

EMC-TRF-01 Rev 1.1 Report No.: GZCR220800102203

Page: 1 of 28 FCC ID: S96-NCTG3

TEST REPORT

Application No.: GZCR2208001022HS **Applicant:** Xiamen Intretech Inc.

Address of Applicant: No. 100, Dongfu West Road, Haicang District, Xiamen, Fujian, China

Manufacturer: Xiamen Intretech Inc.

Address of Manufacturer: No. 100, Dongfu West Road, Haicang District, Xiamen, Fujian, China

Factory: Xiamen Intretech Inc.

Address of Factory: No. 100, Dongfu West Road, Haicang District, Xiamen, Fujian, China

Equipment Under Test (EUT):

EUT Name: NC° Thermometer (Gen3)

Model No.: NCTG3

Standard(s): 47 CFR Part 15, Subpart C 15.225

Date of Receipt: 2022-08-15

Date of Test: 2022-08-29 to 2022-09-30

Date of Issue: 2022-10-20

Test Result: Pass*

Kobe Jian EMC Laboratory Manager



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



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	Revision Record					
Version	Report No.	Date	Remark			
01	GZCR220800102203	2022-10-20	Original			

Authorized for issue by		
	Jim 2i	
	Jim Li/Project Engineer	
	vius cui	
	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 15.225	N/A	47 CFR Part 15, Subpart C 15.203	Pass		

Radio Spectrum Matter Part							
Item	Standard	Method	Requirement	Result			
20dB Bandwidth		ANSI C63.10 (2013) Section 6.9	47 CFR Part 15, Subpart C 15.215	Pass			
Emission Mask		ANSI C63.10 (2013) Section 6.4	47 CFR Part 15, Subpart C 15.225(a)&(b)&(C)	Pass			
Frequency tolerance	47 CFR Part 15, Subpart C 15.225	ANSI C63.10 (2013) Section 6.8	47 CFR Part 15, Subpart C 15.225(e)	Pass			
Radiated Emissions (30MHz-1GHz)		ANSI C63.10 (2013) Section 6.4&6.5	47 CFR Part 15, Subpart C 15.225(d) & 15.209	Pass			
Radiated Emissions (9kHz-30MHz)		ANSI C63.10 (2013) Section 6.4&6.5	47 CFR Part 15, Subpart C 15.225(d) & 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.



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4 General Information

4.1 Details of E.U.T.

Power supply: DC 3V = Size "CR2032" Lithium battery x1

Cable(s): N/A

Operation Frequency: 13.56MHz

Modulation Type: ASK

Antenna Type: Coil Antenna

Function: 13.56MHz NFC tag.

4.2 Description of Support Units

Description	Manufacturer	Model No.	Serial No.
Mobile Phone	APPLE	iPhone 12 mini	F71DP3NG0GQY

4.3 Measurement Uncertainty

Test Item	Measurement Uncertainty
20dB Bandwidth	± 3%
Conducted Emissions at Mains Terminals (150kHz-30MHz)	± 2.76dB
Emission Mask	± 3.12dB (below 30 MHz)
Frequency tolerance	± 7.25 E-8
Radiated Emissions (30MHz-1GHz)	± 5.00dB (30MHz-1GHz):3m;±4.38dB (30MHz- 1GHz):10m
Radiated Emissions (9kHz-30MHz)	± 3.12dB

4.4 Test Location

All tests were performed at:

SGS-CSTC Standards Technical Services Co., Ltd., Guangzhou Branch EMC Laboratory, 198 Kezhu Road, Scientech Park, Guangzhou Economic & Technology Development District, Guangzhou, China 510663

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

No tests were sub-contracted.



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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.

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	
MI CABLE	SGS-EMC	0.8M	EMC2137	2021-11-02	2023-11-01	
MXA Signal Analyzer (10Hz-8.4GHz)	Agilent Technologies	N9020A	SEM004-10	2022-03-03	2023-03-02	

Emission Mask					
Equipment	Manufacturer	Model No.	Inventory No.	Cal Date	Cal Due Date
10m Semi-Anechoic Chamber	ETS	N/A	EMC0530	2019-10-20	2022-10-19
Chamber cable	HangTianXing	N/A	EMC0542	2022-08-24	2023-08-23
Amplifier (9kHz-1.3GHz)	HP	8447F	EMC2065	2022-06-21	2023-06-20
Active Loop Antenna- RED	ETS-Lindgren	6502	EMC2190	2022-04-06	2024-04-05
EMI Test Receiver (1Hz- 8GHz)	Rohde & Schwarz	ESW8	EMC2220	2022-05-20	2023-05-19
Test Software E3	Audix	Ver.6.120110a	GZE100-61	N/A	N/A

Frequency tolerance						
Equipment	Manufacturer	Model No.	Inventory No.	Cal Date	Cal Due Date	
MI CABLE	SGS-EMC	M8.0	EMC2137	2021-11-02	2023-11-01	
Temperature Chamber	GZ GongWen Co.Ltd.	GDJW-100	EMC0039	2022-07-04	2023-07-03	
MXA Signal Analyzer (10Hz-8.4GHz)	Agilent Technologies	N9020A	SEM004-10	2022-03-03	2023-03-02	

Radiated Emissions (30MHz-1GHz)						
Equipment	Manufacturer	Model No.	Inventory No.	Cal Date	Cal Due Date	
10m Semi-Anechoic Chamber	ETS	N/A	EMC0530	2019-10-20	2022-10-19	
Chamber cable	HangTianXing	N/A	EMC0542	2022-08-24	2023-08-23	
Amplifier (9kHz-1.3GHz)	HP	8447F	EMC2065	2022-06-21	2023-06-20	
EMI Test Receiver (1Hz- 8GHz)	Rohde & Schwarz	ESW8	EMC2220	2022-05-20	2023-05-19	
Test Software E3	Audix	Ver.6.120110a	GZE100-61	N/A	N/A	
Trilog Broadband Antenna (25MHz-1GHz)	SCHWARZBECK MESS-ELEKTRONIK	VULB 9168	EMC2174	2022-06-19	2025-06-18	



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Radiated Emissions (9kHz-30MHz)									
Equipment	Manufacturer	Model No.	Inventory No.	Cal Date	Cal Due Date				
10m Semi-Anechoic Chamber	ETS	N/A	EMC0530	2019-10-20	2022-10-19				
Chamber cable	HangTianXing	N/A	EMC0542	2022-08-24	2023-08-23				
Amplifier (9kHz-1.3GHz)	Amplifier (9kHz-1.3GHz) HP		EMC2065	2022-06-21	2023-06-20				
Active Loop Antenna- RED	ETS-Lindgren	6502	EMC2190	2022-04-06	2024-04-05				
EMI Test Receiver (1Hz- 8GHz)	Rohde & Schwarz	ESW8	EMC2220	2022-05-20	2023-05-19				
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	2022-06-24	2023-06-23			



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Radio Spectrum Technical Requirement 6

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

7.1.1 E.U.T. Operation

Operating Environment:

Temperature: 27.1 °C Humidity: 60.2 % RH Atmospheric Pressure: 1006 mbar

7.1.2 Test Mode Description

Pre-scan / Mode

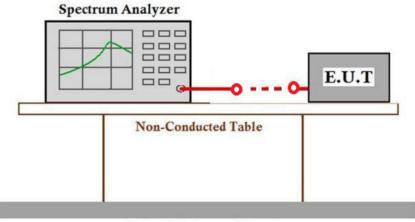
Code

Description

Final test 01 TX mode with modulation.

7.1.3 Test Setup Diagram

Final test



Ground Reference Plane

7.1.4 Measurement Procedure and Data

The useful radiated emission from the EUT was detected by the spectrum analyser with peak detector.



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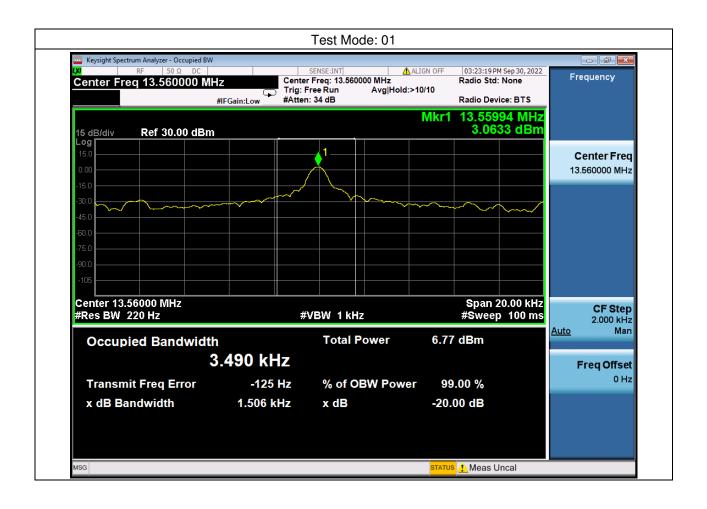
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Remark: The setting of RBW was the minimum for the spectrum.

Test Mode: 01

operating frequency	20dB Bandwidth	Limit	Result
13.560 MHz	1.506 kHz		Pass





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7.2 Emission Mask

Test Requirement 47 CFR Part 15, Subpart C 15.225(a)&(b)&(C)

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

Limit:

(a) The field strength of any emissions within the band 13.553-13.567 MHz shall not exceed 15,848 microvolts/meter at 30 meters.

- (b) Within the bands 13.410-13.553 MHz and 13.567-13.710 MHz, the field strength of any emissions shall not exceed 334 microvolts/meter at 30 meters.
- (c) Within the bands 13.110-13.410 MHz and 13.710-14.010 MHz the field strength of any emissions shall not exceed 106 microvolts/meter at 30 meters.
- (d) The field strength of any emissions appearing outside of the 13.110-14.010 MHz band shall not exceed the general radiated emission limits in § 15.209.

Below 30MHz

The test was performed at a 10m test site.

The factor calculated by the following equation:

$$FS_{\text{limit}} = FS_{\text{max}} - 40 \log \left(\frac{d_{\text{limit}}}{d_{\text{measure}}} \right)$$

where

 FS_{limit} is the calculation of field strength at the limit distance, expressed in dB μ V/m

 $FS_{\rm max}$ is the measured field strength, expressed in dBμV/m is the distance of the measurement point from the EUT d_{limit} is the reference distance or the distance of the $\lambda/2\pi$ point

Table 5—Relationship of frequency and wavelength (informative)

Frequency (MHz)	λ(m)	0.625λ (m)	$\lambda/2\pi$
0.009	33333.3	20833.3	5305.2
0.1	3000.0	1875.0	477.5
0.3	1000.0	625.0	159.2
1	300.0	187.5	47.7
4.76	63.0	39.4	10.0
16	18.8	11.7	3.0
30	10.0	6.3	1.6

The limit at 10m test distance is below:

The factor of field strength of any emissions within the band 13.553-13.567 MHz shall be 19.08 dB at 10 meters.

The field strength of any emissions within the band 13.553-13.567 MHz shall not exceed 84dBuV/m at 30 meters.



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7.2.1 E.U.T. Operation

Operating Environment:

Temperature: 23.5 °C Humidity: 52 % RH Atmospheric Pressure: 1006 mbar

7.2.2 Test Mode Description

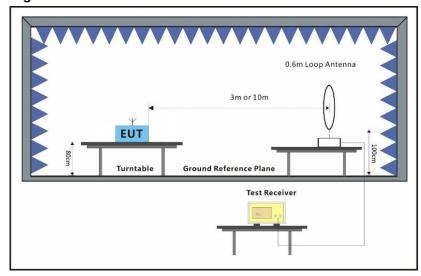
Pre-scan / Mode

Final test Code

Description

Final test 01 TX mode with modulation.

7.2.3 Test Setup Diagram



7.2.4 Measurement Procedure and Data

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



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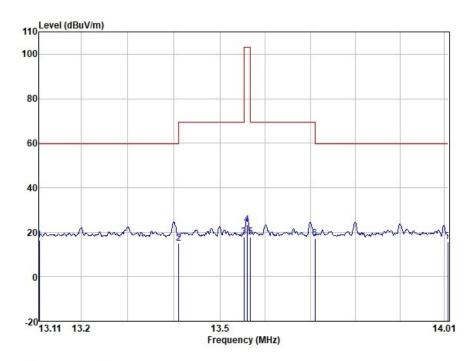


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Test Mode: 01; Polarity: Horizontal



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

	Freq					Measured Level			Pol/ Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		_
1	13.110	34.95	9.97	0.57	29.23	16.26			HORIZONTAL	QP
2	13.410	33.74	9.92	0.58	29.22	15.02			HORIZONTAL	QP
3	13.553	36.53	9.91	0.58	29.22	17.80			HORIZONTAL	QP
4	13.560	42.17	9.91	0.58	29.22	23.44			HORIZONTAL	QP
5	13.567	36.49	9.91	0.58	29.22	17.76			HORIZONTAL	QP
6	13.710	35.94	9.90	0.58	29.22	17.20			HORIZONTAL	QP
7	14.010	34.40	9.86	0.59	29.21	15.64			HORIZONTAL	QP

Frequency (MHz)	Level (dBuV/m) @10m	Limit (dBuV/m) @30m	Convert Factor (dB)	Level (dBuV/m) @30m	Over limit (dB)
13.11	16.26	29.54	19.08	-2.82	-32.36
13.41	15.02	40.51	19.08	-4.06	-44.57
13.55	17.80	50.47	19.08	-1.28	-51.75
**13.56	23.44	84.00	19.08	4.36	-79.64
13.57	17.76	50.47	19.08	-1.32	-51.79
13.71	17.20	40.51	19.08	-1.88	-42.39
14.01	15.64	29.54	19.08	-3.44	-32.98

^{**}Remark: This is the main operating frequency of the EUT.



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7.3 Frequency tolerance

Test Requirement 47 CFR Part 15, Subpart C 15.225(e) Test Method: ANSI C63.10 (2013) Section 6.8

Limit: Within ±0.01% of the operating frequency

7.3.1 E.U.T. Operation

Operating Environment:

Temperature: 27.1 °C Humidity: 60.2 % RH Atmospheric Pressure: 1006 mbar

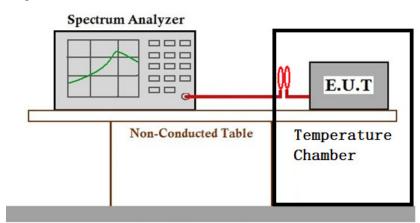
7.3.2 Test Mode Description

Mode Pre-scan /

Final test Code Description

TX mode with modulation. Final test 01

7.3.3 Test Setup Diagram



Ground Reference Plane



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7.3.4 Measurement Procedure and Data

The EUT was placed in an environmental test chamber and powered such that control element received normal voltage and the transmitter provided maximum RF output.

At startup:

Measurement Conditions		Limit: ±0.01%(1		
Voltage (V DC)	Temperature (℃)	Frequency Measured (MHz)	Deviation (kHz)	Verdict
	-20	13.561218	0.144	PASS
	-10	13.561341	0.267	PASS
	0	13.561158	0.084	PASS
., .	+10	13.561213	0.139	PASS
V _{norm} : 3	T _{normal} : +20	13.561074	REF	PASS
	+30	13.561249	0.175	PASS
	+40	13.561200	0.126	PASS
	+50	13.561245	0.171	PASS
V _{max} : 3.3	T20	13.561173	0.099	PASS
V _{min} : 2.7	T_{normal} : +20	13.561178	0.104	PASS

At 2 minutes later.

Measurement Conditions		Limit: ±0.01%(1		
Voltage (V DC)	Temperature (℃)	Frequency Measured (MHz)	Deviation (kHz)	Verdict
	-20	13.561232	0.108	PASS
	-10	13.561295	0.171	PASS
	0	13.561179	0.055	PASS
V .0	+10	13.561339	0.215	PASS
V _{norm} :3	T_{normal} : +20	13.561124	REF	PASS
	+30	13.561317	0.193	PASS
	+40	13.561088	-0.036	PASS
	+50	13.561067	-0.057	PASS
V _{max} : 3.3	Tnormal: +20	13.561233	0.109	PASS
V _{min} : 2.7	I normal . +20	13.561207	0.083	PASS



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At 5 minutes later:

Measurement Conditions		Limit: ±0.01%	Limit: ±0.01%(1.356kHz)				
Voltage (V DC)	Temperature Frequency Measured (°C) (MHz)		Deviation (kHz)	Verdict			
	-20	13.561077	-0.02	PASS			
	-10	13.561101	0.004	PASS			
	0	13.561252	0.155	PASS			
V . 0	+10	13.561049	-0.048	PASS			
V _{norm} : 3	$T_{normal}: +20$	13.561097	REF	PASS			
	+30	13.561130	0.033	PASS			
	+40	13.561127	0.03	PASS			
	+50	13.561342	0.245	PASS			
V _{max} : 3.3	Tnormal: +20	13.561315	0.218	PASS			
V _{min} : 2.7	I normal . +∠U	13.561294	0.197	PASS			

At 10 minutes later:

Measurement Conditions		Limit: ±0.01%	Limit: ±0.01%(1.356kHz)			
Voltage (V DC)	Temperature (°C)	•		Verdict		
	-20	13.561159	-0.177	PASS		
	-10	13.561242	-0.094	PASS		
	0	13.561271	-0.065	PASS		
\ \ \ . o	+10	13.561148	-0.188	PASS		
V _{norm} : 3	T_{normal} : +20	13.561336	REF	PASS		
	+30	13.561134	-0.202	PASS		
	+40	13.561056	-0.28	PASS		
	+50	13.561188	-0.148	PASS		
V _{max} : 3.3	T _{normal} : +20	13.561117	-0.219	PASS		
V _{min} : 2.7	i normal . +20	13.561196	-0.14	PASS		



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7.4 Radiated Emissions (30MHz-1GHz)

Test Requirement 47 CFR Part 15, Subpart C 15.225(d) & 15.209

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

Limit:

Frequency(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 the frequency bands 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.

7.4.1 E.U.T. Operation

Operating Environment:

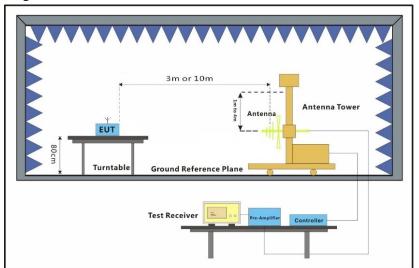
Temperature: 23.5 °C Humidity: 52 % RH Atmospheric Pressure: 1006 mbar

7.4.2 Test Mode Description

Pre-scan / Mode Final test Code Description

Final test 01 TX mode with modulation.

7.4.3 Test Setup Diagram





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7.4.4 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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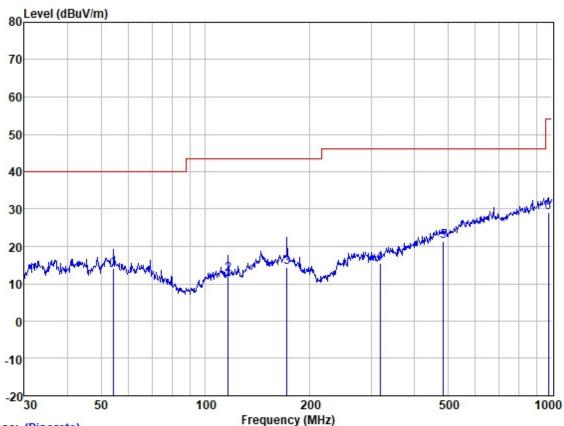


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Test Mode: 01; Polarity: Horizontal



Trace: (Discrete)

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

	Freq					Measured Level			Pol/ Phase	Remark
	MHz	dBuV	dBS/m	dB	dB	dBuA/m	dBuA/m	dB		
1	54.261	26.78	13.86	1.18	27.60	14.22	40.00	-25.78	HORIZONTAL	QP
2	116.132	27.50	10.88	1.84	27.57	12.65	43.50	-30.85	HORIZONTAL	QP
3	171.995	26.11	13.10	2.40	27.33	14.28	43.50	-29.22	HORIZONTAL	QP
4	318.817	25.48	14.01	3.32	27.31	15.50	46.00	-30.50	HORIZONTAL	QP
5	485.609	28.28	17.36	4.36	28.55	21.45	46.00	-24.55	HORIZONTAL	QP
6	975.753	25.49	24.29	7.31	28.03	29.06	54.00	-24.94	HORIZONTAL	QP



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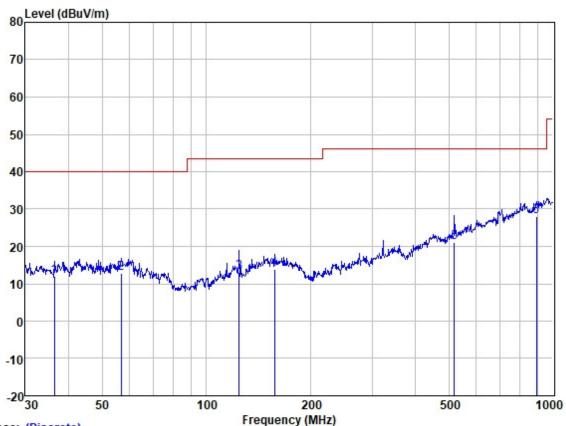
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Test Mode: 01; Polarity: Vertical



Trace: (Discrete)

Site : SGS Job Model Power : Test Mode

	Freq					Measured Level			Pol/ Phase	Remark
	MHz	dBuV	dBS/m	dB	dB	dBuA/m	dBuA/m	dB		-
1	36.381	25.35	13.20	1.08	27.62	12.01	40.00	-27.99	VERTICAL	QP
2	56.792	25.51	13.64	1.21	27.60	12.76	40.00	-27.24	VERTICAL	QP
3	124.133	27.11	11.59	1.90	27.55	13.05	43.50	-30.45	VERTICAL	QP
4	157.007	25.43	13.62	2.31	27.36	14.00	43.50	-29.50	VERTICAL	QP
5	519.065	26.80	18.45	4.55	28.63	21.17	46.00	-24.83	VERTICAL	QP
6	893.857	26.42	22.96	6.86	28.22	28.02	46.00	-17.98	VERTICAL	QP



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7.5 Radiated Emissions (9kHz-30MHz)

Test Requirement 47 CFR Part 15, Subpart C 15.225(d) & 15.209

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

Test Distance: 10 m

Limit:

Frequency(MHz)	Field strength (microvolts/meter)	Limit (dBuV/m)	Detector	Measurement Distance (meters)	
0.009-0.490	2400/F(kHz)	-	-	300	
0.490-1.705	24000/F(kHz)	-	-	30	
1.705-30	30	-	-	30	

Below 30MHz

If field strength is measured at only a single point, then that point shall be at the radial from the EUT that produces the maximum emission at the frequency being measured, as described in 5.4. If that point is closer to the EUT than $\lambda/2\pi$ and the limit distance is greater than $\lambda/2\pi$, the measurement shall be extrapolated to the limit distance by conservatively presuming that the field strength decreases at a 40 dB/decade of distance rate to the $\lambda/2\pi$ distance, and at a 20 dB/decade of distance rate beyond $\lambda/2\pi$. This shall be accomplished using Equation (2):

$$FS_{(10m)} = FS_{(30/300m)} + 40log\{d_{(near field)}/d_{(10m)}\} + 20log\{d_{(30/300m)}/d_{(near field)}\}$$
(2)

If the single point measured is at a distance greater than $\lambda/2\pi$, then extrapolation to the limit distance shall be calculated using Equation (3):

$$FS_{(10m)} = FS_{(30/300m)} + 20log\{d_{(30/300m)}/d_{(10m)}\}$$
(3)

If both the single point and the limit distance are equal to or closer to the EUT than $\lambda/2\pi$, then extrapolation to the limit distance shall be calculated using Equation (4):

$$FS_{(10m)} = FS_{(30/300m)} + 40log\{d_{(30/300m)}/d_{(10m)}\}$$
(4)

Remark:

 $d_{near field} = 47.77 / f_{MHz}$

where f_{MHz} is the frequency of the emission being measured in MHz.

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



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$$FS_{\text{limit}} = FS_{\text{max}} - 40 \log \left(\frac{d_{\text{limit}}}{d_{\text{measure}}} \right)$$

where

 FS_{limit} is the calculation of field strength at the limit distance, expressed in $dB\mu V/m$

FS_{max} is the measured field strength, expressed in dBμV/m d_{measure} is the distance of the measurement point from the EUT d_{limit} is the reference distance or the distance of the $\lambda/2\pi$ point

7.5.1 E.U.T. Operation

Operating Environment:

Temperature: 23.5 °C Humidity: 52 % RH Atmospheric Pressure: 1006 mbar

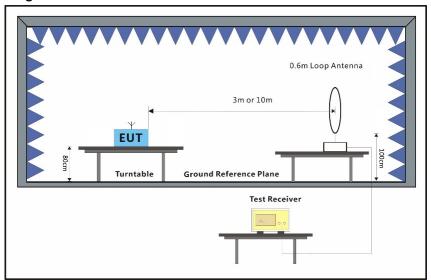
7.5.2 Test Mode Description

Pre-scan / Mode

Final test Code Description

Final test 01 TX mode with modulation.

7.5.3 Test Setup Diagram



7.5.4 Measurement Procedure and Data

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



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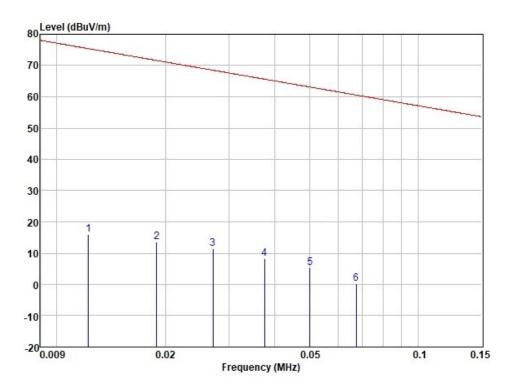
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Mode:02;



Site : SGS Job Model Power Test Mode : NFC

	Freq		Anterna Factor			Measured Level	Pol/ Phase
	MHz	dBuV	dB/m	dB	dB	dBuV/m	
1	0.012	26.89	17.58	0.05	28.45	16.07	VERTICAL
2	0.019	27.76	14.35	0.05	28.56	13.60	VERTICAL
3	0.027	26.95	13.16	0.05	28.76	11.40	VERTICAL
4	0.038	24.74	12.51	0.05	29.14	8.16	VERTICAL
5	0.050	22.44	12.20	0.05	29.26	5.43	VERTICAL
6	0.067	17.54	12.03	0.05	29.33	0.29	VERTICAL

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Frequency (MHz)	Level @10m (dBuV/m)	Limit @300m (dBuV/m)	Convert Factor (dB)	Level @ 300m (dBuV/m)	Over limit (dB)	Remark
0.012	16.07	46.02	59.08	-43.01	-89.04	AV
0.019	13.60	42.03	59.08	-45.48	-87.51	AV
0.027	11.40	38.98	59.08	-47.68	-86.66	AV
0.038	8.16	36.01	59.08	-50.92	-86.93	AV
0.050	5.43	33.62	59.08	-53.65	-87.28	AV
0.067	0.29	31.08	59.08	-58.79	-89.88	AV



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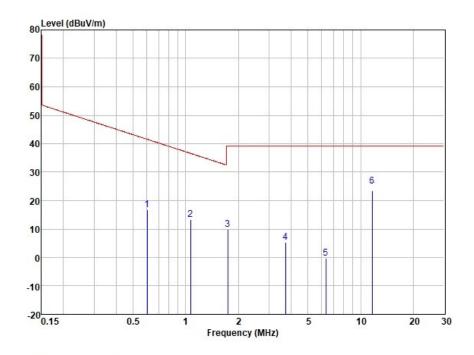
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Mode:02;



Site : SGS Job Model Power Test Mode : NFC

	Freq					Measured Level	
	MHz	dBuV	dB/m	dB	dB	dBuV/m	_
1	0.604	34.36	11.81	0.10	29.40	16.87	VERTICAL
2	1.065	30.81	11.84	0.13	29.40	13.38	VERTICAL
3	1.744	27.37	11.84	0.18	29.40	9.99	VERTICAL
4	3.720	22.38	11.69	0.33	29.32	5.08	VERTICAL
5	6.319	17.19	11.33	0.39	29.30	-0.39	VERTICAL
6	13 683	42 00	10 20	0 55	29 27	23 66	VEDTTCAL

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The point 6 is the main operating frequency of the EUT and refer to section 7.3 for details.

Frequency (MHz)	Level @10m (dBuV/m)	Limit @30m (dBuV/m)	Convert Factor (dB)	Level @ 30m (dBuV/m)	Over limit (dB)	Remark
0.604	16.87	31.98	19.08	-2.21	-34.20	QP
1.065	13.38	27.06	19.08	-5.70	-32.76	QP
1.744	9.99	29.54	19.08	-9.09	-38.64	QP
3.72	5.08	29.54	19.08	-14.00	-43.55	QP
6.319	-0.39	29.54	19.08	-19.47	-49.02	QP
13.683	29.27	29.54	19.08	10.19	-19.36	QP



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Test Setup Photo 8

Refer to Appendix_Setup Photo for GZCR220800102203.



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EUT Constructional Details (EUT Photos) 9

Refer to External and Internal Photos for GZCR2208001022HS

- End of the Report -



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