

TEST REPORT

Applicant Name: FAMOCO SAS
Address: 59 avenue Victor Hugo, 75116 Paris, France
Report Number: 2401T35202E-RF-00A
FCC ID: 2AGQIFX325-VAS

Test Standard (s)

FCC PART 27; FCC PART 24E

Sample Description

Product Type: NFC Android Reader
Model No.: FX325-VAS
Multiple Model(s) No.: N/A
Trade Mark: FAMOCO
Date Received: 2024/05/28
Issue Date: 2024/08/09

Test Result:	Pass [▲]
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▲ 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	2401T35202E-RF-00A	Original Report	2024/08/09

GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

Product	NFC Android Reader			
Tested Model	FX325-VAS			
Multiple Model(s)	N/A			
Frequency Range	PCS 1900: 1850-1910MHz(TX); 1930-1990MHz(RX) WCDMA Band 4: 1710-1755MHz(TX); 2110-2155MHz(RX) LTE Band 2: 1850-1910MHz(TX); 1930-1990MHz(RX) LTE Band 4: 1710-1755MHz(TX); 2110-2155MHz(RX) LTE Band 7: 2500-2570MHz(TX); 2620-2690MHz(TX) LTE Band 12: 699-716MHz(TX); 729-746MHz(RX) LTE Band 13: 777-787(TX) ; 746-756MHz(RX) LTE Band 38: 2570-2620MHz(TX/RX) LTE Band 41: 2496-2690MHz(TX/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	PCS1900/LTE B2	-0.64	1
		WCDMA B4/LTE B4	0.83	1
		LTE B7	-2.69	1
		LTE B12	-5.87	0.5
		LTE B13	-8.27	0.5
		LTE B38	-1.82	1
		LTE B41	-1.81	1
Note: Lc= Signal Attenuation in the connecting cable between the transmitter and antenna, in dB.				
Voltage Range	DC 3.80V from Li-ion Battery or DC 5V/9V from Adapter			
Sample serial number	2M2X-7 for Radiated Emissions Test 2M2X-4 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	Model: APS-KI015WU-G Input: AC 100-240V, 50/60Hz, 0.5A Max Output: DC 5V/7V/9V, 1.67A or 12V, 1.25A			

Objective

This test report is in accordance with Part 2-Subpart J, Part24-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 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
PCS1900	0.25	1850.2	1880	1909.8
WCDMA B4	4.2	1712.4	1732.6	1752.6
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 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	704.0	707.5	711.0
LTE B13	5	779.5	782	784.5
	10	/	782	/
LTE B38	5	2572.5	2595	2617.5
	10	2575	2595	2615
	15	2577.5	2595	2612.5
	20	2580	2595	2610
LTE B41	5	2498.5	2593	2687.5
	10	2501	2593	2685
	15	2503.5	2593	2682.5
	20	2506	2593	2680

Equipment Modifications

No modification was made to the EUT.

Support Equipment List and Details

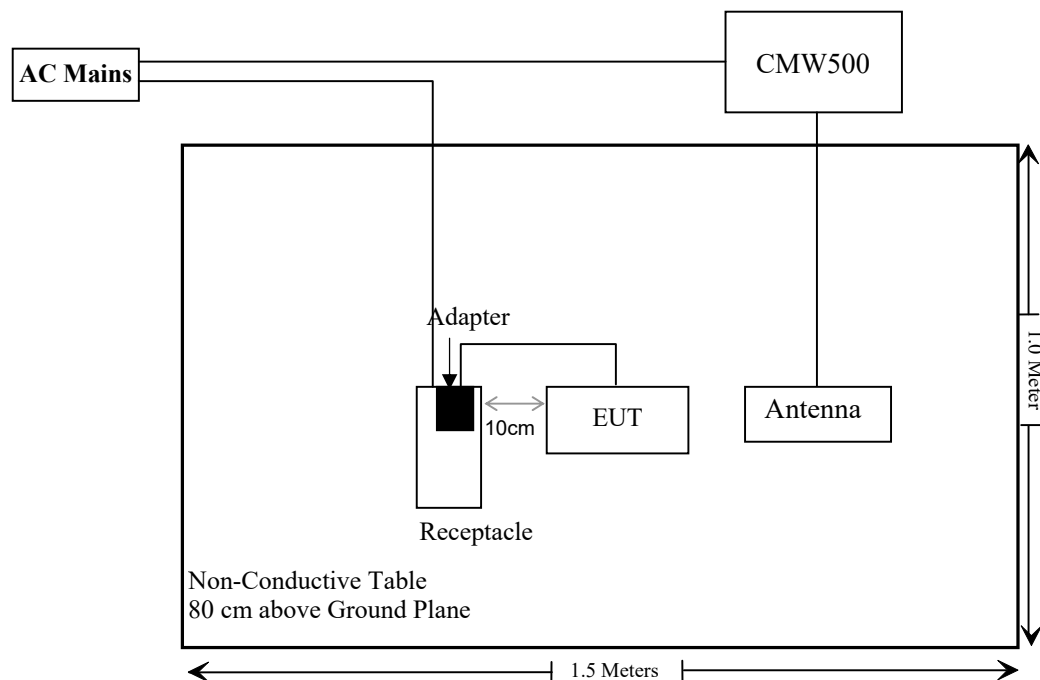
Manufacturer	Description	Model	Serial Number
Rohde & Schwarz	Wideband Radio Communication Tester	CMW500	141718
Unknown	Receptacle	Unknown	Unknown

Support Cable Description

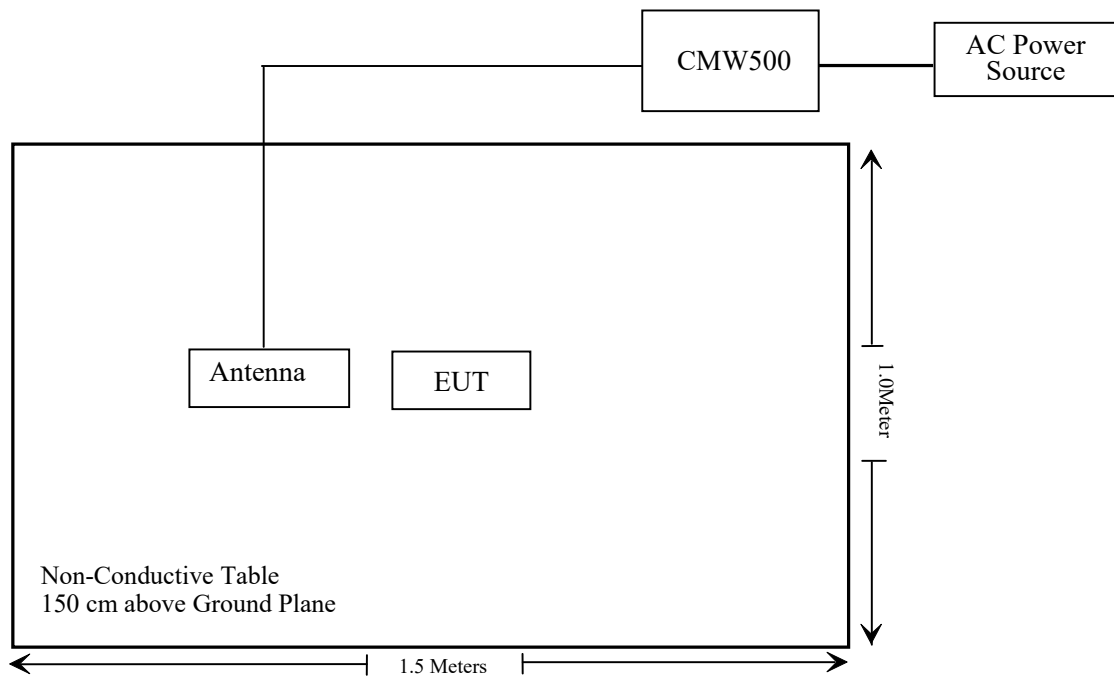
Cable Description	Length (m)	From Port	To
Un-shielded Detachable AC cable	1.2	AC Mains	CMW500
Un-shielding Detachable USB Cable	1.0	EUT	Adapter
Unshielded Un-detachable AC Cable	1.5	Receptacle	AC Mains

Block Diagram of Test Setup

For radiated spurious emission below 1G



For radiated spurious emission above 1G



SUMMARY OF TEST RESULTS

FCC Rules	Description of Test	Result
§1.1307 ,§2.1093	RF Exposure Information	Compliant
§2.1046;§ 24.232 (c) (d); §27.50 (b)(c)(d)(h)	RF Output Power	Compliant
§ 2.1047	Modulation Characteristics	Not Applicable
§ 2.1049; § 24.238; §27.53	Occupied Bandwidth	Compliant
§ 2.1051; § 24.238 (a); §27.53	Spurious Emissions at Antenna Terminal	Compliant
§ 2.1053;§ 24.238 (a); §27.53	Field Strength of Spurious Radiation	Compliant
§ 24.238 (a); §27.53(c)(g)(h)(m)	Band Edge	Compliant
§ 2.1055; § 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
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
COM-POWER	Dipole Antenna	AD-100	721027	NCR	NCR
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

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
RF Conducted Test					
Rohde & Schwarz	Spectrum Analyzer	FSV40	101942	2023/12/18	2024/12/17
R&S	SPECTRUM ANALYZER	FSU26	200120	2024/01/08	2025/01/07
BACL	Temperature & Humidity Chamber	BTH-150-40	30145	2024/01/16	2025/01/15
Rohde & Schwarz	Wideband Radio Communication Tester	CMW500	141718	2023/09/06	2024/09/05
instek	DC Power Supply	GPS-3030DD	EM832096	NCR	NCR
Fluke	Digital Multimeter	287	19000011	2024/05/21	2025/05/20
Unknown	10dB Attenuator	Unknown	F-03-EM122	2024/06/27	2025/06/26
WEINSCHEL	3dB Attenuator	Unknown	F-03-EM220	2024/06/27	2025/06/26
WEINSCHEL	Power Splitter	1515	RH476	2024/06/27	2025/06/26
Unknown	RF Cable	65475	01670515	2024/06/27	2025/06/26

* **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: 2402T35202E-20A.

FCC§2.1047 - MODULATION CHARACTERISTIC

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

FCC § 2.1046, § 24.232 (c) (d) & § 27.50 (b) (c) (d) (h) - RF OUTPUT POWER**Applicable Standard**

According to FCC § 2.1046 and § 24.232 (c), mobile and portable stations are limited to 2 watts EIRP and the equipment must employ a means for limiting power to the minimum necessary for successful communications.

The peak-to-average power ratio (PAPR) of the transmitter output power must not exceed 13 dB.

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

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

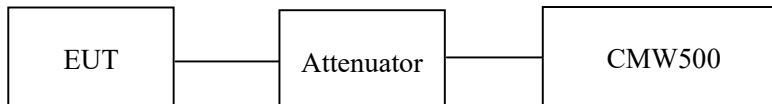
According to § 27.50(d), Fixed, mobile, and portable (hand-held) stations operating in the 1710-1755 MHz band and mobile and portable stations operating in the 1695-1710 MHz and 1755-1780 MHz bands are limited to 1 watt EIRP.

According to § 27.50(h), the maximum EIRP must not exceed 2 Watts (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:	25~27 °C
Relative Humidity:	46~49%
ATM Pressure:	101 kPa

The testing was performed by Allen Bai from 2024-07-04 to 2024-07-17.

Test Result: Compliant

PCS Band (Part 24E)**PCS 1900**

Test Mode	Conducted Peak Output Power(dBm)			Maximum EIRP (dBm)	EIRP Limit (dBm)
	Lowest Channel	Middle Channel	Highest Channel		
GSM	28.96	29.19	29.27	27.63	33
GPRS 1 Slot	28.22	28.97	28.56	27.33	33
GPRS 2 Slots	27.43	27.45	27.66	26.02	33
GPRS 3 Slots	25.49	25.62	25.88	24.24	33
GPRS 4 Slots	24.51	24.28	24.26	22.87	33
EDGE 1 Slot	25.90	25.18	25.61	24.26	33
EDGE 2 Slots	23.21	23.26	23.21	21.62	33
EDGE 3 Slots	21.30	21.17	21.20	19.66	33
EDGE 4 Slots	20.89	20.98	21.11	19.47	33
Note: EIRP=Conducted Power(dBm) - L _C (dB) + G _T (dBi)					

AWS Band**WCDMA B4**

Test Mode	Conducted Average Output Power(dBm)			Maximum EIRP (dBm)	EIRP Limit (dBm)
	Lowest Channel	Middle Channel	Highest Channel		
WCDMA R99	21.15	21.16	21.02	20.99	30
HSDPA Subtest 1	18.55	18.74	18.51	18.57	30
HSDPA Subtest 2	19.03	18.84	19.03	18.86	30
HSDPA Subtest 3	18.92	18.97	19.26	19.09	30
HSDPA Subtest 4	18.92	19.29	19.05	19.12	30
HSUPA Subtest 1	18.38	18.52	18.89	18.72	30
HSUPA Subtest 2	19.27	19.29	19.20	19.12	30
HSUPA Subtest 3	18.96	19.29	18.88	19.12	30
HSUPA Subtest 4	18.82	19.05	18.97	18.88	30
HSUPA Subtest 5	18.97	19.06	19.09	18.92	30
DC-HSDPA Subtest 1	19.13	18.81	19.26	19.09	30
DC-HSDPA Subtest 2	19.08	18.97	19.22	19.05	30
DC-HSDPA Subtest 3	18.81	19.27	18.91	19.10	30
DC-HSDPA Subtest 4	18.82	18.90	18.93	18.76	30
HSPA+ Subtest 1	19.07	19.24	18.85	19.07	30
Note: EIRP=Conducted Power(dBm) - L _C (dB) + G _T (dBi)					

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	20.52	20.73	20.63	19.26	33
	RB1#3	20.64	20.90	20.78		
	RB1#5	20.46	20.71	20.60		
	RB3#0	20.57	20.83	20.64		
	RB3#3	20.55	20.80	20.64		
	RB6#0	19.55	19.80	19.66		
1.4MHz 16QAM	RB1#0	19.52	19.74	19.72	18.31	33
	RB1#3	19.70	19.93	19.88		
	RB1#5	19.48	19.76	19.72		
	RB3#0	19.77	19.93	19.67		
	RB3#3	19.72	19.95	19.65		
	RB6#0	18.63	18.83	18.72		
3MHz QPSK	RB1#0	20.66	20.82	20.64	19.18	33
	RB1#8	20.63	20.81	20.65		
	RB1#14	20.57	20.82	20.61		
	RB6#0	19.62	19.77	19.69		
	RB6#9	19.53	19.78	19.67		
	RB15#0	19.58	19.79	19.70		
3MHz 16QAM	RB1#0	19.80	19.88	20.28	18.66	33
	RB1#8	19.74	19.82	20.30		
	RB1#14	19.73	19.80	20.24		
	RB6#0	18.68	18.81	18.80		
	RB6#9	18.65	18.79	18.77		
	RB15#0	18.59	18.88	18.79		
5MHz QPSK	RB1#0	20.49	20.70	20.57	19.16	33
	RB1#13	20.56	20.80	20.62		
	RB1#24	20.37	20.65	20.52		
	RB15#0	19.56	19.74	19.70		
	RB15#10	19.46	19.73	19.59		
	RB25#0	19.52	19.73	19.61		
5MHz 16QAM	RB1#0	19.42	19.97	19.64	18.45	33
	RB1#13	19.43	20.09	19.74		
	RB1#24	19.30	19.89	19.59		
	RB15#0	18.66	18.77	18.74		
	RB15#10	18.56	18.73	18.69		
	RB25#0	18.62	18.78	18.70		

Test Bandwidth & Modulation	Resource Block & RB offset	Conducted Average Output Power(dBm)			Maximum EIRP (dBm)	EIRP Limit (dBm)
		Lowest Channel	Middle Channel	Highest Channel		
10MHz QPSK	RB1#0	19.76	19.57	19.53	18.22	33
	RB1#25	19.86	19.72	19.68		
	RB1#49	19.68	19.49	19.45		
	RB25#0	18.96	18.67	18.66		
	RB25#25	18.79	18.59	18.54		
	RB50#0	18.84	18.62	18.57		
10MHz 16QAM	RB1#0	19.42	18.69	18.51	18.37	33
	RB1#25	19.54	18.89	18.75		
	RB1#49	20.01	19.80	19.58		
	RB25#0	18.76	18.90	18.86		
	RB25#25	18.63	18.83	18.77		
	RB50#0	18.62	18.84	18.75		
15MHz QPSK	RB1#0	20.33	20.60	20.37	19.15	33
	RB1#38	20.42	20.79	20.64		
	RB1#74	20.14	20.47	20.39		
	RB36#0	19.55	19.74	19.68		
	RB36#39	19.45	19.67	19.56		
	RB75#0	19.48	19.69	19.62		
15MHz 16QAM	RB1#0	19.96	19.73	19.78	18.42	33
	RB1#38	20.06	19.92	20.03		
	RB1#74	19.80	19.58	19.83		
	RB36#0	18.59	18.82	18.69		
	RB36#39	18.48	18.72	18.58		
	RB75#0	18.49	18.75	18.64		
20MHz QPSK	RB1#0	20.28	20.53	20.22	19.29	33
	RB1#50	20.62	20.93	20.78		
	RB1#99	20.00	20.24	20.26		
	RB50#0	19.55	19.77	19.59		
	RB50#50	19.45	19.64	19.61		
	RB100#0	19.53	19.73	19.61		
20MHz 16QAM	RB1#0	19.54	19.77	19.78	18.72	33
	RB1#50	19.91	20.23	20.36		
	RB1#99	19.29	19.41	19.81		
	RB50#0	18.57	18.80	18.65		
	RB50#50	18.47	18.68	18.65		
	RB100#0	18.58	18.74	18.66		
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	20.14	19.77	19.72	20.07	30
	RB1#3	20.24	19.96	19.93		
	RB1#5	20.06	19.78	19.73		
	RB3#0	20.19	19.84	19.84		
	RB3#3	20.20	19.88	19.87		
	RB6#0	19.14	18.81	18.81		
1.4MHz 16QAM	RB1#0	19.08	18.88	18.79	19.19	30
	RB1#3	19.27	19.09	18.98		
	RB1#5	19.09	18.88	18.79		
	RB3#0	19.34	18.81	18.98		
	RB3#3	19.36	18.73	18.89		
	RB6#0	18.22	17.91	17.80		
3MHz QPSK	RB1#0	20.15	19.95	19.89	19.98	30
	RB1#8	20.12	19.90	19.86		
	RB1#14	20.04	19.87	19.85		
	RB6#0	19.17	18.84	18.83		
	RB6#9	19.09	18.82	18.85		
	RB15#0	19.17	18.87	18.87		
3MHz 16QAM	RB1#0	19.86	19.03	18.90	19.69	30
	RB1#8	19.70	19.01	18.88		
	RB1#14	19.67	19.00	18.89		
	RB6#0	18.30	17.91	17.85		
	RB6#9	18.22	17.95	17.83		
	RB15#0	18.29	17.87	17.94		
5MHz QPSK	RB1#0	20.07	19.73	19.67	19.95	30
	RB1#13	20.12	19.83	19.81		
	RB1#24	19.94	19.65	19.67		
	RB15#0	19.08	18.84	18.83		
	RB15#10	19.03	18.74	18.78		
	RB25#0	19.05	18.78	18.77		
5MHz 16QAM	RB1#0	18.96	19.01	18.78	18.96	30
	RB1#13	19.04	19.13	18.92		
	RB1#24	18.84	18.94	18.74		
	RB15#0	18.18	17.82	17.86		
	RB15#10	18.12	17.76	17.86		
	RB25#0	18.15	17.80	17.84		

Test Bandwidth & Modulation	Resource Block & RB offset	Conducted Average Output Power(dBm)			Maximum EIRP (dBm)	EIRP Limit (dBm)
		Lowest Channel	Middle Channel	Highest Channel		
10MHz QPSK	RB1#0	20.11	19.76	19.78	20.03	30
	RB1#25	20.20	20.00	19.98		
	RB1#49	19.92	19.66	19.73		
	RB25#0	19.10	18.89	18.88		
	RB25#25	19.09	18.80	18.86		
	RB50#0	19.15	18.83	18.85		
10MHz 16QAM	RB1#0	19.10	19.41	18.90	19.43	30
	RB1#25	19.17	19.60	19.13		
	RB1#49	18.94	19.23	18.86		
	RB25#0	18.27	18.00	17.93		
	RB25#25	18.24	17.90	17.92		
	RB50#0	18.19	17.88	17.92		
15MHz QPSK	RB1#0	19.89	19.69	19.19	19.80	30
	RB1#38	19.97	19.81	19.77		
	RB1#74	19.62	19.41	19.54		
	RB36#0	18.98	18.80	18.59		
	RB36#39	18.95	18.68	18.76		
	RB75#0	19.01	18.74	18.67		
15MHz 16QAM	RB1#0	19.55	18.81	18.82	19.45	30
	RB1#38	19.62	18.95	19.38		
	RB1#74	19.28	18.55	19.13		
	RB36#0	18.06	17.87	17.64		
	RB36#39	18.00	17.71	17.83		
	RB75#0	18.04	17.80	17.75		
20MHz QPSK	RB1#0	19.80	19.67	19.40	19.94	30
	RB1#50	20.11	19.96	19.89		
	RB1#99	19.45	19.11	19.42		
	RB50#0	18.98	18.89	18.66		
	RB50#50	18.90	18.63	18.84		
	RB100#0	18.95	18.75	18.76		
20MHz 16QAM	RB1#0	19.15	18.86	18.95	19.25	30
	RB1#50	19.38	19.14	19.42		
	RB1#99	18.75	18.28	18.99		
	RB50#0	18.04	17.90	17.70		
	RB50#50	17.94	17.61	17.82		
	RB100#0	18.02	17.76	17.81		
Note: EIRP=Conducted Power(dBm) - L _C (dB) + G _T (dBi)						

LTE Band 7

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	22.05	22.26	22.33	18.88	33
	RB1#13	22.25	22.36	22.57		
	RB1#24	22.15	22.25	22.33		
	RB15#0	21.15	21.30	21.48		
	RB15#10	21.22	21.33	21.51		
	RB25#0	21.13	21.26	21.43		
5MHz 16QAM	RB1#0	20.98	21.53	21.26	17.92	33
	RB1#13	21.13	21.61	21.37		
	RB1#24	21.04	21.49	21.28		
	RB15#0	20.19	20.29	20.51		
	RB15#10	20.25	20.24	20.54		
	RB25#0	20.20	20.24	20.46		
10MHz QPSK	RB1#0	22.64	22.33	22.43	19.21	33
	RB1#25	22.90	22.50	22.55		
	RB1#49	22.74	22.25	22.44		
	RB25#0	21.76	21.49	21.54		
	RB25#25	21.77	21.55	21.53		
	RB50#0	21.79	21.73	21.51		
10MHz 16QAM	RB1#0	21.64	21.86	21.60	18.37	33
	RB1#25	21.64	22.06	21.73		
	RB1#49	21.43	21.80	21.61		
	RB25#0	20.91	20.70	20.59		
	RB25#25	20.72	20.67	20.52		
	RB50#0	20.72	20.78	20.53		
15MHz QPSK	RB1#0	22.56	22.67	22.34	19.09	33
	RB1#38	22.78	22.48	22.41		
	RB1#74	22.61	22.21	22.33		
	RB36#0	21.86	21.87	21.53		
	RB36#39	21.83	21.79	21.56		
	RB75#0	21.82	21.83	21.54		
15MHz 16QAM	RB1#0	21.74	21.69	21.91	18.29	33
	RB1#38	21.96	21.74	21.98		
	RB1#74	21.76	21.69	21.90		
	RB36#0	20.78	20.77	20.50		
	RB36#39	20.83	20.81	20.50		
	RB75#0	20.81	20.79	20.49		

Test Bandwidth & Modulation	Resource Block & RB offset	Conducted Average Output Power(dBm)			Maximum EIRP (dBm)	EIRP Limit (dBm)
		Lowest Channel	Middle Channel	Highest Channel		
20MHz QPSK	RB1#0	22.43	22.10	22.24	19.20	33
	RB1#50	22.89	22.54	22.60		
	RB1#99	22.41	22.01	22.23		
	RB50#0	21.74	21.36	21.91		
	RB50#50	21.81	21.33	21.51		
	RB100#0	21.75	21.36	21.47		
20MHz 16QAM	RB1#0	21.55	21.46	21.71	18.45	33
	RB1#50	22.06	21.84	22.14		
	RB1#99	21.60	21.33	21.73		
	RB50#0	20.47	20.37	20.46		
	RB50#50	20.37	20.33	20.45		
	RB100#0	20.53	20.37	20.46		
Note: EIRP=Conducted Power(dBm) - L _C (dB) + G _T (dBi)						

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	23.27	23.06	22.50	14.89	34.77
	RB1#3	23.41	23.25	22.55		
	RB1#5	23.26	22.87	22.38		
	RB3#0	23.37	22.80	22.46		
	RB3#3	23.33	22.79	22.54		
	RB6#0	22.32	21.95	21.50		
1.4MHz 16QAM	RB1#0	22.25	21.95	21.39	14.01	34.77
	RB1#3	22.41	21.87	21.59		
	RB1#5	22.24	21.87	21.41		
	RB3#0	22.53	21.70	21.58		
	RB3#3	22.50	21.94	21.54		
	RB6#0	21.33	21.03	20.62		
3MHz QPSK	RB1#0	23.42	22.68	22.53	14.90	34.77
	RB1#8	23.40	22.69	22.51		
	RB1#14	23.35	22.73	22.49		
	RB6#0	22.36	21.75	21.47		
	RB6#9	22.23	21.72	21.50		
	RB15#0	22.26	21.70	21.52		
3MHz 16QAM	RB1#0	22.05	21.66	22.14	13.62	34.77
	RB1#8	21.95	21.63	22.07		
	RB1#14	22.07	21.77	22.03		
	RB6#0	21.01	20.76	20.58		
	RB6#9	21.04	20.72	20.52		
	RB15#0	20.87	20.95	20.60		
5MHz QPSK	RB1#0	23.27	23.01	22.63	14.77	34.77
	RB1#13	23.29	23.04	22.49		
	RB1#24	23.07	22.63	22.32		
	RB15#0	22.22	21.76	21.54		
	RB15#10	22.22	21.64	21.50		
	RB25#0	22.17	21.57	21.50		
5MHz 16QAM	RB1#0	22.11	21.77	21.73	13.66	34.77
	RB1#13	22.18	21.97	21.62		
	RB1#24	21.94	21.96	21.37		
	RB15#0	21.27	20.89	20.59		
	RB15#10	21.30	20.58	20.52		
	RB25#0	21.25	20.59	20.54		

Test Bandwidth & Modulation	Resource Block & RB offset	Conducted Average Output Power(dBm)			Maximum ERP (dBm)	ERP Limit (dBm)
		Lowest Channel	Middle Channel	Highest Channel		
10MHz QPSK	RB1#0	23.28	23.10	22.49	14.77	34.77
	RB1#25	23.29	23.03	22.99		
	RB1#49	23.07	22.61	22.37		
	RB25#0	22.17	21.83	21.82		
	RB25#25	22.03	21.63	21.61		
	RB50#0	22.12	21.60	21.69		
10MHz 16QAM	RB1#0	22.88	21.76	21.50	14.38	34.77
	RB1#25	22.90	21.99	22.04		
	RB1#49	22.64	21.69	21.39		
	RB25#0	21.27	20.94	20.90		
	RB25#25	21.12	20.65	20.70		
	RB50#0	21.14	20.65	20.76		
Note: ERP= Conducted Power(dBm) - L _C (dB) + G _T (dBd) G _T (dBd)=G _T (dBi)-2.15						

LTE Band 13

Test Bandwidth & Modulation	Resource Block & RB offset	Conducted Average Output Power(dBm)			Maximum ERP (dBm)	ERP Limit (dBm)
		Lowest Channel	Middle Channel	Highest Channel		
5MHz QPSK	RB1#0	21.70	21.73	21.84	10.98	34.77
	RB1#13	21.90	21.90	21.80		
	RB1#24	21.73	21.79	21.65		
	RB15#0	20.77	20.83	20.89		
	RB15#10	20.81	20.91	20.78		
	RB25#0	20.77	20.87	20.83		
5MHz 16QAM	RB1#0	20.58	21.04	20.89	11.62	34.77
	RB1#13	22.06	22.54	22.20		
	RB1#24	21.93	22.38	22.02		
	RB15#0	21.16	21.15	21.22		
	RB15#10	21.17	21.16	21.16		
	RB25#0	21.16	21.23	21.24		
10MHz QPSK	RB1#0	/	22.89	/	12.28	34.77
	RB1#25	/	23.20	/		
	RB1#49	/	23.19	/		
	RB25#0	/	22.76	/		
	RB25#25	/	22.50	/		
	RB50#0	/	22.76	/		
10MHz 16QAM	RB1#0	/	22.52	/	11.64	34.77
	RB1#25	/	22.56	/		
	RB1#49	/	22.37	/		
	RB25#0	/	21.41	/		
	RB25#25	/	21.44	/		
	RB50#0	/	21.52	/		
Note: ERP= Conducted Power(dBm) - L _C (dB) + G _T (dBd) G _T (dBd)=G _T (dBi)-2.15						

LTE Band 38

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	21.95	21.31	21.57	19.13	33
	RB1#13	21.78	21.41	21.68		
	RB1#24	21.50	21.31	21.58		
	RB15#0	20.93	20.36	20.72		
	RB15#10	20.73	20.31	20.68		
	RB25#0	20.79	20.35	20.70		
5MHz 16QAM	RB1#0	21.10	20.60	20.65	18.28	33
	RB1#13	20.88	20.68	20.78		
	RB1#24	20.64	20.62	20.63		
	RB15#0	19.99	19.43	19.70		
	RB15#10	19.75	19.41	19.66		
	RB25#0	19.88	19.35	19.69		
10MHz QPSK	RB1#0	21.98	21.45	21.68	19.20	33
	RB1#25	21.90	21.72	22.02		
	RB1#49	21.48	21.38	21.60		
	RB25#0	20.96	20.58	20.78		
	RB25#25	20.64	20.44	20.72		
	RB50#0	20.83	20.48	20.74		
10MHz 16QAM	RB1#0	21.37	20.39	20.85	18.55	33
	RB1#25	21.25	20.66	21.18		
	RB1#49	20.83	20.34	20.79		
	RB25#0	20.03	19.63	19.82		
	RB25#25	19.68	19.48	19.79		
	RB50#0	19.85	19.55	19.78		
15MHz QPSK	RB1#0	21.82	21.36	21.06	19.00	33
	RB1#38	21.53	21.38	21.69		
	RB1#74	21.38	21.26	21.48		
	RB36#0	20.74	20.46	20.55		
	RB36#39	20.59	20.34	20.66		
	RB75#0	20.67	20.38	20.60		
15MHz 16QAM	RB1#0	21.14	20.63	19.99	18.32	33
	RB1#38	20.84	20.61	20.69		
	RB1#74	20.73	20.47	20.47		
	RB36#0	19.79	19.44	19.52		
	RB36#39	19.66	19.34	19.58		
	RB75#0	19.65	19.35	19.60		

Test Bandwidth & Modulation	Resource Block & RB offset	Conducted Average Output Power(dBm)			Maximum EIRP (dBm)	EIRP Limit (dBm)
		Lowest Channel	Middle Channel	Highest Channel		
20MHz QPSK	RB1#0	21.62	21.25	21.20	19.14	33
	RB1#50	21.78	21.59	21.96		
	RB1#99	21.08	20.90	21.35		
	RB50#0	20.82	20.65	20.51		
	RB50#50	20.58	20.38	20.66		
	RB100#0	20.69	20.52	20.60		
20MHz 16QAM	RB1#0	20.79	20.33	20.50	18.43	33
	RB1#50	20.95	20.62	21.25		
	RB1#99	20.27	19.95	20.64		
	RB50#0	19.85	19.71	19.57		
	RB50#50	19.59	19.44	19.70		
	RB100#0	19.70	19.53	19.59		
Note: EIRP=Conducted Power(dBm) - L _C (dB) + G _T (dBi)						

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	21.54	21.19	21.96	19.26	33
	RB1#13	21.78	21.32	22.07		
	RB1#24	21.65	21.18	21.94		
	RB15#0	20.47	20.31	21.11		
	RB15#10	20.97	20.26	21.01		
	RB25#0	20.76	20.25	21.05		
5MHz 16QAM	RB1#0	20.98	20.50	21.01	18.36	33
	RB1#13	21.17	20.63	21.15		
	RB1#24	20.99	20.53	21.02		
	RB15#0	19.62	19.38	20.07		
	RB15#10	20.13	19.34	19.97		
	RB25#0	19.79	19.31	20.06		
10MHz QPSK	RB1#0	21.62	21.34	22.01	19.60	33
	RB1#25	22.16	21.68	22.41		
	RB1#49	21.65	21.28	22.02		
	RB25#0	20.49	20.48	21.22		
	RB25#25	20.94	20.41	21.05		
	RB50#0	20.72	20.46	21.14		
10MHz 16QAM	RB1#0	20.83	20.63	20.99	18.56	33
	RB1#25	21.31	20.91	21.37		
	RB1#49	20.87	20.58	21.04		
	RB25#0	19.53	19.50	20.28		
	RB25#25	20.07	19.44	20.11		
	RB50#0	19.82	19.43	20.15		
15MHz QPSK	RB1#0	21.47	21.23	21.76	19.16	33
	RB1#38	21.74	21.37	21.97		
	RB1#74	21.33	21.18	21.82		
	RB36#0	20.51	20.38	21.09		
	RB36#39	20.70	20.29	20.93		
	RB75#0	20.63	20.34	20.98		
15MHz 16QAM	RB1#0	20.81	20.44	21.04	18.48	33
	RB1#38	21.04	20.63	21.29		
	RB1#74	20.63	20.41	21.08		
	RB36#0	19.60	19.34	20.05		
	RB36#39	19.76	19.28	19.89		
	RB75#0	19.66	19.26	19.96		

Test Bandwidth & Modulation	Resource Block & RB offset	Conducted Average Output Power(dBm)			Maximum EIRP (dBm)	EIRP Limit (dBm)
		Lowest Channel	Middle Channel	Highest Channel		
20MHz QPSK	RB1#0	21.32	21.14	21.57	19.36	33
	RB1#50	21.80	21.68	22.17		
	RB1#99	21.03	21.11	21.58		
	RB50#0	20.29	20.41	21.17		
	RB50#50	20.70	20.29	20.78		
	RB100#0	20.61	20.39	21.04		
20MHz 16QAM	RB1#0	20.47	20.35	20.71	18.49	33
	RB1#50	20.91	20.91	21.30		
	RB1#99	20.13	20.35	20.76		
	RB50#0	19.40	19.49	20.20		
	RB50#50	19.78	19.32	19.79		
	RB100#0	19.61	19.34	20.04		
Note: EIRP=Conducted Power(dBm) - L _C (dB) + G _T (dBi)						

Peak-to-average ratio (PAR)**PCS 1900**

Test Mode	Peak-to-average Ratio(dB)			Limit (dB)
	Lowest Channel	Middle Channel	Highest Channel	
GSM	2.55	2.48	2.53	13
EDGE	2.47	2.32	2.51	13

AWS Band

Test Mode	Peak-to-average Ratio(dB)			Limit (dB)
	Lowest Channel	Middle Channel	Highest Channel	
WCDMA R99	3.56	5.27	4.65	13
HSDPA	4.57	4.31	4.84	13
HSUPA	4.33	5.07	4.59	13

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	5.99	5.06	4.87	13
	RB100#0	6.47	6.51	6.44	13
20MHz 16QAM	RB1#0	5.03	5.48	8.17	13
	RB100#0	7.18	7.08	7.05	13

LTE Band 4 10MHz 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	4.58	4.74	4.26	13
	RB100#0	5.48	5.87	5.37	13
20MHz 16QAM	RB1#0	5.27	4.67	5.54	13
	RB100#0	6.27	6.18	6.25	13

LTE Band 7 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	5.90	4.90	5.13	13
	RB100#0	6.44	6.44	6.44	13
20MHz 16QAM	RB1#0	5.16	5.00	7.44	13
	RB100#0	7.24	7.18	7.15	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	3.58	4.51	3.34	13
	RB50#0	4.87	5.33	5.37	13
10MHz 16QAM	RB1#0	3.58	5.27	4.58	13
	RB50#0	5.37	5.84	5.54	13

LTE Band 13 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	/	6.57	/	13
	RB50#0	/	5.98	/	13
10MHz 16QAM	RB1#0	/	6.44	/	13
	RB50#0	/	7.21	/	13

LTE Band 38 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	3.57	4.20	3.76	13
	RB100#0	4.18	5.57	5.37	13
20MHz 16QAM	RB1#0	3.67	5.38	4.28	13
	RB100#0	5.09	5.27	5.77	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	8.74	7.44	9.34	13
	RB100#0	10.53	6.86	10.74	13
20MHz 16QAM	RB1#0	9.15	6.75	6.51	13
	RB100#0	10.06	8.61	9.58	13

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

Applicable Standard

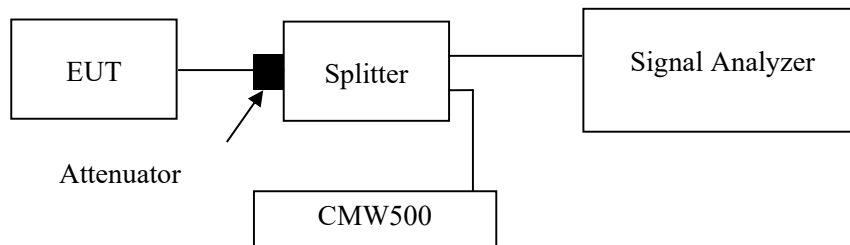
FCC 47 §2.1049, §24.238 and §27.53.

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:	25~27 °C
Relative Humidity:	46~49%
ATM Pressure:	101 kPa

The testing was performed by Allen Bai from 2024-07-04 to 2024-07-23.

EUT operation mode: Transmitting

Test Result: Compliant

Please refer to the following tables and plots.

PCS Band (Part 24E)

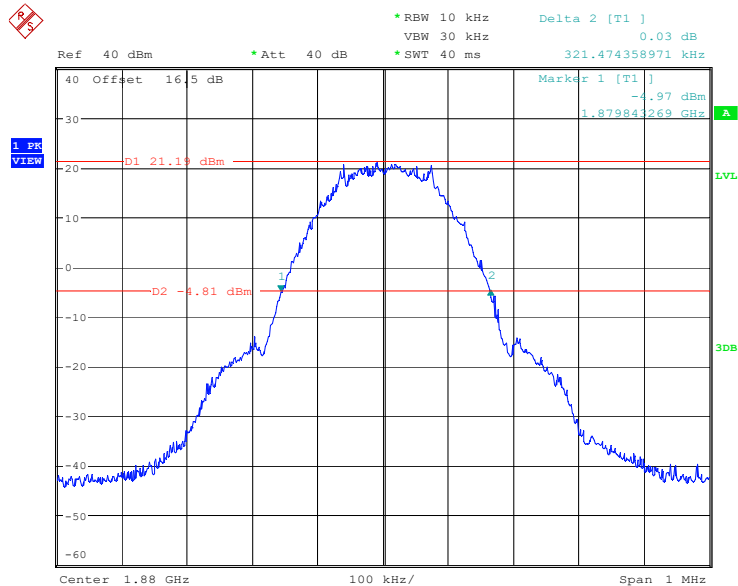
Operation Mode	99% Occupied Bandwidth (MHz)	26 dB Occupied Bandwidth (MHz)
	Middle channel	Middle Channel
GSM	0.242	0.321
EDGE	0.242	0.317

AWS Band

Operation Mode	99% Occupied Bandwidth (MHz)	26 dB Occupied Bandwidth (MHz)
	Middle channel	Middle Channel
WCDMA R99	4.167	4.728
HSDPA	4.180	4.699
HSUPA	4.180	4.715

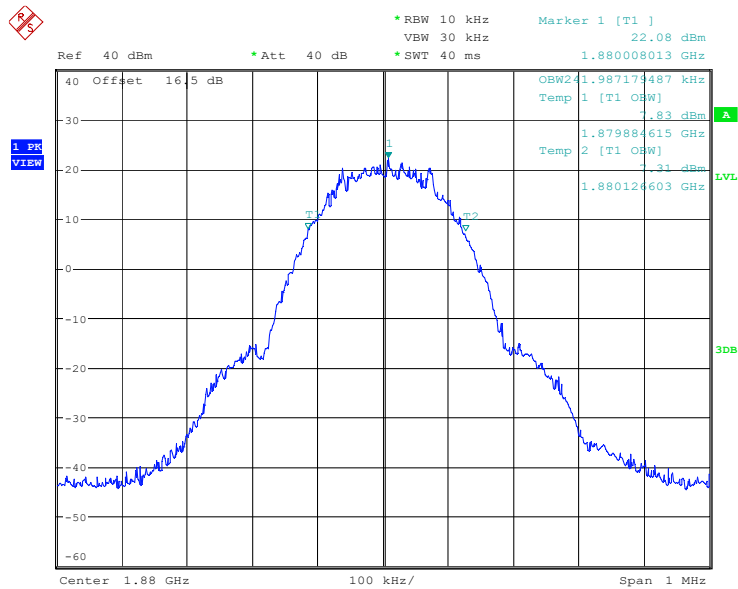
PCS Band (Part 24E)

26 dB Emission Bandwidth for GSM(GMSK) Mode, Middle channel



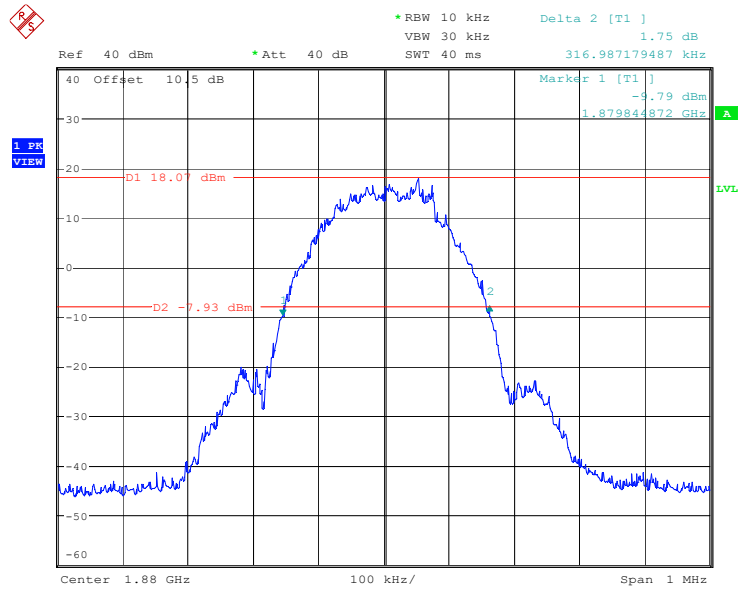
ProjectNo.:2401T35202E-RF Tester:Allen Bai
Date: 11.JUL.2024 20:55:44

99% Occupied Bandwidth for GSM(GMSK) Mode, Middle channel



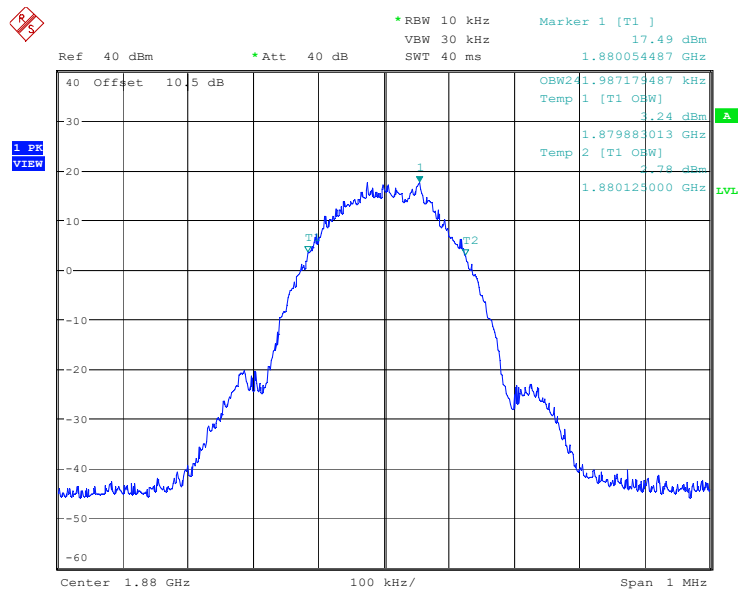
ProjectNo.:2401T35202E-RF Tester:Allen Bai
Date: 11.JUL.2024 20:44:46

26 dB Emission Bandwidth for EDGE(8PSK) Mode, Middle channel



ProjectNo.:2401T35202E-RF Tester:Allen Bai
Date: 18.JUL.2024 00:33:20

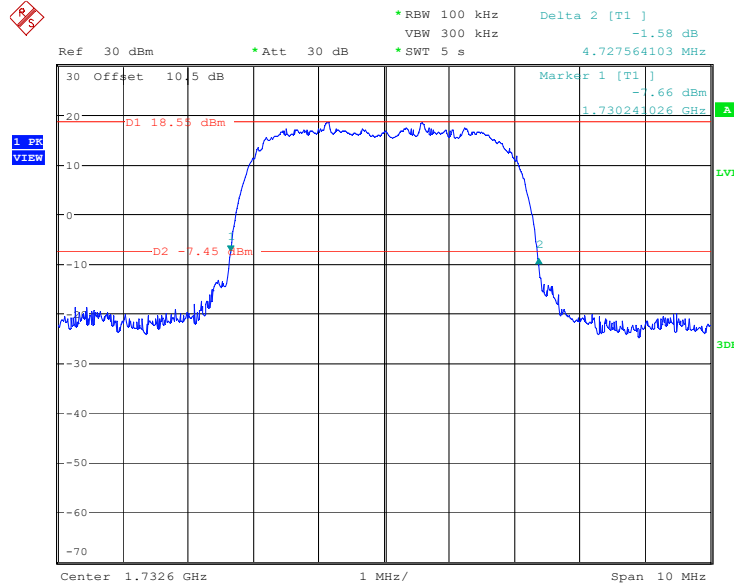
99% Occupied Bandwidth for EDGE(8PSK) Mode, Middle channel



ProjectNo.:2401T35202E-RF Tester:Allen Bai
Date: 18.JUL.2024 00:26:54

AWS Band

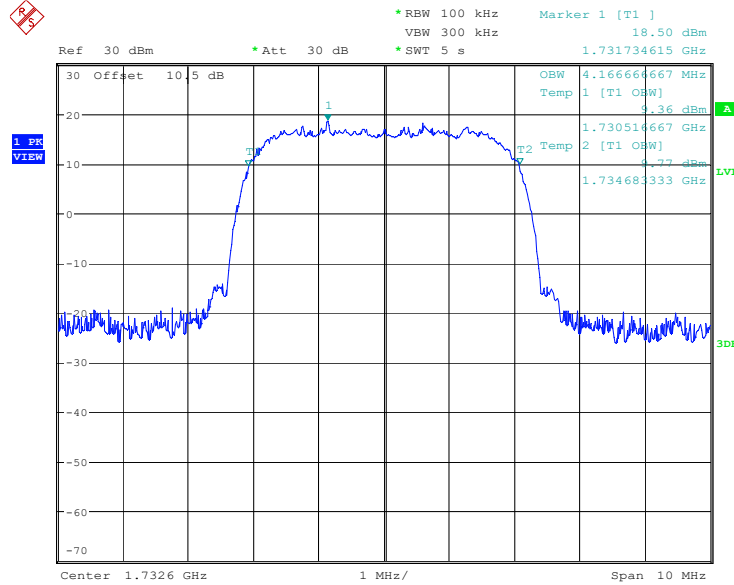
26 dB Emission Bandwidth for RMC (BPSK) Mode, Middle channel



ProjectNo.:2401T35202E-RF Tester:Allen Bai

Date: 15.JUL.2024 19:25:54

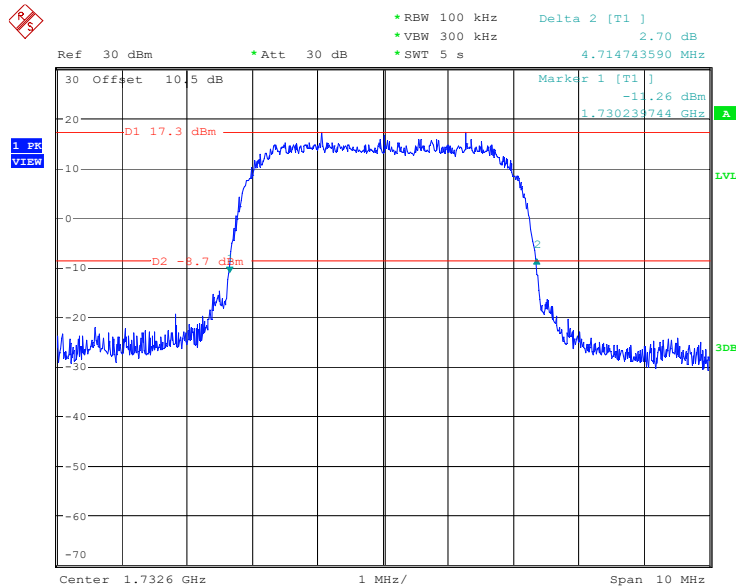
99% Occupied Bandwidth for RMC (BPSK) Mode, Middle channel



ProjectNo.:2401T35202E-RF Tester:Allen Bai

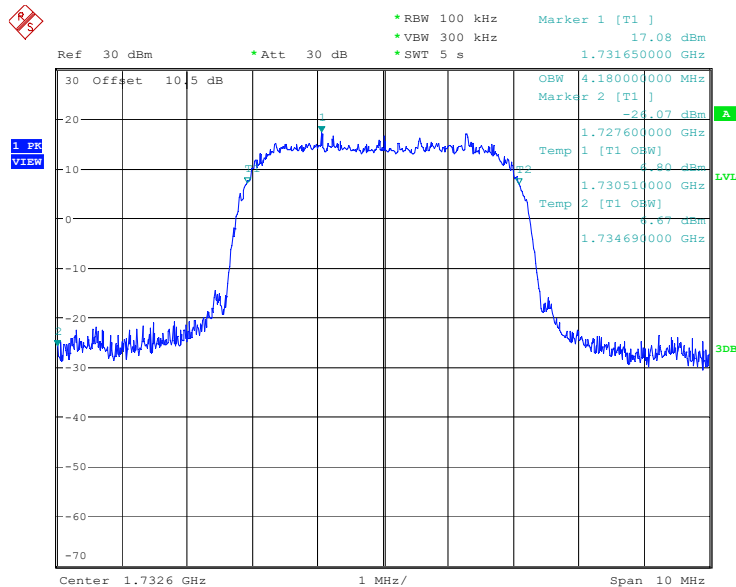
Date: 15.JUL.2024 19:18:10

26 dB Emission Bandwidth for HSUPA (QPSK) Mode, Middle channel



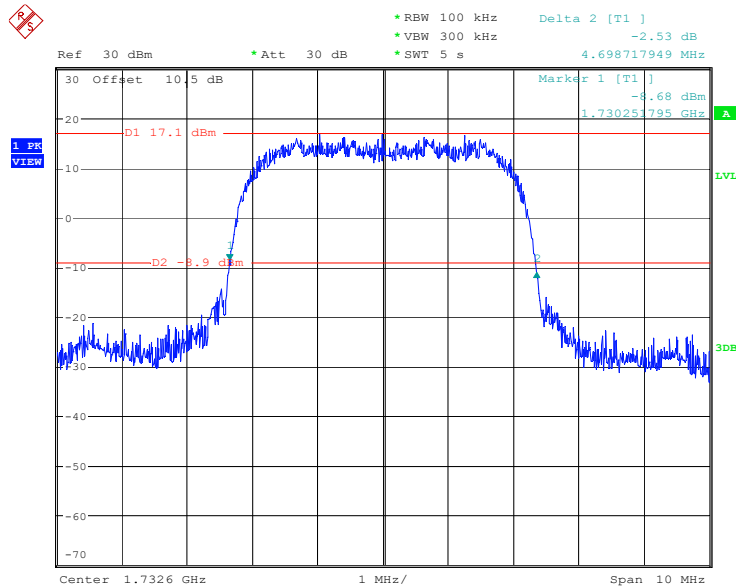
ProjectNo.:2401T35202E-RF Tester:Allen Bai
Date: 15.JUL.2024 21:03:48

99% Occupied Bandwidth for HSUPA (QPSK) Mode, Middle channel



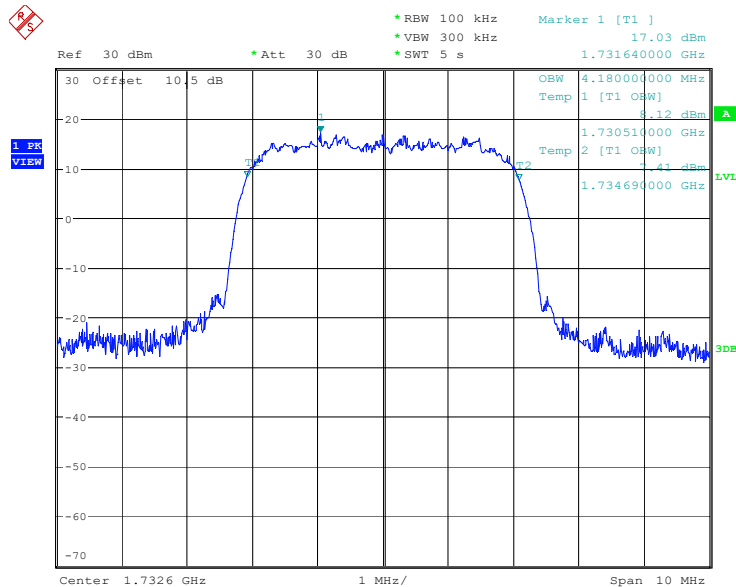
ProjectNo.:2401T35202E-RF Tester:Allen Bai
Date: 15.JUL.2024 21:00:30

26 dB Emission Bandwidth for HSDPA (16QAM) Mode, Middle channel



ProjectNo.:2401T35202E-RF Tester:Allen Bai
 Date: 15.JUL.2024 20:46:15

99% Occupied Bandwidth for HSDPA (16QAM) Mode, Middle channel



ProjectNo.:2401T35202E-RF Tester:Allen Bai
 Date: 15.JUL.2024 20:42:37

LTE Band 2

Operation Mode	99% Occupied Bandwidth (MHz)	26 dB Occupied Bandwidth (MHz)
	Middle channel	Middle Channel
1.4MHz QPSK	1.098	1.314
1.4MHz 16QAM	1.110	1.314
3MHz QPSK	2.688	2.880
3MHz 16QAM	2.688	2.880
5MHz QPSK	4.500	4.960
5MHz 16QAM	4.500	4.940
10MHz QPSK	8.960	9.640
10MHz 16QAM	8.960	9.680
15MHz QPSK	13.500	14.820
15MHz 16QAM	13.560	14.820
20MHz QPSK	18.000	19.440
20MHz 16QAM	18.000	19.360

LTE Band 4

Operation Mode	99% Occupied Bandwidth (MHz)	26 dB Occupied Bandwidth (MHz)
	Middle channel	Middle Channel
1.4MHz QPSK	1.098	1.302
1.4MHz 16QAM	1.098	1.302
3MHz QPSK	2.688	2.880
3MHz 16QAM	2.688	2.880
5MHz QPSK	4.520	4.960
5MHz 16QAM	4.520	4.960
10MHz QPSK	8.960	9.600
10MHz 16QAM	8.960	9.600
15MHz QPSK	13.500	14.760
15MHz 16QAM	13.560	14.760
20MHz QPSK	18.000	19.440
20MHz 16QAM	18.000	19.520

LTE Band 7

Operation Mode	99% Occupied Bandwidth (MHz)	26 dB Occupied Bandwidth (MHz)
	Middle channel	Middle Channel
5MHz QPSK	4.500	4.900
5MHz 16QAM	4.500	4.940
10MHz QPSK	8.960	9.640
10MHz 16QAM	8.920	9.560
15MHz QPSK	13.560	14.760
15MHz 16QAM	13.560	14.760
20MHz QPSK	18.000	19.520
20MHz 16QAM	18.000	19.440

LTE Band 12

Operation Mode	99% Occupied Bandwidth (MHz)	26 dB Occupied Bandwidth (MHz)
	Middle channel	Middle Channel
1.4MHz QPSK	1.098	1.296
1.4MHz 16QAM	1.104	1.314
3MHz QPSK	2.688	2.880
3MHz 16QAM	2.688	2.880
5MHz QPSK	4.520	5.220
5MHz 16QAM	4.540	5.160
10MHz QPSK	8.960	9.720
10MHz 16QAM	8.960	9.760

LTE Band 13

Operation Mode	99% Occupied Bandwidth (MHz)	26 dB Occupied Bandwidth (MHz)
	Middle channel	Middle Channel
5MHz QPSK	4.540	5.200
5MHz 16QAM	4.540	5.180
10MHz QPSK	8.960	10.000
10MHz 16QAM	8.960	9.800

LTE Band 38

Operation Mode	99% Occupied Bandwidth (MHz)	26 dB Occupied Bandwidth (MHz)
	Middle channel	Middle Channel
5MHz QPSK	4.540	5.220
5MHz 16QAM	4.500	5.100
10MHz QPSK	9.000	9.680
10MHz 16QAM	9.000	9.560
15MHz QPSK	13.560	16.080
15MHz 16QAM	13.620	15.54
20MHz QPSK	18.000	19.360
20MHz 16QAM	18.000	21.120

LTE Band 41

Operation Mode	99% Occupied Bandwidth (MHz)	26 dB Occupied Bandwidth (MHz)
	Middle channel	Middle Channel
5MHz QPSK	4.520	4.960
5MHz 16QAM	4.520	5.300
10MHz QPSK	8.960	10.000
10MHz 16QAM	9.000	10.560
15MHz QPSK	13.500	15.780
15MHz 16QAM	13.620	17.340
20MHz QPSK	18.000	23.600
20MHz 16QAM	18.000	19.520

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

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

Applicable Standard

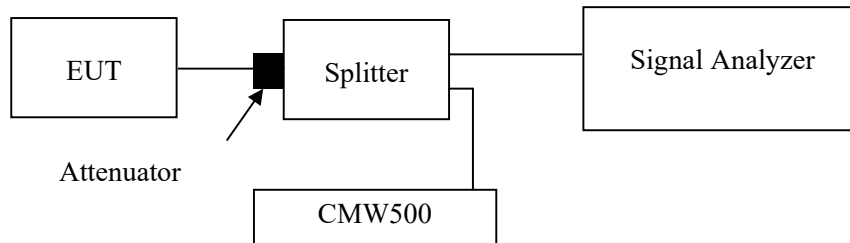
FCC §2.1051, §24.238(a) & §27.53.

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:	25~27 °C
Relative Humidity:	46~49%
ATM Pressure:	101 kPa

The testing was performed by Allen Bai from 2024-07-04 to 2024-07-27.

EUT operation mode: Transmitting

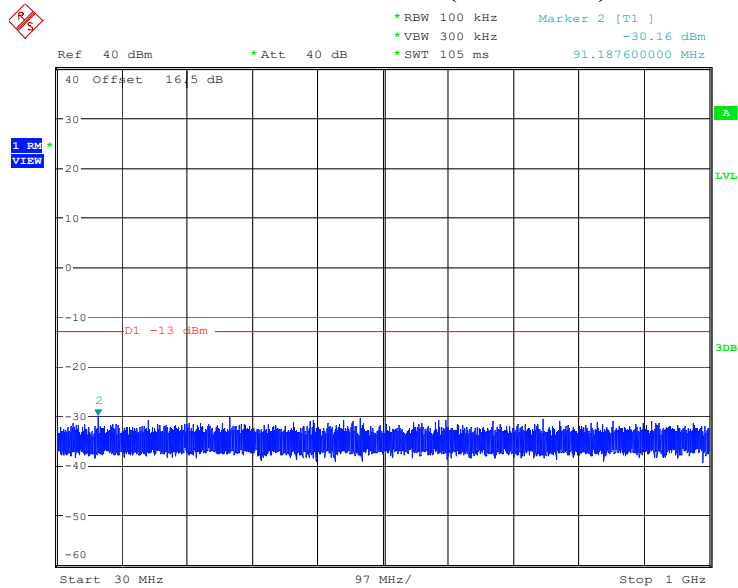
Test result: Compliant

Please refer to the following plots.

PCS Band

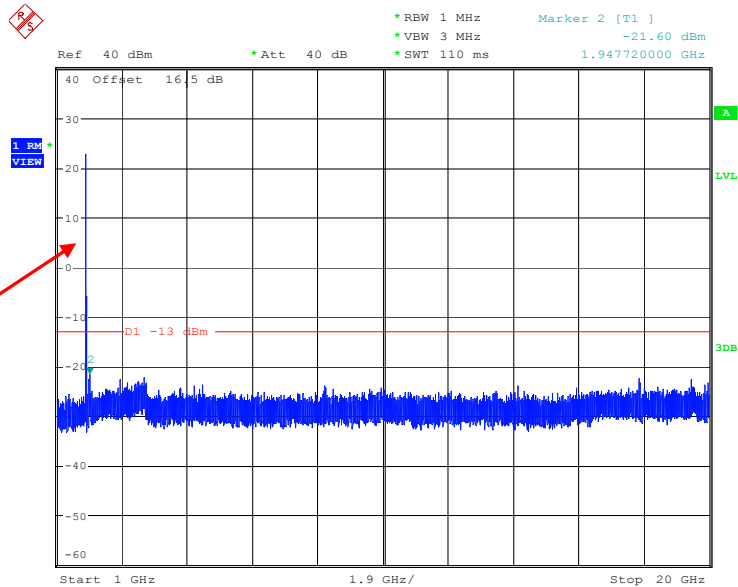
Low Channel:

30 MHz – 1GHz (GSM Mode)



ProjectNo.:2401T35202E-RF Tester:Allen Bai
Date: 11.JUL.2024 21:20:12

1 GHz – 20GHz (GSM Mode)

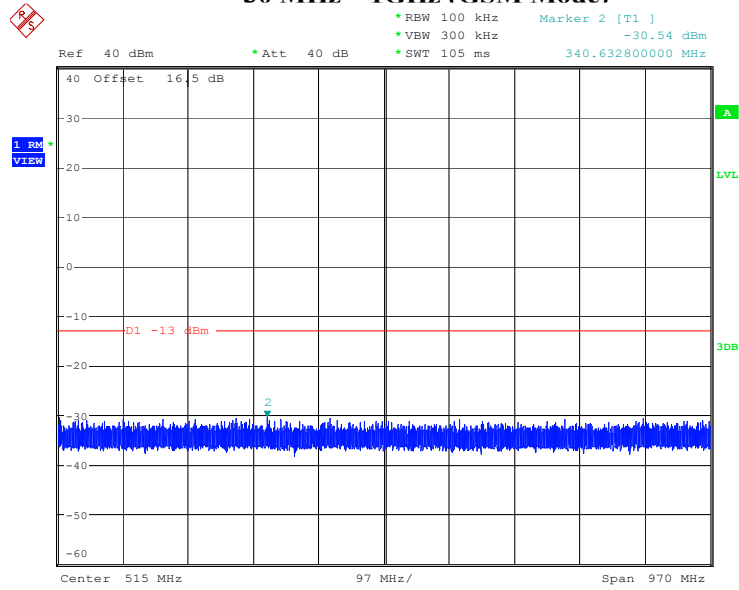


Fundamental test

ProjectNo.:2401T35202E-RF Tester:Allen Bai
Date: 11.JUL.2024 21:11:47

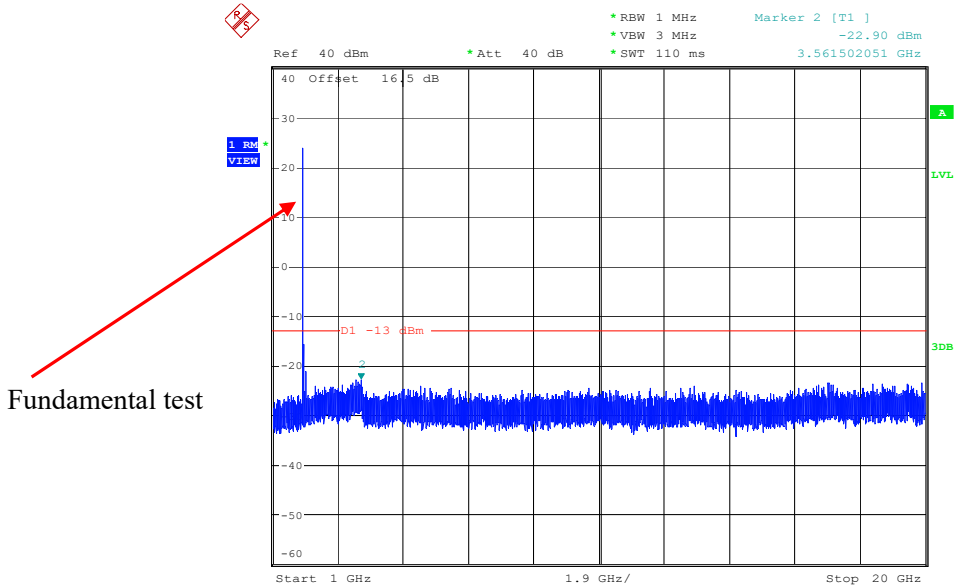
Middle Channel:

30 MHz – 1GHz (GSM Mode)



ProjectNo.:2401T35202E-RF Tester:Allen Bai
Date: 11.JUL.2024 21:20:54

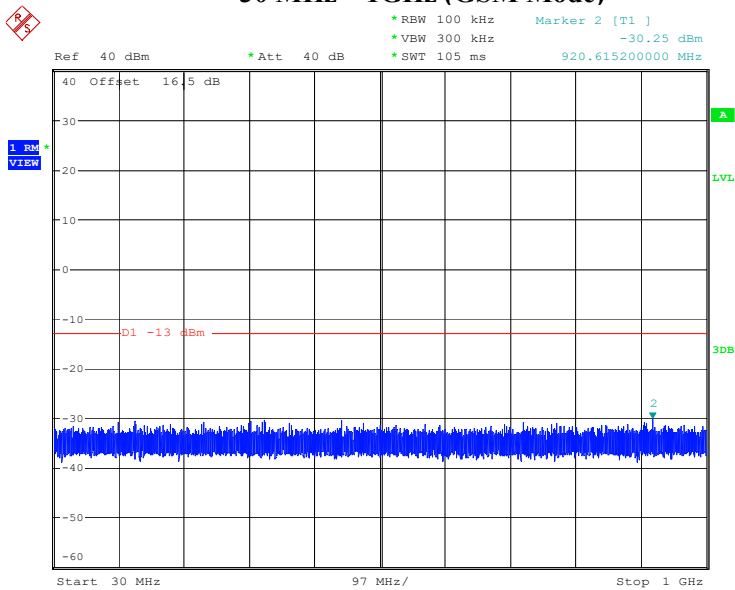
1 GHz – 20GHz (GSM Mode)



ProjectNo.:2401T35202E-RF Tester:Allen Bai
Date: 11.JUL.2024 21:14:58

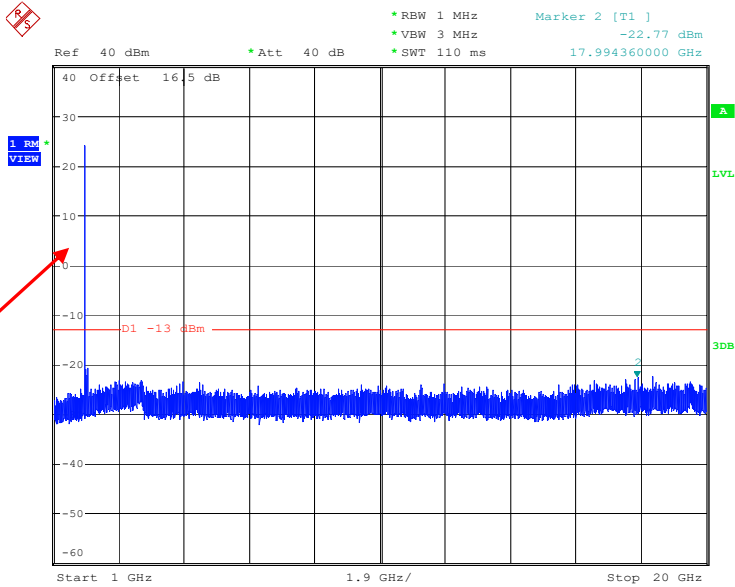
High Channel:

30 MHz – 1GHz (GSM Mode)



ProjectNo.:2401T35202E-RF Tester:Allen Bai
Date: 11.JUL.2024 21:19:41

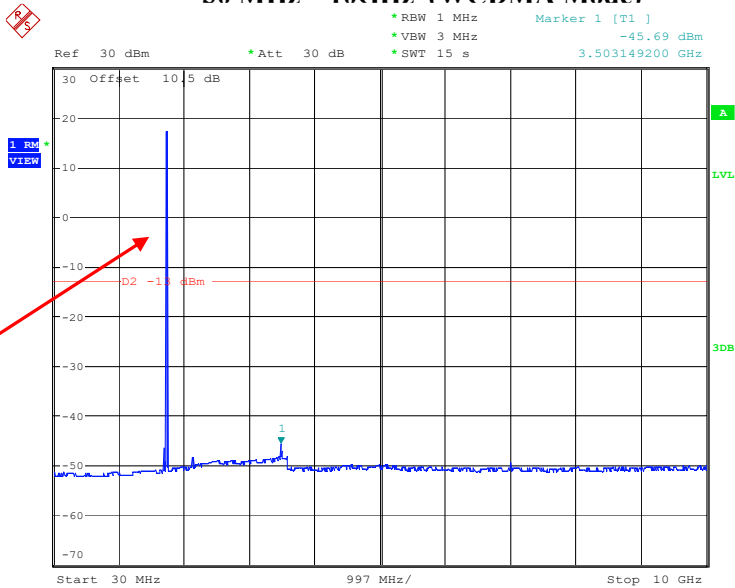
1 GHz – 20GHz (GSM Mode)



ProjectNo.:2401T35202E-RF Tester:Allen Bai
Date: 11.JUL.2024 21:17:51

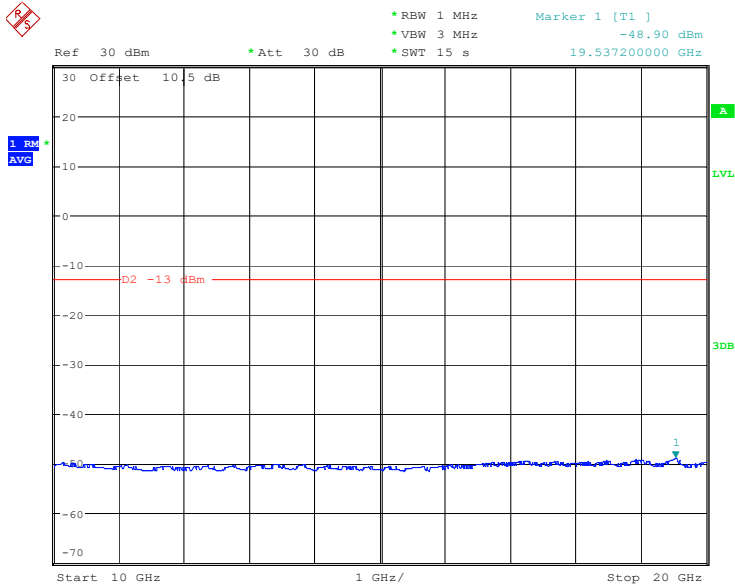
Middle Channel:

30 MHz – 10GHz (WCDMA Mode)



ProjectNo.:2401T35202E-RF Tester:Allen Bai
Date: 15.JUL.2024 20:12:04

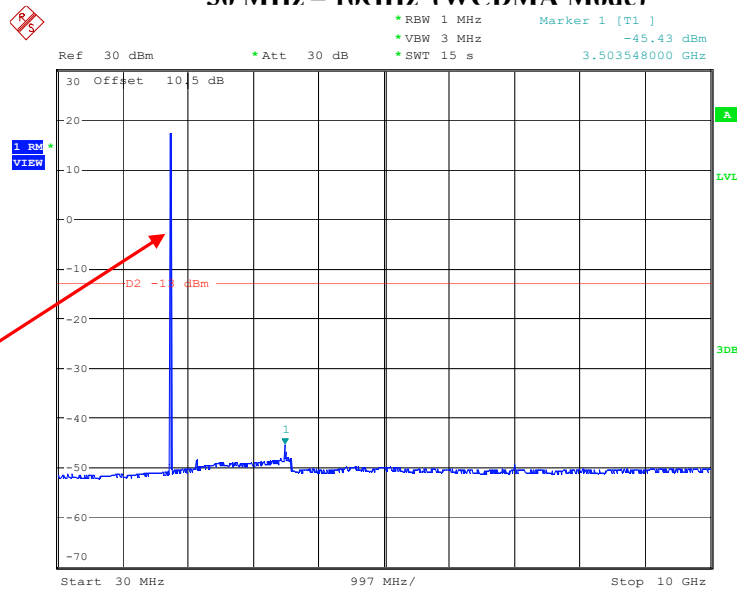
10 GHz – 20GHz (WCDMA Mode)



ProjectNo.:2401T35202E-RF Tester:Allen Bai
Date: 15.JUL.2024 20:14:43

High Channel:

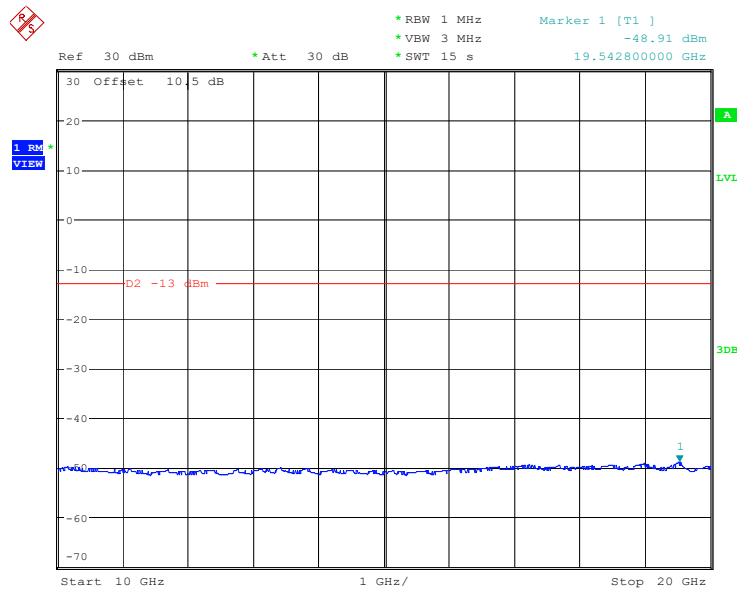
30 MHz – 10GHz (WCDMA Mode)



Fundamental test

ProjectNo.:2401T35202E-RF Tester:Allen Bai
Date: 15.JUL.2024 20:09:41

10 GHz – 20GHz (WCDMA Mode)



ProjectNo.:2401T35202E-RF Tester:Allen Bai
Date: 15.JUL.2024 20:16:06

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

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

FCC § 2.1053, § 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:	22~25.6 °C
Relative Humidity:	50~54 %
ATM Pressure:	101 kPa

The testing was performed by Anson Su and Dylan Yang from 2024-06-23 to 2024-07-09.

EUT operation mode: Transmitting (Pre-scan in the X, Y and Z axes of orientation, the worst case z-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)			
PCS 1900(30MHz-20GHz)								
Low Channel								
955.0	33.42	H	-63.1	1.36	0.0	-64.46	-13	51.46
955.0	33.38	V	-60.7	1.36	0.0	-62.06	-13	49.06
3700.40	40.14	H	-65.26	1.30	11.00	-55.56	-13	42.56
3700.40	39.85	V	-65.45	1.30	11.00	-55.75	-13	42.75
Middle Channel								
953.6	33.72	H	-62.8	1.36	0.0	-64.16	-13	51.16
953.6	33.65	V	-60.4	1.36	0.0	-61.76	-13	48.76
3760.00	41.07	H	-64.03	1.30	10.70	-54.63	-13	41.63
3760.00	40.40	V	-64.70	1.30	10.70	-55.30	-13	42.30
High Channel								
958.7	33.96	H	-62.5	1.36	0.0	-63.86	-13	50.86
958.7	33.81	V	-60.2	1.36	0.0	-61.56	-13	48.56
3819.60	41.79	H	-63.31	1.30	10.70	-53.91	-13	40.91
3819.60	40.76	V	-64.34	1.30	10.70	-54.94	-13	41.94

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 4 (30MHz-20GHz)								
Low Channel								
953.0	33.29	H	-63.2	1.36	0.0	-64.56	-13	51.56
953.0	33.35	V	-60.7	1.36	0.0	-62.06	-13	49.06
3424.800	42.20	H	-63.80	1.30	9.90	-55.20	-13	42.20
3424.800	45.89	V	-59.81	1.30	9.90	-51.21	-13	38.21
5137.200	44.97	H	-58.23	1.50	9.60	-50.13	-13	37.13
5137.200	42.79	V	-59.81	1.50	9.60	-51.71	-13	38.71
Middle Channel								
957.1	33.58	H	-62.9	1.36	0.0	-64.26	-13	51.26
957.1	33.61	V	-60.4	1.36	0.0	-61.76	-13	48.76
3465.200	41.44	H	-64.46	1.30	10.50	-55.26	-13	42.26
3465.200	41.84	V	-63.76	1.30	10.50	-54.56	-13	41.56
5197.800	41.93	H	-61.07	1.60	9.70	-52.97	-13	39.97
5197.800	41.98	V	-60.72	1.60	9.70	-52.62	-13	39.62
High Channel								
953.9	33.76	H	-62.7	1.36	0.0	-64.06	-13	51.06
953.9	33.89	V	-60.2	1.36	0.0	-61.56	-13	48.56
3505.200	39.90	H	-66.00	1.30	10.50	-56.80	-13	43.80
3505.200	40.83	V	-64.77	1.30	10.50	-55.57	-13	42.57
5257.800	40.97	H	-61.93	1.60	10.00	-53.53	-13	40.53
5257.800	41.49	V	-61.21	1.60	10.00	-52.81	-13	39.81

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, Low Channel								
951.4	32.42	H	-64.1	1.36	0.0	-65.46	-13	52.46
951.4	32.26	V	-61.8	1.36	0.0	-63.16	-13	50.16
3701.40	39.47	H	-65.93	1.30	11.00	-56.23	-13	43.23
3701.40	38.53	V	-66.77	1.30	11.00	-57.07	-13	44.07
5552.10	40.70	H	-61.70	1.70	10.90	-52.50	-13	39.50
5552.10	41.67	V	-60.93	1.70	10.90	-51.73	-13	38.73
QPSK, 1.4MHz, Middle Channel								
950.7	32.54	H	-64.0	1.36	0.0	-65.36	-13	52.36
950.7	32.39	V	-61.7	1.36	0.0	-63.06	-13	50.06
3760.00	40.78	H	-64.32	1.30	10.70	-54.92	-13	41.92
3760.00	40.96	V	-64.14	1.30	10.70	-54.74	-13	41.74
5640.00	40.39	H	-62.01	1.70	10.90	-52.81	-13	39.81
5640.00	40.66	V	-61.94	1.70	10.90	-52.74	-13	39.74
QPSK, 1.4MHz, High Channel								
956.4	32.61	H	-63.9	1.36	0.0	-65.26	-13	52.26
956.4	32.59	V	-61.5	1.36	0.0	-62.86	-13	49.86
3818.60	41.47	H	-63.63	1.30	10.70	-54.23	-13	41.23
3818.60	40.75	V	-64.35	1.30	10.70	-54.95	-13	41.95
5727.90	39.99	H	-62.21	1.70	11.10	-52.81	-13	39.81
5727.90	39.82	V	-62.48	1.70	11.10	-53.08	-13	40.08

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, Low Channel								
955.1	32.72	H	-63.8	1.36	0.0	-65.16	-13	52.16
955.1	32.76	V	-61.3	1.36	0.0	-62.66	-13	49.66
3421.40	41.89	H	-64.11	1.30	9.90	-55.51	-13	42.51
3421.40	41.28	V	-64.42	1.30	9.90	-55.82	-13	42.82
5132.10	42.31	H	-60.89	1.50	9.60	-52.79	-13	39.79
5132.10	42.91	V	-59.69	1.50	9.60	-51.59	-13	38.59
QPSK, 1.4MHz, Middle Channel								
953.2	32.88	H	-63.6	1.36	0.0	-64.96	-13	51.96
953.2	32.92	V	-61.1	1.36	0.0	-62.46	-13	49.46
3465.00	40.57	H	-65.33	1.30	10.50	-56.13	-13	43.13
3465.00	39.89	V	-65.71	1.30	10.50	-56.51	-13	43.51
5197.50	41.96	H	-61.04	1.60	9.70	-52.94	-13	39.94
5197.50	40.99	V	-61.71	1.60	9.70	-53.61	-13	40.61
QPSK, 1.4MHz, High Channel								
958.8	33.09	H	-63.4	1.36	0.0	-64.76	-13	51.76
958.8	33.01	V	-61.0	1.36	0.0	-62.36	-13	49.36
3508.60	42.12	H	-63.78	1.30	10.50	-54.58	-13	41.58
3508.60	41.34	V	-64.26	1.30	10.50	-55.06	-13	42.06
5262.90	40.99	H	-61.91	1.60	10.00	-53.51	-13	40.51
5262.90	41.45	V	-61.25	1.60	10.00	-52.85	-13	39.85

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 7 (30MHz-26.5GHz)								
QPSK, 5MHz, Low Channel								
954.9	33.43	H	-63.1	1.36	0.0	-64.46	-25	39.46
954.9	33.27	V	-60.8	1.36	0.0	-62.16	-25	37.16
5005.00	43.15	H	-60.15	1.50	9.80	-51.85	-25	26.85
5005.00	42.43	V	-60.17	1.50	9.80	-51.87	-25	26.87
7507.50	34.76	H	-61.24	1.90	10.80	-52.34	-25	27.34
7507.50	34.47	V	-61.83	1.90	10.80	-52.93	-25	27.93
QPSK, 5MHz, Middle Channel								
950.1	33.63	H	-62.9	1.36	0.0	-64.26	-25	39.26
950.1	33.54	V	-60.5	1.36	0.0	-61.86	-25	36.86
5070.00	43.76	H	-59.44	1.50	9.60	-51.34	-25	26.34
5070.00	41.70	V	-60.90	1.50	9.60	-52.80	-25	27.80
7605.00	35.72	H	-60.18	1.90	11.00	-51.08	-25	26.08
7605.00	34.95	V	-61.25	1.90	11.00	-52.15	-25	27.15
QPSK, 5MHz, High Channel								
955.6	33.89	H	-62.6	1.36	0.0	-63.96	-25	38.96
955.6	33.75	V	-60.3	1.36	0.0	-61.66	-25	36.66
5135.00	43.26	H	-59.94	1.50	9.60	-51.84	-25	26.84
5135.00	41.79	V	-60.81	1.50	9.60	-52.71	-25	27.71
7702.50	37.09	H	-58.71	1.90	10.90	-49.71	-25	24.71
7702.50	33.41	V	-62.79	1.90	10.90	-53.79	-25	28.79

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, Low Channel								
954.7	33.26	H	-63.2	1.36	0.0	-64.56	-13	51.56
954.7	33.14	V	-60.9	1.36	0.0	-62.26	-13	49.26
1399.40	38.87	H	-68.83	0.80	7.90	-61.73	-13	48.73
1399.40	39.16	V	-69.24	0.80	7.90	-62.14	-13	49.14
2099.10	40.26	H	-67.04	1.00	8.30	-59.74	-13	46.74
2099.10	40.58	V	-67.22	1.00	8.30	-59.92	-13	46.92
2798.80	41.12	H	-65.48	1.20	9.20	-57.48	-13	44.48
2798.80	40.90	V	-65.40	1.20	9.20	-57.40	-13	44.40
QPSK, 1.4MHz, Middle Channel								
959.3	33.34	H	-63.2	1.36	0.0	-64.56	-13	51.56
959.3	33.25	V	-60.8	1.36	0.0	-62.16	-13	49.16
1415.00	40.02	H	-67.68	0.80	7.90	-60.58	-13	47.58
1415.00	40.27	V	-68.13	0.80	7.90	-61.03	-13	48.03
2122.50	40.43	H	-66.87	1.00	8.30	-59.57	-13	46.57
2122.50	41.28	V	-66.52	1.00	8.30	-59.22	-13	46.22
2830.00	40.03	H	-66.57	1.20	9.20	-58.57	-13	45.57
2830.00	39.34	V	-66.96	1.20	9.20	-58.96	-13	45.96
QPSK, 1.4MHz, High Channel								
952.5	33.42	H	-63.1	1.36	0.0	-64.46	-13	51.46
952.5	33.39	V	-60.7	1.36	0.0	-62.06	-13	49.06
1430.60	37.37	H	-70.33	0.80	7.90	-63.23	-13	50.23
1430.60	38.77	V	-69.63	0.80	7.90	-62.53	-13	49.53
2145.90	40.35	H	-66.95	1.00	8.30	-59.65	-13	46.65
2145.90	40.73	V	-67.07	1.00	8.30	-59.77	-13	46.77
2861.20	40.73	H	-65.57	1.20	9.00	-57.77	-13	44.77
2861.20	40.37	V	-65.73	1.20	9.00	-57.93	-13	44.93

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 13(30MHz-10GHz)								
QPSK, 5MHz, Low Channel								
958.4	33.58	H	-62.9	1.36	0.0	-64.26	-13	51.26
958.4	33.52	V	-60.5	1.36	0.0	-61.86	-13	48.86
1559.00	38.41	H	-69.29	0.90	8.60	-61.59	-40	21.59
1559.00	38.03	V	-70.17	0.90	8.60	-62.47	-40	22.47
2338.50	39.17	H	-68.13	1.10	9.40	-59.83	-13	46.83
2338.50	40.09	V	-67.41	1.10	9.40	-59.11	-13	46.11
3118.00	44.74	H	-61.26	1.20	7.20	-55.26	-13	42.26
3118.00	44.58	V	-61.22	1.20	7.20	-55.22	-13	42.22
QPSK, 5MHz, Middle Channel								
955.9	33.76	H	-62.7	1.36	0.0	-64.06	-13	51.06
955.9	33.71	V	-60.3	1.36	0.0	-61.66	-13	48.66
1564.00	36.25	H	-71.45	0.90	8.60	-63.75	-40	23.75
1564.00	37.22	V	-70.98	0.90	8.60	-63.28	-40	23.28
2346.00	39.53	H	-67.77	1.10	9.40	-59.47	-13	46.47
2346.00	40.55	V	-66.95	1.10	9.40	-58.65	-13	45.65
3128.00	44.64	H	-61.36	1.20	7.20	-55.36	-13	42.36
3128.00	45.54	V	-60.26	1.20	7.20	-54.26	-13	41.26
QPSK, 5MHz, High Channel								
953.4	33.96	H	-62.5	1.36	0.0	-63.86	-13	50.86
953.4	33.81	V	-60.2	1.36	0.0	-61.56	-13	48.56
1569.00	37.27	H	-70.43	0.90	8.60	-62.73	-40	22.73
1569.00	37.85	V	-70.35	0.90	8.60	-62.65	-40	22.65
2353.50	40.08	H	-67.22	1.10	9.10	-59.22	-13	46.22
2353.50	40.40	V	-66.90	1.10	9.10	-58.90	-13	45.90
3138.00	44.82	H	-61.18	1.20	7.20	-55.18	-13	42.18
3138.00	45.26	V	-60.54	1.20	7.20	-54.54	-13	41.54

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 38(30MHz-26.5GHz)								
QPSK, 5MHz, Low Channel								
956.6	32.86	H	-63.6	1.36	0.0	-64.96	-25	39.96
956.6	32.74	V	-61.3	1.36	0.0	-62.66	-25	37.66
5145.00	43.20	H	-60.00	1.50	9.60	-51.90	-25	26.90
5145.00	42.69	V	-59.91	1.50	9.60	-51.81	-25	26.81
7717.50	37.53	H	-58.27	1.90	10.90	-49.27	-25	24.27
7717.50	34.07	V	-62.13	1.90	10.90	-53.13	-25	28.13
QPSK, 5MHz, Middle Channel								
951.5	33.04	H	-63.5	1.36	0.0	-64.86	-25	39.86
951.5	32.96	V	-61.1	1.36	0.0	-62.46	-25	37.46
5190.00	41.87	H	-61.13	1.60	9.70	-53.03	-25	28.03
5190.00	41.60	V	-61.10	1.60	9.70	-53.00	-25	28.00
7785.00	37.00	H	-58.70	1.90	11.10	-49.50	-25	24.50
7785.00	36.89	V	-59.21	1.90	11.10	-50.01	-25	25.01
QPSK, 5MHz, High Channel								
954.6	33.23	H	-63.3	1.36	0.0	-64.66	-25	39.66
954.6	33.14	V	-60.9	1.36	0.0	-62.26	-25	37.26
5235.00	43.02	H	-59.98	1.60	9.70	-51.88	-25	26.88
5235.00	43.08	V	-59.62	1.60	9.70	-51.52	-25	26.52
7852.50	36.60	H	-59.00	1.90	11.10	-49.80	-25	24.80
7852.50	32.97	V	-63.03	1.90	11.10	-53.83	-25	28.83

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, Low Channel								
955.5	33.24	H	-63.3	1.36	0.0	-64.66	-25	39.66
955.5	33.35	V	-60.7	1.36	0.0	-62.06	-25	37.06
4997.00	43.47	H	-59.83	1.50	9.80	-51.53	-25	26.53
4997.00	42.58	V	-60.02	1.50	9.80	-51.72	-25	26.72
7495.50	35.35	H	-60.65	1.90	10.80	-51.75	-25	26.75
7495.50	35.40	V	-60.90	1.90	10.80	-52.00	-25	27.00
QPSK, 5MHz, Middle Channel								
952.4	33.49	H	-63.0	1.36	0.0	-64.36	-25	39.36
952.4	33.54	V	-60.5	1.36	0.0	-61.86	-25	36.86
5186.00	42.42	H	-60.58	1.60	9.70	-52.48	-25	27.48
5186.00	42.09	V	-60.61	1.60	9.70	-52.51	-25	27.51
7779.00	37.20	H	-58.50	1.90	11.10	-49.30	-25	24.30
7779.00	37.13	V	-58.97	1.90	11.10	-49.77	-25	24.77
QPSK, 5MHz, High Channel								
958.3	33.82	H	-62.7	1.36	0.0	-64.06	-25	39.06
958.3	33.73	V	-60.3	1.36	0.0	-61.66	-25	36.66
5375.00	41.06	H	-61.74	1.70	10.50	-52.94	-25	27.94
5375.00	41.18	V	-61.52	1.70	10.50	-52.72	-25	27.72
8062.50	35.74	H	-59.96	2.00	11.40	-50.56	-25	25.56
8062.50	35.27	V	-60.63	2.00	11.40	-51.23	-25	26.23

Note:

Absolute Level = Reading Level + Substituted Factor

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

Margin = Limit-Absolute Level

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

Applicable Standard

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) (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.

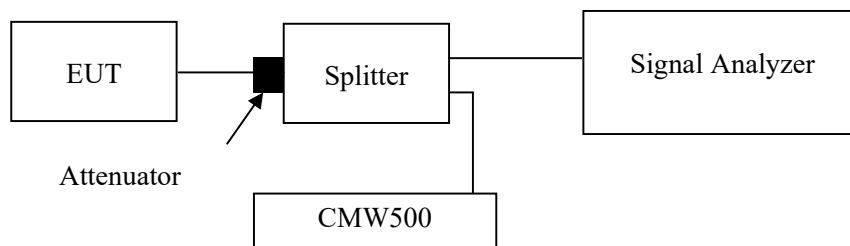
According to FCC §27.53 (m), For mobile digital stations, the attenuation factor shall be not less than $40 + 10 \log(P)$ dB on all frequencies between the channel edge and 5 megahertz from the channel edge, $43 + 10 \log(P)$ dB on all frequencies between 5 megahertz and X megahertz from the channel 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:	25~27 °C
Relative Humidity:	46~49%
ATM Pressure:	101 kPa

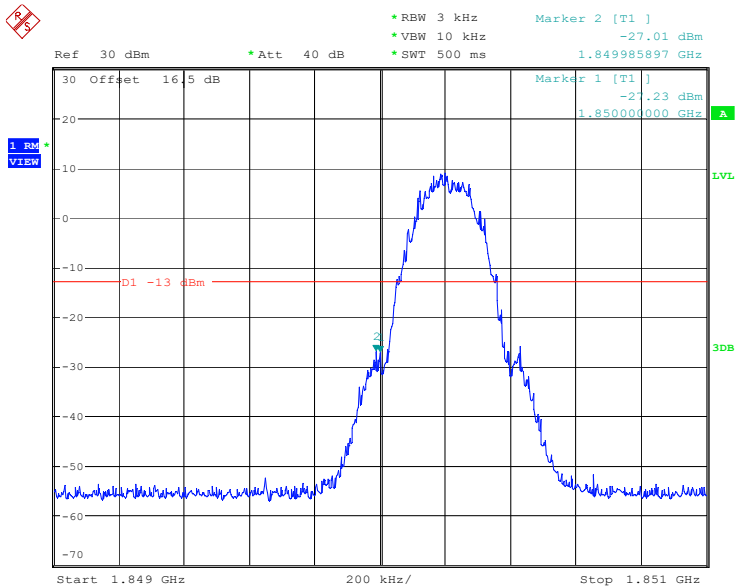
The testing was performed by Allen Bai from 2024-07-04 to 2024-07-18.

EUT operation mode: Transmitting (Worst case)

Test Result: Compliant

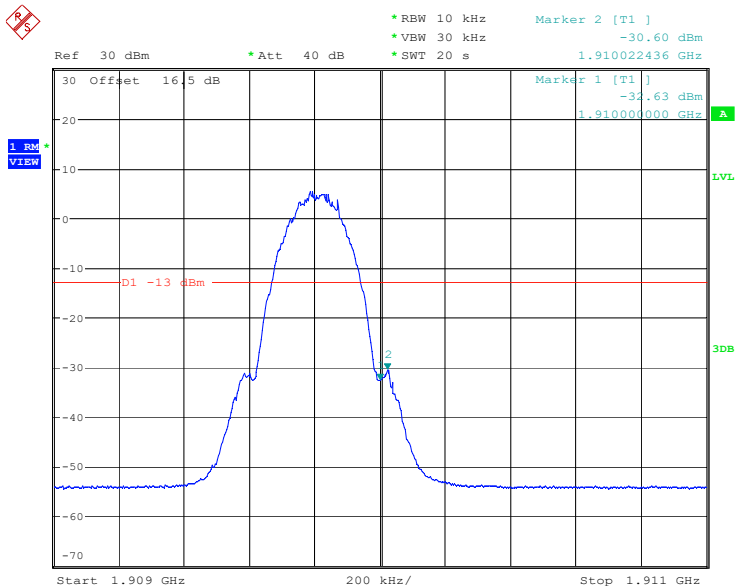
Please refer to the following plots.

PCS Band, Left Band Edge for GSM (GMSK) Mode



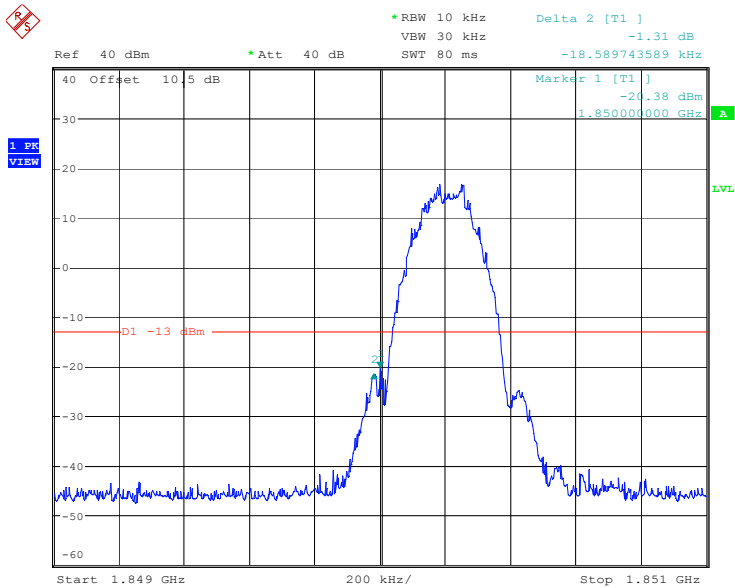
ProjectNo.:2401T35202E-RF Tester:Allen Bai
Date: 11.JUL.2024 21:05:54

PCS Band, Right Band Edge for GSM (GMSK) Mode



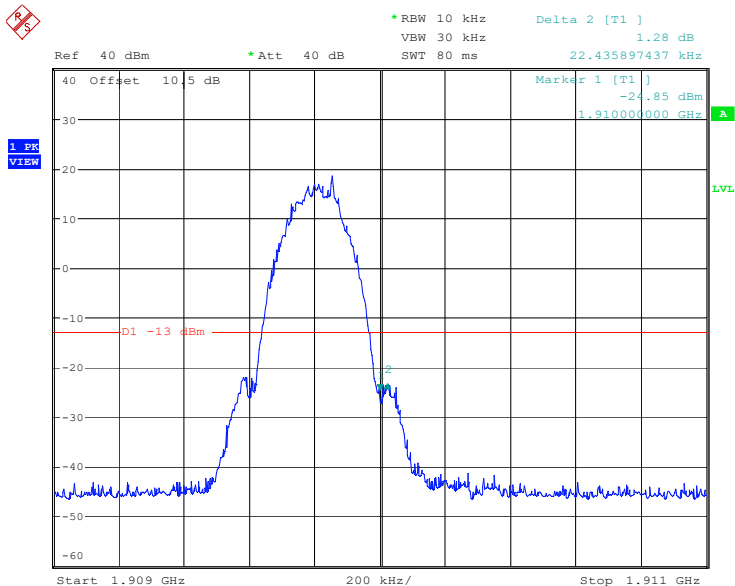
ProjectNo.:2401T35202E-RF Tester:Allen Bai
Date: 11.JUL.2024 21:03:29

PCS Band, Left Band Edge for EDGE (8PSK) Mode



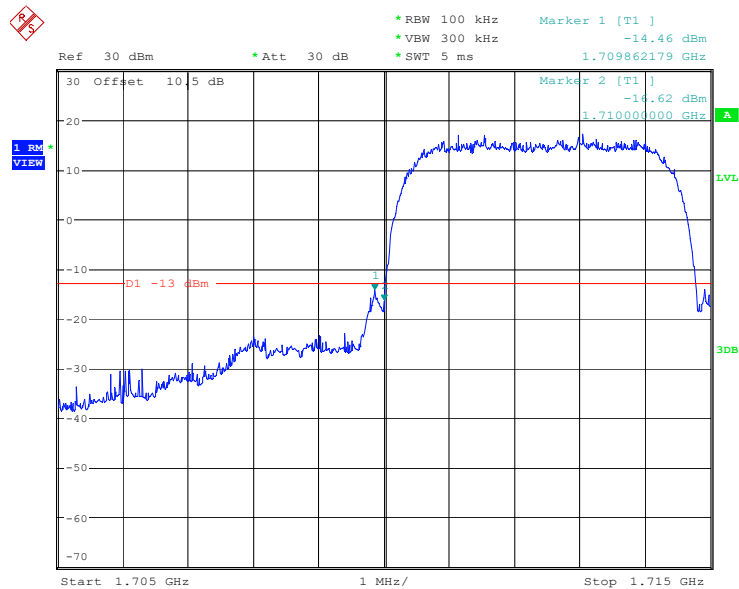
ProjectNo.:2401T35202E-RF Tester:Allen Bai
Date: 18.JUL.2024 00:37:02

PCS Band, Right Band Edge for EDGE (8PSK) Mode



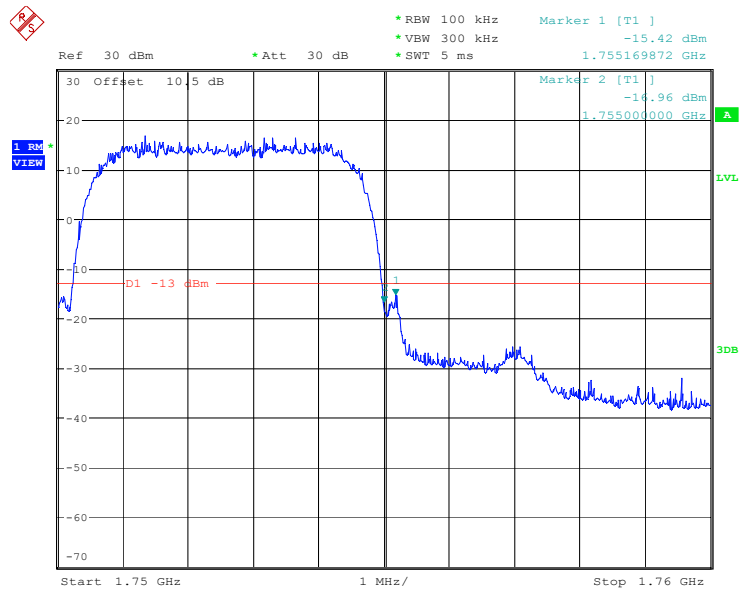
ProjectNo.:2401T35202E-RF Tester:Allen Bai
Date: 18.JUL.2024 00:38:57

AWS Band, Left Band Edge for RMC (BPSK) Mode



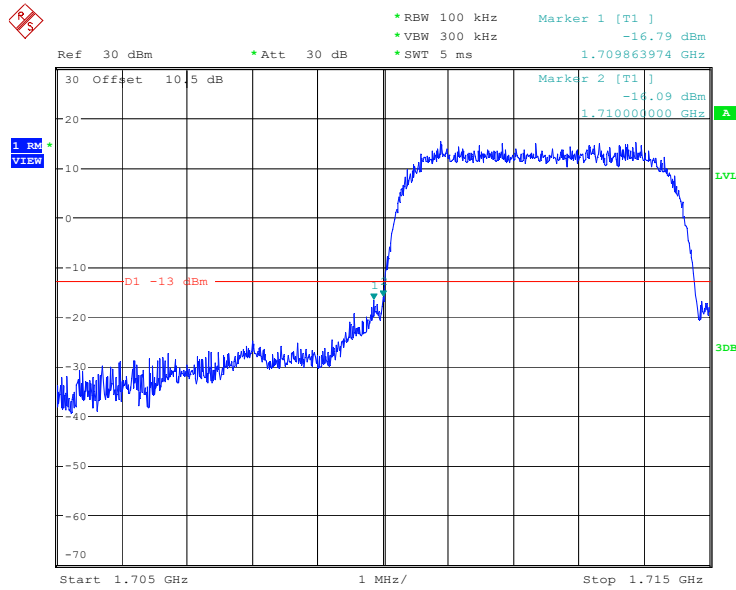
ProjectNo.:2401T35202E-RF Tester:Allen Bai
Date: 15.JUL.2024 19:45:01

AWS Band, Right Band Edge for RMC (BPSK) Mode



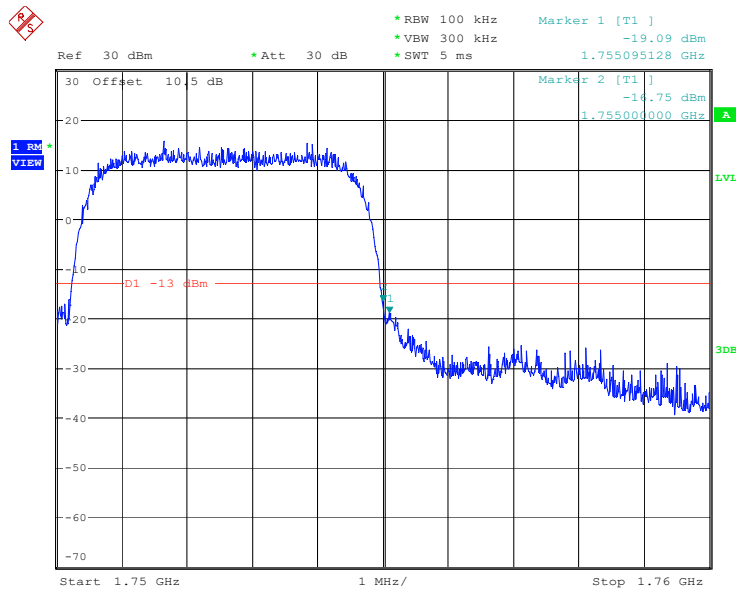
ProjectNo.:2401T35202E-RF Tester:Allen Bai
Date: 15.JUL.2024 19:41:20

AWS Band, Left Band Edge for HSDPA(16QAM) Mode



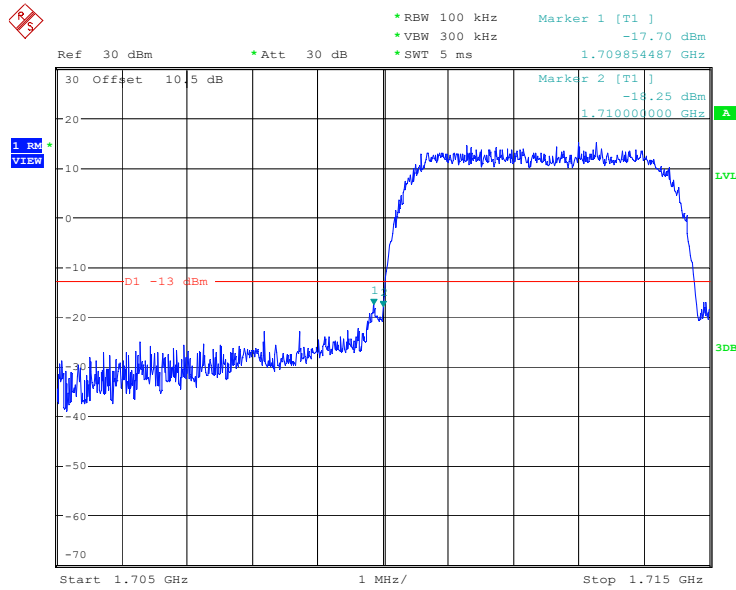
ProjectNo.:2401T35202E-RF Tester:Allen Bai
Date: 15.JUL.2024 20:50:45

AWS Band, Right Band Edge for HSDPA (16QAM) Mode



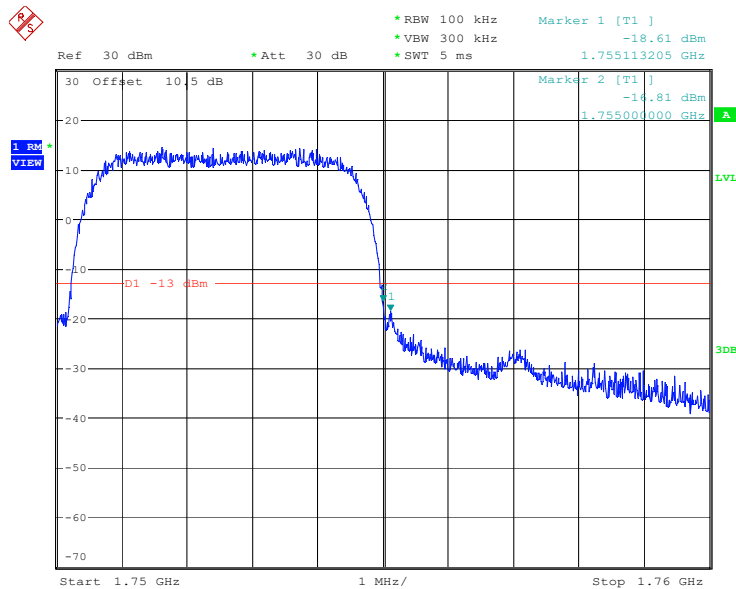
ProjectNo.:2401T35202E-RF Tester:Allen Bai
Date: 15.JUL.2024 20:52:12

AWS Band, Left Band Edge for HSUPA (QPSK) Mode



ProjectNo.:2401T35202E-RF Tester:Allen Bai
Date: 15.JUL.2024 20:58:10

AWS Band, Right Band Edge for HSUPA (QPSK) Mode



ProjectNo.:2401T35202E-RF Tester:Allen Bai
Date: 15.JUL.2024 20:55:34

The test plots of LTE bands please refer to the Appendix J1&J2.

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

Applicable Standard

FCC § 2.1055, §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 §24.235&§27.54, the frequency stability shall be sufficient to ensure that the fundamental emissions stays within the authorized frequency block.

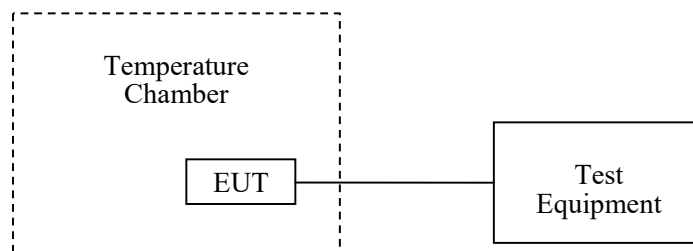
Test Procedure

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:	25~27 °C
Relative Humidity:	46~49%
ATM Pressure:	101 kPa

The testing was performed by Allen Bai from 2024-07-04 to 2024-07-17.

EUT operation mode: Transmitting

Test Result: Compliant

Please refer to the following tables.

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

Test Mode:	GMSK	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	1850.036	1850.000	1909.898	1910.000
	-20	3.8	1850.076	1850.000	1909.815	1910.000
	-10	3.8	1850.072	1850.000	1909.895	1910.000
	0	3.8	1850.129	1850.000	1909.853	1910.000
	10	3.8	1850.158	1850.000	1909.830	1910.000
	20	3.8	1850.078	1850.000	1909.875	1910.000
	30	3.8	1850.142	1850.000	1909.853	1910.000
	40	3.8	1850.199	1850.000	1909.872	1910.000
	50	3.8	1850.196	1850.000	1909.812	1910.000
Frequency Stability vs. Voltage	20	3.42	1850.106	1850.000	1909.839	1910.000
	20	4.35	1850.117	1850.000	1909.883	1910.000

Test Mode:	8PSK	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	1850.145	1850.000	1909.886	1910.000
	-20	3.8	1850.161	1850.000	1909.850	1910.000
	-10	3.8	1850.014	1850.000	1909.819	1910.000
	0	3.8	1851.041	1850.000	1909.834	1910.000
	10	3.8	1850.079	1850.000	1909.854	1910.000
	20	3.8	1850.079	1850.000	1909.839	1910.000
	30	3.8	1850.022	1850.000	1909.822	1910.000
	40	3.8	1850.012	1850.000	1909.856	1910.000
	50	3.8	1850.103	1850.000	1909.814	1910.000
Frequency Stability vs. Voltage	20	3.42	1850.173	1850.000	1909.836	1910.000
	20	4.35	1850.156	1850.000	1909.822	1910.000

AWS Band**WCDMA B4**

Test Mode:	WCDMA R99	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	1712.369	1710.000	1752.701	1755.000
	-20	3.8	1712.226	1710.000	1752.775	1755.000
	-10	3.8	1712.231	1710.000	1752.825	1755.000
	0	3.8	1712.268	1710.000	1752.783	1755.000
	10	3.8	1712.212	1710.000	1752.836	1755.000
	20	3.8	1712.140	1710.000	1752.848	1755.000
	30	3.8	1712.186	1710.000	1752.735	1755.000
	40	3.8	1712.105	1710.000	1752.762	1755.000
	50	3.8	1712.059	1710.000	1752.612	1755.000
Frequency Stability vs. Voltage	20	3.42	1712.152	1710.000	1752.689	1755.000
	20	4.35	1712.299	1710.000	1752.762	1755.000

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	1850.420	1850.000	1909.591	1910.000
	-20	3.8	1850.476	1850.000	1909.507	1910.000
	-10	3.8	1850.457	1850.000	1909.515	1910.000
	0	3.8	1850.495	1850.000	1909.550	1910.000
	10	3.8	1850.416	1850.000	1909.528	1910.000
	20	3.8	1850.450	1850.000	1909.567	1910.000
	30	3.8	1850.432	1850.000	1909.560	1910.000
	40	3.8	1850.455	1850.000	1909.527	1910.000
	50	3.8	1850.440	1850.000	1909.577	1910.000
Frequency Stability vs. Voltage	20	3.42	1850.500	1850.000	1909.559	1910.000
	20	4.35	1850.492	1850.000	1909.587	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	1850.420	1850.000	1909.559	1910.000
	-20	3.8	1850.498	1850.000	1909.522	1910.000
	-10	3.8	1850.413	1850.000	1909.549	1910.000
	0	3.8	1850.429	1850.000	1909.559	1910.000
	10	3.8	1850.465	1850.000	1909.571	1910.000
	20	3.8	1850.410	1850.000	1909.589	1910.000
	30	3.8	1850.426	1850.000	1909.582	1910.000
	40	3.8	1850.470	1850.000	1909.508	1910.000
	50	3.8	1850.454	1850.000	1909.512	1910.000
Frequency Stability vs. Voltage	20	3.42	1850.482	1850.000	1909.529	1910.000
	20	4.35	1850.491	1850.000	1909.553	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	1710.530	1710.000	1754.438	1755.000
	-20	3.8	1710.564	1710.000	1754.443	1755.000
	-10	3.8	1710.505	1710.000	1754.447	1755.000
	0	3.8	1710.525	1710.000	1754.421	1755.000
	10	3.8	1710.574	1710.000	1754.459	1755.000
	20	3.8	1710.551	1710.000	1754.446	1755.000
	30	3.8	1710.530	1710.000	1754.406	1755.000
	40	3.8	1710.580	1710.000	1754.477	1755.000
	50	3.8	1710.535	1710.000	1754.209	1755.000
Frequency Stability vs. Voltage	20	3.42	1710.574	1710.000	1754.427	1755.000
	20	4.35	1710.593	1710.000	1754.435	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	1710.560	1710.000	1754.428	1755.000
	-20	3.8	1710.526	1710.000	1754.497	1755.000
	-10	3.8	1710.578	1710.000	1754.484	1755.000
	0	3.8	1710.566	1710.000	1754.449	1755.000
	10	3.8	1710.560	1710.000	1754.491	1755.000
	20	3.8	1710.586	1710.000	1754.438	1755.000
	30	3.8	1710.570	1710.000	1754.448	1755.000
	40	3.8	1710.563	1710.000	1754.451	1755.000
	50	3.8	1710.584	1710.000	1754.444	1755.000
Frequency Stability vs. Voltage	20	3.42	1710.553	1710.000	1754.442	1755.000
	20	4.35	1710.561	1710.000	1754.412	1755.000

LTE Band 7**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	2500.590	2500.000	2569.436	2570.000
	-20	3.8	2500.542	2500.000	2569.461	2570.000
	-10	3.8	2500.591	2500.000	2569.466	2570.000
	0	3.8	2500.507	2500.000	2569.429	2570.000
	10	3.8	2500.537	2500.000	2569.403	2570.000
	20	3.8	2500.580	2500.000	2569.430	2570.000
	30	3.8	2500.578	2500.000	2569.428	2570.000
	40	3.8	2500.526	2500.000	2569.402	2570.000
	50	3.8	2500.543	2500.000	2569.418	2570.000
Frequency Stability vs. Voltage	20	3.42	2500.566	2500.000	2569.490	2570.000
	20	4.35	2500.518	2500.000	2569.446	2570.000

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	2500.556	2500.000	2569.498	2570.000
	-20	3.8	2500.524	2500.000	2569.431	2570.000
	-10	3.8	2500.511	2500.000	2569.463	2570.000
	0	3.8	2500.585	2500.000	2569.453	2570.000
	10	3.8	2500.549	2500.000	2569.477	2570.000
	20	3.8	2500.500	2500.000	2569.480	2570.000
	30	3.8	2500.567	2500.000	2569.456	2570.000
	40	3.8	2500.548	2500.000	2569.439	2570.000
	50	3.8	2500.599	2500.000	2569.458	2570.000
Frequency Stability vs. Voltage	20	3.42	2500.596	2500.000	2569.441	2570.000
	20	4.35	2500.586	2500.000	2569.402	2570.000

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	699.492	699.000	715.512	716.00
	-20	3.8	699.441	699.000	715.592	716.00
	-10	3.8	699.487	699.000	715.518	716.00
	0	3.8	699.493	699.000	715.504	716.00
	10	3.8	699.422	699.000	715.501	716.00
	20	3.8	699.461	699.000	715.568	716.00
	30	3.8	699.499	699.000	715.553	716.00
	40	3.8	699.450	699.000	715.570	716.00
	50	3.8	699.428	699.000	715.571	716.00
Frequency Stability vs. Voltage	20	3.42	699.485	699.000	715.579	716.00
	20	4.35	699.410	699.000	715.523	716.00

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	699.434	699.000	715.500	716.00
	-20	3.8	699.419	699.000	715.569	716.00
	-10	3.8	699.487	699.000	715.541	716.00
	0	3.8	699.474	699.000	715.532	716.00
	10	3.8	699.453	699.000	715.553	716.00
	20	3.8	699.412	699.000	715.581	716.00
	30	3.8	699.453	699.000	715.545	716.00
	40	3.8	699.434	699.000	715.581	716.00
	50	3.8	699.461	699.000	715.559	716.00
Frequency Stability vs. Voltage	20	3.42	699.422	699.000	715.572	716.00
	20	4.35	699.478	699.000	715.521	716.00

LTE Band 13**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	777.405	777.000	786.505	787.000
	-20	3.8	777.444	777.000	786.544	787.000
	-10	3.8	777.437	777.000	786.537	787.000
	0	3.8	777.415	777.000	786.515	787.000
	10	3.8	777.493	777.000	786.593	787.000
	20	3.8	777.423	777.000	786.523	787.000
	30	3.8	777.423	777.000	786.523	787.000
	40	3.8	777.430	777.000	786.530	787.000
	50	3.8	777.449	777.000	786.549	787.000
Frequency Stability vs. Voltage	20	3.42	777.481	777.000	786.581	787.000
	20	4.35	777.484	777.000	786.584	787.000

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	777.453	777.000	786.516	787.000
	-20	3.8	777.472	777.000	786.575	787.000
	-10	3.8	777.514	777.000	786.546	787.000
	0	3.8	777.515	777.000	786.555	787.000
	10	3.8	777.454	777.000	786.569	787.000
	20	3.8	777.482	777.000	786.517	787.000
	30	3.8	777.440	777.000	786.581	787.000
	40	3.8	777.464	777.000	786.505	787.000
	50	3.8	777.460	777.000	786.491	787.000
Frequency Stability vs. Voltage	20	3.42	777.458	777.000	786.428	787.000
	20	4.35	777.517	777.000	786.504	787.000

LTE Band 38**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	2570.462	2570.000	2619.528	2620
	-20	3.8	2570.453	2570.000	2619.518	2620
	-10	3.8	2570.480	2570.000	2619.548	2620
	0	3.8	2570.435	2570.000	2619.550	2620
	10	3.8	2570.418	2570.000	2619.503	2620
	20	3.8	2570.410	2570.000	2619.527	2620
	30	3.8	2570.430	2570.000	2619.534	2620
	40	3.8	2570.489	2570.000	2619.585	2620
	50	3.8	2570.428	2570.000	2619.518	2620
Frequency Stability vs. Voltage	20	3.42	2570.506	2570.000	2619.563	2620
	20	4.35	2570.466	2570.000	2619.513	2620

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	2570.484	2570.000	2619.542	2620
	-20	3.8	2570.481	2570.000	2619.570	2620
	-10	3.8	2570.439	2570.000	2619.519	2620
	0	3.8	2570.484	2570.000	2619.587	2620
	10	3.8	2570.489	2570.000	2619.513	2620
	20	3.8	2570.449	2570.000	2619.551	2620
	30	3.8	2570.467	2570.000	2619.550	2620
	40	3.8	2570.498	2570.000	2619.512	2620
	50	3.8	2570.453	2570.000	2619.553	2620
Frequency Stability vs. Voltage	20	3.42	2570.481	2570.000	2619.594	2620
	20	4.35	2570.497	2570.000	2619.575	2620

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	2496.494	2496.000	2689.528	2690
	-20	3.8	2496.470	2496.000	2689.542	2690
	-10	3.8	2496.419	2496.000	2689.564	2690
	0	3.8	2496.417	2496.000	2689.541	2690
	10	3.8	2496.495	2496.000	2689.525	2690
	20	3.8	2496.477	2496.000	2689.516	2690
	30	3.8	2496.483	2496.000	2689.526	2690
	40	3.8	2496.492	2496.000	2689.592	2690
	50	3.8	2496.445	2496.000	2689.522	2690
Frequency Stability vs. Voltage	20	3.42	2496.410	2496.000	2689.558	2690
	20	4.35	2496.466	2496.000	2689.567	2690

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	2496.421	2496.000	2689.579	2690
	-20	3.8	2496.468	2496.000	2689.585	2690
	-10	3.8	2496.488	2496.000	2689.502	2690
	0	3.8	2496.491	2496.000	2689.539	2690
	10	3.8	2496.477	2496.000	2689.579	2690
	20	3.8	2496.435	2496.000	2689.543	2690
	30	3.8	2496.414	2496.000	2689.590	2690
	40	3.8	2496.483	2496.000	2689.501	2690
	50	3.8	2496.427	2496.000	2689.506	2690
Frequency Stability vs. Voltage	20	3.42	2496.484	2496.000	2689.520	2690
	20	4.35	2496.445	2496.000	2689.550	2690

EUT PHOTOGRAPHS

Please refer to the attachment 2401T35202E-RF External photo and 2401T35202E-RF Internal photo.

TEST SETUP PHOTOGRAPHS

Please refer to the attachment 2401T35202E-RFA Test Setup photo.

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