

TEST REPORT

Application No.:	GZCR2506000906LM
Applicant:	SHENZHEN BETTERLIFE PHOTOELECTRIC TECHNOLOGY CO., LTD.
Address of Applicant:	2nd Floor, Building C, Shitoushan Industrial Zone, Zhoushi Road, Shiyan Town, Baoan District, Shenzhen, Guangdong, China
Manufacturer:	SHENZHEN BETTERLIFE PHOTOELECTRIC TECHNOLOGY CO., LTD.
Address of Manufacturer:	2nd Floor, Building C, Shitoushan Industrial Zone, Zhoushi Road, Shiyan Town, Baoan District, Shenzhen, Guangdong, China
Factory:	SHENZHEN BETTERLIFE PHOTOELECTRIC TECHNOLOGY CO., LTD.
Address of Factory:	2nd Floor, Building C, Shitoushan Industrial Zone, Zhoushi Road, Shiyan Town, Baoan District, Shenzhen, Guangdong, China
Product Name:	Projector Light
Model No.:	SA200, SA201, SA202, SA203, SA204, SA205, SA206, SA207, SA208, SA209, SA200G, SA201G, SA202G, SA203G, SA204G, SA205G, SA206G, SA207G, SA208G, SA209G, SA200B, SA201B, SA202B, SA203B, SA204B, SA205B, SA206B, SA207B, SA208B, SA209B, SA200Y, SA201Y, SA202Y, SA203Y, SA204Y, SA205Y, SA206Y, SA207Y, SA208Y, SA209Y *
♦	Please refer to section 2 of this report which indicates which item was actually tested and which were electrically identical.
Standard(s):	47 CFR Part 15, Subpart C 15.231
Date of Receipt:	2025-06-24
Date of Test:	2025-07-09 to 2025-07-28
Date of Issue:	2025-08-13
Test Result:	Pass*

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



Ricky Liu
Manager

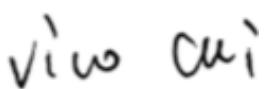
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Revision Record			
Version	Report No.	Date	Remark
01	GZCR250600090602	2025-08-13	Original

Authorized for issue by:			
			
		Michael Huang/Project Engineer	
			
		Vico Cui/Reviewer	



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2 Test Summary

Radio Spectrum Technical Requirement				
Item	Standard	Method	Requirement	Result
Antenna Requirement	47 CFR Part 15, Subpart C 15.231	N/A	47 CFR Part 15, Subpart C 15.203	Pass

Radio Spectrum Matter Part				
Item	Standard	Method	Requirement	Result
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 (15.231(a1))		ANSI C63.10 (2013) Section 7.8.4	47 CFR Part 15, Subpart C 15.231(a1)	Pass
Radiated Emissions below 1GHz		ANSI C63.10 (2013) Section 6.4&6.5	47 CFR Part 15C Section 15.231(e) and 15.209	Pass**
Field Strength of the Fundamental Signal (15.231(b))		ANSI C63.10 (2013) Section 6.5	47 CFR Part 15, Subpart C 15.231(b)	Pass**
Radiated Emissions above 1GHz		ANSI C63.10 (2013) Section 6.6	47 CFR Part 15C Section 15.231(e) and 15.209	Pass**

**: The EUT passed Radiated Emissions below 1GHz, Field Strength of the Fundamental Signal (15.231(b)) and Radiated Emissions above 1GHz tests after modifications.

Note:

E.U.T./EUT means Equipment Under Test.

Pass means the test result passed the test standard requirement, please find the detailed decision rule in the report relative section.

♦ Declaration of EUT Family Grouping:

Model No.:

SA200, SA201, SA202, SA203, SA204, SA205, SA206, SA207, SA208, SA209,
 SA200G, SA201G, SA202G, SA203G, SA204G, SA205G, SA206G, SA207G, SA208G, SA209G,
 SA200B, SA201B, SA202B, SA203B, SA204B, SA205B, SA206B, SA207B, SA208B, SA209B,
 SA200Y, SA201Y, SA202Y, SA203Y, SA204Y, SA205Y, SA206Y, SA207Y, SA208Y, SA209Y

According to the declaration from the applicant, the electrical circuit design, layout, components used and internal wiring were identical for all models, with only difference being the model name.

Only the model SA200 was tested.



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4 General Information

4.1 Details of E.U.T.

Power supply:	DC 5V 3 W Max for light unit (Receiver) DC 3V (1 X 3V"CR2025" button cell) for remote control (Transmitter)
Cable(s):	Type C ports with 1.0m unscreened DC output cable
Test Voltage:	DC 3 V
Operation Frequency:	433.92 MHz
Channel Numbers:	1
Modulation Type:	ASK
Antenna Type:	PCB antenna

Remark: The information in this section is provided by the applicant or manufacturer, SGS is not liable to the accuracy, suitability, reliability or/and integrity of the information.

4.2 Description of Support Units

The EUT has been tested as an independent unit.

4.3 Measurement Uncertainty

Test Item	Measurement Uncertainty
20dB Bandwidth	±0.274%
Dwell Time (15.231(a1))	±0.029%
Radiated Emissions below 1GHz	±5.14dB (30MHz-1GHz; 3m) ±4.90dB (30MHz-1GHz; 10m)
Field Strength of the Fundamental Signal (15.231(b))	±5.14dB (30MHz-1GHz; 3m) ±4.90dB (30MHz-1GHz; 10m)
Radiated Emissions above 1GHz	±4.88dB (1GHz-6 GHz) ±5.06dB (6GHz-18GHz) ±5.30dB (18GHz-40GHz)

Remark:

The U_{lab} (lab Uncertainty) is less than U_{cispr} (CISPR Uncertainty) or U_{ETSI} (ETSI Uncertainty).

Emission decision rule:

- Compliance is deemed to occur if no measured disturbance level exceeds the disturbance limit, marked as Pass in the report.
- Non-compliance is deemed to occur if any measured disturbance level exceeds the disturbance limit, marked as Fail in the report.

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4.4 Test Location

All tests were performed at:

SGS-CSTC Standards Technical Services Co., Ltd., Guangzhou Branch EMC Laboratory,
No.198, Kezhu Road, Science City, Economic & Technological Development Area, Guangzhou,
Guangdong, China 510663
Tel: +86 20 82155555

No tests were sub-contracted.

4.5 Test Facility

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

- **ACMA**

SGS-CSTC Standards Technical Services Co., Ltd., EMC Laboratory can also perform testing for the Australian/New Zealand Regulatory Compliance Mark (RCM).

- **SGS UK(Certificate No.: 32), SGS-TUV SAARLAND and SGS-FIMKO**

Have approved SGS-CSTC Standards Technical Services Co., Ltd., EMC Laboratory as a supplier of EMC TESTING SERVICES and SAFETY TESTING SERVICES.

- **FCC Recognized Accredited Test Firm(Registration No.: 486818)**

SGS-CSTC Standards Technical Services Co., Ltd., EMC Laboratory has been accredited and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Designation Number: CN5016, Test Firm Registration Number: 486818.

- **ISED (Registration No.: 4620B, CAB identifier: CN0052)**

SGS-CSTC Standards Technical Services Co., Ltd., has been registered by Innovation Science and Economic Development Canada for Wireless Device Testing laboratories to test to Canadian radio equipment requirements. Registration No. 4620B, CAB identifier: CN0052.

- **VCCI (Registration No.: R-12460, C-12584, G-20107 and T-11179)**

The 10m Semi-anechoic chamber, 966 Anechoic Chamber and Shielded Room of SGS-CSTC Standards Technical Services Co., Ltd. have been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: R-12460, C-12584, G-20107 and T-11179 respectively.

- **CBTL (Lab Code: TL129)**

SGS-CSTC Standards Technical Services Co., Ltd., E&E Laboratory has been assessed and fully comply with the requirements of ISO/IEC 17025:2017, the Basic Rules, IECEE 01 and Rules of procedure IECEE 02, and the relevant IECEE CB-Scheme Operational documents.

4.6 Deviation from Standards

None

4.7 Abnormalities from Standard Conditions

None



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5 Equipment List

20dB Bandwidth

Equipment	Manufacturer	Model No.	Inventory No.	Cal Date	Cal Due Date
MXA Signal Analyzer (10Hz-8.4GHz)	Agilent Technologies	N9020A	SEM004-10	2024-12-03	2025-12-02
MI CABLE	SGS-EMC	0.8M	EMC2136	2023-11-02	2025-11-01

Dwell Time (15.231(a1))

Equipment	Manufacturer	Model No.	Inventory No.	Cal Date	Cal Due Date
MXA Signal Analyzer (10Hz-8.4GHz)	Agilent Technologies	N9020A	SEM004-10	2024-12-03	2025-12-02
MI CABLE	SGS-EMC	0.8M	EMC2136	2023-11-02	2025-11-01

Radiated Emissions below 1GHz

Equipment	Manufacturer	Model No.	Inventory No.	Cal Date	Cal Due Date
966 Anechoic Chamber	Shenzhen C.R.T	CRTSGSSAC9 66	EMC2230	2025-03-22	2028-03-21
EMI Test Receiver(1Hz-8GHz)	Rohde & Schwarz	ESW8	EMC2229	2024-12-03	2025-12-02
Amplifier(9k-1000MHz)	SONOMA	310	EMC2237	2024-12-03	2025-12-02
Trilog Broadband Antenna (25MHz-2GHz)	Schwarzbeck Mess-Elektronik	VULB 9168	EMC2238	2025-03-24	2027-03-23
Coaxial Cable	Mirco-COAX UTIFLEX ve	LA2-C125-8000	EMC2239	2024-12-04	2026-12-03
Test Software E3	Audix	Ver.6.191211	GZE100-81	N/A	N/A
Active Loop Antenna-RED	ETS-Lindgren	6502	EMC2190	2024-04-08	2026-04-07

Field Strength of the Fundamental Signal (15.231(b))

Equipment	Manufacturer	Model No.	Inventory No.	Cal Date	Cal Due Date
966 Anechoic Chamber	Shenzhen C.R.T	CRTSGSSAC9 66	EMC2230	2025-03-22	2028-03-21
EMI Test Receiver(1Hz-8GHz)	Rohde & Schwarz	ESW8	EMC2229	2024-12-03	2025-12-02
Amplifier(9k-1000MHz)	SONOMA	310	EMC2237	2024-12-03	2025-12-02
Trilog Broadband Antenna (25MHz-2GHz)	Schwarzbeck Mess-Elektronik	VULB 9168	EMC2238	2025-03-24	2027-03-23
Coaxial Cable	Mirco-COAX UTIFLEX ve	LA2-C125-8000	EMC2239	2024-12-04	2026-12-03
Test Software E3	Audix	Ver.6.191211	GZE100-81	N/A	N/A



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Radiated Emissions above 1GHz

Equipment	Manufacturer	Model No.	Inventory No.	Cal Date	Cal Due Date
1-26.5 GHz Pre-Amplifier	Agilent	8449B	EMC0521	2024-10-14	2025-10-13
EMI Test Receiver (10Hz-26.5GHz)	Rohde & Schwarz	ESIB26	EMC0522	2024-09-02	2025-09-01
Chamber cable (Above 1GHz)	Scoflex	KMKM-8.0m	EMC0545	2024-08-19	2026-08-18
Horn Antenna (1-18GHz)	SCHWARZBECK MESS-ELEKTRONIK	BBHA 9120D	EMC2026	2025-05-13	2027-05-12
966 Anechoic Chamber	C.R.T	9m x 6m x 6m	EMC2142	2023-12-20	2026-12-19
Test Software E3	Audix	Ver.6.120110a	GZE100-61	N/A	N/A

General used equipment

Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
DMM	Fluke	73	EMC0006	2025-06-03	2026-06-02



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

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.

EUT Antenna:

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

Antenna location: Refer to Internal photos



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7 Radio Spectrum Matter Test Results

7.1 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

7.1.1 E.U.T. Operation

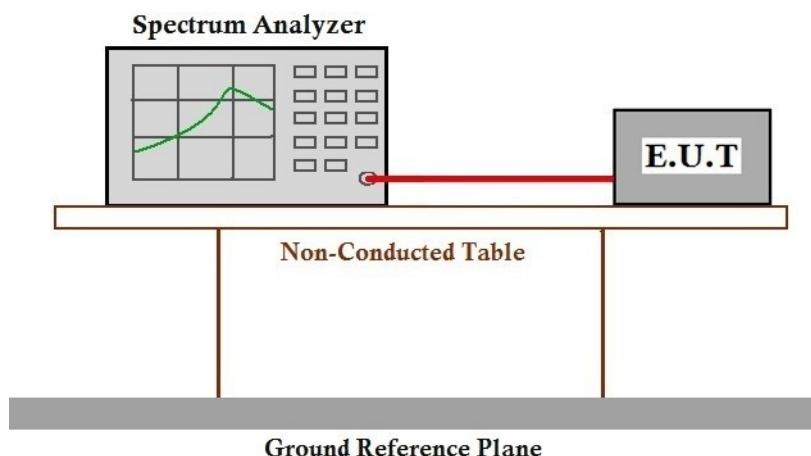
Operating Environment:

Temperature: 23.2 °C Humidity: 68.8 % RH Atmospheric Pressure: 1008 mbar

7.1.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	00	TX mode_Keep the EUT in continuously transmitting mode.

7.1.3 Test Setup Diagram

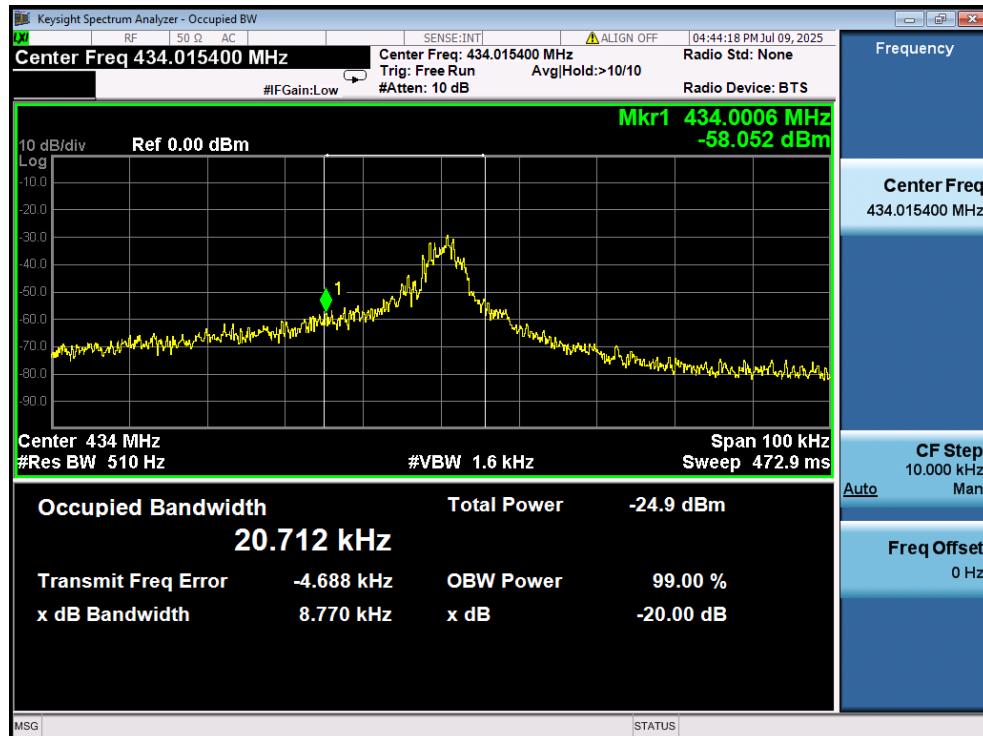


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7.1.4 Measurement Procedure and Data

Test Channel (MHz)	Bandwidth (MHz)	Limit (No wider than, MHz)	Verdict
433.92	0.0087	1.08	Pass



7.2 Radiated Emissions below 1GHz

Test Requirement 47 CFR Part 15C Section 15.231(e) and 15.209

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

Test Distance: 3m

Limit:

For Restricted bands

Frequency(MHz)	Field strength(microvolts/meter)	Measurement distance(meters)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30.0	30	30
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

Remark: The emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9-90kHz, 110-490kHz and above 1000 MHz. Radiated emission limits in these three bands are based on measurements employing an average detector, 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.

For Other bands

Fundamental Frequency MHz	Field Strength of Fundamental (μ V/m @ 3 m)	Field Strength of Harmonics and Spurious Emissions (μ V/m @ 3 m)
40.66 to 40.70	2,250	225
70 to 130	1,250	125
130 to 174	**1,250 to 3,750	**125 to 375
174 to 260	3,750	375
260 to 470	**3,750 to 12,500	**375 to 1,250
Above 470	12,500	1,250
Detector:	Peak for pre-scan QP for 30MHz to 1000 MHz: 120 kHz resolution bandwidth Peak for Above 1 GHz: 1 MHz resolution bandwidth	

** linear interpolations

[Where F is the frequency in MHz, the formulas for calculating the maximum permitted fundamental field strengths are as follows:

for the band 130-174 MHz, μ V/m at 3 meters = $56.81818(F) - 6136.3636$;

for the band 260-470 MHz, μ V/m at 3 meters = $41.6667(F) - 7083.3333$.

The maximum permitted unwanted emission level is 20 dB below the maximum permitted fundamental level.

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The fundamental frequency of the EUT is 433.92 MHz

The limit for average or QP field strength dB_{UV}/m for the fundamental emission= 80.83 dB_{UV}/m

No fundamental is allowed in the restricted bands.

The limit for average field strength dB_{UV}/m for the spurious emission=60.83 dB_{UV}/m. Spurious in the restricted bands must be less than 60.83 dB_{UV}/m or 15.209, whichever limit permits a higher field strength.

7.2.1 E.U.T. Operation

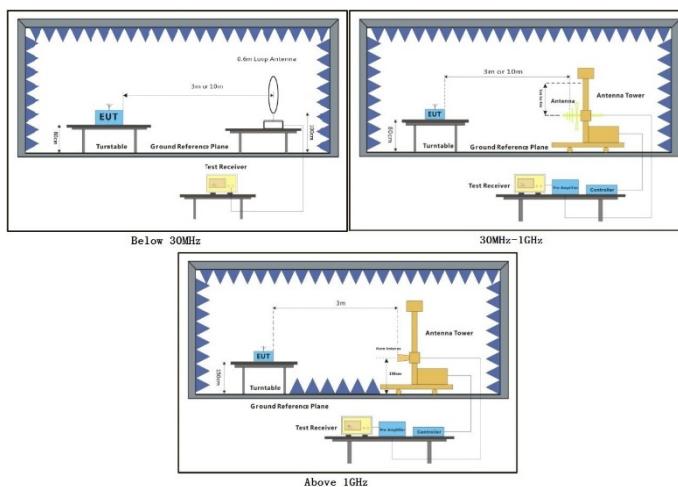
Operating Environment:

Temperature: 24.8 °C Humidity: 59.5 % RH Atmospheric Pressure: 1008 mbar

7.2.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	00	TX mode _Keep the EUT in continuously transmitting mode.

7.2.3 Test Setup Diagram



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7.2.4 Measurement Procedure and Data

- a. 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.
- b. 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.
- 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:

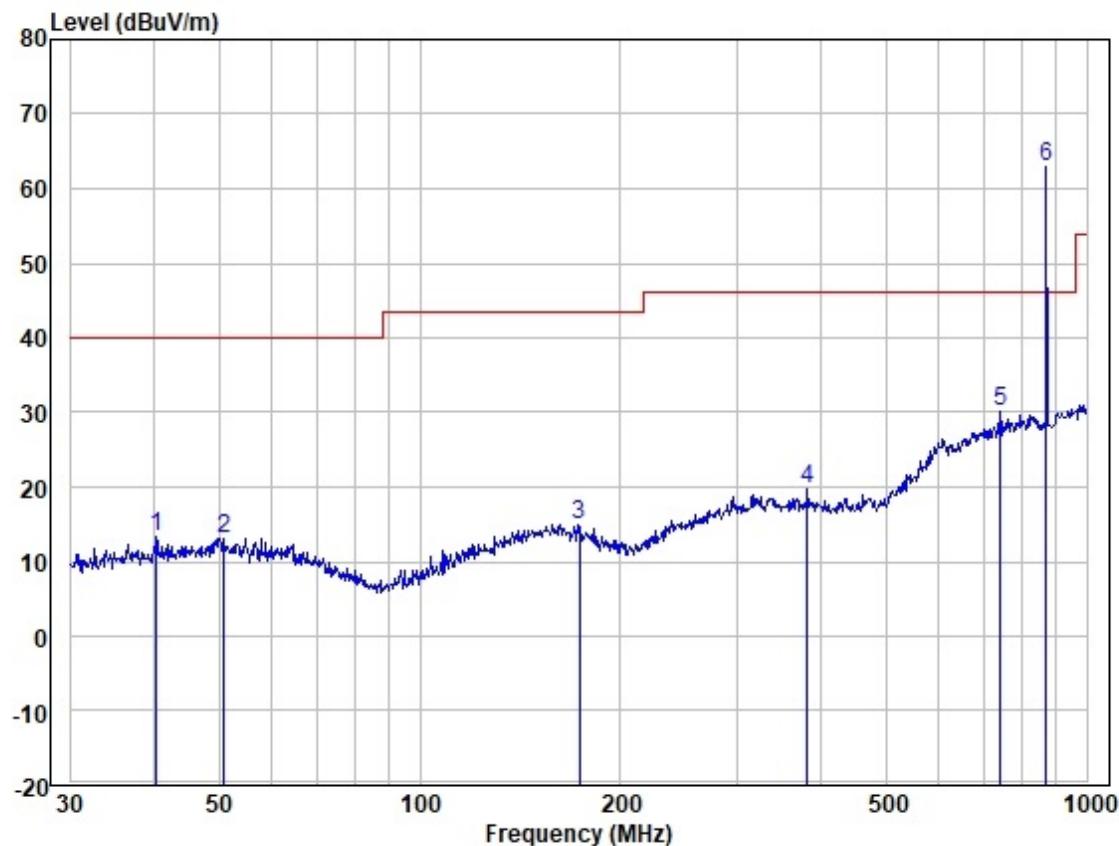
- 1) The field strength is calculated by adding the Antenna Factor, Cable Factor & Preamplifier. The basic equation with a sample calculation is as follows: Final Test Level = Receiver Reading + Antenna Factor + Cable Factor - Preamplifier Factor
- 2) Scan from 9kHz to 1GHz, the disturbance below 30MHz 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.



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Test Mode: 00; Polarity: Horizontal



Site : 966 Chamber
 Job :
 Model :
 Power :
 Test Mode :

Freq	Read	Antena	Cable	Preamp	Measured	Limit	Over	Pol/	Remark
	Level	Factor	Loss	Factor	Level	Line	Limit	Phase	
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1 40.276	26.45	19.29	0.35	32.78	13.31				
2 50.942	25.97	19.62	0.39	32.79	13.19				
3 173.205	28.86	18.21	0.73	32.79	15.01				
4 381.249	30.27	21.10	1.14	32.89	19.62				
5 742.259	32.76	27.60	1.58	31.72	30.22				
6 869.130	64.06	28.53	1.74	31.41	62.92				

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Fundamental Frequency: 433.92 MHz

Frequency (MHz)	Level (dBuV/m)	Factor (dB)	Limit Line (dBuV/m)	Over limit (dB)	Remark
40.276	13.31	None	80.83	-67.52	PK
40.276	5.24	-8.07	60.83	-55.58	AV
50.942	13.19	None	80.83	-67.64	PK
50.942	5.12	-8.07	60.83	-55.70	AV
173.205	15.01	None	80.83	-65.82	PK
173.205	6.94	-8.07	60.83	-53.88	AV
381.249	19.62	None	80.83	-61.21	PK
381.249	11.55	-8.07	60.83	-49.27	AV
742.259	30.22	None	80.83	-50.61	PK
742.259	22.15	-8.07	60.83	-38.67	AV
869.130	62.92	None	80.83	-17.91	PK
869.130	54.85	-8.07	60.83	-5.97	AV

Remark: AV level=PK level+Factor (dB)

Factor (dB)= $20 \log(\text{Duty cycle})$

Duty cycle= 0.395 (Please refer to section 7.4.4 for duty cycle value)

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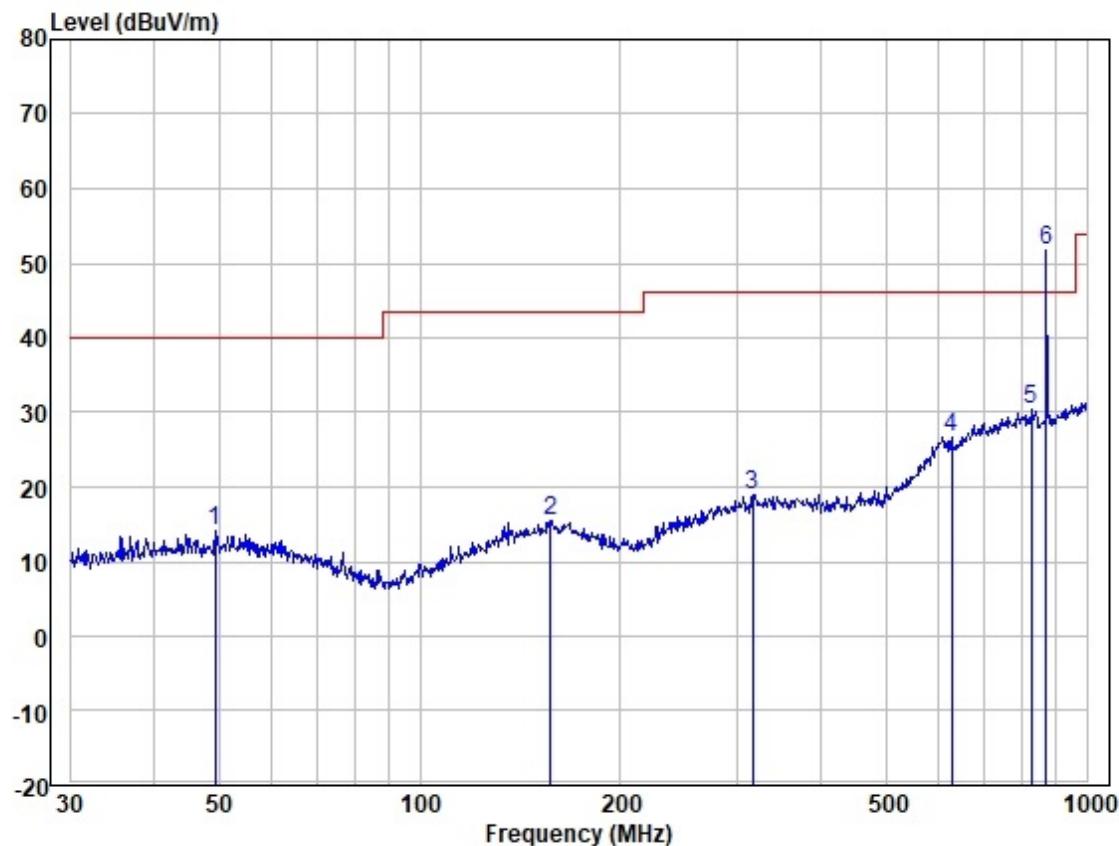
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Test Mode: 00; Polarity: Vertical



Site : 966 Chamber
Job :
Model :
Power :
Test Mode :

Freq	Read	Antena	Cable	Preamp	Measured	Limit	Over	Pol/	Remark
	Level	Factor	Loss	Factor	Level	Line	Limit	Phase	
1 49.359	26.82	19.65	0.39	32.79	14.07				
2 157.007	28.40	19.17	0.69	32.77	15.49				
3 315.481	30.98	19.74	0.99	32.87	18.84				
4 627.274	31.86	25.91	1.45	32.56	26.66				
5 824.597	31.21	29.13	1.68	31.56	30.46				
6 869.130	52.82	28.53	1.74	31.41	51.68				



Fundamental Frequency: 433.92 MHz

Frequency (MHz)	Level (dBuV/m)	Factor (dB)	Limit Line (dBuV/m)	Over limit (dB)	Remark
49.359	14.07	None	80.83	-66.76	PK
49.359	6.00	-8.07	60.83	-54.82	AV
157.007	15.49	None	80.83	-65.34	PK
157.007	7.42	-8.07	60.83	-53.40	AV
315.481	18.84	None	80.83	-61.99	PK
315.481	10.77	-8.07	60.83	-50.05	AV
627.274	26.66	None	80.83	-54.17	PK
627.274	18.59	-8.07	60.83	-42.23	AV
824.597	30.46	None	80.83	-50.37	PK
824.597	22.39	-8.07	60.83	-38.43	AV
869.130	51.68	None	80.83	-29.15	PK
869.130	43.61	-8.07	60.83	-17.21	AV

Remark: AV level=PK level+Factor (dB)

Factor (dB)= $20 \log(\text{Duty cycle})$

Duty cycle= 0.395 (Please refer to section 7.4.4 for duty cycle value)



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7.3 Dwell Time (15.231(a))

Test Requirement 47 CFR Part 15, Subpart C 15.231(a2)

Test Method: ANSI C63.10 (2013) Section 7.5

Limit:

Device type	Limit
Manually operated transmitter	The switch automatically deactivate the transmitter within not more than 5 seconds of being released
Automatically activated 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

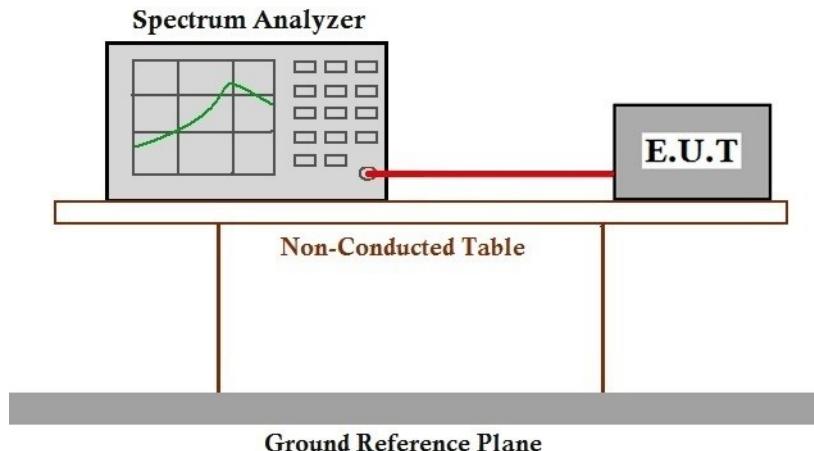
Operating Environment:

Temperature: 23.2 °C Humidity: 68.8 % RH Atmospheric Pressure: 1008 mbar

7.3.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	00	TX mode_Keep the EUT in continuously transmitting mode.

7.3.3 Test Setup Diagram



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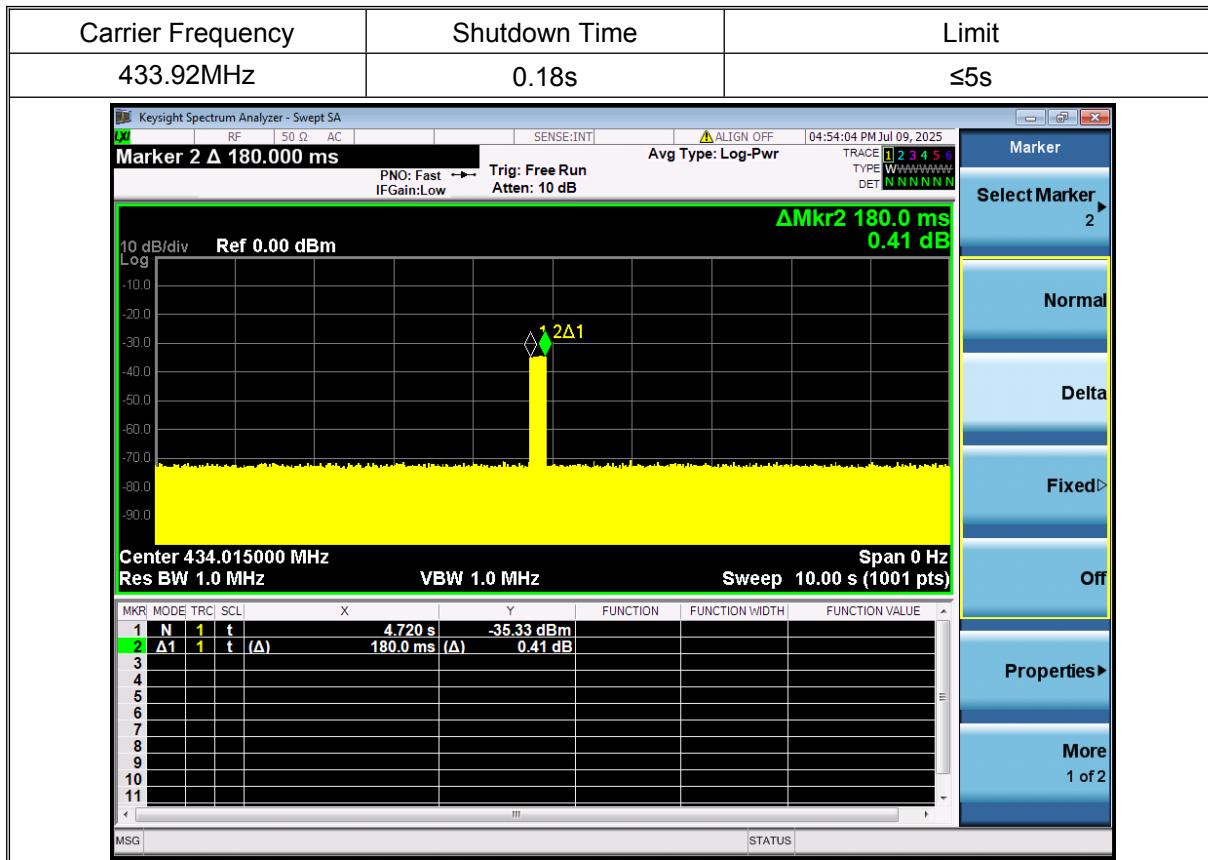


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7.3.4 Measurement Procedure and Data



7.4 Field Strength of the Fundamental Signal (15.231(b))

Test Requirement 47 CFR Part 15, Subpart C 15.231(b)

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

Limit:

Fundamental Frequency MHz	Field Strength of Fundamental (μ V/m @ 3 m)	Field Strength of Harmonics and Spurious Emissions (μ V/m @ 3 m)
40.66 to 40.70	2,250	225
70 to 130	1,250	125
130 to 174	**1,250 to 3,750	**125 to 375
174 to 260	3,750	375
260 to 470	**3,750 to 12,500	**375 to 1,250
Above 470	12,500	1,250
Detector:	Peak for pre-scan	
	QP for 30MHz to 1000 MHz: 120 kHz resolution bandwidth	
	Peak for Above 1 GHz: 1 MHz resolution bandwidth	

** linear interpolations

[Where F is the frequency in MHz, the formulas for calculating the maximum permitted fundamental field strengths are as follows:

for the band 130-174 MHz, μ V/m at 3 meters = $56.81818(F) - 6136.3636$;for the band 260-470 MHz, μ V/m at 3 meters = $41.6667(F) - 7083.3333$.]

The fundamental frequency of the EUT is 433.92 MHz

The limit for average or QP field strength dB μ V/m for the fundamental emission = 80.83 dB μ V/m

No fundamental is allowed in the restricted bands.

7.4.1 E.U.T. Operation

Operating Environment:

Temperature: 24.2 °C Humidity: 59.0 % RH Atmospheric Pressure: 1008 mbar

7.4.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
-----------------------	-----------	-------------

Final test	00	TX mode_Keep the EUT in continuously transmitting mode.
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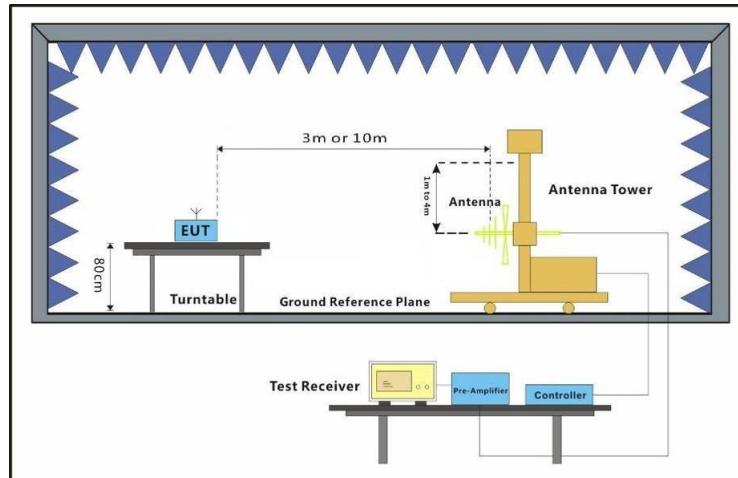
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7.4.3 Test Setup Diagram



7.4.4 Measurement Procedure and Data

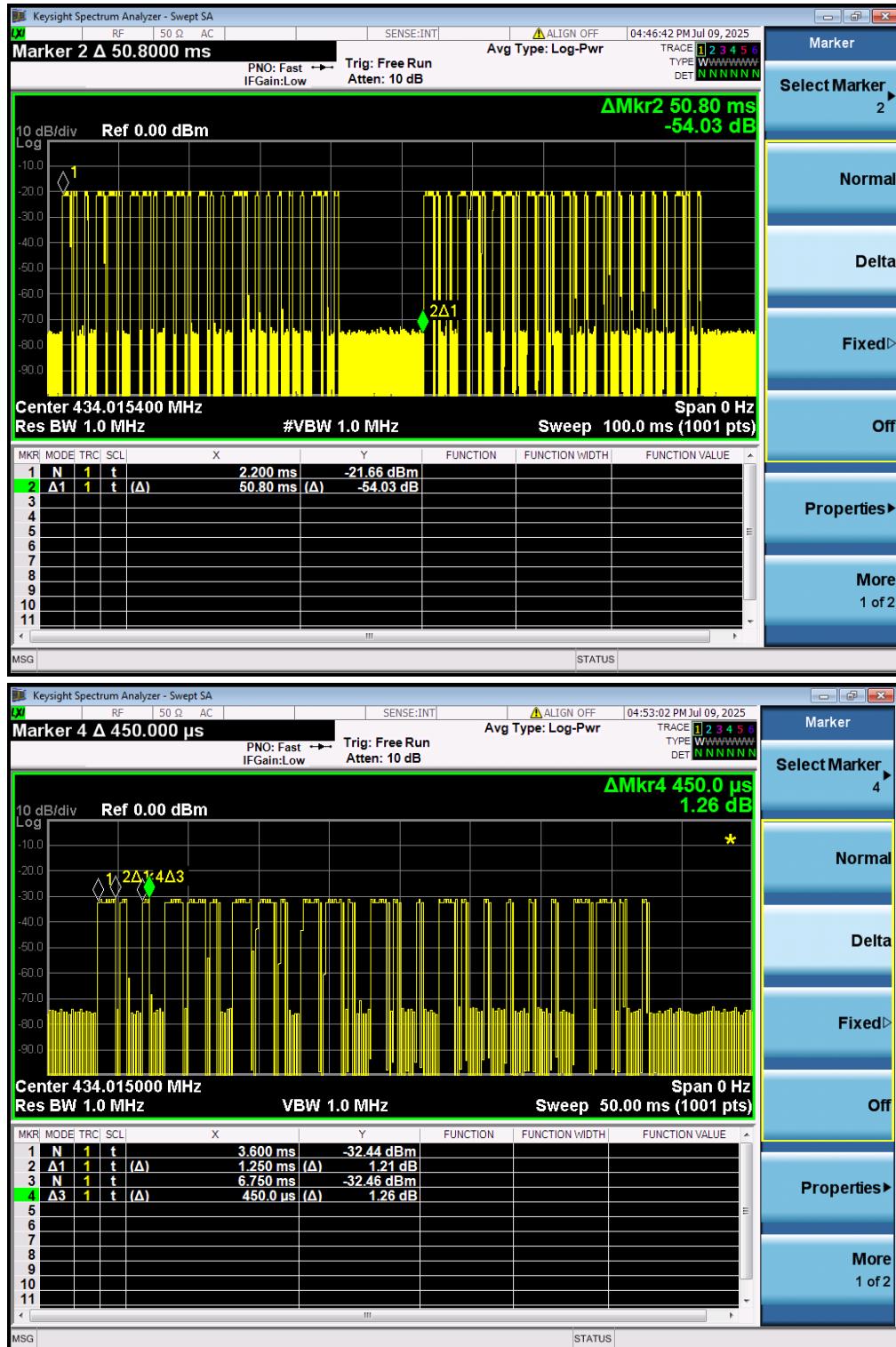
- a. For below 1GHz, the EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 or 10 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. For above 1GHz, the EUT was placed on the top of a rotating table 1.5 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.
- c. 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.
- d. 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.
- e. 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.
- f. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
- g. 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.
- h. 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: Level= Read Level+ Cable Loss+ Antenna Factor- Preamp Factor



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$$\text{Duty cycle} = (1.250 \times 11 + 0.450 \times 14) / 50.80 = 0.395$$



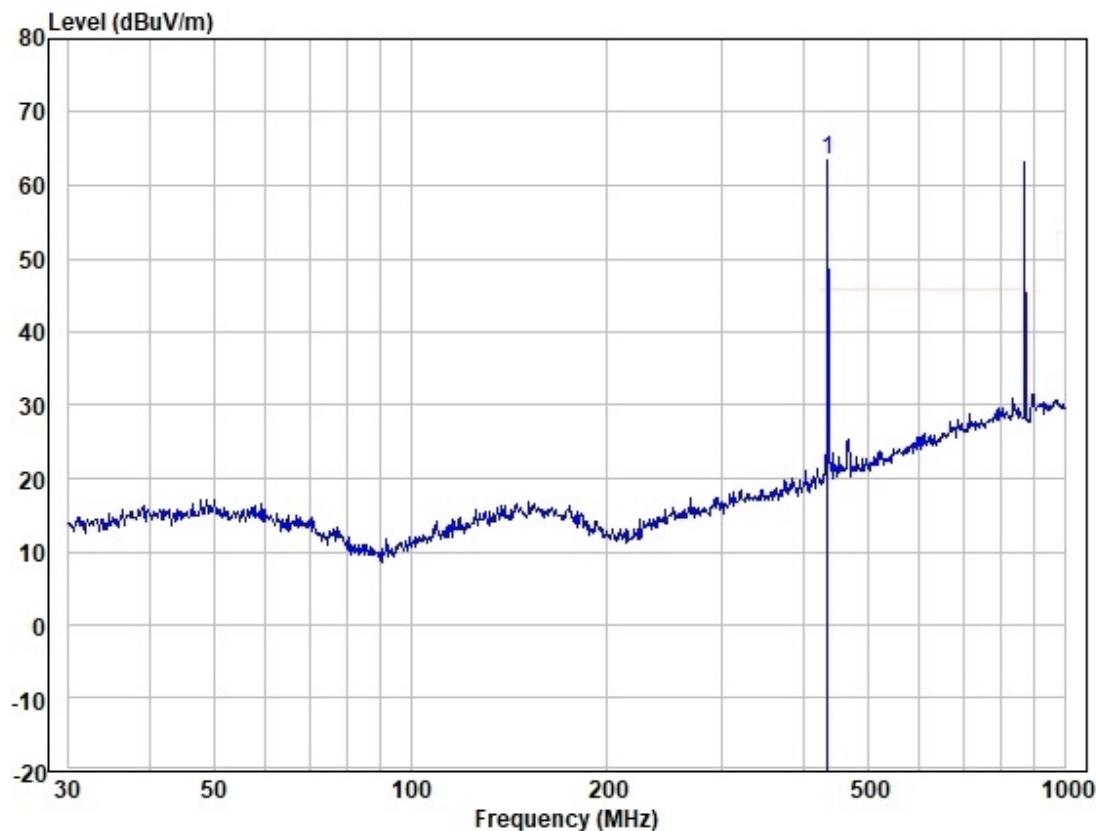
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Test Mode: 00; Polarity: Horizontal



Site : 966 Chamber
 Job :
 Model :
 Power :
 Test Mode :

Freq	Read	Antenna	Cable	Preamp	Measured	Limit	Over	Pol/	Remark
	Level	Factor	Loss	Factor	Level	Line	Limit	Phase	
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	—	—
1 434.065	72.74	22.35	1.19	32.93	63.35				

Fundamental Frequency: 433.92 MHz

Frequency (MHz)	Level (dBuV/m)	Factor (dB)	Limit Line (dBuV/m)	Over limit (dB)	Remark
434.065	63.35	None	100.83	-37.48	PK
434.065	55.28	-8.07	80.83	-25.54	AV

Remark: AV level=PK level+Factor (dB)

Factor (dB)=20*log(Duty cycle)

Duty cycle= 0.395

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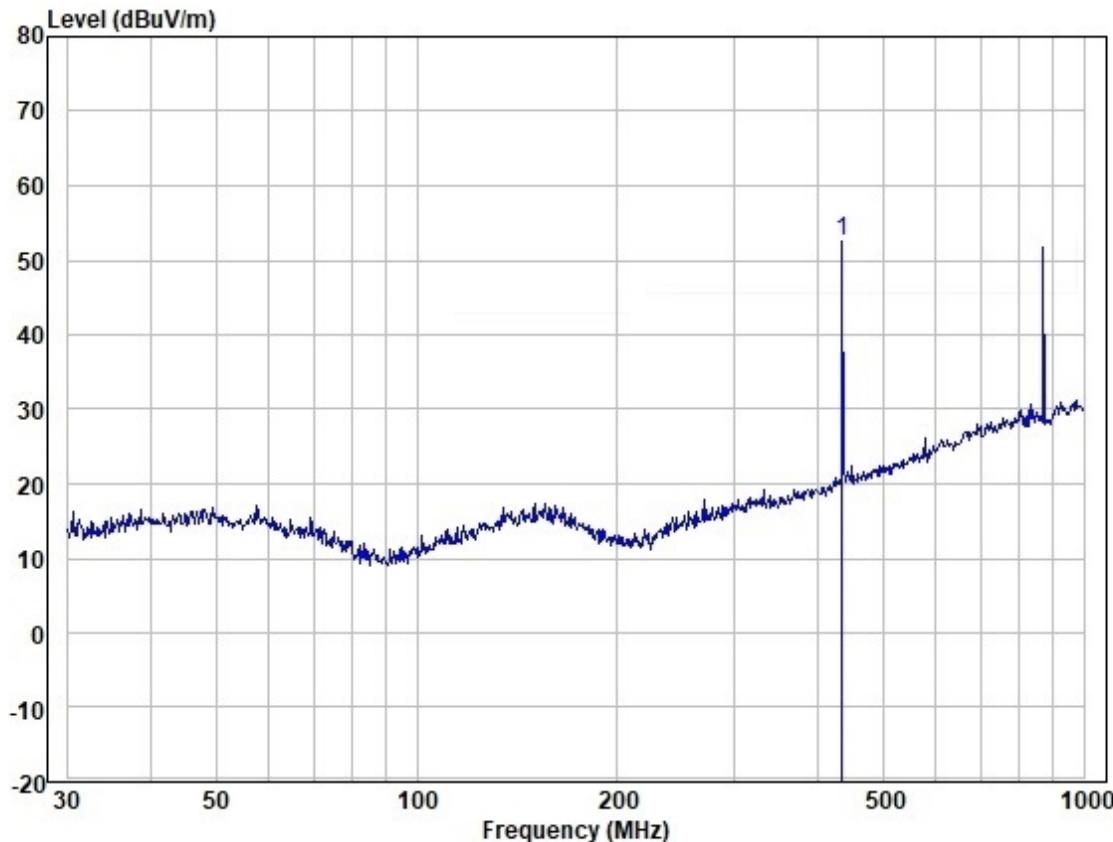
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Test Mode: 00; Polarity: Vertical



Site : 966 Chamber
 Job :
 Model :
 Power :
 Test Mode :

Freq	Read	Antenna	Cable	Preamp	Measured	Limit	Over	Pol/	Remark
	Level	Factor	Loss	Factor	Level	Line	Limit	Phase	
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	—	—
1 434.065	62.06	22.35	1.19	32.93	52.67	100.83	-48.16	PK	

Fundamental Frequency: 433.92 MHz

Frequency (MHz)	Level (dBuV/m)	Factor (dB)	Limit Line (dBuV/m)	Over limit (dB)	Remark
434.065	52.67	None	100.83	-48.16	PK
434.065	44.60	-8.07	80.83	-36.22	AV

Remark: AV level=PK level+Factor (dB)

Factor (dB)=20*log(Duty cycle)

Duty cycle= 0.395

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7.5 Radiated Emissions above 1GHz

Test Requirement 47 CFR Part 15C Section 15.231(e) and 15.209

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

Limit:

For Restricted bands

Frequency (MHz)	Field strength(microvolts/meter)	Measurement distance(meters)
Above 960	500	3

Remark: Radiated emission limits in this band is based on measurements employing an average detector, 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.

For Other bands

Fundamental Frequency MHz	Field Strength of Fundamental (μ V/m @ 3 m)	Field strength of spurious emissions (μ V/m @ 3 m)
Above 470	12,500	1,250
Detector:	Peak for pre-scan	Peak for Above 1 GHz: 1 MHz resolution bandwidth

7.5.1 E.U.T. Operation

Operating Environment:

Temperature: 26.9 °C Humidity: 65.9 % RH Atmospheric Pressure: 1008 mbar

7.5.2 Test Mode Description

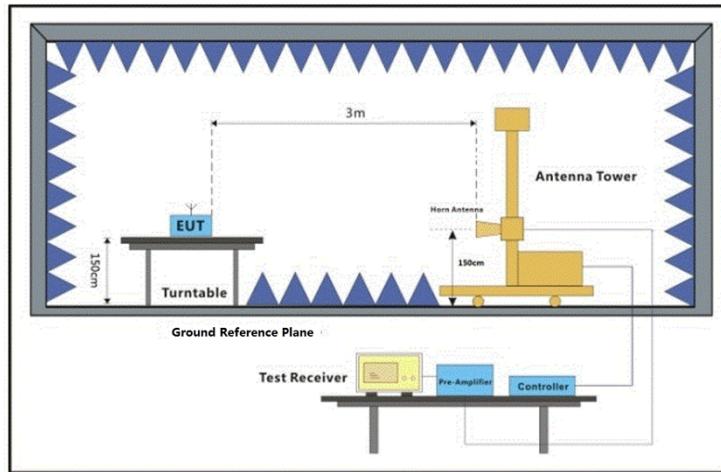
Pre-scan / Final test	Mode Code	Description
Final test	00	TX mode_Keep the EUT in continuously transmitting mode.



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7.5.3 Test Setup Diagram



7.5.4 Measurement Procedure and Data

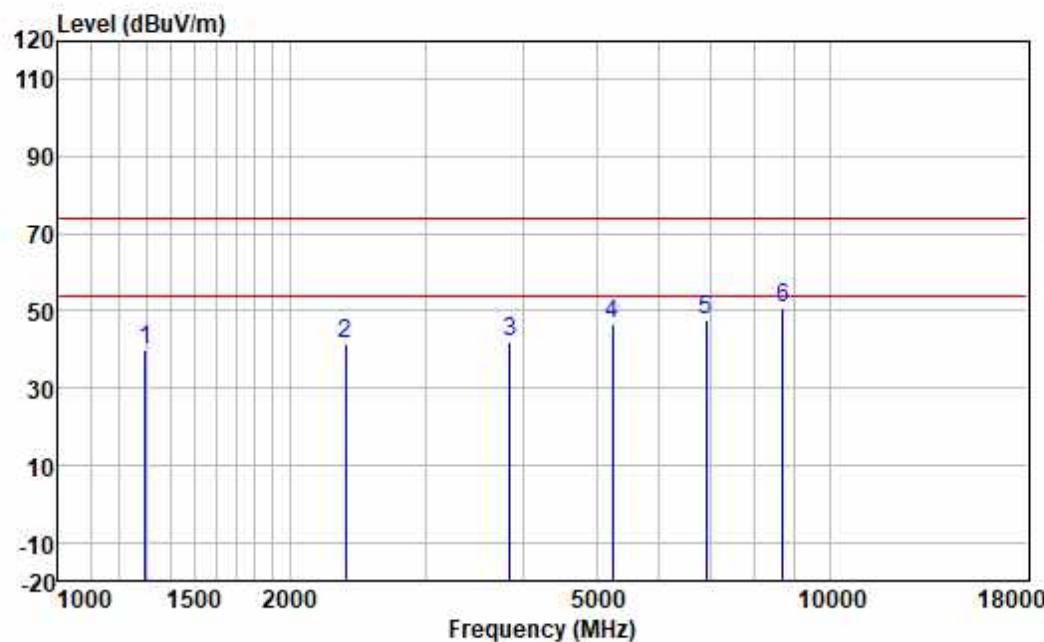
- a. For above 1GHz, the EUT was placed on the top of a rotating table 1.5 meters above the ground at a 3 meter fully-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which 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 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) 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 + Antenna Factor + Cable Factor - Preamplifier Factor
- 2) For frequencies above 1GHz, the field strength limits 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. For the emissions whose peak level is lower than the average limit, only the peak measurement is shown in the report.



Test Mode: 00; Polarity: Vertical



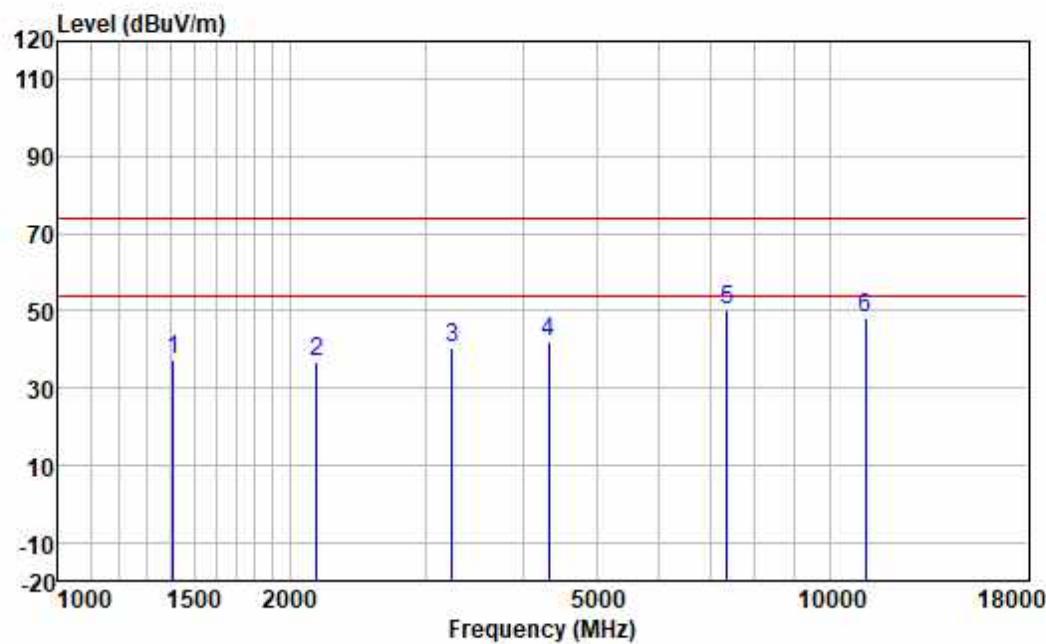
Freq	ReadAntenna	Cable	Preamp	Limit	Over	Over	Pol/Phase	Remark
	Level	Loss	Factor					
MHz	dBuV	dB/m	dB	dBuV/m	dBuV/m	dB		
1 1297.103	50.30	25.59	2.58	38.60	39.87	74.00	-34.13	VERTICAL Peak
2 2359.478	48.27	27.59	3.43	37.77	41.52	74.00	-32.48	VERTICAL Peak
3 3856.668	45.47	29.80	4.42	37.51	42.18	74.00	-31.82	VERTICAL Peak
4 5239.274	46.97	31.92	5.02	37.21	46.70	74.00	-27.30	VERTICAL Peak
5 6914.763	43.94	35.11	5.84	37.14	47.75	74.00	-26.25	VERTICAL Peak
6 8688.480	44.45	37.09	6.51	37.18	50.87	74.00	-23.13	VERTICAL Peak



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Test Mode: 00; Polarity: Horizontal



Freq	ReadAntenna		Cable		Preamp	Level	Limit	Over	Over	Pol/Phase	Remark
	MHz	Level	Factor	Loss							
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	dB		
1	1410.514	47.22	25.81	2.66	38.47	37.22	74.00	-36.78	HORIZONTAL	Peak	
2	2163.504	44.57	26.95	3.22	37.79	36.95	74.00	-37.05	HORIZONTAL	Peak	
3	3242.619	45.16	28.84	3.96	37.58	40.38	74.00	-33.62	HORIZONTAL	Peak	
4	4329.354	44.13	30.67	4.59	37.46	41.93	74.00	-32.07	HORIZONTAL	Peak	
5	7368.741	45.11	36.41	6.00	37.18	50.34	74.00	-23.66	HORIZONTAL	Peak	
6	11140.310	37.11	40.75	7.54	36.97	48.43	74.00	-25.57	HORIZONTAL	Peak	

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8 Test Setup Photo

Refer to Setup Photos for GZCR250600090602



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9 EUT Constructional Details (EUT Photos)

Refer to External and Internal Photos for GZCR2506000906LM

- End of the Report -

