

TEST REPORT

Applicant Name: Shenzhen Topwise Communication Co.,Ltd
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9thRd,Shenzhen, China.
Report Number: 2401V30787E-RF-00E
FCC ID: 2BBKD-T1

Test Standard (s)

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

Sample Description

Product Type: Point of Sale Terminal
Model No.: T1
Multiple Model(s) No.: N/A
Trade Mark: TOPWISE
Date Received: 2024/07/15
Issue Date: 2024/09/30

Test Result:

Pass▲

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

Prepared and Checked By:

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Approved By:

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Note: The information marked # is provided by the applicant, the laboratory is not responsible for its authenticity and this information can affect the validity of the result in the test report. Customer model name, addresses, names, trademarks etc. are included.

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DOCUMENT REVISION HISTORY

Revision Number	Report Number	Description of Revision	Date of Revision
0	2401V30787E-RF-00E	Original Report	2024/09/30

GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

Product	Point of Sale Terminal			
Tested Model	T1			
Multiple Model(s)	N/A			
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 12: 699-716MHz(TX); 729-746MHz(RX) LTE Band 41: 2555-2655MHz(TX/RX) LTE Band 66: 1710-1780MHz(TX); 2110-2200MHz(RX)			
Modulation Technique	2G: GMSK, 8PSK 3G: BPSK, QPSK, 16QAM, 64QAM 4G: QPSK, 16QAM			
Antenna Specification [#]	Antenna	Operation Bands	Antenna Gain (G _T) (dBi)	L _C (dB)
	Main ANT	GSM 850/WCDMA/LTE B5	-3.60	0.5
		PCS1900/WCDMA/LTE B2	-1.40	1.0
		LTE B4/B66	2.20	1.0
		LTE B12	-2.90	0.5
		LTE B41	0.70	1.0
Note: Lc= Signal Attenuation in the connecting cable between the transmitter and antenna, in dB.				
Voltage Range	DC3.8V from Li-ion Battery or DC 5V from Adapter			
Sample serial number	2OC1-1 for Radiated Emissions Test 2OC1-2 for RF Conducted Test (Assigned by BACL, Shenzhen)			
Sample/EUT Status	Good condition			
Normal/Extreme Condition [#]	L.V.: Low Voltage 3.42V _{DC} N.V.: Normal Voltage 3.8V _{DC} H.V.: High Voltage 4.35V _{DC}			
Adapter Information	Adapter 1 Model: PS10UA050K2000UU Input: AC 100-240V, 50/60Hz, 0.35A, Max. Output: DC 5.0V, 2.0A Adapter 2 Model: TPA-141A050200UU01 Input: AC 100-240V, 50/60Hz, 0.3A Output: DC 5.0V, 2.0A			
Note: The EUT charged by two adapters, the worst case adapter 2 was selected to test for radiated emission below 1GHz.				

Objective

This test report is in accordance with Part 2-Subpart J, Part 22-Subpart H, Part 24-Subpart E, and Part 27 of the Federal Communication Commission's rules.

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

Test Methodology

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

Part 22 Subpart H - Public Mobile Services
Part 24 Subpart E - Personal Communication Services
Part 27 - Miscellaneous Wireless Communications Services

ANSI C63.26-2015: American National Standard for Compliance Testing of Transmitters Used in
Licensed Radio Services
KDB 971168 D01: Power Meas License Digital Systems v03r01

All emissions measurement was performed at Bay Area Compliance Laboratories Corp. (Shenzhen). The radiated testing was performed at an antenna-to-EUT distance of 3 meters.

Each test item follows test standards and with no deviation.

Measurement Uncertainty

Parameter		Uncertainty
Occupied Channel Bandwidth		±5%
RF output power, conducted		0.72 dB(k=2, 95% level of confidence)
Unwanted Emission, conducted		1.75 dB(k=2, 95% level of confidence)
RF Frequency		213.55 Hz(k=2, 95% level of confidence)
Radiated Emissions	30MHz~200MHz (Horizontal)	4.48dB(k=2, 95% level of confidence)
	30MHz~200MHz (Vertical)	4.55dB(k=2, 95% level of confidence)
	200MHz~1000MHz (Horizontal)	4.85dB(k=2, 95% level of confidence)
	200MHz~1000MHz (Vertical)	5.05dB(k=2, 95% level of confidence)
	1GHz - 6GHz	5.35dB(k=2, 95% level of confidence)
	6GHz - 18GHz	5.44dB(k=2, 95% level of confidence)
	18GHz - 40GHz	5.16dB(k=2, 95% level of confidence)
Temperature		±1°C
Humidity		±1%
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 Bay Area Compliance Laboratories Corp. (Shenzhen) to collect test data is located on the 5F(B-West) , 6F, 7F, the 3rd Phase of Wan Li Industrial Building D, Shihua Rd, FuTian Free Trade Zone, Shenzhen, China.

The lab has been recognized as the FCC accredited lab under the KDB 974614 D01 and is listed in the FCC Public Access Link (PAL) database, FCC Registration No. : 715558, the FCC Designation No. : CN5045.

SYSTEM TEST CONFIGURATION

Description of Test Configuration

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

Frequency Band	Bandwidth (MHz)	Test Frequency (MHz)		
		Low	Middle	High
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 B5	4.2	826.4	836.4	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 B12	1.4	699.7	707.5	715.3
	3	700.5	707.5	714.5
	5	701.5	707.5	713.5
	10	704.0	707.5	711.0
LTE B41	5	2557.5	2605	2652.5
	10	2560	2605	2650
	15	2562.5	2605	2647.5
	20	2565	2605	2645
LTE B66	1.4	1710.7	1745	1779.3
	3	1711.5	1745	1778.5
	5	1712.5	1745	1777.5
	10	1715	1745	1775
	15	1717.5	1745	1772.5
	20	1720	1745	1770

Equipment Modifications

No modification was made to the EUT.

Support Equipment List and Details

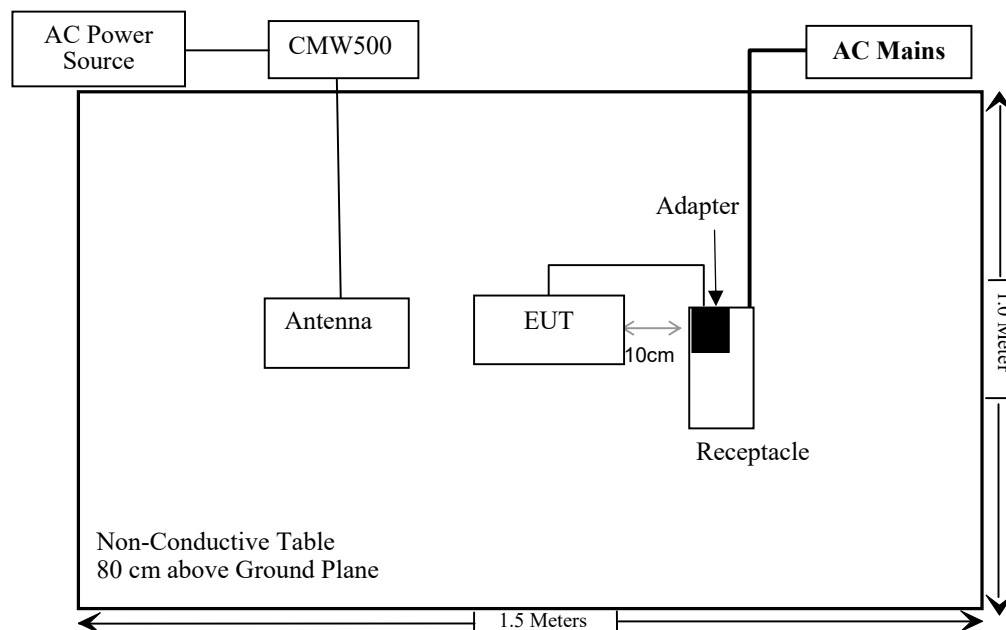
Manufacturer	Description	Model	Serial Number
Rohde & Schwarz	Wideband Radio Communication Tester	CMW500	146520
Unknown	Receptacle	Unknown	Unknown

Support Cable Description

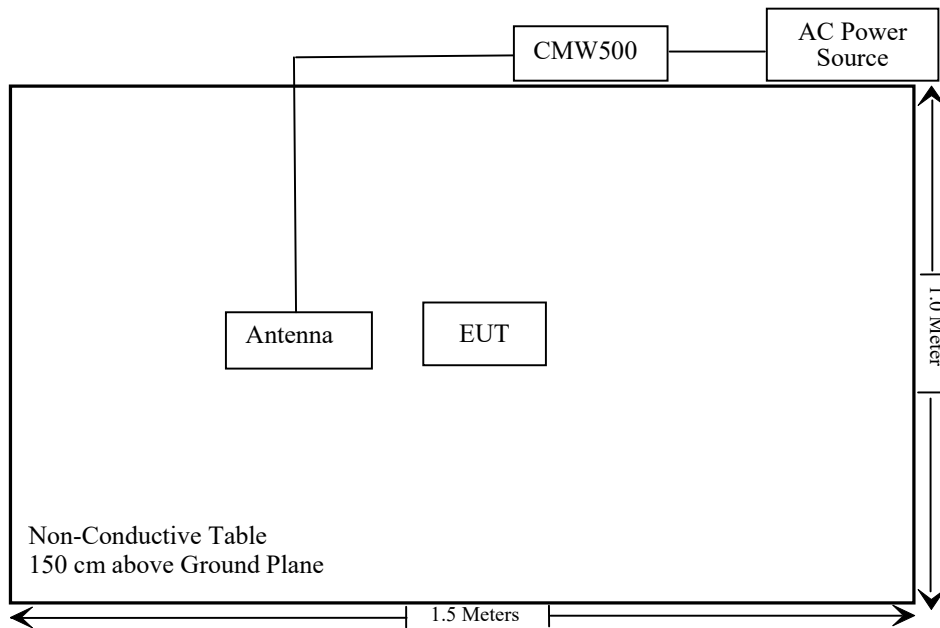
Cable Description	Length (m)	From / Port	To
Unshielded Un-detachable AC cable	1.2	AC Power	CMW500
Un-shielding Detachable USB Cable	1.0	EUT	Adapter
Un-shielded Un-detachable AC Cable	1.5	Receptacle	AC Mains

Block Diagram of Test Setup

For Radiated Emissions below 1GHz:



For Radiated Emissions above 1GHz:



SUMMARY OF TEST RESULTS

FCC Rules	Description of Test	Result
§1.1307 ,§2.1093	RF Exposure Information	Compliant
§2.1046; § 22.913 (a)(d); § 24.232 (c)(d); §27.50 (c)(d)(h)	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(g)(h)(m)	Band Edge	Compliant
§ 2.1055; § 22.355; § 24.235; §27.54;	Frequency stability	Compliant

TEST EQUIPMENT LIST

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Radiated Emission Test					
Rohde & Schwarz	EMI Test Receiver	ESR3	102455	2024/01/16	2025/01/15
Sonoma instrument	Pre-amplifier	310 N	186238	2024/05/21	2025/05/20
Sunol Sciences	Broadband Antenna	JB1	A040904-1	2023/07/20	2026/07/19
COM-POWER	Dipole Antenna	AD-100	721027	NCR	NCR
Unknown	Cable	Chamber A Cable 1	N/A	2024/06/18	2025/06/17
Unknown	Cable	XH500C	J-10M-A	2024/06/18	2025/06/17
Rohde & Schwarz	Spectrum Analyzer	FSV40	101605	2024/03/27	2025/03/26
COM-POWER	Pre-amplifier	PA-122	181919	2024/06/18	2025/06/17
Schwarzbeck	Horn Antenna	BBHA9120D(1201)	1143	2023/07/26	2026/07/25
The Electro-Mechanics Co.	Horn Antenna	3115	9107-3694	2024/06/06	2027/06/05
Unknown	RF Cable	KMSE	735	2024/06/18	2025/06/17
Unknown	RF Cable	UFA147	219661	2024/06/18	2025/06/17
JD	Multiplex Switch Test Control Set	DT7220FSU	DQ77926	2024/06/18	2025/06/17
A.H.System	Pre-amplifier	PAM-1840VH	190	2024/06/18	2025/06/17
Electro-Mechanics Co	Horn Antenna	3116	9510-2270	2023/09/18	2026/09/17
Electro-Mechanics Co	Horn Antenna	3116	2026	2023/09/18	2026/09/17
UTIFLEX	RF Cable	NO. 13	232308-001	2023/08/03	2024/08/02
Agilent	Signal Generator	N5183A	MY50140588	2023/12/18	2024/12/17

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
RF Conducted Test					
R&S	SPECTRUM ANALYZER	FSU26	200120	2024/01/08	2025/01/07
R&S	SPECTRUM ANALYZER	FSV40-N	102259	2024/01/16	2025/01/15
BACL	Temperature & Humidity Chamber	BTH-150-40	30145	2024/01/16	2025/01/15
Rohde & Schwarz	Wideband Radio Communication Tester	CMW500	146520	2024/05/21	2025/05/20
JD	Filter Switch Unit	DT7210FSU	DQ77930	NCR	NCR
JD	Multiplex Switch Test Control Set	DT7210SCU	DQ77929	NCR	NCR
narda	Power divider	SN5	100005	2024/06/27	2025/06/26
Unknown	3dB Attenuator	Unknown	F-03-EM121	2024/06/27	2025/06/26
Unknown	RF Cable	65475	01670515	2024/06/27	2025/06/26
instek	DC Power Supply	GPS-3030DD	EM832096	NCR	NCR
Fluke	Digital Multimeter	287	19000011	2024/05/21	2025/05/20

* **Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Shenzhen) 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: 2403V30787E-20.

FCC§2.1047 - MODULATION CHARACTERISTIC

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)(d) & § 24.232(c)(d) & § 27.50(c)(d)(h) - 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(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.

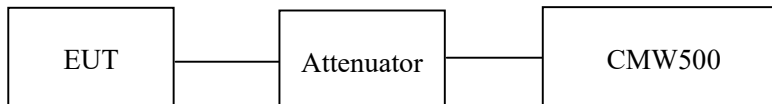
According to §27.50(d), Fixed, mobile, and portable (hand-held) stations operating in the 1710-1755 MHz band and mobile and portable stations operating in the 1695-1710 MHz and 1755-1780 MHz bands are limited to 1 watt EIRP.

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

Test Procedure

Conducted method: ANSI C63.26-2015 Section 5.2

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



Test Data

Environmental Conditions

Temperature:	25~26 °C
Relative Humidity:	48~49 %
ATM Pressure:	101 kPa

The testing was performed by Cheeb Huang and Rainbow Zhu from 2024-07-30 to 2024-08-05.

Test Result: Compliant

LTE Band 2

Test Bandwidth & Modulation	Resource Block & RB offset	Conducted Average Output Power(dBm)			Maximum EIRP (dBm)	EIRP Limit (dBm)
		Lowest Channel	Middle Channel	Highest Channel		
1.4MHz QPSK	RB1#0	16.23	16.03	16.00	14.00	33
	RB1#3	16.40	16.13	16.18		
	RB1#5	16.14	16.11	16.02		
	RB3#0	16.20	16.13	16.03		
	RB3#3	16.08	16.14	16.09		
	RB6#0	15.19	15.16	15.14		
1.4MHz 16QAM	RB1#0	15.06	15.17	15.01	13.01	33
	RB1#3	15.34	15.41	15.22		
	RB1#5	15.15	15.27	14.99		
	RB3#0	15.39	15.20	15.09		
	RB3#3	15.40	15.20	15.05		
	RB6#0	14.13	14.27	14.03		
3MHz QPSK	RB1#0	16.17	16.17	16.18	13.80	33
	RB1#8	16.20	16.19	16.09		
	RB1#14	16.12	16.16	16.04		
	RB6#0	15.07	15.16	15.07		
	RB6#9	15.10	15.09	15.06		
	RB15#0	15.19	15.05	14.99		
3MHz 16QAM	RB1#0	15.22	15.62	15.19	13.28	33
	RB1#8	15.24	15.62	15.14		
	RB1#14	15.13	15.68	15.20		
	RB6#0	14.12	14.16	14.11		
	RB6#9	14.17	14.06	14.11		
	RB15#0	14.29	14.15	13.96		
5MHz QPSK	RB1#0	16.84	16.70	16.66	14.50	33
	RB1#13	16.90	16.85	16.77		
	RB1#24	16.74	16.71	16.63		
	RB15#0	15.79	15.76	15.78		
	RB15#10	15.81	15.74	15.67		
	RB25#0	15.77	15.73	15.70		
5MHz 16QAM	RB1#0	15.63	15.93	15.73	13.67	33
	RB1#13	15.71	16.07	15.83		
	RB1#24	15.58	15.98	15.69		
	RB15#0	14.80	14.76	14.81		
	RB15#10	14.83	14.76	14.73		
	RB25#0	14.82	14.77	14.71		
10MHz QPSK	RB1#0	16.85	16.78	16.76	14.61	33
	RB1#25	16.98	17.01	16.94		

	RB1#49	16.78	16.83	16.65		
	RB25#0	15.84	15.87	15.81		
	RB25#25	15.86	15.82	15.68		
	RB50#0	15.87	15.83	15.72		
10MHz 16QAM	RB1#0	15.84	16.30	15.93	14.04	33
	RB1#25	16.00	16.44	16.00		
	RB1#49	15.72	16.27	15.78		
	RB25#0	14.92	14.80	14.87		
	RB25#25	14.95	14.76	14.71		
	RB50#0	14.87	14.74	14.77		
15MHz QPSK	RB1#0	16.78	16.61	16.60	14.38	33
	RB1#38	16.72	16.72	16.72		
	RB1#74	16.64	16.60	16.46		
	RB36#0	15.76	15.66	15.72		
	RB36#39	15.70	15.56	15.57		
	RB75#0	15.75	15.62	15.67		
15MHz 16QAM	RB1#0	15.88	15.88	16.18	13.90	33
	RB1#38	15.82	16.04	16.30		
	RB1#74	15.71	15.88	16.05		
	RB36#0	14.82	14.65	14.76		
	RB36#39	14.75	14.63	14.59		
	RB75#0	14.77	14.62	14.68		
20MHz QPSK	RB1#0	16.51	16.23	15.82	14.40	33
	RB1#50	16.80	16.20	15.87		
	RB1#99	16.42	15.43	15.32		
	RB50#0	15.66	15.32	15.36		
	RB50#50	15.61	15.17	15.00		
	RB100#0	15.61	15.34	15.22		
20MHz 16QAM	RB1#0	15.74	16.30	15.14	13.90	33
	RB1#50	15.99	16.19	15.21		
	RB1#99	15.62	15.36	15.78		
	RB50#0	15.11	15.62	15.48		
	RB50#50	15.53	15.44	15.08		
	RB100#0	15.89	15.53	15.29		

Note: EIRP=Conducted Power(dBm) - L_C(dB) + G_T(dBi)

LTE Band 4

Test Bandwidth & Modulation	Resource Block & RB offset	Conducted Average Output Power(dBm)			Maximum EIRP (dBm)	EIRP Limit (dBm)
		Lowest Channel	Middle Channel	Highest Channel		
1.4MHz QPSK	RB1#0	17.68	16.40	15.83	19.06	30
	RB1#3	17.85	16.47	15.99		
	RB1#5	17.65	16.42	15.79		
	RB3#0	17.86	16.62	15.87		
	RB3#3	17.82	16.55	15.89		
	RB6#0	16.78	15.49	14.91		
1.4MHz 16QAM	RB1#0	16.71	15.49	14.92	18.17	30
	RB1#3	16.91	15.62	15.10		
	RB1#5	16.72	15.49	14.92		
	RB3#0	16.97	15.82	14.88		
	RB3#3	16.95	15.80	14.90		
	RB6#0	15.88	14.57	14.00		
3MHz QPSK	RB1#0	18.06	16.86	19.05	20.49	30
	RB1#8	17.96	16.82	19.20		
	RB1#14	17.90	16.84	19.29		
	RB6#0	16.92	16.09	18.26		
	RB6#9	16.92	15.99	18.38		
	RB15#0	16.98	16.25	18.48		
3MHz 16QAM	RB1#0	17.08	17.05	18.60	20.25	30
	RB1#8	17.01	19.05	18.66		
	RB1#14	16.90	18.21	18.61		
	RB6#0	16.00	16.68	17.46		
	RB6#9	15.96	16.60	17.41		
	RB15#0	16.11	16.71	17.41		
5MHz QPSK	RB1#0	19.82	19.73	19.71	21.15	30
	RB1#13	19.95	19.84	19.80		
	RB1#24	19.78	19.69	19.68		
	RB15#0	18.84	18.77	18.75		
	RB15#10	18.89	18.76	18.70		
	RB25#0	18.84	18.77	18.71		
5MHz 16QAM	RB1#0	18.89	18.59	18.93	20.22	30
	RB1#13	18.99	18.75	19.02		
	RB1#24	18.85	18.56	18.92		
	RB15#0	17.93	17.87	17.75		
	RB15#10	17.97	17.82	17.71		
	RB25#0	17.94	17.83	17.69		
10MHz QPSK	RB1#0	19.84	19.64	19.55	21.15	30
	RB1#25	19.95	19.78	19.75		
	RB1#49	19.74	19.55	19.59		

	RB25#0	18.70	18.64	18.80		
	RB25#25	18.75	18.58	18.70		
	RB50#0	18.73	18.62	18.74		
10MHz 16QAM	RB1#0	18.88	18.62	19.25	20.67	30
	RB1#25	19.06	18.77	19.47		
	RB1#49	18.83	18.59	19.31		
	RB25#0	17.74	17.80	17.94		
	RB25#25	17.87	17.75	17.84		
	RB50#0	17.80	17.70	17.81		
15MHz QPSK	RB1#0	19.97	19.94	19.91	21.21	30
	RB1#38	20.00	20.01	19.96		
	RB1#74	19.84	19.91	19.89		
	RB36#0	18.97	19.00	18.97		
	RB36#39	19.01	19.01	18.89		
	RB75#0	19.04	18.98	18.93		
15MHz 16QAM	RB1#0	19.61	19.08	19.27	20.84	30
	RB1#38	19.64	19.10	19.34		
	RB1#74	19.49	19.01	19.21		
	RB36#0	18.10	18.08	18.05		
	RB36#39	18.11	18.11	17.94		
	RB75#0	18.12	18.08	17.97		
20MHz QPSK	RB1#0	19.88	19.88	19.81	21.08	30
	RB1#50	19.55	19.80	19.82		
	RB1#99	19.74	19.81	19.81		
	RB50#0	19.00	19.08	19.05		
	RB50#50	19.03	19.04	18.86		
	RB100#0	19.02	19.06	18.96		
20MHz 16QAM	RB1#0	19.49	19.13	19.01	20.99	30
	RB1#50	19.79	19.34	19.38		
	RB1#99	19.34	19.10	18.97		
	RB50#0	18.05	18.08	18.08		
	RB50#50	18.06	18.09	17.89		
	RB100#0	18.08	18.10	17.98		
Note: EIRP=Conducted Power(dBm) - L _C (dB) + G _T (dBi)						

LTE Band 5

Test Bandwidth & Modulation	Resource Block & RB offset	Conducted Average Output Power(dBm)			Maximum ERP (dBm)	ERP Limit (dBm)
		Lowest Channel	Middle Channel	Highest Channel		
1.4MHz QPSK	RB1#0	23.22	23.24	23.09	17.19	38.45
	RB1#3	23.44	23.40	23.33		
	RB1#5	23.20	23.22	23.13		
	RB3#0	23.28	23.31	23.20		
	RB3#3	23.27	23.28	23.21		
	RB6#0	22.26	22.25	22.13		
1.4MHz 16QAM	RB1#0	22.17	22.21	22.19	16.12	38.45
	RB1#3	22.37	22.34	22.34		
	RB1#5	22.21	22.21	22.21		
	RB3#0	22.33	22.46	22.14		
	RB3#3	22.35	22.47	22.21		
	RB6#0	21.19	21.25	21.18		
3MHz QPSK	RB1#0	23.30	23.32	23.25	17.10	38.45
	RB1#8	23.30	23.35	22.69		
	RB1#14	23.27	23.29	22.72		
	RB6#0	22.22	22.29	21.74		
	RB6#9	22.18	22.23	21.91		
	RB15#0	22.28	22.33	22.01		
3MHz 16QAM	RB1#0	22.40	22.18	22.47	16.22	38.45
	RB1#8	22.39	22.28	22.41		
	RB1#14	22.35	22.20	22.31		
	RB6#0	21.17	21.18	20.89		
	RB6#9	21.24	21.15	21.08		
	RB15#0	21.23	21.34	21.13		
5MHz QPSK	RB1#0	23.18	23.23	23.18	17.14	38.45
	RB1#13	23.34	23.39	23.08		
	RB1#24	23.19	23.21	22.91		
	RB15#0	22.23	22.40	22.07		
	RB15#10	22.35	22.26	22.14		
	RB25#0	22.25	22.31	22.07		
5MHz 16QAM	RB1#0	22.27	22.10	22.00	16.11	38.45
	RB1#13	22.36	22.24	22.15		
	RB1#24	22.23	22.05	21.98		
	RB15#0	21.23	21.42	21.07		
	RB15#10	21.34	21.29	21.14		
	RB25#0	21.24	21.34	21.06		
10MHz QPSK	RB1#0	23.09	23.04	23.06	16.97	38.45
	RB1#25	23.19	23.20	23.22		
	RB1#49	23.11	22.98	23.02		
	RB25#0	22.01	22.27	22.09		

	RB25#25	22.05	22.01	22.11		
	RB50#0	22.07	22.17	22.12		
10MHz 16QAM	RB1#0	22.09	22.22	21.99	16.12	38.45
	RB1#25	22.27	22.37	22.17		
	RB1#49	22.06	22.10	21.90		
	RB25#0	21.14	21.23	21.11		
	RB25#25	21.16	21.00	21.17		
	RB50#0	21.07	21.14	21.07		
Note: ERP= Conducted Power(dBm) - L _C (dB) + G _T (dBd) G _T (dBd)=G _T (dBi)-2.15						

LTE Band 12

Test Bandwidth & Modulation	Resource Block & RB offset	Conducted Average Output Power(dBm)			Maximum ERP (dBm)	ERP Limit (dBm)
		Lowest Channel	Middle Channel	Highest Channel		
1.4MHz QPSK	RB1#0	22.72	22.67	22.70	17.38	34.77
	RB1#3	22.93	22.88	22.84		
	RB1#5	22.77	22.71	22.62		
	RB3#0	22.79	22.82	22.76		
	RB3#3	22.83	22.76	22.66		
	RB6#0	21.84	21.79	21.73		
1.4MHz 16QAM	RB1#0	21.71	21.71	21.66	16.52	34.77
	RB1#3	21.97	21.90	21.78		
	RB1#5	21.78	21.80	21.65		
	RB3#0	21.85	22.07	22.00		
	RB3#3	21.95	22.07	21.98		
	RB6#0	20.74	20.80	20.71		
3MHz QPSK	RB1#0	22.81	22.69	22.69	17.31	34.77
	RB1#8	22.86	22.71	22.70		
	RB1#14	22.73	22.68	22.64		
	RB6#0	21.82	21.76	21.74		
	RB6#9	21.80	21.74	21.69		
	RB15#0	21.82	21.82	21.78		
3MHz 16QAM	RB1#0	21.81	22.40	21.83	16.85	34.77
	RB1#8	21.83	22.36	21.83		
	RB1#14	21.77	22.30	21.82		
	RB6#0	20.72	20.81	20.73		
	RB6#9	20.68	20.78	20.69		
	RB15#0	20.85	20.89	20.71		
5MHz QPSK	RB1#0	22.60	22.69	22.57	17.23	34.77
	RB1#13	22.78	22.77	22.68		
	RB1#24	22.65	22.63	22.54		
	RB15#0	21.77	21.88	21.73		
	RB15#10	21.79	21.82	21.66		
	RB25#0	21.74	21.84	21.64		
5MHz 16QAM	RB1#0	21.70	21.76	21.48	16.36	34.77
	RB1#13	21.87	21.91	21.59		
	RB1#24	21.72	21.65	21.44		
	RB15#0	20.78	20.90	20.74		
	RB15#10	20.78	20.87	20.68		
	RB25#0	20.81	20.84	20.73		
10MHz QPSK	RB1#0	22.75	22.70	22.70	17.40	34.77
	RB1#25	22.95	22.83	22.81		
	RB1#49	22.67	22.64	22.66		
	RB25#0	21.82	21.91	21.71		

	RB25#25	21.77	21.81	21.67		
	RB50#0	21.80	21.87	21.71		
10MHz 16QAM	RB1#0	21.74	22.31	21.91	16.89	34.77
	RB1#25	21.92	22.44	21.97		
	RB1#49	21.71	22.17	21.77		
	RB25#0	20.94	20.93	20.77		
	RB25#25	20.84	20.88	20.67		
	RB50#0	20.83	20.89	20.72		
Note: ERP= Conducted Power(dBm) - L _C (dB) + G _T (dBd) G _T (dBd)=G _T (dBi)-2.15						

LTE Band 41

Test Bandwidth & Modulation	Resource Block & RB offset	Conducted Average Output Power(dBm)			Maximum EIRP (dBm)	EIRP Limit (dBm)
		Lowest Channel	Middle Channel	Highest Channel		
5MHz QPSK	RB1#0	21.43	21.27	21.18	21.13	33
	RB1#13	21.36	21.22	21.15		
	RB1#24	21.30	21.12	21.13		
	RB15#0	21.36	21.25	21.20		
	RB15#10	21.36	21.18	21.17		
	RB25#0	21.37	21.20	21.19		
5MHz 16QAM	RB1#0	21.54	21.36	21.34	21.24	33
	RB1#13	21.49	21.32	21.41		
	RB1#24	21.45	21.35	21.30		
	RB15#0	21.44	21.19	21.20		
	RB15#10	21.40	21.23	21.28		
	RB25#0	21.36	21.21	21.16		
10MHz QPSK	RB1#0	21.41	21.28	21.32	21.11	33
	RB1#25	21.36	21.18	21.21		
	RB1#49	21.35	21.22	21.22		
	RB25#0	21.39	21.26	21.19		
	RB25#25	21.32	21.19	21.21		
	RB50#0	21.36	21.25	21.17		
10MHz 16QAM	RB1#0	21.45	21.36	21.32	21.26	33
	RB1#25	21.56	21.40	21.31		
	RB1#49	21.52	21.31	21.36		
	RB25#0	21.41	21.27	21.25		
	RB25#25	21.37	21.27	21.20		
	RB50#0	21.30	21.13	21.18		
15MHz QPSK	RB1#0	21.88	21.87	21.68	21.73	33
	RB1#38	22.03	22.01	21.91		
	RB1#74	21.94	21.96	21.77		
	RB36#0	21.40	21.35	21.19		
	RB36#39	21.34	21.30	21.19		
	RB75#0	21.38	21.42	21.22		
15MHz 16QAM	RB1#0	21.48	21.49	21.34	21.23	33
	RB1#38	21.48	21.52	21.40		
	RB1#74	21.49	21.53	21.38		
	RB36#0	21.41	21.41	21.21		
	RB36#39	21.37	21.36	21.22		
	RB75#0	21.33	21.33	21.12		
20MHz QPSK	RB1#0	22.08	21.96	21.92	21.78	33
	RB1#50	22.04	21.81	21.90		
	RB1#99	22.04	21.88	21.96		
	RB50#0	21.43	21.23	21.25		
	RB50#50	21.39	21.15	21.20		
	RB100#0	21.38	21.23	21.24		

20MHz 16QAM	RB1#0	21.48	21.36	21.34	21.18	33
	RB1#50	21.48	21.38	21.33		
	RB1#99	21.46	21.30	21.39		
	RB50#0	21.37	21.23	21.22		
	RB50#50	21.40	21.23	21.27		
	RB100#0	21.34	21.19	21.12		
Note: EIRP=Conducted Power(dBm) - L _C (dB) + G _T (dBi)						

LTE Band 66

Test Bandwidth & Modulation	Resource Block & RB offset	Conducted Average Output Power(dBm)			Maximum EIRP (dBm)	EIRP Limit (dBm)
		Lowest Channel	Middle Channel	Highest Channel		
1.4MHz QPSK	RB1#0	20.10	20.00	19.87	21.50	30
	RB1#3	20.30	20.16	20.09		
	RB1#5	20.13	20.01	19.88		
	RB3#0	20.14	20.07	19.89		
	RB3#3	20.22	20.07	19.92		
	RB6#0	19.18	19.05	18.91		
1.4MHz 16QAM	RB1#0	19.12	19.00	18.95	20.54	30
	RB1#3	19.32	19.19	19.13		
	RB1#5	19.13	19.03	18.94		
	RB3#0	19.34	19.26	18.91		
	RB3#3	19.33	19.29	18.89		
	RB6#0	18.19	18.13	18.00		
3MHz QPSK	RB1#0	20.24	20.04	19.94	21.44	30
	RB1#8	20.24	20.03	19.94		
	RB1#14	20.19	20.03	19.91		
	RB6#0	19.14	19.03	18.92		
	RB6#9	19.16	19.01	18.87		
	RB15#0	19.19	19.07	18.92		
3MHz 16QAM	RB1#0	19.24	19.63	19.06	20.83	30
	RB1#8	19.24	19.61	19.00		
	RB1#14	19.21	19.60	19.01		
	RB6#0	18.16	18.20	17.96		
	RB6#9	18.19	18.11	18.01		
	RB15#0	18.30	18.18	17.91		
5MHz QPSK	RB1#0	20.12	20.00	19.92	21.45	30
	RB1#13	20.25	20.11	19.99		
	RB1#24	20.11	19.99	19.85		
	RB15#0	19.16	19.06	18.93		
	RB15#10	19.19	19.00	18.85		
	RB25#0	19.14	19.00	18.90		
5MHz 16QAM	RB1#0	19.16	18.89	19.17	20.48	30
	RB1#13	19.28	18.99	19.27		
	RB1#24	19.14	18.85	19.12		
	RB15#0	18.24	18.17	17.99		
	RB15#10	18.26	18.11	17.89		
	RB25#0	18.22	18.12	17.95		
10MHz QPSK	RB1#0	20.21	20.09	20.01	21.57	30
	RB1#25	20.37	20.23	20.14		
	RB1#49	20.10	20.00	19.95		
	RB25#0	19.12	19.12	18.96		

	RB25#25	19.20	18.99	18.93		
	RB50#0	19.19	19.06	18.96		
10MHz 16QAM	RB1#0	19.19	19.64	19.07	21.02	30
	RB1#25	19.37	19.82	19.26		
	RB1#49	19.09	19.62	18.99		
	RB25#0	18.28	18.21	18.02		
	RB25#25	18.31	18.08	17.95		
	RB50#0	18.28	18.11	18.00		
15MHz QPSK	RB1#0	20.11	20.04	19.92	21.34	30
	RB1#38	20.14	20.14	20.03		
	RB1#74	19.86	19.95	19.80		
	RB36#0	19.10	19.09	18.90		
	RB36#39	19.06	18.94	18.94		
	RB75#0	19.16	19.01	18.94		
15MHz 16QAM	RB1#0	19.69	19.13	19.25	20.91	30
	RB1#38	19.71	19.25	19.35		
	RB1#74	19.46	19.03	19.17		
	RB36#0	18.22	18.21	17.98		
	RB36#39	18.14	18.08	18.00		
	RB75#0	18.16	18.10	18.00		
20MHz QPSK	RB1#0	19.92	19.89	19.80	21.48	30
	RB1#50	20.25	20.28	20.17		
	RB1#99	19.78	19.81	19.68		
	RB50#0	19.11	19.08	18.84		
	RB50#50	19.01	18.86	18.93		
	RB100#0	19.05	18.99	18.86		
20MHz 16QAM	RB1#0	19.52	19.15	18.94	21.04	30
	RB1#50	19.84	19.53	19.30		
	RB1#99	19.39	19.09	18.81		
	RB50#0	18.12	18.14	17.88		
	RB50#50	18.05	17.90	17.90		
	RB100#0	18.11	18.02	17.89		
Note: EIRP=Conducted Power(dBm) - L _C (dB) + G _T (dBi)						

Peak-to-average ratio (PAR)**LTE Band:** *(pre-scan all bandwidth, the worst case as below)***LTE Band 2 20MHz Bandwidth**

Test Bandwidth & Modulation	Resource Block & RB offset	Peak-to-average Ratio(dB)			Limit (dB)
		Lowest Channel	Middle Channel	Highest Channel	
20MHz QPSK	RB1#0	6.53	9.41	8.12	13
	RB100#0	6.51	8.28	9.77	13
20MHz 16QAM	RB1#0	6.45	7.23	7.68	13
	RB100#0	7.87	6.28	6.32	13

LTE Band 4 20MHz Bandwidth

Test Bandwidth & Modulation	Resource Block & RB offset	Peak-to-average Ratio(dB)			Limit (dB)
		Lowest Channel	Middle Channel	Highest Channel	
20MHz QPSK	RB1#0	7.97	6.19	7.03	13
	RB100#0	6.74	9.91	6.83	13
20MHz 16QAM	RB1#0	7.05	7.89	6.34	13
	RB100#0	7.96	6.28	8.16	13

LTE Band 5 10MHz Bandwidth

Test Bandwidth & Modulation	Resource Block & RB offset	Peak-to-average Ratio(dB)			Limit (dB)
		Lowest Channel	Middle Channel	Highest Channel	
10MHz QPSK	RB1#0	8.11	9.12	9.42	13
	RB50#0	8.87	7.32	9.13	13
10MHz 16QAM	RB1#0	7.42	8.16	9.73	13
	RB50#0	6.73	8.64	7.83	13

LTE Band 12 10MHz Bandwidth

Test Bandwidth & Modulation	Resource Block & RB offset	Peak-to-average Ratio(dB)			Limit (dB)
		Lowest Channel	Middle Channel	Highest Channel	
10MHz QPSK	RB1#0	8.35	9.51	9.34	13
	RB50#0	7.22	8.62	7.42	13
10MHz 16QAM	RB1#0	9.63	6.64	9.55	13
	RB50#0	6.65	9.05	8.61	13

LTE Band 41 20MHz Bandwidth

Test Bandwidth & Modulation	Resource Block & RB offset	Peak-to-average Ratio(dB)			Limit (dB)
		Lowest Channel	Middle Channel	Highest Channel	
20MHz QPSK	RB1#0	8.69	6.45	8.56	13
	RB100#0	8.83	7.26	7.17	13
20MHz 16QAM	RB1#0	9.56	7.58	9.22	13
	RB100#0	9.58	7.71	9.14	13

LTE Band 66 20MHz Bandwidth

Test Bandwidth & Modulation	Resource Block & RB offset	Peak-to-average Ratio(dB)			Limit (dB)
		Lowest Channel	Middle Channel	Highest Channel	
20MHz QPSK	RB1#0	6.47	9.32	9.24	13
	RB100#0	8.21	6.84	9.87	13
20MHz 16QAM	RB1#0	9.35	9.69	8.44	13
	RB100#0	7.75	8.57	6.69	13

The test data and plots of GSM 850/PCS 1900 please refer to the Appendix A.
The test data plots of WCDMA please refer to the Appendix B.

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

Applicable Standard

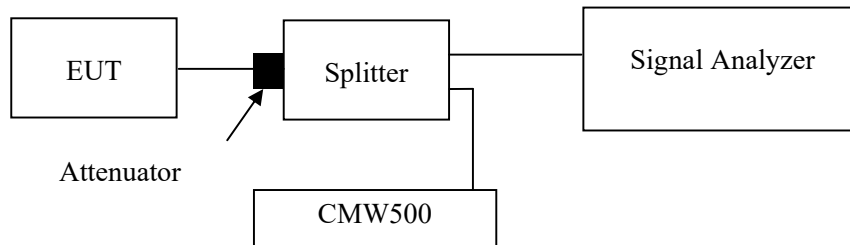
FCC 47 §2.1049, §22.917, §22.905, §24.238 and §27.53.

Test Procedure

ANSI C63.26-2015 Section 5.4.4

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:	25~26 °C
Relative Humidity:	48~49 %
ATM Pressure:	101 kPa

The testing was performed by Cheeb Huang, Allen Bai, Brian Li and Rainbow Zhu from 2024-07-30 to 2024-09-27.

EUT operation mode: Transmitting

Test Result: Compliant

Please refer to the following tables and plots.

LTE Band 2

Operation Mode	99% Occupied Bandwidth (MHz)			26 dB Occupied Bandwidth (MHz)		
	Low Channel	Middle channel	High Channel	Low Channel	Middle Channel	High Channel
1.4MHz QPSK	1.110	1.098	1.098	1.302	1.320	1.320
1.4MHz 16QAM	1.104	1.104	1.092	1.290	1.284	1.290
3MHz QPSK	2.676	2.688	2.880	2.892	2.880	2.676
3MHz 16QAM	2.676	2.676	2.688	2.880	2.892	2.880
5MHz QPSK	4.540	4.520	4.540	5.180	5.200	5.140
5MHz 16QAM	4.540	4.520	4.540	5.220	5.160	5.160
10MHz QPSK	9.000	9.000	8.960	9.880	9.920	9.840
10MHz 16QAM	8.960	8.960	9.000	9.920	9.840	9.840
15MHz QPSK	13.560	13.620	13.560	15.360	15.600	15.180
15MHz 16QAM	13.560	13.560	13.560	15.180	15.120	15.240
20MHz QPSK	18.000	18.000	18.000	19.600	19.760	20.080
20MHz 16QAM	18.000	18.080	18.000	19.680	19.680	19.760

LTE Band 4

Operation Mode	99% Occupied Bandwidth (MHz)			26 dB Occupied Bandwidth (MHz)		
	Low Channel	Middle channel	High Channel	Low Channel	Middle Channel	High Channel
1.4MHz QPSK	1.098	1.098	1.110	1.302	1.320	1.296
1.4MHz 16QAM	1.104	1.092	1.098	1.320	1.308	1.296
3MHz QPSK	2.688	2.688	2.676	2.880	2.880	2.880
3MHz 16QAM	2.676	2.676	2.688	2.868	2.880	2.880
5MHz QPSK	4.500	4.540	4.540	5.100	5.160	5.200
5MHz 16QAM	4.540	4.520	4.540	5.200	5.280	5.160
10MHz QPSK	8.960	8.960	8.960	9.880	9.960	9.800
10MHz 16QAM	8.960	8.960	8.960	9.920	9.800	9.880
15MHz QPSK	13.560	13.560	13.500	15.240	15.180	15.240
15MHz 16QAM	13.620	13.560	13.620	15.120	15.240	15.060
20MHz QPSK	18.000	18.000	18.000	19.920	19.600	19.760
20MHz 16QAM	18.000	18.000	18.000	19.840	19.760	19.920

LTE Band 5

Operation Mode	99% Occupied Bandwidth (MHz)			26 dB Occupied Bandwidth (MHz)		
	Low Channel	Middle channel	High Channel	Low Channel	Middle Channel	High Channel
1.4MHz QPSK	1.104	1.092	1.104	1.314	1.278	1.302
1.4MHz 16QAM	1.098	1.092	1.104	1.290	1.302	1.302
3MHz QPSK	2.688	2.676	2.676	2.880	2.868	2.880
3MHz 16QAM	2.688	2.688	2.688	2.868	2.892	2.880
5MHz QPSK	4.520	4.520	4.520	5.200	5.200	5.160
5MHz 16QAM	4.540	4.520	4.540	5.200	5.120	5.200
10MHz QPSK	8.960	9.000	8.960	9.720	9.880	9.840
10MHz 16QAM	8.960	8.960	9.000	9.840	9.840	9.880

LTE Band 12

Operation Mode	99% Occupied Bandwidth (MHz)			26 dB Occupied Bandwidth (MHz)		
	Low Channel	Middle channel	High Channel	Low Channel	Middle Channel	High Channel
1.4MHz QPSK	1.110	1.122	1.110	1.596	1.536	1.650
1.4MHz 16QAM	1.098	1.110	1.110	1.332	1.470	1.398
3MHz QPSK	2.688	2.688	2.700	2.892	2.880	2.928
3MHz 16QAM	2.688	2.676	2.688	2.880	2.892	2.880
5MHz QPSK	4.520	4.540	4.540	5.320	5.180	7.420
5MHz 16QAM	4.560	4.520	4.560	5.200	5.220	5.980
10MHz QPSK	8.960	9.000	8.960	9.840	9.840	9.840
10MHz 16QAM	8.960	8.960	8.960	9.920	9.840	9.840

LTE Band 41

Operation Mode	99% Occupied Bandwidth (MHz)			26 dB Occupied Bandwidth (MHz)		
	Low Channel	Middle channel	High Channel	Low Channel	Middle Channel	High Channel
5MHz QPSK	4.520	4.540	4.520	5.120	5.180	5.080
5MHz 16QAM	4.540	4.540	4.520	5.180	5.160	5.240
10MHz QPSK	8.960	9.000	9.000	9.920	9.800	9.920
10MHz 16QAM	8.960	9.000	8.960	9.680	9.800	9.720
15MHz QPSK	13.560	13.500	13.500	15.120	15.120	15.060
15MHz 16QAM	13.680	13.620	13.560	15.300	15.060	15.060
20MHz QPSK	18.000	18.000	18.080	19.600	19.760	19.680
20MHz 16QAM	18.080	18.000	17.920	19.520	19.600	19.680

LTE Band 66

Operation Mode	99% Occupied Bandwidth (MHz)			26 dB Occupied Bandwidth (MHz)		
	Low Channel	Middle channel	High Channel	Low Channel	Middle Channel	High Channel
1.4MHz QPSK	1.110	1.104	1.098	1.296	1.308	1.320
1.4MHz 16QAM	1.098	1.104	1.098	1.296	1.320	1.284
3MHz QPSK	2.688	2.700	2.670	2.880	2.892	2.856
3MHz 16QAM	2.688	2.676	2.676	2.880	2.880	2.868
5MHz QPSK	4.520	4.540	4.520	5.140	5.220	5.160
5MHz 16QAM	4.520	4.520	4.520	5.240	5.140	5.180
10MHz QPSK	9.000	8.960	8.960	9.880	9.880	9.800
10MHz 16QAM	9.000	8.960	8.960	9.920	9.760	9.640
15MHz QPSK	13.500	13.620	13.560	15.060	15.300	15.060
15MHz 16QAM	13.560	13.560	13.560	15.000	15.120	15.000
20MHz QPSK	18.000	18.080	17.920	19.520	20.000	19.520
20MHz 16QAM	17.920	18.000	18.000	19.760	19.680	19.680

The test data and plots of GSM 850/PCS 1900 please refer to the Appendix A.

The test data and plots of WCDMA please refer to the Appendix B.

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

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

Applicable Standard

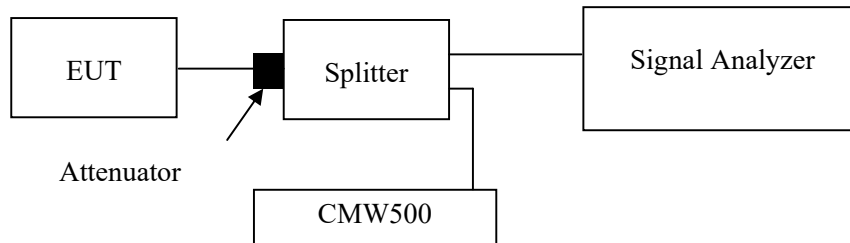
FCC §2.1051, §22.917(a) & §24.238(a) & §27.53.

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

Test Procedure

ANSI C63.26-2015 Section 5.7

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



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

Test Data

Environmental Conditions

Temperature:	25~26 °C
Relative Humidity:	48~49 %
ATM Pressure:	101 kPa

The testing was performed by Cheeb Huang, Allen Bai, Brian Li and Rainbow Zhu from 2024-07-30 to 2024-09-27.

EUT operation mode: Transmitting

Test result: Compliant

The test plots of GSM 850/PCS 1900 please refer to the Appendix A.
The test plots of WCDMA please refer to the Appendix B.
The test plots of LTE band please refer to the Appendix D.

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

ANSI C63.26-2015 Section 5.5

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:	25~25.6 °C
Relative Humidity:	50 %
ATM Pressure:	101 kPa

The testing was performed by Shy Jiang on 2024-07-26 for below 1GHz and Zenos Qiao and Dylan Yang from 2024-07-29 to 2024-07-30 for above 1GHz.

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

Frequency (MHz)	Receiver Reading (dBμV)	Polar (H / V)	Substituted			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Substituted Level (dBm)	Cable Loss (dB)	Antenna Gain (dBi/dBd)			
GSM 850 (30MHz-10GHz)								
Low Channel								
951.3	32.02	H	-64.5	1.36	0.0	-65.86	-13	52.86
951.3	31.53	V	-62.5	1.36	0.0	-63.86	-13	50.86
1648.40	55.92	H	-51.7	0.90	8.60	-44.00	-13	31.00
1648.40	52.28	V	-55.9	0.90	8.60	-48.20	-13	35.20
2472.60	55.43	H	-51.9	1.10	8.80	-44.20	-13	31.20
2472.60	58.21	V	-48.9	1.10	8.80	-41.20	-13	28.20
3296.80	52.32	H	-53.7	1.30	8.80	-46.20	-13	33.20
3296.80	55.04	V	-50.6	1.30	8.80	-43.10	-13	30.10
Middle Channel								
953.2	32.39	H	-64.1	1.36	0.0	-65.46	-13	52.46
953.2	31.86	V	-62.2	1.36	0.0	-63.56	-13	50.56
1673.20	56.73	H	-50.8	0.90	8.60	-43.10	-13	30.10
1673.20	52.89	V	-55.3	0.90	8.60	-47.60	-13	34.60
2509.80	56.27	H	-51.1	1.10	8.80	-43.40	-13	30.40
2509.80	58.49	V	-48.6	1.10	8.80	-40.90	-13	27.90
3346.40	52.49	H	-53.5	1.30	8.80	-46.00	-13	33.00
3346.40	55.72	V	-50.0	1.30	8.80	-42.50	-13	29.50
High Channel								
954.9	32.48	H	-64.0	1.36	0.0	-65.36	-13	52.36
954.9	31.34	V	-62.7	1.36	0.0	-64.06	-13	51.06
1697.60	56.37	H	-51.2	0.90	8.60	-43.50	-13	30.50
1697.60	52.98	V	-55.2	0.90	8.60	-47.50	-13	34.50
2546.40	56.50	H	-50.9	1.10	8.80	-43.20	-13	30.20
2546.40	58.93	V	-48.2	1.10	8.80	-40.50	-13	27.50
3395.20	52.25	H	-53.7	1.30	9.90	-45.10	-13	32.10
3395.20	55.65	V	-50.0	1.30	9.90	-41.40	-13	28.40

Frequency (MHz)	Receiver Reading (dBμV)	Polar (H / V)	Substituted			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Substituted Level (dBm)	Cable Loss (dB)	Antenna Gain (dBi/dBd)			
PCS 1900(30MHz-20GHz)								
Low Channel								
950.6	32.94	H	-63.6	1.36	0.0	-64.96	-13	51.96
950.6	33.02	V	-61.0	1.36	0.0	-62.36	-13	49.36
3700.40	50.91	H	-54.5	1.30	11.00	-44.80	-13	31.80
3700.40	52.52	V	-52.7	1.30	11.00	-43.00	-13	30.00
5550.60	47.87	H	-54.5	1.70	10.90	-45.30	-13	32.30
5550.60	47.93	V	-54.6	1.70	10.90	-45.40	-13	32.40
Middle Channel								
954.1	32.23	H	-64.3	1.36	0.0	-65.66	-13	52.66
954.1	31.17	V	-62.9	1.36	0.0	-64.26	-13	51.26
3760.00	50.94	H	-54.2	1.30	10.70	-44.80	-13	31.80
3760.00	52.98	V	-52.1	1.30	10.70	-42.70	-13	29.70
5640.00	48.57	H	-53.8	1.70	10.90	-44.60	-13	31.60
5640.00	48.55	V	-54.0	1.70	10.90	-44.80	-13	31.80
High Channel								
952.6	32.52	H	-64.0	1.36	0.0	-65.36	-13	52.36
952.6	31.91	V	-62.1	1.36	0.0	-63.46	-13	50.46
3819.60	50.56	H	-54.6	1.30	10.70	-45.20	-13	32.20
3819.60	53.18	V	-51.9	1.30	10.70	-42.50	-13	29.50
5729.40	49.17	H	-53.0	1.70	11.10	-43.60	-13	30.60
5729.40	49.26	V	-53.1	1.70	11.10	-43.70	-13	30.70

Frequency (MHz)	Receiver Reading (dBμV)	Polar (H / V)	Substituted			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Substituted Level (dBm)	Cable Loss (dB)	Antenna Gain (dBi/dBd)			
WCDMA Band 2 (30MHz-20GHz)								
Low Channel								
950.3	33.95	H	-62.6	1.36	0.0	-63.96	-13	50.96
950.3	32.94	V	-61.1	1.36	0.0	-62.46	-13	49.46
3704.80	46.17	H	-59.2	1.30	11.00	-49.50	-13	36.50
3704.80	45.81	V	-59.4	1.30	11.00	-49.70	-13	36.70
5557.20	46.45	H	-56.0	1.70	10.90	-46.80	-13	33.80
5557.20	45.44	V	-57.1	1.70	10.90	-47.90	-13	34.90
Middle Channel								
951.1	33.16	H	-63.3	1.36	0.0	-64.66	-13	51.66
951.1	32.83	V	-61.2	1.36	0.0	-62.56	-13	49.56
3760.00	46.28	H	-58.9	1.30	10.70	-49.50	-13	36.50
3760.00	46.63	V	-58.4	1.30	10.70	-49.00	-13	36.00
5640.00	46.51	H	-55.9	1.70	10.90	-46.70	-13	33.70
5640.00	45.29	V	-57.3	1.70	10.90	-48.10	-13	35.10
High Channel								
959.6	33.37	H	-63.1	1.36	0.0	-64.46	-13	51.46
959.6	32.75	V	-61.3	1.36	0.0	-62.66	-13	49.66
3815.20	46.90	H	-58.2	1.30	10.70	-48.80	-13	35.80
3815.20	46.86	V	-58.2	1.30	10.70	-48.80	-13	35.80
5722.80	47.34	H	-54.8	1.70	11.10	-45.40	-13	32.40
5722.80	45.82	V	-56.5	1.70	11.10	-47.10	-13	34.10
5257.80	47.40	V	-55.3	1.60	10.00	-46.90	-13	33.90

Frequency (MHz)	Receiver Reading (dBμV)	Polar (H / V)	Substituted			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Substituted Level (dBm)	Cable Loss (dB)	Antenna Gain (dBi/dBd)			
WCDMA Band 5 (30MHz-10GHz)								
Low Channel								
952.4	32.27	H	-64.2	1.36	0.0	-65.56	-13	52.56
952.4	32.43	V	-61.6	1.36	0.0	-62.96	-13	49.96
1652.80	47.94	H	-59.6	0.90	8.60	-51.90	-13	38.90
1652.80	46.93	V	-61.2	0.90	8.60	-53.50	-13	40.50
2479.20	45.46	H	-61.9	1.10	8.80	-54.20	-13	41.20
2479.20	45.68	V	-61.4	1.10	8.80	-53.70	-13	40.70
3305.60	44.35	H	-61.6	1.30	8.80	-54.10	-13	41.10
3305.60	45.01	V	-60.7	1.30	8.80	-53.20	-13	40.20
Middle Channel								
958.5	33.04	H	-63.5	1.36	0.0	-64.86	-13	51.86
958.5	33.15	V	-60.9	1.36	0.0	-62.26	-13	49.26
1672.80	48.62	H	-58.9	0.90	8.60	-51.20	-13	38.20
1672.80	47.27	V	-60.9	0.90	8.60	-53.20	-13	40.20
2509.20	45.62	H	-61.7	1.10	8.80	-54.00	-13	41.00
2509.20	45.88	V	-61.2	1.10	8.80	-53.50	-13	40.50
3345.60	45.31	H	-60.7	1.30	8.80	-53.20	-13	40.20
3345.60	45.54	V	-60.1	1.30	8.80	-52.60	-13	39.60
High Channel								
959.2	33.87	H	-62.6	1.36	0.0	-63.96	-13	50.96
959.2	33.79	V	-60.3	1.36	0.0	-61.66	-13	48.66
1693.20	47.61	H	-60.0	0.90	8.60	-52.30	-13	39.30
1693.20	45.89	V	-62.3	0.90	8.60	-54.60	-13	41.60
2539.80	44.51	H	-62.8	1.10	8.80	-55.10	-13	42.10
2539.80	45.73	V	-61.4	1.10	8.80	-53.70	-13	40.70
3386.40	45.12	H	-60.8	1.30	9.90	-52.20	-13	39.20
3386.40	45.70	V	-60.0	1.30	9.90	-51.40	-13	38.40

LTE Bands: (pre-scan QPSK & 16QAM with all bandwidths, the worst case as below)

Frequency (MHz)	Receiver Reading (dBμV)	Polar (H / V)	Substituted			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Substituted Level (dBm)	Cable Loss (dB)	Antenna Gain (dBi/dBd)			
Band 2 (30MHz-20GHz)								
QPSK, 1.4MHz_1RB, Low Channel								
953.8	31.87	H	-64.6	1.36	0.0	-65.96	-13	52.96
953.8	31.79	V	-62.3	1.36	0.0	-63.66	-13	50.66
3701.40	47.57	H	-57.8	1.30	11.00	-48.10	-13	35.10
3701.40	48.32	V	-56.9	1.30	11.00	-47.20	-13	34.20
5552.10	53.98	H	-48.4	1.70	10.90	-39.20	-13	26.20
5552.10	51.45	V	-51.1	1.70	10.90	-41.90	-13	28.90
QPSK, 1.4MHz_1RB, Middle Channel								
951.3	32.56	H	-63.9	1.36	0.0	-65.26	-13	52.26
951.3	32.57	V	-61.5	1.36	0.0	-62.86	-13	49.86
3760.00	48.33	H	-56.8	1.30	10.70	-47.40	-13	34.40
3760.00	49.26	V	-55.8	1.30	10.70	-46.40	-13	33.40
5640.00	54.69	H	-47.7	1.70	10.90	-38.50	-13	25.50
5640.00	51.94	V	-50.6	1.70	10.90	-41.40	-13	28.40
QPSK, 1.4MHz_1RB, High Channel								
958.0	31.49	H	-65.0	1.36	0.0	-66.36	-13	53.36
958.0	31.51	V	-62.5	1.36	0.0	-63.86	-13	50.86
3818.60	49.68	H	-55.5	1.30	10.70	-46.10	-13	33.10
3818.60	50.41	V	-54.7	1.30	10.70	-45.30	-13	32.30
5727.90	55.73	H	-46.5	1.70	11.10	-37.10	-13	24.10
5727.90	52.52	V	-49.8	1.70	11.10	-40.40	-13	27.40

Frequency (MHz)	Receiver Reading (dBμV)	Polar (H / V)	Substituted			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Substituted Level (dBm)	Cable Loss (dB)	Antenna Gain (dBi/dBd)			
Band 4 (30MHz-20GHz)								
QPSK, 1.4MHz_1RB, Low Channel								
959.9	32.63	H	-63.9	1.36	0.0	-65.26	-13	52.26
959.9	32.57	V	-61.5	1.36	0.0	-62.86	-13	49.86
3421.40	51.25	H	-54.7	1.30	9.90	-46.10	-13	33.10
3421.40	50.08	V	-55.6	1.30	9.90	-47.00	-13	34.00
5132.10	57.93	H	-45.2	1.50	9.60	-37.10	-13	24.10
5132.10	58.81	V	-43.8	1.50	9.60	-35.70	-13	22.70
QPSK, 1.4MHz_1RB, Middle Channel								
954.4	32.35	H	-64.2	1.36	0.0	-65.56	-13	52.56
954.4	32.46	V	-61.6	1.36	0.0	-62.96	-13	49.96
3465.00	52.14	H	-53.8	1.30	10.50	-44.60	-13	31.60
3465.00	50.87	V	-54.8	1.30	10.50	-45.60	-13	32.60
5197.50	58.72	H	-44.3	1.60	9.70	-36.20	-13	23.20
5197.50	59.66	V	-43.0	1.60	9.70	-34.90	-13	21.90
QPSK, 1.4MHz_1RB, High Channel								
951.8	33.25	H	-63.3	1.36	0.0	-64.66	-13	51.66
951.8	33.31	V	-60.7	1.36	0.0	-62.06	-13	49.06
3508.60	53.56	H	-52.4	1.30	10.50	-43.20	-13	30.20
3508.60	52.19	V	-53.4	1.30	10.50	-44.20	-13	31.20
5262.90	59.45	H	-43.5	1.60	10.00	-35.10	-13	22.10
5262.90	60.37	V	-42.3	1.60	10.00	-33.90	-13	20.90

Frequency (MHz)	Receiver Reading (dBμV)	Polar (H / V)	Substituted			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Substituted Level (dBm)	Cable Loss (dB)	Antenna Gain (dBi/dBd)			
Band 5 (30MHz-10GHz)								
QPSK, 1.4MHz_1RB, Low Channel								
952.0	32.14	H	-64.4	1.36	0.0	-65.76	-13	52.76
952.0	32.26	V	-61.8	1.36	0.0	-63.16	-13	50.16
1649.40	52.57	H	-55.1	0.90	8.60	-47.40	-13	34.40
1649.40	51.68	V	-56.5	0.90	8.60	-48.80	-13	35.80
2474.10	61.45	H	-45.9	1.10	8.80	-38.20	-13	25.20
2474.10	63.04	V	-44.1	1.10	8.80	-36.40	-13	23.40
3298.80	46.32	H	-59.7	1.30	8.80	-52.20	-13	39.20
3298.80	46.89	V	-58.8	1.30	8.80	-51.30	-13	38.30
QPSK, 1.4MHz_1RB, Middle Channel								
958.7	32.83	H	-63.7	1.36	0.0	-65.06	-13	52.06
958.7	32.91	V	-61.1	1.36	0.0	-62.46	-13	49.46
1673.00	53.83	H	-53.7	0.90	8.60	-46.00	-13	33.00
1673.00	52.69	V	-55.5	0.90	8.60	-47.80	-13	34.80
2509.50	62.78	H	-44.6	1.10	8.80	-36.90	-13	23.90
2509.50	64.92	V	-42.2	1.10	8.80	-34.50	-13	21.50
3346.00	46.75	H	-59.2	1.30	8.80	-51.70	-13	38.70
3346.00	47.16	V	-58.5	1.30	8.80	-51.00	-13	38.00
QPSK, 1.4MHz_1RB, High Channel								
953.4	33.34	H	-63.2	1.36	0.0	-64.56	-13	51.56
953.4	33.42	V	-60.6	1.36	0.0	-61.96	-13	48.96
1696.60	55.15	H	-52.4	0.90	8.60	-44.70	-13	31.70
1696.60	53.82	V	-54.3	0.90	8.60	-46.60	-13	33.60
2544.90	63.59	H	-43.8	1.10	8.80	-36.10	-13	23.10
2544.90	65.44	V	-41.7	1.10	8.80	-34.00	-13	21.00
3393.20	47.38	H	-58.6	1.30	9.90	-50.00	-13	37.00
3393.20	48.01	V	-57.6	1.30	9.90	-49.00	-13	36.00

Frequency (MHz)	Receiver Reading (dBμV)	Polar (H / V)	Substituted			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Substituted Level (dBm)	Cable Loss (dB)	Antenna Gain (dBi/dBd)			
Band 12 (30MHz-10GHz)								
QPSK, 1.4MHz_1RB, Low Channel								
957.4	32.57	H	-63.9	1.36	0.0	-65.26	-13	52.26
957.4	32.39	V	-61.7	1.36	0.0	-63.06	-13	50.06
1399.40	61.76	H	-45.9	0.80	7.90	-38.80	-13	25.80
1399.40	63.51	V	-44.9	0.80	7.90	-37.80	-13	24.80
2099.10	55.24	H	-52.1	1.00	8.30	-44.80	-13	31.80
2099.10	53.49	V	-54.3	1.00	8.30	-47.00	-13	34.00
2798.80	47.63	H	-58.9	1.20	9.20	-50.90	-13	37.90
2798.80	46.92	V	-59.4	1.20	9.20	-51.40	-13	38.40
QPSK, 1.4MHz_1RB, Middle Channel								
959.9	33.21	H	-63.3	1.36	0.0	-64.66	-13	51.66
959.9	33.19	V	-60.9	1.36	0.0	-62.26	-13	49.26
1415.00	62.52	H	-45.2	0.80	7.90	-38.10	-13	25.10
1415.00	64.21	V	-44.2	0.80	7.90	-37.10	-13	24.10
2122.50	56.75	H	-50.6	1.00	8.30	-43.30	-13	30.30
2122.50	54.98	V	-52.8	1.00	8.30	-45.50	-13	32.50
2830.00	48.06	H	-58.5	1.20	9.20	-50.50	-13	37.50
2830.00	47.47	V	-58.8	1.20	9.20	-50.80	-13	37.80
QPSK, 1.4MHz_1RB, High Channel								
956.8	33.46	H	-63.0	1.36	0.0	-64.36	-13	51.36
956.8	33.31	V	-60.7	1.36	0.0	-62.06	-13	49.06
1430.60	63.87	H	-43.8	0.80	7.90	-36.70	-13	23.70
1430.60	65.32	V	-43.1	0.80	7.90	-36.00	-13	23.00
2145.90	58.03	H	-49.3	1.00	8.30	-42.00	-13	29.00
2145.90	56.54	V	-51.3	1.00	8.30	-44.00	-13	31.00
2861.20	49.28	H	-57.0	1.20	9.00	-49.20	-13	36.20
2861.20	48.45	V	-57.6	1.20	9.00	-49.80	-13	36.80

Frequency (MHz)	Receiver Reading (dBμV)	Polar (H / V)	Substituted			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Substituted Level (dBm)	Cable Loss (dB)	Antenna Gain (dBi/dBd)			
Band 41 (30MHz-27GHz)								
QPSK, 5MHz_1RB, Low Channel								
958.8	32.04	H	-64.5	1.36	0.0	-65.86	-25	40.86
958.8	32.09	V	-62.0	1.36	0.0	-63.36	-25	38.36
5115.00	53.75	H	-49.6	1.50	9.80	-41.30	-25	16.30
5115.00	55.48	V	-47.1	1.50	9.80	-38.80	-25	13.80
7672.50	56.02	H	-39.9	1.90	10.80	-31.00	-25	6.00
7672.50	57.31	V	-39.0	1.90	10.80	-30.10	-25	5.10
QPSK, 5MHz_1RB, Middle Channel								
959.1	32.63	H	-63.9	1.36	0.0	-65.26	-25	40.26
959.1	32.71	V	-61.3	1.36	0.0	-62.66	-25	37.66
5210.00	54.68	H	-48.4	1.60	9.70	-40.30	-25	15.30
5210.00	56.43	V	-46.2	1.60	9.70	-38.10	-25	13.10
7815.00	56.54	H	-39.2	1.90	11.10	-30.00	-25	5.00
7815.00	57.87	V	-38.2	1.90	11.10	-29.00	-25	4.00
QPSK, 5MHz_1RB, High Channel								
950.6	33.62	H	-62.9	1.36	0.0	-64.26	-25	39.26
950.6	33.61	V	-60.4	1.36	0.0	-61.76	-25	36.76
5305.00	55.49	H	-47.3	1.70	10.50	-38.50	-25	13.50
5305.00	56.86	V	-45.9	1.70	10.50	-37.10	-25	12.10
7957.50	57.23	H	-38.4	2.00	11.40	-29.00	-25	4.00
7957.50	58.54	V	-37.4	2.00	11.40	-28.00	-25	3.00

Frequency (MHz)	Receiver Reading (dBμV)	Polar (H / V)	Substituted			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Substituted Level (dBm)	Cable Loss (dB)	Antenna Gain (dBi/dBd)			
Band 66 (30MHz-20GHz)								
QPSK, 5MHz_1RB, Low Channel								
951.7	31.52	H	-65.0	1.36	0.0	-66.36	-13	53.36
951.7	31.49	V	-62.6	1.36	0.0	-63.96	-13	50.96
3421.40	62.55	H	-43.4	1.30	9.90	-34.80	-13	21.80
3421.40	60.72	V	-44.9	1.30	9.90	-36.30	-13	23.30
5132.10	56.91	H	-46.3	1.50	9.60	-38.20	-13	25.20
5132.10	58.49	V	-44.1	1.50	9.60	-36.00	-13	23.00
QPSK, 5MHz_1RB, Middle Channel								
956.6	32.43	H	-64.1	1.36	0.0	-65.46	-13	52.46
956.6	32.54	V	-61.5	1.36	0.0	-62.86	-13	49.86
3490.00	63.74	H	-42.2	1.30	10.50	-33.00	-13	20.00
3490.00	61.31	V	-44.3	1.30	10.50	-35.10	-13	22.10
5235.00	57.89	H	-45.2	1.60	9.70	-37.10	-13	24.10
5235.00	59.28	V	-43.4	1.60	9.70	-35.30	-13	22.30
QPSK, 5MHz_1RB, High Channel								
958.5	32.14	H	-64.4	1.36	0.0	-65.76	-13	52.76
958.5	32.26	V	-61.8	1.36	0.0	-63.16	-13	50.16
3558.60	64.96	H	-40.7	1.30	10.90	-31.10	-13	18.10
3558.60	63.13	V	-42.3	1.30	10.90	-32.70	-13	19.70
5337.90	58.75	H	-44.2	1.60	10.00	-35.80	-13	22.80
5337.90	60.27	V	-42.4	1.60	10.00	-34.00	-13	21.00

Note:

Absolute Level = Reading Level + Substituted Factor

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

Margin = Limit-Absolute Level

FCC§ 22.917 (a); § 24.238 (a); §27.53 (g)(h)(m) - BAND EDGES

Applicable Standard

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

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

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

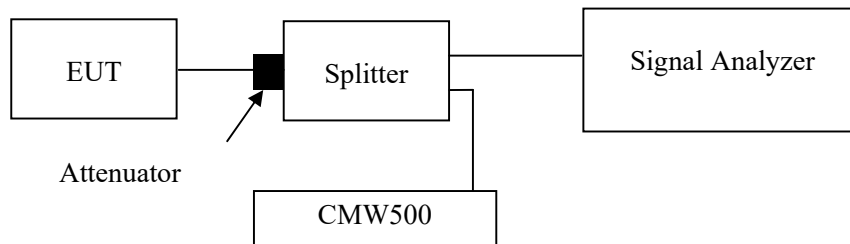
According to FCC §27.53 (m), For mobile digital stations, the attenuation factor shall be not less than $40 + 10 \log(P)$ dB on all frequencies between the channel edge and 5 megahertz from the channel edge, $43 + 10 \log(P)$ dB on all frequencies between 5 megahertz and X megahertz from the channel edge, and $55 + 10 \log(P)$ dB on all frequencies more than X megahertz from the channel edge, where X is the greater of 6 megahertz or the actual emission bandwidth as defined in paragraph (m)(6) of this section. In addition, the attenuation factor shall not be less than $43 + 10 \log(P)$ dB on all frequencies between 2490.5 MHz and 2496 MHz and $55 + 10 \log(P)$ dB at or below 2490.5MHz.

Test Procedure

ANSI C63.26-2015 Section 5.7

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:	25~26 °C
Relative Humidity:	48~49 %
ATM Pressure:	101 kPa

The testing was performed by Cheeb Huang, Allen Bai, Brian Li and Rainbow Zhu from 2024-07-30 to 2024-09-27.

EUT operation mode: Transmitting (Worst case)

Test Result: Compliant

The test plots of GSM 850/PCS 1900 please refer to the Appendix A.
The test plots of WCDMA please refer to the Appendix B.
The test plots of LTE bands please refer to the Appendix E.

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

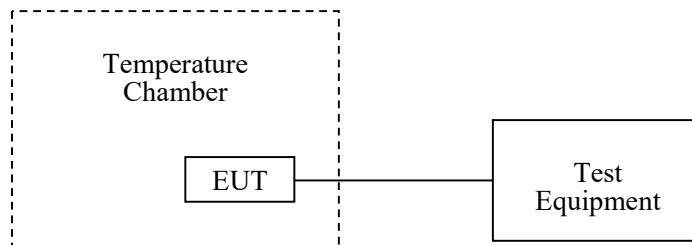
Test Procedure

ANSI C63.26-2015 Section 5.6

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:	25~26 °C
Relative Humidity:	48~49 %
ATM Pressure:	101 kPa

The testing was performed by Cheeb Huang and Rainbow Zhu from 2024-07-30 to 2024-08-05.

EUT operation mode: Transmitting

Test Result: Compliant

LTE Band 2**QPSK:**

Test Mode:	20M QPSK	Test Channel: Lowest for Lower Edge, Highest for Upper Edge				
Test Item	Temperature (°C)	Voltage (V _{DC})	Lower Edge (MHz)		Upper Edge (MHz)	
			Result	Limit	Result	Limit
Frequency Stability vs. Temperature	-30	3.8	1850.018	1850.000	1909.968	1910.000
	-20	3.8	1850.021	1850.000	1909.947	1910.000
	-10	3.8	1850.013	1850.000	1909.966	1910.000
	0	3.8	1850.028	1850.000	1909.958	1910.000
	10	3.8	1850.041	1850.000	1909.974	1910.000
	20	3.8	1850.040	1850.000	1909.949	1910.000
	30	3.8	1850.022	1850.000	1909.960	1910.000
	40	3.8	1850.034	1850.000	1909.971	1910.000
	50	3.8	1850.027	1850.000	1909.957	1910.000
Frequency Stability vs. Voltage	20	3.42	1850.015	1850.000	1909.973	1910.000
	20	4.35	1850.025	1850.000	1909.955	1910.000

16QAM:

Test Mode:	20M 16QAM	Test Channel: Lowest for Lower Edge, Highest for Upper Edge				
Test Item	Temperature (°C)	Voltage (V _{DC})	Lower Edge (MHz)		Upper Edge (MHz)	
			Result	Limit	Result	Limit
Frequency Stability vs. Temperature	-30	3.8	1850.041	1850.000	1909.958	1910.000
	-20	3.8	1850.032	1850.000	1909.956	1910.000
	-10	3.8	1850.013	1850.000	1909.958	1910.000
	0	3.8	1850.015	1850.000	1909.961	1910.000
	10	3.8	1850.041	1850.000	1909.955	1910.000
	20	3.8	1850.035	1850.000	1909.968	1910.000
	30	3.8	1850.027	1850.000	1909.957	1910.000
	40	3.8	1850.027	1850.000	1909.959	1910.000
	50	3.8	1850.034	1850.000	1909.95	1910.000
Frequency Stability vs. Voltage	20	3.42	1850.016	1850.000	1909.958	1910.000
	20	4.35	1850.028	1850.000	1909.963	1910.000

LTE Band 4**QPSK:**

Test Mode:	20M QPSK	Test Channel: Lowest for Lower Edge, Highest for Upper Edge				
Test Item	Temperature (°C)	Voltage (V _{DC})	Lower Edge (MHz)		Upper Edge (MHz)	
			Result	Limit	Result	Limit
Frequency Stability vs. Temperature	-30	3.8	1710.016	1710.000	1754.974	1755.000
	-20	3.8	1710.027	1710.000	1754.974	1755.000
	-10	3.8	1710.027	1710.000	1754.946	1755.000
	0	3.8	1710.037	1710.000	1754.971	1755.000
	10	3.8	1710.014	1710.000	1754.953	1755.000
	20	3.8	1710.014	1710.000	1754.962	1755.000
	30	3.8	1710.033	1710.000	1754.971	1755.000
	40	3.8	1710.032	1710.000	1754.959	1755.000
	50	3.8	1710.014	1710.000	1754.972	1755.000
Frequency Stability vs. Voltage	20	3.42	1710.039	1710.000	1754.951	1755.000
	20	4.35	1710.018	1710.000	1754.946	1755.000

16QAM:

Test Mode:	20M 16QAM	Test Channel: Lowest for Lower Edge, Highest for Upper Edge				
Test Item	Temperature (°C)	Voltage (V _{DC})	Lower Edge (MHz)		Upper Edge (MHz)	
			Result	Limit	Result	Limit
Frequency Stability vs. Temperature	-30	3.8	1710.014	1710.000	1754.963	1755.000
	-20	3.8	1710.017	1710.000	1754.971	1755.000
	-10	3.8	1710.034	1710.000	1754.956	1755.000
	0	3.8	1710.037	1710.000	1754.975	1755.000
	10	3.8	1710.016	1710.000	1754.954	1755.000
	20	3.8	1710.037	1710.000	1754.959	1755.000
	30	3.8	1710.032	1710.000	1754.953	1755.000
	40	3.8	1710.042	1710.000	1754.975	1755.000
	50	3.8	1710.021	1710.000	1754.958	1755.000
Frequency Stability vs. Voltage	20	3.42	1710.026	1710.000	1754.969	1755.000
	20	4.35	1710.038	1710.000	1754.963	1755.000

LTE Band 5**QPSK:**

Test Modulation:	10 MHz QPSK		Test Channel:	836.5	MHz
Test Item	Temperature (°C)	Voltage (V _{DC})	Frequency Error		Limit
			(Hz)	(ppm)	(ppm)
Frequency Stability vs. Temperature	-30	3.8	118.789	0.142	2.5
	-20	3.8	117.416	0.140	2.5
	-10	3.8	115.624	0.138	2.5
	0	3.8	105.855	0.127	2.5
	10	3.8	105.624	0.126	2.5
	20	3.8	116.876	0.140	2.5
	30	3.8	100.282	0.120	2.5
	40	3.8	112.81	0.135	2.5
	50	3.8	110.742	0.132	2.5
Frequency Stability vs. Voltage	20	3.42	111.375	0.133	2.5
	20	4.35	110.178	0.132	2.5

16QAM:

Test Modulation:	10 MHz 16QAM		Test Channel:	836.5	MHz
Test Item	Temperature (°C)	Voltage (V _{DC})	Frequency Error		Limit
			(Hz)	(ppm)	(ppm)
Frequency Stability vs. Temperature	-30	3.8	103.912	0.124	2.5
	-20	3.8	113.502	0.136	2.5
	-10	3.8	103.739	0.124	2.5
	0	3.8	102.476	0.123	2.5
	10	3.8	114.872	0.137	2.5
	20	3.8	102.368	0.122	2.5
	30	3.8	119.073	0.142	2.5
	40	3.8	111.389	0.133	2.5
	50	3.8	107.009	0.128	2.5
Frequency Stability vs. Voltage	20	3.42	107.362	0.128	2.5
	20	4.35	118.79	0.142	2.5

LTE Band 12**QPSK:**

Test Mode:	10M QPSK	Test Channel: Lowest for Lower Edge, Highest for Upper Edge				
Test Item	Temperature (°C)	Voltage (V _{DC})	Lower Edge (MHz)		Upper Edge (MHz)	
			Result	Limit	Result	Limit
Frequency Stability vs. Temperature	-30	3.8	699.025	699.000	715.955	716.000
	-20	3.8	699.042	699.000	715.961	716.000
	-10	3.8	699.025	699.000	715.963	716.000
	0	3.8	699.015	699.000	715.961	716.000
	10	3.8	699.028	699.000	715.967	716.000
	20	3.8	699.029	699.000	715.958	716.000
	30	3.8	699.024	699.000	715.950	716.000
	40	3.8	699.035	699.000	715.975	716.000
	50	3.8	699.018	699.000	715.946	716.000
Frequency Stability vs. Voltage	20	3.42	699.035	699.000	715.953	716.000
	20	4.35	699.028	699.000	715.951	716.000

16QAM:

Test Mode:	10M 16QAM	Test Channel: Lowest for Lower Edge, Highest for Upper Edge				
Test Item	Temperature (°C)	Voltage (V _{DC})	Lower Edge (MHz)		Upper Edge (MHz)	
			Result	Limit	Result	Limit
Frequency Stability vs. Temperature	-30	3.8	699.013	699.000	715.969	716.000
	-20	3.8	699.015	699.000	715.969	716.000
	-10	3.8	699.035	699.000	715.972	716.000
	0	3.8	699.034	699.000	715.951	716.000
	10	3.8	699.040	699.000	715.952	716.000
	20	3.8	699.037	699.000	715.964	716.000
	30	3.8	699.014	699.000	715.974	716.000
	40	3.8	699.021	699.000	715.965	716.000
	50	3.8	699.013	699.000	715.957	716.000
Frequency Stability vs. Voltage	20	3.42	699.033	699.000	715.975	716.000
	20	4.35	699.024	699.000	715.967	716.000

LTE Band 41**QPSK:**

Test Mode:	20M QPSK	Test Channel: Lowest for Lower Edge, Highest for Upper Edge				
Test Item	Temperature (°C)	Voltage (V _{DC})	Lower Edge (MHz)		Upper Edge (MHz)	
			Result	Limit	Result	Limit
Frequency Stability vs. Temperature	-30	3.8	2555.150	2555.000	2654.866	2655.000
	-20	3.8	2555.141	2555.000	2654.871	2655.000
	-10	3.8	2555.148	2555.000	2654.882	2655.000
	0	3.8	2555.142	2555.000	2654.865	2655.000
	10	3.8	2555.134	2555.000	2654.869	2655.000
	20	3.8	2555.149	2555.000	2654.883	2655.000
	30	3.8	2555.154	2555.000	2654.874	2655.000
	40	3.8	2555.151	2555.000	2654.885	2655.000
	50	3.8	2555.148	2555.000	2654.867	2655.000
Frequency Stability vs. Voltage	20	3.42	2555.158	2555.000	2654.879	2655.000
	20	4.35	2555.150	2555.000	2654.883	2655.000

16QAM:

Test Mode:	20M 16QAM	Test Channel: Lowest for Lower Edge, Highest for Upper Edge				
Test Item	Temperature (°C)	Voltage (V _{DC})	Lower Edge (MHz)		Upper Edge (MHz)	
			Result	Limit	Result	Limit
Frequency Stability vs. Temperature	-30	3.8	2555.140	2555.000	2654.887	2655.000
	-20	3.8	2555.140	2555.000	2654.884	2655.000
	-10	3.8	2555.158	2555.000	2654.867	2655.000
	0	3.8	2555.444	2555.000	2654.879	2655.000
	10	3.8	2555.143	2555.000	2654.872	2655.000
	20	3.8	2555.133	2555.000	2654.884	2655.000
	30	3.8	2555.142	2555.000	2654.868	2655.000
	40	3.8	2555.151	2555.000	2654.871	2655.000
	50	3.8	2555.147	2555.000	2654.863	2655.000
Frequency Stability vs. Voltage	20	3.42	2555.145	2555.000	2654.879	2655.000
	20	4.35	2555.153	2555.000	2654.866	2655.000

LTE Band 66**QPSK:**

Test Mode:	20M QPSK	Test Channel: Lowest for Lower Edge, Highest for Upper Edge				
Test Item	Temperature (°C)	Voltage (V _{DC})	Lower Edge (MHz)		Upper Edge (MHz)	
			Result	Limit	Result	Limit
Frequency Stability vs. Temperature	-30	3.8	1710.003	1710.000	1779.974	1780.000
	-20	3.8	1710.002	1710.000	1779.994	1780.000
	-10	3.8	1710.005	1710.000	1779.986	1780.000
	0	3.8	1710.017	1710.000	1779.978	1780.000
	10	3.8	1710.006	1710.000	1779.993	1780.000
	20	3.8	1710.021	1710.000	1779.989	1780.000
	30	3.8	1710.015	1710.000	1779.973	1780.000
	40	3.8	1710.010	1710.000	1779.992	1780.000
	50	3.8	1710.023	1710.000	1779.995	1780.000
Frequency Stability vs. Voltage	20	3.42	1710.009	1710.000	1779.970	1780.000
	20	4.35	1710.025	1710.000	1779.999	1780.000

16QAM:

Test Mode:	20M 16QAM	Test Channel: Lowest for Lower Edge, Highest for Upper Edge				
Test Item	Temperature (°C)	Voltage (V _{DC})	Lower Edge (MHz)		Upper Edge (MHz)	
			Result	Limit	Result	Limit
Frequency Stability vs. Temperature	-30	3.8	1710.008	1710.000	1779.992	1780.000
	-20	3.8	1710.028	1710.000	1779.988	1780.000
	-10	3.8	1710.028	1710.000	1779.972	1780.000
	0	3.8	1710.015	1710.000	1779.982	1780.000
	10	3.8	1710.021	1710.000	1779.994	1780.000
	20	3.8	1710.003	1710.000	1779.996	1780.000
	30	3.8	1710.008	1710.000	1779.983	1780.000
	40	3.8	1710.007	1710.000	1779.978	1780.000
	50	3.8	1710.014	1710.000	1779.970	1780.000
Frequency Stability vs. Voltage	20	3.42	1710.003	1710.000	1779.984	1780.000
	20	4.35	1710.023	1710.000	1779.984	1780.000

The test data of GSM 850/PCS 1900 please refer to the Appendix A.

The test data of WCDMA please refer to the Appendix B.

EUT PHOTOGRAPHS

Please refer to the attachment 2401V30787E-RF External photo and 2401V30787E-RF Internal photo.

TEST SETUP PHOTOGRAPHS

Please refer to the attachment 2401V30787E-RFC Test Setup photo.

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