FCC RF Test Report

APPLICANT	:	**Dell Inc.**
EQUIPMENT	:	**RFID 13.56MHz Wireless Module**
BRAND NAME	:	**DELL**
MODEL NAME	:	**DWRFID1602**
FCC ID	:	**E2K-DWRFID1602**
STANDARD	:	**FCC Part 15 Subpart C §15.225**
CLASSIFICATION	:	**(DXX) Low Power Communication Device Transmitter**

The testing was completed on Oct. 11, 2016. We, SPORTON INTERNATIONAL 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 INC., the test report shall not be reproduced except in full.

Reviewed by: Joseph Lin / Supervisor

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
FR681204	Rev. 01	Initial issue of report	Sep. 09, 2016
FR681204	Rev. 02	Verification of Radiated Spurious Emissions at open-area test site in appendix E.	Oct. 11, 2016

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	3.70 dB at 13.558MHz
3.2	15.225(a)(b)(c)	Field Strength of Fundamental Emissions	Complies	70.31 dB at 13.560 MHz
3.3	2.1049	20dB Spectrum Bandwidth	Complies	-
3.3	-	99% OBW Spectrum Bandwidth	Complies	-
3.4	15.225(d) 15.209	Radiated Emissions	Complies	3.38 dB at 216.030 MHz for Quasi-Peak
3.5	15.225(e)	Frequency Stability	Complies	-
3.6	15.203	Antenna Requirements	Complies	-

Test Items	Uncertainty	Remark
AC Power Line Conducted Emissions	±2.7dB	Confidence levels of 95%
Radiated Emissions (30MHz~1000MHz)	±5.70dB	Confidence levels of 95%

1. GENERAL INFORMATION

1.1 Applicant

Dell Inc.

One Dell Way, Round Rock, TX 78682, USA

1.2 Manufacturer

Dell Inc.

One Dell Way, Round Rock, TX 78682, USA

1.3 Product Feature of Equipment Under Test

Product Feature	
Equipment	RFID 13.56MHz Wireless Module
Brand Name	DELL
Model Name	DWRFID1602
Sample 1	EUT with antenna 1
Sample 2	EUT with antenna 2
Host Notebook	Brand Name: DELL Model Name: P28S
FCC ID	E2K-DWRFID1602
EUT supports Radios application	NFC
EUT Stage	Pre-production

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

Antenna 1	**Brand Name**	ACON	**Model Name**	AFP00-000002
Antenna 2	**Brand Name**	Speedwire	**Model Name**	F.0W.FH-6028-001-00

1.4 Product Specification of Equipment Under Test

Standards-related Product Specification	
Tx/Rx Frequency Range	13.553 ~ 13.567MHz
Number of Channels	1
20dB Bandwidth	2.66KHz
99% Occupied Bandwidth	2.26KHz
Antenna Type	Loop Antenna
Type of Modulation	ASK

1.5 Modification of EUT

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

1.6 Testing 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 1st Rd., Hwa Ya Technology Park, Kwei-Shan District, Tao Yuan City, Taiwan, R.O.C. TEL: +886-3-3273456 / FAX: +886-3-3284978		
Test Site No.	Sporton Site No.		
	TH03-HY	CO05-HY	03CH07-HY
Test Engineer	William Liao	Arthur Hsieh	James Chiu
Temperature	22~24℃	23~24℃	21~23℃
Relative Humidity	53~55%	51~52%	57~61%

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

Test Site	SPORTON INTERNATIONAL INC.
Test Site Location	No. 30-2, Dingfu Tsuen, Linkou District, New Taipei City, Taiwan, R.O.C. TEL: +886-2-2603-5367 / +886-2-2601-1640 FAX: +886-2-2601-1695
Test Site No.	Sporton Site No.
	OS03-LK
Test Engineer	Eric Zheng
Temperature	25~26℃
Relative Humidity	51~53%

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

1.8 Test Modes

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.

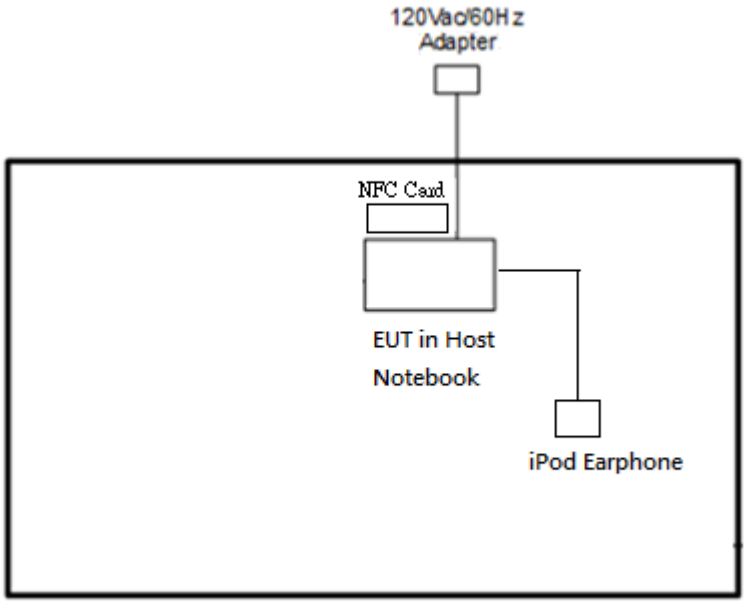
Test Items	
AC Power Line Conducted Emissions	Field Strength of Fundamental Emissions
20dB Spectrum Bandwidth	Frequency Stability
Radiated Emissions 9kHz~30MHz	Radiated Emissions 30MHz~1GHz

Note:

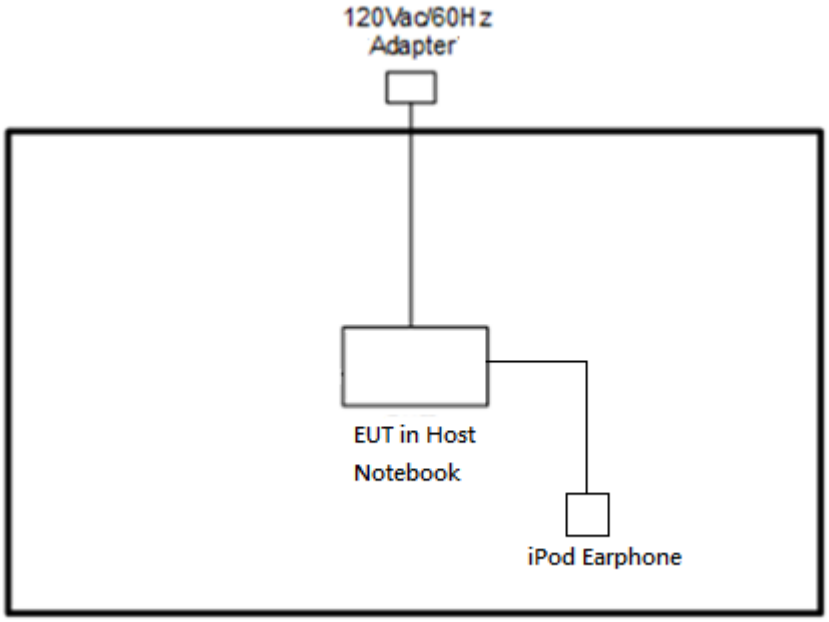
1. The EUT was programmed to be in continuously transmitting mode.
2. The ancillary equipment, NFC card, is used to make the EUT (NFC) continuously transmit at 13.56MHz and is placed around 3 cm gap to the EUT.

1.9 Test Configurations

<AC Conducted Emissions>



< For Fundamental Emissions and Mask and Radiated Emissions Measurement >



1.10 Table for Supporting Units

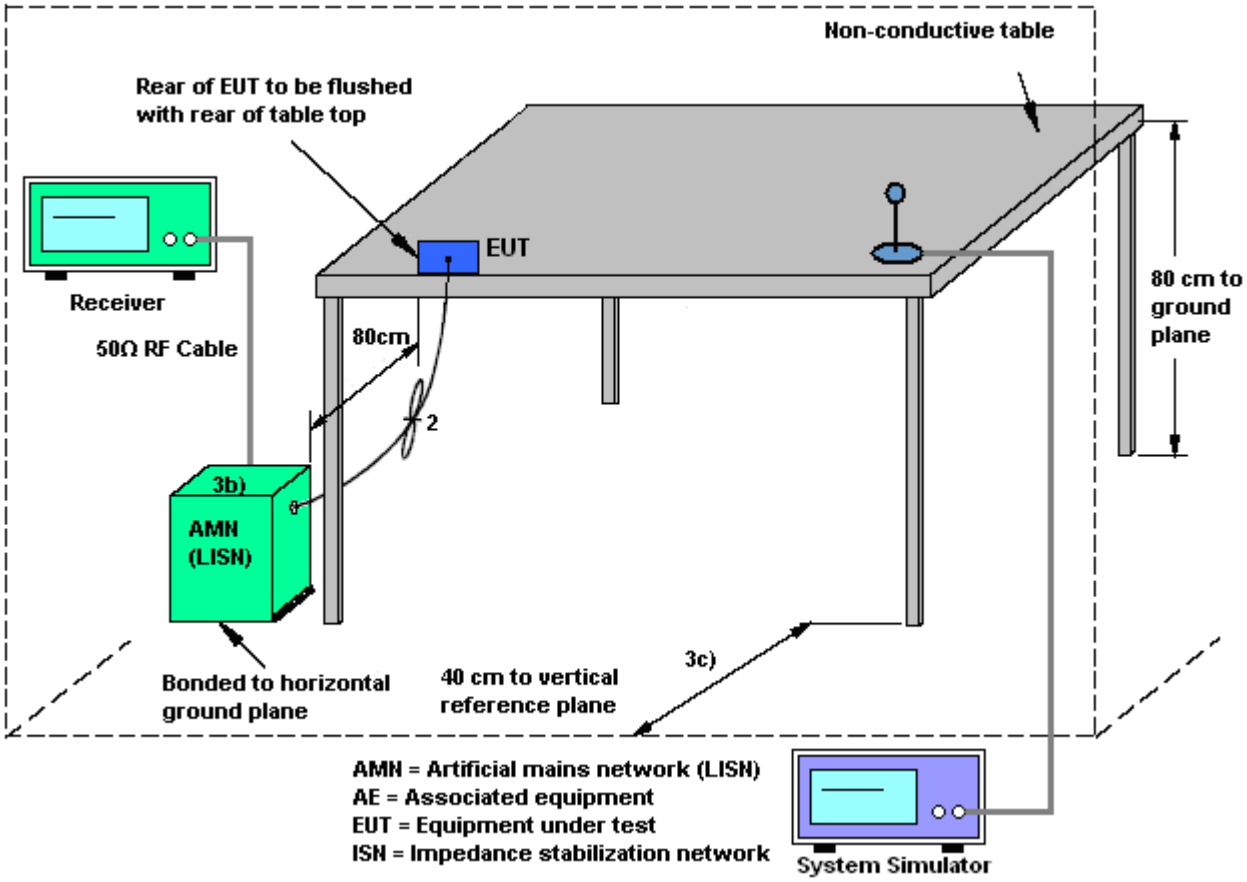
Support Unit	Manufacturer	Model	FCC ID
iPod	Apple	A1285	FCC DoC
NFC Card	Metro Taipei	Easy Card	N/A

2. CONDUCTED EMISSION TEST

2.1 Measuring Instruments

See list of measuring instruments of this test report.

2.2 Test setup



2.3 Test Result of Conducted Emission Test

Please refer to Appendix B.

2.4 AC Power Line Conducted Emissions Measurement

Limit

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.

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.

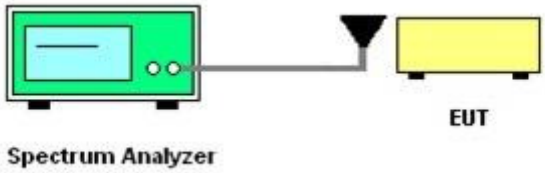
3. CONDUCTED TEST ITEMS

3.1 Measuring Instruments

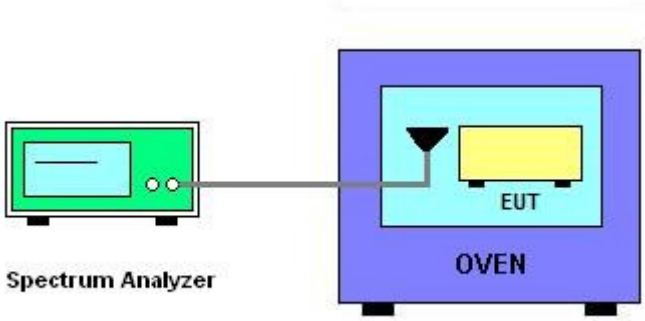
See list of measuring instruments of this test report.

3.2 Test Setup

20dB and 99% OBW Spectrum Bandwidth



Frequency Stability



3.3 Test Result of Conducted Test Items

Please refer to Appendix C.

3.4 20dB and 99% OBW Spectrum Bandwidth Measurement

Limit

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

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.

3.5 Frequency Stability Measurement

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.

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.

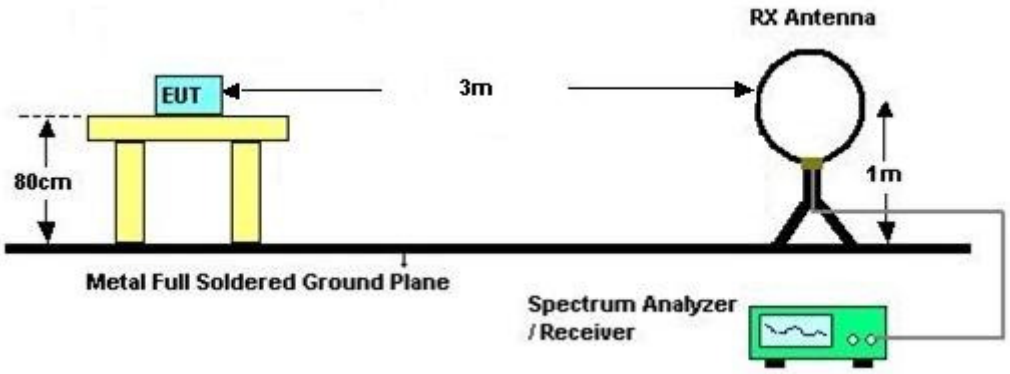
4. RADIATED TEST ITEMS

4.1 Measuring Instruments

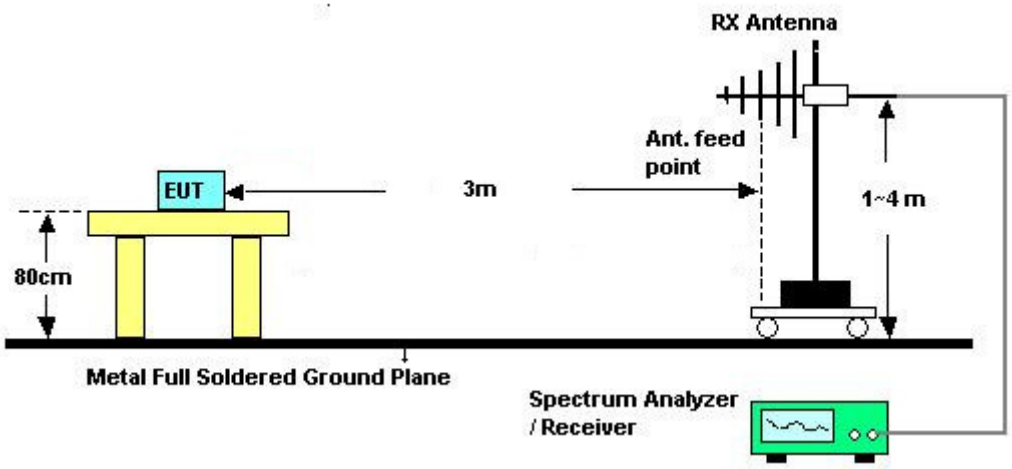
See list of measuring instruments of this test report.

4.2 Test Setup

For radiated emissions below 30MHz



For radiated emissions above 30MHz



4.3 Test Result of Radiated Test Items

Please refer to Appendix D.

4.4 Field Strength of Fundamental Emissions and Mask Measurement

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

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).

4.5 Radiated Emissions Measurement

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

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.

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.
1. Power on the EUT and all the supporting units. The turntable was rotated by 360 degrees to determine the position of the highest radiation.
2. 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.
3. 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.
4. Set the test-receiver system to Peak or CISPR quasi-peak Detect Function with specified bandwidth under Maximum Hold Mode.
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. 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

Limit

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.

Antenna Anti-Replacement Construction

An embedded-in antenna design is used.

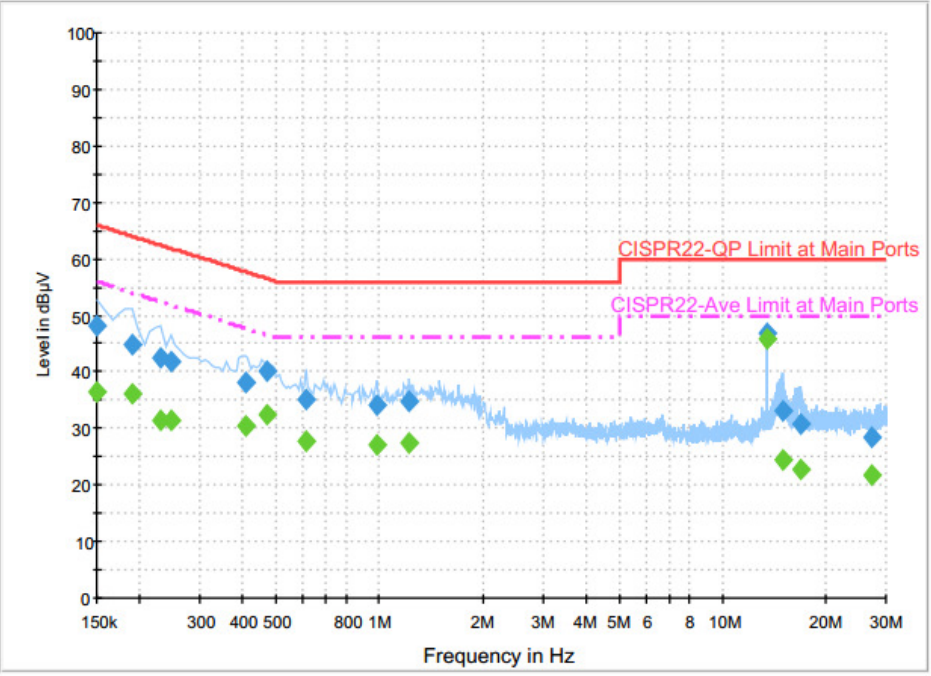
5. LIST OF MEASURING EQUIPMENT

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Programmable Power Supply	GW Instek	PSS-2005	EL883644	Voltage:0~20V;Current:0~5A	Nov. 26, 2015	Aug. 25, 2016	Nov. 25, 2016	Conducted (TH03-HY)
Spectrum Analyzer	Rohde & Schwarz	FSP30	101329	9kHz~30GHz	Jun. 27, 2016	Aug. 25, 2016	Jun. 26, 2017	Conducted (TH03-HY)
Temperature Chamber	ESPEC	SU-641	92013721	-30℃ ~70℃	Nov. 20, 2015	Aug. 25, 2016	Nov. 19, 2016	Conducted (TH03-HY)
AC Power Source	ChainTek	APC-1000W	N/A	N/A	N/A	Aug. 30, 2016	N/A	Conduction (CO05-HY)
LISN	Rohde & Schwarz	ENV216	100080	9kHz~30MHz	Dec. 02, 2015	Aug. 30, 2016	Dec. 01, 2016	Conduction (CO05-HY)
LF Cable	HUBER + SUHNER	RG-214/U	LF01	N/A	Jan. 06, 2016	Aug. 30, 2016	Jan. 05, 2017	Conduction (CO05-HY)
Pulse Limiter	Rohde & Schwarz	ESH3-Z2	100851	N/A	Jan. 08, 2016	Aug. 30, 2016	Jan. 07, 2017	Conduction (CO05-HY)
EMI Test Receiver	Keysight	N9038A(MXE)	MY54130085	20Hz ~ 8.4GHz	Nov. 04, 2015	Aug. 30, 2016	Nov. 03, 2016	Conduction (CO05-HY)
Bilog Antenna	TESEQ	CBL 6111D	35419	30MHz to 1GHz	Jan. 13, 2016	Aug. 23, 2016	Jan. 12, 2017	Radiation (03CH07-HY)
EMI Test Receiver	Keysight	N9038A(MXE)	MY54130085	20Hz ~ 8.4GHz	Nov. 04, 2015	Aug. 23, 2016	Nov. 03, 2016	Radiation (03CH07-HY)
Loop Antenna	Rohde & Schwarz	HFH2-Z2	100315	9 kHz~30 MHz	Sep. 02, 2015	Aug. 23, 2016	Sep. 01, 2016	Radiation (03CH07-HY)
Preamplifier	MITEQ	AMF-7D-00101800-30-10P	1590075	1GHz ~ 18GHz	Apr. 15, 2016	Aug. 23, 2016	Apr. 14, 2017	Radiation (03CH07-HY)
Spectrum Analyzer	Agilent	N9010A	MY53470118	10Hz~44GHz	Feb. 27, 2016	Aug. 23, 2016	Feb. 26, 2017	Radiation (03CH07-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 104	MY84209521	1GHz~26GHz	Dec. 03, 2015	Aug. 23, 2016	Dec. 02, 2016	Radiation (03CH07-HY)
Antenna Mast	Max-Full	MFA520BS	N/A	1m~4m	N/A	Aug. 23, 2016	N/A	Radiation (03CH07-HY)
Turn Table	ChainTek	Chaintek 3000	N/A	0~360 Degree	N/A	Aug. 23, 2016	N/A	Radiation (03CH07-HY)
Loop Cable	Rohde & Schwarz	N/A	N/A	9KHz~30MHz	Dec. 03, 2015	Aug. 23, 2016	Dec. 02, 2016	Radiation (03CH07-HY)
Preamplifier	COM-POWER	PA-103A	161241	10MHz~1GHz	Mar. 18, 2016	Aug. 23, 2016	Mar. 17, 2017	Radiation (03CH07-HY)

Appendix B. Test Results of Conducted Emission Test

<Sample 1>

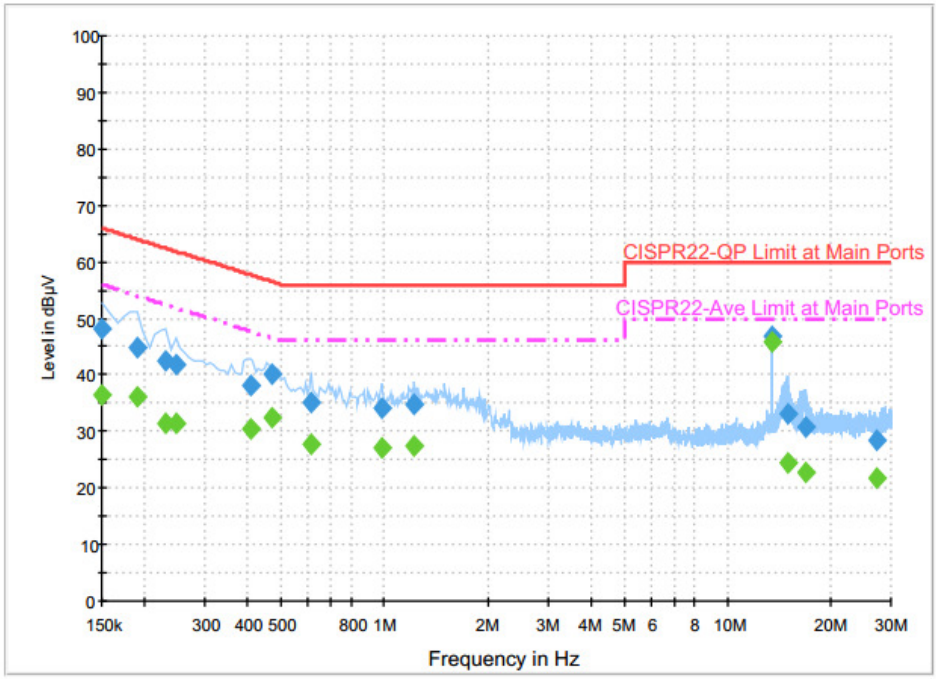
Test Mode :	NFC Tx	Test Voltage :	120Vac / 60Hz
Function Type :	NFC Link + USB Cable Charging with Notebook		



Final Result : Quasi-Peak

Frequency (MHz)	Quasi-Peak (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.150000	48.2	Off	L1	19.6	17.8	66.0
0.190000	44.9	Off	L1	19.6	19.1	64.0
0.230000	42.4	Off	L1	19.6	20.0	62.4
0.246000	41.9	Off	L1	19.6	20.0	61.9
0.406000	38.3	Off	L1	19.6	19.4	57.7
0.470000	40.2	Off	L1	19.6	16.3	56.5
0.614000	35.0	Off	L1	19.6	21.0	56.0
0.982000	34.2	Off	L1	19.6	21.8	56.0
1.222000	34.8	Off	L1	19.6	21.2	56.0
13.558000	46.7	Off	L1	19.8	13.3	60.0
14.974000	33.3	Off	L1	19.8	26.7	60.0
17.022000	30.6	Off	L1	19.8	29.4	60.0
27.118000	28.5	Off	L1	19.9	31.5	60.0

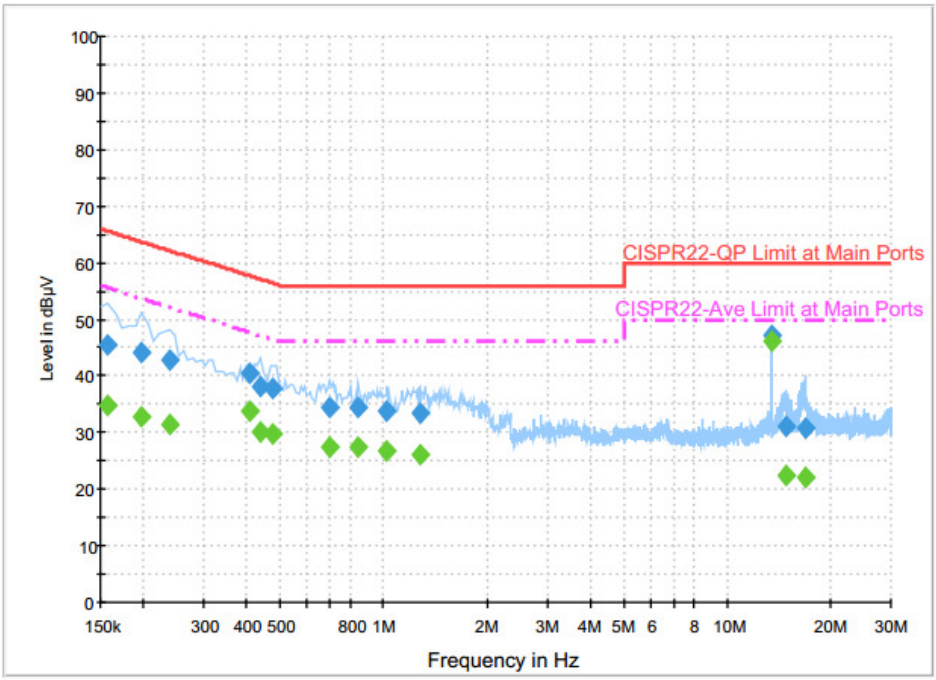
Test Mode :	NFC Tx	Test Voltage :	120Vac / 60Hz
Function Type :	NFC Link + USB Cable Charging with Notebook		



Final Result : Average

Frequency (MHz)	Average (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.150000	36.4	Off	L1	19.6	19.6	56.0
0.190000	36.1	Off	L1	19.6	17.9	54.0
0.230000	31.6	Off	L1	19.6	20.8	52.4
0.246000	31.5	Off	L1	19.6	20.4	51.9
0.406000	30.4	Off	L1	19.6	17.3	47.7
0.470000	32.6	Off	L1	19.6	13.9	46.5
0.614000	27.9	Off	L1	19.6	18.1	46.0
0.982000	26.9	Off	L1	19.6	19.1	46.0
1.222000	27.3	Off	L1	19.6	18.7	46.0
13.558000	45.9	Off	L1	19.8	4.1	50.0
14.974000	24.5	Off	L1	19.8	25.5	50.0
17.022000	22.7	Off	L1	19.8	27.3	50.0
27.118000	21.7	Off	L1	19.9	28.3	50.0

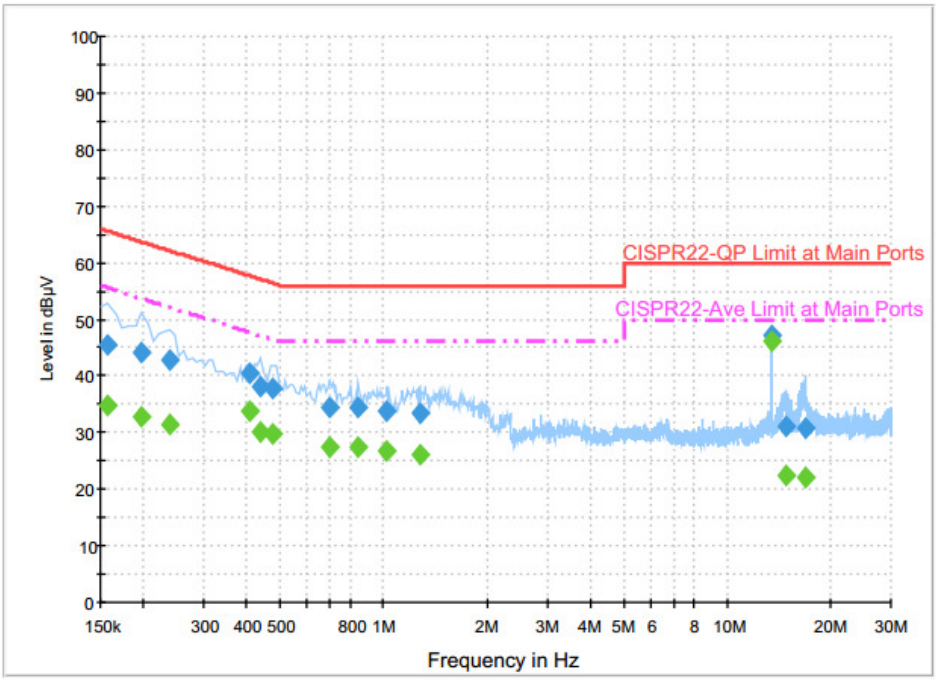
Test Mode :	NFC Tx	Test Voltage :	120Vac / 60Hz
Function Type :	NFC Link + USB Cable Charging with Notebook		



Final Result : Quasi-Peak

Frequency (MHz)	Quasi-Peak (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.158000	45.6	Off	N	19.6	20.0	65.6
0.198000	44.0	Off	N	19.6	19.7	63.7
0.238000	42.7	Off	N	19.6	19.5	62.2
0.406000	40.5	Off	N	19.6	17.2	57.7
0.438000	38.0	Off	N	19.6	19.1	57.1
0.478000	37.8	Off	N	19.6	18.6	56.4
0.694000	34.3	Off	N	19.6	21.7	56.0
0.846000	34.4	Off	N	19.6	21.6	56.0
1.022000	33.7	Off	N	19.6	22.3	56.0
1.278000	33.5	Off	N	19.6	22.5	56.0
13.558000	47.0	Off	N	19.8	13.0	60.0
14.878000	31.3	Off	N	19.9	28.7	60.0
16.878000	30.7	Off	N	19.9	29.3	60.0

Test Mode :	NFC Tx	Test Voltage :	120Vac / 60Hz
Function Type :	NFC Link + USB Cable Charging with Notebook		



Final Result : Average

Frequency (MHz)	Average (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.158000	34.9	Off	N	19.6	20.7	55.6
0.198000	32.9	Off	N	19.6	20.8	53.7
0.238000	31.5	Off	N	19.6	20.7	52.2
0.406000	33.9	Off	N	19.6	13.8	47.7
0.438000	30.2	Off	N	19.6	16.9	47.1
0.478000	29.7	Off	N	19.6	16.7	46.4
0.694000	27.5	Off	N	19.6	18.5	46.0
0.846000	27.4	Off	N	19.6	18.6	46.0
1.022000	26.8	Off	N	19.6	19.2	46.0
1.278000	26.2	Off	N	19.6	19.8	46.0
13.558000	46.3	Off	N	19.8	3.7	50.0
14.878000	22.5	Off	N	19.9	27.5	50.0
16.878000	22.0	Off	N	19.9	28.0	50.0

(1) with antenna

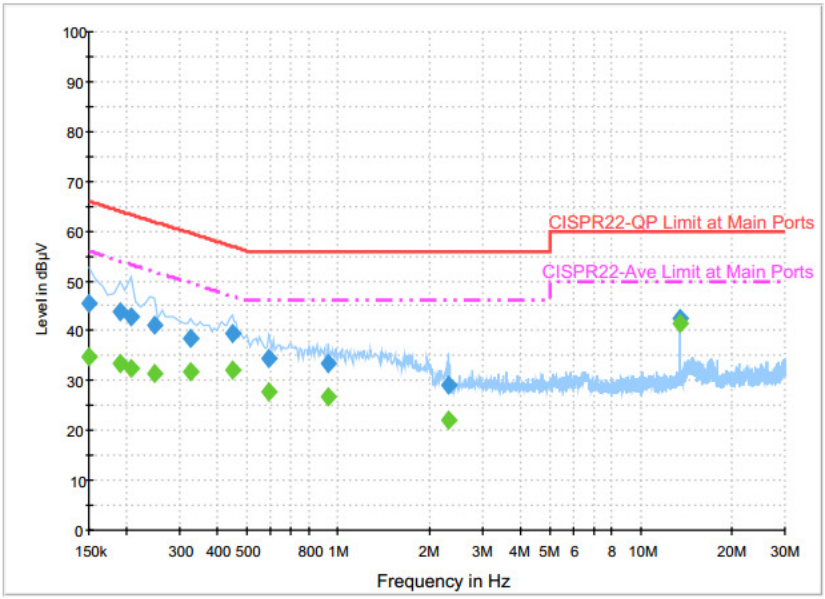
Remark: 13.558MHz is the NFC RF fundamental signal.

(2) with dummy load

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

<Sample 2>

Test Mode :	NFC Tx	Test Voltage :	120Vac / 60Hz
Function Type :	NFC Link + USB Cable Charging with Notebook		



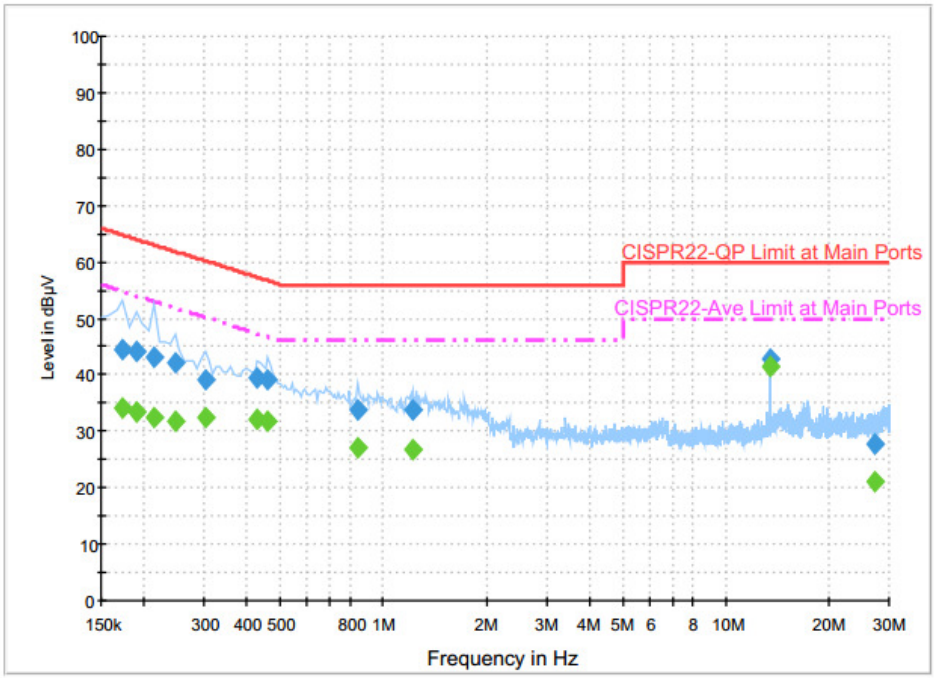
Final Result : Quasi-Peak

Frequency (MHz)	Quasi-Peak (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.150000	45.6	Off	L1	19.6	20.4	66.0
0.190000	43.8	Off	L1	19.6	20.2	64.0
0.206000	42.9	Off	L1	19.6	20.5	63.4
0.246000	41.0	Off	L1	19.6	20.9	61.9
0.326000	38.5	Off	L1	19.6	21.1	59.6
0.446000	39.3	Off	L1	19.6	17.6	56.9
0.590000	34.5	Off	L1	19.6	21.5	56.0
0.926000	33.6	Off	L1	19.6	22.4	56.0
2.318000	29.0	Off	L1	18.6	27.0	56.0
13.558000	42.6	Off	L1	19.8	17.4	60.0

Final Result : Average

Frequency (MHz)	Average (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.150000	34.8	Off	L1	19.6	21.2	56.0
0.190000	33.3	Off	L1	19.6	20.7	54.0
0.206000	32.5	Off	L1	19.6	20.9	53.4
0.246000	31.4	Off	L1	19.6	20.5	51.9
0.326000	31.8	Off	L1	19.6	17.8	49.6
0.446000	32.2	Off	L1	19.6	14.7	46.9
0.590000	27.8	Off	L1	19.6	18.2	46.0
0.926000	26.8	Off	L1	19.6	19.2	46.0
2.318000	22.0	Off	L1	18.6	24.0	46.0
13.558000	41.3	Off	L1	19.8	8.7	50.0

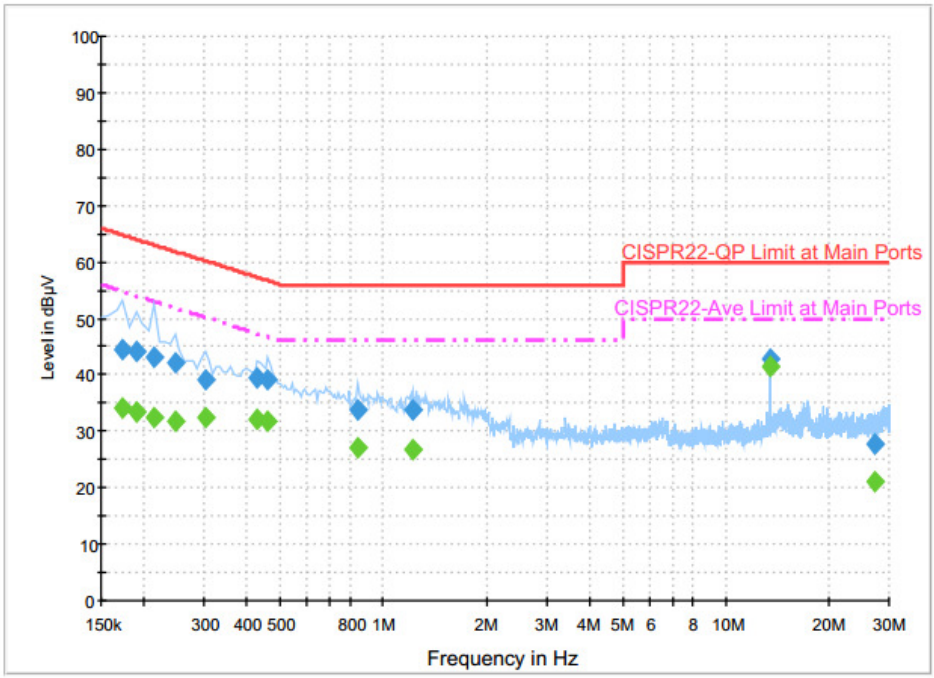
Test Mode :	NFC Tx	Test Voltage :	120Vac / 60Hz
Function Type :	NFC Link + USB Cable Charging with Notebook		



Final Result : Quasi-Peak

Frequency (MHz)	Quasi-Peak (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.174000	44.6	Off	N	19.6	20.2	64.8
0.190000	44.2	Off	N	19.6	19.8	64.0
0.214000	43.1	Off	N	19.6	19.9	63.0
0.246000	42.1	Off	N	19.6	19.8	61.9
0.302000	39.2	Off	N	19.6	21.0	60.2
0.430000	39.5	Off	N	19.6	17.8	57.3
0.462000	39.2	Off	N	19.6	17.5	56.7
0.846000	33.8	Off	N	19.6	22.2	56.0
1.214000	33.7	Off	N	19.6	22.3	56.0
13.558000	42.9	Off	N	19.8	17.1	60.0
27.118000	27.8	Off	N	20.1	32.2	60.0

Test Mode :	NFC Tx	Test Voltage :	120Vac / 60Hz
Function Type :	NFC Link + USB Cable Charging with Notebook		



Final Result : Average

Frequency (MHz)	Average (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.174000	34.2	Off	N	19.6	20.6	54.8
0.190000	33.5	Off	N	19.6	20.5	54.0
0.214000	32.5	Off	N	19.6	20.5	53.0
0.246000	31.6	Off	N	19.6	20.3	51.9
0.302000	32.5	Off	N	19.6	17.7	50.2
0.430000	32.1	Off	N	19.6	15.2	47.3
0.462000	31.9	Off	N	19.6	14.8	46.7
0.846000	27.1	Off	N	19.6	18.9	46.0
1.214000	26.8	Off	N	19.6	19.2	46.0
13.558000	41.6	Off	N	19.8	8.4	50.0
27.118000	21.1	Off	N	20.1	28.9	50.0

(1) with antenna

Remark: 13.558MHz is the NFC RF fundamental signal.

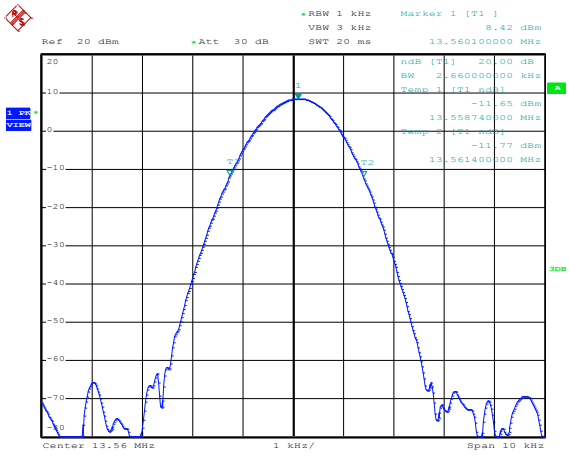
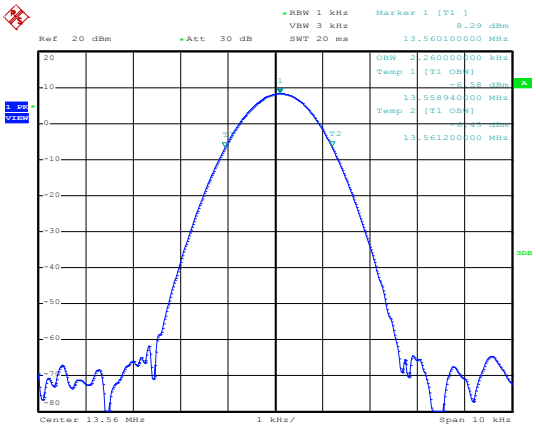
(2) with dummy load

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

Appendix C. Test Results of Conducted Test Items

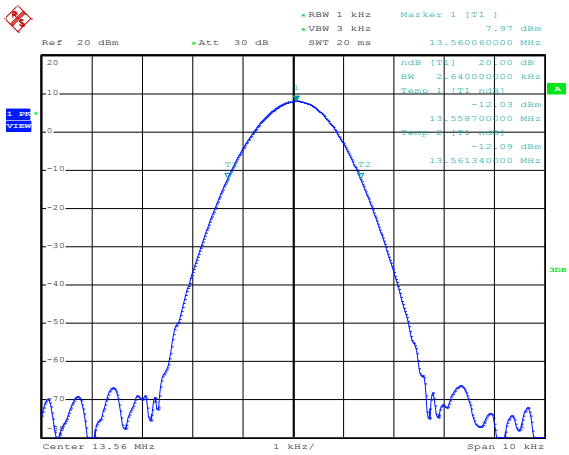
C.1 Test Result of 20dB Spectrum Bandwidth

<Sample 1>

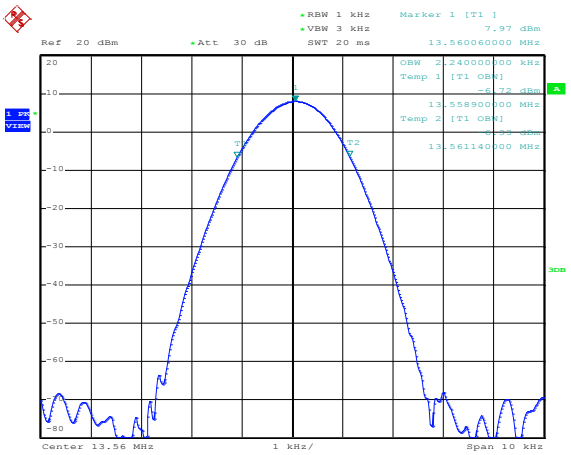
Test mode	NFC Tx	Test Frequency (MHz)	13.56
			
20dB Bandwidth (kHz)	2.660	**99% OccupiedBW(kHz)**	2.260
Frequency range (MHz)	**f_L > 13.553**	13.55874	**Test Result**
	f_H < 13.567	13.56140	**Complies**

<Sample 2>

Test mode	NFC Tx	Test Frequency (MHz)	13.56



Date: 25.AUG.2016 13:19:57



Date: 25.AUG.2016 13:20:20

20dB Bandwidth (kHz)	2.640	99% OccupiedBW(kHz)	2.240
Frequency range (MHz)	f_L > 13.553	13.55870	Test Result
	f_H < 13.567	13.56134	Complies

C.2 Test Result of Frequency Stability

<Sample 1>

Voltage vs. Frequency Stability		Temperature vs. Frequency Stability		
Voltage (Vac)	Measurement Frequency (MHz)	Temperature (℃)	Time	Measurement Frequency (MHz)
120	13.560060	**-20**	**0**	13.560080
102	13.560070		**2**	13.560060
138	13.560060		**5**	13.560070
			10	13.560080
		-10	**0**	13.560080
			2	13.560060
			5	13.560060
			10	13.560060
		0	**0**	13.560060
			2	13.560080
			5	13.560070
			10	13.560060
		10	**0**	13.560080
			2	13.560070
			5	13.560060
			10	13.560060
		20	**0**	13.560060
			2	13.560060
			5	13.560070
			10	13.560060
		30	**0**	13.560070
			2	13.560060
			5	13.560060
			10	13.560060
		40	**0**	13.560080
			2	13.560060
			5	13.560070
			10	13.560070

Voltage vs. Frequency Stability		Temperature vs. Frequency Stability		
Voltage (Vac)	Measurement Frequency (MHz)	Temperature (℃)	Time	Measurement Frequency (MHz)
		50	0	13.560080
			2	13.560080
			5	13.560080
			10	13.560080
Max.Deviation (MHz)	0.000070	Max.Deviation (MHz)		0.000080
Max.Deviation (ppm)	5.1622	Max.Deviation (ppm)		5.8997
Limit	FS < ±100 ppm	Limit		FS < ±100 ppm
Test Result	PASS	Test Result		PASS

<Sample 2>

Voltage vs. Frequency Stability		Temperature vs. Frequency Stability		
Voltage (Vac)	Measurement Frequency (MHz)	Temperature (℃)	Time	Measurement Frequency (MHz)
120	13.560040	**-20**	**0**	13.560060
102	13.560040		**2**	13.560080
138	13.560040		**5**	13.560080
			10	13.560080
		-10	**0**	13.560080
			2	13.560080
			5	13.560080
			10	13.560080
		0	**0**	13.560020
			2	13.560020
			5	13.560020
			10	13.560020
		10	**0**	13.560020
			2	13.560020
			5	13.560020
			10	13.560020
		20	**0**	13.560020
			2	13.560020
			5	13.560020
			10	13.560020
		30	**0**	13.560020
			2	13.560030
			5	13.560020
			10	13.560020
		40	**0**	13.560020
			2	13.560030
			5	13.560030
			10	13.560030

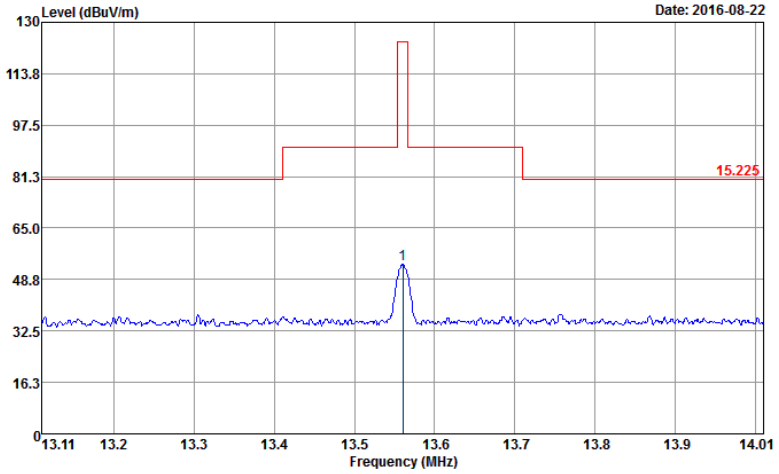
Voltage vs. Frequency Stability		Temperature vs. Frequency Stability		
Voltage (Vac)	Measurement Frequency (MHz)	Temperature (℃)	Time	Measurement Frequency (MHz)
		50	0	13.560040
			2	13.560040
			5	13.560040
			10	13.560040
Max.Deviation (MHz)	0.000040	Max.Deviation (MHz)		0.000080
Max.Deviation (ppm)	2.9499	Max.Deviation (ppm)		5.8997
Limit	FS < ±100 ppm	Limit		FS < ±100 ppm
Test Result	PASS	Test Result		PASS

Appendix D. Test Results of Radiated Test Items

D.1 Test Result of Field Strength of Fundamental Emissions

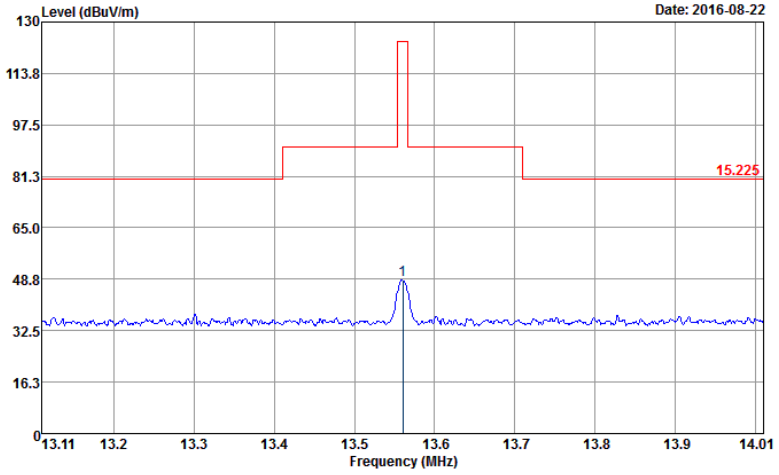
<Sample 1>

Test Mode :	NFC Tx	Test Frequency (MHz)	13.56



Site : 03CH07-HY
Condition : 15.225 3m LOOP_ANT(H) HORIZONTAL
: RBW:9.000KHz VBW:9.000KHz SWT:Auto
Project : 681204
Mode : 1

	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	53.69	-70.31	124.00	32.50	20.51	0.68	100	29	QP



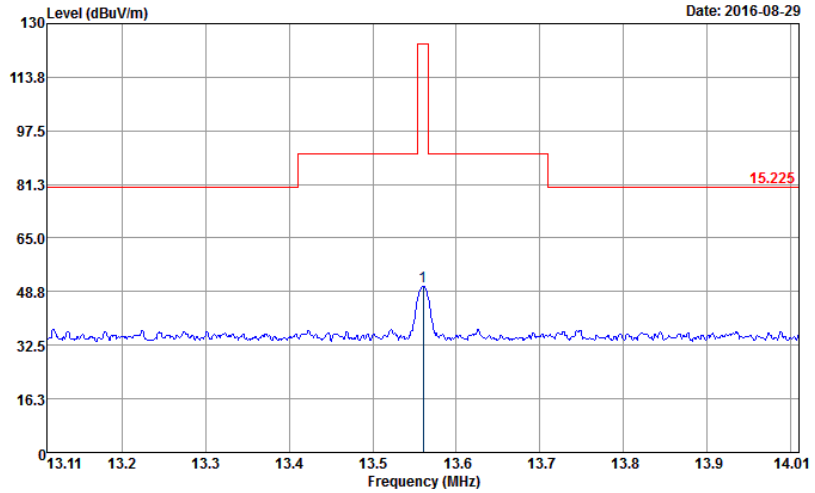
Site : 03CH07-HY
Condition : 15.225 3m LOOP_ANT(V) VERTICAL
: RBW:9.000KHz VBW:9.000KHz SWT:Auto
Project : 681204
Mode : 1

	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	48.61	-75.39	124.00	27.42	20.51	0.68	100	144	QP

Note: All NFC's spurious emissions are below 20dB of limits.

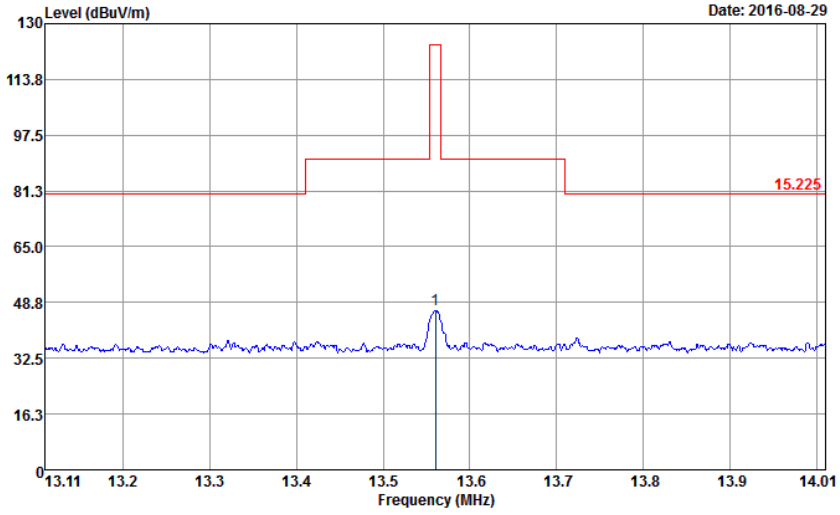
<Sample 2>

Test Mode :	NFC Tx	Test Frequency (MHz)	13.56



Site : 03CH07-HY
Condition : 15.225 3m LOOP_ANT(H) HORIZONTAL
: RBW:9.000KHz VBW:9.000KHz SWT:Auto
Project : 681204
Mode : 1
Plane : NB With accessory
Type : F

	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	50.40	-73.60	124.00	29.21	20.51	0.68	100	225	QP



Site : 03CH07-HY
Condition : 15.225 3m LOOP_ANT(V) VERTICAL
: RBW:9.000KHz VBW:9.000KHz SWT:Auto
Project : 681204
Mode : 1
Plane : NB With accessory
Type : F

	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	46.65	-77.35	124.00	25.46	20.51	0.68	100	106	QP

Note: All NFC's spurious emissions are below 20dB of limits.

D.2 Results of Radiated Emissions (9 kHz~30MHz)

<Sample 1>

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
0.01538	47.66	-76.21	123.87	24.08	22.9	0.68	-	-	Average
0.06456	47.49	-63.92	111.41	27.81	19	0.68	-	-	Average
0.09542	34.42	-73.59	108.01	14.94	18.8	0.68	-	-	QP
0.12912	46.07	-59.31	105.38	26.6	18.79	0.68	-	-	Average
0.19216	41.91	-60.02	101.93	22.47	18.76	0.68	-	-	Average
0.51253	44.03	-29.38	73.41	24.73	18.62	0.68	100	0	QP
12.28	37.17	-32.33	69.5	16.23	20.26	0.68	-	-	QP
13.56	53.62	-15.88	69.5	32.43	20.51	0.68	-	-	QP
19.699	38.8	-30.7	69.5	16.38	21.74	0.68	-	-	QP
28.92	39.87	-29.63	69.5	16.46	22.34	1.07	-	-	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
0.01028	47.5	-79.87	127.37	23.92	22.9	0.68	-	-	Average
0.06456	43.16	-68.25	111.41	23.48	19	0.68	-	-	Average
0.09024	33.6	-74.9	108.5	14.12	18.8	0.68	-	-	QP
0.12012	48.71	-57.3	106.01	29.24	18.79	0.68	-	-	Average
0.23398	45.32	-54.9	100.22	25.91	18.73	0.68	-	-	Average
0.49	41.22	-32.58	73.8	21.94	18.6	0.68	-	-	QP
12.656	37.85	-31.65	69.5	16.84	20.33	0.68	-	-	QP
13.56	49.33	-20.17	69.5	28.14	20.51	0.68	-	-	QP
17.818	39.11	-30.39	69.5	17.07	21.36	0.68	100	0	QP
27.765	39.1	-30.4	69.5	15.77	22.26	1.07	-	-	QP

Note:

1. 13.56 MHz is fundamental signal which can be ignored.
2. The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.
3. Distance extrapolation factor = 40 log (specific distance / test distance) (dB);
4. Limit line = specific limits (dBμV) + distance extrapolation factor.

<Sample 2>

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
0.01334	46.45	-78.65	125.1	22.87	22.9	0.68	-	-	Average
0.07491	46.39	-63.72	110.11	26.71	19	0.68	-	-	Average
0.0909	35.54	-72.89	108.43	16.06	18.8	0.68	-	-	QP
0.11968	46.53	-59.51	106.04	27.06	18.79	0.68	-	-	Average
0.23126	48.28	-52.04	100.32	28.86	18.74	0.68	-	-	Average
0.50502	41.15	-32.39	73.54	21.85	18.62	0.68	-	-	QP
11.384	37.39	-32.11	69.5	16.63	20.08	0.68	-	-	QP
13.56	50.02	-19.48	69.5	28.83	20.51	0.68	-	-	QP
22.093	38.53	-30.97	69.5	15.54	21.92	1.07	-	-	QP
28.62	38.77	-30.73	69.5	15.38	22.32	1.07	100	0	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
0.01328	43.19	-81.95	125.14	19.61	22.9	0.68	-	-	Average
0.07551	42.86	-67.18	110.04	23.18	19	0.68	-	-	Average
0.09016	34.38	-74.12	108.5	14.9	18.8	0.68	-	-	QP
0.11972	44.75	-61.29	106.04	25.28	18.79	0.68	-	-	Average
0.23874	43.95	-56.1	100.05	24.54	18.73	0.68	-	-	Average
0.49	40.75	-33.05	73.8	21.47	18.6	0.68	-	-	QP
10.784	37.19	-32.31	69.5	16.55	19.96	0.68	-	-	QP
13.56	45.8	-23.7	69.5	24.61	20.51	0.68	-	-	QP
23.02	38.82	-30.68	69.5	15.77	21.98	1.07	-	-	QP
28.99	39.14	-30.36	69.5	15.73	22.34	1.07	100	0	QP

Note:

1. 13.56 MHz is fundamental signal which can be ignored.
2. The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.
3. Distance extrapolation factor = 40 log (specific distance / test distance) (dB);
4. Limit line = specific limits (dBμV) + distance extrapolation factor.

D.3 Results of Radiated Emissions (30MHz~1GHz)

<Sample 2>

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
40.8	32.08	-7.92	40	42.66	19.84	1.07	31.49	-	-	Peak
78.33	32.31	-7.69	40	48.9	13.68	1.28	31.55	100	0	Peak
216.03	31.67	-14.33	46	44.89	16.36	1.87	31.45	-	-	Peak
407.8	27.53	-18.47	46	33.51	22.51	2.67	31.16	-	-	Peak
763.4	31.43	-14.57	46	30.92	27.33	3.82	30.64	-	-	Peak
995.8	34.21	-19.79	54	30.46	30.29	3.98	30.52	-	-	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
40.53	36.32	-3.68	40	46.9	19.84	1.07	31.49	100	0	Peak
193.08	25.93	-17.57	43.5	39.89	15.65	1.87	31.48	-	-	Peak
264.09	23.83	-22.17	46	33.09	19.76	2.32	31.34	-	-	Peak
395.2	27.65	-18.35	46	33.87	22.28	2.67	31.17	-	-	Peak
531	29.15	-16.85	46	32.53	24.44	3.14	30.96	-	-	Peak
912.5	35.47	-10.53	46	32.58	29.31	4.12	30.54	-	-	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.

<Sample 2>

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	27.82	-12.18	40	32.1	26	1.07	31.35	-	-	Peak
79.95	33.53	-6.47	40	50.01	13.79	1.28	31.55	-	-	Peak
216.03	42.62	-3.38	46	55.84	16.36	1.87	31.45	100	0	Peak
358.1	25.73	-20.27	46	33.05	21.39	2.5	31.21	-	-	Peak
532.4	32.02	-13.98	46	35.37	24.46	3.14	30.95	-	-	Peak
988.1	33.47	-20.53	54	29.73	30.28	3.98	30.52	-	-	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
40.8	32.73	-7.27	40	43.31	19.84	1.07	31.49	100	0	Peak
216.03	35.24	-10.76	46	48.46	16.36	1.87	31.45	-	-	Peak
230.61	30.87	-15.13	46	42.94	17.28	2.07	31.42	-	-	Peak
497.4	28.31	-17.69	46	32.15	24.14	3.04	31.02	-	-	Peak
727	30.76	-15.24	46	30.87	26.84	3.74	30.69	-	-	Peak
963.6	34.37	-19.63	54	30.6	30.23	4.07	30.53	-	-	Peak

Note:

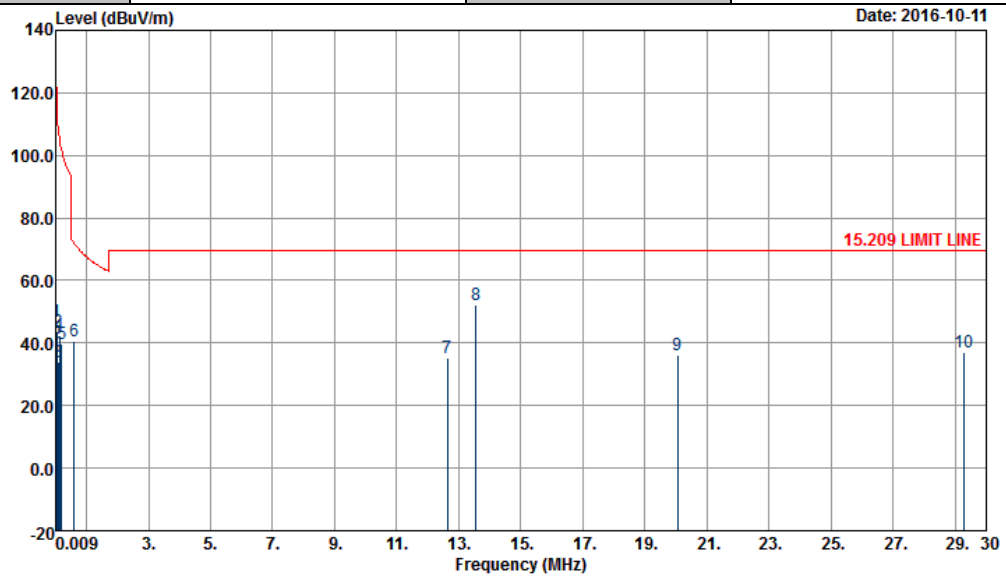
1. The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.
2. Emission level (dBµV/m) = 20 log Emission level (µV/m).
3. Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor= Level.

Appendix E. Verification of Radiated Spurious Emissions at open-area test site

E.1 Results of Radiated Emissions (9 kHz~30MHz)

<Sample 1>

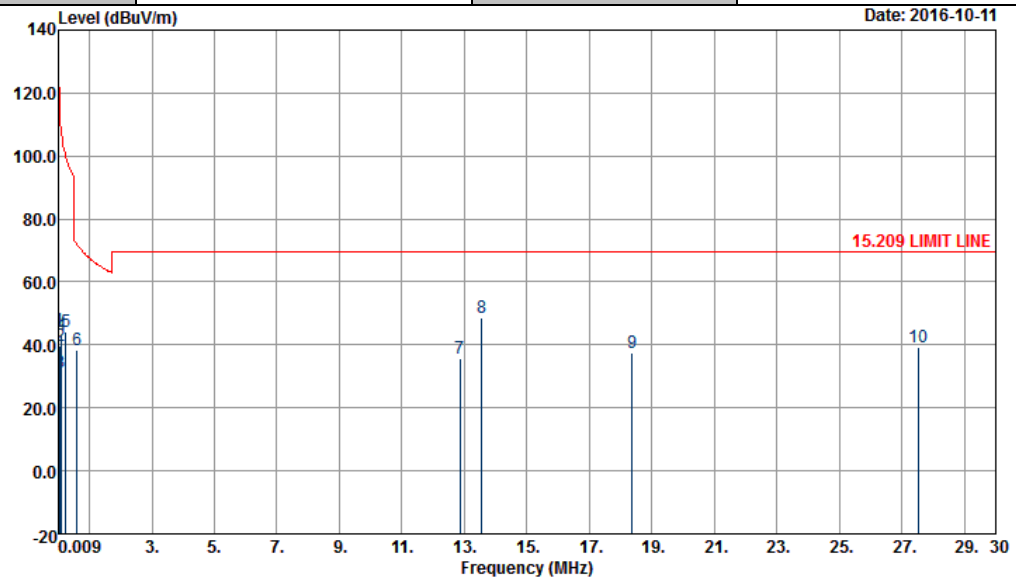
Test Mode :	NFC Tx	Polarization :	Horizontal



Site : OS03-LK
Condition : 15.209 LIMIT LINE 3m LOOP_ANT(H) 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
0.0164	46.94	-76.37	123.31	26.01	20.25	0.68	-	-	Average
0.06468	43.75	-67.64	111.39	23.03	20.04	0.68	-	-	Average
0.09444	33.82	-74.28	108.1	13.15	19.99	0.68	-	-	QP
0.12924	42.55	-62.83	105.38	21.9	19.97	0.68	-	-	Average
0.19964	39.67	-61.93	101.6	19.06	19.93	0.68	-	-	Average
0.59514	40.68	-31.43	72.11	20.1	19.9	0.68	100	34	QP
12.64	35.18	-34.32	69.5	14.44	20.06	0.68	-	-	QP
13.56	52.03	-17.47	69.5	31.3	20.05	0.68	-	-	QP
20.041	36.3	-33.2	69.5	14.81	20.42	1.07	-	-	QP
29.275	37.08	-32.42	69.5	15.57	20.44	1.07	-	-	QP

Test Mode :	NFC Tx	Polarization :	Vertical



Site : OS03-LK
Condition : 15.209 LIMIT LINE 3m LOOP ANT(V) VERTICAL

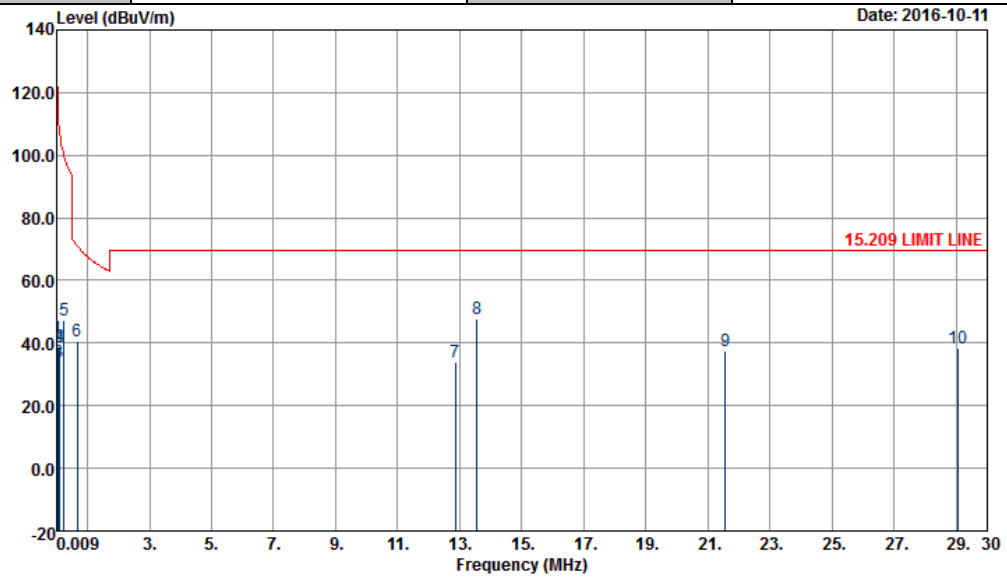
Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB)	Cable Loss (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
0.01252	44.79	-80.86	125.65	23.86	20.25	0.68	-	-	Average
0.06468	39.57	-71.82	111.39	18.85	20.04	0.68	-	-	Average
0.09096	31.29	-77.14	108.43	10.62	19.99	0.68	-	-	QP
0.12068	43.16	-62.81	105.97	22.51	19.97	0.68	-	-	Average
0.25302	44.29	-55.25	99.54	23.69	19.92	0.68	-	-	Average
0.59514	38.22	-33.89	72.11	17.64	19.9	0.68	-	-	QP
12.856	35.71	-33.79	69.5	14.97	20.06	0.68	-	-	QP
13.56	48.56	-20.94	69.5	27.83	20.05	0.68	-	-	QP
18.367	37.55	-31.95	69.5	16.62	20.25	0.68	-	-	QP
27.51	39.2	-30.3	69.5	17.51	20.62	1.07	100	248	QP

Note:

1. 13.56 MHz is fundamental signal which can be ignored.
2. The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.
3. Distance extrapolation factor = 40 log (specific distance / test distance) (dB);
4. Limit line = specific limits (dBµV) + distance extrapolation factor.
5. The test distance between the receiving antenna and the EUT is 3meter.

<Sample 2>

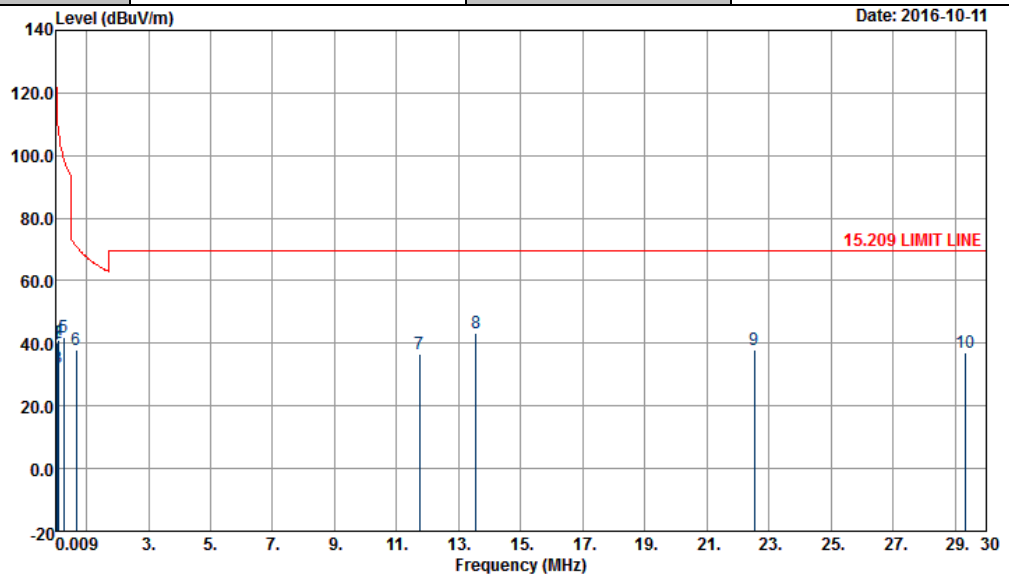
Test Mode :	NFC Tx	Polarization :	Horizontal



Site : OS03-LK
Condition : 15.209 LIMIT LINE 3m LOOP_ANT(H) 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
0.0164	41.3	-82.01	123.31	20.37	20.25	0.68	-	-	Average
0.07617	38.61	-71.36	109.97	17.89	20.04	0.68	-	-	Average
0.09276	34.15	-74.11	108.26	13.48	19.99	0.68	-	-	QP
0.12048	38.69	-67.3	105.99	18.04	19.97	0.68	-	-	Average
0.24928	47.27	-52.4	99.67	26.67	19.92	0.68	-	-	Average
0.67775	40.68	-30.3	70.98	20.1	19.9	0.68	100	305	QP
12.856	34.02	-35.48	69.5	13.28	20.06	0.68	-	-	QP
13.56	47.76	-21.74	69.5	27.03	20.05	0.68	-	-	QP
21.553	37.7	-31.8	69.5	16.1	20.53	1.07	-	-	QP
29.05	38.18	-31.32	69.5	16.62	20.49	1.07	-	-	QP

Test Mode :	NFC Tx	Polarization :	Vertical



Site : OS03-LK
Condition : 15.209 LIMIT LINE 3m LOOP_ANT(V) 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
0.01634	39.87	-83.47	123.34	18.94	20.25	0.68	-	-	Average
0.07608	40.37	-69.61	109.98	19.65	20.04	0.68	-	-	Average
0.09158	31.97	-76.4	108.37	11.3	19.99	0.68	-	-	QP
0.1202	40.95	-65.06	106.01	20.3	19.97	0.68	-	-	Average
0.26152	41.78	-57.47	99.25	21.18	19.92	0.68	-	-	Average
0.67775	38.13	-32.85	70.98	17.55	19.9	0.68	-	-	QP
11.728	36.44	-33.06	69.5	15.71	20.05	0.68	-	-	QP
13.56	43.34	-26.16	69.5	22.61	20.05	0.68	-	-	QP
22.516	37.74	-31.76	69.5	16.11	20.56	1.07	100	105	QP
29.305	37.19	-32.31	69.5	15.68	20.44	1.07	-	-	QP

Note:

1. 13.56 MHz is fundamental signal which can be ignored.
2. The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.
3. Distance extrapolation factor = 40 log (specific distance / test distance) (dB);
4. Limit line = specific limits (dBµV) + distance extrapolation factor.
5. The test distance between the receiving antenna and the EUT is 3meter.

E.2 List of Measuring Equipment

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Loop Antenna	R&S	HFH2-Z2	25236	9 kHz ~ 30MHz	Sep. 02, 2015	Oct. 11, 2016	Sep. 01, 2017	Radiation (OS03-LK)
Amplifier	HP	8447D	2944A09068	0.1MHz ~ 1.3GHz	Dec. 11, 2015	Oct. 11, 2016	Dec. 10, 2016	Radiation (OS03-LK)
Spectrum Analyzer	R&S	FSP 7	100641	9 kHz ~ 7 GHz	Jun. 23, 2016	Oct. 11, 2016	Jun. 22, 2017	Radiation (OS03-LK)
Test Receiver	R&S	ESCS 30	836858/024	9 kHz ~ 2.75 GHz	Jun. 24, 2016	Oct. 11, 2016	Jun. 23, 2017	Radiation (OS03-LK)
Turn Table	EMCO	2080	9711-2021	0 ~ 360 degree	NCR	Oct. 11, 2016	NCR	Radiation (OS03-LK)
Antenna Mast	EMCO	2075	9711-2115	1 m ~ 4 m	NCR	Oct. 11, 2016	NCR	Radiation (OS03-LK)