

HCT CO., LTD.

CERTIFICATE OF COMPLIANCE FCC Certification

Applicant Name:Date of Issue:LG Electronics MobileComm U.S.A., Inc.August 02, 2013

Address:

1000 Sylvan Avenue, Englewood Cliffs NJ 07632

Date of Issue: August 02, 2013 Test Site/Location: HCT CO., LTD., 105-1, Jangam-ri, Majang-Myeon, Icheon-si, Kyunggi-Do, Korea Report No.: HCTR1308FR11

HCT FRN: 0005866421

FCC ID:

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

ZNFD605

FCC Model(s):	LG-D605
Additional FCC Model(s):	D605, LGD605
EUT Type:	Cellular/PCS GSM/GPRS/EDGE/WCDMA/HSDPA/HSUPA Phone with Bluetooth, WLAN and NFC(Felica)
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) 1 852.40 – 1 907.60 MHz (WCDMA1900)
Rx Frequency:	869.20 - 893.80 MHz (GSM850) 871.40 - 891.60 MHz (WCDMA850) 1 930.20 - 1 989.80 MHz (GSM1900) 1 932.40 – 1 987.60 MHz (WCDMA1900)
Max. RF Output Power:	0.558 W GSM850 (27.47 dBm) / 0.964 W GSM1900 (29.84 dBm) 0.234 W GSM850 EDGE (23.70 dBm) / 0.740 W GSM1900 EDGE (28.69 dBm) 0.116 W WCDMA850 (20.63 dBm) / 0.262 W WCDMA1900 (24.18 dBm)
Emission Designator(s):	246 KGXW (GSM850) 247 KGXW (GSM1900) 242 KG7W (GSM850 EDGE) 245 KG7W (GSM1900 EDGE) 4M19F9W (WCDMA850) 4M19F9W (WCDMA1900)
The measurements s	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 : Kyung Soo Kang Test engineer of RF Team

Approved by : Chang Seok Choi Manager of RF Team

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		FCC CERTIFICATION REPORT	www.hct.co.kr
Test Report No. HCTR1308FR11	Date of Issue: August 02 2013	EUT Type: Cellular/PCS GSM/GPRS/EDGE/WCDMA/HSDPA/HSUPA Phone with Bluetooth, WLAN and NFC(Felica)	FCC ID: ZNFD605
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Version

TEST REPORT NO.	DATE	DESCRIPTION
HCTR1308FR11	August 02, 2013	- First Approval Report

		FCC CERTIFICATION REPORT	www.hct.co.kr
Test Report No.	Date of Issue:	EUT Type: Cellular/PCS GSM/GPRS/EDGE/WCDMA/HSDPA/HSUPA Phone with Bluetooth, WLAN	FCC ID:
HCTR1308FR11	August 02 2013	and NFC(Felica)	ZNFD605



Table of Contents

1. GENERAL INFORMATION 4
2. INTRODUCTION
2.1. EUT DESCRIPTION
2.2. MEASURING INSTRUMENT CALIBRATION
2.3. TEST FACILITY
3. DESCRIPTION OF TESTS
3.1 ERP/EIRP RADIATED POWER AND RADIATED SPURIOUS EMISSIONS
3.2 PEAK- TO- AVERAGE RATIO
3.3 OCCUPIED BANDWIDTH
3.4 SPURIOUS AND HARMONIC EMISSIONS AT ANTENNA TERMINAL
3.5 FREQUENCY STABILITY / VARIATION OF AMBIENT TEMPERATURE
4. LIST OF TEST EQUIPMENT 12
5. SUMMARY OF TEST RESULTS
6. SAMPLE CALCULATION
7. TEST DATA
7.1 EFFECTIVE RADIATED POWER OUTPUT (GSM / WCDMA)
7.2 EQUIVALENT ISOTROPIC RADIATED POWER (GSM / WCDMA)
7.3 RADIATED SPURIOUS EMISSIONS17
7.3.1 RADIATED SPURIOUS EMISSIONS (GSM850)17
7.3.2 RADIATED SPURIOUS EMISSIONS (GSM1900)18
7.3.3 RADIATED SPURIOUS EMISSIONS (WCDMA850)19
7.3.4 RADIATED SPURIOUS EMISSIONS (WCDMA1900)
7.4 PEAK-TO-AVERAGE RATIO
7.5 OCCUPIED BANDWIDTH 22
7.6 CONDUCTED SPURIOUS EMISSIONS
7.6.1 BAND EDGE
7.7 FREQUENCY STABILITY / VARIATION OF AMBIENT TEMPERATURE
7.7.1 FREQUENCY STABILITY (GSM850) 24
7.7.2 FREQUENCY STABILITY (GSM1900)
7.7.3 FREQUENCY STABILITY (WCDMA850)
7.7.4 FREQUENCY STABILITY (WCDMA1900) 27
8. TEST PLOTS

		FCC CERTIFICATION REPORT	www.hct.co.kr
Test Report No.	Date of Issue:	EUT Type: Cellular/PCS GSM/GPRS/EDGE/WCDMA/HSDPA/HSUPA Phone with Bluetooth, WLAN	FCC ID:
HCTR1308FR11	August 02 2013	and NFC(Felica)	ZNFD605



MEASUREMENT REPORT

1. GENERAL INFORMATION

Applicant Name:	LG Electronics MobileComm U.S.A., Inc.
Address:	1000 Sylvan Avenue, Englewood Cliffs NJ 07632
FCC ID:	ZNFD605
Application Type:	Certification
FCC Classification:	Licensed Portable Transmitter Held to Ear (PCE)
FCC Rule Part(s):	§22, §24, §2
EUT Type:	Cellular/PCS GSM/GPRS/EDGE/WCDMA/HSDPA/HSUPA Phone with Bluetooth, WLAN and NFC(Felica)
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Emission Designator(s):	246 KGXW (GSM850) 247 KGXW (GSM1900) 242 KG7W (GSM850 EDGE) 245 KG7W (GSM1900 EDGE) 4M19F9W (WCDMA850) 4M19F9W (WCDMA1900)
Date(s) of Tests:	June 17, 2013 ~ July 29, 2013
Antenna Specification	Manufacturer: Ace Technology
	Antenna type: Internal Antenna
	Peak Gain: GSM850/WCDMA850 : -5.66 dBi
	GSM1900/WCDMA1900 :0.38 dBi

Test Report No. Date of Issue: EUT Type: Cellular/PCS GSM/GPRS/EDGE/WCDMA/HSDPA/HSUPA Phone with Bluetooth, WLAN FCC ID:			FCC CERTIFICATION REPORT	www.hct.co.kr
	Test Report No.	Date of Issue:	EUT Type: Cellular/PCS GSM/GPRS/EDGE/WCDMA/HSDPA/HSUPA Phone with Bluetooth, WLAN	FCC ID:
HCTR1308FR11 August 02 2013 and NFC(Felica) ZNFD605	HCTR1308FR11	August 02 2013	and NFC(Felica)	ZNFD605



2. INTRODUCTION

2.1. EUT DESCRIPTION

The LG Electronics MobileComm U.S.A., Inc. LG-D605 Cellular/PCS GSM/GPRS/EDGE/WCDMA/HSDPA/HSUPA Phone with Bluetooth, WLAN and NFC(Felica) consists of GSM850, GSM1900, WCDMA850, WCDMA1900, GPRS Class12, EDGE, HSDPA and HSUPA.

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 105-1, Jangam-ri , Majang-Myeon, Icheon-si, 467-811, KOREA.

The site is constructed in conformance with the requirements of ANSI C63.4 and CISPR Publication 22. Detailed description of test facility was submitted to the Commission and accepted dated March 02, 2011 (Registration Number: 90661)

		FCC CERTIFICATION REPORT	www.hct.co.kr
Test Report No.	Date of Issue:	EUT Type: Cellular/PCS GSM/GPRS/EDGE/WCDMA/HSDPA/HSUPA Phone with Bluetooth, WLAN	FCC ID:
HCTR1308FR11	August 02 2013	and NFC(Felica)	ZNFD605



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

		FCC CERTIFICATION REPORT	www.hct.co.kr
Test Report No.	Date of Issue:	EUT Type: Cellular/PCS GSM/GPRS/EDGE/WCDMA/HSDPA/HSUPA Phone with Bluetooth, WLAN	FCC ID:
HCTR1308FR11	August 02 2013	and NFC(Felica)	ZNFD605



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.

		FCC CERTIFICATION REPORT	www.hct.co.kr
Test Report No.	Date of Issue:	EUT Type: Cellular/PCS GSM/GPRS/EDGE/WCDMA/HSDPA/HSUPA Phone with Bluetooth, WLAN	FCC ID:
HCTR1308FR11	August 02 2013	and NFC(Felica)	ZNFD605



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).

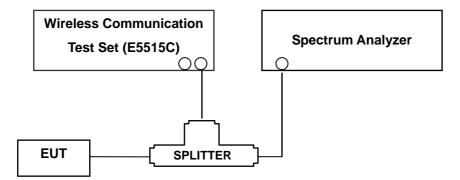
For example, add 10 log (1/0.25) = 6 dB if the duty cycle is a constant 25%.

		FCC CERTIFICATION REPORT	www.hct.co.kr
Test Report No.	Date of Issue:	EUT Type: Cellular/PCS GSM/GPRS/EDGE/WCDMA/HSDPA/HSUPA Phone with Bluetooth, WLAN	FCC ID:
HCTR1308FR11	August 02 2013	and NFC(Felica)	ZNFD605



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

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

	FCC CERTIFICATION REPORT					
LICTD1209ED11 August 02 2012 and NEC/Edico	Test Report No.	Date of Issue:	EUT Type: Cellular/PCS GSM/GPRS/EDGE/WCDMA/HSDPA/HSUPA Phone with Bluetooth, WLAN	FCC ID:		
Inclinioornii August 02 2013 Jaho NFC (Felica) Zinf Doos	HCTR1308FR11	August 02 2013	and NFC(Felica)	ZNFD605		



3.4 SPURIOUS AND HARMONIC EMISSIONS AT ANTENNA TERMINAL.

Test Procedure

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 27 dBm

= 20 dBm attenuator + 6 dBm Divider + 1 dBm RF cables.

• For GSM1900 and WCDMA1900, total offset 28 dB

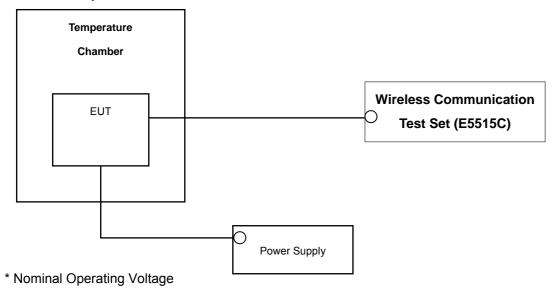
= 20 dBm attenuator + 6 dBm Divider + 2 dBm RF cables.

FCC CERTIFICATION REPORT						
Test Report No.	Date of Issue:	EUT Type: Cellular/PCS GSM/GPRS/EDGE/WCDMA/HSDPA/HSUPA Phone with Bluetooth, WLAN	FCC ID:			
HCTR1308FR11	August 02 2013	and NFC(Felica)	ZNFD605			
Page 10 of 62						



3.5 FREQUENCY STABILITY / VARIATION OF AMBIENT TEMPERATURE

Test Set-up



Test Procedure

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 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.**

FCC CERTIFICATION REPORT				
Test Report No.Date of Issue:HCTR1308FR11August 02 2013	EUT Type: Cellular/PCS GSM/GPRS/EDGE/WCDMA/HSDPA/HSUPA Phone with Bluetooth, WLAN and NFC(Felica)	FCC ID: ZNFD605		



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	09/11/2013
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	10126	Annual	11/07/2013
Digital	EP-3010/ Power Supply	3110117	Annual	11/07/2013
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	11/07/2013
Schwarzbeck	BBHA 9120D/ Horn Antenna	147	Biennial	05/15/2014
Schwarzbeck	BBHA 9120D/ Horn Antenna	937	Biennial	10/17/2013
Agilent	E4440A/Spectrum Analyzer	US45303008	Annual	04/25/2014
WEINSCHEL	ATTENUATOR	BR0592	Annual	11/07/2013
REOHDE&SCHWARZ	FSV40/Spectrum Analyzer	1307.9002K40-100931-NK	Annual	06/10/2014
Agilent	8960 (E5515C)/ Base Station	GB44400269	Annual	02/14/2014

FCC CERTIFICATION REPORT						
Test Report No.	Date of Issue:	EUT Type: Cellular/PCS GSM/GPRS/EDGE/WCDMA/HSDPA/HSUPA Phone with Bluetooth, WLAN	FCC ID:			
HCTR1308FR11	August 02 2013	and NFC(Felica)	ZNFD605			



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

FCC CERTIFICATION REPORT							
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HCTR1308FR11	August 02 2013	and NFC(Felica)	ZNFD605				



6. SAMPLE CALCULATION

A. ERP Sample Calculation

Mode	Ch./ Freq.		Measured	Substitude	Ant. Gain	C.L	Pol.	EF	RP
Wode	channel	Freq.(MHz)	Level(dBm)	LEVEL(dBm)	(dBd)	U.L	POI.	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)

FCC CERTIFICATION REPORT						
Test Report No. HCTR1308FR11	Date of Issue: August 02 2013	EUT Type: Cellular/PCS GSM/GPRS/EDGE/WCDMA/HSDPA/HSUPA Phone with Bluetooth, WLAN and NFC(Felica)	FCC ID: ZNFD605			



7. TEST DATA

7.1 EFFECTIVE RADIATED POWER OUTPUT (GSM / WCDMA)

(GSM850 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
128	824.20	-21.47	38.30	-10.61	0.95	V	0.472	26.74
190	836.60	-21.49	38.69	-10.54	0.96	V	0.524	27.19
251	848.80	-21.38	39.04	-10.47	1.10	V	0.558	27.47
EDGE 251	848.80	-25.15	35.27	-10.47	1.10	V	0.234	23.70

(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	-27.58	32.17	-10.59	0.95	V	0.116	20.63
4183	836.60	-28.66	31.52	-10.54	0.96	V	0.100	20.02
4233	846.60	-28.18	32.17	-10.48	1.11	V	0.114	20.58

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 table 3-meters from the receive antenna. The receive antenna height and turntable rotation was adjusted for the highest reading on the receive spectrum analyzer. For CDMA signals, a peak detector is used, with RBW = VBW = 3 MHz. For WCDMA signals, a peak detector is used, with RBW = VBW = 3 MHz. For WCDMA signals, a peak detector is used, with RBW = VBW = 1 MHz. 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 and 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 y plane in GSM850 and WCDMA850 mode. Also worst case of detecting Antenna is vertical polarization in GSM850 and WCDMA850 mode.

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

FCC CERTIFICATION REPORT						
Test Report No. HCTR1308FR11	Date of Issue: August 02 2013	EUT Type: Cellular/PCS GSM/GPRS/EDGE/WCDMA/HSDPA/HSUPA Phone with Bluetooth, WLAN and NFC(Felica)	FCC ID: ZNFD605			
Page 15 of 62						



7.2 EQUIVALENT ISOTROPIC RADIATED POWER (GSM / WCDMA)

(GSM1900 Mode)

Ch./	Freq.	Measured	Substitude	Ant. Gain		Pol.	EII	RP
channel	Freq.(MHz)	Level(dBm)	LEVEL (dBm)	(dBi)	C.L	F UI.	w	dBm
512	1,850.20	-10.80	21.23	10.02	1.41	Н	0.964	29.84
661	1,880.00	-11.47	20.84	10.04	1.45	Н	0.877	29.43
810	1,909.80	-11.46	20.79	10.05	1.44	V	0.871	29.40
EDGE 512	1,850.20	-11.95	20.08	10.02	1.41	Н	0.740	28.69

(WCDMA1900 Mode)

Ch./	Freq.	Measured	Substitude	Ant. Gain		Pol.	Ell	RP
channel	Freq.(MHz)	Level(dBm)	LEVEL (dBm)	(dBi)	C.L	P0I.	w	dBm
9262	1,852.40	-17.01	15.14	10.02	1.40	Н	0.238	23.76
9400	1,880.00	-17.67	14.64	10.04	1.45	Н	0.210	23.23
9538	1,907.60	-16.95	15.61	10.05	1.48	V	0.262	24.18

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. The receive antenna height and turntable rotation was adjusted for the highest reading on the receive spectrum analyzer. For CDMA signals, a peak detector is used, with RBW = VBW = 3 MHz. For WCDMA signals, a peak detector is used, with RBW = VBW = 5MHz. For AMPS, GSM, and NADC TDMA signals, a peak detector is used, with RBW = VBW = 1 MHz. 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 and 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 (z plane ch 810) and WCDMA1900 (z plane ch 9538) mode. Also worst case of detecting Antenna is in horizontal polarization in GSM1900 (vertical polarization) and WCDMA1900 (vertical polarization) mode.

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

	FCC CERTIFICATION REPORT						
Test Report No. HCTR1308FR11	Date of Issue: August 02 2013	EUT Type: Cellular/PCS GSM/GPRS/EDGE/WCDMA/HSDPA/HSUPA Phone with Bluetooth, WLAN and NFC(Felica)	FCC ID: ZNFD605				
		Page 16 of 62					



7.3 RADIATED SPURIOUS EMISSIONS 7.3.1 RADIATED SPURIOUS EMISSIONS (GSM850)

MEASURED OUTPUT POWER:	27.47 dBm = 0.558 W
MODULATION SIGNAL:	GSM850
DISTANCE:	3 meters
LIMIT: 43 + 10 log10 (W) =	40.47 dBc

Ch.	Freq.(MHz)	Measured Level	Ant. Gain (dBd)	<u>Substitute</u> <u>Level</u> [dBm]	C.L	Pol.	ERP (dBm)	dBc
	1,648.40	-51.75	7.05	-58.59	1.18	Н	-52.72	80.19
128 (824.2)	2,472.60	-45.55	7.90	-49.30	1.57	V	-42.97	70.44
	3,296.80	-57.50	9.91	-61.38	1.99	V	-53.46	80.93
	1,673.20	-51.37	7.22	-58.37	1.20	Н	-52.35	79.82
190 (836.6)	2,509.80	-41.92	8.51	-45.71	1.65	Н	-38.85	66.32
	3,346.40	-57.67	10.09	-62.06	2.00	Н	-53.97	81.44
	1,697.60	-51.21	7.34	-58.23	1.20	Н	-52.09	79.56
251 (848.8)	2,546.40	-38.23	8.61	-41.77	1.65	Н	-34.81	62.28
	3,395.20	-57.17	10.22	-61.70	1.99	Н	-53.47	80.94

 NOTES:
 1. Radiated Spurious Emission Measurements at 3 meters by Substitution Method

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

 2. The magnitude of spurious emissions attenuated more than 20dB below the limit above 5th Harmonic for

all channel.

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Test Report No.Date of Issue:HCTR1308FR11August 02 2013	EUT Type: Cellular/PCS GSM/GPRS/EDGE/WCDMA/HSDPA/HSUPA Phone with Bluetooth, WLAN and NFC(Felica)	FCC ID: ZNFD605



7.3.2 RADIATED SPURIOUS EMISSIONS (GSM1900)

MEASURED OUTPUT POWER:29.84 dBm = 0.964 WMODULATION SIGNAL:GSM1900DISTANCE:3 meters

LIMIT: 43 + 10 log10 (W) =

42.84 dBc

Ch.	Freq.(MHz)	Measured Level	Ant. Gain (dBi)	<u>Substitute</u> Level [dBm]	C.L	Pol.	EIRP (dBm)	dBc
	3,700.40	-54.19	12.27	-58.93	2.19	V	-48.85	78.69
512 (1850.2)	5,550.60	-53.17	13.40	-52.84	2.88	Н	-42.32	72.16
	7,400.80	-58.34	11.37	-48.05	3.29	Н	-39.97	69.81
	3,760.00	-48.79	12.31	-53.34	2.11	V	-43.14	72.98
661 (1880.0)	5,640.00	-57.74	13.41	-57.07	2.92	V	-46.58	76.42
	7,520.00	-56.86	11.55	-47.34	3.34	Н	-39.13	68.97
	3,819.60	-45.39	12.37	-49.87	2.14	Н	-39.64	69.48
810 (1909.8)	5,729.40	-58.76	13.42	-57.32	3.02	Н	-46.92	76.76
	7,639.20	-58.08	11.70	-48.32	3.13	V	-39.75	69.59

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. The magnitude of spurious emissions attenuated more than 20dB below the limit above 5th Harmonic for all channel.

	FCC CERTIFICATION REPORT					
Test Report No.	Date of Issue:	EUT Type: Cellular/PCS GSM/GPRS/EDGE/WCDMA/HSDPA/HSUPA Phone with Bluetooth, WLAN and NFC(Felica)	FCC ID:			
HCTR1308FR11	August 02 2013		ZNFD605			



7.3.3 RADIATED SPURIOUS EMISSIONS (WCDMA850)

 MEASURED OUTPUT POWER:
 20.63 dBm = 0.116 W

 MODULATION SIGNAL:
 WCDMA850

 DISTANCE:
 3 meters

 LIMIT: 43 + 10 log10 (W) =
 33.63 dBc

Ch.	Freq.(MHz)	Measured Level	Ant. Gain (dBd)	<u>Substitute</u> Level [dBm]	C.L	Pol.	ERP (dBm)	dBc
	1,652.80	-48.75	7.11	-55.68	1.20	Н	-49.77	70.40
4,132 (826.4)	2,479.20	-56.87	8.40	-60.76	1.62	Н	-53.98	74.61
()	3,305.60	-57.43	9.95	-61.61	1.99	Н	-53.65	74.28
	1,673.20	-49.23	7.22	-56.23	1.20	Н	-50.21	70.84
4,183 (836.6)	2,509.80	-56.44	8.51	-60.23	1.65	V	-53.37	74.00
	3,346.40	-55.47	10.09	-59.86	2.00	Н	-51.77	72.40
	1,693.20	-45.87	7.34	-52.89	1.20	Н	-46.75	67.38
4,233 (846.6)	2,539.80	-55.48	8.58	-59.40	1.65	Н	-52.47	73.10
	3,386.40	-56.60	10.19	-61.03	1.98	Н	-52.82	73.45

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. The magnitude of spurious emissions attenuated more than 20dB below the limit above 5th Harmonic for all channel.

	FCC CERTIFICATION REPORT					
Test Report No.	Date of Issue:	EUT Type: Cellular/PCS GSM/GPRS/EDGE/WCDMA/HSDPA/HSUPA Phone with Bluetooth, WLAN and NFC(Felica)	FCC ID:			
HCTR1308FR11	August 02 2013		ZNFD605			



7.3.4 RADIATED SPURIOUS EMISSIONS (WCDMA1900)

MEASURED OUTPUT POWER:	24.18 dBm = 0.262 W
MODULATION SIGNAL:	WCDMA1900
DISTANCE:	<u>3 meters</u>
LIMIT: 43 + 10 log10 (W) =	<u>37.18 dBc</u>

Ch.	Freq.(MHz)	Measured Level	Ant. Gain (dBi)	<u>Substitute</u> Level [dBm]	C.L	Pol.	EIRP (dBm)	dBc
	3,704.80	-36.00	12.27	-40.74	2.19	Н	-30.66	54.84
9262	5,557.20	-57.08	13.40	-56.75	2.88	Н	-46.23	70.41
	7,409.60	-54.15	11.37	-43.86	3.29	V	-35.78	59.96
	3,760.00	-38.71	12.31	-43.26	2.11	Н	-33.06	57.24
9400	5,640.00	-57.95	13.41	-57.28	2.92	Н	-46.79	70.97
	7,520.00	-54.44	11.55	-44.92	3.34	V	-36.71	60.89
	3,815.20	-43.22	12.37	-47.70	2.14	Н	-37.47	61.65
9538	5,722.80	-57.27	13.42	-55.83	3.02	V	-45.43	69.61
	7,630.40	-57.80	11.70	-48.04	3.13	V	-39.47	63.65

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. The magnitude of spurious emissions attenuated more than 20dB below the limit above 5th Harmonic for <u>all channel.</u>

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Test Report No.	Date of Issue:	EUT Type: Cellular/PCS GSM/GPRS/EDGE/WCDMA/HSDPA/HSUPA Phone with Bluetooth, WLAN and NFC(Felica)	FCC ID:	
HCTR1308FR11	August 02 2013		ZNFD605	



7.4 PEAK-TO-AVERAGE RATIO

		Measured	Measured	PAV	_{'g} (Duty Cy	cle)	P.A.R.	Limit	Pass
Band	Ch.	P _{Pk} (dBm)	P _{Avg} (dBm)	Tx _{Total} (ms)	Tx _{On} (ms)	Factor (dB)	= P _{Pk} - P _{Avg} (dB)	(dB)	/ Fail
GSM1900	661	30.51	20.91				0.36		Pass
GSM1900 EDGE	661	29.36	16.49	4.6232	0.5507	9.24	3.63	13	Pass
WCDMA1900	9400		CCDF Procedure						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}

FCC CERTIFICATION REPORT			
Test Report No.	Date of Issue:	EUT Type: Cellular/PCS GSM/GPRS/EDGE/WCDMA/HSDPA/HSUPA Phone with Bluetooth, WLAN	FCC ID:
HCTR1308FR11	August 02 2013	and NFC(Felica)	ZNFD605



7.5 OCCUPIED BANDWIDTH

Band	Channel	Frequency(MHz)	Data (GSM: kHz / WCDMA : MHz)
	128	824.20	243.9654
GSM850	190	836.60	245.8808
	251	848.80	243.6934
GSM850 EDGE	190	836.60	241.8246
	512	1850.20	246.9720
GSM1900 GSM1900 EDGE WCDMA850	661	1880.00	245.1067
	810	1909.80	246.6941
	512	1850.20	244.9032
	4132	826.40	4.1852
	4183	836.60	4.1700
	4233	846.60	4.1892
	9262	1852.40	4.1768
WCDMA1900	9400	1880.00	4.1907
	9538	1907.60	4.1924

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

FCC CERTIFICATION REPORT				
Test Report No.	Date of Issue:	EUT Type: Cellular/PCS GSM/GPRS/EDGE/WCDMA/HSDPA/HSUPA Phone with Bluetooth, WLAN	FCC ID:	
HCTR1308FR11	August 02 2013	and NFC(Felica)	ZNFD605	
		Base 00 (00		



7.6 CONDUCTED SPURIOUS EMISSIONS

Band	Channel	Frequency of Maximum Harmonic (GHz)	Maximum Data (dBm)
	128	4.495300	-29.20
GSM850	190	4.995780	-28.69
	251	4.738330	-28.80
	512	6.937470	-25.65
GSM1900 WCDMA850 WCDMA1900	661	6.996290	-24.77
	810	6.946440	-25.47
	4132	4.992300	-28.66
	4183	4.435660	-29.30
	4233	4.801450	-28.41
	9262	3.702700	-22.08
	9400	3.762020	-24.71
	9538	3.817350	-24.98

- 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.

Test Report No. Date of Issue: EUT Type: Cellular/PCS GSM/GPRS/EDGE/WCDMA/HSDPA/HSUPA Phone with Bluetooth, WLAN FCC ID:			FCC CERTIFICATION REPORT	www.hct.co.kr
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	HCTR1308FR11	August 02 2013	and NFC(Felica)	ZNFD605



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

OPERATING FREQUENCY:

836,600,000 Hz

190

CHANNEL:

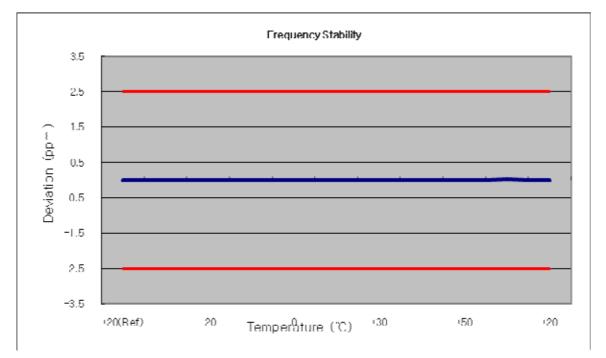
REFERENCE VOLTAGE:

<u>3.8 VDC</u>

DEVIATION LIM IT:

± 0.000 25 % or 2.5 ppm

Voltage	Power	Temp.	Frequency	Frequency	Deviation	
(%)	(VDC)	()	(Hz)	Error (Hz)	(%)	ppm
100%		+20(Ref)	836 599 991	0	0.000 000	0.000
100%		-30	836 600 001	9.60	0.000 001	0.011
100%		-20	836 599 998	7.06	0.000 001	0.008
100%		-10	836 599 982	-9.14	-0.000 001	-0.011
100%	3.800	0	836 599 978	-13.24	-0.000 002	-0.016
100%		+10	836 600 002	11.14	0.000 001	0.013
100%		+30	836 599 978	-13.38	-0.000 002	-0.016
100%		+40	836 599 982	-9.44	-0.000 001	-0.011
100%		+50	836 599 979	-11.66	-0.000 001	-0.014
115%	4.370	+20	836 600 006	15.26	0.000 002	0.018
Batt. Endpoint	3.500	+20	836 599 984	-6.88	-0.000 001	-0.008



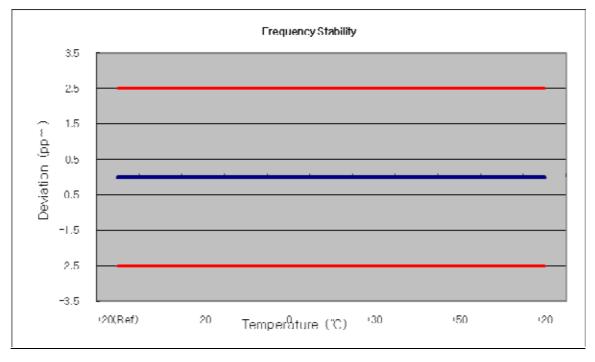
FCC CERTIFICATION REPORT							
Test Report No. HCTR1308FR11	Date of Issue: August 02 2013	EUT Type: Cellular/PCS GSM/GPRS/EDGE/WCDMA/HSDPA/HSUPA Phone with Bluetooth, WLAN and NFC(Felica)	FCC ID: ZNFD605				
	Dage 24 of 62						



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)	1880 000 015	0	0.000 000	0.000
100%		-30	1879 999 993	-22.54	-0.000 001	-0.012
100%		-20	1879 999 989	-26.21	-0.000 001	-0.014
100%		-10	1879 999 994	-21.45	-0.000 001	-0.011
100%	3.800	0	1879 999 998	-17.14	-0.000 001	-0.009
100%		+10	1879 999 991	-24.33	-0.000 001	-0.013
100%		+30	1879 999 994	-20.92	-0.000 001	-0.011
100%	-	+40	1879 999 996	-19.49	-0.000 001	-0.010
100%		+50	1879 999 991	-24.38	-0.000 001	-0.013
115%	4.370	+20	1879 999 999	-16.40	-0.000 001	-0.009
Batt. Endpoint	3.500	+20	1879 999 998	- 17.59	-0.000 001	-0.009



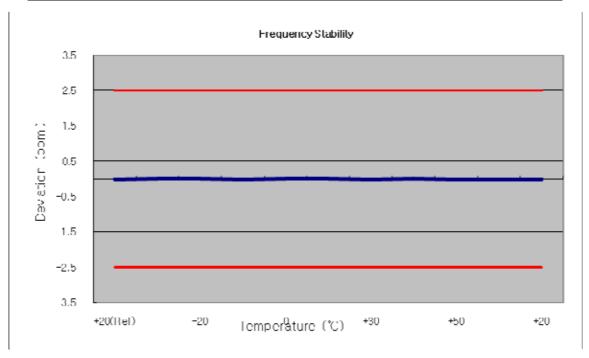
FCC CERTIFICATION REPORT						
Test Report No. HCTR1308FR11	Date of Issue: August 02 2013	EUT Type: Cellular/PCS GSM/GPRS/EDGE/WCDMA/HSDPA/HSUPA Phone with Bluetooth, WLAN and NFC(Felica)	FCC ID: ZNFD605			
Dage 25 of 62						



7.7.3 FREQUENCY STABILITY (WCDMA850)

OPERATING FREQUENCY:	836,600,000 Hz
CHANNEL:	<u>4183</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)	836 599 997	0	0.000 000	0.000
100%		-30	836 600 002	1.95	0.000 000	0.002
100%		-20	836 600 002	1.88	0.000 000	0.002
100%	3.800	-10	836 599 998	-2.34	0.000 000	-0.003
100%		0	836 600 003	2.73	0.000 000	0.003
100%		+10	836 600 002	1.58	0.000 000	0.002
100%		+30	836 599 998	-1.75	0.000 000	-0.002
100%		+40	836 600 002	2.30	0.000 000	0.003
100%		+50	836 599 998	-1.98	0.000 000	-0.002
115%	4.370	+20	836 599 998	-2.23	0.000 000	-0.003
Batt. Endpoint	3.500	+20	836 599 999	-1.41	0.000 000	-0.002



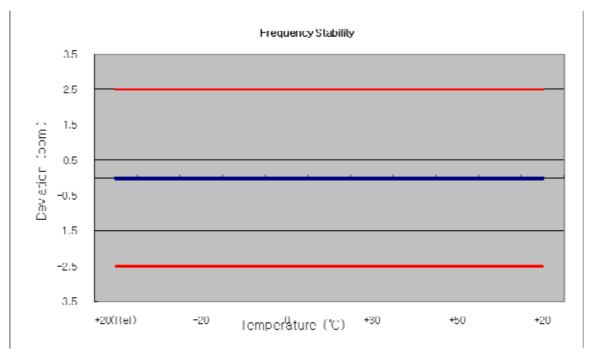
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Test Report No. HCTR1308FR11	Date of Issue: August 02 2013	EUT Type: Cellular/PCS GSM/GPRS/EDGE/WCDMA/HSDPA/HSUPA Phone with Bluetooth, WLAN and NFC(Felica)	FCC ID: ZNFD605
		Page 26 of 62	



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)	1880 000 008	0	0.000 000	0.000
100%		-30	1879 999 991	-8.95	0.000 000	-0.005
100%		-20	1879 999 991	-8.76	0.000 000	-0.005
100%	3.800	-10	1879 999 990	-10.47	-0.000 001	-0.006
100%		0	1879 999 990	-10.11	-0.000 001	-0.005
100%		+10	1879 999 991	-8.82	0.000 000	-0.005
100%		+30	1879 999 991	-9.11	0.000 000	-0.005
100%		+40	1879 999 990	-9.57	-0.000 001	-0.005
100%		+50	1879 999 989	-11.07	-0.000 001	-0.006
115%	4.370	+20	1879 999 991	-8.84	0.000 000	-0.005
Batt. Endpoint	3.500	+20	1879 999 992	-8.33	0.000 000	-0.004



		FCC CERTIFICATION REPORT	www.hct.co.kr
Test Report No. HCTR1308FR11	Date of Issue: August 02 2013	EUT Type: Cellular/PCS GSM/GPRS/EDGE/WCDMA/HSDPA/HSUPA Phone with Bluetooth, WLAN and NFC(Felica)	FCC ID: ZNFD605
		Page 27 of 62	



8. TEST PLOTS

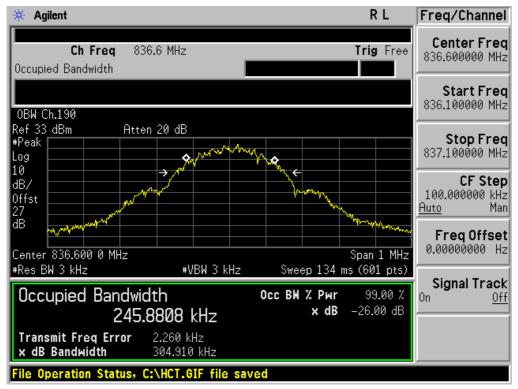
		FCC CERTIFICATION REPORT	www.hct.co.kr
Test Report No. HCTR1308FR11	Date of Issue: August 02 2013	EUT Type: Cellular/PCS GSM/GPRS/EDGE/WCDMA/HSDPA/HSUPA Phone with Bluetooth, WLAN and NFC(Felica)	FCC ID: ZNFD605
		Baga 28 of 62	



■ GSM850 MODE (128 CH.) Occupied Bandwidth



■ GSM850 MODE (190 CH.) Occupied Bandwidth



		FCC CERTIFICATION REPORT	www.hct.co.kr	
Test Report No. HCTR1308FR11	Date of Issue: August 02 2013	EUT Type: Cellular/PCS GSM/GPRS/EDGE/WCDMA/HSDPA/HSUPA Phone with Bluetooth, WLAN and NFC(Felica)	FCC ID: ZNFD605	
Page 29 of 62				



GSM850 MODE (251 CH.) Occupied Bandwidth



■ GSM850 EDGE (190 CH.) Occupied Bandwidth



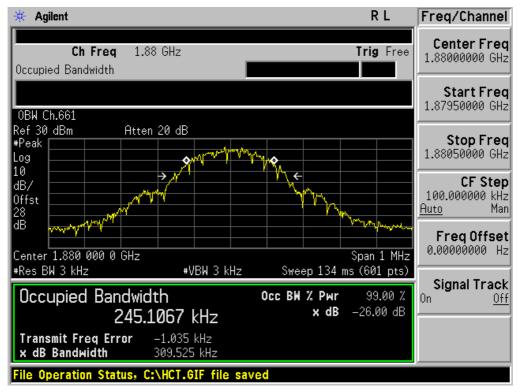
		FCC CERTIFICATION REPORT	www.hct.co.kr		
Test Report No. HCTR1308FR11	Date of Issue: August 02 2013	EUT Type: Cellular/PCS GSM/GPRS/EDGE/WCDMA/HSDPA/HSUPA Phone with Bluetooth, WLAN and NFC(Felica)	FCC ID: ZNFD605		
	Page 30 of 62				



🔆 Agilent RL Freg/Channel **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 Atten 20 dB Stop Freq #Peak w.w 1.85070000 GHz Log ٥ ê 10 ¢ ÷ **CF** Step dB/ 100.000000 kHz Offst 28 Man Auto dB Freq Offset 0.00000000 Hz Center 1.850 200 0 GHz Span 1 MHz #Res BW 3 kHz ₩VBW 3 kHz Sweep 134 ms (601 pts) Signal Track Occupied Bandwidth Occ BW % Pwr 99.00 % 0n Off x dB -26.00 dB 246.9720 kHz **Transmit Freq Error** 2.794 kHz x dB Bandwidth 312.084 kHz le Operation Status, C:\HCT.GIF file saved

■ GSM1900 MODE (512 CH.) Occupied Bandwidth

■ GSM1900 MODE (661 CH.) Occupied Bandwidth



		FCC CERTIFICATION REPORT	www.hct.co.kr		
Test Report No. HCTR1308FR11	Date of Issue: August 02 2013	EUT Type: Cellular/PCS GSM/GPRS/EDGE/WCDMA/HSDPA/HSUPA Phone with Bluetooth, WLAN and NFC(Felica)	FCC ID: ZNFD605		





GSM1900 MODE (810 CH.) Occupied Bandwidth

■ GSM1900 EDGE (512 CH.) Occupied Bandwidth



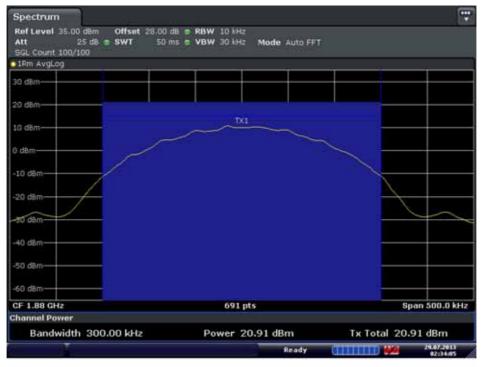
		FCC CERTIFICATION REPORT	www.hct.co.kr		
Test Report No. HCTR1308FR11	Date of Issue: August 02 2013	EUT Type: Cellular/PCS GSM/GPRS/EDGE/WCDMA/HSDPA/HSUPA Phone with Bluetooth, WLAN and NFC(Felica)	FCC ID: ZNFD605		
	Page 32 of 62				



Spectrum			
RefLevel 40.00 dBm Offset 29.1 Att 30 dB SWT 1 SGL Count 100/100		ode Auto FFT	
1Pk Max			
	- M3.	M1[1]	30.51 dBn 1.87996820 GH
30 dBm			
20 dBm			
10 dBm			
) dBm			
10 dBm			
20 dBm			
30 dBm			
40 dBm			
50 dBm			
CF 1.88 GHz	691 pts		Span 2.0 MHz
		Ready 🚺	29.07.2010 02.016-02

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

Date: 29.JUL.2013 02:34:48



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

Dete: 29.JUL.2013 02:34:06

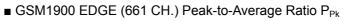
FCC CERTIFICATION REPORT					
Test Report No. HCTR1308FR11	Date of Issue: August 02 2013	EUT Type: Cellular/PCS GSM/GPRS/EDGE/WCDMA/HSDPA/HSUPA Phone with Bluetooth, WLAN and NFC(Felica)	FCC ID: ZNFD605		
Page 33 of 62					



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

Spect	rum							
Att SGL			Offset 28.00 dB e SWT 10 ms	e RBW 1 MHz e VBW 3 MHz				
O IPK A	värod	}						a des se s
30 d8m	+	M	D2			(1) (1)	-0.27 550.7 30.43 d	
20 dBm	\rightarrow			_				1.9130 ms
10 d8m	4							
0 dBm-	\rightarrow							
-10 dBr	+			+				
-20 dBn	s			_				
Why why 30 dan	usul	andurpart	Whitehorentia	lander-contentration	the works and the	ellopar	of moundation while for your	
-40 d8n	-							
-S0 dBr							_	
CF 1.8	8 GH	2		691 pt	ls			1.0 ms/
Marker								
Туре	Ref	Trc	Stimulus	Response	Funct	ion	Function Result	
M1 D1	M	1	1.913 ms 4.6232 ms	30.43 dBm -0.01 dB				
D2	M1		550.7 µs	-0.27 dB				
01		¥.			R	eady	COMPANYAR DO	29.47.2013 92:35:35

Date: 29.JUL.2013 02:36:36

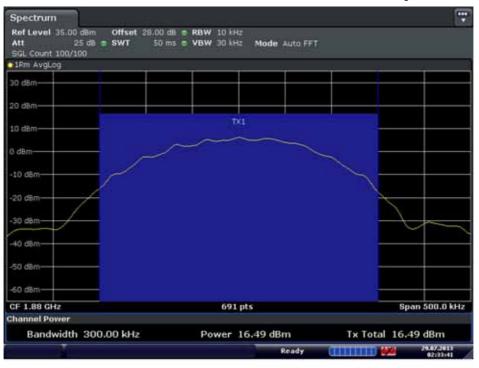


RefLevel 40.00 dBm Att 30 dB	S C RBW 1 MHz S C VBW 3 MHz M	ode Auto FFT		
SGL Count 100/100				
	M	M1[1]	29.36 dB 1.87999138 GF	
30 dBm				
30.48m				
10 dBm				
) dBm				
10 dBm				
20 dBm				
30 dBm	 			
40 dBm				
50 dBm				
CF 1.88 GHz	691 pts		Span 2.0 MH	

Date: 29.JUL.2013 02:35:15

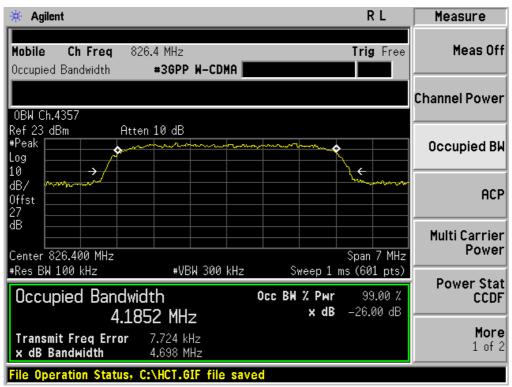
FCC CERTIFICATION REPORT					
Test Report No. HCTR1308FR11	Date of Issue: August 02 2013	EUT Type: Cellular/PCS GSM/GPRS/EDGE/WCDMA/HSDPA/HSUPA Phone with Bluetooth, WLAN and NFC(Felica)	FCC ID: ZNFD605		
Pane 34 of 62					





■ GSM1900 EDGE (661 CH.) Peak-to-Average Ratio PAvg

Date: 29.JUL.2013 02:33:41

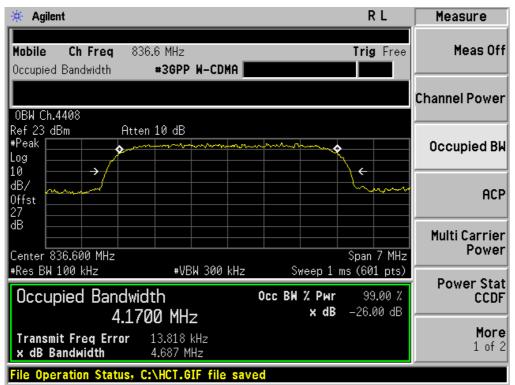


■ WCDMA850 MODE (4132 CH.) Occupied Bandwidth

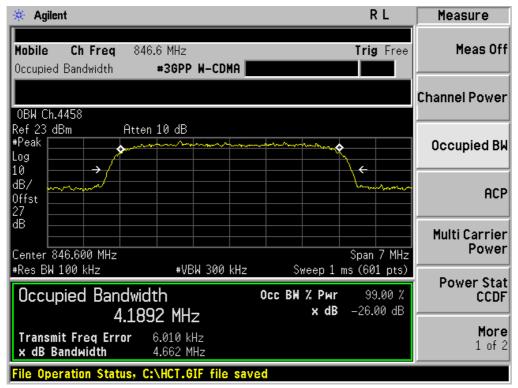
FCC CERTIFICATION REPORT					
Test Report No. HCTR1308FR11	Date of Issue: August 02 2013	EUT Type: Cellular/PCS GSM/GPRS/EDGE/WCDMA/HSDPA/HSUPA Phone with Bluetooth, WLAN and NFC(Felica)	FCC ID: ZNFD605		
Dage 25 of 62					



■ WCDMA850 MODE (4183 CH.) Occupied Bandwidth



■ WCDMA850MODE (4233 CH.) Occupied Bandwidth



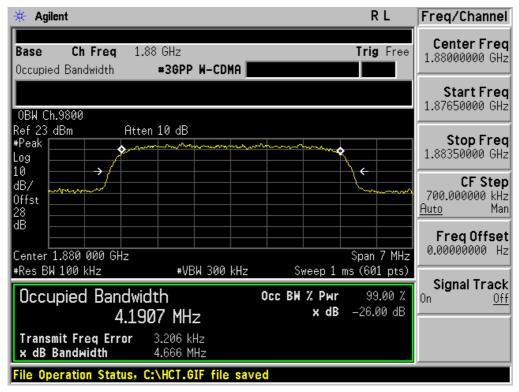
FCC CERTIFICATION REPORT					
Test Report No. HCTR1308FR11	Date of Issue: August 02 2013	EUT Type: Cellular/PCS GSM/GPRS/EDGE/WCDMA/HSDPA/HSUPA Phone with Bluetooth, WLAN and NFC(Felica)	FCC ID: ZNFD605		
Page 36 of 62					



🔆 Agilent RL Freg/Channel **Center Freq** Base Ch Freq 1.8524 GHz Trig Free 1.85240000 GHz Occupied Bandwidth #3GPP W-CDMA Start Freq 1.84890000 GHz 0BW Ch.9662 Ref 23_dBm Atten 10 dB Stop Freq #Peak ò 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 #Res BW 100 kHz #VBW 300 kHz Sweep 1 ms (601 pts) Signal Track Occupied Bandwidth Occ BW % Pwr 99.00 % 0n Off x dB -26.00 dB 4.1768 MHz **Transmit Freq Error** 27.803 kHz x dB Bandwidth 4.670 MHz File 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. HCTR1308FR11	Date of Issue: August 02 2013	EUT Type: Cellular/PCS GSM/GPRS/EDGE/WCDMA/HSDPA/HSUPA Phone with Bluetooth, WLAN and NFC(Felica)	FCC ID: ZNFD605		
	Deep 27 of 62				



🔆 Agilent RL Freg/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 Atten 10 dB Stop Freq #Peak ۵ 1.91110000 GHz Log 10 ÷ \rightarrow **CF** Step dB/ 700.000000 kHz Offst 28 dB Man Auto Freq Offset 0.00000000 Hz Center 1.907 600 GHz Span 7 MHz #Res BW 100 kHz #VBW 300 kHz Sweep 1 ms (601 pts) Signal Track Occupied Bandwidth Occ BW % Pwr 99.00 % 0n Off x dB -26.00 dB 4.1924 MHz **Transmit Freq Error** -8.133 kHz x dB Bandwidth 4.690 MHz File Operation Status, C:\HCT.GIF file saved

■ WCDMA1900 MODE (9538 CH.) Occupied Bandwidth

■ WCDMA1900 MODE (9400 CH.) Peak-to-Average Ratio



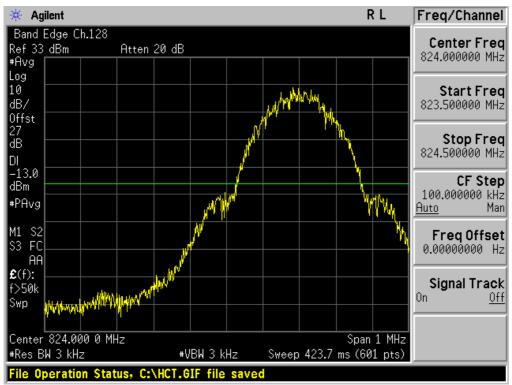
FCC CERTIFICATION REPORT					
Test Report No. HCTR1308FR11	Date of Issue: August 02 2013	EUT Type: Cellular/PCS GSM/GPRS/EDGE/WCDMA/HSDPA/HSUPA Phone with Bluetooth, WLAN and NFC(Felica)	FCC ID: ZNFD605		



🔆 Agilent					R	2 L	Freq/Channel
Band Edge Ch.128				Mkr1 🗧	823.996		Center Freq
Ref 33 dBm PAvg	Atten 20 dB				-16.2	6 dBm	823.500000 MHz
.og							
.0							Start Fred
IB/							823.000000 MHz
)ffst							
27 IB	<u> </u>						Stop Fred
							824.000000 MHz
-13.0							
JBm Hand						1	CF Step
PAvg						AN NY	100.000000 kHz Auto Mar
-	<u> </u>						
11 S2						NN -	Freq Offse
53 FC					- M	<u>ייוי</u>	0.00000000 H;
AA S(f):					a M		
>50k				ارب ا	<i>v₩</i>		Signal Track
Sum I				MMM ^{MM®®®}			0n <u>Of</u> f
material and a second	where the second second second	h hay ya pakay	ulul c .	Ϋ́,			
Center 823.500 0 M	ч Нz				Span	1 MHz	
Res BW 3 kHz		'BW 3 kHz	Sweep	423.7	ms (60		
ile Operation Sta	tus, C:\HCT.G	IF file say	/ed				

■ GSM850 MODE (128 CH.) Block Edge 1

■ GSM850 MODE (128 CH.) Block Edge 2



	FCC CERTIFICATION REPORT			
Test Report No.	Date of Issue:	EUT Type: Cellular/PCS GSM/GPRS/EDGE/WCDMA/HSDPA/HSUPA Phone with Bluetooth, WLAN	FCC ID:	
HCTR1308FR11	August 02 2013	and NFC(Felica)	ZNFD605	
		Bage 30 of 63		



Band Edge Ch.251 Mkr1 Ref 33 dBm Atten 20 dB #Avg Log 10 dB/ 0ffst 27 dB Image: Ch.251 million of the second secon	849.018 1 MHz	Freq/Channel
10 dB/ 0ffst 27 dB DI -13.0 dBm #PAvg M1 S2 S3 FC AA £(f): f>50k	-13.58 dBm	Center Freq 849.500000 MHz
27 dB DI -13.0 dBm #PAvg M1 \$2 \$3 FC AA £(f): f>50k		Start Freq 849.000000 MHz
dBm #PAvg M1 S2 S3 FC AA £(f): f>50k M1 MM A M/A C		Stop Freq 850.000000 MHz
S3 FC 4 AA £(f): f>50k		CF Step 100.000000 kHz <u>Auto</u> Mar
f>50k http://www.lake.com/		Freq Offset 0.00000000 Hz
L. LILL MANAGEMENT AND A CONTRACT AND A CONT	1. Martin Mar	Signal Track On <u>Off</u>
Center 849.500 0 MHz #Res BW 3 kHz Sweep 423	Span 1 MHz 7 ms (601 pts)	

■ GSM850 MODE (251 CH.) Block Edge 1

■ GSM850 MODE (251 CH.) Block Edge 2



		FCC CERTIFICATION REPORT	www.hct.co.kr
Test Report No.	Date of Issue:	EUT Type: Cellular/PCS GSM/GPRS/EDGE/WCDMA/HSDPA/HSUPA Phone with Bluetooth, WLAN	FCC ID:
HCTR1308FR11	August 02 2013	and NFC(Felica)	ZNFD605
		Dogo 40 of 62	



		(
🔆 Agilent				RL	Freq/Channel
Band Edge Ch.1 Ref 33 dBm #Avg	28 EDGE Atten 20 dB		Mkr1 82	23.996 7 MHz -23.50 dBm	Center Freq 823.500000 MHz
Log 10 dB/ Offst					Start Freq 823.000000 MHz
27 dB DI					Stop Freq 824.000000 MHz
-13.0 dBm #PAvg					CF Step 100.000000 kHz <u>Auto</u> Man
M1 S2 S3 FC AA				. allow all 1	Freq Offset 0.00000000 Hz
£(f): f>50k Swp			who and who have	WW ^{WV}	Signal Track On <u>Off</u>
Center 823.500 #Res BW 3 kHz	<u>сиситуу б</u> инининининининининин 0 MHz +VBW :	M^{ara}lla^alla^a 3 kHz – S	ү ү Бweep 423.7 m	Span 1 MHz s (601 pts)	
	Status, C:\HCT.GIF f				

■ EDGE MODE (128 CH.) Block Edge 1

■ EDGE MODE (128 CH.) Block Edge 2



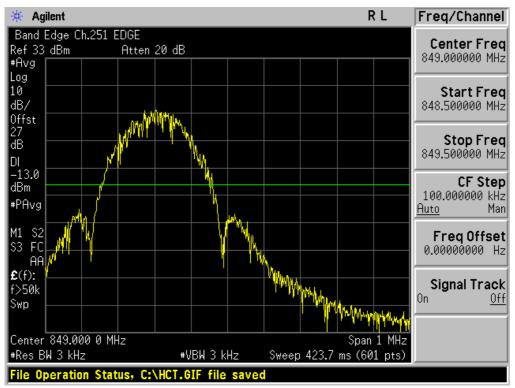
		FCC CERTIFICATION REPORT	www.hct.co.kr
Test Report No. HCTR1308FR11	Date of Issue: August 02 2013	EUT Type: Cellular/PCS GSM/GPRS/EDGE/WCDMA/HSDPA/HSUPA Phone with Bluetooth, WLAN and NFC(Felica)	FCC ID: ZNFD605
-		Page 41 of 62	



		,	- D I	
🔆 Agilent			RL	Freq/Channel
Band Edge Ch.251 EDGE Ref 33 dBm Atten ; #Avg	20 dB	Mkr1	849.018 1 MHz -24.15 dBm	Center Freq 849.500000 MHz
_og L0 dB/ Offst				Start Frec 849.000000 MHz
27 dB DI				Stop Frec 850.000000 MHz
-13.0 dBm #PAvg				CF Step 100.000000 kHz <u>Auto</u> Mar
M1 S2 S3 FC AA				Freq Offset 0.00000000 Hz
E(f): F>50k Swp	Photoscolu			Signal Track On <u>Of</u>
	a standard lawyed between the	homenter		
Center 849.500 0 MHz #Res BW 3 kHz	#VBW 3 kHz	Sweep 423.7	Span 1 MHz ms (601 pts)	
File Operation Status, C:\	HCT.GIF file sav	ed		

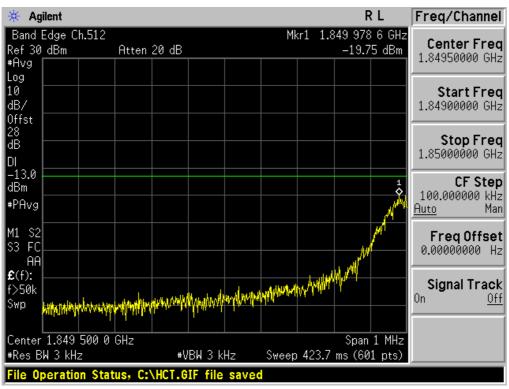
■ EDGE MODE (251 CH.) Block Edge 1

■ EDGE MODE (251 CH.) Block Edge 2



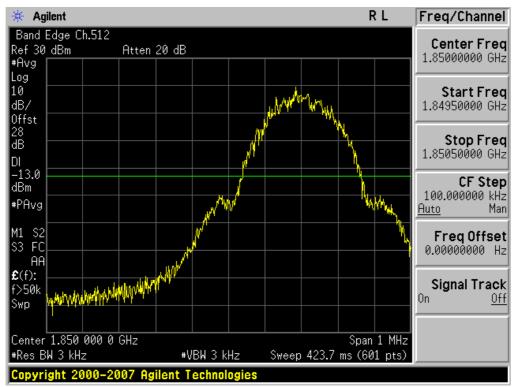
		FCC CERTIFICATION REPORT	www.hct.co.kr		
Test Report No.	Date of Issue:	EUT Type: Cellular/PCS GSM/GPRS/EDGE/WCDMA/HSDPA/HSUPA Phone with Bluetooth, WLAN	FCC ID:		
HCTR1308FR11	August 02 2013	and NFC(Felica)	ZNFD605		





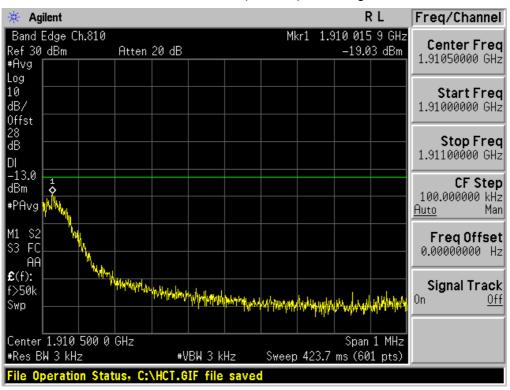
■ GSM1900 MODE (512 CH.) Block Edge 1

■ GSM1900 MODE (512 CH.) Block Edge 2



	FCC CERTIFICATION REPORT				
Test Report No.	Date of Issue:	EUT Type: Cellular/PCS GSM/GPRS/EDGE/WCDMA/HSDPA/HSUPA Phone with Bluetooth, WLAN	FCC ID:		
HCTR1308FR11	August 02 2013	and NFC(Felica)	ZNFD605		





■ GSM1900 MODE (810 CH.) Block Edge 1

■ GSM1900 MODE (810 CH.) Block Edge 2



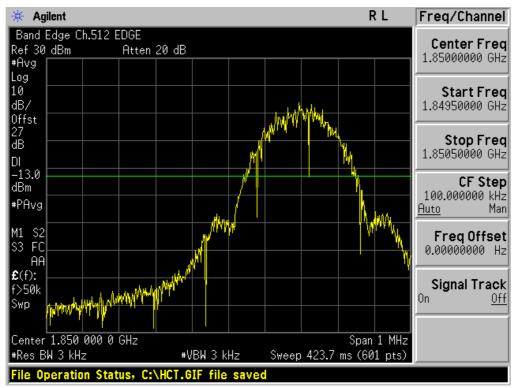
		FCC CERTIFICATION REPORT	www.hct.co.kr
Test Report No. HCTR1308FR11	Date of Issue: August 02 2013	EUT Type: Cellular/PCS GSM/GPRS/EDGE/WCDMA/HSDPA/HSUPA Phone with Bluetooth, WLAN and NFC(Felica)	FCC ID: ZNFD605
		Dage 11 of 63	



🔆 Agilent				RL	Freq/Channel
Band Edge Ch.5			Mkr1 1.8	349 986 8 GHz	
Ref 30_dBm	Atten 20 dB			-25.88 dBm	1.84950000 GHz
ŧAvg					1.04030000 01/2
.og					Charles France
10 187					Start Fred
)ffst					1.84900000 GH:
27					
iB					Stop Free
or I I					1.85000000 GH:
-13.0					05.04-1
dBm					CF Step
PAvg					100.000000 kH Auto Ma
41 S2				w Phil	Freq Offse
3 FC				<u>,^1 '</u>	0.00000000 H
AA				M	
E(f):				L ALCONN	Signal Traal
:>50k			Anthen the	H Y Y	Signal Track
Swp	Lalers & La Koth date	LLANWARM WWW	had the all you will be a		
and the second second	White was how was how how	and the second		'	
Center 1.849 50	0 0 GHz			Span 1 MHz	
Res BW 3 kHz		3W 3 kHz	Sweep 423.7	ms (601 pts)	
	Status, C:\HCT.GI				

■ EDGE MODE (512 CH.) Block Edge 1

■ EDGE MODE (512 CH.) Block Edge 2



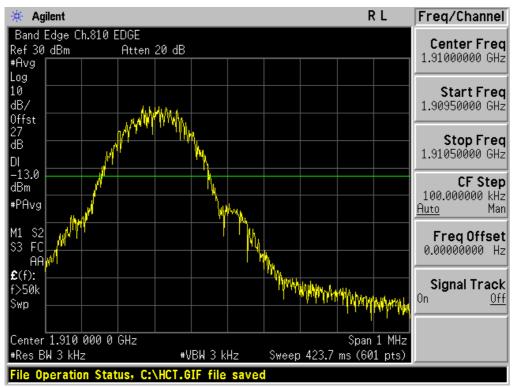
		FCC CERTIFICATION REPORT	www.hct.co.kr
Test Report No.	Date of Issue:	EUT Type: Cellular/PCS GSM/GPRS/EDGE/WCDMA/HSDPA/HSUPA Phone with Bluetooth, WLAN	FCC ID:
HCTR1308FR11	August 02 2013	and NFC(Felica)	ZNFD605
		Page 45 of 62	



Band Edge Ch.810				Freq/Channel
Ref30 dBm ⊧Avg	EDGE Atten 20 dB	M	kr1 1.910 003 8 -22.21 d	
.og LØ HB/ Dffst				Start Freq 1.91000000 GHz
27 18				Stop Freq 1.91100000 GHz
-13.0 JBm 1 PAvg MIN				CF Step 100.000000 kHz <u>Auto</u> Man
11 S2 14 S3 FC 44 AA				Freq Offset 0.00000000 Hz
E(f):	Ny Mphy provident hour	here way and wanted	- Mallek Managana ang ang ang ang ang ang ang ang	Signal Track On <u>Off</u>
Center 1.910 500 0 +Res BW 3 kHz		3 kHz Sweep	Span 1 9 423.7 ms (601 p	

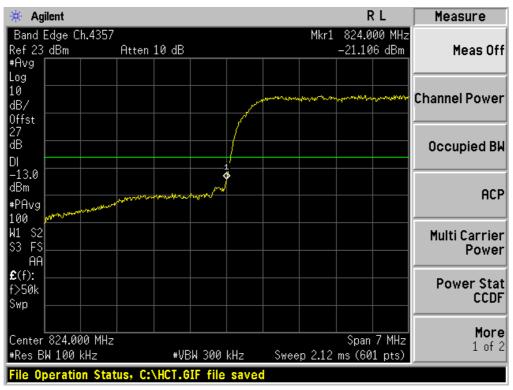
■ EDGE MODE (810 CH.) Block Edge 1

■ EDGE MODE (810 CH.) Block Edge 2



		FCC CERTIFICATION REPORT	www.hct.co.kr
Test Report No.	Date of Issue:	EUT Type: Cellular/PCS GSM/GPRS/EDGE/WCDMA/HSDPA/HSUPA Phone with Bluetooth, WLAN	FCC ID:
HCTR1308FR11	August 02 2013	and NFC(Felica)	ZNFD605





■ WCDMA850 MODE (4132 CH.) Block Edge

■ WCDMA850MODE (4233 CH.) Block Edge



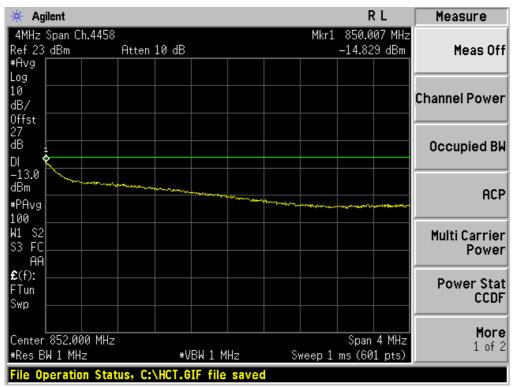
		FCC CERTIFICATION REPORT	www.hct.co.kr
Test Report No. HCTR1308FR11	Date of Issue: August 02 2013	EUT Type: Cellular/PCS GSM/GPRS/EDGE/WCDMA/HSDPA/HSUPA Phone with Bluetooth, WLAN and NFC(Felica)	FCC ID: ZNFD605
		Dogo 47 of 62	



🔆 Agilent				RL	Measure
4MHz Span Ch.4357 Ref 23 dBm #Avg	Atten 10 dB		Mkr1 823 –13.9	.000 MHz 126 dBm	Meas Off
Log 10 dB/ 0ffst					Channel Power
27 dB DI -13.0				1	Occupied BW
dBm #PAvg 100	www.marchologand.age.col.age.col.age.col.age.col.age.col.age.col.age.col.age.col.age.col.age.col.age.col.age.col				ACP
W1 S2 S3 FC AA					Multi Carrier Power
£(f): FTun Swp					Power Stat CCDF
Center 821.000 MHz #Res BW 1 MHz		1 MHz S	Spa weep 1 ms (6	n 4 MHz 01 pts)	More 1 of 2
File Operation Stat	tus, C:\HCT.GIF	file saved			

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

■ WCDMA850MODE (4233 CH.) – 4 MHz Span



		FCC CERTIFICATION REPORT	www.hct.co.kr
Test Report No.	Date of Issue:	EUT Type: Cellular/PCS GSM/GPRS/EDGE/WCDMA/HSDPA/HSUPA Phone with Bluetooth, WLAN	FCC ID:
HCTR1308FR11	August 02 2013	and NFC(Felica)	ZNFD605
		Dage 49 of 62	



1kr1 1	1.850 00		Center Free 1.85000000 GH Start Free 1.84650000 GH Stop Free 1.85350000 GH CF Step
(mmluen)),i	Ay 11440	1.84650000 GH Stop Free 1.85350000 GH CF Step
			1.85350000 GH
			700.000000 kH <u>Auto</u> Ma
			Freq Offse 0.00000000 H
			Signal Trac i On <u>Of</u>
. 2 1 2			
)	2.12		Span 7 MHz 2.12 ms (601 pts)

■ WCDMA1900 MODE (9262 CH.) Block Edge

■ WCDMA1900 MODE (9538 CH.) Block Edge



		FCC CERTIFICATION REPORT	www.hct.co.kr
Test Report No.	Date of Issue:	EUT Type: Cellular/PCS GSM/GPRS/EDGE/WCDMA/HSDPA/HSUPA Phone with Bluetooth, WLAN	FCC ID:
HCTR1308FR11	August 02 2013	and NFC(Felica)	ZNFD605
		Bage 40 of 63	



🔆 Agilent		,		RL	Freq/Channel
4MHz Span Ch.966. Ref 23 dBm #Avg	2 Atten 10 dB		Mkr1	1.848 993 GHz -16.291 dBm	Center Freq 1.84700000 GHz
Log 10 dB/					Start Freq 1.84500000 GHz
Offst 28 dB DI					Stop Freq 1.84900000 GHz
-13.0 dBm #PAvg		a for the second and	angana dan sana dan sana da		CF Step 400.000000 kHz Auto Mar
100 W1 S2 S3 FC AA					Freq Offset 0.00000000 Hz
€(f): FTun Swp					Signal Track On <u>Of</u> i
Center 1.847 000 0				Span 4 MHz	
#Res BW 1 MHz File Operation Sta		BW 1 MHz IF file saved	- Sweeb 1	. ms (601 pts)	

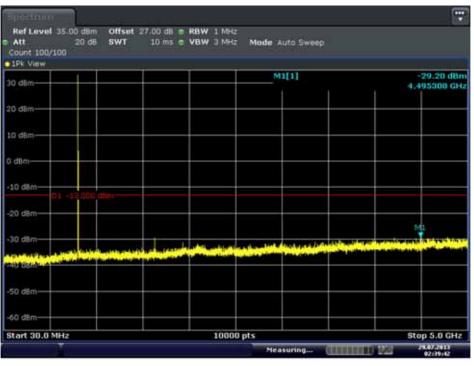
■ WCDMA1900 MODE (9262 CH.) – 4 MHz Span

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



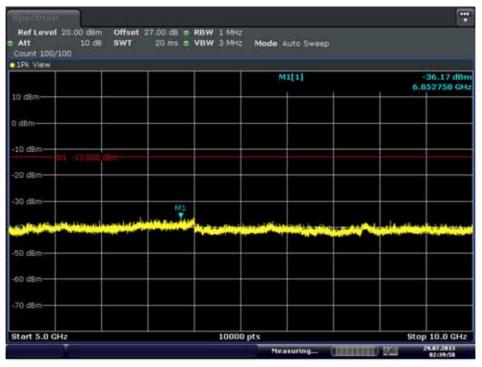
		FCC CERTIFICATION REPORT	www.hct.co.kr
Test Report No. HCTR1308FR11	Date of Issue: August 02 2013	EUT Type: Cellular/PCS GSM/GPRS/EDGE/WCDMA/HSDPA/HSUPA Phone with Bluetooth, WLAN and NFC(Felica)	FCC ID: ZNFD605
HUIRI300FRII	August 02 2015		ZINFD003





■ GSM850 MODE (128 CH.) Conducted Spurious Emissions1

Date: 29.JUL.2013 02:39:42



■ GSM850 MODE (128 CH.) Conducted Spurious Emissions2

Date: 29.JUL.2013 02:39:59

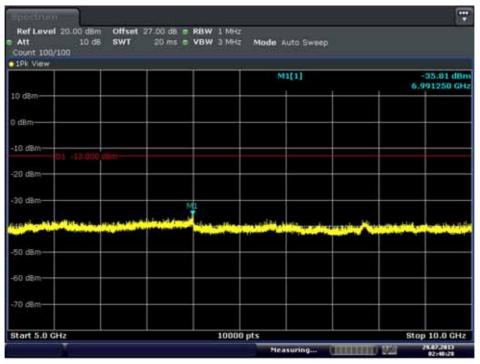
		FCC CERTIFICATION REPORT	www.hct.co.kr
Test Report No. HCTR1308FR11	Date of Issue: August 02 2013	EUT Type: Cellular/PCS GSM/GPRS/EDGE/WCDMA/HSDPA/HSUPA Phone with Bluetooth, WLAN and NFC(Felica)	FCC ID: ZNFD605
		Page 51 of 62	



.... Ref Level 35.00 dBm Offset 27.00 dB B RBW 1 MHz Att 20 dB SWT 10 ms C VBW 3 MHz Mode Auto Sweep Att Count 100/100 1Pk View M1[1] -28.69 dBn 30 dBm 4.995788 GHz 20 d8m 10 dam 0 dBr -10 dBri -20 dBr 30 dBr in all a sain last souther and so a la a di tia -50 dBm -60 dBn Start 30.0 MHz 10000 pts Stop 5.0 GHz 29.07.2011 Measuring. COLUMN DE LE

■ GSM850 MODE (190 CH.) Conducted Spurious Emissions1

Date: 29.JUL.2013 02:40:12



■ GSM850 MODE (190 CH.) Conducted Spurious Emissions2

Date: 29.JUL.2013 02:40:28

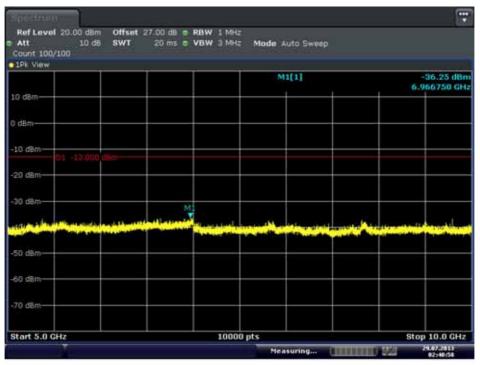
FCC CERTIFICATION REPORT			www.hct.co.kr		
Test Report No. HCTR1308FR11	Date of Issue: August 02 2013	EUT Type: Cellular/PCS GSM/GPRS/EDGE/WCDMA/HSDPA/HSUPA Phone with Bluetooth, WLAN and NFC(Felica)	FCC ID: ZNFD605		
Page 52 of 62					



.... Ref Level 35.00 dBm Offset 27.00 dB = RBW 1 MHz Att 20 dB SWT 10 ms = VBW 3 MHz Mode Auto Sweep Att Count 100/100 1Pk View M1[1] -28.80 dBn 30 dBm 4.738330 GHz 20 d8m 10 dam 0 dBr -10 dBri -20 dBr M1 30 dBr al day on the los a shall have be 19 m 1 m -50 dBm -60 dBn Start 30.0 MHz 10000 pts Stop 5.0 GHz 29.07.2011 Measuring. COLUMN DE LE

■ GSM850 MODE (251 CH.) Conducted Spurious Emissions1

Date: 29.JUL.2013 02:40:42



■ GSM850 MODE (251 CH.) Conducted Spurious Emissions2

Date: 29.JUL.2013 02:40:58

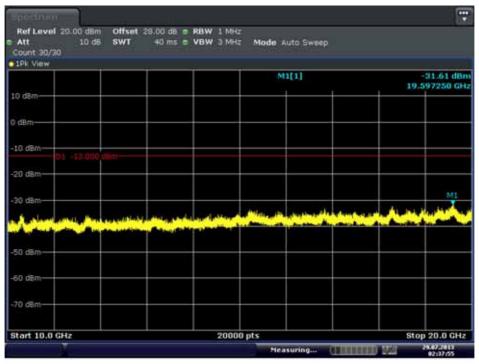
FCC CERTIFICATION REPORT			www.hct.co.kr			
Test Repo HCTR1308		Date of Issue: August 02 2013	EUT Type: Cellular/PCS GSM/GPRS/EDGE/WCDMA/HSDPA/HSUPA Phone with Bluetooth, WLAN and NFC(Felica)	FCC ID: ZNFD605		
	Page 53 of 62					





■ GSM1900 MODE (512 CH.) Conducted Spurious Emissions1

Date: 29.JUL.2013 02:37:40

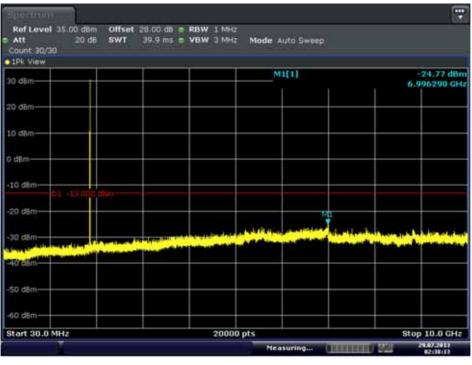


■ GSM1900 MODE (512 CH.) Conducted Spurious Emissions2

Date: 29.JUL.2013 02:37:56

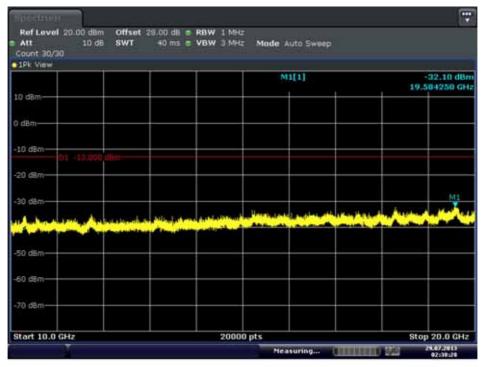
FCC CERTIFICATION REPORT			www.hct.co.kr		
Test Report No. HCTR1308FR11	Date of Issue: August 02 2013	EUT Type: Cellular/PCS GSM/GPRS/EDGE/WCDMA/HSDPA/HSUPA Phone with Bluetooth, WLAN and NFC(Felica)	FCC ID: ZNFD605		
Page 54 of 62					





■ GSM1900 MODE (661 CH) Conducted Spurious Emissions1

Date: 29.JUL.2013 02:38:13

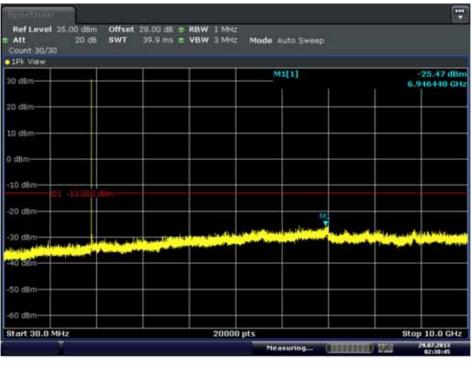


■ GSM1900 MODE (661 CH.) Conducted Spurious Emissions2

Date: 29.JUL.2013 02:38:29

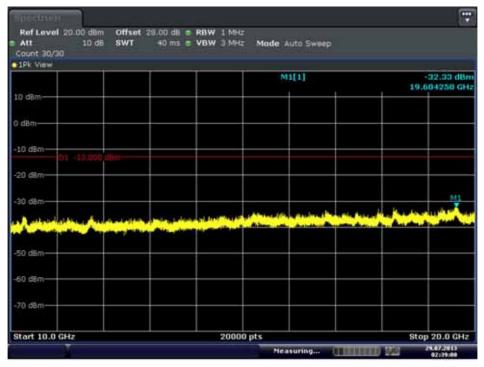
FCC CERTIFICATION REPORT			www.hct.co.kr	
Test Report No. HCTR1308FR11	Date of Issue: August 02 2013	EUT Type: Cellular/PCS GSM/GPRS/EDGE/WCDMA/HSDPA/HSUPA Phone with Bluetooth, WLAN and NFC(Felica)	FCC ID: ZNFD605	
Page 55 of 62				





■ GSM1900 MODE (810 CH.) Conducted Spurious Emissions1

Date: 29.JUL.2013 02:38:45



■ GSM1900 MODE (810 CH.) Conducted Spurious Emissions2

Date: 29.JUL.2013 02:39:01

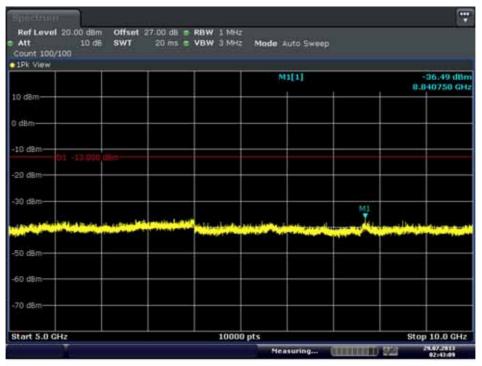
FCC CERTIFICATION REPORT			www.hct.co.kr	
Test Report No. HCTR1308FR11	Date of Issue: August 02 2013	EUT Type: Cellular/PCS GSM/GPRS/EDGE/WCDMA/HSDPA/HSUPA Phone with Bluetooth, WLAN and NFC(Felica)	FCC ID: ZNFD605	
Page 56 of 62				



.... Ref Level 35.00 dBm Offset 27.00 dB = RBW 1 MHz Att 20 dB SWT 10 ms = VBW 3 MHz Mode Auto Sweep ITA C Count 100/100 1Pk View M1[1] -28.66 dBn 30 dBm 1.992300 GHz 20 d8m 10 dam 0 dBr -10 dBri -20 dBr 30 dBr daught get A DE LA D . U DEM -50 dBm -60 dBm Start 30.0 MHz 10000 pts Stop 5.0 GHz 29.07.2013 Measuring. COLUMN DE LE

WCDMA850 MODE (4132 CH.) Conducted Spurious Emissions1

Date: 29.JUL.2013 02:42:53



■ WCDMA850 MODE (4132 CH.) Conducted Spurious Emissions2

Date: 29.JUL.2013 02:43:09

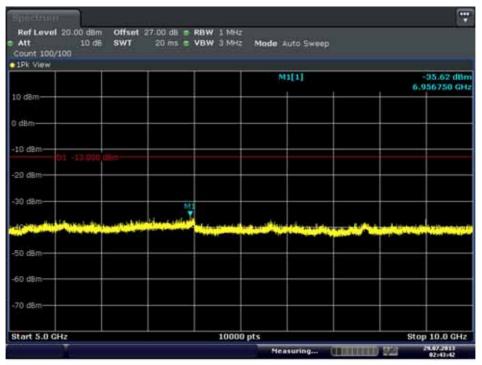
FCC CERTIFICATION REPORT			www.hct.co.kr		
Test Report No. HCTR1308FR11	Date of Issue: August 02 2013	EUT Type: Cellular/PCS GSM/GPRS/EDGE/WCDMA/HSDPA/HSUPA Phone with Bluetooth, WLAN and NFC(Felica)	FCC ID: ZNFD605		
Page 57 of 62					



.... Ref Level 35.00 dBm Offset 27.00 dB = RBW 1 MHz Att 20 dB SWT 10 ms = VBW 3 MHz Mode Auto Sweep ITA C Count 100/100 1Pk View M1[1] -29.30 dBn 30 dBm 4.435660 GHz 20 d8m 10 dam 0 dBr -10 dBri -20 dBr M1 ¥ 30 dBr 110 14 ALC: NO. Stand at and in -50 dBm -60 dBm Start 30.0 MHz 10000 pts Stop 5.0 GHz 29.07.2011 Measuring. **OBSERVANCE**

■ WCDMA850 MODE (4183 CH.) Conducted Spurious Emissions1

Date: 29.JUL.2013 02:43:26



■ WCDMA850 MODE (4183 CH.) Conducted Spurious Emissions2

Date: 29.JUL.2013 02:43:42

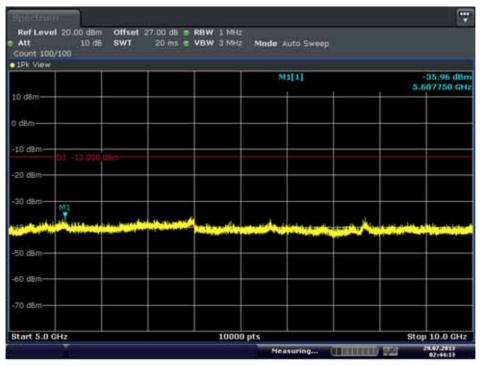
FCC CERTIFICATION REPORT			www.hct.co.kr		
Test Report No. HCTR1308FR11	Date of Issue: August 02 2013	EUT Type: Cellular/PCS GSM/GPRS/EDGE/WCDMA/HSDPA/HSUPA Phone with Bluetooth, WLAN and NFC(Felica)	FCC ID: ZNFD605		
Page 58 of 62					



.... Ref Level 35.00 dBm Offset 27.00 dB = RBW 1 MHz Att 20 dB SWT 10 ms = VBW 3 MHz ITA C Mode Auto Sweep Count 100/100 1Pk View -28.41 dBn 4.801450 GHz M1[1] 30 dBm 20 d8m 10 dam 0 dBr -10 dBri -20 dBr M1 30 dBr address in -50 d8m -60 dBm Start 30.0 MHz 10000 pts Stop 5.0 GHz 29.07.2013 Measuring. COLUMN DE LE

WCDMA850MODE (4233 CH.) Conducted Spurious Emissions1

Date: 29.JUL.2013 02:43:57

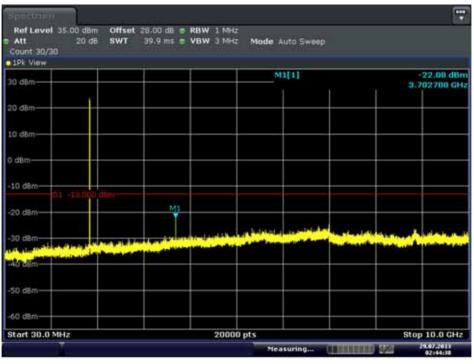


■ WCDMA850MODE (4233 CH.) Conducted Spurious Emissions2

Date: 29.JUL.2013 02:44:14

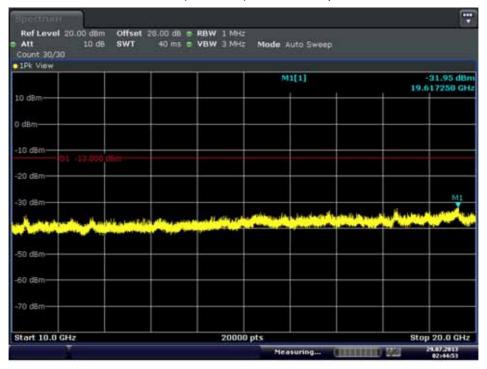
FCC CERTIFICATION REPORT			www.hct.co.kr		
Test Report No. HCTR1308FR11	Date of Issue: August 02 2013	EUT Type: Cellular/PCS GSM/GPRS/EDGE/WCDMA/HSDPA/HSUPA Phone with Bluetooth, WLAN and NFC(Felica)	FCC ID: ZNFD605		
Page 50 of 62					





■ WCDMA1900 MODE (9262 CH.) Conducted Spurious Emissions1

Date: 29.JUL.2013 02:44:38

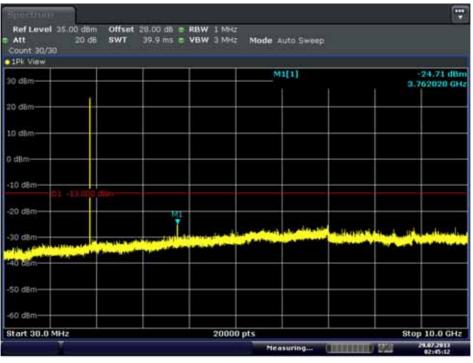


■ WCDMA1900 MODE (9262 CH.) Conducted Spurious Emissions2

Date: 29.JUL.2013 02:44:54

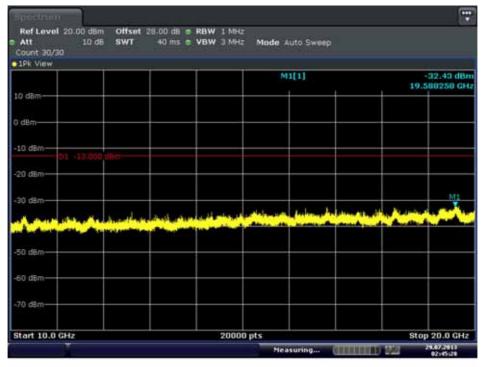
FCC CERTIFICATION REPORT			www.hct.co.kr		
Test Report No. HCTR1308FR11	Date of Issue: August 02 2013	EUT Type: Cellular/PCS GSM/GPRS/EDGE/WCDMA/HSDPA/HSUPA Phone with Bluetooth, WLAN and NFC(Felica)	FCC ID: ZNFD605		
Page 60 of 62					





■ WCDMA1900 MODE (9400 CH.) Conducted Spurious Emissions1

Date: 29.JUL.2013 02:45:12

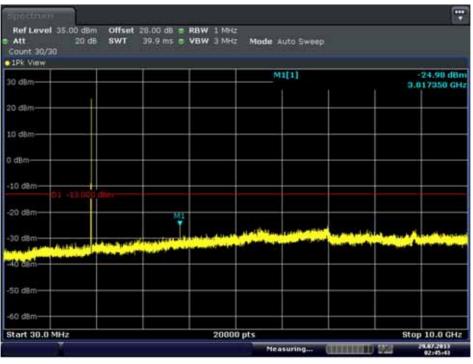


■ WCDMA1900 MODE (9400 CH.) Conducted Spurious Emissions2

Date: 29.JUL.2013 02:45:28

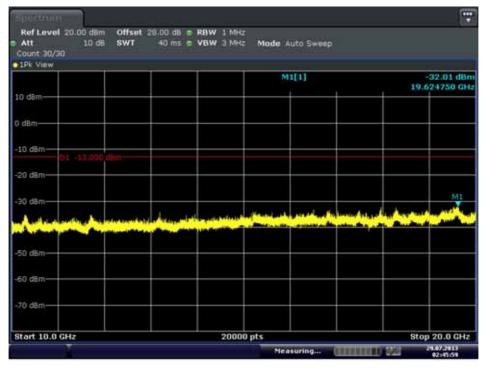
FCC CERTIFICATION REPORT			www.hct.co.kr		
Test Report No. HCTR1308FR11	Date of Issue: August 02 2013	EUT Type: Cellular/PCS GSM/GPRS/EDGE/WCDMA/HSDPA/HSUPA Phone with Bluetooth, WLAN and NFC(Felica)	FCC ID: ZNFD605		
Page 61 of 62					





■ WCDMA1900 MODE (9538 CH.) Conducted Spurious Emissions1

Date: 29.JUL.2013 02:45:43



■ WCDMA1900 MODE (9538 CH.) Conducted Spurious Emissions2

Date: 29.JUL.2013 02:45:59

FCC CERTIFICATION REPORT			www.hct.co.kr	
Test Report No. HCTR1308FR11	Date of Issue: August 02 2013	EUT Type: Cellular/PCS GSM/GPRS/EDGE/WCDMA/HSDPA/HSUPA Phone with Bluetooth, WLAN and NFC(Felica)	FCC ID: ZNFD605	
Page 62 of 62				