

TEST REPORT

Application No.: SHEM2011009535CR
FCC ID: 2ADTD-K3G411RM
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: tripod turnstile
Model No.: DS-K3G411-R;DS-K3G411-R/M;DS-K3G411-RMUHK;DS-K3G411-RMCKV;DS-K3G411-RMUVS;DS-K3G411-RMKVO;DS-K3G411-RMHUN
 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: 2020-11-02
Date of Test: 2020-11-02 to 2020-12-17
Date of Issue: 2020-12-21

Test Result:	Pass*
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* 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.



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

Authorized for issue by:			
			
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		Micheal Niu / Project Engineer	
			
		<hr/>	
		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-K3G411-R/M was tested since their differences were the model number and appearance.

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4 General Information

4.1 Details of E.U.T.

Power supply:	100-240V~,50/60Hz,
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:

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
Conducted Emission at Mains Terminals (150kHz-30MHz)						
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
RF Conducted Test						
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
RF Radiated Test						
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 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.

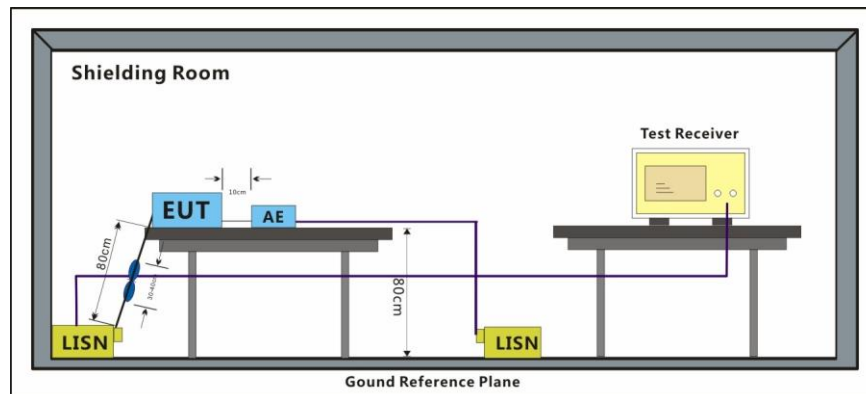
7.1.1 E.U.T. Operation

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

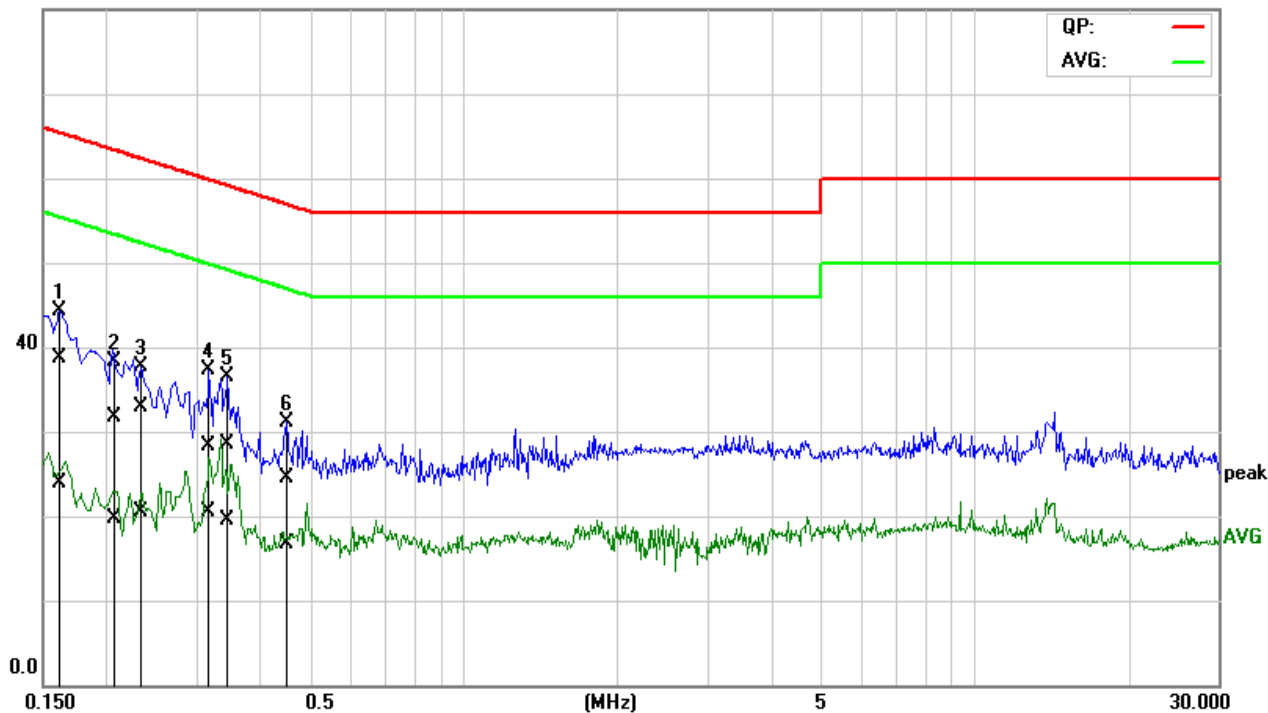
- 1) The mains terminal disturbance voltage test was conducted in a shielded room.
- 2) The EUT was connected to AC power source through a LISN 1 (Line Impedance Stabilization Network) which provides a 50ohm/50μH + 5ohm linear impedance. The power cables of all other units of the EUT were connected to 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

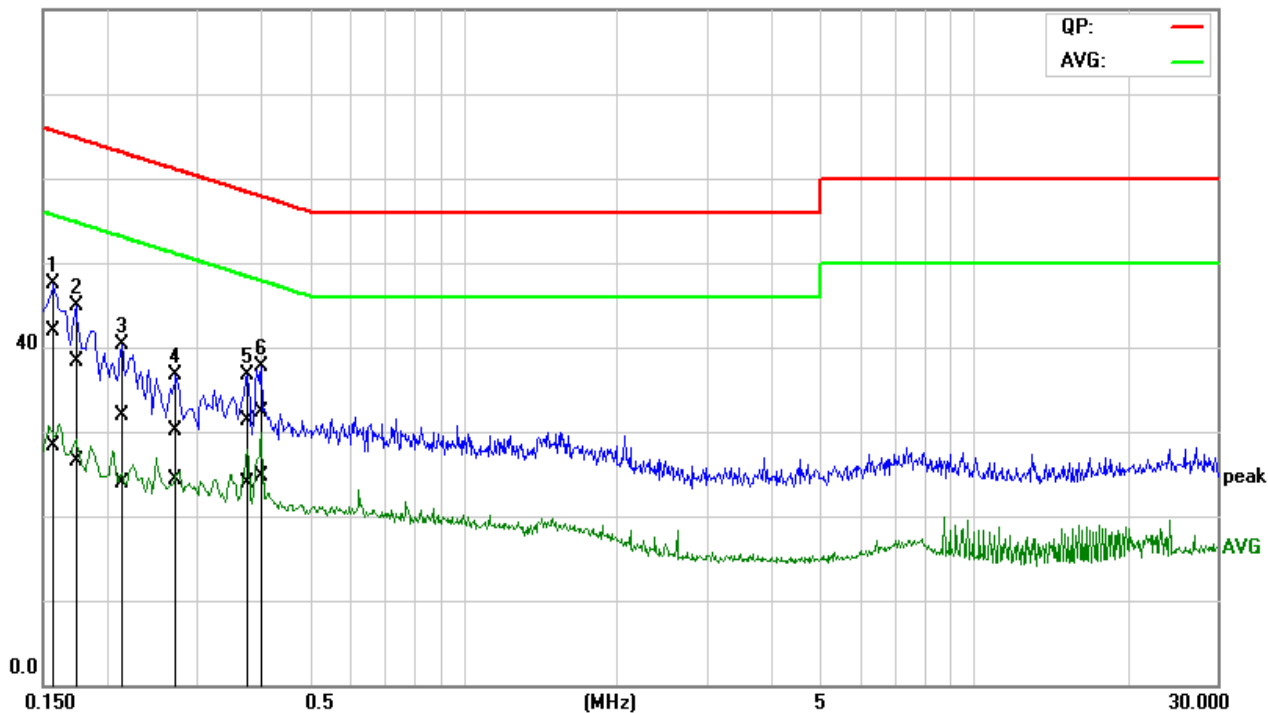
80.0 dBuV



No.	Frequency (MHz)	QuasiPeak reading (dBuV)	Average reading (dBuV)	Correction factor (dB)	QuasiPeak result (dBuV)	Average result (dBuV)	QuasiPeak limit (dBuV)	Average limit (dBuV)	QuasiPeak margin (dB)	Average margin (dB)	Remark
1*	0.1621	19.21	4.36	19.52	38.73	23.88	65.35	55.36	-26.62	-31.48	Pass
2	0.2087	12.19	0.24	19.51	31.70	19.75	63.25	53.26	-31.55	-33.51	Pass
3	0.2340	13.47	1.06	19.51	32.98	20.57	62.30	52.31	-29.32	-31.74	Pass
4	0.3171	8.72	0.97	19.52	28.24	20.49	59.78	49.78	-31.54	-29.29	Pass
5	0.3460	9.05	0.05	19.52	28.57	19.57	59.06	49.06	-30.49	-29.49	Pass
6	0.4492	5.05	-2.86	19.52	24.57	16.66	56.89	46.89	-32.32	-30.23	Pass

Mode:a; Line:Neutral Line

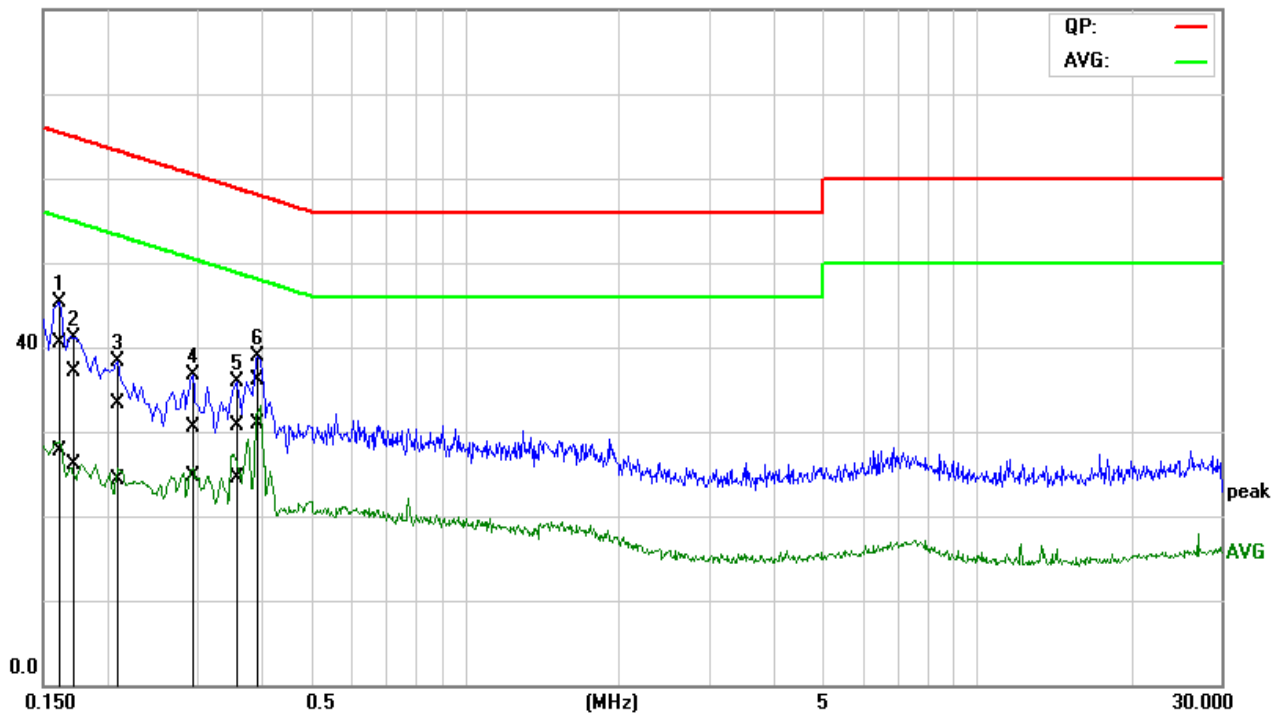
80.0 dBuV



No.	Frequency (MHz)	QuasiPeak reading (dBuV)	Average reading (dBuV)	Correction factor (dB)	QuasiPeak result (dBuV)	Average result (dBuV)	QuasiPeak limit (dBuV)	Average limit (dBuV)	QuasiPeak margin (dB)	Average margin (dB)	Remark
1	0.1590	22.39	8.78	19.45	41.84	28.23	65.51	55.52	-23.67	-27.29	Pass
2	0.1745	18.96	7.09	19.44	38.40	26.53	64.74	54.74	-26.34	-28.21	Pass
3	0.2142	12.45	4.52	19.42	31.87	23.94	63.04	53.04	-31.17	-29.10	Pass
4	0.2754	10.76	4.85	19.39	30.15	24.24	60.95	50.95	-30.80	-26.71	Pass
5	0.3803	11.86	4.43	19.42	31.28	23.85	58.27	48.27	-26.99	-24.42	Pass
6*	0.4014	12.85	5.30	19.43	32.28	24.73	57.82	47.82	-25.54	-23.09	Pass

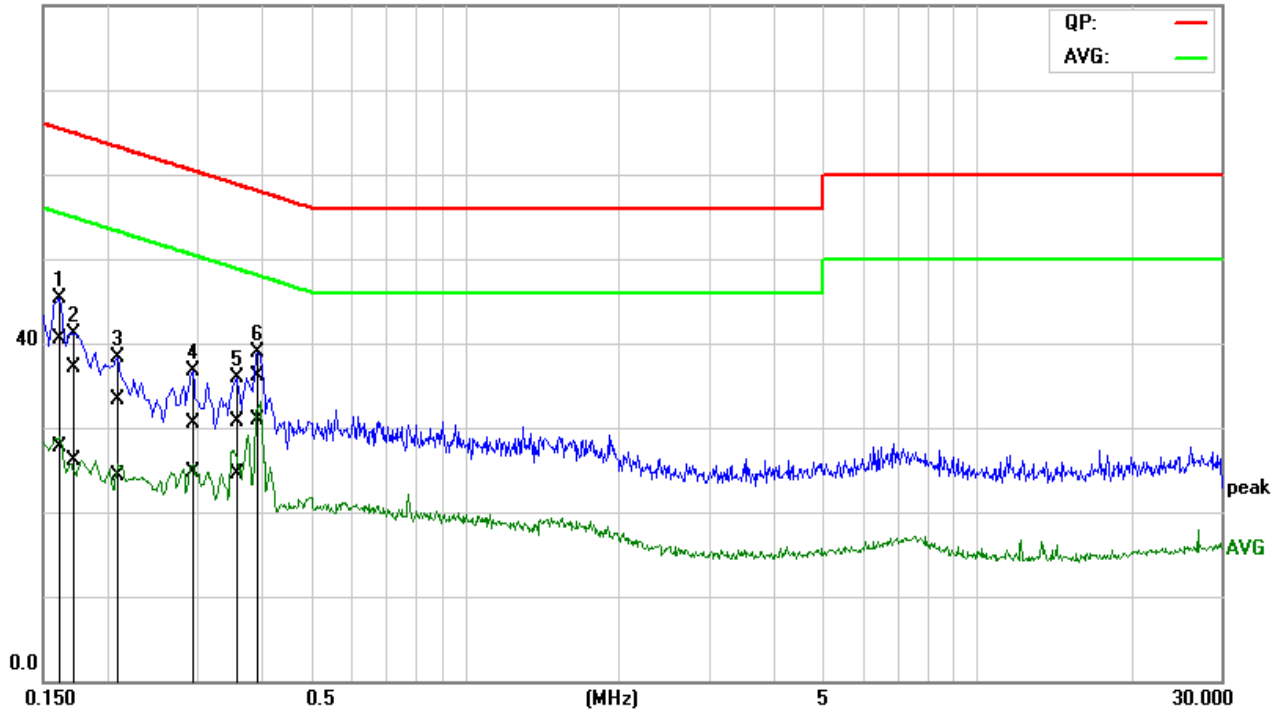
Mode b; Line:Live Line

80.0 dBuV



No.	Frequency (MHz)	QuasiPeak reading (dBuV)	Average reading (dBuV)	Correction factor (dB)	QuasiPeak result (dBuV)	Average result (dBuV)	QuasiPeak limit (dBuV)	Average limit (dBuV)	QuasiPeak margin (dB)	Average margin (dB)	Remark
1	0.1513	21.59	6.39	19.50	41.09	25.89	65.92	55.93	-24.83	-30.04	Pass
2	0.1684	18.63	4.69	19.50	38.13	24.19	65.03	55.04	-26.90	-30.85	Pass
3	0.1923	14.45	3.10	19.49	33.94	22.59	63.93	53.94	-29.99	-31.35	Pass
4	0.2100	16.28	0.98	19.49	35.77	20.47	63.20	53.21	-27.43	-32.74	Pass
5	0.2427	12.79	2.65	19.49	32.28	22.14	62.00	52.00	-29.72	-29.86	Pass
6*	0.3407	13.35	6.30	19.50	32.85	25.80	59.18	49.19	-26.33	-23.39	Pass

Mode:b; Line:Neutral Line
80.0 dBuV



No.	Frequency (MHz)	QuasiPeak reading (dBuV)	Average reading (dBuV)	Correction factor (dB)	QuasiPeak result (dBuV)	Average result (dBuV)	QuasiPeak limit (dBuV)	Average limit (dBuV)	QuasiPeak margin (dB)	Average margin (dB)	Remark
1	0.1612	21.05	8.28	19.40	40.45	27.68	65.40	55.40	-24.95	-27.72	Pass
2	0.1734	17.70	6.74	19.40	37.10	26.14	64.79	54.80	-27.69	-28.66	Pass
3	0.2078	14.00	4.85	19.39	33.39	24.24	63.29	53.29	-29.90	-29.05	Pass
4	0.2960	11.06	5.27	19.38	30.44	24.65	60.35	50.35	-29.91	-25.70	Pass
5	0.3590	11.36	5.05	19.38	30.74	24.43	58.75	48.75	-28.01	-24.32	Pass
6*	0.3936	16.66	11.57	19.38	36.04	30.95	57.99	47.99	-21.95	-17.04	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: N/A

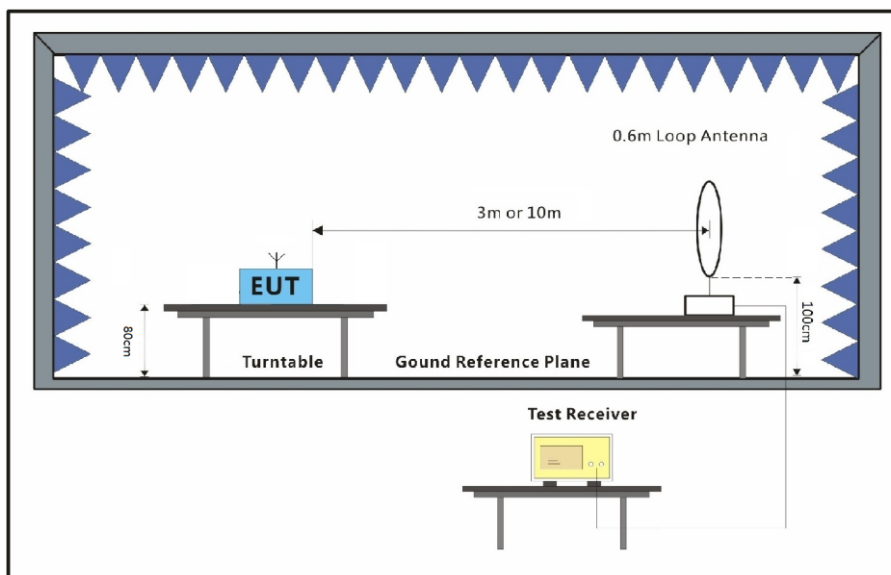
7.2.1 E.U.T. Operation

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

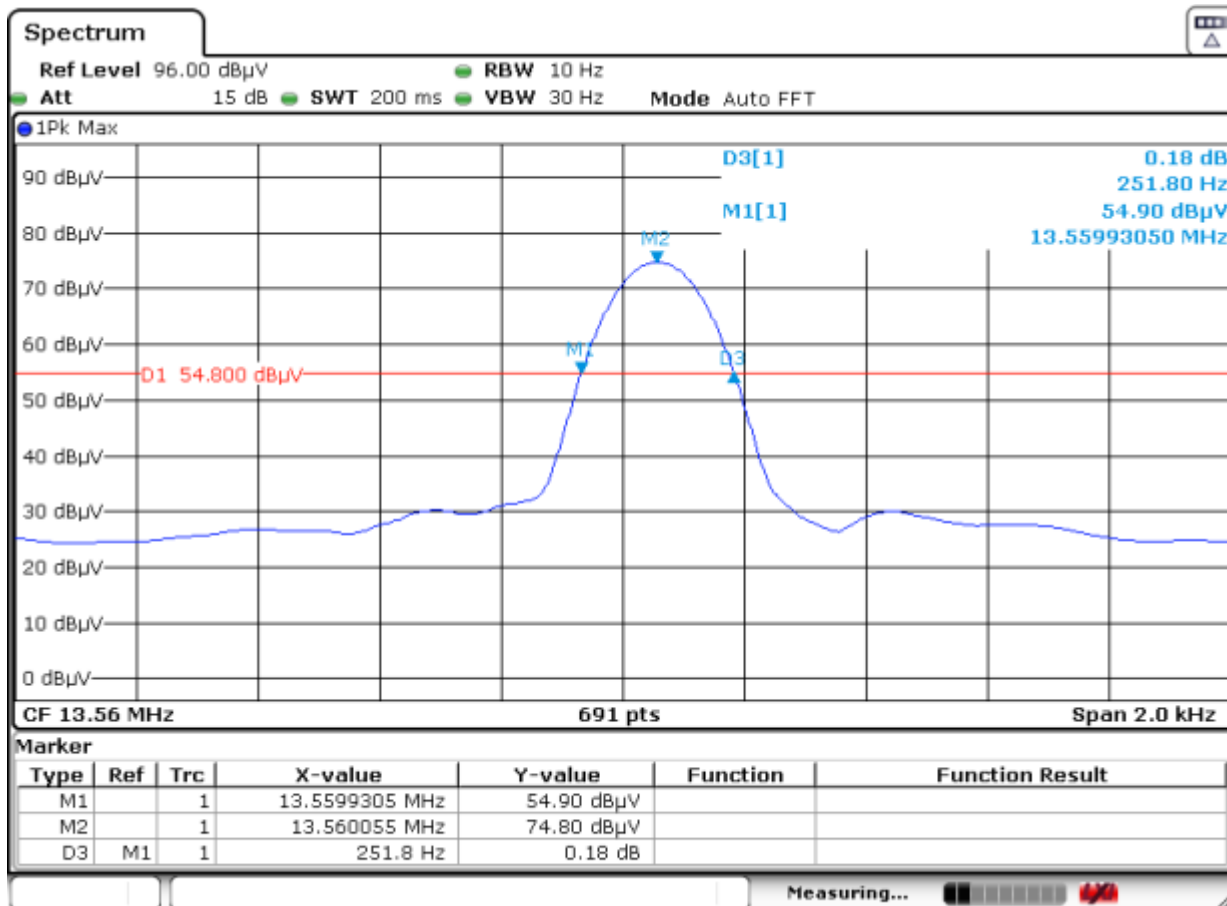


7.2.3 Measurement Procedure and Data

Mode a:

20dB bandwidth (kHz)	F _L (MHz)	F _H (MHz)	Limit(MHz)	Result
0.2518	13.5599305	13.5601823	13.110 – 14.010	Pass

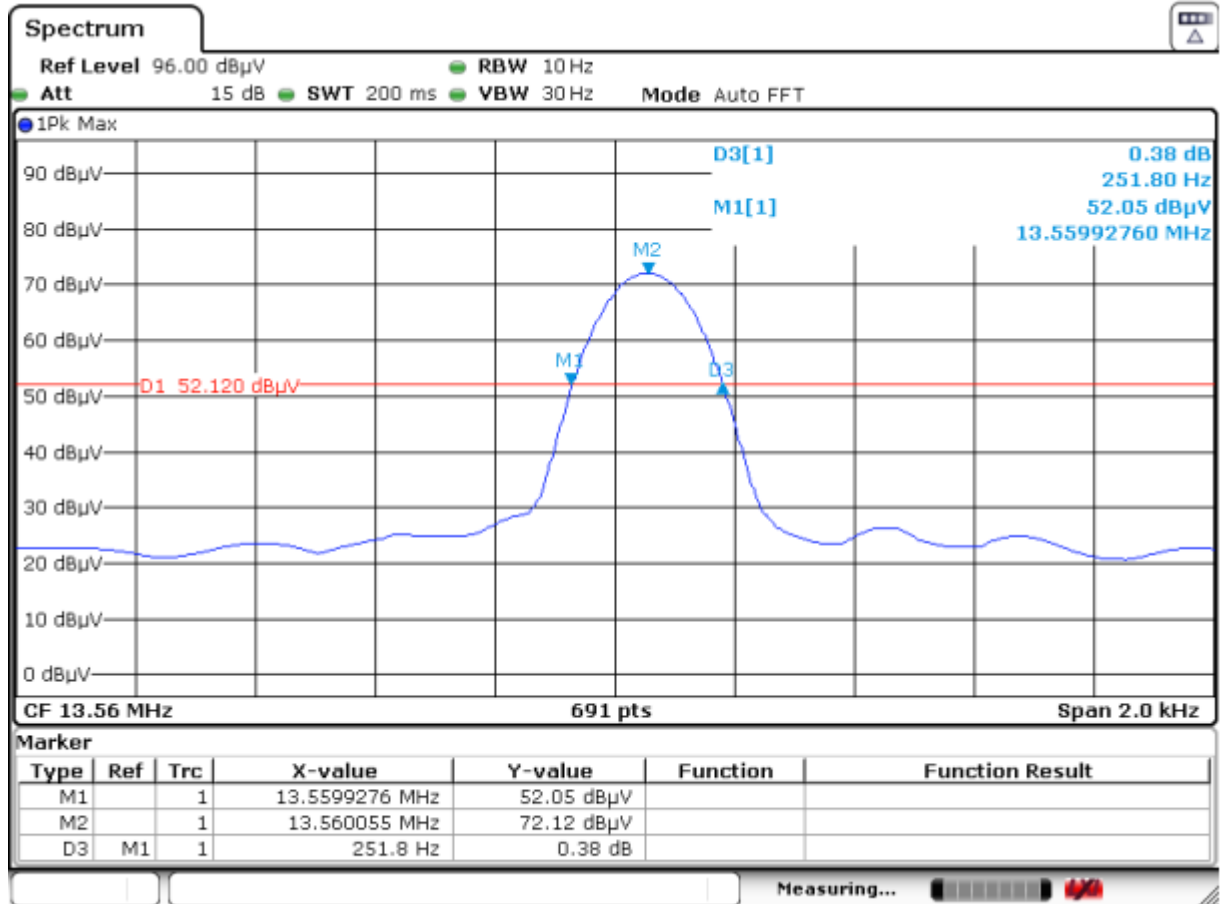
Test plot as follows:



Mode b

20dB bandwidth (kHz)	F _L (MHz)	F _H (MHz)	Limit(MHz)	Result
0.2518	13.5599296	13.5601814	13.110 – 14.010	Pass

Test plot as follows:



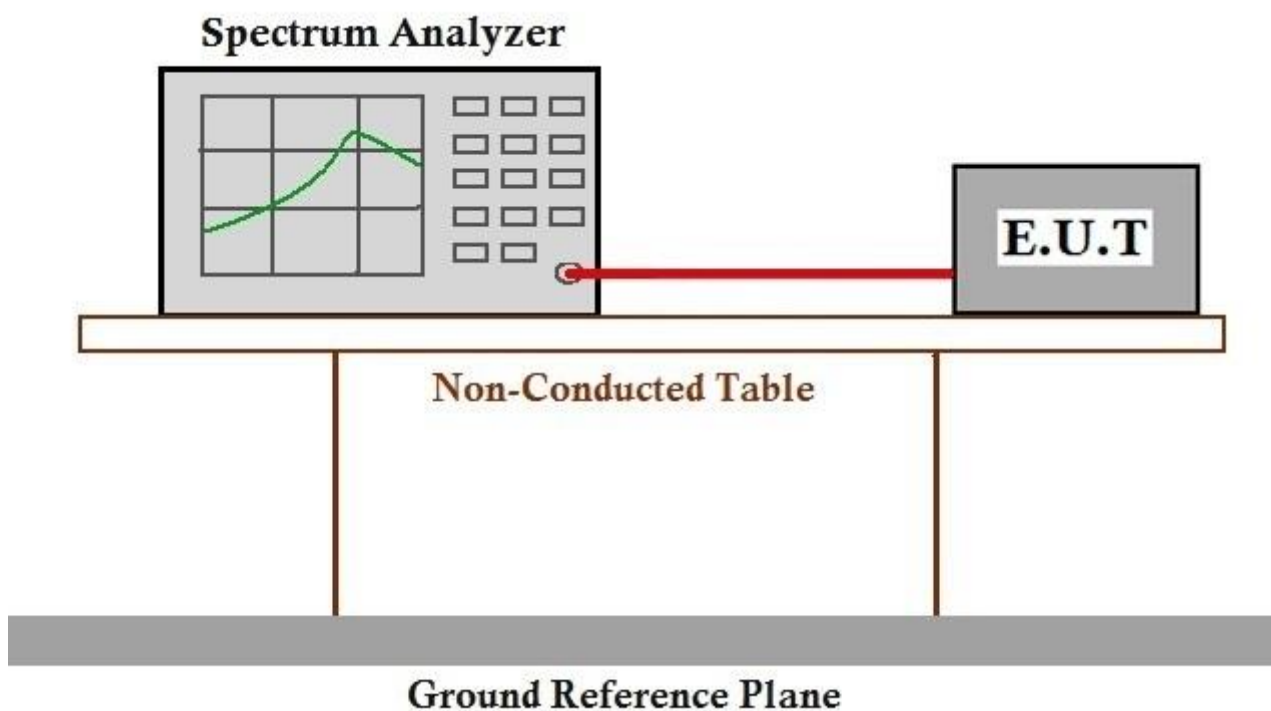
7.3 Frequency tolerance

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 (°C)	Volt (V AC)				
T _{nom} (-20)	V _{nom} (120)	13.56006	0.06	±0.01% (1.3560kHz)	Pass
T _{nom} (-10)	V _{nom} (120)	13.56005	0.05		Pass
T _{nom} (0)	V _{nom} (120)	13.56006	0.06		Pass
T _{nom} (10)	V _{nom} (120)	13.56006	0.06		Pass
T _{nom} (20)	V _{nom} (120)	13.56005	0.05		Pass
T _{nom} (30)	V _{nom} (120)	13.56006	0.06		Pass
T _{nom} (40)	V _{nom} (120)	13.56006	0.06		Pass
T _{nom} (50)	V _{nom} (120)	13.56006	0.06		Pass
T _{nom} (20)	V _{min} (102)	13.56005	0.05		Pass
	V _{max} (138)	13.56006	0.06		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 (°C)	Volt (V AC)				
T _{nom} (-20)	V _{nom} (120)	13.56006	0.06	±0.01% (1.3560kHz)	Pass
T _{nom} (-10)	V _{nom} (120)	13.56005	0.06		Pass
T _{nom} (0)	V _{nom} (120)	13.56006	0.06		Pass
T _{nom} (10)	V _{nom} (120)	13.56006	0.05		Pass
T _{nom} (20)	V _{nom} (120)	13.56005	0.06		Pass
T _{nom} (30)	V _{nom} (120)	13.56006	0.06		Pass
T _{nom} (40)	V _{nom} (120)	13.56006	0.06		Pass
T _{nom} (50)	V _{nom} (120)	13.56006	0.06		Pass
T _{nom} (20)	V _{min} (102)	13.56005	0.06		Pass
	V _{max} (138)	13.56006	0.07		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 $40 \cdot \log(D_{TEST} / D_{SPEC})$ where D_{TEST} = Test Distance and D_{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.

7.4.1 E.U.T. Operation

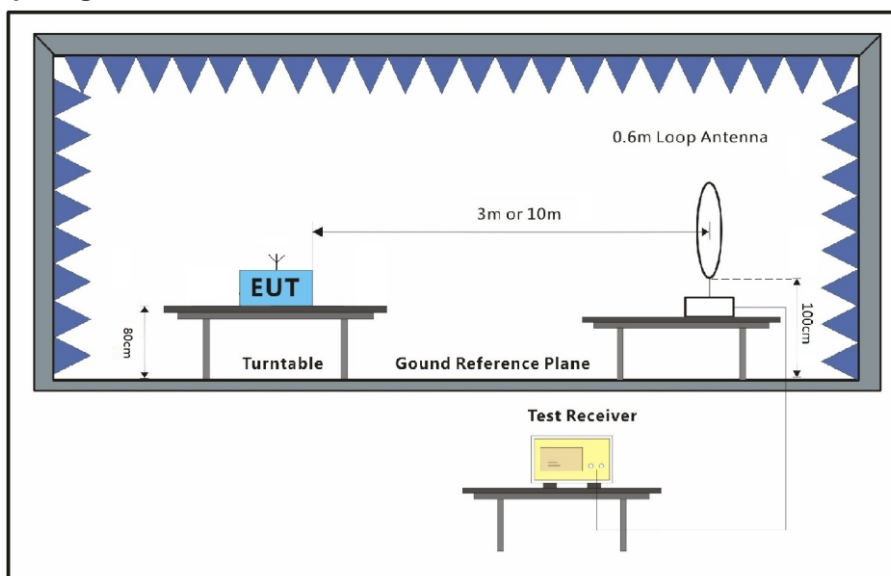
Operating Environment:

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

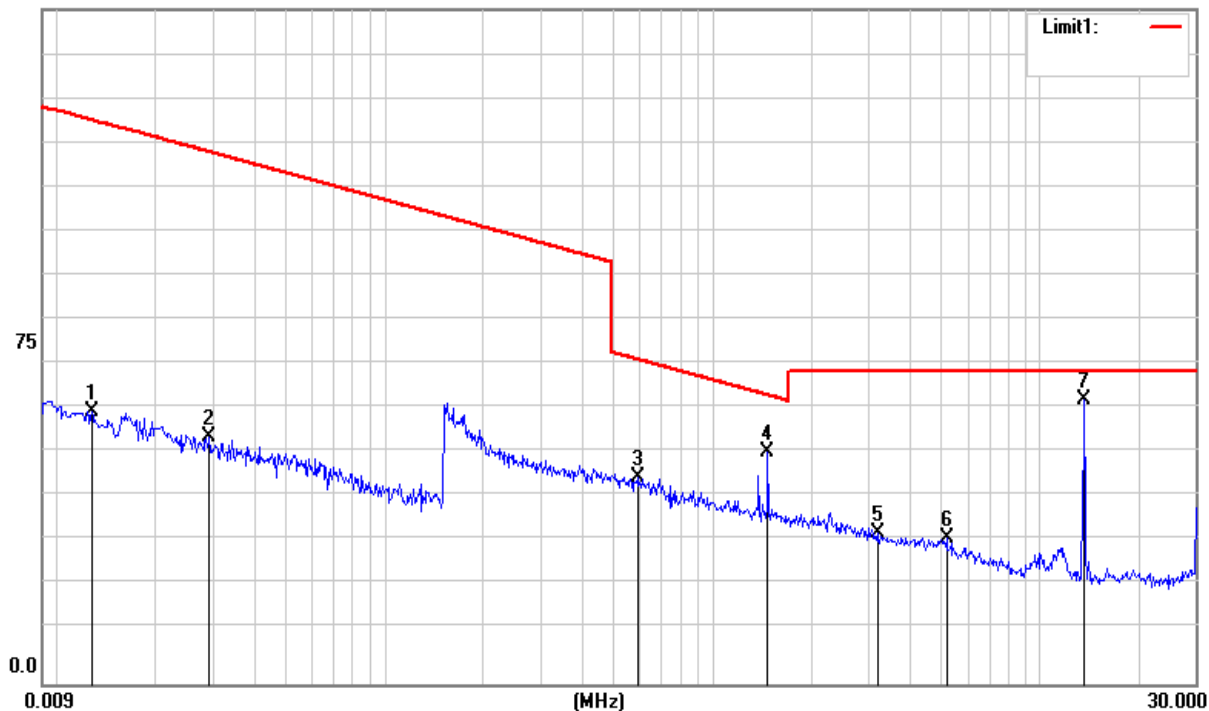
For testing performed with the loop antenna, the center of the loop was positioned 1 m above the ground and positioned with its plane vertical at the specified distance from the EUT. During testing the loop was rotated about its vertical axis for maximum response at each azimuth and also investigated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

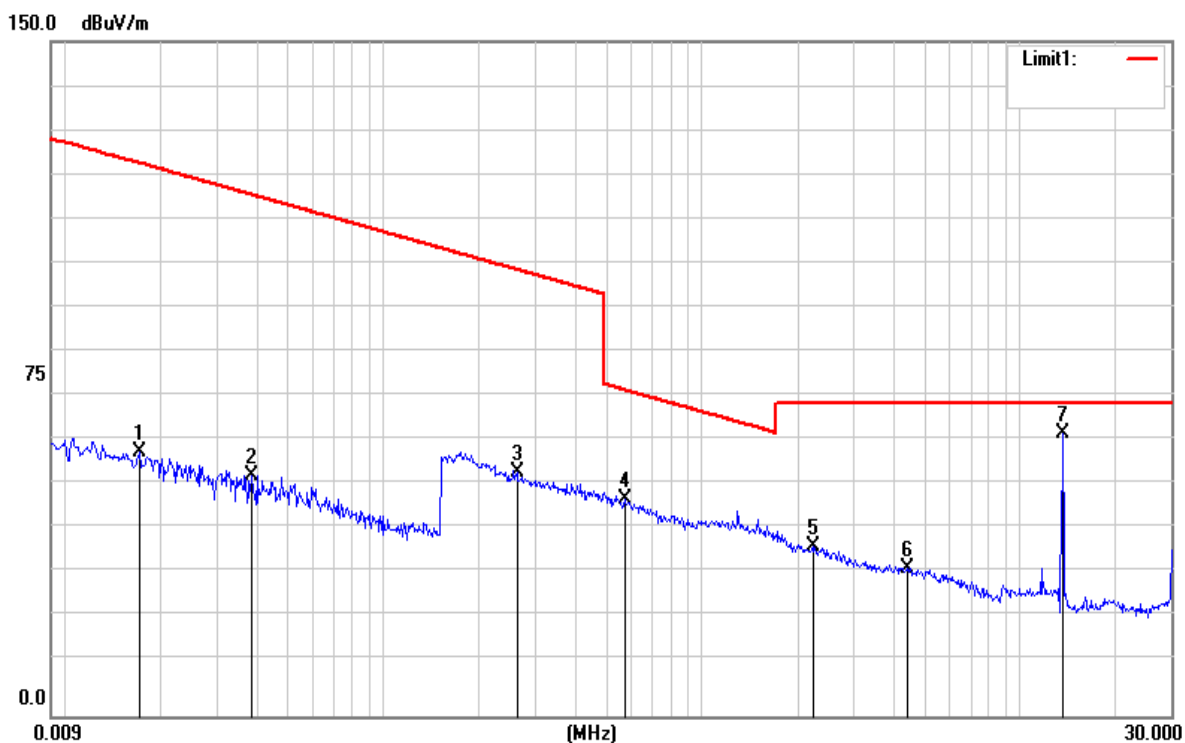
150.0 dBuV/m



Item	Freq.	Read Level	Antenna Factor	Result Level@3m	Result Level@SP EC	Limit Line@SPE C	Over Limit	Detector
(Mark)	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	0.0128	44.81	15.89	60.7	-19.30	45.44	-64.74	QP
2	0.0292	39.24	15.79	55.03	-24.97	38.28	-63.25	QP
3	0.5885	30.7	15.09	45.79	5.79	32.21	-26.42	QP
4	1.4796	36.44	15.11	51.55	11.55	24.23	-12.68	QP
5	3.1730	18.38	15.14	33.52	-6.48	29.50	-35.98	QP
6	5.1935	17.20	15.18	32.38	-7.62	29.50	-37.12	QP
7	13.6227	47.91	15.36	63.34	23.34	29.50	-6.16	PK

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

Mode b



Item	Freq.	Read Level	Antenna Factor	Result Level@3m	Result Level@SPEC	Limit Line@SPEC	Over Limit	Detector
(Mark)	(MHz)	(dB μ V)	(dB/m)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	0.0171	42.81	15.86	58.67	-21.33	42.93	-64.26	QP
2	0.0383	37.55	15.74	53.29	-26.71	35.93	-62.64	QP
3	0.2615	39.24	15.08	54.32	-25.68	19.25	-44.93	QP
4	0.5701	33.06	15.09	48.15	8.15	32.49	-24.34	QP
5	2.2366	22.56	15.12	37.68	-2.32	29.5	-31.82	QP
6	4.4305	17.72	15.17	32.89	-7.11	29.5	-36.61	QP
7	13.6227	47.53	15.36	62.89	22.89	29.5	-6.61	PK

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

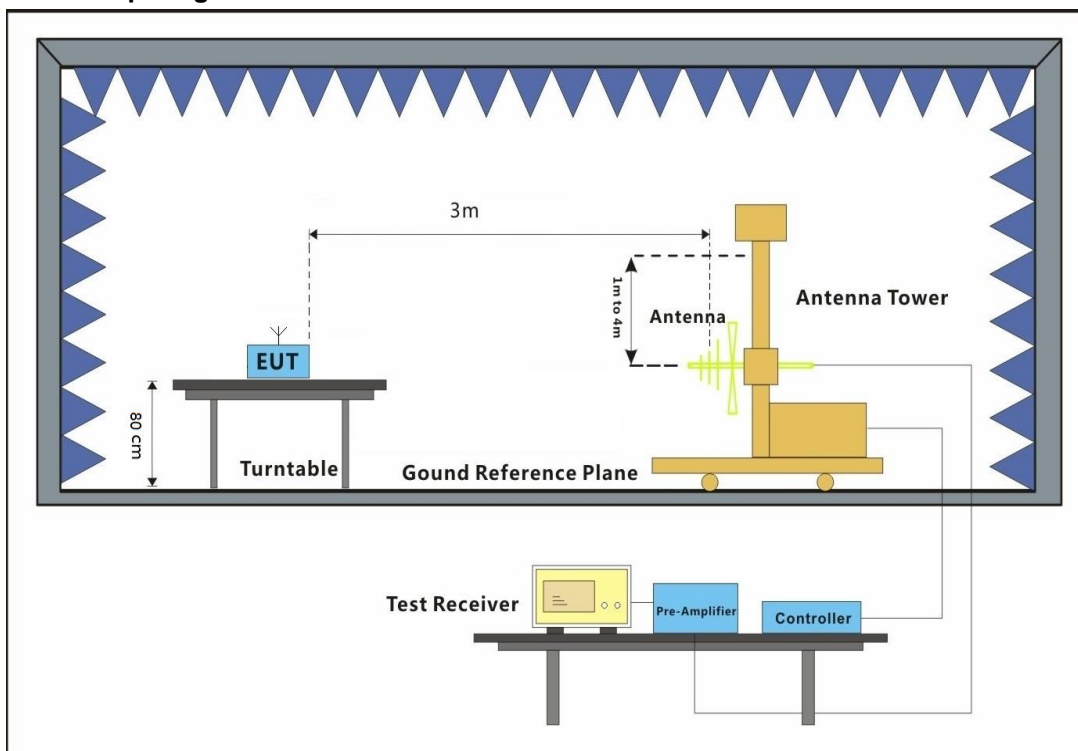
7.5.1 E.U.T. Operation

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

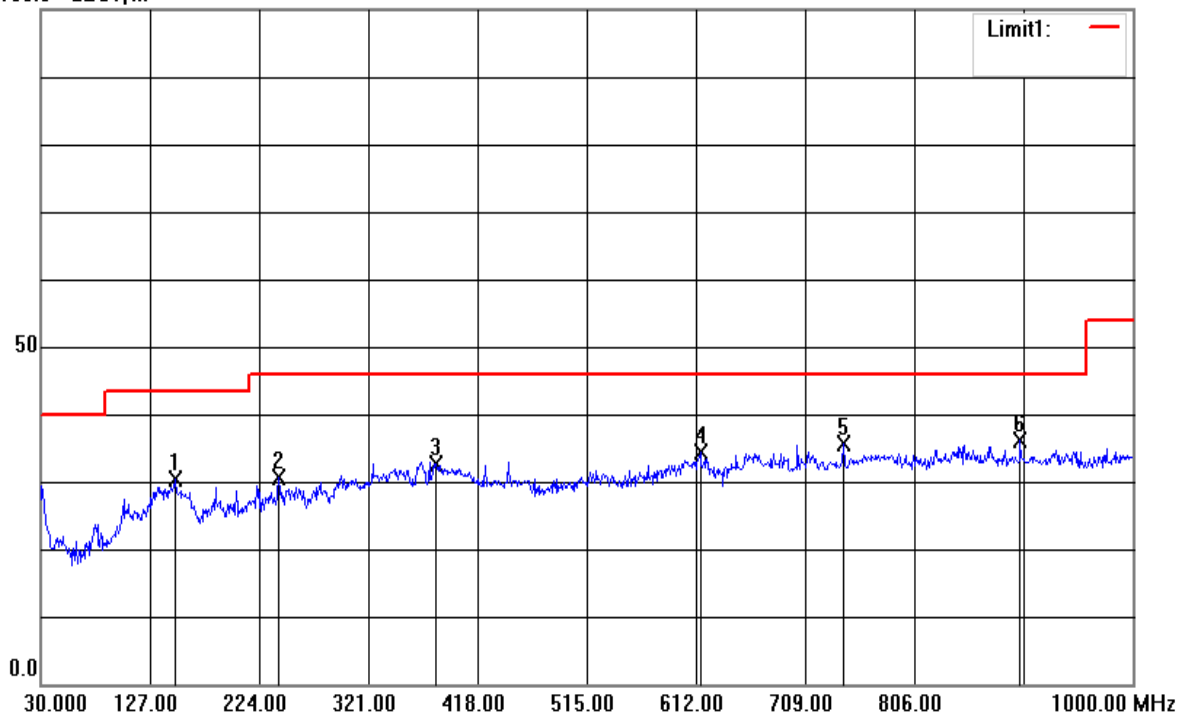
- a. The EUT was placed on the top of a rotating table 0.8 meters above the ground for below 1GHz at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which 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: Vertical

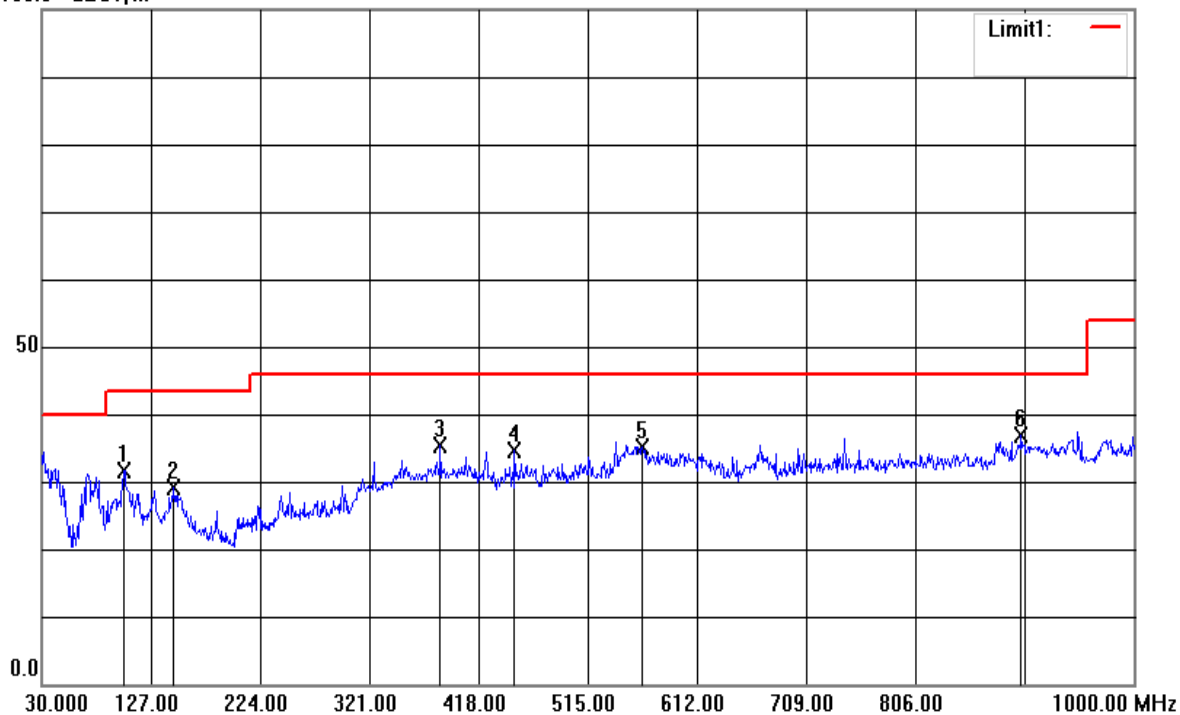
100.0 dBuV/m



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	149.3100	10.28	20.18	30.46	43.50	-13.04	QP
2	241.4600	11.83	18.91	30.74	46.00	-15.26	QP
3	381.1400	9.20	23.43	32.63	46.00	-13.37	QP
4	615.8800	7.53	26.76	34.29	46.00	-11.71	QP
5	742.9500	7.64	27.87	35.51	46.00	-10.49	QP
6	900.0900	7.48	28.74	36.22	46.00	-9.78	QP

Horizontal

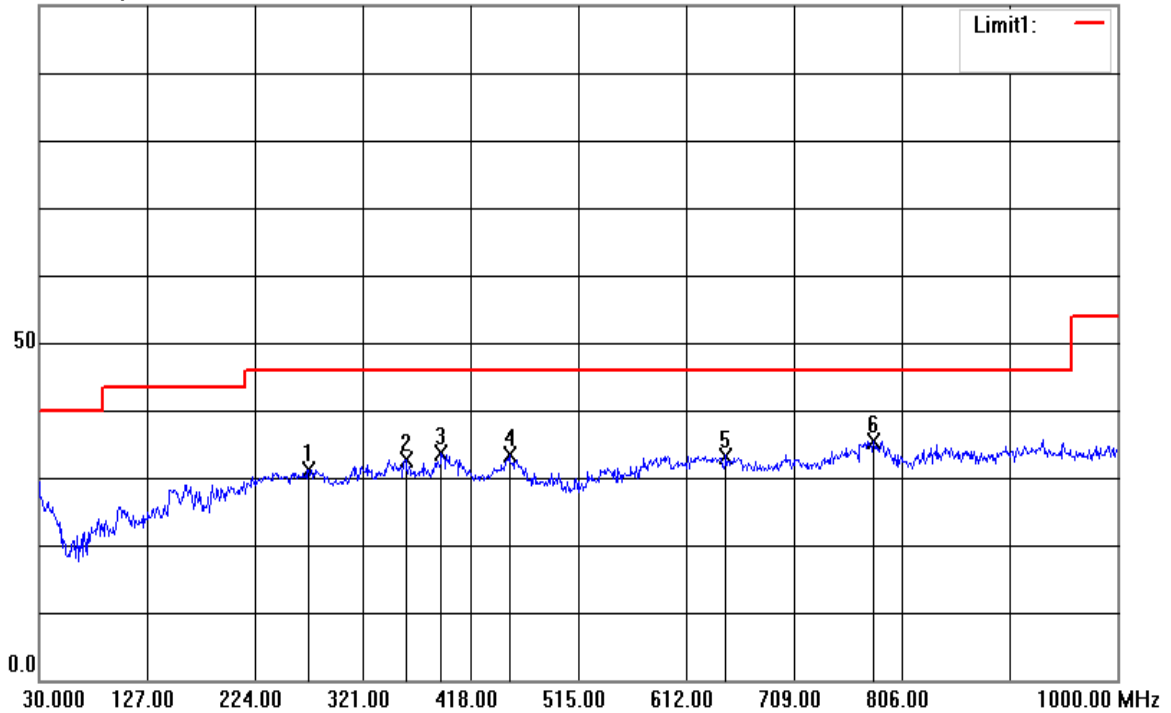
100.0 dBuV/m



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	102.7500	13.01	18.72	31.73	43.50	-11.77	QP
2	147.3700	9.13	20.12	29.25	43.50	-14.25	QP
3	384.0500	11.96	23.50	35.46	46.00	-10.54	QP
4	450.0100	10.20	24.51	34.71	46.00	-11.29	QP
5	563.5000	9.00	26.09	35.09	46.00	-10.91	QP
6	900.0900	8.20	28.74	36.94	46.00	-9.06	QP

Mode b: Vertical

100.0 dBuV/m



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	272.5000	11.20	19.99	31.19	46.00	-14.81	QP
2	359.8000	9.75	22.99	32.74	46.00	-13.26	QP
3	391.8100	9.88	23.66	33.54	46.00	-12.46	QP
4	452.9200	8.88	24.55	33.43	46.00	-12.57	QP
5	647.8900	6.14	27.11	33.25	46.00	-12.75	QP
6	780.7800	7.22	28.08	35.30	46.00	-10.70	QP

Horizontal



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	150.2800	4.63	20.18	24.81	43.50	-18.69	QP
2	253.1000	6.97	19.52	26.49	46.00	-19.51	QP
3	378.2300	7.32	23.37	30.69	46.00	-15.31	QP
4	513.0600	7.19	25.39	32.58	46.00	-13.42	QP
5	540.2200	7.70	25.77	33.47	46.00	-12.53	QP
6	668.2600	5.81	27.35	33.16	46.00	-12.84	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 -