

TEST REPORT

Applicant: Quanzhou SFE Electronic Technology Co.,Ltd
Address of Applicant: No.35 Yangming Street, Shuangyang, Luojiang District,
Quanzhou City, Fujian Province 362012, China
Manufacturer/Factory: Quanzhou SFE Electronic Technology Co.,Ltd
Address of Manufacturer/Factory: No.35 Yangming Street, Shuangyang, Luojiang District,
Quanzhou City, Fujian Province 362012, China
Equipment Under Test (EUT)
Product Name: In-vehicle PoC Network Radio
Model No.: SEM1000, SEM2000
Trade mark: SFE
FCC ID: 2AYFQ-SEM1000
Applicable standards: FCC CFR Title 47 Part 90
Date of sample receipt: 2022-01-25
Date of Test: 2022-01-15-2022-01-25
Date of report issued: 2022-01-25
Test Result : PASS *

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

Authorized Signature:



Robinson Luo

Laboratory Manager

This results shown in this test report refer only to the sample(s) tested, this test report cannot be reproduced, except in full, without prior written permission of the company. The report would be invalid without specific stamp of test institute and the signatures of compiler and approver.

2 Version

Version No.	Date	Description
00	2022-01-25	Original

Prepared By:

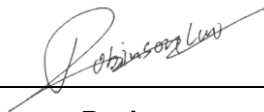


Date:

2022-01-25

Project Engineer

Check By:



Date:

2022-01-25

Reviewer

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4 Test Summary

Test Item	Section in CFR 47	Result
RF Exposure (SAR)	Part 1.1307 Part 2.1093	Pass* (Please refer to SAR Report)
RF Output Power	Part 90.542 (a)	Pass
Peak-to-Average Ratio	FCC Part 27.50(a)	Pass
99% & -26 dB Occupied Bandwidth	Part 2.1049	Pass
Spurious Emissions at Antenna Terminal	Part 90.543	Pass
Field Strength of Spurious Radiation	Part 90.543	Pass
Out of band emission, Band Edge	Part 90.543	Pass
Frequency stability	Part 90.539	Pass

Remarks:

1. *Pass: The EUT complies with the essential requirements in the standard.*
2. *N/A: Not applicable.*

5 General Information

5.1 General Description of EUT

Product Name:	In-vehicle PoC Network Radio
Model No.:	SEM1000, SEM2000
Serial No.:	N/A
Hardware Version:	HV10
Software Version:	SV10
Tested Sample(s) ID:	GTSL202202000003-1
Support Networks:	LTE
Support Bands:	LTE BAND 14
TX Frequency:	LTE BAND 14:788-798MHz
Modulation type:	QPSK, 16QAM
Antenna type:	External antenna
Antenna gain:	4.0dBi
Power supply:	DC 12-24V from battery

Test Frequency

Test Channel(MHz)			
Band	Low	Middle	High
LTE Band 14	790.5	793.0	795.5

Note:1: for LTE mode, if the bandwidth is different, the test frequency is changed.

2:we pretest all voltage, the worst mode was DC 24V, the result only show the worst mode's data.

5.2 Related Submittal(s) / Grant (s)

This submittal(s) (test report) is filing to comply with Section Part 90 of the FCC CFR 47 Rules.

5.3 Test Methodology

Both conducted and radiated testing were performed according to the procedures document on ANSI C63.26:2015 and FCC CFR 47.1046, 2.1047, 2.1049, 2.1051, 2.1053, 2.1055 and 2.1057

5.4 Test Facility

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

- **FCC —Registration No.: 381383**

Global United Technology Services Co., Ltd., Shenzhen EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in files. Registration 381383.

- **IC —Registration No.: 9079A**

The 3m Semi-anechoic chamber of Global United Technology Services Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 9079A.

- **NVLAP (LAB CODE:600179-0)**

Global United Technology Services Co., Ltd., is accredited by the National Voluntary Laboratory Accreditation Program (NVLAP). LAB CODE:600179-0

5.5 Test Location

All tests were performed at:

Global United Technology Services Co., Ltd.

Address: No. 123-128, Tower A, Jinyuan Business Building, No.2, Laodong Industrial Zone, Xixiang Road, Baoan District, Shenzhen, Guangdong, China 518102

Tel: 0755-27798480

Fax: 0755-27798960

6 Test Instruments list

Radiated Emission:						
Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal.Date (mm-dd-yy)	Cal.Due date (mm-dd-yy)
1	3m Semi- Anechoic Chamber	ZhongYu Electron	9.2(L)*6.2(W)* 6.4(H)	GTS250	July. 02 2020	July. 01 2025
2	Control Room	ZhongYu Electron	6.2(L)*2.5(W)* 2.4(H)	GTS251	N/A	N/A
3	EMI Test Receiver	Rohde & Schwarz	ESU26	GTS203	June. 25 2021	June. 24 2022
4	BiConiLog Antenna	SCHWARZBECK MESS-ELEKTRONIK	VULB9163	GTS214	June. 25 2021	June. 24 2022
5	Double -ridged waveguide horn	SCHWARZBECK MESS-ELEKTRONIK	BBHA 9120 D	GTS208	June. 25 2021	June. 24 2022
6	Horn Antenna	ETS-LINDGREN	3160	GTS217	June. 25 2021	June. 24 2022
7	EMI Test Software	AUDIX	E3	N/A	N/A	N/A
8	Coaxial Cable	GTS	N/A	GTS213	June. 25 2021	June. 24 2022
9	Coaxial Cable	GTS	N/A	GTS211	June. 25 2021	June. 24 2022
10	Coaxial cable	GTS	N/A	GTS210	June. 25 2021	June. 24 2022
11	Coaxial Cable	GTS	N/A	GTS212	June. 25 2021	June. 24 2022
12	Amplifier(100kHz-3GHz)	HP	8347A	GTS204	June. 25 2021	June. 24 2022
13	Amplifier(2GHz-20GHz)	HP	84722A	GTS206	June. 25 2021	June. 24 2022
14	Amplifier (18-26GHz)	Rohde & Schwarz	AFS33-18002 650-30-8P-44	GTS218	June. 25 2021	June. 24 2022
15	Band filter	Amindeon	82346	GTS219	June. 25 2021	June. 24 2022
16	Power Meter	Anritsu	ML2495A	GTS540	June. 25 2021	June. 24 2022
17	Power Sensor	Anritsu	MA2411B	GTS541	June. 25 2021	June. 24 2022
18	Wideband Radio Communication Tester	Rohde & Schwarz	CMW500	GTS575	June. 25 2021	June. 24 2022
19	Splitter	Agilent	11636B	GTS237	June. 25 2021	June. 24 2022
20	Loop Antenna	ZHINAN	ZN30900A	GTS534	June. 25 2021	June. 24 2022
21	Breitband hornantenne	SCHWARZBECK	BBHA 9170	GTS579	Oct. 18 2021	Oct. 17 2022
22	Amplifier	TDK	PA-02-02	GTS574	Oct. 18 2021	Oct. 17 2022
23	Amplifier	TDK	PA-02-03	GTS576	Oct. 18 2021	Oct. 17 2022
24	PSA Series Spectrum Analyzer	Rohde & Schwarz	FSP	GTS578	June. 25 2021	June. 24 2022

General used equipment:						
Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal.Date (mm-dd-yy)	Cal.Due date (mm-dd-yy)
1	Humidity/ Temperature Indicator	KTJ	TA328	GTS243	June. 25 2021	June. 24 2022
2	Barometer	ChangChun	DYM3	GTS255	June. 25 2021	June. 24 2022

RF Conducted Test:						
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Cal.Date (mm-dd-yy)	Cal.Due date (mm-dd-yy)
1	MXA Signal Analyzer	Agilent	N9020A	GTS566	June. 25 2021	June. 24 2022
2	EMI Test Receiver	R&S	ESCI 7	GTS552	June. 25 2021	June. 24 2022
3	Spectrum Analyzer	Agilent	E4440A	GTS533	June. 25 2021	June. 24 2022
4	MXG vector Signal Generator	Agilent	N5182A	GTS567	June. 25 2021	June. 24 2022
5	ESG Analog Signal Generator	Agilent	E4428C	GTS568	June. 25 2021	June. 24 2022
6	USB RF Power Sensor	DARE	RPR3006W	GTS569	June. 25 2021	June. 24 2022
7	RF Switch Box	Shongyi	RFSW3003328	GTS571	June. 25 2021	June. 24 2022
8	Programmable Constant Temp & Humi Test Chamber	WEWON	WHTH-150L-40-880	GTS572	June. 25 2021	June. 24 2022

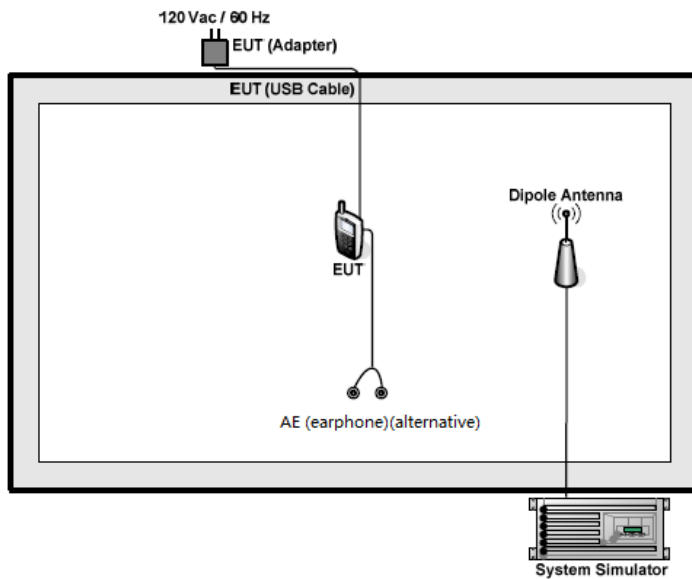
7 System test configuration

7.1 Test mode

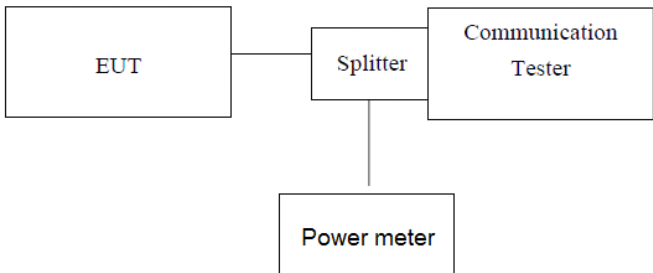
During all testing, EUT is in link mode with base station emulator at maximum power level. The spurious emission measurements were carried out in semi-anechoic chamber with 3-meter test range, and EUT is rotated on three test planes to find out the worst emission.

Test modes		
Band	Radiated	Conducted
LTE Band 14	■ QPSK and 16QAM link	■ QPSK and 16QAM link

7.2 Configuration of Tested System



7.3 Conducted Output Power

Test Requirement:	FCC part 90.542
Test Method:	FCC part 2.1046
Limit:	LTE Band 14: 3W
Test setup:	 <p style="text-align: center;"><i>Note: Measurement setup for testing on Antenna connector</i></p>
Test Instruments:	Refer to section 6.0 for details
Test mode:	Refer to section 6.1 for details
Test results:	Pass

Measurement Data:

Note: Measurement Uncertainty: ± 2.6 dB.

Average Conducted Power						
Band	LTE Band 14			Channel/Frequency (MHz)		
Bandwidth	Modulation	RB size	RB offset	23305/779.5	23330/793	23355/795.5
5MHz	QPSK	1	0	22.58	22.57	22.26
		1	12	22.34	22.43	22.50
		1	24	22.30	22.43	22.86
		25	0	22.36	22.55	22.54
	16QAM	1	0	22.11	22.54	22.10
		1	12	22.30	22.80	22.15
		1	24	22.69	22.75	22.86
		25	0	22.75	22.73	22.42

Average Conducted Power				
Band	LTE Band 14			Channel/Frequency (MHz)
Bandwidth	Modulation	RB size	RB offset	23330/793
10MHz	QPSK	1	0	22.69
		1	24	22.12
		1	49	22.28
		50	0	22.31
	16QAM	1	0	22.16
		1	24	22.07
		1	49	22.74
		50	0	22.76

Note: Measurement Uncertainty: ± 2.6 dB.

7.4 Peak-to-Average Ratio

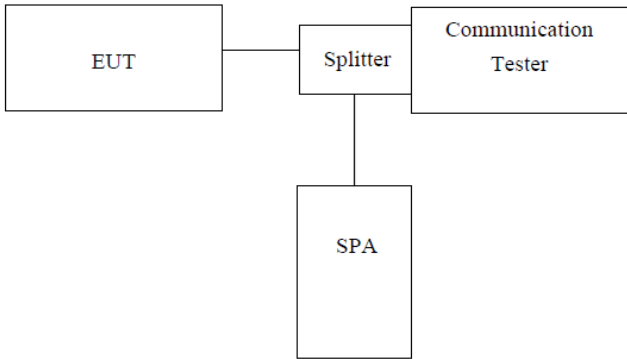
Test Requirement:	FCC Part 27.50
Test Method:	FCC part2.1046
Limit:	13db
Test setup:	<pre> graph LR CC[Control Computer] --> EUT[EUT] PS[Power Supply] --> EUT EUT --> PD[Power Divider] PD --> WC[Wireless Communication] PD --> SA[Spectrum Analyzer] </pre>
Test Instruments:	Refer to section 6.0 for details
Test mode:	Refer to section 7.1 for details
Test results:	Pass

Remark: Both modulation modes have been tested, showing only the worst QPSK test data.

Measurement data:

Band	Bandwidth (MHz)	Channel	Conducted power(dBm)		Peak-Average Ratio(PAR)	Limit (dB)	Result
			Peak	Average			
LTE Band 14 (QPSK)	5	Low	25.32	22.59	2.73	≤13	Pass
		Middle	25.48	22.28	3.20	≤13	Pass
		High	25.41	22.35	3.07	≤13	Pass
	10	Low	25.13	22.84	2.29	≤13	Pass
		Middle	25.18	22.75	2.43	≤13	Pass
		High	25.80	22.54	3.26	≤13	Pass
LTE Band 14 (16QAM)	5	Low	25.34	22.21	3.13	≤13	Pass
		Middle	25.39	22.29	3.09	≤13	Pass
		High	25.70	22.43	3.27	≤13	Pass
	10	Low	25.12	22.85	2.28	≤13	Pass
		Middle	25.23	22.48	2.75	≤13	Pass
		High	25.16	22.40	2.75	≤13	Pass

7.5 Occupancy Bandwidth

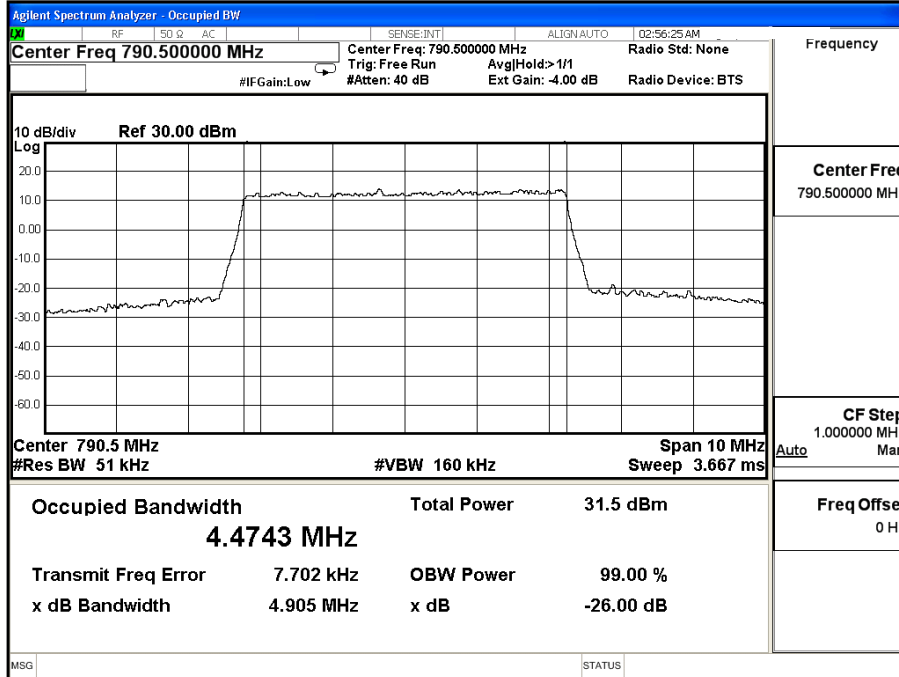
Test Requirement:	FCC Part 90
Test Method:	FCC part2.1049
Test setup:	 <p><i>Note: Measurement setup for testing on Antenna connector</i></p>
Test Procedure:	<ol style="list-style-type: none"> 1. The EUT's output RF connector was connected with a short cable to the spectrum analyzer 2. RBW was set to about 1% of emission BW, VBW= 3 times RBW. 3. -26dBc display line was placed on the screen (or 99% bandwidth), the occupied bandwidth is the delta frequency between the two points where the display line intersects the signal trace.
Test Instruments:	Refer to section 6.0 for details
Test mode:	Refer to section 6.1 for details
Test results:	Pass

Measurement Data:

EUT Mode Bandwidth	Modulation	Frequency (MHz)	99% Occupy bandwidth (MHz)	-26dB bandwidth (MHz)
LTE Band 14 5 MHz	QPSK	790.5	4.474	4.905
		793.0	4.468	4.870
		795.5	4.478	4.893
LTE Band 14 5 MHz	16-QAM	790.5	4.484	4.934
		793.0	4.447	4.889
		795.5	4.471	4.872
LTE Band 14 10 MHz	QPSK	793.0	8.946	9.706
LTE Band 14 10 MHz	16-QAM	793.0	8.946	9.563

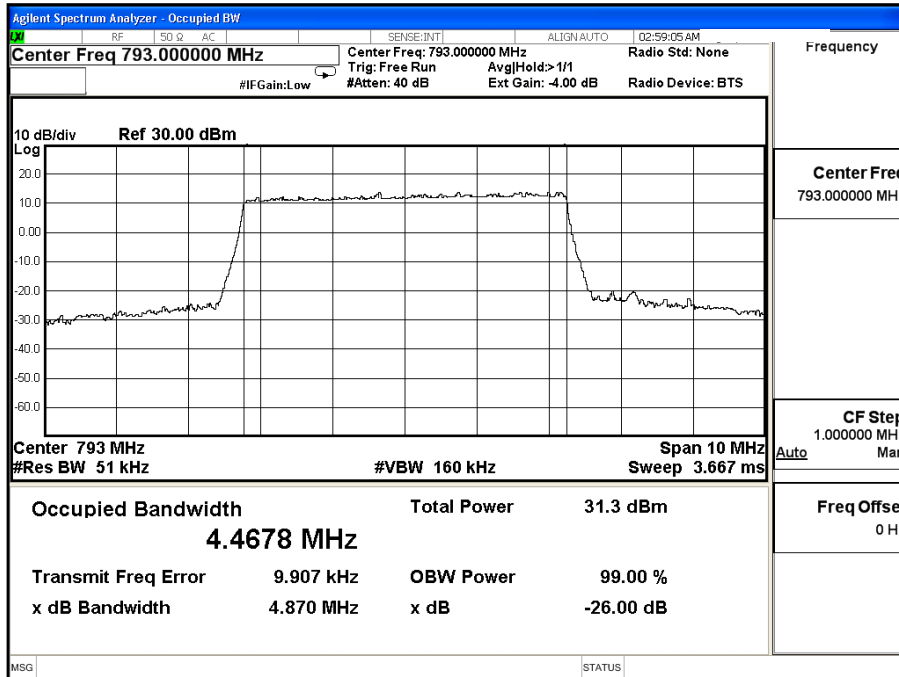
LTE Band 14 Lowest channel

5 MHz QPSK



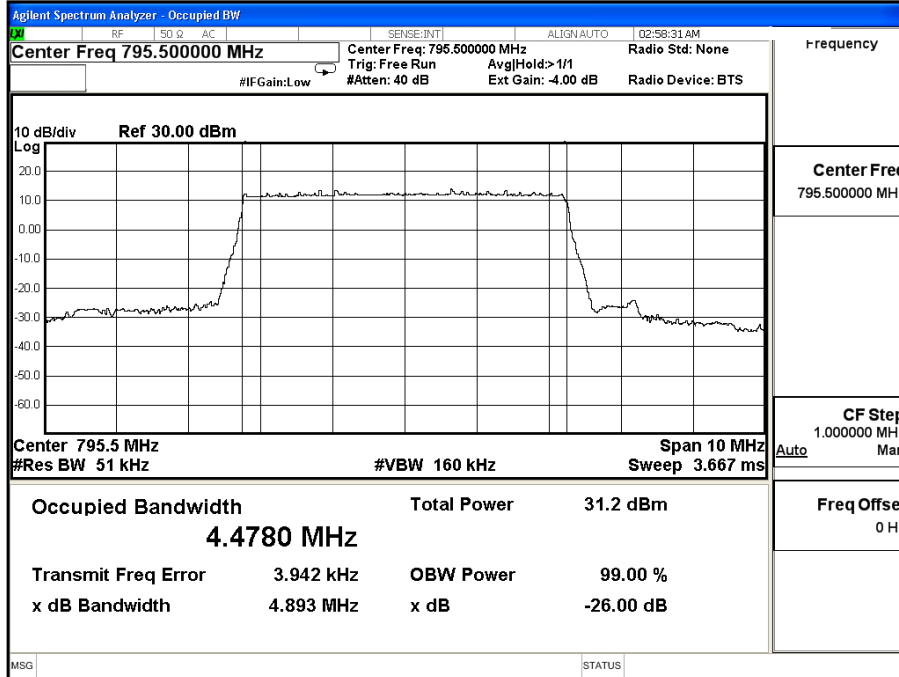
LTE Band 14 Middle channel

5 MHz QPSK



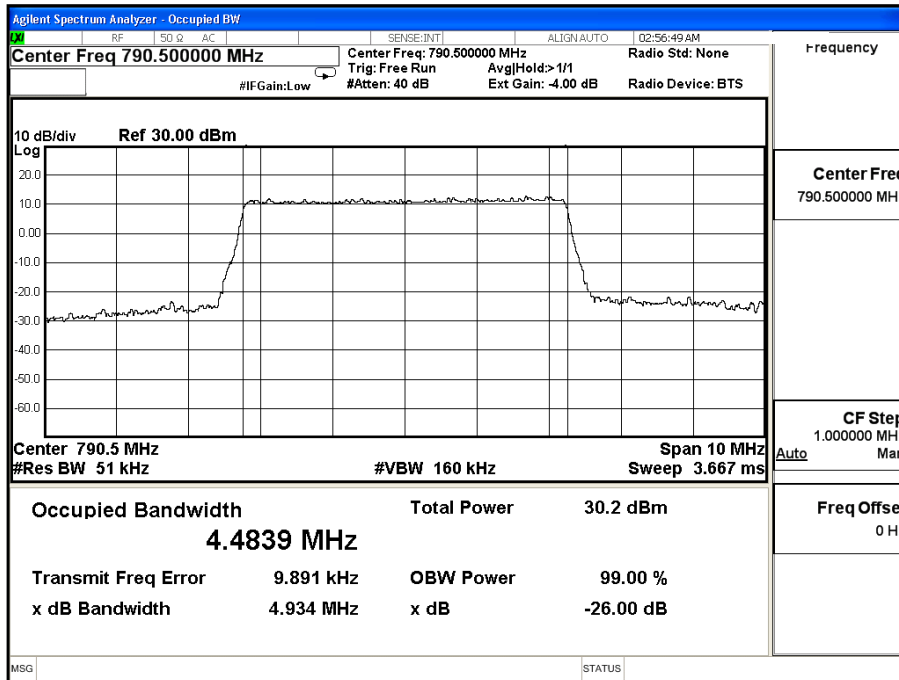
LTE Band 14 Highest channel:

5 MHz QPSK



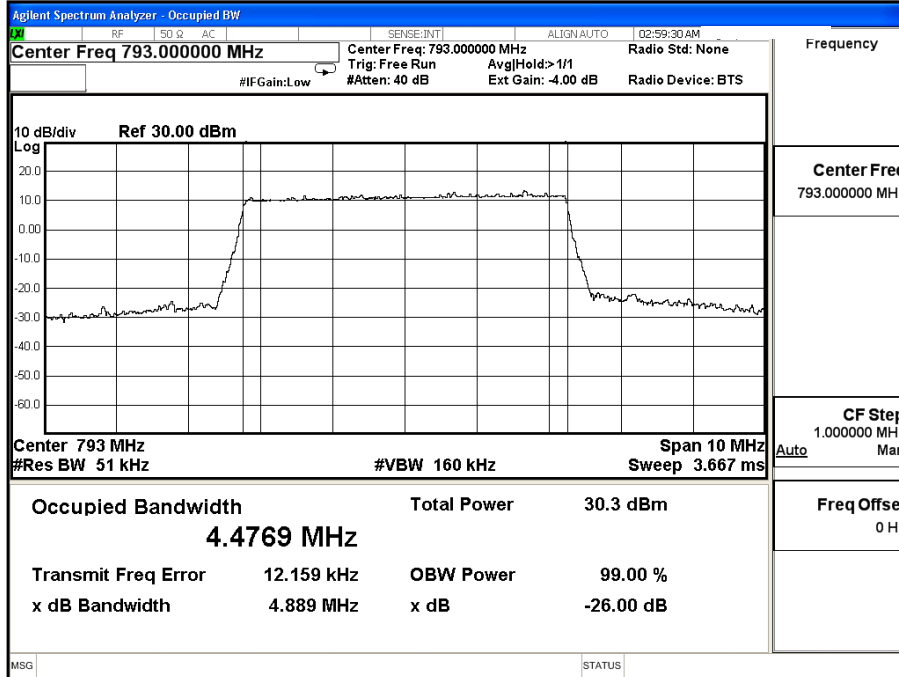
LTE Band 14 Lowest channel

5 MHz 16-QAM



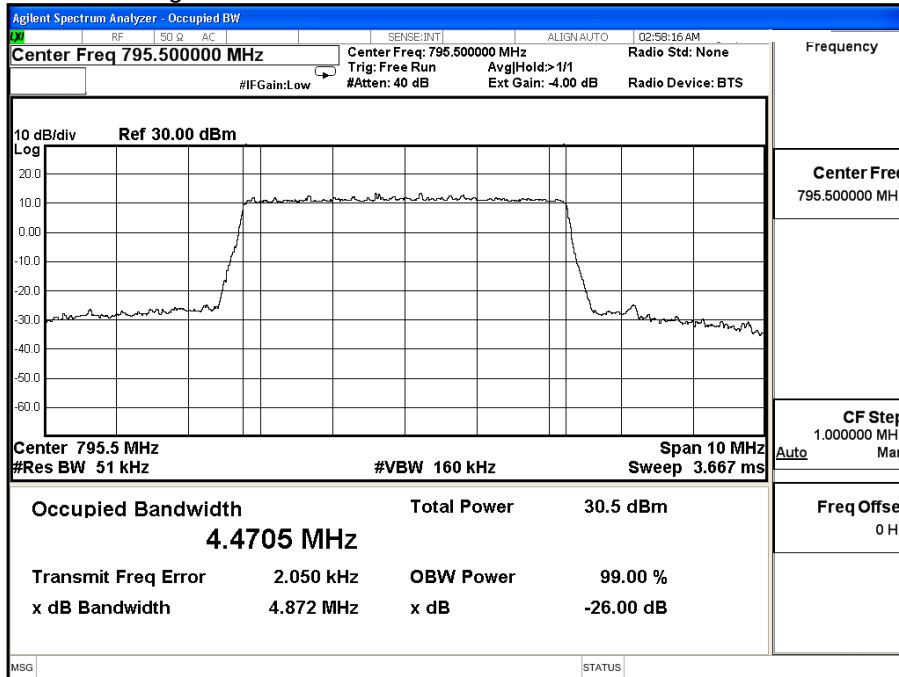
LTE Band 14 Middle channel

5 MHz 16-QAM



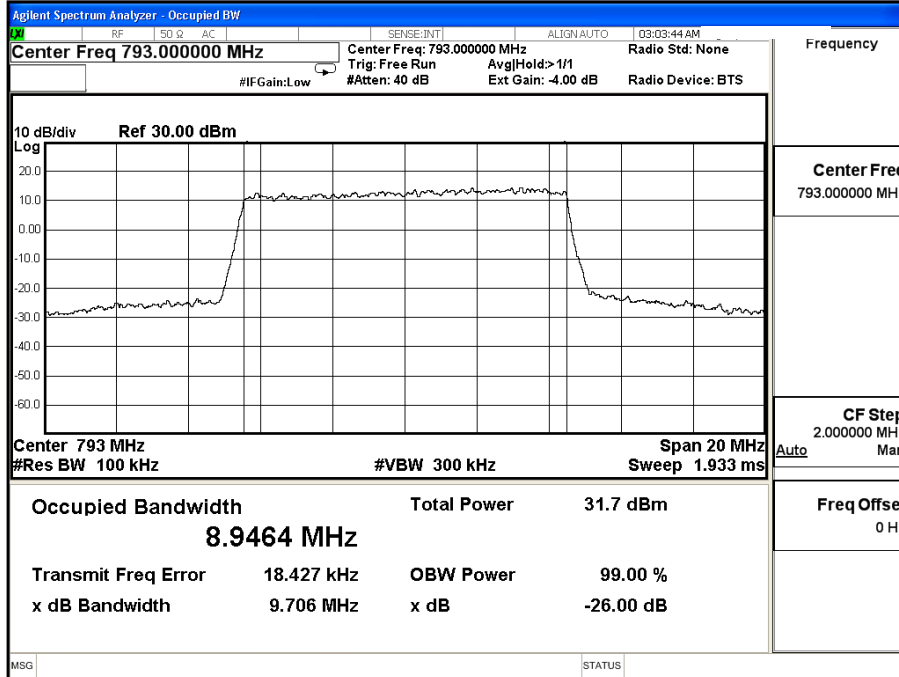
LTE Band 14 Highest channel:

5 MHz 16-QAM



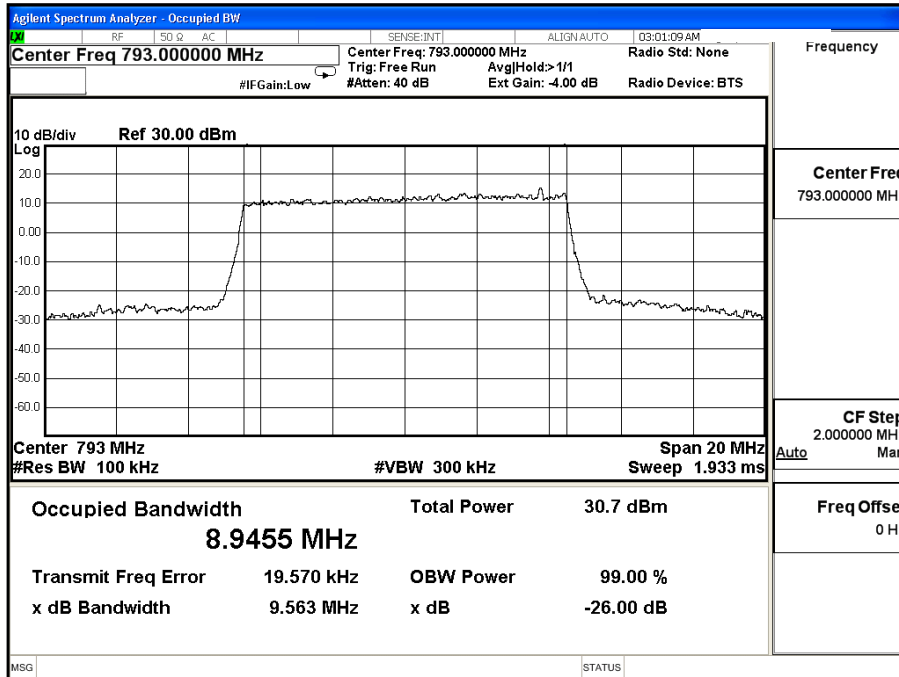
LTE Band 14 Middle channel

10 MHz QPSK



LTE Band 14 Middle channel

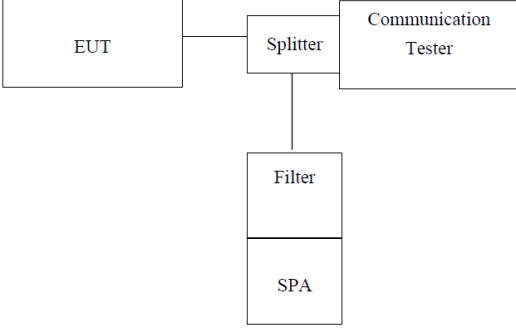
10 MHz 16-QAM



7.6 MODULATION CHARACTERISTIC

According to FCC § 2.1047(d), Part 27 there is no specific requirement for digital modulation, therefore modulation characteristic is not presented.

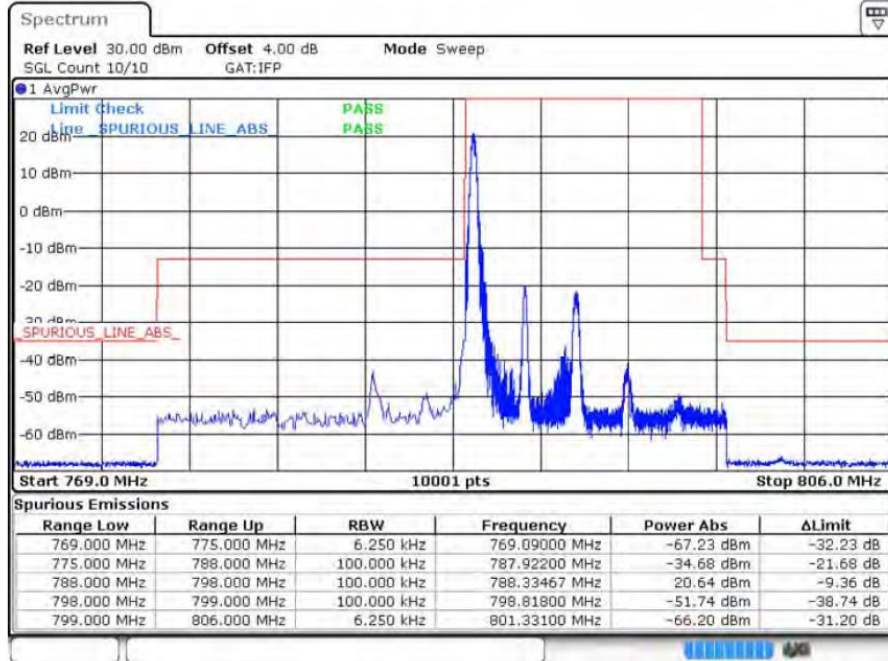
7.7 Out of band emission at antenna terminals

Test Requirement:	FCC Part 90.543
Test Method:	FCC part2.1051
Test setup:	 <p><i>Note: Measurement setup for testing on Antenna connector</i></p>
Test Procedure:	<ol style="list-style-type: none"> 1 The RF output of the transceiver was connected to a spectrum analyzer through appropriate attenuation. 2 The resolution bandwidth of the spectrum analyzer was set at 1MHz, sufficient scans were taken to show the out of band Emissions if any up to 10th harmonic. 3 For the out of band: Set the RBW, VBW = 1MHz, Start=30MHz, Stop= 10th harmonic. 4 Band Edge Requirements: In the 1 MHz bands immediately outside and adjacent to the frequency block, a resolution bandwidth of at least 1 percent of the emission bandwidth of the fundamental emission of the transmitter may be employed to measure the out of band Emissions.
Test Instruments:	Refer to section 6.0 for details
Test mode:	Refer to section 6.1 for details
Test results:	Pass

Measurement Data:

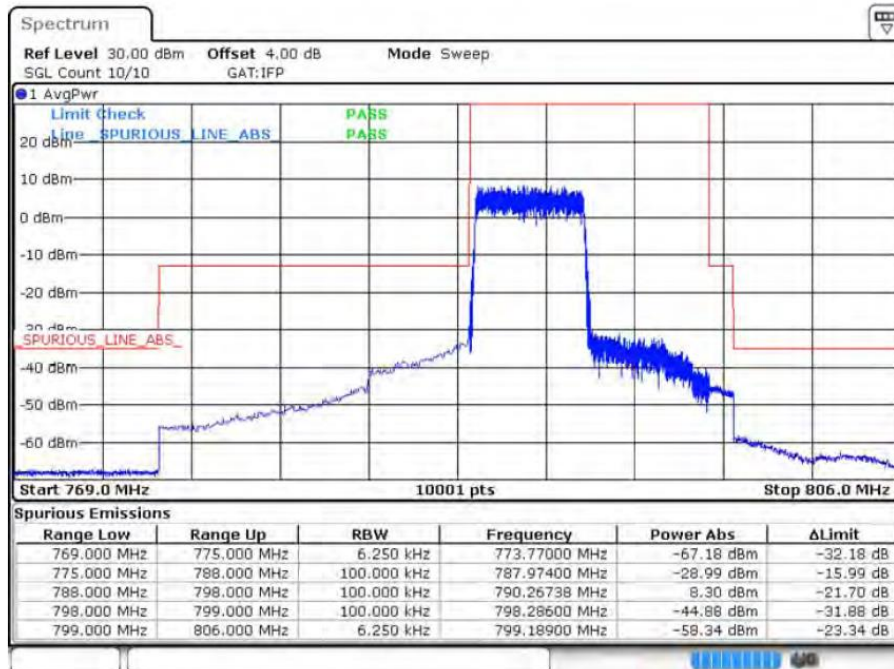
LTE Band 14 Lowest channel

5MHz 1RB



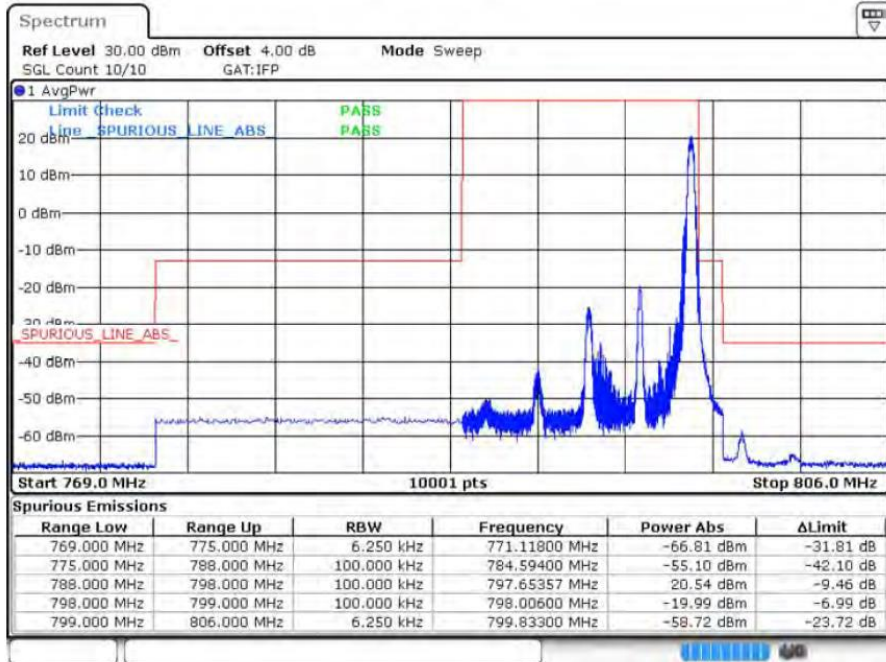
LTE Band 14 Lowest channel

5MHz 25RB



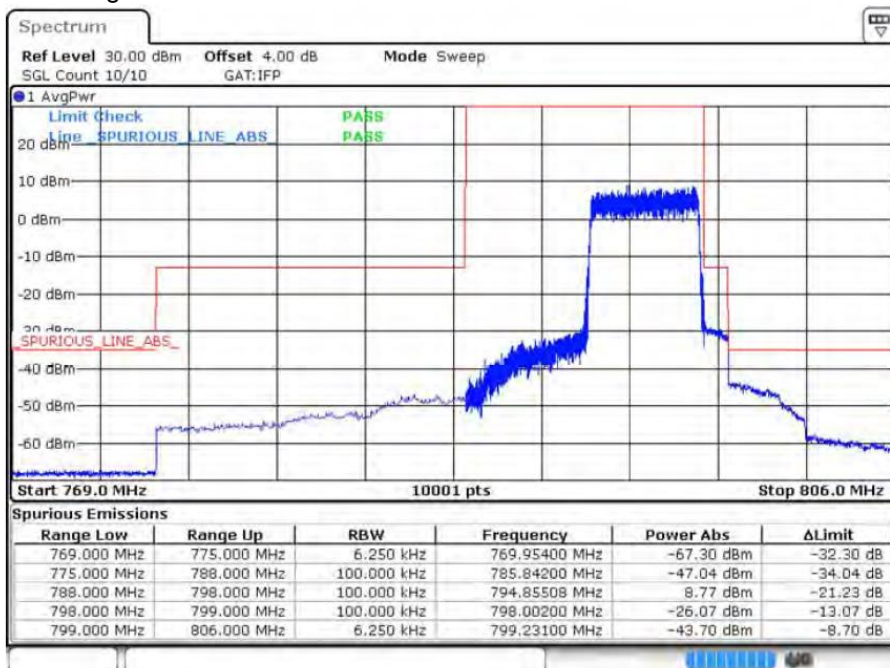
LTE Band 14 Highest channel:

5MHz 1RB



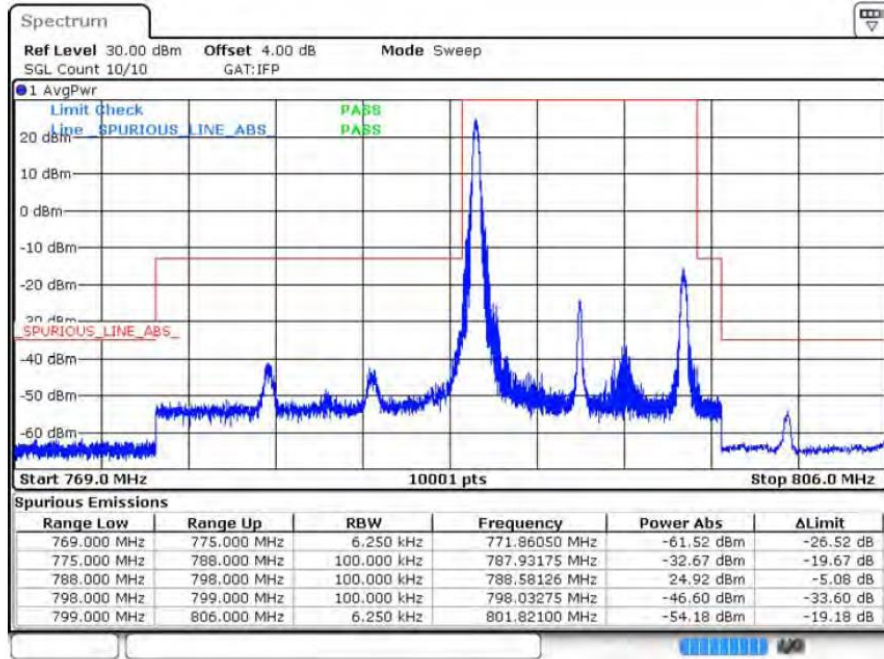
LTE Band 14 Highest channel:

5MHz 25RB



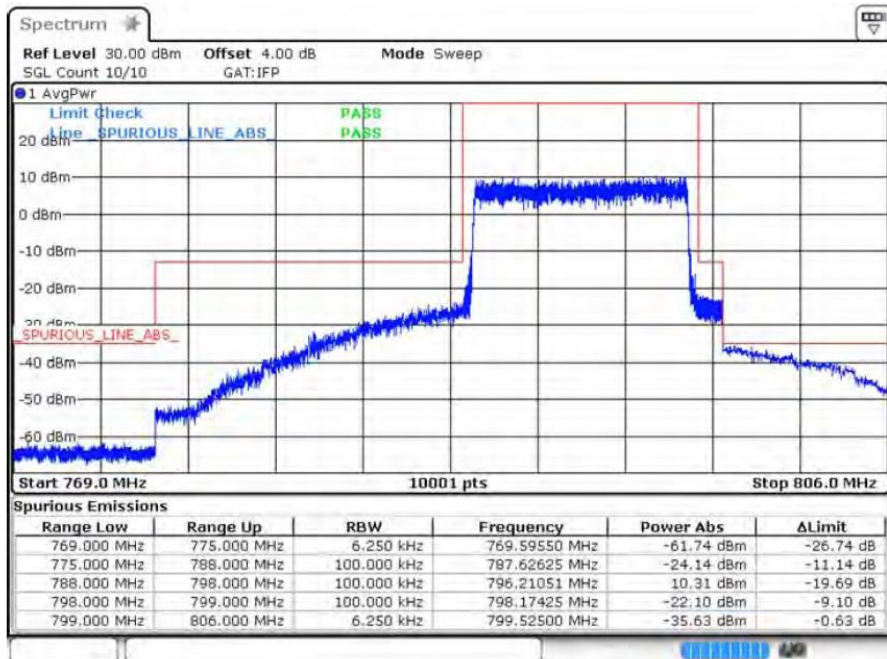
LTE Band 14 middle channel

10MHz 1RB



LTE Band 14 middle channel

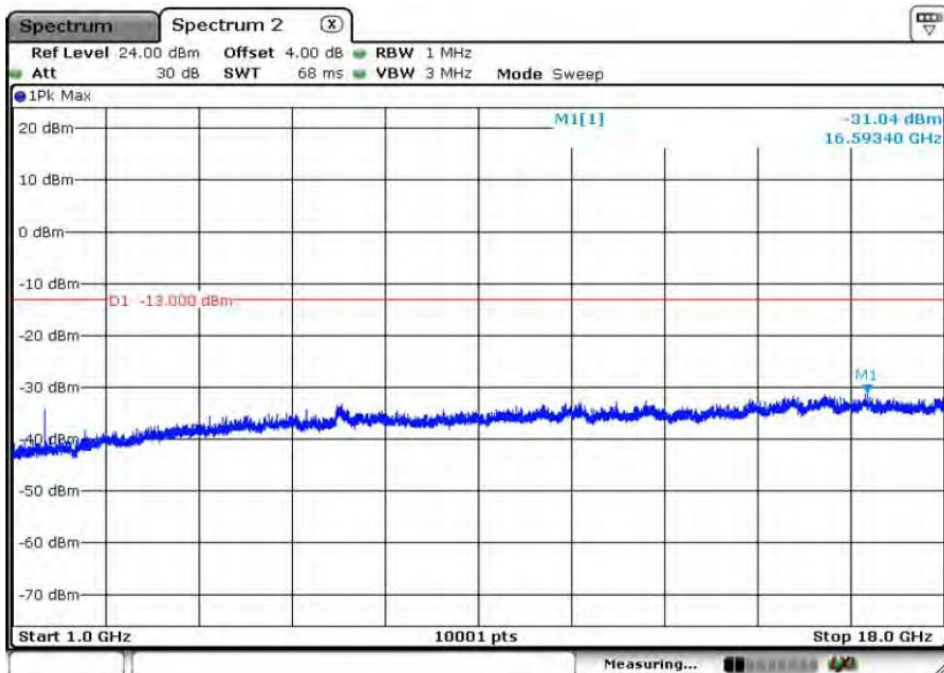
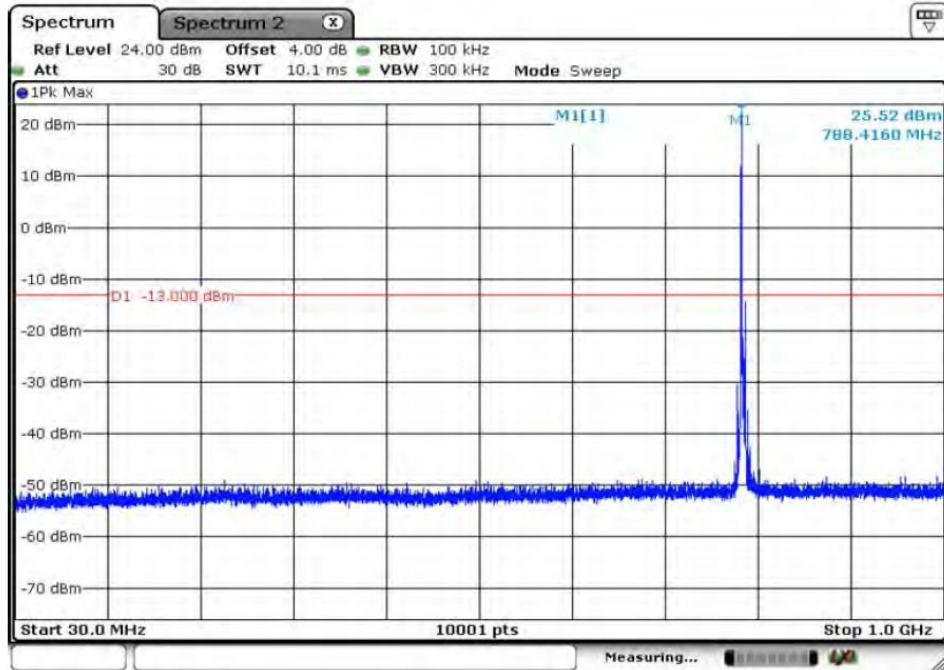
10MHz 50RB



Spurious Emission Antenna Port

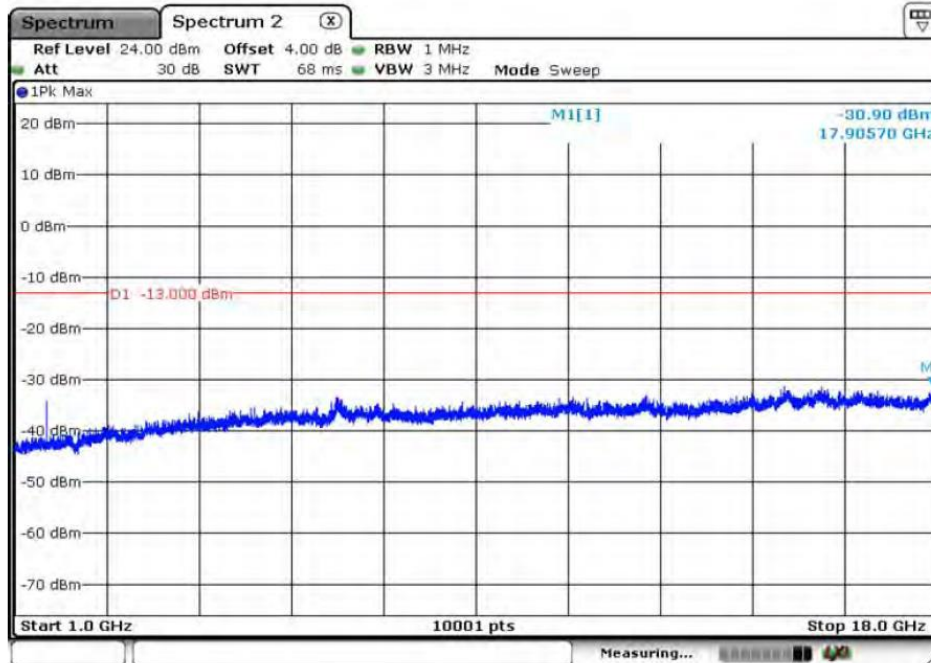
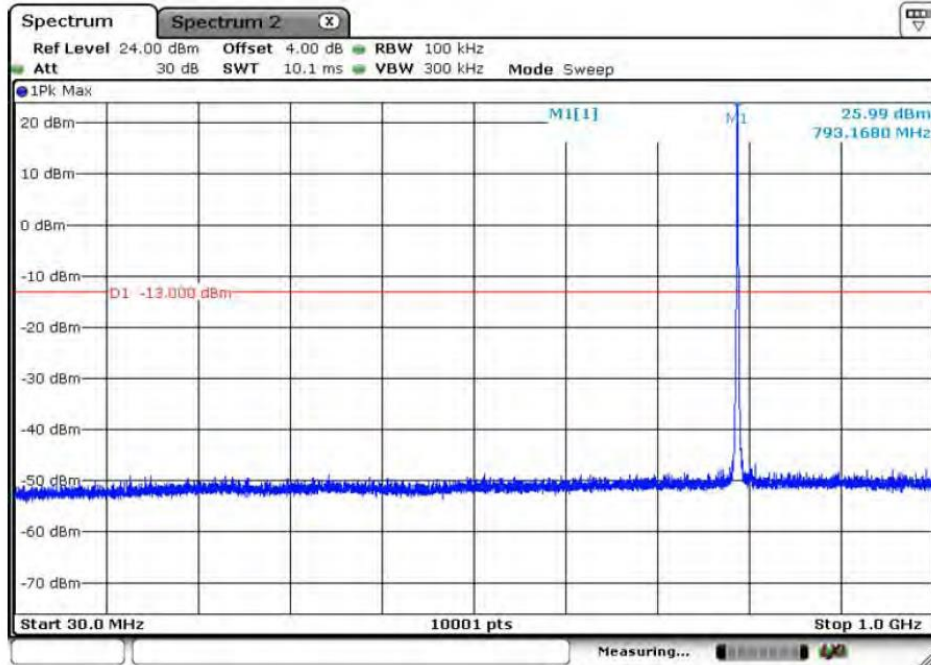
LTE Band 14 Lowest channel

5MHz



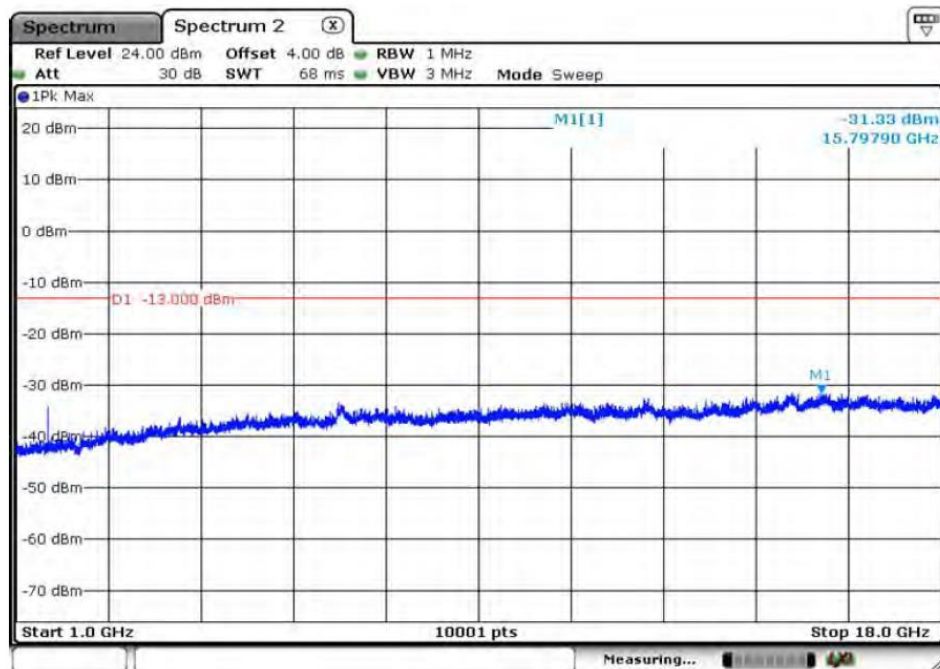
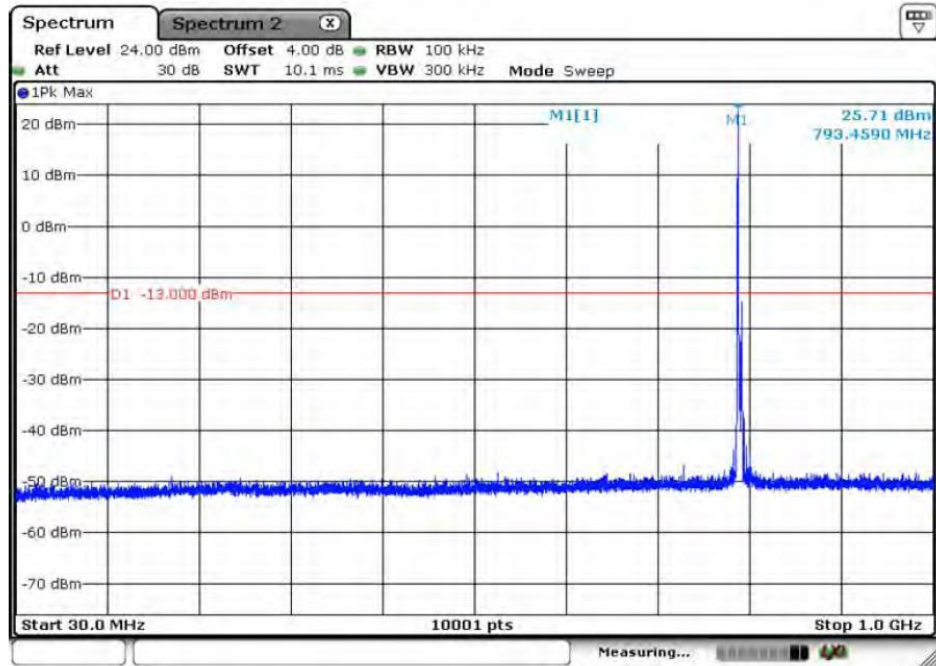
LTE Band 14 middle channel

5MHz



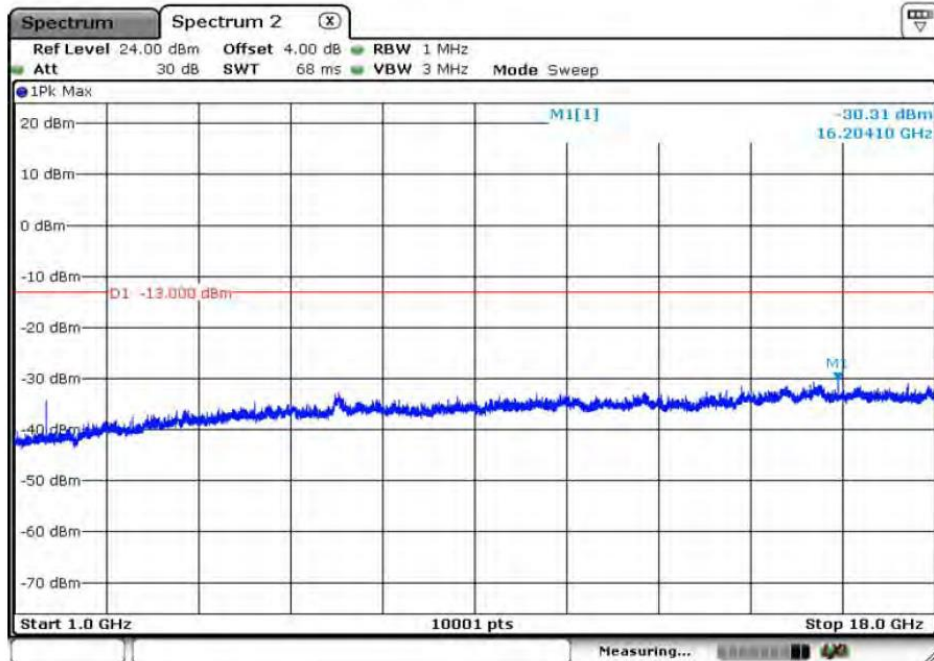
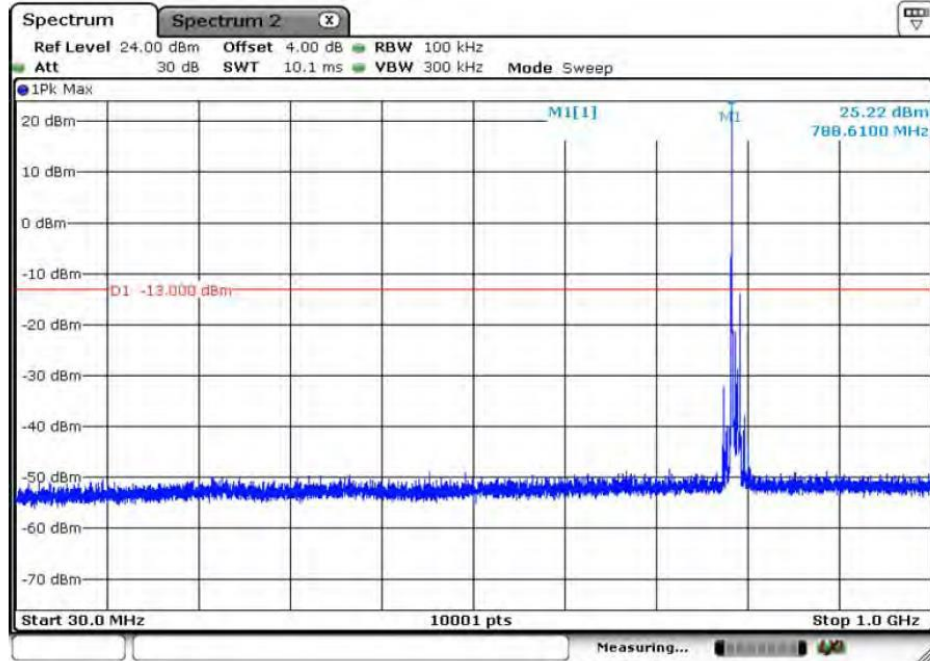
LTE Band 14 high channel

5MHz

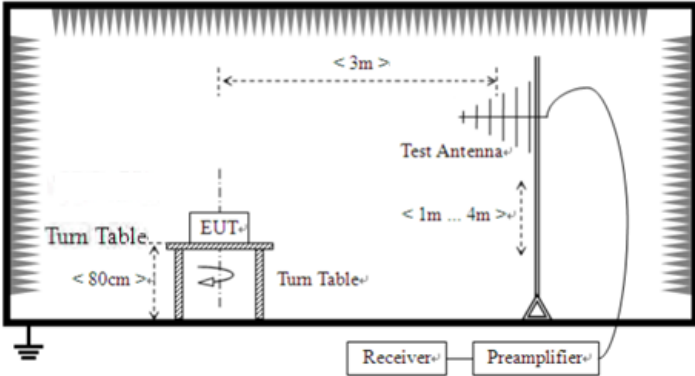
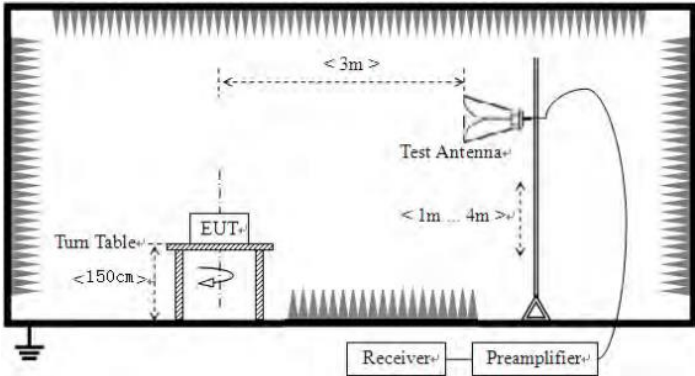
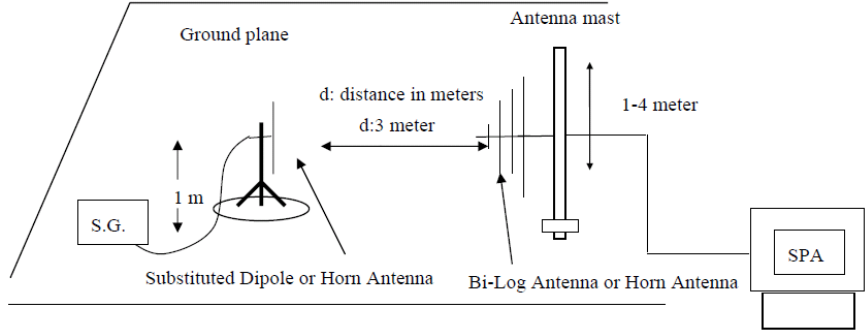


LTE Band 14 middle channel

10MHz



7.8 ERP, EIRP Measurement

Test Requirement:	FCC part 90.542
Test Method:	FCC part 2.1046 and ANSI C63.26:2015
Limit:	LTE Band 14: 3W
Test setup:	<p>Below 1GHz</p>  <p>Above 1GHz</p>  <p>Substituted method:</p> 
Test Procedure:	<ol style="list-style-type: none"> 1. The EUT was placed on a non-conductive turntable using a non-conductive support. The radiated emission at the fundamental frequency was measured at 3 m with a test antenna and EMI spectrum analyzer. 2. During the measurement, the EUT was communication with the

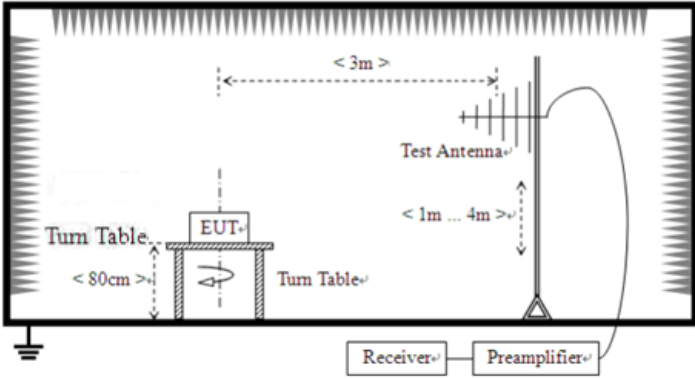
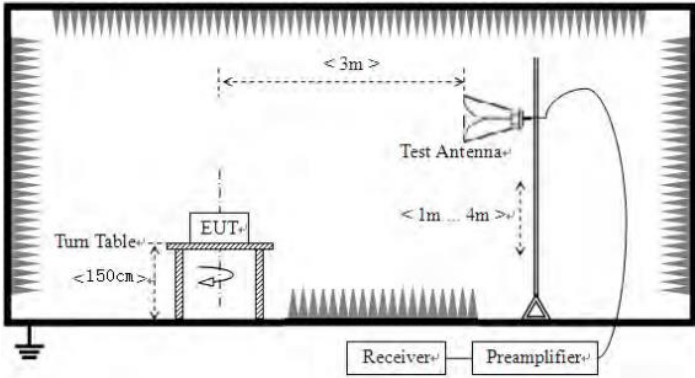
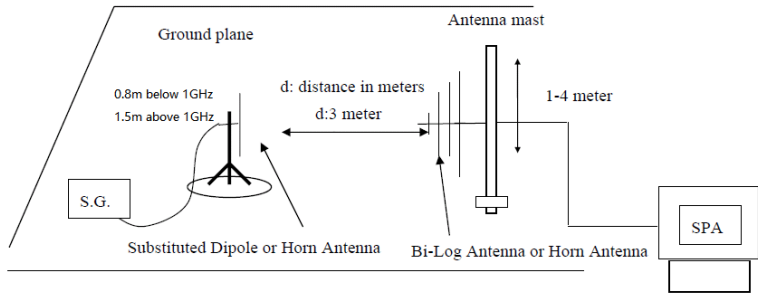
	<p>station. The highest emission was recorded with the rotation of the turntable and the lowering of the test antenna from 4m to 1m. The reading was recorded and the field strength (E in dBuV/m) was calculated.</p> <p>3. ERP in frequency band 777–787MHz were measured using a substitution method. The EUT was replaced by dipole antenna connected, the S.G. output was recorded and ERP was calculated as follows:</p> $\text{ERP} = \text{S.G. output (dBm)} + \text{Antenna Gain (dBd)} - \text{Cable Loss (dB)}$ <p>4. EIRP in frequency band 1710–1755MHz were measured using a substitution method. The EUT was replaced by or horn antenna connected, the S.G. output was recorded and EIRP was calculated as follows:</p> $\text{EIRP} = \text{S.G. output (dBm)} + \text{Antenna Gain (dBi)} - \text{Cable Loss (dB)}$
Test Instruments:	Refer to section 6.0 for details
Test mode:	Refer to section 7.1 for details
Test results:	Pass

Measurement Data:

EUT mode	Channel	Antenna Pol.	S.G. output (dBm)	Antenna Gain (dBd)	Cable Loss (dB)	EIRP (dBm)	Limit (dBm)	Result
LTE BAND 14 5MHz QPSK	Lowest	V	5.52	19.35	2.54	22.33	34.77	Pass
		H	5.60	19.35	2.54	22.41		
	Middle	V	6.44	19.51	2.62	23.33	34.77	Pass
		H	5.29	19.51	2.62	22.18		
	Highest	V	5.72	19.96	2.69	22.99	34.77	Pass
		H	5.68	19.96	2.69	22.95		
LTE BAND 14 10MHz QPSK	Lowest	V	5.40	19.35	2.54	22.21	34.77	Pass
		H	5.50	19.35	2.54	22.31		
	Middle	V	5.32	19.51	2.62	22.21	34.77	Pass
		H	5.18	19.51	2.62	22.07		
	Highest	V	5.60	19.96	2.69	22.87	34.77	Pass
		H	5.59	19.96	2.69	22.86		
LTE BAND 14 5MHz 16QAM	Lowest	V	5.35	19.35	2.54	22.16	34.77	Pass
		H	5.44	19.35	2.54	22.25		
	Middle	V	5.27	19.51	2.62	22.16	34.77	Pass
		H	5.13	19.51	2.62	22.02		
	Highest	V	5.54	19.96	2.69	22.81	34.77	Pass
		H	5.53	19.96	2.69	22.80		
LTE BAND 14 10MHz 16QAM	Lowest	V	5.44	19.35	2.54	22.25	34.77	Pass
		H	5.53	19.35	2.54	22.34		
	Middle	V	5.37	19.51	2.62	22.26	34.77	Pass
		H	5.23	19.51	2.62	22.12		
	Highest	V	5.64	19.96	2.69	22.91	34.77	Pass
		H	5.61	19.96	2.69	22.88		

Band	Frequency (MHz)	Spurious Emission					Limit (dBm)	Result
		Polarization	S.G. output (dBm)	Antenna Gain (dBi)	Cable Loss (dB)	Level (dBm)		
BAND 14 LTE 5MHz Lowest	87.87	Vertical	-74.42	3.35	0.38	-72.15	-13	PASS
	1559.00	Vertical	-45.55	7.76	3.75	-41.97		
	2338.50	Vertical	-46.65	9.84	4.94	-42.19		
	3118.00	Vertical	-39.19	10.21	5.32	-34.67		
	3897.50	Vertical	-42.52	11.36	6.02	-37.58		
	4677.00	Vertical	-44.04	14.52	6.68	-36.61		
BAND 14 LTE 5MHz Middle	88.68	Vertical	-74.42	3.35	0.38	-72.29	-13	PASS
	1586.00	Vertical	-46.85	7.76	3.75	-43.37		
	2379.00	Vertical	-46.46	9.84	4.94	-42.08		
	3172.00	Vertical	-42.14	10.21	5.32	-37.72		
	3965.00	Vertical	-41.55	11.36	6.02	-36.68		
	4758.00	Vertical	-45.45	14.52	6.68	-38.12		
BAND 14 LTE 5MHz Highest	88.89	Vertical	-74.39	3.35	0.38	-72.25	-13	PASS
	1591.00	Vertical	-46.46	7.79	3.53	-42.72		
	2386.50	Vertical	-40.99	9.88	5.02	-36.59		
	3182.00	Vertical	-37.24	10.25	5.54	-32.95		
	3977.50	Vertical	-44.01	11.38	6.16	-39.28		
	4773.00	Vertical	-46.41	14.56	6.72	-39.09		
BAND 14 LTE 10MHz Middle	88.93	Vertical	-74.39	3.35	0.38	-72.29	-13	PASS
	1586.00	Vertical	-46.84	7.76	3.75	-43.37		
	2379.00	Vertical	-46.44	9.84	4.94	-42.08		
	3172.00	Vertical	-42.12	10.21	5.32	-37.72		
	3965.00	Vertical	-41.54	11.36	6.02	-36.68		
	4758.00	Vertical	-45.43	14.52	6.68	-38.12		

7.9 Field strength of spurious radiation measurement

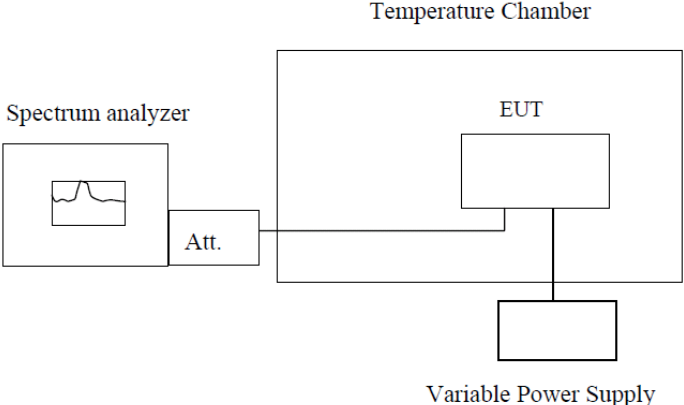
Test Requirement:	Part 90.543
Test Method:	FCC part 2.1053 and ANSI C63.26:2015
Test setup:	<p>Below 1GHz</p>  <p>Above 1GHz</p>  <p>Substituted method:</p> 
Test Instruments:	Refer to section 6.0 for details
Test mode:	Refer to section 6.1 for details
Test results:	Pass

Measurement Data:

Frequency (MHz)	Receiver Reading (dBμV)	Turn table Angle Degree	RX Antenna		Substituted			Absolute Level (dBm)	Result	
			Height (m)	Polar (H/V)	SG Level (dBm)	Cable (dB)	Antenna Gain (dB)		Limit (dBm)	Margin (dB)
LTE BAND 14 Low Channel										
199.38	40.66	300	1.7	H	-69.85	0.15	1.12	-68.88	-25.00	-43.88
199.38	30.80	124	1.9	V	-76.79	0.15	1.12	-75.82	-25.00	-50.82
1649.40	65.95	176	1.5	H	-43.29	2.79	12.70	-33.38	-25.00	-8.38
1649.40	59.98	191	1.2	V	-48.79	2.79	12.70	-38.88	-25.00	-13.88
2474.10	53.58	33	1.3	H	-52.96	3.12	11.50	-44.58	-25.00	-19.58
2474.10	44.73	272	1.7	V	-60.70	3.12	11.50	-52.32	-25.00	-27.32
LTE BAND 14 Middle Channel										
199.38	41.42	102	1.2	H	-69.09	0.15	1.12	-68.12	-25.00	-43.12
199.38	31.18	34	2.0	V	-76.41	0.15	1.12	-75.44	-25.00	-50.44
1673.00	59.85	64	1.3	H	-49.39	2.37	12.50	-39.26	-25.00	-14.26
1673.00	53.68	351	1.4	V	-55.09	2.37	12.50	-44.96	-25.00	-19.96
2509.50	47.29	337	2.2	H	-59.25	3.12	11.50	-50.87	-25.00	-25.87
2509.50	37.81	301	1.6	V	-67.62	3.12	11.50	-59.24	-25.00	-34.24
LTE BAND 14 High Channel										
199.38	42.08	172	1.8	H	-68.43	0.15	1.12	-67.46	-25.00	-42.46
199.38	30.62	120	1.7	V	-76.97	0.15	1.12	-76.00	-25.00	-51.00
1696.60	52.06	131	1.7	H	-57.35	2.37	12.50	-47.22	-25.00	-22.22
1696.60	47.65	120	1.2	V	-61.12	2.37	12.50	-50.99	-25.00	-25.99
2544.90	39.87	17	1.2	H	-65.36	3.12	11.50	-56.98	-25.00	-31.98
2544.90	31.09	277	1.1	V	-73.80	3.12	11.50	-65.42	-25.00	-40.42

Note: 1) Absolute Level = SG Level - Cable loss + Antenna Gain
 2) Margin = Absolute Level - Limit

7.10 Frequency stability

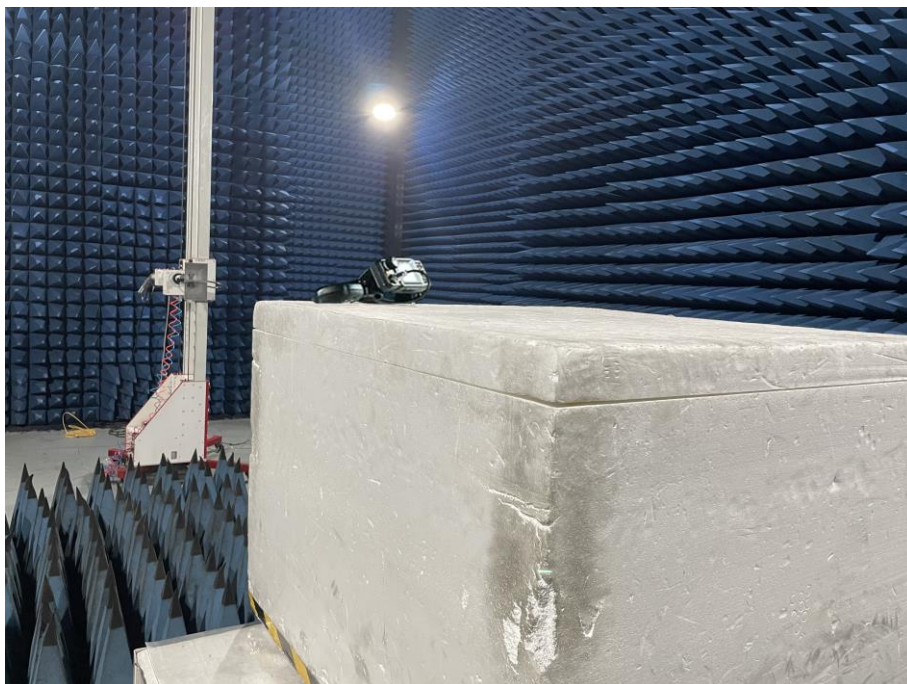
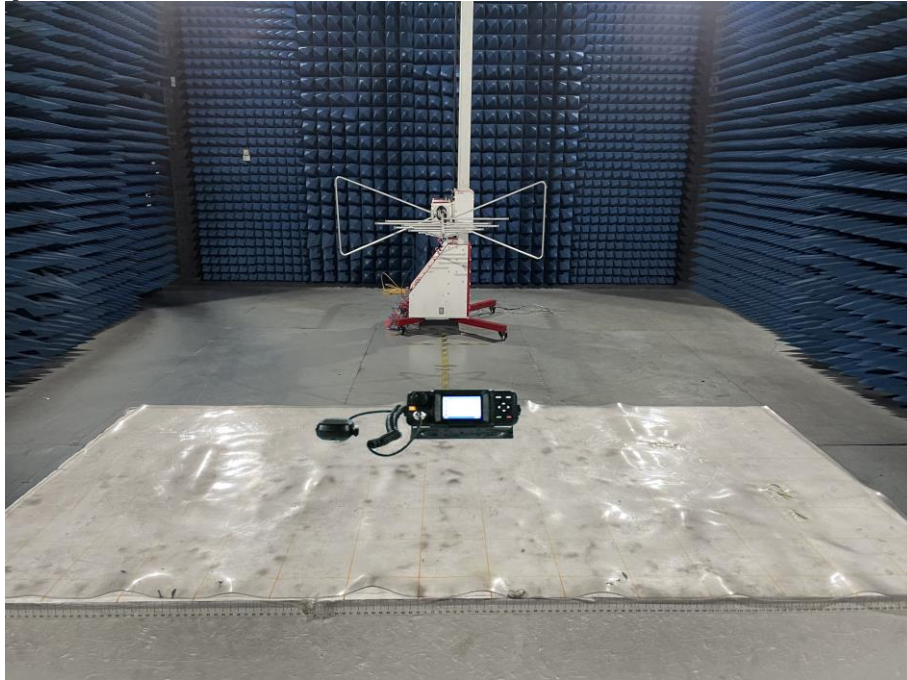
Test Requirement:	FCC Part90.539
Test Method:	FCC Part2.1055(a)(1)(b), FCC Part2.1055(d)(1)(2)
Limit:	2.5ppm
Test setup:	 <p>Note : Measurement setup for testing on Antenna connector</p>
Test procedure:	<ol style="list-style-type: none"> 1. The equipment under test was connected to an external DC power supply and input rated voltage. 2. RF output was connected to a frequency counter or spectrum analyzer via feed through attenuators. 3. The EUT was placed inside the temperature chamber. 4. Set the spectrum analyzer RBW low enough to obtain the desired frequency resolution and measure EUT 25°C operating frequency as reference frequency. 5. Turn EUT off and set the chamber temperature to –20°C. After the temperature stabilized for approximately 30 minutes recorded the frequency. 6. Repeat step measure with 10°C increased per stage until the highest temperature of +50°C reached. 7. Set chamber temperature to 25°C. Use a variable DC power source to power the EUT and set the voltage to rated voltage. 8. Set the spectrum analyzer RBW low enough to obtain the desired frequency resolution and recorded the frequency. 9. Reduce the input voltage to specified extreme voltage variation (+/- 15%) and endpoint, record the maximum frequency change.
Test Instruments:	Refer to section 6.0 for details
Test mode:	Refer to section 6.1 for details
Test results:	Pass

Measurement Data:

Test Conditions			Frequency Deviation			Result
Band	Power(Vdc)	Temperature(°C)	Frequency Error(Hz)	ppm	Limit	
LTE Band 14 Bandwidth 10MHz QPSK Middle channel 793MHz	24.0	-40	78	0.0982	±1	PASS
	24.0	-30	44	0.0558		
	24.0	-20	75	0.0947		
	24.0	-10	65	0.0823		
	24.0	0	59	0.0739		
	24.0	10	30	0.0383		
	24.0	20	32	0.0404		
	24.0	30	56	0.0701		
	24.0	40	50	0.0637		
	24.0	50	48	0.0600		
	24.0	60	36	0.0456		
	24.0	70	52	0.0658		
	24.0	80	76	0.0957		
	26.4	25	73	0.0924		
	24.0	25	21	0.0267		
21.6	25	75	0.0946			
LTE Band 14 Bandwidth 10MHz 16QAM Middle channel 793MHz	24.0	-40	68	0.0853	±1	PASS
	24.0	-30	33	0.0419		
	24.0	-20	43	0.0538		
	24.0	-10	21	0.0261		
	24.0	0	67	0.0848		
	24.0	10	58	0.0737		
	24.0	20	79	0.0990		
	24.0	30	77	0.0974		
	24.0	40	68	0.0858		
	24.0	50	35	0.0442		
	24.0	60	34	0.0427		
	24.0	70	57	0.0723		
	24.0	80	49	0.0617		
	26.4	25	40	0.0503		
	24.0	25	74	0.0938		
21.6	25	63	0.0791			

Note: Measurement Uncertainty: ±20Hz.

8 Test Setup Photo



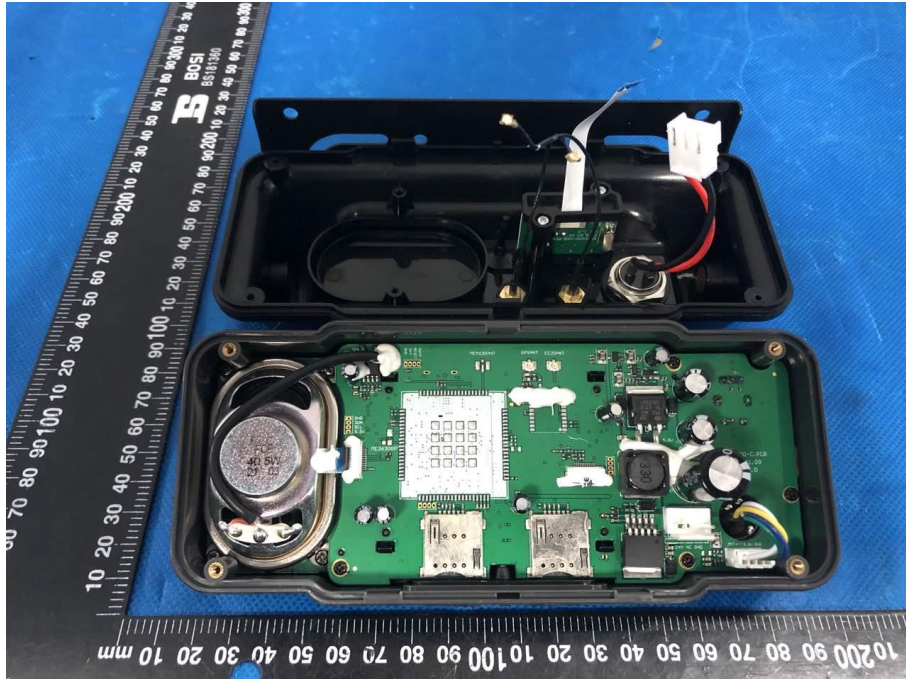
9 EUT Constructional Details

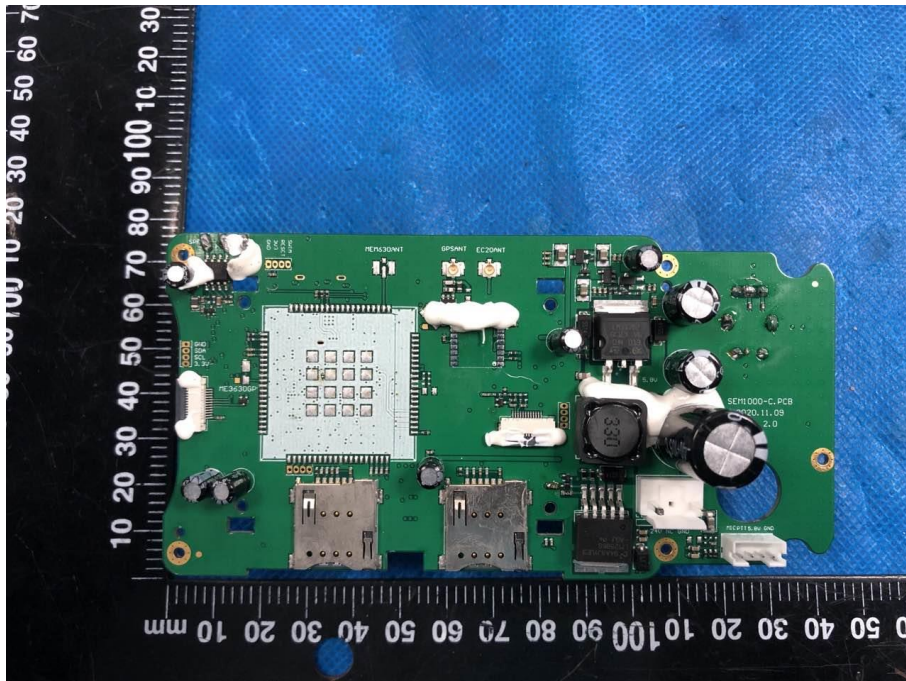
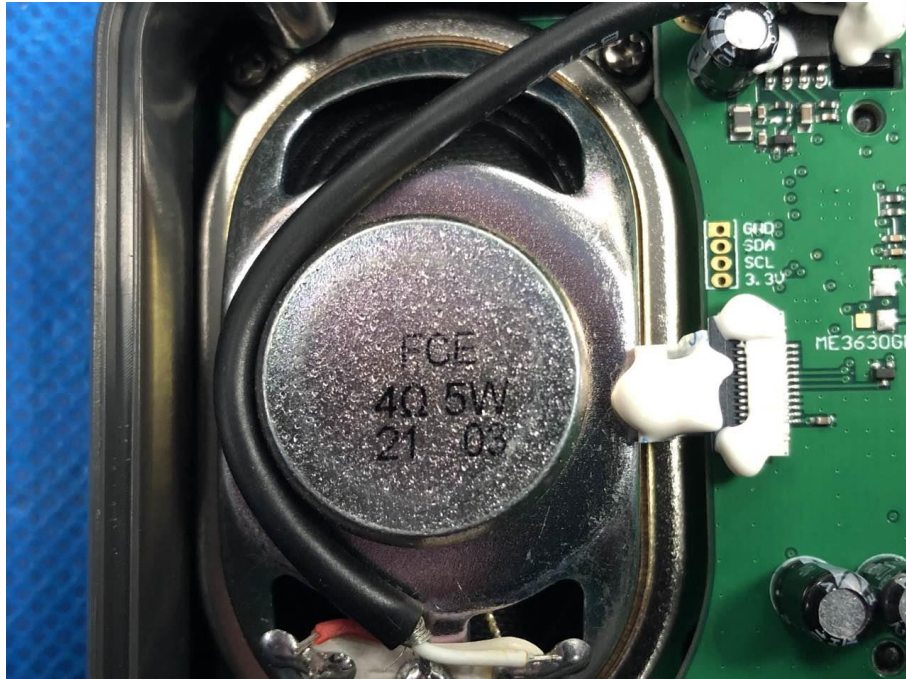


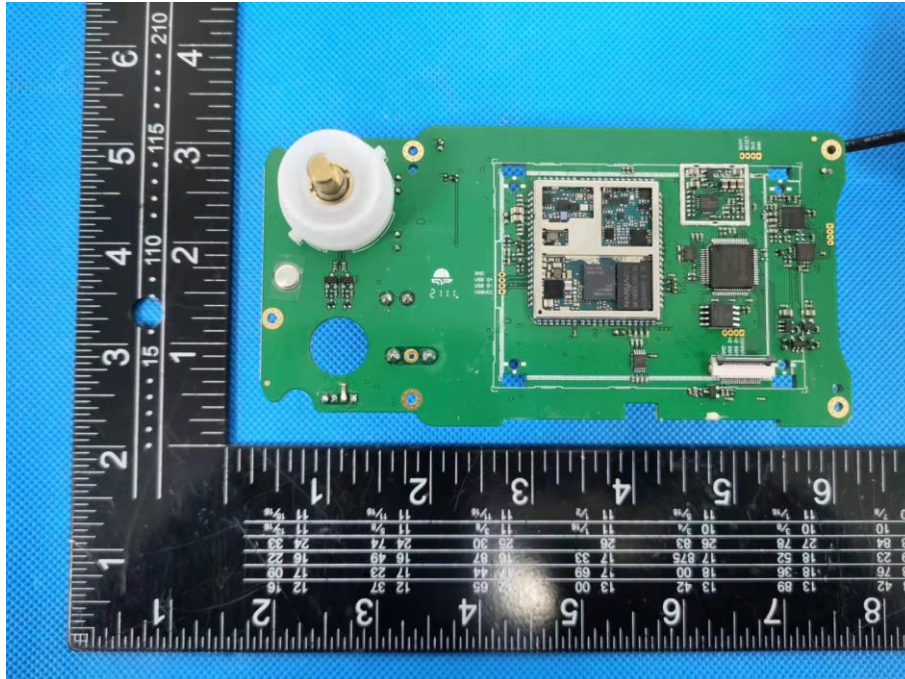


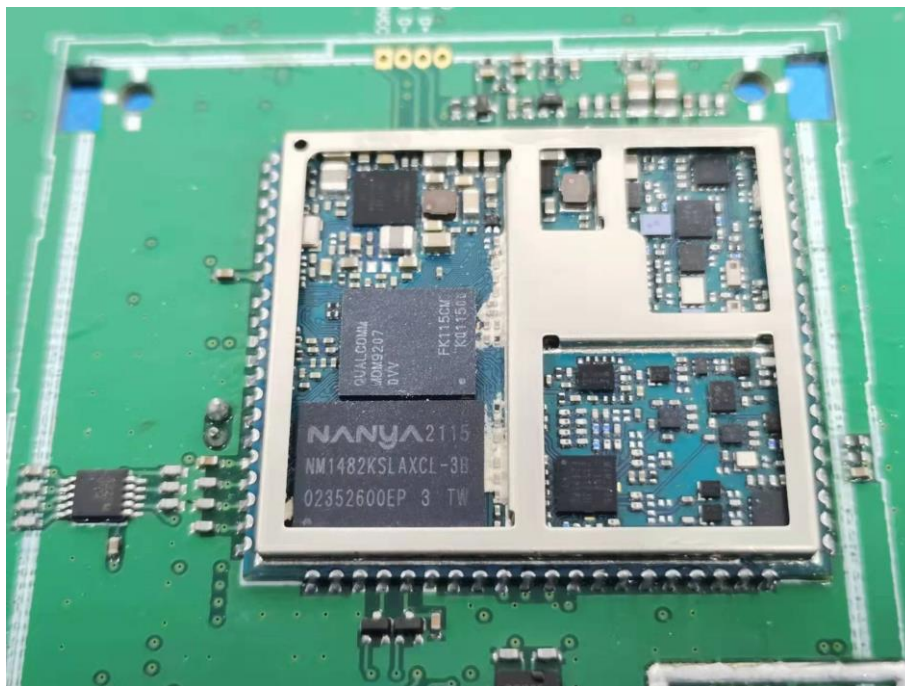
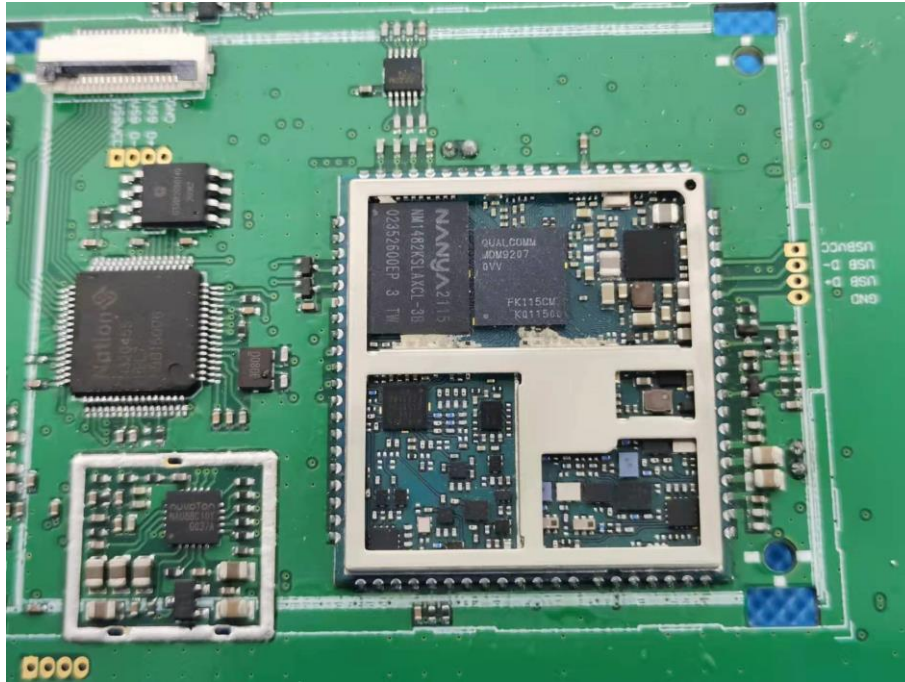


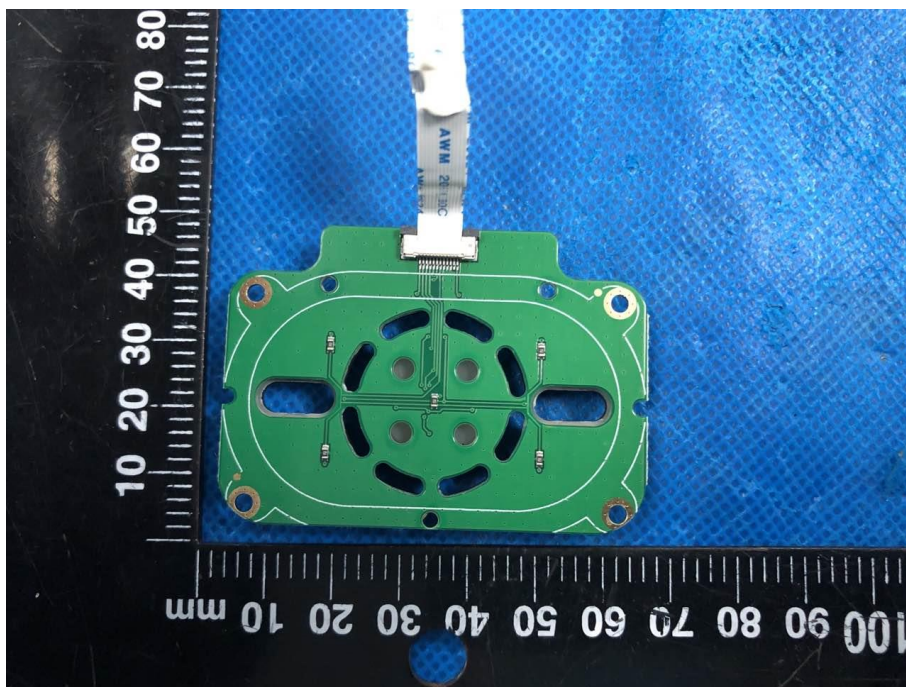
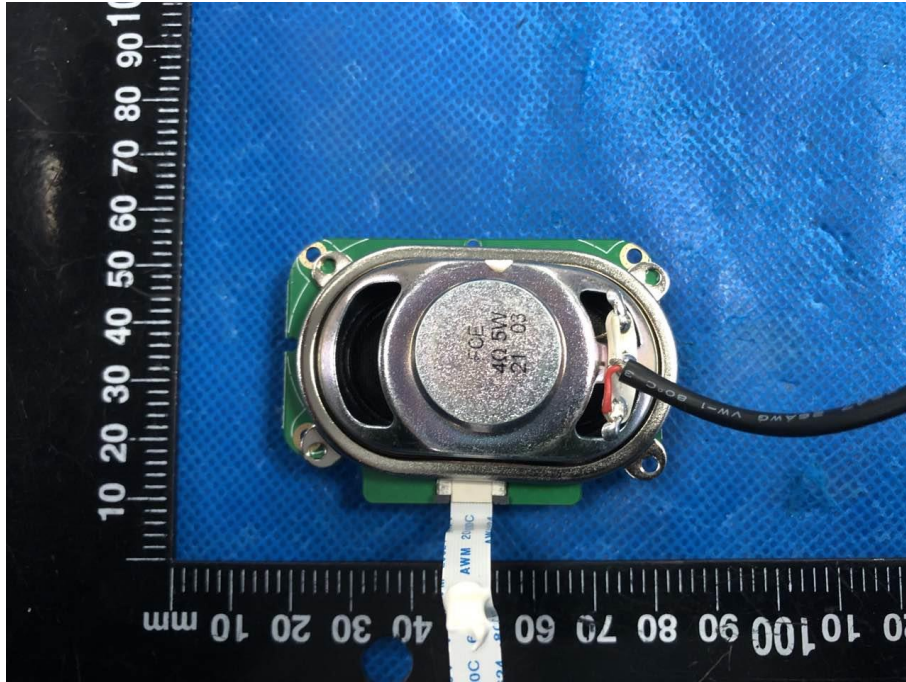


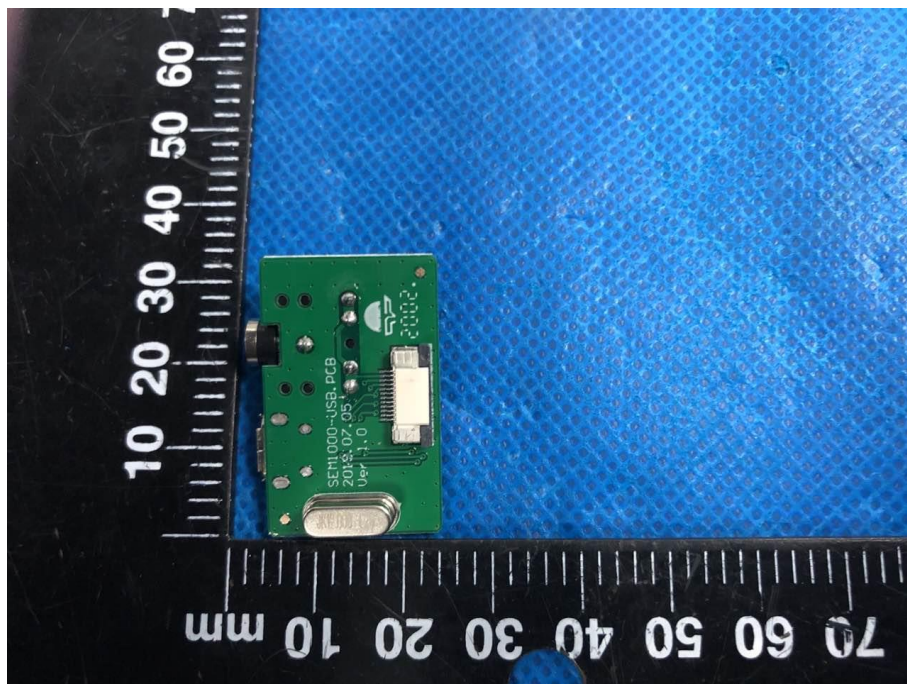
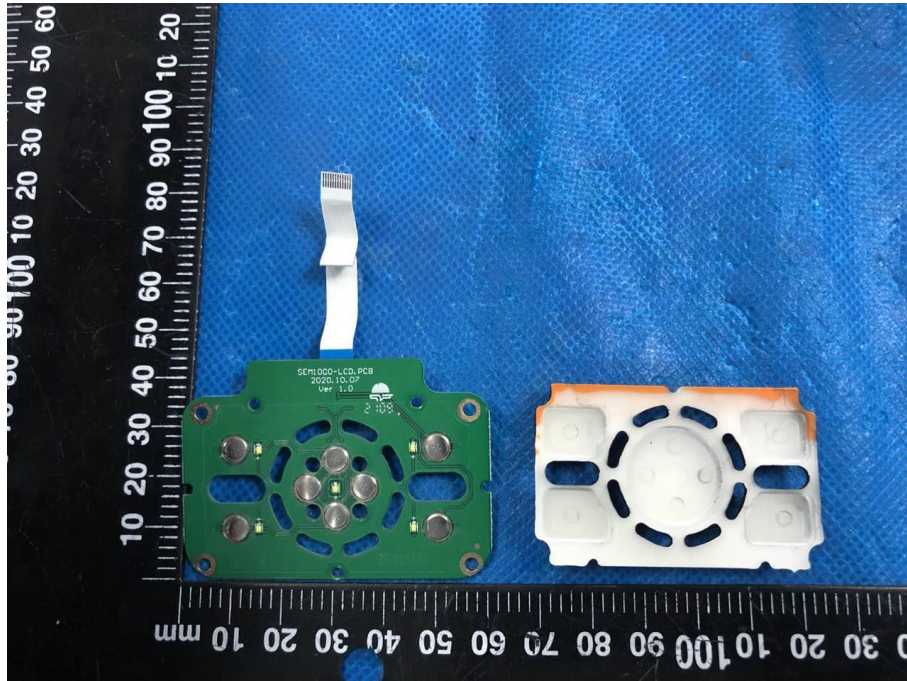


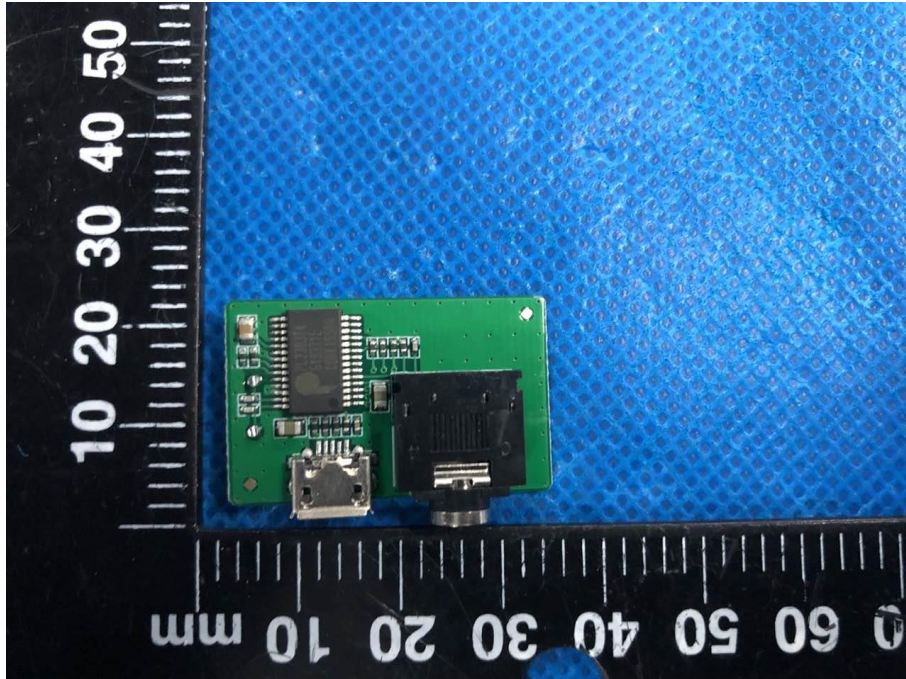












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