FCC TEST REPORT FOR CERTIFICATION
On Behalf of

TCL Communication Ltd.

Tablet PC

Model No.: 8188G

FCC ID: 2ACCJB224

Prepared for : TCL Communication Ltd.
5/F, Building 22E, 22 Science Park East Avenue, Hong Kong Science Park, Shatin, NT, Hong Kong

Prepared By : Audix Technology (Shenzhen) Co., Ltd.
No. 6, Kefeng Road, Science & Technology Park,
Nanshan District , Shenzhen, Guangdong, China

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TESTING
NVLAP LAB CODE 200372-0

Report Number : ACS-F24109
Date of Test : May.29~Jun.05, 2024
Date of Report : Jul.17, 2024

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TEST REPORT

Applicant	:	TCL Communication Ltd.
Manufacture	:	TCL Communication Ltd.
Product	:	Tablet PC
FCC ID	:	2ACCJB224
	(A) Model No.	: 8188G
	(B) Serial No.	: N/A
	(C) Test Voltage	: DC 3.85V DC 5V From Adapter Input AC 120V /60Hz

Tested for comply with:
FCC part 2, 22H, 24E, 27

Test Method:
KDB971168 D01 v03;ANSI C63.26: 2015

The device described above is tested by AUDIX TECHNOLOGY (SHENZHEN) CO., LTD. to confirm comply with all the FCC part 2, 22H, 24E, 27 requirements.

The test results are contained in this test report and AUDIX TECHNOLOGY (SHENZHEN) CO., LTD. is assumed full responsibility for the accuracy and completeness of these tests. This report contains data that are not covered by the NVLAP accreditation. Also, this report shows that the Equipment Under Test (EUT) is to be technically compliant with the FCC and IC requirements.

This Report is made under FCC part 2, 22H, 24E, 27. No modifications were required during testing to bring this product into compliance.

This report applies to single evaluation of one sample of above mentioned product. This report shall not be reproduced in part without written approval of AUDIX TECHNOLOGY (SHENZHEN) CO., LTD.

Date of Test : May.29~Jun.05, 2024 Report of date: Jul.17, 2024

Prepared by : Jasmine Ning
Jasmine Ning / Assistant

Reviewed by : Thomas Chen
Thomas Chen / Assistant Manager

AUDIX 信華科技（深圳）有限公司
Audix Technology (Shenzhen) Co., Ltd.
EMC 部門報告專用章
Stamp only for EMC Dept. Report

Approved & Authorized Signer : Signature:
Sunny Liu / Manager

1. SUMMARY OF STANDARDS AND RESULTS

1.1.Description of Standards and Results

The EUT has been tested according to the applicable standards as referenced below.

EMISSION		
Description of Test Item	**Standard**	**Results**
RF Output Power	2.1046	PASS
Effective Isotropic Radiated Power	2.1046 22.913 24.232 27.50	PASS
Peak to Average Power Ratio	24.232	PASS
99% & 26dB Occupied Bandwidth	2.1049	PASS
Band Edge	2.1051 22.917 24.238 27.53	PASS
Frequency Stability	2.1055 22.355 24.235 27.54	PASS
Field Strength of Spurious Emissions	2.1053 22.917 24.238 27.53	PASS
Emission Limit	2.1053 22.917(a) 24.238(a)	PASS
Note: Measurement uncertainty affection to the result is not considered, the EUT is technically compliant with standard requirements.		

2. GENERAL INFORMATION

2.1.Description of Device (EUT)

Product	:	Tablet PC
Model No.	:	8188G
FCC ID	:	2ACCJB224
Applicant	:	TCL Communication Ltd. 5/F, Building 22E, 22 Science Park East Avenue, Hong Kong Science Park, Shatin, NT, Hong Kong
Manufacturer	:	TCL Communication Ltd. 5/F, Building 22E, 22 Science Park East Avenue, Hong Kong Science Park, Shatin, NT, Hong Kong
Factory	:	Huizhou TCL Mobile Communication Co., Ltd. No.86, Hechang 7th West Road, Zhong Kai Hi-tech Development District, Hui Zhou, Guang Dong
Date of Test	:	May.29~Jun.05, 2024
Date of Receipt	:	May.21, 2024
Sample Type	:	Prototype production

2.2.Feature of Equipment Under Test

Product Feature & Specification		
Product	Tablet PC	
Model No.	8188G	
Power Source	☒ Commercial Power	AC 100-240V~50/60Hz
	☒ External Power Source	DC 5.0V, 2.0A
	☒ Li-ion Battery	DC 3.85V
	☐ UM battery	DC V
LTE		
Frequency Range		

Band	**Uplink**	**Downlink**
Band 2	1850-1910MHz	1930-1990MHz
Band 4	1710-1755MHz	2110-2155MHz
Band 5	824-849MHz	869-894MHz
Band 7	699-716MHz	729-746MHz
Band 12	704-716MHz	734-746MHz
Band 13	777 - 787MHz	746 - 756MHz
Band 17	704 - 716MHz	734 - 746MHz
Band 38	2570 - 2620MHz	2570 - 2620MHz
Band 41	2496 - 2690MHz	2496 - 2690MHz
Band 66	1710 - 1780MHz	2110 - 2200MHz

Type of Modulation	QPSK,16QAM

Antenna System	
Type of Antenna & Antenna Peak Gain	Antenna Type : Loop Antenna LTE Band 2 Antenna Gain: 2.07 dBi LTE Band 4 Antenna Gain: -1.2 dBi LTE Band 5 Antenna Gain: 1.07 dBi LTE Band 7 Antenna Gain: 0.83 dBi LTE Band 12 Antenna Gain: -2.02 dBi LTE Band 13 Antenna Gain: -1.41 dBi LTE Band 17 Antenna Gain: -2.02 dBi LTE Band 38 Antenna Gain: 0.83 dBi LTE Band 41 Antenna Gain: 0.83 dBi LTE Band 66 Antenna Gain: -1.2 dBi
Remark: This report is for LTE radio specification only. EUT also supports other radio specification as below listed: GSM (Test report No. ACS-F24107) UMTS (Test report No. ACS-F24108) BDR+EDR (Test report No. ACS-F24110) BLE (Test report No. ACS-F24111) Wi-Fi 2.4GHz (Test report No. ACS-F24112) Wi-Fi 5GHz (Test report No. ACS-F24113)	

2.3.Photographs of the EUT

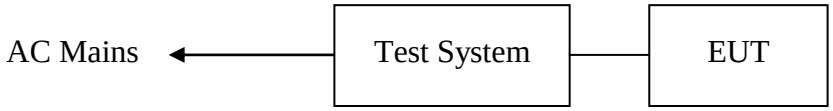
Please reference APPDENX B

2.4.Tested Supporting System Details

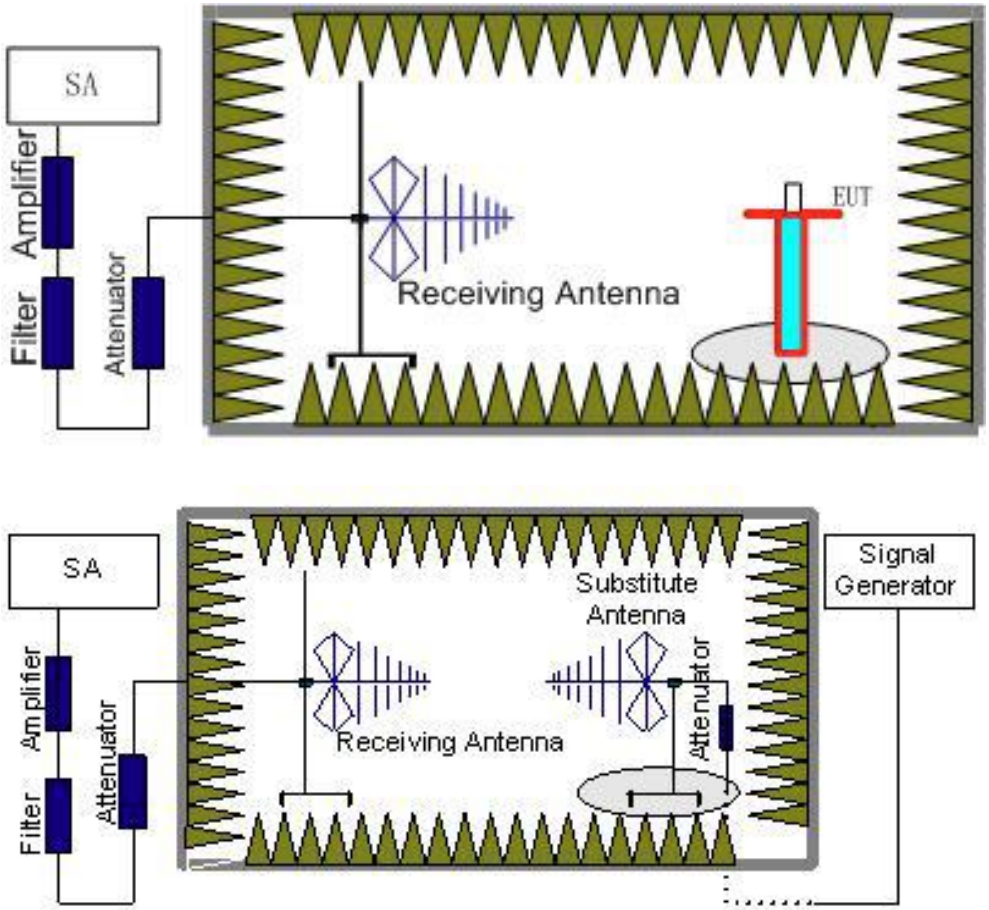
[None]

2.5.Block diagram of connection between the EUT and simulators

Conducted Method



Radiated Method



(EUT: Tablet PC)

2.6.Test Information

Band	Bandwidth (MHz)	CH	Frequency (MHz)
Band 2	1.4	18607	1850.7
		18900	1880.0
		19193	1909.3
	3	18615	1851.5
		18900	1880.0
		19185	1908.5
	5	18625	1852.5
		18900	1880.0
		19175	1907.5
	10	18650	1855.0
		18900	1880.0
		19150	1905.0
	15	18675	1857.5
		18900	1880.0
		19125	1902.5
	20	18700	1860.0
		18900	1880.0
		19100	1900.0

Band	Bandwidth (MHz)	CH	Frequency (MHz)
Band 4	1.4	19957	1710.7
		20175	1732.5
		20393	1754.3
	3	19965	1711.5
		20175	1732.5
		20385	1753.5
	5	19975	1712.5
		20175	1732.5
		20375	1752.5
	10	20000	1715.0
		20175	1732.5
		20350	1750.0
	15	20025	1717.5
		20175	1732.5
		20325	1747.5
	20	20050	1720.0
		20175	1732.5
		20300	1745.0
Band 5	1.4	20407	824.7
		20525	836.5
		20643	848.3
	3	20413	825.5
		20525	836.5
		20635	847.5
	5	20425	826.5
		20525	836.5
		20625	846.5
	10	20450	829.0
		20525	836.5
		20600	844.0

Band	Bandwidth (MHz)	CH	Frequency (MHz)
Band 7	5MHz	20775	2502.5
		21100	2535
		21425	2567.5
	10MHz	20800	2505
		21100	2535
		21400	2565
	15MHz	20825	2507.5
		21100	2535
		21375	2562.5
	20MHz	20850	2510
		21100	2535
		21350	2560
Band 12	1.4	23017	699.7
		23095	707.5
		23173	715.3
	3	23025	700.5
		23095	707.5
		23165	714.5
	5	23035	701.5
		23095	707.5
		23155	713.5
	10	23060	704.0
		23095	707.5
		23130	711.0
Band 13	5MHz	23205	779.5
		23230	782
		23255	784.5
	10MHz	23230	782

Band 17	5	23755	706.5
		23790	710.0
		23825	713.5
	10	23780	709.0
		23790	710.0
		23800	711.0
Band 38	5MHz	37775	2572.5
		38000	2595
		38225	2617.5
	10MHz	37800	2575
		38000	2595
		38200	2615
	15MHz	37825	2577.5
		38000	2595
		38175	2612.5
	20MHz	37850	2580
		38000	2595
		38150	2610
Band 41	5MHz	39675	2498.5
		40620	2593
		41565	2687.5
	10MHz	39700	2501
		40620	2593
		41540	2685
	15MHz	39725	2503.5
		40620	2593
		41515	2682.5
	20MHz	39750	2506
		40620	2593
		41490	2680

Band66	1.4MHz	131979	1710.7
		132322	1745
		132665	1779.3
	3MHz	131987	1711.5
		132322	1745
		132657	1778.5
	5MHz	131997	1712.5
		132322	1745
		132647	1777.5
	10MHz	132022	1715
		132322	1745
		132622	1775
	15MHz	132047	1717.5
		132322	1745
		132597	1772.5
	20 MHz	132072	1720
		132322	1745
		132572	1770

2.7.Test Equipment

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Radio Communication Analyzer	Rohde & Schwarz	CMW500	103249	Sep.15,23	1 Year
2.	Signal Analyzer	Rohde & Schwarz	FSV40	101608	Nov.07,23	1 Year
3.	RF Vector Signal Generator	Agilent	N5182B	MY53050865	Sep.15,23	1 Year
4.	Signal Generator	Rohde & Schwarz	SMB100A	181375	Mar.16,24	1 Year
5.	Constant Humidity Thermostat	GuangZhouGong Wen	HSD-010	0507	Aug.06,23	1Year
6.	Test the shield box manually	HUAGEFENG	691-200	NO.1	NCR	NCR
7.	3m Chamber(NSA)	AUDIX	N/A	N/A	Aug.11,22	3Year
8.	3m Chamber(SE)	AUDIX	N/A	N/A	Sep.16,22	3 Year
9.	Signal Analyzer	Rohde & Schwarz	FSV40	101608	Nov.07,23	1 Year
10.	Tri-log-Broadband Antenna	SCHWARZBECK	VULB 9168	429	Oct.10,23	1 Year
11.	NSA Cable	HUBER+SUHNER	CFD400NL-LW	No.3+190411	Sep.20,23	1 Year
12.	Coaxial Switch	Anritsu	MP59B	6201397223	Mar.17,24	1 Year
13.	EMI Test Receiver	Rohde & Schwarz	ESR3	101931	Mar.17,24	1 Year
14.	Amplifier	HP	8447D	2944A11159	Mar.17,24	1 Year
15.	Test Software	AUDIX	e3	6.100913a	N/A	N/A
16.	Signal Analyzer	Rohde & Schwarz	FSV40	101608	Nov.07,23	1 Year
17.	Amplifier	EMCI	EMC0518A45SE	980965	Aug.25,23	1 Year
18.	RF Cable	TIMES MICROWAVE	SFT205-NMSM-10.00M	689241	Aug.25,23	1 Year
19.	Test Software	AUDIX	e3	6.100913a	N/A	N/A
20.	Horn Antenna	ETC	MCTD 1209	DRH15F03007	Aug.23,23	1 Year
21.	Horn Antenna	ETS	3117	00218552	Feb.22,24	1 Year
Note: N/A means Not applicable.						

2.9.Test Facility

Site Description

Name of Firm	:	Audix Technology (Shenzhen) Co., Ltd. No. 6, Kefeng Road, Science & Technology Park, Nanshan District , Shenzhen, Guangdong, China
EMC Lab.	:	Certificated by ISED, Canada Company Number: 5183A CAB identifier: CN0034 Valid Date: Mar.31, 2025
	:	Certificated by FCC, USA Designation No.: CN5022 Valid Date: Mar.31, 2025
	:	Accredited by NVLAP, USA NVLAP Code: 200372-0 Valid Date: Mar.31, 2025

2.10.Measurement Uncertainty (95% confidence levels, k=2)

Test Item	Uncertainty
Uncertainty for Radiated Spurious Emission test in RF chamber	±3.7dB(30MHz~1000MHz)
	±3.3dB(1~26.5GHz)
Uncertainty for Conduction Spurious emission test	±2.0dB
Uncertainty for Output power test	±0.8dB
Uncertainty for Power density test	±2.0dB
Uncertainty for Radio Frequency	$\pm 2.0 \times 10^{-7}$
Uncertainty for Bandwidth test	±4.6%
Uncertainty for DC power test	±0.1 %
Uncertainty for test site temperature and humidity	±0.6℃
	±3%

3. RF POWER OUTPUT TEST

3.1. Test Procedure

The transmitter output was connected to calibrated attenuator, the other end of which was connected to a power meter. Transmitter output was read off the power in dBm. The power output at the transmitter antenna port was determined by adding the value of attenuator to the power meter reading.

3.2. Test Result

PASSED

The detailed test data please refer to Appendix A

4. EFFECTIVE ISOTROPIC RADIATED POWER TEST

4.1.Limit

Part 22.913(a)
The ERP of mobile transmitters and auxiliary test transmitters must not exceed 7 watts.

Part 24.232(c)
Mobile and portable stations are limited to 2 watts EIRP and the equipment must employ a means for limiting power to the minimum necessary for successful communications.

Part 27.50(b)(10)
Portable stations (hand-held devices) transmitting in the 746-757 MHz, 776-788 MHz, and 805-806 MHz bands are limited to 3 watts ERP.

Part 27.50(c)(10)
Portable stations (hand-held devices) in the 600 MHz uplink band and the 698-746 MHz band, and fixed and mobile stations in the 600 MHz uplink band are limited to 3 watts ERP.

Part 27.50(d)(4)
Fixed, mobile, and portable (hand-held) stations operating in the 1710-1755 MHz band and mobile and portable stations operating in the 1695-1710 MHz and 1755-1780 MHz bands are limited to 1 watt EIRP. Fixed stations operating in the 1710-1755MHz band are limited to a maximum antenna height of 10 meters above ground. Mobile and portable stations operating in these bands must employ a means for limiting power to the minimum necessary for successful communications.

4.2.Test Procedure

The EUT was placed on a non-conductive turntable using a non-conductive support. The radiated emission at the fundamental frequency was measured at 3 m with a test antenna and EMI spectrum analyzer.
During the measurement, the EUT was communication with the station.
The highest emission was recorded with the rotation of the turntable and lowering of the test antenna from 4m to 1m. The reading was recorded and the field strength(E in dBuV/m) was calculated.
ERP were measured using substitution method. The EUT was replaced by dipole antenna connected, the S.G. output was recorded and ERP was calculated as follow:

EIRP were measured using a substitution method. The EUT was replaced by a horn antenna connected, the S.G. output was recorded and EIRP was calculated as follows:

ERP=S.G. output (dBm) + Antenna Gain (dBd) - Cable Loss(dB)

EIRP= S.G. output (dBm) + Antenna Gain (dBi) - Cable Loss(dB)

dBd=dBi-2.15dB

4.3.Test Result

PASSED
The detailed test data please refer to Appendix A

5. PEAK-TO-AVERAGE POWER RATIO TEST

5.1.Limit

FCC: CFR 24.232:

(d) Power measurements for transmissions by stations authorized under this section may be made either in accordance with a Commission-approved average power technique or in compliance with paragraph (e) of this section. In both instances, equipment employed must be authorized in accordance with the provisions of §24.51. In measuring transmissions in this band using an average power technique, the peak-to-average ratio (PAR) of the transmission may not exceed 13 dB.

(e) Peak transmit power must be measured over any interval of continuous transmission using instrumentation calibrated in terms of an rms-equivalent voltage. The measurement results shall be properly adjusted for any instrument limitations, such as detector response times, limited resolution bandwidth capability when compared to the emission bandwidth, sensitivity, etc., so as to obtain a true peak measurement for the emission in question over the full bandwidth of the channel.

FCC: CFR 27.50(a):

The peak-to-average power ratio (PAPR) of the transmitter output power must not exceed 13 dB. The PAPR measurements should be made using either an instrument with complementary cumulative distribution function (CCDF) capabilities to determine that PAPR will not exceed 13 dB for more than 0.1 percent of the time or other Commission approved procedure. The measurement must be performed using a signal corresponding to the highest PAPR expected during periods of continuous transmission.

5.2.Test Procedure

According to KDB 971168:

a) Refer to instrument's analyzer instruction manual for details on how to use the power statistics/CCDF function;

b) Set resolution/measurement bandwidth ≥ signal's occupied bandwidth;

c) Set the number of counts to a value that stabilizes the measured CCDF curve;

d) Set the measurement interval to 1 ms

e) Record the maximum PAPR level associated with a probability of 0.1%

5.3.Test Result

PASSED

The detailed test data please refer to Appendix A

6. 26DB BANDWIDTH AND OCCUPIED BANDWIDTH

6.1. Test Procedure

The EUT output RF connector was connected with a short a cable to the spectrum analyzer, RBW was set to about 1 to 5 % of the anticipated OBW, VBW>=3 times RBW, 99% bandwidth were measured, the occupied bandwidth is the delta frequency between the two points where the display line intersects the signal trace.

6.2. Test Result

PASSED

The detailed test data please refer to Appendix A

7. BAND EDGE

7.1.Limit

FCC part 22.917(a), 24.238(a), 27.53(h)
The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log(P) dB.

Part 27.53(a)

For mobile and portable stations operating in the 2305-2315 MHz and 2350-2360 MHz bands: by a factor of not less than 43 + 10 log (P) dB on all frequencies between 2360 and 2365 MHz, and not less than 70 +10 log (P) dB above 2365 MHz.

Part 27.53(c)
For operations in the 746-758 MHz band and the 776-788 MHz band, the power of any emission outside the licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, in accordance with the following:
(1) On any frequency outside the 746-758 MHz band, the power of any emission shall be attenuated outside the band below the transmitter power (P) by at least 43 + 10 log (P) dB;

(2) On any frequency outside the 776-788 MHz band, the power of any emission shall be attenuated outside the band below the transmitter power (P) by at least 43 + 10 log (P) dB;

(3) On all frequencies between 763-775 MHz and 793-805 MHz, by a factor not less than 76 + 10 log (P) dB in a 6.25 kHz band segment, for base and fixed stations;

(4) On all frequencies between 763-775 MHz and 793-805 MHz, by a factor not less than 65 + 10 log (P) dB in a 6.25 kHz band segment, for mobile and portable stations;

(5) Compliance with the provisions of paragraphs (c)(1) and (c)(2) of this section is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kHz or greater. However, in the 100 kHz bands immediately outside and adjacent to the frequency block, a resolution bandwidth of at least 30 kHz may be employed;

(6) Compliance with the provisions of paragraphs (c)(3) and (c)(4) of this section is based on the use of measurement instrumentation such that the reading taken with any resolution bandwidth setting should be adjusted to indicate spectral energy in a 6.25 kHz segment.

Part 27.53(m)(6)
Measurement procedure. Compliance with these rules is based on the use of measurement instrumentation employing are solution bandwidth of 1 megahertz or greater. However, in the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter maybe employed; for mobile digital stations, in the 1 megahertz bands immediately outside and adjacent to the frequency block are solution bandwidth of at least two percent may be employed, except when the 1 megahertz band is 2495-2496 MHz, in which case a resolution bandwidth of at least one percent may be employed. A narrower resolution bandwidth is permitted in all cases to improve measurement accuracy provided the measured power is integrated over the full required measurement bandwidth (i.e.1 megahertz or 1 percent of emission bandwidth, as specified; or 1 megahertz or 2 percent for mobile digital stations, except in the band 2495-2496 MHz). 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. With respect to television operations, measurements must be made of the separate visual and aural operating powers at sufficiently frequent intervals to ensure compliance with the rules.

Part 27.53(m)(4)
For mobile digital stations, the attenuation factor shall be not less than 40 + 10 log (P) dB on all frequencies between the channel edge and 5 megahertz from the channel edge, 43 + 10 log (P) dB on all frequencies between 5 megahertz and X megahertz from the channel edge, and 55 + 10 log (P) dB on all frequencies more than X megahertz from the channel edge, where X is the greater of 6 megahertz or the actual emission bandwidth as defined in paragraph (m)(6) of this section. In addition, the attenuation factor shall not be less that 43 + 10 log (P) dB on all frequencies between 2490.5 MHz and 2496 MHz and 55 + 10 log (P) dB at or below 2490.5 MHz. Mobile Satellite Service licensees operating on frequencies below 2495 MHz may also submit a documented interference complaint against BRS licensees operating on channel BRS Channel 1 on the same terms and conditions as adjacent channel BRS or EBS licensees.

7.2.Test Procedure

According to KDB 971168, a relaxation of the reference bandwidth is often provided for measurements within a specified frequency range at the edge of the authorized frequency block/band. This is often implemented by permitting the use of a narrower RBW (typically limited to a minimum RBW of 1% of the OBW) for measuring the out-of-band emissions without a requirement to integrate the result over the full reference bandwidth.

The RF output of the transceiver was connected to a spectrum analyzer through appropriate attenuation. The resolution bandwidth of spectrum analyzer was set at 1MHz, sufficient scans were taken to show the out of band Emission is any up to 10th harmonic. For the out of band: set RBW, VBW=1MHz, stat=30MHz, stop= 10 th harmonic. Limit= -13dBm Band Edge requirements: In 1Mhz bands immediately outside and adjacent to the frequency block, a resolution bandwidth of at least 1 % of bandwidth of fundamental emission of the transmitter any be employed to measure the out of band emission. Limit=-13dBm.

7.3.Test result

PASSED

The detailed test data please refer to Appendix A

8. CONDUCTED SPURIOUS EMISSIONS

8.1.Limit

FCC part 22.917(a), 24.238(a), 27.53(h)
The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log(P) dB.

Part 27.53(a)

For mobile and portable stations operating in the 2305-2315 MHz and 2350-2360 MHz bands: by a factor of not less than 43 + 10 log (P) dB on all frequencies between 2360 and 2365 MHz, and not less than 70 +10 log (P) dB above 2365 MHz.

Part 27.53(c)
For operations in the 746-758 MHz band and the 776-788 MHz band, the power of any emission outside the licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, in accordance with the following:

(1) On any frequency outside the 746-758 MHz band, the power of any emission shall be attenuated outside the band below the transmitter power (P) by at least 43 + 10 log (P) dB;

(2) On any frequency outside the 776-788 MHz band, the power of any emission shall be attenuated outside the band below the transmitter power (P) by at least 43 + 10 log (P) dB;

(3) On all frequencies between 763-775 MHz and 793-805 MHz, by a factor not less than 76 + 10 log (P) dB in a 6.25 kHz band segment, for base and fixed stations;

(4) On all frequencies between 763-775 MHz and 793-805 MHz, by a factor not less than 65 + 10 log (P) dB in a 6.25 kHz band segment, for mobile and portable stations;

(5) Compliance with the provisions of paragraphs (c)(1) and (c)(2) of this section is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kHz or greater. However, in the 100 kHz bands immediately outside and adjacent to the frequency block, a resolution bandwidth of at least 30 kHz may be employed;

(6) Compliance with the provisions of paragraphs (c)(3) and (c)(4) of this section is based on the use of measurement instrumentation such that the reading taken with any resolution bandwidth setting should be adjusted to indicate spectral energy in a 6.25 kHz segment.

Part 27.53(m)(6)
Measurement procedure. Compliance with these rules is based on the use of measurement instrumentation employing are solution bandwidth of 1 megahertz or greater. However, in the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter maybe employed; for mobile digital stations, in the 1 megahertz bands immediately outside and adjacent to the frequency block are solution bandwidth of at least two percent may be employed, except when the 1 megahertz band is 2495-2496 MHz, in which case a resolution bandwidth of at least one percent may be employed. A narrower resolution bandwidth is permitted in all cases to improve measurement accuracy provided the measured power is integrated over the full required measurement bandwidth (i.e.1 megahertz or 1 percent of emission bandwidth, as specified; or 1 megahertz or 2 percent for mobile digital stations, except in the band 2495-2496 MHz). 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. With respect to television operations, measurements must be made of the separate visual and aural operating powers at sufficiently frequent intervals to ensure compliance with the rules.

Part 27.53(m)(4)
For mobile digital stations, the attenuation factor shall be not less than 40 + 10 log (P) dB on all frequencies between the channel edge and 5 megahertz from the channel edge, 43 + 10 log (P) dB on all frequencies between 5 megahertz and X megahertz from the channel edge, and 55 + 10 log (P) dB on all frequencies more than X megahertz from the channel edge, where X is the greater of 6 megahertz or the actual emission bandwidth as defined in paragraph (m)(6) of this section. In addition, the attenuation factor shall not be less that 43 + 10 log (P) dB on all frequencies between 2490.5 MHz and 2496 MHz and 55 + 10 log (P) dB at or below 2490.5 MHz. Mobile Satellite Service licensees operating on frequencies below 2495 MHz may also submit a documented interference complaint against BRS licensees operating on channel BRS Channel 1 on the same terms and conditions as adjacent channel BRS or EBS licensees.

8.2.Test Procedure

According to KDB 971168, a relaxation of the reference bandwidth is often provided for measurements within a specified frequency range at the edge of the authorized frequency block/band. This is often implemented by permitting the use of a narrower RBW (typically limited to a minimum RBW of 1% of the OBW) for measuring the out-of-band emissions without a requirement to integrate the result over the full reference bandwidth.

The RF output of the transceiver was connected to a spectrum analyzer through appropriate attenuation. The resolution bandwidth of spectrum analyzer was set at 1MHz, sufficient scans were taken to show the out of band Emission is any up to 10th harmonic. For the out of band: set RBW, VBW=1MHz, stat=30MHz, stop= 10 th harmonic. Limit= -13dBm Band Edge requirements: In 1Mhz bands immediately outside and adjacent to the frequency block, a resolution bandwidth of at least 1 % of bandwidth of fundamental emission of the transmitter any be employed to measure the out of band emission. Limit=-13dBm.

8.3.Test result

PASSED

The detailed test data please refer to Appendix A

9. FREQUENCY STABILITY

9.1.Limit

FCC Part 22.355,
The carrier frequency shall not depart from the reference frequency in excess of ±2.5 ppm mobile stations.

FCC Part 24.235, 27.54
The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block.

9.2.Test procedure

The equipment under test was connected to an external DC power supply and input rated voltage. Reference power supply voltage for these tests is DC 3.85V. 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 25 degree operating frequency as reference frequency. Turn EUT off and set the chamber temperature to -30 degree. After the temperature stabilized for approximately 30 minutes record the frequency. Repeat step measure with 10 degree per stage until the highest temperature of 50 degree reached.

9.3.Test Result

PASSED
The detailed test data please refer to Appendix A

10. EMISSION LIMIT

10.1. Limit

FCC part 22.917(a), 24.238(a) the magnitude of each spurious and harmonic emission that can be detected when the equipment is operated under the conditions specification in the instruction manual and/or alignment procedure, shall not be less than 43+10log(Mean power in watts) dBc below the mean power output outside a license's frequency block(-13dBm).

FCC part 27.53(g) state that for operations in the 600 MHz band and the 698-746 MHz band, the power of any emission outside a licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, by at least 43 + 10 log (P) dB. Compliance with this provision is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kilohertz or greater. However, in the 100 kilohertz bands immediately outside and adjacent to a licensee's frequency block, a resolution bandwidth of at least 30 kHz may be employed.

FCC part 27.53(h) state that on any frequency outside frequency band of the US Cellular/PCS spectrum, the power of any emission shall be attenuated below the transmitter power (P, in Watts) by at least 43+10Log (P) dB. For all power levels +30 dBm to 0 dBm, this becomes a constant specification limit of -13 dBm.

10.2.Test Procedure

1. EUT was placed on a 1.5-meter-high non-conductive stand at a 3-meter test distance from the receive antenna. A receiving antenna was placed on the antenna mast 3 meters from the EUT for emission measurements. The height of receiving antenna is 1.5m. The test setup refers to figure below. Detected emissions were maximized at each frequency by rotating the EUT through 360° and adjusting the receiving antenna polarization. The radiated emission measurements of all non-harmonic and harmonics of the transmit frequency through the 10^{th} harmonic were measured with peak detector.
2. The EUT is then put into continuously transmitting mode at its maximum power level during the test. And the maximum value of the receiver should be recorded as (Pr).
3. The EUT shall be replaced by a substitution antenna.
In the chamber, a substitution antenna for the frequency band of interest is placed at the reference point of the chamber. An RF Signal source for the frequency band of interest is connected to the substitution antenna with a cable that has been constructed to not interfere with the radiation pattern of the antenna. A power (PMea) is applied to the input of the substitution antenna and adjusts the level of the signal generator output until the value of the receiver reach the previously recorded (Pr). The power of signal source (PMea) is recorded. The test should be performed by rotating the test item and adjusting the receiving antenna polarization.
4. The Path loss (Ppl) between the Signal Source with the Substitution Antenna and the Substitution Antenna Gain (Ga) should be recorded after test. A amplifier should be connected in for the test. The Path loss (Ppl) is the summation of the cable loss and the gain of the amplifier. The measurement results are obtained as described below:
Power (EIRP) = $P_{Mea} - P_{pl} + G_a$
5. This value is EIRP since the measurement is calibrated using an antenna of known gain (2.15 dBi) and known input power.
6. ERP can be calculated from EIRP by subtracting the gain of the dipole, ERP = EIRP -2.15dBi.

10.3.Test Result

PASSED

The detailed test data please refer to Appendix A

THE END

APPENDIX A

Test Results of LTE