



TEST REPORT

Product Name: 4G solar cell camera
FCC ID: 2BNNG-KBV1
Trademark: N/A
Model Number: KB-V1, KB-V2, KB-V3, KB-V4, KB-V5, KB-V6, KB-V7, KB-V8, KB-V9, KB-V10
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Sample Received Date: Dec. 31, 2024
Sample tested Date: Dec. 31, 2024 to Jan. 21, 2025
Issue Date: Jan. 21, 2025
Report No.: CTB24123106701RF01
Test Standards: FCC Part 2, 22, 24E, 27
Test Results: PASS
Remark: This is LTE radio test report.

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(Note: N/A means not applicable)



1. VERSION

Report No.	Issue Date	Description	Approved
CTB24123106701RF01	Jan. 21, 2025	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):	KB-V1, KB-V2, KB-V3, KB-V4, KB-V5, KB-V6, KB-V7, KB-V8, KB-V9, KB-V10
Model Description:	All the model are the same circuit and RF module, only the model name and appearance are different. Test sample model: KB-V1
Hardware Version:	V1.0
Software Version:	V1.0
Operation Frequency:	FDD-LTE BAND 2:1850-1910MHz FDD-LTE BAND 4:1710-1755MHz FDD-LTE BAND 5: 824-849MHz
Max. RF output power:	FDD-LTE BAND 2: 23.52dBm FDD-LTE BAND 4: 23.26dBm FDD-LTE BAND 5: 24.18dBm
Type of Modulation:	QPSK, 16QAM
Antenna installation:	External antenna
Antenna Gain:	FDD-LTE BAND 2: 2.86dBi FDD-LTE BAND 4: 1.89dBi FDD-LTE BAND 5: 1.82dBi
Ratings:	DC5V, 2A

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	FDD -LTE BAND 5	Low, Middle, High Channels

4.5 Test Environment

Humidity(%):	54
Atmospheric Pressure(kPa):	101
Normal Voltage(DC):	5V
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, Xinghe 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	2025/6/28
2	Power Sensor	Agilent	U2021XA	MY56120032	/	2025/6/28
3	Power Sensor	Agilent	U2021XA	MY56120034	/	2025/6/28
4	Communication test set	R&S	CMW500	108058	V3.5.80	2025/6/28
5	Spectrum Analyzer	KEYSIGHT	N9020A	MY51289897	A.14.16	2025/6/28
6	Signal Generator	Agilent	N5181A	MY50140365	A.01.60	2025/6/28
7	Vector signal generator	Agilent	N5182A	MY47420195	A.01.87	2025/6/28
8	Communication test set	Agilent	E5515C	MY50102567	B.19.07 (E1962B)	2025/6/28
9	2.4 GHz Filter	Shenxiang	MSF2400-24 83.5MS-1154	20181015001	/	2025/6/30
10	5 GHz Filter	Shenxiang	MSF5150-58 50MS-1155	20181015001	/	2025/6/30
11	Filter	Xingbo	XBLBQ-DZA 120	190821-1-1	/	2025/6/30
12	BT&WI-FI Automatic test software	Microwave	MTS8310	Ver. 2.0.0.0	/	/
13	Rohde & Schwarz SFU Broadcast Test System	R&S	SFU	101017	/	2025/6/28
14	Temperature humidity chamber	Hongjing	TH-80CH	DG-15174	/	2025/6/28
15	234G Automatic test software	Microwave	MTS8200	Ver. 2.0.0.0	/	/
16	966 chamber	C.R.T.	966	/	/	2027/6/21
17	Receiver	R&S	ESPI	100362	RF_ATTEN_7 (104489/003)	2025/6/28
18	Amplifier	HP	8447E	2945A02747	/	2025/6/28
19	Amplifier	Agilent	8449B	3008A01838	/	2025/6/28
20	TRILOG Broadband Antenna	Schwarzbeck	VULB 9168	00869	/	2025/6/28
21	Double Ridged Broadband Horn Antenna	Schwarzbeck	BBHA9120D	01911	/	2025/6/28

22	EMI test software	Fala	EZ-EMC	FA-03A2 RE	/	/
23	Loop Antenna	Schwarzbeck	FMZB 1519B	1519B-224	/	2025/6/28
24	loop antenna	ZHINAN	ZN30900A	GTS534	/	/
25	40G Horn antenna	A/H/System	SAS-574	588	/	2025/6/28
26	Amplifier	AEROFLEX	Aeroflex	097	/	2025/6/28
27	Power Metter	KEYSIGHT	N1912AP	N/A	A.05.00	2025/6/28

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.

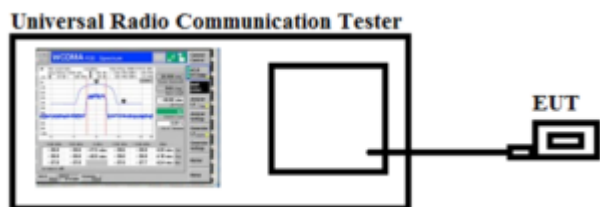
According to §24.232(c), mobile and portable stations are limited to 2 watts EIRP and the equipment must employ a means for limiting power to the minimum necessary for successful communications.

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

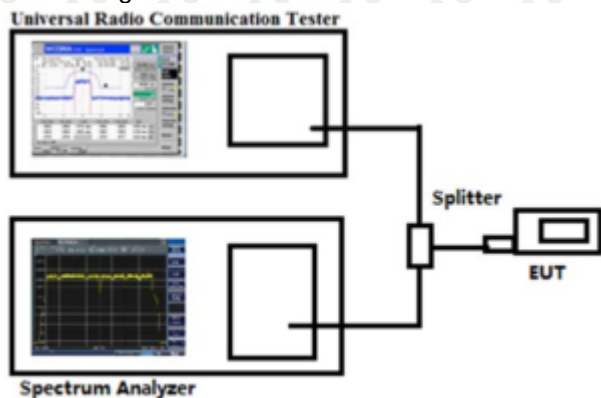
corresponding to the highest PAPR expected during periods of continuous transmission.

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 3: 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.

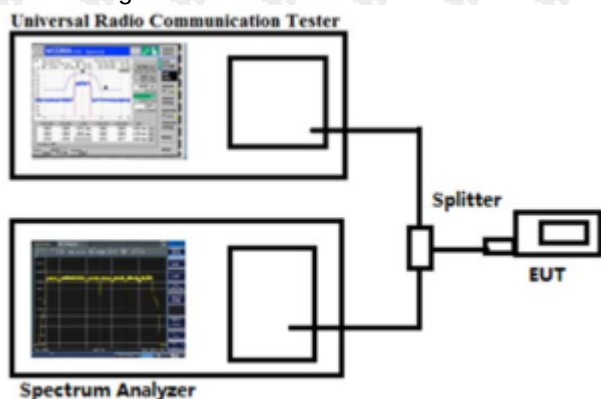
According to §24.238(b), the emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.

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 4: 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.

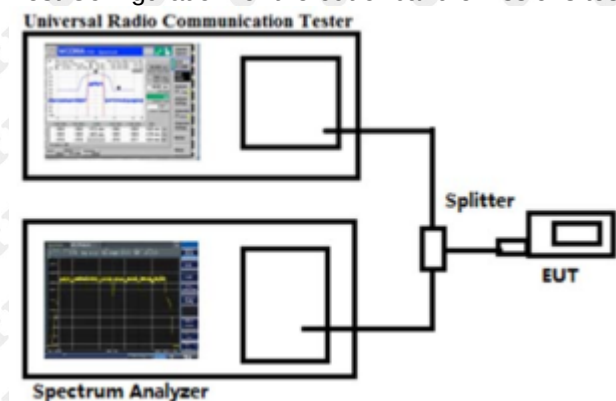
According to §27.53(g), for operations in the 600 MHz band and the 698-746 MHz band, the power of any emission outside a licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, by at least $43 + 10 \log(P)$ 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 5 & 6: 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.
1413.83	143	342	-56.50	-13	-43.50	Pass	H
1757.91	155	276	-51.01	-13	-38.01	Pass	H
3910.18	155	130	-47.97	-13	-34.97	Pass	H
5973.45	149	297	-42.21	-13	-29.21	Pass	H
6567.36	155	61	-45.52	-13	-32.52	Pass	H
8073.58	146	310	-44.62	-13	-31.62	Pass	H
1244.52	146	14	-56.11	-13	-43.11	Pass	V
1411.08	151	345	-59.34	-13	-46.34	Pass	V
3611.61	146	163	-49.65	-13	-36.65	Pass	V
3838.25	154	27	-50.36	-13	-37.36	Pass	V
5800.01	147	321	-48.03	-13	-35.03	Pass	V
6487.52	157	82	-46.45	-13	-33.45	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.
1320.38	150	46	-56.95	-13	-43.95	Pass	H
1761.35	146	203	-53.72	-13	-40.72	Pass	H
3944.43	150	267	-51.17	-13	-38.17	Pass	H
5845.31	146	196	-48.18	-13	-35.18	Pass	H
6522.43	149	228	-51.59	-13	-38.59	Pass	H
8104.43	151	199	-48.33	-13	-35.33	Pass	H
1225.91	149	96	-56.63	-13	-43.63	Pass	V
1470.05	148	82	-61.49	-13	-48.49	Pass	V
3537.19	147	305	-51.34	-13	-38.34	Pass	V
3819.59	148	278	-51.85	-13	-38.85	Pass	V
5810.51	150	205	-50.70	-13	-37.70	Pass	V
6443.86	150	193	-51.10	-13	-38.10	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.
1418.79	153	28	-56.65	-13	-43.65	Pass	H
1740.22	151	300	-52.87	-13	-39.87	Pass	H
3767.60	152	213	-48.41	-13	-35.41	Pass	H
5911.37	152	35	-39.91	-13	-26.91	Pass	H
6607.30	155	358	-42.33	-13	-29.33	Pass	H
7995.99	155	122	-46.95	-13	-33.95	Pass	H
1299.33	150	156	-54.00	-13	-41.00	Pass	V
1396.13	150	176	-56.62	-13	-43.62	Pass	V
3431.98	148	315	-52.90	-13	-39.90	Pass	V
3953.76	150	159	-51.41	-13	-38.41	Pass	V
5746.76	152	221	-42.77	-13	-29.77	Pass	V
6477.49	149	44	-45.60	-13	-32.60	Pass	V

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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.
1405.07	154	124	-60.80	-13	-47.80	Pass	H
1593.64	148	337	-44.96	-13	-31.96	Pass	H
3878.07	150	339	-49.55	-13	-36.55	Pass	H
5830.01	149	116	-46.45	-13	-33.45	Pass	H
6606.03	153	92	-45.08	-13	-32.08	Pass	H
8096.33	147	310	-40.15	-13	-27.15	Pass	H
1268.76	146	224	-49.77	-13	-36.77	Pass	V
1412.76	147	21	-53.00	-13	-40.00	Pass	V
3554.53	151	233	-48.79	-13	-35.79	Pass	V
3914.98	148	148	-53.26	-13	-40.26	Pass	V
5806.51	151	294	-45.14	-13	-32.14	Pass	V
6545.09	145	220	-51.41	-13	-38.41	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.
1256.93	150	76	-50.79	-13	-41.45	Pass	H
1809.00	148	54	-52.99	-13	-37.85	Pass	H
3827.47	153	79	-49.39	-13	-35.2	Pass	H
5859.56	151	215	-43.66	-13	-30.39	Pass	H
6413.76	155	97	-43.11	-13	-32.24	Pass	H
8033.98	148	17	-44.12	-13	-30.22	Pass	H
1115.56	146	67	-58.09	-13	-44.9	Pass	V
1424.99	154	107	-52.75	-13	-43.63	Pass	V
3547.80	146	105	-48.84	-13	-35.94	Pass	V
3799.29	149	240	-46.74	-13	-36.01	Pass	V
5870.05	153	192	-46.63	-13	-33.75	Pass	V
6506.15	153	250	-42.39	-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.
1413.64	148	61	-56.59	-13	-43.59	Pass	H
1719.25	152	304	-52.51	-13	-39.51	Pass	H
3854.10	151	225	-41.55	-13	-28.55	Pass	H
5913.10	152	60	-43.14	-13	-30.14	Pass	H
6555.15	147	157	-43.59	-13	-30.59	Pass	H
8082.87	150	314	-47.33	-13	-34.33	Pass	H
1117.34	150	265	-53.74	-13	-40.74	Pass	V
1454.00	154	58	-57.23	-13	-44.23	Pass	V
3482.67	147	228	-46.79	-13	-33.79	Pass	V
3908.75	148	254	-48.57	-13	-35.57	Pass	V
5897.84	148	7	-49.64	-13	-36.64	Pass	V
6606.01	146	171	-43.71	-13	-30.71	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.

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Band 4 19957 channel/BW1.4(lowest channel)							
Frequency (MHz)	Height (cm)	Azimuth (deg)	Spurious Emission Level (dBm)	Limit (dBm)	Over Limit (dB)	Result	Antenna Polaxis.
1340.32	140	115	-58.42	-13	-45.42	Pass	H
1765.01	159	59	-48.11	-13	-35.11	Pass	H
3900.70	142	93	-45.66	-13	-32.66	Pass	H
5955.68	145	20	-44.96	-13	-31.96	Pass	H
6428.57	158	272	-42.24	-13	-29.24	Pass	H
8108.65	150	199	-42.92	-13	-29.92	Pass	H
1268.54	154	261	-57.10	-13	-44.10	Pass	V
1364.61	154	190	-58.91	-13	-45.91	Pass	V
3571.10	154	319	-50.20	-13	-37.20	Pass	V
3781.54	152	121	-53.64	-13	-40.64	Pass	V
5719.71	159	273	-47.29	-13	-34.29	Pass	V
6551.07	153	12	-49.27	-13	-36.27	Pass	V
Band 4 20175 channel/BW1.4(middle channel)							
Frequency (MHz)	Height (cm)	Azimuth (deg)	Spurious Emission Level (dBm)	Limit (dBm)	Over Limit (dB)	Result	Antenna Polaxis.
1297.93	150	326	-55.80	-13	-42.80	Pass	H
1756.50	146	355	-49.25	-13	-36.25	Pass	H
3956.59	150	318	-50.50	-13	-37.50	Pass	H
5868.37	146	279	-45.06	-13	-32.06	Pass	H
6418.37	149	177	-50.95	-13	-37.95	Pass	H
7995.95	151	126	-47.64	-13	-34.64	Pass	H
1235.48	149	95	-52.60	-13	-39.60	Pass	V
1418.48	148	148	-58.37	-13	-45.37	Pass	V
3543.22	147	227	-55.75	-13	-42.75	Pass	V
3848.13	148	178	-51.66	-13	-38.66	Pass	V
5766.07	150	15	-48.01	-13	-35.01	Pass	V
6490.86	150	202	-46.18	-13	-33.18	Pass	V

Band 4 20393 channel/BW1.4(highest channel)							
Frequency (MHz)	Height (cm)	Azimuth (deg)	Spurious Emission Level (dBm)	Limit (dBm)	Over Limit (dB)	Result	Antenna Polaxis.
1281.25	147	212	-58.68	-13	-45.68	Pass	H
1662.19	150	62	-54.67	-13	-41.67	Pass	H
3911.22	155	175	-45.54	-13	-32.54	Pass	H
5877.98	151	143	-42.22	-13	-29.22	Pass	H
6617.03	150	335	-43.74	-13	-30.74	Pass	H
7912.85	145	207	-44.85	-13	-31.85	Pass	H
1189.63	149	294	-56.35	-13	-43.35	Pass	V
1451.38	151	44	-58.52	-13	-45.52	Pass	V
3472.91	153	318	-54.10	-13	-41.10	Pass	V
3949.88	149	159	-50.18	-13	-37.18	Pass	V
5828.36	155	309	-41.21	-13	-28.21	Pass	V
6476.74	150	155	-45.96	-13	-32.96	Pass	V

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Band 4 19957 channel/BW1.4(lowest channel)							
Frequency (MHz)	Height (cm)	Azimuth (deg)	Spurious Emission Level (dBm)	Limit (dBm)	Over Limit (dB)	Result	Antenna Polaxis.
1428.40	154	350	-57.77	-13	-44.77	Pass	H
1735.30	149	249	-48.62	-13	-35.62	Pass	H
3822.74	154	179	-51.86	-13	-38.86	Pass	H
5863.21	153	60	-46.83	-13	-33.83	Pass	H
6540.31	153	66	-46.13	-13	-33.13	Pass	H
8079.11	146	331	-40.35	-13	-27.35	Pass	H
1095.94	154	195	-50.29	-13	-37.29	Pass	V
1377.77	155	346	-55.36	-13	-42.36	Pass	V
3681.76	152	58	-51.31	-13	-38.31	Pass	V
3986.97	154	134	-51.02	-13	-38.02	Pass	V
5910.82	153	321	-47.07	-13	-34.07	Pass	V
6671.91	151	6	-50.38	-13	-37.38	Pass	V

Band 4 20175 channel/BW1.4(middle channel)							
Frequency (MHz)	Height (cm)	Azimuth (deg)	Spurious Emission Level (dBm)	Limit (dBm)	Over Limit (dB)	Result	Antenna Polaxis.
1320.20	151	245	-53.06	-13	-41.45	Pass	H
1768.72	153	98	-50.67	-13	-37.85	Pass	H
3923.01	153	120	-45.52	-13	-35.2	Pass	H
5974.80	145	51	-43.64	-13	-30.39	Pass	H
6461.75	146	135	-43.52	-13	-32.24	Pass	H
8016.49	151	234	-41.43	-13	-30.22	Pass	H
1231.81	154	14	-59.55	-13	-44.9	Pass	V
1471.43	154	334	-54.60	-13	-43.63	Pass	V
3462.52	150	301	-48.99	-13	-35.94	Pass	V
3849.96	152	355	-51.26	-13	-36.01	Pass	V
5827.70	154	244	-45.99	-13	-33.75	Pass	V
6550.30	146	229	-42.00	-13	-32.41	Pass	V
Band 4 20393 channel/BW1.4(highest channel)							
Frequency (MHz)	Height (cm)	Azimuth (deg)	Spurious Emission Level (dBm)	Limit (dBm)	Over Limit (dB)	Result	Antenna Polaxis.
1425.60	154	239	-53.78	-13	-40.78	Pass	H
1709.88	147	86	-46.23	-13	-33.23	Pass	H
3968.23	146	220	-42.09	-13	-29.09	Pass	H
5970.86	145	77	-39.06	-13	-26.06	Pass	H
6599.00	154	130	-40.17	-13	-27.17	Pass	H
8145.15	147	116	-44.16	-13	-31.16	Pass	H
1248.89	155	219	-57.46	-13	-44.46	Pass	V
1414.68	155	58	-61.68	-13	-48.68	Pass	V
3535.04	152	112	-48.82	-13	-35.82	Pass	V
3826.76	148	134	-47.59	-13	-34.59	Pass	V
5723.89	150	176	-50.10	-13	-37.10	Pass	V
6508.16	148	32	-43.88	-13	-30.88	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.

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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.
1405.52	141	183	-56.73	-13	-43.73	Pass	H
1752.34	157	106	-51.21	-13	-38.21	Pass	H
3909.14	144	209	-45.22	-13	-32.22	Pass	H
5861.37	141	112	-46.30	-13	-33.30	Pass	H
6530.45	141	271	-42.75	-13	-29.75	Pass	H
7995.09	140	47	-40.57	-13	-27.57	Pass	H
1241.75	156	336	-53.98	-13	-40.98	Pass	V
1441.07	147	127	-57.48	-13	-44.48	Pass	V
3636.04	146	28	-47.94	-13	-34.94	Pass	V
3857.95	141	239	-51.43	-13	-38.43	Pass	V
5723.65	146	57	-50.64	-13	-37.64	Pass	V
6469.69	145	262	-45.12	-13	-32.12	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.
1239.72	150	219	-58.25	-13	-45.25	Pass	H
1734.15	146	168	-53.76	-13	-40.76	Pass	H
3811.75	150	203	-49.62	-13	-36.62	Pass	H
5964.14	146	334	-46.24	-13	-33.24	Pass	H
6399.90	149	221	-47.43	-13	-34.43	Pass	H
7994.47	151	202	-49.26	-13	-36.26	Pass	H
1308.57	149	219	-53.71	-13	-40.71	Pass	V
1382.48	148	130	-58.73	-13	-45.73	Pass	V
3497.37	147	114	-50.91	-13	-37.91	Pass	V
3952.16	148	241	-50.48	-13	-37.48	Pass	V
5755.48	150	320	-48.26	-13	-35.26	Pass	V
6463.21	150	201	-45.85	-13	-32.85	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.
1435.66	146	192	-55.17	-13	-42.17	Pass	H
1574.06	147	273	-51.59	-13	-38.59	Pass	H
3888.87	152	181	-46.65	-13	-33.65	Pass	H
5934.35	151	206	-38.24	-13	-25.24	Pass	H
6611.06	151	219	-40.54	-13	-27.54	Pass	H
7981.96	153	278	-45.78	-13	-32.78	Pass	H
1160.30	153	169	-55.76	-13	-42.76	Pass	V
1408.72	150	36	-55.49	-13	-42.49	Pass	V
3551.41	150	213	-51.36	-13	-38.36	Pass	V
4008.90	147	5	-50.14	-13	-37.14	Pass	V
5851.15	154	229	-41.48	-13	-28.48	Pass	V
6630.74	154	206	-50.17	-13	-37.17	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.
1336.96	148	126	-58.33	-13	-45.33	Pass	H
1592.46	155	87	-49.89	-13	-36.89	Pass	H
3807.64	145	93	-49.78	-13	-36.78	Pass	H
5826.72	149	104	-43.07	-13	-30.07	Pass	H
6512.43	148	326	-44.34	-13	-31.34	Pass	H
8045.29	153	118	-40.76	-13	-27.76	Pass	H
1137.12	153	19	-49.61	-13	-36.61	Pass	V
1334.45	148	2	-52.58	-13	-39.58	Pass	V
3636.95	147	70	-48.64	-13	-35.64	Pass	V
3888.35	150	237	-49.32	-13	-36.32	Pass	V
5876.08	148	217	-48.36	-13	-35.36	Pass	V
6484.89	147	144	-52.01	-13	-39.01	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.
1273.66	147	335	-57.20	-13	-41.45	Pass	H
1684.46	147	307	-50.91	-13	-37.85	Pass	H
3862.53	151	2	-45.67	-13	-35.2	Pass	H
5897.75	148	8	-43.01	-13	-30.39	Pass	H
6593.33	148	21	-45.27	-13	-32.24	Pass	H
8006.30	151	122	-39.88	-13	-30.22	Pass	H
1175.77	150	321	-54.30	-13	-44.9	Pass	V
1345.39	150	196	-58.33	-13	-43.63	Pass	V
3576.45	154	150	-48.28	-13	-35.94	Pass	V
3792.45	155	232	-47.01	-13	-36.01	Pass	V
5842.24	153	219	-43.16	-13	-33.75	Pass	V
6558.66	147	204	-42.68	-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.
1303.14	149	151	-54.75	-13	-41.75	Pass	H
1664.26	153	275	-51.37	-13	-38.37	Pass	H
3925.94	150	271	-43.68	-13	-30.68	Pass	H
5923.73	154	10	-38.79	-13	-25.79	Pass	H
6467.86	153	65	-40.15	-13	-27.15	Pass	H
7993.30	147	193	-45.79	-13	-32.79	Pass	H
1217.89	150	5	-53.84	-13	-40.84	Pass	V
1373.18	147	295	-56.87	-13	-43.87	Pass	V
3547.99	147	200	-49.82	-13	-36.82	Pass	V
3741.74	152	296	-49.00	-13	-36.00	Pass	V
5866.32	155	147	-47.92	-13	-34.92	Pass	V
6492.83	149	69	-43.63	-13	-30.63	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=DC5V; Low Voltage LV=DC4.5; High Voltage HV=DC5.5V

Please refer to Appendix 2: Frequency Stability

Test result: Pass

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