

# TESTREPORT

Applicant Name : Inrico Technologies Co.,Ltd  
Address : 3/F, Building NO.118, High Tech Industrial Park, 72 Guowei Road, Luohu District, Shenzhen, China  
Report Number: SZ1210930-51080E-RF-00C  
FCC ID: 2AIV6-T368

## Test Standard (s)

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

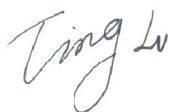
## Sample Description

Product Type: Intelligent Two Way Radio  
Model No.: T368  
Trade Mark: N/A  
Date Received: Inrico  
Date Received: 2021/09/30  
Date of Test: 2021/10/19~2022/01/26  
Report Date: 2022/01/26

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

## Prepared and Checked By:



Ting Lü  
EMC Engineer

## Approved By:



Robert Li  
EMC Engineer

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

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## GENERAL INFORMATION

### Product Description for Equipment under Test (EUT)

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 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 17: 704-716MHz(TX); 734-746MHz(RX)
Modulation Technique	2G: GMSK/8PSK 3G: BPSK, QPSK, 16QAM 4G: QPSK, 16QAM
Antenna Specification*	0.5 dBi(provided by the applicant)
Voltage Range	DC 3.8V from battery or DC 5V from adapter
Sample serial number	SZ1210930-51080E-RF-S1 (Assigned by ATC)
Sample/EUT Status	Good condition
Normal/Extreme Condition	L.V.: Low Voltage 3.8V <sub>DC</sub> ; N.V.: Normal Voltage 3.45V <sub>DC</sub> ; H.V.: High Voltage 4.35V <sub>DC</sub> ;
Adapter information	Model: HJ-0502000W2-US Input: AC 100-240V, 50/60Hz, 0.3A Output: DC 5V, 2000mA

### Objective

This test report is in accordance with Part 2-Subpart J, Part 22-Subpart H and Part24-Subpart E and Subpart 27of 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

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		$0.082 \times 10^{-7}$
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.

Test was performed as below table:

Frequency band	Bandwidth (MHz)	Test Frequency(MHz)		
		Low	Middle	High
GSM850	0.25	824.2	836.6	848.8
DCS1900	0.25	1850.2	1880	1909.8
WCDMA B2	4.2	1852.4	1880	1907.6
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	1.4	824.7	836.5	848.3
	3	825.5	836.5	847.5
	5	826.5	836.5	846.5
	10	829	836.5	844
LTE 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	/
LTE B17	5	706.5	710	713.5
	10	709	710	711

## Equipment Modifications

No modification was made to the EUT.

## Support Equipment List and Details

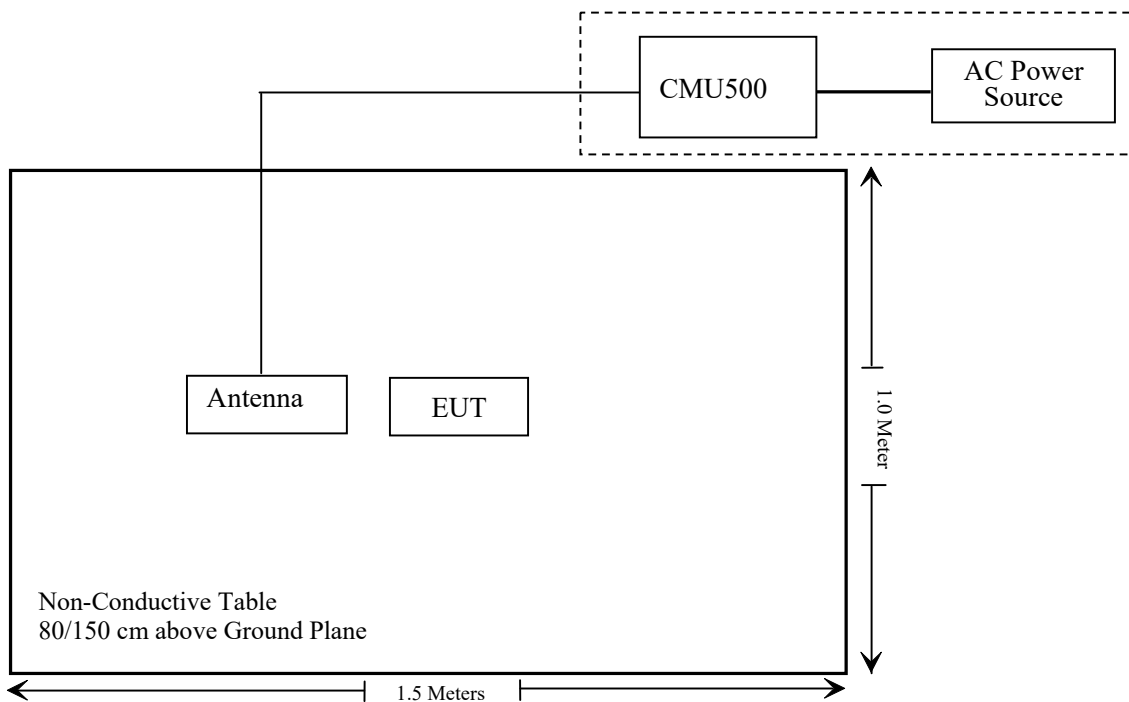
Manufacturer	Description	Model	Serial Number
Rohde & Schwarz	Wideband Radio Communication Tester	CMW500	1201.002K50-11621 8-U

## Support Cable Description

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

## Block Diagram of Test Setup

Test Set up Connect:



**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;	RF Output Power	Compliant
§ 2.1047	Modulation Characteristics	Not Applicable
§ 2.1049; § 22.905; § 22.917; § 24.238; §27.53;	Occupied Bandwidth	Compliant
§ 2.1051; § 22.917 (a); § 24.238 (a); §27.53	Spurious Emissions at Antenna Terminal	Compliant
§ 2.1053; § 22.917 (a); § 24.238 (a); §27.53	Field Strength of Spurious Radiation	Compliant
§ 22.917 (a); § 24.238 (a); §27.53	Band Edge	Compliant
§ 2.1055; § 22.355; § 24.235; §27.54;	Frequency stability	Compliant

Note: \* Please refer to SAR report number: SZ1210930-51080E-SA.

**TEST EQUIPMENT LIST**

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Radiated Emission Test					
Rohde& Schwarz	Test Receiver	ESR	101817	2020/12/24	2021/12/23
Rohde&Schwarz	Spectrum Analyzer	FSV40	101495	2020/12/24	2021/12/23
SONOMA INSTRUMENT	Amplifier	310 N	186131	2020/12/25	2021/12/24
A.H. Systems, inc.	Preamplifier	PAM-0118P	531	2021/07/08	2022/07/07
Quinstar	Amplifier	QLW-184055 36-J0	15964001002	2020/11/28	2021/11/27
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
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
Unknown	RF Coaxial Cable	N-5m	No.3	2020/12/25	2021/12/24
Unknown	RF Coaxial Cable	N-5m	No.4	2020/12/25	2021/12/24
Unknown	RF Coaxial Cable	N-1m	No.5	2020/12/25	2021/12/24
Unknown	RF Coaxial Cable	N-1m	No.6	2020/12/25	2021/12/24
Unknown	Band Reject Filter	MSF824-862 MS-1147	201706003	2020/12/25	2021/12/24
Unknown	Band Reject Filter	MSF1850-191 OMS-1148	201706003	2020/12/25	2021/12/24
Unknown	Band Reject Filter	MSF1710-178 5MS-1150	201706003	2020/12/25	2021/12/24
Unknown	Band Reject Filter	MSF2495-257 OMS-1152	201706003	2020/12/25	2021/12/24
Unknown	Band Reject Filter	MSF700-800 MS-1153	201706003	2020/12/25	2021/12/24
Unknown	RF Coaxial Cable	N-1m	No.6	2020/12/25	2021/12/24
Anritsu	Signal Generator	68369B	004114	2021/7/31	2022/7/30



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	Spectrum Analyzer	FSV-40	101495	2021/12/24	2022/12/23
Rohde & Schwarz	Wideband Radio Communication Tester	CMW500	154606	2020/12/25	2021/12/24
Rohde & Schwarz	Wideband Radio Communication Tester	CMW500	154606	2021/12/25	2022/12/24
Mini-Circuits	Power Splitter	DC-18000MHz	SF10944151S	2020/12/25	2021/12/24
Mini-Circuits	Power Splitter	DC-18000MHz	SF10944151S	2021/12/25	2022/12/24
Gongwen	Temp. & Humid. Chamber	JB913R	GZ-WS004	2020/12/25	2021/12/24
Gongwen	Temp. & Humid. Chamber	JB913R	GZ-WS004	2021/12/25	2022/12/24
HP	6dB Attenuator	8493B	06151	2020/12/14	2021/12/13
HP	6dB Attenuator	8493B	06151	2021/12/14	2022/12/13
Fluke	Multi Meter	45	7664009	2020/12/14	2021/12/13
Manson	DC Power Source	KPS-6604	ATCS-205	NCR	NCR
Unknown	RF Cable	Unknown	Unknown	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).

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## **FCC §1.1307(b)&§2.1093 - RF EXPOSURE INFORMATION**

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### **Applicable Standard**

FCC§1.1310 and §2.1093.

### **Test Result**

Compliant, please refer to the SAR report: SZ1210930-51080E-SA.

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## **FCC§2.1047 - MODULATION CHARACTERISTIC**

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According to FCC § 2.1047(d), Part 22H & 24E& 27 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- 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.

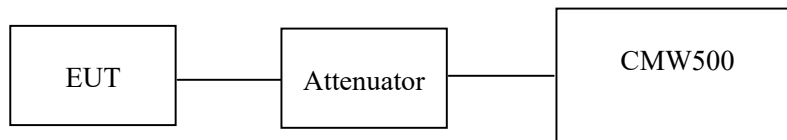
According to §27.50(c), Portable stations (hand-held devices) in the 600 MHz uplink band and the 698-746 MHz band, and fixed and mobile stations in the 600 MHz uplink band are limited to 3 watts ERP.

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

### **Test Procedure**

*Conducted method:*

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



### **Test Data**

#### **Environmental Conditions**

<b>Temperature:</b>	27.6 °C
<b>Relative Humidity:</b>	58 %
<b>ATM Pressure:</b>	101.0 kPa

*The testing was performed by Black Ding from 2021-10-19 to 2021-10-20.*

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

Mode	Channel	Frequency (MHz)	Average Output Power (dBm)	ERP(dBm)	Limit (dBm)
GSM	128	824.2	33.50	31.85	38.45
	190	836.6	33.60	31.95	38.45
	251	848.8	33.60	31.95	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	
GPRS	128	824.2	32.64	31.81	29.97	28.73	30.99	30.16	28.32	27.08	38.45
	190	836.6	32.55	31.70	29.86	28.68	30.90	30.05	28.21	27.03	38.45
	251	848.8	32.51	31.65	29.88	28.66	30.86	30.00	28.23	27.01	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	26.57	25.27	23.28	22.13	24.92	23.62	21.63	20.48	38.45
	190	836.6	26.49	25.17	23.19	22.14	24.84	23.52	21.54	20.49	38.45
	251	848.8	26.65	25.34	23.34	22.15	25.00	23.69	21.69	20.50	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		22.68	22.75	22.67	21.03	21.10	21.02
	HSDPA	1	22.41	22.38	22.68	20.76	20.73	21.03
		2	22.21	22.22	22.33	20.56	20.57	20.68
		3	22.28	22.21	22.17	20.63	20.56	20.52
		4	22.26	22.17	22.14	20.61	20.52	20.49
	HSUPA	1	22.00	22.10	22.04	20.35	20.45	20.39
		2	22.54	22.48	22.30	20.89	20.83	20.65
		3	22.52	22.44	22.28	20.87	20.79	20.63
		4	22.43	22.35	22.34	20.78	20.70	20.69
		5	22.37	22.32	22.31	20.72	20.67	20.66
HSPA+	1	22.22	22.18	22.16	20.57	20.53	20.51	

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

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

Limit: ERP<38.45dBm

**PCS Band (Part 24E)**

Mode	Channel	Frequency (MHz)	Average Output Power (dBm)	EIRP(dBm)	Limit (dBm)
GSM	512	1850.2	30.00	30.50	33
	661	1880.0	30.50	31.00	33
	810	1909.8	30.60	31.10	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	
GPRS	512	1850.2	29.08	28.35	26.56	25.45	29.58	28.85	27.06	25.95	33
	661	1880.0	29.33	28.56	26.82	25.75	29.83	29.06	27.32	26.25	33
	810	1909.8	29.29	26.89	26.89	25.77	29.79	27.39	27.39	26.27	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	25.83	24.61	22.48	21.32	26.33	25.11	22.98	21.82	33
	661	1880.0	25.87	24.33	22.14	20.95	26.37	24.83	22.64	21.45	33
	810	1909.8	25.79	24.55	22.29	21.17	26.29	25.05	22.79	21.67	33

Mode	Test Mode	3GPP Sub Test	Average Output Power (dBm)			EIRP(dBm)		
			Low	Mid	High	Low	Mid	High
WCDMA (Band 2)	RMC12.2k		22.59	22.55	22.56	23.09	23.05	23.06
	HSDPA	1	20.83	20.52	20.85	21.33	21.02	21.35
		2	20.66	20.81	20.93	21.16	21.31	21.43
		3	20.64	20.79	20.98	21.14	21.29	21.48
		4	20.67	20.77	20.96	21.17	21.27	21.46
	HSUPA	1	21.88	21.86	21.95	22.38	22.36	22.45
		2	21.78	21.56	21.75	22.28	22.06	22.25
		3	21.57	21.68	21.97	22.07	22.18	22.47
		4	21.59	21.73	21.88	22.09	22.23	22.38
		5	21.53	21.69	21.84	22.03	22.19	22.34
HSPA+	1	21.33	21.25	21.27	21.83	21.75	21.77	

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

For PCS1900 / WCDMA Band2: Antenna Gain = 0.5dBi

Limit: EIRP<33dBm

**LTE Band 2**

Bandwidth (MHz)	Modulation	RB size/ RB Offset	Conducted Average Output Power (dBm)			EIRP(dBm)		
			Low	Mid	High	Low	Mid	High
1.4	QPSK	RB1#0	23.18	23.12	23.11	23.68	23.62	23.61
		RB1#3	23.33	23.33	23.28	23.83	23.83	23.78
		RB1#5	23.14	23.11	23.10	23.64	23.61	23.60
		RB3#0	23.24	23.16	23.13	23.74	23.66	23.63
		RB3#3	23.23	23.20	23.11	23.73	23.70	23.61
		RB6#0	22.24	22.14	22.14	22.74	22.64	22.64
	16QAM	RB1#0	22.23	22.09	22.05	22.73	22.59	22.55
		RB1#3	22.43	22.24	22.25	22.93	22.74	22.75
		RB1#5	22.22	22.10	22.05	22.72	22.60	22.55
		RB3#0	22.15	22.22	22.27	22.65	22.72	22.77
		RB3#3	22.15	22.19	22.25	22.65	22.69	22.75
		RB6#0	21.23	21.13	21.16	21.73	21.63	21.66
3.0	QPSK	RB1#0	23.24	23.19	23.18	23.74	23.69	23.68
		RB1#8	23.17	23.20	23.21	23.67	23.70	23.71
		RB1#14	23.17	23.14	23.22	23.67	23.64	23.72
		RB6#0	22.15	22.13	22.17	22.65	22.63	22.67
		RB6#9	22.13	22.12	22.16	22.63	22.62	22.66
		RB15#0	22.15	22.16	22.16	22.65	22.66	22.66
	16QAM	RB1#0	22.66	22.29	22.14	23.16	22.79	22.64
		RB1#8	22.64	22.27	22.13	23.14	22.77	22.63
		RB1#14	22.64	22.24	22.13	23.14	22.74	22.63
		RB6#0	21.24	21.16	21.10	21.74	21.66	21.60
		RB6#9	21.19	21.19	21.11	21.69	21.69	21.61
		RB15#0	21.23	21.16	21.22	21.73	21.66	21.72

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	23.07	23.14	23.12	23.57	23.64	23.62
		RB1#13	23.22	23.22	23.19	23.72	23.72	23.69
		RB1#24	23.08	23.15	23.12	23.58	23.65	23.62
		RB15#0	22.14	22.11	22.20	22.64	22.61	22.70
		RB15#10	22.14	22.15	22.14	22.64	22.65	22.64
		RB25#0	22.11	22.11	22.11	22.61	22.61	22.61
	16QAM	RB1#0	21.95	22.36	22.09	22.45	22.86	22.59
		RB1#13	22.04	22.45	22.22	22.54	22.95	22.72
		RB1#24	21.90	22.28	22.12	22.40	22.78	22.62
		RB15#0	21.18	21.14	21.26	21.68	21.64	21.76
		RB15#10	21.19	21.17	21.13	21.69	21.67	21.63
		RB25#0	21.16	21.16	21.19	21.66	21.66	21.69
10.0	QPSK	RB1#0	23.21	23.22	23.25	23.71	23.72	23.75
		RB1#25	23.32	23.33	23.41	23.82	23.83	23.91
		RB1#49	23.17	23.28	23.24	23.67	23.78	23.74
		RB25#0	22.16	22.19	22.21	22.66	22.69	22.71
		RB25#25	22.13	22.20	22.10	22.63	22.70	22.60
		RB50#0	22.11	22.20	22.15	22.61	22.70	22.65
	16QAM	RB1#0	22.67	22.26	22.15	23.17	22.76	22.65
		RB1#25	22.82	22.47	22.33	23.32	22.97	22.83
		RB1#49	22.69	22.34	22.17	23.19	22.84	22.67
		RB25#0	21.23	21.24	21.31	21.73	21.74	21.81
		RB25#25	21.21	21.23	21.20	21.71	21.73	21.70
		RB50#0	21.17	21.23	21.19	21.67	21.73	21.69



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	23.12	23.17	23.09	23.62	23.67	23.59
		RB1#37	23.21	23.21	23.25	23.71	23.71	23.75
		RB1#74	23.09	23.16	23.15	23.59	23.66	23.65
		RB36#0	22.25	22.24	22.26	22.75	22.74	22.76
		RB36#18	22.23	22.23	22.19	22.73	22.73	22.69
		RB36#37	22.24	22.26	22.25	22.74	22.76	22.75
		RB75#0	22.62	22.24	22.41	23.12	22.74	22.91
	16QAM	RB1#0	22.69	22.33	22.52	23.19	22.83	23.02
		RB1#37	22.76	22.14	22.44	23.26	22.64	22.94
		RB1#74	21.26	21.28	21.23	21.76	21.78	21.73
		RB36#0	21.23	21.27	21.21	21.73	21.77	21.71
		RB36#18	21.23	21.28	21.23	21.73	21.78	21.73
		RB36#37	23.12	23.17	23.09	23.62	23.67	23.59
		RB75#0	23.21	23.21	23.25	23.71	23.71	23.75
20.0	QPSK	RB1#0	22.93	23.01	22.87	23.43	23.51	23.37
		RB1#49	23.37	23.37	23.35	23.87	23.87	23.85
		RB1#99	23.02	23.01	22.97	23.52	23.51	23.47
		RB50#0	22.24	22.22	22.25	22.74	22.72	22.75
		RB50#24	22.18	22.13	22.08	22.68	22.63	22.58
		RB50#49	22.21	22.20	22.18	22.71	22.70	22.68
		RB100#0	22.18	22.16	22.39	22.68	22.66	22.89
	16QAM	RB1#0	22.59	22.46	22.82	23.09	22.96	23.32
		RB1#49	22.27	22.10	22.40	22.77	22.60	22.90
		RB1#99	21.23	21.21	21.26	21.73	21.71	21.76
		RB50#0	21.21	21.17	21.07	21.71	21.67	21.57
		RB50#24	21.25	21.20	21.22	21.75	21.70	21.72
		RB50#49	22.93	23.01	22.87	23.43	23.51	23.37
		RB100#0	23.37	23.37	23.35	23.87	23.87	23.85

Note: EIRP(dBm) = Conducted Power(dBm) + Antenna Gain(dBi)  
For Band2: Antenna Gain = 0.5dBi  
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	23.14	23.03	22.95	23.64	23.53	23.45
		RB1#3	23.31	23.16	23.15	23.81	23.66	23.65
		RB1#5	23.10	23.02	22.99	23.60	23.52	23.49
		RB3#0	23.21	23.03	22.98	23.71	23.53	23.48
		RB3#3	23.23	23.03	23.02	23.73	23.53	23.52
		RB6#0	22.26	22.13	21.99	22.76	22.63	22.49
	16QAM	RB1#0	22.17	22.14	21.87	22.67	22.64	22.37
		RB1#3	22.33	22.29	22.12	22.83	22.79	22.62
		RB1#5	22.14	22.15	21.94	22.64	22.65	22.44
		RB3#0	22.40	22.06	22.06	22.90	22.56	22.56
		RB3#3	22.40	22.12	22.06	22.90	22.62	22.56
		RB6#0	21.23	21.11	21.01	21.73	21.61	21.51
3.0	QPSK	RB1#0	23.24	23.11	23.14	23.74	23.61	23.64
		RB1#8	23.21	23.08	23.06	23.71	23.58	23.56
		RB1#14	23.21	23.12	23.09	23.71	23.62	23.59
		RB6#0	22.26	22.09	22.04	22.76	22.59	22.54
		RB6#9	22.27	22.10	22.03	22.77	22.60	22.53
		RB15#0	22.28	22.12	22.06	22.78	22.62	22.56
	16QAM	RB1#0	22.87	22.26	22.08	23.37	22.76	22.58
		RB1#8	22.77	22.26	21.99	23.27	22.76	22.49
		RB1#14	22.77	22.23	22.00	23.27	22.73	22.50
		RB6#0	21.26	21.06	21.02	21.76	21.56	21.52
		RB6#9	21.24	21.11	21.00	21.74	21.61	21.50
		RB15#0	21.28	21.06	21.15	21.78	21.56	21.65

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	23.18	23.06	22.97	23.68	23.56	23.47
		RB1#13	23.24	23.09	23.10	23.74	23.59	23.6
		RB1#24	23.14	23.07	23.01	23.64	23.57	23.51
		RB15#0	22.28	22.05	22.08	22.78	22.55	22.58
		RB15#10	22.24	22.06	22.03	22.74	22.56	22.53
		RB25#0	22.24	22.07	22.02	22.74	22.57	22.52
	16QAM	RB1#0	22.09	22.31	22.02	22.59	22.81	22.52
		RB1#13	22.25	22.40	22.09	22.75	22.90	22.59
		RB1#24	22.15	22.30	22.03	22.65	22.80	22.53
		RB15#0	21.29	21.11	21.14	21.79	21.61	21.64
		RB15#10	21.25	21.07	21.12	21.75	21.57	21.62
		RB25#0	21.23	21.09	21.08	21.73	21.59	21.58
10.0	QPSK	RB1#0	23.22	23.16	23.07	23.72	23.66	23.57
		RB1#25	23.36	23.26	23.27	23.86	23.76	23.77
		RB1#49	23.19	23.10	23.07	23.69	23.60	23.57
		RB25#0	22.27	22.13	22.03	22.77	22.63	22.53
		RB25#25	22.29	22.11	22.06	22.79	22.61	22.56
		RB50#0	22.29	22.12	22.07	22.79	22.62	22.57
	16QAM	RB1#0	22.79	22.23	21.99	23.29	22.73	22.49
		RB1#25	22.94	22.48	22.14	23.44	22.98	22.64
		RB1#49	22.74	22.29	22.02	23.24	22.79	22.52
		RB25#0	21.30	21.19	21.14	21.80	21.69	21.64
		RB25#25	21.27	21.16	21.18	21.77	21.66	21.68
		RB50#0	21.27	21.17	21.11	21.77	21.67	21.61

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	23.14	23.06	23.00	23.64	23.56	23.50
		RB1#38	23.24	23.14	23.11	23.74	23.64	23.61
		RB1#74	23.05	22.97	23.10	23.55	23.47	23.60
		RB36#0	22.30	22.16	22.15	22.80	22.66	22.65
		RB36#39	22.31	22.13	22.12	22.81	22.63	22.62
		RB75#0	22.34	22.18	22.17	22.84	22.68	22.67
	16QAM	RB1#0	22.73	22.22	22.32	23.23	22.72	22.82
		RB1#38	22.80	22.26	22.43	23.30	22.76	22.93
		RB1#74	22.58	22.08	22.29	23.08	22.58	22.79
		RB36#0	21.33	21.24	21.16	21.83	21.74	21.66
		RB36#39	21.26	21.18	21.15	21.76	21.68	21.65
		RB75#0	21.28	21.23	21.15	21.78	21.73	21.65
20.0	QPSK	RB1#0	22.98	22.89	22.79	23.48	23.39	23.29
		RB1#50	23.30	23.32	23.21	23.80	23.82	23.71
		RB1#99	22.91	22.90	22.83	23.41	23.40	23.33
		RB50#0	22.25	22.11	22.09	22.75	22.61	22.59
		RB50#50	22.27	22.10	22.11	22.77	22.60	22.61
		RB100#0	22.29	22.14	22.09	22.79	22.64	22.59
	16QAM	RB1#0	22.33	22.15	22.35	22.83	22.65	22.85
		RB1#50	22.62	22.48	22.73	23.12	22.98	23.23
		RB1#99	22.16	21.99	22.31	22.66	22.49	22.81
		RB50#0	21.23	21.17	21.11	21.73	21.67	21.61
		RB50#50	21.23	21.16	21.13	21.73	21.66	21.63
		RB100#0	21.22	21.19	21.13	21.72	21.69	21.63

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

For Band4: Antenna Gain = 0.5dBi

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	23.49	23.50	23.44	21.84	21.85	21.79
		RB1#3	23.67	23.68	23.68	22.02	22.03	22.03
		RB1#5	23.46	23.48	23.47	21.81	21.83	21.82
		RB3#0	23.56	23.51	23.48	21.91	21.86	21.83
		RB3#3	23.49	23.49	23.56	21.84	21.84	21.91
		RB6#0	22.63	22.64	22.64	20.98	20.99	20.99
	16QAM	RB1#0	22.52	22.62	22.50	20.87	20.97	20.85
		RB1#3	22.71	22.79	22.73	21.06	21.14	21.08
		RB1#5	22.48	22.65	22.53	20.83	21.00	20.88
		RB3#0	22.75	22.52	22.64	21.10	20.87	20.99
		RB3#3	22.74	22.53	22.64	21.09	20.88	20.99
		RB6#0	21.55	21.62	21.52	19.90	19.97	19.87
3.0	QPSK	RB1#0	23.55	23.52	23.53	21.90	21.87	21.88
		RB1#8	23.49	23.52	23.52	21.84	21.87	21.87
		RB1#14	23.47	23.51	23.53	21.82	21.86	21.88
		RB6#0	22.55	22.56	22.51	20.90	20.91	20.86
		RB6#9	22.53	22.58	22.59	20.88	20.93	20.94
		RB15#0	22.56	22.57	22.55	20.91	20.92	20.90
	16QAM	RB1#0	23.10	22.69	22.58	21.45	21.04	20.93
		RB1#8	23.07	22.71	22.56	21.42	21.06	20.91
		RB1#14	23.07	22.68	22.58	21.42	21.03	20.93
		RB6#0	21.57	21.52	21.46	19.92	19.87	19.81
		RB6#9	21.55	21.57	21.50	19.90	19.92	19.85
		RB15#0	21.60	21.47	21.56	19.95	19.82	19.91

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	23.48	23.43	23.40	21.83	21.78	21.75
		RB1#13	23.57	23.57	23.51	21.92	21.92	21.86
		RB1#24	23.48	23.44	23.47	21.83	21.79	21.82
		RB15#0	22.58	22.56	22.60	20.93	20.91	20.95
		RB15#10	22.57	22.56	22.59	20.92	20.91	20.94
		RB25#0	22.54	22.58	22.57	20.89	20.93	20.92
	16QAM	RB1#0	22.41	22.77	22.52	20.76	21.12	20.87
		RB1#13	22.48	22.87	22.61	20.83	21.22	20.96
		RB1#24	22.42	22.75	22.56	20.77	21.10	20.91
		RB15#0	21.59	21.51	21.62	19.94	19.86	19.97
		RB15#10	21.58	21.51	21.58	19.93	19.86	19.93
		RB25#0	21.56	21.53	21.53	19.91	19.88	19.88
10.0	QPSK	RB1#0	23.53	23.52	23.48	21.88	21.87	21.83
		RB1#25	23.71	23.66	23.66	22.06	22.01	22.01
		RB1#49	23.46	23.48	23.56	21.81	21.83	21.91
		RB25#0	22.58	22.63	22.64	20.93	20.98	20.99
		RB25#25	22.63	22.59	22.57	20.98	20.94	20.92
		RB50#0	22.59	22.57	22.62	20.94	20.92	20.97
	16QAM	RB1#0	23.12	22.71	22.49	21.47	21.06	20.84
		RB1#25	23.28	22.84	22.74	21.63	21.19	21.09
		RB1#49	23.03	22.70	22.58	21.38	21.05	20.93
		RB25#0	21.59	21.57	21.68	19.94	19.92	20.03
		RB25#25	21.66	21.56	21.62	20.01	19.91	19.97
		RB50#0	21.55	21.56	21.61	19.90	19.91	19.96

Note: ERP(dBm) = Conducted Power(dBm) + Antenna Gain(dBd)  
For Band5: Antenna Gain = 0.5dBi = -1.65dBd (0dBd=2.15dBi)  
Limit: ERP ≤ 38.45dBm

**LTE Band 7**

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	22.34	22.34	22.56	22.84	22.84	23.06
		RB1#13	22.49	22.47	22.70	22.99	22.97	23.20
		RB1#24	22.38	22.36	22.61	22.88	22.86	23.11
		RB15#0	21.42	21.42	21.72	21.92	21.92	22.22
		RB15#10	21.55	21.45	21.67	22.05	21.95	22.17
		RB25#0	21.45	21.42	21.70	21.95	21.92	22.20
	16QAM	RB1#0	21.21	21.59	21.60	21.71	22.09	22.10
		RB1#13	21.31	21.75	21.72	21.81	22.25	22.22
		RB1#24	21.22	21.60	21.61	21.72	22.10	22.11
		RB15#0	20.58	20.46	20.79	21.08	20.96	21.29
		RB15#10	20.64	20.49	20.77	21.14	20.99	21.27
		RB25#0	20.54	20.48	20.72	21.04	20.98	21.22
10.0	QPSK	RB1#0	22.35	22.38	22.57	22.85	22.88	23.07
		RB1#25	22.58	22.62	22.88	23.08	23.12	23.38
		RB1#49	22.39	22.40	22.70	22.89	22.90	23.20
		RB25#0	21.44	21.46	21.71	21.94	21.96	22.21
		RB25#25	21.53	21.45	21.66	22.03	21.95	22.16
		RB50#0	21.50	21.46	21.70	22.00	21.96	22.20
	16QAM	RB1#0	21.89	21.51	21.53	22.39	22.01	22.03
		RB1#25	22.08	21.69	21.73	22.58	22.19	22.23
		RB1#49	21.94	21.57	21.57	22.44	22.07	22.07
		RB25#0	20.56	20.50	20.86	21.06	21.00	21.36
		RB25#25	20.63	20.53	20.83	21.13	21.03	21.33
		RB50#0	20.57	20.54	20.74	21.07	21.04	21.24

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	22.29	22.32	22.51	22.79	22.82	23.01
		RB1#38	22.41	22.46	22.67	22.91	22.96	23.17
		RB1#74	22.32	22.36	22.65	22.82	22.86	23.15
		RB36#0	21.44	21.44	21.69	21.94	21.94	22.19
		RB36#39	21.53	21.50	21.75	22.03	22.00	22.25
		RB75#0	21.49	21.52	21.74	21.99	22.02	22.24
	16QAM	RB1#0	21.89	21.45	21.82	22.39	21.95	22.32
		RB1#38	22.03	21.57	21.99	22.53	22.07	22.49
		RB1#74	21.90	21.48	21.85	22.40	21.98	22.35
		RB36#0	20.52	20.51	20.69	21.02	21.01	21.19
		RB36#39	20.58	20.58	20.74	21.08	21.08	21.24
		RB75#0	20.54	20.54	20.74	21.04	21.04	21.24
20.0	QPSK	RB1#0	22.18	22.19	22.21	22.68	22.69	22.71
		RB1#50	22.57	22.61	22.68	23.07	23.11	23.18
		RB1#99	22.19	22.29	22.43	22.69	22.79	22.93
		RB50#0	21.35	21.40	21.56	21.85	21.90	22.06
		RB50#50	21.49	21.47	21.68	21.99	21.97	22.18
		RB100#0	21.44	21.42	21.64	21.94	21.92	22.14
	16QAM	RB1#0	21.45	21.33	21.75	21.95	21.83	22.25
		RB1#50	21.88	21.80	22.25	22.38	22.30	22.75
		RB1#99	21.50	21.47	21.89	22.00	21.97	22.39
		RB50#0	20.39	20.45	20.59	20.89	20.95	21.09
		RB50#50	20.50	20.51	20.69	21.00	21.01	21.19
		RB100#0	20.48	20.47	20.67	20.98	20.97	21.17

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

For Band7: Antenna Gain = 0.5dBi

Limit: ERP ≤ 33dBm



**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	23.44	23.49	23.43	21.79	21.84	21.78
		RB1#3	23.64	23.59	23.69	21.99	21.94	22.04
		RB1#5	23.46	23.48	23.52	21.81	21.83	21.87
		RB3#0	23.54	23.64	23.56	21.89	21.99	21.91
		RB3#3	23.55	23.56	23.54	21.90	21.91	21.89
		RB6#0	22.49	22.53	22.55	20.84	20.88	20.90
	16QAM	RB1#0	22.44	22.63	22.37	20.79	20.98	20.72
		RB1#3	22.64	22.73	22.64	20.99	21.08	20.99
		RB1#5	22.44	22.59	22.45	20.79	20.94	20.80
		RB3#0	22.72	22.57	22.57	21.07	20.92	20.92
		RB3#3	22.74	22.54	22.59	21.09	20.89	20.94
		RB6#0	21.48	21.55	21.39	19.83	19.90	19.74
3.0	QPSK	RB1#0	23.57	23.53	23.54	21.92	21.88	21.89
		RB1#8	23.54	23.56	23.52	21.89	21.91	21.87
		RB1#14	23.52	23.52	23.57	21.87	21.87	21.92
		RB6#0	22.50	22.48	22.49	20.85	20.83	20.84
		RB6#9	22.49	22.48	22.48	20.84	20.83	20.83
		RB15#0	22.56	22.57	22.52	20.91	20.92	20.87
	16QAM	RB1#0	23.10	22.70	22.52	21.45	21.05	20.87
		RB1#8	23.05	22.67	22.49	21.40	21.02	20.84
		RB1#14	23.09	22.64	22.45	21.44	20.99	20.80
		RB6#0	21.58	21.45	21.39	19.93	19.80	19.74
		RB6#9	21.55	21.52	21.38	19.90	19.87	19.73
		RB15#0	21.61	21.47	21.52	19.96	19.82	19.87

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	23.44	23.43	23.42	21.79	21.78	21.77
		RB1#13	23.59	23.53	23.49	21.94	21.88	21.84
		RB1#24	23.46	23.43	23.47	21.81	21.78	21.82
		RB15#0	22.62	22.50	22.54	20.97	20.85	20.89
		RB15#10	22.59	22.57	22.54	20.94	20.92	20.89
		RB25#0	22.54	22.48	22.50	20.89	20.83	20.85
	16QAM	RB1#0	22.30	22.67	22.46	20.65	21.02	20.81
		RB1#13	22.46	22.84	22.51	20.81	21.19	20.86
		RB1#24	22.35	22.71	22.42	20.70	21.06	20.77
		RB15#0	21.65	21.46	21.55	20.00	19.81	19.90
		RB15#10	21.61	21.50	21.52	19.96	19.85	19.87
		RB25#0	21.62	21.45	21.53	19.97	19.80	19.88
10.0	QPSK	RB1#0	23.52	23.53	23.51	21.87	21.88	21.86
		RB1#25	23.72	23.75	23.73	22.07	22.10	22.08
		RB1#49	23.52	23.51	23.57	21.87	21.86	21.92
		RB25#0	22.61	22.51	22.55	20.96	20.86	20.90
		RB25#25	22.66	22.51	22.60	21.01	20.86	20.95
		RB50#0	22.63	22.57	22.59	20.98	20.92	20.94
	16QAM	RB1#0	23.10	22.64	22.49	21.45	20.99	20.84
		RB1#25	23.28	22.80	22.67	21.63	21.15	21.02
		RB1#49	23.05	22.63	22.51	21.40	20.98	20.86
		RB25#0	21.69	21.51	21.62	20.04	19.86	19.97
		RB25#25	21.72	21.54	21.63	20.07	19.89	19.98
		RB50#0	21.65	21.54	21.58	20.00	19.89	19.93

Note: ERP(dBm) = Conducted Power(dBm) + Antenna Gain(dBd)  
For Band12: Antenna Gain = 0.5dBi = -1.65dBd (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	23.50	23.52	23.50	21.85	21.87	21.85
		RB1#13	23.55	23.62	23.54	21.9	21.97	21.89
		RB1#24	23.50	23.49	23.44	21.85	21.84	21.79
		RB15#0	22.65	22.60	22.57	21.00	20.95	20.92
		RB15#10	22.59	22.67	22.58	20.94	21.02	20.93
		RB25#0	22.63	22.67	22.56	20.98	21.02	20.91
	16QAM	RB1#0	22.45	22.81	22.62	20.80	21.16	20.97
		RB1#13	22.50	22.96	22.65	20.85	21.31	21.00
		RB1#24	22.47	22.82	22.56	20.82	21.17	20.91
		RB15#0	21.70	21.57	21.56	20.05	19.92	19.91
		RB15#10	21.59	21.63	21.58	19.94	19.98	19.93
		RB25#0	21.61	21.67	21.57	19.96	20.02	19.92
10.0	QPSK	RB1#0	/	23.51	/	/	21.86	/
		RB1#25	/	23.63	/	/	21.98	/
		RB1#49	/	23.51	/	/	21.86	/
		RB25#0	/	22.71	/	/	21.06	/
		RB25#25	/	22.71	/	/	21.06	/
		RB50#0	/	22.69	/	/	21.04	/
	16QAM	RB1#0	/	23.12	/	/	21.47	/
		RB1#25	/	23.22	/	/	21.57	/
		RB1#49	/	23.10	/	/	21.45	/
		RB25#0	/	21.75	/	/	20.10	/
		RB25#25	/	21.75	/	/	20.10	/
		RB50#0	/	21.71	/	/	20.06	/

Note: ERP(dBm) = Conducted Power(dBm) + Antenna Gain(dBd)  
For Band13: Antenna Gain = 0.5dBi = -1.65dBd (0dBd=2.15dBi)  
Limit: ERP ≤ 34.77dBm

**LTE Band 17**

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	23.53	23.47	23.46	21.88	21.82	21.81
		RB1#13	23.62	23.59	23.59	21.97	21.94	21.94
		RB1#24	23.47	23.47	23.52	21.82	21.82	21.87
		RB15#0	22.58	22.56	22.60	20.93	20.91	20.95
		RB15#10	22.64	22.52	22.59	20.99	20.87	20.94
		RB25#0	22.58	22.53	22.50	20.93	20.88	20.85
	16QAM	RB1#0	22.42	22.74	22.49	20.77	21.09	20.84
		RB1#13	22.46	22.88	22.61	20.81	21.23	20.96
		RB1#24	22.32	22.74	22.48	20.67	21.09	20.83
		RB15#0	21.61	21.54	21.59	19.96	19.89	19.94
		RB15#10	21.66	21.49	21.59	20.01	19.84	19.94
		RB25#0	21.59	21.50	21.56	19.94	19.85	19.91
10.0	QPSK	RB1#0	23.60	23.63	23.61	21.95	21.98	21.96
		RB1#25	23.73	23.67	23.74	22.08	22.02	22.09
		RB1#49	23.56	23.60	23.62	21.91	21.95	21.97
		RB25#0	22.58	22.56	22.56	20.93	20.91	20.91
		RB25#25	22.59	22.60	22.60	20.94	20.95	20.95
		RB50#0	22.62	22.60	22.57	20.97	20.95	20.92
	16QAM	RB1#0	23.14	22.73	22.55	21.49	21.08	20.90
		RB1#25	23.23	22.85	22.69	21.58	21.20	21.04
		RB1#49	23.08	22.69	22.53	21.43	21.04	20.88
		RB25#0	21.61	21.57	21.64	19.96	19.92	19.99
		RB25#25	21.57	21.61	21.68	19.92	19.96	20.03
		RB50#0	21.57	21.59	21.62	19.92	19.94	19.97

Note: ERP(dBm) = Conducted Power(dBm) + Antenna Gain(dBd)  
For Band17: Antenna Gain = 0.5dBi = -1.65dBd (0dBd=2.15dBi)  
Limit: ERP ≤ 34.77dBm

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

Mode	Channel	PAR (dB)	Limit(dB)
GSM	Low	3.52	13
	Middle	3.44	13
	High	3.57	13

Mode	Channel	PAR (dB)	Limit(dB)
EGPRS	Low	3.62	13
	Middle	3.77	13
	High	3.81	13

Mode	Channel	PAR (dB)	Limit (dB)
RMC (BPSK)	Low	3.54	13
	Middle	3.62	13
	High	3.47	13
HSDPA (16QAM)	Low	3.57	13
	Middle	3.53	13
	High	3.52	13
HSUPA (BPSK)	Low	3.45	13
	Middle	3.46	13
	High	3.51	13
HSPA+	Low	3.41	13
	Middle	3.55	13
	High	3.52	13

**PCS Band**

Mode	Channel	PAR (dB)	Limit(dB)
GSM	Low	3.53	13
	Middle	3.57	13
	High	3.47	13

Mode	Channel	PAR (dB)	Limit(dB)
EGPRS	Low	3.53	13
	Middle	3.55	13
	High	3.51	13

Mode	Channel	PAR (dB)	Limit (dB)
RMC (BPSK)	Low	3.42	13
	Middle	3.52	13
	High	3.52	13
HSDPA (16QAM)	Low	3.51	13
	Middle	3.53	13
	High	3.47	13
HSUPA (BPSK)	Low	3.43	13
	Middle	3.45	13
	High	3.53	13
HSPA+	Low	3.47	13
	Middle	3.56	13
	High	3.48	13

**LTE Band 2 20MHz Bandwidth**

Modulation	Low channel (dB)	Middle channel (dB)	High channel (dB)	PAR Limit (dB)	Result
QPSK (1RB Size)	3.74	4.84	4.55	13	Pass
QPSK (100RB Size)	4.81	4.87	4.72	13	Pass
16QAM (1RB Size)	4.52	5.74	5.59	13	Pass
16QAM (100RB Size)	5.83	5.80	5.71	13	Pass

**LTE Band 4 20MHz Bandwidth**

Modulation	Low channel (dB)	Middle channel (dB)	High channel (dB)	PAR Limit (dB)	Result
QPSK (1RB Size)	5.10	4.35	4.93	13	Pass
QPSK (100RB Size)	4.96	5.16	4.75	13	Pass
16QAM (1RB Size)	6.00	5.45	5.68	13	Pass
16QAM (100RB Size)	5.91	6.09	5.68	13	Pass

**LTE Band 5 10MHz Bandwidth**

Modulation	Low channel (dB)	Middle channel (dB)	High channel (dB)	PAR Limit (dB)	Result
QPSK (1RB Size)	4.14	3.97	4.64	13	Pass
QPSK (50RB Size)	4.72	4.93	4.81	13	Pass
16QAM (1RB Size)	5.19	4.96	5.36	13	Pass
16QAM (50RB Size)	5.65	5.94	5.83	13	Pass

**LTE Band 7 20MHz Bandwidth**

Modulation	Low channel (dB)	Middle channel (dB)	High channel (dB)	PAR Limit (dB)	Result
QPSK (1RB Size)	4.14	3.97	4.64	13	Pass
QPSK (100RB Size)	4.72	4.93	4.81	13	Pass
16QAM (1RB Size)	5.19	4.96	5.36	13	Pass
16QAM (100RB Size)	5.65	5.94	5.83	13	Pass

**LTE Band 12 10MHz Bandwidth**

Modulation	Low channel (dB)	Middle channel (dB)	High channel (dB)	PAR Limit (dB)	Result
QPSK (1RB Size)	4.64	4.78	4.20	13	Pass
QPSK (50RB Size)	5.22	5.07	5.10	13	Pass
16QAM (1RB Size)	5.62	5.65	5.25	13	Pass
16QAM (50RB Size)	6.32	6.00	6.00	13	Pass

**LTE Band 13 10MHz Bandwidth**

Modulation	Low channel (dB)	Middle channel (dB)	High channel (dB)	PAR Limit (dB)	Result
QPSK (1RB Size)	/	4.46	/	13	Pass
QPSK (50RB Size)	/	5.04	/	13	Pass
16QAM (1RB Size)	/	5.16	/	13	Pass
16QAM (50RB Size)	/	6.03	/	13	Pass

**LTE Band 17 10MHz Bandwidth**

Modulation	Low channel (dB)	Middle channel (dB)	High channel (dB)	PAR Limit (dB)	Result
QPSK (1RB Size)	4.78	4.43	4.29	13	Pass
QPSK (50RB Size)	5.04	5.07	5.07	13	Pass
16QAM (1RB Size)	5.59	5.33	5.45	13	Pass
16QAM (50RB Size)	6.00	6.09	6.09	13	Pass



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

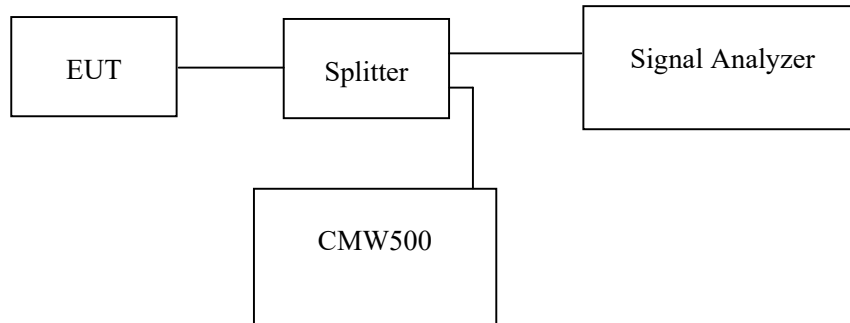
### Applicable Standard

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

### 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

<b>Temperature:</b>	27.6 °C
<b>Relative Humidity:</b>	58 %
<b>ATM Pressure:</b>	101.0 kPa

*The testing was performed by Black Ding from 2021-10-19 to 2022-01-20.*

*EUT operation mode: Transmitting*

**Test Result: Pass**

**Cellular Band (Part 22H)**

Mode	Channel	Frequency (MHz)	99% Occupied Bandwidth (kHz)	26 dB Emission Bandwidth (kHz)
GSM (GMSK)	128	824.2	244.57	318.40
	190	836.6	243.13	318.40
	251	848.8	243.13	321.30
EGPRS(8PSK)	128	824.2	260.49	340.10
	190	836.6	259.04	334.30
	251	848.8	259.04	334.30

	Frequency (MHz)	Occupied Bandwidth (MHz)	26dB Bandwidth (MHz)
RMC	826.4	4.17	4.73
	836.6	4.17	4.73
	846.6	4.17	4.73
HSDPA	826.4	4.19	4.93
	836.6	4.21	4.91
	846.6	4.19	4.77
HSUPA	826.4	4.19	4.73
	836.6	4.19	4.73
	846.6	4.17	4.73

**PCS Band (Part 24E)**

Mode	Channel	Frequency (MHz)	99% Occupied Bandwidth (kHz)	26 dB Emission Bandwidth (kHz)
GSM (GMSK)	512	1850.2	244.57	319.80
	661	1880.0	244.57	319.80
	810	1909.8	243.13	321.30
EGPRS(8PSK)	512	1850.2	247.47	311.10
	661	1880.0	247.47	316.90
	810	1909.8	246.02	312.60

	Frequency (MHz)	Occupied Bandwidth (MHz)	26dB Bandwidth (MHz)
RMC	1852.4	4.29	6.31
	1880.0	4.17	4.71
	1907.6	4.15	4.73
HSDPA	1852.4	4.25	5.71
	1880.0	4.25	5.75
	1907.6	4.17	4.69
HSUPA	1852.4	4.17	4.71
	1880.0	4.19	4.73
	1907.6	4.17	4.71

**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	1.104	1.314	1.104	1.308	1.092	1.302
	16QAM	1.098	1.290	1.104	1.302	1.104	1.314
3 MHz	QPSK	2.688	2.880	2.700	2.880	2.688	2.892
	16QAM	2.688	2.904	2.688	2.892	2.688	2.892
5 MHz	QPSK	4.540	5.160	4.520	5.220	4.520	5.140
	16QAM	4.520	5.120	4.520	5.200	4.520	5.180
10 MHz	QPSK	8.960	9.920	8.960	9.800	9.000	9.840
	16QAM	8.960	9.680	8.960	9.760	8.960	9.800
15 MHz	QPSK	13.560	15.300	13.500	15.060	13.500	15.060
	16QAM	13.560	15.180	13.500	15.060	13.560	15.120
20 MHz	QPSK	18.080	19.760	18.000	19.760	17.920	19.840
	16QAM	18.080	19.520	18.000	19.840	17.920	19.680

**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	1.098	1.302	1.110	1.308	1.104	1.290
	16QAM	1.104	1.314	1.098	1.290	1.104	1.302
3 MHz	QPSK	2.688	2.880	2.688	2.880	2.688	2.892
	16QAM	2.688	2.892	2.688	2.880	2.688	2.880
5 MHz	QPSK	4.520	5.140	4.520	5.180	4.520	5.160
	16QAM	4.520	5.140	4.540	5.220	4.540	5.220
10 MHz	QPSK	8.960	9.920	8.960	9.840	8.960	9.880
	16QAM	8.960	9.840	9.000	9.920	8.960	9.880
15 MHz	QPSK	13.560	15.060	13.500	15.120	13.560	15.240
	16QAM	13.560	15.240	13.560	15.120	13.560	15.060
20 MHz	QPSK	18.000	19.680	18.000	19.680	18.000	19.920
	16QAM	18.000	19.760	18.000	19.680	18.000	19.680

**LTE Band 5:**

Bandwidth	Modulation	Low channel		Middle channel		High channel	
		OBW (MHz)	26dB EBW (MHz)	OBW (MHz)	26dB EBW (MHz)	OBW (MHz)	26dB EBW (MHz)
1.4 MHz	QPSK	1.098	1.308	1.104	1.320	1.110	1.296
	16QAM	1.104	1.320	1.098	1.284	1.098	1.290
3 MHz	QPSK	2.688	2.868	2.688	2.880	2.688	2.892
	16QAM	2.688	2.880	2.688	2.880	2.676	2.880
5 MHz	QPSK	4.540	5.220	4.520	5.160	4.520	5.140
	16QAM	4.540	5.140	4.540	5.140	4.540	5.240
10 MHz	QPSK	8.960	9.920	8.960	9.680	9.000	9.880
	16QAM	8.960	9.880	8.960	9.760	9.000	9.880

**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	4.540	5.200	4.520	5.180	4.520	5.220
	16QAM	4.520	5.160	4.560	5.180	4.540	5.240
10 MHz	QPSK	9.000	10.120	8.960	9.800	8.960	9.880
	16QAM	8.960	9.720	9.000	9.760	8.960	9.920
15 MHz	QPSK	13.560	15.180	13.500	15.240	13.620	15.360
	16QAM	13.560	15.120	13.560	15.180	13.620	15.060
20 MHz	QPSK	18.000	19.680	17.920	19.760	18.000	19.760
	16QAM	18.000	19.760	18.000	19.760	18.000	19.760

**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	1.098	1.302	1.104	1.512	1.104	1.302
	16QAM	1.104	1.314	1.098	1.296	1.104	1.308
3 MHz	QPSK	2.688	2.868	2.688	2.964	2.688	2.880
	16QAM	2.688	2.880	2.688	2.892	2.688	2.868
5 MHz	QPSK	4.560	5.180	4.520	5.100	4.520	5.200
	16QAM	4.540	5.200	4.540	5.140	4.540	5.220
10 MHz	QPSK	9.000	9.960	8.960	9.760	8.960	9.880
	16QAM	9.000	9.720	8.960	9.680	8.960	9.840

**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	4.560	5.240	4.540	5.200	4.520	5.160
	16QAM	4.540	5.220	4.540	5.200	4.540	5.160
10 MHz	QPSK	/	/	9.000	9.880	/	/
	16QAM	/	/	9.000	9.720	/	/

**LTE Band 17**

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	4.540	5.160	4.520	5.140	4.540	5.220
	16QAM	4.540	5.120	4.540	5.180	4.560	5.240
10 MHz	QPSK	8.960	9.920	8.960	9.840	9.000	9.920
	16QAM	8.960	9.880	8.960	9.880	9.000	9.920

*Test plots refer to the Appendix A.*

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

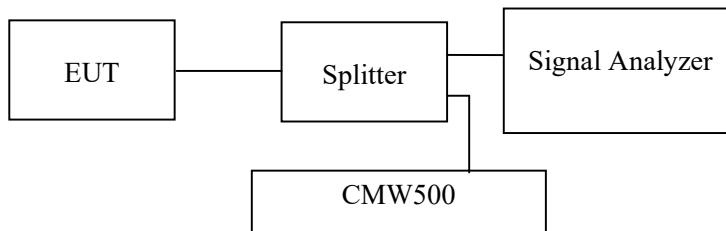
### Applicable Standard

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

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 10<sup>th</sup> harmonic.



### Test Data

#### Environmental Conditions

Temperature:	27.6 °C
Relative Humidity:	58 %
ATM Pressure:	101.0 kPa

*The testing was performed by Black Ding from 2021-10-19 to 2022-01-20.*

*EUT operation mode: Transmitting*

#### Test result: Pass

*Test plots refer to the Appendix B.*

## **FCC § 2.1053; § 22.917 (a);§ 24.238 (a); §27.53- SPURIOUS RADIATED EMISSIONS**

### **Applicable Standard**

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

### **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**

<b>Temperature:</b>	26.5 °C
<b>Relative Humidity:</b>	52 %
<b>ATM Pressure:</b>	101.0 kPa

*The testing was performed by Caro Hu on 2021-10-19 for below 1GHz and on 2021-10-19 for above 1GHz.*

*EUT operation mode:*

Transmitting (Pre-scan in the X,Y and Z axes of orientation, the worst case 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)				
GSM Mode								
Low channel								
114.8	-57.25	347	1.2	H	-2.65	-59.9	-13	46.9
114.8	-55.18	264	1.8	V	-3.32	-58.5	-13	45.5
1648.4	-36.98	55	1.2	H	-2.32	-39.3	-13	26.3
1648.4	-36.01	91	1.4	V	-2.29	-38.3	-13	25.3
Middle Channel								
111.2	-57.95	307	2.1	H	-2.65	-60.6	-13	47.6
111.2	-56.48	270	1.5	V	-3.32	-59.8	-13	46.8
1673.2	-32.82	178	1.7	H	-2.38	-35.2	-13	22.2
1673.2	-30.49	240	1	V	-2.31	-32.8	-13	19.8
High Channel								
111.9	-56.85	331	1.5	H	-2.65	-59.5	-13	46.5
111.9	-55.48	28	1.1	V	-3.32	-58.8	-13	45.8
1697.6	-31.82	261	2.1	H	-2.38	-34.2	-13	21.2
1697.6	-29.86	347	1.4	V	-2.34	-32.2	-13	19.2

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								
122.5	-56.45	311	1.2	H	-2.65	-59.1	-13	46.1
122.5	-55.08	179	1.7	V	-3.32	-58.4	-13	45.4
1652.8	-50.38	333	2	H	-2.72	-53.1	-13	40.1
1652.8	-49.12	27	1.6	V	-2.78	-51.9	-13	38.9
Middle Channel								
121.2	-56.75	12	2	H	-2.65	-59.4	-13	46.4
121.2	-57.58	332	1.9	V	-3.32	-60.9	-13	47.9
1673.2	-43.21	197	1.9	H	-2.69	-45.9	-13	32.9
1673.2	-46.06	107	1	V	-2.74	-48.8	-13	35.8
High Channel								
116.6	-57.35	97	2.2	H	-2.65	-60	-13	47
116.6	-56.08	50	1.8	V	-3.32	-59.4	-13	46.4
1693.2	-47.55	310	1.4	H	-2.65	-50.2	-13	37.2
1693.2	-46.90	78	1.3	V	-2.70	-49.6	-13	36.6



## 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)				
GSM Mode								
Low channel								
114.6	-56.75	162	2.1	H	-2.65	-59.4	-13	46.4
114.6	-55.78	334	1.1	V	-3.32	-59.1	-13	46.1
3700.4	-34.32	178	1.7	H	4.72	-29.6	-13	16.6
3700.4	-40.81	191	2	V	4.61	-36.2	-13	23.2
Middle Channel								
111.3	-58.15	146	2.1	H	-2.65	-60.8	-13	47.8
111.3	-55.38	25	2	V	-3.32	-58.7	-13	45.7
3760	-35.44	338	1.2	H	4.94	-30.5	-13	17.5
3760	-42.05	14	1.1	V	4.85	-37.2	-13	24.2
High Channel								
113.5	-57.05	25	2.2	H	-2.65	-59.7	-13	46.7
113.5	-56.58	52	1.6	V	-3.32	-59.9	-13	46.9
3819.6	-36.65	148	1.4	H	5.25	-31.4	-13	18.4
3819.6	-41.88	233	1.4	V	5.08	-36.8	-13	23.8

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								
122.8	-56.55	349	1.3	H	-2.65	-59.2	-13	46.2
122.8	-56.38	335	1.9	V	-3.32	-59.7	-13	46.7
3704.8	-50.31	120	1.8	H	4.71	-45.6	-13	32.6
3704.8	-50.92	211	1	V	4.62	-46.3	-13	33.3
Middle channel								
115.4	-57.25	244	2.1	H	-2.65	-59.9	-13	46.9
115.4	-56.58	136	1.6	V	-3.32	-59.9	-13	46.9
3760	-48.12	47	1.5	H	5.02	-43.1	-13	30.1
3760	-48.93	66	1.1	V	4.93	-44	-13	31
High channel								
120.6	-57.75	120	1.8	H	-2.65	-60.4	-13	47.4
120.6	-55.38	9	1.4	V	-3.32	-58.7	-13	45.7
3815.2	-47.94	220	1.4	H	5.34	-42.6	-13	29.6
3815.2	-48.64	333	1.6	V	5.24	-43.4	-13	30.4

**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 bandwidth, low channel								
111.1	-58.35	81	2.1	H	-2.65	-61	-13	48
111.1	-57.28	315	1.9	V	-3.32	-60.6	-13	47.6
3701.40	-46.92	22	1.4	H	4.72	-42.2	-13	29.2
3701.40	-47.81	343	1.2	V	4.61	-43.2	-13	30.2
1.4MHz bandwidth, middle channel								
112.8	-57.55	183	1	H	-2.65	-60.2	-13	47.2
112.8	-55.48	236	1.3	V	-3.32	-58.8	-13	45.8
3760.00	-45.84	246	1.3	H	4.94	-40.9	-13	27.9
3760.00	-44.95	23	2.1	V	4.85	-40.1	-13	27.1
1.4MHz bandwidth, high channel								
112	-56.05	89	2.2	H	-2.65	-58.7	-13	45.7
112	-57.68	347	1.7	V	-3.32	-61	-13	48
3818.60	-47.15	254	1.6	H	5.25	-41.9	-13	28.9
3818.60	-47.18	289	1.5	V	5.08	-42.1	-13	29.1

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 4								
Test frequency range: 30MHz-20GHz								
1.4MHz bandwidth, low channel								
117.4	-57.35	263	1.7	H	-2.65	-60	-13	47
117.4	-57.38	274	1.5	V	-3.32	-60.7	-13	47.7
3421.4	-44.02	253	1.9	H	2.72	-41.3	-13	28.3
3421.4	-44.69	83	1.1	V	2.59	-42.1	-13	29.1
1.4MHz bandwidth, middle channel								
116.5	-56.25	152	1.7	H	-2.65	-58.9	-13	45.9
116.5	-56.18	90	1.6	V	-3.32	-59.5	-13	46.5
3465	-45.49	357	2.1	H	3.09	-42.4	-13	29.4
3465	-44.57	95	1.9	V	2.97	-41.6	-13	28.6
1.4MHz bandwidth, high channel								
118.9	-57.25	89	1.2	H	-2.65	-59.9	-13	46.9
118.9	-56.08	252	1.2	V	-3.32	-59.4	-13	46.4
3508.6	-45.04	158	1.3	H	3.44	-41.6	-13	28.6
3508.6	-46.51	143	1.9	V	3.31	-43.2	-13	30.2

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								
Test frequency range: 30MHz-10GHz								
1.4MHz bandwidth, low channel								
120.1	-55.85	276	1.8	H	-2.65	-58.5	-13	45.5
120.1	-55.68	200	2.1	V	-3.32	-59	-13	46
1649.40	-45.61	5	1.9	H	-2.79	-48.4	-13	35.4
1649.40	-47.17	339	1	V	-2.73	-49.9	-13	36.9
1.4MHz bandwidth, middle channel								
117.9	-56.85	69	1.7	H	-2.65	-59.5	-13	46.5
117.9	-56.18	206	1.5	V	-3.32	-59.5	-13	46.5
1673.00	-39.56	32	1.4	H	-2.74	-42.3	-13	29.3
1673.00	-39.41	185	1.3	V	-2.69	-42.1	-13	29.1
1.4MHz bandwidth, high channel								
122.7	-56.85	46	1.2	H	-2.65	-59.5	-13	46.5
122.7	-56.78	314	1.8	V	-3.32	-60.1	-13	47.1
1696.6	-43.3	61	1.5	H	-2.7	-46	-13	33
1696.6	-42.95	227	2	V	-2.65	-45.6	-13	32.6

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-26.5GHz								
5MHz bandwidth, low channel								
122.1	-56.75	131	1.5	H	-2.65	-59.4	-25	34.4
122.1	-54.88	112	1.5	V	-3.32	-58.2	-25	33.2
5005	-48.64	338	2.1	H	9.54	-39.1	-25	14.1
5005	-49.43	167	1.2	V	8.33	-41.1	-25	16.1
5MHz bandwidth, middle channel								
115.3	-56.15	241	1.8	H	-2.65	-58.8	-25	33.8
115.3	-57.28	156	1.9	V	-3.32	-60.6	-25	35.6
5070	-49.37	31	2	H	9.67	-39.7	-25	14.7
5070	-50.35	77	1.7	V	8.35	-42	-25	17
5MHz bandwidth, high channel								
121.7	-55.45	318	1.7	H	-2.65	-58.1	-25	33.1
121.7	-54.88	352	2	V	-3.32	-58.2	-25	33.2
5135	-49.74	21	1.3	H	9.84	-39.9	-25	14.9
5135	-50.96	106	1.3	V	8.36	-42.6	-25	17.6

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-10GHz								
5MHz bandwidth, low channel								
118.5	-58.25	166	2	H	-2.65	-60.9	-13	47.9
118.5	-56.78	92	1.5	V	-3.32	-60.1	-13	47.1
1399.4	-48.57	77	2	H	-0.53	-49.1	-13	36.1
1399.4	-49.06	205	1.8	V	-0.74	-49.8	-13	36.8
5MHz bandwidth, middle channel								
119.6	-56.95	30	1.8	H	-2.65	-59.6	-13	46.6
119.6	-55.78	313	1.3	V	-3.32	-59.1	-13	46.1
1415	-55.10	254	2.1	H	-0.70	-55.8	-13	42.8
1415	-52.80	317	2	V	-0.90	-53.7	-13	40.7
5MHz bandwidth, high channel								
119	-57.35	66	2.1	H	-2.65	-60	-13	47
119	-55.48	16	1.1	V	-3.32	-58.8	-13	45.8
1430.6	-54.62	45	1.7	H	-0.88	-55.5	-13	42.5
1430.6	-52.63	271	1.1	V	-1.07	-53.7	-13	40.7

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 13								
Test frequency range: 30MHz-26.5GHz								
5MHz bandwidth, low channel								
117.6	-56.05	301	2.1	H	-2.65	-58.7	-13	45.7
117.6	-57.28	96	2.1	V	-3.32	-60.6	-13	47.6
1559	-48.16	239	1.4	H	-2.34	-50.5	-40	10.5
1559	-44.75	277	1.1	V	-2.45	-47.2	-40	7.2
5MHz bandwidth, middle channel								
121.7	-57.75	93	1.5	H	-2.65	-60.4	-13	47.4
121.7	-56.08	309	1	V	-3.32	-59.4	-13	46.4
1564	-52.60	86	1.3	H	-2.40	-55	-40	15
1564	-51.00	330	2.1	V	-2.50	-53.5	-40	13.5
5MHz bandwidth, high channel								
121.1	-57.05	327	1.7	H	-2.65	-59.7	-13	46.7
121.1	-55.18	347	1.3	V	-3.32	-58.5	-13	45.5
1569	-50.04	251	1.9	H	-2.46	-52.5	-40	12.5
1569	-46.54	268	1.4	V	-2.56	-49.1	-40	9.1

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 17								
Test frequency range: 30MHz-26.5GHz								
5MHz bandwidth, low channel								
120.2	-56.95	206	1.8	H	-2.65	-59.6	-13	46.6
120.2	-56.88	7	1.8	V	-3.32	-60.2	-13	47.2
1413	-54.22	61	1.5	H	-0.68	-54.9	-13	41.9
1413	-52.52	174	1.5	V	-0.88	-53.4	-13	40.4
5MHz bandwidth, middle channel								
122.9	-55.65	120	2.1	H	-2.65	-58.3	-13	45.3
122.9	-56.48	231	1.3	V	-3.32	-59.8	-13	46.8
1420	-51.04	204	1.6	H	-0.76	-51.8	-13	38.8
1420	-48.35	154	1.5	V	-0.95	-49.3	-13	36.3
5MHz bandwidth, high channel								
116.3	-55.65	139	1.2	H	-2.65	-58.3	-13	45.3
116.3	-55.08	275	1.7	V	-3.32	-58.4	-13	45.4
1427	-49.06	316	1.9	H	-0.84	-49.9	-13	36.9
1427	-48.57	356	2	V	-1.03	-49.6	-13	36.6

**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 - 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.

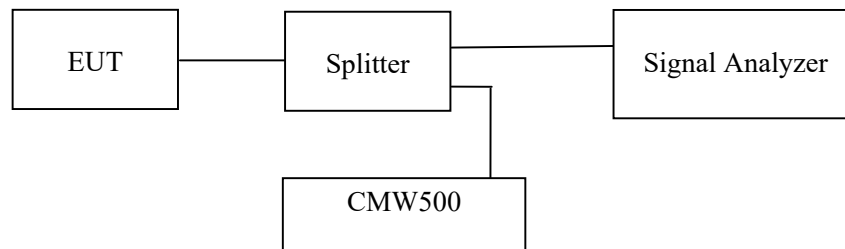
According to §24.238(a), the power of any emissions outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least  $43 + 10 \log(P)$  dB.

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**

<b>Temperature:</b>	27.6 °C
<b>Relative Humidity:</b>	58 %
<b>ATM Pressure:</b>	101.0 kPa

*The testing was performed by Black Ding from 2021-10-19 to 2022-01-26.*

*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- FREQUENCY STABILITY**

### **Applicable Standard**

FCC § 2.1055, §22.355, §24.235, §27.54

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

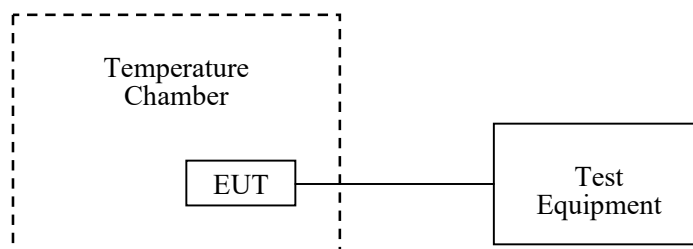
According to §24.235, the frequency stability shall be sufficient to ensure that the fundamental emissions stays within the authorized frequency block.

### **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**

<b>Temperature:</b>	27.6 °C
<b>Relative Humidity:</b>	58 %
<b>ATM Pressure:</b>	101.0 kPa

The testing was performed by Black Ding from 2021-10-19 to 2021-10-20.

EUT operation mode: Transmitting

**Test Result: Pass**

Please refer to the following tables.

**Cellular Band (Part 22H)****GSM 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.	-5	-0.0060	2.5
-20		-4	-0.0048	2.5
-10		0	0.0000	2.5
0		6	0.0072	2.5
10		-3	-0.0036	2.5
20		10	0.0120	2.5
30		6	0.0072	2.5
40		7	0.0084	2.5
50		8	0.0096	2.5
20		L.V.	4	0.0048
	H.V.	-2	-0.0024	2.5



**EDGE Mode**

<b>Middle Channel, <math>f_0=836.6\text{MHz}</math></b>				
<b>Temperature (°C)</b>	<b>Voltage Supplied (<math>V_{DC}</math>)</b>	<b>Frequency Error (Hz)</b>	<b>Frequency Error (ppm)</b>	<b>Limit (ppm)</b>
-30	N.V.	-4	-0.0048	2.5
-20		3	0.0036	2.5
-10		-7	-0.0084	2.5
0		-8	-0.0096	2.5
10		6	0.0072	2.5
20		-2	-0.0024	2.5
30		7	0.0084	2.5
40		-6	-0.0072	2.5
50		5	0.0060	2.5
20	L.V.	4	0.0048	2.5
	H.V.	6	0.0072	2.5

**WCDMA Mode**

<b>Middle Channel, <math>f_0=836.6\text{MHz}</math></b>				
<b>Temperature (°C)</b>	<b>Voltage Supplied (<math>V_{DC}</math>)</b>	<b>Frequency Error (Hz)</b>	<b>Frequency Error (ppm)</b>	<b>Limit (ppm)</b>
-30	N.V.	-1.02	-0.0012	2.5
-20		9.04	0.0108	2.5
-10		8.03	0.0096	2.5
0		5.01	0.0060	2.5
10		3.02	0.0036	2.5
20		-10.01	-0.0120	2.5
30		4.05	0.0048	2.5
40		5.02	0.0060	2.5
50		8.01	0.0096	2.5
20		L.V.	5.02	0.0060
	H.V.	6.01	0.0072	2.5

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

Middle Channel, $f_0=1880.0$ MHz				
Temperature (°C)	Voltage Supplied (V <sub>DC</sub> )	Frequency Error (Hz)	Frequency Error (ppm)	Result
-30	N.V.	-3	-0.0016	pass
-20		8	0.0043	pass
-10		3	0.0016	pass
0		8	0.0043	pass
10		-1	-0.0005	pass
20		22	0.0117	pass
30		-3	-0.0016	pass
40		-7	-0.0037	pass
50		-5	-0.0027	pass
20		L.V.	-3	-0.0016
	H.V.	-2	-0.0011	pass

**EDGE Mode**

Middle Channel, $f_0=1880.0$ MHz				
Temperature (°C)	Voltage Supplied (V <sub>DC</sub> )	Frequency Error (Hz)	Frequency Error (ppm)	Result
-30	N.V.	-2	-0.0011	pass
-20		-4	-0.0021	pass
-10		5	0.0027	pass
0		3	-0.0016	pass
10		-4	-0.0021	pass
20		22	0.0117	pass
30		-3	-0.0016	pass
40		8	0.0043	pass
50		7	0.0037	pass
20		L.V.	3	0.0016
	H.V.	6	0.0032	pass

**WCDMA Mode**

<b>Middle Channel, <math>f_0=1880.0</math> MHz</b>				
<b>Temperature (°C)</b>	<b>Voltage Supplied (<math>V_{DC}</math>)</b>	<b>Frequency Error (Hz)</b>	<b>Frequency Error (ppm)</b>	<b>Result</b>
-30	N.V.	11.02	0.0059	pass
-20		19.01	0.0101	pass
-10		18.03	0.0096	pass
0		15.11	0.0080	pass
10		13.11	0.0070	pass
20		-10.31	-0.0055	pass
30		14.05	0.0075	pass
40		17.03	0.0091	pass
50		10.28	0.0055	pass
20		L.V.	15.03	0.0080
	H.V.	12.02	0.0064	pass

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

10.0 MHz Middle Channel, $f_0=1880\text{MHz}$				
Temperature (°C)	Voltage Supplied (V <sub>DC</sub> )	Frequency Error (Hz)	Frequency Error (ppm)	Result
-30	N.V.	10	-0.0053	pass
-20		8	0.0043	pass
-10		-6	-0.0032	pass
0		3	0.0016	pass
10		8	0.0043	pass
20		6	0.0032	pass
30		4	0.0021	pass
40		7	0.0037	pass
50		-10	-0.0053	pass
20		L.V.	-8	-0.0043
	H.V.	-7	-0.0037	pass

**Band 4:**

10 MHz Bandwidth					
Temperature (°C)	Power Supplied (V <sub>DC</sub> )	F <sub>L</sub> (MHz)	F <sub>H</sub> (MHz)	F <sub>L</sub> Limit (MHz)	F <sub>H</sub> Limit (MHz)
-30	N.V.	1710.3256	1754.8745	1710	1755
-20		1710.3161	1754.8742	1710	1755
-10		1710.2133	1754.8772	1710	1755
0		1710.2129	1754.8751	1710	1755
10		1710.2123	1754.8743	1710	1755
20		1710.3162	1754.8738	1710	1755
30		1710.3122	1754.8736	1710	1755
40		1710.2142	1754.8751	1710	1755
50		1710.2154	1754.8753	1710	1755
20		L.V.	1710.2142	1754.8778	1710
	H.V.	1710.2146	1754.8767	1710	1755

**Band 5:**

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.	5	0.0060	2.5
-20		-10	-0.0120	2.5
-10		-4	-0.0048	2.5
0		6	0.0072	2.5
10		10	0.0120	2.5
20		8	0.0096	2.5
30		7	0.0084	2.5
40		10	0.0120	2.5
50		3	0.0036	2.5
20		L.V.	-9	-0.0108
	H.V.	-7	-0.0084	2.5

**Band 7:**

10 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.	2500.1925	2569.9845	2500	2570
-20		2500.1953	2569.9955	2500	2570
-10		2500.1832	2569.9813	2500	2570
0		2500.1815	2569.9717	2500	2570
10		2500.1917	2569.9862	2500	2570
20		2500.1814	2569.9436	2500	2570
30		2500.1742	2569.9521	2500	2570
40		2500.1543	2569.9811	2500	2570
50		2500.1526	2569.9821	2500	2570
20		L.V.	2500.1425	2569.9723	2500
	H.V.	2500.1547	2569.9642	2500	2570

**Band 12:**

10 MHz Bandwidth					
Temperature (°C)	Power Supplied (V <sub>DC</sub> )	F <sub>L</sub> (MHz)	F <sub>H</sub> (MHz)	F <sub>L</sub> Limit (MHz)	F <sub>H</sub> Limit (MHz)
-30	N.V.	699.0367	715.9631	699	716
-20		699.0382	715.9617	699	716
-10		699.0375	715.9653	699	716
0		699.0332	715.9648	699	716
10		699.0357	715.9665	699	716
20		699.0386	715.9673	699	716
30		699.0382	715.9652	699	716
40		699.0380	715.9651	699	716
50		699.0358	715.9652	699	716
20	L.V.	699.0347	715.9647	699	716
	H.V.	699.0374	715.9645	699	716

**Band 13:**

10 MHz Bandwidth					
Temperature (°C)	Power Supplied (V <sub>DC</sub> )	F <sub>L</sub> (MHz)	F <sub>H</sub> (MHz)	F <sub>L</sub> Limit (MHz)	F <sub>H</sub> Limit (MHz)
-30	N.V.	777.1273	786.8455	777	787
-20		777.1251	786.8437	777	787
-10		777.1272	786.8443	777	787
0		777.1218	786.8456	777	787
10		777.1237	786.8458	777	787
20		777.1225	786.8474	777	787
30		777.1246	786.8487	777	787
40		777.1233	786.8456	777	787
50		777.1261	786.8455	777	787
20		L.V.	777.1252	786.8462	777
	H.V.	777.1259	786.8442	777	787

**Band 17:**

10 MHz Bandwidth					
Temperature (°C)	Power Supplied (V <sub>DC</sub> )	F <sub>L</sub> (MHz)	F <sub>H</sub> (MHz)	F <sub>L</sub> Limit (MHz)	F <sub>H</sub> Limit (MHz)
-30	N.V.	704.1293	715.8468	704	716
-20		704.1233	715.8438	704	716
-10		704.1276	715.8442	704	716
0		704.1217	715.8468	704	716
10		704.1247	715.8459	704	716
20		704.1291	715.8487	704	716
30		704.1258	715.8488	704	716
40		704.1291	715.8497	704	716
50		704.1262	715.8455	704	716
20		L.V.	704.1210	715.8460	704
	H.V.	704.1266	715.8441	704	716

**16QAM:****Band 2:**

10.0 MHz Middle Channel, $f_0=1880\text{MHz}$				
Temperature (°C)	Voltage Supplied (V <sub>DC</sub> )	Frequency Error (Hz)	Frequency Error (ppm)	Result
-30	N.V.	9	0.0048	pass
-20		7	0.0037	pass
-10		5	0.0027	pass
0		8	0.0043	pass
10		10	0.0053	pass
20		-10	-0.0053	pass
30		-7	-0.0037	pass
40		9	0.0048	pass
50		-6	-0.0032	pass
20		L.V.	6	0.0032
	H.V.	8	0.0043	pass

**Band 4:**

10 MHz Bandwidth					
Temperature (°C)	Power Supplied (V <sub>DC</sub> )	F <sub>L</sub> (MHz)	F <sub>H</sub> (MHz)	F <sub>L</sub> Limit (MHz)	F <sub>H</sub> Limit (MHz)
-30	N.V.	1710.2764	1754.7647	1710	1755
-20		1710.2753	1754.7536	1710	1755
-10		1710.2725	1754.7628	1710	1755
0		1710.2653	1754.7454	1710	1755
10		1710.2652	1754.7471	1710	1755
20		1710.2636	1754.7832	1710	1755
30		1710.2552	1754.7656	1710	1755
40		1710.2572	1754.7688	1710	1755
50		1710.2655	1754.7728	1710	1755
20		L.V.	1710.2652	1754.7536	1710
	H.V.	1710.2633	1754.7528	1710	1755



**Band 5:**

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.	4	0.0048	2.5
-20		6	0.0072	2.5
-10		-10	-0.0120	2.5
0		5	0.0036	2.5
10		7	0.0084	2.5
20		-8	-0.0096	2.5
30		4	0.0048	2.5
40		6	0.0072	2.5
50		-6	-0.0072	2.5
20	L.V.	-3	-0.0036	2.5
	H.V.	7	0.0084	2.5

**Band 7:**

10 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.	2500.7455	2569.8510	2500	2570
-20		2500.7338	2569.8542	2500	2570
-10		2500.7327	2569.8425	2500	2570
0		2500.7236	2569.8523	2500	2570
10		2500.6355	2569.8238	2500	2570
20		2500.6228	2569.7875	2500	2570
30		2500.6337	2569.7856	2500	2570
40		2500.6325	2569.8435	2500	2570
50		2500.6326	2569.8454	2500	2570
20	L.V.	2500.6233	2569.8343	2500	2570
	H.V.	2500.5427	2569.8252	2500	2570

**Band 12:**

10 MHz Bandwidth					
Temperature (°C)	Power Supplied (V <sub>DC</sub> )	F <sub>L</sub> (MHz)	F <sub>H</sub> (MHz)	F <sub>L</sub> Limit (MHz)	F <sub>H</sub> Limit (MHz)
-30	N.V.	699.0422	715.9682	699	716
-20		699.0423	715.9625	699	716
-10		699.0399	715.9637	699	716
0		699.0356	715.9645	699	716
10		699.0357	715.9652	699	716
20		699.0412	715.9637	699	716
30		699.0326	715.9628	699	716
40		699.0350	715.9645	699	716
50		699.0346	715.9636	699	716
20	L.V.	699.0336	715.9665	699	716
	H.V.	699.0348	715.9672	699	716

**Band 13:**

10 MHz Bandwidth					
Temperature (°C)	Power Supplied (V <sub>DC</sub> )	F <sub>L</sub> (MHz)	F <sub>H</sub> (MHz)	F <sub>L</sub> Limit (MHz)	F <sub>H</sub> Limit (MHz)
-30	N.V.	777.0356	786.9225	777	787
-20		777.0362	786.9226	777	787
-10		777.0357	786.9227	777	787
0		777.0345	786.9237	777	787
10		777.0328	786.9251	777	787
20		777.0336	786.9235	777	787
30		777.0342	786.9233	777	787
40		777.0352	786.9243	777	787
50		777.0217	786.9251	777	787
20	L.V.	777.0335	786.9252	777	787
	H.V.	777.0328	786.9238	777	787

**Band 17:**

10 MHz Bandwidth					
Temperature (°C)	Power Supplied (V <sub>DC</sub> )	F <sub>L</sub> (MHz)	F <sub>H</sub> (MHz)	F <sub>L</sub> Limit (MHz)	F <sub>H</sub> Limit (MHz)
-30	N.V.	704.1226	715.8456	704	716
-20		704.1235	715.8452	704	716
-10		704.1252	715.8433	704	716
0		704.1233	715.8427	704	716
10		704.1242	715.8426	704	716
20		704.1252	715.8445	704	716
30		704.1251	715.8435	704	716
40		704.1236	715.8442	704	716
50		704.122	715.8452	704	716
20	L.V.	704.1215	715.8462	704	716
	H.V.	704.1242	715.8445	704	716

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