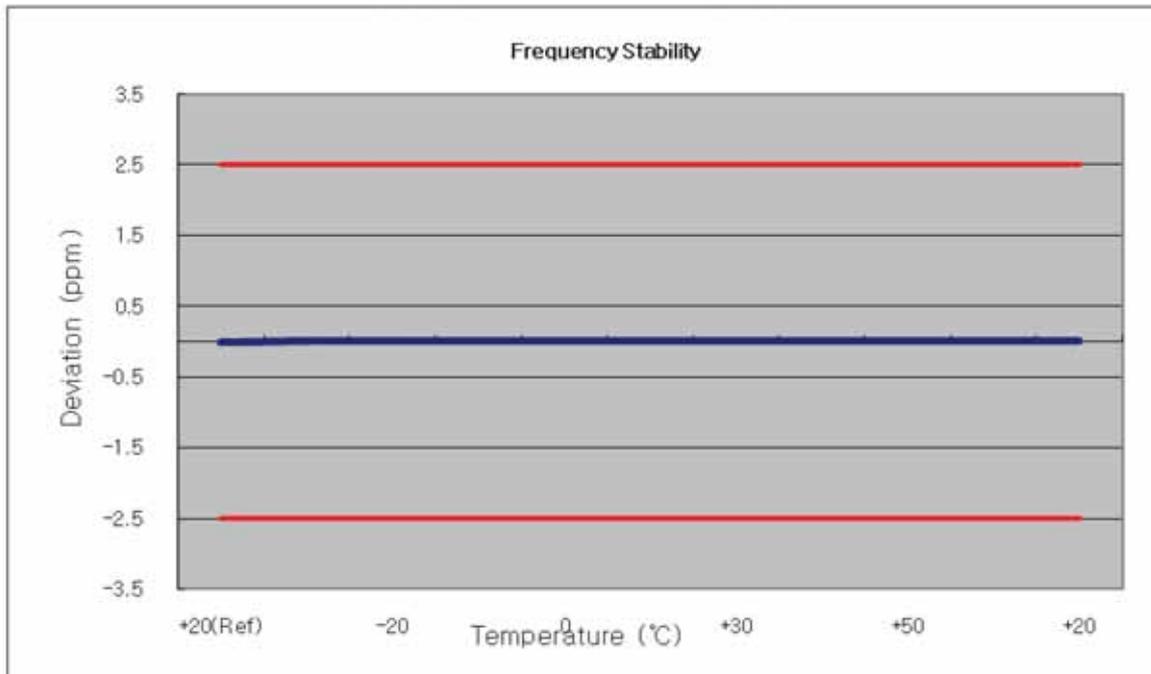## 7.7.2 FREQUENCY STABILITY (GSM1900)

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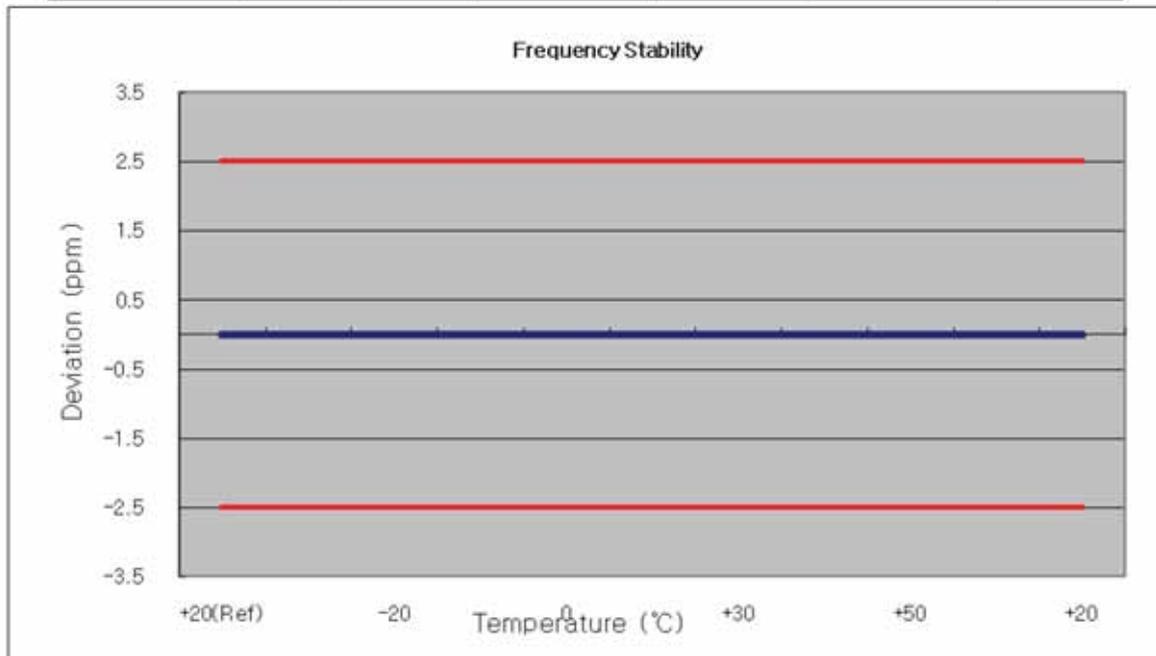- ▣ DEVIATION LIM IT: ± 0.000 25 % or 2.5 ppm

Voltage (%)	Power (VDC)	Temp. (℃)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
100%		+20(Ref)	1879 999 982	0	0.000 000	0.000
100%		−30	1880 000 005	23.18	0.000 001	0.012
100%		−20	1880 000 001	19.24	0.000 001	0.010
100%		−10	1879 999 999	16.33	0.000 001	0.009
100%	3.800	0	1879 999 997	15.24	0.000 001	0.008
100%		+10	1880 000 004	22.28	0.000 001	0.012
100%		+30	1880 000 005	22.55	0.000 001	0.012
100%		+40	1880 000 001	18.61	0.000 001	0.010
100%		+50	1880 000 003	21.25	0.000 001	0.011
115%	4.370	+20	1880 000 004	21.52	0.000 001	0.011
Batt. Endpoint	3.500	+20	1880 000 001	18.69	0.000 001	0.010

Frequency Stability

FCC CERTIFICATION REPORT   www.hct.co.kr

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7.7.3 FREQUENCY STABILITY (WCDMA850)

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

Voltage (%)	Power (VDC)	Temp. (℃)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
100%		+20(Ref)	836 600 003	0	0.000 000	0.000
100%		−30	836 599 997	−2.61	0.000 000	−0.003
100%		−20	836 600 003	3.39	0.000 000	0.004
100%		−10	836 599 997	−2.56	0.000 000	−0.003
100%	3.800	0	836 600 003	2.98	0.000 000	0.004
100%		+10	836 599 997	−2.78	0.000 000	−0.003
100%		+30	836 600 003	3.34	0.000 000	0.004
100%		+40	836 600 002	2.49	0.000 000	0.003
100%		+50	836 600 003	3.43	0.000 000	0.004
115%	4,370	+20	836 599 996	−3.54	0.000 000	−0.004
Batt. Endpoint	3.500	+20	836 600 002	2.35	0.000 000	0.003

Frequency Stability

FCC CERTIFICATION REPORT			www.hct.co.kr
Test Report No. HCTR1305FR05	Date of Issue: May 09, 2013	EUT Type: GSM/WCDMA Phone with Bluetooth3.0, WIFI802.11 b/g/n	FCC ID: ZNFE467F

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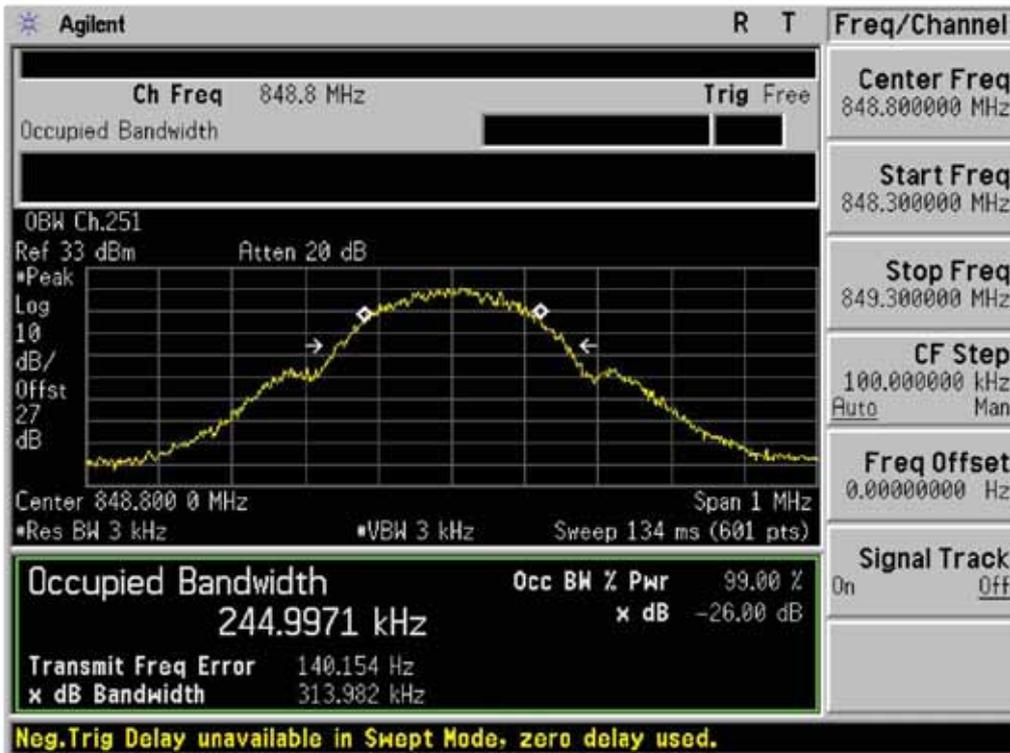# 8. TEST PLOTS

| FCC CERTIFICATION REPORT | www.hct.co.kr |
| Test Report No. HCTR1305FR05 | Date of Issue: May 09, 2013 | EUT Type: GSM/WCDMA Phone with Bluetooth3.0, WIFI802.11 b/g/n | FCC ID: ZNFE467F |

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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

■ GSM1900 MODE (512 CH.) Occupied Bandwidth

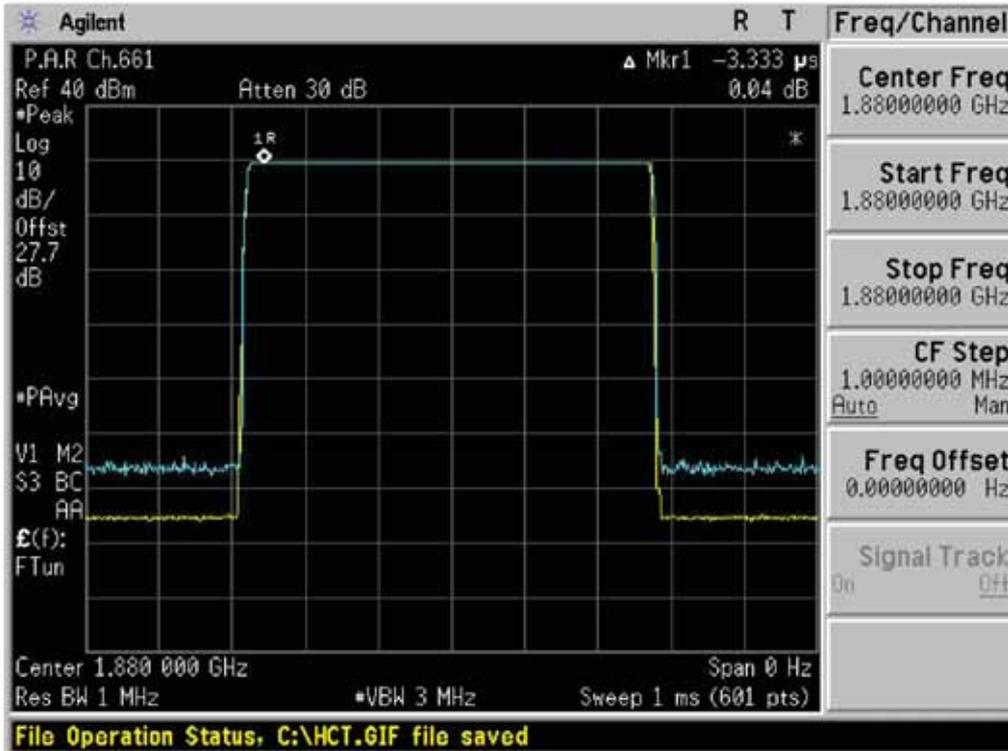| FCC CERTIFICATION REPORT			www.hct.co.kr
Test Report No. HCTR1305FR05	Date of Issue: May 09, 2013	EUT Type: GSM/WCDMA Phone with Bluetooth3.0, WIFI802.11 b/g/n	FCC ID: ZNFE467F

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■ GSM1900 MODE (661 CH.) Occupied Bandwidth


```
※ Agilent                                          R   T    Freq/Channel

        Ch Freq    1.88 GHz                    Trig Free        Center Freq
Occupied Bandwidth                                              1.88000000 GHz

                                                                Start Freq
                                                                1.87950000 GHz
 OBW Ch.661
Ref 30 dBm         Atten 20 dB                                  Stop Freq
●Peak                                                           1.88050000 GHz
Log
10
dB/                                                            CF Step
Offst                                                          100.000000 kHz
27.7                                                           Auto      Man
dB
                                                               Freq Offset
Center 1.880 000 0 GHz                      Span 1 MHz         0.00000000 Hz
●Res BW 3 kHz           ●VBW 3 kHz      Sweep 134 ms (601 pts)
                                                               Signal Track
Occupied Bandwidth          Occ BW % Pwr     99.00 %          On          Off
          252.2890 kHz          x dB      -26.00 dB

Transmit Freq Error   630.135 Hz
x dB Bandwidth        313.077 kHz

File Operation Status, C:\HCT.GIF file saved
```

■ GSM1900 MODE (810 CH.) Occupied Bandwidth


```
※ Agilent                                          R   T    Freq/Channel

        Ch Freq    1.9098 GHz                  Trig Free        Center Freq
Occupied Bandwidth                                             1.90980000 GHz

                                                                Start Freq
                                                                1.90930000 GHz
 OBW Ch.810
Ref 30 dBm         Atten 20 dB                                  Stop Freq
●Peak                                                           1.91030000 GHz
Log
10
dB/                                                            CF Step
Offst                                                          100.000000 kHz
27.7                                                           Auto      Man
dB
                                                               Freq Offset
Center 1.909 800 0 GHz                      Span 1 MHz         0.00000000 Hz
●Res BW 3 kHz           ●VBW 3 kHz      Sweep 134 ms (601 pts)
                                                               Signal Track
Occupied Bandwidth          Occ BW % Pwr     99.00 %          On          Off
          246.7906 kHz          x dB      -26.00 dB

Transmit Freq Error   1.248 kHz
x dB Bandwidth        309.069 kHz

File Operation Status, C:\HCT.GIF file saved
```

	FCC CERTIFICATION REPORT		www.hct.co.kr
Test Report No. HCTR1305FR05	Date of Issue: May 09, 2013	EUT Type: GSM/WCDMA Phone with Bluetooth3.0, WIFI802.11 b/g/n	FCC ID: ZNFE467F
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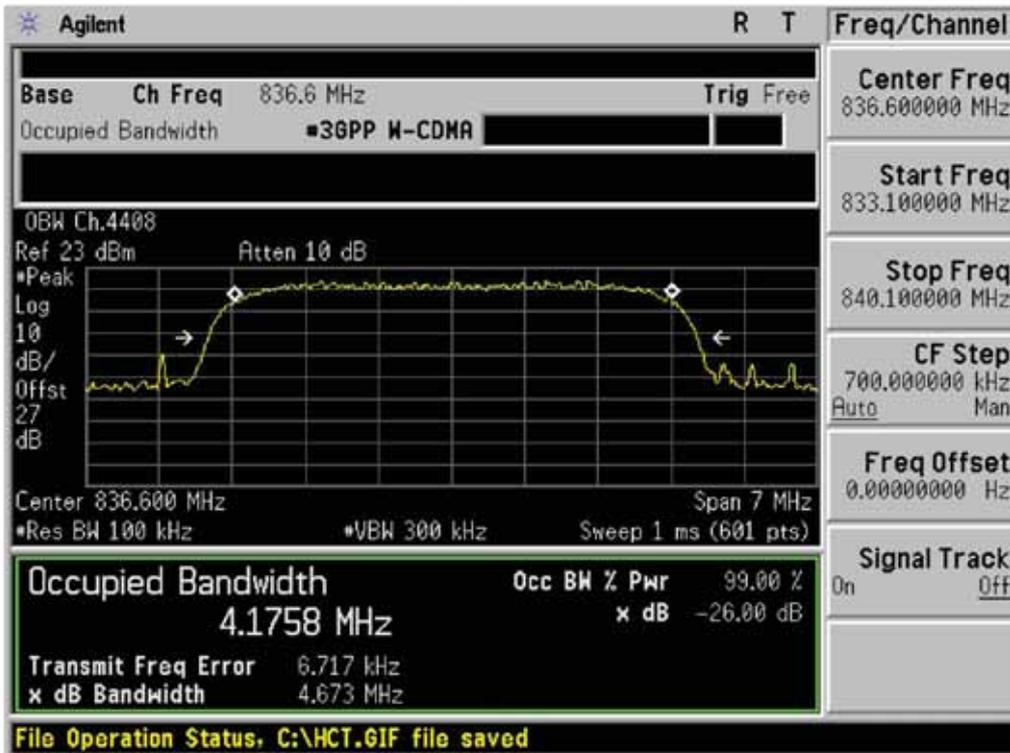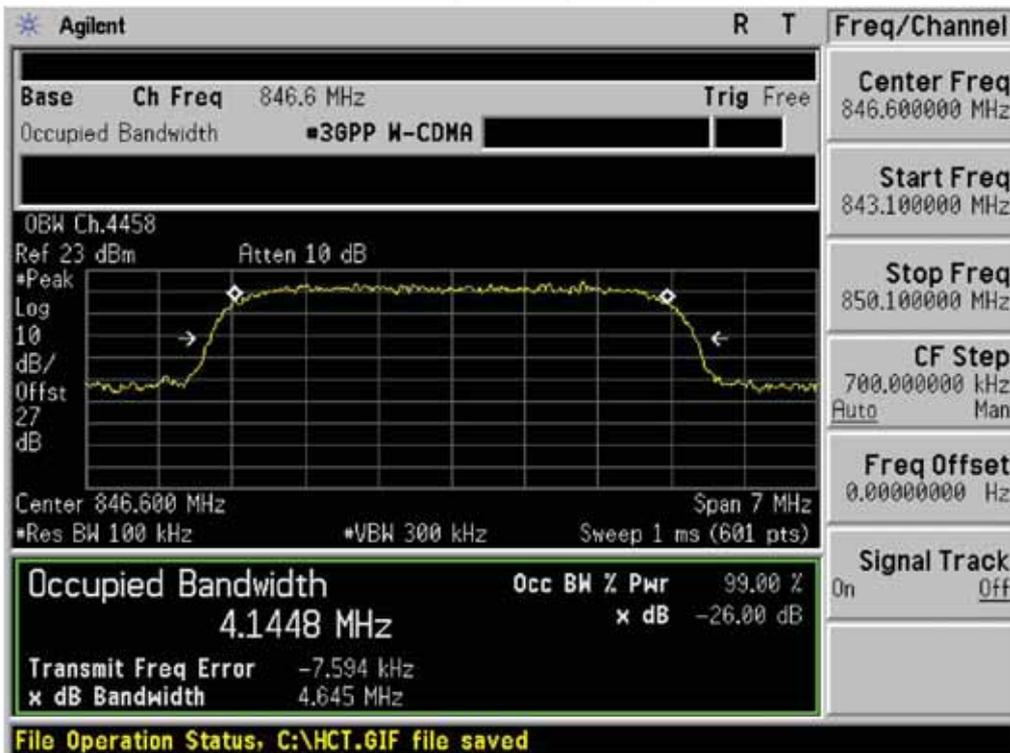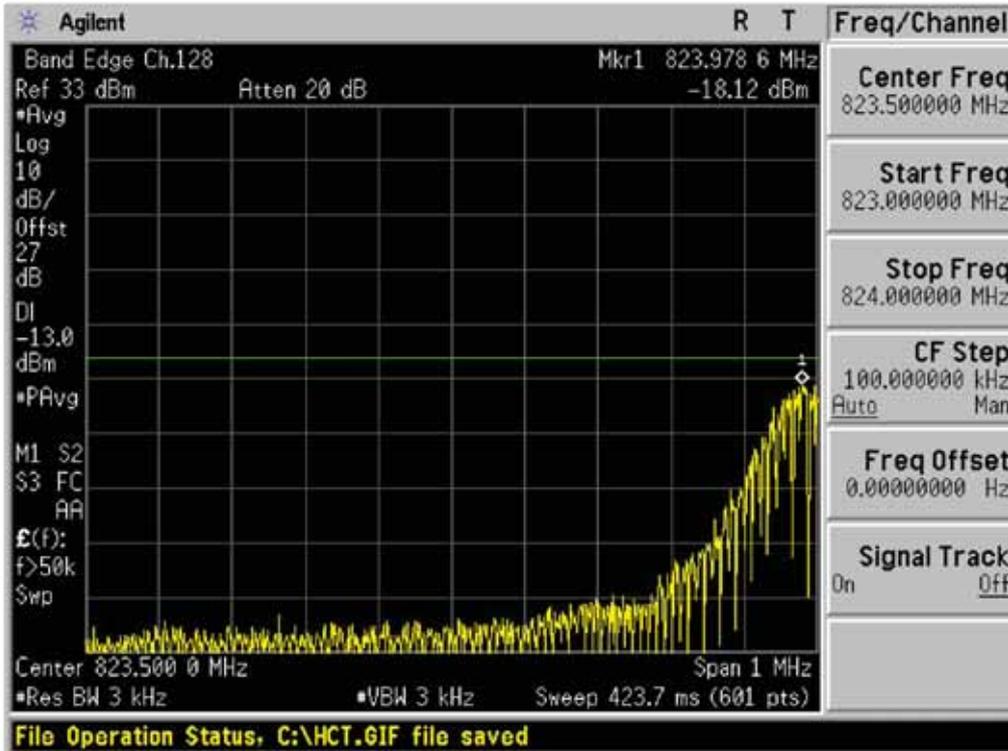■ GSM1900 MODE (661 CH.) Peak-to-Average Ratio

■ WCDMA850 MODE (4132 CH.) Occupied Bandwidth

FCC CERTIFICATION REPORT · www.hct.co.kr

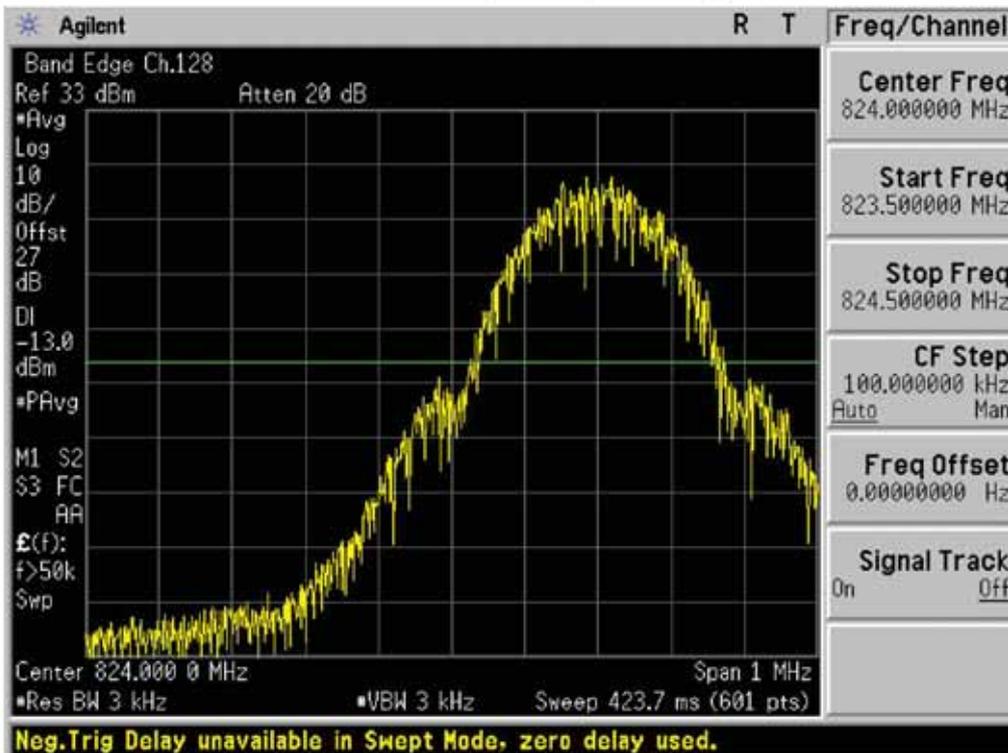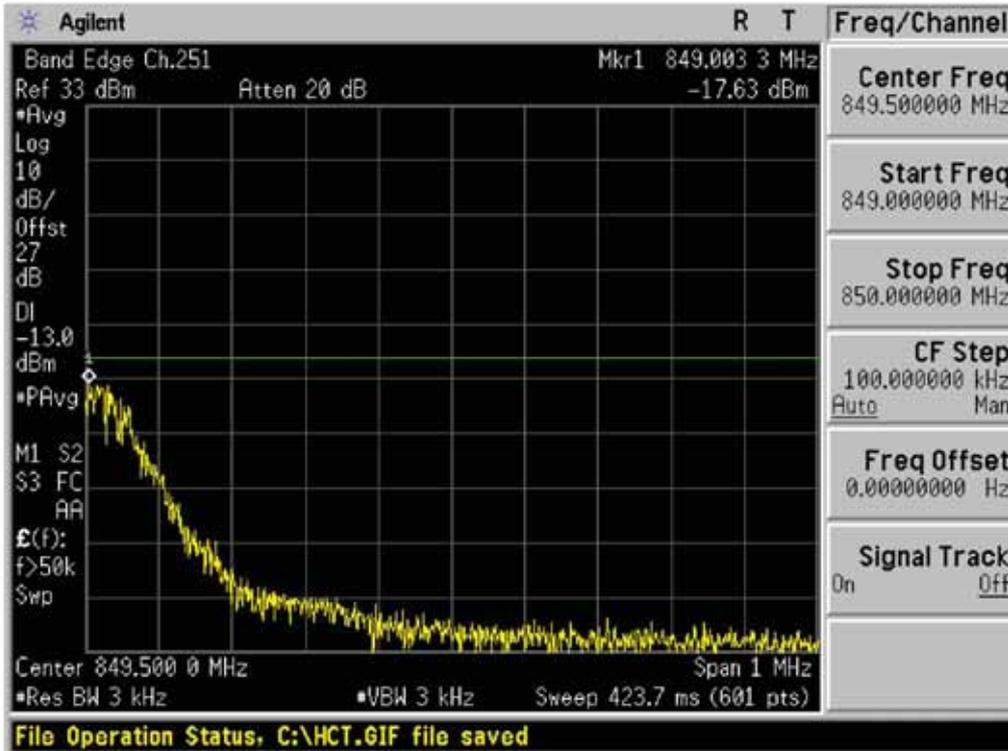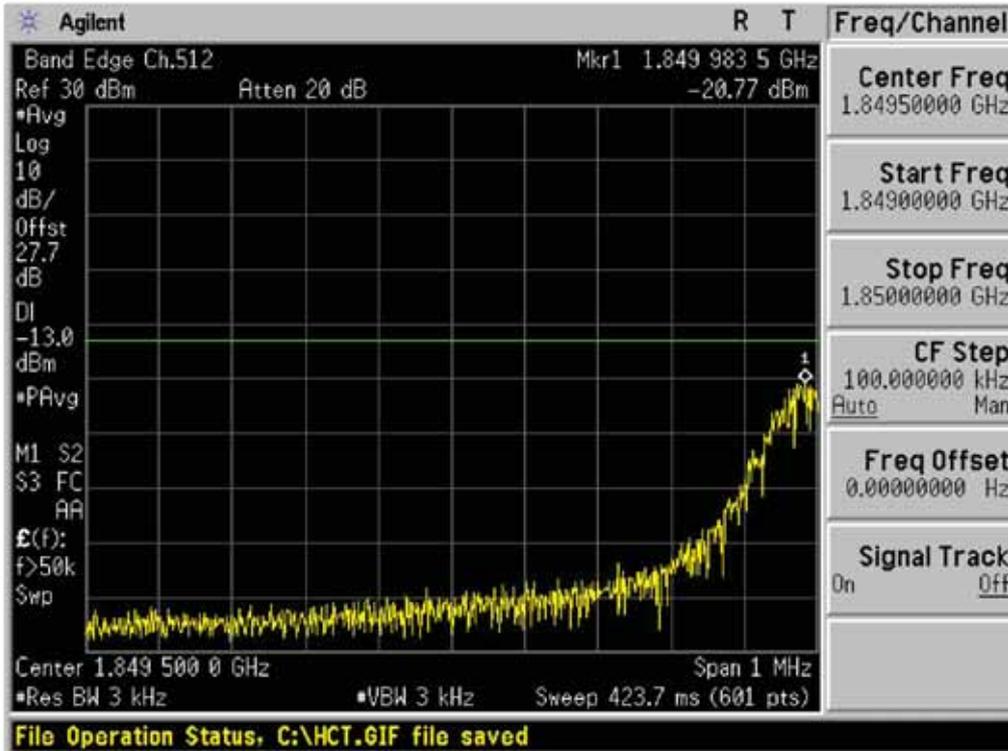| Test Report No. HCTR1305FR05 | Date of Issue: May 09, 2013 | EUT Type: GSM/WCDMA Phone with Bluetooth3.0, WIFI802.11 b/g/n | FCC ID: ZNFE467F |

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■ WCDMA850 MODE (4183 CH.) Occupied Bandwidth

■ WCDMA850MODE (4233 CH.) Occupied Bandwidth

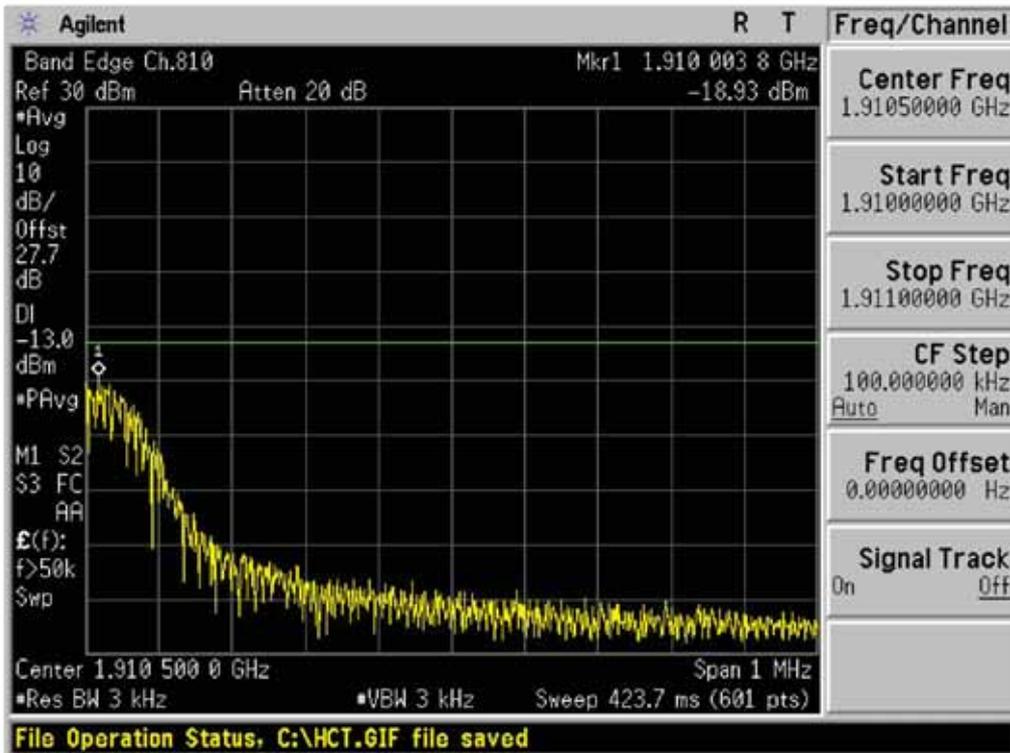| FCC CERTIFICATION REPORT			www.hct.co.kr
Test Report No. HCTR1305FR05	Date of Issue: May 09, 2013	EUT Type: GSM/WCDMA Phone with Bluetooth3.0, WIFI802.11 b/g/n	FCC ID: ZNFE467F

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■ GSM850 MODE (128 CH.) Block Edge 1

■ GSM850 MODE (128 CH.) Block Edge 2

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■ GSM850 MODE (251 CH.) Block Edge 1

■ GSM850 MODE (251 CH.) Block Edge 2

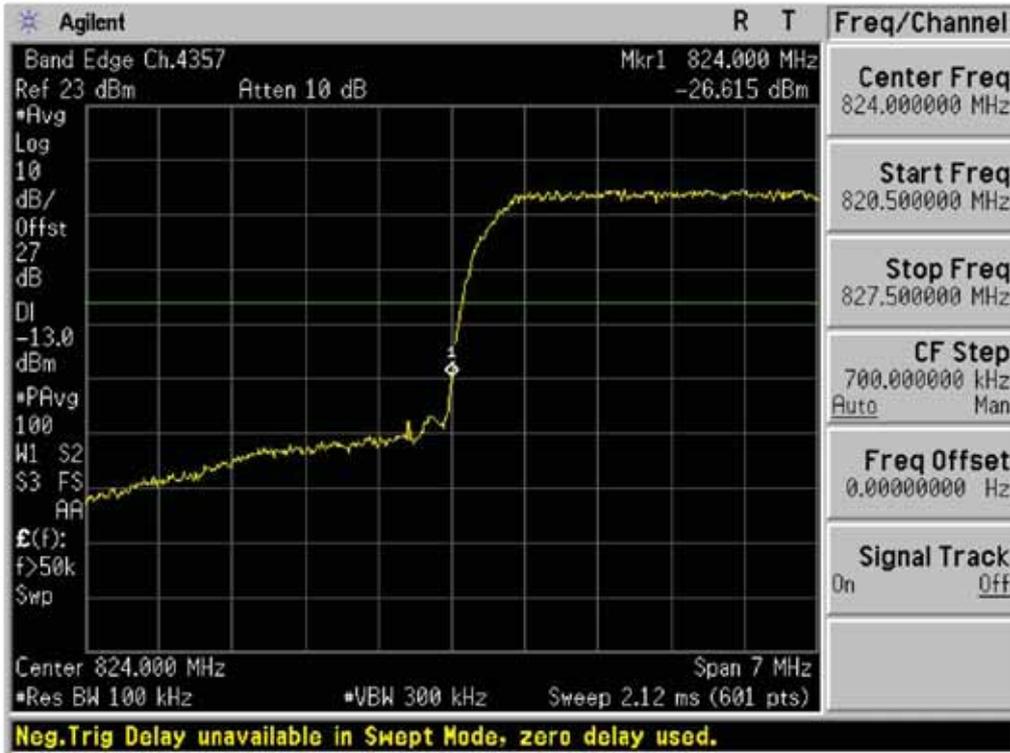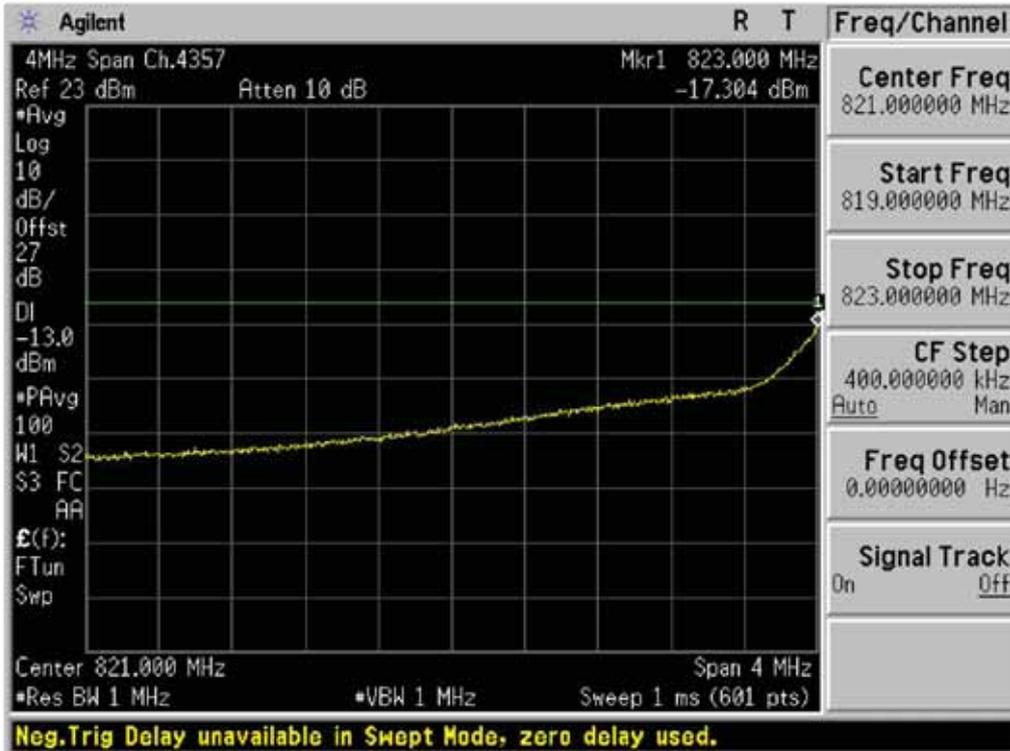|		FCC CERTIFICATION REPORT		www.hct.co.kr
Test Report No. HCTR1305FR05	Date of Issue: May 09, 2013	EUT Type: GSM/WCDMA Phone with Bluetooth3.0, WIFI802.11 b/g/n		FCC ID: ZNFE467F
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GSM1900 MODE (512 CH.) Block Edge 1

Agilent	R T	Freq/Channel

Band Edge Ch.512
Ref 30 dBm   Atten 20 dB
Mkr1   1.849 983 5 GHz
-20.77 dBm

•Avg
Log
10
dB/
Offst
27.7
dB
DI
-13.0
dBm
•PAvg

M1 S2
S3 FC
    AA
£(f):
f>50k
Swp

Center 1.849 500 0 GHz   Span 1 MHz
•Res BW 3 kHz   •VBW 3 kHz   Sweep 423.7 ms (601 pts)

File Operation Status, C:\HCT.GIF file saved

Freq/Channel panel:
Center Freq 1.84950000 GHz
Start Freq 1.84900000 GHz
Stop Freq 1.85000000 GHz
CF Step 100.000000 kHz   Auto   Man
Freq Offset 0.00000000 Hz
Signal Track   On   Off

GSM1900 MODE (512 CH.) Block Edge 2

Agilent	R T	Freq/Channel

Band Edge Ch.512
Ref 30 dBm   Atten 20 dB

•Avg
Log
10
dB/
Offst
27.7
dB
DI
-13.0
dBm
•PAvg

M1 S2
S3 FC
    AA
£(f):
f>50k
Swp

Center 1.850 000 0 GHz   Span 1 MHz
•Res BW 3 kHz   •VBW 3 kHz   Sweep 423.7 ms (601 pts)

Copyright 2000-2007 Agilent Technologies

Freq/Channel panel:
Center Freq 1.85000000 GHz
Start Freq 1.84950000 GHz
Stop Freq 1.85050000 GHz
CF Step 100.000000 kHz   Auto   Man
Freq Offset 0.00000000 Hz
Signal Track   On   Off

FCC CERTIFICATION REPORT	www.hct.co.kr

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GSM1900 MODE (810 CH.) Block Edge 1

GSM1900 MODE (810 CH.) Block Edge 2
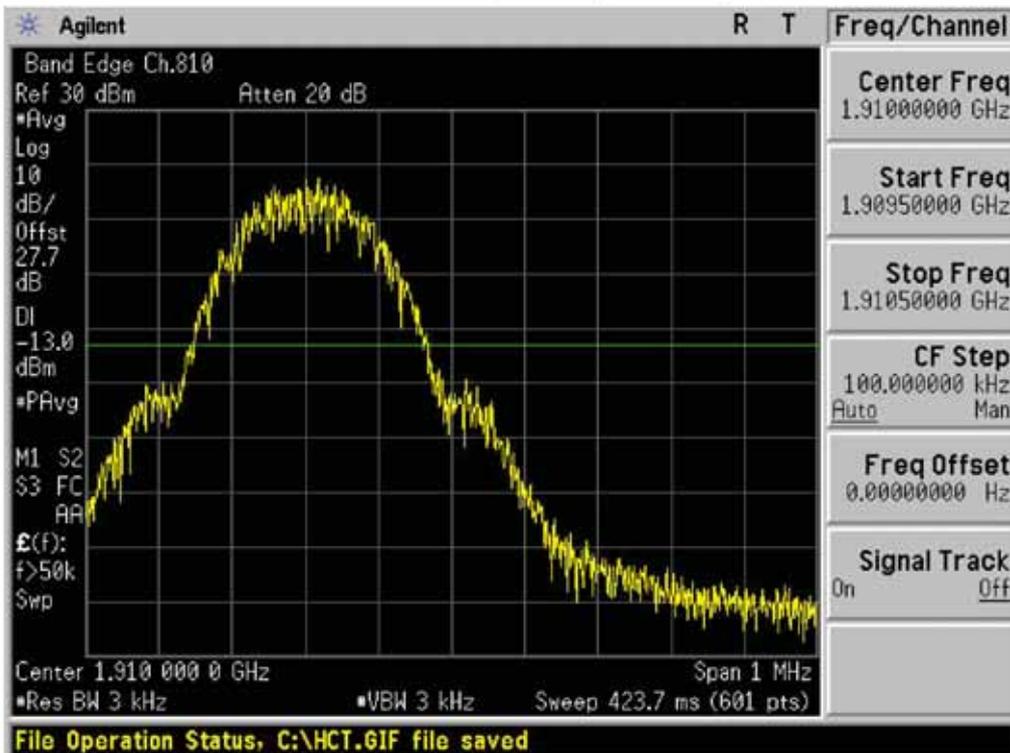
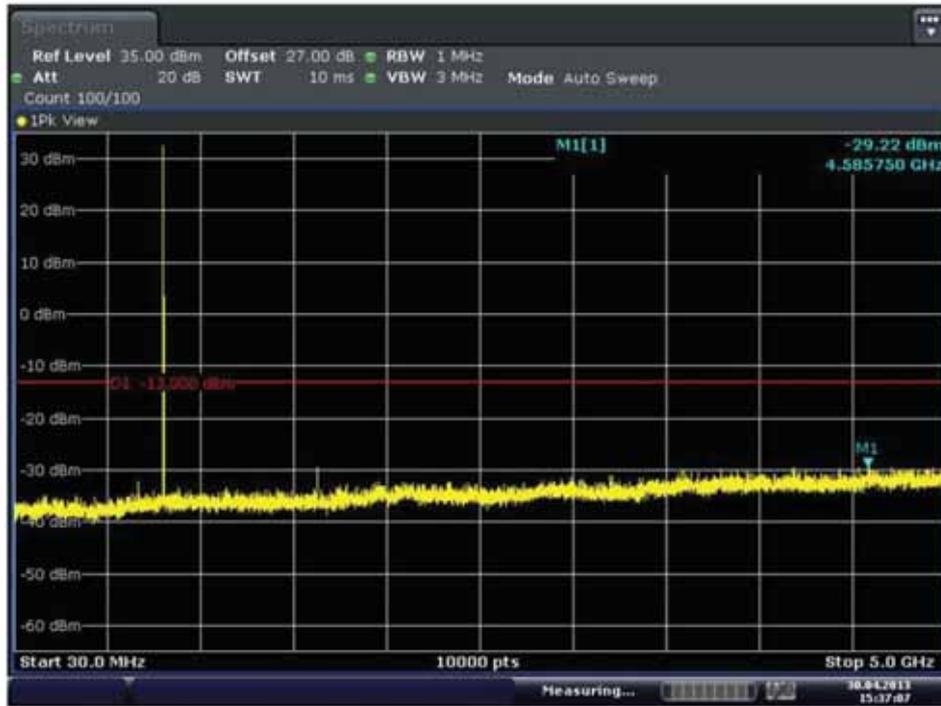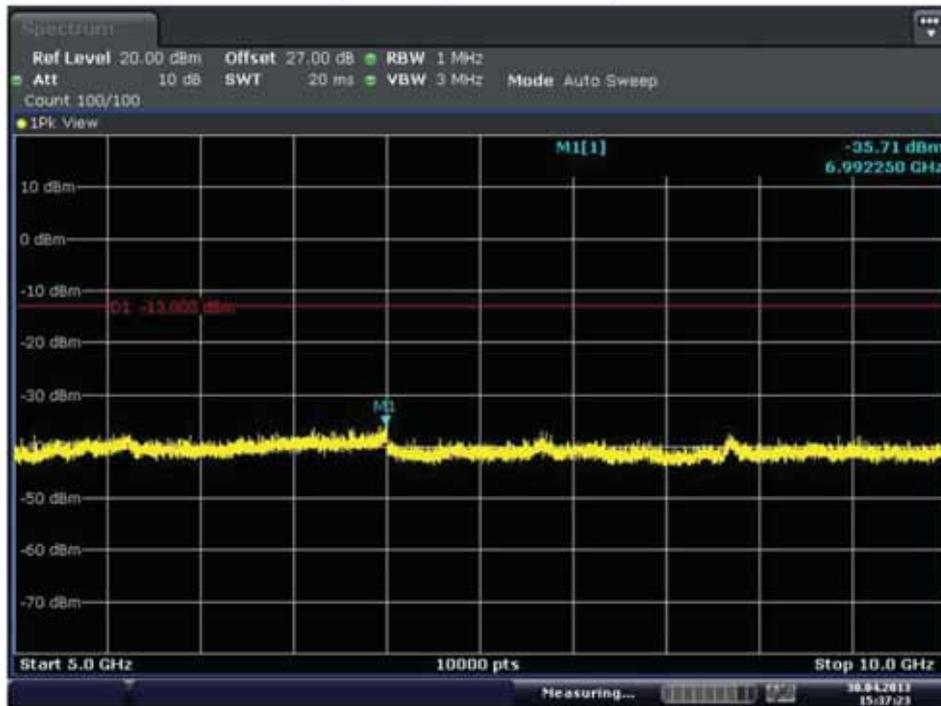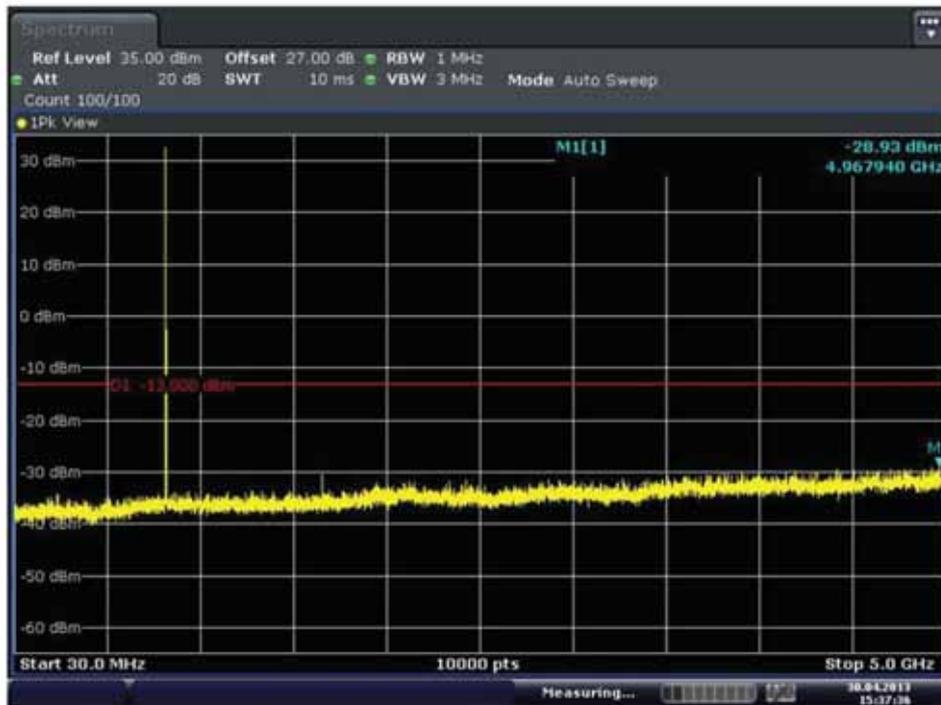|		FCC CERTIFICATION REPORT		www.hct.co.kr
Test Report No. HCTR1305FR05	Date of Issue: May 09, 2013	EUT Type: GSM/WCDMA Phone with Bluetooth3.0, WIFI802.11 b/g/n		FCC ID: ZNFE467F
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■ WCDMA850 MODE (4132 CH.) Block Edge

Agilent		R T	Freq/Channel
Band Edge Ch.4357		Mkr1 824.000 MHz	
Ref 23 dBm	Atten 10 dB	−26.615 dBm	Center Freq
▪Avg			824.000000 MHz
Log			
10			Start Freq
dB/			820.500000 MHz
Offst			
27			Stop Freq
dB			827.500000 MHz
DI			
−13.0			CF Step
dBm			700.000000 kHz
▪PAvg			Auto Man
100			
W1 S2			Freq Offset
S3 FS			0.00000000 Hz
AA			
£(f):			Signal Track
f>50k			On Off
Swp			
Center 824.000 MHz		Span 7 MHz	
▪Res BW 100 kHz	▪VBW 300 kHz	Sweep 2.12 ms (601 pts)	

Neg.Trig Delay unavailable in Swept Mode. zero delay used.

■ WCDMA850MODE (4233 CH.) Block Edge
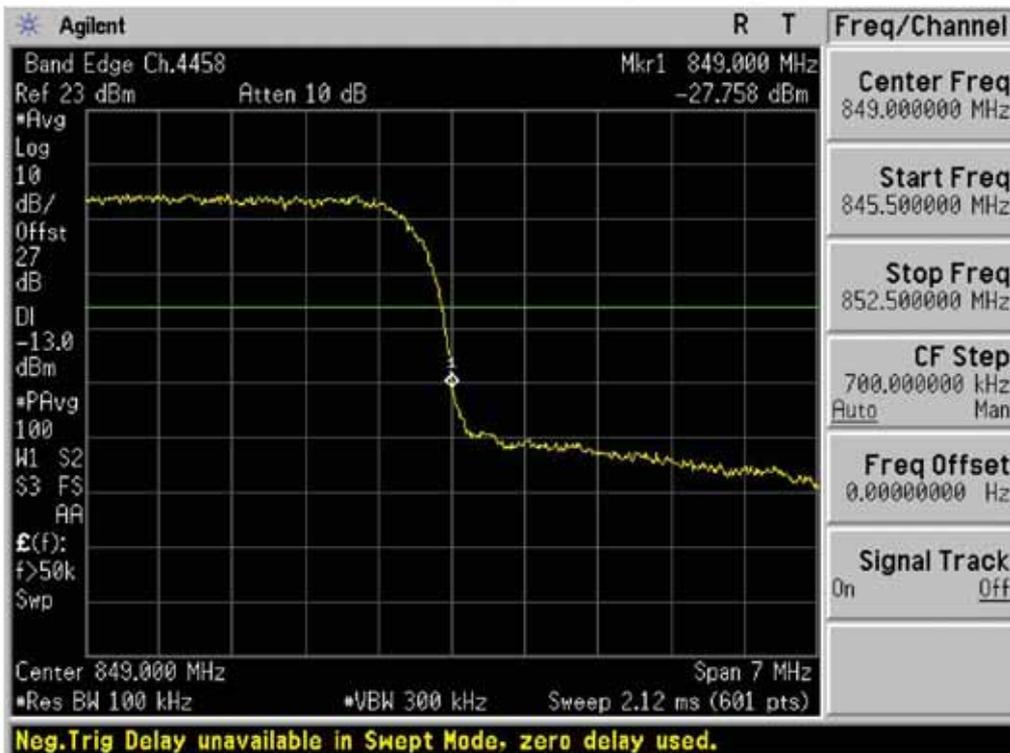
Agilent		R T	Freq/Channel
Band Edge Ch.4458		Mkr1 849.000 MHz	
Ref 23 dBm	Atten 10 dB	−27.758 dBm	Center Freq
▪Avg			849.000000 MHz
Log			
10			Start Freq
dB/			845.500000 MHz
Offst			
27			Stop Freq
dB			852.500000 MHz
DI			
−13.0			CF Step
dBm			700.000000 kHz
▪PAvg			Auto Man
100			
W1 S2			Freq Offset
S3 FS			0.00000000 Hz
AA			
£(f):			Signal Track
f>50k			On Off
Swp			
Center 849.000 MHz		Span 7 MHz	
▪Res BW 100 kHz	▪VBW 300 kHz	Sweep 2.12 ms (601 pts)	

Neg.Trig Delay unavailable in Swept Mode. zero delay used.

FCC CERTIFICATION REPORT				www.hct.co.kr
Test Report No. HCTR1305FR05	Date of Issue: May 09, 2013	EUT Type: GSM/WCDMA Phone with Bluetooth3.0, WIFI802.11 b/g/n		FCC ID: ZNFE467F
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■ WCDMA850 MODE (4132 CH.) – 4 MHz Span

■ WCDMA850MODE (4233 CH.) – 4 MHz Span
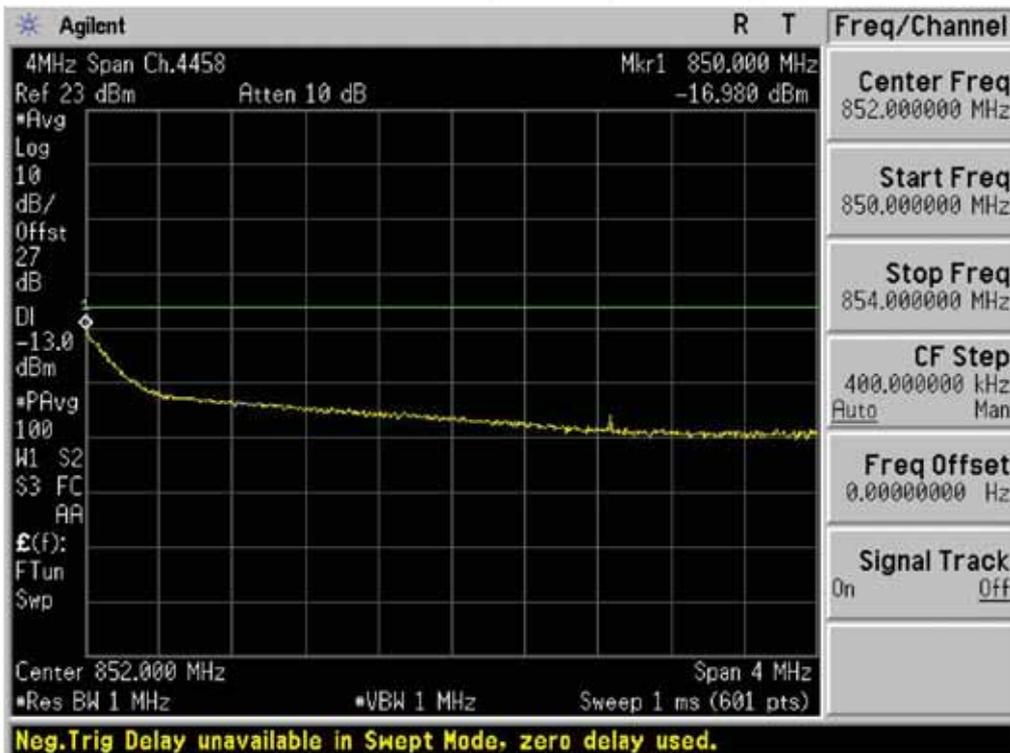
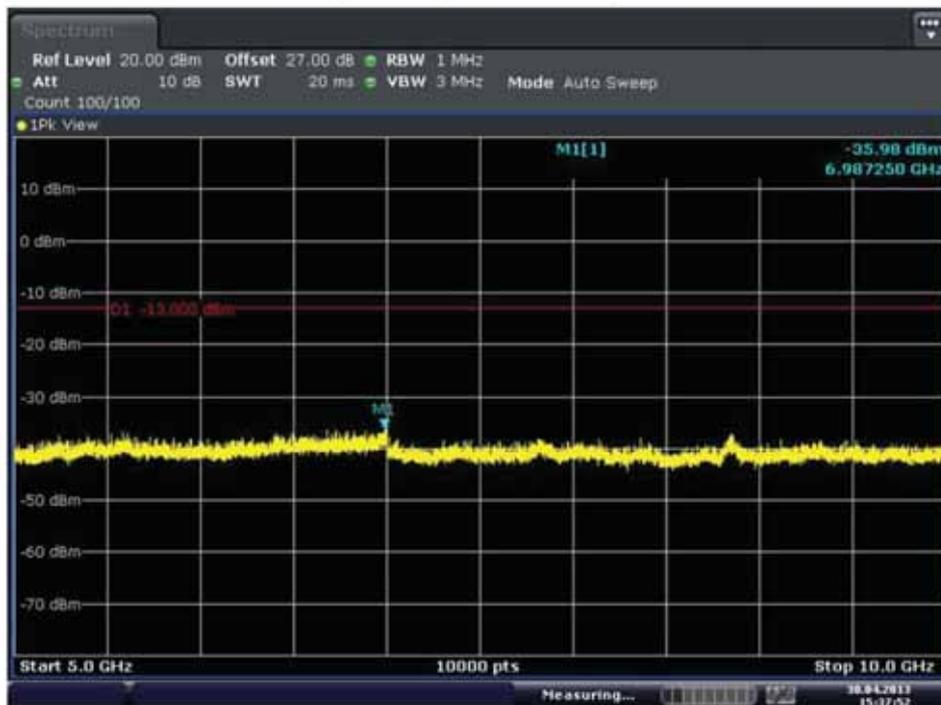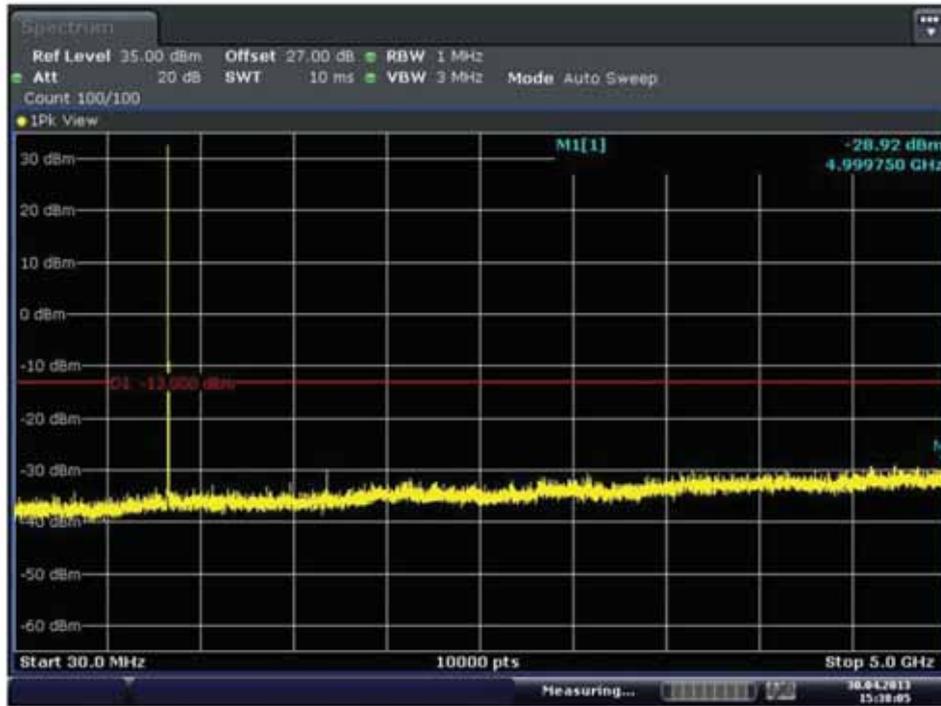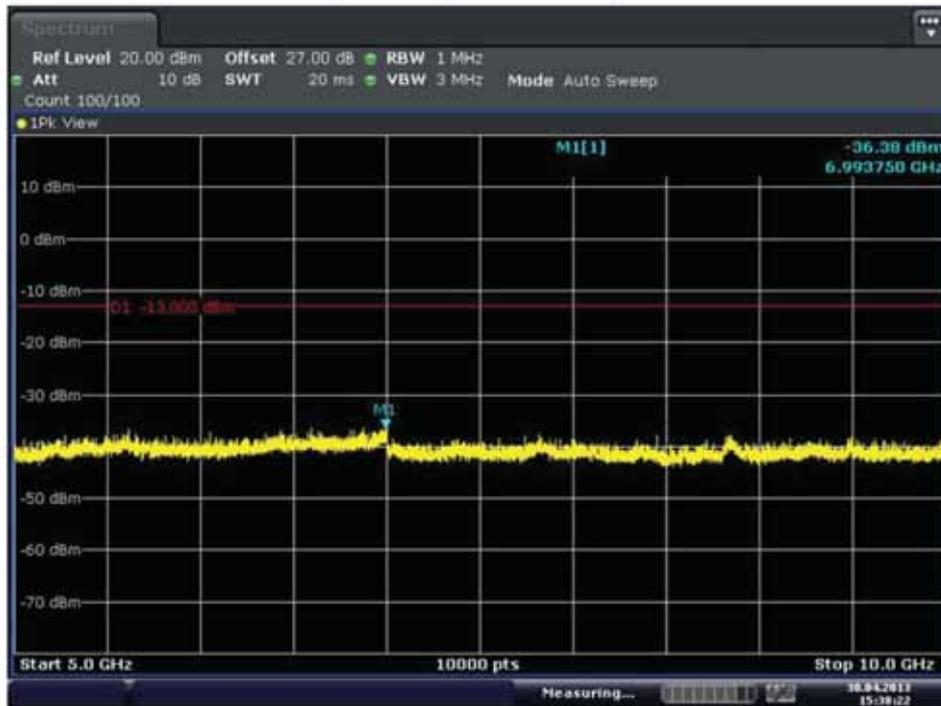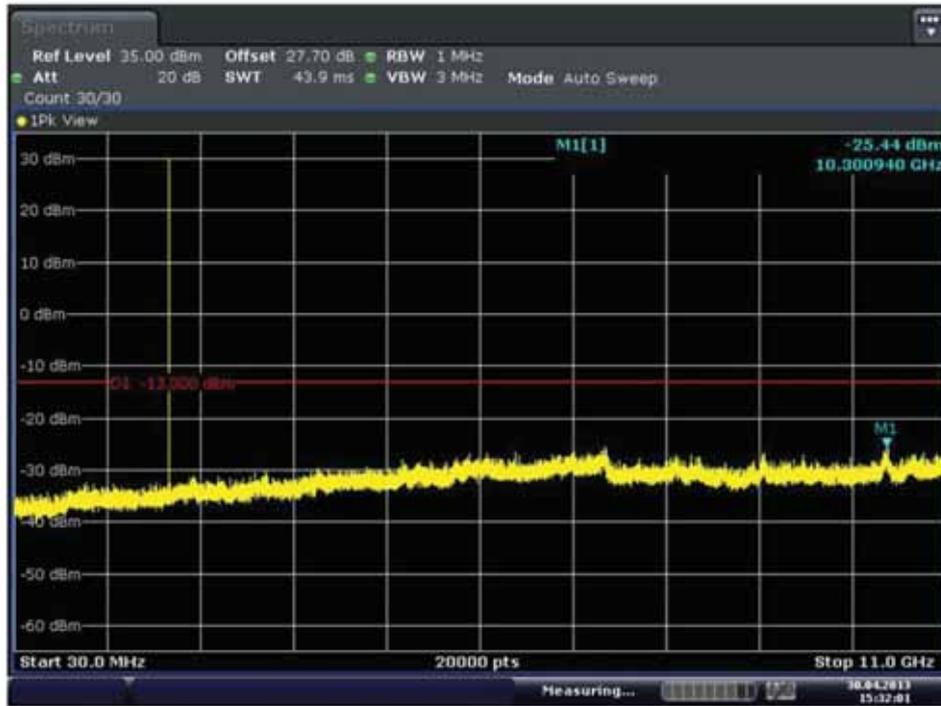|		FCC CERTIFICATION REPORT		www.hct.co.kr
Test Report No.	Date of Issue:	EUT Type:		FCC ID:
HCTR1305FR05	May 09, 2013	GSM/WCDMA Phone with Bluetooth3.0, WIFI802.11 b/g/n		ZNFE467F

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■ GSM850 MODE (128 CH.) Conducted Spurious Emissions1

Date: 30.APR.2013 15:37:07

■ GSM850 MODE (128 CH.) Conducted Spurious Emissions2

Date: 30.APR.2013 15:37:23

		FCC CERTIFICATION REPORT		www.hct.co.kr
Test Report No.	Date of Issue:	EUT Type:		FCC ID:
HCTR1305FR05	May 09, 2013	GSM/WCDMA Phone with Bluetooth3.0, WIFI802.11 b/g/n		ZNFE467F

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■ GSM850 MODE (190 CH.) Conducted Spurious Emissions1

Date: 30.APR.2013 15:37:37

■ GSM850 MODE (190 CH.) Conducted Spurious Emissions2

Date: 30.APR.2013 15:37:53

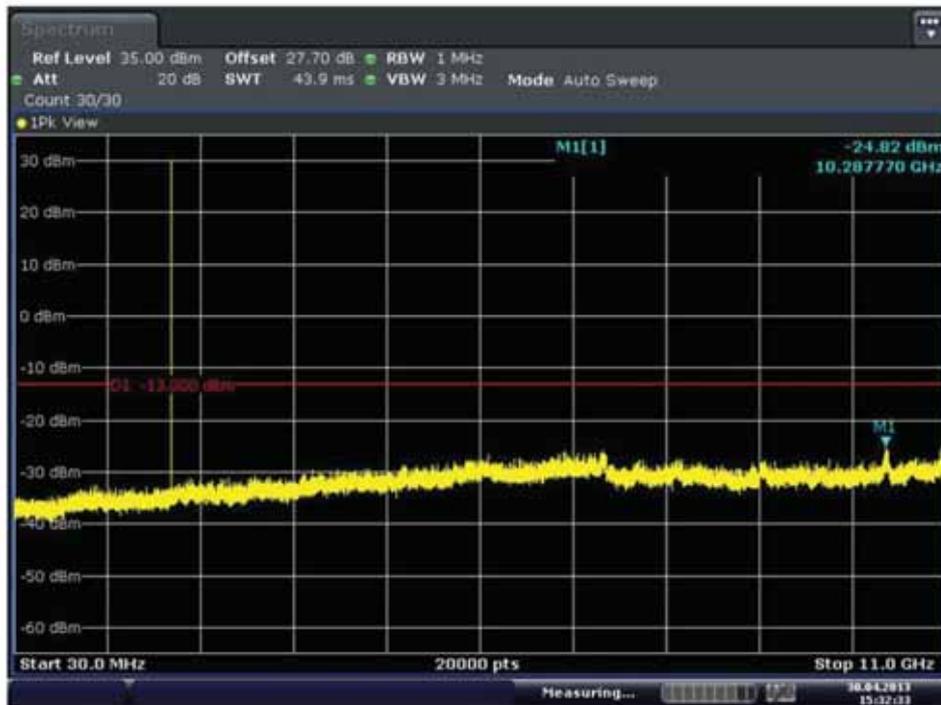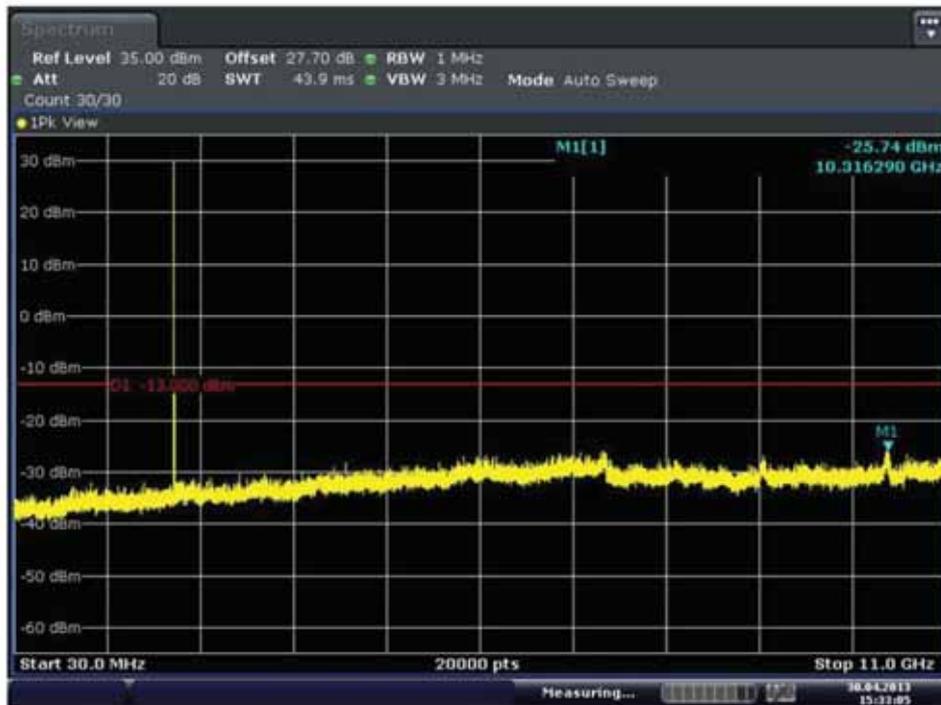| FCC CERTIFICATION REPORT			www.hct.co.kr
Test Report No. HCTR1305FR05	Date of Issue: May 09, 2013	EUT Type: GSM/WCDMA Phone with Bluetooth3.0, WIFI802.11 b/g/n	FCC ID: ZNFE467F

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GSM850 MODE (251 CH.) Conducted Spurious Emissions1

Date: 30.APR.2013 15:38:06

GSM850 MODE (251 CH.) Conducted Spurious Emissions2

Date: 30.APR.2013 15:38:22

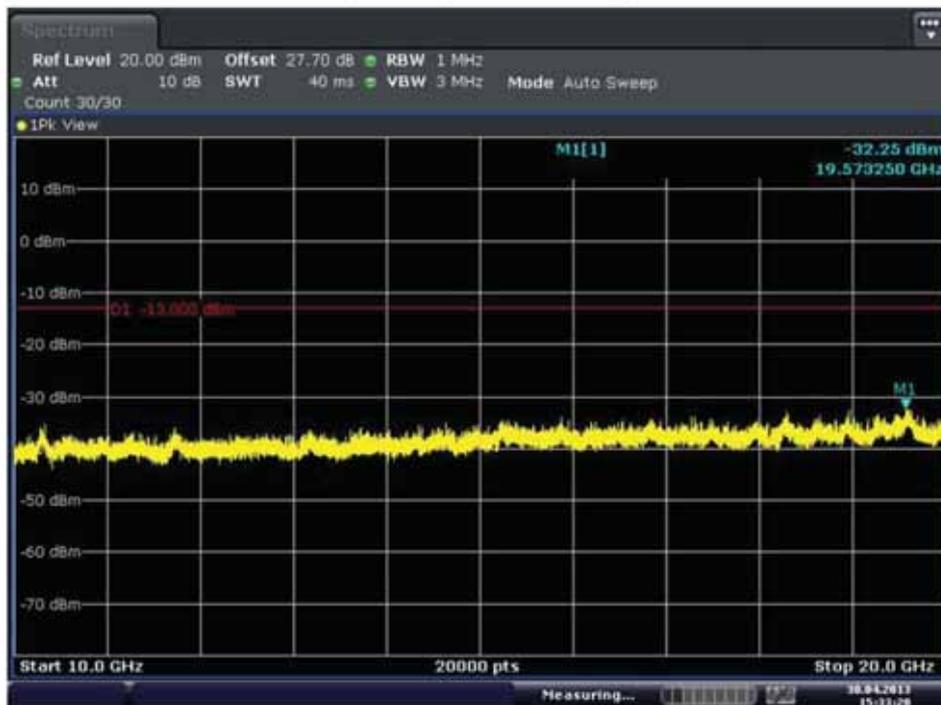| FCC CERTIFICATION REPORT			www.hct.co.kr
Test Report No. HCTR1305FR05	Date of Issue: May 09, 2013	EUT Type: GSM/WCDMA Phone with Bluetooth3.0, WIFI802.11 b/g/n	FCC ID: ZNFE467F

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■ GSM1900 MODE (512 CH.) Conducted Spurious Emissions1

Date: 30.APR.2013 15:32:01

■ GSM1900 MODE (512 CH.) Conducted Spurious Emissions2

Date: 30.APR.2013 15:32:17

FCC CERTIFICATION REPORT			www.hct.co.kr
Test Report No. HCTR1305FR05	**Date of Issue:** May 09, 2013	**EUT Type:** GSM/WCDMA Phone with Bluetooth3.0, WIFI802.11 b/g/n	**FCC ID:** ZNFE467F

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■ GSM1900 MODE (661 CH) Conducted Spurious Emissions1

Date: 30.APR.2013 15:32:34

■ GSM1900 MODE (661 CH.) Conducted Spurious Emissions2

Date: 30.APR.2013 15:32:49

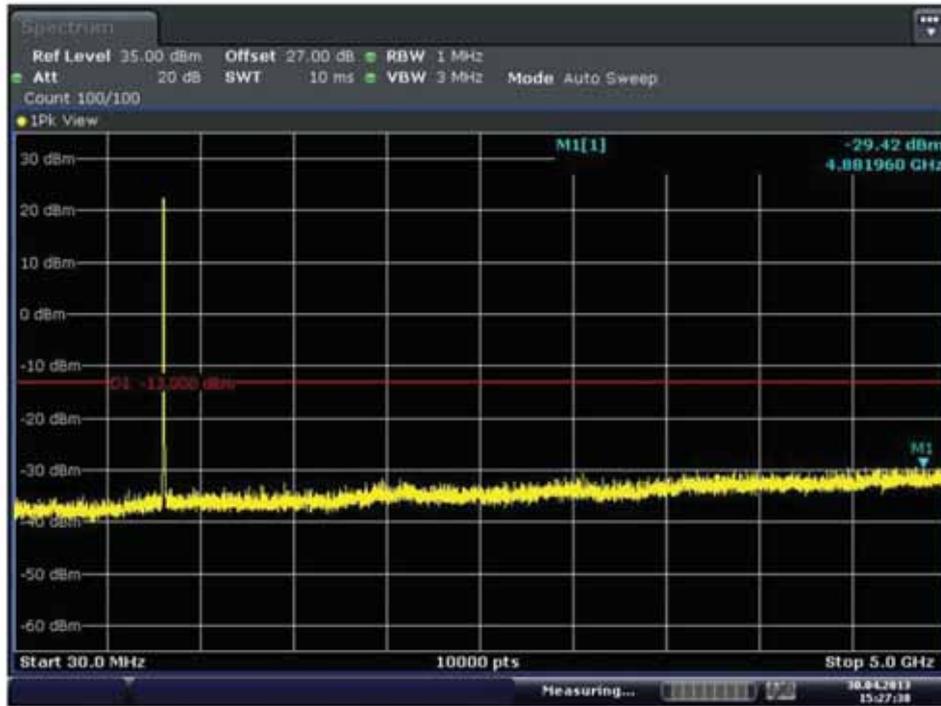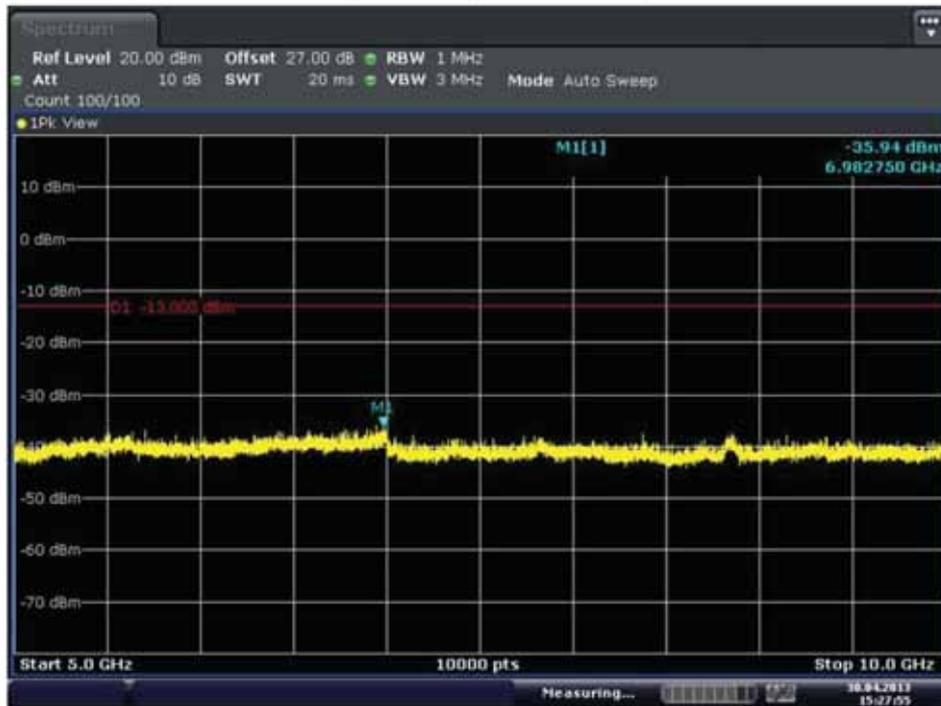|		FCC CERTIFICATION REPORT		www.hct.co.kr
Test Report No. HCTR1305FR05	Date of Issue: May 09, 2013	EUT Type: GSM/WCDMA Phone with Bluetooth3.0, WIFI802.11 b/g/n		FCC ID: ZNFE467F

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■ GSM1900 MODE (810 CH.) Conducted Spurious Emissions1

Date: 30.APR.2013 15:33:05

■ GSM1900 MODE (810 CH.) Conducted Spurious Emissions2

Date: 30.APR.2013 15:33:20

FCC CERTIFICATION REPORT			www.hct.co.kr
Test Report No. HCTR1305FR05	Date of Issue: May 09, 2013	EUT Type: GSM/WCDMA Phone with Bluetooth3.0, WIFI802.11 b/g/n	FCC ID: ZNFE467F

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■ WCDMA850 MODE (4132 CH.) Conducted Spurious Emissions1

Date: 30.APR.2013   15:27:39

■ WCDMA850 MODE (4132 CH.) Conducted Spurious Emissions2

Date: 30.APR.2013   15:27:55
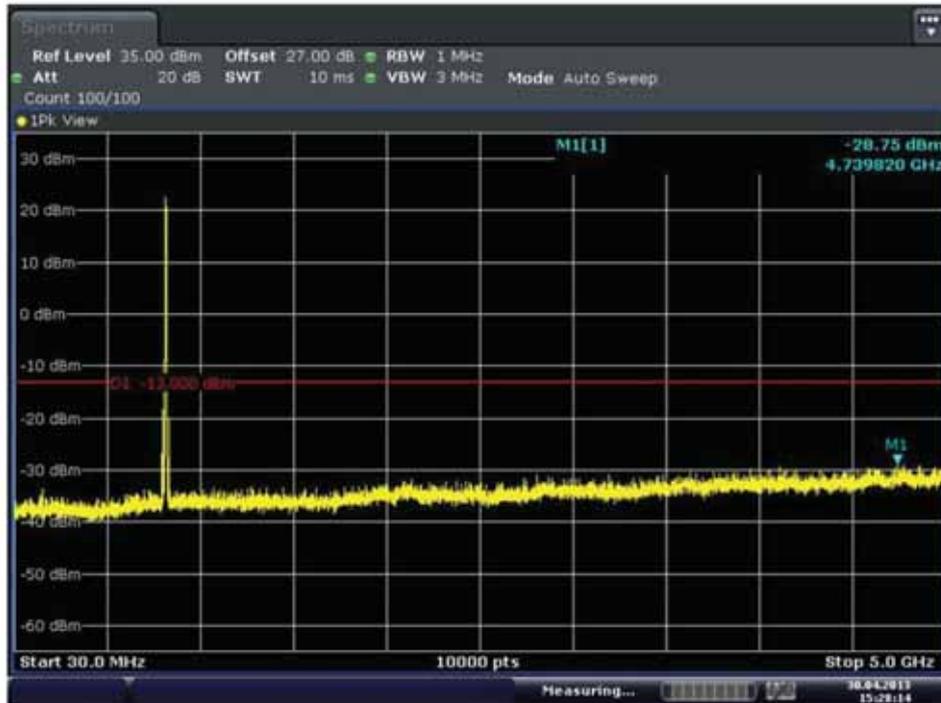
		FCC CERTIFICATION REPORT	www.hct.co.kr
Test Report No. HCTR1305FR05	Date of Issue: May 09, 2013	EUT Type: GSM/WCDMA Phone with Bluetooth3.0, WIFI802.11 b/g/n	FCC ID: ZNFE467F

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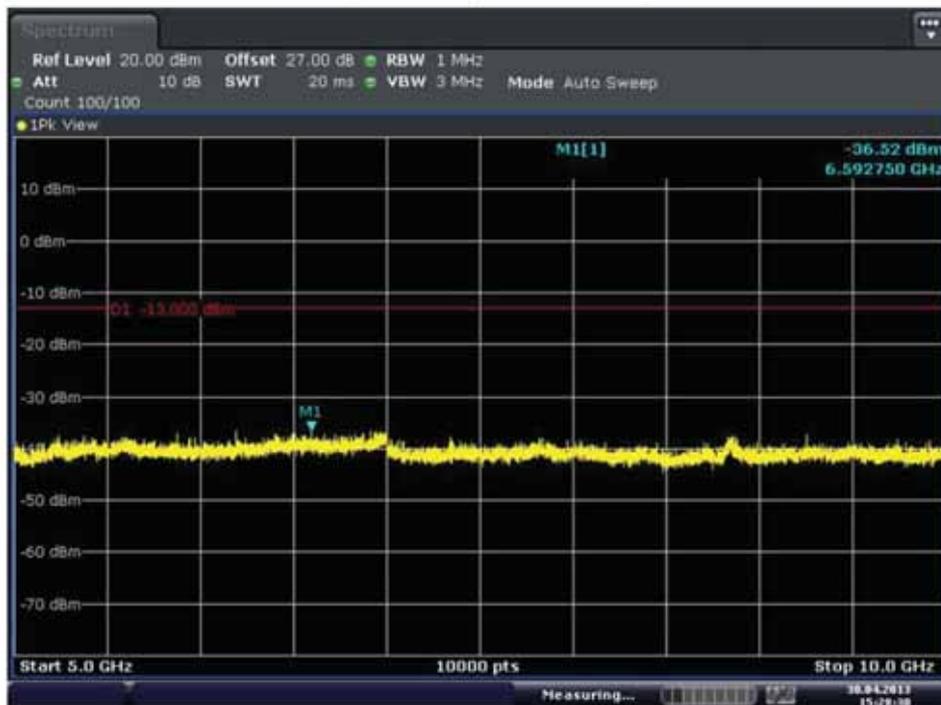### ■ WCDMA850 MODE (4183 CH.) Conducted Spurious Emissions1

Date: 30.APR.2013 15:28:14

■ WCDMA850 MODE (4183 CH.) Conducted Spurious Emissions2

Date: 30.APR.2013 15:28:30

		FCC CERTIFICATION REPORT		www.hct.co.kr
Test Report No. HCTR1305FR05	Date of Issue: May 09, 2013	EUT Type: GSM/WCDMA Phone with Bluetooth3.0, WIFI802.11 b/g/n		FCC ID: ZNFE467F