TEST REPORT

Report No.	CISRR26011310401
Project No.	CISR260113104
FCC ID	2BPAN-AW1-EM
Applicant	Huanya Intelligent Technology Shenzhen Co., LTD
Address	202 Room 2F,1 Building ,Enterprise Life, AI Digital Valley, No.8 Queshan Road, Taoyuan Community,Dalang Long Hua District Shenzhen 518000,China
Manufacturer	Huanya Intelligent Technology Shenzhen Co., LTD
Address	202 Room 2F,1 Building ,Enterprise Life, AI Digital Valley, No.8 Queshan Road, Taoyuan Community,Dalang Long Hua District Shenzhen 518000,China
Product Name	Wireless Access Control
Trade mark	-
Model/Type reference	AW1-EM
Listed Model(s)	AW1,AW10,AW8,WS1,WS2
Standard	47 CFR Part 15.231
Date of sample receipt	January 14, 2026
Test date	January 14, 2026 to January 16, 2026
Issue date	January 20, 2026
Test result	**Complied**

Morgan Tan

Reviewed by: Morgan Tan

Hans Hu

Approved by: Hans Hu

The test results relate only to the tested samples.

The test report should not be reproduced except in full without the written approval of Shenzhen Bangce Testing Technology Co., Ltd.

Contents

1. STANDARD AND APPLICABLE TEST METHODS 3

2. REPORT VERSION 3

3. SUMMARY OF TEST RESULT 4

4. SUMMARY 5

4.1. Product Description 5
4.2. Radio Specification Description 5
4.3. Modification of EUT 6
4.4. Testing Site 6

5. TEST CONFIGURATION 7

5.1. Test frequency list 7
5.2. Test mode 7
5.3. Support unit used in test configuration and system 7
5.4. Test sample information 7
5.5. Testing environmental condition 8
5.6. Statement of the measurement uncertainty 8
5.7. Equipment Used during the Test 9

6. TEST CONDITIONS AND RESULTS 10

6.1. Antenna Requirement 10
6.2. AC Conducted Emission 11
6.3. 20 dB Bandwidth 12
6.4. Transmitter Deactivation Time 14
6.5. Duty cycle Factor 15
6.6. Radiated field strength of the fundamental signal 18
6.7. Radiated Spurious Emission 19

1 . STANDARD AND APPLICABLE TEST METHODS

The tests were performed according to following standards:
47 CFR Part 15.231: Periodic operation in the band 40.66-40.70 MHz and above 70 MHz

ANSI C63.10-2020: American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices.

2. REPORT VERSION

Version No.	Issue date	Description
00	January 20, 2026	Original

3. SUMMARY OF TEST RESULT

Report clause	Test Item	Standard Requirement	Result
5.1	Antenna Requirement	15.203	PASS
5.2	AC Conducted Emission	15.207	PASS
5.3	20 dB Bandwidth	15.231(c)	PASS
5.4	Radiated Spurious Emission	15.231 (a)/15.205/15.209	PASS
5.5	Transmitter Deactivation Time	15.231	PASS
5.6	Duty cycle Factor	15.231	PASS

Note:

– The measurement uncertainty is not included in the test result.

4. SUMMARY

4.1. Product Description

Main unit information:	
Product Name:	Wireless Access Control
Trade mark:	-
Model No.:	AW1-EM
Listed Model(s):	AW1,AW10,AW8,WS1,WS2
Model difference:	The series model is the same product,with only different model names
Power supply:	DC 3V
Hardware version:	-
Software version:	-
Accessory unit (AU) information:	
AU-1	-

4.2. Radio Specification Description

Operation frequency:	433.97MHz
Modulation:	FSK
Occupied Bandwidth:	191.55kHz
Channel Number:	1
Type of transmission	Manual transmission
Antenna type:	PCB antenna
Antenna gain:	-2dBi

4.3. Modification of EUT

No modifications are made to the EUT during all test items.

4.4. Testing Site

Laboratory Name	Shenzhen Bangce Testing Technology Co., Ltd.
Laboratory Location	101, building 10, Yunli Intelligent Park, Shutianpu community, Matian Street, Guangming District, Shenzhen，Guangdong, China
Contact information	Tel: 86-755-2319 6848, email: service@cis-cn.net Website: http://www.cis-cn.net/
FCC registration number	736346
FCC designation number	CN1372

5. TEST CONFIGURATION

5.1. Test frequency list

Channel	Frequency (MHz)
CH1	433.97

5.2. Test mode

For RF test items
The engineering test program was provided and enabled to make EUT continuous transmit.
For Radiated spurious emissions test item:
The engineering test program was provided and enabled to make EUT continuous transmit. The EUT in each of three orthogonal axis emissions had been tested, but only the worst case (Y axis) data Recorded in the report.

5.3. Support unit used in test configuration and system

The EUT has been associated with peripherals and configuration operated in a manner tended to maximize its emission characteristics in a typical application.

The following peripheral devices and interface cables were connected during the measurement:

Item	Equipment name	Trade Name	Model No.
1	--	--	--

5.4. Test sample information

Type	sample no.
Engineer sample	CISR260113104-1#
Normal sample	CISR260113104-2#

5.5. Testing environmental condition

Type	Requirement	Actual
Temperature:	15~35°C	25°C
Relative Humidity:	25~75%	50%
Air Pressure:	860~1060mbar	1000mbar

5.6. Statement of the measurement uncertainty

No.	Test Items	Measurement Uncertainty
1	AC Conducted Emission	1.63dB
2	Power Spectral Density	1.34dB
3	20dB Bandwidth	0.002%
4	Duty cycle	-
5	Conducted Band Edge and Spurious Emission	1.93dB
6	Radiated Band Edge Emission	3.76dB for 30MHz-1GHz 3.80dB for above 1GHz
7	Radiated Spurious Emission	3.76dB for 30MHz-1GHz 3.80dB for above 1GHz

This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=1.96.

5.7. Equipment Used during the Test

20dB Bandwidth
Dwell Time
Duty Cycle

Item	Equipment name	Manufacturer	Model	Serial No.	Calibration date	Due date
1	Spectrum analyzer	ROHDE&SCHWARZ	FSV-40N	CIS-EE076	2026-01-06	2027-01-05
2	Notch Filter Assembly	WCS	SMU-1003	CIS-EE093	2026-01-06	2027-01-05
3	Vector Signal Generator	Agilent	N5182A	CIS-RE012	2026-01-06	2027-01-05
4	Analog Signal Generator	Agilent	N5181A	CIS-RE013	2026-01-06	2027-01-05
5	Test software	WCS	WCN-Regulatory	CIS-EE103	/	/

Radiated Emission (below 1GHz)
Radiated Emission (above 1GHz)
Field Strength of The Fundamental Signal

Item	Equipment name	Manufacturer	Model	Serial No.	Calibration date	Due date
1	9*6*6 anechoic chamber	SKET	9.3*6.3*6	N/A	2024-09-02	2027-09-01
2	Spectrum analyzer	Agilent	N9020A	MY50530263	2026-01-06	2027-01-05
3	Spectrum analyzer	R&S	FSV-40N	102130	2026-01-06	2027-01-05
4	Bilog Antenna	Schwarzbeck	VULB 9163	1463	2026-01-06	2029-01-05
5	Horn Antenna	SCHWARZBECK	BBHA 9120 D	2487	2026-01-06	2029-01-05
6	Active Loop Antenna	SCHWARZBECK	FMZB 1519B	/	2026-01-06	2029-01-05
7	RF Cable	Tonscend	Cable 1	/	2026-01-06	2027-01-05
8	RF Cable	Tonscend	Cable 2	/	2026-01-06	2027-01-05
9	RF Cable	SKET	Cable 3	/	2026-01-06	2027-01-05
10	L.I.S.N.#1	Schwarzbeck	NSLK8127	/	2026-01-06	2027-01-05
11	L.I.S.N.#2	ROHDE&SCHWARZ	ENV216	/	2026-01-06	2027-01-05
12	Horn Antenna	SCHWARZBECK	BBHA9170	1130	2026-01-06	2029-01-05
13	Preamplifier	Tonscend	TAP18040048	AP21C806126	2026-01-06	2027-01-05
14	Variable-frequency power source	Pinhong	PH1110	/	2026-01-06	2027-01-05
15	6dB Attenuator	SKET	DC-6G	/	2026-01-06	2027-01-05
16	Antenna tower	SKT	Bk-4AT-BS	AT2021040101-V1	2026-01-06	2027-01-05

6. TEST CONDITIONS AND RESULTS

6.1. Antenna Requirement

Standard Applicable	**FCC CFR Title 47 Part 15 Subpart C Section 15.203:** An intentional radiator shall be designed to ensure that no antenna other than that furnished by the response-ble 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.
Description	The EUT antenna is PCB antenna. It comply with the standard requirement. In case of replacement of broken antenna the same antenna type must be used.Antenna structure please refer to the EUT internal photographs antenna photo.

6.2. AC Conducted Emission

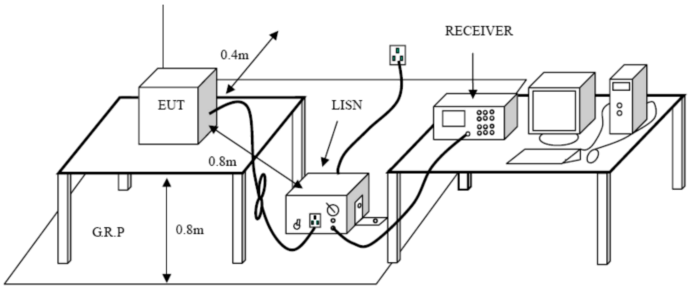
Limit:

FCC CFR Title 47 Part 15 Subpart C Section 15.207

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.

Test configuration:



Test procedure:

1. The EUT was setup according to ANSI C63.10 requirements.
2. The EUT was placed on a platform of nominal size, 1 m by 1.5 m, raised 80 cm above the conducting ground plane. The vertical conducting plane was located 40 cm to the rear of the EUT. All other surfaces of EUT were at least 80 cm from any other grounded conducting surface.
3. The EUT and simulators are connected to the main power through a line impedances stabilization network (LISN). The LISN provides a 50 ohm /50uH coupling impedance for the measuring equipment.
4. The peripheral devices are also connected to the main power through a LISN. (Refer to the block diagram of the test setup and photographs)
5. Each current-carrying conductor of the EUT power cord, except the ground (safety) conductor, was individually connected through a LISN to the input power source.
6. The excess length of the power cord between the EUT and the LISN receptacle were folded back and forth at the center of the lead to form a bundle not exceeding 40 cm in length.
7. Conducted emissions were investigated over the frequency range from 0.15MHz to 30MHz using a receiver bandwidth of 9 kHz.
8. During the above scans, the emissions were maximized by cable manipulation.

Test mode:

Refer to the clause 4.2

Result:

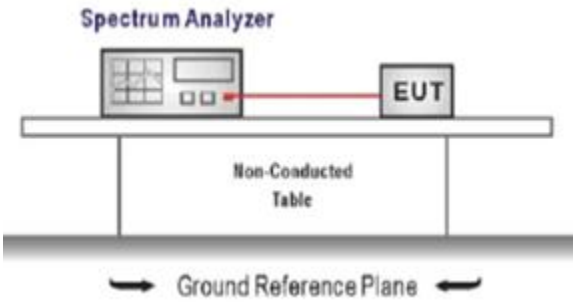
Not Applicable

6.3. 20 dB Bandwidth

Limit:

The bandwidth of the emission shall be no wider than 0.25% of the center frequency for devices operating above 70 MHz and below 900 MHz. Bandwidth is determined at the points 20 dB down from the modulated carrier.

Test configuration:



Test procedure:

1. The transmitter output was connected to the spectrum analyzer through an attenuator, the path loss was compensated to the results for each measurement.
2. Set to the maximum power setting and enable the EUT transmit continuously
3. Use the following spectrum analyzer settings:
   Span = approximately 2 to 3 times the 20 dB bandwidth, centered on a Test channel
   RBW ≥ 1% of the 20 dB bandwidth, VBW ≥ RBW
   Sweep = auto, Detector function = peak, Trace = max hold
4. Measure and record the results in the test report.

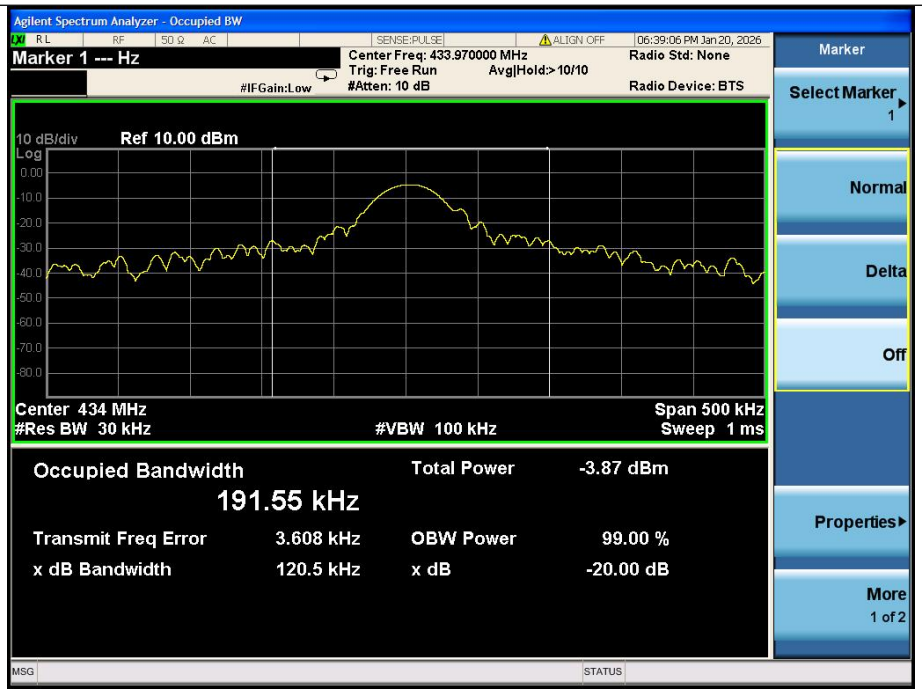
Test mode:

Refer to the clause 4.2

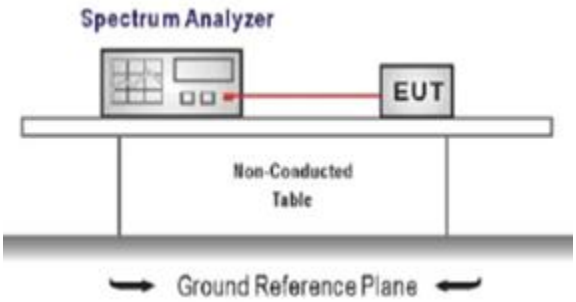
Result:

Passed

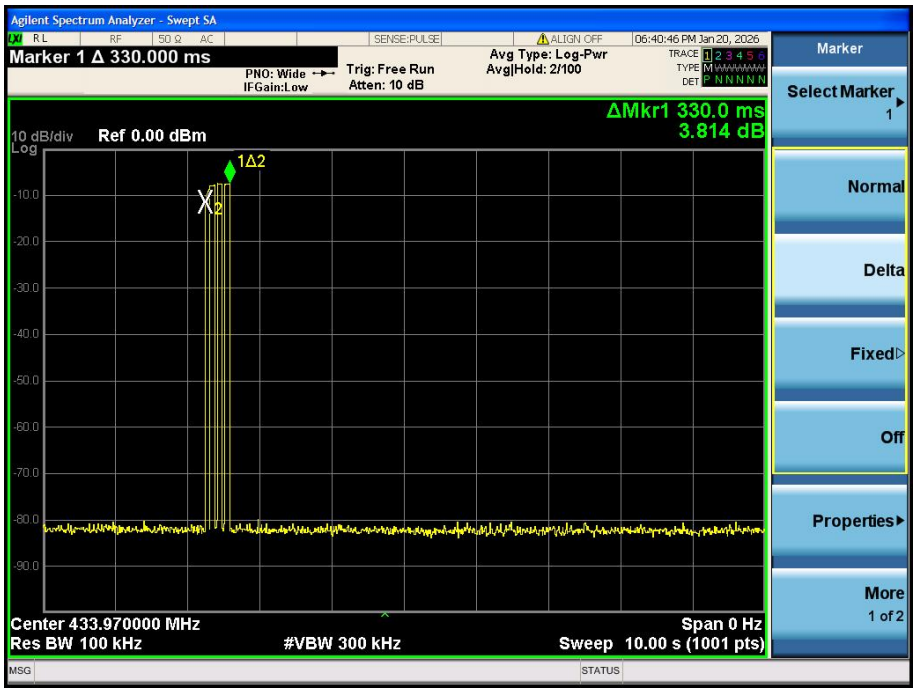
Center Frequency of operation(MHz)	Measured 20dB Bandwidth(kHz)	Limit(kHz)	Result
433.97	120.5	1084.75	PASS


Agilent Spectrum Analyzer - Occupied BW
Marker 1 --- Hz
Center Freq: 433.970000 MHz
Trig: Free Run
Avg|Hold:>10/10
#Atten: 10 dB
Radio Std: None
Radio Device: BTS
#IFGain:Low
10 dB/div
Ref 10.00 dBm
Log
Center 434 MHz
#Res BW 30 kHz
#VBW 100 kHz
Span 500 kHz
Sweep 1 ms
Occupied Bandwidth
191.55 kHz
Total Power -3.87 dBm
Transmit Freq Error 3.608 kHz
OBW Power 99.00 %
x dB Bandwidth 120.5 kHz
x dB -20.00 dB
Marker
Select Marker 1
Normal
Delta
Off
Properties
More 1 of 2

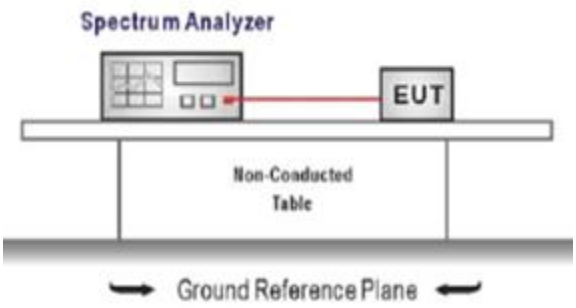
6.4. Transmitter Deactivation Time

Limit:	A manually operated transmitter shall employ a switch that will automatically deactivate the transmitter within not more than 5 seconds of being released.
Test configuration:	
Test procedure:	Maximizing procedure was performed on the highest emissions to ensure that the EUT complied with all installation combinations.
Test mode:	Refer to the clause 4.2
Result:	**Passed**

Transmission time (second)	Limit (second)	Result
0.33	5	Pass



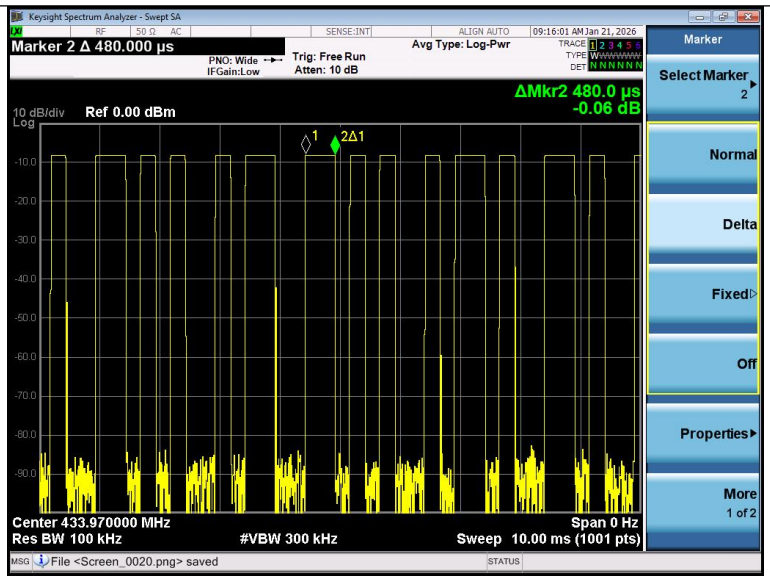
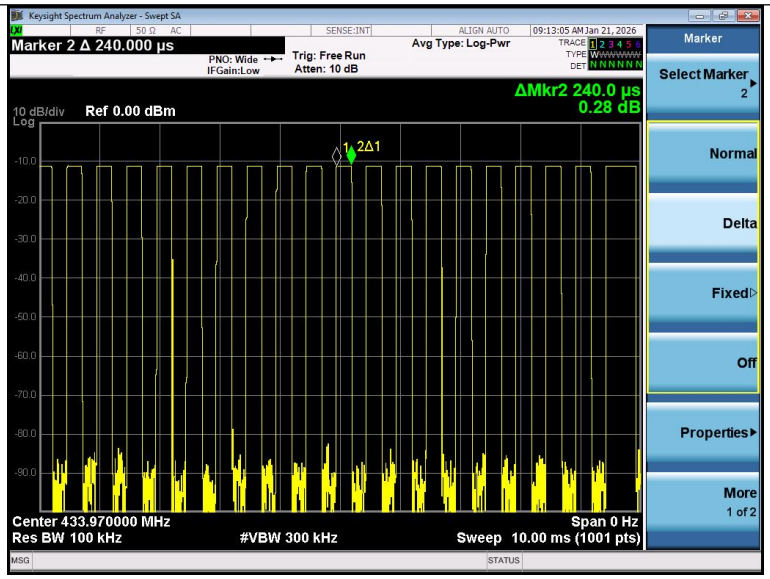
6.5. Duty cycle Factor

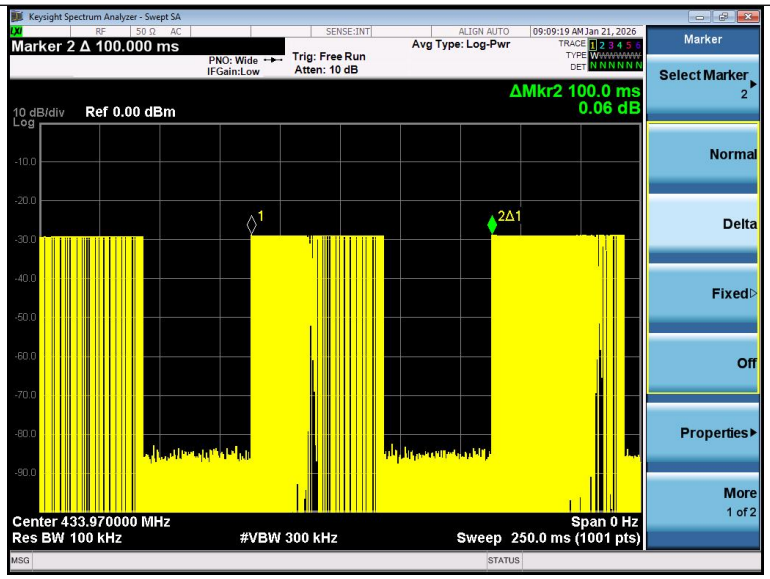
Limit:	No dedicated limit specified in the Rules.
Test configuration:	
Test procedure:	1. Place the EUT on the table and set it in transmitting mode. 2. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer. 3. Set centre frequency of spectrum analyzer=operating frequency. 4. Set the spectrum analyzer as RBW=100kHz, VBW=300kHz, Span=0Hz, Adjust Sweep=Auto. 5. Repeat above procedures until all frequency measured was complete.
Test mode:	Refer to the clause 4.2
Result:	**Passed**

T_{ON1} (ms) :	0.48
T_{ON1} number	16
T_{ON2} (ms) :	0.24
T_{ON2} number	72
Period (ms) :	37
Duty Cycle :	=(0.48*16+0.24*72)/100=0.2496
Duty Cycle Corrected Factor:	=20*log(0.2496)=-12.05dB

Note：

1) Duty cycle= Ton1* T_{ON1} number +Ton2* T_{ON2} number / Tperiod
2) Duty Cycle Corrected Factor/DCCF=20*log (Duty Cycle)

T_{ON1} (ms) :	
T_{ON2} (ms) :	
Period (ms) :	


Keysight Spectrum Analyzer - Swept SA
Marker 2 Δ 100.000 ms
PNO: Wide
IFGain:Low
Trig: Free Run
Atten: 10 dB
Avg Type: Log-Pwr
09:09:19 AM Jan 21, 2026
ΔMkr2 100.0 ms
0.06 dB
10 dB/div
Log
Ref 0.00 dBm
1
2Δ1
Center 433.970000 MHz
Res BW 100 kHz
#VBW 300 kHz
Span 0 Hz
Sweep 250.0 ms (1001 pts)
Marker
Select Marker 2
Normal
Delta
Fixed
Off
Properties
More 1 of 2

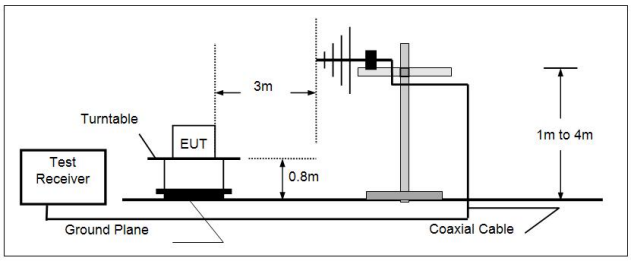
6.6. Radiated field strength of the fundamental signal

Limit:

Fundamental frequency (MHz)	Field strength of fundamental (microvolts/meter)	Field strength of spurious emissions (microvolts/meter)
40.66-40.70	2,250	225
70-130	1,250	125
130-174	[1]1,250 to 3,750	[1]125 to 375
174-260	3,750	375
260-470	[1]3,750 to 12,500	[1]375 to 1,250
Above 470	12,500	1,250

[1]Linear interpolations.

Test configuration:



Test procedure:

1. The EUT was setup and tested according to ANSI C63.10.
2. The EUT is placed on a turn table which is 0.8 meter above ground for below 1 GHz, and 1.5 m for above 1 GHz. The turn table is rotated 360 degrees to determine the position of the maximum emission level.
3. The EUT was set 3 meters from the receiving antenna, which was mounted on the top of a variable height antenna tower.
4. For each suspected emission, the EUT was arranged to its worst case and then tune the Antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter are used for the test in order to get better signal level to comply with the guidelines.
5. Set to the maximum power setting and enable the EUT transmit continuously.
6. Use the following spectrum analyzer settings
   RBW=120 kHz, VBW=300 kHz, Sweep=auto, Detector function=peak, Trace=max hold;
7. If the emission level of the EUT measured by the peak detector is 3 dB lower than the applicable limit, the peak emission level will be reported. Otherwise, the emission measurement will be repeated using the quasi-peak detector and reported.

Test mode: Refer to the clause 4.2

Result: **Passed**

Frequency (MHz)	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector	Polarity
433.97	78.06	100.83	22.77	Peak	Horizontal
433.97	66.01	80.83	14.82	Average	Horizontal
433.97	77.98	100.83	22.85	Peak	Vertical
433.97	65.93	80.83	14.90	Average	Vertical

Note:

1) Level= Reading + Factor/Transd; Factor/Transd =Antenna Factor+ Cable Loss- Preamp Factor
2) Margin = Limit – Level
3) Average Level = Peak Level+Duty cycle corrected factor
4) This test was performed with EUT in X, Y, Z position and the worse case was found when EUT in Y position.

6.7. Radiated Spurious Emission

Limit:

FCC CFR Title 47 Part 15 Subpart C Section 15.209

Frequency	Limit (dBuV/m)	Value
0.009 MHz ~0.49 MHz	2400/F(kHz) @300m	Quasi-peak
0.49 MHz ~ 1.705 MHz	24000/F(kHz) @30m	Quasi-peak
1.705 MHz ~30 MHz	30 @30m	Quasi-peak

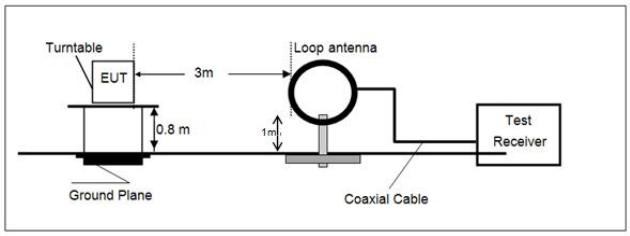
Limit dBuV/m @3m = Limit dBuV/m @300m + 40*log(300/3

Limit dBuV/m @3m = Limit dBuV/m @30m +40*log(30/3)

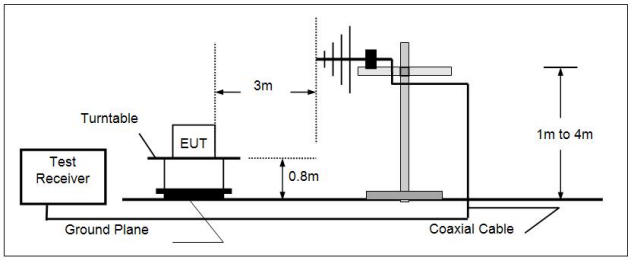
Frequency	Limit (dBuV/m @3m)	Value
30MHz~88MHz	40.00	Quasi-peak
88MHz~216MHz	43.50	Quasi-peak
216MHz~960MHz	46.00	Quasi-peak
960MHz~1GHz	54.00	Quasi-peak
Above 1GHz(Field strength of fundamental)	80.83	Average
	100.83	Peak
Above 1GHz(Field strength of harmonics)	60.83	Average
	80.83	Peak

Test configuration:

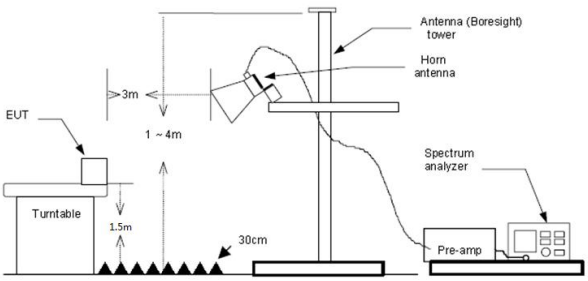
9kHz~30MHz



30 MHz ~ 1 GHz



Above 1 GHz



Test procedure:	8. The EUT was setup and tested according to ANSI C63.10. 9. The EUT is placed on a turn table which is 0.8 meter above ground for below 1 GHz, and 1.5 m for above 1 GHz. The turn table is rotated 360 degrees to determine the position of the maximum emission level. 10. The EUT was set 3 meters from the receiving antenna, which was mounted on the top of a variable height antenna tower. 11. For each suspected emission, the EUT was arranged to its worst case and then tune the Antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter are used for the test in order to get better signal level to comply with the guidelines. 12. Set to the maximum power setting and enable the EUT transmit continuously. 13. Use the following spectrum analyzer settings a) Span shall wide enough to fully capture the emission being measured; b) Below 1 GHz: RBW=120 kHz, VBW=300 kHz, Sweep=auto, Detector function=peak, Trace=max hold; If the emission level of the EUT measured by the peak detector is 3 dB lower than the applicable limit, the peak emission level will be reported. Otherwise, the emission measurement will be repeated using the quasi-peak detector and reported. c) Set RBW=1MHz, VBW=3MHz for >1GHz, Sweep time=auto, Detector=peak, Trace=max hold for Peak measurement d) Set RBW=1MHz, VBW=3MHz for >1GHz, Sweep time=auto, Detector=peak, Trace=max hold for Peak measurement
Test mode:	Refer to the clause 4.2
Result:	**Passed**

Note:

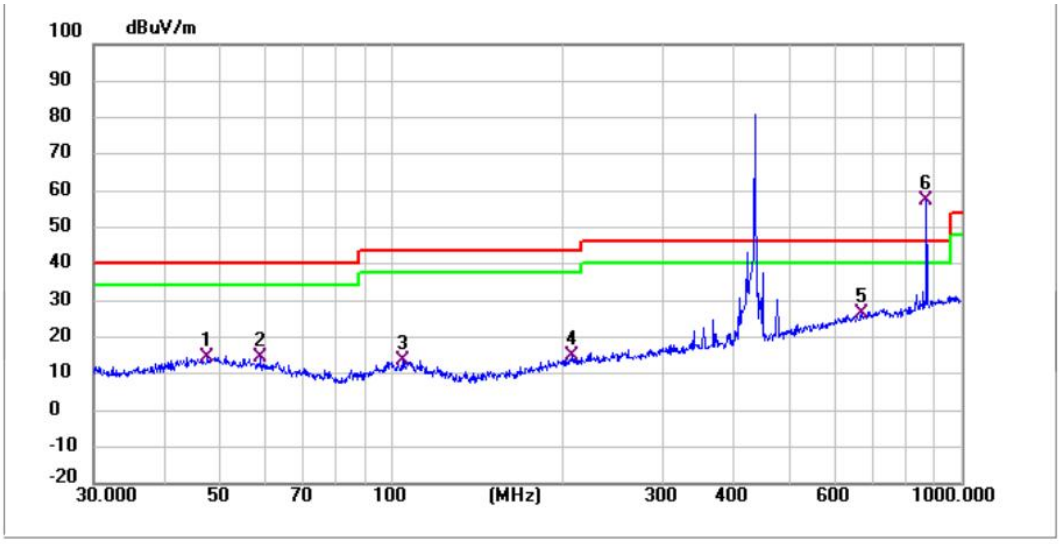
1) Level= Reading + Factor/Transd; Factor/Transd =Antenna Factor+ Cable Loss- Preamp Factor
2) Margin = Limit – Level
3) Average Level = Peak Level+Duty cycle corrected factor
4) Average measurement was not performed if peak level is lower than average limit(54 dBuV/m) for above 1GHz.
5) The other emission levels were very low against the limit.
6) This test was performed with EUT in X, Y, Z position and the worse case was found when EUT in X position.

For 9 kHz ~ 30 MHz

The EUT was pre-scanned this frequency band, found the radiated level 20dB lower than the limit, so don't show data on this report.

For 30 MHz ~ 1000 MHz

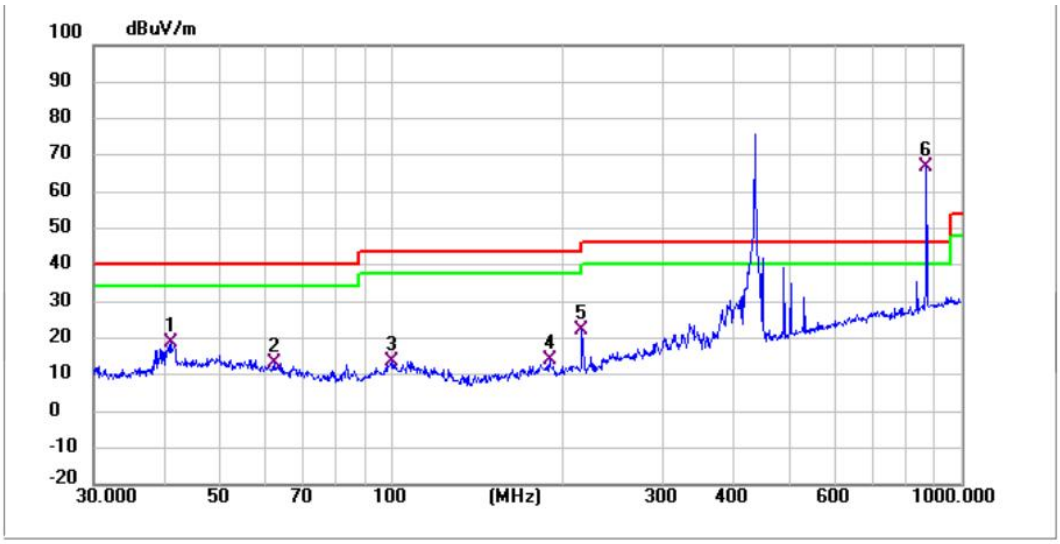
Polarization:	Horizontal



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	47.4917	43.95	-29.24	14.71	40.00	25.29	QP
2	59.0251	45.14	-30.64	14.50	40.00	25.50	QP
3	104.5360	44.30	-30.81	13.49	43.50	30.01	QP
4	207.8500	44.76	-29.66	15.10	43.50	28.40	QP
5	670.4891	44.09	-17.66	26.43	46.00	19.57	QP
6 *	869.1302	72.60	-15.25	57.35	46.00	-11.35	QP

Fundamental and Harmonics Result						
Frequency (MHz)	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector	Polarity	Conclusion
869.13	57.35	80.83	23.48	Peak	Horizontal	PASS
869.13	45.3	60.83	15.53	Average	Horizontal	PASS

Polarization:	Vertical

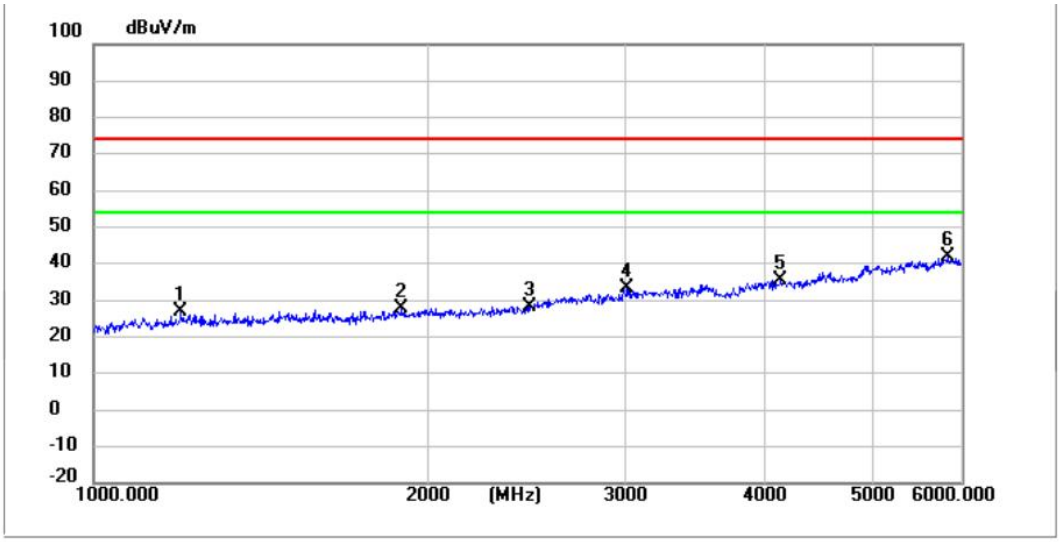


No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	40.9880	49.46	-30.56	18.90	40.00	21.10	QP
2	62.2128	44.55	-31.17	13.38	40.00	26.62	QP
3	99.8777	44.72	-30.88	13.84	43.50	29.66	QP
4	189.7384	44.89	-30.76	14.13	43.50	29.37	QP
5	216.0240	51.78	-29.61	22.17	46.00	23.83	QP
6 *	869.1301	81.99	-15.25	66.74	46.00	-20.74	QP

Fundamental and Harmonics Result						
Frequency (MHz)	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector	Polarity	Conclusion
869.13	66.74	80.83	14.09	Peak	Horizontal	PASS
869.13	54.69	60.83	6.14	Average	Horizontal	PASS

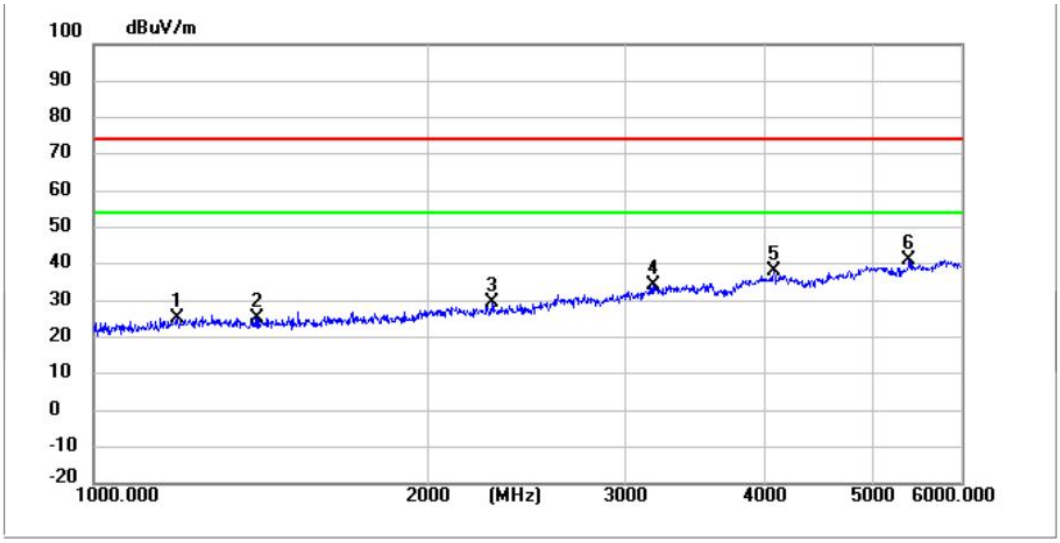
For 1 GHz ~ 6 GHz

Polarization:	Horizontal



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	1199.0000	48.22	-21.46	26.76	74.00	47.24	peak
2	1889.5000	47.01	-19.27	27.74	74.00	46.26	peak
3	2462.0000	45.54	-17.15	28.39	74.00	45.61	peak
4	3010.5000	47.80	-14.60	33.20	74.00	40.80	peak
5	4134.5000	47.56	-11.97	35.59	74.00	38.41	peak
6 *	5837.5000	48.09	-6.19	41.90	74.00	32.10	peak

Polarization:	Vertical



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	1189.0000	46.59	-21.50	25.09	74.00	48.91	peak
2	1403.5000	46.50	-21.09	25.41	74.00	48.59	peak
3	2280.5000	47.21	-17.59	29.62	74.00	44.38	peak
4	3181.5000	48.53	-14.12	34.41	74.00	39.59	peak
5	4081.5000	49.99	-12.09	37.90	74.00	36.10	peak
6 *	5391.5000	47.40	-6.53	40.87	74.00	33.13	peak

------End of the report------