Shenzhen Huatongwei International Inspection Co.,Ltd.
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FCC REPORT

Report Reference No. ..... :	**CHTEW21070220** Report Verification:
Project No..... :	**SHT2104128003EW**
FCC ID ..... :	**2AY5M-E3PDA**
Applicant's name ..... :	**Fuzhou Soarfree Information Technology Co., Ltd.**
Address..... :	Office 426，Floor 4,Building 3,Plot A1,Fuzhou Zhengrong Fortune Center,28 Xinbao Road,Shangjie Town,Minhou County,Fuzhou,Fujian
Test item description ..... :	**New Mobile Computer**
Trade Mark ..... :	-
Model/Type reference..... :	E3PDA
Listed Model(s) ..... :	-
Standard ..... :	**FCC CFR Title 47 Part 2** **FCC CFR Title 47 Part 22** **FCC CFR Title 47 Part 27**
Date of receipt of test sample..... :	Jun. 22, 2021
Date of testing..... :	Jun. 23, 2021- Jul. 29, 2021
Date of issue..... :	Jul. 30, 2021
**Result..... ..... : **	**Pass**

Compiled by (position+printedname+signature)... :	File administrators Silvia Li	Silvia Li
Supervised by (position+printedname+signature).... :	Project Engineer Aaron Fang	Aaron.Fang
Approved by (position+printedname+signature).... :	Manager Hans Hu	Hans Hu

Testing Laboratory Name ..... :	**Shenzhen Huatongwei International Inspection Co., Ltd.**
Address..... :	1/F, Bldg 3, Hongfa Hi-tech Industrial Park, Genyu Road, Tianliao, Gongming, Shenzhen, China

Contents

1. TEST STANDARDS AND REPORT VERSION

1.1. Applicable Standards

The tests were performed according to following standards:

FCC Rules Part 2: FREQUENCY ALLOCATIONS AND RADIO TREATY MATTERS; GENERAL RULES AND REGULATIONS
FCC Rules Part 22: PUBLIC MOBILE SERVICES
FCC Rules 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	2021-07-30	Original

2. Test Description

Test Item	Section in CFR 47	Result	Test Engineer
Conducted Output Power	Part 2.1046 Part 22.913(a) Part 27.50	Pass	Jiongsheng Feng
Peak-to-Average Ratio	Part 24.232 Part 27.50	Pass	Jiongsheng Feng
99% Occupied Bandwidth & 26 dB Bandwidth	Part 2.1049 Part 22.917(b) Part 27.53	Pass	Jiongsheng Feng
Band Edge	Part 2.1051 Part 22.917 Part 27.53	Pass	Jiongsheng Feng
Conducted Spurious Emissions	Part 2.1051 Part 22.917 Part 27.53	Pass	Jiongsheng Feng
Frequency stability VS Temperature	Part 2.1055(a)(1)(b) Part 22.355 Part 27.54	Pass	Jiongsheng Feng
Frequency stability VS Voltage	Part 2.1055(d)(1)(2) Part 22.355 Part 27.54	Pass	Jiongsheng Feng
ERP and EIRP	Part 22.913(a) Part 27.50	Pass	Pan Xie
Radiated Spurious Emissions	Part 2.1053 Part 22.917 Part 27.53	Pass	Pan Xie

Note: The measurement uncertainty is not included in the test result.

3. SUMMARY

3.1. Client Information

Applicant:	Fuzhou Soarfree Information Technology Co., Ltd.
Address:	Office 426，Floor 4,Building 3,Plot A1,Fuzhou Zhengrong Fortune Center,28 Xinbao Road,Shangjie Town,Minhou County,Fuzhou,Fujian
Manufacturer:	Fuzhou Soarfree Information Technology Co., Ltd.
Address:	Office 426，Floor 4,Building 3,Plot A1,Fuzhou Zhengrong Fortune Center,28 Xinbao Road,Shangjie Town,Minhou County,Fuzhou,Fujian

3.2. Product Description

Name of EUT:	New Mobile Computer		
Trade Mark:	-		
Model No.:	E3PDA		
Listed Model(s):	-		
SIM Information:	Support One SIM Card		
Power supply:	DC 3.7V		
Adapter information:	Model:TPA-46050200UU Input: AC100-240V, 50/60Hz, 0.3A Output: 5.0Vdc, 2000mA		
Hardware version:	7129S0_MMI_V02		
Software version:	R107V200R001C01B011_SF01		
4G			
Operation Band:	☒ FDD Band 5	☒ TDD Band 38	☒ TDD Band 41
Transmit frequency:	FDD Band 5: TDD Band 38: TDD Band 41:	824.7 MHz – 848.3 MHz 2572.5 MHz – 2617.5 MHz 2557.5 MHz – 2652.5 MHz	
Receive frequency:	FDD Band 5: TDD Band 38: TDD Band 41:	869.7 MHz – 893.3 MHz 2572.5 MHz – 2617.5 MHz 2557.5 MHz – 2652.5 MHz	
Channel bandwidth:	FDD Band 5: TDD Band 38: TDD Band 41:	1.4MHz, 3MHz, 5MHz, 10MHz 5MHz, 10MHz, 15MHz, 20MHz 5MHz, 10MHz, 15MHz, 20MHz	
Power Class:	Class 3		
Modulation type:	QPSK, 16QAM		
Antenna type	Loop Antenna		
Antenna Gain	Band5:-1.5dBi Band38:1.0dBi Band41:1.0dBi		

3.3. Operation state

➢ **Test frequency list**

FDD Band 5

Test Frequency ID	Bandwidth [MHz]	N_{UL}	Frequency of Uplink [MHz]	N_{DL}	Frequency of Downlink [MHz]
Low Range	1.4	20407	824.7	2407	869.7
	3	20415	825.5	2415	870.5
	5	20425	826.5	2425	871.5
	10 [1]	20450	829	2450	874
Mid Range	1.4/3/5 10 [1]	20525	836.5	2525	881.5
High Range	1.4	20643	848.3	2643	893.3
	3	20635	847.5	2635	892.5
	5	20625	846.5	2625	891.5
	10 [1]	20600	844	2600	889
NOTE 1: Bandwidth for which a relaxation of the specified UE receiver sensitivity requirement (TS 36.101 [27] Clause 7.3) is allowed.					

TDD Band 38

Test Frequency ID	Bandwidth [MHz]	EARFCN	Frequency (UL and DL) [MHz]
Low Range	5	37775	2572.5
	10	37800	2575
	15	37825	2577.5
	20	37850	2580
Mid Range	5/10/15/20	38000	2595
High Range	5	38225	2617.5
	10	38200	2615
	15	38175	2612.5
	20	38150	2610

TDD Band 41

Test Frequency ID	Bandwidth [MHz]	EARFCN	Frequency (UL and DL) [MHz]
Low Range	5	40265	2557.5
	10	40290	2560
	15	40315	2562.5
	20	40340	2565
Mid Range	5/10/15/20	40740	2605
High Range	5	41215	2652.5
	10	41190	2650
	15	41165	2647.5
	20	41140	2645

3.4. EUT operation mode

For RF test items
The EUT has been tested under typical operating condition. Testing was performed by configuring EUT to maximum output power status.

Test Items	Band	Bandwidth (MHz)						Modulation		RB #		
		1.4	3	5	10	15	20	QPSK	16QAM	1	Half	Full
Conducted Output Power	5	○	○	○	○	-	-	○	○	○	○	○
	38	-	-	○	○	○	○	○	○	○	○	○
	41	-	-	○	○	○	○	○	○	○	○	○
Peak-to-Average Ratio	5	○	○	○	○	-	-	○	○	○	-	○
	38	-	-	○	○	○	○	○	○	○	-	○
	41	-	-	○	○	○	○	○	○	○	-	○
99% Occupied Bandwidth & 26 dB Bandwidth	5	○	○	○	○	-	-	○	○	-	-	○
	38	-	-	○	○	○	○	○	○	-	-	○
	41	-	-	○	○	○	○	○	○	-	-	○
Band Edge	5	○	○	○	○	-	-	○	○	○	-	○
	38	-	-	○	○	○	○	○	○	○	-	○
	41	-	-	○	○	○	○	○	○	○	-	○
Conducted Spurious Emission	5	○	○	○	○	-	-	○	○	○	-	-
	38	-	-	○	○	○	○	○	○	○	-	-
	41	-	-	○	○	○	○	○	○	○	-	-
Frequency Stability	5	○	○	○	○	-	-	○	○	-	-	○
	38	-	-	○	○	○	○	○	○	-	-	○
	41	-	-	○	○	○	○	○	○	-	-	○
ERP and EIRP	5	○	○	○	○	-	-	○	○	○	-	-
	38	-	-	○	○	○	○	○	○	○	-	-
	41	-	-	○	○	○	○	○	○	○	-	-
Radiated Spurious Emission	5	○	○	○	○	-	-	○	○	○	-	-
	38	-	-	○	○	○	○	○	○	○	-	-
	41	-	-	○	○	○	○	○	○	○	-	-
Remark	1. The mark " ○"means that this configuration is chosenfor testing 2. The mark "-"means that this bandwidth is not test. 3. The device is investigatedfrom 30MHz to10 times offundamental signal for radiated spurious emission test under different RB size/offset and modulations in exploratory test. Subsequently, only the worst case emissions are reported.											

3.5. EUT configuration

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

- ● - supplied by the manufacturer
- ○ - supplied by the lab

○	/	Manufacturer:	/
		Model No.:	/
○	/	Manufacturer:	/
		Model No.:	/

3.6. Modifications

No modifications were implemented to meet testing criteria.

4. TEST ENVIRONMENT

4.1. Testing Laboratory Information

Laboratory Name	Shenzhen Huatongwei International Inspection Co., Ltd.	
Laboratory Location	1/F, Bldg 3, Hongfa Hi-tech Industrial Park, Genyu Road, Tianliao, Gongming, Shenzhen, China	
Connect information:	Tel: 86-755-26715499 E-mail: cs@szhtw.com.cn http://www.szhtw.com.cn	
Qualifications	Type	Accreditation Number
	FCC	762235

4.2. Equipments Used during the Test

Used	Test Equipment	Manufacturer	Equipment No.	Model No.	Serial No.	Last Cal. Date (YY-MM-DD)	Next Cal. Date (YY-MM-DD)
●	Signal and spectrum Analyzer	R&S	HTWE0242	FSV40	100048	2020/10/19	2021/10/18
●	Signal & Spectrum Analyzer	R&S	HTWE0262	FSW26	103440	2020/10/19	2021/10/18
●	Spectrum Analyzer	Agilent	HTWE0286	N9020A	MY50510187	2020/10/19	2021/10/18
●	Radio communication tester	R&S	HTWE0287	CMW500	137688-Lv	2020/10/19	2021/10/18
●	Test software	Tonscend	N/A	JS1120	N/A	N/A	N/A

● 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	N/A	2018/09/27	2021/09/26
●	Spectrum Analyzer	R&S	HTWE0098	FSP40	100597	2020/10/20	2021/10/19
●	Loop Antenna	R&S	HTWE0170	HFH2-Z2	100020	2021/04/06	2022/04/05
●	Broadband Horn Antenna	SCHWARZBECK	HTWE0103	BBHA9170	BBHA9170472	2018/10/11	2021/10/11
●	Ultra-Broadband Antenna	SCHWARZBECK	HTWE0123	VULB9163	538	2021/04/06	2022/04/05
●	Horn Antenna	SCHWARZBECK	HTWE0126	9120D	1011	2020/04/01	2023/03/31
●	Pre-amplifier	CD	HTWE0071	PAP-0102	12004	2020/11/13	2021/11/12
●	Broadband Preamplifier	SCHWARZBECK	HTWE0201	BBV 9718	9718-248	2021/03/05	2022/03/04
●	RF Connection Cable	HUBER+SUHNER	HTWE0120-01	6m 18GHz S Serisa	N/A	2021/02/26	2022/02/25
●	RF Connection Cable	HUBER+SUHNER	HTWE0120-02	6m 3GHz RG Serisa	N/A	2021/02/26	2022/02/25
●	RF Connection Cable	HUBER+SUHNER	HTWE0120-03	6m 3GHz RG Serisa	N/A	2021/02/26	2022/02/25
●	RF Connection Cable	HUBER+SUHNER	HTWE0120-04	6m 3GHz RG Serisa	N/A	2021/02/26	2022/02/25
●	RF Connection Cable	HUBER+SUHNER	HTWE0121-01	6m 18GHz S Serisa	N/A	2021/02/26	2022/02/25
●	EMI 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)
●	Climate chamber	ESPEC	HTWE0254	GPL-2	N/A	2020/10/21	2021/10/20
●	DC Power Supply	Gwinstek	HTWE0274	SPS-2415	GER835793	N/A	N/A

4.3. Environmental conditions

During the measurement the environmental conditions were within the listed ranges:

Voltage	VN=Nominal Voltage	DC 3.70V
	VL=Lower Voltage	DC 3.60V
	VH=Higher Voltage	DC 4.20V
Temperature	TN=Normal Temperature	25 °C
	Extreme Temperature	From −30° to + 50° centigrade
Humidity	30~60 %	
Air Pressure	950-1050 hPa	

4.4. Statement of the measurement uncertainty

The data and results referenced in this document are true and accurate. The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities. The measurement uncertainty was calculated for all measurements listed in this test report acc. to TR-100028-01"Electromagnetic compatibilityand Radio spectrum Matters (ERM);Uncertainties in the measurementof mobile radio equipment characteristics;Part 1"and TR-100028-02 "Electromagnetic compatibilityand Radio spectrum Matters (ERM);Uncertainties in the measurementof mobile radio equipment characteristics;Part 2 " and is documented in the Shenzhen Huatongwei International Inspection Co., Ltd quality system acc. to DIN EN ISO/IEC 17025. Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.

Hereafter the best measurement capability for Shenzhen Huatongweilaboratory is reported:

Test Items	Measurement Uncertainty	Notes
Transmitter power conducted	0.51 dB	(1)
Transmitter power Radiated	2.66dB for <1GHz 3.44dB for >1GHz	(1)
Conducted spurious emissions 9kHz~40GHz	0.51 dB	(1)
Radiated spurious emissions	2.66dB for <1GHz 3.44dB for >1GHz	(1)
Occupied Bandwidth	15Hz for <1GHz 70Hz for >1GHz	(1)
Frequency error	15Hz for <1GHz 70Hz for >1GHz	(1)

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

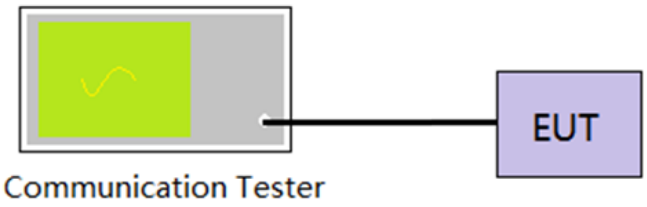
5. TEST CONDITIONS AND RESULTS

5.1. Conducted Output Power

LIMIT

N/A

TEST CONFIGURATION



TEST PROCEDURE

1. The EUT output port was connected to communication tester.
2. Set EUT at maximum power through communication tester.
3. Select lowest, middle, and highest channels for each band and different modulation.
4. Measure the maximum burst average power.

TEST MODE:

Please refer to the clause 3.3

TEST RESULTS

☒ **Passed** ☐ **Not Applicable**

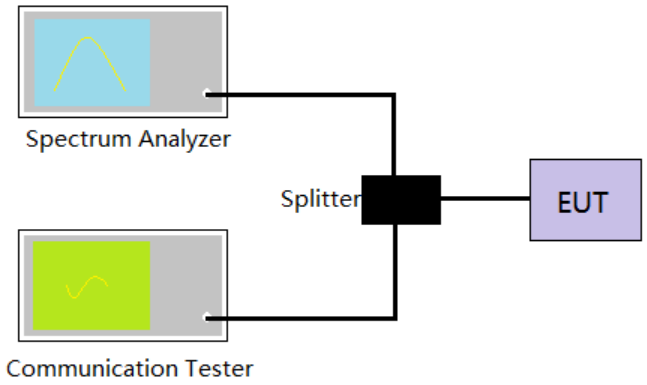
Refer to appendix A on the section 8 appendix report

5.2. Peak-to-Average Ratio

LIMIT

13dB

TEST CONFIGURATION



TEST PROCEDURE

1. The EUT was connected to the spectrum analyzer and communication tester via a power splitter
2. Set EUT in maximum power output.
3. Center Frequency = Carrier frequency, RBW > Emission bandwidth of signal
4. The signal analyzer was set to collect one million samples to generate the CCDF curve
5. The measurement interval was set depending on the type of signal analyzed.
   i. For continuous signals (>98% duty cycle), the measurement interval was set to 1ms.
   ii. For bursttransmissions, the spectrum analyzer is set to use an internal " RF Burst" trigger that issynced with an incoming pulse and the measurement interval is set to less than the durationof the " on time" of one burst to ensure that energy is only captured during a time in whichthetransmitter is operating at maximum power
6. Record the maximum PAPR level associated with a probability of 0.1%.

TEST MODE:

Please refer to the clause 3.3

TEST RESULTS

☒ **Passed** ☐ **Not Applicable**

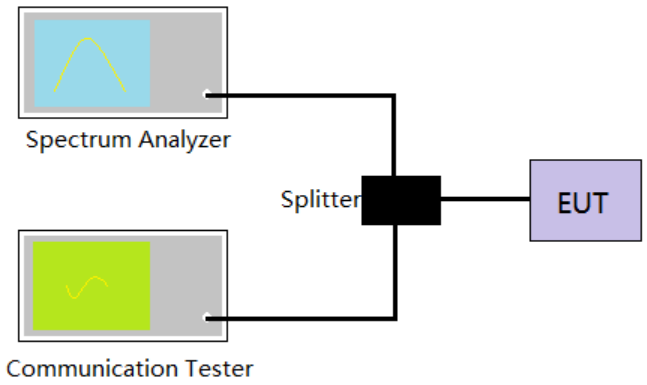
Refer to appendix B on the section 8 appendix report

5.3. 99% Occupied Bandwidth & 26 dB Bandwidth

LIMIT

N/A

TEST CONFIGURATION



TEST PROCEDURE

1. The EUT was connected to the spectrum analyzer and communication tester via a power splitter
2. Set EUT in maximum power output.
3. Spectrum analyzer setting as follow:

   Center Frequency= Carrier frequency, RBW=1% to 5% of the anticipated OBW, VBW= 3 * RBW, Detector=Peak,

   Trace maximum hold.
4. Record the value of 99% Occupied bandwidth and 26dB bandwidth.

TEST MODE:

Please refer to the clause 3.3

TEST RESULTS

☒ **Passed** ☐ **Not Applicable**

Refer to appendix C on the section 8 appendix report

5.4. Band Edge

LIMIT

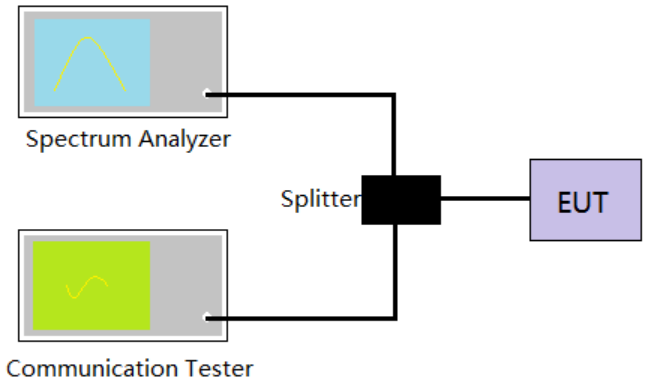
Part 24.238 and Part 22.917 and Part 27.53 specify that the power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log(P) dB.

The specification that emissions shall be attenuated below the transmitter power (P) by at least 43 + 10 log (P) dB, translates in the relevant power range (1 to 0.001 W) to -13 dBm. At 1 W the specified minimum attenuation becomes 43 dB and relative to a 30 dBm (1 W) carrier becomes a limit of -13 dBm. At 0.001 W (0 dBm) the minimum attenuation is 13 dB, which again yields a limit of -13 dBm. In this way a translation of the specification from relative to absolute terms is carried out.

LTE Band 7

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.

TEST CONFIGURATION



TEST PROCEDURE

1. The EUT was connected to the spectrum analyzer and communication tester via a power splitter
2. Set EUT in maximum power output.
3. The band edges of low and high channels were measured.
4. Spectrum analyzer setting as follow:

   RBW= no less than 1% of the OBW, VBW =3 * RBW, Sweep time= Auto
5. Record the test plot.

TEST MODE:

Please refer to the clause 3.3

TEST RESULTS

☒ **Passed** ☐ **Not Applicable**

Refer to appendix D on the section 8 appendix report

5.5. Conducted Spurious Emissions

LIMIT

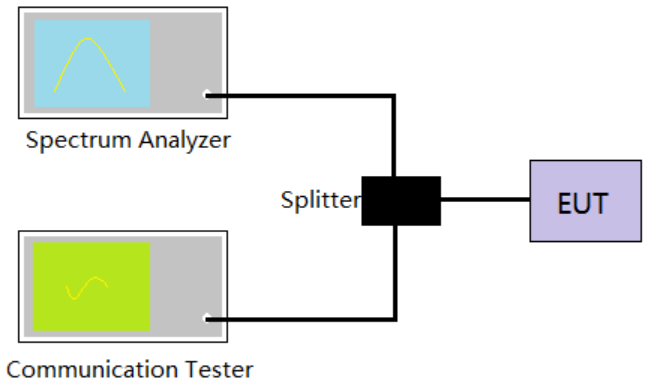
Part 24.238 and Part 22.917 and Part 27.53 specify that the power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log(P) dB.

The specification that emissions shall be attenuated below the transmitter power (P) by at least 43 + 10 log (P) dB, translates in the relevant power range (1 to 0.001 W) to -13 dBm. At 1 W the specified minimum attenuation becomes 43 dB and relative to a 30 dBm (1 W) carrier becomes a limit of -13 dBm. At 0.001 W (0 dBm) the minimum attenuation is 13 dB, which again yields a limit of -13 dBm. In this way a translation of the specification from relative to absolute terms is carried out.

LTE Band 7

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 that 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. Limit <-25 dBm

TEST CONFIGURATION



TEST PROCEDURE

1. The EUT was connected to the spectrum analyzer and communication tester via a power splitter
2. Set EUT in maximum power output.
3. Spectrum analyzer setting as follow:

   Below 1GHz, RBW=100KHz, VBW = 300KHz, Detector=Peak, Sweep time= Auto

   Above 1GHz, RBW=1MHz, VBW=3MHz, Detector=Peak, Sweep time= Auto

   Scan frequency range up to 10th harmonic.
4. Record the test plot.

TEST MODE:

Please refer to the clause 3.3

TEST RESULTS

☒ **Passed** ☐ **Not Applicable**

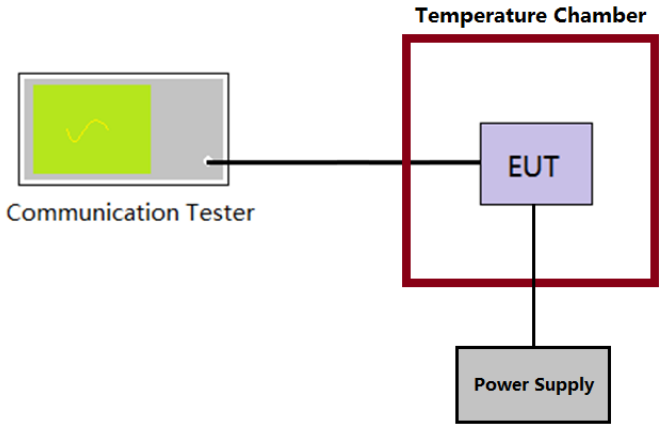
Refer to appendix E on the section 8 appendix report

5.6. Frequency stability VS Temperature measurement

LIMIT

2.5ppm

TEST CONFIGURATION



TEST PROCEDURE

1. The equipment under test was connected to an external DC power supply and input rated voltage.
2. The EUT output port was connected to communication tester.
3. The EUT was placed inside the temperature chamber.
4. Turn EUT off and set the chamber temperature to –30°C. After the temperature stabilized for approximately 30 minutes recorded the frequency.
5. Repeat step 4 measure with 10°C increased per stage until the highest temperature of +50°C reached.

TEST MODE:

Please refer to the clause 3.3

TEST RESULTS

☒ **Passed** ☐ **Not Applicable**

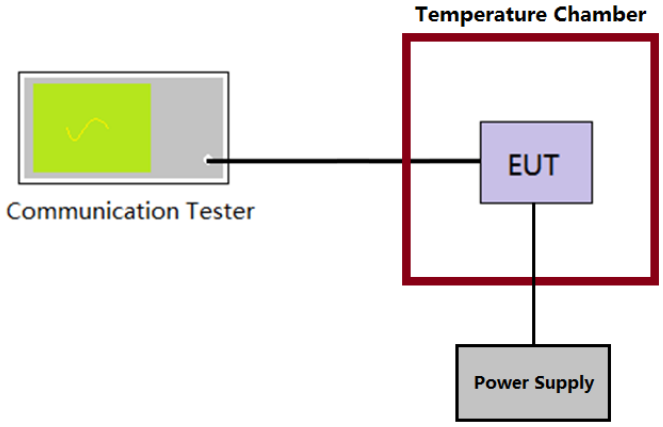
Refer to appendix F on the section 8 appendix report

5.7. Frequency stability VS Voltage measurement

LIMIT

2.5ppm

TEST CONFIGURATION



TEST PROCEDURE

1. The equipment under test was connected to an external DC power supply and input rated voltage.
2. The EUT output port was connected to communication tester.
3. The EUT was placed inside the temperature chamber at 25°C
4. The power supply voltage to the EUT was varied ±15% of the nominal value measured at the input to the EUT
5. Record the maximum frequency change.

TEST MODE:

Please refer to the clause 3.3

TEST RESULTS

☒ **Passed** ☐ **Not Applicable**

Refer to appendix F on the section 8 appendix report

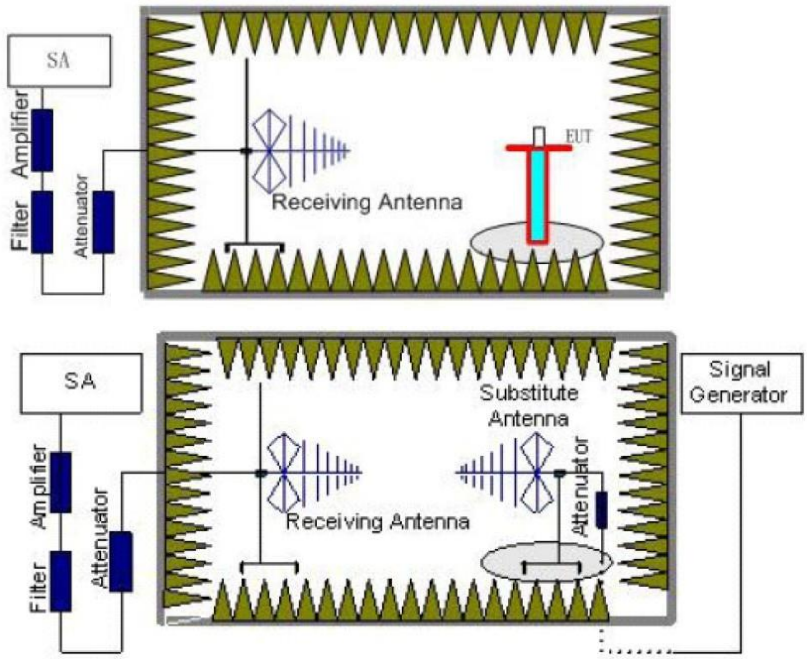
5.8. ERP and EIRP

LIMIT

LTE Band 38/41: 2W(33dBm) EIRP

LTE Band 5: 7W(38.50dBm) ERP

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(dBm) − cable loss (dB) + 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:

    gain (dBd) = gain (dBi) − 2.15 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 3.3

TEST RESULTS

☒ **Passed** ☐ **Not Applicable**

LTE Band 5-1.4MHz					
Modulation	Channel	ERP (dBm)		Limit (dBm)	Result
		Vertical	Horizontal		
QPSK	Low	20.69	18.08	≤38.50	PASS
	Mid	20.92	18.54		
	High	20.57	18.33		
16QAM	Low	20.63	18.05		PASS
	Mid	20.88	18.60		
	High	20.53	18.29		

LTE Band 5-3MHz					
Modulation	Channel	ERP (dBm)		Limit (dBm)	Result
		Vertical	Horizontal		
QPSK	Low	20.66	18.07	≤38.50	PASS
	Mid	20.90	18.48		
	High	20.62	18.37		
16QAM	Low	20.59	18.00		PASS
	Mid	20.80	18.51		
	High	20.52	18.34		

LTE Band 5-5MHz					
Modulation	Channel	ERP (dBm)		Limit (dBm)	Result
		Vertical	Horizontal		
QPSK	Low	20.65	18.04	≤38.50	PASS
	Mid	20.81	18.49		
	High	20.56	18.40		
16QAM	Low	20.68	18.15		PASS
	Mid	20.78	18.45		
	High	20.46	18.28		

LTE Band 5-10MHz					
Modulation	Channel	ERP (dBm)		Limit (dBm)	Result
		Vertical	Horizontal		
QPSK	Low	20.70	18.01	≤38.50	PASS
	Mid	20.92	18.55		
	High	20.56	18.38		
16QAM	Low	20.73	18.13		PASS
	Mid	20.89	18.56		
	High	20.55	18.37		

LTE Band 38-5MHz					
Modulation	Channel	EIRP (dBm)		Limit (dBm)	Result
		Vertical	Horizontal		
QPSK	Low	20.72	18.19	≤33.00	PASS
	Mid	20.64	18.60		
	High	20.90	17.99		
16QAM	Low	20.60	18.12		PASS
	Mid	20.53	18.67		
	High	20.81	17.89		

LTE Band 38-10MHz					
Modulation	Channel	EIRP (dBm)		Limit (dBm)	Result
		Vertical	Horizontal		
QPSK	Low	20.64	18.15	≤33.00	PASS
	Mid	20.67	18.53		
	High	20.97	18.04		
16QAM	Low	20.53	18.03		PASS
	Mid	20.47	18.61		
	High	20.76	17.93		

LTE Band 38-15MHz					
Modulation	Channel	EIRP (dBm)		Limit (dBm)	Result
		Vertical	Horizontal		
QPSK	Low	20.64	18.11	≤33.00	PASS
	Mid	20.53	18.60		
	High	20.91	18.17		
16QAM	Low	20.68	18.32		PASS
	Mid	20.48	18.51		
	High	20.70	17.93		

LTE Band 38-20MHz					
Modulation	Channel	EIRP (dBm)		Limit (dBm)	Result
		Vertical	Horizontal		
QPSK	Low	20.68	18.02	≤33.00	PASS
	Mid	20.59	18.59		
	High	20.83	18.02		
16QAM	Low	20.75	18.25		PASS
	Mid	20.60	18.66		
	High	20.81	18.00		

LTE Band 41-5MHz					
Modulation	Channel	EIRP (dBm)		Limit (dBm)	Result
		Vertical	Horizontal		
QPSK	Low	20.88	17.94	≤33.00	PASS
	Mid	20.79	18.54		
	High	20.49	17.95		
16QAM	Low	20.76	17.87		PASS
	Mid	20.72	18.60		
	High	20.43	17.89		

LTE Band 41-10MHz					
Modulation	Channel	EIRP (dBm)		Limit (dBm)	Result
		Vertical	Horizontal		
QPSK	Low	20.75	17.85	≤33.00	PASS
	Mid	20.86	18.52		
	High	20.60	18.04		
16QAM	Low	20.66	17.77		PASS
	Mid	20.68	18.57		
	High	20.39	17.92		

LTE Band 41-15MHz					
Modulation	Channel	EIRP (dBm)		Limit (dBm)	Result
		Vertical	Horizontal		
QPSK	Low	20.80	17.87	≤33.00	PASS
	Mid	20.73	18.56		
	High	20.53	18.14		
16QAM	Low	20.88	18.09		PASS
	Mid	20.67	18.48		
	High	20.37	17.95		

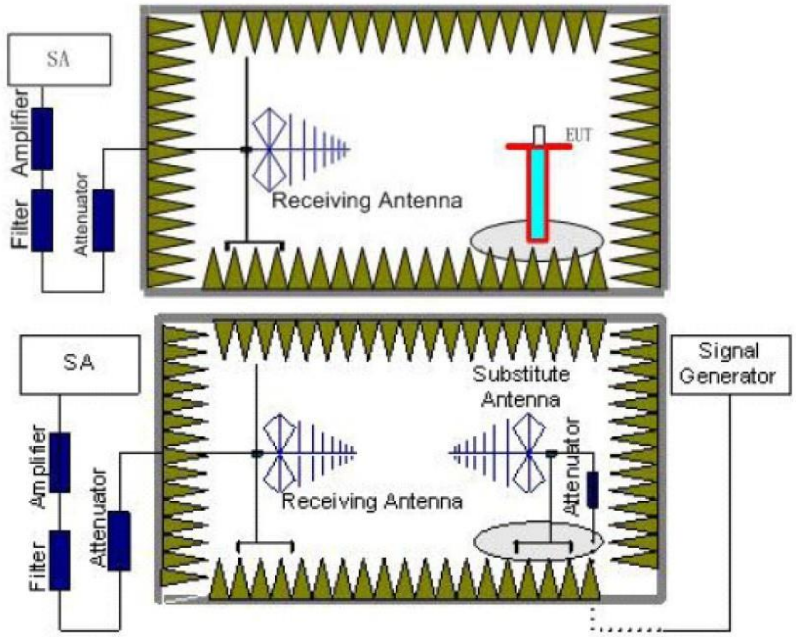
LTE Band 41-20MHz					
Modulation	Channel	EIRP (dBm)		Limit (dBm)	Result
		Vertical	Horizontal		
QPSK	Low	20.84	17.79	≤33.00	PASS
	Mid	20.83	18.59		
	High	20.46	18.01		
16QAM	Low	20.93	18.01		PASS
	Mid	20.84	18.65		
	High	20.46	18.00		

5.9. Radiated Spurious Emission

LIMIT

LTE Band 5: -13dBm;
LTE Band 38/41: -25dBm

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(dBm) − cable loss (dB) + 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:

    gain (dBd) = gain (dBi) − 2.15 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 3.3

TEST RESULTS

☒ **Passed** ☐ **Not Applicable**

Note: only show the worse case for QPSK modulation.

LTE Band 5-1.4MHz					
Channel	Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
		Polarization	Level (dBm)		
Low	1649.4	Vertical	-31.36	≤-13.00	Pass
	2474.1	V	-40.46		
	3298.8	V	-42.56		
	1649.4	Horizontal	-33.31	≤-13.00	Pass
	2474.1	H	-41.00		
	3298.8	H	-42.51		
Mid	1673	Vertical	-30.68	≤-13.00	Pass
	2509.5	V	-39.34		
	3346	V	-41.32		
	1673	Horizontal	-31.79	≤-13.00	Pass
	2509.5	H	-40.14		
	3346	H	-41.58		
High	1696.6	Vertical	-29.58	≤-13.00	Pass
	2544.9	V	-37.89		
	3393.2	V	-39.85		
	1696.6	Horizontal	-30.34	≤-13.00	Pass
	2544.9	H	-39.32		
	3393.2	H	-41.09		

LTE Band 5-3MHz					
Channel	Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
		Polarization	Level (dBm)		
Low	1651	Vertical	-28.88	≤-13.00	Pass
	2476.5	V	-37.00		
	3302	V	-39.43		
	1651	Horizontal	-30.01	≤-13.00	Pass
	2476.5	H	-38.61		
	3302	H	-40.26		
Mid	1673	Vertical	-28.07	≤-13.00	Pass
	2509.5	V	-36.29		
	3346	V	-38.69		
	1673	Horizontal	-29.36	≤-13.00	Pass
	2509.5	H	-37.61		
	3346	H	-39.74		
High	1695	Vertical	-27.33	≤-13.00	Pass
	2542.5	V	-35.37		
	3390	V	-37.47		
	1695	Horizontal	-28.15	≤-13.00	Pass
	2542.5	H	-36.93		
	3390	H	-39.33		

LTE Band 5-5MHz					
Channel	Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
		Polarization	Level (dBm)		
Low	1653	Vertical	-26.42	≤-13.00	Pass
	2479.5	V	-33.86		
	3306	V	-36.96		
	1653	Horizontal	-27.33	≤-13.00	Pass
	2479.5	H	-36.02		
	3306	H	-38.17		
Mid	1673	Vertical	-25.18	≤-13.00	Pass
	2509.5	V	-32.77		
	3346	V	-35.83		
	1673	Horizontal	-26.33	≤-13.00	Pass
	2509.5	H	-34.49		
	3346	H	-37.37		
High	1693	Vertical	-24.05	≤-13.00	Pass
	2539.5	V	-31.37		
	3386	V	-33.96		
	1693	Horizontal	-24.49	≤-13.00	Pass
	2539.5	H	-33.45		
	3386	H	-36.75		

LTE Band 5-10MHz					
Channel	Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
		Polarization	Level (dBm)		
Low	1658	Vertical	-23.38	≤-13.00	Pass
	2487	V	-30.52		
	3316	V	-33.55		
	1658	Horizontal	-24.17	≤-13.00	Pass
	2487	H	-32.76		
	3316	H	-35.95		
Mid	1673	Vertical	-22.60	≤-13.00	Pass
	2509.5	V	-29.83		
	3346	V	-32.84		
	1673	Horizontal	-23.54	≤-13.00	Pass
	2509.5	H	-31.79		
	3346	H	-35.45		
High	1688	Vertical	-21.89	≤-13.00	Pass
	2532	V	-28.95		
	3376	V	-31.66		
	1688	Horizontal	-22.38	≤-13.00	Pass
	2532	H	-31.13		
	3376	H	-35.06		

Remark:
1. Remark"---" means that the emission level is too low to be measured
2. The emission levels of below 1 GHz are very lower than the limit and not show in test report.

LTE Band 38-5MHz					
Channel	Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
		Polarization	Level (dBm)		
Low	5145	Vertical	-33.44	≤-25.00	Pass
	7717.5	V	-41.90		
	10290	V	-42.96		
	5145	Horizontal	-33.50	≤-25.00	Pass
	7717.5	H	-40.59		
	10290	H	-43.57		
Mid	5190	Vertical	-33.28	≤-25.00	Pass
	7785	V	-41.79		
	10380	V	-42.79		
	5190	Horizontal	-33.38	≤-25.00	Pass
	7785	H	-40.38		
	10380	H	-43.45		
High	5235	Vertical	-33.14	≤-25.00	Pass
	7852.5	V	-41.55		
	10470	V	-42.55		
	5235	Horizontal	-33.16	≤-25.00	Pass
	7852.5	H	-40.25		
	10470	H	-43.37		

LTE Band 38-10MHz					
Channel	Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
		Polarization	Level (dBm)		
Low	5150	Vertical	-33.03	≤-25.00	Pass
	7725	V	-41.41		
	10300	V	-42.48		
	5150	Horizontal	-33.11	≤-25.00	Pass
	7725	H	-40.13		
	10300	H	-43.23		
Mid	5190	Vertical	-32.90	≤-25.00	Pass
	7785	V	-41.29		
	10380	V	-42.36		
	5190	Horizontal	-33.00	≤-25.00	Pass
	7785	H	-39.97		
	10380	H	-43.14		
High	5230	Vertical	-32.78	≤-25.00	Pass
	7845	V	-41.14		
	10460	V	-42.16		
	5230	Horizontal	-32.80	≤-25.00	Pass
	7845	H	-39.86		
	10460	H	-43.07		

LTE Band 38-15MHz					
Channel	Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
		Polarization	Level (dBm)		
Low	5155	Vertical	-32.65	≤-25.00	Pass
	7732.5	V	-40.93		
	10310	V	-42.09		
	5155	Horizontal	-32.68	≤-25.00	Pass
	7732.5	H	-39.73		
	10310	H	-42.91		
Mid	5190	Vertical	-32.47	≤-25.00	Pass
	7785	V	-40.78		
	10380	V	-41.93		
	5190	Horizontal	-32.54	≤-25.00	Pass
	7785	H	-39.51		
	10380	H	-42.80		
High	5225	Vertical	-32.31	≤-25.00	Pass
	7837.5	V	-40.58		
	10450	V	-41.67		
	5225	Horizontal	-32.28	≤-25.00	Pass
	7837.5	H	-39.36		
	10450	H	-42.71		

LTE Band 38-20MHz					
Channel	Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
		Polarization	Level (dBm)		
Low	5160	Vertical	-32.22	≤-25.00	Pass
	7740	V	-40.46		
	10320	V	-41.61		
	5160	Horizontal	-32.23	≤-25.00	Pass
	7740	H	-39.26		
	10320	H	-42.60		
Mid	5190	Vertical	-32.11	≤-25.00	Pass
	7785	V	-40.36		
	10380	V	-41.51		
	5190	Horizontal	-32.14	≤-25.00	Pass
	7785	H	-39.12		
	10380	H	-42.53		
High	5220	Vertical	-32.01	≤-25.00	Pass
	7830	V	-40.24		
	10440	V	-41.34		
	5220	Horizontal	-31.98	≤-25.00	Pass
	7830	H	-39.03		
	10440	H	-42.47		

Remark:
1. Remark"---" means that the emission level is too low to be measured
2. The emission levels of below 1 GHz are very lower than the limit and not show in test report.

LTE Band 41-5MHz					
Channel	Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
		Polarization	Level (dBm)		
Low	5005	Vertical	-32.78	≤-25.00	Pass
	7507.5	V	-42.42		
	10010	V	-43.18		
	5005	Horizontal	-32.33	≤-25.00	Pass
	7507.5	H	-41.38		
	10010	H	-42.07		
Mid	5070	Vertical	-32.38	≤-25.00	Pass
	7605	V	-42.06		
	10140	V	-42.80		
	5070	Horizontal	-32.00	≤-25.00	Pass
	7605	H	-40.82		
	10140	H	-41.75		
High	5135	Vertical	-31.96	≤-25.00	Pass
	7702.5	V	-41.34		
	10270	V	-42.18		
	5135	Horizontal	-31.39	≤-25.00	Pass
	7702.5	H	-40.47		
	10270	H	-41.54		

LTE Band 41-10MHz					
Channel	Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
		Polarization	Level (dBm)		
Low	5010	Vertical	-31.62	≤-25.00	Pass
	7515	V	-40.90		
	10020	V	-41.97		
	5010	Horizontal	-31.22	≤-25.00	Pass
	7515	H	-40.12		
	10020	H	-41.13		
Mid	5070	Vertical	-31.32	≤-25.00	Pass
	7605	V	-40.40		
	10140	V	-41.47		
	5070	Horizontal	-30.62	≤-25.00	Pass
	7605	H	-39.47		
	10140	H	-40.79		
High	5130	Vertical	-30.83	≤-25.00	Pass
	7695	V	-39.90		
	10260	V	-40.88		
	5130	Horizontal	-29.92	≤-25.00	Pass
	7695	H	-39.12		
	10260	H	-40.40		

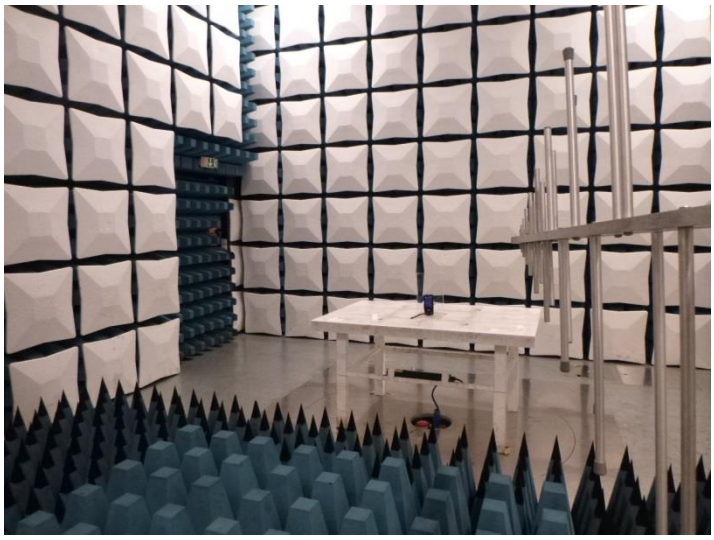
LTE Band 41-15MHz					
Channel	Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
		Polarization	Level (dBm)		
Low	5015	Vertical	-30.41	≤-25.00	Pass
	7522.5	V	-39.20		
	10030	V	-40.64		
	5015	Horizontal	-29.54	≤-25.00	Pass
	7522.5	H	-38.70		
	10030	H	-39.87		
Mid	5070	Vertical	-29.83	≤-25.00	Pass
	7605	V	-38.70		
	10140	V	-40.12		
	5070	Horizontal	-29.08	≤-25.00	Pass
	7605	H	-37.99		
	10140	H	-39.50		
High	5125	Vertical	-29.31	≤-25.00	Pass
	7687.5	V	-38.05		
	10250	V	-39.26		
	5125	Horizontal	-28.23	≤-25.00	Pass
	7687.5	H	-37.51		
	10250	H	-39.21		

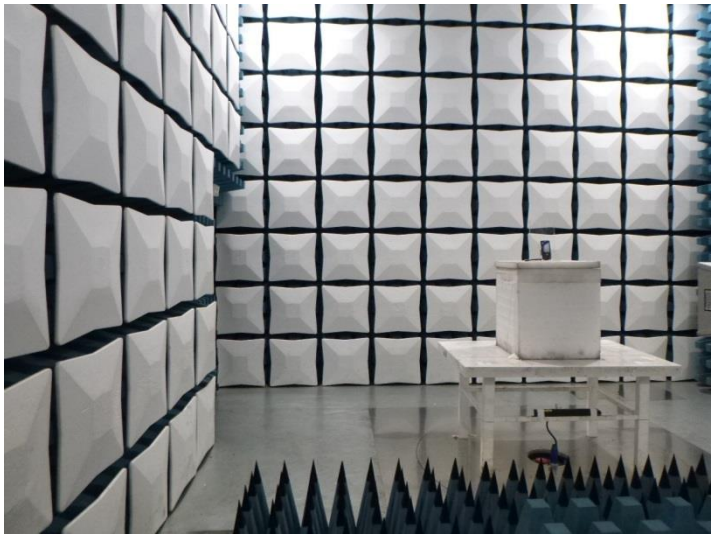
LTE Band 41-20MHz					
Channel	Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
		Polarization	Level (dBm)		
Low	5020	Vertical	-29.00	≤-25.00	Pass
	7530	V	-37.65		
	10040	V	-39.07		
	5020	Horizontal	-28.08	≤-25.00	Pass
	7530	H	-37.19		
	10040	H	-38.84		
Mid	5070	Vertical	-28.64	≤-25.00	Pass
	7605	V	-37.33		
	10140	V	-38.74		
	5070	Horizontal	-27.79	≤-25.00	Pass
	7605	H	-36.74		
	10140	H	-38.61		
High	5120	Vertical	-28.31	≤-25.00	Pass
	7680	V	-36.92		
	10240	V	-38.20		
	5120	Horizontal	-27.25	≤-25.00	Pass
	7680	H	-36.44		
	10240	H	-38.43		

Remark:

3. Remark"---" means that the emission level is too low to be measured
4. The emission levels of below 1 GHz are very lower than the limit and not show in test report.

6. TEST SETUP PHOTOS OF THE EUT





7. EXTERNAL AND INTERNAL PHOTOS OF THE EUT

Refere to the test report No.: CHTEW21070219

8. APPENDIX REPORT