TCT 通测检测 TESTING CENTRE TECHNOLOGY

TEST REPORT

FCC ID. ..... :	2AGEB-5502	
Test Report No..... :	TCT210926E027	
Date of issue..... :	Dec. 09, 2021	
Testing laboratory ..... :	SHENZHEN TONGCE TESTING LAB	
Testing location/ address:	TCT Testing Industrial Park Fuqiao 5th Industrial Zone, Fuhai Street, Bao'an District Shenzhen, Guangdong, 518103, People's Republic of China	
Applicant's name..... :	Shenzhen ZKC Software Technology Co., Ltd	
Address..... :	1st Floor, No. 1 Block, Zhongkenuo Industry Park, Beiqi Road, Xixiang Town, Bao'an District, Shenzhen, China	
Manufacturer's name ... :	Shenzhen ZKC Software Technology Co., Ltd	
Address..... :	1st Floor, No. 1 Block, Zhongkenuo Industry Park, Beiqi Road, Xixiang Town, Bao'an District, Shenzhen, China	
Standard(s) ..... :	FCC CFR Title 47 Part 2 FCC CFR Title 47 Part22 FCC CFR Title 47 Part27	
Test item description ..... :	Handheld integrated intelligent terminal	
Trade Mark ..... :	ZKC	
Model/Type reference..... :	5502	
Rating(s)..... :	Adapter Information: Model: GHSOU-090700 Input: AC 100-240V, 50/60Hz, 0.3A Output: DC 9V, 2000mA Rechargeable Li-ion Battery DC 7.4V	
Date of receipt of test item ..... :	Sep. 26, 2021	
Date (s) of performance of test..... :	Sep. 26, 2021 - Dec. 09, 2021	
Tested by (+signature) ... :	Aaron MO	
Check by (+signature).... :	Beryl ZHAO	
Approved by (+signature):	Tomsin	

General disclaimer:

This report shall not be reproduced except in full, without the written approval of SHENZHEN TONGCE TESTING LAB. This document may be altered or revised by SHENZHEN TONGCE TESTING LAB personnel only, and shall be noted in the revision section of the document. The test results in the report only apply to the tested sample.

TABLE OF CONTENTS

Hotline: 400-6611-140 Tel: 86-755-27673339 Fax: 86-755-27673332 http://www.tct-lab.com

1. General Product Information

1.1. EUT description

Test item description .....:	Handheld integrated intelligent terminal
Model/Type reference.....:	5502
Sample Number.....:	TCT210926E008-0101
Tx Frequency.....:	LTE Band 5: 824 MHz ~ 849 MHz LTE Band 41: 2555 MHz ~ 2655 MHz
Rx Frequency .....:	LTE Band 5: 869 MHz ~ 894 MHz LTE Band 41: 2555 MHz ~ 2655 MHz
Bandwidth.....:	LTE Band 5: 1.4MHz /3MHz /5MHz /10MHz LTE Band 41: 5MHz /10MHz /15MHz /20MHz
Maximum Output Power to Antenna.....:	LTE Band 5: 21.04dBm LTE Band 41: 25.99dBm
99% Occupied Bandwidth.....:	LTE Band 5: 9M00G7D LTE Band 41: 18M0G7D
Type of Modulation.....:	QPSK/16QAM
Antenna Type.....:	Internal Antenna
Antenna Gain.....:	0dBi
Rating(s).....:	Adapter Information: Model: GHSOU-090700 Input: AC 100-240V, 50/60Hz, 0.3A Output: DC 9V, 2000mA Rechargeable Li-ion Battery DC 7.4V

Note: The antenna gain listed in this report is provided by applicant, and the test laboratory is not responsible for this parameter.

1.2. Model(s) list

None.

Hotline: 400-6611-140 Tel: 86-755-27673339 Fax: 86-755-27673332 http://www.tct-lab.com

1.3. Emission Designator

LTE Band 5	QPSK		16QAM	
BW(MHz)	Emission Designator (99%OBW)	Maximum ERP(W)	Emission Designator (99%OBW)	Maximum ERP(W)
1.4	1M09G7D	0.123	1M09W7D	0.094
3	2M70G7D	0.124	2M70W7D	0.094
5	4M50G7D	0.125	4M51W7D	0.094
10	9M00G7D	0.127	9M00W7D	0.098

LTE Band 41	QPSK		16QAM	
BW(MHz)	Emission Designator (99%OBW)	Maximum EIRP(W)	Emission Designator (99%OBW)	Maximum EIRP(W)
5	4M51G7D	0.223	4M50W7D	0.195
10	8M98G7D	0.224	8M98W7D	0.185
15	13M5G7D	0.237	13M5W7D	0.191
20	18M0G7D	0.242	17M9W7D	0.177

Hotline: 400-6611-140 Tel: 86-755-27673339 Fax: 86-755-27673332 http://www.tct-lab.com

1.4. Test Frequency

LTE Band 5(1.4MHz)		LTE Band 5(3MHz)	
Channel	Frequency (MHz)	Channel	Frequency (MHz)
20407	824.7	20415	825.5
20525	836.5	20525	836.5
20643	848.3	20635	847.5
LTE Band 5(5MHz)		LTE Band 5(10MHz)	
Channel	Frequency (MHz)	Channel	Frequency (MHz)
20425	826.5	20450	829.0
20525	836.5	20525	836.5
20625	846.5	20600	844.0

LTE Band 41(5MHz)		LTE Band 41(10MHz)	
Channel	Frequency (MHz)	Channel	Frequency (MHz)
40265	2557.5	40290	2560
40740	2605	40740	2605
41215	2652.5	41190	2650
LTE Band 41(15MHz)		LTE Band 41(20MHz)	
Channel	Frequency (MHz)	Channel	Frequency (MHz)
40315	2562.5	40340	2565
40740	2605	40740	2605
41165	2647.5	41140	2645

Hotline: 400-6611-140 Tel: 86-755-27673339 Fax: 86-755-27673332 http://www.tct-lab.com

2. Test Result Summary

Requirement	CFR 47 Section	Result
Conducted Output Power	§2.1046; §22.913; §27.50(d); §27.50(c); §27.50(b);	PASS
Peak-to-Average Ratio	§2.1046; §27.50(d); §27.50(c); §27.50(b);	PASS
Effective Radiated Power	§2.1046; §22.913; §27.50(d); §27.50(c); §27.50(b);	PASS
Equivalent Isotropic Radiated Power	§2.1046; §22.913; §27.50(d); §27.50(c); §27.50(b);	PASS
Occupied Bandwidth	§2.1049; §27.53;	PASS
Band Edge	§2.1051; §22.917(a); §27.53(h); §27.53(c); §27.53(g);	PASS
Conducted Spurious Emission	§2.1051; §22.917(a); §27.53(h); §27.53(g); §27.53(c);	PASS
Field Strength of Spurious Radiation	§2.1053; §22.917(a); §27.53(g) ; §27.53(c); §27.53(h);	PASS
Frequency Stability for Temperature & Voltage	§2.1055;§22.355; §27.54;	PASS

Note:

1. PASS: Test item meets the requirement.

2. Fail: Test item does not meet the requirement.

3. N/A: Test case does not apply to the test object.

4. The test result judgment is decided by the limit of test standard.

Hotline: 400-6611-140 Tel: 86-755-27673339 Fax: 86-755-27673332 http://www.tct-lab.com

3. General Information

3.1. Test environment and mode

Operating Environment:	
Temperature:	25.0 °C
Humidity:	56 % RH
Atmospheric Pressure:	1010 mbar
Test Mode:	
Operation mode:	Keep the EUT in continuous transmitting with modulation
The sample was placed 0.8m above the ground plane of 3m chamber. Measurements in both horizontal and vertical polarities were performed. During the test, each emission was maximized by: having the EUT continuously working, investigated all operating modes, rotated about all 3 axis (X, Y & Z) and considered typical configuration to obtain worst position, manipulating interconnecting cables, rotating the turntable, varying antenna height from 1m to 4m in both horizontal and vertical polarizations. The emissions worst-case are shown in Test Results of the following pages.	

Keep the EUT in communication with CMW500 and select channel with modulation
All modes and data rates and positions were investigated.
Test modes are chosen to be reported as the worst case configuration below:

Test Mode		
Band	**Radiated TCs**	**Conducted TCs**
LTE Band 5	QPSK Link (1.4MHz / 3MHz / 5MHz / 10MHz)	16QAM Link (1.4MHz / 3MHz / 5MHz / 10MHz)
LTE Band 41	QPSK Link (5MHz / 10MHz / 15MHz / 20MHz)	16QAM Link (5MHz / 10MHz / 15MHz / 20MHz)

Antenna port conducted and radiated test items were performed according to KDB 971168 D01 Power Meas License Digital Systems v03 with maximum output power.

Radiated measurements were performed with rotating EUT in different three orthogonal test planes to find the maximum emission. The sample was placed 0.8m/1.5m above the ground plane of 3m chamber. Measurements in both horizontal and vertical polarities were performed. During the test, each emission was maximized by: having the EUT continuously working, investigated all operating modes, rotated about all 3 axis (X, Y & Z) and considered typical configuration to obtain worst position, manipulating interconnecting cables, rotating the turntable, varying antenna height from 1m to 4m in both horizontal and vertical polarization. The emissions worst-case are shown in Test Results of the following pages.

Hotline: 400-6611-140 Tel: 86-755-27673339 Fax: 86-755-27673332 http://www.tct-lab.com

Test Items	Band	Bandwidth (MHz)						Modulation		RB #			Test Channel		
		1.4	3	5	10	15	20	QPSK	16QAM	1	Half	Full	L	M	H
Max. Output Power	5	v	v	v	v	-	-	v	v	v	v	v	v	v	v
	41	-	-	v	v	v	v	v	v	v	v	v	v	v	v
Peak-to-Average Ratio	5	v	v	v	v	-	-	v	v	v	v	v	v	v	v
	41	-	-	v	v	v	v	v	v	v	v	v	v	v	v
26dB and 99% Bandwidth	5	v	v	v	v	-	-	v	v	v	v	v	v	v	v
	41	-	-	v	v	v	v	v	v	-	-	v	v	v	v
Conducted Band Edge	5	v	v	v	v	-	-	v	v	v	v	v	v	-	v
	41	-	-	v	v	v	v	v	v	v	-	v	v	-	v
Conducted Spurious Emission	5	v	v	v	v	-	-	v	v	v	-	-	v	v	v
	41	-	-	v	v	v	v	v	v	v	-	-	v	v	v
Frequency Stability	5	v	v	v	v	-	-	v	v	v	-	-	v	v	v
	41	-	-	v	v	v	v	v	v	-	-	v	v	v	v
E.R.P./ E.I.R.P.	5	v	v	v	v	-	-	v	v	v	v	v	v	v	v
	41	-	-	v	v	v	v	v	v	v	v	v	v	v	v
Radiated Spurious Emission	5	-	-	-	v	-	-	v	v	v	-	-	v	v	v
	41	-	-	-	-	-	v	v	v	v	-	-	v	v	v
Note	1. The mark "**v**" means that this configuration is chosen for testing 2. The mark "-" means that this bandwidth is not supported.														

3.2. Description of Support Units

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

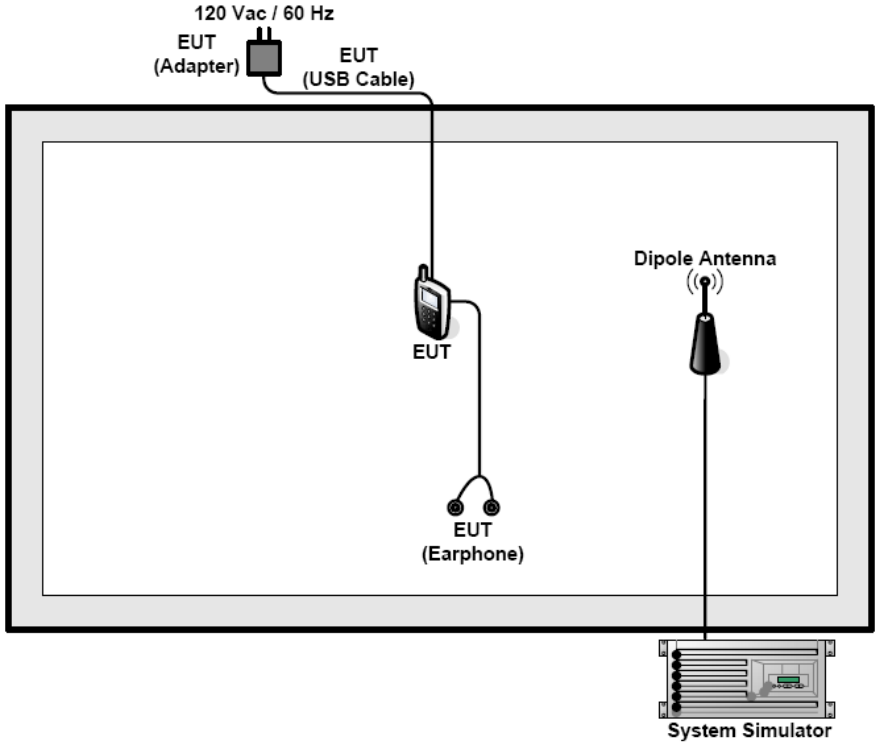
Equipment	Model No.	Serial No.	FCC ID	Trade Name
/	/	/	/	/

Note:

1. All the equipment/cables were placed in the worst-case configuration to maximize the emission during the test.

2. Grounding was established in accordance with the manufacturer's requirements and conditions for the intended use.

3.3. Configuration of Tested System



3.4. Measurement Results Explanation Example

For all conducted test items:

The offset level is set in the spectrum analyzer to compensate the RF cable loss and attenuator factor between RF conducted output port and spectrum analyzer. With the offset compensation, the spectrum analyzer reading level will be exactly the RF output level. The spectrum analyzer offset is derived from RF cable loss and attenuator factor.

Offset = RF cable loss + attenuator factor.

Hotline: 400-6611-140 Tel: 86-755-27673339 Fax: 86-755-27673332 http://www.tct-lab.com

4. Facilities and Accreditations

4.1. Facilities

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

- FCC - Registration No.: 645098

  SHENZHEN TONGCE TESTING LAB

  Designation Number: CN1205

  The testing lab has been registered and fully described in a report with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files.

- IC - Registration No.: 10668A-1

  SHENZHEN TONGCE TESTING LAB

  CAB identifier: CN0031

  The testing lab has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing.

4.2. Location

SHENZHEN TONGCE TESTING LAB

Address: TCT Testing Industrial Park Fuqiao 5th Industrial Zone, Fuhai Street, Bao'an District Shenzhen, Guangdong, 518103, People's Republic of China

TEL: +86-755-27673339

4.3. Measurement Uncertainty

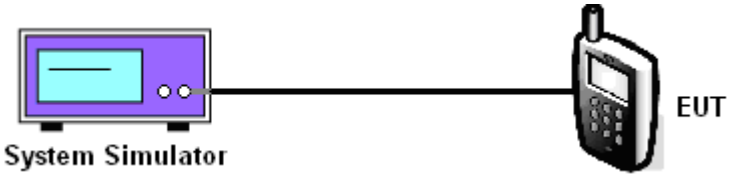
The reported uncertainty of measurement y ± U, where expended uncertainty U is based on a standard uncertainty multiplied by a coverage factor of k=2, providing a level of confidence of approximately 95 %.

No.	Item	MU
1	Conducted Emission	± 3.10 dB
2	RF power, conducted	± 0.12 dB
3	Spurious emissions, conducted	± 0.11 dB
4	All emissions, radiated(<1 GHz)	± 4.56 dB
5	All emissions, radiated(1 GHz - 18 GHz)	± 4.22 dB
6	All emissions, radiated(18 GHz- 40 GHz)	± 4.36 dB

5. Test Results and Measurement Data

5.1. Effective Radiated Power and Effective Isotropic Radiated Power Measurement

5.1.1. Test Specification

Test Requirement:	FCC part 27.50(c), FCC part 27.50(d) and FCC part 27.50(h), FCC part 22.913
Test Method:	FCC part 2.1046
Limit:	LTE Band 5: 7W LTE Band 41: 2W
Test Setup:	
Test Procedure:	1. The transmitter output port was connected to the system simulator. 2. Set EUT at maximum power through system simulator. 3. Select lowest, middle, highest channels for each band and different modulation. 4. Measure and record the power level from the system simulator. 5. Calculate the ERP and EIRP The relevant equation for determining the ERP or EIRP from the conducted RF output power measured using the guidance provided above is: ERP or EIRP = $P_{Meas} + G_T - L_C$ where: ERP or EIRP = effective radiated power or equivalent isotropically radiated power, respectively (expressed in the same units as P Meas , typically dBW or dBm); P_{Meas} = measured transmitter output power or PSD, in dBm or dBW; G_T = gain of the transmitting antenna, in dBd (ERP) or dBi (EIRP); L_C = signal attenuation in the connecting cable between the transmitter and antenna, in dB. *Note: For personal/portable radios utilizing an integral antenna, the factor L C is typically negligible. However, in a fixed station transmit system that utilizes a long cable run between the transmitter and the transmitting antenna, this*

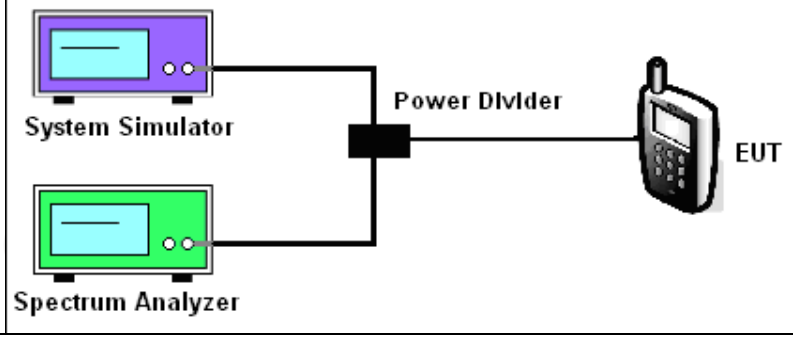
	factor can be significant.
Test Result:	PASS

5.1.2. Test Instruments

Equipment	Manufacturer	Model	Serial Number	Calibration Due
Wideband Radio Communication Tester	R&S	CMW500	114220	Jul. 07, 2022
RF cable (9kHz-40GHz)	TCT	RE-05	N/A	Jul. 07, 2022
Antenna Connector	TCT	RFC-02	N/A	Jul. 07, 2022

5.2. Peak to Average Ratio

5.2.1. Test Specification

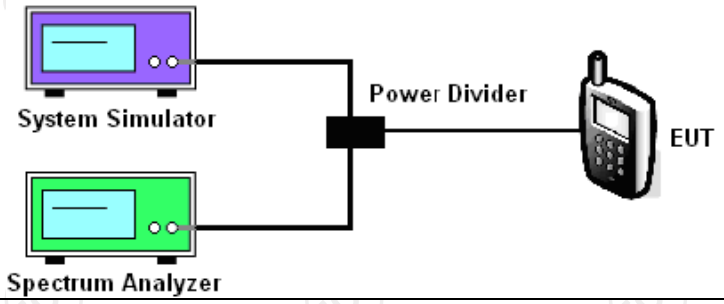
Test Requirement:	FCC part 2.1046; 22.913; 27.50(d); 27.50(c); 27.50(b)
Test Method:	FCC KDB 971168 D01v03
Limit:	The peak-to-average ratio (PAR) of the transmission may not exceed 13 dB.
Test Setup:	
Test Procedure:	1. The testing follows FCC KDB 971168 D01v03 Section 5.7.1. 2. The EUT was connected to spectrum analyzer and system simulator via a power divider. 3. Set EUT to transmit at maximum output power. 4. Set the CCDF (Complementary Cumulative Distribution Function) option of the spectrum analyzer. Record the maximum PAPR level associated with a probability of 0.1%.
Test Result:	PASS

5.2.2. Test Instruments

Equipment	Manufacturer	Model	Serial Number	Calibration Due
Wideband Radio Communication Tester	R&S	CMW500	114220	Jul. 07, 2022
Spectrum Analyzer	Agilent	N9020A	MY49100619	Jul. 18, 2022
RF cable (9kHz-40GHz)	TCT	RE-05	N/A	Jul. 07, 2022
Antenna Connector	TCT	RFC-02	N/A	Jul. 07, 2022

5.3. 99% Occupied Bandwidth and 26dB Bandwidth Measurement

5.3.1. Test Specification

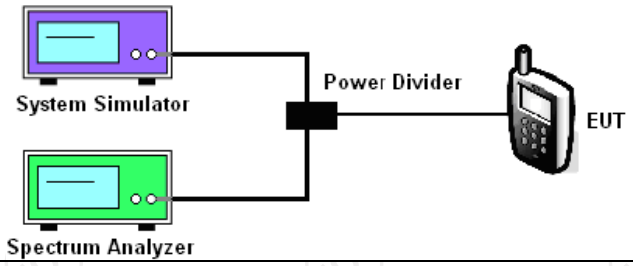
Test Requirement:	FCC part 27.53(h)(3) and FCC part 27.53(m)(6)
Test Method:	FCC part 2.1049
Limit:	N/A
Test Setup:	
Test Procedure:	1. The testing follows FCC KDB 971168 D01v03 Section 4.2. 2. The EUT was connected to the spectrum analyzer and system simulator via a power divider. 3. The RF output of the EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement. 4. The 99% occupied bandwidth were measured, set RBW= 1% of OBW, VBW= 3*RBW, sample detector, trace maximum hold. 5. The 26dB bandwidth were measured, set RBW= 1% of EBW, VBW= 3*RBW, peak detector, trace maximum hold.
Test Result:	PASS

5.3.2. Test Instruments

Equipment	Manufacturer	Model	Serial Number	Calibration Due
Wideband Radio Communication Tester	R&S	CMW500	114220	Jul. 07, 2022
Spectrum Analyzer	Agilent	N9020A	MY49100619	Jul. 18, 2022
RF cable (9kHz-40GHz)	TCT	RE-05	N/A	Jul. 07, 2022
Antenna Connector	TCT	RFC-02	N/A	Jul. 07, 2022

5.4. Band Edge and Conducted Spurious Emission Measurement

5.4.1. Test Specification

Test Requirement:	FCC part 27.53(h), FCC part 27.53(g) , FCC part 27.53(m)(4), FCC part 22.917(a)
Test Method:	FCC part2.1051
Limit:	-13dBm
Test Setup:	
Test Procedure:	1. The testing follows FCC KDB 971168 D01v03 Section 6.0. 2. The EUT was connected to the spectrum analyzer and system simulator via a power divider. 3. The RF output of EUT was connected to the spectrum analyzer by an RF cable and attenuator. The path loss was compensated to the results for each measurement. 4. The band edges of low and high channels for the highest RF powers were measured. 5. The conducted spurious emission for the whole frequency range was taken. 6. The RF fundamental frequency should be excluded against the limit line in the operating frequency band. 7. The limit line is derived from 43 + 10log(P) dB below the transmitter power P(Watts) = P(W) - [43 + 10log(P)] (dB) = [30 + 10log(P)] (dBm) - [43 + 10log(P)] (dB) = -13dBm. For Band 17, he limit line is derived from 55 + 10log(P) dB below the transmitter power
Test Result:	PASS

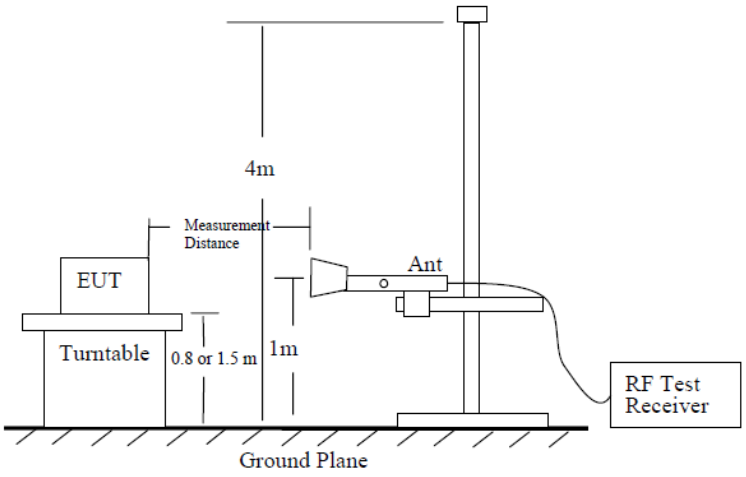
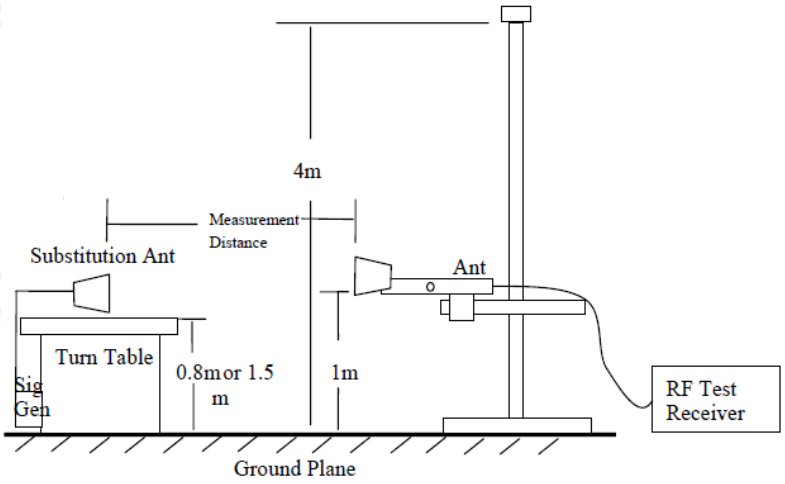
Hotline: 400-6611-140 Tel: 86-755-27673339 Fax: 86-755-27673332 http://www.tct-lab.com

5.4.2. Test Instruments

Equipment	Manufacturer	Model	Serial Number	Calibration Due
Wideband Radio Communication Tester	R&S	CMW500	114220	Jul. 07, 2022
Spectrum Analyzer	Agilent	N9020A	MY49100619	Jul. 18, 2022
RF cable (9kHz-40GHz)	TCT	RE-05	N/A	Jul. 07, 2022
Antenna Connector	TCT	RFC-02	N/A	Jul. 07, 2022

5.5. Field Strength of Spurious Radiation Measurement

5.5.1. Test Specification

Test Requirement:	FCC part 27.53(g) ,FCC part 27.53(h), FCC part 27.53(m)(4), FCC part 22.917(a)
Test Method:	FCC part 2.1053
Limit:	30MHz~20GHz -13dBm
Test setup:	 
Test Procedure:	1. The testing follows FCC KDB 971168 D01v03 Section 5.8 and ANSI / TIA-603-D-2010Section 2.2.12. 2. The EUT was placed on a rotatable wooden table 0.8 meters above the ground. 3. The EUT was set 3 meters from the receiving antenna, which was mounted on the antenna tower. 4. The table was rotated 360 degrees to determine the position of the highest spurious emission. 5. The height of the receiving antenna is varied between one meter and four meters to search for the maximum

	spurious emission for both horizontal and vertical polarizations. 6. Make the measurement with the spectrum analyzer's RBW = 1MHz, VBW = 3MHz, taking record of maximum spurious emission. 7. A horn antenna was substituted in place of the EUT and was driven by a signal generator. 8. Tune the output power of signal generator to the same emission level with EUT maximum spurious emission. 9. Taking the record of output power at antenna port. 10. Repeat step 7 to step 8 for another polarization. 11. EIRP (dBm) = S.G. Power – Tx Cable Loss + Tx Antenna Gain 12. ERP (dBm) = EIRP - 2.15 13. The RF fundamental frequency should be excluded against the limit line in the operating frequency band. 14. The limit line is derived from 43 + 10log(P) dB below the transmitter power P(Watts) = P(W) - [43 + 10log(P)] (dB) = [30 + 10log(P)] (dBm) - [43 + 10log(P)] (dB) = -13dBm.
Test results:	PASS
Remark:	All modulations have been tested, but only the worst modulation show in this test item.

Hotline: 400-6611-140 Tel: 86-755-27673339 Fax: 86-755-27673332 http://www.tct-lab.com

5.5.2. Test Instruments

Radiated Emission Test Site (966)				
Name of Equipment	**Manufacturer**	**Model**	**Serial Number**	**Calibration Due**
Universal Radio Communication Tester	R&S	CMU200	110188	Jul. 07, 2022
Spectrum Analyzer	R&S	FSQ40	200061	Jul. 07, 2022
Signal Generator	HP	83623B	3614A00396	Jul. 18, 2022
Broadband Antenna	Schwarzbeck	VULB9163	340	Sep. 04, 2022
Horn Antenna	Schwarzbeck	BBHA 9120D	631	Sep. 04, 2022
Broadband Antenna	Schwarzbeck	VULB9163	412	Sep. 04, 2022
Horn Antenna	Schwarzbeck	BBHA 9120D	1201	Sep. 04, 2022
Horn Antenna	Schwarzbeck	BBHA 9170	00956	Apr. 10, 2023
Dipole Antenna	TCT	TCT-RF	N/A	Sep. 02, 2021
Coaxial cable	SKET	RC_DC18G-N	N/A	Apr. 08, 2022
Coaxial cable	SKET	RC-DC18G-N	N/A	Apr. 08, 2022
Coaxial cable	SKET	RC-DC40G-N	N/A	Jul. 07, 2022
Antenna Mast	Keleto	CC-A-4M	N/A	N/A
EMI Test Software	Shurple Technology	EZ-EMC	N/A	N/A

Hotline: 400-6611-140 Tel: 86-755-27673339 Fax: 86-755-27673332 http://www.tct-lab.com

5.5.3. Test Data

Frequency Range (9 kHz-30MHz)

Frequency (MHz)	Level@3m (dBμV/m)	Limit@3m (dBμV/m)
--	--	--
--	--	--
--	--	--
--	--	--

Note: *1. Emission Level=Reading+ Cable loss+Antenna factor-Amp factor*

2. The emission levels are 20 dB below the limit value, which are not reported. It is deemed to comply with the requirement

Band	Band 5(QPSK, 10MHz)	Test channel:	Lowest
Test mode:		Temperature:	25°C
		Relative Humidity:	56%

Note: Spurious emissions within 30-1000MHz were found more than 20dB below limit line.

Frequency (MHz)	Spurious Emission				Limit (dBm)	Result
	Polarization	Level (dBm)	Correction Factor (dB)	Spurious emissions (dBm)		
1658.00	Vertical	-60.24	23.15	-37.09	-13.00	PASS
2487.00	V	-64.85	23.24	-41.61		
3316.00	V	-79.04	23.35	-55.69		
1658.00	Horizontal	-59.36	23.15	-36.21		
2487.00	H	-61.68	23.24	-38.44		
3316.00	H	-77.23	23.35	-53.88		

Band	Band 5(QPSK, 10MHz)	Test channel:	Middle
Test mode:		Temperature:	25°C
		Relative Humidity:	56%

Note: Spurious emissions within 30-1000MHz were found more than 20dB below limit line.

Frequency (MHz)	Spurious Emission				Limit (dBm)	Result
	Polarization	Level (dBm)	Correction Factor (dB)	Spurious emissions (dBm)		
1673.00	Vertical	-58.97	23.17	-35.80	-13.00	PASS
2509.50	V	-70.12	23.26	-46.86		
3346.00	V	-78.05	23.38	-54.67		
1673.00	Horizontal	-57.47	23.17	-34.30		
2509.50	H	-63.86	23.26	-40.60		
3346.00	H	-77.77	23.38	-54.39		

Band	Band 5(QPSK, 10MHz)	Test channel:	Highest
Test mode:		Temperature:	25°C
		Relative Humidity:	56%

Note: Spurious emissions within 30-1000MHz were found more than 20dB below limit line.

Frequency (MHz)	Spurious Emission				Limit (dBm)	Result
	Polarization	Level (dBm)	Correction Factor (dB)	Spurious emissions (dBm)		
1688.00	Vertical	-61.61	23.19	-38.42	-13.00	PASS
2532.00	V	-71.26	23.28	-47.98		
3376.00	V	-82.72	23.40	-59.32		
1688.00	Horizontal	-57.44	23.19	-34.25		
2532.00	H	-66.25	23.28	-42.97		
3376.00	H	-81.58	23.40	-58.18		

Band	Band 5(16QAM, 10MHz)			Test channel:	Lowest
Test mode:				Temperature:	25°C
				Relative Humidity:	56%
Note: Spurious emissions within 30-1000MHz were found more than 20dB below limit line.					
Frequency (MHz)	Spurious Emission			Limit (dBm)	Result
	Polarization	Level (dBm)	Correction Factor (dB)	Spurious emissions (dBm)	
1658.00	Vertical	-58.57	23.15	-35.42	-13.00 PASS
2487.00	V	-64.14	23.24	-40.90	
3316.00	V	-79.85	23.35	-56.50	
1658.00	Horizontal	-58.03	23.15	-34.88	
2487.00	H	-63.41	23.24	-40.17	
3316.00	H	-78.11	23.35	-54.76	

Band	Band 5(16QAM, 10MHz)			Test channel:	Middle
Test mode:				Temperature:	25°C
				Relative Humidity:	56%
Note: Spurious emissions within 30-1000MHz were found more than 20dB below limit line.					
Frequency (MHz)	Spurious Emission			Limit (dBm)	Result
	Polarization	Level (dBm)	Correction Factor (dB)	Spurious emissions (dBm)	
1673.00	Vertical	-59.24	23.17	-36.07	-13.00 PASS
2509.50	V	-69.92	23.26	-46.66	
3346.00	V	-77.44	23.38	-54.06	
1673.00	Horizontal	-56.01	23.17	-32.84	
2509.50	H	-64.72	23.26	-41.46	
3346.00	H	-78.18	23.38	-54.80	

Band	Band 5(16QAM, 10MHz)			Test channel:	Highest
Test mode:				Temperature:	25°C
				Relative Humidity:	56%
Note: Spurious emissions within 30-1000MHz were found more than 20dB below limit line.					
Frequency (MHz)	Spurious Emission			Limit (dBm)	Result
	Polarization	Level (dBm)	Correction Factor (dB)	Spurious emissions (dBm)	
1688.00	Vertical	-61.42	23.19	-38.23	-13.00 PASS
2532.00	V	-69.65	23.28	-46.37	
3376.00	V	-79.01	23.40	-55.61	
1688.00	Horizontal	-56.99	23.19	-33.80	
2532.00	H	-67.22	23.28	-43.94	
3376.00	H	-80.31	23.40	-56.91	

Hotline: 400-6611-140 Tel: 86-755-27673339 Fax: 86-755-27673332 http://www.tct-lab.com

Band	Band 41(QPSK, 20MHz)	Test channel:	Lowest
Test mode:		Temperature:	25°C
		Relative Humidity:	56%

Note: Spurious emissions within 30-1000MHz were found more than 20dB below limit line.

Frequency (MHz)	Spurious Emission				Limit (dBm)	Result
	Polarization	Level (dBm)	Correction Factor (dB)	Spurious emissions (dBm)		
5130.00	Vertical	-60.61	22.16	-38.45	-25.00	PASS
7695.00	V	-65.98	22.99	-42.99		
10260.00	V	-80.71	23.04	-57.67		
5130.00	Horizontal	-60.72	22.16	-38.56		
7695.00	H	-62.50	22.99	-39.51		
10260.00	H	-78.46	23.04	-55.42		

Band	Band 41(QPSK, 20MHz)	Test channel:	Middle
Test mode:		Temperature:	25°C
		Relative Humidity:	56%

Note: Spurious emissions within 30-1000MHz were found more than 20dB below limit line.

Frequency (MHz)	Spurious Emission				Limit (dBm)	Result
	Polarization	Level (dBm)	Correction Factor (dB)	Spurious emissions (dBm)		
5210.00	Vertical	-60.03	22.76	-37.27	-25.00	PASS
7815.00	V	-70.25	23.07	-47.18		
10420.00	V	-79.58	23.11	-56.47		
5210.00	Horizontal	-56.24	22.76	-33.48		
7815.00	H	-63.42	23.07	-40.35		
10420.00	H	-78.76	23.11	-55.65		

Band	Band 41(QPSK, 20MHz)	Test channel:	Highest
Test mode:		Temperature:	25°C
		Relative Humidity:	56%

Note: Spurious emissions within 30-1000MHz were found more than 20dB below limit line.

Frequency (MHz)	Spurious Emission				Limit (dBm)	Result
	Polarization	Level (dBm)	Correction Factor (dB)	Spurious emissions (dBm)		
5290.00	Vertical	-62.48	22.42	-40.06	-25.00	PASS
7935.00	V	-71.88	22.33	-49.55		
10580.00	V	-82.59	23.00	-59.59		
5290.00	Horizontal	-57.25	22.42	-34.83		
7935.00	H	-65.51	22.33	-43.18		
10580.00	H	-81.86	23.00	-58.86		

Hotline: 400-6611-140 Tel: 86-755-27673339 Fax: 86-755-27673332 http://www.tct-lab.com

Band	Band 41(16QAM, 20MHz)				Test channel:	Lowest
Test mode:					Temperature:	25°C
					Relative Humidity:	56%
Note: Spurious emissions within 30-1000MHz were found more than 20dB below limit line.						
Frequency (MHz)	Spurious Emission				Limit (dBm)	Result
	Polarization	Level (dBm)	Correction Factor (dB)	Spurious emissions (dBm)		
5130.00	Vertical	-59.61	22.16	-37.45	-25.00	PASS
7695.00	V	-63.26	22.99	-40.27		
10260.00	V	-81.35	23.04	-58.31		
5130.00	Horizontal	-58.27	22.16	-36.11		
7695.00	H	-64.33	22.99	-41.34		
10260.00	H	-78.55	23.04	-55.51		

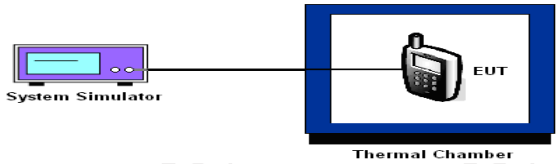
Band	Band 41(16QAM, 20MHz)				Test channel:	Middle
Test mode:					Temperature:	25°C
					Relative Humidity:	56%
Note: Spurious emissions within 30-1000MHz were found more than 20dB below limit line.						
Frequency (MHz)	Spurious Emission				Limit (dBm)	Result
	Polarization	Level (dBm)	Correction Factor (dB)	Spurious emissions (dBm)		
5210.00	Vertical	-59.78	22.76	-37.02	-25.00	PASS
7815.00	V	-69.96	23.07	-46.89		
10420.00	V	-78.51	23.11	-55.40		
5210.00	Horizontal	-58.44	22.76	-35.68		
7815.00	H	-65.36	23.07	-42.29		
10420.00	H	-78.83	23.11	-55.72		

Band	Band 41(16QAM, 20MHz)				Test channel:	Highest
Test mode:					Temperature:	25°C
					Relative Humidity:	56%
Note: Spurious emissions within 30-1000MHz were found more than 20dB below limit line.						
Frequency (MHz)	Spurious Emission				Limit (dBm)	Result
	Polarization	Level (dBm)	Correction Factor (dB)	Spurious emissions (dBm)		
5290.00	Vertical	-60.78	22.42	-38.36	-25.00	PASS
7935.00	V	-70.65	22.33	-48.32		
10580.00	V	-78.55	23.00	-55.55		
5290.00	Horizontal	-57.33	22.42	-34.91		
7935.00	H	-66.52	22.33	-44.19		
10580.00	H	-80.46	23.00	-57.46		

Hotline: 400-6611-140 Tel: 86-755-27673339 Fax: 86-755-27673332 http://www.tct-lab.com

5.6. Frequency Stability Measurement

5.6.1. Test Specification

Test Requirement:	FCC part 27.54, FCC part 22.355
Test Method:	FCC Part 2.1055
Limit:	±2.5 ppm
Test Setup:	
Test Procedure:	**Test Procedures for Temperature Variation** 1. The testing follows FCC KDB 971168 D01v03 Section 9.0. 2. The EUT was set up in the thermal chamber and connected with the system simulator. 3. With power OFF, the temperature was decreased to -30°C and the EUT was stabilized before testing. Power was applied and the maximum change in frequency was recorded within one minute. 4. With power OFF, the temperature was raised in 10°C steps up to 50°C. The EUT was stabilized at each step for at least half an hour. Power was applied and the maximum frequency change was recorded within one minute. **Test Procedures for Voltage Variation** 1. The testing follows FCC KDB 971168 D01v03 Section 9.0. 2. The EUT was placed in a temperature chamber at 25±5° C and connected with the system simulator. 3. The power supply voltage to the EUT was varied from BEP to 115% of the nominal value measured at the input to the EUT. 4. The variation in frequency was measured for the worst case. 5. The worst case(worst bandwidth) for frequency stability reported in the Test Data. The worst bandwidth is as follow: 1.4M is for LTE Band 5, 5M is for LTE Band 41
Test Result:	PASS

5.6.2. Test Instruments

Equipment	Manufacturer	Model	Serial Number	Calibration Due
Wideband Radio Communication Tester	R&S	CMW500	114220	Jul. 07, 2022
Programable tempratuce and humidity chamber	JQ	MHU-80L	N/A	Jul. 18, 2022
DC power supply	Kingrang	KR3005K	N/A	Jul. 18, 2022
RF cable (9kHz-40GHz)	TCT	RE-04	N/A	Jul. 18, 2022
Antenna Connector	TCT	RFC-03	N/A	Jul. 18, 2022

Appendix A: Photographs of Test Setup

Refer to the test report No. TCT210926E026

Appendix B: Photographs of EUT

Refer to the test report No. TCT210926E008

Test Data for Appendix For LTE Band 5 and Appendix For LTE Band 41

********END OF REPORT********

Hotline: 400-6611-140 Tel: 86-755-27673339 Fax: 86-755-27673332 http://www.tct-lab.com