



# TEST REPORT

**Product Name** : Tablet PC  
**Brand Name** : Wishtel  
**Model** : T808  
**Series Model** : N/A  
**FCC ID** : 2BHIY-IRAT808  
**Applicant** : **Wishtel Pvt Ltd**  
**Address** : 4, Champaklal Industrail Estate, Sion East, Mumbai, MH - 400022  
**Manufacturer** : **Wishtel Pvt Ltd**  
**Address** : 4, Champaklal Industrail Estate, Sion East, Mumbai, MH - 400022  
**Standard(s)** : FCC CFR Title 47 Part 2, Part 22H, Part 24E, and Part 27  
ANSI C63.26:2015  
KDB 971168 D01  
**Date of Receipt** : July 08, 2024  
**Date of Test** : July 08, 2024 ~ July 22, 2024  
**Issued Date** : July 22, 2024

**Issued By:** **Guangdong Asia Hongke Test Technology Limited**  
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Note: This device has been tested and found to comply with the standard(s) listed, this test report merely corresponds to the test sample. It is not permitted to copy extracts of these test result without the written permission of the test laboratory. This report shall not be reproduced except in full, without the written approval of Guangdong Asia Hongke Test Technology Limited. If there is a need to alter or revise this document, the right belongs to Guangdong Asia Hongke Test Technology Limited, and it should give a prior written notice of the revision document. This test report must not be used by the client to claim product endorsement.



**Report Revise Record**

Report Version	Issued Date	Notes
M1	July 22, 2024	Initial Release

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# 1 TEST SUMMARY

## 1.1 Test Standards

The tests were performed according to following standards:

[FCC Part 22](#): PRIVATE LAND MOBILE RADIO SERVICES.

[FCC Part 24](#): PUBLIC MOBILE SERVICES

[Part 27](#): MISCELLANEOUS WIRELESS COMMUNICATIONS SERVICES

[FCC Part 2](#): FREQUENCY ALLOCATIONS AND RADIO TREATY MATTERS; GENERAL RULES AND REGULATIONS

[ANSI C63.26:2015](#): American National Standard of procedures for compliance testing of transmitters used in licensed radio services.

[ANSI C63.10-2013](#) Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz

[KDB971168 D01:v03r01](#) MEASUREMENT GUIDANCE FOR CERTIFICATION OF LICENSED DIGITAL TRANSMITTERS

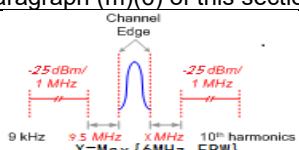
## 1.2 Test Summary

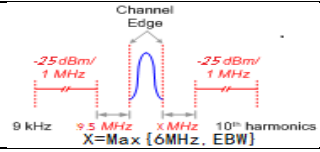
### Band5 (824-848MHz)

Test Item	FCC Rule No.	Requirements	Verdict (Note1)
Effective(Isotropic) Radiated Power Output Data	Part 2.1046, 22.913(a)	$EIRP \leq 1W$	Pass
Peak-Average Ratio	--	Limits13 dB	Pass
Bandwidth	Part 2.1049	OBW:No limit. EBW:No limit.	Pass
Band Edges Compliance	Part 2.1051, 22.917(a)	$\leq -13$ dBm/1%*EBW, in1MHz bands immediately outside and adjacent to the frequency block.	Pass
Spurious Emission at Antenna Terminals	Part 2.1051, 22.917(a)	$\leq -13$ dBm/1MHz, from9 kHz to 10 <sup>th</sup> harmonics but out sideauthorized operating frequency ranges.	Pass
Field Strength of Spurious Radiation	Part 2.1051, 22.917(a)	$\leq -13$ dBm/1MHz.	Pass
Frequency Stability	Part 2.1055, 22.355	$\leq \pm 2.5$ ppm.	Pass

Note1: For the verdict, the "N/A" denotes "not applicable", the "N/T" denotes "not tested".

### Band7 (2500-2570MHz)

Test Item	FCC Rule No.	Requirements	Verdict (Note1)
Effective (Isotropic) Radiated Power Output Data	Part 2.1046 27.50(h)	$EIRP \leq 2 W$	Pass
Peak-Average Ratio	Part 27.50(a)	Limits13 dB	Pass
Bandwidth	Part 2.1049	OBW: No limit. EBW: No limit.	Pass
Band Edges Compliance	Part 2.1051, 27.53(m4)	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.	Pass
Spurious Emission at Antenna Terminals	Part 2.1051, 27.53(m)	 <p><math>-25</math> dBm/1 MHz</p> <p>9 kHz 9.5 MHz X MHz 10<sup>th</sup> harmonics</p> <p><math>X = \text{Max} \{ 6\text{MHz}, \text{EBW} \}</math></p>	Pass

Field Strength of Spurious Radiation	Part 2.1053, 27.53(m)		Pass
Frequency Stability	Part 2.1055, 27.54	Within authorized bands of operation/frequency block.	Pass
Note1: For the verdict, the "N/A" denotes "not applicable", the "N/T" denotes "not tested".			

### Band38 (2570-2620MHz)

Test Item	FCC Rule No.	Requirements	Verdict (Note1)
Effective(Isotropic) Radiated Power Output Data	§2.1046, §27.50(h)	EIRP $\leq$ 2W;	PASS
Peak-Average Ratio	§2.1046, §27.50	Limit $\leq$ 13dB	PASS
Modulation Characteristics	§2.1047	Digital modulation	N/A
Bandwidth	§2.1049	OBW: Nolimit. EBW: Nolimit.	PASS
BandEdges Compliance	§2.1051, §27.53(m)	$\leq$ -13dBm/1%*EBW,in1 MHz bands immediately outside and adjacent to The frequency block.	PASS
Spurious Emission at Antenna Terminals	§2.1051, §27.53(m)	$\leq$ -13dBm/1MHz, from 9kHz to10th harmonics but outside authorized Operating frequency ranges.	PASS
Frequency Stability	§2.1055, §27.54	Within authorized bands of operation/frequency block.	PASS
Radiated spurious emission	§2.1053, §27.53(m)	$\leq$ -25dBm/1MHz.	PASS
NOTE 1:For the verdict, the"N/A"denotes"not applicable",the"N/T"de notes "not tested".			

**Band40 (2305-2315 MHz /2350-2360 MHz)**

Test Item	FCC Rule No	Requirements	Verdict (Note1)
Effective (Isotropic) Radiated Power Output Data	Part 27.50(c)	FCC: ERP $\leq$ 3 W.	Pass
Peak-Average Ratio	Part 2.1046, Part 27.50(c)	Limits $\leq$ 13 dB	Pass
Bandwidth	Part 2.1049	OBW: No limit. EBW: No limit.	Pass
Band Edges Compliance	Part 2.1051, Part 27.53(g) ,	$\leq$ -13 dBm/1%*EBW, in 1 MHz bands immediately outside and adjacent to the frequency block.	Pass
Spurious Emission at Antenna Terminals	Part 2.1051, 27.53(g)	FCC: $\leq$ -13 dBm/100 kHz, from 9 kHz to 10th harmonics but outside authorized operating frequency ranges.	Pass
Field Strength of Spurious Radiation	Part 2.1053, 27.53(g)	FCC: $\leq$ -13 dBm/100 kHz.	Pass
Frequency Stability	Part 2.1055 27.54	$\leq \pm 2.5$ ppm.	Pass
Modulation Characteristics	Part 2.1047	Digital modulation	Pass
Note1: For the verdict, the "N/A" denotes "not applicable", the "N/T" denotes "not tested".			

**Band41 (2555MHz -2655MHz)**

Test Item	FCC Rule No.	Requirements	Verdict (Note1)
Effective(Isotropic) Radiated Power Output Data	§2.1046, §27.50(h)	EIRP $\leq$ 2W;	PASS
Peak-Average Ratio	§2.1046, §27.50	Limits $\leq$ 13dB	PASS
Modulation Characteristics	§2.1047	Digital modulation	N/A
Bandwidth	§2.1049	OBW: Nolimit. EBW: Nolimit.	PASS
BandEdges Compliance	§2.1051, §27.53(m)	$\leq$ -13dBm/1%*EBW,in1 MHz bands immediately outside and adjacent to The frequency block.	PASS
Spurious Emission at Antenna Terminals	§2.1051, §27.53(m)	$\leq$ -13dBm/1MHz, from 9kHz to10th harmonics but outside authorized Operating frequency ranges.	PASS
Frequency Stability	§2.1055, §27.54	Within authorized bands of operation/frequency block.	PASS
Radiated spurious emission	§2.1053, §27.53(m)	$\leq$ -25dBm/1MHz.	PASS
NOTE 1:For the verdict, the"N/A"denotes"not applicable",the"N/T"de notes "not tested".			

### 1.3 Test Facility

#### Test Laboratory:

#### Guangdong Asia Hongke Test Technology Limited

B1/F, Building 11, Junfeng Industrial Park, Chongqing Road, Heping Community, Fuhai Street, Bao'an District, Shenzhen, Guangdong, China

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

#### FCC-Registration No.: 251906 Designation Number: CN1376

Guangdong Asia Hongke Test Technology Limited has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files.

#### IC —Registration No.: 31737 CAB identifier: CN0165

The 3m Semi-anechoic chamber of Guangdong Asia Hongke Test Technology Limited has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 31737

#### A2LA-Lab Cert. No.: 7133.01

Guangdong Asia Hongke Test Technology Limited has been accredited by A2LA for technical competence in the field of electrical testing, and proved to be in compliance with ISO/IEC 17025: 2017 General Requirements for the Competence of Testing and Calibration Laboratories and any additional program requirements in the identified field of testing.

### 1.4 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 according to CISPR 16 - 4 "Specification for radio disturbance and immunity measuring apparatus and methods – Part 4: Uncertainty in EMC Measurements" and is documented in the Guangdong Asia Hongke Test Technology Limited's quality system according 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 Asia Hongke laboratory is reported:

Test	Measurement Uncertainty	Notes
Power Line Conducted Emission	150KHz~30MHz $\pm 1.20$ dB	(1)
Radiated Emission	9KHz~30Hz $\pm 3.10$ dB	(1)
Radiated Emission	9KHz~1GHz $\pm 3.75$ dB	(1)
Radiated Emission	1GHz~18GHz $\pm 3.88$ dB	(1)
Radiated Emission	18GHz~40GHz $\pm 3.88$ dB	(1)
RF power, conducted	30MHz~6GHz $\pm 0.16$ dB	(1)
RF power density, conducted	$\pm 0.24$ dB	(1)
Spurious emissions, conducted	$\pm 0.21$ dB	(1)
Temperature	$\pm 1^{\circ}\text{C}$	(1)
Humidity	$\pm 3\%$	(1)
DC and low frequency voltages	$\pm 1.5\%$	(1)
Time	$\pm 2\%$	(1)
Duty cycle	$\pm 2\%$	(1)

The report uncertainty of measurement  $y \pm U$ , 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%

## 2 GENGGENERAL INFORMATION

### 2.1 Environmental conditions

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

Normal Temperature:	25°C
Relative Humidity:	55 %
Air Pressure:	101 kPa

### 2.2 General Description of EUT

Product Name:	Tablet PC
Model/Type reference:	T808
Serial Model:	N/A
Power Supply:	DC 3.8V from battery 4000mAh
Adapter Information:	Model: AS1201A-0502000USU Input: 100-240V~50/60Hz 0.35A Max Output: 5.0V=2000mA
Hardware Version:	N/A
Software Version:	N/A
Sample(s) Status:	AiTDG-240708005-1(Normal sample) AiTDG-240708005-2(Engineer sample)
<b>LTE:</b>	
Operation Band:	FDD-LTE: Band /5/7 TDD-LTE: Band 38/40/41
Support Bandwidth:	Band 5: 1.4MHz, 3MHz, 5MHz, 10MHz Band 7: 5MHz, 10MHz, 15MHz, 20MHz Band 38: 5MHz, 10MHz, 15MHz, 20MHz Band 40: 5MHz, 10MHz, 15MHz, 20MHz Band 41: 5MHz, 10MHz, 15MHz, 20MHz
Frequency Range:	Band 5: 824~849MHz Band 7: 2500~2570MHz Band 38: 2570~2620MHz Band 40: 2305~2315MHz & 2300~2400 MHz Band 41: 2555~2655MHz
Power Class:	Power Class 3
Modulation Type:	QPSK, 16QAM
Antenna type:	FPC Antenna
Antenna gain:	LTE Band 5: 0.57dBi; LTE Band 7:1.21dBi LTE Band 38: 1.21dBi; LTE Band 40: 1.19dBi; LTE Band 41:1.21dBi
<b>Remark:</b> The above DUT's information was declared by manufacturer. For more detailed features description, please refer to the manufacturer's specifications or the User's Manual.	

### 2.3 Description of Test Modes and Test Frequency

The EUT has been tested under typical operating condition. The CMW500 used to control the EUT staying in continuous transmitting and receiving mode for testing. Regards to the frequency band



operation: the lowest, middle and highest frequency of channel were selected to perform the test, then shown on this report.

### Test Frequency:

#### Band 5

Test Frequency ID	Bandwidth [MHz]	NUL	Frequency of Uplink [MHz]	NDL	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	20450	829	2450	874
Mid Range	1.4/3/5/10	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	20700	835	2700	880

#### Band 7

Test Frequency ID	Bandwidth [MHz]	NUL	Frequency of Uplink [MHz]	NDL	Frequency of Downlink [MHz]
Low Range	5	20775	2502.5	2775	2622.5
	10	20800	2505	2800	2625
	15	20825	2507.5	2825	2627.5
	20	20850	2510	2850	2630
Mid Range	5/10/15/20	21100	2535	3100	2655
High Range	5	21425	2567.5	3425	2687.5
	10	21400	2565	3400	2685
	15	21375	2562.5	3375	2682.5
	20	21350	2560	3350	2680

#### Band 38

Test Frequency ID	Bandwidth [MHz]	NUL	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

### Band 40

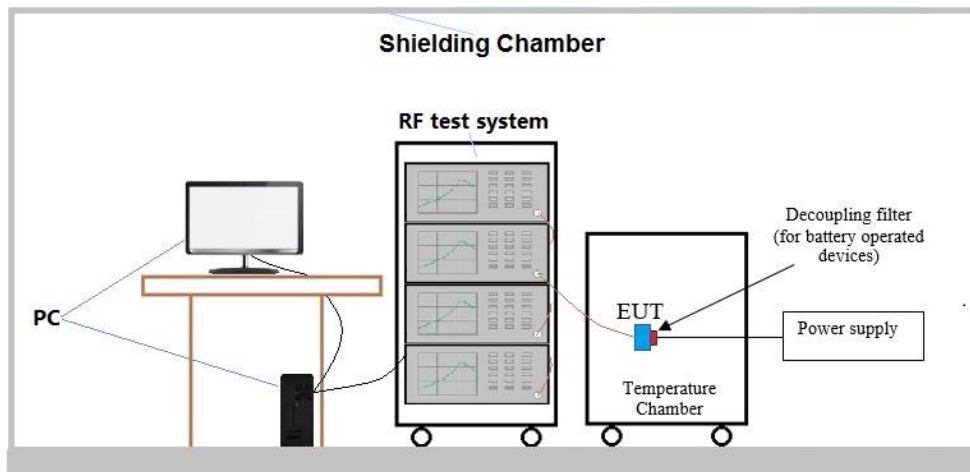
Test Frequency ID	Bandwidth [MHz]	NUL	Frequency (UL and DL) [MHz]
Low Range	5	38675	2302.5
	10	38700	2305
	15	38725	2307.5
	20	38750	2310
Mid Range	5/10/15/20	39150	2350
High Range	5	39625	2397.5
	10	39600	2395
	15	39575	2392.5
	20	39550	2390

### Band 41

Test Frequency ID	Bandwidth [MHz]	NUL	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

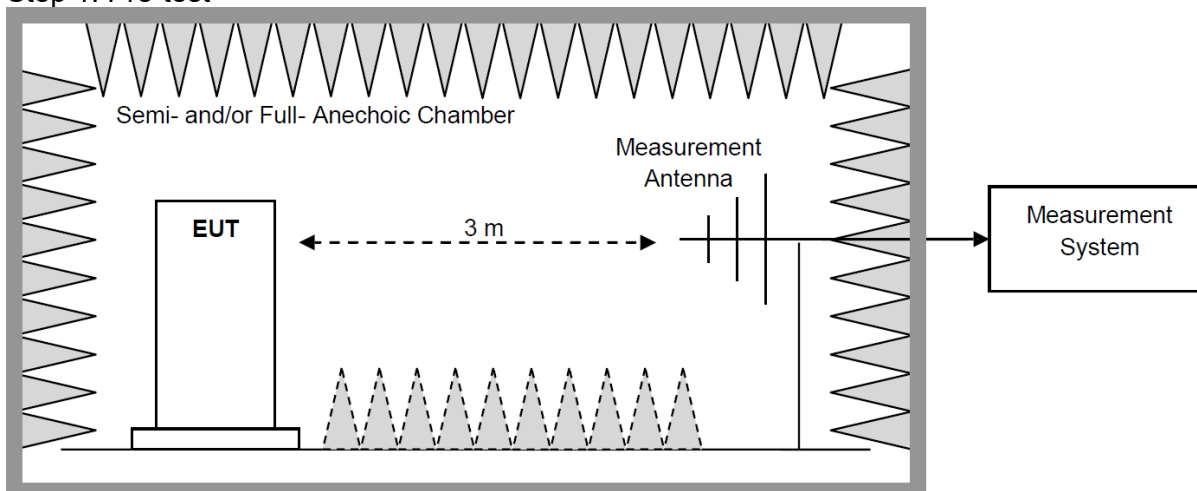
## 2.4 Test Setup and Conditions

### 2.4.1 Conducted Measurement Test Setup

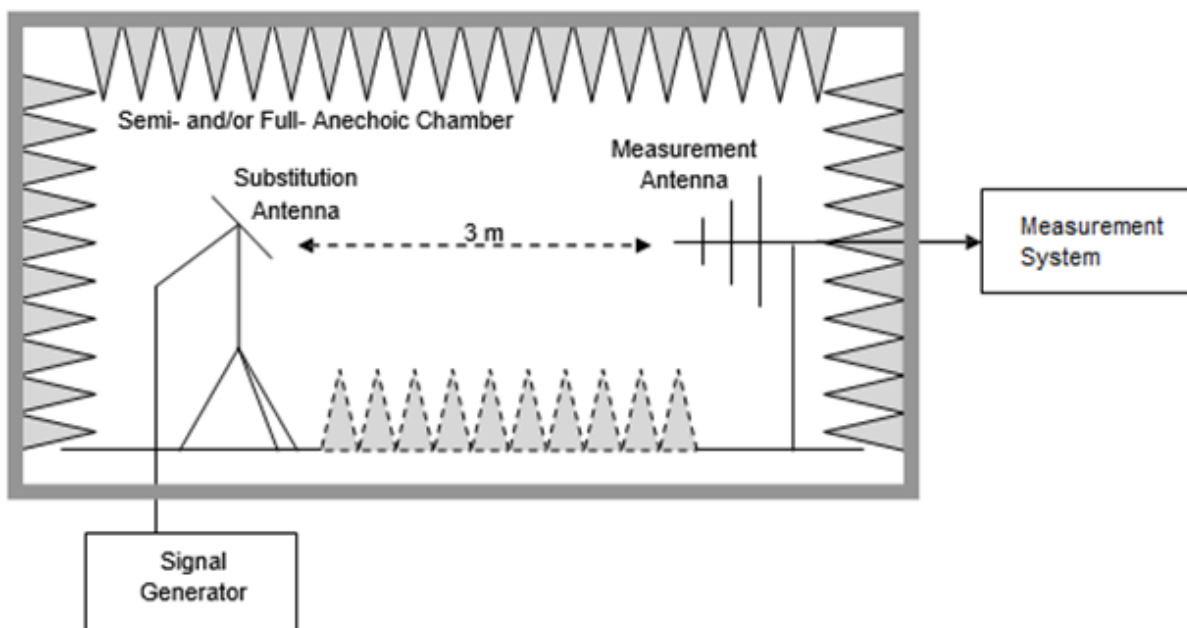


### 2.4.2 Radiated Measurement Test Setup

Step 1: Pre-test



Step 2: Substitution method to verify the maximum ERP/EIRP



No	Test Equipment	Manufacturer	Model No	Serial No	Cal. Date	Cal. Due Date
1	Spectrum Analyzer	R&S	FSV40	101470	2023.09.08	2024.09.07
2	Spectrum Analyzer	Keysight	N9020A	MY51280643	2023.09.08	2024.09.07
3	EMI Measuring Receiver	R&S	ESR	101660	2023.09.08	2024.09.07
4	Low Noise Pre-Amplifier	HP	HP8447E	1937A01855	2023.09.08	2024.09.07
5	Low Noise Pre-Amplifier	Tsj	MLA-0120-A02-34	2648A04738	2023.09.08	2024.09.07
6	Passive Loop	ETS	6512	00165355	2022.09.04	2024.09.03
7	TRILOG Super Broadband test Antenna	SCHWARZBECK	VULB9160	9160-3206	2021.08.29	2024.08.28
8	Broadband Horn Antenna	SCHWARZBECK	BBHA9120D	452	2021.08.29	2024.08.28
9	SHF-EHF Horn Antenna 15-40GHz	SCHWARZBECK	BBHA9170	BBHA9170367d	2021.08.29	2024.08.28
10	EMI Measuring Receiver	R&S	ESR	101160	2023.09.13	2024.09.12
11	LISN	SCHWARZBECK	NNLK 8129	8130179	2023.10.29	2024.10.28
12	Pulse Limiter	R&S	ESH3-Z2	102789	2023.09.13	2024.09.12
13	Pro.Temp&Humi.chamber	MENTEK	MHP-150-1C	MAA08112501	2023.09.08	2024.09.07
14	RF Automatic Test system	MW	MW100-RFCB	21033016	2023.09.08	2024.09.07
15	Signal Generator	Agilent	N5182A	MY50143009	2023.09.08	2024.09.07
16	Wideband Radio communication tester	R&S	CMW500	1201.0002K50	2023.09.08	2024.09.07
17	RF Automatic Test system	MW	MW100-RFCB	21033016	2023.09.08	2024.09.07
18	DC power supply	ZHAOXIN	RXN-305D-2	28070002559	N/A	N/A
19	RE Software	EZ	EZ-EMC_RE	Ver.AIT-03A	N/A	N/A
20	CE Software	EZ	EZ-EMC_CE	Ver.AIT-03A	N/A	N/A
21	RF Software	MW	MTS 8310	2.0.0.0	N/A	N/A
22	temporary antenna connector(Note)	NTS	R001	N/A	N/A	N/A
Note: The temporary antenna connector is soldered on the PCB board in order to perform conducted tests and this temporary antenna connector is listed in the equipment list.						

### 3 TEST CONDITIONS AND RESULTS

#### 3.1 Output Power

##### MEASUREMENT SETUP

Test set up as section 2.4.1& 2.4.2.

##### TEST PROCEDURE

The EUT was setup according to ANSI C63.26:2015

##### **Conducted Power Measurement:**

- Place the EUT on a bench and set it in transmitting mode.
- Connect a low loss RF cable from the antenna port to a spectrum analyzer and CMW500 by a Directional Couple.
- EUT Communicate with CMW500 then selects a channel for testing.
- Add a correction factor to the display of spectrum, and then test.

##### **Radiated Power Measurement:**

Determining ERP and/or EIRP from conducted RF output power measurements according to ANSI C63.26 2015 Section 5.2.5.5.

In many cases, RF output power limits are specified in terms of the ERP or the EIRP. Typically, ERP is specified when the operating frequency is less than or equal to 1 GHz and EIRP is specified when the operating frequency is greater than 1 GHz. Both are defined as the product of the power supplied to the antenna and its gain (relative to a dipole antenna in the case of ERP, and relative to an isotropic antenna in the case of EIRP); however, when working in decibels (i.e., logarithmic scale), the ERP and EIRP represent the sum of the transmit antenna gain (in dBd or dBi, respectively) and the conducted RF output power (expressed in dB relative to watts or milliwatts).

The relevant equation for determining the maximum ERP or EIRP from the measured RF output power is given in Equation (1) as follows:

$$\text{ERP or EIRP} = P_{\text{Meas}} + G_T$$

$$\text{ERP} = \text{EIRP} - 2.15$$

where

ERP or EIRP effective radiated power or equivalent isotropically radiated power, respectively (expressed in the same units as  $P_{\text{Meas}}$ , e.g., dBm or dBW)

$P_{\text{Meas}}$  measured transmitter output power or PSD, in dBm or dBW

$G_T$  gain of the transmitting antenna, in dBd (ERP) or dBi (EIRP)

For devices utilizing multiple antennas, see 6.4 for guidance with respect to determining the effective array transmit antenna gain term to be used in the above equation.

The following equations demonstrate the mathematical relationship between ERP and EIRP:

- $\text{ERP} = \text{EIRP} - 2.15$ , where ERP and EIRP are expressed in consistent units.
- $\text{EIRP} = \text{ERP} + 2.15$ , where ERP and EIRP are expressed in consistent units.

##### TEST RESULTS

**Passed**

☒ **Pass**

☐ **Not Applicable**

Note:

For test data, please refer to Appendix RF test data for LTE.

## 3.2 PEAK-TO-AVERAGE RATIO

### **MEASUREMENT SETUP**

Test set up as section 2.4.1.

### **TEST PROCEDURE**

#### **CCDF Procedure for PAPR :**

1. Set resolution/measurement bandwidth  $\geq$  signal's occupied bandwidth;
2. Set the number of counts to a value that stabilizes the measured CCDF curve;
3. Set the measurement interval as follows:
  - for continuous transmissions, set to 1 ms,
  - or burst transmissions, employ an external trigger that is synchronized with the EUT burst timing sequence, or use the internal burst trigger with a trigger level that allows the burst to stabilize and set the measurement interval to a time that is less than or equal to the burst duration.
4. Record the maximum PAPR level associated with a probability of 0.1%.

### **TEST RESULTS**

#### **Passed**

☒ **Pass**                      ☐ **Not Applicable**

Note:

For test data, please refer to Appendix RF test data for LTE.

### 3.3 Occupied Bandwidth

#### **MEASUREMENT SETUP**

Test set up as section 2.4.1.

#### **TEST PROCEDURE**

1. The signal analyzer's automatic bandwidth measurement capability was used to perform the 99%occupied bandwidth and the 26dB bandwidth. The bandwidth measurement was not influenced by any intermediate power nulls in the fundamental emission.
2.  $RBW = 1 - 5\%$  of the expected OBW
3.  $VBW \geq 3 \times RBW$
4. Detector = Peak
5. Trace mode = max hold
6. Sweep = auto couple
7. The trace was allowed to stabilize
8. If necessary, steps 2 – 7 were repeated after changing the RBW such that it would be within 1 – 5% of the 99% occupied bandwidth observed in Step 7

#### **TEST RESULTS**

**Passed**

☒ **Pass**                      ☐ **Not Applicable**

Note:

For test data, please refer to Appendix RF test data for LTE.

### 3.4 Band Edge compliance

#### **MEASUREMENT SETUP**

Test set up as section 2.4.1.

#### **TEST PROCEDURE**

##### **GSM:**

1. Start and stop frequency were set such that the band edge would be placed in the center of the plot
2. Span was set large enough so as to capture all out of band emissions near the band edge
3. RBW > 1% of the emission bandwidth = 10KHZ
4. VBW > 3 x RBW = 30KHZ
5. Detector = RMS
6. Number of sweep points  $\geq 2 \times \text{Span/RBW}$
7. Trace mode = trace average
8. Sweep time = (number of points in sweep)  $\times$  (symbol period)
9. Sweep = Single

#### **TEST RESULTS**

##### **Passed**

☒ **Pass**                      ☐ **Not Applicable**

Note:

For test data, please refer to Appendix RF test data for LTE.



### 3.5 Spurious Emission

#### **MEASUREMENT SETUP**

Test set up as section 2.4.1& 2.4.2.

#### **TEST PROCEDURE**

The EUT was setup according to ANSI C63.26:2015

##### **Conducted Spurious Measurement:**

1. RBW = 1 MHz
2. VBW  $\geq$  3 MHz
3. Detector = RMS
4. Trace Mode = Trace average
5. Sweep time > (number of points in sweep)  $\times$  (symbol period)
6. Number of points in sweep  $\geq$  2 x Span / RBW
7. Sweep =Single

##### **Test Settings (WCDMA)**

1. RBW = 1 MHz
2. VBW  $\geq$  3 MHz
3. Detector = RMS
4. Trace Mode = trace average
5. Sweep time > (number of points in sweep)  $\times$  (symbol period)
6. Number of points in sweep  $\geq$  2 x Span / RBW
7. Sweep =Single

##### **Radiated Spurious Measurement:**

1. The EUT shall be placed at the specified height on a support, and in the position closest to normal use as declared by provider.
2. The test antenna shall be oriented initially for vertical polarization and shall be chosen to correspond to the frequency of the transmitter
3. The output of the test antenna shall be connected to the measuring receiver.
4. The transmitter shall be switched on and the measuring receiver shall be tuned to the frequency of the transmitter under test.
5. The test antenna shall be raised and lowered through the specified range of height until a maximum signal level is detected by the measuring receiver.
6. The transmitter shall then be rotated through 360° in the horizontal plane, until the maximum signal level is detected by the measuring receiver.
7. The test antenna shall be raised and lowered again through the specified range of height until a

maximum signal level is detected by the measuring receiver.

8. The maximum signal level detected by the measuring receiver shall be noted.
9. The transmitter shall be replaced by a substitution antenna.
10. The substitution antenna shall be orientated for vertical polarization and the length of the substitution antenna shall be adjusted to correspond to the frequency of the transmitter.
11. The substitution antenna shall be connected to a calibrated signal generator.
12. If necessary, the input attenuator setting of the measuring receiver shall be adjusted in order to increase the sensitivity of the measuring receiver.
13. The test antenna shall be raised and lowered through the specified range of height to ensure that the maximum signal is received.
14. The input signal to the substitution antenna shall be adjusted to the level that produces a level detected by the measuring receiver, that is equal to the level noted while the transmitter radiated power was measured, corrected for the change of input attenuator setting of the measuring receiver.
15. The measurement shall be repeated with the test antenna and the substitution antenna orientated for horizontal polarization.
16. The measure of the effective radiated power is the larger of the two levels recorded at the input to the substitution antenna, corrected for gain of the substitution antenna if necessary.
17. The frequency range need checked up to 10th harmonic.

Final measurement calculation as below:

The relevant equation for determining the ERP/EIRP from the radiated RF output power is:

$$\text{ERP/EIRP (dBm)} = \text{SA Read Value (dBm)} + \text{Correction Factor (dB)}$$

where:

ERP/EIRP = effective or equivalent radiated power, in dBm;

SA Read Value = measured transmitter power received by EMI receiver or spectrum analyzer, in dBm;

Correction Factor = total correction factor including cable loss, in dB;

**TEST RESULTS**

**Conducted Measurement result:**

**Passed**

☒ **Pass**                      ☐ **Not Applicable**

Note:

For test data, please refer to Appendix RF test data for LTE.

**Radiated Measurement:**

<b>LTE Band 5 / 1.4MHz / QPSK / RB Size 1 Offset 0/ The Worst Test Results for Lowest</b>							
Frequency(MHz)	S G.Lev (dBm)	Ant(dBi)	Loss	PMea (dBm)	Limit (dBm)	Margin (dBm)	Polarity
1648.70	-34.29	9.56	9.72	-34.45	-13.00	-21.45	H
2473.35	-35.30	10.50	10.86	-35.66	-13.00	-22.66	H
3298.68	-32.46	12.78	11.57	<b>-31.25</b>	-13.00	-18.25	H
1648.70	-35.44	9.56	9.72	-35.60	-13.00	-22.60	V
2473.35	-34.07	10.50	10.86	-34.43	-13.00	-21.43	V
3298.68	-32.48	12.78	11.57	-31.27	-13.00	-18.27	V
<b>LTE Band 5 / 1.4MHz / QPSK / RB Size 1 Offset 0/ The Worst Test Results for Middle</b>							
Frequency(MHz)	S G.Lev (dBm)	Ant(dBi)	Loss	PMea (dBm)	Limit (dBm)	Margin (dBm)	Polarity
1672.64	-34.05	9.56	9.72	-34.21	-13.00	-21.21	H
2509.02	-35.49	10.50	10.86	-35.85	-13.00	-22.85	H
3345.72	-33.49	12.78	11.57	-32.28	-13.00	-19.28	H
1672.64	-34.58	9.56	9.72	-34.74	-13.00	-21.74	V
2509.02	-34.21	10.50	10.86	-34.57	-13.00	-21.57	V
3345.72	-31.80	12.78	11.57	<b>-30.59</b>	-13.00	-17.59	V
<b>LTE Band 5 / 1.4MHz / QPSK / RB Size 1 Offset 0/ The Worst Test Results for Highest</b>							
Frequency(MHz)	S G.Lev (dBm)	Ant(dBi)	Loss	PMea (dBm)	Limit (dBm)	Margin (dBm)	Polarity
1696.37	-33.95	9.56	9.72	-34.11	-13.00	-21.11	H
2544.53	-35.28	10.50	10.86	-35.64	-13.00	-22.64	H
3393.10	-32.54	12.78	11.57	-31.33	-13.00	-18.33	H
1696.37	-35.78	9.56	9.72	-35.94	-13.00	-22.94	V
2544.53	-34.90	10.50	10.86	-35.26	-13.00	-22.26	V
3393.10	-31.96	12.78	11.57	<b>-30.75</b>	-13.00	-17.75	V

LTE Band 7 / 5MHz / QPSK / RB Size 1 Offset 0/ The Worst Test Results for Lowest							
Frequency(MHz)	S G.Lev (dBm)	Ant(dBi)	Loss	PMea (dBm)	Limit (dBm)	Margin (dBm)	Polarity
5005.26	-34.31	12.66	15.86	-37.51	-25.00	-12.51	H
7507.62	-34.63	11.46	19.28	-42.45	-25.00	-17.45	H
10010.49	-32.87	12.79	23.19	-43.27	-25.00	-18.27	H
5005.26	-35.44	12.66	15.86	-38.64	-25.00	-13.64	V
7507.62	-34.42	11.46	19.28	-42.24	-25.00	-17.24	V
10010.49	-31.82	12.79	23.19	-42.22	-25.00	-17.22	V
LTE Band 7 / 5MHz / QPSK / RB Size 1 Offset 0/ The Worst Test Results for Middle							
Frequency(MHz)	S G.Lev (dBm)	Ant(dBi)	Loss	PMea (dBm)	Limit (dBm)	Margin (dBm)	Polarity
5069.98	-34.06	12.72	15.86	-37.20	-25.00	-12.20	H
7605.11	-34.78	11.46	19.28	-42.60	-25.00	-17.60	H
10139.89	-33.57	12.09	23.19	-44.67	-25.00	-19.67	H
5069.98	-34.71	12.72	15.86	-37.85	-25.00	-12.85	V
7605.11	-35.08	11.46	19.28	-42.90	-25.00	-17.90	V
10139.89	-32.29	12.09	23.19	-43.39	-25.00	-18.39	V
LTE Band 7 / 5MHz / QPSK / RB Size 1 Offset 0/ The Worst Test Results for Highest							
Frequency(MHz)	S G.Lev (dBm)	Ant(dBi)	Loss	PMea (dBm)	Limit (dBm)	Margin (dBm)	Polarity
5133.82	-34.27	12.76	15.86	-37.37	-25.00	-12.37	H
7701.46	-34.73	11.45	19.28	-42.56	-25.00	-17.56	H
10268.28	-32.54	12.28	23.19	-43.45	-25.00	-18.45	H
5133.82	-35.39	12.76	15.86	-38.49	-25.00	-13.49	V
7701.46	-34.60	11.45	19.28	-42.43	-25.00	-17.43	V
10268.28	-32.61	12.28	23.19	-43.52	-25.00	-18.52	V

LTE Band 38 / 5MHz / QPSK / RB Size 1 Offset 0/ The Worst Test Results for Lowest							
Frequency(MHz)	S G.Lev (dBm)	Ant(dBi)	Loss	PMea (dBm)	Limit (dBm)	Margin (dBm)	Polarity
5114.91	-33.80	12.66	15.86	-37.00	-25.00	-12.00	H
7672.86	-35.34	11.46	19.28	-43.16	-25.00	-18.16	H
10230.00	-32.28	12.79	23.19	-42.68	-25.00	-17.68	H
4996.99	-35.61	12.66	15.86	-38.81	-25.00	-13.81	V
7495.77	-34.79	11.46	19.28	-42.61	-25.00	-17.61	V
9994.44	-31.81	12.79	23.19	-42.21	-25.00	-17.21	V
LTE Band 38 / 5MHz / QPSK / RB Size 1 Offset 0/ The Worst Test Results for Middle							
Frequency(MHz)	S G.Lev (dBm)	Ant(dBi)	Loss	PMea (dBm)	Limit (dBm)	Margin (dBm)	Polarity
5209.90	-33.57	12.72	15.86	-36.71	-25.00	-11.71	H
7815.15	-34.56	11.46	19.28	-42.38	-25.00	-17.38	H
10420.10	-32.15	12.09	23.19	-43.25	-25.00	-18.25	H
5209.90	-34.52	12.72	15.86	-37.66	-25.00	-12.66	V
7815.15	-34.27	11.46	19.28	-42.09	-25.00	-17.09	V
10420.10	-31.91	12.09	23.19	-43.01	-25.00	-18.01	V
LTE Band 38 / 5MHz / QPSK / RB Size 1 Offset 0/ The Worst Test Results for Highest							
Frequency(MHz)	S G.Lev (dBm)	Ant(dBi)	Loss	PMea (dBm)	Limit (dBm)	Margin (dBm)	Polarity
5304.94	-34.41	12.76	15.86	-37.51	-25.00	-12.51	H
7957.65	-35.01	11.45	19.28	-42.84	-25.00	-17.84	H
10610.23	-33.63	12.28	23.19	-44.54	-25.00	-19.54	H
5304.94	-35.14	12.76	15.86	-38.24	-25.00	-13.24	V
7957.65	-34.98	11.45	19.28	-42.81	-25.00	-17.81	V
10610.23	-32.78	12.28	23.19	-43.69	-25.00	-18.69	V

LTE Band 40 / 5MHz / QPSK / RB Size 1 Offset 0/ The Worst Test Results for Lowest							
Frequency(MHz)	S G.Lev (dBm)	Ant(dBi)	Loss	PMea (dBm)	Limit (dBm)	Margin (dBm)	Polarity
4615.26	-45.00	12.91	12.95	-45.04	-40.00	-5.04	H
6922.69	-41.46	13.18	17.02	-45.30	-40.00	-5.30	H
9229.86	-35.20	12.45	21.78	-44.53	-40.00	-4.53	H
4615.26	-44.54	12.91	12.95	-44.58	-40.00	-4.58	V
6922.69	-40.91	13.18	17.02	-44.75	-40.00	-4.75	V
9229.86	-35.88	12.45	21.78	-45.21	-40.00	-5.21	V
LTE Band 40 / 5MHz / QPSK / RB Size 1 Offset 0/ The Worst Test Results for Middle							
Frequency(MHz)	S G.Lev (dBm)	Ant(dBi)	Loss	PMea (dBm)	Limit (dBm)	Margin (dBm)	Polarity
4619.83	-45.09	12.91	12.95	-45.13	-40.00	-5.13	H
6930.03	-41.57	13.18	17.02	-45.41	-40.00	-5.41	H
9239.88	-35.89	12.45	21.78	-45.22	-40.00	-5.22	H
4619.83	-44.94	12.91	12.95	-44.98	-40.00	-4.98	V
6930.03	-41.03	13.18	17.02	-44.87	-40.00	-4.87	V
9239.88	-35.67	12.45	21.78	-45.00	-40.00	-5.00	V
LTE Band 40 / 5MHz / QPSK / RB Size 1 Offset 0/ The Worst Test Results for Highest							
Frequency(MHz)	S G.Lev (dBm)	Ant(dBi)	Loss	PMea (dBm)	Limit (dBm)	Margin (dBm)	Polarity
4625.14	-44.65	12.91	12.95	-44.69	-40.00	-4.69	H
6937.64	-42.44	13.18	17.02	-46.28	-40.00	-6.28	H
9250.05	-35.51	12.45	21.78	-44.84	-40.00	-4.84	H
4625.14	-45.89	12.91	12.95	-45.93	-40.00	-5.93	V
6937.64	-42.02	13.18	17.02	-45.86	-40.00	-5.86	V
9250.05	-35.67	12.45	21.78	-45.00	-40.00	-5.00	V

LTE Band 41 / 5MHz / QPSK / RB Size 1 Offset 0/ The Worst Test Results for Lowest							
Frequency(MHz)	S G.Lev (dBm)	Ant(dBi)	Loss	PMea (dBm)	Limit (dBm)	Margin (dBm)	Polarity
5115.10	-34.93	12.66	15.86	-38.13	-25.00	-13.13	H
7672.66	-34.36	11.46	19.28	-42.18	-25.00	-17.18	H
10230.00	-32.33	12.79	23.19	-42.73	-25.00	-17.73	H
5115.10	-35.32	12.66	15.86	-38.52	-25.00	-13.52	V
7672.66	-33.81	11.46	19.28	-41.63	-25.00	-16.63	V
10230.00	-32.86	12.79	23.19	-43.26	-25.00	-18.26	V
LTE Band 41 / 5MHz / QPSK / RB Size 1 Offset 0/ The Worst Test Results for Middle							
Frequency(MHz)	S G.Lev (dBm)	Ant(dBi)	Loss	PMea (dBm)	Limit (dBm)	Margin (dBm)	Polarity
5209.82	-34.55	12.72	15.86	-37.69	-25.00	-12.69	H
7815.15	-35.26	11.46	19.28	-43.08	-25.00	-18.08	H
10420.01	-33.02	12.09	23.19	-44.12	-25.00	-19.12	H
5209.82	-35.53	12.72	15.86	-38.67	-25.00	-13.67	V
7815.15	-33.85	11.46	19.28	-41.67	-25.00	-16.67	V
10420.01	-31.91	12.09	23.19	-43.01	-25.00	-18.01	V
LTE Band 41 / 5MHz / QPSK / RB Size 1 Offset 0/ The Worst Test Results for Highest							
Frequency(MHz)	S G.Lev (dBm)	Ant(dBi)	Loss	PMea (dBm)	Limit (dBm)	Margin (dBm)	Polarity
5305.03	-34.00	12.76	15.86	-37.10	-25.00	-12.10	H
7957.41	-34.58	11.45	19.28	-42.41	-25.00	-17.41	H
10609.88	-32.48	12.28	23.19	-43.39	-25.00	-18.39	H
5305.03	-35.70	12.76	15.86	-38.80	-25.00	-13.80	V
7957.41	-33.80	11.45	19.28	-41.63	-25.00	-16.63	V
10609.88	-32.84	12.28	23.19	-43.75	-25.00	-18.75	V

Remark:

1.  $PMea = S\ G.Lev + Ant - Loss$
2.  $Margin = PMea - Limit$
3. Other emission levels are attenuated 20dB below the limit and not recorded in report.



### 3.6 Frequency Stability under Temperature & Voltage Variations

#### **TEST CONFIGURATION**

Test set up as section 2.4.1.

#### **TEST PROCEDURE**

The EUT was setup according to ANSI C63.26:2015

##### **Frequency Stability under Temperature Variations:**

The equipment under test was connected to an external AC or DC power supply and input rated voltage. RF output was connected to a frequency counter or spectrum analyzer via feed through attenuators. The EUT was placed inside the temperature chamber. Set the spectrum analyzer RBW low enough to obtain the desired frequency resolution and measure EUT 20°C operating frequency as reference frequency. Turn EUT off and set the chamber temperature to -30°C. After the temperature stabilized for approximately 30 minutes recorded the frequency. Repeat step measure with 10°C increased per stage until the highest temperature of +50°C reached.

##### **Frequency Stability under Voltage Variations:**

Set chamber temperature to 20°C. Use a variable AC power supply / DC power source to power the EUT and set the voltage to rated voltage. Set the spectrum analyzer RBW low enough to obtain the desired frequency resolution and recorded the frequency.

Reduce the input voltage to specify extreme voltage variation ( $\pm 15\%$ ) and endpoint, record the maximum frequency change.

#### **TEST RESULTS**

**Passed**

☒ **Pass**      ☐ **Not Applicable**

Note:

For test data, please refer to Appendix RF test data for LTE.

## **4 Test Setup Photographs of EUT**

Please refer to separated files for Test Setup Photos of the EUT.

## **5 External Photographs of EUT**

Please refer to separated files for External Photos of the EUT.

## **6 Internal Photographs of EUT**

Please refer to separated files for Internal Photos of the EUT.

\*\*\*\*\* End of Report \*\*\*\*\*