



TEST REPORT

Applicant Name : Vanstone Electronic (Beijing) Co., Ltd.
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Road, Haidian District, Beijing, China 100195
Report Number : SZNS210702-55501E-RF-00E
FCC ID: OWLA78

Test Standard (s)

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

Sample Description

Product Type: Cloud POS Terminal
Model No.: A78
Multiple Model(s) No.: N/A
Trade Mark: Aisino
Date Received: 2021/07/02
Date of Test: 2021/10/10~2021/11/14
Report Date: 2021/11/19

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

Prepared and Checked By:

Approved By:

Fan Yang
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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GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

Frequency Range	GSM 850: 824-849MHz(TX); 869-894MHz(RX) PCS 1900: 1850-1910MHz(TX); 1930-1990MHz(RX) 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 7: 2500-2570MHz(TX); 2620-2690MHz(RX) LTE Band 12: 699-716MHz(TX); 729-746MHz(RX) LTE Band 13: 777-787MHz(TX); 746-756MHz(RX) LTE Band 25: 1850-1915MHz(TX); 1930-1995MHz(RX) LTE Band 26(Part 22): 824-849MHz(TX); 869-894MHz(RX) LTE Band 26(Part 90): 814-824MHz(TX); 859-869MHz(RX)
Modulation Technique	2G: GMSK/8PSK 3G: BPSK, QPSK, 16QAM 4G: QPSK, 16QAM
Antenna Specification*	Below 1GHz :0.5dBi Above 1GHz: 0.8dBi (provided by the applicant)
Voltage Range	DC 3.6V from battery or DC 5V from adapter
Sample serial number	RE: SZNS210702-55501E-RF-S1 RF conducted: SZNS210702-55501E-RF-S2 (Assigned by ATC)
Sample/EUT Status	Good condition
Normal/Extreme Condition	L.V.: Low Voltage 3.3V _{DC} ; N.V.: Normal Voltage 3.6V _{DC} ; H.V.: High Voltage 4.2V _{DC} ; (provided by the applicant)
Adapter information	Model: TPA-46050200UU Input: AC 100-240V, 50/60Hz, 0.3A Output: DC 5.0V, 2000mA

Objective

This test report is in accordance with Part 2-Subpart J, Part 22-Subpart H and Part 24-Subpart E and Subpart 27, Part 90 of the Federal Communication Commissions 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 Service

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 1/F., Building A, Changyuan New Material Port, Science & Industry Park, Nanshan District, Shenzhen, Guangdong, P.R. China.

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

Listed by Innovation, Science and Economic Development Canada (ISED), the Registration Number is 5077A.

SYSTEM TEST CONFIGURATION

Description of Test Configuration

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

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

Frequency Band	Bandwidth (MHz)	Test Frequency (MHz)		
		Low	Middle	High
GSM850	0.25	824.2	836.6	848.8
PCS1900	0.25	1850.2	1880	1909.8
WCDMA B2	4.2	1852.4	1880	1907.6
WCDMA B4	4.2	1712.4	1732.6	1752.6
WCDMA B5	4.2	826.4	836.6	846.6
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& LTE B26(Part 22)	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
	15(B26 only)	831.5	836.5	841.5
LTE B7	5	2502.5	2535	2567.5
	10	2505	2535	2565
	15	2507.5	2535	2562.5
	20	2510	2535	2560
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	707.5	711
LTE B13	5	779.5	782	784.5
	10	/	782	/

Frequency Band	Bandwidth (MHz)	Test Frequency (MHz)		
		Low	Middle	High
LTE B25	1.4	1850.7	1882.5	1914.3
	3	1851.5	1882.5	1913.5
	5	1852.5	1882.5	1912.5
	10	1855	1882.5	1910
	15	1857.5	1882.5	1907.5
	20	1860	1882.5	1905
LTE B26(Part 90S)	1.4	814.7	819	823.3
	3	815.5	819	822.5
	5	816.5	819	821.5
	10	/	819	/

Equipment Modifications

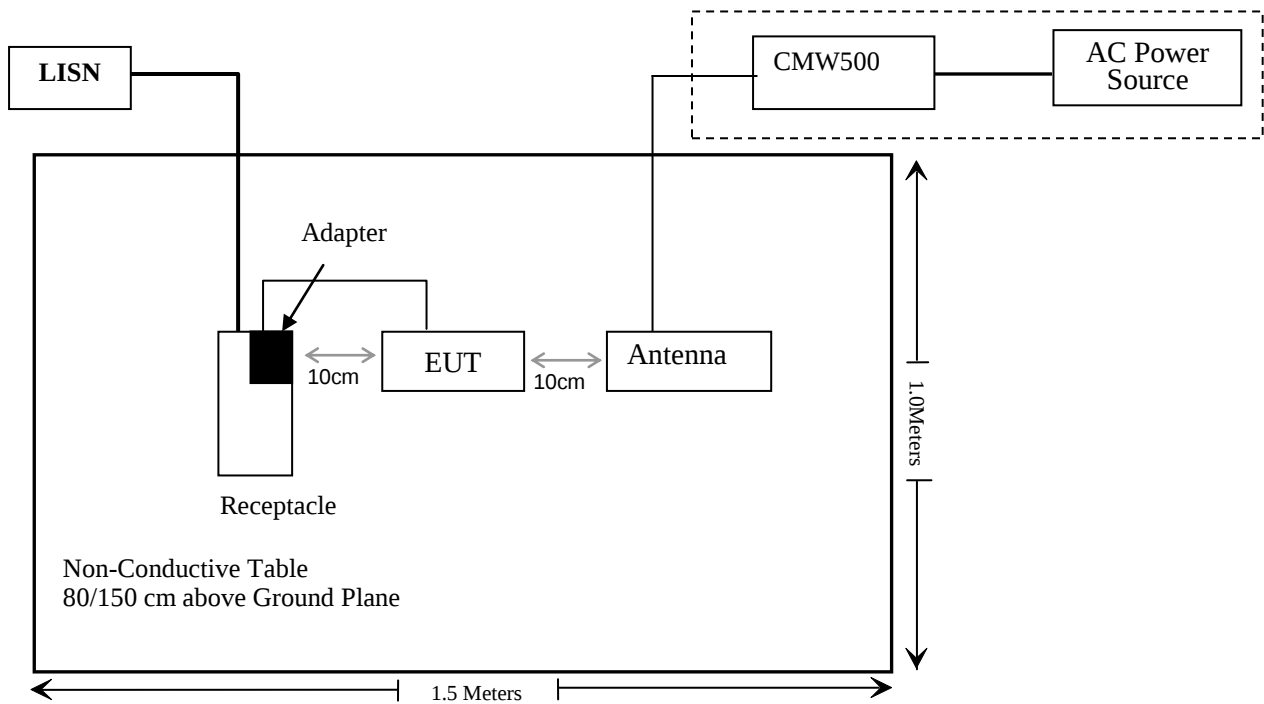
No modification was made to the EUT.

Support Equipment List and Details

Manufacturer	Description	Model	Serial Number
Rohde & Schwarz	Wideband Radio Communication tester	CMW500	146520

Support Cable Description

Cable Description	Length (m)	From / Port	To
Un-shielded Un-detachable AC cable	1.2	AC Power	CMU200
Un-Shielding Detachable USB Cable	1.0	EUT	Adapter

Block Diagram of Test Setup

SUMMARY OF TEST RESULTS

FCC Rules	Description of Test	Result
§1.1307 , §2.1093	RF Exposure (SAR)	Compliant*
§2.1046; § 22.913 (a); § 24.232 (c); §27.50; §90.635	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 §90.691	Spurious Emissions at Antenna Terminal	Compliant
§ 2.1053; § 22.917 (a); § 24.238 (a); §27.53 §90.691	Field Strength of Spurious Radiation	Compliant
§ 22.917 (a); § 24.238 (a); §27.53 § 90.691	Band Edge	Compliant
§ 2.1055; § 22.355; § 24.235; §27.54; § 90.213	Frequency stability	Compliant

Note: * Please refer to SAR report number: SZNS210702-55525E-SA.

TEST EQUIPMENT LIST

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Radiated Emission Test					
Rohde&Schwarz	Spectrum Analyzer	FSV40	101495	2020/12/24	2021/12/23
Rohde & Schwarz	Wideband Radio Communication Tester	CMW500	154606	2020/12/25	2021/12/24
AGILENT	Vector Signal Generator	N5182A	MY50143401	2021/01/04	2022/01/03
Anritsu	Signal Generator	68369B	004114	2021/7/31	2022/7/30
Schwarzbeck	Horn Antenna	BBHA9120D	9120D-1067	2020/01/05	2023/01/04
Schwarzbeck	Horn Antenna	BBHA9120D	9120D-655	2020/01/05	2023/01/04
PASTERNAK	Horn Antenn	PE9852/2F-20	1120	2020/01/05	2023/01/04
PASTERNAK	Horn Antenn	PE9852/2F-20	1120	2020/01/05	2023/01/04
A.H. Systems, inc.	Preamplifier	PAM-0118P	531	2020/11/09	2021/11/08
Quinstar	Amplifier	QLW-18405536-J0	15964001002	2020/11/28	2021/11/27
Rohde& Schwarz	Test Receiver	ESR	101817	2020/12/24	2021/12/23
SONOMA INSTRUMENT	Amplifier	310 N	186131	2020/12/25	2021/12/24
Anritsu Corp	50 Coaxial Switch	MP59B	6100237248	2020/12/25	2021/12/24
Schwarzbeck	Bilog Antenna	VULB9163	9163-323	2020/01/05	2023/01/04
Schwarzbeck	Bilog Antenna	VULB9163	9163-194	2020/01/05	2023/01/04
RF Coaxial Cable	Unknown	N-5m	No.1	2020/12/25	2021/12/24
Unknown	RF Coaxial Cable	N-1m	No.6	2020/12/25	2021/12/24
RF Coaxial Cable	Unknown	N-6m	No.10	2020/12/25	2021/12/24
RF Coaxial Cable	Unknown	N-2m	No.11	2020/12/25	2021/12/24
RF Coaxial Cable	Unknown	N-8m	No.15	2020/12/25	2021/12/24
Wainwright	High Pass Filter	WHKX3.6/18G-10SS	5	2020/12/25	2021/12/24
CD	High Pass Filter	HPM-1.2/18G-60	110	2020/12/25	2021/12/24

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
RF Conducted Test					
Rohde & Schwarz	Spectrum Analyzer	FSV-40	101495	2020/12/24	2021/12/23
Rohde & Schwarz	Wideband Radio Communication Tester	CMW500	154606	2020/12/25	2021/12/24
Fluke	Desktop Multi Meter	45	7664009	2020/12/25	2021/12/24
Mini-Circuits	Power Splitter	DC-18000MHz	SF10944151S	2020/12/25	2021/12/24
UNI-T	DC Power Supply	UTP8305B	10584	NCR	NCR
Gongwen	Temp. & Humid. Chamber	HSD-500	109	2020/12/25	2021/12/24
WEINSCHL	10dB Attenuator	5324	AU 3842	2020/12/25	2021/12/24

* 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) & §2.1093 - RF EXPOSURE INFORMATION

Applicable Standard

FCC§1.1310 and §2.1093.

Test Result

Compliant, please refer to the SAR report: SZNS210702-55525E-SA.

FCC §2.1047 - MODULATION CHARACTERISTIC

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

FCC § 2.1046, § 22.913 (a), § 24.232 (c), § 27.50, § 90.635 - 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), 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), the maximum EIRP must not exceed 1Watts (30dBm) for 1710-1780MHz.

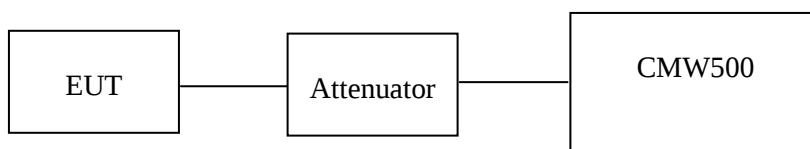
According to § 27.50(h), the maximum EIRP must not exceed 2Watts (33dBm) for 2500-2570MHz & 2496-2690MHz.

According to § 90.635, the maximum EIRP must not exceed 100 Watts (50dBm) for 814-824 MHz.

Test Procedure

Conducted method:

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



Test Data

Environmental Conditions

Temperature:	28.2~29.7 °C
Relative Humidity:	52~63 %
ATM Pressure:	100.8~101.6 kPa

The testing was performed by Fan Yang from 2021-10-10 to 2021-11-14.

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

Mode	Channel	Frequency (MHz)	Average Output Power (dBm)				ERP(dBm)				Limit (dBm)
			1 slot	2 slots	3 slots	4 slots	1 slot	2 slots	3 slots	4 slots	
GPRS	128	824.2	33.97	32.94	29.74	28.48	31.82	30.79	27.59	26.33	38.45
	190	836.6	33.80	32.74	29.84	28.56	31.65	30.59	27.69	26.41	38.45
	251	848.8	33.73	32.73	30.04	28.71	31.58	30.58	27.89	26.56	38.45

Mode	Channel	Frequency (MHz)	Average Output Power (dBm)				ERP(dBm)				Limit (dBm)
			1 slot	2 slots	3 slots	4 slots	1 slot	2 slots	3 slots	4 slots	
EGPRS	128	824.2	27.39	25.95	22.58	21.52	25.24	23.80	20.43	19.37	38.45
	190	836.6	27.22	25.49	22.64	21.63	25.07	23.34	20.49	19.48	38.45
	251	848.8	27.39	26.01	22.57	21.72	25.24	23.86	20.42	19.57	38.45

Mode	Test Mode	3GPP Sub Test	Average Output Power (dBm)			ERP(dBm)		
			Low	Mid	High	Low	Mid	High
WCDMA (Band 5)	RMC12.2k		23.14	23.43	23.46	20.99	21.28	21.31
	HSDPA	1	21.39	21.16	21.31	19.24	19.01	19.16
		2	21.38	21.25	21.32	19.23	19.10	19.17
		3	21.35	21.24	21.14	19.20	19.09	18.99
		4	21.28	21.17	21.15	19.13	19.02	19.00
	HSUPA	1	22.59	22.51	22.48	20.44	20.36	20.33
		2	22.54	22.24	22.32	20.39	20.09	20.17
		3	22.52	22.14	22.34	20.37	19.99	20.19
		4	22.13	22.34	22.27	19.98	20.19	20.12
		5	22.36	22.32	22.33	20.21	20.17	20.18
	HSPA+	1	22.21	22.35	22.24	20.06	20.20	20.09

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

For GSM850 / WCDMA Band5: Antenna Gain = 0.5dBi = -1.65dBd (0dBd=2.15dBi)

Cable Loss=0.5dB*(provided by the applicant)

Limit: ERP≤38.45dBm

PCS Band (Part 24E)

Mode	Channel	Frequency (MHz)	Average Output Power (dBm)				EIRP(dBm)				Limit (dBm)
			1 slot	2 slots	3 slots	4 slots	1 slot	2 slots	3 slots	4 slots	
GPRS	512	1850.2	21.67	20.92	19.95	19.31	21.67	20.92	19.95	19.31	33
	661	1880.0	21.68	20.89	19.98	19.34	21.68	20.89	19.98	19.34	33
	810	1909.8	21.66	20.94	19.95	19.36	21.66	20.94	19.95	19.36	33

Mode	Channel	Frequency (MHz)	Average Output Power (dBm)				EIRP(dBm)				Limit (dBm)
			1 slot	2 slots	3 slots	4 slots	1 slot	2 slots	3 slots	4 slots	
EGPRS	512	1850.2	20.29	19.54	18.19	17.20	20.29	19.54	18.19	17.20	33
	661	1880.0	20.34	19.56	18.15	17.18	20.34	19.56	18.15	17.18	33
	810	1909.8	20.53	19.61	18.23	17.24	20.53	19.61	18.23	17.24	33

Mode	Test Mode	3GPP Sub Test	Average Output Power (dBm)			EIRP(dBm)		
			Low	Mid	High	Low	Mid	High
WCDMA (Band 2)	RMC12.2k		18.41	18.52	18.61	18.41	18.52	18.61
	HSDPA	1	16.94	16.92	16.89	16.94	16.92	16.89
		2	16.98	16.98	16.93	16.98	16.98	16.93
		3	17.03	17.02	16.96	17.03	17.02	16.96
		4	17.11	17.07	17.01	17.11	17.07	17.01
	HSUPA	1	17.27	17.12	17.19	17.27	17.12	17.19
		2	17.31	17.20	17.25	17.31	17.20	17.25
		3	17.39	17.26	17.28	17.39	17.26	17.28
		4	17.47	17.32	17.32	17.47	17.32	17.32
		5	17.49	17.35	17.38	17.49	17.35	17.38
	HSPA+	1	17.25	17.53	17.82	17.25	17.53	17.82

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

For PCS1900 / WCDMA Band2: Antenna Gain = 0.8dBi

Cable Loss=0.8dB*(provided by the applicant)

Limit: EIRP≤33dBm

AWS Band

Mode	Test Mode	3GPP Sub Test	Average Output Power (dBm)			EIRP(dBm)		
			Low	Mid	High	Low	Mid	High
WCDMA (Band 4)	RMC12.2k		19.12	19.31	19.24	19.12	19.31	19.24
	HSDPA	1	18.04	18.01	17.99	18.04	18.01	17.99
		2	18.06	18.05	18.04	18.06	18.05	18.04
		3	18.10	18.08	18.12	18.10	18.08	18.12
		4	18.14	18.12	18.17	18.14	18.12	18.17
	HSUPA	1	18.51	18.42	18.49	18.51	18.42	18.49
		2	18.55	18.49	18.51	18.55	18.49	18.51
		3	18.60	18.55	18.55	18.60	18.55	18.55
		4	18.65	18.59	18.62	18.65	18.59	18.62
		5	18.71	18.63	18.66	18.71	18.63	18.66
	HSPA+	1	18.43	18.56	18.44	18.43	18.56	18.44

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

For Band4: Antenna Gain = 0.8dBi

Cable Loss=0.8dB*(provided by the applicant)

Limit: EIRP ≤ 30dBm

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

Mode	Channel	PAR (dB)	Limit (dB)
GPRS	Low	3.19	13
	Middle	3.38	13
	High	3.47	13

Mode	Channel	PAR (dB)	Limit (dB)
EGPRS	Low	3.25	13
	Middle	3.69	13
	High	3.43	13

Mode	Channel	PAR (dB)	Limit (dB)
RMC (BPSK)	Low	3.22	13
	Middle	3.43	13
	High	3.56	13
HSDPA (16QAM)	Low	3.98	13
	Middle	3.97	13
	High	3.69	13
HSUPA (BPSK)	Low	3.58	13
	Middle	3.66	13
	High	3.59	13
HSPA+	Low	3.42	13
	Middle	3.35	13
	High	3.58	13

PCS Band (Part 24E)

Mode	Channel	PAR (dB)	Limit (dB)
GPRS	Low	3.34	13
	Middle	3.22	13
	High	3.62	13

Mode	Channel	PAR (dB)	Limit (dB)
EGPRS	Low	3.34	13
	Middle	3.31	13
	High	3.40	13

Mode	Channel	PAR (dB)	Limit (dB)
RMC (BPSK)	Low	3.53	13
	Middle	3.47	13
	High	3.69	13
HSDPA (16QAM)	Low	3.61	13
	Middle	3.78	13
	High	3.69	13
HSUPA (BPSK)	Low	3.65	13
	Middle	3.73	13
	High	3.88	13
HSPA+	Low	3.43	13
	Middle	3.37	13
	High	3.59	13

AWS Band

Mode	Channel	PAR (dB)	Limit (dB)
RMC (BPSK)	Low	3.68	13
	Middle	3.71	13
	High	3.53	13
HSDPA (16QAM)	Low	3.42	13
	Middle	3.49	13
	High	3.68	13
HSUPA (BPSK)	Low	3.47	13
	Middle	3.52	13
	High	3.66	13
HSPA+	Low	3.62	13
	Middle	3.68	13
	High	3.69	13

LTE Band 2:**Maximum Output Power**

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	15.86	15.49	15.52	15.86	15.49	15.52
		RB1#3	16.03	15.53	15.72	16.03	15.53	15.72
		RB1#5	15.88	15.58	15.57	15.88	15.58	15.57
		RB3#0	15.77	15.61	15.66	15.77	15.61	15.66
		RB3#3	15.73	15.54	15.68	15.73	15.54	15.68
		RB6#0	14.79	14.47	14.71	14.79	14.47	14.71
	16QAM	RB1#0	14.92	14.51	14.69	14.92	14.51	14.69
		RB1#3	15.14	14.65	14.67	15.14	14.65	14.67
		RB1#5	15.17	14.39	14.21	15.17	14.39	14.21
		RB3#0	14.82	14.60	14.38	14.82	14.60	14.38
		RB3#3	15.00	14.75	14.43	15.00	14.75	14.43
		RB6#0	13.69	13.70	13.73	13.69	13.70	13.73
3.0	QPSK	RB1#0	15.65	15.51	15.61	15.65	15.51	15.61
		RB1#8	15.54	15.22	15.63	15.54	15.22	15.63
		RB1#14	15.81	15.30	15.64	15.81	15.30	15.64
		RB6#0	14.75	14.45	14.61	14.75	14.45	14.61
		RB6#9	14.67	14.38	14.75	14.67	14.38	14.75
		RB15#0	14.61	14.45	14.65	14.61	14.45	14.65
	16QAM	RB1#0	14.54	14.70	14.20	14.54	14.70	14.20
		RB1#8	14.58	14.46	14.14	14.58	14.46	14.14
		RB1#14	14.62	15.01	14.27	14.62	15.01	14.27
		RB6#0	13.59	13.75	13.66	13.59	13.75	13.66
		RB6#9	13.65	13.78	13.69	13.65	13.78	13.69
		RB15#0	13.91	13.71	13.91	13.91	13.71	13.91

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	15.53	15.44	15.55	15.53	15.44	15.55
		RB1#13	15.54	15.30	15.44	15.54	15.30	15.44
		RB1#24	15.42	15.44	15.34	15.42	15.44	15.34
		RB15#0	14.66	14.46	14.60	14.66	14.46	14.60
		RB15#10	14.68	14.38	14.54	14.68	14.38	14.54
		RB25#0	14.71	14.42	14.57	14.71	14.42	14.57
	16QAM	RB1#0	14.52	14.53	13.96	14.52	14.53	13.96
		RB1#13	13.89	14.21	14.20	13.89	14.21	14.20
		RB1#24	13.75	14.34	14.77	13.75	14.34	14.77
		RB15#0	13.49	13.48	13.52	13.49	13.48	13.52
		RB15#10	13.52	13.26	13.56	13.52	13.26	13.56
		RB25#0	13.77	13.43	13.61	13.77	13.43	13.61
10.0	QPSK	RB1#0	15.90	15.64	15.59	15.90	15.64	15.59
		RB1#25	15.67	15.65	15.49	15.67	15.65	15.49
		RB1#49	15.62	15.62	15.61	15.62	15.62	15.61
		RB25#0	14.64	14.47	14.57	14.64	14.47	14.57
		RB25#25	14.57	14.34	14.58	14.57	14.34	14.58
		RB50#0	14.69	14.45	14.65	14.69	14.45	14.65
	16QAM	RB1#0	15.05	15.11	14.67	15.05	15.11	14.67
		RB1#25	14.71	14.49	14.19	14.71	14.49	14.19
		RB1#49	14.70	14.68	14.08	14.70	14.68	14.08
		RB25#0	13.69	13.48	13.79	13.69	13.48	13.79
		RB25#25	13.63	13.37	13.58	13.63	13.37	13.58
		RB50#0	13.67	13.51	13.66	13.67	13.51	13.66

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	15.72	15.62	15.39	15.72	15.62	15.39
		RB1#38	15.55	15.24	15.32	15.55	15.24	15.32
		RB1#74	15.58	15.41	15.50	15.58	15.41	15.50
		RB36#0	14.54	14.32	14.52	14.54	14.32	14.52
		RB36#39	14.71	14.22	14.46	14.71	14.22	14.46
		RB75#0	14.54	14.32	14.47	14.54	14.32	14.47
	16QAM	RB1#0	15.04	15.24	14.74	15.04	15.24	14.74
		RB1#38	14.57	14.38	14.75	14.57	14.38	14.75
		RB1#74	14.78	15.14	14.72	14.78	15.14	14.72
		RB36#0	13.64	13.63	13.68	13.64	13.63	13.68
		RB36#39	13.68	13.19	13.64	13.68	13.19	13.64
		RB75#0	13.63	13.35	13.56	13.63	13.35	13.56
20.0	QPSK	RB1#0	15.80	15.64	15.53	15.80	15.64	15.53
		RB1#50	15.68	15.64	15.85	15.68	15.64	15.85
		RB1#99	15.44	15.50	15.44	15.44	15.50	15.44
		RB50#0	14.73	14.42	14.42	14.73	14.42	14.42
		RB50#50	14.53	14.27	14.47	14.53	14.27	14.47
		RB100#0	14.49	14.37	14.53	14.49	14.37	14.53
	16QAM	RB1#0	14.32	14.61	15.17	14.32	14.61	15.17
		RB1#50	14.23	14.77	14.97	14.23	14.77	14.97
		RB1#99	14.18	14.76	14.93	14.18	14.76	14.93
		RB50#0	13.59	13.51	13.40	13.59	13.51	13.40
		RB50#50	13.54	13.37	13.51	13.54	13.37	13.51
		RB100#0	13.48	13.27	13.58	13.48	13.27	13.58

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

For Band2: Antenna Gain = 0.8dBi

Cable Loss=0.8dB*(provided by the applicant)

Limit: EIRP ≤ 33dBm

Peak-to-average ratio (PAR)**20MHz Bandwidth**

Modulation	Low channel (dB)	Middle channel (dB)	High channel (dB)	PAR Limit (dB)	Result
QPSK (1RB Size)	4.72	4.61	4.58	13	Pass
QPSK (100RB Size)	5.13	5.07	5.01	13	Pass
16QAM (1RB Size)	5.59	5.48	5.42	13	Pass
16QAM (100RB Size)	6.14	6.00	5.88	13	Pass

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	15.58	15.73	15.70	15.58	15.73	15.70
		RB1#3	15.50	15.73	15.68	15.50	15.73	15.68
		RB1#5	15.50	15.47	15.62	15.50	15.47	15.62
		RB3#0	15.48	15.61	15.77	15.48	15.61	15.77
		RB3#3	15.29	15.69	15.77	15.29	15.69	15.77
		RB6#0	14.39	14.60	14.53	14.39	14.60	14.53
	16QAM	RB1#0	14.35	14.66	14.63	14.35	14.66	14.63
		RB1#3	14.97	14.78	14.81	14.97	14.78	14.81
		RB1#5	14.88	14.32	14.69	14.88	14.32	14.69
		RB3#0	14.11	14.53	14.58	14.11	14.53	14.58
		RB3#3	14.36	14.60	14.55	14.36	14.60	14.55
		RB6#0	13.49	13.95	13.47	13.49	13.95	13.47
3.0	QPSK	RB1#0	15.50	15.80	15.50	15.50	15.80	15.50
		RB1#8	15.36	15.53	15.60	15.36	15.53	15.60
		RB1#14	15.53	15.67	15.64	15.53	15.67	15.64
		RB6#0	14.48	14.72	14.56	14.48	14.72	14.56
		RB6#9	14.43	14.66	14.73	14.43	14.66	14.73
		RB15#0	14.49	14.74	14.70	14.49	14.74	14.70
	16QAM	RB1#0	14.61	15.04	14.69	14.61	15.04	14.69
		RB1#8	14.47	14.75	14.29	14.47	14.75	14.29
		RB1#14	14.49	14.67	14.23	14.49	14.67	14.23
		RB6#0	13.50	13.81	13.49	13.50	13.81	13.49
		RB6#9	13.57	13.59	13.94	13.57	13.59	13.94
		RB15#0	13.79	13.50	13.72	13.79	13.50	13.72

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	15.54	15.74	15.69	15.54	15.74	15.69
		RB1#13	15.38	15.61	15.59	15.38	15.61	15.59
		RB1#24	15.44	15.71	15.60	15.44	15.71	15.60
		RB15#0	14.58	14.67	14.62	14.58	14.67	14.62
		RB15#10	14.54	14.63	14.65	14.54	14.63	14.65
		RB25#0	14.54	14.70	14.68	14.54	14.70	14.68
	16QAM	RB1#0	13.79	14.71	14.13	13.79	14.71	14.13
		RB1#13	13.44	14.52	14.44	13.44	14.52	14.44
		RB1#24	13.54	14.46	14.39	13.54	14.46	14.39
		RB15#0	13.48	13.55	13.49	13.48	13.55	13.49
		RB15#10	13.73	13.42	13.81	13.73	13.42	13.81
		RB25#0	13.76	13.48	13.63	13.76	13.48	13.63
10.0	QPSK	RB1#0	15.73	15.77	15.68	15.73	15.77	15.68
		RB1#25	15.93	15.82	15.73	15.93	15.82	15.73
		RB1#49	15.81	15.76	15.69	15.81	15.76	15.69
		RB25#0	14.49	14.65	14.68	14.49	14.65	14.68
		RB25#25	14.60	14.64	14.65	14.60	14.64	14.65
		RB50#0	14.60	14.69	14.63	14.60	14.69	14.63
	16QAM	RB1#0	14.98	14.78	14.53	14.98	14.78	14.53
		RB1#25	14.92	14.99	14.47	14.92	14.99	14.47
		RB1#49	14.51	15.26	14.64	14.51	15.26	14.64
		RB25#0	13.47	13.74	13.89	13.47	13.74	13.89
		RB25#25	13.62	13.63	13.67	13.62	13.63	13.67
		RB50#0	13.50	13.77	13.69	13.50	13.77	13.69

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	15.57	15.66	15.81	15.57	15.66	15.81
		RB1#38	15.47	15.47	15.54	15.47	15.47	15.54
		RB1#74	15.52	15.69	15.62	15.52	15.69	15.62
		RB36#0	14.61	14.54	14.54	14.61	14.54	14.54
		RB36#39	14.64	14.55	14.56	14.64	14.55	14.56
		RB75#0	14.54	14.57	14.59	14.54	14.57	14.59
	16QAM	RB1#0	14.65	14.85	14.85	14.65	14.85	14.85
		RB1#38	14.67	14.52	14.61	14.67	14.52	14.61
		RB1#74	14.94	14.89	14.83	14.94	14.89	14.83
		RB36#0	13.57	13.63	13.59	13.57	13.63	13.59
		RB36#39	13.63	13.64	13.68	13.63	13.64	13.68
		RB75#0	13.48	13.75	13.63	13.48	13.75	13.63
20.0	QPSK	RB1#0	15.42	15.59	15.61	15.42	15.59	15.61
		RB1#50	15.67	15.43	15.54	15.67	15.43	15.54
		RB1#99	15.35	15.69	15.53	15.35	15.69	15.53
		RB50#0	14.43	14.53	14.58	14.43	14.53	14.58
		RB50#50	14.42	14.56	14.49	14.42	14.56	14.49
		RB100#0	14.55	14.60	14.51	14.55	14.60	14.51
	16QAM	RB1#0	14.17	14.83	15.12	14.17	14.83	15.12
		RB1#50	14.50	14.99	14.95	14.50	14.99	14.95
		RB1#99	14.59	14.62	14.81	14.59	14.62	14.81
		RB50#0	13.67	13.71	13.56	13.67	13.71	13.56
		RB50#50	13.38	13.53	13.44	13.38	13.53	13.44
		RB100#0	13.51	13.52	13.58	13.51	13.52	13.58

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

For Band4: Antenna Gain = 0.8dBi

Cable Loss=0.8dB*(provided by the applicant)

Limit: EIRP≤30dBm

Peak-to-average ratio (PAR)**20MHz Bandwidth**

Modulation	Low channel (dB)	Middle channel (dB)	High channel (dB)	PAR Limit (dB)	Result
QPSK (1RB Size)	4.72	4.70	4.70	13	Pass
QPSK (100RB Size)	5.04	4.90	5.04	13	Pass
16QAM (1RB Size)	5.68	5.65	5.68	13	Pass
16QAM (100RB Size)	5.97	5.83	5.97	13	Pass

LTE Band 5& LTE Band 26(Part 22H):**Maximum Output Power**

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	23.30	23.26	23.15	21.15	21.11	21.00
		RB1#3	23.33	23.37	23.14	21.18	21.22	20.99
		RB1#5	23.32	23.16	23.15	21.17	21.01	21.00
		RB3#0	23.30	23.27	23.33	21.15	21.12	21.18
		RB3#3	23.25	23.35	23.14	21.10	21.20	20.99
		RB6#0	22.21	22.34	22.18	20.06	20.19	20.03
	16QAM	RB1#0	22.44	22.55	22.25	20.29	20.40	20.10
		RB1#3	22.53	22.83	22.26	20.38	20.68	20.11
		RB1#5	22.63	22.94	21.78	20.48	20.79	19.63
		RB3#0	22.08	22.43	22.07	19.93	20.28	19.92
		RB3#3	22.01	22.28	22.04	19.86	20.13	19.89
		RB6#0	20.96	21.36	21.25	18.81	19.21	19.10
3.0	QPSK	RB1#0	23.24	23.29	23.16	21.09	21.14	21.01
		RB1#8	23.15	23.28	23.14	21.00	21.13	20.99
		RB1#14	23.10	23.34	23.09	20.95	21.19	20.94
		RB6#0	22.30	22.33	22.32	20.15	20.18	20.17
		RB6#9	22.14	22.19	22.28	19.99	20.04	20.13
		RB15#0	22.30	22.34	22.34	20.15	20.19	20.19
	16QAM	RB1#0	23.07	22.87	21.81	20.92	20.72	19.66
		RB1#8	22.28	22.31	21.52	20.13	20.16	19.37
		RB1#14	22.57	22.36	21.75	20.42	20.21	19.60
		RB6#0	21.34	21.54	21.27	19.19	19.39	19.12
		RB6#9	21.29	21.55	21.21	19.14	19.40	19.06
		RB15#0	21.37	21.50	21.52	19.22	19.35	19.37

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	23.21	23.41	23.02	21.06	21.26	20.87
		RB1#13	23.13	23.36	23.13	20.98	21.21	20.98
		RB1#24	23.07	23.14	23.06	20.92	20.99	20.91
		RB15#0	22.20	22.25	22.24	20.05	20.10	20.09
		RB15#10	22.19	22.24	22.22	20.04	20.09	20.07
		RB25#0	22.25	22.31	22.21	20.10	20.16	20.06
	16QAM	RB1#0	21.28	22.34	21.79	19.13	20.19	19.64
		RB1#13	21.20	22.14	21.78	19.05	19.99	19.63
		RB1#24	21.49	22.38	21.90	19.34	20.23	19.75
		RB15#0	21.06	21.22	21.14	18.91	19.07	18.99
		RB15#10	21.13	21.31	21.33	18.98	19.16	19.18
		RB25#0	21.24	21.48	21.42	19.09	19.33	19.27
10.0	QPSK	RB1#0	23.51	23.33	23.36	21.36	21.18	21.21
		RB1#25	23.29	23.46	23.42	21.14	21.31	21.27
		RB1#49	23.52	23.29	23.34	21.37	21.14	21.19
		RB25#0	22.26	22.34	22.31	20.11	20.19	20.16
		RB25#25	22.21	22.35	22.25	20.06	20.20	20.10
		RB50#0	22.33	22.36	22.29	20.18	20.21	20.14
	16QAM	RB1#0	22.57	22.92	21.70	20.42	20.77	19.55
		RB1#25	22.31	22.30	22.05	20.16	20.15	19.90
		RB1#49	22.74	22.40	22.29	20.59	20.25	20.14
		RB25#0	21.40	21.64	21.38	19.25	19.49	19.23
		RB25#25	21.16	21.32	21.43	19.01	19.17	19.28
		RB50#0	21.25	21.53	21.37	19.10	19.38	19.22

Bandwidth (MHz)	Modulation	RB size/ RB Offset	Conducted Average Output Power (dBm)			ERP(dBm)		
			Low	Mid	High	Low	Mid	High
15	QPSK	RB1#0	23.35	23.40	23.43	21.20	21.25	21.28
		RB1#38	23.19	23.23	23.08	21.04	21.08	20.93
		RB1#74	23.45	23.41	23.30	21.30	21.26	21.15
		RB36#0	22.24	22.37	22.27	20.09	20.22	20.12
		RB36#39	22.26	22.34	22.21	20.11	20.19	20.06
		RB75#0	22.24	22.25	22.33	20.09	20.10	20.18
	16QAM	RB1#0	22.55	22.58	22.54	20.40	20.43	20.39
		RB1#38	22.22	22.37	22.21	20.07	20.22	20.06
		RB1#74	22.55	23.14	22.45	20.40	20.99	20.30
		RB36#0	21.34	21.50	21.45	19.19	19.35	19.30
		RB36#39	21.19	21.55	21.33	19.04	19.40	19.18
		RB75#0	21.26	21.39	21.41	19.11	19.24	19.26

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

For Band5: Antenna Gain = 0.5dBi = -1.65dBd (0dBd=2.15dBi)

Cable Loss=0.5dB*(provided by the applicant)

Limit: ERP ≤ 38.45dBm

Peak-to-average ratio (PAR)**10MHz bandwidth**

Modulation	Low channel (dB)	Middle channel (dB)	High channel (dB)	PAR Limit (dB)	Result
QPSK (1RB Size)	4.61	4.87	4.43	13	Pass
QPSK (50RB Size)	5.19	4.93	5.01	13	Pass
16QAM (1RB Size)	5.51	5.83	5.45	13	Pass
16QAM (50RB Size)	6.23	5.94	5.94	13	Pass

LTE Band 7:**Maximum Output Power**

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	14.26	14.36	13.86	14.26	14.36	13.86
		RB1#13	14.36	14.04	13.78	14.36	14.04	13.78
		RB1#24	14.39	14.16	13.88	14.39	14.16	13.88
		RB15#0	13.50	13.06	13.00	13.50	13.06	13.00
		RB15#10	13.31	13.00	12.87	13.31	13.00	12.87
		RB25#0	13.34	13.00	12.94	13.34	13.00	12.94
	16QAM	RB1#0	13.41	13.15	12.92	13.41	13.15	12.92
		RB1#13	12.66	12.82	12.83	12.66	12.82	12.83
		RB1#24	12.58	13.04	12.37	12.58	13.04	12.37
		RB15#0	12.49	11.86	11.85	12.49	11.86	11.85
		RB15#10	12.21	11.88	11.81	12.21	11.88	11.81
		RB25#0	12.59	11.89	11.87	12.59	11.89	11.87
10.0	QPSK	RB1#0	14.57	14.04	14.14	14.57	14.04	14.14
		RB1#25	14.55	14.07	13.98	14.55	14.07	13.98
		RB1#49	14.37	14.05	13.82	14.37	14.05	13.82
		RB25#0	13.28	13.02	13.02	13.28	13.02	13.02
		RB25#25	13.22	13.00	12.93	13.22	13.00	12.93
		RB50#0	13.26	12.97	12.94	13.26	12.97	12.94
	16QAM	RB1#0	13.80	13.31	12.65	13.80	13.31	12.65
		RB1#25	13.72	13.11	12.80	13.72	13.11	12.80
		RB1#49	13.54	13.47	12.36	13.54	13.47	12.36
		RB25#0	12.28	11.95	12.39	12.28	11.95	12.39
		RB25#25	12.16	11.92	12.02	12.16	11.92	12.02
		RB50#0	12.34	12.07	11.97	12.34	12.07	11.97

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	14.60	14.37	13.98	14.60	14.37	13.98
		RB1#13	14.11	13.78	14.00	14.11	13.78	14.00
		RB1#24	14.32	14.04	13.91	14.32	14.04	13.91
		RB15#0	13.27	13.09	12.99	13.27	13.09	12.99
		RB15#10	13.19	12.94	12.88	13.19	12.94	12.88
		RB25#0	13.18	12.99	12.90	13.18	12.99	12.90
	16QAM	RB1#0	13.91	13.64	13.20	13.91	13.64	13.20
		RB1#13	13.08	12.87	13.07	13.08	12.87	13.07
		RB1#24	13.27	13.18	13.07	13.27	13.18	13.07
		RB15#0	12.28	11.86	11.88	12.28	11.86	11.88
		RB15#10	12.22	12.00	11.76	12.22	12.00	11.76
		RB25#0	12.39	11.85	11.81	12.39	11.85	11.81
20.0	QPSK	RB1#0	13.46	14.46	14.12	13.46	14.46	14.12
		RB1#25	14.68	14.47	14.09	14.68	14.47	14.09
		RB1#49	14.40	14.39	13.92	14.40	14.39	13.92
		RB25#0	13.64	13.09	13.06	13.64	13.09	13.06
		RB25#25	13.28	13.10	12.94	13.28	13.10	12.94
		RB50#0	13.49	13.09	12.93	13.49	13.09	12.93
	16QAM	RB1#0	13.88	13.84	14.15	13.88	13.84	14.15
		RB1#25	13.71	13.15	13.59	13.71	13.15	13.59
		RB1#49	13.01	13.43	13.58	13.01	13.43	13.58
		RB25#0	12.43	12.09	11.96	12.43	12.09	11.96
		RB25#25	12.29	12.02	11.85	12.29	12.02	11.85
		RB50#0	12.44	11.99	12.04	12.44	11.99	12.04

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

For Band7: Antenna Gain = 0.8dBi

Cable Loss=0.8dB*(provided by the applicant)

Limit: EIRP≤33dBm

Peak-to-average ratio (PAR)**20MHz bandwidth**

Modulation	Low channel (dB)	Middle channel (dB)	High channel (dB)	PAR Limit (dB)	Result
QPSK (1RB Size)	4.70	4.67	4.55	13	Pass
QPSK (100RB Size)	4.99	5.13	4.93	13	Pass
16QAM (1RB Size)	5.33	5.51	5.48	13	Pass
16QAM (100RB Size)	5.97	6.00	5.94	13	Pass

LTE Band 12:**Maximum Output Power**

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	23.19	23.35	23.41	21.04	21.20	21.26
		RB1#3	23.28	23.46	23.50	21.13	21.31	21.35
		RB1#5	23.26	23.41	23.63	21.11	21.26	21.48
		RB3#0	23.50	23.26	23.24	21.35	21.11	21.09
		RB3#3	23.22	23.39	23.34	21.07	21.24	21.19
		RB6#0	22.36	22.39	22.52	20.21	20.24	20.37
	16QAM	RB1#0	22.25	22.66	22.36	20.10	20.51	20.21
		RB1#3	22.32	22.78	22.62	20.17	20.63	20.47
		RB1#5	22.20	22.66	22.50	20.05	20.51	20.35
		RB3#0	22.36	22.21	22.29	20.21	20.06	20.14
		RB3#3	22.34	22.25	22.45	20.19	20.10	20.30
		RB6#0	21.33	21.51	21.65	19.18	19.36	19.50
3.0	QPSK	RB1#0	23.31	23.25	23.20	21.16	21.10	21.05
		RB1#8	23.16	23.31	23.13	21.01	21.16	20.98
		RB1#14	23.09	23.19	23.28	20.94	21.04	21.13
		RB6#0	22.41	22.39	22.19	20.26	20.24	20.04
		RB6#9	22.21	22.50	22.34	20.06	20.35	20.19
		RB15#0	22.34	22.41	22.27	20.19	20.26	20.12
	16QAM	RB1#0	23.11	22.59	22.27	20.96	20.44	20.12
		RB1#8	22.74	22.99	21.84	20.59	20.84	19.69
		RB1#14	22.73	22.51	21.57	20.58	20.36	19.42
		RB6#0	21.26	21.37	21.18	19.11	19.22	19.03
		RB6#9	21.27	21.45	21.31	19.12	19.30	19.16
		RB15#0	21.42	21.31	21.35	19.27	19.16	19.20

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	23.39	23.24	23.16	21.24	21.09	21.01
		RB1#13	23.01	23.13	22.99	20.86	20.98	20.84
		RB1#24	22.99	23.33	23.37	20.84	21.18	21.22
		RB15#0	22.15	22.30	22.30	20.00	20.15	20.15
		RB15#10	22.14	22.40	22.31	19.99	20.25	20.16
		RB25#0	22.25	22.34	22.38	20.10	20.19	20.23
	16QAM	RB1#0	21.57	22.28	21.87	19.42	20.13	19.72
		RB1#13	21.19	21.90	21.72	19.04	19.75	19.57
		RB1#24	21.53	22.06	22.15	19.38	19.91	20.00
		RB15#0	21.02	20.97	21.14	18.87	18.82	18.99
		RB15#10	20.99	21.02	21.16	18.84	18.87	19.01
		RB25#0	21.11	21.23	21.32	18.96	19.08	19.17
10.0	QPSK	RB1#0	23.09	23.33	23.29	20.94	21.18	21.14
		RB1#25	23.25	23.45	23.24	21.10	21.30	21.09
		RB1#49	23.18	23.07	23.22	21.03	20.92	21.07
		RB25#0	22.19	22.15	22.39	20.04	20.00	20.24
		RB25#25	22.29	22.13	22.20	20.14	19.98	20.05
		RB50#0	22.23	22.05	22.33	20.08	19.90	20.18
	16QAM	RB1#0	22.68	22.15	22.02	20.53	20.00	19.87
		RB1#25	22.64	22.85	22.20	20.49	20.70	20.05
		RB1#49	22.44	22.41	21.82	20.29	20.26	19.67
		RB25#0	21.12	21.09	21.43	18.97	18.94	19.28
		RB25#25	21.22	21.08	21.48	19.07	18.93	19.33
		RB50#0	21.13	21.08	21.37	18.98	18.93	19.22

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

For Band12: Antenna Gain = -0.5dBi = -1.65dBd (0dBd=2.15dBi)

Cable Loss=0.5dB* (provided by the applicant)

Limit: ERP ≤ 34.77dBm

Peak-to-average ratio (PAR)**10MHz bandwidth**

Modulation	Low channel (dB)	Middle channel (dB)	High channel (dB)	PAR Limit (dB)	Result
QPSK (1RB Size)	4.90	5.04	5.07	13	Pass
QPSK (50RB Size)	5.54	5.42	5.36	13	Pass
16QAM (1RB Size)	6.00	5.97	5.94	13	Pass
16QAM (50RB Size)	6.52	6.46	6.43	13	Pass

LTE Band 13:**Maximum Output Power**

Bandwidth (MHz)	Modulation	RB size/ RB Offset	Conducted Average Output Power (dBm)			ERP(dBm)		
			Low	Mid	High	Low	Mid	High
5	QPSK	RB1#0	23.06	23.00	23.09	20.91	20.85	20.94
		RB1#13	22.84	22.81	22.78	20.69	20.66	20.63
		RB1#24	22.94	22.93	22.93	20.79	20.78	20.78
		RB15#0	22.20	22.15	22.13	20.05	20.00	19.98
		RB15#10	22.04	22.00	21.95	19.89	19.85	19.80
		RB25#0	22.07	22.06	22.04	19.92	19.91	19.89
	16QAM	RB1#0	21.49	22.29	21.94	19.34	20.14	19.79
		RB1#13	21.11	21.71	21.45	18.96	19.56	19.30
		RB1#24	21.09	21.44	21.89	18.94	19.29	19.74
		RB15#0	20.96	20.85	20.90	18.81	18.70	18.75
		RB15#10	20.87	20.72	20.90	18.72	18.57	18.75
		RB25#0	21.18	21.05	21.04	19.03	18.90	18.89
10	QPSK	RB1#0	/	23.45	/	/	21.30	/
		RB1#25	/	23.07	/	/	20.92	/
		RB1#49	/	22.15	/	/	20.00	/
		RB25#0	/	22.13	/	/	19.98	/
		RB25#25	/	22.05	/	/	19.90	/
		RB50#0	/	22.15	/	/	20.00	/
	16QAM	RB1#0	/	22.85	/	/	20.70	/
		RB1#25	/	22.41	/	/	20.26	/
		RB1#49	/	21.09	/	/	18.94	/
		RB25#0	/	21.08	/	/	18.93	/
		RB25#25	/	21.08	/	/	18.93	/
		RB50#0	/	21.45	/	/	19.30	/

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

For Band13: Antenna Gain = 0.5dBi = -1.65dBd (0dBd=2.15dBi)

Cable Loss=0.5dB* (provided by the applicant)

Limit: ERP ≤ 34.77dBm

Peak-to-average ratio (PAR)**10MHz bandwidth**

Modulation	Low channel (dB)	Middle channel (dB)	High channel (dB)	PAR Limit (dB)	Result
QPSK (1RB Size)	/	4.55	/	13	Pass
QPSK (50RB Size)	/	5.29	/	13	Pass
16QAM (1RB Size)	/	5.32	/	13	Pass
16QAM (50RB Size)	/	6.19	/	13	Pass

LTE Band 25:**Maximum Output Power**

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	15.84	15.41	15.59	15.84	15.41	15.59
		RB1#3	15.77	15.63	15.60	15.77	15.63	15.60
		RB1#5	15.81	15.66	15.54	15.81	15.66	15.54
		RB3#0	15.76	15.39	15.55	15.76	15.39	15.55
		RB3#3	15.54	15.50	15.52	15.54	15.50	15.52
		RB6#0	14.62	14.58	14.65	14.62	14.58	14.65
	16QAM	RB1#0	14.71	14.52	14.61	14.71	14.52	14.61
		RB1#3	14.90	14.70	14.59	14.90	14.70	14.59
		RB1#5	14.88	14.60	13.85	14.88	14.60	13.85
		RB3#0	14.52	14.62	14.12	14.52	14.62	14.12
		RB3#3	14.37	14.52	14.51	14.37	14.52	14.51
		RB6#0	13.46	13.55	13.63	13.46	13.55	13.63
3.0	QPSK	RB1#0	15.43	15.40	15.41	15.43	15.40	15.41
		RB1#8	15.42	15.45	15.48	15.42	15.45	15.48
		RB1#14	15.49	15.40	15.42	15.49	15.40	15.42
		RB6#0	14.69	14.53	14.78	14.69	14.53	14.78
		RB6#9	14.66	14.37	14.70	14.66	14.37	14.70
		RB15#0	14.68	14.45	14.75	14.68	14.45	14.75
	16QAM	RB1#0	15.11	14.61	14.41	15.11	14.61	14.41
		RB1#8	14.75	14.42	14.29	14.75	14.42	14.29
		RB1#14	14.71	14.60	14.21	14.71	14.60	14.21
		RB6#0	13.50	13.70	13.70	13.50	13.70	13.70
		RB6#9	13.48	13.60	13.68	13.48	13.60	13.68
		RB15#0	13.60	13.47	13.69	13.60	13.47	13.69

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	15.41	15.38	15.38	15.41	15.38	15.38
		RB1#13	15.53	15.21	15.32	15.53	15.21	15.32
		RB1#24	15.51	15.22	15.31	15.51	15.22	15.31
		RB15#0	14.79	14.41	14.55	14.79	14.41	14.55
		RB15#10	14.70	14.36	14.62	14.70	14.36	14.62
		RB25#0	14.74	14.37	14.58	14.74	14.37	14.58
	16QAM	RB1#0	13.66	14.54	14.12	13.66	14.54	14.12
		RB1#13	13.74	14.23	14.23	13.74	14.23	14.23
		RB1#24	13.69	14.10	14.29	13.69	14.10	14.29
		RB15#0	13.57	13.15	13.44	13.57	13.15	13.44
		RB15#10	13.61	13.18	13.62	13.61	13.18	13.62
		RB25#0	13.77	13.33	13.47	13.77	13.33	13.47
10.0	QPSK	RB1#0	15.62	15.56	15.49	15.62	15.56	15.49
		RB1#25	15.68	15.29	15.66	15.68	15.29	15.66
		RB1#49	15.55	15.34	15.49	15.55	15.34	15.49
		RB25#0	14.89	14.45	14.64	14.89	14.45	14.64
		RB25#25	14.75	14.35	14.66	14.75	14.35	14.66
		RB50#0	14.78	14.39	14.62	14.78	14.39	14.62
	16QAM	RB1#0	15.07	14.79	14.42	15.07	14.79	14.42
		RB1#25	15.29	15.04	14.46	15.29	15.04	14.46
		RB1#49	14.56	14.54	14.18	14.56	14.54	14.18
		RB25#0	13.73	13.55	13.58	13.73	13.55	13.58
		RB25#25	13.69	13.44	13.75	13.69	13.44	13.75
		RB50#0	13.75	13.47	13.50	13.75	13.47	13.50

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	15.50	15.52	15.43	15.50	15.52	15.43
		RB1#38	15.54	15.15	15.45	15.54	15.15	15.45
		RB1#74	15.44	15.39	15.54	15.44	15.39	15.54
		RB36#0	14.66	14.47	14.69	14.66	14.47	14.69
		RB36#39	14.52	14.24	14.49	14.52	14.24	14.49
		RB75#0	14.55	14.36	14.61	14.55	14.36	14.61
	16QAM	RB1#0	15.04	14.85	14.97	15.04	14.85	14.97
		RB1#38	14.94	14.37	14.61	14.94	14.37	14.61
		RB1#74	14.50	15.28	14.73	14.50	15.28	14.73
		RB36#0	13.73	13.46	13.68	13.73	13.46	13.68
		RB36#39	13.38	13.36	13.42	13.38	13.36	13.42
		RB75#0	13.44	13.46	13.56	13.44	13.46	13.56
20.0	QPSK	RB1#0	15.59	15.60	15.67	15.59	15.60	15.67
		RB1#50	15.74	15.47	15.46	15.74	15.47	15.46
		RB1#99	15.57	15.61	15.37	15.57	15.61	15.37
		RB50#0	14.68	14.32	14.65	14.68	14.32	14.65
		RB50#50	14.43	14.22	14.41	14.43	14.22	14.41
		RB100#0	14.47	14.28	14.56	14.47	14.28	14.56
	16QAM	RB1#0	14.35	14.93	15.29	14.35	14.93	15.29
		RB1#50	14.36	14.67	14.96	14.36	14.67	14.96
		RB1#99	14.13	14.71	15.01	14.13	14.71	15.01
		RB50#0	13.60	13.48	13.65	13.60	13.48	13.65
		RB50#50	13.59	13.28	13.37	13.59	13.28	13.37
		RB100#0	13.53	13.28	13.75	13.53	13.28	13.75

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

For Band25: Antenna Gain = 0.8dBi

Cable Loss=0.8dB*(provided by the applicant)

Limit: EIRP≤33dBm

Peak-to-average ratio (PAR)**20MHz bandwidth**

Modulation	Low channel (dB)	Middle channel (dB)	High channel (dB)	PAR Limit (dB)	Result
QPSK (1RB Size)	4.72	4.67	4.72	13	Pass
QPSK (100RB Size)	5.25	5.04	4.99	13	Pass
16QAM (1RB Size)	5.77	5.36	5.62	13	Pass
16QAM (100RB Size)	6.20	6.09	5.91	13	Pass

LTE Band 26(Part 90S)

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	23.35	23.40	23.43	21.20	21.25	21.28
		RB1#3	23.19	23.23	23.08	21.04	21.08	20.93
		RB1#5	23.45	23.41	23.30	21.30	21.26	21.15
		RB3#0	22.24	22.37	22.27	20.09	20.22	20.12
		RB3#3	22.26	22.34	22.21	20.11	20.19	20.06
		RB6#0	22.24	22.25	22.33	20.09	20.10	20.18
	16QAM	RB1#0	22.55	22.58	22.54	20.40	20.43	20.39
		RB1#3	22.22	22.37	22.21	20.07	20.22	20.06
		RB1#5	22.55	23.14	22.45	20.40	20.99	20.30
		RB3#0	21.34	21.50	21.45	19.19	19.35	19.30
		RB3#3	21.19	21.55	21.33	19.04	19.40	19.18
		RB6#0	21.26	21.39	21.41	19.11	19.24	19.26
3.0	QPSK	RB1#0	23.09	23.52	23.14	20.94	21.37	20.99
		RB1#8	23.02	23.21	22.95	20.87	21.06	20.80
		RB1#14	23.32	23.40	23.01	21.17	21.25	20.86
		RB6#0	22.07	22.27	22.31	19.92	20.12	20.16
		RB6#9	22.20	22.27	22.15	20.05	20.12	20.00
		RB15#0	22.11	22.22	22.26	19.96	20.07	20.11
	16QAM	RB1#0	22.57	22.85	22.02	20.42	20.70	19.87
		RB1#8	22.17	22.57	21.57	20.02	20.42	19.42
		RB1#14	22.57	23.04	21.72	20.42	20.89	19.57
		RB6#0	20.97	21.40	21.28	18.82	19.25	19.13
		RB6#9	21.27	21.41	21.14	19.12	19.26	18.99
		RB15#0	21.17	21.59	21.42	19.02	19.44	19.27

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	22.93	23.34	23.10	20.78	21.19	20.95
		RB1#13	23.10	23.22	23.05	20.95	21.07	20.90
		RB1#24	23.14	23.48	23.00	20.99	21.33	20.85
		RB15#0	22.20	22.26	22.27	20.05	20.11	20.12
		RB15#10	22.23	22.28	22.11	20.08	20.13	19.96
		RB25#0	22.34	22.27	22.27	20.19	20.12	20.12
	16QAM	RB1#0	21.56	22.36	22.12	19.41	20.21	19.97
		RB1#13	21.37	21.73	21.93	19.22	19.58	19.78
		RB1#24	21.36	22.30	22.18	19.21	20.15	20.03
		RB15#0	21.03	21.01	21.35	18.88	18.86	19.20
		RB15#10	21.19	21.18	21.16	19.04	19.03	19.01
		RB25#0	21.40	21.38	21.27	19.25	19.23	19.12
10.0	QPSK	RB1#0	/	23.47	/	/	21.32	/
		RB1#25	/	23.28	/	/	21.13	/
		RB1#49	/	23.48	/	/	21.33	/
		RB25#0	/	22.27	/	/	20.12	/
		RB25#25	/	22.36	/	/	20.21	/
		RB50#0	/	22.25	/	/	20.10	/
	16QAM	RB1#0	/	22.53	/	/	20.38	/
		RB1#25	/	22.34	/	/	20.19	/
		RB1#49	/	22.59	/	/	20.44	/
		RB25#0	/	21.40	/	/	19.25	/
		RB25#25	/	21.42	/	/	19.27	/
		RB50#0	/	21.36	/	/	19.21	/

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

For Band26: Antenna Gain = 0.5dBi* = -1.65dBd (0dBd=2.15dBi)(provided by the applicant)

Cable Loss=0.5dB*(provided by the applicant)

Limit: ERP≤50dBm

Peak-to-average ratio (PAR)**10MHz Bandwidth**

Modulation	Low channel (dB)	Middle channel (dB)	High channel (dB)	PAR Limit (dB)	Result
QPSK (1RB Size)	/	4.43	/	13	Pass
QPSK (50RB Size)	/	4.72	/	13	Pass
16QAM (1RB Size)	/	5.25	/	13	Pass
16QAM (50RB Size)	/	5.71	/	13	Pass

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

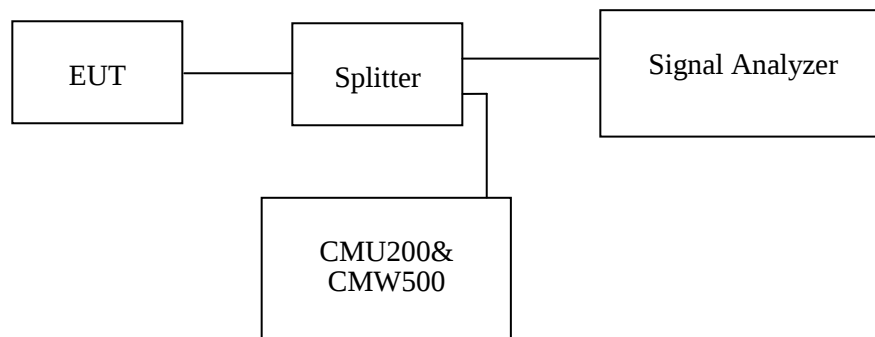
Applicable Standard

FCC 47 §2.1049, §22.917, §22.905, §24.238, §27.53 and §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.



Test Data

Environmental Conditions

Temperature:	28.2~29.7 °C
Relative Humidity:	52~63 %
ATM Pressure:	100.8~101.6 kPa

The testing was performed by Fan Yang from 2021-10-10 to 2021-11-12.

EUT operation mode: Transmitting

Test Result: Pass

Cellular Band (Part 22H)

Mode	Channel	Frequency (MHz)	99% Occupied Bandwidth (kHz)	26 dB Emission Bandwidth (kHz)
GPRS	128	824.2	243.13	318.40
	190	836.6	244.57	321.30
	251	848.8	244.57	316.90
EGPRS	128	824.2	246.02	311.10
	190	836.6	246.02	311.10
	251	848.8	246.02	311.10

	Frequency (MHz)	Occupied Bandwidth (MHz)	26dB Bandwidth (MHz)
RMC	826.4	4.14	4.73
	836.6	4.12	4.72
	846.6	4.12	4.73
HSDPA	826.4	4.17	4.83
	836.6	4.12	4.72
	846.6	4.15	4.78
HSUPA	826.4	4.14	4.73
	836.6	4.12	4.72
	846.6	4.14	4.82

PCS Band (Part 24E)

Mode	Channel	Frequency (MHz)	99% Occupied Bandwidth (kHz)	26 dB Emission Bandwidth (kHz)
GPRS	512	1850.2	241.68	314.00
	661	1880.0	240.23	318.40
	810	1909.8	240.23	315.50
EGPRS	512	1850.2	240.23	315.50
	661	1880.0	241.68	311.10
	810	1909.8	241.68	314.00

Frequency (MHz)		Occupied Bandwidth (MHz)	26dB Bandwidth (MHz)
RMC	1852.4	4.15	4.72
	1880.0	4.15	4.72
	1907.6	4.14	4.72
HSDPA	1852.4	4.17	4.73
	1880.0	4.17	4.73
	1907.6	4.17	4.73
HSUPA	1852.4	4.17	4.73
	1880.0	4.17	4.73
	1907.6	4.15	4.75

AWS Band (Part 27)

Frequency (MHz)		Occupied Bandwidth (MHz)	26dB Bandwidth (MHz)
RMC	1712.4	4.15	4.73
	1732.6	4.14	4.73
	1752.6	4.15	4.73
HSDPA	1712.4	4.17	4.81
	1732.6	4.20	4.72
	1752.6	4.18	4.73
HSUPA	1712.4	4.18	4.79
	1732.6	4.18	4.76
	1752.6	4.17	4.78

LTE Mode:**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	1.108	1.320	1.108	1.296	1.102	1.314
	16QAM	1.102	1.308	1.102	1.308	1.108	1.338
3 MHz	QPSK	2.695	2.928	2.695	2.940	2.695	2.964
	16QAM	2.695	2.976	2.683	2.964	2.683	2.940
5 MHz	QPSK	4.531	5.040	4.511	5.040	4.531	5.040
	16QAM	4.511	5.000	4.551	5.040	4.531	5.060
10 MHz	QPSK	8.982	9.800	8.942	9.840	8.942	9.800
	16QAM	8.982	9.680	8.942	9.760	8.942	9.760
15 MHz	QPSK	13.533	14.880	13.533	14.820	13.533	14.940
	16QAM	13.533	14.820	13.533	14.880	13.533	14.880
20 MHz	QPSK	17.964	19.360	17.964	19.440	17.964	19.600
	16QAM	17.964	19.440	17.964	19.600	17.964	19.440

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	1.102	1.308	1.108	1.326	1.108	1.296
	16QAM	1.102	1.314	1.096	1.302	1.102	1.314
3 MHz	QPSK	2.695	2.952	2.695	2.952	2.683	2.952
	16QAM	2.695	2.976	2.683	2.964	2.683	2.964
5 MHz	QPSK	4.531	5.060	4.511	5.020	4.491	5.020
	16QAM	4.511	5.040	4.551	5.040	4.531	5.080
10 MHz	QPSK	8.982	9.840	8.942	9.640	8.942	9.760
	16QAM	8.942	9.640	8.942	9.800	8.942	9.760
15 MHz	QPSK	13.533	14.940	13.473	14.760	13.533	14.940
	16QAM	13.533	14.880	13.473	14.880	13.533	14.820
20 MHz	QPSK	17.964	19.440	17.884	19.360	18.044	19.760
	16QAM	17.964	19.440	17.884	19.520	17.964	19.520

LTE Band 5& LTE Band 26(Part 22H):

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	1.096	1.320	1.102	1.320	1.102	1.290
	16QAM	1.102	1.320	1.096	1.296	1.102	1.302
3 MHz	QPSK	2.695	2.952	2.695	2.940	2.683	2.964
	16QAM	2.695	2.976	2.683	2.952	2.683	2.964
5 MHz	QPSK	4.551	5.080	4.511	5.040	4.511	5.020
	16QAM	4.511	5.040	4.531	5.040	4.511	5.060
10 MHz	QPSK	8.982	9.840	8.942	9.720	8.982	9.840
	16QAM	8.942	9.680	8.942	9.760	8.982	9.760
15 MHz	QPSK	13.533	14.880	13.413	14.760	13.533	14.940
	16QAM	13.533	14.820	13.533	14.760	13.473	14.700

LTE Band 7:

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	4.531	5.040	4.511	5.060	4.531	5.040
	16QAM	4.511	5.020	4.531	5.060	4.531	5.080
10 MHz	QPSK	8.942	9.880	8.942	9.800	8.942	9.800
	16QAM	8.942	9.640	8.942	9.760	8.942	9.760
15 MHz	QPSK	13.533	14.940	13.473	14.880	13.533	14.940
	16QAM	13.533	14.820	13.533	14.880	13.533	14.880
20 MHz	QPSK	17.884	19.360	17.964	19.440	17.964	19.680
	16QAM	17.964	19.520	17.964	19.600	17.884	19.440

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	4.531	5.060	4.511	5.040	4.511	5.020
	16QAM	4.511	5.020	4.551	5.040	4.531	5.080
10 MHz	QPSK	/	/	8.942	9.800	/	/
	16QAM	/	/	8.942	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	1.102	1.302	1.108	1.314	1.108	1.284
	16QAM	1.102	1.320	1.096	1.296	1.102	1.302
3 MHz	QPSK	2.695	2.952	2.695	2.952	2.695	2.964
	16QAM	2.695	2.964	2.683	2.964	2.683	2.952
5 MHz	QPSK	4.531	5.080	4.511	5.040	4.511	5.040
	16QAM	4.511	5.040	4.551	5.060	4.551	5.100
10 MHz	QPSK	8.942	9.840	8.942	9.800	8.942	9.800
	16QAM	8.942	9.720	8.942	9.800	8.942	9.720

LTE Band 25

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	1.108	1.320	1.108	1.290
	16QAM	1.102	1.338	1.096	1.308	1.102	1.302
3 MHz	QPSK	2.695	2.940	2.695	2.940	2.683	2.952
	16QAM	2.695	2.964	2.683	2.964	2.683	2.964
5 MHz	QPSK	4.531	5.060	4.511	5.040	4.511	5.020
	16QAM	4.511	5.020	4.531	5.040	4.551	5.040
10 MHz	QPSK	8.982	9.800	8.942	9.720	8.942	9.800
	16QAM	8.942	9.640	8.942	9.720	8.942	9.680
15 MHz	QPSK	13.533	14.880	13.533	14.760	13.533	15.000
	16QAM	13.533	14.820	13.533	14.880	13.533	14.880
20 MHz	QPSK	17.964	19.360	17.964	19.440	17.884	19.600
	16QAM	17.964	19.440	18.044	19.680	17.884	19.440

LTE Band 26(Part 90S):

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	1.096	1.326
	16QAM	1.096	1.302	1.102	1.314	1.102	1.314
3 MHz	QPSK	2.695	2.940	2.695	2.940	2.683	2.976
	16QAM	2.695	2.976	2.683	2.952	2.683	2.964
5 MHz	QPSK	4.531	5.060	4.511	5.060	4.511	5.040
	16QAM	4.511	5.040	4.531	5.040	4.531	5.080
10 MHz	QPSK	/	/	8.942	9.840	/	/
	16QAM	/	/	8.942	9.680	/	/

Test plots refer to the Appendix A.

FCC §2.1051, §22.917(a), §24.238(a), §27.53, §90.691 - SPURIOUS EMISSIONS AT ANTENNA TERMINALS

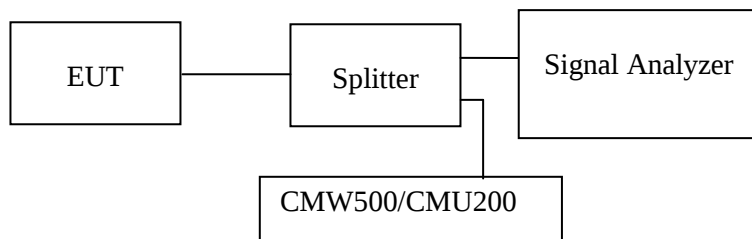
Applicable Standard

FCC §2.1051, §22.917(a) and §24.238(a) and §27.53 and §90.691

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.



Test Data

Environmental Conditions

Temperature:	28.2~29.7 °C
Relative Humidity:	52~63 %
ATM Pressure:	100.8~101.6 kPa

The testing was performed by Fan Yang from 2021-10-10 to 2021-11-12.

EUT operation mode: Transmitting

Test result: Pass

Test plots refer to the Appendix B.

FCC §2.1051, §22.917(a), §24.238(a), §27.53, §90.691 - Field Strength of Spurious Radiation

Applicable Standard

FCC §2.1051, §22.917(a) and §24.238(a) and §27.53 and §90.691

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

Test Procedure

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

The measurement antenna was placed at a distance of 3 meters from the EUT. During the tests, the receiving antenna height and polarization as well as EUT azimuth were varied in order to identify the maximum level of emissions from the EUT. The test was performed by placing the EUT on 3-orthogonal axis.

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

Test Data

Environmental Conditions

Temperature:	26~27 °C
Relative Humidity:	54~56 %
ATM Pressure:	101.0 kPa

The testing was performed by Chao Mo on 2021-10-21 and 2021-10-24.

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

The worst case is as below:

30 MHz ~ 10 GHz:**Cellular Band**

Frequency (MHz)	Receiver Reading (dBm)	Turntable Degree	Rx Antenna		Substituted Factor (dB)	Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Height (m)	Polar (H/V)				
GPRS Mode								
Low channel								
952.46	-45.91	168	1.9	H	11.79	-34.12	-13	-21.12
952.46	-46.37	32	1.8	V	12.48	-33.89	-13	-20.89
1648.4	-14.77	330	1.3	H	-2.73	-17.50	-13	-4.50
1648.4	-15.21	104	1.5	V	-2.79	-18.00	-13	-5.00
2472.6	-36.38	218	2.4	H	1.18	-35.20	-13	-22.20
2472.6	-34.61	24	1	V	1.21	-33.40	-13	-20.40
3296.8	-41.74	203	1.5	H	3.24	-38.50	-13	-25.50
3296.8	-42.67	96	2	V	3.27	-39.40	-13	-26.40
Middle Channel								
952.46	-46.02	257	1.5	H	11.79	-34.23	-13	-21.23
952.46	-46.40	218	1.2	V	12.48	-33.92	-13	-20.92
1673.2	-13.53	25	2.4	H	-2.67	-16.20	-13	-3.20
1673.2	-14.06	3	1.6	V	-2.74	-16.80	-13	-3.80
2509.8	-38.32	56	1.5	H	1.32	-37.00	-13	-24.00
2509.8	-36.66	74	1.2	V	1.36	-35.30	-13	-22.30
3346.4	-45.71	19	1.2	H	3.31	-42.40	-13	-29.40
3346.4	-46.22	125	2.3	V	3.32	-42.90	-13	-29.90
High Channel								
952.46	-45.78	289	1	H	11.79	-33.99	-13	-20.99
952.46	-46.32	96	1.6	V	12.48	-33.84	-13	-20.84
1697.6	-13.76	220	1.5	H	-2.64	-16.40	-13	-3.40
1697.6	-14.41	65	2.0	V	-2.69	-17.10	-13	-4.10
2546.4	-39.07	129	2.2	H	1.47	-37.60	-13	-24.60
2546.4	-37.42	8	1.2	V	1.52	-35.90	-13	-22.90
3395.2	-46.38	238	2.4	H	3.38	-43.00	-13	-30.00
3395.2	-46.77	207	1.3	V	3.37	-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)				
WCDMA Mode								
Low channel								
953.43	-45.76	37	1.9	H	11.79	-33.97	-13	-20.97
953.43	-46.30	128	1.6	V	12.48	-33.82	-13	-20.82
1652.80	-38.47	288	2.4	H	-2.73	-41.20	-13	-28.20
1652.80	-38.41	1	1.1	V	-2.79	-41.20	-13	-28.20
2479.20	-47.28	344	1.7	H	1.18	-46.10	-13	-33.10
2479.20	-45.81	175	1.6	V	1.21	-44.60	-13	-31.60
3305.60	-48.74	8	1.2	H	3.24	-45.50	-13	-32.50
3305.60	-49.07	170	1.4	V	3.27	-45.80	-13	-32.80
Middle Channel								
953.43	-45.66	42	1.4	H	11.79	-33.87	-13	-20.87
953.43	-46.18	20	2	V	12.48	-33.70	-13	-20.70
1673.20	-37.33	178	1.6	H	-2.67	-40.00	-13	-27.00
1673.20	-37.66	326	1.5	V	-2.74	-40.40	-13	-27.40
2509.80	-49.22	71	1.6	H	1.32	-47.90	-13	-34.90
2509.80	-48.86	217	1.7	V	1.36	-47.50	-13	-34.50
3346.40	-49.11	292	1.1	H	3.31	-45.80	-13	-32.80
3346.40	-48.52	298	2.2	V	3.32	-45.20	-13	-32.20
High Channel								
953.43	-45.58	1	1.9	H	11.79	-33.79	-13	-20.79
953.43	-46.16	34	1.3	V	12.48	-33.68	-13	-20.68
1693.20	-36.56	98	2.2	H	-2.64	-39.20	-13	-26.20
1693.20	-36.91	19	1.4	V	-2.69	-39.60	-13	-26.60
2539.80	-50.47	335	2.1	H	1.47	-49.00	-13	-36.00
2539.80	-48.12	272	1.0	V	1.52	-46.60	-13	-33.60
3386.40	-48.78	122	2.5	H	3.38	-45.40	-13	-32.40
3386.40	-49.37	349	1.4	V	3.37	-46.00	-13	-33.00

30 MHz ~ 20 GHz:**PCS Band**

Frequency (MHz)	Receiver Reading (dBm)	Turntable Degree	Rx Antenna		Substituted Factor (dB)	Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Height (m)	Polar (H/V)				
GPRS Mode								
Low channel								
952.46	-45.81	268	1.2	H	11.79	-34.02	-13	-21.02
952.46	-46.32	175	1.5	V	12.48	-33.84	-13	-20.84
3700.4	-45.16	231	1.7	H	4.96	-40.20	-13	-27.20
3700.4	-45.09	323	2.0	V	4.59	-40.50	-13	-27.50
Middle Channel								
952.46	-45.89	305	2.3	H	11.79	-34.10	-13	-21.10
952.46	-46.44	215	2.4	V	12.48	-33.96	-13	-20.96
3760	-48.21	357	2.2	H	5.31	-42.90	-13	-29.90
3760	-48.23	141	2.2	V	4.93	-43.30	-13	-30.30
High Channel								
952.46	-45.72	285	1.3	H	11.79	-33.93	-13	-20.93
952.46	-46.20	56	2.2	V	12.48	-33.72	-13	-20.72
3819.6	-51.14	134	1.9	H	5.64	-45.50	-13	-32.50
3819.6	-51.27	239	2.2	V	5.27	-46.00	-13	-33.00
WCDMA Mode								
Low channel								
953.43	-45.98	192	1.5	H	11.79	-34.19	-13	-21.19
953.43	-46.46	126	1.5	V	12.48	-33.98	-13	-20.98
3704.80	-49.66	235	1.5	H	4.96	-44.70	-13	-31.70
3704.80	-49.49	184	2.3	V	4.59	-44.90	-13	-31.90
Middle channel								
953.43	-45.70	94	1.9	H	11.79	-33.91	-13	-20.91
953.43	-46.23	56	1.3	V	12.48	-33.75	-13	-20.75
3760.00	-50.61	146	2.4	H	5.31	-45.30	-13	-32.30
3760.00	-49.93	82	1.1	V	4.93	-45.00	-13	-32.00
High channel								
953.43	-45.73	125	2	H	11.79	-33.94	-13	-20.94
953.43	-46.32	325	2.2	V	12.48	-33.84	-13	-20.84
3815.20	-51.04	271	1.2	H	5.64	-45.40	-13	-32.40
3815.20	-50.37	307	2.1	V	5.27	-45.10	-13	-32.10

30 MHz ~ 20 GHz:**AWS Band**

Frequency (MHz)	Receiver Reading (dBm)	Turntable Degree	Rx Antenna		Substituted Factor (dB)	Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Height (m)	Polar (H/V)				
WCDMA Mode								
Low channel								
953.43	-45.85	124	1	H	11.79	-34.06	-13	-21.06
953.43	-46.44	306	1	V	12.48	-33.96	-13	-20.96
3424.80	-46.83	235	1.7	H	3.43	-43.40	-13	-30.40
3424.80	-46.90	201	2.2	V	3.4	-43.50	-13	-30.50
Middle channel								
953.43	-45.80	232	1.6	H	11.79	-34.01	-13	-21.01
953.43	-46.26	340	2.4	V	12.48	-33.78	-13	-20.78
3465.20	-47.19	214	1.2	H	3.49	-43.70	-13	-30.70
3465.20	-48.15	146	2.4	V	3.45	-44.70	-13	-31.70
High channel								
953.43	-45.96	78	1.5	H	11.79	-34.17	-13	-21.17
953.43	-46.40	154	1.2	V	12.48	-33.92	-13	-20.92
3505.20	-47.45	232	1.4	H	3.55	-43.90	-13	-30.90
3505.20	-48.30	150	2	V	3.5	-44.80	-13	-31.80

LTE Band: (Pre-scan with all the bandwidth, and 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)				
Band 2								
Test frequency range: 30MHz-20GHz								
1.4MHz, low channel								
950.86	-45.96	239	1.6	H	11.79	-34.17	-13	-21.17
950.86	-46.49	198	1.8	V	12.48	-34.01	-13	-21.01
3701.40	-49.76	313	2.2	H	4.96	-44.80	-13	-31.80
3701.40	-48.81	3	1.9	V	4.59	-44.22	-13	-31.22
1.4MHz, middle channel								
950.86	-45.94	222	1.9	H	11.79	-34.15	-13	-21.15
950.86	-45.84	320	1.8	V	12.48	-33.36	-13	-20.36
3760.00	-52.01	19	2.4	H	5.31	-46.70	-13	-33.70
3760.00	-50.33	262	1.6	V	4.93	-45.40	-13	-32.40
1.4MHz, high channel								
950.86	-45.79	246	1.8	H	11.79	-34.00	-13	-21.00
950.86	-46.30	196	1.9	V	12.48	-33.82	-13	-20.82
3818.60	-50.54	184	1.7	H	5.64	-44.90	-13	-31.90
3818.60	-51.07	191	2.3	V	5.27	-45.80	-13	-32.80
Band 4								
Test frequency range: 30MHz-20GHz								
1.4MHz, low channel								
950.86	-45.87	167	2	H	11.79	-34.08	-13	-21.08
950.86	-46.29	333	1.3	V	12.48	-33.81	-13	-20.81
3421.40	-41.33	210	2.3	H	3.43	-37.90	-13	-24.90
3421.40	-41.80	332	1.5	V	3.4	-38.40	-13	-25.40
1.4MHz, middle channel								
950.86	-45.88	23	1.3	H	11.79	-34.09	-13	-21.09
950.86	-46.40	5	2.3	V	12.48	-33.92	-13	-20.92
3465.00	-42.09	324	1.2	H	3.49	-38.60	-13	-25.60
3465.00	-45.15	225	1.5	V	3.45	-41.70	-13	-28.70
1.4MHz, high channel								
950.86	-45.85	309	1.7	H	11.79	-34.06	-13	-21.06
950.86	-46.42	302	1.9	V	12.48	-33.94	-13	-20.94
3508.60	-42.55	145	2.4	H	3.55	-39.00	-13	-26.00
3508.60	-43.60	21	1.5	V	3.5	-40.10	-13	-27.10

Frequency (MHz)	Receiver Reading (dBm)	Turntable Degree	Rx Antenna		Substituted Factor (dB)	Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Height (m)	Polar (H/V)				
Band 5& Band 26(Part 22H)								
Test frequency range: 30MHz-10GHz								
1.4MHz, low channel								
950.86	-45.71	22	2	H	11.79	-33.92	-13	-20.92
950.86	-46.28	105	2.2	V	12.48	-33.80	-13	-20.80
1649.40	-39.27	262	2.4	H	-2.73	-42.00	-13	-29.00
1649.40	-41.61	195	2	V	-2.79	-44.40	-13	-31.40
2474.10	-46.78	224	2.3	H	1.18	-45.60	-13	-32.60
2474.10	-47.71	354	2.5	V	1.21	-46.50	-13	-33.50
3298.80	-46.34	25	2.1	H	3.24	-43.10	-13	-30.10
3298.80	-48.17	171	1.1	V	3.27	-44.90	-13	-31.90
1.4MHz, middle channel								
950.86	-45.78	189	2.4	H	11.79	-33.99	-13	-20.99
950.86	-46.35	176	1	V	12.48	-33.87	-13	-20.87
1673.00	-37.03	335	2.1	H	-2.67	-39.70	-13	-26.70
1673.00	-35.66	359	1.8	V	-2.74	-38.40	-13	-25.40
2509.50	-48.02	267	1.4	H	1.32	-46.70	-13	-33.70
2509.50	-48.56	20	2.2	V	1.36	-47.20	-13	-34.20
3346.00	-47.21	203	2.1	H	3.31	-43.90	-13	-30.90
3346.00	-48.62	49	1.6	V	3.32	-45.30	-13	-32.30
1.4MHz, high channel								
950.86	-45.81	17	1.2	H	11.79	-34.02	-13	-21.02
950.86	-46.27	171	1.1	V	12.48	-33.79	-13	-20.79
1696.60	-37.66	230	2.0	H	-2.64	-40.30	-13	-27.30
1696.60	-37.81	308	1.3	V	-2.69	-40.50	-13	-27.50
2544.90	-47.87	269	1.6	H	1.47	-46.40	-13	-33.40
2544.90	-48.12	293	2.4	V	1.52	-46.60	-13	-33.60
3393.20	-46.98	39	1.9	H	3.38	-43.60	-13	-30.60
3393.20	-48.57	302	2.3	V	3.37	-45.20	-13	-32.20

Frequency (MHz)	Receiver Reading (dBm)	Turntable Degree	Rx Antenna		Substituted Factor (dB)	Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Height (m)	Polar (H/V)				
Band 7								
Test frequency range: 30MHz-26GHz								
5MHz, low channel								
950.86	-45.58	108	2.5	H	11.79	-33.79	-25	-8.79
950.86	-45.33	51	1.4	V	12.48	-32.85	-25	-7.85
5005.00	-51.30	231	2.1	H	9.5	-41.80	-25	-16.80
5005.00	-47.12	205	1.9	V	8.32	-38.80	-25	-13.80
5MHz, middle channel								
950.86	-45.48	72	2.4	H	11.79	-33.69	-25	-8.69
950.86	-44.91	171	1.4	V	12.48	-32.43	-25	-7.43
5070.00	-53.76	181	2	H	9.56	-44.20	-25	-19.20
5070.00	-49.84	121	1.9	V	8.34	-41.50	-25	-16.50
5MHz, high channel								
950.86	-44.95	98	2.3	H	11.79	-33.16	-25	-8.16
950.86	-44.53	52	1.9	V	12.48	-32.05	-25	-7.05
5135.00	-50.92	51	1.4	H	9.72	-41.20	-25	-16.20
5135.00	-46.48	316	1.1	V	8.38	-38.10	-25	-13.10

Frequency (MHz)	Receiver Reading (dBm)	Turntable Degree	Rx Antenna		Substituted Factor (dB)	Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Height (m)	Polar (H/V)				
Band 12								
Test frequency range: 30MHz-8GHz								
1.4MHz, low channel								
950.86	-45.58	278	1.4	H	11.79	-33.79	-13	-20.79
950.86	-46.16	334	1.1	V	12.48	-33.68	-13	-20.68
1399.40	-27.17	199	1.6	H	-0.53	-27.70	-13	-14.70
1399.40	-29.26	279	2	V	-0.74	-30.00	-13	-17.00
2099.10	-41.11	345	1.9	H	-0.89	-42.00	-13	-29.00
2099.10	-41.08	273	1.4	V	-1.12	-42.20	-13	-29.20
2798.80	-45.34	220	1	H	2.24	-43.10	-13	-30.10
2798.80	-47.83	333	1.2	V	2.33	-45.50	-13	-32.50
1.4MHz, middle channel								
950.86	-45.59	235	2.1	H	11.79	-33.80	-13	-20.80
950.86	-46.14	331	1.5	V	12.48	-33.66	-13	-20.66
1415.00	-27.17	355	1.4	H	-0.53	-27.70	-13	-14.70
1415.00	-27.76	283	1.9	V	-0.74	-28.50	-13	-15.50
2122.50	-41.11	188	1.2	H	-0.89	-42.00	-13	-29.00
2122.50	-42.08	162	2.5	V	-1.12	-43.20	-13	-30.20
2830.00	-47.94	148	1.2	H	2.24	-45.70	-13	-32.70
2830.00	-46.93	219	1.6	V	2.33	-44.60	-13	-31.60
1.4MHz, high channel								
950.86	-45.99	359	2	H	11.79	-34.20	-13	-21.20
950.86	-46.44	199	2.4	V	12.48	-33.96	-13	-20.96
1430.60	-27.27	103	1.3	H	-0.53	-27.80	-13	-14.80
1430.60	-28.96	14	1.5	V	-0.74	-29.70	-13	-16.70
2145.90	-40.91	225	2.5	H	-0.89	-41.80	-13	-28.80
2145.90	-41.88	11	2	V	-1.12	-43.00	-13	-30.00
2861.20	-43.84	211	1.6	H	2.24	-41.60	-13	-28.60
2861.20	-47.93	203	2.4	V	2.33	-45.60	-13	-32.60

Frequency (MHz)	Receiver Reading (dBm)	Turntable Degree	Rx Antenna		Substituted Factor (dB)	Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Height (m)	Polar (H/V)				
Band 13								
Test frequency range: 30MHz-8GHz								
5MHz, low channel								
950.86	-45.93	84	1.7	H	11.79	-34.14	-13	-21.14
950.86	-46.37	302	1.2	V	12.48	-33.89	-13	-20.89
1559.00	-39.2	359	2.1	H	-2.81	-42.01	-40	-2.01
1559.00	-38.96	155	1.2	V	-2.89	-41.85	-40	-1.85
2338.50	-47.62	270	1.9	H	1.22	-46.4	-13	-33.4
2338.50	-46.58	117	2.3	V	1.18	-45.4	-13	-32.4
3118.00	-48.44	22	1.5	H	2.84	-45.6	-13	-32.6
3118.00	-48.77	184	2.3	V	2.97	-45.8	-13	-32.8
5MHz, middle channel								
950.86	-45.72	20	1.8	H	11.79	-33.93	-13	-20.93
950.86	-46.25	159	1.1	V	12.48	-33.77	-13	-20.77
1564.00	-39.29	359	2.1	H	-2.81	-42.1	-40	-2.1
1564.00	-39.01	155	1.2	V	-2.89	-41.9	-40	-1.9
2346.00	-48.52	270	1.9	H	1.22	-47.3	-13	-34.3
2346.00	-46.98	117	2.3	V	1.18	-45.8	-13	-32.8
3128.00	-48.94	22	1.5	H	2.84	-46.1	-13	-33.1
3128.00	-49.07	184	2.3	V	2.97	-46.1	-13	-33.1
5MHz, high channel								
950.86	-45.70	152	1.1	H	11.79	-33.91	-13	-20.91
950.86	-46.18	118	2.4	V	12.48	-33.70	-13	-20.70
1569.00	-39.59	359	2.1	H	-2.81	-42.4	-40	-2.4
1569.00	-41.31	155	1.2	V	-2.89	-44.2	-40	-4.2
2353.50	-48.62	270	1.9	H	1.22	-47.4	-13	-34.4
2353.50	-47.28	117	2.3	V	1.18	-46.1	-13	-33.1
3138.00	-49.44	22	1.5	H	2.84	-46.6	-13	-33.6
3138.00	-49.67	184	2.3	V	2.97	-46.7	-13	-33.7

Frequency (MHz)	Receiver Reading (dBm)	Turntable Degree	Rx Antenna		Substituted Factor (dB)	Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Height (m)	Polar (H/V)				
Band 25								
Test frequency range: 30MHz-20GHz								
1.4MHz, low channel								
950.86	-45.98	25	1.6	H	11.79	-34.19	-13	-21.19
950.86	-46.41	239	2.3	V	12.48	-33.93	-13	-20.93
3701.40	-50.16	237	1.9	H	4.96	-45.20	-13	-32.20
3701.40	-48.59	192	1.2	V	4.59	-44.00	-13	-31.00
1.4MHz, middle channel								
950.86	-45.51	7	1.7	H	11.79	-33.72	-13	-20.72
950.86	-46.02	323	1.9	V	12.48	-33.54	-13	-20.54
3765.00	-51.21	277	1.3	H	5.31	-45.90	-13	-32.90
3765.00	-50.03	105	2.2	V	4.93	-45.10	-13	-32.10
1.4MHz, high channel								
950.86	-45.64	45	1.4	H	11.79	-33.85	-13	-20.85
950.86	-46.24	166	1.8	V	12.48	-33.76	-13	-20.76
3828.60	-46.94	317	1.5	H	5.64	-41.30	-13	-28.30
3828.60	-46.37	232	1.5	V	5.27	-41.10	-13	-28.10

Frequency (MHz)	Receiver Reading (dBm)	Turntable Degree	Rx Antenna		Substituted Factor (dB)	Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Height (m)	Polar (H/V)				
Band 26(Part 90S)								
Test frequency range: 30MHz-10GHz								
1.4MHz, low channel								
950.86	-46.18	189	1.9	H	11.79	-34.39	-13	-21.39
950.86	-46.37	294	1.6	V	12.48	-33.89	-13	-20.89
1629.40	-36.37	62	1.1	H	-2.73	-39.10	-13	-26.10
1629.40	-33.31	119	1.2	V	-2.79	-36.10	-13	-23.10
2444.10	-43.08	112	1.9	H	1.18	-41.90	-13	-28.90
2444.10	-40.51	111	2.3	V	1.21	-39.30	-13	-26.30
3258.80	-47.74	341	1.1	H	3.24	-44.50	-13	-31.50
3258.80	-48.67	26	2	V	3.27	-45.40	-13	-32.40
1.4MHz, middle channel								
950.86	-46.11	153	1.5	H	11.79	-34.32	-13	-21.32
950.86	-45.93	109	1.5	V	12.48	-33.45	-13	-20.45
1638.00	-36.27	157	1.2	H	-2.73	-39.00	-13	-26.00
1638.00	-30.11	182	1.5	V	-2.79	-32.90	-13	-19.90
2457.00	-43.58	38	1	H	1.18	-42.40	-13	-29.40
2457.00	-41.21	302	2.4	V	1.21	-40.00	-13	-27.00
3276.00	-48.14	95	1.7	H	3.24	-44.90	-13	-31.90
3276.00	-47.37	47	1.4	V	3.27	-44.10	-13	-31.10
1.4MHz, high channel								
950.86	-46.11	277	2	H	11.79	-34.32	-13	-21.32
950.86	-45.92	260	1.5	V	12.48	-33.44	-13	-20.44
1646.60	-32.27	230	2.3	H	-2.73	-35.00	-13	-22.00
1646.60	-31.01	100	1.9	V	-2.79	-33.80	-13	-20.80
2469.90	-45.68	218	1.3	H	1.18	-44.50	-13	-31.50
2469.90	-41.91	298	1.9	V	1.21	-40.70	-13	-27.70
3293.20	-48.84	192	2.2	H	3.24	-45.60	-13	-32.60
3293.20	-48.27	301	1.7	V	3.27	-45.00	-13	-32.00

Note:

Absolute Level = Reading Level + Substituted Factor

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

Margin = Limit - Absolute Level

FCC § 22.917 (a), § 24.238 (a), §27.53, §90.691 - 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.

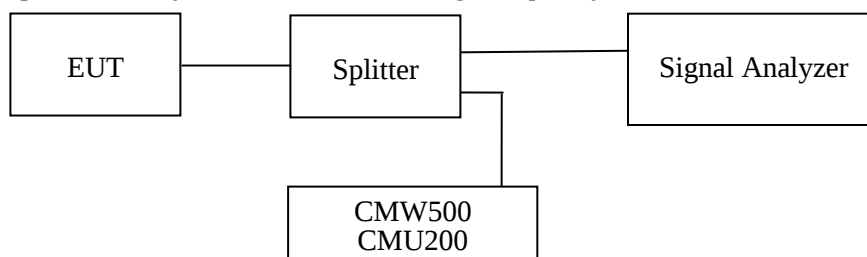
According to §24.238(a), the power of any emissions outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + 10 \log(P)$ dB.

According to FCC §27.53 (c)(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.

Test Procedure

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

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

**Test Data****Environmental Conditions**

Temperature:	28.2~29.7 °C
Relative Humidity:	52~63 %
ATM Pressure:	100.8~101.6 kPa

The testing was performed by Fan Yang from 2021-10-10 to 2021-11-23.

EUT operation mode: Transmitting (Worst case)

Test Result: Pass

Test plots refer to the Appendix C.

FCC § 2.1055, § 22.355, § 24.235, §27.54, §90.213- FREQUENCY STABILITY**Applicable Standard**

FCC § 2.1055, §22.355, §24.235, §27.54 and §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:

Frequency Tolerance for Transmitters in the Public Mobile Services

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

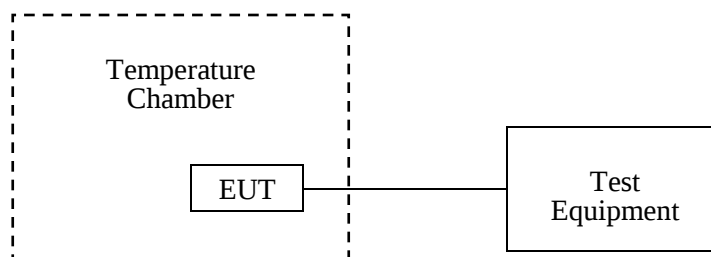
According to §24.235, the frequency stability shall be sufficient to ensure that the fundamental emissions stays within the authorized frequency block.

Test Procedure

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

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

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



Test Data**Environmental Conditions**

Temperature:	28.2~29.7 °C
Relative Humidity:	52~63 %
ATM Pressure:	100.8~101.6 kPa

The testing was performed by Fan Yang from 2021-10-10 to 2021-11-14.

EUT operation mode: Transmitting

Test Result: Pass

Please refer to the following tables.

Please refer to the following tables.

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

Middle Channel, $f_0 = 836.6\text{MHz}$				
Temperature (°C)	Voltage Supplied (V _{DC})	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
-30	N.V.	23.32	0.0279	2.5
-20		21.14	0.0253	2.5
-10		20.15	0.0241	2.5
0		19.15	0.0229	2.5
10		27.32	0.0327	2.5
20		25.25	0.0302	2.5
30		24.14	0.0289	2.5
40		18.18	0.0217	2.5
50		17.65	0.0211	2.5
20	L.V.	20.82	0.0249	2.5
	H.V.	19.72	0.0236	2.5

EDGE Mode

Middle Channel, $f_0 = 836.6\text{MHz}$				
Temperature (°C)	Voltage Supplied (V_{DC})	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
-30	N.V.	20.12	0.0240	2.5
-20		18.35	0.0219	2.5
-10		19.34	0.0231	2.5
0		14.25	0.0170	2.5
10		15.61	0.0187	2.5
20		17.28	0.0207	2.5
30		21.62	0.0258	2.5
40		23.87	0.0285	2.5
50		22.45	0.0268	2.5
20	L.V.	19.32	0.0231	2.5
	H.V.	17.47	0.0209	2.5

WCDMA Mode

Middle Channel, $f_0 = 836.6\text{MHz}$				
Temperature (°C)	Voltage Supplied (V_{DC})	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
-30	N.V.	1.01	0.0012	2.5
-20		0.99	0.0012	2.5
-10		0.89	0.0011	2.5
0		1.32	0.0016	2.5
10		1.12	0.0013	2.5
20		1.00	0.0012	2.5
30		1.35	0.0016	2.5
40		1.22	0.0015	2.5
50		1.08	0.0013	2.5
20	L.V.	1.34	0.0016	2.5
	H.V.	0.88	0.0011	2.5

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

Middle Channel, $f_0 = 1880.0$ MHz				
Temperature (°C)	Voltage Supplied (V_{DC})	Frequency Error (Hz)	Frequency Error (ppm)	Result
-30	N.V.	14.21	0.0076	Pass
-20		15.33	0.0082	Pass
-10		13.95	0.0074	Pass
0		14.68	0.0078	Pass
10		15.76	0.0084	Pass
20		10.65	0.0057	Pass
30		12.54	0.0067	Pass
40		13.68	0.0073	Pass
50		16.09	0.0086	Pass
20	L.V.	19.40	0.0103	Pass
	H.V.	18.53	0.0099	Pass

EDGE Mode

Middle Channel, $f_0 = 1880.0$ MHz				
Temperature (°C)	Voltage Supplied (V_{DC})	Frequency Error (Hz)	Frequency Error (ppm)	Result
-30	N.V.	7.38	0.0039	Pass
-20		10.65	0.0057	Pass
-10		9.54	0.0051	Pass
0		8.62	0.0046	Pass
10		14.32	0.0076	Pass
20		6.81	0.0036	Pass
30		10.54	0.0056	Pass
40		12.36	0.0066	Pass
50		15.48	0.0082	Pass
20	L.V.	13.68	0.0073	Pass
	H.V.	16.31	0.0087	Pass

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

Middle Channel, $f_o = 1880.0$ MHz				
Temperature (°C)	Voltage Supplied (V _{DC})	Frequency Error (Hz)	Frequency Error (ppm)	Result
-30	N.V.	2.05	0.0011	Pass
-20		3.24	0.0017	Pass
-10		-2.17	-0.0012	Pass
0		4.12	0.0022	Pass
10		2.18	0.0012	Pass
20		0.14	0.0001	Pass
30		1.27	0.0007	Pass
40		-2.15	-0.0011	Pass
50		-1.11	-0.0006	Pass
20	L.V.	-3.14	-0.0017	Pass
	H.V.	2.08	0.0011	Pass

AWS Band (Part 27)

Low/High Channel=1712.4MHz/1752.6MHz					
Temperature (°C)	Power Supplied (V _{DC})	F _L (MHz)	F _H (MHz)	F _L Limit (MHz)	F _H Limit (MHz)
-30	N.V.	1710.8947	1754.9883	1710	1755
-20		1710.8535	1754.9782	1710	1755
-10		1710.8448	1754.9775	1710	1755
0		1710.8117	1754.9668	1710	1755
10		1710.7794	1754.9595	1710	1755
20		1710.7668	1754.9435	1710	1755
30		1710.7634	1754.9475	1710	1755
40		1710.7551	1754.9342	1710	1755
50		1710.7462	1754.9335	1710	1755
20	L.V.	1710.6924	1754.9245	1710	1755
	H.V.	1710.6865	1754.9235	1710	1755

LTE:**QPSK:****Band 2:**

10.0 MHz Middle Channel, $f_0=1880\text{MHz}$				
Temperature (°C)	Voltage Supplied (V_{DC})	Frequency Error (Hz)	Frequency Error (ppm)	Result
-30	N.V.	-4.59	-0.0024	Pass
-20		-9.97	-0.0053	Pass
-10		-6.13	-0.0033	Pass
0		6.17	0.0033	Pass
10		7.92	0.0042	Pass
20		6.46	0.0034	Pass
30		-6.52	-0.0035	Pass
40		7.18	0.0038	Pass
50		-9.69	-0.0052	Pass
20	L.V.	-8.17	-0.0043	Pass
	H.V.	-7.05	-0.0038	Pass

Band 4:

10 MHz Bandwidth, Low/High Channel=1715MHz/1750MHz					
Temperature (°C)	Power Supplied (V_{DC})	F_L (MHz)	F_H (MHz)	F_L Limit (MHz)	F_H Limit (MHz)
-30	N.V.	1710.424	1754.722	1710	1755
-20		1710.249	1754.714	1710	1755
-10		1710.394	1754.933	1710	1755
0		1710.295	1754.766	1710	1755
10		1710.363	1754.717	1710	1755
20		1710.506	1754.827	1710	1755
30		1710.393	1754.385	1710	1755
40		1710.189	1754.914	1710	1755
50		1710.452	1754.637	1710	1755
20	L.V.	1710.439	1754.686	1710	1755
	H.V.	1710.792	1754.354	1710	1755

Band 5& Band 26(Part 22H):

10.0 MHz Middle Channel, $f_0=836.5\text{MHz}$				
Temperature (°C)	Voltage Supplied (V _{DC})	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
-30	N.V.	-0.27	-0.0003	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	0.0060	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 7:

10 MHz Bandwidth, Low/High Channel=2505MHz/2565MHz					
Temperature (°C)	Power Supplied (V _{DC})	F _L (MHz)	F _H (MHz)	F _L Limit (MHz)	F _H Limit (MHz)
-30	N.V.	2500.344	2569.947	2500	2570
-20		2500.574	2569.587	2500	2570
-10		2500.997	2569.519	2500	2570
0		2500.422	2569.484	2500	2570
10		2500.711	2569.752	2500	2570
20		2500.520	2569.390	2500	2570
30		2500.823	2568.991	2500	2570
40		2500.248	2569.844	2500	2570
50		2500.789	2569.456	2500	2570
20	L.V.	2500.444	2569.406	2500	2570
	H.V.	2500.734	2569.086	2500	2570

Band 12:

10 MHz Bandwidth, Low/High Channel=704MHz/711MHz					
Temperature (°C)	Power Supplied (V _{DC})	F _L (MHz)	F _H (MHz)	F _L Limit (MHz)	F _H Limit (MHz)
-30	N.V.	699.215	715.899	699	716
-20		699.121	715.699	699	716
-10		699.382	715.610	699	716
0		699.465	715.088	699	716
10		699.723	715.749	699	716
20		699.366	715.847	699	716
30		699.618	715.437	699	716
40		699.090	715.817	699	716
50		699.612	715.512	699	716
20	L.V.	699.332	715.852	699	716
	H.V.	699.599	715.660	699	716

Band 13

10 MHz Bandwidth, f ₀ =782MHz					
Temperature (°C)	Power Supplied (V _{DC})	F _L (MHz)	F _H (MHz)	F _L Limit (MHz)	F _H Limit (MHz)
-30	N.V.	777.3306	786.7888	777	787
-20		777.1310	786.7135	777	787
-10		777.3385	786.6096	777	787
0		777.4584	786.5436	777	787
10		777.1081	786.8073	777	787
20		777.3772	786.6208	777	787
30		777.5911	786.5590	777	787
40		777.1842	786.7541	777	787
50		777.3870	786.4579	777	787
20	L.V.	777.0865	786.4739	777	787
	H.V.	777.3511	786.7137	777	787

Band 25

10 MHz Bandwidth, Low/High Channel=1855MHz/1910MHz					
Temperature (°C)	Power Supplied (V _{DC})	F _L (MHz)	F _H (MHz)	F _L Limit (MHz)	F _H Limit (MHz)
-30	N.V.	1850.158	1914.431	1850	1915
-20		1850.613	1914.959	1850	1915
-10		1850.925	1914.930	1850	1915
0		1850.440	1914.854	1850	1915
10		1850.612	1914.667	1850	1915
20		1850.243	1914.675	1850	1915
30		1850.532	1914.161	1850	1915
40		1850.036	1914.639	1850	1915
50		1850.447	1914.523	1850	1915
20	L.V.	1850.199	1914.763	1850	1915
	H.V.	1850.257	1914.631	1850	1915

Band 26(Part 90S):

10.0 MHz Middle Channel, f ₀ =819MHz				
Temperature (°C)	Voltage Supplied (V _{DC})	Frequency Error (Hz)	Frequency Error (ppm)	Result (ppm)
-30	N.V.	0.93	0.0011	2.5
-20		-8.69	-0.0106	2.5
-10		5.70	0.0070	2.5
0		9.11	0.0111	2.5
10		-8.55	-0.0104	2.5
20		7.51	0.0092	2.5
30		-7.90	-0.0096	2.5
40		-5.46	-0.0067	2.5
50		8.40	0.0103	2.5
20	L.V.	-7.71	-0.0094	2.5
	H.V.	5.87	0.0072	2.5

16QAM:**Band 2:**

10.0 MHz Middle Channel, $f_0=1880\text{MHz}$				
Temperature (°C)	Voltage Supplied (V_{DC})	Frequency Error (Hz)	Frequency Error (ppm)	Result
-30	N.V.	-3.92	-0.0021	Pass
-20		-6.68	-0.0036	Pass
-10		9.77	0.0052	Pass
0		-7.62	-0.0041	Pass
10		-9.91	-0.0053	Pass
20		-9.82	-0.0052	Pass
30		-6.68	-0.0036	Pass
40		-8.85	-0.0047	Pass
50		5.67	0.0030	Pass
20	L.V.	6.05	0.0032	Pass
	H.V.	7.52	0.0040	Pass

Band 4:

10 MHz Bandwidth, Low/High Channel=1715MHz/1750MHz					
Temperature (°C)	Power Supplied (V_{DC})	F_L (MHz)	F_H (MHz)	F_L Limit (MHz)	F_H Limit (MHz)
-30	N.V.	1710.199	1754.972	1710	1755
-20		1710.325	1754.606	1710	1755
-10		1710.531	1754.749	1710	1755
0		1710.170	1754.444	1710	1755
10		1710.700	1754.618	1710	1755
20		1710.383	1754.469	1710	1755
30		1710.931	1754.399	1710	1755
40		1710.434	1754.428	1710	1755
50		1710.588	1754.428	1710	1755
20	L.V.	1710.435	1754.417	1710	1755
	H.V.	1711.023	1754.154	1710	1755

Band 5& Band 26(Part 22H):

10.0 MHz Middle Channel, $f_0=836.5\text{MHz}$				
Temperature (°C)	Voltage Supplied (V _{DC})	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
-30	N.V.	-0.51	-0.0006	2.5
-20		8.10	0.0097	2.5
-10		-8.59	-0.0103	2.5
0		9.33	0.0112	2.5
10		-6.94	-0.0083	2.5
20		7.54	0.009	2.5
30		6.43	0.0077	2.5
40		-6.17	-0.0074	2.5
50		-6.44	-0.0077	2.5
20	L.V.	6.34	0.0076	2.5
	H.V.	-6.89	-0.0082	2.5

Band 7:

10 MHz Bandwidth, Low/High Channel=2505MHz/2565MHz					
Temperature (°C)	Power Supplied (V _{DC})	F _L (MHz)	F _H (MHz)	F _L Limit (MHz)	F _H Limit (MHz)
-30	N.V.	2500.161	2569.715	2500	2570
-20		2500.293	2569.767	2500	2570
-10		2500.709	2569.880	2500	2570
0		2500.035	2569.583	2500	2570
10		2500.461	2569.394	2500	2570
20		2500.394	2569.520	2500	2570
30		2500.970	2569.160	2500	2570
40		2500.039	2569.954	2500	2570
50		2500.358	2569.623	2500	2570
20	L.V.	2500.356	2569.870	2500	2570
	H.V.	2500.393	2569.381	2500	2570

Band 12:

10 MHz Bandwidth, Low/High Channel=704MHz/711MHz					
Temperature (°C)	Power Supplied (V _{DC})	F _L (MHz)	F _H (MHz)	F _L Limit (MHz)	F _H Limit (MHz)
-30	N.V.	699.619	715.629	699	716
-20		699.557	715.562	699	716
-10		699.353	715.667	699	716
0		699.037	715.440	699	716
10		699.625	715.903	699	716
20		699.552	715.628	699	716
30		699.836	715.090	699	716
40		699.269	715.528	699	716
50		699.394	715.755	699	716
20	L.V.	699.127	715.597	699	716
	H.V.	699.585	715.108	699	716

Band 13

10 MHz Bandwidth, f _o =782MHz					
Temperature (°C)	Power Supplied (V _{DC})	F _L (MHz)	F _H (MHz)	F _L Limit (MHz)	F _H Limit (MHz)
-30	N.V.	777.245	786.383	777	787
-20		777.279	786.477	777	787
-10		777.326	786.956	777	787
0		777.294	786.573	777	787
10		777.836	786.681	777	787
20		777.269	786.690	777	787
30		777.806	786.453	777	787
40		777.103	786.556	777	787
50		777.314	786.572	777	787
20	L.V.	777.134	786.589	777	787
	H.V.	777.583	786.084	777	787

Band 25

10 MHz Bandwidth, Low/High Channel=1855MHz/1910MHz					
Temperature (°C)	Power Supplied (V _{DC})	F _L (MHz)	F _H (MHz)	F _L Limit (MHz)	F _H Limit (MHz)
-30	N.V.	1850.439	1914.713	1850	1915
-20		1850.144	1914.891	1850	1915
-10		1850.265	1914.654	1850	1915
0		1850.139	1914.365	1850	1915
10		1850.662	1914.761	1850	1915
20		1850.212	1914.907	1850	1915
30		1850.353	1914.368	1850	1915
40		1850.232	1914.788	1850	1915
50		1850.563	1914.654	1850	1915
20	L.V.	1850.332	1914.830	1850	1915
	H.V.	1850.872	1914.556	1850	1915

Band 26(Part 90S):

10.0 MHz Middle Channel, f ₀ =819MHz				
Temperature (°C)	Voltage Supplied (V _{DC})	Frequency Error (Hz)	Frequency Error (ppm)	Result (ppm)
-30	N.V.	0.26	0.0003	2.5
-20		-9.88	-0.0121	2.5
-10		-7.99	-0.0098	2.5
0		7.26	0.0089	2.5
10		5.71	0.0070	2.5
20		9.10	0.0111	2.5
30		-6.47	-0.0079	2.5
40		-7.37	-0.0090	2.5
50		9.02	0.0110	2.5
20	L.V.	-9.44	-0.0115	2.5
	H.V.	-8.88	-0.0108	2.5

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