



TEST REPORT

Product Name: Car headunit
FCC ID: 2BF4O-CC32K
Trademark: TEYES
Model Number: CC3 2K, CC4, CC4PRO, CC4L, LUX1, LUX2, CC5, CC5PRO, CC4PRO UIS, CC4PRO QCM
Prepared For: Shenzhen TEYES High tech Co., Ltd.
Address: 16D, No. 5 Golf Avenue, Guangpei Community, Guanlan Street, Longhua District, Shenzhen, China
Manufacturer: Shenzhen TEYES High tech Co., Ltd.
Address: 16D, No. 5 Golf Avenue, Guangpei Community, Guanlan Street, Longhua District, Shenzhen, China
Prepared By: Shenzhen CTB Testing Technology Co., Ltd.
Address: 1&2/F., Building A, No.26, Xinghe Road, Xinqiao, Xinqiao Street, Bao'an District, Shenzhen, Guangdong, China
Sample Received Date: Apr. 01, 2024
Sample tested Date: Apr. 01, 2024 to Apr. 17, 2024
Issue Date: May. 10, 2024
Report No.: CTB240411083RFX(REV1)
Test Standards: FCC Part 2, 22, 24E, 27
Test Results: PASS
Remark: This is LTE radio test report.

Compiled by:

Zhou kui

Zhou Kui

Reviewed by:

Arron Liu

Arron Liu

Approved by:



Bin Mei / Director

Note: If there is any objection to the inspection results in this report, please submit a written report to the company within 15 days from the date of receiving the report. The test report is effective only with both signature and specialized stamp. This result(s) shown in this report refer only to the sample(s) tested. Without written approval of Shenzhen CTB Testing Technology Co., Ltd. this report can't be reproduced except in full. The tested sample(s) and the sample information are provided by the client. "*" indicates the testing items were fulfilled by subcontracted lab. "#" indicates the items are not in CNAS accreditation scope.

TABLE OF CONTENT

Test Report Declaration	Page
1. VERSION	3
2. TEST SUMMARY	4
3. MEASUREMENT UNCERTAINTY	5
4. PRODUCT INFORMATION AND TEST SETUP	6
4.1 Product Information	6
4.2 Test Setup Configuration	7
4.3 Support Equipment	7
4.4 Test Mode	7
4.5 Test Environment	7
5. TEST FACILITY AND TEST INSTRUMENT USED	8
5.1 Test Facility	8
5.2 Test Instrument Used	8
6. RF EXPOSURE	10
6.1 Standard Applicable	10
6.2 Test Result	10
7. RF OUTPUT POWER	11
7.1 Standard Applicable	11
7.2 Test Procedure	11
7.3 Summary of Test Results/Plots	12
8. PEAK-TO-AVERAGE RATIO (PAR) OF TRANSMITTER	13
8.1 Standard Applicable	13
8.2 Test Procedure	13
8.3 Summary of Test Results	13
9. EMISSION BANDWIDTH	14
9.1 Standard Applicable	14
9.2 Test Procedure	14
9.3 Summary of Test Results/Plots	14
10. OUT OF BAND EMISSIONS AT ANTENNA TERMINAL	15
10.1 Standard Applicable	15
10.2 Test Procedure	15
10.3 Summary of Test Results/Plots	16
11. SPURIOUS RADIATED EMISSIONS	17
11.1 Standard Applicable	17
11.2 Test Procedure	18
11.3 Summary of Test Results/Plots	18
12. FREQUENCY STABILITY	27
12.1 Standard Applicable	27
12.2 Test Procedure	27
12.3 Summary of Test Results/Plots	27

(Note: N/A means not applicable)



1. VERSION

Report No.	Issue Date	Description	Approved
CTB240411083RFX	Apr. 17, 2024	Original	Invalid
CTB240411083RFX(REV1)	May. 10, 2024	Modification	Valid

2. TEST SUMMARY

The Product has been tested according to the following specifications:

Test Item	Test Requirement	Test method	Result
Conducted output power	Part 2.1046(a)	TIA-603-E-2016 & KDB 971168 D01v03r01	PASS
Effective Radiated Power of Transmitter(EIRP)	Part 22.913(a)(5)/Part27.50(h)(2)	TIA-603-E-2016 & KDB 971168 D01v03r01	PASS
peak-to-average ratio	Part 27.50(d)	KDB 971168 D01v03r01	PASS
99% & 26dB Occupied Bandwidth	Part 2.1049(h)	KDB 971168 D01v03r01	PASS
Band Edge at antenna terminals	Part 2.1051/ Part 22.917(a)/Part 27.53(m) (4)	KDB 971168 D01v03r01	PASS
Spurious emissions at antenna terminals	Part 2.1051/ Part 22.917(a)/Part 27.53(m) (4)	TIA-603-E-2016 & KDB 971168 D01v03r01	PASS
Field strength of spurious radiation	Part 2.1053/ Part 22.917(a)/Part 27.53(m) (4)	TIA-603-E-2016 & KDB 971168 D01v03r01	PASS
Frequency stability	Part 2.1055/Part 27.54	TIA-603-E-2016 & KDB 971168 D01v03r01	PASS

3. MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the Product as specified in CISPR 16-4-2. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

Item	Uncertainty
Occupancy bandwidth	54.3kHz
Conducted output power Above 1G	0.9dB
Conducted output power below 1G	0.9dB
Power Spectral Density , Conduction	0.9dB
Conduction spurious emissions	2.0dB
Out of band emission	2.0dB
3m camber Radiated spurious emission(30MHz-1GHz)	4.6dB
3m chamber Radiated spurious emission(1GHz-18GHz)	5.1dB
3m chamber Radiated spurious emission(18GHz-40GHz)	3.4dB
Receiver Reference Sensitivity level	1.9dB
humidity uncertainty	5.5%
Temperature uncertainty	0.63℃
frequency	1×10 ⁻⁷

4. PRODUCT INFORMATION AND TEST SETUP

4.1 Product Information

Model(s):	CC3 2K, CC4, CC4PRO, CC4L, LUX1, LUX2, CC5, CC5PRO, CC4PRO UIS, CC4PRO QCM
Model Description:	All the model are the same circuit and RF module, only different for model name. Test sample model: CC3 2K
Hardware Version:	V1.0
Software Version:	V1.0
Operation Frequency:	FDD-LTE BAND 2: 1850-1910MHz FDD-LTE BAND 5: 824-849MHz FDD-LTE BAND 7: 2500-2570MHz FDD-LTE BAND 26: 824-849MHz TDD-LTE BAND 41: 2496-2690MHz
Max. RF output power:	FDD-LTE BAND 2: 21.82dBm FDD-LTE BAND 5: 20.42dBm FDD-LTE BAND 7: 21.49dBm FDD-LTE BAND 26: 25.47dBm TDD-LTE BAND 41: 20.83dBm
Type of Modulation:	QPSK, 16QAM
Antenna installation:	External antenna
Antenna Gain:	FDD-LTE BAND 2: 1.02dBi FDD-LTE BAND 5: 5.40dBi FDD-LTE BAND 7: 0.20dBi FDD-LTE BAND 26: 5.44dBi TDD-LTE BAND 41: 1.41dBi
Ratings:	DC 12V

4.2 Test Setup Configuration

See test photographs attached in EUT TEST SETUP PHOTOGRAPHS for the actual connections between Product and support equipment.

4.3 Support Equipment

No.	Device Type	Brand	Model	Series No.	Note
1	Battery	JUXIANG	6-QW-45(430)-C	/	/

Notes:

1. All the equipment/cables were placed in the worst-case configuration to maximize the emission during the test.
2. Grounding was established in accordance with the manufacturer's requirements and conditions for the intended use.

4.4 Test Mode

Test Mode List		
Test Mode	Description	Remark
TM1	FDD-LTE BAND 2	Low, Middle, High Channels
TM2	FDD-LTE BAND 5	Low, Middle, High Channels
TM3	FDD-LTE BAND 7	Low, Middle, High Channels
TM4	FDD-LTE BAND 26	Low, Middle, High Channels
TM5	TDD-LTE BAND 41	Low, Middle, High Channels

4.5 Test Environment

Humidity(%):	54
Atmospheric Pressure(kPa):	101
Normal Voltage(DC):	12.0V
Normal Temperature(°C)	23
Low Temperature(°C)	0
High Temperature(°C)	40

5. TEST FACILITY AND TEST INSTRUMENT USED

5.1 Test Facility

All measurement facilities used to collect the measurement data are located at 1&2F., Building A, No. 26, Xinhe Road, Xinqiao, Xinqiao Street, Bao'an District, Shenzhen, Guangdong, China. The site and apparatus are constructed in conformance with the requirements of ANSI C63.4 and CISPR 16-1-1 other equivalent standards.

5.2 Test Instrument Used

No.	Equipment	Manufacturer	Type No.	Serial No.	Firmware Version	Calibrated until
1	Spectrum Analyzer	Agilent	N9020A	MY52090073	A.14.16	2024.07.05
2	Power Sensor	Agilent	U2021XA	MY56120032	/	2024.07.05
3	Power Sensor	Agilent	U2021XA	MY56120034	/	2024.07.05
4	Communication test set	R&S	CMW500	108058	V3.5.80	2024.07.05
5	Spectrum Analyzer	KEYSIGHT	N9020A	MY51289897	A.14.16	2024.07.05
6	Signal Generator	Agilent	N5181A	MY50140365	A.01.60	2024.07.05
7	Vector signal generator	Agilent	N5182A	MY47420195	A.01.87	2024.07.05
8	Communication test set	Agilent	E5515C	MY50102567	B.19.07 (E1962B)	2024.07.06
9	2.4 GHz Filter	Shenxiang	MSF2400-24 83.5MS-1154	20181015001	/	2024.07.05
10	5 GHz Filter	Shenxiang	MSF5150-58 50MS-1155	20181015001	/	2024.07.06
11	Filter	Xingbo	XBLBQ-DZA 120	190821-1-1	/	2024.07.06
12	BT&WI-FI Automatic test software	Microwave	MTS8000	Ver. 2.0.0.0	/	/
13	Rohde & Schwarz SFU Broadcast Test System	R&S	SFU	101017	/	2024.10.30
14	Temperature humidity chamber	Hongjing	TH-80CH	DG-15174	/	2024.07.05
15	234G Automatic test software	Microwave	MTS8200	Ver. 2.0.0.0	/	/
16	966 chamber	C.R.T.	966	/	/	2024.08.11
17	Receiver	R&S	ESPI	100362	RF_ATTEN_7 (104489/003)	2024.07.05
18	Amplifier	HP	8447E	2945A02747	/	2024.07.05
19	Amplifier	Agilent	8449B	3008A01838	/	2024.07.05
20	TRILOG Broadband Antenna	Schwarzbeck	VULB 9168	00869	/	2024.07.08
21	Double Ridged Broadband Horn Antenna	Schwarzbeck	BBHA9120D	01911	/	2024.07.08



22	EMI test software	Fala	EZ-EMC	FA-03A2 RE	/	/
23	Loop Antenna	Schwarzbeck	FMZB 1519B	1519B-224	/	2024.07.08
24	loop antenna	ZHINAN	ZN30900A	GTS534	/	/
25	40G Horn antenna	A/H/System	SAS-574	588	/	2024.10.30
26	Amplifier	AEROFLEX	Aeroflex	097	/	2024.07.05

6. RF EXPOSURE

6.1 Standard Applicable

According to §1.1307 and §2.1091, §2.1093, the portable transmitter must comply the RF exposure requirements.

6.2 Test Result

This product complied with the requirement of the RF exposure, please see the RF Exposure report.

7. RF OUTPUT POWER

7.1 Standard Applicable

According to §22.913(a)(2), the ERP of mobile and portable stations transmitters and auxiliary test transmitters must not exceed 7 Watts.

According to §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.

According to §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.

According to §27.50(c)(10), portable stations (hand-held devices) in the 698-746 MHz band are limited to 3 watts ERP.

7.2 Test Procedure

Conducted output power test method:



Radiated power test method:

1. The setup of EUT is according with per ANSI/TIA Standard 603E and ANSI C63.26 measurement procedure.
2. The measurement antenna was placed at a distance of 3 meters from the EUT. During the tests, the antenna height and polarization as well as EUT azimuth were varied in order to identify the maximum level of emissions from the EUT. The test was performed by placing the EUT on 3-orthogonal axis.
3. The frequency range up to tenth harmonic of the fundamental frequency was investigated.
4. Remove the EUT and replace it with substitution antenna. A signal generator was connected to the substitution antenna by a non-radiating cable. The absolute levels of the spurious emissions were measured by the substitution.

7.3 Summary of Test Results/Plots

Please refer to Appendix 1: Conducted output power

Test result: Pass

8. PEAK-TO-AVERAGE RATIO (PAR) OF TRANSMITTER

8.1 Standard Applicable

According to §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.

According to §27.50(B), 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

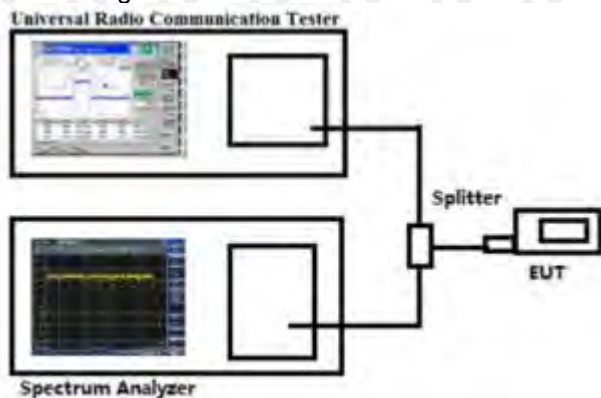
corresponding to the highest PAPR expected during periods of continuous transmission.

8.2 Test Procedure

According with KDB 971168

1. The signal analyzer's CCDF measurement profile is enabled
2. Frequency = carrier center frequency
3. Measurement BW > Emission bandwidth of signal
4. The signal analyzer was set to collect one million samples to generate the CCDF curve
5. The measurement interval was set depending on the type of signal analyzed. For continuous signals (>98% duty cycle), the measurement interval was set to 1ms. For burst transmissions, the spectrum analyzer is set to use an internal "RF Burst" trigger that is synced with an incoming pulse and the measurement interval is set to less than the duration of the "on time" of one burst to ensure that energy is only captured during a time in which the transmitter is operating at maximum power

Test Configuration for the emission bandwidth testing:



8.3 Summary of Test Results

Please refer to Appendix B: Peak-to-Average Ratio

Test result: Pass

9. EMISSION BANDWIDTH

9.1 Standard Applicable

According to §22.917(b), 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.

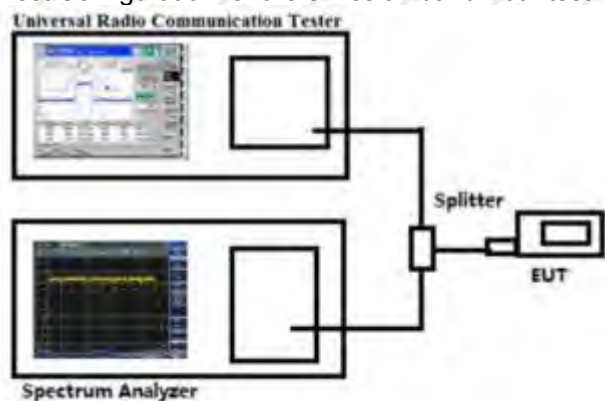
According to §24.238(b), the emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.

According to §27.53, 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.

9.2 Test Procedure

According to §22.917(b), 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.

Test Configuration for the emission bandwidth testing:



9.3 Summary of Test Results/Plots

Please refer to Appendix C: 26dB Bandwidth and Occupied Bandwidth
Test result: Pass

10. OUT OF BAND EMISSIONS AT ANTENNA TERMINAL

10.1 Standard Applicable

According to §22.917(a), the power of any emissions 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.

According to §24.238(a), 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.

According to §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.

According to §27.53 (f) For operations in the 746-758 MHz, 775-788 MHz, and 805-806 MHz bands, emissions in the band 1559-1610 MHz shall be limited to -70 dBW/MHz equivalent isotropically radiated power (EIRP) for wideband signals, and -80 dBW EIRP for discrete emissions of less than 700 Hz bandwidth. For the purpose of equipment authorization, a transmitter shall be tested with an antenna that is representative of the type that will be used with the equipment in normal operation.

According to §27.53(h), the power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) in watts by at least $43 + 10 \log_{10}(P)$ dB.

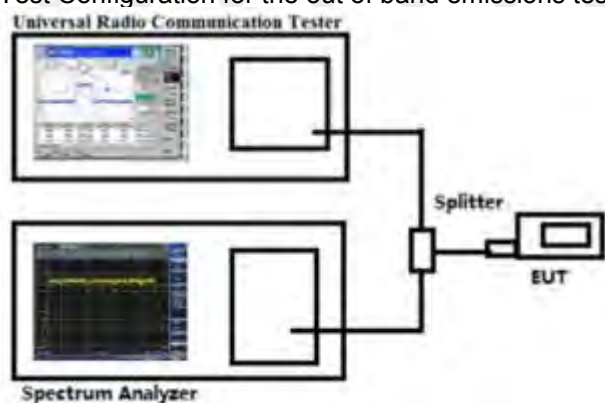
According to §27.53(g), for operations in the 600 MHz band and the 698-746 MHz band, the power of any emission outside a licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, by at least $43 + 10 \log(P)$ dB.

According to §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 than $43 + 10 \log(P)$ dB on all frequencies between 2490.5 MHz and 2496 MHz and $55 + 10 \log(P)$ dB at or below 2490.5 MHz.

10.2 Test Procedure

The RF output terminal of the transmitter was connected to the input of the spectrum analyzer via a suitable attenuation. The RBW of the spectrum analyzer was set to 100kHz and 1MHz for the scan frequency from 30MHz to 1GHz and the scan frequency from 1GHz to up to 10 th harmonic.

Test Configuration for the out of band emissions testing:



10.3 Summary of Test Results/Plots

Please refer to Appendix D & E: Band Edge & Conducted Spurious Emission
Test result: Pass

11. SPURIOUS RADIATED EMISSIONS

11.1 Standard Applicable

According to §22.917(a), the power of any emissions 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.

According to §24.238(a), 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.

According to §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.

According to §27.53 (f) For operations in the 746-758 MHz, 775-788 MHz, and 805-806 MHz bands, emissions in the band 1559-1610 MHz shall be limited to -70 dBW/MHz equivalent isotropically radiated power (EIRP) for wideband signals, and -80 dBW EIRP for discrete emissions of less than 700 Hz bandwidth. For the purpose of equipment authorization, a transmitter shall be tested with an antenna that is representative of the type that will be used with the equipment in normal operation.

According to §27.53(h), the power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) in watts by at least $43 + 10 \log_{10}(P)$ dB.

According to §27.53(g) 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.

11.2 Test Procedure

1. The setup of EUT is according with per ANSI/TIA-603-E and ANSI C63.4-2014 measurement procedure.
 2. The measurement antenna was placed at a distance of 3 meters from the EUT. During the tests, the antenna height and polarization as well as EUT azimuth were varied in order to identify the maximum level of emissions from the EUT. The test was performed by placing the EUT on 3-orthogonal axis.
 3. The frequency range up to tenth harmonic of the fundamental frequency was investigated.
 4. Remove the EUT and replace it with substitution antenna. A signal generator was connected to the substitution antenna by a non-radiating cable. The absolute levels of the spurious emissions were measured by the substitution.
- Spurious attenuation limit in dB = $43 + 10 \log_{10}(\text{power out in Watts})$

11.3 Summary of Test Results/Plots

- Note: 1. this EUT was tested in 3 orthogonal positions and the worst case position data was reported.
2. All test modes (different bandwidth and different modulation) are performed, but only the worst case is recorded in this report.

Test Data:
QPSK

Band 2 18607 channel/BW1.4(lowest channel)							
Frequency (MHz)	Height (cm)	Azimuth (deg)	Spurious Emission Level (dBm)	Limit (dBm)	Over Limit (dB)	Result	Antenna Polaxis.
1274.96	155	309	-56.68	-13	-43.68	Pass	H
1635.16	151	303	-51.64	-13	-38.64	Pass	H
3813.31	157	191	-47.72	-13	-34.72	Pass	H
5767.58	158	59	-45.87	-13	-32.87	Pass	H
6423.04	155	215	-43.10	-13	-30.10	Pass	H
7943.62	145	123	-47.17	-13	-34.17	Pass	H
1220.91	153	179	-54.10	-13	-41.10	Pass	V
1390.05	153	38	-58.52	-13	-45.52	Pass	V
3488.77	143	307	-53.32	-13	-40.32	Pass	V
3896.85	150	299	-48.14	-13	-35.14	Pass	V
5786.83	143	295	-44.41	-13	-31.41	Pass	V
6615.93	148	29	-50.87	-13	-37.87	Pass	V
Band 2 18900 channel/BW1.4(middle channel)							
Frequency (MHz)	Height (cm)	Azimuth (deg)	Spurious Emission Level (dBm)	Limit (dBm)	Over Limit (dB)	Result	Antenna Polaxis.
1395.29	156	294	-54.97	-13	-41.97	Pass	H
1643.10	153	90	-51.64	-13	-38.64	Pass	H
3938.94	159	86	-51.14	-13	-38.14	Pass	H
5805.15	149	157	-45.02	-13	-32.02	Pass	H
6440.65	149	201	-44.36	-13	-31.36	Pass	H
7917.05	157	290	-49.28	-13	-36.28	Pass	H
1291.57	145	120	-56.23	-13	-43.23	Pass	V
1413.77	143	275	-59.55	-13	-46.55	Pass	V
3516.90	142	153	-51.20	-13	-38.20	Pass	V
3891.77	156	79	-51.02	-13	-38.02	Pass	V
5848.38	156	19	-44.90	-13	-31.90	Pass	V
6470.66	151	189	-50.17	-13	-37.17	Pass	V

Band 2 19193 channel/BW1.4(highest channel)							
Frequency (MHz)	Height (cm)	Azimuth (deg)	Spurious Emission Level (dBm)	Limit (dBm)	Over Limit (dB)	Result	Antenna Polaxis.
1310.94	156	28	-56.72	-13	-43.72	Pass	H
1750.41	145	164	-52.25	-13	-39.25	Pass	H
3940.79	158	67	-51.92	-13	-38.92	Pass	H
5767.07	155	188	-45.91	-13	-32.91	Pass	H
6412.13	141	222	-47.10	-13	-34.10	Pass	H
7936.31	144	276	-48.12	-13	-35.12	Pass	H
1293.24	143	71	-58.08	-13	-45.08	Pass	V
1380.46	151	356	-56.62	-13	-43.62	Pass	V
3638.34	158	147	-53.43	-13	-40.43	Pass	V
3873.17	151	308	-48.33	-13	-35.33	Pass	V
5860.20	144	229	-44.89	-13	-31.89	Pass	V
6527.09	147	59	-50.55	-13	-37.55	Pass	V

16QAM

Band 2 18607 channel/BW1.4(lowest channel)							
Frequency (MHz)	Height (cm)	Azimuth (deg)	Spurious Emission Level (dBm)	Limit (dBm)	Over Limit (dB)	Result	Antenna Polaxis.
1353.21	141	272	-57.53	-13	-44.53	Pass	H
1633.11	160	67	-50.43	-13	-37.43	Pass	H
3980.85	142	210	-47.25	-13	-34.25	Pass	H
5946.56	153	255	-45.35	-13	-32.35	Pass	H
6471.79	148	56	-46.49	-13	-33.49	Pass	H
7931.50	152	299	-48.28	-13	-35.28	Pass	H
1222.58	151	81	-57.23	-13	-44.23	Pass	V
1477.94	160	84	-59.23	-13	-46.23	Pass	V
3572.33	149	83	-53.77	-13	-40.77	Pass	V
3903.75	160	195	-49.11	-13	-36.11	Pass	V
5809.00	155	357	-48.02	-13	-35.02	Pass	V
6606.49	160	192	-47.71	-13	-34.71	Pass	V

Band 2 18900 channel/BW1.4(middle channel)							
Frequency (MHz)	Height (cm)	Azimuth (deg)	Spurious Emission Level (dBm)	Limit (dBm)	Over Limit (dB)	Result	Antenna Polaxis.
1421.25	148	134	-55.85	-13	-42.85	Pass	H
1640.11	156	147	-49.11	-13	-36.11	Pass	H
3911.15	149	45	-50.20	-13	-37.20	Pass	H
5929.04	155	272	-43.87	-13	-30.87	Pass	H
6517.18	156	327	-42.75	-13	-29.75	Pass	H
7933.06	160	89	-47.91	-13	-34.91	Pass	H
1308.80	143	301	-58.11	-13	-45.11	Pass	V
1479.69	160	250	-58.57	-13	-45.57	Pass	V
3539.37	142	297	-54.43	-13	-41.43	Pass	V
3909.19	144	110	-49.57	-13	-36.57	Pass	V
5739.17	155	153	-45.43	-13	-32.43	Pass	V
6494.45	153	10	-48.53	-13	-35.53	Pass	V
Band 2 19193 channel/BW1.4(highest channel)							
Frequency (MHz)	Height (cm)	Azimuth (deg)	Spurious Emission Level (dBm)	Limit (dBm)	Over Limit (dB)	Result	Antenna Polaxis.
1314.14	154	104	-57.07	-13	-44.07	Pass	H
1683.34	143	80	-49.54	-13	-36.54	Pass	H
3957.92	146	30	-49.19	-13	-36.19	Pass	H
5875.75	140	311	-47.33	-13	-34.33	Pass	H
6471.04	157	314	-45.37	-13	-32.37	Pass	H
7980.85	153	145	-49.79	-13	-36.79	Pass	H
1264.78	145	204	-57.35	-13	-44.35	Pass	V
1469.05	154	85	-59.58	-13	-46.58	Pass	V
3651.92	145	75	-51.86	-13	-38.86	Pass	V
3914.38	143	85	-47.52	-13	-34.52	Pass	V
5793.76	147	173	-46.35	-13	-33.35	Pass	V
6590.19	157	139	-51.09	-13	-38.09	Pass	V

Note:

- 1) Scan from 9kHz to 40GHz, the disturbance above 13GHz and below 1GHz are attenuated more than 20 dB below the applicable limit and not required to be reported, the above harmonics were the highest point could be found when testing, so only the above harmonics had been displayed.
- 2) Tested with all kind of bandwidth, RB Size and RB Offset, Found the 1.4MHz with full RB were the worst case; and then Only the worst case is recorded in the report.

QPSK

Band 7 20775 channel/BW 5(lowest channel)							
Frequency (MHz)	Height (cm)	Azimuth (deg)	Spurious Emission Level (dBm)	Limit (dBm)	Over Limit (dB)	Result	Antenna Polaxis.
1418.21	148	262	-54.14	-13	-41.14	Pass	H
1773.83	146	236	-50.30	-13	-37.30	Pass	H
3835.70	155	227	-50.07	-13	-37.07	Pass	H
5927.62	147	241	-46.93	-13	-33.93	Pass	H
6415.09	148	156	-43.03	-13	-30.03	Pass	H
7903.06	143	275	-49.97	-13	-36.97	Pass	H
1237.78	156	5	-54.34	-13	-41.34	Pass	V
1429.55	146	294	-57.70	-13	-44.70	Pass	V
3611.92	148	73	-54.39	-13	-41.39	Pass	V
3759.56	157	330	-46.76	-13	-33.76	Pass	V
5750.44	153	134	-47.16	-13	-34.16	Pass	V
6553.28	141	322	-48.26	-13	-35.26	Pass	V

Band 7 21100 channel/BW 5 (middle channel)							
Frequency (MHz)	Height (cm)	Azimuth (deg)	Spurious Emission Level (dBm)	Limit (dBm)	Over Limit (dB)	Result	Antenna Polaxis.
1248.72	141	48	-56.73	-13	-43.73	Pass	H
1784.02	144	86	-50.60	-13	-37.60	Pass	H
3941.57	143	157	-49.03	-13	-36.03	Pass	H
5944.81	144	92	-47.52	-13	-34.52	Pass	H
6538.76	159	158	-43.66	-13	-30.66	Pass	H
7974.63	158	310	-45.66	-13	-32.66	Pass	H
1125.01	146	275	-55.85	-13	-42.85	Pass	V
1534.27	150	210	-59.58	-13	-46.58	Pass	V
3534.27	142	37	-52.07	-13	-39.07	Pass	V
3830.51	154	247	-48.26	-13	-35.26	Pass	V
5829.88	153	159	-46.60	-13	-33.60	Pass	V
6602.01	154	15	-47.38	-13	-34.38	Pass	V

Band 7 21425 channel/BW 5 (highest channel)							
Frequency (MHz)	Height (cm)	Azimuth (deg)	Spurious Emission Level (dBm)	Limit (dBm)	Over Limit (dB)	Result	Antenna Polaxis.
1262.63	146	63	-56.35	-13	-43.35	Pass	H
1666.91	159	56	-52.58	-13	-39.58	Pass	H
3893.08	141	15	-47.53	-13	-34.53	Pass	H
5773.03	154	288	-45.65	-13	-32.65	Pass	H
6525.87	159	216	-45.83	-13	-32.83	Pass	H
8001.12	158	98	-49.29	-13	-36.29	Pass	H
1302.22	159	289	-54.27	-13	-41.27	Pass	V
1435.44	151	297	-59.89	-13	-46.89	Pass	V
3499.00	155	131	-51.02	-13	-38.02	Pass	V
3895.33	154	358	-48.32	-13	-35.32	Pass	V
5885.76	156	196	-45.12	-13	-32.12	Pass	V
6495.14	158	233	-46.63	-13	-33.63	Pass	V

16QAM

Band 7 20775 channel/BW 5 (lowest channel)							
Frequency (MHz)	Height (cm)	Azimuth (deg)	Spurious Emission Level (dBm)	Limit (dBm)	Over Limit (dB)	Result	Antenna Polaxis.
1345.15	157	33	-53.96	-13	-40.96	Pass	H
1816.55	153	332	-48.67	-13	-35.67	Pass	H
3877.94	158	264	-47.60	-13	-34.60	Pass	H
5949.64	151	42	-43.72	-13	-30.72	Pass	H
6441.56	146	62	-46.84	-13	-33.84	Pass	H
7966.28	155	22	-47.52	-13	-34.52	Pass	H
1243.16	160	169	-56.60	-13	-43.60	Pass	V
1379.54	151	160	-59.03	-13	-46.03	Pass	V
3526.89	146	14	-52.31	-13	-39.31	Pass	V
3745.84	156	303	-49.63	-13	-36.63	Pass	V
5831.42	148	7	-46.01	-13	-33.01	Pass	V
6623.54	156	319	-47.06	-13	-34.06	Pass	V

Band 7 21100 channel/BW 5 (middle channel)							
Frequency (MHz)	Height (cm)	Azimuth (deg)	Spurious Emission Level (dBm)	Limit (dBm)	Over Limit (dB)	Result	Antenna Polaxis.
1349.44	149	25	-56.36	-13	-43.36	Pass	H
1753.18	143	184	-50.01	-13	-37.01	Pass	H
3806.69	142	122	-47.06	-13	-34.06	Pass	H
5927.22	147	291	-46.67	-13	-33.67	Pass	H
6417.54	156	134	-46.49	-13	-33.49	Pass	H
8088.52	157	244	-47.97	-13	-34.97	Pass	H
1192.44	141	97	-53.55	-13	-40.55	Pass	V
1389.69	141	333	-57.83	-13	-44.83	Pass	V
3498.30	158	326	-51.57	-13	-38.57	Pass	V
3797.04	152	246	-46.83	-13	-33.83	Pass	V
5883.82	150	349	-43.46	-13	-30.46	Pass	V
6467.57	140	213	-46.59	-13	-33.59	Pass	V

Band 7 21425 channel/BW 5 (highest channel)							
Frequency (MHz)	Height (cm)	Azimuth (deg)	Spurious Emission Level (dBm)	Limit (dBm)	Over Limit (dB)	Result	Antenna Polaxis.
1261.19	148	238	-53.17	-13	-40.17	Pass	H
1690.82	144	301	-49.22	-13	-36.22	Pass	H
3994.16	142	212	-47.91	-13	-34.91	Pass	H
5846.30	149	125	-46.84	-13	-33.84	Pass	H
6537.19	146	148	-43.41	-13	-30.41	Pass	H
7915.56	143	348	-47.47	-13	-34.47	Pass	H
1209.48	159	69	-56.74	-13	-43.74	Pass	V
1448.35	147	31	-59.07	-13	-46.07	Pass	V
3496.59	151	236	-51.36	-13	-38.36	Pass	V
3806.24	143	346	-49.46	-13	-36.46	Pass	V
5874.87	143	70	-46.90	-13	-33.90	Pass	V
6541.74	152	220	-47.49	-13	-34.49	Pass	V

Note:

- 3) Scan from 9kHz to 40GHz, the disturbance above 13GHz and below 1GHz are attenuated more than 20 dB below the applicable limit and not required to be reported, the above harmonics were the highest point could be found when testing, so only the above harmonics had been displayed.
- 4) Tested with all kind of bandwidth, RB Size and RB Offset, Found the 1.4MHz with full RB were the worst case; and then Only the worst case is recorded in the report.

QPSK-B41

Band 41 40265 channel/BW 5(lowest channel)							
Frequency (MHz)	Height (cm)	Azimuth (deg)	Spurious Emission Level (dBm)	Limit (dBm)	Over Limit (dB)	Result	Antenna Polaxis.
1336.58	146	223	-54.33	-13	-41.33	Pass	H
1688.96	152	116	-52.34	-13	-39.34	Pass	H
3819.71	150	247	-48.55	-13	-35.55	Pass	H
5914.47	145	292	-43.47	-13	-30.47	Pass	H
6441.37	147	156	-43.01	-13	-30.01	Pass	H
8005.58	155	165	-47.78	-13	-34.78	Pass	H
1227.10	147	65	-57.75	-13	-44.75	Pass	V
1535.25	144	353	-60.24	-13	-47.24	Pass	V
3496.93	147	166	-50.27	-13	-37.27	Pass	V
3878.85	147	294	-47.97	-13	-34.97	Pass	V
5762.25	157	326	-48.05	-13	-35.05	Pass	V
6573.96	149	136	-49.15	-13	-36.15	Pass	V
Band 41 40740 channel/BW 5(middle channel)							
Frequency (MHz)	Height (cm)	Azimuth (deg)	Spurious Emission Level (dBm)	Limit (dBm)	Over Limit (dB)	Result	Antenna Polaxis.
1369.43	140	330	-53.39	-13	-40.39	Pass	H
1696.83	146	118	-51.37	-13	-38.37	Pass	H
3828.06	144	279	-51.04	-13	-38.04	Pass	H
5887.68	154	330	-42.88	-13	-29.88	Pass	H
6460.68	155	183	-44.83	-13	-31.83	Pass	H
7996.46	155	235	-47.54	-13	-34.54	Pass	H
1214.98	152	35	-57.10	-13	-44.10	Pass	V
1534.01	148	336	-58.33	-13	-45.33	Pass	V
3613.77	150	315	-52.52	-13	-39.52	Pass	V
3873.40	155	202	-47.14	-13	-34.14	Pass	V
5742.88	159	100	-45.79	-13	-32.79	Pass	V
6548.83	156	109	-50.76	-13	-37.76	Pass	V
Band 41 41215 channel/BW 5(highest channel)							
Frequency (MHz)	Height (cm)	Azimuth (deg)	Spurious Emission Level (dBm)	Limit (dBm)	Over Limit (dB)	Result	Antenna Polaxis.
1298.47	147	197	-53.32	-13	-40.32	Pass	H
1648.61	158	139	-48.85	-13	-35.85	Pass	H
3928.80	144	173	-47.46	-13	-34.46	Pass	H
5877.80	153	205	-44.65	-13	-31.65	Pass	H
6542.91	155	98	-47.30	-13	-34.30	Pass	H
8025.76	153	149	-47.73	-13	-34.73	Pass	H
1155.17	153	154	-56.22	-13	-43.22	Pass	V
1522.69	153	326	-57.72	-13	-44.72	Pass	V
3512.07	145	306	-52.51	-13	-39.51	Pass	V
3852.72	146	256	-48.47	-13	-35.47	Pass	V
5873.39	141	20	-44.17	-13	-31.17	Pass	V
6588.10	142	115	-48.74	-13	-35.74	Pass	V

16QAM-B41

Band 41 40265 channel/BW 5(lowest channel)							
Frequency (MHz)	Height (cm)	Azimuth (deg)	Spurious Emission Level (dBm)	Limit (dBm)	Over Limit (dB)	Result	Antenna Polaxis.
1361.78	144	219	-57.41	-13	-44.41	Pass	H
1744.15	158	342	-52.69	-13	-39.69	Pass	H
3897.96	141	176	-49.66	-13	-36.66	Pass	H
5929.59	146	254	-44.97	-13	-31.97	Pass	H
6509.78	153	299	-46.50	-13	-33.50	Pass	H
8078.62	144	116	-46.83	-13	-33.83	Pass	H
1159.16	143	324	-57.26	-13	-44.26	Pass	V
1372.54	159	324	-61.05	-13	-48.05	Pass	V
3542.55	148	47	-50.42	-13	-37.42	Pass	V
3809.88	145	89	-48.39	-13	-35.39	Pass	V
5799.74	146	161	-47.81	-13	-34.81	Pass	V
6538.81	149	337	-48.40	-13	-35.40	Pass	V
Band 41 40740 channel/BW 5(middle channel)							
Frequency (MHz)	Height (cm)	Azimuth (deg)	Spurious Emission Level (dBm)	Limit (dBm)	Over Limit (dB)	Result	Antenna Polaxis.
1344.28	146	217	-53.28	-13	-40.28	Pass	H
1686.35	154	164	-52.32	-13	-39.32	Pass	H
3916.52	140	278	-49.01	-13	-36.01	Pass	H
5889.59	141	251	-47.33	-13	-34.33	Pass	H
6537.78	147	199	-46.14	-13	-33.14	Pass	H
8076.54	155	355	-48.07	-13	-35.07	Pass	H
1159.46	142	56	-54.83	-13	-41.83	Pass	V
1387.90	157	201	-58.48	-13	-45.48	Pass	V
3614.69	152	258	-54.75	-13	-41.75	Pass	V
3737.72	144	17	-50.17	-13	-37.17	Pass	V
5844.69	144	185	-46.96	-13	-33.96	Pass	V
6579.09	159	109	-46.64	-13	-33.64	Pass	V
Band 41 41215 channel/BW 5(highest channel)							
Frequency (MHz)	Height (cm)	Azimuth (deg)	Spurious Emission Level (dBm)	Limit (dBm)	Over Limit (dB)	Result	Antenna Polaxis.
1400.52	157	140	-55.87	-13	-42.87	Pass	H
1762.78	148	198	-52.19	-13	-39.19	Pass	H
3975.43	159	284	-48.05	-13	-35.05	Pass	H
5786.04	152	282	-44.11	-13	-31.11	Pass	H
6493.17	144	33	-43.55	-13	-30.55	Pass	H
8038.38	158	110	-46.18	-13	-33.18	Pass	H
1128.76	152	16	-56.04	-13	-43.04	Pass	V
1400.14	143	102	-58.45	-13	-45.45	Pass	V
3526.55	152	97	-54.18	-13	-41.18	Pass	V
3921.74	151	235	-47.83	-13	-34.83	Pass	V
5766.22	159	306	-46.20	-13	-33.20	Pass	V
6570.04	153	207	-47.52	-13	-34.52	Pass	V

Note:

5) Scan from 9kHz to 40GHz, the disturbance above 13GHz and below 1GHz are attenuated more than 20 dB below the applicable limit and not required to be reported, the above harmonics were the highest point could be found when testing, so only the above harmonics had been displayed.

6) Tested with all kind of bandwidth, RB Size and RB Offset, Found the 1.4MHz with full RB were the worst case; and then Only the worst case is recorded in the report.

12. FREQUENCY STABILITY

12.1 Standard Applicable

According to §22.355, §24.235, §27.54 the limit is 2.5ppm.

12.2 Test Procedure

According to §2.1055, the following test procedure was performed.

The Frequency Stability is measured directly with a Frequency Domain Analyzer. Frequency Deviation in ppm is calculated from the measured peak to peak value.

The Carrier Frequency Stability over Power Supply Voltage and over Temperature is measured with a Frequency Domain Analyzer in histogram mode

12.3 Summary of Test Results/Plots

Note: 1.Normal Voltage NV=DC12.0V; Low Voltage LV=DC10.8; High Voltage HV=DC13.2V

Please refer to Appendix 2: Frequency Stability

Test result: Pass

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