RADIO TEST REPORT
FCC ID:2AWGT-G1C

Product Designation	:	GPS tracker
Trade Name	:	GOSAFE
Model Name	:	G1C
Applicant	:	GOSAFE(GUANGZHOU)INC
Date of Issue	:	May. 15, 2020
Standard(s)	:	FCC Part 27:MISCELLANEOUS WIRELESS COMMUNICATIONS SERVICES
Report No	:	DGE200413002D04

Prepared for

GOSAFE(GUANGZHOU)INC

RM 1105, the Innovation Building C1 No. 182 Kexue Avenue, Science City, Guangzhou.China

Prepared by

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REPORT REVISE RECORD

Report No	Revise Time	Issued Date	Valid Version	Notes
DGE200413002D04	/	May 15, 2020	Invalid	Initial release

Note: The original test report Ref.No. ZR/2019/8003201 dated Dec. 11, 2019, was modified on May. 15, 2020 to include the following changes:

- Change the EUT Left headset photo;
- RADIATED OUTPUT POWER.
- RADIATED SPURIOUS EMISSION;

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1. TEST REPORT CERTIFICATION

Applicant's name.....: GOSAFE(GUANGZHOU)INC

Address.....: RM 1105, the Innovation Building C1 No. 182 Kexue Avenue, Science City, Guangzhou.China

Manufacturer's Name.....: Huizhou Bo Shi Jie Technology Co., Ltd.

Address.....: Bo Shi Jie Industrial Park, No .1 Huifeng West Third Road, Zhongkai，Huizhou City, Guangzhou.China

Product description

Product name.....: GPS tracker

Trademark .....: GOSAFE

Model and/or type reference ....: G1C

Difference ： N/A

Standards.....: FCC Part 27:MISCELLANEOUS WIRELESS COMMUNICATIONS SERVICES

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Date of Test.....

Date (s) of performance of tests.....: 10 Apr. 2020 ~15 May. 2020

Date of Issue.....: 15 May. 2020

Test Result.....: **Pass**

Testing Engineer : Eileen Liu.

(Eileen Liu)

Technical Manager : Jason Chen

(Jason Chen)

Authorized Signatory : Sam. Chen

(Sam Chen)

2. GENERAL INFORMATION

2.1 PRODUCT DESCRIPTION

A major technical description of EUT is described as following:

Product Designation:	GPS tracker
Frequency Bands:	☒ LTE CatM1 Band 12 ☒ LTE CatM1 Band 13
Test Modulation	QPSK,16QAM
Hardware Version	V1.0
Software Version	V1.0
Antenna Type	PIFA Antenna
Antenna gain	LTE CatM1 Band 12: -1.4dBi; LTE CatM1 Band 13: -0.7dBi;
Power Supply:	DC 3.3V to 4.07V (Normal: DC 3.7V);DC 6V~90V by external power supply
Singel Card:	GSM /LTE Card Slot
Extreme Temp. Tolerance	-20℃ to +75℃
*** Note: 1. The High Voltage DC 4.07V and Low Voltage DC 3.3V were declared by manufacturer 2. The EUT couldn't be operating normally with higher or lower voltage.	

2.2 Technical Specification

Characteristics	Description		
Supported Frequency Range	Band	Tx	Rx
	GSM 850	824 to 849 MHz	869 to 894 MHz
	GSM 1900	1850 to 1910 MHz	1930 to 1990 MHz
	LTE NB1 Band 2	1850 to 1910 MHz	1930 to 1990 MHz
	LTE NB1 Band 4	1710 to 1755 MHz	2110 to 2155 MHz
	LTE NB1 Band 12	699 to 716 MHz	729 to 746 MHz
	LTE NB1 Band13	777 to 787 MHz	746 to 756 MHz
	LTE CatM1 Band 2	1850 to 1910 MHz	1930 to 1990 MHz
	LTE CatM1 Band 4	1710 to 1755 MHz	2110 to 2155 MHz
	LTE CatM1 Band 12	699 to 716 MHz	729 to 746 MHz
	LTE CatM1 Band 13	777 to 787 MHz	746 to 756 MHz

Supported Channel Bandwidth	GSM	200KHz
	LTE NB1 Band 2	180KHz
	LTE NB1 Band 4	180KHz
	LTE NB1 Band 12	180KHz
	LTE NB1 Band13	180KHz
	LTE CatM1 Band 2	☒1.4MHz ☒3MHz ☒5MHz ☒10MHz ☒15MHz ☒20MHz
	LTE CatM1 Band 4	☒1.4MHz ☒3MHz ☒5MHz ☒10MHz ☒15MHz ☒20MHz
	LTE CatM1 Band 12	☒1.4MHz ☒3MHz ☒5MHz ☒10MHz
	LTE CatM1 Band 13	☒5MHz ☒10MHz

2.3 Test Frequencies

Test Mode	Bandwidth	TX / RX	RF Channel		
			Low (L)	Middle (M)	High (H)
LTE CatM1 Band 12	1.4MHz	TX	Channel 23017	Channel 23095	Channel 23173
			699.7 MHz	707.5 MHz	715.3 MHz
		RX	Channel 5017	Channel 5095	Channel 5173
			729.7 MHz	737.5 MHz	745.3 MHz
	3MHz	TX	Channel 23025	Channel 23095	Channel 23165
			700.5 MHz	707.5 MHz	714.5 MHz
		RX	Channel 5025	Channel 5095	Channel 5165
			730.5 MHz	737.5 MHz	744.5 MHz
	5MHz	TX	Channel 23035	Channel 23095	Channel 23155
			701.5 MHz	707.5 MHz	713.5 MHz
		RX	Channel 5035	Channel 5095	Channel 5155
			731.5 MHz	737.5 MHz	743.5 MHz
	10MHz	TX	Channel 23060	Channel 23095	Channel 23130
			704 MHz	707.5 MHz	711 MHz
		RX	Channel 5060	Channel 5095	Channel 5130
			734 MHz	737.5 MHz	741 MHz

Test Mode	Bandwidth	TX / RX	RF Channel		
			Low (L)	Middle (M)	High (H)
LTE CatM1 Band 13	5MHz	TX	Channel 23025	Channel 23230	Channel 23255
			779.5 MHz	782 MHz	784.5 MHz
		RX	Channel 5205	Channel 5230	Channel 5255
			748.5 MHz	751 MHz	753.5 MHz
	10MHz	TX	Channel 23230	Channel 23230	Channel 23230
			782 MHz	782 MHz	782 MHz
		RX	Channel 5230	Channel 5230	Channel 5230
			751 MHz	751 MHz	751 MHz

2.4 Test Methodology

The radiated emission testing was performed according to the procedures of ANSI/TIA-603-E-2016, and KDB 971168 D01 Power Means License Digital Systems V03R01.

2.5 TEST FACILITY

Site	Shenzhen NTEK Testing Technology Co., Ltd.
Location	1/F, Building E, Fenda Science Park, Sanwei Community, Xixiang Street, Bao'an District, Shenzhen P.R. China
Designation Number	FCC Registered No.: 238937 IC Registered No.:9270A-1 CNAS Registration No.:L5516

MEASUREMENT UNCERTAINTY

The reported uncertainty of measurement y ± U， where expended uncertainty U is based on a standard uncertainty multiplied by a coverage factor of k=2，providing a level of confidence of approximately 95 %.

No.	Item	Uncertainty
1	Conducted Emission Test	±3.6dB
2	RF power,conducted	±0.16dB
3	Spurious emissions,conducted	±0.21dB
4	All emissions,radiated(<1G)	±4. 8dB
5	All emissions,radiated(>1G)	±5.0dB
6	Temperature	±0.5°C
7	Humidity	±2%

ALL TEST EQUIPMENT LIST

No.	Type	Manufacturer	S/N	Cal. Date	Cal. Due
1	H & T Chamber ETH225-40A	Test EQ	WIT-05121302	Feb.13,2020	Feb.12,2021
2	CMW500	R&S	1100.008.02	Feb.27,2020	Feb.26,2021
3	Wireless communication test set 8960	Agilent	GB46200384	July 16,2019	July 15,2020
4	Power Splitter 11636A	Agilent	34	Sep.21,2019	Sep.20,2020
5	Attenuator	JFW	50FHC-006-50	Jun 20, 2019	June 19, 2020
6	Vector Signal Generator SMU200A	R&S	104332	Sep.21,2019	Sep.20,2020
7	VECTOR ANALYZER E4440A	Agilent	MY44303916	Jun 29, 2019	June 28, 2020
8	MXG Vector Signal Generator N5182A	AGILENT	MY50140530	Sep. 21, 2019	Sep. 20, 2020
9	PSG Analog Signal Generator E8257D	AGILENT	MY45141029	Sep. 21, 2019	Sep. 20, 2020
10	MXA Signal Analyzer N9020A	AGILENT	W1312-60196	Feb.27,2020	Feb.26,2021
11	Universal Switch Control Unit	JS TONSCEND	N/A	---	---
12	RF SHIELD BOX	R&S	1204.7008K02-102590-EE	Feb.27,2020	Feb.26,2021
13	Programmable Power Supply PPT-1830	GW INSTEK	EM907629	Aug.24,2019	Aug.23,2020
14	Vibration Source SCU-200	SUSHI	3000-40-07	Feb.23,2020	Feb.22,2021
15	Attenuator	JFW	50FHC-006-50	Jun 20, 2019	Jun 19, 2020
16	EMI Test Receiver ESCI	R&S	100694	Feb.27,2020	Feb.26,2021
17	Horn Antenna	EM	EM-AH-10180	Mar.01,2020	Feb.28,2021
18	Horn Ant	Schwarzbeck	BBHA 9170	Mar.12,2020	Mar.11,2021
19	Loop antenna	ARA	PLA-1030/B	Mar.01,2020	Feb.28,2021
20	Bilog Antenna	TESEQ	CBL6111D	Apr.11,2020	Apr.10,2021
21	Pre-Amplifier	EMC	EMC051835SE	Mar.01,2016	Feb.28,2021
22	High pass filter unit	Tonscend	JS0806-F	Mar.09,2019	Mar.08,2022
23	Coupling Ant	EMC	0059611	Mar.18,2019	Mar.17,2022

2.6 SPECIAL ACCESSORIES

The battery wassupplied by the applicant were used as accessories and being tested with EUT intended for FCC grant together.

2.7 EQUIPMENT MODIFICATIONS

Not available for this EUT intended for grant.

3. SYSTEM TEST CONFIGURATION

3.1 EUT CONFIGURATION

The EUTconfiguration for testing is installed on RF field strength measurement to meet the Commission's requirement and operating in a manner which intends to maximize its emission characteristics in a continuous normal application.

3.2 EUT EXERCISE

The Transmitter was operated in the maximum output power mode through Communication Tester. The TX frequency was fixed which was for the purpose of the measurements.

3.3 CONFIGURATION OF EUT SYSTEM

Fig. 2-1 Configuration of EUT System

Table 2-1 Equipment Used in EUT System

Item	Equipment	Model No.	ID or Specification	Remark
1	GPS tracker	G1C	2AWGT-G1C	EUT
2	Antenna	N/A	N/A	AE

***Note: All the accessories have been used during the test. The following "EUT" in setup diagram means EUT system.

4. SUMMARY OF TEST RESULTS

Item Number	Item Description		FCC Rules	Result
1	Output Power	Conducted Output Power	2.1046	Pass
		Radiated Output Power	27.50(c)	
2	Peak-to-Average Ratio	Peak-to-Average Ratio	27.50(C)	Pass
3	Spurious Emission	Conducted Spurious Emission	2.1051/27.53(h)	Pass
		Radiated Spurious Emission		
4	Frequency Stability		2.1053/27.53(h)	Pass
5	Occupied Bandwidth		2.1049	Pass
6	Band Edge		2.1051/27.53(h)	Pass

5. DESCRIPTION OF TEST MODES

During the testing, the EUT was controlled via Rhode & Schwarz Digital Radio Communication Tester (CMW 500)to ensure max power transmission and proper modulation. Three channels (The top channel, the middle channel and the bottom channel) were chosen for testing on both GSMand PCS frequency band.

***Note:** LTE, mode have been tested during the test.

The worst condition was recorded in the test report if no other modes test data.

6. OUTPUT POWER

6.1 CONDUCTED OUTPUT POWER

Please refer to the original report .: ZR/2019/8003201-Appendix B , FCC ID: ZMOMA510GL

6.2 RADIATED OUTPUT POWER

6.2.1 MEASUREMENT METHOD

The measurements procedures specified in ANSI/TIA-603-E-2016 were applied.

1. Effective Radiated Power (ERP) and Equivalent Isotropic Radiated Power (EIRP) measurements are performed using the substitution method described in ANSI/TIA-603-E-2016 with the EUT transmitting into an integral antenna. Measurements on signal operating below 1GHz are performed using dipole antennas. Measurements on signals operating above 1GHz are performed using broadband horn antennas. All measurements are performed as RMS average measurements while the EUT operating at its maximum duty cycle, at maximum power, and at the approximate frequencies.

2. In an anechoic antenna test chamber, a half-wave dipole antenna for the frequency band of interest is placed at the reference centre of the chamber. An RF Signal source for the frequency band of interest is connected to the dipole with a cable that has been constructed to not interfere with the radiation pattern of the antenna. A known (measured) power (Pin) is applied to the input of the dipole, and the power received (Pr) at the chamber's probe antenna is recorded.

3. The substitution method is used. Substitution values at each frequency are measured before and saved to the test software. A "reference path loss" is established as ARpl=Pin + 2.15 - Pr. TheARpl is the attenuation of “reference path loss”, and including the gain of receive antenna, the cable loss and the air loss. The measurement results are obtained as described below: Power=PMea+ARpl

4. The EUT is substituted for the dipole at the reference centre of the chamber and a scan is performed to obtain the radiation pattern.

5. From the radiation pattern, the co-ordinates where the maximum antenna gain occurs are identified.

6. The EUT is then put into continuously transmitting mode at its maximum power level.

7. Power mode measurements are performed with the receiving antenna placed at the coordinates determined in Step 3 to determine the output power as defined in Rule 24.232 (b) and (c) and Rule 27.50(d)(4). The "reference path loss" from Step1 is added to this result.

8. This value is EIRP since the measurement is calibrated using a half-wave dipole antenna of known gain (2.15 dBi) and known input power (Pin).

9. ERP can be calculated from EIRP by subtracting the gain of the dipole, **ERP = EIRP -2.15dBi.**..

SG Level= Signal generator output

Pcl= cable loss

Ga= Antenna Gain

Peak EIRP(dBm)= SGLevel -Pcl +Ga

ERP(dBm)=EIRP-2.15

6.2.2 PROVISIONS APPLICABLE

Mode	FCC Part Section(s)	Nominal Peak Power
LTE CatM1Band 12	27.5(c)	<=34.77dBm(3W)
LTE CatM1 Band 13	27.5(b)	<=34.77dBm(3W)

6.2.3 MEASUREMENT RESULT

LTE CatM1 Band 12

Test Band	Test Mode	Test Bandwidth	Test channel	Test RB	Conducted Power (dBm)	ERP (dBm)	limit (dBm)	Verdict
CatM1 Band 12	QPSK	1.4M	LCH	1RB#0	21.02	17.47	34.77	PASS
CatM1 Band 12	QPSK	1.4M	LCH	5RB#0	20.22	16.67	34.77	PASS
CatM1 Band 12	QPSK	1.4M	LCH	6RB#0	19.14	15.59	34.77	PASS
CatM1 Band 12	QPSK	1.4M	MCH	1RB#0	20.83	17.28	34.77	PASS
CatM1 Band 12	QPSK	1.4M	MCH	5RB#0	19.88	16.33	34.77	PASS
CatM1 Band 12	QPSK	1.4M	MCH	6RB#0	18.77	15.22	34.77	PASS
CatM1 Band 12	QPSK	1.4M	HCH	1RB#0	21.01	17.46	34.77	PASS
CatM1 Band 12	QPSK	1.4M	HCH	5RB#0	20.12	16.57	34.77	PASS
CatM1 Band 12	QPSK	1.4M	HCH	6RB#0	18.89	15.34	34.77	PASS
CatM1 Band 12	16QAM	1.4M	LCH	1RB#0	20.05	16.50	34.77	PASS
CatM1 Band 12	16QAM	1.4M	LCH	5RB#0	19.17	15.62	34.77	PASS
CatM1 Band 12	16QAM	1.4M	MCH	1RB#0	19.83	16.28	34.77	PASS
CatM1 Band 12	16QAM	1.4M	MCH	5RB#0	18.99	15.44	34.77	PASS
CatM1 Band 12	16QAM	1.4M	HCH	1RB#0	19.91	16.36	34.77	PASS
CatM1 Band 12	16QAM	1.4M	HCH	5RB#0	19.11	15.56	34.77	PASS
CatM1 Band 12	QPSK	3M	LCH	1RB#0	20.96	17.41	34.77	PASS
CatM1 Band 12	QPSK	3M	LCH	5RB#0	19.93	16.38	34.77	PASS
CatM1 Band 12	QPSK	3M	LCH	6RB#0	18.81	15.26	34.77	PASS
CatM1 Band 12	QPSK	3M	MCH	1RB#0	20.89	17.34	34.77	PASS
CatM1 Band 12	QPSK	3M	MCH	5RB#0	19.88	16.33	34.77	PASS
CatM1 Band 12	QPSK	3M	MCH	6RB#0	18.78	15.23	34.77	PASS
CatM1 Band 12	QPSK	3M	HCH	1RB#0	20.91	17.36	34.77	PASS
CatM1 Band 12	QPSK	3M	HCH	5RB#0	19.87	16.32	34.77	PASS
CatM1 Band 12	QPSK	3M	HCH	6RB#0	18.83	15.28	34.77	PASS
CatM1 Band 12	16QAM	3M	LCH	1RB#0	19.78	16.23	34.77	PASS
CatM1 Band 12	16QAM	3M	LCH	5RB#0	18.74	15.19	34.77	PASS
CatM1 Band 12	16QAM	3M	MCH	1RB#0	19.79	16.24	34.77	PASS
CatM1 Band 12	16QAM	3M	MCH	5RB#0	18.78	15.23	34.77	PASS
CatM1 Band 12	16QAM	3M	HCH	1RB#0	19.85	16.30	34.77	PASS
CatM1 Band 12	16QAM	3M	HCH	5RB#0	18.82	15.27	34.77	PASS
CatM1 Band 12	QPSK	5M	LCH	1RB#0	21.21	17.66	34.77	PASS
CatM1 Band 12	QPSK	5M	LCH	5RB#0	20.09	16.54	34.77	PASS
CatM1 Band 12	QPSK	5M	LCH	6RB#0	20.03	16.48	34.77	PASS
CatM1 Band 12	QPSK	5M	MCH	1RB#0	21.14	17.59	34.77	PASS
CatM1 Band 12	QPSK	5M	MCH	5RB#0	20.01	16.46	34.77	PASS
CatM1 Band 12	QPSK	5M	MCH	6RB#0	19.99	16.44	34.77	PASS
CatM1 Band 12	QPSK	5M	HCH	1RB#0	21.05	17.50	34.77	PASS
CatM1 Band 12	QPSK	5M	HCH	5RB#0	19.97	16.42	34.77	PASS
CatM1 Band 12	QPSK	5M	HCH	6RB#0	19.95	16.40	34.77	PASS

Note: Above is the worst mode data.

LTE CatM1 Band 13

Test Band	Test Mode	Test Bandwidth	Test channel	Test RB	Conducted Power (dBm)	ERP (dBm)	limit (dBm)	Verdict
CatM1 Band 13	QPSK	5M	LCH	1RB#0	20.60	19.56	34.77	PASS
CatM1 Band 13	QPSK	5M	LCH	5RB#0	19.20	18.16	34.77	PASS
CatM1 Band 13	QPSK	5M	LCH	6RB#0	19.18	18.14	34.77	PASS
CatM1 Band 13	QPSK	5M	MCH	1RB#0	20.70	19.66	34.77	PASS
CatM1 Band 13	QPSK	5M	MCH	5RB#0	19.29	18.25	34.77	PASS
CatM1 Band 13	QPSK	5M	MCH	6RB#0	19.28	18.24	34.77	PASS
CatM1 Band 13	QPSK	5M	HCH	1RB#0	20.71	19.67	34.77	PASS
CatM1 Band 13	QPSK	5M	HCH	5RB#0	19.24	18.20	34.77	PASS
CatM1 Band 13	QPSK	5M	HCH	6RB#0	19.22	18.18	34.77	PASS
CatM1 Band 13	16QAM	5M	LCH	1RB#0	20.48	19.44	34.77	PASS
CatM1 Band 13	16QAM	5M	LCH	5RB#0	19.26	18.22	34.77	PASS
CatM1 Band 13	16QAM	5M	MCH	1RB#0	20.27	19.23	34.77	PASS
CatM1 Band 13	16QAM	5M	MCH	5RB#0	19.31	18.27	34.77	PASS
CatM1 Band 13	16QAM	5M	HCH	1RB#0	20.31	19.27	34.77	PASS
CatM1 Band 13	16QAM	5M	HCH	5RB#0	19.34	18.30	34.77	PASS
CatM1 Band 13	QPSK	10M	MCH	1RB#0	20.92	19.88	34.77	PASS
CatM1 Band 13	QPSK	10M	MCH	5RB#0	20.62	19.58	34.77	PASS
CatM1 Band 13	QPSK	10M	MCH	6RB#0	19.39	18.35	34.77	PASS
CatM1 Band 13	16QAM	10M	MCH	1RB#0	20.44	19.40	34.77	PASS
CatM1 Band 13	16QAM	10M	MCH	5RB#0	20.59	19.55	34.77	PASS

Note: Above is the worst mode data.

Note:

a: For getting the EIRP (Efficient Isotropic Radiated Power) in substitution method, the following formula should be taken to calculate it,

EIRP [dBm] = Conducted Power [dBm] + Gain

[dBi] ERP [dBm] = Conducted Power [dBm] +

Gain [dBi] -2.15

6.3. PEAK-TO-AVERAGE RATIO

Please refer to the original report .: ZR/2019/8003201-Appendix B , FCC ID: ZMOMA510GL

7. OCCUPIED BANDWIDTH

Please refer to the original report .: ZR/2019/8003201-Appendix B , FCC ID: ZMOMA510GL

8. BAND EDGE

Please refer to the original report .: ZR/2019/8003201-Appendix B , FCC ID: ZMOMA510GL

9. SPURIOUS EMISSION

9.1 CONDUCTED SPURIOUS EMISSION

Please refer to the original report .: ZR/2019/8003201-Appendix B , FCC ID: ZMOMA510GL

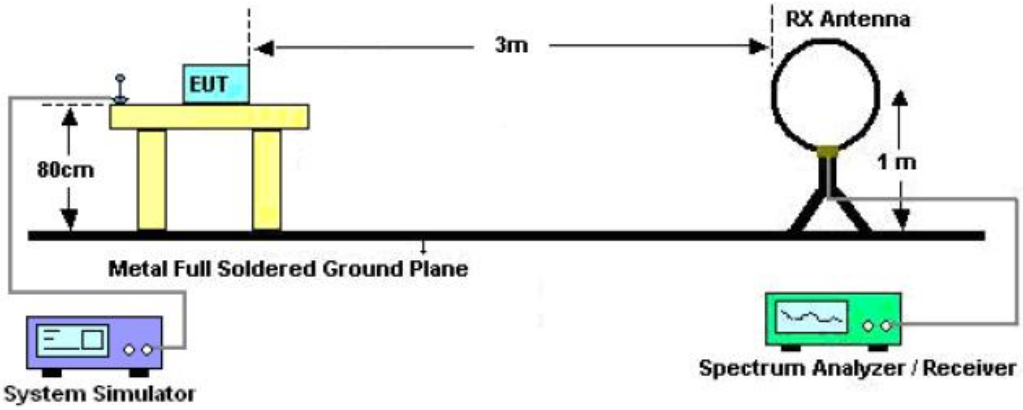
9.2 RADIATED SPURIOUS EMISSION

9.2.1MEASUREMENT METHOD

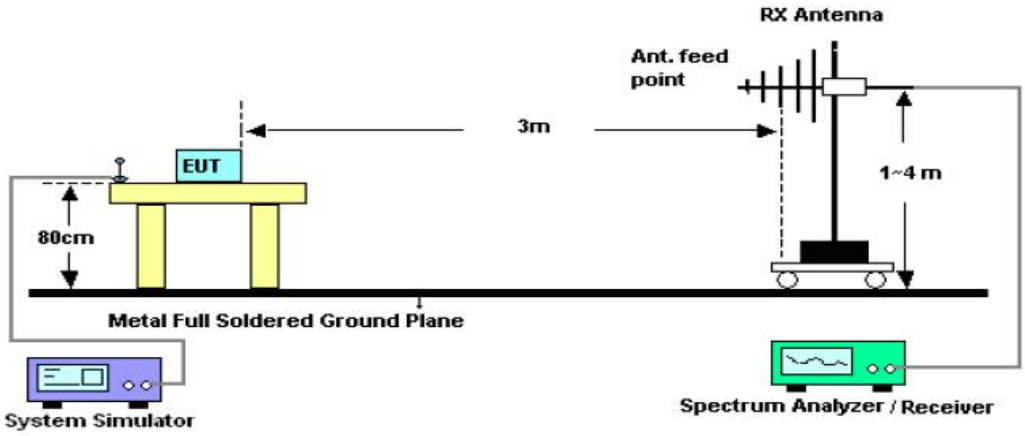
1. The EUT was placed on the top of the turntable 0.8 or 1.5 meter above ground. The phase center of the receiving antenna mounted on the top of a height-variable antenna tower was placed 3 meters far away from the turntable.
2. Power on the EUT and all the supporting units. The turntable was rotated by 360 degrees to determine the position of the highest radiation.
3. The height of the broadband receiving antenna was varied between one meter and four meters above ground to find the maximum emissions field strength of both horizontal and vertical polarization.
4. For each suspected emissions, the antenna tower was scan (from 1 M to 4 M) and then the turntable was rotated (from 0 degree to 360 degrees) to find the maximum reading.
5. Set the test-receiver system to Peak or CISPR quasi-peak Detect Function with specified bandwidth under Maximum Hold Mode.
6. For emissions above 1GHz, use 1MHz VBW and RBW for peak reading. Then 1MHz RBW and 10Hz VBW for average reading in spectrum analyzer. Place the measurement antenna away from each area of the EUT determined to be a source of emissions at the specified measurement distance, while keeping the measurement antenna aimed at the source of emissions at each frequency of significant emissions, with polarization oriented for maximum response. The measurement antenna may have to be higher or lower than the EUT, depending on the radiation pattern of the emission and staying aimed at the emission source for receiving the maximum signal. The final measurement antenna elevation shall be that which maximizes the emissions. The measurement antenna elevation for maximum emissions shall be restricted to a range of heights of from 1 m to 4 m above the ground or reference ground plane.
7. When the radiated emissions limits are expressed in terms of the average value of the emissions, and pulsed operation is employed, the measurement field strength shall be determined by averaging over one complete pulse train, including blanking intervals, as long as the pulse train does not exceed 0.1 seconds. As an alternative (provided the transmitter operates for longer than 0.1 seconds) or in cases where the pulse train exceeds 0.1 seconds, the measured field strength shall be determined from the average absolute voltage during a 0.1 second interval during which the field strength is at its maximum values.
8. If the emissions level of the EUT in peak mode was 3 dB lower than the average limit specified, then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions which do not have 3 dB margin will be repeated one by one using the quasi-peak method for below 1GHz.
9. For testing above 1GHz, the emissions level of the EUT in peak mode was lower than average limit (that means the emissions level in peak mode also complies with the limit in average mode), then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions will be measured in average mode again and reported.
10. In case the emission is lower than 30MHz, loop antenna has to be used for measurement and the recorded data should be QP measured by receiver. High - Low scan is not required in this case.

9.2.2 TEST SETUP

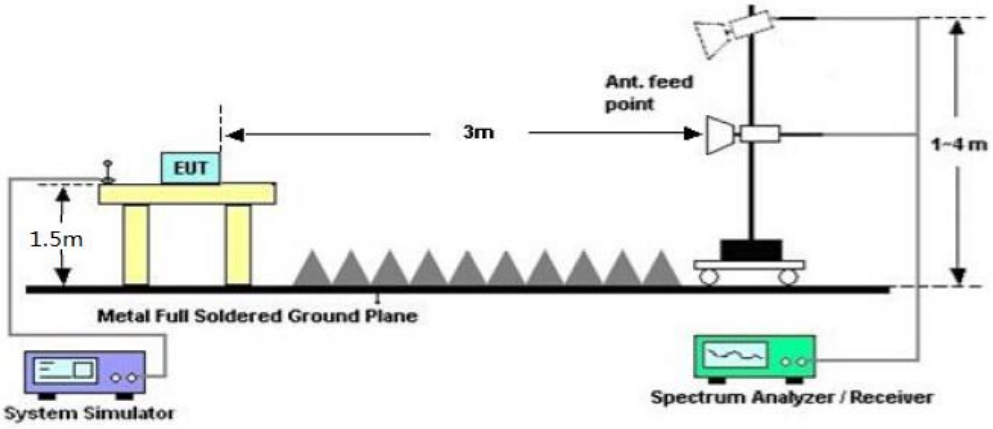
Radiated Emission Test-Setup Frequency Below 30MHz



RADIATED EMISSION TEST SETUP 30MHz-1000MHz



RADIATED EMISSION TEST SETUP ABOVE 1000MHz



9.2.3 PROVISIONS APPLICABLE

(a) On any frequency outside a licensee's frequency block (e.g. A, D, B, etc.) within the USPCS spectrum, the power of any emission shall be attenuated below the transmitter power (P, in Watts) by at least 43+10Log(P) dB. The specification that emissions shall be attenuated below the transmitter power (P) by at least 43 + 10 log (P) dB, translates in the relevant power range (1 to 0.001 W) to -13 dBm. At 1 W the specified minimum attenuation becomes 43 dB and relative to a 30 dBm (1 W) carrier becomes a limit of -13 dBm. At 0.001 W (0 dBm) the minimum attenuation is 13 dB, which again yields a limit of -13 dBm. In this way a translation of the specification from relative to absolute terms is carried out.

Note: only result the worst condition of each test mode:

9.2.4 MEASUREMENT RESULT

LTE CatM1 Band 12:

Test Results for Low Channel					
Frequency (MHz)	Emission Level (dBm)	Factor (dBm)	Limits (dBm)	Margin (dB)	Comment
1399.89	-51.66	2.19	-13	-38.66	Horizontal
2099.47	-53.20	1.97	-13	-40.20	Horizontal
5597.81	-50.80	1.03	-13	-37.80	Horizontal
1399.90	-53.93	2.72	-13	-40.93	Vertical
2099.25	-50.63	1.49	-13	-37.63	Vertical
5597.69	-55.90	2.33	-13	-42.90	Vertical
Test Results for Middle Channel					
Frequency (MHz)	Emission Level (dBm)	Factor (dBm)	Limits (dBm)	Margin (dB)	Comment
1415.38	-51.72	2.45	-13	-38.72	Horizontal
2122.61	-53.32	2.33	-13	-40.32	Horizontal
5660.19	-50.92	1.36	-13	-37.92	Horizontal
1415.46	-53.82	1.81	-13	-40.82	Vertical
2122.72	-50.64	1.25	-13	-37.64	Vertical
5660.03	-56.07	1.98	-13	-43.07	Vertical
Test Results for High Channel					
Frequency (MHz)	Emission Level (dBm)	Factor (dBm)	Limits (dBm)	Margin (dB)	Comment
1430.69	-51.92	1.91	-13	-38.92	Horizontal
2146.11	-53.45	2.10	-13	-40.45	Horizontal
5722.70	-50.98	2.56	-13	-37.98	Horizontal
1430.68	-53.80	1.50	-13	-40.80	Vertical
2146.17	-50.25	2.30	-13	-37.25	Vertical
5722.81	-55.84	1.39	-13	-42.84	Vertical

LTE CatM1 Band 13:

Test Results for Low Channel					
Frequency (MHz)	Emission Level (dBm)	Factor (dBm)	Limits (dBm)	Margin (dB)	Comment
1559.34	-51.73	1.49	-13	-38.73	Horizontal
2338.69	-53.66	2.60	-13	-40.66	Horizontal
6236.31	-51.17	1.87	-13	-38.17	Horizontal
1559.03	-53.85	1.58	-13	-40.85	Vertical
2338.51	-50.50	2.23	-13	-37.50	Vertical
6236.24	-55.89	2.75	-13	-42.89	Vertical
Test Results for Middle Channel					
Frequency (MHz)	Emission Level (dBm)	Factor (dBm)	Limits (dBm)	Margin (dB)	Comment
1564.13	-51.85	1.83	-13	-38.85	Horizontal
2346.00	-53.68	2.14	-13	-40.68	Horizontal
6256.27	-50.90	2.43	-13	-37.90	Horizontal
1564.17	-54.10	2.79	-13	-41.10	Vertical
2346.36	-50.25	2.50	-13	-37.25	Vertical
6256.29	-55.94	1.67	-13	-42.94	Vertical
Test Results for High Channel					
Frequency (MHz)	Emission Level (dBm)	Factor (dBm)	Limits (dBm)	Margin (dB)	Comment
1569.29	-51.71	2.31	-13	-38.71	Horizontal
2353.76	-53.24	1.44	-13	-40.24	Horizontal
6276.44	-51.14	2.06	-13	-38.14	Horizontal
1569.40	-54.14	2.57	-13	-41.14	Vertical
2353.72	-50.23	1.48	-13	-37.23	Vertical
6276.25	-55.87	1.36	-13	-42.87	Vertical

RESULT: PASS

Note:

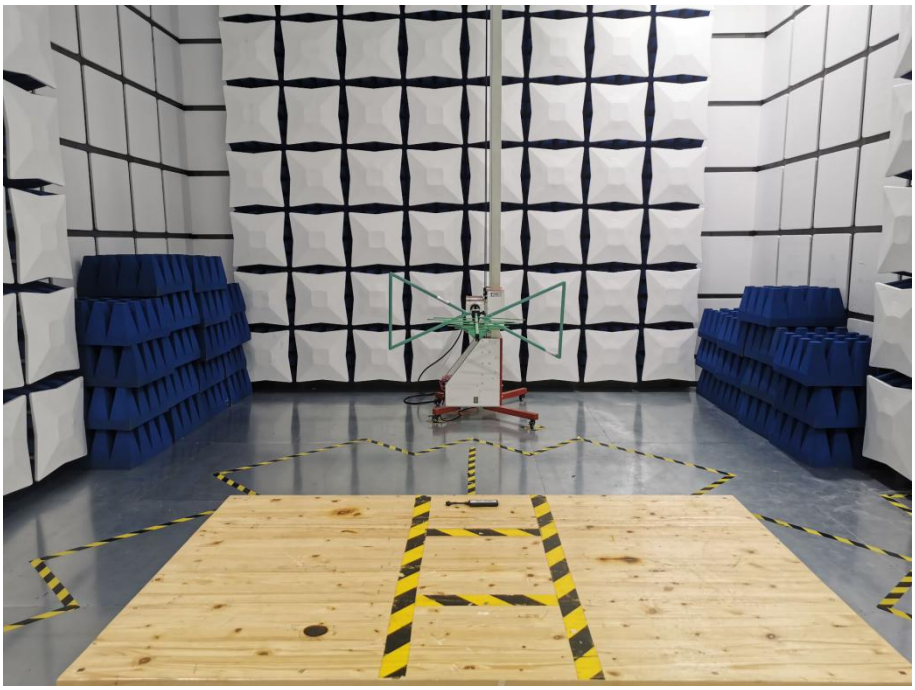
1. Margin = Emission Level -Limit
2. Below 30MHZ no Spurious found and Above is the worst mode data
3. Factor = Antenna Factor + Cable Loss

10. FREQUENCY STABILITY

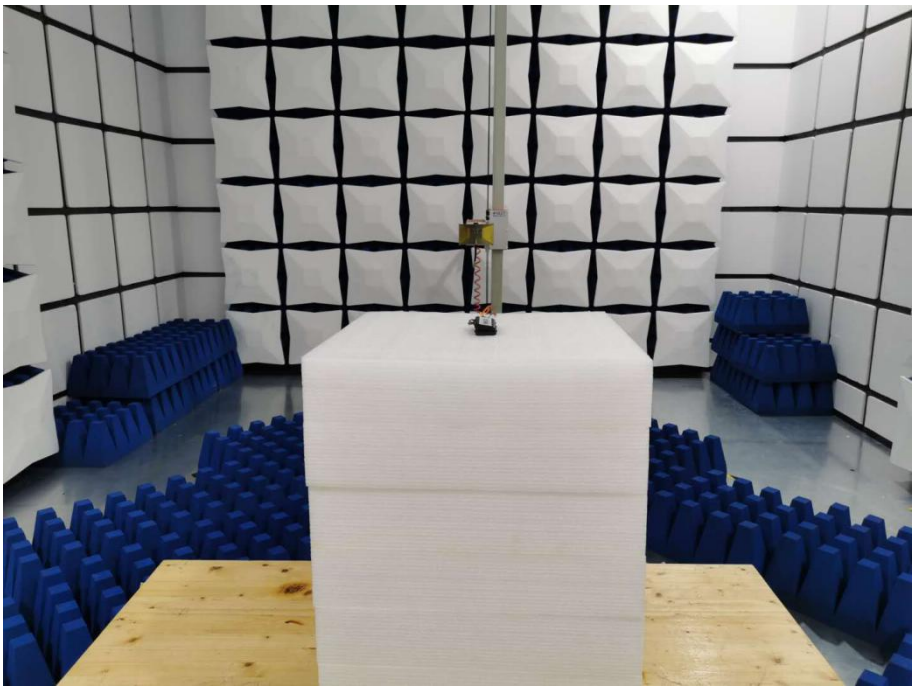
Please refer to the original report .: ZR/2019/8003201-Appendix B , FCC ID: ZMOMA510GL

APPENDIX A: PHOTOGRAPHS OF TEST SETUP

RADIATED SPURIOUS EMISSION



RADIATED SPURIOUS ABOVE 1G EMISSION



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