



## TEST REPORT

**Application No.:** SHEM2011009541CR  
**FCC ID:** 2ADTD-K3G411RE  
**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  
Ctiy, 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:** tripod turnstile

**Model No.:** DS-K3G411-R, DS-K3G411-R/E, DS-K3G411-REUHK, DS-K3G411-RECKV, DS-K3G411-REUVS, DS-K3G411-REKVO, DS-K3G412-REHUN

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 15.209

**Date of Receipt:** 2020-11-02

**Date of Test:** 2020-11-02 to 2020-12-17

**Date of Issue:** 2020-12-21

<b>Test Result:</b>	<b>Pass*</b>
---------------------	--------------

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

Parlam Zhan

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.



Unless otherwise agreed in writing, this document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <http://www.sgs.com/en/Terms-and-Conditions/Terms-e-Documents.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 30 days only.

Attention: To check the authenticity of testing / inspection report & certificate, please contact us at telephone: (86-755) 8307 1443, or email: [CN.Doccheck@sgs.com](mailto:CN.Doccheck@sgs.com)

SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd.  
Testing Center EMC Laboratory

NO. 588 West Jindu Road, Songjiang District, Shanghai, China 201612  
中国·上海·松江区金都西路588号 邮编: 201612

t(86-21) 61915666 f(86-21) 61915678 www.sgsgroup.com.cn  
t(86-21) 61915666 f(86-21) 61915678 e [sgs.china@sgs.com](mailto:sgs.china@sgs.com)



Revision Record			
Version	Description	Date	Remark
00	Original	2020-12-21	/

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 15.209	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 15.209	ANSI C63.10 (2013) Section 6.2	47 CFR Part 15, Subpart C 15.207	Pass
20dB Bandwidth	47 CFR Part 15, Subpart C 15.209	ANSI C63.10 (2013) Section 6.9	47 CFR Part 15, Subpart C 15.215	Pass
Radiated Emissions (9kHz-30MHz)	47 CFR Part 15, Subpart C 15.209	ANSI C63.10 (2013) Section 6.4&6.5	47 CFR Part 15, Subpart C 15.209	Pass
Radiated Emissions (30MHz-1GHz)	47 CFR Part 15, Subpart C 15.209	ANSI C63.10 (2013) Section 6.4&6.5	47 CFR Part 15, Subpart C 15.209	Pass

**Note: Declaration of EUT Family Grouping:**

There are series models mentioned in this report and they are the similar in electrical and electronic characters. Only the model DS-K3G411-R/E was tested since their differences are model number and appearance.



### 3 Contents

	Page
1 COVER PAGE .....	1
2 TEST SUMMARY .....	3
3 CONTENTS .....	4
4 GENERAL INFORMATION .....	5
4.1 DETAILS OF E.U.T. ....	5
4.2 DESCRIPTION OF SUPPORT UNITS .....	5
4.3 MEASUREMENT UNCERTAINTY .....	5
4.4 TEST LOCATION .....	6
4.5 TEST FACILITY .....	6
4.6 DEVIATION FROM STANDARDS .....	6
4.7 ABNORMALITIES FROM STANDARD CONDITIONS .....	6
5 EQUIPMENT LIST .....	7
6 RADIO SPECTRUM TECHNICAL REQUIREMENT .....	8
6.1 ANTENNA REQUIREMENT .....	8
7 RADIO SPECTRUM MATTER TEST RESULTS .....	9
7.1 CONDUCTED EMISSIONS AT AC POWER LINE (150kHz-30MHz) .....	9
7.2 20dB BANDWIDTH .....	15
7.3 RADIATED EMISSIONS (9kHz-30MHz) .....	18
7.4 RADIATED EMISSIONS (30MHz-1GHz) .....	22
8 TEST SETUP PHOTOGRAPHS .....	28
9 EUT CONSTRUCTIONAL DETAILS .....	28



## 4 General Information

### 4.1 Details of E.U.T.

Power supply:	AC100V~240V 50/60Hz
Test voltage:	AC 120V/60Hz
Antenna Type	Loop Antenna
Modulation Type	ASK
Number of Channels	1
Operation Frequency	125kHz

### 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:

Compliance Certification Services (Kunshan) Inc.

No.10 Weiye Rd, Innovation park, Eco&Tec, Development Zone, Kunshan City, Jiangsu, China.

Tel: +86 512 5735 5888 Fax: +86 512 5737 0818

No tests were sub-contracted.

#### **4.5 Test Facility**

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

- **CNAS (No. CNAS L4354)**

CNAS has accredited Compliance Certification Services (Kunshan) Inc. 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.

- **A2LA (Certificate No. 2541.01)**

Compliance Certification Services (Kunshan) Inc. is accredited by the American Association for Laboratory Accreditation (A2LA). Certificate No. 2541.01.

- **FCC (Designation Number: CN1172)**

Compliance Certification Services Inc. has been recognized as an accredited testing laboratory. Designation Number: CN1172.

- **ISED (CAB identifier: CN0072)**

Compliance Certification Services (Kunshan) Inc. has been recognized by Innovation, Science and Economic Development Canada (ISED) as an accredited testing laboratory.

CAB Identifier: CN0072.

- **VCCI (Member No.: 1938)**

The 3m and 10m Semi-anechoic chamber and Shielded Room of Compliance Certification Services (Kunshan) Inc. has been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: R-1600, C-1707, T-1499, G-10216 respectively.

#### **4.6 Deviation from Standards**

None

#### **4.7 Abnormalities from Standard Conditions**

None



## 5 Equipment List

Item	Equipment	Manufacturer	Model	Serial Number	Cal Date	Cal. Due Date
<b>Conducted Emission at Mains Terminals (150kHz-30MHz)</b>						
1	EMI Test Receive	R&S	ESCI	100781	02/24/2020	02/23/2021
2	LISN	R&S	ENV216	101604	10/19/2020	10/18/2021
3	LISN	Schwarzbeck	NNLK 8129	8129-143	10/19/2020	10/18/2021
4	Pulse Limiter	R&S	ESH3-Z2	100609	02/24/2020	02/23/2021
5	CE test Cable	Thermax	/	14	02/24/2020	02/23/2021
<b>RF Conducted Test</b>						
1	Spectrum Analyzer	Agilent	E4446A	MY44020154	04/22/2020	04/21/2021
2	Spectrum Analyzer	Keysight	N9020A	MY55370209	10/19/2020	10/18/2021
3	Signal Generator	Agilent	E8257C	MY43321570	10/10/2020	10/18/2021
4	Vector Signal Generator	R&S	SMU 200A	102744	09/25/2020	09/24/2021
5	Universal Radio Communication Tester	R&S	CMU200	109525	10/19/2020	10/18/2021
6	Universal Radio Communication Tester	R&S	CMW500	159275	10/19/2020	10/18/2021
7	Power Meter	Anritsu	ML2495A	1445010	04/21/2020	04/20/2021
8	Switcher	CCSRF	FY562	KS301219	10/19/2020	10/18/2021
9	AC Power Source	EXTECH	6605	1570106	N.C.R	N.C.R
10	DC Power Supply	Agilent	E3632A	MY50340053	N.C.R	N.C.R
11	6dB Attenuator	Mini-Circuits	NAT-6-2W	15542-1	N.C.R	N.C.R
12	Power Divider	AISI	IOWOPE2068	PE2068	N.C.R	N.C.R
13	Filter	MICRO-TRONICS	BRM50701	5	N.C.R	N.C.R
14	Conducted test cable	/	RF01-RF04	/	04/21/2020	04/22/2021
15	Temp. / Humidity Chamber	TERCHY	MHK-120AK	X30109	04/21/2020	04/20/2021
<b>RF Radiated Test</b>						
1	Spectrum Analyzer	R&S	FSV40	101493	01/08/2020	01/07/2021
2	Signal Generator	Agilent	E8257C	MY43321570	10/19/2020	10/18/2021
3	Loop Antenna	COM-POWER	AL-130R	10160008	04/29/2019	04/28/2021
4	Bilog Antenna	TESEQ	CBL 6112D	35403	06/22/2019	06/21/2021
5	Bilog Antenna	SCHWARZBECK	VULB9160	9160-3342	04/29/2019	04/28/2021
6	Horn-antenna(1-18GHz)	Schwarzbeck	BBHA9120D	267	10/26/2020	10/25/2022
7	Horn-antenna(1-18GHz)	ETS-LINDGREN	3117	00143290	02/25/2019	02/24/2021
8	Horn Antenna(18-40GHz)	Schwarzbeck	BBHA9170	BBHA9170171	02/27/2018	02/26/2021
9	Pre-Amplifier(30MHz~18GHz)	CCSRF	AMP1277	1	12/19/2019	12/18/2020
10	Pre-Amplifier(0.1~26.5GHz)	EMCI	EMC012645	980060	04/21/2020	04/20/2021
11	Low Pass Filter	MICRO-TRONICS	VLFX-950	RV142900829	N.C.R	N.C.R
12	High Pass Filter	Mini-Circuits	VHF-1200	15542	N.C.R	N.C.R
13	Filter (5450MHz~5770 MHz)	MICRO-TRONICS	BRC50704-01	2	N.C.R	N.C.R
14	Filter (5690 MHz~5930 MHz)	MICRO-TRONICS	BRC50705-01	4	N.C.R	N.C.R
15	Filter (5150 MHz~5350 MHz)	MICRO-TRONICS	BRC50703-01	2	N.C.R	N.C.R
16	Filter (885 MHz~915 MHz)	MICRO-TRONICS	BRM14698	1	N.C.R	N.C.R
17	Filter (815 MHz~860 MHz)	MICRO-TRONICS	BRM14697	1	N.C.R	N.C.R
18	Filter (1745 MHz~1910 MHz)	MICRO-TRONICS	BRM14700	1	N.C.R	N.C.R
19	Filter (1922 MHz~1977 MHz)	MICRO-TRONICS	BRM50715	1	N.C.R	N.C.R
20	Filter (2550 MHz)	MICRO-TRONICS	HPM13362	5	N.C.R	N.C.R
21	Filter (1532 MHz~1845 MHz)	MICRO-TRONICS	BRM50713	1	N.C.R	N.C.R
22	Filter (2.4GHz)	MICRO-TRONICS	BRM50701	5	N.C.R	N.C.R
23	RE test cable	/	RE01-RE04	/	04/21/2020	04/22/2021
24	Spectrum Analyzer	Keysight	N9020A	MY53420174	09/25/2020	09/24/2021



## **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 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 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.

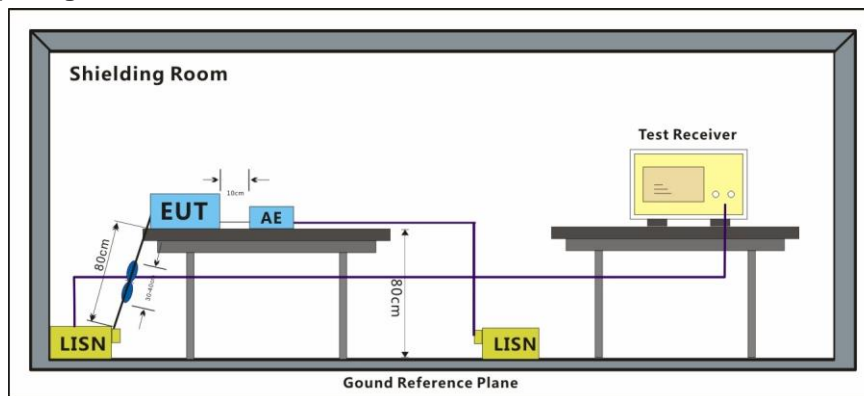
#### 7.1.1 E.U.T. Operation

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.

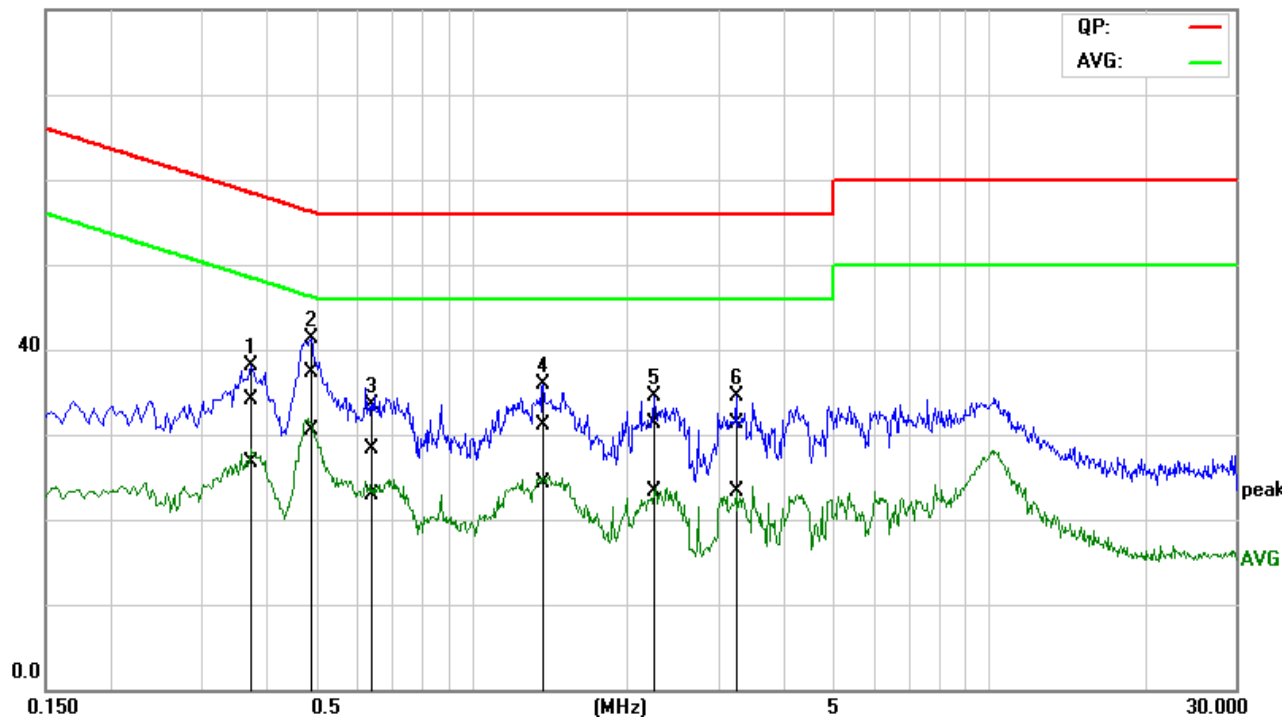
Remark: LISN=Read Level+ Cable Loss+ LISN Factor

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 125KHz module to test.



Mode:a; Line:Live Line

80.0 dBuV

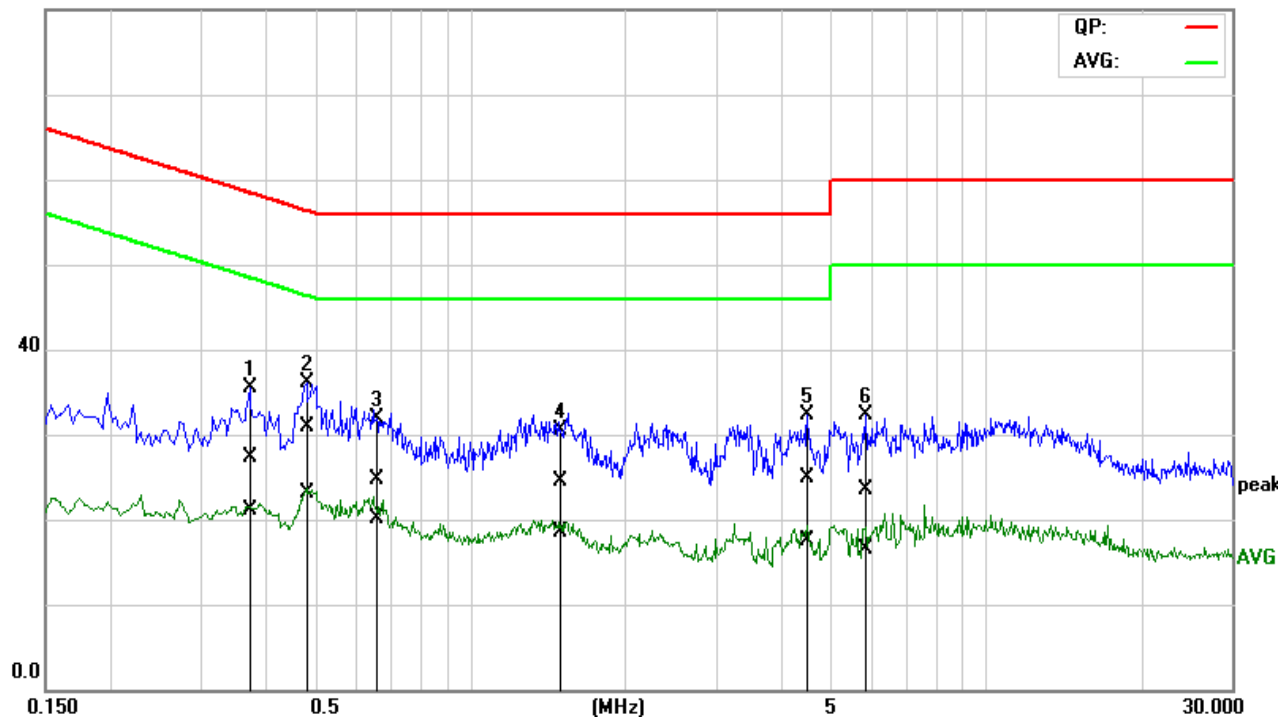


No.	Frequency	QuasiPeak reading	Average reading	Correction factor	QuasiPeak result	Average result	QuasiPeak limit	Average limit	QuasiPeak margin	Average margin	Remark
	(MHz)	(dBuV)	(dBuV)	(dB)	(dBuV)	(dBuV)	(dBuV)	(dBuV)	(dB)	(dB)	
1	0.3745	14.58	7.24	19.44	34.02	26.68	58.40	48.40	-24.38	-21.72	Pass
2*	0.4858	17.93	11.01	19.47	37.40	30.48	56.24	46.24	-18.84	-15.76	Pass
3	0.6357	8.89	3.41	19.47	28.36	22.88	56.00	46.00	-27.64	-23.12	Pass
4	1.3746	11.61	4.80	19.51	31.12	24.31	56.00	46.00	-24.88	-21.69	Pass
5	2.2488	11.70	3.77	19.55	31.25	23.32	56.00	46.00	-24.75	-22.68	Pass
6	3.2497	11.65	3.62	19.59	31.24	23.21	56.00	46.00	-24.76	-22.79	Pass



Mode:a; Line:Neutral Line

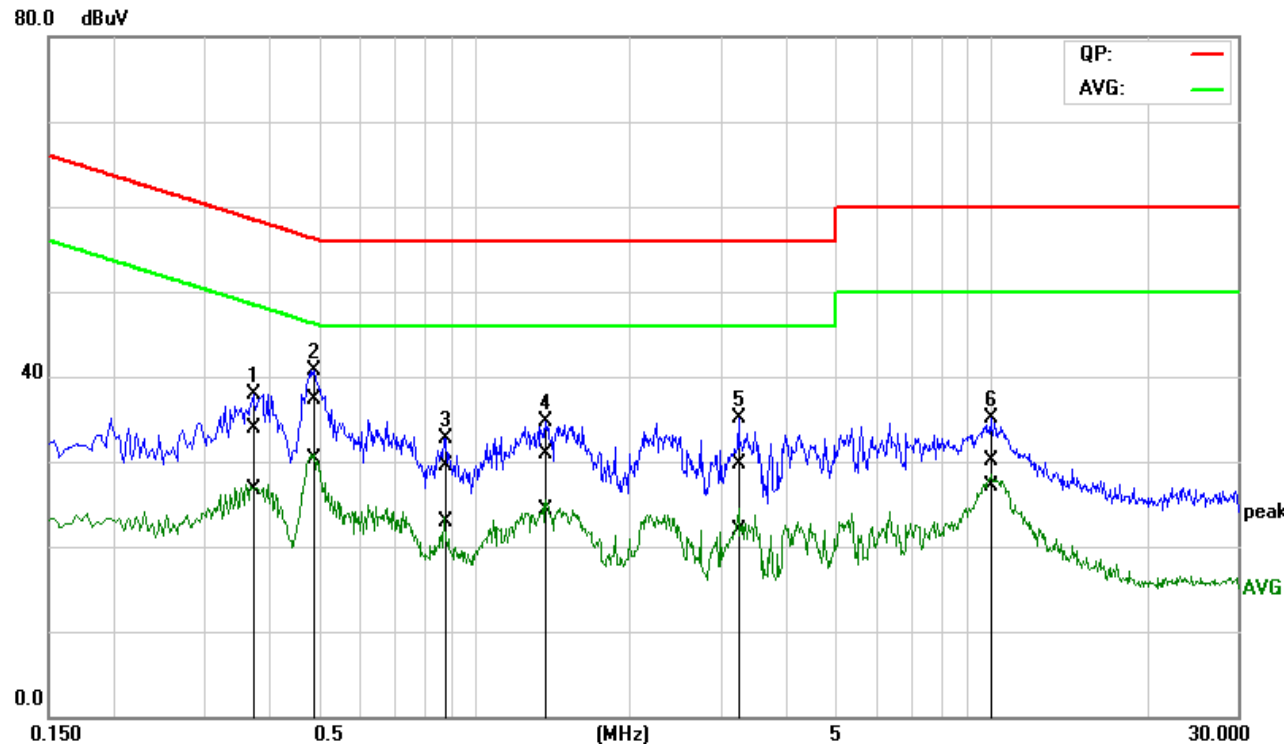
80.0 dBuV



No.	Frequency	QuasiPeak reading	Average reading	Correction factor	QuasiPeak result	Average result	QuasiPeak limit	Average limit	QuasiPeak margin	Average margin	Remark
	(MHz)	(dBuV)	(dBuV)	(dB)	(dBuV)	(dBuV)	(dBuV)	(dBuV)	(dB)	(dB)	
1	0.3735	7.87	1.61	19.42	27.29	21.03	58.42	48.42	-31.13	-27.39	Pass
2*	0.4829	11.55	3.74	19.45	31.00	23.19	56.29	46.29	-25.29	-23.10	Pass
3	0.6611	5.22	0.69	19.46	24.68	20.15	56.00	46.00	-31.32	-25.85	Pass
4	1.5033	4.93	-0.96	19.49	24.42	18.53	56.00	46.00	-31.58	-27.47	Pass
5	4.4969	5.29	-2.22	19.65	24.94	17.43	56.00	46.00	-31.06	-28.57	Pass
6	5.8474	3.87	-3.26	19.73	23.60	16.47	60.00	50.00	-36.40	-33.53	Pass



Mode:b; Line:Live Line

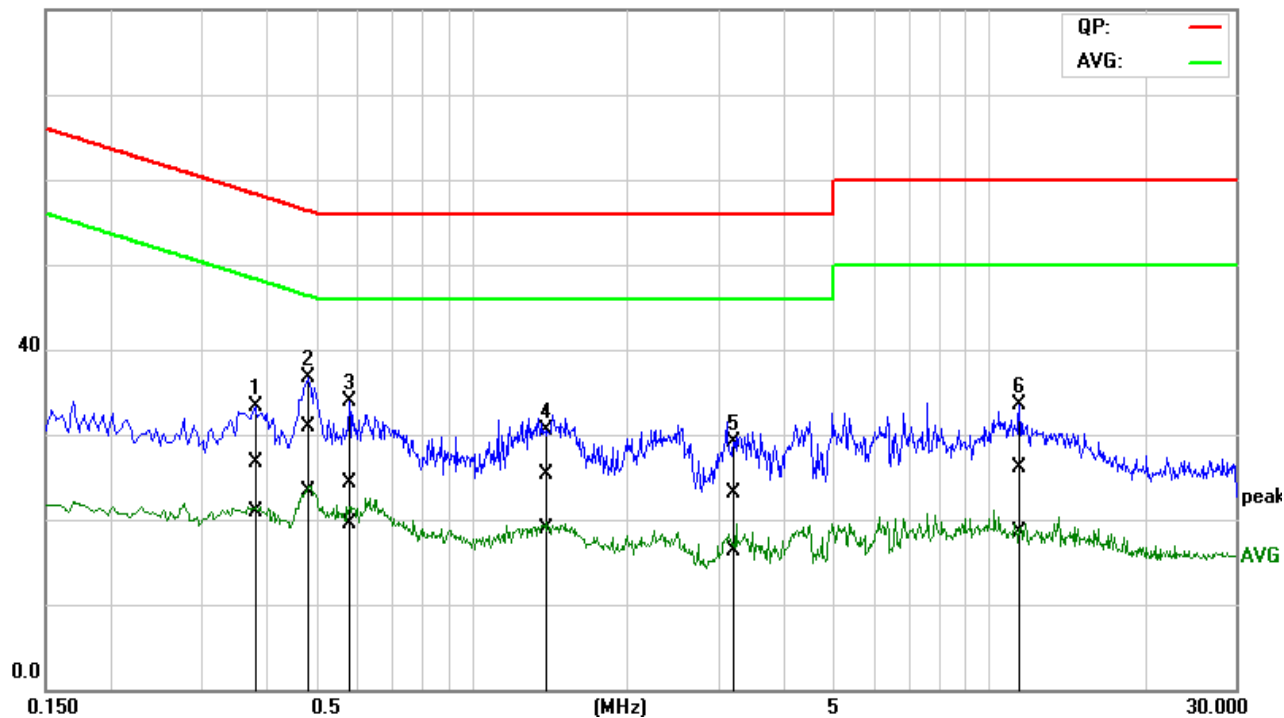


No.	Frequency	QuasiPeak reading	Average reading	Correction factor	QuasiPeak result	Average result	QuasiPeak limit	Average limit	QuasiPeak margin	Average margin	Remark
	(MHz)	(dBuV)	(dBuV)	(dB)	(dBuV)	(dBuV)	(dBuV)	(dBuV)	(dB)	(dB)	
1	0.3735	14.43	7.20	19.44	33.87	26.64	58.42	48.42	-24.55	-21.78	Pass
2*	0.4904	17.77	10.84	19.47	37.24	30.31	56.16	46.16	-18.92	-15.85	Pass
3	0.8768	9.96	3.45	19.48	29.44	22.93	56.00	46.00	-26.56	-23.07	Pass
4	1.3759	11.30	4.84	19.51	30.81	24.35	56.00	46.00	-25.19	-21.65	Pass
5	3.2468	10.16	2.34	19.59	29.75	21.93	56.00	46.00	-26.25	-24.07	Pass
6	9.9918	10.22	7.19	19.94	30.16	27.13	60.00	50.00	-29.84	-22.87	Pass



Mode:b; Line:Neutral Line

80.0 dBuV



No.	Frequency	QuasiPeak reading	Average reading	Correction factor	QuasiPeak result	Average result	QuasiPeak limit	Average limit	QuasiPeak margin	Average margin	Remark
	(MHz)	(dBuV)	(dBuV)	(dB)	(dBuV)	(dBuV)	(dBuV)	(dBuV)	(dB)	(dB)	
1	0.3843	7.36	1.41	19.42	26.78	20.83	58.18	48.19	-31.40	-27.36	Pass
2*	0.4870	11.50	3.83	19.45	30.95	23.28	56.22	46.22	-25.27	-22.94	Pass
3	0.5823	4.89	0.12	19.45	24.34	19.57	56.00	46.00	-31.66	-26.43	Pass
4	1.3984	5.76	-0.65	19.49	25.25	18.84	56.00	46.00	-30.75	-27.16	Pass
5	3.1872	3.62	-3.27	19.57	23.19	16.30	56.00	46.00	-32.81	-29.70	Pass
6	11.5034	6.13	-1.45	19.98	26.11	18.53	60.00	50.00	-33.89	-31.47	Pass

## 7.2 20dB Bandwidth

Test Requirement 47 CFR Part 15, Subpart C 15.215  
Test Method: ANSI C63.10 (2013) Section 6.9  
Limit: <200 kHz

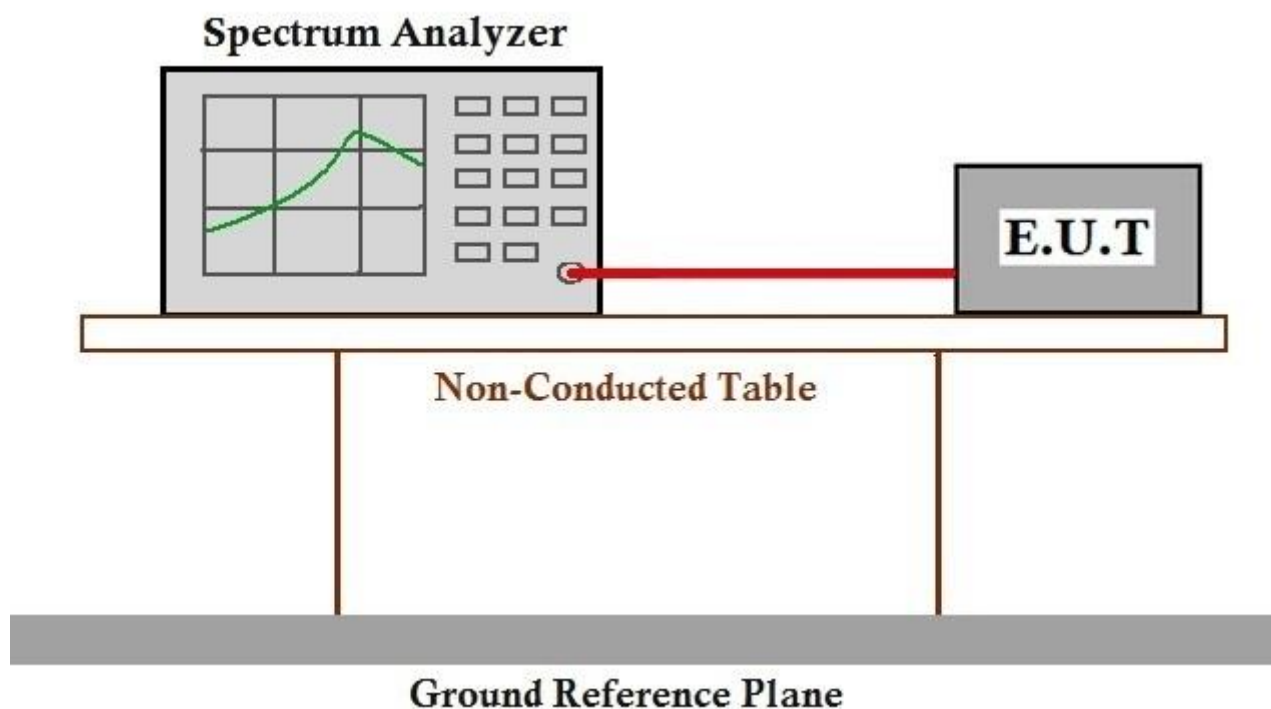
### 7.2.1 E.U.T. Operation

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

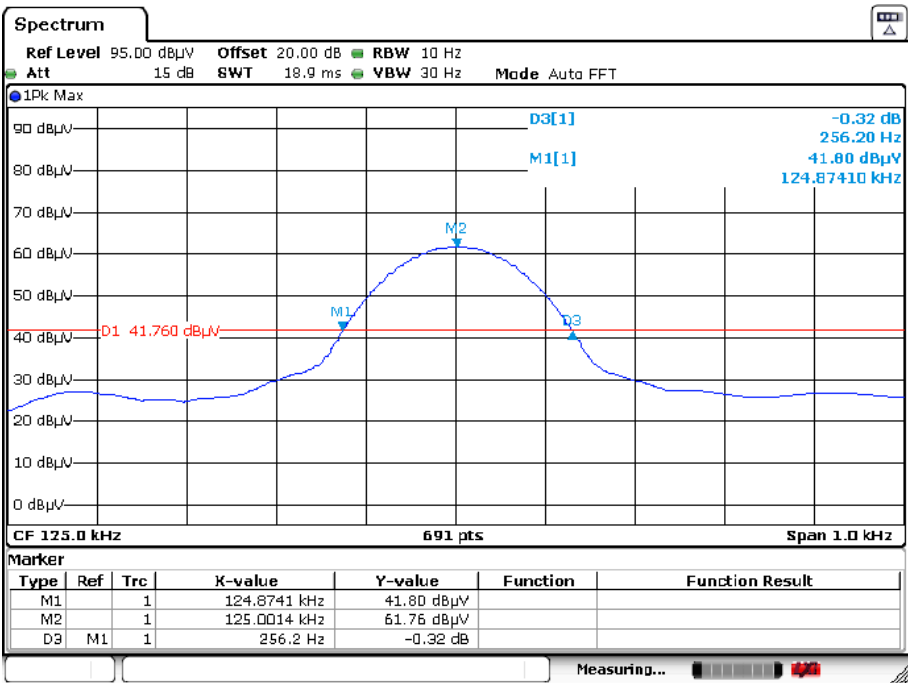


Mode:a

20dB bandwidth (Hz)	Result
256.20	Pass

Test plot as follows:

Module 1





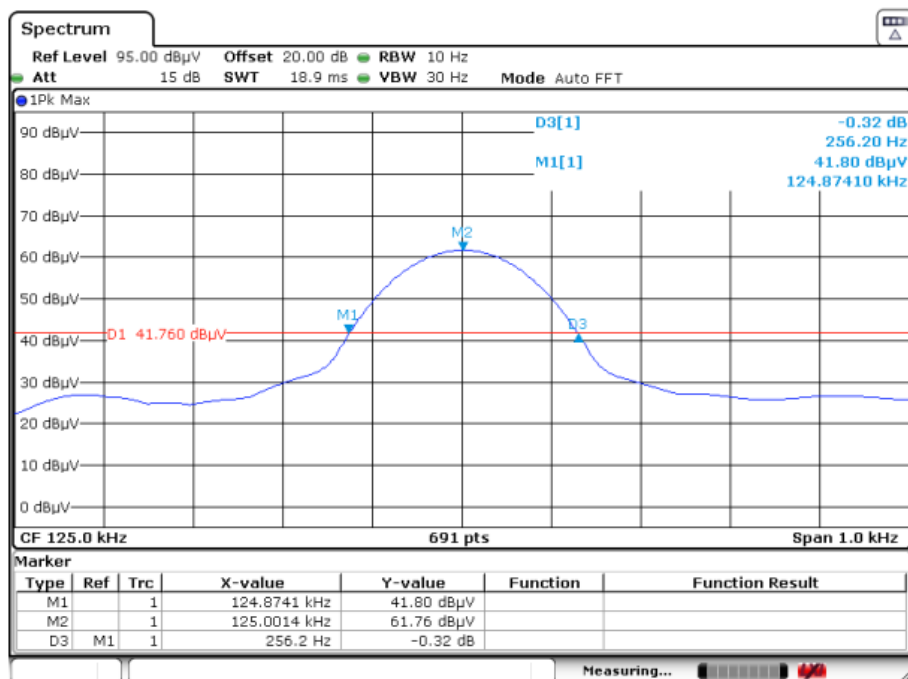


Mode:b

20dB bandwidth (Hz)	Result
256.20	Pass

Test plot as follows:

Module 2





### 7.3 Radiated Emissions (9kHz-30MHz)

Test Requirement 47 CFR Part 15, Subpart C 15.209

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

Measurement Distance: 3m

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  $40 \cdot \log(D_{\text{TEST}} / D_{\text{SPEC}})$  where  $D_{\text{TEST}}$  = Test Distance and  $D_{\text{SPEC}}$  = Specified Distance.

Field strength limit (dBuV/m)@test distance= Field strength limit (dBuV/m)@specified distance +Distance Extrapolation Factor

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

#### 7.3.1 E.U.T. Operation

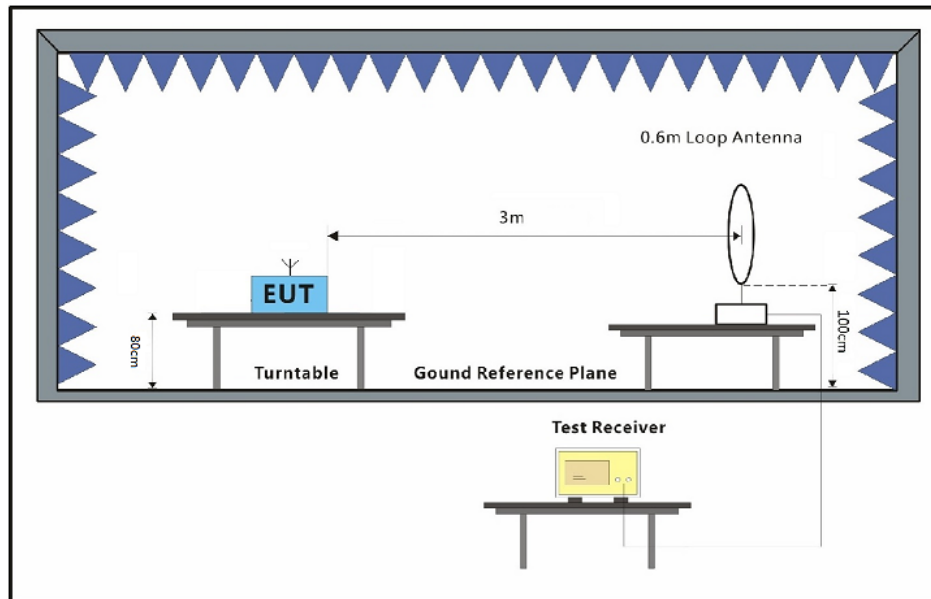
Operating Environment:

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

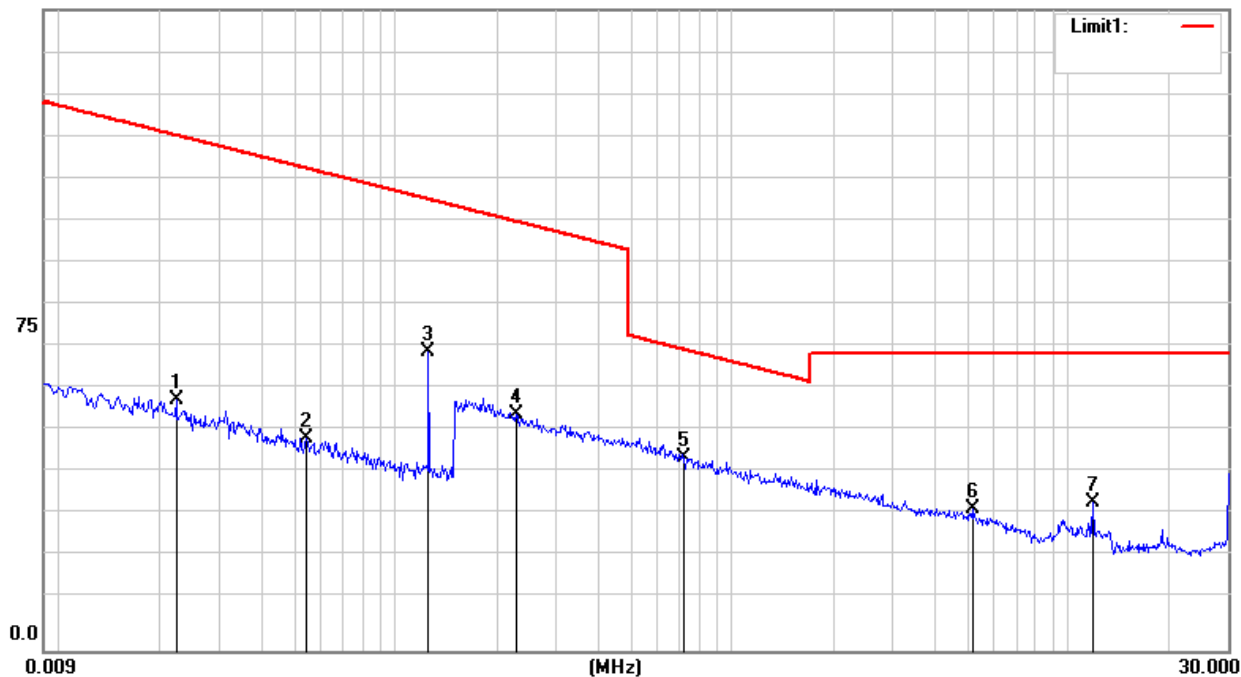
For testing performed with the loop antenna, the center of the loop was positioned 1 m above the ground and positioned with its plane vertical at the specified distance from the EUT. During testing the loop was rotated about its vertical axis for maximum response at each azimuth and also investigated 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 125KHz module to test.



Mode a

150.0 dBuV/m



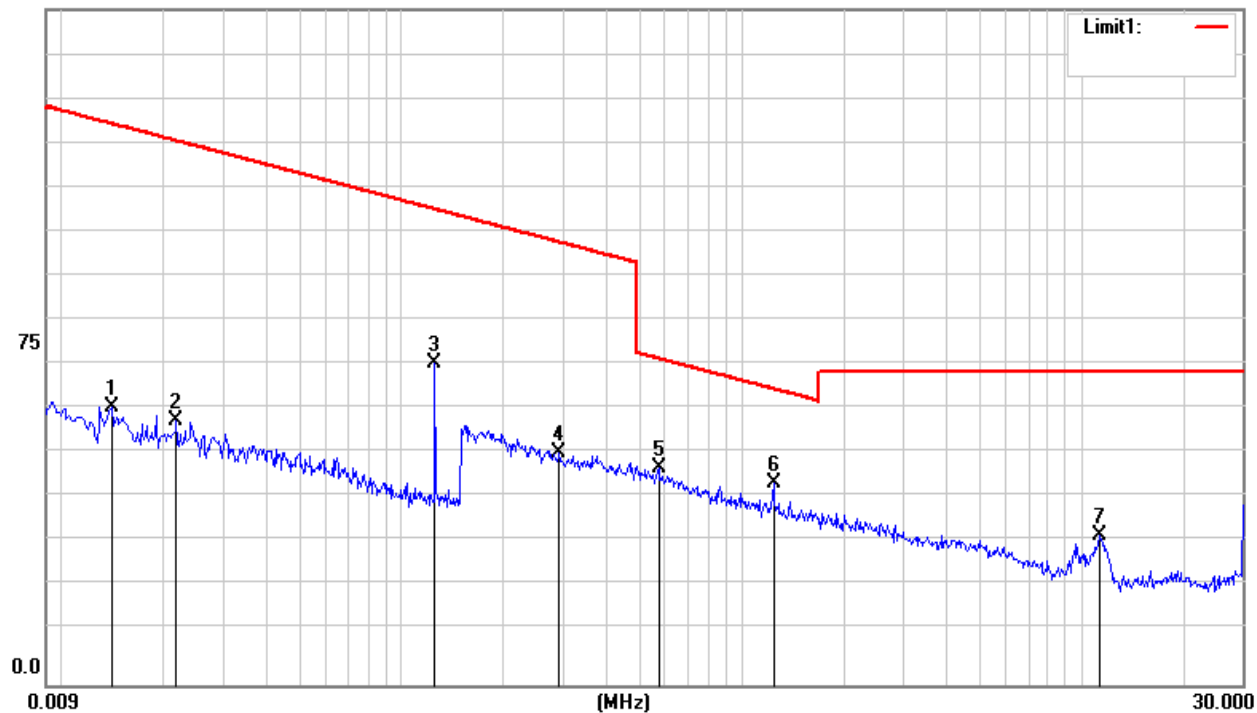
Item	Freq.	Read Level	Correct Factor	Result Level@3m	Result Level@SP EC	Limit Line@SPEC	Over Limit	Detector
(Mark)	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	0.0222	42.76	15.78	58.54	-21.46	40.66	-62.12	QP
2	0.0543	34.33	15.47	49.80	-30.20	32.90	-63.10	QP
3	0.1252	55.03	14.77	69.80	-10.20	25.65	-35.85	PK
4	0.2290	40.23	15.08	55.31	-24.69	20.40	-45.09	QP
5	0.7197	29.97	15.10	45.07	5.07	30.47	-25.40	QP
6	5.1935	17.95	15.25	33.20	-6.80	29.50	-36.30	QP
7	11.8070	19.23	15.47	34.70	-5.30	29.50	-34.80	QP

Correct Factor= Read Level+ Cable Loss+ Antenna Factor



Mode b

150.0 dBuV/m



Item	Freq.	Read Level	Correct Factor	Result Level@3m	Result Level@SP EC	Limit Line@SPE C	Over Limit	Detector
(Mark)	(MHz)	(dBμV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	0.014	45.84	15.88	61.72	-18.28	44.66	-62.94	QP
2	0.0217	42.79	15.84	58.63	-21.37	40.86	-62.23	QP
3	0.1252	56.3	15.23	71.53	-8.47	25.65	-34.12	PK
4	0.2908	36.39	15.08	51.47	-28.53	18.33	-46.86	QP
5	0.5701	33.06	15.09	48.15	8.15	32.49	-24.34	QP
6	1.242	29.86	15.1	44.96	4.96	25.74	-20.78	QP
7	11.317	17.72	15.31	33.03	-6.97	29.5	-36.47	QP

Correct Factor= Read Level+ Cable Loss+ Antenna Factor

## 7.4 Radiated Emissions (30MHz-1GHz)

Test Requirement 47 CFR Part 15, Subpart C 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

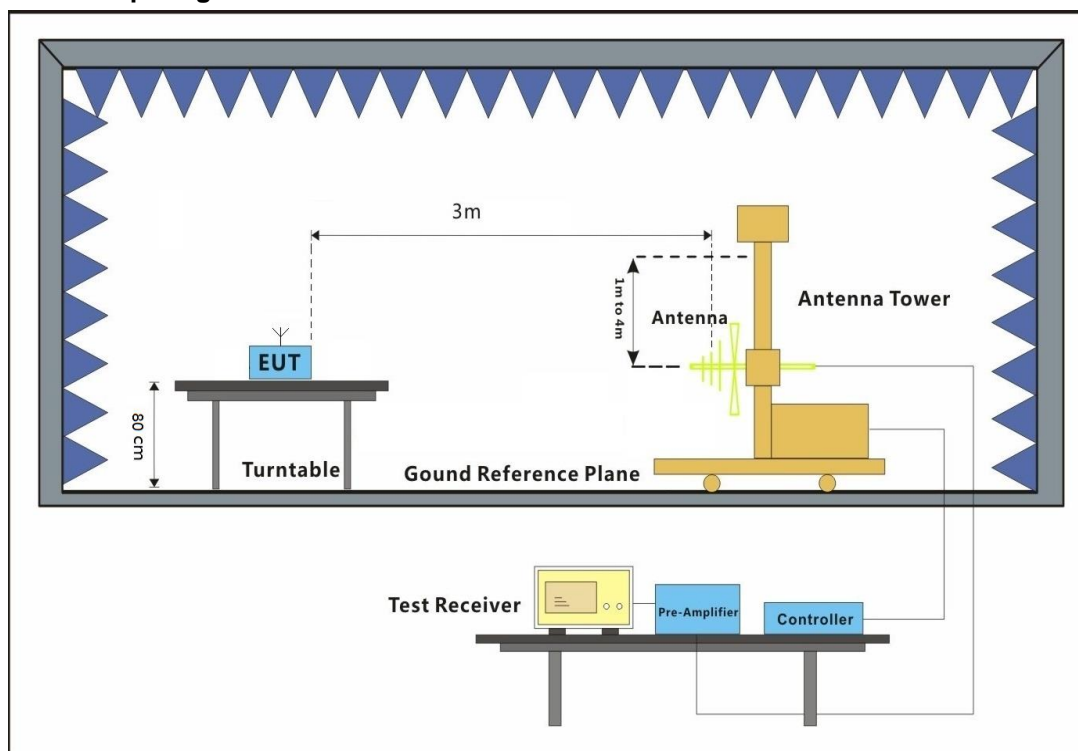
### 7.4.1 E.U.T. Operation

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**

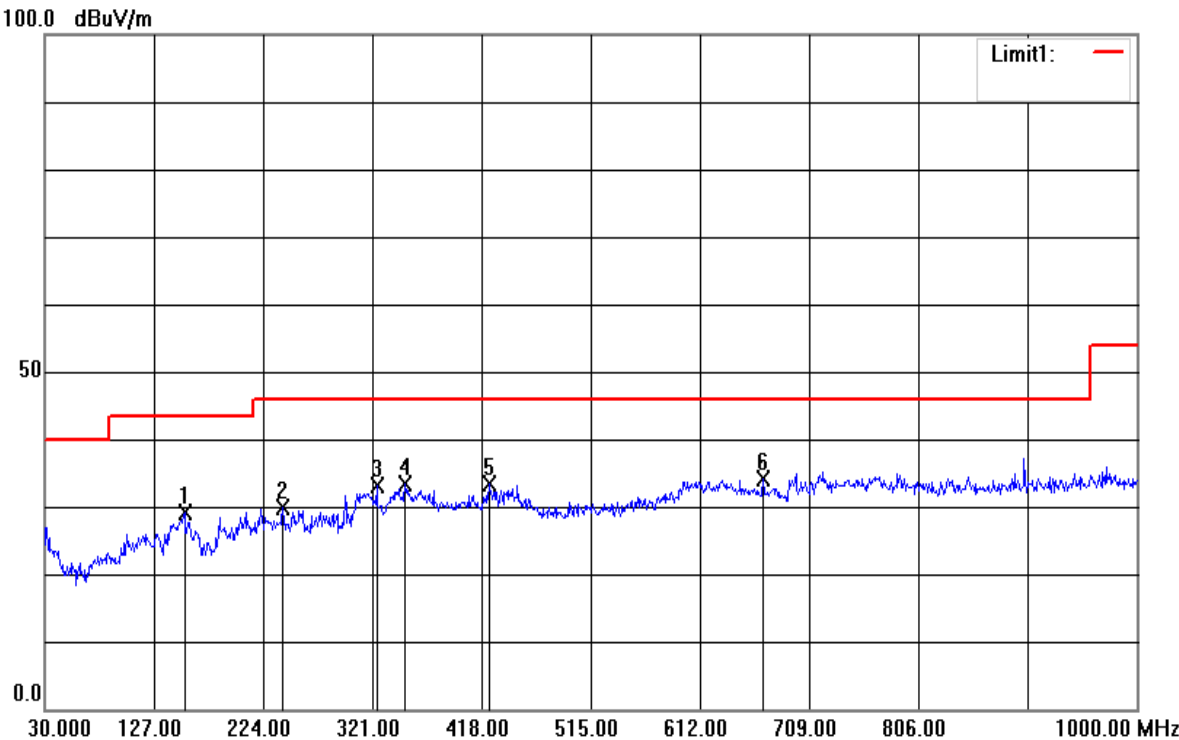
- a. The EUT was placed on the top of a rotating table 0.8 meters above the ground for below 1GHz at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which 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. Test the EUT in the lowest channel, the middle channel, the Highest channel
- h. The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, And found the X axis positioning which it is worse case.
- i. Repeat above procedures until all frequencies measured was complete.

Remark:  $\text{Level} = \text{Read Level} + \text{Cable Loss} + \text{Antenna Factor} - \text{Preamp Factor}$

This product is a floor product. It is placed on the ground during normal use. It is unable to place the antenna to 1.5m, so use the 125KHz module to test.



Mode:a Vertical:

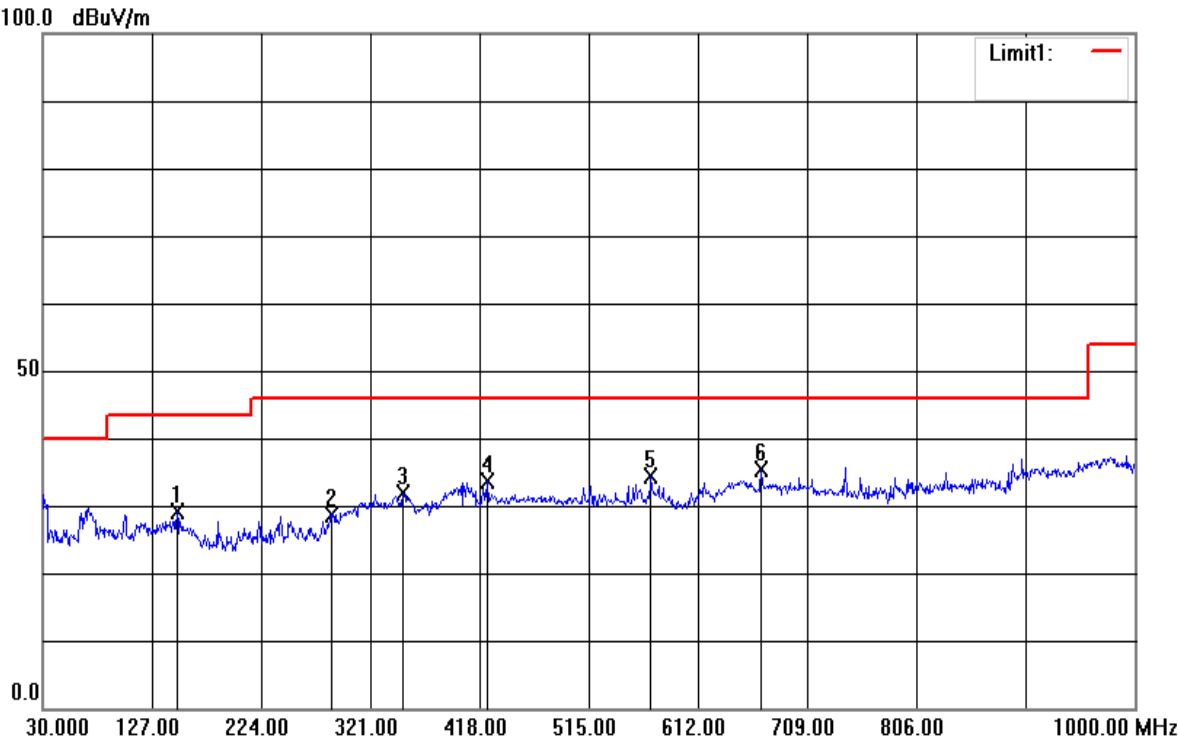


No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	154.1600	9.15	19.88	29.03	43.50	-14.47	QP
2	241.4600	11.01	18.91	29.92	46.00	-16.08	QP
3	324.8800	11.46	21.71	33.17	46.00	-12.83	QP
4	350.1000	10.50	22.78	33.28	46.00	-12.72	QP
5	424.7900	9.31	24.17	33.48	46.00	-12.52	QP
6	668.2600	6.76	27.35	34.11	46.00	-11.89	QP





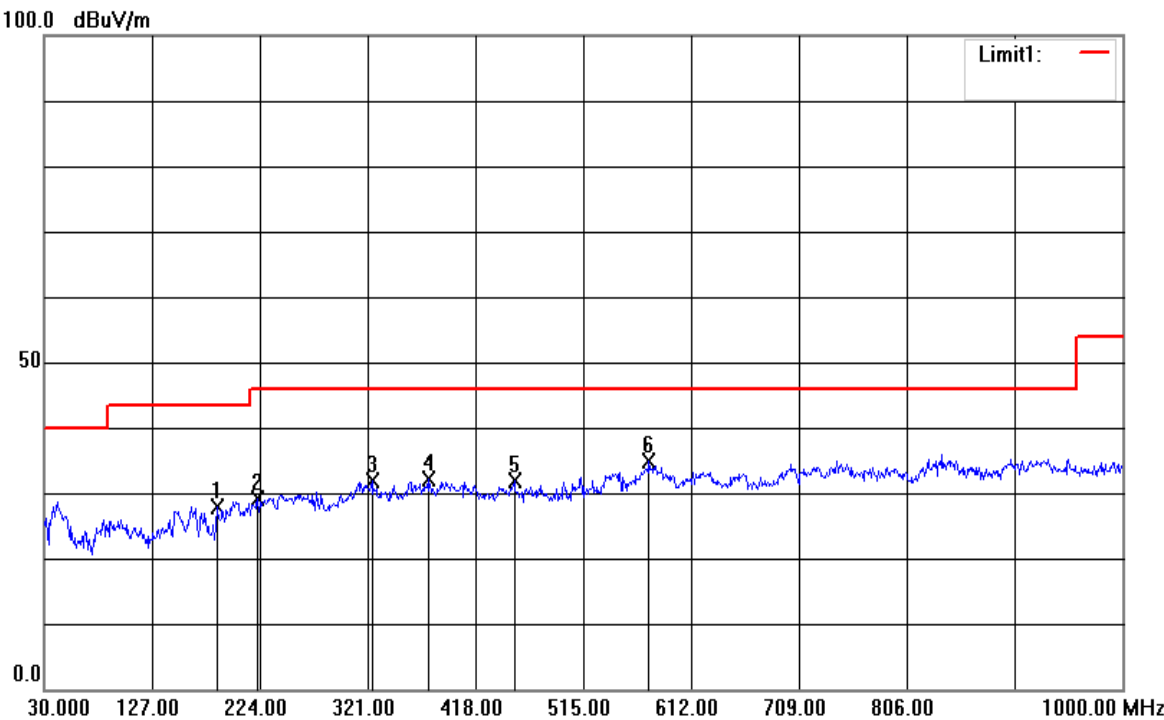
Horizontal:



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	149.3100	9.06	20.18	29.24	43.50	-14.26	QP
2	286.0800	8.43	20.32	28.75	46.00	-17.25	QP
3	350.1000	9.22	22.78	32.00	46.00	-14.00	QP
4	424.7900	9.42	24.17	33.59	46.00	-12.41	QP
5	570.2900	8.26	26.19	34.45	46.00	-11.55	QP
6	668.2600	8.01	27.35	35.36	46.00	-10.64	QP



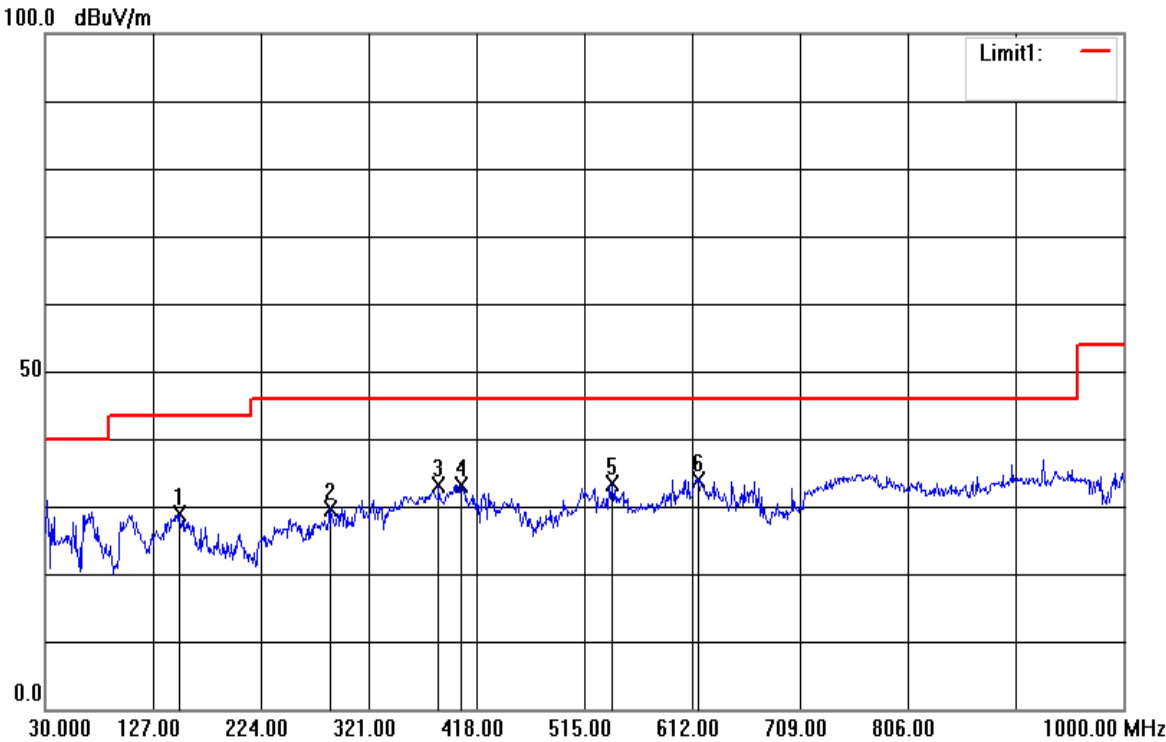
Mode:b Vertical:



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	185.2000	10.40	17.50	27.90	43.50	-15.60	QP
2	222.0600	11.47	17.72	29.19	46.00	-16.81	QP
3	324.8800	10.26	21.71	31.97	46.00	-14.03	QP
4	375.3200	8.84	23.31	32.15	46.00	-13.85	QP
5	452.9200	7.38	24.55	31.93	46.00	-14.07	QP
6	574.1700	8.69	26.24	34.93	46.00	-11.07	QP



Horizontal:



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	150.2800	8.63	20.18	28.81	43.50	-14.69	QP
2	286.0800	9.43	20.32	29.75	46.00	-16.25	QP
3	384.0500	9.58	23.50	33.08	46.00	-12.92	QP
4	404.4200	9.24	23.89	33.13	46.00	-12.87	QP
5	540.2200	7.70	25.77	33.47	46.00	-12.53	QP
6	617.8200	7.07	26.78	33.85	46.00	-12.15	QP



## **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 -**