



TESTREPORT

Applicant Name : EZTECH DIGITAL INC.
Address : 251 Little Falls Drive Wilmington Delaware 19808 United States
Report Number: RA230427-22867E-RF-00
FCC ID: 2A4AS-2303B

Test Standard (s)

FCC PART 22H; FCC PART 24E; FCC PART 27; FCC PART 90

Sample Description

Product Type: IP Camera
Model No.: Reolink TrackMix Wired LTE
Multiple Model(s) No.: DUO PTZ Wired LTE,TM4G4MPW
Trade Mark: Reolink
Date Received: 2023/04/27
Report Date: 2023/05/30

Test Result:	Pass*
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* In the configuration tested, the EUT complied with the standards above.

Prepared and Checked By:

Approved By:

Nick Fang
EMC Engineer

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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FCC -2G,3G,4G

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DOCUMENT REVISION HISTORY

Revision Number	Report Number	Description of Revision	Date of Revision
0	RA230427-22867E-RF-00	Original Report	2023/05/30

GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

Product Type	IP Camera
Model No.	Reolink TrackMix Wired LTE
Multiple Model(s) No.	DUO PTZ Wired LTE,TM4G4MPW (model difference see product declaration letter of similarity)
Frequency Range	LTE Band 2: 1850-1910MHz(TX); 1920-1980MHz(RX) LTE Band 4: 1710-1755MHz(TX); 2110-2155MHz(RX) LTE Band 5: 824-849MHz(TX); 869-894MHz(RX) LTE Band 12: 699-716MHz(TX); 729-746MHz(RX) LTE Band 13: 777-787MHz(TX); 746-756MHz(RX) LTE Band 14: 788-798MHz(TX); 758-768MHz(RX) LTE Band 66: 1710-1780MHz(TX); 2110-2180MHz(RX) LTE Band 71: 663-698 MHz(TX); 617-652MHz(RX)
Modulation Technique	4G: QPSK, 16QAM
Antenna Specification*	LTE Band 2: 2.2dBi, LTE Band 4/66: 2.6dBi, LTE Band 5: 1.5dBi, LTE Band 12: -0.5dBi, LTE Band 13: 0.6dBi, LTE Band 14: 1.0dBi LTE Band 71: -1.4dBi (provided by the applicant) Note: Antenna contain with a RF cable
Voltage Range	DC 12V from adapter
Sample serial number	258J-1 for RF Conducted Emission 258J-2 for Radiation Emission (Assigned by ATC)
Sample/EUT Status	Good condition
Adapter information	Model:DCT24W120200US-A0 Input:100-240V~50/60Hz,0.7A max Output:12.0V,2.0A

Objective

This test report is in accordance with Part 2-Subpart J, Part 22-Subpart H, Part24-Subpart E and Part 27, and Part 90 of the Federal Communication Commission's rules.

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
Part 27 - Miscellaneous Wireless Communications Services
Part 90 - Private Land Mobile Radio 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 Frequency		0.082×10^{-7}
RF output power, conducted		0.73dB
Unwanted Emission, conducted		1.6dB
AC Power Lines Conducted Emissions		2.72dB
Emissions, Radiated	9kHz - 30MHz	2.66dB
	30MHz - 1GHz	4.28dB
	1GHz - 18GHz	4.98dB
	18GHz -26.5GHz	5.06dB
	26.5GHz -40GHz	4.72dB
Temperature		1°C
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 Floor 1, KuMaKe Building, Dongzhou Community, Guangming Street, Guangming District, Shenzhen, Guangdong, 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 30241.

SYSTEM TEST CONFIGURATION

Description of Test Configuration

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

Frequency band	Bandwidth (MHz)	Test Frequency(MHz)		
		Low	Middle	High
LTE B2	1.4	1850.7	1880	1909.3
	3	1851.5	1880	1908.5
	5	1852.5	1880	1907.5
	10	1855	1880	1905
	15	1857.5	1880	1902.5
	20	1860	1880	1900
LTE B4	1.4	1710.7	1732.5	1754.3
	3	1711.5	1732.5	1753.5
	5	1712.5	1732.5	1752.5
	10	1715	1732.5	1750
	15	1717.5	1732.5	1747.5
	20	1720	1732.5	1745
LTE B5	1.4	824.7	836.5	848.3
	3	825.5	836.5	847.5
	5	826.5	836.5	846.5
	10	829	836.5	844
LTE B12	1.4	699.7	707.5	715.3
	3	700.5	707.5	714.5
	5	701.5	707.5	713.5
	10	704.0	707.5	711
LTE B13	5	779.5	782	784.5
	10	/	782	/
LTE B14	5	790.5	793	795.5
	10	/	793	/
LTE B66	1.4	1710.7	1745	1779.3
	3	1711.5	1745	1778.5
	5	1712.5	1745	1777.5
	10	1715	1745	1775
	15	1717.5	1745	1772.5
	20	1720	1745	1770
LTE B71	5	665.5	680.5	695.5
	10	668	680.5	693
	15	670.5	680.5	690.5
	20	673	680.5	688

Equipment Modifications

No modification was made to the EUT.

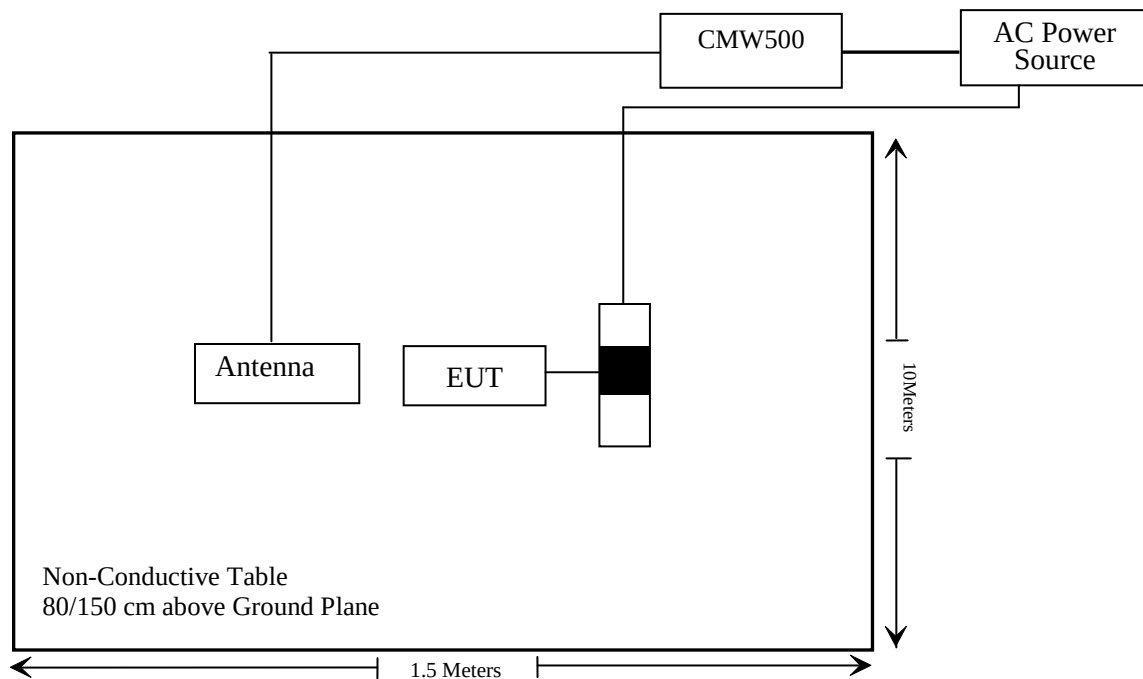
Support Equipment List and Details

Manufacturer	Description	Model	Serial Number
Rohde & Schwarz	Wideband Radio Communication Tester	CMW500	154606

Support Cable Description

Cable Description	Length (m)	From / Port	To
Unshielded Un-detachable AC cable	1.2	AC Power	CMW500

Block Diagram of Test Setup



SUMMARY OF TEST RESULTS

FCC Rules	Description of Test	Result
§2.1091	RF Exposure	Compliant
§2.1046; § 22.913 (a) (d); § 24.232 (c) (d); §27.50; §90.542	RF Output Power	Compliant
§ 2.1047	Modulation Characteristics	Not Applicable
§ 2.1049; § 22.905; § 22.917; § 24.238; §27.53; §90.209	Occupied Bandwidth	Compliant
§ 2.1051; §22.917 (a); § 24.238 (a); §27.53; §90.543	Spurious Emissions at Antenna Terminal	Compliant
§ 2.1053; § 22.917 (a); § 24.238 (a); §27.53, §90.543	Field Strength of Spurious Radiation	Compliant
§ 22.917 (a); § 24.238 (a); §27.53 (c) (g) (h); §90.543	Band Edge	Compliant
§ 2.1055; § 22.355; § 24.235; §27.54; §90.539	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
Rohde & Schwarz	Wideband Radio Communication Tester	CMW500	154606	2022/11/25	2023/11/24
A.H. Systems, inc.	Preamplifier	PAM-0118P	135	2022/11/08	2023/11/07
A.H. Systems, inc.	Preamplifier	PAM-0118P	135	2022/11/08	2023/11/07
Radiated Emission Test Software: e3 19821b (V9)					
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	2022/11/30	2025/11/29
Schwarzbeck	Bilog Antenna	VULB9163	9163-323	2021/07/06	2024/07/05
Schwarzbeck	Horn Antenna	BBHA9120D	9120D-655	2022/12/26	2025/12/25
Schwarzbeck	Horn Antenna	BBHA9120D	9120D-1067	2022/11/30	2025/11/29
PASTERNAK	Horn Antenna	PE9852/2F-20	1120 (ATC-BA-024-1)	2023/01/04	2026/01/03
PASTERNAK	Horn Antenna	PE9852/2F-20	1120 (ATC-BA-025-1)	2023/01/04	2026/01/03
Unknown	RF Coaxial Cable	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	FSU26	200982	2022/07/04	2023/07/03
WEINSCHTEL	10dB Attenuator	5324	AU 3842	2022/11/25	2023/11/24
HP	3dB Attenuator	8493B	04800	2022/11/25	2023/11/24
REALE	Temp. & Humid. Chamber	RHP-800BT	R20170318310	2022/11/23	2023/11/22
Mini-Circuits	Power Splitter	DC-18000MHz	SF10944151S	2022/11/25	2023/11/24
Rohde & Schwarz	Wideband Radio Communication Tester	CMW500	154606	2022/11/25	2023/11/24
Fluke	Multi Meter	45	7664009	2022/11/23	2023/11/22

* 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).

§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 exemption from 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	$0.0128 R^2 f$.
1,500-100,000	$19.2 R^2$.

R is the minimum separation distance in meters

f = frequency in MHz

Result

Frequency (MHz)	Antenna Gain		Tune up conducted power		ERP		Evaluation Distance (m)	ERP Limit (W)
	(dBi)	(dBd)	(dBm)	(W)	(dBm)	(W)		
1850-1910	2.2	0.05	24.0	0.251	24.05	0.254	0.2	0.768
1710-1755	2.6	0.45	24.0	0.251	24.45	0.279	0.2	0.768
824-849	1.5	-0.65	24.0	0.251	23.35	0.216	0.2	0.422
699-716	-0.5	-2.65	24.0	0.251	21.35	0.136	0.2	0.358
777-787	0.6	-1.55	24.0	0.251	22.45	0.176	0.2	0.398
788-798	1.0	-1.15	24.0	0.251	22.85	0.193	0.2	0.403
1710-1780	2.6	0.45	24.0	0.251	24.45	0.279	0.2	0.768
663-698	-1.4	-3.55	24.0	0.251	20.45	0.111	0.2	0.339

Note: The tune up conducted power and antenna gain was declared by the applicant.

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

Result: Compliance

FCC §2.1047 - MODULATION CHARACTERISTIC

According to FCC § 2.1047(d), Part 22H, 24E, 27 & 90 there is no specific requirement for digital modulation, therefore modulation characteristic is not presented.

FCC § 2.1046, §22.913 (a) (d)& §24.232 (c) (d) & §27.50 & §90.542 - 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.

According to §27.50(b), Portable stations (hand-held devices) transmitting in the 746–757 MHz, 776–788 MHz, and 805–806 MHz bands are limited to 3 watts ERP.

According to §27.50(c), Control and mobile stations in the 698-746 MHz band are limited to 30 watts ERP. And Portable stations (hand-held devices) in the 600 MHz uplink band and the 698-746 MHz band, and fixed and mobile stations in the 600 MHz uplink band are limited to 3 watts ERP.

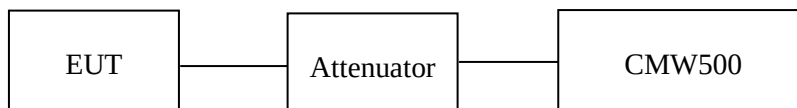
According to §27.50(d), Fixed, mobile, and portable (hand-held) stations operating in the 1710–1755 MHz band and mobile and portable stations operating in the 1695–1710 MHz and 1755–1780 MHz bands are limited to 1 watt EIRP.

According to §90.542, Portable stations (hand-held devices) transmitting in the 758-768 MHz band and the 788-798 MHz band are limited to 3 watts ERP.

Test Procedure

Conducted method:

The RF output of the transmitter was connected to the CMW500 through sufficient attenuation.



ANSI C63.26-2015 Section 5.5.

Test Data

Environmental Conditions

Temperature:	26~28.8 °C
Relative Humidity:	46.8~52 %
ATM Pressure:	101.0 kPa

The testing was performed by Jacob Huang from 2023-05-16 to 2023-05-18.

LTE Band 2

Bandwidth (MHz)	Modulation	RB size/ RB Offset	Conducted Average Output Power (dBm)			EIRP(dBm)		
			Low	Mid	High	Low	Mid	High
1.4	QPSK	RB1#0	23.07	22.66	22.67	25.27	24.86	24.87
		RB1#3	22.98	22.74	22.8	25.18	24.94	25
		RB1#5	22.93	22.78	22.78	25.13	24.98	24.98
		RB3#0	22.95	22.73	22.74	25.15	24.93	24.94
		RB3#3	22.92	22.78	22.69	25.12	24.98	24.89
		RB6#0	21.93	21.83	21.95	24.13	24.03	24.15
	16QAM	RB1#0	22.02	22.11	21.85	24.22	24.31	24.05
		RB1#3	22.14	22.24	21.64	24.34	24.44	23.84
		RB1#5	21.91	22.16	21.41	24.11	24.36	23.61
		RB3#0	21.94	22.06	21.76	24.14	24.26	23.96
		RB3#3	21.88	22.03	21.67	24.08	24.23	23.87
		RB6#0	20.61	20.93	20.81	22.81	23.13	23.01
3.0	QPSK	RB1#0	22.34	22.43	22.83	24.54	24.63	25.03
		RB1#8	22.28	22.6	22.76	24.48	24.8	24.96
		RB1#14	22.31	22.7	22.92	24.51	24.9	25.12
		RB6#0	21.36	21.6	21.69	23.56	23.8	23.89
		RB6#9	21.37	21.49	21.45	23.57	23.69	23.65
		RB15#0	21.37	21.56	21.63	23.57	23.76	23.83
	16QAM	RB1#0	21.76	21.86	22.24	23.96	24.06	24.44
		RB1#8	21.57	21.68	22.21	23.77	23.88	24.41
		RB1#14	21.61	21.78	22.27	23.81	23.98	24.47
		RB6#0	20.42	20.47	20.81	22.62	22.67	23.01
		RB6#9	20.42	20.46	20.71	22.62	22.66	22.91
		RB15#0	20.51	20.53	20.76	22.71	22.73	22.96

Bandwidth (MHz)	Modulation	RB size/ RB Offset	Conducted Average Output Power (dBm)			EIRP(dBm)		
			Low	Mid	High	Low	Mid	High
5.0	QPSK	RB1#0	22.62	22.48	22.47	24.82	24.68	24.67
		RB1#13	22.39	22.57	22.58	24.59	24.77	24.78
		RB1#24	22.39	22.61	22.58	24.59	24.81	24.78
		RB15#0	21.63	21.61	21.58	23.83	23.81	23.78
		RB15#10	21.69	21.69	21.7	23.89	23.89	23.9
		RB25#0	21.73	21.77	21.63	23.93	23.97	23.83
	16QAM	RB1#0	21.39	21.18	21.87	23.59	23.38	24.07
		RB1#13	21.2	21.27	22.22	23.4	23.47	24.42
		RB1#24	21.38	21.18	21.88	23.58	23.38	24.08
		RB15#0	20.69	20.45	20.46	22.89	22.65	22.66
		RB15#10	20.7	20.42	20.62	22.9	22.62	22.82
		RB25#0	20.63	20.82	20.55	22.83	23.02	22.75
10.0	QPSK	RB1#0	22.56	22.76	22.6	24.76	24.96	24.8
		RB1#25	22.93	22.73	22.96	25.13	24.93	25.16
		RB1#49	22.84	22.72	22.82	25.04	24.92	25.02
		RB25#0	21.73	21.75	21.76	23.93	23.95	23.96
		RB25#25	21.74	21.68	21.85	23.94	23.88	24.05
		RB50#0	21.72	21.81	21.64	23.92	24.01	23.84
	16QAM	RB1#0	21.48	21.99	22.17	23.68	24.19	24.37
		RB1#25	21.46	22.26	22.46	23.66	24.46	24.66
		RB1#49	21.13	21.92	22.67	23.33	24.12	24.87
		RB25#0	20.86	20.87	20.57	23.06	23.07	22.77
		RB25#25	20.88	20.73	20.82	23.08	22.93	23.02
		RB50#0	20.61	20.71	20.63	22.81	22.91	22.83

Bandwidth (MHz)	Modulation	RB size/ RB Offset	Conducted Average Output Power (dBm)			EIRP(dBm)		
			Low	Mid	High	Low	Mid	High
15.0	QPSK	RB1#0	22.64	22.6	22.47	24.84	24.8	24.67
		RB1#38	22.53	22.56	22.54	24.73	24.76	24.74
		RB1#74	22.48	22.51	22.57	24.68	24.71	24.77
		RB36#0	21.76	21.79	21.44	23.96	23.99	23.64
		RB36#39	21.72	21.64	21.71	23.92	23.84	23.91
		RB75#0	21.63	21.72	21.56	23.83	23.92	23.76
	16QAM	RB1#0	21.86	22.03	21.91	24.06	24.23	24.11
		RB1#38	21.45	22	22.14	23.65	24.2	24.34
		RB1#74	21.74	21.81	22.42	23.94	24.01	24.62
		RB36#0	20.4	20.82	20.51	22.6	23.02	22.71
		RB36#39	20.64	20.63	20.69	22.84	22.83	22.89
		RB75#0	20.47	20.71	20.68	22.67	22.91	22.88
20.0	QPSK	RB1#0	22.84	22.67	22.62	25.04	24.87	24.82
		RB1#50	22.82	22.98	22.59	25.02	25.18	24.79
		RB1#99	22.88	22.46	22.66	25.08	24.66	24.86
		RB50#0	21.78	21.85	21.57	23.98	24.05	23.77
		RB50#50	21.8	21.72	21.78	24	23.92	23.98
		RB100#0	21.7	21.81	21.56	23.9	24.01	23.76
	16QAM	RB1#0	22.52	22.23	21.74	24.72	24.43	23.94
		RB1#50	22.89	22.65	21.69	25.09	24.85	23.89
		RB1#99	22.95	22.06	21.79	25.15	24.26	23.99
		RB50#0	20.6	20.93	20.54	22.8	23.13	22.74
		RB50#50	20.83	20.77	20.85	23.03	22.97	23.05
		RB100#0	20.65	20.79	20.64	22.85	22.99	22.84

Note: EIRP(dBm) = Conducted Power(dBm) + Antenna Gain(dBi)-Cable loss(dB)

For Band 2: Antenna Gain = 2.2dBi, antenna contain with cable

Limit: EIRP≤33dBm

LTE Band 4

Bandwidth (MHz)	Modulation	RB size/ RB Offset	Conducted Average Output Power (dBm)			EIRP(dBm)		
			Low	Mid	High	Low	Mid	High
1.4	QPSK	RB1#0	22.98	23.06	23.02	25.58	25.66	25.62
		RB1#3	23.09	23.23	23.08	25.69	25.83	25.68
		RB1#5	23	23.07	23.08	25.6	25.67	25.68
		RB3#0	23	23.17	23.01	25.6	25.77	25.61
		RB3#3	23.13	23.06	22.84	25.73	25.66	25.44
		RB6#0	22.16	22.09	22.07	24.76	24.69	24.67
	16QAM	RB1#0	22.16	22.11	21.96	24.76	24.71	24.56
		RB1#3	22.31	22.49	22.11	24.91	25.09	24.71
		RB1#5	22.38	22.09	22.04	24.98	24.69	24.64
		RB3#0	22.31	22.1	22.09	24.91	24.7	24.69
		RB3#3	22.31	22.02	22.04	24.91	24.62	24.64
		RB6#0	21.18	21.19	21	23.78	23.79	23.6
3.0	QPSK	RB1#0	23.11	23.17	23.16	25.71	25.77	25.76
		RB1#8	23.06	23.13	23.04	25.66	25.73	25.64
		RB1#14	22.98	23.13	23.03	25.58	25.73	25.63
		RB6#0	22.12	22.02	21.89	24.72	24.62	24.49
		RB6#9	22.11	22.09	21.92	24.71	24.69	24.52
		RB15#0	22.12	22.13	21.92	24.72	24.73	24.52
	16QAM	RB1#0	22.19	22.39	22.13	24.79	24.99	24.73
		RB1#8	21.78	22.18	22.2	24.38	24.78	24.8
		RB1#14	21.79	22.27	22.06	24.39	24.87	24.66
		RB6#0	21.04	21.05	21.2	23.64	23.65	23.8
		RB6#9	21.04	21.01	21.14	23.64	23.61	23.74
		RB15#0	21.23	21.07	21.08	23.83	23.67	23.68

Bandwidth (MHz)	Modulation	RB size/ RB Offset	Conducted Average Output Power (dBm)			EIRP(dBm)		
			Low	Mid	High	Low	Mid	High
5.0	QPSK	RB1#0	23.2	23.06	22.96	25.8	25.66	25.56
		RB1#13	23.01	23.22	23.11	25.61	25.82	25.71
		RB1#24	23.11	23.13	22.98	25.71	25.73	25.58
		RB15#0	22.18	22.13	22.17	24.78	24.73	24.77
		RB15#10	22.1	22.11	22.05	24.7	24.71	24.65
		RB25#0	22.14	22.15	22.17	24.74	24.75	24.77
	16QAM	RB1#0	22.04	21.51	22.38	24.64	24.11	24.98
		RB1#13	22.02	21.6	22.48	24.62	24.2	25.08
		RB1#24	21.78	21.63	22.33	24.38	24.23	24.93
		RB15#0	21.25	21.14	21.15	23.85	23.74	23.75
		RB15#10	21.19	20.99	21.04	23.79	23.59	23.64
		RB25#0	21.22	21.18	21.17	23.82	23.78	23.77
10.0	QPSK	RB1#0	23.06	23.12	23.16	25.66	25.72	25.76
		RB1#25	23.42	23.04	23.43	26.02	25.64	26.03
		RB1#49	23.09	23.13	23.13	25.69	25.73	25.73
		RB25#0	22.19	22.13	21.96	24.79	24.73	24.56
		RB25#25	21.89	22.14	21.95	24.49	24.74	24.55
		RB50#0	22.03	22.14	22.15	24.63	24.74	24.75
	16QAM	RB1#0	22.01	22.35	22.61	24.61	24.95	25.21
		RB1#25	21.94	22.97	22.49	24.54	25.57	25.09
		RB1#49	21.5	22.95	22.56	24.1	25.55	25.16
		RB25#0	21.41	21.14	21.15	24.01	23.74	23.75
		RB25#25	21.12	21.25	21.23	23.72	23.85	23.83
		RB50#0	21.11	21	21.12	23.71	23.6	23.72

Bandwidth (MHz)	Modulation	RB size/ RB Offset	Conducted Average Output Power (dBm)			EIRP(dBm)		
			Low	Mid	High	Low	Mid	High
15.0	QPSK	RB1#0	23.07	23.09	23.29	25.67	25.69	25.89
		RB1#38	22.92	23.19	23.09	25.52	25.79	25.69
		RB1#74	23.13	23.14	23.02	25.73	25.74	25.62
		RB36#0	22.07	22.12	22.25	24.67	24.72	24.85
		RB36#39	22.05	22.15	21.95	24.65	24.75	24.55
		RB75#0	22.09	21.88	21.99	24.69	24.48	24.59
	16QAM	RB1#0	22.2	22.4	22.73	24.8	25	25.33
		RB1#38	21.98	22.32	22.95	24.58	24.92	25.55
		RB1#74	21.35	22.57	22.63	23.95	25.17	25.23
		RB36#0	21.12	21.14	21.38	23.72	23.74	23.98
		RB36#39	21.09	21.12	21.23	23.69	23.72	23.83
		RB75#0	21.05	20.95	21.1	23.65	23.55	23.7
20.0	QPSK	RB1#0	23.25	23.16	23.32	25.85	25.76	25.92
		RB1#50	23.09	23.33	23.55	25.69	25.93	26.15
		RB1#99	23.22	23.18	23.21	25.82	25.78	25.81
		RB50#0	22.21	22.25	22.29	24.81	24.85	24.89
		RB50#50	22.33	22.23	22.11	24.93	24.83	24.71
		RB100#0	22.3	22.13	22.22	24.9	24.73	24.82
	16QAM	RB1#0	23.06	22.74	22.12	25.66	25.34	24.72
		RB1#50	22.95	22.74	22	25.55	25.34	24.6
		RB1#99	22.91	22.88	21.52	25.51	25.48	24.12
		RB50#0	21.04	21.18	21.35	23.64	23.78	23.95
		RB50#50	21.18	21.17	21.09	23.78	23.77	23.69
		RB100#0	21.34	21.01	21.16	23.94	23.61	23.76

Note: EIRP(dBm) = Conducted Power(dBm) + Antenna Gain(dBi)-Cable loss(dB)

For Band4: Antenna Gain = 2.6dBi, antenna contain with cable

Limit: EIRP≤30dBm

LTE Band5

Bandwidth (MHz)	Modulation	RB size/ RB Offset	Conducted Average Output Power (dBm)			ERP(dBm)		
			Low	Mid	High	Low	Mid	High
1.4	QPSK	RB1#0	23.07	22.8	22.86	22.42	22.15	22.21
		RB1#3	23.18	22.97	23.04	22.53	22.32	22.39
		RB1#5	22.94	22.88	22.93	22.29	22.23	22.28
		RB3#0	22.97	22.89	23.07	22.32	22.24	22.42
		RB3#3	22.69	22.83	23.12	22.04	22.18	22.47
		RB6#0	21.86	22	22.13	21.21	21.35	21.48
	16QAM	RB1#0	22.02	22.32	21.71	21.37	21.67	21.06
		RB1#3	22.24	22.44	21.93	21.59	21.79	21.28
		RB1#5	22.26	22.33	21.43	21.61	21.68	20.78
		RB3#0	22.06	22.02	22.21	21.41	21.37	21.56
		RB3#3	21.84	22.07	22.18	21.19	21.42	21.53
		RB6#0	20.68	21.18	21.14	20.03	20.53	20.49
3.0	QPSK	RB1#0	22.72	22.83	22.93	22.07	22.18	22.28
		RB1#8	22.61	22.96	23.03	21.96	22.31	22.38
		RB1#14	22.73	23.1	23.17	22.08	22.45	22.52
		RB6#0	21.95	22.02	22.01	21.3	21.37	21.36
		RB6#9	22	22	22.16	21.35	21.35	21.51
		RB15#0	21.89	22	22.14	21.24	21.35	21.49
	16QAM	RB1#0	21.59	22.25	22.61	20.94	21.6	21.96
		RB1#8	21.38	22.15	22.76	20.73	21.5	22.11
		RB1#14	21.44	22.28	22.87	20.79	21.63	22.22
		RB6#0	20.75	20.92	21.27	20.1	20.27	20.62
		RB6#9	20.81	20.94	21.54	20.16	20.29	20.89
		RB15#0	20.98	20.93	21.34	20.33	20.28	20.69

Bandwidth (MHz)	Modulation	RB size/ RB Offset	Conducted Average Output Power (dBm)			ERP(dBm)		
			Low	Mid	High	Low	Mid	High
5.0	QPSK	RB1#0	22.86	22.77	22.92	22.21	22.12	22.27
		RB1#13	22.92	22.97	22.89	22.27	22.32	22.24
		RB1#24	22.87	22.93	23.11	22.22	22.28	22.46
		RB15#0	21.9	22.11	21.99	21.25	21.46	21.34
		RB15#10	21.95	22.03	22.06	21.3	21.38	21.41
		RB25#0	21.98	22.02	22.09	21.33	21.37	21.44
	16QAM	RB1#0	21.87	21.32	22.23	21.22	20.67	21.58
		RB1#13	21.75	21.21	22.4	21.1	20.56	21.75
		RB1#24	21.69	21.38	22.65	21.04	20.73	22
		RB15#0	20.79	20.93	20.78	20.14	20.28	20.13
		RB15#10	20.86	20.94	20.82	20.21	20.29	20.17
		RB25#0	20.86	20.97	21.01	20.21	20.32	20.36
10.0	QPSK	RB1#0	22.85	22.94	23.07	22.2	22.29	22.42
		RB1#25	23.08	23.13	23.03	22.43	22.48	22.38
		RB1#49	23.18	23.04	23.07	22.53	22.39	22.42
		RB25#0	22.09	22.16	22.2	21.44	21.51	21.55
		RB25#25	22.11	22.18	22.22	21.46	21.53	21.57
		RB50#0	22.04	22.08	22.15	21.39	21.43	21.5
	16QAM	RB1#0	22.01	22.36	22.67	21.36	21.71	22.02
		RB1#25	21.85	22.68	22.6	21.2	22.03	21.95
		RB1#49	21.66	22.27	22.76	21.01	21.62	22.11
		RB25#0	21.14	21.07	21.29	20.49	20.42	20.64
		RB25#25	21.26	21.12	21.11	20.61	20.47	20.46
		RB50#0	21	20.95	21.15	20.35	20.3	20.5

Note: ERP(dBm) = Conducted Power(dBm) + Antenna Gain(dBd)-Cable Loss(dB)
 For Band5: Antenna Gain = 1.5dBi = -0.65dBd (0dBd=2.15dBi) , antenna contain with cable
 Limit: ERP≤38.45dBm

LTE Band 12

Bandwidth (MHz)	Modulation	RB size/ RB Offset	Conducted Average Output Power (dBm)			ERP(dBm)		
			Low	Mid	High	Low	Mid	High
1.4	QPSK	RB1#0	22.78	22.94	23.18	20.13	20.29	20.53
		RB1#3	23.1	23.05	23.36	20.45	20.4	20.71
		RB1#5	23.11	22.95	23.39	20.46	20.3	20.74
		RB3#0	22.99	23	23.03	20.34	20.35	20.38
		RB3#3	23.05	23.12	23.12	20.4	20.47	20.47
		RB6#0	21.87	22.21	22.13	19.22	19.56	19.48
	16QAM	RB1#0	22.23	21.88	22.39	19.58	19.23	19.74
		RB1#3	22.34	22.08	22.69	19.69	19.43	20.04
		RB1#5	22.34	21.94	22.22	19.69	19.29	19.57
		RB3#0	21.88	22.22	22.02	19.23	19.57	19.37
		RB3#3	22.18	22.22	22.11	19.53	19.57	19.46
		RB6#0	21.11	21.21	20.97	18.46	18.56	18.32
3.0	QPSK	RB1#0	22.99	22.96	23.24	20.34	20.31	20.59
		RB1#8	22.73	23.06	23.21	20.08	20.41	20.56
		RB1#14	23.06	23.08	23.08	20.41	20.43	20.43
		RB6#0	21.99	22.08	22.31	19.34	19.43	19.66
		RB6#9	22.06	22.18	22.15	19.41	19.53	19.5
		RB15#0	22.02	22.13	22.16	19.37	19.48	19.51
	16QAM	RB1#0	21.51	22.36	22.98	18.86	19.71	20.33
		RB1#8	21.5	22.47	22.82	18.85	19.82	20.17
		RB1#14	21.56	22.67	23.11	18.91	20.02	20.46
		RB6#0	20.78	21.08	21.12	18.13	18.43	18.47
		RB6#9	20.87	21.28	20.99	18.22	18.63	18.34
		RB15#0	20.99	21.13	21.03	18.34	18.48	18.38

Bandwidth (MHz)	Modulation	RB size/ RB Offset	Conducted Average Output Power (dBm)			ERP(dBm)		
			Low	Mid	High	Low	Mid	High
5.0	QPSK	RB1#0	22.83	22.81	22.97	20.18	20.16	20.32
		RB1#13	22.94	23	23.21	20.29	20.35	20.56
		RB1#24	22.81	22.86	23.06	20.16	20.21	20.41
		RB15#0	21.89	22	22.27	19.24	19.35	19.62
		RB15#10	21.96	22.08	22.19	19.31	19.43	19.54
		RB25#0	22	21.95	22.16	19.35	19.3	19.51
	16QAM	RB1#0	21.81	21.54	22.52	19.16	18.89	19.87
		RB1#13	21.71	22.11	22.02	19.06	19.46	19.37
		RB1#24	21.52	22.1	22.51	18.87	19.45	19.86
		RB15#0	20.94	21.06	21.06	18.29	18.41	18.41
		RB15#10	20.94	21.3	20.9	18.29	18.65	18.25
		RB25#0	20.96	21.14	20.99	18.31	18.49	18.34
10.0	QPSK	RB1#0	22.8	22.8	23.12	20.15	20.15	20.47
		RB1#25	23.07	23.09	23.28	20.42	20.44	20.63
		RB1#49	23.14	23	22.82	20.49	20.35	20.17
		RB25#0	21.99	22.1	22.18	19.34	19.45	19.53
		RB25#25	22.14	22.1	22.13	19.49	19.45	19.48
		RB50#0	21.99	22	22.15	19.34	19.35	19.5
	16QAM	RB1#0	21.97	22.36	22.73	19.32	19.71	20.08
		RB1#25	21.75	22.6	23.25	19.1	19.95	20.6
		RB1#49	22.16	22.3	22.61	19.51	19.65	19.96
		RB25#0	20.81	21.04	21.02	18.16	18.39	18.37
		RB25#25	21.05	21.27	21.05	18.4	18.62	18.4
		RB50#0	21	20.94	21.14	18.35	18.29	18.49

Note: ERP(dBm) = Conducted Power(dBm) + Antenna Gain(dBd)-Cable loss(dB)

For Band12: Antenna Gain = -0.5dBi = -2.65dBd (0dBd=2.15dBi) , antenna contain with cable

Limit: ERP≤34.77dBm

LTE Band 13

Bandwidth (MHz)	Modulation	RB size/ RB Offset	Conducted Average Output Power (dBm)			ERP(dBm)		
			Low	Mid	High	Low	Mid	High
5.0	QPSK	RB1#0	22.95	22.83	22.77	21.4	21.28	21.22
		RB1#13	22.89	22.76	23.03	21.34	21.21	21.48
		RB1#24	22.81	22.81	22.97	21.26	21.26	21.42
		RB15#0	22.03	21.98	21.98	20.48	20.43	20.43
		RB15#10	22.05	22	22.02	20.5	20.45	20.47
		RB25#0	22.03	22.11	22.08	20.48	20.56	20.53
	16QAM	RB1#0	22.36	21.67	21.55	20.81	20.12	20
		RB1#13	22.35	21.64	21.63	20.8	20.09	20.08
		RB1#24	22.33	21.85	21.68	20.78	20.3	20.13
		RB15#0	20.81	20.9	20.92	19.26	19.35	19.37
		RB15#10	20.87	21.04	20.98	19.32	19.49	19.43
		RB25#0	20.97	20.99	21.24	19.42	19.44	19.69
10.0	QPSK	RB1#0	/	22.84	/	/	21.29	/
		RB1#25	/	22.79	/	/	21.24	/
		RB1#49	/	22.87	/	/	21.32	/
		RB25#0	/	22.06	/	/	20.51	/
		RB25#25	/	21.97	/	/	20.42	/
		RB50#0	/	22.08	/	/	20.53	/
	16QAM	RB1#0	/	22.21	/	/	20.66	/
		RB1#25	/	21.7	/	/	20.15	/
		RB1#49	/	21.69	/	/	20.14	/
		RB25#0	/	21.04	/	/	19.49	/
		RB25#25	/	21.01	/	/	19.46	/
		RB50#0	/	20.91	/	/	19.36	/

Note: ERP(dBm) = Conducted Power(dBm) + Antenna Gain(dBd) -Cable loss(dB)

For Band13: Antenna Gain =0.6dBi =-1.55dBd (0dBd=2.15dBi) , antenna contain with cable

Limit: ERP≤34.77dBm

LTE Band 14

Bandwidth (MHz)	Modulation	RB size/ RB Offset	Conducted Average Output Power (dBm)			ERP(dBm)		
			Low	Mid	High	Low	Mid	High
5.0	QPSK	RB1#0	22.67	22.57	22.75	21.52	21.42	21.6
		RB1#13	22.75	22.91	22.91	21.6	21.76	21.76
		RB1#24	22.66	22.96	23.03	21.51	21.81	21.88
		RB15#0	21.89	22.01	22.03	20.74	20.86	20.88
		RB15#10	21.93	22.03	22.1	20.78	20.88	20.95
		RB25#0	22	22.03	22.09	20.85	20.88	20.94
	16QAM	RB1#0	22.07	21.7	21.25	20.92	20.55	20.1
		RB1#13	22.11	21.69	21.43	20.96	20.54	20.28
		RB1#24	22.17	21.78	21.42	21.02	20.63	20.27
		RB15#0	20.76	21	20.99	19.61	19.85	19.84
		RB15#10	20.81	21.03	21.04	19.66	19.88	19.89
		RB25#0	20.88	21.16	21.18	19.73	20.01	20.03
10.0	QPSK	RB1#0	/	22.56	/	/	21.41	/
		RB1#25	/	22.75	/	/	21.6	/
		RB1#49	/	22.7	/	/	21.55	/
		RB25#0	/	21.96	/	/	20.81	/
		RB25#25	/	22.02	/	/	20.87	/
		RB50#0	/	22.01	/	/	20.86	/
	16QAM	RB1#0	/	21.82	/	/	20.67	/
		RB1#25	/	21.97	/	/	20.82	/
		RB1#49	/	22.18	/	/	21.03	/
		RB25#0	/	21.19	/	/	20.04	/
		RB25#25	/	21.26	/	/	20.11	/
		RB50#0	/	21.00	/	/	19.85	/

Note: ERP(dBm) = Conducted Power(dBm) + Antenna Gain(dBd) -Cable loss(dB)
 For Band14: Antenna Gain = 1dBi = -1.15dBd (0dBd=2.15dBi) , antenna contain with cable
 Limit: ERP≤34.77dBm

LTE Band 66:

Bandwidth (MHz)	Modulation	RB size/ RB Offset	Conducted Average Output Power (dBm)			EIRP(dBm)		
			Low	Mid	High	Low	Mid	High
1.4	QPSK	RB1#0	23.17	23.58	23.3	25.77	26.18	25.9
		RB1#3	23.27	23.48	23.43	25.87	26.08	26.03
		RB1#5	23.08	23.6	23.36	25.68	26.2	25.96
		RB3#0	23.18	23.48	23.19	25.78	26.08	25.79
		RB3#3	23.23	23.34	23.07	25.83	25.94	25.67
		RB6#0	22.29	22.34	22.25	24.89	24.94	24.85
	16QAM	RB1#0	22.52	22.37	22.48	25.12	24.97	25.08
		RB1#3	22.66	22.66	22.45	25.26	25.26	25.05
		RB1#5	22.64	22.36	22.2	25.24	24.96	24.8
		RB3#0	22.31	22.84	22.26	24.91	25.44	24.86
		RB3#3	22.3	22.86	21.96	24.9	25.46	24.56
		RB6#0	21.17	21.65	21.08	23.77	24.25	23.68
3.0	QPSK	RB1#0	23.45	23.41	23.12	26.05	26.01	25.72
		RB1#8	23.43	23.34	23.22	26.03	25.94	25.82
		RB1#14	23.36	23.35	23.17	25.96	25.95	25.77
		RB6#0	22.29	22.46	22.4	24.89	25.06	25
		RB6#9	22.42	22.45	22.35	25.02	25.05	24.95
		RB15#0	22.4	22.45	22.5	25	25.05	25.1
	16QAM	RB1#0	22.79	23.05	22.59	25.39	25.65	25.19
		RB1#8	22.8	23.22	22.47	25.4	25.82	25.07
		RB1#14	22.55	23.27	22.06	25.15	25.87	24.66
		RB6#0	21.39	21.72	21.66	23.99	24.32	24.26
		RB6#9	21.51	21.72	21.47	24.11	24.32	24.07
		RB15#0	21.49	21.56	21.56	24.09	24.16	24.16

Bandwidth (MHz)	Modulation	RB size/ RB Offset	Conducted Average Output Power (dBm)			EIRP(dBm)		
			Low	Mid	High	Low	Mid	High
5.0	QPSK	RB1#0	23.24	23.46	23.09	25.84	26.06	25.69
		RB1#13	23.13	23.38	23.01	25.73	25.98	25.61
		RB1#24	22.96	23.17	23.18	25.56	25.77	25.78
		RB15#0	22.32	22.32	22.45	24.92	24.92	25.05
		RB15#10	22.16	22.36	22.27	24.76	24.96	24.87
		RB25#0	22.25	22.26	22.33	24.85	24.86	24.93
	16QAM	RB1#0	22.01	22.88	22.23	24.61	25.48	24.83
		RB1#13	21.76	22.9	22.05	24.36	25.5	24.65
		RB1#24	21.59	22.66	21.92	24.19	25.26	24.52
		RB15#0	21.31	21.39	21.48	23.91	23.99	24.08
		RB15#10	21.16	21.18	21.37	23.76	23.78	23.97
		RB25#0	21.37	21.2	21.42	23.97	23.8	24.02
10.0	QPSK	RB1#0	23.37	23.53	23.09	25.97	26.13	25.69
		RB1#25	23.17	23.44	23.53	25.77	26.04	26.13
		RB1#49	23.13	23.35	22.97	25.73	25.95	25.57
		RB25#0	22.12	22.49	22.1	24.72	25.09	24.7
		RB25#25	22.22	22.46	22.31	24.82	25.06	24.91
		RB50#0	22.29	22.4	22.19	24.89	25	24.79
	16QAM	RB1#0	22.57	23.11	22.12	25.17	25.71	24.72
		RB1#25	23.04	23.31	22.63	25.64	25.91	25.23
		RB1#49	22.05	22.83	21.7	24.65	25.43	24.3
		RB25#0	21.36	21.5	21.15	23.96	24.1	23.75
		RB25#25	21.34	21.54	21.42	23.94	24.14	24.02
		RB50#0	21.36	21.3	21.3	23.96	23.9	23.9

Bandwidth (MHz)	Modulation	RB size/ RB Offset	Conducted Average Output Power (dBm)			EIRP(dBm)		
			Low	Mid	High	Low	Mid	High
15.0	QPSK	RB1#0	23.26	23.34	23.05	25.86	25.94	25.65
		RB1#38	23.33	23.22	23.1	25.93	25.82	25.7
		RB1#74	23	23.08	22.97	25.6	25.68	25.57
		RB36#0	22.15	22.46	22.14	24.75	25.06	24.74
		RB36#39	22.13	22.31	22.28	24.73	24.91	24.88
		RB75#0	22.1	22.38	22.12	24.7	24.98	24.72
	16QAM	RB1#0	22.56	22.53	22.18	25.16	25.13	24.78
		RB1#38	22.57	22.93	22.16	25.17	25.53	24.76
		RB1#74	22.24	22.83	21.68	24.84	25.43	24.28
		RB36#0	21.11	21.57	21.07	23.71	24.17	23.67
		RB36#39	21.12	21.3	21.3	23.72	23.9	23.9
		RB75#0	21.19	21.37	21.11	23.79	23.97	23.71
20.0	QPSK	RB1#0	23.06	23.17	23.21	25.66	25.77	25.81
		RB1#50	23.42	23.67	23.41	26.02	26.27	26.01
		RB1#99	23.05	23.36	23.14	25.65	25.96	25.74
		RB50#0	22.28	22.36	22.25	24.88	24.96	24.85
		RB50#50	22.09	22.31	22.28	24.69	24.91	24.88
		RB100#0	22.2	22.25	22.09	24.8	24.85	24.69
	16QAM	RB1#0	22.4	22.39	22.87	25	24.99	25.47
		RB1#50	22.74	22.19	23.13	25.34	24.79	25.73
		RB1#99	22.6	21.82	22.67	25.2	24.42	25.27
		RB50#0	21.24	21.42	21.17	23.84	24.02	23.77
		RB50#50	21.16	21.4	21.2	23.76	24	23.8
		RB100#0	21.29	21.36	21.01	23.89	23.96	23.61

Note: EIRP(dBm) = Conducted Power(dBm) + Antenna Gain(dBi) -Cable loss(dB)

For Band 66: Antenna Gain = 2.6dBi, antenna contain with cable

Limit: EIRP≤30dBm

LTE Band 71:

Bandwidth (MHz)	Modulation	RB size/ RB Offset	Conducted Average Output Power (dBm)			ERP(dBm)		
			Low	Mid	High	Low	Mid	High
5.0	QPSK	RB1#0	22.94	22.71	22.4	19.39	19.16	18.85
		RB1#13	22.88	22.67	22.64	19.33	19.12	19.09
		RB1#24	22.85	22.8	22.42	19.3	19.25	18.87
		RB15#0	21.8	21.58	21.61	18.25	18.03	18.06
		RB15#10	21.64	21.64	21.64	18.09	18.09	18.09
		RB25#0	21.76	21.68	21.66	18.21	18.13	18.11
	16QAM	RB1#0	21.92	21.5	21.67	18.37	17.95	18.12
		RB1#13	22.08	21.29	21.54	18.53	17.74	17.99
		RB1#24	22.12	21.31	21.53	18.57	17.76	17.98
		RB15#0	20.7	20.5	20.54	17.15	16.95	16.99
		RB15#10	20.6	20.65	20.48	17.05	17.1	16.93
		RB25#0	20.96	20.53	20.61	17.41	16.98	17.06
10.0	QPSK	RB1#0	22.85	22.89	22.59	19.3	19.34	19.04
		RB1#25	22.76	22.61	22.57	19.21	19.06	19.02
		RB1#49	22.92	22.75	22.57	19.37	19.2	19.02
		RB25#0	21.95	21.88	21.52	18.4	18.33	17.97
		RB25#25	21.87	21.78	21.63	18.32	18.23	18.08
		RB50#0	21.84	21.83	21.58	18.29	18.28	18.03
	16QAM	RB1#0	22.49	21.98	21.93	18.94	18.43	18.38
		RB1#25	22.4	21.34	22.06	18.85	17.79	18.51
		RB1#49	22.15	21.36	21.92	18.6	17.81	18.37
		RB25#0	20.83	20.76	20.64	17.28	17.21	17.09
		RB25#25	20.87	20.58	20.68	17.32	17.03	17.13
		RB50#0	20.73	20.6	20.57	17.18	17.05	17.02

Bandwidth (MHz)	Modulation	RB size/ RB Offset	Conducted Average Output Power (dBm)			ERP(dBm)		
			Low	Mid	High	Low	Mid	High
15.0	QPSK	RB1#0	22.67	22.8	22.59	19.12	19.25	19.04
		RB1#38	22.56	22.57	22.5	19.01	19.02	18.95
		RB1#74	22.7	22.58	22.66	19.15	19.03	19.11
		RB36#0	21.8	21.86	21.6	18.25	18.31	18.05
		RB36#39	21.89	21.67	21.61	18.34	18.12	18.06
		RB75#0	21.82	21.64	21.62	18.27	18.09	18.07
	16QAM	RB1#0	22.48	21.89	22.12	18.93	18.34	18.57
		RB1#38	22.28	21.22	22.04	18.73	17.67	18.49
		RB1#74	22.75	21.67	22.18	19.2	18.12	18.63
		RB36#0	20.87	20.84	20.7	17.32	17.29	17.15
		RB36#39	20.87	20.47	20.71	17.32	16.92	17.16
		RB75#0	20.74	20.52	20.61	17.19	16.97	17.06
20.0	QPSK	RB1#0	22.79	22.5	22.78	19.24	18.95	19.23
		RB1#50	22.9	22.5	22.76	19.35	18.95	19.21
		RB1#99	22.49	22.55	22.6	18.94	19	19.05
		RB50#0	21.88	21.67	21.52	18.33	18.12	17.97
		RB50#50	21.77	21.66	21.69	18.22	18.11	18.14
		RB100#0	21.8	21.68	21.59	18.25	18.13	18.04
	16QAM	RB1#0	22.45	21.77	21.63	18.9	18.22	18.08
		RB1#50	23.01	22.07	21.64	19.46	18.52	18.09
		RB1#99	22.4	22.2	21.54	18.85	18.65	17.99
		RB50#0	20.69	20.73	20.49	17.14	17.18	16.94
		RB50#50	20.73	20.64	20.67	17.18	17.09	17.12
		RB100#0	20.7	20.59	20.6	17.15	17.04	17.05

Note: ERP(dBm) = Conducted Power(dBm) + Antenna Gain(dBd)-Cable loss(dB)
 For Band71: Antenna Gain =-1.4dBi =-3.55dBd (0dBd=2.15dBi) , antenna contain with cable
 Limit: ERP≤34.77dBm

Peak-to-average ratio (PAR)

Note: pre-scan all bandwidth, the worst case as below:

LTE Band 2 20MHz Bandwidth

Modulation	Low channel (dB)	Middle channel (dB)	High channel (dB)	PAR Limit (dB)	Result
QPSK (1RB Size)	4.58	4.55	4.46	13	Pass
QPSK (100RB Size)	3.97	4.9	4.75	13	Pass
16QAM (1RB Size)	5.39	5.22	5.13	13	Pass
16QAM (100RB Size)	5.86	5.86	5.83	13	Pass

LTE Band 4 20MHz Bandwidth

Modulation	Low channel (dB)	Middle channel (dB)	High channel (dB)	PAR Limit (dB)	Result
QPSK (1RB Size)	4.38	4.64	4.67	13	Pass
QPSK (100RB Size)	4.9	4.9	4.99	13	Pass
16QAM (1RB Size)	5.45	5.86	5.39	13	Pass
16QAM (100RB Size)	5.88	5.91	6.00	13	Pass

LTE Band 5 10MHz Bandwidth

Modulation	Low channel (dB)	Middle channel (dB)	High channel (dB)	PAR Limit (dB)	Result
QPSK (1RB Size)	3.69	4.62	2.92	13	Pass
QPSK (50RB Size)	5.29	5.32	5.35	13	Pass
16QAM (1RB Size)	4.55	5.61	3.56	13	Pass
16QAM (50RB Size)	6.22	6.28	6.12	13	Pass

LTE Band 12 10MHz Bandwidth

Modulation	Low channel (dB)	Middle channel (dB)	High channel (dB)	PAR Limit (dB)	Result
QPSK (1RB Size)	4.55	4.39	4.42	13	Pass
QPSK (50RB Size)	5.13	5.83	5.19	13	Pass
16QAM (1RB Size)	5.42	5.13	5.38	13	Pass
16QAM (50RB Size)	6.09	6.6	6.28	13	Pass

LTE Band 13 10MHz Bandwidth

Modulation	Low channel (dB)	Middle channel (dB)	High channel (dB)	PAR Limit (dB)	Result
QPSK (1RB Size)	/	4.33	/	13	Pass
QPSK (50RB Size)	/	4.94	/	13	Pass
16QAM (1RB Size)	/	5.29	/	13	Pass
16QAM (50RB Size)	/	5.83	/	13	Pass

LTE Band 14 10MHz Bandwidth

Modulation	Low channel (dB)	Middle channel (dB)	High channel (dB)	PAR Limit (dB)	Result
QPSK (1RB Size)	/	3.78	/	13	Pass
QPSK (50RB Size)	/	5.22	/	13	Pass
16QAM (1RB Size)	/	4.58	/	13	Pass
16QAM (50RB Size)	/	6.22	/	13	Pass

LTE Band 66 20MHz Bandwidth

Modulation	Low channel (dB)	Middle channel (dB)	High channel (dB)	PAR Limit (dB)	Result
QPSK (1RB Size)	4.23	4.58	4.35	13	Pass
QPSK (100RB Size)	4.93	5.01	4.70	13	Pass
16QAM (1RB Size)	5.45	5.83	5.30	13	Pass
16QAM (100RB Size)	5.88	6.00	5.62	13	Pass

LTE Band 71 20MHz Bandwidth

Modulation	Low channel (dB)	Middle channel (dB)	High channel (dB)	PAR Limit (dB)	Result
QPSK (1RB Size)	4.26	4.42	3.94	13	Pass
QPSK (100RB Size)	4.49	4.94	5.64	13	Pass
16QAM (1RB Size)	4.94	5.42	4.84	13	Pass
16QAM (100RB Size)	5.58	6.12	6.51	13	Pass

FCC §2.1049, §22.917, §22.905 & §24.238& §27.53& §90.209 - OCCUPIED BANDWIDTH

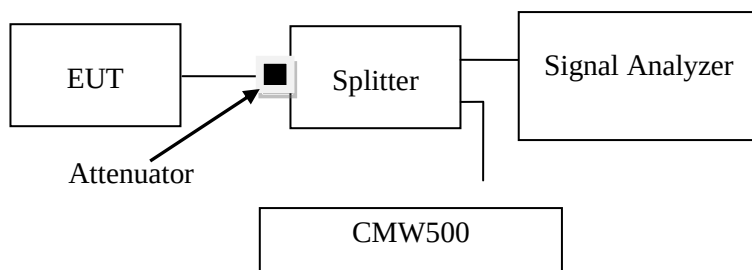
Applicable Standard

FCC 47 §2.1049, §22.917, §22.905, §24.238, §27.53& §90.209.

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.



Note: the worst path loss (Attenuator, cable loss and splitter inset loss) among the test frequency range was added into plots.

Test Data

Environmental Conditions

Temperature:	26~28.8 °C
Relative Humidity:	46.8~52 %
ATM Pressure:	101.0 kPa

The testing was performed by Jacob Huang from 2023-05-16 to 2023-05-17.

EUT operation mode: Transmitting

Test Result: Pass

Please refer to the following tables and plots.

LTE Band 2:

Bandwidth	Modulation	Low channel		Middle channel		High channel	
		OBW (MHz)	26dB EBW (MHz)	OBW (MHz)	26dB EBW (MHz)	OBW (MHz)	26dB EBW (MHz)
1.4 MHz	QPSK	1.098	1.302	1.104	1.308	1.110	1.296
	16QAM	1.104	1.308	1.098	1.296	1.098	1.308
3 MHz	QPSK	2.700	2.952	2.700	2.940	2.688	2.952
	16QAM	2.688	2.940	2.700	2.928	2.688	2.964
5 MHz	QPSK	4.500	5.000	4.540	5.040	4.520	5.040
	16QAM	4.540	5.020	4.520	4.960	4.520	5.000
10 MHz	QPSK	8.960	9.800	8.960	9.800	8.920	9.680
	16QAM	8.960	9.760	8.960	9.640	8.920	9.720
15 MHz	QPSK	13.560	14.820	13.500	14.820	13.440	14.820
	16QAM	13.560	14.880	13.500	14.820	13.560	14.880
20 MHz	QPSK	17.920	19.360	17.840	19.280	17.840	19.440
	16QAM	18.000	19.440	17.840	19.280	18.000	19.520

LTE Band 4:

Bandwidth	Modulation	Low channel		Middle channel		High channel	
		OBW (MHz)	26dB EBW (MHz)	OBW (MHz)	26dB EBW (MHz)	OBW (MHz)	26dB EBW (MHz)
1.4 MHz	QPSK	1.104	1.332	1.110	1.296	1.104	1.314
	16QAM	1.104	1.296	1.104	1.308	1.104	1.314
3 MHz	QPSK	2.700	2.964	2.700	2.940	2.700	2.952
	16QAM	2.700	2.952	2.700	2.940	2.688	2.964
5 MHz	QPSK	4.520	5.000	4.540	5.060	4.520	5.060
	16QAM	4.520	5.040	4.520	5.040	4.540	5.020
10 MHz	QPSK	8.960	9.600	9.000	9.800	8.960	9.680
	16QAM	8.960	9.640	8.960	9.720	8.920	9.600
15 MHz	QPSK	13.500	14.820	13.560	14.880	13.440	14.700
	16QAM	13.500	14.820	13.440	14.880	13.440	14.760
20 MHz	QPSK	17.920	19.440	18.000	19.360	17.840	19.360
	16QAM	17.840	19.520	18.000	19.440	17.920	19.440

LTE Band 5:

Bandwidth	Modulation	Low channel		Middle channel		High channel	
		OBW (MHz)	26dB EBW (MHz)	OBW (MHz)	26dB EBW (MHz)	OBW (MHz)	26dB EBW (MHz)
1.4 MHz	QPSK	1.098	1.314	1.104	1.314	1.104	1.290
	16QAM	1.110	1.308	1.098	1.290	1.104	1.302
3 MHz	QPSK	2.700	2.964	2.700	2.928	2.700	2.952
	16QAM	2.688	2.952	2.700	2.952	2.688	2.952
5 MHz	QPSK	4.520	5.020	4.540	5.020	4.520	5.060
	16QAM	4.520	5.040	4.500	4.960	4.540	5.040
10 MHz	QPSK	8.960	9.680	9.000	9.720	8.960	9.680
	16QAM	8.960	9.760	8.920	9.640	8.960	9.640

LTE Band 12:

Bandwidth	Modulation	Low channel		Middle channel		High channel	
		OBW (MHz)	26dB EBW (MHz)	OBW (MHz)	26dB EBW (MHz)	OBW (MHz)	26dB EBW (MHz)
1.4 MHz	QPSK	1.104	1.326	1.110	1.302	1.104	1.320
	16QAM	1.098	1.302	1.104	1.320	1.110	1.320
3 MHz	QPSK	2.700	2.940	2.700	2.952	2.700	2.952
	16QAM	2.700	2.940	2.700	2.976	2.688	2.952
5 MHz	QPSK	4.500	5.020	4.520	5.040	4.520	5.040
	16QAM	4.520	4.940	4.520	5.020	4.520	5.020
10 MHz	QPSK	8.920	9.680	9.000	9.840	8.920	9.640
	16QAM	8.960	9.680	8.960	9.760	8.920	9.640

LTE Band 13:

Bandwidth	Modulation	Low channel		Middle channel		High channel	
		OBW (MHz)	26dB EBW (MHz)	OBW (MHz)	26dB EBW (MHz)	OBW (MHz)	26dB EBW (MHz)
5 MHz	QPSK	4.520	5.020	4.500	5.020	4.520	5.020
	16QAM	4.540	5.040	4.520	5.040	4.520	5.000
10 MHz	QPSK	/	/	8.960	9.680	/	/
	16QAM	/	/	8.960	9.720	/	/

LTE Band 14:

Bandwidth	Modulation	Low channel		Middle channel		High channel	
		OBW (MHz)	26dB EBW (MHz)	OBW (MHz)	26dB EBW (MHz)	OBW (MHz)	26dB EBW (MHz)
5 MHz	QPSK	4.520	5.040	4.520	5.020	4.520	5.040
	16QAM	4.520	5.020	4.520	5.040	4.520	5.020
10 MHz	QPSK	/	/	8.960	9.560	/	/
	16QAM	/	/	8.960	9.600	/	/

LTE Band 66:

Bandwidth	Modulation	Low channel		Middle channel		High channel	
		OBW (MHz)	26dB EBW (MHz)	OBW (MHz)	26dB EBW (MHz)	OBW (MHz)	26dB EBW (MHz)
1.4 MHz	QPSK	1.098	1.332	1.110	1.308	1.116	1.362
	16QAM	1.104	1.308	1.104	1.320	1.104	1.332
3 MHz	QPSK	2.700	2.940	2.700	2.964	2.700	2.976
	16QAM	2.700	2.952	2.688	2.964	2.700	2.964
5 MHz	QPSK	4.540	5.000	4.520	5.020	4.500	5.020
	16QAM	4.520	5.020	4.520	5.040	4.520	5.040
10 MHz	QPSK	8.920	9.600	8.960	9.640	8.920	9.680
	16QAM	8.920	9.640	8.920	9.680	8.920	9.680
15 MHz	QPSK	13.500	14.880	13.440	14.640	13.440	14.760
	16QAM	13.440	14.820	13.500	14.760	13.440	14.820
20 MHz	QPSK	17.920	19.440	17.840	19.280	18.000	19.440
	16QAM	17.920	19.440	17.920	19.200	17.920	19.440

LTE Band 71:

Bandwidth	Modulation	Low channel		Middle channel		High channel	
		OBW (MHz)	26dB EBW (MHz)	OBW (MHz)	26dB EBW (MHz)	OBW (MHz)	26dB EBW (MHz)
5 MHz	QPSK	4.520	5.020	4.520	4.980	4.540	5.000
	16QAM	4.520	5.020	4.520	5.020	4.500	5.020
10 MHz	QPSK	8.920	9.560	8.920	9.680	8.960	9.720
	16QAM	8.920	9.560	8.920	9.520	8.960	9.680
15 MHz	QPSK	13.440	14.760	13.440	14.760	13.620	15.000
	16QAM	13.500	14.760	13.440	14.640	13.620	14.940
20 MHz	QPSK	17.920	19.600	17.840	19.120	17.920	19.440
	16QAM	18.000	19.440	17.920	19.280	17.840	19.360

The test plots of LTE band please refer to the Appendix A.

FCC §2.1051, §22.917(a) & §24.238(a)& §27.53& §90.543 - SPURIOUS EMISSIONS AT ANTENNA TERMINALS

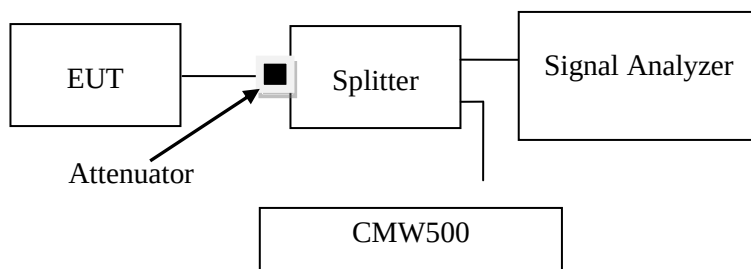
Applicable Standard

FCC §2.1051, §22.917(a) & §24.238(a)& §27.53 & §90.543

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 path loss (Attenuator, cable loss and splitter inset loss) among the test frequency range was added into plots.

Test Data

Environmental Conditions

Temperature:	26~28.8 °C
Relative Humidity:	46.8~52 %
ATM Pressure:	101.0 kPa

The testing was performed by Jacob Huang from 2023-05-16 to 2023-05-29.

EUT operation mode: Transmitting

Test result: Pass

Please refer to the following plots.

The test plots please refer to the Appendix B.

FCC §2.1053; § 22.917 (a); § 24.238 (a); §27.53; §90.543 - SPURIOUS RADIATED EMISSIONS**Applicable Standard**

FCC § 2.1053, §22.917(a)& § 24.238(a) & § 27.53& §90.543

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:	22.1~25.6 ℃
Relative Humidity:	45~52%
ATM Pressure:	100.2~101.0 kPa

The testing was performed by Jimi Zheng from 2023-05-10 to 2023-05-29.

EUT operation mode: Transmitting (Scan with X-AXIS, Y-AXIS, Z-AXIS, the worst case Y-AXIS was recorded)

The worst case is as below:

LTE Bands: (pre-scan all bandwidth/modulation, the worst case as below)

Frequency (MHz)	Receiver Reading (dBm)	Turntable Degree	Rx Antenna		Substituted Factor (dB)	Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Height (m)	Polar (H/V)				
LTE Band 2, Test frequency range: 30MHz-20GHz								
QPSK,1.4MHz,1850.7MHz								
3701.4	-51.90	219	2	H	8.2	-43.70	-13	-30.70
3701.4	-49.30	311	2.3	V	6.9	-42.40	-13	-29.40
5552.1	-51.10	194	1.3	H	9	-42.10	-13	-29.10
5552.1	-50.60	309	1.4	V	10	-40.60	-13	-27.60
QPSK,1.4MHz,1880MHz								
3760.0	-52.30	304	2.4	H	8.2	-44.10	-13	-31.10
3760.0	-50.70	148	2.1	V	7.7	-43.00	-13	-30.00
5640.0	-51.60	17	1.8	H	10.7	-40.90	-13	-27.90
5640.0	-50.00	329	1.1	V	9.8	-40.20	-13	-27.20
QPSK,1.4MHz,1909.3MHz								
3818.6	-52.20	30	1.1	H	8.1	-44.10	-13	-31.10
3818.6	-50.80	297	2.5	V	7.6	-43.20	-13	-30.20
5727.9	-52.30	77	2.3	H	11.4	-40.90	-13	-27.90
5727.9	-49.80	15	1.9	V	10	-39.80	-13	-26.80

Frequency (MHz)	Receiver Reading (dBm)	Turntable Degree	Rx Antenna		Substituted Factor (dB)	Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Height (m)	Polar (H/V)				
LTE Band 4, Test frequency range: 30MHz-20GHz								
QPSK,1.4MHz,1710.7MHz								
3421.4	-48.70	194	2.1	H	5.8	-42.90	-13	-29.90
3421.4	-48.30	143	1.8	V	6	-42.30	-13	-29.30
5132.1	-55.80	48	1.9	H	11.3	-44.50	-13	-31.50
5132.1	-54.60	2	1.1	V	10.6	-44.00	-13	-31.00
QPSK,1.4MHz,1732.5Hz								
3465	-49.40	140	2.4	H	6.5	-42.90	-13	-29.90
3465	-49.90	43	2	V	6.7	-43.20	-13	-30.20
5197.5	-55.60	194	1.1	H	11.1	-44.50	-13	-31.50
5197.5	-53.40	232	1.7	V	9.8	-43.60	-13	-30.60
QPSK,1.4MHz,1754.3Hz								
3508.6	-51.10	180	2.2	H	8.2	-42.90	-13	-29.90
3508.6	-49.40	321	1.8	V	6	-43.40	-13	-30.40
5262.9	-54.00	335	1.3	H	9.7	-44.30	-13	-31.30
5262.9	-52.60	142	1.1	V	9.3	-43.30	-13	-30.30

Frequency (MHz)	Receiver Reading (dBm)	Turntable Degree	Rx Antenna		Substituted Factor (dB)	Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Height (m)	Polar (H/V)				
LTE Band 5, Test frequency range: 30MHz-10GHz								
QPSK,1.4MHz,824.7MHz								
1649.4	-53.70	77	1.2	H	3	-50.70	-13	-37.70
1649.4	-51.80	324	1.6	V	2.6	-49.20	-13	-36.20
2474.1	-41.40	108	1.3	H	7.1	-34.30	-13	-21.30
2474.1	-37.90	7	1.7	V	5.9	-32.00	-13	-19.00
3298.8	-51.50	9	1.8	H	6.7	-44.80	-13	-31.80
3298.8	-50.80	354	1.6	V	6.2	-44.60	-13	-31.60
QPSK,1.4MHz,836.5Hz								
1673	-49.40	128	1.3	H	3.1	-46.30	-13	-33.30
1673	-47.90	255	2.3	V	2.5	-45.40	-13	-32.40
2509.5	-43.40	92	1.7	H	7.1	-36.30	-13	-23.30
2509.5	-40.00	245	1.1	V	5.4	-34.60	-13	-21.60
3346	-51.80	333	1.6	H	7.3	-44.50	-13	-31.50
3346	-49.40	34	2	V	5.4	-44.00	-13	-31.00
QPSK,1.4MHz,848.3Hz								
1696.6	-45.20	250	1.9	H	3.3	-41.90	-13	-28.90
1696.6	-42.50	254	1.6	V	2.4	-40.10	-13	-27.10
2544.9	-45.00	26	2	H	6.9	-38.10	-13	-25.10
2544.9	-42.80	79	1.5	V	6.1	-36.70	-13	-23.70
3393.2	-50.50	80	2.4	H	5.9	-44.60	-13	-31.60
3393.2	-49.10	315	2	V	5.2	-43.90	-13	-30.90

Frequency (MHz)	Receiver Reading (dBm)	Turntable Degree	Rx Antenna		Substituted Factor (dB)	Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Height (m)	Polar (H/V)				
LTE Band 12, Test frequency range: 30MHz-10GHz								
QPSK, 1.4MHz, 699.7MHz								
1399.4	-55.00	197	2	H	5.5	-49.50	-13	-36.50
1399.4	-56.90	62	1.5	V	6.3	-50.60	-13	-37.60
2099.1	-49.70	138	1.2	H	5.8	-43.90	-13	-30.90
2099.1	-50.10	159	1.1	V	4.6	-45.50	-13	-32.50
2798.8	-54.90	253	1.4	H	5.8	-49.10	-13	-36.10
2798.8	-56.30	215	1.2	V	6.9	-49.40	-13	-36.40
QPSK, 1.4MHz, 707.5MHz								
1415	-55.10	173	1.4	H	5.1	-50.00	-13	-37.00
1415	-56.60	168	1.6	V	5.6	-51.00	-13	-38.00
2122.5	-52.80	356	1.2	H	6.7	-46.10	-13	-33.10
2122.5	-53.60	243	1.6	V	5.6	-48.00	-13	-35.00
2830	-54.80	171	2.2	H	6.3	-48.50	-13	-35.50
2830	-55.20	243	2.4	V	6.5	-48.70	-13	-35.70
QPSK, 1.4MHz, 715.3MHz								
1430.6	-55.50	72	2.5	H	4.7	-50.80	-13	-37.80
1430.6	-56.90	302	2	V	4.9	-52.00	-13	-39.00
2145.9	-54.50	108	2.1	H	7.6	-46.90	-13	-33.90
2145.9	-55.80	232	1.4	V	6.7	-49.10	-13	-36.10
2861.2	-54.20	187	2.2	H	6.7	-47.50	-13	-34.50
2861.2	-54.80	125	1.7	V	6.2	-48.60	-13	-35.60

Frequency (MHz)	Receiver Reading (dBm)	Turntable Degree	Rx Antenna		Substituted Factor (dB)	Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Height (m)	Polar (H/V)				
LTE Band 13, Test frequency range: 30MHz-10GHz								
QPSK, 5MHz, 779.5MHz								
1559	-55.40	43	1.8	H	3.6	-51.80	-40	-11.80
1559	-54.70	230	2.5	V	2.8	-51.90	-40	-11.90
2338.5	-55.30	236	1.1	H	7.1	-48.20	-13	-35.20
2338.5	-54.70	55	1.7	V	5.9	-48.80	-13	-35.80
3118	-53.00	61	1.3	H	6.6	-46.40	-13	-33.40
3118	-53.20	38	2.3	V	6.2	-47.00	-13	-34.00
QPSK, 5MHz, 782MHz								
1564	-56.30	338	1.9	H	3.6	-52.70	-40	-12.70
1564	-56.50	307	1.6	V	2.9	-53.60	-40	-13.60
2346	-55.30	82	1.6	H	6.9	-48.40	-13	-35.40
2346	-54.40	359	1.4	V	5.6	-48.80	-13	-35.80
3128	-53.10	91	2.2	H	6.7	-46.40	-13	-33.40
3128	-53.00	51	2.3	V	6.1	-46.90	-13	-33.90
QPSK, 5MHz, 784.5MHz								
1569	-57.90	234	1.8	H	3.5	-54.40	-40	-14.40
1569	-58.40	293	1.9	V	2.9	-55.50	-40	-15.50
2353.5	-55.30	137	1.2	H	6.8	-48.50	-13	-35.50
2353.5	-53.80	210	2.1	V	5.9	-47.90	-13	-34.90
3138	-53.10	248	1.4	H	6.8	-46.30	-13	-33.30
3138	-52.40	158	2.1	V	5.9	-46.50	-13	-33.50

Frequency (MHz)	Receiver Reading (dBm)	Turntable Degree	Rx Antenna		Substituted Factor (dB)	Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Height (m)	Polar (H/V)				
LTE Band 14, Test frequency range: 30MHz-10GHz								
QPSK, 5MHz, 790.5MHz								
1581	-58.20	263	2.1	H	3.5	-54.70	-40	-14.70
1581	-57.50	350	1.5	V	3.1	-54.40	-40	-14.40
2371.5	-55.90	141	2.4	H	6.9	-49.00	-13	-36.00
2371.5	-53.20	308	2.3	V	5.8	-47.40	-13	-34.40
3162	-52.30	293	2	H	7.2	-45.10	-13	-32.10
3162	-50.90	160	2.1	V	6.1	-44.80	-13	-31.80
QPSK, 5MHz, 793MHz								
1586	-57.30	315	1.7	H	3.4	-53.90	-40	-13.90
1586	-56.50	143	1.5	V	3.1	-53.40	-40	-13.40
2379	-55.00	219	1.5	H	7	-48.00	-13	-35.00
2379	-52.30	201	1.3	V	5.9	-46.40	-13	-33.40
3172	-52.50	317	2.2	H	7.4	-45.10	-13	-32.10
3172	-51.10	337	1.2	V	6.3	-44.80	-13	-31.80
QPSK, 5MHz, 795.5MHz								
1591	-56.60	112	1.6	H	3.2	-53.40	-40	-13.40
1591	-57.20	83	1.4	V	4.9	-52.30	-40	-12.30
2386.5	-54.10	157	2.1	H	7	-47.10	-13	-34.10
2386.5	-51.70	206	1.9	V	6	-45.70	-13	-32.70
3182	-52.90	318	1.6	H	7.6	-45.30	-13	-32.30
3182	-51.30	192	1.1	V	6.6	-44.70	-13	-31.70

Frequency (MHz)	Receiver Reading (dBm)	Turntable Degree	Rx Antenna		Substituted Factor (dB)	Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Height (m)	Polar (H/V)				
LTE Band 66, Test frequency range: 30MHz-20GHz								
QPSK, 1.4MHz, 1710.7MHz								
3421.4	-48.30	210	1.3	H	5.8	-42.50	-13	-29.50
3421.4	-48.50	98	1.2	V	6	-42.50	-13	-29.50
5132.1	-54.70	52	1.9	H	11.3	-43.40	-13	-30.40
5132.1	-54.20	175	2	V	10.6	-43.60	-13	-30.60
QPSK, 1.4MHz, 1745MHz								
3490	-49.20	247	2.4	H	7.6	-41.60	-13	-28.60
3490	-49.30	90	2.1	V	6.1	-43.20	-13	-30.20
5235	-53.70	134	1.5	H	10.2	-43.50	-13	-30.50
5235	-53.20	186	2.4	V	9.6	-43.60	-13	-30.60
QPSK, 1.4MHz, 1779.3MHz								
3558.6	-50.40	324	1.3	H	8.4	-42.00	-13	-29.00
3558.6	-49.80	194	2.3	V	7.2	-42.60	-13	-29.60
5337.9	-52.30	169	2.1	H	8.9	-43.40	-13	-30.40
5337.9	-51.60	240	2.3	V	8.2	-43.40	-13	-30.40

Frequency (MHz)	Receiver Reading (dBm)	Turntable Degree	Rx Antenna		Substituted Factor (dB)	Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Height (m)	Polar (H/V)				
LTE Band 71, Test frequency range: 30MHz-10GHz								
QPSK, 5MHz, 665.5MHz								
1331	-57.60	324	1.1	H	6.3	-51.30	-13	-38.30
1331	-57.90	101	1.8	V	5.1	-52.80	-13	-39.80
1996.5	-45.90	345	1.9	H	3.4	-42.50	-13	-29.50
1996.5	-47.30	257	1.8	V	3.6	-43.70	-13	-30.70
2662	-53.80	157	1.9	H	6.7	-47.10	-13	-34.10
2662	-52.40	223	1.7	V	5.2	-47.20	-13	-34.20
QPSK, 5MHz, 680.5MHz								
1361	-56.10	96	2.3	H	6.5	-49.60	-13	-36.60
1361	-56.50	277	1.8	V	5.8	-50.70	-13	-37.70
2041.5	-46.00	241	1.3	H	4.3	-41.70	-13	-28.70
2041.5	-47.50	358	1.3	V	4.6	-42.90	-13	-29.90
2722	-53.90	138	1.3	H	7.2	-46.70	-13	-33.70
2722	-52.80	60	1.7	V	5.8	-47.00	-13	-34.00
QPSK, 5MHz, 695.5MHz								
1391	-55.20	19	1.3	H	5.7	-49.50	-13	-36.50
1391	-56.60	248	1.8	V	6.2	-50.40	-13	-37.40
2086.5	-47.50	72	1.7	H	5.5	-42.00	-13	-29.00
2086.5	-48.10	221	1.4	V	4.6	-43.50	-13	-30.50
2782	-53.20	298	1.3	H	6.3	-46.90	-13	-33.90
2782	-54.00	22	1.2	V	6.5	-47.50	-13	-34.50

Note:

Absolute Level = Reading Level + Substituted Factor

Substituted Factor contains: SG Level - Cable loss+ Antenna Gain

Margin = Absolute Level - Limit

Other emissions was more than 20dB below the limit was not recorded

FCC § 22.917 (a); § 24.238 (a); § 27.53 (c) (g) (h) § 90.543 - 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.

According to FCC § 27.53(g)(h), the power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + 10 \log(P)$ dB.

According to FCC § 27.53(c), For operations in the 746–758 MHz band and the 776–788 MHz band, the power of any emission outside the licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, in accordance with the following:

- (1) On any frequency outside the 746–758 MHz band, the power of any emission shall be attenuated outside the band below the transmitter power (P) by at least $43 + 10 \log(P)$ dB;
- (2) On any frequency outside the 776–788 MHz band, the power of any emission shall be attenuated outside the band below the transmitter power (P) by at least $43 + 10 \log(P)$ dB;
- (3) On all frequencies between 763–775 MHz and 793–805 MHz, by a factor not less than $76 + 10 \log(P)$ dB in a 6.25 kHz band segment, for base and fixed stations;
- (4) On all frequencies between 763–775 MHz and 793–805 MHz, by a factor not less than $65 + 10 \log(P)$ dB in a 6.25 kHz band segment, for mobile and portable stations;
- (5) Compliance with the provisions of paragraphs (c)(1) and (c)(2) of this section is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kHz or greater. However, in the 100 kHz bands immediately outside and adjacent to the frequency block, a resolution bandwidth of at least 30 kHz may be employed;
- (6) Compliance with the provisions of paragraphs (c)(3) and (c)(4) of this section is based on the use of measurement instrumentation such that the reading taken with any resolution bandwidth setting should be adjusted to indicate spectral energy in a 6.25 kHz segment.

According to § 90.543, (e) For operations in the 758-768 MHz and the 788-798 MHz bands, the power of any emission outside the licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, in accordance with the following:

- (1) On all frequencies between 769-775 MHz and 799-805 MHz, by a factor not less than $76 + 10 \log(P)$ dB in a 6.25 kHz band segment, for base and fixed stations.
- (2) On all frequencies between 769-775 MHz and 799-805 MHz, by a factor not less than $65 + 10 \log(P)$ dB in a 6.25 kHz band segment, for mobile and portable stations.

(3) On any frequency between 775-788 MHz, above 805 MHz, and below 758 MHz, by at least $43 + 10 \log(P)$ dB.

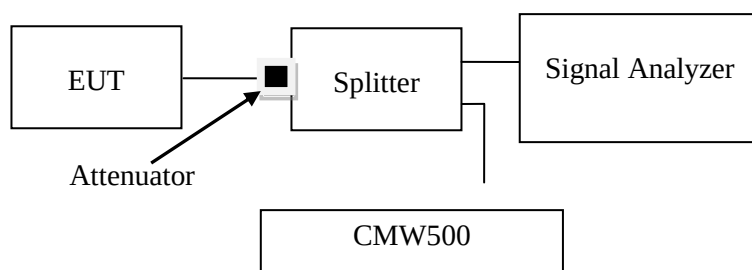
(4) Compliance with the provisions of paragraphs (e)(1) and (2) of this section is based on the use of measurement instrumentation such that the reading taken with any resolution bandwidth setting should be adjusted to indicate spectral energy in a 6.25 kHz segment.

(5) Compliance with the provisions of paragraph (e)(3) of this section is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kHz or greater. However, in the 100 kHz bands immediately outside and adjacent to the frequency block, a resolution bandwidth of 30 kHz may be employed.

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



Note: the worst path loss (Attenuator, cable loss and splitter inset loss) among the test frequency range was added into plots.

Test Data

Environmental Conditions

Temperature:	26~28.8 °C
Relative Humidity:	46.8~52 %
ATM Pressure:	101.0 kPa

The testing was performed by Jacob Huang from 2023-05-16 to 2023-05-18.

EUT operation mode: Transmitting (Worst case)

Test Result: Pass

Please refer to the following plots.

The test plots please refer to the Appendix C.

FCC § 2.1055; § 22.355; § 24.235; § 27.54; § 90.539 - FREQUENCY STABILITY

Applicable Standard

FCC § 2.1055, § 22.355, § 24.235& § 27.54& § 90.539.

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& § 27.54, the frequency stability shall be sufficient to ensure that the fundamental emissions stays within the authorized frequency block.

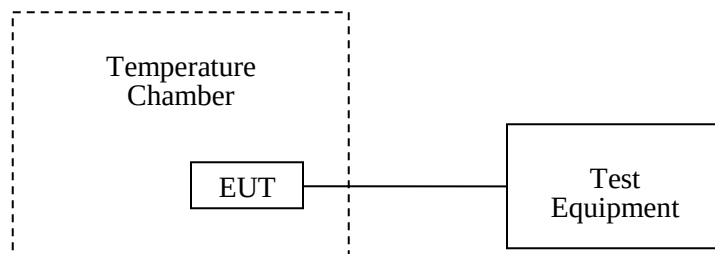
According to § 90.539, The frequency stability of mobile, portable and control transmitters operating in the wideband segment must be 1.25 parts per million or better when AFC is locked to a base station, and 5 parts per million or better when AFC is not locked.

Test Procedure

Frequency Stability vs. Temperature: The equipment under test was connected to an external 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 power 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:	26~28.8 °C
Relative Humidity:	46.8~52 %
ATM Pressure:	101.0 kPa

The testing was performed by Jacob Huang from 2023-05-16 to 2023-05-18.

EUT operation mode: Transmitting

Test Result: Pass

Please refer to the following tables.

LTE:
QPSK:
Band 2:

10 MHz Bandwidth					
Temperature (°C)	Power Supplied (V _{AC})	F _L (MHz)	F _H (MHz)	F _L Limit (MHz)	F _H Limit (MHz)
-30	120	1850.1083	1909.8716	1850	1910
-20		1850.1154	1909.8736	1850	1910
-10		1850.1114	1909.8764	1850	1910
0		1850.1185	1909.8717	1850	1910
10		1850.1151	1909.8730	1850	1910
20		1850.1188	1909.8725	1850	1910
30		1850.1199	1909.8725	1850	1910
40		1850.1209	1909.8728	1850	1910
50		1850.1150	1909.8736	1850	1910
20	102	1850.1113	1909.8741	1850	1910
	138	1850.1037	1909.8708	1850	1910

Band 4:

10 MHz Bandwidth					
Temperature (°C)	Power Supplied (V _{AC})	F _L (MHz)	F _H (MHz)	F _L Limit (MHz)	F _H Limit (MHz)
-30	120	1710.1800	1754.9045	1710	1755
-20		1710.1762	1754.9012	1710	1755
-10		1710.1786	1754.9027	1710	1755
0		1710.1823	1754.9033	1710	1755
10		1710.1777	1754.8999	1710	1755
20		1710.1769	1754.9036	1710	1755
30		1710.1818	1754.8988	1710	1755
40		1710.1785	1754.9033	1710	1755
50		1710.1761	1754.9043	1710	1755
20	102	1710.1771	1754.8993	1710	1755
	138	1710.1814	1754.9031	1710	1755

Band 5:

10.0 MHz Middle Channel, $f_0 = 836.5\text{MHz}$				
Temperature (°C)	Power Supplied (V _{AC})	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
-30	120	-0.9	-0.0011	2.5
-20		8.3	0.0099	2.5
-10		7.1	0.0085	2.5
0		-7.1	-0.0085	2.5
10		-6.5	-0.0078	2.5
20		9.2	0.0110	2.5
30		-7.7	-0.0092	2.5
40		-8.5	-0.0102	2.5
50		7.0	0.0084	2.5
20	102	-9.6	-0.0115	2.5
	138	-8.9	-0.0106	2.5

Band 12:

10 MHz Bandwidth					
Temperature (°C)	Power Supplied (V _{AC})	F _L (MHz)	F _H (MHz)	F _L Limit (MHz)	F _H Limit (MHz)
-30	120	699.1582	715.8904	699	716
-20		699.1560	715.8874	699	716
-10		699.1572	715.8899	699	716
0		699.1564	715.8912	699	716
10		699.1551	715.8888	699	716
20		699.1545	715.8875	699	716
30		699.1543	715.8933	699	716
40		699.1561	715.8881	699	716
50		699.1553	715.8927	699	716
20	102	699.1593	715.8888	699	716
	138	699.1551	715.8932	699	716

Band 13:

10 MHz Bandwidth					
Temperature (°C)	Power Supplied (V _{AC})	F _L (MHz)	F _H (MHz)	F _L Limit (MHz)	F _H Limit (MHz)
-30	120	777.1470	786.9559	777	787
-20		777.1423	786.9569	777	787
-10		777.1423	786.9543	777	787
0		777.1411	786.9558	777	787
10		777.1425	786.9561	777	787
20		777.1460	786.9592	777	787
30		777.1454	786.9596	777	787
40		777.1403	786.9602	777	787
50		777.1457	786.9547	777	787
20	102	777.1395	786.9568	777	787
	138	777.1444	786.9601	777	787

Band 14:

10.0 MHz Middle Channel, f ₀ = 793MHz				
Temperature (°C)	Power Supplied (V _{AC})	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
-30	120	5.34	0.0067	1.25
-20		4.93	0.0062	1.25
-10		-3.65	-0.0046	1.25
0		-6.01	-0.0076	1.25
10		3.52	0.0044	1.25
20		-8.16	-0.0103	1.25
30		-3.63	-0.0046	1.25
40		-5.62	-0.0071	1.25
50		5.53	0.0070	1.25
20	102	3.61	0.0046	1.25
	138	5.81	0.0073	1.25

Band 66:

10 MHz Bandwidth					
Temperature (°C)	Power Supplied (V _{AC})	F _L (MHz)	F _H (MHz)	F _L Limit (MHz)	F _H Limit (MHz)
-30	120	1710.0135	1779.9456	1710	1780
-20		1710.0149	1779.9487	1710	1780
-10		1710.0105	1779.9447	1710	1780
0		1710.0154	1779.9457	1710	1780
10		1710.0125	1779.9456	1710	1780
20		1710.0111	1779.9480	1710	1780
30		1710.0099	1779.9463	1710	1780
40		1710.0102	1779.9471	1710	1780
50		1710.0172	1779.9485	1710	1780
20	102	1710.0116	1779.9477	1710	1780
	138	1710.0173	1779.9447	1710	1780

Band 71:

10 MHz Bandwidth					
Temperature (°C)	Power Supplied (V _{AC})	F _L (MHz)	F _H (MHz)	F _L Limit (MHz)	F _H Limit (MHz)
-30	120	663.0923	697.9824	663	698
-20		663.0903	697.9873	663	698
-10		663.0902	697.9884	663	698
0		663.0879	697.9832	663	698
10		663.0888	697.9852	663	698
20		663.0925	697.9880	663	698
30		663.0882	697.9868	663	698
40		663.0885	697.9869	663	698
50		663.0874	697.9836	663	698
20	102	663.0876	697.9874	663	698
	138	663.0876	697.9847	663	698

**16QAM:
Band 2:**

10 MHz Bandwidth					
Temperature (°C)	Power Supplied (V _{AC})	F _L (MHz)	F _H (MHz)	F _L Limit (MHz)	F _H Limit (MHz)
-30	120	1850.1071	1909.8747	1850	1910
-20		1850.1201	1909.8773	1850	1910
-10		1850.1127	1909.8805	1850	1910
0		1850.1143	1909.8765	1850	1910
10		1850.1157	1909.8698	1850	1910
20		1850.1252	1909.8781	1850	1910
30		1850.1123	1909.8738	1850	1910
40		1850.1231	1909.8700	1850	1910
50		1850.1066	1909.8806	1850	1910
20	102	1850.1103	1909.8766	1850	1910
	138	1850.1028	1909.8714	1850	1910

Band 4:

10 MHz Bandwidth					
Temperature (°C)	Power Supplied (V _{AC})	F _L (MHz)	F _H (MHz)	F _L Limit (MHz)	F _H Limit (MHz)
-30	120	1710.1603	1754.8514	1710	1755
-20		1710.1595	1754.8534	1710	1755
-10		1710.1557	1754.8538	1710	1755
0		1710.1584	1754.8493	1710	1755
10		1710.1577	1754.8499	1710	1755
20		1710.1596	1754.8540	1710	1755
30		1710.1581	1754.8514	1710	1755
40		1710.1552	1754.8488	1710	1755
50		1710.1565	1754.8474	1710	1755
20	102	1710.1566	1754.8521	1710	1755
	138	1710.1619	1754.8485	1710	1755

Band 5:

10.0 MHz Middle Channel, $f_0 = 836.5\text{MHz}$				
Temperature (°C)	Power Supplied (V _{AC})	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
-30	120	-1.47	-0.0018	2.5
-20		9.50	0.0114	2.5
-10		5.04	0.0060	2.5
0		8.10	0.0097	2.5
10		-9.35	-0.0112	2.5
20		-8.35	-0.0100	2.5
30		9.64	0.0115	2.5
40		-9.69	-0.0116	2.5
50		8.57	0.0102	2.5
20	102	-9.67	-0.0116	2.5
	138	-6.60	-0.0079	2.5

Band 12:

10 MHz Bandwidth					
Temperature (°C)	Power Supplied (V _{AC})	F _L (MHz)	F _H (MHz)	F _L Limit (MHz)	F _H Limit (MHz)
-30	120	699.0277	715.9704	699	716
-20		699.0270	715.9690	699	716
-10		699.0268	715.9725	699	716
0		699.0297	715.9692	699	716
10		699.0258	715.9685	699	716
20		699.0273	715.9680	699	716
30		699.0277	715.9733	699	716
40		699.0279	715.9718	699	716
50		699.0305	715.9692	699	716
20	102	699.0239	715.9713	699	716
	138	699.0292	715.9681	699	716

Band 13:

10 MHz Bandwidth					
Temperature (°C)	Power Supplied (V _{AC})	F _L (MHz)	F _H (MHz)	F _L Limit (MHz)	F _H Limit (MHz)
-30	120	777.1148	786.8923	777	787
-20		777.1095	786.8900	777	787
-10		777.1112	786.8899	777	787
0		777.1091	786.8935	777	787
10		777.1111	786.8889	777	787
20		777.1090	786.8875	777	787
30		777.1118	786.8905	777	787
40		777.1103	786.8923	777	787
50		777.1113	786.8913	777	787
20	102	777.1085	786.8901	777	787
	138	777.1155	786.8923	777	787

Band 14:

10.0 MHz Middle Channel, f ₀ = 793MHz				
Temperature (°C)	Power Supplied (V _{AC})	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
-30	120	5.44	0.0069	1.25
-20		4.80	0.0061	1.25
-10		-3.61	-0.0046	1.25
0		-5.97	-0.0075	1.25
10		3.49	0.0044	1.25
20		-8.15	-0.0103	1.25
30		-3.69	-0.0047	1.25
40		-5.48	-0.0069	1.25
50		5.57	0.0070	1.25
20	102	3.66	0.0046	1.25
	138	5.83	0.0074	1.25

Band 66:

10 MHz Bandwidth					
Temperature (°C)	Power Supplied (V _{AC})	F _L (MHz)	F _H (MHz)	F _L Limit (MHz)	F _H Limit (MHz)
-30	120	1710.0241	1779.9728	1710	1780
-20		1710.0238	1779.9727	1710	1780
-10		1710.0236	1779.9839	1710	1780
0		1710.0235	1779.9756	1710	1780
10		1710.0237	1779.9755	1710	1780
20		1710.0228	1779.9747	1710	1780
30		1710.0257	1779.9749	1710	1780
40		1710.0256	1779.9756	1710	1780
50		1710.0229	1779.9828	1710	1780
20	102	1710.0225	1779.9727	1710	1780
	138	1710.0226	1779.9775	1710	1780

Band 71:

10 MHz Bandwidth					
Temperature (°C)	Power Supplied (V _{AC})	F _L (MHz)	F _H (MHz)	F _L Limit (MHz)	F _H Limit (MHz)
-30	120	663.1750	697.8320	663	698
-20		663.1757	697.8286	663	698
-10		663.1728	697.8295	663	698
0		663.1717	697.8306	663	698
10		663.1725	697.8299	663	698
20		663.1714	697.8297	663	698
30		663.1719	697.8343	663	698
40		663.1705	697.8322	663	698
50		663.1740	697.8293	663	698
20	102	663.1719	697.8344	663	698
	138	663.1758	697.8308	663	698

Note: The extreme work voltage range provided by customer

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