

HCT CO., LTD.

CERTIFICATE OF COMPLIANCE FCC Certification

Applicant Name:

Pantech Co., Ltd.

Address: Pantech Bldg, I-2, DMC, Sangam-dong, Mapo-gu, Seoul, 121-792, Korea

Date of Issue: February 05, 2013 Location: HCT CO., LTD., 105-1, Jangam-ri, Majang-Myeon, Icheon-si, Kyunggi-Do, Korea Test Report No.: HCTR1302FR07 HCT FRN: 0005866421

FCC ID:

JYCORBIT

Pantech Co., Ltd.
MHS291LVW
Cellular/PCS CDMA, GSM, WCDMA and LTE Portable Router with WLAN
PCS Licensed Transmitter (PCB)
§22, §24, §2
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)
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)
0.527 W GSM850 (27.22 dBm) / 1.023 W GSM1900 (30.10 dBm) 0.628 W EDGE850 (27.98 dBm) / 1.064 W EDGE1900 (30.27 dBm) 0.137 W WCDMA850 (21.38 dBm) / 0.698 W WCDMA1900 (28.44 dBm)
244 KGXW (GSM850) 245 KGXW (GSM1900) 248 KG7W (GSM850 EDGE) 241 KG7W (GSM1900 EDGE) 4M17F9W (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 : Jae Chul Shin Test engineer of RF Team

Approved by : Chang Seok Choi Manager of RF Team

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Version

TEST REPORT NO.	DATE	DESCRIPTION
HCTR1302FR07	February 05, 2013	First Approval Report

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MEASUREMENT REPORT

1. GENERAL INFORMATION

Applicant Name:	Pantech Co., Ltd.
Address:	Pantech Bldg, I-2, DMC, Sangam-dong, Mapo-gu, Seoul, 121-792, Korea
FCC ID:	JYCORBIT
Application Type:	Certification
FCC Classification:	PCS Licensed Transmitter (PCB)
FCC Rule Part(s):	§22, §24, §2
EUT Type:	Cellular/PCS CDMA, GSM, WCDMA and LTE Portable Router with WLAN
FCC Model(s):	MHS291LVW
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:	0.527 W GSM850 (27.22 dBm) / 1.023 W GSM1900 (30.10 dBm) 0.628 W EDGE850 (27.98 dBm) / 1.064 W EDGE1900 (30.27 dBm) 0.137 W WCDMA850 (21.38 dBm) / 0.698 W WCDMA1900 (28.44 dBm)
Emission Designator(s):	244 KGXW (GSM850) 245 KGXW (GSM1900) 248 KG7W (GSM850 EDGE) 241 KG7W (GSM1900 EDGE) 4M17F9W (WCDMA850) 4M17F9W (WCDMA1900)
Date(s) of Tests:	December 06, 2012 ~ February 01, 2013
Antenna Specification	Manufacturer: KARAM SOLUTION
	Antenna type: Built-in Antenna
	Peak Gain: GSM850/WCDMA850 : 0.55 dBi
	GSM1900/WCDMA1900 : 0.66 dBi

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2. INTRODUCTION

2.1. EUT DESCRIPTION

The Pantech Co., Ltd. MHS291LVW Cellular/PCS CDMA, GSM, WCDMA and LTE Portable Router with WLAN consists of GSM850, GSM1900, WCDMA850, WCDMA1900, GPRS Class10, EDGE Class10, HSDPA, HSUPA and HSPA+Release 6.

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)

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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 Clasue 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 postion 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 caculated 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

3.2 PEAK- TO- AVERAGE RATIO

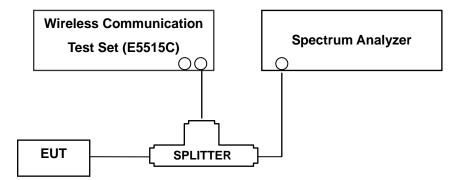
A peak to average ratio measurement is performed at the conducted port of the EUT. For CDMA and WCDMA signals, the spectrum analyzers Complementary Cumulative Distribution Function (CCDF) measurement profile is used to determine the largest deviation between the average and the peak power of the EUT in a given bandwidth. The CCDF curve shows how much time the peak waveform spends at or above a given average power level. The percent of time the signal spends at or above the level defines the probability for that particular power level. For GSM signals, an average and the peak power of the EUT in a bandwidth greater than the emission bandwidth. Plots of the EUT's Peak- to- Average Ratio are shown herein.

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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

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

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.

- 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.

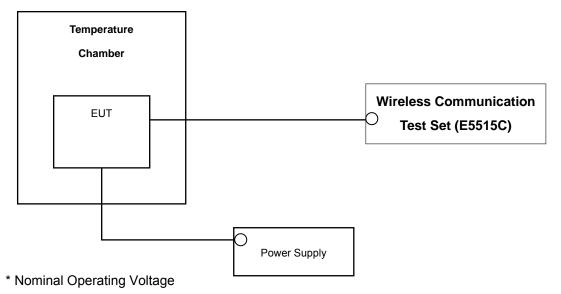
- For GSM850 and WCDMA850, total offset 27.1 dBm = 20 dBm attenuator + 6 dBm Divider + 1.1 dBm RF cables.
- For GSM1900 and WCDMA1900, total offset 28.6 dBm = 20 dBm attenuator + 6 dBm Divider + 2.6 dBm RF cables.

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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.**

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4. LIST OF TEST EQUIPMENT

Manufacture	Model/ Equipment	Serial Number	Calibration Interval	Calibration Due
Agilent	E9327A/ Power Sensor	MY4442009	Annual	05/02/2013
MITEQ	AMF-6D-001180-35-20P/AMP	1081666	Annual	09/11/2013
Wainwright	WHK1.2/15G-10EF/H.P.F	2	Annual	05/02/2013
Wainwright	WHK3.3/18G-10EF/H.P.F	1	Annual	05/02/2013
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	03/11/2013
Schwarzbeck	UHAP/ Dipole Antenna	558	Biennial	03/11/2013
Korea Engineering	KR-1005L / Chamber	KRAB05063-3CH	Annual	11/07/2013
Schwarzbeck	BBHA 9120D/ Horn Antenna	296	Biennial	02/20/2014
Agilent	E4440A/Spectrum Analyzer	US45303008	Annual	05/02/2013
WEINSCHEL	ATTENUATOR	BR0592	Annual	11/07/2013
REOHDE&SCHWARZ	FSV40/Spectrum Analyzer	1307.9002K40-100931-NK	Annual	06/11/2013
Agilent	8960 (E5515C)/ Base Station	GB44400269	Annual	02/10/2013
Anritsu	MT8820C/ Radio Communication Analyer	6200951754	Annual	08/24/2013

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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

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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	P01.	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 and the antenna height is also varied from 1 to 4 meters 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)

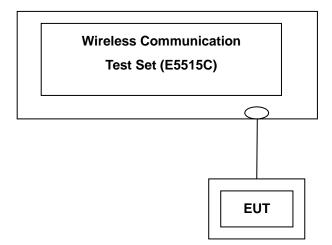
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7. TEST DATA

7.1 CONDUCTED OUTPUT POWER

A base station simulator was used to establish communication with the EUT. The base station simulator parameters were set to produce the maximum power from the EUT. This device was tested under all configurations and the highest power is reported. Conducted Output Powers of EUT are reported below.



Test Result

		Voice	GPRS Data		
Band	Channel	GSM (dBm)	GPRS 1 TX Slot (dBm)	GPRS 2 TX Slot (dBm)	
GSM	128	33.06	33.10	32.90	
850	190	33.11	33.18	32.96	
850	251	33.14	33.20	32.98	
COM	512	30.13	30.19	30.08	
GSM 1900	661	30.19	30.25	30.13	
1900	810	30.18	30.23	30.11	

(GSM Conducted Maximum Output Powers)

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		EDGE	Data
Band	Channel	EDGE 1 TX Slot (dBm)	EDGE 2 TX Slot (dBm)
GSM	128	27.53	25.09
850	190	27.62	25.12
850	251	27.67	25.15
C SM	512	26.02	24.02
GSM 1900	661	26.06	24.05
1900	810	26.16	24.10

(GSM EDGE Conducted Output Powers)

2000		3GPP 34.121	Cel	lular Band [d	Bm]	
3GPP Release Version	Mode	Subtest	UL 4132 (826.4) DL 4357	UL 4183 (836.6) DL 4408	UL 4233 (846.6) DL 4458	MPR
99	WCDMA	12.2 kbps RMC	23.49	23.00	23.45	_
99	WCDMA	12.2 kbps AMR	-	-	-	-
5		Subtest 1	22.50	21.99	22.50	0
5	HSDPA	Subtest 2	22.45	21.95	22.48	0
5		Subtest 3	22.02	21.46	22.03	-0.5
5		Subtest 4	22.05	21.46	22.02	-0.5
6		Subtest 1	22.49	21.80	22.45	0
6	HSUPA	Subtest 2	21.25	20.52	21.30	-2
6		Subtest 3	21.15	20.73	20.98	-1
6		Subtest 4	21.42	21.02	21.45	-2
6		Subtest 5	22.19	21.90	22.10	0

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2000		3GPP 34.121	P	CS Band [dBr	m]	
3GPP Release Version	Mode	Subtest	UL 9262 (1852.4) DL 9662	UL 9400 (1880.0) DL 9800	UL 9538 (1907.6) DL 9938	MPR
99	WCDMA	12.2 kbps RMC	22.99	23.04	22.96	-
99	WCDMA	12.2 kbps AMR	-	-	-	-
5		Subtest 1	22.02	22.14	22.00	0
5	HSDPA	Subtest 2	22.05	22.08	21.99	0
5	HSDPA	Subtest 3	21.58	21.64	21.52	-0.5
5		Subtest 4	21.54	21.62	21.54	-0.5
6		Subtest 1	21.94	22.02	22.01	0
6		Subtest 2	20.66	20.92	20.64	-2
6	HSUPA	Subtest 3	20.92	20.64	20.97	-1
6		Subtest 4	20.91	21.02	21.15	-2
6		Subtest 5	21.60	21.95	22.01	0

(WCDMA Conducted Output Powers)

Note : Detecting mode is average.

7.2 PEAK-TO-AVERAGE RATIO

- Plots of the EUT's Peak- to- Average Ratio are shown Page 33, 37.

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7.3 OCCUPIED BANDWIDTH

Band	Channel	Frequency(MHz)	Data (GSM: kHz / WCDMA : MHz)
	128	824.20	239.8830
GSM850	190	836.60	243.6071
	251	848.80	239.5967
GSM850 EDGE	190	836.60	247.5337
	512	1850.20	243.1409
GSM1900	661	1880.00	244.5288
	810	1909.80	239.4002
GSM1900 EDGE	661	1880.00	240.9056
	4132	826.40	4.1740
WCDMA850	4183	836.60	4.1694
	4233	846.60	4.1592
	9262	1852.40	4.1434
WCDMA1900	9400	1880.00	4.1546
	9538	1907.60	4.1681

- Plots of the EUT's Occupied Bandwidth are shown Page 29 ~ 32, 34 ~ 36.

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7.4 CONDUCTED SPURIOUS EMISSIONS

Band	Channel	Frequency of Maximum Harmonic (GHz)	Maximum Data (dBm)
	128	7.0375	-30.24
GSM850	190	7.0250	-29.87
	251	7.1500	-30.47
	512	13.6270	-24.59
GSM1900	661	13.6800	-25.34
	810	13.8930	-24.72
	4132	7.2250	-40.14
WCDMA850	4183	1.6770	-35.08
	4233	1.6970	-37.71
	9262	13.9470	-36.67
WCDMA1900	9400	13.7330	-36.94
	9538	13.7330	-36.70

- Plots of the EUT's Conducted Spurious Emissions are shown Page 49 ~ 61..

7.4.1 BAND EDGE

- Plots of the EUT's Band Edge are shown Page 37 ~ 49.

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7.5 EFFECTIVE RADIATED POWER OUTPUT (GSM / WCDMA)

(GSM850 Mode)

Ch./	Freq.	Measured	Substitude	Ant. Gain		Del	ER	Р
channel	Freq.(MHz)	Level(dBm)	LEVEL (dBm)	(dBd)	C.L	Pol.	W	dBm
128	824.20	-21.67	38.10	-10.61	0.95	Н	0.451	26.54
190	836.60	-21.76	38.42	-10.54	0.96	Н	0.492	26.92
251	848.80	-21.63	38.79	-10.47	1.10	Н	0.527	27.22
EDGE 251	848.80	-20.87	39.55	-10.47	1.10	Н	0.628	27.98

(WCDMA850 Mode)

Ch./	Freq.	Measured	Substitude	Ant. Gain		Del	ER	Р
channel	Freq.(MHz)	Level(dBm)	LEVEL (dBm)	(dBd)	C.L	Pol.	W	dBm
4132	826.40	-27.58	32.17	-10.59	0.95	Н	0.116	20.63
4183	836.60	-27.30	32.88	-10.54	0.96	Н	0.137	21.38
4233	846.60	-27.76	32.59	-10.48	1.11	V	0.126	21.00

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 z plane in GSM850 and WCDMA850 (x plane ch 4183, y plan ch 4233) mode. Also worst case of detecting Antenna is horizontal polarization in GSM850 and WCDMA850 (vertical polarization) mode.

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

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7.6 EQUIVALENT ISOTROPIC RADIATED POWER (GSM / WCDMA)

(GSM1900 Mode)

Ch./	Freq.	Measured	Substitude	Ant. Gain		Del	EII	RP
channel	Freq.(MHz)	Level(dBm)	LEVEL (dBm)	(dBi)	C.L	Pol.	w	dBm
512	1,850.20	-10.97	21.17	10.02	1.41	Н	0.951	29.78
661	1,880.00	-11.07	21.24	10.04	1.45	Н	0.962	29.83
810	1,909.80	-10.92	21.49	10.05	1.44	Н	1.023	30.10
EDGE 810	1,909.80	-10.75	21.66	10.05	1.44	Н	1.064	30.27

(WCDMA1900 Mode)

Ch./	Freq.	Measured	Substitude	Ant. Gain	ain C.L Pol.		Elf	RP
channel	Freq.(MHz)	Level(dBm)	LEVEL (dBm)	(dBi)	U.L	P0I.	w	dBm
9262	1,852.40	-12.71	19.44	10.02	1.40	Н	0.640	28.06
9400	1,880.00	-12.78	19.53	10.04	1.45	Н	0.649	28.12
9538	1,907.60	-12.69	19.85	10.05	1.46	Н	0.698	28.44

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 = 3 MHz. For WCDMA 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 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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7.7 RADIATED SPURIOUS EMISSIONS 7.7.1 RADIATED SPURIOUS EMISSIONS (GSM850)

MEASURED OUTPUT POWER:	27.98 dBm = 0.628 W

MODULATION SIGNAL:
 GSM EDGE 850

DISTANCE:

3 meters

LIMIT: - (43 + 10 log10 (W)) =

- 40.98 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	-43.26	7.05	-50.10	1.18	Н	-44.23	-72.21
128 (824.2)	2,472.60	-38.76	7.90	-42.51	1.57	Н	-36.18	-64.16
(-)	3,296.80	_	_	_	-	_	_	_
	1,673.20	-44.52	7.22	-51.52	1.20	Н	-45.50	-73.48
190 (836.6)	2,509.80	-36.58	8.51	-40.37	1.65	V	-33.51	-61.49
	3,346.40	_	_	-	-	_	_	_
	1,697.60	-42.95	7.34	-49.97	1.20	Н	-43.83	-71.81
251 (848.8)	2,546.40	-41.02	8.61	-44.56	1.65	V	-37.60	-65.58
	3,395.20	-54.29	10.22	-58.82	1.99	Н	-50.59	-78.57

 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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7.7.2 RADIATED SPURIOUS EMISSIONS (GSM1900)

MEASURED OUTPUT POWER: <u>30.27 dBm = 1.064 W</u>

MODULATION SIGNAL:
 GSM EDGE 1900

DISTANCE:

LIMIT: - (43 + 10 log10 (W)) = - 43.27 dBc

Ch.	Freq.(MHz)	Measured Level	Ant. Gain (dBi)	<u>Substitute</u> Level [dBm]	C.L	Pol.	EIRP (dBm)	dBc
	3,700.40	-39.15	12.27	-43.89	2.19	V	-33.81	-64.08
512 (1850.2)	5,550.60	-42.38	13.40	-42.05	2.88	Н	-31.53	-61.80
()	7,400.80	-45.50	11.37	-35.21	3.29	Н	-27.13	-57.40
	3,760.00	-33.73	12.31	-38.28	2.11	Н	-28.08	-58.35
661 (1880.0)	5,640.00	-43.87	13.41	-43.20	2.92	Н	-32.71	-62.98
	7,520.00	-43.38	11.55	-33.86	3.34	Н	-25.65	-55.92
	3,819.60	-37.51	12.37	-41.99	2.14	Н	-31.76	-62.03
810 (1909.8)	5,729.40	-42.04	13.42	-40.60	3.02	Н	-30.20	-60.47
	7,639.20	-41.79	11.70	-32.03	3.13	Н	-23.46	-53.73

3 meters

NOTES: <u>1. Radiated Spurious Emission Measurements at 3 meters by Substitution Method</u>

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 <u>all channel.</u>

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7.7.3 RADIATED SPURIOUS EMISSIONS (WCDMA850)

MEASURED OUTPUT POWER: 21.38 dBm = 0.137 W

MODULATION SIGNAL: WCDMA850

DISTANCE:

LIMIT: - (43 + 10 log10 (W)) = - 34.38 dBc

Ch.	Freq.(MHz)	Measured Level	Ant. Gain (dBd)	<u>Substitute</u> Level [dBm]	C.L	Pol.	ERP (dBm)	dBc
	1,652.80	-37.19	7.11	-44.12	1.20	Н	-38.21	-59.59
4,132 (826.4)	2,479.20	-45.74	8.40	-49.63	1.62	Н	-42.85	-64.23
()	3,305.60	_	_	-	-	-	_	-
	1,673.20	-37.41	7.22	-44.41	1.20	Н	-38.39	-59.77
4,183 (836.6)	2,509.80	-44.39	8.51	-48.18	1.65	Н	-41.32	-62.70
	3,346.40	_	_	_	_	_	_	-
4,233 (846.6)	1,693.20	-34.84	7.34	-41.86	1.20	Н	-35.72	-57.10
	2,539.80	-48.98	8.58	-52.90	1.65	Н	-45.97	-67.35
	3,386.40	_	_	_	-	_	_	-

3 meters

NOTES: <u>1. Radiated Spurious Emission Measurements at 3 meters by Substitution Method</u>

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 <u>all channel.</u>

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7.7.4 RADIATED SPURIOUS EMISSIONS (WCDMA1900)

- MEASURED OUTPUT POWER: 28.44 dBm = 0.698 W
- MODULATION SIGNAL: WCDMA1900
- DISTANCE:
- LIMIT: (43 + 10 log10 (W)) = _____ 41.44 dBc

Ch.	Freq.(MHz)	Measured Level	Ant. Gain (dBi)	<u>Substitute</u> Level [dBm]	C.L	Pol.	EIRP (dBm)	dBc
	3,704.80	-54.22	12.27	-58.96	2.19	Н	-48.88	-77.32
9262	5,557.20	-56.03	13.40	-55.70	2.88	V	-45.18	-73.62
	7,409.60	_	Ι	Ι	Ι	_	_	_
	3,760.00	-55.17	12.31	-59.72	2.11	V	-49.52	-77.96
9400	5,640.00	_	Ι	I	I	_	_	_
	7,520.00	_	_	_	-	_	_	_
	3,815.20	-55.51	12.37	-59.99	2.14	V	-49.76	-78.20
9538	5,722.80	_	-	_	-	-	-	_
	7,630.40	_	_	_	_	_	_	_

3 meters

NOTES: <u>1. Radiated Spurious Emission Measurements at 3 meters by Substitution Method</u>

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 <u>all channel.</u>

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7.8 FREQUENCY STABILITY / VARIATION OF AMBIENT TEMPERATURE 7.8.1 FREQUENCY STABILITY (GSM850)

- OPERATING FREQUENCY: 836,600,000 Hz
- CHANNEL:

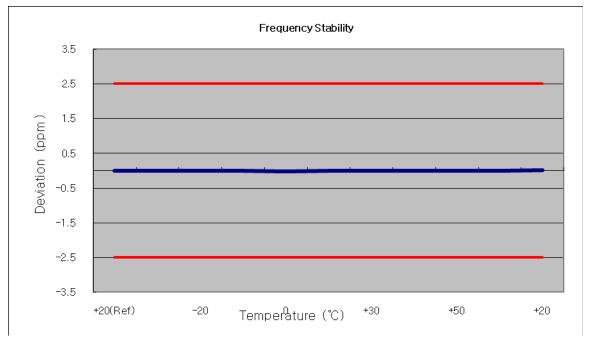
REFERENCE VOLTAGE: <u>3.8 VDC</u>

190

DEVIATION LIM IT:

± 0.000 25 % or 2.5 ppm

Voltage	Power	Temp.	Frequency	Frequency	Deviation	
(%)	(VDC)	(°°)	(Hz)	Error (Hz)	(%)	ppm
100%		+20(Ref)	836 600 008	0	0.000 000	0.000
100%		-30	836 600 011	3.10	0.000 000	0.004
100%		-20	836 600 010	1.81	0.000 000	0.002
100%		-10	836 600 009	0.31	0.000 000	0.000
100%	3.800	0	836 599 997	-11.40	-0.000 001	-0.014
100%		+10	836 599 999	-9.78	-0.000 001	-0.012
100%		+30	836 600 000	-8.63	-0.000 001	-0.010
100%		+40	836 599 999	-9.01	-0.000 001	-0.011
100%		+50	836 600 001	-7.45	-0.000 001	-0.009
115%	4.370	+20	836 600 001	-7.00	-0.000 001	-0.008
Batt. Endpoint	3.500	+20	836 600 016	7.37	0.000 001	0.009



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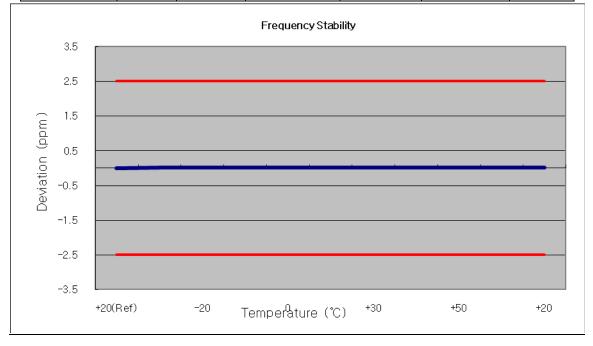


7.8.2 FREQUENCY STABILITY (GSM1900)

- OPERATING FREQUENCY: 1880,000,000 Hz
- 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)	1879 999 977	0	0.000 000	0.000
100%		-30	1880 000 001	23.92	0.000 001	0.013
100%		-20	1880 000 002	25.33	0.000 001	0.013
100%		-10	1880 000 005	27.75	0.000 001	0.015
100%	3.800	0	1880 000 000	22.52	0.000 001	0.012
100%		+10	1879 999 998	20.64	0.000 001	0.011
100%		+30	1879 999 999	21.46	0.000 001	0.011
100%		+40	1880 000 003	26.06	0.000 001	0.014
100%		+50	1879 999 998	21.11	0.000 001	0.011
115%	4.370	+20	1879 999 999	21.68	0.000 001	0.012
Batt. Endpoint	3.500	+20	1880 000 004	27.07	0.000 001	0.014

<u>661</u>



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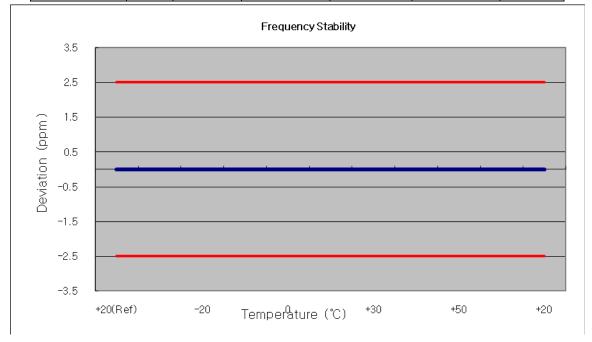


7.8.3 FREQUENCY STABILITY (WCDMA850)

- OPERATING FREQUENCY: 836,600,000 Hz
- 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)	836 599 998	0	0.000 000	0.000
100%		-30	836 599 997	-2.91	0.000 000	-0.003
100%		-20	836 599 998	-1.85	0.000 000	-0.002
100%		-10	836 600 002	2.08	0.000 000	0.002
100%	3.800	0	836 600 002	1.70	0.000 000	0.002
100%		+10	836 599 998	-2.20	0.000 000	-0.003
100%		+30	836 600 002	1.61	0.000 000	0.002
100%		+40	836 599 998	-1.98	0.000 000	-0.002
100%		+50	836 599 998	-1.53	0.000 000	-0.002
115%	4.370	+20	836 599 998	-2.12	0.000 000	-0.003
Batt. Endpoint	3.500	+20	836 599 998	-2.05	0.000 000	-0.002

4183



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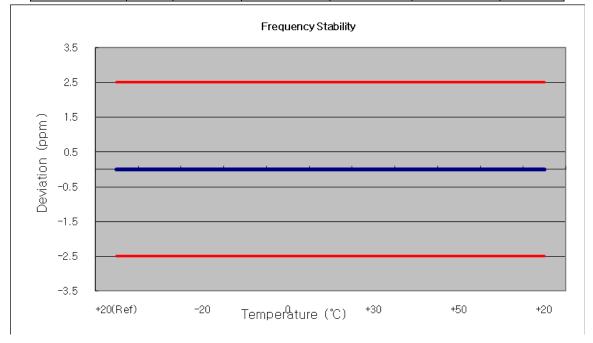


7.8.4 FREQUENCY STABILITY (WCDMA1900)

- OPERATING FREQUENCY: 1,880,000,000 Hz
- 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)	1880 000 009	0	0.000 000	0.000
100%		-30	1879 999 990	-9.82	-0.000 001	-0.005
100%		-20	1879 999 992	-8.01	0.000 000	-0.004
100%		-10	1879 999 991	-8.64	0.000 000	-0.005
100%	3.800	0	1879 999 991	-9.22	0.000 000	-0.005
100%		+10	1879 999 991	-8.82	0.000 000	-0.005
100%		+30	1879 999 991	-8.81	0.000 000	-0.005
100%		+40	1879 999 991	-9.32	0.000 000	-0.005
100%		+50	1879 999 991	-9.00	0.000 000	-0.005
115%	4.370	+20	1879 999 992	-7.96	0.000 000	-0.004
Batt. Endpoint	3.500	+20	1879 999 992	-7.64	0.000 000	-0.004

9400



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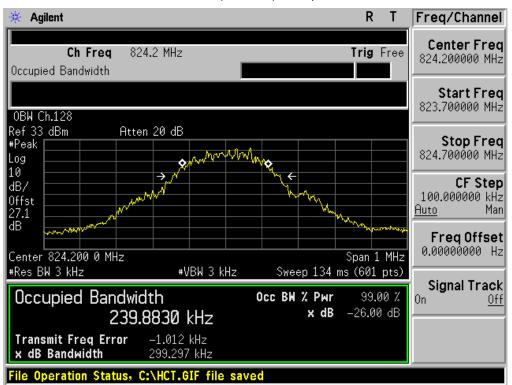


8. TEST PLOTS

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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 (190 CH.) Occupied Bandwidth



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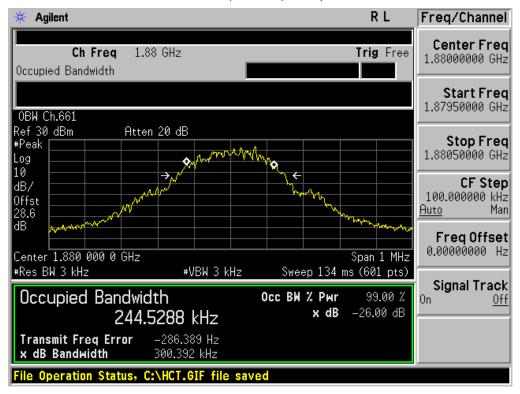


🔆 Agilent RL Freg/Channel Center Freq Ch Freq 1.8502 GHz Trig Free 1.85020000 GHz Occupied Bandwidth Start Freq 1.84970000 GHz 0BW Ch.512 Ref 30 dBm #Peak Atten 20 dB Stop Freq mound 1.85070000 GHz Log ø ٥ 10 →_№ ÷ CF Step dB/ Offst 28.6 100.000000 kHz MM Man <u>Auto</u> dB Freq Offset 0.00000000 Hz 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 243.1409 kHz **Transmit Freq Error** 173.451 Hz x dB Bandwidth 299.146 kHz

■ GSM1900 MODE (512 CH.) Occupied Bandwidth

■ GSM1900 MODE (661 CH.) Occupied Bandwidth

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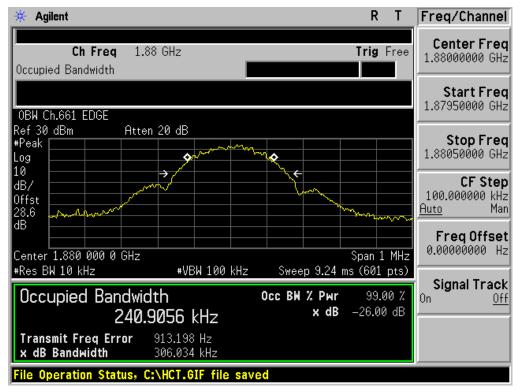
	FCC CERTIFICATION REPORT			
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🔆 Agilent RL Freg/Channel Center Freq Ch Freq 1.9098 GHz Trig Free 1.90980000 GHz Occupied Bandwidth Start Freq 1.90930000 GHz 0BW Ch.810 Ref 30 dBm #Peak Atten 20 dB Stop Freq www. 1.91030000 GHz $m \sim$ Log ٥ ۵ 10 →<mark>,</mark> ÷ CF Step dB/ M 100.000000 kHz 0ffst 28.6 Man <u>Auto</u> dB Freq Offset 0.00000000 Hz Center 1.909 800 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 239.4002 kHz **Transmit Freq Error** 1.039 kHz x dB Bandwidth 300.388 kHz le Operation Status, C:\HCT.GIF file saved

■ GSM1900 MODE (810 CH.) Occupied Bandwidth

■ GSM1900 EDGE (661 CH.) Occupied Bandwidth



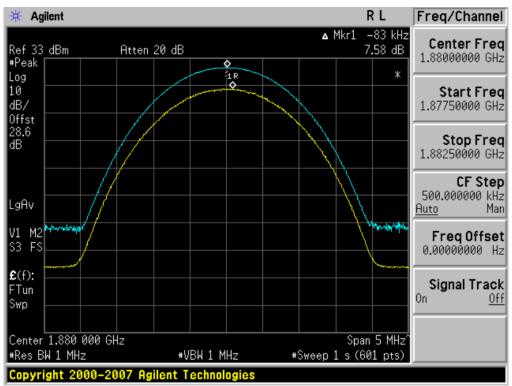
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■ GSM1900 MODE (661 CH.) Peak-to-Average Ratio

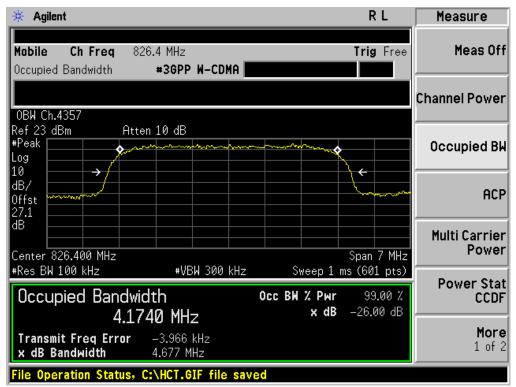
GSM1900 EDGE (661 CH.) Peak-to-Average Ratio



	FCC CERTIFICATION REPORT			
Test Report No. HCTR1302FR07	Date of Issue: February 05, 2013	EUT Type: Cellular/PCS CDMA, GSM, WCDMA and LTE Portable Router with WLAN	FCC ID: JYCORBIT	
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■ WCDMA850 MODE (4132 CH.) Occupied Bandwidth



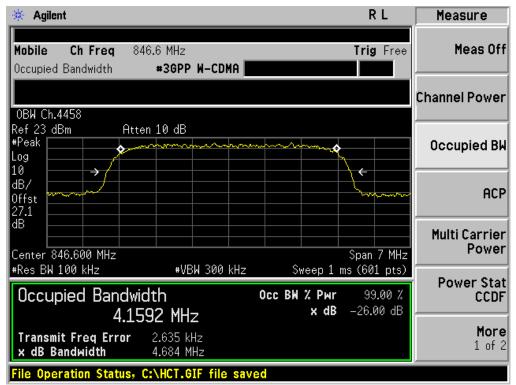
■ WCDMA850 MODE (4183 CH.) Occupied Bandwidth



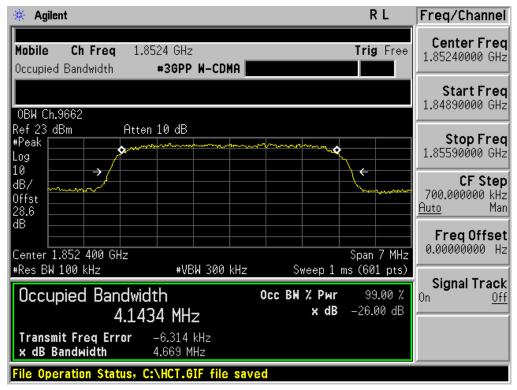
FCC CERTIFICATION REPORT						
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■ WCDMA850MODE (4233 CH.) Occupied Bandwidth



■ WCDMA1900 MODE (9262 CH.) Occupied Bandwidth

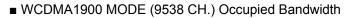


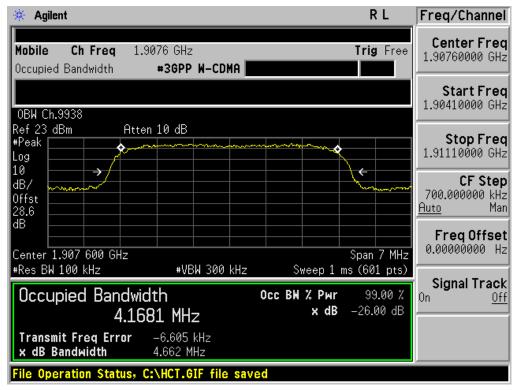
FCC CERTIFICATION REPORT						
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🔆 Agilent RL Freg/Channel **Center Freq** Mobile Ch Freq 1.88 GHz Trig Free 1.88000000 GHz Occupied Bandwidth #3GPP W-CDMA Start Freq 1.87650000 GHz 0BW Ch.9800 Ref 23 dBm #Peak Atten 10 dB Stop Freq ÷ 1.88350000 GHz Log 10 ¢ ÷ CF Step dB/ Offst 28.6 700.000000 kHz Man Auto dB Freq Offset 0.00000000 Hz Center 1.880 000 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 4.1546 MHz **Transmit Freq Error** 7.671 kHz x dB Bandwidth 4.648 MHz le Operation Status, C:\HCT.GIF file saved

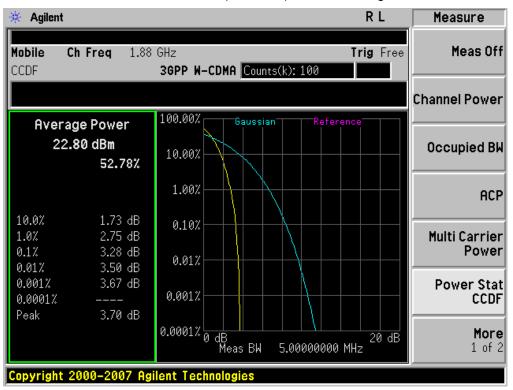
■ WCDMA1900 MODE (9400 CH.) Occupied Bandwidth





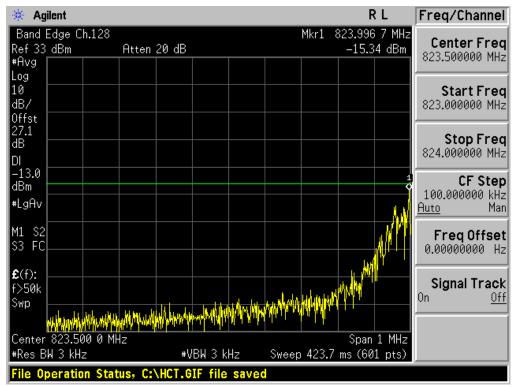
FCC CERTIFICATION REPORT						
Test Report No. HCTR1302FR07	Date of Issue: February 05, 2013	EUT Type: Cellular/PCS CDMA, GSM, WCDMA and LTE Portable Router with WLAN	FCC ID: JYCORBIT			
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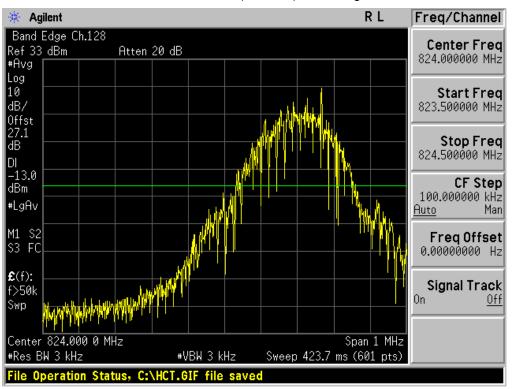
■ WCDMA1900 MODE (9400 CH.) Peak-to-Average Ratio

■ GSM850 MODE (128 CH.) Block Edge 1



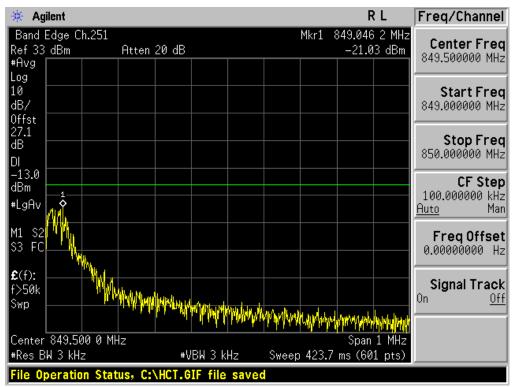
		FCC CERTIFICATION REPORT	www.hct.co.kr
Test Report No. HCTR1302FR07	Date of Issue: February 05, 2013	EUT Type: Cellular/PCS CDMA. GSM. WCDMA and LTE Portable Router with WLAN	FCC ID: JYCORBIT
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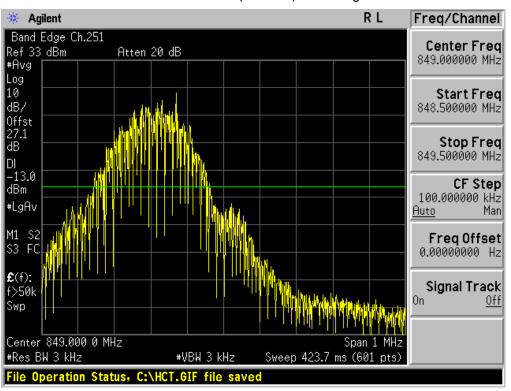
■ GSM850 MODE (128 CH.) Block Edge 2

■ GSM850 MODE (251 CH.) Block Edge 1



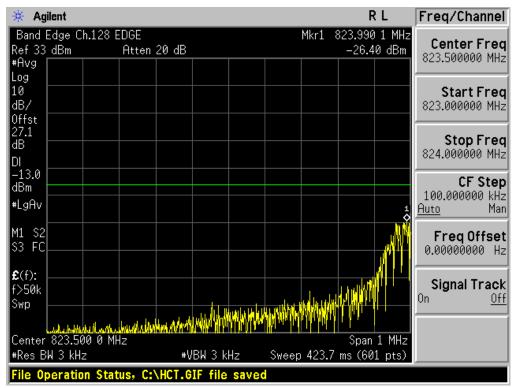
	FCC CERTIFICATION REPORT		
Test Report No. HCTR1302FR07	Date of Issue: February 05, 2013	EUT Type: Cellular/PCS CDMA, GSM, WCDMA and LTE Portable Router with WLAN	FCC ID: JYCORBIT
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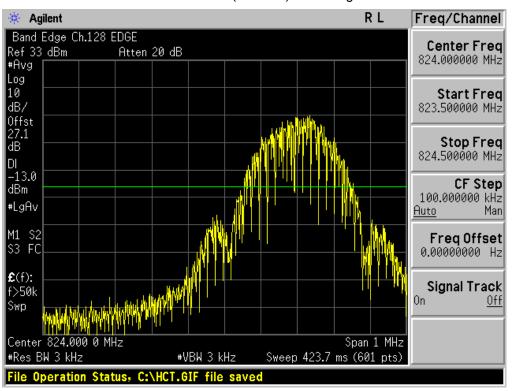
■ GSM850 MODE (251 CH.) Block Edge 2

■ EDGE MODE (128 CH.) Block Edge 1



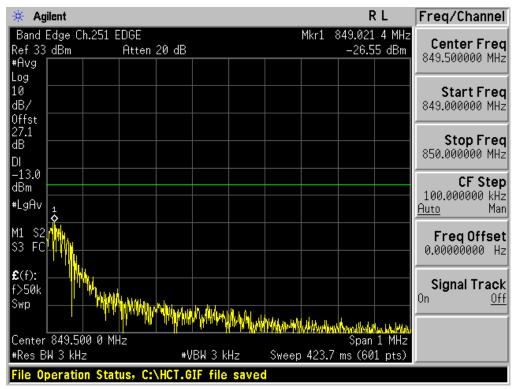
		FCC CERTIFICATION REPORT	www.hct.co.kr
Test Report No. HCTR1302FR07	Date of Issue: February 05, 2013	EUT Type: Cellular/PCS CDMA, GSM, WCDMA and LTE Portable Router with WLAN	FCC ID: JYCORBIT
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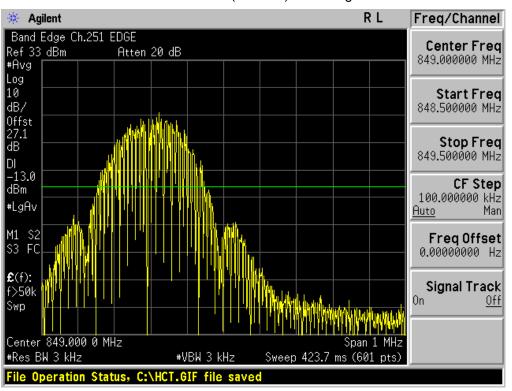
■ EDGE MODE (128 CH.) Block Edge 2

■ EDGE MODE (251 CH.) Block Edge 1



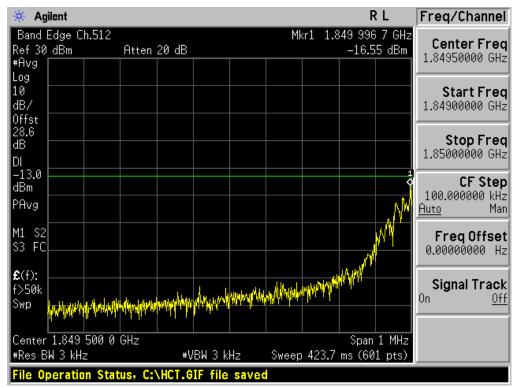
	FCC CERTIFICATION REPORT		
Test Report No. HCTR1302FR07	Date of Issue: February 05, 2013	EUT Type: Cellular/PCS CDMA, GSM, WCDMA and LTE Portable Router with WLAN	FCC ID: JYCORBIT
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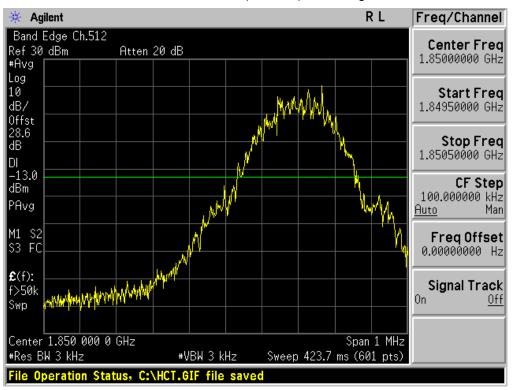
■ EDGE MODE (251 CH.) Block Edge 2

■ GSM1900 MODE (512 CH.) Block Edge 1



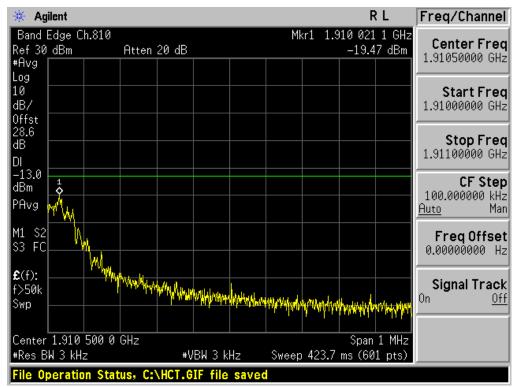
	FCC CERTIFICATION REPORT		
Test Report No. HCTR1302FR07	Date of Issue: February 05, 2013	EUT Type: Cellular/PCS CDMA, GSM, WCDMA and LTE Portable Router with WLAN	FCC ID: JYCORBIT
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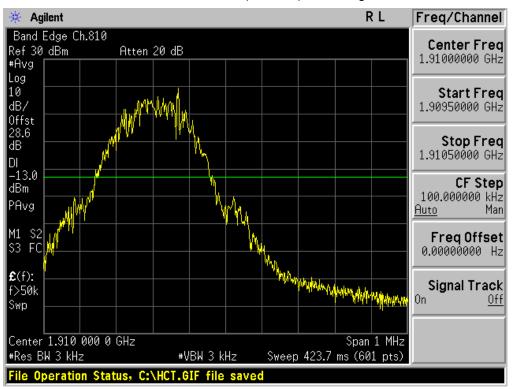
■ GSM1900 MODE (512 CH.) Block Edge 2

■ GSM1900 MODE (810 CH.) Block Edge 1



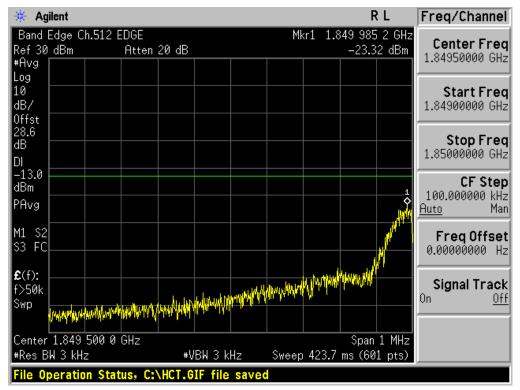
	FCC CERTIFICATION REPORT		
Test Report No. HCTR1302FR07	Date of Issue: February 05, 2013	EUT Type: Cellular/PCS CDMA, GSM, WCDMA and LTE Portable Router with WLAN	FCC ID: JYCORBIT
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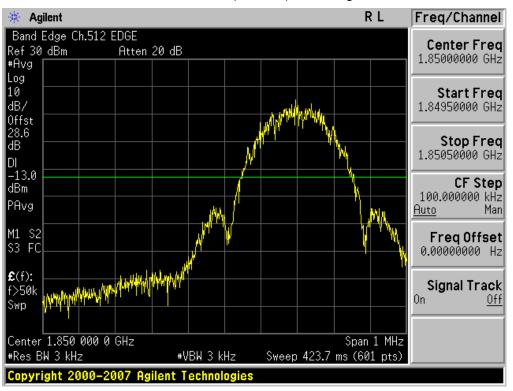
■ GSM1900 MODE (810 CH.) Block Edge 2

■ EDGE MODE (512 CH.) Block Edge 1



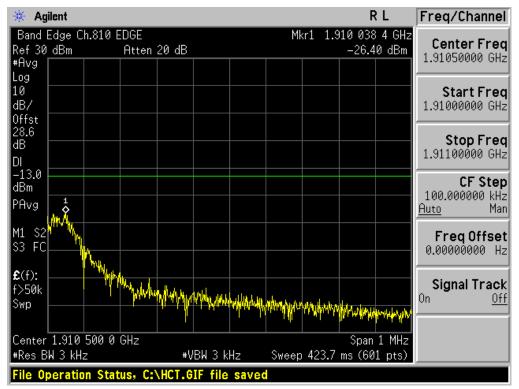
		FCC CERTIFICATION REPORT	www.hct.co.kr
Test Report No. HCTR1302FR07	Date of Issue: February 05, 2013	EUT Type: Cellular/PCS CDMA, GSM, WCDMA and LTE Portable Router with WLAN	FCC ID: JYCORBIT
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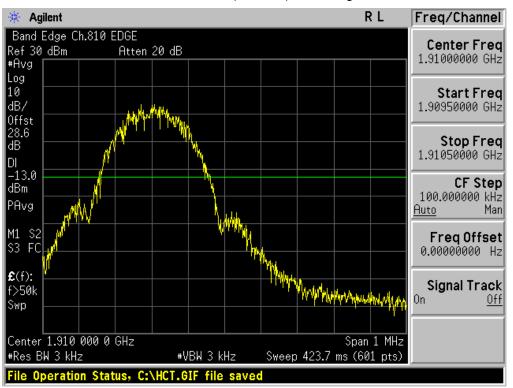
■ EDGE MODE (512 CH.) Block Edge 2

■ EDGE MODE (810 CH.) Block Edge 1



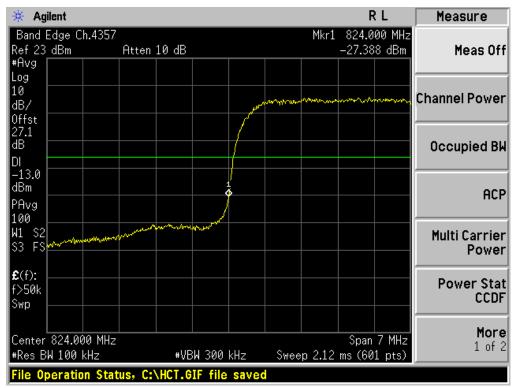
	FCC CERTIFICATION REPORT		
Test Report No. HCTR1302FR07	Date of Issue: February 05, 2013	EUT Type: Cellular/PCS CDMA, GSM, WCDMA and LTE Portable Router with WLAN	FCC ID: JYCORBIT
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■ EDGE MODE (810 CH.) Block Edge 2

■ WCDMA850 MODE (4132 CH.) Block Edge



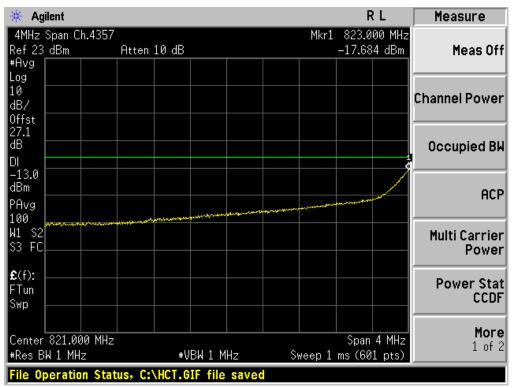
	FCC CERTIFICATION REPORT		
Test Report No. HCTR1302FR07	Date of Issue: February 05, 2013	EUT Type: Cellular/PCS CDMA, GSM, WCDMA and LTE Portable Router with WLAN	FCC ID: JYCORBIT
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🔆 Agilent				RL	Measure	
Band Edge Ch.44 Ref 23 dBm #Avg	158 Atten 10 dB		Mkr1	Mkr1 849.000 MHz —26.929 dBm		
Log 10 dB/	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	~~			Channel Power	
0ffst 27.1 dB DI					Occupied BW	
-13.0 dBm PAvg		11			ACP	
100 W1 S2 S3 FS				and the second	Multi Carrier Power	
£ (f): f>50k Swp					Power Stat CCDF	
Center 849.000 M #Res BW 100 kHz		 BW 300 kHz	Sweep 2.12	Span 7 MHz ms (601 pts)	More 1 of 2	
File Operation S	tatus, C:\HCT.(

■ WCDMA850MODE (4233 CH.) Block Edge

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



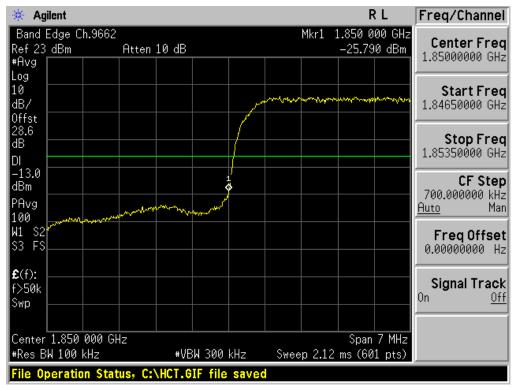
		FCC CERTIFICATION REPORT	www.hct.co.kr
Test Report No. HCTR1302FR07	Date of Issue: February 05, 2013	EUT Type: Cellular/PCS CDMA, GSM, WCDMA and LTE Portable Router with WLAN	FCC ID: JYCORBIT
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Measure	RL							ilent	₩ Ag
Meas Off	50.000 MHz .6.744 dBm				10 dB	Atten	Ch.4458		Ref 23
Channel Power									#Avg Log 10 dB/ Offst
Occupied Bk								2	27.1 dB
ACP	ىسىر مىلەرلىرىدىنىي چىرىدىلەرلىر.	harman a	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	*****	***				dBm PAvg 100
Multi Carrier Power									W1 S2 S3 FC
Power Stat CCDF									€(f): FTun Swp
More 1 of 2	Span 4 MHz (601 pts)	weep 1 r		BW 1 M	#V		 00 MHz Iz		Center #Res B
			saved	IF file	HCT.6	tus, C:'	on Stat	peratio	File O

■ WCDMA850MODE (4233 CH.) – 4 MHz Span

■ WCDMA1900 MODE (9262 CH.) Block Edge



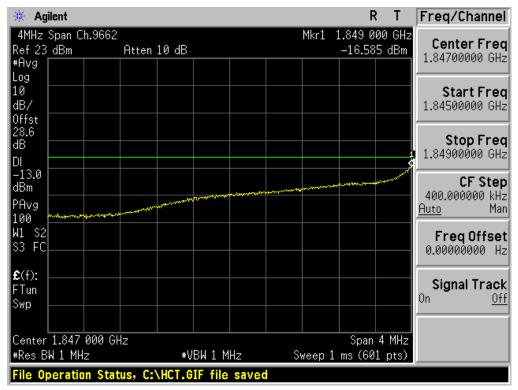
	FCC CERTIFICATION REPORT						
Test Report No.	Date of Issue:	EUT Type:	FCC ID:				
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Atten 10 dB			Mkr1 1	1.910 0 -25.58		Center Frec 1.91000000 GHz Start Frec 1.90650000 GHz
~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	Non -					
						1.30030000 0H2
						Stop Frec 1.91350000 GHz
	10	www.www.www.	and the second			<b>CF Ster</b> 700.000000 kH: Auto Mar
					0°°°°°°°°°°°°°°°°°°°°°°°°°°°°°°°°°°°°°	<b>Freq Offse</b> 0.00000000 H
						<b>Signal Tracl</b> On <u>Of</u>
z #WB	W 300 KH	 z	en 212			
	<b>#</b> VB	#VBW 300 kH		#VBW 300 kHz Sweep 2.12	z Span #VBW 300 kHz Sweep 2.12 ms (60	#VBW 300 kHz Sweep 2.12 ms (601 pts)

# ■ WCDMA1900 MODE (9538 CH.) Block Edge

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



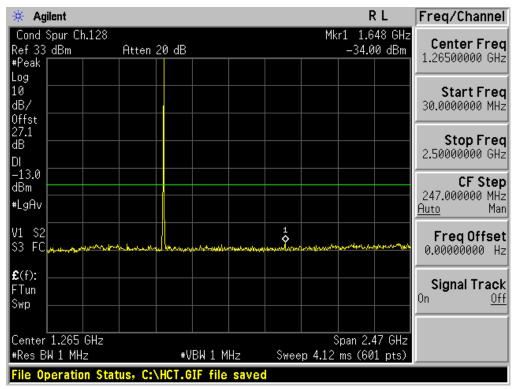
	FCC CERTIFICATION REPORT						
Test Report No.	Date of Issue:	EUT Type:	FCC ID:				
HCTR1302FR07	February 05, 2013	Cellular/PCS CDMA, GSM, WCDMA and LTE Portable Router with WLAN	JYCORBIT				
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🔆 Agilent				RL	Freq/Channel
4MHz Span Ch.99 Ref 23 dBm #Avg	38 Atten 10 dB		Mkr1 1	.911 000 GHz -15.536 dBm	Center Freq 1.91300000 GHz
Log 10 dB/ Offst					<b>Start Freq</b> 1.91100000 GHz
dB 1					<b>Stop Freq</b> 1.91500000 GHz
-13.0 dBm PAvg		and the second	Marchard Marchard and		<b>CF Step</b> 400.000000 kHz Auto Man
100 W1 S2 S3 FC				Landa antinety reasons it games in planaje	Freq Offset 0.00000000 Hz
€(f): FTun Swp					<b>Signal Track</b> On <u>Off</u>
Center 1.913 000 #Res BW 1 MHz		W 1 MHz	Sweep 1	Span 4 MHz ms (601 pts)	
File Operation S	tatus, C:\HCT.GI	F file saved			

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

# ■ GSM850 MODE (128 CH.) Conducted Spurious Emissions1



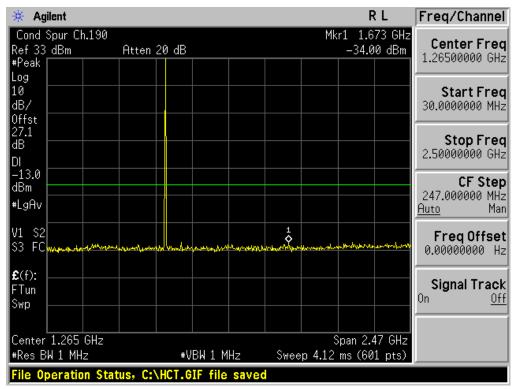
	FCC CERTIFICATION REPORT					
Test Report No. HCTR1302FR07	Date of Issue: February 05, 2013	EUT Type: Cellular/PCS CDMA, GSM, WCDMA and LTE Portable Router with WLAN	FCC ID: JYCORBIT			
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🗧 Agilent				R L	Freq/Channel
Cond Spur Ch.12	8		Mkr1	7.037 5 GHz	Center Freq
lef 33_dBm	Atten 20 dE	3		-30.24 dBm	6.25000000 GHz
Peak					0.23000000 0112
og Ø					Chart Enge
IB/					Start Frec 2.5000000 GHz
lffst					2.30000000 0H2
27.1					a. =
IB					Stop Fred
					10.0000000 GHz
-13.0					CF Step
IBm					750.000000 MHz
LgAv					Auto Mar
1 S2	man man man man man man	and all all and the strengthere	have an a work and the area and	When the Million more than	Freq Offse
3 FC	CONTRACTOR OF A DESCRIPTION OF A DESCRIP				0.00000000 H:
(f):					
Tun					Signal Track
inan Gwp					0n <u>Of</u>
9					
Center 6.250 0 G				Span 7.5 GHz	
Res BW 1 MHz	+	VBW 1 MHz	Sweep 12.52	ms (601 pts)	

### ■ GSM850 MODE (128 CH.) Conducted Spurious Emissions2

# ■ GSM850 MODE (190 CH.) Conducted Spurious Emissions1



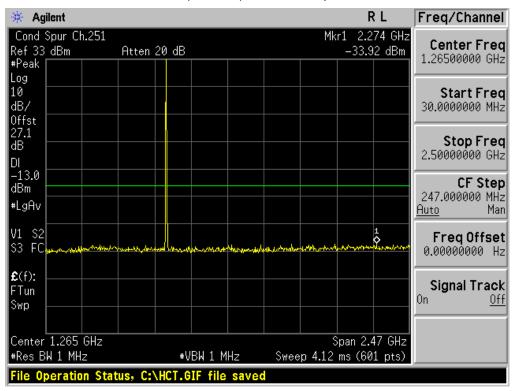
	FCC CERTIFICATION REPORT					
Test Report No. HCTR1302FR07	Date of Issue: February 05, 2013	EUT Type: Cellular/PCS CDMA, GSM, WCDMA and LTE Portable Router with WLAN	FCC ID: JYCORBIT			
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🖗 Agilent				R L	Freq/Channel
Cond Spur Ch.19	10		Mkr1	7.025 0 GHz	Center Fred
Ref 33_dBm	Atten 20 dB			-29.87 dBm	6.25000000 GHz
Peak					0.23000000 0112
.og					Chart Fra
187					Start Fred 2.50000000 GH;
)ffst					2.30000000 0H.
27.1					
£B ⊨ −					Stop Free
					10.0000000 GH:
-13.0					CF Step
iBm					750.000000 MH;
LgAv					Auto Ma
		<u> </u>	1		
/1 S2	المعرفين المعرفين		and marked and a second	man white we	Freq Offse
3 FC	hammentenen and a state of the second	Anterio de la companya de la company			0.00000000 H;
<b>2</b> (f):					
Tun					Signal Track
Swp					0n <u>Of</u>
Center 6.250 0 G				Span 7.5 GHz	
ŧRes BW 1 MHz	#	/BW1 MHz	Sweep 12.52	ms(601 pts)	

# ■ GSM850 MODE (190 CH.) Conducted Spurious Emissions2

### ■ GSM850 MODE (251 CH.) Conducted Spurious Emissions1



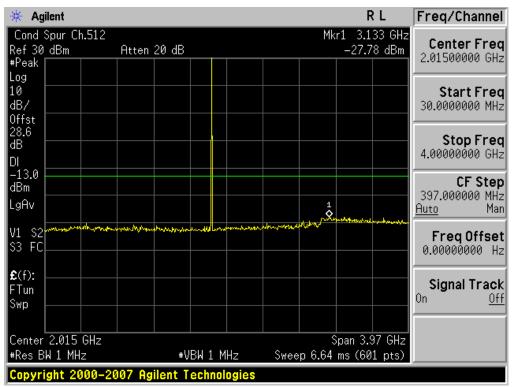
	FCC CERTIFICATION REPORT					
Test Report No. HCTR1302FR07	· · · · · · · · · · · · · · · · · · ·					
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🗧 Agilent				RL	Freq/Channel
Cond Spur Ch.25			Mkr1	7.150 0 GHz	Center Freq
kef 33_dBm	Atten 20 dB			-30.47 dBm	6.25000000 GHz
Peak					.23000000 0112
.og					Stort From
.ø IB/					Start Fred 2.5000000 GHz
)ffst					2.30000000 0112
27.1					A
IB					Stop Fred
)   К					10.0000000 GHz
-13.0					CF Step
lBm					750.000000 MHz
LgAv					Auto Mar
			1		
1 S2	And water the state	all a company of high faith	unter marine	Marrie Josephine married	Freq Offset
3 FC		VHrynd Arvit Life Arter			0.00000000 Hz
<b>2</b> (f):					
Tun					Signal Track
Swp					0n <u>Of</u>
Center 6.250 0 G				Span 7.5 GHz	
Res BW 1 MHz	#	VBW 1 MHz	Sweep 12.52	ms (601 pts)	

### ■ GSM850 MODE (251 CH.) Conducted Spurious Emissions2

# ■ GSM1900 MODE (512 CH.) Conducted Spurious Emissions1



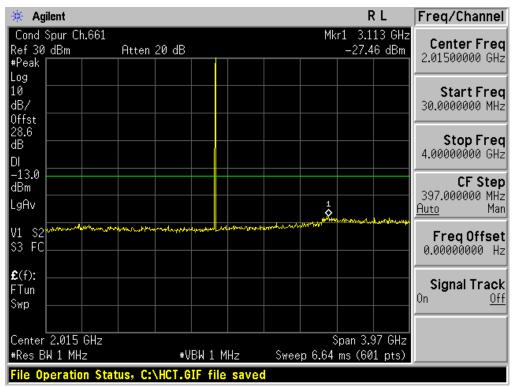
	FCC CERTIFICATION REPORT					
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🔆 Agilent			R	: L	Freq/Channel
Cond Spur Ch.51	.2			27 GHz	Contor From
Ref 30_dBm	Atten 20 dB		-24.5	9 dBm	Center Freq 12.0000000 GHz
#Peak					
Log 10					Stort From
dB/					Start Freq 4.00000000 GHz
Offst					4.000000000 0112
28.6					Chan Fran
dB					Stop Freq 20.0000000 GHz
					20.0000000 0H2
-13.0 dBm					CF Step
		1			1.60000000 GHz
LgAv	- Marina marina	and a stranger	manymennertheren	and the second second	<u>Auto</u> Mar
V1 S2	and the state of t	and the second			En a altra a
\$3 FC					Freq Offset
					0.00000000 Hz
<b>£</b> (f):					
FTun 📔 👘					Signal Track
Swp					0n <u>0f</u>
Center 12.000 G	Hz		Span 1	.6 GHz	
#Res BW 1 MHz		BW 1 MHz	Sweep 40 ms (60		
	Status, C:\HCT.G				,

### ■ GSM1900 MODE (512 CH.) Conducted Spurious Emissions2

# ■ GSM1900 MODE (661 CH) Conducted Spurious Emissions1



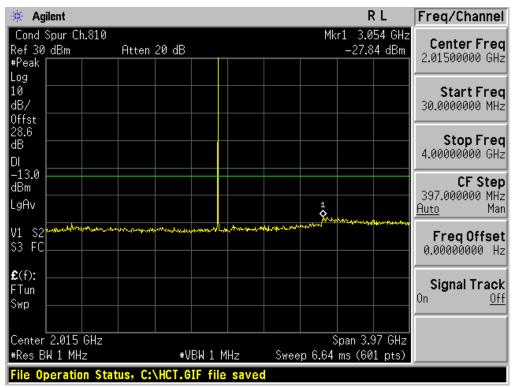
FCC CERTIFICATION REPORT				
Test Report No. HCTR1302FR07	Date of Issue: February 05, 2013	EUT Type: Cellular/PCS CDMA, GSM, WCDMA and LTE Portable Router with WLAN	FCC ID: JYCORBIT	
11011(130211(0)	1 ebidary 00, 2010	Page 53 of 61	JICORDIT	



			RL	Freq/Channel
1 Atten 20 dB		Mkr	1 13.680 GHz -25.34 dBm	Center Freq 12.0000000 GHz
				<b>Start Freq</b> 4.00000000 GHz
				<b>Stop Freq</b> 20.0000000 GHz
America I		markan markan	ter ware with stranger - theread	<b>CF Step</b> 1.60000000 GHz <u>Auto</u> Mar
	ayor (10)0000			Freq Offset 0.00000000 Hz
				<b>Signal Track</b> On <u>Of</u>
	3W 1 MHz	Sweep 40	Span 16 GHz ms (601 pts)	
		Atten 20 dB	Atten 20 dB         Image: Constraint of the second secon	Atten 20 dB25.34 dBm

#### ■ GSM1900 MODE (661 CH.) Conducted Spurious Emissions2

# ■ GSM1900 MODE (810 CH.) Conducted Spurious Emissions1



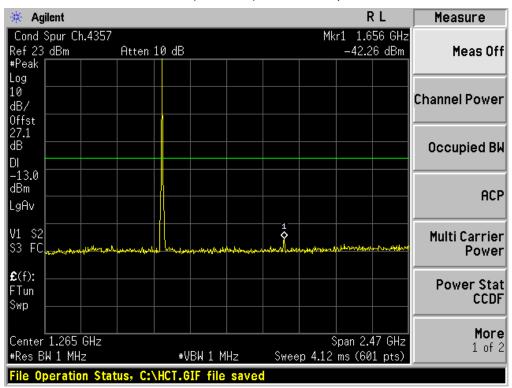
FCC CERTIFICATION REPORT				
Test Report No.	Date of Issue:	EUT Type:	FCC ID:	
HCTR1302FR07	February 05, 2013	Cellular/PCS CDMA, GSM, WCDMA and LTE Portable Router with WLAN	JYCORBIT	
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🔆 Agilent			RL	Freq/Channel
Cond Spur Ch.810 Ref 30 dBm #Peak	Atten 20 dB		Mkr1 13.893 -24.72	
Log 10 dB/				Start Freq 4.00000000 GHz
0ffst 28.6 dB DI				Stop Freq 20.0000000 GHz
-13.0 dBm LgAv			Maryan Marina Marina	<b>CF Step</b> 1.60000000 GHz <u>Auto</u> Man
V1 S2 S3 FC	nordelite anna an a	her out and the second s		Freq Offset 0.00000000 Hz
£(f): FTun Swp				Signal Track ^{On <u>Off</u>}
Center 12.000 GHz #Res BW 1 MHz		1 MHz 3	Span 16 Sweep 40 ms (601	
File Operation St	atus, C:\HCT.GIF	file saved		

# ■ GSM1900 MODE (810 CH.) Conducted Spurious Emissions2

# ■ WCDMA850 MODE (4132 CH.) Conducted Spurious Emissions1



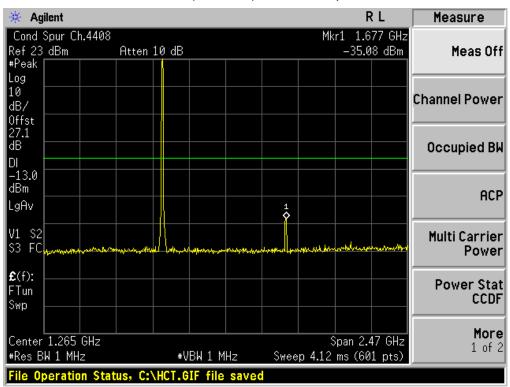
FCC CERTIFICATION REPORT				
Test Report No. HCTR1302FR07	Date of Issue: February 05, 2013	EUT Type: Cellular/PCS CDMA, GSM, WCDMA and LTE Portable Router with WLAN	FCC ID: JYCORBIT	
11011(100211(0)	1 coldary 00, 2010	Page 55 of 61	UTCORDIT	



Measure	RL									ilent	🔆 Ag
Meas Off	225 0 GHz 0.14 dBm		Mkr:				10 dB	Atten	Ch.4357		Ref 23
Channel Power											#Peak Log 10 dB/
Occupied Bk											Offst 27.1 dB DI –13.0
ACF				1							dBm LgAv
Multi Carrier Power	www.wate	hwa	a harver	NHÂNA	hadrada an da a	an a	when	-	tra transformation and a		V1 S2 S3 FC
Power Stat CCDF											€(f): FTun Swp
<b>More</b> 1 of 2	n 7.5 GHz 601 pts)		) 12.52	Swee	Hz	BW 1 M	#\		) 0 GHz Hz		Center #Res B
				d	save	IF file	\HCT.G	tus, C:	ion Sta	perati	File O

# ■ WCDMA850 MODE (4132 CH.) Conducted Spurious Emissions2

# ■ WCDMA850 MODE (4183 CH.) Conducted Spurious Emissions1



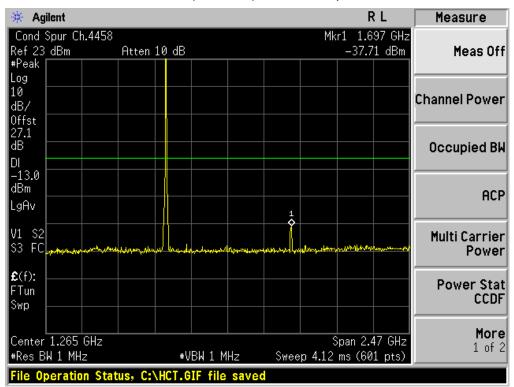
FCC CERTIFICATION REPORT				
Test Report No. HCTR1302FR07	Date of Issue: February 05, 2013	EUT Type: Cellular/PCS CDMA, GSM, WCDMA and LTE Portable Router with WLAN	FCC ID: JYCORBIT	
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K Agilent				RL	Measure
Cond Spur Ch.4408	<i>i</i> <del>.</del>		Mkr1	7.350 0 GHz	
Ref23 dBm At Peak	ltten 10 dB		1	-40.56 dBm	Meas Off
og					
0					Channel Power
					channer ower
offst 197.1					
iB					Occupied BW
-13.0  Bm					
gAv					ACP
3.1.		1			
1 S2		mound	Monthemark	when the should be a should be should be should be a should be a should be a should be a s	Multi Carrier
3 FC month marker	ablestand	Manster		**************************************	Power
2(f):					
Tun					Power Stat
iwp					CCDF
					Horo
Center 6.250 0 GHz				Span 7.5 GHz	<b>More</b> 1 of 2
Res BW 1 MHz	#VBW 1	MHz Sweep	12.52 г	ns (601 pts)	
ile Operation Status	GC:\HCT.GIF fil	e saved			

# ■ WCDMA850 MODE (4183 CH.) Conducted Spurious Emissions2

■ WCDMA850MODE (4233 CH.) Conducted Spurious Emissions1



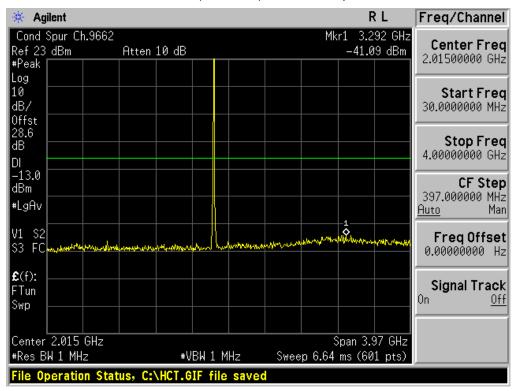
FCC CERTIFICATION REPORT				
Test Report No. HCTR1302FR07	Date of Issue: February 05, 2013	EUT Type: Cellular/PCS CDMA, GSM, WCDMA and LTE Portable Router with WLAN	FCC ID: JYCORBIT	
	1 001001 00, 2010	Page 57 of 61	01001.511	



🔆 Agilent					RL	Measure
Cond Spur Ch.44			М		.150 0 GHz	
Ref 23 dBm #Peak	Atten 10 dl	3			39.90 dBm	Meas Off
Log						
10						Channel Power
dB/						channel Fower
Offst 27.1						
dB						Occupied BW
-13.0 dBm						
LgAv						ACP
-9110			11			
V1 S2	ь	البيل	Anthony	Muchant	لمعربا لعرب	Multi Carrier
S3 FC	Mary hope - the part of the state of the	ward and the state of the second s				Power
<b>£</b> (f):						
FTun						Power Stat
Swp						CCDF
						Mara
Center 6.250 0 G					an 7.5 GHz	<b>More</b> 1 of 2
#Res BW 1 MHz		ŧVBW 1 MHz	Sweep 12.	52 ms	(601 pts)	
File Operation S	tatus, C:\HCT	GIF file save	d			

# ■ WCDMA850MODE (4233 CH.) Conducted Spurious Emissions2

# ■ WCDMA1900 MODE (9262 CH.) Conducted Spurious Emissions1



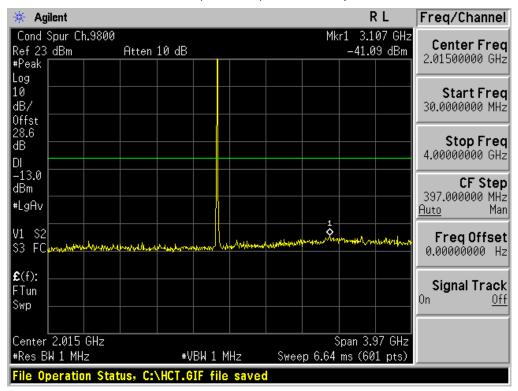
FCC CERTIFICATION REPORT				
Test Report No. HCTR1302FR07	Date of Issue: February 05, 2013	EUT Type: Cellular/PCS CDMA. GSM. WCDMA and LTE Portable Router with WLAN	FCC ID: JYCORBIT	
1011(130211(07	1 ebidary 00, 2010	Page 58 of 61	STOORBIT	



Atten 10 dB				L3.947 GHz 36.67 dBm	Center Fred
					12.0000000 GHz
					<b>Start Fred</b> 4.00000000 GHz
					Stop Fred 20.0000000 GHz
		1			<b>CF Step</b> 1.6000000 GH; <u>Auto</u> Mar
And Hora Man Souther man	andramhin marke	1 and Andrews	Marken Marken	unnanyarhairenta	Freq Offse 0.00000000 H
					<b>Signal Tracl</b> On <u>Of</u>
#\	/BW 1 MHz	Sw			
	#\	#VBW 1 MHz		Sp #VBW 1 MHz Sweep 40 ms	Span 16 GHz #VBW 1 MHz Sweep 40 ms (601 pts)

#### ■ WCDMA1900 MODE (9262 CH.) Conducted Spurious Emissions2

■ WCDMA1900 MODE (9400 CH.) Conducted Spurious Emissions1



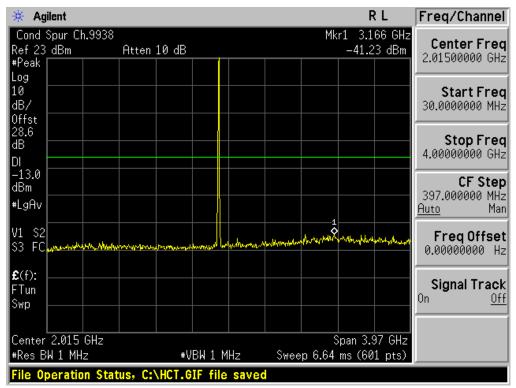
FCC CERTIFICATION REPORT				
Test Report No. HCTR1302FR07	Date of Issue: February 05, 2013	EUT Type: Cellular/PCS CDMA, GSM, WCDMA and LTE Portable Router with WLAN	FCC ID: JYCORBIT	
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Cond Spur Ch.980 Ref 23 dBm #Peak Log 10	00 Atten 10 dB		Mkr		
				-36.94 dB	12.0000000 GHz
dB/ Offst					Start Freq 4.00000000 GHz
28.6 dB DI					<b>Stop Frec</b> 20.0000000 GHz
-13.0 dBm #LgAv			1		<b>CF Step</b> 1.60000000 GHz <u>Auto</u> Mar
/1 S2 53 FC	n and a second	the second s	And and a start of the start of	ny hambour and	Freq Offset
C(f): Tun Swp					<b>Signal Tracl</b> On <u>Of</u>
Center 12.000 GH: #Res BW 1 MHz		W 1 MHz	Sweep 40	Span 16 GH ms (601 pts	

#### ■ WCDMA1900 MODE (9400 CH.) Conducted Spurious Emissions2

### ■ WCDMA1900 MODE (9538 CH.) Conducted Spurious Emissions1



FCC CERTIFICATION REPORT				
Test Report No.	Date of Issue:	EUT Type:	FCC ID:	
HCTR1302FR07	February 05, 2013	Cellular/PCS CDMA, GSM, WCDMA and LTE Portable Router with WLAN	JYCORBIT	
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🔆 Agilent		,	RL	Freq/Channel
Cond Spur Ch.9938 Ref 23 dBm	3 Atten 10 dB		Mkr1 13.733 ( –36.70 df	Hz Center Freq
#Peak Log				12.0000000 GHz
10 dB/ Offst				Start Freq 4.00000000 GHz
28.6 dB DI				Stop Fred 20.0000000 GHz
-13.0 dBm #LgAv				<b>CF Step</b> 1.60000000 GHz <u>Auto</u> Mar
V1 S2 S3 FC	Antoning Pares - manthe and from	way which we have made	an and the stand of the stand o	Freq Offse 0.00000000 H;
€(f): FTun Swp				Signal Tracl
L Center 12.000 GHz ≢Res BW 1 MHz	#VBW 1	MHz St	Span 16 G veep 40 ms (601 pt	
File Operation Sta	atus, C:\HCT.GIF fil	e saved		

# ■ WCDMA1900 MODE (9538 CH.) Conducted Spurious Emissions2

FCC CERTIFICATION REPORT				
Test Report No. HCTR1302FR07	Date of Issue: February 05, 2013	EUT Type: Cellular/PCS CDMA, GSM, WCDMA and LTE Portable Router with WLAN	FCC ID: JYCORBIT	
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