

TEST REPORT

Application No.: GZCR2109021088AT
Applicant: Shantou Yuejian Plastic Products Co., LTD
Address of Applicant: Chenghai District Lianxia town Jianyang Sea door one road, SHANTOU, 515834 China
Manufacturer: Shantou Yuejian Plastic Products Co., LTD
Address of Manufacturer: Shantou City Chenghai District Lianxia town Jianyang Sea door one road
Equipment Under Test (EUT):
EUT Name: Remote control car series
Model No.: Y913-15A, Y913-16A, Y913-17A, Y913-18A, Y913-15A, Y913-16A, Y913-17A, Y913-18A, Y913-19A, Y913-20A, Y913-21A, Y913-22A, Y913—15, Y913-16, Y913-17, Y913-18, Y913-19, Y913-20, Y913-21, Y913-22, Y913-15B, Y913-16B, Y913-17B, Y913-18B, Y913-19B, Y913-20B, Y913-21B, Y913-22B, Y913-23, Y913-24, Y913-25, Y913-26, Y913-27, Y913-23A, Y913-24A, Y913-25A, Y913-26A, Y913-27A, Y913-23B, Y913-24B, Y913-25B, Y913-26B, Y913-27B, Y913-31, Y913-32, Y913-33, Y913-34, Y913-35, Y913-36, Y913-37, Y913-38, Y913-39, Y913-40, Y913-41, Y913-42, Y913-10A, Y913-11A, Y913-12A, Y913-13A, Y913-14A, Y913-31A, Y913-32A, Y913-33A, Y913-34A, Y913-35A, Y913-36A, Y913-37A, Y913-38A, Y913-39A, Y913-40A, Y913-41A, Y913-42A, Y913-05, Y913-06, Y913-07, Y913-08, Y913-09, Y913-05A, Y913-06A, Y913-07A ♣
♣ Please refer to section 2 of this report which indicates which model was actually tested and which were electrically identical.
Standard(s) : 47 CFR Part 15, Subpart C 15.227
Date of Receipt: 2021-09-10
Date of Test: 2021-09-10 to 2021-09-14
Date of Issue: 2021-09-22

Test Result:	Pass*
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* In the configuration tested, the EUT complied with the standards specified above.



Kobe Jian
EMC Laboratory Manager



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Revision Record				
Version	Chapter	Date	Modifier	Remark
01		2021-09-22		Original

Authorized for issue by				
				
		Curry Wu/Project Engineer		
				
		Ricky Liu/Reviewer		

2 Test Summary

Radio Spectrum Technical Requirement				
Item	Standard	Method	Requirement	Result
Antenna Requirement	47 CFR Part 15, Subpart C 15.227	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 15.227	ANSI C63.10 (2013) Section 6.9	47 CFR Part 15, Subpart C 15.215	Pass
Field Strength of the Fundamental Signal (15.227(a))	47 CFR Part 15, Subpart C 15.227	ANSI C63.10 (2013) Section 6.4	47 CFR Part 15, Subpart C 15.227(a)	Pass
Radiated Emissions	47 CFR Part 15, Subpart C 15.227	ANSI C63.10 (2013) Section 6.4&6.5	47 CFR Part 15, Subpart C 15.227(b) & C 15.209	Pass

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.: Y913-15A, Y913-16A, Y913-17A, Y913-18A, Y913-15A, Y913-16A, Y913-17A, Y913-18A, Y913-19A, Y913-20A, Y913-21A, Y913-22A, Y913—15, Y913-16, Y913-17, Y913-18, Y913-19, Y913-20, Y913-21, Y913-22, Y913-15B, Y913-16B, Y913-17B, Y913-18B, Y913-19B, Y913-20B, Y913-21B, Y913-22B, Y913-23, Y913-24, Y913-25, Y913-26, Y913-27, Y913-23A, Y913-24A, Y913-25A, Y913-26A, Y913-27A, Y913-23B, Y913-24B, Y913-25B, Y913-26B, Y913-27B, Y913-31, Y913-32, Y913-33, Y913-34, Y913-35, Y913-36, Y913-37, Y913-38, Y913-39, Y913-40, Y913-41, Y913-42, Y913-10A, Y913-11A, Y913-12A, Y913-13A, Y913-14A, Y913-31A, Y913-32A, Y913-33A, Y913-34A, Y913-35A, Y913-36A, Y913-37A, Y913-38A, Y913-39A, Y913-40A, Y913-41A, Y913-42A, Y913-05, Y913-06, Y913-07, Y913-08, Y913-09, Y913-05A, Y913-06A, Y913-07A

Only the model Y913-16 was tested. According to the declaration from the applicant, the electrical circuit design, layout, components used, internal wiring and functions were identical for the above models, with only difference on colour, appearance and packaging.



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4 General Information

4.1 Details of E.U.T.

Power supply: 3V DC(1.5V x 2 "AA" Size Batteries) for TX
Operation Frequency 27.145MHz
Antenna Type: Integral

4.2 Description of Support Units

Description	Manufacturer	Model No.	Serial No.
--	--	--	--
The EUT has been tested as an independent unit.			

4.3 Measurement Uncertainty

Test Item	Measurement Uncertainty
20dB Bandwidth	3%
Field Strength of the Fundamental Signal (15.249(a))	5.06dB (below 1GHz)
Radiated Emissions	5.06dB (30MHz-1GHz ; 3m)
	5.08dB (1GHz-6GHz)
	5.14dB (6GHz-18GHz)
Remark: The U_{lab} (lab Uncertainty) is less than U_{CISPR} (CISPR Uncertainty), so the test results – compliance is deemed to occur if no measured disturbance level exceeds the disturbance limit; – non-compliance is deemed to occur if any measured disturbance level exceeds the disturbance limit.	

4.4 Test Location

All tests were performed at:

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198 Kezhu Road, Sciencetech Park, Guangzhou Economic & Technology Development District,
Guangzhou, China 510663

Tel: +86 20 82155555 Fax: +86 20 82075059

No tests were sub-contracted.

4.5 Test Facility

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

- **NVLAP (Lab Code: 200611-0)**

SGS-CSTC Standards Technical Services Co., Ltd., Guangzhou EMC Laboratory is accredited by the National Voluntary Laboratory Accreditation Program (NVLAP/NIST). NVLAP Code: 200611-0.

The report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the Federal Government.

- **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.

- **CNAS (Lab Code: L0167)**

SGS-CSTC Standards Technical Services Co., Ltd., EMC Laboratory has been assessed and in compliance with CNAS-CL01:2018 accreditation criteria for testing laboratories (identical to ISO/IEC 17025:2017 General Requirements) for the Competence of Testing Laboratories.

- **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.



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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	2021-03-02	2022-03-01
ESG Vector Signal Generator(250kHz-6GHz)	Keysight	E4438C	SEM006-03	2021-03-12	2022-03-11
EXG Analog Signal Generator(9kHz-3GHz)	Agilent Technologies	N5171B	SEM006-04	2021-07-12	2022-07-11
Power Meter (U2021XA_Ch2)	Agilent Technologies	U2021XA_Ch2	SEM009-02	2021-05-19	2022-05-18
Power Meter (U2021XA_Ch3)	Agilent Technologies	U2021XA_Ch3	SEM009-03	2021-05-19	2022-05-18
EXA Signal Analyzer(10Hz-44GHz)	Agilent Technologies	N9010A	EMC2138	2020-09-17	2021-09-16
6dB Attenuator	HP	8491A	EMC2062	2020-04-15	2022-04-14
Test Software JS1120-3	HangTianXing	V2.6	GZE100-69	N/A	N/A
MI CABLE	SGS-EMC	0.8M	EMC2136	2019-11-02	2021-11-01
MI CABLE	SGS-EMC	0.8M	EMC2137	2019-11-02	2021-11-01

Field Strength of the Fundamental Signal (15.227(a))					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
Chamber cable	HangTianXing	N/A	EMC0542	2020-09-09	2022-09-08
Trilog Broadband Antenna(25MHz-1GHz)-Lab	SCHWARZBECK MESS-ELEKTRONIK	VULB 9168	SEM003-18	2019-02-22	2022-02-22
Amplifier(9kHz-1.3GHz)	HP	8447F	EMC2065	2021-05-19	2022-05-18
10m Semi-Anechoic Chamber	ETS	N/A	EMC0530	2019-10-20	2022-10-19
Test Software E3	Audix	Ver.6.120110a	GZE100-61	N/A	N/A
EMI Test Receiver(1Hz-8GHz)	Rohde & Schwarz	ESW8	EMC2220	2021-05-26	2022-05-25
Active Loop Antenna	ETS-Lindgren	6502	EMC2190	2019-12-27	2021-12-26

Radiated Emissions					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
Chamber cable	HangTianXing	N/A	EMC0542	2020-09-09	2022-09-08
Trilog Broadband Antenna(25MHz-1GHz)-Lab	SCHWARZBECK MESS-ELEKTRONIK	VULB 9168	SEM003-18	2019-02-22	2022-02-22
Amplifier(9kHz-1.3GHz)	HP	8447F	EMC2065	2021-05-19	2022-05-18



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10m Semi-Anechoic Chamber	ETS	N/A	EMC0530	2019-10-20	2022-10-19
Test Software E3	Audix	Ver.6.120110a	GZE100-61	N/A	N/A
EMI Test Receiver(1Hz-8GHz)	Rohde & Schwarz	ESW8	EMC2220	2021-05-26	2022-05-25
Active Loop Antenna	ETS-Lindgren	6502	EMC2190	2019-12-27	2021-12-26

General used equipment

Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
DMM	Fluke	73	EMC0006	2021-07-05	2022-07-05
DMM	Fluke	73	EMC0007	2021-07-05	2022-07-05



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6 Radio Spectrum Technical Requirement

6.1 Antenna Requirement

6.1.1 Test Requirement:

47 CFR Part 15, Subpart C 15.203

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

6.1.2 Conclusion

EUT Antenna:

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

Antenna location: Refer to Appendix(external photos).

7 Radio Spectrum Matter Test Results

7.1 20dB Bandwidth

Test Requirement 47 CFR Part 15, Subpart C 15.215

Test Method: ANSI C63.10 (2013) Section 6.9

7.1.1 E.U.T. Operation

Operating Environment:

Temperature: 25.6 °C Humidity: 52.8 % RH Atmospheric Pressure: 1008 mbar

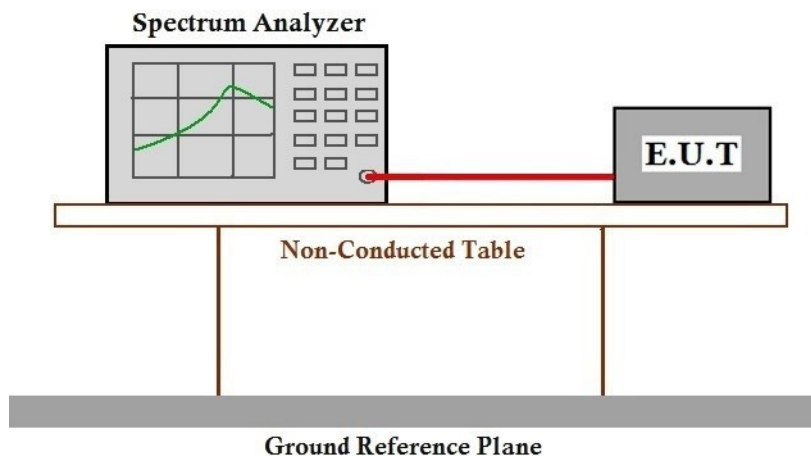
7.1.2 Test Mode Description

Pre-scan / Mode	Description
Final test Code	
Final test 01	TX mode_Keep the EUT in transmitting with modulation mode

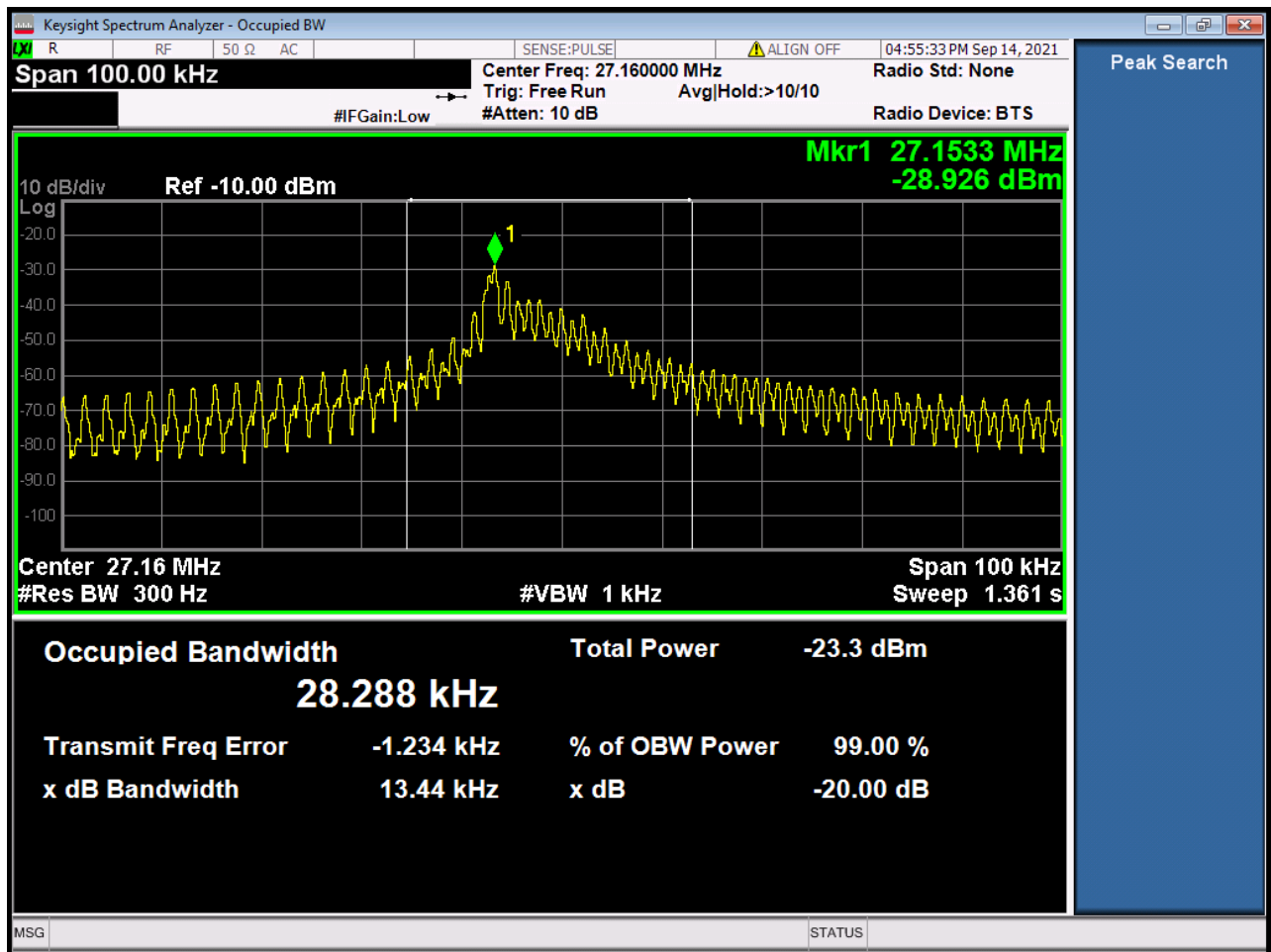


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7.1.3 Test Setup Diagram



7.1.4 Measurement Procedure and Data



7.2 Field Strength of the Fundamental Signal (15.227(a))

Test Requirement 47 CFR Part 15, Subpart C 15.227(a)
Test Method: ANSI C63.10 (2013) Section 6.4
Measurement Distance: 3m
Limit: ≤ 10000 microvolts/meter at 3 meters, the emission limit is based on measurement instrumentation employing an average Detector. The provisions in § 15.35 for limiting peak emissions apply.

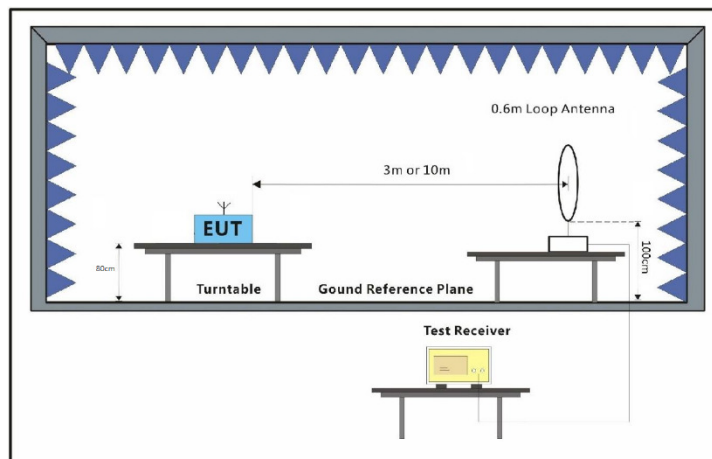
7.2.1 E.U.T. Operation

Operating Environment:
Temperature: 25.8 °C Humidity: 50.9 % RH Atmospheric Pressure: 1008 mbar

7.2.2 Test Mode Description

Pre-scan / Mode	Description
Final test Code	
Final test 01	TX mode_Keep the EUT in transmitting with modulation mode

7.2.3 Test Setup Diagram



7.2.4 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.

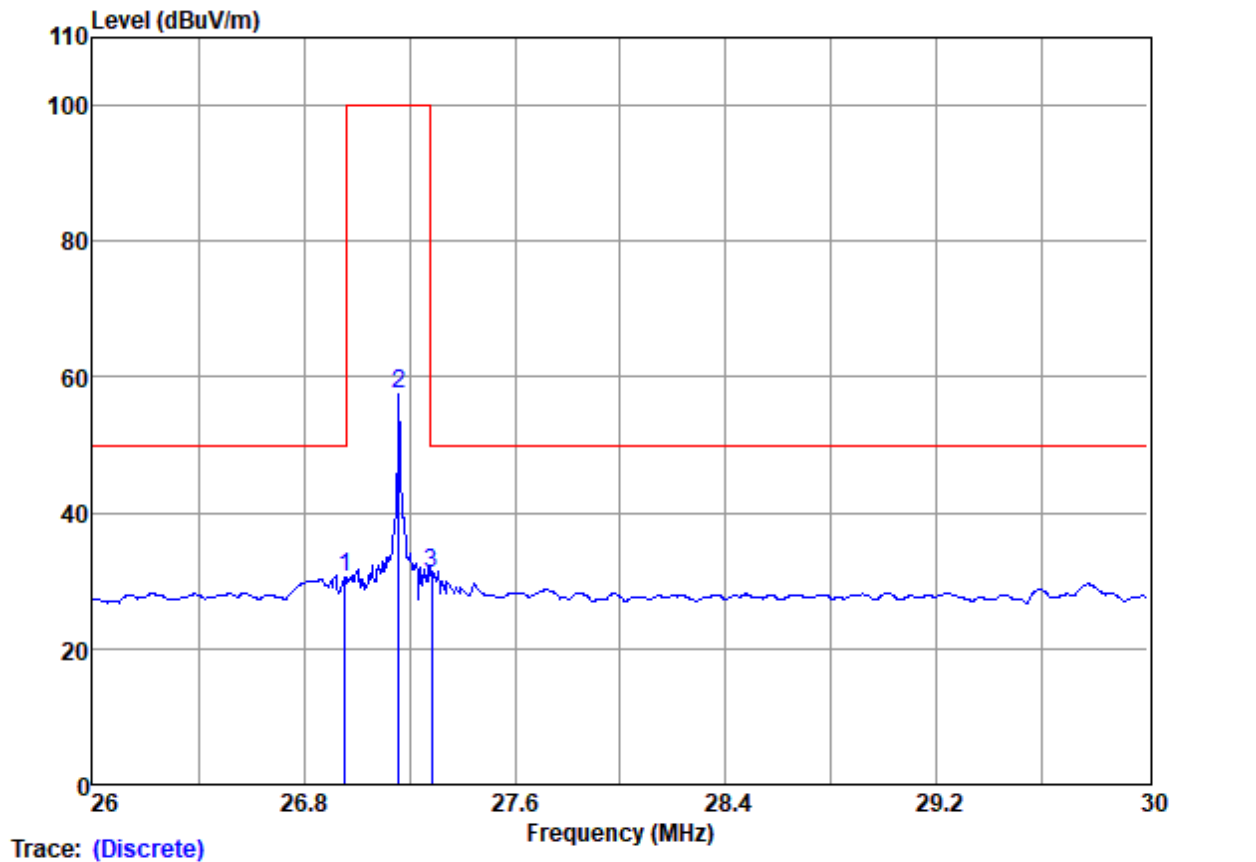
Remark: Level= Read Level+ Cable Loss+ Antenna Factor- Preamp Factor



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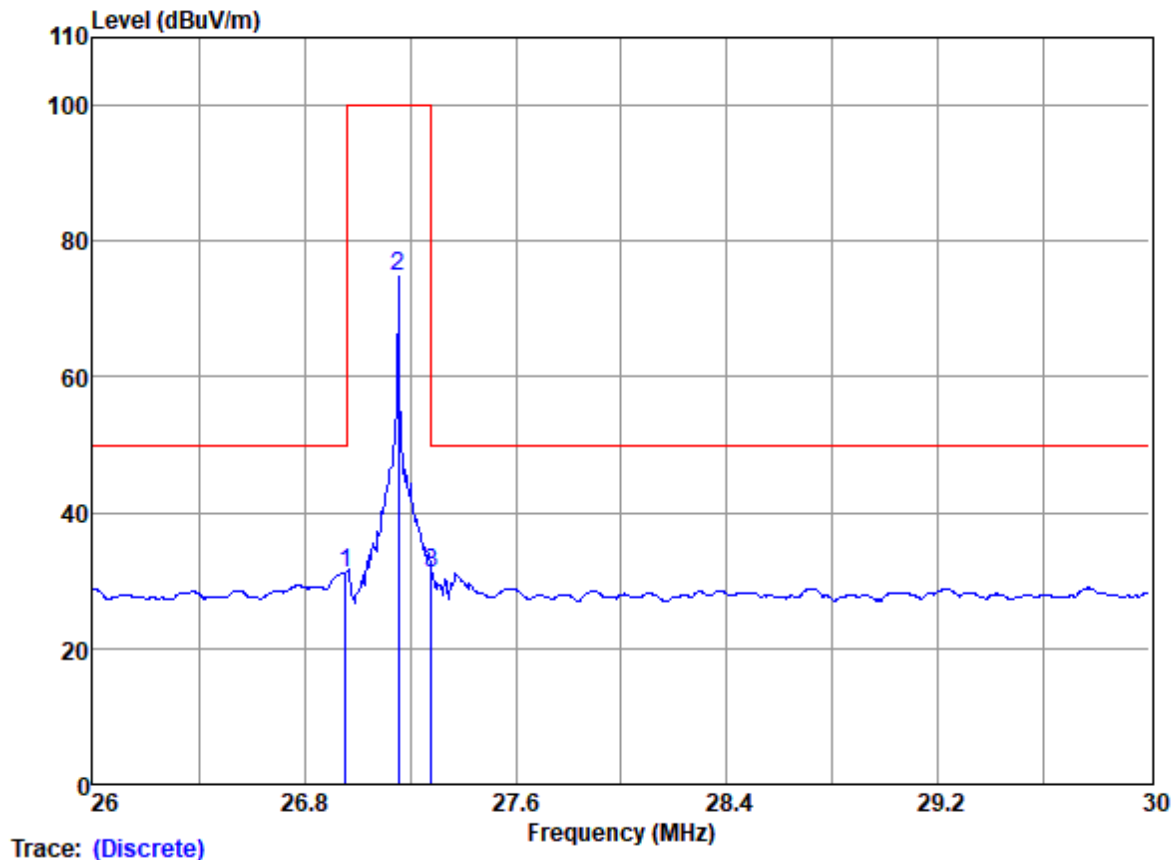
Test Mode: 01; Polarity: Horizontal



Site : SGS
Job :
Model :
Power :
Test Mode :

	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Measured Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dBuV		
1	26.96	50.68	7.85	0.97	29.13	30.37	50.00	-19.63	HORIZONTAL	Peak
2	27.16	77.90	7.78	0.98	29.12	57.54	100.00	-42.46	HORIZONTAL	Peak
3	27.28	51.49	7.78	0.98	29.12	31.13	50.00	-18.87	HORIZONTAL	Peak

Test Mode: 01; Polarity: Vertical



Site : SGS
Job :
Model :
Power :
Test Mode :

	Freq	Read Level	Antenna Factor	Cable Loss	Preamplifier Factor	Measured Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dBuV		
1	26.96	51.49	7.85	0.97	29.13	31.18	50.00	-18.82	VERTICAL	Peak
2	27.16	95.25	7.78	0.98	29.12	74.89	100.00	-25.11	VERTICAL	Peak
3	27.28	51.42	7.78	0.98	29.12	31.06	50.00	-18.94	VERTICAL	Peak

Remark:

As shown in this section, for Field Strength of the Fundamental Signal limits are based on average limits. However, the peak field strength of the Fundamental Signal was not exceed the average limits specified under any condition of modulation. So, only peak field strength data of the Fundamental Signal was shown in the report.



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7.3 Radiated Emissions

Test Requirement 47 CFR Part 15, Subpart C 15.227(b) & C 15.209

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

Measurement Distance: 3m

Limit:

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
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 and 110-490kHz. Radiated emission limits in these two bands are based on measurements employing an average detector.		
Frequency(MHz)	Field strength(microvolts/meter)	Measurement distance(meters)
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 above 1000MHz. Radiated emission limits above 1000MHz is based on measurements employing an average detector.		

7.3.1 E.U.T. Operation

Operating Environment:

Temperature: 25.8 °C Humidity: 50.9 % RH Atmospheric Pressure: 1008 mbar

7.3.2 Test Mode Description

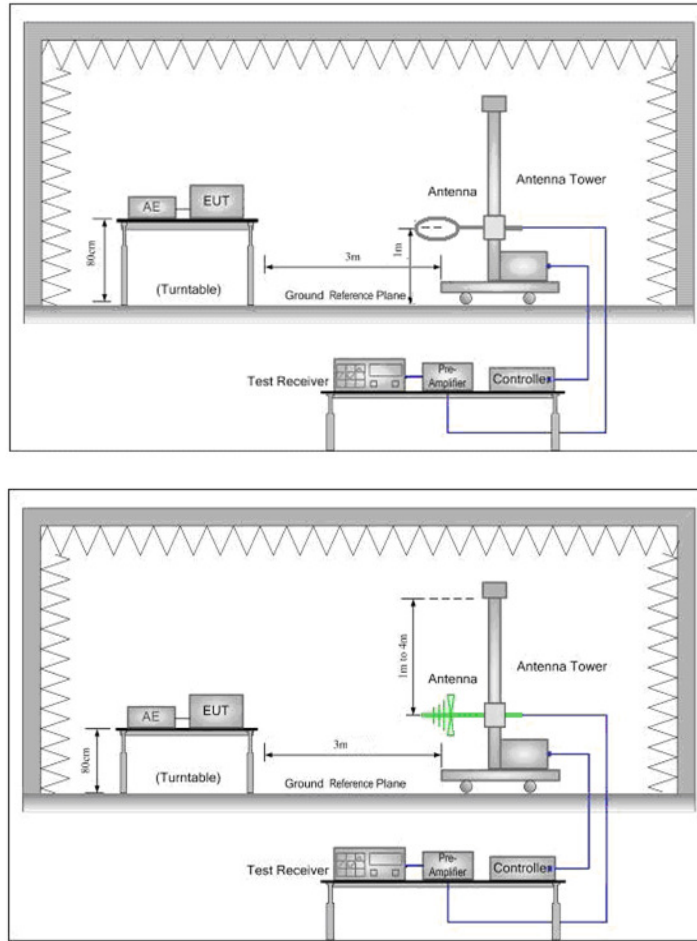
Pre-scan / Mode	Description
Final test Code	
Final test 01	TX mode_Keep the EUT in transmitting with modulation mode



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7.3.3 Test Setup Diagram



7.3.4 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.

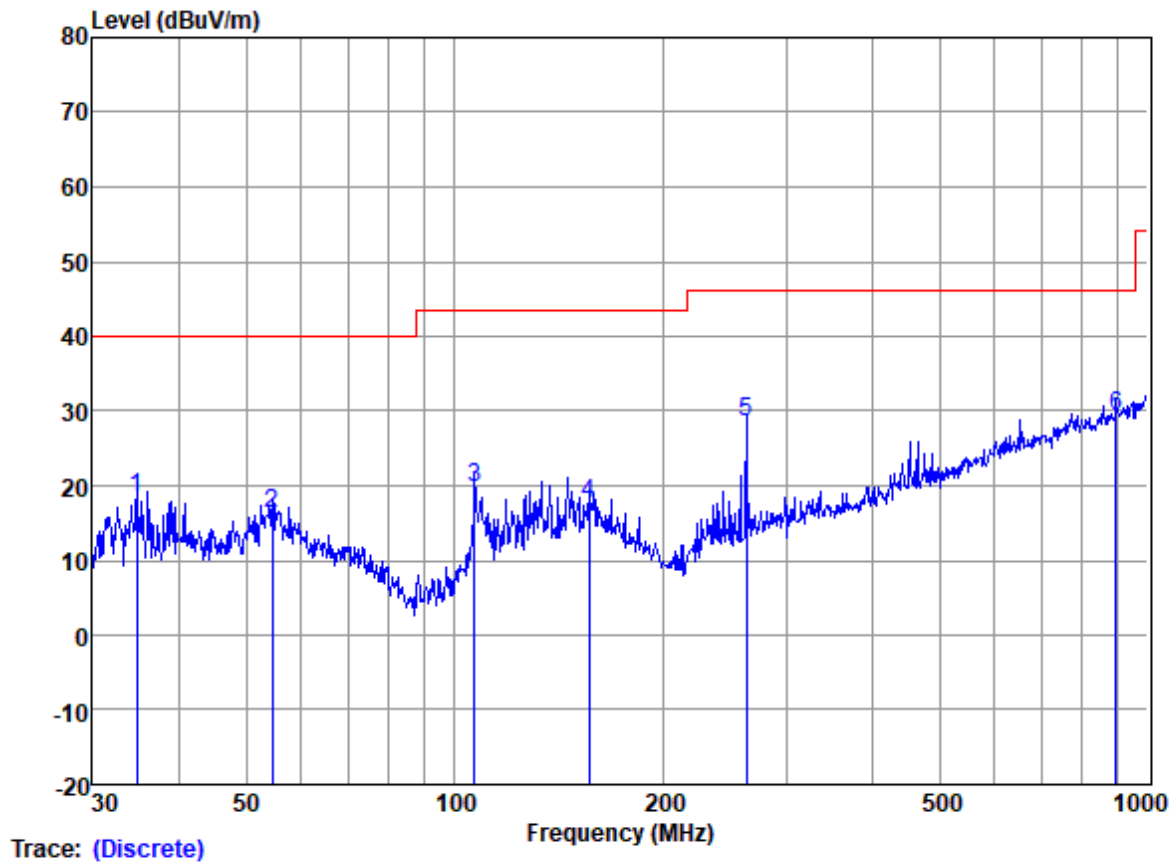
Remark: Level= Read Level+ Cable Loss+ Antenna Factor- Preamp Factor



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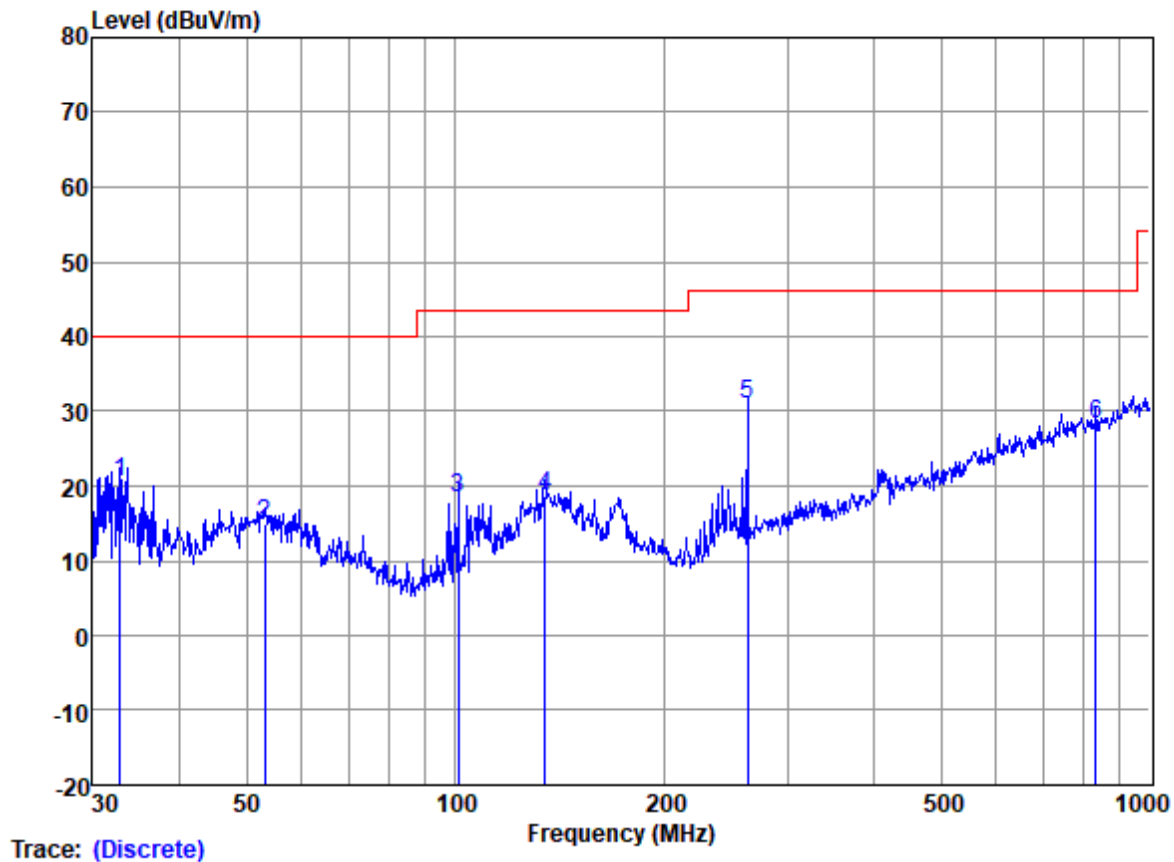
Test Mode: 01; Polarity: Horizontal



Site : SGS
Job :
Model :
Power :
Test Mode :

	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Measured Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dBuV		
1	34.76	31.68	12.87	1.07	27.18	18.44	40.00	-21.56	HORIZONTAL	QP
2	54.45	28.44	13.78	1.18	27.16	16.24	40.00	-23.76	HORIZONTAL	QP
3	106.76	34.85	10.15	1.77	27.07	19.70	43.50	-23.80	HORIZONTAL	QP
4	155.91	28.39	13.70	2.30	26.81	17.58	43.50	-25.92	HORIZONTAL	QP
5	262.90	39.84	12.34	3.00	26.59	28.59	46.00	-17.41	HORIZONTAL	QP
6	897.00	27.16	23.23	6.92	27.85	29.46	46.00	-16.54	HORIZONTAL	QP

Test Mode: 01; Polarity: Vertical



Site : SGS
Job :
Model :
Power :
Test Mode :

	Freq	Read Level	Antenna Factor	Cable Loss	Preamplifier Factor	Measured Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dBuV		
1	32.86	33.82	12.74	1.05	27.19	20.42	40.00	-19.58	VERTICAL	QP
2	53.13	27.17	13.88	1.17	27.17	15.05	40.00	-24.95	VERTICAL	QP
3	100.93	34.55	9.25	1.74	27.08	18.46	43.50	-25.04	VERTICAL	QP
4	134.56	31.07	12.57	2.01	26.97	18.68	43.50	-24.82	VERTICAL	QP
5	262.90	42.30	12.34	3.00	26.59	31.05	46.00	-14.95	VERTICAL	QP
6	836.24	27.17	22.70	6.46	27.97	28.36	46.00	-17.64	VERTICAL	QP

Remark:

The disturbance below 30MHz was very low and the above harmonics were the highest point could be found when testing, so only the above harmonics had been displayed

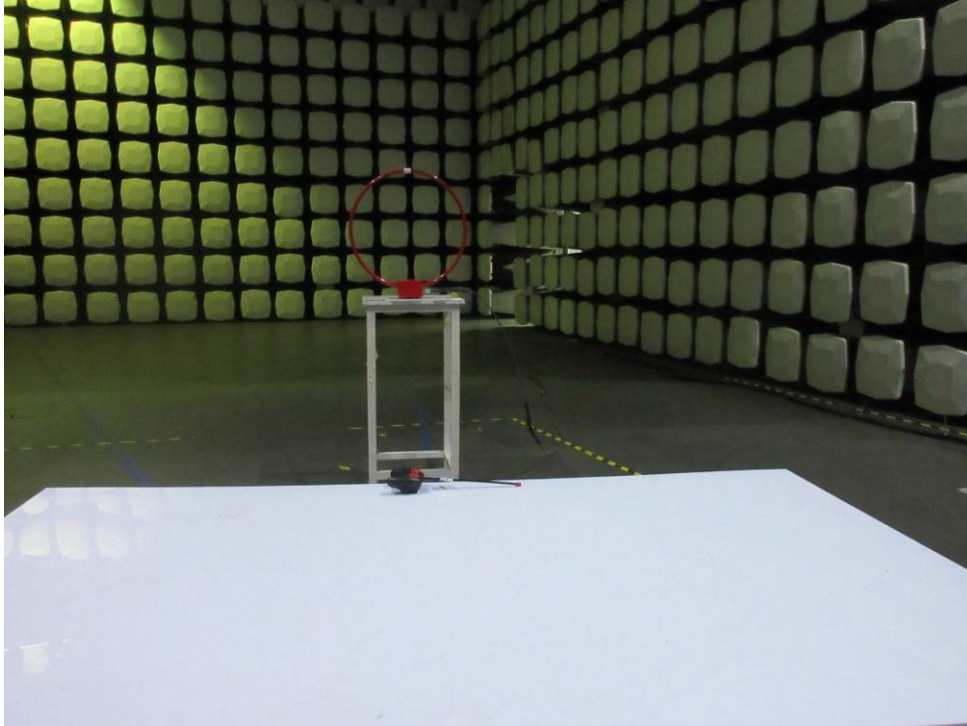


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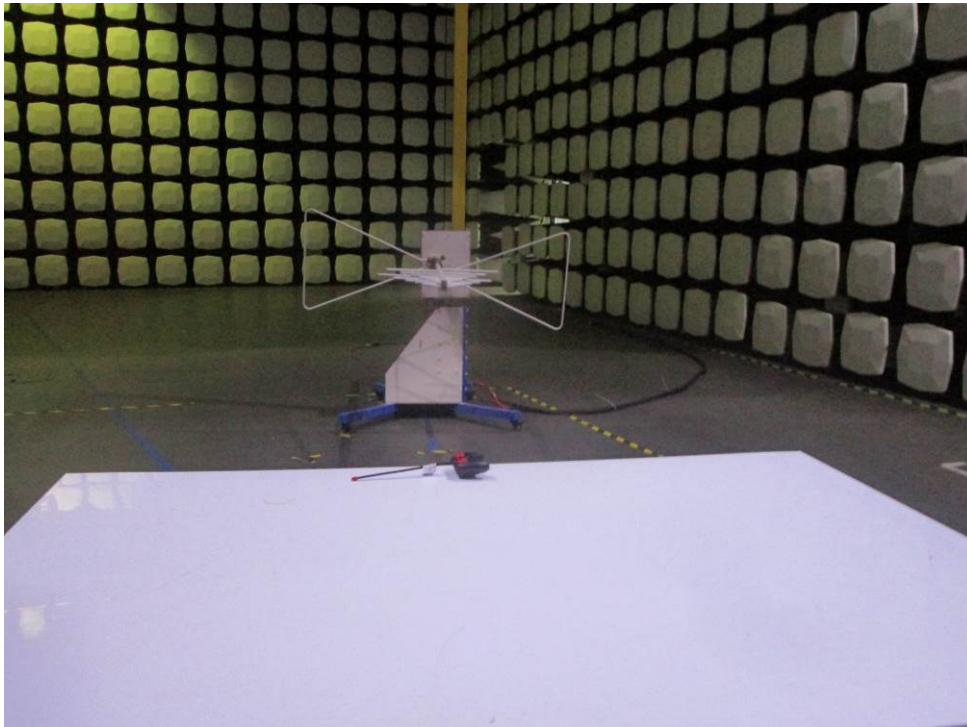
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8 Test Setup Photo

Field Strength of the Fundamental Signal (15.227(a))



Radiated Emissions



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9 EUT Constructional Details (EUT Photos)

Refer to Appendix - external and internal photos for GZCR2109021088AT

- End of the Report -