TEST REPORT

Applicant Name :	Franklin Technology Inc.
Address :	906 JEI Platz, 186, Gasan digital 1-ro, Gumcheon-Gu Seoul South Korea
Report Number :	RA221031-50431E-RF-00BA1
FCC ID:	XHG-M2500

Test Standard (s)

FCC PART 22H; FCC PART 24E

Sample Description

Product Type:	5G RF Module
Model No.:	M2600
Multiple Model(s) No.:	N/A
Trade Mark:	N/A
Date Received:	2022/10/31
Report Date:	2022/12/17

Test Result:	Pass*

* In the configuration tested, the EUT complied with the standards above.

Prepared and Checked By:

Roger Ling
EMC Engineer

Approved By:

Candy Li
EMC Engineer

Note: This report may contain data that are not covered by the A2LA accreditation and are marked with an asterisk "★".
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GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

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5G NR Band 5: 824-849 MHz(TX); 869-894MHz(RX)</td></tr>
<tr><td>EN-DC possible combinations</td><td colspan="6">DC_2A_n5A, DC_5A_n66A, DC_5A_n2A, DC_2A_n66A, DC_66A_n2A</td></tr>
<tr><td>Carrier aggregation</td><td colspan="6">None Carrier aggregation</td></tr>
<tr><td>Modulation Technique</td><td colspan="6">DFT-s-OFDM: PI/2 BPSK, QPSK, 16QAM, 64QAM, 256QAM
CP-OFDM: QPSK, 16QAM, 64QAM, 256QAM</td></tr>
<tr><td rowspan="6">Antenna Specification*</td><td colspan="6">ANT 0:
Band 2: -1.66dBi, Band 5: -0.66dBi, Band 66: -1.56dBi
ANT 2:
Band 2: -1.54dBi, Band 66: -1.19dBi (provided by the applicant)</td></tr>
<tr><td colspan="6">ANT Location:
SA mode: ANT 0</td></tr>
<tr><td>NSA mode:</td><td>LTE</td><td>NR</td><td></td><td>LTE</td><td>NR</td></tr>
<tr><td>DC_2A_n5A</td><td>ANT 0</td><td>ANT 0</td><td>DC_5A_n66A</td><td>ANT 0</td><td>ANT 0</td></tr>
<tr><td>DC_2A_n66A</td><td>ANT 0</td><td>ANT 2</td><td>DC_5A_n2A</td><td>ANT 0</td><td>ANT 0</td></tr>
<tr><td>DC_66A_n2A</td><td>ANT 0</td><td>ANT 2</td><td></td><td></td><td></td></tr>
<tr><td>Sample serial number</td><td colspan="6">RA221031-50431E-RFA1-S1 (Assigned by ATC)</td></tr>
<tr><td>Sample/EUT Status</td><td colspan="6">Good condition</td></tr>
<tr><td>Extreme condition*</td><td colspan="6">VL: Low Voltage 3.6V
VN: Normal Voltage 3.8V
VH: High Voltage 4.2V
TN: Normal Temperature: 20℃
T1~T8: -30℃, -20℃, -10℃, 0℃, 10℃, 30℃, 40℃, 50℃
(provided by the applicant)</td></tr>
</table>

Remark:

1. 5G NR bands supports SA Bands 2/5/66 and NSA DC_2A_n5A/ DC_2A_n66A/ DC_5A_n66A/ DC_5A_n2A/ DC_66A_n2A mode. For SA and NSA mode of all 5G NR, we only show the combination of the maximum power among all SA and NSA combinations in the report.
2. For modulation of CP-OFDM and DFT-s-OFDM, the maximum power of CP-OFDM is lower than DFT-s-OFDM modulation, therefore, we chose higher power (DFT-s-OFDM modulation) to perform all tests and show in the report.

Objective

This test report is in accordance with Part 2-Subpart J, Part 22-Subpart H, Part24-Subpart E of the Federal Communication Commission's rules.

The objective is to determine the compliance of the EUT with FCC rules for output power, modulation characteristic, occupied bandwidth, and spurious emission at antenna terminal, spurious radiated emission, frequency stability and band edge.

Note: This is CIIPC application base on original equipment granted on 2022-08-03, the details as follow:

Add frequency band by software upgrade:
(1) Adding the Frequency band of 5G band n2 and 5G band n5.
(2) Adding EN-DC mode: DC_2A_n5A, DC_5A_n66A, DC_5A_n2A, DC_2A_n66A, DC_66A_n2A

Based on above differences, it will affect all test data for the new adding frequency bands; all the test items for those bands were performed.

Test Methodology

All tests and measurements indicated in this document were performed in accordance with the Code of Federal Regulations Title 47 Part 2-Subpart J as well as the following parts:

Part 22 Subpart H - Public Mobile Services
Part 24 Subpart E - Personal Communication Services

ANSI C63.26-2015: American National Standard for Compliance Testing of Transmitters Used in Licensed Radio Services

All emissions measurement was performed at Shenzhen Accurate Technology Co., Ltd. The radiated testing was performed at an antenna-to-EUT distance of 3 meters.

Each test item follows test standards and with no deviation.

Measurement Uncertainty

Parameter		Uncertainty
Occupied Channel Bandwidth		5%
RF output power, conducted		0.73dB
Unwanted Emission, conducted		1.6dB
RF Frequency		$0.082*10^{-7}$
Emissions, Radiated	30MHz - 1GHz	4.28dB
	1GHz- 18GHz	4.98dB
	18GHz- 26.5GHz	5.06dB
Temperature		1℃
Humidity		6%
Supply voltages		0.4%

Note: The extended uncertainty given in this report is obtained by combining the standard uncertainty times the coverage factor K with the 95% confidence interval.Otherwise required by the applicant or Product Regulations, Decision Rule in this report did not consider the uncertainty.

Test Facility

The Test site used by Shenzhen Accurate Technology Co., Ltd. to collect test data is located on the 1/F., Building A, Changyuan New Material Port, Science & Industry Park, Nanshan District, Shenzhen, Guangdong, P.R. China.

The test site has been approved by the FCC under the KDB 974614 D01 and is listed in the FCC Public Access Link (PAL) database, FCC Registration No.: 708358,the FCC Designation No.: CN1189. Accredited by American Association for Laboratory Accreditation (A2LA) The Certificate Number is 429 7.01.

The lab has been recognized by Innovation, Science and Economic Development Canada to test to Canadian radio equipment requirements, the CAB identifier: CN0016.The Registration Number is 5077A.

SYSTEM TEST CONFIGURATION

Description of Test Configuration

The final qualification test was performed with the EUT operating at normal mode.

The test items were performed with the EUT operating at testing mode. Test was performed with channels as below table:

Band	Channel Bandwidth	Frequency
NR Band 2	5.0 MHz	1852.5MHz, 1880MHz, 1907.5MHz
	10.0 MHz	1855MHz, 1880MHz, 1905MHz
	15.0 MHz	1857.5MHz, 1880MHz, 1902.5MHz
	20.0 MHz	1860MHz, 1880MHz, 1900MHz
NR Band 5	5.0 MHz	826.5MHz, 836.5MHz, 846.5MHz
	10.0 MHz	829MHz, 836.5MHz, 844MHz
	15.0 MHz	831.5MHz, 836.5MHz, 841.5MHz
	20.0 MHz	834MHz, 836.5MHz, 839MHz

Band	Band width(MHz)						Modulation					Test RB#		
	5	10	15	20	30	40	PI/2 BPSK	QPSK	16QAM	64QAM	256QAM	1	50%	Full
n2	√	√	√	√			√	√	√	√	√	√	√	√
n5	√	√	√	√			√	√	√	√	√	√	√	√
DC_2A_n5A	√	√	√	√			√	√	√	√	√	√	√	√
,DC_5A_n66A	√	√	√	√	√	√	√	√	√	√	√	√	√	√
DC_5A_n2A	√	√	√	√			√	√	√	√	√	√	√	√
DC_2A_n66A	√	√	√	√	√	√	√	√	√	√	√	√	√	√
DC_66A_n2A	√	√	√	√			√	√	√	√	√	√	√	√

Equipment Modifications

No modification was made to the EUT.

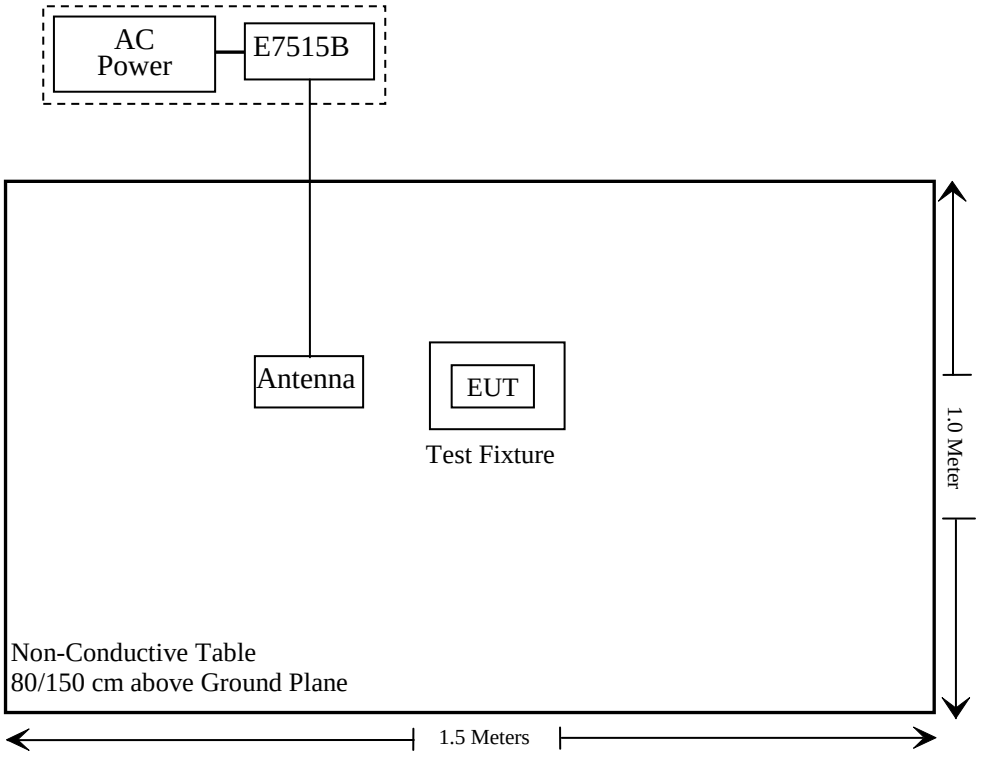
Support Equipment List and Details

Manufacturer	Description	Model	Serial Number
Rohde&Schwarz	Wideband Radio Communication Tester	E7515B	154606
Franklin Technology Inc.	Test Fixture	RG2102	Unknown

Support Cable Description

Cable Description	Length (m)	From / Port	To
Unshielded Un-detachable AC cable	1.2	AC Power	E7515B

Block Diagram of Test Setup



SUMMARY OF TEST RESULTS

Rules	Description of Test	Result
§1.1309(b), §2.1091	RF EXPOSURE	Compliant
§2.1046; §22.913 (a); §24.232 (c)	RF Output Power	Compliant
§2.1047	Modulation Characteristics	Not Applicable
§2.1049; §22.905; §22.917; §24.238;	Occupied Bandwidth	Compliant
§2.1051; §22.917 (a); §24.238 (a)	Spurious Emissions at Antenna Terminal	Compliant
§2.1053; §22.917 (a); §24.238 (a)	Field Strength of Spurious Radiation	Compliant
§22.917 (a); §24.238 (a);	Band Edge	Compliant
§2.1055; §22.355; §24.235	Frequency stability	Compliant

TEST EQUIPMENT LIST

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Radiated Emission Test					
Rohde& Schwarz	Test Receiver	ESR	102725	2022/11/25	2023/11/24
Rohde&Schwarz	Spectrum Analyzer	FSV40	101949	2022/11/25	2023/11/24
SONOMA INSTRUMENT	Amplifier	310 N	186131	2022/11/08	2023/11/07
Schwarzbeck	Bilog Antenna	VULB9163	9163-323	2021/07/06	2024/07/05
Schwarzbeck	Horn Antenna	BBHA9120D	9120D-1067	2020/01/05	2023/01/04
Unknown	RF Coaxial Cable	No.10	N050	2022/11/25	2023/11/24
Unknown	RF Coaxial Cable	No.11	N1000	2022/11/25	2023/11/24
Unknown	RF Coaxial Cable	No.12	N040	2022/11/25	2023/11/24
Unknown	RF Coaxial Cable	No.13	N300	2022/11/25	2023/11/24
Unknown	RF Coaxial Cable	No.14	N800	2022/11/25	2023/11/24
Unknown	RF Coaxial Cable	No.15	N600	2022/11/25	2023/11/24
Unknown	RF Coaxial Cable	No.16	N650	2022/11/25	2023/11/24
Schwarzbeck	Bilog Antenna	VULB9163	9163-194	2020/01/05	2023/01/04
Schwarzbeck	Bilog Antenna	VULB9163	9163-323	2021/07/06	2024/07/05
Schwarzbeck	Horn Antenna	BBHA9120D	9120D-655	2020/01/05	2023/01/04
Schwarzbeck	Horn Antenna	BBHA9120D	9120D-1067	2020/01/05	2023/01/04
PASTERNACK	Horn Antenna	PE9852/2F-20	1120 (ATC-BA-024-1)	2020/01/05	2023/01/04
PASTERNACK	Horn Antenna	PE9852/2F-20	1120 (ATC-BA-025-1)	2020/01/05	2023/01/04
Unknown	RFCoaxialCable	No.16	N200	2022/11/25	2023/11/24
Agilent	Signal Generator	N5183A	MY51040755	2022/11/25	2023/11/24

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
RF Conducted Test					
Rohde&Schwarz	Spectrum Analyzer	FSV-40	101948	2022/11/25	2023/11/24
WEINSCHEL	10dB Attenuator	5324	AU 3842	2022/11/25	2023/11/24
REALE	Temp. & Humid. Chamber	RHP-800BT	R20170318310	2022/11/23	2023/11/22
Keysight	UXM 5G Wireless Test Platform	E7515B	MY58120284	2022-07-15	2023-07-14
Fluke	Desktop Multi Meter	45	7664009	2021/12/14	2022/12/13
Unknown	RF Coaxial Cable	No.31	RF-01	Each time	

* Statement of Traceability: Shenzhen Accurate Technology Co., Ltd. attests that all calibrations have been performed in accordance to requirements that traceable to National Primary Standards and International System of Units (SI).

FCC §1.1307 (b) (3) & §2.1091- RF EXPOSURE

Applicable Standard

According to subpart 2.1091 systems operating under the provisions of this section shall be operated in a manner that ensures the public is not exposed to RF energy level in excess of the communication guidelines.

According to KDB 447498 D04 Interim General RF Exposure Guidance

MPE-Based Exemption:

General frequency and separation-distance dependent MPE-based effective radiated power(ERP) thresholds are in Table B.1 [Table 1 of §1.1307(b)(1)(i)(C)] to support an exemptionfrom further evaluation from 300 kHz through 100 GHz.

Table 1 to § 1.1307(b)(3)(i)(C) - Single RF Sources Subject to Routine Environmental Evaluation

RF Source frequency (MHz)	Threshold ERP (watts)
0.3-1.34	1,920 R^2.
1.34-30	3,450 R^2/f^2.
30-300	3.83 R^2.
300-1,500	0.0128 R^2f.
1,500-100,000	19.2R^2.

Ris the minimum separation distance in meters
f = frequency in MHz

For multiple RF sources: Multiple RF sources are exempt if:

in the case of fixed RF sources operating in the same time-averaging period, or of multiple mobile or portable RF sources within a device operating in the same time averaging period, if the sum of the fractional contributions to the applicable thresholds is less than or equal to 1 as indicated in the following equation:

$$\sum_{i=1}^{a} \frac{P_i}{P_{th,i}} + \sum_{j=1}^{b} \frac{ERP_j}{ERP_{th,j}} + \sum_{k=1}^{c} \frac{Evaluated_k}{Exposure\ Limit_k} \leq 1$$

Result

Mode	Frequency (MHz)	Tune up conducted power	Antenna Gain		ERP		Evaluation Distance (m)	ERP Limit (W)
		(dBm)	(dBi)	(dBd)	(dBm)	(W)		
LTE B7	2500-2570	24.0	-2.99	-5.14	18.86	0.077	0.2	0.768
LTE B14	788-798	24.0	-0.93	-3.08	20.92	0.124	0.2	0.403
LTE B30	2305-2315	24.0	-2.39	-4.54	19.46	0.088	0.2	0.768
5G n2	1850-1910	24.0	-1.66	-3.81	20.19	0.107	0.2	0.768
5G n5	824-849	24.0	-0.66	-2.81	21.19	0.132	0.2	0.422

Note:
1. The tune up conducted power and antenna gain was declared by the applicant.
2. 0dBd=2.15dBi

For below frequency bands were refer to the original granted FCC ID: XHG-M2500 granted on 2022-08-03.

Mode	Frequency (MHz)	Tune up conducted power	Antenna Gain		ERP		Evaluation Distance (m)	ERP Limit (W)
		(dBm)	(dBi)	(dBd)	(dBm)	(W)		
WCDMA B2	1850-1910	24.0	-1.66	-3.81	20.19	0.104	0.2	0.768
WCDMA B4	1710-1755	24.0	-1.56	-3.71	20.29	0.107	0.2	0.768
WCDMA B5	824-849	25.0	-0.66	-2.81	22.19	0.166	0.2	0.422
LTE B2	1850-1910	23.0	-1.66	-3.81	19.19	0.083	0.2	0.768
LTE B4	1710-1755	23.5	-1.56	-3.71	19.79	0.095	0.2	0.768
LTE B5	824-849	23.5	-0.66	-2.81	20.69	0.117	0.2	0.422
LTE B12	699-716	24.0	-1.43	-3.58	20.42	0.110	0.2	0.358
LTE B25	1850-1915	23.0	-1.66	-3.81	19.19	0.083	0.2	0.768
LTE B26	814-849	24.0	-0.66	-2.81	21.19	0.132	0.2	0.417
LTE B41	2496-2690	27.0	-2.99	-5.14	21.86	0.153	0.2	0.768
LTE B48	3550-3700	23.0	-1.71	-3.86	19.14	0.082	0.2	0.768
LTE B66	1710-1780	23.5	-1.56	-3.71	19.79	0.095	0.2	0.768
LTE B71	663-698	24.0	-2.75	-4.90	19.10	0.081	0.2	0.339
5G n25	1850-1915	24.5	-1.54	-3.69	20.81	0.121	0.2	0.768
5G n41	2496-2690	26.0	-2.18	-4.33	21.67	0.147	0.2	0.768
5G n66	1710-1780	24.0	-1.19	-3.34	20.66	0.116	0.2	0.768
5G n48	3550-3700	23.5	-1.71	-3.86	19.64	0.092	0.2	0.768
5G n71	663-698	24.5	-2.75	-4.90	19.60	0.091	0.2	0.339
5G n77	3450-3550/ 3700-3980	26.0	-1.49	-3.64	22.36	0.172	0.2	0.768

For EN-DC mode consider, use the worst LTE and 5G NR bands to calculate:

The ratio=$ERP_{LTE}/ERP_{Limit}+ERP_{5G\ NR}/\ ERP_{5G\ NR}$=0.132/0.417+0.132/0.422=0.629<1

To maintain compliance with the FCC's RF exposure guidelines, place the equipment at least 20cm from nearby persons.

Result: Compliant.

FCC §2.1047 - MODULATION CHARACTERISTIC

According to FCC § 2.1047(d), Part 22H, Part 24E, there is no specific requirement for digital modulation, therefore modulation characteristic is not presented.

FCC §2.1046, §22.913 (a)& §24.232(c) - RF OUTPUT POWER

Applicable Standard

According to FCC §2.1046 and §22.913 (a), the ERP of mobile transmitters and auxiliary test transmitters must not exceed 7 watts.

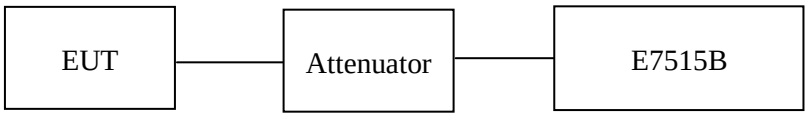
According to FCC §2.1046 and §24.232 (c),mobile and portable stations are limited to 2 watts EIRP and the equipment must employ a means for limiting power to the minimum necessary for successful communications.

The peak-to-average power ratio (PAPR) of the transmitter output power must not exceed 13 dB.

Test Procedure

Conducted method:

The RF output of the transmitter was connected to the E7515B through sufficient attenuation.



Test Data

Environmental Conditions

Temperature:	23.2-24.6 ℃
Relative Humidity:	53~56 %
ATM Pressure:	101.0 kPa

The testing was performed by Andy Yu from 2022-11-29 to 2022-12-15.

EUT operation mode: Transmitting (Worst case record in the reports)

Note: for ERP/EIRP calculate, the path loss was included in the antenna gain.

Conducted Power

Test data refer to the Appendix D1&D2&D3&D4&D5.

Peak-to-average ratio (PAR)

Test data refer to the Appendix E1&E2&E3&E4&E5.

FCC §2.1049, §22.917, §22.905 & §24.238 - OCCUPIED BANDWIDTH

Applicable Standard

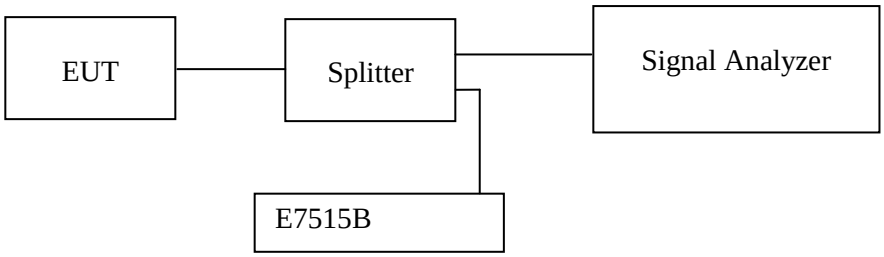
FCC 47 §2.1049, §22.917, §22.905, §24.238

In some cases, the "26 dB bandwidth" is required, which is defined as the frequency range between two points, one at the lowest frequency below and one at the highest frequency above the carrier frequency, at which the maximum power level of the transmitted emission is attenuated 26 dB below the maximum in-band power level of the modulated signal, where the two points are on the outskirts of the in-band emission.

Test Procedure

The RF output of the transmitter was connected to the simulator and the spectrum analyzer through sufficient attenuation.

The resolution bandwidth of the spectrum analyzer was set at 1% to 5% of the anticipated emission bandwidth and the 26 dB & 99% bandwidth was recorded.



Test Data

Environmental Conditions

Temperature:	23.2-24.6 ℃
Relative Humidity:	53~56 %
ATM Pressure:	101.0 kPa

The testing was performed by Andy Yu from 2022-11-30 to 2022-12-08.

EUT operation mode: Transmitting (Worst case record in the reports)

Test Result: Pass

Test plots refer to the Appendix F1&F2&F3&F4&F5

FCC §2.1051, §22.917(a) & §24.238(a) - SPURIOUS EMISSIONS AT ANTENNA TERMINALS

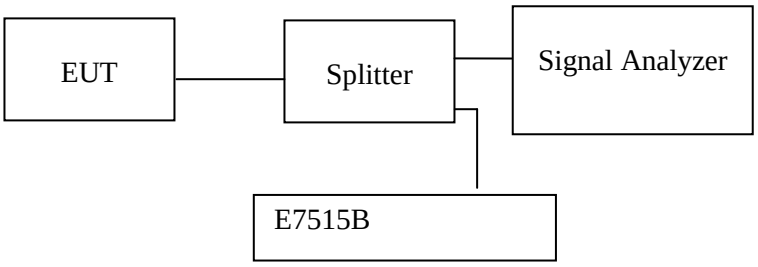
Applicable Standard

FCC §2.1051, §22.917(a) & §24.238(a)

The spectrum was to be investigated to the tenth harmonics of the highest fundamental frequency as specified in §2.1051.

Test Procedure

The RF output of the transceiver was connected to a spectrum analyzer and simulator through appropriate attenuation. The resolution bandwidth of the spectrum analyzer was set at 1MHz. Sufficient scans were taken to show any out of band emissions up to 10th harmonic.



Note: the worst case path loss(cable loss and splitter inset loss) among the test frequency range has included in plots.

Test Data

Environmental Conditions

Temperature:	23.2-24.6 ℃
Relative Humidity:	62%
ATM Pressure:	101.0 kPa

The testing was performed by Andy Yu from 2022-12-01 to 2022-12-15.

EUT operation mode: Transmitting (Worst case record in the reports)

Test result: Pass

Test plots refer to the Appendix G1&G2&G3&G4&G5.

FCC §2.1053; §22.917 (a); §24.238 (a) - SPURIOUS RADIATED EMISSIONS

Applicable Standard

FCC §2.1053, §22.917(a)& §24.238(a)

The spectrum was to be investigated to the tenth harmonics of the highest fundamental frequency as specified in §2.1051.

Test Procedure

The transmitter was placed on a wooden turntable, and it was transmitting into a non-radiating load which was also placed on the turntable.

The measurement antenna was placed at a distance of 3 meters from the EUT. During the tests, the receiving 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.

The frequency range up to tenth harmonic of the fundamental frequency was investigated.

Test Data

Environmental Conditions

Temperature:	23.6-24.7℃
Relative Humidity:	58-62%
ATM Pressure:	101.0kPa

The testing was performed by Jimi from 2022-12-10 to 2022-12-14.

EUT operation mode: Transmitting (Worst case record in the reports)

The worst case is as below:

Frequency (MHz)	Receiver		Turntable Angle Degree	Rx Antenna		Factor (dB/m)	Absolute Level (dBm)	Limit (dBm)	Margin (dB)
	Reading (dBm)	PK/Ave		Height (m)	Polar (H/V)				
5G N2, Low Channel, 5MHz									
239.7	-53.19	PK	90	1.2	H	7.44	-45.75	-13	-32.75
634.5	-47.77	PK	211	1.5	V	6.69	-41.08	-13	-28.08
3705	-55.05	PK	90	1.2	H	8.18	-46.87	-13	-33.87
3705	-56.27	PK	211	1.5	V	7.64	-48.63	-13	-35.63
5G N2, Middle Channel, 5MHz									
239.7	-51.90	PK	180	1.2	H	7.44	-44.54	-13	-31.54
634.5	-47.95	PK	77	1.8	V	6.69	-41.26	-13	-28.26
3760	-57.51	PK	177	1.4	H	8.84	-48.67	-13	-35.67
3760	-57.17	PK	91	1.9	V	7.96	-49.21	-13	-36.21
5G N2, High Channel, 5MHz									
239.7	-52.69	PK	45	1.5	H	7.44	-45.25	-13	-32.25
634.5	-48.30	PK	214	2.2	V	6.69	-41.61	-13	-28.61
3815	-54.11	PK	225	2.1	H	8.66	-45.45	-13	-32.45
3815	-54.51	PK	81	2.1	V	7.93	-46.58	-13	-33.58
5G N5, Low Channel, 5MHz									
239.7	-52.23	PK	134	2.2	H	7.44	-44.79	-13	-31.79
634.5	-47.54	PK	57	1.8	V	6.69	-40.85	-13	-27.85
1653	-58.11	PK	134	2.2	H	3.54	-54.57	-13	-41.57
1653	-59.45	PK	57	1.8	V	3.1	-56.35	-13	-43.35
5G N5, Middle Channel, 5MHz									
239.7	-51.98	PK	185	1.1	H	7.44	-44.54	-13	-31.54
634.5	-47.88	PK	147	1.6	V	6.69	-41.19	-13	-28.19
1673	-59.67	PK	255	1.9	H	3.78	-55.89	-13	-42.89
1673	-60.22	PK	283	1.7	V	3.1	-57.12	-13	-44.12
5G N5, High Channel, 5MHz									
239.7	-52.60	PK	66	1.7	H	7.44	-45.16	-13	-32.16
634.5	-48.22	PK	322	1.5	V	6.69	-41.53	-13	-28.53
1693	-56.94	PK	216	1.5	H	4.02	-52.92	-13	-39.92
1693	-57.55	PK	203	1.4	V	3.1	-54.45	-13	-41.45
DC_2A_N66A, Low Channel, 5MHz									
239.7	-52.84	PK	177	1.4	H	7.44	-45.40	-13	-32.40
634.5	-48.29	PK	91	1.9	V	6.69	-41.60	-13	-28.60
3425	-59.99	PK	148	1.0	H	6.4	-53.59	-13	-40.59
3425	-60.09	PK	256	2.1	V	5.75	-54.34	-13	-41.34
DC_2A_N66A, Middle Channel, 5MHz									
239.7	-51.47	PK	255	1.9	H	7.44	-44.03	-13	-31.03
634.5	-45.09	PK	283	1.7	V	6.69	-38.40	-13	-25.40
3490	-60.41	PK	169	1.9	H	7.57	-52.84	-13	-39.84
3490	-60.00	PK	245	1.1	V	6.42	-53.58	-13	-40.58
DC_2A_N66A, High Channel, 5MHz									
239.7	-52.69	PK	340	1.7	H	7.44	-45.25	-13	-32.25
634.5	-47.27	PK	268	1.0	V	6.69	-40.58	-13	-27.58
3555	-61.01	PK	103	1.8	H	7.75	-53.26	-13	-40.26
3555	-61.81	PK	199	1.3	V	6.94	-54.87	-13	-41.87

Frequency (MHz)	Receiver		Turntable Angle Degree	Rx Antenna		Factor (dB/m)	Absolute Level (dBm)	Limit (dBm)	Margin (dB)
	Reading (dBm)	PK/Ave		Height (m)	Polar (H/V)				
DC_2A_n5A Low Channel, 5MHz									
239.7	-55.45	PK	152	1.6	H	7.44	-48.01	-13	-35.01
634.5	-48.18	PK	174	1.2	V	6.69	-41.49	-13	-28.49
1653	-64.17	PK	152	1.6	H	3.54	-60.63	-13	-47.63
1653	-63.19	PK	174	1.2	V	3.1	-60.09	-13	-47.09
DC_2A_n5A Middle Channel, 5MHz									
239.7	-53.61	PK	117	1.4	H	7.44	-46.17	-13	-33.17
634.5	-46.62	PK	49	1.8	V	6.69	-39.93	-13	-26.93
1673	-61.17	PK	209	2.0	H	3.78	-57.39	-13	-44.39
1673	-61.70	PK	237	2.1	V	3.1	-58.60	-13	-45.60
DC_2A_n5A High Channel, 5MHz									
239.7	-54.79	PK	87	1.7	H	7.44	-47.35	-13	-34.35
634.5	-47.45	PK	242	1.7	V	6.69	-40.76	-13	-27.76
1693	-63.09	PK	107	1.7	H	4.02	-59.07	-13	-46.07
1693	-63.36	PK	94	2.0	V	3.1	-60.26	-13	-47.26
DC_5A_n2A Low Channel, 5MHz									
239.7	-53.82	PK	87	1.7	H	7.44	-46.38	-13	-33.38
634.5	-46.30	PK	242	1.7	V	6.69	-39.61	-13	-26.61
3705	-58.67	PK	87	1.7	H	8.18	-50.49	-13	-37.49
3705	-60.21	PK	242	1.7	V	7.64	-52.57	-13	-39.57
DC_5A_n2A Middle Channel, 5MHz									
239.7	-51.89	PK	303	1.1	H	7.44	-44.45	-13	-31.45
634.5	-44.70	PK	238	1.4	V	6.69	-38.01	-13	-25.01
3760	-60.39	PK	114	1.6	H	8.84	-51.55	-13	-38.55
3760	-61.09	PK	56	2.1	V	7.96	-53.13	-13	-40.13
DC_5A_n2A High Channel, 5MHz									
239.7	-53.69	PK	237	2.1	H	7.44	-46.25	-13	-33.25
634.5	-48.96	PK	252	1.3	V	6.69	-42.27	-13	-29.27
3815	-59.82	PK	336	1.5	H	8.66	-51.16	-13	-38.16
3815	-60.66	PK	132	1.1	V	7.92	-52.74	-13	-39.74

Frequency (MHz)	Receiver		Turntable Angle Degree	Rx Antenna		Factor (dB/m)	Absolute Level (dBm)	Limit (dBm)	Margin (dB)
	Reading (dBm)	PK/Ave		Height (m)	Polar (H/V)				
DC_5A_n66A Low Channel, 5MHz									
239.7	-54.88	PK	208	1.8	H	7.44	-47.44	-13	-34.44
634.5	-47.39	PK	264	1.3	V	6.69	-40.70	-13	-27.70
3425	21.19	PK	148	1.5	H	6.4	27.59	-13	40.59
3425	-60.09	PK	87	1.7	V	5.75	-54.34	-13	-41.34
DC_5A_n66A Middle Channel, 5MHz									
239.7	-53.57	PK	152	1.6	H	7.44	-46.13	-13	-33.13
634.5	-45.84	PK	174	1.2	V	6.69	-39.15	-13	-26.15
3490	-58.47	PK	257	1.2	H	7.57	-50.90	-13	-37.90
3490	-59.06	PK	303	1.1	V	6.42	-52.64	-13	-39.64
DC_5A_n66A High Channel, 5MHz									
239.7	-52.69	PK	117	1.4	H	7.44	-45.25	-13	-32.25
634.5	-48.53	PK	49	1.8	V	6.69	-41.84	-13	-28.84
3555	-59.89	PK	209	2.0	H	7.75	-52.14	-13	-39.14
3555	-60.46	PK	237	2.1	V	6.94	-53.52	-13	-40.52
DC_66A_n2A Low Channel, 5MHz									
239.7	-53.76	PK	87	1.7	H	7.44	-46.32	-13	-33.32
634.5	-48.77	PK	242	1.7	V	6.69	-42.08	-13	-29.08
3705	-57.81	PK	107	1.7	H	8.18	-49.63	-13	-36.63
3705	-58.73	PK	94	2.0	V	7.64	-51.09	-13	-38.09
DC_66A_n2A Middle Channel, 5MHz									
239.7	-54.95	PK	303	1.1	H	7.44	-47.51	-13	-34.51
634.5	-48.80	PK	238	1.4	V	6.69	-42.11	-13	-29.11
3760	-59.30	PK	114	1.6	H	8.84	-50.46	-13	-37.46
3760	-58.65	PK	56	2.1	V	7.96	-50.69	-13	-37.69
DC_66A_n2A High Channel, 5MHz									
239.7	-51.59	PK	237	2.1	H	7.44	-44.15	-13	-31.15
634.5	-44.93	PK	252	1.3	V	6.69	-38.24	-13	-25.24
3815	-58.81	PK	336	1.5	H	8.66	-50.15	-13	-37.15
3815	-60.59	PK	132	1.1	V	7.92	-52.67	-13	-39.67

Note:
Absolute Level = Reading Level + Substituted Factor
Substituted Factor contains: SG Level - Cable loss+ Antenna Gain
Margin = Limit - Absolute Level

FCC § 22.917 (a); § 24.238 (a) - BAND EDGES

Applicable Standard

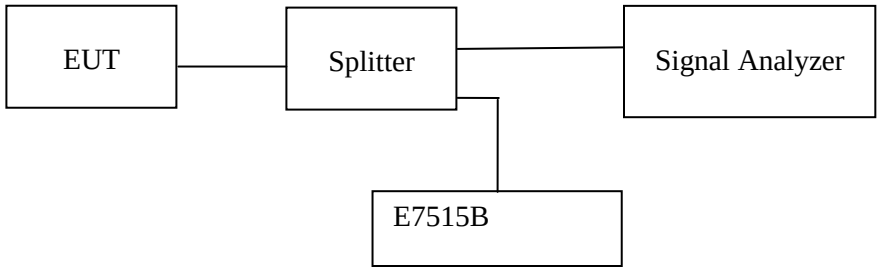
According to § 22.917(a), the power of any emissions outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log(P) dB.

According to §24.238(a), the power of any 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.

Test Procedure

The RF output of the transmitter was connected to the input of the spectrum analyzer through sufficient attenuation.

The center of the spectrum analyzer was set to block edge frequency



Test Data

Environmental Conditions

Temperature:	23.2-24.6 ℃
Relative Humidity:	53~56 %
ATM Pressure:	101.0 kPa

The testing was performed by Andy Yu from 2022-12-01 to 2022-12-08.

EUT operation mode: Transmitting (Worst case record in the reports)

Test Result: Pass

Test plots refer to the Appendix H1&H2&H3&H4&H5.

FCC §2.1055; §22.355; §24.235 - FREQUENCY STABILITY

Applicable Standard

FCC §2.1055, §22.355, §24.235

According to FCC §2.1055, the frequency stability shall be sufficient to ensure that the fundamental emissions stay within the authorized bands of operation.

According to §22.355, the carrier frequency of each transmitter in the Public Mobile Services must be maintained within the tolerances given in Table below:

Frequency Tolerance for Transmitters in the Public Mobile Services

Frequency Range (MHz)	Base, fixed (ppm)	Mobile ≤ 3 watts (ppm)	Mobile > 3 watts (ppm)
25 to 50	20.0	20.0	50.0
50 to 450	5.0	5.0	50.0
450 to 512	2.5	5.0	5.0
821 to 896	1.5	2.5	2.5
928 to 929.	5.0	N/A	N/A
929 to 960.	1.5	N/A	N/A
2110 to 2220	10.0	N/A	N/A

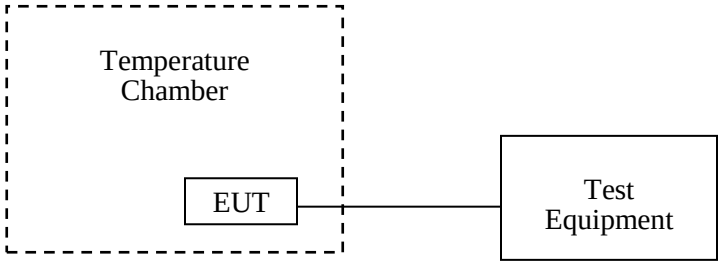
According to §24.235, the frequency stability shall be sufficient to ensure that the fundamental emissions stays within the authorized frequency block.

Test Procedure

Frequency Stability vs. Temperature: The equipment under test was connected to an external DC power supply and the RF output was connected to communication test set via feed-through attenuators. The EUT was placed inside the temperature chamber. The DC leads and RF output cable exited the chamber through an opening made for the purpose.

After the temperature stabilized for approximately 20 minutes, the frequency output was recorded from the communication test set.

Frequency Stability vs. Voltage: For hand carried, battery powered equipment; reduce primary supply voltage to the battery operating end point which shall be specified by the manufacturer.



Test Data

Environmental Conditions

Temperature:	23.2-24.6 ℃
Relative Humidity:	53~56 %
ATM Pressure:	101.0 kPa

The testing was performed by Andy Yu from 2022-11-30 to 2022-12-08.

EUT operation mode: Transmitting (Worst case record in the reports)

Test Result: Pass

Test data please refer to the Appendix J1&J2&J3&J4&J5.

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