TEST REPORT

Product Name	:	Smart phone
Brand Name	:	Blackview
Model	:	BL8000
Series Model	:	N/A
FCC ID	:	2A7DX-BL8000
Applicant	:	**DOKE COMMUNICATION (HK) LIMITED**
Address	:	19H MAXGRAND PLAZA NO 3 TAI YAU STREET SAN PO KONG KL
Manufacturer	:	**Shenzhen DOKE Electronic Co., Ltd**
Address	:	801, Building3, 7th Industrial Zone, Yulv Community, Yutang Road, Guangming District, Shenzhen, China
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 24, 2024
Date of Test	:	July 24, 2024~ Aug. 22, 2024
Issued Date	:	Aug. 23, 2024

Issued By: **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

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Report Revise Record

Report Version	Issued Date	Notes
M1	Aug. 23, 2024	Initial Release

Contents

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 ALLOCA-TIONS AND RADIO TREATY MAT-TERS; GENERAL RULES AND REG-ULATIONS

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

Test Item	FCC Rule No.	Test data	Verdict (Note1)
Effective(Isotropic) Radiated Power Output Data	Part 2.1046 Part 22.913 (a)(5) Part 27.50 (h)(2) Part 27.50 (j)(3) Part 27.50 (k)(3)	Appendix – 5G NR	Pass
Peak-Average Ratio	Part 27.50 (j)(4) Part 27.50 (k)(4)	Appendix – 5G NR	Pass
Bandwidth	Part 2.1049	Appendix – 5G NR	Pass
Band Edges Compliance	Part 2.1051 Part 22.917 (a) Part 27.53 (l)(2) Part 27.53 (m)(4) Part 27.53 (n)(2)	Appendix – 5G NR	Pass
Spurious Emission at Antenna Terminals	Part 2.1053 Part 22.917 (a) Part 27.53 (l)(2) Part 27.53 (m)(4) Part 27.53 (n)(2)	Appendix – 5G NR	Pass
Field Strength of Spurious Radiation	Part 2.1053 Part 22.917 (a) Part 27.53 (l)(2) Part 27.53 (m)(4) Part 27.53 (n)(2)	See Section 6.2	Pass
Frequency Stability	Part 2.1055 (d)(2) Part 22.355 Part 27.54	Appendix – 5G NR	Pass
Note1: For the verdict, the “N/A” denotes “not applicable”, the “N/T” denotes “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 ±1.20 dB	(1)
Radiated Emission	9KHz~30Hz ±3.10dB	(1)
Radiated Emission	9KHz~1GHz ±3.75dB	(1)
Radiated Emission	1GHz~18GHz ±3.88 dB	(1)
Radiated Emission	18GHz-40GHz ±3.88dB	(1)
RF power, conducted	30MHz~6GHz ±0.16dB	(1)
RF power density, conducted	±0.24dB	(1)
Spurious emissions, conducted	±0.21dB	(1)
Temperature	±1℃	(1)
Humidity	±3%	(1)
DC and low frequency voltages	±1.5%	(1)
Time	±2%	(1)
Duty cycle	±2%	(1)

The report 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%

2 GENGENERAL 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:	Smart phone		
Model/Type reference:	BL8000		
Serial Model:	N/A		
Power Supply:	DC 3.87V from battery 8800mAh		
Adapter Information:	Model: HJ-C6-33-US Input: 100-240V~50/60Hz 0.8A Output(PD)5.0V⎓3.0A 15.0W Or 9.0V⎓3.0A 27.0W Or 12.0V⎓2.5A 30.0W Or 15.0V⎓2.0A 30.0W Or 20.0V⎓1.5A 30.0W (PPS)3.3V-11.0V⎓3.0A(33.0W MAX)		
Hardware Version:	HCT-V930MB-A1		
Software Version:	BL8000_NEU_V1300_V1.0		
Sample(s) Status:	AiTDG-240724011-1(Normal sample) AiTDG-240724011-2(Engineer sample)		
NR:			
Operation Band:	☒SA	Band n5/n7/n38/n41/n77/n78	
	☐NSA(EN-DC)	N/A	
Frequency Range:	Band n5:	Tx: 824 - 849 MHz	Rx: 869 894 MHz
	Band n7:	Tx: 2500 - 2570 MHz	Rx: 2620 2690 MHz
	Band n38:	Tx: 2570 - 2620 MHz	Rx: 257 - 2620 MHz
	Band n41:	Tx: 2496 - 2690 MHz	Rx: 2496 - 2690 MHz
	Band n77 L:	Tx: 3450 - 3550 MHz	Rx: 3450 - 3550 MHz
	Band n77 H:	Tx: 3700 - 3980 MHz	Rx: 3700 - 3980 MHz
	Band n78 L:	Tx: 3450 - 3550 MHz	Rx: 3450 - 3550 MHz
	Band n78 H:	Tx: 3700 - 3800 MHz	Rx: 3700 - 3800 MHz
Modulation Type:	☒DFT-s-OFDM: Pi/2-BPSK, QPSK, 16-QAM, 64-QAM, 256-QAM ☒CP-OFDM: QPSK, 16-QAM, 64-QAM, 256-QAM		
SCS Support:	☒15 kHz ☒30 kHz ☐60 kHz ☐120 kHz		
Power Class:	Class 3		
Antenna type:	FPC Antenna		

Antenna gain:	Band n5: -0.2 dBi Band n7: 1.0 dBi Band n38/n41: 1.0 dBi Band n77/n78: 0.2 dBi
Remark: 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

According to ANSI C63.26-2015 chapter 5.1.2.1 Table 2 requirement, select lowest channel, middle channel, and highest channel in the frequency range in which device operates for testing. The detailed frequency points are as follows.

Test Frequency:

Band n5, SCS: 15 kHz

Test Frequency ID	Bandwidth [MHz]	NUL	Frequency of Uplink [MHz]	NDL	Frequency of Downlink [MHz]
Low Range	5	165300	826.5	174300	871.5
	10	165800	829.0	174800	874
	15	166300	831.5	175300	876.5
	20	166800	834.0	175800	879
Mid Range	5/10/15/20	167300	836.5	176300	881.5
High Range	5	169300	846.5	178300	891.5
	10	168800	844.0	177800	889
	15	168300	841.5	177300	886.5
	20	167800	839.0	176800	839

Band n5, SCS: 30 kHz

Test Frequency ID	Bandwidth [MHz]	NUL	Frequency of Uplink [MHz]	NDL	Frequency of Downlink [MHz]
Low Range	10	165800	829.0	174800	874
	15	166300	831.5	175300	876.5
	20	166800	834.0	175800	879
Mid Range	10/15/20	167300	836.5	176300	881.5
High Range	10	168800	844.0	177800	889
	15	168300	841.5	177300	886.5
	20	167800	839.0	176800	884

Band n7, SCS: 15 kHz

Test Frequency ID	Bandwidth [MHz]	NUL	Frequency of Uplink [MHz]	NDL	Frequency of Downlink [MHz]
Low Range	5	500500	2502.5	524500	2622.5
	10	501000	2505	525000	2625
	15	501500	2507.5	525500	2627.5
	20	502000	2510	526000	2630
Mid Range	5/10/15/20	507000	2535	531000	2655
High Range	5	513500	2567.5	537500	2687.5
	10	513000	2565	537000	2685
	15	512500	2562.5	536500	2682.5
	20	512000	2560	536000	2680

Band n7, SCS: 30 kHz

Test Frequency ID	Bandwidth [MHz]	NUL	Frequency of Uplink [MHz]	NDL	Frequency of Downlink [MHz]
Low Range	10	501000	2505	525000	2625
	15	501500	2507.5	525500	2627.5
	20	502000	2510	526000	2630
Mid Range	10/15/20	507000	2535	531000	2655
High Range	10	513000	2565	537000	2685
	15	512500	2562.5	536500	2682.5
	20	512000	2560	536000	2680

Band n38, SCS: 15 kHz

Test Frequency ID	Bandwidth [MHz]	NUL	Frequency (UL and DL) [MHz]
Low Range	5	514500	2572.5
	10	515000	2575
	15	515500	2577.5
	20	516000	2580
Mid Range	5/10/15/20	519000	2595
High Range	5	523500	2617.5
	10	523000	2615
	15	522500	2612.5
	20	522000	2610

Band n38, SCS: 30 kHz

Test Frequency ID	Bandwidth [MHz]	NUL	Frequency (UL and DL) [MHz]
Low Range	10	515000	2575
	15	515500	2577.5
	20	516000	2580
Mid Range	10/15/20	519000	2595
High Range	10	523000	2615
	15	522500	2612.5
	20	522000	2610

Band n41, SCS: 15 kHz

Test Frequency ID	Bandwidth [MHz]	NUL	Frequency (UL and DL) [MHz]
Low Range	10	2501.010	500202
	15	2503.500	500700
	20	2506.005	501201
	30	2511.000	502200
	40	2516.010	503202
	50	2521.005	504201
Mid Range	10/15/20/30/40/50	2593.005	518601
High Range	10	2685.000	537000
	15	2682.495	536499
	20	2679.990	535998
	30	2674.995	534999
	40	2670.000	534000
	50	2664.990	532998

Band n41, SCS: 30 kHz

Test Frequency ID	Bandwidth [MHz]	NUL	Frequency (UL and DL) [MHz]
Low Range	10	500202	2501.010
	15	500700	2503.500
	20	501204	2506.020
	30	502200	2511.000
	40	503202	2516.010
	50	504204	2521.020
	60	505200	2526.000
	80	507204	2536.020
	90	508200	2541.000
	100	509202	2546.010
Mid Range	10/15/20/30/40/50/60/80/90/100	518598	2592.990
High Range	10	537000	2685.000
	15	536496	2682.480
	20	535998	2679.990
	30	534996	2674.980
	40	534000	2670.000
	50	532998	2664.990
	60	531996	2659.980
	80	529998	2649.990
	90	528996	2644.980
	100	528000	2640.000

Band n77/78(3450-3550), SCS: 15 kHz Include Band n78

Test Frequency ID	Bandwidth [MHz]	NUL	Frequency (UL and DL) [MHz]
Low Range	10	630334	3455.010
	15	630500	3457.500
	20	630668	3460.020
	30	631000	3465.000
	40	631334	3470.010
	50	631668	3475.020
Mid Range	10/15/20/30/40/50	633334	3500.010
High Range	10	636332	3544.980
	15	636166	3542.490
	20	636000	3540.000
	30	635666	3534.990
	40	635332	3529.980
	50	635000	3525.000

Band n77/78(3450-3550), SCS: 30 kHz Include Band n78

Test Frequency ID	Bandwidth [MHz]	NUL	Frequency (UL and DL) [MHz]
Low Range	10	630334	3455.010
	15	630500	3457.500
	20	630668	3460.020
	30	631000	3465.000
	40	631334	3470.010
	50	631668	3475.020
	60	632000	3480.000
	80	632668	3490.020
	90	633000	3495.000
	100	633334	3500.010
Mid Range	10/15/20/30/40/50/60/80/90/100	633334	3500.010
High Range	10	636332	3544.980
	15	636166	3542.490
	20	636000	3540.000
	30	635666	3534.990
	40	635332	3529.980
	50	635000	3525.000
	60	634666	3519.990
	80	634000	3510.000
	90	633666	3504.990
	100	633334	3500.010

Band n77(3700-3980), SCS: 15 kHz Include Band n78

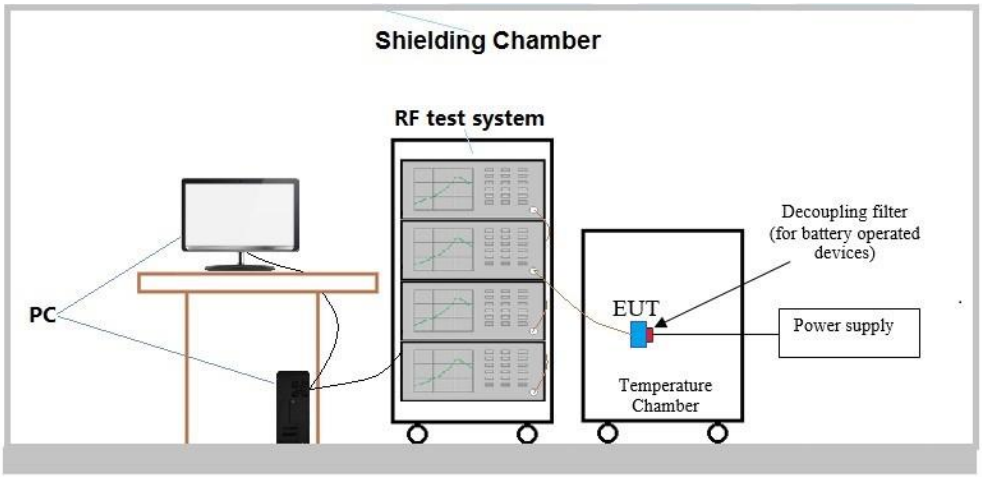
Test Frequency ID	Bandwidth [MHz]	NUL	Frequency (UL and DL) [MHz]
Low Range	10	647000	3705.000
	15	647168	3707.520
	20	647334	3710.010
	30	647668	3715.020
	40	648000	3720.000
	50	648334	3725.010
Mid Range	10/15/20/30/40/50	656000	3840.000
High Range	10	665000	3975.000
	15	664832	3972.480
	20	664666	3969.990
	30	664332	3964.980
	40	664000	3960.000
	50	663666	3954.990

Band n77(3700-3980), SCS: 30 kHz Include Band n78

Test Frequency ID	Bandwidth [MHz]	NUL	Frequency (UL and DL) [MHz]
Low Range	10	647000	3705.000
	15	647168	3707.520
	20	647334	3710.010
	30	647668	3715.020
	40	648000	3720.000
	50	648334	3725.010
	60	648668	3730.020
	80	649334	3740.010
	90	649668	3745.020
	100	650000	3750.000
Mid Range	10/15/20/30/40/50/60/80/90/100	656000	3840.000
High Range	10	665000	3975.000
	15	664832	3972.480
	20	664666	3969.990
	30	664332	3964.980
	40	664000	3960.000
	50	663666	3954.990
	60	663332	3949.980
	80	662666	3939.990
	90	662332	3934.980
	100	662000	3930.000

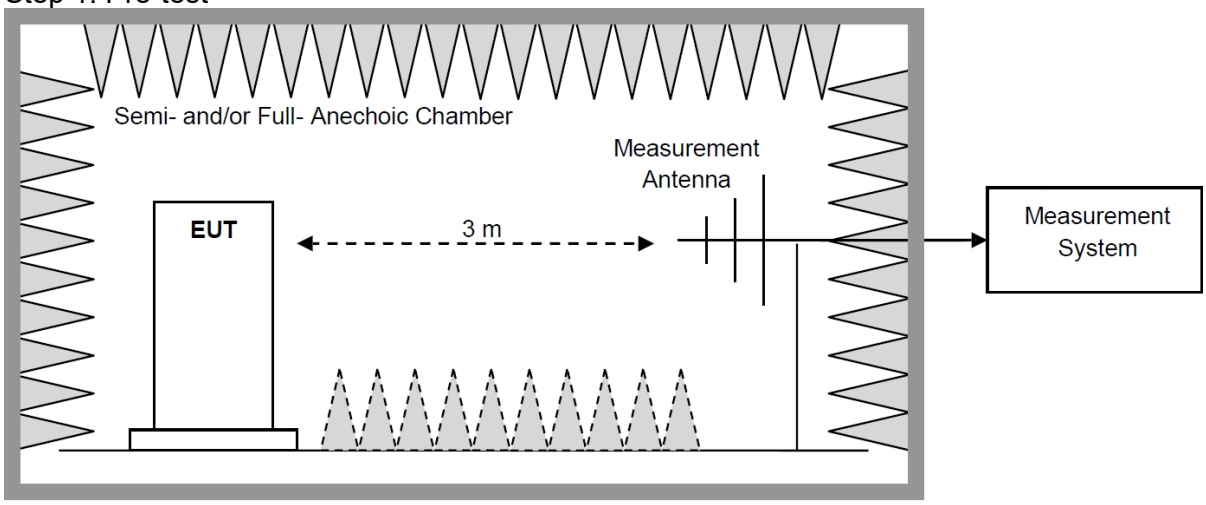
2.4 Test Setup and Conditions

2.4.1 Conducted Measurement Test Setup

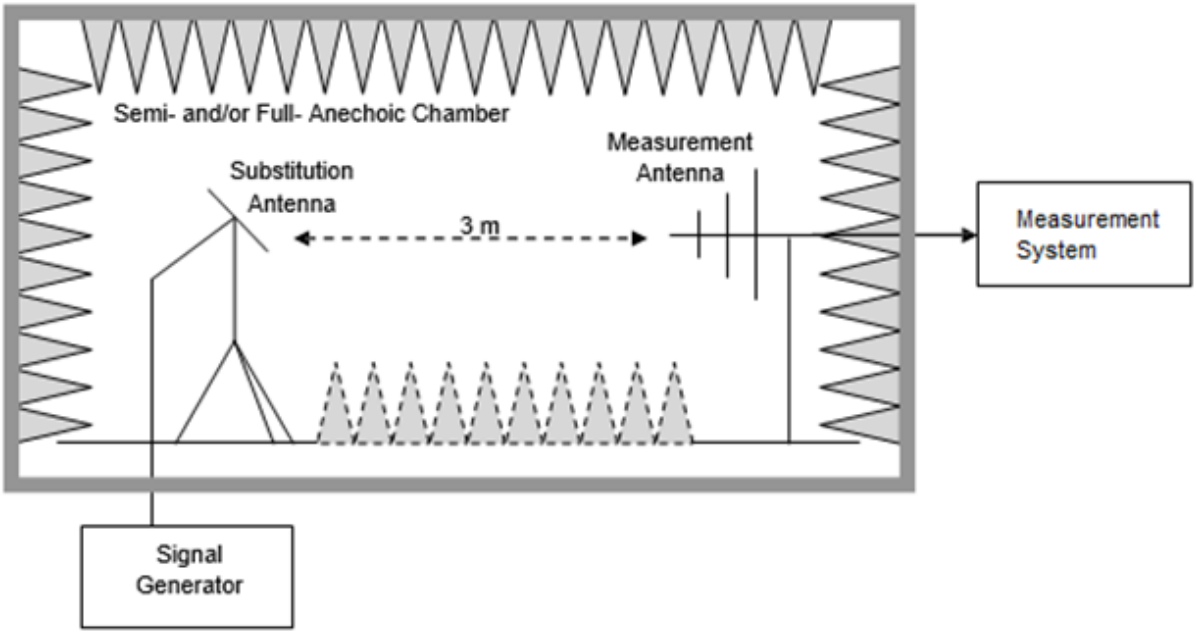


2.4.2 Radiated Measurement Test Setup

Step 1: Pre-test



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



2.5 Equipment List for the Test

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	Spectrum Analyzer	Keysight	N9020B	MY59426547	2023.09.08	2024.09.07
4	UXM 5G Wireless Test Platform	Keysight	E7515B	MY59321499	2023.09.08	2024.09.07
5	EMI Measuring Receiver	R&S	ESR	101660	2023.09.08	2024.09.07
6	Low Noise Pre-Amplifier	HP	HP8447E	1937A01855	2023.09.08	2024.09.07
7	Low Noise Pre-Amplifier	Tsj	MLA-0120-A02-34	2648A04738	2023.09.08	2024.09.07
8	Passive Loop	ETS	6512	00165355	2022.09.04	2024.09.03
9	TRILOG Super Broadband test Antenna	SCHWARZBECK	VULB9160	9160-3206	2021.08.29	2024.08.28
10	Broadband Horn Antenna	SCHWARZBECK	BBHA9120D	452	2021.08.29	2024.08.28
11	SHF-EHF Horn Antenna 15-40GHz	SCHWARZBECK	BBHA9170	BBHA9170367d	2021.08.29	2024.08.28
12	EMI Measuring Receiver	R&S	ESR	101160	2023.09.13	2024.09.12
13	LISN	SCHWARZBECK	NNLK 8129	8130179	2023.10.29	2024.10.28
14	Pulse Limiter	R&S	ESH3-Z2	102789	2023.09.13	2024.09.12
15	Pro.Temp&Humi.chamber	MENTEK	MHP-150-1C	MAA08112501	2023.09.08	2024.09.07
16	RF Automatic Test system	MW	MW100-RFCB	21033016	2023.09.08	2024.09.07
17	Signal Generator	Agilent	N5182A	MY50143009	2023.09.08	2024.09.07
18	Wideband Radio communication tester	R&S	CMW500	1201.0002K50	2023.09.08	2024.09.07
19	RF Automatic Test system	MW	MW100-RFCB	21033016	2023.09.08	2024.09.07
20	DC power supply	ZHAOXIN	RXN-305D-2	28070002559	N/A	N/A
21	RE Software	EZ	EZ-EMC_RE	Ver.AIT-03A	N/A	N/A
22	CE Software	EZ	EZ-EMC_CE	Ver.AIT-03A	N/A	N/A
23	RF Software	MW	MTS 8310	2.0.0.0	N/A	N/A
24	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 Test Limit apply

Test items	Limit
Effective(Isotropic) Radiated Power Output Data	Band 7/38/41: 2W EIRP, Band n5: 7W EIRP, Band n77, n78: 1W EIRP
Peak-to-Average Power Ratio	The peak-to-average ratio (PAR) of the transmission may not exceed 13 dB
Modulation Characteristics	N/A
26dB Emission Bandwidth 99% Occupied Bandwidth	N/A
Band Edges Compliance Spurious Emission at Antenna Terminals Field Strength of Spurious Radiation	**Band n2, n5, n66, n71:** 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. **Band n7, n38, n41:** 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. **Band n77, n78:** For mobile operations in the 3450-3550 MHz band, the conducted power of any emission outside the licensee's authorized bandwidth shall not exceed −13 dBm/MHz. Compliance with this paragraph (n)(2) is based on the use of measurement instrumentation employing a resolution bandwidth of 1 megahertz or greater. However, in the 1 megahertz bands immediately outside and adjacent to the licensee's frequency block, a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed, but limited to a maximum of 200 kHz. In the bands between 1 and 5 MHz removed from the licensee's frequency block, the minimum resolution bandwidth for the measurement shall be 500 kHz. The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.

	For mobile operations in the 3700-3980 MHz band, the conducted power of any emission outside the licensee's authorized bandwidth shall not exceed −13 dBm/MHz. Compliance with this paragraph (l)(2) is based on the use of measurement instrumentation employing a resolution bandwidth of 1 megahertz or greater. However, in the 1 megahertz bands immediately outside and adjacent to the licensee's frequency block, the minimum resolution bandwidth for the measurement shall be either one percent of the emission bandwidth of the fundamental emission of the transmitter or 350 kHz. In the bands between 1 and 5 MHz removed from the licensee's frequency block, the minimum resolution bandwidth for the measurement shall be 500 kHz. The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.
Frequency Stability	The frequency stability shall be sufficient to ensure that the fundamental emissions stay within the authorized bands of operation.

3.2 Output Power

LIMIT

Limit apply as section 3.1.

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:

a) Place the EUT on a bench and set it in transmitting mode.

b) Connect a low loss RF cable from the antenna port to a spectrum analyzer and CMW500 by a Directional Couple.

c) EUT Communicate with CMW500 then selects a channel for testing.

d) 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:

ERP or EIRP = PMeas + G_T

ERP= EIRP-2.15

where

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

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)

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:

a) ERP = EIRP − 2.15, where ERP and EIRP are expressed in consistent units.

b) EIRP = 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.

3.3 PEAK-TO-AVERAGE RATIO

LIMIT

Limit apply as section 3.1.

MEASUREMENT SETUP

Test set up as section 2.4.1.

TEST PROCEDURE

CCDF Procedure for PAPR :

1. Set resolution/measurement bandwidth ≥ 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.

3.4 Occupied Bandwidth

LIMIT

Limit apply as section 3.1.

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 ≥ 3 x 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.

3.5 Band Edge compliance

LIMIT

Limit apply as section 3.1.

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 ≥ 2 x Span/RBW
7. Trace mode = trace average
8. Sweep time = (number of points in sweep) × (symbol period)
9. Sweep =Single

TEST RESULTS

Passed

☒ **Pass** ☐ **Not Applicable**

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

3.6 Spurious Emission

LIMIT

Limit apply as section 3.1.

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 ≥ 3 MHz

3. Detector = RMS

4. Trace Mode = Trace average

5. Sweep time > (number of points in sweep) × (symbol period)

6. Number of points in sweep ≥ 2 x Span / RBW

7. Sweep =Single

Test Settings (WCDMA)

1. RBW = 1 MHz

2. VBW ≥ 3 MHz

3. Detector = RMS

4. Trace Mode = trace average

5. Sweep time > (number of points in sweep) × (symbol period)

6. Number of points in sweep ≥ 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:
ERP/EIRP (dBm) = SA Read Value (dBm) + 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:

Note: The field strength of spurious radiation is tested all configuration and record the worst test result as below for each band. As band n38 and band n78 was the sub band of band n41 and band n77, and the same tune-up power and antenna apply, so, only band n41 and band n77 was tested.

Band n5 The Worst Test Results Band n5 _SCS 15kHz 5MHz(1@0) for DFT-s-OFDM Pi/2 BPSK							
Lowest channel							
Frequency(MHz)	S G.Lev (dBm)	Ant(dBi)	Loss	PMea (dBm)	Limit （dBm）	Margin (dBm)	Polarity
1652.80	-68.75	9.34	3.03	-62.44	-13.00	-49.44	H
2480.00	-61.17	10.40	3.97	-54.74	-13.00	-41.74	H
3306.10	-62.34	11.11	4.75	-55.98	-13.00	-42.98	H
1652.80	-68.22	9.34	3.03	-61.91	-13.00	-48.91	V
2480.00	-59.98	10.40	3.97	**-53.55**	-13.00	-40.55	V
3306.10	-61.84	11.11	4.75	-55.48	-13.00	-42.48	V
Middle channel							
Frequency(MHz)	S G.Lev (dBm)	Ant(dBi)	Loss	PMea (dBm)	Limit （dBm）	Margin (dBm)	Polarity
1672.35	-68.23	9.48	3.06	-61.81	-13.00	-48.81	H
2510.00	-60.98	10.41	4.00	-54.57	-13.00	-41.57	H
3346.05	-66.22	11.24	4.81	-59.79	-13.00	-46.79	H
1672.35	-67.51	9.48	3.06	-61.09	-13.00	-48.09	V
2510.00	-60.23	10.41	4.00	**-53.82**	-13.00	-40.82	V
3346.05	-65.94	11.24	4.81	-59.51	-13.00	-46.51	V
Highest channel							
Frequency(MHz)	S G.Lev (dBm)	Ant(dBi)	Loss	PMea (dBm)	Limit （dBm）	Margin (dBm)	Polarity
1693.00	-68.19	9.62	3.10	-61.67	-13.00	-48.67	H
2539.65	-57.36	10.41	4.03	-50.98	-13.00	-37.98	H
3385.55	-64.46	11.38	4.86	-57.94	-13.00	-44.94	H
1693.00	-67.99	9.62	3.10	-61.47	-13.00	-48.47	V
2539.65	-56.51	10.41	4.03	**-50.13**	-13.00	-37.13	V
3385.55	-64.21	11.38	4.86	-57.69	-13.00	-44.69	V

Band n7 The Worst Test Results Band n7 _SCS 15kHz 5MHz(1@0) for DFT-s-OFDM Pi/2 BPSK							
Lowest channel							
Frequency(MHz)	S G.Lev (dBm)	Ant(dBi)	Loss	PMea (dBm)	Limit （dBm）	Margin (dBm)	Polarity
5004.55	-55.51	11.33	5.76	-49.94	-25.00	-24.94	H
7507.55	-46.25	11.33	7.63	-42.55	-25.00	-17.55	H
10010.00	-45.76	11.72	9.09	-43.13	-25.00	-18.13	H
5004.55	-54.44	11.33	5.76	-48.87	-25.00	-23.87	V
7507.55	-45.79	11.33	7.63	**-42.09**	-25.00	-17.09	V
10010.00	-45.48	11.72	9.09	-42.85	-25.00	-17.85	V
Middle channel							
Frequency(MHz)	S G.Lev (dBm)	Ant(dBi)	Loss	PMea (dBm)	Limit （dBm）	Margin (dBm)	Polarity
5070.10	-57.33	11.33	5.67	-51.67	-25.00	-26.67	H
7604.40	-48.34	11.44	7.69	-44.59	-25.00	-19.59	H
10139.25	-44.82	11.61	9.21	-42.42	-25.00	-17.42	H
5070.10	-56.13	11.33	5.67	-50.47	-25.00	-25.47	V
7604.40	-47.79	11.44	7.69	-44.04	-25.00	-19.04	V
10139.25	-43.89	11.61	9.21	**-41.49**	-25.00	-16.49	V
Highest channel							
Frequency(MHz)	S G.Lev (dBm)	Ant(dBi)	Loss	PMea (dBm)	Limit （dBm）	Margin (dBm)	Polarity
5134.50	-54.87	11.41	5.71	-49.17	-25.00	-24.17	H
7703.70	-46.65	11.40	7.71	-42.96	-25.00	-17.96	H
10269.35	-41.69	11.63	9.19	-39.25	-25.00	-14.25	H
5134.50	-54.38	11.41	5.71	-48.68	-25.00	-23.68	V
7703.70	-45.71	11.40	7.71	-42.02	-25.00	-17.02	V
10269.35	-41.06	11.63	9.19	**-38.62**	-25.00	-13.62	V

Band n41 The Worst Test Results Band n41 _SCS 15kHz 10MHz(Edge_1RB_Left) for DFT-s-OFDM Pi/2 BPSK							
Lowest channel							
Frequency(MHz)	S G.Lev (dBm)	Ant(dBi)	Loss	PMea (dBm)	Limit （dBm）	Margin (dBm)	Polarity
5003.00	-57.51	11.33	5.76	-51.94	-25.00	-26.94	H
7503.45	-47.89	11.33	7.63	-44.19	-25.00	-19.19	H
10005.75	-42.71	11.73	9.09	-40.07	-25.00	-15.07	H
5003.00	-56.84	11.33	5.76	-51.27	-25.00	-26.27	V
7503.45	-46.85	11.33	7.63	-43.15	-25.00	-18.15	V
10005.75	-42.16	11.73	9.09	**-39.52**	-25.00	-14.52	V
Middle channel							
Frequency(MHz)	S G.Lev (dBm)	Ant(dBi)	Loss	PMea (dBm)	Limit （dBm）	Margin (dBm)	Polarity
5186.00	-55.01	11.52	5.85	-49.34	-25.00	-24.34	H
7778.80	-49.10	11.31	7.71	-45.50	-25.00	-20.50	H
10371.95	-42.51	11.69	9.22	-40.04	-25.00	-15.04	H
5186.00	-54.07	11.52	5.85	-48.40	-25.00	-23.40	V
7778.80	-48.66	11.31	7.71	-45.06	-25.00	-20.06	V
10371.95	-42.28	11.69	9.22	**-39.81**	-25.00	-14.81	V
Highest channel							
Frequency(MHz)	S G.Lev (dBm)	Ant(dBi)	Loss	PMea (dBm)	Limit （dBm）	Margin (dBm)	Polarity
5369.25	-57.22	12.00	6.13	-51.35	-25.00	-26.35	H
8054.25	-46.39	11.32	7.82	-42.89	-25.00	-17.89	H
10740.00	-42.72	11.66	9.67	-40.73	-25.00	-15.73	H
5369.25	-56.15	12.00	6.13	-50.28	-25.00	-25.28	V
8054.25	-46.05	11.32	7.82	-42.55	-25.00	-17.55	V
10740.00	-41.53	11.66	9.67	**-39.54**	-25.00	-14.54	V

Band n77(3450 MHz – 3550 MHz) The Worst Test Results Band n77 _SCS 15kHz 10MHz(Edge_1RB_Left) for DFT-s-OFDM Pi/2 BPSK							
Lowest channel							
Frequency(MHz)	S G.Lev (dBm)	Ant(dBi)	Loss	PMea (dBm)	Limit （dBm）	Margin (dBm)	Polarity
6910.60	-46.12	11.08	6.93	-41.97	-13.00	-28.97	H
10366.55	-41.02	11.69	9.22	-38.55	-13.00	-25.55	H
13821.55	-38.39	13.07	10.43	-35.75	-13.00	-22.75	H
6910.60	-45.53	11.08	6.93	-41.38	-13.00	-28.38	V
10366.55	-40.32	11.69	9.22	-37.85	-13.00	-24.85	V
13821.55	-37.81	13.07	10.43	**-35.17**	-13.00	-22.17	V
Middle channel							
Frequency(MHz)	S G.Lev (dBm)	Ant(dBi)	Loss	PMea (dBm)	Limit （dBm）	Margin (dBm)	Polarity
7001.05	-48.55	11.04	6.96	-44.47	-13.00	-31.47	H
10500.90	-43.54	11.75	9.31	-41.10	-13.00	-28.10	H
14001.40	-35.21	13.00	10.36	-32.57	-13.00	-19.57	H
7001.05	-47.50	11.04	6.96	-43.42	-13.00	-30.42	V
10500.90	-42.64	11.75	9.31	-40.20	-13.00	-27.20	V
14001.40	-34.05	13.00	10.36	**-31.41**	-13.00	-18.41	V
Highest channel							
Frequency(MHz)	S G.Lev (dBm)	Ant(dBi)	Loss	PMea (dBm)	Limit （dBm）	Margin (dBm)	Polarity
7090.00	-47.83	10.88	7.11	-44.06	-13.00	-31.06	H
10635.00	-41.52	11.66	9.47	-39.33	-13.00	-26.33	H
14180.60	-34.28	13.03	10.50	-31.75	-13.00	-18.75	H
7090.00	-47.00	10.88	7.11	-43.23	-13.00	-30.23	V
10635.00	-40.57	11.66	9.47	-38.38	-13.00	-25.38	V
14180.60	-33.18	13.03	10.50	**-30.65**	-13.00	-17.65	V

Band n77(3700 MHz – 3980 MHz) The Worst Test Results Band n77 _SCS 15kHz 10MHz(Edge_1RB_Left) for DFT-s-OFDM Pi/2 BPSK							
Lowest channel							
Frequency(MHz)	S G.Lev (dBm)	Ant(dBi)	Loss	PMea (dBm)	Limit （dBm）	Margin (dBm)	Polarity
7410.55	-45.28	11.14	7.58	-41.72	-13.00	-28.72	H
11115.20	-41.71	12.09	10.56	-40.18	-13.00	-27.18	H
14820.40	-33.95	14.03	10.68	-30.60	-13.00	-17.60	H
7410.55	-44.32	11.14	7.58	-40.76	-13.00	-27.76	V
11115.20	-41.66	12.09	10.56	-40.13	-13.00	-27.13	V
14820.40	-32.99	14.03	10.68	**-29.64**	-13.00	-16.64	V
Middle channel							
Frequency(MHz)	S G.Lev (dBm)	Ant(dBi)	Loss	PMea (dBm)	Limit （dBm）	Margin (dBm)	Polarity
7680.00	-42.50	11.41	7.70	-38.79	-13.00	-25.79	H
11520.10	-41.76	12.46	10.53	-39.83	-13.00	-26.83	H
15359.70	-33.71	15.19	10.81	-29.33	-13.00	-16.33	H
7680.00	-41.89	11.41	7.70	-38.18	-13.00	-25.18	V
11520.10	-40.57	12.46	10.53	-38.64	-13.00	-25.64	V
15359.70	-32.92	15.19	10.81	**-28.54**	-13.00	-15.54	V
Highest channel							
Frequency(MHz)	S G.Lev (dBm)	Ant(dBi)	Loss	PMea (dBm)	Limit （dBm）	Margin (dBm)	Polarity
7950.45	-42.53	11.26	7.78	-39.05	-13.00	-26.05	H
11925.00	-41.83	12.89	10.95	-39.89	-13.00	-26.89	H
15899.60	-37.84	16.21	11.46	-33.09	-13.00	-20.09	H
7950.45	-41.59	11.26	7.78	-38.11	-13.00	-25.11	V
11925.00	-41.23	12.89	10.95	-39.29	-13.00	-26.29	V
15899.60	-37.06	16.21	11.46	**-32.31**	-13.00	-19.31	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.*

3.7 Frequency Stability under Temperature & Voltage Variations

LIMIT

Limit apply as section 3.1.

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℃ operating frequency as reference frequency. Turn EUT off and set the chamber temperature to -30℃. After the temperature stabilized for approximately 30 minutes recorded the frequency. Repeat step measure with 10℃ increased per stage until the highest temperature of +50℃ reached.

Frequency Stability under Voltage Variations:
Set chamber temperature to 20℃. 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 (±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 **********