

# TEST REPORT

**Application No.:** SHEM2004002797CR  
**FCC ID:** 2ADTD-K3B501SRE  
**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 City, Zhejiang Province, China

**Equipment Under Test (EUT):**

**EUT Name:** Swing Barrier

**Model No.:** DS-K3B501S-R/E, DS-K3B501S-R, DS-K3B501S-RUHK, DS-K3B501S-RCKV, DS-K3B501S-RUVS, DS-K3B501S-RKVO, DS-K3B501S-RHUN, DS-K3B501S-M/E, DS-K3B501S-M, DS-K3B501S-MUHK, DS-K3B501S-MCKV, DS-K3B501S-MUVS, DS-K3B501S-MKVO, DS-K3B501S-MHUN, DS-K3B501S-L/E, 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 15.231

**Date of Receipt:** 2020-06-09

**Date of Test:** 2020-06-09 to 2020-06-11

**Date of Issue:** 2020-06-17

<b>Test Result:</b>	<b>Pass*</b>
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\* In the configuration tested, the EUT complied with the standards specified above.

*Parlan Zhan*

Parlan 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	2020-06-17	/

<b>Authorized for issue by:</b>			
		<i>Michael Niu</i>	
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		<b>Micheal Niu / Project Engineer</b>	
		<i>Parlam Zhan</i>	
		_____	
		<b>Parlam Zhan / Reviewer</b>	



## 2 Test Summary

Radio Spectrum Technical Requirement			
Item	Standard	Method	Result
Antenna Requirement	47 CFR Part 15.203	N/A	Pass

N/A: Not applicable

Radio Spectrum Matter Part				
Item	Standard	Method	Requirement	Result
Conducted Emissions at AC Power Line (150kHz-30MHz)	47 CFR Part 15, Subpart C 15.231	ANSI C63.10 (2013) Section 6.2	47 CFR Part 15, Subpart C 15.207	Pass
20dB Bandwidth	47 CFR Part 15, Subpart C 15.231	ANSI C63.10 (2013) Section 6.9	47 CFR Part 15, Subpart C 15.231(c)	Pass
Dwell Time	47 CFR Part 15, Subpart C 15.231	ANSI C63.10 (2013) Section 7.8.4	47 CFR Part 15, Subpart C 15.231(a)	Pass
Field Strength of the Fundamental Signal	47 CFR Part 15, Subpart C 15.231	ANSI C63.10 (2013) Section 6.5	47 CFR Part 15.231 (b)	Pass
Radiated Emissions	47 CFR Part 15, Subpart C 15.231	ANSI C63.10 (2013) Section 6.4&6.5&6.6	47 CFR Part 15.209 15.231(b)	Pass

N/A: Not applicable

### 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-K3B501S-R/E was tested since their differences are model number and appearance.



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## 4 General Information

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

Power supply:	AC100V~240V
Test voltage:	AC 120V/60Hz
Modulation Type	2GFSK
Number of Channels	1
Operation Frequency	433.92MHz
Antenna Type	Helical Antenna

### 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 <sup>-8</sup>
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
<b>Conducted Emission at Mains Terminals (150kHz-30MHz)</b>					
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
<b>RF Conducted Test</b>					
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
<b>RF Radiated Test</b>					
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	2019-12-19	2020-12-18
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	/	2019-12-19	2020-12-18



## 6 Radio Spectrum Technical Requirement

### 6.1 Antenna Requirement

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

The antenna is helical 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.

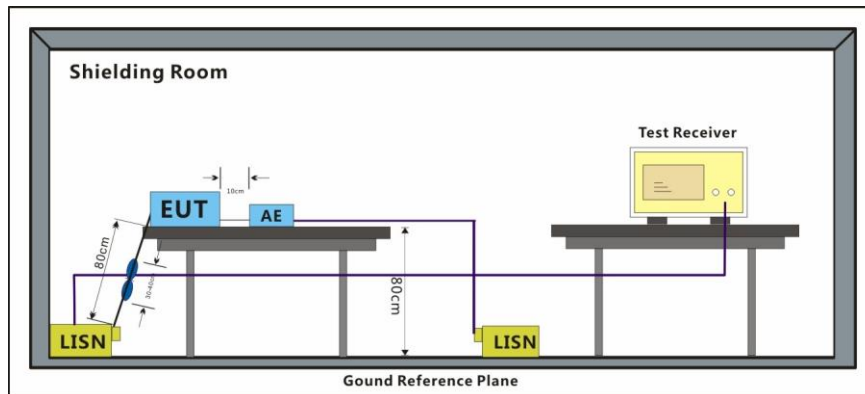
#### 7.1.1 E.U.T. Operation

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.

#### 7.1.2 Test Setup Diagram





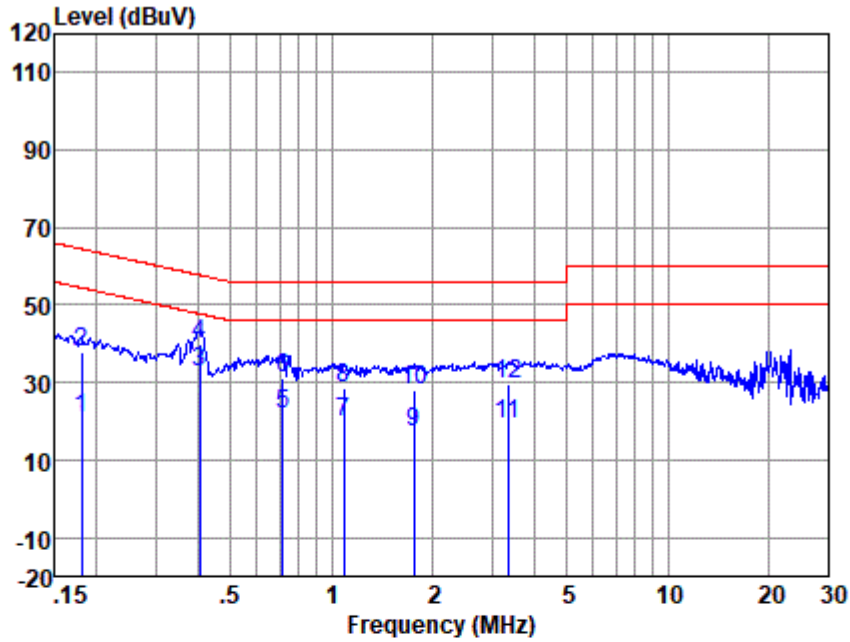
### 7.1.3 Measurement Procedure and Data

- 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.
- 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 433MHz module to test.

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



Mode:a; Line:Live Line



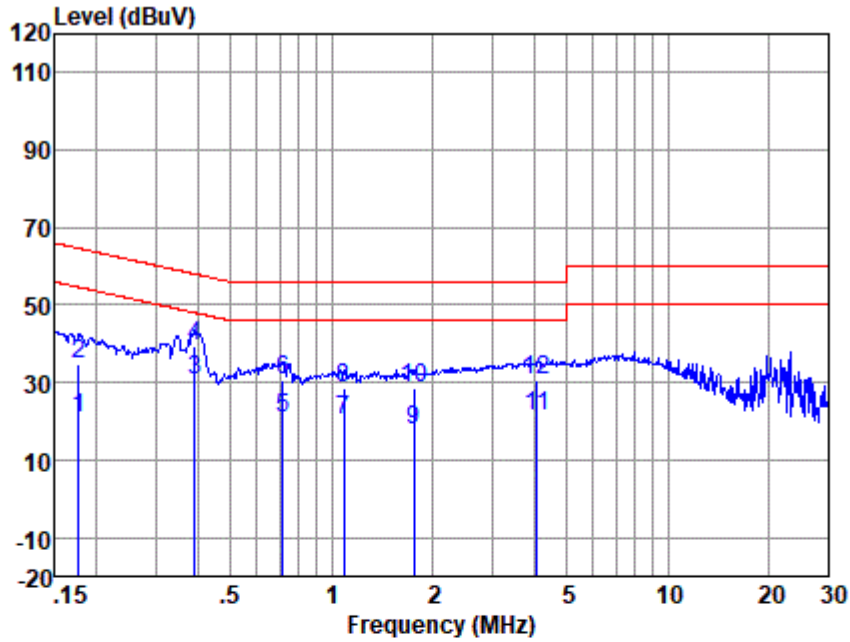
LISN : LINE

	Freq (MHz)	Read level (dBuV)	LISN Factor (dB)	Cable Loss (dB)	Emission Level (dBuV)	Limit (dBuV)	Over Limit (dB)	Remark
1	0.18	10.56	0.08	9.99	20.63	54.50	-33.87	Average
2	0.18	27.75	0.08	9.99	37.82	64.50	-26.68	QP
3	0.41	22.43	0.08	10.04	32.55	47.73	-15.18	Average
4	0.41	29.73	0.08	10.04	39.85	57.73	-17.88	QP
5	0.72	11.56	0.09	10.08	21.73	46.00	-24.27	Average
6	0.72	21.17	0.09	10.08	31.34	56.00	-24.66	QP
7	1.09	9.57	0.10	10.11	19.78	46.00	-26.22	Average
8	1.09	18.30	0.10	10.11	28.51	56.00	-27.49	QP
9	1.75	6.95	0.13	10.14	17.22	46.00	-28.78	Average
10	1.75	17.77	0.13	10.14	28.04	56.00	-27.96	QP
11	3.35	8.67	0.13	10.23	19.03	46.00	-26.97	Average
12	3.35	19.06	0.13	10.23	29.42	56.00	-26.58	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	0.18	10.92	0.07	9.98	20.97	54.64	-33.67	Average
2	0.18	24.69	0.07	9.98	34.74	64.64	-29.90	QP
3	0.39	20.36	0.06	10.04	30.46	48.03	-17.57	Average
4	0.39	29.51	0.06	10.04	39.61	58.03	-18.42	QP
5	0.72	10.55	0.07	10.08	20.70	46.00	-25.30	Average
6	0.72	20.48	0.07	10.08	30.63	56.00	-25.37	QP
7	1.09	10.30	0.08	10.11	20.49	46.00	-25.51	Average
8	1.09	18.22	0.08	10.11	28.41	56.00	-27.59	QP
9	1.75	7.51	0.10	10.14	17.75	46.00	-28.25	Average
10	1.75	18.49	0.10	10.14	28.73	56.00	-27.27	QP
11	4.09	10.92	0.13	10.27	21.32	46.00	-24.68	Average
12	4.09	20.27	0.13	10.27	30.67	56.00	-25.33	QP

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

## 7.2 20dB Bandwidth

Test Requirement 47 CFR Part 15, Subpart C 15.231(c)  
Test Method: ANSI C63.10 (2013) Section 6.9  
Limit:

Frequency range(MHz)	Limit
70-900	No wider than 0.25% of the center frequency
Above 900	No wider than 0.5% of the center frequency

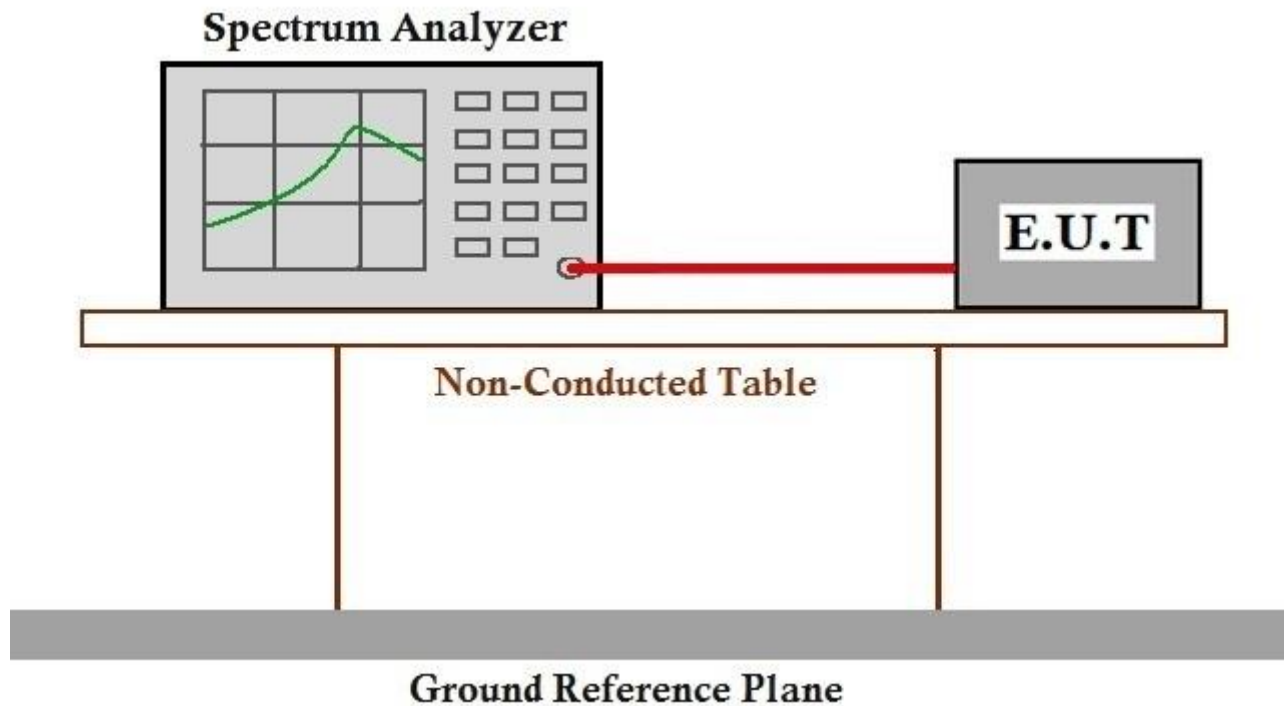
### 7.2.1 E.U.T. Operation

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.

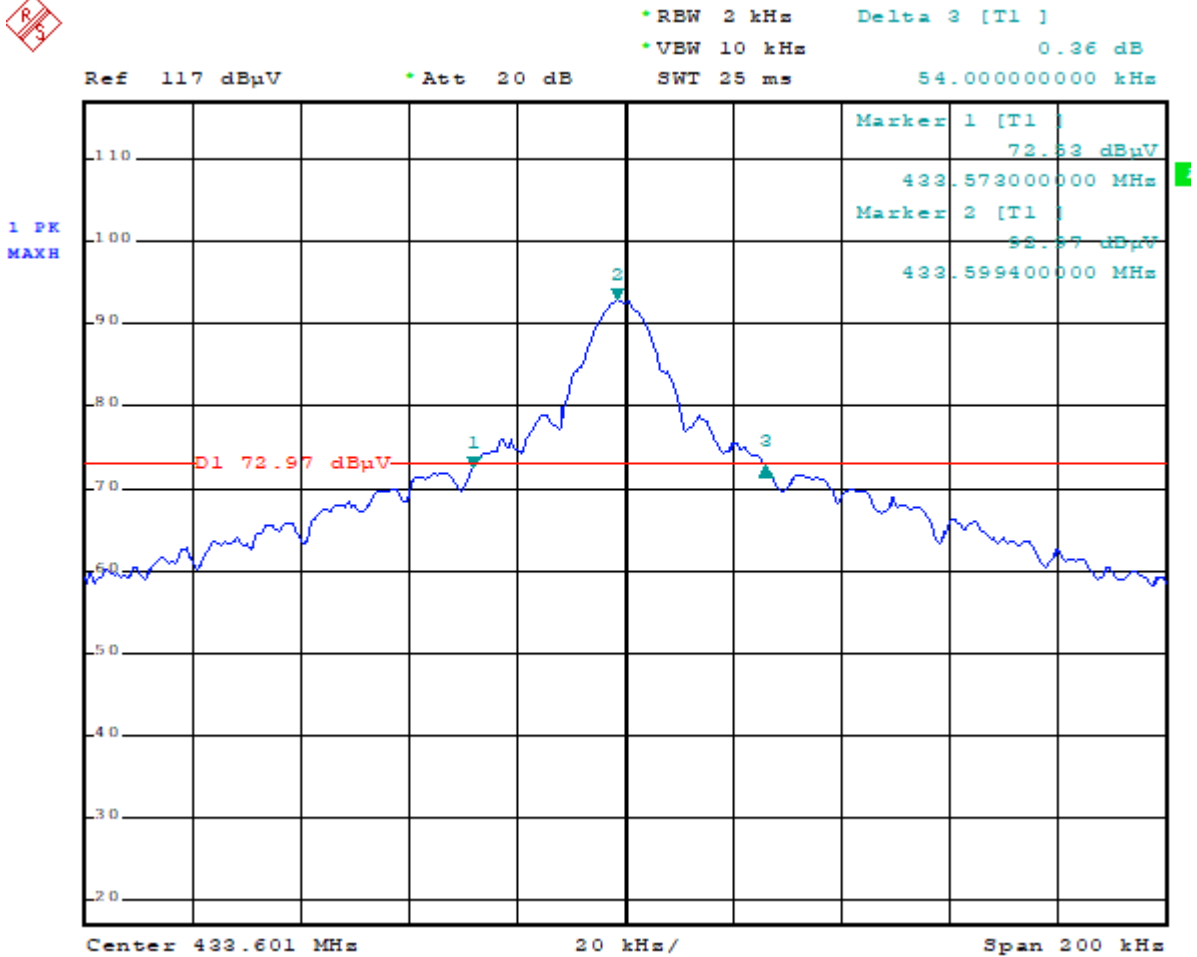
### 7.2.2 Test Setup Diagram



### 7.2.3 Measurement Procedure and Data



Frequency(MHz)	20dB bandwidth (kHz)	Limit (kHz)	Results
433.92	54.00	1084.8	Pass



### 7.3 Dwell Time

Test Requirement 47 CFR Part 15, Subpart C 15.231(a)  
Test Method: ANSI C63.10 (2013) Section 7.8.4  
Limit:

Device type	Limit
Manually operated transmitter	The switch automatically deactivate the transmitter within not more than 5 seconds of being released
Automatically actived transmitter	Cease transmission within 5 seconds after activation
Periodic transmissions to determine system integrity of transmitters used in security or safety applications	The total transmission time does not exceed 2 seconds per hour

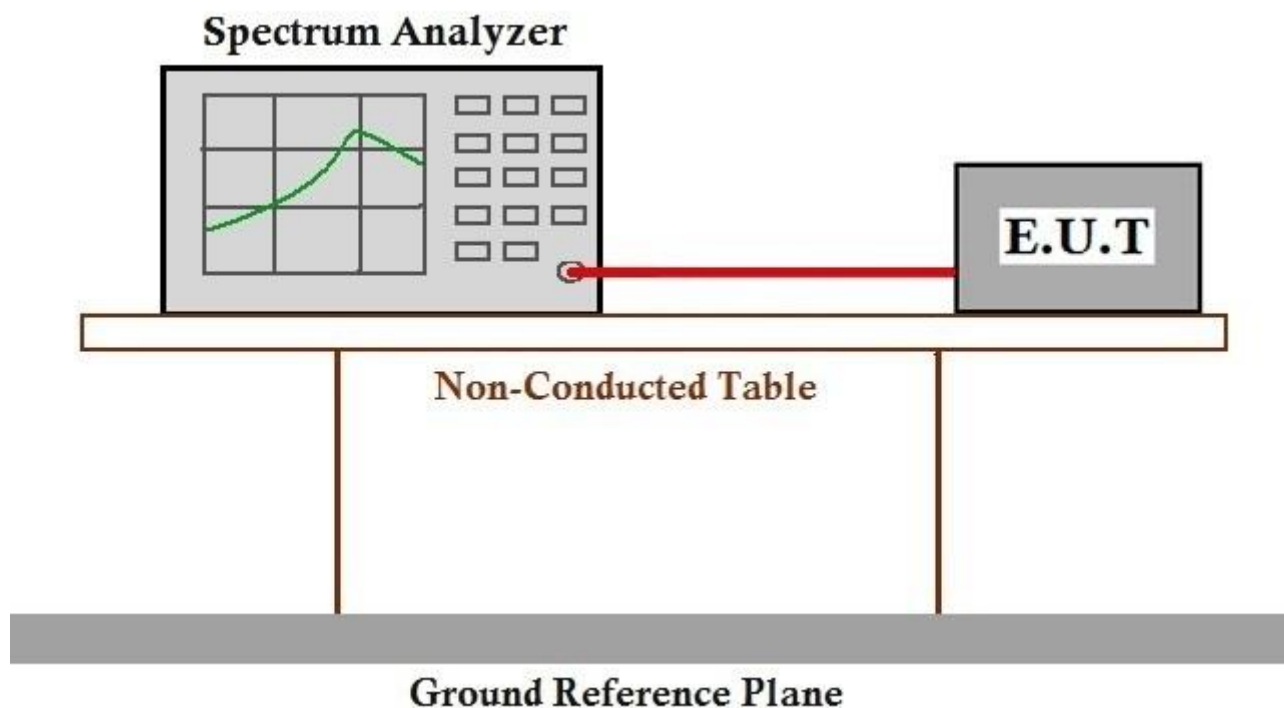
#### 7.3.1 E.U.T. Operation

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.

#### 7.3.2 Test Setup Diagram



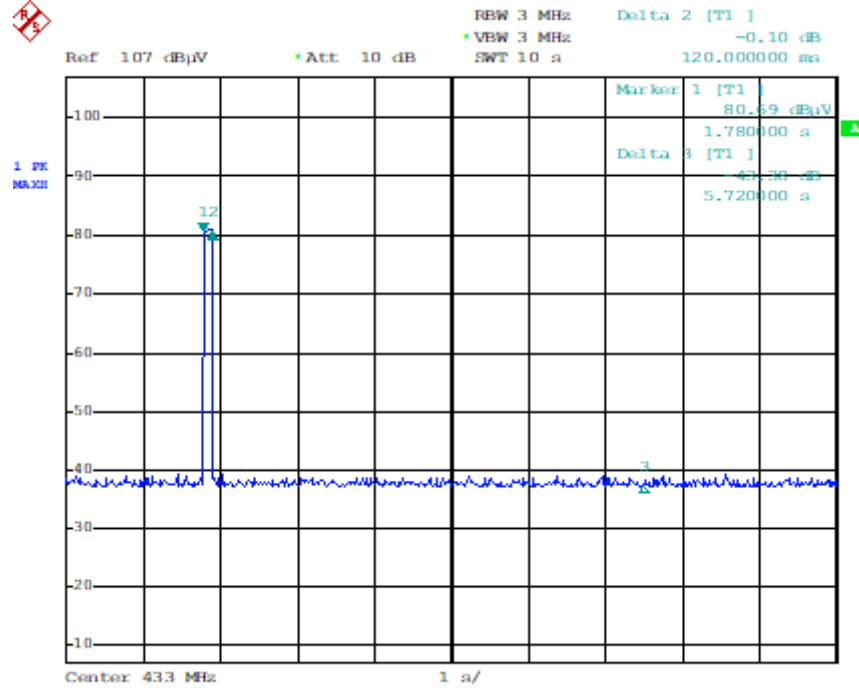
#### 7.3.3 Measurement Procedure and Data



Measurement Data:

Test item	Limit (s)	Results
Transmission Duration	≤5s	Pass

Test plot as follows:







### 7.4 Field Strength of the Fundamental Signal

Test Requirement 47 CFR Part 15.231 (b)  
Test Method: ANSI C63.10 (2013) Section 6.5  
Limit:

Fundamental frequency(MHz)	Field strength of fundamental(microvolts/meter)	Field strength of spurious emissions(microvolts/meter)
40.66-40.70	2250	225
70-130	1250	125
130-174	1250 to 3750	125 to 375
174-260	3750	375
260-470	3750 to 12500	375 to 1250
Above 470	12500	1250

Remark: the emission limit is based on measurement instrumentation employing an average detector at a distance of 3 meters. The frequencies above 1000MHz are based on average limits. However, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation.

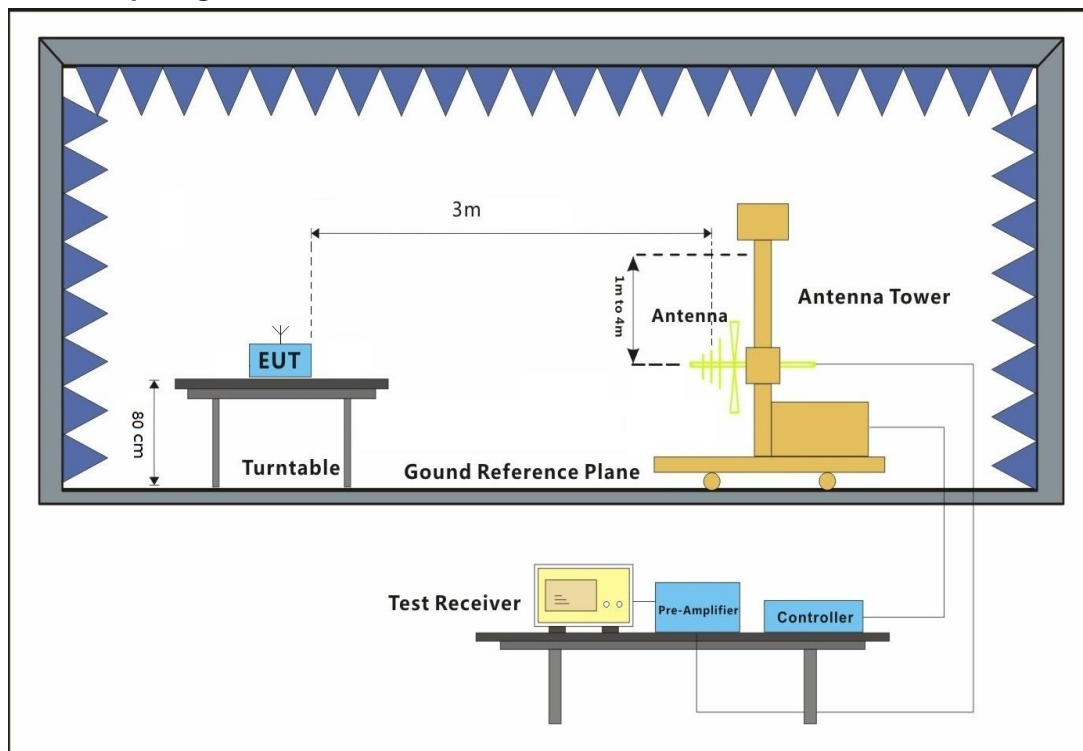
Limit:	Frequency	Limit (dBuV/m @3m)	Remark
(Field strength of the fundamental signal)	433.09 - 434.61MHz	80.83	Average Value
		100.83	Peak Value

#### 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.

#### 7.4.2 Test Setup Diagram



#### 7.4.3 Measurement Procedure and Data

- For below 1GHz, the EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 or 10 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- For above 1GHz, the EUT was placed on the top of a rotating table 1.5 meters above the ground at a 3 meter fully-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- The EUT was set 3 or 10 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- 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.
- 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.
- The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
- 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.
- 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.
- 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 433MHz module to test.

Remark: Level= Read Level+ Cable Loss+ Antenna Factor- Preamp Factor



Test channel	Freq. (MHz)	Result Level (dB $\mu$ V/m)	Limit Line (dB $\mu$ V/m)	Over Limit (dB)	Detector	Polarization
Channel 1	433.92	77.91	80.83	-2.92	Peak	Vertical
		79.50	80.83	-1.33	Peak	Horizontal



### 7.5 Radiated Emissions

Test frequency range: 9KHz – 6GHz

Test Requirement: 47 CFR Part 15.209 15.231(b)

Test Method: ANSI C63.10 (2013) Section 6.4&6.5&6.6

<b>Receiver Setup:</b>	Frequency	Detector	RBW	VBW	Remark
	0.009MHz-0.015MHz	Quasi-peak	200Hz	1KHz	Quasi-peak
	0.015MHz-30MHz	Quasi-peak	9kHz	30KHz	Quasi-peak
	30MHz-1GHz	Quasi-peak	120 kHz	300KHz	Quasi-peak
	Above 1GHz	Peak	1MHz	3MHz	Peak
Peak		1MHz	10Hz	Average	
<b>Limit: (Spurious Emissions)</b>	Frequency	Field strength (microvolt/meter)	Limit (dBuV/m )	Remark	Measurement distance (m)
	0.009MHz-0.490MHz	2400/F(kHz)	-	Quasi-peak	300
	0.490MHz-1.705MHz	24000/F(kHz)	-	Quasi-peak	30
	1.705MHz-30MHz	30	-	Quasi-peak	30
	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
	Above 1GHz	500	54.0	Average	3
74.0			Peak	3	

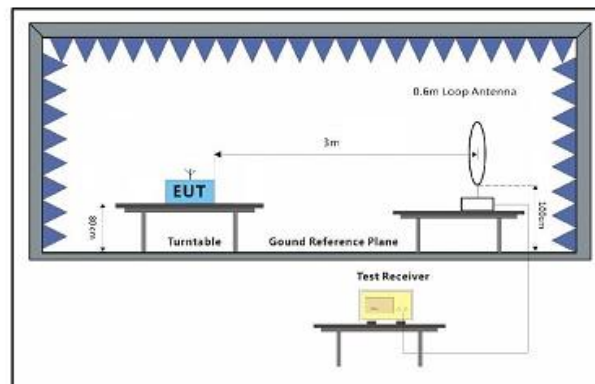
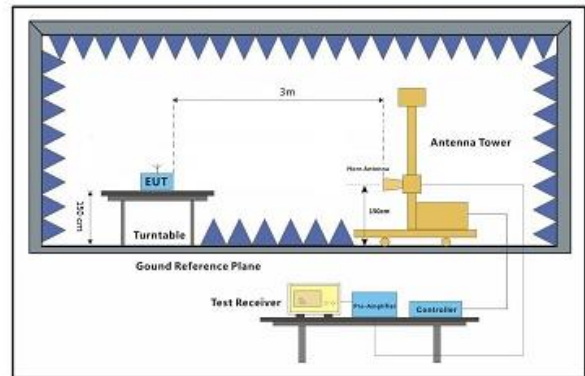
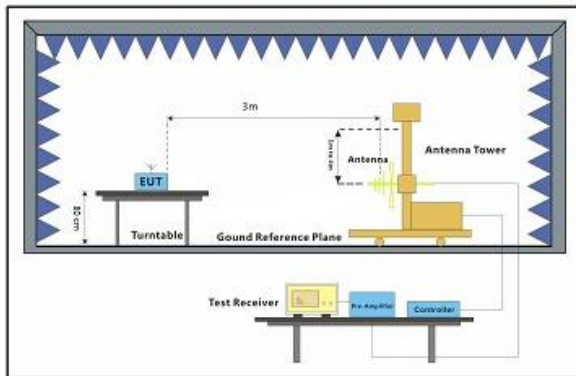
### 7.5.1 E.U.T. Operation

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.

### 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 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 Z axis positioning which it is worse case, only the test worst case mode is recorded in the report.
- h. Scan from 9kHz to 6GHz, below 30MHz was very low. The points marked on above plots are the highest emissions could be found when testing, so only above points had been displayed. The amplitude of spurious emissions from the radiator which are attenuated more than 20dB below the limit need not be reported.

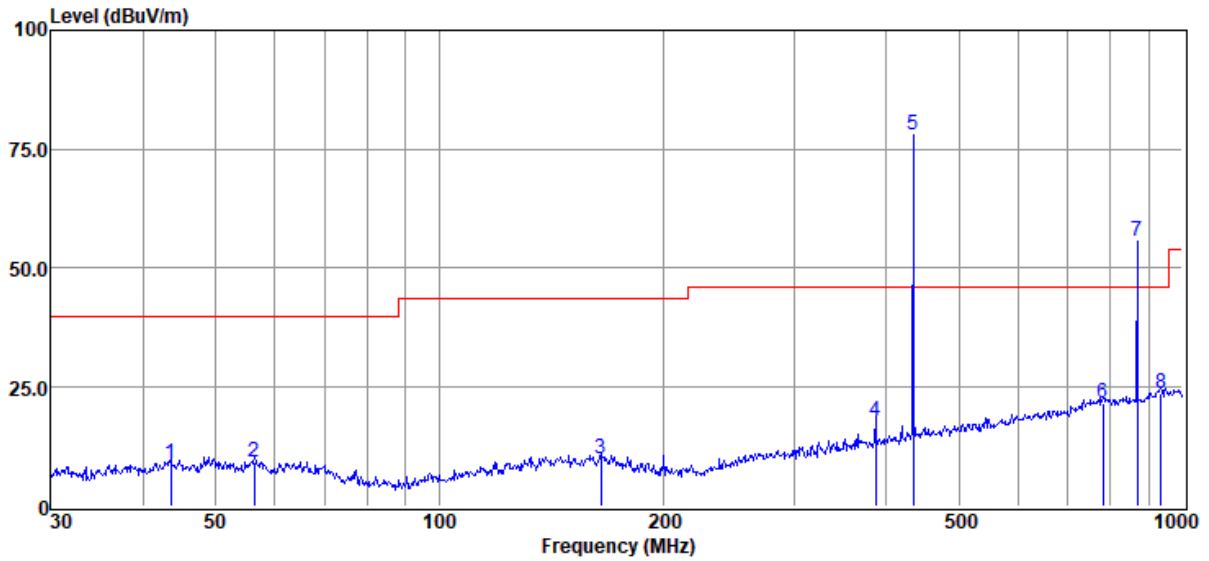
**Remark:**

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 433MHz module to test.



Below 1GHz

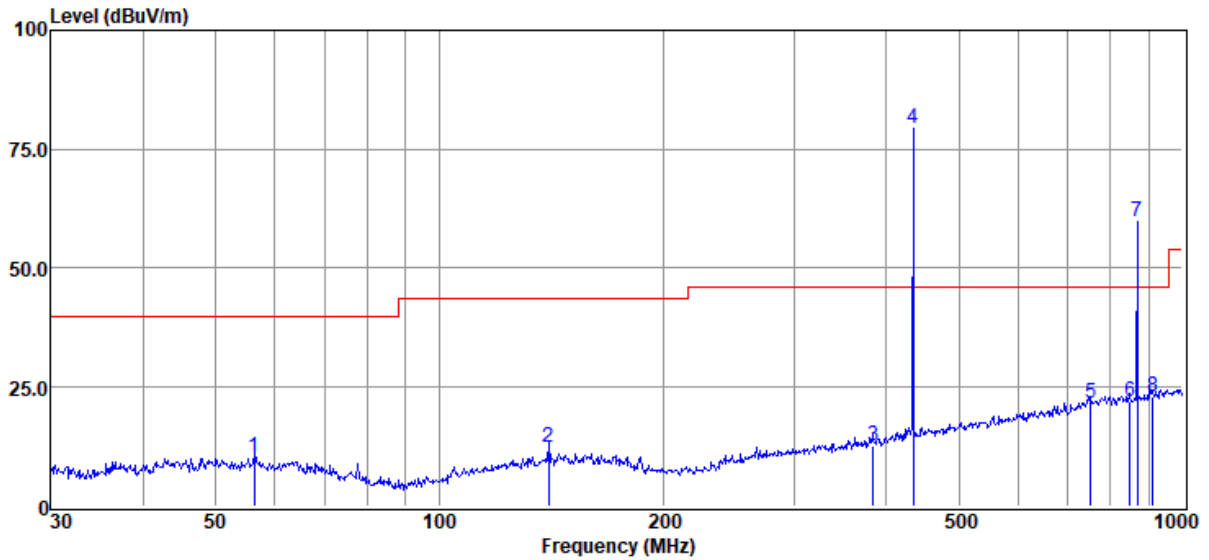
Vertical:



Item (Mark)	Freq. (MHz)	Read Level (dB $\mu$ V)	Antenna Factor (dB/m)	Pream p Factor (dB)	Cabl e Loss (dB)	Result Level (dB $\mu$ V/ m)	Limit Line (dB $\mu$ V/ m)	Over Limit (dB)	Detecto r	Polarization
1	43.506	36.77	13.41	42.33	0.99	8.84	40.00	-31.16	QP	VERTICAL
2	56.395	37.34	13.31	42.33	1.09	9.41	40.00	-30.59	QP	VERTICAL
3	164.907	37.49	13.00	42.21	1.81	10.09	43.50	-33.41	QP	VERTICAL
4	386.634	42.03	15.24	41.93	2.63	17.97	46.00	-28.03	QP	VERTICAL
5	434.065	100.45	16.52	41.81	2.75	77.91	80.83	Fundamental		VERTICAL
6	782.345	37.89	22.23	41.99	3.67	21.80	46.00	-24.20	QP	VERTICAL
7	869.130	70.66	22.90	41.74	3.86	55.68	60.83	-5.15	QP	VERTICAL
8	935.546	37.40	23.84	41.50	3.98	23.72	46.00	-22.28	QP	VERTICAL



Horizontal:



Item (Mark)	Freq. (MHz)	Read Level (dBμV)	Antenna Factor (dB/m)	Pream p Factor (dB)	Cabl e Loss (dB)	Result Level (dBμV/ m)	Limit Line (dBμV/ m)	Over Limit (dB)	Detector	Polarization
1	56.395	38.33	13.31	42.33	1.09	10.40	40.00	-29.60	QP	HORIZONTAL
2	140.342	40.36	12.52	42.25	1.63	12.26	43.50	-31.24	QP	HORIZONTAL
3	383.932	36.84	15.18	41.93	2.63	12.72	46.00	-33.28	QP	HORIZONTAL
4	434.065	102.04	16.52	41.81	2.75	79.50	80.83		Fundamental	HORIZONTAL
5	752.743	38.08	22.11	41.99	3.59	21.79	46.00	-24.21	QP	HORIZONTAL
6	851.035	37.49	22.60	41.79	3.82	22.12	46.00	-23.88	QP	HORIZONTAL
7	869.130	74.82	22.90	41.74	3.86	59.84	60.83	-0.99	QP	HORIZONTAL
8	912.862	37.22	23.56	41.61	3.92	23.09	46.00	-22.91	QP	HORIZONTAL





Above 1GHz

Mark	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Emission (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Detector	polarization
1	1885.669	57.64	37.14	48.13	74	-25.87	peak	Vertical
2	4770.324	46.87	38.68	44.22	74	-29.78	peak	Vertical
3	5015.753	44.96	38.89	43.74	74	-30.26	peak	Vertical
4	1777.406	58.16	37.09	48.15	74	-25.85	peak	Horizontal
5	2575.514	50.75	37.65	42.71	74	-31.29	peak	Horizontal
6	4997.811	43.1	38.9	41.45	74	-32.55	peak	Horizontal

Remark:

- 1) The field strength is calculated by adding the Antenna Factor, Cable Factor & Preamplifier. The basic equation with a sample calculation is as follows:  
Final Test Level = Receiver Reading Level + Antenna Factor + Cable Factor – Preamplifier Factor
- 2) If Peak Result comply with AV limit, AV Result is deemed to comply with QP limit
- 3) No any other emissions level which are attenuated less than 20dB below the limit. According to 15.31(o), the amplitude of spurious emissions from intentional radiators and emissions from unintentional radiators which are attenuated more than 20 dB below the permissible value need not be reported unless specifically required elsewhere in this Part. Hence there no other emissions have been reported.



## **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 -**