NCC RADIO TEST REPORT

Equipment	:	**Touch Computer**
Brand Name	:	**Zebra**
Model Name	:	**TC520K**
Applicant	:	台灣斑馬科技股份有限公司 台北市信義區松高路 9 號 13 樓
Manufacturer	:	**Zebra Technologies Corporation** **1 Zebra Plaza Holtsville, NY 11742**
Standard	:	**NCC LP0002 (2018-01-10)**

The product was received on May. 31, 2018, and testing was started from Jul. 17, 2018 and completed on Aug. 17, 2018. We, SPORTON INTERNATIONAL INC. EMC & Wireless Communications Laboratory, would like to declare that the tested sample has been evaluated in accordance with the procedures given in NCC LP0002 (2018-01-10) and shown compliance with the applicable technical standards.

The report must not be used by the client to claim product certification, approval, or endorsement by TAF or any agency of government.

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

Jones Tsai

Approved by: Jones Tsai

SPORTON INTERNATIONAL INC. EMC & Wireless Communications Laboratory

No. 52, Huaya 1st Rd., Guishan Dist., Taoyuan City, Taiwan (R.O.C.)

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History of this test report

Report No.	Version	Description	Issue Date
TR853105D	01	Initial issue of report	Aug. 27, 2018

Summary of the Test Result

Report Clause	Ref Std. Clause	Test Items	Result (PASS/FAIL)	Remark
3.1	LP0002 2.3	AC Power Line Conducted Emissions	Pass	Under limit 16.09 dB at 0.409MHz
3.2	-	20dB Bandwidth	Pass	-
	-	99% Occupied Bandwidth	Pass	-
3.3	LP0002 3.2.1.3	Frequency Stability	Pass	-
3.4	LP0002 3.2.1.2	Field Strength of Fundamental Emissions	Pass	Max level 63.81 dBμV/m at 13.560 MHz
3.5	LP0002 2.8 3.2.1.2	Radiated Spurious Emissions	Pass	Under limit 5.53 dB at 35.670MHz
3.6	LP0002 2.2	Antenna Requirements	Pass	-

Reviewed by: Joseph Lin

Report Producer: Polly Tsai

1. General Description

1.1 Product Feature of Equipment Under Test

Product Feature	
Equipment	Touch Computer
Brand Name	Zebra
Model Name	TC520K
EUT supports Radios application	NFC WLAN 11a/b/g/n HT20/HT40 WLAN 11ac VHT20/VHT40/VHT80 Bluetooth BR/EDR/LE
HW Version	DV
SW Version	91-09-14.00-ON-U00-STD
FW Version	NFC_NCIHALx_AR3C.8.3.0
MFD	20-Jul-18
EUT Stage	Engineering Sample

Remark: The above EUT's information was declared by manufacturer.

Specification of Accessories				
Adapter	**Brand Name**	Zebra	**Part Number**	PWR-WUA5V12W0US
Battery 1	**Brand Name**	Zebra	**Part Number**	BT-000314-50
Battery 2	**Brand Name**	Zebra	**Part Number**	BT-000314-01
USB cable	**Brand Name**	Zebra	**Part Number**	CBL-TC51-USB1-01
Headset Jumper 1	**Brand Name**	Zebra	**Part Number**	CBL-TC51-HDST25-01
Headset Jumper 2	**Brand Name**	Zebra	**Part Number**	CBL-TC51-HDST35-01
2.5mm Earphone	**Brand Name**	Zebra	**Part Number**	HDST-25MM-PTVP-01
3.5mm Earphone	**Brand Name**	Zebra	**Part Number**	HDST-35MM-PTVP-01
Exoskeleton	**Brand Name**	Zebra	**Part Number**	SG-TC51-EX01-01
Trigger Handle	**Brand Name**	Zebra	**Part Number**	TRG-TC51-SNP1-01
Soft Holster	**Brand Name**	Zebra	**Part Number**	SG-TC51-HLSTR1-01
Hand strap	**Brand Name**	Zebra	**Part Number**	SG-TC51-BHDSTP1-03
USB-C Adapter	**Brand Name**	Zebra	**Part Number**	ADPTR-TC56-USBC-01
USB Type C cable	**Brand Name**	Zebra	**Part Number**	N/A

1.2 Product Specification of Equipment Under Test

Standards-related Product Specification	
Tx/Rx Frequency Range	13.553 ~ 13.567MHz
Channel Number	1
20dBW	2.68 KHz
99%OBW	2.26 KHz
Antenna Type	Loop Antenna
Type of Modulation	ASK

Remark: The above EUT's information was declared by manufacturer.

1.3 Modification of EUT

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

1.4 Testing Location

Sporton Lab is accredited to ISO 17025 by Taiwan Accreditation Foundation (TAF code : 1190) and the FCC designation No. TW1190 and TW0007 under the FCC 2.948(e) by Mutual Recognition Agreement (MRA) in FCC Test.

Test Site	SPORTON INTERNATIONAL INC.	
Test Site Location	No.52, Huaya 1st Rd., Guishan Dist., Taoyuan City, Taiwan (R.O.C.) TEL: +886-3-327-3456 FAX: +886-3-328-4978	
Test Site No.	**Sporton Site No.**	
	TH03-HY	CO05-HY
Test Engineer	George Chen	Arthur Hsieh and Kai-Chun Chu
Temperature	22~24°C	21~25°C
Relative Humidity	53~55%	51~55%

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

Test Site	SPORTON INTERNATIONAL INC.
Test Site Location	No.58, Huaya 1st Rd., Guishan Dist., Taoyuan City, Taiwan (R.O.C.) TEL: +886-3-327-3456 FAX: +886-3-328-4978
Test Site No.	**Sporton Site No.**
	03CH11-HY
Test Engineer	Hao Hsu
Temperature	21~25°C
Relative Humidity	52~57%

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

1.5 Applicable Standards

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

- NCC LP0002 (2018-01-10)
- 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.

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

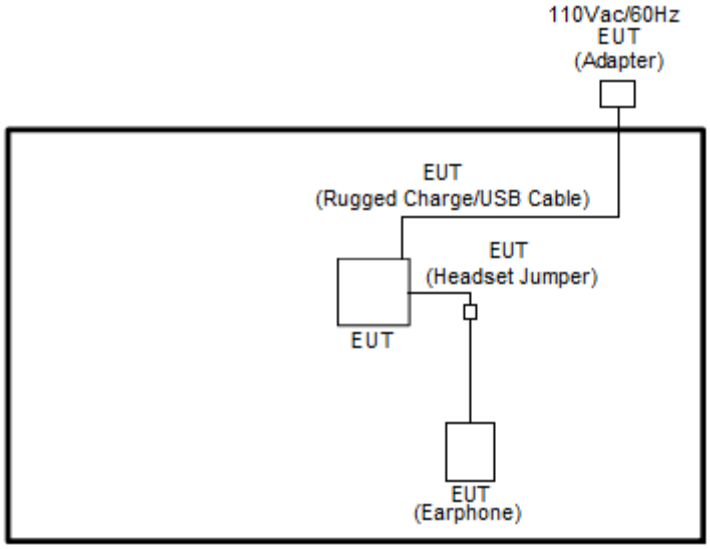
Test Items	
AC Power Line Conducted Emissions	Field Strength of Fundamental Emissions
20dB Spectrum Bandwidth	Frequency Stability
Radiated Emissions 9kHz~30MHz	Radiated Emissions 30MHz~1GHz

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

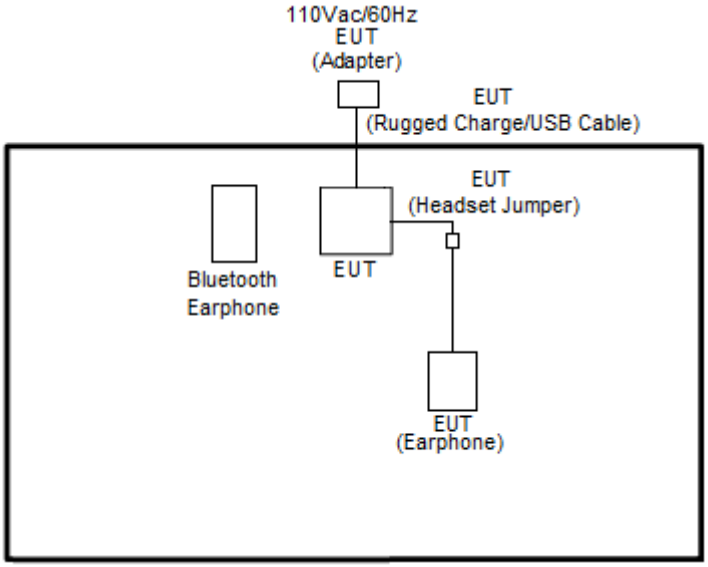
Test Cases	
AC Conducted Emission	Mode 1: NFC Tx + WLAN (2.4GHz) Idle + Bluetooth Idle + Rugged Charge/USB Cable + without Exoskeleton + Battery 1 + Adapter (SAWA-65-20005A (5V/2.5A)) + Earphone (HDST-25MM-PTVP-01) + Headset Jumper (CBL-TC51-HDST25-01) Mode 2: NFC Tx + WLAN (2.4GHz) Idle + Bluetooth Idle + Rugged Charge/USB Cable + without Exoskeleton + Battery 2 + Adapter (SAWA-65-20005A (5V/2.5A)) + Earphone (HDST-25MM-PTVP-01) + Headset Jumper (CBL-TC51-HDST25-01)
Receiver Radiated Emission	Mode 1: NFC Idle + Battery 2
Remark: For Radiated Test Cases, the tests were performed with Rugged Charge/USB Cable, Adapter (SAWA-65-20005A (5V/2.5A)), Battery 1 or 2, Earphone (HDST-25MM-PTVP-01), Headset Jumper (CBL-TC51-HDST25-01), and without Exoskeleton.	

2.2 Connection Diagram of Test System

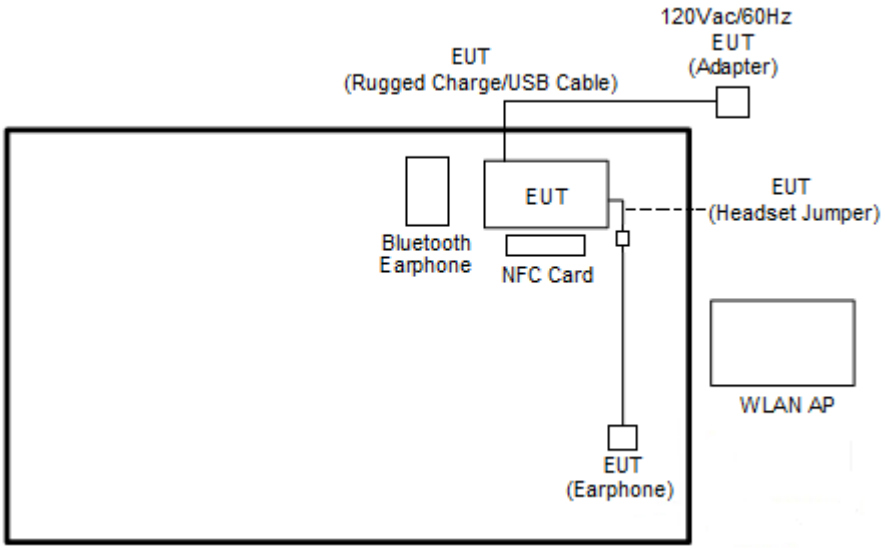
<Radiated Emission Mode>



<Receiver Radiated Emission Mode>



<AC Conducted Emission Mode>



2.3 Support Unit used in test configuration and system

Item	Equipment	Trade Name	Model Name	FCC ID	Data Cable	Power Cord
1.	WLAN AP	ASUS	RT-AC66U	MSQ-RTAC66U	N/A	Unshielded, 1.8 m
2.	Bluetooth Earphone	Sony Ericsson	MW600	PY7DDA-2029	N/A	N/A
3.	NFC Card	N/A	N/A	N/A	N/A	N/A
4.	SD Card	SanDisk	MicroSD HC	FCC DoC	N/A	N/A
5.	SD Card	Transcend	MicroSD HC 8GB Class 10	FCC DoC	N/A	N/A

2.4 EUT Operation Test Setup

For type A/B/F, programmed RF utility, “adb command line Tx” make the EUT was programmed to be in continuously transmitting mode.

For type V, it use card-inducing to be in continuously transmitting mode.

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.

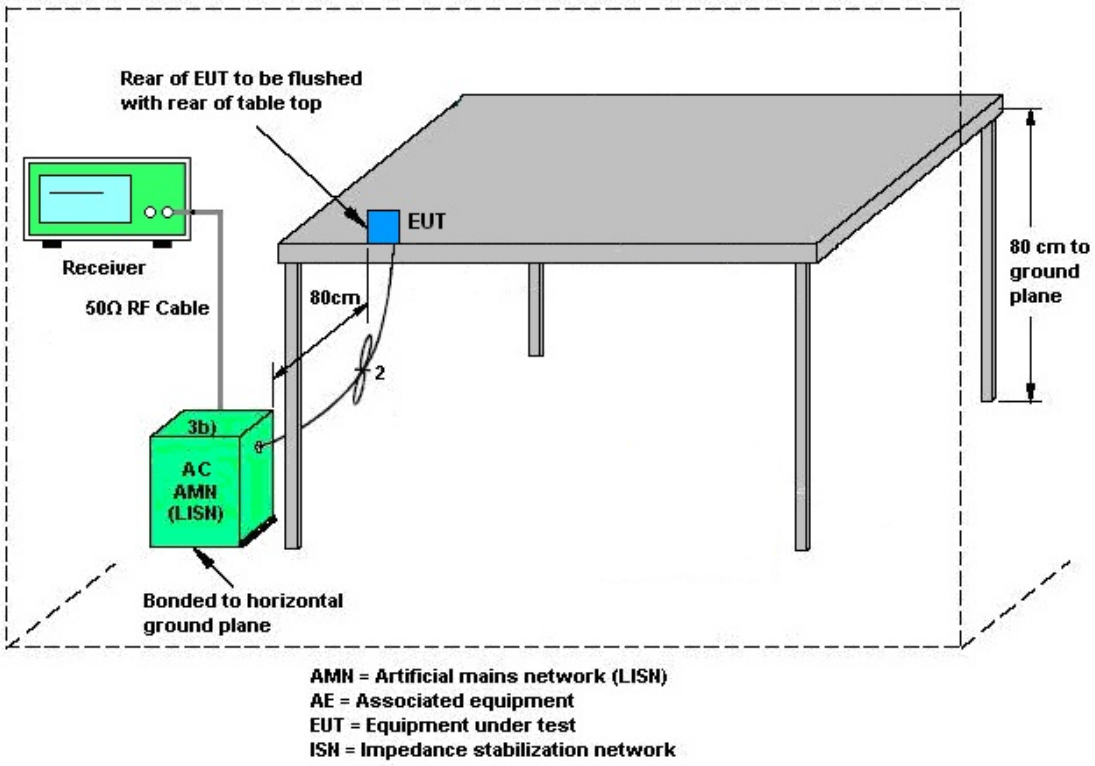
3.1.2 Measuring Instruments

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



AMN = Artificial mains network (LISN)
AE = Associated equipment
EUT = Equipment under test
ISN = Impedance stabilization network

3.1.5 Test Result of AC Conducted Emission

Please refer to Appendix A.

Note:

(1) with antenna

Remark: 13.560MHz is the NFC RF fundamental signal.

(2) with dummy load

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

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.

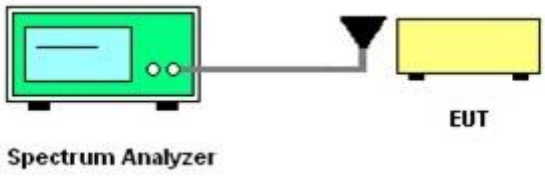
3.2.2 Measuring Instruments

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.

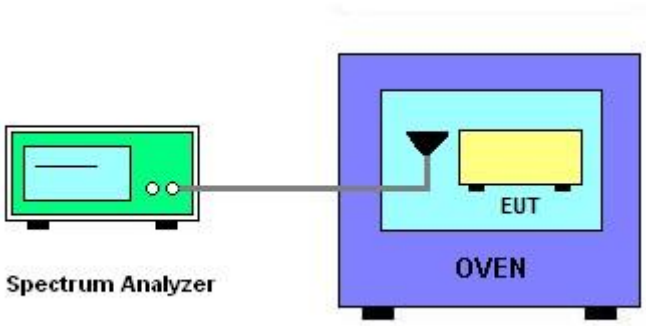
3.3.2 Measuring Instruments

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	NCC LP0002 3.2.1.1			
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
13.553~13.567	15848	84.0	103.08	124.0

3.4.2 Measuring Instruments

See list of measuring instruments of this test report.

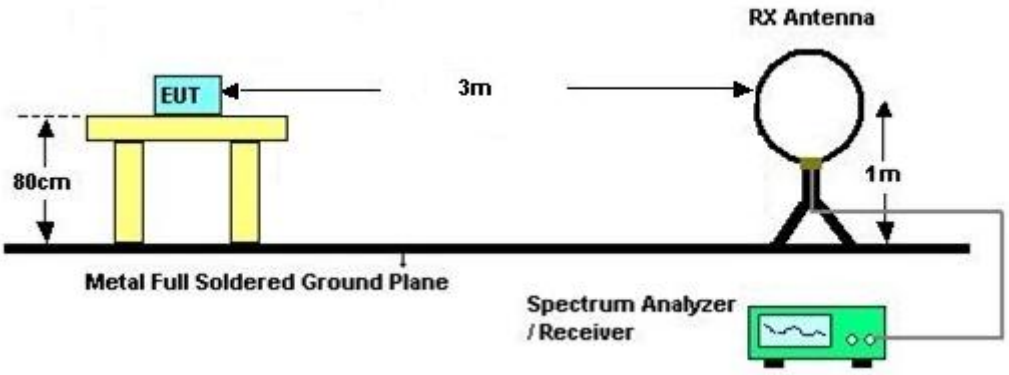
3.4.3 Test Procedures

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

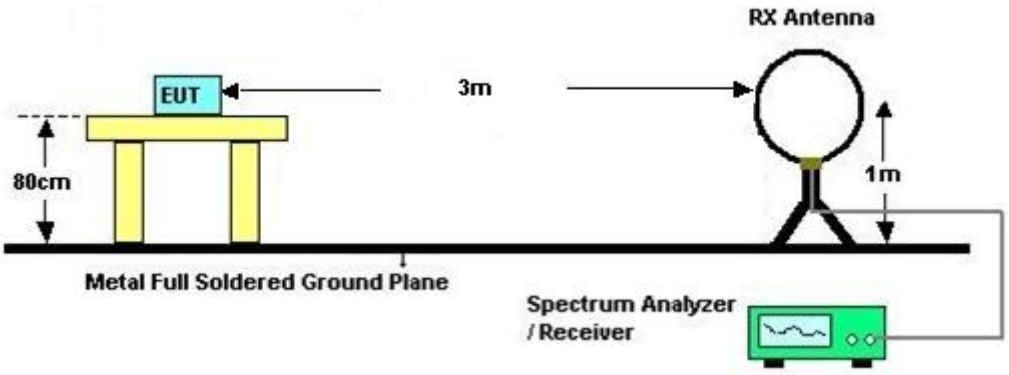
Note: The emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9-90 kHz, 110-490 kHz. Radiated emission limits in these two bands are based on measurements employing an average detector.

3.5.4 Test Procedures

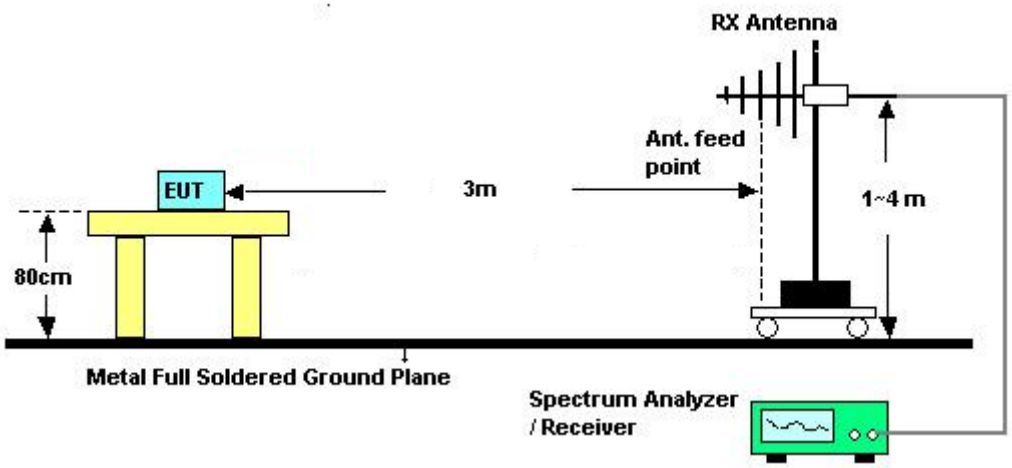
1. Configure the EUT according to ANSI C63.10. The EUT was placed on the top of the turntable 0.8 meter above ground. The phase center of the receiving antenna mounted on the top of a height-variable antenna tower was placed 3 meters far away from the turntable.
2. Power on the EUT and all the supporting 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 below 30MHz



For radiated emissions above 30MHz



3.5.6 Test Result of Radiated Emissions Measurement

Please refer to Appendix C

Remark: There is a comparison data of both open-field test site and semi-Anechoic chamber, and the result came out very similar.

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 LP0002 Section 2.2.

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
AC Power Source	AC POWER	AFC-500W	F104070011	50Hz~60Hz	Mar. 21, 2018	Aug. 08, 2018~ Aug. 15, 2018	Mar. 20, 2019	Conducted (TH03-HY)
Spectrum Analyzer	Rohde & Schwarz	FSP30	101329	9kHz~30GHz	Jun. 25, 2018	Aug. 08, 2018~ Aug. 15, 2018	Jun. 24, 2019	Conducted (TH03-HY)
Temperature Chamber	ESPEC	SU-641	92013721	-30℃ ~70℃	Dec. 06, 2017	Aug. 08, 2018~ Aug. 15, 2018	Dec. 05, 2019	Conducted (TH03-HY)
AC Power Source	ChainTek	APC-1000W	N/A	N/A	N/A	Jul. 17, 2018~ Jul. 20, 2018	N/A	Conduction (CO05-HY)
EMI Test Receiver	Rohde & Schwarz	ESR3	102388	3.6GHz	Dec. 08, 2017	Jul. 17, 2018~ Jul. 20, 2018	Dec. 07, 2018	Conduction (CO05-HY)
LISN	Rohde & Schwarz	ENV216	100080	9kHz~30MHz	Nov. 30, 2017	Jul. 17, 2018~ Jul. 20, 2018	Nov. 29, 2018	Conduction (CO05-HY)
Software	Rohde & Schwarz	EMC32 V10.30	N/A	N/A	N/A	Jul. 17, 2018~ Jul. 20, 2018	N/A	Conduction (CO05-HY)
LF Cable	HUBER + SUHNER	RG-214/U	LF01	N/A	Jan. 03, 2018	Jul. 17, 2018 ~ Jul. 20, 2018	Jan. 02, 2019	Conduction (CO05-HY)
Pulse Limiter	Rohde & Schwarz	ESH3-Z2	100851	N/A	Jan. 03, 2018	Jul. 17, 2018 ~ Jul. 20, 2018	Jan. 02, 2019	Conduction (CO05-HY)
Software	Audix	E3 6.2009-8-24	RK-001042	N/A	N/A	Aug. 10, 2018~ Aug. 17, 2018	N/A	Radiation (03CH11-HY)
Amplifier	SONOMA	310N	187312	9kHz~1GHz	Jan. 16, 2018	Aug. 10, 2018~ Aug. 17, 2018	Jan. 15, 2019	Radiation (03CH11-HY)
Bilog Antenna	TESEQ	CBL 6111D&N-6-06	35414&AT-N0602	30MHz~1GHz	Oct. 14, 2017	Aug. 10, 2018~ Aug. 17, 2018	Oct. 13, 2018	Radiation (03CH11-HY)
Loop Antenna	Rohde & Schwarz	HFH2-Z2	100488	9 kHz~30 MHz	Nov. 23, 2017	Aug. 10, 2018~ Aug. 17, 2018	Nov. 22, 2018	Radiation (03CH11-HY)
Spectrum Analyzer	Keysight	N9010A	MY54200486	10Hz ~ 44GHz	Oct. 19, 2017	Aug. 10, 2018~ Aug. 17, 2018	Oct. 18, 2018	Radiation (03CH11-HY)
Antenna Mast	EMEC	AM-BS-4500-B	N/A	1~4m	N/A	Aug. 10, 2018~ Aug. 17, 2018	N/A	Radiation (03CH11-HY)
Turn Table	EMEC	TT 2000	N/A	0~360 Degree	N/A	Aug. 10, 2018~ Aug. 17, 2018	N/A	Radiation (03CH11-HY)
EMI Test Receiver	Keysight	N9038A(MXE)	MY55420170	N/A	Mar. 06, 2018	Aug. 10, 2018~ Aug. 17, 2018	Mar. 05, 2019	Radiation (03CH11-HY)
Filter	Wainwright	WHK20/1000 C7/40SS	SN2	20M High Pass	Sep. 18, 2017	Aug. 10, 2018~ Aug. 17, 2018	Sep. 17, 2018	Radiation (03CH11-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 104	MY9837/4 PE	9K-30M	Mar. 14, 2018	Aug. 10, 2018~ Aug. 17, 2018	Mar. 13, 2019	Radiation (03CH11-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 104	MY9837/4	30M-18G	Mar. 14, 2018	Aug. 10, 2018~ Aug. 17, 2018	Mar. 13, 2019	Radiation (03CH11-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 102	MY2589/2	30M-40G	Mar. 14, 2018	Aug. 10, 2018~ Aug. 17, 2018	Mar. 13, 2019	Radiation (03CH11-HY)

5. Uncertainty of Evaluation

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

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**2.70**

Uncertainty of Radiated Emission Measurement (9 kHz ~ 30 MHz)

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**3.45**

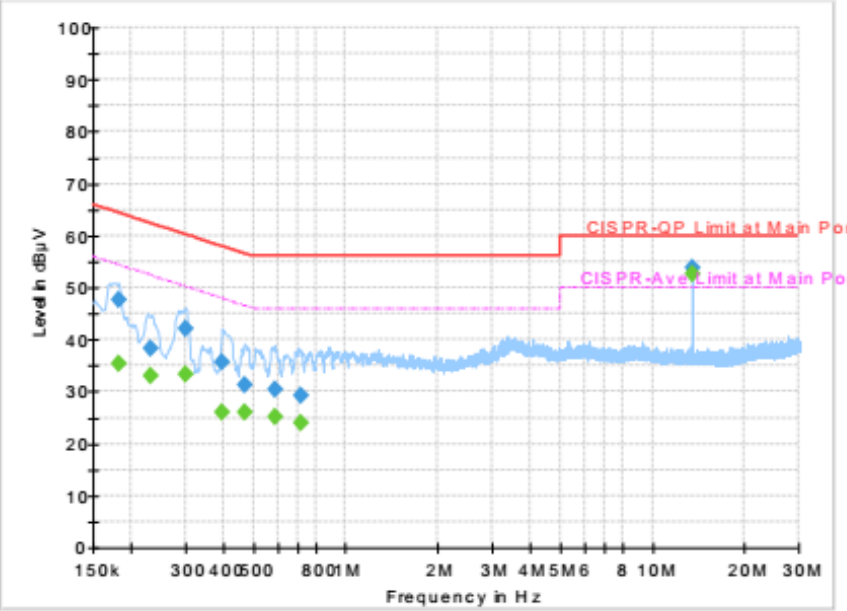
Uncertainty of Radiated Emission Measurement (30 MHz ~ 1000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**5.20**

Appendix A. Test Results of Conducted Emission Test

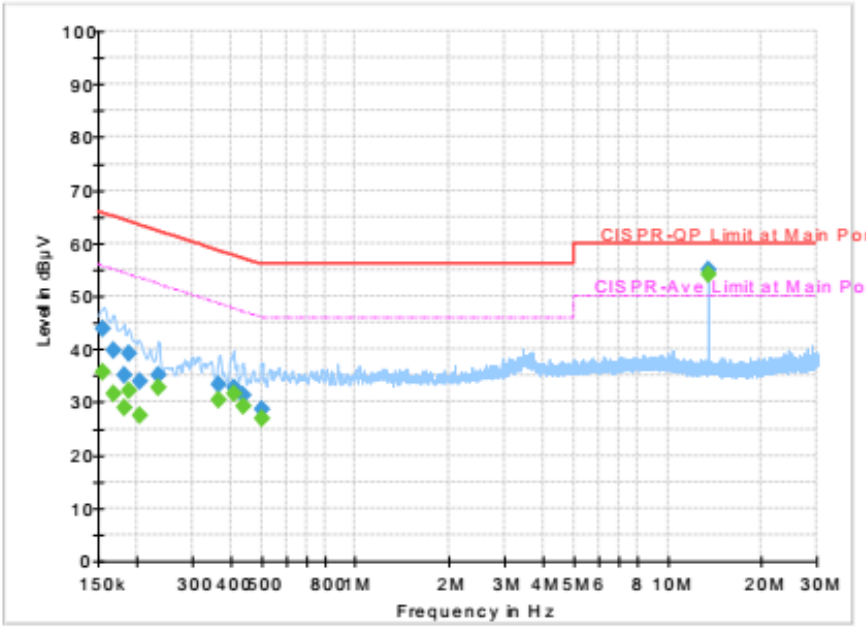
<Original Test Result>

Test Mode:	Mode 1	**Temperature :**	21~25℃
Test Engineer :	Arthur Hsieh and Kai-Chun Chu	**Relative Humidity :**	51~55%
Test Voltage :	120Vac / 60Hz	**Phase :**	Line



Frequency (MHz)	QuasiPeak (dBµV)	CAverage (dBµV)	Limit (dBµV)	Margin (dB)	Line	Filter	Corr. (dB)
0.181500	---	35.43	54.42	18.99	L1	OFF	19.5
0.181500	47.64	---	64.42	16.78	L1	OFF	19.5
0.231000	---	32.97	52.41	19.44	L1	OFF	19.5
0.231000	38.24	---	62.41	24.17	L1	OFF	19.5
0.300750	---	33.42	50.22	16.80	L1	OFF	19.5
0.300750	41.96	---	60.22	18.26	L1	OFF	19.5
0.395250	---	26.04	47.95	21.91	L1	OFF	19.5
0.395250	35.69	---	57.95	22.26	L1	OFF	19.5
0.467250	---	26.09	46.56	20.47	L1	OFF	19.5
0.467250	31.28	---	56.56	25.28	L1	OFF	19.5
0.586500	---	25.16	46.00	20.84	L1	OFF	19.5
0.586500	30.51	---	56.00	25.49	L1	OFF	19.5
0.712500	---	24.01	46.00	21.99	L1	OFF	19.6
0.712500	29.30	---	56.00	26.70	L1	OFF	19.6
13.560000	---	52.69	50.00	-2.69	L1	OFF	20.0
13.560000	53.82	---	60.00	6.18	L1	OFF	20.0

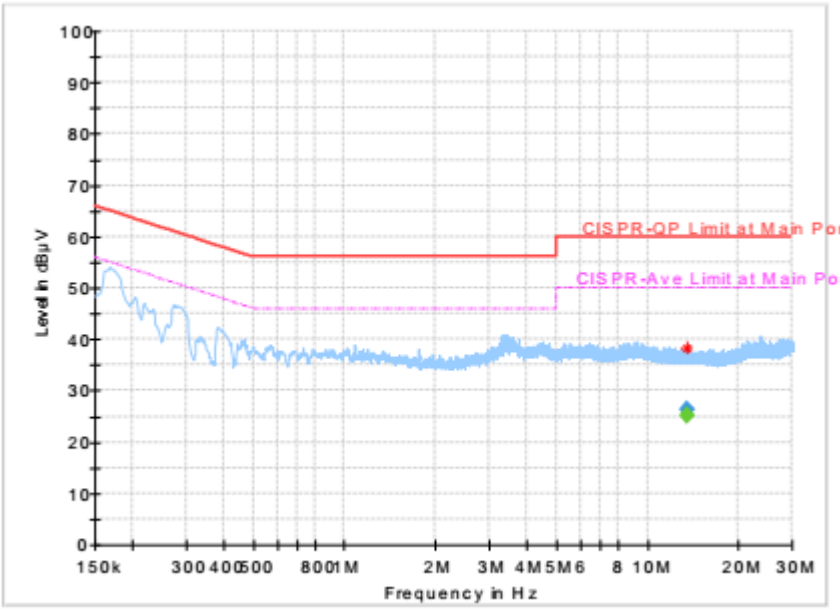
Test Mode:	Mode 1	Temperature :	21~25℃
Test Engineer :	Arthur Hsieh and Kai-Chun Chu	Relative Humidity :	51~55%
Test Voltage :	120Vac / 60Hz	Phase :	Neutral



Frequency (MHz)	QuasiPeak (dBµV)	CAverage (dBµV)	Limit (dBµV)	Margin (dB)	Line	Filter	Corr. (dB)
0.154500	---	35.56	55.75	20.19	N	OFF	19.5
0.154500	43.82	---	65.75	21.93	N	OFF	19.5
0.168000	---	31.72	55.06	23.34	N	OFF	19.5
0.168000	39.63	---	65.06	25.43	N	OFF	19.5
0.181500	---	28.94	54.42	25.48	N	OFF	19.5
0.181500	35.08	---	64.42	29.34	N	OFF	19.5
0.188250	---	32.05	54.11	22.06	N	OFF	19.5
0.188250	39.18	---	64.11	24.93	N	OFF	19.5
0.204000	---	27.47	53.45	25.98	N	OFF	19.5
0.204000	34.06	---	63.45	29.39	N	OFF	19.5
0.233250	---	32.65	52.33	19.68	N	OFF	19.5
0.233250	35.09	---	62.33	27.24	N	OFF	19.5
0.366000	---	30.35	48.59	18.24	N	OFF	19.5
0.366000	33.36	---	58.59	25.23	N	OFF	19.5
0.408750	---	31.58	47.67	16.09	N	OFF	19.5
0.408750	32.85	---	57.67	24.82	N	OFF	19.5
0.438000	---	29.25	47.10	17.85	N	OFF	19.5
0.438000	31.15	---	57.10	25.95	N	OFF	19.5
0.501000	---	27.00	46.00	19.00	N	OFF	19.5
0.501000	28.76	---	56.00	27.24	N	OFF	19.5
13.560000	---	54.01	50.00	-4.01	N	OFF	20.1
13.560000	54.90	---	60.00	5.10	N	OFF	20.1

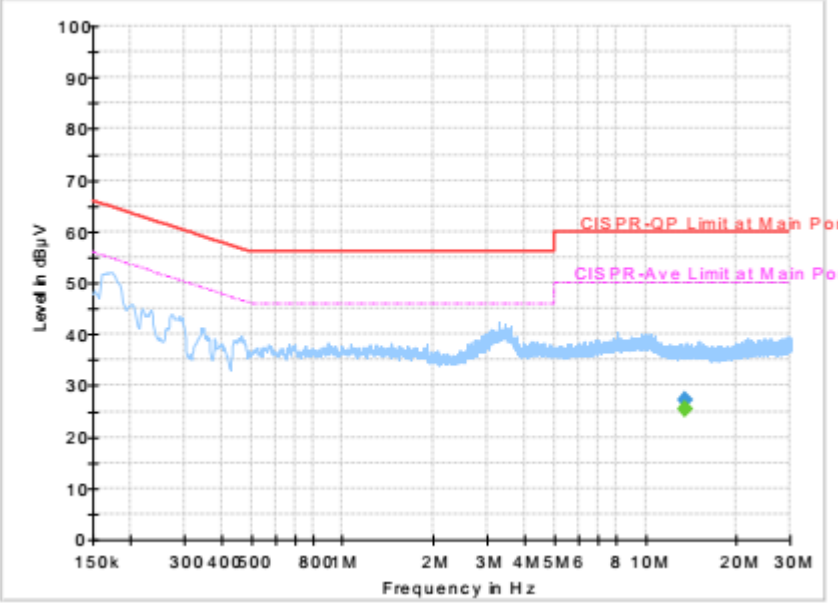
<Terminal Test Result>

Test Mode:	Mode 1	Temperature :	21~25℃
Test Engineer :	Arthur Hsieh and Kai-Chun Chu	Relative Humidity :	51~55%
Test Voltage :	120Vac / 60Hz	Phase :	Line



Frequency (MHz)	QuasiPeak (dBµV)	CAverage (dBµV)	Limit (dBµV)	Margin (dB)	Line	Filter	Corr. (dB)
13.560000	---	25.22	50.00	24.78	L1	OFF	20.0
13.560000	26.46	---	60.00	33.54	L1	OFF	20.0

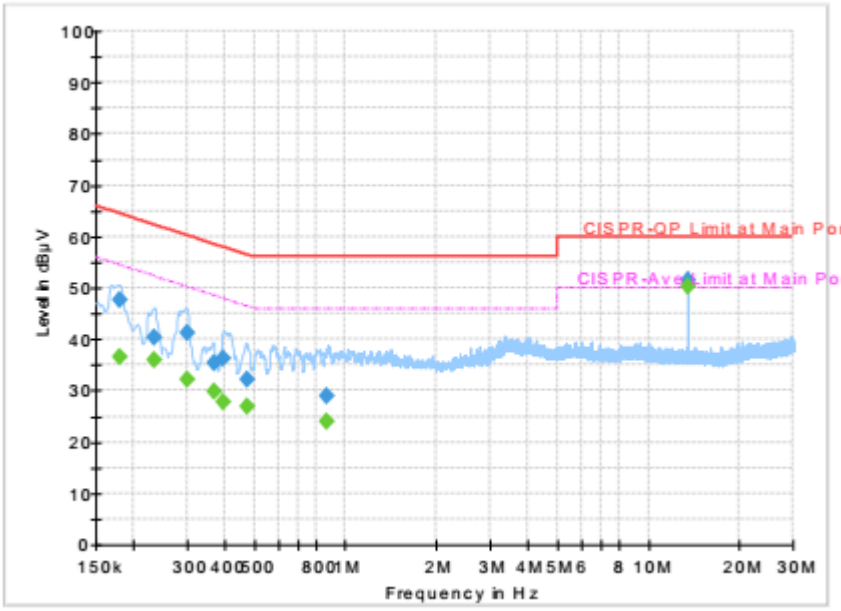
Test Mode:	Mode 1	Temperature :	21~25℃
Test Engineer :	Arthur Hsieh and Kai-Chun Chu	Relative Humidity :	51~55%
Test Voltage :	120Vac / 60Hz	Phase :	Neutral



Frequency (MHz)	QuasiPeak (dBµV)	CAverage (dBµV)	Limit (dBµV)	Margin (dB)	Line	Filter	Corr. (dB)
13.560000	---	25.58	50.00	24.42	N	OFF	20.1
13.560000	27.28	---	60.00	32.72	N	OFF	20.1

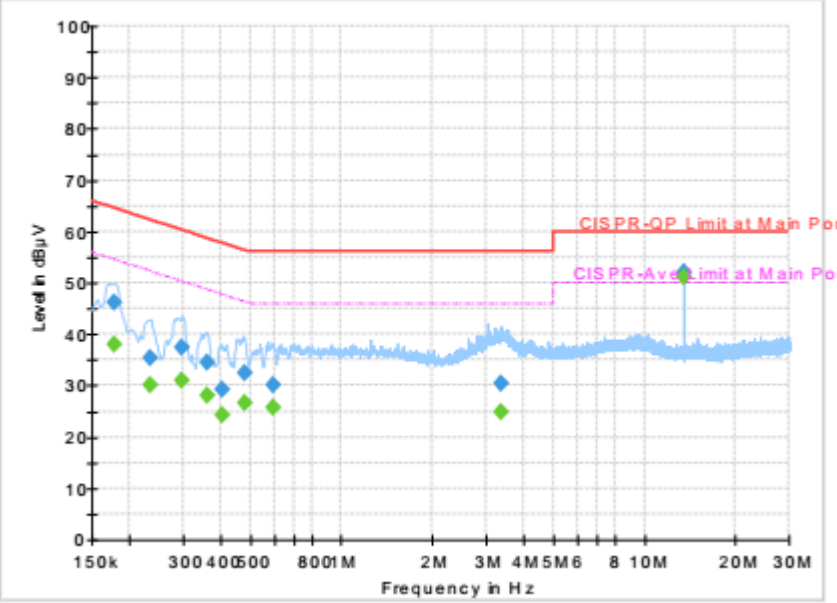
<Original Test Result>

Test Mode:	Mode 2	Temperature :	21~25℃
Test Engineer :	Arthur Hsieh and Kai-Chun Chu	Relative Humidity :	51~55%
Test Voltage :	120Vac / 60Hz	Phase :	Line



Frequency (MHz)	QuasiPeak (dBµV)	CAverage (dBµV)	Limit (dBµV)	Margin (dB)	Line	Filter	Corr. (dB)
0.179250	---	36.54	54.52	17.98	L1	OFF	19.5
0.179250	47.77	---	64.52	16.75	L1	OFF	19.5
0.233250	---	35.96	52.33	16.37	L1	OFF	19.5
0.233250	40.45	---	62.33	21.88	L1	OFF	19.5
0.300750	---	32.21	50.22	18.01	L1	OFF	19.5
0.300750	41.36	---	60.22	18.86	L1	OFF	19.5
0.368250	---	29.74	48.54	18.80	L1	OFF	19.5
0.368250	35.48	---	58.54	23.06	L1	OFF	19.5
0.395250	---	27.70	47.95	20.25	L1	OFF	19.5
0.395250	36.25	---	57.95	21.70	L1	OFF	19.5
0.471750	---	26.83	46.48	19.65	L1	OFF	19.5
0.471750	32.18	---	56.48	24.30	L1	OFF	19.5
0.867750	---	23.94	46.00	22.06	L1	OFF	19.6
0.867750	29.08	---	56.00	26.92	L1	OFF	19.6
13.560000	---	50.34	50.00	-0.34	L1	OFF	20.0
13.560000	51.44	---	60.00	8.56	L1	OFF	20.0

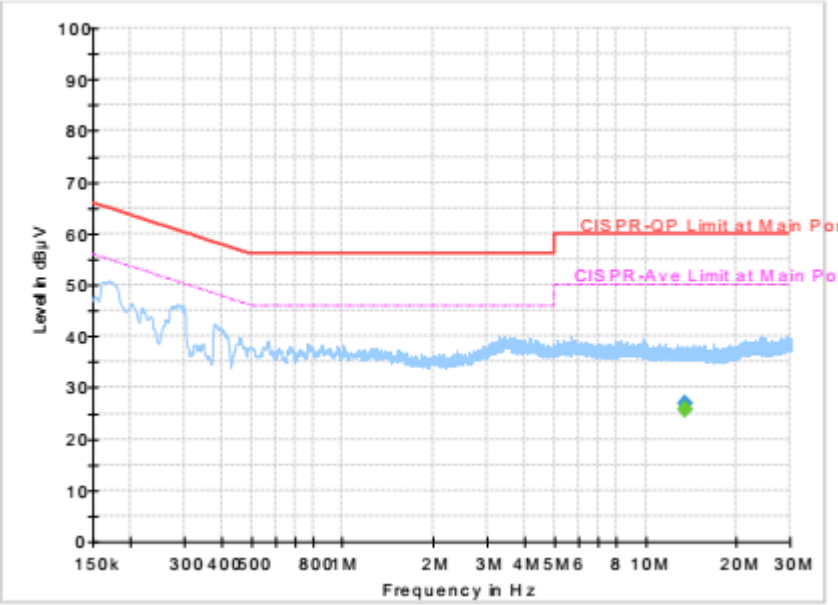
Test Mode:	Mode 2	Temperature :	21~25℃
Test Engineer :	Arthur Hsieh and Kai-Chun Chu	Relative Humidity :	51~55%
Test Voltage :	120Vac / 60Hz	Phase :	Neutral



Frequency (MHz)	QuasiPeak (dBµV)	CAverage (dBµV)	Limit (dBµV)	Margin (dB)	Line	Filter	Corr. (dB)
0.177000	---	37.96	54.63	16.67	N	OFF	19.5
0.177000	46.25	---	64.63	18.38	N	OFF	19.5
0.233250	---	30.07	52.33	22.26	N	OFF	19.5
0.233250	35.50	---	62.33	26.83	N	OFF	19.5
0.296250	---	30.98	50.35	19.37	N	OFF	19.5
0.296250	37.54	---	60.35	22.81	N	OFF	19.5
0.359250	---	28.14	48.75	20.61	N	OFF	19.5
0.359250	34.42	---	58.75	24.33	N	OFF	19.5
0.402000	---	24.30	47.81	23.51	N	OFF	19.5
0.402000	29.31	---	57.81	28.50	N	OFF	19.5
0.478500	---	26.56	46.37	19.81	N	OFF	19.5
0.478500	32.47	---	56.37	23.90	N	OFF	19.5
0.593250	---	25.65	46.00	20.35	N	OFF	19.5
0.593250	30.07	---	56.00	25.93	N	OFF	19.5
3.367500	---	24.92	46.00	21.08	N	OFF	19.7
3.367500	30.43	---	56.00	25.57	N	OFF	19.7
13.560000	---	51.12	50.00	-1.12	N	OFF	20.1
13.560000	52.06	---	60.00	7.94	N	OFF	20.1

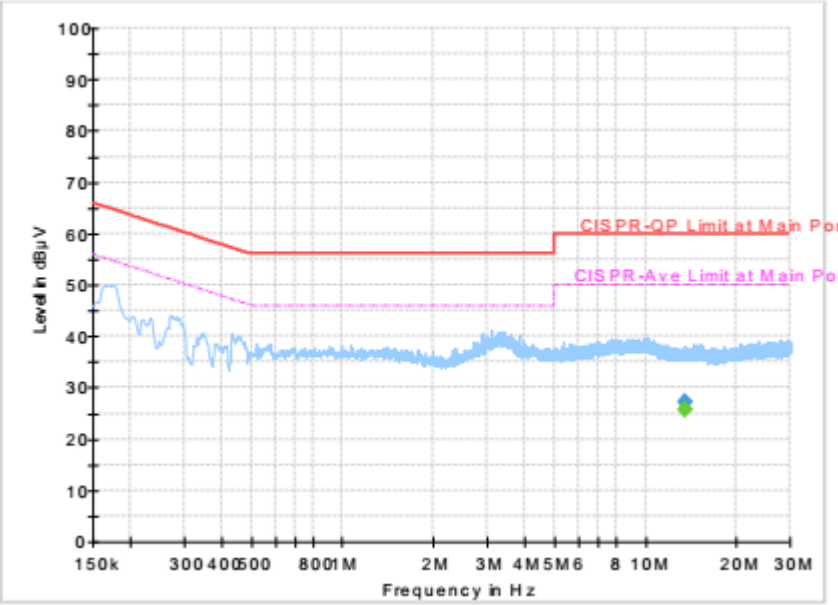
<Terminal Test Result>

Test Mode:	Mode 2	Temperature :	21~25℃
Test Engineer :	Arthur Hsieh and Kai-Chun Chu	Relative Humidity :	51~55%
Test Voltage :	120Vac / 60Hz	Phase :	Line



Frequency (MHz)	QuasiPeak (dBµV)	CAverage (dBµV)	Limit (dBµV)	Margin (dB)	Line	Filter	Corr. (dB)
13.560000	---	25.61	50.00	24.39	L1	OFF	20.0
13.560000	26.88	---	60.00	33.12	L1	OFF	20.0

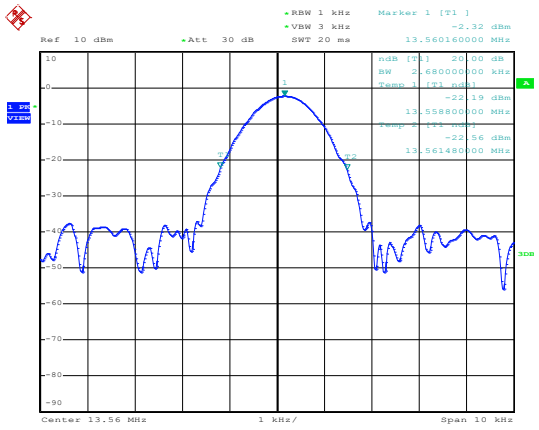
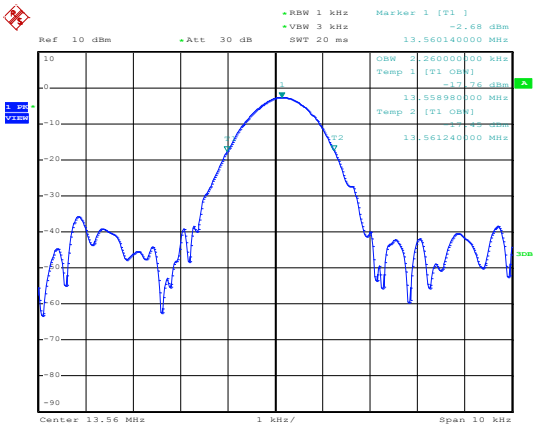
Test Mode:	Mode 2	Temperature :	21~25℃
Test Engineer :	Arthur Hsieh and Kai-Chun Chu	Relative Humidity :	51~55%
Test Voltage :	120Vac / 60Hz	Phase :	Neutral



Frequency (MHz)	QuasiPeak (dBµV)	CAverage (dBµV)	Limit (dBµV)	Margin (dB)	Line	Filter	Corr. (dB)
13.560000	---	25.68	50.00	24.32	N	OFF	20.1
13.560000	27.06	---	60.00	32.94	N	OFF	20.1

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)	2.680	**99% OccupiedBW(kHz)**	2.260
Frequency range (MHz)	**f_L > 13.553**	13.55880	**Test Result**
	f_H < 13.567	13.56148	**Complies**

Remark: Because the measured signal is CW adjusting the RBW per C63.10 would not be practical since measured bandwidth will always follow the RBW and the result will be approximately twice the RBW

B2. Test Result of Frequency Stability

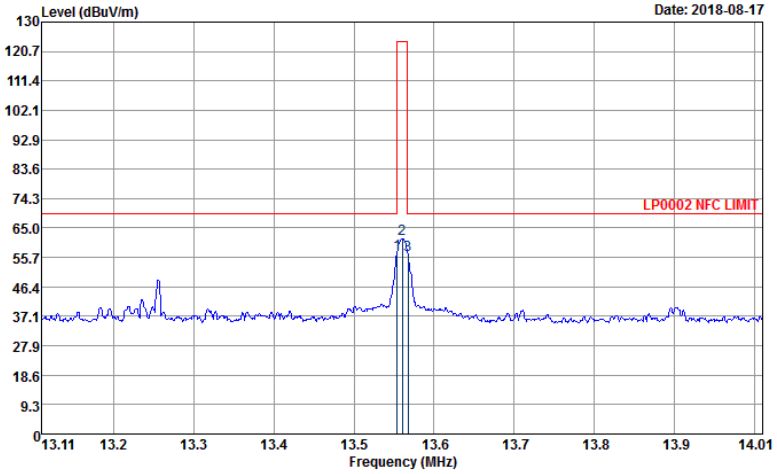
Voltage vs. Frequency Stability		Temperature vs. Frequency Stability		
Voltage (Vac)	Measurement Frequency (MHz)	Temperature (℃)	Time	Measurement Frequency (MHz)
120	13.560110	**-20**	**0**	13.560240
102	13.560110		**2**	13.560250
138	13.560120		**5**	13.560250
			10	13.560240
		-10	**0**	13.560240
			2	13.560240
			5	13.560240
			10	13.560250
		0	**0**	13.560180
			2	13.560180
			5	13.560200
			10	13.560190
		10	**0**	13.560120
			2	13.560120
			5	13.560130
			10	13.560120
		20	**0**	13.560140
			2	13.560110
			5	13.560120
			10	13.560120
		30	**0**	13.560140
			2	13.560120
			5	13.560120
			10	13.560130
		40	**0**	13.560120
			2	13.560120
			5	13.560120
			10	13.560120

Voltage vs. Frequency Stability		Temperature vs. Frequency Stability		
Voltage (Vac)	**Measurement Frequency (MHz)**	**Temperature (℃)**	**Time**	**Measurement Frequency (MHz)**
		50	**0**	13.560100
			2	13.560100
			5	13.560100
			10	13.560100
Max.Deviation (MHz)	0.000120	**Max.Deviation (MHz)**		0.000250
Max.Deviation (ppm)	8.8496	**Max.Deviation (ppm)**		18.4366
Limit	**FS < ±100 ppm**	**Limit**		**FS < ±100 ppm**
Test Result	**PASS**	**Test Result**		**PASS**

Appendix C. Test Results of Radiated Test Items

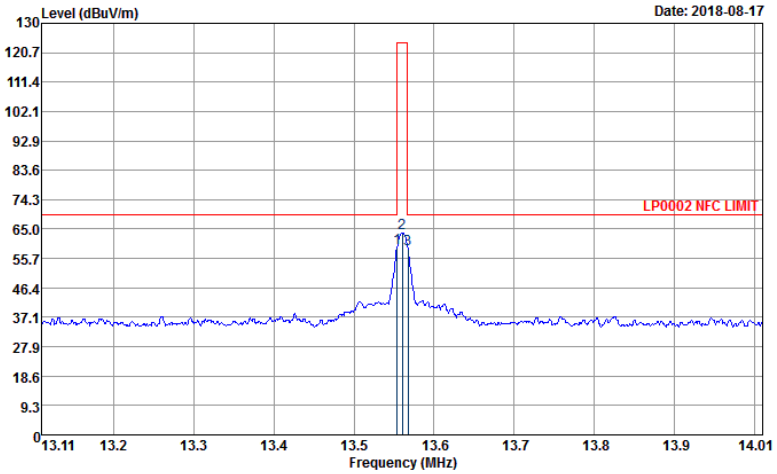
C1. Test Result of Field Strength of Fundamental Emissions

Test Mode :	NFC Tx + Battery 1	Test Frequency (MHz)	13.56



Site : 03CH11-HY
Condition : LP0002 NFC LIMIT 3m LOOP_ANT(V) VERTICAL
: RBW:9.000KHz VBW:9.000KHz SWT:Auto
Project : 853105

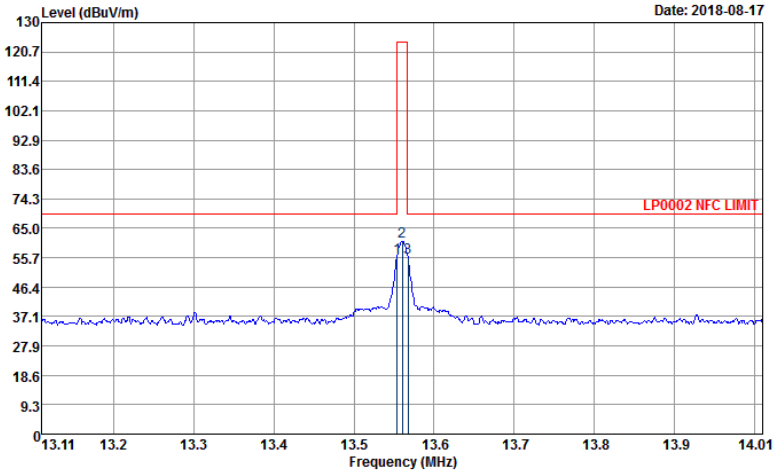
	Freq	Level	Over Limit	Limit Line	ReadAntenna Level	Antenna Factor	Cable Loss	A/Pos	T/Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	cm	deg	
1	13.55	56.92	-67.08	124.00	35.64	21.02	0.26	100	88	QP
2	13.56	61.65	-62.35	124.00	40.37	21.02	0.26	100	88	QP
3	13.57	56.65	-12.85	69.50	35.37	21.02	0.26	100	88	QP



Site : 03CH11-HY
Condition : LP0002 NFC LIMIT 3m LOOP_ANT(H) HORIZONTAL
: RBW:9.000KHz VBW:9.000KHz SWT:Auto
Project : 853105

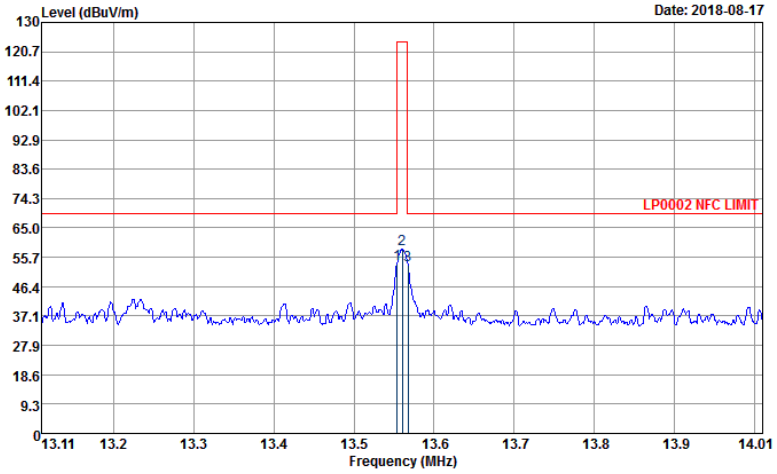
	Freq	Level	Over Limit	Limit Line	ReadAntenna Level	Antenna Factor	Cable Loss	A/Pos	T/Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	cm	deg	
1	13.55	58.92	-65.08	124.00	37.64	21.02	0.26	100	176	QP
2	13.56	63.81	-60.19	124.00	42.53	21.02	0.26	100	176	QP
3	13.57	58.71	-10.79	69.50	37.43	21.02	0.26	100	176	QP

Test Mode :	NFC Tx + Battery 2	Test Frequency (MHz)	13.56



Site : 03CH11-HY
Condition : LP0002 NFC LIMIT 3m LOOP_ANT(H) HORIZONTAL
: RBW:9.000KHz VBW:9.000KHz SWT:Auto
Project : 853105

	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	13.55	55.92	-68.08	124.00	34.64	21.02	0.26	100	0	QP
2	13.56	60.89	-63.11	124.00	39.61	21.02	0.26	100	0	QP
3	13.57	55.67	-13.83	69.50	34.39	21.02	0.26	100	0	QP

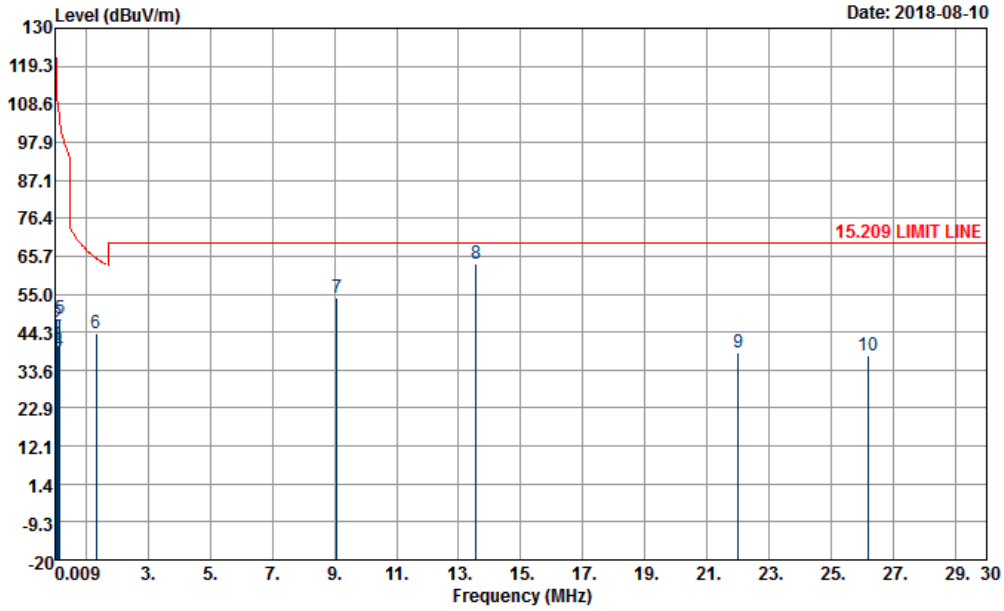


Site : 03CH11-HY
Condition : LP0002 NFC LIMIT 3m LOOP_ANT(V) VERTICAL
: RBW:9.000KHz VBW:9.000KHz SWT:Auto
Project : 853105

	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	13.55	53.49	-70.51	124.00	32.21	21.02	0.26	100	94	QP
2	13.56	58.16	-65.84	124.00	36.88	21.02	0.26	100	94	QP
3	13.57	53.34	-16.16	69.50	32.06	21.02	0.26	100	94	QP

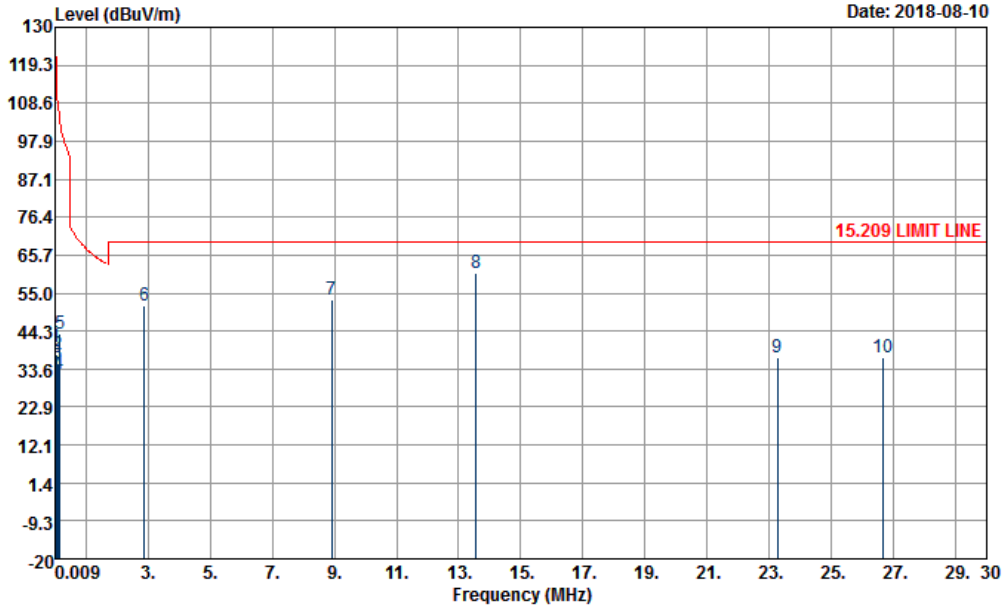
C2. Results of Radiated Spurious Emissions (9 kHz~30MHz)

Test Mode :	NFC Tx + Battery 1	Polarization :	Horizontal



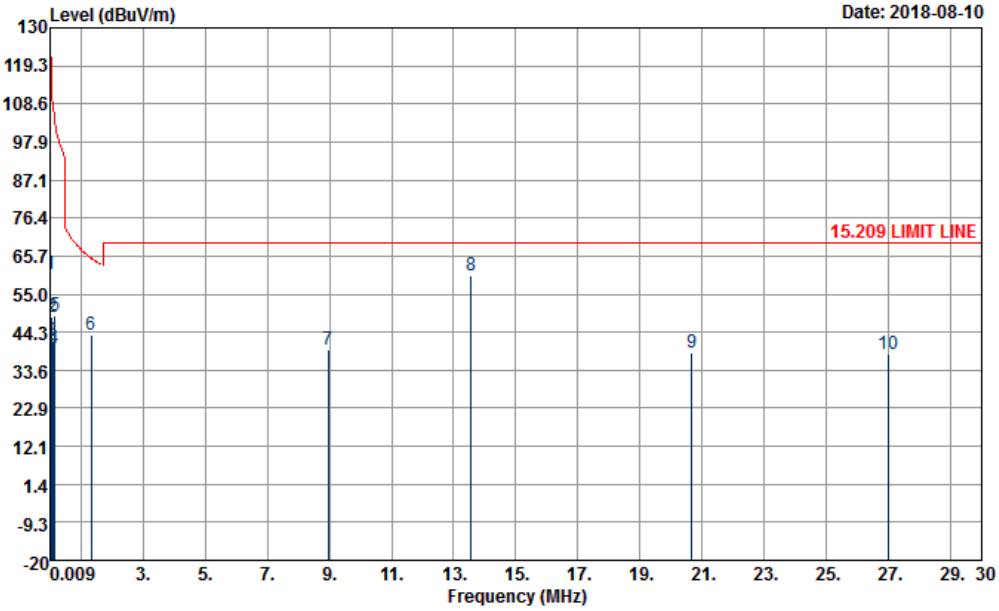
Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB)	Cable Loss (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
0.01925	42.81	-79.11	121.92	23.1	19.7	0.01	-	-	Average
0.06249	46.2	-65.49	111.69	26.39	19.8	0.01	-	-	Average
0.09378	40.44	-67.72	108.16	20.83	19.6	0.01	-	-	QP
0.11004	38.87	-67.9	106.77	19.26	19.6	0.01	-	-	Average
0.15748	48.07	-55.59	103.66	28.53	19.53	0.01	-	-	Average
1.324	43.88	-21.29	65.17	24.43	19.34	0.11	-	-	QP
9.072	54.05	-15.45	69.5	33.32	20.57	0.16	100	0	QP
13.56	63.49	-6.01	69.5	42.21	21.02	0.26	-	-	QP
21.994	38.37	-31.13	69.5	16.46	21.64	0.27	-	-	QP
26.18	37.58	-31.92	69.5	15.6	21.72	0.26	-	-	QP

Test Mode :	NFC Tx + Battery 1	Polarization :	Vertical



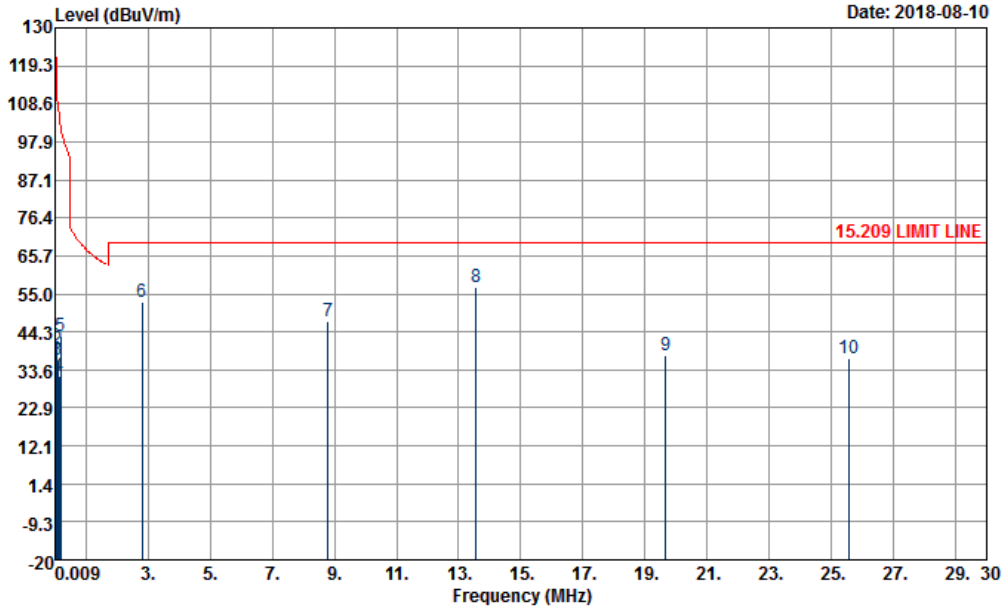
Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB)	Cable Loss (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
0.00925	39.57	-88.71	128.28	19.86	19.7	0.01	-	-	Average
0.06738	37.72	-73.31	111.03	17.91	19.8	0.01	-	-	Average
0.09824	35.18	-72.58	107.76	15.57	19.6	0.01	-	-	QP
0.1176	32.07	-74.13	106.2	12.46	19.6	0.01	-	-	Average
0.167	43.32	-59.83	103.15	23.78	19.53	0.01	-	-	Average
2.871	51.51	-17.99	69.5	32.33	19.03	0.15	-	-	QP
8.92	53.07	-16.43	69.5	32.36	20.55	0.16	100	0	QP
13.56	60.69	-8.81	69.5	39.41	21.02	0.26	-	-	QP
23.263	36.96	-32.54	69.5	15.02	21.67	0.27	-	-	QP
26.67	36.8	-32.7	69.5	14.82	21.73	0.25	-	-	QP

Test Mode :	NFC Tx + Battery 2	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
0.01645	60.69	-62.59	123.28	40.98	19.7	0.01	-	-	Average
0.07815	48.48	-61.27	109.75	28.67	19.8	0.01	-	-	Average
0.09378	41.81	-66.35	108.16	22.2	19.6	0.01	-	-	QP
0.12504	39.71	-65.95	105.66	20.13	19.57	0.01	-	-	Average
0.15272	48.97	-54.96	103.93	29.39	19.57	0.01	-	-	Average
1.339	43.7	-21.37	65.07	24.26	19.33	0.11	100	0	QP
8.968	39.49	-30.01	69.5	18.77	20.56	0.16	-	-	QP
13.56	60.25	-9.25	69.5	38.97	21.02	0.26	-	-	QP
20.662	38.42	-31.08	69.5	16.54	21.61	0.27	-	-	QP
27	37.9	-31.6	69.5	15.91	21.74	0.25	-	-	QP

Test Mode :	NFC Tx + Battery 2	Polarization :	Vertical



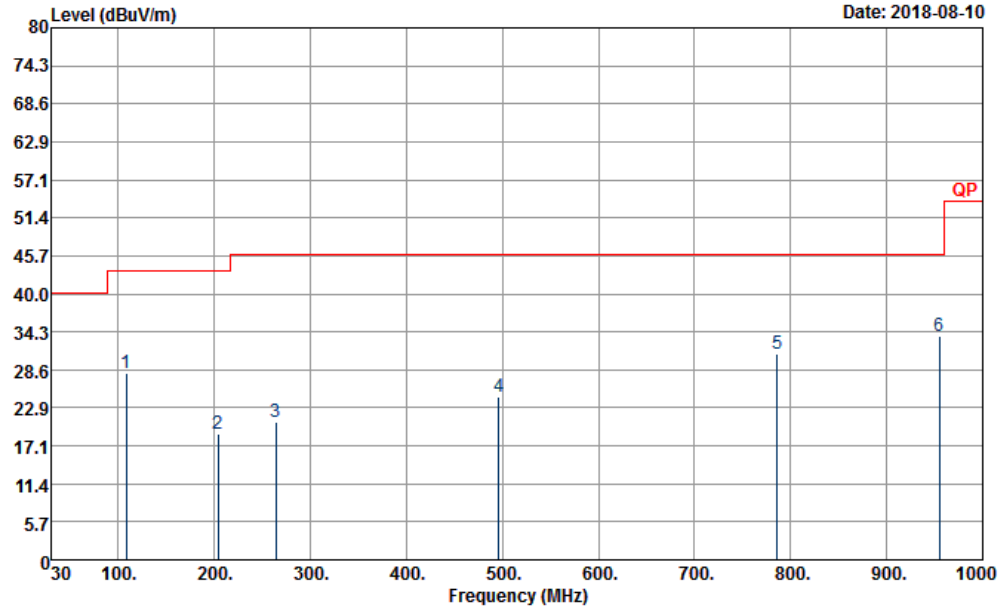
Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB)	Cable Loss (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
0.00982	36.05	-91.72	127.77	16.34	19.7	0.01	-	-	Average
0.07548	39.38	-70.67	110.05	19.57	19.8	0.01	-	-	Average
0.10188	36.29	-71.15	107.44	16.68	19.6	0.01	-	-	QP
0.1284	31.9	-73.53	105.43	12.32	19.57	0.01	-	-	Average
0.18978	43.14	-58.9	102.04	23.63	19.5	0.01	-	-	Average
2.803	52.76	-16.74	69.5	33.57	19.04	0.15	100	0	QP
8.792	47.12	-22.38	69.5	26.43	20.53	0.16	-	-	QP
13.56	57.07	-12.43	69.5	35.79	21.02	0.26	-	-	QP
19.663	37.57	-31.93	69.5	15.73	21.57	0.27	-	-	QP
25.56	36.83	-32.67	69.5	14.86	21.71	0.26	-	-	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);
   Limit line = specific limits (dBµV) + distance extrapolation factor.

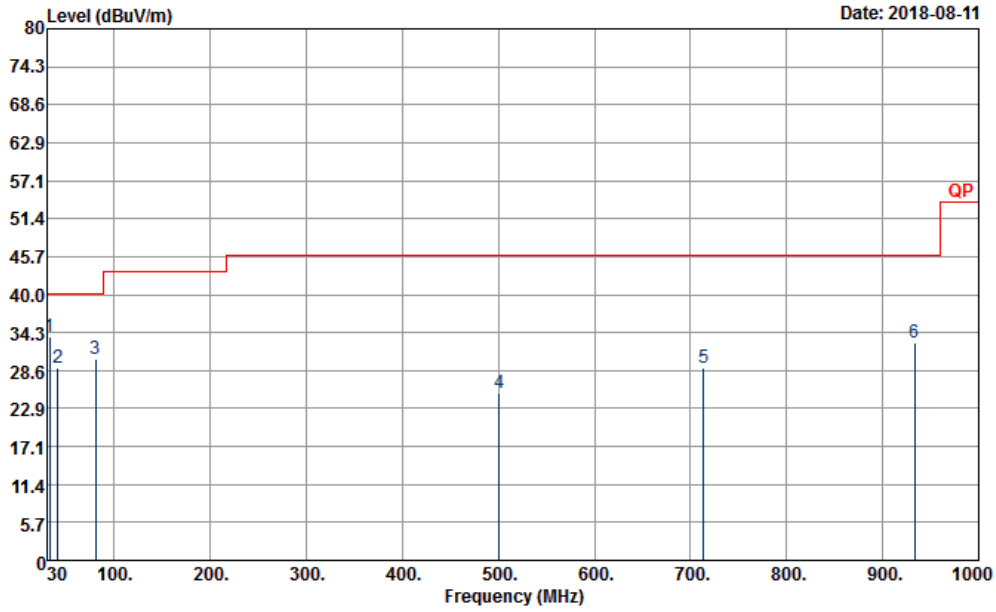
C3. Results of Radiated Spurious Emissions (30MHz~1GHz)

Test Mode :	NFC Tx + Battery 1	Polarization :	Horizontal



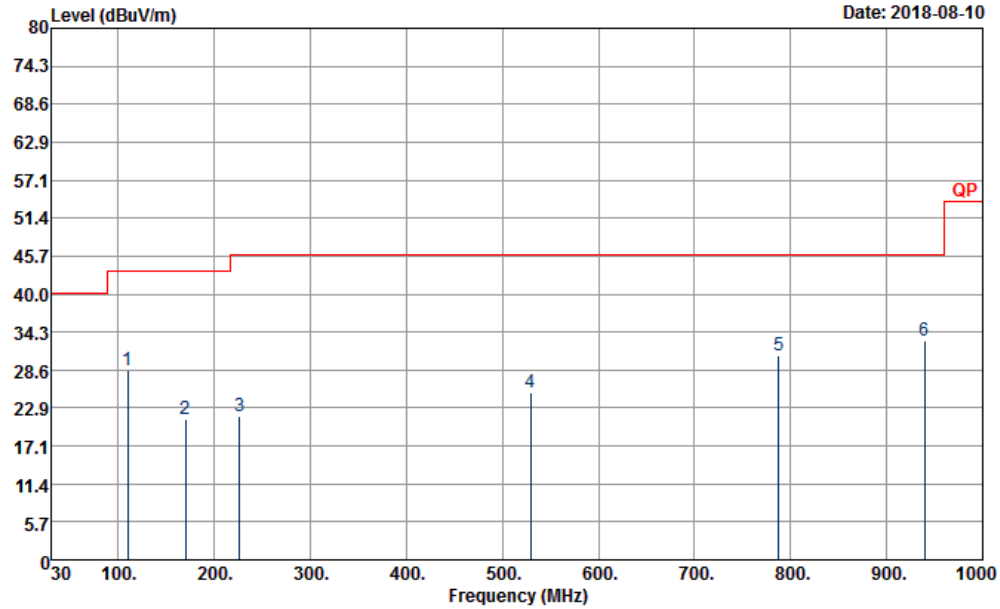
Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
108.03	27.97	-15.53	43.5	42.42	16.51	1.39	32.47	-	-	Peak
203.61	18.93	-24.57	43.5	34.54	14.91	1.72	32.39	-	-	Peak
263.82	20.66	-25.34	46	31.3	19.57	2.09	32.38	-	-	Peak
496	24.41	-21.59	46	29.96	23.64	2.84	32.38	-	-	Peak
785.8	31.01	-14.99	46	30.66	28.04	3.49	32.22	-	-	Peak
955.2	33.72	-12.28	46	29.16	30.87	3.9	31.15	100	0	Peak

Test Mode :	NFC Tx + Battery 1	Polarization :	Vertical



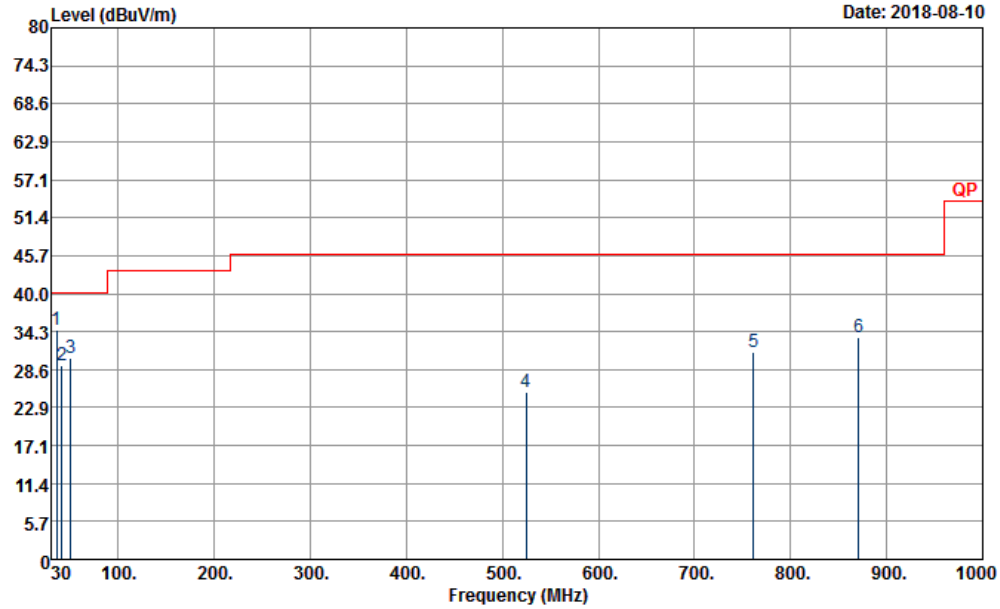
Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
32.97	33.59	-6.41	40	42.34	22.77	0.82	32.49	100	0	Peak
40.8	28.9	-11.1	40	41.68	18.68	0.82	32.49	-	-	Peak
80.22	30.35	-9.65	40	48.36	13.19	1.22	32.48	-	-	Peak
500.9	25.19	-20.81	46	30.66	23.7	2.84	32.38	-	-	Peak
713.7	28.91	-17.09	46	30.6	26.73	3.35	32.43	-	-	Peak
933.5	32.74	-13.26	46	29.61	29.8	3.82	31.36	-	-	Peak

Test Mode :	NFC Tx + Battery 2	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
110.19	28.6	-14.9	43.5	42.79	16.75	1.39	32.47	-	-	Peak
169.59	21.23	-22.27	43.5	36.51	15.37	1.61	32.42	-	-	Peak
226.02	21.53	-24.47	46	36.19	15.66	1.95	32.38	-	-	Peak
529.6	25.14	-20.86	46	30.35	23.89	2.91	32.4	-	-	Peak
787.9	30.71	-15.29	46	30.32	28.05	3.49	32.21	-	-	Peak
939.1	32.91	-13.09	46	29.52	30.01	3.82	31.3	100	0	Peak

Test Mode :	NFC Tx + Battery 2	Polarization :	Vertical



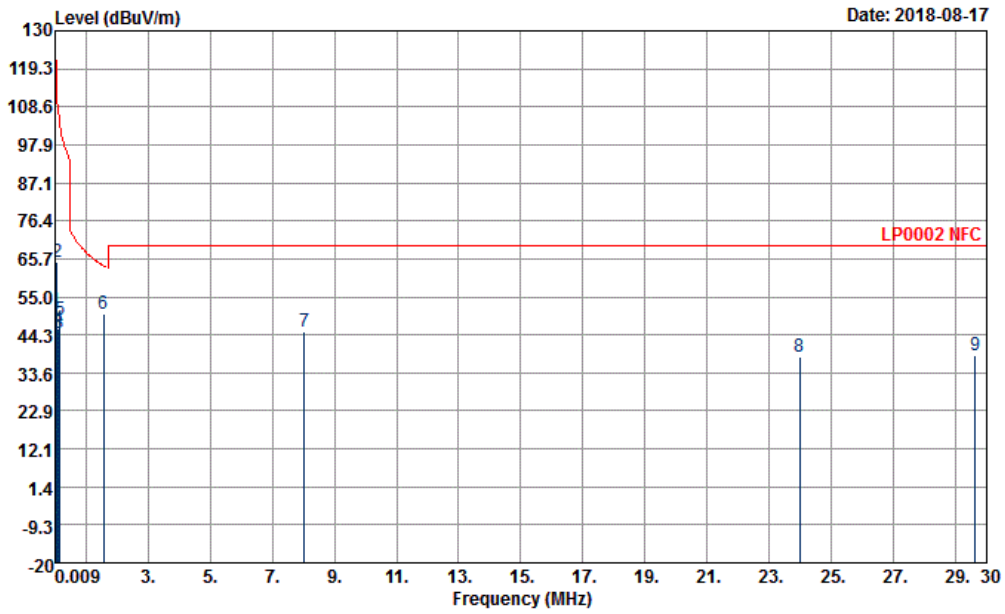
Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
35.67	34.47	-5.53	40	44.65	21.31	0.82	32.49	100	0	Peak
40.8	29.14	-10.86	40	41.92	18.68	0.82	32.49	-	-	Peak
50.79	30.28	-9.72	40	47.52	14.07	1.02	32.49	-	-	Peak
524.7	25.21	-20.79	46	30.49	23.83	2.91	32.4	-	-	Peak
761.3	31.18	-14.82	46	31.38	27.91	3.44	32.29	-	-	Peak
870.5	33.49	-12.51	46	31.43	29.08	3.67	31.82	-	-	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.

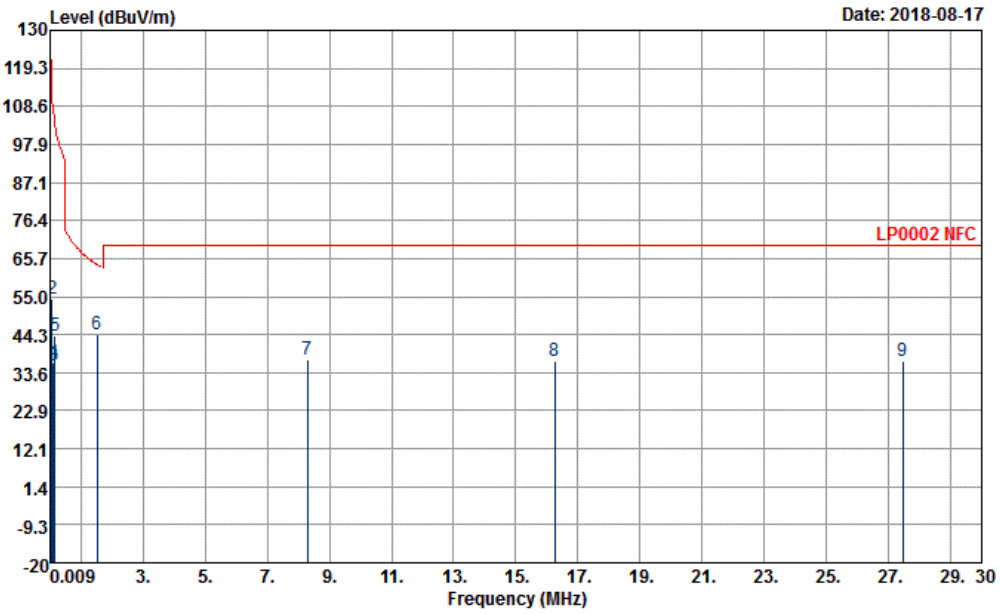
C4. Results of Receiver Radiated Spurious Emissions (9 kHz~30MHz)

Test Mode :	NFC Rx + Battery 2	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
0.01925	51	-70.92	121.92	31.29	19.7	0.01	-	-	Average
0.06711	64.82	-46.25	111.07	45.01	19.8	0.01	-	-	Average
0.10998	44.94	-61.84	106.78	25.33	19.6	0.01	-	-	QP
0.11004	46.15	-60.62	106.77	26.54	19.6	0.01	-	-	Average
0.17584	48.57	-54.13	102.7	29.03	19.53	0.01	-	-	Average
1.579	50.2	-13.44	63.64	30.79	19.28	0.13	100	0	QP
8.024	44.97	-24.53	69.5	24.38	20.43	0.16	-	-	QP
23.992	38.09	-31.41	69.5	16.14	21.68	0.27	-	-	QP
29.635	38.63	-30.87	69.5	16.62	21.79	0.22	-	-	QP

Test Mode :	NFC Rx + Battery 2	Polarization :	Vertical



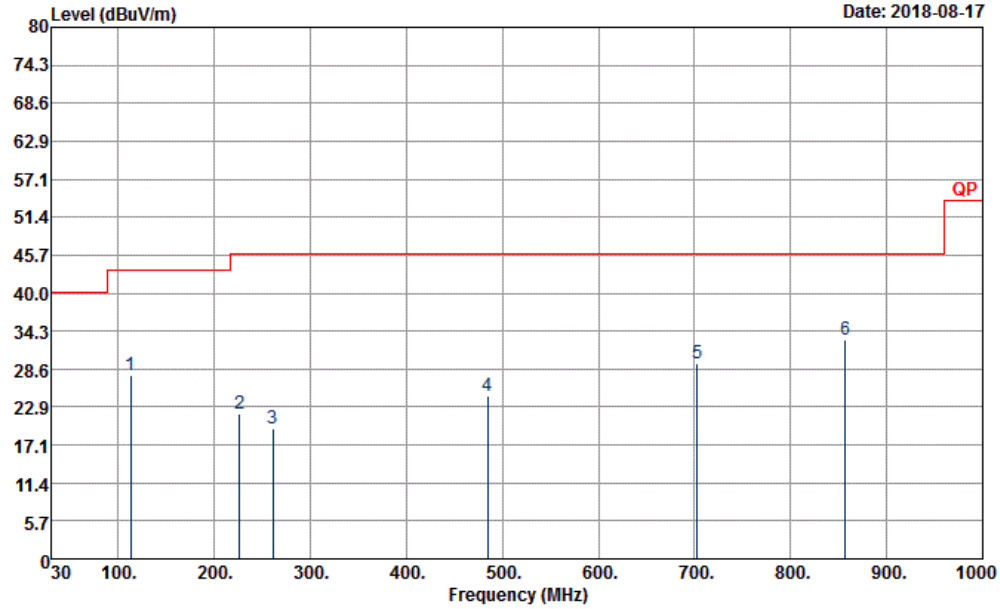
Frequency (MHz)	Level (dBµV/m)	Over Limit (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB)	Cable Loss (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
0.0192	36.2	-85.74	121.94	16.49	19.7	0.01	-	-	Average
0.06711	54.37	-56.7	111.07	34.56	19.8	0.01	-	-	Average
0.10998	35.53	-71.25	106.78	15.92	19.6	0.01	-	-	QP
0.11	36.23	-70.55	106.78	16.62	19.6	0.01	-	-	Average
0.16156	43.72	-59.72	103.44	24.18	19.53	0.01	-	-	Average
1.519	44.39	-19.58	63.97	24.97	19.3	0.12	100	0	QP
8.288	37.37	-32.13	69.5	16.75	20.46	0.16	-	-	QP
16.261	36.74	-32.76	69.5	15.2	21.26	0.28	-	-	QP
27.46	36.74	-32.76	69.5	14.74	21.75	0.25	-	-	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.

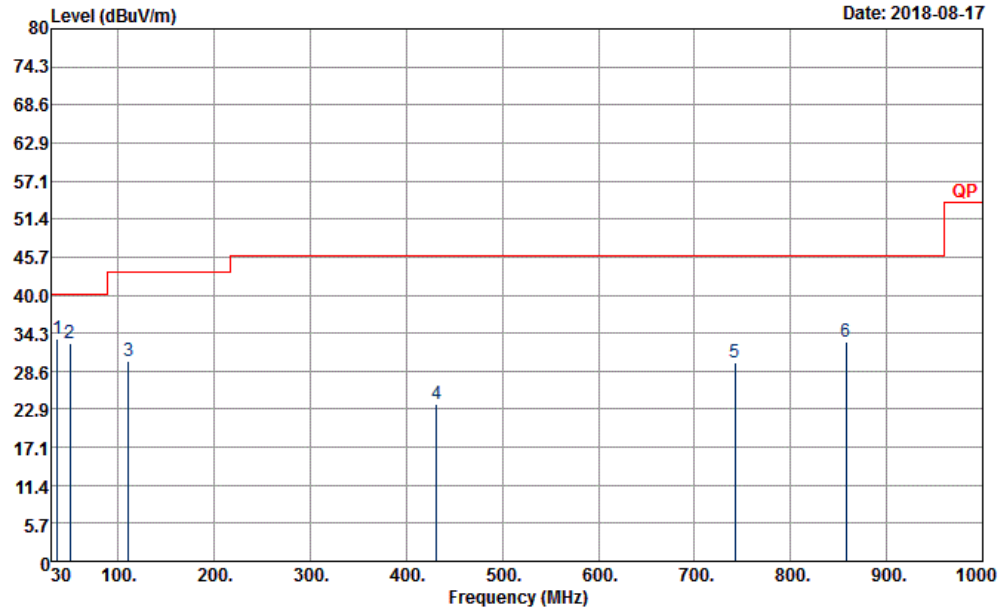
C5. Results of Receiver Radiated Spurious Emissions (30MHz~1GHz)

Test Mode :	NFC Rx + Battery 2	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
112.89	27.65	-15.85	43.5	41.72	16.86	1.39	32.47	-	-	Peak
226.02	21.86	-24.14	46	36.52	15.66	1.95	32.38	-	-	Peak
260.85	19.62	-26.38	46	30.09	19.74	2.09	32.38	-	-	Peak
484.8	24.45	-21.55	46	30.18	23.51	2.84	32.37	-	-	Peak
702.5	29.32	-16.68	46	31.29	26.45	3.35	32.46	-	-	Peak
857.2	32.89	-13.11	46	30.89	28.97	3.67	31.88	100	0	Peak

Test Mode :	NFC Rx + Battery 2	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
36.48	33.32	-6.68	40	44.01	20.79	0.82	32.49	100	0	Peak
49.98	32.75	-7.25	40	49.99	14.07	1.02	32.49	-	-	Peak
110.73	30.03	-13.47	43.5	44.22	16.75	1.39	32.47	-	-	Peak
431.6	23.71	-22.29	46	30.61	22.67	2.63	32.35	-	-	Peak
741.7	29.97	-16.03	46	30.57	27.74	3.4	32.35	-	-	Peak
857.9	33	-13	46	30.99	28.99	3.67	31.88	-	-	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.