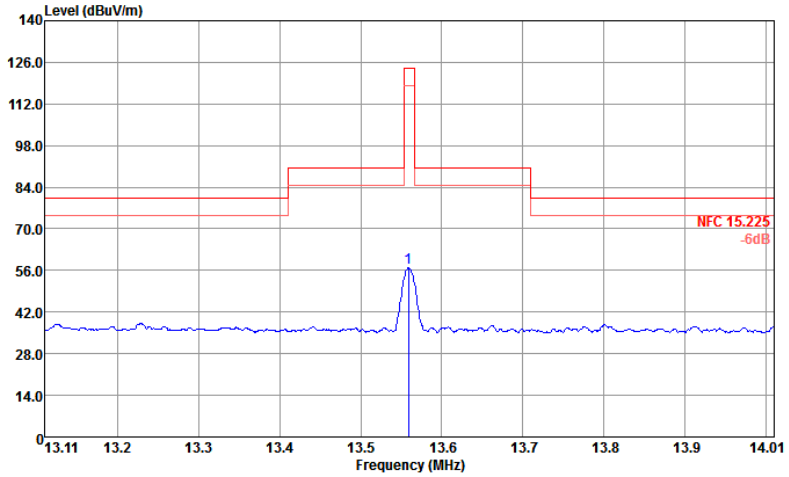
B2. Test Result of Frequency Stability

Voltage vs. Frequency Stability		Temperature vs. Frequency Stability	
Voltage (Vac)	**Measurement Frequency (MHz)**	**Temperature (℃)**	**Measurement Frequency (MHz)**
120	13.559306	**-20**	13.559356
102	13.559306	**-10**	13.559393
138	13.559306	**0**	13.559306
		10	13.559306
		20	13.559306
		30	13.559320
		40	13.559298
		50	13.559277
Max.Deviation (MHz)	-0.000694	**Max.Deviation (MHz)**	-0.000723
Max.Deviation (ppm)	-51.2168	**Max.Deviation (ppm)**	-53.3555
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

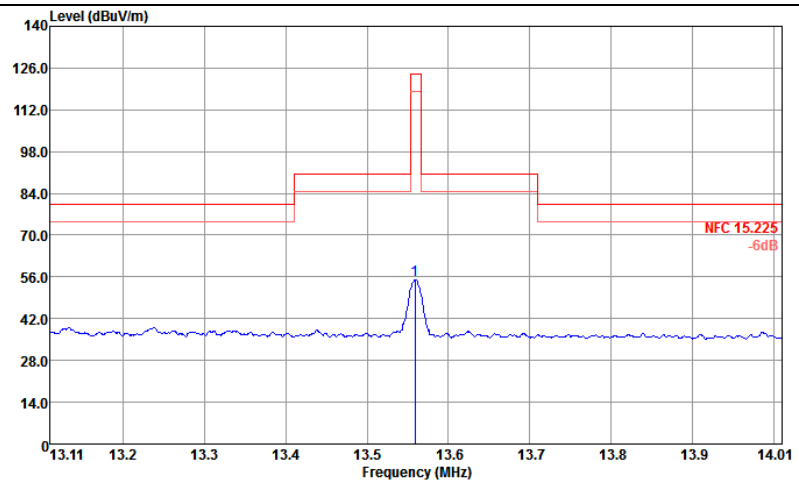
Test Mode :	NFC Tx	Test Frequency (MHz)	13.56



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

IMEI : 00440255012049 004402550120509 #19
: F Card

	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	A/Pos	T/Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	cm	deg	
1	13.56	56.94	-67.06	124.00	36.88	19.90	0.16	---	---	QP



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

IMEI : 00440255012049 004402550120509 #19
: F Card

	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	A/Pos	T/Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	cm	deg	
1	13.56	55.16	-68.84	124.00	35.10	19.90	0.16	---	---	QP

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
0.01	56.51	-69.75	126.26	35.9	20.6	0.01	-	-	Average
0.02	50.33	-71.82	122.15	29.72	20.6	0.01	-	-	Average
1.39	49.97	-14.77	64.74	30.2	19.74	0.03	-	-	QP
1.51	46.32	-17.67	63.99	26.54	19.75	0.03	-	-	QP
3.25	40.82	-28.72	69.54	20.97	19.8	0.05	-	-	QP
11.94	37.55	-31.99	69.54	17.42	19.99	0.14	-	-	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
0.01	55.04	-72.7	127.74	34.43	20.6	0.01	-	-	Average
0.02	49.14	-72.82	121.96	28.53	20.6	0.01	-	-	Average
1.38	36.34	-28.44	64.78	16.57	19.74	0.03	-	-	QP
1.68	34.5	-28.57	63.07	14.7	19.77	0.03	-	-	QP
5.76	46.03	-23.51	69.54	26.42	19.54	0.07	-	-	QP
11.65	39.25	-30.29	69.54	19.1	20.01	0.14	-	-	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
32.91	22.91	-17.09	40	29.49	25.05	0.11	31.74	-	-	Peak
40.67	26.09	-13.91	40	36.3	21.5	0.13	31.84	100	0	Peak
67.83	18.01	-21.99	40	36.73	12.85	0.18	31.75	-	-	Peak
104.69	16.56	-26.94	43.5	29.61	18.24	0.24	31.53	-	-	Peak
413.15	24.25	-21.75	46	28.49	25.09	0.94	30.27	-	-	Peak
704.15	26.4	-19.6	46	26.65	26.74	1.19	28.18	-	-	Peak
848.68	27.23	-18.77	46	25.93	27.19	1.37	27.26	-	-	Peak
947.62	28.29	-17.71	46	24.74	28.35	1.71	26.51	-	-	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
30.97	22.73	-17.27	40	28.82	25.55	0.11	31.75	-	-	Peak
40.67	27.54	-12.46	40	37.75	21.5	0.13	31.84	100	0	Peak
67.83	21.23	-18.77	40	39.95	12.85	0.18	31.75	-	-	Peak
116.33	17.55	-25.95	43.5	30.84	18.08	0.26	31.63	-	-	Peak
427.7	24.39	-21.61	46	28.67	24.85	0.93	30.06	-	-	Peak
706.09	26.03	-19.97	46	26.29	26.72	1.2	28.18	-	-	Peak
859.35	27.01	-18.99	46	25.48	27.28	1.43	27.18	-	-	Peak
955.38	28.44	-17.56	46	24.62	28.53	1.73	26.44	-	-	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.