FCC PART 22H, PART 24E

MEASUREMENT AND TEST REPORT

For

DOPPIO MOBILE INTERNATIONAL LIMITED

ROOM 1708,17/F HART AVENUE PLAZA,5-9 HART AVENUE TSIM SHA TSUI,KOWLOON,
Hong Kong

FCC ID: N2GF1820

Report Type:	**Product Type:**
Original Report	Doppio Cuarzo

Test Engineer:	Allen Qiao
Report Number:	RDG151126002-00C
Report Date:	2015-12-02
Reviewed By:	Sula Huang RF Leader
Test Laboratory:	Bay Area Compliance Laboratories Corp. (Dongguan) No.69 Pulongcun, Puxinhu Industrial Zone, Tangxia, Dongguan, Guangdong, China Tel: +86-769-86858888 Fax: +86-769-86858891 www.baclcorp.com.cn

Note: This test report is prepared for the customer shown above and for the device described herein. It may not be duplicated or used in part without prior written consent from Bay Area Compliance Laboratories Corp. (Dongguan). 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.

TABLE OF CONTENTS

GENERAL INFORMATION **4**
PRODUCT DESCRIPTION FOR EQUIPMENT UNDER TEST (EUT) 4
OBJECTIVE 4
RELATED SUBMITTAL(S)/GRANT(S) 4
TEST METHODOLOGY 4
TEST FACILITY 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 14
TEST DATA 14
FCC §2.1049, §22.917, §22.905 & §24.238 - OCCUPIED BANDWIDTH **21**
APPLICABLE STANDARD 21
TEST PROCEDURE 21
TEST EQUIPMENT LIST AND DETAILS 21
TEST DATA 21
FCC §2.1051, §22.917(A) & §24.238(A) - SPURIOUS EMISSIONS AT ANTENNA TERMINALS **28**
APPLICABLE STANDARD 28
TEST PROCEDURE 28
TEST EQUIPMENT LIST AND DETAILS 28
TEST DATA 28
FCC §2.1053, §22.917 & §24.238 - SPURIOUS RADIATED EMISSIONS **42**
APPLICABLE STANDARD 42
TEST PROCEDURE 42
TEST EQUIPMENT LIST AND DETAILS 42
TEST DATA 43
FCC §22.917(A) & §24.238(A) - BAND EDGES **45**
APPLICABLE STANDARD 45
TEST PROCEDURE 45
TEST EQUIPMENT LIST AND DETAILS 45
TEST DATA 46
FCC §2.1055, §22.355 & §24.235 - FREQUENCY STABILITY **57**

APPLICABLE STANDARD 57
TEST PROCEDURE 57
TEST EQUIPMENT LIST AND DETAILS.....58
TEST DATA 58

DECLARATION LETTER 64

FINAL

GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

The *DOPPIO MOBILE INTERNATIONAL LIMITED.* 's product, model number: *F1820(FCC ID: N2GF1820)* (the "EUT") in this report was a *Doppio Cuarzo,* which was measured approximately: 11.2 cm (L) x 4.6 cm (W) x 1.4 cm (H), rated input voltage: DC3.7V rechargeable Li-ion battery or DC5.0V charging from adapter.

Adapter information:
Model: F1820
Input: AC100-240V, 50/60 Hz, 0.15A
Output: DC 5V, 500mA

Note: The model F1820 have different samples , they are the same electromagnetic emissions and electromagnetic compatibility characteristics, the difference between them is the colour, the details was explained in the attached declaration letter.

All measurement and test data in this report was gathered from production sample serial number: 151126002 (Assigned byBACL, Dongguan). The EUT was received on 2015-11-26.

Objective

This report is prepared on behalf of *DOPPIO MOBILE INTERNATIONAL LIMITED.* in accordance with: Part 2-Subpart J, Part 22-Subpart H, and 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.

Related Submittal(s)/Grant(s)

FCC Part 15B JBP submissions with FCC ID: N2GF1820
FCC Part 15C DSS submissions with FCC ID: N2GF1820

Test Methodology

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

Part 22 Subpart H - Public Mobile Services
Part 24 Subpart E - Personal Communication Services

Applicable Standards: TIA/EIA-603-D-2010.

All radiated and conducted emissions measurements were performed at Bay Area Compliance Laboratories Corp.(Dongguan).

Test Facility

The Test site used by Bay Area Compliance Laboratories Corp. (Dongguan) to collect test data is located on the No.69 Pulongcun, Puxinhu Industrial Zone, Tangxia, Dongguan, Guangdong, China

Test site at Bay Area Compliance Laboratories Corp. (Dongguan) has been fully described in reports submitted to the Federal Communications Commission (FCC). The details of these reports have been found to be in compliance with the requirements of Section 2.948 of the FCC Rules on February 06, 2015.

The Federal Communications Commission has the reports on file and is listed under FCC Registration No.: 273710. The test site has been approved by the FCC for public use and is listed in the FCC Public Access Link (PAL) database.

FINAL

SYSTEM TEST CONFIGURATION

Justification

The EUT was configured for testing according to TIA/EIA-603-D-2010.

The test items were performed with the EUT operating at testing mode.

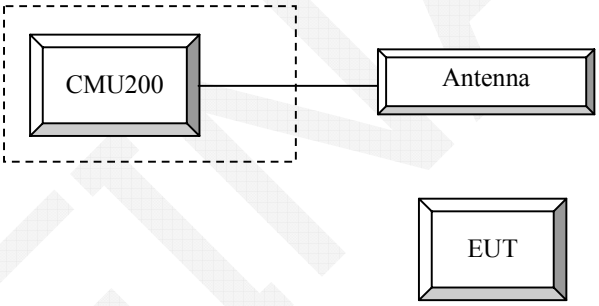
Equipment Modifications

No modification was made to the EUT.

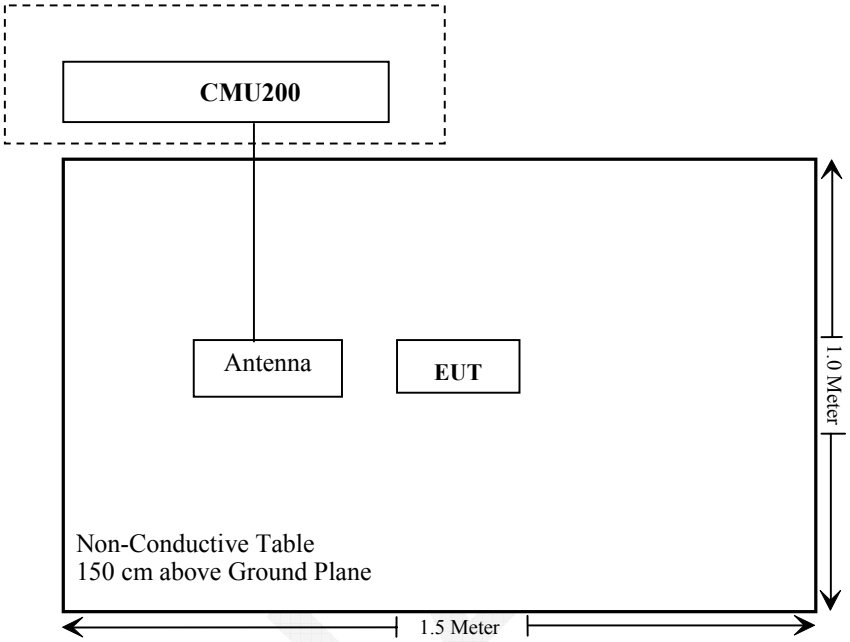
Support Equipment List and Details

Manufacturer	Description	Model	Serial Number
R&S	Universal Radio Communication Tester	CMU200	109038
N/A	ANTENNA	N/A	N/A

Configuration of Test Setup



Block Diagram of Test Setup



SUMMARY OF TEST RESULTS

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

FINAL

FCC §1.1310 & §2.1093- RF EXPOSURE

Applicable Standard

FCC§1.1310 and §2.1093.

Test Result

Compliant, please refer to the SAR report: RDG151126002-20.

FINAL

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.

FINAL

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
	βc / βd	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			
	βc	2/15	12/15	15/15	15/15
	βd	15/15	15/15	8/15	4/15
	βd (SF)	64			
	βc/ βd	2/15	12/15	15/8	15/4
	βhs	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			
	Ahs=βhs/ βc	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				
	βc	11/15	6/15	15/15	2/15	15/15
	βd	15/15	15/15	9/15	15/15	0
	βec	209/225	12/15	30/15	2/15	5/15
	βc/ βd	11/15	6/15	15/9	2/15	-
	βhs	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				
	Ahs=βhs/ βc	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_FCls	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	

Radiated method:

ANSI/TIA-603-D section 2.2.17

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	EMI Test Receiver	ESCI	100224	2015-08-03	2016-08-02
Sunol Sciences	Antenna	JB3	A060611-3	2014-11-06	2017-11-05
HP	Amplifier	8447E	2434A02181	2015-09-01	2016-09-01
Agilent	Spectrum Analyzer	E4440A	SG43360054	2015-11-23	2016-11-22
ETS-Lindgren	Horn Antenna	3115	9808-5557	2015-09-06	2018-09-06
Mini-Circuit	Amplifier	ZVA-213-S+	054201245	2015-02-19	2016-02-19
Giga	Signal Generator	1026	320408	2015-11-23	2016-11-22
EMCO	Adjustable Dipole Antenna	3121C	9109-753	N/A	N/A
TDK RF	Horn Antenna	HRN-0118	130 084	2015-09-06	2018-09-06

* **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:	24.8 °C
Relative Humidity:	42%
ATM Pressure:	101.3 kPa

The testing was performed by Allen Qiao on 2015-11-29.

FINAL

Conducted Output Power

Cellular Band (Part 22H) & PCS Band (Part 24E)

Band	Channel No.	Peak Output Power (dBm)								
		GSM	GPRS 1 TX Slot	GPRS 2 TX Slot	GPRS 3 TX Slot	GPRS 4 TX Slot	EDGE 1 TX Slot	EDGE 2 TX Slot	EDGE 3 TX Slot	EDGE 4 TX Slot
Cellular	128	32.90	32.89	31.97	30.05	28.95	26.17	24.85	22.66	20.57
	190	32.80	32.85	31.94	29.94	28.81	26.23	25.06	22.73	20.66
	251	32.90	32.88	32.08	30.07	28.83	26.36	25.25	22.87	20.69
PCS	512	29.00	28.98	28.12	26.26	25.09	24.50	23.45	21.31	19.27
	661	28.40	29.03	28.30	26.59	25.63	24.76	23.57	21.51	19.19
	810	28.01	28.53	27.87	26.43	25.61	24.87	23.67	21.62	19.24

WCDMA Band Ⅱ(PART 24E)

Mode	3GPP Sub Test	Average Output Power (dBm)					
		Low Channel (Ave. Power)	Low Channel (PAR)	Middle Channel (Ave. Power)	Middle Channel (PAR)	High Channel (Ave. Power)	High Channel (PAR)
Rel 99	1	22.12	3.20	21.98	2.68	22.16	2.72
HSDPA	1	21.13	3.26	21.11	2.60	21.24	2.62
	2	21.06	3.13	21.04	2.76	21.31	2.78
	3	21.14	3.14	21.08	2.78	21.21	2.69
	4	21.18	3.22	21.19	2.75	21.19	2.76
HSUPA	1	21.11	3.18	21.08	2.76	21.21	2.77
	2	21.02	3.05	21.16	2.66	21.12	2.83
	3	21.20	3.34	21.00	2.80	21.28	2.73
	4	21.15	3.29	21.10	2.76	21.15	2.82
	5	21.07	3.32	21.13	2.82	21.21	2.85

WCDMA Band V (PART 22H)

Mode	3GPP Sub Test	Average Output Power (dBm)					
		Low Channel (Ave. Power)	Low Channel (PAR)	Middle Channel (Ave. Power)	Middle Channel (PAR)	High Channel (Ave. Power)	High Channel (PAR)
Rel 99	1	22.77	3.24	22.80	3.20	22.59	3.24
HSDPA	1	21.65	3.2	21.77	3.21	21.54	3.17
	2	21.58	3.25	21.75	3.27	21.55	3.22
	3	21.68	3.27	21.72	3.12	21.60	3.20
	4	21.62	3.31	21.84	3.13	21.62	3.22
HSUPA	1	21.57	3.35	21.63	3.18	21.51	3.28
	2	21.47	3.36	21.59	3.17	21.60	3.18
	3	21.66	3.27	21.62	3.19	21.51	3.23
	4	21.55	3.25	21.65	3.15	21.57	3.32
	5	21.48	3.36	21.66	3.21	21.56	3.36

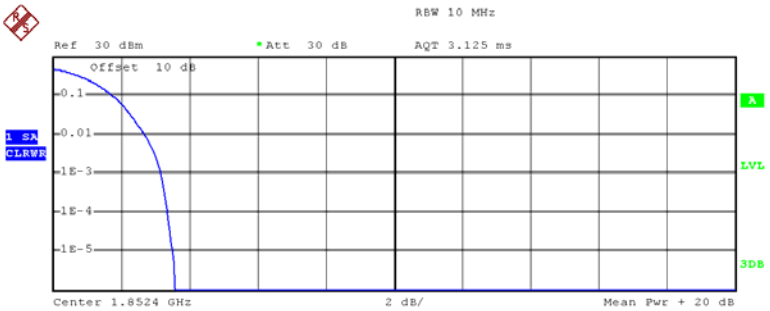
Note: peak-to-average ratio (PAR) <13 dB.

FINAL

Peak-to-average ratio (PAR)

WCDMA Band Ⅱ(PART 24E)

Low Channel

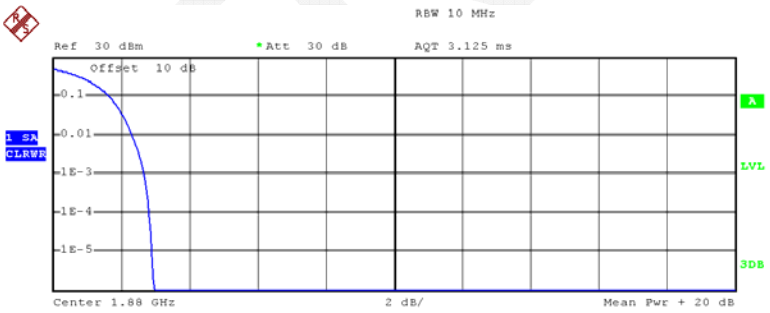


Complementary Cumulative Distribution Function (100000 samples)

	Trace 1
Mean	19.64 dBm
Peak	23.24 dBm
Crest	3.60 dB
10 %	1.76 dB
1 %	2.72 dB
.1 %	3.20 dB
.01 %	3.36 dB

Date: 29.NOV.2015 14:05:18

Middle Channel

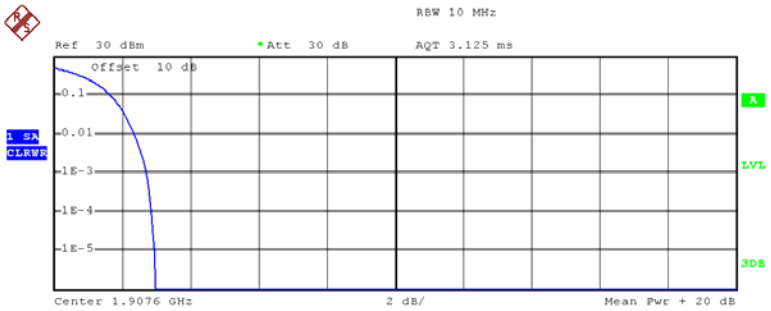


Complementary Cumulative Distribution Function (100000 samples)

	Trace 1
Mean	18.51 dBm
Peak	21.48 dBm
Crest	2.97 dB
10 %	1.68 dB
1 %	2.36 dB
.1 %	2.68 dB
.01 %	2.84 dB

Date: 29.NOV.2015 14:04:39

High Channel



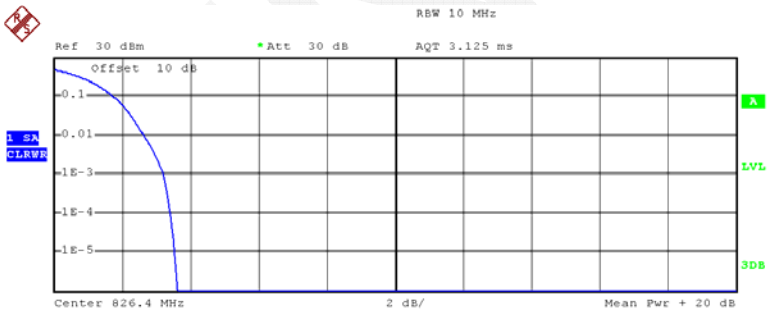
Complementary Cumulative Distribution Function (100000 samples)

	Trace 1
Mean	18.00 dBm
Peak	20.98 dBm
Crest	2.98 dB
10 %	1.68 dB
1 %	2.40 dB
.1 %	2.72 dB
.01 %	2.88 dB

Date: 29.NOV.2015 14:03:25

WCDMA Band V (PART 22H)

Low Channel

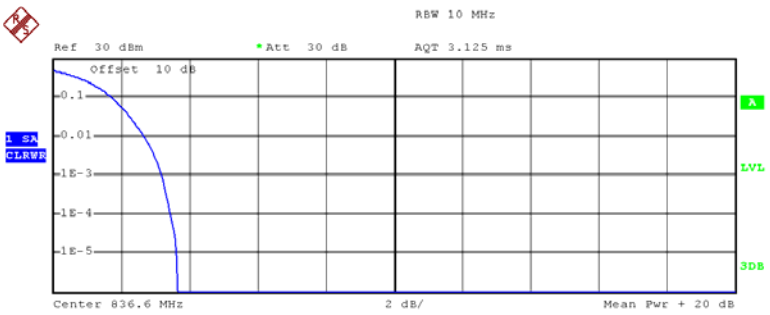


Complementary Cumulative Distribution Function (100000 samples)

	Trace 1
Mean	21.04 dBm
Peak	24.65 dBm
Crest	3.62 dB
10 %	1.80 dB
1 %	2.68 dB
.1 %	3.24 dB
.01 %	3.44 dB

Date: 29.NOV.2015 13:58:03

Middle Channel

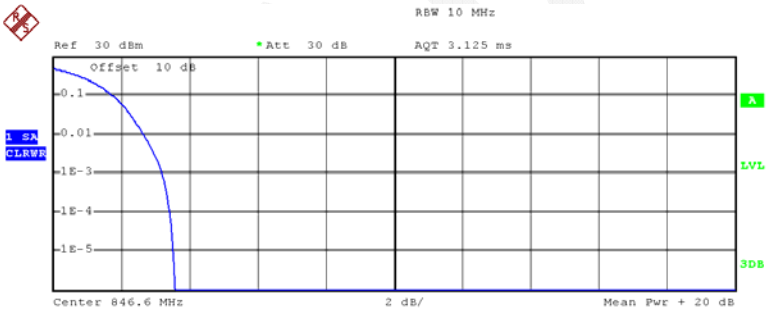


Complementary Cumulative Distribution Function (100000 samples)

	Trace 1
Mean	21.42 dBm
Peak	25.08 dBm
Crest	3.65 dB
10 %	1.76 dB
1 %	2.72 dB
.1 %	3.20 dB
.01 %	3.48 dB

Date: 29.NOV.2015 13:58:44

High Channel



Complementary Cumulative Distribution Function (100000 samples)

	Trace 1
Mean	21.20 dBm
Peak	24.79 dBm
Crest	3.59 dB
10 %	1.80 dB
1 %	2.68 dB
.1 %	3.24 dB
.01 %	3.44 dB

Date: 29.NOV.2015 13:59:32

ERP & EIRP

Part 22H

Frequency (MHz)	Polar (H/V)	Receiver Reading (dBµV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			S.G. Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
GSM 850_Middle Channel								
836.600	H	99.26	24.3	0.0	1.0	23.3	38.50	15.2
836.600	V	103.68	31.9	0.0	1.0	30.9	38.50	7.6
EGPRS 850_Middle Channel								
836.600	H	92.61	17.7	0.0	1.0	16.7	38.50	21.8
836.600	V	97.91	26.1	0.0	1.0	25.1	38.50	13.4
WCDMA Band V_Middle Channel								
836.600	H	85.96	11	0.0	1.0	10.0	38.50	28.5
836.600	V	93.52	21.7	0.0	1.0	20.7	38.50	17.8

Part 24E

Frequency (MHz)	Polar (H/V)	Receiver Reading (dBµV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			S.G. Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
PCS 1900_Middle Channel								
1880.000	H	87.73	16.1	11.7	1.4	26.4	33.0	6.6
1880.000	V	89.75	18.3	11.7	1.4	28.6	33.0	4.4
EGPRS1900_Middle Channel								
1880.000	H	82.81	11.2	11.7	1.4	21.5	33.0	11.5
1880.000	V	85.47	14	11.7	1.4	24.3	33.0	8.7
WCDMA Band II_Middle Channel								
1880.000	H	80.20	8.6	11.7	1.4	18.9	33.0	14.1
1880.000	V	82.79	11.3	11.7	1.4	21.6	33.0	11.4

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 = SG Level - Cable loss + Antenna Gain
3) Margin = Limit-Absolute Level

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

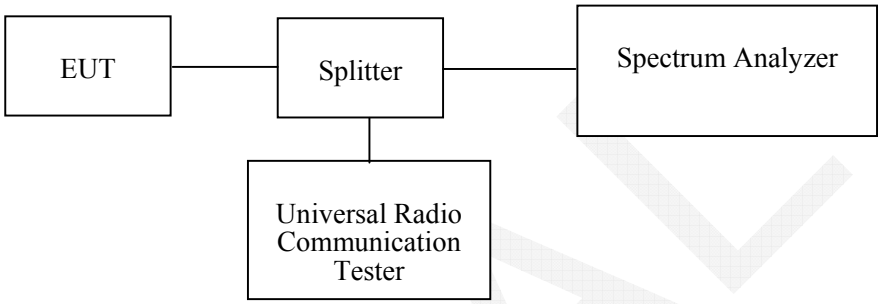
Applicable Standard

FCC §2.1049, §22.917 and §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	FSP 38	100478	2015-11-23	2016-11-22
R&S	Universal Radio Communication Tester	CMU200	109 038	2015-05-09	2016-05-09

*** 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:	24.8 °C
Relative Humidity:	43 %
ATM Pressure:	101.3 kPa

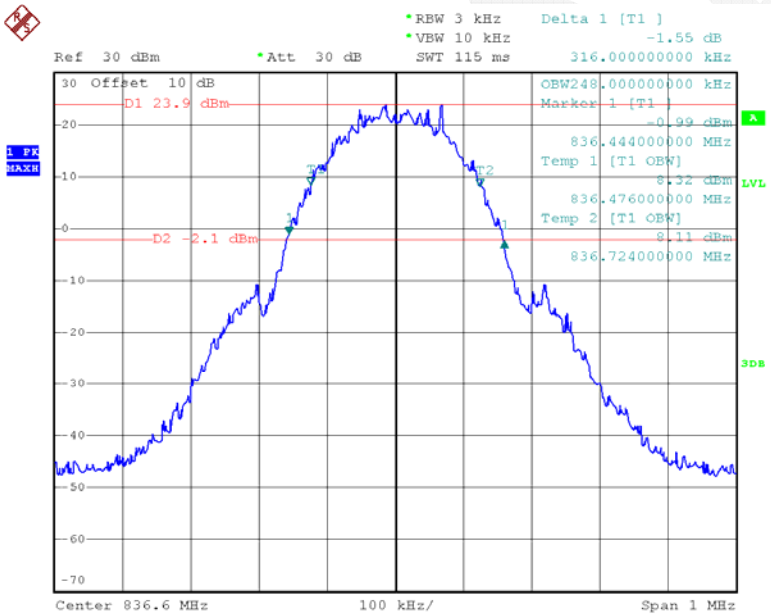
The testing was performed by Allen Qiao on 2015-11-29.

Test Mode: Transmitting

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

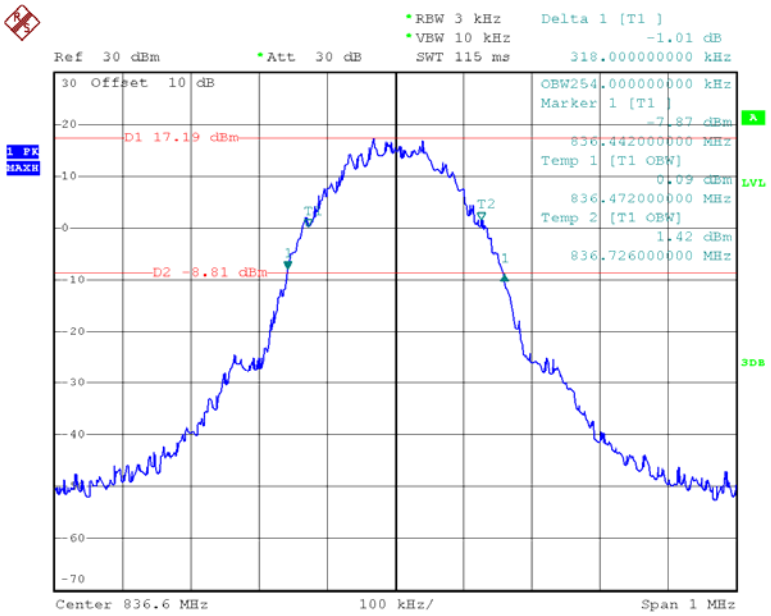
Band	Channel No.	Mode	99% Occupied Bandwidth	26 dB Occupied Bandwidth
			kHz	kHz
Cellular	190	GSM	248	316
		EDGE	254	318
PCS	661	PCS	248	312
		EDGE	248	314
WCDMA Band Ⅱ	9400	Rel 99	4180	4720
	9400	HSDPA	4180	4720
	9400	HSUPA	4180	4720
WCDMA Band V	4183	Rel 99	4180	4680
	4183	HSDPA	4160	4700
	4183	HSUPA	4180	4700

GMSK 850 Cellular Band



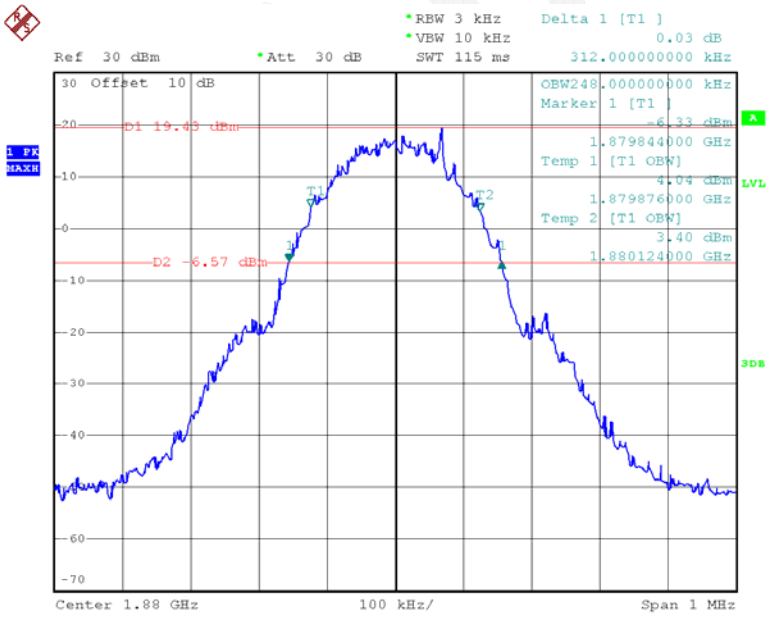
Date: 29.NOV.2015 17:05:00

EDGE 850 Cellular Band



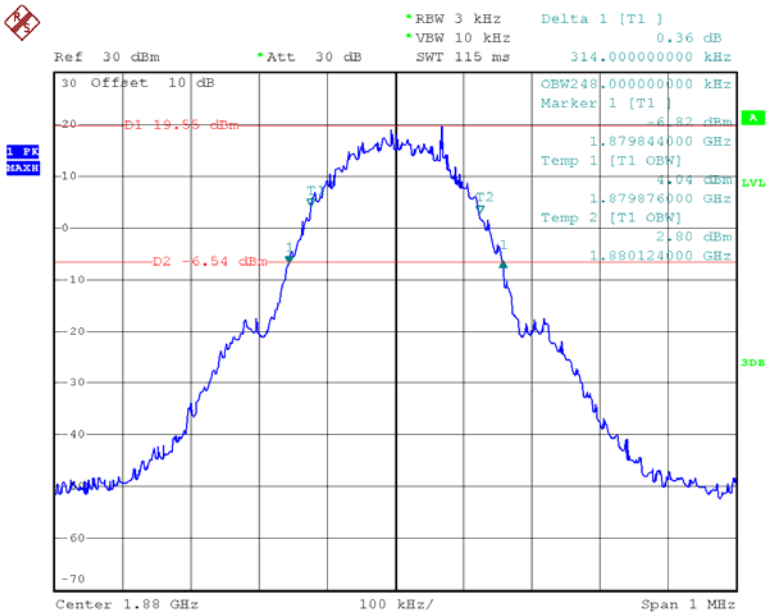
Date: 29.NOV.2015 16:59:28

GMSK PCS Band



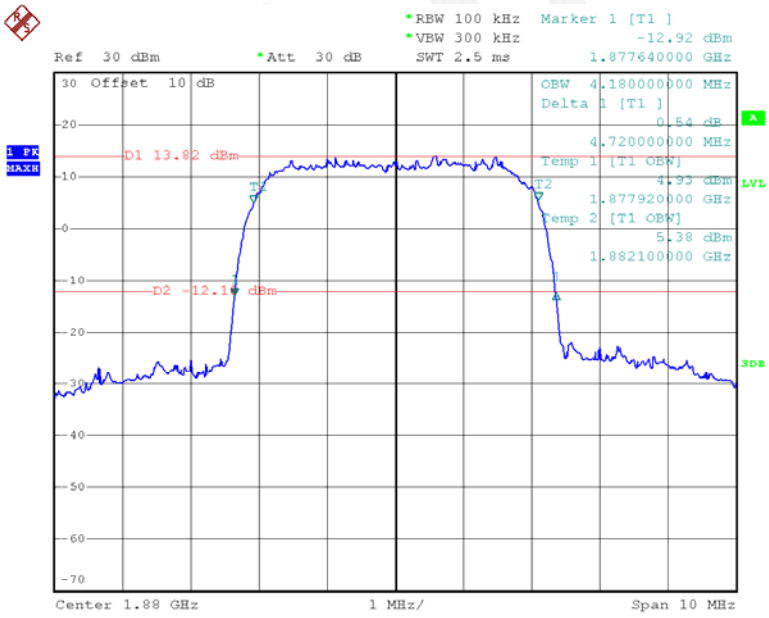
Date: 29.NOV.2015 16:46:34

EDGE PCS Band



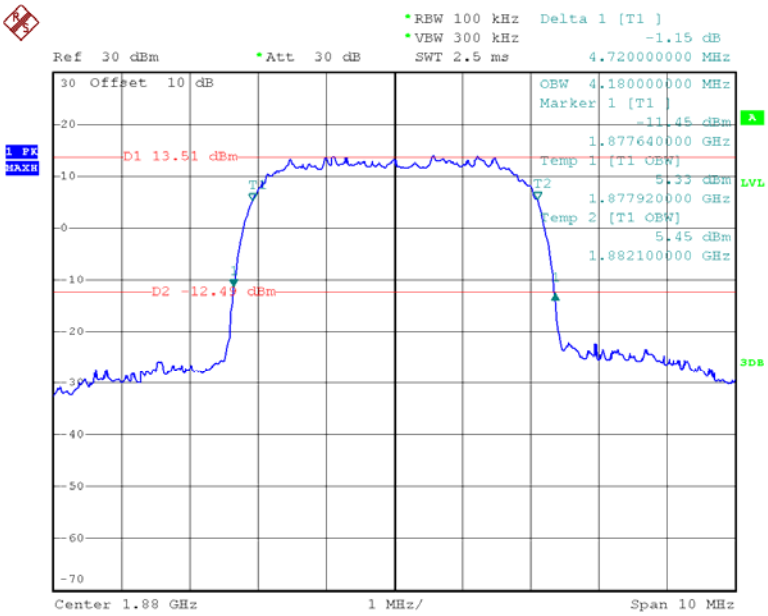
Date: 29.NOV.2015 16:47:49

REL99 Band II



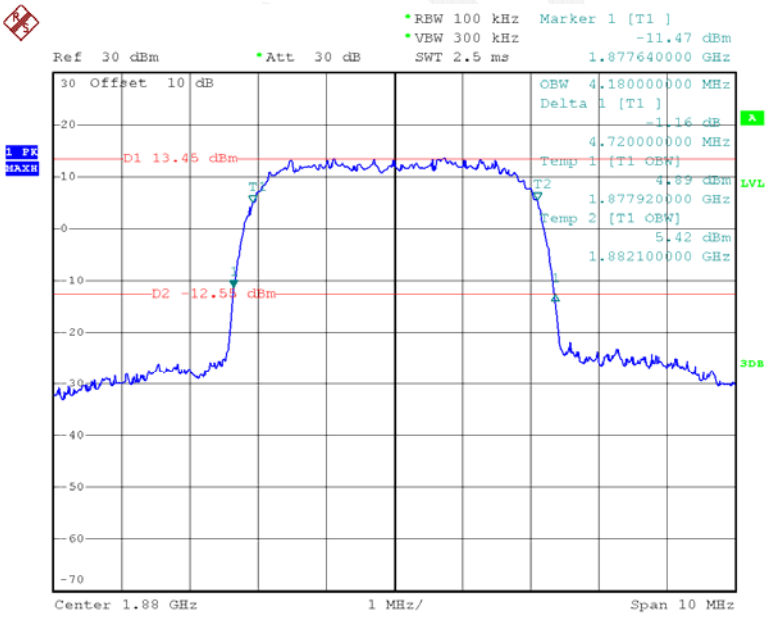
Date: 29.NOV.2015 14:11:33

HSDPA Band II



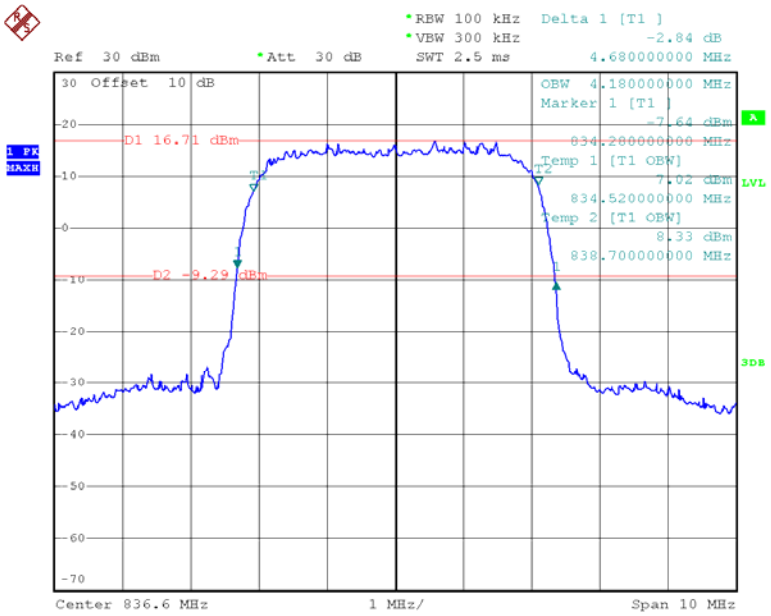
Date: 29.NOV.2015 14:09:20

HSUPA Band II



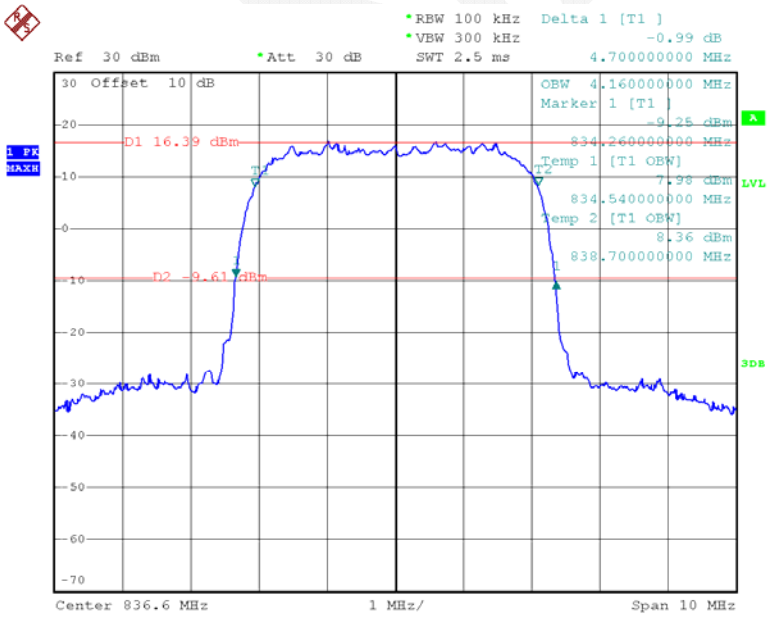
Date: 29.NOV.2015 14:12:15

REL99 Band V



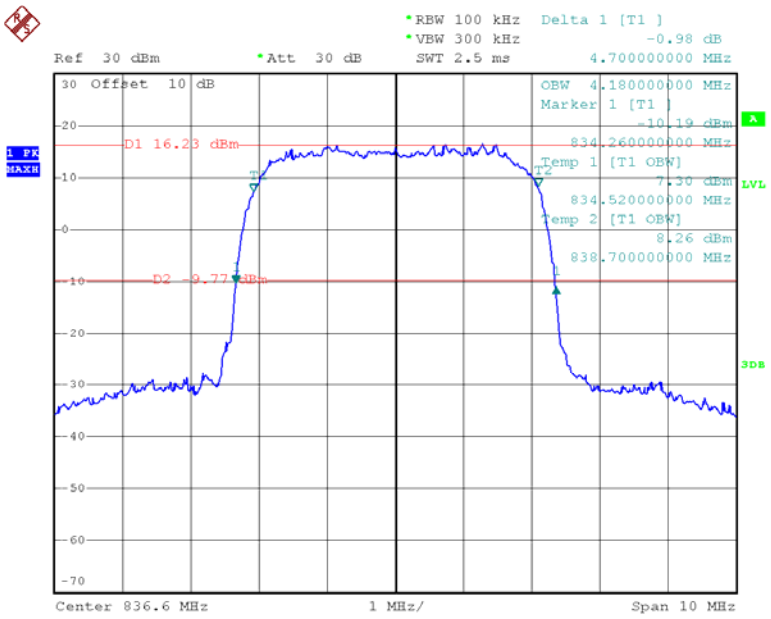
Date: 29.NOV.2015 15:30:15

HSDPA Band V



Date: 29.NOV.2015 15:27:12

HSUPA Band V



Date: 29.NOV.2015 15:28:11

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

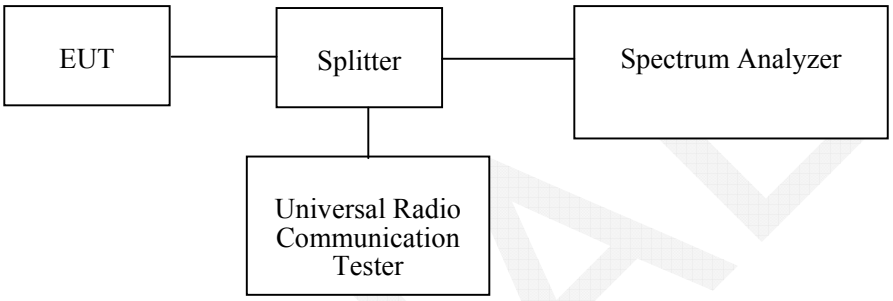
Applicable Standard

FCC §2.1051, §22.917(a) and §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	FSP 38	100478	2015-05-09	2016-05-09
R&S	Universal Radio Communication Tester	CMU200	109 038	2015-07-28	2016-07-27

*** 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

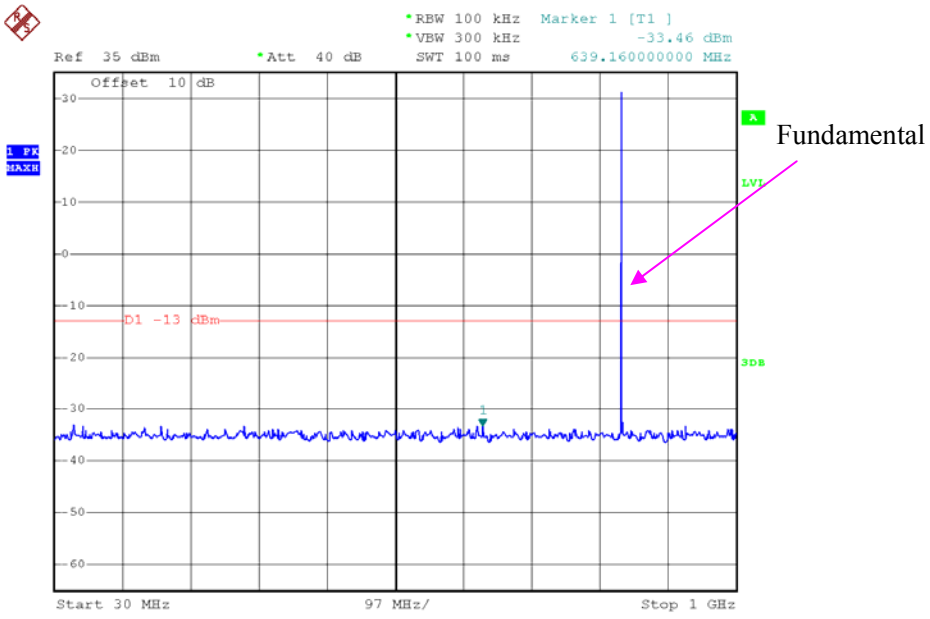
Environmental Conditions

Temperature:	24.8 °C
Relative Humidity:	43 %
ATM Pressure:	101.5 kPa

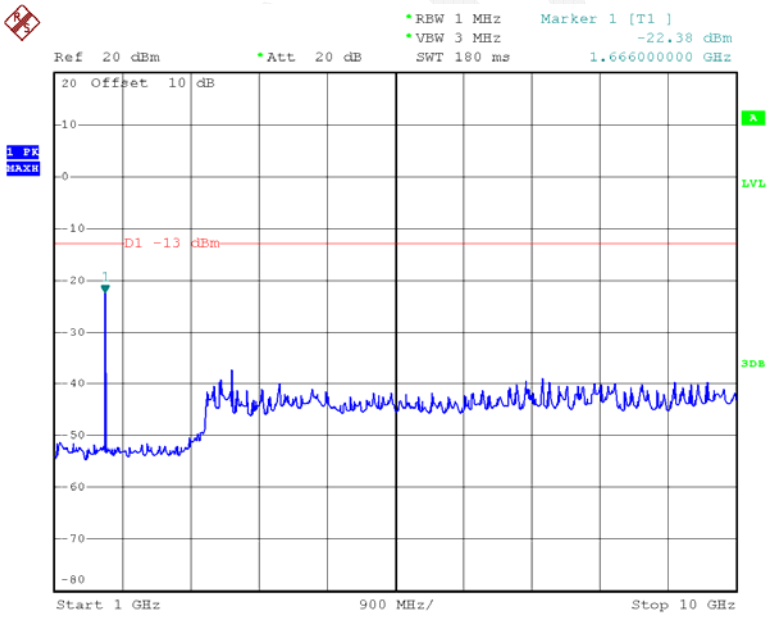
The testing was performed by Allen Qiao on 2015-11-29

Please refer to the following plots.

GSM850_Middle Channel

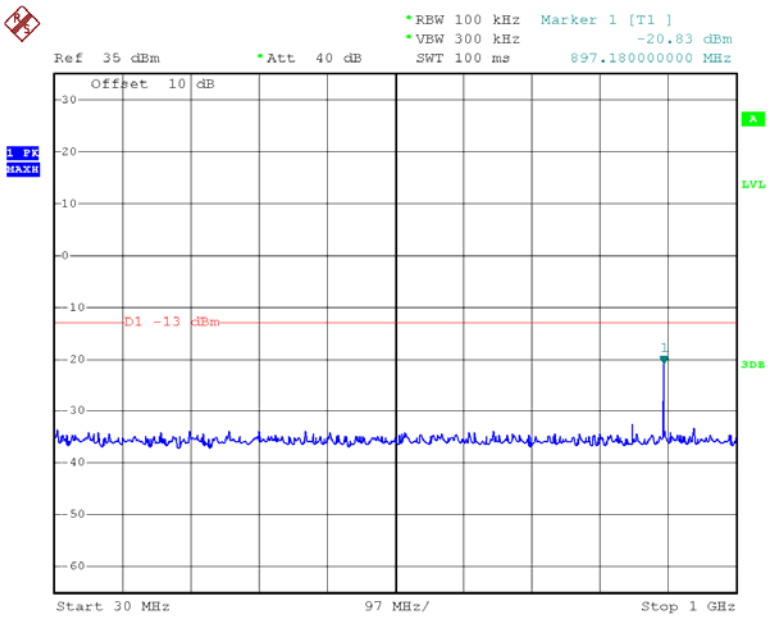


Date: 29.NOV.2015 16:18:58

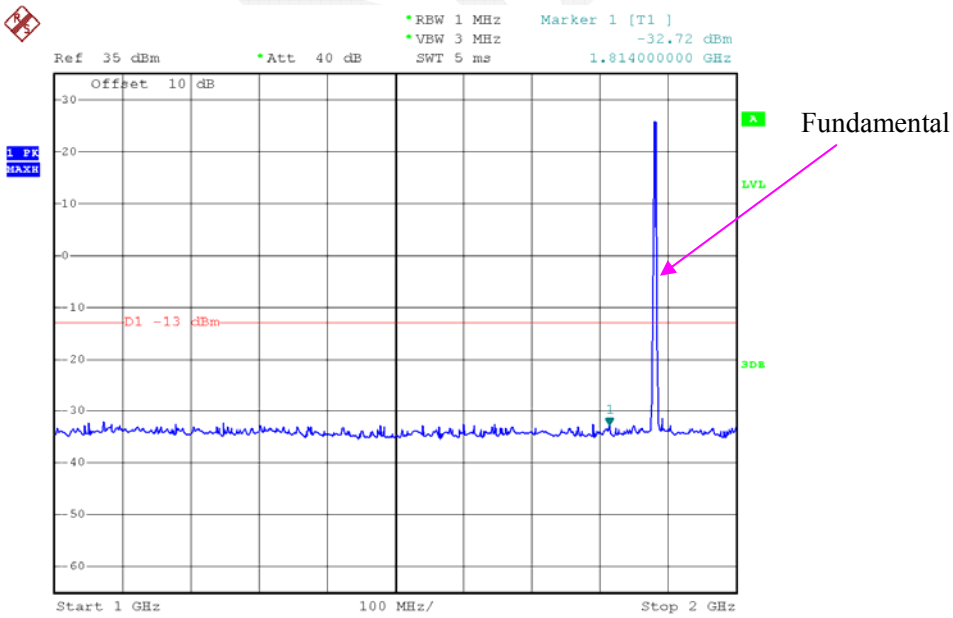


Date: 29.NOV.2015 16:20:18

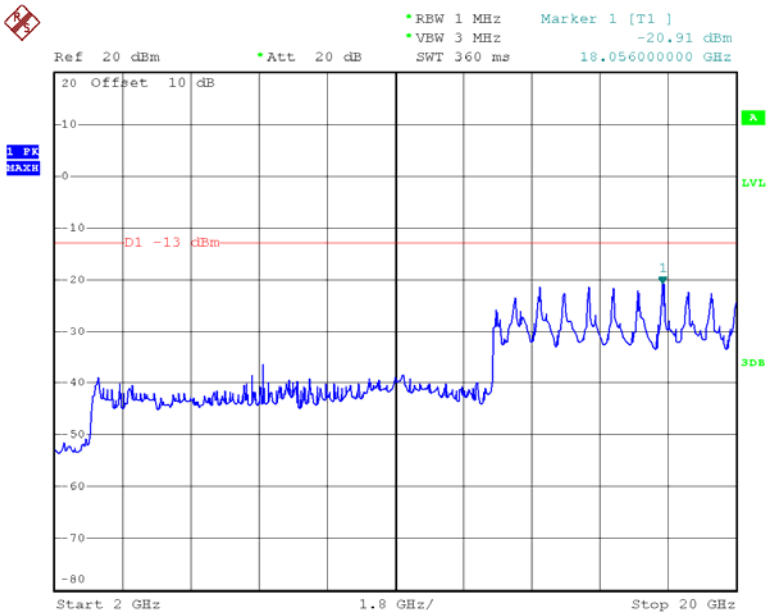
PCS 1900_ Middle Channel



Date: 29.NOV.2015 16:38:34

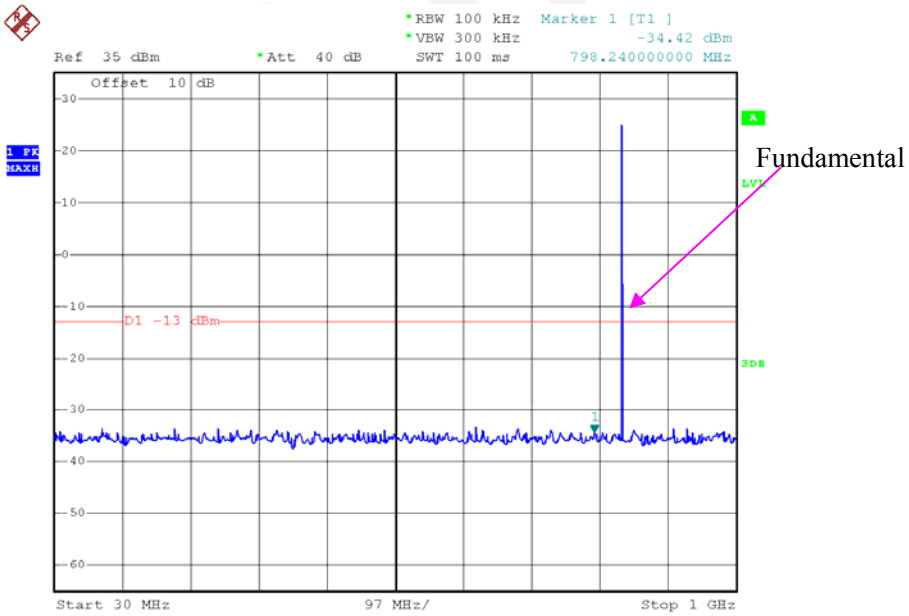


Date: 29.NOV.2015 16:38:04

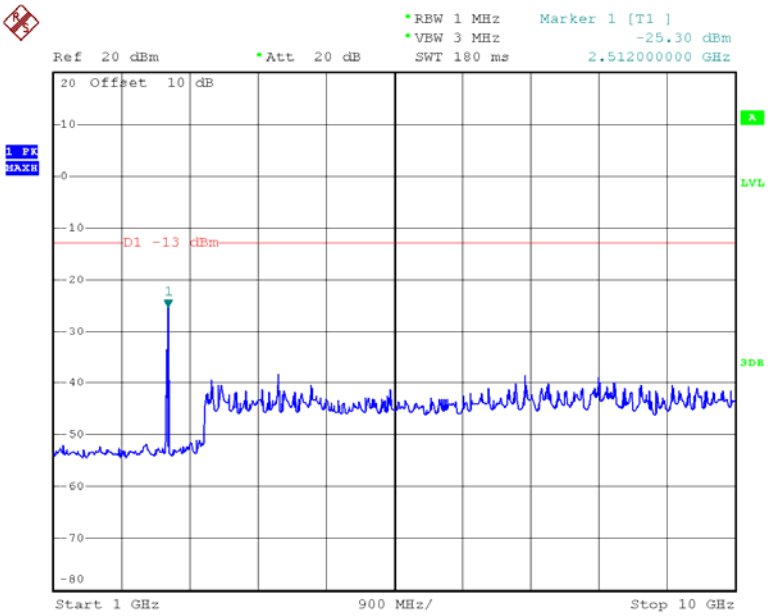


Date: 29.NOV.2015 16:37:04

EDGE850_ Middle Channel

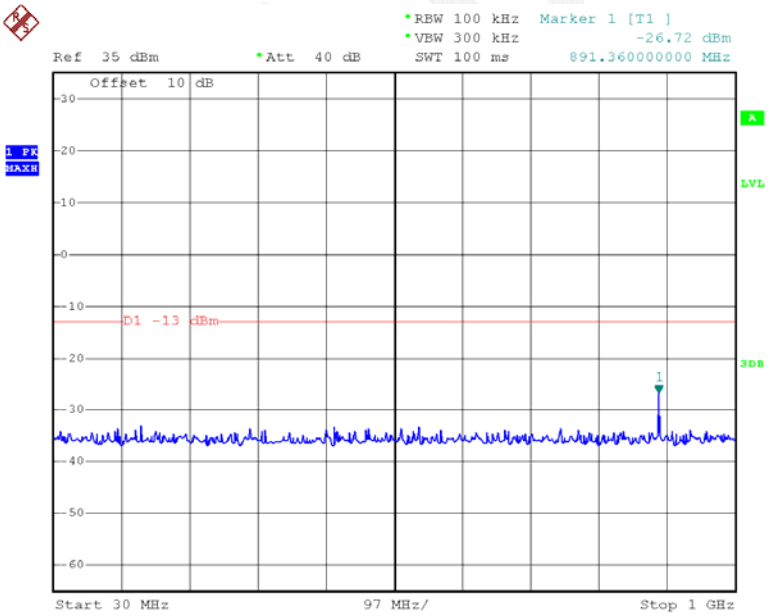


Date: 29.NOV.2015 16:27:11

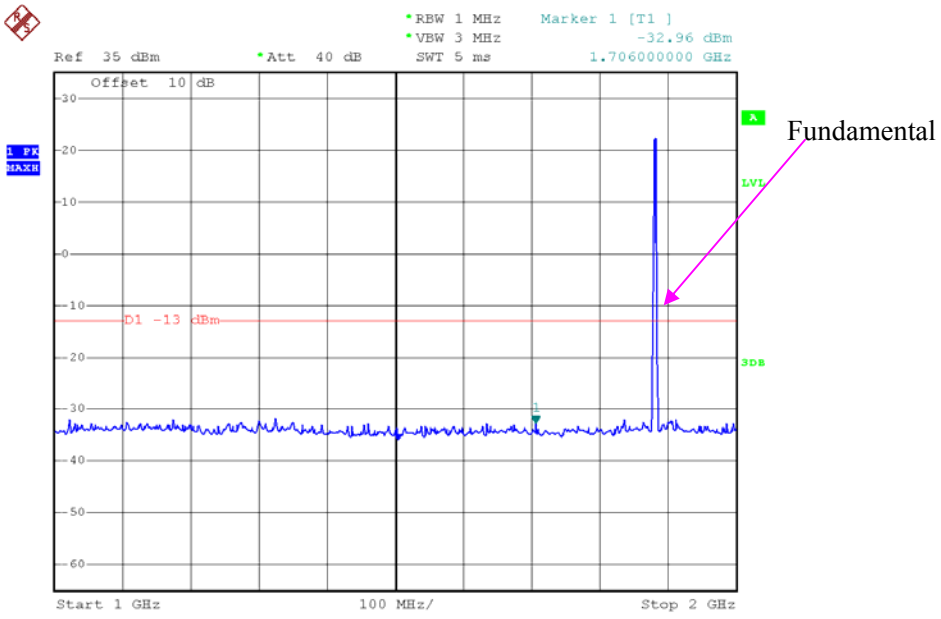


Date: 29.NOV.2015 16:25:48

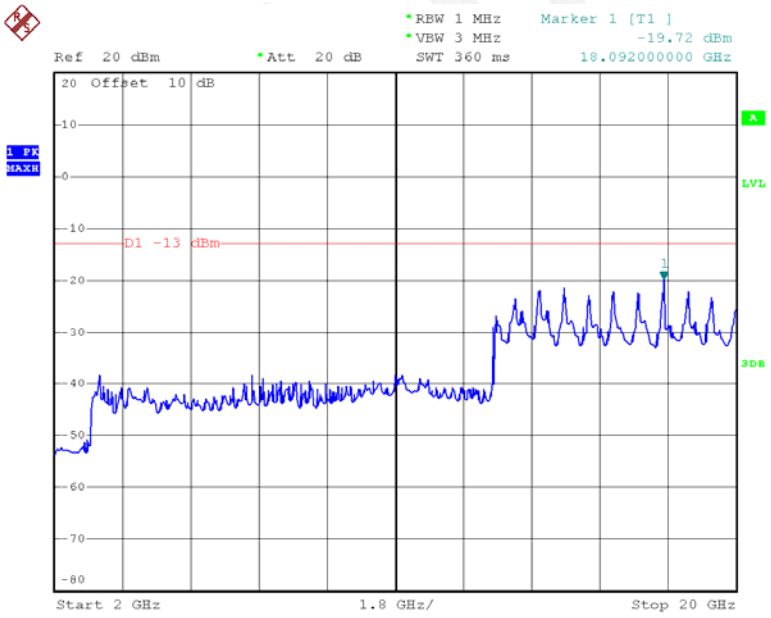
EDGE1900_ Middle Channel



Date: 29.NOV.2015 16:33:25

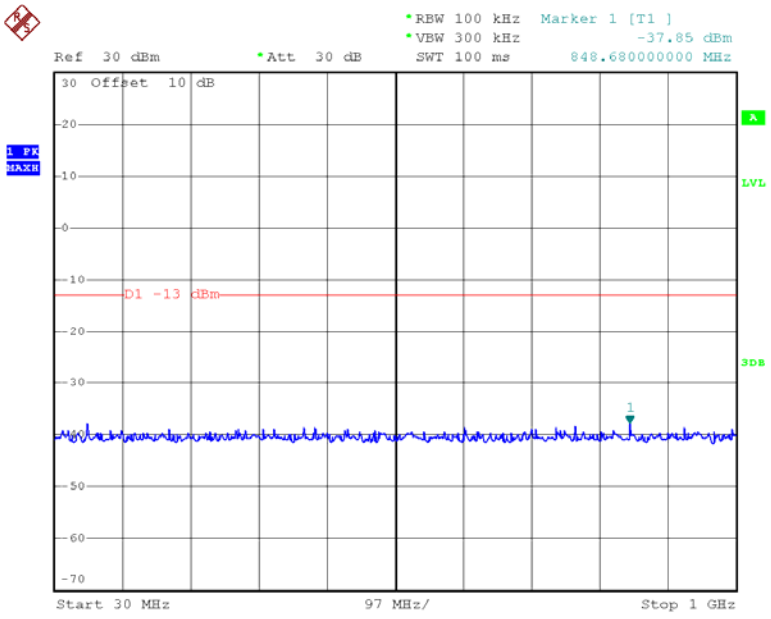


Date: 29.NOV.2015 16:34:03

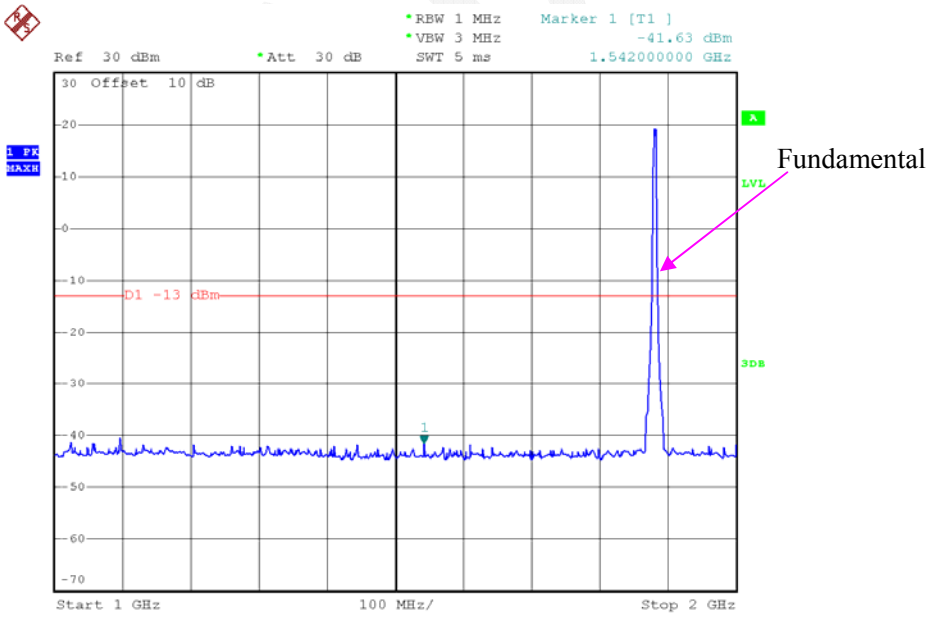


Date: 29.NOV.2015 16:34:46

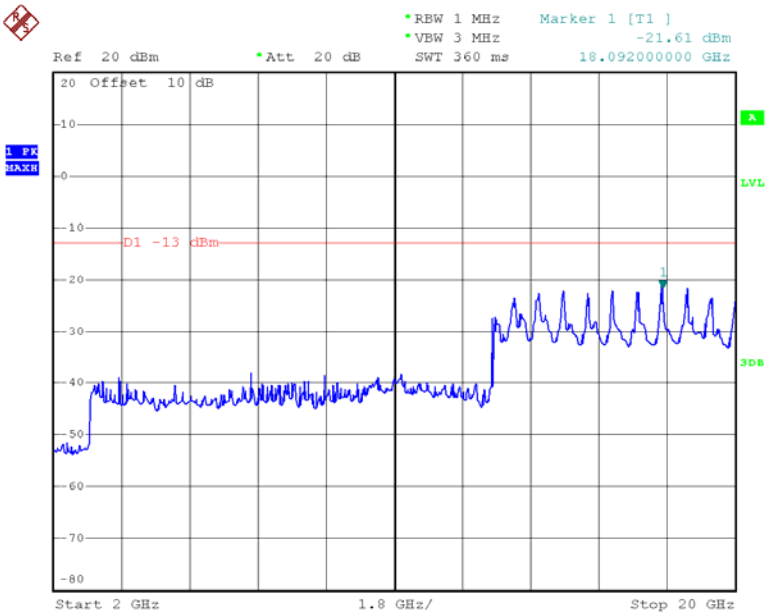
REL99 Band II_ Middle Channel



Date: 29.NOV.2015 16:06:30

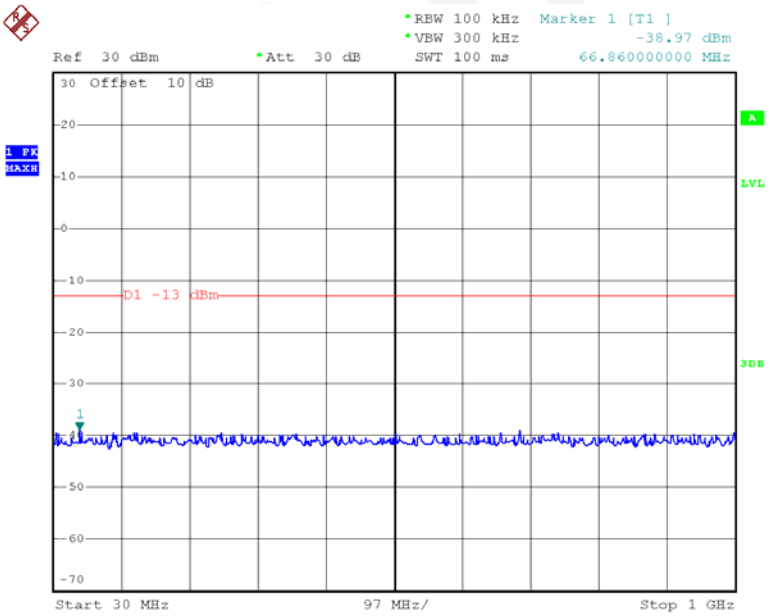


Date: 29.NOV.2015 16:07:16

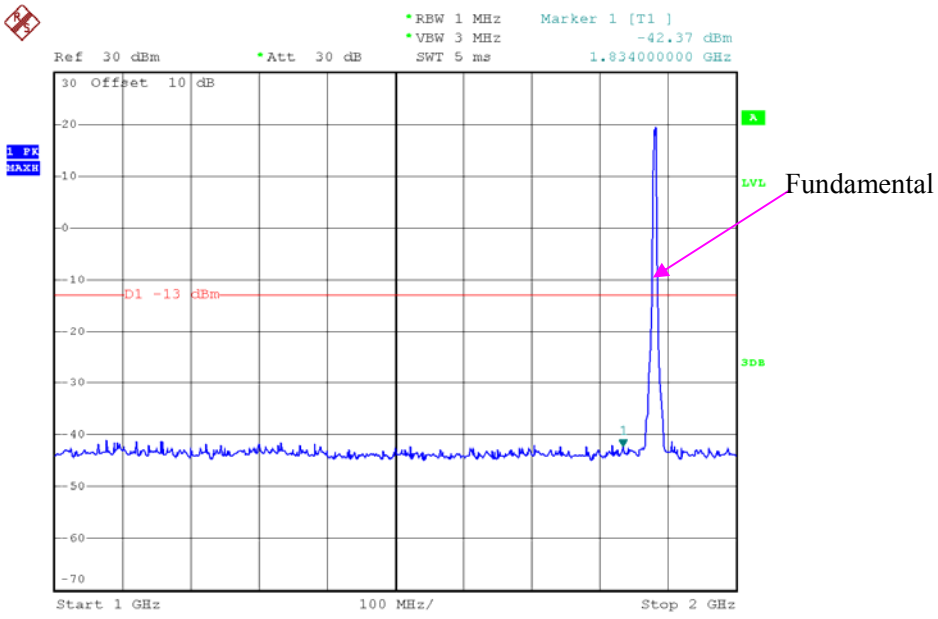


Date: 29.NOV.2015 16:07:42

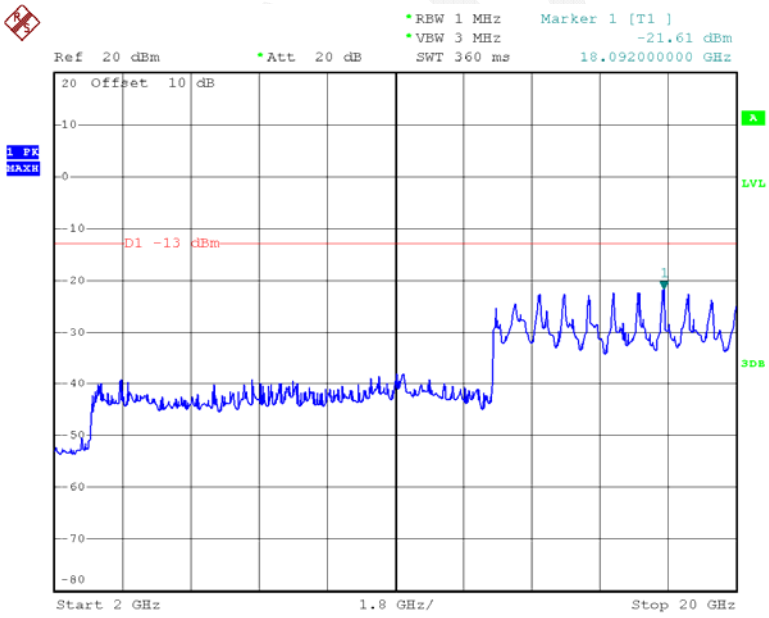
HSDPA Band II _Middle Channel



Date: 29.NOV.2015 16:08:50

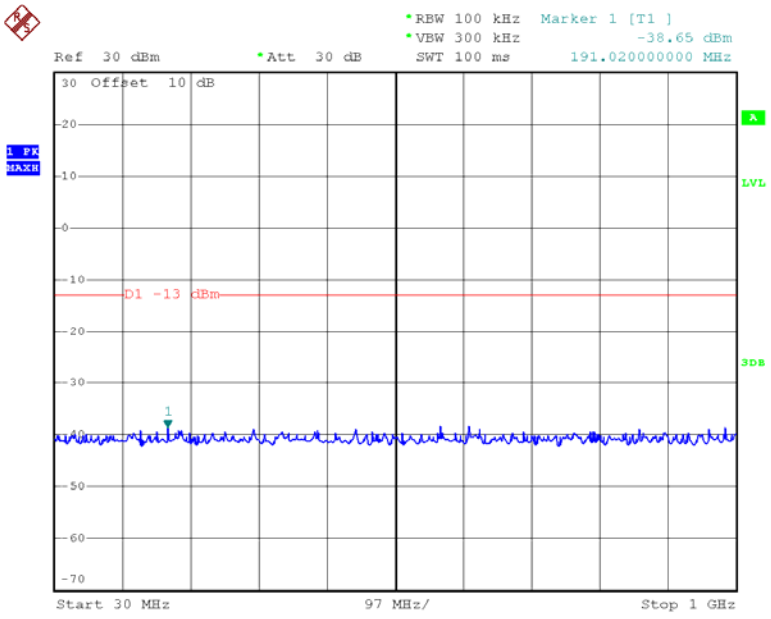


Date: 29.NOV.2015 16:08:23

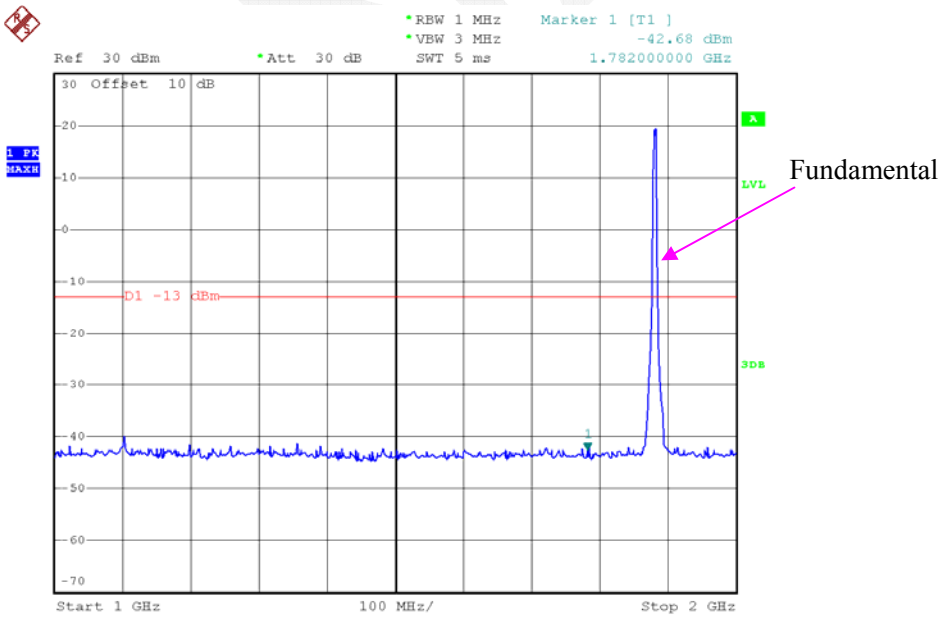


Date: 29.NOV.2015 16:07:52

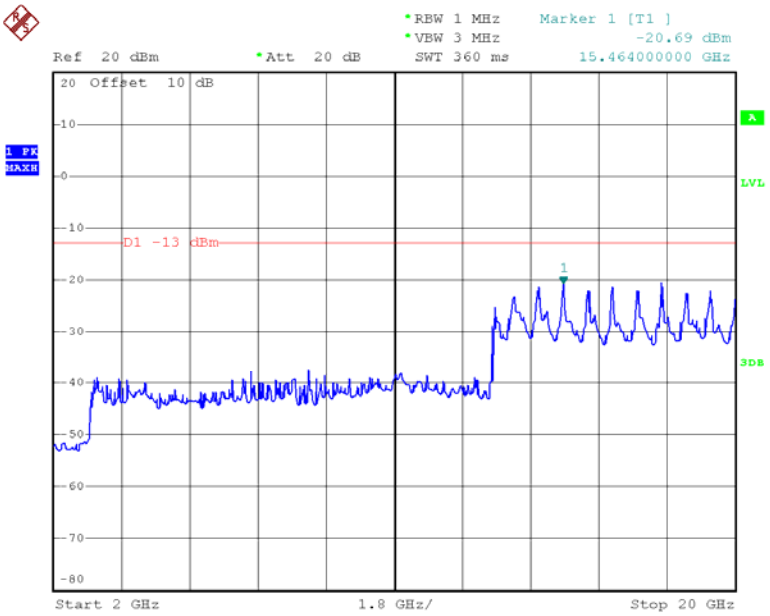
HSUPA Band II _ Middle Channel



Date: 29.NOV.2015 15:55:51

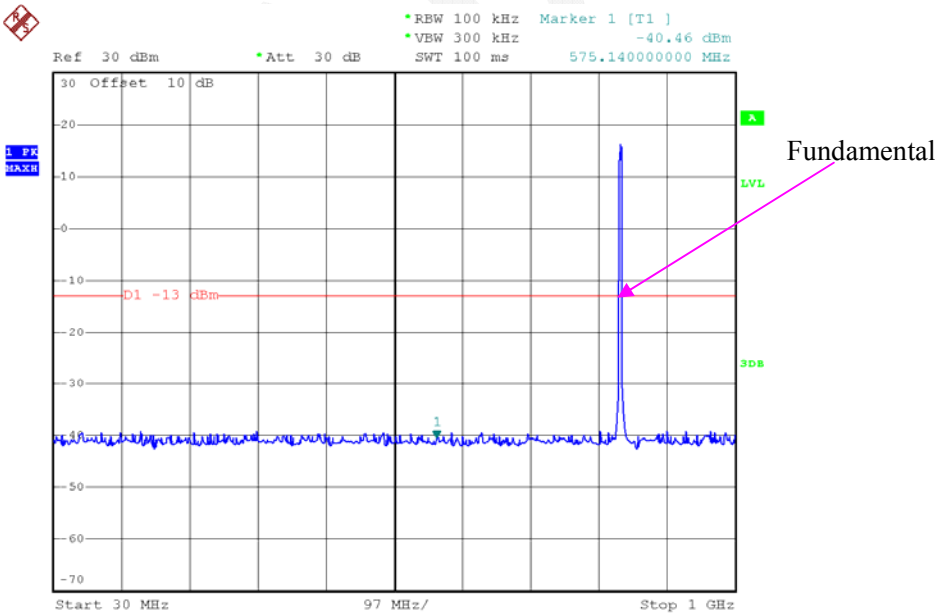


Date: 29.NOV.2015 15:56:37

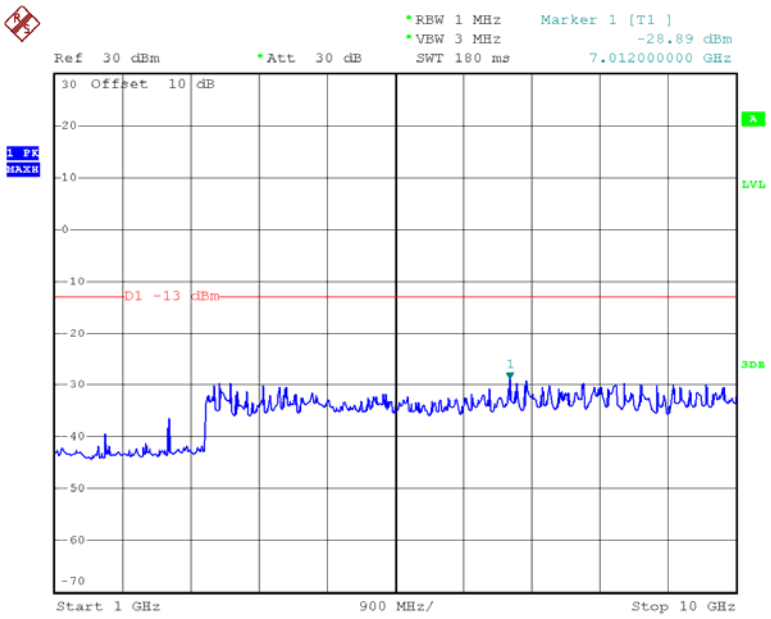


Date: 29.NOV.2015 15:58:08

REL99 Band V_ Middle Channel

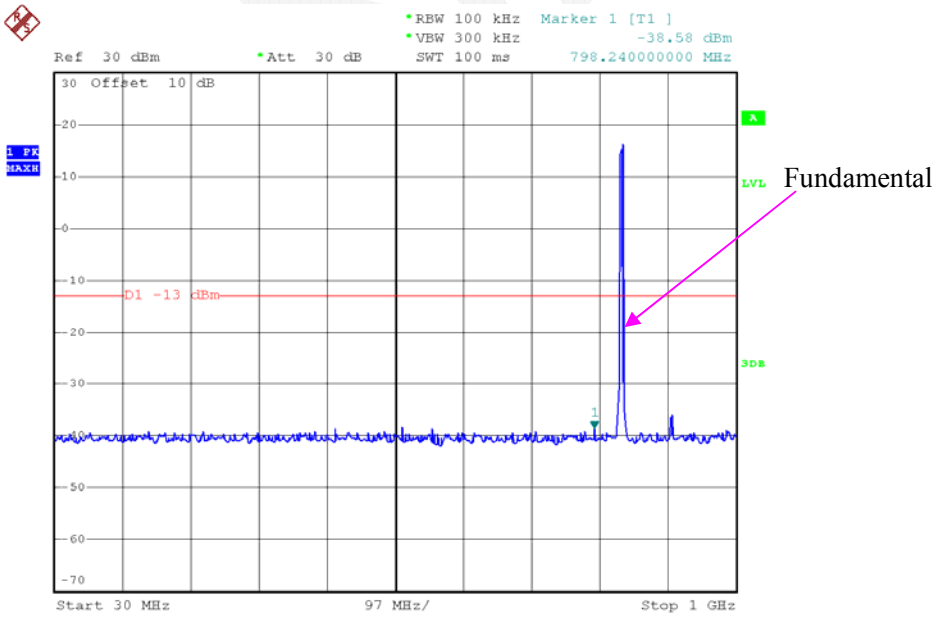


Date: 29.NOV.2015 16:14:54

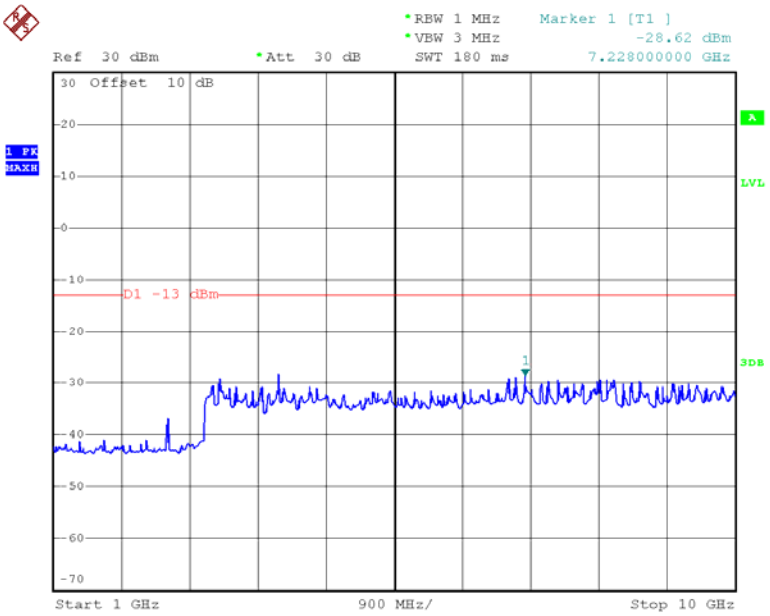


Date: 29.NOV.2015 16:12:32

HSDPA Band V_ Middle Channel

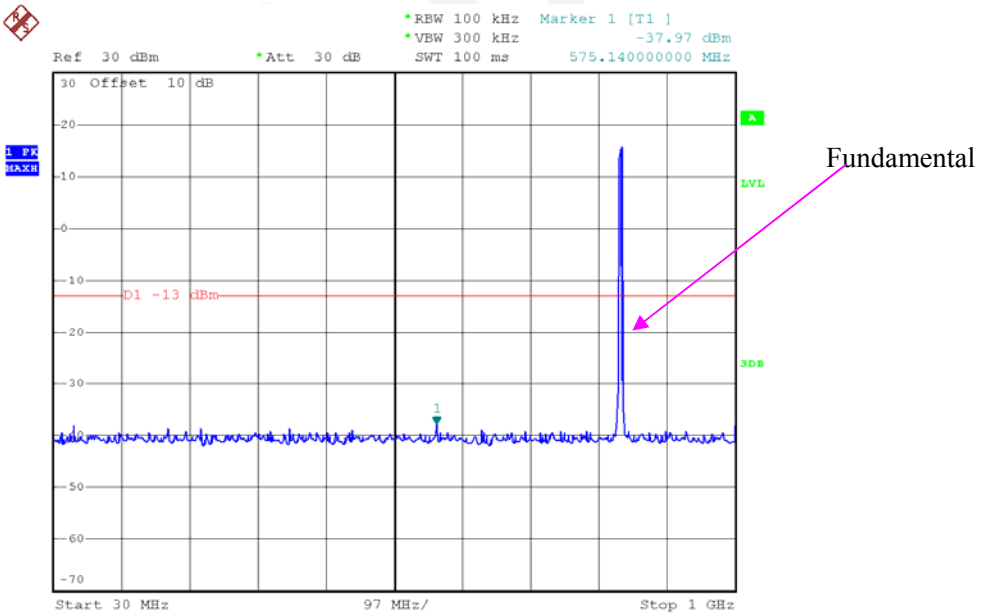


Date: 29.NOV.2015 16:10:30

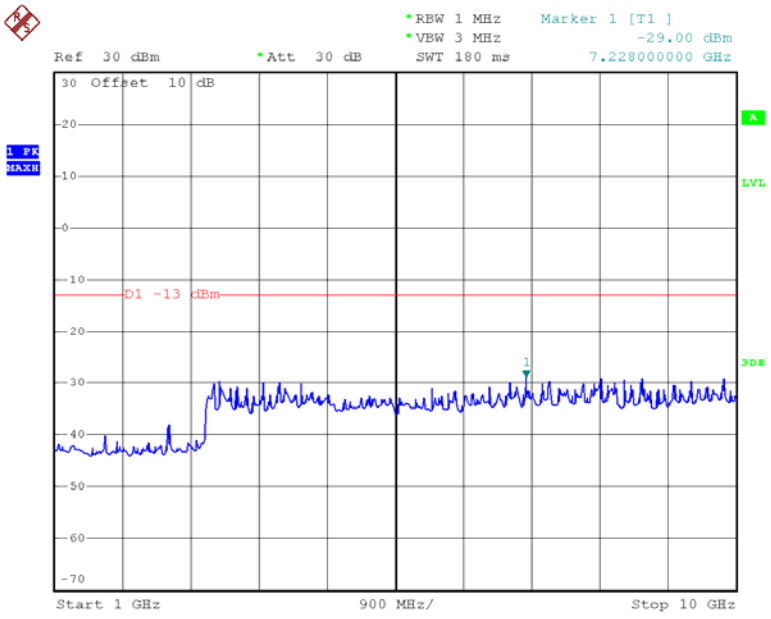


Date: 29.NOV.2015 16:11:09

HSUPA Band V_ Middle Channel



Date: 29.NOV.2015 16:14:42



Date: 29.NOV.2015 16:11:19

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

Applicable Standard

FCC § 2.1053, §22.917 and § 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 (TXpwr in Watts/0.001) – the absolute level

Spurious attenuation limit in dB = 43 + 10 Log_{10} (power out in Watts)

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	EMI Test Receiver	ESCI	100224	2015-08-03	2016-08-02
Sunol Sciences	Antenna	JB3	A060611-3	2014-11-06	2017-11-05
HP	Amplifier	8447E	2434A02181	2015-09-01	2016-09-01
Agilent	Spectrum Analyzer	E4440A	SG43360054	2015-11-23	2016-11-22
ETS-Lindgren	Horn Antenna	3115	9808-5557	2015-09-06	2018-09-06
Mini-Circuit	Amplifier	ZVA-213-S+	054201245	2015-02-19	2016-02-19
Giga	Signal Generator	1026	320408	2015-11-23	2016-11-22
EMCO	Adjustable Dipole Antenna	3121C	9109-753	N/A	N/A
TDK RF	Horn Antenna	HRN-0118	130 084	2015-09-06	2018-09-06

*** 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:	24.5 °C
Relative Humidity:	42 %
ATM Pressure:	101.5 kPa

The testing was performed by Allen Qiao on 2015-11-30

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)
			S.G. Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
Frequency: 836.6 MHz								
1673.200	H	53.73	-47.3	10.6	1.5	-38.2	-13.0	25.2
1673.200	V	56.82	-44.6	10.6	1.5	-35.5	-13.0	22.5
2509.800	H	35.66	-62.4	13.1	2.8	-52.1	-13.0	39.1
2509.800	V	37.18	-59.9	13.1	2.8	-49.6	-13.0	36.6

For below 1GHz, all spurious emissions are 20 dB below the limit or are on the system noise floor level.

WCDMA Band V (PART 22H)

Frequency (MHz)	Polar (H/V)	Receiver Reading (dBμV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			S.G. Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
Frequency: 836.6 MHz								
1673.200	H	44.17	-56.9	10.6	1.5	-47.8	-13.0	34.8
1673.200	V	47.25	-54.1	10.6	1.5	-45.0	-13.0	32.0

For below 1GHz, all spurious emissions are 20 dB below the limit or are on the system noise floor level.

PCS Band (PART 24E)

30 MHz-20 GHz:

Frequency (MHz)	Polar (H/V)	Receiver Reading (dBμV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			S.G. Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
Frequency: 1880 MHz								
3760.000	H	37.71	-56.6	13.8	2.9	-45.7	-13.0	32.7
3760.000	V	36.31	-56.8	13.8	2.9	-45.9	-13.0	32.9

For below 1GHz, all spurious emissions are 20 dB below the limit or are on the system noise floor level.

WCDMA Band II (PART 24E)

Frequency (MHz)	Polar (H/V)	Receiver Reading (dBμV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			S.G. Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
Frequency: 1880 MHz								
3760.000	H	43.02	-51.3	13.8	2.9	-40.4	-13.0	27.4
3760.000	V	40.64	-52.4	13.8	2.9	-41.5	-13.0	28.5

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 = SG Level - Cable loss + Antenna Gain
3) Margin = Limit-Absolute Level

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

Applicable Standard

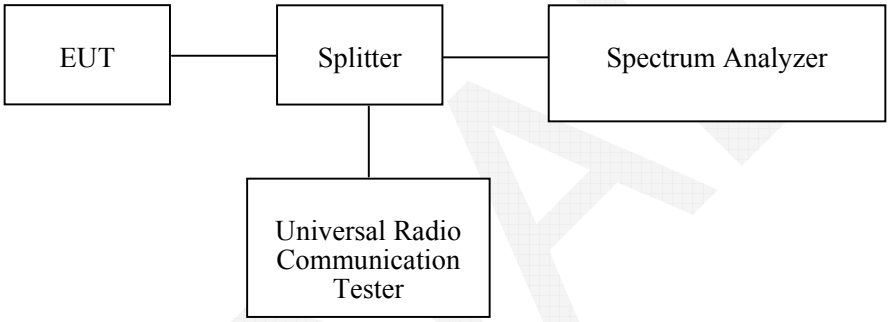
According to § 22.917(a), the power of any emissions outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log(P) dB.

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

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	FSP 38	100478	2015-11-23	2016-11-22
R&S	Universal Radio Communication Tester	CMU200	109 038	2015-07-28	2016-07-27

*** 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:	24.8 °C
Relative Humidity:	42 %
ATM Pressure:	101.3 kPa

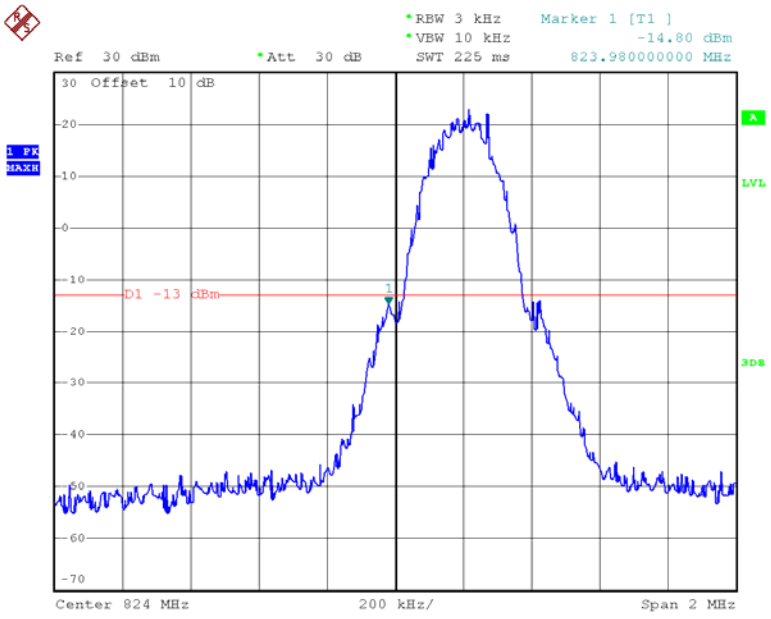
The testing was performed by Allen Qiao on 2015-11-29.

Test Mode: Transmitting

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

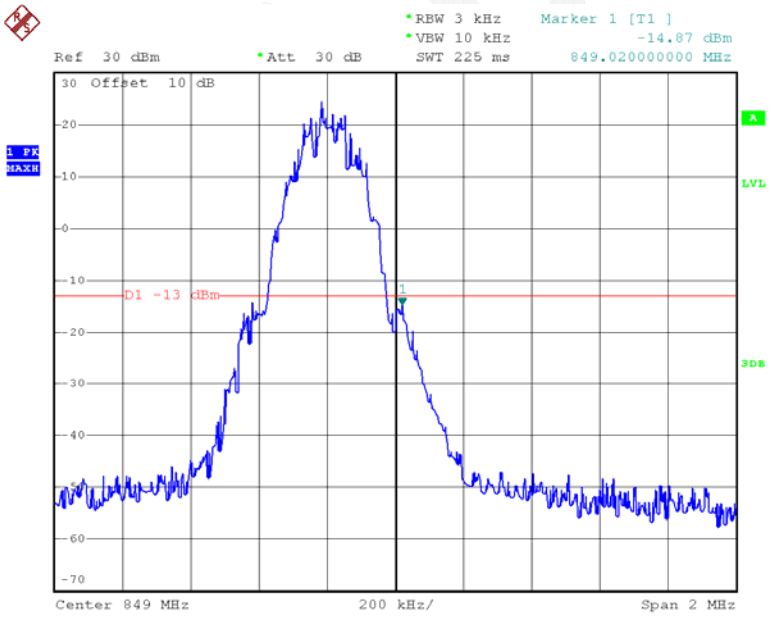
FINAL

GSM 850, Left Band Edge



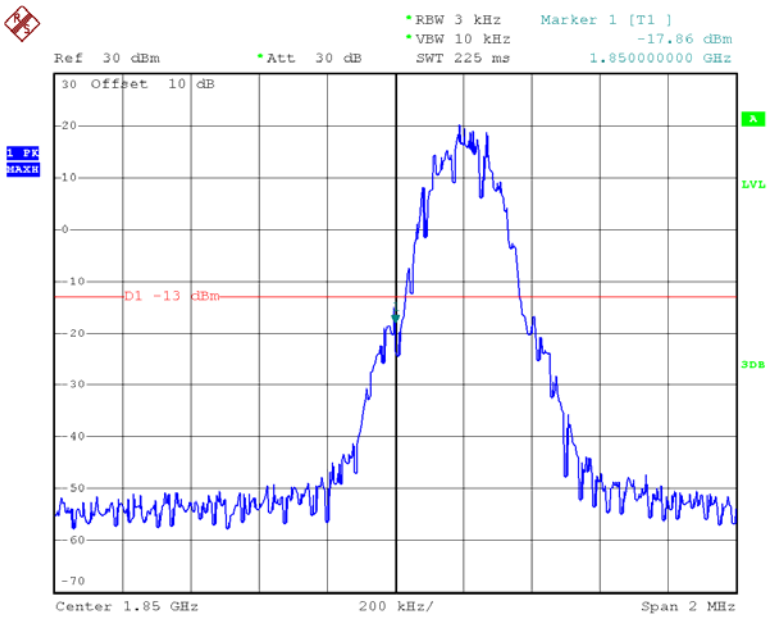
Date: 29.NOV.2015 17:11:55

GSM 850, Right Band Edge



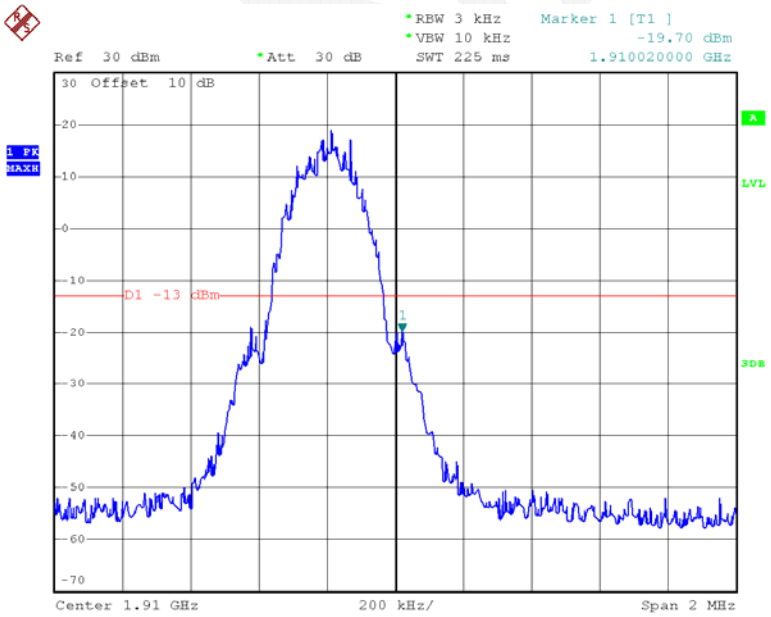
Date: 29.NOV.2015 17:12:57

PCS 1900, Left Band Edge



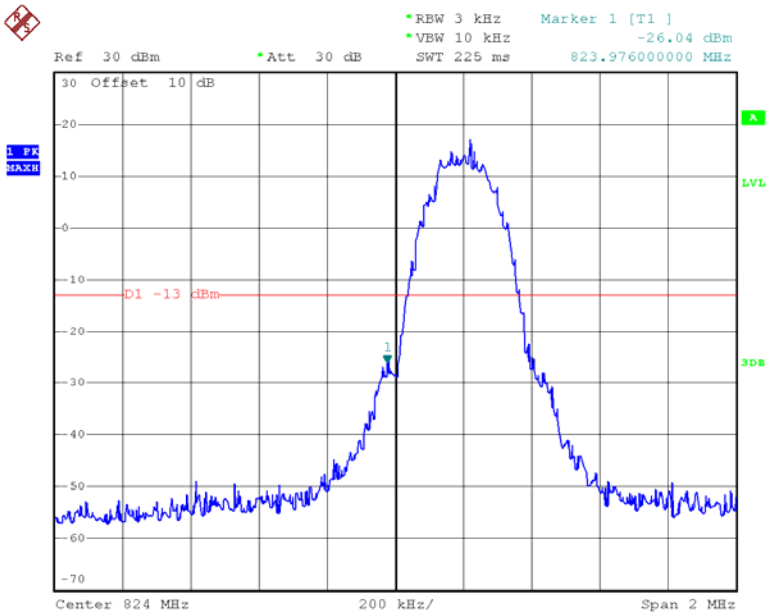
Date: 29.NOV.2015 17:25:56

PCS 1900, Right Band Edge



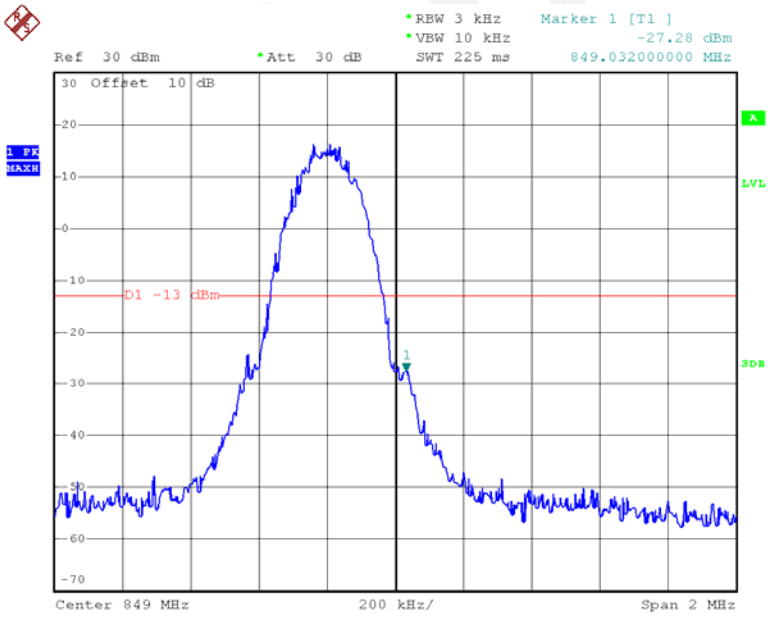
Date: 29.NOV.2015 17:22:59

EDGE850, Left Band Edge



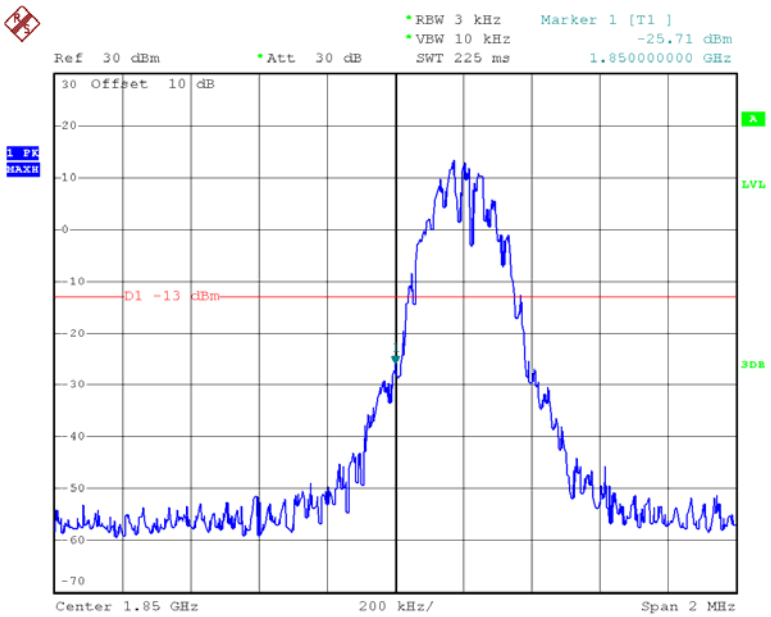
Date: 29.NOV.2015 17:15:52

EDGE850, Right Band Edge



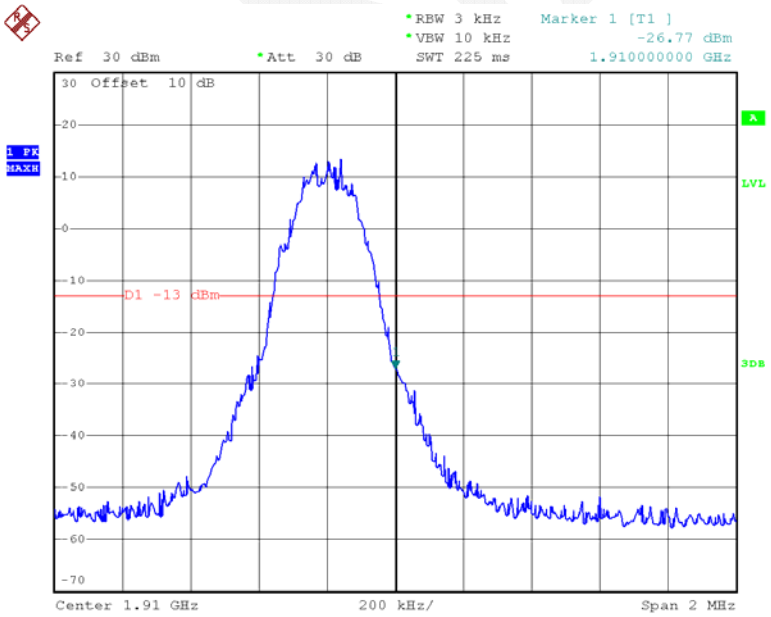
Date: 29.NOV.2015 17:14:29

EDGE 1900, Left Band Edge



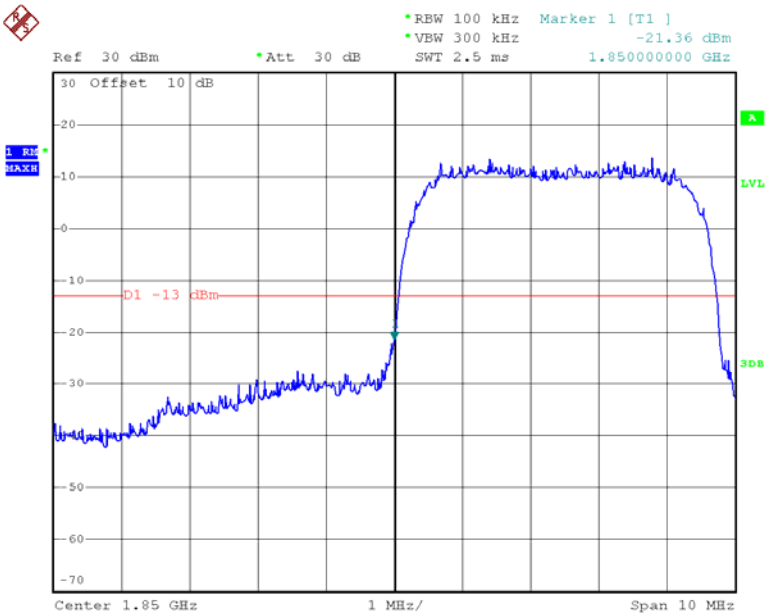
Date: 29.NOV.2015 17:20:26

EDGE 1900, Right Band Edge



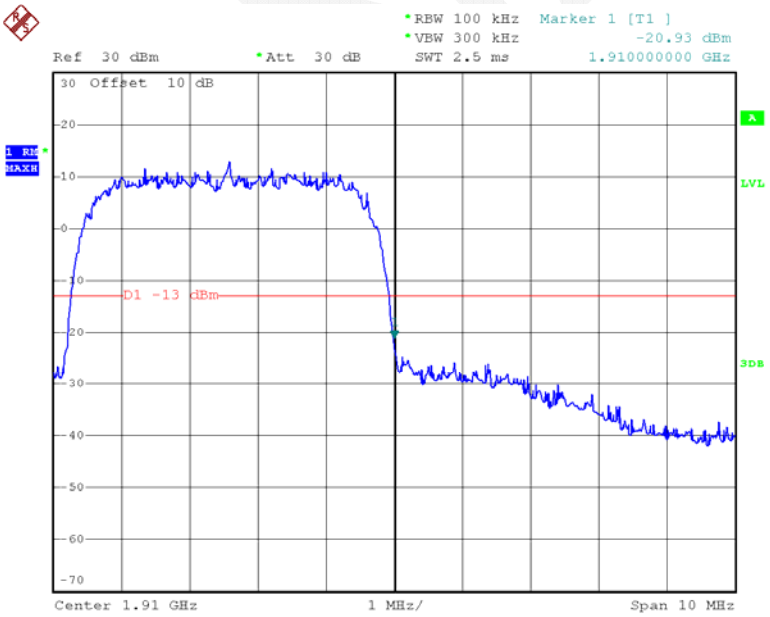
Date: 29.NOV.2015 17:19:04

REL99 Band II, Left Band Edge



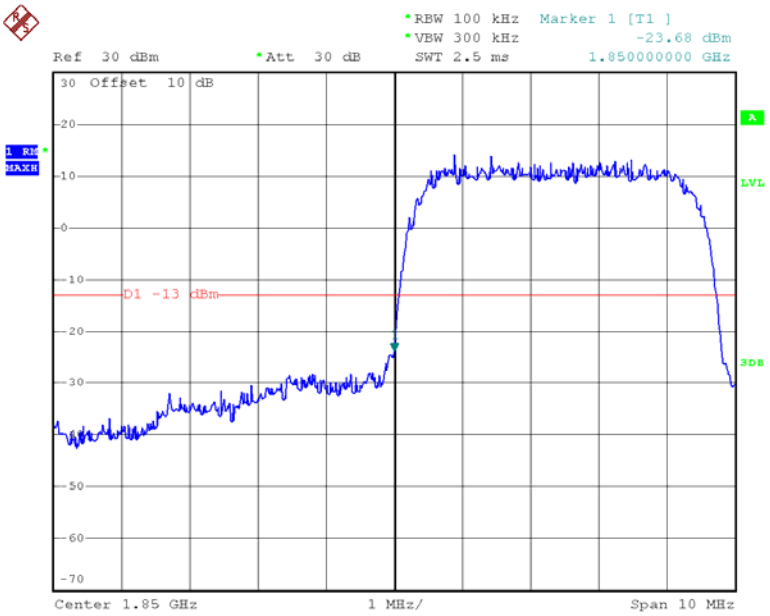
Date: 29.NOV.2015 15:46:59

REL99 Band II, Right Band Edge



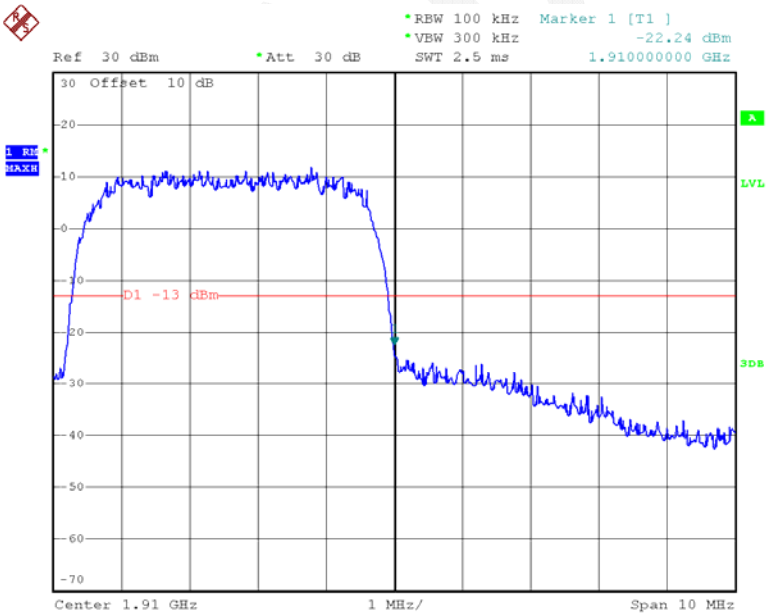
Date: 29.NOV.2015 15:48:20

HSDPA Band II, Left Band Edge



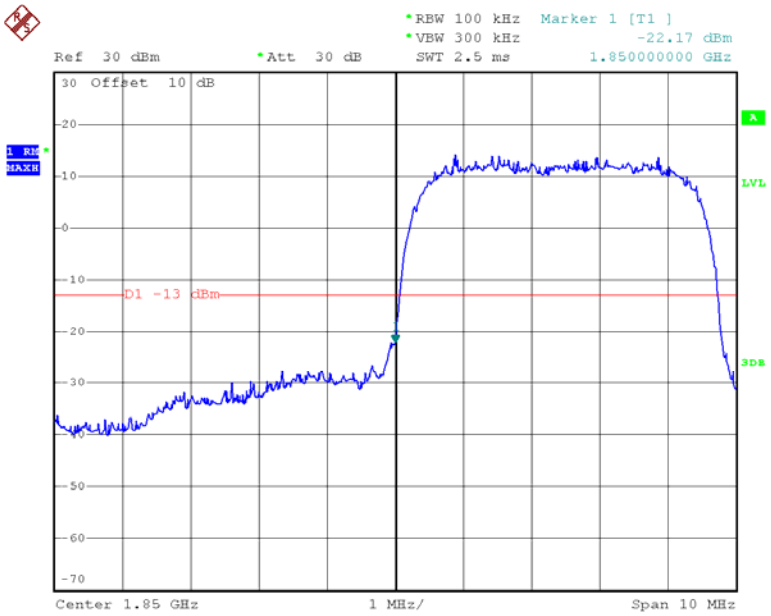
Date: 29.NOV.2015 15:47:06

HSDPA Band II, Right Band Edge



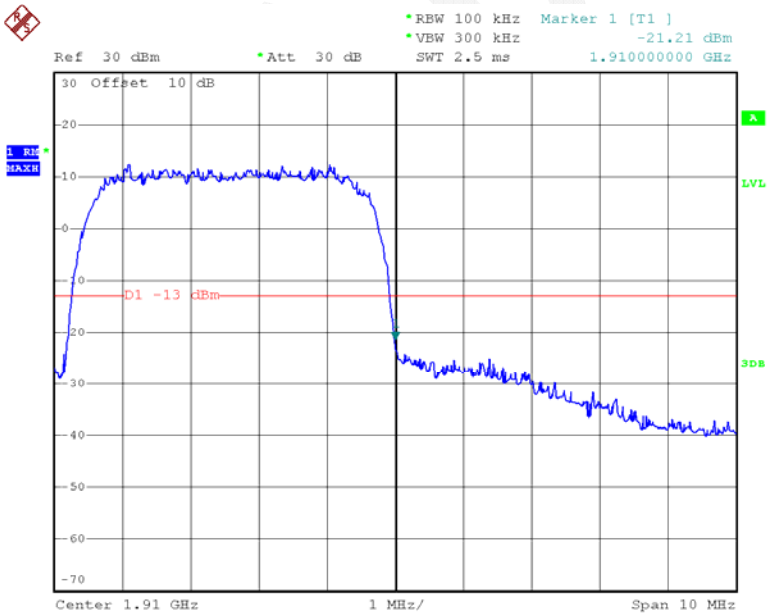
Date: 29.NOV.2015 15:48:13

HSUPA Band II, Left Band Edge



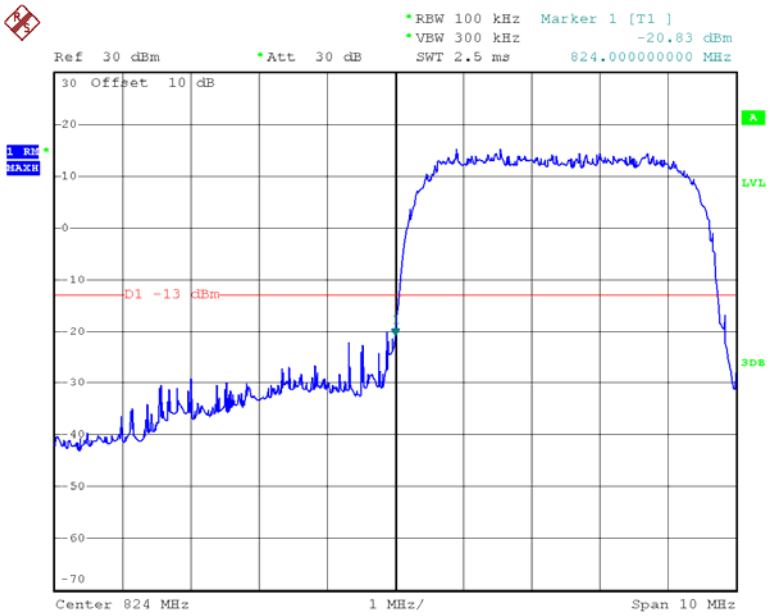
Date: 29.NOV.2015 15:46:53

HSUPA Band II, Right Band Edge



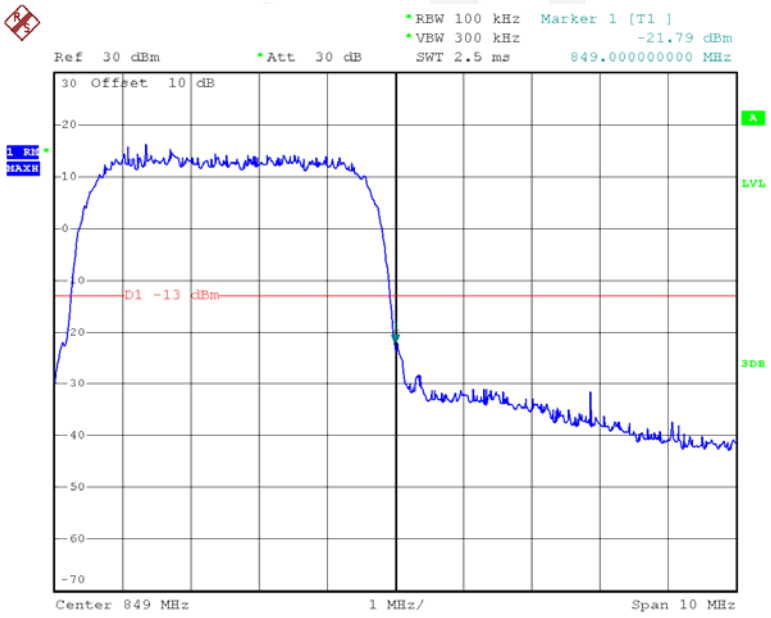
Date: 29.NOV.2015 15:48:07

REL99 Band V, Left Band Edge



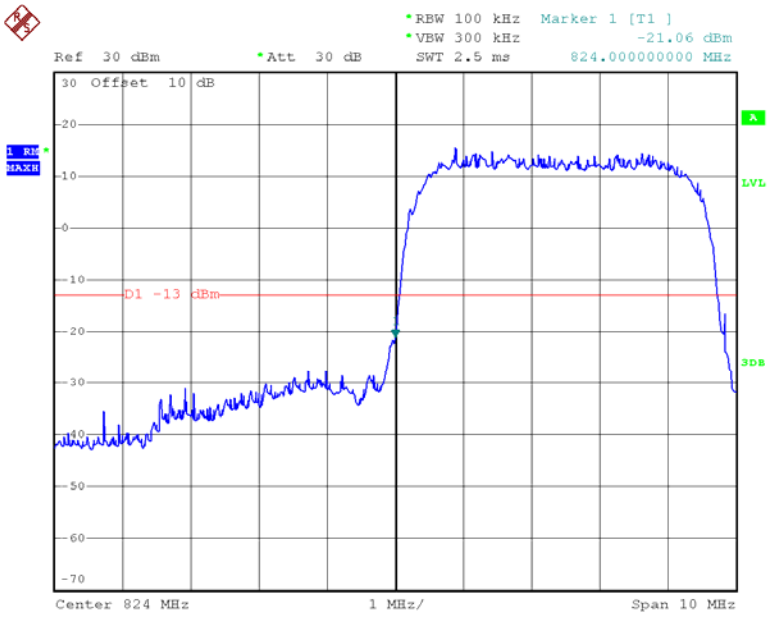
Date: 29.NOV.2015 15:51:54

REL99 Band V Right Band Edge



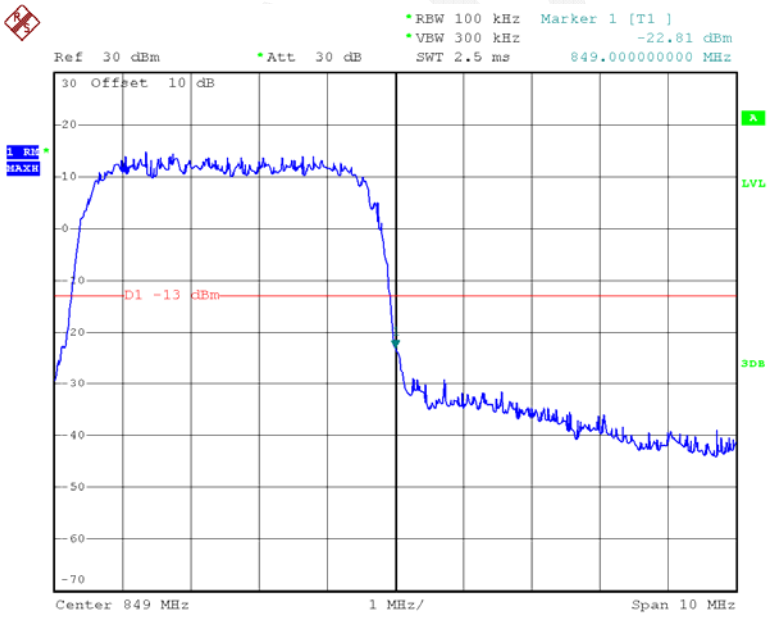
Date: 29.NOV.2015 15:49:33

HSDPA Band V, Left Band Edge



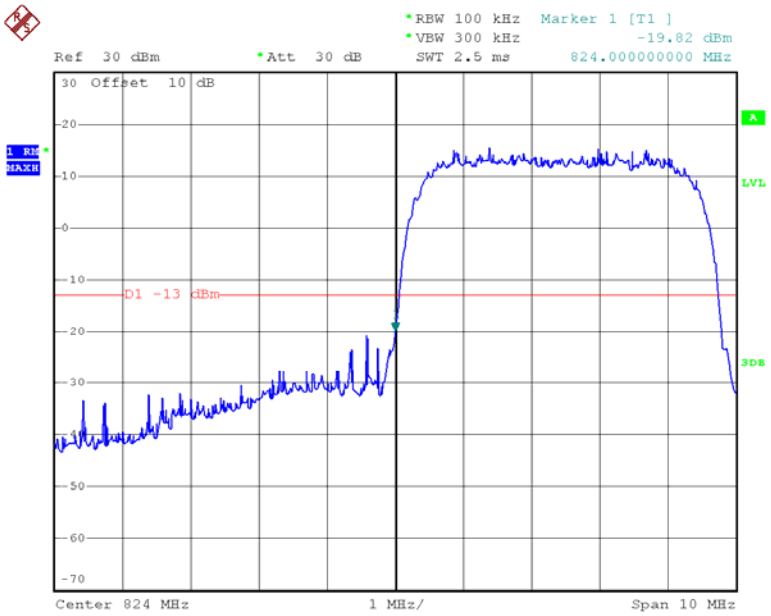
Date: 29.NOV.2015 15:52:23

HSDPA Band V, Right Band Edge



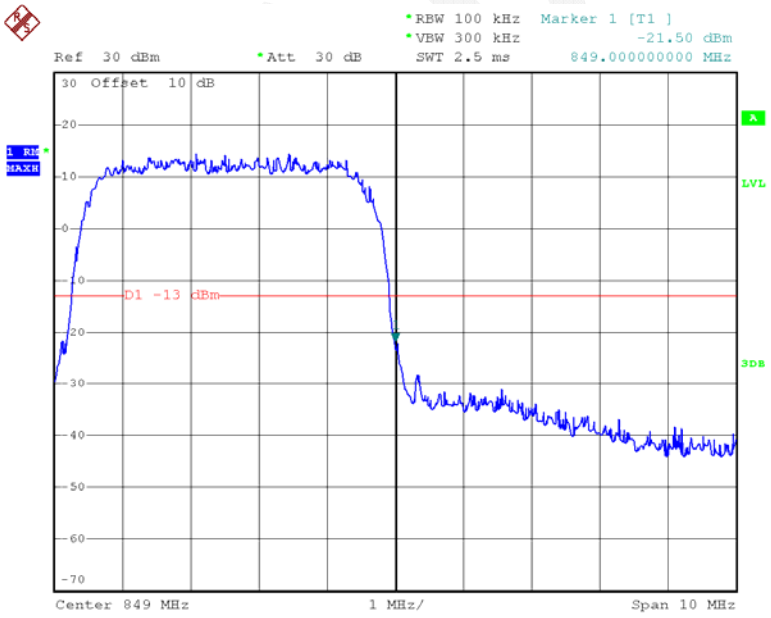
Date: 29.NOV.2015 15:49:54

HSUPA Band V, Left Band Edge



Date: 29.NOV.2015 15:52:36

HSUPA Band V, Right Band Edge



Date: 29.NOV.2015 15:49:48

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

Applicable Standard

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

According to §22.355, the carrier frequency of each transmitter in the Public Mobile Services must be maintained within the tolerances given in Table below:

Frequency Tolerance for Transmitters in the Public Mobile Services

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

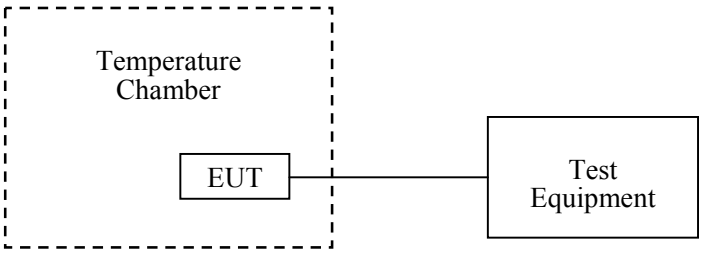
According to §24.235, the frequency stability shall be sufficient to ensure that the fundamental emissions stays within the authorized frequency block.

Test Procedure

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

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

Frequency Stability vs. Voltage: 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
Dongzhixu	High Temperature Test Chamber	DP1000	201105083-3	2015-09-10	2016-09-09
R&S	Universal Radio Communication Tester	CMU200	109 038	2015-07-28	2016-07-27

*** 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:	24.5 °C
Relative Humidity:	42%
ATM Pressure:	101.5 kPa

The testing was performed by Allen Qiao on 2015-11-30

Cellular Band (Part 22H)

GMSK, Middle Channel, f_c = 836.6 MHz				
Temperature	**Voltage**	**Frequency Error**	**Frequency Error**	**Limit**
℃	**V_{DC}**	**Hz**	**ppm**	**ppm**
-30	3.7	10	0.012	2.5
-20		12	0.014	
-10		15	0.018	
0		18	0.022	
10		11	0.013	
20		13	0.016	
30		16	0.019	
40		13	0.016	
50		11	0.013	
25	3.5	17	0.020	
	4.2	10	0.012	

EDGE, Middle Channel, f_c = 836.6 MHz				
Temperature	Voltage	Frequency Error	Frequency Error	Limit
℃	V_{DC}	Hz	ppm	ppm
-30	3.7	17	0.020	2.5
-20		19	0.023	
-10		15	0.018	
0		13	0.016	
10		17	0.020	
20		19	0.023	
30		15	0.018	
40		16	0.019	
50		11	0.013	
25	3.5	12	0.014	
	4.2	18	0.022	

WCDMA Band V: Re199

Middle Channel, f_c = 836.6 MHz				
Temperature	Voltage	Frequency Error	Frequency Error	Limit
℃	V_{DC}	Hz	ppm	ppm
-30	3.7	14	0.017	2.5
-20		18	0.022	
-10		19	0.023	
0		14	0.017	
10		12	0.014	
20		11	0.013	
30		16	0.019	
40		20	0.024	
50		11	0.013	
25	3.5	13	0.016	
25	4.2	15	0.018	

WCDMA Band V: HSDPA

Middle Channel, f_c = 836.6 MHz				
Temperature	Voltage	Frequency Error	Frequency Error	Limit
℃	V_{DC}	Hz	ppm	ppm
-30	3.7	19	0.023	2.5
-20		11	0.013	
-10		10	0.012	
0		16	0.019	
10		15	0.018	
20		19	0.023	
30		17	0.020	
40		12	0.014	
50		18	0.022	
25	3.5	13	0.016	
25	4.2	11	0.013	

WCDMA Band V: HSUPA

Middle Channel, f_c = 836.6 MHz				
Temperature	Voltage	Frequency Error	Frequency Error	Limit
℃	V_{DC}	Hz	ppm	ppm
-30	3.7	12	0.006	2.5
-20		16	0.009	
-10		14	0.007	
0		11	0.006	
10		13	0.007	
20		14	0.007	
30		10	0.005	
40		17	0.009	
50		18	0.010	
25	3.5	19	0.010	
25	4.2	12	0.006	

PCS Band (Part 24E)

GMSK, Middle Channel, f_c = 1880.0 MHz				
Temperature	Voltage	Frequency Error	Frequency Error	Result
℃	V_{DC}	Hz	ppm	
-30	3.7	17	0.009	Compliance
-20		11	0.006	
-10		13	0.007	
0		15	0.008	
10		14	0.007	
20		19	0.010	
30		10	0.005	
40		12	0.006	
50		17	0.009	
25	3.5	16	0.009	
	4.2	18	0.010	

EDGE, Middle Channel, f_c = 1880.0 MHz				
Temperature	Voltage	Frequency Error	Frequency Error	Result
℃	V_{DC}	Hz	ppm	
-30	3.7	-17	-0.009	Compliance
-20		-19	-0.010	
-10		-13	-0.007	
0		-15	-0.008	
10		-16	-0.009	
20		-15	-0.008	
30		-18	-0.010	
40		-10	-0.005	
50		-12	-0.006	
25	3.5	-11	-0.006	
	4.2	-15	-0.008	

WCDMA Band II: Re199

Middle Channel, f_c = 1880.0 MHz				
Temperature	Voltage	Frequency Error	Frequency Error	Result
℃	V_{DC}	Hz	ppm	
-30	3.7	19	0.010	Compliance
-20		15	0.008	
-10		17	0.009	
0		14	0.007	
10		13	0.007	
20		21	0.011	
30		20	0.011	
40		11	0.006	
50		12	0.006	
25	3.5	18	0.010	
25	4.2	17	0.009	

WCDMA Band II: HSDPA

Middle Channel, f_c = 1880.0 MHz				
Temperature	Voltage	Frequency Error	Frequency Error	Result
℃	V_{DC}	Hz	ppm	
-30	3.7	12	0.006	Compliance
-20		16	0.009	
-10		18	0.010	
0		11	0.006	
10		13	0.007	
20		15	0.008	
30		19	0.010	
40		17	0.009	
50		10	0.005	
25	3.5	14	0.007	
25	4.2	16	0.009	

WCDMA Band II: HSUPA

Middle Channel, f_c = 1880.0 MHz				
Temperature	**Voltage**	**Frequency Error**	**Frequency Error**	**Result**
℃	**V_{DC}**	**Hz**	**ppm**	
-30	3.7	17	0.009	Compliance
-20		19	0.010	
-10		18	0.010	
0		20	0.011	
10		16	0.009	
20		21	0.011	
30		13	0.007	
40		12	0.006	
50		14	0.007	
25	3.5	15	0.008	
25	4.2	19	0.010	

FINAL

DECLARATION LETTER

DOPPIO MOBILE INTERNATIONAL LIMITED
Add: ROOM 1708,17/F HART AVENUE PLAZA,5-9 HART AVENUE TSIM SHA TSUI,KOWLOON, Hong Kong
Tel: +852 97960680 Fax: +852 39044979

DECLARATION OF SIMILARITY

Date: 2015-11-26

Dear Sir or Madam:

We, DOPPIO MOBILE INTERNATIONAL LIMITED, hereby declare that product name: Doppio Cuarzo ,model: F1820,they are the same electromagnetic emissions and electromagnetic compatibility characteristics. A description of the difference among the 2 samples and those that are declared similar are as follows:

1) They have different colours:white and black

The rest are the same.

Please contact me should there be need for any additional clarification or information.

Best Regards,

Doppio Mobile International Limited

Signature:

ARIAS LAZO Luiggi Ivan

Director

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