

### Conducted Output Power (802.11n-CH 60) 6.5 Mbps



### Conducted Output Power (802.11n-CH 60) 13 Mbps



### Conducted Output Power (802.11n-CH 60) 19.5 Mbps



### Conducted Output Power (802.11n-CH 60) 26 Mbps



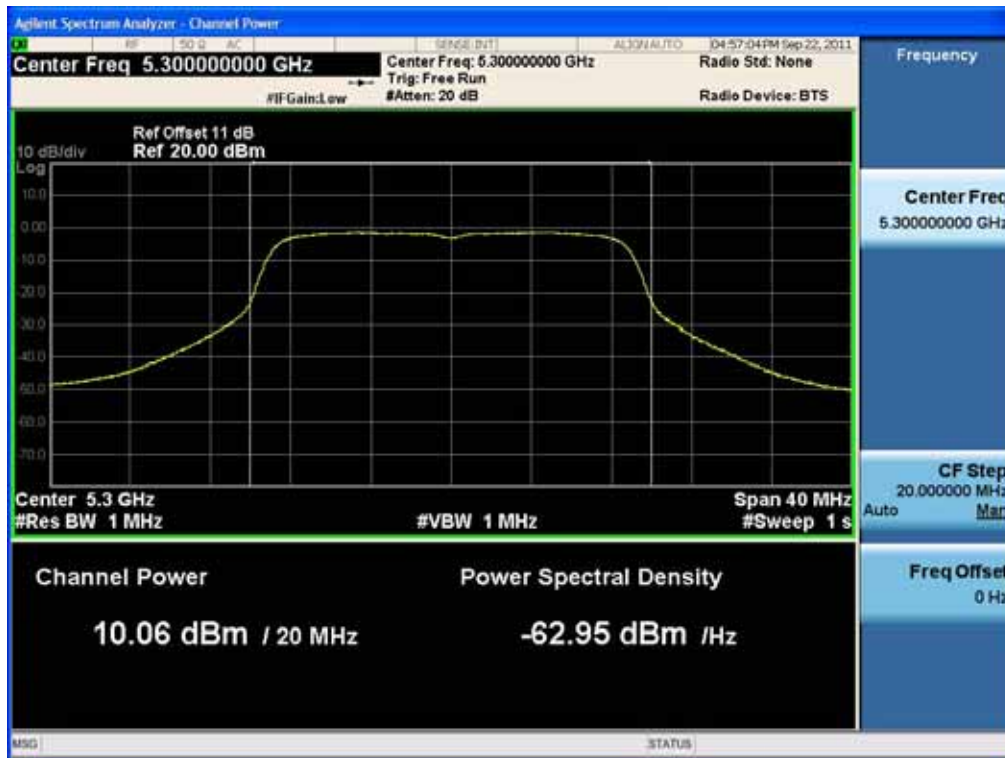
### Conducted Output Power (802.11n-CH 60) 39 Mbps



### Conducted Output Power (802.11n-CH 60) 52 Mbps



### Conducted Output Power (802.11n-CH 60) 58.5 Mbps



### Conducted Output Power (802.11n-CH 60) 65 Mbps



FCC PT.15.247 TEST REPORT	FCC CERTIFICATION REPORT		<a href="http://www.hct.co.kr">www.hct.co.kr</a>
Test Report No. HCTR1110FR08	Date of Issue: October 26, 2011	EUT Type: GSM/WCDMA/LTE Phone with Bluetooth / WLAN	FCC ID: JYCP4100



### Conducted Output Power (802.11n-CH 64) 6.5 Mbps



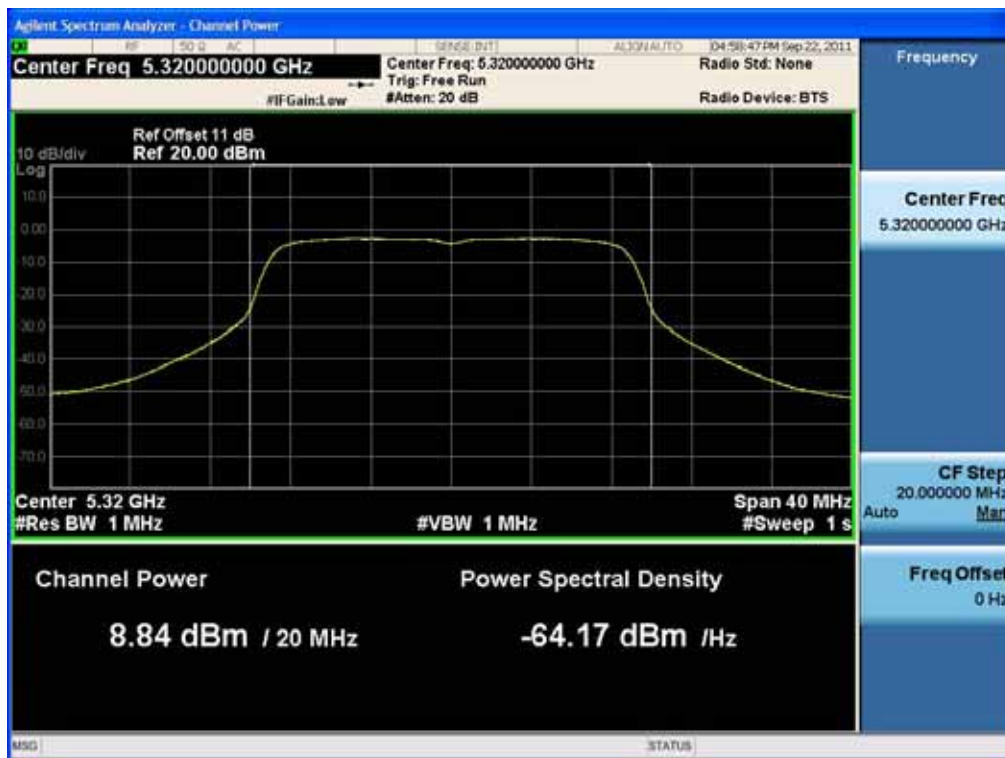
### Conducted Output Power (802.11n-CH 64) 13 Mbps



### Conducted Output Power (802.11n-CH 64) 19.5 Mbps



### Conducted Output Power (802.11n-CH 64) 26 Mbps



FCC PT.15.247 TEST REPORT	FCC CERTIFICATION REPORT		<a href="http://www.hct.co.kr">www.hct.co.kr</a>
Test Report No. HCTR1110FR08	Date of Issue: October 26, 2011	EUT Type: GSM/WCDMA/LTE Phone with Bluetooth / WLAN	FCC ID: JYCP4100

### Conducted Output Power (802.11n-CH 64) 39 Mbps



### Conducted Output Power (802.11n-CH 64) 52 Mbps



FCC PT.15.247 TEST REPORT	FCC CERTIFICATION REPORT		<a href="http://www.hct.co.kr">www.hct.co.kr</a>
Test Report No. HCTR1110FR08	Date of Issue: October 26, 2011	EUT Type: GSM/WCDMA/LTE Phone with Bluetooth / WLAN	FCC ID: JYCP4100

### Conducted Output Power (802.11n-CH 64) 58.5 Mbps



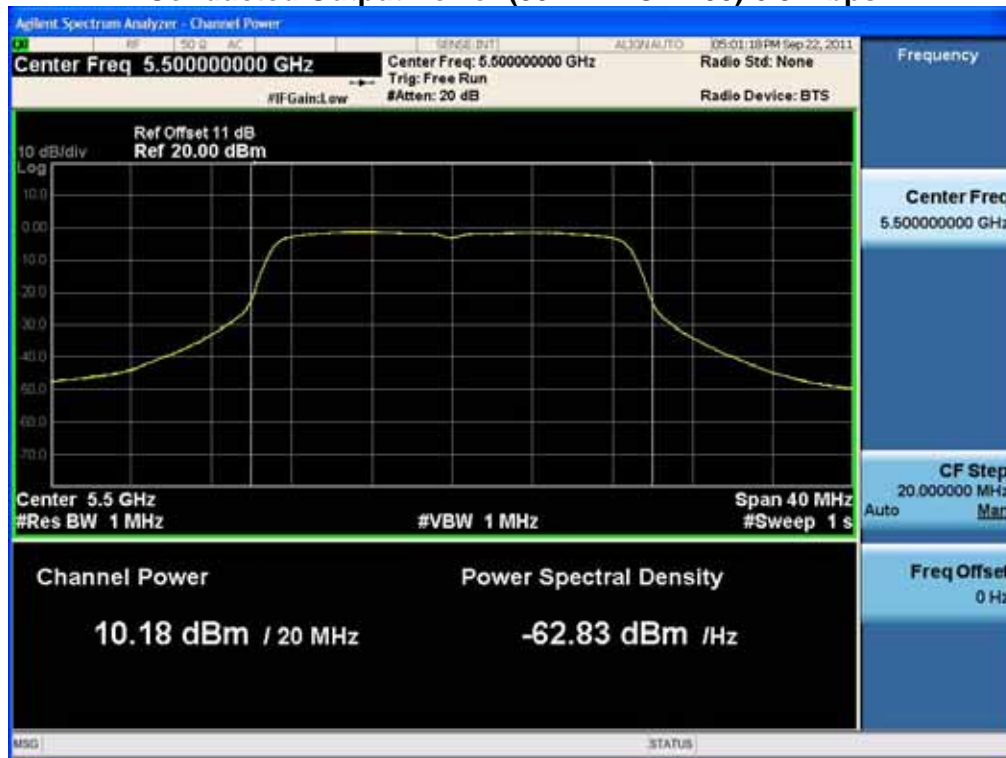
### Conducted Output Power (802.11n-CH 64) 65 Mbps





■ RESULT PLOTS\_5500 MHz ~ 5700 MHz

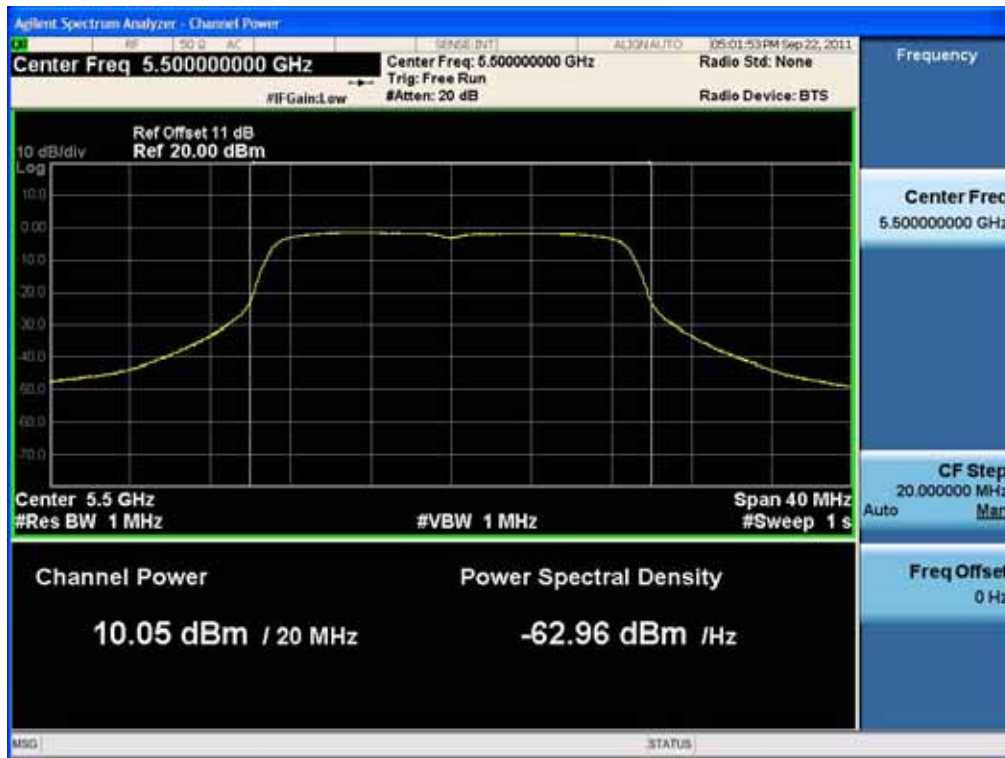
Conducted Output Power (802.11n-CH 100) 6.5 Mbps



Conducted Output Power (802.11n-CH 100) 13 Mbps



### Conducted Output Power (802.11n-CH 100) 19.5 Mbps

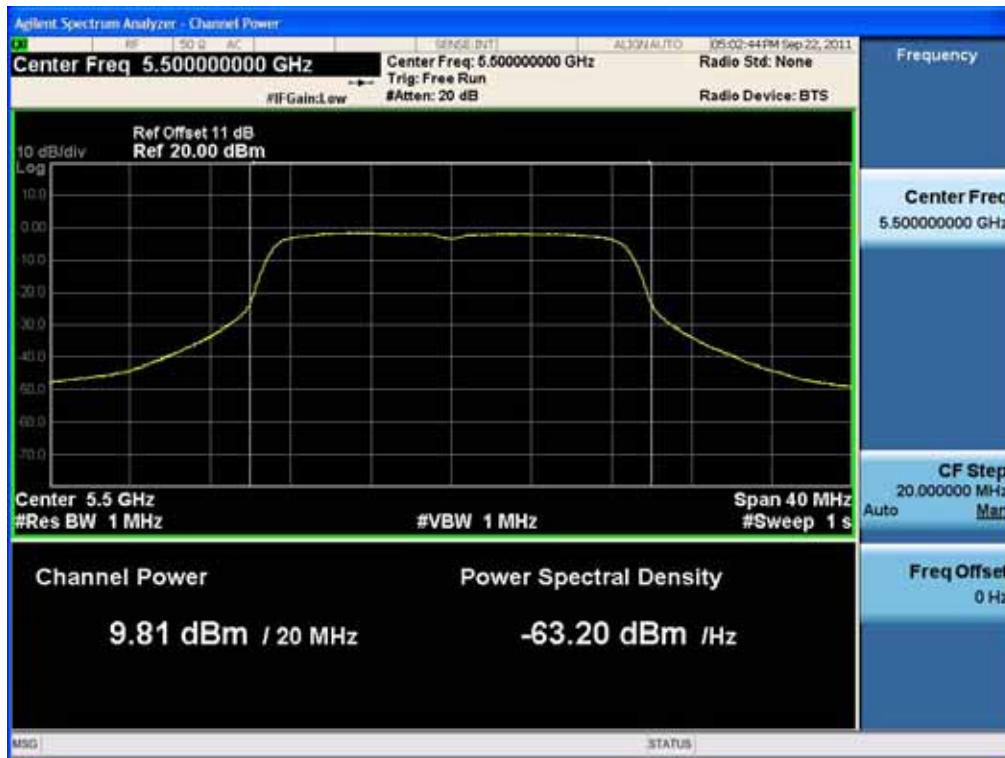


### Conducted Output Power (802.11n-CH 100) 26 Mbps



FCC PT.15.247 TEST REPORT	FCC CERTIFICATION REPORT		<a href="http://www.hct.co.kr">www.hct.co.kr</a>
Test Report No. HCTR1110FR08	Date of Issue: October 26, 2011	EUT Type: GSM/WCDMA/LTE Phone with Bluetooth / WLAN	FCC ID: JYCP4100

### Conducted Output Power (802.11n-CH 100) 39 Mbps



### Conducted Output Power (802.11n-CH 100) 52 Mbps



FCC PT.15.247 TEST REPORT	FCC CERTIFICATION REPORT		<a href="http://www.hct.co.kr">www.hct.co.kr</a>
Test Report No. HCTR1110FR08	Date of Issue: October 26, 2011	EUT Type: GSM/WCDMA/LTE Phone with Bluetooth / WLAN	FCC ID: JYCP4100

### Conducted Output Power (802.11n-CH 100) 58.5 Mbps



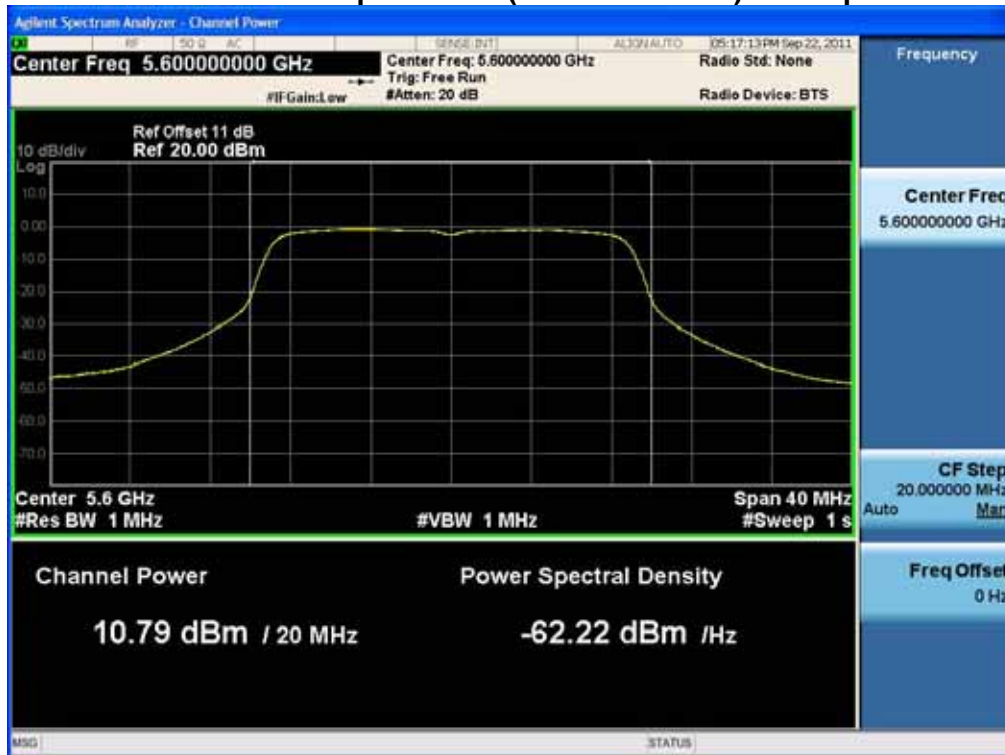
### Conducted Output Power (802.11n-CH 100) 65 Mbps



FCC PT.15.247 TEST REPORT	FCC CERTIFICATION REPORT		<a href="http://www.hct.co.kr">www.hct.co.kr</a>
Test Report No. HCTR1110FR08	Date of Issue: October 26, 2011	EUT Type: GSM/WCDMA/LTE Phone with Bluetooth / WLAN	FCC ID: JYCP4100



### Conducted Output Power (802.11n-CH 120) 6.5 Mbps



### Conducted Output Power (802.11n-CH 120) 13 Mbps



### Conducted Output Power (802.11n-CH 120) 19.5 Mbps



### Conducted Output Power (802.11n-CH 120) 26 Mbps



FCC PT.15.247 TEST REPORT	FCC CERTIFICATION REPORT		<a href="http://www.hct.co.kr">www.hct.co.kr</a>
Test Report No. HCTR1110FR08	Date of Issue: October 26, 2011	EUT Type: GSM/WCDMA/LTE Phone with Bluetooth / WLAN	FCC ID: JYCP4100

### Conducted Output Power (802.11n-CH 120) 39 Mbps

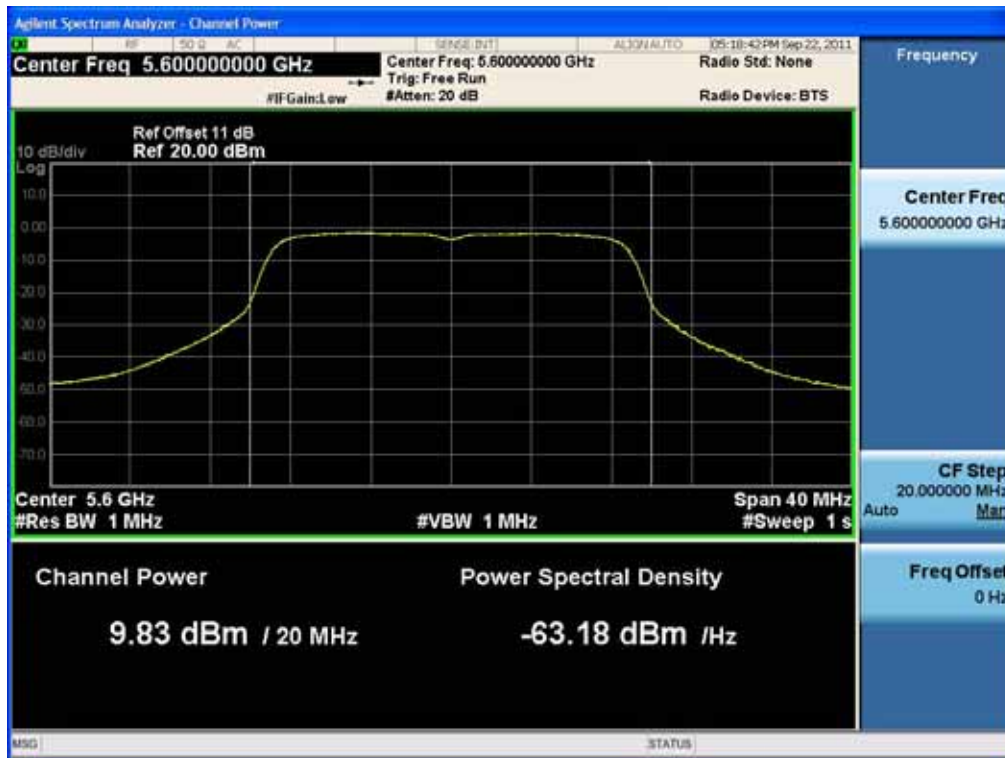


### Conducted Output Power (802.11n-CH 120) 52 Mbps



FCC PT.15.247 TEST REPORT	FCC CERTIFICATION REPORT		<a href="http://www.hct.co.kr">www.hct.co.kr</a>
Test Report No. HCTR1110FR08	Date of Issue: October 26, 2011	EUT Type: GSM/WCDMA/LTE Phone with Bluetooth / WLAN	FCC ID: JYCP4100

### Conducted Output Power (802.11n-CH 120) 58.5 Mbps



### Conducted Output Power (802.11n-CH 120) 65 Mbps



FCC PT.15.247 TEST REPORT	FCC CERTIFICATION REPORT		<a href="http://www.hct.co.kr">www.hct.co.kr</a>
Test Report No. HCTR1110FR08	Date of Issue: October 26, 2011	EUT Type: GSM/WCDMA/LTE Phone with Bluetooth / WLAN	FCC ID: JYCP4100



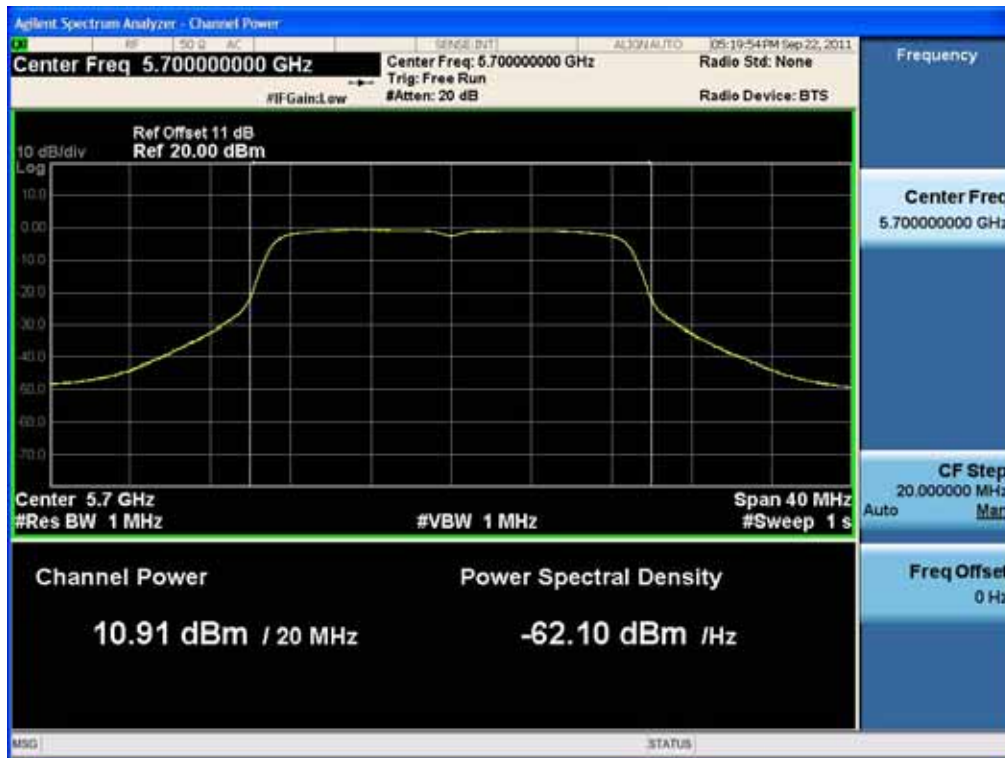
### Conducted Output Power (802.11n-CH 140) 6.5 Mbps



### Conducted Output Power (802.11n-CH 140) 13 Mbps



### Conducted Output Power (802.11n-CH 140) 19.5 Mbps

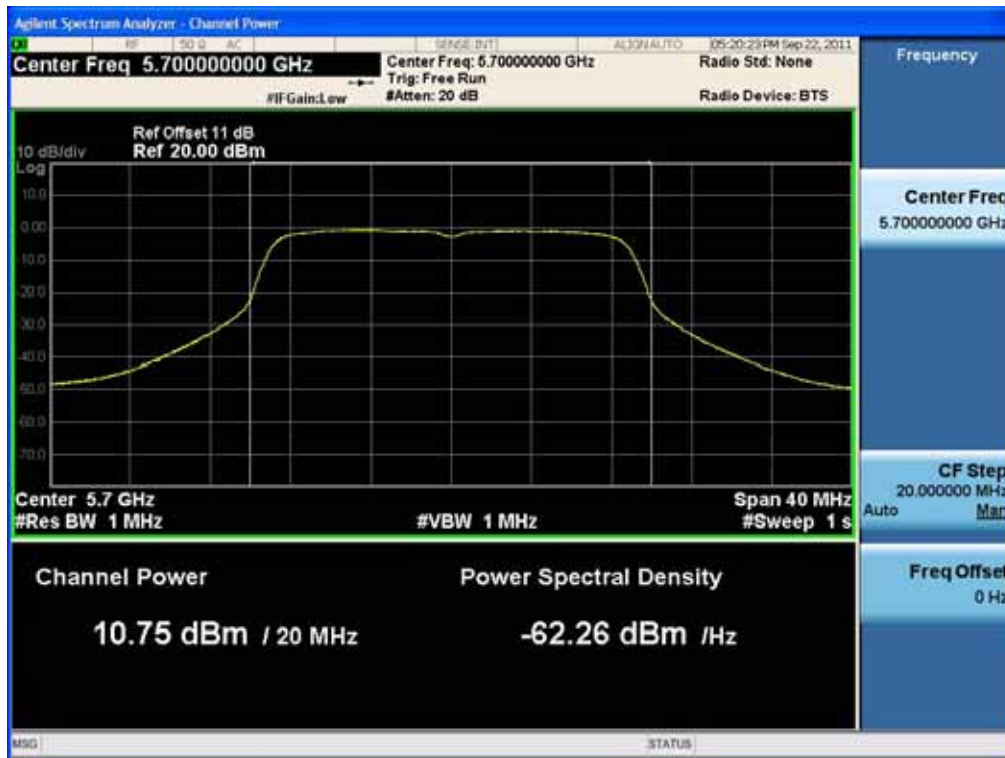


### Conducted Output Power (802.11n-CH 140) 26 Mbps



FCC PT.15.247 TEST REPORT	FCC CERTIFICATION REPORT		<a href="http://www.hct.co.kr">www.hct.co.kr</a>
Test Report No. HCTR1110FR08	Date of Issue: October 26, 2011	EUT Type: GSM/WCDMA/LTE Phone with Bluetooth / WLAN	FCC ID: JYCP4100

### Conducted Output Power (802.11n-CH 140) 39 Mbps

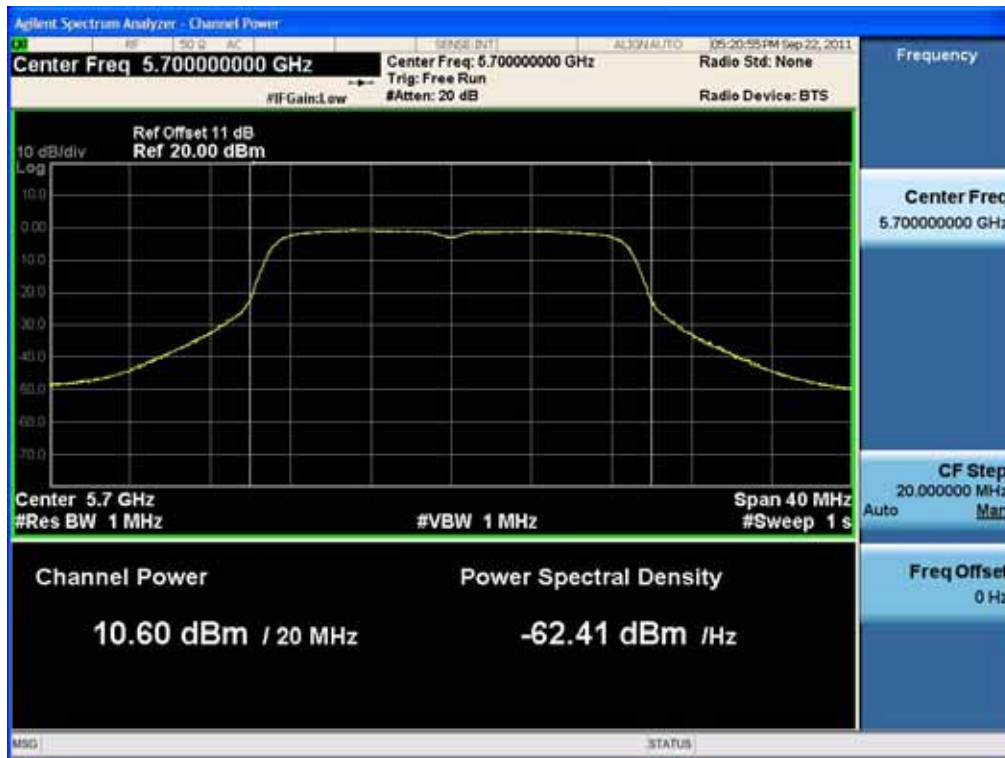


### Conducted Output Power (802.11n-CH 140) 52 Mbps



FCC PT.15.247 TEST REPORT	FCC CERTIFICATION REPORT		<a href="http://www.hct.co.kr">www.hct.co.kr</a>
Test Report No. HCTR1110FR08	Date of Issue: October 26, 2011	EUT Type: GSM/WCDMA/LTE Phone with Bluetooth / WLAN	FCC ID: JYCP4100

### Conducted Output Power (802.11n-CH 140) 58.5 Mbps



### Conducted Output Power (802.11n-CH 140) 65 Mbps

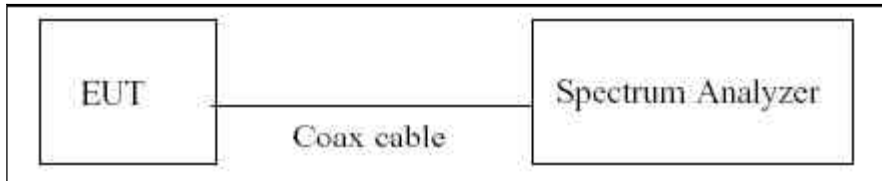




## 7.3 POWER SPECTRAL DENSITY

The peak power density is measured with a spectrum analyzer connected to the antenna terminal while the EUT is operating in transmission mode at the appropriate frequencies. The maximum permissible peak power spectral density is 4 dBm/ MHz in the 5.15 GHz – 5.25 GHz band and 11 dBm/ MHz in the 5.25 GHz – 5.35 GHz and 5.47 GHz – 5.725 GHz bands

### ■ TEST CONFIGURATION



### ■ TEST PROCEDURE

The spectrum analyzer is set to :

1. Span = 20 MHz
2. RBW = 1 MHz
3. VBW = 3 MHz
4. Sweep = Auto

### ■ TEST RESULTS

Conducted Power Density Measurements

Frequency (MHz)	Channel No.	Mode	Test Result	
			Power Density (dBm)	Pass/Fail
5180	36	802.11a	0.607	Pass
5200	40		0.790	Pass
5240	48		0.331	Pass
5260	52	802.11a	0.284	Pass
5300	60		0.155	Pass
5320	64		-0.451	Pass
5500	100	802.11a	0.432	Pass
5600	120		0.997	Pass
5700	140		0.790	Pass

**Conducted Power Density Measurements**

Frequency (MHz)	Channel No.	Mode	Test Result	
			Power Density (dBm)	Pass/Fail
5180	36	802.11n	-1.667	Pass
5200	40		-1.309	Pass
5240	48		-1.411	Pass
5260	52	802.11n	-1.130	Pass
5300	60		-1.491	Pass
5320	64		-3.052	Pass
5500	100	802.11n	-1.694	Pass
5600	120		-1.070	Pass
5700	140		-0.976	Pass

■ RESULT PLOTS

Power Spectral Density (802.11a-CH 36)



Power Spectral Density (802.11a-CH 40)



FCC PT.15.247 TEST REPORT	FCC CERTIFICATION REPORT		<a href="http://www.hct.co.kr">www.hct.co.kr</a>
Test Report No. HCTR1110FR08	Date of Issue: October 26, 2011	EUT Type: GSM/WCDMA/LTE Phone with Bluetooth / WLAN	FCC ID: JYCP4100

**Power Spectral Density (802.11a-CH 48)**



**Power Spectral Density (802.11a-CH 52)**





### Power Spectral Density (802.11a-CH 60)



### Power Spectral Density (802.11a-CH 64)



FCC PT.15.247 TEST REPORT	FCC CERTIFICATION REPORT		<a href="http://www.hct.co.kr">www.hct.co.kr</a>
Test Report No. HCTR1110FR08	Date of Issue: October 26, 2011	EUT Type: GSM/WCDMA/LTE Phone with Bluetooth / WLAN	FCC ID: JYCP4100

## Power Spectral Density (802.11a-CH 100)



## Power Spectral Density (802.11a-CH 120)



FCC PT.15.247 TEST REPORT	FCC CERTIFICATION REPORT		<a href="http://www.hct.co.kr">www.hct.co.kr</a>
Test Report No. HCTR1110FR08	Date of Issue: October 26, 2011	EUT Type: GSM/WCDMA/LTE Phone with Bluetooth / WLAN	FCC ID: JYCP4100

**Power Spectral Density (802.11a-CH 140)**



FCC PT.15.247 TEST REPORT	FCC CERTIFICATION REPORT		<a href="http://www.hct.co.kr">www.hct.co.kr</a>
Test Report No. HCTR1110FR08	Date of Issue: October 26, 2011	EUT Type: GSM/WCDMA/LTE Phone with Bluetooth / WLAN	FCC ID: JYCP4100

### Power Spectral Density (802.11n-CH 36)



### Power Spectral Density (802.11n-CH 40)



FCC PT.15.247 TEST REPORT	FCC CERTIFICATION REPORT		<a href="http://www.hct.co.kr">www.hct.co.kr</a>
Test Report No. HCTR1110FR08	Date of Issue: October 26, 2011	EUT Type: GSM/WCDMA/LTE Phone with Bluetooth / WLAN	FCC ID: JYCP4100



### Power Spectral Density (802.11n-CH 48)



### Power Spectral Density (802.11n-CH 52)



### Power Spectral Density (802.11n-CH 60)



### Power Spectral Density (802.11n-CH 64)



FCC PT.15.247 TEST REPORT	FCC CERTIFICATION REPORT		<a href="http://www.hct.co.kr">www.hct.co.kr</a>
Test Report No. HCTR1110FR08	Date of Issue: October 26, 2011	EUT Type: GSM/WCDMA/LTE Phone with Bluetooth / WLAN	FCC ID: JYCP4100

### Power Spectral Density (802.11n-CH 100)



### Power Spectral Density (802.11n-CH 120)



FCC PT.15.247 TEST REPORT	FCC CERTIFICATION REPORT		<a href="http://www.hct.co.kr">www.hct.co.kr</a>
Test Report No. HCTR1110FR08	Date of Issue: October 26, 2011	EUT Type: GSM/WCDMA/LTE Phone with Bluetooth / WLAN	FCC ID: JYCP4100

**Power Spectral Density (802.11n-CH 140)**



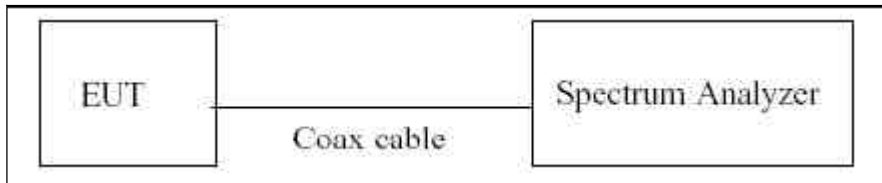
FCC PT.15.247 TEST REPORT	FCC CERTIFICATION REPORT		<a href="http://www.hct.co.kr">www.hct.co.kr</a>
Test Report No. HCTR1110FR08	Date of Issue: October 26, 2011	EUT Type: GSM/WCDMA/LTE Phone with Bluetooth / WLAN	FCC ID: JYCP4100



## 7.4 PEAK EXCURSION RATIO

The spectrum analyzer was connected to the antenna terminal while the EUT was operating in the continuous transmission mode at the appropriate center frequencies. The largest permissible difference between the modulation envelope(measured using a peak hold function) and the maximum conducted output power 13 dBm/MHz.

### ■ TEST CONFIGURATION



## RESULT PLOTS

Peak Excursion Ratio (802.11a-CH36)

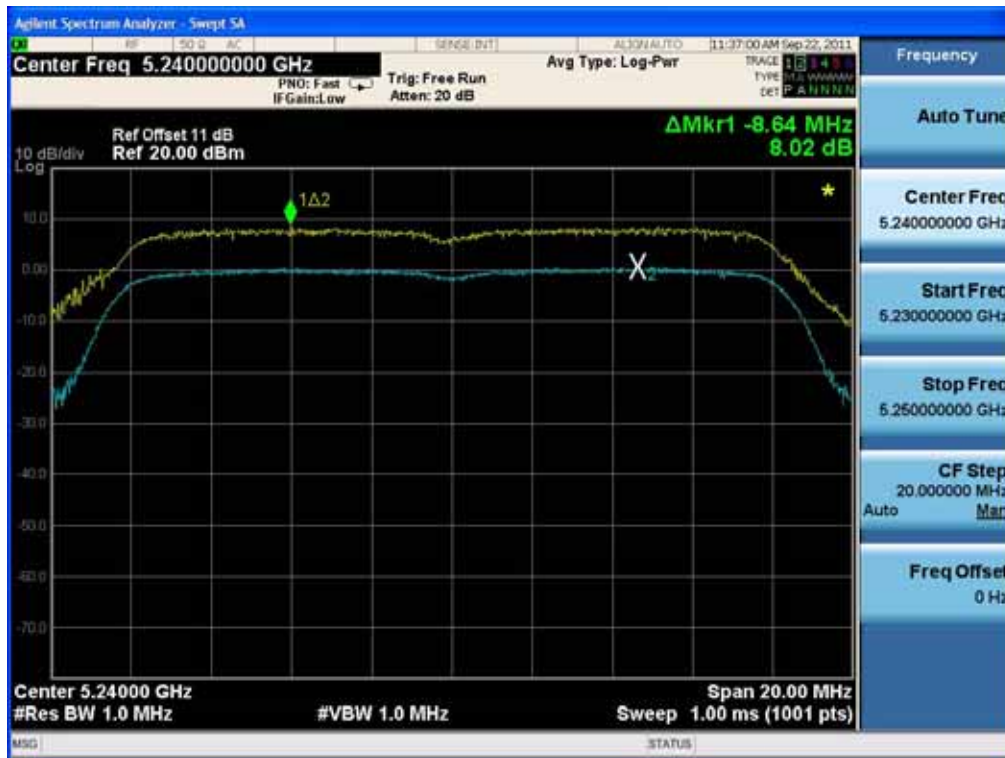


Peak Excursion Ratio (802.11a-CH40)



FCC PT.15.247 TEST REPORT	FCC CERTIFICATION REPORT		<a href="http://www.hct.co.kr">www.hct.co.kr</a>
Test Report No. HCTR1110FR08	Date of Issue: October 26, 2011	EUT Type: GSM/WCDMA/LTE Phone with Bluetooth / WLAN	FCC ID: JYCP4100

### Peak Excursion Ratio (802.11a-CH48)



### Peak Excursion Ratio (802.11a-CH52)



FCC PT.15.247 TEST REPORT	FCC CERTIFICATION REPORT		<a href="http://www.hct.co.kr">www.hct.co.kr</a>
Test Report No. HCTR1110FR08	Date of Issue: October 26, 2011	EUT Type: GSM/WCDMA/LTE Phone with Bluetooth / WLAN	FCC ID: JYCP4100

### Peak Excursion Ratio (802.11a-CH60)



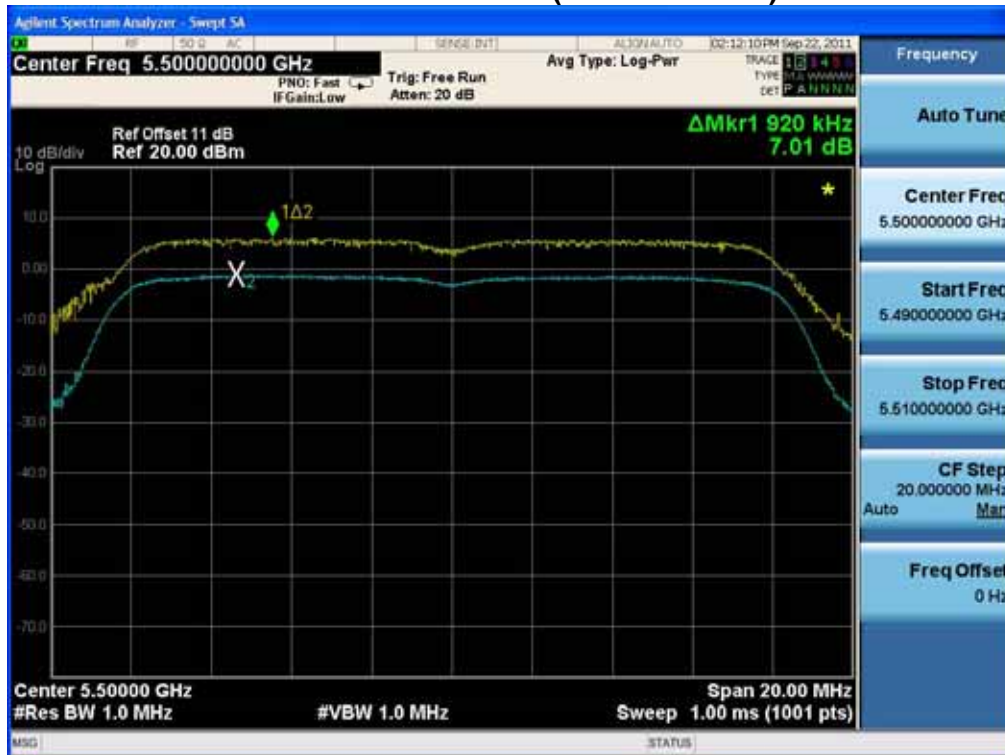
### Peak Excursion Ratio (802.11a-CH64)



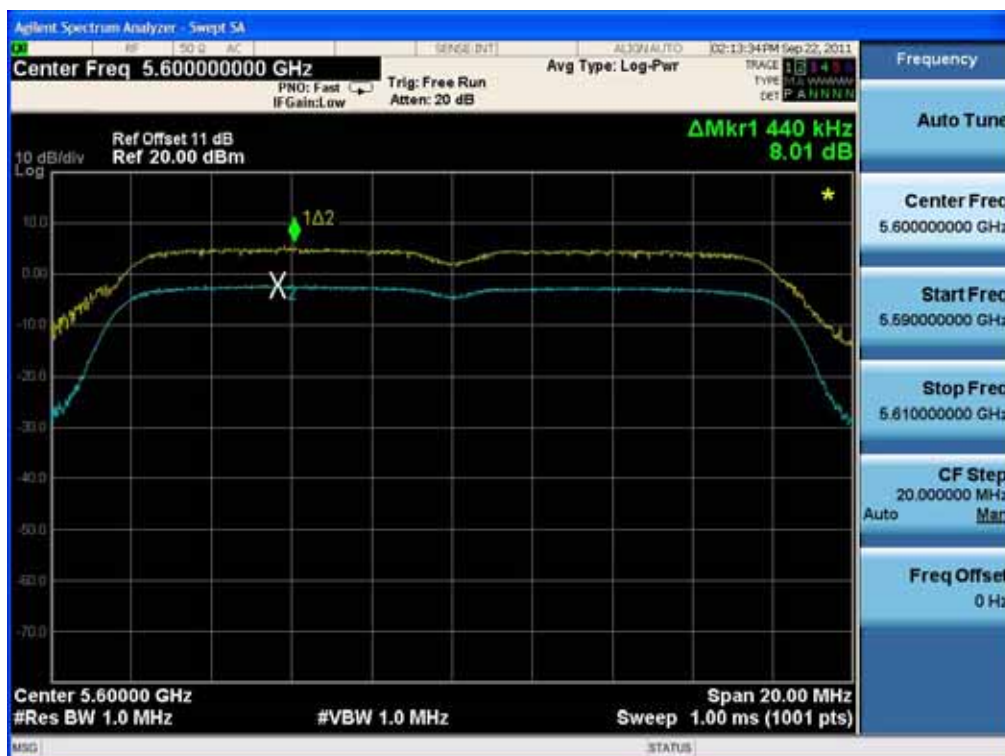
FCC PT.15.247 TEST REPORT	FCC CERTIFICATION REPORT		<a href="http://www.hct.co.kr">www.hct.co.kr</a>
Test Report No. HCTR1110FR08	Date of Issue: October 26, 2011	EUT Type: GSM/WCDMA/LTE Phone with Bluetooth / WLAN	FCC ID: JYCP4100



### Peak Excursion Ratio (802.11a-CH100)



### Peak Excursion Ratio (802.11a-CH120)

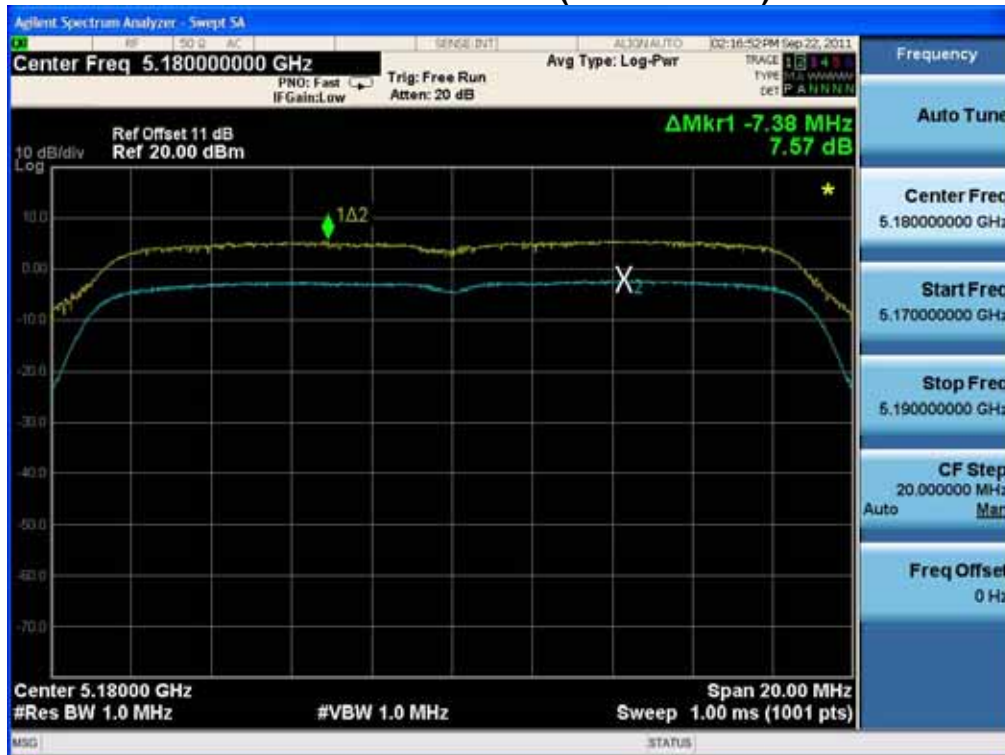


## Peak Excursion Ratio (802.11a-CH140)



FCC PT.15.247 TEST REPORT	FCC CERTIFICATION REPORT		<a href="http://www.hct.co.kr">www.hct.co.kr</a>
Test Report No. HCTR1110FR08	Date of Issue: October 26, 2011	EUT Type: GSM/WCDMA/LTE Phone with Bluetooth / WLAN	FCC ID: JYCP4100

### Peak Excursion Ratio (802.11n-CH36)

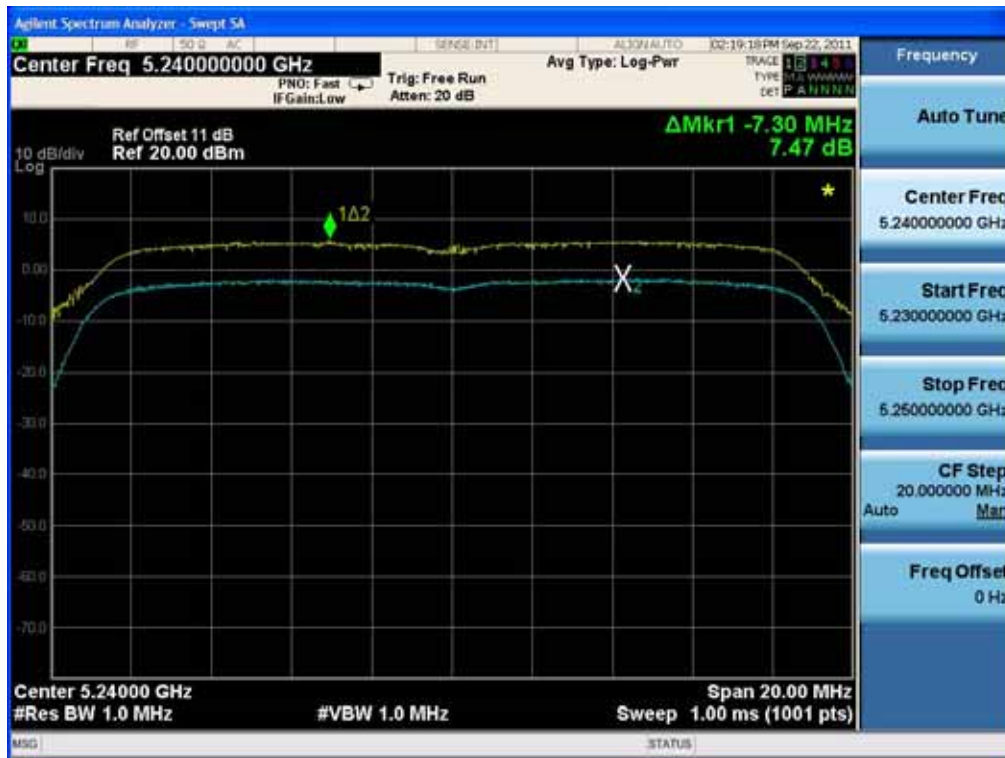


### Peak Excursion Ratio (802.11n-CH40)

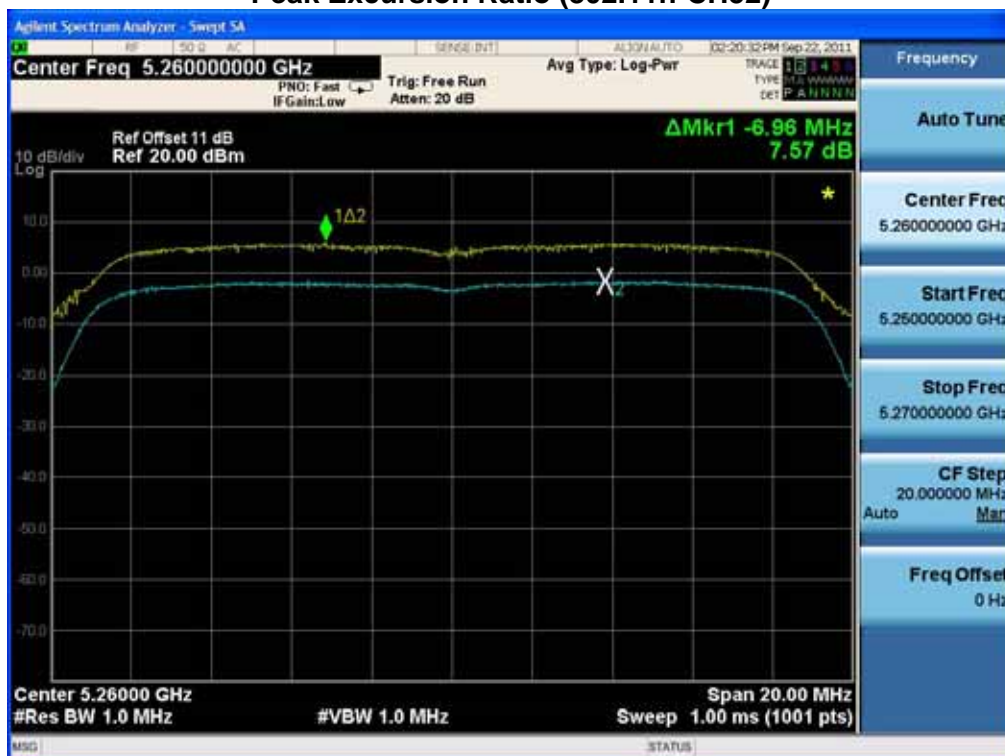


FCC PT.15.247 TEST REPORT	FCC CERTIFICATION REPORT		<a href="http://www.hct.co.kr">www.hct.co.kr</a>
Test Report No. HCTR1110FR08	Date of Issue: October 26, 2011	EUT Type: GSM/WCDMA/LTE Phone with Bluetooth / WLAN	FCC ID: JYCP4100

### Peak Excursion Ratio (802.11n-CH48)



### Peak Excursion Ratio (802.11n-CH52)



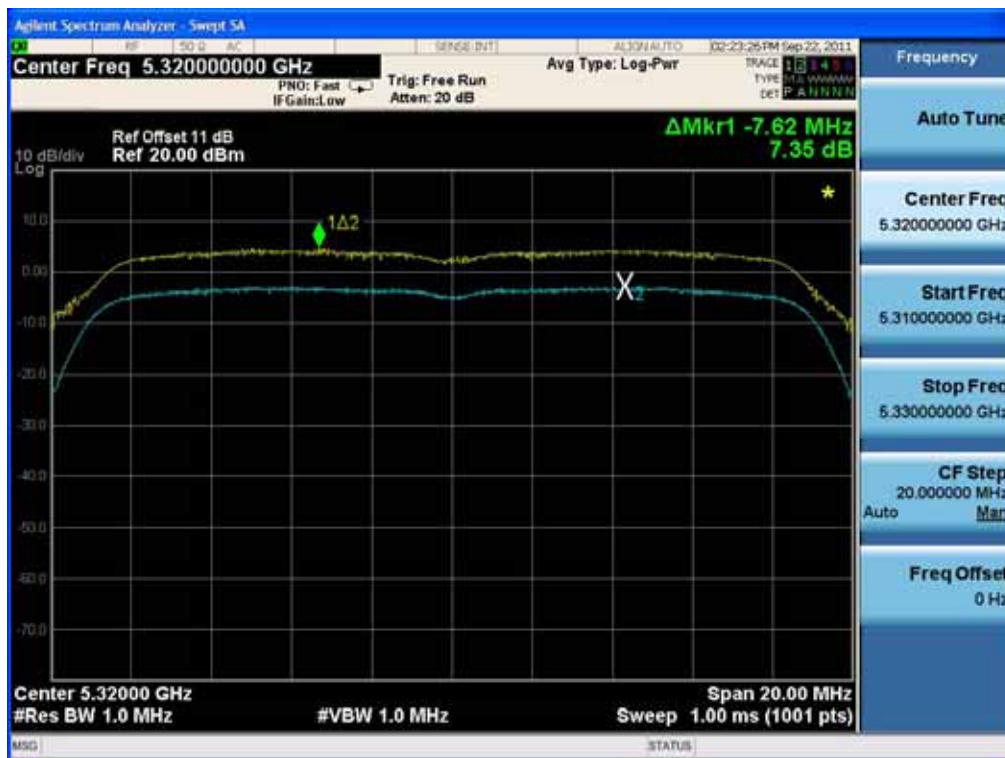
FCC PT.15.247 TEST REPORT	FCC CERTIFICATION REPORT		<a href="http://www.hct.co.kr">www.hct.co.kr</a>
Test Report No. HCTR1110FR08	Date of Issue: October 26, 2011	EUT Type: GSM/WCDMA/LTE Phone with Bluetooth / WLAN	FCC ID: JYCP4100



### Peak Excursion Ratio (802.11n-CH60)



### Peak Excursion Ratio (802.11n-CH64)



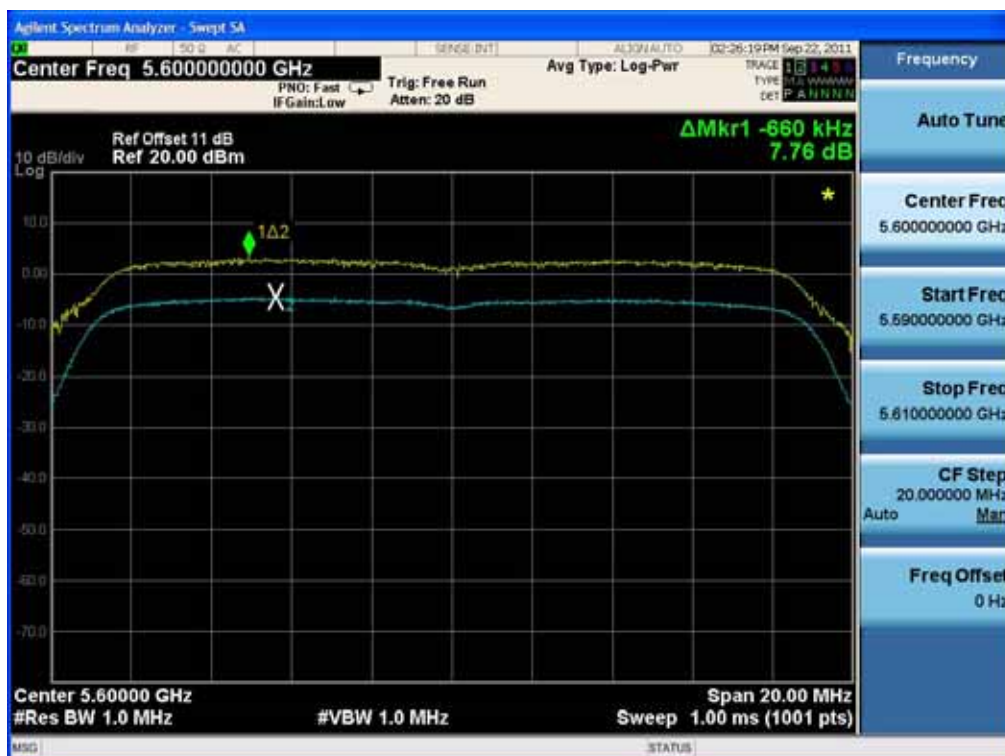
FCC PT.15.247 TEST REPORT	FCC CERTIFICATION REPORT		<a href="http://www.hct.co.kr">www.hct.co.kr</a>
Test Report No. HCTR1110FR08	Date of Issue: October 26, 2011	EUT Type: GSM/WCDMA/LTE Phone with Bluetooth / WLAN	FCC ID: JYCP4100



### Peak Excursion Ratio (802.11n-CH100)



### Peak Excursion Ratio (802.11n-CH120)



## Peak Excursion Ratio (802.11n-CH140)



FCC PT.15.247 TEST REPORT	FCC CERTIFICATION REPORT		<a href="http://www.hct.co.kr">www.hct.co.kr</a>
Test Report No. HCTR1110FR08	Date of Issue: October 26, 2011	EUT Type: GSM/WCDMA/LTE Phone with Bluetooth / WLAN	FCC ID: JYCP4100

## 7.5 FREQUENCY STABILITY.

The EUT was placed inside an environmental chamber as the temperature in the chamber was varied between -30 °C and 50 °C. The temperature was incremented by 10 °C intervals and the unit was allowed to stabilize at each temperature before each measurement. The center frequency of the transmitting channel was evaluated at each temperature and the frequency deviation from the channel's center frequency was recorded.

OPERATING FREQUENCY: 5,200,000,000 Hz  
 CHANNEL: 40  
 REFERENCE VOLTAGE: 3.7 VDC

Voltage (%)	Power (VDC)	Temp. (°C)	Frequency (kHz)	Frequency Error (kHz)
100%	3.7	+20(Ref)	5 200 006	6
100%		-30	5 200 014	13.5
100%		-20	5 200 011	11.4
100%		-10	5 200 012	12.2
100%		0	5 200 010	9.8
100%		+10	5 200 007	7.2
100%		+30	5 200 015	15.4
100%		+40	5 200 017	17.2
100%		+50	5 200 020	20.4
115%	3.300	+20	5 200 006	6.2
Batt. Endpoint	4.700	+20	5 200 006	6.1

OPERATING FREQUENCY: 5,300,000,000 Hz

CHANNEL: 60

REFERENCE VOLTAGE: 3.7 VDC

Voltage (%)	Power (VDC)	Temp. (°C)	Frequency (kHz)	Frequency Error (kHz)
100%	3.7	+20(Ref)	5 300 006	6
100%		-30	5 300 016	16.2
100%		-20	5 300 013	12.6
100%		-10	5 300 012	11.8
100%		0	5 300 010	9.5
100%		+10	5 300 008	8.1
100%		+30	5 300 015	15.1
100%		+40	5 300 019	18.6
100%		+50	5 300 022	22.2
115%	3.300	+20	5 300 006	6.3
Batt. Endpoint	4.700	+20	5 300 006	6

OPERATING FREQUENCY: 5,600,000,000 Hz

CHANNEL: 120

REFERENCE VOLTAGE: 3.7 VDC

Voltage (%)	Power (VDC)	Temp. (°C)	Frequency (kHz)	Frequency Error (kHz)
100%	3.7	+20(Ref)	5 600 006	6
100%		-30	5 600 017	17.4
100%		-20	5 600 016	16.1
100%		-10	5 600 013	13
100%		0	5 600 009	9.3
100%		+10	5 600 008	7.9
100%		+30	5 600 013	13.2
100%		+40	5 600 018	18.2
100%		+50	5 600 023	23.4
115%	3.300	+20	5 600 006	6.1
Batt. Endpoint	4.700	+20	5 600 006	5.8



## 7.6 RADIATED MEASUREMENT.

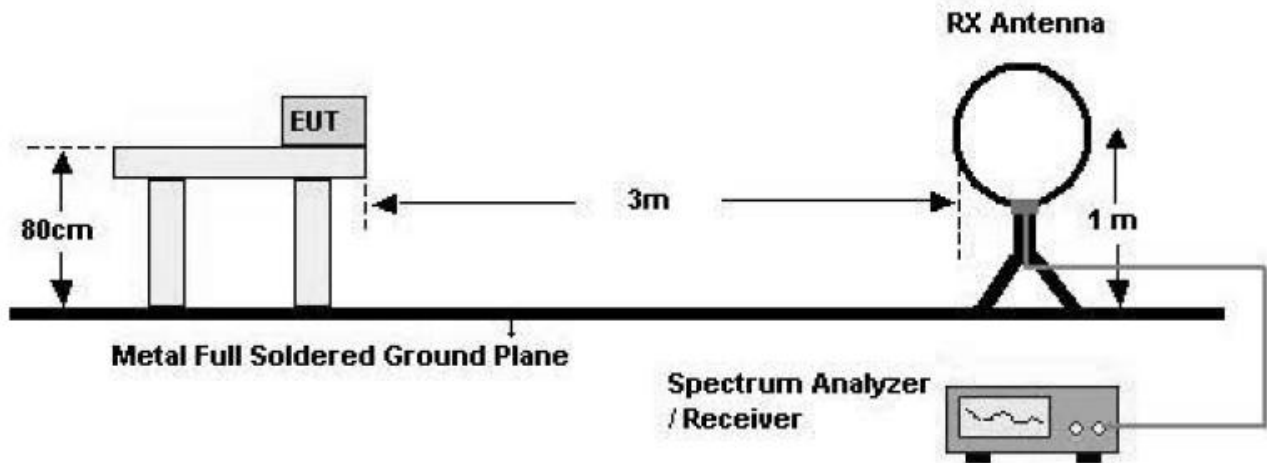
### 7.6.1 RADIATED SPURIOUS EMISSIONS.

Test Requirements and limit, §15.205, §15.209

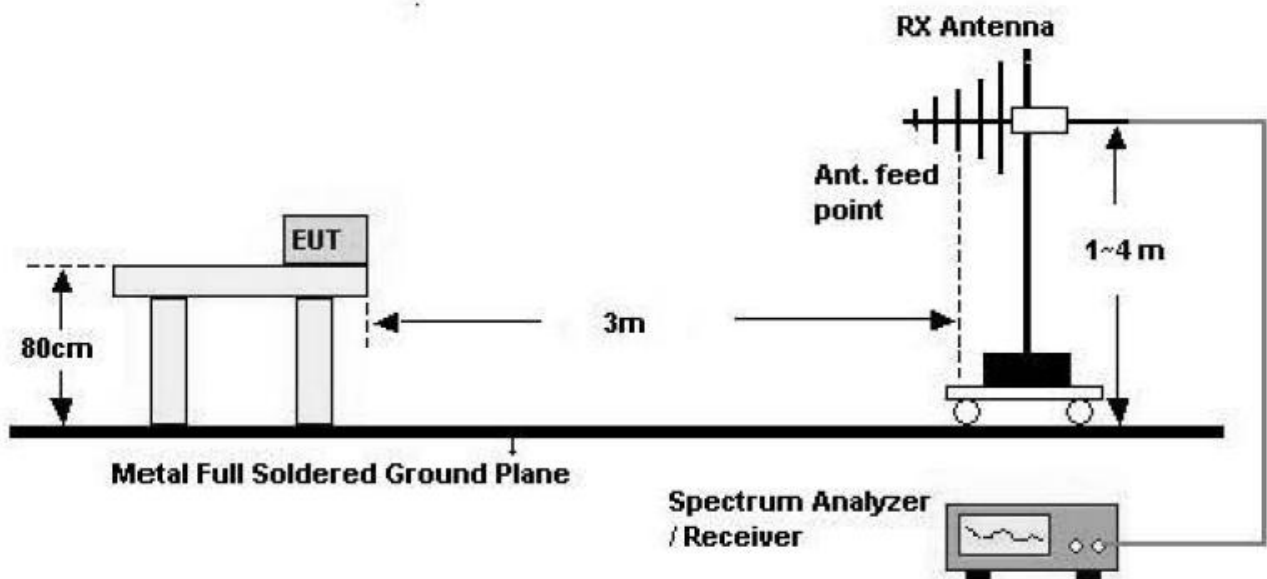
Frequency (MHz)	Field Strength (uV/m)	Measurement Distance (m)
0.009 – 0.490	2400/F(kHz)	300
0.490 – 1.705	24000/F(kHz)	30
1.705 – 30	30	30
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

## Test Configuration

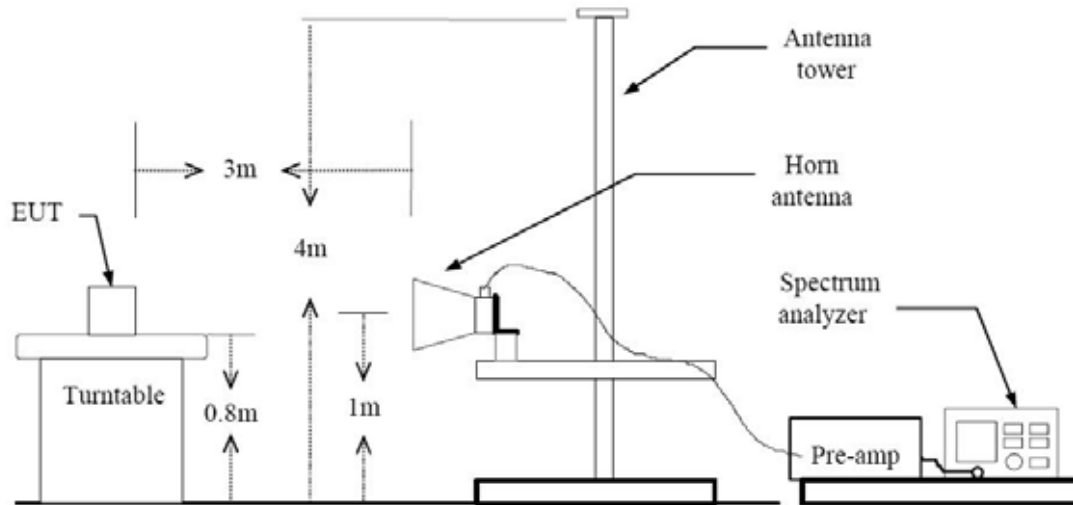
### Below 30 MHz



### 30 MHz - 1 GHz



## Above 1 GHz



### TEST PROCEDURE

1. The EUT is placed on a turntable, which is 0.8 m above ground plane.
2. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
3. EUT is set 3 m away from the receiving antenna, which is varied from 1m to 4m to find out the highest emissions.
4. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
5. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
6. Repeat above procedures until the measurements for all frequencies are complete.

<b>FCC PT.15.247 TEST REPORT</b>	<b>FCC CERTIFICATION REPORT</b>		<a href="http://www.hct.co.kr">www.hct.co.kr</a>
<b>Test Report No.</b> HCTR1110FR08	<b>Date of Issue:</b> October 26, 2011	<b>EUT Type:</b> GSM/WCDMA/LTE Phone with Bluetooth / WLAN	<b>FCC ID:</b> JYCP4100

## TEST RESULTS

**9 kHz – 30MHz**

**Operation Mode:** Normal Mode

Frequency	Reading	Ant. factor	Cable loss	Ant. POL	Total	Limit	Margin
MHz	dB $\mu$ V	dB /m	dB	(H/V)	dB $\mu$ V/m	dB $\mu$ 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

## TEST RESULTS

### Below 1 GHz

**Operation Mode:** 802.11a Mode (Channel : 140 , Data rate : 6 Mbps)

Frequency	Reading	Ant. factor	Cable loss	Ant. POL	Total	Limit	Margin
MHz	dB $\mu$ V	dB /m	dB	(H/V)	dB $\mu$ V/m	dB $\mu$ V/m	dB
66.10	17.2	12.24	0.79	H	30.20	40.0	9.8
124.00	21.9	11.30	1.12	H	34.30	43.5	9.2
154.50	17.4	13.18	1.27	V	31.80	43.5	11.7
211.60	20.0	10.50	1.52	V	32.00	43.5	11.5
428.20	19.5	16.30	2.30	H	38.10	46.0	7.9
481.60	20.8	17.40	2.43	H	40.60	46.0	5.4

### 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 802.11a, 802.11n mode. Worst case of EUT is 6 Mbps in 802.11a.



## Above 1 GHz

Band :	UNII 1
Operation Mode:	802.11 a
Transfer Rate:	6 Mbps
Operating Frequency	5180
Channel No.	36 Ch

Frequency [MHz]	Reading dBuV	AN.+CL-AMP G [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
10360	38.57	9.33	V	47.90	68.2	20.30	PK
10360	25.50	9.33	V	34.83	54	19.17	AV
10360	37.55	9.33	H	46.88	68.2	21.32	PK
10360	24.37	9.33	H	33.70	54	20.30	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. Spectrum setting:
  - a. Peak Setting 1 GHz – 40 GHz, RBW = 1 MHz, VBW = 1 MHz.
  - b. AV Setting 1 GHz – 40 GHz, RBW = 1 MHz, VBW = 10 Hz.
5. We have done 802.11a, 802.11n test. Worst case is 6 Mbps in 802.11a.

Band :	UNII 1
Operation Mode:	802.11 a
Transfer Rate:	6 Mbps
Operating Frequency	5200
Channel No.	40 Ch

Frequency [MHz]	Reading dBuV	AN.+CL-AMP G [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
10400	39.05	9.26	V	48.31	68.2	25.69	PK
10400	24.80	9.26	V	34.06	54	19.94	AV
10400	38.52	9.26	H	47.78	68.2	21.32	PK
10400	23.45	9.26	H	32.71	54	21.29	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 1000 MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
4. Spectrum setting:
  - a. Peak Setting 1 GHz – 40 GHz, RBW = 1 MHz, VBW = 1 MHz.
  - b. AV Setting 1 GHz – 40 GHz, RBW = 1 MHz, VBW = 10 Hz.
5. We have done 802.11a, 802.11n test. Worst case is 6 Mbps in 802.11a.

Band :	UNII 1
Operation Mode:	802.11 a
Transfer Rate:	6 Mbps
Operating Frequency	5240
Channel No.	48 Ch

Frequency [MHz]	Reading dBuV	AN.+CL-AMP G [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
10480	38.69	9.35	V	48.04	74	25.96	PK
10480	25.37	9.35	V	34.72	54	19.28	AV
10480	37.62	9.35	H	46.97	74	27.03	PK
10480	24.35	9.35	H	33.70	54	20.30	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 > 20dB 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. Spectrum setting:
  - a. Peak Setting 1 GHz – 40 GHz, RBW = 1 MHz, VBW = 1 MH.
  - b. AV Setting 1 GHz – 40 GHz, RBW = 1 MHz, VBW = 10 Hz.
5. We have done 802.11a, 802.11n test. Worst case is 6 Mbps in 802.11a.

Band :	UNII 2
Operation Mode:	802.11 a
Transfer Rate:	6 Mbps
Operating Frequency	5260
Channel No.	52 Ch

Frequency [MHz]	Reading dBuV	AN.+CL-AMP G [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
10520	38.88	9.52	V	48.40	68.2	19.80	PK
10520	25.73	9.52	V	35.25	54	18.75	AV
10520	37.63	9.52	H	47.15	68.2	21.05	PK
10520	24.23	9.52	H	33.75	54	20.25	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. Spectrum setting:
  - a. Peak Setting 1 GHz – 40 GHz, RBW = 1 MHz, VBW = 1 MHz.
  - b. AV Setting 1 GHz – 40 GHz, RBW = 1 MHz, VBW = 10 Hz.
5. We have done 802.11a, 802.11n test. Worst case is 6 Mbps in 802.11a.

Band :	UNII 2
Operation Mode:	802.11 a
Transfer Rate:	6 Mbps
Operating Frequency	5300
Channel No.	60 Ch

Frequency [MHz]	Reading dBuV	AN.+CL-AMP G [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
10600	38.09	9.99	V	48.08	68.2	20.12	PK
10600	25.03	9.99	V	35.02	54	18.98	AV
10600	38.62	9.99	H	48.61	68.2	19.59	PK
10600	22.42	9.99	H	32.41	54	21.59	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 1000 MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
4. Spectrum setting:
  - a. Peak Setting 1 GHz – 40 GHz, RBW = 1 MHz, VBW = 1 MHz.
  - b. AV Setting 1 GHz – 40 GHz, RBW = 1 MHz, VBW = 10 Hz.
5. We have done 802.11a, 802.11n test. Worst case is 6 Mbps in 802.11a.



Band :	UNII 2
Operation Mode:	802.11 a
Transfer Rate:	6 Mbps
Operating Frequency	5320
Channel No.	64 Ch

Frequency [MHz]	Reading dBuV	AN.+CL-AMP G [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
10640	37.59	10.08	V	47.67	74	26.33	PK
10640	24.92	10.08	V	35.00	54	19.00	AV
10640	37.62	10.08	H	47.70	74	26.30	PK
10640	24.33	10.08	H	34.41	54	19.59	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 > 20dB 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. Spectrum setting:
  - a. Peak Setting 1 GHz – 40 GHz, RBW = 1 MHz, VBW = 1 MH.
  - b. AV Setting 1 GHz – 40 GHz, RBW = 1 MHz, VBW = 10 Hz.
5. We have done 802.11a, 802.11n test. Worst case is 6 Mbps in 802.11a.

Band :	UNII 3
Operation Mode:	802.11 a
Transfer Rate:	6 Mbps
Operating Frequency	5500
Channel No.	100 Ch

Frequency [MHz]	Reading dBuV	AN.+CL-AMP G [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
11000	37.67	10.79	V	48.46	74	25.54	PK
11000	24.11	10.79	V	34.90	54	19.10	AV
11000	37.42	10.79	H	48.21	74	25.79	PK
11000	24.28	10.79	H	35.07	54	18.93	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. Spectrum setting:
  - a. Peak Setting 1 GHz – 40 GHz, RBW = 1 MHz, VBW = 1 MHz.
  - b. AV Setting 1 GHz – 40 GHz, RBW = 1 MHz, VBW = 10 Hz.
5. We have done 802.11a, 802.11n test. Worst case is 6 Mbps in 802.11a.

Band :	UNII 3
Operation Mode:	802.11 a
Transfer Rate:	6 Mbps
Operating Frequency	5600
Channel No.	120 Ch

Frequency [MHz]	Reading dBuV	AN.+CL-AMP G [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
11200	36.57	11.00	V	47.57	74	26.43	PK
11200	23.00	11.00	V	34.00	54	20.00	AV
11200	38.52	11.00	H	49.52	74	24.48	PK
11200	23.64	11.00	H	34.64	54	19.36	AV

**Notes:**

- Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
  - 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.
  - Radiated emissions measured in frequency above 1000 MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
- Spectrum setting:
    - Peak Setting 1 GHz – 40 GHz, RBW = 1 MHz, VBW = 1 MHz.
    - AV Setting 1 GHz – 40 GHz, RBW = 1 MHz, VBW = 10 Hz.
  - We have done 802.11a, 802.11n mode. Worst case of 802.11a 6 Mbps.

Band :	UNII 3
Operation Mode:	802.11 a
Transfer Rate:	6 Mbps
Operating Frequency	5700
Channel No.	140 Ch

Frequency [MHz]	Reading dBuV	AN.+CL-AMP G [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
11400	36.56	11.04	V	47.60	74	26.40	PK
11400	23.01	11.04	V	34.05	54	19.95	AV
11400	37.35	11.04	H	48.39	74	25.61	PK
11400	24.81	11.04	H	35.85	54	18.15	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 > 20dB 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.
1. Spectrum setting:
    - a. Peak Setting 1 GHz – 40 GHz, RBW = 1 MHz, VBW = 1 MHz.
    - b. AV Setting 1 GHz – 40 GHz, RBW = 1 MHz, VBW = 10 Hz.
  2. We have done 802.11a, 802.11n mode. Worst case of 802.11a 6 Mbps.

### 7.6.3 RADIATED RESTRICTED BAND EDGE MEASUREMENTS

#### 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)).

Band :	UNII 1
Operation Mode:	802.11 a
Transfer Rate:	6 Mbps
Operating Frequency	5180 MHz
Channel No.	36 Ch

Frequency [MHz]	Reading dBuV	AN.+CL-Amp G. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
5150.0	55.74	-0.563	H	55.18	74	18.82	PK
5150.0	41.53	-0.563	H	40.97	54	13.03	AV
5150.0	56.06	-0.563	V	55.50	74	18.50	PK
5150.0	42.24	-0.563	V	41.68	54	12.32	AV



Band :	UNII 2
Operation Mode:	802.11 a
Transfer Rate:	6 Mbps
Operating Frequency	5320 MHz
Channel No.	64 Ch

Frequency [MHz]	Reading dBuV	AN.+CL [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
5350.0	55.52	-0.563	H	54.96	74	19.04	PK
5350.0	40.16	-0.563	H	39.60	54	14.40	AV
5350.0	54.46	-0.563	V	53.90	74	20.10	PK
5350.0	40.41	-0.563	V	39.85	54	14.15	AV

Band :	UNII 3
Operation Mode:	802.11 a
Transfer Rate:	6 Mbps
Operating Frequency	5500 MHz
Channel No.	100 Ch

Frequency [MHz]	Reading dBuV	AN.+CL [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
5460.0	54.50	0.24	H	54.74	74	19.26	PK
5460.0	40.33	0.24	H	40.57	54	13.43	AV
5460.0	55.00	0.24	V	55.24	74	18.76	PK
5460.0	40.38	0.24	V	40.62	54	13.38	AV

#### Notes:

- Spectrum setting:
  - Peak Setting 1 GHz – 40 GHz, RBW = 1 MHz, VBW = 1 MHz.
  - AV Setting 1 GHz – 40 GHz, RBW = 1 MHz, VBW = 10 Hz.
- We have done 802.11a, 802.11n mode. Worst case of 802.11a 6 Mbps.

## 7.7 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 (dBμV)	
	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 groundplane.
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.

■ RESULT PLOTS

Conducted Emissions (Line 1)

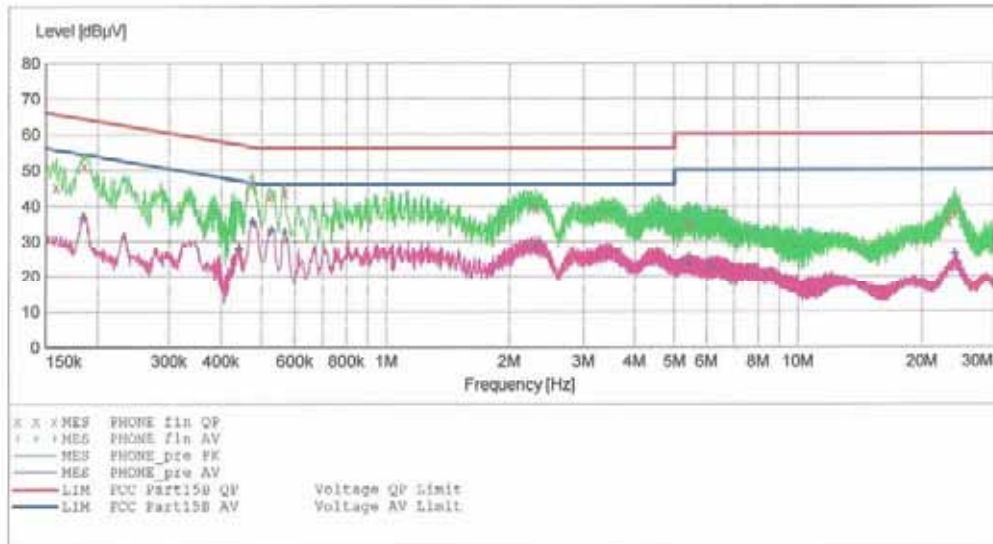
HCT

EMC

EUT: P4100  
Manufacturer: PANTECH  
Operating Condition: WLAN MODE  
Test Site: SHIELD ROOM  
Operator: JS LEE  
Test Specification: FCC PART15 CLASS B  
Comment: H

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

Short Description:			FCC PART 15 CLASS B			
Start Frequency	Stop Frequency	Step Width	Detector	Meas. Time	IF Bandw.	Transducer
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"

8/23/2011 2:13PM

Frequency MHz	Level dBμV	Transd dD	Limit dDμV	Margin dD	Line	PE
0.159010	45.30	10.1	66	20.2	---	---
0.186010	51.10	10.1	64	13.1	---	---
0.475010	46.00	10.1	56	10.4	---	---
0.520000	42.60	10.1	56	13.4	---	---
0.568000	43.60	10.1	56	12.4	---	---
2.312000	39.20	10.2	56	16.8	---	---
5.452000	34.90	10.6	60	25.1	---	---
23.156000	35.60	12.0	60	24.4	---	---
24.060000	37.50	12.0	60	22.5	---	---

**MEASUREMENT RESULT: "PHONE\_fin AV"**

8/23/2011 2:13PM

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Line	PE
0.184010	36.70	10.1	54	17.6	---	---
0.442010	27.90	10.1	47	19.1	---	---
0.475010	35.70	10.1	46	10.7	---	---
0.528000	33.20	10.1	46	12.8	---	---
0.568000	32.40	10.1	46	13.6	---	---
2.312000	28.90	10.2	46	17.1	---	---
5.444000	23.80	10.6	50	26.2	---	---
6.140000	22.80	10.7	50	27.2	---	---
24.036000	26.50	12.0	50	23.5	---	---

## Conducted Emissions (Line 2)

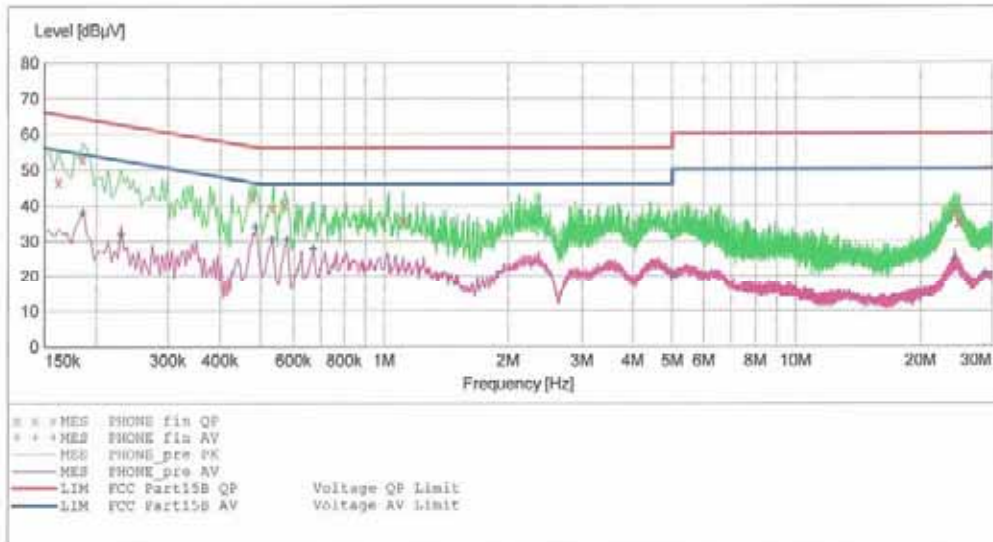
HCT

EMC

EUT: P4100  
 Manufacturer: PANTECH  
 Operating Condition: WLAN MODE  
 Test Site: SHIELD ROOM  
 Operator: JS LEE  
 Test Specification: FCC PART15 CLASS B  
 Comment: N

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

Short Description:			FCC PART 15 CLASS B				
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"

8/23/2011 2:10PM

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Line	PE
0.162010	46.50	10.3	65	18.9	---	---
0.186010	52.90	10.3	64	11.3	---	---
0.478010	42.30	10.3	56	14.0	---	---
0.536000	39.30	10.3	56	16.7	---	---
0.572000	40.20	10.3	56	15.8	---	---
1.116000	35.50	10.4	56	20.5	---	---
24.316000	38.10	11.8	60	21.9	---	---
24.660000	35.20	11.8	60	24.8	---	---
24.908000	35.60	11.8	60	24.4	---	---



**MEASUREMENT RESULT: "PHONE\_fin AV"**

8/23/2011 2:10PM

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Line	FE
0.186010	37.80	10.3	54	16.4	---	---
0.230010	31.70	10.3	52	20.7	---	---
0.486010	33.70	10.3	46	12.5	---	---
0.532000	30.50	10.3	46	15.5	---	---
0.580000	30.30	10.3	46	15.7	---	---
0.672000	27.70	10.4	46	18.3	---	---
5.000000	20.60	10.7	46	25.4	---	---
24.180000	24.40	11.8	50	25.6	---	---
28.860000	20.50	11.9	50	29.5	---	---

## 8. LIST OF TEST EQUIPMENT

Manufacturer	Model / Equipment	Calibration Interval	Calibration Due	Serial No.
Rohde & Schwarz	ESH2-Z5/ LISN	Annual	02/01/2012	861741/013
Schwarzbeck	VULB 9168/ TRILOG Antenna	Biennial	02/09/2013	200
Rohde & Schwarz	ESI 40 / EMI TEST RECEIVER	Annual	05/26/2012	831564103
Agilent	E4440A/ Spectrum Analyzer	Annual	05/02/2012	US45303008
Agilent	N9020A/ SIGNAL ANALYZER	Annual	09/23/2012	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	ESH3-Z2/ PULSE LIMITER	Annual	08/01/2012	375.8810.352
Rohde & Schwarz	SCU-18/ Signal Conditioning Unit	Annual	09/19/2012	10094
MITEQ	AFS44-00102650-42-10P-44-PS/ POWER AMP	Annual	09/23/2012	1532439
Schwarzbeck	BBHA 9120D/ Horn Antenna	Biennial	04/13/2012	147
Rohde & Schwarz	FSP / Spectrum Analyzer	Annual	03/23/2012	839117/011
Agilent	E4440A / Spectrum Analyzer	Annual	05/02/2012	US45303008
Agilent	E4416A /Power Meter	Annual	01/04/2012	GB41291412
Agilent	E9327A /POWER SENSOR	Annual	05/02/2012	MY4442009
Wainwright Instrument	WHF3.3/18G-10EF / High Pass Filter	Annual	05/02/2012	1
Wainwright Instrument	WRCJ2400/2483.5-2370/2520-60/14SS / Band Reject Filter	Annual	05/02/2012	1
Hewlett Packard	11636B/Power Divider	Annual	12/29/2011	11377
Hewlett Packard	11667B / Power Splitter	Annual	11/08/2011	10126
DIGITAL	EP-3010 /DC POWER SUPPLY	Annual	01/04/2012	3110117
ITECH	IT6720 / DC POWER SUPPLY	Annual	12/01/2011	010002156287001199
TESCOM	TC-3000C / BLUETOOTH TESTER	Annual	04/01/2012	3000C000276
Rohde & Schwarz	CBT / BLUETOOTH TESTER	Annual	05/02/2012	100422
EMCO	6502.LOOP ANTENNA	Biennial	01/13/2012	9009-2536