

RF TEST REPORT

Test item	:	Multi Band GSM/WCDMA/LTE Phone with Bluetooth, WLAN and NFC
Model No.	:	LG-D855V, LGD855V, D855V, LG-D855v, LGD855v, D855v
Order No.	:	DTNC1411-04837
Date of receipt	:	2014-11-05
Test duration	:	2014-11-06 ~ 2014-11-17
Date of issue	:	2014-11-20
Use of report	:	FCC Original Grant

Applicant : LG Electronics MobileComm U.S.A., Inc. 1000 Sylvan Avenue, Englewood Cliffs NJ 07632

Test laboratory : DT&C Co., Ltd.

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Test specification	:	§22(H), §24(E)	
Test environment	:	See appended te	est report
Test result	:	🛛 Pass	🗌 Fail

The test results presented in this test report are limited only to the sample supplied by applicant and the use of this test report is inhibited other than its purpose. This test report shall not be reproduced except in full, without the written approval of DT&C Co., Ltd.

Reviewed by:

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Tested by:

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DT&C Co., Ltd.

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Test Report Version

Test Report No.	Date	Description
DRTFCC1411-1466	Nov. 20, 2014	Initial issue

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1. GENERAL INFORMATION

Applicant Name:	LG Electronics MobileComm U.S.A., Inc.			
Address:	1000 Sylvan Avenue, Englewood Cliffs NJ 07632			
FCC ID	: ZNFD855V			
FCC Classification	: Licensed Portable Transmitter Held to Ear (PCE)			
EUT	: Multi Band GSM/WCDMA/LTE Phone with Bluetooth, WLAN and NFC			
Model Name	: LG-D855V			
Add Model Name	 LGD855V, D855V, LG-D855v, LGD855v, D855v % 6 models are same mechanical, electrical and functional. % The only difference is the model name, which are changed for marketing purpose 			
Supplying power	: Standard Battery - Type: Li-ion Battery - M/N: BL-53YH - Rating: DC 3.8V & 3000mAh / 11.4Wh			
Antenna Informatio	: Internal Antenna - Type: Built-In type			
Tx Frequency	: GSM850: 824.2 ~ 848.8 MHz GSM1900: 1850.2 ~ 1909.8 MHz EDGE850: 824.2 ~ 848.8 MHz EDGE1900: 1850.2 ~ 1909.8 MHz WCDMA850: 826.4 ~ 846.6 MHz WCDMA1900: 1852.4 ~ 1907.6 MHz HSUPA850: 826.4 ~ 846.6 MHz HSUPA1900: 1852.4 ~ 1907.6 MHz			
Rx Frequency	: GSM850: 869.2 ~ 893.8 MHz GSM1900: 1930.2 ~ 1989.8 MHz EDGE850: 869.2 ~ 893.8 MHz EDGE1900: 1930.2 ~ 1989.8 MHz WCDMA850: 871.4 ~ 891.6 MHz WCDMA1900: 1932.4 ~ 1987.6 MHz HSUPA850: 871.4 ~ 891.6 MHz HSUPA1900: 1932.4 ~ 1987.6 MHz			
Max. RF Output Pov	Image: series of the system			
Emission Designato	(s) : GSM850: 248KGXW GSM1900: 246KGXW EDGE850: 247KG7W EDGE1900: 245KG7W WCDMA850: 4M20F9W WCDMA1900: 4M17F9W HSUPA850: 4M16F9W HSUPA1900: 4M17F9W			

2. INTRODUCTION

2.1. EUT DESCRIPTION

The Equipment Under Test(EUT) supports Multi Band GSM/WCDMA/LTE Phone with Bluetooth, WLAN and NFC.

2.2. Support equipment

Equipment	Model No.	Serial No.	Manufacturer	Note
Wireless Charger	WCP-310	-	LG	BEJWCP300
-	-	-	-	-

Note: The above equipments were supported by manufacturer.

2.3. MEASURING INSTRUMENT CALIBRATION

The measuring equipment, which was utilized in performing the tests documented herein, has been calibrated in accordance with the manufacturer's recommendations for utilizing calibration equipment, which is traceable to recognized national standards.

2.4. TEST FACILITY

The 3&10m test site and conducted measurement facility used to collect the radiated data are located at the 42, Yurim-ro, 154beon-gil, Cheoin-gu, Yongin-si, Gyeonggi-do, Korea 449-935. The site is constructed in conformance with the requirements.

- 3&10m test site registration Number: 678747

3. DESCRIPTION OF TESTS

3.1 ERP & EIRP

(Effective Radiated Power & Equivalent Isotropic Radiated Power)

Test Set-up



Test Procedure

- ANSI/TIA-603-C-2004 Section 2.2.17
- KDB971168 v02r02 Section 5.2.1

These measurements were performed at 3 &10 m test site. The equipment under test is placed on a non-conductive table 0.8-meters above a turntable which is flush with the ground plane and 3 meters from the receive antenna.

- 1. Set span to at least 1.5 times the OBW.
- 2. Set RBW = 1-5 % of the OBW, not to exceed 1 MHz.
- 3. Set VBW \ge 3 x RBW.
- 4. Set number of points in sweep \geq 2 × span / RBW.
- 5. Sweep time = auto couple.
- 6. Detector = RMS (power averaging).
- 7. If the EUT can be configured to transmit continuously (i.e., burst duty cycle \geq 98 %), then set the trigger to free run.
- 8. If the EUT cannot be configured to transmit continuously (i.e., burst duty cycle < 98 %), then use a sweep trigger with the level set to enable triggering only on full power bursts and configure the EUT to transmit at full power for the entire duration of each sweep.</p>
 - Ensure that the sweep time is less than or equal to the transmission burst duration.
- 9. Trace average at least 100 traces in power averaging (i.e., RMS) mode.
- 10. Compute the power by integrating the spectrum across the OBW of the signal using the instrument's band power measurement function, with the band limits set equal to the OBW band edges. If the instrument does not have a band power function, then sum the spectrum levels (in linear power units) at intervals equal to the RBW extending across the entire OBW of the spectrum.

The receive antenna height and turntable rotations were adjusted for the highest reading on the receive spectrum analyzer.

A half-wave dipole was substituted in place of the EUT. This dipole antenna was driven by a signal generator and the level of the signal generator was adjusted to obtain the same receive spectrum analyzer reading. The conducted power at the terminal of the substitute antenna is measured.

The ERP/EIRP is calculated using the following formula:

ERP/EIRP = The conducted power at the substitute antenna's terminal [dBm] + Substitute Antenna gain [dBd for ERP, dBi for EIRP]

For readings above 1 GHz, the above procedure is repeated using horn antennas and the difference between the gain of the horn antenna and an isotropic antenna are taken into consideration.

3.2 PEAK TO AVERAGE RATIO

Test set-up



Test Procedure

A peak to average ratio measurement is performed using the following procedure.

CCDF Procedure

- KDB971168 v02r02-Section 5.7.1
- 1. Set resolution/measurement bandwidth ≥ signal's occupied bandwidth
- 2. Set the number of counts to a value that stabilizes the measured CCDF curve
- 3. Set the measurement interval as follows:
 - 1) For continuous transmissions, set to 1 ms
 - 2) For burst transmissions, employ an external trigger that is synchronized with the EUT burst timing sequence, or use the internal burst trigger with a trigger level that allows the burst to stabilize and set the measurement interval to a time that is less than or equal to the burst duration.
- 4. Record the maximum PAPR level associated with a probability of 0.1%

Alternate Procedure

- KDB971168 v02r02-Section 5.7.2

Use one of the measurement procedures of the peak power and record as P_{Pk} .

Use one of the measurement procedures of the average power and record as $\mathsf{P}_{\mathsf{Avg}}.$

Both the peak and average power levels must be expressed in the same logarithmic units (e.g., dBm). Determine the PAPR from:

PAPR (dB) = P_{Pk} (dBm) - P_{Avg} (dBm).

- Peak Power Measurement

- 1. Set the RBW ≥ OBW
- 2. Set VBW ≥ 3 × RBW
- 3. Set span ≥ 2 x RBW
- 4. Sweep time = auto couple
- 5. Detector = peak
- 6. Ensure that the number of measurement points \geq span/RBW.
- 7. Trace mode = max hold
- 8. Allow trace to fully stabilize.
- 9. Use the peak marker function to determine the peak amplitude level.

- Average Power Measurement

- 1. Set span to at least 1.5 times the OBW.
- 2. Set RBW = 1-5% of the OBW, not to exceed 1 MHz.
- 3. Set VBW \ge 3 x RBW.
- 4. Set number of points in sweep \geq 2 × span / RBW.
- 5. Sweep time = auto-couple.
- 6. Detector = RMS (power averaging).
- If the EUT can be configured to transmit continuously (i.e., burst duty cycle ≥ 98%), then set the trigger to free run.
- 8. If the EUT cannot be configured to transmit continuously (i.e., burst duty cycle < 98 %), then use a sweep trigger with the level set to enable triggering only on full power bursts and configure the EUT to transmit at full power for the entire duration of each sweep. Ensure that the sweep time is less than or equal to the transmission burst duration.</p>
- 9. Trace average at least 100 traces in power averaging (i.e., RMS) mode.
- 10. Compute the power by integrating the spectrum across the OBW of the signal using the instrument's band power measurement function, with the band limits set equal to the OBW band edges. If the instrument does not have a band power function, then sum the spectrum levels (in linear power units) at intervals equal to the RBW extending across the entire OBW of the spectrum.

3.3 OCCUPIED BANDWIDTH.

Test set-up



Offset value information

Frequency (MHz)	Offset Value (dB)	Frequency (MHz)	Offset Value (dB)
824.2	19.17	1850.2	19.82
826.4	19.16	1852.4	19.82
836.6	19.21	1880.0	19.89
846.6	19.23	1907.6	19.91
848.8	19.25	1909.8	19.91
-	-	-	-

Note. 1: The offset values from EUT to Spectrum analyzer were measured and used for test. Offset value = Cable A + Splitter +ATT+ Cable B

Test Procedure

- KDB971168 v02r02-Section 4.2

The occupied bandwidth, that is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers radiated are each equal to 0.5 percent of the total mean power of a given emission.

- 1. The signal analyzer's automatic bandwidth measurement capability was used to perform the 99 % occupied bandwidth and the 26 dB bandwidth. The bandwidth measurement was not influenced by any intermediate power nulls in the fundamental emission.
- 2. RBW = $1 \sim 5$ % of the expected OBW & VBW ≥ 3 X RBW
- 3. Detector = Peak
- 4. Trance mode = Max hold
- 5. Sweep = Auto couple
- 6. The trace was allowed to stabilize
- 7. If necessary, step 2 ~ 6 were repeated after changing the RBW such that it would be within $1 \sim 5 \%$ of the 99 % occupied bandwidth observed in step 6.

3.4 BAND EDGE EMISSIONS AT ANTENNA TERMINAL.

Test set-up



Offset value information

Frequency (MHz)	Offset Value (dB)	Frequency (MHz)	Offset Value (dB)
823.0	19.16	1849.0	19.82
824.0	19.17	1850.0	19.82
849.0	19.26	1910.0	19.92
850.0	19.26	1911.0	19.92
-	-	-	-

Note. 1: The offset value from EUT to Spectrum analyzer was measured and used for test. Offset value = Cable A + Splitter +ATT+ Cable B

Test Procedure

- KDB971168 v02r02 - Section 6.0

All out of band emissions are measured by means of a calibrated spectrum analyzer. The EUT was setup to maximum output power at its lowest and highest channel with all modulations.

The power of any spurious emission shall be attenuated below the transmitter power (P) by at least $43 + 10 \log(P) dB$

- 1. Start and stop frequency were set such that the band edge would be placed in the center of the plot
- 2. Span was set large enough so as to capture all out of band emissions near the band edge
- 3. RBW \geq 1 % of the emission
- 4. VBW ≥ 3 X RBW
- 5. Detector = RMS & Trace mode = Max hold
- 6. Sweep time = Auto couple or 1 s for band edge
- 7. Number of sweep point $\ge 2 \text{ X span} / \text{RBW}$
- 8. The trace was allowed to stabilize
 - Note 1: In the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of **at least one percent** of the emission bandwidth of the fundamental emission of the transmitter may be employed to demonstrate compliance with the out-of-band emissions limit. The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emission are attenuated at least 26 dB below the transmitter power.

3.5 SPURIOUS AND HARMONIC EMISSIONS AT ANTENNA TERMINAL.

Test set-up



Offset value information

Frequency (MHz)	Offset Value (dB)	Frequency (MHz)	Offset Value (dB)
5000.0	21.09	15000.0	22.15
10000.0	21.74	20000.0	23.13
-	-	-	-

Note. 1: The offset value from EUT to Spectrum analyzer was measured and used for test. Offset value = Cable A + Splitter +ATT+ Cable B

Test Procedure

- KDB971168 v02r02 - Section 6.0

The level of the carrier and the various conducted spurious and harmonic frequencies is measured by means of a calibrated spectrum analyzer. The EUT was setup to maximum output power at its low, middle, high channel with all bandwidths. The spectrum is scanned from 30 MHz up to a frequency including its 10th harmonic.

The power of any spurious emission shall be attenuated below the transmitter power (P) by at least $43 + 10 \log(P) dB$

- 1. RBW = 100 KHz or 1 MHz & VBW \ge 3 X RBW (Refer to Note 1)
- 2. Detector = RMS & Trace mode = Max hold
- 3. Sweep time = Auto couple
- 4. Number of sweep point \geq 2 X span / RBW
- 5. The trace was allowed to stabilize
- Note 1: Compliance with these provisions is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kHz or greater for Part 22 and 1 MHz or greater for Part 24.

3.6 RADIATED SPURIOUS EMISSIONS

Test Set-up



Test Procedure

- ANSI/TIA-603-C-2004 - Section 2.2.12

- KDB971168 v02r02 - Section 5.8

These measurements were performed at 3 & 10m test site. The equipment under test is placed on a non-conductive table 0.8-meters above a turntable which is flush with the ground plane and 3 meters from the receive antenna.

Test setting

- 1. RBW = 100 kHz for below 1 GHz and 1 MHz for above 1 GHz / VBW \ge 3 X RBW
- 2. Detector = Peak & Trace mode = Max hold
- 3. Sweep time = Auto couple
- 4. Number of sweep point \geq 2 X span / RBW
- 5. The trace was allowed to stabilize

The receive antenna height and turntable rotations were adjusted for the highest reading on the receive spectrum analyzer.

For radiated power measurements below 1 GHz, a half-wave dipole was substituted in place of the EUT. This dipole antenna was driven by a signal generator and the level of the signal generator was adjusted to obtain the same spectrum analyzer reading.

For radiated power measurements above 1 GHz, a Horn antenna was substituted in place of the EUT. This Horn antenna was driven by a signal generator and the level of the signal generator was adjusted to obtain the same spectrum analyzer reading. The difference between the gain of the horn and an isotropic antenna are taken into consideration.

This measurement was performed with the EUT oriented in 3 orthogonal axis.

3.7 FREQUENCY STABILITY / VARIATION OF AMBIENT TEMPERATURE

Test Set-up



Test Procedure

- ANSI/TIA-603-C-2004
- KDB971168 v02r02 Section 9.0

The frequency stability of the transmitter is measured by:

a.) Temperature:

The temperature is varied from - 30 °C to + 50 °C using an environmental chamber.

b.) Primary Supply Voltage:

The primary supply voltage is varied from 85 % to 115 % of the nominal value for non handcarried battery and AC powered equipment. For hand-carried, battery-powered equipment, primary supply voltage is reduced to the battery operating end point which shall be specified by the manufacturer.

Specification:

The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block for Part 24. The frequency stability of the transmitter shall be maintained within \pm 0.000 25 % (\pm 2.5 ppm) of the center frequency for Part 22.

Time Period and Procedure:

- The carrier frequency of the transmitter is measured at room temperature. (25 °C to provide a reference)
- 2. The equipment is turned on in a "standby" condition for one minute before applying power to the transmitter. Measurement of the carrier frequency of the transmitter is made within one minute after applying power to the transmitter.
- Frequency measurements are made at 10 °C intervals ranging from -30 °C to +50 °C. A period of at least one half-hour is provided to allow stabilization of the equipment at each temperature level.

4. LIST OF TEST EQUIPMENT

Туре	Manufacturer	Model	Cal.Date (yy/mm/dd)	Next.Cal. Date (yy/mm/dd)	S/N
Spectrum Analyzer	Agilent	N9020A	14/03/28	15/03/28	MY50510026
Multimeter	Fluke	17B	14/05/12	15/05/12	26030065WS
DC Power Supply	H.P	6633A	14/02/27	15/02/27	3524A06634
Temp &Humid Test Chamber	SJ Science	SJ-TH-S50	14/10/21	15/10/21	SJ-TH-S50-130930
Power Splitter	Anritsu	K241B	14/10/21	15/10/21	1701099
Attenuator(3dB)	SMAJK	SMAJK-2-3	14/10/21	15/10/21	3
Attenuator(10dB)	SMAJK	SMAJK-50-10	14/10/21	15/10/21	2-50-10
Thermo hygrometer	BODYCOM	BJ5478	14/03/03	15/03/03	1209
Dipole Antenna	Schwarzbeck	VHA9103	13/10/24	15/10/24	2116
Dipole Antenna	Schwarzbeck	VHA9103	14/04/01	16/04/01	2117
Dipole Antenna	Schwarzbeck	UHA9105	13/10/24	15/10/24	2261
Dipole Antenna	Schwarzbeck	UHA9105	14/04/01	16/04/01	2262
Bilog Antenna	Schwarzbeck	VULB9160	14/07/31	16/07/31	9160-3362
LOOP Antenna	Schwarzbeck	FMZB1513	14/04/29	16/04/29	1513-128
HORN ANT	ETS	3115	14/02/26	16/02/26	6419
HORN ANT	ETS	3117	14/05/12	16/05/12	00140394
HORN ANT	A.H.Systems	SAS-574	13/03/20	15/03/20	154
HORN ANT	A.H.Systems	SAS-574	13/05/27	15/05/27	155
Amplifier (22dB)	H.P	8447E	14/01/07	15/01/07	2945A02865
Amplifier (30dB)	Agilent	8449B	14/02/27	15/02/27	3008A00370
Amplifier	EMPOWER	BBS3Q7ELU	14/09/12	15/09/12	1020
High-pass filter	Wainwright	WHKX1.0	14/09/11	15/09/11	9
High-Pass Filter	Wainwright	WHNX2.1	14/09/11	15/09/11	1
8960 Series 10 Wireless Comms Test Set	Agilent	E5515C	14/02/28	15/02/28	GB43461134
Universal Radio Communication Tester	Rohde Schwarz	CMU200	14/02/28	15/02/28	106760
Vector Signal Generator	Rohde Schwarz	SMBV100A	14/01/08	15/01/08	255571
Signal Generator	Rohde Schwarz	SMF100A	14/07/01	15/07/01	102341

5. SUMMARY OF TEST RESULTS

FCC Part Section(s)	RSS Section(s)	Parameter	Status Note 1
2.1046	RSS-132 (5.4) RSS-133 (4.1)	Conducted Output Power	C ^{Note 2}
22.913(a) 24.232(c)	RSS-132 (5.4) [SRSP-503(5.1.3)] RSS-133 (6.4) [SRSP-510(5.1.2)]	Effective Radiated Power Equivalent Isotropic Radiated Power	C Note 3
22.917(a) 24.238(a) 2.1049	RSS-Gen (4.6.1)	Occupied Bandwidth	С
22.917(a) 24.238(a) 2.1051	RSS-132 (5.5) RSS-133 (6.5)	Band Edge Spurious and Harmonic Emissions at Antenna Terminal	С
24.232(d)	RSS-133 (6.4)	Peak to Average Ratio	С
22.917(a) 24.238(a) 2.1053	RSS-132 (5.5) RSS-133 (6.5)	Radiated Spurious and Harmonic Emissions	C Note 3
22.355 24.235 2.1055	RSS-132 (5.3) RSS-133 (6.3)	Frequency Stability	С

Note 1: C=Comply NC=Not Comply NT=Not Tested NA=Not Applicable

Note 2: Refer to RF Exposure Report (Test Report_SAR)

Note 3: There is no normal battery cover and there is only one kind of wireless charging battery cover for this handset. So per KDB 648474 D03 v01r02, the spurious emissions were tested with the wireless charging battery cover and with both not charging and charging conditions.

Also ERP,EIRP tests were repeated with the wireless charging condition at the worst case configuration of the not charging condition. For wireless charging condition, the handset is placed on the representative charging pad under normal conditions and in a simulated call configuration.

The sample was tested according to the following specification: ANSI/TIA/EIA-603-C-2004 and KDB 971168 D01 v02r02, KDB 648474 D03 v01r02

6. SAMPLE CALCULATION

A. Emission Designator

GSM850 Emission Designator

Emission Designator = **248KGXW** GSM OBW = 247.83 kHz

(Measured at the 99.75 % power bandwidth)

G = Phase Modulation

X = Cases not otherwise covered

W = Combination (Audio/Data)

EDGE850 Emission Designator

Emission Designator = 247KG7W GSM OBW = 246.94 kHz (Measured at the 99.75 % power bandwidth) G = Phase Modulation 7 = Two or more channels containing quantized or digital information

W = Combination (Audio/Data)

WCDMA850 Emission Designator

Emission Designator = **4M20F9W** WCDMA OBW = 4.1950 MHz (Measured at the 99.75 % power bandwidth) F = Frequency Modulation 9 = Composite Digital Information W = Combination (Audio/Data) **WCDMA1900 Emission Designator**

Emission Designator = **4M16F9W** WCDMA OBW = 4.1633 MHz (Measured at the 99.75 % power bandwidth) F = Frequency Modulation 9 = Composite Digital Information W = Combination (Audio/Data)

GSM1900 Emission Designator

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Emission Designator = 246KGXW
GSM OBW = 245.95 kHz
(Measured at the 99.75 % power bandwidth)
G = Phase Modulation
X = Cases not otherwise covered
W = Combination (Audio/Data)
EDGE1900 Emission Designator
Emission Designator = 245KG7W
GSM OBW = 244.98 kHz
(Measured at the 99.75 % power bandwidth)
G = Phase Modulation
7 = Two or more channels containing
quantized or digital information
```

W = Combination (Audio/Data)

HSUPA850 Emission Designator

Emission Designator = **4M17F9W** HSUPA OBW = 4.1659 MHz (Measured at the 99.75 % power bandwidth) F = Frequency Modulation 9 = Composite Digital Information W = Combination (Audio/Data) HSUPA1900 Emission Designator Emission Designator = **4M17F9W**

HSUPA OBW = 4.1690 MHz (Measured at the 99.75 % power bandwidth)

- F = Frequency Modulation
- 9 = Composite Digital Information
- W = Combination (Audio/Data)

7. TEST DATA

7.1 PEAK TO AVERAGE RATIO

- Plots of the EUT's Peak- to- Average Ratio are shown in Clause 8.1

7.2 OCCUPIED BANDWIDTH

Band	Channel	Frequency	Test Result (kHz)
	128	824.2	247.83
GSM850	190	836.6	244.41
	251	848.8	245.98
	512	1850.2	245.95
GSM1900	661	1880.0	244.24
	810	1909.8	245.51
	128	824.2	246.94
EDGE850	190	836.6	243.18
	251	848.8	241.78
	512	1850.2	244.98
EDGE1900	661	1880.0	243.63
	810	1909.8	244.65
	4132	826.4	4195.90
WCDMA850	4183	836.6	4160.70
	4233	846.6	4157.20
	512	1850.2	4151.60
WCDMA1900	661	1880.0	4165.90
	810	1909.8	4154.10
	4132	826.4	4157.10
HSUPA850	4183	836.6	4163.30
	4233	846.6	4144.60
	9262	1852.4	4156.80
HSUPA1900	9400	1880.0	4169.00
	9538	1907.6	4161.70

- Plots of the EUT's Occupied Bandwidth are shown in Clause 8.2

7.3 SPURIOUS AND HARMONIC EMISSIONS AT ANTENNA TERMINAL

- Plots of the EUT's Conducted Spurious Emissions are shown in Clause 8.3

7.4 BAND EDGE

- Plots of the EUT's Band Edge are shown in Clause 8.4

7.5 EFFECTIVE RADIATED POWER

- **GSM850** / Without Wireless Charging

	сит		Test Conditions(Power Step: 5)					
CH.	Position (Axis)	Pol. (H/V)	LEVEL@ TX ANTENNA TERMINAL (dBm)	Antenna Gain (dBd)	ERP (dBm)	ERP (W)	Rated Voltage	Note.
824.2 128	Z	Н	27.06	1.19	28.25	0.668	DC 3.8V	GSM
836.6 190	Z	Н	27.79	1.19	28.98	0.791	DC 3.8V	GSM
848.8 251	Z	Н	26.85	1.19	28.04	0.637	DC 3.8V	GSM
836.6 190	Z	Н	22.21	1.19	23.40	0.219	DC 3.8V	EDGE

- GSM850 data / With Wireless Charging

СН.	сит		Test Conditions(Power Step: 5)						
	Position (Axis)	Pol. (H/V)	LEVEL@ TX ANTENNA TERMINAL (dBm)	Antenna Gain (dBd)	ERP (dBm)	ERP (W)	Rated Voltage	Note.	
836.6 190	Х	Н	27.19	1.19	28.38	0.689	DC 3.8V	GSM	

- WCDMA850 data / Without Wireless Charging

	сит			Test Conditi	ons(TPC bits a	all set to "1")		
CH.	Position (Axis)	Pol. (H/V)	LEVEL@ TX ANTENNA TERMINAL (dBm)	Antenna Gain (dBd)	ERP (dBm)	ERP (W)	Rated Voltage	Note.
826.4 4132	Z	Н	17.79	1.19	18.98	0.079	DC 3.8V	-
836.6 4183	Z	Н	18.08	1.19	19.27	0.085	DC 3.8V	-
846.6 4233	Z	Н	17.70	1.19	18.89	0.077	DC 3.8V	-

- WCDMA850 data / With Wireless Charging

СН.	сит	Test Conditions(TPC bits all set to "1")						
	Position (Axis)	Pol. (H/V)	LEVEL@ TX ANTENNA TERMINAL (dBm)	Antenna Gain (dBd)	ERP (dBm)	ERP (W)	Rated Voltage	Note.
836.6 4183	Х	Н	15.05	1.19	16.24	0.042	DC 3.8V	-

- HSUPA850 data / Without Wireless Charging

	сит		Test Conditions(TPC bits all set to "1")						
CH.	Position (Axis)	Pol. (H/V)	LEVEL@ TX ANTENNA TERMINAL (dBm)	Antenna Gain (dBd)	ERP (dBm)	ERP (W)	Rated Voltage	Note.	
826.4 4132	Z	Н	16.71	1.19	17.90	0.062	DC 3.8V	-	
836.6 4183	Z	Н	16.79	1.19	17.98	0.063	DC 3.8V	-	
846.6 4233	Z	Н	16.51	1.19	17.70	0.059	DC 3.8V	-	

- HSUPA850 data / With Wireless Charging

CH.	сит	Test Conditions(TPC bits all set to "1")						
	Position (Axis)	Pol. (H/V)	LEVEL@ TX ANTENNA TERMINAL (dBm)	Antenna Gain (dBd)	ERP (dBm)	ERP (W)	Rated Voltage	Note.
836.6 4183	Х	Н	13.74	1.19	14.93	0.031	DC 3.8V	-

NOTES:

7.6 EQUIVALENT ISOTROPIC RADIATED POWER

	сит			TEST CON	IDITIONS(Pow	er Step: 0)		
CH. P	Position (Axis)	Pol. (H/V)	LEVEL@ TX ANTENNA TERMINAL (dBm)	Antenna Gain (dBi)	EIRP (dBm)	EIRP (W)	Rated Voltage	Note.
1850.2 512	Z	V	19.19	8.89	28.08	0.643	DC 3.8V	GSM
1880.0 661	Z	V	18.58	8.92	27.50	0.562	DC 3.8V	GSM
1909.80 810	Z	V	17.98	8.96	26.94	0.494	DC 3.8V	GSM
1850.2 512	Z	V	14.00	8.89	22.89	0.195	DC 3.8V	EDGE

- GSM1900 data / Without Wireless Charging

- GSM1900 data / With Wireless Charging

	EUT		TEST CONDITIONS(Power Step: 0)						
CH.	Position (Axis)	Pol. (H/V)	LEVEL@ TX ANTENNA TERMINAL (dBm)	Antenna Gain (dBi)	EIRP (dBm)	EIRP (W)	Rated Voltage	Note.	
1850.2 512	Х	Н	15.73	8.89	24.62	0.290	DC 3.8V	GSM	

- WCDMA1900 data / Without Wireless Charging

	сит		Test Conditions(TPC bits all set to "1")						
CH.	Position (Axis)	Pol. (H/V)	LEVEL@ TX ANTENNA TERMINAL (dBm)	Antenna Gain (dBi)	EIRP (dBm)	EIRP (W)	Rated Voltage	Note.	
1852.4 9262	Z	V	11.21	8.89	20.10	0.102	DC 3.8V	-	
1880.0 9400	Z	V	12.53	8.92	21.45	0.140	DC 3.8V	-	
1907.6 9538	Z	V	11.63	8.95	20.58	0.114	DC 3.8V	-	

- WCDMA1900 data / With Wireless Charging

	EUT		Test Conditions(TPC bits all set to "1")						
CH.	Position (Axis)	Pol. (H/V)	LEVEL@ TX ANTENNA TERMINAL (dBm)	Antenna Gain (dBi)	EIRP (dBm)	EIRP (W)	Rated Voltage	Note.	
1880.0 9400	Х	н	7.00	8.92	15.92	0.039	DC 3.8V	-	

- HSUPA1900 data / Without Wireless Charging

	сит		Test Conditions(TPC bits all set to "1")						
СН.	Position (Axis)	Pol. (H/V)	LEVEL@ TX ANTENNA TERMINAL (dBm)	Antenna Gain (dBi)	EIRP (dBm)	EIRP (W)	Rated Voltage	Note.	
1852.4 9262	Z	V	9.56	8.89	18.45	0.070	DC 3.8V	-	
1880.0 9400	Z	V	10.79	8.92	19.71	0.094	DC 3.8V	-	
1907.6 9538	Z	V	10.52	8.95	19.47	0.089	DC 3.8V	-	

- HSUPA1900 data / With Wireless Charging

СН.	сит		Test Conditions(TPC bits all set to "1")						
	Position (Axis)	Pol. (H/V)	LEVEL@ TX ANTENNA TERMINAL (dBm)	Antenna Gain (dBi)	EIRP (dBm)	EIRP (W)	Rated Voltage	Note.	
1880.0 9400	Х	Н	4.95	8.92	13.87	0.024	DC 3.8V	-	

NOTES:

7.7 RADIATED SPURIOUS EMISSIONS

7.7.1 RADIATED SPURIOUS EMISSIONS (GSM850)

- Without Wireless Charging

Channel (ERP)	Freq. (MHz)	EUT Position (Axis)	POL (H/V)	LEVEL@ ANTENNA TERMINAL (dBm)	Substitute Antenna Gain (dBd)	Correct Generator Level (dBm)	Result (dBc)	Limit (dBc)
	1648.48	Z	Н	-65.41	6.50	-58.91	87.16	
128	2472.62	Z	V	-58.18	7.53	-50.65	78.90	41.25
(0.668 W)	3296.74	Z	V	-58.33	7.79	-50.54	78.79	41.25
	4121.32	Z	Н	-57.36	7.65	-49.71	77.96	
	1673.14	Z	Н	-64.86	6.53	-58.33	87.31	
190	2509.61	Z	V	-58.08	7.57	-50.51	79.49	41.09
(0.791 W)	3346.45	Z	V	-61.61	7.80	-53.81	82.79	41.90
	4182.87	Z	Н	-57.39	7.81	-49.58	78.56	
	1697.52	Z	Н	-64.70	6.56	-58.14	86.18	
251	2546.50	Z	V	-57.27	7.59	-49.68	77.72	41.04
(0.637 W)	3394.98	Z	V	-61.63	7.81	-53.82	81.86	41.04
	4244.10	Z	Н	-54.920	7.97	-46.95	74.99	

- Limit Calculation= 43 + 10 log₁₀(ERP [W]) [dBc]

- No other spurious and harmonic emissions were reported greater than listed emissions above table.

- With Wireless Charging

Channel (ERP)	Freq. (MHz)	EUT Position (Axis)	POL (H/V)	LEVEL@ ANTENNA TERMINAL (dBm)	Substitute Antenna Gain (dBd)	Correct Generator Level (dBm)	Result (dBc)	Limit (dBc)
	1673.30	Х	Н	-68.81	6.53	-62.28	90.66	
190	2509.63	Х	Н	-61.21	7.57	-53.64	82.02	41 20
(0.689 W)	3346.52	Х	Н	-62.31	7.80	-54.51	82.89	41.30
	4182.94	Х	Н	-59.19	7.81	-51.38	79.76	

- Limit Calculation= 43 + 10 log₁₀(ERP [W]) [dBc]

- No other spurious and harmonic emissions were reported greater than listed emissions above table.

NOTES:

This EUT was tested under all configurations and the highest power is reported in GSM mode and WCDMA mode with HSDPA inactive at 12.2 kbps RMC and TPC bits set to "1" and in GSM mode using a Power Control Level of "0" in PCS Band and "5" in the Cellular Band. This EUT was tested with the fully charged battery. Also, we have done x, y, z planes in EUT and horizontal and vertical polarization of detecting antenna.

The worst case data is reported.

7.7.2 RADIATED SPURIOUS EMISSIONS (WCDMA850)

Channel (ERP)	Freq. (MHz)	EUT Position (Axis)	POL (H/V)	LEVEL@ ANTENNA TERMINAL (dBm)	Substitute Antenna Gain (dBd)	Correct Generator Level (dBm)	Result (dBc)	Limit (dBc)
4400	1650.92	Z	V	-63.69	6.51	-57.18	76.16	
4132 (0.079 W)	2476.42	Z	V	-59.21	7.54	-51.67	70.65	31.98
(0.0.0.0.1)	I	_	-	-	-	-	_	
	1671.40	Z	V	-61.32	6.53	-54.79	74.06	
4183 (0.085 W)	2507.14	Z	V	-61.04	7.57	-53.47	72.74	32.27
(0.000)	_	_	_	_	_	_	-	
4233 (0.077 W)	1695.15	Z	V	-60.53	6.56	-53.97	72.86	
	2536.18	Z	V	-62.74	7.58	-55.16	74.05	31.89
	-	-	-	-	-	-	-	

- Without Wireless Charging

- Limit Calculation= 43 + 10 log₁₀(ERP [W]) [dBc]

- No other spurious and harmonic emissions were reported greater than listed emissions above table.

With Wireless Charging

Channel (ERP)	Freq. (MHz)	EUT Position (Axis)	POL (H/V)	LEVEL@ ANTENNA TERMINAL (dBm)	Substitute Antenna Gain (dBd)	Correct Generator Level (dBm)	Result (dBc)	Limit (dBc)
	1674.21	Х	Н	-65.33	6.53	-58.80	75.04	
4183 (0.042 W)	2507.20	Х	Н	-62.53	7.57	-54.96	71.20	29.24
(0.042 VV)	_	_	_	_	_	_	_	

- Limit Calculation= 43 + 10 log₁₀(ERP [W]) [dBc]

- No other spurious and harmonic emissions were reported greater than listed emissions above table.

NOTES:

This EUT was tested under all configurations and the highest power is reported in GSM mode and WCDMA mode with HSDPA inactive at 12.2 kbps RMC and TPC bits set to "1" and in GSM mode using a Power Control Level of "0" in PCS Band and "5" in the Cellular Band. This EUT was tested with the fully charged battery. Also, we have done x, y, z planes in EUT and horizontal and vertical polarization of detecting antenna.

The worst case data is reported.

7.7.3 RADIATED SPURIOUS EMISSIONS (HSUPA850)

Channel (ERP)	Freq. (MHz)	EUT Position (Axis)	POL (H/V)	LEVEL@ ANTENNA TERMINAL (dBm)	Substitute Antenna Gain (dBd)	Correct Generator Level (dBm)	Result (dBc)	Limit (dBc)
	1650.72	Z	V	-63.56	6.50	-57.06	74.96	
4132 (0.062 W)	2476.46	Z	V	-60.60	7.54	-53.06	70.96	30.90
(0.001)	-	-	-	-	-	-	-	
	1675.04	Z	V	-62.95	6.53	-56.42	74.40	
4183 (0.063 W)	2512.22	Z	V	-62.86	7.57	-55.29	73.27	30.98
(0.000 11)	-	-	-	-	-	-	-	
	1695.61	Z	V	-60.96	6.56	-54.40	72.10	
4233 (0.059 W)	2536.58	Z	V	-62.18	7.58	-54.60	72.30	30.70
	-	-	-	-	-	-	-	

- Without Wireless Charging

- Limit Calculation= 43 + 10 log₁₀(ERP [W]) [dBc]

- No other spurious and harmonic emissions were reported greater than listed emissions above table.

- With Wireless Charging

Channel (ERP)	Freq. (MHz)	EUT Position (Axis)	POL (H/V)	LEVEL@ ANTENNA TERMINAL (dBm)	Substitute Antenna Gain (dBd)	Correct Generator Level (dBm)	Result (dBc)	Limit (dBc)
	1675.21	Х	Н	-65.57	6.53	-59.04	73.97	
4183 (0.031 W)	2512.25	Х	Н	-65.08	7.57	-57.51	72.44	27.93
(0.001.17)	-	-	-	-	-	-	-	

- Limit Calculation= 43 + 10 log₁₀(ERP [W]) [dBc]

- No other spurious and harmonic emissions were reported greater than listed emissions above table.

NOTES:

7.7.4 RADIATED SPURIOUS EMISSIONS (GSM1900)

Channel (EIRP)	Freq. (MHz)	EUT Position (Axis)	POL (H/V)	LEVEL@ ANTENNA TERMINAL (dBm)	Substitute Antenna Gain (dBi)	Correct Generator Level (dBm)	Result (dBc)	Limit (dBc)
	5550.80	Z	Н	-56.05	11.04	-45.01	73.09	
512 (0.643 W)	7400.58	Y	V	-51.59	11.71	-39.88	67.96	41.08
(-	-	-	-	-	-	-	
	5640.12	Z	Н	-54.79	11.14	-43.65	71.15	
661 (0.562 W)	7519.87	Y	V	-52.38	11.69	-40.69	68.19	40.50
(0.001)	-	-	-	-	-	-	-	
810 (0.494 W)	5729.40	Z	Н	-54.15	11.23	-42.92	69.86	39.94
	7639.34	Y	V	-52.67	11.66	-41.01	67.95	
	-	-	-	_	_	_	-	

- Without Wireless Charging

- Limit Calculation = 43 + 10 log₁₀(EIRP [W]) [dBc]

- No other spurious and harmonic emissions were reported greater than listed emissions above table.

With Wireless Charging

Channel (EIRP)	Freq. (MHz)	EUT Position (Axis)	POL (H/V)	LEVEL@ ANTENNA TERMINAL (dBm)	Substitute Antenna Gain (dBi)	Correct Generator Level (dBm)	Result (dBc)	Limit (dBc)
	5550.39	Х	Н	-58.18	11.04	-47.14	71.76	
512 (0.290 W)	7401.07	Х	Н	-52.02	11.71	-40.31	64.93	37.62
(,	-	-	-	-	-	-	-	

- Limit Calculation = 43 + 10 log₁₀(EIRP [W]) [dBc]

- No other spurious and harmonic emissions were reported greater than listed emissions above table.

NOTES:

7.7.5 RADIATED SPURIOUS EMISSIONS (WCDMA1900)

Channel (EIRP)	Freq. (MHz)	EUT Position (Axis)	POL (H/V)	LEVEL@ ANTENNA TERMINAL (dBm)	Substitute Antenna Gain (dBi)	Correct Generator Level (dBm)	Result (dBc)	Limit (dBc)
0000	5560.28	Z	V	-55.59	11.05	-44.54	64.64	
9262 (0.102 W)	7405.66	Z	V	-44.95	11.71	-33.24	53.34	33.10
(0.102 W)	-	-	-	-	-	-	-	
	5644.10	Z	V	-57.16	11.14	-46.02	67.47	
9400 (0.140 W)	7515.74	Z	V	-47.77	11.69	-36.08	57.53	34.45
(0111011)	-	-	-	-	-	-	-	
9538 (0.114 W)	5725.28	Z	V	-55.43	11.22	-44.21	64.79	
	7626.82	Z	V	-48.04	11.66	-36.38	56.96	33.58
	-	-	-	-	-	-	-	

- Without Wireless Charging

- Limit Calculation = 43 + 10 log₁₀(EIRP [W]) [dBc]

- No other spurious and harmonic emissions were reported greater than listed emissions above table.

With Wireless Charging

Channel (EIRP)	Freq. (MHz)	EUT Position (Axis)	POL (H/V)	LEVEL@ ANTENNA TERMINAL (dBm)	Substitute Antenna Gain (dBi)	Correct Generator Level (dBm)	Result (dBc)	Limit (dBc)
	5644.24	Х	Н	-58.72	11.14	-47.58	63.50	
9400 (0.039 W)	7516.62	Х	Н	-50.38	11.69	-38.69	54.61	28.92
(-	-	-	-	-	-	-	

- Limit Calculation = 43 + 10 log₁₀(EIRP [W]) [dBc]

- No other spurious and harmonic emissions were reported greater than listed emissions above table.

NOTES:

-

7.7.6 RADIATED SPURIOUS EMISSIONS (HSUPA1900)

Channel (EIRP)	Freq. (MHz)	EUT Position (Axis)	POL (H/V)	LEVEL@ ANTENNA TERMINAL (dBm)	Substitute Antenna Gain (dBi)	Correct Generator Level (dBm)	Result (dBc))	Limit (dBc)
0262	5559.66	Z	V	-57.16	11.05	-46.11	64.56	
9262 (0.070 W)	7405.72	Z	V	-46.03	11.71	-34.32	52.77	31.45
()	-	-	-	-	-	-	-	
	5637.05	Z	V	-57.02	11.13	-45.89	65.60	
9400 (0.094 W)	7516.10	Z	V	-48.00	11.69	-36.31	56.02	32.71
(0.000,000)	-	-	-	-	-	-	-	
9538 (0.089 W)	5725.74	Z	V	-56.74	11.22	-45.52	64.99	
	7626.26	Z	V	-47.89	11.66	-36.23	55.70	32.47
	_	-	-	-	_	_	-	

- Without Wireless Charging

- Limit Calculation = 43 + 10 log₁₀(EIRP [W]) [dBc]

- No other spurious and harmonic emissions were reported greater than listed emissions above table.

With Wireless Charging

Channel (EIRP)	Freq. (MHz)	EUT Position (Axis)	POL (H/V)	LEVEL@ ANTENNA TERMINAL (dBm)	Substitute Antenna Gain (dBi)	Correct Generator Level (dBm)	Result (dBc))	Limit (dBc)
	5637.24	Х	Н	-59.72	11.13	-48.59	62.46	
9400 (0.024 W)	7516.96	Х	Н	-51.18	11.69	-39.49	53.36	26.87
(0.02+ 11)	-	-	-	-	-	-	-	

- Limit Calculation = 43 + 10 log₁₀(EIRP [W]) [dBc]

- No other spurious and harmonic emissions were reported greater than listed emissions above table.

NOTES:

7.8 FREQUENCY STABILITY / VARIATION OF AMBIENT TEMPERATURE

7.8.1 FREQUENCY STABILITY (GSM850)

OPERATING FREQUENCY	:	<u>836,600,014</u> Hz		
CHANNEL	:	190(Mid)		
REFERENCE VOLTAGE	:	3.800V DC		
DEVIATION LIMIT	:	<u>± 0.00025 </u> % or	2.5	_ppm

VOLTAGE	POWER	TEMP	FREQ	Deviation			
(%)	(V DC)	(°C)	(Hz)	(ppm)	(%)		
100%	3.800	+25(Ref)	836,600,014	0.000	0.00000000		
100%		-30	836,600,007	-0.008	-0.00000084		
100%		-20	836,600,012	-0.002	-0.00000024		
100%		-10	836,600,014	0.000	0.00000000		
100%		0	836,600,012	-0.002	-0.00000024		
100%		+10	836,600,010	-0.005	-0.00000048		
100%		+20	836,600,011	-0.004	-0.00000036		
100%		+30	836,600,012	-0.002	-0.00000024		
100%		+40	836,600,012	-0.002	-0.00000024		
100%		+50	836,600,007	-0.008	-0.00000084		
115%	4.370	+25	836,600,009	-0.006	-0.00000060		
BATT.ENDPOINT	3.100	+25	836,600,014	0.000	0.0000000		



7.8.2 FREQUENCY STABILITY (WCDMA850)

OPERATING FREQUENCY	:	<u>836,600,002</u> Hz		
CHANNEL	:	4183(Mid)		
REFERENCE VOLTAGE	:	3.800	V DC	
DEVIATION LIMIT	:	<u>± 0.00025 % or</u>	2.5	_ppm

VOLTAGE	POWER	TEMP	FREQ	Deviation		
(%)	(V DC)	(°C)	(Hz)	(ppm)	(%)	
100%	3.800	+25(Ref)	836,600,002	0.000	0.00000000	
100%		-30	836,600,004	0.002	0.00000024	
100%		-20	836,600,001	-0.001	-0.00000012	
100%		-10	836,600,003	0.001	0.00000012	
100%		0	836,599,999	-0.004	-0.0000036	
100%		+10	836,600,001	-0.001	-0.00000012	
100%		+20	836,600,003	0.001	0.00000012	
100%		+30	836,600,002	0.000	0.0000000	
100%		+40	836,600,002	0.000	0.0000000	
100%		+50	836,600,005	0.004	0.0000036	
115%	4.370	+25	836,600,004	0.002	0.00000024	
BATT.ENDPOINT	3.100	+25	836,599,999	-0.004	-0.00000036	



7.8.3 FREQUENCY STABILITY (HSUPA850)

OPERATING FREQUENCY	:	<u>836,600,002</u> Hz		
CHANNEL	:	4183(Mid)		
REFERENCE VOLTAGE	:	3.800	V DC	
DEVIATION LIMIT	:	<u>± 0.00025 % or</u>	2.5	_ppm

VOLTAGE	POWER	TEMP	FREQ	Deviation		
(%)	(V DC)	(°C)	(Hz)	(ppm)	(%)	
100%	3.800	+25(Ref)	836,600,002	0.000	0.00000000	
100%		-30	836,600,001	-0.001	-0.00000012	
100%		-20	836,599,998	-0.005	-0.00000048	
100%		-10	836,600,002	0.000	0.00000000	
100%		0	836,599,999	-0.004	-0.0000036	
100%		+10	836,600,004	0.002	0.00000024	
100%		+20	836,600,003	0.001	0.00000012	
100%		+30	836,600,004	0.002	0.0000024	
100%		+40	836,600,003	0.001	0.00000012	
100%		+50	836,599,999	-0.004	-0.0000036	
115%	4.370	+25	836,600,005	0.004	0.00000036	
BATT.ENDPOINT	3.100	+25	836,600,002	0.000	0.0000000	



7.8.4 FREQUENCY STABILITY (GSM1900)

OPERATING FREQUENCY CHANNEL REFERENCE VOLTAGE LIMIT <u>1,880,000,042 Hz</u>

:

:

<u>661(Mid)</u> 3.800 V DC

<u>3.800</u> V DC

The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block.

VOLTAGE	POWER TEMP		FREQ	Deviation		
(%)	(V DC)	(°C)	(Hz)	(ppm)	(%)	
100%	3.800	+25(Ref)	1,880,000,042	0.000	0.00000000	
100%		-30	1,880,000,043	0.001	0.00000005	
100%		-20	1,880,000,039	-0.002	-0.00000016	
100%		-10	1,880,000,049	0.004	0.0000037	
100%		0	1,880,000,052	0.005	0.00000053	
100%		+10	1,880,000,048	0.003	0.0000032	
100%		+20	1,880,000,052	0.005	0.00000053	
100%		+30	1,880,000,047	0.003	0.00000027	
100%		+40	1,880,000,053	0.006	0.00000059	
100%		+50	1,880,000,049	0.004	0.00000037	
115%	4.370	+25	1,880,000,053	0.006	0.00000059	
BATT.ENDPOINT	3.100	+25	1,880,000,048	0.003	0.0000032	



Note. Based on the results of the frequency stability test at the center channel the frequency deviation results measured are very small. as such it is determined that the channels at the band edge would remain inband when the maximum measured frequency deviation noted during the frequency stability tests is applied. therefore the device is determined to remain operating in band over the temperature and voltage range as tested.

7.8.5 FREQUENCY STABILITY (WCDMA1900)

OPERATING FREQUENCY CHANNEL	:	<u>1,880,000,007</u> Hz <u>9400(Mid)</u>
REFERENCE VOLTAGE	:	3.800 V DC
LIMIT	:	The frequency stability shall be sufficient to ensure that the
		fundamental emission stays wthin the authorized frequency

Deviation TEMP VOLTAGE POWER FREQ (%) (VDC) (°C) (Hz) (ppm) (%) 3.800 100% + 25(Ref) 1,880,000,007 0.000 0.00000000 100% - 30 1,880,000,008 0.001 0.0000005 100% - 20 0.0000016 1,880,000,010 0.002 100% - 10 -0.001 -0.00000005 1,880,000,006 100% 0.000 0 1,880,000,007 0.00000000 100% + 10 1,880,000,009 0.001 0.00000011 100% +201,880,000,004 -0.002 -0.00000016 + 30 100% 1,880,000,005 -0.001 -0.00000011 100% +400.001 1,880,000,008 0.00000005 100% + 50 -0.0000005 1,880,000,006 -0.001 115% 4.370 + 25 0.000 0.00000000 1,880,000,007 BATT.ENDPOINT 3.100 + 25 1,880,000,011 0.002 0.0000021

block.



Note. Based on the results of the frequency stability test at the center channel the frequency deviation results measured are very small. as such it is determined that the channels at the band edge would remain inband when the maximum measured frequency deviation noted during the frequency stability tests is applied. therefore the device is determined to remain operating in band over the temperature and voltage range as tested.

7.8.6 FREQUENCY STABILITY (HSUPA1900)

OPERATING FREQUENCY : <u>1,8880,000,010</u> Hz

CHANNEL : REFERENCE VOLTAGE :

9400(Mid)

<u>3.800</u> V DC

The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block.

VOLTAGE	POWER	TEMP	FREQ	Deviation		
(%)	(V DC)	(°C)	(Hz)	(ppm)	(%)	
100%	3.800	+ 25(Ref)	1,880,000,010	0.000	0.00000000	
100%		- 30	1,880,000,007	-0.002	-0.00000016	
100%		- 20	1,880,000,012	0.001	0.00000011	
100%		- 10	1,880,000,008	-0.001	-0.00000011	
100%		0	1,880,000,009	-0.001	-0.00000005	
100%		+ 10	1,880,000,006	-0.002	-0.00000021	
100%		+ 20	1,880,000,011	0.001	0.0000005	
100%		+ 30	1,880,000,009	-0.001	-0.00000005	
100%		+ 40	1,880,000,010	0.000	0.00000000	
100%		+ 50	1,880,000,007	-0.002	-0.00000016	
115%	4.370	+ 25	1,880,000,012	0.001	0.00000011	
BATT.ENDPOINT	3.100	+ 25	1,880,000,009	-0.001	-0.00000005	



Note. Based on the results of the frequency stability test at the center channel the frequency deviation results measured are very small. as such it is determined that the channels at the band edge would remain inband when the maximum measured frequency deviation noted during the frequency stability tests is applied. therefore the device is determined to remain operating in band over the temperature and voltage range as tested.

8. TEST PLOTS



PAPR (dB) = P_{Pk} (dBm) - P_{Avg} (dBm) = 30.20dBm - 30.05 dBm = 0.15 dB

- P _{Pk} (dBm)		EDGE1900 & C	Channel: 661
Agilent Spectrum Analyzer - Swept SA			
Center Freq 1.880000000	GHZ Trig: Free Run	ALIGN OFF 05:18:15 PM No #Avg Type: Pwr(RMS) TRACE TYPE	2 3 4 5 6 7 3 4 5 6 7 4 5 6
	IFGain:Low Atten: 26 dB	DET A	
Ref Offset 19.89 dB 10 dB/div Ref 35.00 dBm		Mkr1 1.880 010 30.27	GHz Auto Tune dBm
25.0 15.0 5.00			Center Freq 1.880000000 GHz
-5.00 -15.0 -25.0			Start Freq 1.877500000 GHz
-35.0			Чекирын, Stop Freq 1.882500000 GHz
Center 1.880000 GHz #Res BW 1.0 MHz	#VBW 3.0 MHz	Span 5.00 Sweep 1.00 ms (10 UNCTION FUNCTION WIDTH FUNCTION V	00 MHz 01 pts) CF Step 500.000 kHz ALUE Auto Man
1 N 1 f 1.880 2 - <td>0 010 GHz 30.27 dBm</td> <td></td> <td>Freq Offset</td>	0 010 GHz 30.27 dBm		Freq Offset
MSG		STATUS	

P_{Avg} (dBm) EDGE1900 & Channel: 661 08:32:47 AMNov 10, 2014 Radio Std: None SENSE:INT ALIGN AUT Center Freq: 1.88000000 GHz Trig: Free Run Avg|Hold: 100/100 #Atten: 32 dB ALIGN AUTO Frequency Gate: LC #IFGain:Low Radio Device: BTS Ref Offset 19.89 dB Ref 40.00 dBm 10 dB/div **Center Freq** 1.880000000 GHz YM Trin CF Step 50.000 kHz Center 1.88 GHz #Res BW 10 kHz Span 500 kHz Sweep 23.13 ms Man <u>Auto</u> VBW 100 kHz Freq Offset **Channel Power Power Spectral Density** 0 Hz 25.11 dBm / 243.6 kHz -28.76 dBm /Hz STATUS

PAR (dB) = P_{Pk} (dBm) - P_{Avg} (dBm) = 30.27 dBm - 25.11 dBm = 5.16 dB



WCDMA1900 & Channel: 9400

HSUPA1900 & Channel: 9400



8.2 Occupied Bandwidth(99 % Bandwidth)



GSM850 & Channel: 190









EDGE 850 & Channel: 128

EDGE 850 & Channel: 190





EDGE 850 & Channel: 251

Agilent Spectrum Analyzer - Occupied B	w						
Center Freq 826.400000	MHz	SENSE:INT Center Freq: 826.400	000 MHz	ALIGN OFF	05:44:23 Pf Radio Std:	MNov 06, 2014 None	Frequency
	+ #IECainil ow	Frig: Free Run Atten: 32 dB	Avg Hold: 1	100/100 F	Radio Dev	ice: BTS	
	#IFGalli.Low				luuro Der		
Ref Offset 19.16 of 10 dB/div Ref 35.00 dBm	1B 1						
25.0							Contor From
45.0							826 400000 MHz
15.0	www.man	white marker through	walkar have				020.400000 11112
5.00	1 I						
-5.00	/						
-15.0	┦			han .			
-25.0 Marty and the Andrew N				้ ให้การป	<i>ለ</i> ዛው _ተ ሚያኮንግጭ	www.white	
-35.0							
-45.0							
-55.0							
							CF Step
Center 826.4 MHz #Res BW 51 kHz		#VBW 200 k	Hz	ę	Spai Sweep	n 10 MHz 4.733 ms	<u>Auto</u> Man
Occupied Bandwidt	h	Total P	ower	29.9	dBm		Freq Offset
4.	1959 MH	Z					0 Hz
Transmit Freq Error	4.044 kH	z OBW P	ower	99.	00 %		
x dB Bandwidth	4.678 MH	z xdB		-26.0	0 dB		
MSG				STATUS			
J							

WCDMA850 & Channel: 4132

WCDMA850 & Channel: 4183



Agilent Spectrum	Analyzer - Occu	upied BW								
	RF 50 Ω		S Center F	ENSE:INT	000 MHz	ALIGN OFF	05:48:55 P Radio Std	MNov 06, 2014	Freq	uency
Cerner Fre	q 040.000	1000 MH2	📕 Trig: Fre	e Run	Avg Hold:	100/100				
		#IFGain:Low_	#Atten: 3	32 dB			Radio Dev	/ice: BTS		
10 dB/div	Ref Offset 1 Ref 35.00	19.23 dB I dBm								
Log									-	
25.0									Ce	nter Freq
15.0		Howard	Margaret	www.www.	mayremound.				846.60	00000 MHZ
5.00		ماري مر				N.				
-5.00		/				<u>}</u>				
-15.0						<u> </u>				
.25.0	and wathin the	MMM				Way was	whether and	_ ,		
20.0 Mint with	Mall age to a					•Q	hha a safaraan	WWWWWWY		
-35.0										
-45.0										
-55.0										CE Stop
Conton 046	C BALL-						0.5.5	m 40 Mills	1.00	00000 MHz
#Res BW 5	1 kHz		#V	BW 200 k	HZ		Sween	4.733 ms	<u>Auto</u>	Man
Occupie	ed Bandv	width		Total P	ower	30.2	2 dBm		Fr	eq Offset
		4.1572 N	1Hz							0 Hz
Transmit	t Freq Erro	or -8.862	2 kHz	OBW P	ower	99	9.00 %			
x dB Bar	ndwidth	4.618	MHz	x dB		-26	00 dB			
MSG						STATUS				

WCDMA850 & Channel: 4233

Agilent Spectrum Analyzer - Occi	upied BW						
Center Freq 826 400		SENSE:INT Center Freg: 826.4	00000 MHz	ALIGN OFF	10:30:28 Af adio Std:	Nov 12, 2014 None	Frequency
	→	Trig: Free Run	Avg Hold:	100/100	adio Devi	ce BTS	
	#IFGaIn:Low	#Atten: 52 db			auto Devi	ce. D13	
10 dB/div Ref 35.00	19.16 dB dBm						
Log							0
25.0							
15.0	mound	www.www.	minnera.				826.400000 MH2
5.00	Pl Pl			'n			
-5.00							
-15.0							
-25.0	when the			horman	vvvvhraterva	VWWMAN.	
-35.0							
-45.0							
-55.0							
							CF Step
Center 826.4 MHz #Res BW 51 kHz		#VBW 200	kHz	s	Spai Sweep	n 10 MHz 4.733 ms	<u>Auto</u> Man
Occupied Bandy	width	Total	Power	28.7	dBm		Freq Offset
	4.1571 M	Hz					0 Hz
Transmit Freq Erro	or 10.322	kHz OBW	Power	99.0	00 %		
x dB Bandwidth	4.644 N	/Hz xdB		-26.00	0 dB		
MSG				STATUS			

HSUPA850 & Channel: 4132

HSUPA850 & Channel: 4183



Agilent Spectrun	n Analyzer - Occ	upied BW									
LXI RL	RF 50 Ω	AC		S Conton	ENSE:INT		ALIGN OFF	11:19:36 /	AMNov 12, 2014	Freau	iencv
Center Fre	eq 846.60		Z	Trig: Fr	ee Run	Avg Hold	l: 100/100	Radio Sta	. None		
		#IF	Gain:Low	#Atten:	32 dB	2 dB Radi			vice: BTS		
10 dB/div	Ref Offset Ref 35.0	19.23 dB 0 dBm									
Log											
25.0										Cen	ter Freq
15.0										846.60	0000 MHz
5.00			Mannahline	and when the	worker Warter and	Mr. M. Wrathy	x				
5.00		M					N.				
-5.00		<u> </u>									
-15.0											
.25.0	1 House	mound					Minun	a land a state			
14/martineta	June 1. 1.							a and working	Wwwwwwwwwwwww		
-35.0											
-45.0											
-55.0											
00.0											CF Step
Center 846	6.6 MHz							Spa	n 10 MHz	1.00	0000 MHz
#Res BW 5	51 kHz			#V	BW 2001	kHz		Sweep	4.733 ms	Auto	Man
Occupi	ed Band	width			Total F	ower	29.4	1 dBm		Fre	q Offset
		4.14	46 M	Hz							0 Hz
Transmi	it Freq Err	or	2.689	kHz	OBW I	ower	9	9.00 %			
v dB Ba	ndwidth		1 653 1	лна	v dB		-26	00 dB			
	nawiatii		4.0001		x ub		-20				
MSG							STATUS	3			

HSUPA850 & Channel: 4233



GSM 1900 & Channel: 512

GSM 1900 & Channel: 661





GSM 1900 & Channel: 810

TRF-RF-210(04)140901



EDGE 1900 & Channel: 512

EDGE 1900 & Channel: 661





EDGE 1900 & Channel: 810



WCDMA1900 & Channel: 9262

WCDMA1900 & Channel: 9400



Agilent Spectrum	Analyzer - Occ	upied BW									
Center Fre	RF 50 Ω		Hz	Center F	NSE:INT reg: 1.90760	0000 GHz	ALIGN OFF	06:07:01 F Radio Std	MNov 06, 2014 : None	Freq	uency
Conterrite	q 1.30700	50000 CI	· · ·	Trig: Fre	e Run	Avg Hold:	: 100/100	Dedie Dee			
		#IF0	jain:Low	#Atten: 3	1 a D			Radio Dev	/ice: 015		
10 dB/div	Ref Offset Ref 35.00	19.91 dB 0 dBm									
Log											
25.0										1 9076	
15.0			whitemate	mbroken	haventrationality	un hours				1.9070	50000 GH2
5.00		ممحم					1				
-5.00							+				
-15.0							₩\				
-25.0	Malla Ail Indeal	MWWW					- White and all	Amar a			
-35.0 wolwall-with	ANTION OF THE TREE							and for the start	hall all and the second		
-45.0											
-55.0											
											CF Step
Center 1.90 #Res BW 5	08 GHz 1 kHz			#VE	3W 200 k	Hz		Spa Sweep	n 10 MHz 4.733 ms	Auto	Man
Occupie	ed Band	width			Total P	ower	29.9) dBm		Fr	ea Offset
		4.15	41 MI	Ηz							0 Hz
Transmit	t Freq Err	or	2.406	κHz	OBW P	ower	99	0.00 %			
x dB Bar	ndwidth		4.613 N	1Hz	x dB		-26.	00 dB			
MSG							STATUS				

WCDMA1900 & Channel: 9538



HSUPA1900 & Channel: 9262

HSUPA1900 & Channel: 9400



Agilent Spectrum Analyzer - Occupied BW							
ເ₩ RL RF 50Ω AC Center Freq 1.907600000 G	iHz Ce	SENSE:INT	00000 GHz	ALIGN OFF	01:12:23 P Radio Std:	MNov 12, 2014 None	Frequency
#IF	Gain:Low #A	ig: Free Run Atten: 30 dB	Avg Hold:	100/100	Radio Dev	ice: BTS	
Ref Offset 19.91 dB 10 dB/div Ref 35.00 dBm							
25.0							Center Freg
15.0							1.907600000 GHz
5.00	when have the second	***********************	munnenun	4			
-5.00				Δ			
-15.0							
-25.0				hyperty	A. a the law of		
-35.0					a deloral installation	Marilla Andros	
-45.0							
-55.0							
							CF Step
Center 1.908 GHz #Res BW 51 kHz		#VBW 2001	Hz		Spa Sweep	n 10 MHz 4.733 ms	<u>Auto</u> Man
Occupied Bandwidth		Total P	ower	29.8	8 dBm		Freq Offset
4.16	617 MHz						0 Hz
Transmit Freq Error	-4.253 kHz	OBW F	ower	99	0.00 %		
x dB Bandwidth	4.631 MHz	x dB		-26.	00 dB		
MSG				STATUS			

HSUPA1900 & Channel: 9538

8.3 Spurious Emissions at Antenna Terminal

		GSM850	& Cł	nannel:	128
Agilent Spectrum Analyzer - Swept SA					
M RL RF 50 Ω AC Center Freq 5.015000000 GHz	SENSE:INT	ALIGN OF #Avg Type: Pwr(RI	F (04:38:44 F MS) TRA TY	MNov 06, 2014 CE 1 2 3 4 5 6 PE M WARMAN	Frequency
IFGain:Low #/	Atten: 30 dB		D		Auto Tuno
Ref Offset 21.74 dB 10 dB/div Ref 36.00 dBm		M	kr3 2.778 -25.	73 GHz 98 dBm	Auto Tune
26.0					Center Freq 5.015000000 GHz
-4.00 -14.0 -24.0				-13.00 dBm	Start Freq 30.000000 MHz
-34.0 -44.0 -54.0					Stop Freq 10.000000000 GHz
Start 30 MHz #Res BW 1.0 MHz #VBW 3.1) MHz	Sweep	Stop 10 18.7 ms (4	0.000 GHz 0001 pts)	CF Step 997.000000 MHz
MKR MODE TRC SCL X 1 N 1 f 824.36 MHz	Y FUN 35.25 dBm	CTION FUNCTION WIE	TH FUNCTI	ON VALUE	<u>Auto</u> Man
2 N 1 f 3.151 61 GHz 4 3 N 1 f 2.778 73 GHz 4 5 6 6	25.98 dBm 25.98 dBm				Freq Offset 0 Hz
7 8 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9					
MSG		STA	TUS		

GSM850 & Channel: 190



Agilent Spectrum Analyzer - Swept SA				
LXX RL RF 50 Q AC	SENSE:II	ALIGN OFF #Avg Type: Pwr(RMS)	04:42:00 PMNov 06, 2014 TRACE 1 2 3 4 5 6	Frequency
Ref Offset 21.74 dB	IFGain:Low #Atten: 30 dB	Mkr3	ост АААААА 3.324 34 GHz -25.74 dBm	Auto Tune
26.0 16.0				Center Freq 5.015000000 GHz
-4.00 -14.0 -24.0	3	eternine to the first the property of the first second second second second second second second second second	-13.00 dBm	Start Freq 30.000000 MHz
-34.0 -44.0 -54.0				Stop Freq 10.000000000 GHz
Start 30 MHz #Res BW 1.0 MHz	#VBW 3.0 MHz	Sweep 18	Stop 10.000 GHz 3.7 ms (40001 pts)	CF Step 997.000000 MHz
MKR MODE TRC SCL X	0.04 MHz 35.58 dBm	FUNCTION FUNCTION WIDTH	FUNCTION VALUE	<u>Auto</u> Man
2 N 1 f 3.260 3 N 1 f 3.324 4 5 6	3 01 GHz -25.71 dBm 4 34 GHz -25.74 dBm			Freq Offset 0 Hz
7 8 8 9 10 11				
MSG		STATUS		

GSM850 & Channel: 251

Agilent Spectr	um Analyz	er - Swej	ot SA		2						
LXI RL	RF	50 Ω	AC		S	ENSE:INT	#Avg	ALIGN OFF	05:47:10 F TRA	MNov 06, 2014	Frequency
	Ref Of	set 21.7	74 dB	PNO: Fast IFGain:Low	#Atten: 3	e Run 0 dB		Mkr	3 2.449	97 GHz	Auto Tune
26.0		5.UU A	DIII						20.		Center Freq 5.015000000 GHz
-4.00 -14.0 -24.0			3	2	n a laterate provide a statement of a statement	Level of the second	(argument) argument of the	e de la suja e la sub-la sub-la sub-	and the first of the second second second	-13.00 dBm	Start Freq 30.000000 MHz
-34.0 -44.0 -54.0								atlantini, era datkini, seetaa as			Stop Freq 10.000000000 GHz
Start 30 W #Res BW	1Hz 1.0 MH	Z	×	#VE	3W 3.0 MHz		FUNCTION	Sweep 18 FUNCTION WIDTH	Stop 10 3.7 ms (4 FUNCTIO	.000 GHz 0001 pts) DN VALUE	CF Step 997.000000 MHz <u>Auto</u> Man
2 N 1 3 N 1 4 5 6	f		<u>3.17</u> 2.44	4 54 GHz 9 97 GHz	-24.96 d -26.03 d	Bm Bm Bm					Freq Offset 0 Hz
7 8 9 10 11 12											
MSG								STATUS			

WCDMA850 & Channel: 4132

WCDMA850 & Channel: 4183



Agilent Spectrum	Analyzer -	Swept SA			22							
LXI RL	RF 5	OΩ AC			SENSE	INT	#Avg Ty	ALIGN OFF	05:51:44 F	MNov 06, 2014	Free	quency
			PNO: Fas IFGain:Lo	st 🖵 T w #	rig: Free Ri Atten: 30 di	un 3			TY D		,	
10 dB/div	Ref Offset Ref 36.0	21.74 dB 0 dBm						Mkr3	2.669 -26.	31 GHz 27 dBm		
26.0)1 										Ce 5.0150	e nter Freq 000000 GHz
-4.00 -14.0 -24.0			³ ∂ ²			مىرى بەلغان بەلغان رىيى	المراجع الروب برا مان	g biner of and lines (1	te post alfatting and and a	-13.00 dBm	30.0	Start Freq
-34.0 -44.0 -54.0						<u> </u>					10.0000	Stop Freq 000000 GHz
Start 30 MH #Res BW 1.	z 0 MHz		#\	VBW 3.	0 MHz			Sweep 18	Stop 10 3.7 ms (4	.000 GHz 0001 pts)	997.0	CF Step
MKR MODE TRC	SCL f	× 8	46.04 MHz	3	Y 25.70 dBm	FUN	CTION	FUNCTION WIDTH	FUNCTI	DN VALUE	Auto	Man
2 N 1 3 N 1 4 5 6	f f	<u>3.2</u> 2.6	44 08 GHz 69 31 GHz		25.66 dBm 26.27 dBm						F	r eq Offset 0 Hz
7 8 9 10 11 12												
MSG								STATUS				

WCDMA850 & Channel: 4233

Agilent Spectrum Ana	llyzer - Swept SA						
Center Freq	50 Q AC	GHz	SENSE:	INT #Av:	ALIGN OFF g Type: Pwr(RMS)	10:33:11 AMNov 12, 2014 TRACE 1 2 3 4 5 6	Frequency
Ref 10 dB/div Ref	Offset 21.74 dB 36.00 dBm	PNO: Fast C IFGain:Low	#Atten: 30 dE	n	Mkr	2.602 51 GHz -25.81 dBm	Auto Tune
26.0 1 16.0 6.00							Center Freq 5.015000000 GHz
-4.00 -14.0 -24.0		3 2	ener Litti, av en etti di angen di bili fitame	Providence - Constraining and	astag adir kana sheri yi kalika ya astarisa da	-13.00 dBm	Start Freq 30.000000 MHz
-44.0							Stop Freq 10.000000000 GHz
Start 30 MHz #Res BW 1.0 M MKR MODE TRC SCL	1Hz × 827	#VB	W 3.0 MHz Y 24.09 dBm	FUNCTION	Sweep 18 FUNCTION WIDTH	Stop 10.000 GHz 3.7 ms (40001 pts) FUNCTION VALUE	CF Step 997.000000 MHz <u>Auto</u> Man
2 N 1 f 3 N 1 f 4 5 6	3.040 2.602	2 51 GHz	-25.81 dBm				Freq Offset 0 Hz
7 8 9 10 11 12							
MSG					STATUS		

HSUPA850 & Channel: 4132

HSUPA850 & Channel: 4183



Agilent Spectr	um Analyzer - So RF 50	wept SA Ω AC	SENS	5E:INT	🛕 ALIGN OFF	11:22:22 AMNov 12	,2014
Center F	req 5.015	000000 GHz	Trig: Free F	#Av Run	g Type: Pwr(RMS)	TRACE 1 2 3 TYPE MWW	456 Frequency
10 dB/div	Ref Offset 2 Ref 36.00	IFGain:Low 1.74 dB	#Atten: 30	dB	Mkr	3 3.301 66 G -25.69 dl	Hz Auto Tune
26.0 16.0 6.00	≬ 1						Center Freq 5.015000000 GHz
-4.00 -14.0 -24.0	La L		a i a les sus précedencies de color des	g Margare 1984 (1964) State Social States in a	and the second	-13.0	0 dBm Start Freq 30.000000 MHz
-34.0 -44.0 -54.0							Stop Freq 10.000000000 GHz
Start 30 M #Res BW	1Hz 1.0 MHz	#VI	3W 3.0 MHz		Sweep 1	Stop 10.000 0 8.7 ms (40001	GHz pts) CF Step 997.000000 MHz
MKR MODE TF	C SCL	× 846.29 MHz	Y 25.02 dB	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE	Auto Man
2 N 1 3 N 1 4 5 6	f f	3.153 85 GHz 3.301 66 GHz	-25.20 dBi -25.69 dBi	m m			Freq Offset
7 8 9 10 11 12							
MSG					STATUS		

HSUPA850 & Channel: 4233

Frequency	87:12 PM Nov 06, 2014 TRACE 1 2 3 4 5 6	(15)	ALIGN OFF	#Avg	ENSE:INT	SE		AC AC	RF 50 9	L
Auto Tune	25.72 dBm	(r3 2	Mkr		lo dB	Atten: 30	PNO: Fast (IFGain:Low	1.74 dB dBm	ef Offset 2 ef 36.00	B/div
Center Fred 5.015000000 GH2										
Start Free 30.000000 MH	-13.00 dBm		ere discutori	ntl. <i>at 14</i>			32			
Stop Fred 10.000000000 GH2										
CF Step 997.000000 MHz <u>Auto</u> Mar	p 10.000 GHz ns (40001 pts) UNCTION VALUE	б 18.7	Sweep 1	FUNCTION	2	W 3.0 MHz Y	#VB	×	z) MHz	t 30 MI s BW 1
Freq Offse 0 Hz					IBm IBm IBm	31.86 dl -25.51 dl -25.72 dl	60 52 GHz 21 20 GHz 39 10 GHz	1.85 3.12 2.98	f f f	N 1 N 1 N 1
		rus	STATU							

GSM1900 & Channel: 512

GSM1900 & Channel: 512



ent Spectr	RE 50.0	Ept SA		SENSE: IN	т	ALIGN OFF	05:39:41 PMNov 06, 2014	
	10 00 10		DNO: Fast	Trig: Free Run	#Avg	Type: Pwr(RMS)	TRACE 1 2 3 4 5 5 TYPE MWWWW	Frequency
dB/div	Ref Offset 21 Ref 36.00	.74 dB dBm	FGain:Low	#Atten: 30 dB		Mkr3	6.055 12 GHz -26.05 dBm	Auto Tune
	X	1						Center Freq 5.015000000 GHz
					3	ي المراجب المحفظ الذي المحفظ الذي	-13.00 dBm	Start Freq 30.000000 MHz
.0								Stop Freq 10.000000000 GHz
art 30 N les BW	MHz 1.0 MHz		#VBV	V 3.0 MHz		Sweep 18	Stop 10.000 GHz .7 ms (40001 pts)	CF Step 997.000000 MHz
R MODE T	RC SCL	× 1.880	18 GHz	۲ 31.74 dBm	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE	<u>Auto</u> Man
2 N 1 8 N 1 4	f	6.055	10 GHz 12 GHz	-25.72 dBm -26.05 dBm				Freq Offset 0 Hz
7 3 3 9 0 1								
G						STATUS		

GSM1900 & Channel: 661

GSM1900 & Channel: 661



Frequency	MNov 06, 2014 CE 1 2 3 4 5 6 PE MWWWWW	05:41:25 F TRAC TY	ALIGN OFF : Pwr(RMS)	#Avg 1	Run) Trig: Free	PNO: Fast 🔾	AC AC	RF 50
Auto Tune	88 GHz 31 dBm	3.559 -26.	Mkr3		dB	#Atten: 30	IFGain:Low	1.74 dB dBm	Ref Offset 2 Ref 36.00
Center Fred 5.015000000 GHz								(1	
Start Fred 30.000000 MHz	-13.00 dBm								
Stop Fred 10.000000000 GHz		and the second second second	ay a katila a sa						
CF Step 997.000000 MHz	0.000 GHz 0001 pts)	Stop 10 .7 ms (4	Sweep 18			/ 3.0 MHz	#VBV		lz .0 MHz
Auto Mar Freg Offsel	UN VALUE	FUNCTI	ICTION WIDTH	CHUN	3m 3m 3m	31.40 dE -25.62 dE -26.31 dE	09 GHz 17 GHz 88 GHz	× 1.91 3.13 3.55	f f f
0 Hz									
			STATUS						

GSM1900 & Channel: 810

GSM1900 & Channel: 810



Agilent Spectrum Analyzer - Swept SA	5	CENCE IN	ri i		06-02-02 PMA	lov 06, 2014		
		Trig: Free Bun	#Avg	Type: Pwr(RMS)	TRACE	1 2 3 4 5 6 M	Frequency	
	IFGain:Low	#Atten: 30 dB			DET	A A A A A A	Auto Tupe	
Ref Offset 21.74 d 10 dB/div Ref 36.00 dBm	Ref Offset 21.74 dB Mkr3 3.414 32 GHz 0 dB/div Ref 36.00 dBm -26.22 dBm							
26.0							Center Freq	
16.0							5.015000000 GHz	
. 6.00								
-14.0	<u>^2</u> .2					-13.00 dBm	Start Freq	
-24.0		and the second secon	and the local day of the second second	and the state of the	contribution of solid solid solid solid	and the state of the	30.000000 MHz	
-34.0	and the set of the set of					and the second s	Stop Fred	
-54.0							10.000000000 GHz	
Start 30 MHz					Stop 10.0	00 GH7		
#Res BW 1.0 MHz	#VBW	/ 3.0 MHz		Sweep 18	3.7 ms (400	001 pts)	CF Step 997.000000 MHz	
MKR MODE TRC SCL >	851 77 GHz	Y 24.88 dBm	FUNCTION	FUNCTION WIDTH	FUNCTION 1	VALUE	<u>Auto</u> Man	
2 N 1 f 3 3 N 1 f 3	.167 06 GHz .414 32 GHz	-24.45 dBm -26.22 dBm					Eron Offect	
4 5							0 Hz	
6 7 7								
8								
11								
MSG				STATUS				

WCDMA1900 & Channel: 9262

WCDMA1900 & Channel: 9262



gilent Spectrum Analyzer - Swe	pt SA	OFF OF ALT		Deversion PMNI-vior - Donie	
RL RF 50 Q	AC	Trig: Free Pup	#Avg Type: Pwr(RMS)	105:05:48 PM Nov 06, 2014 TRACE 2 3 4 5 6 TYPE M GALAGAGA	Frequency
Ref Offset 21.	PNO: Fast IFGain:Low 74 dB	#Atten: 30 dB	Mkr	3 5.274 97 GHz -25.84 dBm	Auto Tune
					Center Freq 5.015000000 GHz
		3	in the second	-13.00 dBm	Start Freq 30.000000 MHz
					Stop Freq 10.000000000 GHz
art 30 MHz es BW 1.0 MHz	#VE	3W 3.0 MHz	Sweep 1	Stop 10.000 GHz 3.7 ms (40001 pts)	CF Step 997.000000 MHz
R MODE TRC SCL	× 1.879 44 GHz	24.34 dBm	JNCTION FUNCTION WIDTH	FUNCTION VALUE	<u>Auto</u> Man
2 N 1 f 3 N 1 f 4 5	3.208 44 GHz 5.274 97 GHz	-25.54 dBm -25.84 dBm			Freq Offset 0 Hz
			STATUS		

WCDMA1900 & Channel: 9400

WCDMA1900 & Channel: 9400

