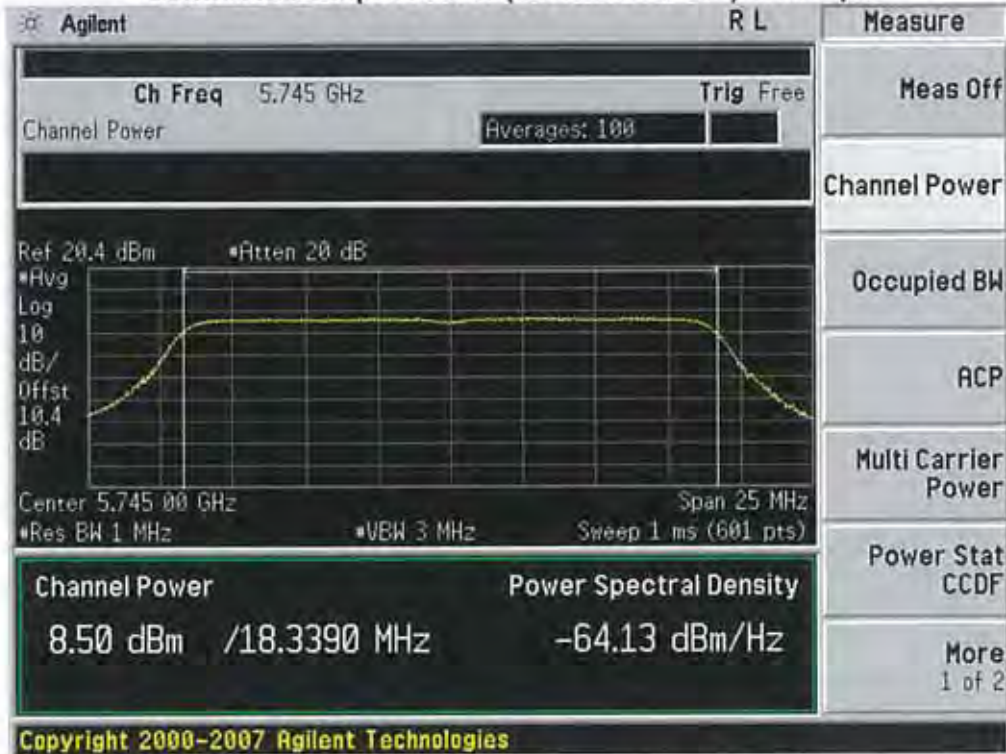
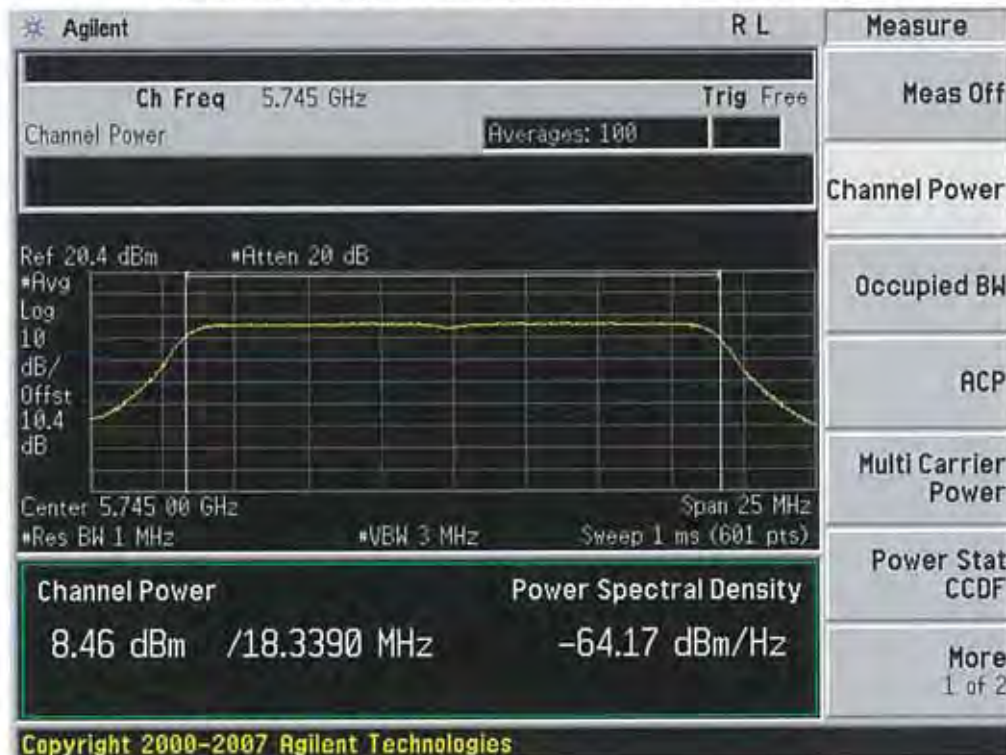


20 MHz BW
(5745 MHz ~5825 MHz)

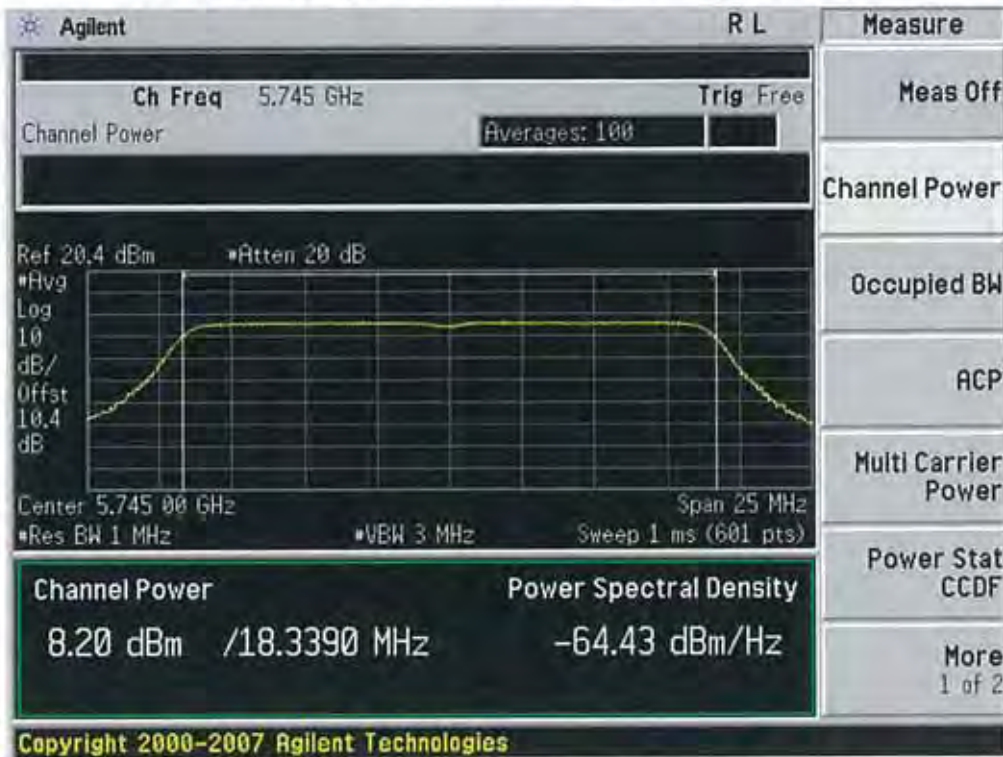
Conducted Output Power (802.11n-CH 149) 6.5 Mbps



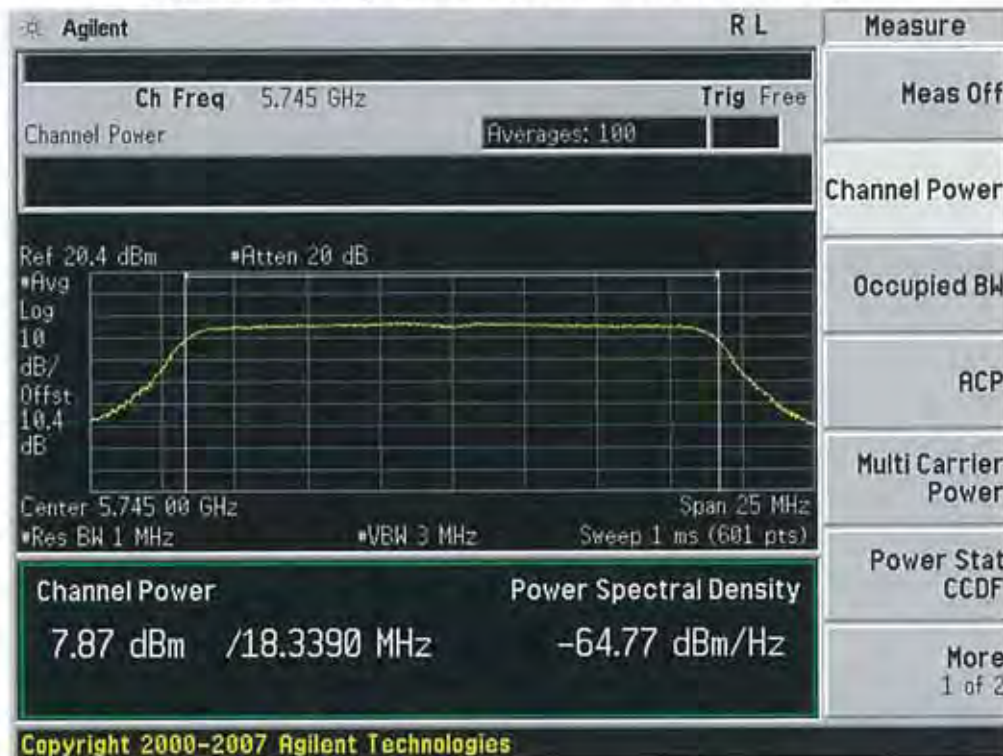
Conducted Output Power (802.11n-CH 149) 13 Mbps



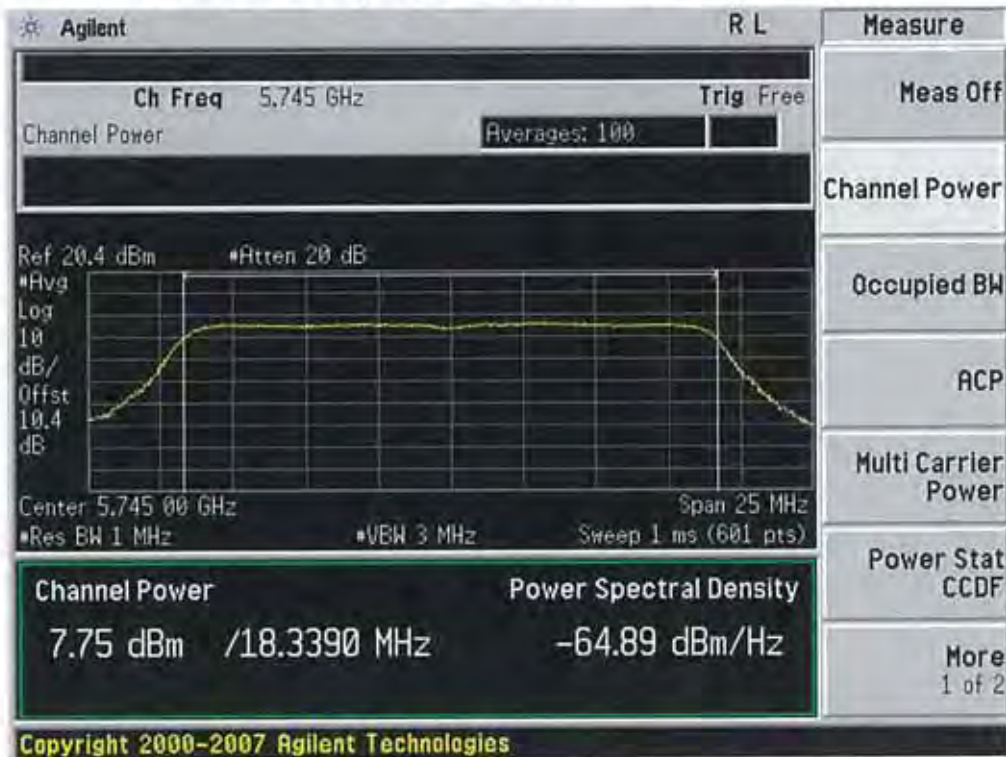
Conducted Output Power (802.11n-CH 149) 19.5 Mbps



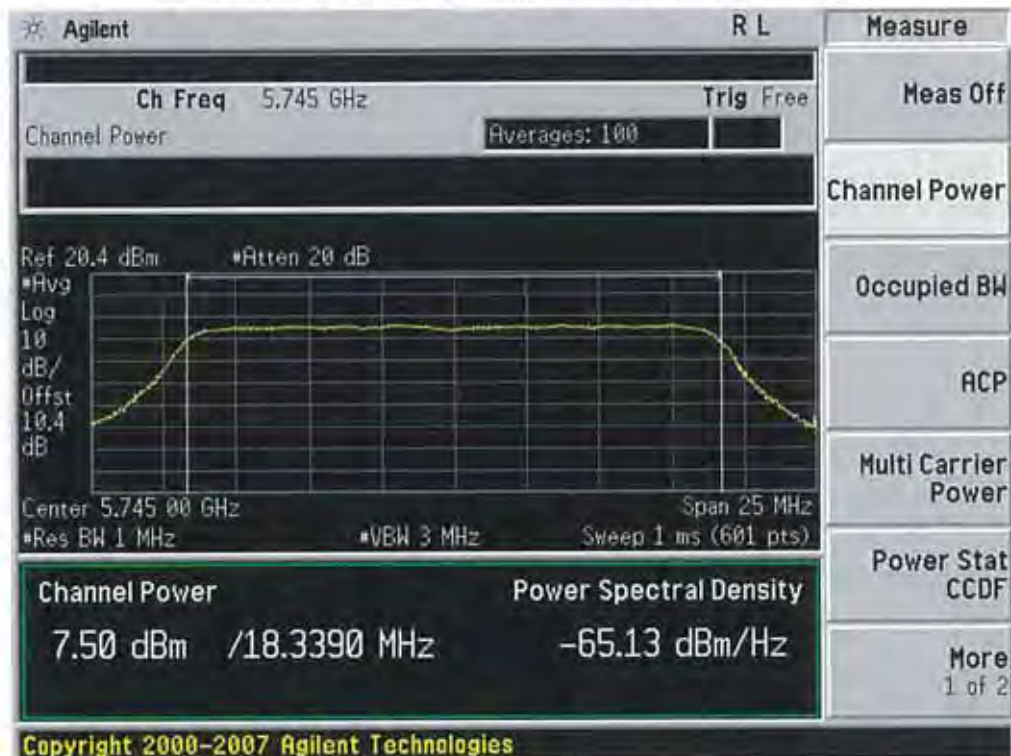
Conducted Output Power (802.11n-CH 149) 26 Mbps



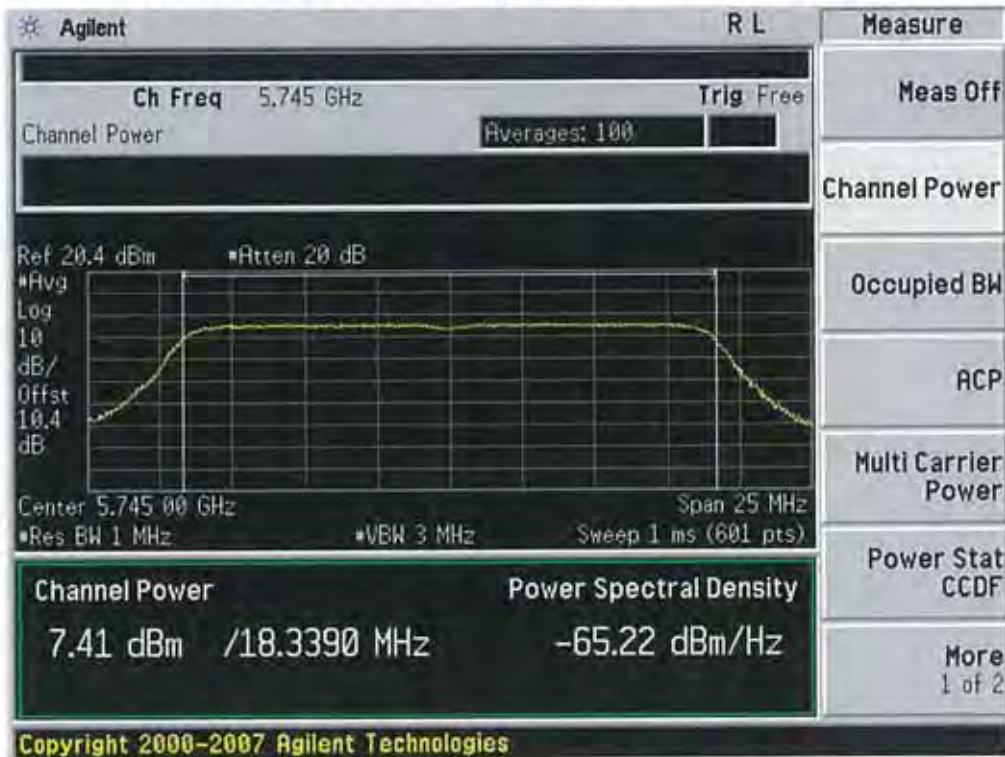
Conducted Output Power (802.11n-CH 149) 39 Mbps



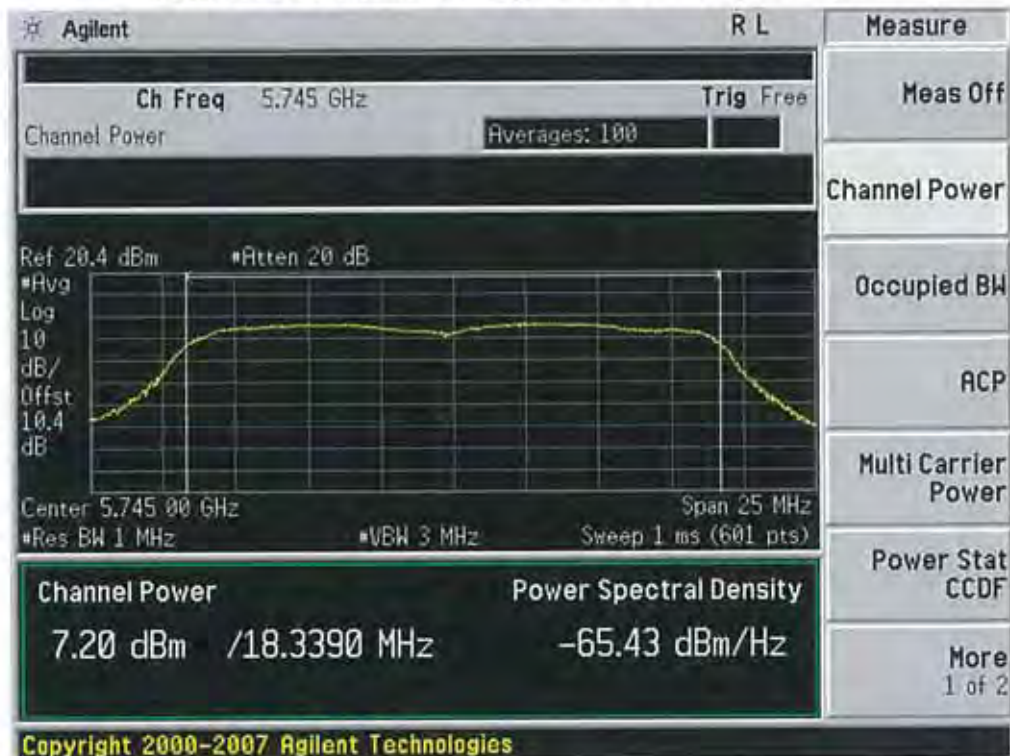
Conducted Output Power (802.11n-CH 149) 52 Mbps



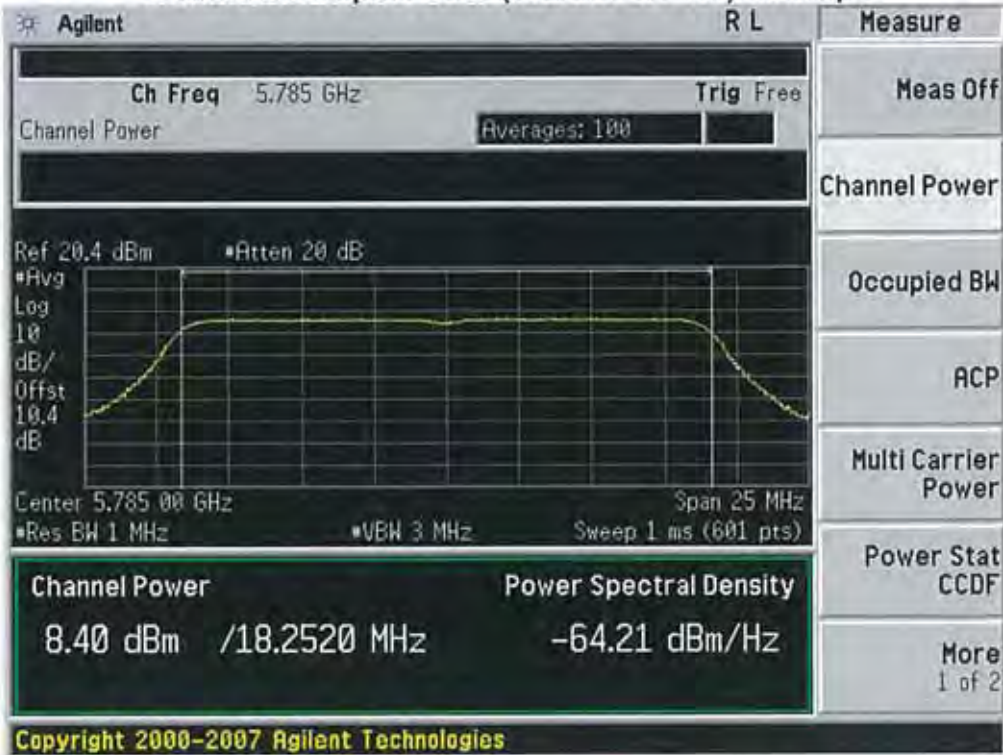
Conducted Output Power (802.11n-CH 149) 58.5 Mbps



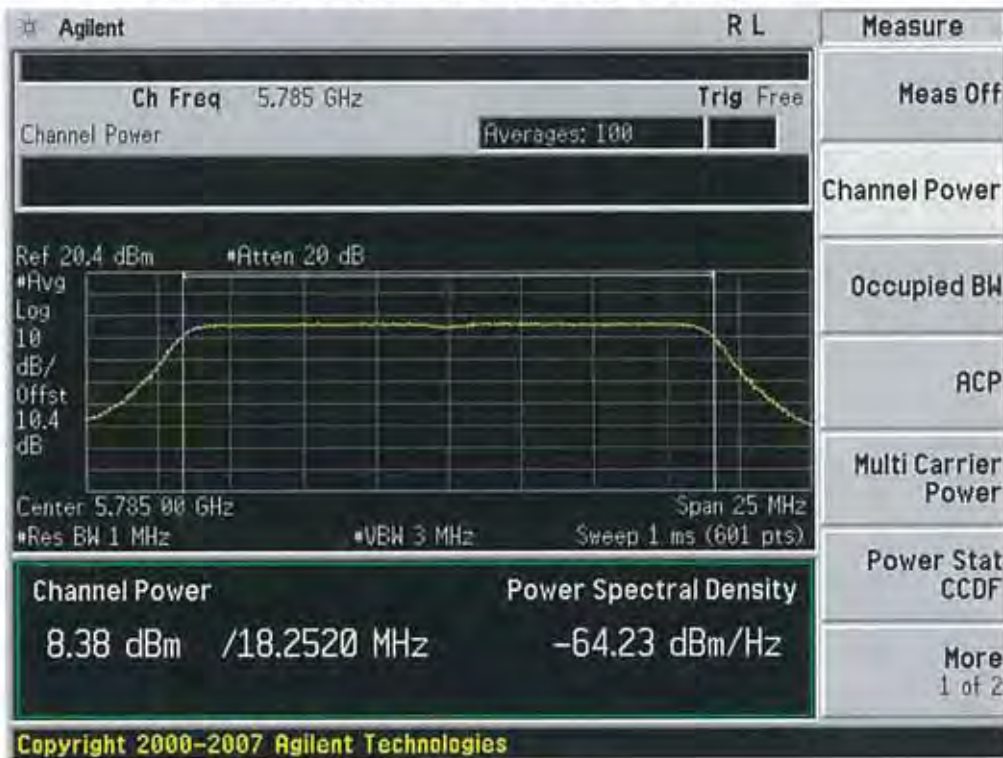
Conducted Output Power (802.11n-CH 149) 65 Mbps



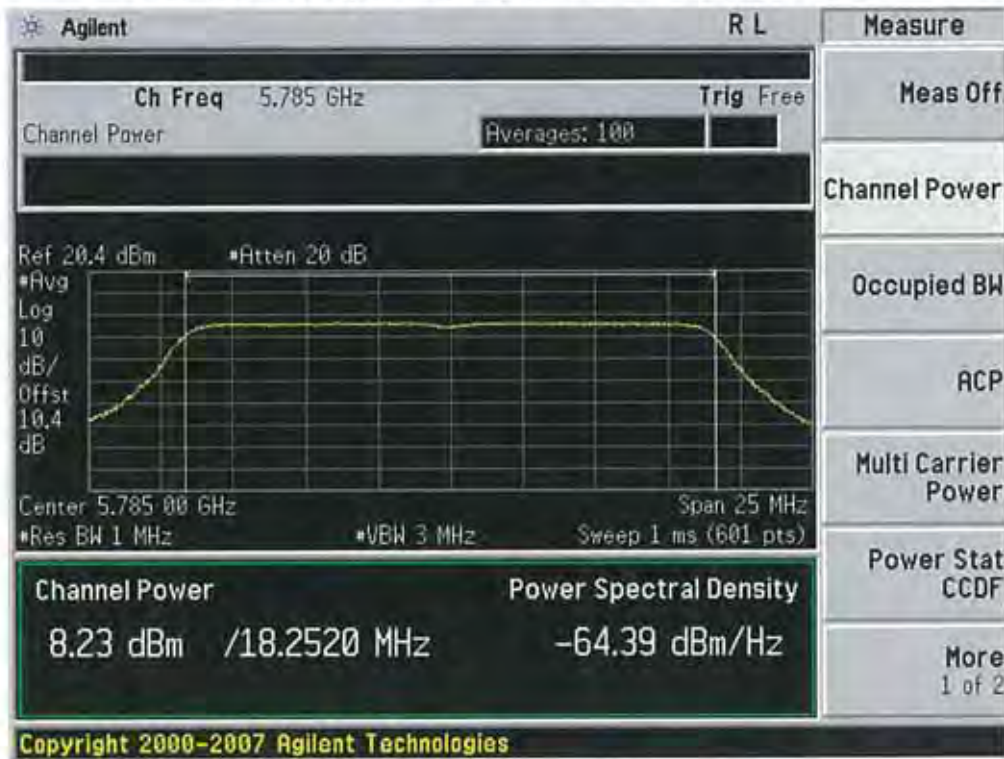
Conducted Output Power (802.11n-CH 157) 6.5 Mbps



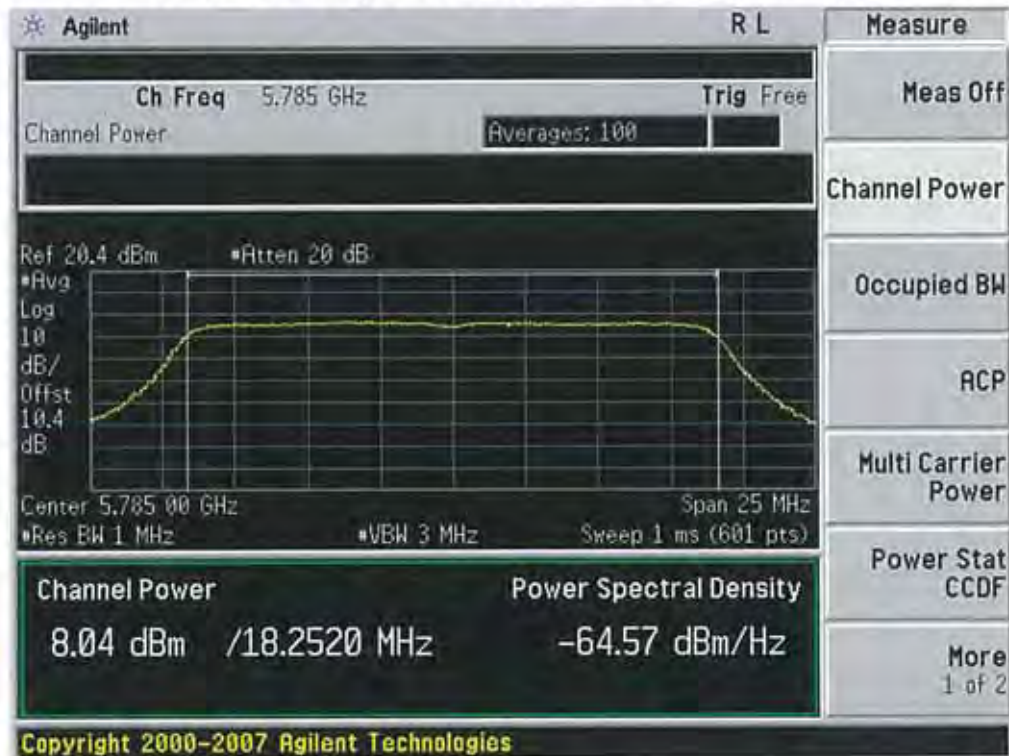
Conducted Output Power (802.11n-CH 157) 13 Mbps



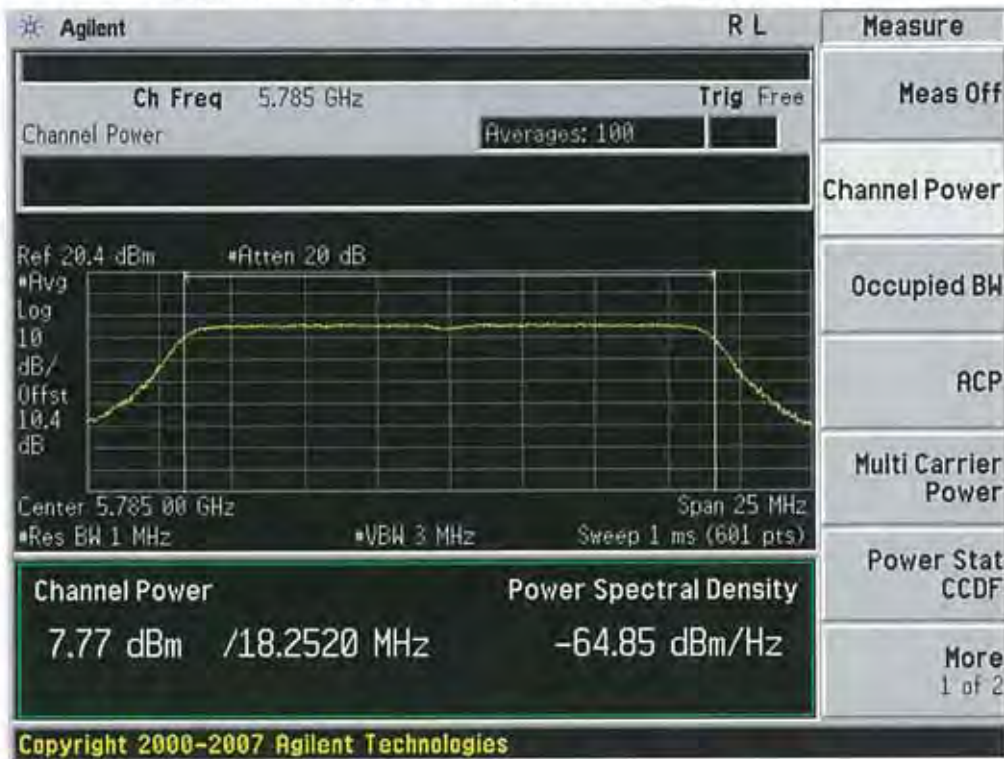
Conducted Output Power (802.11n-CH 157) 19.5 Mbps



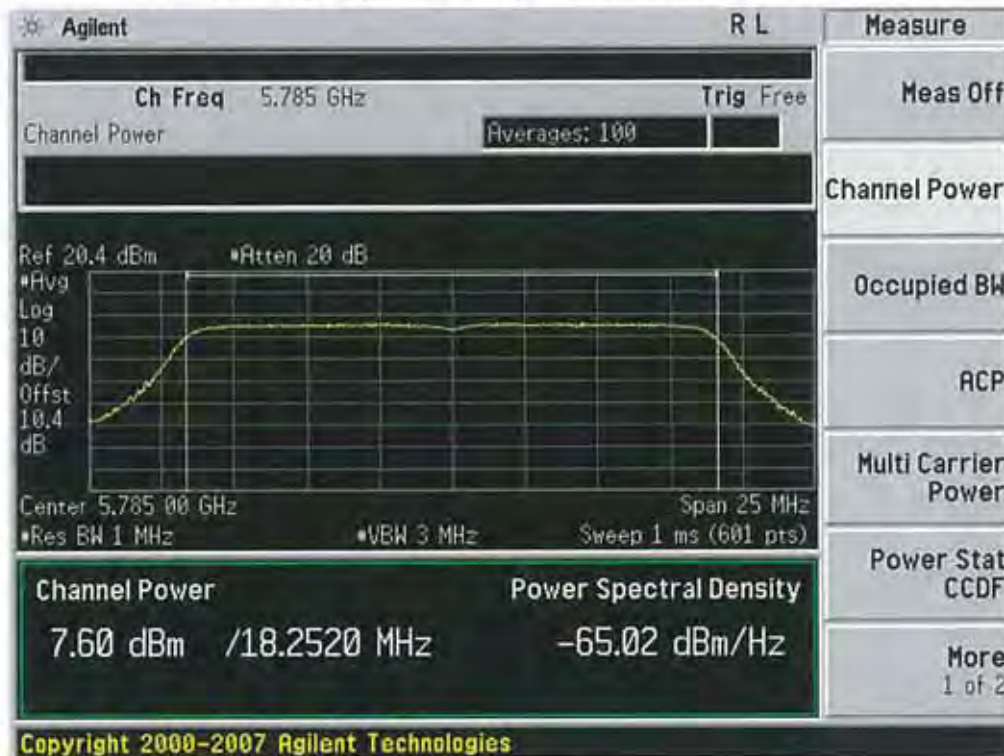
Conducted Output Power (802.11n-CH 157) 26 Mbps



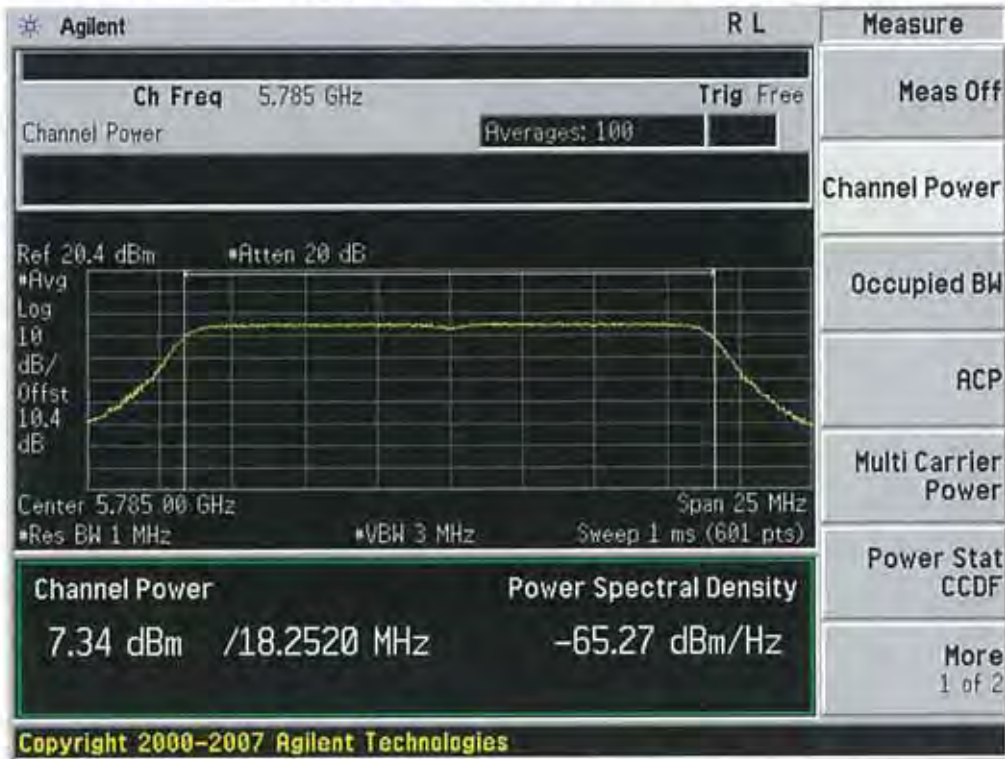
Conducted Output Power (802.11n-CH 157) 39 Mbps



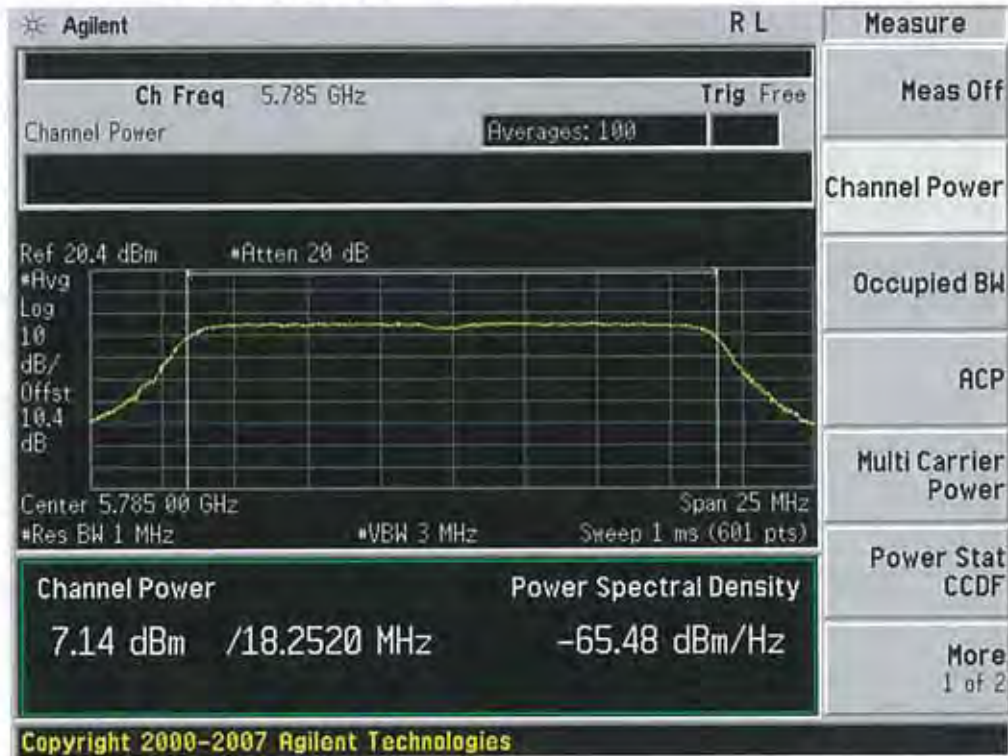
Conducted Output Power (802.11n-CH 157) 52 Mbps



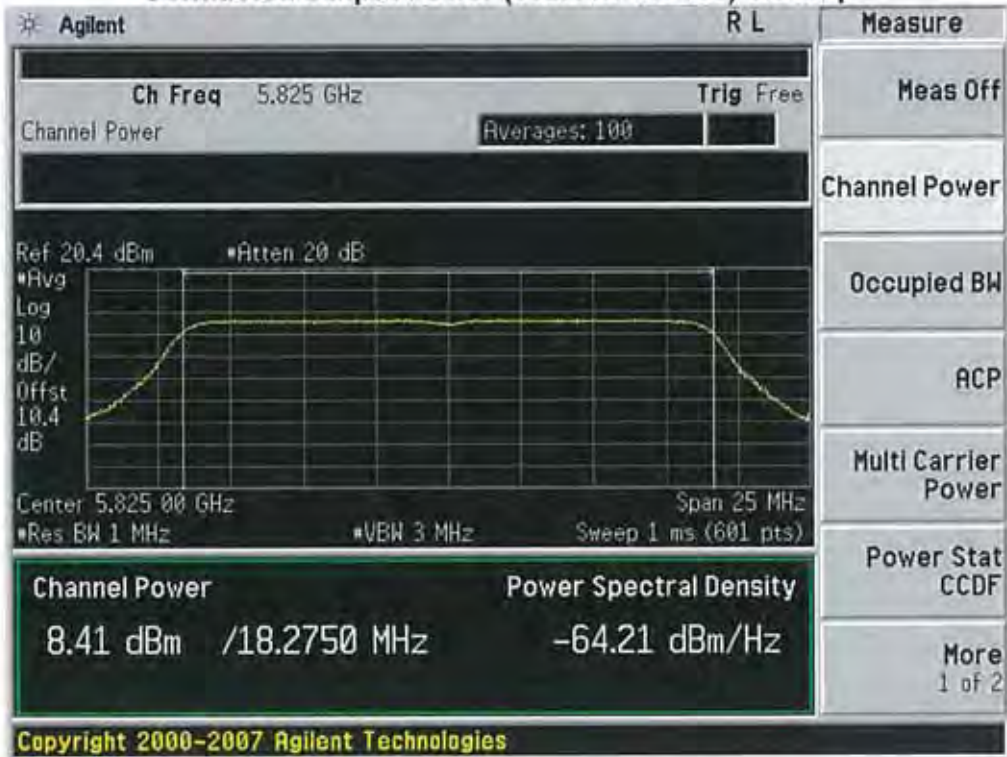
Conducted Output Power (802.11n-CH 157) 58.5 Mbps



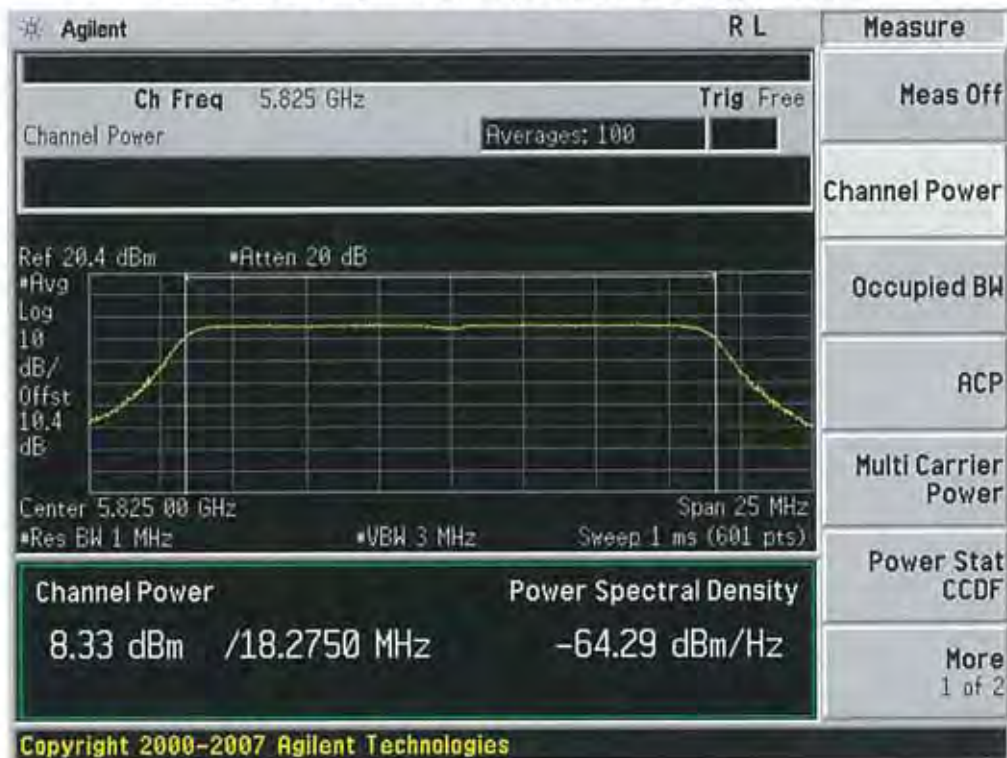
Conducted Output Power (802.11n-CH 157) 65 Mbps



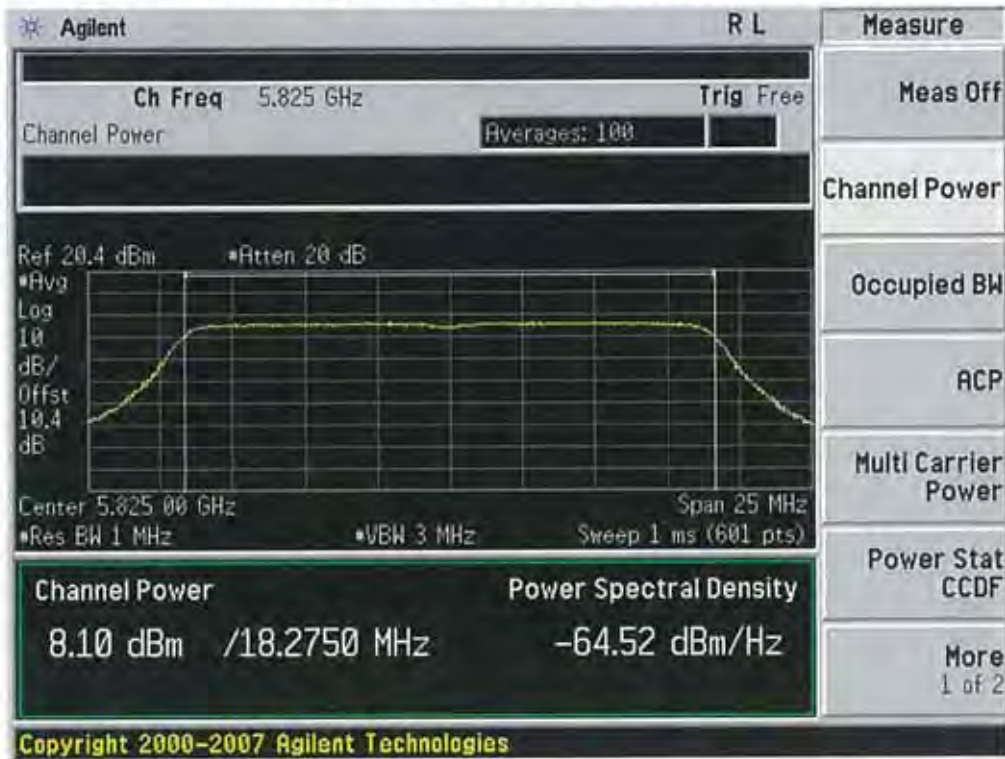
Conducted Output Power (802.11n-CH 165) 6.5 Mbps



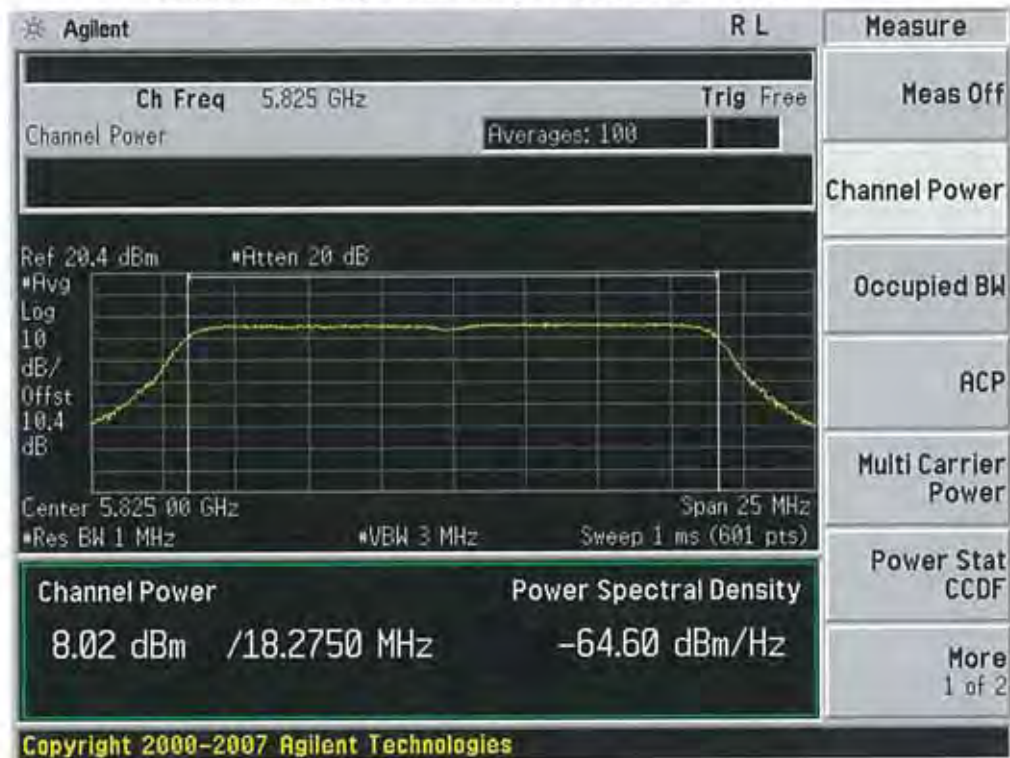
Conducted Output Power (802.11n-CH 165) 13 Mbps



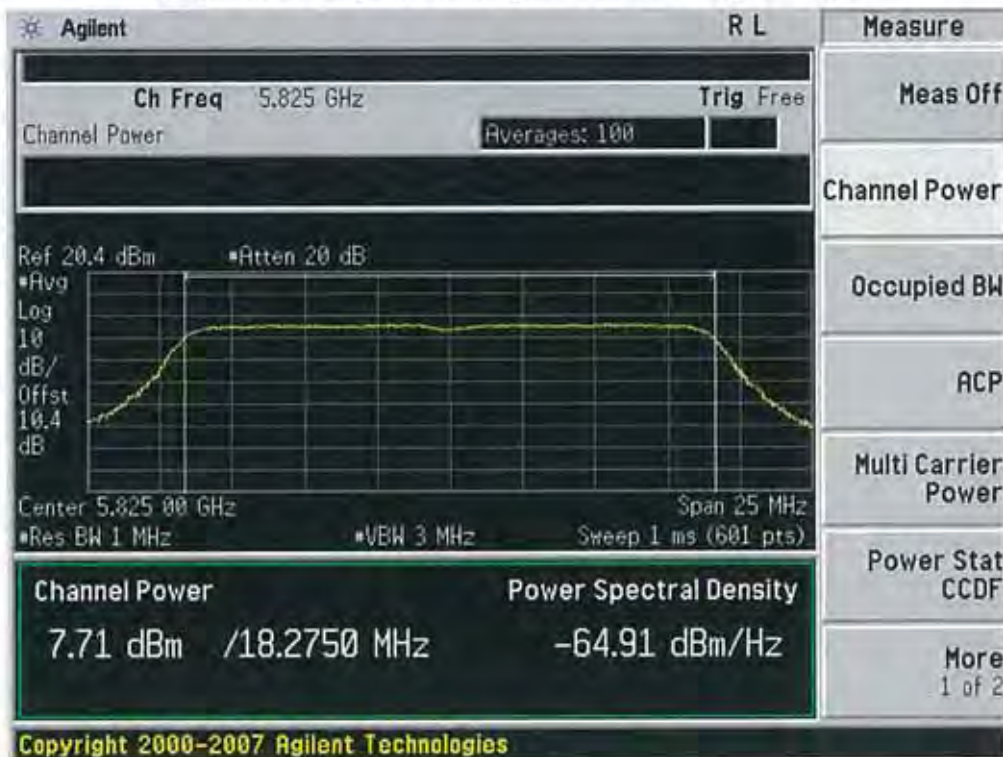
Conducted Output Power (802.11n-CH 165) 19.5 Mbps



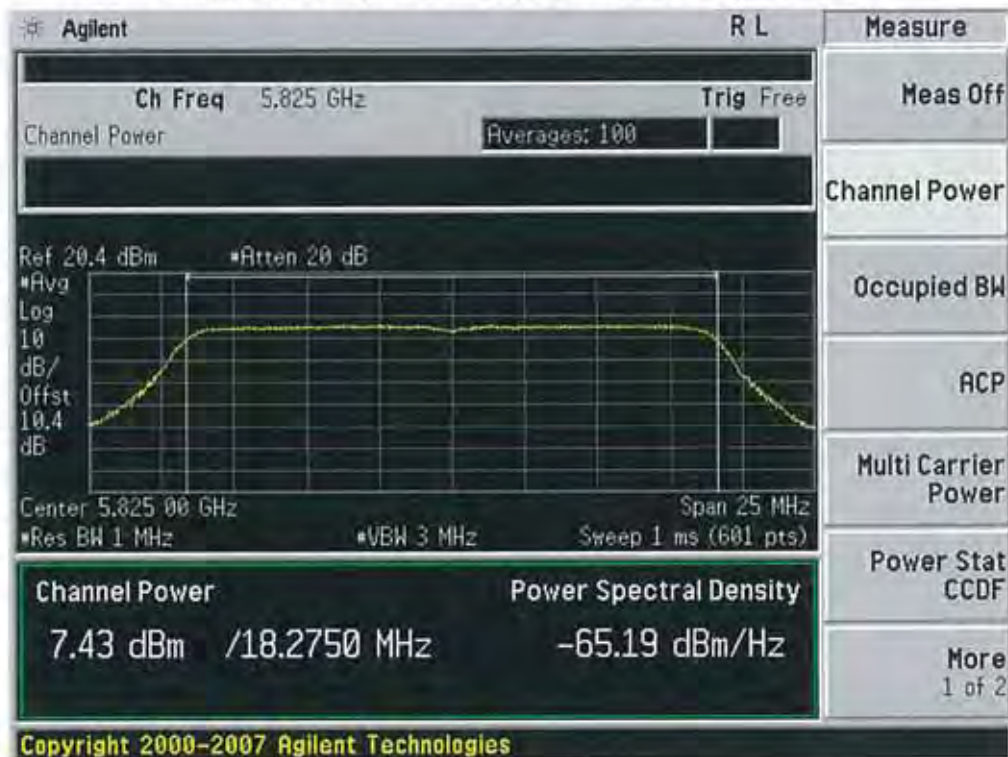
Conducted Output Power (802.11n-CH 165) 26 Mbps



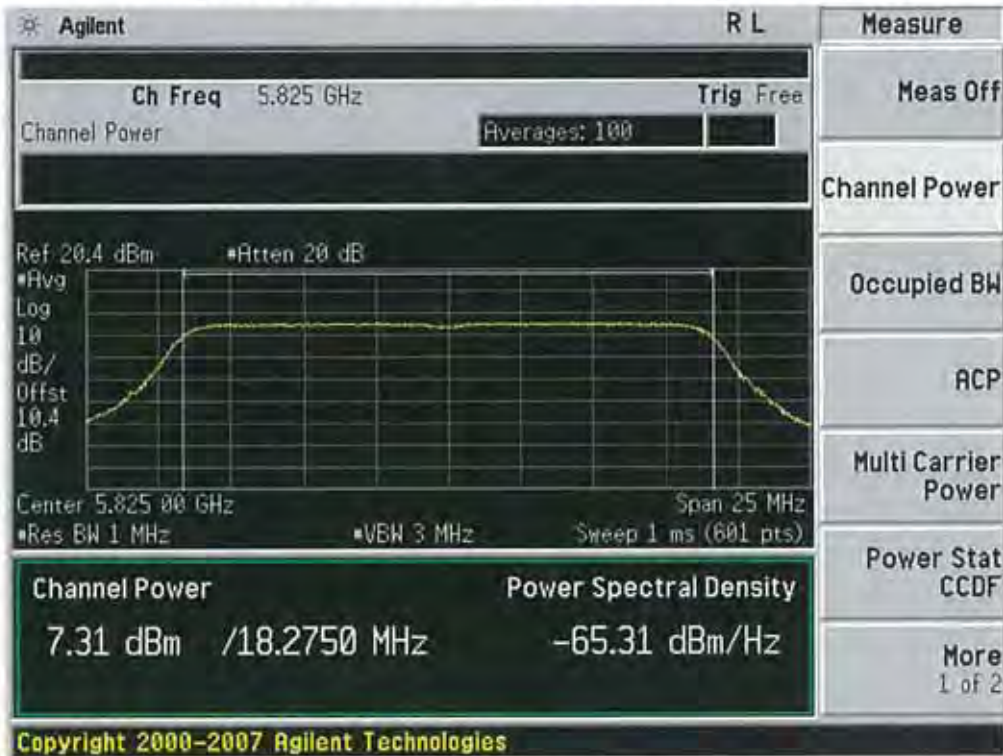
Conducted Output Power (802.11n-CH 165) 39 Mbps



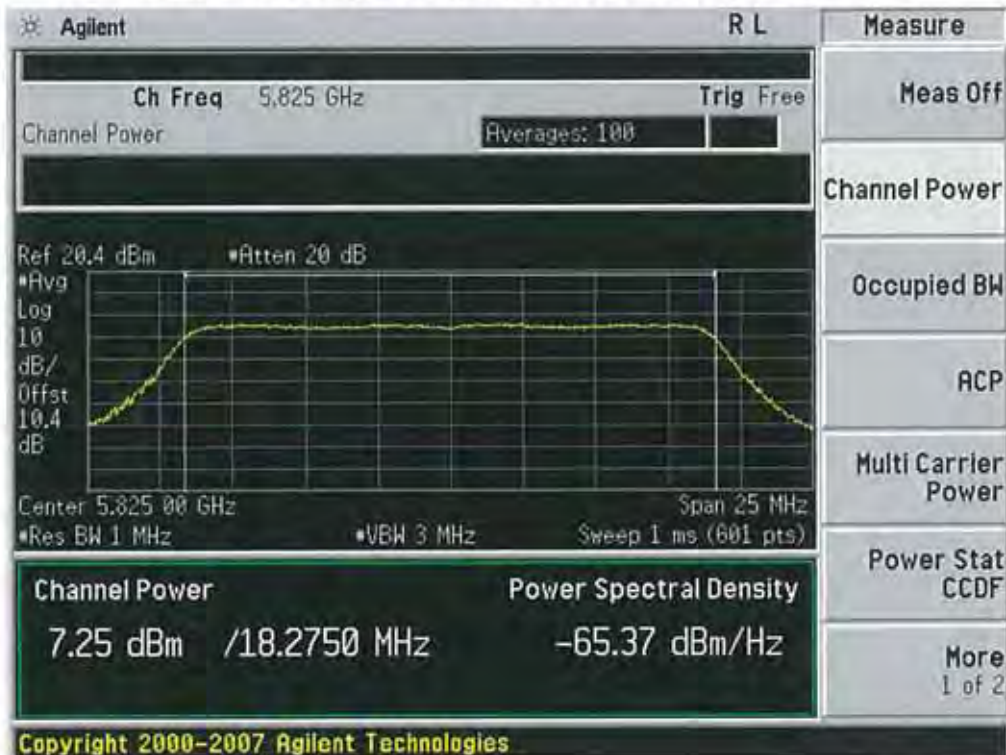
Conducted Output Power (802.11n-CH 165) 52 Mbps



Conducted Output Power (802.11n-CH 165) 58.5 Mbps



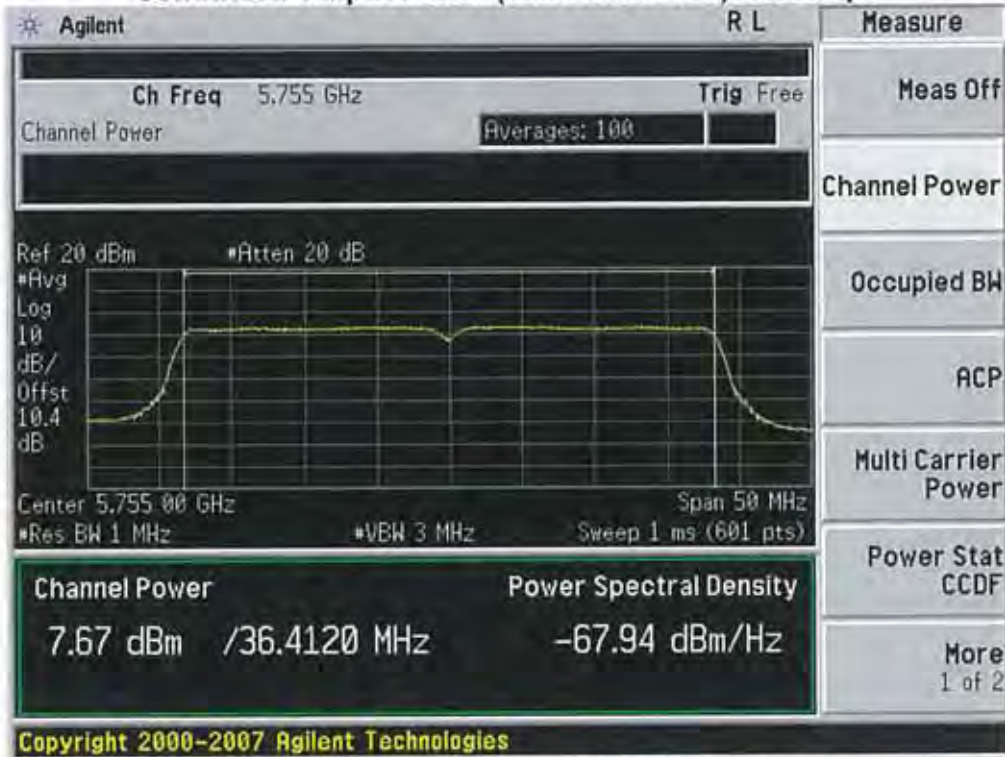
Conducted Output Power (802.11n-CH 165) 65 Mbps



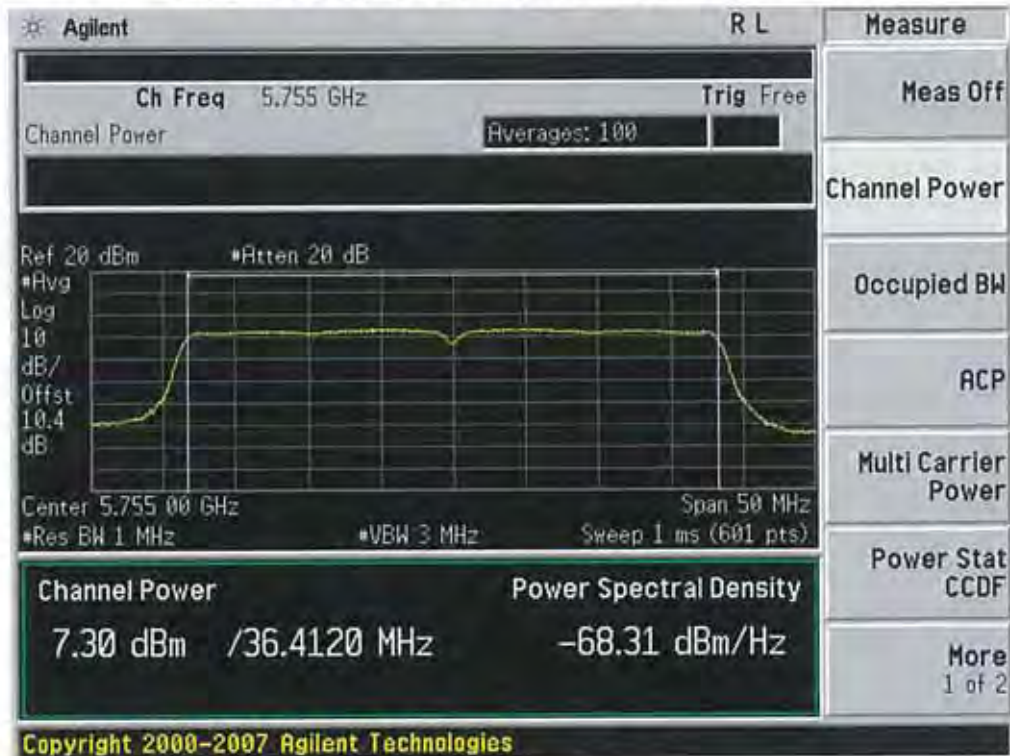
40 MHz BW

(5755 MHz ~5795 MHz)

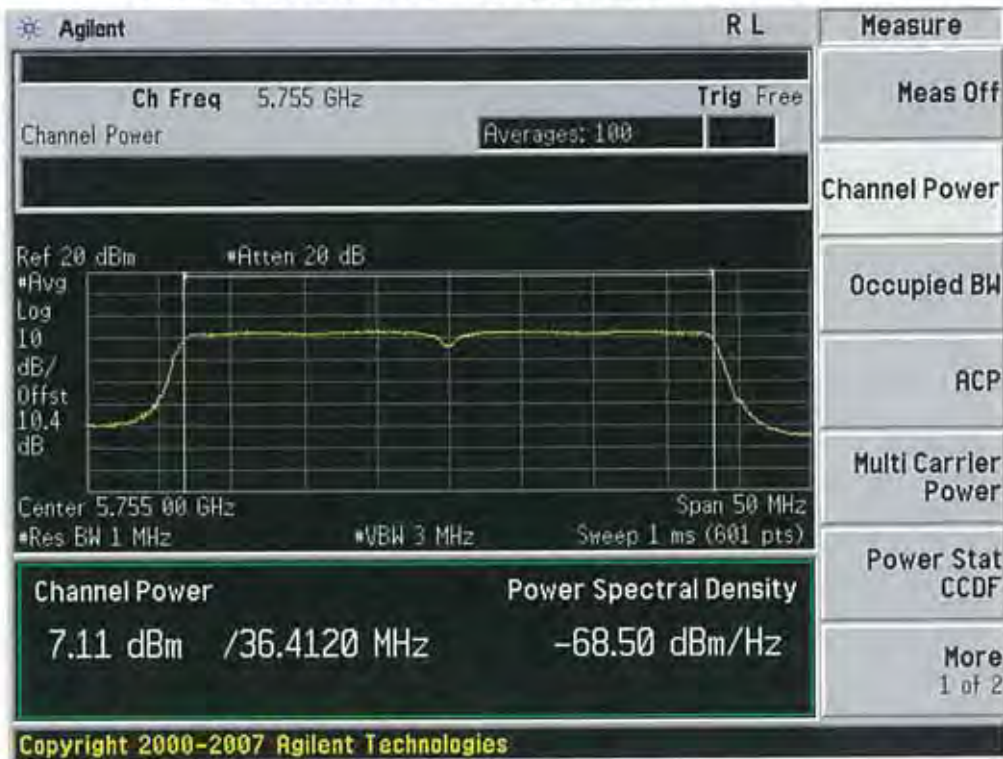
Conducted Output Power (802.11n-CH 151) 13.5 Mbps



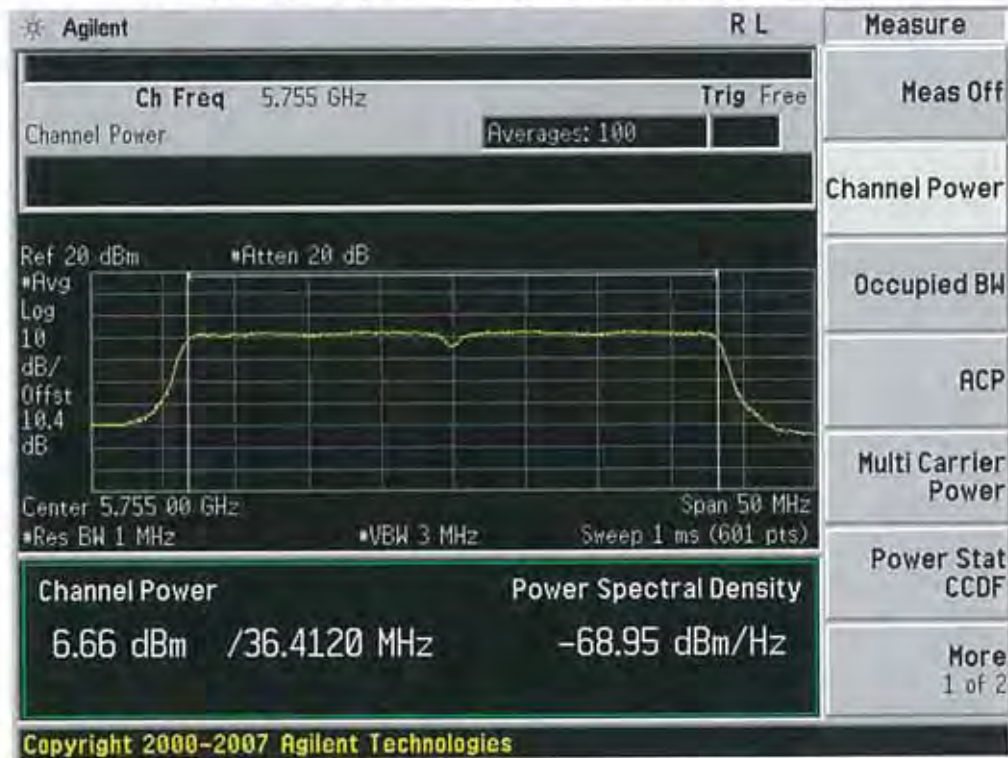
Conducted Output Power (802.11n-CH 151) 27 Mbps



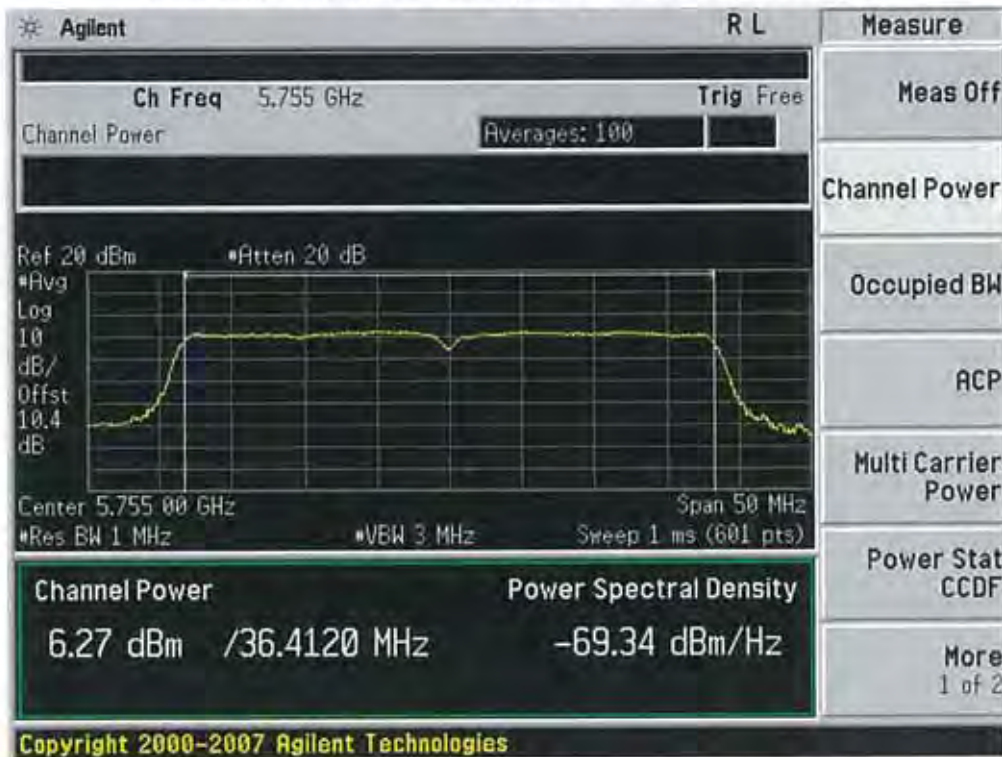
Conducted Output Power (802.11n-CH 151) 40.5 Mbps



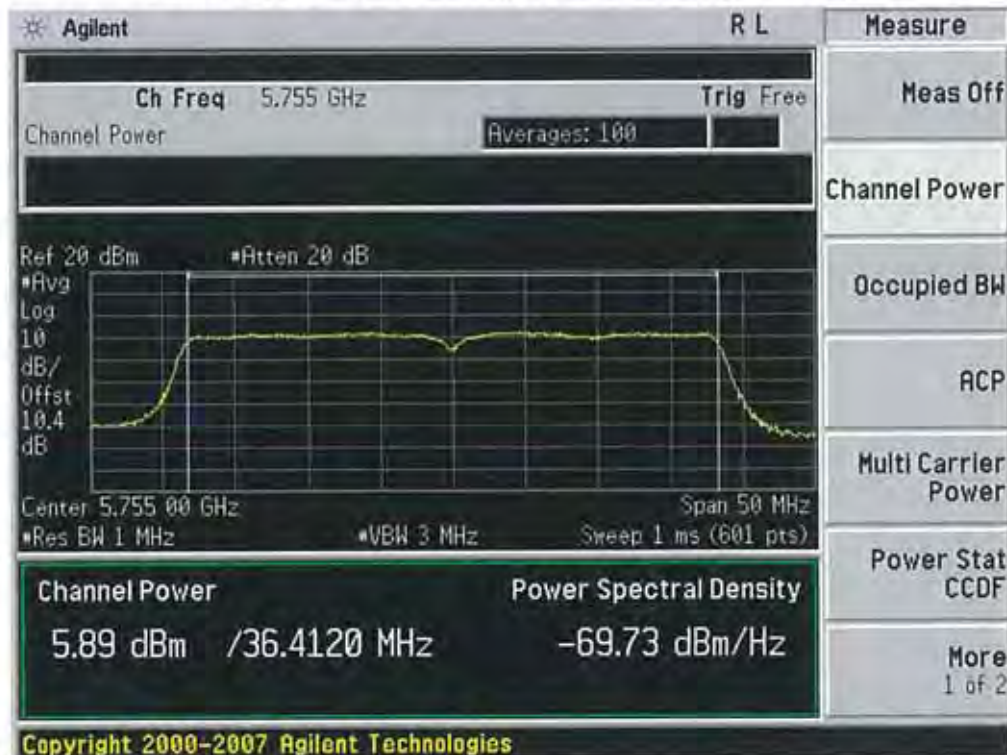
Conducted Output Power (802.11n-CH 151) 54 Mbps



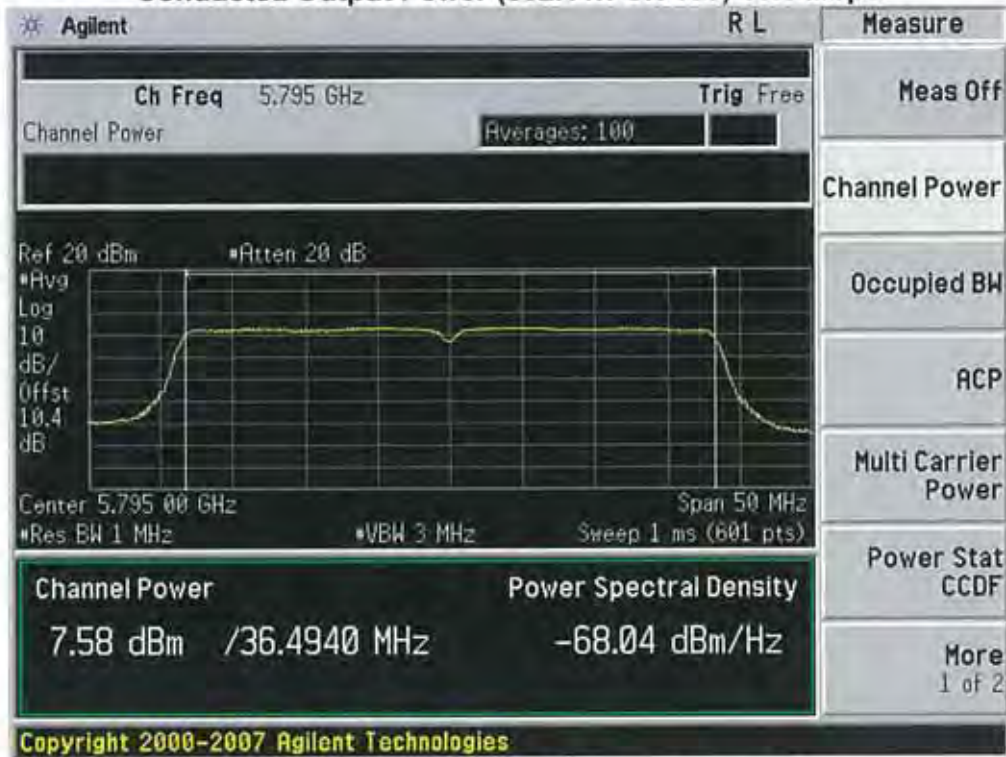
Conducted Output Power (802.11n-CH 151) 81 Mbps



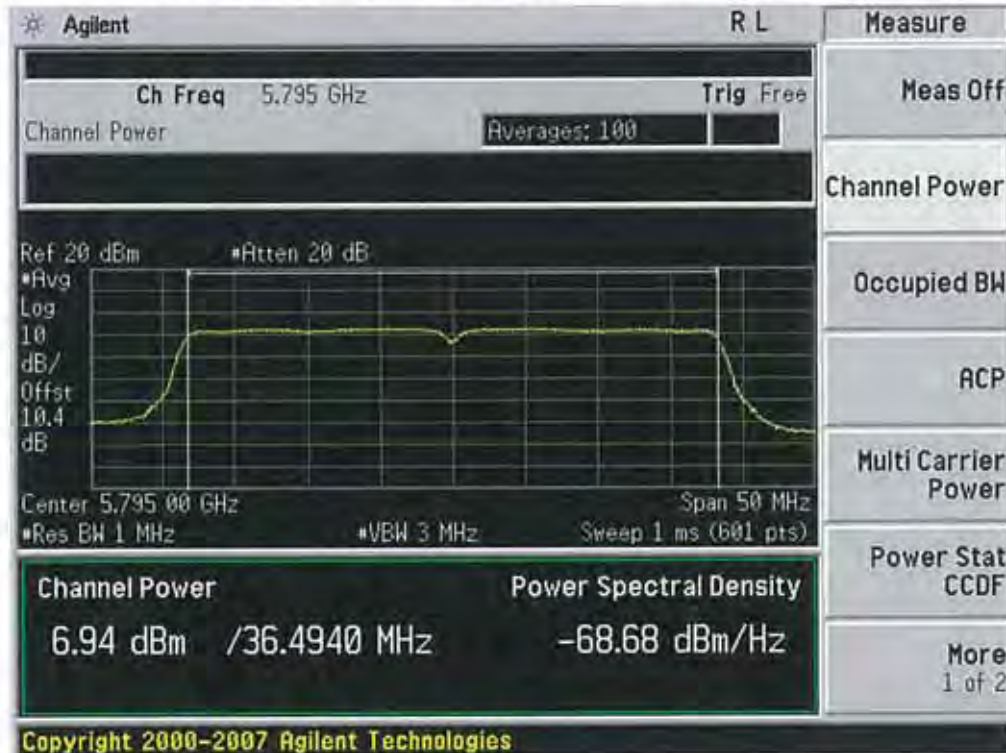
Conducted Output Power (802.11n-CH 151) 108 Mbps



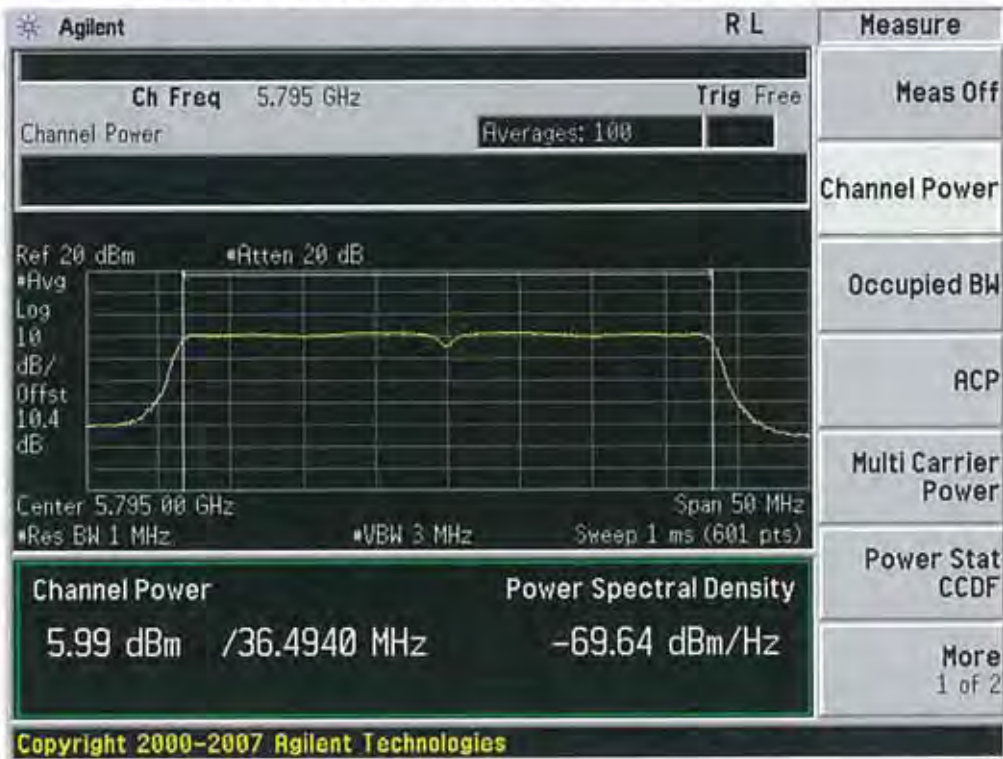
Conducted Output Power (802.11n-CH 159) 13.5 Mbps



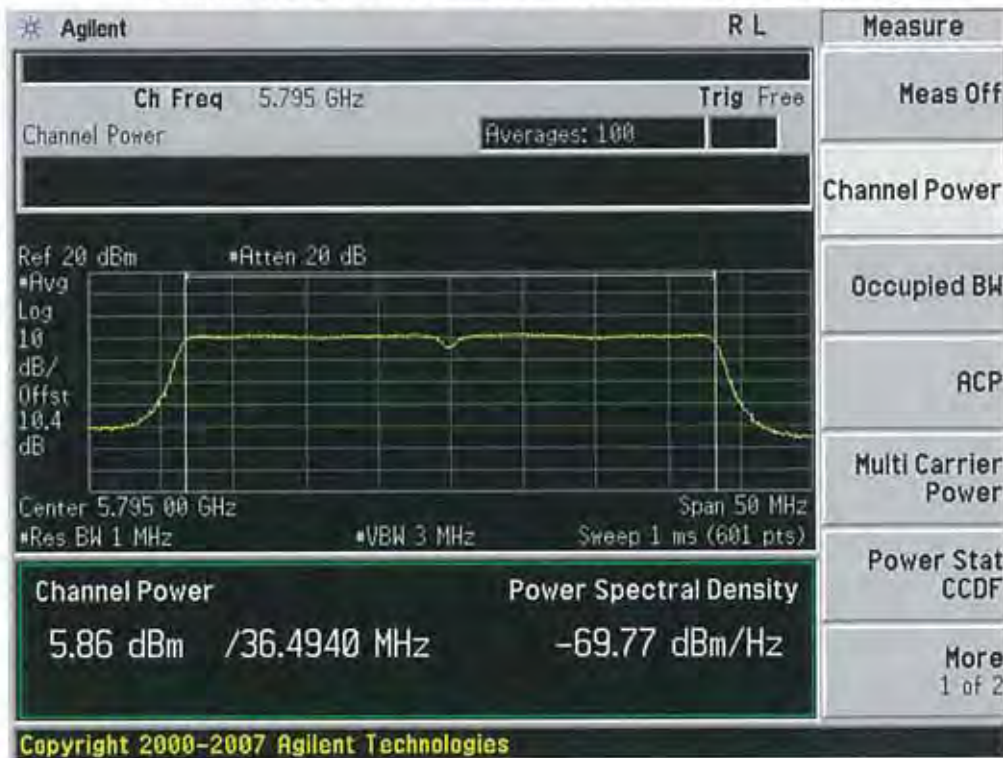
Conducted Output Power (802.11n-CH 159) 27 Mbps



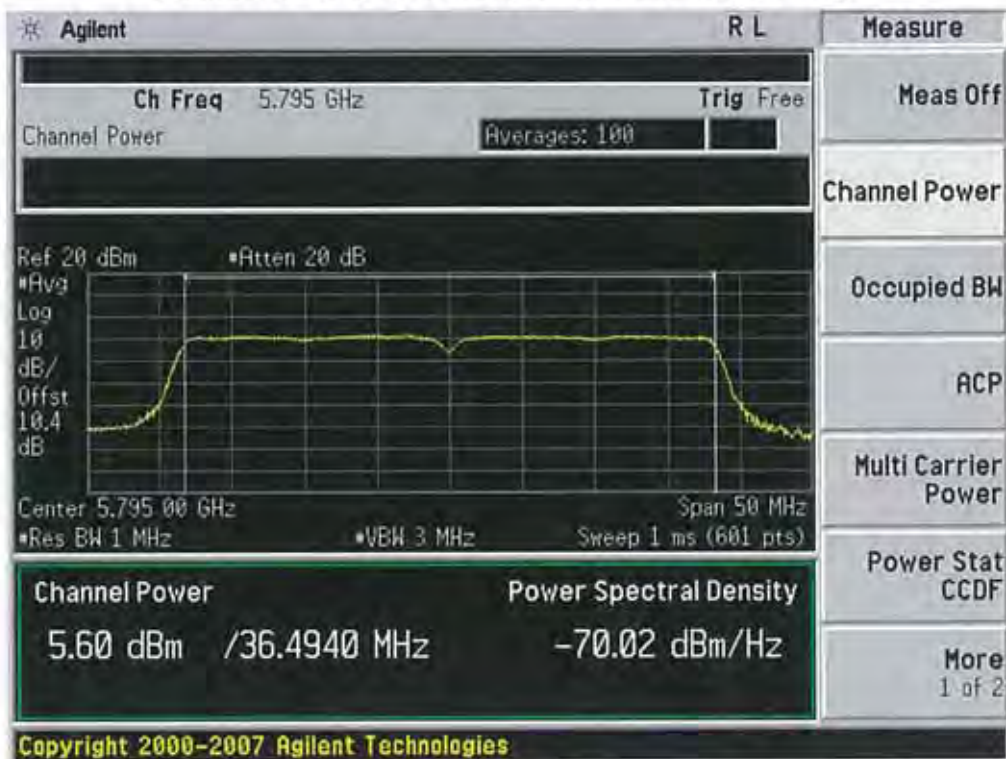
Conducted Output Power (802.11n-CH 159) 40.5 Mbps



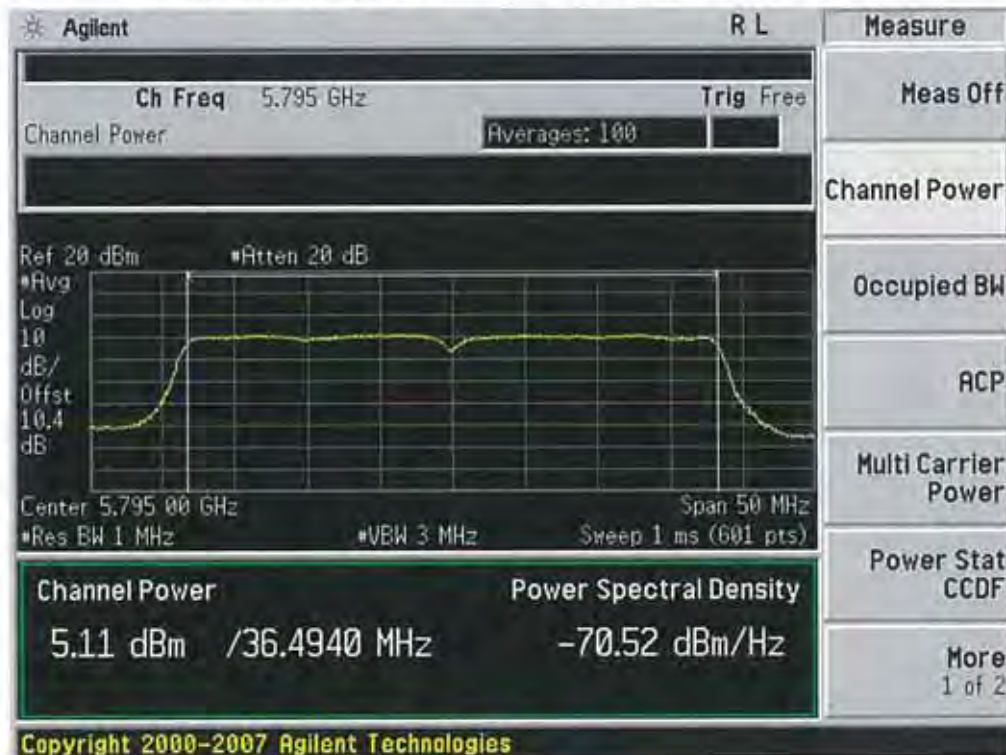
Conducted Output Power (802.11n-CH 159) 54 Mbps



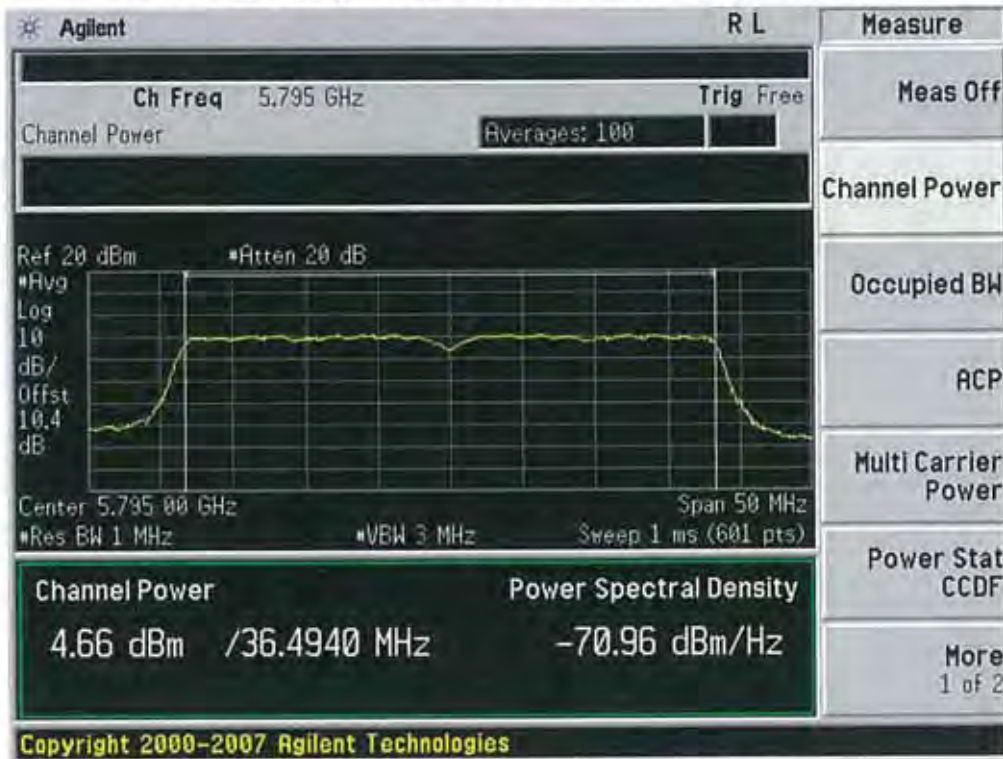
Conducted Output Power (802.11n-CH 159) 81 Mbps



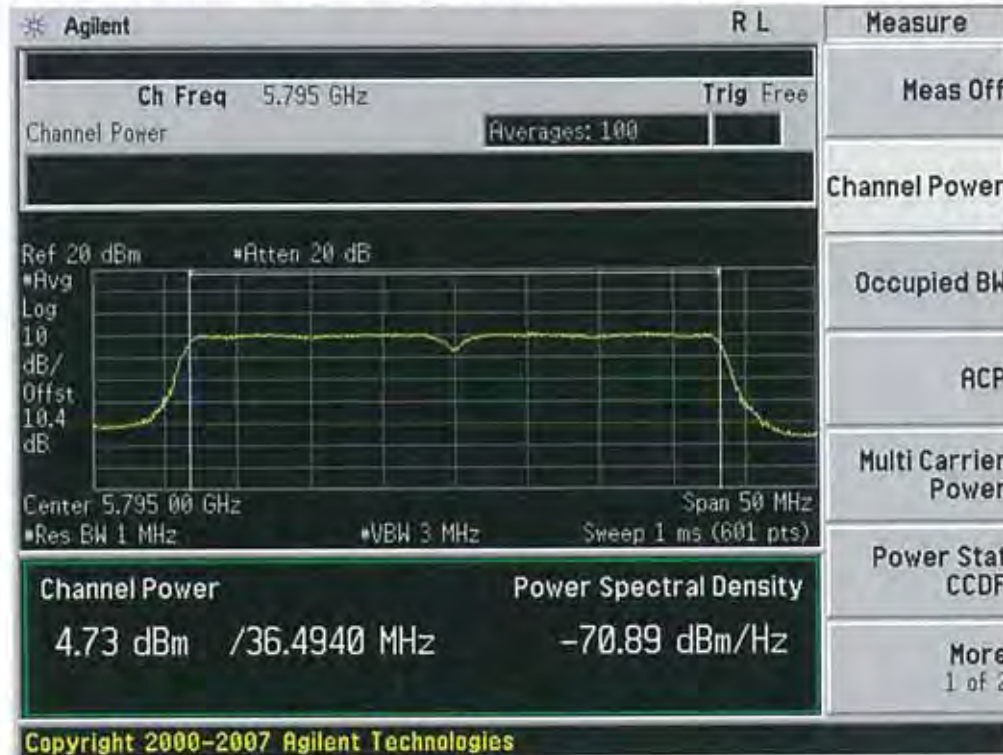
Conducted Output Power (802.11n-CH 159) 108 Mbps



Conducted Output Power (802.11n-CH 159) 121.5 Mbps



Conducted Output Power (802.11n-CH 159) 135 Mbps



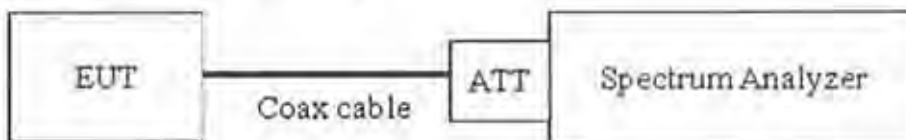
8.3 POWER SPECTRAL DENSITY (802.11a/b/g/n)

Test Requirements and limit, §15.247(e)

The peak power spectral density is measured with a spectrum analyzer connected to the antenna terminal while the EUT is operating in transmission mode at the appropriate frequencies.

Minimum Standard – the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

▣ TEST CONFIGURATION



▣ TEST PROCEDURE

We tested according to Procedure 9.1 Option1 in KDB 558074, issued 10/04/2012

The spectrum analyzer is set to :

Set analyzer center frequency to DTS channel center frequency.

Span = 1.5 times the DTS channel bandwidth

RBW ≥ 3 kHz

VBW ≥ 9 kHz

Sweep = Auto couple

Detector Mode = Peak

Trace Mode = Max hold

Allow trace to fully stabilize.

Use the peak marker function to determine the maximum amplitude level.

If measured value exceeds limit, reduce RBW (no less than 3 kHz) and repeat.

▣ Sample Calculation

$$\begin{aligned} \text{PSD} &= \text{Reading Value} + \text{ATT loss} + \text{Cable loss}(1 \text{ ea}) \\ &= -5 \text{ dBm} + 10 \text{ dB} + 0.8 \text{ dB} = 5.8 \text{ dBm} \end{aligned}$$

Note :

1. Spectrum reading values are not plot data. The PSD results in plot is already including the actual values of loss for the attenuator and cable combination.
2. Spectrum offset = Attenuator loss + Cable loss
3. We apply to the offset in the 2.4 GHz and 5.8 GHz range that was rounded off to the closest tenth dB.
Actual value of loss for the attenuator and cable combination is below table.

FCC PT.15.247 TEST REPORT	FCC CERTIFICATION REPORT		www.hct.co.kr
Test Report No. HCTR1304FR25-2	Date of Issue: May 06, 2013	EUT Type: Cellular/PCS GSM/GPRS and Cellular WCDMA/HSDPA/HSUPA Phone with Bluetooth/ WLAN, NFC(Felica), A-GPS, Wireless Charger, Wi-Fi Direct	FCC ID: ZNFL05E

Band	Frequency(MHz)	Loss(dB)
2.4 GHz	2412	10.11
	2437	10.10
	2462	10.12
5.8 GHz	5745	10.37
	5755	10.37
	5785	10.38
	5795	10.38
	5825	10.37

(Actual value of loss for the attenuator and cable combination)

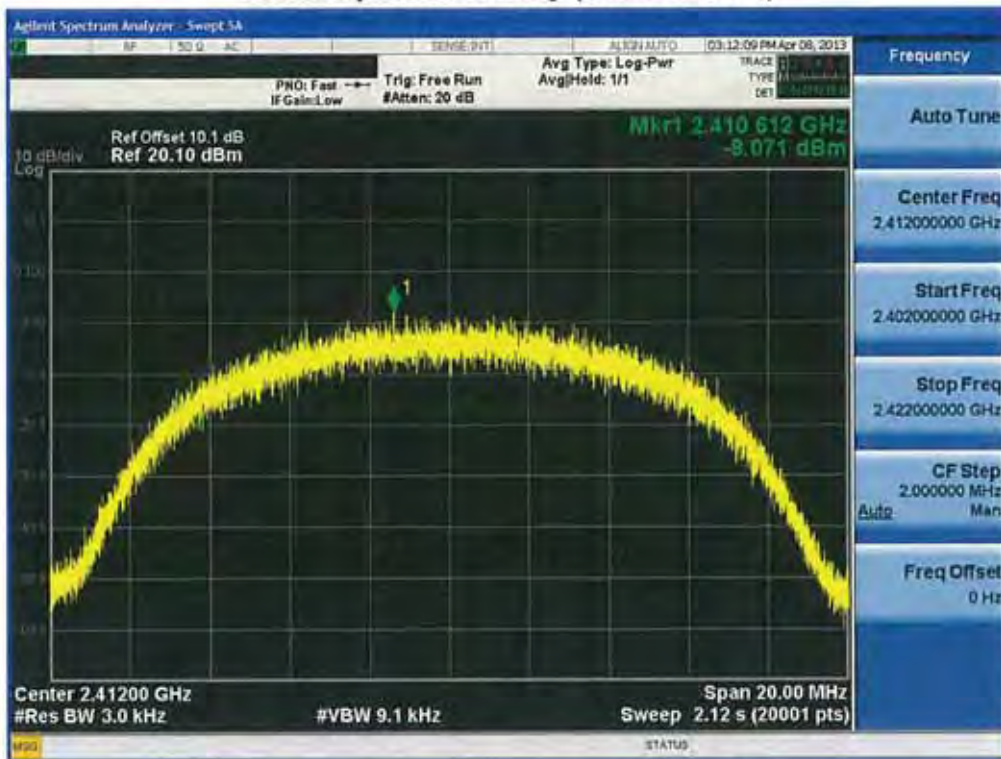
■ TEST RESULTS

Conducted Power Density Measurements

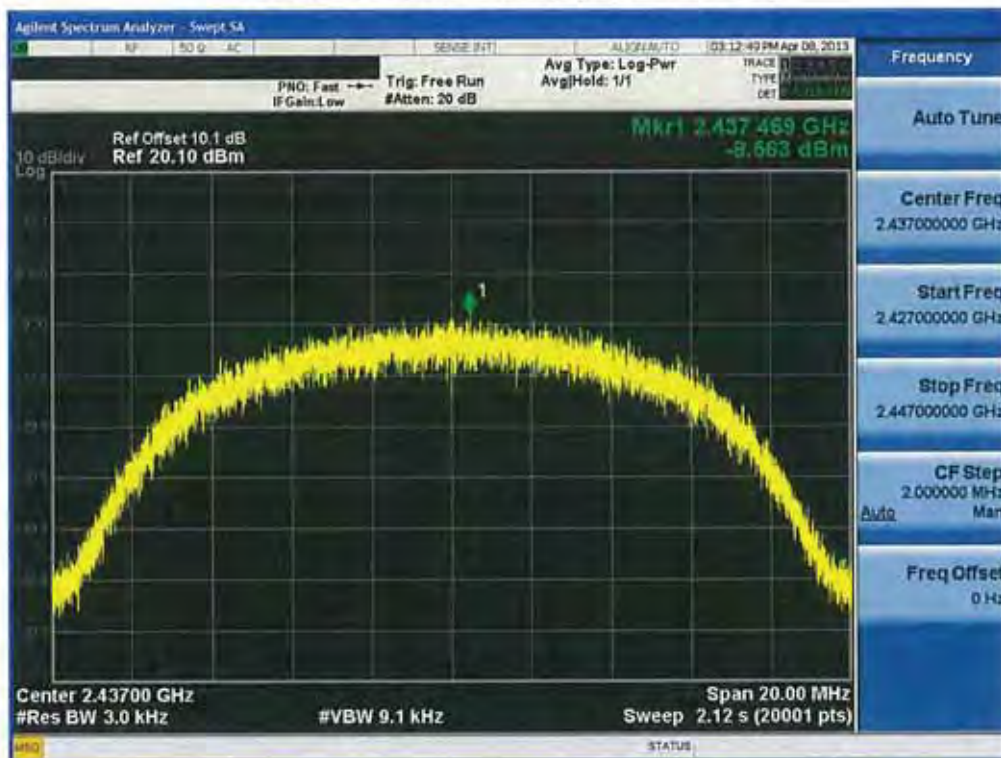
Frequency (MHz)	Channel No.	Mode	Test Result		
			PSD (dBm)	Limit (dBm)	Pass/Fail
2412	1	802.11b	-8.071	8	Pass
2437	6		-8.563	8	Pass
2462	11		-7.831	8	Pass
2412	1	802.11g	-14.978	8	Pass
2437	6		-14.932	8	Pass
2462	11		-15.055	8	Pass
2412	1	802.11n	-13.764	8	Pass
2437	6	2.4 GHz Band	-14.462	8	Pass
2462	11		-14.283	8	Pass
5745	149	802.11a	-18.311	8	Pass
5785	157		-17.704	8	Pass
5825	165		-18.862	8	Pass
5745	149	802.11n 20 MHz BW	-17.907	8	Pass
5785	157	5.8 GHz Band	-18.959	8	Pass
5825	165		-17.461	8	Pass
5755	151	802.11n 40 MHz BW	-23.043	8	Pass
5795	159	5.8 GHz Band	-23.503	8	Pass

RESULT PLOTS

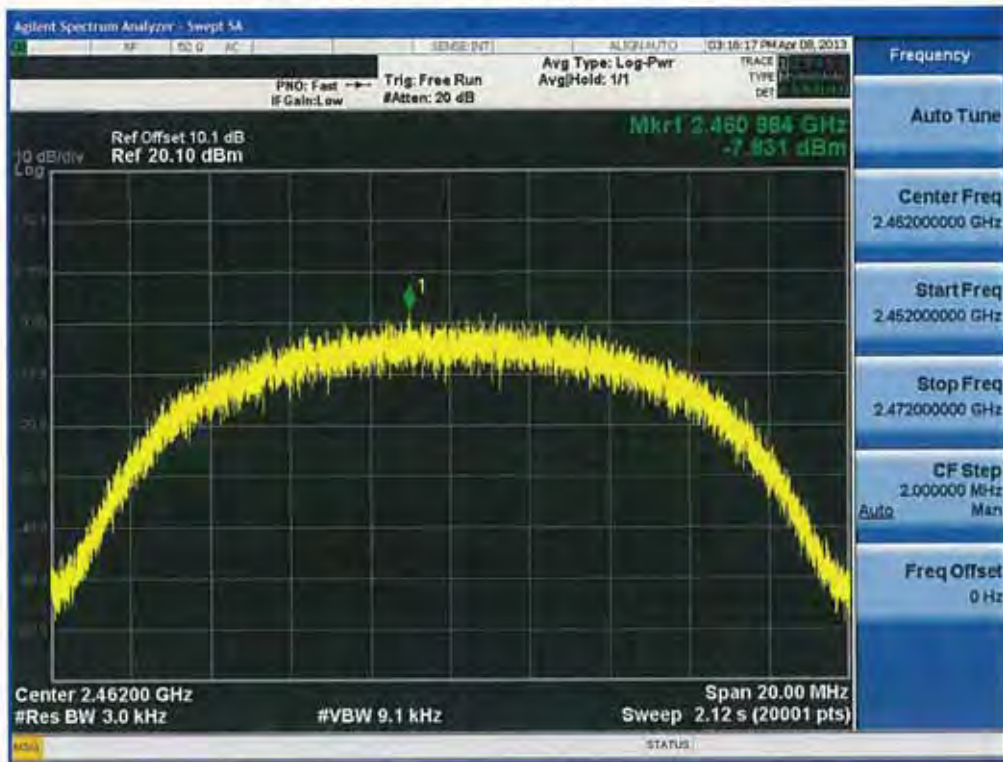
Power Spectral Density (802.11b-CH 1)



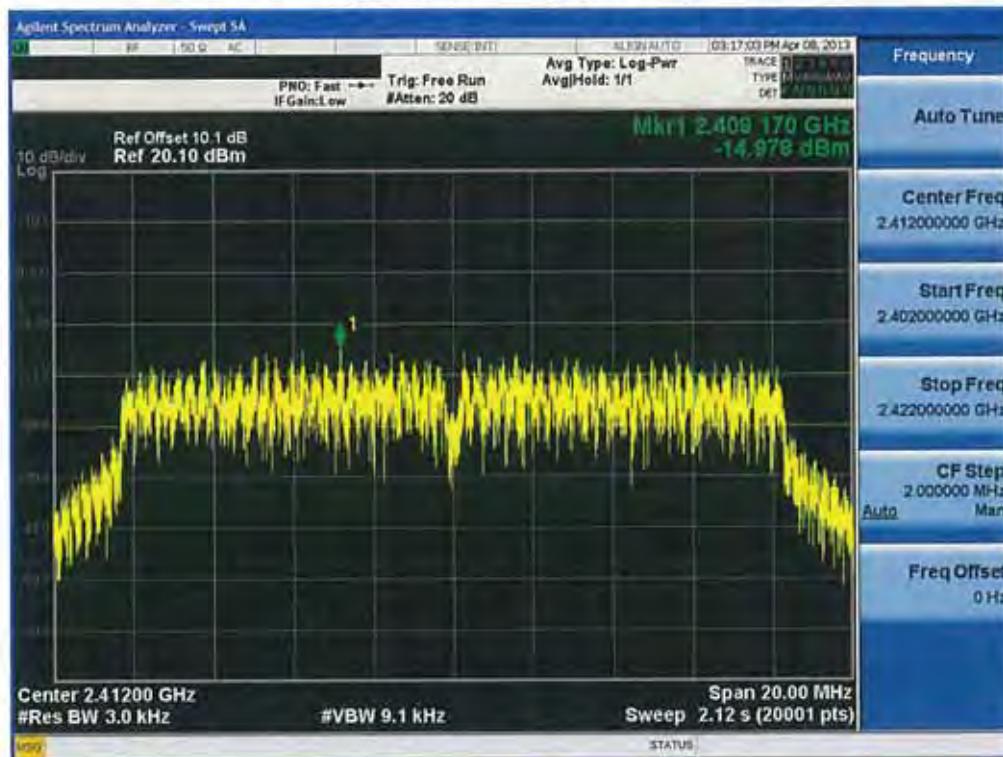
Power Spectral Density (802.11b-CH 6)



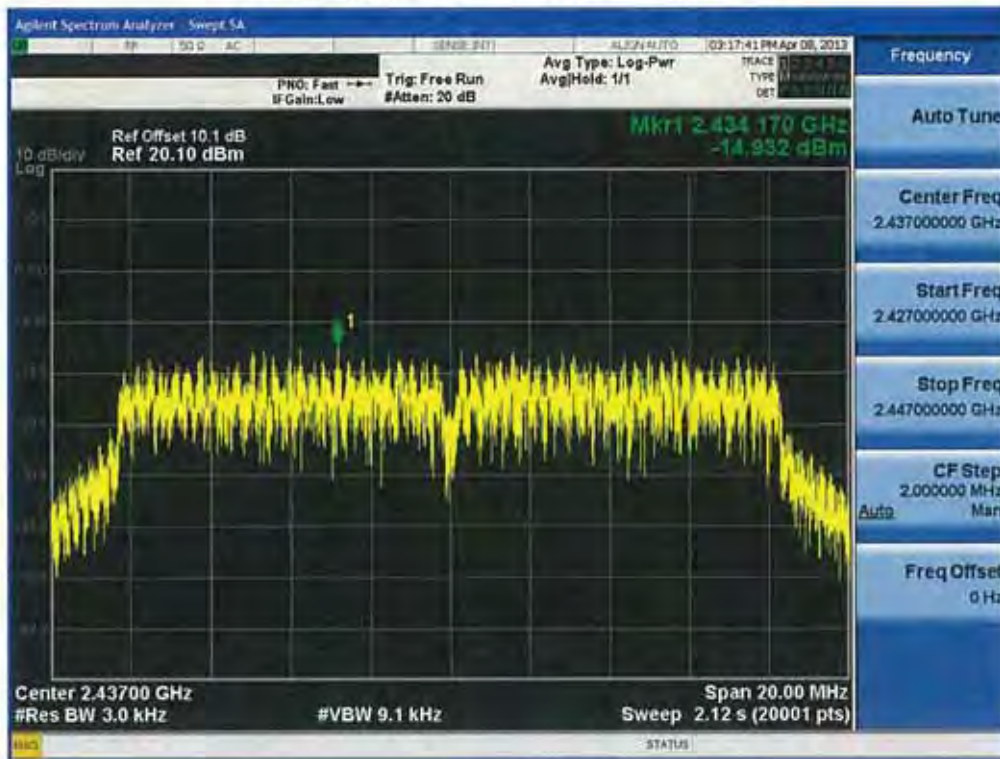
Power Spectral Density (802.11b-CH 11)



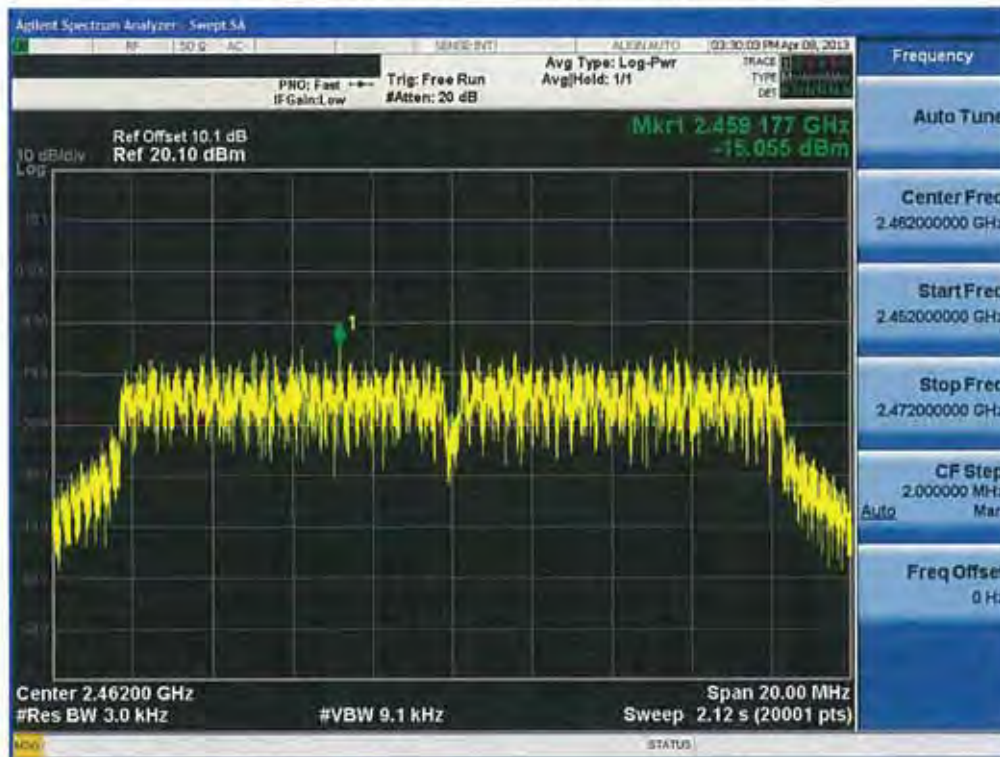
Power Spectral Density (802.11g-CH 1)



Power Spectral Density (802.11g-CH 6)

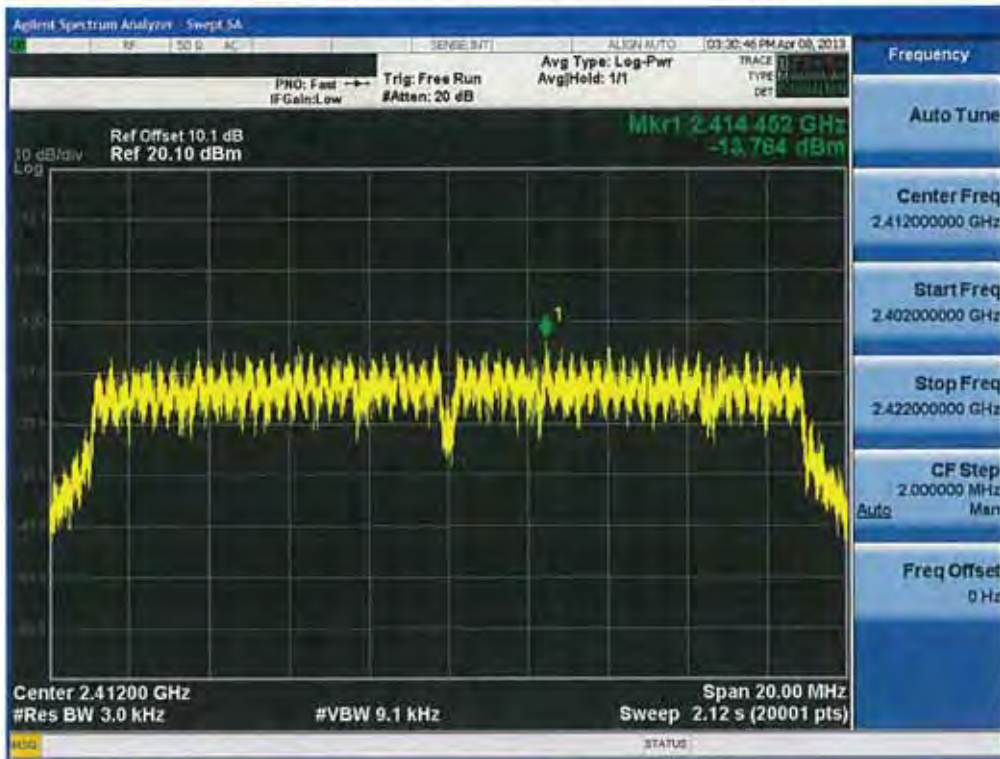


Power Spectral Density (802.11g-CH11)

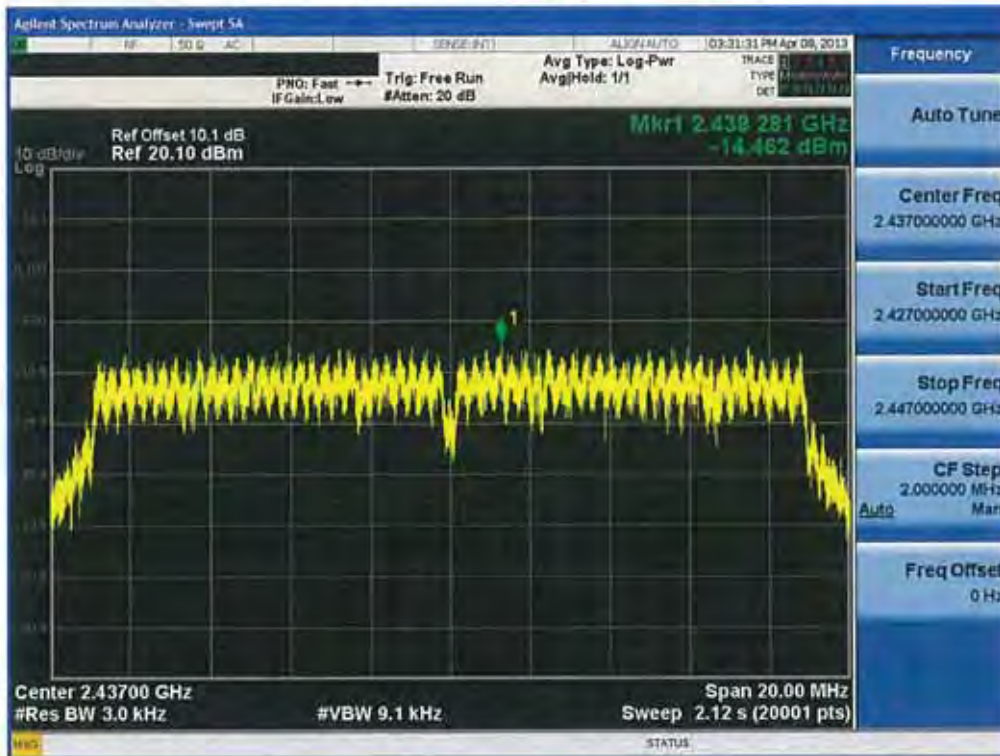


FCC PT.15.247 TEST REPORT	FCC CERTIFICATION REPORT		www.hct.co.kr
Test Report No. HCTR1304FR25-2	Date of Issue: May 06, 2013	EUT Type: Cellular/PCS GSM/GPRS and Cellular WCDMA/HSDPA/HSUPA Phone with Bluetooth, WLAN, NFC(Felica), A-GPS, Wireless Charger, Wi-Fi Direct	FCC ID: ZNFL05E

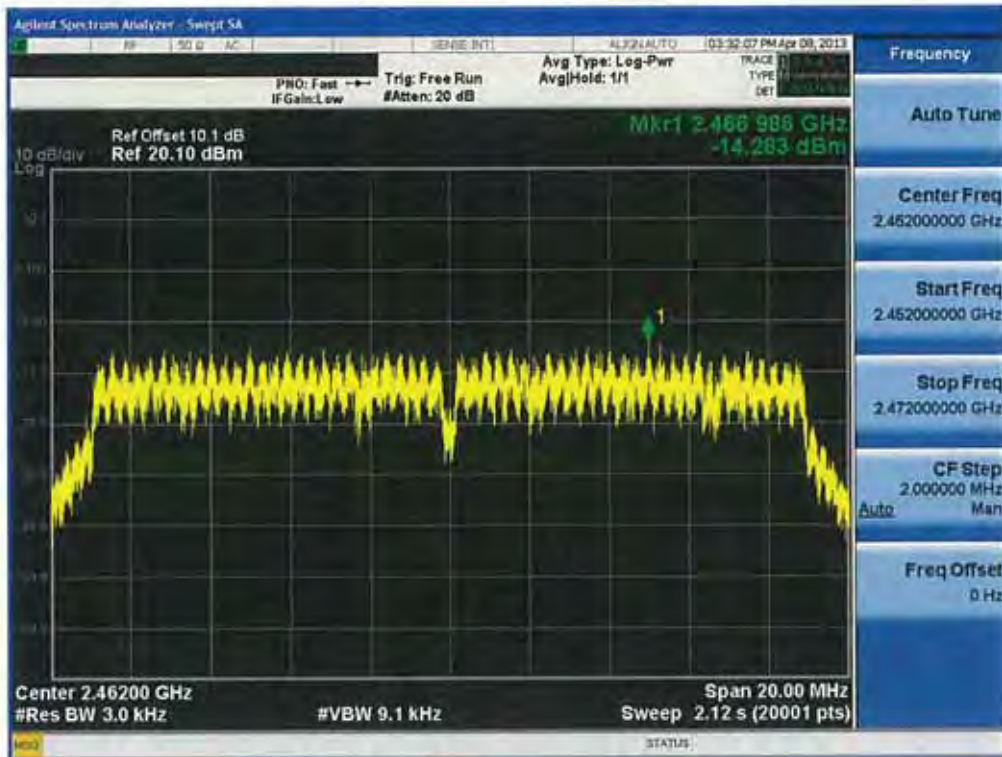
Power Spectral Density (802.11n-CH 1)



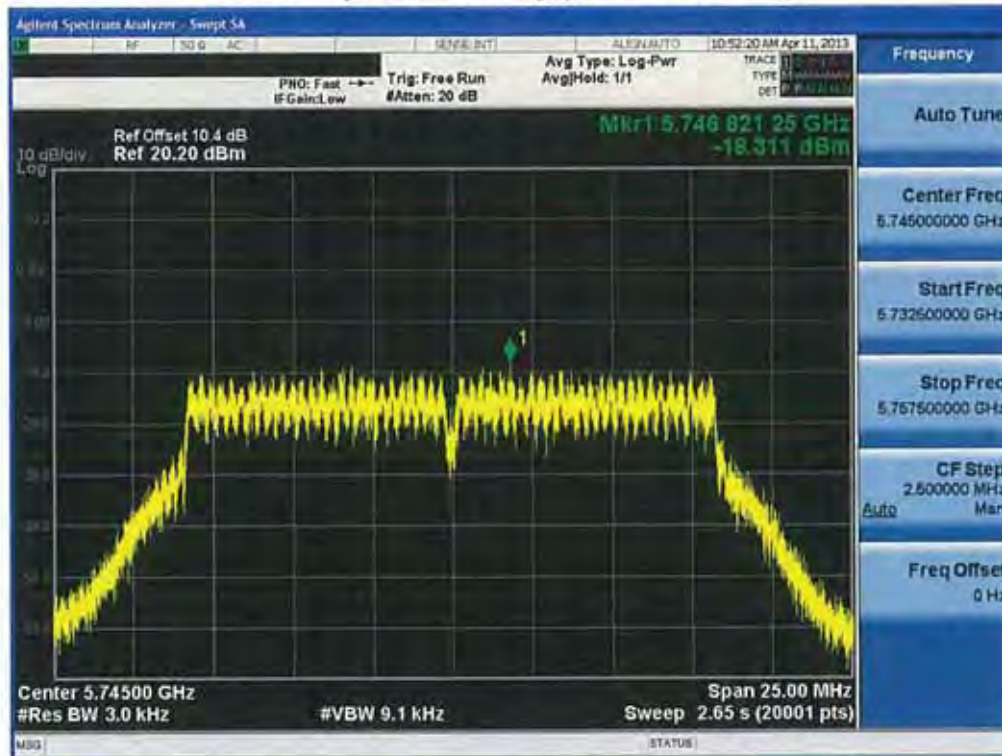
Power Spectral Density (802.11n-CH 6)



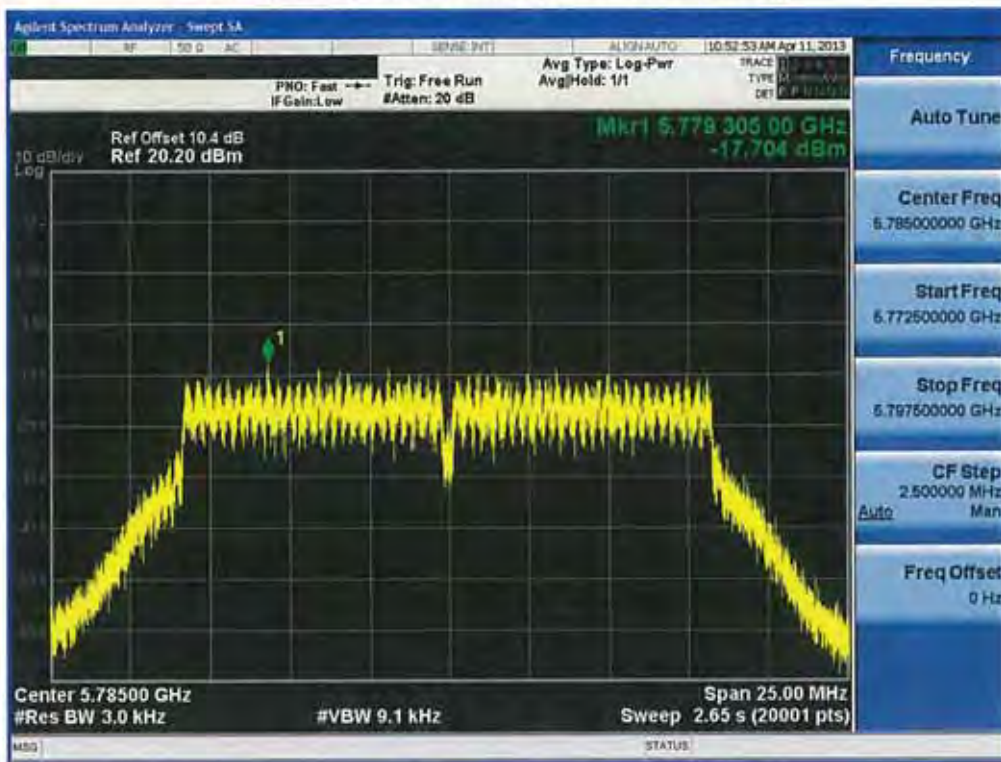
Power Spectral Density (802.11n-CH11)



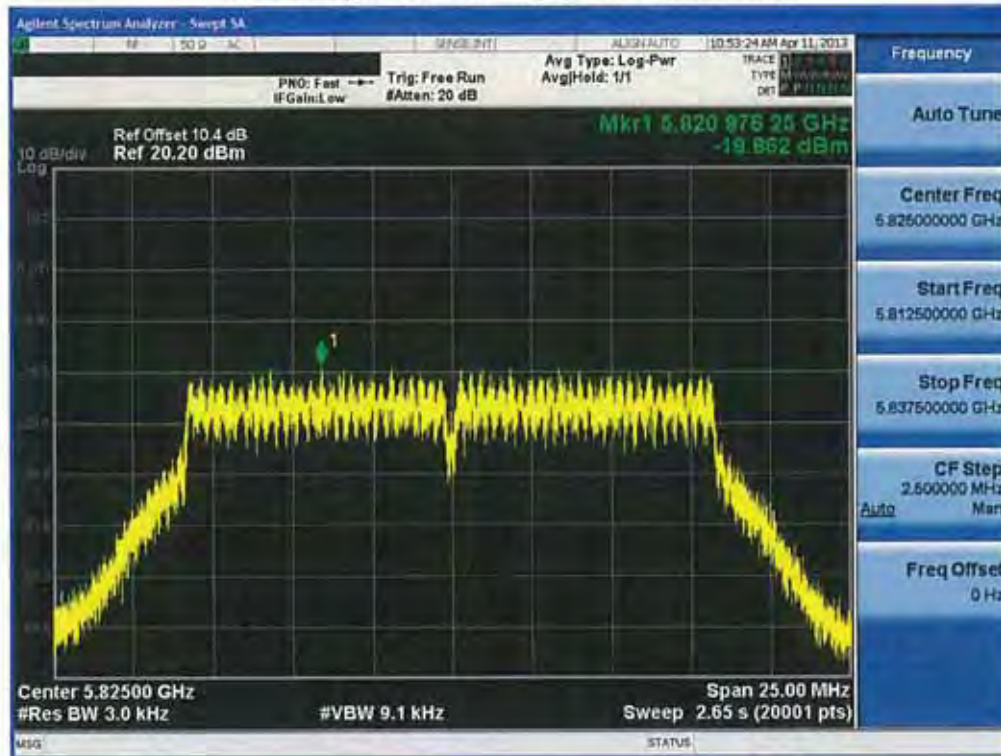
Power Spectral Density (802.11a-CH 149)



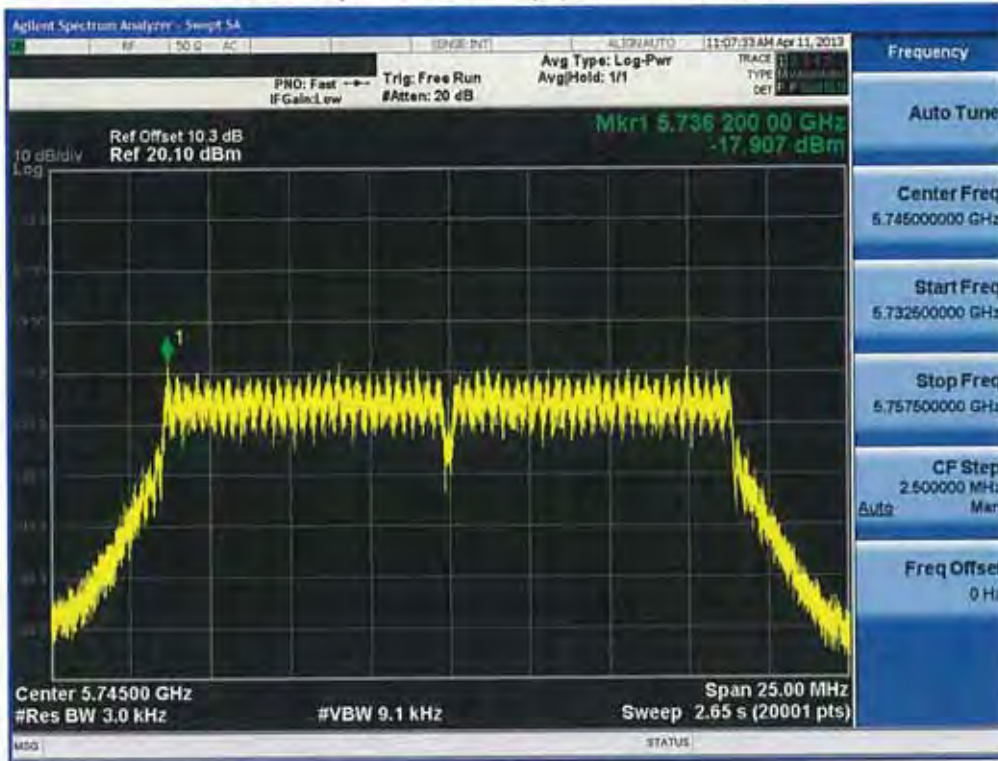
Power Spectral Density (802.11a-CH 157)



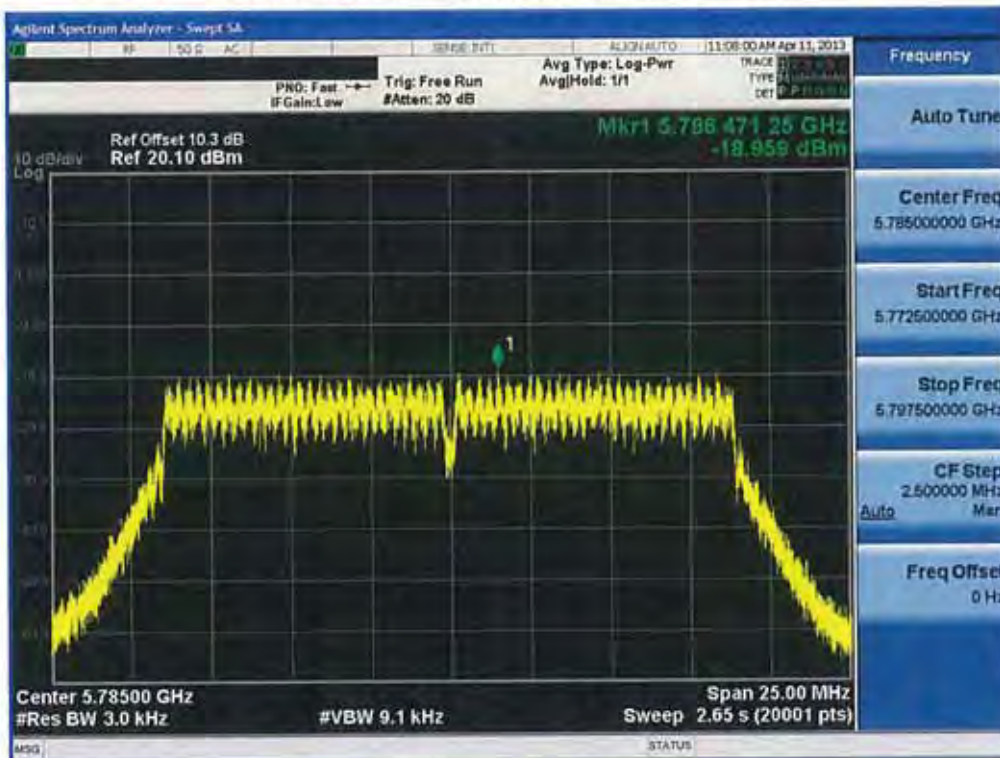
Power Spectral Density (802.11a-CH 165)



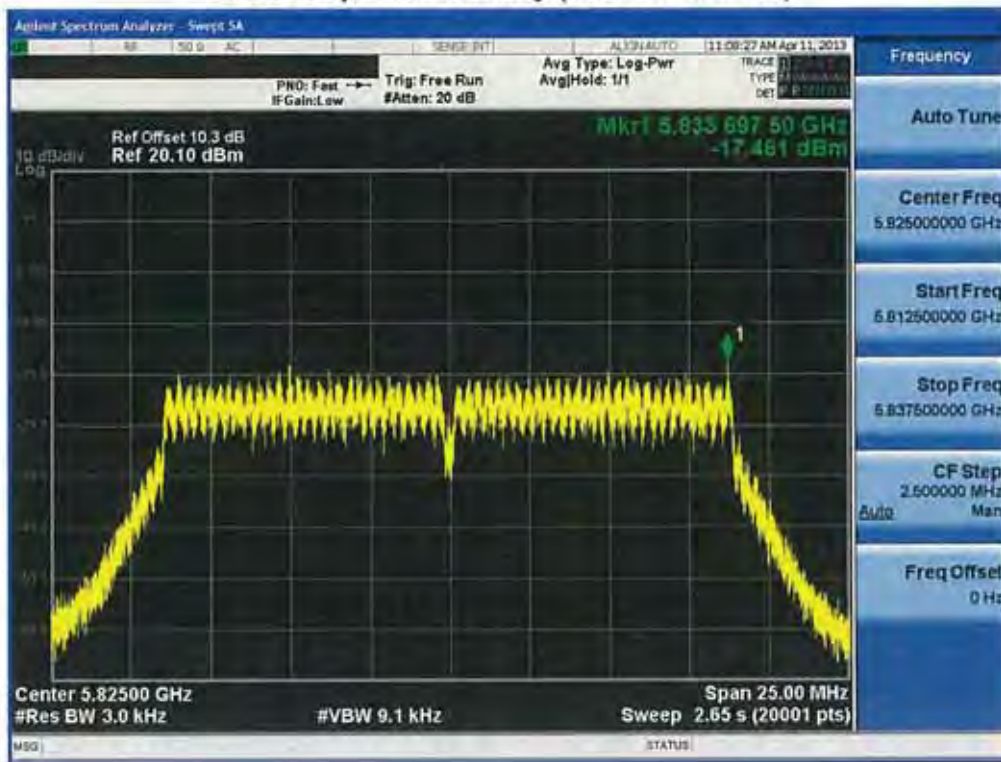
Power Spectral Density (802.11n-CH 149)



Power Spectral Density (802.11n-CH 157)

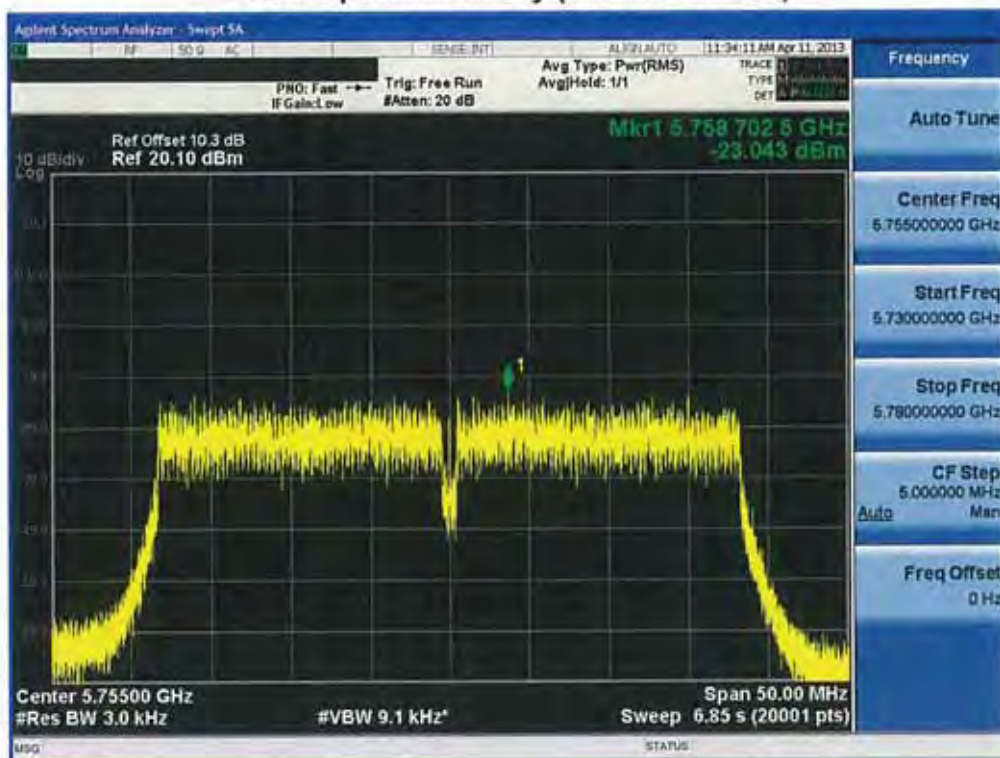


Power Spectral Density (802.11n-CH 165)

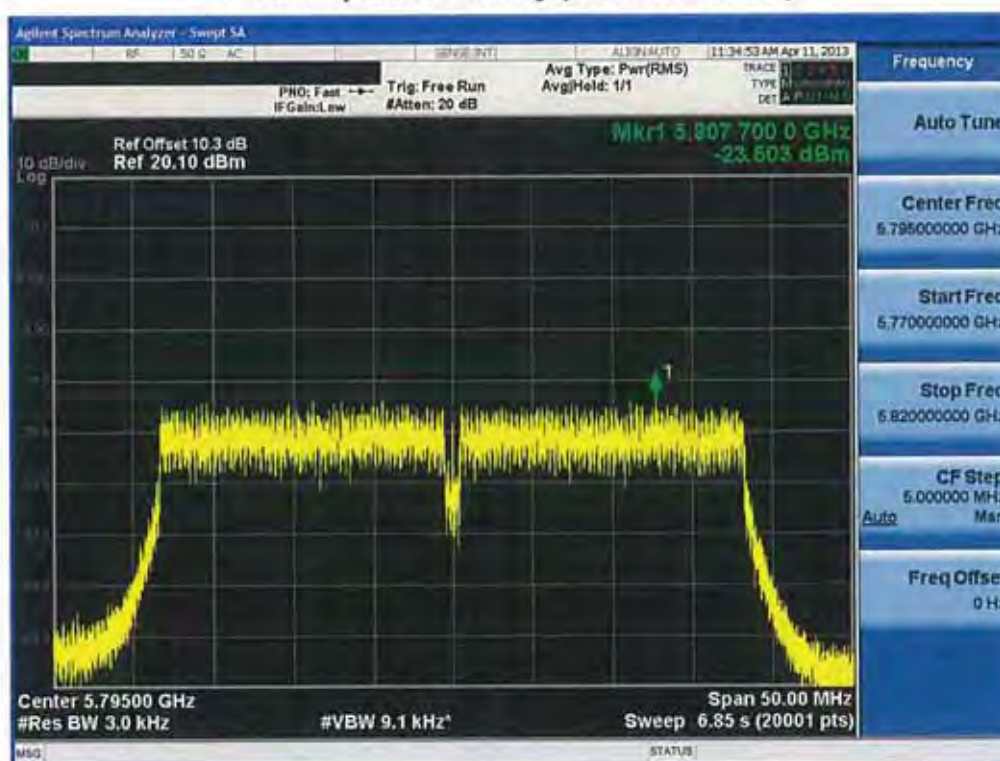


FCC PT.15.247 TEST REPORT		FCC CERTIFICATION REPORT		www.hct.co.kr
Test Report No. HCTR1304FR25-2	Date of Issue: May 06, 2013	EUT Type: Cellular/PCS GSM/GPRS and Cellular WCDMA/HSDPA/HSUPA Phone with Bluetooth, WLAN, NFC(Felica), A-GPS, Wireless Charger, Wi-Fi Direct		FCC ID: ZNFL05E

Power Spectral Density (802.11n-CH 151)



Power Spectral Density (802.11n-CH 159)



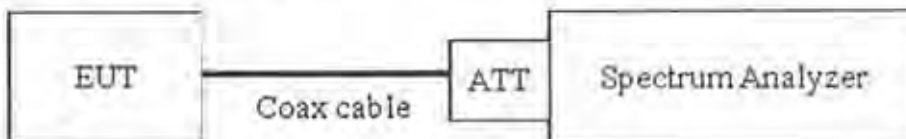
8.4 OUT OF BAND EMISSIONS AT THE BAND EDGE/ CONDUCTED SPURIOUS EMISSIONS

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

The transmitter output is connected to the spectrum analyzer. (Procedure 10.1.2 in KDB 558074, issued 10/04/2012)

RBW = 100 kHz (Upon 1 GHz = 1 MHz)

VBW ≥ 300 kHz (Upon 1 GHz = 3 MHz)

Set span to encompass the spectrum to be examined

Detector = Peak

Trace Mode = max hold

Sweep = auto couple

Allow the trace to stabilize (this may take some time, depending on the extent of the span).

Use peak marker function to determine maximum amplitude of all unwanted emissions within any 100 kHz bandwidth.

Measurements are made over the 30 MHz to 40 GHz range with the transmitter set to the lowest, middle, and highest channels.

Note :

1. The band edge results in plot is already including the actual values of loss for the attenuator and cable combination.
2. Spectrum offset = Attenuator loss + Cable loss
3. We apply to the offset in the 2.4 GHz and 5.8 GHz range that was rounded off to the closest tenth dB.

FCC PT.15.247 TEST REPORT		FCC CERTIFICATION REPORT		www.hct.co.kr
Test Report No. HCTR1304FR25-2	Date of Issue: May 06, 2013	EUT Type: Cellular/PCS GSM/GPRS and Cellular WCDMA/HSDPA/HSUPA Phone with Bluetooth, WLAN, NFC(Felica), A-GPS, Wireless Charger, Wi-Fi Direct		FCC ID: ZNFLO5E

Actual value of loss for the attenuator and cable combination is below table.

Band	Frequency(MHz)	Loss(dB)
2.4 GHz	2412	10.11
	2437	10.10
	2462	10.12
5.8 GHz	5745	10.37
	5755	10.37
	5785	10.38
	5795	10.38
	5825	10.37

(Actual value of loss for the attenuator and cable combination)

4. In case of conducted spurious emissions test, please check factors below table.

■ FACTORS FOR FREQUENCY

Freq(MHz)	Factor(dB)
30	10.37
100	10.16
200	10.15
300	10.14
400	10.18
500	10.19
600	10.20
700	10.30
800	10.25
900	10.28
1000	10.29
2000	10.17
2400*	10.10
2500*	10.12
3000	10.26
4000	10.31
5000	9.85
5700*	10.40
5800*	10.38
6000	10.20
7000	10.60
8000	10.53

9000	10.23
10000	10.41
11000	10.65
12000	11.19
13000	10.97
14000	11.42
15000	12.01
16000	11.77
17000	10.78
18000	10.76
19000	11.15
20000	10.75
21000	10.82
22000	10.82
23000	11.26
24000	11.08
25000	11.18
26000	10.90
27000	11.32
28000	11.33
29000	11.77
30000	11.40
31000	11.82
32000	11.07
33000	13.05
34000	15.68
35000	14.08
36000	15.88
37000	17.32
38000	15.44
39000	14.48
40000	16.50

Note : 1. ^(*) is fundamental frequency range.
2. Factor = Cable loss + Attenuator loss

RESULT PLOTS

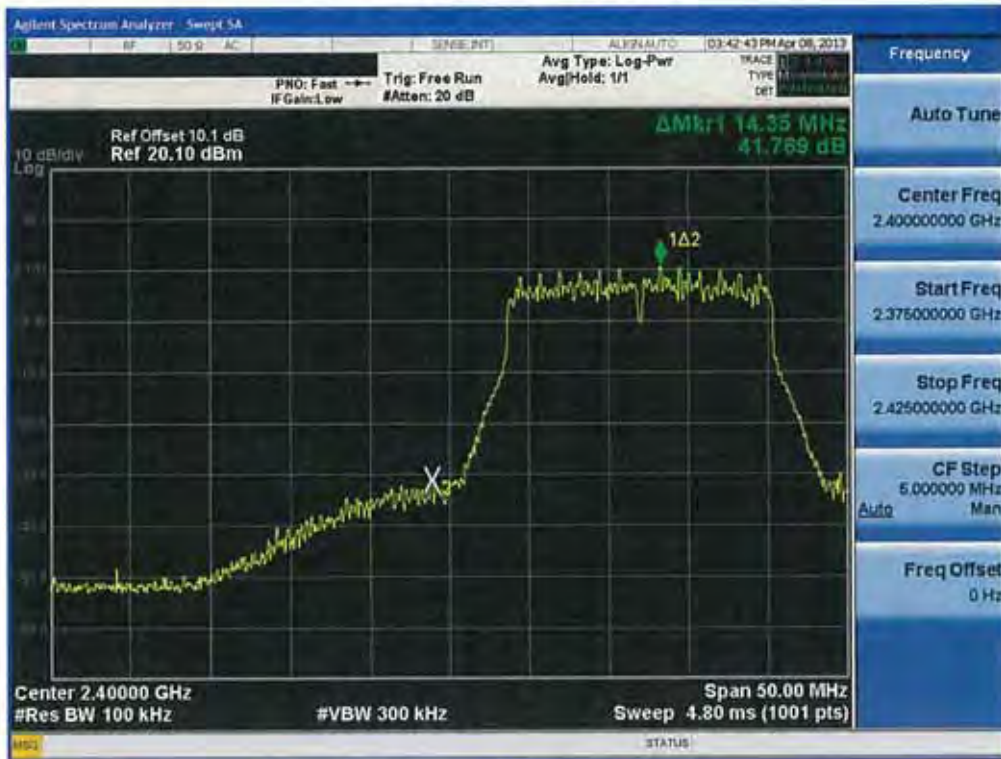
BandEdge (802.11b-CH1)



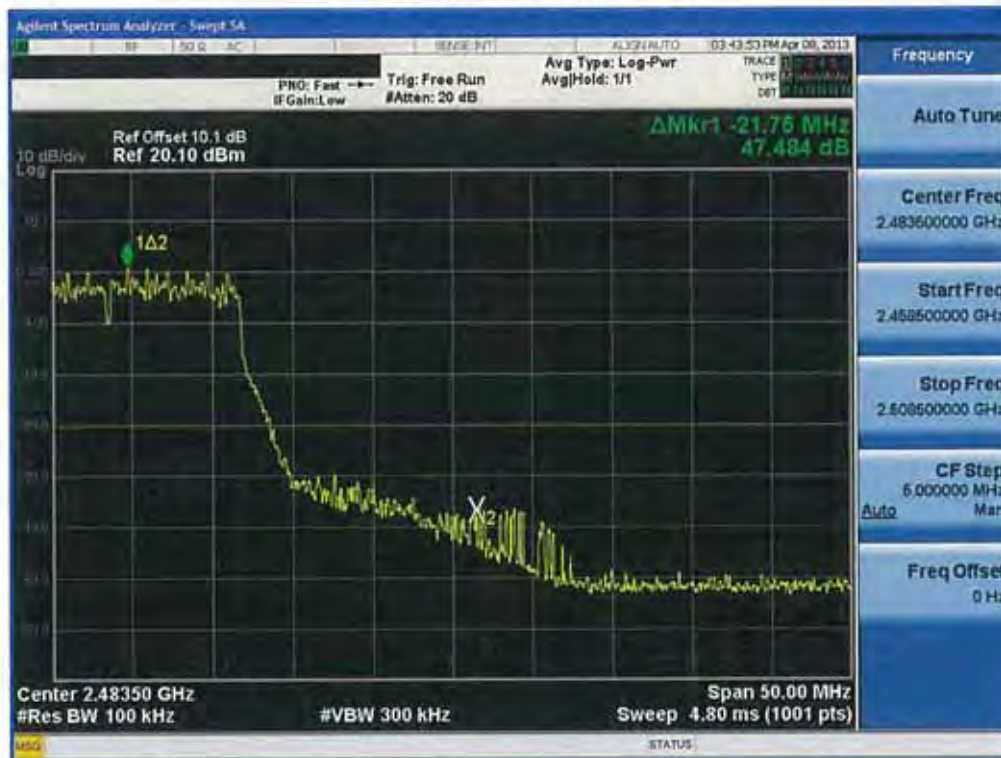
BandEdge (802.11b-CH11)



BandEdge (802.11g-CH1)



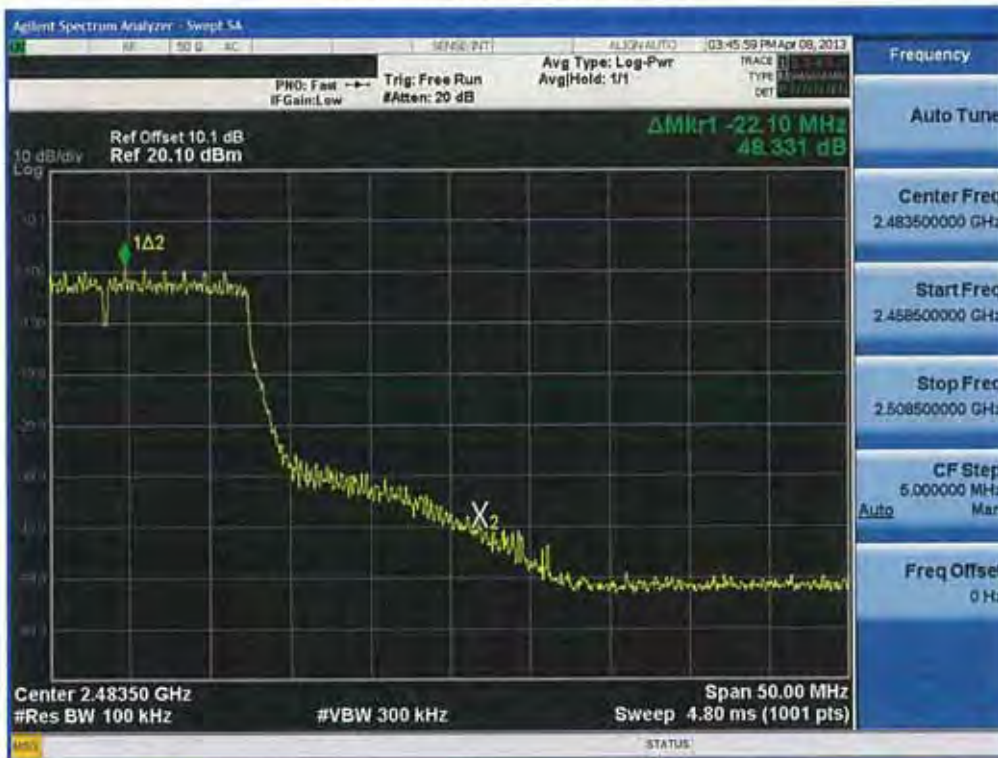
BandEdge (802.11g-CH11)



BandEdge (802.11n-CH1)



BandEdge (802.11n-CH11)

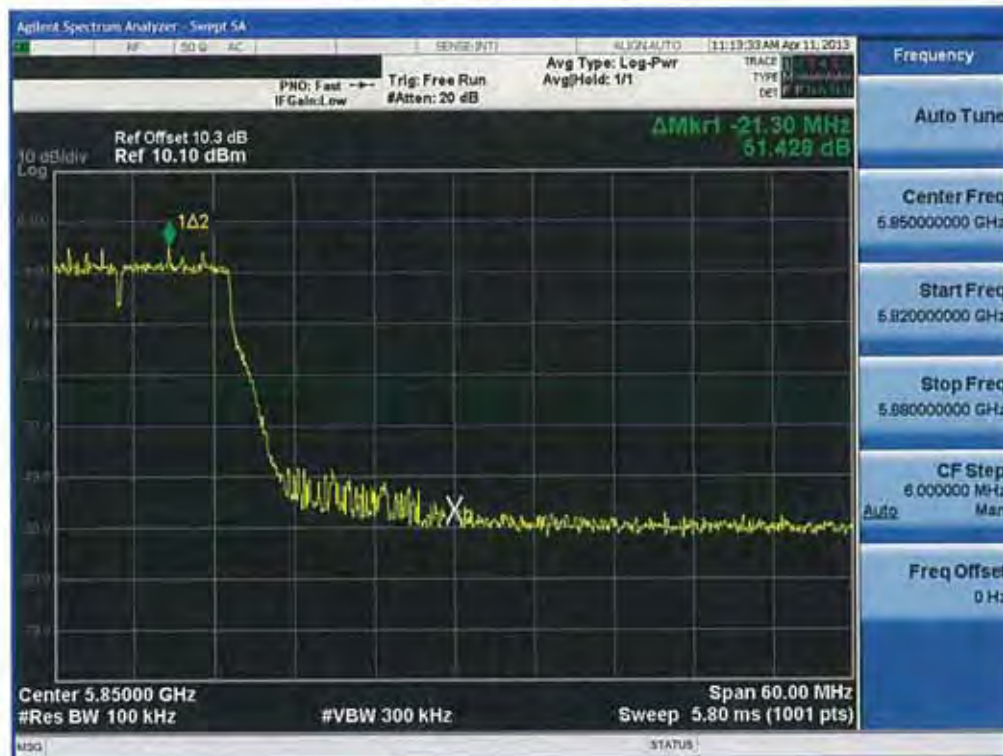


FCC PT.15.247 TEST REPORT	FCC CERTIFICATION REPORT		www.hct.co.kr
Test Report No. HCTR1304FR25-2	Date of Issue: May 06, 2013	EUT Type: Cellular/PCS GSM/GPRS and Cellular WCDMA/HSDPA/HSUPA Phone with Bluetooth, WLAN, NFC(Felica), A-GPS, Wireless Charger, Wi-Fi Direct	FCC ID: ZNFL05E

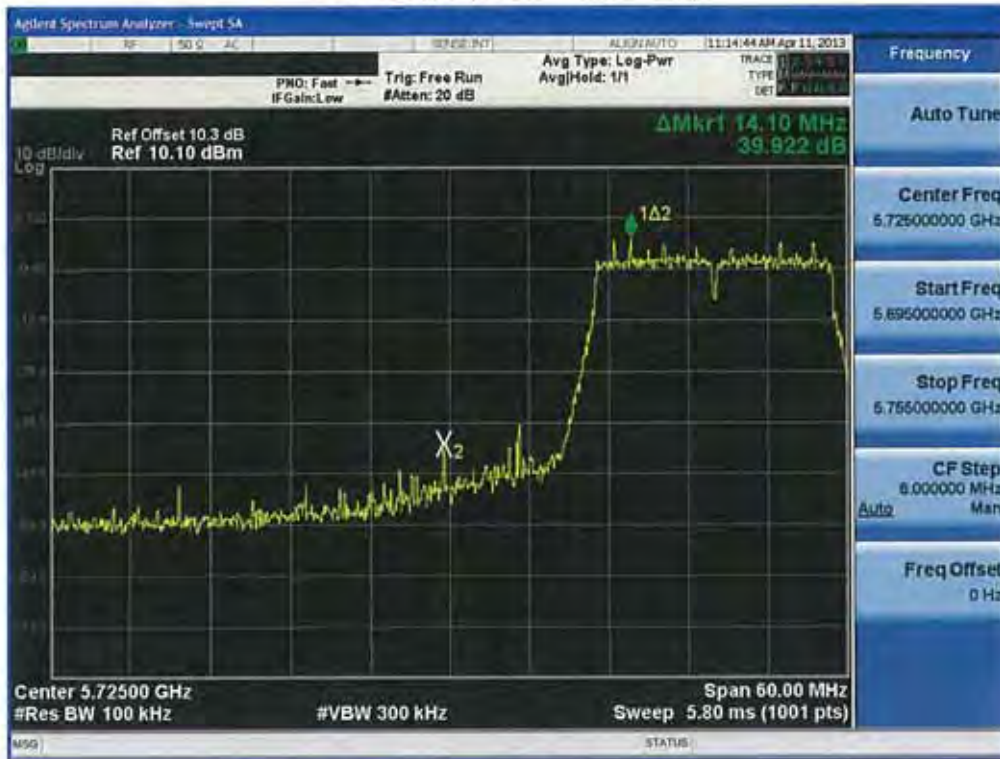
BandEdge (802.11a-CH 149)



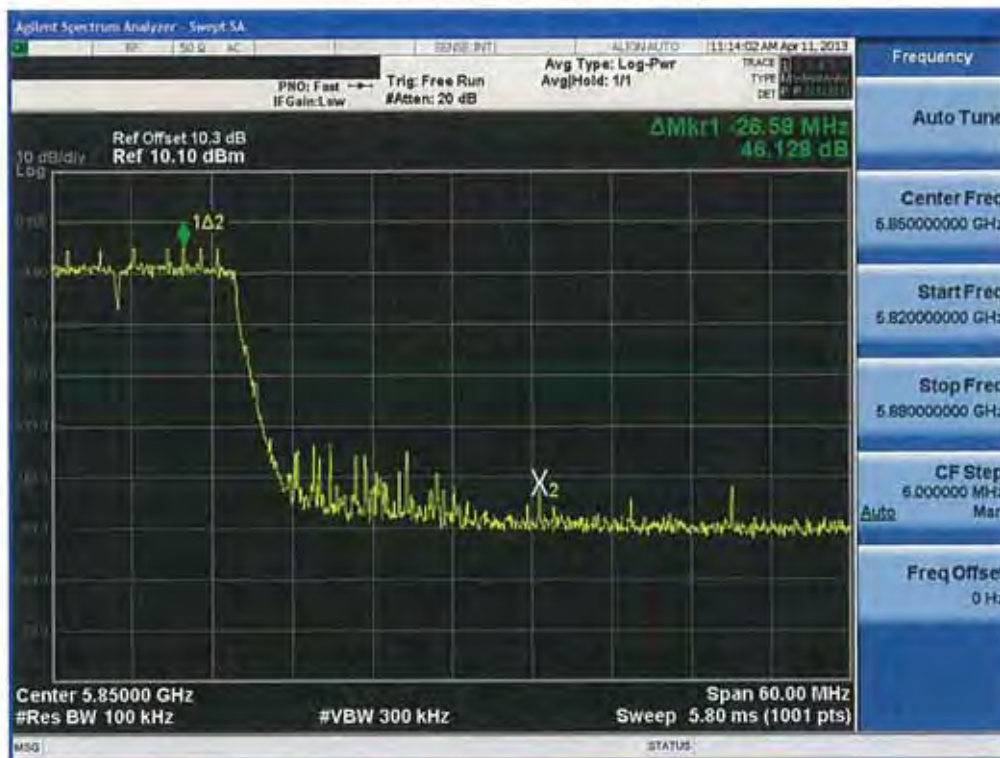
BandEdge (802.11a-CH 165)



BandEdge (802.11n-CH 149)

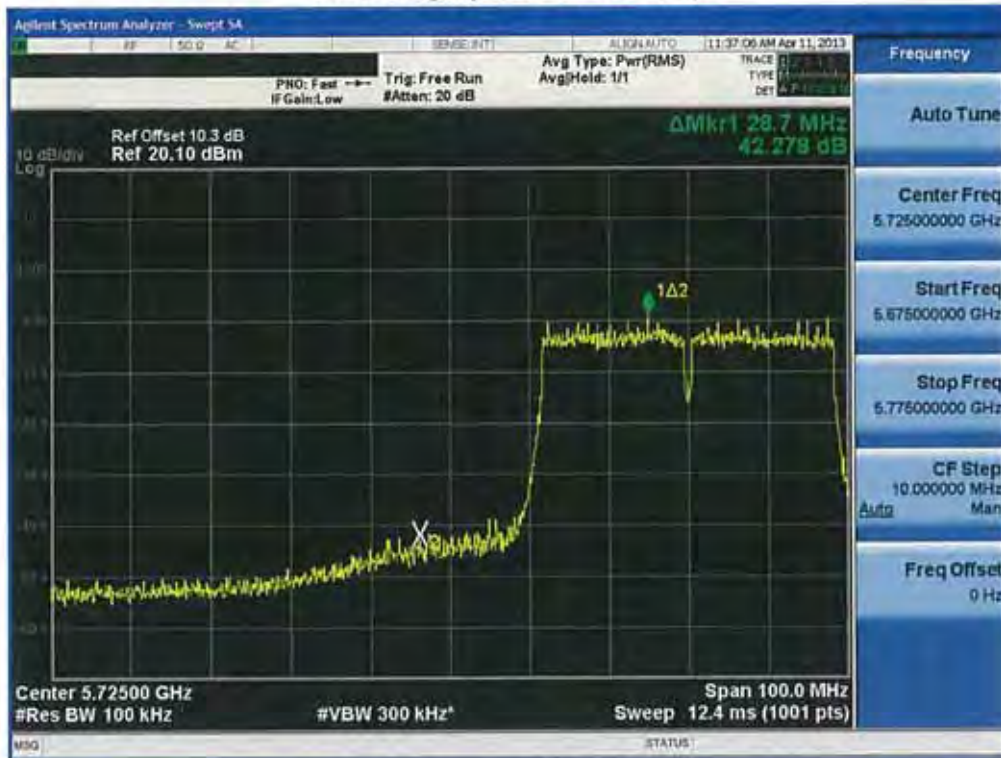


BandEdge (802.11n-CH 165)



FCC PT.15.247 TEST REPORT	FCC CERTIFICATION REPORT		www.hct.co.kr
Test Report No. HCTR1304FR25-2	Date of Issue: May 06, 2013	EUT Type: Cellular/PCS GSM/GPRS and Cellular WCDMA/HSDPA/HSUPA Phone with Bluetooth, WLAN, NFC(Felica), A-GPS, Wireless Charger, Wi-Fi Direct	FCC ID: ZNFL05E

BandEdge (802.11n-CH 151)

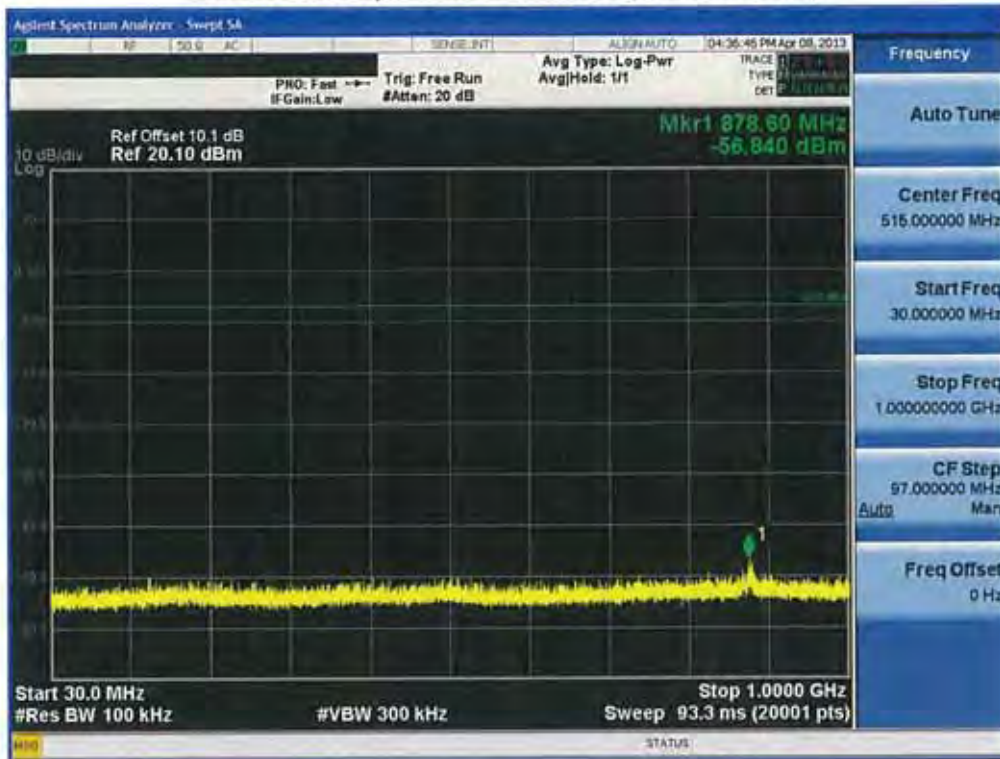


BandEdge (802.11n-CH 159)



FCC PT.15.247 TEST REPORT	FCC CERTIFICATION REPORT		www.hct.co.kr
Test Report No. HCTR1304FR25-2	Date of Issue: May 06, 2013	EUT Type: Cellular/PCS GSM/GPRS and Cellular WCDMA/HSDPA/HSUPA Phone with Bluetooth, WLAN, NFC(Felica), A-GPS, Wireless Charger, Wi-Fi Direct	FCC ID: ZNFL05E

Conducted Spurious Emission (802.11b-CH1)

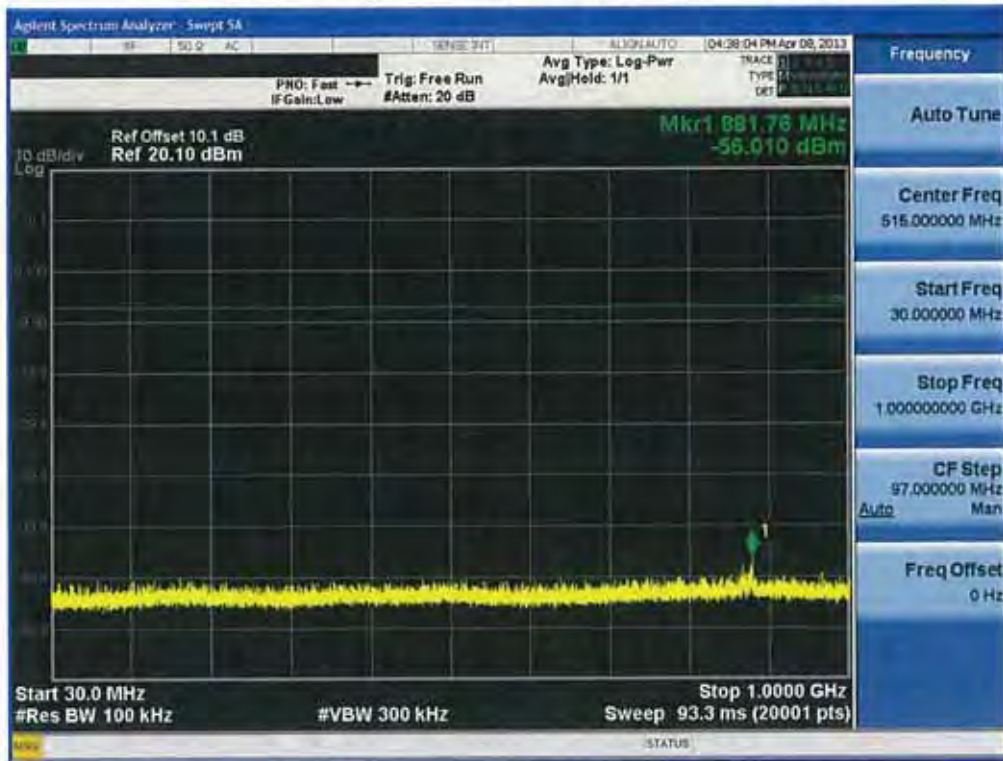


Conducted Spurious Emission (802.11b-CH6)

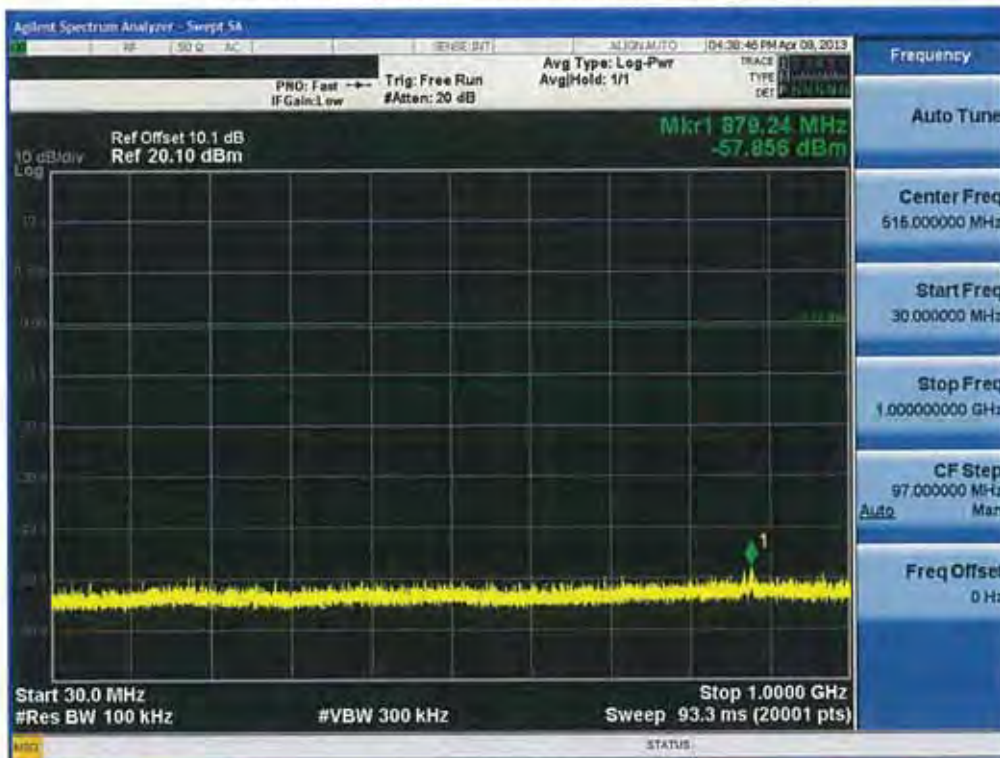


FCC PT.15.247 TEST REPORT	FCC CERTIFICATION REPORT		www.hct.co.kr
Test Report No. HCTR1304FR25-2	Date of Issue: May 06, 2013	EUT Type: Cellular/PCS GSM/GPRS and Cellular WCDMA/HSDPA/HSUPA Phone with Bluetooth, WLAN, NFC(Felica), A-GPS, Wireless Charger, Wi-Fi Direct	FCC ID: ZNFL05E

Conducted Spurious Emission (802.11b-CH11)

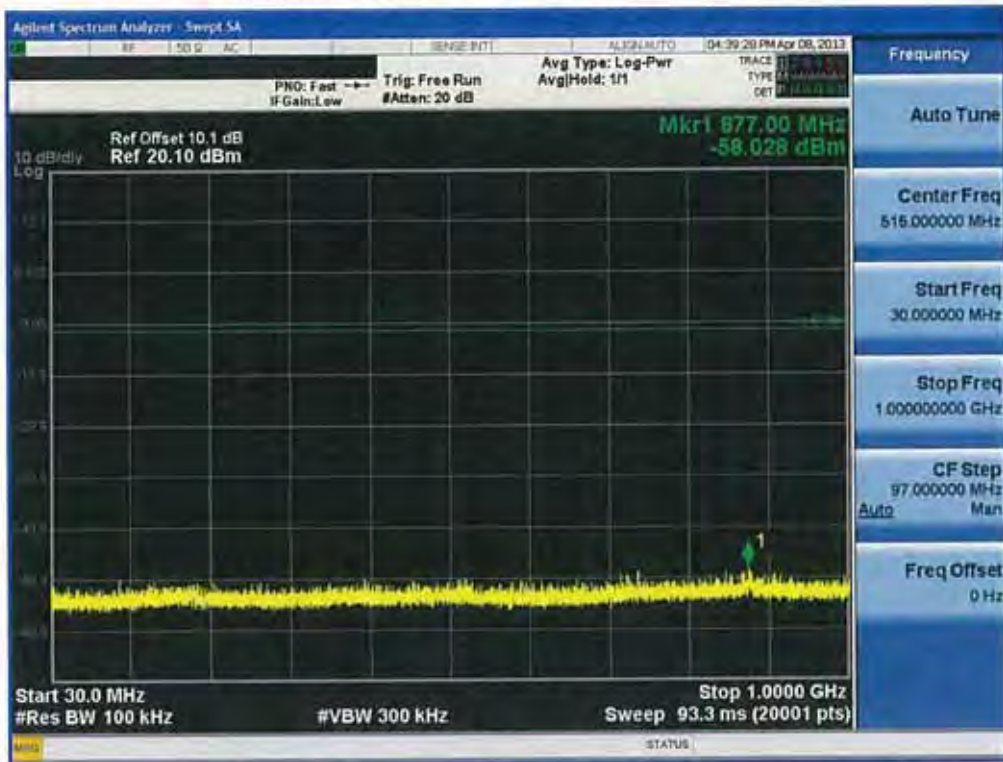


Conducted Spurious Emission (802.11g-CH1)

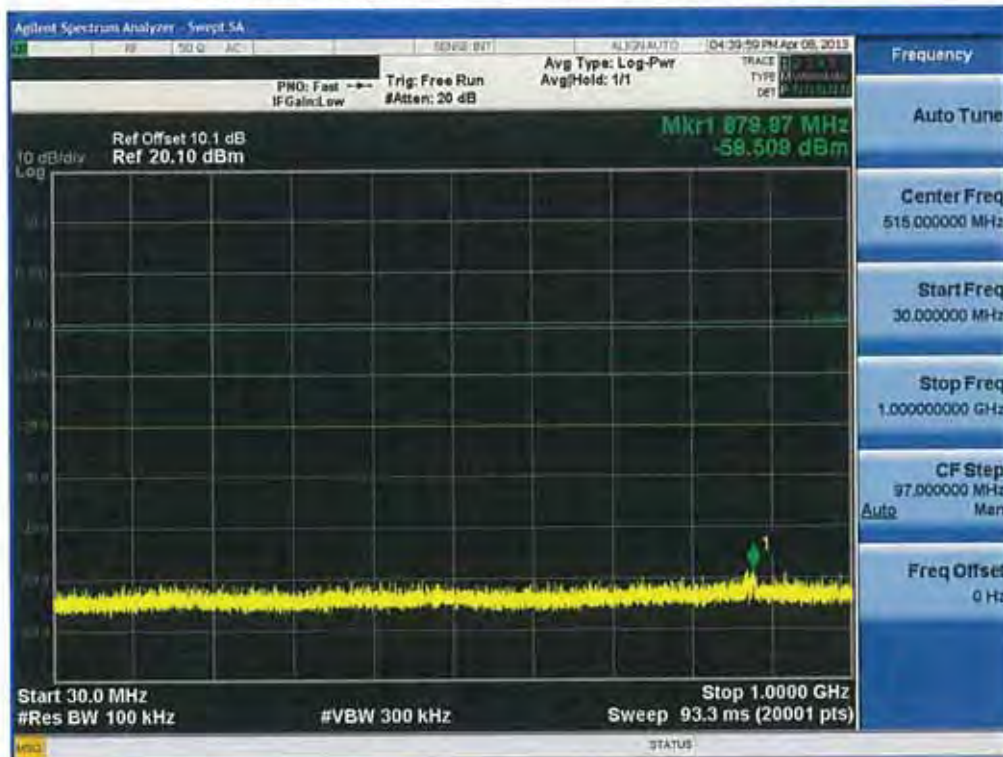


FCC PT.15.247 TEST REPORT	FCC CERTIFICATION REPORT		www.hct.co.kr
Test Report No. HCTR1304FR25-2	Date of Issue: May 06, 2013	EUT Type: Cellular/PCS GSM/GPRS and Cellular WCDMA/HSDPA/HSUPA Phone with Bluetooth, WLAN, NFC(Felica), A-GPS, Wireless Charger, Wi-Fi Direct	FCC ID: ZNFL05E

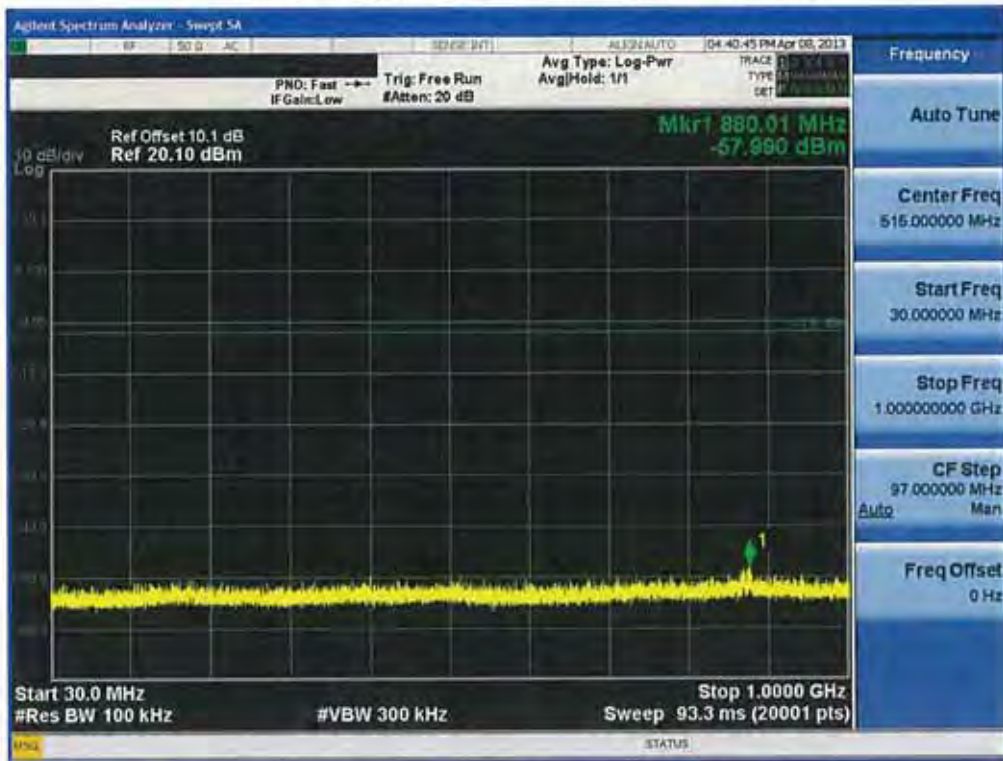
Conducted Spurious Emission (802.11g-CH6)



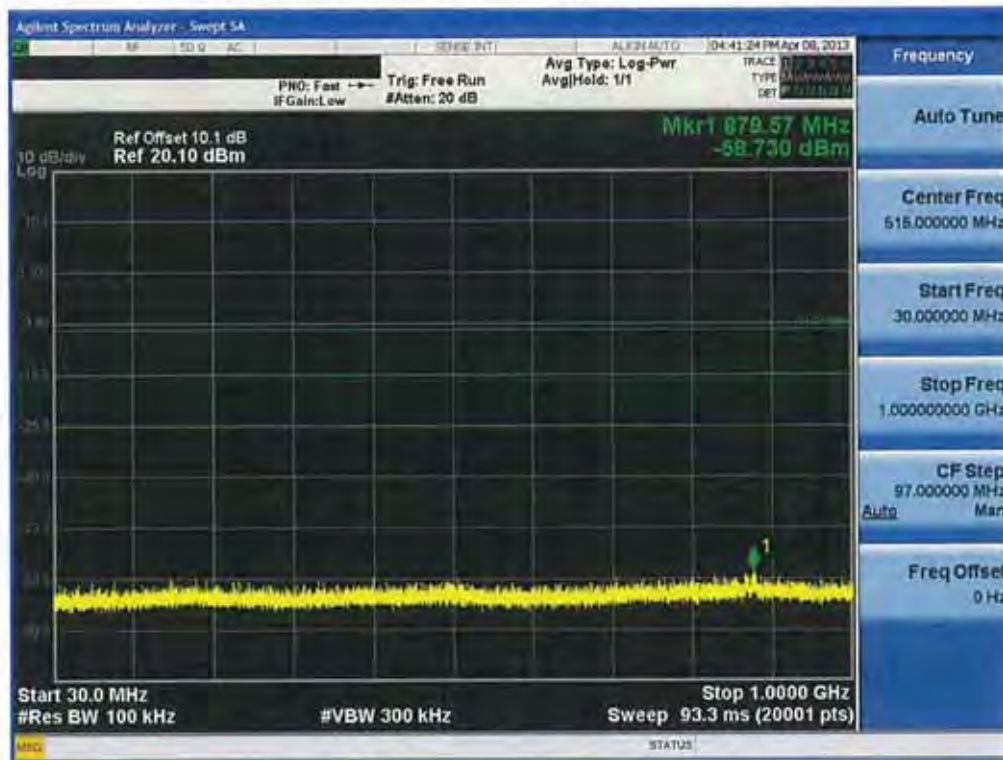
Conducted Spurious Emission (802.11g-CH11)



Conducted Spurious Emission (802.11n-CH1)



Conducted Spurious Emission (802.11n-CH6)

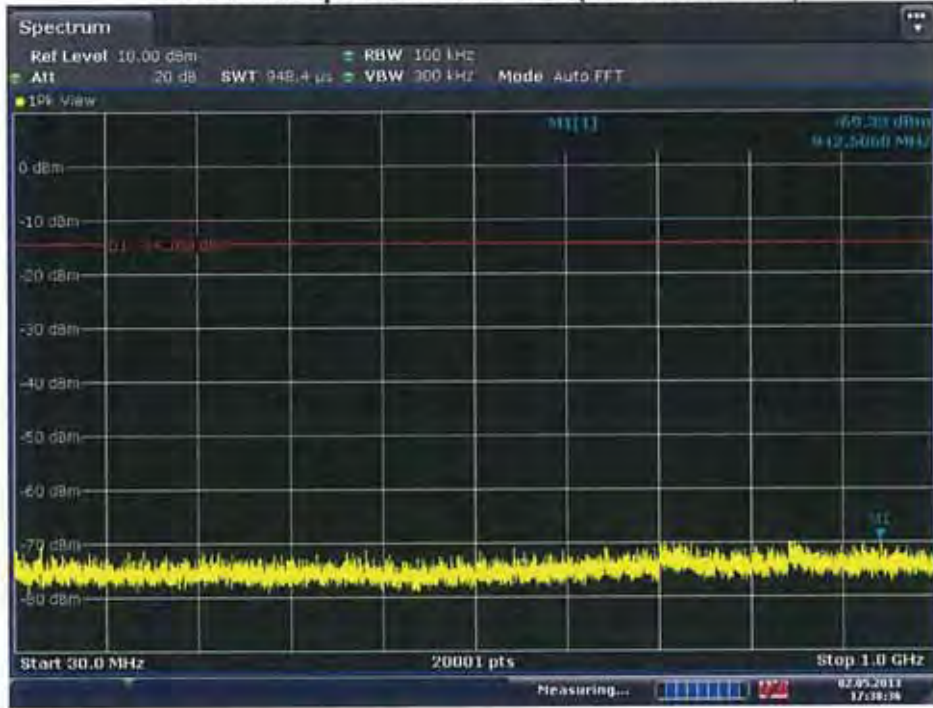


Conducted Spurious Emission (802.11n-CH11)



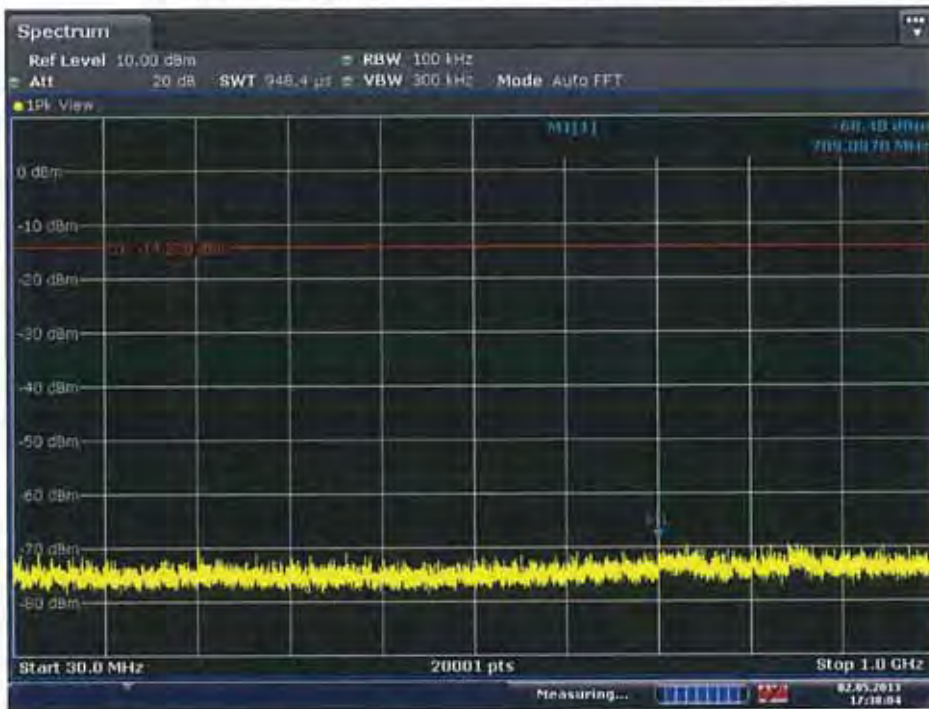
FCC PT.15.247 TEST REPORT	FCC CERTIFICATION REPORT		www.hct.co.kr
Test Report No. HCTR1304FR25-2	Date of Issue: May 06, 2013	EUT Type: Cellular/PCS GSM/GPRS and Cellular WCDMA/HSDPA/HSUPA Phone with Bluetooth, WLAN, NFC(Felica), A-GPS, Wireless Charger, Wi-Fi Direct	FCC ID: ZNFL05E

Conducted Spurious Emission (802.11a-CH149)



Date: 2.MAY.2013 17:38:36

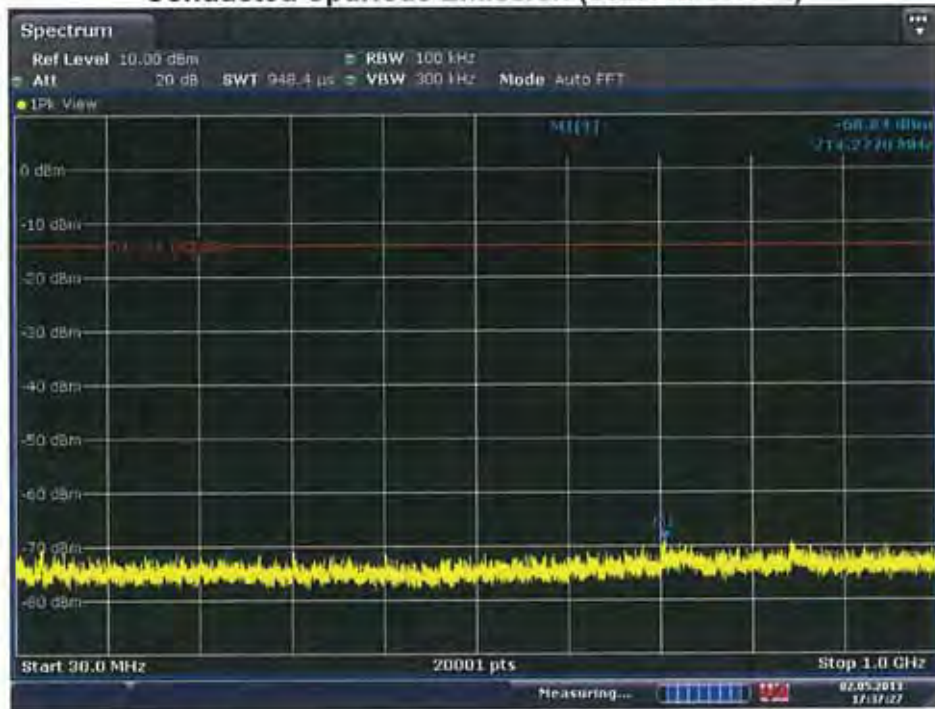
Conducted Spurious Emission (802.11a-CH157)



Date: 2.MAY.2013 17:38:05

FCC PT.15.247 TEST REPORT	FCC CERTIFICATION REPORT		www.hct.co.kr
Test Report No. HCTR1304FR25-2	Date of Issue: May 06, 2013	EUT Type: Cellular/PCS GSM/GPRS and Cellular WCDMA/HSDPA/HSUPA Phone with Bluetooth, WLAN, NFC(Felica), A-GPS, Wireless Charger, Wi-Fi Direct	FCC ID: ZNFL05E
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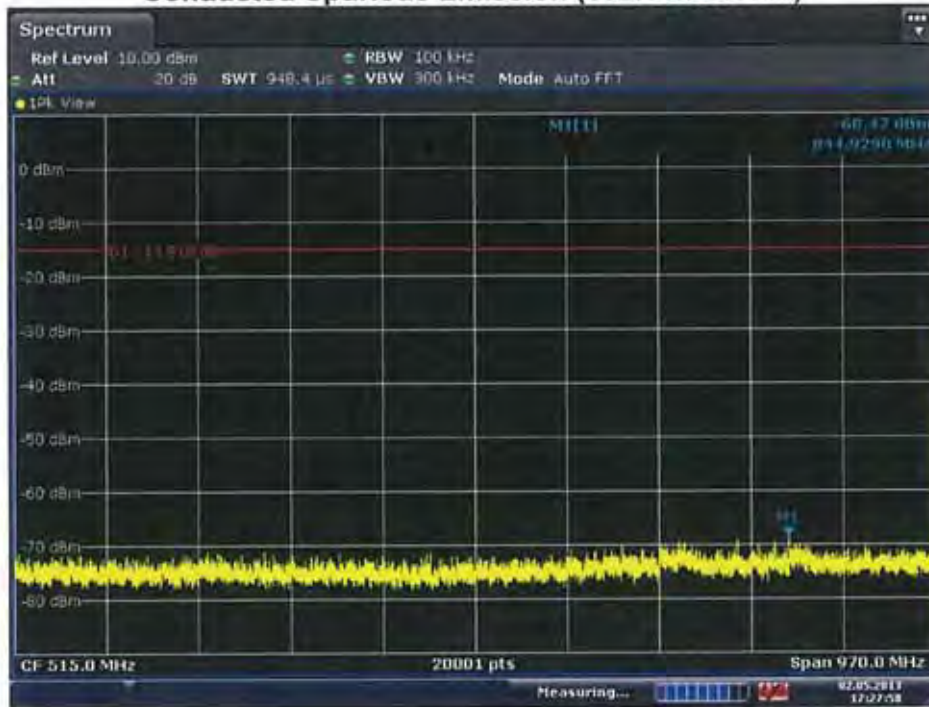
Conducted Spurious Emission (802.11a-CH165)



Date: 2.MAY.2013 17:37:27

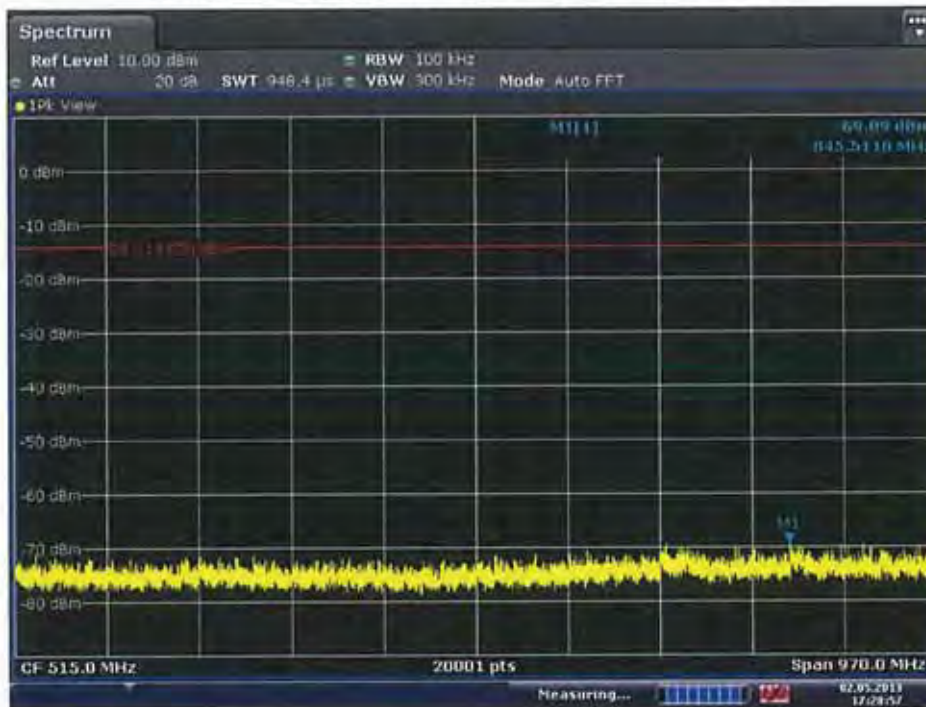
FCC PT.15.247 TEST REPORT		FCC CERTIFICATION REPORT		www.hct.co.kr
Test Report No. HCTR1304FR25-2	Date of Issue: May 06, 2013	EUT Type: Cellular/PCS GSM/GPRS and Cellular WCDMA/HSDPA/HSUPA Phone with Bluetooth, WLAN, NFC(Felica), A-GPS, Wireless Charger, Wi-Fi Direct		FCC ID: ZNFL05E

Conducted Spurious Emission (802.11n-CH149)



Date: 2.MAY.2013 17:27:58

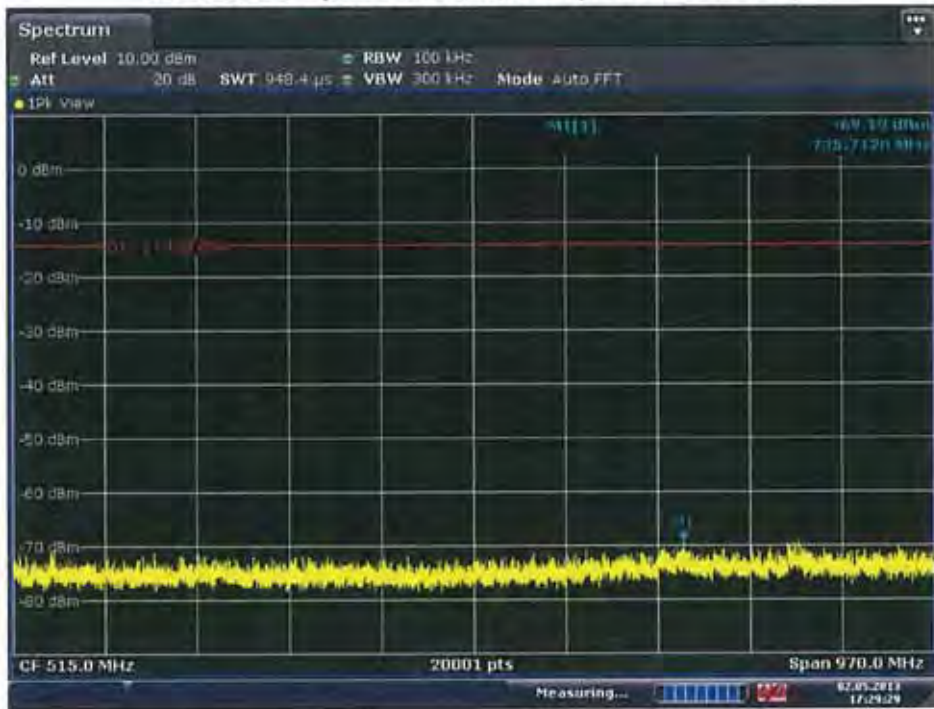
Conducted Spurious Emission (802.11n-CH157)



Date: 2.MAY.2013 17:28:58

FCC PT.15.247 TEST REPORT	FCC CERTIFICATION REPORT		www.hct.co.kr
Test Report No. HCTR1304FR25-2	Date of Issue: May 06, 2013	EUT Type: Cellular/PCS GSM/GPRS and Cellular WCDMA/HSDPA/HSUPA Phone with Bluetooth, WLAN, NFC(Felica), A-GPS, Wireless Charger, Wi-Fi Direct	FCC ID: ZNFL05E

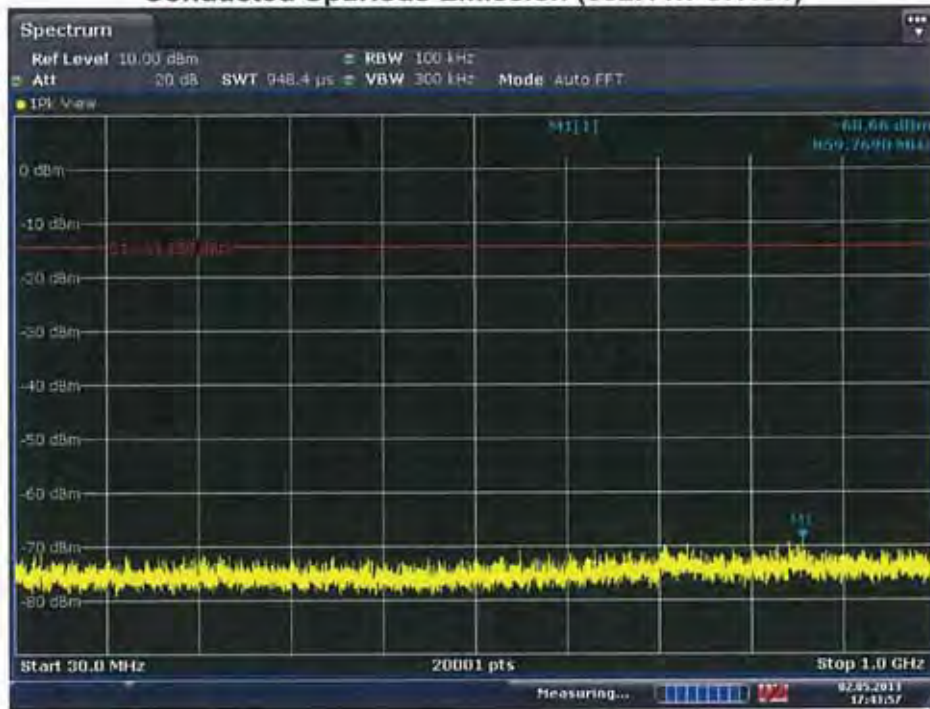
Conducted Spurious Emission (802.11n-CH165)



Date: 2.MAY.2013 17:29:30

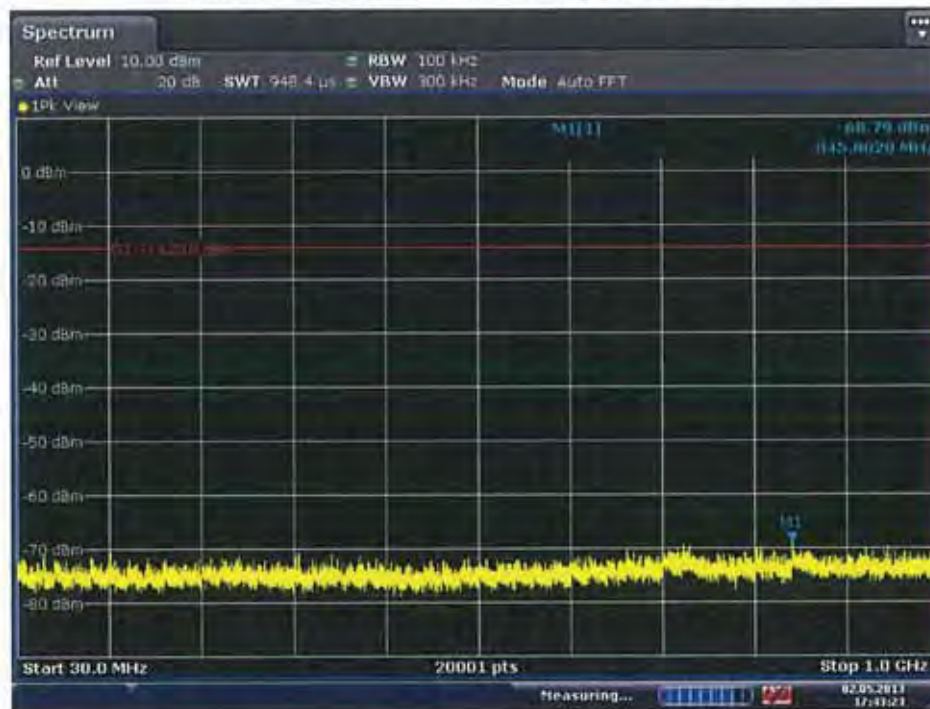
FCC PT.15.247 TEST REPORT		FCC CERTIFICATION REPORT		www.hct.co.kr
Test Report No. HCTR1304FR25-2	Date of Issue: May 06, 2013	EUT Type: Cellular/PCS GSM/GPRS and Cellular WCDMA/HSDPA/HSUPA Phone with Bluetooth, WLAN, NFC(Felica), A-GPS, Wireless Charger, Wi-Fi Direct		FCC ID: ZNFL05E
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Conducted Spurious Emission (802.11n-CH151)



Date: 2.MAY.2013 17:43:58

Conducted Spurious Emission (802.11n-CH159)

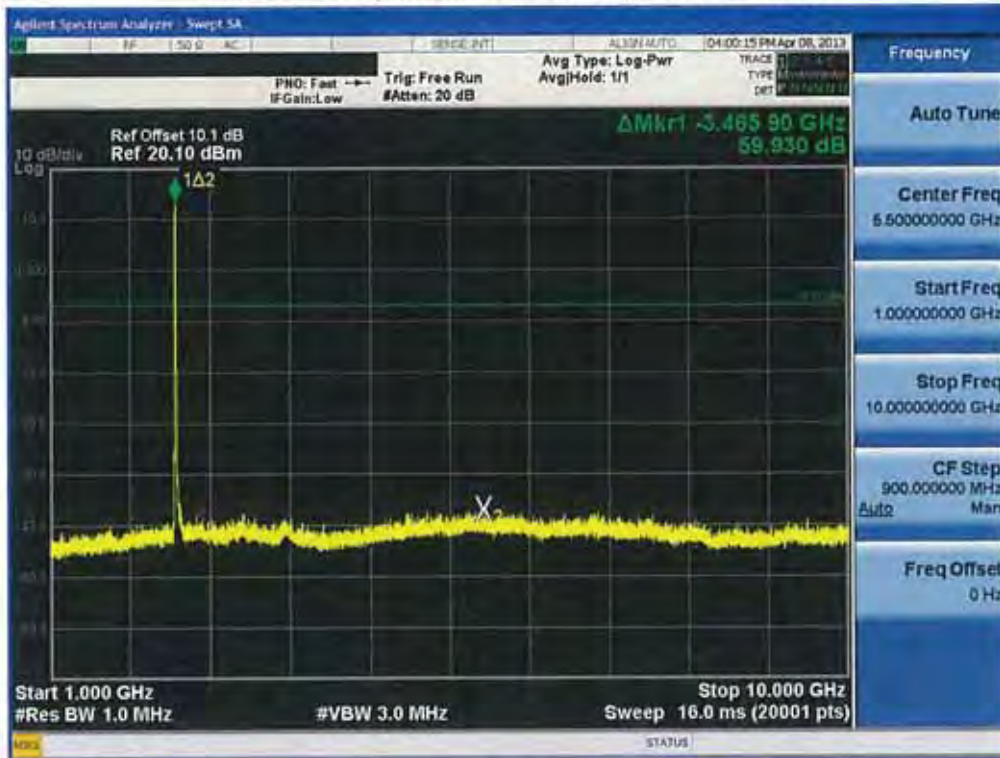


Date: 2.MAY.2013 17:43:24

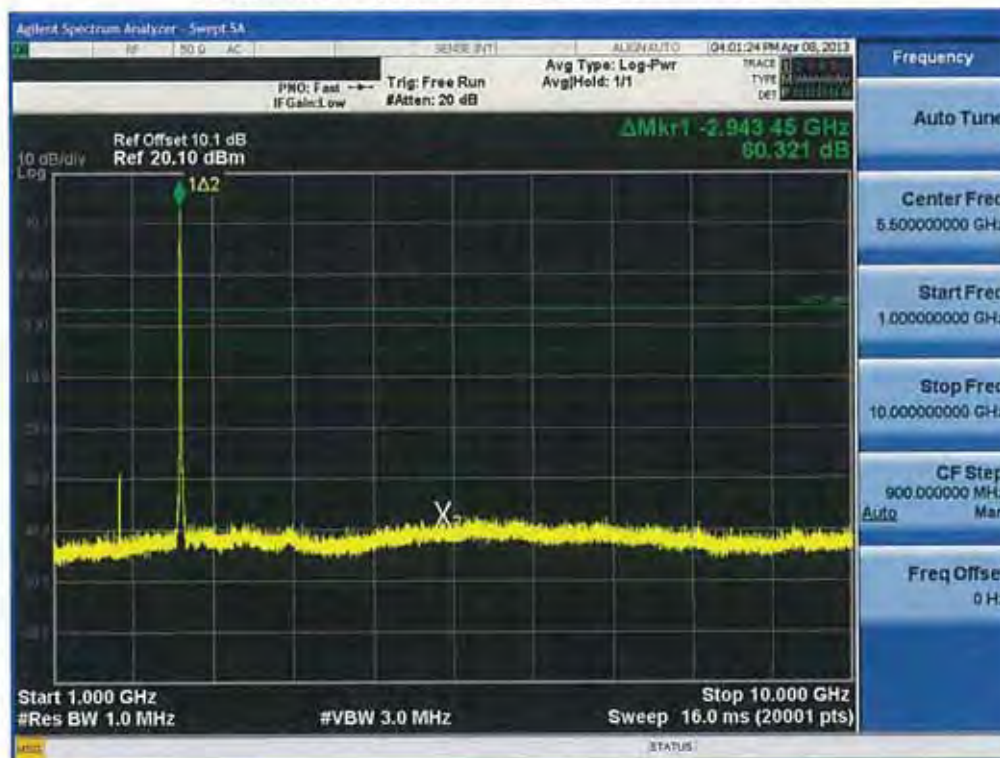
FCC PT.15.247 TEST REPORT	FCC CERTIFICATION REPORT		www.hct.co.kr
Test Report No. HCTR1304FR25-2	Date of Issue: May 06, 2013	EUT Type: Cellular/PCS GSM/GPRS and Cellular WCDMA/HSDPA/HSUPA Phone with Bluetooth, WLAN, NFC(Felica), A-GPS, Wireless Charger, Wi-Fi Direct	FCC ID: ZNFL05E

1 GHz ~ 10 GHz

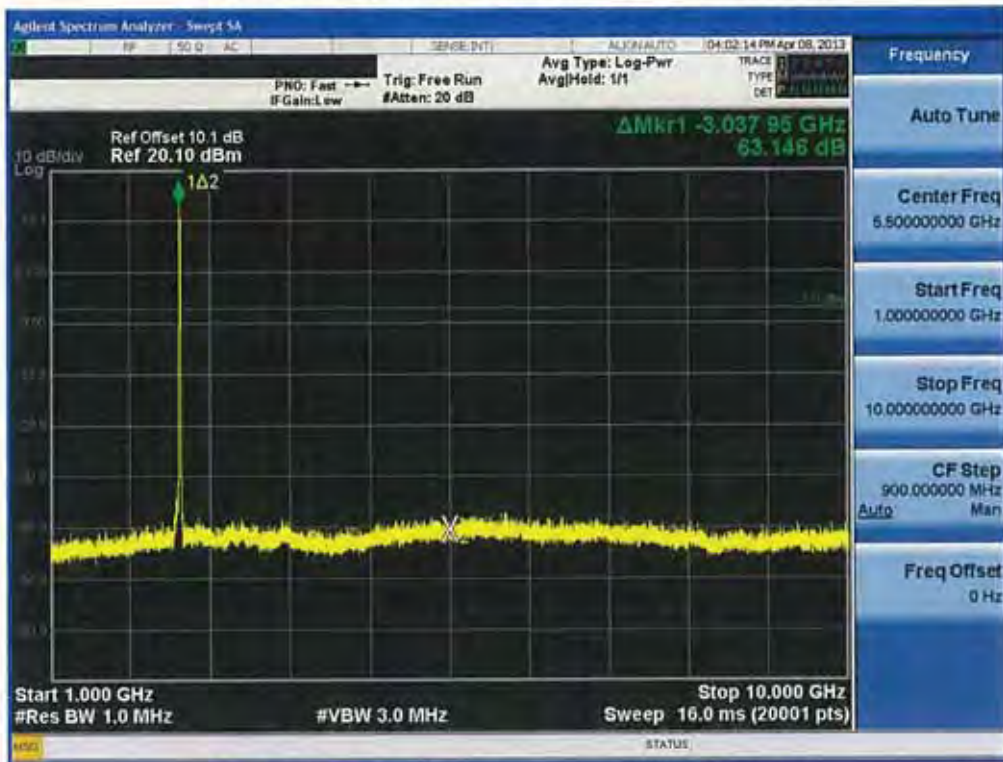
Conducted Spurious Emission (802.11b-CH1)



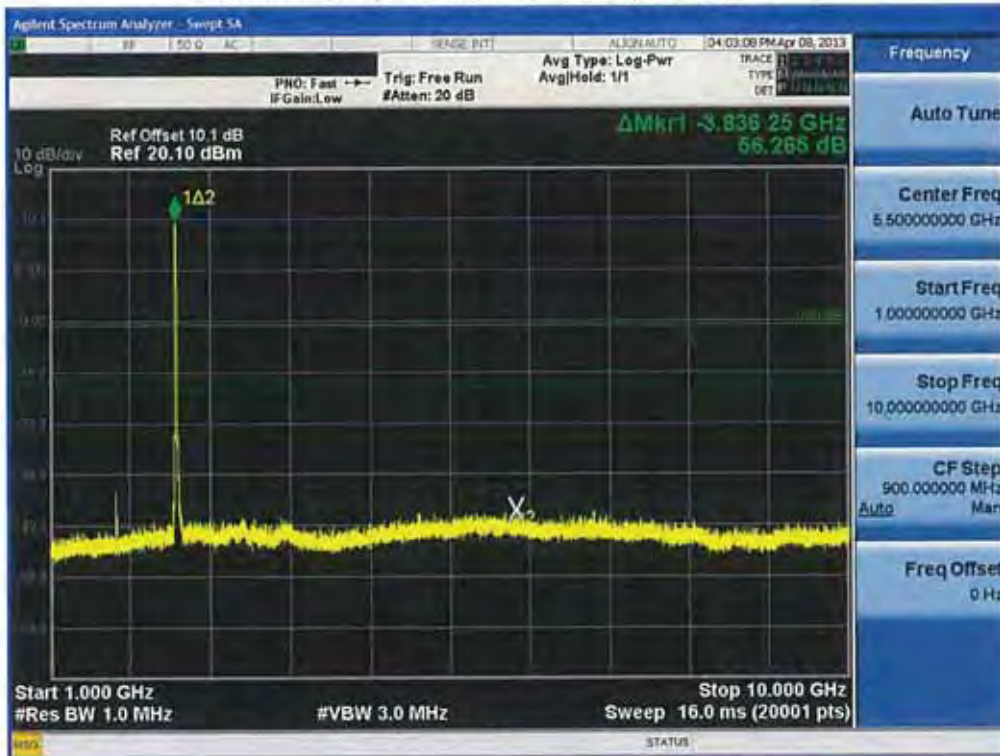
Conducted Spurious Emission (802.11b-CH6)



Conducted Spurious Emission (802.11b-CH11)

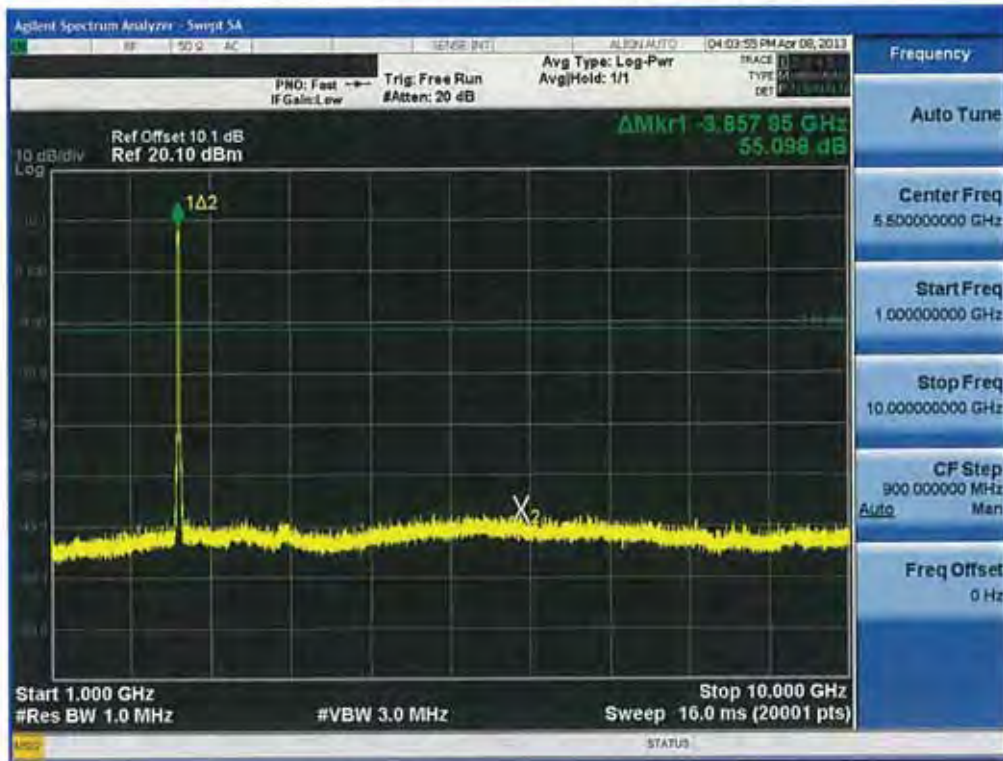


Conducted Spurious Emission (802.11g-CH1)

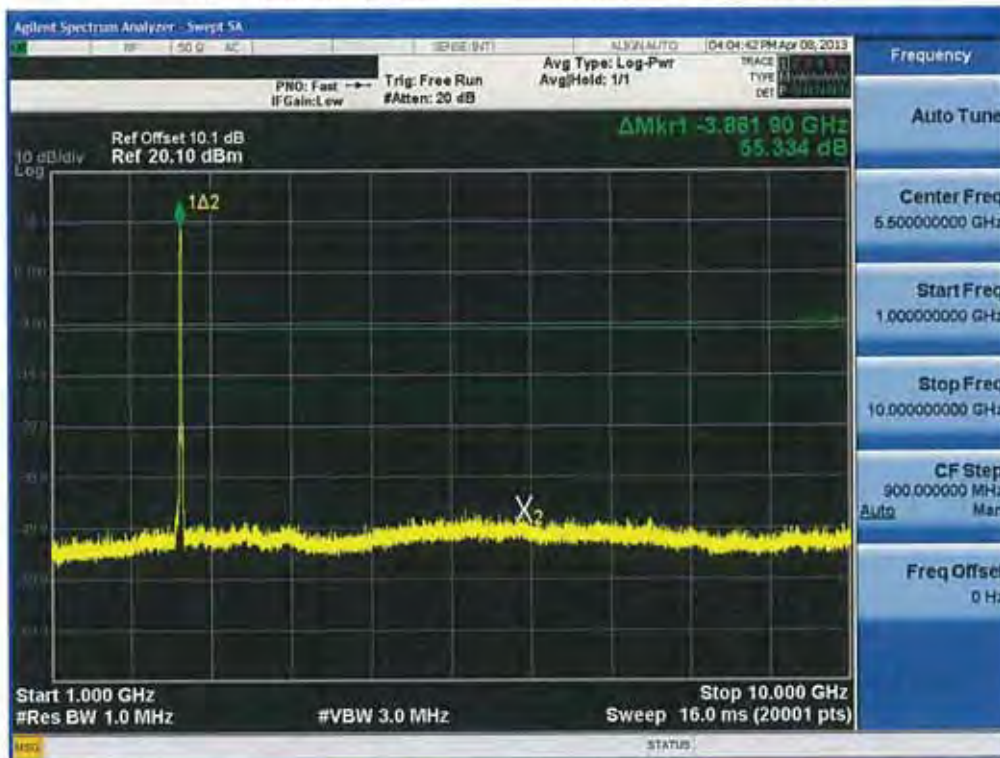


FCC PT.15.247 TEST REPORT	FCC CERTIFICATION REPORT		www.hct.co.kr
Test Report No. HCTR1304FR25-2	Date of Issue: May 06, 2013	EUT Type: Cellular/PCS GSM/GPRS and Cellular WCDMA/HSDPA/HSUPA Phone with Bluetooth, WLAN, NFC(Felica), A-GPS, Wireless Charger, Wi-Fi Direct	FCC ID: ZNFL05E

Conducted Spurious Emission (802.11g-CH6)

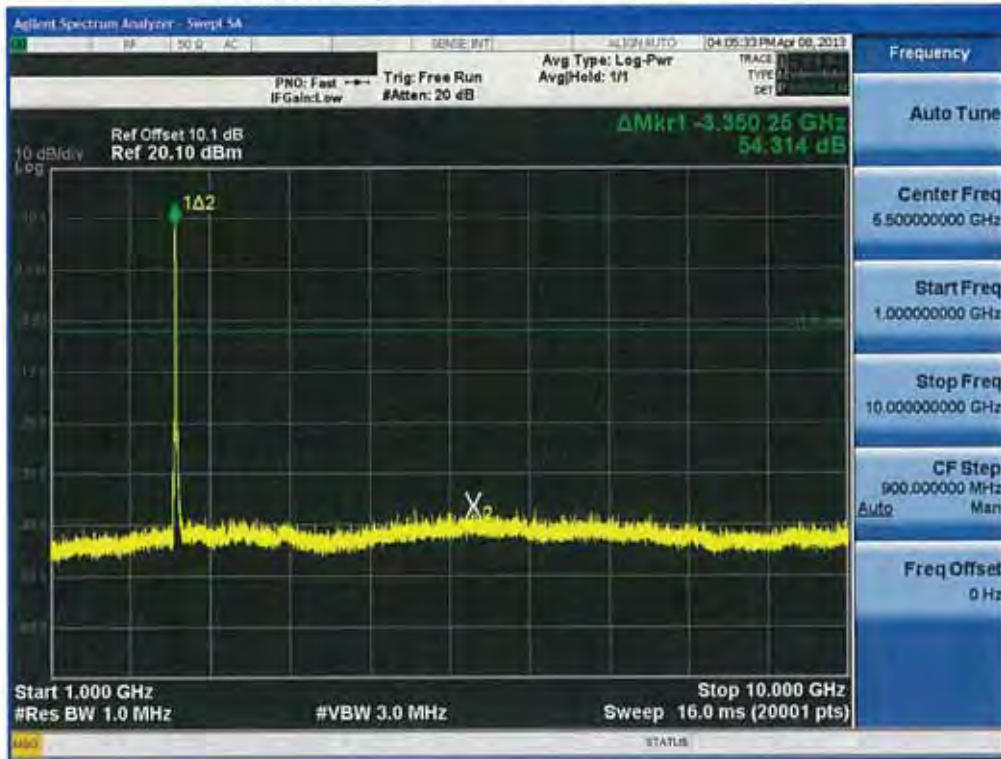


Conducted Spurious Emission (802.11g-CH11)

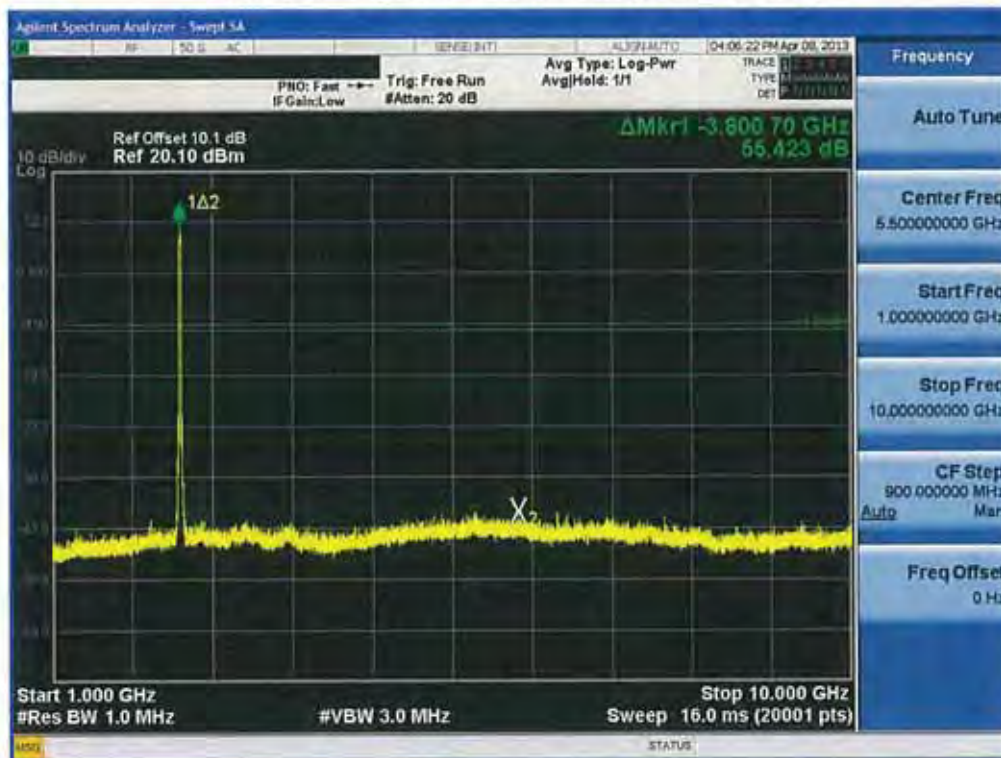


FCC PT.15.247 TEST REPORT	FCC CERTIFICATION REPORT		www.hct.co.kr
Test Report No. HCTR1304FR25-2	Date of Issue: May 06, 2013	EUT Type: Cellular/PCS GSM/GPRS and Cellular WCDMA/HSDPA/HSUPA Phone with Bluetooth, WLAN, NFC(Felica), A-GPS, Wireless Charger, Wi-Fi Direct	FCC ID: ZNFL05E

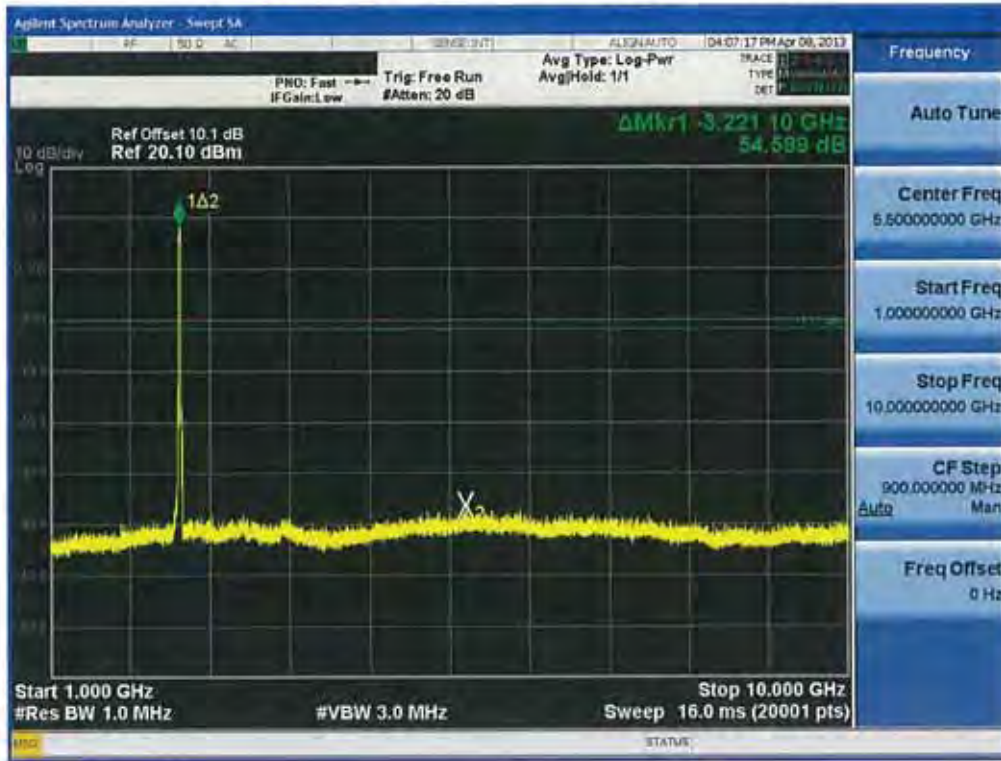
Conducted Spurious Emission (802.11n-CH1)



Conducted Spurious Emission (802.11n-CH6)

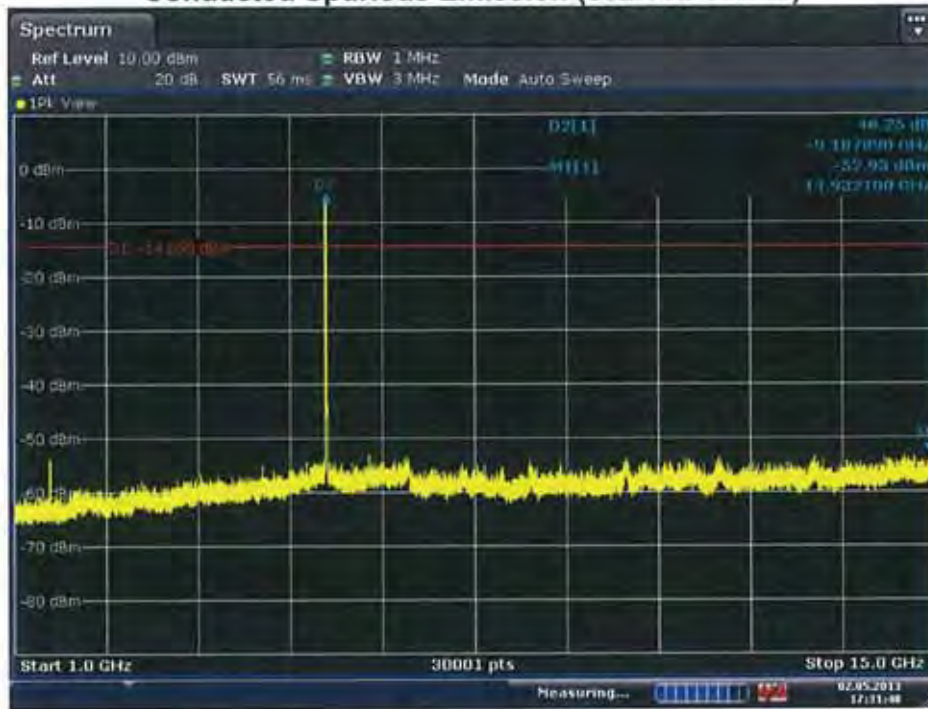


Conducted Spurious Emission (802.11n-CH11)



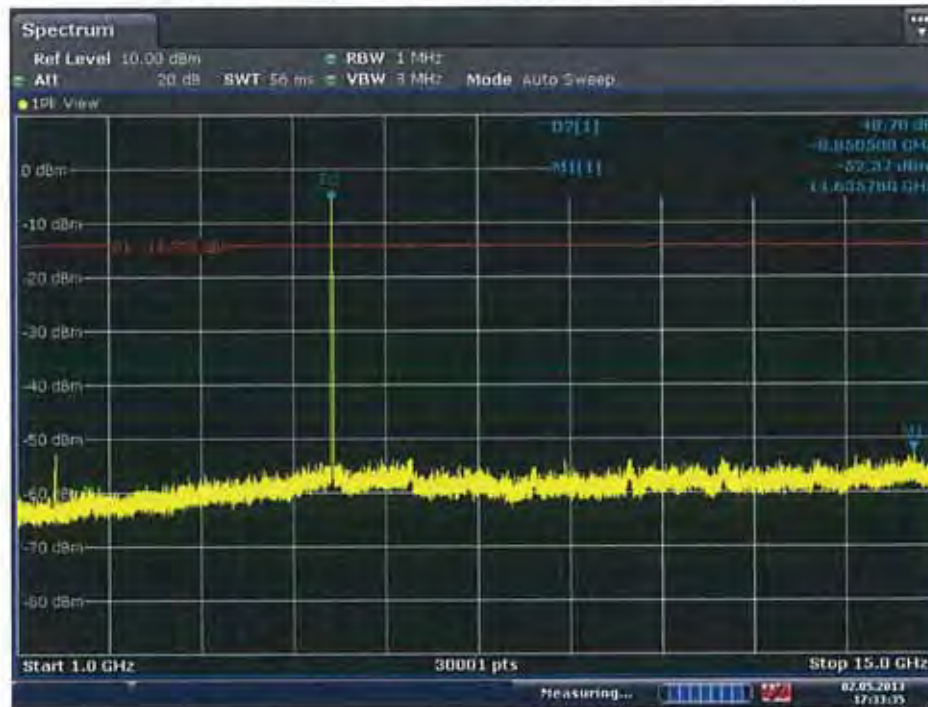
FCC PT.15.247 TEST REPORT	FCC CERTIFICATION REPORT		www.hct.co.kr
Test Report No. HCTR1304FR25-2	Date of Issue: May 06, 2013	EUT Type: Cellular/PCS GSM/GPRS and Cellular WCDMA/HSDPA/HSUPA Phone with Bluetooth, WLAN, NFC(Felica), A-GPS, Wireless Charger, Wi-Fi Direct	FCC ID: ZNFL05E

Conducted Spurious Emission (802.11a-CH149)



Date: 2.MAY.2013 17:31:49

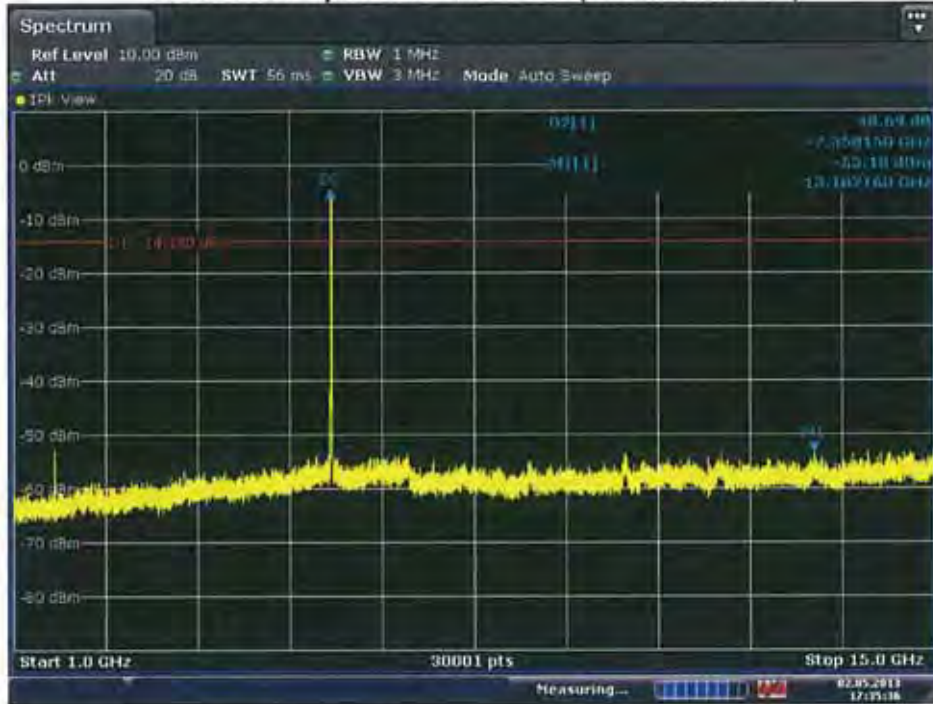
Conducted Spurious Emission (802.11a-CH157)



Date: 3.MAY.2013 17:33:35

FCC PT.15.247 TEST REPORT	FCC CERTIFICATION REPORT		www.hct.co.kr
Test Report No. HCTR1304FR25-2	Date of Issue: May 06, 2013	EUT Type: Cellular/PCS GSM/GPRS and Cellular WCDMA/HSDPA/HSUPA Phone with Bluetooth, WLAN, NFC(Felica), A-GPS, Wireless Charger, Wi-Fi Direct	FCC ID: ZNFL05E
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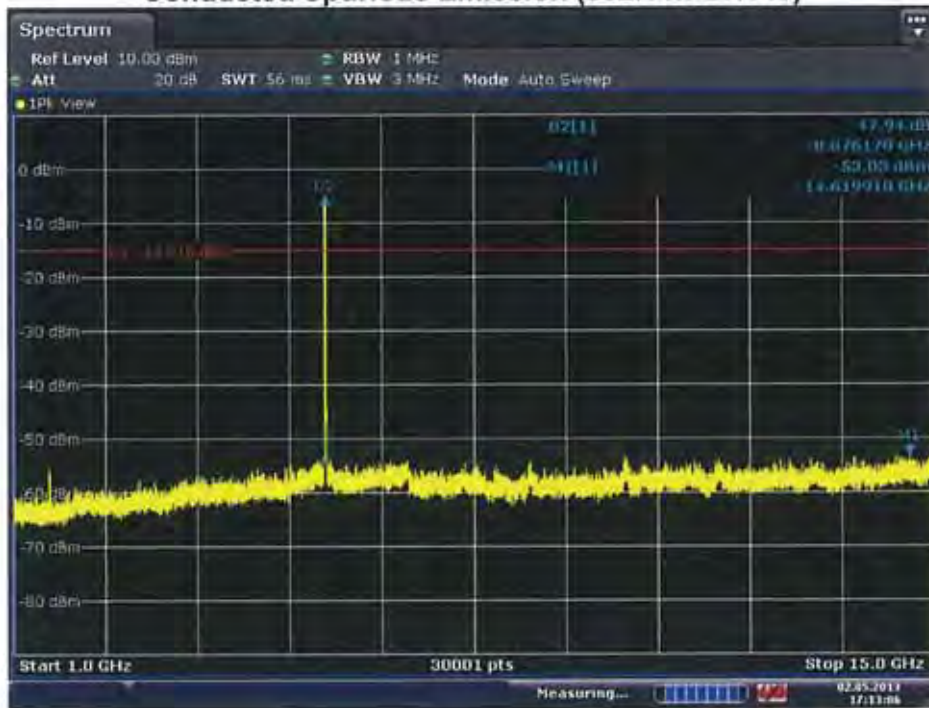
Conducted Spurious Emission (802.11a-CH165)



Date: 2, MAY, 2013 17:35:37

FCC PT.15.247 TEST REPORT		FCC CERTIFICATION REPORT		www.hct.co.kr
Test Report No. HCTR1304FR25-2	Date of Issue: May 06, 2013	EUT Type: Cellular/PCS GSM/GPRS and Cellular WCDMA/HSDPA/HSUPA Phone with Bluetooth, WLAN, NFC(Felica), A-GPS, Wireless Charger, Wi-Fi Direct		FCC ID: ZNFL05E

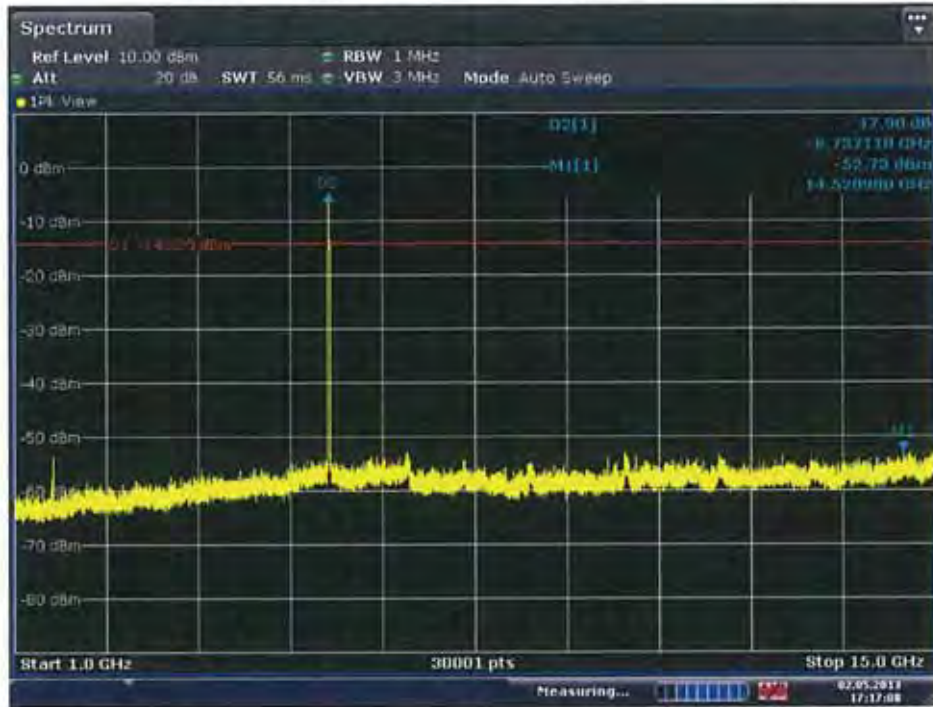
Conducted Spurious Emission (802.11n-CH149)



Date: 2.MAY.2013 17:13:06

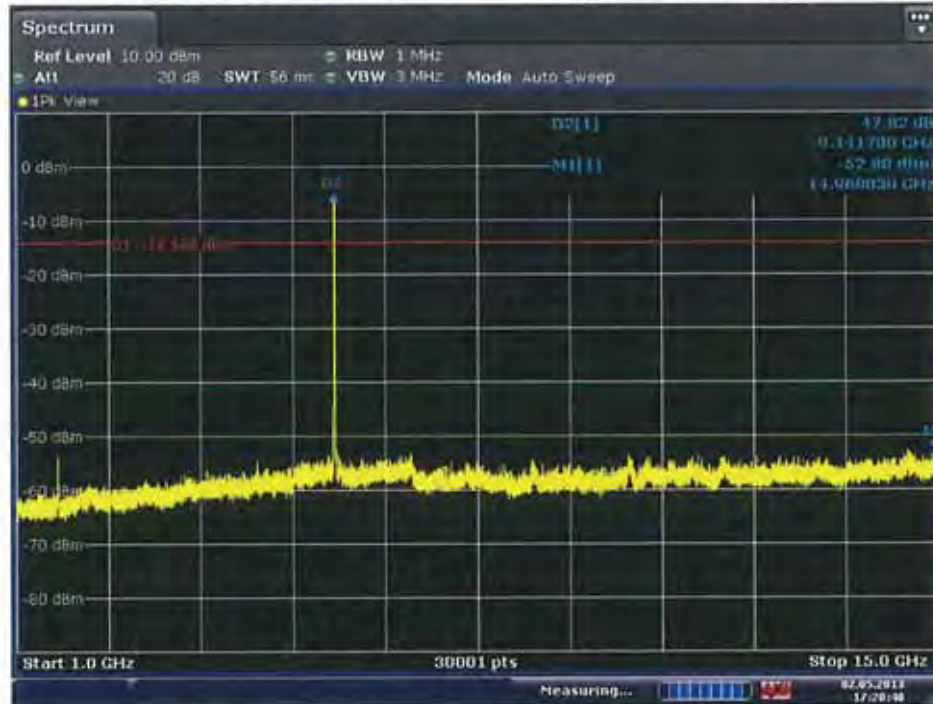
FCC PT.15.247 TEST REPORT		FCC CERTIFICATION REPORT		www.hct.co.kr
Test Report No. HCTR1304FR25-2	Date of Issue: May 06, 2013	EUT Type: Cellular/PCS GSM/GPRS and Cellular WCDMA/HSDPA/HSUPA Phone with Bluetooth, WLAN, NFC(Felica), A-GPS, Wireless Charger, Wi-Fi Direct		FCC ID: ZNFL05E

Conducted Spurious Emission (802.11n-CH157)



Date: 2.MAY.2013 17:17:08

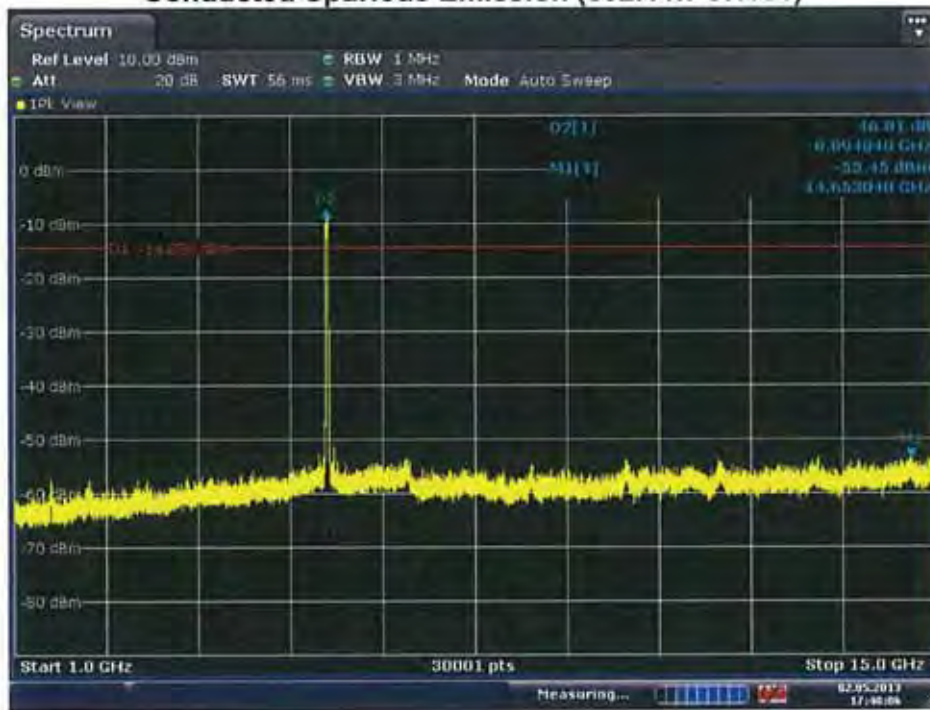
Conducted Spurious Emission (802.11n-CH165)



Date: 2.MAY.2013 17:20:41

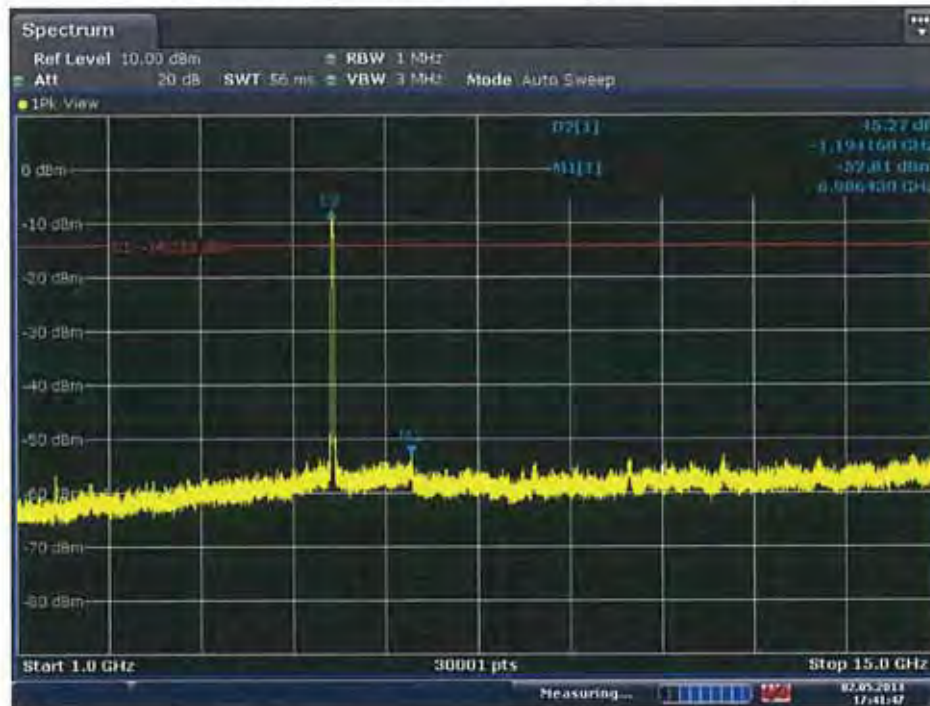
FCC PT.15.247 TEST REPORT	FCC CERTIFICATION REPORT		www.hct.co.kr
Test Report No. HCTR1304FR25-2	Date of Issue: May 06, 2013	EUT Type: Cellular/PCS GSM/GPRS and Cellular WCDMA/HSDPA/HSUPA Phone with Bluetooth, WLAN, NFC(Felica), A-GPS, Wireless Charger, Wi-Fi Direct	FCC ID: ZNFL05E

Conducted Spurious Emission (802.11n-CH151)



Date: 2.MAY.2013 17:40:06

Conducted Spurious Emission (802.11n-CH159)



Date: 2.MAY.2013 17:41:47

10 GHz ~ 25 GHz

Conducted Spurious Emission (802.11b-CH1)



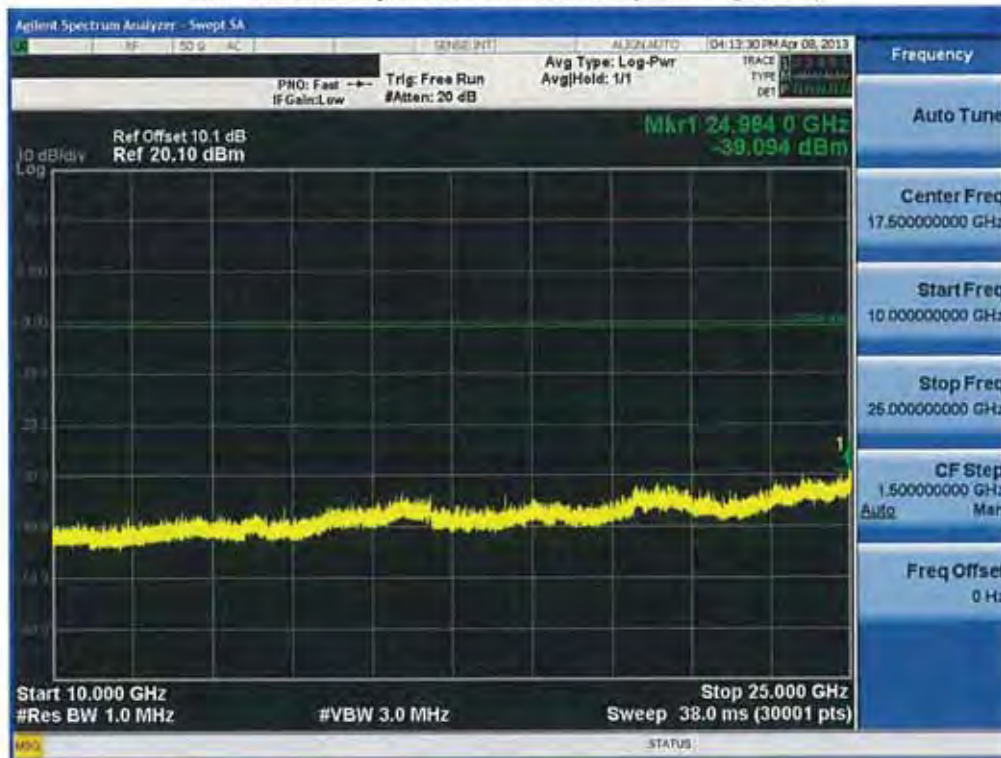
Conducted Spurious Emission (802.11b-CH6)



Conducted Spurious Emission (802.11b-CH11)

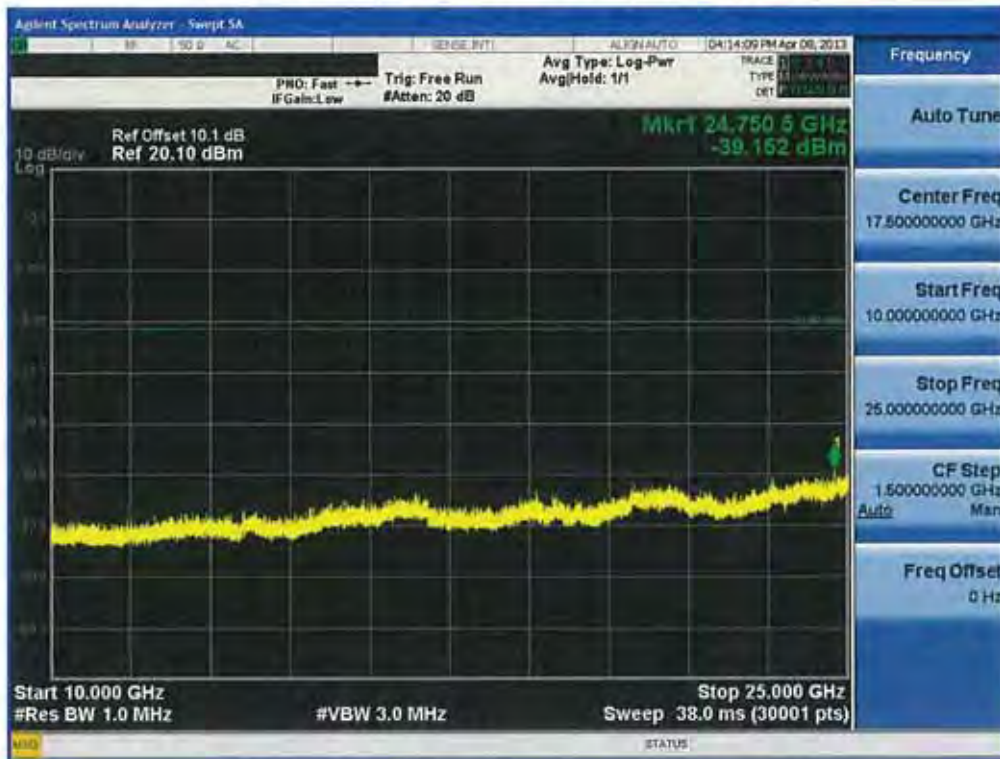


Conducted Spurious Emission (802.11g-CH11)



FCC PT.15.247 TEST REPORT	FCC CERTIFICATION REPORT		www.hct.co.kr
Test Report No. HCTR1304FR25-2	Date of Issue: May 06, 2013	EUT Type: Cellular/PCS GSM/GPRS and Cellular WCDMA/HSDPA/HSUPA Phone with Bluetooth, WLAN, NFC(Felica), A-GPS, Wireless Charger, Wi-Fi Direct	FCC ID: ZNFL05E

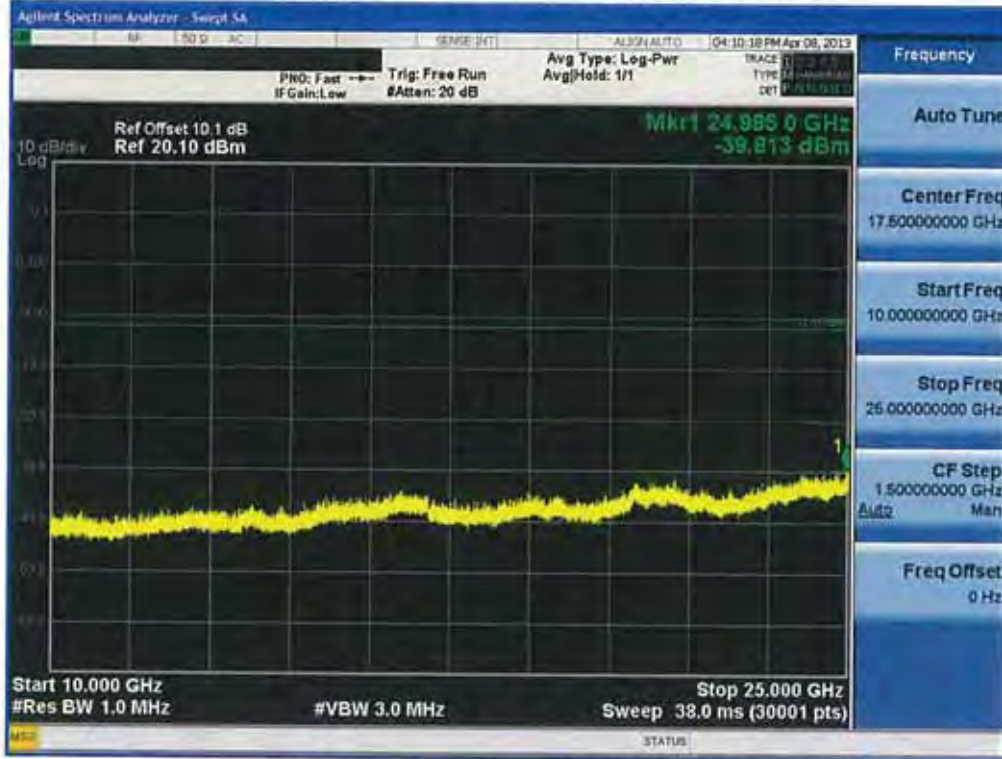
Conducted Spurious Emission (802.11g-CH6)



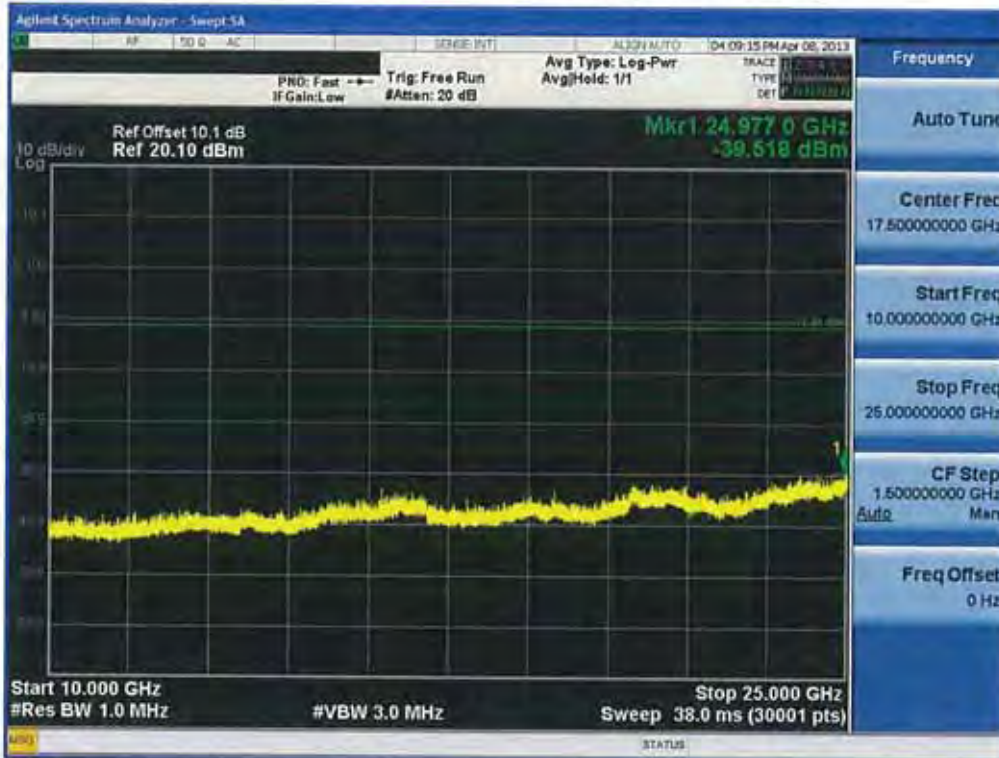
Conducted Spurious Emission (802.11g-CH11)



Conducted Spurious Emission (802.11n-CH1)



Conducted Spurious Emission (802.11n-CH6)



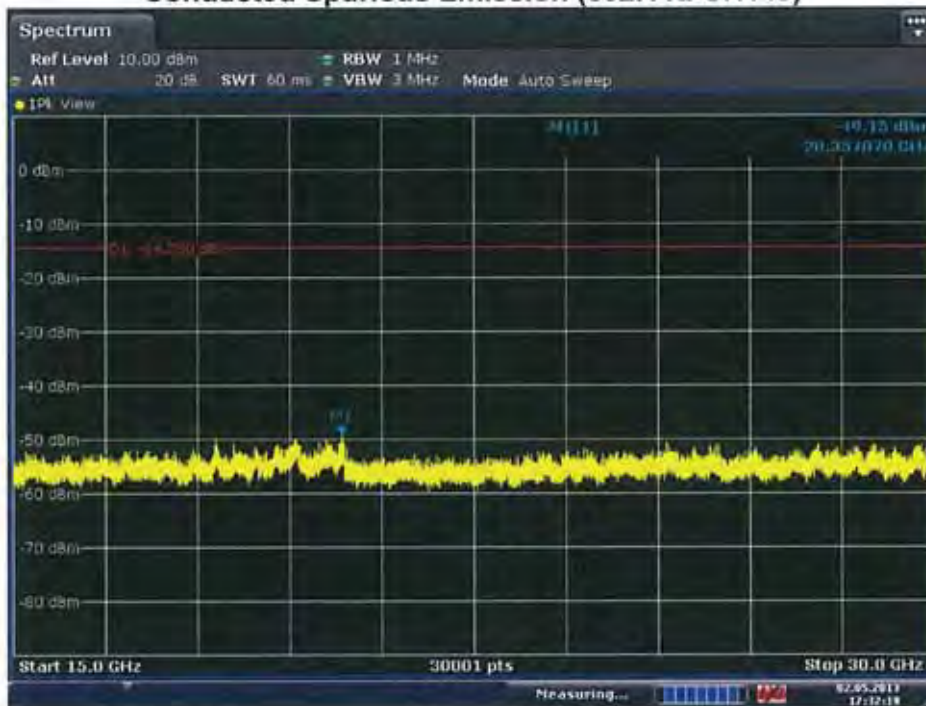
FCC PT.15.247 TEST REPORT	FCC CERTIFICATION REPORT		www.hct.co.kr
Test Report No. HCTR1304FR25-2	Date of Issue: May 06, 2013	EUT Type: Cellular/PCS GSM/GPRS and Cellular WCDMA/HSDPA/HSUPA Phone with Bluetooth, WLAN, NFC(Felica), A-GPS, Wireless Charger, Wi-Fi Direct	FCC ID: ZNFL05E

Conducted Spurious Emission (802.11n-CH11)



FCC PT.15.247 TEST REPORT	FCC CERTIFICATION REPORT		www.hct.co.kr
Test Report No. HCTR1304FR25-2	Date of Issue: May 06, 2013	EUT Type: Cellular/PCS GSM/GPRS and Cellular WCDMA/HSDPA/HSUPA Phone with Bluetooth, WLAN, NFC(Felica), A-GPS, Wireless Charger, Wi-Fi Direct	FCC ID: ZNFL05E

Conducted Spurious Emission (802.11a-CH149)



Date: 2.MAY.2013 17:32:19

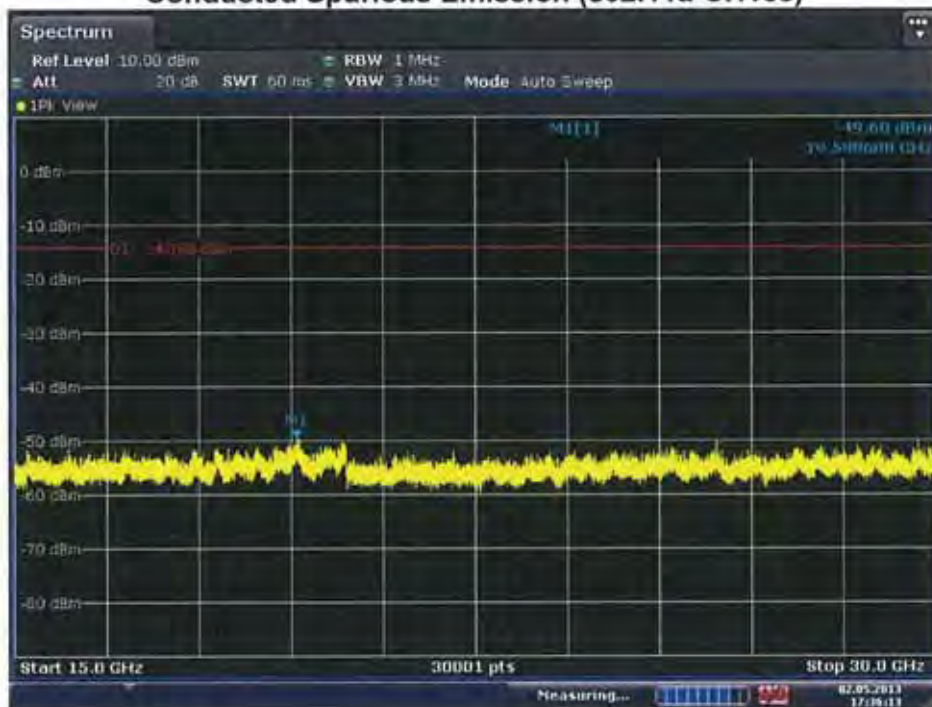
Conducted Spurious Emission (802.11a-CH157)



Date: 2.MAY.2013 17:34:07

FCC PT.15.247 TEST REPORT	FCC CERTIFICATION REPORT		www.hct.co.kr
Test Report No. HCTR1304FR25-2	Date of Issue: May 06, 2013	EUT Type: Cellular/PCS GSM/GPRS and Cellular WCDMA/HSDPA/HSUPA Phone with Bluetooth, WLAN, NFC(Felica), A-GPS, Wireless Charger, Wi-Fi Direct	FCC ID: ZNFL05E

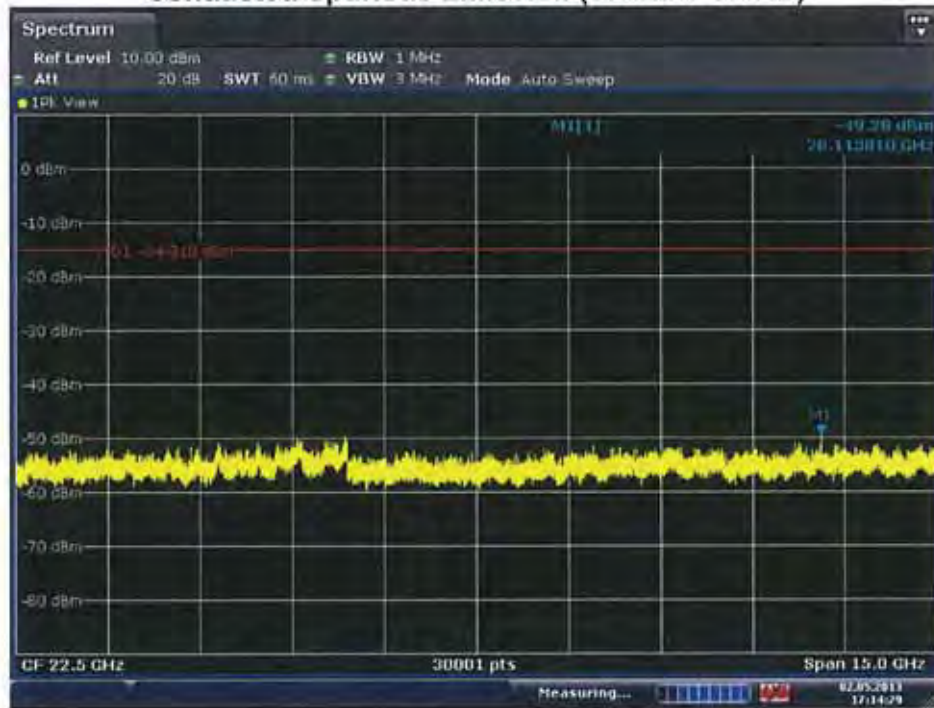
Conducted Spurious Emission (802.11a-CH165)



Date: 2.MAY.2013 17:36:13

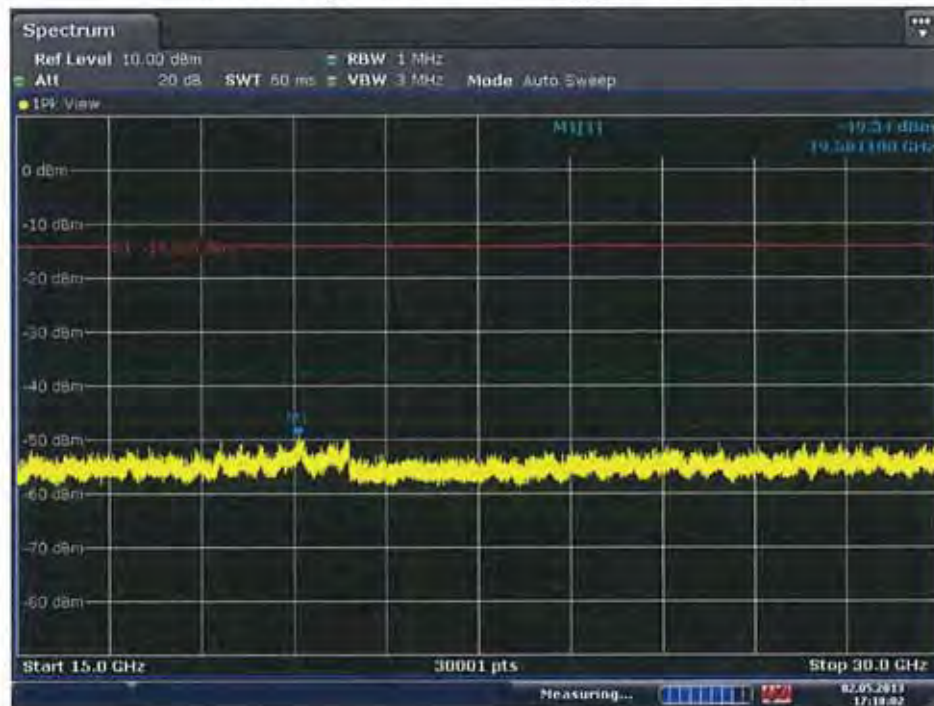
FCC PT.15.247 TEST REPORT		FCC CERTIFICATION REPORT		www.hct.co.kr
Test Report No. HCTR1304FR25-2	Date of Issue: May 06, 2013	EUT Type: Cellular/PCS GSM/GPRS and Cellular WCDMA/HSDPA/HSUPA Phone with Bluetooth, WLAN, NFC(Felica), A-GPS, Wireless Charger, Wi-Fi Direct		FCC ID: ZNFL05E

Conducted Spurious Emission (802.11n-CH149)



Date: 2.MAY.2013 17:14:30

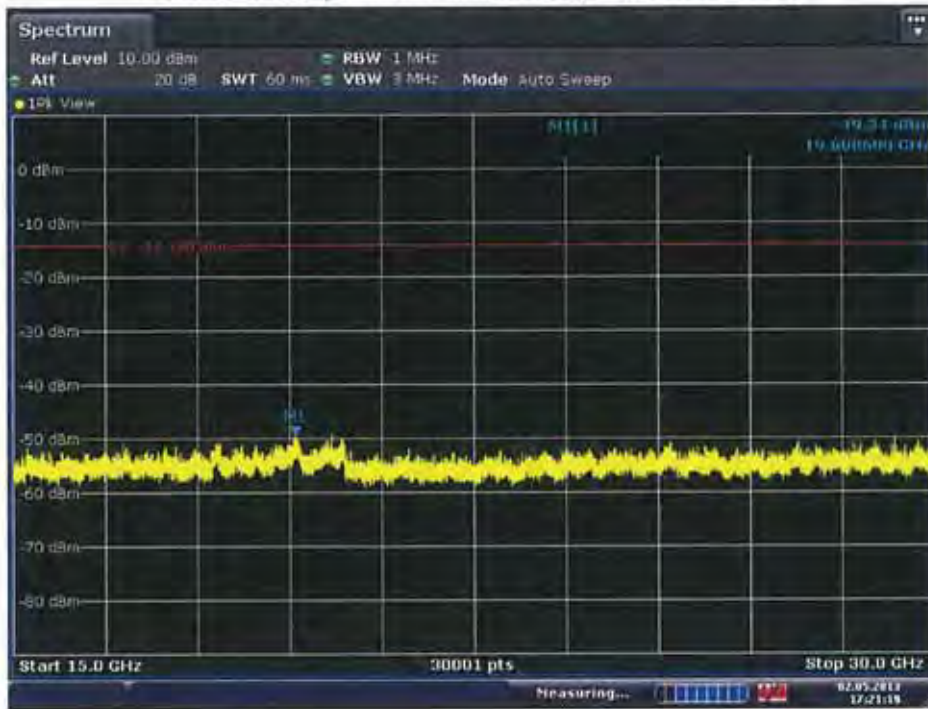
Conducted Spurious Emission (802.11n-CH157)



Date: 2.MAY.2013 17:18:03

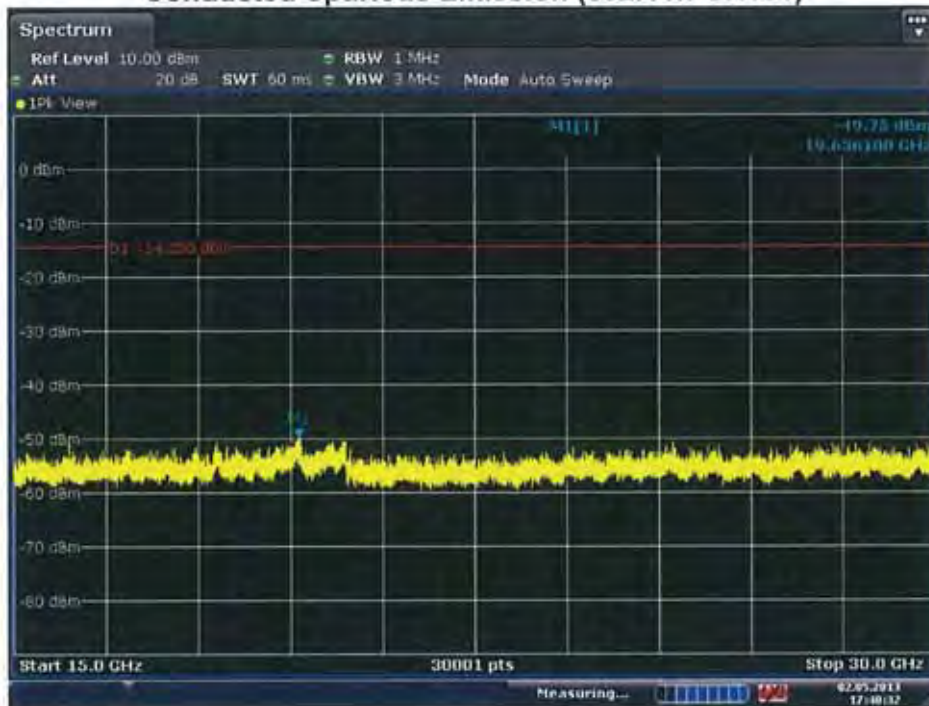
FCC PT.15.247 TEST REPORT	FCC CERTIFICATION REPORT		www.hct.co.kr
Test Report No. HCTR1304FR25-2	Date of Issue: May 06, 2013	EUT Type: Cellular/PCS GSM/GPRS and Cellular WCDMA/HSDPA/HSUPA Phone with Bluetooth, WLAN, NFC(Felica), A-GPS, Wireless Charger, Wi-Fi Direct	FCC ID: ZNFL05E
Page 2 0 7 of 241			

Conducted Spurious Emission (802.11n-CH165)



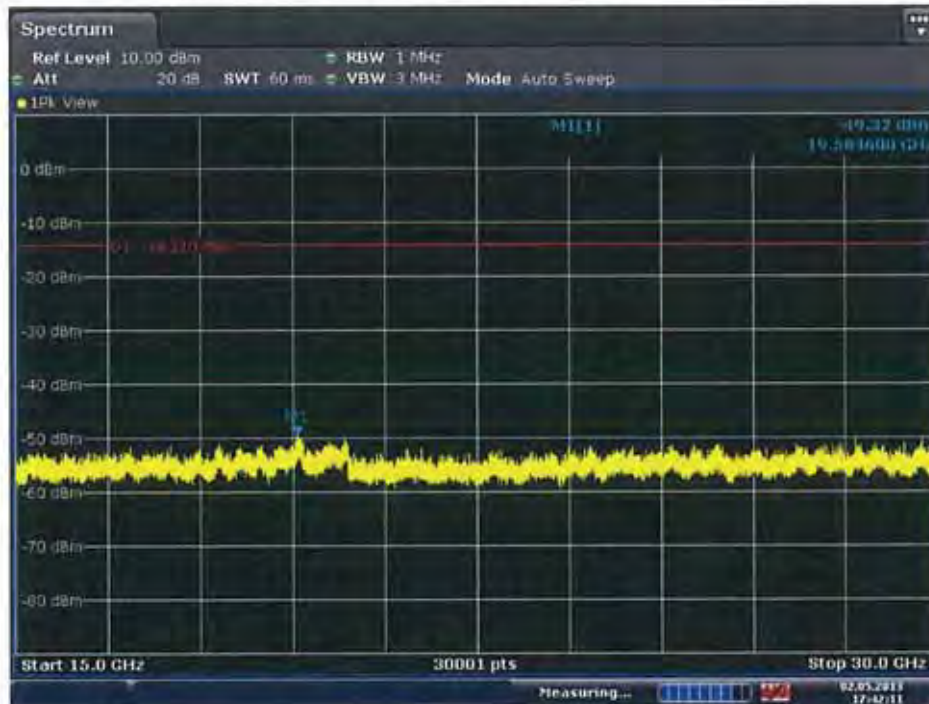
Date: 2.MAY,2013 17:21:20

Conducted Spurious Emission (802.11n-CH151)



Date: 2.MAY.2013 17:40:33

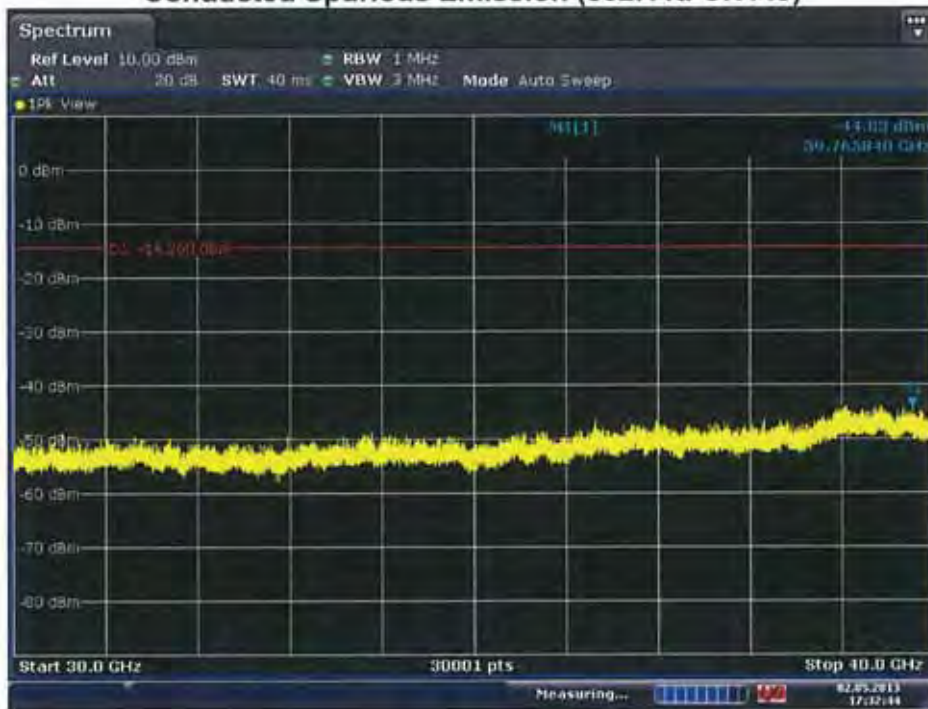
Conducted Spurious Emission (802.11n-CH159)



Date: 2.MAY.2013 17:42:12

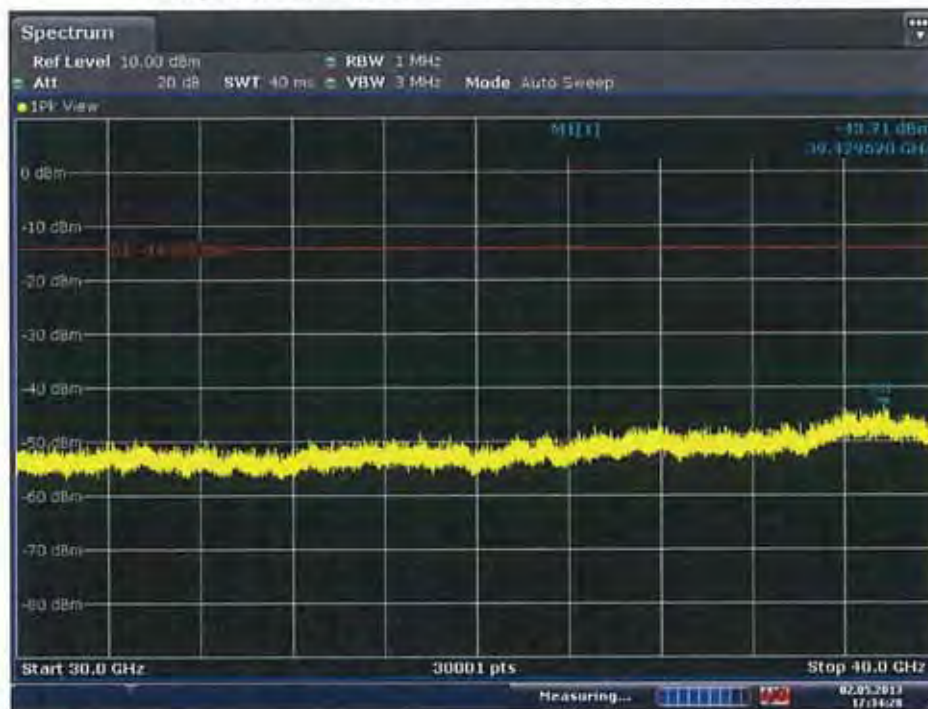
FCC PT.15.247 TEST REPORT	FCC CERTIFICATION REPORT		www.hct.co.kr
Test Report No. HCTR1304FR25-2	Date of Issue: May 06, 2013	EUT Type: Cellular/PCS GSM/GPRS and Cellular WCDMA/HSDPA/HSUPA Phone with Bluetooth, WLAN, NFC(Felica), A-GPS, Wireless Charger, Wi-Fi Direct	FCC ID: ZNFL05E

Conducted Spurious Emission (802.11a-CH149)



Date: 2, MAY, 2013 17:32:44

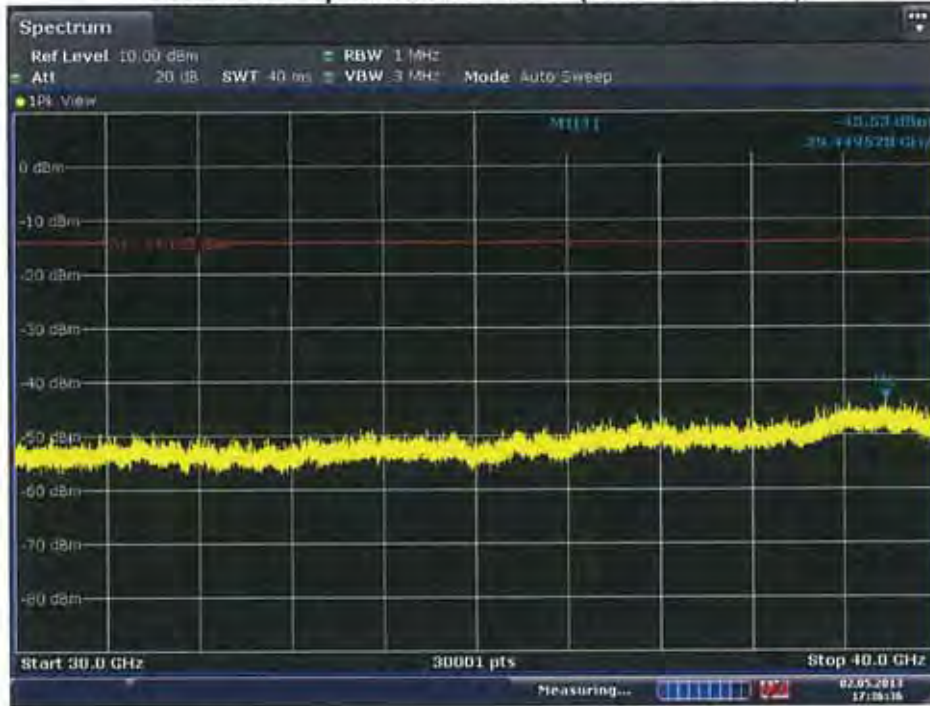
Conducted Spurious Emission (802.11a-CH157)



Date: 3, MAY, 2013 17:34:28

FCC PT.15.247 TEST REPORT	FCC CERTIFICATION REPORT		www.hct.co.kr
Test Report No. HCTR1304FR25-2	Date of Issue: May 06, 2013	EUT Type: Cellular/PCS GSM/GPRS and Cellular WCDMA/HSDPA/HSUPA Phone with Bluetooth, WLAN, NFC(Felica), A-GPS, Wireless Charger, Wi-Fi Direct	FCC ID: ZNFL05E

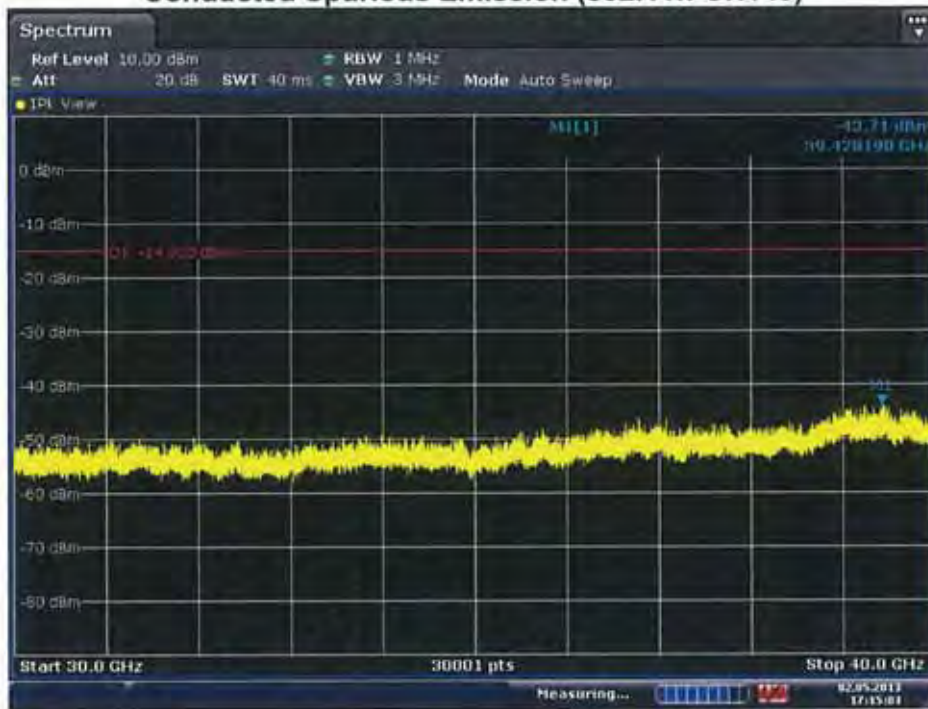
Conducted Spurious Emission (802.11a-CH165)



Date: 2-MAY-2013 17:36:36

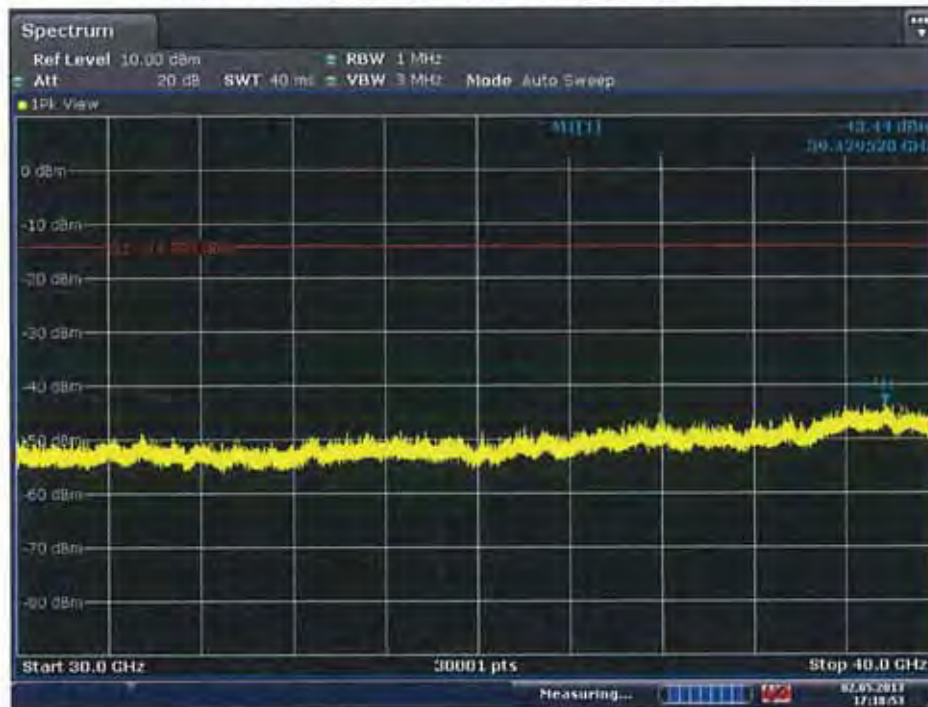
FCC PT.15.247 TEST REPORT		FCC CERTIFICATION REPORT		www.hct.co.kr
Test Report No. HCTR1304FR25-2	Date of Issue: May 06, 2013	EUT Type: Cellular/PCS GSM/GPRS and Cellular WCDMA/HSDPA/HSUPA Phone with Bluetooth, WLAN, NFC(Felica), A-GPS, Wireless Charger, Wi-Fi Direct		FCC ID: ZNFL05E

Conducted Spurious Emission (802.11n-CH149)



Date: 2 MAY 2013 17:15:03

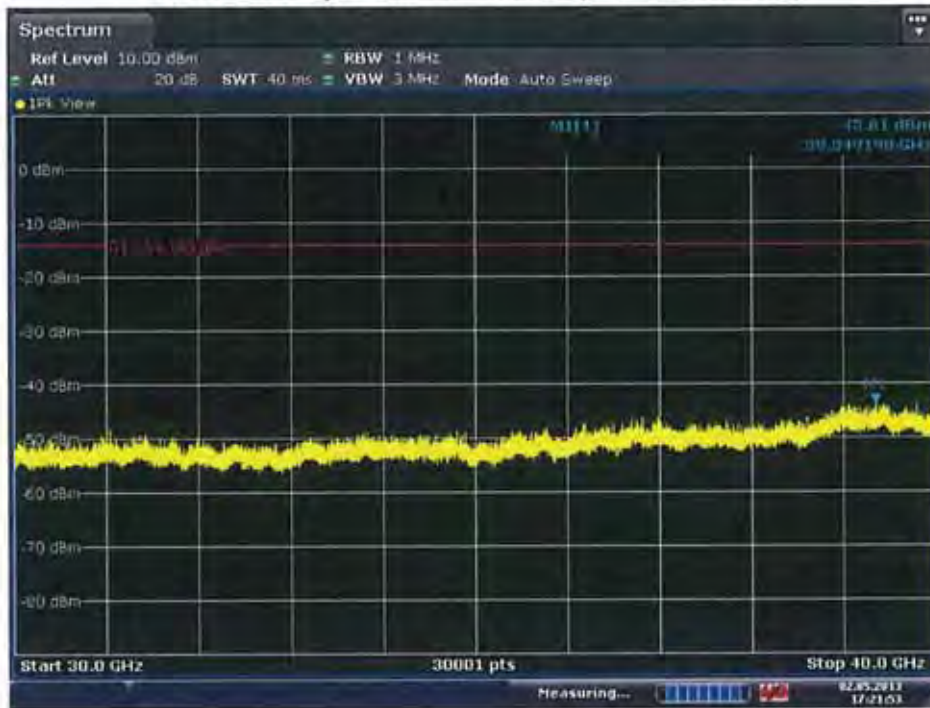
Conducted Spurious Emission (802.11n-CH157)



Date: 2 MAY 2013 17:18:54

FCC PT.15.247 TEST REPORT	FCC CERTIFICATION REPORT		www.hct.co.kr
Test Report No. HCTR1304FR25-2	Date of Issue: May 06, 2013	EUT Type: Cellular/PCS GSM/GPRS and Cellular WCDMA/HSDPA/HSUPA Phone with Bluetooth, WLAN, NFC(Felica), A-GPS, Wireless Charger, Wi-Fi Direct	FCC ID: ZNFL05E

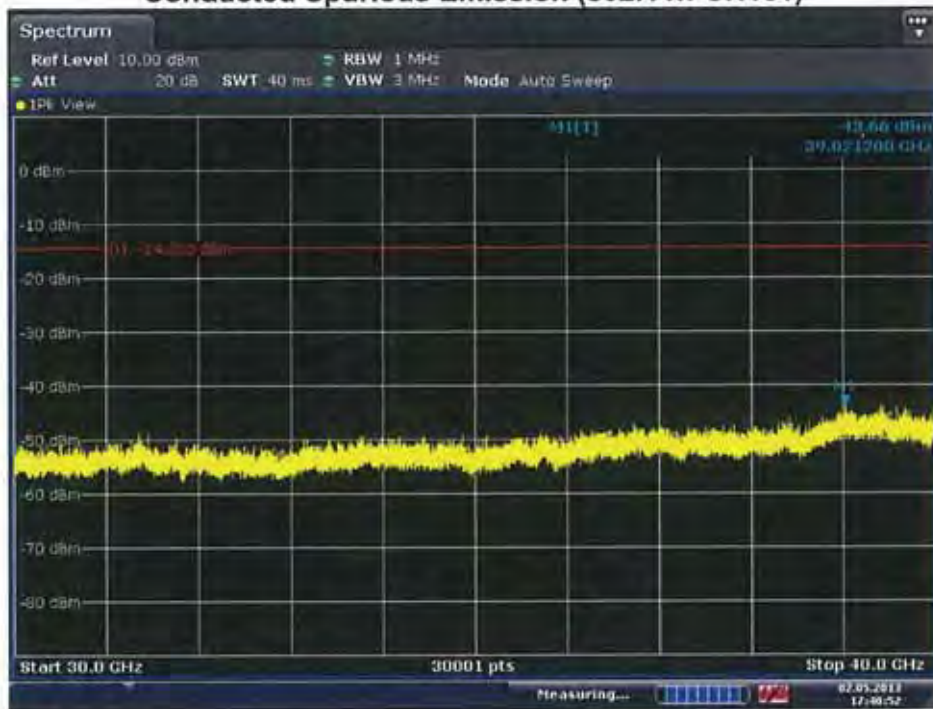
Conducted Spurious Emission (802.11n-CH165)



Date: 2 MAY 2013 17:21:53

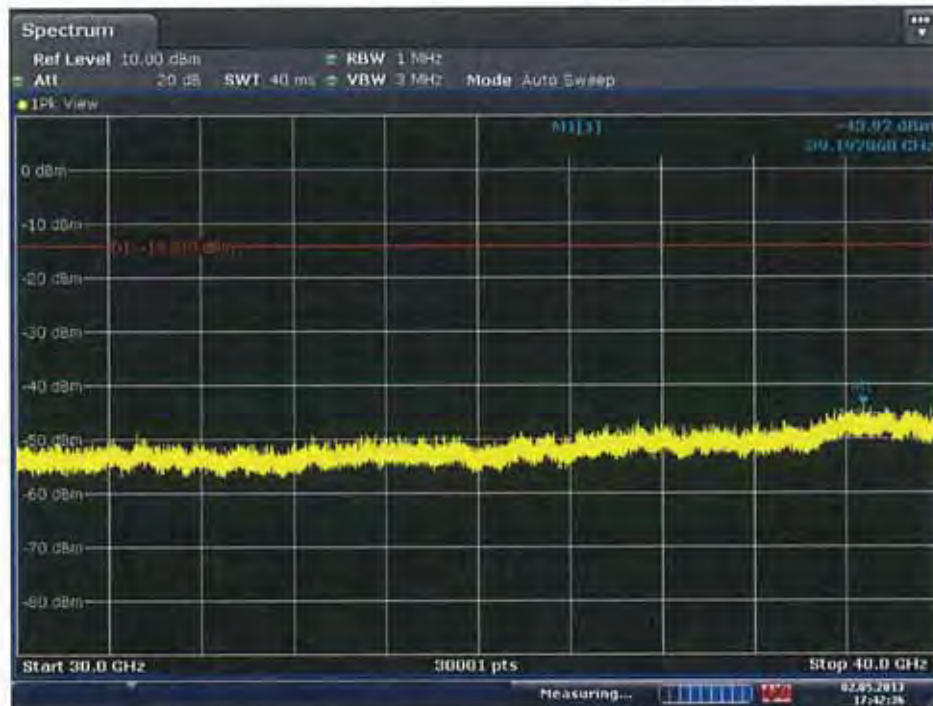
FCC PT.15.247 TEST REPORT		FCC CERTIFICATION REPORT		www.hct.co.kr
Test Report No. HCTR1304FR25-2	Date of Issue: May 06, 2013	EUT Type: Cellular/PCS GSM/GPRS and Cellular WCDMA/HSDPA/HSUPA Phone with Bluetooth, WLAN, NFC(Felica), A-GPS, Wireless Charger, Wi-Fi Direct		FCC ID: ZNFL05E

Conducted Spurious Emission (802.11n-CH151)



Date: 2.MAY.2013 17:40:53

Conducted Spurious Emission (802.11n-CH159)



Date: 2.MAY.2013 17:42:37

FCC PT.15.247 TEST REPORT	FCC CERTIFICATION REPORT		www.hct.co.kr
Test Report No. HCTR1304FR25-2	Date of Issue: May 06, 2013	EUT Type: Cellular/PCS GSM/GPRS and Cellular WCDMA/HSDPA/HSUPA Phone with Bluetooth, WLAN, NFC(Felica), A-GPS, Wireless Charger, Wi-Fi Direct	FCC ID: ZNFL05E

8.5 RADIATED MEASUREMENT.

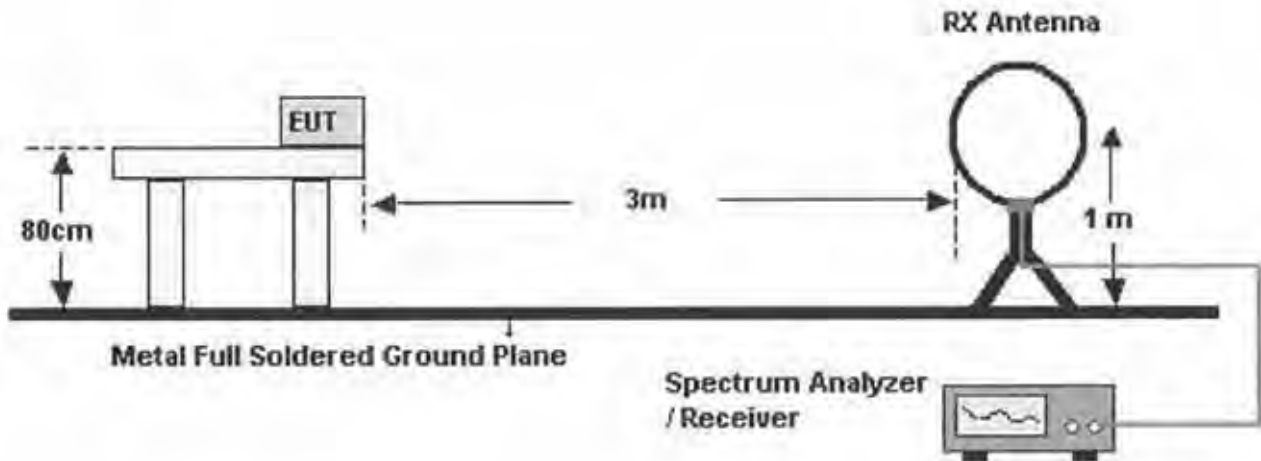
8.5.1 RADIATED SPURIOUS EMISSIONS.

Test Requirements and limit, §15.205, §15.209

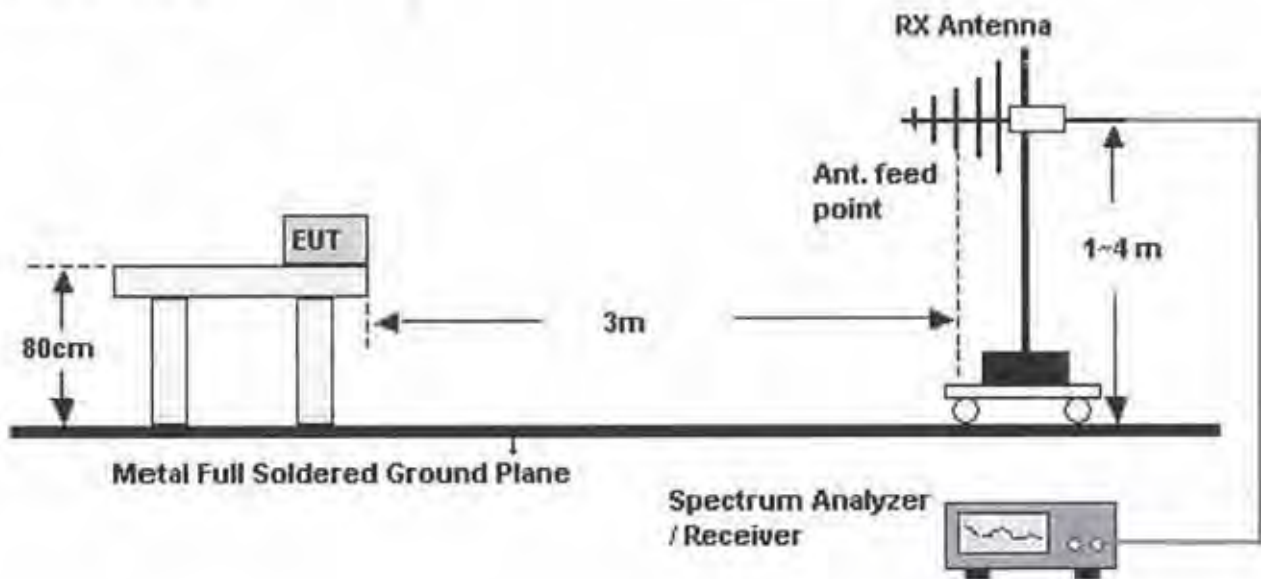
Frequency (MHz)	Field Strength (uV/m)	Measurement Distance (m)
0.009 – 0.490	2400/F(kHz)	300
0.490 – 1.705	24000/F(kHz)	30
1.705 – 30	30	30
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

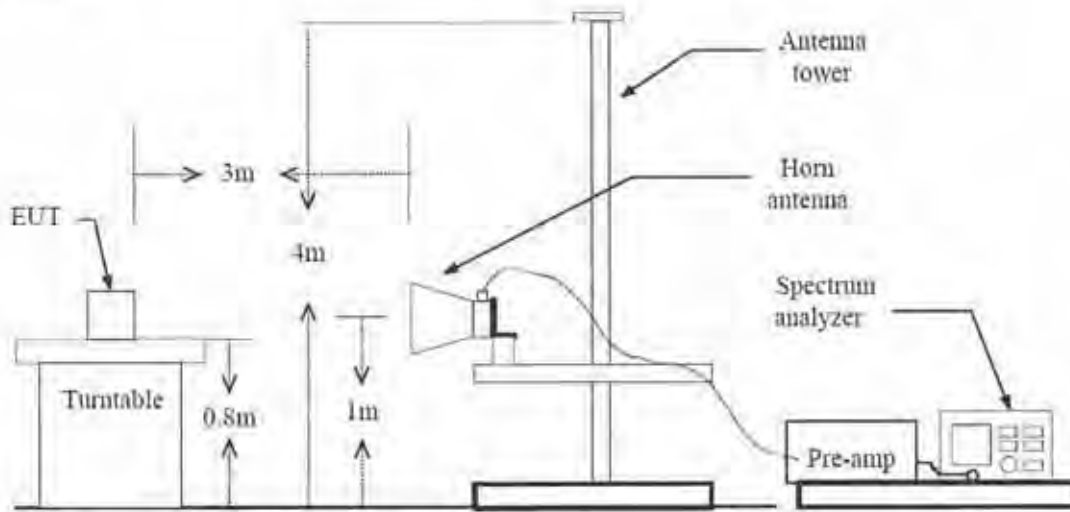
Test Configuration

Below 30 MHz



30 MHz - 1 GHz





TEST PROCEDURE USED

ANSI C63.4(2003)

Method 10.2.3.2 in KDB 558074, issued 10/04/2012 (Peak)

Method 10.2.3.3 in KDB 558074, issued 10/04/2012(Average)

Spectrum Setting

- Peak (Method 10.2.3.2 in KDB 558074, issued 10/04/2012)

RBW = 1 MHz

VBW $\geq 3 \times$ RBW

Detector = Peak

Trace = Max hold

Sweep = auto couple

- Average (Method 10.2.3.3 in KDB 558074, issued 10/04/2012)

RBW = 1 MH

VBW $\geq 3 \times$ RBW

Span = least 1MHz

Detector Mode = Power average (RMS) or sample detector when RMS not available

Trace average at least 100 traces in power averaging(RMS) mode

FCC PT.15.247 TEST REPORT		FCC CERTIFICATION REPORT		www.hct.co.kr
Test Report No. HCTR1304FR25-2	Date of Issue: May 06, 2013	EUT Type: Cellular/PCS GSM/GPRS and Cellular WCDMA/HSDPA/HSUPA Phone with Bluetooth, WLAN, NFC(Felica), A-GPS, Wireless Charger, Wi-Fi Direct		FCC ID: ZNFL05E

TEST RESULTS

9 kHz – 30MHz

Operation Mode: Normal Mode

Frequency	Reading	Ant. factor	Cable loss	Ant. POL	Total	Limit	Margin
MHz	dB μ V	dB /m	dB	(H/V)	dB μ V/m	dB μ V/m	dB
No Critical peaks found							

Notes:

1. Measuring frequencies from 9 kHz to the 30MHz.
2. The reading of emissions are attenuated more than 20 dB below the permissible limits or the field strength is too small to be measured.
3. Distance extrapolation factor = 40 log (specific distance / test distance) (dB)
4. Limit line = specific Limits (dBuV) + Distance extrapolation factor
5. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.

TEST RESULTS

Below 1 GHz

Operation Mode: Normal Mode

Frequency	Reading	Ant. factor	Cable loss	Ant. POL	Total	Limit	Margin
MHz	dB μ V	dB /m	dB	(H/V)	dB μ V/m	dB μ V/m	dB
No Critical peaks found							

Notes:

1. Measuring frequencies from 30 MHz to the 1 GHz.
2. Radiated emissions measured in frequency range from 30 MHz to 1000 MHz were made with an instrument using Quasi peak detector mode.
3. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.

Above 1 GHz

Operation Mode: 802.11 b
 Transfer Rate: 1 Mbps
 Operating Frequency: 2412
 Channel No.: 01 Ch

Frequency [MHz]	Reading dBuV	AN.+CL-AMP G [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
4824	53.19	-0.79	V	52.40	74	21.60	PK
4824	42.72	-0.79	V	41.93	54	12.07	AV
7236	50.70	9.08	V	59.78	74	14.22	PK
7236	39.63	9.08	V	48.71	54	5.29	AV
4824	53.66	-0.79	H	52.87	74	21.13	PK
4824	45.70	-0.79	H	44.91	54	9.09	AV
7236	51.15	9.08	H	60.23	74	13.77	PK
7236	39.12	9.08	H	48.2	54	5.80	AV

Operation Mode: 802.11 g
 Transfer Rate: 6 Mbps
 Operating Frequency: 2412
 Channel No.: 01 Ch

Frequency [MHz]	Reading dBuV	AN.+CL-AMP G [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
4824	51.48	-0.79	V	50.69	74	23.31	PK
4824	39.62	-0.79	V	38.83	54	15.17	AV
7236	49.70	9.08	V	58.78	74	15.22	PK
7236	38.16	9.08	V	47.24	54	6.76	AV
4824	51.03	-0.79	H	50.24	74	23.76	PK
4824	39.82	-0.79	H	39.03	54	14.97	AV
7236	49.80	9.08	H	58.88	74	15.12	PK
7236	38.20	9.08	H	47.28	54	6.72	AV

Operation Mode:	802.11 n
Transfer Rate:	6.5 Mbps
Operating Frequency	2412
Channel No.	01 Ch

Frequency [MHz]	Reading dBuV	AN.+CL-AMP.G [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
4824	51.60	-0.79	V	50.81	74	23.19	PK
4824	39.58	-0.79	V	38.79	54	15.21	AV
7236	49.95	9.08	V	59.03	74	14.97	PK
7236	38.15	9.08	V	47.23	54	6.77	AV
4824	51.31	-0.79	H	50.52	74	23.48	PK
4824	39.74	-0.79	H	38.95	54	15.05	AV
7236	50.23	9.08	H	59.31	74	14.69	PK
7236	38.19	9.08	H	47.27	54	6.73	AV

Notes:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.
3. Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
4. Total = Reading Value + Antenna Factor + Cable Loss - Amp Gain
5. We have done 802.11b/g/n mode and all data rate. Worst data rate is the lowest data of each mode.
6. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.

Operation Mode: 802.11 b
 Transfer Rate: 1 Mbps
 Operating Frequency: 2437
 Channel No.: 06 Ch

Frequency [MHz]	Reading dBuV	AN.+CL-AMP G [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
4874	53.38	-0.37	V	53.01	74	20.99	PK
4874	43.44	-0.37	V	43.07	54	10.93	AV
7311	49.59	8.64	V	58.23	74	15.77	PK
7311	38.44	8.64	V	47.08	54	6.92	AV
4874	53.29	-0.37	H	52.92	74	21.08	PK
4874	45.59	-0.37	H	45.22	54	8.78	AV
7311	49.23	8.64	H	57.87	74	16.13	PK
7311	37.90	8.64	H	46.54	54	7.46	AV

Operation Mode: 802.11 g
 Transfer Rate: 6 Mbps
 Operating Frequency: 2437
 Channel No.: 06 Ch

Frequency [MHz]	Reading dBuV	AN.+CL-AMP G [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
4874	50.49	-0.37	V	50.12	74	23.88	PK
4874	39.12	-0.37	V	38.75	54	15.25	AV
7311	48.26	8.64	V	56.90	74	17.10	PK
7311	37.63	8.64	V	46.27	54	7.73	AV
4874	50.74	-0.37	H	50.37	74	23.63	PK
4874	39.19	-0.37	H	38.82	54	15.18	AV
7311	48.28	8.64	H	56.92	74	17.08	PK
7311	37.46	8.64	H	46.10	54	7.90	AV

Operation Mode: 802.11 n
 Transfer Rate: 6.5 Mbps
 Operating Frequency: 2437
 Channel No.: 06 Ch

Frequency [MHz]	Reading dBuV	AN.+CL-AMP G [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
4874	50.58	-0.37	V	50.21	74	23.79	PK
4874	39.00	-0.37	V	38.63	54	15.37	AV
7311	48.39	8.64	V	57.03	74	16.97	PK
7311	37.60	8.64	V	46.24	54	7.76	AV
4874	50.56	-0.37	H	50.19	74	23.81	PK
4874	39.24	-0.37	H	38.87	54	15.13	AV
7311	48.90	8.64	H	57.54	74	16.46	PK
7311	37.49	8.64	H	46.13	54	7.87	AV

Notes:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.
3. Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
4. Total = Reading Value + Antenna Factor + Cable Loss - Amp Gain
5. We have done 802.11b/g/n mode and all data rate. Worst data rate is the lowest data of each mode.
6. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.

Operation Mode: 802.11 b
 Transfer Rate: 1 Mbps
 Operating Frequency: 2462
 Channel No.: 11 Ch

Frequency [MHz]	Reading dBuV	AN.+CL-AMP G [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
4924	52.03	-0.15	V	51.88	74	22.12	PK
4924	43.11	-0.15	V	42.96	54	11.04	AV
7386	49.89	9.06	V	58.95	74	15.05	PK
7386	38.64	9.06	V	47.7	54	6.3	AV
4924	53.34	-0.15	H	53.19	74	20.81	PK
4924	45.20	-0.15	H	45.05	54	8.95	AV
7386	50.38	9.06	H	59.44	74	14.56	PK
7386	38.35	9.06	H	47.41	54	6.59	AV

Operation Mode: 802.11 g
 Transfer Rate: 6 Mbps
 Operating Frequency: 2462
 Channel No.: 11 Ch

Frequency [MHz]	Reading dBuV	AN.+CL-AMP G [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
4924	50.47	-0.15	V	50.32	74	23.68	PK
4924	38.83	-0.15	V	38.68	54	15.32	AV
7386	48.67	9.06	V	57.73	74	16.27	PK
7386	38.22	9.06	V	47.28	54	6.72	AV
4924	50.76	-0.15	H	50.61	74	23.39	PK
4924	38.96	-0.15	H	38.81	54	15.19	AV
7386	49.63	9.06	H	58.69	74	15.31	PK
7386	38.12	9.06	H	47.18	54	6.82	AV

Operation Mode:	802.11 n
Transfer Rate:	6.5 Mbps
Operating Frequency	2462
Channel No.	11 Ch

Frequency [MHz]	Reading dBuV	AN.+CL-AMP G [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
4924	49.90	-0.15	V	49.75	74	24.25	PK
4924	38.85	-0.15	V	38.70	54	15.30	AV
7386	49.44	9.06	V	58.5	74	15.5	PK
7386	38.19	9.06	V	47.25	54	6.75	AV
4924	50.53	-0.15	H	50.38	74	23.62	PK
4924	39.00	-0.15	H	38.85	54	15.15	AV
7386	49.08	9.06	H	58.14	74	15.86	PK
7386	38.06	9.06	H	47.12	54	6.88	AV

Notes:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.
3. Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
4. Total = Reading Value + Antenna Factor + Cable Loss - Amp Gain
5. We have done 802.11b/g/n mode and all data rate. Worst data rate is the lowest data of each mode.
6. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.

Band :	5.8 GHz
Operation Mode:	802.11 a
Transfer Rate:	6 Mbps
Operating Frequency	5745 MHz
Channel No.	149 Ch

Frequency [MHz]	Reading dBuV	AN.+CL-Amp G. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
11490	46.13	11.22	V	57.35	74	16.65	PK
11490	34.42	11.22	V	45.64	54	8.36	AV
17235	46.47	18.82	V	65.29	74	8.71	PK
17235	31.25	18.82	V	50.07	54	3.93	AV
11490	45.02	11.22	H	56.24	74	17.76	PK
11490	33.70	11.22	H	44.92	54	9.08	AV
17235	45.88	18.82	H	64.70	74	9.30	PK
17235	31.25	18.82	H	50.07	54	3.93	AV

Notes:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.
3. Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
4. Total = Reading Value + Antenna Factor + Cable Loss - Amp Gain
5. We have done 802.11b/g/n mode and all data rate. Worst data rate is the lowest data of each mode
6. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.

Band :	5.8 GHz
Operation Mode:	802.11 a
Transfer Rate:	6 Mbps
Operating Frequency	5785 MHz
Channel No.	157 Ch

Frequency [MHz]	Reading dBuV	AN.+CL-Amp G. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
11570	45.79	11.71	V	57.50	74	16.50	PK
11570	34.60	11.71	V	46.31	54	7.69	AV
17355	44.92	18.94	V	63.86	74	10.15	PK
17355	32.03	18.94	V	50.97	54	3.03	AV
11570	43.80	11.71	H	55.51	74	18.49	PK
11570	32.74	11.71	H	44.45	54	9.55	AV
17355	45.24	18.94	H	64.18	74	9.83	PK
17355	31.48	18.94	H	50.42	54	3.59	AV

Notes:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.
3. Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
4. Total = Reading Value + Antenna Factor + Cable Loss - Amp Gain
5. We have done 802.11b/g/n mode and all data rate. Worst data rate is the lowest data of each mode
6. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.

Band :	5.8 GHz
Operation Mode:	802.11 a
Transfer Rate:	6 Mbps
Operating Frequency	5825 MHz
Channel No.	165 Ch

Frequency [MHz]	Reading dBuV	AN,+CL-Amp G. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
11650	44.79	11.34	V	56.13	74	17.87	PK
11650	45.97	11.34	V	57.31	54	-3.31	AV
17475	33.75	19.52	V	53.27	74	20.73	PK
17475	31.20	19.52	V	50.72	54	3.28	AV
11650	43.73	11.34	H	55.07	74	18.93	PK
11650	31.80	11.34	H	43.14	54	10.86	AV
17475	45.61	19.52	H	65.13	74	8.87	PK
17475	31.15	19.52	H	50.67	54	3.33	AV

Notes:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.
3. Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
4. Total = Reading Value + Antenna Factor + Cable Loss - Amp Gain
5. We have done 802.11b/g/n mode and all data rate. Worst data rate is the lowest data of each mode
6. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.

Band :	5.8 GHz
Operation Mode:	802.11 n_20 MHz BW
Transfer Rate:	6.5 Mbps
Operating Frequency	5745 MHz
Channel No.	149 Ch

Frequency [MHz]	Reading dBuV	AN.+CL-Amp G. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
11490	46.36	11.22	V	57.58	74	16.42	PK
11490	34.07	11.22	V	45.29	54	8.71	AV
17235	45.99	18.82	V	64.81	74	9.19	PK
17235	31.36	18.82	V	50.18	54	3.82	AV
11490	47.25	11.22	H	58.47	74	15.53	PK
11490	33.43	11.22	H	44.65	54	9.35	AV
17235	46.45	18.82	H	65.27	74	8.73	PK
17235	31.19	18.82	H	50.01	54	3.99	AV

Notes:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.
3. Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
4. Total = Reading Value + Antenna Factor + Cable Loss - Amp Gain
5. We have done 802.11b/g/n mode and all data rate. Worst data rate is the lowest data of each mode
6. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna

Band :	5.8 GHz
Operation Mode:	802.11 n_20 MHz BW
Transfer Rate:	6.5 Mbps
Operating Frequency	5785 MHz
Channel No.	157 Ch

Frequency [MHz]	Reading dBuV	AN.+CL-Amp G. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
11570	44.99	11.71	V	56.70	74	17.30	PK
11570	33.43	11.71	V	45.14	54	8.86	AV
17355	45.73	18.94	V	64.67	74	9.34	PK
17355	31.43	18.94	V	50.37	54	3.64	AV
11570	46.10	11.71	H	57.81	74	16.19	PK
11570	32.59	11.71	H	44.30	54	9.70	AV
17355	45.38	18.94	H	64.32	74	9.69	PK
17355	31.50	18.94	H	50.44	54	3.57	AV

Notes:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.
3. Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
4. Total = Reading Value + Antenna Factor + Cable Loss - Amp Gain
5. We have done 802.11b/g/n mode and all data rate. Worst data rate is the lowest data of each mode
6. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna

Band :	5.8 GHz
Operation Mode:	802.11 n_20 MHz BW
Transfer Rate:	6.5 Mbps
Operating Frequency	5825 MHz
Channel No.	165 Ch

Frequency [MHz]	Reading dBuV	AN.+CL-Amp G. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
11650	46.30	11.34	V	57.64	74	16.36	PK
11650	33.44	11.34	V	44.78	54	9.22	AV
17475	45.61	19.52	V	65.13	74	8.87	PK
17475	31.35	19.52	V	50.87	54	3.13	AV
11650	45.18	11.34	H	56.52	74	17.48	PK
11650	31.81	11.34	H	43.15	54	10.85	AV
17475	45.56	19.52	H	65.08	74	8.92	PK
17475	31.13	19.52	H	50.65	54	3.35	AV

Notes:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.
3. Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
4. Total = Reading Value + Antenna Factor + Cable Loss - Amp Gain
5. We have done 802.11b/g/n mode and all data rate. Worst data rate is the lowest data of each mode
6. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna

Band :	5.8 GHz
Operation Mode:	802.11 n_40 MHz BW
Transfer Rate:	13.5 Mbps
Operating Frequency	5755 MHz
Channel No.	151 Ch

Frequency [MHz]	Reading dBuV	AN.+CL-Amp G. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
11510	43.14	11.53	V	54.67	74	19.33	PK
11510	31.01	11.53	V	42.54	54	11.46	AV
17265	44.72	18.46	V	63.18	74	10.82	PK
17265	31.90	18.46	V	50.36	54	3.64	AV
11510	41.22	11.53	H	52.75	74	21.25	PK
11510	29.46	11.53	H	40.99	54	13.01	AV
17265	45.18	18.46	H	63.64	74	10.36	PK
17265	31.90	18.46	H	50.36	54	3.64	AV

Notes:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.
3. Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
4. Total = Reading Value + Antenna Factor + Cable Loss - Amp Gain
5. We have done 802.11b/g/n mode and all data rate. Worst data rate is the lowest data of each mode
6. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna

Band :	5.8 GHz
Operation Mode:	802.11 n_40 MHz BW
Transfer Rate:	13.5 Mbps
Operating Frequency	5795 MHz
Channel No.	159 Ch

Frequency [MHz]	Reading dBuV	AN.+CL-Amp G. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
11590	42.06	11.64	V	53.70	74	20.30	PK
11590	30.64	11.64	V	42.28	54	11.72	AV
17385	45.21	18.91	V	64.12	74	9.88	PK
17385	31.40	18.91	V	50.31	54	3.70	AV
11590	41.32	11.64	H	52.96	74	21.04	PK
11590	29.55	11.64	H	41.19	54	12.81	AV
17385	44.86	18.91	H	63.77	74	10.24	PK
17385	31.47	18.91	H	50.38	54	3.63	AV

Notes:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.
3. Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
4. Total = Reading Value + Antenna Factor + Cable Loss - Amp Gain
5. We have done 802.11b/g/n mode and all data rate. Worst data rate is the lowest data of each mode
6. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna

8.5.2 RADIATED RESTRICTED BAND EDGES

Test Requirements and limit, §15.247(d) §15.205, §15.209

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum 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. Attenuation below the general limits specified in Section 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in section 15.209(a) (See section 15.205(c)).

Operation Mode:	802.11g
Transfer Rate:	6 Mbps
Operating Frequency	2412 MHz, 2462 MHz
Channel No.	01 Ch, 11 Ch

Frequency [MHz]	Reading dBuV	AN+CL [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
2390.0	31.69	33.90	H	65.59	74	8.41	PK
2390.0	15.66	33.90	H	49.56	54	4.44	AV
2390.0	31.11	33.90	V	65.01	74	8.99	PK
2390.0	14.48	33.90	V	48.38	54	5.62	AV
2483.5	34.12	33.99	H	68.11	74	5.89	PK
2483.5	16.35	33.99	H	50.34	54	3.66	AV
2483.5	26.74	33.99	V	60.73	74	13.27	PK
2483.5	14.60	33.99	V	48.59	54	5.41	AV

Operation Mode: 802.11b
 Transfer Rate: 1 Mbps
 Operating Frequency 2412 MHz, 2462 MHz
 Channel No. 01 Ch, 11 Ch

Frequency [MHz]	Reading dBuV	AN.+CL [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
2390.0	25.70	33.90	H	59.60	74	14.40	PK
2390.0	15.05	33.90	H	48.95	54	5.05	AV
2390.0	25.57	33.90	V	59.47	74	14.53	PK
2390.0	13.96	33.90	V	47.86	54	6.14	AV
2483.5	25.43	33.99	H	59.42	74	14.58	PK
2483.5	14.65	33.99	H	48.64	54	5.36	AV
2483.5	25.30	33.99	V	59.29	74	14.71	PK
2483.5	14.08	33.99	V	48.07	54	5.93	AV

Operation Mode: 802.11n
 Transfer Rate: 6.5 Mbps
 Operating Frequency 2412 MHz, 2462 MHz
 Channel No. 01 Ch, 11 Ch

Frequency [MHz]	Reading dBuV	AN.+CL [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
2390.0	36.10	33.90	H	70.00	74	4.00	PK
2390.0	15.83	33.90	H	49.73	54	4.27	AV
2390.0	29.48	33.90	V	63.38	74	10.62	PK
2390.0	14.85	33.90	V	48.75	54	5.25	AV
2483.5	37.40	33.99	H	71.39	74	2.61	PK
2483.5	16.20	33.99	H	50.19	54	3.81	AV
2483.5	30.24	33.99	V	64.23	74	9.77	PK
2483.5	14.76	33.99	V	48.75	54	5.25	AV

Notes:

1. Total = Reading Value + Antenna Factor + Cable Loss
2. We have done 802.11b/g/n mode and all data rate. Worst data rate is the lowest data of each mode.
3. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.

8.6 POWERLINE CONDUCTED EMISSIONS

Test Requirements and limit, §15.207

For an intentional radiator which is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed 250 microvolts (The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.50 MHz). The limits at specific frequency range is listed as follows:

Frequency Range (MHz)	Limits (dB μ V)	
	Quasi-peak	Average
0.15 to 0.50	66 to 56	56 to 46
0.50 to 5	56	46
5 to 30	60	50

Compliance with this provision shall be based on the measurement of the radio frequency voltage between each power line (LINE and NEUTRAL) and ground at the power terminals.

Test Configuration

See test photographs attached in Appendix 1 for the actual connections between EUT and support equipment.

TEST PROCEDURE

1. The EUT is placed on a wooden table 80 cm above the reference ground plane.
2. The EUT is connected via LISN to a test power supply.
3. The measurement results are obtained as described below:
4. Detectors – Quasi Peak and Average Detector.
5. We are performed the AC Power Line Conducted Emission test for 6.5 Mbps, Ch.6 and 802.11n. Because 802.11n mode is worst case.

RESULT PLOTS

Conducted Emissions (Line 1)

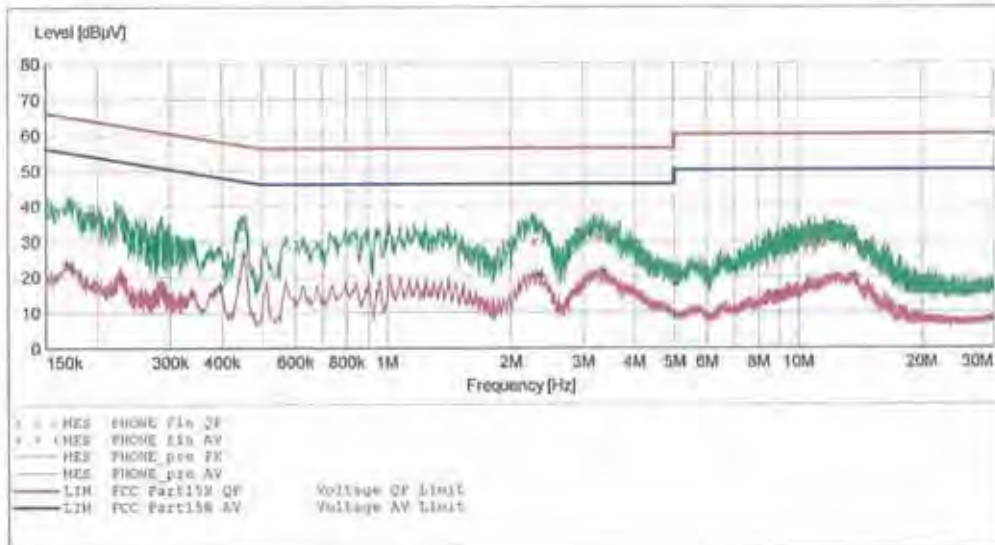
HCT

EMC

EUT: L-05E
 Manufacturer: LG
 Operating Condition: WLAN MODE
 Test Site: SHIELD ROOM
 Operator: JS LEE
 Test Specification: FCC PART 15 B
 Comment: H

SCAN TABLE: "FCC PART 15 B(H)"

Short Description:			FCC PART 15	CLASS B			
Start	Stop	Step	Detector	Meas. Time	IF Bandw.	Transducer	
Frequency	Frequency	Width					
150.0 kHz	500.0 kHz	1.0 kHz	MaxPeak	10.0 ms	9 kHz	None	
			Average				
500.0 kHz	5.0 MHz	4.0 kHz	MaxPeak	10.0 ms	9 kHz	None	
			Average				
5.0 MHz	30.0 MHz	4.0 kHz	MaxPeak	10.0 ms	9 kHz	None	
			Average				



MEASUREMENT RESULT: "PHONE_fin QP"

4/12/2013 10:01PM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Line	PE
0.221010	33.70	9.7	63	29.1	---	---
0.226010	36.60	9.7	63	26.0	---	---
0.455010	34.70	9.8	57	22.1	---	---
2.288000	29.80	10.0	56	26.2	---	---
3.232000	31.70	10.1	56	24.3	---	---
3.348000	31.70	10.1	56	24.3	---	---
10.652000	29.50	10.5	60	30.5	---	---
10.996000	29.30	10.6	60	31.7	---	---
11.572000	29.60	10.6	60	30.4	---	---

MEASUREMENT RESULT: "PHONE_fin AV"

4/12/2013 10:01PM

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Line	PE
0.169010	23.50	9.7	55	31.3	---	---
0.395010	17.10	9.8	48	30.8	---	---
0.451010	26.20	9.8	47	20.7	---	---
2.316000	20.70	10.0	46	25.3	---	---
2.380000	20.10	10.0	46	25.9	---	---
3.348000	21.70	10.1	46	24.3	---	---
5.000000	9.20	10.2	46	36.8	---	---
8.848000	14.80	10.4	50	35.2	---	---
13.720000	20.10	10.8	50	29.9	---	---

FCC PT.15.247 TEST REPORT		FCC CERTIFICATION REPORT		www.hct.co.kr
Test Report No. HCTR1304FR25-2	Date of Issue: May 06, 2013	EUT Type: Cellular/PCS GSM/GPRS and Cellular WCDMA/HSDPA/HSUPA Phone with Bluetooth, WLAN, NFC(Felica), A-GPS, Wireless Charger, Wi-Fi Direct		FCC ID: ZNFL05E

Conducted Emissions (Line 2)

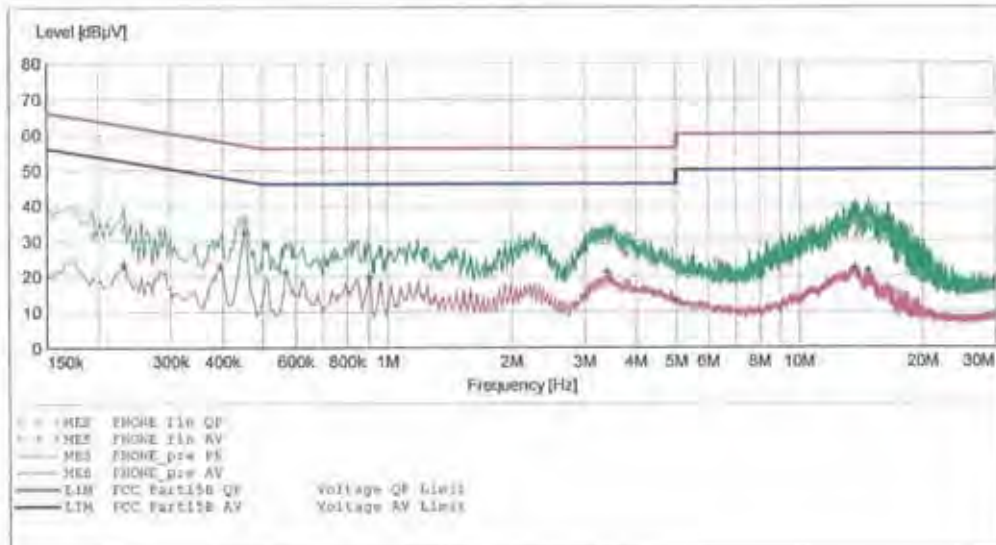
HCT

EMC

EUT: L-05E
 Manufacturer: LG
 Operating Condition: WLAN MODE
 Test Site: SHIELD ROOM
 Operator: JS LEE
 Test Specification: FCC PART 15 CLASS B
 Comment: N

SCAN TABLE: "FCC PART 15 B(N)"

Start Frequency	Stop Frequency	Step Width	Detector	Meas. Time	IF Bandw.	Transducer
150.0 kHz	500.0 kHz	4.0 kHz	MaxPeak	10.0 ms	9 kHz	None
			Average			
500.0 kHz	5.0 MHz	4.0 kHz	MaxPeak	10.0 ms	9 kHz	None
			Average			
5.0 MHz	30.0 MHz	4.0 kHz	MaxPeak	10.0 ms	9 kHz	None
			Average			



MEASUREMENT RESULT: "PHONE_fin_QP"

4/12/2013 10:06PM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Line	PE
0.194010	32.00	9.9	64	31.9	---	---
0.230010	34.30	10.0	62	28.1	---	---
0.450010	35.60	10.0	57	21.2	---	---
3.416000	30.40	10.3	56	25.6	---	---
3.752000	26.90	10.3	56	29.1	---	---
3.816000	26.70	10.3	56	29.3	---	---
13.660000	35.40	11.1	60	24.6	---	---
13.808000	32.00	11.1	60	28.0	---	---
14.792000	35.50	11.2	60	24.5	---	---

MEASUREMENT RESULT: "PHONE_fin AV"

4/12/2013 10:06PM

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Line	PE
0.230010	23.00	10.0	52	29.5	---	---
0.394010	22.60	10.0	48	25.3	---	---
0.450010	32.30	10.0	47	14.6	---	---
0.568000	21.20	10.0	46	24.8	---	---
0.904000	19.60	10.0	46	26.4	---	---
3.408000	21.10	10.3	46	24.9	---	---
5.000000	13.10	10.4	46	32.9	---	---
13.644000	22.20	11.1	50	27.8	---	---
14.736000	21.60	11.2	50	28.4	---	---

FCC PT.15.247 TEST REPORT		FCC CERTIFICATION REPORT		www.hct.co.kr
Test Report No. HCTR1304FR25-2	Date of Issue: May 06, 2013	EUT Type: Cellular/PCS GSM/GPRS and Cellular WCDMA/HSDPA/HSUPA Phone with Bluetooth, WLAN, NFC(Felica), A-GPS, Wireless Charger, Wi-Fi Direct		FCC ID: ZNFL05E

9. LIST OF TEST EQUIPMENT

Manufacturer	Model / Equipment	Calibration Interval	Calibration Due	Serial No.
Rohde & Schwarz	ENV216/ LISN	Annual	02/06/2014	100073
Schwarzbeck	VULB 9160/ TRILOG Antenna	Biennial	05/03/2015	3125
Rohde & Schwarz	ESI 40 / EMI TEST RECEIVER	Annual	05/03/2013	831564103
Agilent	E4440A/ Spectrum Analyzer	Annual	05/02/2013	US45303008
Agilent	N9020A/ SIGNAL ANALYZER	Annual	07/31/2013	MY51110020
HD	MA240/ Antenna Position Tower	N/A	N/A	556
EMCO	1050/ Turn Table	N/A	N/A	114
HD GmbH	HD 100/ Controller	N/A	N/A	13
HD GmbH	KMS 560/ SlideBar	N/A	N/A	12
Rohde & Schwarz	SCU-18/ Signal Conditioning Unit	Annual	09/11/2013	10094
MITEQ	AMF-6B-180265-35-10P / POWER AMP	Annual	04/16/2014	667624
CERNEX	CBL26405040 / POWER AMP	Annual	04/16/2014	19660
Schwarzbeck	BBHA 9120D/ Horn Antenna	Biennial	10/17/2013	937
Schwarzbeck	BBHA9170 / Horn Antenna(15 GHz - 40 GHz)	Biennial	10/30/2014	BBHA9170124
Rohde & Schwarz	FSP / Spectrum Analyzer	Annual	02/08/2014	839117/011
Agilent	E4416A /Power Meter	Annual	11/07/2013	GB41291412
Agilent	E9327A /POWER SENSOR	Annual	05/02/2014	MY4442009
Wainwright Instrument	WHF3.3/18G-10EF / High Pass Filter	Annual	05/02/2013	1
Wainwright Instrument	WHNX6.0/26.5G-6SS / High Pass Filter	Annual	05/02/2014	1
Wainwright Instrument	WHNX7.0/18G-BSS / High Pass Filter	Annual	05/02/2014	29
Wainwright Instrument	WRCJ2400/2483.5-2370/2520-60/1455 / Band Reject Filter	Annual	05/02/2013	1
Hewlett Packard	11636B/Power Divider	Annual	11/07/2013	11377
Hewlett Packard	11667B / Power Splitter	Annual	06/05/2013	05001
DIGITAL	EP-3010 /DC POWER SUPPLY	Annual	11/07/2013	3110117
ITECH	IT6720 / DC POWER SUPPLY	Annual	11/07/2013	010002156287001199
TESCOM	TC-3000C / BLUETOOTH TESTER	Annual	11/07/2013	3000C000276
Rohde & Schwarz	CBT / BLUETOOTH TESTER	Annual	05/02/2013	100422
EMCO	6502.LOOP ANTENNA	Biennial	01/11/2014	9009-2536
MITEQ	AMF-6D-001180-35-20P/ POWER AMP	Annual	07/30/2013	990893
Agilent	8493C / Attenuator(10 dB)	Annual	07/30/2013	76649
WEINSCHL	2-3 / Attenuator(3 dB)	Annual	11/07/2013	BR0617
CERNEX	CBLU1183540 / POWER AMP	Annual	07/27/2013	21691