

TEST REPORT

Product Name: Tablet
FCC ID: 2ANMU-RT7TITAN
Trademark: OUKITEL
Model Number: RT7 TITAN
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Sample Received Date: Oct. 24, 2023
Sample tested Date: Oct. 24, 2023 to Nov. 10, 2023
Issue Date: Nov. 10, 2023
Report No.: CTB231109016RFX
Test Standards: FCC Part 2, 22, 24E, 27
Test Results: PASS
Remark: This is LTE radio test report.

Compiled by:

Reviewed by:

Approved by:

Zhou kui

Arron Liu



Zhou Kui

Arron Liu

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.

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(Note: N/A means not applicable)

1. VERSION

Report No.	Issue Date	Description	Approved
CTB231109016RFX	Nov. 10, 2023	Original	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°C
frequency	1×10 ⁻⁷

4. PRODUCT INFORMATION AND TEST SETUP

4.1 Product Information

Model(s):	RT7 TITAN
Model Description:	N/A
Hardware Version:	TP756_MAIN_PCB_V1.1
Software Version:	OUKITEL_P07B_EEA_V07_20231110
Operation Frequency:	FDD-LTE BAND 2: 1850-1910MHz FDD-LTE BAND 4: 1710-1755MHz FDD-LTE BAND 5: 824-849MHz FDD-LTE BAND 7: 2500-2570MHz FDD-LTE BAND 12: 699-716MHz FDD-LTE BAND 17: 704-716MHz
Max. RF output power:	FDD-LTE BAND 2: 21.53dBm FDD-LTE BAND 4: 22.34dBm TDD-LTE BAND 5: 22.42dBm TDD-LTE BAND 7: 23.27dBm TDD-LTE BAND 12: 22.38dBm TDD-LTE BAND 17: 21.99dBm
Type of Modulation:	QPSK, 16QAM
Antenna installation:	FPC Antenna
Antenna Gain:	FDD-LTE BAND 2: 0.67dBi FDD-LTE BAND 4: 0.46dBi TDD-LTE BAND 5: -0.75dBi TDD-LTE BAND 7: 2.24dBi TDD-LTE BAND 12: -1.1dBi TDD-LTE BAND 17: -1.1dBi
Ratings:	DC 9V 3A

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
/	/	/	/	/	/

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 4	Low, Middle, High Channels
TM3	TDD-LTE BAND 5	Low, Middle, High Channels
TM4	TDD-LTE BAND 7	Low, Middle, High Channels
TM5	TDD-LTE BAND 12	Low, Middle, High Channels
TM6	TDD-LTE BAND 17	Low, Middle, High Channels

4.5 Test Environment

Humidity(%):	54
Atmospheric Pressure(kPa):	101
Normal Voltage(DC):	9V
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, Xinhua 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

Item	Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Spectrum Analyzer	Agilent	N9020A	MY52090073	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	2024.07.05
5	Spectrum Analyzer	KEYSIGHT	N9020A	MY51289897	2024.07.05
6	Signal Generator	Agilent	N5181A	MY50140365	2024.07.05
7	Vector signal generator	Agilent	N5182A	MY47420195	2024.07.05
8	Communication test set	Agilent	E5515C	MY50102567	2024.07.06
9	2.4 GHz Filter	Shenxiang	MSF2400-2483.5MS-1154	20181015001	2024.07.05
10	5 GHz Filter	Shenxiang	MSF5150-5850 MS-1155	20181015001	2024.07.06
11	Filter	Xingbo	XBLBQ-DZA120	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	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.

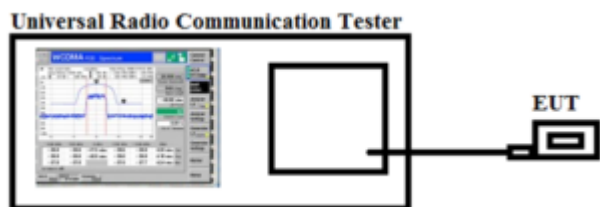
According to §24.232(c), mobile and portable stations are limited to 2 watts EIRP and the equipment must employ a means for limiting power to the minimum necessary for successful communications.

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

Max. Radiated Power:

FDD-LTE Band 2

Channel Bandwidth: 1.4 MHz					
Modulation	Channel	Antenna Polar	EIRP [dBm]	Limit (dBm)	Verdict
QPSK	LCH	V	21.38	<33.00	PASS
		H	19.85		
	MCH	V	21.29		PASS
		H	21.16		
	HCH	V	20.44		PASS
		H	20.93		
16QAM	LCH	V	19.91	<33.00	PASS
		H	21.53		
	MCH	V	21.37		PASS
		H	20.52		
	HCH	V	20.03		PASS
		H	21.44		
Channel Bandwidth: 3 MHz					
Modulation	Channel	Antenna Polar	EIRP [dBm]	Limit (dBm)	Verdict
QPSK	LCH	V	20.06	<33.00	PASS
		H	20.55		
	MCH	V	19.47		PASS
		H	20.21		
	HCH	V	20.54		PASS
		H	20.21		
16QAM	LCH	V	19.26	<33.00	PASS
		H	19.71		
	MCH	V	20.26		PASS
		H	21.05		
	HCH	V	19.97		PASS
		H	19.98		
Channel Bandwidth: 5 MHz					
Modulation	Channel	Antenna Polar	EIRP [dBm]	Limit (dBm)	Verdict
QPSK	LCH	V	19.49	<33.00	PASS
		H	20.91		
	MCH	V	20.66		PASS

	HCH	H	19.34		PASS
		V	19.81		
		H	19.71		
16QAM	LCH	V	19.46	<33.00	PASS
		H	20.68		
	MCH	V	19.08		PASS
		H	20.72		
	HCH	V	19.40		PASS
		H	20.68		
Channel Bandwidth: 10 MHz					
Modulation	Channel	Antenna Polar	EIRP [dBm]	Limit (dBm)	Verdict
QPSK	LCH	V	20.87	<33.00	PASS
		H	19.86		
	MCH	V	20.20		PASS
		H	19.75		
	HCH	V	19.16		PASS
		H	20.84		
16QAM	LCH	V	20.23	<33.00	PASS
		H	20.16		
	MCH	V	20.60		PASS
		H	20.26		
	HCH	V	19.16		PASS
		H	19.64		
Channel Bandwidth: 15 MHz					
Modulation	Channel	Antenna Polar	EIRP [dBm]	Limit (dBm)	Verdict
QPSK	LCH	V	19.22	<33.00	PASS
		H	20.62		
	MCH	V	20.43		PASS
		H	19.00		
	HCH	V	20.45		PASS
		H	20.32		
16QAM	LCH	V	20.42	<33.00	PASS
		H	20.41		
	MCH	V	20.00		PASS
		H	19.49		
	HCH	V	19.96		PASS
		H	20.09		

Channel Bandwidth: 20 MHz					
Modulation	Channel	Antenna Polar	EIRP [dBm]	Limit (dBm)	Verdict
QPSK	LCH	V	21.4	<33.00	PASS
		H	21.12		
	MCH	V	20.22		PASS
		H	20.25		
	HCH	V	20.14		PASS
		H	20.15		
16QAM	LCH	V	21.72	<33.00	PASS
		H	21.38		
	MCH	V	20.94		PASS
		H	20.84		
	HCH	V	20.69		PASS
		H	21.4		

FDD-LTE Band 4

Channel Bandwidth: 1.4 MHz					
Modulation	Channel	Antenna Polar	EIRP [dBm]	Limit (dBm)	Verdict
QPSK	LCH	V	20.88	<30.00	PASS
		H	21.35		
	MCH	V	21.37		PASS
		H	20.89		
	HCH	V	21.60		PASS
		H	21.47		
16QAM	LCH	V	20.98	<30.00	PASS
		H	21.59		
	MCH	V	21.29		PASS
		H	21.77		
	HCH	V	21.23		PASS
		H	21.58		
Channel Bandwidth: 3 MHz					
Modulation	Channel	Antenna Polar	EIRP [dBm]	Limit (dBm)	Verdict
QPSK	LCH	V	21.23	<30.00	PASS
		H	20.84		
	MCH	V	21.49		PASS
		H	21.11		
	HCH	V	21.50		PASS
		H	20.78		
16QAM	LCH	V	21.03	<30.00	PASS
		H	20.68		
	MCH	V	21.19		PASS
		H	20.57		
	HCH	V	21.35		PASS
		H	20.66		
Channel Bandwidth: 5 MHz					
Modulation	Channel	Antenna Polar	EIRP [dBm]	Limit (dBm)	Verdict
QPSK	LCH	V	21.31	<30.00	PASS
		H	20.77		
	MCH	V	20.71		PASS
		H	21.63		
	HCH	V	21.55		PASS
		H	20.69		

16QAM	LCH	V	21.17	<30.00	PASS
		H	21.53		
	MCH	V	21.55		PASS
		H	21.45		
	HCH	V	21.06		PASS
		H	20.94		
Channel Bandwidth: 10 MHz					
Modulation	Channel	Antenna Polar	EIRP [dBm]	Limit (dBm)	Verdict
QPSK	LCH	V	21.06	<30.00	PASS
		H	21.22		
	MCH	V	20.93		PASS
		H	21.31		
	HCH	V	21.36		PASS
		H	20.97		
16QAM	LCH	V	20.70	<30.00	PASS
		H	21.07		
	MCH	V	20.87		PASS
		H	20.67		
	HCH	V	21.48		PASS
		H	21.04		

Channel Bandwidth: 15 MHz					
Modulation	Channel	Antenna Polar	EIRP [dBm]	Limit (dBm)	Verdict
QPSK	LCH	V	20.43	<30.00	PASS
		H	20.41		
	MCH	V	20.52		PASS
		H	20.45		
	HCH	V	20.42		PASS
		H	20.25		
16QAM	LCH	V	20.34	<30.00	PASS
		H	20.74		
	MCH	V	20.60		PASS
		H	20.17		
	HCH	V	20.72		PASS
		H	20.77		
Channel Bandwidth: 20 MHz					
Modulation	Channel	Antenna Polar	EIRP [dBm]	Limit (dBm)	Verdict
QPSK	LCH	V	22.22	<30.00	PASS
		H	19.55		
	MCH	V	21.21		PASS
		H	19.65		
	HCH	V	19.92		PASS
		H	20.35		
16QAM	LCH	V	22.34	<30.00	PASS
		H	19.82		
	MCH	V	20.77		PASS
		H	19.98		
	HCH	V	19.87		PASS
		H	20.96		

FDD-LTE Band 5

Channel Bandwidth: 1.4 MHz					
Modulation	Channel	Antenna Polar	ERP [dBm]	Limit (dBm)	Verdict
QPSK	LCH	V	20.64	<34.77	PASS
		H	20.26		
	MCH	V	19.97		PASS
		H	20.78		
	HCH	V	20.22		PASS
		H	20.78		
16QAM	LCH	V	20.72	<34.77	PASS
		H	20.63		
	MCH	V	19.92		PASS
		H	20.53		
	HCH	V	20.17		PASS
		H	20.47		
Channel Bandwidth: 3 MHz					
Modulation	Channel	Antenna Polar	ERP [dBm]	Limit (dBm)	Verdict
QPSK	LCH	V	20.78	<34.77	PASS
		H	20.88		
	MCH	V	20.46		PASS
		H	20.68		
	HCH	V	20.59		PASS
		H	20.76		
16QAM	LCH	V	20.89	<34.77	PASS
		H	20.90		
	MCH	V	21.02		PASS
		H	20.61		
	HCH	V	20.89		PASS
		H	20.78		
Channel Bandwidth: 5 MHz					
Modulation	Channel	Antenna Polar	ERP [dBm]	Limit (dBm)	Verdict
QPSK	LCH	V	20.51	<34.77	PASS
		H	20.91		
	MCH	V	20.48		PASS
		H	20.94		
	HCH	V	20.30		PASS
		H	20.55		

16QAM	LCH	V	20.75	<34.77	PASS
		H	20.52		
	MCH	V	20.18		PASS
		H	20.48		
	HCH	V	21.01		PASS
		H	20.54		
Channel Bandwidth: 10 MHz					
Modulation	Channel	Antenna Polar	ERP [dBm]	Limit (dBm)	Verdict
QPSK	LCH	V	22.25	<34.77	PASS
		H	21.63		
	MCH	V	21.17		PASS
		H	21.33		
	HCH	V	21.72		PASS
		H	21.42		
16QAM	LCH	V	22.42	<34.77	PASS
		H	21.35		
	MCH	V	21.64		PASS
		H	21.64		
	HCH	V	21.68		PASS
		H	22.08		

FDD-LTE Band 7

Channel Bandwidth: 5 MHz					
Modulation	Channel	Antenna Polar	ERP [dBm]	Limit (dBm)	Verdict
QPSK	LCH	V	20.58	<34.77	PASS
		H	21.02		
	MCH	V	20.83		PASS
		H	20.65		
	HCH	V	20.49		PASS
		H	20.87		
16QAM	LCH	V	21.17	<34.77	PASS
		H	20.25		
	MCH	V	20.62		PASS
		H	21.16		
	HCH	V	20.31		PASS
		H	20.77		
Channel Bandwidth: 10 MHz					
Modulation	Channel	Antenna Polar	ERP [dBm]	Limit (dBm)	Verdict
QPSK	LCH	V	23.19	<34.77	PASS
		H	23.00		
	MCH	V	23.00		PASS
		H	23.00		
	HCH	V	22.07		PASS
		H	22.56		
16QAM	LCH	V	23.27	<34.77	PASS
		H	22.41		
	MCH	V	23.02		PASS
		H	22.70		
	HCH	V	21.88		PASS
		H	22.12		

FDD-LTE Band 12

Channel Bandwidth: 1.4 MHz					
Modulation	Channel	Antenna Polar	ERP [dBm]	Limit (dBm)	Verdict
QPSK	LCH	V	20.90	<34.77	PASS
		H	21.14		
	MCH	V	22.15		PASS
		H	21.12		
	HCH	V	20.98		PASS
		H	22.12		
16QAM	LCH	V	21.82	<34.77	PASS
		H	20.77		
	MCH	V	21.06		PASS
		H	22.39		
	HCH	V	21.68		PASS
		H	20.74		
Channel Bandwidth: 3 MHz					
Modulation	Channel	Antenna Polar	ERP [dBm]	Limit (dBm)	Verdict
QPSK	LCH	V	20.75	<34.77	PASS
		H	21.42		
	MCH	V	20.85		PASS
		H	21.65		
	HCH	V	21.21		PASS
		H	22.26		
16QAM	LCH	V	21.15	<34.77	PASS
		H	22.80		
	MCH	V	22.17		PASS
		H	22.21		
	HCH	V	21.93		PASS
		H	22.38		
Channel Bandwidth: 5 MHz					
Modulation	Channel	Antenna Polar	ERP [dBm]	Limit (dBm)	Verdict
QPSK	LCH	V	20.86	<34.77	PASS
		H	20.13		
	MCH	V	20.88		PASS
		H	20.54		
	HCH	V	20.46		PASS
		H	20.75		

16QAM	LCH	V	20.19	<34.77	PASS
		H	21.10		
	MCH	V	20.30		PASS
		H	20.85		
	HCH	V	20.21		PASS
		H	20.48		
Channel Bandwidth: 10 MHz					
Modulation	Channel	Antenna Polar	ERP [dBm]	Limit (dBm)	Verdict
QPSK	LCH	V	22.34	<34.77	PASS
		H	21.21		
	MCH	V	22.07		PASS
		H	21.65		
	HCH	V	20.91		PASS
		H	22.27		
16QAM	LCH	V	22.94	<34.77	PASS
		H	22.60		
	MCH	V	20.88		PASS
		H	22.18		
	HCH	V	20.97		PASS
		H	21.22		

FDD-LTE Band 17

Channel Bandwidth: 5 MHz					
Modulation	Channel	Antenna Polar	ERP [dBm]	Limit (dBm)	Verdict
QPSK	LCH	V	20.46	<34.77	PASS
		H	19.96		
	MCH	V	20.23		PASS
		H	19.80		
	HCH	V	19.76		PASS
		H	19.74		
16QAM	LCH	V	19.85	<34.77	PASS
		H	20.08		
	MCH	V	19.83		PASS
		H	20.57		
	HCH	V	20.47		PASS
		H	20.35		
Channel Bandwidth: 10 MHz					
Modulation	Channel	Antenna Polar	ERP [dBm]	Limit (dBm)	Verdict
QPSK	LCH	V	22.43	<34.77	PASS
		H	20.67		
	MCH	V	20.85		PASS
		H	21.41		
	HCH	V	21.86		PASS
		H	21.73		
16QAM	LCH	V	21.99	<34.77	PASS
		H	20.93		
	MCH	V	21.46		PASS
		H	21.82		
	HCH	V	20.85		PASS
		H	21.90		

Max. Conducted Output Power
Please refer to Appendix A: Average Power Output Data
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

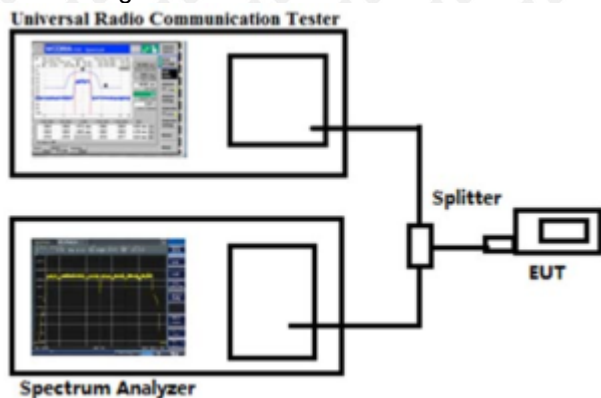
corresponding to the highest PAPR expected during periods of continuous transmission.

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.

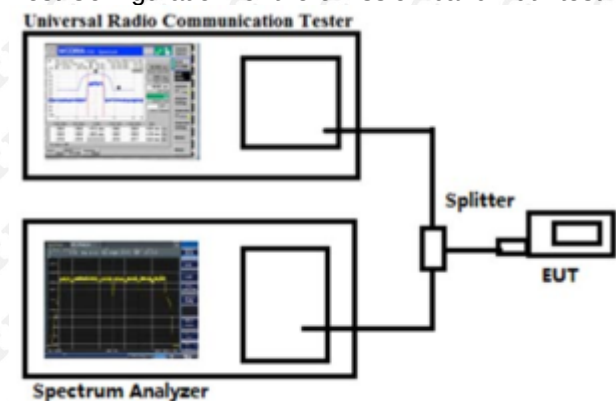
According to §24.238(b), the emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.

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.

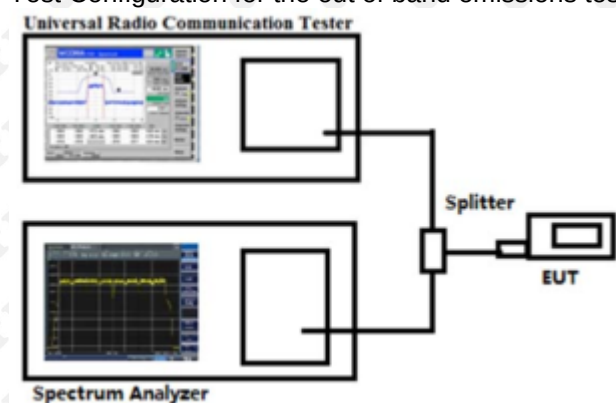
According to §27.53(g), for operations in the 600 MHz band and the 698-746 MHz band, the power of any emission outside a licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, by at least $43 + 10 \log(P)$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

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.
1338.23	146	314	-54.94	-13	-41.94	Pass	H
1757.07	146	299	-50.21	-13	-37.21	Pass	H
3842.68	140	193	-50.24	-13	-37.24	Pass	H
5895.60	142	290	-43.27	-13	-30.27	Pass	H
6585.98	146	15	-43.02	-13	-30.02	Pass	H
8036.42	144	186	-46.59	-13	-33.59	Pass	H
1156.80	151	251	-54.91	-13	-41.91	Pass	V
1493.02	146	298	-60.35	-13	-47.35	Pass	V
3504.76	159	341	-50.71	-13	-37.71	Pass	V
3904.75	149	146	-47.46	-13	-34.46	Pass	V
5734.23	142	195	-47.03	-13	-34.03	Pass	V
6647.35	146	247	-48.41	-13	-35.41	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.
1260.41	150	216	-58.75	-13	-45.75	Pass	H
1761.61	146	225	-52.70	-13	-39.70	Pass	H
3839.11	150	288	-52.36	-13	-39.36	Pass	H
5855.12	146	246	-47.51	-13	-34.51	Pass	H
6532.36	149	53	-48.26	-13	-35.26	Pass	H
7980.61	151	42	-46.81	-13	-33.81	Pass	H
1321.40	149	45	-55.81	-13	-42.81	Pass	V
1303.21	148	263	-61.99	-13	-48.99	Pass	V
3686.46	147	195	-50.87	-13	-37.87	Pass	V
3986.70	148	63	-51.90	-13	-38.90	Pass	V
5893.81	150	27	-49.76	-13	-36.76	Pass	V
6566.82	150	224	-49.02	-13	-36.02	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.
1340.71	148	255	-56.73	-13	-43.73	Pass	H
1669.90	153	302	-52	-13	-39	Pass	H
3845.50	146	61	-45.66	-13	-32.66	Pass	H
5906.91	146	245	-40.96	-13	-27.96	Pass	H
6531.65	151	260	-42.47	-13	-29.47	Pass	H
8000.07	149	84	-44.74	-13	-31.74	Pass	H
1257.63	153	151	-56.49	-13	-43.49	Pass	V
1403.18	154	169	-56.84	-13	-43.84	Pass	V
3525.24	147	318	-52.79	-13	-39.79	Pass	V
3912.13	148	102	-48.59	-13	-35.59	Pass	V
5788.31	151	317	-43.05	-13	-30.05	Pass	V
6576.29	148	251	-47.76	-13	-34.76	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.
1269.61	146	249	-60.71	-13	-47.71	Pass	H
1734.70	146	339	-44.85	-13	-31.85	Pass	H
3809.57	149	109	-51.70	-13	-38.70	Pass	H
6012.05	146	318	-44.10	-13	-31.10	Pass	H
6548.58	152	127	-44.46	-13	-31.46	Pass	H
7945.79	147	120	-42.94	-13	-29.94	Pass	H
1176.12	145	187	-53.57	-13	-40.57	Pass	V
1482.73	149	233	-55.27	-13	-42.27	Pass	V
3679.62	151	218	-50.95	-13	-37.95	Pass	V
3938.94	148	130	-51.21	-13	-38.21	Pass	V
5836.34	152	239	-44.47	-13	-31.47	Pass	V
6564.04	153	109	-51.71	-13	-38.71	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.
1301.96	145	216	-51.56	-13	-41.45	Pass	H
1635.74	145	175	-53.76	-13	-37.85	Pass	H
3777.59	146	232	-47.48	-13	-35.2	Pass	H
5892.18	148	157	-43.08	-13	-30.39	Pass	H
6438.14	152	284	-41.57	-13	-32.24	Pass	H
8023.17	155	87	-44.04	-13	-30.22	Pass	H
1279.71	150	74	-54.77	-13	-44.9	Pass	V
1364.51	148	333	-52.90	-13	-43.63	Pass	V
3591.81	151	50	-51.40	-13	-35.94	Pass	V
3914.75	154	133	-49.67	-13	-36.01	Pass	V
5806.46	150	131	-48.25	-13	-33.75	Pass	V
6556.48	153	360	-43.27	-13	-32.41	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.
1270.71	155	263	-56.00	-13	-43.00	Pass	H
1736.94	149	232	-47.48	-13	-34.48	Pass	H
3891.62	150	250	-45.34	-13	-32.34	Pass	H
5963.21	155	78	-38.87	-13	-25.87	Pass	H
6541.64	153	198	-39.38	-13	-26.38	Pass	H
8137.60	151	29	-47.25	-13	-34.25	Pass	H
1293.31	152	114	-58.61	-13	-45.61	Pass	V
1430.47	149	191	-57.45	-13	-44.45	Pass	V
3487.04	145	62	-49.63	-13	-36.63	Pass	V
3788.60	151	143	-47.17	-13	-34.17	Pass	V
5740.06	150	236	-47.47	-13	-34.47	Pass	V
6507.92	145	258	-45.89	-13	-32.89	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.
1274.31	147	338	-57.00	-13	-44.67	Pass	H
1743.21	150	307	-43.65	-13	-34.41	Pass	H
3951.97	147	240	-51.90	-13	-36.9	Pass	H
5861.90	148	139	-46.04	-13	-33.07	Pass	H
6480.31	154	357	-47.08	-13	-31.79	Pass	H
7905.67	147	330	-40.95	-13	-28.84	Pass	H
1119.79	146	21	-56.79	-13	-41.24	Pass	V
1340.52	145	329	-59.07	-13	-43.57	Pass	V
3588.34	148	339	-51.48	-13	-37.85	Pass	V
3839.47	149	154	-49.01	-13	-38.46	Pass	V
5849.49	155	233	-47.26	-13	-32.52	Pass	V
6575.57	155	214	-46.89	-13	-35.32	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.
1238.27	153	233	-54.29	-13	-41.29	Pass	H
1642.94	146	84	-47.34	-13	-34.34	Pass	H
3851.67	148	21	-46.18	-13	-33.18	Pass	H
5910.53	147	159	-41.21	-13	-28.21	Pass	H
6421.96	154	210	-40.14	-13	-27.14	Pass	H
7968.90	152	148	-44.97	-13	-31.97	Pass	H
1186.63	154	139	-58.14	-13	-45.14	Pass	V
1454.56	148	1	-60.04	-13	-47.04	Pass	V
3540.90	146	308	-45.66	-13	-32.66	Pass	V
3946.99	147	33	-50.48	-13	-37.48	Pass	V
5907.60	146	357	-46.24	-13	-33.24	Pass	V
6483.75	154	284	-48.23	-13	-35.23	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.
1396.01	149	165	-52.92	-13	-39.92	Pass	H
1634.87	146	208	-50.34	-13	-37.34	Pass	H
3990.77	146	4	-42.18	-13	-29.18	Pass	H
5803.96	150	198	-40.81	-13	-27.81	Pass	H
6593.24	146	341	-45.52	-13	-32.52	Pass	H
8001.24	150	235	-42.14	-13	-29.14	Pass	H
1195.95	146	292	-52.11	-13	-39.11	Pass	V
1374.22	150	158	-53.79	-13	-40.79	Pass	V
3447.69	149	55	-46.98	-13	-33.98	Pass	V
3928.75	150	319	-49.54	-13	-36.54	Pass	V
5769.15	146	118	-44.07	-13	-31.07	Pass	V
6519.92	150	155	-46.99	-13	-33.99	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.
1239.25	150	78	-55.64	-13	-42.64	Pass	H
1791.84	149	291	-50.94	-13	-37.94	Pass	H
3825.64	151	213	-50.93	-13	-37.93	Pass	H
5858.69	150	89	-43.45	-13	-30.45	Pass	H
6556.06	151	329	-49.40	-13	-36.40	Pass	H
7927.03	148	138	-46.77	-13	-33.77	Pass	H
1151.66	149	99	-56.68	-13	-43.68	Pass	V
1458.57	148	217	-55.78	-13	-42.78	Pass	V
3617.02	150	12	-46.68	-13	-33.68	Pass	V
3928.75	150	137	-50.24	-13	-37.24	Pass	V
5853.39	146	356	-44.64	-13	-31.64	Pass	V
6599.69	146	95	-48.27	-13	-35.27	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.
1286.44	150	142	-57.95	-13	-44.95	Pass	H
1809.58	146	280	-56.20	-13	-43.20	Pass	H
3824.23	150	330	-48.15	-13	-35.15	Pass	H
5933.04	146	194	-41.02	-13	-28.02	Pass	H
6447.70	149	260	-48.24	-13	-35.24	Pass	H
8089.09	151	31	-44.55	-13	-31.55	Pass	H
1241.89	149	4	-51.45	-13	-38.45	Pass	V
1385.93	148	257	-64.37	-13	-51.37	Pass	V
3516.47	147	55	-48.31	-13	-35.31	Pass	V
3824.65	148	273	-49.93	-13	-36.93	Pass	V
5767.31	150	136	-49.38	-13	-36.38	Pass	V
6435.06	150	16	-48.99	-13	-35.99	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.
1307.43	149	156	-59.19	-13	-46.19	Pass	H
1578.57	149	170	-54.11	-13	-41.11	Pass	H
3810.14	149	127	-47.39	-13	-34.39	Pass	H
5863.68	146	42	-43.87	-13	-30.87	Pass	H
6427.45	147	69	-46.05	-13	-33.05	Pass	H
7979.18	151	110	-43.26	-13	-30.26	Pass	H
1216.78	148	61	-53.63	-13	-40.63	Pass	V
1344.58	147	266	-52.64	-13	-39.64	Pass	V
3423.61	148	303	-48.28	-13	-35.28	Pass	V
3869.88	149	195	-44.07	-13	-31.07	Pass	V
5697.83	147	323	-45.79	-13	-32.79	Pass	V
6519.57	146	325	-45.84	-13	-32.84	Pass	V

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Band 5 20407 channel/BW1.4(lowest channel)							
Frequency (MHz)	Height (cm)	Azimuth (deg)	Spurious Emission Level (dBm)	Limit (dBm)	Over Limit (dB)	Result	Antenna Polaxis.
1323.93	159	313	-55.04	-13	-42.04	Pass	H
1809.26	155	286	-50.21	-13	-37.21	Pass	H
3834.68	145	79	-49.87	-13	-36.87	Pass	H
5757.60	151	44	-44.66	-13	-31.66	Pass	H
6402.11	145	214	-45.52	-13	-32.52	Pass	H
7960.31	152	256	-49.62	-13	-36.62	Pass	H
1220.51	160	114	-56.03	-13	-43.03	Pass	V
1445.96	146	174	-57.41	-13	-44.41	Pass	V
3505.92	153	155	-53.78	-13	-40.78	Pass	V
3820.39	141	47	-47.69	-13	-34.69	Pass	V
5854.25	154	151	-43.90	-13	-30.90	Pass	V
6554.53	150	171	-51.12	-13	-38.12	Pass	V

Band 5 20525 channel/BW1.4(middle channel)							
Frequency (MHz)	Height (cm)	Azimuth (deg)	Spurious Emission Level (dBm)	Limit (dBm)	Over Limit (dB)	Result	Antenna Polaxis.
1222.43	150	207	-56.95	-13	-43.95	Pass	H
1727.39	146	72	-53.57	-13	-40.57	Pass	H
3880.24	150	172	-51.02	-13	-38.02	Pass	H
5811.02	146	288	-43.20	-13	-30.20	Pass	H
6416.29	149	58	-50.51	-13	-37.51	Pass	H
8015.30	151	343	-50.00	-13	-37.00	Pass	H
1323.48	149	210	-54.88	-13	-41.88	Pass	V
1448.12	148	40	-58.04	-13	-45.04	Pass	V
3690.01	147	221	-56.23	-13	-43.23	Pass	V
3842.78	148	298	-48.10	-13	-35.10	Pass	V
5764.62	150	108	-46.66	-13	-33.66	Pass	V
6486.96	150	221	-46.58	-13	-33.58	Pass	V

Band 5 20643 channel/BW1.4(highest channel)							
Frequency (MHz)	Height (cm)	Azimuth (deg)	Spurious Emission Level (dBm)	Limit (dBm)	Over Limit (dB)	Result	Antenna Polaxis.
1340.713	149	156	-56.73	-13	-43.73	Pass	H
1669.900	149	170	-52.00	-13	-39.00	Pass	H
3845.500	149	127	-45.66	-13	-32.66	Pass	H
5906.908	146	42	-40.96	-13	-27.96	Pass	H
6531.650	147	69	-42.47	-13	-29.47	Pass	H
8000.071	151	110	-44.74	-13	-31.74	Pass	H
1257.628	148	61	-56.49	-13	-43.49	Pass	V
1403.175	147	266	-56.84	-13	-43.84	Pass	V
3525.243	148	303	-52.79	-13	-39.79	Pass	V
3912.129	149	195	-48.59	-13	-35.59	Pass	V
5788.308	147	323	-43.05	-13	-30.05	Pass	V
6576.285	146	325	-47.76	-13	-34.76	Pass	V

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Band 5 20407 channel/BW1.4(lowest channel)							
Frequency (MHz)	Height (cm)	Azimuth (deg)	Spurious Emission Level (dBm)	Limit (dBm)	Over Limit (dB)	Result	Antenna Polaxis.
1383.96	153	353	-55.89	-13	-42.89	Pass	H
1592.89	147	254	-45.13	-13	-32.13	Pass	H
3874.31	147	29	-51.07	-13	-38.07	Pass	H
5999.25	151	191	-45.88	-13	-32.88	Pass	H
6577.06	149	127	-46.43	-13	-33.43	Pass	H
7963.66	145	203	-44.86	-13	-31.86	Pass	H
1255.22	145	223	-52.31	-13	-39.31	Pass	V
1490.79	155	323	-55.57	-13	-42.57	Pass	V
3552.89	145	206	-52.94	-13	-39.94	Pass	V
3840.97	153	183	-50.52	-13	-37.52	Pass	V
5815.50	147	235	-47.23	-13	-34.23	Pass	V
6636.04	154	346	-48.74	-13	-35.74	Pass	V

Band 5 20525 channel/BW1.4(middle channel)							
Frequency (MHz)	Height (cm)	Azimuth (deg)	Spurious Emission Level (dBm)	Limit (dBm)	Over Limit (dB)	Result	Antenna Polaxis.
1279.22	152	119	-51.03	-13	-41.45	Pass	H
1709.87	151	282	-51.87	-13	-37.85	Pass	H
3903.39	149	13	-46.25	-13	-35.2	Pass	H
5920.43	148	195	-39.87	-13	-30.39	Pass	H
6582.04	150	106	-42.01	-13	-32.24	Pass	H
7970.47	145	301	-43.90	-13	-30.22	Pass	H
1131.26	152	169	-57.54	-13	-44.9	Pass	V
1467.42	153	158	-52.95	-13	-43.63	Pass	V
3634.73	154	262	-51.39	-13	-35.94	Pass	V
3802.85	153	126	-48.89	-13	-36.01	Pass	V
5821.08	152	172	-47.96	-13	-33.75	Pass	V
6607.24	147	219	-47.95	-13	-32.41	Pass	V

Band 5 20643 channel/BW1.4(highest channel)							
Frequency (MHz)	Height (cm)	Azimuth (deg)	Spurious Emission Level (dBm)	Limit (dBm)	Over Limit (dB)	Result	Antenna Polaxis.
1237.15	147	270	-52.72	-13	-39.72	Pass	H
1759.05	155	94	-50.80	-13	-37.80	Pass	H
3941.42	145	171	-41.53	-13	-28.53	Pass	H
5930.66	150	318	-44.87	-13	-31.87	Pass	H
6551.62	154	204	-39.13	-13	-26.13	Pass	H
8119.24	147	344	-48.10	-13	-35.10	Pass	H
1224.84	150	296	-55.36	-13	-42.36	Pass	V
1452.16	154	299	-58.29	-13	-45.29	Pass	V
3500.69	152	350	-50.54	-13	-37.54	Pass	V
3867.48	149	261	-51.04	-13	-38.04	Pass	V
5882.72	151	83	-50.57	-13	-37.57	Pass	V
6603.80	147	70	-44.60	-13	-31.60	Pass	V

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Band 12 23017 channel/BW1.4(lowest channel)							
Frequency (MHz)	Height (cm)	Azimuth (deg)	Spurious Emission Level (dBm)	Limit (dBm)	Over Limit (dB)	Result	Antenna Polaxis.
1258.03	146	321	-54.46	-13	-44.67	Pass	H
1624.24	151	203	-48.38	-13	-34.41	Pass	H
3861.37	150	90	-51.08	-13	-36.9	Pass	H
5895.19	148	105	-48.09	-13	-33.07	Pass	H
6605.63	151	154	-42.89	-13	-31.79	Pass	H
8064.43	152	273	-42.16	-13	-28.84	Pass	H
1119.01	149	43	-54.39	-13	-41.24	Pass	V
1393.08	150	25	-54.90	-13	-43.57	Pass	V
3506.34	148	169	-47.24	-13	-37.85	Pass	V
3886.25	148	229	-49.30	-13	-38.46	Pass	V
5763.85	154	262	-42.49	-13	-32.52	Pass	V
6523.07	152	174	-47.27	-13	-35.32	Pass	V

Band 12 23095 channel/BW1.4(middle channel)							
Frequency (MHz)	Height (cm)	Azimuth (deg)	Spurious Emission Level (dBm)	Limit (dBm)	Over Limit (dB)	Result	Antenna Polaxis.
1321.05	152	166	-53.65	-13	-40.65	Pass	H
1701.96	148	43	-50.89	-13	-37.89	Pass	H
3912.69	152	179	-45.44	-13	-32.44	Pass	H
5958.20	148	321	-42.18	-13	-29.18	Pass	H
6429.84	150	316	-41.97	-13	-28.97	Pass	H
8044.02	150	291	-46.35	-13	-33.35	Pass	H
1235.54	149	191	-55.40	-13	-42.40	Pass	V
1332.66	146	211	-60.83	-13	-47.83	Pass	V
3539.52	150	154	-46.88	-13	-33.88	Pass	V
3864.19	146	0	-50.52	-13	-37.52	Pass	V
5777.58	151	250	-40.04	-13	-27.04	Pass	V
6420.35	154	124	-42.36	-13	-29.36	Pass	V

Band 12 23173 channel/BW1.4(highest channel)							
Frequency (MHz)	Height (cm)	Azimuth (deg)	Spurious Emission Level (dBm)	Limit (dBm)	Over Limit (dB)	Result	Antenna Polaxis.
1299.90	149	165	-50.72	-13	-37.72	Pass	H
1670.32	146	208	-48.68	-13	-35.68	Pass	H
3964.03	146	4	-43.26	-13	-30.26	Pass	H
5950.03	150	198	-41.15	-13	-28.15	Pass	H
6528.23	146	341	-42.85	-13	-29.85	Pass	H
8046.83	150	235	-40.94	-13	-27.94	Pass	H
1221.76	146	292	-56.02	-13	-43.02	Pass	V
1480.63	150	158	-58.48	-13	-45.48	Pass	V
3636.44	149	55	-47.45	-13	-34.45	Pass	V
3770.41	150	319	-44.52	-13	-31.52	Pass	V
5741.04	146	118	-43.98	-13	-30.98	Pass	V
6571.17	150	155	-47.01	-13	-34.01	Pass	V

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Band 12 23017 channel/BW1.4(lowest channel)							
Frequency (MHz)	Height (cm)	Azimuth (deg)	Spurious Emission Level (dBm)	Limit (dBm)	Over Limit (dB)	Result	Antenna Polaxis.
1254.67	150	78	-59.38	-13	-46.38	Pass	H
1824.84	149	291	-55.65	-13	-42.65	Pass	H
3854.18	151	213	-48.26	-13	-35.26	Pass	H
5939.24	150	89	-46.52	-13	-33.52	Pass	H
6418.35	151	329	-48.00	-13	-35.00	Pass	H
8018.16	148	138	-47.75	-13	-34.75	Pass	H
1144.00	149	99	-59.28	-13	-46.28	Pass	V
1346.70	148	217	-54.22	-13	-41.22	Pass	V
3500.54	150	12	-52.46	-13	-39.46	Pass	V
3757.21	150	137	-47.44	-13	-34.44	Pass	V
5826.58	146	356	-44.16	-13	-31.16	Pass	V
6584.28	146	95	-49.97	-13	-36.97	Pass	V

Band 12 23095 channel/BW1.4(middle channel)							
Frequency (MHz)	Height (cm)	Azimuth (deg)	Spurious Emission Level (dBm)	Limit (dBm)	Over Limit (dB)	Result	Antenna Polaxis.
1367.19	150	142	-57.38	-13	-44.38	Pass	H
1718.08	146	280	-56.44	-13	-43.44	Pass	H
3786.83	150	330	-47.75	-13	-34.75	Pass	H
5947.35	146	194	-43.97	-13	-30.97	Pass	H
6379.57	149	260	-47.26	-13	-34.26	Pass	H
8003.58	151	31	-48.95	-13	-35.95	Pass	H
1287.41	149	4	-51.49	-13	-38.49	Pass	V
1458.25	148	257	-66.01	-13	-53.01	Pass	V
3568.08	147	55	-54.21	-13	-41.21	Pass	V
3962.91	148	273	-53.36	-13	-40.36	Pass	V
5776.79	150	136	-47.96	-13	-34.96	Pass	V
6554.72	150	16	-50.34	-13	-37.34	Pass	V

Band 12 23173 channel/BW1.4(highest channel)							
Frequency (MHz)	Height (cm)	Azimuth (deg)	Spurious Emission Level (dBm)	Limit (dBm)	Over Limit (dB)	Result	Antenna Polaxis.
1309.82	149	156	-53.33	-13	-40.33	Pass	H
1570.79	149	170	-51.69	-13	-38.69	Pass	H
3841.50	149	127	-47.56	-13	-34.56	Pass	H
5862.85	146	42	-42.99	-13	-29.99	Pass	H
6467.15	147	69	-43.52	-13	-30.52	Pass	H
7929.71	151	110	-49.06	-13	-36.06	Pass	H
1226.12	148	61	-51.40	-13	-38.40	Pass	V
1330.54	147	266	-50.48	-13	-37.48	Pass	V
3434.14	148	303	-54.29	-13	-41.29	Pass	V
3849.55	149	195	-44.01	-13	-31.01	Pass	V
5747.19	147	323	-44.57	-13	-31.57	Pass	V
6564.68	146	325	-49.99	-13	-36.99	Pass	V

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Band 17 23755 channel/BW1.4(lowest channel)							
Frequency (MHz)	Height (cm)	Azimuth (deg)	Spurious Emission Level (dBm)	Limit (dBm)	Over Limit (dB)	Result	Antenna Polaxis.
1394.38	144	324	-53.65	-13	-40.65	Pass	H
1643.48	155	359	-50.26	-13	-37.26	Pass	H
3977.21	143	165	-49.90	-13	-36.90	Pass	H
5878.75	146	48	-46.94	-13	-33.94	Pass	H
6428.56	150	359	-47.32	-13	-34.32	Pass	H
8015.78	140	127	-48.02	-13	-35.02	Pass	H
1157.29	145	8	-54.36	-13	-41.36	Pass	V
1534.84	158	45	-57.28	-13	-44.28	Pass	V
3642.53	150	171	-54.51	-13	-41.51	Pass	V
3792.68	144	103	-50.70	-13	-37.70	Pass	V
5718.48	157	213	-44.98	-13	-31.98	Pass	V
6553.85	146	189	-50.75	-13	-37.75	Pass	V

Band 17 23790 channel/BW1.4(middle channel)							
Frequency (MHz)	Height (cm)	Azimuth (deg)	Spurious Emission Level (dBm)	Limit (dBm)	Over Limit (dB)	Result	Antenna Polaxis.
1269.11	150	292	-59.07	-13	-46.07	Pass	H
1656.36	146	156	-49.47	-13	-36.47	Pass	H
3918.30	150	168	-49.51	-13	-36.51	Pass	H
5859.89	146	92	-47.74	-13	-34.74	Pass	H
6454.55	149	73	-49.37	-13	-36.37	Pass	H
8076.37	151	103	-48.78	-13	-35.78	Pass	H
1172.88	149	263	-54.74	-13	-41.74	Pass	V
1341.58	148	38	-58.16	-13	-45.16	Pass	V
3641.86	147	96	-52.58	-13	-39.58	Pass	V
3951.53	148	359	-52.44	-13	-39.44	Pass	V
5886.44	150	327	-46.89	-13	-33.89	Pass	V
6526.66	150	343	-47.36	-13	-34.36	Pass	V

Band 17 23825 channel/BW1.4(highest channel)							
Frequency (MHz)	Height (cm)	Azimuth (deg)	Spurious Emission Level (dBm)	Limit (dBm)	Over Limit (dB)	Result	Antenna Polaxis.
1340.71	148	105	-56.73	-13	-43.73	Pass	H
1669.90	152	220	-52	-13	-39	Pass	H
3845.50	148	256	-45.66	-13	-32.66	Pass	H
5906.91	146	97	-40.96	-13	-27.96	Pass	H
6531.65	151	343	-42.47	-13	-29.47	Pass	H
8000.07	152	157	-44.74	-13	-31.74	Pass	H
1257.63	146	334	-56.49	-13	-43.49	Pass	V
1403.18	152	119	-56.84	-13	-43.84	Pass	V
3525.24	154	142	-52.79	-13	-39.79	Pass	V
3912.13	151	203	-48.59	-13	-35.59	Pass	V
5788.31	149	15	-43.05	-13	-30.05	Pass	V
6576.29	146	267	-47.76	-13	-34.76	Pass	V

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Band 17 23755 channel/BW1.4(lowest channel)							
Frequency (MHz)	Height (cm)	Azimuth (deg)	Spurious Emission Level (dBm)	Limit (dBm)	Over Limit (dB)	Result	Antenna Polaxis.
1286.56	147	280	-57.15	-13	-44.15	Pass	H
1704.86	154	48	-47.80	-13	-34.80	Pass	H
3867.31	151	148	-47.59	-13	-34.59	Pass	H
6001.08	147	171	-44.22	-13	-31.22	Pass	H
6559.84	154	116	-45.94	-13	-32.94	Pass	H
7982.76	147	148	-39.86	-13	-26.86	Pass	H
1087.76	149	219	-49.61	-13	-36.61	Pass	V
1485.55	152	271	-54.38	-13	-41.38	Pass	V
3602.29	149	282	-51.04	-13	-38.04	Pass	V
3959.71	152	306	-53.84	-13	-40.84	Pass	V
5918.12	150	223	-45.66	-13	-32.66	Pass	V
6507.12	152	315	-49.07	-13	-36.07	Pass	V

Band 17 23790 channel/BW1.4(middle channel)							
Frequency (MHz)	Height (cm)	Azimuth (deg)	Spurious Emission Level (dBm)	Limit (dBm)	Over Limit (dB)	Result	Antenna Polaxis.
1233.55	149	209	-56.74	-13	-41.45	Pass	H
1707.57	154	292	-52.21	-13	-37.85	Pass	H
3893.09	152	52	-44.66	-13	-35.2	Pass	H
5883.50	145	143	-44.36	-13	-30.39	Pass	H
6594.66	148	309	-47.96	-13	-32.24	Pass	H
7970.27	153	108	-41.77	-13	-30.22	Pass	H
1140.70	154	132	-57.42	-13	-44.9	Pass	V
1407.26	148	46	-57.80	-13	-43.63	Pass	V
3507.91	151	310	-47.89	-13	-35.94	Pass	V
3859.49	151	266	-45.91	-13	-36.01	Pass	V
5771.88	150	204	-44.40	-13	-33.75	Pass	V
6588.59	145	188	-42.08	-13	-32.41	Pass	V

Band 17 23825 channel/BW1.4(highest channel)							
Frequency (MHz)	Height (cm)	Azimuth (deg)	Spurious Emission Level (dBm)	Limit (dBm)	Over Limit (dB)	Result	Antenna Polaxis.
1401.27	148	205	-54.12	-13	-41.12	Pass	H
1712.32	153	149	-48.81	-13	-35.81	Pass	H
3944.23	154	194	-44.44	-13	-31.44	Pass	H
5956.05	151	358	-43.30	-13	-30.30	Pass	H
6577.88	146	172	-43.12	-13	-30.12	Pass	H
7978.55	147	177	-42.14	-13	-29.14	Pass	H
1260.10	149	205	-53.29	-13	-40.29	Pass	V
1433.53	153	279	-61.93	-13	-48.93	Pass	V
3611.42	152	41	-52.35	-13	-39.35	Pass	V
3794.02	146	93	-51.10	-13	-38.10	Pass	V
5703.51	145	38	-50.69	-13	-37.69	Pass	V
6564.07	155	327	-44.48	-13	-31.48	Pass	V

Note:

3) Scan from 9kHz to 25GHz, 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.

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=DC 9V; Low Voltage LV=DC 8.1V; High Voltage HV=DC 9.9V

Please refer to Appendix 2: Frequency Stability

Test result: Pass

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