

TEST REPORT

Applicant Name : EZTECH DIGITAL INC.
Address : 251 Little Falls Drive Wilmington Delaware 19808 United States
Report Number: RA230321-13736E-RF-00B
FCC ID: 2A4AS-2212A

Test Standard (s)

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

Sample Description

Product Type: IP Camera
Model No.: Reolink TrackMix LTE Plus
Trade Mark: 
Date Received: 2023-03-21
Date of Test: 2023-04-11 to 2023-04-19
Report Date: 2023-06-01

Test Result:	Pass*
--------------	-------

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

Prepared and Checked By:

Bob. Liao

Bob.Liao
EMC Engineer

Approved By:

Candy. Li

Candy Li
EMC Engineer

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

Shenzhen Accurate Technology Co., Ltd. is not responsible for the authenticity of any test data provided by the applicant. Data included from the applicant that may affect test results are marked with an asterisk "*". Customer model name, addresses, names, trademarks etc. are not considered data.

This report cannot be reproduced except in full, without prior written approval of the Company. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested. This report is valid only with a valid digital signature. The digital signature may be available only under the Adobe software above version 7.0.

Shenzhen Accurate Technology Co., Ltd.

1/F., Building A, Changyuan New Material Port, Science & Industry Park, Nanshan District, Shenzhen, Guangdong, P.R. China
Tel: +86 755-26503290 Fax: +86 755-26503290 Web: www.atc-lab.com

TABLE OF CONTENTS

DOCUMENT REVISION HISTORY	3
GENERAL INFORMATION.....	4
PRODUCT DESCRIPTION FOR EQUIPMENT UNDER TEST (EUT)	4
OBJECTIVE	5
TEST METHODOLOGY	5
MEASUREMENT UNCERTAINTY	5
TEST FACILITY	6
SYSTEM TEST CONFIGURATION.....	7
DESCRIPTION OF TEST CONFIGURATION	7
EQUIPMENT MODIFICATIONS	8
EUT EXERCISE SOFTWARE	8
SUPPORT EQUIPMENT LIST AND DETAILS	8
SUPPORT CABLE DESCRIPTION	8
BLOCK DIAGRAM OF TEST SETUP	9
SUMMARY OF TEST RESULTS	10
TEST EQUIPMENT LIST	11
FCC §1.1307(B)-RF EXPOSURE	13
TEST RESULT:	14
FCC §2.1047-MODULATION CHARACTERISTIC	15
FCC § 2.1046; § 22.913(A)(D); § 24.232(C)(D); §27.50(B) (C)(D); §90.542 (A)(6)-RF OUTPUT POWER	16
APPLICABLE STANDARD	16
TEST PROCEDURE	16
TEST DATA	16
FCC §2.1049-OCCUPIED BANDWIDTH	39
APPLICABLE STANDARD	39
TEST PROCEDURE	39
TEST DATA	39
FCC §2.1051; §22.917(A); §24.238(A); §27.53; §90.543(E) -SPURIOUS EMISSIONS AT ANTENNA TERMINALS.....	44
APPLICABLE STANDARD	44
TEST PROCEDURE	44
TEST DATA	44
FCC § 2.1053; § 22.917(A); § 24.238(A); §27.53; §90.543(E)-SPURIOUS RADIATED EMISSIONS	45
APPLICABLE STANDARD	45
TEST PROCEDURE	45
TEST DATA	45
FCC §22.917(A); § 24.238(A); §27.53(G)(H)(M); §90.543(E)-BAND EDGES	52
APPLICABLE STANDARD	52
TEST PROCEDURE	52
TEST DATA	53
FCC § 2.1055; § 22.355; § 24.235; §27.54; §90.39-REQUENCY STABILITY	54
APPLICABLE STANDARD	54
TEST PROCEDURE	56
TEST DATA	57

DOCUMENT REVISION HISTORY

Revision Number	Report Number	Description of Revision	Date of Revision
0	RA230321-13736E-RF-00B	Original Report	2023-06-01

GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

Product	IP Camera	
Tested Model	Reolink TrackMix LTE Plus	
Frequency Range	WCDMA Band 2: 1850-1910MHz(TX); 1930-1990MHz(RX) WCDMA Band 4: 1710-1755MHz(TX); 2110-2155MHz(RX) WCDMA Band 5: 824-849MHz(TX); 869-894MHz(RX) LTE Band 2: 1850-1910MHz(TX); 1930-1990MHz(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: 663-698MHz(TX); 617-652MHz(RX)	
Maximum Average Conducted Output Power	WCDMA Band 2: 23.82 dBm	LTE Band 12: 24.30 dBm
	WCDMA Band 4: 23.83 dBm	LTE Band 13: 24.00 dBm
	WCDMA Band 5: 23.58 dBm	LTE Band 14: 23.95 dBm
	LTE Band 2: 23.41 dBm	LTE Band 66: 23.70 dBm
	LTE Band 4: 23.78 dBm	LTE Band 71: 23.99 dBm
	LTE Band 5: 24.27 dBm	
Modulation Technique	3G: BPSK, QPSK, 16QAM 4G: QPSK, 16QAM	
Antenna Specification*	External antenna	
	WCDMA Band 2: 2.28dBi	LTE Band 12: -1.10dBi
	WCDMA Band 4: 1.80dBi	LTE Band 13: -0.27dBi
	WCDMA Band 5: -0.29dBi	LTE Band 14: -0.12dBi
	LTE Band 2: 2.28dBi	LTE Band 66: 1.80dBi
	LTE Band 4: 1.80dBi	LTE Band 71: -1.91dBi
	LTE Band 5: -0.29dBi	
(provided by the applicant)		
Voltage Range	DC10.8V from battery	
Sample number	RA230321-13736E-RF-S1 (RF Radiated Test) RA230321-13736E-RF-S2 (RF Conducted Test) (Assigned by ATC, Shenzhen)	
Sample/EUT Status	Good condition	
Normal/Extreme Condition	L.V.: Low Voltage: 10V _{DC} N.V.: Normal Voltage: 10.8V _{DC} H.V.: High Voltage: 12V _{DC}	

Objective

This test report is in accordance with Part 2-Subpart J, Part 22-Subpart H, Part 24-Subpart E, Part 27 and Part 90 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.

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		0.71dB
Unwanted Emission, conducted		1.6dB
Emissions, Radiated	30MHz - 1GHz	5.08dB
	1GHz - 18GHz	4.96dB
	18GHz - 26.5GHz	5.16dB
	26.5GHz - 40GHz	4.64dB
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 4297.01.

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.

Test was performed as below table:

Frequency band	Bandwidth (MHz)	Test Frequency(MHz)		
		Low	Middle	High
WCDMA B2	4.2	1852.4	1880.0	1907.6
WCDMA B4	4.2	1712.4	1732.6	1752.6
WCDMA B5	4.2	826.4	836.4	846.6
LTE B2	1.4	1850.7	1880.0	1909.3
	3	1851.5	1880.0	1908.5
	5	1852.5	1880.0	1907.5
	10	1855	1880.0	1905.0
	15	1857.5	1880.0	1902.5
	20	1860.0	1880.0	1900.0
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	1715.0	1732.5	1750.0
	15	1717.5	1732.5	1747.5
	20	1720.0	1732.5	1745.0
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	829.0	836.5	844.0
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	711.0
LTE B13	5	779.5	782.0	784.5
	10	/	782.0	/
LTE B14	5	790.5	793.0	795.5
	10	/	793.0	/

Frequency band	Bandwidth (MHz)	Test Frequency(MHz)		
		Low	Middle	High
LTE B66	1.4	1710.7	1745.0	1779.3
	3	1711.5	1745.0	1778.5
	5	1712.5	1745.0	1777.5
	10	1715.0	1745.0	1775.0
	15	1717.5	1745.0	1772.5
	20	1720.0	1745.0	1770.0
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.

EUT Exercise Software

No exercise software was used.

Support Equipment List and Details

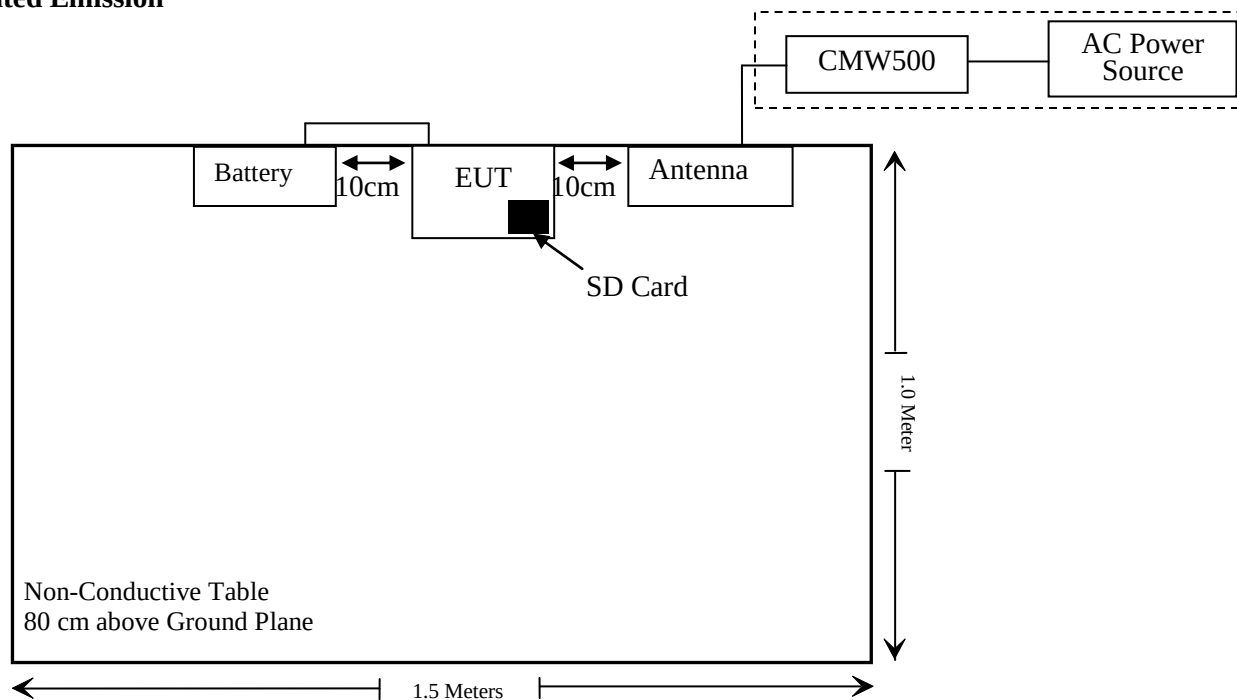
Manufacturer	Description	Model	Serial Number
Rohde & Schwarz	Wideband Radio Communication Tester	CMW500	154606
REOLINK INNOVATION LIMITED	Rechargeable Li-ion Battery	Battery-Li12	C493A122JHB0323
Unknown	SD Card	Unknown	Unknown

Support Cable Description

Cable Description	Length (m)	From / Port	To
Unshielded Un-detachable AC cable	1.2	AC Power	CMW500
Unshielded Un-detachable DC cable	1.0	EUT	Rechargeable Li-ion Battery

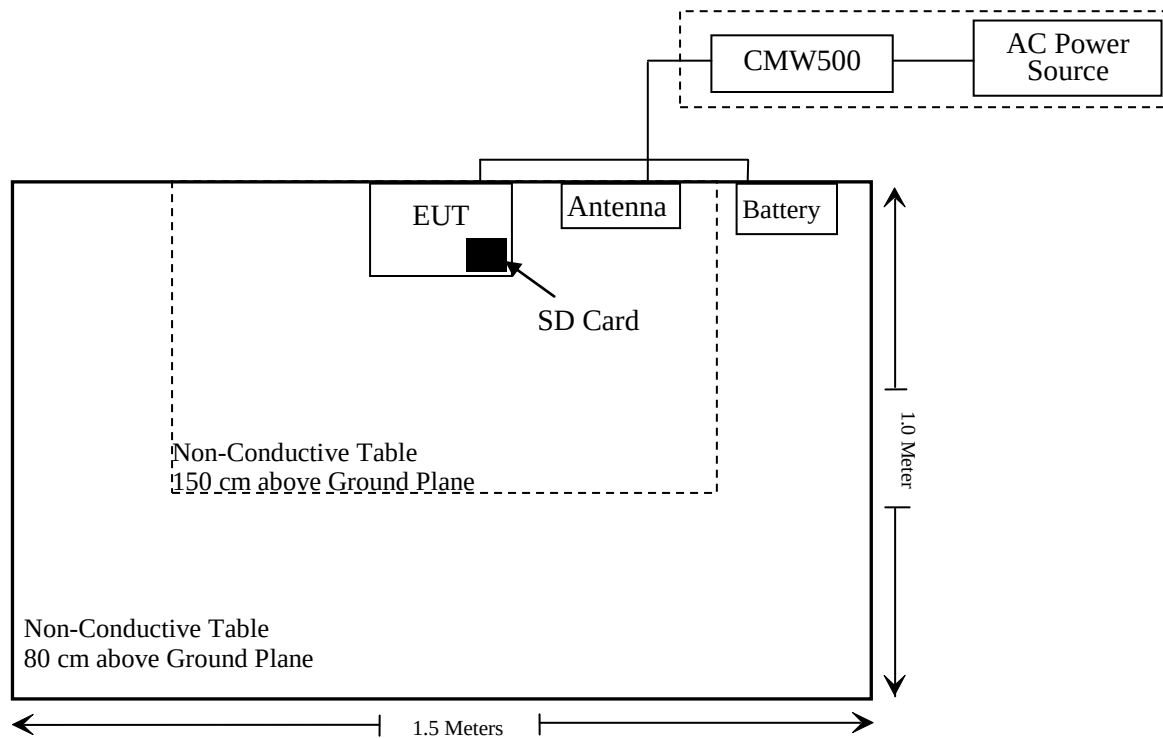
Block Diagram of Test Setup

For Radiated Emission Below 1G



Note: the support table edge was flush with center of turntable

Above 1G



Note: the support table edge was flush with center of turntable

SUMMARY OF TEST RESULTS

FCC Rules	Description of Test	Result
§1.1307(b)	RF Exposure	Compliant
§2.1046; § 22.913 (a)(d); § 24.232 (c)(d); §27.50 (b)(c) (d); §90.542 (a) (6)	RF Output Power	Compliant
§ 2.1047	Modulation Characteristics	Not Applicable
§ 2.1049	Occupied Bandwidth	Compliant
§ 2.1051; §22.917 (a); § 24.238 (a); §27.53; §90.543 (e)	Spurious Emissions at Antenna Terminal	Compliant
§ 2.1053; § 22.917 (a); § 24.238 (a); §27.53; §90.543 (e)	Field Strength of Spurious Radiation	Compliant
§ 22.917 (a); § 24.238 (a); §27.53 (g) (h) (m); §90.543 (e)	Band Edge	Compliant
§ 2.1055; § 22.355; § 24.235; §27.54; §90.213	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
A.H. Systems, inc.	Preamplifier	PAM-0118P	135	2022/11/08	2023/11/07
Quinstar	Amplifier	QLW-18405536-J0	15964001002	2022/11/08	2023/11/07
Schwarzbeck	Bilog Antenna	VULB9163	9163-323	2021/07/06	2024/07/05
Schwarzbeck	Bilog Antenna	VULB9163	9163-194	2023/02/14	2026/02/13
Schwarzbeck	Horn Antenna	BBHA9120D	9120D-655	2022/12/26	2025/12/25
Schwarzbeck	Horn Antenna	BBHA9120D	837	2023/02/22	2026/02/21
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
Unknown	Band Reject Filter	MSF824-862MS-1147	ATCE-141	2022/11/25	2023/11/24
Unknown	Band Reject Filter	MSF1850-1910MS-1148	ATCE-142	2022/11/25	2023/11/24
Unknown	Band Reject Filter	MSF1710-1785MS-1150	ATCE-144	2022/11/25	2023/11/24
Unknown	Band Reject Filter	MSF700-800MS-1153	ATCE-147	2022/11/25	2023/11/24
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
Radiated Emission Test Software: e3 19821b (V9)					

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
Rohde & Schwarz	Wideband Radio Communication Tester	CMW500	154606	2022/11/25	2023/11/24
WEINSCHTEL	10dB Attenuator	5324	AU 3842	2022/11/25	2023/11/24
Mini-Circuits	Power Splitter	DC-18000MHz	SF10944151S	2022/11/25	2023/11/24
BACL	Temp. & Humid. Chamber	BTH-150-40	30192	2023/02/09	2024/02/08
UNI-T	DC Power Supply	UTP8305B	10584	NCR	NCR
Fluke	Desktop Multi Meter	45	7664009	2022/12/12	2023/12/11
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)-RF EXPOSURE

Applicable Standard

According to KDB 447498 D04 Interim General RF Exposure Guidance v01, clause 2.1.4 –MPE-Based Exemption:

An alternative to the SAR-based exemption is provided in § 1.1307(b)(3)(i)(C), for a much wider frequency range, from 300 kHz to 100 GHz, applicable for separation distances greater or equal to $\lambda/2\pi$, where λ is the free-space operating wavelength in meters. The MPE-based test exemption condition is in terms of ERP, defined as the product of the maximum antenna gain and the delivered maximum time-averaged power. For this case, a RF source is an RF exempt device if its ERP (watts) is no more than a frequency-dependent value, as detailed tabular form in Appendix B. These limits have been derived based on the basic specifications on Maximum Permissible Exposure (MPE) considered for the FCC rules in § 1.1310(e)(1).

Table 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	$19.2 R^2$.

f = frequency in MHz;

R = minimum separation distance from the body of a nearby person (appropriate units, e.g., m);

Test Result:

For worst case:

Mode	Frequency Range (MHz)	Tune-Up Conducted Average Output Power (dBm)	Antenna Gain		ERP		Evaluation Distance (cm)	MPE-Based Exemption (mW)
			(dBi)	(dBd)	(dBm)	(mW)		
WCDMA B2	1850-1910	24.0	2.28	0.13	24.13	258.82	20	768.0
WCDMA B4	1710-1755	24.0	1.8	-0.35	23.65	231.74	20	768.0
WCDMA B5	824-849	24.0	-0.29	-2.44	21.56	143.22	20	421.9
LTE B2	1850-1910	23.5	2.28	0.13	23.63	230.67	20	768.0
LTE B4	1710-1755	24.0	1.80	-0.35	23.65	231.74	20	768.0
LTE B5	824-849	24.5	-0.29	-2.44	22.06	160.69	20	421.9
LTE B12	699-716	24.5	-1.10	-3.25	21.25	133.35	20	357.9
LTE B13	777-787	24.0	-0.27	-2.42	21.58	143.88	20	397.8
LTE B14	788-798	24.0	-0.12	-2.27	21.73	148.94	20	403.5
LTE B66	1710-1780	24.0	1.80	-0.35	23.65	231.74	20	768.0
LTE B71	663-698	24.0	-1.91	-4.06	19.94	98.63	20	339.5

Note 1: The tune-up power was declared by the applicant.

Note 2: 0dBd=2.15dBi.

Simultaneous transmission consideration:

For the 433.92MHz SRD is a very lower power device, it's almost have no influence on the results of simultaneous transmission, so the device compliance with RF exposure in simultaneous transmission condition.

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, 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(b) (c)(d); § 90.542 (a)(6)-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)(d), 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), Control stations and mobile stations transmitting in the 746–757 MHz, 776–788 MHz, and 805–806 MHz bands and fixed stations transmitting in the 787–788 MHz and 805–806 MHz bands are limited to 30 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.

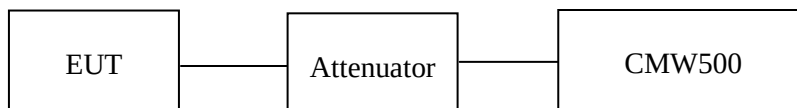
According to § 27.50(d), Fixed, mobile, and portable (hand-held) stations operating in the 1710-1755 MHz band and mobile and portable stations operating in the 1695-1710 MHz and 1755-1780 MHz bands are limited to 1 watt EIRP.

According to § 90.542(a) (6), Control stations and mobile stations transmitting in the 758-768 MHz band and the 788-798 MHz band are limited to 30 watts ERP.

Test Procedure

Conducted method:

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



Note: the path loss (cable loss and attenuator) has including in result.

ANSI C63.26-2015 Section 5.5.

Test Data

Environmental Conditions

Temperature:	23-24 °C
Relative Humidity:	56-60 %
ATM Pressure:	101.0 kPa

The testing was performed by Jacob Huang from 2023-04-11 to 2023-04-15.

Conducted Power**Cellular Band (Part 22H)**

Mode	Test Mode	3GPP Sub Test	Average Output Power (dBm)			ERP(dBm)		
			Low	Mid	High	Low	Mid	High
WCDMA (Band 5)	RMC12.2k		23.49	23.58	23.46	21.05	21.14	21.02
	HSDPA	1	19.93	21.16	21.16	17.49	18.72	18.72
		2	19.83	21.11	21.11	17.39	18.67	18.67
		3	19.43	20.70	20.69	16.99	18.26	18.25
		4	19.45	20.68	20.71	17.01	18.24	18.27
	HSUPA	1	22.56	20.86	20.63	20.12	18.42	18.19
		2	22.50	20.80	20.54	20.06	18.36	18.10
		3	22.06	20.41	20.16	19.62	17.97	17.72
		4	20.05	19.60	19.51	17.61	17.16	17.07
		5	22.64	20.95	20.68	20.20	18.51	18.24

Note: ERP(dBm) = Conducted Power(dBm) + Antenna Gain(dBd)

For WCDMA Band5: Antenna Gain = -0.29dBi = -2.44dBd (0dBd=2.15dBi)

Limit: ERP≤38.45dBm

PCS Band (Part 24E)

Mode	Test Mode	3GPP Sub Test	Average Output Power (dBm)			EIRP(dBm)		
			Low	Mid	High	Low	Mid	High
WCDMA (Band 2)	RMC12.2k		23.80	23.82	23.51	26.08	26.10	25.79
	HSDPA	1	21.61	22.45	19.02	23.89	24.73	21.30
		2	21.52	22.35	18.97	23.80	24.63	21.25
		3	21.13	21.94	18.52	23.41	24.22	20.80
		4	21.10	22.00	18.51	23.38	24.28	20.79
	HSUPA	1	22.59	22.00	20.55	24.87	24.28	22.83
		2	21.60	22.45	19.04	23.88	24.73	21.32
		3	21.21	22.04	18.66	23.49	24.32	20.94
		4	21.15	22.05	18.63	23.43	24.33	20.91
		5	22.69	22.11	20.60	24.97	24.39	22.88

Note: EIRP(dBm) = Conducted Power(dBm) + Antenna Gain(dBi)

For WCDMA Band2: Antenna Gain = 2.28dBi

Limit: EIRP≤33dBm

AWS Band (Part 27)

Mode	Test Mode	3GPP Sub Test	Average Output Power (dBm)			EIRP(dBm)		
			Low	Mid	High	Low	Mid	High
WCDMA (Band 4)	RMC12.2k		23.83	22.76	22.12	25.63	24.56	23.92
	HSDPA	1	19.54	20.29	18.89	21.34	22.09	20.69
		2	19.49	20.23	18.83	21.29	22.03	20.63
		3	19.09	19.80	18.41	20.89	21.60	20.21
		4	19.08	19.84	18.43	20.88	21.64	20.23
	HSUPA	1	20.16	20.07	21.09	21.96	21.87	22.89
		2	20.09	20.00	21.03	21.89	21.80	22.83
		3	19.68	19.59	20.63	21.48	21.39	22.43
		4	19.69	19.59	20.60	21.49	21.39	22.40
		5	20.22	20.17	21.16	22.02	21.97	22.96

Note: EIRP(dBm) = Conducted Power(dBm) + Antenna Gain(dBi)

For Band4: Antenna Gain = 1.80dBi

Limit: EIRP ≤ 30dBm

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	22.82	22.90	22.67	25.10	25.18	24.95
		RB1#3	23.01	22.99	22.74	25.29	25.27	25.02
		RB1#5	23.19	23.03	22.59	25.47	25.31	24.87
		RB3#0	22.81	22.92	22.91	25.09	25.20	25.19
		RB3#3	22.86	22.88	22.80	25.14	25.16	25.08
		RB6#0	21.82	21.96	21.89	24.10	24.24	24.17
	16QAM	RB1#0	21.58	22.03	22.16	23.86	24.31	24.44
		RB1#3	21.74	22.13	22.22	24.02	24.41	24.50
		RB1#5	21.64	21.99	22.19	23.92	24.27	24.47
		RB3#0	22.82	22.94	22.91	25.10	25.22	25.19
		RB3#3	22.87	22.89	22.87	25.15	25.17	25.15
		RB6#0	21.04	21.00	21.06	23.32	23.28	23.34
3.0	QPSK	RB1#0	23.17	23.02	23.29	25.45	25.30	25.57
		RB1#8	23.12	23.19	23.06	25.40	25.47	25.34
		RB1#14	23.22	23.17	23.12	25.50	25.45	25.40
		RB6#0	22.06	22.23	22.13	24.34	24.51	24.41
		RB6#9	22.13	22.11	21.96	24.41	24.39	24.24
		RB15#0	22.09	22.27	22.13	24.37	24.55	24.41
	16QAM	RB1#0	22.06	22.87	22.60	24.34	25.15	24.88
		RB1#8	21.99	22.78	22.66	24.27	25.06	24.94
		RB1#14	22.21	22.77	22.64	24.49	25.05	24.92
		RB6#0	21.00	21.20	21.45	23.28	23.48	23.73
		RB6#9	20.97	21.35	21.46	23.25	23.63	23.74
		RB15#0	21.11	21.14	21.28	23.39	23.42	23.56

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	22.99	23.21	22.97	25.27	25.49	25.25
		RB1#13	22.82	23.11	22.85	25.10	25.39	25.13
		RB1#24	22.98	23.24	22.76	25.26	25.52	25.04
		RB15#0	22.08	22.32	22.21	24.36	24.60	24.49
		RB15#10	22.06	22.18	22.20	24.34	24.46	24.48
		RB25#0	22.05	22.27	22.27	24.33	24.55	24.55
	16QAM	RB1#0	22.35	22.15	21.77	24.63	24.43	24.05
		RB1#13	22.32	21.99	21.53	24.60	24.27	23.81
		RB1#24	22.57	22.21	21.41	24.85	24.49	23.69
		RB15#0	22.04	22.22	22.18	24.32	24.50	24.46
		RB15#10	22.12	22.08	22.06	24.40	24.36	24.34
		RB25#0	21.09	21.28	21.34	23.37	23.56	23.62
10.0	QPSK	RB1#0	23.02	23.14	22.94	25.30	25.42	25.22
		RB1#25	23.17	23.24	23.40	25.45	25.52	25.68
		RB1#49	23.18	22.80	23.15	25.46	25.08	25.43
		RB25#0	21.89	22.26	22.28	24.17	24.54	24.56
		RB25#25	22.02	22.12	22.27	24.30	24.40	24.55
		RB50#0	21.99	22.20	22.16	24.27	24.48	24.44
	16QAM	RB1#0	22.72	22.40	22.41	25.00	24.68	24.69
		RB1#25	22.55	22.49	23.10	24.83	24.77	25.38
		RB1#49	22.72	21.77	22.92	25.00	24.05	25.20
		RB25#0	21.93	22.25	22.15	24.21	24.53	24.43
		RB25#25	22.07	22.11	22.16	24.35	24.39	24.44
		RB50#0	21.04	21.20	21.05	23.32	23.48	23.33

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	22.94	23.30	22.71	25.22	25.58	24.99
		RB1#38	23.01	23.25	23.03	25.29	25.53	25.31
		RB1#74	22.90	22.92	23.08	25.18	25.20	25.36
		RB36#0	21.85	22.17	21.96	24.13	24.45	24.24
		RB36#39	21.97	22.08	22.22	24.25	24.36	24.50
		RB75#0	21.90	22.14	22.09	24.18	24.42	24.37
	16QAM	RB1#0	22.43	22.52	21.87	24.71	24.80	24.15
		RB1#38	22.99	22.57	22.17	25.27	24.85	24.45
		RB1#74	23.02	22.52	21.97	25.30	24.80	24.25
		RB36#0	21.90	22.14	21.93	24.18	24.42	24.21
		RB36#39	22.02	22.08	22.27	24.30	24.36	24.55
		RB75#0	20.96	21.12	21.16	23.24	23.40	23.44
20.0	QPSK	RB1#0	23.00	22.93	22.79	25.28	25.21	25.07
		RB1#50	23.41	23.19	23.24	25.69	25.47	25.52
		RB1#99	23.23	22.92	23.25	25.51	25.20	25.53
		RB50#0	21.89	22.17	21.94	24.17	24.45	24.22
		RB50#50	21.97	22.05	22.25	24.25	24.33	24.53
		RB100#0	21.92	22.12	22.05	24.20	24.40	24.33
	16QAM	RB1#0	22.12	22.72	22.30	24.40	25.00	24.58
		RB1#50	21.94	22.81	22.77	24.22	25.09	25.05
		RB1#99	22.19	22.72	22.64	24.47	25.00	24.92
		RB50#0	21.95	22.26	21.82	24.23	24.54	24.10
		RB50#50	21.93	22.03	22.22	24.21	24.31	24.50
		RB100#0	20.99	21.19	20.95	23.27	23.47	23.23

Note: EIRP(dBm) = Conducted Power(dBm) + Antenna Gain(dBi)

For Band2: Antenna Gain = 2.28dBi

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	23.40	23.37	23.28	25.20	25.17	25.08
		RB1#3	23.38	23.51	23.35	25.18	25.31	25.15
		RB1#5	23.29	23.39	23.44	25.09	25.19	25.24
		RB3#0	23.49	23.25	23.44	25.29	25.05	25.24
		RB3#3	23.43	23.29	23.30	25.23	25.09	25.10
		RB6#0	22.36	22.43	22.23	24.16	24.23	24.03
	16QAM	RB1#0	22.35	22.11	22.26	24.15	23.91	24.06
		RB1#3	22.56	22.26	22.33	24.36	24.06	24.13
		RB1#5	22.46	22.07	22.03	24.26	23.87	23.83
		RB3#0	23.24	23.34	23.09	25.04	25.14	24.89
		RB3#3	23.42	23.29	23.23	25.22	25.09	25.03
		RB6#0	21.67	21.48	21.30	23.47	23.28	23.10
3.0	QPSK	RB1#0	23.33	23.79	23.23	25.13	25.59	25.03
		RB1#8	23.37	23.74	23.16	25.17	25.54	24.96
		RB1#14	23.46	23.76	23.23	25.26	25.56	25.03
		RB6#0	22.32	22.62	22.28	24.12	24.42	24.08
		RB6#9	22.38	22.57	22.29	24.18	24.37	24.09
		RB15#0	22.48	22.54	22.34	24.28	24.34	24.14
	16QAM	RB1#0	22.65	23.23	22.37	24.45	25.03	24.17
		RB1#8	22.54	23.08	22.01	24.34	24.88	23.81
		RB1#14	22.60	23.04	22.19	24.40	24.84	23.99
		RB6#0	21.29	21.71	21.16	23.09	23.51	22.96
		RB6#9	21.33	21.73	21.18	23.13	23.53	22.98
		RB15#0	21.45	21.40	21.40	23.25	23.20	23.20

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	23.34	23.45	23.36	25.14	25.25	25.16
		RB1#13	23.45	23.47	23.32	25.25	25.27	25.12
		RB1#24	23.50	23.51	23.48	25.30	25.31	25.28
		RB15#0	22.47	22.59	22.45	24.27	24.39	24.25
		RB15#10	22.50	22.46	22.37	24.30	24.26	24.17
		RB25#0	22.45	22.47	22.39	24.25	24.27	24.19
	16QAM	RB1#0	22.01	22.79	22.27	23.81	24.59	24.07
		RB1#13	21.77	22.74	22.12	23.57	24.54	23.92
		RB1#24	21.85	22.58	22.05	23.65	24.38	23.85
		RB15#0	22.39	22.48	22.36	24.19	24.28	24.16
		RB15#10	22.49	22.45	22.44	24.29	24.25	24.24
		RB25#0	21.60	21.56	21.26	23.40	23.36	23.06
10.0	QPSK	RB1#0	23.29	23.37	23.44	25.09	25.17	25.24
		RB1#25	23.40	23.78	23.55	25.20	25.58	25.35
		RB1#49	23.61	23.54	23.32	25.41	25.34	25.12
		RB25#0	22.50	22.51	22.56	24.30	24.31	24.36
		RB25#25	22.63	22.58	22.31	24.43	24.38	24.11
		RB50#0	22.65	22.58	22.37	24.45	24.38	24.17
	16QAM	RB1#0	22.61	23.09	22.20	24.41	24.89	24.00
		RB1#25	22.87	23.01	22.34	24.67	24.81	24.14
		RB1#49	22.79	23.02	22.06	24.59	24.82	23.86
		RB25#0	22.56	22.58	22.56	24.36	24.38	24.36
		RB25#25	22.59	22.47	22.30	24.39	24.27	24.10
		RB50#0	21.55	21.57	21.48	23.35	23.37	23.28

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	23.40	23.35	23.34	25.20	25.15	25.14
		RB1#38	23.57	23.47	23.26	25.37	25.27	25.06
		RB1#74	23.53	23.60	23.17	25.33	25.40	24.97
		RB36#0	22.57	22.58	22.48	24.37	24.38	24.28
		RB36#39	22.58	22.54	22.35	24.38	24.34	24.15
		RB75#0	22.66	22.48	22.38	24.46	24.28	24.18
	16QAM	RB1#0	22.89	22.57	22.59	24.69	24.37	24.39
		RB1#38	23.07	22.77	22.44	24.87	24.57	24.24
		RB1#74	22.85	23.00	22.03	24.65	24.80	23.83
		RB36#0	22.54	22.36	22.48	24.34	24.16	24.28
		RB36#39	22.55	22.43	22.34	24.35	24.23	24.14
		RB75#0	21.67	21.50	21.34	23.47	23.30	23.14
20.0	QPSK	RB1#0	23.21	23.54	23.41	25.01	25.34	25.21
		RB1#50	23.66	23.59	23.43	25.46	25.39	25.23
		RB1#99	23.61	23.73	23.32	25.41	25.53	25.12
		RB50#0	22.64	22.54	22.42	24.44	24.34	24.22
		RB50#50	22.53	22.65	22.38	24.33	24.45	24.18
		RB100#0	22.63	22.49	22.32	24.43	24.29	24.12
	16QAM	RB1#0	22.78	22.59	22.96	24.58	24.39	24.76
		RB1#50	23.23	22.32	23.18	25.03	24.12	24.98
		RB1#99	23.23	22.54	23.05	25.03	24.34	24.85
		RB50#0	22.60	22.42	22.31	24.40	24.22	24.11
		RB50#50	22.57	22.54	22.29	24.37	24.34	24.09
		RB100#0	21.67	21.41	21.43	23.47	23.21	23.23

Note: EIRP(dBm) = Conducted Power(dBm) + Antenna Gain(dBi)

For Band4: Antenna Gain =1.80dBi

Limit: EIRP ≤ 30dBm

LTE Band 5

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	23.91	23.85	23.90	21.47	21.41	21.46
		RB1#3	24.02	24.05	24.05	21.58	21.61	21.61
		RB1#5	23.98	23.84	23.95	21.54	21.40	21.51
		RB3#0	23.82	23.86	23.91	21.38	21.42	21.47
		RB3#3	23.72	23.90	23.94	21.28	21.46	21.50
		RB6#0	22.81	23.01	22.92	20.37	20.57	20.48
	16QAM	RB1#0	22.89	22.99	22.65	20.45	20.55	20.21
		RB1#3	23.10	23.43	22.59	20.66	20.99	20.15
		RB1#5	22.90	23.30	22.55	20.46	20.86	20.11
		RB3#0	23.78	24.01	23.81	21.34	21.57	21.37
		RB3#3	23.77	23.96	23.92	21.33	21.52	21.48
		RB6#0	21.88	21.99	21.91	19.44	19.55	19.47
3.0	QPSK	RB1#0	23.74	23.81	23.84	21.30	21.37	21.40
		RB1#8	23.62	23.86	23.99	21.18	21.42	21.55
		RB1#14	23.60	24.00	23.96	21.16	21.56	21.52
		RB6#0	22.71	22.90	23.01	20.27	20.46	20.57
		RB6#9	22.78	22.96	22.98	20.34	20.52	20.54
		RB15#0	22.79	22.89	23.00	20.35	20.45	20.56
	16QAM	RB1#0	23.04	23.34	22.93	20.60	20.90	20.49
		RB1#8	22.93	23.52	22.67	20.49	21.08	20.23
		RB1#14	22.99	23.63	22.54	20.55	21.19	20.10
		RB6#0	21.64	22.26	21.94	19.20	19.82	19.50
		RB6#9	21.71	22.25	21.81	19.27	19.81	19.37
		RB15#0	21.81	22.10	21.92	19.37	19.66	19.48

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	23.66	23.81	23.99	21.22	21.37	21.55
		RB1#13	23.77	23.94	24.17	21.33	21.50	21.73
		RB1#24	23.97	23.80	24.09	21.53	21.36	21.65
		RB15#0	22.96	23.05	23.12	20.52	20.61	20.68
		RB15#10	22.87	23.05	23.07	20.43	20.61	20.63
		RB25#0	22.92	23.04	23.03	20.48	20.60	20.59
	16QAM	RB1#0	22.43	23.24	22.84	19.99	20.80	20.40
		RB1#13	22.47	23.32	22.97	20.03	20.88	20.53
		RB1#24	22.39	23.23	22.84	19.95	20.79	20.40
		RB15#0	22.88	23.06	23.05	20.44	20.62	20.61
		RB15#10	22.88	23.05	23.09	20.44	20.61	20.65
		RB25#0	21.91	22.03	21.95	19.47	19.59	19.51
10.0	QPSK	RB1#0	23.79	23.96	23.86	21.35	21.52	21.42
		RB1#25	24.02	23.96	23.97	21.58	21.52	21.53
		RB1#49	24.13	23.72	24.27	21.69	21.28	21.83
		RB25#0	22.85	22.88	23.01	20.41	20.44	20.57
		RB25#25	22.98	23.02	23.04	20.54	20.58	20.60
		RB50#0	22.96	22.99	23.08	20.52	20.55	20.64
	16QAM	RB1#0	23.10	23.62	22.77	20.66	21.18	20.33
		RB1#25	23.52	23.52	22.75	21.08	21.08	20.31
		RB1#49	23.26	23.56	22.72	20.82	21.12	20.28
		RB25#0	22.92	22.95	23.00	20.48	20.51	20.56
		RB25#25	22.95	23.07	23.03	20.51	20.63	20.59
		RB50#0	21.92	22.05	21.90	19.48	19.61	19.46

Note: EIRP(dBm) = Conducted Power(dBm) + Antenna Gain(dBd)
 For Band5: Antenna Gain = -0.29dBi=-2.44dBd (0dBd=2.15dBi)
 Limit: EIRP≤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	23.56	23.71	23.76	20.31	20.46	20.51
		RB1#3	23.88	23.89	24.04	20.63	20.64	20.79
		RB1#5	23.77	23.73	24.11	20.52	20.48	20.86
		RB3#0	23.68	23.78	23.69	20.43	20.53	20.44
		RB3#3	23.87	23.84	23.78	20.62	20.59	20.53
		RB6#0	22.92	22.93	22.88	19.67	19.68	19.63
	16QAM	RB1#0	22.92	22.84	22.96	19.67	19.59	19.71
		RB1#3	23.21	22.85	23.07	19.96	19.60	19.82
		RB1#5	23.35	22.64	22.96	20.10	19.39	19.71
		RB3#0	23.83	23.96	23.68	20.58	20.71	20.43
		RB3#3	23.84	24.30	23.78	20.59	21.05	20.53
		RB6#0	21.97	21.91	21.83	18.72	18.66	18.58
3.0	QPSK	RB1#0	23.71	23.86	23.64	20.46	20.61	20.39
		RB1#8	23.79	24.02	23.70	20.54	20.77	20.45
		RB1#14	23.75	23.96	24.00	20.50	20.71	20.75
		RB6#0	22.69	22.95	22.83	19.44	19.70	19.58
		RB6#9	22.73	22.93	22.89	19.48	19.68	19.64
		RB15#0	22.86	22.94	22.82	19.61	19.69	19.57
	16QAM	RB1#0	23.03	23.05	22.58	19.78	19.80	19.33
		RB1#8	23.04	23.34	22.80	19.79	20.09	19.55
		RB1#14	22.71	23.17	23.12	19.46	19.92	19.87
		RB6#0	21.67	22.23	21.68	18.42	18.98	18.43
		RB6#9	21.60	22.24	21.96	18.35	18.99	18.71
		RB15#0	21.71	22.19	21.88	18.46	18.94	18.63

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	23.59	23.75	23.67	20.34	20.50	20.42
		RB1#13	23.55	23.76	23.77	20.30	20.51	20.52
		RB1#24	23.55	23.45	23.80	20.30	20.20	20.55
		RB15#0	22.83	22.83	22.83	19.58	19.58	19.58
		RB15#10	22.79	22.79	22.79	19.54	19.54	19.54
		RB25#0	22.76	22.88	22.68	19.51	19.63	19.43
	16QAM	RB1#0	22.31	23.16	22.64	19.06	19.91	19.39
		RB1#13	22.36	23.17	22.55	19.11	19.92	19.30
		RB1#24	22.12	23.02	22.59	18.87	19.77	19.34
		RB15#0	22.81	22.89	22.81	19.56	19.64	19.56
		RB15#10	22.77	22.85	22.86	19.52	19.60	19.61
		RB25#0	21.91	21.97	21.72	18.66	18.72	18.47
10.0	QPSK	RB1#0	23.65	23.56	23.84	20.40	20.31	20.59
		RB1#25	23.84	24.04	23.98	20.59	20.79	20.73
		RB1#49	23.86	23.64	23.82	20.61	20.39	20.57
		RB25#0	22.67	22.82	22.92	19.42	19.57	19.67
		RB25#25	22.83	22.81	22.81	19.58	19.56	19.56
		RB50#0	22.73	22.82	22.88	19.48	19.57	19.63
	16QAM	RB1#0	22.52	23.18	23.44	19.27	19.93	20.19
		RB1#25	22.62	23.80	23.39	19.37	20.55	20.14
		RB1#49	22.55	23.18	23.50	19.30	19.93	20.25
		RB25#0	22.73	22.88	22.90	19.48	19.63	19.65
		RB25#25	22.96	22.87	22.88	19.71	19.62	19.63
		RB50#0	21.83	21.81	21.88	18.58	18.56	18.63

Note: ERP(dBm) = Conducted Power(dBm) + Antenna Gain(dBd)
For Band12: Antenna Gain = -1.1dBi = -3.25dBd (0dBd=2.15dBi)
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	23.65	23.91	23.72	21.23	21.49	21.30
		RB1#13	23.80	23.79	23.78	21.38	21.37	21.36
		RB1#24	23.80	23.81	24.00	21.38	21.39	21.58
		RB15#0	22.84	22.83	22.97	20.42	20.41	20.55
		RB15#10	22.94	22.88	22.97	20.52	20.46	20.55
		RB25#0	22.91	22.91	23.04	20.49	20.49	20.62
	16QAM	RB1#0	22.95	22.76	22.43	20.53	20.34	20.01
		RB1#13	23.06	22.66	22.26	20.64	20.24	19.84
		RB1#24	23.14	22.61	22.20	20.72	20.19	19.78
		RB15#0	22.83	22.82	22.97	20.41	20.40	20.55
		RB15#10	23.01	22.87	22.97	20.59	20.45	20.55
		RB25#0	21.87	21.84	21.93	19.45	19.42	19.51
10.0	QPSK	RB1#0	/	23.63	/	/	21.21	/
		RB1#25	/	23.93	/	/	21.51	/
		RB1#49	/	23.77	/	/	21.35	/
		RB25#0	/	22.82	/	/	20.40	/
		RB25#25	/	22.96	/	/	20.54	/
		RB50#0	/	22.87	/	/	20.45	/
	16QAM	RB1#0	/	23.35	/	/	20.93	/
		RB1#25	/	23.63	/	/	21.21	/
		RB1#49	/	23.29	/	/	20.87	/
		RB25#0	/	22.84	/	/	20.42	/
		RB25#25	/	22.98	/	/	20.56	/
		RB50#0	/	21.96	/	/	19.54	/

Note: ERP(dBm) = Conducted Power(dBm) + Antenna Gain(dBd)
 For Band13: Antenna Gain = -0.27dBi = -2.42dBd (0dBd=2.15dBi)
 Limit: ERP≤44.77dBm

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	23.56	23.91	23.80	21.29	21.64	21.53
		RB1#13	23.55	23.71	23.87	21.28	21.44	21.60
		RB1#24	23.95	23.81	23.76	21.68	21.54	21.49
		RB15#0	22.96	22.86	22.82	20.69	20.59	20.55
		RB15#10	22.81	22.78	22.89	20.54	20.51	20.62
		RB25#0	22.88	22.81	22.86	20.61	20.54	20.59
	16QAM	RB1#0	23.27	22.27	22.07	21.00	20.00	19.80
		RB1#13	22.89	22.22	22.25	20.62	19.95	19.98
		RB1#24	22.56	22.24	22.37	20.29	19.97	20.10
		RB15#0	22.93	22.76	22.82	20.66	20.49	20.55
		RB15#10	22.88	22.86	22.89	20.61	20.59	20.62
		RB25#0	21.75	21.93	21.83	19.48	19.66	19.56
10.0	QPSK	RB1#0	/	23.78	/	/	21.51	/
		RB1#25	/	23.68	/	/	21.41	/
		RB1#49	/	23.79	/	/	21.52	/
		RB25#0	/	22.81	/	/	20.54	/
		RB25#25	/	22.81	/	/	20.54	/
		RB50#0	/	22.80	/	/	20.53	/
	16QAM	RB1#0	/	23.38	/	/	21.11	/
		RB1#25	/	23.31	/	/	21.04	/
		RB1#49	/	23.79	/	/	21.52	/
		RB25#0	/	22.83	/	/	20.56	/
		RB25#25	/	22.85	/	/	20.58	/
		RB50#0	/	21.83	/	/	19.56	/

Note: ERP(dBm) = Conducted Power(dBm) + Antenna Gain(dBd)
 For Band14: Antenna Gain = -0.12dBi = -2.27dBd (0dBd=2.15dBi)
 Limit: ERP≤44.77dBm

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	23.27	23.49	23.31	25.07	25.29	25.11
		RB1#3	23.47	23.58	23.20	25.27	25.38	25.00
		RB1#5	23.30	23.50	23.11	25.10	25.30	24.91
		RB3#0	23.26	23.42	23.23	25.06	25.22	25.03
		RB3#3	23.27	23.46	23.17	25.07	25.26	24.97
		RB6#0	22.39	22.53	22.23	24.19	24.33	24.03
	16QAM	RB1#0	22.37	22.55	22.35	24.17	24.35	24.15
		RB1#3	22.24	22.74	22.40	24.04	24.54	24.20
		RB1#5	21.94	22.58	22.25	23.74	24.38	24.05
		RB3#0	23.15	23.38	23.16	24.95	25.18	24.96
		RB3#3	23.17	23.43	23.11	24.97	25.23	24.91
		RB6#0	21.23	21.62	21.29	23.03	23.42	23.09
3.0	QPSK	RB1#0	23.09	23.57	23.01	24.89	25.37	24.81
		RB1#8	23.08	23.51	23.23	24.88	25.31	25.03
		RB1#14	23.10	23.46	23.16	24.90	25.26	24.96
		RB6#0	22.25	22.40	22.17	24.05	24.20	23.97
		RB6#9	22.25	22.39	22.10	24.05	24.19	23.90
		RB15#0	22.26	22.39	22.24	24.06	24.19	24.04
	16QAM	RB1#0	22.65	22.73	22.90	24.45	24.53	24.70
		RB1#8	22.23	22.76	22.92	24.03	24.56	24.72
		RB1#14	22.17	22.68	22.45	23.97	24.48	24.25
		RB6#0	21.30	21.44	21.24	23.10	23.24	23.04
		RB6#9	21.29	21.35	21.17	23.09	23.15	22.97
		RB15#0	21.38	21.43	21.30	23.18	23.23	23.10

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	22.98	23.33	22.97	24.78	25.13	24.77
		RB1#13	23.10	23.38	23.07	24.90	25.18	24.87
		RB1#24	22.97	23.40	22.98	24.77	25.20	24.78
		RB15#0	22.28	22.46	22.22	24.08	24.26	24.02
		RB15#10	22.32	22.47	22.16	24.12	24.27	23.96
		RB25#0	22.21	22.35	22.17	24.01	24.15	23.97
	16QAM	RB1#0	21.64	22.08	22.15	23.44	23.88	23.95
		RB1#13	21.90	21.99	22.32	23.70	23.79	24.12
		RB1#24	21.55	21.74	21.88	23.35	23.54	23.68
		RB15#0	22.25	22.55	22.25	24.05	24.35	24.05
		RB15#10	22.29	22.53	22.21	24.09	24.33	24.01
		RB25#0	21.33	21.56	21.10	23.13	23.36	22.90
10.0	QPSK	RB1#0	23.09	23.37	23.01	24.89	25.17	24.81
		RB1#25	23.32	23.70	23.30	25.12	25.50	25.10
		RB1#49	23.20	23.44	22.90	25.00	25.24	24.70
		RB25#0	22.31	22.52	22.27	24.11	24.32	24.07
		RB25#25	22.28	22.57	22.20	24.08	24.37	24.00
		RB50#0	22.30	22.46	22.21	24.10	24.26	24.01
	16QAM	RB1#0	22.52	22.44	22.48	24.32	24.24	24.28
		RB1#25	23.17	23.06	23.08	24.97	24.86	24.88
		RB1#49	22.47	22.55	22.22	24.27	24.35	24.02
		RB25#0	22.38	22.59	22.34	24.18	24.39	24.14
		RB25#25	22.34	22.54	22.24	24.14	24.34	24.04
		RB50#0	21.28	21.51	21.28	23.08	23.31	23.08

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	23.09	23.34	23.01	24.89	25.14	24.81
		RB1#38	23.30	23.40	23.15	25.10	25.20	24.95
		RB1#74	23.20	23.29	23.08	25.00	25.09	24.88
		RB36#0	22.39	22.47	22.15	24.19	24.27	23.95
		RB36#39	22.41	22.44	22.19	24.21	24.24	23.99
		RB75#0	22.38	22.46	22.15	24.18	24.26	23.95
	16QAM	RB1#0	22.71	22.88	22.42	24.51	24.68	24.22
		RB1#38	23.23	23.42	22.55	25.03	25.22	24.35
		RB1#74	22.97	22.37	22.19	24.77	24.17	23.99
		RB36#0	22.43	22.45	22.23	24.23	24.25	24.03
		RB36#39	22.37	22.48	22.22	24.17	24.28	24.02
		RB75#0	21.37	21.54	21.32	23.17	23.34	23.12
20.0	QPSK	RB1#0	23.13	23.23	23.17	24.93	25.03	24.97
		RB1#50	23.55	23.50	23.22	25.35	25.30	25.02
		RB1#99	23.17	23.33	23.09	24.97	25.13	24.89
		RB50#0	22.41	22.51	22.17	24.21	24.31	23.97
		RB50#50	22.39	22.53	22.34	24.19	24.33	24.14
		RB100#0	22.48	22.43	22.11	24.28	24.23	23.91
	16QAM	RB1#0	22.55	22.86	22.75	24.35	24.66	24.55
		RB1#50	23.09	23.25	22.79	24.89	25.05	24.59
		RB1#99	22.73	22.96	22.28	24.53	24.76	24.08
		RB50#0	22.37	22.53	22.21	24.17	24.33	24.01
		RB50#50	22.45	22.58	22.38	24.25	24.38	24.18
		RB100#0	21.45	21.60	21.20	23.25	23.40	23.00

Note: EIRP(dBm) = Conducted Power(dBm) + Antenna Gain(dBi)

For Band 66: Antenna Gain = 1.8 dBi

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	23.50	23.39	23.72	19.44	19.33	19.66
		RB1#13	23.68	23.62	23.78	19.62	19.56	19.72
		RB1#24	23.68	23.46	23.75	19.62	19.40	19.69
		RB15#0	22.58	22.46	22.67	18.52	18.40	18.61
		RB15#10	22.70	22.54	22.59	18.64	18.48	18.53
		RB25#0	22.66	22.42	22.68	18.60	18.36	18.62
	16QAM	RB1#0	22.65	21.87	22.54	18.59	17.81	18.48
		RB1#13	22.24	22.57	22.29	18.18	18.51	18.23
		RB1#24	22.46	22.52	22.58	18.40	18.46	18.52
		RB15#0	22.75	22.42	22.62	18.69	18.36	18.56
		RB15#10	22.66	22.58	22.55	18.60	18.52	18.49
		RB25#0	21.55	21.64	21.75	17.49	17.58	17.69
10.0	QPSK	RB1#0	23.62	23.66	23.56	19.56	19.60	19.50
		RB1#25	23.71	23.56	23.68	19.65	19.50	19.62
		RB1#49	23.58	23.55	23.54	19.52	19.49	19.48
		RB25#0	22.71	22.53	22.64	18.65	18.47	18.58
		RB25#25	22.66	22.72	22.71	18.60	18.66	18.65
		RB50#0	22.68	22.50	22.69	18.62	18.44	18.63
	16QAM	RB1#0	22.95	22.94	22.83	18.89	18.88	18.77
		RB1#25	23.64	23.45	23.52	19.58	19.39	19.46
		RB1#49	22.91	22.78	22.85	18.85	18.72	18.79
		RB25#0	22.68	22.51	22.54	18.62	18.45	18.48
		RB25#25	22.62	22.70	22.79	18.56	18.64	18.73
		RB50#0	21.73	21.66	21.58	17.67	17.60	17.52

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	23.76	23.48	23.47	19.70	19.42	19.41
		RB1#38	23.66	23.50	23.61	19.60	19.44	19.55
		RB1#74	23.54	23.61	23.68	19.48	19.55	19.62
		RB36#0	22.64	22.49	22.53	18.58	18.43	18.47
		RB36#39	22.65	22.65	22.65	18.59	18.59	18.59
		RB75#0	22.67	22.53	22.52	18.61	18.47	18.46
	16QAM	RB1#0	22.88	23.06	23.01	18.82	19.00	18.95
		RB1#38	22.98	23.69	23.00	18.92	19.63	18.94
		RB1#74	22.44	23.00	22.64	18.38	18.94	18.58
		RB36#0	22.62	22.52	22.48	18.56	18.46	18.42
		RB36#39	22.71	22.69	22.69	18.65	18.63	18.63
		RB75#0	21.64	21.51	21.67	17.58	17.45	17.61
20.0	QPSK	RB1#0	23.41	23.30	23.15	19.35	19.24	19.09
		RB1#50	23.99	23.59	23.46	19.93	19.53	19.40
		RB1#99	23.42	23.41	23.53	19.36	19.35	19.47
		RB50#0	22.73	22.55	22.62	18.67	18.49	18.56
		RB50#50	22.60	22.65	22.64	18.54	18.59	18.58
		RB100#0	22.65	22.60	22.61	18.59	18.54	18.55
	16QAM	RB1#0	22.73	22.68	22.53	18.67	18.62	18.47
		RB1#50	23.60	23.40	23.01	19.54	19.34	18.95
		RB1#99	23.09	23.10	23.26	19.03	19.04	19.20
		RB50#0	22.76	22.59	22.64	18.70	18.53	18.58
		RB50#50	22.63	22.70	22.66	18.57	18.64	18.60
		RB100#0	21.78	21.58	21.56	17.72	17.52	17.50

Note: ERP(dBm) = Conducted Power(dBm) + Antenna Gain(dBd)

For Band 41: Antenna Gain = -1.91dBi = -4.06dBd (0dBd=2.15dBi)

Limit: ERP ≤ 34.77dBm

Peak-to-average ratio (PAR)**Cellular Band**

Mode	Channel	PAR (dB)	Limit (dB)
RMC (BPSK)	Low	2.93	13
	Middle	2.99	13
	High	2.99	13
HSDPA (16QAM)	Low	4.61	13
	Middle	4.67	13
	High	4.75	13
HSUPA (QPSK)	Low	6.03	13
	Middle	6.00	13
	High	6.00	13

PCS Band

Mode	Channel	PAR (dB)	Limit (dB)
RMC (BPSK)	Low	3.33	13
	Middle	3.01	13
	High	3.04	13
HSDPA (16QAM)	Low	4.70	13
	Middle	4.64	13
	High	4.58	13
HSUPA (QPSK)	Low	6.32	13
	Middle	6.09	13
	High	5.91	13

AWS Band

Mode	Channel	PAR (dB)	Limit (dB)
RMC (BPSK)	Low	2.90	13
	Middle	3.16	13
	High	3.07	13
HSDPA (16QAM)	Low	4.55	13
	Middle	4.70	13
	High	4.64	13
HSUPA (QPSK)	Low	5.88	13
	Middle	5.97	13
	High	6.14	13

LTE Band: (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	4.17	4.55	13	Pass
QPSK (100RB Size)	3.88	3.83	3.86	13	Pass
16QAM (1RB Size)	5.62	4.93	5.36	13	Pass
16QAM (100RB Size)	5.68	5.54	5.59	13	Pass

LTE Band 4 20MHz Bandwidth

Modulation	Low channel (dB)	Middle channel (dB)	High channel (dB)	PAR Limit (dB)	Result
QPSK (1RB Size)	3.51	4.35	4.43	13	Pass
QPSK (100RB Size)	3.83	3.91	3.8	13	Pass
16QAM (1RB Size)	4.41	5.3	5.13	13	Pass
16QAM (100RB Size)	5.54	5.62	5.51	13	Pass

LTE Band 5 10MHz Bandwidth

Modulation	Low channel (dB)	Middle channel (dB)	High channel (dB)	PAR Limit (dB)	Result
QPSK (1RB Size)	3.97	4.52	3.91	13	Pass
QPSK (50RB Size)	4.78	4.78	4.49	13	Pass
16QAM (1RB Size)	4.72	5.16	4.9	13	Pass
16QAM (50RB Size)	5.68	5.88	5.42	13	Pass

LTE Band 12 10MHz Bandwidth

Modulation	Low channel (dB)	Middle channel (dB)	High channel (dB)	PAR Limit (dB)	Result
QPSK (1RB Size)	4.38	4.41	4.38	13	Pass
QPSK (50RB Size)	4.84	4.9	4.81	13	Pass
16QAM (1RB Size)	5.13	5.1	5.51	13	Pass
16QAM (50RB Size)	5.77	5.88	5.83	13	Pass

LTE Band 13 10MHz Bandwidth

Modulation	Low channel (dB)	Middle channel (dB)	High channel (dB)	PAR Limit (dB)	Result
QPSK (1RB Size)	/	4.12	/	13	Pass
QPSK (50RB Size)	/	4.64	/	13	Pass
16QAM (1RB Size)	/	5.16	/	13	Pass
16QAM (50RB Size)	/	5.68	/	13	Pass

LTE Band 14 10MHz Bandwidth

Modulation	Low channel (dB)	Middle channel (dB)	High channel (dB)	PAR Limit (dB)	Result
QPSK (1RB Size)	/	4.29	/	13	Pass
QPSK (50RB Size)	/	4.55	/	13	Pass
16QAM (1RB Size)	/	4.9	/	13	Pass
16QAM (50RB Size)	/	5.62	/	13	Pass

LTE Band 66 20MHz Bandwidth

Modulation	Low channel (dB)	Middle channel (dB)	High channel (dB)	PAR Limit (dB)	Result
QPSK (1RB Size)	3.74	4.52	4.17	13	Pass
QPSK (100RB Size)	3.8	3.86	3.71	13	Pass
16QAM (1RB Size)	4.35	5.04	4.81	13	Pass
16QAM (100RB Size)	5.57	5.59	5.39	13	Pass

LTE Band 71 20MHz Bandwidth

Modulation	Low channel (dB)	Middle channel (dB)	High channel (dB)	PAR Limit (dB)	Result
QPSK (1RB Size)	4.35	4.35	4.49	13	Pass
QPSK (100RB Size)	4.17	3.91	3.94	13	Pass
16QAM (1RB Size)	5.13	4.84	4.93	13	Pass
16QAM (100RB Size)	5.68	5.74	5.65	13	Pass

FCC §2.1049-OCCUPIED BANDWIDTH

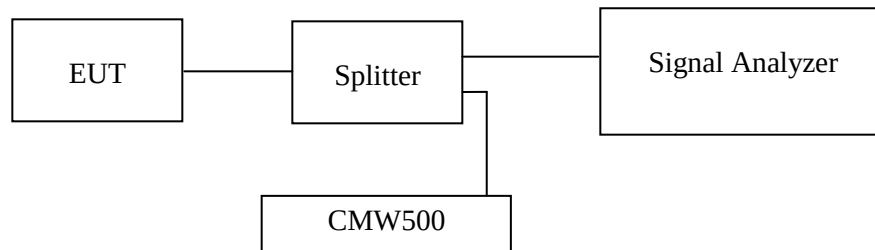
Applicable Standard

FCC 47 §2.1049

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 (cable loss and splitter inset loss) among the test frequency range has including in test plot.

Test Data

Environmental Conditions

Temperature:	23-24 °C
Relative Humidity:	56-60 %
ATM Pressure:	101.0 kPa

The testing was performed by Jacob Huang from 2023-04-11 to 2023-04-14.

EUT operation mode: Transmitting

Test Result: Pass. Please refer to the following tables and plots.

Cellular Band (Part 22H)

Frequency (MHz)		Occupied Bandwidth (MHz)	26dB Bandwidth (MHz)
RMC	826.4	4.15	4.77
	836.4	4.15	4.77
	846.6	4.14	4.76
HSDPA	826.4	4.15	4.74
	836.4	4.17	4.73
	846.6	4.32	6.53
HSUPA	826.4	4.17	4.76
	836.4	4.15	4.74
	846.6	4.39	6.80

PCS Band (Part 24E)

Frequency (MHz)		Occupied Bandwidth (MHz)	26dB Bandwidth (MHz)
RMC	1852.4	4.15	4.79
	1880.0	4.12	4.74
	1907.6	4.12	4.74
HSDPA	1852.4	4.14	4.74
	1880.0	4.14	4.76
	1907.6	4.12	4.71
HSUPA	1852.4	4.12	4.73
	1880.0	4.14	4.76
	1907.6	4.14	4.74

AWS Band (Part 27)

Frequency (MHz)		Occupied Bandwidth (MHz)	26dB Bandwidth (MHz)
RMC	1712.4	4.14	4.76
	1732.6	4.12	4.74
	1752.6	4.14	4.74
HSDPA	1712.4	4.12	4.73
	1732.6	4.14	4.73
	1752.6	4.12	4.73
HSUPA	1712.4	4.14	4.74
	1732.6	4.12	4.73
	1752.6	4.14	4.74

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	1.102	1.308	1.096	1.320	1.108	1.296
	16QAM	1.102	1.326	1.096	1.302	1.102	1.314
3 MHz	QPSK	2.695	2.952	2.695	2.952	2.695	2.940
	16QAM	2.683	2.952	2.695	2.976	2.683	2.964
5 MHz	QPSK	4.531	5.040	4.511	5.060	4.511	5.020
	16QAM	4.511	5.020	4.551	5.060	4.531	5.060
10 MHz	QPSK	8.942	9.720	8.942	9.840	8.942	9.720
	16QAM	8.942	9.760	8.942	9.680	8.942	9.680
15 MHz	QPSK	13.473	14.700	13.413	14.580	13.413	14.580
	16QAM	13.473	14.640	13.533	14.640	13.473	14.640
20 MHz	QPSK	17.884	19.280	17.884	19.280	17.884	19.280
	16QAM	17.964	19.440	17.964	19.360	17.884	19.360

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	1.108	1.368	1.108	1.290	1.102	1.326
	16QAM	1.102	1.308	1.096	1.302	1.102	1.326
3 MHz	QPSK	2.695	2.952	2.683	2.952	2.695	2.952
	16QAM	2.683	2.964	2.683	2.952	2.695	2.976
5 MHz	QPSK	4.531	5.040	4.511	5.060	4.511	5.040
	16QAM	4.511	5.040	4.551	5.060	4.531	5.040
10 MHz	QPSK	8.942	9.720	8.942	9.800	8.942	9.680
	16QAM	8.942	9.640	8.942	9.640	8.942	9.680
15 MHz	QPSK	13.473	14.760	13.413	14.640	13.473	14.640
	16QAM	13.473	14.640	13.413	14.640	13.413	14.640
20 MHz	QPSK	17.964	19.280	17.964	19.200	17.884	19.360
	16QAM	17.964	19.280	18.044	19.600	17.884	19.280

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	1.102	1.314	1.096	1.320	1.102	1.302
	16QAM	1.102	1.314	1.096	1.296	1.102	1.302
3 MHz	QPSK	2.695	2.940	2.695	2.928	2.683	2.964
	16QAM	2.695	2.964	2.683	2.952	2.683	2.964
5 MHz	QPSK	4.511	5.040	4.511	5.060	4.511	5.020
	16QAM	4.511	5.020	4.531	5.060	4.531	5.040
10 MHz	QPSK	8.942	9.840	8.942	9.680	8.942	9.720
	16QAM	8.942	9.680	8.942	9.720	8.942	9.680

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	1.102	1.320	1.102	1.302	1.102	1.320
	16QAM	1.096	1.296	1.102	1.296	1.102	1.320
3 MHz	QPSK	2.695	2.940	2.695	2.940	2.683	2.964
	16QAM	2.695	2.964	2.683	2.952	2.683	2.964
5 MHz	QPSK	4.531	5.040	4.511	5.060	4.511	5.020
	16QAM	4.511	5.020	4.551	5.040	4.511	5.060
10 MHz	QPSK	8.942	9.720	8.942	9.840	8.942	9.760
	16QAM	8.942	9.720	8.942	9.680	8.942	9.720

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	4.511	5.040	4.511	5.000	4.511	5.040
	16QAM	4.511	5.040	4.531	5.040	4.511	5.000
10 MHz	QPSK	/	/	8.942	9.840	/	/
	16QAM	/	/	8.942	9.640	/	/

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	4.511	5.060	4.511	5.020	4.531	5.040
	16QAM	4.511	5.040	4.511	5.040	4.511	5.020
10 MHz	QPSK	/	/	8.942	9.800	/	/
	16QAM	/	/	8.942	9.680	/	/

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	1.102	1.338	1.102	1.326	1.108	1.416
	16QAM	1.102	1.332	1.096	1.296	1.102	1.320
3 MHz	QPSK	2.695	2.952	2.695	2.952	2.695	2.952
	16QAM	2.695	2.988	2.683	2.952	2.695	2.976
5 MHz	QPSK	4.531	5.040	4.531	5.060	4.511	5.060
	16QAM	4.511	5.040	4.511	5.040	4.511	5.060
10 MHz	QPSK	8.942	9.840	8.942	9.840	8.942	9.800
	16QAM	8.942	9.680	8.942	9.640	8.942	9.680
15 MHz	QPSK	13.533	14.760	13.473	14.760	13.473	14.640
	16QAM	13.413	14.700	13.413	14.640	13.413	14.640
20 MHz	QPSK	17.884	19.360	17.884	19.120	17.884	19.360
	16QAM	17.884	19.360	17.964	19.280	17.884	19.280

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	4.491	5.040	4.511	5.060	4.531	5.060
	16QAM	4.511	5.040	4.511	5.020	4.511	5.040
10 MHz	QPSK	8.942	9.720	8.942	9.720	8.942	9.840
	16QAM	8.942	9.600	8.942	9.680	8.942	9.640
15 MHz	QPSK	13.473	14.700	13.413	14.640	13.533	14.760
	16QAM	13.473	14.700	13.413	14.640	13.533	14.760
20 MHz	QPSK	17.804	19.360	17.804	19.280	17.884	19.360
	16QAM	17.964	19.520	17.884	19.280	17.964	19.280

The test plots please refer to the Appendix A.

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

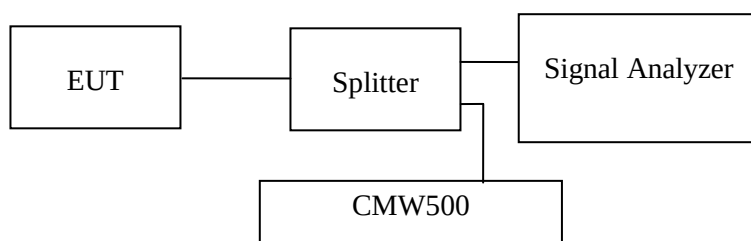
Applicable Standard

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

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 (cable loss and splitter inset loss) among the test frequency range has including in test plot.

Test Data

Environmental Conditions

Temperature:	23-24°C
Relative Humidity:	56-59 %
ATM Pressure:	101.0 kPa

The testing was performed by Jacob Huang from 2023-04-11 to 2023-04-17.

EUT operation mode: Transmitting

Test result: Pass.

The test plots please refer to the Appendix B.

FCC § 2.1053; § 22.917(a); § 24.238(a); § 27.53; § 90.543(e)-SPURIOUS RADIATED EMISSIONS

Applicable Standard

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

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.

Remove the EUT and replace it with substitution antenna. A signal generator was connected to the substitution antenna by a non-radiating cable. The absolute levels of the spurious emissions were measured by the substitution.

Spurious emissions in dB = $10 \lg(\text{TXpwr in Watts}/0.001)$ – the absolute level

Spurious attenuation limit in dB = $43 + 10 \lg(\text{power out in Watts})$

Test Data

Environmental Conditions

Temperature:	23 °C
Relative Humidity:	57 %
ATM Pressure:	101.0 kPa

The testing was performed by Jason Liu on 2023-04-19.

*EUT operation mode: Transmitting
(Pre-scan in the X,Y and Z axes of orientation, the worst case Y-axes of orientation was recorded)*

The worst case is as below:

Cellular Band (Part 22H)**30MHz-10GHz:**

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)				
3G BAND5, Low Channel									
39.87	-56.92	PK	289	2.2	H	6.5	-50.42	-13	-37.42
522.26	-53.83	PK	289	2.0	V	7.7	-46.13	-13	-33.13
1652.8	-41.44	PK	0	1.5	H	3.01	-38.43	-13	-25.43
1652.8	-46.69	PK	230	1.4	V	2.55	-44.14	-13	-31.14
3G BAND5, Middle Channel									
39.87	-57.85	PK	16	1.0	H	6.5	-51.35	-13	-38.35
522.26	-55.11	PK	56	1.4	V	7.7	-47.41	-13	-34.41
1673.2	-42.36	PK	154	1.6	H	3.12	-39.24	-13	-26.24
1673.2	-49.30	PK	230	1.2	V	2.49	-46.81	-13	-33.81
3G BAND5, High Channel									
39.87	-57.34	PK	67	1.4	H	6.5	-50.84	-13	-37.84
522.26	-54.28	PK	22	1.7	V	7.7	-46.58	-13	-33.58
1693.2	-43.08	PK	282	1.4	H	3.23	-39.85	-13	-26.85
1693.2	-48.12	PK	62	1.9	V	2.43	-45.69	-13	-32.69

PCS Band (Part 24E)**30MHz-20GHz:**

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)				
3G BAND2, Low Channel									
39.87	-57.56	PK	284	1.3	H	6.5	-51.06	-13	-38.06
522.26	-55.20	PK	190	1.5	V	7.7	-47.50	-13	-34.50
3704.8	-43.77	PK	205	1.3	H	8.2	-35.57	-13	-22.57
3704.8	-45.30	PK	251	2.2	V	6.93	-38.37	-13	-25.37
3G BAND2, Middle Channel									
39.87	-59.02	PK	117	1.7	H	6.5	-52.52	-13	-39.52
522.26	-54.37	PK	301	2.2	V	7.7	-46.67	-13	-33.67
3760	-44.79	PK	84	1.5	H	8.25	-36.54	-13	-23.54
3760	-47.49	PK	160	1.6	V	7.65	-39.84	-13	-26.84
3G BAND2, High Channel									
39.87	-57.39	PK	348	2.1	H	6.5	-50.89	-13	-37.89
522.26	-54.17	PK	43	1.3	V	7.7	-46.47	-13	-33.47
3815.2	-45.32	PK	346	2.0	H	8.16	-37.16	-13	-24.16
3815.2	-46.68	PK	175	2.0	V	7.5	-39.18	-13	-26.18

AWS Band (Part 27)

30MHz-20GHz:

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)				
3G BAND4, Low Channel									
39.87	-57.98	PK	90	1.8	H	6.5	-51.48	-13	-38.48
522.26	-54.85	PK	263	2.0	V	7.7	-47.15	-13	-34.15
3424.8	-48.18	PK	0	1.5	H	5.81	-42.37	-13	-29.37
3424.8	-56.20	PK	230	1.4	V	6.41	-49.79	-13	-36.79
3G BAND4, Middle Channel									
39.87	-57.13	PK	338	1.3	H	6.5	-50.63	-13	-37.63
522.26	-53.11	PK	313	1.4	V	7.7	-45.41	-13	-32.41
3464	-50.33	PK	154	1.6	H	6.47	-43.86	-13	-30.86
3464	-56.13	PK	230	1.2	V	6.71	-49.42	-13	-36.42
3G BAND4, High Channel									
39.87	-58.80	PK	260	1.7	H	6.5	-52.30	-13	-39.30
522.26	-54.96	PK	30	1.4	V	7.7	-47.26	-13	-34.26
3502.2	-52.02	PK	282	1.4	H	8.08	-43.94	-13	-30.94
3502.2	-54.16	PK	62	1.9	V	5.88	-48.28	-13	-35.28

LTE Bands: (pre-scan all bandwidth/modulation, the worst case 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)				
LTE BAND2									
Test frequency range: 30MHz-20GHz									
1.4MHz bandwidth, QPSK, Low Channel									
39.87	-57.48	PK	27	1.4	H	6.5	-50.98	-13	-37.98
522.26	-54.11	PK	342	1.0	V	7.7	-46.41	-13	-33.41
3701.4	-42.01	PK	331	1.9	H	8.2	-33.81	-13	-20.81
3701.4	-42.61	PK	18	1.4	V	6.87	-35.74	-13	-22.74
1.4MHz bandwidth, QPSK, Middle Channel									
39.87	-58.25	PK	335	1.4	H	6.5	-51.75	-13	-38.75
522.26	-56.12	PK	318	1.3	V	7.7	-48.42	-13	-35.42
3760	-41.27	PK	241	1.2	H	8.25	-33.02	-13	-20.02
3760	-43.71	PK	118	1.6	V	7.65	-36.06	-13	-23.06
1.4MHz bandwidth, QPSK, High Channel									
39.87	-57.13	PK	79	1.1	H	6.5	-50.63	-13	-37.63
522.26	-53.82	PK	197	1.4	V	7.7	-46.12	-13	-33.12
3818.6	-42.49	PK	316	1.2	H	8.14	-34.35	-13	-21.35
3818.6	-44.73	PK	24	1.5	V	7.58	-37.15	-13	-24.15
LTE BAND4									
Test frequency range: 30MHz-20GHz									
1.4MHz bandwidth, QPSK, Low Channel									
39.87	-57.39	PK	194	1.0	H	6.5	-50.89	-13	-37.89
522.26	-54.38	PK	274	1.0	V	7.7	-46.68	-13	-33.68
3421.4	-47.14	PK	250	2.0	H	5.78	-41.36	-13	-28.36
3421.4	-51.16	PK	290	1.3	V	5.98	-45.18	-13	-32.18
1.4MHz bandwidth, QPSK, Middle Channel									
39.87	-58.07	PK	242	2.1	H	6.5	-51.57	-13	-38.57
522.26	-55.33	PK	24	1.3	V	7.7	-47.63	-13	-34.63
3465	-45.93	PK	149	1.8	H	6.51	-39.42	-13	-26.42
3465	-52.77	PK	122	1.0	V	6.69	-46.08	-13	-33.08
1.4MHz bandwidth, QPSK, High Channel									
39.87	-57.61	PK	118	2.0	H	6.5	-51.11	-13	-38.11
522.26	-54.57	PK	249	1.7	V	7.7	-46.87	-13	-33.87
3508.6	-49.74	PK	175	2.1	H	8.15	-41.59	-13	-28.59
3508.6	-49.89	PK	61	1.4	V	6.05	-43.84	-13	-30.84

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)				
LTE BAND5									
Test frequency range: 30MHz-10GHz									
5MHz bandwidth, QPSK, Low Channel									
39.87	-57.46	PK	231	1.6	H	6.5	-50.96	-13	-37.96
522.26	-55.23	PK	183	1.6	V	7.7	-47.53	-13	-34.53
1649.4	-36.86	PK	188	1.7	H	2.99	-33.87	-13	-20.87
1649.4	-42.11	PK	286	2.1	V	2.57	-39.54	-13	-26.54
5MHz bandwidth, QPSK, Middle Channel									
39.87	-58.91	PK	177	2.1	H	6.5	-52.41	-13	-39.41
522.26	-55.89	PK	257	1.4	V	7.7	-48.19	-13	-35.19
1673	-38.11	PK	268	1.9	H	3.12	-34.99	-13	-21.99
1673	-42.04	PK	253	1.9	V	2.49	-39.55	-13	-26.55
5MHz bandwidth, QPSK, High Channel									
39.87	-58.12	PK	141	1.8	H	6.5	-51.62	-13	-38.62
522.26	-55.45	PK	5	1.9	V	7.7	-47.75	-13	-34.75
1696.6	-38.63	PK	153	1.4	H	3.25	-35.38	-13	-22.38
1696.6	-42.84	PK	257	1.2	V	2.42	-40.42	-13	-27.42
LTE BAND12									
Test frequency range: 30MHz-10GHz									
1.4MHz bandwidth, QPSK, Low Channel									
39.87	-58.57	PK	310	1.9	H	6.5	-52.07	-13	-39.07
522.26	-55.49	PK	106	1.9	V	7.7	-47.79	-13	-34.79
1399.4	-45.99	PK	219	1.4	H	5.51	-40.48	-13	-27.48
1399.4	-49.40	PK	293	1.0	V	5.34	-44.06	-13	-31.06
1.4MHz bandwidth, QPSK, Middle Channel									
39.87	-57.88	PK	18	2.0	H	6.5	-51.38	-13	-38.38
522.26	-54.90	PK	284	1.1	V	7.7	-47.20	-13	-34.20
1415	-47.99	PK	208	1.1	H	5.12	-42.87	-13	-29.87
1415	-52.74	PK	225	2.0	V	5.62	-47.12	-13	-34.12
1.4MHz bandwidth, QPSK, High Channel									
39.87	-57.33	PK	341	2.0	H	6.5	-50.83	-13	-37.83
522.26	-54.15	PK	179	1.7	V	7.7	-46.45	-13	-33.45
1430.6	-44.68	PK	272	1.7	H	4.73	-39.95	-13	-26.95
1430.6	-51.44	PK	314	1.8	V	4.86	-46.58	-13	-33.58

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)				
LTE BAND13									
Test frequency range: 30MHz-10GHz									
5MHz bandwidth, QPSK, Low Channel									
39.87	-58.25	PK	45	2.2	H	6.5	-51.75	-13	-38.75
522.26	-54.26	PK	289	1.8	V	7.7	-46.56	-13	-33.56
1559	-49.41	PK	111	1.2	H	3.57	-45.84	-40	-5.84
1559	-54.28	PK	303	1.2	V	2.81	-51.47	-40	-11.47
5MHz bandwidth, QPSK, Middle Channel									
39.87	-58.86	PK	3	1.2	H	6.5	-52.36	-13	-39.36
522.26	-56.27	PK	262	1.7	V	7.7	-48.57	-13	-35.57
1564	-48.77	PK	105	1.8	H	3.55	-45.22	-40	-5.22
1564	-55.62	PK	30	1.4	V	2.87	-52.75	-40	-12.75
5MHz bandwidth, QPSK, High Channel									
39.87	-58.69	PK	214	1.2	H	6.5	-52.19	-13	-39.19
522.26	-56.44	PK	284	1.1	V	7.7	-48.74	-13	-35.74
1569	-49.44	PK	340	2.2	H	3.52	-45.92	-40	-5.92
1569	-55.60	PK	158	2.0	V	2.93	-52.67	-40	-12.67
LTE BAND14									
Test frequency range: 30MHz-10GHz									
5MHz bandwidth, QPSK, Low Channel									
39.87	-57.77	PK	162	1.1	H	6.5	-51.27	-13	-38.27
522.26	-54.81	PK	305	2.0	V	7.7	-47.11	-13	-34.11
1581	-50.84	PK	359	1.6	H	3.46	-47.38	-40	-7.38
1581	-50.70	PK	45	2.1	V	3.07	-47.63	-40	-7.63
5MHz bandwidth, QPSK, Middle Channel									
39.87	-59.05	PK	318	1.4	H	6.5	-52.55	-13	-39.55
522.26	-56.19	PK	27	1.3	V	7.7	-48.49	-13	-35.49
1586	-50.58	PK	258	1.2	H	3.44	-47.14	-40	-7.14
1586	-50.57	PK	2	1.0	V	3.13	-47.44	-40	-7.44
5MHz bandwidth, QPSK, High Channel									
39.87	-57.22	PK	301	1.2	H	6.5	-50.72	-13	-37.72
522.26	-54.35	PK	237	1.3	V	7.7	-46.65	-13	-33.65
1591	-50.46	PK	273	1.8	H	3.41	-47.05	-40	-7.05
1591	-51.36	PK	210	2.2	V	3.19	-48.17	-40	-8.17

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)				
LTE BAND66									
Test frequency range: 30MHz-20GHz									
1.4MHz bandwidth, QPSK, Low Channel									
39.87	-57.97	PK	162	1.1	H	6.5	-51.47	-13	-38.47
522.26	-56.04	PK	305	2.0	V	7.7	-48.34	-13	-35.34
3421.4	-55.89	PK	359	1.6	H	5.78	-50.11	-13	-37.11
3421.4	-56.47	PK	45	2.1	V	5.98	-50.49	-13	-37.49
1.4MHz bandwidth, QPSK, Middle Channel									
39.87	-58.78	PK	318	1.4	H	6.5	-52.28	-13	-39.28
522.26	-55.35	PK	27	1.3	V	7.7	-47.65	-13	-34.65
3490	-58.89	PK	258	1.2	H	7.62	-51.27	-13	-38.27
3490	-57.34	PK	2	1.0	V	6.07	-51.27	-13	-38.27
1.4MHz bandwidth, QPSK, High Channel									
39.87	-58.18	PK	301	1.2	H	6.5	-51.68	-13	-38.68
522.26	-55.85	PK	237	1.3	V	7.7	-48.15	-13	-35.15
3558.6	-59.87	PK	273	1.8	H	8.41	-51.46	-13	-38.46
3558.6	-59.41	PK	210	2.2	V	7.25	-52.16	-13	-39.16
LTE BAND71									
Test frequency range: 30MHz-10GHz									
5MHz bandwidth, QPSK, Low Channel									
39.87	-57.75	PK	297	2.0	H	6.5	-51.25	-13	-38.25
522.26	-55.82	PK	247	1.5	V	7.7	-48.12	-13	-35.12
1331	-50.55	PK	213	2.0	H	6.26	-44.29	-13	-31.29
1331	-49.07	PK	111	1.3	V	5.12	-43.95	-13	-30.95
5MHz bandwidth, QPSK, Middle Channel									
39.87	-57.34	PK	70	1.7	H	6.5	-50.84	-13	-37.84
522.26	-54.79	PK	144	1.3	V	7.7	-47.09	-13	-34.09
1361	-52.99	PK	288	1.0	H	6.45	-46.54	-13	-33.54
1361	-50.52	PK	10	1.2	V	5.76	-44.76	-13	-31.76
5MHz bandwidth, QPSK, High Channel									
39.87	-58.68	PK	39	1.0	H	6.5	-52.18	-13	-39.18
522.26	-56.17	PK	154	1.4	V	7.7	-48.47	-13	-35.47
1391	-61.01	PK	41	1.0	H	5.72	-55.29	-13	-42.29
1391	-51.37	PK	153	1.1	V	6.22	-45.15	-13	-32.15

Note:

Absolute Level = Reading Level + Substituted Factor

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

Margin = Absolute Level - Limit

The other spurious emission which is in the noise floor level was not recorded.

FCC § 22.917(a); § 24.238(a); §27.53(g)(h)(m); §90.543(e)-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 §27.53(g) (h)(m), 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.

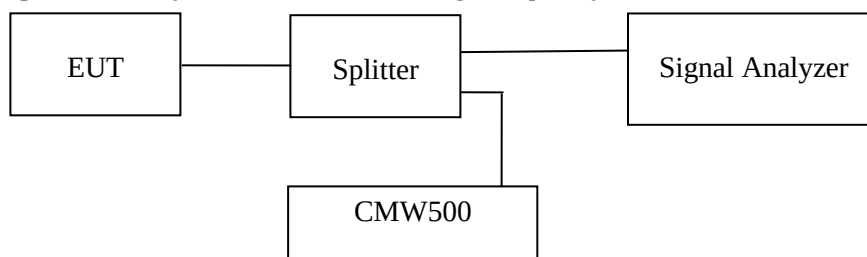
According to §90.543 (e), For operations in the 758-768 MHz and the 788-798 MHz bands, the power of any emission outside the licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, in accordance with the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

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 (cable loss and splitter inset loss) among the test frequency range has including in test plot.

Test Data**Environmental Conditions**

Temperature:	23-24 °C
Relative Humidity:	56-59 %
ATM Pressure:	101.0 kPa

The testing was performed by Jacob Huang from 2023-04-11 to 2023-04-17.

EUT operation mode: Transmitting (Worst case)

Test Result: Pass. The test plots please refer to the Appendix C.

FCC § 2.1055; § 22.355; § 24.235; §27.54; §90.39-FREQUENCY STABILITY**Applicable Standard**

FCC § 2.1055, §22.355 & §24.235 & §27.54 & §90.213.

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:

Table C-1—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 §90.213, (a) unless noted elsewhere, transmitters used in the services governed by this part must have a minimum frequency stability as specified in the following table.

Table 1 to § 90.213(a)—Minimum Frequency Stability

[Parts per million (ppm)]

Frequency range (MHz)	Fixed and base stations	Mobile stations	
		Over 2 watts output power	2 watts or less output power
Below 25	^{1 2 3} 100	100	200
25–50	20	20	50
72–76	5		50
150–174	^{5 11} 5	⁶ 5	^{4 6} 50
216–220	1.0		1.0
220–222 ¹²	0.1	1.5	1.5
421–512	^{7 11 14} 2.5	⁸ 5	⁸ 5
806–809	¹⁴ 1.0	1.5	1.5
809–824	¹⁴ 1.5	2.5	2.5
851–854	1.0	1.5	1.5
854–869	1.5	2.5	2.5
896–901	¹⁴ 0.1	1.5	1.5
902–928	2.5	2.5	2.5
902–928 ¹³	2.5	2.5	2.5
929–930	1.5		
935–940	0.1	1.5	1.5
1427–1435	⁹ 300	300	300
Above 2450 ¹⁰			

¹ Fixed and base stations with over 200 watts transmitter power must have a frequency stability of 50 ppm except for equipment used in the Public Safety Pool where the frequency stability is 100 ppm.

² For single sideband operations below 25 MHz, the carrier frequency must be maintained within 50 Hz of the authorized carrier frequency.

³ Travelers information station transmitters operating from 530–1700 kHz and transmitters exceeding 200 watts peak envelope power used for disaster communications and long distance circuit operations pursuant to §§ 90.242 and 90.264 must maintain the carrier frequency to within 20 Hz of the authorized frequency.

⁴ Stations operating in the 154.45 to 154.49 MHz or the 173.2 to 173.4 MHz bands must have a frequency stability of 5 ppm.

⁵ In the 150–174 MHz band, fixed and base stations with a 12.5 kHz channel bandwidth must have a frequency stability of 2.5 ppm. Fixed and base stations with a 6.25 kHz channel bandwidth must have a frequency stability of 1.0 ppm.

⁶ In the 150–174 MHz band, mobile stations designed to operate with a 12.5 kHz channel bandwidth or designed to operate on a frequency specifically designated for itinerant use or designed for low-power operation of two watts or less, must have a frequency stability of 5.0 ppm. Mobile stations designed to operate with a 6.25 kHz channel bandwidth must have a frequency stability of 2.0 ppm.

⁷ In the 421–512 MHz band, fixed and base stations with a 12.5 kHz channel bandwidth must have a frequency stability of 1.5 ppm. Fixed and base stations with a 6.25 kHz channel bandwidth must have a frequency stability of 0.5 ppm.

⁸ In the 421–512 MHz band, mobile stations designed to operate with a 12.5 kHz channel bandwidth must have a frequency stability of 2.5 ppm. Mobile stations designed to operate with a 6.25 kHz channel bandwidth must have a frequency stability of 1.0 ppm.

⁹ Fixed stations with output powers above 120 watts and necessary bandwidth less than 3 kHz must operate with a frequency stability of 100 ppm. Fixed stations with output powers less than 120 watts and using time-division multiplex, must operate with a frequency stability of 500 ppm.

¹⁰ Frequency stability for DSRCS equipment in the 5895–5925 MHz band is specified in [subpart M of this part](#). For all other equipment, frequency stability is to be specified in the station authorization.

¹¹ Paging transmitters operating on paging-only frequencies must operate with frequency stability of 5 ppm in the 150–174 MHz band and 2.5 ppm in the 421–512 MHz band.

¹² Mobile units may utilize synchronizing signals from associated base stations to achieve the specified carrier stability.

¹³ Fixed non-multilateration transmitters with an authorized bandwidth that is more than 40 kHz from the band edge, intermittently operated hand-held readers, and mobile transponders are not subject to frequency tolerance restrictions.

¹⁴ Control stations may operate with the frequency tolerance specified for associated mobile frequencies.

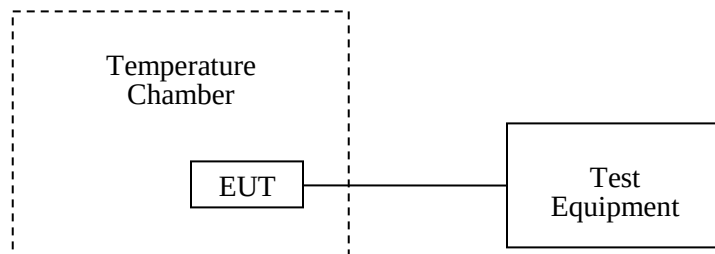
(b) For the purpose of determining the frequency stability limits, the power of a transmitter is considered to be the maximum rated output power as specified by the manufacturer.

Test Procedure

Frequency Stability vs. Temperature: The equipment under test was connected to an external AC 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 AC 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:	23-24 °C
Relative Humidity:	56-60 %
ATM Pressure:	101.0 kPa

The testing was performed by Jacob Huang from 2023-04-11 to 2023-04-15.

EUT operation mode: Transmitting

Test Result: Pass. Please refer to the following tables.

Cellular Band (Part 22H)**WCDMA Mode**

Middle Channel, $f_0 = 836.4\text{MHz}$				
Temperature (°C)	Voltage Supplied (V_{DC})	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
-30	N.V.	8.15	0.0097	2.5
-20		5.50	0.0066	2.5
-10		-0.80	-0.0010	2.5
0		-4.05	-0.0048	2.5
10		-6.97	-0.0083	2.5
20		-8.00	-0.0096	2.5
30		0.00	0.0000	2.5
40		-4.51	-0.0054	2.5
50		-4.37	-0.0052	2.5
20	L.V.	-3.75	-0.0045	2.5
	H.V.	-3.31	-0.0040	2.5

PCS Band (Part 24E)**WCDMA Mode**

Temperature (°C)	Power Supplied (V _{DC})	F _L (MHz)	F _H (MHz)	F _L Limit (MHz)	F _H Limit (MHz)
-30	N.V.	1850.0182	1909.9911	1850	1910
-20		1850.0211	1909.9815	1850	1910
-10		1850.0142	1909.9869	1850	1910
0		1850.0199	1909.9647	1850	1910
10		1850.0210	1909.9952	1850	1910
20		1850.0251	1909.9789	1850	1910
30		1850.0318	1909.9671	1850	1910
40		1850.0203	1909.9989	1850	1910
50		1850.0213	1909.9867	1850	1910
20	L.V.	1850.0218	1909.9744	1850	1910
	H.V.	1850.0146	1909.9710	1850	1910

AWS Band (Part 27)

Temperature (°C)	Power Supplied (V _{DC})	F _L (MHz)	F _H (MHz)	F _L Limit (MHz)	F _H Limit (MHz)
-30	N.V.	1710.0333	1754.9904	1710	1755
-20		1710.0291	1754.9877	1710	1755
-10		1710.0311	1754.9910	1710	1755
0		1710.0259	1754.9878	1710	1755
10		1710.0289	1754.9879	1710	1755
20		1710.0264	1754.9919	1710	1755
30		1710.0269	1754.9927	1710	1755
40		1710.0271	1754.9875	1710	1755
50		1710.0263	1754.9857	1710	1755
20	L.V.	1710.0283	1754.9921	1710	1755
	H.V.	1710.0259	1754.9873	1710	1755

LTE:
QPSK:
Band 2:

1.4 MHz Bandwidth					
Temperature (°C)	Power Supplied (V _{DC})	F _L (MHz)	F _H (MHz)	F _L Limit (MHz)	F _H Limit (MHz)
-30	N.V.	1850.0257	1909.9804	1850	1910
-20		1850.0232	1909.9657	1850	1910
-10		1850.0325	1909.9803	1850	1910
0		1850.0230	1909.9918	1850	1910
10		1850.0235	1909.9750	1850	1910
20		1850.0269	1909.9890	1850	1910
30		1850.0255	1909.9769	1850	1910
40		1850.0191	1909.9823	1850	1910
50		1850.0218	1909.9863	1850	1910
20	L.V.	1850.0256	1909.9767	1850	1910
	H.V.	1850.0237	1909.9780	1850	1910

Band 4:

1.4 MHz Bandwidth					
Temperature (°C)	Power Supplied (V _{DC})	F _L (MHz)	F _H (MHz)	F _L Limit (MHz)	F _H Limit (MHz)
-30	N.V.	1710.1169	1754.8715	1710	1755
-20		1710.1163	1754.8712	1710	1755
-10		1710.1119	1754.8762	1710	1755
0		1710.1119	1754.8754	1710	1755
10		1710.1126	1754.8742	1710	1755
20		1710.1173	1754.8737	1710	1755
30		1710.1108	1754.8733	1710	1755
40		1710.1141	1754.8767	1710	1755
50		1710.1176	1754.8751	1710	1755
20	L.V.	1710.1114	1754.8778	1710	1755
	H.V.	1710.1094	1754.8736	1710	1755

Band 5:

1.4MHz Bandwidth, Middle Channel, $f_o = 836.5\text{MHz}$				
Temperature (°C)	Voltage Supplied (V _{DC})	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
-30	N.V.	6.72	0.008	2.5
-20		-6.97	-0.0083	2.5
-10		-5.50	-0.0066	2.5
0		6.06	0.0072	2.5
10		9.80	0.0117	2.5
20		5.03	0.006	2.5
30		-6.62	-0.0079	2.5
40		-8.73	-0.0104	2.5
50		-7.05	-0.0084	2.5
20	L.V.	8.99	0.0107	2.5
	H.V.	-7.17	-0.0086	2.5

Band 12:

1.4 MHz Bandwidth					
Temperature (°C)	Power Supplied (V _{DC})	F _L (MHz)	F _H (MHz)	F _L Limit (MHz)	F _H Limit (MHz)
-30	N.V.	699.0972	715.9959	699	716
-20		699.1030	715.9981	699	716
-10		699.1037	715.9876	699	716
0		699.0983	715.9467	699	716
10		699.0997	715.9987	699	716
20		699.1029	715.9990	699	716
30		699.0974	715.9991	699	716
40		699.0975	715.8993	699	716
50		699.0992	715.9997	699	716
20	L.V.	699.1019	715.8997	699	716
	H.V.	699.0969	715.9971	699	716

Band 13:

5 MHz Bandwidth					
Temperature (°C)	Power Supplied (V _{DC})	F _L (MHz)	F _H (MHz)	F _L Limit (MHz)	F _H Limit (MHz)
-30	N.V.	777.1266	786.8994	777	787
-20		777.1311	786.8988	777	787
-10		777.1261	786.9025	777	787
0		777.1267	786.9018	777	787
10		777.1289	786.8997	777	787
20		777.1278	786.8990	777	787
30		777.1314	786.8976	777	787
40		777.1296	786.9044	777	787
50		777.1267	786.8974	777	787
20	L.V.	777.1309	786.8986	777	787
	H.V.	777.1288	786.9004	777	787

Band 14:

5 MHz Bandwidth					
Temperature (°C)	Power Supplied (V _{DC})	F _L (MHz)	F _H (MHz)	F _L Limit (MHz)	F _H Limit (MHz)
-30	N.V.	788.1278	797.8878	788	798
-20		788.1252	797.8914	788	798
-10		788.1267	797.8874	788	798
0		788.1250	797.8893	788	798
10		788.1243	797.8897	788	798
20		788.1275	797.8900	788	798
30		788.1262	797.8879	788	798
40		788.1278	797.8875	788	798
50		788.1269	797.8917	788	798
20	L.V.	788.1237	797.8942	788	798
	H.V.	788.1270	797.8886	788	798

Band 66:

1.4 MHz Bandwidth					
Temperature (°C)	Power Supplied (V _{DC})	F _L (MHz)	F _H (MHz)	F _L Limit (MHz)	F _H Limit (MHz)
-30	N.V.	1710.0214	1779.8910	1710	1780
-20		1710.0205	1779.8909	1710	1780
-10		1710.0194	1779.8886	1710	1780
0		1710.0219	1779.8900	1710	1780
10		1710.0187	1779.8897	1710	1780
20		1710.0194	1779.8869	1710	1780
30		1710.0166	1779.8941	1710	1780
40		1710.0177	1779.8929	1710	1780
50		1710.0235	1779.8937	1710	1780
20	L.V.	1710.0190	1779.8878	1710	1780
	H.V.	1710.0186	1779.8938	1710	1780

Band 71:

5 MHz Bandwidth					
Temperature (°C)	Power Supplied (V _{DC})	F _L (MHz)	F _H (MHz)	F _L Limit (MHz)	F _H Limit (MHz)
-30	N.V.	663.0309	697.9069	663	698
-20		663.0308	697.9048	663	698
-10		663.0274	697.9101	663	698
0		663.0318	697.9103	663	698
10		663.0289	697.9078	663	698
20		663.0336	697.9070	663	698
30		663.0260	697.9075	663	698
40		663.0319	697.9099	663	698
50		663.0271	697.9126	663	698
20	L.V.	663.0306	697.9053	663	698
	H.V.	663.0276	697.9121	663	698

16QAM:**Band 2:**

1.4 MHz Bandwidth					
Temperature (°C)	Power Supplied (V _{DC})	F _L (MHz)	F _H (MHz)	F _L Limit (MHz)	F _H Limit (MHz)
-30	N.V.	1850.0217	1909.9903	1850	1910
-20		1850.0398	1909.9832	1850	1910
-10		1850.0165	1909.9826	1850	1910
0		1850.0242	1909.9548	1850	1910
10		1850.0373	1909.9812	1850	1910
20		1850.0189	1909.9914	1850	1910
30		1850.0247	1909.9760	1850	1910
40		1850.0219	1909.9978	1850	1910
50		1850.0195	1909.9800	1850	1910
20	L.V.	1850.0177	1909.9817	1850	1910
	H.V.	1850.0234	1909.9814	1850	1910

Band 4:

1.4 MHz Bandwidth					
Temperature (°C)	Power Supplied (V _{DC})	F _L (MHz)	F _H (MHz)	F _L Limit (MHz)	F _H Limit (MHz)
-30	N.V.	1710.2181	1754.8558	1710	1755
-20		1710.2158	1754.8589	1710	1755
-10		1710.2122	1754.8550	1710	1755
0		1710.2126	1754.8566	1710	1755
10		1710.2136	1754.8547	1710	1755
20		1710.2131	1754.8552	1710	1755
30		1710.2115	1754.8579	1710	1755
40		1710.2150	1754.8519	1710	1755
50		1710.2175	1754.8589	1710	1755
20	L.V.	1710.2128	1754.8584	1710	1755
	H.V.	1710.2184	1754.8544	1710	1755

Band 5:

1.4MHz Bandwidth, Middle Channel, $f_o = 836.5\text{MHz}$				
Temperature (°C)	Voltage Supplied (V _{DC})	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
-30	N.V.	12.74	0.0152	2.5
-20		6.49	0.0078	2.5
-10		6.43	0.0077	2.5
0		7.95	0.0095	2.5
10		13.51	0.0161	2.5
20		5.43	0.0065	2.5
30		6.05	0.0072	2.5
40		14.78	0.0177	2.5
50		9.88	0.0118	2.5
20	L.V.	10.44	0.0125	2.5
	H.V.	10.84	0.0130	2.5

Band 12:

1.4 MHz Bandwidth					
Temperature (°C)	Power Supplied (V _{DC})	F _L (MHz)	F _H (MHz)	F _L Limit (MHz)	F _H Limit (MHz)
-30	N.V.	699.1871	715.8767	699	716
-20		699.1908	715.8711	699	716
-10		699.1919	715.8746	699	716
0		699.1919	715.8730	699	716
10		699.1893	715.8723	699	716
20		699.1943	715.8742	699	716
30		699.1911	715.8711	699	716
40		699.1943	715.8749	699	716
50		699.1933	715.8695	699	716
20	L.V.	699.1889	715.8757	699	716
	H.V.	699.1907	715.8725	699	716

Band 13:

5 MHz Bandwidth					
Temperature (°C)	Power Supplied (V _{DC})	F _L (MHz)	F _H (MHz)	F _L Limit (MHz)	F _H Limit (MHz)
-30	N.V.	777.1263	786.8783	777	787
-20		777.1228	786.8828	777	787
-10		777.1263	786.8835	777	787
0		777.1242	786.8836	777	787
10		777.1234	786.8797	777	787
20		777.1216	786.8838	777	787
30		777.1245	786.8814	777	787
40		777.1240	786.8777	777	787
50		777.1244	786.8840	777	787
20	L.V.	777.1279	786.8787	777	787
	H.V.	777.1278	786.8824	777	787

Band 14:

5 MHz Bandwidth					
Temperature (°C)	Power Supplied (V _{DC})	F _L (MHz)	F _H (MHz)	F _L Limit (MHz)	F _H Limit (MHz)
-30	N.V.	788.1419	797.8914	788	798
-20		788.1402	797.8940	788	798
-10		788.1391	797.8934	788	798
0		788.1412	797.8908	788	798
10		788.1389	797.8908	788	798
20		788.1372	797.8905	788	798
30		788.1429	797.8925	788	798
40		788.1408	797.8890	788	798
50		788.1431	797.8952	788	798
20	L.V.	788.1386	797.8921	788	798
	H.V.	788.1395	797.8918	788	798

Band 66:

1.4 MHz Bandwidth					
Temperature (°C)	Power Supplied (V _{DC})	F _L (MHz)	F _H (MHz)	F _L Limit (MHz)	F _H Limit (MHz)
-30	N.V.	1710.2190	1779.7343	1710	1780
-20		1710.2170	1779.7349	1710	1780
-10		1710.2154	1779.7350	1710	1780
0		1710.2139	1779.7327	1710	1780
10		1710.2145	1779.7329	1710	1780
20		1710.2191	1779.7307	1710	1780
30		1710.2141	1779.7367	1710	1780
40		1710.2134	1779.7335	1710	1780
50		1710.2166	1779.7303	1710	1780
20	L.V.	1710.2169	1779.7317	1710	1780
	H.V.	1710.2120	1779.7300	1710	1780

Band 71:

5 MHz Bandwidth					
Temperature (°C)	Power Supplied (V _{DC})	F _L (MHz)	F _H (MHz)	F _L Limit (MHz)	F _H Limit (MHz)
-30	N.V.	663.2503	697.8195	663	698
-20		663.2480	697.8139	663	698
-10		663.2506	697.8124	663	698
0		663.2467	697.8153	663	698
10		663.2458	697.8149	663	698
20		663.2456	697.8193	663	698
30		663.2503	697.8166	663	698
40		663.2490	697.8181	663	698
50		663.2457	697.8184	663	698
20	L.V.	663.2463	697.8166	663	698
	H.V.	663.2452	697.8132	663	698

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