

TEST REPORT

CERTIFICATE OF CONFORMITY

Standard: 47 CFR FCC Part 24
47 CFR FCC Part 27
47 CFR FCC Part 2

Report No.: RFBEIH-WTW-P23060517C

FCC ID: 2BBDG-CHPU-NS-A01

Product: Canopy Hub

Brand: CANOPY

Model No.: CHPU-NS-A01

Received Date: 2025/8/7

Test Date: 2025/8/20 ~ 2025/8/25

Issued Date: 2025/9/3

Applicant: SNTNL LLC

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Issued By: Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch
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FCC Registration /
Designation Number: 788550 / TW0003

Approved by: Jeremy Lin, Date: 2025/9/3
Jeremy Lin / Project Engineer

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Prepared by : Vera Huang / Specialist



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Release Control Record

Issue No.	Description	Date Issued
RFBEIH-WTW-P23060517C	Original Release	2025/9/3

1 Certificate

Product: Canopy Hub
Brand: CANOPY
Test Model: CHPU-NS-A01
Sample Status: Engineering Sample
Applicant: SNTNL LLC
Test Date: 2025/8/20 ~ 2025/8/25
Standard: 47 CFR FCC Part 24
47 CFR FCC Part 27
47 CFR FCC Part 2
Measurement procedure: ANSI/TIA/EIA-603-E 2016
ANSI C63.26-2015
KDB 971168 D01 Power Meas License Digital Systems v03r01
KDB 971168 D02 Misc Rev Approv License Devices v02r02

The above equipment has been tested by **Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch**, and found compliance with the requirement of the above standards. The test record, data evaluation & Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's RF characteristics under the conditions specified in this report.

2 Summary of Test Results

Standard / Clause	Test Item	Result	Remark
Part 2.1046 Part 24.232 (c) Part 27.50(d) Part 27.50(c)	Effective Radiated Power and Equivalent Isotropically Radiated Power	N/A	Refer to Note 1
Part 2.1047	Modulation Characteristics	N/A	Refer to Note 1
Part 24.232 (d) Part 27.50(d)	Peak to Average Ratio	N/A	Refer to Note 1
Part 2.1049	Bandwidth	N/A	Refer to Note 1
Part 2.1051 Part 24.238 Part 27.53(h) Part 27.53(g)	Conducted Spurious Emissions	N/A	Refer to Note 1
Part 2.1053 Part 24.238 Part 27.53(h) Part 27.53(g)	Radiated Spurious Emissions below 1GHz	Pass	Minimum passing margin is -31.15 dB at 41.64 MHz
Part 2.1053 Part 24.238 Part 27.53(h) Part 27.53(g)	Radiated Spurious Emissions above 1GHz	N/A	Refer to Note 1
Part 2.1055 Part 24.235 Part 27.54	Frequency Stability	Pass	Meet the requirement of limit.

Note:

- Only test item of radiated spurious emissions below 1GHz and frequency stability were performed for this report. Other testing data please refer to original report (BV CPS report no.: RFBEIH-WTW-P23060517).
- Determining compliance based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.

2.1 Measurement Uncertainty

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2:

Measurement	Specification	Expanded Uncertainty (k=2) (±)
Radiated Spurious Emissions below 1GHz	9 kHz ~ 30 MHz	3.59 dB
	30 MHz ~ 1 GHz	3.6 dB
Frequency Stability	-	0.176 ppm

The other instruments specified are routine verified to remain within the calibrated levels, no measurement uncertainty is required to be calculated.

2.2 Supplementary Information

There is not any deviation from the test standards for the test method, and no modifications required for compliance.

3 General Information

3.1 General Description of EUT

Product	Canopy Hub
Brand	CANOPY
Test Model	CHPU-NS-A01
Status of EUT	Engineering Sample
Power Supply Rating	12 Vdc or 24Vdc (from Car Battery)
Support Bands	WCDMA Band 2, 4 LTE Band 2, 4, 12

Note:

1. This report is issued as a supplementary report of BV CPS report no.: RFBEIH-WTW-P23060517A. The difference compared with the original report are changing power board and power cable change to 4m. Therefore, only radiated spurious emissions below 1GHz and frequency stability were performed for this report. Other testing data please refer to BV CPS report no.: RFBEIH-WTW-P23060517.
2. The above EUT information is declared by manufacturer and for more detailed features description, please refers to the manufacturer's specifications or user's manual.

3.2 Antenna Description of EUT

1. The antenna information is listed as below.

Antenna Type	Antenna Gain (dBi)		
	WCDMA Band 2 / LTE Band 2	WCDMA Band 4 / LTE Band 4	LTE Band 12
PIFA	2.41	2.23	1.32

* The above Antenna information is declared by manufacturer and for more detailed features description, please refer to the manufacturer's specifications, the laboratory shall not be held responsible.

3.3 Test Mode Applicability and Tested Channel Detail

Pre-Scan:	1. EUT can be used in the following ways: X-axis/ Y-axis/ Z-axis. Pre-scan these ways and find the worst case as a representative test condition. 2. The EUT has 2 input power modes: 12 Vdc and 24 Vdc. Pre-scan these patterns and find the worst case as a representative test condition.
Worst Case:	1. X-axis/ Y-axis/ Z-axis Worst Condition: Z-axis 2. Input power worst condition: 12 Vdc

3.3.1 WCDMA Band 2

Test Item	Tested Channel	Mode
Radiated Spurious Emissions below 1GHz	9400 (1880.00 MHz)	WCDMA
Frequency Stability	9262 (1852.40 MHz) 9538 (1907.60 MHz)	WCDMA

3.3.2 WCDMA Band 4

Test Item	Tested Channel	Mode
Radiated Spurious Emissions below 1GHz	1513 (1752.60 MHz)	WCDMA
Frequency Stability	1312 (1712.40 MHz) 1513 (1752.60 MHz)	WCDMA

3.3.3 LTE Band 2

Test Item	Tested Channel	Channel Bandwidth	Modulation	Mode
Radiated Spurious Emissions below 1GHz	18900 (1880.00 MHz)	20 MHz	QPSK	1 RB
Frequency Stability	18607 (1850.70 MHz) 19193 (1909.30 MHz)	1.4 MHz	QPSK	Full RB
	18615 (1851.50 MHz) 19185 (1908.50 MHz)	3 MHz	QPSK	Full RB
	18625 (1852.50 MHz) 19175 (1907.50 MHz)	5 MHz	QPSK	Full RB
	18650 (1855.00 MHz) 19150 (1905.00 MHz)	10 MHz	QPSK	Full RB
	18675 (1857.50 MHz) 19125 (1902.50 MHz)	15 MHz	QPSK	Full RB
	18700 (1860.00 MHz) 19100 (1900.00 MHz)	20 MHz	QPSK	Full RB

3.3.4 LTE Band 4

Test Item	Tested Channel	Channel Bandwidth	Modulation	Mode
Radiated Spurious Emissions below 1GHz	20393 (1754.30 MHz)	1.4 MHz	QPSK	1 RB
Frequency Stability	19957 (1710.70 MHz) 20393 (1754.30 MHz)	1.4 MHz	QPSK	Full RB
	19965 (1711.50 MHz) 20385 (1753.50 MHz)	3 MHz	QPSK	Full RB
	19975 (1712.50 MHz) 20375 (1752.50 MHz)	5 MHz	QPSK	Full RB
	20000 (1715.00 MHz) 20350 (1750.00 MHz)	10 MHz	QPSK	Full RB
	20025 (1717.50 MHz) 20325 (1747.50 MHz)	15 MHz	QPSK	Full RB
	20050 (1720.00 MHz) 20300 (1745.00 MHz)	20 MHz	QPSK	Full RB

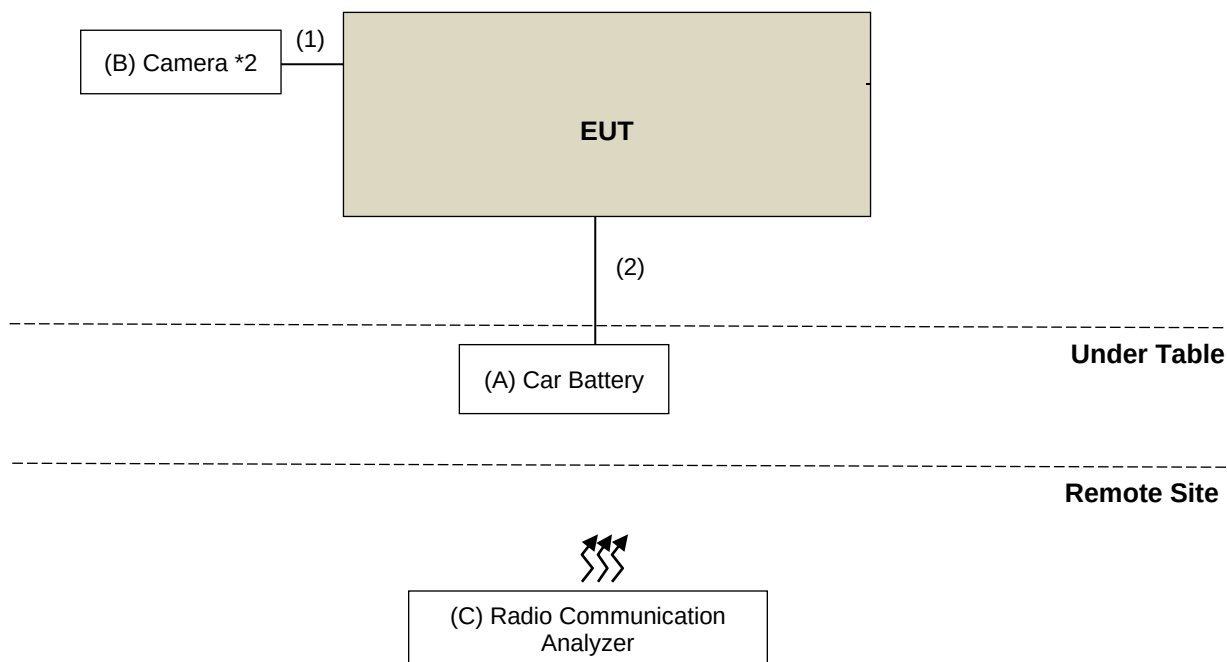
3.3.5 LTE Band 12

Test Item	Tested Channel	Channel Bandwidth	Modulation	Mode
Radiated Spurious Emissions below 1GHz	23095 (707.50 MHz)	10 MHz	QPSK	1 RB
Frequency Stability	23017 (699.70 MHz) 23173 (715.30 MHz)	1.4 MHz	QPSK	Full RB
	23025 (700.50 MHz) 23165 (714.50 MHz)	3 MHz	QPSK	Full RB
	23035 (701.50 MHz) 23155 (713.50 MHz)	5 MHz	QPSK	Full RB
	23060 (704.00 MHz) 23130 (711.00 MHz)	10 MHz	QPSK	Full RB

3.4 Test Program Used and Operation Descriptions

There is no need to controlling software during the test, and the EUT can be paired with the Radio Communication Analyzer to test the connection when it is powered on.

3.5 Connection Diagram of EUT and Peripheral Devices



3.6 Configuration of Peripheral Devices and Cable Connections

ID	Product	Brand	Model No.	Serial No.	FCC ID	Remarks
A	Car Battery	Global	NX120-7L	N/A	N/A	Provided by Lab
B	Camera*2	N/A	N/A	N/A	N/A	Supplied by applicant
C	Radio Communication Analyzer	Anritsu	MT8821C	6201462755	N/A	Provided by Lab (for RF Setup)

ID	Cable Descriptions	Qty.	Length (m)	Shielding (Yes/No)	Cores (Qty.)	Remarks
1	Type C Cable	2	1.5	Yes	0	Supplied by applicant
2	DC Cable	1	4	No	0	Supplied by applicant

4 Test Instruments

The calibration interval of the all test instruments are 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

4.1 Radiated Spurious Emissions below 1GHz

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
Antenna Tower & Turn BV ADT	AT100	AT93021705	N/A	N/A
Bi_Log Antenna Schwarzbeck	VULB 9168	9168-160	2024/10/9	2025/10/8
Loop Antenna TESEQ	RLA 6120-20	80002	2025/7/29	2026/7/28
MXE EMI Receiver Agilent	N9038A	MY51210203	2024/8/27	2025/8/26
Preamplifier Agilent	8447D	2944A10638	2025/4/27	2026/4/26
RF Coaxial Cable Woken	8D-FB	Cable-CH9-01	2025/4/27	2026/4/26
Signal & Spectrum Analyzer R&S	FSW43	101866	2025/3/25	2026/3/24
Software BV ADT	ADT_Radiated_ V7.6.15.9.5	N/A	N/A	N/A
Turn Table BV ADT	TT100	TT93021705	N/A	N/A
Turn Table Controller BV ADT	SC100	SC93021705	N/A	N/A

Notes:

1. The test was performed in HY - 966 chamber 4.
2. Tested Date: 2025/8/21

4.2 Frequency Stability

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
PXA Signal Analyzer Keysight	N9030B	MY57140938	2025/3/24	2026/3/23
Software BV	ADT_RF Test Software V7.6.5.4	N/A	N/A	N/A
Fixed Attenuator Woken	00800A1K01A-10	00800A1K01A-10-01	2025/5/23	2026/5/22
Temperature & Humidity Chamber Terchy	MHU-225AU	920842	2025/6/25	2026/6/24
3-channel DC power supply OWON	ODP3033	ODP30332128138	N/A	N/A
Digital Multimeter Fluke	8050A	4660081	2025/6/6	2026/6/5
Radio Communication Analyzer Anritsu	MT8821C	6201462755	2025/4/8	2026/4/7

Notes:

1. The test was performed in Oven room.
2. Tested Date: 2025/8/20 ~ 2025/8/25

5 Limits of Test Items

5.1 Radiated Spurious Emissions below 1GHz

For WCDMA Band 2, LTE Band 2:

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. The emission limit equal to -13 dBm.

For WCDMA Band 4, LTE Band 4:

According to FCC 47 CFR part 27.53(h), for operations in the 1695-1710 MHz, 1710-1755 MHz, 1755-1780 MHz bands, the power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) in watts by at least $43 + 10 \log(P)$ dB. The limit of emission is equal to -13 dBm.

For LTE Band 12:

According to FCC 47 CFR part 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. The limit of emissions is equal to -13 dBm.

5.2 Frequency Stability

For WCDMA Band 2, WCDMA Band 4, LTE Band 2, LTE Band 4, LTE Band 12:

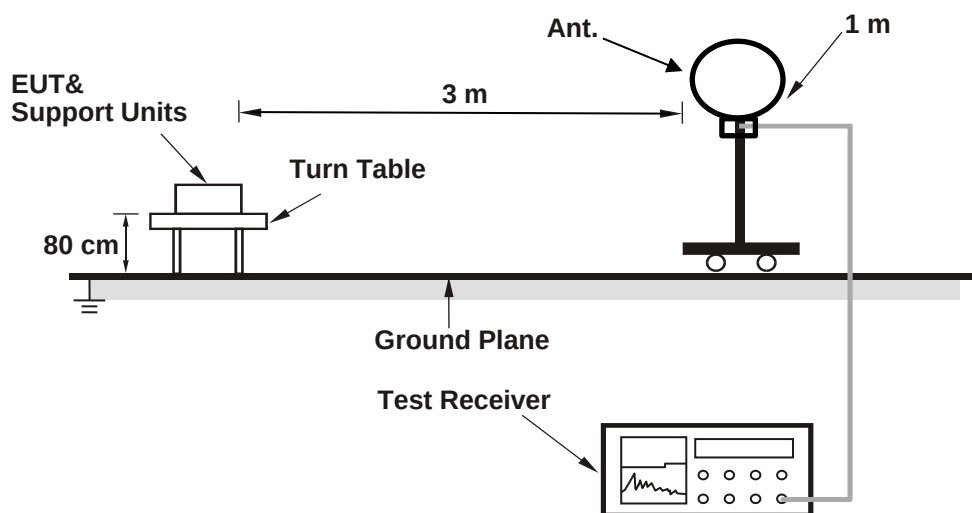
The frequency stability shall be sufficient to ensure that the fundamental emissions stay within the authorized bands of operation (authorized frequency block).

6 Test Arrangements

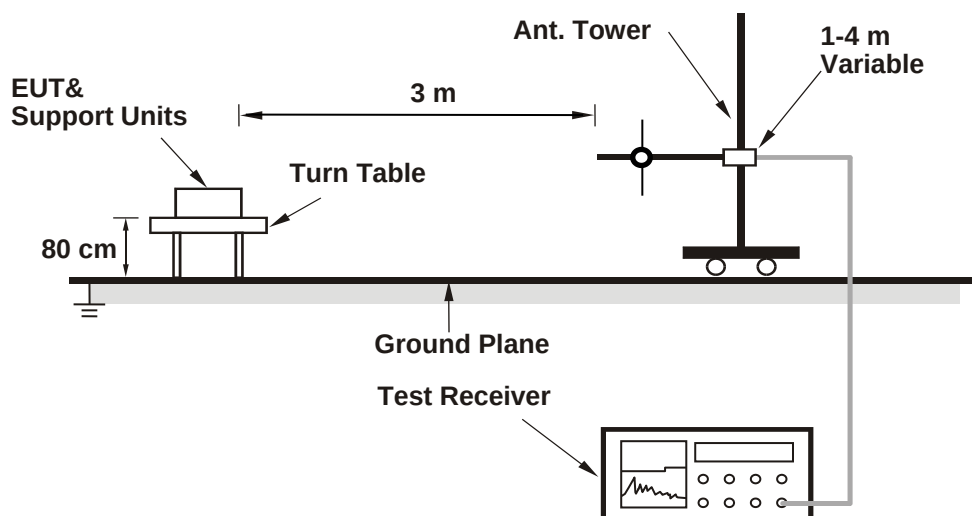
6.1 Radiated Spurious Emissions below 1GHz

6.1.1 Test Setup

For Radiated emission below 30 MHz



For Radiated emission above 30 MHz



For the actual test configuration, please refer to the attached file (Test Setup Photo).

6.1.2 Test Procedure

The EUT is configured to set data modulation and maximum power using WWAN technology.

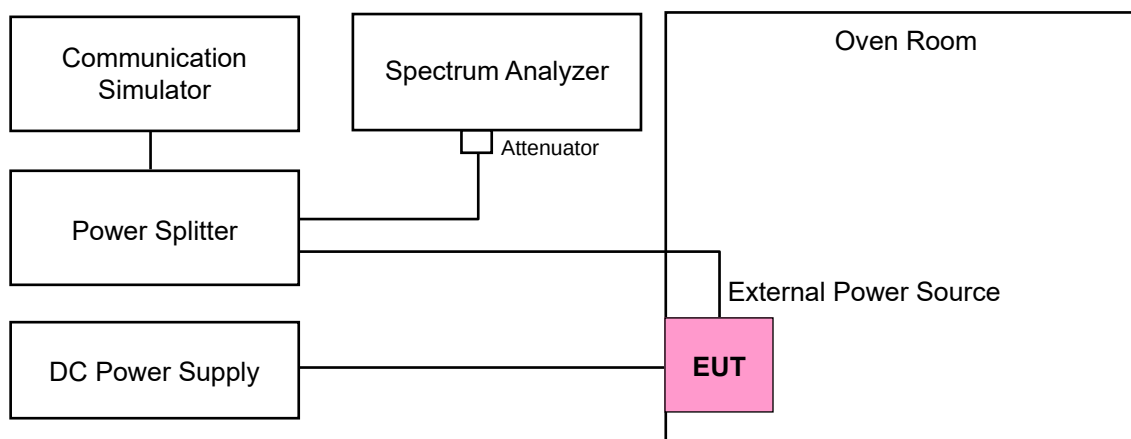
- a. In the semi-anechoic chamber, EUT placed on the 0.8 m (below or equal 1 GHz) height of turn table, rotated the table around 360 degrees to search the maximum radiation power and receiver antenna shall be rotated vertical and horizontal polarization and moved height from 1 m to 4 m to find the maximum polar radiated power. The "Read Value" is the spectrum reading the maximum power value.
- b. The height of antenna is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- c. Perform a field strength measurement and record the worse read value, is the field strength value via a spectrum reading obtained corrected for antenna factor, cable loss and pre-amplifier factor and then mathematically convert the measured field strength level to EIRP/ERP level.
- d. Following ANSI C63.26 section 5.5 and 5.2.7
- e. $EIRP (dBm) = E (dB\mu V/m) + 20\log(D) - 104.8$; where D is the measurement distance (in the far field region) in m.
- f. $ERP (dBm) = E (dB\mu V/m) + 20\log(D) - 104.8 - 2.15$; where D is the measurement distance (in the far field region) in m.

Note:

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 1 MHz/3 MHz. Set detector = average.
2. The amplitude of spurious emissions in the range 9 kHz to 30 MHz which are attenuated more than 20 dB below the permissible value need not be reported.

6.2 Frequency Stability

6.2.1 Test Setup



6.2.2 Test Procedure

The EUT is configured by emulator to set data modulation and maximum power using WWAN technology.

- Device is placed at the oven room. The oven room could control the temperatures and humidity. Power warm up is at least 15 min and power applied should perform before recording frequency error.
- EUT is connected the external power supply to control the DC input power. The test voltage range is from minimum to maximum working voltage. Each step shall be record the frequency error rate.
- The temperature range step is 10 degrees in this test items. All temperature levels shall be hold the $\pm 0.5^{\circ}\text{C}$ during the measurement testing. The each temperature step shall be at least 0.5 hours, consider the EUT could be test under the stability condition.

Note: The frequency error was recorded frequency error from the communication simulator.

7 Test Results of Test Item

7.1 Radiated Spurious Emissions below 1GHz

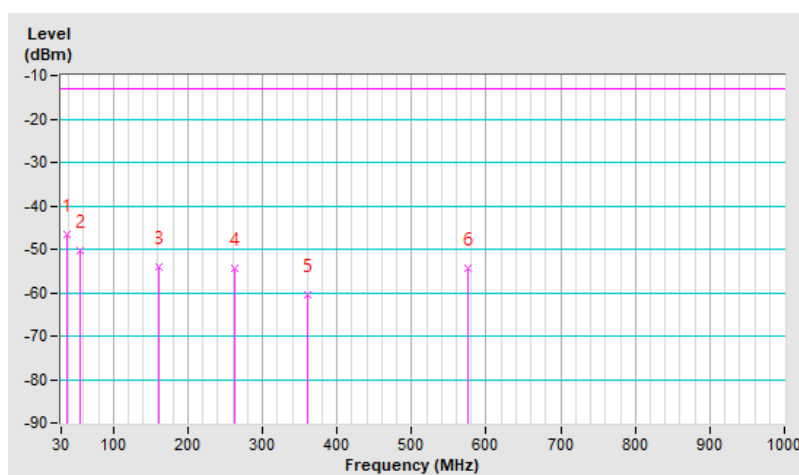
7.1.1 WCDMA Band 2

RF Mode	WCDMA Band 2	Channel	CH 9400 : 1880 MHz
Frequency Range	30 MHz ~ 1 GHz	Detector Function & Bandwidth	1 MHz/3 MHz (RMS)
Input Power:	12 Vdc	Environmental Conditions	23 °C, 67 % RH
Tested By	Adair Peng		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	38.73	-46.45	-13.00	-33.45	1.99 H	0	58.56	-105.01
2	56.19	-50.38	-13.00	-37.38	1.99 H	17	54.04	-104.42
3	161.92	-53.92	-13.00	-40.92	1.99 H	141	49.56	-103.48
4	262.80	-54.41	-13.00	-41.41	1.99 H	100	48.94	-103.35
5	359.80	-60.54	-13.00	-47.54	1.00 H	109	40.16	-100.70
6	576.11	-54.43	-13.00	-41.43	1.00 H	112	42.14	-96.57

Remarks:

1. $EIRP(dBm) = Raw\ Value(dBuV) + Correction\ Factor(dB/m)$
2. $Correction\ Factor(dB/m) = Antenna\ Factor(dB/m) + Cable\ Factor(dB) - Pre-Amplifier\ Factor(dB) + 20\log(D) - 104.8$
3. $Margin\ value = EIRP - Limit\ value$
4. The other EIRP levels were very low against the limit of frequency range 30 MHz ~ 1 GHz.
5. The frequency range 9 kHz ~ 30 MHz: all emissions are more than 20 dB below the limit, therefore do not be recorded in this report.

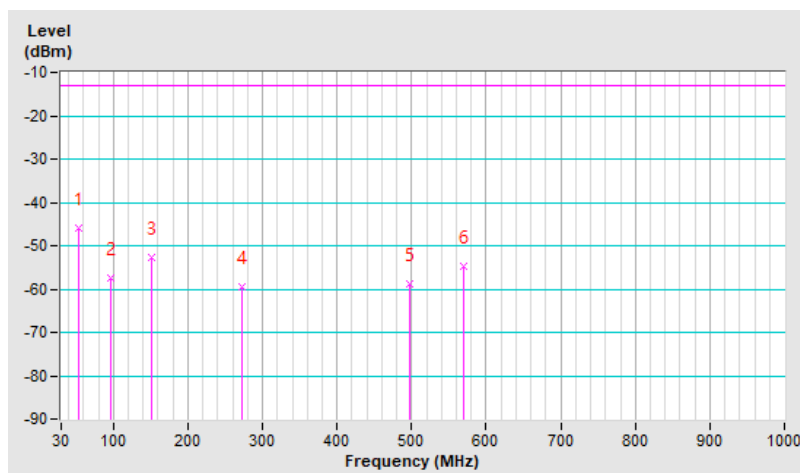


RF Mode	WCDMA Band 2	Channel	CH 9400 : 1880 MHz
Frequency Range	30 MHz ~ 1 GHz	Detector Function & Bandwidth	1 MHz/3 MHz (RMS)
Input Power:	12 Vdc	Environmental Conditions	23°C, 67% RH
Tested By	Adair Peng		

Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	54.25	-45.89	-13.00	-32.89	1.00 V	198	58.54	-104.43
2	95.96	-57.39	-13.00	-44.39	1.50 V	198	51.73	-109.12
3	152.22	-52.72	-13.00	-39.72	1.50 V	198	50.93	-103.65
4	272.50	-59.57	-13.00	-46.57	1.00 V	193	43.18	-102.75
5	496.57	-58.72	-13.00	-45.72	2.00 V	161	39.39	-98.11
6	569.32	-54.60	-13.00	-41.60	1.00 V	13	42.17	-96.77

Remarks:

1. $EIRP(dBm) = Raw\ Value(dBuV) + Correction\ Factor(dB/m)$
2. $Correction\ Factor(dB/m) = Antenna\ Factor(dB/m) + Cable\ Factor(dB) - Pre-Amplifier\ Factor(dB) + 20\log(D) - 104.8$
3. $Margin\ value = EIRP - Limit\ value$
4. The other EIRP levels were very low against the limit of frequency range 30 MHz ~ 1 GHz.
5. The frequency range 9 kHz ~ 30 MHz: all emissions are more than 20 dB below the limit, therefore do not be recorded in this report.



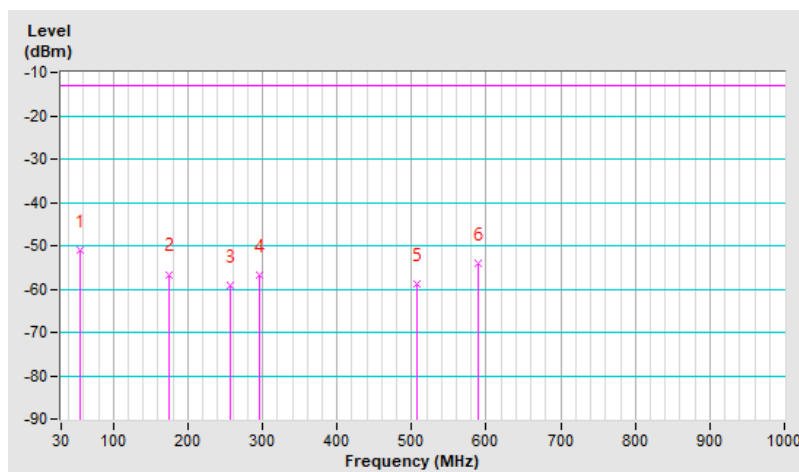
7.1.2 WCDMA Band 4

RF Mode	WCDMA Band 4	Channel	CH 1513 : 1752.6 MHz
Frequency Range	30 MHz ~ 1 GHz	Detector Function & Bandwidth	1 MHz/3 MHz (RMS)
Input Power:	12 Vdc	Environmental Conditions	23°C, 67% RH
Tested By	Adair Peng		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	55.22	-51.11	-13.00	-38.11	1.50 H	22	53.26	-104.37
2	174.53	-56.61	-13.00	-43.61	1.00 H	67	47.58	-104.19
3	256.98	-59.23	-13.00	-46.23	2.00 H	262	44.44	-103.67
4	295.78	-56.76	-13.00	-43.76	1.00 H	160	45.24	-102.00
5	507.24	-58.90	-13.00	-45.90	1.50 H	28	38.99	-97.89
6	589.69	-54.16	-13.00	-41.16	1.00 H	107	41.98	-96.14

Remarks:

1. $EIRP(dBm) = Raw\ Value(dBuV) + Correction\ Factor(dB/m)$
2. $Correction\ Factor(dB/m) = Antenna\ Factor(dB/m) + Cable\ Factor(dB) - Pre-Amplifier\ Factor(dB) + 20\log(D) - 104.8$
3. $Margin\ value = EIRP - Limit\ value$
4. The other EIRP levels were very low against the limit of frequency range 30 MHz ~ 1 GHz.
5. The frequency range 9 kHz ~ 30 MHz: all emissions are more than 20 dB below the limit, therefore do not be recorded in this report.

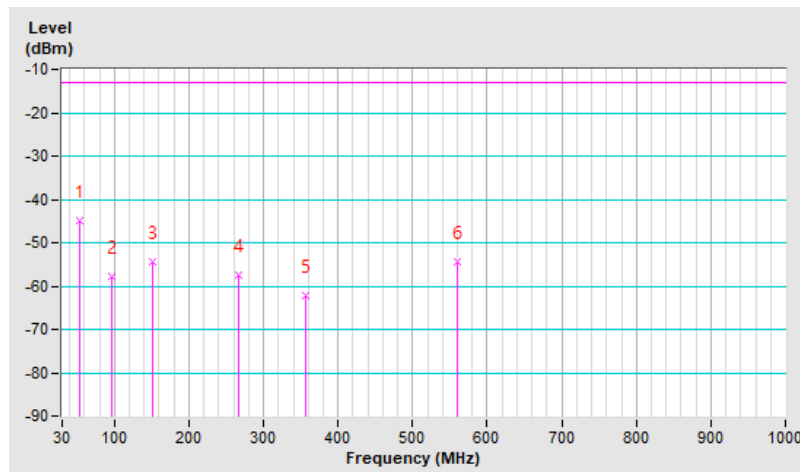


RF Mode	WCDMA Band 4	Channel	CH 1513 : 1752.6 MHz
Frequency Range	30 MHz ~ 1 GHz	Detector Function & Bandwidth	1 MHz/3 MHz (RMS)
Input Power:	12 Vdc	Environmental Conditions	23°C, 67% RH
Tested By	Adair Peng		

Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	54.25	-45.06	-13.00	-32.06	1.50 V	136	59.37	-104.43
2	95.96	-57.91	-13.00	-44.91	1.00 V	138	51.21	-109.12
3	152.22	-54.42	-13.00	-41.42	2.00 V	136	49.23	-103.65
4	266.68	-57.57	-13.00	-44.57	2.00 V	49	45.55	-103.12
5	356.89	-62.04	-13.00	-49.04	1.00 V	6	38.72	-100.76
6	559.62	-54.57	-13.00	-41.57	1.00 V	2	42.45	-97.02

Remarks:

1. $EIRP(dBm) = Raw\ Value(dBuV) + Correction\ Factor(dB/m)$
2. $Correction\ Factor(dB/m) = Antenna\ Factor(dB/m) + Cable\ Factor(dB) - Pre-Amplifier\ Factor(dB) + 20\log(D) - 104.8$
3. $Margin\ value = EIRP - Limit\ value$
4. The other EIRP levels were very low against the limit of frequency range 30 MHz ~ 1 GHz.
5. The frequency range 9 kHz ~ 30 MHz: all emissions are more than 20 dB below the limit, therefore do not be recorded in this report.



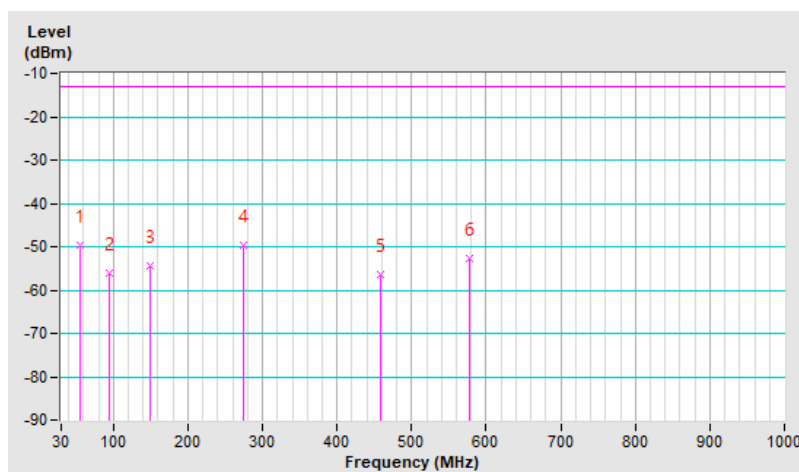
7.1.3 LTE Band 2

RF Mode	LTE Band 2 Channel Bandwidth: 20MHz	Channel	CH 18900 : 1880 MHz
Frequency Range	30 MHz ~ 1 GHz	Detector Function & Bandwidth	1 MHz/3 MHz (RMS)
Input Power:	12 Vdc	Environmental Conditions	23°C, 67% RH
Tested By	Adair Peng		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	56.19	-49.77	-13.00	-36.77	1.50 H	13	54.65	-104.42
2	94.02	-56.03	-13.00	-43.03	1.50 H	140	53.29	-109.32
3	149.31	-54.29	-13.00	-41.29	1.00 H	140	49.33	-103.62
4	274.44	-49.60	-13.00	-36.60	2.00 H	140	53.04	-102.64
5	457.77	-56.29	-13.00	-43.29	1.00 H	118	42.20	-98.49
6	578.05	-52.85	-13.00	-39.85	1.00 H	94	43.65	-96.50

Remarks:

1. $EIRP(dBm) = Raw\ Value(dBuV) + Correction\ Factor(dB/m)$
2. $Correction\ Factor(dB/m) = Antenna\ Factor(dB/m) + Cable\ Factor(dB) - Pre-Amplifier\ Factor(dB) + 20\log(D) - 104.8$
3. $Margin\ value = EIRP - Limit\ value$
4. The other EIRP levels were very low against the limit of frequency range 30 MHz ~ 1 GHz.
5. The frequency range 9 kHz ~ 30 MHz: all emissions are more than 20 dB below the limit, therefore do not be recorded in this report.

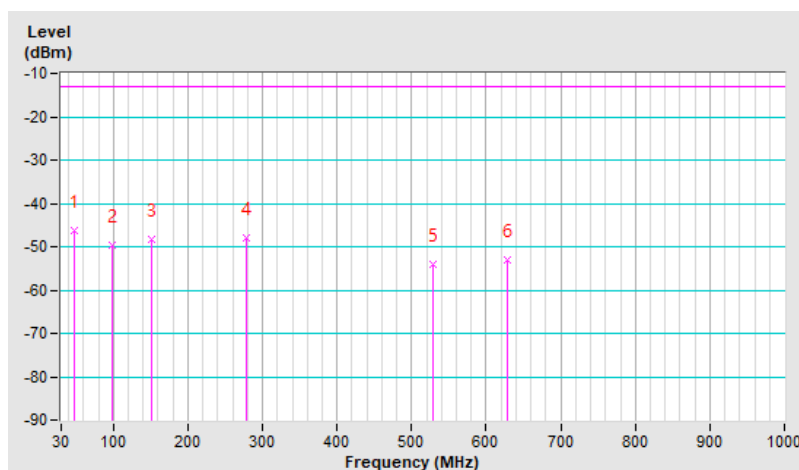


RF Mode	LTE Band 2 Channel Bandwidth: 20MHz	Channel	CH 18900 : 1880 MHz
Frequency Range	30 MHz ~ 1 GHz	Detector Function & Bandwidth	1 MHz/3 MHz (RMS)
Input Power:	12 Vdc	Environmental Conditions	23°C, 67% RH
Tested By	Adair Peng		

Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	48.43	-46.19	-13.00	-33.19	1.00 V	261	58.02	-104.21
2	97.90	-49.79	-13.00	-36.79	1.50 V	149	59.04	-108.83
3	152.22	-48.15	-13.00	-35.15	1.50 V	318	55.50	-103.65
4	279.29	-47.88	-13.00	-34.88	1.00 V	149	54.55	-102.43
5	528.58	-53.91	-13.00	-40.91	1.50 V	108	43.62	-97.53
6	628.49	-52.89	-13.00	-39.89	1.00 V	195	42.40	-95.29

Remarks:

1. $EIRP(dBm) = Raw\ Value(dBuV) + Correction\ Factor(dB/m)$
2. $Correction\ Factor(dB/m) = Antenna\ Factor(dB/m) + Cable\ Factor(dB) - Pre-Amplifier\ Factor(dB) + 20\log(D) - 104.8$
3. $Margin\ value = EIRP - Limit\ value$
4. The other EIRP levels were very low against the limit of frequency range 30 MHz ~ 1 GHz.
5. The frequency range 9 kHz ~ 30 MHz: all emissions are more than 20 dB below the limit, therefore do not be recorded in this report.



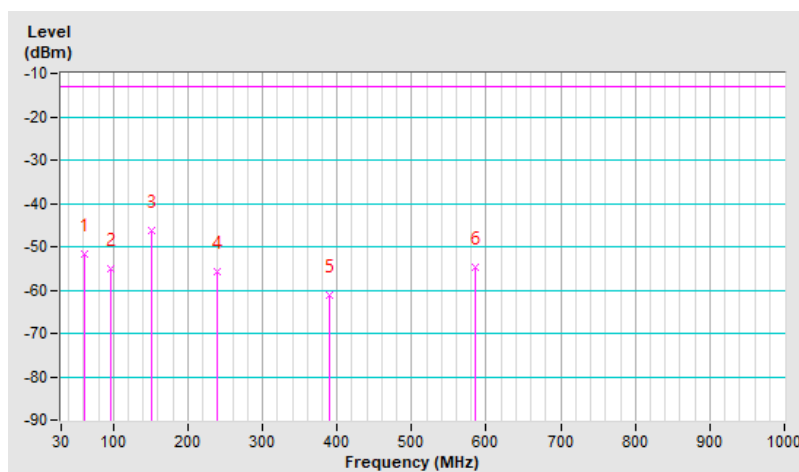
7.1.4 LTE Band 4

RF Mode	LTE Band 4 Channel Bandwidth: 1.4MHz	Channel	CH 20393 : 1754.3 MHz
Frequency Range	30 MHz ~ 1 GHz	Detector Function & Bandwidth	1 MHz/3 MHz (RMS)
Input Power:	12 Vdc	Environmental Conditions	23°C, 67% RH
Tested By	Adair Peng		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	61.04	-51.79	-13.00	-38.79	1.50 H	283	53.07	-104.86
2	96.93	-55.18	-13.00	-42.18	1.00 H	283	53.87	-109.05
3	152.22	-46.25	-13.00	-33.25	2.00 H	283	57.40	-103.65
4	238.55	-55.93	-13.00	-42.93	2.00 H	283	48.71	-104.64
5	389.87	-61.30	-13.00	-48.30	1.00 H	357	38.72	-100.02
6	585.81	-54.80	-13.00	-41.80	1.00 H	283	41.43	-96.23

Remarks:

1. $EIRP(dBm) = Raw\ Value(dBuV) + Correction\ Factor(dB/m)$
2. $Correction\ Factor(dB/m) = Antenna\ Factor(dB/m) + Cable\ Factor(dB) - Pre-Amplifier\ Factor(dB) + 20\log(D) - 104.8$
3. $Margin\ value = EIRP - Limit\ value$
4. The other EIRP levels were very low against the limit of frequency range 30 MHz ~ 1 GHz.
5. The frequency range 9 kHz ~ 30 MHz: all emissions are more than 20 dB below the limit, therefore do not be recorded in this report.

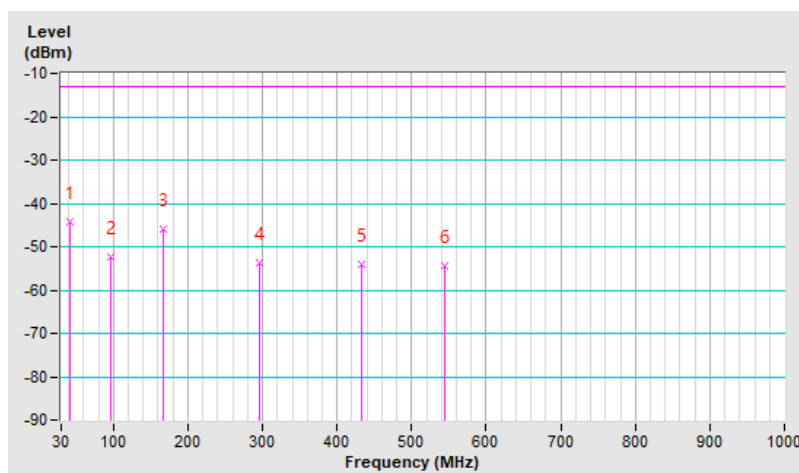


RF Mode	LTE Band 4 Channel Bandwidth: 1.4MHz	Channel	CH 20393 : 1754.3 MHz
Frequency Range	30 MHz ~ 1 GHz	Detector Function & Bandwidth	1 MHz/3 MHz (RMS)
Input Power:	12 Vdc	Environmental Conditions	23°C, 67% RH
Tested By	Adair Peng		

Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	41.64	-44.15	-13.00	-31.15	1.00 V	139	60.48	-104.63
2	95.96	-52.33	-13.00	-39.33	1.50 V	139	56.79	-109.12
3	167.74	-45.92	-13.00	-32.92	1.50 V	139	57.80	-103.72
4	295.78	-53.62	-13.00	-40.62	1.00 V	139	48.38	-102.00
5	432.55	-53.97	-13.00	-40.97	1.00 V	103	45.01	-98.98
6	544.10	-54.33	-13.00	-41.33	1.50 V	139	42.97	-97.30

Remarks:

1. $EIRP(dBm) = Raw\ Value(dBuV) + Correction\ Factor(dB/m)$
2. $Correction\ Factor(dB/m) = Antenna\ Factor(dB/m) + Cable\ Factor(dB) - Pre-Amplifier\ Factor(dB) + 20\log(D) - 104.8$
3. $Margin\ value = EIRP - Limit\ value$
4. The other EIRP levels were very low against the limit of frequency range 30 MHz ~ 1 GHz.
5. The frequency range 9 kHz ~ 30 MHz: all emissions are more than 20 dB below the limit, therefore do not be recorded in this report.



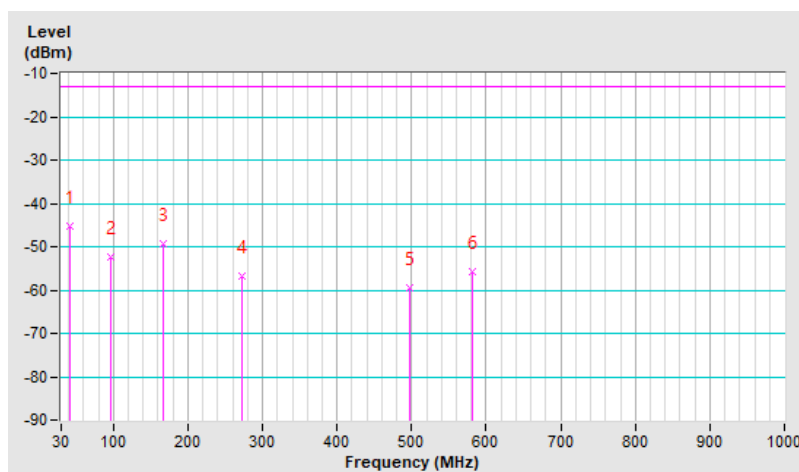
7.1.5 LTE Band 12

RF Mode	LTE Band 12 Channel Bandwidth: 10MHz	Channel	CH 23095 : 707.5 MHz
Frequency Range	30 MHz ~ 1 GHz	Detector Function & Bandwidth	1 MHz/3 MHz (RMS)
Input Power:	12 Vdc	Environmental Conditions	23°C, 67% RH
Tested By	Adair Peng		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	ERP (dBm)	Limit (dBm)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	41.64	-45.17	-13.00	-32.17	1.00 H	65	61.61	-106.78
2	96.93	-52.23	-13.00	-39.23	2.00 H	70	58.97	-111.20
3	167.74	-49.21	-13.00	-36.21	1.00 H	70	56.66	-105.87
4	273.47	-56.68	-13.00	-43.68	1.50 H	70	48.16	-104.84
5	497.54	-59.39	-13.00	-46.39	1.00 H	70	40.85	-100.24
6	581.93	-55.80	-13.00	-42.80	1.50 H	70	42.70	-98.50

Remarks:

1. $ERP(dBm) = Raw\ Value(dBuV) + Correction\ Factor(dB/m)$
2. $Correction\ Factor(dB/m) = Antenna\ Factor(dB/m) + Cable\ Factor(dB) - Pre-Amplifier\ Factor(dB) + 20\log(D) - 104.8 - 2.15$
3. $Margin\ value = ERP - Limit\ value$
4. The other ERP levels were very low against the limit of frequency range 30 MHz ~ 1 GHz.
5. The frequency range 9 kHz ~ 30 MHz: all emissions are more than 20 dB below the limit, therefore do not be recorded in this report.

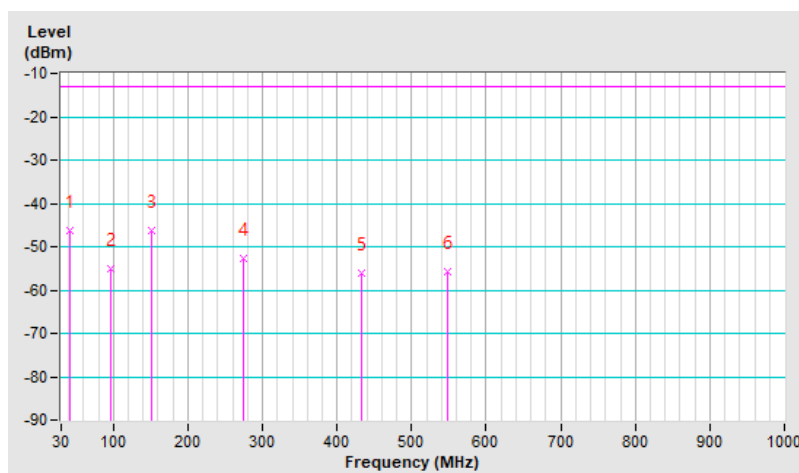


RF Mode	LTE Band 12 Channel Bandwidth: 10MHz	Channel	CH 23095 : 707.5 MHz
Frequency Range	30 MHz ~ 1 GHz	Detector Function & Bandwidth	1 MHz/3 MHz (RMS)
Input Power:	12 Vdc	Environmental Conditions	23°C, 67% RH
Tested By	Adair Peng		

Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	ERP (dBm)	Limit (dBm)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	41.64	-46.23	-13.00	-33.23	2.00 V	42	60.55	-106.78
2	96.93	-55.16	-13.00	-42.16	1.00 V	42	56.04	-111.20
3	152.22	-46.23	-13.00	-33.23	1.50 V	42	59.57	-105.80
4	275.41	-52.87	-13.00	-39.87	1.00 V	156	51.87	-104.74
5	432.55	-56.00	-13.00	-43.00	1.50 V	104	45.13	-101.13
6	547.98	-55.90	-13.00	-42.90	1.00 V	42	43.47	-99.37

Remarks:

1. $ERP(dBm) = Raw\ Value(dBuV) + Correction\ Factor(dB/m)$
2. $Correction\ Factor(dB/m) = Antenna\ Factor(dB/m) + Cable\ Factor(dB) - Pre-Amplifier\ Factor(dB) + 20\log(D) - 104.8 - 2.15$
3. $Margin\ value = ERP - Limit\ value$
4. The other ERP levels were very low against the limit of frequency range 30 MHz ~ 1 GHz.
5. The frequency range 9 kHz ~ 30 MHz: all emissions are more than 20 dB below the limit, therefore do not be recorded in this report.



7.2 Frequency Stability

Environmental Conditions:	25°C, 60% RH	Tested By:	Charles Hsiao
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7.2.1 WCDMA Band 2

12 Vdc

Frequency Stability Versus Voltage				
Voltage (Vdc)	CH 9262 (1852.4 MHz)		CH 9538 (1907.6 MHz)	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
10.2	1852.3999980	-0.0011	1907.6000040	0.0021
12.0	1852.3999960	-0.0022	1907.5999980	-0.0010
13.8	1852.3999990	-0.0005	1907.5999970	-0.0016

Note: The applicant defined the normal working voltage is from 10.2 to 13.8 Vdc.

Frequency Stability Versus Temperature				
Temperature (°C)	CH 9262 (1852.4 MHz)		CH 9538 (1907.6 MHz)	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
-30	1852.4000010	0.0005	1907.5999990	-0.0005
-20	1852.3999980	-0.0011	1907.5999960	-0.0021
-10	1852.3999970	-0.0016	1907.5999990	-0.0005
0	1852.3999980	-0.0011	1907.6000020	0.0010
10	1852.4000030	0.0016	1907.6000010	0.0005
20	1852.4000010	0.0005	1907.6000030	0.0016
30	1852.3999970	-0.0016	1907.6000030	0.0016
40	1852.3999980	-0.0011	1907.5999970	-0.0016
50	1852.4000010	0.0005	1907.6000030	0.0016
60	1852.4000030	0.0016	1907.5999980	-0.0010
65	1852.3999990	-0.0005	1907.5999960	-0.0021

24 Vdc

Frequency Stability Versus Voltage				
Voltage (Vdc)	CH 9262 (1852.4 MHz)		CH 9538 (1907.6 MHz)	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
20.4	1852.4000030	0.0016	1907.6000010	0.0005
24.0	1852.4000040	0.0022	1907.5999960	-0.0021
27.6	1852.4000030	0.0016	1907.5999970	-0.0016

Note: The applicant defined the normal working voltage is from 20.4 to 27.6 Vdc.

Frequency Stability Versus Temperature				
Temperature (°C)	CH 9262 (1852.4 MHz)		CH 9538 (1907.6 MHz)	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
-30	1852.4000010	0.0005	1907.6000010	0.0005
-20	1852.3999980	-0.0011	1907.5999970	-0.0016
-10	1852.4000010	0.0005	1907.5999970	-0.0016
0	1852.3999980	-0.0011	1907.6000040	0.0021
10	1852.4000010	0.0005	1907.5999990	-0.0005
20	1852.3999970	-0.0016	1907.5999980	-0.0010
30	1852.3999980	-0.0011	1907.5999980	-0.0010
40	1852.3999960	-0.0022	1907.6000030	0.0016
50	1852.4000040	0.0022	1907.6000040	0.0021
60	1852.4000020	0.0011	1907.6000040	0.0021
65	1852.4000030	0.0016	1907.6000020	0.0010

7.2.2 WCDMA Band 4

12 Vdc

Frequency Stability Versus Voltage				
Voltage (Vdc)	CH 1312 (1712.4 MHz)		CH 1513 (1752.6 MHz)	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
10.2	1712.3999960	-0.0023	1752.5999960	-0.0023
12.0	1712.4000040	0.0023	1752.5999970	-0.0017
13.8	1712.4000020	0.0012	1752.6000020	0.0011

Note: The applicant defined the normal working voltage is from 10.2 to 13.8 Vdc.

Frequency Stability Versus Temperature				
Temperature (°C)	CH 1312 (1712.4 MHz)		CH 1513 (1752.6 MHz)	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
-30	1712.3999970	-0.0018	1752.6000010	0.0006
-20	1712.4000010	0.0006	1752.6000020	0.0011
-10	1712.3999960	-0.0023	1752.6000010	0.0006
0	1712.3999970	-0.0018	1752.5999960	-0.0023
10	1712.4000020	0.0012	1752.5999980	-0.0011
20	1712.3999990	-0.0006	1752.6000030	0.0017
30	1712.3999980	-0.0012	1752.6000040	0.0023
40	1712.4000020	0.0012	1752.6000040	0.0023
50	1712.3999970	-0.0018	1752.5999990	-0.0006
60	1712.3999960	-0.0023	1752.6000030	0.0017
65	1712.4000010	0.0006	1752.6000030	0.0017

24 Vdc

Frequency Stability Versus Voltage				
Voltage (Vdc)	CH 1312 (1712.4 MHz)		CH 1513 (1752.6 MHz)	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
20.4	1712.3999990	-0.0006	1752.6000010	0.0006
24.0	1712.4000040	0.0023	1752.5999990	-0.0006
27.6	1712.4000020	0.0012	1752.6000020	0.0011

Note: The applicant defined the normal working voltage is from 20.4 to 27.6 Vdc.

Frequency Stability Versus Temperature				
Temperature (°C)	CH 1312 (1712.4 MHz)		CH 1513 (1752.6 MHz)	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
-30	1712.3999990	-0.0006	1752.5999960	-0.0023
-20	1712.3999980	-0.0012	1752.5999970	-0.0017
-10	1712.4000040	0.0023	1752.6000030	0.0017
0	1712.3999980	-0.0012	1752.5999960	-0.0023
10	1712.4000020	0.0012	1752.6000040	0.0023
20	1712.3999990	-0.0006	1752.6000010	0.0006
30	1712.4000030	0.0018	1752.5999970	-0.0017
40	1712.4000030	0.0018	1752.5999970	-0.0017
50	1712.3999970	-0.0018	1752.6000020	0.0011
60	1712.3999990	-0.0006	1752.5999970	-0.0017
65	1712.4000030	0.0018	1752.5999960	-0.0023

7.2.3 LTE Band 2

12 Vdc

LTE Band 2, Channel Bandwidth: 1.4 MHz

Frequency Stability Versus Voltage					
Voltage (Vdc)	CH 18607 (1850.7 MHz)		CH 19193 (1909.3 MHz)		Test Result
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
10.2	1850.700007	0.0038	1909.30001	0.0054	Pass
12	1850.700001	0.0005	1909.300006	0.0032	Pass
13.8	1850.700006	0.0032	1909.300007	0.0038	Pass

Note: The applicant defined the normal working voltage is from 10.2 to 13.8 Vdc.

Frequency Stability Versus Temperature					
Temperature (°C)	CH 18607 (1850.7 MHz)		CH 19193 (1909.3 MHz)		Test Result
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
-30	1850.700007	0.0038	1909.300003	0.0016	Pass
-20	1850.700005	0.0027	1909.300007	0.0038	Pass
-10	1850.7	0	1909.299997	-0.0016	Pass
0	1850.700005	0.0027	1909.300002	0.0011	Pass
10	1850.699998	-0.0011	1909.3	0	Pass
20	1850.699997	-0.0016	1909.299999	-0.0005	Pass
30	1850.699998	-0.0011	1909.299998	-0.0011	Pass
40	1850.700009	0.0049	1909.300005	0.0027	Pass
50	1850.700009	0.0049	1909.300005	0.0027	Pass
60	1850.700002	0.0011	1909.300007	0.0038	Pass
65	1850.699999	-0.0005	1909.3	0	Pass

LTE Band 2, Channel Bandwidth: 3 MHz

Frequency Stability Versus Voltage					
Voltage (Vdc)	CH 18615 (1851.5 MHz)		CH 19185 (1908.5 MHz)		Test Result
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
10.2	1851.5	0	1908.500002	0.0011	Pass
12	1851.500006	0.0032	1908.500002	0.0011	Pass
13.8	1851.5	0	1908.5	0	Pass

Note: The applicant defined the normal working voltage is from 10.2 to 13.8 Vdc.

Frequency Stability Versus Temperature					
Temperature (°C)	CH 18615 (1851.5 MHz)		CH 19185 (1908.5 MHz)		Test Result
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
-30	1851.500004	0.0022	1908.500008	0.0043	Pass
-20	1851.500006	0.0032	1908.500005	0.0027	Pass
-10	1851.500003	0.0016	1908.499998	-0.0011	Pass
0	1851.499998	-0.0011	1908.500001	0.0005	Pass
10	1851.500003	0.0016	1908.500003	0.0016	Pass
20	1851.499991	-0.0049	1908.499996	-0.0022	Pass
30	1851.499996	-0.0022	1908.499991	-0.0049	Pass
40	1851.500008	0.0043	1908.500003	0.0016	Pass
50	1851.500002	0.0011	1908.500006	0.0032	Pass
60	1851.500007	0.0038	1908.500004	0.0022	Pass
65	1851.499995	-0.0027	1908.499993	-0.0038	Pass

LTE Band 2, Channel Bandwidth: 5 MHz

Frequency Stability Versus Voltage					
Voltage (Vdc)	CH 18625 (1852.5 MHz)		CH 19175 (1907.5 MHz)		Test Result
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
10.2	1852.499993	-0.0038	1907.499994	-0.0032	Pass
12	1852.500008	0.0043	1907.500005	0.0027	Pass
13.8	1852.499992	-0.0043	1907.499991	-0.0049	Pass

Note: The applicant defined the normal working voltage is from 10.2 to 13.8 Vdc.

Frequency Stability Versus Temperature					
Temperature (°C)	CH 18625 (1852.5 MHz)		CH 19175 (1907.5 MHz)		Test Result
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
-30	1852.499992	-0.0043	1907.499996	-0.0022	Pass
-20	1852.499991	-0.0049	1907.499991	-0.0049	Pass
-10	1852.500006	0.0032	1907.500004	0.0022	Pass
0	1852.500005	0.0027	1907.500007	0.0038	Pass
10	1852.499995	-0.0027	1907.499999	-0.0005	Pass
20	1852.499995	-0.0027	1907.5	0	Pass
30	1852.499991	-0.0049	1907.499992	-0.0043	Pass
40	1852.499997	-0.0016	1907.499997	-0.0016	Pass
50	1852.499999	-0.0005	1907.500002	0.0011	Pass
60	1852.500004	0.0022	1907.500001	0.0005	Pass
65	1852.500002	0.0011	1907.499998	-0.0011	Pass

LTE Band 2, Channel Bandwidth: 10 MHz

Frequency Stability Versus Voltage					
Voltage (Vdc)	CH 18650 (1855 MHz)		CH 19150 (1905 MHz)		Test Result
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
10.2	1855.000008	0.0043	1905.000004	0.0022	Pass
12	1854.999998	-0.0011	1905	0	Pass
13.8	1854.999991	-0.0049	1904.999994	-0.0032	Pass

Note: The applicant defined the normal working voltage is from 10.2 to 13.8 Vdc.

Frequency Stability Versus Temperature					
Temperature (°C)	CH 18650 (1855 MHz)		CH 19150 (1905 MHz)		Test Result
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
-30	1854.99999	-0.0054	1904.99999	-0.0054	Pass
-20	1854.999997	-0.0016	1905.000001	0.0005	Pass
-10	1855.000009	0.0049	1905.00001	0.0054	Pass
0	1855.00001	0.0054	1905.000006	0.0032	Pass
10	1854.999995	-0.0027	1904.99999	-0.0054	Pass
20	1855.000003	0.0016	1905.000006	0.0032	Pass
30	1855.000007	0.0038	1905.00001	0.0054	Pass
40	1855.000008	0.0043	1905.000006	0.0032	Pass
50	1855	0	1905.000001	0.0005	Pass
60	1854.999994	-0.0032	1904.999994	-0.0032	Pass
65	1854.999999	-0.0005	1905.000001	0.0005	Pass

LTE Band 2, Channel Bandwidth: 15 MHz

Frequency Stability Versus Voltage					
Voltage (Vdc)	CH 18675 (1857.5 MHz)		CH 19125 (1902.5 MHz)		Test Result
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
10.2	1857.500006	0.0032	1902.50001	0.0054	Pass
12	1857.500004	0.0022	1902.500001	0.0005	Pass
13.8	1857.5	0	1902.499998	-0.0011	Pass

Note: The applicant defined the normal working voltage is from 10.2 to 13.8 Vdc.

Frequency Stability Versus Temperature					
Temperature (°C)	CH 18675 (1857.5 MHz)		CH 19125 (1902.5 MHz)		Test Result
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
-30	1857.499991	-0.0048	1902.499993	-0.0038	Pass
-20	1857.500005	0.0027	1902.500001	0.0005	Pass
-10	1857.500003	0.0016	1902.500006	0.0032	Pass
0	1857.499991	-0.0048	1902.499996	-0.0022	Pass
10	1857.500003	0.0016	1902.500007	0.0038	Pass
20	1857.499998	-0.0011	1902.499997	-0.0016	Pass
30	1857.499993	-0.0038	1902.499991	-0.0048	Pass
40	1857.500002	0.0011	1902.499998	-0.0011	Pass
50	1857.5	0	1902.499996	-0.0022	Pass
60	1857.500001	0.0005	1902.500005	0.0027	Pass
65	1857.499998	-0.0011	1902.500002	0.0011	Pass

LTE Band 2, Channel Bandwidth: 20 MHz

Frequency Stability Versus Voltage					
Voltage (Vdc)	CH 18700 (1860 MHz)		CH 19100 (1900 MHz)		Test Result
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
10.2	1859.999992	-0.0043	1899.99999	-0.0054	Pass
12	1860	0	1899.999999	-0.0005	Pass
13.8	1860.000003	0.0016	1900.000008	0.0043	Pass

Note: The applicant defined the normal working voltage is from 10.2 to 13.8 Vdc.

Frequency Stability Versus Temperature					
Temperature (°C)	CH 18700 (1860 MHz)		CH 19100 (1900 MHz)		Test Result
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
-30	1859.999995	-0.0027	1899.999994	-0.0032	Pass
-20	1859.999998	-0.0011	1899.999999	-0.0005	Pass
-10	1859.999991	-0.0048	1899.999996	-0.0022	Pass
0	1860	0	1900.000001	0.0005	Pass
10	1859.999994	-0.0032	1899.999992	-0.0043	Pass
20	1860.000003	0.0016	1900.000006	0.0032	Pass
30	1860.000003	0.0016	1900	0	Pass
40	1859.999993	-0.0038	1899.99999	-0.0054	Pass
50	1859.999992	-0.0043	1899.999995	-0.0027	Pass
60	1860	0	1899.999995	-0.0027	Pass
65	1859.99999	-0.0054	1899.999991	-0.0048	Pass

24 Vdc

LTE Band 2, Channel Bandwidth: 1.4 MHz

Frequency Stability Versus Voltage					
Voltage (Vdc)	CH 18607 (1850.7 MHz)		CH 19193 (1909.3 MHz)		Test Result
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
10.2	1850.699999	-0.0005	1909.299995	-0.0027	Pass
12	1850.700008	0.0043	1909.300006	0.0032	Pass
13.8	1850.699992	-0.0043	1909.299996	-0.0022	Pass

Note: The applicant defined the normal working voltage is from 10.2 to 13.8 Vdc.

Frequency Stability Versus Temperature					
Temperature (°C)	CH 18607 (1850.7 MHz)		CH 19193 (1909.3 MHz)		Test Result
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
-30	1850.699994	-0.0032	1909.299993	-0.0038	Pass
-20	1850.699991	-0.0049	1909.299992	-0.0043	Pass
-10	1850.700001	0.0005	1909.299997	-0.0016	Pass
0	1850.7	0	1909.300002	0.0011	Pass
10	1850.699991	-0.0049	1909.299993	-0.0038	Pass
20	1850.69999	-0.0054	1909.299992	-0.0043	Pass
30	1850.700006	0.0032	1909.300004	0.0022	Pass
40	1850.699992	-0.0043	1909.299993	-0.0038	Pass
50	1850.700003	0.0016	1909.299999	-0.0005	Pass
60	1850.700001	0.0005	1909.300003	0.0016	Pass
65	1850.700002	0.0011	1909.300005	0.0027	Pass

LTE Band 2, Channel Bandwidth: 3 MHz

Frequency Stability Versus Voltage					
Voltage (Vdc)	CH 18615 (1851.5 MHz)		CH 19185 (1908.5 MHz)		Test Result
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
10.2	1851.500007	0.0038	1908.500003	0.0016	Pass
12	1851.500001	0.0005	1908.500002	0.0011	Pass
13.8	1851.500005	0.0027	1908.50001	0.0054	Pass

Note: The applicant defined the normal working voltage is from 10.2 to 13.8 Vdc.

Frequency Stability Versus Temperature					
Temperature (°C)	CH 18615 (1851.5 MHz)		CH 19185 (1908.5 MHz)		Test Result
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
-30	1851.500007	0.0038	1908.500006	0.0032	Pass
-20	1851.500005	0.0027	1908.500001	0.0005	Pass
-10	1851.5	0	1908.500003	0.0016	Pass
0	1851.500005	0.0027	1908.500006	0.0032	Pass
10	1851.499995	-0.0027	1908.499994	-0.0032	Pass
20	1851.499999	-0.0005	1908.499998	-0.0011	Pass
30	1851.5	0	1908.499997	-0.0016	Pass
40	1851.499992	-0.0043	1908.499992	-0.0043	Pass
50	1851.499991	-0.0049	1908.499992	-0.0043	Pass
60	1851.499998	-0.0011	1908.499998	-0.0011	Pass
65	1851.499996	-0.0022	1908.499999	-0.0005	Pass

LTE Band 2, Channel Bandwidth: 5 MHz

Frequency Stability Versus Voltage					
Voltage (Vdc)	CH 18625 (1852.5 MHz)		CH 19175 (1907.5 MHz)		Test Result
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
10.2	1852.499992	-0.0043	1907.499996	-0.0022	Pass
12	1852.500003	0.0016	1907.500001	0.0005	Pass
13.8	1852.499997	-0.0016	1907.499999	-0.0005	Pass

Note: The applicant defined the normal working voltage is from 10.2 to 13.8 Vdc.

Frequency Stability Versus Temperature					
Temperature (°C)	CH 18625 (1852.5 MHz)		CH 19175 (1907.5 MHz)		Test Result
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
-30	1852.499995	-0.0027	1907.499994	-0.0032	Pass
-20	1852.500003	0.0016	1907.500006	0.0032	Pass
-10	1852.499995	-0.0027	1907.499995	-0.0027	Pass
0	1852.499995	-0.0027	1907.5	0	Pass
10	1852.5	0	1907.500004	0.0022	Pass
20	1852.500008	0.0043	1907.500007	0.0038	Pass
30	1852.499992	-0.0043	1907.499991	-0.0049	Pass
40	1852.499993	-0.0038	1907.499999	-0.0054	Pass
50	1852.500005	0.0027	1907.500002	0.0011	Pass
60	1852.499994	-0.0032	1907.499999	-0.0054	Pass
65	1852.499999	-0.0005	1907.499998	-0.0011	Pass

LTE Band 2, Channel Bandwidth: 10 MHz

Frequency Stability Versus Voltage					
Voltage (Vdc)	CH 18650 (1855 MHz)		CH 19150 (1905 MHz)		Test Result
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
10.2	1855.000006	0.0032	1905.000003	0.0016	Pass
12	1855.000004	0.0022	1905.000004	0.0022	Pass
13.8	1854.999999	-0.0005	1905.000001	0.0005	Pass

Note: The applicant defined the normal working voltage is from 10.2 to 13.8 Vdc.

Frequency Stability Versus Temperature					
Temperature (°C)	CH 18650 (1855 MHz)		CH 19150 (1905 MHz)		Test Result
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
-30	1854.999999	-0.0054	1904.999992	-0.0043	Pass
-20	1855	0	1905.000002	0.0011	Pass
-10	1854.999992	-0.0043	1904.999995	-0.0027	Pass
0	1854.999995	-0.0027	1904.999996	-0.0022	Pass
10	1855.000005	0.0027	1905.000009	0.0049	Pass
20	1855.000004	0.0022	1905.000002	0.0011	Pass
30	1855	0	1905	0	Pass
40	1854.999999	-0.0005	1904.999999	-0.0005	Pass
50	1855.000001	0.0054	1905.000006	0.0032	Pass
60	1854.999995	-0.0027	1904.999998	-0.0011	Pass
65	1854.999992	-0.0043	1904.999999	-0.0054	Pass

LTE Band 2, Channel Bandwidth: 15 MHz

Frequency Stability Versus Voltage					
Voltage (Vdc)	CH 18675 (1857.5 MHz)		CH 19125 (1902.5 MHz)		Test Result
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
10.2	1857.499999	-0.0005	1902.499999	-0.0005	Pass
12	1857.499997	-0.0016	1902.5	0	Pass
13.8	1857.499993	-0.0038	1902.499998	-0.0011	Pass

Note: The applicant defined the normal working voltage is from 10.2 to 13.8 Vdc.

Frequency Stability Versus Temperature					
Temperature (°C)	CH 18675 (1857.5 MHz)		CH 19125 (1902.5 MHz)		Test Result
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
-30	1857.500004	0.0022	1902.500002	0.0011	Pass
-20	1857.499998	-0.0011	1902.500001	0.0005	Pass
-10	1857.499996	-0.0022	1902.499995	-0.0027	Pass
0	1857.500004	0.0022	1902.500005	0.0027	Pass
10	1857.499996	-0.0022	1902.499996	-0.0022	Pass
20	1857.499991	-0.0048	1902.499996	-0.0022	Pass
30	1857.500004	0.0022	1902.500006	0.0032	Pass
40	1857.499995	-0.0027	1902.499996	-0.0022	Pass
50	1857.499994	-0.0032	1902.499996	-0.0022	Pass
60	1857.499999	-0.0054	1902.499999	-0.0054	Pass
65	1857.499991	-0.0048	1902.499994	-0.0032	Pass

LTE Band 2, Channel Bandwidth: 20 MHz

Frequency Stability Versus Voltage					
Voltage (Vdc)	CH 18700 (1860 MHz)		CH 19100 (1900 MHz)		Test Result
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
10.2	1860	0	1899.999997	-0.0016	Pass
12	1860.000002	0.0011	1900	0	Pass
13.8	1860	0	1900.000001	0.0005	Pass

Note: The applicant defined the normal working voltage is from 10.2 to 13.8 Vdc.

Frequency Stability Versus Temperature					
Temperature (°C)	CH 18700 (1860 MHz)		CH 19100 (1900 MHz)		Test Result
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
-30	1860	0	1900.000002	0.0011	Pass
-20	1859.999991	-0.0048	1899.99999	-0.0054	Pass
-10	1860	0	1900	0	Pass
0	1860.000004	0.0022	1900.000001	0.0005	Pass
10	1859.999991	-0.0048	1899.999992	-0.0043	Pass
20	1860.000003	0.0016	1900.000001	0.0005	Pass
30	1859.999998	-0.0011	1900.000001	0.0005	Pass
40	1860.000009	0.0048	1900.000006	0.0032	Pass
50	1859.999991	-0.0048	1899.999991	-0.0048	Pass
60	1860.000003	0.0016	1899.999999	-0.0005	Pass
65	1859.999993	-0.0038	1899.999992	-0.0043	Pass

7.2.4 LTE Band 4

12 Vdc

LTE Band 4, Channel Bandwidth: 1.4 MHz

Frequency Stability Versus Voltage					
Voltage (Vdc)	CH 19957 (1710.7 MHz)		CH 20393 (1754.3 MHz)		Test Result
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
10.2	1710.699991	-0.0053	1754.299991	-0.0053	Pass
12	1710.699991	-0.0053	1754.299993	-0.0041	Pass
13.8	1710.700002	0.0012	1754.3	0	Pass

Note: The applicant defined the normal working voltage is from 10.2 to 13.8 Vdc.

Frequency Stability Versus Temperature					
Temperature (°C)	CH 19957 (1710.7 MHz)		CH 20393 (1754.3 MHz)		Test Result
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
-30	1710.699991	-0.0053	1754.29999	-0.0058	Pass
-20	1710.699995	-0.0029	1754.299991	-0.0053	Pass
-10	1710.699997	-0.0018	1754.299997	-0.0018	Pass
0	1710.699994	-0.0035	1754.299991	-0.0053	Pass
10	1710.700009	0.0053	1754.300007	0.0041	Pass
20	1710.699999	-0.0006	1754.300002	0.0012	Pass
30	1710.699999	-0.0006	1754.300003	0.0018	Pass
40	1710.699995	-0.0029	1754.299995	-0.0029	Pass
50	1710.699995	-0.0029	1754.299992	-0.0047	Pass
60	1710.699991	-0.0053	1754.29999	-0.0058	Pass
65	1710.699997	-0.0018	1754.3	0	Pass

LTE Band 4, Channel Bandwidth: 3 MHz

Frequency Stability Versus Voltage					
Voltage (Vdc)	CH 19965 (1711.5 MHz)		CH 20385 (1753.5 MHz)		Test Result
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
10.2	1711.5	0	1753.500002	0.0012	Pass
12	1711.500006	0.0035	1753.500008	0.0047	Pass
13.8	1711.500009	0.0053	1753.500007	0.0041	Pass

Note: The applicant defined the normal working voltage is from 10.2 to 13.8 Vdc.

Frequency Stability Versus Temperature					
Temperature (°C)	CH 19965 (1711.5 MHz)		CH 20385 (1753.5 MHz)		Test Result
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
-30	1711.499996	-0.0023	1753.499998	-0.0012	Pass
-20	1711.500005	0.0029	1753.500009	0.0053	Pass
-10	1711.499998	-0.0012	1753.499993	-0.0041	Pass
0	1711.500002	0.0012	1753.500006	0.0035	Pass
10	1711.5	0	1753.500001	0.0006	Pass
20	1711.499999	-0.0058	1753.499999	-0.0058	Pass
30	1711.500001	0.0006	1753.500001	0.0006	Pass
40	1711.5	0	1753.5	0	Pass
50	1711.500001	0.0006	1753.499999	-0.0006	Pass
60	1711.499993	-0.0041	1753.499991	-0.0053	Pass
65	1711.500007	0.0041	1753.500006	0.0035	Pass

LTE Band 4, Channel Bandwidth: 5 MHz

Frequency Stability Versus Voltage					
Voltage (Vdc)	CH 19975 (1712.5 MHz)		CH 20375 (1752.5 MHz)		Test Result
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
10.2	1712.499992	-0.0047	1752.499991	-0.0053	Pass
12	1712.499999	-0.0006	1752.499999	-0.0006	Pass
13.8	1712.499997	-0.0018	1752.5	0	Pass

Note: The applicant defined the normal working voltage is from 10.2 to 13.8 Vdc.

Frequency Stability Versus Temperature					
Temperature (°C)	CH 19975 (1712.5 MHz)		CH 20375 (1752.5 MHz)		Test Result
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
-30	1712.499998	-0.0012	1752.500003	0.0018	Pass
-20	1712.500004	0.0023	1752.500005	0.0029	Pass
-10	1712.499998	-0.0012	1752.500001	0.0006	Pass
0	1712.500002	0.0012	1752.500001	0.0006	Pass
10	1712.500004	0.0023	1752.500008	0.0047	Pass
20	1712.500006	0.0035	1752.500009	0.0053	Pass
30	1712.500001	0.0006	1752.499999	-0.0006	Pass
40	1712.500006	0.0035	1752.500004	0.0023	Pass
50	1712.5	0	1752.500003	0.0018	Pass
60	1712.499998	-0.0012	1752.5	0	Pass
65	1712.499999	-0.0006	1752.5	0	Pass

LTE Band 4, Channel Bandwidth: 10 MHz

Frequency Stability Versus Voltage					
Voltage (Vdc)	CH 20000 (1715 MHz)		CH 20350 (1750 MHz)		Test Result
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
10.2	1714.999991	-0.0052	1749.999994	-0.0035	Pass
12	1715.000005	0.0029	1750.000007	0.0041	Pass
13.8	1714.99999	-0.0058	1749.999995	-0.0029	Pass

Note: The applicant defined the normal working voltage is from 10.2 to 13.8 Vdc.

Frequency Stability Versus Temperature					
Temperature (°C)	CH 20000 (1715 MHz)		CH 20350 (1750 MHz)		Test Result
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
-30	1714.999998	-0.0012	1750.000001	0.0006	Pass
-20	1714.999996	-0.0023	1749.999995	-0.0029	Pass
-10	1714.999996	-0.0023	1749.999996	-0.0023	Pass
0	1715.000002	0.0012	1750.000006	0.0035	Pass
10	1714.999996	-0.0023	1749.999994	-0.0035	Pass
20	1715	0	1750.000002	0.0012	Pass
30	1715.000002	0.0012	1749.999999	-0.0006	Pass
40	1714.999999	-0.0006	1750.000002	0.0012	Pass
50	1714.999994	-0.0035	1749.999995	-0.0029	Pass
60	1715	0	1749.999998	-0.0012	Pass
65	1715.000008	0.0047	1750.000004	0.0023	Pass

LTE Band 4, Channel Bandwidth: 15 MHz

Frequency Stability Versus Voltage					
Voltage (Vdc)	CH 20025 (1717.5 MHz)		CH 20325 (1747.5 MHz)		Test Result
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
10.2	1717.499991	-0.0052	1747.499993	-0.0041	Pass
12	1717.500007	0.0041	1747.500009	0.0052	Pass
13.8	1717.500007	0.0041	1747.500006	0.0035	Pass

Note: The applicant defined the normal working voltage is from 10.2 to 13.8 Vdc.

Frequency Stability Versus Temperature					
Temperature (°C)	CH 20025 (1717.5 MHz)		CH 20325 (1747.5 MHz)		Test Result
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
-30	1717.500004	0.0023	1747.500006	0.0035	Pass
-20	1717.500001	0.0058	1747.500005	0.0029	Pass
-10	1717.499992	-0.0047	1747.499996	-0.0023	Pass
0	1717.499998	-0.0012	1747.5	0	Pass
10	1717.500001	0.0006	1747.500001	0.0006	Pass
20	1717.499994	-0.0035	1747.499991	-0.0052	Pass
30	1717.500002	0.0012	1747.499999	-0.0006	Pass
40	1717.499995	-0.0029	1747.499995	-0.0029	Pass
50	1717.500005	0.0029	1747.500001	0.0006	Pass
60	1717.499998	-0.0012	1747.499994	-0.0035	Pass
65	1717.500008	0.0047	1747.500007	0.0041	Pass

LTE Band 4, Channel Bandwidth: 20 MHz

Frequency Stability Versus Voltage					
Voltage (Vdc)	CH 20050 (1720 MHz)		CH 20300 (1745 MHz)		Test Result
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
10.2	1720.000007	0.0041	1745.00001	0.0058	Pass
12	1719.999997	-0.0017	1745.000002	0.0012	Pass
13.8	1719.999997	-0.0017	1744.999993	-0.0041	Pass

Note: The applicant defined the normal working voltage is from 10.2 to 13.8 Vdc.

Frequency Stability Versus Temperature					
Temperature (°C)	CH 20050 (1720 MHz)		CH 20300 (1745 MHz)		Test Result
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
-30	1719.999993	-0.0041	1744.999994	-0.0035	Pass
-20	1719.999993	-0.0041	1744.999992	-0.0047	Pass
-10	1719.999995	-0.0029	1744.999996	-0.0023	Pass
0	1720.000001	0.0006	1745.000006	0.0035	Pass
10	1719.999998	-0.0012	1745.000002	0.0012	Pass
20	1720.000004	0.0023	1745.000005	0.0029	Pass
30	1720.000007	0.0041	1745.000004	0.0023	Pass
40	1719.999999	-0.0006	1745.000003	0.0017	Pass
50	1720.000003	0.0017	1745.000006	0.0035	Pass
60	1719.999996	-0.0023	1744.999993	-0.0041	Pass
65	1720.000005	0.0029	1745.000008	0.0047	Pass

24 Vdc

LTE Band 4, Channel Bandwidth: 1.4 MHz

Frequency Stability Versus Voltage					
Voltage (Vdc)	CH 19957 (1710.7 MHz)		CH 20393 (1754.3 MHz)		Test Result
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
10.2	1710.699995	-0.0029	1754.299993	-0.0041	Pass
12	1710.699993	-0.0041	1754.299994	-0.0035	Pass
13.8	1710.699994	-0.0035	1754.299997	-0.0018	Pass

Note: The applicant defined the normal working voltage is from 10.2 to 13.8 Vdc.

Frequency Stability Versus Temperature					
Temperature (°C)	CH 19957 (1710.7 MHz)		CH 20393 (1754.3 MHz)		Test Result
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
-30	1710.700005	0.0029	1754.300004	0.0023	Pass
-20	1710.699993	-0.0041	1754.299994	-0.0035	Pass
-10	1710.699997	-0.0018	1754.299994	-0.0035	Pass
0	1710.699999	-0.0006	1754.300001	0.0006	Pass
10	1710.699991	-0.0053	1754.299993	-0.0041	Pass
20	1710.700006	0.0035	1754.300004	0.0023	Pass
30	1710.7	0	1754.300002	0.0012	Pass
40	1710.699996	-0.0023	1754.299998	-0.0012	Pass
50	1710.699995	-0.0029	1754.299997	-0.0018	Pass
60	1710.699991	-0.0053	1754.299994	-0.0035	Pass
65	1710.699991	-0.0053	1754.299995	-0.0029	Pass

LTE Band 4, Channel Bandwidth: 3 MHz

Frequency Stability Versus Voltage					
Voltage (Vdc)	CH 19965 (1711.5 MHz)		CH 20385 (1753.5 MHz)		Test Result
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
10.2	1711.499995	-0.0029	1753.499992	-0.0047	Pass
12	1711.500003	0.0018	1753.500001	0.0006	Pass
13.8	1711.500001	0.0006	1753.500002	0.0012	Pass

Note: The applicant defined the normal working voltage is from 10.2 to 13.8 Vdc.

Frequency Stability Versus Temperature					
Temperature (°C)	CH 19965 (1711.5 MHz)		CH 20385 (1753.5 MHz)		Test Result
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
-30	1711.500001	0.0006	1753.500004	0.0023	Pass
-20	1711.499993	-0.0041	1753.499995	-0.0029	Pass
-10	1711.500002	0.0012	1753.500005	0.0029	Pass
0	1711.499994	-0.0035	1753.499998	-0.0012	Pass
10	1711.499998	-0.0012	1753.5	0	Pass
20	1711.499997	-0.0018	1753.499997	-0.0018	Pass
30	1711.500007	0.0041	1753.500003	0.0018	Pass
40	1711.499998	-0.0012	1753.499996	-0.0023	Pass
50	1711.499996	-0.0023	1753.499994	-0.0035	Pass
60	1711.499998	-0.0012	1753.499994	-0.0035	Pass
65	1711.500009	0.0053	1753.500005	0.0029	Pass

LTE Band 4, Channel Bandwidth: 5 MHz

Frequency Stability Versus Voltage					
Voltage (Vdc)	CH 19975 (1712.5 MHz)		CH 20375 (1752.5 MHz)		Test Result
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
10.2	1712.500004	0.0023	1752.500001	0.0006	Pass
12	1712.500008	0.0047	1752.500005	0.0029	Pass
13.8	1712.499996	-0.0023	1752.499995	-0.0029	Pass

Note: The applicant defined the normal working voltage is from 10.2 to 13.8 Vdc.

Frequency Stability Versus Temperature					
Temperature (°C)	CH 19975 (1712.5 MHz)		CH 20375 (1752.5 MHz)		Test Result
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
-30	1712.499994	-0.0035	1752.499996	-0.0023	Pass
-20	1712.499995	-0.0029	1752.499998	-0.0012	Pass
-10	1712.499998	-0.0012	1752.499996	-0.0023	Pass
0	1712.499991	-0.0053	1752.499991	-0.0053	Pass
10	1712.499996	-0.0023	1752.499992	-0.0047	Pass
20	1712.499997	-0.0018	1752.499998	-0.0012	Pass
30	1712.499995	-0.0029	1752.499992	-0.0047	Pass
40	1712.500001	0.0058	1752.500009	0.0053	Pass
50	1712.500008	0.0047	1752.500005	0.0029	Pass
60	1712.500007	0.0041	1752.500004	0.0023	Pass
65	1712.500008	0.0047	1752.500001	0.0058	Pass

LTE Band 4, Channel Bandwidth: 10 MHz

Frequency Stability Versus Voltage					
Voltage (Vdc)	CH 20000 (1715 MHz)		CH 20350 (1750 MHz)		Test Result
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
10.2	1714.999995	-0.0029	1749.999992	-0.0047	Pass
12	1714.999992	-0.0047	1749.999991	-0.0052	Pass
13.8	1714.999998	-0.0012	1750.000001	0.0006	Pass

Note: The applicant defined the normal working voltage is from 10.2 to 13.8 Vdc.

Frequency Stability Versus Temperature					
Temperature (°C)	CH 20000 (1715 MHz)		CH 20350 (1750 MHz)		Test Result
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
-30	1714.999995	-0.0029	1749.999997	-0.0017	Pass
-20	1715.000006	0.0035	1750.000008	0.0047	Pass
-10	1715.000009	0.0052	1750.000004	0.0023	Pass
0	1714.999996	-0.0023	1749.999998	-0.0012	Pass
10	1715.000005	0.0029	1750.000009	0.0052	Pass
20	1714.999993	-0.0041	1749.999993	-0.0041	Pass
30	1715.000003	0.0017	1749.999998	-0.0012	Pass
40	1715.000008	0.0047	1750.000001	0.0058	Pass
50	1714.999996	-0.0023	1749.999996	-0.0023	Pass
60	1715	0	1750	0	Pass
65	1715.000001	0.0006	1749.999999	-0.0006	Pass

LTE Band 4, Channel Bandwidth: 15 MHz

Frequency Stability Versus Voltage					
Voltage (Vdc)	CH 20025 (1717.5 MHz)		CH 20325 (1747.5 MHz)		Test Result
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
10.2	1717.499993	-0.0041	1747.499991	-0.0052	Pass
12	1717.500007	0.0041	1747.500003	0.0017	Pass
13.8	1717.499992	-0.0047	1747.499991	-0.0052	Pass

Note: The applicant defined the normal working voltage is from 10.2 to 13.8 Vdc.

Frequency Stability Versus Temperature					
Temperature (°C)	CH 20025 (1717.5 MHz)		CH 20325 (1747.5 MHz)		Test Result
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
-30	1717.499994	-0.0035	1747.499992	-0.0047	Pass
-20	1717.499992	-0.0047	1747.499993	-0.0041	Pass
-10	1717.500008	0.0047	1747.50001	0.0058	Pass
0	1717.499999	-0.0006	1747.499995	-0.0029	Pass
10	1717.499992	-0.0047	1747.499992	-0.0047	Pass
20	1717.499991	-0.0052	1747.499994	-0.0035	Pass
30	1717.500002	0.0012	1747.499997	-0.0017	Pass
40	1717.499996	-0.0023	1747.499991	-0.0052	Pass
50	1717.500006	0.0035	1747.500004	0.0023	Pass
60	1717.500005	0.0029	1747.500007	0.0041	Pass
65	1717.499995	-0.0029	1747.499999	-0.0006	Pass

LTE Band 4, Channel Bandwidth: 20 MHz

Frequency Stability Versus Voltage					
Voltage (Vdc)	CH 20050 (1720 MHz)		CH 20300 (1745 MHz)		Test Result
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
10.2	1719.999995	-0.0029	1745	0	Pass
12	1719.999991	-0.0052	1744.999991	-0.0052	Pass
13.8	1719.999991	-0.0052	1744.999993	-0.0041	Pass

Note: The applicant defined the normal working voltage is from 10.2 to 13.8 Vdc.

Frequency Stability Versus Temperature					
Temperature (°C)	CH 20050 (1720 MHz)		CH 20300 (1745 MHz)		Test Result
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
-30	1720	0	1744.999999	-0.0006	Pass
-20	1720.000007	0.0041	1745.000005	0.0029	Pass
-10	1720.000005	0.0029	1745.000006	0.0035	Pass
0	1720.000001	0.0006	1745.000004	0.0023	Pass
10	1719.999992	-0.0047	1744.999991	-0.0052	Pass
20	1720.000006	0.0035	1745.000006	0.0035	Pass
30	1720.000005	0.0029	1745.000002	0.0012	Pass
40	1719.999992	-0.0047	1744.999993	-0.0041	Pass
50	1720.000004	0.0023	1745.000002	0.0012	Pass
60	1720.000004	0.0023	1745.000007	0.0041	Pass
65	1720.000009	0.0052	1745.000005	0.0029	Pass

7.2.5 LTE Band 12

12 Vdc

LTE Band 12, Channel Bandwidth: 1.4 MHz

Frequency Stability Versus Voltage					
Voltage (Vdc)	CH 23017 (699.7 MHz)		CH 23173 (715.3 MHz)		Test Result
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
10.2	699.699998	-0.0029	715.300001	0.0014	Pass
12	699.700008	0.0114	715.300004	0.0057	Pass
13.8	699.700007	0.01	715.300007	0.01	Pass

Note: The applicant defined the normal working voltage is from 10.2 to 13.8 Vdc.

Frequency Stability Versus Temperature					
Temperature (°C)	CH 23017 (699.7 MHz)		CH 23173 (715.3 MHz)		Test Result
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
-30	699.700003	0.0043	715.300005	0.0071	Pass
-20	699.700002	0.0029	715.300004	0.0057	Pass
-10	699.699993	-0.01	715.299991	-0.0129	Pass
0	699.699999	-0.0014	715.299994	-0.0086	Pass
10	699.699995	-0.0071	715.299995	-0.0071	Pass
20	699.700006	0.0086	715.300001	0.0143	Pass
30	699.700009	0.0129	715.300009	0.0129	Pass
40	699.699998	-0.0029	715.299994	-0.0086	Pass
50	699.700005	0.0071	715.300008	0.0114	Pass
60	699.699994	-0.0086	715.299997	-0.0043	Pass
65	699.700007	0.01	715.300003	0.0043	Pass

LTE Band 12, Channel Bandwidth: 3 MHz

Frequency Stability Versus Voltage					
Voltage (Vdc)	CH 23025 (700.5 MHz)		CH 23165 (714.5 MHz)		Test Result
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
10.2	700.499991	-0.0128	714.499993	-0.01	Pass
12	700.500009	0.0128	714.500009	0.0128	Pass
13.8	700.499999	-0.0014	714.500004	0.0057	Pass

Note: The applicant defined the normal working voltage is from 10.2 to 13.8 Vdc.

Frequency Stability Versus Temperature					
Temperature (°C)	CH 23025 (700.5 MHz)		CH 23165 (714.5 MHz)		Test Result
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
-30	700.499993	-0.01	714.499992	-0.0114	Pass
-20	700.500009	0.0128	714.500007	0.01	Pass
-10	700.500008	0.0114	714.500007	0.01	Pass
0	700.500004	0.0057	714.500001	0.0014	Pass
10	700.500004	0.0057	714.500008	0.0114	Pass
20	700.500006	0.0086	714.500003	0.0043	Pass
30	700.500007	0.01	714.500005	0.0071	Pass
40	700.500009	0.0128	714.500006	0.0086	Pass
50	700.499996	-0.0057	714.499993	-0.01	Pass
60	700.499999	-0.0014	714.500002	0.0029	Pass
65	700.499991	-0.0128	714.499994	-0.0086	Pass

LTE Band 12, Channel Bandwidth: 5 MHz

Frequency Stability Versus Voltage					
Voltage (Vdc)	CH 23035 (701.5 MHz)		CH 23155 (713.5 MHz)		Test Result
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
10.2	701.499993	-0.01	713.499992	-0.0114	Pass
12	701.500003	0.0043	713.500001	0.0014	Pass
13.8	701.499998	-0.0029	713.500001	0.0014	Pass

Note: The applicant defined the normal working voltage is from 10.2 to 13.8 Vdc.

Frequency Stability Versus Temperature					
Temperature (°C)	CH 23035 (701.5 MHz)		CH 23155 (713.5 MHz)		Test Result
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
-30	701.500008	0.0114	713.500001	0.0143	Pass
-20	701.499996	-0.0057	713.499993	-0.01	Pass
-10	701.499995	-0.0071	713.499992	-0.0114	Pass
0	701.499996	-0.0057	713.499991	-0.0128	Pass
10	701.499993	-0.01	713.499991	-0.0128	Pass
20	701.500002	0.0029	713.499998	-0.0029	Pass
30	701.499992	-0.0114	713.499991	-0.0128	Pass
40	701.499994	-0.0086	713.499992	-0.0114	Pass
50	701.499992	-0.0114	713.499993	-0.01	Pass
60	701.499993	-0.01	713.499995	-0.0071	Pass
65	701.500004	0.0057	713.500002	0.0029	Pass

LTE Band 12, Channel Bandwidth: 10 MHz

Frequency Stability Versus Voltage					
Voltage (Vdc)	CH 23060 (704 MHz)		CH 23130 (711 MHz)		Test Result
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
10.2	703.999993	-0.0099	710.999993	-0.0099	Pass
12	703.999997	-0.0043	710.999994	-0.0085	Pass
13.8	703.999998	-0.0028	710.999999	-0.0014	Pass

Note: The applicant defined the normal working voltage is from 10.2 to 13.8 Vdc.

Frequency Stability Versus Temperature					
Temperature (°C)	CH 23060 (704 MHz)		CH 23130 (711 MHz)		Test Result
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
-30	703.999996	-0.0057	710.999994	-0.0085	Pass
-20	703.999991	-0.0128	710.999994	-0.0085	Pass
-10	704.000009	0.0128	711.000009	0.0128	Pass
0	704.000008	0.0114	711.000008	0.0114	Pass
10	704.000009	0.0128	711.000007	0.0099	Pass
20	704.000001	0.0014	710.999999	-0.0014	Pass
30	703.999995	-0.0071	710.999991	-0.0128	Pass
40	704	0	710.999999	-0.0014	Pass
50	704.000007	0.0099	711.000008	0.0114	Pass
60	704.000005	0.0071	711.000009	0.0128	Pass
65	704.000006	0.0085	711.000001	0.0014	Pass

24 Vdc

LTE Band 12, Channel Bandwidth: 1.4 MHz

Frequency Stability Versus Voltage					
Voltage (Vdc)	CH 23017 (699.7 MHz)		CH 23173 (715.3 MHz)		Test Result
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
10.2	699.700001	0.0014	715.300001	0.0014	Pass
12	699.700002	0.0029	715.299998	-0.0029	Pass
13.8	699.700008	0.0114	715.300004	0.0057	Pass

Note: The applicant defined the normal working voltage is from 10.2 to 13.8 Vdc.

Frequency Stability Versus Temperature					
Temperature (°C)	CH 23017 (699.7 MHz)		CH 23173 (715.3 MHz)		Test Result
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
-30	699.700003	0.0043	715.300007	0.01	Pass
-20	699.700008	0.0114	715.300005	0.0071	Pass
-10	699.699995	-0.0071	715.299993	-0.01	Pass
0	699.699993	-0.01	715.299994	-0.0086	Pass
10	699.700009	0.0129	715.300007	0.01	Pass
20	699.700001	0.0014	715.299997	-0.0043	Pass
30	699.699994	-0.0086	715.299994	-0.0086	Pass
40	699.699998	-0.0029	715.299994	-0.0086	Pass
50	699.699997	-0.0043	715.3	0	Pass
60	699.700007	0.01	715.300006	0.0086	Pass
65	699.7	0	715.300003	0.0043	Pass

LTE Band 12, Channel Bandwidth: 3 MHz

Frequency Stability Versus Voltage					
Voltage (Vdc)	CH 23025 (700.5 MHz)		CH 23165 (714.5 MHz)		Test Result
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
10.2	700.499996	-0.0057	714.499998	-0.0029	Pass
12	700.499996	-0.0057	714.499998	-0.0029	Pass
13.8	700.499992	-0.0114	714.499993	-0.01	Pass

Note: The applicant defined the normal working voltage is from 10.2 to 13.8 Vdc.

Frequency Stability Versus Temperature					
Temperature (°C)	CH 23025 (700.5 MHz)		CH 23165 (714.5 MHz)		Test Result
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
-30	700.499992	-0.0114	714.499999	-0.0143	Pass
-20	700.499994	-0.0086	714.499994	-0.0086	Pass
-10	700.499994	-0.0086	714.499996	-0.0057	Pass
0	700.499997	-0.0043	714.499997	-0.0043	Pass
10	700.500003	0.0043	714.500004	0.0057	Pass
20	700.500006	0.0086	714.500002	0.0029	Pass
30	700.499998	-0.0029	714.499999	-0.0014	Pass
40	700.500002	0.0029	714.500005	0.0071	Pass
50	700.499995	-0.0071	714.499991	-0.0128	Pass
60	700.500004	0.0057	714.500006	0.0086	Pass
65	700.499997	-0.0043	714.499997	-0.0043	Pass

LTE Band 12, Channel Bandwidth: 5 MHz

Frequency Stability Versus Voltage					
Voltage (Vdc)	CH 23035 (701.5 MHz)		CH 23155 (713.5 MHz)		Test Result
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
10.2	701.500007	0.01	713.500002	0.0029	Pass
12	701.500006	0.0086	713.500005	0.0071	Pass
13.8	701.499991	-0.0128	713.499995	-0.0071	Pass

Note: The applicant defined the normal working voltage is from 10.2 to 13.8 Vdc.

Frequency Stability Versus Temperature					
Temperature (°C)	CH 23035 (701.5 MHz)		CH 23155 (713.5 MHz)		Test Result
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
-30	701.499993	-0.01	713.499996	-0.0057	Pass
-20	701.500009	0.0128	713.500005	0.0071	Pass
-10	701.499999	-0.0014	713.500003	0.0043	Pass
0	701.500009	0.0128	713.500006	0.0086	Pass
10	701.499991	-0.0128	713.499991	-0.0128	Pass
20	701.499998	-0.0029	713.500003	0.0043	Pass
30	701.500001	0.0014	713.500001	0.0014	Pass
40	701.499994	-0.0086	713.499999	-0.0014	Pass
50	701.499997	-0.0043	713.499994	-0.0086	Pass
60	701.500001	0.0143	713.500008	0.0114	Pass
65	701.499999	-0.0014	713.499995	-0.0071	Pass

LTE Band 12, Channel Bandwidth: 10 MHz

Frequency Stability Versus Voltage					
Voltage (Vdc)	CH 23060 (704 MHz)		CH 23130 (711 MHz)		Test Result
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
10.2	703.999992	-0.0114	710.999996	-0.0057	Pass
12	704.000008	0.0114	711.000007	0.0099	Pass
13.8	704.000001	0.0014	711.000004	0.0057	Pass

Note: The applicant defined the normal working voltage is from 10.2 to 13.8 Vdc.

Frequency Stability Versus Temperature					
Temperature (°C)	CH 23060 (704 MHz)		CH 23130 (711 MHz)		Test Result
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)	
-30	703.999997	-0.0043	710.999999	-0.0014	Pass
-20	703.999997	-0.0043	711	0	Pass
-10	703.999993	-0.0099	710.999992	-0.0114	Pass
0	703.999993	-0.0099	710.999995	-0.0071	Pass
10	703.999996	-0.0057	710.999994	-0.0085	Pass
20	704.000004	0.0057	711.000003	0.0043	Pass
30	704.000002	0.0028	711.000004	0.0057	Pass
40	704.000003	0.0043	711.000007	0.0099	Pass
50	703.999994	-0.0085	710.999991	-0.0128	Pass
60	704.000002	0.0028	711.000003	0.0043	Pass
65	704.000007	0.0099	711.000005	0.0071	Pass

8 Pictures of Test Arrangements

Please refer to the attached file (Test Setup Photo)

9 Information of the Testing Laboratories

We, Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch, were founded in 1988 to provide our best service in EMC, Radio, Telecom and Safety consultation. Our laboratories are FCC recognized accredited test firms and accredited according to ISO/IEC 17025.

If you have any comments, please feel free to contact us at the following:

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The address and road map of all our labs can be found in our web site also.

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