

7.3.2 RADIATED SPURIOUS EMISSIONS (GSM1900)

- MEASURED OUTPUT POWER: 28.67 dBm = 0.736 W
- MODULATION SIGNAL: GSM1900
- DISTANCE: 3 meters
- LIMIT: $43 + 10 \log_{10}(W) =$ 41.67 dBc

Ch.	Freq.(MHz)	Measured Level [dBm]	Ant. Gain (dBi)	Substitute Level [dBm]	C.L	Pol.	EIRP (dBm)	dBc
512 (1850.2)	3,700.40	-44.90	12.27	-49.64	2.19	H	-39.56	68.23
	5,550.60	-42.41	13.40	-42.08	2.88	V	-31.56	60.23
	7,400.80	-56.95	11.37	-46.66	3.29	H	-38.58	67.25
661 (1880.0)	3,760.00	-42.05	12.31	-46.60	2.11	H	-36.40	65.07
	5,640.00	-44.37	13.41	-43.70	2.92	V	-33.21	61.88
	7,520.00	-59.18	11.55	-49.66	3.34	V	-41.45	70.12
810 (1909.8)	3,819.60	-40.05	12.37	-44.53	2.14	H	-34.30	62.97
	5,729.40	-45.85	13.42	-44.41	3.02	H	-34.01	62.68
	7,639.20	-58.01	11.70	-48.25	3.13	V	-39.68	68.35

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

7.3.3 SPURIOUS EMISSIONS (WCDMA1900)

- MEASURED OUTPUT POWER: 25.21 dBm = 0.332 W
- MODULATION SIGNAL: WCDMA1900
- DISTANCE: 3 meters
- LIMIT: $43 + 10 \log_{10}(W) =$ 38.21 dBc

Ch.	Freq.(MHz)	Measured Level [dBm]	Ant. Gain (dBi)	Substitute Level [dBm]	C.L	Pol.	EIRP (dBm)	dBc
9262	3,704.80	-50.93	12.27	-55.67	2.19	H	-45.59	70.80
	5,557.20	-56.56	13.40	-56.23	2.88	H	-45.71	70.92
	7,409.60	-58.00	11.37	-47.71	3.29	H	-39.63	64.84
9400	3,760.00	-51.74	12.31	-56.29	2.11	H	-46.09	71.30
	5,640.00	-55.92	13.41	-55.25	2.92	H	-44.76	69.97
	7,520.00	-58.14	11.55	-48.62	3.34	V	-40.41	65.62
9538	3,815.20	-53.11	12.37	-57.59	2.14	H	-47.36	72.57
	5,722.80	-54.98	13.42	-53.54	3.02	H	-43.14	68.35
	7,630.40	-59.04	11.70	-49.28	3.13	V	-40.71	65.92

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

7.4 PEAK-TO-AVERAGE RATIO

- Plots of the EUT's Peak- to- Average Ratio are shown Page 27, 29.

7.5 OCCUPIED BANDWIDTH

Band	Channel	Frequency(MHz)	Data (GSM: kHz / WCDMA : MHz)
GSM850	128	824.20	243.8687
	190	836.60	248.4525
	251	848.80	246.4799
GSM1900	512	1850.20	245.0848
	661	1880.00	250.2688
	810	1909.80	245.7804
WCDMA1900	9262	1852.40	4.1450
	9400	1880.00	4.1621
	9538	1907.60	4.1810

- Plots of the EUT's Occupied Bandwidth are shown Page 24 ~ 26, 27 ~ 28.

7.6 CONDUCTED SPURIOUS EMISSIONS

Band	Channel	Frequency of Maximum Harmonic (GHz)	Maximum Data (dBm)
GSM850	128	4.795480	-28.99
	190	4.947570	-28.62
	251	4.761190	-28.65
GSM1900	512	6.420300	-24.99
	661	6.943020	-25.36
	810	6.997320	-25.61
WCDMA1900	9262	6.973190	-25.08
	9400	6.982510	-25.63
	9538	6.977030	-25.23

- Plots of the EUT's Conducted Spurious Emissions are shown Page 35 ~ 44.

7.6.1 BAND EDGE

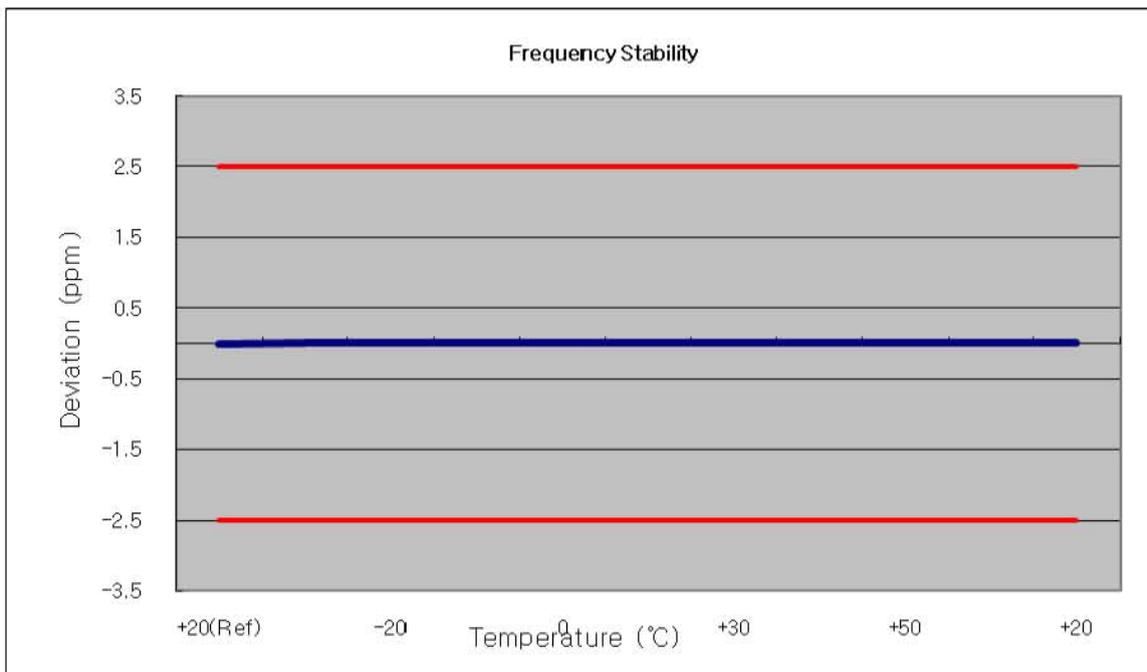
- Plots of the EUT's Band Edge are shown Page 29 ~ 35.

7.7 FREQUENCY STABILITY / VARIATION OF AMBIENT TEMPERATURE

7.7.1 FREQUENCY STABILITY (GSM850)

- ▣ OPERATING FREQUENCY: 836,600,000 Hz
- ▣ CHANNEL: 190
- ▣ REFERENCE VOLTAGE: 3.8 VDC
- ▣ DEVIATION LIM IT: ± 0.000 25 % or 2.5 ppm

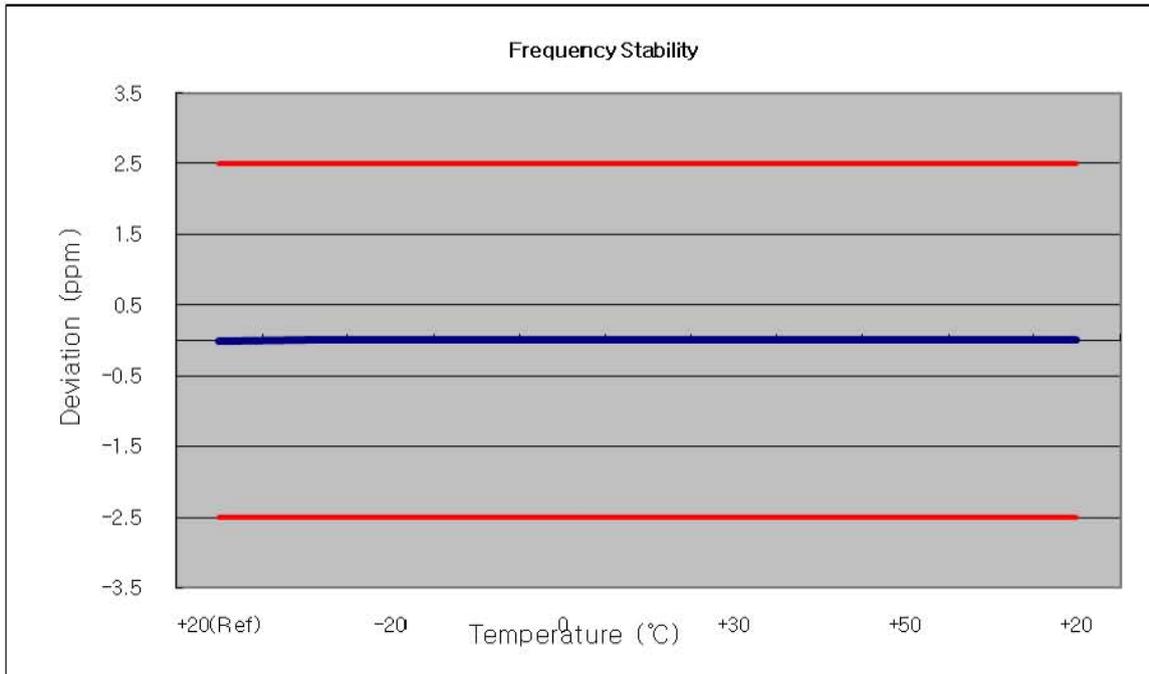
Voltage (%)	Power (VDC)	Temp. (°C)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
100%	3.800	+20(Ref)	836 599 994	0	0.000 000	0.000
100%		-30	836 600 001	7.17	0.000 001	0.009
100%		-20	836 600 002	8.42	0.000 001	0.010
100%		-10	836 600 001	7.57	0.000 001	0.009
100%		0	836 600 001	7.34	0.000 001	0.009
100%		+10	836 599 999	5.33	0.000 001	0.006
100%		+30	836 600 002	7.78	0.000 001	0.009
100%		+40	836 600 000	6.24	0.000 001	0.007
100%		+50	836 600 003	9.25	0.000 001	0.011
115%		4.370	+20	836 600 004	9.73	0.000 001
Batt. Endpoint	3.500	+20	836 600 002	8.45	0.000 001	0.010



7.7.2 FREQUENCY STABILITY (GSM1900)

- ▣ OPERATING FREQUENCY: 1880,000,000 Hz
- ▣ CHANNEL: 661
- ▣ REFERENCE VOLTAGE: 3.8 VDC
- ▣ DEVIATION LIMIT: ± 0.000 25 % or 2.5 ppm

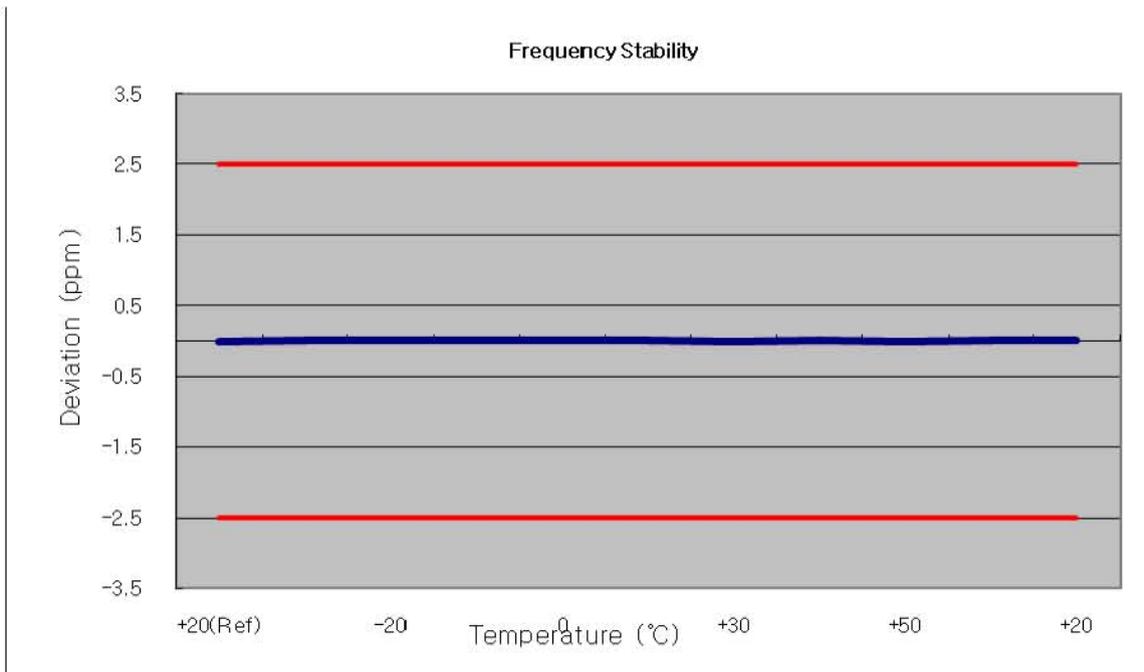
Voltage (%)	Power (VDC)	Temp. (°C)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
100%	3.800	+20(Ref)	1879 999 979	0	0.000 000	0.000
100%		-30	1879 999 995	16.21	0.000 001	0.009
100%		-20	1879 999 998	18.53	0.000 001	0.010
100%		-10	1880 000 000	21.13	0.000 001	0.011
100%		0	1880 000 006	26.41	0.000 001	0.014
100%		+10	1879 999 998	19.12	0.000 001	0.010
100%		+30	1880 000 006	27.13	0.000 001	0.014
100%		+40	1879 999 999	19.94	0.000 001	0.011
100%		+50	1879 999 998	18.56	0.000 001	0.010
115%		4.370	+20	1880 000 002	23.00	0.000 001
Batt. Endpoint	3.500	+20	1879 999 998	18.38	0.000 001	0.010



7.7.3 FREQUENCY STABILITY (WCDMA1900)

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

Voltage (%)	Power (VDC)	Temp. (°C)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
100%	3.800	+20(Ref)	1879 999 994	0	0.000 000	0.000
100%		-30	1880 000 005	5.17	0.000 000	0.003
100%		-20	1880 000 008	7.70	0.000 000	0.004
100%		-10	1880 000 006	6.29	0.000 000	0.003
100%		0	1880 000 008	7.73	0.000 000	0.004
100%		+10	1880 000 006	6.09	0.000 000	0.003
100%		+30	1879 999 996	-3.73	0.000 000	-0.002
100%		+40	1880 000 006	6.40	0.000 000	0.003
100%		+50	1879 999 994	-5.94	0.000 000	-0.003
115%		4.370	+20	1880 000 008	7.53	0.000 000
Batt. Endpoint	3.500	+20	1880 000 007	7.47	0.000 000	0.004





8. TEST PLOTS

FCC CERTIFICATION REPORT			www.hct.co.kr
Test Report No. HCTR1305FR09	Date of Issue: May 14, 2013	EUT Type: GSM/WCDMA Phone with Bluetooth3.0, WMF1802.11 b/g/n	FCC ID: ZNFE440J

■ GSM850 MODE (128 CH.) Occupied Bandwidth



■ GSM850 MODE (190 CH.) Occupied Bandwidth



FCC CERTIFICATION REPORT

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Test Report No.
HCTR1305FR09

Date of Issue:
May 14, 2013

EUT Type:
GSM/WCDMA Phone with Bluetooth3.0, WMFI802.11 b/g/n

FCC ID:
ZNFE440J

■ GSM850 MODE (251 CH.) Occupied Bandwidth



■ GSM1900 MODE (512 CH.) Occupied Bandwidth



FCC CERTIFICATION REPORT

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Test Report No. HCTR1305FR09	Date of Issue: May 14, 2013	EUT Type: GSM/WCDMA Phone with Bluetooth3.0, WMFI802.11 b/g/n	FCC ID: ZNFE440J

■ GSM1900 MODE (661 CH.) Occupied Bandwidth



■ GSM1900 MODE (810 CH.) Occupied Bandwidth



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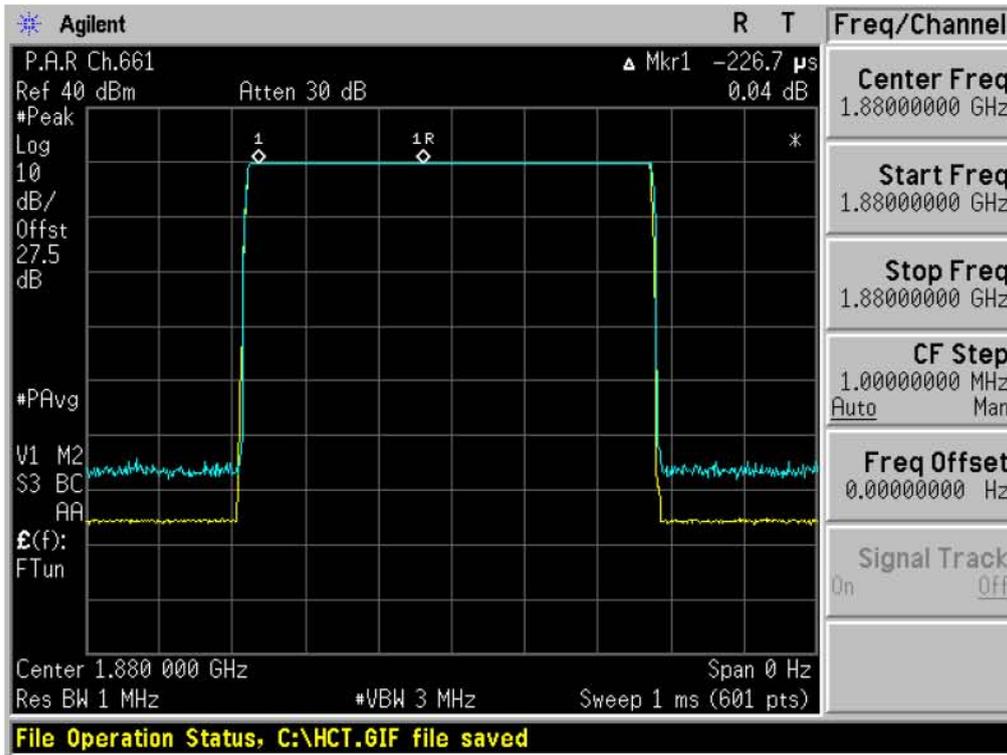
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HCTR1305FR09

Date of Issue:
May 14, 2013

EUT Type:
GSM/WCDMA Phone with Bluetooth3.0, WMFI802.11 b/g/n

FCC ID:
ZNFE440J

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



■ WCDMA1900 MODE (9262 CH.) Occupied Bandwidth



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Test Report No.
HCTR1305FR09

Date of Issue:
May 14, 2013

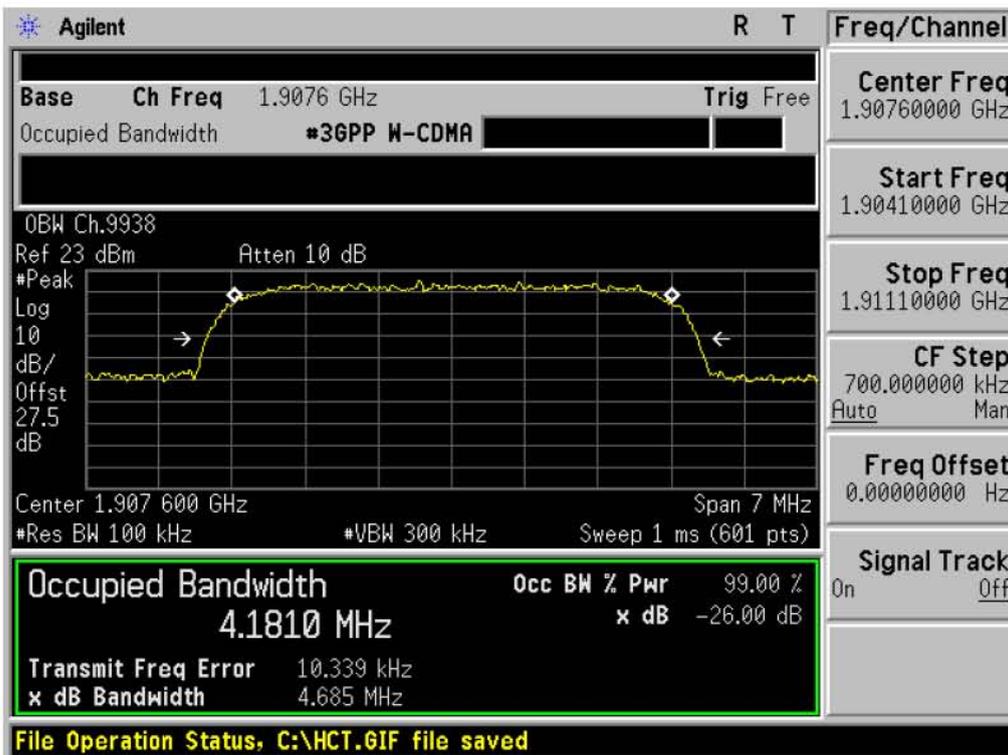
EUT Type:
GSM/WCDMA Phone with Bluetooth3.0, WMFI802.11 b/g/n

FCC ID:
ZNFE440J

■ WCDMA1900 MODE (9400 CH.) Occupied Bandwidth



■ WCDMA1900 MODE (9538 CH.) Occupied Bandwidth



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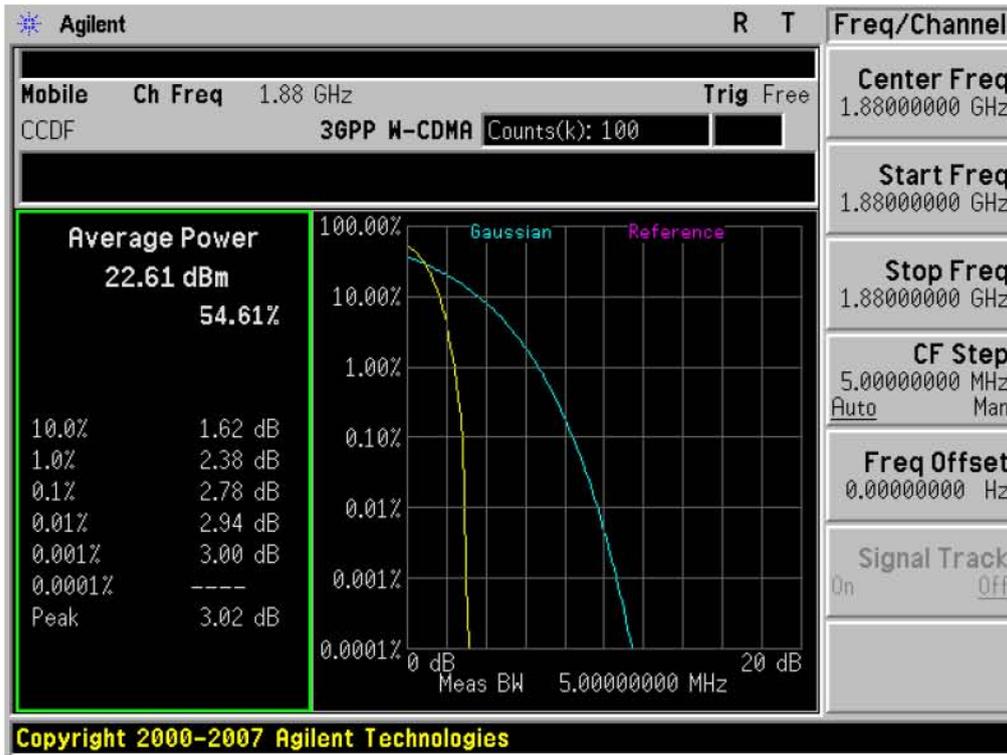
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May 14, 2013

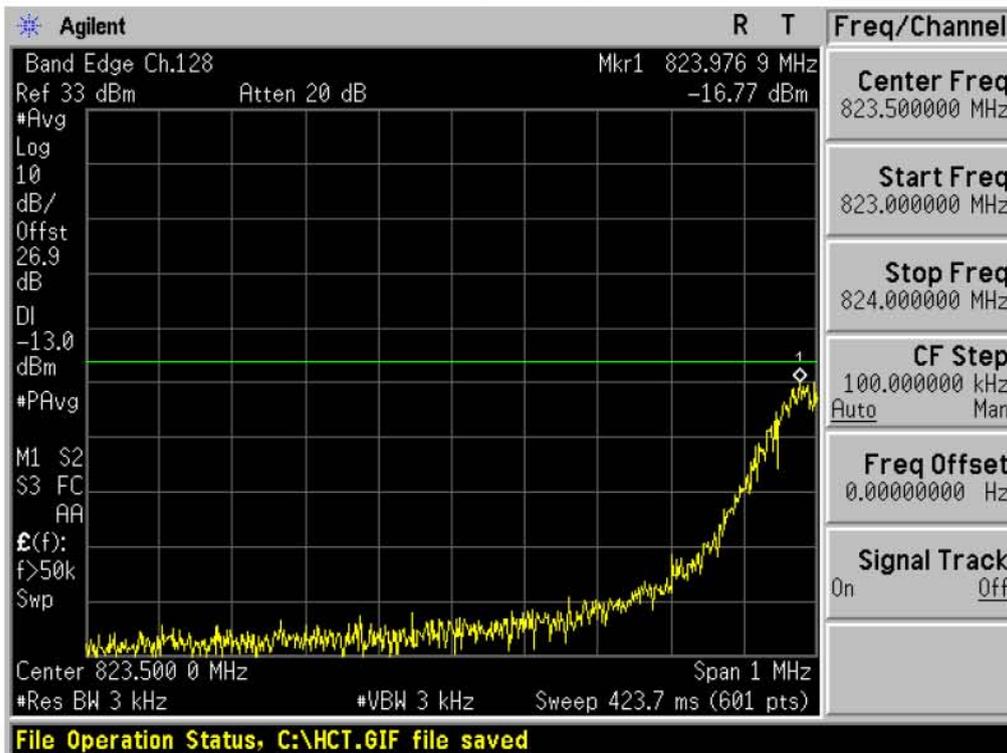
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GSM/WCDMA Phone with Bluetooth3.0, WMF1802.11 b/g/n

FCC ID:
ZNF440J

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



■ GSM850 MODE (128 CH.) Block Edge 1



FCC CERTIFICATION REPORT

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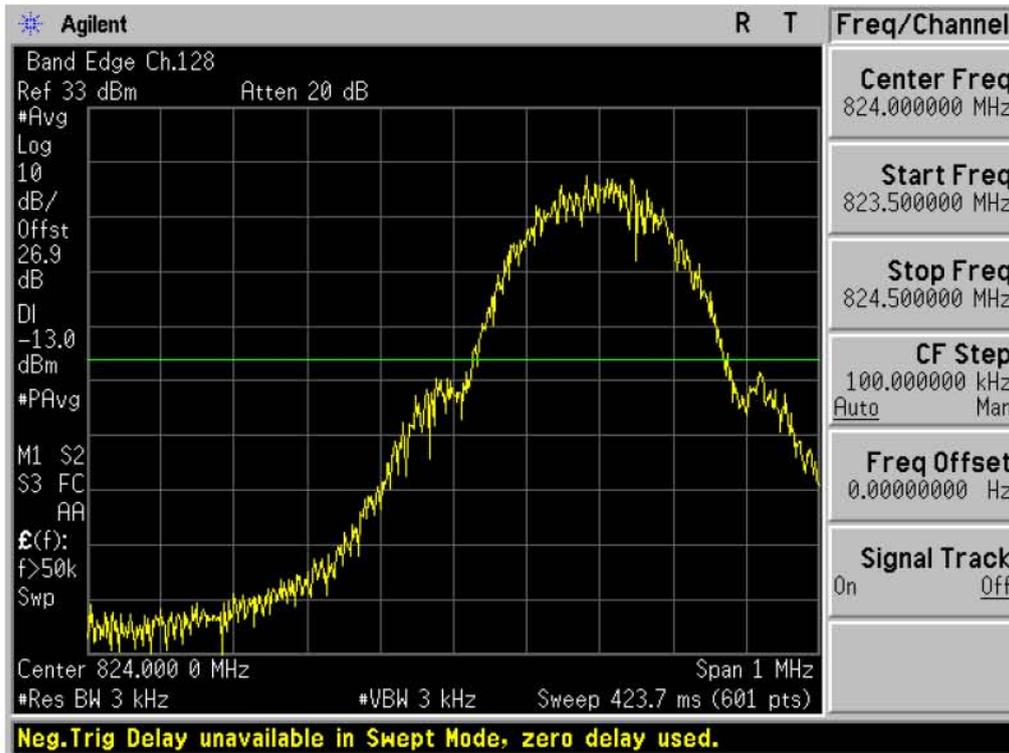
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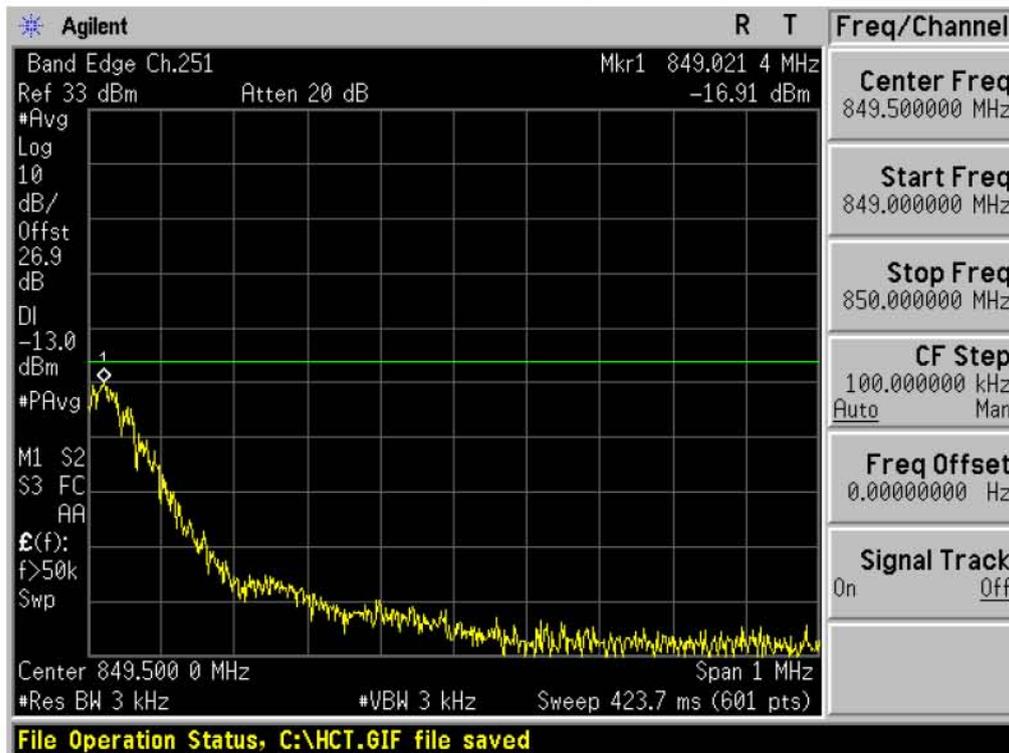
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GSM/WCDMA Phone with Bluetooth3.0, WMF1802.11 b/g/n

FCC ID:
ZNFE440J

■ GSM850 MODE (128 CH.) Block Edge 2



■ GSM850 MODE (251 CH.) Block Edge 1



FCC CERTIFICATION REPORT

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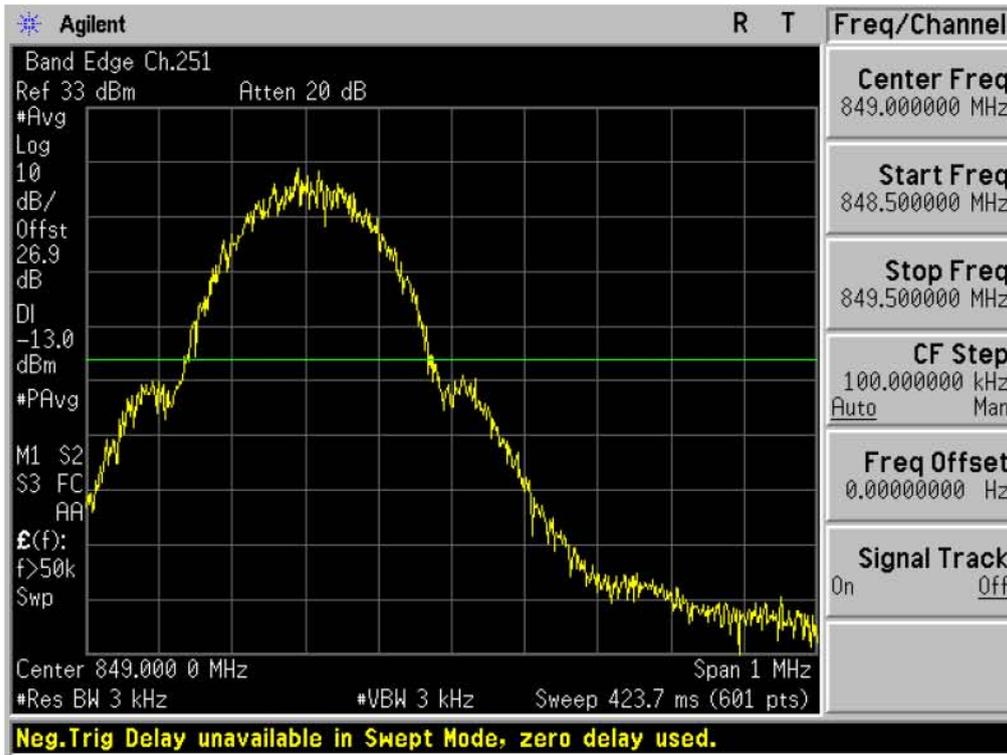
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May 14, 2013

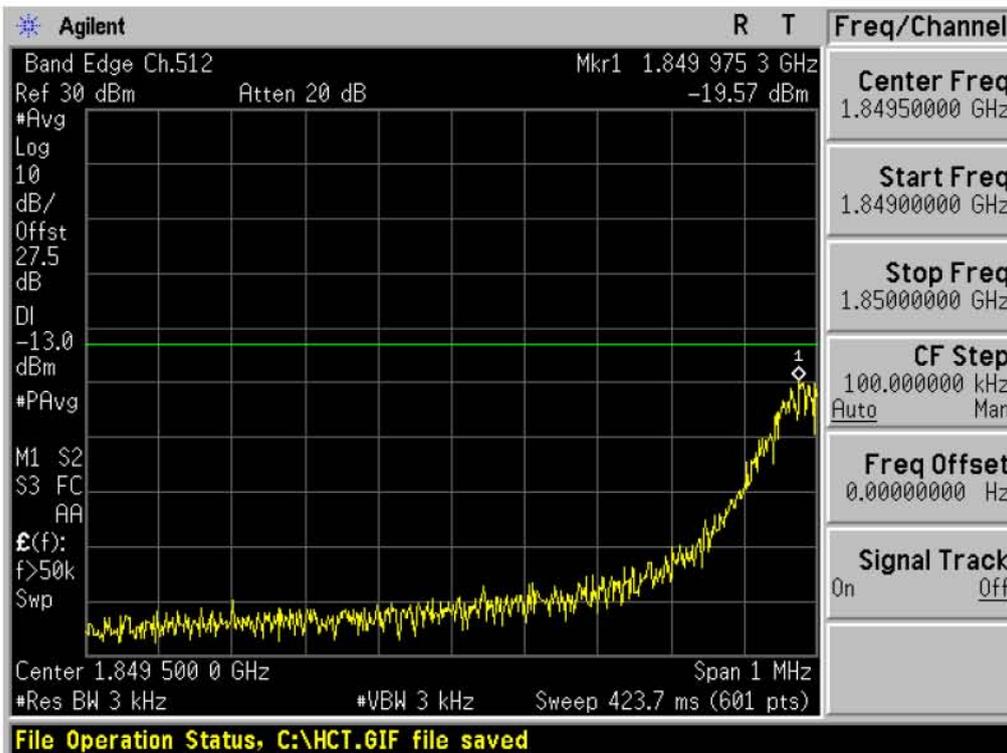
EUT Type:
GSM/WCDMA Phone with Bluetooth3.0, WMF1802.11 b/g/n

FCC ID:
ZNFE440J

■ GSM850 MODE (251 CH.) Block Edge 2



■ GSM1900 MODE (512 CH.) Block Edge 1



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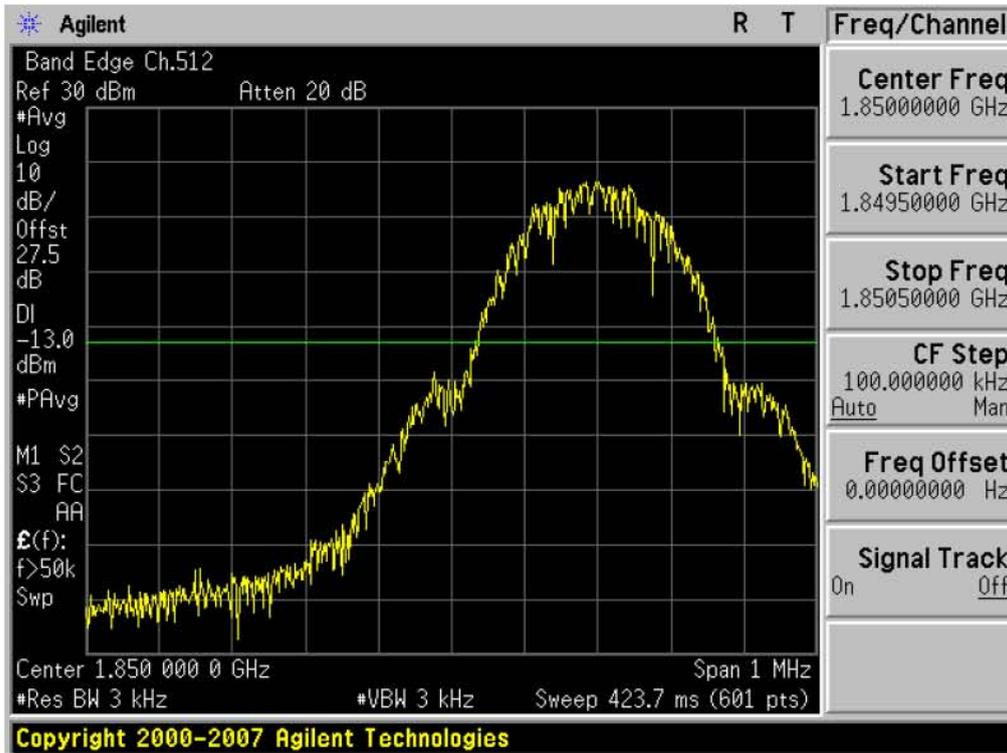
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Date of Issue:
May 14, 2013

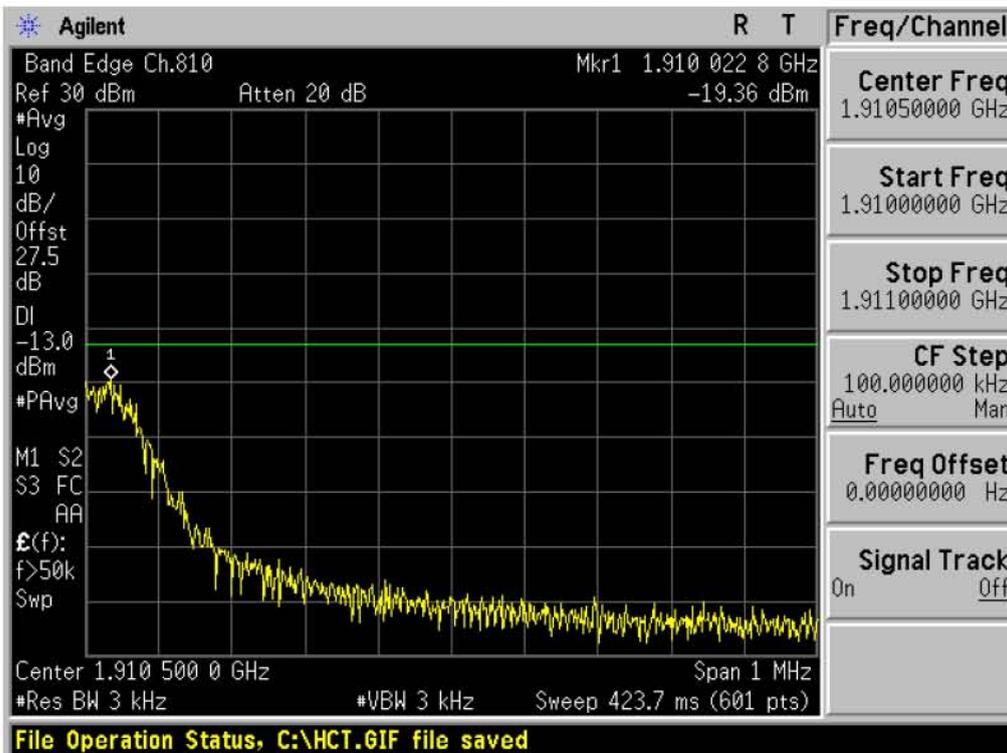
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GSM/WCDMA Phone with Bluetooth3.0, WMF1802.11 b/g/n

FCC ID:
ZNFE440J

■ GSM1900 MODE (512 CH.) Block Edge 2



■ GSM1900 MODE (810 CH.) Block Edge 1



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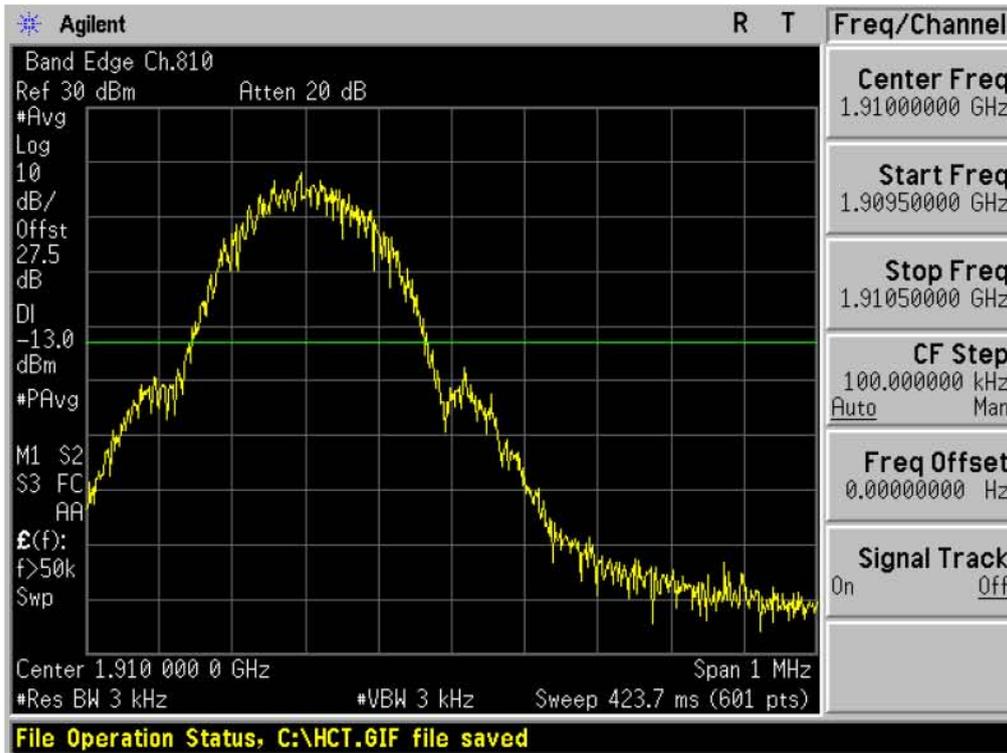
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May 14, 2013

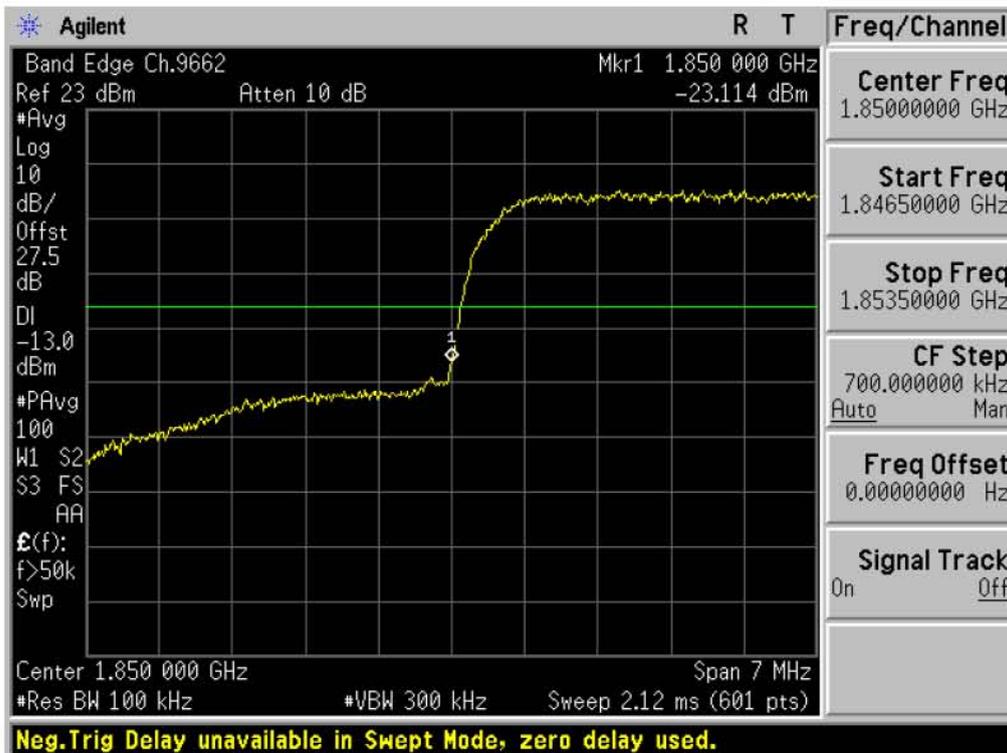
EUT Type:
GSM/WCDMA Phone with Bluetooth3.0, WMF1802.11 b/g/n

FCC ID:
ZNFE440J

■ GSM1900 MODE (810 CH.) Block Edge 2



■ WCDMA1900 MODE (9262 CH.) Block Edge



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