ACCREDITED
CERTIFICATE #5473.01

Test Report No.:
FCC2022-0038-RF7

RF Test Report

EUT	:	**IoT Display**
MODEL	:	**DS7610-915M**
BRAND NAME	:	**Milesight**
APPLICANT	:	**Xiamen Milesight IoT Co., Ltd.**
CLASSIFICATION OF TEST	:	**N/A**

CVC Testing Technology Co., Ltd.

Applicant	**Name: Xiamen Milesight IoT Co., Ltd.** **Address: Building C09, Software Park Phase III, Xiamen 361024, Fujian, China**
Manufacturer	**Name: Xiamen Milesight IoT Co., Ltd.** **Address: Building C09, Software Park Phase III, Xiamen 361024, Fujian, China**
Equipment Under Test	**Name: IoT Display** **Model/Type: DS7610-915M** **Additional Models/Types: See Section 2.2** **Brand: Milesight** **Serial NO.: N/A** **Sampe NO.: 4-1**

Date of Receipt.	**2022.07.11**	Date of Testing	**2022.07.11～2022.12.06**

Test Specification	**Test Result**
FCC Part 15, Subpart C, Section 15.225	PASS

Evaluation of Test Result	The equipment under test was found to comply with the requirements of the standards applied. Seal of CVC **Issue Date: 2022.12.10**

Tested by:	Reviewed by:	Approved by:
Xu ZhenFei	**Liu YongHai**	**Chen HuaWen**
Name Signature	Name Signature	Name Signature

Other Aspects: NONE.

Abbreviations:OK, Pass= passed Fail = failed N/A= not applicable EUT= equipment, sample(s) under tested

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RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
FCC2022-0038-RF7	Original release	2022.12.10

1 SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

APPLIED STANDARD: FCC Part 15, Subpart C Section 15.225			
FCC STANDARD SECTION	**TEST TYPE AND LIMIT**	**RESULT**	**REMARK**
15.207	AC Power Line Conducted Emission	PASS	Meet the requirement of limit.
15.225 (a)&(b)&(c)	The field strength of Fundamental Emission	PASS	Meet the requirement of limit.
15.225 (d) 15.209	Radiated Emissions	PASS	Meet the requirement of limit.
15.225 (e)	Frequency tolerance	PASS	Meet the requirement of limit.
15.215 (c)	20dB Bandwidth	PASS	Meet the requirement of limit.
15.203	Antenna Requirement	PASS	No antenna connector is used.

1.1 LIST OF TEST AND MEASUREMENT INSTRUMENTS

Test Equipment	Type/Mode	SERIAL NO.	Equipment No.	Manufacturer	Cal. Due
WIFI & Bluetooth Test System 1					/
Communication Shielded Room 2	4m*3m*3m	CRTDSWKSR 44301	VGDS-0700	CRT	2024/04/24
Bluetooth system integration	/	/	-	Tonscend	/
Spectrum Analyzer	FSV40	101580	DZ-000238-3	R&S	2023/06/05
Comprehensive Test Instrument	CMW270	100304	DZ-000240-1	R&S	2023/12/06
Analog Signal Generator	SMB100A	181858	DZ-000238-2	R&S	2023/06/05
Vector Signal Generator	SGT100A	111661	DZ-000238-1	R&S	2023/06/05
RF Radio Frequency Switch	JS0806-2	19H9080187	`	Tonscend	2023/06/06
Programmable DC Power Supply	E3644A	MY58036222	DZ-000178	KEYSIGHT	2023/04/21
Radiation Spurious Test System					/
3m Semi-Anechoic Chamber	FACT-4	ST08035	WKNA-0024	ETS	2024/12/12
Spectrum Analyzer	N9010B	MY57470323	DZ-000174	KEYSIGHT	2023/03/02
EMI Test Receiver	N9038A-508	MY532290079	EM-000397	Agilent	2023/03/02
Loop Antenna	HLA 6121	540046	EM-000546	TESEQ	2023/06/07
Broadband Antenna	VULB 9163	9163-530	EM-000342	SCHWARZBECK	2023/06/25
Waveguide Horn Antenna	HF906	360306/008	EM-000093	R&S	2023/03/04
Waveguide Horn Antenna	BBHA9170	00949	DZ-000209-2	SCHWARZBECK	2023/07/31
Preamplifier	BBV 9721	9721-050	DZ-000209-1	SCHWARZBECK	2023/06/05
5G Bandstop Filters	WRCJV12-4900-5100-5900-6100-50EE	851770	DZ-000186	WI	2023/12/06
Comprehensive tester	CMW500	159000	DZ-000240-2	R&S	2023/12/06
Conducted emission					/
EMI Test Receiver	ESCI	100857	WKNB-0081	R&S	2023-12-08
EMI Test Receiver	ESR3	102394	VGDY-0705	R&S	2023-03-04
LISN	NSLK 8127	8127644	VGDY-0150	SCHWARZBECK	2023-09-04
LISN	NSLK 8128	8128-316	VGDY-0149	SCHWARZBECK	2023-09-04
LISN	NSLK 8129	8129-268	EM-000388	SCHWARZBECK	2023-03-03
Plus Limiter（#1）	VTSD 9561 F-N	00515	VGDY-0808	SCHWARZBECK	2023-03-04
Plus Limiter（#2）	VTSD 9561	9561-F017	VGDY-0152	SCHWARZBECK	2024-09-04
Impedance Stabilization Network	ISN T800	27095	WKNE-0195	TESEQ	2023-09-04
Impedance Stabilization Network	NTFM8158	8158-0092	VGDY-0356	SCHWARZBECK	2023-06-07
ImpedanceStabilizationNetwork	NTFM8131	#184	EM-000498	SCHWARZBECK	2023-06-07
Voltage Probe	TK9420	9420-499	VGDY-0128	SCHWARZBECK	2023-03-04
Power Divider	4901.17.B	22643830	DB-0016	HUBER+SUHNER	2023-09-01
Video Signal Generator	GV-798+	151064920001	VGDS-0215	PROMAX	2023-05-30
Audio Signal Generator	GAG-810	EK871591	EM-000309	GW	2023-12-08
Shielding Room(#1)	GP1A	001	WKNF-0001	LEINING	2024-08-08
Shielding Room(#2)	GP1A	002	WKNF-0006	LEINING	2024-08-08
Current probe	EZ-17	0816.2063.02	EM-000567	R&S	2023-01-16

1.2 MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2:

No.	ITEM	FREQUENCY	UNCERTAINTY
1	Conducted Emissions	9kHz~30MHz	±2.66dB
2	Radiated Spurious Emissions	9KHz ~ 30MHz	±0.769dB
		30MHz ~ 1GMHz	±0.877dB
		1GHz ~ 18GHz	±0.777dB
		18GHz ~ 40GHz	±1.315dB

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2:

1.3 TEST LOCATION

The tests and measurements refer to this report were performed by EMC testing Lab. of CVC Testing Technology Co., Ltd.

Address: No.3,TiantaiyiRoad,KaitaiAvenue,ScienceCity,Guangzhou,China
Post Code：510663 Tel：020-32293888
FAX：020-32293889 E-mail：office@cvc.org.cn
Test Firm Registration Number: 937273
CN Number：26239 Wireless Test Site Registration Number：CN0103

2 GENERAL INFORMATION

2.1 GENERAL PRODUCT INFORMATION

PRODUCT	IoT Display
BRAND	Milesight
MODEL	DS7610-915M
ADDITIONAL MODEL	See Section 2.2
FCC ID	2AYHY-DS7610
POWER SUPPLY	1. DC 5V from USB host unit 2. DC 56V from POE 3. DC 12V from Adapter
MODULATION TYPE	ASK
OPERATING FREQUENCY	13.56MHz
NUMBER OF CHANNEL	1
ANTENNA TYPE (Remakr 3)	Loop antenna
HARDWARE VERSION:	UD00-00-V1.2
SOFTWARE VERSION:	72.0.0.5-r1
I/O PORTS	Refer to user's manual
CABLE SUPPLIED	N/A

Remark:

1. For more detailed features description, please refer to the manufacturer's specifications or the User's Manual.
2. For the test results, the EUT had been tested with all conditions. But only the worst case was shown in test report.
3. EUT photo refer to the report (Report NO.: FCC2022-0038-E).
4. Please refer to the antenna report.

2.2 ADDITIONAL MODELS/TYPES

Models	
1	DS7610-9M
2	NH7610-915M
3	NH7610-9M

Note:
The only differences are silk-screen 、trade name and model no. for trading purpose.

2.3 OTHER INFORMATION

The EUT only have one channel.

CHANNEL	FREQUENCY (MHz)
1	13.56

2.4 TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL

Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates, XYZ axis and antenna ports
The worst case was found when positioned on X axis for radiated emission. Following channel(s) was (were) selected for the final test as listed below:

EUT CONFIGURE MODE	APPLICABLE TO				DESCRIPTION
	RE	FT	PLC	BW	
A	√	√	√	√	NFC Link

Where **RE:** Radiated Emission **FT:** Frequency tolerance
PLC: Power Line Conducted Emission **BW:** 20dB Bandwidth

POWER LINE CONDUCTED EMISSION TEST:

☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, antenna ports (if EUT with antenna diversity architecture), and packet types.
☒ Following channel(s) was (were) selected for the final test as listed below.

EUT CONFIGURE MODE	TESTED CONDITION
A	NFC Link

RADIATED EMISSION TEST:

☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, XYZ axis, antenna ports (if EUT with antenna diversity architecture) and packet type.
☒ Following channel(s) was (were) selected for the final test as listed below.

EUT CONFIGURE MODE	TESTED CHANNEL	TESTED FREQUENCY (MHZ)	MODULATION TYPE	AXIS
A	1	13.56	ASK	X

FREQUENCY TOLERANCE:

☒ This item includes all test value of each mode, but only includes spectrum plot of worst value of each mode.

☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, antenna ports (if EUT with antenna diversity architecture), and packet types.

☒ Following channel(s) was (were) selected for the final test as listed below.

EUT CONFIGURE MODE	TESTED CHANNEL	TESTED FREQUENCY (MHZ)	MODULATION TYPE	AXIS
A	1	13.56	ASK	X

20dB BANDWIDTH:

☒ This item includes all test value of each mode, but only includes spectrum plot of worst value of each mode.

☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, antenna ports (if EUT with antenna diversity architecture), and packet types.

☒ Following channel(s) was (were) selected for the final test as listed below.

EUT CONFIGURE MODE	TESTED CHANNEL	TESTED FREQUENCY (MHZ)	MODULATION TYPE	AXIS
A	1	13.56	ASK	X

TEST CONDITION:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	TEST VOLTAGE (SYSTEM)	TESTED BY
RE<1G	25.5deg. C, 53%RH	DC 12V from Adapter	Li JiaLing
RE≥1G	25.5deg. C, 53%RH	DC 12V from Adapter	Li JiaLing
PLC	25.6deg. C, 54%RH	DC 12V from Adapter	Li JiaLing
BW	25.6deg. C, 55%RH	DC 5V from USB host unit	Liu ShiWei

2.5 GENERAL DESCRIPTION OF APPLIED STANDARDS

The EUT is a RF product, according to the specifications of the manufacturers. It must comply with the requirements of the following standards:

FCC PART 15, Subpart C. Section 15.225
ANSI C63.10-2020

All test items have been performed and recorded as per the above standards

2.6 DESCRIPTION OF SUPPORT UNITS

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

Support Equipment					
NO	Description	Brand	Model No.	Serial Number	Supplied by
1	N/A	N/A	N/A	N/A	N/A

Support Cable							
NO	Description	Quantity (Number)	Length (m)	Detachable (Yes/ No)	Shielded (Yes/ No)	Cores (Number)	Supplied by
1	N/A	N/A	N/A	N/A	N/A	N/A	N/A

3 TEST TYPES AND RESULTS

3.1 CONDUCTED EMISSION

3.1.1 Limits

TEST STANDARD: FCC Part 15, Subpart B (Section: 15.107) and ICES-003 (Class A: section 6.1)

Frequency (MHz)	Class A (dBuV)		Class B (dBuV)	
	Quasi-peak	Average	Quasi-peak	Average
0.15 - 0.5	79	66	66 - 56	56 - 46
0.50 - 5.0	73	60	56	46
5.0 - 30.0	73	60	60	50
NOTE: 1. The lower limit shall apply at the transition frequencies. NOTE: 2. The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50MHz. NOTE: 3. All emanations from a class A/B digital device or system, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strengths specified above.				

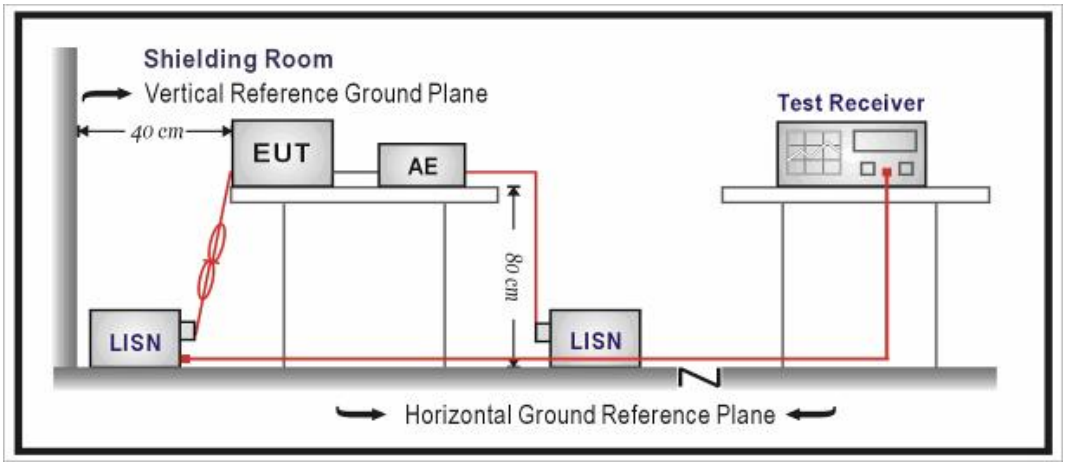
3.1.2 Test Procedures

The basic test procedure was in accordance with ANSI C63.4:2014 (section 7).

a. The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 Ohm/ 50uH of coupling impedance for the measuring instrument.
b. Both lines of the power mains connected to the EUT were checked for maximum conducted interference.
c. The test results of conducted emissions at mains ports are recorded of six worst margins for quasi-peak (mandatory) [and average (if necessary)] values against the limits at frequencies of interest unless the margin is 20 dB or greater.

Note: The resolution bandwidth and video bandwidth of test receiver is 9kHz for quasi-peak detection (QP) and average detection (AV) at frequency 0.15MHz-30MHz.

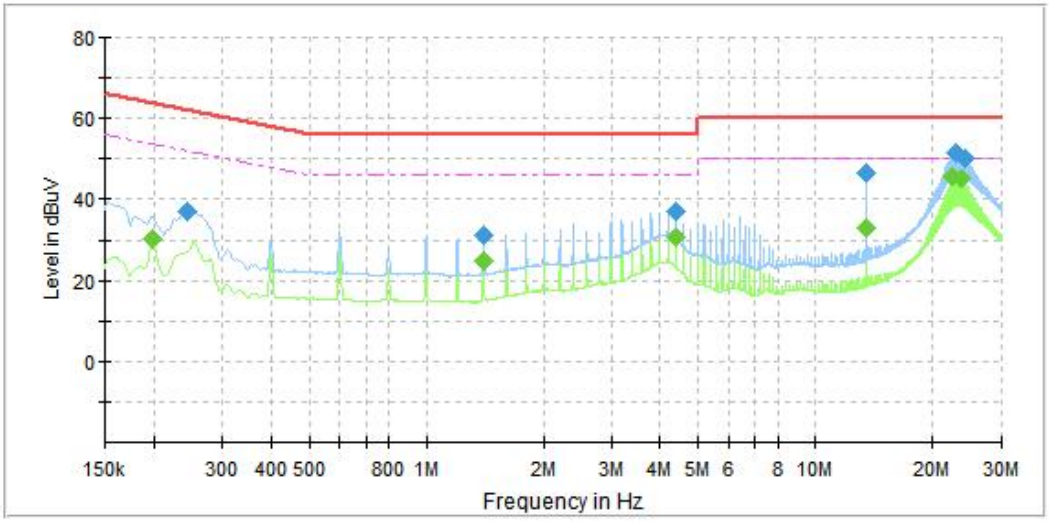
3.1.3 Test setup



3.1.4 Test Results

CONDUCTED WORST-CASE DATA:

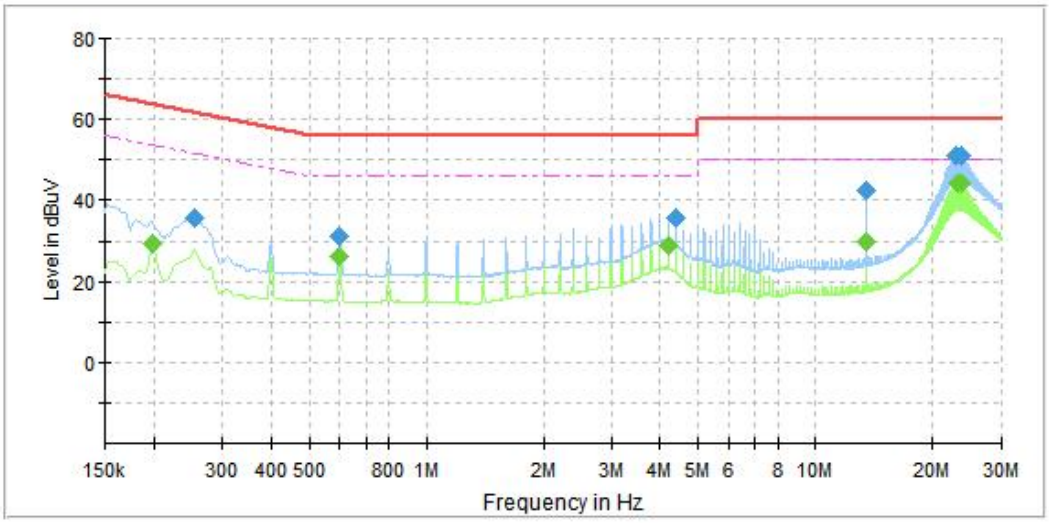
Test Mode	NFC Link	Frequency Range	150KHz ~ 30MHz
PHASE	Line (L)		



NO	Frequency (MHz)	QuasiPeak (dBuV)	Average (dBuV)	Limit (dBuV)	Margin (dB)	Line	Corr.Factor (dB)
1	0.200	---	30.4	53.6	23.2	L1	19.5
2	0.245	37.2	---	61.9	24.8	L1	19.5
3	1.399	---	24.9	46.0	21.1	L1	19.5
4	1.399	31.0	---	56.0	25.0	L1	19.5
5	4.396	---	30.5	46.0	15.5	L1	19.6
6	4.396	36.8	---	56.0	19.2	L1	19.6
7	13.560	46.3	---	60.0	13.7	L1	19.9
8	13.560	---	32.8	50.0	17.2	L1	19.9
9	22.529	---	45.6	50.0	4.4	L1	19.9
10	22.976	51.7	---	60.0	8.3	L1	19.9
11	**23.573**	**---**	**44.9**	**50.0**	**5.1**	**L1**	**19.9**
12	24.169	50.3	---	60.0	9.7	L1	19.9

Remark: The emission levels of other frequencies were very low against the limit.

Test Mode	NFC Link	Frequency Range	150KHz ~ 30MHz
PHASE	Line (N)		



NO	Frequency (MHz)	QuasiPeak (dBuV)	Average (dBuV)	Limit (dBuV)	Margin (dB)	Line	Corr.Factor (dB)
1	0.200	---	29.4	53.6	24.2	N	19.5
2	0.254	35.7	---	61.6	26.0	N	19.6
3	0.600	31.1	---	56.0	24.9	N	19.6
4	0.600	---	26.2	46.0	19.8	N	19.6
5	4.196	---	28.9	46.0	17.1	N	19.7
6	4.396	35.5	---	56.0	20.5	N	19.7
7	13.560	---	29.8	50.0	20.2	N	20.1
8	13.560	42.5	---	60.0	17.5	N	20.1
9	22.979	51.1	---	60.0	8.9	N	20.2
10	23.172	---	44.5	50.0	5.5	N	20.2
11	23.573	---	44.2	50.0	5.8	N	20.2
12	23.575	51.0	---	60.0	9.0	N	20.2

Remark: The emission levels of other frequencies were very low against the limit.

3.2 RADIATED EMISSIONS

3.2.1 Limits

(a)The field strength of any emissions within the band 13.553-13.567 MHz shall not exceed 15,848 microvolts/meter at 30 meters.
(b) Within the bands 13.410-13.553 MHz and 13.567-13.710 MHz, the field strength of any emissions shall not exceed 334 microvolts/meter at 30 meters.
(c) Within the bands 13.110-13.410 MHz and 13.710-14.010 MHz the field strength of any emissions shall not exceed 106 microvolts/meter at 30 meters.

FREQUENCIES (MHz)	FIELD STRENGTH (Microvolts/Meter)	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
NOTE: 1. The lower limit shall apply at the transition frequencies. NOTE: 2. Emission level (dBuV/m) = 20 log Emission level (uV/m).		

3.2.2 Measurement procedure

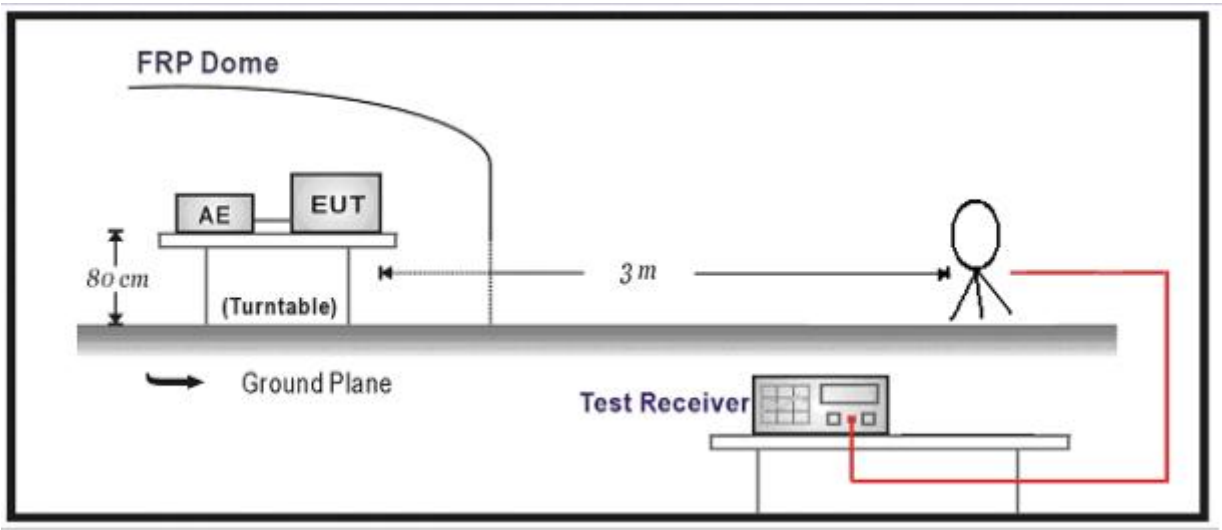
a. The EUT was placed on the top of a rotating table 1.5 meters(above 1GHz) and 0.8 meters(below 1GHz) above the ground at a 3 meters semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
c. For below 1GHz was used bilog antenna, and above 1GHz was used horn antenna, and its height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
f. For below 30MHz, a loop antenna with its vertical plane is place 3m from the EUT and rotated about its vertical axis for maximum response at each azimuth about the EUT. And the centre of the loop shall be 1m above the ground.
g. During the test, each emission was maximized by: having the EUT continuously working, investigated all operating modes, rotated about all 3 axis (X, Y & Z) and considered typical configuration to obtain worst position, manipulating interconnecting cables, For battery operated equipment, the equipment tests shall be perform using fresh batteries. The turntable was rotated to maximize the emission level.

NOTE:

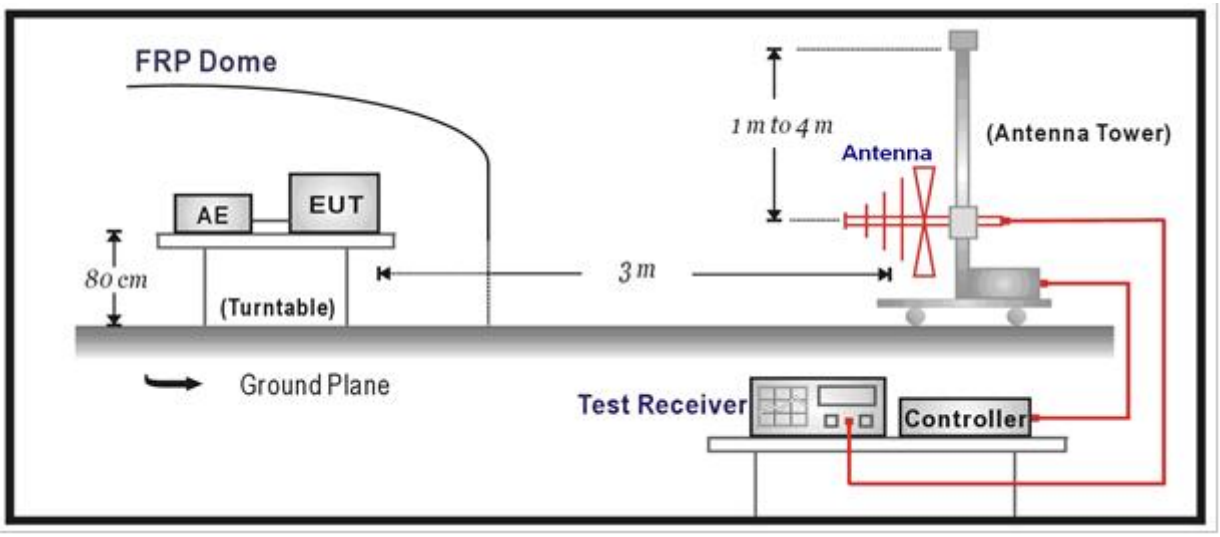
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and video bandwidth is 3MHz for Peak detection at frequency above 1GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is ⩾ 1/T (Duty cycle < 98%) or 10Hz(Duty cycle > 98%) for Average detection (AV) at frequency above 1GHz.
4. All modes of operation were investigated and the worst-case emissions are reported.
5. The testing of the EUT was performed on all 3 orthogonal axes; the worst-case test configuration was reported on the file test setup photo.

3.2.3 Test setup

Below 30MHz Test Setup:



Below 1GHz Test Setup:

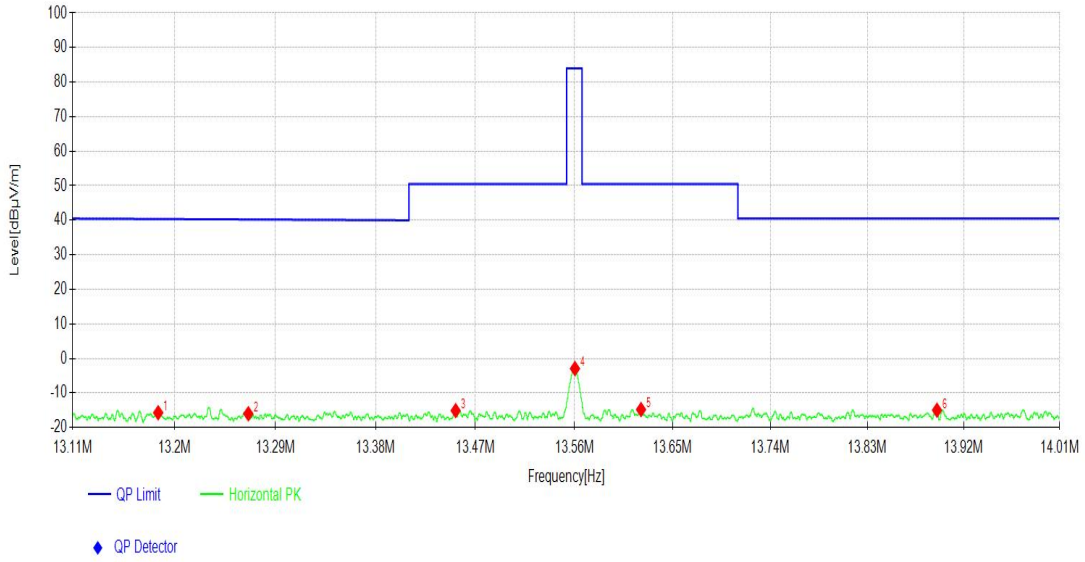


3.2.4 Test results

Result of The field strength of Fundamental Emission

Worst Test Mode	NFC	**Channel**	13.56M
Frequency Range	13.11MHz ~ 14.01MHz	**Detector Function**	Quasi-Peak (QP)

Horizontal



NO.	Freq. [MHz]	Reading [dBµV/m]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]
1	13.1857	4.24	-15.72	-19.96	40.37	56.09	100	214
2	13.2659	3.92	-16.02	-19.94	40.24	56.26	100	95
3	13.4522	4.79	-15.12	-19.91	50.50	65.62	100	354
4	13.5606	16.95	-2.95	-19.90	84.00	86.95	100	19
5	13.6210	5.10	-14.79	-19.89	50.50	65.29	100	207
6	13.8949	4.85	-14.99	-19.84	40.50	55.49	100	134

Remark: 1. Distance extrapolation factor = 40log(specific distance/test distance)
2. Level (dBuV/m) = Reading (dBuV/m) + Factor (dB).
3. Factor (dB/m)=Antenna Factor (dB/m) + Cable Factor (dB).+ Distance extrapolation factor
4. Margin(dB) = Limit[dBµV/m] - Level [dBµV/m]
5. Emission level (dBuV/m) = 20 log Emission level (uV/m).

[

Worst Test Mode	NFC	**Channel**	13.56M
Frequency Range	13.11MHz ~ 14.01MHz	**Detector Function**	Quasi-Peak (QP)

Vertical

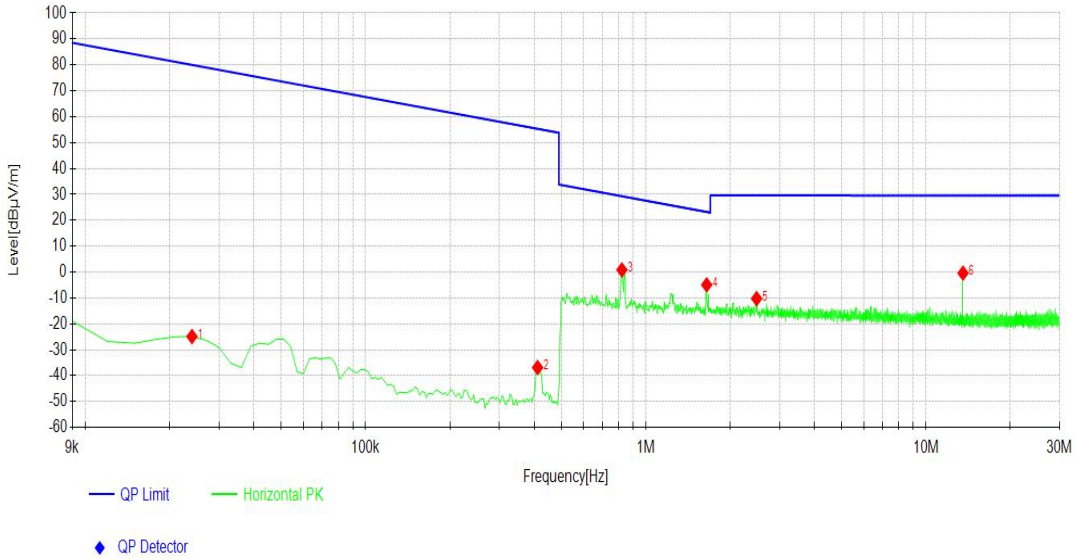
NO.	Freq. [MHz]	Reading [dBµV/m]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]
1	**13.1762**	**6.67**	**-13.29**	**-19.96**	**40.39**	**53.68**	**100**	**36**
2	13.4106	5.63	-14.29	-19.92	50.50	64.79	100	282
3	13.5598	12.62	-7.28	-19.90	84.00	91.28	100	257
4	13.6827	5.11	-14.77	-19.88	50.50	65.27	100	48
5	13.8660	6.29	-13.56	-19.85	40.50	54.06	100	73
6	13.9310	4.13	-15.71	-19.84	40.50	56.21	100	6

Remark: 1. Distance extrapolation factor = 40log(specific distance/test distance)
2. Level (dBuV/m) = Reading (dBuV/m) + Factor (dB).
3. Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB). + Distance extrapolation factor
4. Margin(dB) = Limit[dBµV/m] - Level [dBµV/m]
5. Emission level (dBuV/m) = 20 log Emission level (uV/m).

Result of Radiated Emissions(9kHz~30MHz)

Worst Test Mode	NFC	**Channel**	13.56M
Frequency Range	9kHz ~ 30MHz	**Detector Function**	Quasi-Peak (QP)

Horizontal

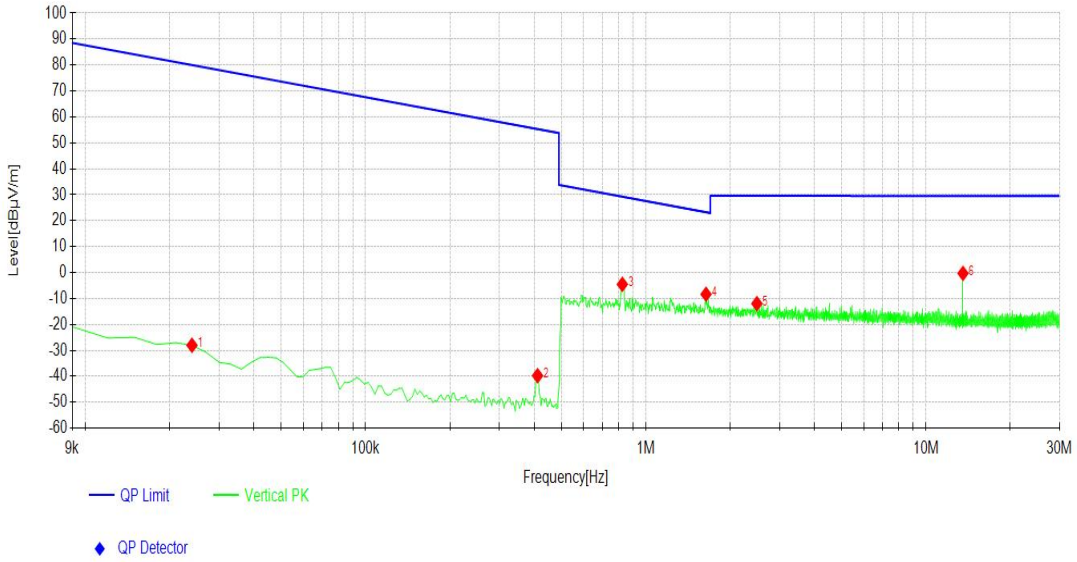


NO.	Freq. [MHz]	Reading [dBµV/m]	Factor [dB]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]
1	0.0240	34.39	-59.27	-24.88	80.00	104.88	100	298
2	0.4109	22.10	-58.95	-36.85	55.33	92.18	100	353
3	0.8218	19.88	-19.04	0.84	29.30	28.46	100	65
4	**1.6497**	**14.22**	**-19.14**	**-4.92**	**23.23**	**28.15**	**100**	**54**
5	2.4865	8.83	-19.05	-10.22	29.57	39.79	100	80
6	13.5603	19.51	-19.90	-0.39	29.55	29.94	100	190

Remark: 1. Distance extrapolation factor = 40log(specific distance/test distance)
2. Level (dBuV/m) = Reading (dBuV/m) + Factor (dB).
3. Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB) + Cable Factor (dB). + Distance extrapolation factor
4. Margin(dB) = Limit[dBµV/m] - Level [dBµV/m]
5. Emission level (dBuV/m) = 20 log Emission level (uV/m).

Worst Test Mode	NFC	**Channel**	13.56M
Frequency Range	9kHz ~ 30MHz	**Detector Function**	Quasi-Peak (QP)

Vertical



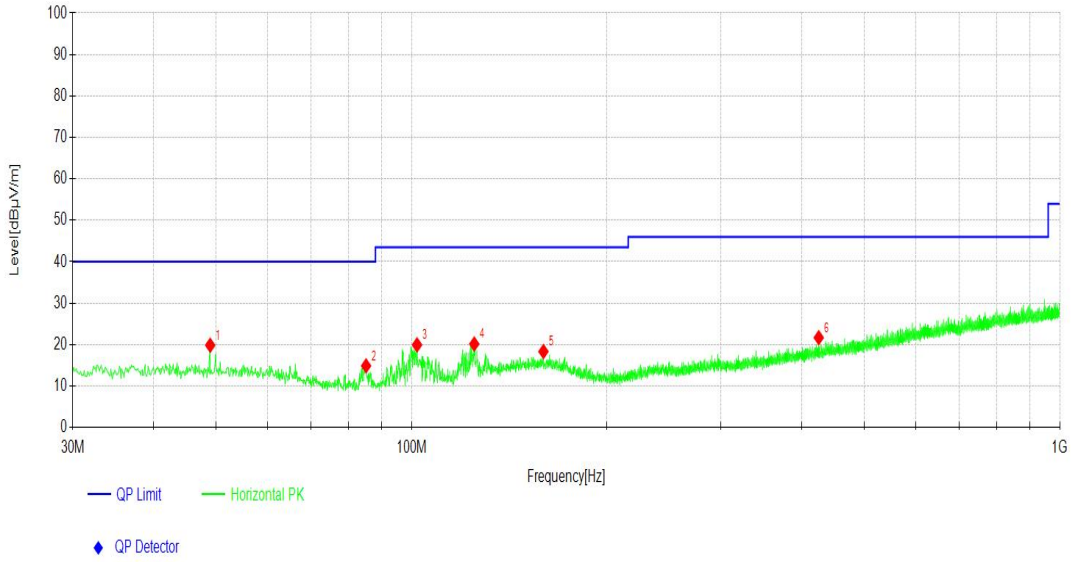
NO.	Freq. [MHz]	Reading [dBµV/m]	Factor [dB]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]
1	0.0240	31.25	-59.27	-28.02	80.00	108.02	100	202
2	0.4109	19.21	-58.95	-39.74	55.33	95.07	100	69
3	0.8248	14.53	-19.04	-4.51	29.27	33.78	100	345
4	1.6407	10.81	-19.14	-8.33	23.28	31.61	100	11
5	2.4925	7.09	-19.05	-11.96	29.57	41.53	100	146
6	13.5603	19.61	-19.90	-0.29	29.55	29.84	100	264

Remark: 1. Distance extrapolation factor = 40log(specific distance/test distance)
2. Level (dBuV/m) = Reading (dBuV/m) + Factor (dB).
3. Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB) + Cable Factor (dB). + Distance extrapolation factor
4. Margin(dB) = Limit[dBµV/m] - Level [dBµV/m]
5. Emission level (dBuV/m) = 20 log Emission level (uV/m).

Result of Radiated Emissions(30MHz~1GHz)

Worst Test Mode	NFC	**Channel**	13.56M
Frequency Range	30MHz ~ 1GHz	**Detector Function**	Quasi-Peak (QP)

Horizontal

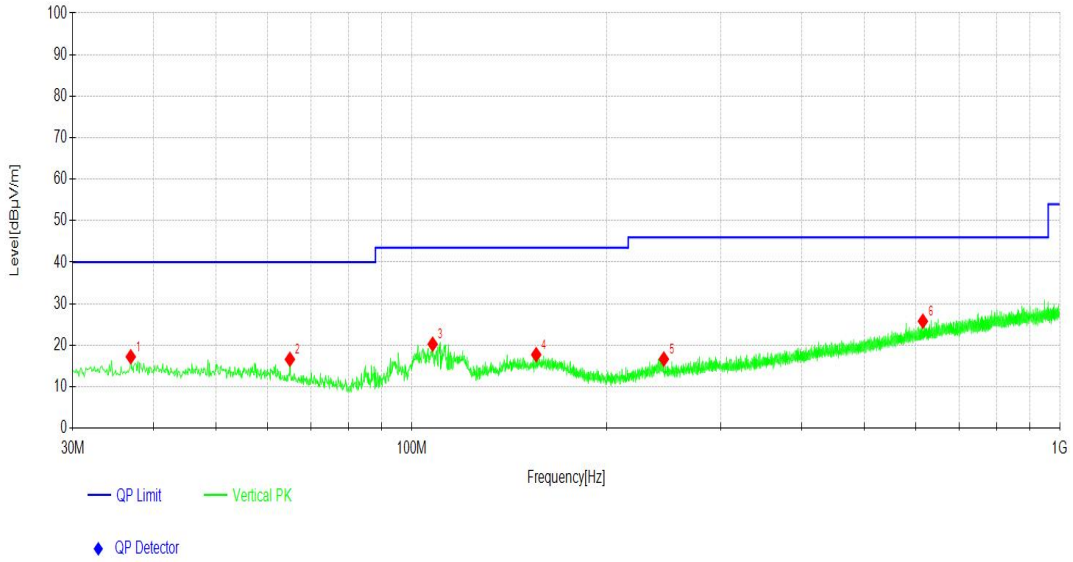


NO.	Freq. [MHz]	Reading [dBµV/m]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]
1	48.9169	5.55	19.85	14.30	40.00	20.15	200	103
2	85.1015	4.46	14.88	10.42	40.00	25.12	100	66
3	101.9812	8.54	19.94	11.40	43.50	23.56	100	176
4	124.9725	6.97	20.16	13.19	43.50	23.34	200	103
5	159.7990	2.43	18.33	15.90	43.50	25.17	200	189
6	424.9265	3.87	21.68	17.81	46.00	24.32	100	249

Remark: 1. Level (dBuV/m) = Reading (dBuV/m) + Factor (dB).
2. Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. Margin(dB) = Limit[dBµV/m] - Level [dBµV/m]
4. Emission level (dBuV/m) = 20 log Emission level (uV/m).

Worst Test Mode	NFC	**Channel**	13.56M
Frequency Range	30MHz ~ 1GHz	**Detector Function**	Quasi-Peak (QP)

Vertical



NO.	Freq. [MHz]	Reading [dBµV/m]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]
1	36.8877	3.04	17.22	14.18	40.00	22.78	100	167
2	64.9235	3.70	16.61	12.91	40.00	23.39	100	324
3	107.8018	8.52	20.26	11.74	43.50	23.24	200	85
4	155.7246	2.01	17.73	15.72	43.50	25.77	100	324
5	245.0705	3.40	16.66	13.26	46.00	29.34	200	85
6	615.1625	4.39	25.79	21.40	46.00	20.21	200	255

Remark: 1. Level (dBuV/m) = Reading (dBuV/m) + Factor (dB).
2. Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. Margin(dB) = Limit[dBµV/m] - Level [dBµV/m]
4. Emission level (dBuV/m) = 20 log Emission level (uV/m).

3.3 FREQUENCY TOLERANCE

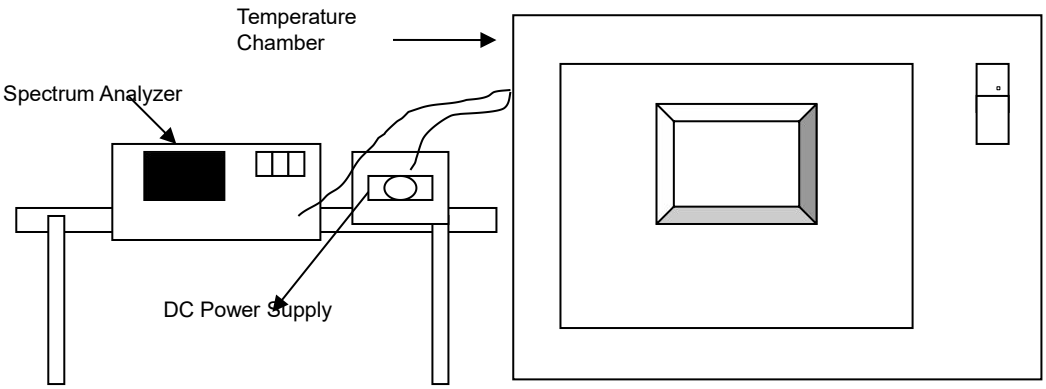
3.3.1 LIMIT OF FREQUENCY TOLERANCE

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 TEST PROCEDURES

Refer to ANSI C63.10-2020

3.3.3 TEST SETUP



3.3.4 TEST RESULTS

FREQUEMCY STABILITY VERSUS TEMP.									
TEMP. (℃)	POWER SUPPLY (V)	0 MINUTE		2 MINUTE		5 MINUTE		10 MINUTE	
		Measured Frequency (MHz)	Frequency Drift (ppm)	Measured Frequency (MHz)	Frequency Drift (ppm)	Measured Frequency (MHz)	Frequency Drift (ppm)	Measured Frequency (MHz)	Frequency Drift (ppm)
50	120	13.560599	44.17	13.560607	44.76	13.560599	44.17	13.560596	43.95
40	120	13.560608	44.84	13.560602	44.40	13.560596	43.95	13.560602	44.40
30	120	13.560612	45.13	13.560594	43.81	13.560594	43.81	13.560614	45.28
20	120	13.560611	45.06	13.560603	44.47	13.560603	44.47	13.560603	44.47
10	120	13.560605	44.62	13.560608	44.84	13.560607	44.76	13.560600	44.25
0	120	13.560605	44.62	13.560599	44.17	13.560604	44.54	13.560598	44.10
-10	120	13.560596	43.95	13.560606	44.69	13.560600	44.25	13.560598	44.10
-20	120	13.560607	44.76	13.560614	45.28	13.560596	43.95	13.560595	43.88
20	102	13.560608	44.84	13.560603	44.47	13.560606	44.69	13.560602	44.40
	138	13.560613	45.21	13.560596	43.95	13.560600	44.25	13.560611	45.06

3.4 20dB BANDWIDTH

3.4.1 LIMITS OF 20dB BANDWIDTH

The 20dB bandwidth shall be specified in operating frequency band. (13.11MHz – 14.01MHz)

3.4.2 TEST PROCEDURE

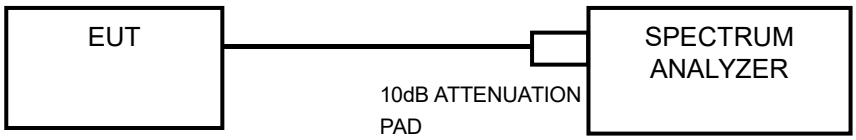
a. Turn on the EUT and connect it to measurement instrument. Then set it to any one convenient frequency within its operating range. Set a reference level on the measuring instrument equal to the highest peak value.

b. The resolution bandwidth of 1kHz and the video bandwidth of 3kHz were used.

c. Measured spectrum width with power higher than 20dB below carrier.

Note: Because the measured singal is CW or CW-like adjust the RBW per C63.10 would not be practical since measured bandwidth will always follow the RBW and the result will be approximately the RBW

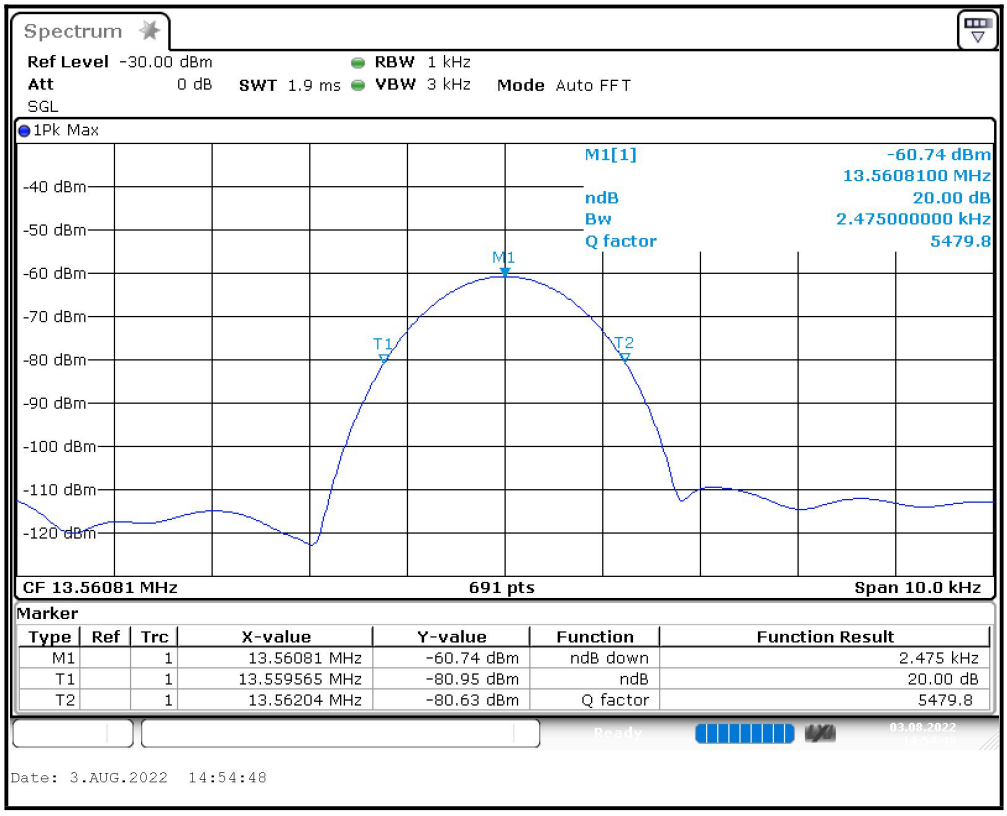
3.4.3 TEST SETUP



3.4.4 TEST RESULTS

CHANNEL	CHANNEL FREQUENCY (MHz)	20dB BANDWIDTH (KHz)
1	13.56	2.475

Lower & Upper Test Frequency Point (MHz)	Test Frequency (MHz)	P/F
Lower	13.5596	PASS
Upper	13.5620	PASS



4 PHOTOGRAPHS OF TEST SETUP

Please refer to the attached file (Test Photos).

5 PHOTOGRAPHS OF THE EUT

Please refer to the attached file (External Photos report and Internal Photos).

Important

(1) The test report is valid without the official stamp of CVC;

(2) Any part photocopies of the test report are forbidden without the written permission from CVC;

(3) The test report is invalid without the signatures of Approval and Reviewer;

(4) The test report is invalid if altered;

(5) Objections to the test report must be submitted to CVC within 15 days.

(6) Generally, commission test is responsible for the tested samples only.

(7) As for the test result “-” or “N” means “not applicable”, “/” means “not test”, “P” means “pass” and “F” means “fail”

The test data and test results given in this test report should only be used for purposes of scientific research, teaching and internal quality control when the CMA symbol is not presented.

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