



TESTING LABORATORY
CERTIFICATE #4820.01



FCC PART 22H, PART 24E MEASUREMENT AND TEST REPORT

For

Shenzhen Digidragon Technology Co., Ltd

F02-3, Block 36, Dayun Software Town, Longgang District, Shenzhen, China

FCC ID:2AW7SDS502

Report Type: Original Report	Product Type: 3G Mobile Phone
Report Number:	SZ2210527-19879E-00C
Report Date:	2021-06-29
Reviewed By:	Ivan Cao Assistant Manager 
Test Laboratory:	Bay Area Compliance Laboratories Corp. (Dongguan) No.12, Pulong East 1 st Road, Tangxia Town, Dongguan, Guangdong, China Tel: +86-769-86858888 Fax: +86-769-86858891 www.baclcorp.com.cn

TABLE OF CONTENTS

GENERAL INFORMATION.....	4
PRODUCT DESCRIPTION FOR EQUIPMENT UNDER TEST (EUT)	4
OBJECTIVE	4
TEST METHODOLOGY	4
MEASUREMENT UNCERTAINTY	5
TEST FACILITY	5
DECLARATIONS.....	5
SYSTEM TEST CONFIGURATION.....	6
JUSTIFICATION	6
EQUIPMENT MODIFICATIONS	6
SUPPORT EQUIPMENT LIST AND DETAILS	6
CONFIGURATION OF TEST SETUP	6
BLOCK DIAGRAM OF TEST SETUP	7
SUMMARY OF TEST RESULTS	8
FCC §1.1310 & §2.1093- RF EXPOSURE	9
APPLICABLE STANDARD	9
TEST RESULT	9
FCC §2.1047 - MODULATION CHARACTERISTIC	10
FCC § 2.1046, § 22.913 (A) & § 24.232 (C) - RF OUTPUT POWER.....	11
APPLICABLE STANDARD	11
TEST PROCEDURE	11
TEST EQUIPMENT LIST AND DETAILS.....	15
TEST DATA	15
FCC §2.1049, §22.917, §22.905 & §24.238 - OCCUPIED BANDWIDTH	19
APPLICABLE STANDARD	19
TEST PROCEDURE	19
TEST EQUIPMENT LIST AND DETAILS.....	19
TEST DATA	20
FCC §2.1051, §22.917(A) & §24.238(A) - SPURIOUS EMISSIONS AT ANTENNA TERMINALS	27
APPLICABLE STANDARD	27
TEST PROCEDURE	27
TEST EQUIPMENT LIST AND DETAILS.....	27
TEST DATA	27
FCC §2.1053, §22.917 & §24.238 - SPURIOUS RADIATED EMISSIONS	32
APPLICABLE STANDARD	32
TEST PROCEDURE	32
TEST EQUIPMENT LIST AND DETAILS.....	33
TEST DATA	33
FCC §22.917(A) & §24.238(A) - BAND EDGES.....	38
APPLICABLE STANDARD	38
TEST PROCEDURE	38
TEST EQUIPMENT LIST AND DETAILS.....	38
TEST DATA	38

FCC §2.1055, §22.355 & §24.235 - FREQUENCY STABILITY.....43
APPLICABLE STANDARD43
TEST PROCEDURE43
TEST EQUIPMENT LIST AND DETAILS.....44
TEST DATA44

GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

EUT Name:	3G Mobile Phone
EUT Model:	DS502
Operation modes:	GSM Voice, GPRS/EDGE Data, WCDMA(R99 (Voice+Data), HSDPA,HSUPA, HSPA+, DC-HSDPA)
Operation Frequency:	GSM 850: 824-849 MHz(TX); 869-894 MHz(RX) PCS 1900: 1850-1910 MHz(TX); 1930-1990 MHz(RX) WCDMA Band 2: 1850-1910 MHz(TX); 1930-1990 MHz(RX) WCDMA Band 5: 824-849 MHz(TX); 869-894 MHz(RX)
Antenna Gain [▲]:	GSM850/WCDMA B5: -1.2dBi(-3.35 dBd) PCS1900/WCDMA B2: -1.2 dBi
Modulation Type:	GMSK,8PSK,QPSK,16QAM
Adapter Information	Model: J002-1
	Input: 100-240Vac 50/60Hz 0.2A
	Output: 5.0Vdc1000mA
Rated Input Voltage:	DC 3.8V from Battery or DC 5V from Adapter
Serial Number:	SZ2210527-19879E-RF-S1
EUT Received Date:	2021.06.01
EUT Received Status:	Good

Objective

This report is prepared on behalf of *Shenzhen Digidragon Technology Co., Ltd* in accordance with: Part 2-Subpart J, Part 22-Subpart H, Part 24-Subpart E of the Federal Communications Commission's rules.

The objective is to determine compliance with FCC Rules for output power, modulation characteristic, occupied bandwidth, spurious emissions 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, Part 22H, Part 24E.

ANSI C63.26-2015, American National Standard for Compliance Testing of Transmitters Used in Licensed Radio Services

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

Measurement Uncertainty

Parameter	Measurement Uncertainty
Occupied Channel Bandwidth	±5 %
RF output power, conducted	±0.61dB
Unwanted Emissions, radiated	30MHz ~ 1GHz: 5.85 dB 1G~26.5GHz: 5.23 dB
Unwanted Emissions, conducted	±1.5 dB
Temperature	±1°C
Humidity	±5%
DC and low frequency voltages	±0.4%
Duty Cycle	1%

Note: Otherwise required by the applicant or Product Regulations, Decision Rule in this report did not consider the uncertainty. The extended uncertainty given in this report is obtained by combining the standard uncertainty times the coverage factor K with the 95% confidence interval.

Test Facility

The Test site used by Bay Area Compliance Laboratories Corp. (Dongguan) to collect test data is located on the No.12, Pulong East 1st Road, Tangxia Town, Dongguan, Guangdong, 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. : 897218, the FCC Designation No. : CN1220.

The lab has been recognized by Innovation, Science and Economic Development Canada to test to Canadian radio equipment requirements, the CAB identifier: CN0022.

Declarations

BACL is not responsible for the authenticity of any test data provided by the applicant. Data included from the applicant that may affect test results are marked with a triangle symbol “▲”. Customer model name, addresses, names, trademarks etc. are not considered data.

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested.

This report cannot be reproduced except in full, without prior written approval of the Company.

This report is valid only with a valid digital signature. The digital signature may be available only under the Adobe software above version 7.0.

This report may contain data that are not covered by the accreditation scope and shall be marked with an asterisk “★”.

SYSTEM TEST CONFIGURATION

Justification

The EUT was configured for testing according to ANSI C63.26-2015.

The test items were performed with the EUT operating at testing mode. The device operates on GSM Band 850/1900MHz, WCDMA Band 2/5, test was performed with channels as below table:

Frequency Bands	Bandwidth (MHz)	Test Frequency(MHz)		
		Low	Middle	High
GSM/GPRS/EDGE 850	0.25	824.2	836.6	848.8
GSM/GPRS/EDGE 1900	0.25	1850.2	1880	1909.8
WCDMA Band 2	4.2	1852.4	1880	1907.6
WCDMA Band 5	4.2	826.4	836.6	846.6

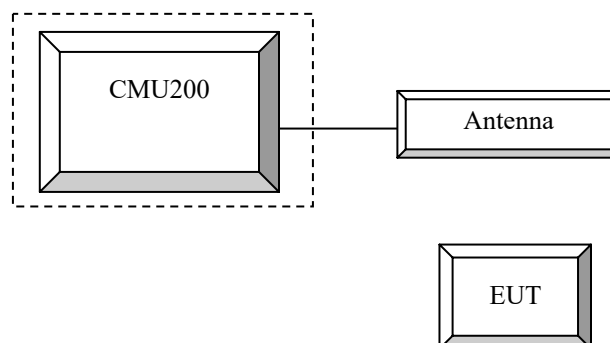
Equipment Modifications

No modification was made to the EUT.

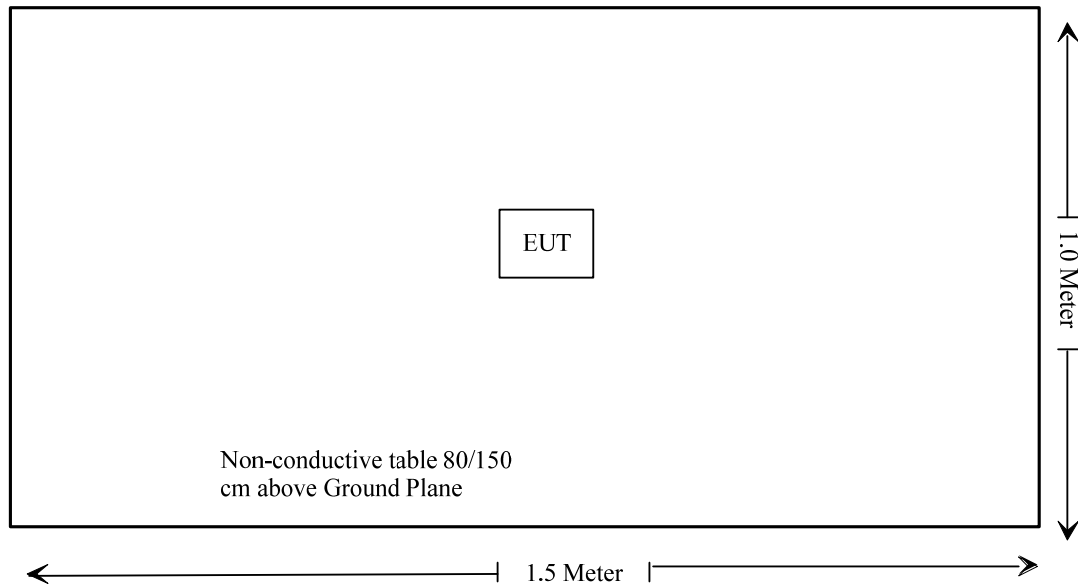
Support Equipment List and Details

Manufacturer	Description	Model	Serial Number
R&S	Universal Radio Communication Tester	CMU200	106 891
Un-Known	ANTENNA	Un-Known	Un-Known

Configuration of Test Setup



Block Diagram of Test Setup



SUMMARY OF TEST RESULTS

Rules	Description of Test	Result
FCC§1.1310, §2.1093	RF Exposure	Compliance
FCC§2.1046;§ 22.913 (a); § 24.232 (c)	RF Output Power	Compliance
FCC§ 2.1047	Modulation Characteristics	Not Applicable
FCC§ 2.1049; § 22.905 § 22.917; § 24.238	Occupied Bandwidth	Compliance
FCC§ 2.1051, § 22.917 (a); § 24.238 (a)	Spurious Emissions at Antenna Terminal	Compliance
FCC§ 2.1053 § 22.917 (a); § 24.238 (a)	Field Strength of Spurious Radiation	Compliance
FCC§ 22.917 (a); § 24.238 (a)	Out of band emission, Band Edge	Compliance
FCC§ 2.1055 § 22.355; § 24.235	Frequency stability vs. temperature Frequency stability vs. voltage	Compliance

FCC §1.1310 & §2.1093- RF EXPOSURE

Applicable Standard

FCC§1.1310 and §2.1093.

Test Result

Compliance, please refer to the SAR report: SZ2210527-19879E-20.

FCC §2.1047 - MODULATION CHARACTERISTIC

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

FCC § 2.1046, § 22.913 (a) & § 24.232 (c) - 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.

According to §24.232 (d) Power measurements for transmissions by stations authorized under this section may be made either in accordance with a Commission-approved average power technique or in compliance with paragraph (e) of this section. In both instances, equipment employed must be authorized in accordance with the provisions of §24.51. In measuring transmissions in this band using an average power technique, the peak-to-average ratio (PAR) of the transmission may not exceed 13 dB.

Test Procedure

GSM/GPRS/EGPRS

Function: Menu select > GSM Mobile Station > GSM 850/1900

Press Connection control to choose the different menus

Press RESET > choose all the reset all settings

Connection Press Signal Off to turn off the signal and change settings

Network Support > GSM + GPRS or GSM + EGSM

Main Service > Packet Data

Service selection > Test Mode A – Auto Slot Config, off

MS Signal Press Slot Config Bottom on the right twice to select and change the number of time slots and power setting

> Slot configuration > Uplink/Gamma

> 33 dBm for GPRS 850

> 30 dBm for GPRS 1900

> 27 dBm for EGPRS 850

> 26 dBm for EGPRS 1900

BS Signal Enter the same channel number for TCH channel (test channel) and BCCH channel

Frequency Offset > + 0 Hz

Mode > BCCH and TCH

BCCH Level > -85 dBm (May need to adjust if link is not stable)

BCCH Channel > choose desire test channel [Enter the same channel number for TCH channel (test channel) and BCCH channel]

Channel Type > Off

P0 > 4 dB

Slot Config > Unchanged (if already set under MS signal)

TCH > choose desired test channel

Hopping > Off

Main Timeslot > 3

Network Coding Scheme > CS4 (GPRS) and MCS5 (EGPRS)

Bit Stream > 2E9-1 PSR Bit Stream

AF/RF Enter appropriate offsets for Ext. Att. Output and Ext. Att. Input

Connection Press Signal on to turn on the signal and change settings

WCDMA-Release 99

The following tests were conducted according to the test requirements outlines in section 5.2 of the 3GPP TS34.121-1 specification. The EUT has a nominal maximum output power of 24dBm (+1.7/-3.7).

WCDMA General Settings	Loopback Mode	Test Mode 1
	Rel99 RMC	12.2kbps RMC
	Power Control Algorithm	Algorithm2
	β_c / β_d	8/15

WCDMA HSDPA

The following tests were conducted according to the test requirements outlines in section 5.2 of the 3GPP TS34.121-1 specification.

	Mode	HSDPA	HSDPA	HSDPA	HSDPA
	Subset	1	2	3	4
WCDMA General Settings	Loopback Mode	Test Mode 1			
	Rel99 RMC	12.2kbps RMC			
	HSDPA FRC	H-Set1			
	Power Control Algorithm	Algorithm2			
	β_c	2/15	12/15	15/15	15/15
	β_d	15/15	15/15	8/15	4/15
	β_d (SF)	64			
	β_c / β_d	2/15	12/15	15/8	15/4
	β_{hs}	4/15	24/15	30/15	30/15
MPR(dB)	0	0	0.5	0.5	
HSDPA Specific Settings	DACK	8			
	DNAK	8			
	DCQI	8			
	Ack-Nack repetition factor	3			
	CQI Feedback	4ms			
	CQI Repetition Factor	2			
	$A_{hs} = \beta_{hs} / \beta_c$	30/15			

WCDMA HSUPA

The following tests were conducted according to the test requirements outlines in section 5.2 of the 3GPP TS34.121-1 specification.

	Mode	HSUPA	HSUPA	HSUPA	HSUPA	HSUPA
	Subset	1	2	3	4	5
WCDMA General Settings	Loopback Mode	Test Mode 1				
	Rel99 RMC	12.2kbps RMC				
	HSDPA FRC	H-Set1				
	HSUPA Test	HSUPA Loopback				
	Power Control Algorithm	Algorithm2				
	β_c	11/15	6/15	15/15	2/15	15/15
	β_d	15/15	15/15	9/15	15/15	0
	β_{ec}	209/225	12/15	30/15	2/15	5/15
	β_c / β_d	11/15	6/15	15/9	2/15	-
	β_{hs}	22/15	12/15	30/15	4/15	5/15
	CM(dB)	1.0	3.0	2.0	3.0	1.0
MPR(dB)	0	2	1	2	0	
HSDPA Specific Settings	DACK	8				
	DNAK	8				
	DCQI	8				
	Ack-Nack repetition factor	3				
	CQI Feedback	4ms				
	CQI Repetition Factor	2				
	$A_{hs} = \beta_{hs} / \beta_c$	30/15				
HSUPA Specific Settings	DE-DPCCH	6	8	8	5	7
	DHARQ	0	0	0	0	0
	AG Index	20	12	15	17	21
	ETFCI	75	67	92	71	81
	Associated Max UL Data Rate kbps	242.1	174.9	482.8	205.8	308.9
	Reference E_FCIs	E-TFCI 11 E E-TFCI PO 4 E-TFCI 67 E-TFCI PO 18 E-TFCI 71 E-TFCI PO23 E-TFCI 75 E-TFCI PO26 E-TFCI 81 E-TFCI PO 27	E-TFCI 11 E-TFCI PO4 E-TFCI 92 E-TFCI PO 18	E-TFCI 11 E E-TFCI PO 4 E-TFCI 67 E-TFCI PO 18 E-TFCI 71 E-TFCI PO23 E-TFCI 75 E-TFCI PO26 E-TFCI 81 E-TFCI PO 27		

HSPA+

The following tests were conducted according to the test requirements in Table C.11.1.4 of 3GPP TS 34.121-1

Sub-test	β_c (Note3)	β_d	β_{HS} (Note1)	β_{ec}	β_{ed} (2xSF2) (Note 4)	β_{ed} (2xSF4) (Note 4)	CM (dB) (Note 2)	MPR (dB) (Note 2)	AG Index (Note 4)	E-TFCI (Note 5)	E-TFCI (boost)
1	1	0	30/15	30/15	β_{ed1} : 30/15 β_{ed2} : 30/15	β_{ed3} : 24/15 β_{ed4} : 24/15	3.5	2.5	14	105	105

Note 1: $\Delta_{ACK}, \Delta_{NACK}$ and $\Delta_{CQI} = 30/15$ with $\beta_{hs} = 30/15 * \beta_c$.

Note 2: CM = 3.5 and the MPR is based on the relative CM difference, MPR = MAX(CM-1,0).

Note 3: DPDCH is not configured, therefore the β_c is set to 1 and $\beta_d = 0$ by default.

Note 4: β_{ed} can not be set directly; it is set by Absolute Grant Value.

Note 5: All the sub-tests require the UE to transmit 2SF2+2SF4 16QAM EDCH and they apply for UE using E-DPDCH category 7. E-DCH TTI is set to 2ms TTI and E-DCH table index = 2. To support these E-DCH configurations DPDCH is not allocated. The UE is signalled to use the extrapolation algorithm.

DC-HSDPA

The following tests were conducted according to the test requirements in Table C.8.1.12 of 3GPP TS 34.121-1

Table C.8.1.12: Fixed Reference Channel H-Set 12

Parameter	Unit	Value
Nominal Avg. Inf. Bit Rate	kbps	60
Inter-TTI Distance	TTI's	1
Number of HARQ Processes	Processes	6
Information Bit Payload (N_{INF})	Bits	120
Number Code Blocks	Blocks	1
Binary Channel Bits Per TTI	Bits	960
Total Available SML's in UE	SML's	19200
Number of SML's per HARQ Proc.	SML's	3200
Coding Rate		0.15
Number of Physical Channel Codes	Codes	1
Modulation		QPSK

Note 1: The RMC is intended to be used for DC-HSDPA mode and both cells shall transmit with identical parameters as listed in the table.

Note 2: Maximum number of transmission is limited to 1, i.e., retransmission is not allowed. The redundancy and constellation version 0 shall be used.

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
yzjingcheng	Coaxial Cable	KTRFBU-141-50	41010012	Each time	N/A
yzjingcheng	Coaxial Cable	KTRFBU-141-50	41005011	Each time	N/A
Unknown	Coaxial Cable	C-SJ00-0010	C0010/01	Each time	N/A
E-Microwave	Blocking Control	EMDCB-00036	0E01201047	Each time	N/A
Unknown	Attenuator	UNAT-3+	15529	Each time	N/A
R&S	Universal Radio Communication Tester	CMU200	106 891	2020-09-12	2021-09-12

** Statement of Traceability: Bay Area Compliance Laboratories Corp. (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).*

Test Data**Environmental Conditions**

Temperature:	26.9~27.4 °C
Relative Humidity:	47~64 %
ATM Pressure:	100.3~100.4kPa
Tester:	Lay Lei
Test Date:	2021-06-02~2021-06-04

Test Result: Compliance

Cellular Band & PCS Band

Conducted Output Power

Band	Channel No.	Conducted Peak Output Power (dBm)								
		GSM	GPRS 1TX Slot	GPRS 2TX Slots	GPRS 3TX Slots	GPRS 4TX Slots	EGPRS 1TX Slot	EGPRS 2TX Slots	EGPRS 3TX Slots	EGPRS 4TX Slots
Cellular	128	32.56	32.25	30.46	28.46	26.56	27.24	25.23	23.46	22.03
	190	32.26	32.76	30.25	28.26	26.52	27.53	25.52	23.62	21.46
	251	32.35	32.46	30.05	28.76	26.27	27.46	25.64	23.46	21.76
PCS	512	28.85	28.74	26.25	24.57	22.26	26.56	25.71	23.34	21.82
	661	28.76	28.61	26.47	24.22	22.15	26.72	25.46	23.21	21.43
	810	29.46	29.16	26.54	24.14	22.23	26.76	25.53	22.68	21.62

ERP/EIRP:

Band	Mode	Channel	Conducted Power (dBm)	Antenna Gain (dBi/dBd)	Cable Loss (dB)	Result (dBm)	Limit (dBm)
Cellular	GSM	Low	32.56	-3.35	0.5	28.71	38.45
		Middle	32.76	-3.35	0.5	28.91	38.45
		High	32.46	-3.35	0.5	28.61	38.45
	EGPRS	Low	27.24	-3.35	0.5	23.39	38.45
		Middle	27.53	-3.35	0.5	23.68	38.45
		High	27.46	-3.35	0.5	23.61	38.45
PCS	GSM	Low	28.85	-1.2	0.8	26.85	33
		Middle	28.76	-1.2	0.8	26.76	33
		High	29.46	-1.2	0.8	27.46	33
	EGPRS	Low	26.56	-1.2	0.8	24.56	33
		Middle	26.72	-1.2	0.8	24.72	33
		High	26.76	-1.2	0.8	24.76	33

Note:

- 1) The unit of Antenna Gain is dBd for frequency below 1GHz, and the unit of Antenna Gain is dBi for frequency above 1GHz.
- 2) Result = Conducted Power - Cable loss + Antenna Gain
- 3) Antenna gain(dBd)= Antenna gain(dBi)-2.15

WCDMA Band 2**Conducted Output Power and PAR:**

Mode	3GPP Sub Test	Low Channel		Middle Channel		High Channel	
		Ave. Power (dBm)	PAR (dB)	Ave. Power (dBm)	PAR (dB)	Ave. Power (dBm)	PAR (dB)
Rel 99	1	22.86	1.80	22.34	2.58	21.46	1.86
HSDPA	1	21.25	3.22	21.52	3.68	21.25	2.35
	2	21.76	3.21	21.28	3.23	21.63	3.35
	3	21.46	3.32	21.63	3.42	21.75	3.67
	4	22.23	3.82	21.48	3.61	21.46	3.64
HSUPA	1	22.85	2.75	22.34	3.01	21.64	0.20
	2	21.46	3.46	21.71	3.08	21.27	3.02
	3	22.26	3.04	21.62	3.64	21.61	3.46
	4	22.45	3.71	21.73	3.72	21.86	3.29
	5	22.56	3.26	21.64	3.46	21.49	3.76
DC-HSDPA	1	22.41	3.37	21.57	3.89	21.34	3.34
	2	22.37	3.42	21.86	3.35	21.28	3.27
	3	22.46	3.62	21.79	3.58	21.78	3.78
	4	22.86	3.21	21.28	3.92	21.69	2.98
HSPA+ (16QAM)	1	21.12	2.43	20.46	2.24	20.48	2.13

EIRP:

Channel	Conducted Power (dBm)	Antenna Gain (dBi)	Cable Loss (dB)	Result (dBm)	Limit (dBm)
Low	22.86	-1.2	0.8	20.86	33
Middle	22.34	-1.2	0.8	20.34	33
High	21.86	-1.2	0.8	19.86	33

WCDMA Band 5**Conducted Output Power and PAR:**

Mode	3GPP Sub Test	Low Channel		Middle Channel		High Channel	
		Ave. Power (dBm)	PAR (dB)	Ave. Power (dBm)	PAR (dB)	Ave. Power (dBm)	PAR (dB)
Rel 99	1	22.56	2.75	22.43	2.99	22.74	3.04
HSDPA	1	21.14	3.25	21.72	3.25	21.48	3.28
	2	21.25	3.08	21.63	3.82	21.93	3.28
	3	21.69	3.12	21.79	3.43	21.49	3.37
	4	21.86	3.28	21.21	3.71	21.85	3.14
HSUPA	1	21.92	3.04	21.34	4.03	21.74	3.28
	2	21.14	3.86	21.65	3.52	21.49	3.85
	3	21.23	3.46	21.52	3.46	21.34	3.63
	4	21.45	3.28	21.48	3.93	21.85	3.27
	5	21.32	3.62	21.92	3.42	21.27	3.84
DC-HSDPA	1	21.96	3.45	21.76	3.38	21.53	3.27
	2	21.46	3.73	21.42	3.47	21.49	3.36
	3	21.28	3.18	21.26	3.96	21.75	3.81
	4	21.46	3.27	21.14	3.46	21.86	3.92
HSPA+ (16QAM)	1	20.24	3.48	20.12	3.72	20.24	3.35

ERP:

Channel	Conducted Power (dBm)	Antenna Gain (dBd)	Cable Loss (dB)	Result (dBm)	Limit (dBm)
Low	22.56	-3.35	0.5	18.71	38.45
Middle	22.43	-3.35	0.5	18.58	38.45
High	22.74	-3.35	0.5	18.89	38.45

Note:

- 1) The unit of Antenna Gain is dBd for frequency below 1GHz, and the unit of Antenna Gain is dBi for frequency above 1GHz.
- 2) Result = Conducted Power - Cable loss + Antenna Gain
- 3) Antenna gain(dBd)= Antenna gain(dBi)-2.15

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

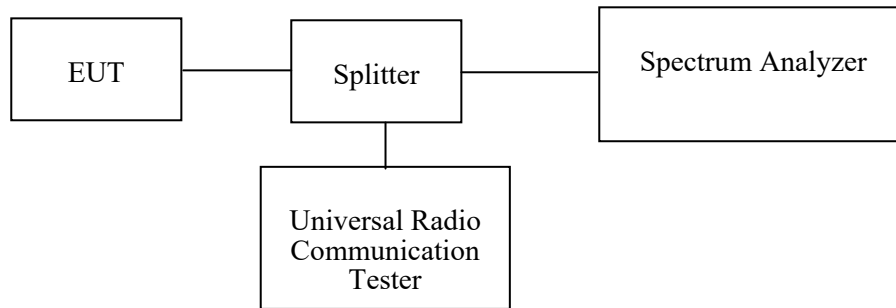
Applicable Standard

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

Test Procedure

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

The 26 dB & 99% bandwidth was recorded.



Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	Spectrum Analyzer	FSV40	101474	2020-07-07	2021-07-07
yzjingcheng	Coaxial Cable	KTRFBU-141-50	41010012	Each time	N/A
yzjingcheng	Coaxial Cable	KTRFBU-141-50	41005011	Each time	N/A
Unknown	Coaxial Cable	C-SJ00-0010	C0010/01	Each time	N/A
E-Microwave	Blocking Control	EMDCB-00036	0E01201047	Each time	N/A
Unknown	Attenuator	UNAT-3+	15529	Each time	N/A
E-Microwave	Two-way Splitter	ODP-1-6-2S	OE0120142	Each time	N/A

* **Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

Test Data**Environmental Conditions**

Temperature:	26.9~27.4 °C
Relative Humidity:	47~64 %
ATM Pressure:	100.3~100.4kPa
Tester:	Lay Lei
Test Date:	2021-06-02~2021-06-04

Test Mode: Transmitting

Test Result: Compliance. Please refer to the following table and plots.

GSM:

Band	Operation Mode	99% Occupied Bandwidth (MHz)			26 dB Occupied Bandwidth (MHz)		
		Low Channel	Middle Channel	High Channel	Low Channel	Middle Channel	High Channel
Cellular	GSM	0.246	0.244	0.246	0.317	0.318	0.320
	EGPRS	0.244	0.246	0.246	0.320	0.321	0.321
PCS	GSM	0.246	0.244	0.244	0.320	0.316	0.323
	EGPRS	0.244	0.244	0.244	0.321	0.317	0.320

WCDMA:

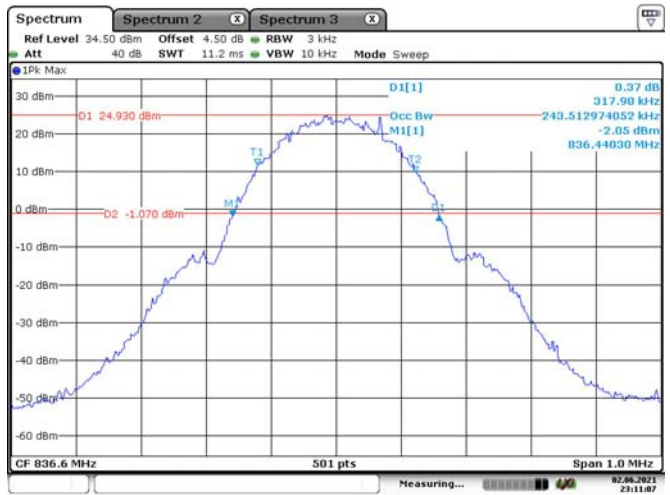
Band	Operation Mode	99% Occupied Bandwidth (MHz)			26 dB Occupied Bandwidth (MHz)		
		Low Channel	Middle Channel	High Channel	Low Channel	Middle Channel	High Channel
Cellular	Rel 99	4.172	4.152	4.172	4.726	4.717	4.717
	HSDPA	4.172	4.152	4.172	4.741	4.732	4.744
	HSUPA	4.172	4.172	4.172	4.703	4.715	4.723
PCS	Rel 99	4.212	4.172	4.192	4.851	4.739	4.811
	HSDPA	4.192	4.192	4.172	4.746	4.723	4.744
	HSUPA	4.172	4.172	4.152	4.764	4.740	4.735

Cellular 850 Band, GSM, Low Channel



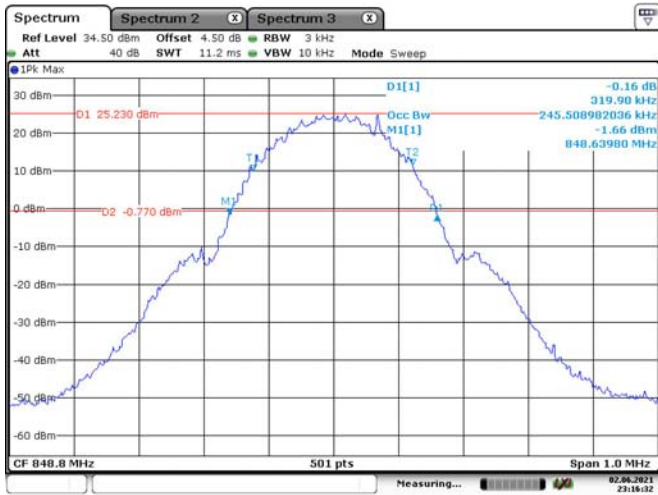
Date: 2 JUN 2021 23:01:01

Cellular 850 Band, GSM, Middle Channel



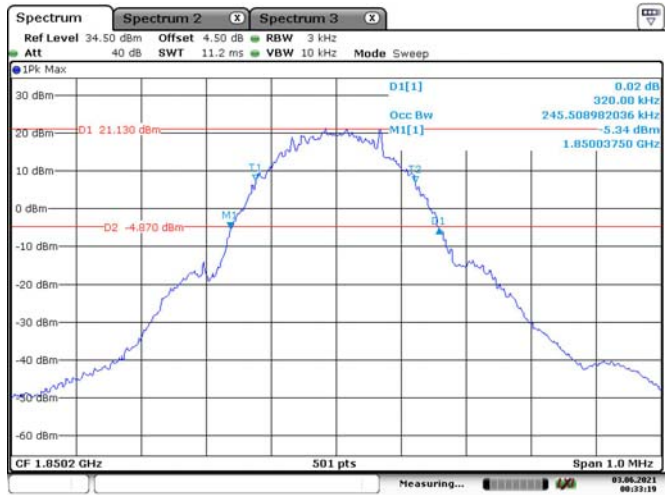
Date: 2 JUN 2021 23:11:07

Cellular 850 Band, GSM, High Channel



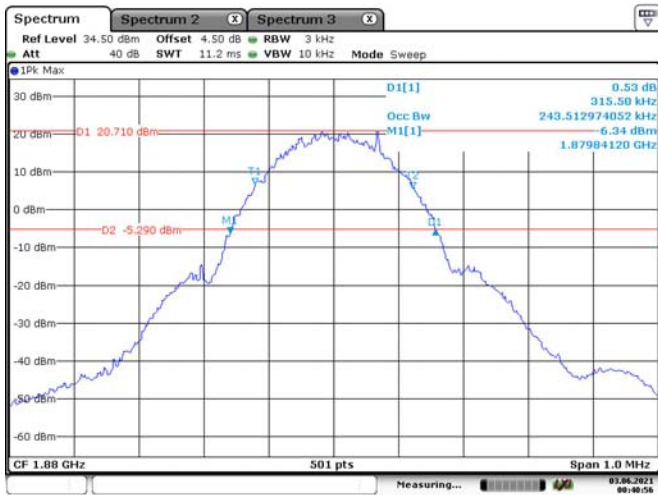
Date: 2 JUN 2021 23:16:32

PCS 1900 Band, GSM, Low Channel



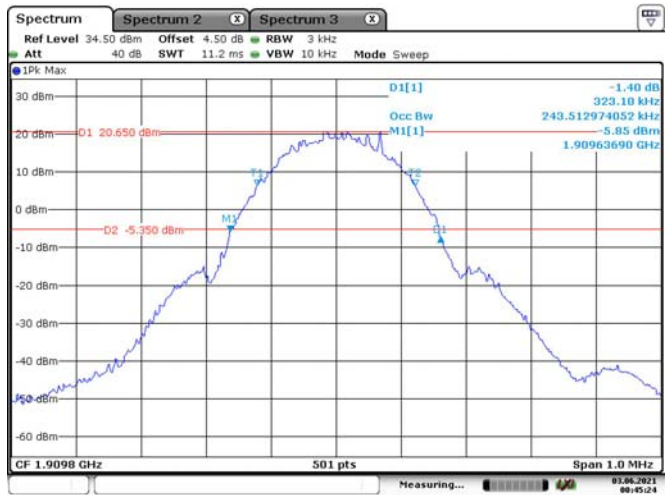
Date: 3 JUN 2021 00:13:19

PCS 1900 Band, GSM, Middle Channel



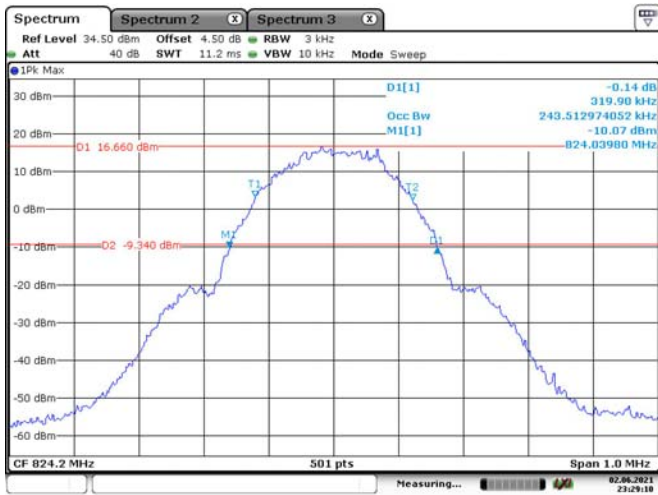
Date: 3 JUN 2021 00:40:56

PCS 1900 Band, GSM, High Channel

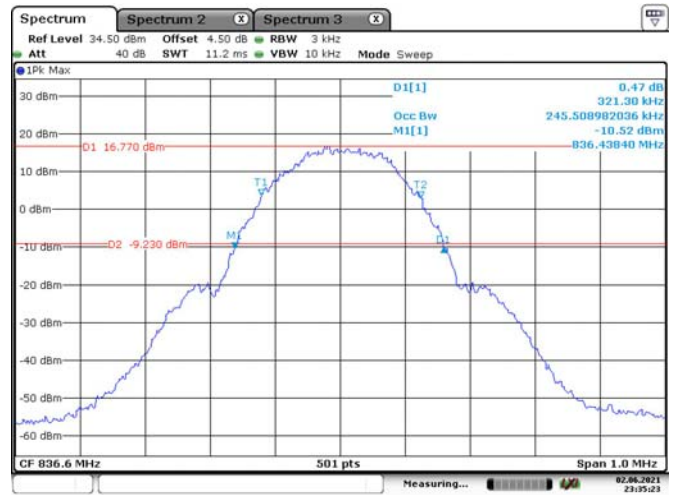


Date: 3 JUN 2021 00:45:24

Cellular 850 Band, EGPRS, Low Channel



Cellular 850 Band, EGPRS, Middle Channel



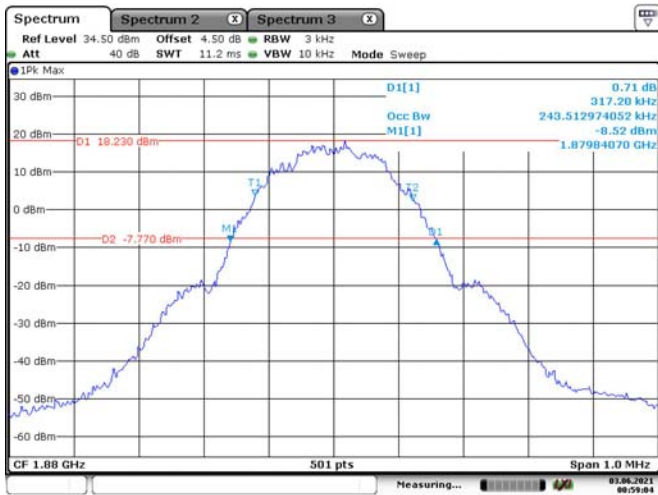
Cellular 850 Band, EGPRS, High Channel



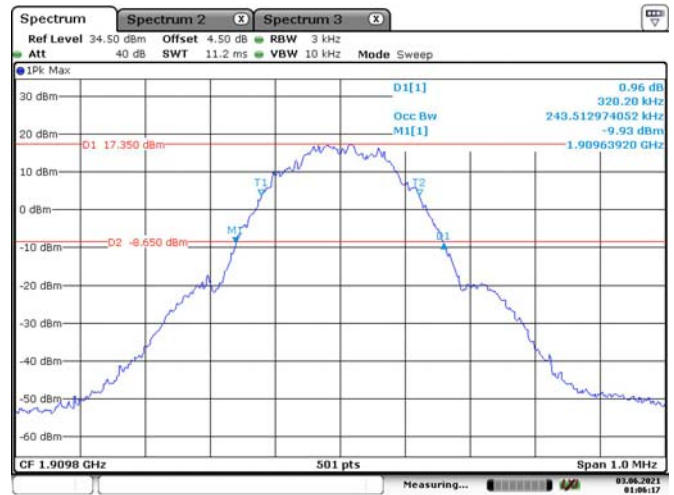
PCS 1900 Band, EGPRS, Low Channel



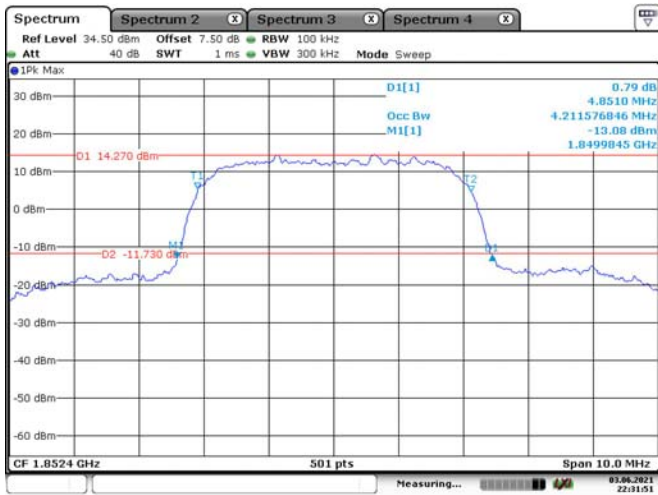
PCS 1900 Band, EGPRS, Middle Channel



PCS 1900 Band, EGPRS, High Channel

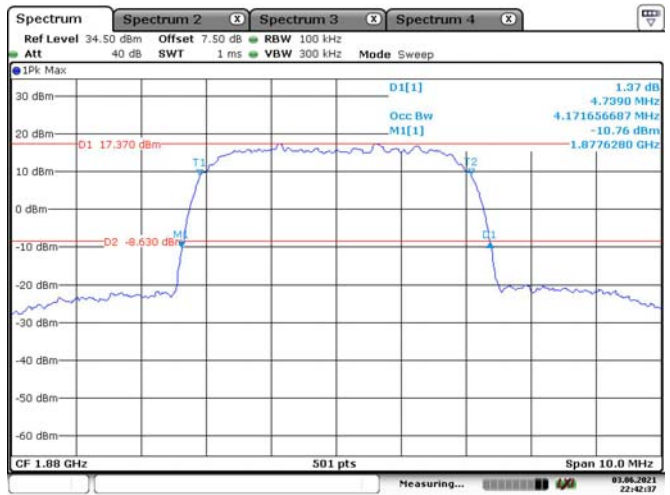


WCDMA Band II, Rel99, Low Channel



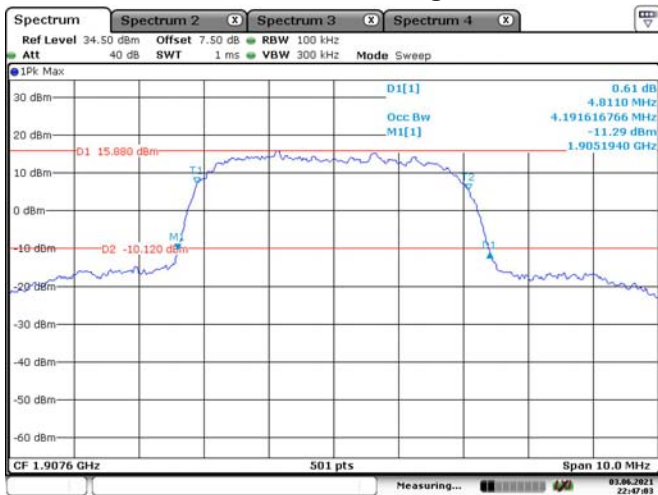
Date: 3 JUN 2021 22:31:52

WCDMA Band II, Rel99, Middle Channel



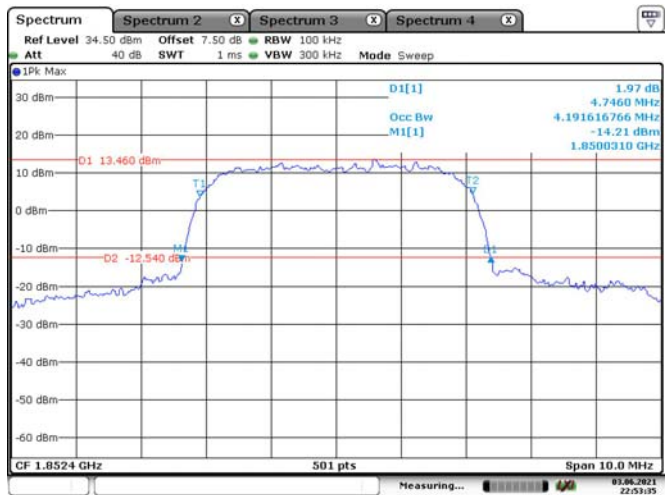
Date: 3 JUN 2021 22:42:37

WCDMA Band II, Rel99, High Channel



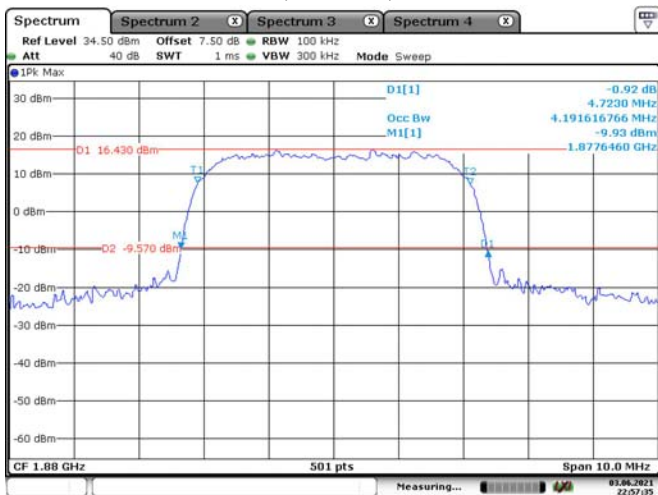
Date: 3 JUN 2021 22:47:03

WCDMA Band II, HSDPA, Low Channel



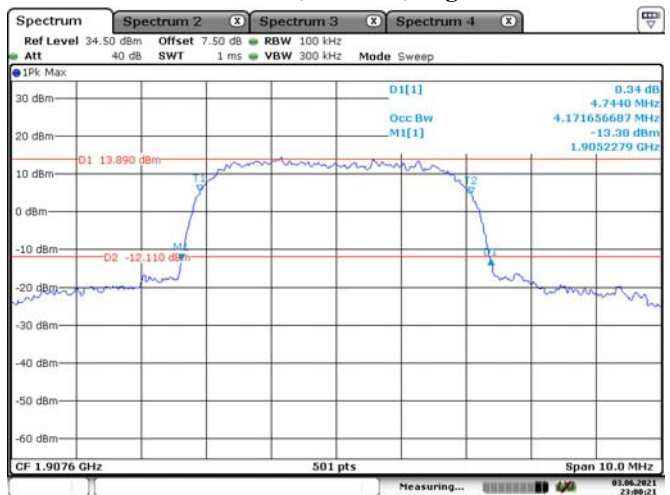
Date: 3 JUN 2021 22:53:35

WCDMA Band II, HSDPA, Middle Channel



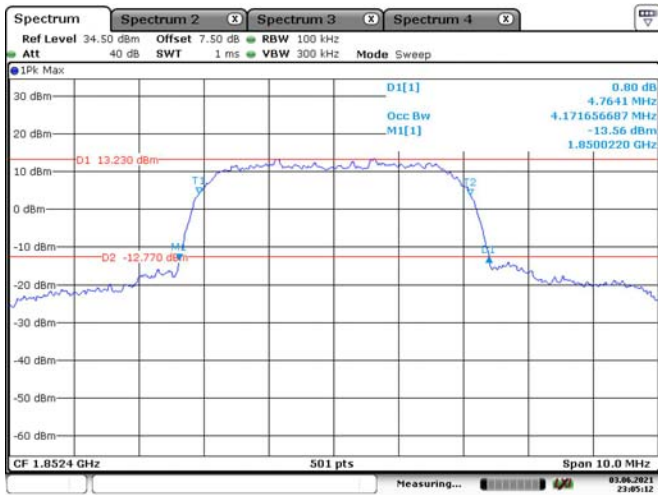
Date: 3 JUN 2021 22:57:35

WCDMA Band II, HSDPA, High Channel



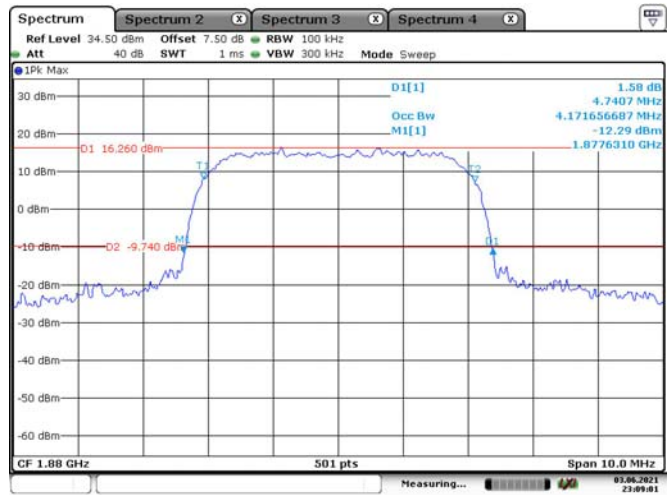
Date: 3 JUN 2021 23:00:21

WCDMA Band II, HSUPA, Low Channel



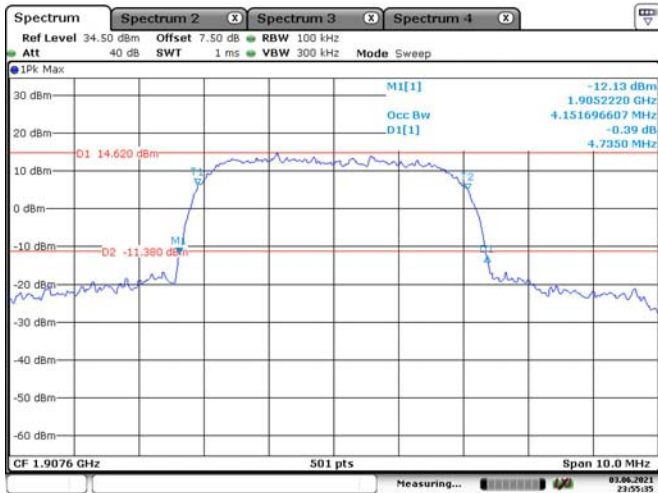
Date: 3 JUN 2021 23:05:13

WCDMA Band II, HSUPA, Middle Channel



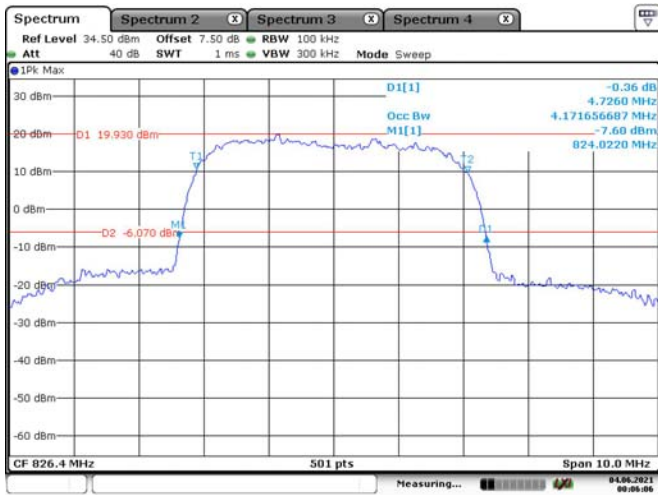
Date: 3 JUN 2021 23:09:01

WCDMA Band II, HSUPA, High Channel



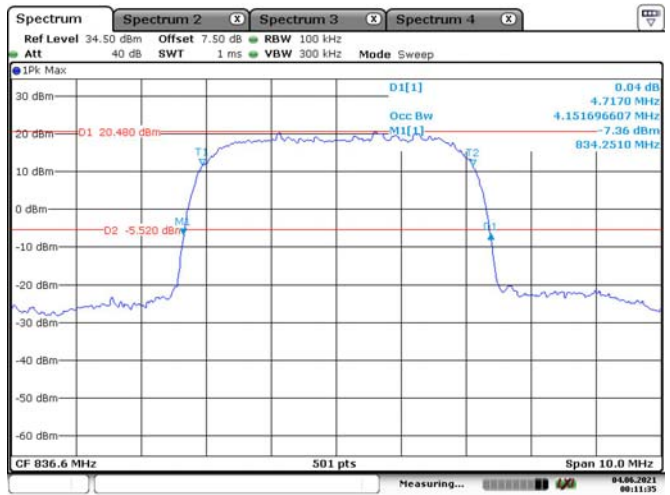
Date: 3 JUN 2021 23:55:35

WCDMA Band V, Rel99, Low Channel



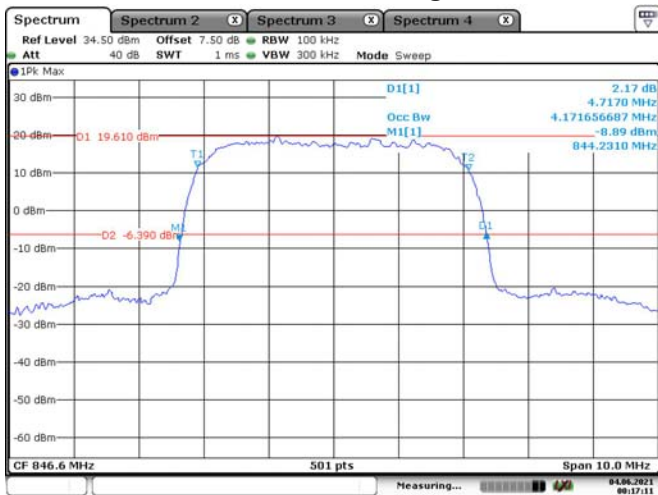
Date: 4 JUN. 2021 00:06:06

WCDMA Band V, Rel99, Middle Channel



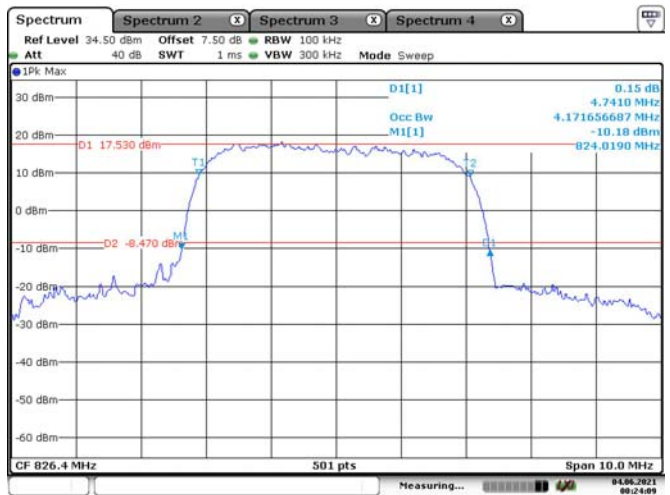
Date: 4 JUN. 2021 00:11:35

WCDMA Band V, Rel99, High Channel



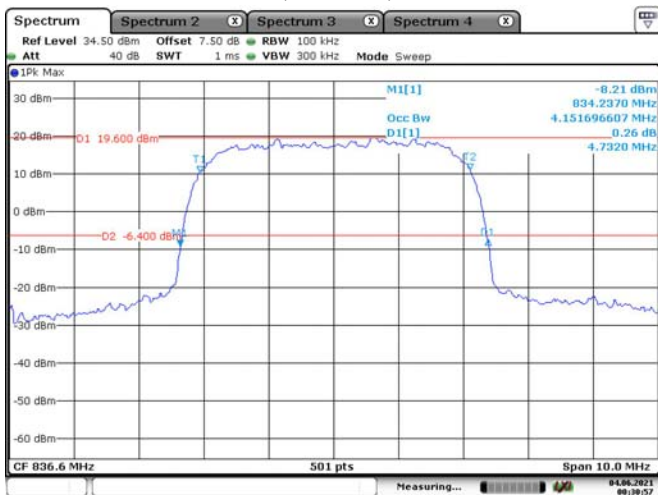
Date: 4 JUN. 2021 00:17:11

WCDMA Band V, HSDPA, Low Channel



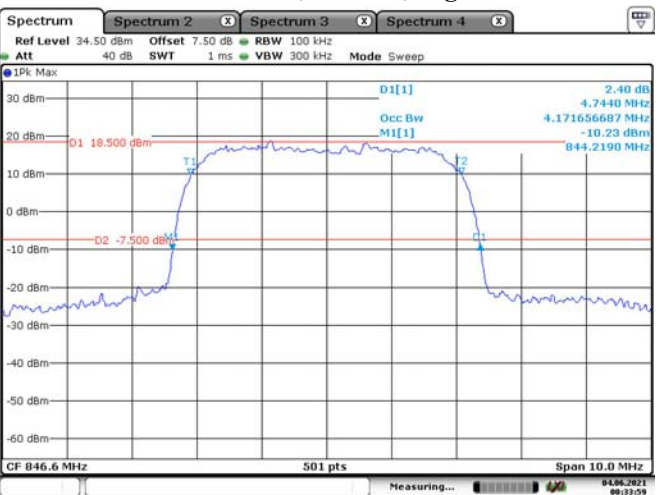
Date: 4 JUN. 2021 00:24:09

WCDMA Band V, HSDPA, Middle Channel



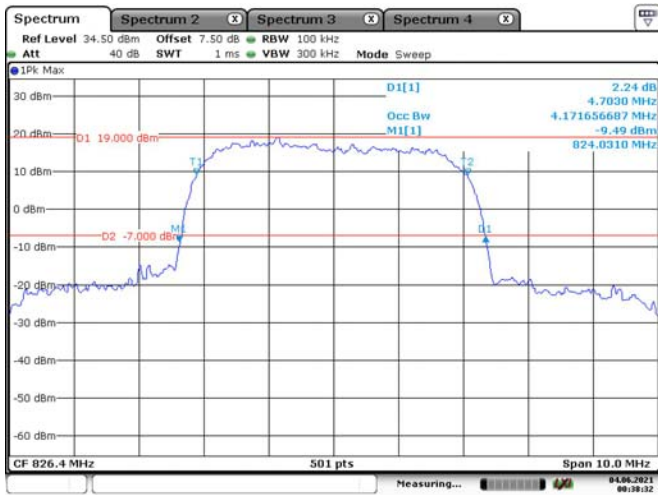
Date: 4 JUN. 2021 00:30:57

WCDMA Band V, HSDPA, High Channel



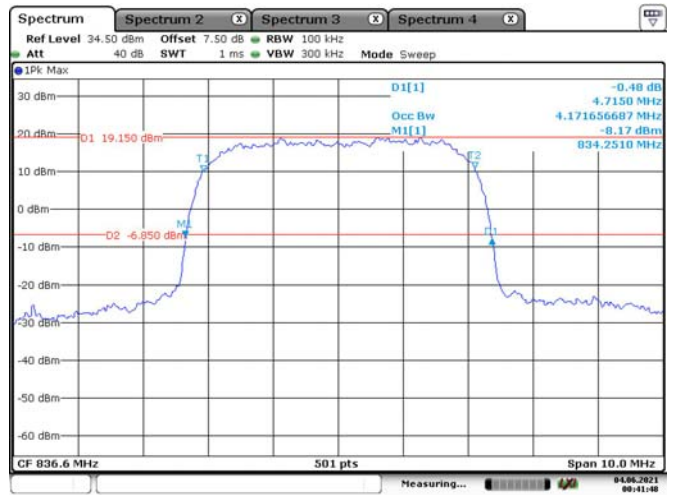
Date: 4 JUN. 2021 00:33:59

WCDMA Band V, HSUPA, Low Channel



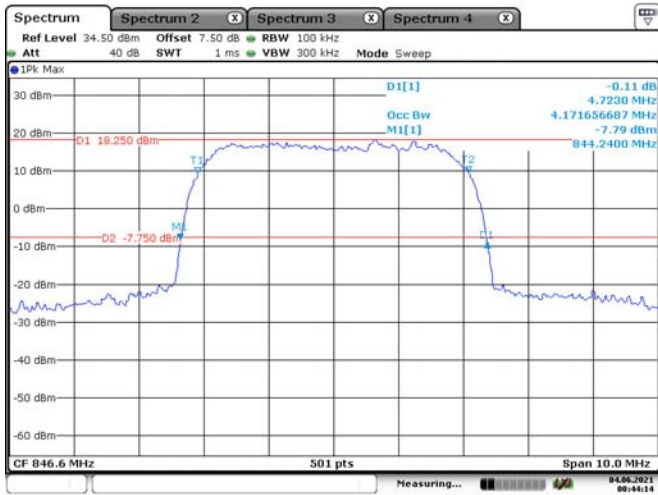
Date: 4.JUN.2021 00:38:32

WCDMA Band V, HSUPA, Middle Channel



Date: 4.JUN.2021 00:41:48

WCDMA Band V, HSUPA, High Channel



Date: 4.JUN.2021 00:44:15

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

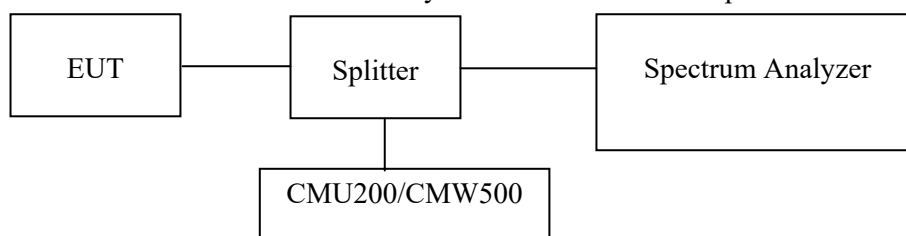
Applicable Standard

FCC §2.1051, §22.917(a), §24.238(a).

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

Test Procedure

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



Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	Spectrum Analyzer	FSV40	101474	2020-07-07	2021-07-07
yzjingcheng	Coaxial Cable	KTRFBU-141-50	41010012	Each time	N/A
yzjingcheng	Coaxial Cable	KTRFBU-141-50	41005011	Each time	N/A
Unknown	Coaxial Cable	C-SJ00-0010	C0010/01	Each time	N/A
E-Microwave	Blocking Control	EMDCB-00036	0E01201047	Each time	N/A
Unknown	Attenuator	UNAT-3+	15529	Each time	N/A
E-Microwave	Two-way Splitter	ODP-1-6-2S	OE0120142	Each time	N/A

* **Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

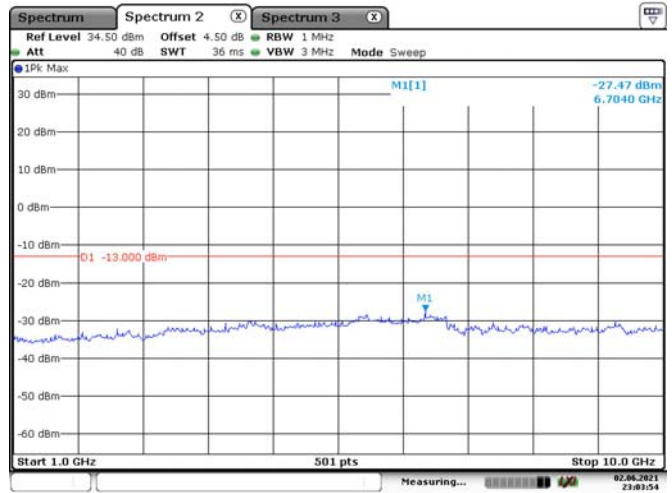
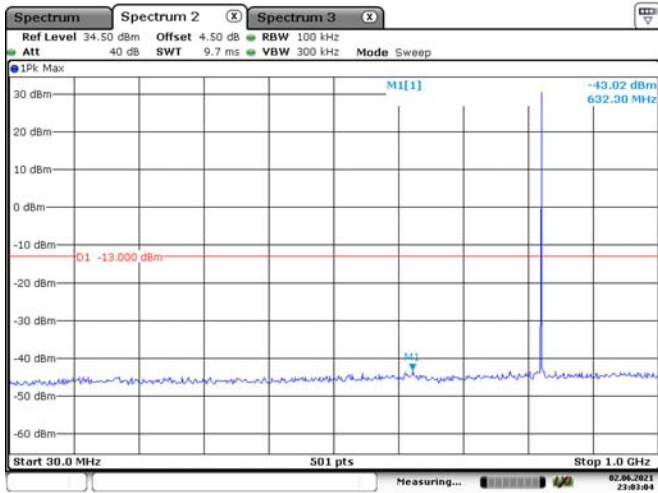
Test Data

Environmental Conditions

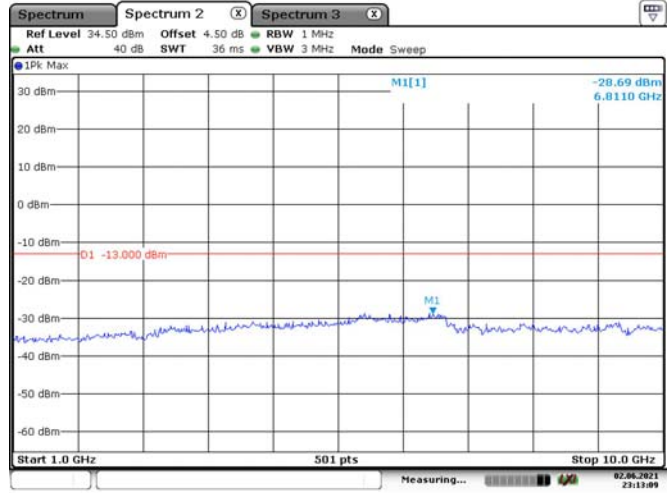
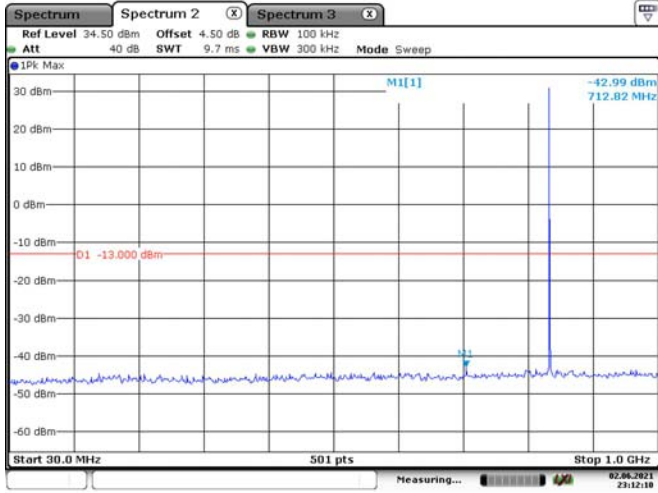
Temperature:	26.9~27.5 °C
Relative Humidity:	47~64 %
ATM Pressure:	100.3~100.4kPa
Tester:	Lay Lei
Test Date:	2021-06-02~2021-06-04

Test Result: Compliance. Please refer to the following plots.

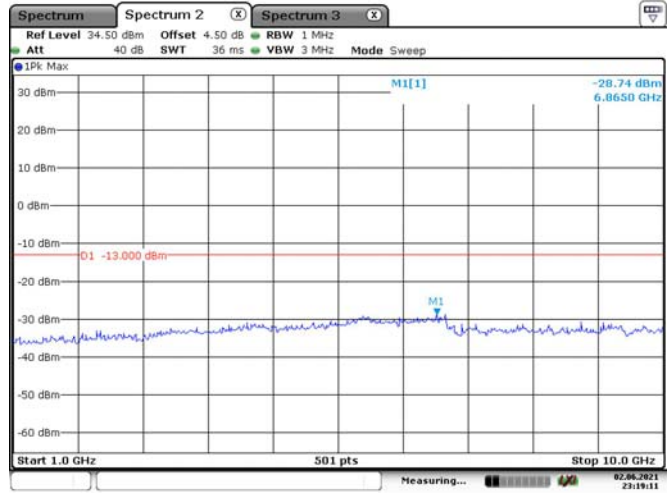
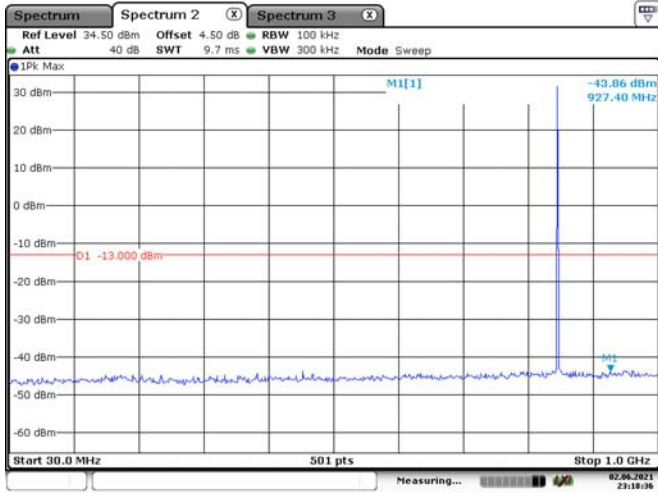
GSM 850, Low Channel



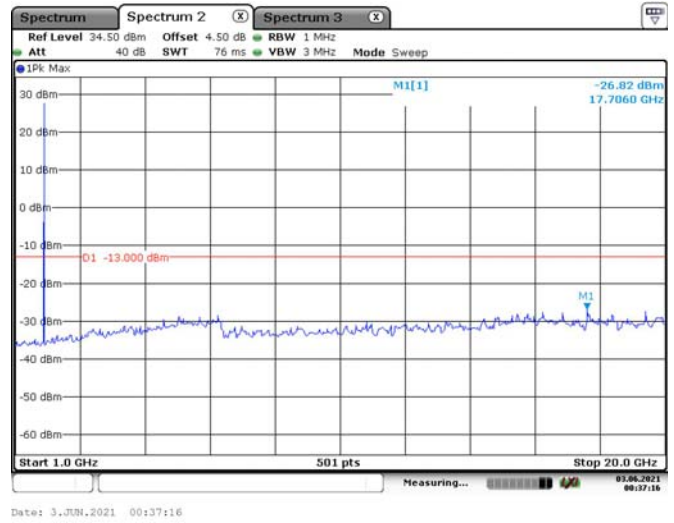
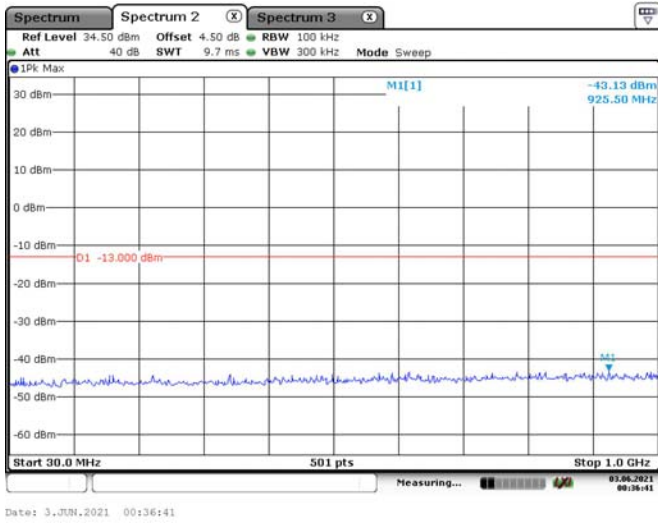
GSM 850, Middle Channel



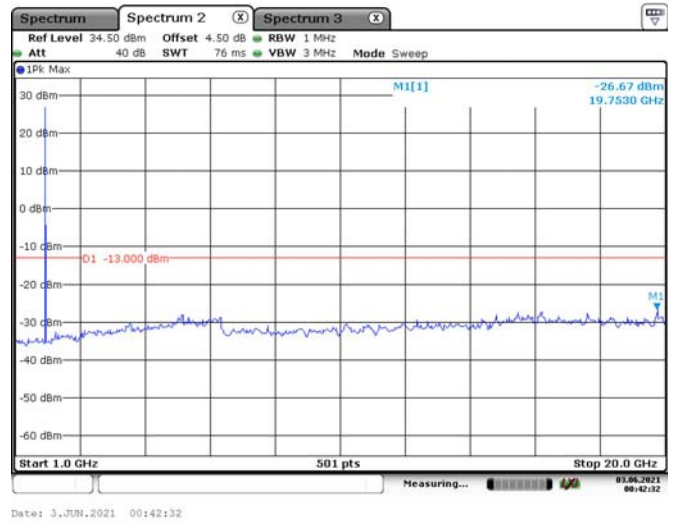
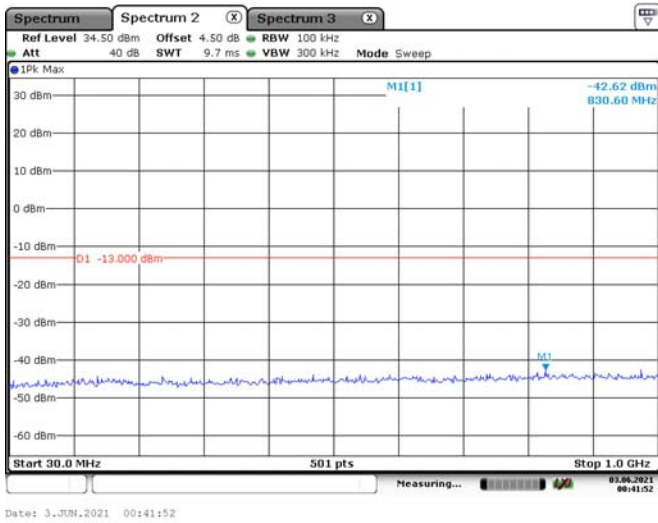
GSM 850, High Channel



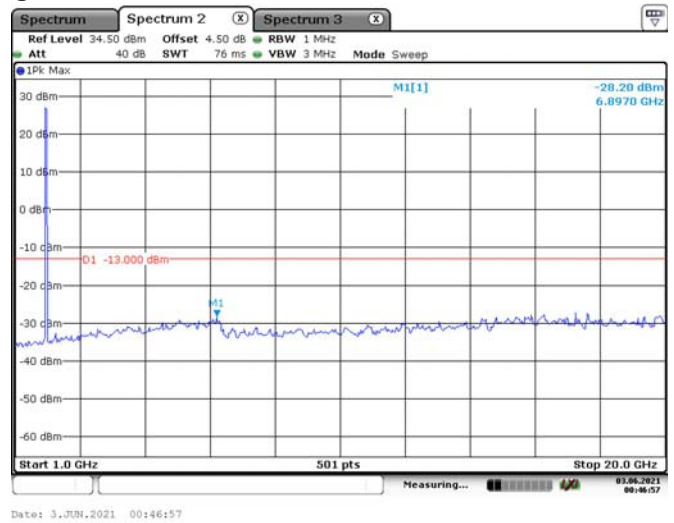
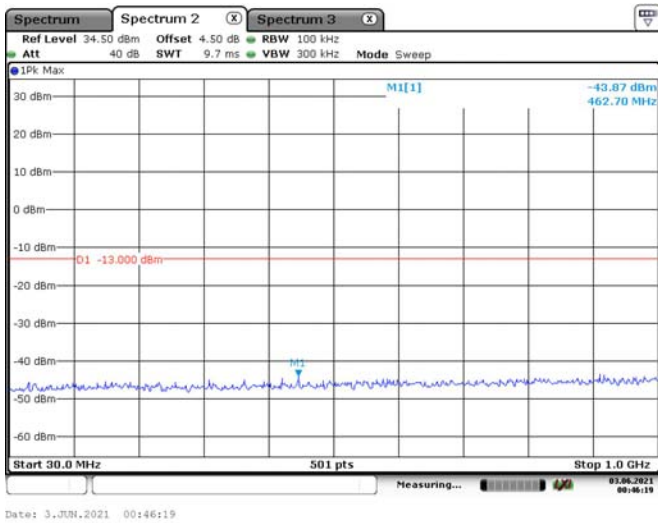
PCS 1900, Low Channel



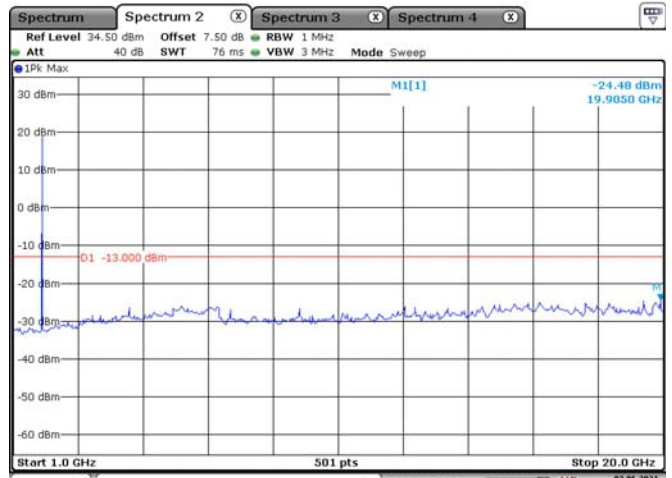
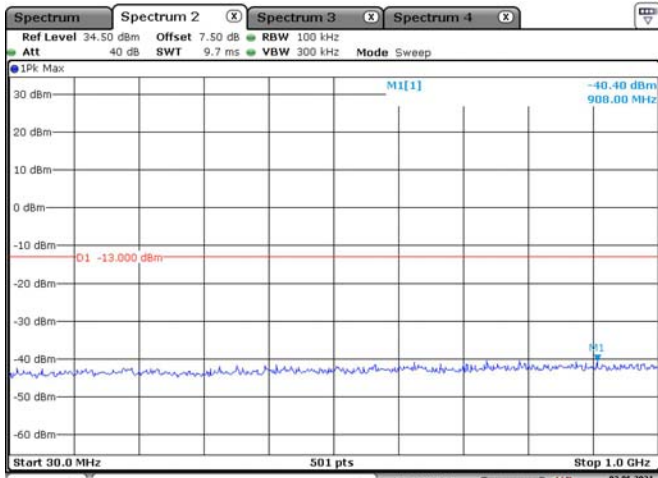
PCS 1900, Middle Channel



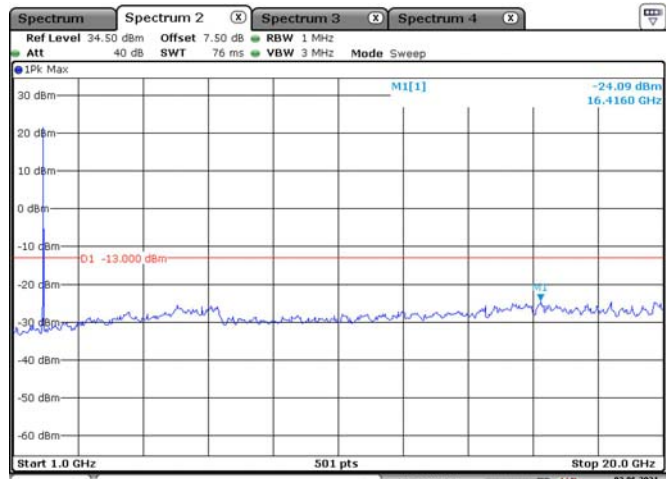
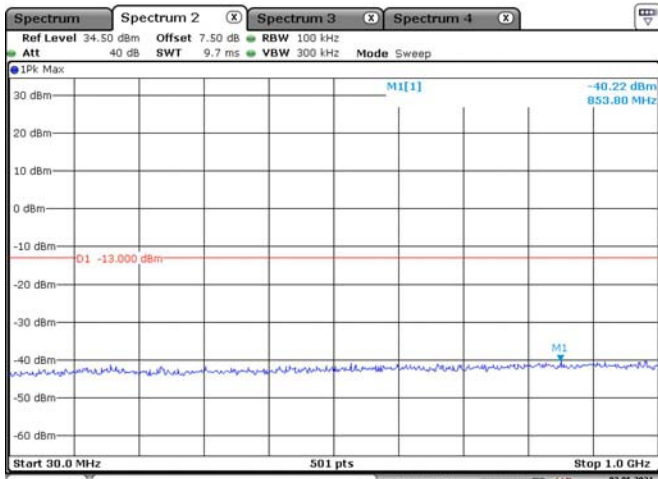
PCS 1900, High Channel



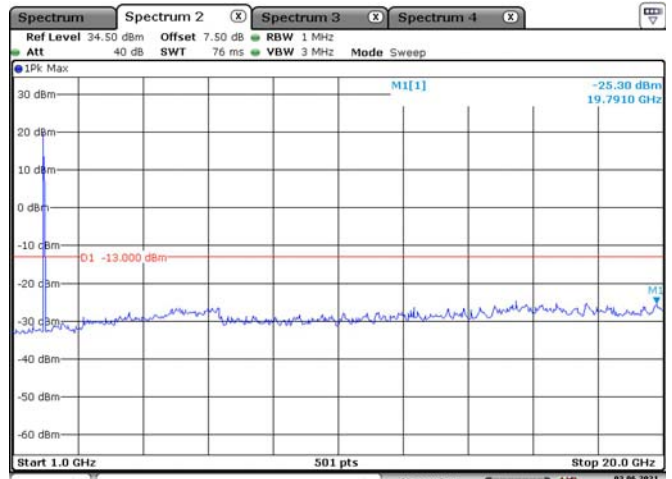
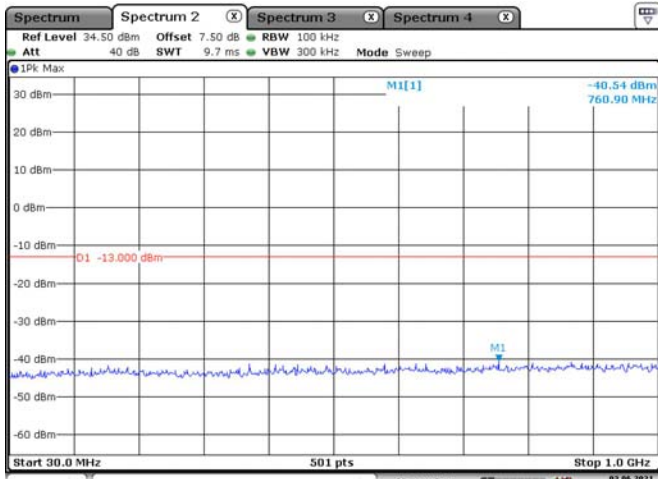
WCDMA Band II, R99, Low Channel



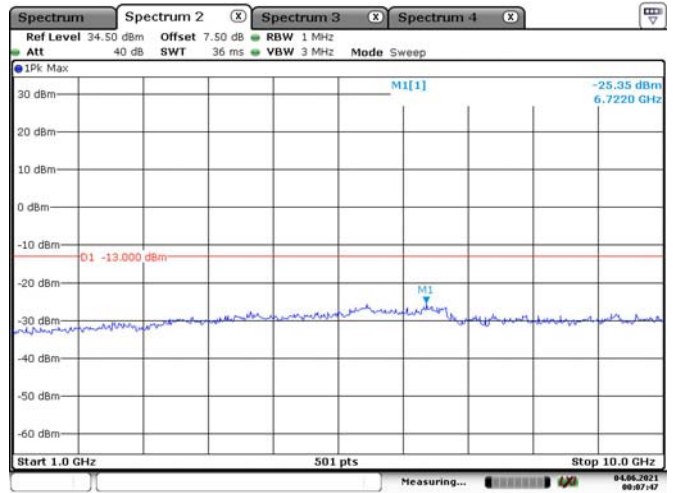
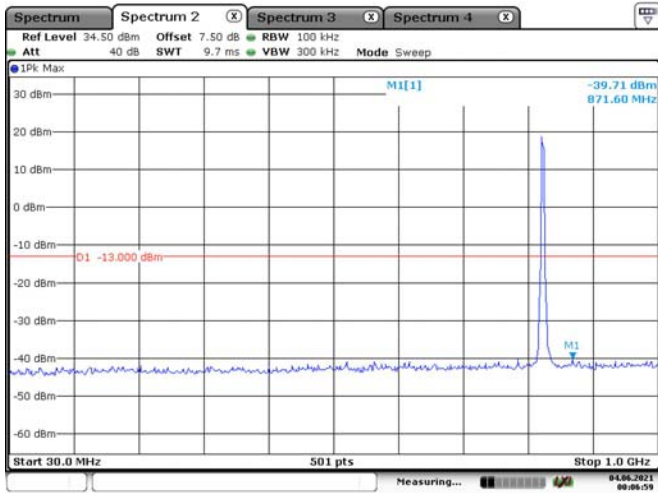
WCDMA Band II, R99, Middle Channel



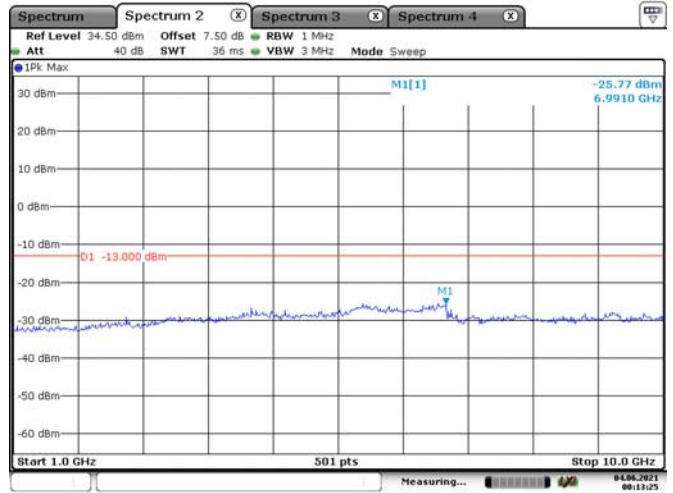
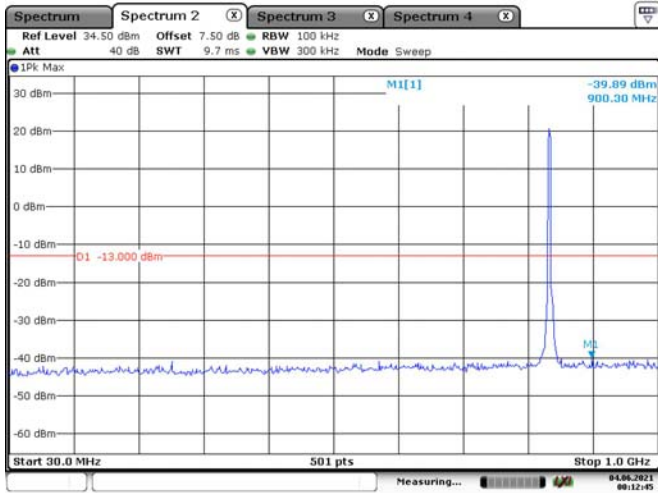
WCDMA Band II, R99, High Channel



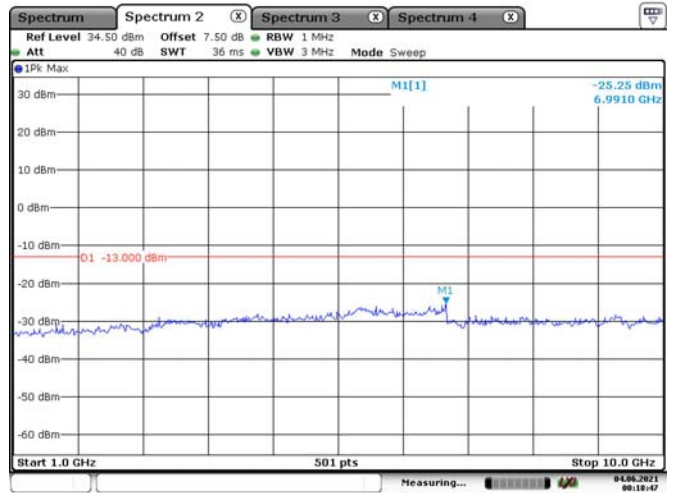
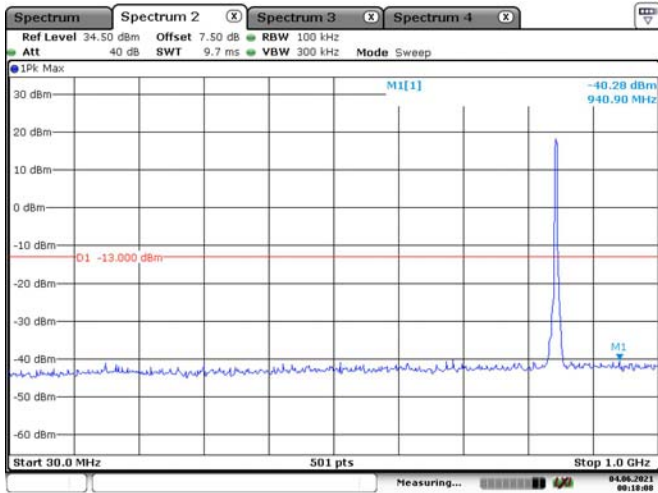
WCDMA Band V, R99, Low Channel



WCDMA Band V, R99, Middle Channel



WCDMA Band V, R99, High Channel



FCC §2.1053, §22.917 & §24.238 - SPURIOUS RADIATED EMISSIONS

Applicable Standard

FCC § 2.1053, §22.917, § 24.238

Test Procedure

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

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

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

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

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

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

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Sunol Sciences	Antenna	JB3	A060611-1	2020-11-10	2023-11-10
R&S	EMI Test Receiver	ESR3	102453	2020-09-12	2021-09-12
Unknown	Coaxial Cable	C-NJNJ-50	C-0075-01	2020-09-05	2021-09-05
Unknown	Coaxial Cable	C-NJNJ-50	C-0400-01	2020-09-05	2021-09-05
Unknown	Coaxial Cable	C-NJNJ-50	C-1400-01	2021-05-06	2022-05-05
HP	Amplifier	8447D	2727A05902	2020-09-05	2021-09-05
EMCO	Adjustable Dipole Antenna	3121C	9109-753	N/A	N/A
Unknown	Coaxial Cable	C-NJNJ-50	C-0200-02	2020-09-05	2021-09-05
Agilent	Signal Generator	E8247C	MY43321350	2021-04-25	2022-04-24
ETS-Lindgren	Horn Antenna	3115	000 527 35	2018-10-12	2021-10-12
Ducommun Technologies	Horn Antenna	ARH-4223-02	1007726-01 1304	2020-12-05	2023-12-04
Agilent	Spectrum Analyzer	E4440A	SG43360054	2020-07-07	2021-07-07
Unknown	Coaxial Cable	C-SJSJ-50	C-0800-01	2020-09-05	2021-09-05
Mini-Circuit	Amplifier	ZVA-213-S+	54201245	2020-09-05	2021-09-05
Quinstar	Amplifier	QLW-18405536- JO	15964001001	2020-06-27	2021-06-27
ETS-Lindgren	Horn Antenna	3115	9912-5985	2020-10-13	2023-10-12
Ducommun Technologies	Horn Antenna	ARH-4223-02	1007726-02 1304	2020-12-05	2023-12-04
Unknown	Coaxial Cable	C-NJNJ-50	C-0200-02	2020-09-05	2021-09-05

* **Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

Test Data**Environmental Conditions**

Test Items	Radiation Below 1GHz	Radiation Above 1GHz
Temperature:	28.2°C	28.0°C
Relative Humidity:	53%	33%
ATM Pressure:	100.1kPa	100.4kPa
Tester:	Joker Chen	Jeremy Liang
Test Date:	2021-06-19	2021-06-09

Test Result: Compliance.

EUT Operation Mode: Transmitting

Cellular Band (PART 22H)

30 MHz-10 GHz:

Frequency (MHz)	Polar (H/V)	Receiver Reading (dBµV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
GSM850 Frequency:824.2MHz								
1648.40	H	41.27	-62.91	10.44	0.71	-53.18	-13.00	40.18
1648.40	V	41.86	-62.92	10.44	0.71	-53.19	-13.00	40.19
2472.60	H	45.94	-56.84	12.88	1.25	-45.21	-13.00	32.21
2472.60	V	44.36	-58.47	12.88	1.25	-46.84	-13.00	33.84
3296.80	H	36.17	-63.61	13.60	1.59	-51.60	-13.00	38.60
3296.80	V	37.27	-62.52	13.60	1.59	-50.51	-13.00	37.51
748.00	H	35.43	-64.67	0.00	0.94	-65.61	-13.00	52.61
710.10	V	36.83	-66.92	0.00	0.94	-67.86	-13.00	54.86
GSM850 Frequency:836.6MHz								
1673.20	H	39.48	-64.46	10.61	0.73	-54.58	-13.00	41.58
1673.20	V	40.73	-63.81	10.61	0.73	-53.93	-13.00	40.93
2509.80	H	37.25	-65.66	13.11	1.25	-53.80	-13.00	40.80
2509.80	V	39.49	-63.45	13.11	1.25	-51.59	-13.00	38.59
3346.40	H	36.92	-62.76	13.83	1.61	-50.54	-13.00	37.54
3346.40	V	36.38	-63.34	13.83	1.61	-51.12	-13.00	38.12
785.90	H	36.66	-62.38	0.00	0.93	-63.31	-13.00	50.31
934.70	V	36.57	-60.89	0.00	0.94	-61.83	-13.00	48.83
GSM850 Frequency:848.8MHz								
1697.60	H	41.06	-62.64	10.78	0.75	-52.61	-13.00	39.61
1697.60	V	40.10	-64.20	10.78	0.75	-54.17	-13.00	41.17
2546.40	H	36.47	-66.48	13.15	1.27	-54.60	-13.00	41.60
2546.40	V	37.61	-65.48	13.15	1.27	-53.60	-13.00	40.60
3395.20	H	35.72	-63.80	14.08	1.64	-51.36	-13.00	38.36
3395.20	V	36.38	-63.24	14.08	1.64	-50.80	-13.00	37.80
805.60	H	35.64	-62.93	0.00	0.94	-63.87	-13.00	50.87
800.00	V	35.48	-66.93	0.00	0.93	-67.86	-13.00	54.86

Frequency (MHz)	Polar (H/V)	Receiver Reading (dB μ V)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
WCDMA Band 5 Frequency:826.4 MHz								
1652.80	H	37.31	-66.82	10.47	0.72	-57.07	-13.00	44.07
1652.80	V	36.87	-67.86	10.47	0.72	-58.11	-13.00	45.11
2479.20	H	36.59	-66.22	12.93	1.25	-54.54	-13.00	41.54
2479.20	V	37.67	-65.18	12.93	1.25	-53.50	-13.00	40.50
3305.60	H	35.61	-64.19	13.63	1.59	-52.15	-13.00	39.15
3305.60	V	35.89	-63.92	13.63	1.59	-51.88	-13.00	38.88
792.90	H	36.05	-62.80	0.00	0.93	-63.73	-13.00	50.73
774.70	V	36.33	-66.46	0.00	0.93	-67.39	-13.00	54.39
WCDMA Band 5 Frequency:836.6MHz								
1673.20	H	36.82	-67.12	10.61	0.73	-57.24	-13.00	44.24
1673.20	V	36.78	-67.76	10.61	0.73	-57.88	-13.00	44.88
2509.80	H	35.48	-67.43	13.11	1.25	-55.57	-13.00	42.57
2509.80	V	35.72	-67.22	13.11	1.25	-55.36	-13.00	42.36
3346.40	H	35.11	-64.57	13.83	1.61	-52.35	-13.00	39.35
3346.40	V	35.02	-64.70	13.83	1.61	-52.48	-13.00	39.48
760.70	H	35.57	-64.17	0.00	0.93	-65.10	-13.00	52.10
776.10	V	36.14	-66.63	0.00	0.93	-67.56	-13.00	54.56
WCDMA Band 5 Frequency:846.6MHz								
1693.20	H	36.28	-67.47	10.75	0.75	-57.47	-13.00	44.47
1693.20	V	35.85	-68.50	10.75	0.75	-58.50	-13.00	45.50
2539.80	H	36.13	-66.81	13.14	1.27	-54.94	-13.00	41.94
2539.80	V	36.41	-66.65	13.14	1.27	-54.78	-13.00	41.78
3386.40	H	35.77	-63.78	14.03	1.63	-51.38	-13.00	38.38
3386.40	V	36.65	-62.99	14.03	1.63	-50.59	-13.00	37.59
729.80	H	36.12	-64.48	0.00	0.94	-65.42	-13.00	52.42
815.40	V	35.52	-66.39	0.00	0.95	-67.34	-13.00	54.34

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

Frequency (MHz)	Polar (H/V)	Receiver Reading (dB μ V)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
GSM1900 Frequency:1850.2MHz								
3700.40	H	37.55	-60.44	14.00	1.83	-48.27	-13.00	35.27
3700.40	V	36.41	-61.56	14.00	1.83	-49.39	-13.00	36.39
5550.60	H	37.59	-56.38	13.95	1.27	-43.70	-13.00	30.70
5550.60	V	36.25	-57.57	13.95	1.27	-44.89	-13.00	31.89
763.50	H	35.54	-64.12	0.00	0.93	-65.05	-13.00	52.05
791.50	V	35.78	-66.76	0.00	0.93	-67.69	-13.00	54.69
GSM 1900 Frequency:1880MHz								
3760.00	H	36.41	-61.23	13.76	1.63	-49.10	-13.00	36.10
3760.00	V	37.61	-59.89	13.76	1.63	-47.76	-13.00	34.76
5640.00	H	36.21	-57.38	14.02	1.31	-44.67	-13.00	31.67
5640.00	V	37.59	-55.89	14.02	1.31	-43.18	-13.00	30.18
748.00	H	36.47	-63.63	0.00	0.94	-64.57	-13.00	51.57
844.90	V	35.64	-65.31	0.00	0.98	-66.29	-13.00	53.29
GSM 1900 Frequency:1909.8MHz								
3819.60	H	36.03	-61.22	13.56	1.50	-49.16	-13.00	36.16
3819.60	V	37.01	-60.06	13.56	1.50	-48.00	-13.00	35.00
5640.00	H	37.54	-56.05	14.02	1.31	-43.34	-13.00	30.34
5640.00	V	36.18	-57.30	14.02	1.31	-44.59	-13.00	31.59
755.00	H	36.52	-63.38	0.00	0.93	-64.31	-13.00	51.31
788.70	V	36.24	-66.34	0.00	0.93	-67.27	-13.00	54.27

Frequency (MHz)	Polar (H/V)	Receiver Reading (dB μ V)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
WCDMA Band II, Frequency:1852.4 MHz								
3704.80	H	35.62	-62.34	13.98	1.81	-50.17	-13.00	37.17
3704.80	V	35.88	-62.05	13.98	1.81	-49.88	-13.00	36.88
5557.20	H	33.68	-60.21	13.97	1.27	-47.51	-13.00	34.51
5557.20	V	33.72	-60.02	13.97	1.27	-47.32	-13.00	34.32
833.70	H	35.46	-62.68	0.00	0.97	-63.65	-13.00	50.65
670.80	V	37.47	-66.87	0.00	0.89	-67.76	-13.00	54.76
WCDMA Band II, Frequency:1880 MHz								
3760.00	H	35.15	-62.49	13.76	1.63	-50.36	-13.00	37.36
3760.00	V	35.58	-61.92	13.76	1.63	-49.79	-13.00	36.79
5640.00	H	33.56	-60.03	14.02	1.31	-47.32	-13.00	34.32
5640.00	V	33.76	-59.72	14.02	1.31	-47.01	-13.00	34.01
828.10	H	35.52	-62.71	0.00	0.96	-63.67	-13.00	50.67
870.20	V	36.65	-63.47	0.00	1.01	-64.48	-13.00	51.48
WCDMA Band II, Frequency:1907.6MHz								
3815.20	H	35.63	-61.65	13.57	1.50	-49.58	-13.00	36.58
3815.20	V	35.74	-61.36	13.57	1.50	-49.29	-13.00	36.29
5722.80	H	34.26	-59.50	13.95	1.32	-46.87	-13.00	33.87
5722.80	V	34.21	-59.51	13.95	1.32	-46.88	-13.00	33.88
743.80	H	35.76	-64.45	0.00	0.94	-65.39	-13.00	52.39
728.40	V	36.07	-67.41	0.00	0.94	-68.35	-13.00	55.35

Note:

- 1) The unit of Antenna Gain is dBd for frequency below 1GHz, and the unit of Antenna Gain is dBi for frequency above 1GHz.
- 2) Absolute Level = Substituted Level - Cable loss + Antenna Gain
- 3) Margin = Limit-Absolute Level

FCC §22.917(a) & §24.238(a) - BAND EDGES

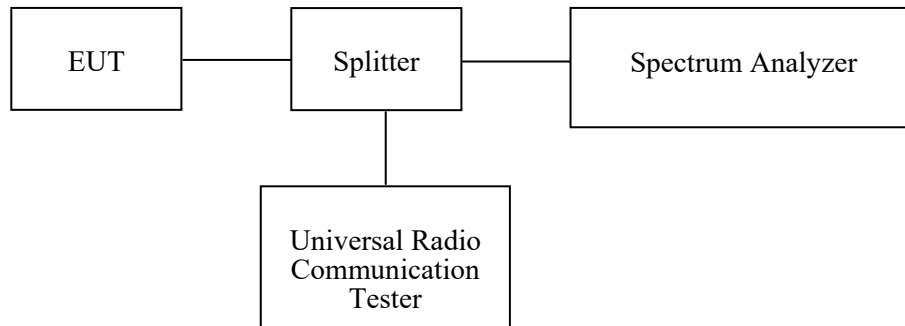
Applicable Standard

FCC § 2.1053, §22.917, § 24.238

Test Procedure

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

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



Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	Spectrum Analyzer	FSV40	101474	2020-07-07	2021-07-07
yzjingcheng	Coaxial Cable	KTRFBU-141-50	41010012	Each time	N/A
yzjingcheng	Coaxial Cable	KTRFBU-141-50	41005011	Each time	N/A
Unknown	Coaxial Cable	C-SJ00-0010	C0010/01	Each time	N/A
E-Microwave	Blocking Control	EMDCB-00036	0E01201047	Each time	N/A
Unknown	Attenuator	UNAT-3+	15529	Each time	N/A
E-Microwave	Two-way Splitter	ODP-1-6-2S	OE0120142	Each time	N/A

** Statement of Traceability: Bay Area Compliance Laboratories Corp. (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).*

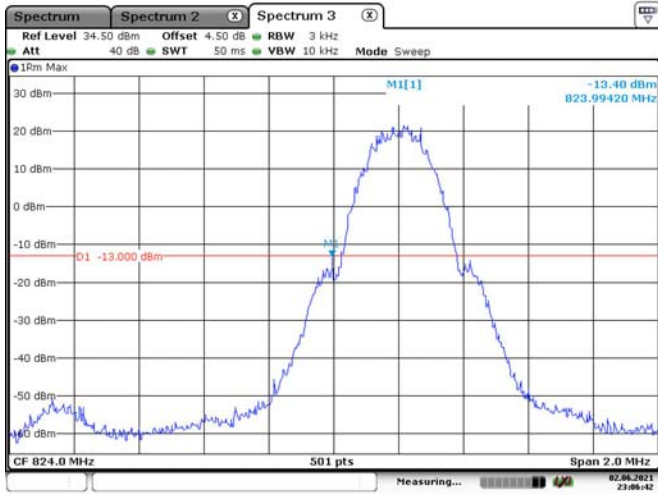
Test Data

Environmental Conditions

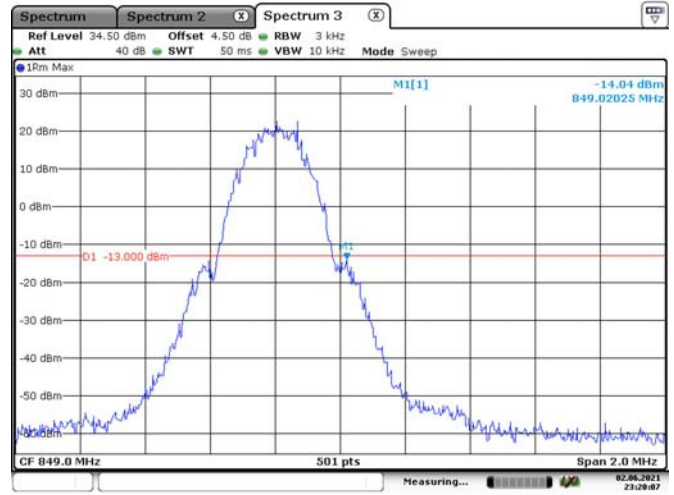
Temperature:	26.9~27.4 °C
Relative Humidity:	47~64 %
ATM Pressure:	100.3~100.4kPa
Tester:	Lay Lei
Test Date:	2021-06-02~2021-06-04

Test Mode: Transmitting
 Test Result: Compliance. Please refer to the following plots.

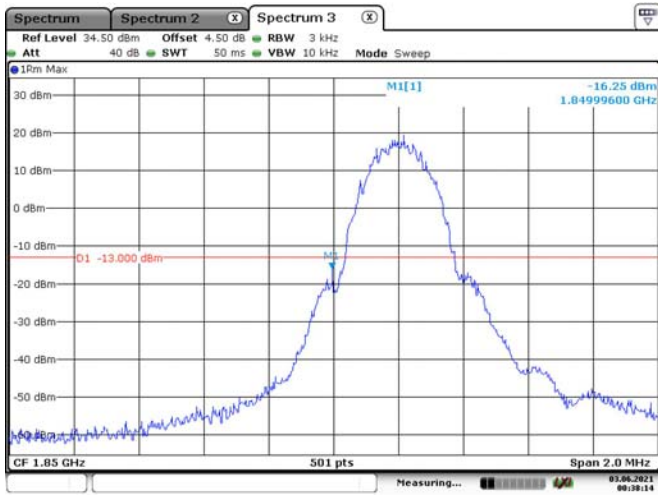
GSM 850, Left Band Edge



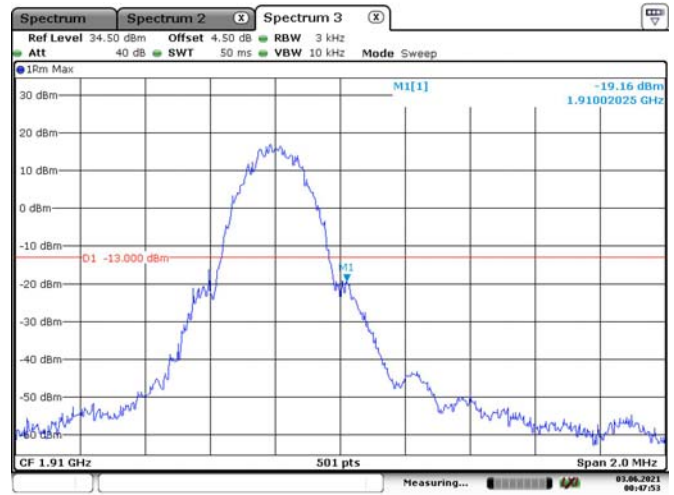
GSM 850, Right Band Edge



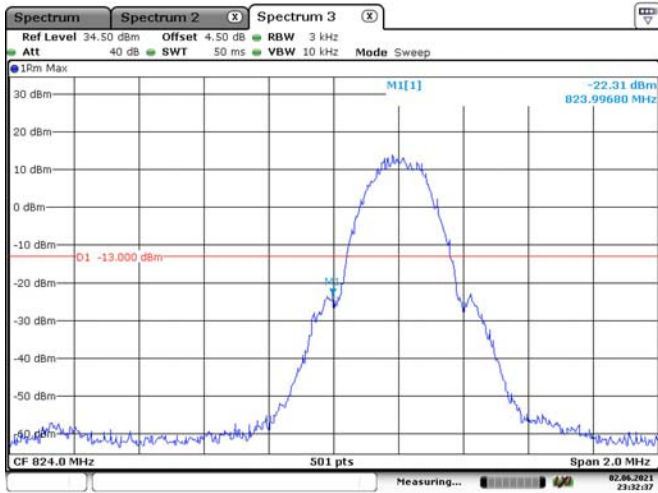
PCS 1900, Left Band Edge



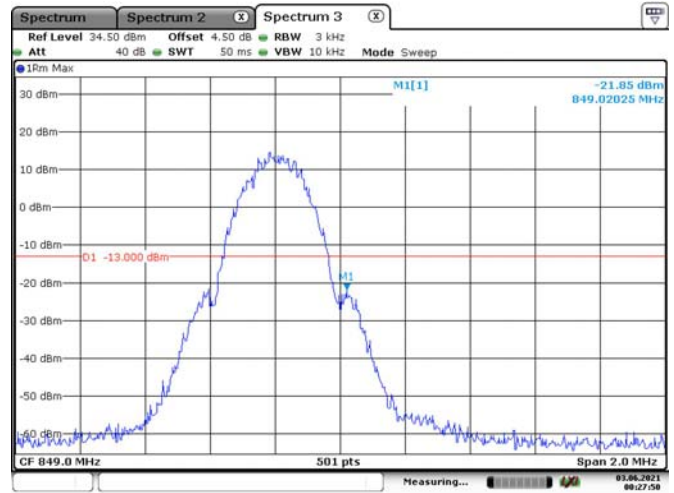
PCS 1900, Right Band Edge



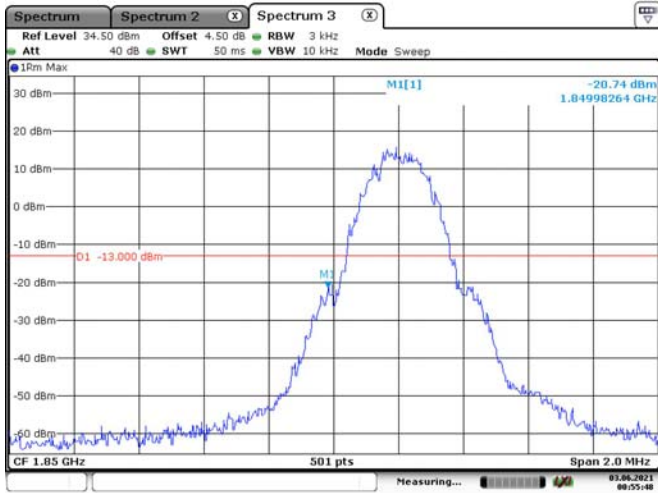
EGPRS 850, Left Band Edge



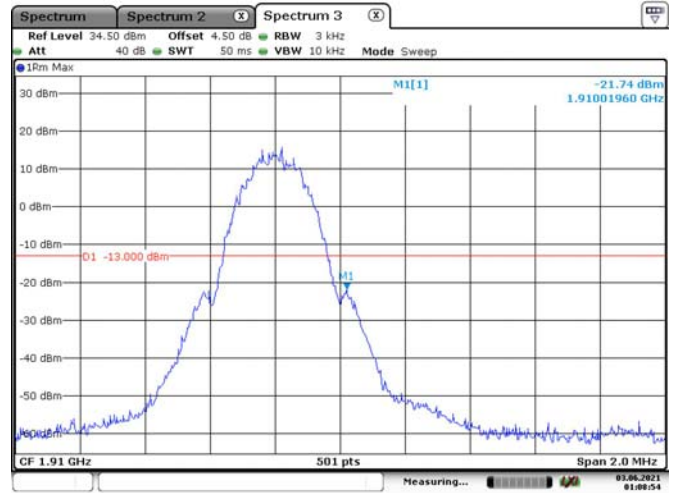
EGPRS 850, Right Band Edge



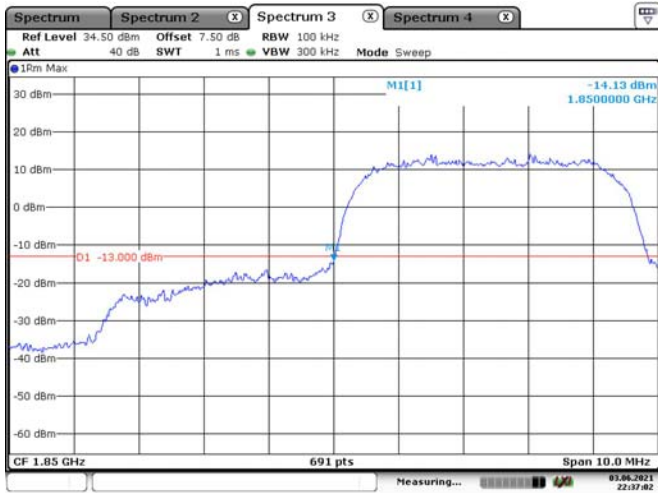
EGPRS 1900, Left Band Edge



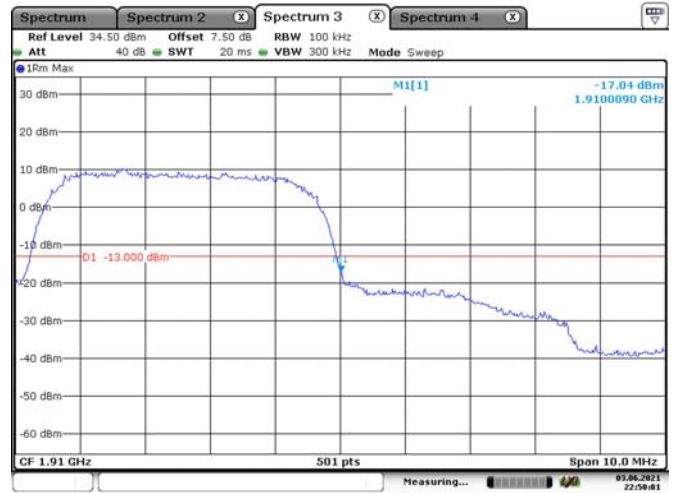
EGPRS 1900, Right Band Edge



WCDMA Band II,Rel99, Left Band Edge



WCDMA Band II,Rel99, Right Band Edge



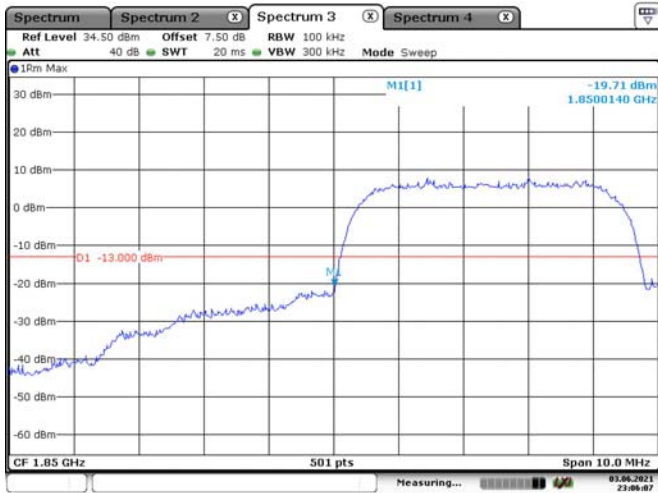
WCDMA Band II,HSDPA, Left Band Edge



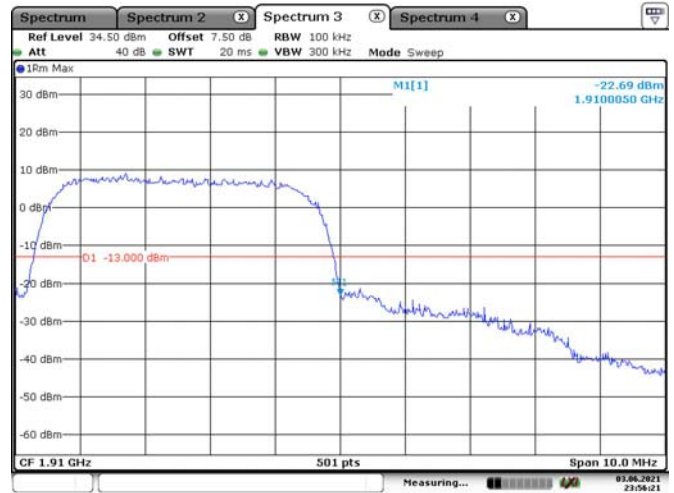
WCDMA Band II,HSDPA,Right Band Edge



WCDMA Band II,HSUPA, Left Band Edge



WCDMA Band II,HSUPA, Right Band Edge



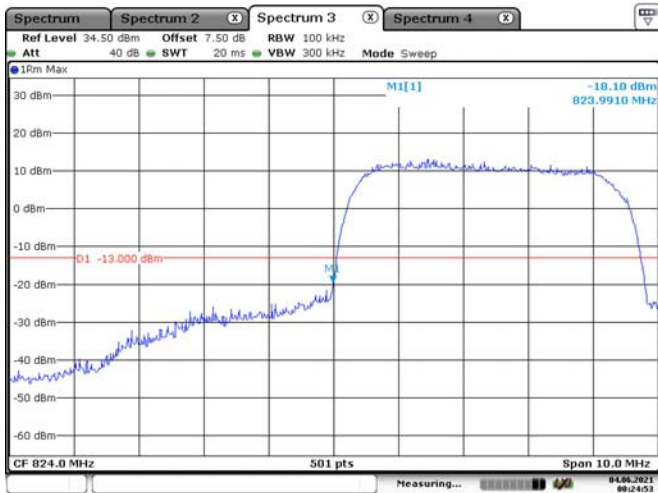
WCDMA Band V,Rel99, Left Band Edge



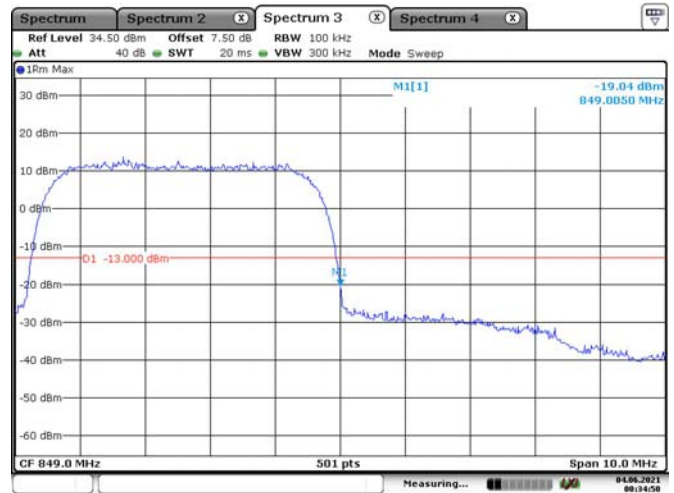
WCDMA Band V,Rel99, Right Band Edge



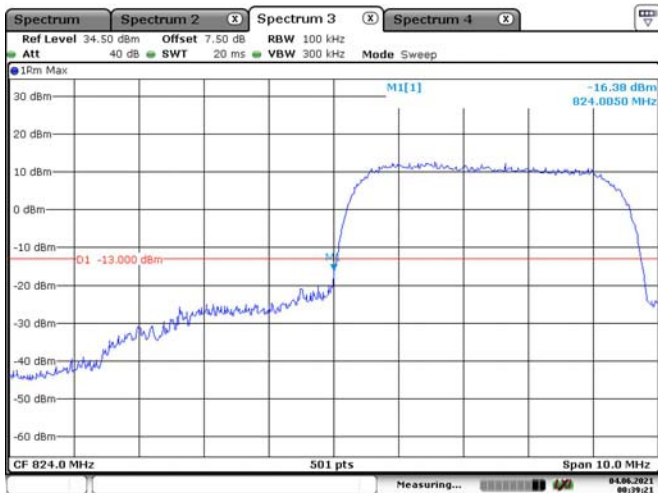
WCDMA Band V,HSDPA, Left Band Edge



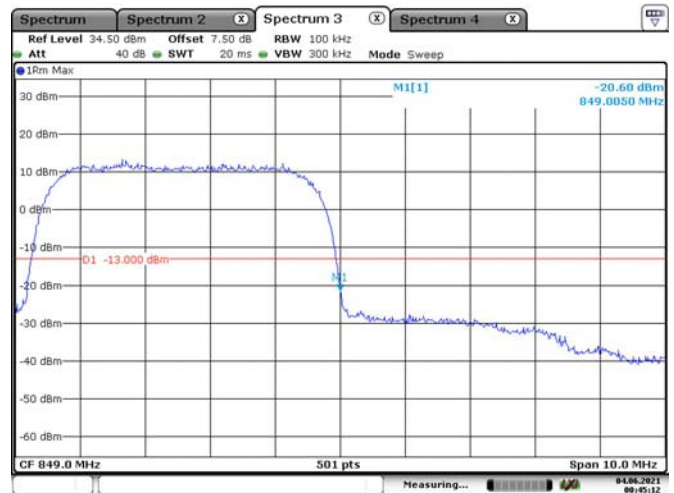
WCDMA Band V,HSDPA,Right Band Edge



WCDMA Band V,HSUPA, Left Band Edge



WCDMA Band V,HSUPA, Right Band Edge



FCC §2.1055, §22.355 & §24.235 - FREQUENCY STABILITY

Applicable Standard

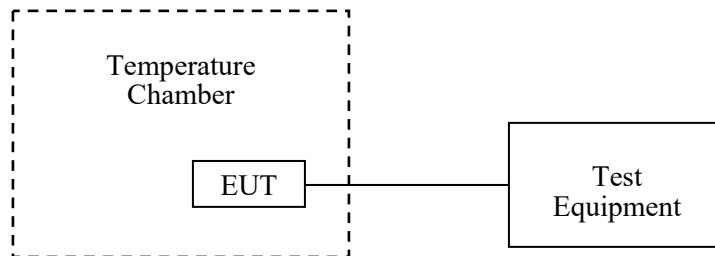
FCC § 2.1055 (a), § 2.1055 (d), §22.355, §24.235

Test Procedure

Frequency Stability vs. Temperature: The equipment under test was connected to an external DC power supply and the RF output was connected to communication test set via feed-through attenuators. The EUT was placed inside the temperature chamber. The 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: An external variable DC power supply was connected to the battery terminals of the equipment under test. The voltage was set from 85% to 115% of the nominal value and was then decreased until the transmitter light no longer illuminated; i.e., the battery end point. The output frequency was recorded for each battery voltage.



Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
E-Microwave	Blocking Control	EMDCB-00036	0E01201047	Each time	N/A
Unknown	Attenuator	UNAT-3+	15529	Each time	N/A
R&S	Universal Radio Communication Tester	CMU200	106 891	2020-09-12	2021-09-12
ESPEC	Constant temperature and humidity Tester	ESX-4CA	018 463	2021-03-10	2022-03-09
UNI-T	Multimeter	UT39A	M130199938	2020-07-24	2021-07-24
Pro instrument	DC Power Supply	pps3300	3300012	N/A	N/A
Unknown	Coaxial Cable	C-SJ00-0010	C0010/01	Each time	N/A

* **Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

Test Data**Environmental Conditions**

Temperature:	26.9~27.4 °C
Relative Humidity:	47~64 %
ATM Pressure:	100.3~100.4kPa
Tester:	Lay Lei
Test Date:	2021-06-02~2021-06-04

Test Result: Compliance.

GMSK, Middle Channel, $f_c = 836.6$ MHz				
Temperature	Voltage	Frequency Error	Frequency Error	Limit
°C	V _{DC}	Hz	ppm	ppm
-30	3.8	6	0.00717	2.5
-20		8	0.00956	
-10		7	0.00837	
0		2	0.00239	
10		6	0.00717	
20		8	0.00956	
30		7	0.00837	
40		-4	-0.00478	
50		4	0.00478	
20		3.6	6	
20	4.35	-8	-0.00956	

GMSK, Middle Channel, $f_c = 1880$ MHz				
Temperature	Voltage	Frequency Error	Frequency Error	Result
°C	V _{DC}	Hz	ppm	
-30	3.8	12	0.00638	Pass
-20		14	0.00745	
-10		8	0.00426	
0		14	0.00745	
10		-9	-0.00479	
20		14	0.00745	
30		6	0.00319	
40		-4	-0.00213	
50		6	0.00319	
20		3.6	16	
20	4.35	-12	-0.00638	

8PSK, Middle Channel, $f_c = 836.6$ MHz				
Temperature	Voltage	Frequency Error	Frequency Error	Limit
°C	V _{DC}	Hz	ppm	ppm
-30	3.8	12	0.01434	2.5
-20		8	0.00956	
-10		-10	-0.01195	
0		14	0.01673	
10		16	0.01913	
20		15	0.01793	
30		-9	-0.01076	
40		8	0.00956	
50		12	0.01434	
20		3.6	6	
20	4.35	-4	-0.00478	

8PSK, Middle Channel, $f_c = 1880$ MHz				
Temperature	Voltage	Frequency Error	Frequency Error	Result
°C	V _{DC}	Hz	ppm	
-30	3.8	16	0.00851	Pass
-20		-7	-0.00372	
-10		14	0.00745	
0		16	0.00851	
10		22	0.01170	
20		20	0.01064	
30		18	0.00957	
40		-16	-0.00851	
50		8	0.00426	
20		3.6	16	
20	4.35	-20	-0.01064	

WCDMA Band II: R99

Middle Channel, $f_c = 1880.0$ MHz				
Temperature	Voltage	Frequency Error	Frequency Error	Result
°C	V _{DC}	Hz	ppm	
-30	3.8	-5	-0.00266	Pass
-20		8	0.00426	
-10		-16	-0.00851	
0		-12	-0.00638	
10		15	0.00798	
20		-18	-0.00957	
30		20	0.01064	
40		-26	-0.01383	
50		-22	-0.01170	
20		3.6	8	
20	4.35	-12	-0.00638	

WCDMA Band V: R99

Middle Channel, $f_c = 836.6$ MHz				
Temperature	Voltage	Frequency Error	Frequency Error	Limit
°C	V _{DC}	Hz	ppm	ppm
-30	3.8	-14	-0.01673	2.5
-20		-16	-0.01913	
-10		13	0.01554	
0		-16	-0.01913	
10		-12	-0.01434	
20		12	0.01434	
30		14	0.01673	
40		-6	-0.00717	
50		-12	-0.01434	
20		3.6	8	
20	4.35	18	0.02152	

Note: The fundamental emissions stay within the authorized bands of operation based on the frequency deviation measured is small, the extreme voltage was declared by applicant.

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