

## 8.6 SPURIOUS EMISSIONS

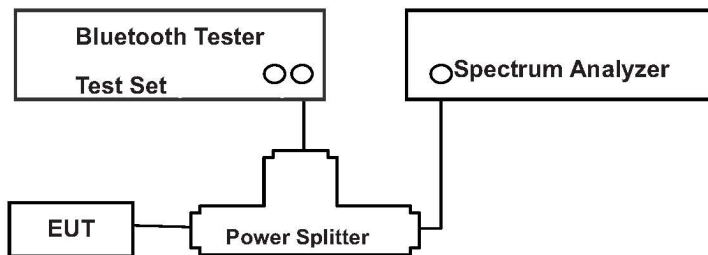
### 8.6.1 CONDUCTED SPURIOUS EMISSIONS

#### Test Requirements and limit, §15.247(d)

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in § 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in § 15.205(a), must also comply with the radiated emission limits specified in § 15.209(a) (see § 15.205(c)).

**Limit : 20 dBc**

#### Test Configuration



#### TEST PROCEDURE

Conducted RF measurements of the transmitter output were made to confirm that the EUT antenna port conducted emissions meet the specified limit and to identify any spurious signals that require further investigation or measurements on the radiated emissions site.

The transmitter output is connected to the spectrum analyzer.

The Spectrum Analyzer is set to ( DA 00-705 )

1. Span = wide enough to capture the peak level of the in-band emission and all spurious emissions(e.g.,harmonics) from the lowest frequency generated in the EUT up through the 10<sup>th</sup> harmonic.
2. RBW = 100 kHz(Upon 1 GHz = 1 MHz)
3. VBW ≥ 300 kHz(Upon 1 GHz = 3 MHz)
4. Sweep = auto
5. Sweep point ≥ 2\*span/RBW
5. Detector function = peak

FCC PT.15.247 TEST REPORT	FCC CERTIFICATION REPORT		<a href="http://www.hct.co.kr">www.hct.co.kr</a>
Test Report No. HCTR1306FR02	Date of Issue: June 05, 2013	EUT Type: GSM/WCDMA Phone with Bluetooth4.0, WIFI802.11 a/b/g/n(2.4/5GHz)/NFC	FCC ID: ZNFE989



6. Trace = max hold

Measurements are made over the 30 MHz to 26 GHz range with the transmitter set to the lowest, middle, and highest channels.

This test is performed with hopping off.

**TEST RESULTS**

No non-compliance noted.

**FACTORS FOR FREQUENCY**

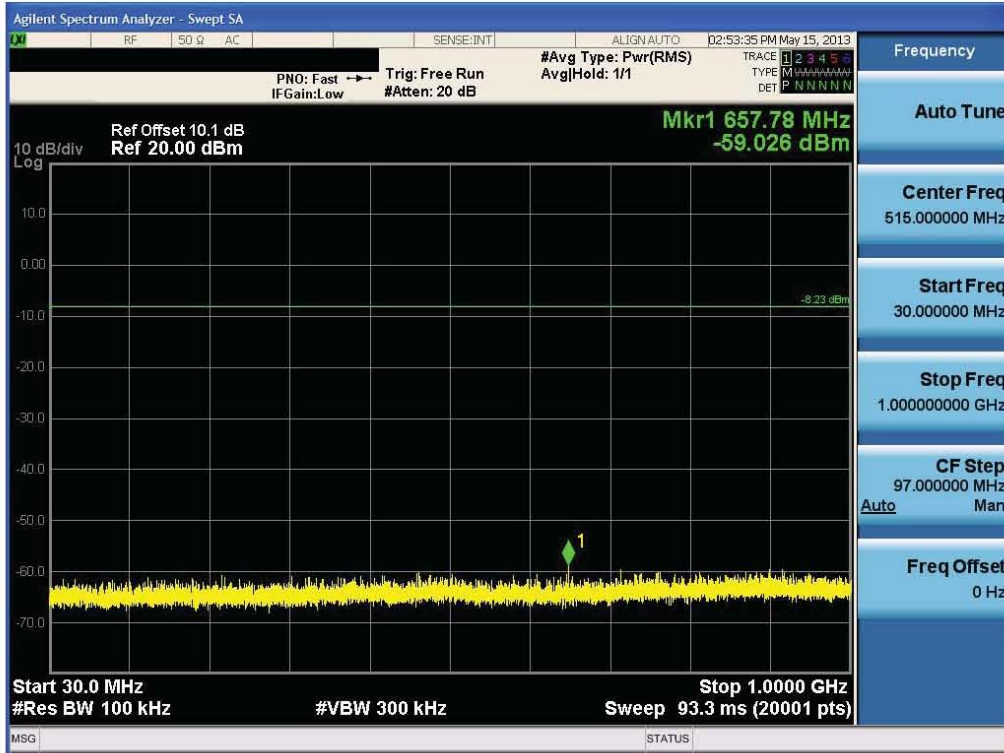
Freq(MHz)	Factor(dB)
30	10.01
100	10.02
200	10.10
300	10.09
400	10.13
500	10.21
600	10.13
700	10.31
800	10.18
900	10.30
1000	10.17
2000	8.53
2400*	7.18
2500*	7.21
3000	8.59
4000	10.02
5000	9.88
6000	5.70
7000	10.21
8000	6.13
9000	8.79
10000	12.46
11000	8.11
12000	9.52
13000	8.98
14000	8.13
15000	11.82
16000	6.92
17000	13.23
18000	10.25
19000	10.28
20000	9.10
21000	10.94
22000	11.54
23000	8.81
24000	11.71
25000	9.37
26000	9.34

Note : 1. "\*" is fundamental frequency range.

2. Factor = Cable loss + Splitter loss

FCC PT.15.247 TEST REPORT	FCC CERTIFICATION REPORT		<a href="http://www.hct.co.kr">www.hct.co.kr</a>
Test Report No. HCTR1306FR02	Date of Issue: June 05, 2013	EUT Type: GSM/WCDMA Phone with Bluetooth4.0, WIFI802.11 a/b/g/n(2.4/5GHz)/NFC	FCC ID: ZNFE989

Test Plots (GFSK) - 30 MHz - 1 GHz  
Spurious Emission (Low-CH)

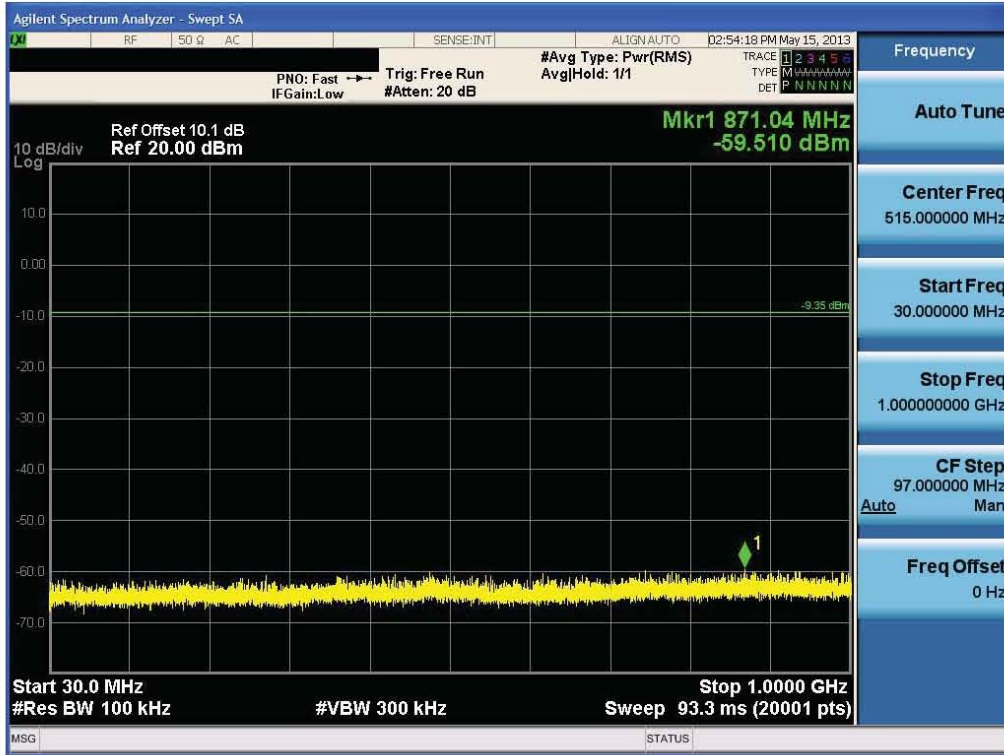


Test Plots (GFSK) - 30 MHz - 1 GHz (RBW:100 kHz, VBW: 300 kHz)  
Spurious Emission (Mid-CH)

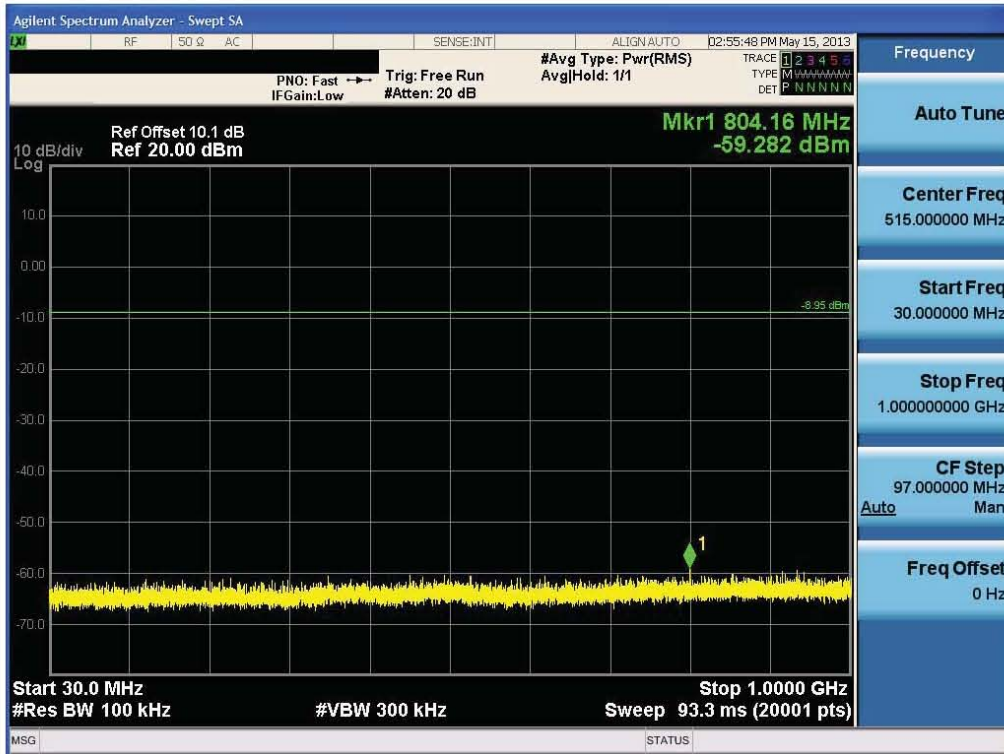


FCC PT.15.247 TEST REPORT	FCC CERTIFICATION REPORT		<a href="http://www.hct.co.kr">www.hct.co.kr</a>
Test Report No. HCTR1306FR02	Date of Issue: June 05, 2013	EUT Type: GSM/WCDMA Phone with Bluetooth4.0, WiFi802.11 a/b/g/n(2.4/5GHz)/NFC	FCC ID: ZNFE989

Test Plots (GFSK) - 30 MHz - 1 GHz (RBW:100 kHz, VBW: 300 kHz)  
Spurious Emission (High-CH)

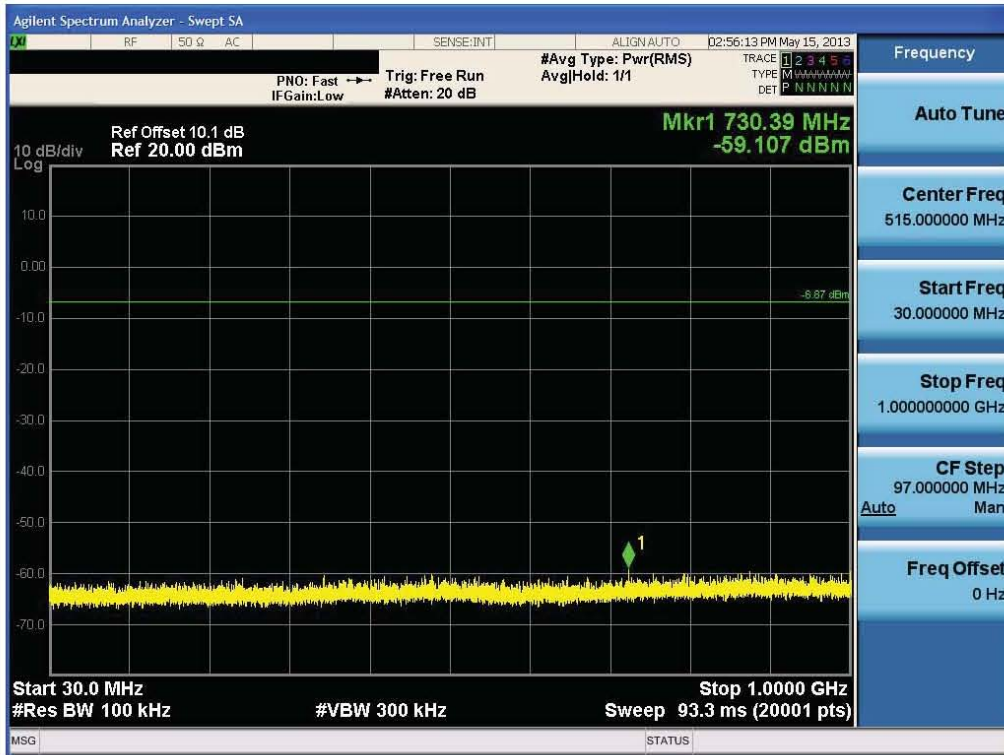


Test Plots (8DPSK) - 30 MHz - 1 GHz (RBW:100 kHz, VBW: 300 kHz)  
Spurious Emission (Low-CH)

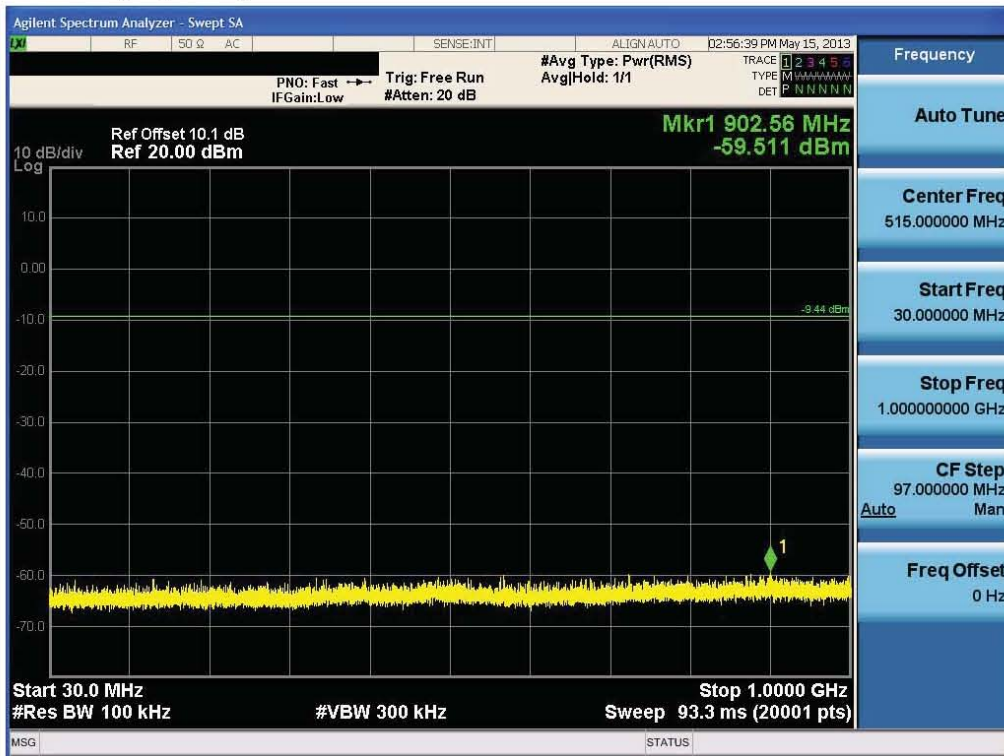


FCC PT.15.247 TEST REPORT	FCC CERTIFICATION REPORT		<a href="http://www.hct.co.kr">www.hct.co.kr</a>
Test Report No. HCTR1306FR02	Date of Issue: June 05, 2013	EUT Type: GSM/WCDMA Phone with Bluetooth4.0, WiFi802.11 a/b/g/n(2.4/5GHz)/NFC	FCC ID: ZNFE989

Test Plots (8DPSK) - 30 MHz - 1 GHz (RBW:100 kHz, VBW: 300 kHz)  
Spurious Emission (Mid-CH)

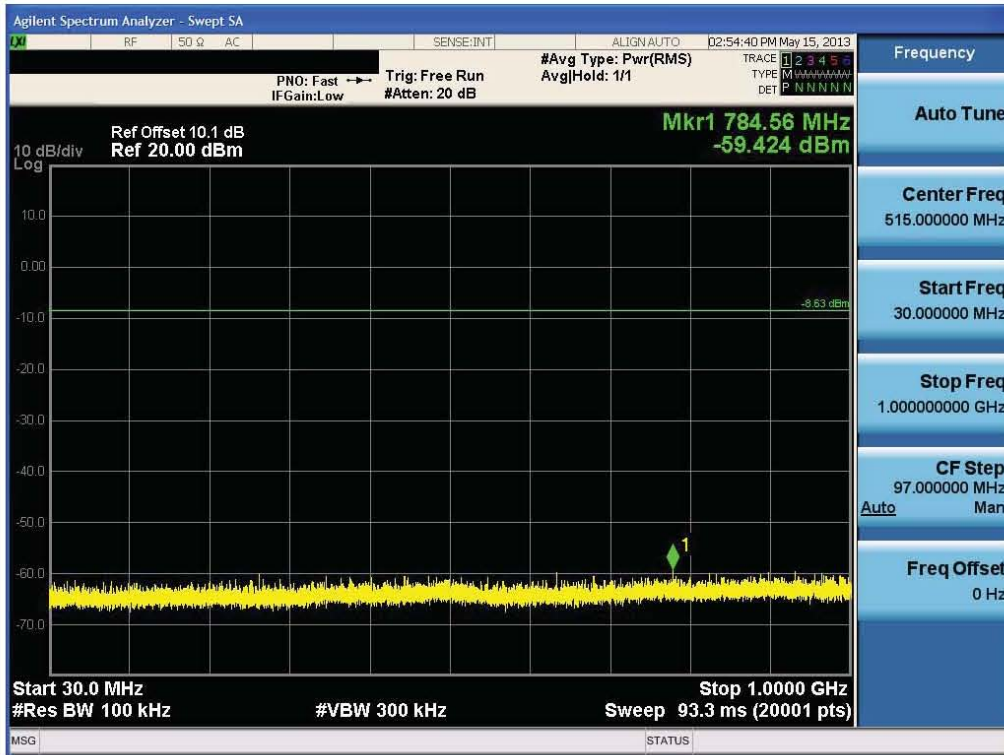


Test Plots (8DPSK) - 30 MHz - 1 GHz (RBW:100 kHz, VBW: 300 kHz)  
Spurious Emission (High-CH)

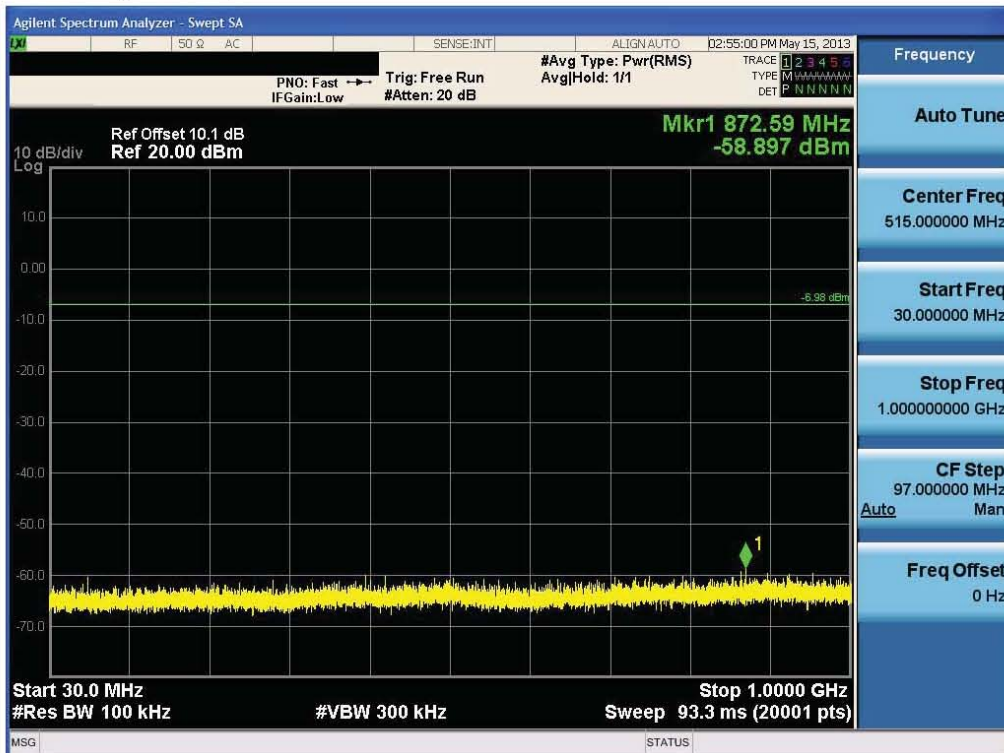


FCC PT.15.247 TEST REPORT		FCC CERTIFICATION REPORT		<a href="http://www.hct.co.kr">www.hct.co.kr</a>
Test Report No. HCTR1306FR02	Date of Issue: June 05, 2013	EUT Type: GSM/WCDMA Phone with Bluetooth4.0, WiFi802.11 a/b/g/n(2.4/5GHz)/NFC	FCC ID: ZNFE989	

Test Plots ( $\pi/4$ DQPSK) - 30 MHz - 1 GHz (RBW:100 kHz, VBW: 300 kHz)  
Spurious Emission (Low-CH)

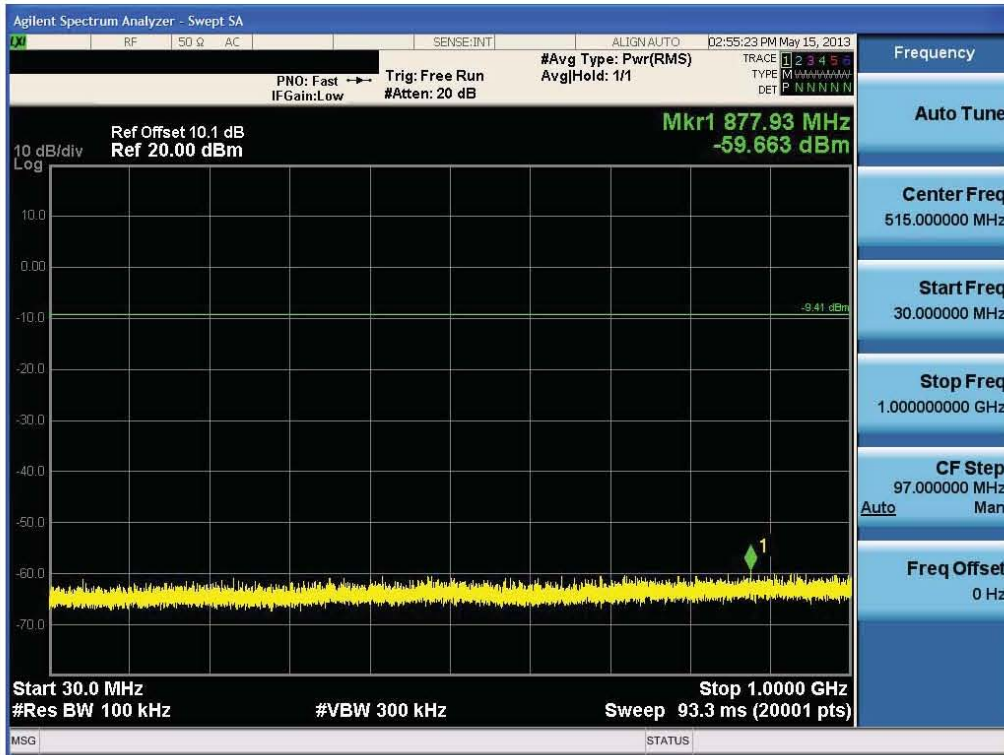


Test Plots ( $\pi/4$ DQPSK) - 30 MHz - 1 GHz (RBW:100 kHz, VBW: 300 kHz)  
Spurious Emission (Mid-CH)



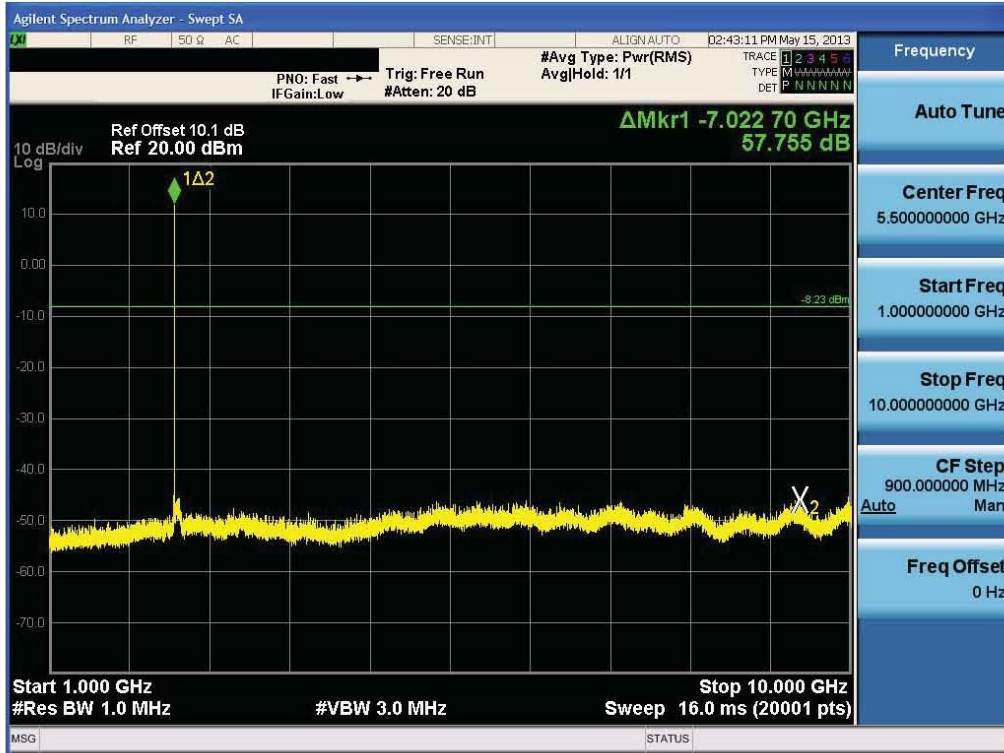
FCC PT.15.247 TEST REPORT	FCC CERTIFICATION REPORT		<a href="http://www.hct.co.kr">www.hct.co.kr</a>
Test Report No. HCTR1306FR02	Date of Issue: June 05, 2013	EUT Type: GSM/WCDMA Phone with Bluetooth4.0, WiFi802.11 a/b/g/n(2.4/5GHz)/NFC	FCC ID: ZNFE989

Test Plots ( $\pi/4$ DQPSK) - 30 MHz - 1 GHz (RBW:100 kHz, VBW: 300 kHz)  
 Spurious Emission (High-CH)

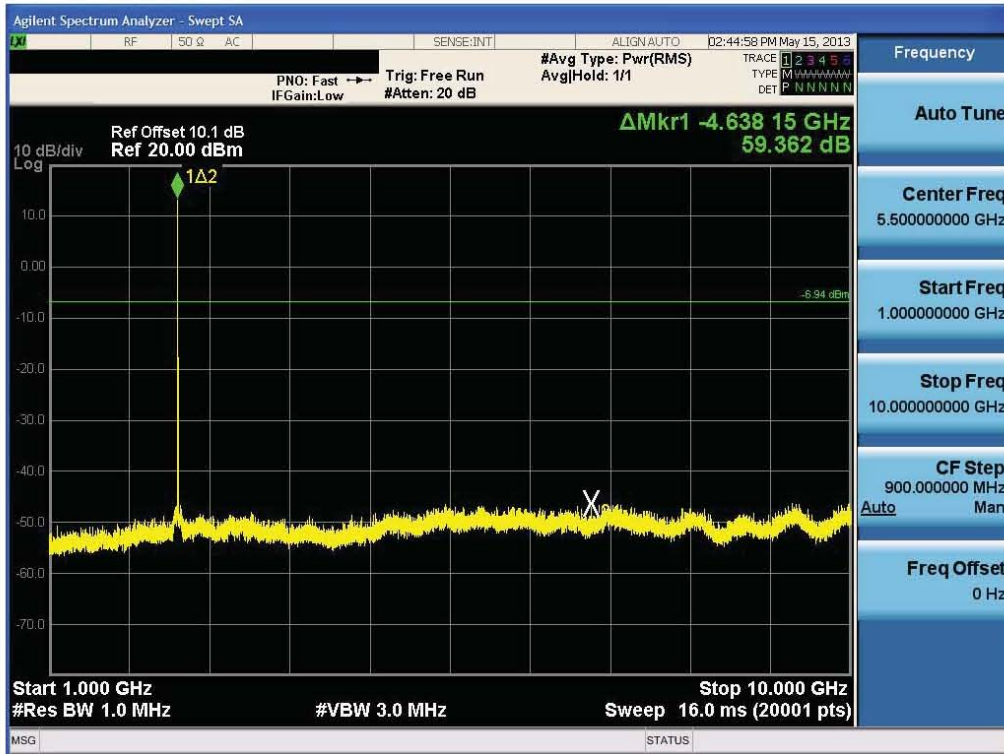


FCC PT.15.247 TEST REPORT		FCC CERTIFICATION REPORT		<a href="http://www.hct.co.kr">www.hct.co.kr</a>
Test Report No. HCTR1306FR02	Date of Issue: June 05, 2013	EUT Type: GSM/WCDMA Phone with Bluetooth4.0, WIFI802.11 a/b/g/n(2.4/5GHz)/NFC		FCC ID: ZNFE989

Test Plots (GFSK) - 1 GHz - 10 GHz (RBW:1 MHz, VBW: 3 MHz)  
Spurious Emission (Low-CH)



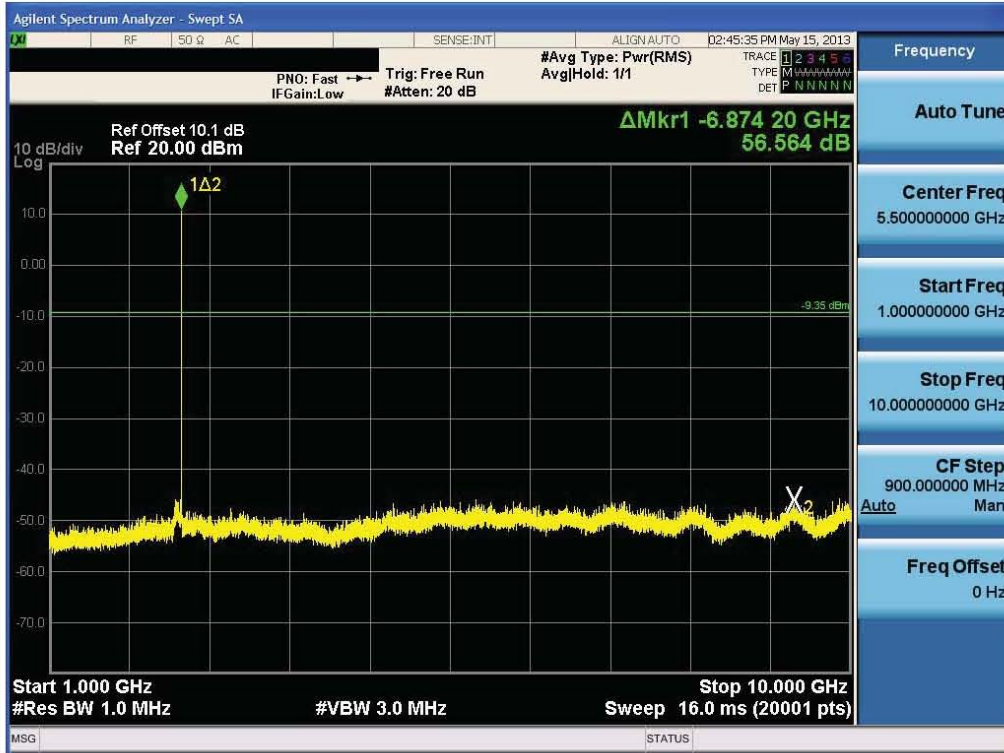
Test Plots (GFSK) - 1 GHz - 10 GHz (RBW:1 MHz, VBW: 3 MHz)  
Spurious Emission (Mid-CH)



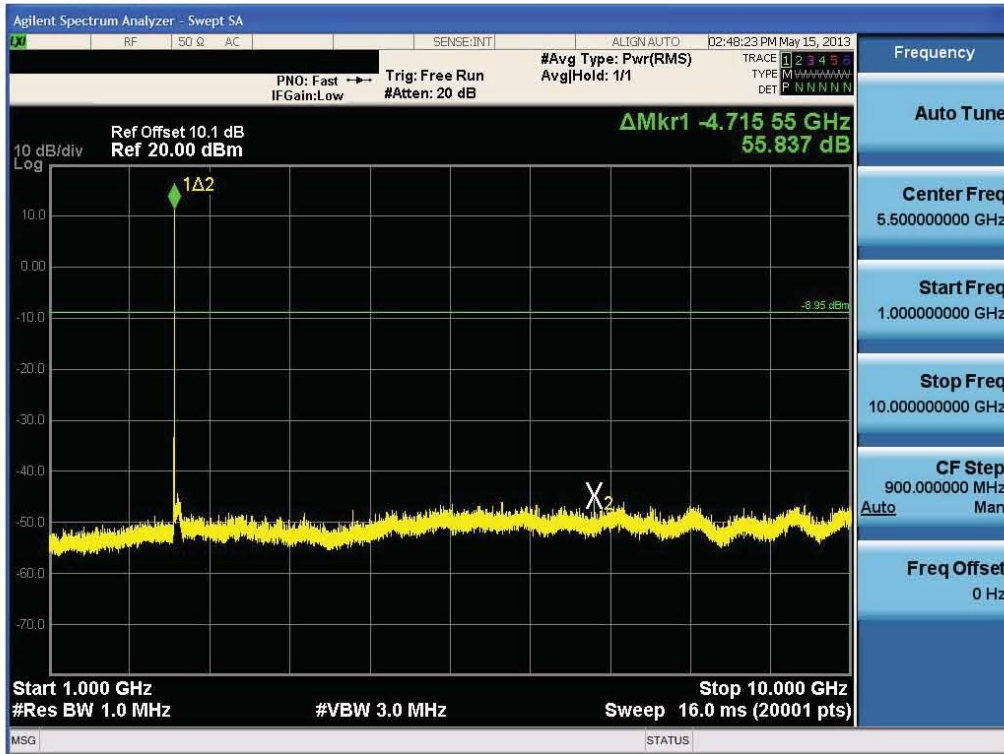
FCC PT.15.247 TEST REPORT	FCC CERTIFICATION REPORT		<a href="http://www.hct.co.kr">www.hct.co.kr</a>
Test Report No. HCTR1306FR02	Date of Issue: June 05, 2013	EUT Type: GSM/WCDMA Phone with Bluetooth4.0, WIFI802.11 a/b/g/n(2.4/5GHz)/NFC	FCC ID: ZNFE989



Test Plots (GFSK) - 1 GHz - 10 GHz (RBW:1 MHz, VBW: 3 MHz)  
Spurious Emission (High-CH)

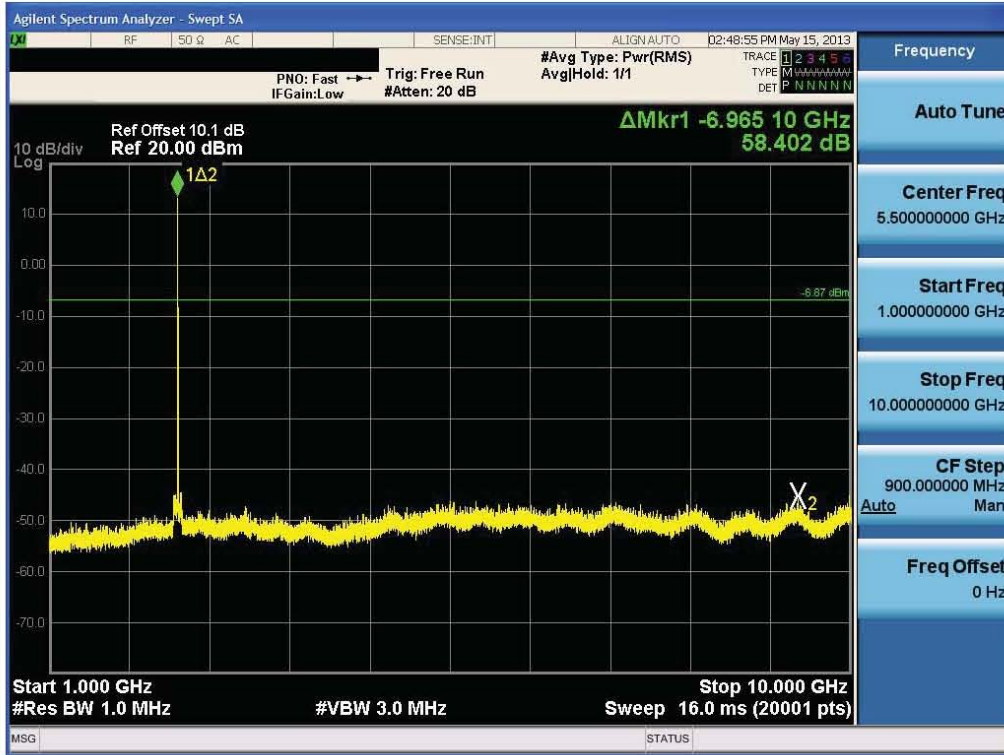


Test Plots (8DPSK) - 1 GHz - 10 GHz (RBW:1 MHz, VBW: 3 MHz)  
Spurious Emission (Low-CH)

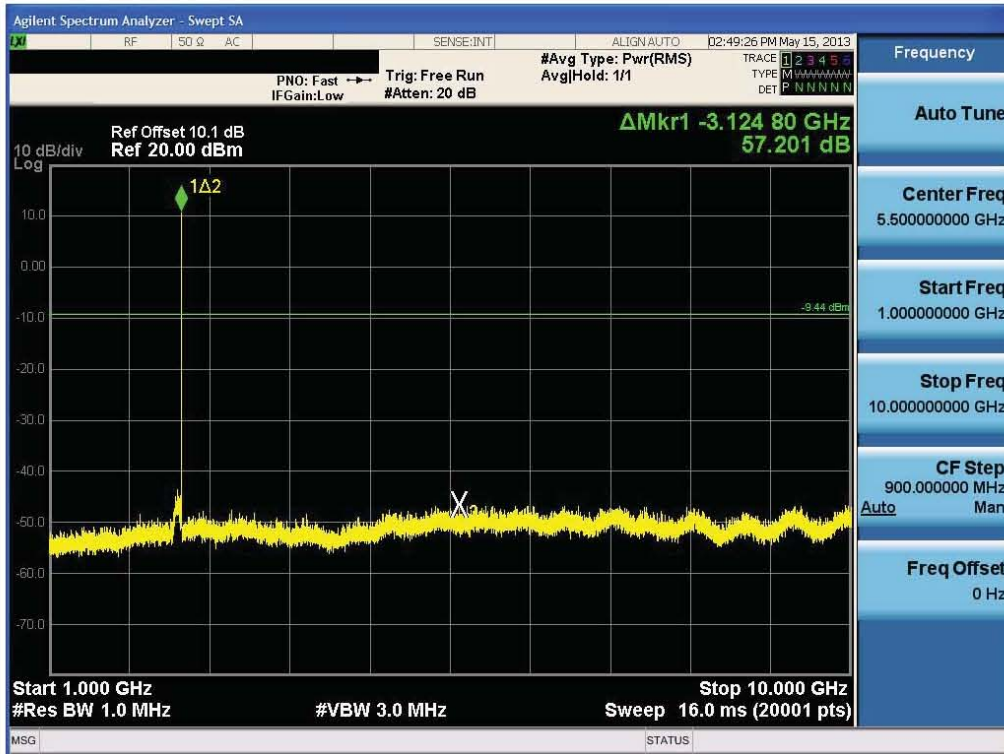


FCC PT.15.247 TEST REPORT	FCC CERTIFICATION REPORT		<a href="http://www.hct.co.kr">www.hct.co.kr</a>
Test Report No. HCTR1306FR02	Date of Issue: June 05, 2013	EUT Type: GSM/WCDMA Phone with Bluetooth4.0, WIFI802.11 a/b/g/n(2.4/5GHz)/NFC	FCC ID: ZNFE989

Test Plots (8DPSK) - 1 GHz - 10 GHz (RBW:1 MHz, VBW: 3 MHz)  
Spurious Emission (Mid-CH)

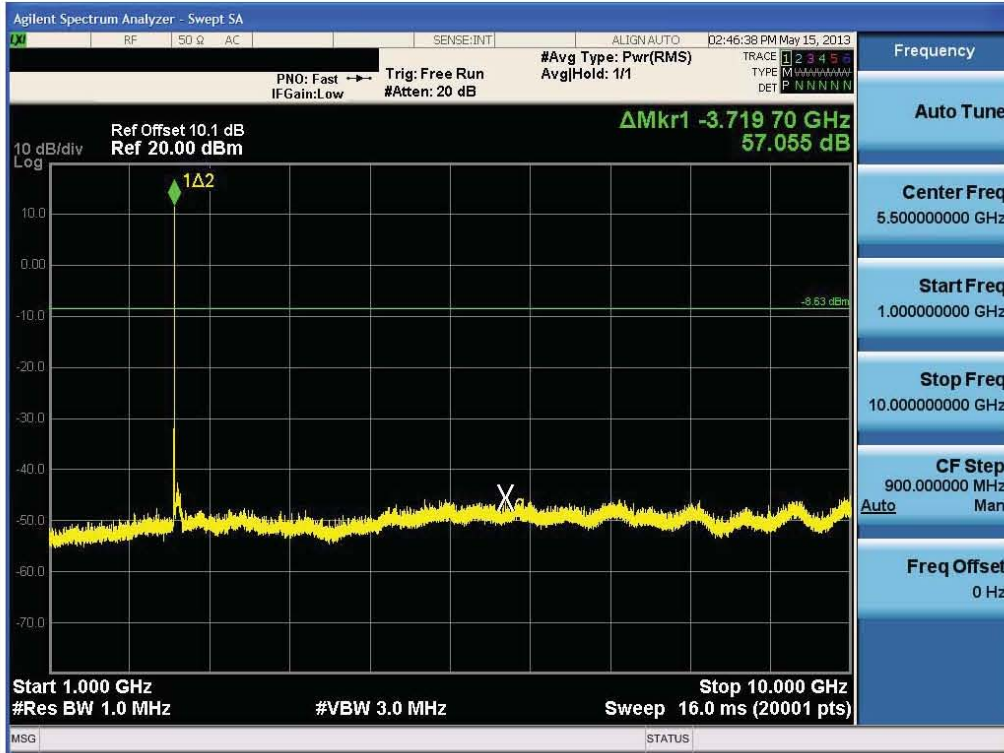


Test Plots (8DPSK) - 1 GHz - 10 GHz (RBW:1 MHz, VBW: 3 MHz)  
Spurious Emission (High-CH)

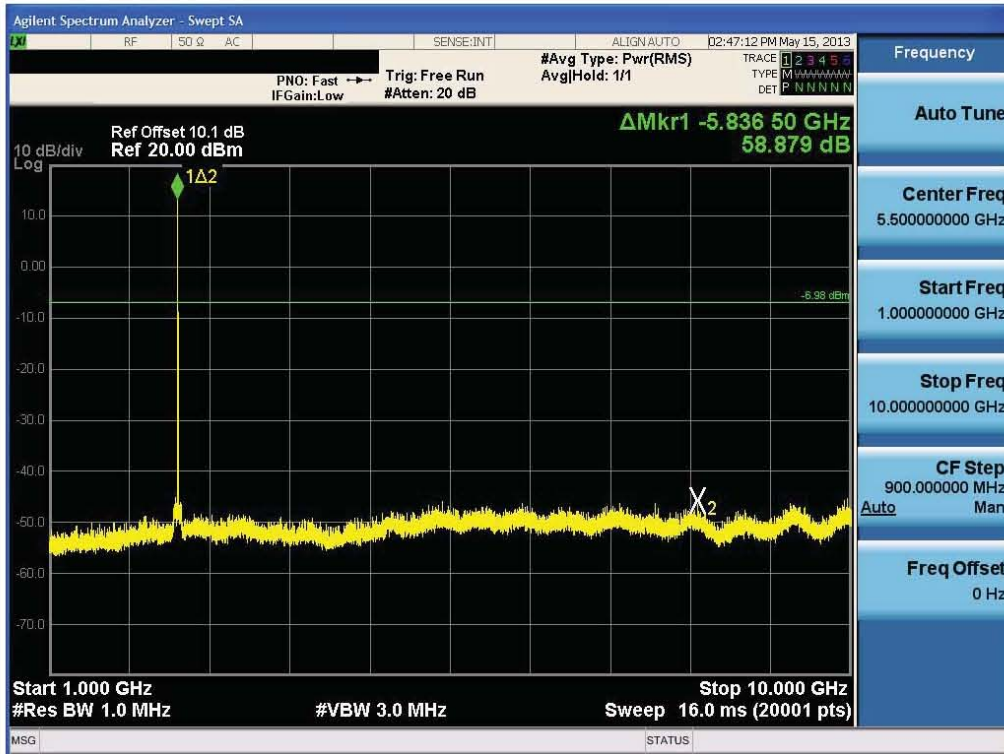


FCC PT.15.247 TEST REPORT	FCC CERTIFICATION REPORT		<a href="http://www.hct.co.kr">www.hct.co.kr</a>
Test Report No. HCTR1306FR02	Date of Issue: June 05, 2013	EUT Type: GSM/WCDMA Phone with Bluetooth4.0, WIFI802.11 a/b/g/n(2.4/5GHz)/NFC	FCC ID: ZNFE989

Test Plots ( $\pi/4$ DQPSK) - 1 GHz - 10 GHz (RBW:1 MHz, VBW: 3 MHz)  
Spurious Emission (Low-CH)



Test Plots ( $\pi/4$ DQPSK) - 1 GHz - 10 GHz (RBW:1 MHz, VBW: 3 MHz)  
Spurious Emission (Mid-CH)



FCC PT.15.247 TEST REPORT	FCC CERTIFICATION REPORT		<a href="http://www.hct.co.kr">www.hct.co.kr</a>
Test Report No. HCTR1306FR02	Date of Issue: June 05, 2013	EUT Type: GSM/WCDMA Phone with Bluetooth4.0, WiFi802.11 a/b/g/n(2.4/5GHz)/NFC	FCC ID: ZNFE989