

TEST REPORT

Product : RTK GNSS receiver
Trade mark : EMLID
Model/Type reference : REACH RS3
Serial Number : N/A
Report Number : EED32P80561204
FCC ID : 2BAYERCH205
Date of Issue : Jun. 25, 2023
Test Standards : 47 CFR Part 2
47 CFR Part 22 subpart H
47 CFR Part 24 subpart E
47 CFR Part 27
47 CFR Part 90
Test result : PASS

Prepared for:

Emlid Tech Kft.

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Date:

Jun. 25, 2023



Check No.:4815210423

2 Test Summary

Test Item	Test Requirement	Result
FCC Part 22 (GSM 850,WCDMA Band V,LTE Band 5,LTE Band 26)		
Conducted output power	Part 2.1046(a)/Part 22.913(a)	NOTE1
Effective Radiated Power of Transmitter(ERP)	Part 2.1046(a)/Part 22.913(a)	PASS
99% &26dBOccupied Bandwidth	Part 2.1049(h)	NOTE1
Band Edge at antenna terminals	Part 2.1051/Part 22.917(a)	NOTE1
Spurious emissions at antenna terminals	Part 2.1051/ Part 2.1057/ Part 22.917(a)(b)	NOTE1
Field strength of spurious radiation	Part 2.1053/ Part 2.1057/ Part 22.917(a)(b)	PASS
Frequency stability	Part 2.1055/ Part 22.355	NOTE1
FCC Part 24 (GSM 1900,WCDMA Band II,LTE Band 2)		
Conducted output power	Part 2.1046(a) /Part 24.232(c)	NOTE1
Effective Radiated Power of Transmitter(EIRP)	Part 2.1046(a) / Part 24.232(c)	PASS
peak-to-average ratio	Part 24.232(d)	NOTE1
99% &26dBOccupied Bandwidth	Part 2.1049(h)	NOTE1
Band Edge at antenna terminals	Part 2.1051/ Part 24.238(a)	NOTE1
Spurious emissions at antenna terminals	Part 2.1051/ Part 2.1057/ Part 24.238(a)(b)	NOTE1
Field strength of spurious radiation	Part 2.1053 /Part 2.1057 / Part 24.238(a)(b)	PASS
Frequency stability	Part 2.1055/Part 24.235	NOTE1
FCC Part 27 (WCDMA Band IV,LTE Band 4,LTE Band 7,LTE Band 12,LTE Band 13,LTE Band 38,LTE Band 41, LTE Band 66)		
Conducted output power	Part 2.1046(a) /Part 27.50(d)	NOTE1
Effective Radiated Power of Transmitter(EIRP)	Part 2.1046(a) / Part 27.50(d)	PASS
peak-to-average ratio	Part 27.50(d)	NOTE1
99% &26dBOccupied Bandwidth	Part 2.1049(h)	NOTE1
Band Edge at antenna terminals	Part 2.1051/ Part 27.53(h)	NOTE1
Spurious emissions at antenna terminals	Part 2.1051/ Part 27.53(h)	NOTE1
Field strength of spurious radiation	Part 2.1053/ Part 27.53(h)	PASS
Frequency stability	Part 2.1055/Part 27.54	NOTE1

FCC Part 90 (LTE Band 26)		
Conducted output power	Part 2.1046/Part 90.635(b)	NOTE1
Effective Radiated Power of Transmitter(ERP)	Part 90.542	PASS
99% &26dB Occupied Bandwidth	Part 2.1049/Part 90.209	NOTE1
Emission Masks	90.210(b)	NOTE1
Band Edge at antenna terminals	Part 2.1051/Part 90.543	NOTE1
Spurious emissions at antenna terminals	Part 90.543(e)	NOTE1
Field strength of spurious radiation	Part 90.543(e)	PASS
Frequency stability	Part 90.539(c)	NOTE1
Remark: NOTE1: The test data please refer to the report of 200722016RFM-1 and 200722016RFM-2.(FCC ID:QIPPLS63-W) This test report (Ref. No.:EED32P80561204) is only valid with the original test report (Ref. No.: Report No.:200722016RFM-1 and 200722016RFM-2). Review this report and original report,the module without changes in circuit and product function, therefore in this report the Radiated Spurious Emission were retested and shown the data in this report, other tests data please refer to original Report No.:200722016RFM-1 and 200722016RFM-2. Company Name and Address shown on Report, the sample(s) and sample Information was/ were provided by the applicant who should be responsible for the authenticity which CTI hasn't verified. Tx: In this whole report Tx (or tx) means Transmitter. Rx: In this whole report Rx (or rx) means Receiver. RF: In this whole report RF means Radiated Frequency. CH: In this whole report CH means channel. Volt: In this whole report Volt means Voltage. Temp: In this whole report Temp means Temperature. Humid: In this whole report Humid means humidity. Press: In this whole report Press means Pressure. N/A: In this whole report not application		

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4 Test Requirement

4.1 Test setup

4.1.1 For Radiated Emissions test setup

Radiated Emissions setup:

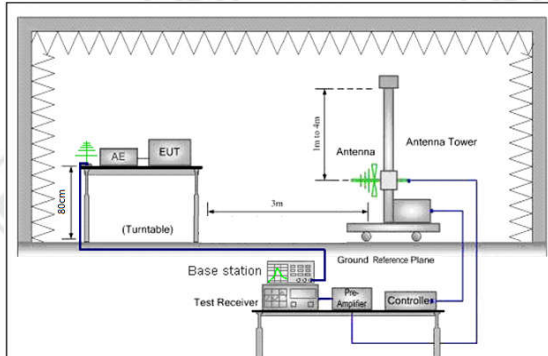


Figure 1.30MHz to 1GHz

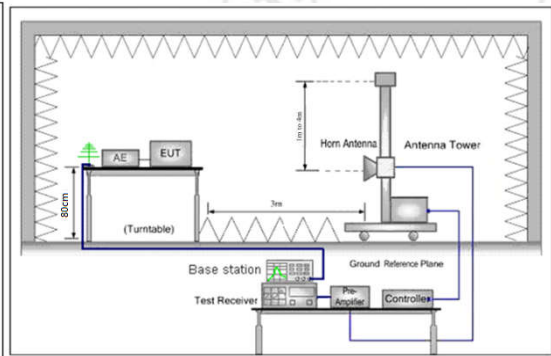


Figure 2. above 1GHz

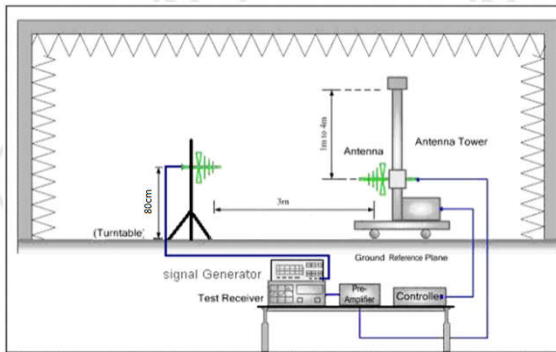


Figure 1. 30MHz to 1GHz

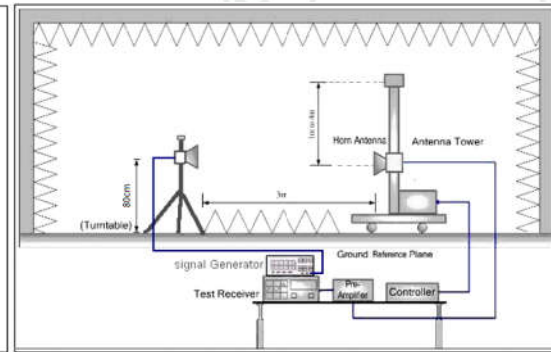


Figure 2. above 1GHz

4.2 Test Environment

Operating Environment:	
Temperature:	24.0 °C
Humidity:	54 % RH
Atmospheric Pressure:	1010mbar

5 General Information

5.1 Client Information

Applicant:	Emlid Tech Kft
Address of Applicant:	Raday utca 33/A, 1st floor, 3rd door, Budapest,1092, Hungary
Manufacturer:	Ningbo High-tech Zone Ladder Science co., Ltd
Address of Manufacturer:	3/F, Building #1, Zone B, No.428 Dongqing Road, High-tech Zone, Ningbo City, Zhejiang Province
Factory:	Ningbo High-tech Zone Ladder Science co., Ltd
Address of Factory:	3/F, Building #1, Zone B, No.428 Dongqing Road, High-tech Zone, Ningbo City, Zhejiang Province

5.2 General Description of EUT

Product Name:	RTK GNSS receiver
Model No.:	REACH RS3
Trade Mark:	EMLID
Product Type:	☐ Mobile ☒ Portable ☐ Fix Location
Frequency Band:	GSM 850: 824MHz - 849MHz GSM 1900: 1710MHz - 1785MHz WCDMA Band II: 1850MHz - 1910MHz WCDMA Band IV: 1710MHz - 1755MHz WCDMA Band V : 824MHz - 849MHz LTE Band 2: 1850MHz - 1910MHz LTE Band 4: 1710MHz - 1755MHz LTE Band 5: 824MHz - 849 MHz LTE Band 7: 2500MHz - 2570MHz LTE Band 12: 699MHz - 716MHz LTE Band 13: 777MHz - 787MHz LTE Band 26: 814MHz - 849 MHz LTE Band 38: 2572.5MHz - 2617.5MHz LTE Band 41: 2496 MHz - 2690 MHz LTE Band 66: 1710.7MHz - 1779.3MHz
Modulation Type:	GMSK,8PSK,QPSK,16QAM
Antenna Type:	PCB antenna
Antenna Gain:	GSM 850: -1.64dBi GSM 1900: 2.26dBi WCDMA Band II: 2.26dBi WCDMA Band IV: 2.26dBi WCDMA Band V : -1.64dBi LTE Band 2: 2.26dBi LTE Band 4: 2.26dBi LTE Band 5: -1.64dBi LTE Band 7: 2.37dBi LTE Band 12: -1.64dBi

	LTE Band 13: -1.64dBi LTE Band 26: -1.64dBi LTE Band 38: 2.37dBi LTE Band 41: 2.37dBi LTE Band 66: 2.26dBi	
Power Supply:	USB port:	DC 5.0V
	Battery:	DC 7.2V,5200mAh,37.44Wh
Test Voltage:	DC 5.0V	
Sample Received Date:	Mar. 23, 2023	
Sample tested Date:	Mar. 23, 2023 to May 24, 2023	

5.3 Description of Support Units

The EUT has been tested independently.

5.4 Test Location

All tests were performed at:

Centre Testing International Group Co., Ltd

Building C, Hongwei Industrial Park Block 70, Bao'an District, Shenzhen, China

Telephone: +86 (0) 755 33683668 Fax: +86 (0) 755 33683385

No tests were sub-contracted.

FCC Designation No.: CN1164

5.5 Deviation from Standards

None.

5.6 Abnormalities from Standard Conditions

None.

5.7 Other Information Requested by the Customer

None.

5.8 Measurement Uncertainty (95% confidence levels, k=2)

No.	Item	Measurement Uncertainty
1	Radio Frequency	7.9×10^{-8}
2	RF power, conducted	0.46dB (30MHz-1GHz)
		0.55dB (1GHz-18GHz)
3	Radiated Spurious emission test	4.3dB (30MHz-1GHz)
		4.5dB (1GHz-12.75GHz)
4	Conduction emission	3.5dB (9kHz to 150kHz)
		3.1dB (150kHz to 30MHz)
5	Temperature test	0.64°C
6	Humidity test	3.8%
7	DC power voltages	0.026%

6 Equipment List

3M Semi-anechoic Chamber (2)- Radiated disturbance Test					
Equipment	Manufacturer	Model	Serial No.	Cal. Date	Due Date
3M Chamber & Accessory Equipment	TDK	SAC-3	---	05/22/2022	05/21/2025
Receiver	R&S	ESCI7	100938-003	09/28/2022	09/27/2023
Communication test set	R&S	CMW500	102898	12-23-2022	12-22-2023
Spectrum Analyzer	R&S	FSV40	101200	07/29/2022	07/28/2023
TRILOG Broadband Antenna	schwarzbeck	VULB 9163	9163-618	05/22/2022	05/21/2025
Loop Antenna	Schwarzbeck	FMZB 1519B	1519B-076	04/15/2021	04/14/2024
Microwave Preamplifier	Tonscend	EMC051845SE	980380	12/23/2022	12/23/2023
Horn Antenna	A.H.SYSTEMS	SAS-574	374	05/29/2021	05/28/2024
Horn Antenna	ETS-LINGREN	BBHA 9120D	9120D-1869	04/15/2021	04/14/2024
Preamplifier	Agilent	11909A	12-1	03/28/2023	03/27/2024
Preamplifier	CD	PAP-1840-60	6041.6042	07/05/2022	07/04/2023
Test software	Fara	EZ-EMC	EMEC-3A1-Pre	---	---
Cable line	Fulai(7M)	SF106	5219/6A	---	---
Cable line	Fulai(6M)	SF106	5220/6A	---	---
Cable line	Fulai(3M)	SF106	5216/6A	---	---
Cable line	Fulai(3M)	SF106	5217/6A	---	---

3M full-anechoic Chamber					
Equipment	Manufacturer	Model No.	Serial Number	Cal. Date (mm-dd-yyyy)	Cal. Due date (mm-dd-yyyy)
RSE Automatic test software	JS Tonscend	JS36-RSE	10166	---	---
Receiver	Keysight	N9038A	MY57290136	02-27-2023	02-26-2024
Spectrum Analyzer	Keysight	N9020B	MY57111112	02-21-2023	02-20-2024
Spectrum Analyzer	Keysight	N9030B	MY57140871	02-21-2023	02-20-2024
TRILOG Broadband Antenna	Schwarzbeck	VULB 9163	9163-1148	04-28-2021	04-27-2024
Horn Antenna	Schwarzbeck	BBHA 9170	9170-832	04-15-2021	04-14-2024
Horn Antenna	ETS-LINDGREN	3117	57407	07-04-2021	07-03-2024
Preamplifier	EMCI	EMC184055SE	980597	04-20-2022 04-13-2023	04-19-2023 04-12-2024
Preamplifier	EMCI	EMC001330	980563	03-28-2023	03-27-2024
Preamplifier	JS Tonscend	TAP-011858	AP21B806112	07-29-2022	07-28-2023
Communication test set	R&S	CMW500	102898	12-23-2022	12-22-2023
Temperature/Humidity Indicator	biaozhi	GM1360	EJ1611459	02-15-2023	02-14-2024
Fully Anechoic Chamber	TDK	FAC-3	---	01-09-2021	01-08-2024
Cable line	Times	SFT205-NMSM-2.50M	394812-0001	---	---
Cable line	Times	SFT205-NMSM-2.50M	394812-0002	---	---
Cable line	Times	SFT205-NMSM-2.50M	394812-0003	---	---
Cable line	Times	SFT205-NMSM-2.50M	393495-0001	---	---
Cable line	Times	EMC104-NMNM-1000	SN160710	---	---
Cable line	Times	SFT205-NMSM-3.00M	394813-0001	---	---
Cable line	Times	SFT205-NMNM-1.50M	381964-0001	---	---
Cable line	Times	SFT205-NMSM-7.00M	394815-0001	---	---
Cable line	Times	HF160-KMKM-3.00M	393493-0001	---	---

7 Radio Technical Requirements Specification

Reference documents for testing:

No.	Identity	Document Title
1	PART 22	PART 22 – PUBLIC MOBILE SERVICES Subpart H – Cellular Radiotelephone Service
2	PART 24	PART 24 – PERSONAL COMMUNICATIONS SERVICES Subpart E – Broadband PCS
3	PART 27	PART 27 – MISCELLANEOUS WIRELESS COMMUNICATIONS SERVICES Subpart C – Technical Standards
4	PART 90	PART 90—PRIVATE LAND MOBILE RADIO SERVICES
5	PART 2	Frequency allocations and radio treaty matters; general rules and regulations
6	TIA-603-E-2016	Land Mobile FM or PM -Communications Equipment -Measurement and Performance Standards
7	KDB971168 D01	KDB971168 D01 Power Meas License Digital Systems v02r02
8	ANSI C63.26-2015	American National Standard for Compliance Testing of Transmitters Used in Licensed Radio Services

Test Results List:

Test Method:	Test Descriptions &Test Conditions	Verdict	Note
ANSI C63.26-2015 & KDB971168 D01 & TIA-603-E-2016	RF output power		NOTE1
	NT/NV	PASS	
	99% & 26dB Occupied Bandwidth		NOTE1
	NT/NV	PASS	
	Peak to average power ratio		NOTE1
	NT/NV	PASS	
	Spurious emissions		Appendix B
	NT/NV	PASS	
	Spurious emissions at antenna terminals		NOTE1
	NT/NV	PASS	
	Frequency stability		NOTE1
	NT/NV	PASS	
	LT/LV	PASS	
	LT/HV	PASS	
	HT/LV	PASS	
HT/HV	PASS		
NOTE1: The test data please refer to the report of 200722016RFM-1 and 200722016RFM-2.(FCC ID:QIPPLS63-W)			

Appendix A:Effective Radiated Power of Transmitter(EIRP)

Band	Conducted power (dBm)	Antenna gain (dBi)	ERP/EIRP (dBm)
GSM 850	33.57	-1.64	29.78
GSM 1900	30.75	2.26	33.01
WCDMA Band II	24.52	2.26	26.78
WCDMA Band IV	24.15	2.26	26.41
WCDMA Band V	24.53	-1.64	20.74
LTE Band 2	23.67	2.26	25.93
LTE Band 4	23.16	2.26	25.42
LTE Band 5	23.58	-1.64	19.79
LTE Band 7	23.15	2.37	25.52
LTE Band 12	23.93	-1.64	20.14
LTE Band 13	23.39	-1.64	19.60
LTE Band 26	23.44	-1.64	19.65
LTE Band 38	23.19	2.37	25.56
LTE Band 41	23.56	2.37	25.93
LTE Band 66	23.66	2.26	25.92

Remark:

1.The Conducted power refer to the report of Report No.:200722016RFM-1 and 200722016RFM-2.Only the worst case was recorded in the report.

2.According to KDB 412172 D01 Power Approach,Calculate power in dBm by the following formula:

ERP(dBm) = Conducted output powe(dBm) + antenna gain (dBd)

EIRP(dBm) = Conducted output powe(dBm) + antenna gain (dBi)

EIRP=ERP+2.15dB

Appendix B:Field strength of spurious radiation

Receiver Setup:	Frequency	Detector	RBW	VBW	Remark
	0.009MHz-30MHz	Peak	10kHz	30kHz	Peak
	30MHz-1GHz	Peak	120kHz	300kHz	Peak
	Above 1GHz	Peak	1MHz	3MHz	Peak
Measurement Procedure:	1. Scan up to 10th harmonic, find the maximum radiation frequency to measure. 2. The technique used to find the Spurious Emissions of the transmitter was the antenna substitution method. Substitution method was performed to determine the actual ERP/EIRP emission levels of the EUT. Test procedure as below: 1) The EUT was powered ON and placed on a 0.8m high table at a 3 meter fully Anechoic Chamber. The antenna of the transmitter was extended to its maximum length. modulation mode and the measuring receiver shall be tuned to the frequency of the transmitter under test. 2) The EUT was set 3 meters(above 18GHz the distance is 1 meter) away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower. 3) The disturbance of the transmitter was maximized on the test receiver display by raising and lowering from 1m to 4m the receive antenna and by rotating through 360° the turntable. After the fundamental emission was maximized, a field strength measurement was made. 4) Steps 1) to 3) were performed with the EUT and the receive antenna in both vertical and horizontal polarization. 5) The transmitter was then removed and replaced with another antenna. The center of the antenna was approximately at the same location as the center of the transmitter. 6) A signal at the disturbance was fed to the substitution antenna by means of a non-radiating cable. With both the substitution and the receive antennas horizontally polarized, the receive antenna was raised and lowered to obtain a maximum reading at the test receiver. The level of the signal generator was adjusted until the measured field strength level in step 3) is obtained for this set of conditions. 7) The output power into the substitution antenna was then measured. 8) Steps 6) and 7) were repeated with both antennas polarized. 9) Calculate power in dBm by the following formula: $\text{ERP(dBm)} = \text{Pg(dBm)} - \text{cable loss (dB)} + \text{antenna gain (dBi)}$ $\text{EIRP(dBm)} = \text{Pg(dBm)} - \text{cable loss (dB)} + \text{antenna gain (dBi)}$ $\text{EIRP} = \text{ERP} + 2.15\text{dB}$ where: Pg is the generator output power into the substitution antenna. 10) Test the EUT in the lowest channel, the middle channel the Highest channel 11) The radiation measurements are performed in X, Y, Z axis positioning for EUT operation mode, And found the X axis positioning which it is worse case. 12) Repeat above procedures until all frequencies measured was complete.				
Limit:	Attenuated at least 43+10log(P)				

Measurement Data:

Remark: Only the worst case data was recorded in the report.

Mode	GSM	Remark	
Band	850	Channel	190

Suspected List								
NO.	Freq. [MHz]	Height [cm]	Azimuth [deg]	Level [dBm]	Limit [dBm]	Margin [dB]	Result	Polarity
1	94.4209	150	323	-66.67	-13.00	53.67	PASS	Horizontal
2	120.034	150	3	-62.62	-13.00	49.62	PASS	Horizontal
3	360.06	150	3	-73.12	-13.00	60.12	PASS	Horizontal
4	1786.0786	150	296	-61.84	-13.00	48.84	PASS	Horizontal
5	5017.6009	150	338	-55.70	-13.00	42.70	PASS	Horizontal
6	8787.2894	150	82	-52.89	-13.00	39.89	PASS	Horizontal
7	45.3291	150	292	-64.77	-13.00	51.77	PASS	Vertical
8	120.034	150	3	-63.86	-13.00	50.86	PASS	Vertical
9	160.006	150	3	-63.50	-13.00	50.50	PASS	Vertical
10	1691.6692	150	113	-62.79	-13.00	49.79	PASS	Vertical
11	5019.851	150	203	-56.26	-13.00	43.26	PASS	Vertical
12	11424.4212	150	71	-49.21	-13.00	36.21	PASS	Vertical

Mode	GSM	Remark	
Band	1900	Channel	661

Suspected List								
NO.	Freq. [MHz]	Height [cm]	Azimuth [deg]	Level [dBm]	Limit [dBm]	Margin [dB]	Result	Polarity
1	120.034	150	3	-64.89	-13.00	51.89	PASS	Horizontal
2	270.026	150	3	-73.07	-13.00	60.07	PASS	Horizontal
3	730.2861	150	3	-66.53	-13.00	53.53	PASS	Horizontal
4	1321.2321	150	273	-48.91	-13.00	35.91	PASS	Horizontal
5	3804.0804	150	134	-59.21	-13.00	46.21	PASS	Horizontal
6	10413.7414	150	206	-50.39	-13.00	37.39	PASS	Horizontal
7	35.239	150	64	-61.06	-13.00	48.06	PASS	Vertical
8	120.034	150	3	-63.99	-13.00	50.99	PASS	Vertical
9	725.6291	150	3	-65.85	-13.00	52.85	PASS	Vertical
10	1251.2251	150	118	-48.41	-13.00	35.41	PASS	Vertical
11	4996.6997	150	138	-56.83	-13.00	43.83	PASS	Vertical
12	11477.3477	150	285	-49.77	-13.00	36.77	PASS	Vertical

Mode	WCDMA	Remark	
Band	II	Channel	9400

Suspected List								
NO.	Freq. [MHz]	Height [cm]	Azimuth [deg]	Level [dBm]	Limit [dBm]	Margin [dB]	Result	Polarity
1	80.062	150	3	-67.85	-13.00	54.85	PASS	Horizontal
2	94.809	150	360	-65.82	-13.00	52.82	PASS	Horizontal
3	120.034	150	3	-64.95	-13.00	51.95	PASS	Horizontal
4	1287.4287	150	13	-47.85	-13.00	34.85	PASS	Horizontal
5	5022.1011	150	12	-55.49	-13.00	42.49	PASS	Horizontal
6	10148.6074	150	219	-50.10	-13.00	37.10	PASS	Horizontal
7	35.4331	150	114	-61.78	-13.00	48.78	PASS	Vertical
8	160.006	150	3	-64.82	-13.00	51.82	PASS	Vertical
9	729.1218	150	3	-50.24	-13.00	37.24	PASS	Vertical
10	1282.4282	150	346	-47.33	-13.00	34.33	PASS	Vertical
11	5017.6009	150	139	-56.96	-13.00	43.96	PASS	Vertical
12	9871.8436	150	348	-50.38	-13.00	37.38	PASS	Vertical

Mode	WCDMA	Remark	
Band	IV	Channel	1450

Suspected List								
NO.	Freq. [MHz]	Height [cm]	Azimuth [deg]	Level [dBm]	Limit [dBm]	Margin [dB]	Result	Polarity
1	120.034	150	3	-63.14	-13.00	50.14	PASS	Horizontal
2	208.9038	150	72	-73.82	-13.00	60.82	PASS	Horizontal
3	729.898	150	3	-66.51	-13.00	53.51	PASS	Horizontal
4	1406.6407	150	314	-49.34	-13.00	36.34	PASS	Horizontal
5	5013.8507	150	357	-55.53	-13.00	42.53	PASS	Horizontal
6	14408.8204	150	13	-45.67	-13.00	32.67	PASS	Horizontal
7	35.239	150	41	-62.69	-13.00	49.69	PASS	Vertical
8	160.006	150	3	-63.58	-13.00	50.58	PASS	Vertical
9	729.1218	150	3	-49.95	-13.00	36.95	PASS	Vertical
10	1400.8401	150	360	-48.66	-13.00	35.66	PASS	Vertical
11	5010.8505	150	270	-56.70	-13.00	43.70	PASS	Vertical
12	8590.0295	150	253	-53.12	-13.00	40.12	PASS	Vertical

Mode	WCDMA	Remark	
Band	V	Channel	4175

Suspected List								
NO.	Freq. [MHz]	Height [cm]	Azimuth [deg]	Level [dBm]	Limit [dBm]	Margin [dB]	Result	Polarity
1	95.003	150	261	-65.64	-13.00	52.64	PASS	Horizontal
2	120.034	150	3	-63.96	-13.00	50.96	PASS	Horizontal
3	208.9038	150	327	-73.75	-13.00	60.75	PASS	Horizontal
4	1675.8676	150	360	-61.93	-13.00	48.93	PASS	Horizontal
5	5043.8522	150	247	-55.82	-13.00	42.82	PASS	Horizontal
6	12571.2286	150	212	-48.76	-13.00	35.76	PASS	Horizontal
7	51.5383	150	262	-65.45	-13.00	52.45	PASS	Vertical
8	160.006	150	3	-64.50	-13.00	51.50	PASS	Vertical
9	730.092	150	60	-67.58	-13.00	54.58	PASS	Vertical
10	1125.2125	150	13	-58.16	-13.00	45.16	PASS	Vertical
11	3476.2738	150	296	-59.84	-13.00	46.84	PASS	Vertical
12	9859.093	150	200	-50.86	-13.00	37.86	PASS	Vertical

Mode	LTE	Remark	
Band	Band=2 BW=20MHz	Channel	18900

Suspected List								
NO.	Freq. [MHz]	Height [cm]	Azimuth [deg]	Level [dBm]	Limit [dBm]	Margin [dB]	Result	Polarity
1	80.062	150	3	-68.31	-13.00	55.31	PASS	Horizontal
2	120.034	150	3	-65.30	-13.00	52.30	PASS	Horizontal
3	360.06	150	3	-73.72	-13.00	60.72	PASS	Horizontal
4	1294.6295	150	276	-48.53	-13.00	35.53	PASS	Horizontal
5	5029.6015	150	301	-55.99	-13.00	42.99	PASS	Horizontal
6	12541.9771	150	94	-50.16	-13.00	37.16	PASS	Horizontal
7	120.034	150	3	-65.29	-13.00	52.29	PASS	Vertical
8	160.006	150	3	-63.88	-13.00	50.88	PASS	Vertical
9	726.7934	150	3	-54.09	-13.00	41.09	PASS	Vertical
10	1284.0284	150	94	-48.76	-13.00	35.76	PASS	Vertical
11	5001.1001	150	36	-57.21	-13.00	44.21	PASS	Vertical
12	10351.8676	150	46	-50.29	-13.00	37.29	PASS	Vertical

Mode	LTE	Remark	
Band	Band=4 BW=20MHz	Channel	20175

Suspected List								
NO.	Freq. [MHz]	Height [cm]	Azimuth [deg]	Level [dBm]	Limit [dBm]	Margin [dB]	Result	Polarity
1	120.034	150	3	-64.80	-13.00	51.80	PASS	Horizontal
2	208.9038	150	215	-74.43	-13.00	61.43	PASS	Horizontal
3	360.06	150	3	-73.32	-13.00	60.32	PASS	Horizontal
4	1288.2288	150	81	-48.52	-13.00	35.52	PASS	Horizontal
5	5024.3512	150	203	-56.34	-13.00	43.34	PASS	Horizontal
6	10466.6233	150	261	-50.32	-13.00	37.32	PASS	Horizontal
7	35.239	150	100	-62.39	-13.00	49.39	PASS	Vertical
8	120.034	150	3	-64.85	-13.00	51.85	PASS	Vertical
9	160.006	150	3	-63.51	-13.00	50.51	PASS	Vertical
10	1341.4341	150	360	-49.29	-13.00	36.29	PASS	Vertical
11	4995.0998	150	147	-56.72	-13.00	43.72	PASS	Vertical
12	9676.0838	150	4	-51.19	-13.00	38.19	PASS	Vertical

Mode	LTE	Remark	
Band	Band=5 BW=20MHz	Channel	20525

Suspected List								
NO.	Freq. [MHz]	Height [cm]	Azimuth [deg]	Level [dBm]	Limit [dBm]	Margin [dB]	Result	Polarity
1	120.034	150	3	-63.89	-13.00	50.89	PASS	Horizontal
2	208.9038	150	81	-73.17	-13.00	60.17	PASS	Horizontal
3	593.1006	150	310	-74.33	-13.00	61.33	PASS	Horizontal
4	1592.2592	150	338	-60.46	-13.00	47.46	PASS	Horizontal
5	5011.6006	150	347	-55.79	-13.00	42.79	PASS	Horizontal
6	9635.5818	150	14	-50.51	-13.00	37.51	PASS	Horizontal
7	35.6271	150	342	-63.38	-13.00	50.38	PASS	Vertical
8	160.006	150	3	-63.53	-13.00	50.53	PASS	Vertical
9	708.9418	150	3	-67.54	-13.00	54.54	PASS	Vertical
10	1692.6693	150	360	-62.41	-13.00	49.41	PASS	Vertical
11	5016.1008	150	292	-56.45	-13.00	43.45	PASS	Vertical
12	9279.314	150	222	-50.99	-13.00	37.99	PASS	Vertical

Mode	LTE	Remark	
Band	Band=7 BW=20MHz	Channel	21100

Suspected List								
NO.	Freq. [MHz]	Height [cm]	Azimuth [deg]	Level [dBm]	Limit [dBm]	Margin [dB]	Result	Polarity
1	120.034	150	3	-63.95	-13.00	50.95	PASS	Horizontal
2	208.9038	150	126	-74.04	-13.00	61.04	PASS	Horizontal
3	359.866	150	60	-74.34	-13.00	61.34	PASS	Horizontal
4	1488.0488	150	136	-49.59	-13.00	36.59	PASS	Horizontal
5	5003.3502	150	338	-56.06	-13.00	43.06	PASS	Horizontal
6	9280.064	150	186	-51.62	-13.00	38.62	PASS	Horizontal
7	35.4331	150	239	-62.85	-13.00	49.85	PASS	Vertical
8	120.034	150	3	-65.20	-13.00	52.20	PASS	Vertical
9	735.137	150	3	-53.72	-13.00	40.72	PASS	Vertical
10	1283.6284	150	239	-48.42	-13.00	35.42	PASS	Vertical
11	5032.6016	150	74	-57.05	-13.00	44.05	PASS	Vertical
12	9038.5519	150	44	-52.54	-13.00	39.54	PASS	Vertical

Mode	LTE	Remark	
Band	Band=12 BW=20MHz	Channel	23095

Suspected List								
NO.	Freq. [MHz]	Height [cm]	Azimuth [deg]	Level [dBm]	Limit [dBm]	Margin [dB]	Result	Polarity
1	80.062	150	3	-67.44	-13.00	54.44	PASS	Horizontal
2	120.034	150	3	-63.02	-13.00	50.02	PASS	Horizontal
3	270.026	150	3	-72.80	-13.00	59.80	PASS	Horizontal
4	1556.4556	150	282	-61.14	-13.00	48.14	PASS	Horizontal
5	5032.6016	150	0	-56.02	-13.00	43.02	PASS	Horizontal
6	10229.6115	150	242	-50.16	-13.00	37.16	PASS	Horizontal
7	37.1794	150	268	-64.66	-13.00	51.66	PASS	Vertical
8	120.034	150	3	-64.32	-13.00	51.32	PASS	Vertical
9	160.006	150	3	-63.54	-13.00	50.54	PASS	Vertical
10	1274.6275	150	213	-59.92	-13.00	46.92	PASS	Vertical
11	5020.601	150	35	-56.63	-13.00	43.63	PASS	Vertical
12	11084.6542	150	216	-49.89	-13.00	36.89	PASS	Vertical

Mode	LTE	Remark	
Band	Band=13 BW=20MHz	Channel	23230

Suspected List								
NO.	Freq. [MHz]	Height [cm]	Azimuth [deg]	Level [dBm]	Limit [dBm]	Margin [dB]	Result	Polarity
1	120.034	150	3	-64.16	-13.00	51.16	PASS	Horizontal
2	208.9038	150	313	-73.65	-13.00	60.65	PASS	Horizontal
3	360.06	150	183	-74.02	-13.00	61.02	PASS	Horizontal
4	2159.516	150	284	-60.37	-13.00	47.37	PASS	Horizontal
5	5011.6006	150	301	-56.29	-13.00	43.29	PASS	Horizontal
6	11382.4191	150	357	-49.87	-13.00	36.87	PASS	Horizontal
7	35.4331	150	272	-63.29	-13.00	50.29	PASS	Vertical
8	120.034	150	3	-65.16	-13.00	52.16	PASS	Vertical
9	160.006	150	3	-65.88	-13.00	52.88	PASS	Vertical
10	3080.254	150	338	-59.64	-13.00	46.64	PASS	Vertical
11	5015.3508	150	110	-56.77	-13.00	43.77	PASS	Vertical
12	10071.3536	150	329	-51.01	-13.00	38.01	PASS	Vertical

Mode	LTE	Remark	
Band	Band=26 BW=20MHz	Channel	26865

Suspected List								
NO.	Freq. [MHz]	Height [cm]	Azimuth [deg]	Level [dBm]	Limit [dBm]	Margin [dB]	Result	Polarity
1	95.003	150	80	-65.54	-13.00	52.54	PASS	Horizontal
2	120.034	150	3	-62.99	-13.00	49.99	PASS	Horizontal
3	208.9038	150	43	-73.73	-13.00	60.73	PASS	Horizontal
4	1964.8965	150	281	-61.22	-13.00	48.22	PASS	Horizontal
5	5032.6016	150	347	-56.04	-13.00	43.04	PASS	Horizontal
6	11916.4458	150	338	-49.38	-13.00	36.38	PASS	Horizontal
7	35.239	150	360	-63.66	-13.00	50.66	PASS	Vertical
8	120.034	150	3	-64.99	-13.00	51.99	PASS	Vertical
9	160.006	150	3	-64.57	-13.00	51.57	PASS	Vertical
10	2092.9093	150	180	-61.38	-13.00	48.38	PASS	Vertical
11	5031.8516	150	46	-56.58	-13.00	43.58	PASS	Vertical
12	10729.1365	150	263	-50.44	-13.00	37.44	PASS	Vertical

Mode	LTE	Remark	
Band	Band=38 BW=20MHz	Channel	38000

Suspected List								
NO.	Freq. [MHz]	Height [cm]	Azimuth [deg]	Level [dBm]	Limit [dBm]	Margin [dB]	Result	Polarity
1	96.0201	150	76	-65.32	-13.00	52.32	PASS	Horizontal
2	121.244	150	10	-62.08	-13.00	49.08	PASS	Horizontal
3	208.9928	150	47	-73.13	-13.00	60.13	PASS	Horizontal
4	1964.805	150	290	-61.24	-13.00	48.24	PASS	Horizontal
5	5032.602	150	355	-55.23	-13.00	42.23	PASS	Horizontal
6	11918.5823	150	342	-46.39	-13.00	33.39	PASS	Horizontal
7	34.232	150	357	-62.78	-13.00	49.78	PASS	Vertical
8	119.402	150	12	-63.21	-13.00	50.21	PASS	Vertical
9	145.024	150	30	-63.45	-13.00	50.45	PASS	Vertical
10	2091.907	150	160	-61.09	-13.00	48.09	PASS	Vertical
11	5030.8265	150	56	-56.14	-13.00	43.14	PASS	Vertical
12	10728.1315	150	278	-50.49	-13.00	37.49	PASS	Vertical

Mode	LTE	Remark	
Band	Band=41 BW=20MHz	Channel	40620

Suspected List								
NO.	Freq. [MHz]	Height [cm]	Azimuth [deg]	Level [dBm]	Limit [dBm]	Margin [dB]	Result	Polarity
1	95.003	150	344	-66.37	-13.00	53.37	PASS	Horizontal
2	120.034	150	3	-65.96	-13.00	52.96	PASS	Horizontal
3	270.026	150	336	-74.29	-13.00	61.29	PASS	Horizontal
4	1282.8283	150	336	-50.68	-13.00	37.68	PASS	Horizontal
5	5018.3509	150	118	-56.24	-13.00	43.24	PASS	Horizontal
6	9638.5819	150	147	-50.74	-13.00	37.74	PASS	Horizontal
7	120.034	150	3	-63.85	-13.00	50.85	PASS	Vertical
8	160.006	150	3	-63.13	-13.00	50.13	PASS	Vertical
9	726.4053	150	3	-53.56	-13.00	40.56	PASS	Vertical
10	1247.2247	150	14	-50.98	-13.00	37.98	PASS	Vertical
11	5026.6013	150	300	-57.16	-13.00	44.16	PASS	Vertical
12	9761.5881	150	50	-51.11	-13.00	38.11	PASS	Vertical

Mode	LTE	Remark	
Band	Band=66 BW=20MHz	Channel	132322

Suspected List								
NO.	Freq. [MHz]	Height [cm]	Azimuth [deg]	Level [dBm]	Limit [dBm]	Margin [dB]	Result	Polarity
1	95.041	150	338	-66.45	-13.00	53.45	PASS	Horizontal
2	120.023	150	23	-65.14	-13.00	52.14	PASS	Horizontal
3	270.089	150	312	-74.34	-13.00	61.34	PASS	Horizontal
4	1281.2833	150	345	-50.89	-13.00	37.89	PASS	Horizontal
5	5018.3565	150	110	-56.21	-13.00	43.21	PASS	Horizontal
6	9638.5249	150	154	-50.79	-13.00	37.79	PASS	Horizontal
7	120.0389	150	5	-63.80	-13.00	50.8	PASS	Vertical
8	160.263	150	10	-63.24	-13.00	50.24	PASS	Vertical
9	726.4093	150	23	-53.78	-13.00	40.78	PASS	Vertical
10	1245.2237	150	45	-50.13	-13.00	37.13	PASS	Vertical
11	5024.6133	150	312	-57.17	-13.00	44.17	PASS	Vertical
12	9762.5918	150	53	-51.13	-13.00	38.13	PASS	Vertical

8 PHOTOGRAPHS OF TEST SETUP

Refer to Report No.EED32P80561201 Appendix : Photographs of test setup.

9 PHOTOGRAPHS OF EUT Constructional Details

Refer to Report No.EED32P80561201 Appendix : External photo and EED32P80561201

Appendix : Internal photo .

The test report is effective only with both signature and specialized stamp, The result(s) shown in this report refer only to the sample(s) tested. Without written approval of CTI, this report can't be reproduced except in full.

*** End of Report ***