

HCT CO., LTD.

CERTIFICATE OF COMPLIANCE FCC Certification

Applicant Name: LG Electronics MobileComm U.S.A., Inc.

Address:

1000 Sylvan Avenue, Englewood Cliffs NJ 07632

Date of Issue: March 19, 2014 **Test Site/Location:** HCT CO., LTD., 74, Seoicheon-ro 578beon-gil, Majang-myeon, Icheon-si, Gyeonggi-do, Korea Report No.: HCT-R-1403-F027-1

HCT FRN: 0005866421

FCC ID:

ZNFD625

APPLICANT: LG Electronics MobileComm U.S.A., Inc.

FCC Model(s):	LG-D625
Additional FCC Model(s):	LGD625, D625
EUT Type:	Cellular/PCS GSM, WCDMA, LTE Phone with Bluetooth/WLAN/NFC
FCC Classification:	Licensed Portable Transmitter Held to Ear (PCE)
FCC Rule Part(s):	§22, §24, §2
Tx Frequency:	824.20 - 848.80 MHz (GSM850) 826.40 - 846.60 MHz (WCDMA850) 1 850.20 - 1 909.80 MHz (GSM1900) 1 852.4 – 1 907.6 MHz (WCDMA1900)
Rx Frequency:	869.20 - 893.80 MHz (GSM850) 871.40 - 891.60 MHz (WCDMA850) 1 930.20 - 1 989.80 MHz (GSM1900) 1 932.4 – 1 987.6 MHz (WCDMA1900)
Max. RF Output Power:	1.135 W GSM850 (30.55 dBm) / 1.089 W GSM1900 (30.37 dBm) 0.270 W GSM850 EDGE (24.32 dBm) / 0.553 W GSM1900 EDGE (27.43 dBm) 0.133 W WCDMA850 (21.23 dBm) / 0.324 W WCDMA1900 (25.10 dBm)
Emission Designator(s):	245 KGXW (GSM850) 244 KGXW (GSM1900) 250 KG7W (GSM850 EDGE) 246 KG7W (GSM1900 EDGE) 4M15F9W (WCDMA850) 4M17F9W (WCDMA1900)

The measurements shown in this report were made in accordance with the procedures specified in §2.947. I assume full responsibility for the accuracy and completeness of these measurements, and for the qualifications of all persons taking them. HCT CO., LTD. Certifies that no party to this application has subject to a denial of Federal benefits that includes FCC benefits pursuant to section 5301 of the Anti-Drug Abuse Act of 1998,21 U.S. C.853(a)

Report prepared by : Jong Seok Lee Test engineer of RF Team

Approved by : Chang Seok Choi Manager of RF Team

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Version

TEST REPORT NO.	DATE	DESCRIPTION
HCT-R-1403-F027	March 14, 2014	- First Approval Report
HCT-R-1403-F027-1	March 19, 2014	- Revised Section 2.1.
101-10-1027-1		- Revised battery endpoint voltage in Section 7.7.

FCC CERTIFICATION REPORT		
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MEASUREMENT REPORT

1. GENERAL INFORMATION

Applicant Name:	LG Electronics MobileComm U.S.A., Inc.
Address:	1000 Sylvan Avenue, Englewood Cliffs NJ 07632
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Max. RF Output Power:	1.135 W GSM850 (30.55 dBm) / 1.089 W GSM1900 (30.37 dBm) 0.270 W GSM850 EDGE (24.32 dBm) / 0.553 W GSM1900 EDGE (27.43 dBm) 0.133 W WCDMA850 (21.23 dBm) / 0.324 W WCDMA1900 (25.10 dBm)
Emission Designator(s):	245 KGXW (GSM850) 244 KGXW (GSM1900) 250 KG7W (GSM850 EDGE) 246 KG7W (GSM1900 EDGE) 4M15F9W (WCDMA850) 4M17F9W (WCDMA1900)
Date(s) of Tests:	February 11, 2014 ~ March 13, 2014
Antenna Specification	Manufacturer: acetchnologyA
	Antenna type: Internal Antenna
	Peak Gain: GSM850/ WCDMA850 : -3.6 dBi
	GSM1900/ WCDMA1900 : -3.0 dBi

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2. INTRODUCTION

2.1. EUT DESCRIPTION

The LG Electronics MobileComm U.S.A., Inc. LG-D625 Cellular/PCS GSM, WCDMA, LTE(Band 4, 7) Phone with Bluetooth/WLAN/NFC consists of GPRS Class12, EDGE 12, GSM850, GSM1900, WCDMA850, WCDMA1900, HSDPA, HSUPA and DC-HSDPA.

2.2. 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.

2.3. TEST FACILITY

The Fully-anechoic chamber and conducted measurement facility used to collect the radiated data are located at the 74, Seoicheon-ro 578beon-gil, Majang-myeon, Icheon-si, Gyeonggi-do, Korea.

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3. DESCRIPTION OF TESTS

3.1 ERP/EIRP RADIATED POWER AND RADIATED SPURIOUS EMISSIONS

Note: ERP(Effective Radiated Power), EIRP(Effective Isotropic Radiated Power)

Test Procedure

Radiated emission measurements are performed in the Fully-anechoic chamber. The equipment under test is placed on a non-conductive table 3-meters away from the receive antenna in accordance with ANSI/TIA-603-C-2004 Clause 2.2.17. The turntable is rotated through 360 degrees, and the receiving antenna scans in order to determine the level of the maximized emission. The level and position of the maximized emission is recorded with the spectrum analyzer using a positive peak detector.

A half wave dipole is then substituted in place of the EUT. For emissions above 1GHz, a horn antenna is substituted in place of the EUT. The substitute antenna is driven by a signal generator and the previously recorded signal was duplicated.

The power is calculated by the following formula;

 $P_{d(dBm)} = Pg_{(dBm)} - cable loss_{(dB)} + antenna gain_{(dB)}$

Where: P_d is the dipole equivalent power and P_g is the generator output power into the substitution antenna.

The maximum EIRP is calculated by adding the forward power to the calibrated source plus its appropriate gain value. These steps are repeated with the receiving antenna in both vertical and horizontal polarization. the difference between the gain of the horn and an isotropic antenna are taken into consideration

Radiated spurious emissions

- 1. Frequency Range : 30 MHz ~ 10th Harmonics of highest channel fundamental frequency.
- The EUT was setup to maximum output power. The 100 kHz RBW was used to scan from 30 MHz to 1 GHz. Also, the 1 MHz RBW was used to scan from 1 GHz to 10 GHz(GSM850/WCDMA850) or 20 GHz(GSM1900/WCDMA1900). The high, low and a middle channel were tested for out of band measurements.

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3.2 PEAK- TO- AVERAGE RATIO

Test Procedure

Peak to Average Power Ratio is tested in accordance with KDB971168 D01 Power Meas License Digital Systems v02r01, June 7, 2013, Section 5.7.

- Section 5.7.1 CCDF Procedure

- a) Set resolution/measurement bandwidth ≥ signal's occupied bandwidth;
- b) Set the number of counts to a value that stabilizes the measured CCDF curve;
- c) 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.
- d) Record the maximum PAPR level associated with a probability of 0.1%.

- Section 5.7.2 Alternate Procedure

Use one of the procedures presented in 5.1 to measure the total peak power and record as P_{Pk} . Use one of the applicable procedures presented 5.2 to measure the total average power and record as P_{Avg} . Determine the P.A.R. from: P.A.R_(dB) = $P_{Pk (dBm)} - P_{Avg (dBm)}$ (P_{Avg} = Average Power + Duty cycle Factor)

5.1.1 Peak power measurements with a spectrum/signal analyzer or EMI receiver

The following procedure can be used to determine the total peak output power.

- a) Set the RBW \geq OBW.
- b) Set VBW \geq 3 × RBW.
- c) Set span $\ge 2 \times RBW$
- d) Sweep time = auto couple.
- e) Detector = peak.
- f) Ensure that the number of measurement points \geq span/RBW.
- g) Trace mode = max hold.
- h) Allow trace to fully stabilize.
- i) Use the peak marker function to determine the peak amplitude level.

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5.2.2 Procedures for use with a spectrum/signal analyzer when EUT cannot be configured to transmit continuously and sweep triggering/signal gating cannot be properly implemented

If the EUT cannot be configured to transmit continuously (burst duty cycle < 98%), then one of the following procedures can be used. The selection of the applicable procedure will depend on the characteristics of the measured burst duty cycle.

Measure the burst duty cycle with a spectrum/signal analyzer or EMC receiver can be used in zero-span mode if the response time and spacing between bins on the sweep are sufficient to permit accurate measurement of the burst on/off time of the transmitted signal.

5.2.2.2 Constant burst duty cycle

If the measured burst duty cycle is constant (i.e., duty cycle variations are less than ± 2 percent), then:

- a) Set span to at least 1.5 times the OBW.
- b) Set RBW = 1-5% of the OBW, not to exceed 1 MHz.
- c) Set VBW \geq 3 x RBW.
- d) Number of points in sweep ≥ 2 × span / RBW. (This gives bin-to-bin spacing ≤ RBW/2, so that narrowband signals are not lost between frequency bins.)
- e) Sweep time = auto.
- f) Detector = RMS (power averaging).
- g) Set sweep trigger to "free run".
- h) Trace average at least 100 traces in power averaging (i.e., RMS) mode.
- i) Compute power by integrating the spectrum across the OBW of the signal using the instrument's band power measurement function with band limits set equal to the OBW band edges. If the instrument does not have a band power function, sum the spectrum levels (in power units) at intervals equal to the RBW extending across the entire OBW of the spectrum.
- j) Add 10 log (1/x), where x is the duty cycle, to the measured power in order to compute the average power during the actual transmission times (because the measurement represents an average over both the on and off times of the transmission).

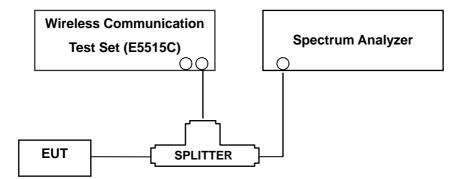
For example, add 10 log (1/0.25) = 6 dB if the duty cycle is a constant 25%.

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3.3 OCCUPIED BANDWIDTH.

Test set-up



(Configuration of conducted Emission measurement)

The width of a frequency band such that, below the lower and above the upper frequency limits, the mean powers emitted are each equal to a specified percentage 0.5 % of the total mean power of a given emission.

Test Procedure

OBW is tested in accordance with KDB971168 D01 Power Meas License Digital Systems v02r01, June 7, 2013, Section 4.2..

The EUT makes a call to the communication simulator. The power was measured with R&S Spectrum Analyzer. All measurements were done at 3 channels(low, middle and high operational range.)

The conducted occupied bandwidth used the power splitter via EUT RF power connector between simulation base station and spectrum analyzer.

The communication simulator station system controlled a EUT to export maximum output power under transmission mode and specific channel frequency. Use OBW measurement function of Spectrum analyzer to measure 99 % occupied bandwidth

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3.4 SPURIOUS AND HARMONIC EMISSIONS AT ANTENNA TERMINAL.

Test Procedure

Spurious and harmonic emissions at antenna terminal is tested in accordance with KDB971168 D01 Power Meas License Digital Systems v02r01, June 7, 2013, 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.

On any frequency outside a licensee's frequency block, the power of any emission shall be attenuated below the transmitter power (P) by at least $43 + 10 \log(P) dB$. The RBW settings used in the testing are greater than 1 % of the occupied bw. The 1 MHz RBW was used to scan from 10 MHz to 10 GHz. (GSM1900 Mode: 10 MHz to 20 GHz). A display line was placed at – 13 dBm to show compliance. The high, lowest and a middle channel were tested for out of band measurements.

Measurements of all out of band are made on RBW = 1MHz and VBW \ge 3 MHz in the worst case despite RBW = 100 kHz and VBW \ge 300 kHz upon 1 GHz.

- RBW = 1 MHz
- VBW ≥ 3 MHz
- Detector = Peak
- Trace Mode = max hold
- Sweep time = auto
- Number of points in sweep ≥ 2 * Span / RBW

- Band Edge Requirement : According to FCC 22.917, 24.238(a) specified that power of any emission outside of The authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log(P) dB. 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.

The EUT makes a call to the communication simulator. The power was measured with R&S Spectrum Analyzer. All measurements were done at 2 channels(low and high operational frequency range.)

The band edge measurement used the power splitter via EUT RF power connector between simulation base station and spectrum analyzer.

The center frequency of spectrum is the band edge frequency and span is 1MHz RB of the spectrum is 3KHz and VB of the spectrum is 3KHz (GSM)

The center frequency of spectrum is the band edge frequency and span is 5MHz RB of the spectrum is 100KHz and VB of the spectrum is 100KHz(WCDMA)

NOTES: The analyzer plot offsets were determined by below conditions.

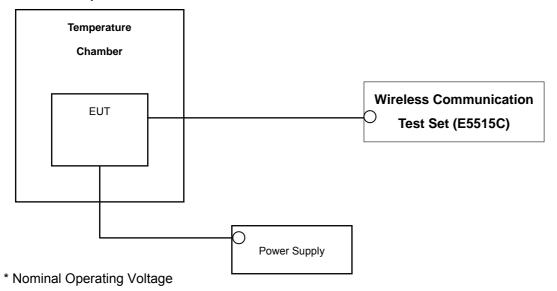
- For GSM850 and WCDMA850, total offset 26.7 dBm = 20 dBm attenuator + 6 dBm Divider + 0.7 dBm RF cables.
- For GSM1900 and WCDMA1900, total offset 28 dBm = 20 dBm attenuator + 6 dBm Divider + 2.0 dBm RF cables.

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3.5 FREQUENCY STABILITY / VARIATION OF AMBIENT TEMPERATURE

Test Set-up



Test Procedure

Frequency stability is tested in accordance with ANSI/TIA-603-C-2004 section 2.2.2.

The frequency stability of the transmitter is measured by: a.) **Temperature:** The temperature is varied from - $30 \degree C$ to + $50 \degree C$ using an environmental chamber.

b.) **Primary Supply Voltage:** The primary supply voltage is varied from battery end point to 115 % of the voltage normally at the input to the device or at the power supply terminals if cables are not normally supplied.

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

Time Period and Procedure:

The carrier frequency of the transmitter is measured at room temperature (20°C to provide a reference). 1. 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.

2. Frequency measurements are made at 10°C intervals ranging from -30°C to +50°C. A period of at least one halfhour is provided to allow stabilization of the equipment at each temperature level. **NOTE: The EUT is tested down to the battery endpoint.**

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4. LIST OF TEST EQUIPMENT

Manufacture	Model/ Equipment	Serial Number	Calibration Interval	Calibration Due
Agilent	E9327A/ Power Sensor	MY4442009	Annual	04/16/2014
MITEQ	AMF-6D-001180-35-20P/AMP	1081666	Annual	09/12/2014
Wainwright	WHK1.2/15G-10EF/H.P.F	2	Annual	04/25/2014
Wainwright	WHK3.3/18G-10EF/H.P.F	1	Annual	04/25/2014
Hewlett Packard	11667B / Power Splitter	11275	Annual	05/13/2014
Digital	EP-3010/ Power Supply	3110117	Annual	10/29/2014
Schwarzbeck	UHAP/ Dipole Antenna	557	Biennial	03/05/2015
Schwarzbeck	UHAP/ Dipole Antenna	558	Biennial	05/03/2015
Korea Engineering	KR-1005L / Chamber	KRAB05063-3CH	Annual	10/30/2014
Schwarzbeck	BBHA 9120D/ Horn Antenna	147	Biennial	05/15/2014
Schwarzbeck	BBHA 9120D/ Horn Antenna	1151	Biennial	10/05/2015
Agilent	E4440A/Spectrum Analyzer	US45303008	Annual	04/25/2014
WEINSCHEL	ATTENUATOR	BR0592	Annual	10/28/2014
REOHDE&SCHWARZ	FSV40/Spectrum Analyzer	1307.9002K40-100931-NK	Annual	06/10/2014
Agilent	8960 (E5515C)/ Base Station	GB45070669	Annual	08/31/2014

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5. SUMMARY OF TEST RESULTS

FCC Part Section(s)	Test Description	Test Limit	Test Condition	Test Result
2.1049, 22.917(a), 24.238(a)	Occupied Bandwidth	N/A		PASS
2.1051, 22.917(a), 24.238(a)	Band Edge / Spurious and Harmonic Emissions at Antenna Terminal.	< 43 + 10log10 (P[Watts]) at Band Edge and for all out-of-band emissions		PASS
* 2.1046	Conducted Output Power	-	CONDUCTED	PASS
24.232(d)	Peak- to- Average Ratio	< 13 dB		PASS
2.1055, 22.355, 24.235	Frequency stability / variation of ambient temperature	< 2.5 ppm		PASS
22.913(a)(2)	Effective Radiated Power	< 7 Watts max. ERP		PASS
24.232(c)	Equivalent Isotropic Radiated Power	< 2 Watts max. EIRP	RADIATED	PASS
2.1053, 22.917(a), 24.238(a)	Radiated Spurious and Harmonic Emissions	< 43 + 10log10 (P[Watts]) for all out-of band emissions		PASS

*: See SAR Report

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6. SAMPLE CALCULATION

A. ERP Sample Calculation

Mode	Ch./ Freq.		Measured	Substitude	Ant. Gain	C.L	Pol.	EF	RP
Mode	channel	Freq.(MHz)	Level(dBm)	LEVEL(dBm)	(dBd)	U.L	P0I.	w	dBm
GSM850	128	824.20	-21.37	38.40	-10.61	0.95	Н	0.483	26.84

ERP = SubstitudeLEVEL(dBm) + Ant. Gain – CL(Cable Loss)

- 1) The EUT mounted on a non-conductive tuntable is 0.8 meter above test site ground level.
- 2) During the test, the turn table is rotated until the maximum signal is found.
- 3) Record the field strength meter's level.
- 4) Replace the EUT with dipole/Horn antenna that is connected to a calibrated signal generator.
- 5) Increase the signal generator output till the field strength meter's level is equal to the item (3).

6) The signal generator output level with Ant. Gain and cable loss are the rating of effective radiated power (**ERP**).

B. Emission Designator

GSM Emission Designator

Emission Designator = 249KGXW

GSM BW = 249 kHz

- G = Phase Modulation
- X = Cases not otherwise covered
- W = Combination (Audio/Data)

WCDMA Emission Designator

Emission Designator = 4M17F9W

WCDMA BW = 4.17 MHz

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

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7. TEST DATA

7.1 EFFECTIVE RADIATED POWER OUTPUT

(GSM850 Mode)

Ch./	Freq.	Measured	Substitude	Ant. Gain	C.L Pol.		ER	Р
channel	Freq.(MHz)	Level(dBm)	LEVEL (dBm)	(dBd)	C.L	P0I.	w	dBm
128	824.20	-20.57	41.99	-10.59	0.85	V	1.135	30.55
190	836.60	-21.83	40.55	-10.53	0.89	Н	0.818	29.13
251	848.80	-22.69	39.69	-10.48	0.88	Н	0.681	28.33
EDGE 128	824.20	-26.80	35.76	-10.59	0.85	V	0.270	24.32

(WCDMA850 Mode)

Ch./	Freq.	Measured	Substitude	Ant. Gain	C.L	Pol.	ER	Р
channel	Freq.(MHz)	Level(dBm)	LEVEL (dBm)	(dBd)	U.L	P0I.	w	dBm
4132	826.40	-30.10	32.49	-10.58	0.84	н	0.128	21.07
4183	836.60	-29.73	32.65	-10.53	0.89	Н	0.133	21.23
4233	846.60	-30.86	31.70	-10.49	0.85	Н	0.109	20.36

Note: Standard batteries are the only options for this phone. And a peak detector is used.

NOTES:

Effective Radiated Power Output Measurements by Substitution Method

according to ANSI/TIA/EIA-603-C-2004, Aug. 17, 2004:

The EUT was placed on a non-conductive styrofoam resin table 3-meters from the receive antenna. Turntable rotation was adjusted for the highest reading on the receive spectrum analyzer. For WCDMA, GSM signals, a peak detector is used, with RBW \geq OBW, VBW \geq 3 x RBW. 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 terminals of the dipole is measured. The ERP is recorded.

This device was tested under all configurations and the highest power is reported in WCDMA mode with HSDPA Inactive at 12.2 kbps RMC and TPC bits all set to "1" and in GSM mode using a Power Control Level of "0" in the PCS Band and "5" in the Cellular Band. This unit was tested with its standard battery. Also, we have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna. The worst case of the EUT is z plane in GSM850 (y plane ch 128) and WCDMA850 mode. Also worst case of detecting Antenna is horizontal polarization in GSM850 (vertical polarization) and WCDMA850 mode.

The EDGE mode testing were performed using 1Tx because 1Tx is highest power in EDGE mode.

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7.2 EQUIVALENT ISOTROPIC RADIATED POWER

(GSM1900 Mode)

Ch./	Freq.	Measured	Substitude	Ant. Gain	C.L	Del	EII	RP
channel	Freq.(MHz)	Level(dBm)	LEVEL (dBm)	(dBi)		Pol.	w	dBm
512	1,850.20	-10.10	21.52	10.04	1.19	Н	1.089	30.37
661	1,880.00	-11.38	20.35	10.04	1.23	Н	0.824	29.16
810	1,909.80	-11.69	20.29	10.05	1.22	Н	0.817	29.12
EDGE 512	1,850.20	-13.04	18.58	10.04	1.19	Н	0.553	27.43

(WCDMA1900 Mode)

Ch./	Freq.	Measured	Substitude	Ant. Gain			Pol.	EI	RP
channel	Freq.(MHz)	Level(dBm)	LEVEL (dBm)	(dBi)	C.L	P0I.	w	dBm	
9262	1,852.40	-15.37	16.25	10.04	1.19	Н	0.324	25.10	
9400	1,880.00	-15.79	15.94	10.04	1.23	Н	0.299	24.75	
9538	1,907.60	-16.21	15.67	10.05	1.22	Н	0.282	24.50	

Note: Standard batteries are the only options for this phone. And a peak detector is used.

NOTES:

Equivalent Isotropic Radiated Power Measurements by Substitution Method

according to ANSI/TIA/EIA-603-C-2004, Aug. 17, 2004:

The EUT was placed on a non-conductive styrofoam resin table 3-meters from the receive antenna. Turntable rotation was adjusted for the highest reading on the receive spectrum analyzer. For WCDMA, GSM signals, a peak detector is used, with RBW \geq OBW, VBW \geq 3 x RBW. 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 receive spectrum analyzer reading. The conducted power at the terminals of the Horn antenna is measured. The difference between the gain of the horn and an isotropic antenna is taken into consideration and the EIRP is recorded.

This device was tested under all configurations and the highest power is reported in WCDMA mode with HSDPA Inactive at 12.2 kbps RMC and TPC bits all set to "1" and in GSM mode using a Power Control Level of "0" in the PCS Band and "5" in the Cellular Band. This unit was tested with its standard battery. Also, we have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna. The worst case of the EUT is x plane in GSM1900 and WCDMA1900 mode. Also worst case of detecting Antenna is in horizontal polarization in GSM1900 and WCDMA1900 mode.

The EDGE mode testing were performed using 1Tx because 1Tx is highest power in EDGE mode.

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7.3 RADIATED SPURIOUS EMISSIONS 7.3.1 RADIATED SPURIOUS EMISSIONS (GSM850)

MEASURED OUTPUT POWER:	30.55 dBm = 1.135 W		
MODULATION SIGNAL:	GSM850		
DISTANCE:	3 meters		
LIMIT: 43 + 10 log10 (W) =	43.55 dBc		

Ch.	Freq.(MHz)	Measured Level	Ant. Gain (dBd)	<u>Substitute</u> Level [dBm]	C.L	Pol.	ERP (dBm)	dBc
	1,648.40	-41.56	7.55	-50.64	1.13	V	-44.22	74.77
128 (824.2)	2,472.60	-35.47	8.39	-42.14	1.35	V	-35.10	65.65
, , , , , , , , , , , , , , , , , , ,	3,296.80	-55.14	10.07	-62.20	1.58	V	-53.71	84.26
	1,673.20	-46.05	7.62	-55.29	1.12	V	-48.79	79.34
190 (836.6)	2,509.80	-39.40	8.50	-45.98	1.35	V	-38.83	69.38
	3,346.40	-57.23	10.26	-64.44	1.61	V	-55.79	86.34
	1,697.60	-49.76	7.69	-59.10	1.16	V	-52.57	83.12
251 (848.8)	2,546.40	-40.80	8.57	-47.70	1.37	V	-40.50	71.05
、 <i>`</i>	3,395.20	-56.69	10.25	-63.81	1.62	V	-55.18	85.73

NOTES: <u>1. Radiated Spurious Emission Measurements at 3 meters by Substitution Method</u> <u>according to ANSI/TIA/EIA-603-C-2004, Aug. 17, 2004:</u>

 <u>2. We are performed all frequency to 10th harmonics from 30 MHz. Measurements above show only up to 3</u> maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.
 <u>3. we have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.</u>

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7.3.2 RADIATED SPURIOUS EMISSIONS (GSM1900)

MEASURED OUTPUT POWER:	30.37 dBm = 1.089 W
MODULATION SIGNAL:	GSM1900
DISTANCE:	3 meters
LIMIT: 43 + 10 log10 (W) =	43.37 dBc

Ch.	Freq.(MHz)	Measured Level	Ant. Gain (dBi)	<u>Substitute</u> Level [dBm]	C.L	Pol.	EIRP (dBm)	dBc
	3,700.40	-47.20	12.32	-52.92	1.73	Н	-42.33	72.70
512 (1850.2)	5,550.60	-47.57	13.02	-48.07	2.12	V	-37.17	67.54
, , , , , , , , , , , , , , , , , , ,	7,400.80	-51.70	11.06	-42.19	2.42	Н	-33.55	63.92
	3,760.00	-46.44	12.29	-51.76	1.66	Н	-41.13	71.50
661 (1880.0)	5,640.00	-50.15	13.12	-50.43	2.11	V	-39.42	69.79
	7,520.00	-48.63	11.09	-39.62	2.35	Н	-30.88	61.25
	3,819.60	-45.26	12.28	-50.37	1.80	Н	-39.89	70.26
810 (1909.8)	5,729.40	-50.47	13.06	-50.53	2.14	V	-39.61	69.98
	7,639.20	-46.59	11.38	-36.83	2.41	Н	-27.86	58.23

NOTES: <u>1. Radiated Spurious Emission Measurements at 3 meters by Substitution Method</u> <u>according to ANSI/TIA/EIA-603-C-2004, Aug. 17, 2004:</u>

2. We are performed all frequency to 10th harmonics from 30 MHz. Measurements above show only up to 3 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.

3. we have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.

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7.3.3 RADIATED SPURIOUS EMISSIONS (WCDMA850)

MEASURED OUTPUT POWER:	21.23 dBm = 0.133 W
MODULATION SIGNAL:	WCDMA850
DISTANCE:	<u>3 meters</u>
LIMIT: 43 + 10 log10 (W) =	34.23 dBc

Ch.	Freq.(MHz)	Measured Level	Ant. Gain (dBd)	<u>Substitute</u> Level [dBm]	C.L	Pol.	ERP (dBm)	dBc
	1,652.80	-51.92	7.57	-61.15	1.13	V	-54.71	75.94
4,132 (826.4)	2,479.20	-57.14	8.39	-63.82	1.34	V	-56.77	78.00
, , , , , , , , , , , , , , , , , , ,	3,305.60	-55.85	10.11	-62.94	1.59	Н	-54.42	75.65
	1,673.20	-55.50	7.62	-64.73	1.13	Н	-58.24	79.47
4,183 (836.6)	2,509.80	-56.38	8.50	-62.96	1.35	V	-55.81	77.04
	3,346.40	-56.01	10.26	-63.22	1.61	V	-54.57	75.80
	1,693.20	-52.93	7.68	-62.27	1.15	V	-55.74	76.97
4,233 (846.6)	2,539.80	-56.45	8.56	-63.01	1.37	Н	-55.82	77.05
	3,386.40	-57.60	10.25	-64.73	1.61	V	-56.09	77.32

NOTES: <u>1. Radiated Spurious Emission Measurements at 3 meters by Substitution Method</u> <u>according to ANSI/TIA/EIA-603-C-2004, Aug. 17, 2004:</u>

2. We are performed all frequency to 10th harmonics from 30 MHz. Measurements above show only up to 3 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.

3. we have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.

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7.3.4 RADIATED SPURIOUS EMISSIONS (WCDMA1900)

MEASURED OUTPUT POWER:	25.10 dBm = 0.324 W
MODULATION SIGNAL:	WCDMA1900
DISTANCE:	3 meters
LIMIT: 43 + 10 log10 (W) =	38.10 dBc

Ch.	Freq.(MHz)	Measured Level	Ant. Gain (dBi)	<u>Substitute</u> Level [dBm]	C.L	Pol.	EIRP (dBm)	dBc
	3,704.80	-56.32	12.32	-61.46	1.72	V	-50.86	75.96
9262	5,557.20	-56.47	13.03	-56.93	2.14	Н	-46.04	71.14
	7,409.60	-57.36	11.05	-47.63	2.40	Н	-38.98	64.08
	3,760.00	-56.69	12.29	-62.01	1.66	V	-51.38	76.48
9400	5,640.00	-56.90	13.12	-57.18	2.11	V	-46.17	71.27
	7,520.00	-57.67	11.09	-48.66	2.35	Н	-39.92	65.02
	3,815.20	-56.42	12.29	-61.55	1.79	Н	-51.05	76.15
9538	5,722.80	-57.63	13.08	-57.72	2.13	Н	-46.77	71.87
	7,630.40	-58.39	11.36	-48.21	2.54	Н	-39.39	64.49

NOTES: <u>1. Radiated Spurious Emission Measurements at 3 meters by Substitution Method</u> <u>according to ANSI/TIA/EIA-603-C-2004, Aug. 17, 2004:</u>

2. We are performed all frequency to 10th harmonics from 30 MHz. Measurements above show only up to 3 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.

3. we have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.

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7.4 PEAK-TO-AVERAGE RATIO

		Measured	Measured	Pav	_{'g} (Duty Cy	P.A.R.	Limit	Pass	
Band	Ch.	Р _{Рк} (dBm)	P _{Avg} (dBm)	Tx _{Total} (ms)	Tx _{On} (ms)	Factor (dB)	= P _{Pk} - P _{Avg} (dB)	(dB)	/ Fail
GSM1900	661	30.82	21.43				0.15		Pass
GSM1900 EDGE	661	28.17	15.26	4.6232	0.5507	9.24	3.67	13	Pass
WCDMA1900	9400		CCDF Procedure				2.92		Pass

- Plots of the EUT's Peak- to- Average Ratio are shown Page 33 ~ 35, 38.

NOTES:

Peak to Average Power Ratio was tested in accordance with KDB971168 D01 Power Meas License Digital Systems v02r01, June 7, 2013, Section 5.7.

Only GSM(include EDGE) Mode was tested by Section 5.7.2 Alternate Procedure

 $P.A.R_{(dB)} = P_{Pk (dBm)} - P_{Avg (dBm)} (P_{Avg} = Average Power + Duty cycle Factor)$

Duty cycle Factor = 10 log (1/x), x = Tx_{On} / Tx_{Total}

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7.5 OCCUPIED BANDWIDTH

Band	Channel	Frequency(MHz)	Data (GSM: kHz / WCDMA : MHz)
	128	824.20	245.0597
GSM850	190	836.60	242.0761
	251	848.80	243.2240
GSM850 EDGE	128	824.20	250.1788
	512	1,850.20	240.3187
GSM1900	661	1,880.00	243.6795
	810	1,909.80	244.3040
GSM1900 EDGE	810	1,909.80	246.3503
	4132	826.40	4.1462
WCDMA850	4183	836.60	4.1393
	4233	846.60	4.1286
	9262	1852.40	4.1221
WCDMA1900	9400	1880.00	4.1707
	9538	1907.60	4.1316

- Plots of the EUT's Occupied Bandwidth are shown Page 29 ~ 32, 35 ~ 38.

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7.6 CONDUCTED SPURIOUS EMISSIONS

Band	Channel	Frequency of Maximum Harmonic (GHz)	Maximum Data (dBm)
	128	4.597680	-28.56
GSM850	190	4.814370	-28.86
	251	4.587740	-29.52
	512	6.929490	-25.30
GSM1900	661	6.970860	-25.55
	810	6.992800	-24.28
	4132	4.786040	-27.26
WCDMA850	4183	4.596190	-29.07
	4233	4.701050	-29.06
WCDMA1900	9262	6.674760	-25.01
	9400	6.999780	-23.97
	9538	6.978340	-25.48

- Plots of the EUT's Conducted Spurious Emissions are shown Page 51 ~ 62.

7.6.1 BAND EDGE

- Plots of the EUT's Band Edge are shown Page 39 ~ 50.

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7.7 FREQUENCY STABILITY / VARIATION OF AMBIENT TEMPERATURE 7.7.1 FREQUENCY STABILITY (GSM850)

OPERATING	FREQUENCY:
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836,600,000 Hz

CHANNEL:

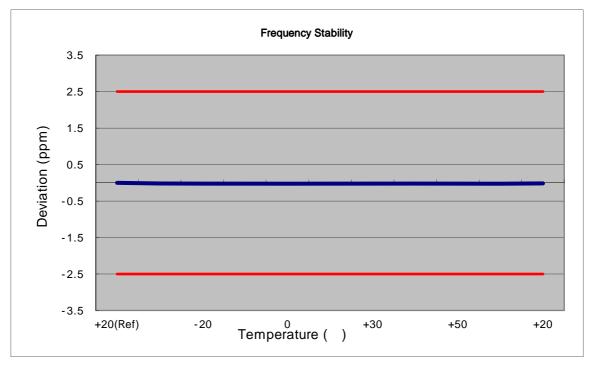
190 REFERENCE VOLTAGE:

3.8 VDC

DEVIATION LIM IT:

± 0.000 25 % or 2.5 ppm

Voltage	Power	Temp.	Frequency	Frequency	Deviation	
(%)	(VDC)	()	(Hz)	Error (Hz)	(%)	ppm
100%		+20(Ref)	836 600 013	0	0.000 000	0.000
100%		-30	836 599 998	-14.87	-0.000 002	-0.018
100%		-20	836 599 997	-15.84	-0.000 002	-0.019
100%		-10	836 599 991	-22.27	-0.000 003	-0.027
100%	3.80	0	836 599 994	-18.49	-0.000 002	-0.022
100%		+10	836 599 993	-20.22	-0.000 002	-0.024
100%		+30	836 599 995	-18.42	-0.000 002	-0.022
100%		+40	836 599 995	-18.09	-0.000 002	-0.022
100%		+50	836 599 995	-18.28	-0.000 002	-0.022
115%	4.37	+20	836 599 991	-21.79	-0.000 003	-0.026
85%	3.50	+20	836 600 000	-13.08	-0.000 002	-0.016



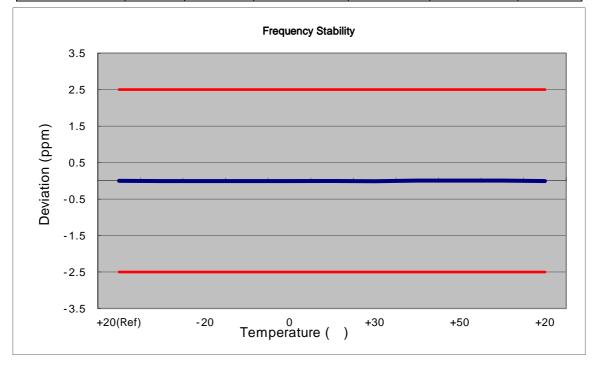
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7.7.2 FREQUENCY STABILITY (GSM1900)

OPERATING FREQUENCY:	1880,000,000 Hz
CHANNEL:	<u>661</u>
REFERENCE VOLTAGE:	3.8 VDC
DEVIATION LIM IT:	± 0.000 25 % or 2.5 ppm

Voltage	Power	Temp.	Frequency	Frequency	Deviation	
(%)	(VDC)	()	(Hz)	Error (Hz)	(%)	ppm
100%		+20(Ref)	1879 999 989	0	0.000 000	0.000
100%		-30	1879 999 977	-12.09	-0.000 001	-0.006
100%		-20	1879 999 973	-15.81	-0.000 001	-0.008
100%		-10	1879 999 975	-13.58	-0.000 001	-0.007
100%	3.80	0	1879 999 975	-13.59	-0.000 001	-0.007
100%		+10	1879 999 981	-8.21	0.000 000	-0.004
100%		+30	1879 999 965	-23.92	-0.000 001	-0.013
100%		+40	1879 999 999	10.42	0.000 001	0.006
100%		+50	1879 999 997	8.60	0.000 000	0.005
115%	4.37	+20	1880 000 000	11.63	0.000 001	0.006
85%	3.50	+20	1879 999 976	-13.00	-0.000 001	-0.007



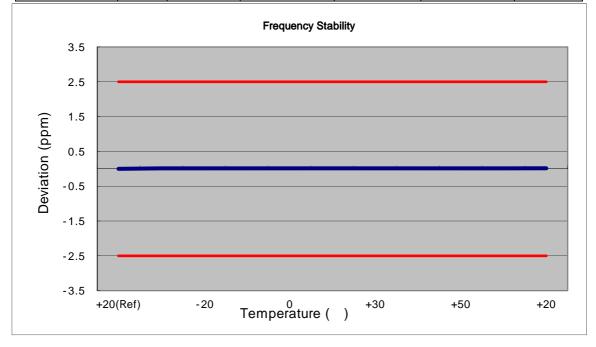
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7.7.3 FREQUENCY STABILITY (WCDMA850)

OPERATING FREQUENCY:	836,600,000 Hz
CHANNEL:	4183
REFERENCE VOLTAGE:	3.8 VDC
DEVIATION LIM IT:	± 0.000 25 % or 2.5 ppm

Voltage	Power	Temp.	Frequency	Frequency	Deviation	
(%)	(VDC)	()	(Hz)	Error (Hz)	(%)	ppm
100%		+20(Ref)	836 599 988	0	0.000 000	0.000
100%		-30	836 600 012	11.73	0.000 001	0.014
100%		-20	836 600 013	13.16	0.000 002	0.016
100%		-10	836 600 011	10.51	0.000 001	0.013
100%	3.80	0	836 600 010	9.55	0.000 001	0.011
100%		+10	836 600 012	11.74	0.000 001	0.014
100%		+30	836 600 012	12.48	0.000 001	0.015
100%		+40	836 600 012	11.89	0.000 001	0.014
100%		+50	836 600 011	11.05	0.000 001	0.013
115%	4.37	+20	836 600 011	11.07	0.000 001	0.013
85%	3.50	+20	836 600 012	11.92	0.000 001	0.014



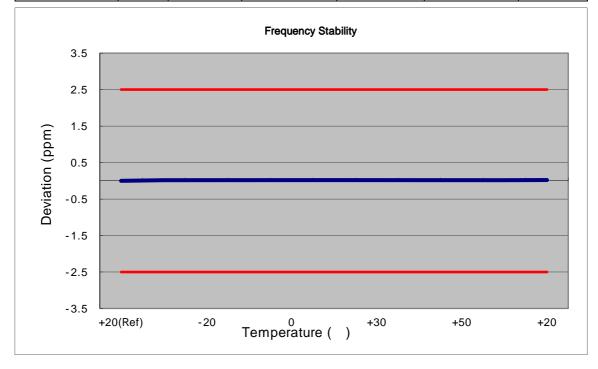
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7.7.4 FREQUENCY STABILITY (WCDMA1900)

OPERATING FREQUENCY:	1,880,000,000 Hz
CHANNEL:	9400
REFERENCE VOLTAGE:	3.8 VDC
DEVIATION LIM IT:	± 0.000 25 % or 2.5 ppm

Voltage	Power	Temp.	Frequency	Frequency	Deviation	
(%)	(VDC)	()	(Hz)	Error (Hz)	(%)	ppm
100%		+20(Ref)	1879 999 967	0	0.000 000	0.000
100%		-30	1880 000 032	31.98	0.000 002	0.017
100%		-20	1880 000 035	35.28	0.000 002	0.019
100%		-10	1880 000 033	33.07	0.000 002	0.018
100%	3.80	0	1880 000 035	35.35	0.000 002	0.019
100%		+10	1880 000 034	34.44	0.000 002	0.018
100%		+30	1880 000 036	36.05	0.000 002	0.019
100%		+40	1880 000 034	33.99	0.000 002	0.018
100%		+50	1880 000 029	29.18	0.000 002	0.016
115%	4.37	+20	1880 000 030	30.35	0.000 002	0.016
85%	3.50	+20	1880 000 040	40.32	0.000 002	0.021



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8. TEST PLOTS

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GSM850 MODE (128 CH.) Occupied Bandwidth



■ GSM850 MODE (190 CH.) Occupied Bandwidth



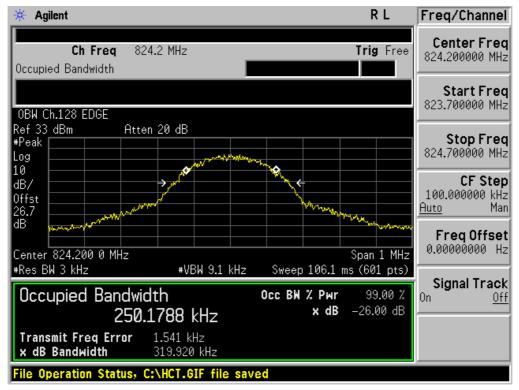
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GSM850 MODE (251 CH.) Occupied Bandwidth



■ GSM850 EDGE (128 CH.) Occupied Bandwidth



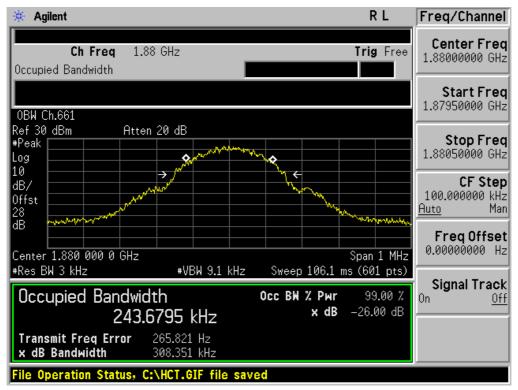
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Test Report No. HCT-R-1403-F027-1	Date of Issue: March 19, 2014	EUT Type: Cellular/PCS GSM, WCDMA, LTE Phone with Bluetooth/WLAN/NFC	FCC ID: ZNFD625		
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Agilent R L Freq/Channel <u>- 16</u> Center Freq Ch Freq 1.8502 GHz Trig Free 1.85020000 GHz Occupied Bandwidth Start Freq 1.84970000 GHz 0BW Ch.512 Ref 30 dBm #Peak Atten 20 dB Stop Freq 1.85070000 GHz Log ٥ ŵ 10 \rightarrow ÷ **CF** Step dB/ 100.000000 kHz Offst Man <u>Auto</u> 28 dB Freq Offset 0.00000000 Hz Center 1.850 200 0 GHz Span 1 MHz #Res BW 3 kHz #VBW 9.1 kHz Sweep 106.1 ms (601 pts) Signal Track Occupied Bandwidth Occ BW % Pwr 99.00 % 0n Off x dB -26.00 dB 240.3187 kHz **Transmit Freq Error** 359.068 Hz x dB Bandwidth 307.916 kHz Operation Status, C:\HCT.GIF file save

■ GSM1900 MODE (512 CH.) Occupied Bandwidth

■ GSM1900 MODE (661 CH.) Occupied Bandwidth



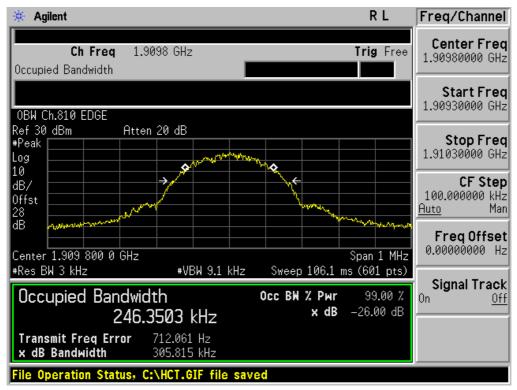
FCC CERTIFICATION REPORT			
Test Report No. HCT-R-1403-F027-1	Date of Issue: March 19, 2014	EUT Type: Cellular/PCS GSM, WCDMA, LTE Phone with Bluetooth/WLAN/NFC	FCC ID: ZNFD625
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🔆 Agilent R L Freq/Channel Center Freq Ch Freq 1.9098 GHz Trig Free 1.90980000 GHz Occupied Bandwidth Start Freq 1.90930000 GHz 0BW Ch.810 Ref 30 dBm #Peak Atten 20 dB Stop Freq 1.91030000 GHz Log 10 → ÷ **CF** Step dB/ 100.000000 kHz Offst Man <u>Auto</u> 28 dB Freq Offset 0.00000000 Hz Center 1.909 800 0 GHz Span 1 MHz #Res BW 3 kHz #VBW 9.1 kHz Sweep 106.1 ms (601 pts) Signal Track Occupied Bandwidth Occ BW % Pwr 99.00 % 0n Off x dB -26.00 dB 244.3040 kHz **Transmit Freq Error** 1.455 kHz x dB Bandwidth 307.578 kHz Operation Status, C:\HCT.GIF file save

■ GSM1900 MODE (810 CH.) Occupied Bandwidth

■ GSM1900 EDGE (810 CH.) Occupied Bandwidth

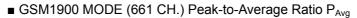


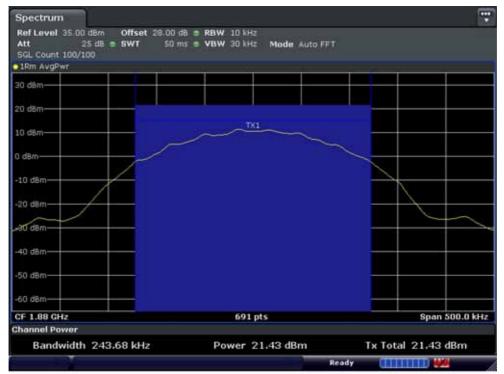
FCC CERTIFICATION REPORT					
Test Report No. HCT-R-1403-F027-1	Date of Issue: March 19, 2014	EUT Type: Cellular/PCS GSM, WCDMA, LTE Phone with Bluetooth/WLAN/NFC	FCC ID: ZNFD625		
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RefLevel 40.00 dBm Att 30 dB		ade Auto FFT	
1Pk Max	M	M1[1]	30.82 dB 1.87998840 GF
30 dBm			
20 dBm			
10 dBm	_		
0 dBm			
-10 dBm			
20 dBm			
-30 dBm			
-40 dBm			
-50 dBm			
CF 1.88 GHz	691 pts		Span 2.0 MH

■ GSM1900 MODE (661 CH.) Peak-to-Average Ratio P_{Pk}





FCC CERTIFICATION REPORT			
Test Report No. HCT-R-1403-F027-1	Date of Issue: March 19, 2014	EUT Type: Cellular/PCS GSM, WCDMA, LTE Phone with Bluetooth/WLAN/NFC	FCC ID: ZNFD625
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SGL 1Pk Cirw									
30 dBm	M1	D3				9[1] D2 1[1]	7		-0.01 d 550.7 p 30.75 dBr 1.6377 m
20 dBm									
10 dBm									
dem		++							
10 d8m—								_	
20 dBm									
30 dBm	Angener	Wardens	inestephytet, né	American	renderland	μ	Naughla	Networksonlyn-trades	f farihanda je
40 dBm		L							
-50 dBm									
CF 1.88 G	Hż			691	pts				1.0 ms/
tarker									
Type Re		Stimulus				tion	_	Function Res	ult
M1	1		377 ms	30.75 dB					
	41 1 41 1		232 ms 50.7 µs	0.01 d					

■ GSM1900 MODE (661 CH.) Peak-to-Average Ratio P_{Avg}

■ GSM1900 EDGE (661 CH.) Peak-to-Average Ratio P_{Pk}



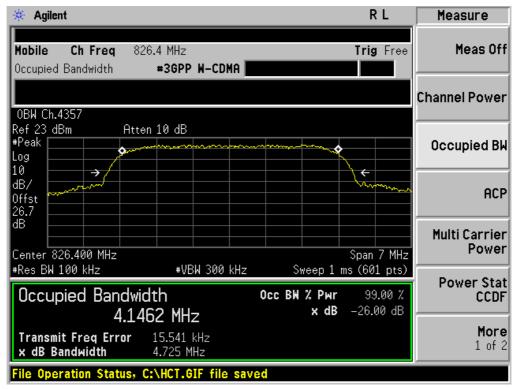
FCC CERTIFICATION REPORT					
Test Report No. HCT-R-1403-F027-1	Date of Issue: March 19, 2014	EUT Type: Cellular/PCS GSM, WCDMA, LTE Phone with Bluetooth/WLAN/NFC	FCC ID: ZNFD625		
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■ GSM1900 EDGE (661 CH.) Peak-to-Average Ratio PAvg

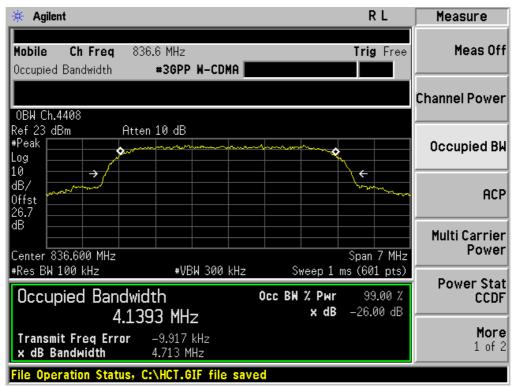
■ WCDMA850 MODE (4132 CH.) Occupied Bandwidth



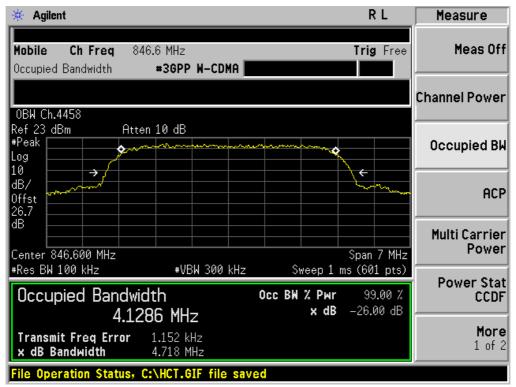
FCC CERTIFICATION REPORT					
Test Report No. HCT-R-1403-F027-1	Date of Issue: March 19, 2014	EUT Type: Cellular/PCS GSM, WCDMA, LTE Phone with Bluetooth/WLAN/NFC	FCC ID: ZNFD625		
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■ WCDMA850 MODE (4183 CH.) Occupied Bandwidth



■ WCDMA850MODE (4233 CH.) Occupied Bandwidth



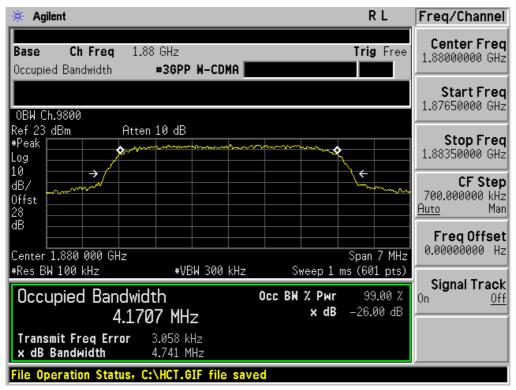
FCC CERTIFICATION REPORT					
Test Report No. HCT-R-1403-F027-1	Date of Issue: March 19, 2014	EUT Type: Cellular/PCS GSM, WCDMA, LTE Phone with Bluetooth/WLAN/NFC	FCC ID: ZNFD625		
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Agilent R L Freq/Channel ** Center Freq Ch Freq 1.8524 GHz Base Trig Free 1.85240000 GHz Occupied Bandwidth #3GPP W-CDMA Start Freq 1.84890000 GHz 0BW Ch.9662 Ref 23 dBm #Peak Atten 10 dB Stop Freq ٥ 1.85590000 GHz Log 10 ÷ ⇒ **CF** Step dB/ 700.000000 kHz Offst Man Auto 28 dB Freq Offset 0.00000000 Hz Center 1.852 400 GHz Span 7 MHz Sweep 1 ms (601 pts) #Res BW 100 kHz #VBW 300 kHz Signal Track Occupied Bandwidth Occ BW % Pwr 99.00 % 0n Off x dB -26.00 dB 4.1221 MHz **Transmit Freq Error** 5.628 kHz x dB Bandwidth 4.712 MHz Operation Status, C:\HCT.GIF file saved

■ WCDMA1900 MODE (9262 CH.) Occupied Bandwidth

■ WCDMA1900 MODE (9400 CH.) Occupied Bandwidth

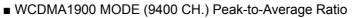


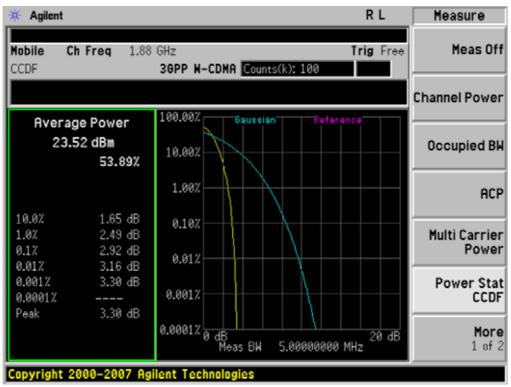
	FCC CERTIFICATION REPORT				
Test Report No. HCT-R-1403-F027-1	Date of Issue: March 19, 2014	EUT Type: Cellular/PCS GSM, WCDMA, LTE Phone with Bluetooth/WLAN/NFC	FCC ID: ZNFD625		
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🔆 Agilent R Т Freq/Channel Center Freq Base Ch Freq 1.9076 GHz Trig Free 1.90760000 GHz Occupied Bandwidth #3GPP W-CDMA Start Freq 1.90410000 GHz 0BW Ch.9938 Ref 23 dBm #Peak Atten 10 dB Stop Freq ò Ô 1.91110000 GHz Log 10 \rightarrow ÷ **CF** Step dB/ 700.000000 kHz Offst Man <u>Auto</u> 28 dB Freq Offset 0.00000000 Hz Center 1.907 600 GHz Span 7 MHz Sweep 1 ms (601 pts) #Res BW 100 kHz #VBW 300 kHz Signal Track Occupied Bandwidth Occ BW % Pwr 99.00 % 0n Off x dB -26.00 dB 4.1316 MHz **Transmit Freq Error** 10.343 kHz x dB Bandwidth 4.718 MHz File Operation Status, C:\HCT.GIF file saved

■ WCDMA1900 MODE (9538 CH.) Occupied Bandwidth





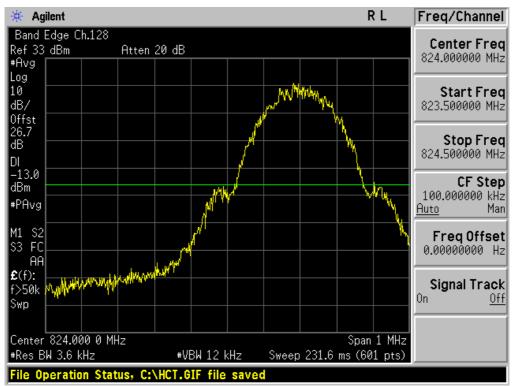
		FCC CERTIFICATION REPORT	www.hct.co.kr			
Test Report No. HCT-R-1403-F027-1	Date of Issue: March 19, 2014	EUT Type: Cellular/PCS GSM, WCDMA, LTE Phone with Bluetooth/WLAN/NFC	FCC ID: ZNFD625			



Agilent					R	L	Freq/Channel
Band Edge Ch.128 ef 33 dBm Avg	Atten 20 dB			Mkr1 8	323.995 -13.68		Center Frec 823.500000 MHz
og 0 B/ ffst							Start Fred 823.000000 MHz
6.7 B I							Stop Fred 824.000000 MH:
13.0 Bm PAvg							CF Ster 100.000000 kH: <u>Auto</u> Ma
1 S2 3 FC AA					and the second		Freq Offse 0.00000000 H
:(f):	Valey/~withthe matter	un the state of th	very for many mark	nthe verility	W ^{/#1}		Signal Tracl On <u>Of</u>
enter 823.500 0 M Res BW 3.6 kHz	Hz	 VBW 12 kHz			Span : ms (601		

■ GSM850 MODE (128 CH.) Block Edge 1

■ GSM850 MODE (128 CH.) Block Edge 2



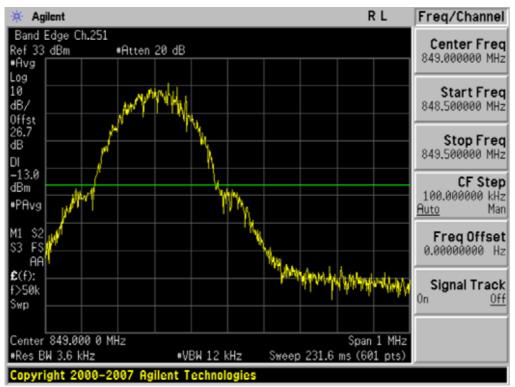
		FCC CERTIFICATION REPORT	www.hct.co.kr			
Test Report No. HCT-R-1403-F027-1	Date of Issue: March 19, 2014	EUT Type: Cellular/PCS GSM, WCDMA, LTE Phone with Bluetooth/WLAN/NFC	FCC ID: ZNFD625			
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Agilent			Г	L .	Freq/Channel
and Edge Ch.251 af 33 dBm Atte Avg	en 20 dB	M	lkr1 849.018 -14.4	1 MHz 0 dBm	Center Freq 849.500000 MHz
ig) 3/					Start Freq 849.000000 MHz
6.7 3					Stop Fred 850.000000 MHz
L3.0 1 Sm 'Avg					CF Step 100.000000 kHz <u>Auto</u> Mar
L S2					Freq Offset 0.00000000 Hz
(f): 50k /p	WWWWWWWWWWWW	unter Ministry and Andrew	Yanna <mark>h ya</mark> n ya	hi ya	Signal Track On <u>Off</u>
enter 849.500 0 MHz Res BW 3.6 kHz	#VBW 12	kHz Sweep	Span 231.6 ms (60	1 MHz 1 pts)	

■ GSM850 MODE (251 CH.) Block Edge 1

■ GSM850 MODE (251 CH.) Block Edge 2



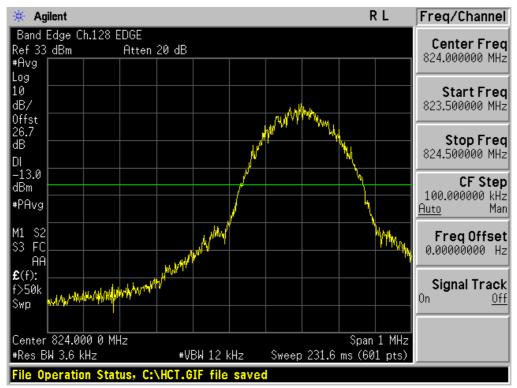
	FCC CERTIFICATION REPORT					
Test Report No. HCT-R-1403-F027-1	Date of Issue: March 19, 2014	EUT Type: Cellular/PCS GSM, WCDMA, LTE Phone with Bluetooth/WLAN/NFC	FCC ID: ZNFD625			



🗧 Agilent				RL	Freq/Channel
Band Edge Ch.128 ef 33 dBm Avg	EDGE Atten 20 dB			1.000 0 MHz -25.77 dBm	Center Freq 823.500000 MHz
og Ø B/					Start Fred 823.000000 MHz
lffst 6.7 B Il					Stop Frec 824.000000 MHz
13.0 Bm PAvg					CF Ster 100.000000 kH: <u>Auto</u> Mar
11 S2 3 FC AA				MANNA	Freq Offse 0.00000000 H:
(f): >50k	Humbrichterstrations	water and	www.www.wh		Signal Track On <u>Of</u> i
Center 823.500 0 M Res BW 3.6 kHz	1Hz			Span 1 MHz (601 pts)	

■ EDGE MODE (128 CH.) Block Edge 1

■ EDGE MODE (128 CH.) Block Edge 2



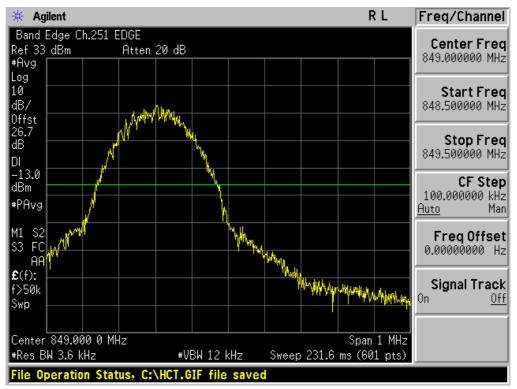
	FCC CERTIFICATION REPORT					
Test Report No. HCT-R-1403-F027-1	Date of Issue: March 19, 2014	EUT Type: Cellular/PCS GSM, WCDMA, LTE Phone with Bluetooth/WLAN/NFC	FCC ID: ZNFD625			



#Avg Log 10 dB/ Offst 26.7 dB DI -13.0 dBm	DGE Atten 20 dB				Mkr1 8		0 MHz 4 dBm	Start Freq 849.500000 MHz 849.000000 MHz 849.000000 MHz Stop Freq
10 dB/ 26.7 dB DI -13.0 dBm								849.000000 MHz Stop Freq
26.7 dB DI -13.0 dBm								Stop Fred
JBm								850.000000 MHz
ŧPAvg₁								CF Step 100.000000 kHz <u>Auto</u> Mar
								Freq Offset 0.00000000 Hz
£ (f): F>50k Swp	HANNA MANNAY	H~~,M~/H	₽╱₦ <mark>ᢣᢞᠵᠼᡀᠩ</mark>	ulu walaka ya	httle-uhyr	vtumyta	harright	Signal Track On <u>Of</u>
Center 849.500 0 MHz #Res BW 3.6 kHz		3W 12 k	(Hz	Sweep	231.6		1 MHz 1 pts)	

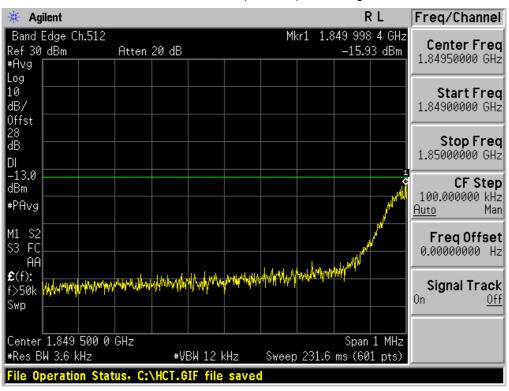
■ EDGE MODE (251 CH.) Block Edge 1

■ EDGE MODE (251 CH.) Block Edge 2



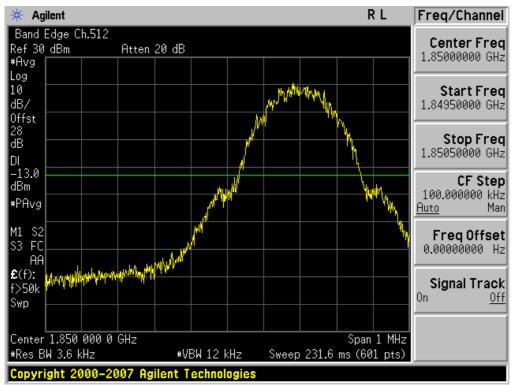
		FCC CERTIFICATION REPORT	www.hct.co.kr
Test Report No. HCT-R-1403-F027-1	Date of Issue: March 19, 2014	EUT Type: Cellular/PCS GSM, WCDMA, LTE Phone with Bluetooth/WLAN/NFC	FCC ID: ZNFD625
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■ GSM1900 MODE (512 CH.) Block Edge 1

■ GSM1900 MODE (512 CH.) Block Edge 2



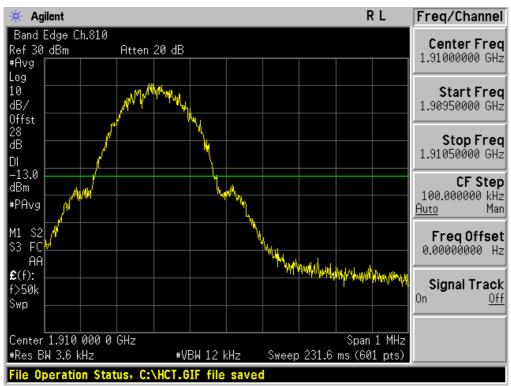
		FCC CERTIFICATION REPORT	www.hct.co.kr
Test Report No. HCT-R-1403-F027-1	Date of Issue: March 19, 2014	EUT Type: Cellular/PCS GSM, WCDMA, LTE Phone with Bluetooth/WLAN/NFC	FCC ID: ZNFD625
		Dago 42 of 62	



🗧 Agilent						RL	Freq/Channel
Band Edge Ch. Lef 33 dBm Avg	810 #Atten	20 dB		Mkr1		15 9 GHz .60 dBm	Center Freq 1.91050000 GHz
og Ø IB/							Start Fred 1.91000000 GHz
28 IB)I							Stop Fred 1.91100000 GHz
-13.0 Bm 4 PAvg Why							CF Step 100.000000 kHz <u>Auto</u> Mar
11 S2 3 FS AA	N						Freq Offset 0.00000000 Hz
2(f): >50k Wwp	Walk w putity	Madotaphillydou	vyploblog	MMMMMM	hunnun	han the	Signal Track On <u>Of</u>
Center 1.910 5 Res BW 3.6 kH		#VBW 1	2 kHz	Sweep 23	Spa 31.6 ms (6	an 1 MHz 601 pts)	

■ GSM1900 MODE (810 CH.) Block Edge 1

■ GSM1900 MODE (810 CH.) Block Edge 2



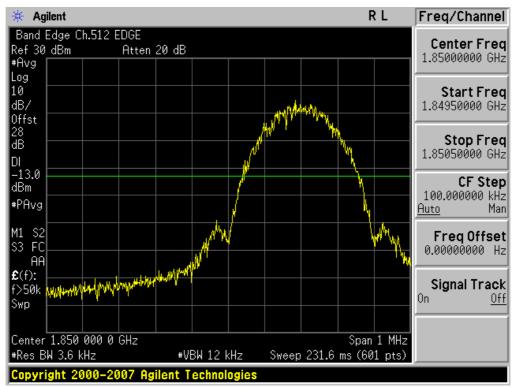
FCC CERTIFICATION REPORT					
Test Report No. HCT-R-1403-F027-1	Date of Issue: March 19, 2014	EUT Type: Cellular/PCS GSM, WCDMA, LTE Phone with Bluetooth/WLAN/NFC	FCC ID: ZNFD625		



🗧 Agilent				RL	Freq/Channel
Band Edge Ch.5 ef 30 dBm Avg	12 EDGE Atten 20 dB			976 9 GHz 31.02 dBm	Center Fred 1.84950000 GHz
og Ø B/ Iffst					Start Fred 1.84900000 GHz
:8 IB II					Stop Fred 1.85000000 GH2
13.0 Bm PAvg				1	CF Step 100.000000 kH: <u>Auto</u> Ma
11 S2 3 FC				A MAN	Freq Offset 0.00000000 Hz
	anterenter and manual the second	pharmon degranded and	politikationanapationan	/1/H/W	Signal Track On <u>Of</u>
Center 1.849 50 Res BW 3.6 kHz	0 0 GHz			pan 1 MHz (601 pts)	

■ EDGE MODE (512 CH.) Block Edge 1

■ EDGE MODE (512 CH.) Block Edge 2



	FCC CERTIFICATION REPORT				
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Base 45 of 62					



Band Edge Ch.81 Ref 30 dBm #Avg _og	0 EDGE Atten 20 dB	Mkr1 1.909	- AAA E AU	
ng l l			986 5 GHz 24.87 dBm	Center Freq 1.91050000 GHz
LOG LO dB/ Offst				Start Freq 1.91000000 GHz
28 dB DI				Stop Freq 1.91100000 GHz
-13.0 dBm #PAvg ¢				CF Step 100.000000 kHz <u>Auto</u> Mar
M1 S2 MAL S3 FC AA				Freq Offset 0.00000000 Hz
€(f): F>50k Swp	nonder and a second	malashination Million and an addition of the	enthelegionnegile	Signal Track On <u>Off</u>
Center 1.910 500 #Res BW 3.6 kHz		12 kHz Sweep 231.6 ms	òpan 1 MHz (601 pts)	

■ EDGE MODE (810 CH.) Block Edge 1

■ EDGE MODE (810 CH.) Block Edge 2



	FCC CERTIFICATION REPORT				
Test Report No. HCT-R-1403-F027-1	Date of Issue: March 19, 2014	EUT Type: Cellular/PCS GSM, WCDMA, LTE Phone with Bluetooth/WLAN/NFC	FCC ID: ZNFD625		



 Agilent 				RL	Measure
Band Edge Ch.4357 ef 23_dBm	Atten 10 dB			4.000 MHz .796 dBm	Meas Off
Avg og Ø B/ ffst			, and an		Channel Power
6.7 B I 13.0					Occupied Bk
Bm PAvg		whet a			ACF
1 S2 3 FS AA	the off whether the state of th				Multi Carrier Power
r(f): >50k wp					Power Stat CCDF
enter 824.000 MHz Res BW 100 kHz		 300 kHz Sw	Sp eep 2.12 ms (an 7 MHz 601 pts)	More 1 of 2

■ WCDMA850 MODE (4132 CH.) Block Edge

■ WCDMA850MODE (4233 CH.) Block Edge



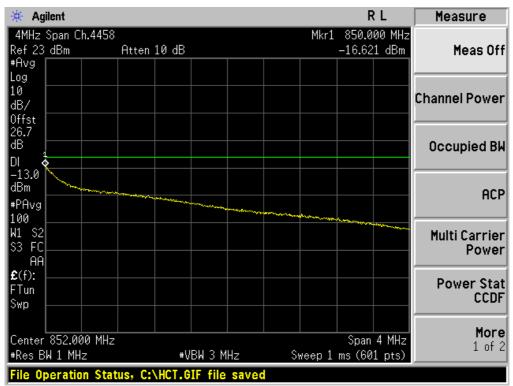
FCC CERTIFICATION REPORT					
Test Report No. HCT-R-1403-F027-1	Date of Issue: March 19, 2014	EUT Type: Cellular/PCS GSM, WCDMA, LTE Phone with Bluetooth/WLAN/NFC	FCC ID: ZNFD625		



Measure	RL								ilent	🔆 Aç
		Mkr1 823.					_	Ch.4357		
Meas Off	534 dBm	-17.5			1	10 dB	Atten		dBm	Ref 23 #Avg
										Log
Channel Dewer										10
Channel Power										dB/
										Offst 26.7
Occupied BW										20./ dB
occupied DH	1									DI
										-13.0
ACP	and all all all all all all all all all al									dBm
		and the second	manne	and a start of the start of the						#PAvg
						,	and the second		have been and the second	100
Multi Carrier										W1 S2 S3 FC
Power										AA
Der von Chad										£(f):
Power Stat CCDF										FTun
CCDF										Swp
Mana										
More 1 of 2	an 4 MHz							00 MHz		
1 01 2	601 pts)	eep1 ms(6	Sm	Ήz	BW 3 M	#V		lz	W 1 MH	#Res E
			1	save	IF file	HCT.G	us, C:`	on Stat	peratio	File O

■ WCDMA850 MODE (4132 CH.) – 4 MHz Span

■ WCDMA850MODE (4233 CH.) – 4 MHz Span



FCC CERTIFICATION REPORT					
Test Report No. HCT-R-1403-F027-1	Date of Issue: March 19, 2014	EUT Type: Cellular/PCS GSM, WCDMA, LTE Phone with Bluetooth/WLAN/NFC	FCC ID: ZNFD625		



🔆 Agilent				RL	Freq/Channel
Band Edge Ch.966 Ref 23 dBm #Avg	2 Atten 10 dB			.850 000 GHz -21.575 dBm	Center Freq 1.85000000 GHz
Log 10 dB/			aprovation of the second	and the second	Start Freq 1.84650000 GHz
Offst 28 dB DI					Stop Freq 1.85350000 GHz
-13.0 dBm #PAvg		*			CF Step 700.000000 kHz <u>Auto</u> Man
100 W1 S2 S3 FS AA	North Stanger Standard Standard				FreqOffset 0.00000000 Hz
€(f): f>50k Swp					Signal Track On <u>Off</u>
Center 1.850 000 (#Res BW 100 kHz		00 kHz	Sweep 2.12	Span 7 MHz ms (601 pts)	
File Operation St	atus, C:\HCT.GIF	file saved			

■ WCDMA1900 MODE (9262 CH.) Block Edge

■ WCDMA1900 MODE (9538 CH.) Block Edge



FCC CERTIFICATION REPORT					
Test Report No. HCT-R-1403-F027-1	Date of Issue: March 19, 2014	EUT Type: Cellular/PCS GSM, WCDMA, LTE Phone with Bluetooth/WLAN/NFC	FCC ID: ZNFD625		



		- (-	/		
🔆 Agilent				RL	Freq/Channel
4MHz Span Ch.9662 Ref 23 dBm #Avg	Atten 10 dB		Mkr1	1.849 000 GHz -17.066 dBm	Center Freq 1.84700000 GHz
Log 10 dB/					Start Freq 1.84500000 GHz
0ffst 28 dB DI					Stop Freq 1.84900000 GHz
-13.0 dBm #PAvg		and the second			CF Step 400.000000 kHz <u>Auto</u> Man
100 M1 S2 S3 FC AA					Freq Offset 0.00000000 Hz
£(f): FTun Swp					Signal Track On <u>Off</u>
Center 1.847 000 G #Res BW 1 MHz		N 3 MHz	Sweep 1	Span 4 MHz . ms (601 pts)	
File Operation Stat					

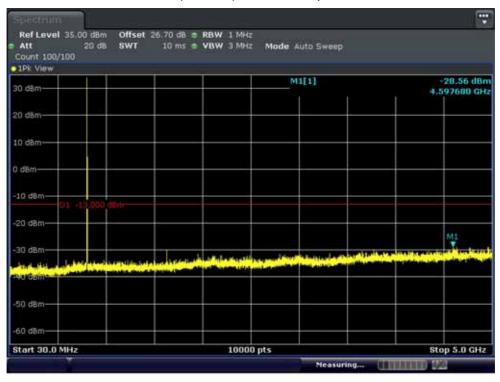
■ WCDMA1900 MODE (9262 CH.) – 4 MHz Span

■ WCDMA1900 MODE (9538 CH.) – 4 MHz Span



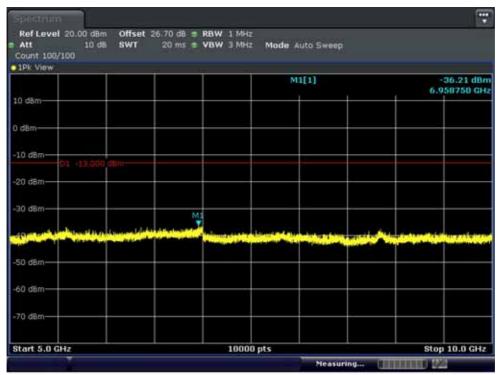
FCC CERTIFICATION REPORT			www.hct.co.kr
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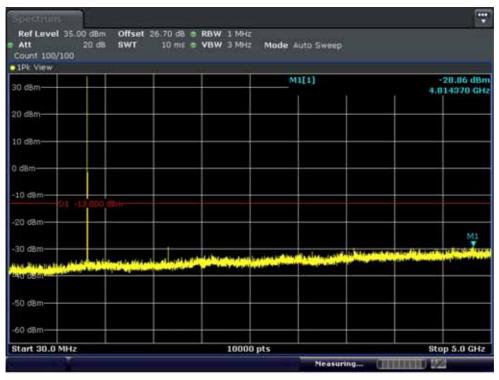
■ GSM850 MODE (128 CH.) Conducted Spurious Emissions1

■ GSM850 MODE (128 CH.) Conducted Spurious Emissions2



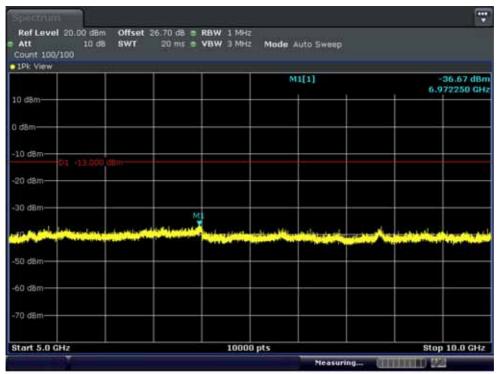
FCC CERTIFICATION REPORT			www.hct.co.kr
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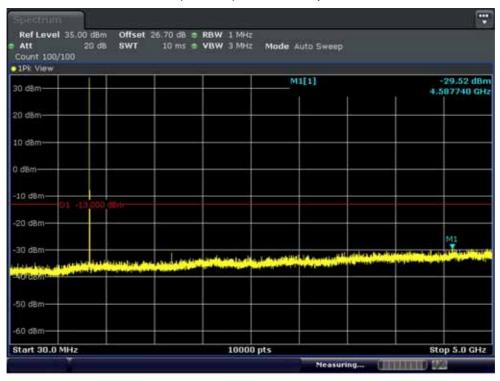
■ GSM850 MODE (190 CH.) Conducted Spurious Emissions1

■ GSM850 MODE (190 CH.) Conducted Spurious Emissions2



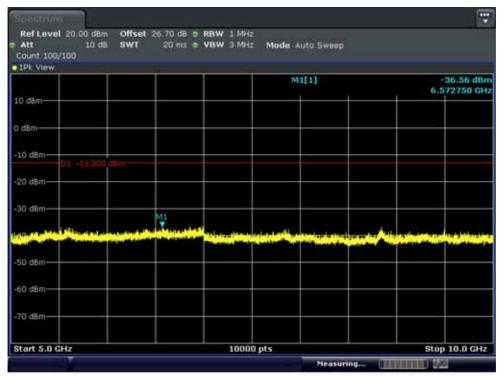
FCC CERTIFICATION REPORT			www.hct.co.kr
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Dage 52 of 62			





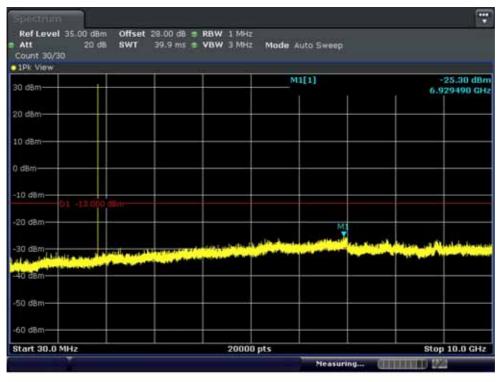
■ GSM850 MODE (251 CH.) Conducted Spurious Emissions1

■ GSM850 MODE (251 CH.) Conducted Spurious Emissions2



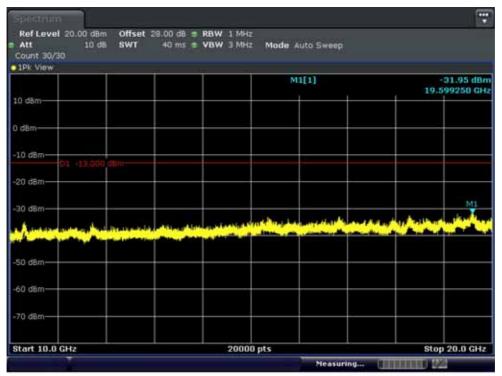
FCC CERTIFICATION REPORT			www.hct.co.kr	
Test Report No. HCT-R-1403-F027-1	Date of Issue: March 19, 2014	EUT Type: Cellular/PCS GSM, WCDMA, LTE Phone with Bluetooth/WLAN/NFC	FCC ID: ZNFD625	
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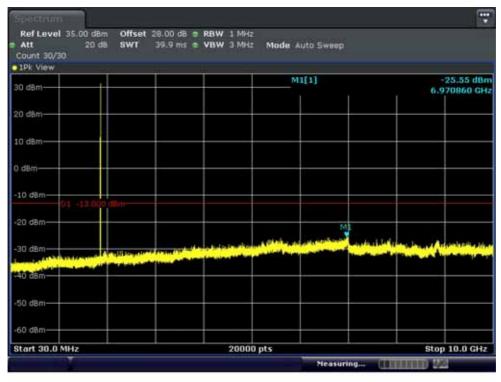
■ GSM1900 MODE (512 CH.) Conducted Spurious Emissions1

■ GSM1900 MODE (512 CH.) Conducted Spurious Emissions2



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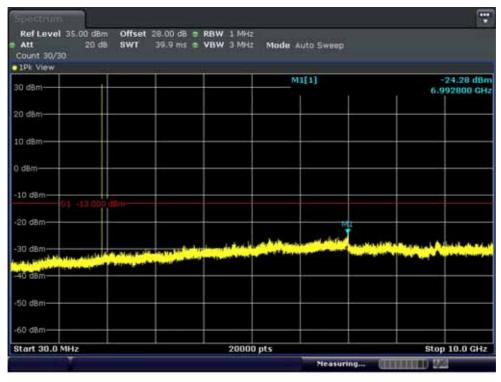
■ GSM1900 MODE (661 CH) Conducted Spurious Emissions1

■ GSM1900 MODE (661 CH.) Conducted Spurious Emissions2



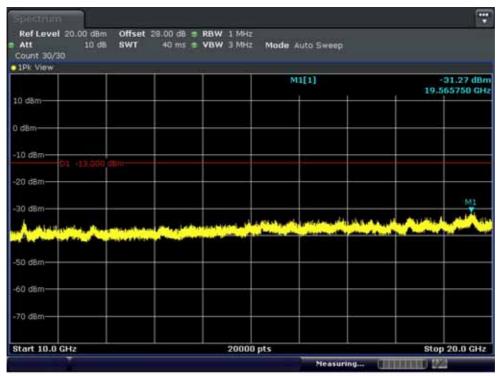
FCC CERTIFICATION REPORT			www.hct.co.kr
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■ GSM1900 MODE (810 CH.) Conducted Spurious Emissions1

■ GSM1900 MODE (810 CH.) Conducted Spurious Emissions2



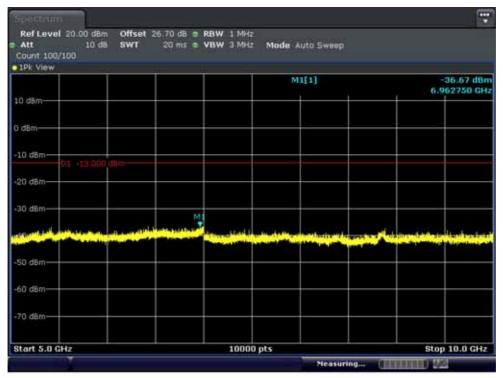
FCC CERTIFICATION REPORT			www.hct.co.kr
Test Report No. HCT-R-1403-F027-1	Date of Issue: March 19, 2014	EUT Type: Cellular/PCS GSM, WCDMA, LTE Phone with Bluetooth/WLAN/NFC	FCC ID: ZNFD625
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Ref Level 35.00 dBm Offset 26.70 dB RBW 1 MHz Att 20 dB SWT 10 ms VBW 3 MHz 10 ms 🕿 VBW 3 MHz ALL Mode Auto Sweep 1Pk View M1[1] -27.26 dBm 30 d8m 4.786040 GHz 20 dBm 10 d8m 0 dBm 10 dBm -20 dBm MI -30 dBm and the set of the set A RODENTION AND CONTRACTOR distant in the 10.010 Sundition in -50 dBm -60 dBm-Start 30.0 MHz Stop 5.0 GHz 10000 pts Measuring... CONTRACTOR OF CONTRACT, CONTRACTATACT, CONTRACTATACT, CONTRACTATACT, CONTRACTATACTATACTATACTATAT

■ WCDMA850 MODE (4132 CH.) Conducted Spurious Emissions1

■ WCDMA850 MODE (4132 CH.) Conducted Spurious Emissions2



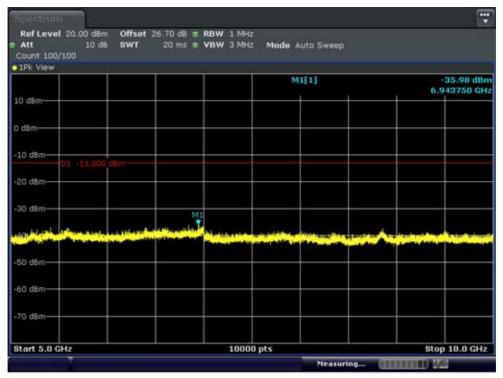
FCC CERTIFICATION REPORT			www.hct.co.kr
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Ref Level 35.00 dBm Offset 26.70 dB RBW 1 MHz Att 20 dB SWT 10 ms VBW 3 MHz 10 ms 🕿 VBW 3 MHz ALL Mode Auto Sweep 1Pk View M1[1] -29.07 dBm 30 d8m 4.596190 GHz 20 dBm 10 d8m 0 dBm -10 dBm-20 dBm MI V -30 dBm A DESCRIPTION OF THE OWNER OWNER OF THE OWNER OWNER OF THE OWNER OWNE بعاصلته ورجوان الماري الماري and stated in Alternal Loans -50 dBm -60 dBm-Start 30.0 MHz Stop 5.0 GHz 10000 pts Measuring... CONTRACTOR OF CONTRACT, CONTRACTATACT, CONTRACTATACT, CONTRACTATACT, CONTRACTATACTATACTATACTATAT

■ WCDMA850 MODE (4183 CH.) Conducted Spurious Emissions1

■ WCDMA850 MODE (4183 CH.) Conducted Spurious Emissions2



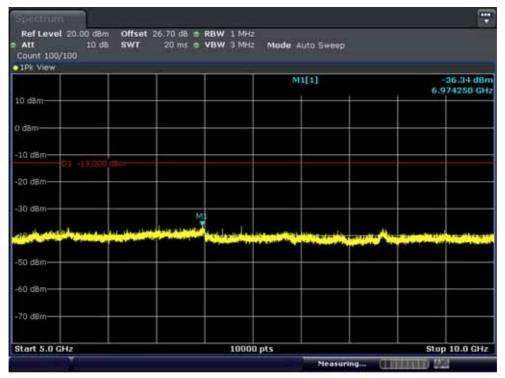
FCC CERTIFICATION REPORT			www.hct.co.kr
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Ref Level 35.00 dBm Offset 26.70 dB RBW 1 MHz Att 20 dB SWT 10 ms VBW 3 MHz 10 ms e VBW 3 MHz ALL Mode Auto Sweep 1Pk View M1[1] -29.06 dBm 30 d8m 4.701050 GHz 20 dBm 10 d8m 0 dBm -10 dBm-20 dBm MI idair inneacha a na chaidh dan 18 ann an -30 dBm allow and a state to be a lot to be atter 1 distriction -50 dBm -60 dBm-Stop 5.0 GHz Start 30.0 MHz 10000 pts Measuring...

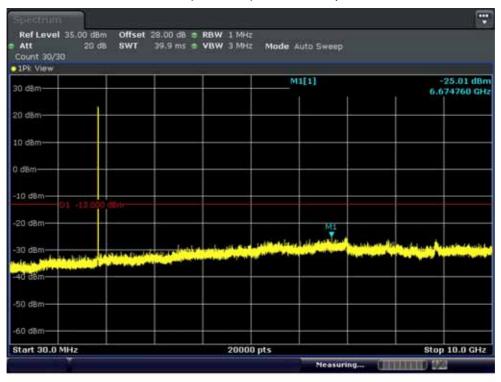
■ WCDMA850MODE (4233 CH.) Conducted Spurious Emissions1

■ WCDMA850MODE (4233 CH.) Conducted Spurious Emissions2



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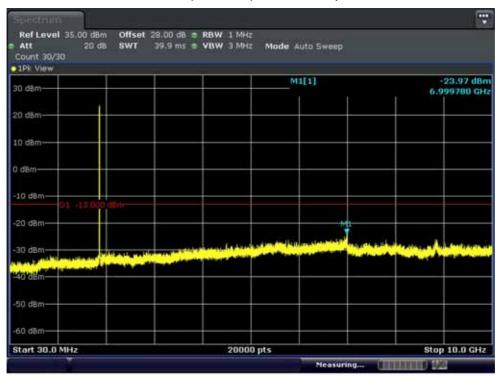
■ WCDMA1900 MODE (9262 CH.) Conducted Spurious Emissions1

■ WCDMA1900 MODE (9262 CH.) Conducted Spurious Emissions2



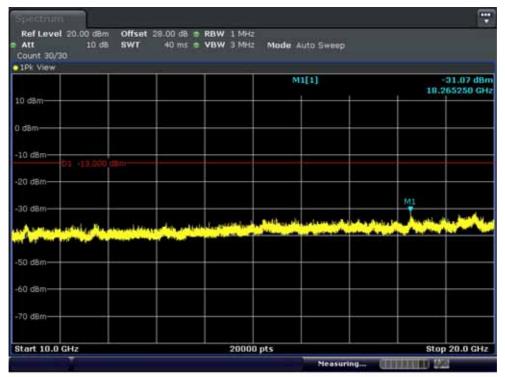
FCC CERTIFICATION REPORT			www.hct.co.kr
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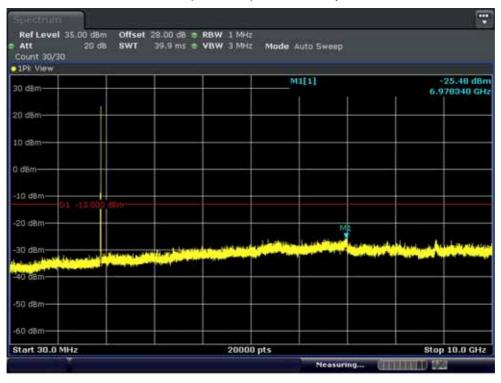
■ WCDMA1900 MODE (9400 CH.) Conducted Spurious Emissions1

■ WCDMA1900 MODE (9400 CH.) Conducted Spurious Emissions2



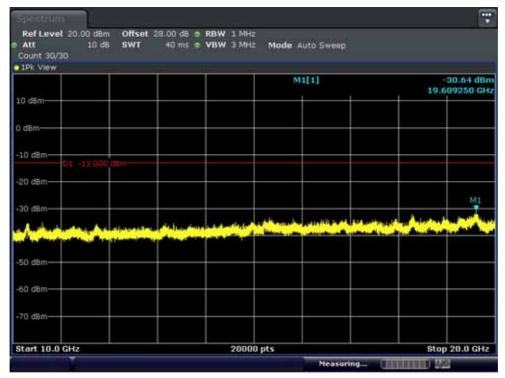
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■ WCDMA1900 MODE (9538 CH.) Conducted Spurious Emissions1

■ WCDMA1900 MODE (9538 CH.) Conducted Spurious Emissions2



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