




# FCC REPORT

For LTE



Report No. .... : CHTW24090016 Report Verification: 

Project No..... : SHT2408085301W

FCC ID..... : 2BKRZ-WL432EG25G

Applicant ..... : Suzhou Inovance Technology Co., Ltd.

Address..... : No. 52, Tian E Dang Road, Wuzhong District, 215104, Suzhou City, Jiangsu Province, P.R. China

Product Name ..... : LTE Module

Trade Mark ..... : -

Model No. .... : EG25-G

Listed Model(s) ..... : -

Standard ..... : FCC CFR Title 47 Part 2  
FCC CFR Title 47 Part 22 Subpart H  
FCC CFR Title 47 Part 24 Subpart E  
FCC CFR Title 47 Part 27

Date of receipt of test sample..... : Aug. 28, 2024

Date of testing..... : Aug. 30, 2024- Sep. 04, 2024

Date of issue..... : Sep. 09, 2024

Result..... : Pass

Compiled by  
( position+printedname+signature).... : File administrators Xiaodong Zhao

*Xiaodong Zhao*

Supervised by  
(position+printedname+signature)..... : Project Engineer Xiaodong Zhao

*Xiaodong Zhao*

Approved by  
(position+printedname+signature)..... : Manager Xu Yang

*Xu Yang*

Testing Laboratory Name ..... : Shenzhen Huatongwei International Inspection Co., Ltd.

Address..... : Building 7, Baiwang Idea Factory, No.1051, Songbai Road, Yangguang Community, Xili Subdistrict, Nanshan District, Shenzhen, Guangdong, China

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*The test report merely correspond to the test sample.*

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## 1. TEST STANDARDS AND REPORT VERSION

### 1.1. Applicable Standards

The tests were performed according to following standards:

[FCC CFR Title 47 Part 2:](#) Frequency Allocations and Radio Treaty Matters; General Rules and Regulations

[FCC CFR Title 47 Part 22 Subpart H:](#) Cellular Radiotelephone Service

[FCC CFR Title 47 Part 24 Subpart E:](#) Broadband PCS

[FCC CFR Title 47 Part 27:](#) Miscellaneous Wireless Communications Services

[ANSI C63.26-2015:](#) American National Standard for Compliance Testing of Transmitters Used in Licensed Radio Services

[KDB 971168 D01 Power Meas License Digital Systems v03:](#) MEASUREMENT GUIDANCE FOR CERTIFICATION OF LICENSED DIGITAL TRANSMITTERS

### 1.2. Report version information

Revision No.	Date of issue	Description
N/A	2024-09-09	Original

## 2. TEST DESCRIPTION

Section	Test Item	Section in CFR 47	Result #1	Test Engineer
5.1	Radiated Spurious Emissions	Part 2.1053 Part 22.917 Part 24.238 Part 27.53	Pass	Yifan Wang
5.2	Radiated Band Edge	Part 2.1053 Part 22.917 Part 24.238 Part 27.53	Pass	Yifan Wang

Note:

- 1) #1: The test result does not include measurement uncertainty value.

### 3. SUMMARY

#### 3.1. Client Information

Applicant:	Suzhou Inovance Technology Co., Ltd.
Address:	No. 52, Tian E Dang Road, Wuzhong District, 215104, Suzhou City, Jiangsu Province, P.R. China
Manufacturer:	Suzhou Inovance Technology Co., Ltd.
Address:	No. 52, Tian E Dang Road, Wuzhong District, 215104, Suzhou City, Jiangsu Province, P.R. China

#### 3.2. Product Description

Module information:	
Product Name:	LTE Module
Trade Mark:	-
Model No.:	EG25-G
Listed Model(s):	-

#### 3.3. Radio Specification Description

Support Operating Band:	<input checked="" type="checkbox"/> LTE Band 2 <input checked="" type="checkbox"/> LTE Band 4 <input checked="" type="checkbox"/> LTE Band 5 <input checked="" type="checkbox"/> LTE Band 7 <input checked="" type="checkbox"/> LTE Band 12
Operating Frequency Range:	Please refer to note #2
Channel bandwidth:	Please refer to note #3
Uplink Modulation type:	<input checked="" type="checkbox"/> QPSK <input checked="" type="checkbox"/> 16QAM <input type="checkbox"/> 64QAM <input type="checkbox"/> 256QAM
Downlink Modulation type:	<input checked="" type="checkbox"/> QPSK <input checked="" type="checkbox"/> 16QAM <input type="checkbox"/> 64QAM <input type="checkbox"/> 256QAM
Antenna type:	linear antenna
Antenna gain #4:	Band 2: 1.496dBi      Band 4: 1.963dBi      Band 5: 2.066dBi Band 7: 2.994dBi      Band 12: 0.366dBi

Note:

- ☐ ☒: means that this feature is supported; ☐: means that this feature is not supported
- ☐ #2: Operating frequency range is as follow:

LTE Band	Uplink frequency	Downlink frequency
LTE Band 2	1850.7 – 1909.3 MHz	1930.7 – 1989.3 MHz
LTE Band 4	1710.7 – 1754.3 MHz	2110.7 – 2154.3 MHz
LTE Band 5	824.7 – 848.3 MHz	869.7 – 893.3 MHz
LTE Band 7	2502.5 – 2567.5 MHz	2622.5 – 2687.5 MHz
LTE Band 12	699.7 – 715.3 MHz	729.7 – 745.3 MHz

- ☐ Supported channel bandwidth is as follow:

LTE Band	1.4MHz	3MHz	5MHz	10MHz	15MHz	20MHz
LTE Band 2	√	√	√	√	√	√
LTE Band 4	√	√	√	√	√	√
LTE Band 5	√	√	√	√	-	-
LTE Band 7	-	-	√	√	√	√
LTE Band 12	√	√	√	√	-	-

√: means that this feature is supported; -: means that this feature is not supported

- #4: The antenna gain is provided by the applicant, and the applicant should be responsible for its authenticity, HTW lab has not verified the authenticity of its information

### 3.4. Testing Laboratory Information

Laboratory Name	Shenzhen Huatongwei International Inspection Co., Ltd.	
Laboratory Location	Building 7, Baiwang Idea Factory, No.1051, Songbai Road, Yangguang Community, Xili Subdistrict, Nanshan District, Shenzhen, Guangdong, China	
Contact information:	Phone: 86-755-26715499 E-mail: <a href="mailto:cs@szhtw.com.cn">cs@szhtw.com.cn</a> <a href="http://www.szhtw.com.cn">http://www.szhtw.com.cn</a>	
Qualifications	Type	Accreditation Number
	FCC Registration Number	762235
	FCC Designation Number	CN1181

## 4. TEST CONFIGURATION

### 4.1. Test frequency list

LTE Band 2	<table><tr><th>Test Frequency ID</th><th>Bandwidth [MHz]</th><th>N<sub>UL</sub></th><th>Frequency of Uplink [MHz]</th><th>N<sub>DL</sub></th><th>Frequency of Downlink [MHz]</th></tr><tr><td rowspan="6">Low Range</td><td>1.4</td><td>18607</td><td>1850.7</td><td>607</td><td>1930.7</td></tr><tr><td>3</td><td>18615</td><td>1851.5</td><td>615</td><td>1931.5</td></tr><tr><td>5</td><td>18625</td><td>1852.5</td><td>625</td><td>1932.5</td></tr><tr><td>10</td><td>18650</td><td>1855</td><td>650</td><td>1935</td></tr><tr><td>15 <sup>[1]</sup></td><td>18675</td><td>1857.5</td><td>675</td><td>1937.5</td></tr><tr><td>20 <sup>[1]</sup></td><td>18700</td><td>1860</td><td>700</td><td>1940</td></tr><tr><td>Mid Range</td><td>1.4/3/5/10/15 <sup>[1]</sup>/20 <sup>[1]</sup></td><td>18900</td><td>1880</td><td>900</td><td>1960</td></tr><tr><td rowspan="6">High Range</td><td>1.4</td><td>19193</td><td>1909.3</td><td>1193</td><td>1989.3</td></tr><tr><td>3</td><td>19185</td><td>1908.5</td><td>1185</td><td>1988.5</td></tr><tr><td>5</td><td>19175</td><td>1907.5</td><td>1175</td><td>1987.5</td></tr><tr><td>10</td><td>19150</td><td>1905</td><td>1150</td><td>1985</td></tr><tr><td>15 <sup>[1]</sup></td><td>19125</td><td>1902.5</td><td>1125</td><td>1982.5</td></tr><tr><td>20 <sup>[1]</sup></td><td>19100</td><td>1900</td><td>1100</td><td>1980</td></tr><tr><td colspan="6">NOTE 1: Bandwidth for which a relaxation of the specified UE receiver sensitivity requirement (TS 36.101 [27] Clause 7.3) is allowed.</td></tr></table>	Test Frequency ID	Bandwidth [MHz]	N <sub>UL</sub>	Frequency of Uplink [MHz]	N <sub>DL</sub>	Frequency of Downlink [MHz]	Low Range	1.4	18607	1850.7	607	1930.7	3	18615	1851.5	615	1931.5	5	18625	1852.5	625	1932.5	10	18650	1855	650	1935	15 <sup>[1]</sup>	18675	1857.5	675	1937.5	20 <sup>[1]</sup>	18700	1860	700	1940	Mid Range	1.4/3/5/10/15 <sup>[1]</sup> /20 <sup>[1]</sup>	18900	1880	900	1960	High Range	1.4	19193	1909.3	1193	1989.3	3	19185	1908.5	1185	1988.5	5	19175	1907.5	1175	1987.5	10	19150	1905	1150	1985	15 <sup>[1]</sup>	19125	1902.5	1125	1982.5	20 <sup>[1]</sup>	19100	1900	1100	1980	NOTE 1: Bandwidth for which a relaxation of the specified UE receiver sensitivity requirement (TS 36.101 [27] Clause 7.3) is allowed.					
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	20 <sup>[1]</sup>	21350	2560	3350	2680																																																																												
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LTE Band 12	<div>Table 4.3.1.1.12-1: Test frequencies for E-UTRA channel bandwidth for operating band 12</div> <table><tr><th>Test Frequency ID</th><th>Bandwidth [MHz]</th><th>N<sub>UL</sub></th><th>Frequency of Uplink [MHz]</th><th>N<sub>DL</sub></th><th>Frequency of Downlink [MHz]</th></tr><tr><td rowspan="4">Low Range</td><td>1.4</td><td>23017</td><td>699.7</td><td>5017</td><td>729.7</td></tr><tr><td>3</td><td>23025</td><td>700.5</td><td>5025</td><td>730.5</td></tr><tr><td>5 <sup>[1]</sup></td><td>23035</td><td>701.5</td><td>5035</td><td>731.5</td></tr><tr><td>10 <sup>[1]</sup></td><td>23060</td><td>704</td><td>5060</td><td>734</td></tr><tr><td>Mid Range</td><td>1.4/3/5 <sup>[1]</sup>/10 <sup>[1]</sup></td><td>23095</td><td>707.5</td><td>5095</td><td>737.5</td></tr><tr><td rowspan="4">High Range</td><td>1.4</td><td>23173</td><td>715.3</td><td>5173</td><td>745.3</td></tr><tr><td>3</td><td>23165</td><td>714.5</td><td>5165</td><td>744.5</td></tr><tr><td>5 <sup>[1]</sup></td><td>23155</td><td>713.5</td><td>5155</td><td>743.5</td></tr><tr><td>10 <sup>[1]</sup></td><td>23130</td><td>711</td><td>5130</td><td>741</td></tr><tr><td colspan="6">NOTE 1: Bandwidth for which a relaxation of the specified UE receiver sensitivity requirement (TS 36.101 [27] Clause 7.3) is allowed.</td></tr></table>	Test Frequency ID	Bandwidth [MHz]	N <sub>UL</sub>	Frequency of Uplink [MHz]	N <sub>DL</sub>	Frequency of Downlink [MHz]	Low Range	1.4	23017	699.7	5017	729.7	3	23025	700.5	5025	730.5	5 <sup>[1]</sup>	23035	701.5	5035	731.5	10 <sup>[1]</sup>	23060	704	5060	734	Mid Range	1.4/3/5 <sup>[1]</sup> /10 <sup>[1]</sup>	23095	707.5	5095	737.5	High Range	1.4	23173	715.3	5173	745.3	3	23165	714.5	5165	744.5	5 <sup>[1]</sup>	23155	713.5	5155	743.5	10 <sup>[1]</sup>	23130	711	5130	741	NOTE 1: Bandwidth for which a relaxation of the specified UE receiver sensitivity requirement (TS 36.101 [27] Clause 7.3) is allowed.																									
Test Frequency ID	Bandwidth [MHz]	N <sub>UL</sub>	Frequency of Uplink [MHz]	N <sub>DL</sub>	Frequency of Downlink [MHz]																																																																												
Low Range	1.4	23017	699.7	5017	729.7																																																																												
	3	23025	700.5	5025	730.5																																																																												
	5 <sup>[1]</sup>	23035	701.5	5035	731.5																																																																												
	10 <sup>[1]</sup>	23060	704	5060	734																																																																												
Mid Range	1.4/3/5 <sup>[1]</sup> /10 <sup>[1]</sup>	23095	707.5	5095	737.5																																																																												
High Range	1.4	23173	715.3	5173	745.3																																																																												
	3	23165	714.5	5165	744.5																																																																												
	5 <sup>[1]</sup>	23155	713.5	5155	743.5																																																																												
	10 <sup>[1]</sup>	23130	711	5130	741																																																																												
NOTE 1: Bandwidth for which a relaxation of the specified UE receiver sensitivity requirement (TS 36.101 [27] Clause 7.3) is allowed.																																																																																	

## 4.2. Test mode

Test mode	Link mode
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- 1) Antenna port conducted and radiated test items were performed according to KDB 971168 D01 Power Meas. License Digital Systems and ANSI C63.26 with maximum output power.
- 2) Radiated measurements were performed with rotating EUT in different three orthogonal test planes to find the maximum emission.

Test configuration is as follow:

Test Items	Bandwidth	Modulation	RB #		
			1	Half	Full
Radiated Spurious Emission	#5	#6	○	-	-
Radiated Band Edge	#5	#6	○	-	○

Note:

- #5: Test all kind of bandwidth in section 3.3
- #6: Test all kind of uplink modulation in section 3.3
- ○: means that this configuration is chosen for testing
- -: means that this configuration is not test.
- The device is investigated from 30MHz to 10 times of fundamental signal for radiated spurious emission test under different bandwidth, modulations and RB size/offset in exploratory test. Subsequently, only the worst case emissions (highest bandwidth, QPSK, and 1RB0) are reported.

## 4.3. Test sample information

Test item	HTW sample no.
Radiated test items	YPHT24080853001

Note:

Radiated test items: Radiated Spurious Emission, Radiated Band Edge

## 4.4. Support unit used in test configuration and system

The EUT has been associated with peripherals and configuration operated in a manner tended to maximize its emission characteristics in a typical application.

The following peripheral devices and interface cables were connected during the measurement:

Whether support unit is used?				
✓ No				
Item	Equipment	Trade Name	Model No.	Other
1				
2				



4.5. Testing environmental condition

Voltage	VN=Nominal Voltage	DC 24V
Temperature	TN=Normal Temperature	25 °C
Humidity	30~60 %	
Air Pressure	950-1050 hPa	

4.6. Statement of the measurement uncertainty

No.	Test Items	Measurement Uncertainty
1	Radiated Spurious Emission	4.54dB for 30MHz-1GHz 5.10dB for above 1GHz

This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=1.96.

4.7. Equipments Used during the Test

● Radiated Spurious Emission							
Used	Test Equipment	Manufacturer	Equipment No.	Model No.	Serial No.	Last Cal. Date (YY-MM-DD)	Next Cal. Date (YY-MM-DD)
●	Semi-Anechoic Chamber	Albatross projects	HTWE0122	SAC-3m-01	C11121	2023/4/17	2026/4/16
●	Spectrum Analyzer	R&S	HTWE0098	FSP40	100597	2024/8/12	2025/8/11
●	Spectrum Analyzer	R&S	HTWE0385	N9020A	MY54486658	2024/8/12	2025/8/11
●	Ultra-Broadband Antenna	SCHWARZBECK	HTWE0123	VULB9163	538	2024/4/8	2027/4/7
●	Horn Antenna	SCHWARZBECK	HTWE0126	BBHA 9120D	1011	2023/2/14	2026/2/13
●	Broadband Horn Antenna	SCHWARZBECK	HTWE0103	BBHA9170	BBHA9170472	2023/2/20	2026/2/19
●	Pre-Amplifier	CD	HTWE0071	PAP-0102	12004	2024/6/6	2025/6/5
●	Broadband Pre-amplifier	SCHWARZBECK	HTWE0551	SCU18F	100855	2024/6/6	2025/6/5
●	Test Software	Audix	N/A	E3	N/A	N/A	N/A

● Auxiliary Equipment							
Used	Test Equipment	Manufacturer	Equipment No.	Model No.	Serial No.	Last Cal. Date (YY-MM-DD)	Next Cal. Date (YY-MM-DD)
●	Radio communication tester	R&S	HTWE0287	CMW500	137688-Lv	2024/08/12	2025/08/11
●	High pass filter	Wainwright	HTWE0297	WHKX3.0/18G-10SS	38	2024/03/26	2025/03/25
●	Band Stop filter	-	HTWE0039	N/A	N/A	2024/01/23	2025/01/24

## 5. TEST CONDITIONS AND RESULTS

### 5.1. Radiated Spurious Emission

#### LIMIT

Part 22.917&Part 24.238:

The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least  $43 + 10 \log(P)$  dB.

Part 27.53(g):

For operations in the 600 MHz band and the 698-746 MHz band, the power of any emission outside a licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, by at least  $43 + 10 \log(P)$  dB.

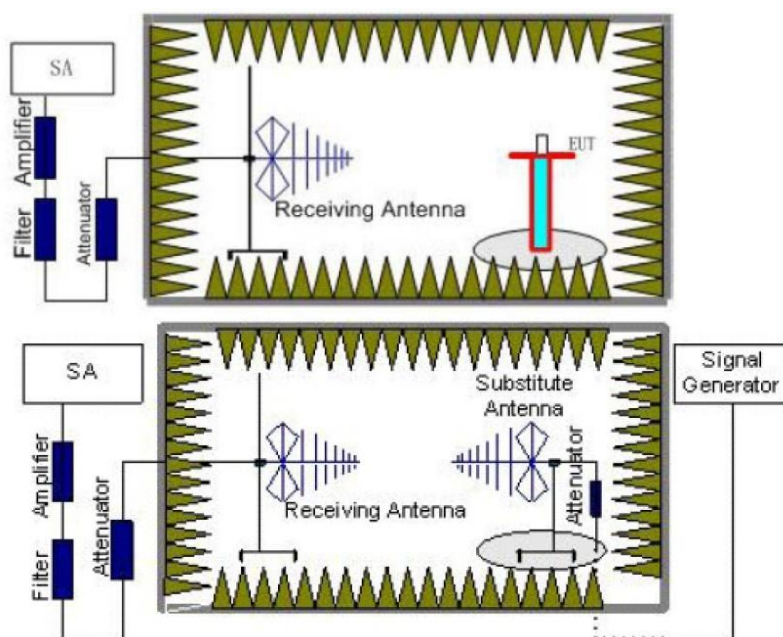
Part 27.53(h):

Except as otherwise specified below, for operations in the 1695-1710 MHz, 1710-1755 MHz, 1755-1780 MHz, 1915-1920 MHz, 1995-2000 MHz, 2000-2020 MHz, 2110-2155 MHz, 2155-2180 MHz, and 2180-2200 bands, the power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) in watts by at least  $43 + 10 \log(P)$  dB.

Part 27.53(m)(4):

For mobile digital stations, the attenuation factor shall be not less than  $40 + 10 \log(P)$  dB on all frequencies between the channel edge and 5 megahertz from the channel edge,  $43 + 10 \log(P)$  dB on all frequencies between 5 megahertz and X megahertz from the channel edge, and  $55 + 10 \log(P)$  dB on all frequencies more than X megahertz from the channel edge, where X is the greater of 6 megahertz or the actual emission bandwidth as defined in paragraph (m)(6) of this section. In addition, the attenuation factor shall not be less than  $43 + 10 \log(P)$  dB on all frequencies between 2490.5 MHz and 2496 MHz and  $55 + 10 \log(P)$  dB at or below 2490.5 MHz. Mobile Satellite Service licensees operating on frequencies below 2495 MHz may also submit a documented interference complaint against BRS licensees operating on channel BRS Channel 1 on the same terms and conditions as adjacent channel BRS or EBS licensees.

#### TEST CONFIGURATION



#### TEST PROCEDURE

1. Place the EUT in the center of the turntable.
  - a) For radiated emissions measurements performed at frequencies less than or equal to 1 GHz, the EUT shall be placed on a RF-transparent table at a nominal height of 80 cm above the reference ground plane
  - b) For radiated measurements performed at frequencies above 1 GHz, the EUT shall be placed on an RF transparent table at a nominal height of 1.5 m above the ground plane.
2. Unless the EUT uses an integral antenna, the EUT shall be terminated with a non-radiating transmitter load. In cases where the EUT uses an adjustable antenna, the antenna shall be adjusted through typical positions and lengths to maximize emissions levels.
3. The EUT shall be tested while operating on the frequency per manufacturer specification. Set the transmitter to operate in continuous transmit mode.
4. Receiver or Spectrum set as follow:  
Below 1GHz, RBW=100kHz, VBW=300kHz, Detector=Peak, Sweep time=Auto  
Above 1GHz, RBW=1MHz, VBW=3MHz, Detector=Peck, Sweep time=Auto
5. Each emission under consideration shall be evaluated:
  - a) Raise and lower the measurement antenna from 1 m to 4 m, as necessary to enable detection of the maximum emission amplitude relative to measurement antenna height.
  - b) Rotate the EUT through 360° to determine the maximum emission level relative to the axial position.
  - c) Return the turntable to the azimuth where the highest emission amplitude level was observed.
  - d) Vary the measurement antenna height again through 1 m to 4 m again to find the height associated with the maximum emission amplitude.
  - e) Record the measured emission amplitude level and frequency
6. Repeat step 5 for each emission frequency with the measurement antenna oriented in both the horizontal and vertical polarizations to determine the orientation that gives the maximum emissions amplitude.
7. Set-up the substitution measurement with the reference point of the substitution antenna located as near as possible to where the center of the EUT radiating element was located during the initial EUT measurement.
8. Maintain the previous measurement instrument settings and test set-up, with the exception that the EUT is removed and replaced by the substitution antenna.
9. Connect a signal generator to the substitution antenna; locate the signal generator so as to minimize any potential influences on the measurement results. Set the signal generator to the frequency where emissions are detected, and set an output power level such that the radiated signal can be detected by the measurement instrument, with sufficient dynamic range relative to the noise floor.
10. For each emission that was detected and measured in the initial test
  - a) Vary the measurement antenna height between 1 m to 4 m to maximize the received (measured) signal amplitude.
  - b) Adjust the signal generator output power level until the amplitude detected by the measurement instrument equals the amplitude level of the emission previously measured directly in step 5 and step 6.
  - c) Record the output power level of the signal generator when equivalence is achieved in step b).
11. Repeat step 8 through step 10 with the measurement antenna oriented in the opposite polarization.
12. Calculate the emission power in dBm referenced to a half-wave dipole using the following equation:  
$$Pe = Ps(\text{dBm}) - \text{cable loss (dB)} + \text{antenna gain (dBd)}$$
  
where  
Pe = equivalent emission power in dBm  
Ps = source (signal generator) power in dBm  
*NOTE—dBd refers to the measured antenna gain in decibels relative to a half-wave dipole.*
13. Correct the antenna gain of the substitution antenna if necessary to reference the emission power to a half-wave dipole. When using measurement antennas with the gain specified in dBi, the equivalent dipole-referenced gain can be determined from:  
$$\text{gain (dBd)} = \text{gain (dBi)} - 2.15 \text{ dB}.$$

If necessary, the antenna gain can be calculated from calibrated antenna factor information

14. Provide the complete measurement results as a part of the test report.

### **TEST MODE**

Please refer to the clause 4.2

### **TEST RESULTS**

☒ **Passed**      ☐ **Not Applicable**

Note: only show the worse case for QPSK modulation.

LTE Band 2									
Test channel:		Low			Polarization:		Horizontal		
Mark	Frequency MHz	Reading dBm	Antenna dB	Cable dB	Preamp dB	Level dBm	Limit dBm	Over limit	Remark
1	70.26	-60.90	16.93	1.55	30.62	-73.04	-13.00	-60.04	Peak
2	143.46	-61.39	17.66	2.26	30.44	-71.91	-13.00	-58.91	Peak
3	4996.69	-60.34	44.35	6.00	40.20	-50.19	-13.00	-37.19	Peak
4	7432.62	-51.10	48.40	7.73	39.91	-34.88	-13.00	-21.88	Peak
5	9298.80	-53.53	49.63	8.52	39.88	-35.26	-13.00	-22.26	Peak
6	11140.85	-64.14	52.93	8.91	40.56	-42.86	-13.00	-29.86	Peak
Test channel:		Low			Polarization:		Vertical		
Mark	Frequency MHz	Reading dBm	Antenna dB	Cable dB	Preamp dB	Level dBm	Limit dBm	Over limit	Remark
1	70.26	-61.76	19.39	1.55	30.62	-71.44	-13.00	-58.44	Peak
2	143.46	-61.52	21.38	2.26	30.44	-68.32	-13.00	-55.32	Peak
3	5574.67	-55.48	43.93	6.48	39.61	-44.68	-13.00	-31.68	Peak
4	7432.62	-50.28	48.53	7.73	39.91	-33.93	-13.00	-20.93	Peak
5	9298.80	-50.42	49.78	8.52	39.88	-32.00	-13.00	-19.00	Peak
6	11140.85	-60.42	52.91	8.91	40.56	-39.16	-13.00	-26.16	Peak

Test channel:		Mid			Polarization:		Horizontal		
Mark	Frequency MHz	Reading dBm	Antenna dB	Cable dB	Preamp dB	Level dBm	Limit dBm	Over limit	Remark
1	143.46	-62.54	17.66	2.26	30.44	-73.06	-13.00	-60.06	Peak
2	400.56	-74.13	25.43	3.95	29.80	-74.55	-13.00	-61.55	Peak
3	3747.66	-58.45	42.24	5.24	40.68	-51.65	-13.00	-38.65	Peak
4	5631.73	-58.84	43.77	6.54	39.53	-48.06	-13.00	-35.06	Peak
5	7508.69	-49.78	48.05	7.79	39.93	-33.87	-13.00	-20.87	Peak
6	9393.97	-54.49	50.01	8.56	39.84	-35.76	-13.00	-22.76	Peak
Test channel:		Mid			Polarization:		Vertical		
Mark	Frequency MHz	Reading dBm	Antenna dB	Cable dB	Preamp dB	Level dBm	Limit dBm	Over limit	Remark
1	85.85	-59.40	24.05	1.73	30.70	-64.32	-13.00	-51.32	Peak
2	143.46	-61.11	21.38	2.26	30.44	-67.91	-13.00	-54.91	Peak
3	5631.73	-54.88	43.94	6.54	39.53	-43.93	-13.00	-30.93	Peak
4	7508.69	-45.64	48.40	7.79	39.93	-29.38	-13.00	-16.38	Peak
5	9393.97	-53.25	49.83	8.56	39.84	-34.70	-13.00	-21.70	Peak
6	11254.86	-62.87	53.01	9.00	40.45	-41.31	-13.00	-28.31	Peak

Test channel:		High			Polarization:		Horizontal		
Mark	Frequency MHz	Reading dBm	Antenna dB	Cable dB	Preamp dB	Level dBm	Limit dBm	Over limit	Remark
1	40.74	-65.62	27.43	1.16	30.96	-67.99	-13.00	-54.99	Peak
2	143.46	-62.86	17.66	2.26	30.44	-73.38	-13.00	-60.38	Peak
3	4996.69	-60.93	44.35	6.00	40.20	-50.78	-13.00	-37.78	Peak
4	7585.53	-54.92	47.70	7.86	39.95	-39.31	-13.00	-26.31	Peak
5	9490.10	-56.22	49.93	8.60	39.80	-37.49	-13.00	-24.49	Peak
6	11283.55	-65.64	52.95	9.03	40.42	-44.08	-13.00	-31.08	Peak
Test channel:		High			Polarization:		Vertical		
Mark	Frequency MHz	Reading dBm	Antenna dB	Cable dB	Preamp dB	Level dBm	Limit dBm	Over limit	Remark
1	63.22	-66.38	22.27	1.46	30.67	-73.32	-13.00	-60.32	Peak
2	143.46	-63.63	21.38	2.26	30.44	-70.43	-13.00	-57.43	Peak
3	5689.36	-55.06	44.00	6.60	39.45	-43.91	-13.00	-30.91	Peak
4	7585.53	-50.98	48.27	7.86	39.95	-34.80	-13.00	-21.80	Peak
5	9490.10	-49.51	49.73	8.60	39.80	-30.98	-13.00	-17.98	Peak
6	11545.04	-66.12	53.19	9.25	40.26	-43.94	-13.00	-30.94	Peak



LTE Band 4									
Test channel:		Low			Polarization:		Horizontal		
Mark	Frequency MHz	Reading dBm	Antenna dB	Cable dB	Preamp dB	Level dBm	Limit dBm	Over limit	Remark
1	40.88	-66.44	27.37	1.16	30.96	-68.87	-13.00	-55.87	Peak
2	143.46	-64.23	17.66	2.26	30.44	-74.75	-13.00	-61.75	Peak
3	3428.21	-54.40	39.99	4.93	40.85	-50.33	-13.00	-37.33	Peak
4	6868.65	-62.96	47.06	7.40	39.40	-47.90	-13.00	-34.90	Peak
5	8593.22	-49.86	47.37	8.27	40.16	-34.38	-13.00	-21.38	Peak
6	10295.50	-64.20	51.17	8.84	40.08	-44.27	-13.00	-31.27	Peak
Test channel:		Low			Polarization:		Vertical		
Mark	Frequency MHz	Reading dBm	Antenna dB	Cable dB	Preamp dB	Level dBm	Limit dBm	Over limit	Remark
1	143.46	-63.27	21.38	2.26	30.44	-70.07	-13.00	-57.07	Peak
2	374.67	-70.36	24.67	3.80	30.16	-72.05	-13.00	-59.05	Peak
3	3428.21	-53.82	40.01	4.93	40.85	-49.73	-13.00	-36.73	Peak
4	6868.65	-53.68	47.39	7.40	39.40	-38.29	-13.00	-25.29	Peak
5	8593.22	-59.22	47.74	8.27	40.16	-43.37	-13.00	-30.37	Peak
6	10295.50	-61.18	51.59	8.84	40.08	-40.83	-13.00	-27.83	Peak

Test channel:		Mid			Polarization:		Horizontal		
Mark	Frequency MHz	Reading dBm	Antenna dB	Cable dB	Preamp dB	Level dBm	Limit dBm	Over limit	Remark
1	40.74	-62.10	27.43	1.16	30.96	-64.47	-13.00	-51.47	Peak
2	374.67	-67.97	24.80	3.80	30.16	-69.53	-13.00	-56.53	Peak
3	4996.69	-60.55	44.35	6.00	40.20	-50.40	-13.00	-37.40	Peak
4	6921.30	-62.95	47.30	7.39	39.43	-47.69	-13.00	-34.69	Peak
5	9660.72	-66.74	50.05	8.60	39.83	-47.92	-13.00	-34.92	Peak
6	11457.21	-66.44	52.97	9.17	40.24	-44.54	-13.00	-31.54	Peak
Test channel:		Mid			Polarization:		Vertical		
Mark	Frequency MHz	Reading dBm	Antenna dB	Cable dB	Preamp dB	Level dBm	Limit dBm	Over limit	Remark
1	39.75	-67.45	21.03	1.15	30.96	-76.23	-13.00	-63.23	Peak
2	143.46	-62.93	21.38	2.26	30.44	-69.73	-13.00	-56.73	Peak
3	4996.69	-61.12	44.50	6.00	40.20	-50.82	-13.00	-37.82	Peak
4	6921.30	-59.04	47.37	7.39	39.43	-43.71	-13.00	-30.71	Peak
5	8659.10	-59.85	48.28	8.29	40.14	-43.42	-13.00	-30.42	Peak
6	10374.42	-65.03	51.87	8.90	40.12	-44.38	-13.00	-31.38	Peak

Test channel:		High			Polarization:		Horizontal		
Mark	Frequency MHz	Reading dBm	Antenna dB	Cable dB	Preamp dB	Level dBm	Limit dBm	Over limit	Remark
1	41.75	-66.42	26.96	1.18	30.95	-69.23	-13.00	-56.23	Peak
2	598.09	-74.49	27.78	4.92	29.54	-71.33	-13.00	-58.33	Peak
3	3480.97	-54.52	40.74	5.03	40.91	-49.66	-13.00	-36.66	Peak
4	5217.66	-57.31	43.96	6.18	39.94	-47.11	-13.00	-34.11	Peak
5	6974.36	-51.84	47.53	7.38	39.46	-36.39	-13.00	-23.39	Peak
6	8703.29	-57.35	48.14	8.31	40.12	-41.02	-13.00	-28.02	Peak
Test channel:		High			Polarization:		Vertical		
Mark	Frequency MHz	Reading dBm	Antenna dB	Cable dB	Preamp dB	Level dBm	Limit dBm	Over limit	Remark
1	41.75	-65.64	21.29	1.18	30.95	-74.12	-13.00	-61.12	Peak
2	143.46	-62.37	21.38	2.26	30.44	-69.17	-13.00	-56.17	Peak
3	3480.97	-56.34	40.83	5.03	40.91	-51.39	-13.00	-38.39	Peak
4	6974.36	-55.93	47.36	7.38	39.46	-40.65	-13.00	-27.65	Peak
5	8703.29	-60.86	48.68	8.31	40.12	-43.99	-13.00	-30.99	Peak
6	10453.95	-59.96	52.16	8.96	40.17	-39.01	-13.00	-26.01	Peak



LTE Band 5									
Test channel:		Low			Polarization:		Horizontal		
Mark	Frequency MHz	Reading dBm	Antenna dB	Cable dB	Preamp dB	Level dBm	Limit dBm	Over limit	Remark
1	31.96	-65.34	26.49	1.02	30.99	-68.82	-13.00	-55.82	Peak
2	143.46	-64.41	17.66	2.26	30.44	-74.93	-13.00	-61.93	Peak
3	4159.93	-64.28	42.07	5.65	40.29	-56.85	-13.00	-43.85	Peak
4	5504.17	-66.35	43.89	6.40	39.71	-55.77	-13.00	-42.77	Peak
5	8002.06	-66.39	48.12	8.04	39.94	-50.17	-13.00	-37.17	Peak
6	10916.26	-67.63	52.71	8.83	40.62	-46.71	-13.00	-33.71	Peak
Test channel:		Low			Polarization:		Vertical		
Mark	Frequency MHz	Reading dBm	Antenna dB	Cable dB	Preamp dB	Level dBm	Limit dBm	Over limit	Remark
1	143.46	-65.19	21.38	2.26	30.44	-71.99	-13.00	-58.99	Peak
2	374.67	-73.17	24.67	3.80	30.16	-74.86	-13.00	-61.86	Peak
3	3625.67	-64.76	42.54	5.20	40.88	-57.90	-13.00	-44.90	Peak
4	5689.36	-67.09	44.00	6.60	39.45	-55.94	-13.00	-42.94	Peak
5	7470.56	-66.95	48.47	7.76	39.92	-50.64	-13.00	-37.64	Peak
6	10723.47	-68.28	52.53	8.91	40.42	-47.26	-13.00	-34.26	Peak

Test channel:		Mid			Polarization:		Horizontal		
Mark	Frequency MHz	Reading dBm	Antenna dB	Cable dB	Preamp dB	Level dBm	Limit dBm	Over limit	Remark
1	33.10	-59.55	26.69	1.04	30.99	-62.81	-13.00	-49.81	Peak
2	143.46	-65.07	17.66	2.26	30.44	-75.59	-13.00	-62.59	Peak
3	4159.93	-57.75	42.07	5.65	40.29	-50.32	-13.00	-37.32	Peak
4	4996.69	-60.87	44.35	6.00	40.20	-50.72	-13.00	-37.72	Peak
5	7489.60	-62.70	48.13	7.78	39.93	-46.72	-13.00	-33.72	Peak
6	11341.14	-67.49	52.96	9.07	40.36	-45.82	-13.00	-32.82	Peak
Test channel:		Mid			Polarization:		Vertical		
Mark	Frequency MHz	Reading dBm	Antenna dB	Cable dB	Preamp dB	Level dBm	Limit dBm	Over limit	Remark
1	33.93	-59.23	19.23	1.05	30.98	-69.93	-13.00	-56.93	Peak
2	143.46	-65.55	21.38	2.26	30.44	-72.35	-13.00	-59.35	Peak
3	4159.93	-55.45	42.33	5.65	40.29	-47.76	-13.00	-34.76	Peak
4	4996.69	-61.14	44.50	6.00	40.20	-50.84	-13.00	-37.84	Peak
5	7489.60	-61.42	48.44	7.78	39.93	-45.13	-13.00	-32.13	Peak
6	10400.86	-67.03	51.97	8.92	40.14	-46.28	-13.00	-33.28	Peak

Test channel:		High			Polarization:		Horizontal		
Mark	Frequency MHz	Reading dBm	Antenna dB	Cable dB	Preamp dB	Level dBm	Limit dBm	Over limit	Remark
1	143.46	-66.23	17.66	2.26	30.44	-76.75	-13.00	-63.75	Peak
2	374.67	-71.93	24.80	3.80	30.16	-73.49	-13.00	-60.49	Peak
3	4366.07	-64.75	42.82	5.89	40.56	-56.60	-13.00	-43.60	Peak
4	7135.98	-67.34	47.79	7.45	39.61	-51.71	-13.00	-38.71	Peak
5	7941.19	-66.41	48.06	8.03	39.95	-50.27	-13.00	-37.27	Peak
6	10453.95	-67.71	51.57	8.96	40.17	-47.35	-13.00	-34.35	Peak
Test channel:		High			Polarization:		Vertical		
Mark	Frequency MHz	Reading dBm	Antenna dB	Cable dB	Preamp dB	Level dBm	Limit dBm	Over limit	Remark
1	40.74	-68.86	21.18	1.16	30.96	-77.48	-13.00	-64.48	Peak
2	143.46	-66.87	21.38	2.26	30.44	-73.67	-13.00	-60.67	Peak
3	4159.93	-63.46	42.33	5.65	40.29	-55.77	-13.00	-42.77	Peak
4	6063.19	-67.11	45.00	6.69	39.21	-54.63	-13.00	-41.63	Peak
5	7489.60	-65.31	48.44	7.78	39.93	-49.02	-13.00	-36.02	Peak
6	10641.89	-68.47	52.46	8.94	40.34	-47.41	-13.00	-34.41	Peak

LTE Band 7									
Test channel:		Low			Polarization:		Horizontal		
Mark	Frequency MHz	Reading dBm	Antenna dB	Cable dB	Preamp dB	Level dBm	Limit dBm	Over limit	Remark
1	143.46	-61.10	17.66	2.26	30.44	-71.62	-25.00	-46.62	Peak
2	400.56	-74.12	25.43	3.95	29.80	-74.54	-25.00	-49.54	Peak
3	5009.43	-49.14	44.34	6.01	40.19	-38.98	-25.00	-13.98	Peak
4	6527.71	-60.69	46.35	7.14	39.24	-46.44	-25.00	-21.44	Peak
5	7527.83	-47.92	47.96	7.81	39.94	-32.09	-25.00	-7.09	Peak
6	10036.73	-57.24	50.50	8.63	39.92	-38.03	-25.00	-13.03	Peak
Test channel:		Low			Polarization:		Vertical		
Mark	Frequency MHz	Reading dBm	Antenna dB	Cable dB	Preamp dB	Level dBm	Limit dBm	Over limit	Remark
1	143.46	-61.86	21.38	2.26	30.44	-68.66	-25.00	-43.66	Peak
2	343.14	-73.64	24.72	3.63	29.99	-75.28	-25.00	-50.28	Peak
3	5009.43	-51.13	44.48	6.01	40.19	-40.83	-25.00	-15.83	Peak
4	6527.71	-62.36	46.82	7.14	39.24	-47.64	-25.00	-22.64	Peak
5	7527.83	-50.45	48.37	7.81	39.94	-34.21	-25.00	-9.21	Peak
6	10036.73	-49.87	50.64	8.63	39.92	-30.52	-25.00	-5.52	Peak

Test channel:		Mid			Polarization:		Horizontal		
Mark	Frequency MHz	Reading dBm	Antenna dB	Cable dB	Preamp dB	Level dBm	Limit dBm	Over limit	Remark
1	143.46	-61.62	17.66	2.26	30.44	-72.14	-25.00	-47.14	Peak
2	400.56	-73.25	25.43	3.95	29.80	-73.67	-25.00	-48.67	Peak
3	5060.69	-48.92	44.23	6.05	40.13	-38.77	-25.00	-13.77	Peak
4	6561.03	-61.14	46.41	7.19	39.26	-46.80	-25.00	-21.80	Peak
5	7604.87	-49.89	47.64	7.87	39.96	-34.34	-25.00	-9.34	Peak
6	10139.45	-54.88	50.76	8.71	39.98	-35.39	-25.00	-10.39	Peak
Test channel:		Mid			Polarization:		Vertical		
Mark	Frequency MHz	Reading dBm	Antenna dB	Cable dB	Preamp dB	Level dBm	Limit dBm	Over limit	Remark
1	143.46	-62.10	21.38	2.26	30.44	-68.90	-25.00	-43.90	Peak
2	235.54	-69.12	19.98	2.95	30.22	-76.41	-25.00	-51.41	Peak
3	5060.69	-50.51	44.33	6.05	40.13	-40.26	-25.00	-15.26	Peak
4	6561.03	-62.57	46.85	7.19	39.26	-47.79	-25.00	-22.79	Peak
5	7604.87	-52.65	48.26	7.87	39.96	-36.48	-25.00	-11.48	Peak
6	10139.45	-50.68	51.02	8.71	39.98	-30.93	-25.00	-5.93	Peak

Test channel:		High			Polarization:		Horizontal		
Mark	Frequency MHz	Reading dBm	Antenna dB	Cable dB	Preamp dB	Level dBm	Limit dBm	Over limit	Remark
1	143.46	-60.97	17.66	2.26	30.44	-71.49	-25.00	-46.49	Peak
2	449.85	-67.87	25.95	4.20	29.90	-67.62	-25.00	-42.62	Peak
3	5112.49	-49.52	44.13	6.09	40.07	-39.37	-25.00	-14.37	Peak
4	6577.75	-64.47	46.44	7.22	39.26	-50.07	-25.00	-25.07	Peak
5	7682.70	-51.99	47.73	7.94	39.98	-36.30	-25.00	-11.30	Peak
6	10243.22	-55.13	51.03	8.79	40.05	-35.36	-25.00	-10.36	Peak

Test channel:		High			Polarization:		Vertical		
Mark	Frequency MHz	Reading dBm	Antenna dB	Cable dB	Preamp dB	Level dBm	Limit dBm	Over limit	Remark
1	41.75	-67.81	21.29	1.18	30.95	-76.29	-25.00	-51.29	Peak
2	143.46	-69.25	21.38	2.26	30.44	-76.05	-25.00	-51.05	Peak
3	5112.49	-50.58	44.18	6.09	40.07	-40.38	-25.00	-15.38	Peak
4	6577.75	-63.40	46.86	7.22	39.26	-48.58	-25.00	-23.58	Peak
5	7682.70	-54.17	48.38	7.94	39.98	-37.83	-25.00	-12.83	Peak
6	10243.22	-50.32	51.40	8.79	40.05	-30.18	-25.00	-5.18	Peak



LTE Band 12									
Test channel:		Low			Polarization:		Horizontal		
Mark	Frequency MHz	Reading dBm	Antenna dB	Cable dB	Preamp dB	Level dBm	Limit dBm	Over limit	Remark
1	60.40	-97.31	24.20	1.43	0.00	-71.68	-13.00	-58.68	Peak
2	462.68	-95.03	25.76	4.27	0.00	-65.00	-13.00	-52.00	Peak
3	4688.62	-64.77	43.55	5.86	40.33	-55.69	-13.00	-42.69	Peak
4	6331.33	-67.45	45.85	6.85	39.20	-53.95	-13.00	-40.95	Peak
5	7981.72	-66.69	48.11	8.03	39.94	-50.49	-13.00	-37.49	Peak
6	10971.98	-68.17	52.84	8.81	40.67	-47.19	-13.00	-34.19	Peak
Test channel:		Low			Polarization:		Vertical		
Mark	Frequency MHz	Reading dBm	Antenna dB	Cable dB	Preamp dB	Level dBm	Limit dBm	Over limit	Remark
1	103.44	-96.46	25.28	1.90	0.00	-69.28	-13.00	-56.28	Peak
2	428.24	-95.35	25.47	4.09	0.00	-65.79	-13.00	-52.79	Peak
3	4065.71	-63.69	41.86	5.52	40.25	-56.56	-13.00	-43.56	Peak
4	6267.19	-67.35	45.93	6.81	39.20	-53.81	-13.00	-40.81	Peak
5	7781.10	-67.08	48.53	8.00	40.00	-50.55	-13.00	-37.55	Peak
6	11341.14	-69.00	53.08	9.07	40.36	-47.21	-13.00	-34.21	Peak

Test channel:		Mid			Polarization:		Horizontal		
Mark	Frequency MHz	Reading dBm	Antenna dB	Cable dB	Preamp dB	Level dBm	Limit dBm	Over limit	Remark
1	56.50	-95.17	24.19	1.38	0.00	-69.60	-13.00	-56.60	Peak
2	428.24	-94.30	26.01	4.09	0.00	-64.20	-13.00	-51.20	Peak
3	5338.58	-64.56	44.04	6.28	39.83	-54.07	-13.00	-41.07	Peak
4	7081.70	-65.79	47.74	7.40	39.55	-50.20	-13.00	-37.20	Peak
5	9275.16	-65.79	49.53	8.51	39.89	-47.64	-13.00	-34.64	Peak
6	11112.52	-67.59	52.93	8.89	40.59	-46.36	-13.00	-33.36	Peak
Test channel:		Mid			Polarization:		Vertical		
Mark	Frequency MHz	Reading dBm	Antenna dB	Cable dB	Preamp dB	Level dBm	Limit dBm	Over limit	Remark
1	96.76	-95.45	25.79	1.84	0.00	-67.82	-13.00	-54.82	Peak
2	431.26	-93.71	25.51	4.10	0.00	-64.10	-13.00	-51.10	Peak
3	4996.69	-61.82	44.50	6.00	40.20	-51.52	-13.00	-38.52	Peak
4	7451.57	-64.82	48.50	7.75	39.92	-48.49	-13.00	-35.49	Peak
5	9204.60	-66.97	49.73	8.48	39.92	-48.68	-13.00	-35.68	Peak
6	10480.59	-67.02	52.25	8.98	40.19	-45.98	-13.00	-32.98	Peak

Test channel:		High			Polarization:		Horizontal		
Mark	Frequency MHz	Reading dBm	Antenna dB	Cable dB	Preamp dB	Level dBm	Limit dBm	Over limit	Remark
1	67.36	-95.87	18.86	1.51	0.00	-75.50	-13.00	-62.50	Peak
2	414.90	-95.35	25.84	4.01	0.00	-65.50	-13.00	-52.50	Peak
3	4455.89	-65.06	43.08	5.88	40.48	-56.58	-13.00	-43.58	Peak
4	6696.01	-64.96	46.61	7.42	39.30	-50.23	-13.00	-37.23	Peak
5	9834.41	-67.42	50.57	8.60	39.87	-48.12	-13.00	-35.12	Peak
6	11370.05	-68.21	52.96	9.10	40.33	-46.48	-13.00	-33.48	Peak
Test channel:		High			Polarization:		Vertical		
Mark	Frequency MHz	Reading dBm	Antenna dB	Cable dB	Preamp dB	Level dBm	Limit dBm	Over limit	Remark
1	97.78	-96.98	25.78	1.85	0.00	-69.35	-13.00	-56.35	Peak
2	411.99	-95.06	25.32	4.00	0.00	-65.74	-13.00	-52.74	Peak
3	4570.77	-64.52	43.43	5.87	40.39	-55.61	-13.00	-42.61	Peak
4	4996.69	-64.56	44.50	6.00	40.20	-54.26	-13.00	-41.26	Peak
5	7451.57	-66.77	48.50	7.75	39.92	-50.44	-13.00	-37.44	Peak
6	10480.59	-68.72	52.25	8.98	40.19	-47.68	-13.00	-34.68	Peak

## 5.2. Radiated Spurious Emission

### LIMIT

Part 22.917&Part 24.238:

The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least  $43 + 10 \log(P)$  dB.

Part 27.53(g):

For operations in the 600 MHz band and the 698-746 MHz band, the power of any emission outside a licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, by at least  $43 + 10 \log(P)$  dB.

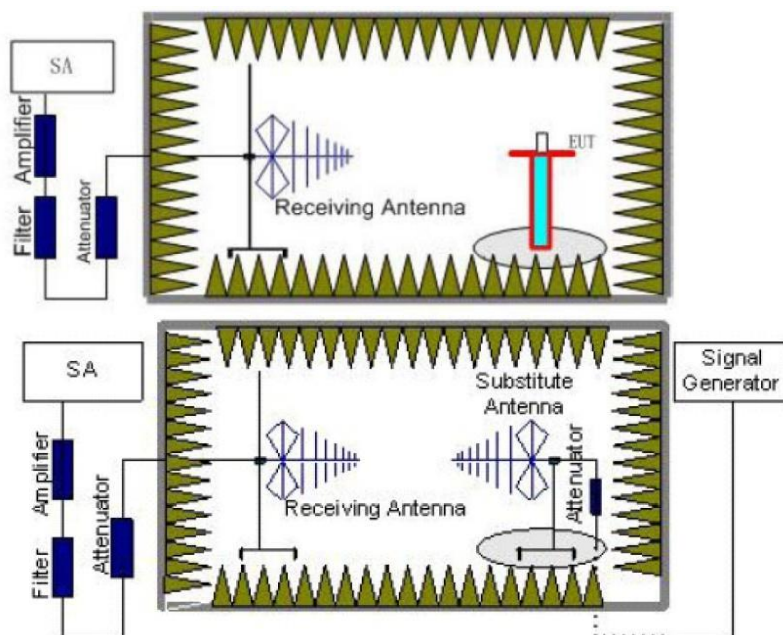
Part 27.53(h):

Except as otherwise specified below, for operations in the 1695-1710 MHz, 1710-1755 MHz, 1755-1780 MHz, 1915-1920 MHz, 1995-2000 MHz, 2000-2020 MHz, 2110-2155 MHz, 2155-2180 MHz, and 2180-2200 bands, the power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) in watts by at least  $43 + 10 \log(P)$  dB.

Part 27.53(m)(4):

For mobile digital stations, the attenuation factor shall be not less than  $40 + 10 \log(P)$  dB on all frequencies between the channel edge and 5 megahertz from the channel edge,  $43 + 10 \log(P)$  dB on all frequencies between 5 megahertz and X megahertz from the channel edge, and  $55 + 10 \log(P)$  dB on all frequencies more than X megahertz from the channel edge, where X is the greater of 6 megahertz or the actual emission bandwidth as defined in paragraph (m)(6) of this section. In addition, the attenuation factor shall not be less than  $43 + 10 \log(P)$  dB on all frequencies between 2490.5 MHz and 2496 MHz and  $55 + 10 \log(P)$  dB at or below 2490.5 MHz. Mobile Satellite Service licensees operating on frequencies below 2495 MHz may also submit a documented interference complaint against BRS licensees operating on channel BRS Channel 1 on the same terms and conditions as adjacent channel BRS or EBS licensees.

### TEST CONFIGURATION



### TEST PROCEDURE

1. Place the EUT in the center of the turntable.
  - a) For radiated emissions measurements performed at frequencies less than or equal to 1 GHz, the EUT shall be placed on a RF-transparent table at a nominal height of 80 cm above the reference

- ground plane
- b) For radiated measurements performed at frequencies above 1 GHz, the EUT shall be placed on an RF transparent table at a nominal height of 1.5 m above the ground plane.
2. Unless the EUT uses an integral antenna, the EUT shall be terminated with a non-radiating transmitter load. In cases where the EUT uses an adjustable antenna, the antenna shall be adjusted through typical positions and lengths to maximize emissions levels.
3. The EUT shall be tested while operating on the frequency per manufacturer specification. Set the transmitter to operate in continuous transmit mode.
4. Each emission under consideration shall be evaluated:
- a) Raise and lower the measurement antenna from 1 m to 4 m, as necessary to enable detection of the maximum emission amplitude relative to measurement antenna height.
- b) Rotate the EUT through 360° to determine the maximum emission level relative to the axial position.
- c) Return the turntable to the azimuth where the highest emission amplitude level was observed.
- d) Vary the measurement antenna height again through 1 m to 4 m again to find the height associated with the maximum emission amplitude.
- e) Record the measured emission amplitude level and frequency
5. Repeat step 5 for each emission frequency with the measurement antenna oriented in both the horizontal and vertical polarizations to determine the orientation that gives the maximum emissions amplitude.
6. Set-up the substitution measurement with the reference point of the substitution antenna located as near as possible to where the center of the EUT radiating element was located during the initial EUT measurement.
7. Maintain the previous measurement instrument settings and test set-up, with the exception that the EUT is removed and replaced by the substitution antenna.
8. Connect a signal generator to the substitution antenna; locate the signal generator so as to minimize any potential influences on the measurement results. Set the signal generator to the frequency where emissions are detected, and set an output power level such that the radiated signal can be detected by the measurement instrument, with sufficient dynamic range relative to the noise floor.
9. For each emission that was detected and measured in the initial test
- a) Vary the measurement antenna height between 1 m to 4 m to maximize the received (measured) signal amplitude.
- b) Adjust the signal generator output power level until the amplitude detected by the measurement instrument equals the amplitude level of the emission previously measured directly in step 5 and step 6.
- c) Record the output power level of the signal generator when equivalence is achieved in step b).
10. Repeat step 8 through step 10 with the measurement antenna oriented in the opposite polarization.
11. Calculate the emission power in dBm referenced to a half-wave dipole using the following equation:  
$$P_e = P_s(\text{dBm}) - \text{cable loss (dB)} + \text{antenna gain (dBd)}$$
  
where  
 $P_e$  = equivalent emission power in dBm  
 $P_s$  = source (signal generator) power in dBm  
*NOTE—dBd refers to the measured antenna gain in decibels relative to a half-wave dipole.*
12. Correct the antenna gain of the substitution antenna if necessary to reference the emission power to a half-wave dipole. When using measurement antennas with the gain specified in dBi, the equivalent dipole-referenced gain can be determined from:  
$$\text{gain (dBd)} = \text{gain (dBi)} - 2.15 \text{ dB}.$$
  
If necessary, the antenna gain can be calculated from calibrated antenna factor information
13. Provide the complete measurement results as a part of the test report.

## **TEST MODE**

Please refer to the clause 4.2



**TEST RESULTS**

☒ **Passed**      ☐ **Not Applicable**

Note: only show the worse case for QPSK modulation.

LTE Band 2									
Test channel:		Low			Polarization:		Horizontal		
Mark	Frequency MHz	Reading dBm	Antenna dB	Cable dB	Preamp dB	Level dBm	Limit dBm	Over limit	Remark
1	1850.00	-65.32	37.34	3.54	0.00	-24.44	-13.00	-11.44	Peak
Test channel:		Low			Polarization:		Vertical		
Mark	Frequency MHz	Reading dBm	Antenna dB	Cable dB	Preamp dB	Level dBm	Limit dBm	Over limit	Remark
1	1850.00	-56.69	36.95	3.54	0.00	-16.20	-13.00	-3.20	Peak

Test channel:		High			Polarization:		Horizontal		
Mark	Frequency MHz	Reading dBm	Antenna dB	Cable dB	Preamp dB	Level dBm	Limit dBm	Over limit	Remark
1	1910.00	-65.55	38.07	3.59	0.00	-23.89	-13.00	-10.89	Peak
Test channel:		High			Polarization:		Vertical		
Mark	Frequency MHz	Reading dBm	Antenna dB	Cable dB	Preamp dB	Level dBm	Limit dBm	Over limit	Remark
1	1910.00	-57.17	37.51	3.59	0.00	-16.07	-13.00	-3.07	Peak

LTE Band 4									
Test channel:		Low			Polarization:		Horizontal		
Mark	Frequency MHz	Reading dBm	Antenna dB	Cable dB	Preamp dB	Level dBm	Limit dBm	Over limit	Remark
1	1709.99	-65.34	36.39	3.37	0.00	-25.58	-13.00	-12.58	Peak
Test channel:		Low			Polarization:		Vertical		
Mark	Frequency MHz	Reading dBm	Antenna dB	Cable dB	Preamp dB	Level dBm	Limit dBm	Over limit	Remark
1	1709.99	-53.56	36.26	3.37	0.00	-13.93	-13.00	-0.93	Peak

Test channel:		High			Polarization:		Horizontal		
Mark	Frequency MHz	Reading dBm	Antenna dB	Cable dB	Preamp dB	Level dBm	Limit dBm	Over limit	Remark
1	1754.99	-64.98	36.56	3.43	0.00	-24.99	-13.00	-11.99	Peak
Test channel:		High			Polarization:		Vertical		
Mark	Frequency MHz	Reading dBm	Antenna dB	Cable dB	Preamp dB	Level dBm	Limit dBm	Over limit	Remark
1	1754.99	-55.50	36.37	3.43	0.00	-15.70	-13.00	-2.70	Peak

LTE Band 5									
Test channel:		Low			Polarization:		Horizontal		
Mark	Frequency MHz	Reading dBm	Antenna dB	Cable dB	Preamp dB	Level dBm	Limit dBm	Over limit	Remark
1	823.99	-63.49	29.93	5.89	0.00	-27.67	-13.00	-14.67	Peak
Test channel:		Low			Polarization:		Vertical		
Mark	Frequency MHz	Reading dBm	Antenna dB	Cable dB	Preamp dB	Level dBm	Limit dBm	Over limit	Remark
1	823.99	-68.84	29.80	5.89	0.00	-33.15	-13.00	-20.15	Peak

Test channel:		High			Polarization:		Horizontal		
Mark	Frequency MHz	Reading dBm	Antenna dB	Cable dB	Preamp dB	Level dBm	Limit dBm	Over limit	Remark
1	849.00	-67.18	29.77	6.00	0.00	-31.41	-13.00	-18.41	Peak
Test channel:		High			Polarization:		Vertical		
Mark	Frequency MHz	Reading dBm	Antenna dB	Cable dB	Preamp dB	Level dBm	Limit dBm	Over limit	Remark
1	849.00	-67.35	29.83	6.00	0.00	-31.52	-13.00	-18.52	Peak

LTE Band 7									
Test channel:		Low			Polarization:		Horizontal		
Mark	Frequency MHz	Reading dBm	Antenna dB	Cable dB	Preamp dB	Level dBm	Limit dBm	Over limit	Remark
1	2494.00	-79.40	39.31	4.19	0.00	-35.90	-25.00	-10.90	Peak
2	2495.00	-77.80	39.30	4.19	0.00	-34.31	-13.00	-21.31	Peak
3	2500.00	-71.82	39.27	4.20	0.00	-28.35	-10.00	-18.35	Peak
Test channel:		Low			Polarization:		Vertical		
Mark	Frequency MHz	Reading dBm	Antenna dB	Cable dB	Preamp dB	Level dBm	Limit dBm	Over limit	Remark
1	2494.00	-73.43	39.24	4.19	0.00	-30.00	-25.00	-5.00	Peak
2	2495.00	-71.33	39.24	4.19	0.00	-27.90	-13.00	-14.90	Peak
3	2500.00	-66.45	39.23	4.20	0.00	-23.02	-10.00	-13.02	Peak

Test channel:		High			Polarization:		Horizontal		
Mark	Frequency MHz	Reading dBm	Antenna dB	Cable dB	Preamp dB	Level dBm	Limit dBm	Over limit	Remark
1	2570.03	-69.33	38.90	4.24	0.00	-26.19	-10.00	-16.19	Peak
2	2575.06	-75.61	38.88	4.24	0.00	-32.49	-13.00	-19.49	Peak
3	2576.04	-75.07	38.87	4.24	0.00	-31.96	-25.00	-6.96	Peak
Test channel:		High			Polarization:		Vertical		
Mark	Frequency MHz	Reading dBm	Antenna dB	Cable dB	Preamp dB	Level dBm	Limit dBm	Over limit	Remark
1	2570.03	-65.04	39.17	4.24	0.00	-21.63	-10.00	-11.63	Peak
2	2575.06	-78.28	39.17	4.24	0.00	-34.87	-13.00	-21.87	Peak
3	2576.04	-79.51	39.17	4.24	0.00	-36.10	-25.00	-11.10	Peak

LTE Band 12									
Test channel:		Low			Polarization:		Horizontal		
Mark	Frequency MHz	Reading dBm	Antenna dB	Cable dB	Preamp dB	Level dBm	Limit dBm	Over limit	Remark
1	699.01	-64.60	28.19	5.36	0.00	-31.05	-13.00	-18.05	Peak
Test channel:		Low			Polarization:		Vertical		
Mark	Frequency MHz	Reading dBm	Antenna dB	Cable dB	Preamp dB	Level dBm	Limit dBm	Over limit	Remark
1	699.01	-66.27	28.48	5.36	0.00	-32.43	-13.00	-19.43	Peak

Test channel:		High			Polarization:		Horizontal		
Mark	Frequency MHz	Reading dBm	Antenna dB	Cable dB	Preamp dB	Level dBm	Limit dBm	Over limit	Remark
1	716.01	-62.31	28.42	5.43	0.00	-28.46	-13.00	-15.46	Peak
Test channel:		High			Polarization:		Vertical		
Mark	Frequency MHz	Reading dBm	Antenna dB	Cable dB	Preamp dB	Level dBm	Limit dBm	Over limit	Remark
1	716.01	-64.22	28.88	5.43	0.00	-29.91	-13.00	-16.91	Peak

-----End of the report-----