TEST REPORT

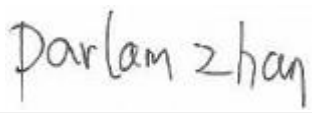
Application No.:	SHEM2004002802CR
FCC ID:	2ADTD-K3B501SRM
Applicant:	Hangzhou Hikvision Digital Technology Co., Ltd.
Address of Applicant:	No.555 Qianmo Road, Binjiang District, Hangzhou 310052, China
Manufacturer:	Hangzhou Hikvision Digital Technology Co., Ltd.
Address of Manufacturer:	No.555 Qianmo Road, Binjiang District, Hangzhou 310052, China
Factory:	1, Hangzhou Hikvision Technology Co., Ltd. 2, Hangzhou Hikvision Electronics Co., Ltd. 3, Hangzhou Hikvision Digital Technology Co., Ltd.
Address of Factory:	1, No.700,Dongliu Road, Binjiang District, Hangzhou City,Zhejiang, 310052, China 2, No.299,Qiushi Road,Tonglu Economic Development Zone,Tonglu County, Hangzhou,Zhejiang,310052,China. 3, No.555 Qianmo Road,Binjiang District Hangzhou 310052,China
Equipment Under Test (EUT):	
EUT Name:	Swing Barrier
Model No.:	DS-K3B501S-R/M,DS-K3B501S-R,DS-K3B501S-RUHK,DS-K3B501S-RCKV,DS-K3B501S-RUVS,DS-K3B501S-RKVO,DS-K3B501S-RHUN, DS-K3B501S-M/M,DS-K3B501S-M,DS-K3B501S-MUHK,DS-K3B501S-MCKV,DS-K3B501S-MUVS,DS-K3B501S-MKVO,DS-K3B501S-MHUN, DS-K3B501S-L/M,DS-K3B501S-L,DS-K3B501S-LUHK,DS-K3B501S-LCKV,DS-K3B501S-LUVS,DS-K3B501S-LKVO,DS-K3B501S-LHUN ¤
¤	Please refer to section 2 of this report which indicates which model was actually tested and which were electrically identical.
Trade Mark:	HIKVISION
Standard(s) :	47 CFR Part 15, Subpart C 15.225
Date of Receipt:	2020-06-09
Date of Test:	2020-06-09 to 2020-06-23
Date of Issue:	2020-06-24
Test Result:	**Pass***

* In the configuration tested, the EUT complied with the standards specified above.

Parlam Zhan
E&E Section Manager

The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report. If the product in this report is used in any configuration other than that detailed in the report, the manufacturer must ensure the new system complies with all relevant standards. Any mention of SGS International Electrical Approvals or testing done by SGS International Electrical Approvals in connection with, distribution or use of the product described in this report must be approved by SGS International Electrical Approvals in writing.

Revision Record			
Version	**Description**	**Date**	**Remark**
00	Original	2020-06-24	/

Authorized for issue by:				
				
		Micheal Niu / Project Engineer		
				
		Parlam Zhan / Reviewer		

2 Test Summary

Radio Spectrum Technical Requirement				
Item	**Standard**	**Method**	**Requirement**	**Result**
Antenna Requirement	47 CFR Part 15, Subpart C 15.225	N/A	47 CFR Part 15, Subpart C 15.203	Pass

Radio Spectrum Matter Part				
Item	**Standard**	**Method**	**Requirement**	**Result**
Conducted Emissions at AC Power Line (150kHz-30MHz)	47 CFR Part 15, Subpart C 15.225	ANSI C63.10 (2013) Section 6.2	47 CFR Part 15, Subpart C 15.207	Pass
20dB Bandwidth	47 CFR Part 15, Subpart C 15.225	ANSI C63.10 (2013) Section 6.9	47 CFR Part 15, Subpart C 15.215	Pass
Emission Mask	47 CFR Part 15, Subpart C 15.225	ANSI C63.10 (2013) Section 6.4	47 CFR Part 15, Subpart C 15.225(a)&(b)&(C)	Pass*
Frequency tolerance	47 CFR Part 15, Subpart C 15.225	ANSI C63.10 (2013) Section 6.8	47 CFR Part 15, Subpart C 15.225(e)	Pass
Radiated Emissions(9kHz-30MHz)	47 CFR Part 15, Subpart C 15.225	ANSI C63.10 (2013) Section 6.4&6.5	47 CFR Part 15, Subpart C 15.225(d) & 15.209	Pass
Radiated Emissions(30MHz-1GHz)	47 CFR Part 15, Subpart C 15.225	ANSI C63.10 (2013) Section 6.4&6.5	47 CFR Part 15, Subpart C 15.225(d) & 15.209	Pass

Note1*: The test level of the fundamental signal is below the limit of general spurious emission, so the test item doesn't be performed.

Declaration of EUT Family Grouping:

Note2: There are series models mentioned in this report, and they are the identical in electrical and electronic characters. Only the model DS-K3B501S-R/M was tested since their differences were the model number and appearance.

3 Contents

4 General Information

4.1 Details of E.U.T.

Power supply:	100-240V~,50/60Hz, 1.44-0.6A
Test voltage:	AC 120V 60Hz
Antenna Type	Loop antenna
Modulation Type	ASK
Number of Channels	1
Operation Frequency	13.56MHz

4.2 Description of Support Units

The EUT has been tested as an independent unit.

4.3 Measurement Uncertainty

No.	Item	Measurement Uncertainty
1	Radio Frequency	8.4 x 10-8
2	Timeout	2s
3	Duty cycle	0.4%
4	Occupied Bandwidth	3%
5	RF conducted power	0.6dB
6	RF power density	2.9dB
7	Conducted Spurious emissions	0.75dB
8	RF Radiated power	5.1dB (Below 1GHz)
		5.9dB (Above 1GHz)
9	Radiated Spurious emission test	4.2dB (Below 30MHz)
		4.5dB (30MHz-1GHz)
		5.1dB (1GHz-6GHz)
		5.4dB (6GHz-18GHz)
10	Temperature test	1°C
11	Humidity test	3%
12	Supply voltages	1.5%
13	Time	3%

Note: The measurement uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

4.4 Test Location

All tests were performed at:

SGS-CSTC Standards Technical Services Co., Ltd. Shanghai Branch

588 West Jindu Road, Xinqiao, Songjiang, 201612 Shanghai, China

Tel: +86 21 6191 5666 Fax: +86 21 6191 5678

No tests were sub-contracted.

4.5 Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

- **CNAS (No. CNAS L0599)**

  CNAS has accredited SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. to ISO/IEC 17025:2017 General Requirements for the Competence of Testing and Calibration Laboratories (CNAS-CL01 Accreditation Criteria for the Competence of Testing and Calibration Laboratories) for the competence in the field of testing.

- **NVLAP (LAB CODE: 201034-0)**

  SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. is accredited by the National Voluntary Laboratory Accreditation Program (NVLAP).

- **FCC (Designation Number: CN5033)**

  SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. has been recognized as an accredited testing laboratory.

- **ISED (CAB Identifier: CN0020)**

  SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. EMC Laboratory has been recognized by Innovation, Science and Economic Development Canada (ISED) as an accredited testing laboratory.

- **VCCI (Member No.: 3061)**

  The 3m Semi-anechoic chamber and Shielded Room of SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. has been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: R-13868, C-14336, T-12221, G-10830 respectively.

4.6 Deviation from Standards

None

4.7 Abnormalities from Standard Conditions

None

5 Equipment List

Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
Conducted Emission at Mains Terminals (150kHz-30MHz)					
EMI test receiver	R&S	ESR7	SHEM162-1	2019-12-20	2020-12-19
LISN	Schwarzbeck	NSLK8127	SHEM061-1	2019-12-20	2020-12-19
LISN	EMCO	3816/2	SHEM019-1	2019-12-20	2020-12-19
Pulse limiter	R&S	ESH3-Z2	SHEM029-1	2019-12-20	2020-12-19
Shielding Room	ZHONGYU	8*4*3M	SHEM079-2	2019-12-20	2020-12-19
CE test Cable	/	CE01	/	2019-12-20	2020-12-19
RF Conducted Test					
Spectrum Analyzer	R&S	FSP-30	SHEM002-1	2019-12-20	2020-12-19
Spectrum Analyzer	Agilent	N9020A	SHEM181-1	2019-08-13	2020-08-12
Signal Generator	R&S	SMR20	SHEM006-1	2019-08-13	2020-08-12
Signal Generator	Agilent	N5182A	SHEM182-1	2019-08-13	2020-08-12
Communication Tester	R&S	CMW270	SHEM183-1	2019-08-13	2020-08-12
Switcher	Tonscend	JS0806	SHEM184-1	2019-08-13	2020-08-12
Power Sensor	Keysight	U2021XA * 4	SHEM184-1	2019-08-13	2020-08-12
Splitter	Anritsu	MA1612A	SHEM185-1	/	/
Coupler	e-meca	803-S-1	SHEM186-1	/	/
High-low Temp Cabinet	Suzhou Zhihe	TL-40	SHEM087-1	2017-09-25	2020-09-24
AC Power Stabilizer	APC	KDF-31020T-V0-F0	SHEM216-1	2019-12-20	2020-12-19
DC Power Supply	MCH	MCH-303A	SHEM210-1	2019-12-20	2020-12-19
Conducted test Cable	/	RF01~RF04	/	2019-12-20	2020-12-19
RF Radiated Test					
EMI test Receiver	R&S	ESU40	SHEM051-1	2019-12-20	2020-12-19
Spectrum Analyzer	R&S	FSP-30	SHEM002-1	2019-12-20	2020-12-19
Loop Antenna (9kHz-30MHz)	Schwarzbeck	FMZB1519	SHEM135-1	2019-12-20	2020-12-19
Antenna (25MHz-2GHz)	Schwarzbeck	VULB9168	SHEM048-1	2019-10-14	2021-10-13
Antenna (25MHz-2GHz)	Schwarzbeck	VULB9168	SHEM202-1	2019-04-30	2021-04-29
Horn Antenna (1-18GHz)	Schwarzbeck	HF906	SHEM009-1	2017-10-24	2020-10-23
Horn Antenna (1-18GHz)	Schwarzbeck	BBHA9120D	SHEM050-1	2019-10-14	2021-10-13
Horn Antenna (14-40GHz)	Schwarzbeck	BBHA 9170	SHEM049-1	2017-10-31	2020-10-30
Pre-amplifier (9KHz-2GHz)	CLAVIIO	BDLNA-0001	SHEM164-1	2019-08-13	2020-08-12
Pre-amplifier (1-18GHz)	CLAVIIO	BDLNA-0118	SHEM050-2	2019-08-13	2020-08-12
High-amplifier (14-40GHz)	Schwarzbeck	10001	SHEM049-2	2019-12-20	2020-12-19
Signal Generator	R&S	SMR40	SHEM058-1	2019-08-13	2020-08-12
Band Filter	LORCH	9BRX-875/X150	SHEM156-1	/	/
Band Filter	LORCH	13BRX-1950/X500	SHEM083-2	/	/
Band Filter	LORCH	5BRX-2400/X200	SHEM155-1	/	/
Band Filter	LORCH	5BRX-5500/X1000	SHEM157-2	/	/
High pass Filter	Wainwright	WHK3.0/18G	SHEM157-1	/	/
High pass Filter	Wainwright	WHKS1700	SHEM157-3	/	/
Semi/Fully Anechoic	ST	11*6*6M	SHEM078-2	2017-07-22	2020-07-21
RE test Cable	/	RE01, RE02, RE06	/	2019-12-20	2020-12-19

6 Radio Spectrum Technical Requirement

6.1 Antenna Requirement

6.1.1 Test Requirement:

47 CFR Part 15, Subpart C 15.203

6.1.2 Conclusion

Standard Requirement:

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 antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit permanently attached antenna or of an so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

EUT Antenna:

The antenna is loop antenna integrated on the main PCB and no consideration of replacement.

Antenna location: Refer to Appendix (Internal Photos)

7 Radio Spectrum Matter Test Results

7.1 Conducted Emissions at AC Power Line (150kHz-30MHz)

Test Requirement 47 CFR Part 15, Subpart C 15.207

Test Method: ANSI C63.10 (2013) Section 6.2

Limit:

Frequency range (MHz)	Limit (dBuV)	
	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.

7.1.1 E.U.T. Operation

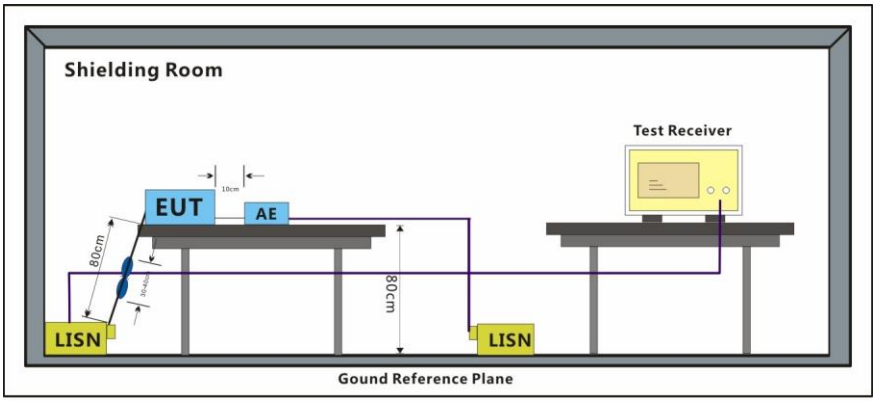
Operating Environment:

Temperature: 22 °C Humidity: 50 % RH Atmospheric Pressure: 1020 mbar

Test mode a: TX mode_Keep the EUT in transmitting with modulation mode. (Module 1)

b: TX mode_Keep the EUT in transmitting with modulation mode. (Module 2)

7.1.2 Test Setup Diagram



7.1.3 Measurement Procedure and Data

1) The mains terminal disturbance voltage test was conducted in a shielded room.

2) The EUT was connected to AC power source through a LISN 1 (Line Impedance Stabilization Network) which provides a 50ohm/50μH + 5ohm linear impedance. The power cables of all other units of the EUT were connected to a second LISN 2, which was bonded to the ground reference plane in the same way as the LISN 1 for the unit being measured. A multiple socket outlet strip was used to connect multiple power cables to a single LISN provided the rating of the LISN was not exceeded.

3) The tabletop EUT was placed upon a non-metallic table 0.8m above the ground reference plane. And for floor-standing arrangement, the EUT was placed on the horizontal ground reference plane,

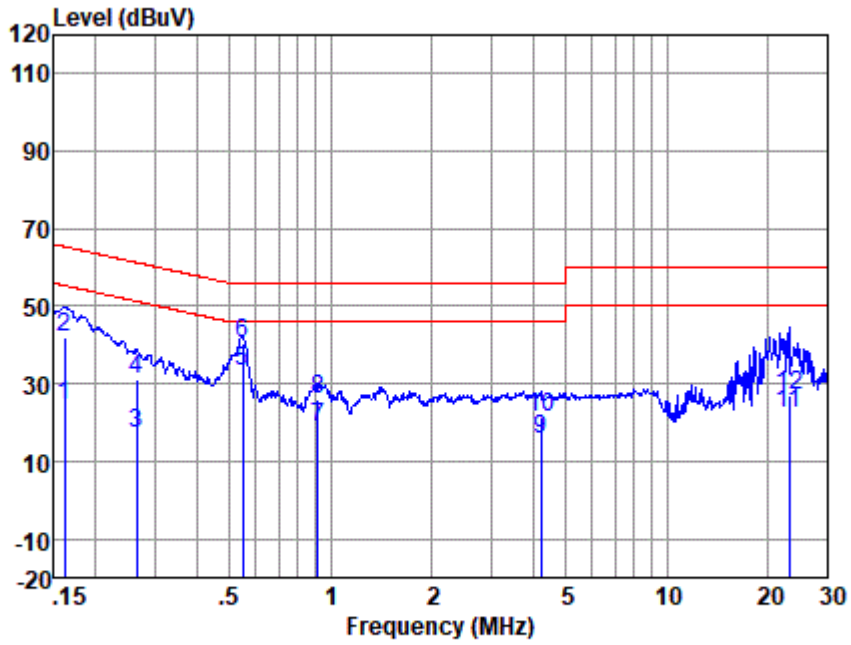
4) The test was performed with a vertical ground reference plane. The rear of the EUT shall be 0.4 m from the vertical ground reference plane. The vertical ground reference plane was bonded to the horizontal ground reference plane. The LISN 1 was placed 0.8 m from the boundary of the unit under test and bonded to a ground reference plane for LISNs mounted on top of the ground reference plane. This distance was between the closest points of the LISN 1 and the EUT. All other units of the EUT and associated equipment was at least 0.8 m from the LISN 2.

5) In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.10 on conducted measurement.

Remark: LISN=Read Level+ Cable Loss+ LISN Factor

6)This product is a floor product. It is placed on the ground during normal use. Because the product size is too large, so use the 13.56MHz module to test.

Mode a; Line:Live Line

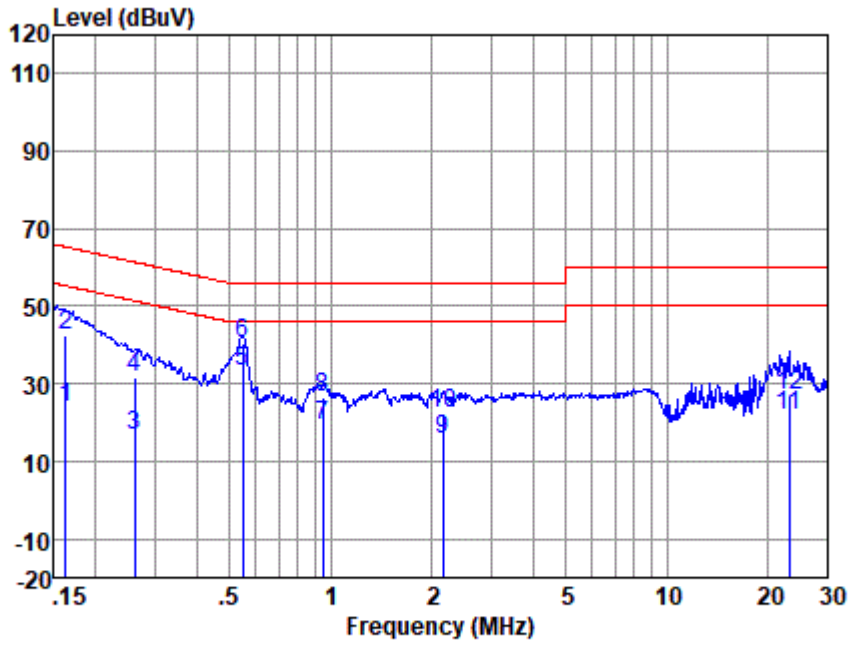


LISN : LINE

	Freq (MHz)	Read level (dBuV)	LISN Factor (dB)	Cable Loss (dB)	Emission Level (dBuV)	Limit (dBuV)	Over Limit (dB)	Remark
1	0.16	14.12	0.08	9.97	24.17	55.38	-31.21	Average
2	0.16	32.06	0.08	9.97	42.11	65.38	-23.27	QP
3	0.26	7.02	0.07	10.01	17.10	51.29	-34.19	Average
4	0.26	21.26	0.07	10.01	31.34	61.29	-29.95	QP
5	0.55	23.03	0.08	10.06	33.17	46.00	-12.83	Average
6	0.55	30.33	0.08	10.06	40.47	56.00	-15.53	QP
7	0.92	8.45	0.09	10.09	18.63	46.00	-27.37	Average
8	0.92	15.82	0.09	10.09	26.00	56.00	-30.00	QP
9	4.22	5.34	0.13	10.27	15.74	46.00	-30.26	Average
10	4.22	11.15	0.13	10.27	21.55	56.00	-34.45	QP
11	23.14	11.47	0.31	10.47	22.25	50.00	-27.75	Average
12	23.14	16.07	0.31	10.47	26.85	60.00	-33.15	QP

Notes: Emission Level = Read Level +LISN Factor + Cable loss

Mode:a; Line:Neutral Line

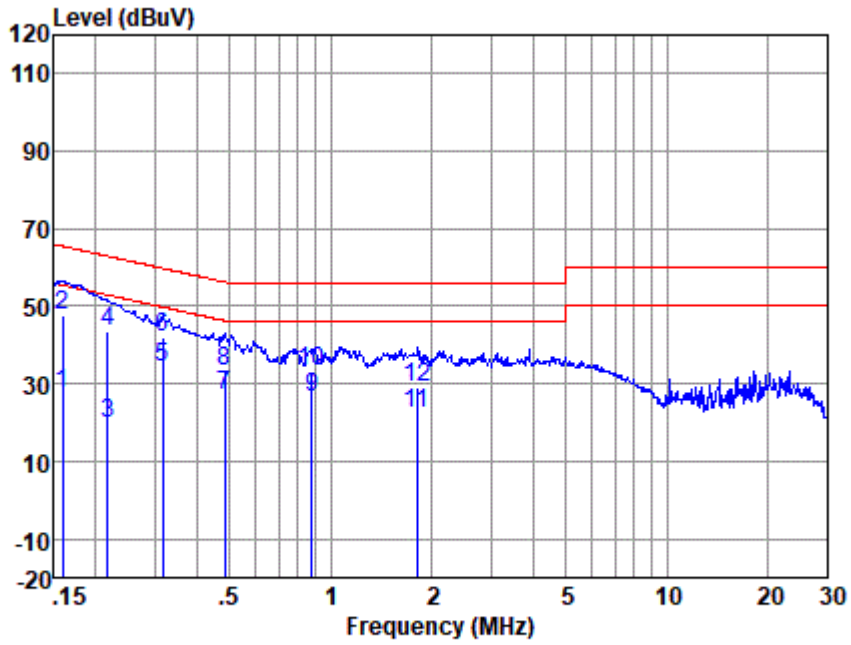


LISN : NEUTRAL

	Freq (MHz)	Read level (dBuV)	LISN Factor (dB)	Cable Loss (dB)	Emission Level (dBuV)	Limit (dBuV)	Over Limit (dB)	Remark
1	0.16	13.80	0.07	9.97	23.84	55.34	-31.50	Average
2	0.16	32.50	0.07	9.97	42.54	65.34	-22.80	QP
3	0.26	6.81	0.06	10.01	16.88	51.42	-34.54	Average
4	0.26	21.34	0.06	10.01	31.41	61.42	-30.01	QP
5	0.55	23.04	0.06	10.06	33.16	46.00	-12.84	Average
6	0.55	30.32	0.06	10.06	40.44	56.00	-15.56	QP
7	0.95	8.91	0.08	10.10	19.09	46.00	-26.91	Average
8	0.95	16.23	0.08	10.10	26.41	56.00	-29.59	QP
9	2.16	5.29	0.10	10.16	15.55	46.00	-30.45	Average
10	2.16	12.33	0.10	10.16	22.59	56.00	-33.41	QP
11	23.14	11.30	0.31	10.47	22.08	50.00	-27.92	Average
12	23.14	16.11	0.31	10.47	26.89	60.00	-33.11	QP

Notes: Emission Level = Read Level +LISN Factor + Cable loss

Mode b; Line:Live Line

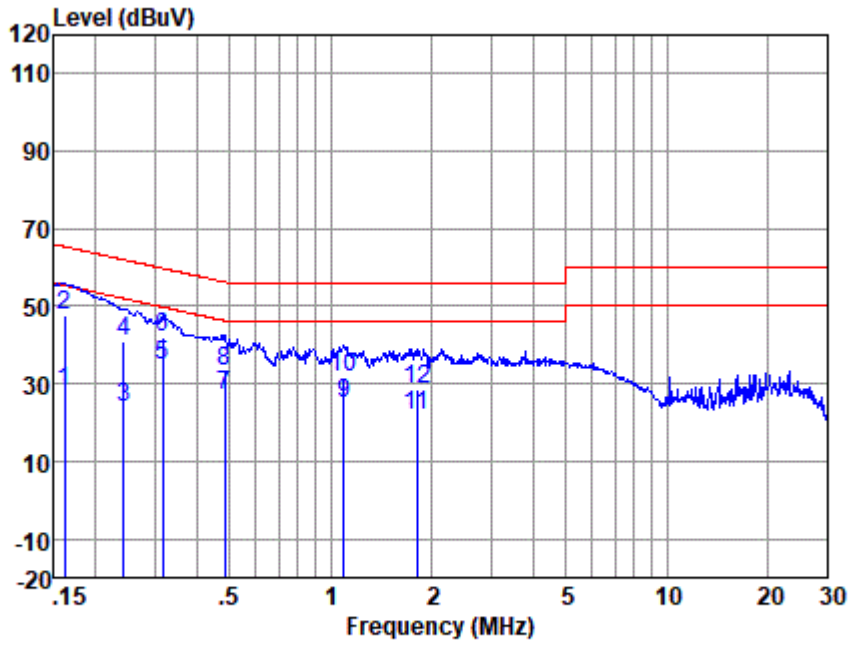


LISN : LINE

	Freq (MHz)	Read level (dBuV)	LISN Factor (dB)	Cable Loss (dB)	Emission Level (dBuV)	Limit (dBuV)	Over Limit (dB)	Remark
1	0.16	17.51	0.08	9.97	27.56	55.52	-27.96	Average
2	0.16	37.86	0.08	9.97	47.91	65.52	-17.61	QP
3	0.22	9.55	0.07	10.00	19.62	52.92	-33.30	Average
4	0.22	33.26	0.07	10.00	43.33	62.92	-19.59	QP
5	0.32	24.40	0.08	10.02	34.50	49.80	-15.30	Average
6	0.32	31.80	0.08	10.02	41.90	59.80	-17.90	QP
7	0.48	16.95	0.08	10.05	27.08	46.27	-19.19	Average
8	0.48	23.29	0.08	10.05	33.42	56.27	-22.85	QP
9	0.88	16.37	0.09	10.09	26.55	46.00	-19.45	Average
10	0.88	23.09	0.09	10.09	33.27	56.00	-22.73	QP
11	1.81	12.25	0.13	10.14	22.52	46.00	-23.48	Average
12	1.81	18.58	0.13	10.14	28.85	56.00	-27.15	QP

Notes: Emission Level = Read Level +LISN Factor + Cable loss

Mode:b; Line:Neutral Line



LISN : NEUTRAL

	Freq (MHz)	Read level (dBuV)	LISN Factor (dB)	Cable Loss (dB)	Emission Level (dBuV)	Limit (dBuV)	Over Limit (dB)	Remark
1	0.16	18.03	0.07	9.97	28.07	55.38	-27.31	Average
2	0.16	37.86	0.07	9.97	47.90	65.38	-17.48	QP
3	0.24	13.86	0.06	10.01	23.93	52.04	-28.11	Average
4	0.24	30.88	0.06	10.01	40.95	62.04	-21.09	QP
5	0.32	24.45	0.06	10.02	34.53	49.80	-15.27	Average
6	0.32	31.87	0.06	10.02	41.95	59.80	-17.85	QP
7	0.48	17.00	0.06	10.05	27.11	46.27	-19.16	Average
8	0.48	23.26	0.06	10.05	33.37	56.27	-22.90	QP
9	1.09	14.64	0.08	10.11	24.83	46.00	-21.17	Average
10	1.09	21.36	0.08	10.11	31.55	56.00	-24.45	QP
11	1.80	11.79	0.10	10.14	22.03	46.00	-23.97	Average
12	1.80	18.47	0.10	10.14	28.71	56.00	-27.29	QP

Notes: Emission Level = Read Level +LISN Factor + Cable loss

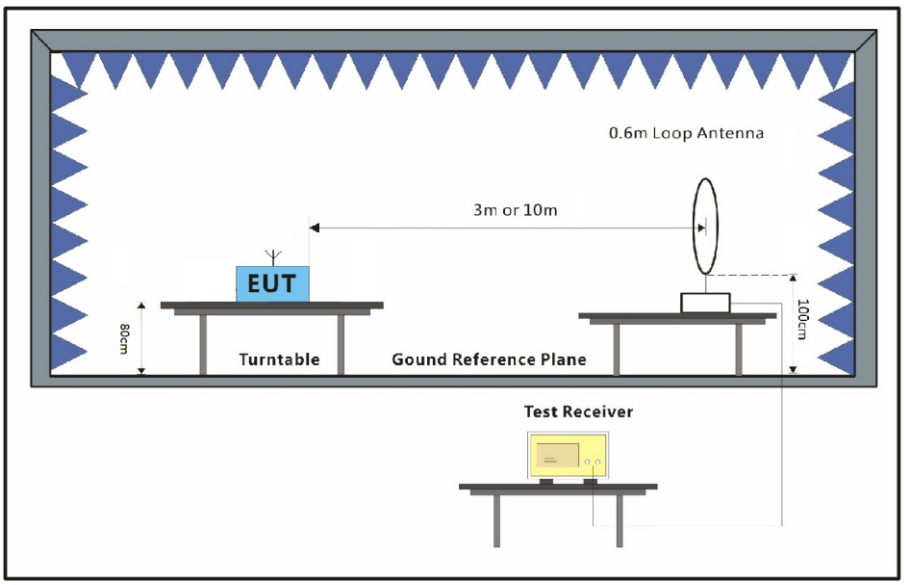
7.2 20dB Bandwidth

Test Requirement 47 CFR Part 15, Subpart C 15.215
Test Method: ANSI C63.10 (2013) Section 6.9
Limit: N/A

7.2.1 E.U.T. Operation

Operating Environment:
Temperature: 22 °C Humidity: 50 % RH Atmospheric Pressure: 1002 mbar
Test mode a: TX mode_Keep the EUT in transmitting with modulation mode. (Module 1)
b: TX mode_Keep the EUT in transmitting with modulation mode. (Module 2)

7.2.2 Test Setup Diagram

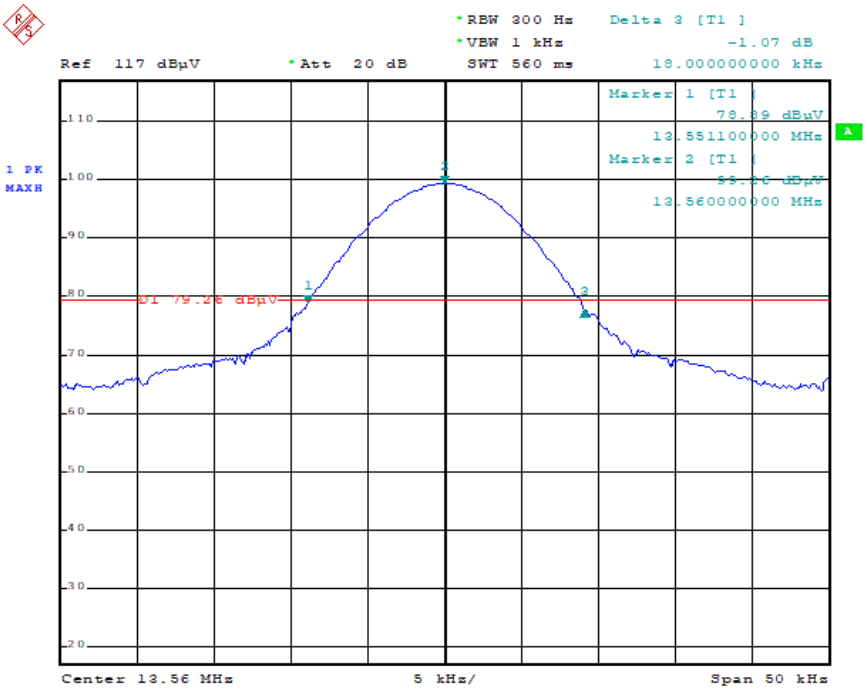


7.2.3 Measurement Procedure and Data

Mode a:

20dB bandwidth (kHz)	F_L (MHz)	F_H (MHz)	Limit(MHz)	Result
18.00	13.5511	13.5691	13.110 – 14.010	Pass

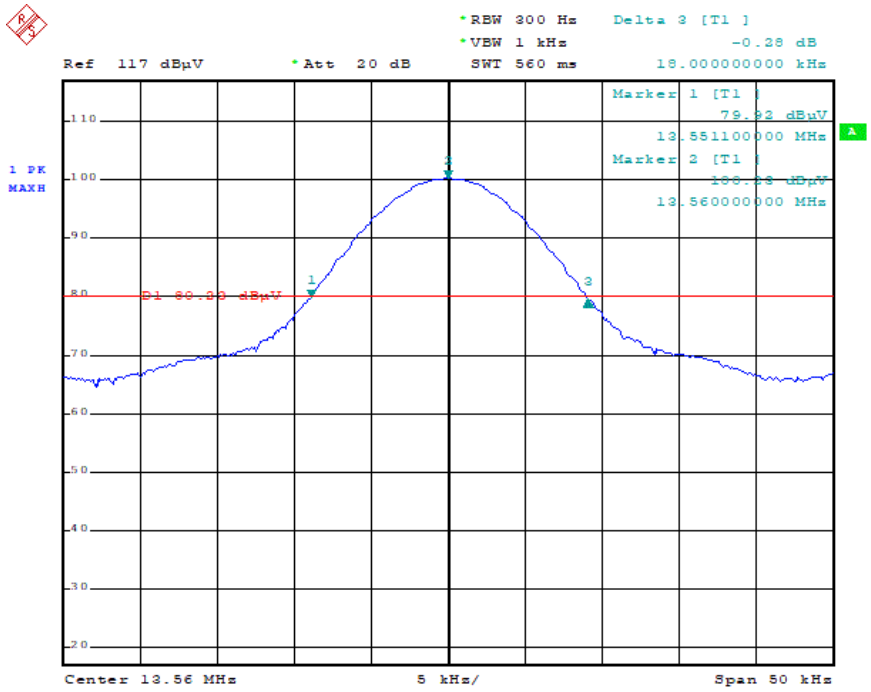
Test plot as follows:



Mode b:

20dB bandwidth (kHz)	F_L (MHz)	F_H (MHz)	Limit(MHz)	Result
18.00	13.5511	13.5691	13.110 – 14.010	Pass

Test plot as follows:



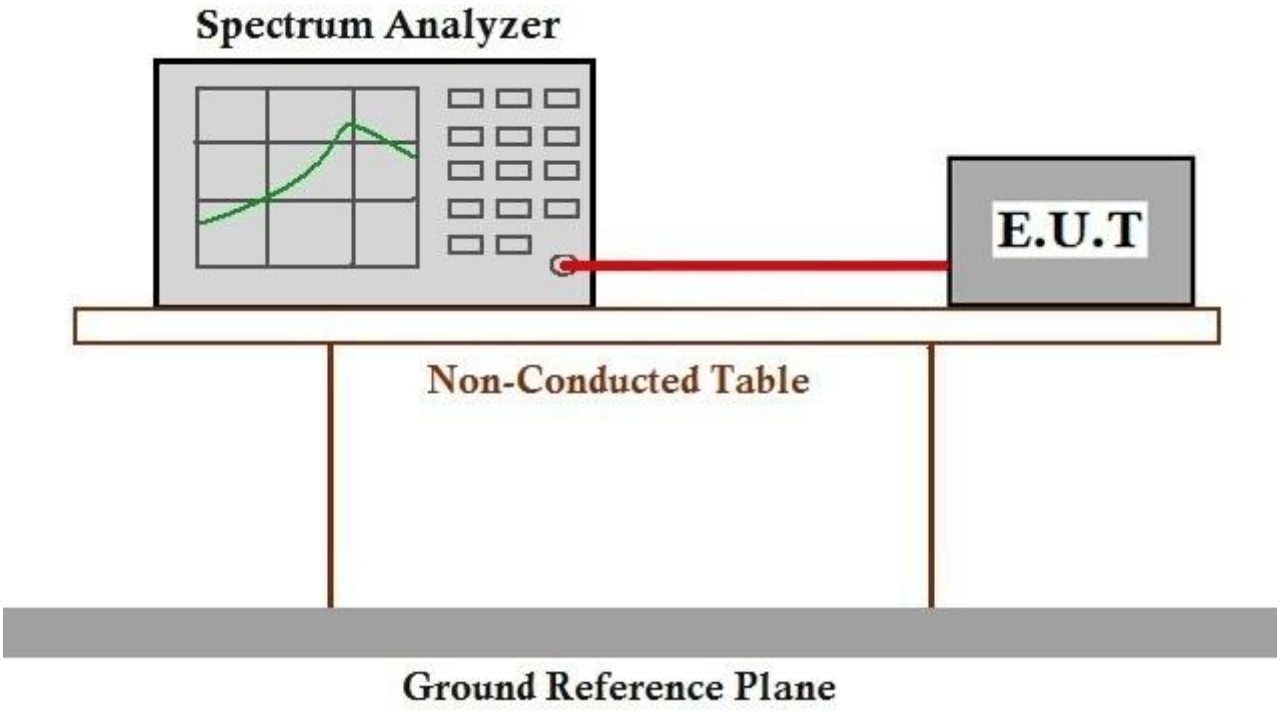
7.3 Frequency tolerance

Test Requirement 47 CFR Part 15, Subpart C 15.225(e)
Test Method: ANSI C63.10 (2013) Section 6.8
Limit: 1.356kHz

7.3.1 E.U.T. Operation

Operating Environment:
Temperature: 22 °C Humidity: 50 % RH Atmospheric Pressure: 1002 mbar
Test mode a: TX mode_Keep the EUT in transmitting with modulation mode. (Module 1)
b: TX mode_Keep the EUT in transmitting with modulation mode. (Module 2)

7.3.2 Test Setup Diagram



7.3.3 Measurement Procedure and Data

Mode a:

Nominal Operation Frequency: 13.56MHz

Test Conditions		Test Result (MHz)	Deviation (kHz)	Limit (kHz)	Result
Temp (℃)	Volt (V AC)				
T_{nom} (-20)	V_{nom} (120)	13.56008	0.08	±0.01% (1.3560kHz)	Pass
T_{nom} (-10)	V_{nom} (120)	13.56008	0.08		Pass
T_{nom} (0)	V_{nom} (120)	13.56008	0.08		Pass
T_{nom} (10)	V_{nom} (120)	13.56008	0.08		Pass
T_{nom} (20)	V_{nom} (120)	13.56008	0.08		Pass
T_{nom} (30)	V_{nom} (120)	13.56008	0.08		Pass
T_{nom} (40)	V_{nom} (120)	13.56008	0.08		Pass
T_{nom} (50)	V_{nom} (120)	13.56008	0.08		Pass
T_{nom} (20)	V_{min} (108)	13.56006	0.06		Pass
	V_{max} (132)	13. 56007	0.07		Pass

Note: Deviation (kHz) = (Test Result-13.56MHz)*1000

Mode b:

Nominal Operation Frequency: 13.56MHz

Test Conditions		Test Result (MHz)	Deviation (kHz)	Limit (kHz)	Result
Temp (℃)	Volt (V AC)				
T_{nom} (-20)	V_{nom} (120)	13.56009	0.09	±0.01% (1.3560kHz)	Pass
T_{nom} (-10)	V_{nom} (120)	13.56009	0.09		Pass
T_{nom} (0)	V_{nom} (120)	13.56009	0.09		Pass
T_{nom} (10)	V_{nom} (120)	13.56009	0.09		Pass
T_{nom} (20)	V_{nom} (120)	13.56009	0.09		Pass
T_{nom} (30)	V_{nom} (120)	13.56009	0.09		Pass
T_{nom} (40)	V_{nom} (120)	13.56009	0.09		Pass
T_{nom} (50)	V_{nom} (120)	13.56009	0.09		Pass
T_{nom} (20)	V_{min} (108)	13.56007	0.07		Pass
	V_{max} (132)	13. 56008	0.08		Pass

Note: Deviation (kHz) = (Test Result-13.56MHz)*1000

7.4 Radiated Emissions(9kHz-30MHz)

Test Requirement 47 CFR Part 15, Subpart C 15.225(d) & 15.209

Test Method: ANSI C63.10 (2013) Section 6.4&6.5

Limit:

Frequency(MHz)	Field strength (microvolts/meter)	Limit (dBuV/m)	Detector	Measurement Distance (meters)
0.009-0.490	2400/F(kHz)	-	-	300
0.490-1.705	24000/F(kHz)	-	-	30
1.705-30	30	-	-	30
30-88	100	40.0	QP	3
88-216	150	43.5	QP	3
216-960	200	46.0	QP	3
960-1000	500	54.0	QP	3
Above 1000	500	54.0	AV	3

NOTE:

(1) For test distance other than what is specified, but fulfilling the requirements of section 15.31(f) (2) the field strength is calculated by adding additionally an extrapolation factor of 40dB/decade (inverse linear distance for field strength measurements).

So the Distance Extrapolation Factor in dB is 40*log (D_{TEST} / D_{SPEC}) where D_{TEST} = Test Distance and D_{SPEC} = Specified Distance.

Field strength limit (dBμV/m)@test distance= Field strength limit (dBμV/m)@specified distance -Distance Extrapolation Factor

(2) The lower limit shall apply at the transition frequencies.

7.4.1 E.U.T. Operation

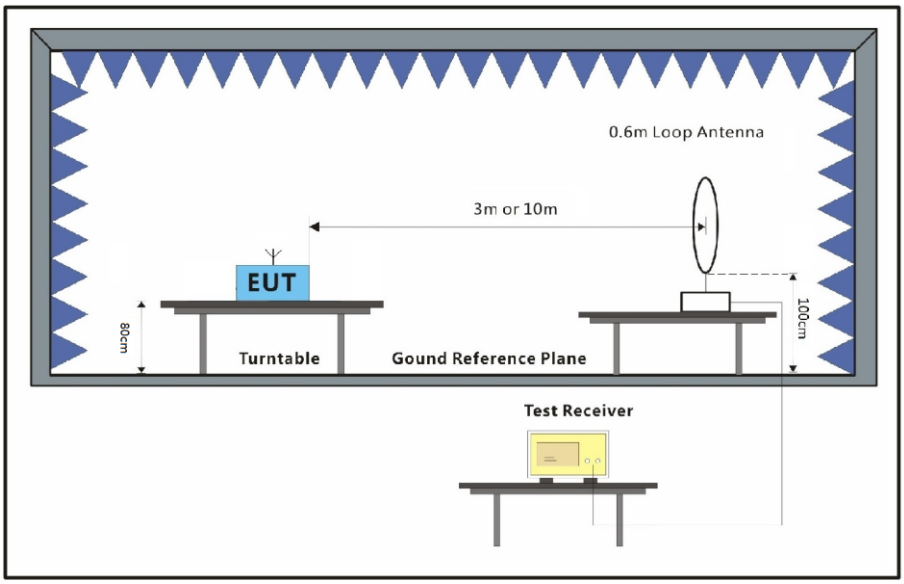
Operating Environment:

Temperature: 22 °C Humidity: 50 % RH Atmospheric Pressure: 1002 mbar

Test mode a: TX mode_Keep the EUT in transmitting with modulation mode. (Module 1)

b: TX mode_Keep the EUT in transmitting with modulation mode. (Module 2)

7.4.2 Test Setup Diagram



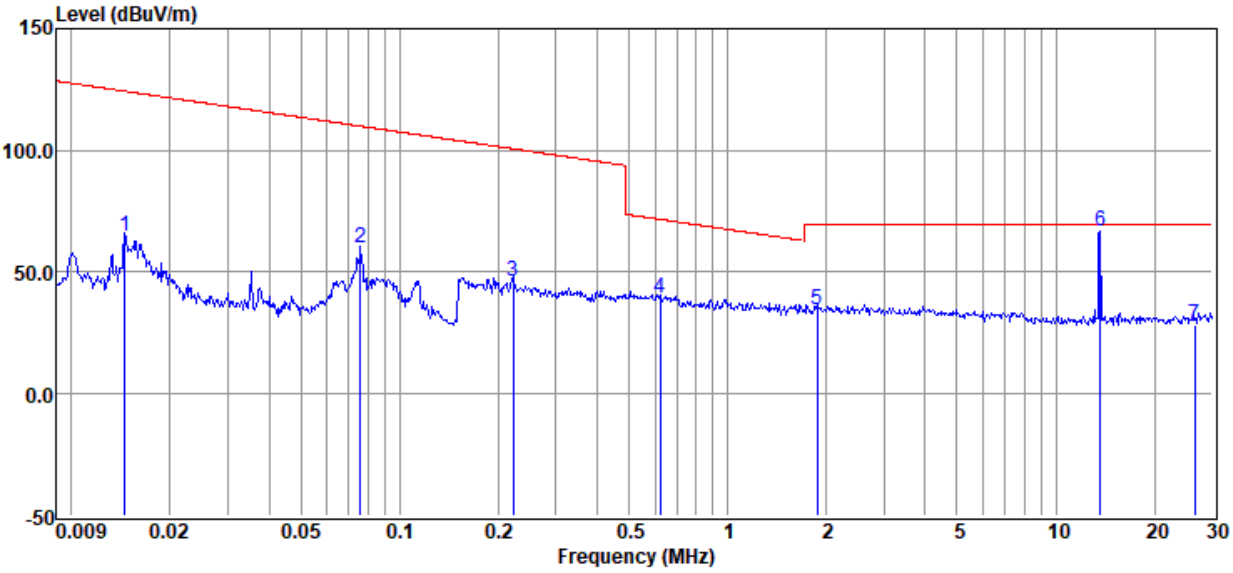
7.4.3 Measurement Procedure and Data

For testing performed with the loop antenna, the center of the loop was positioned 1 m above the ground and positioned with its plane vertical at the specified distance from the EUT. During testing the loop was rotated about its vertical axis for maximum response at each azimuth and also investigated with the loop positioned in the horizontal plane. Only the worst position of vertical was shown in the report.

Remark:

This product is a floor product. It is placed on the ground during normal use. Because the product size is too large, so use the 13.56MHz module to test.

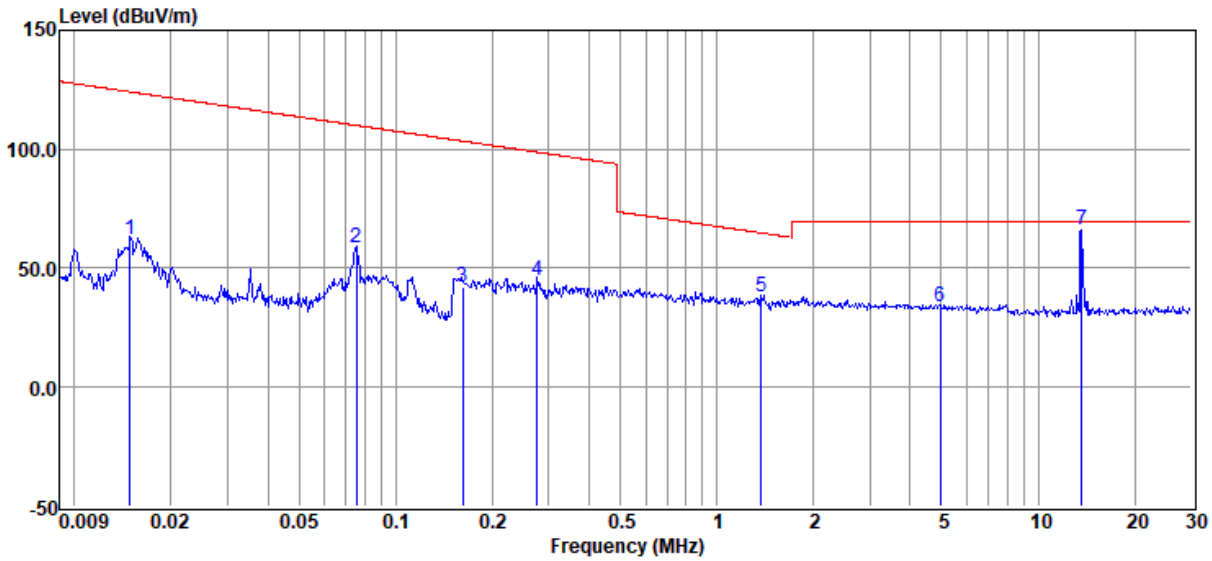
Mode a:



Item	Freq.	Read Level	Antenna Factor	Cable Loss	Result Level@3m	Result Level@SPEC	Limit Line@SPEC	Over Limit	Detector
(Mark)	(MHz)	(dBμV)	(dB/m)	(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	0.015	45.14	19.65	0.03	64.82	-15.18	44.35	-59.53	QP
2	0.076	40	19.73	0.04	59.77	-20.23	29.98	-50.21	QP
3	0.222	26.2	19.82	0.06	46.08	-33.92	20.68	-54.6	QP
4	0.621	18.82	20.12	0.1	39.04	-0.96	31.75	-32.71	QP
5	1.872	14.24	20.21	0.2	34.65	-5.35	29.5	-34.85	QP
6	13.658	46.61	19.98	0.54	67.13	27.13	29.5	-2.37	Peak
7	26.563	7.13	20.33	0.8	28.26	-11.74	29.5	-41.24	QP

Note: 0.009-0.49MHz Distance factor is 80, 0.49MHz~30MHz Distance factor is 40

Mode b:



Item	Freq.	Read Level	Antenna Factor	Cable Loss	Result Level@3m	Result Level@SPEC	Limit Line@SPEC	Over Limit	Detector
(Mark)	(MHz)	(dBμV)	(dB/m)	(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	0.015	42.47	19.64	0.03	62.14	-17.86	44.13	-61.99	QP
2	0.075	38.68	19.71	0.04	58.43	-21.57	30.05	-51.62	QP
3	0.162	22.51	19.83	0.05	42.39	-37.61	23.43	-61.04	QP
4	0.276	25.23	19.85	0.07	45.15	-34.85	18.78	-53.63	QP
5	1.375	17.3	20.25	0.16	37.71	-2.29	24.86	-27.15	QP
6	4.955	13.02	20.39	0.33	33.74	-6.26	29.5	-35.76	QP
7	13.658	45.59	19.98	0.54	66.11	26.11	29.5	-3.39	Peak

Note: 0.009-0.49MHz Distance factor is 80, 0.49MHz~30MHz Distance factor is 40

7.5 Radiated Emissions(30MHz-1GHz)

Test Requirement 47 CFR Part 15, Subpart C 15.225(d) & 15.209

Test Method: ANSI C63.10 (2013) Section 6.4&6.5

Limit:

Frequency	Field strength (microvolt/meter)	Limit (dBuV/m)	Remark	Measurement distance (m)
30MHz-88MHz	100	40.0	Quasi-peak	3
88MHz-216MHz	150	43.5	Quasi-peak	3
216MHz-960MHz	200	46.0	Quasi-peak	3
960MHz-1GHz	500	54.0	Quasi-peak	3

7.5.1 E.U.T. Operation

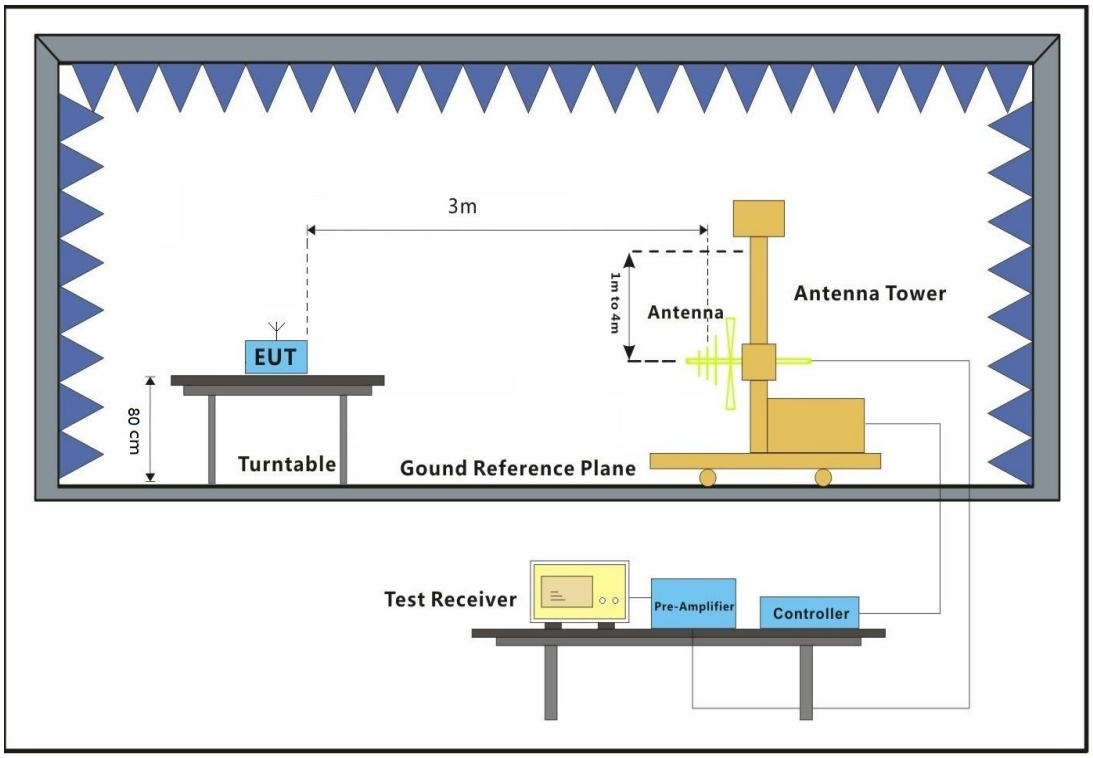
Operating Environment:

Temperature: 22 °C Humidity: 50 % RH Atmospheric Pressure: 1002 mbar

Test mode a: TX mode_Keep the EUT in transmitting with modulation mode. (Module 1)

b: TX mode_Keep the EUT in transmitting with modulation mode. (Module 2)

7.5.2 Test Setup Diagram



7.5.3 Measurement Procedure and Data

a. The EUT was placed on the top of a rotating table 0.8 meters above the ground for below 1GHz at a 3 meter 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. The antenna 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 (for the test frequency of below 30MHz, the antenna was tuned to heights 1 meter) 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. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.

g. The radiation measurements are performed in X, Y, Z axis positioning. And found the X axis positioning which it is worse case, only the test worst case mode is recorded in the report.

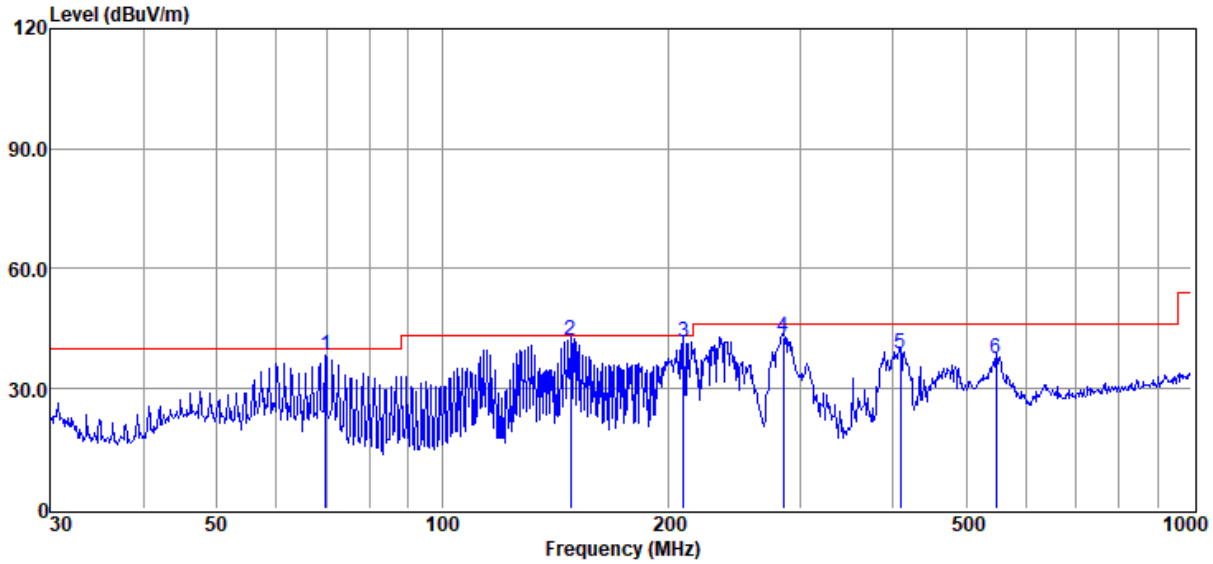
Remark:

1. Level= Read Level+ Cable Loss+ Antenna Factor- Preamp Factor

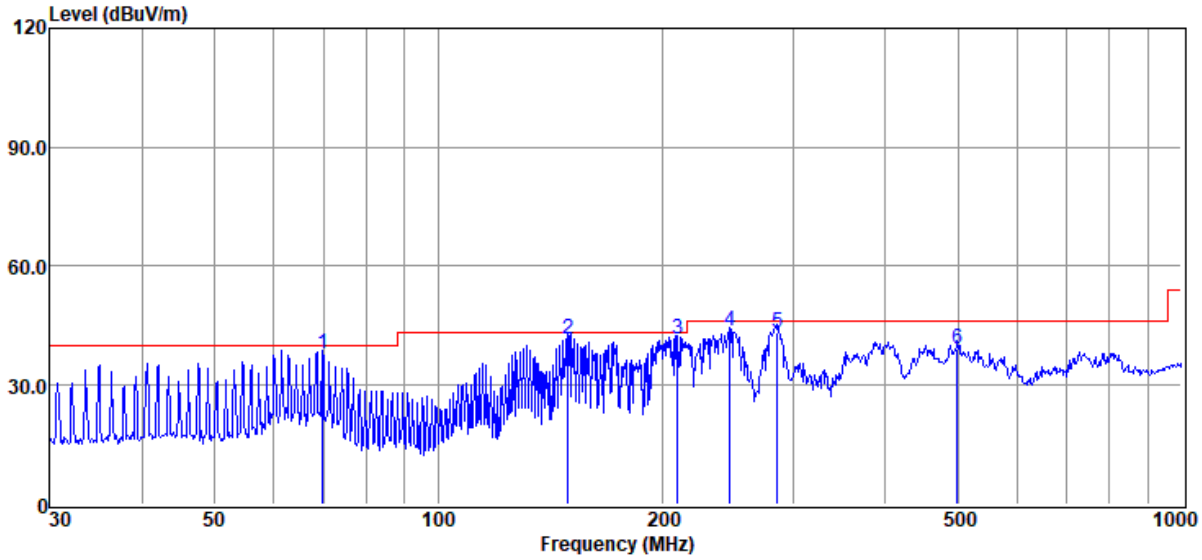
2.The product contains two identical 13.56MHz modules in which are tested and only the worst data is recorded into the report

3.This product is a floor product. It is placed on the ground during normal use. Because the product size is too large, so use the 13.56MHz module to test.

Mode a

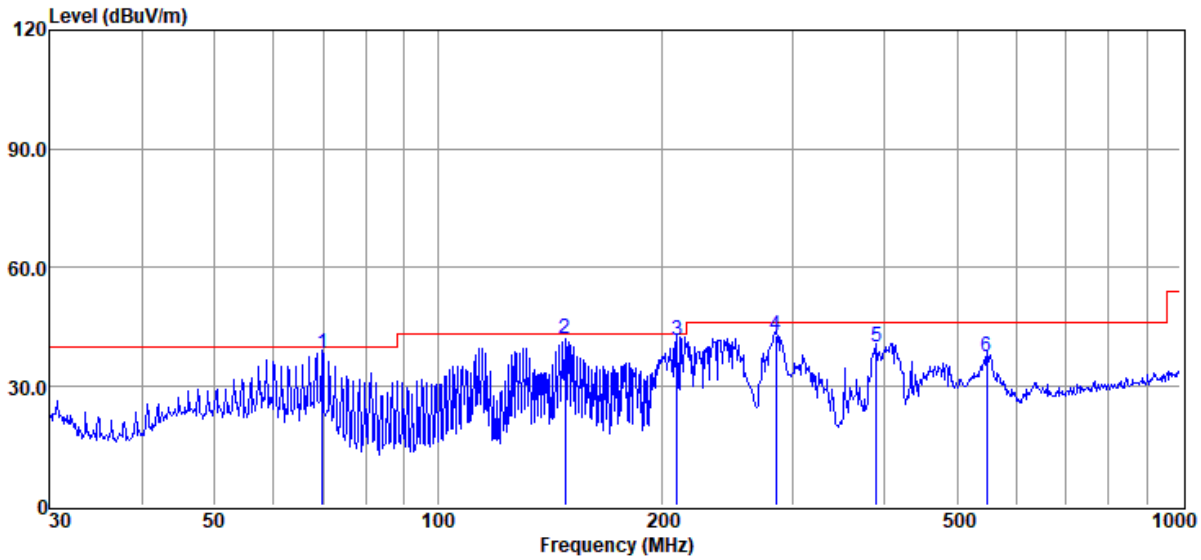


Item	Freq.	Read Level	Antenna Factor	Preamp Factor	Cable Loss	Result Level	Limit Line	Over Limit	Detector	Polarization
(Mark)	(MHz)	(dBµV)	(dB/m)	(dB)	(dB)	(dBµV/m)	(dBµV/m)	(dB)		
1	69.845	67.74	11.73	42.26	1.17	38.38	40.00	-1.62	QP	Vertical
2	148.441	69.65	12.84	42.23	1.69	41.95	43.50	-1.55	QP	Vertical
3	210.048	72.09	9.78	42.16	2.04	41.75	43.50	-1.75	QP	Vertical
4	284.977	69.85	12.94	42.11	2.34	43.02	46.00	-2.98	QP	Vertical
5	408.946	62.32	15.78	41.89	2.69	38.90	46.00	-7.10	QP	Vertical
6	549.019	58.04	18.28	41.68	3.04	37.68	46.00	-8.32	QP	Vertical

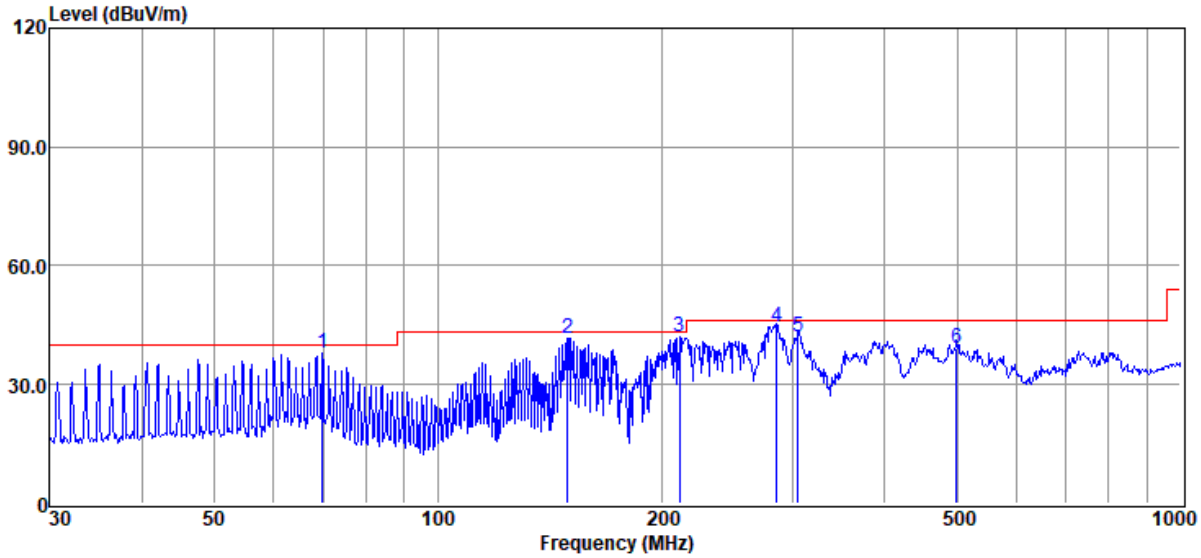


Item	Freq.	Read Level	Antenna Factor	Preamp Factor	Cable Loss	Result Level	Limit Line	Over Limit	Detector	Polarization
(Mark)	(MHz)	(dBµV)	(dB/m)	(dB)	(dB)	(dBµV/m)	(dBµV/m)	(dB)		
1	69.845	67.16	11.73	42.26	1.17	37.80	40.00	-2.20	QP	Horizontal
2	149.486	69.44	12.88	42.23	1.71	41.80	43.50	-1.70	QP	Horizontal
3	210.048	71.87	9.78	42.16	2.04	41.53	43.50	-1.97	QP	Horizontal
4	246.815	72.14	11.42	42.10	2.20	43.66	46.00	-2.34	QP	Horizontal
5	285.978	70.22	12.96	42.11	2.35	43.42	46.00	-2.58	QP	Horizontal
6	499.425	60.13	17.70	41.69	2.90	39.04	46.00	-6.96	QP	Horizontal

Mode b:



Item	Freq.	Read Level	Antenna Factor	Preamp Factor	Cable Loss	Result Level	Limit Line	Over Limit	Detector	Polarization
(Mark)	(MHz)	(dBµV)	(dB/m)	(dB)	(dB)	(dBµV/m)	(dBµV/m)	(dB)		
1	69.845	67.74	11.73	42.26	1.17	38.38	40.00	-1.62	QP	Vertical
2	148.441	69.65	12.84	42.23	1.69	41.95	43.50	-1.55	QP	Vertical
3	210.048	72.09	9.78	42.16	2.04	41.75	43.50	-1.75	QP	Vertical
4	284.977	69.85	12.94	42.11	2.34	43.02	46.00	-2.98	QP	Vertical
5	389.355	63.98	15.29	41.92	2.65	40.00	46.00	-6.00	QP	Vertical
6	549.019	58.04	18.28	41.68	3.04	37.68	46.00	-8.32	QP	Vertical



Item	Freq.	Read Level	Antenna Factor	Preamp Factor	Cable Loss	Result Level	Limit Line	Over Limit	Detector	Polarization
(Mark)	(MHz)	(dBµV)	(dB/m)	(dB)	(dB)	(dBµV/m)	(dBµV/m)	(dB)		
1	69.845	67.16	11.73	42.26	1.17	37.80	40.00	-2.20	QP	Horizontal
2	149.486	69.44	12.88	42.23	1.71	41.80	43.50	-1.70	QP	Horizontal
3	211.526	72.48	9.76	42.16	2.05	42.13	43.50	-1.37	QP	Horizontal
4	285.978	71.22	12.96	42.11	2.35	44.42	46.00	-1.58	QP	Horizontal
5	305.680	68.14	13.46	42.09	2.40	41.91	46.00	-4.09	QP	Horizontal
6	499.425	60.13	17.70	41.69	2.90	39.04	46.00	-6.96	QP	Horizontal

8 Test Setup Photographs

Refer to the < Test Setup photos-FCC>.

9 EUT Constructional Details

Refer to the < External Photos > & < Internal Photos >.

- End of the Report -