

HCT CO., LTD.

CERTIFICATE OF COMPLIANCE FCC Certification

Applicant Name:
SAMSUNG Electronics Co., Ltd.

Address:
129, Samsung-ro, Yeongtong-gu Suwon-si, Gyeonggi-do,
443-742 Rep. of Korea

Date of Issue:

February 12, 2014

Test Site/Location:

HCT CO., LTD., 74, Seoicheon-ro 578beon-gil,
Majang-myeon, Icheon-si, Gyeonggi-do, Korea.

Report No.: HCTR1402F011

HCT FRN: 0005866421

FCC ID : A3LSMN7506V

APPLICANT : SAMSUNG Electronics Co., Ltd.

FCC Model(s): SM-N7506V

EUT Type: Mobile Phone

Max. RF Output Power: Wi-Fi 802.11a (5180~5240) (8.18 dBm)/ Wi-Fi 802.11a (5260~5320) (8.44 dBm)/
Wi-Fi 802.11a (5500~5700) (8.69 dBm)/ Wi-Fi 802.11n_20 MHz BW (5180~5240) (7.73 dBm)/
Wi-Fi 802.11n_20 MHz BW(5260~5320)(8.17 dBm)/ Wi-Fi 802.11n_20 MHz BW(5500~5700)(7.71 dBm)/
Wi-Fi 802.11n_40 MHz BW(5190~5230) (7.36 dBm)/ Wi-Fi 802.11n_40 MHz BW (5270~5310) (7.58 dBm)/
Wi-Fi 802.11n_40 MHz BW (5510~5670) (7.70 dBm)

Frequency Range: 20 MHz BW: 5180 MHz - 5240 MHz (UNII 1)/ 5260 MHz - 5320 MHz (UNII 2)/
5500 MHz - 5700 MHz (UNII 2e)
40 MHz BW: 5190 MHz - 5230 MHz (UNII 1)/ 5270 MHz - 5310 MHz (UNII 2)/
5510 MHz - 5670 MHz (UNII 2e)

Modulation type OFDM

FCC Classification: Unlicensed National Information Infrastructure(UNII)

FCC Rule Part(s): Part 15.407

Engineering Statement:

The measurements shown in this report were made in accordance with the procedures indicated, and the emissions from this equipment were found to be within the limits applicable. I assume full responsibility for the accuracy and completeness of these measurements, and for the qualifications of all persons taking them.

HCT CO., LTD. Certifies that no party to this application has subject to a denial of Federal benefits that includes FCC benefits pursuant to section 5301 of the Anti-Drug Abuse Act of 1998,21 U.S. C.853(a)



Report prepared by
: Jae Chul Shin
Test engineer of RF Team



Approved by
: Kyoung Houn Seo
Manager of RF Team

This report only responds to the tested sample and may not be reproduced, except in full, without written approval of the HCT Co., Ltd.

FCC PT.15.407 TEST REPORT	FCC CERTIFICATION REPORT		www.hct.co.kr
Test Report No. HCTR1402F011	Date of Issue: February 12, 2014	EUT Type: Mobile Phone	FCC ID: A3LSMN7506V

Version

TEST REPORT NO.	DATE	DESCRIPTION
HCTR1402F011	February 12, 2014	- First Approval Report

Table of Contents

1. GENERAL INFORMATION	4
2. EUT DESCRIPTION	4
3. TEST METHODOLOGY	5
3.1 EUT CONFIGURATION	5
3.2 EUT EXERCISE	5
3.3 GENERAL TEST PROCEDURES	5
3.4 DESCRIPTION OF TEST MODES	5
4. INSTRUMENT CALIBRATION.....	6
5. FACILITIES AND ACCREDITATIONS	6
5.1 FACILITIES	6
5.2 EQUIPMENT	6
6. ANTENNA REQUIREMENTS	6
7. SUMMARY OF TEST RESULTS	7
8. TEST RESULT	8
8.1 DUTY CYCLE.....	8
8.2 26 dB BANDWIDTH MEASUREMENT	10
8.3 OUTPUT POWER MEASUREMENT.....	19
8.4 POWER SPECTRAL DENSITY	35
8.5 PEAK EXCURSION RATIO.....	44
8.6 FREQUENCY STABILITY.	60
8.7 RADIATED MEASUREMENT.....	66
8.7.1 RADIATED SPURIOUS EMISSIONS.....	66
8.7.2 RADIATED RESTRICTED BAND EDGE MEASUREMENTS	97
8.8 POWERLINE CONDUCTED EMISSIONS	103
9. LIST OF TEST EQUIPMENT	108



1. GENERAL INFORMATION

Applicant: SAMSUNG Electronics Co., Ltd.
Address: 129, Samsung-ro, Yeongtong-gu Suwon-si, Gyeonggi-do, 443-742 Rep. of Korea
FCC ID: A3LSMN7506V
EUT Type: Mobile Phone
FCC Model(s): SM-N7506V
Date(s) of Tests: February 05, 2014 ~ February 11, 2014
Place of Tests: HCT Co., Ltd.
 74, Seoicheon-ro 578beon-gil, Majang-myeon, Icheon-si, Gyeonggi-do, Korea.
 (IC Recognition No. : 5944A-3)

2. EUT DESCRIPTION

EUT Type	Mobile Phone	
FCC Model Name	SM-N7506V	
Power Supply	DC 3.8 V	
Frequency Range	TX_20 MHz BW: 40 MHz BW: RX_20 MHz BW: 40 MHz BW:	5180 MHz - 5240 MHz (UNII 1)/ 5260 MHz - 5320 MHz (UNII 2)/ 5500 MHz - 5700 MHz (UNII 2e) where) Not supported 5600 MHz – 5640 MHz 5190 MHz - 5230 MHz (UNII 1)/ 5270 MHz - 5310 MHz (UNII 2)/ 5510 MHz - 5670 MHz (UNII 2e) where) Not supported 5590 MHz – 5630 MHz 5180 MHz - 5240 MHz (UNII 1)/ 5260 MHz - 5320 MHz (UNII 2)/ 5500 MHz - 5700 MHz (UNII 2e) where) Not supported 5600 MHz – 5640 MHz 5190 MHz - 5230 MHz (UNII 1)/ 5270 MHz - 5310 MHz (UNII 2)/ 5510 MHz - 5670 MHz (UNII 2e) where) Not supported 5590 MHz – 5630 MHz
Max. RF Output Power:	Wi-Fi 802.11a (5180~5240) (8.18 dBm)/ Wi-Fi 802.11a (5260~5320) (8.44 dBm)/ Wi-Fi 802.11a (5500~5700) (8.69 dBm)/ Wi-Fi 802.11n_20 MHz BW (5180~5240) (7.73 dBm)/ Wi-Fi 802.11n_20 MHz BW(5260~5320)(8.17 dBm)/ Wi-Fi 802.11n_20 MHz BW(5500~5700)(7.71 dBm)/ Wi-Fi 802.11n_40 MHz BW(5190~5230) (7.36 dBm)/ Wi-Fi 802.11n_40 MHz BW (5270~5310) (7.58 dBm)/ Wi-Fi 802.11n_40 MHz BW (5510~5670) (7.70 dBm)	
Modulation Type	OFDM(802.11a, 802.11n_20 MHz, 802.11n_40 MHz)	
Antenna Specification	Manufacturer: PULSE ELECTRONICS KOREA Antenna type: LDS Antenna Peak Gain : -0.08 dBi	

FCC PT.15.407 TEST REPORT	FCC CERTIFICATION REPORT		www.hct.co.kr
Test Report No. HCTR1402F011	Date of Issue: February 12, 2014	EUT Type: Mobile Phone	FCC ID: A3LSMN7506V

3. TEST METHODOLOGY

The measurement procedure described in FCC KDB 789033 D01 General UNII Test Procedures v01r03 dated April 08, 2013 entitled “ Guidelines for Compliance Testing of Unlicensed National Information Infrastructure (U-NII) Devices the American National Standard for Testing Unlicensed Wireless Devices(ANSI C63.4-2003) – Part 15, Subpart E” were used in the measurement.

3.1 EUT CONFIGURATION

The EUT configuration for testing is installed on RF field strength measurement to meet the Commissions requirement and operating in a manner that intends to maximize its emission characteristics in a continuous normal application.

3.2 EUT EXERCISE

The EUT was operated in the engineering mode to fix the Tx frequency that was for the purpose of the measurements. According to its specifications, the EUT must comply with the requirements of the Section 15.207, 15.209 and 15.407 under the FCC Rules Part 15 Subpart E.

3.3 GENERAL TEST PROCEDURES

Conducted Emissions

The EUT is placed on the turntable, which is 0.8 m above ground plane. According to the requirements in Section 13.1.4.1 of ANSI C63.4. (Version :2003) Conducted emissions from the EUT measured in the frequency range between 0.15 MHz and 30MHz using CISPR Quasi-peak and average detector modes.

Radiated Emissions

The EUT is placed on a turn table, which is 0.8 m above ground plane. The turntable shall rotate 360 degrees to determine the position of maximum emission level. EUT is set 3 m away from the receiving antenna, which varied from 1 m to 4 m to find out the highest emission. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical. In order to find out the max. emission, the relative positions of this hand-held transmitter (EUT) was rotated through three orthogonal axes according to the requirements in Section 13.1.4.1 of ANSI C63.4. (Version: 2003)

Conducted Antenna Terminal

See Section from 8.1 to 8.4.(KDB 789033)

3.4 DESCRIPTION OF TEST MODES

The EUT has been tested under operating condition. Test program used to control the EUT for staying in continuous transmitting and receiving mode is programmed.

Channel low, mid and high with highest data rate (worst case) is chosen for full testing.

FCC PT.15.407 TEST REPORT	FCC CERTIFICATION REPORT		www.hct.co.kr
Test Report No. HCTR1402F011	Date of Issue: February 12, 2014	EUT Type: Mobile Phone	FCC ID: A3LSMN7506V

4. INSTRUMENT CALIBRATION

The measuring equipment, which was utilized in performing the tests documented herein, has been calibrated in accordance with the manufacturer's recommendations for utilizing calibration equipments, which is traceable to recognized national standards

5. FACILITIES AND ACCREDITATIONS

5.1 FACILITIES

The SAC(Semi-Anechoic Chamber) and conducted measurement facility used to collect the radiated data are located at the 74, Seoicheon-ro 578beon-gil, Majang-myeon, Icheon-si, Gyeonggi-do, Korea. The site is constructed in conformance with the requirements of ANSI C63.4. (Version :2003) and CISPR Publication 22. Detailed description of test facility was submitted to the Commission and accepted dated March 02, 2011 (Registration Number: 90661)

5.2 EQUIPMENT

Radiated emissions are measured with one or more of the following types of Linearly polarized antennas: tuned dipole, bi-conical, log periodic, bi-log, and/or ridged waveguide, horn. Spectrum analyzers with pre-selectors and quasi-peak detectors are used to perform radiated measurements. Conducted emissions are measured with Line Impedance Stabilization Networks and EMI Test Receivers. Calibrated wideband preamplifiers, coaxial cables, and coaxial attenuators are also used for making measurements.

All receiving equipment conforms to CISPR Publication 16-1, "Radio Interference Measuring Apparatus and Measurement Methods."

6. ANTENNA REQUIREMENTS

According to FCC 47 CFR §15.203:

"An intentional radiator antenna shall be designed to ensure that no antenna other than that furnished by the responsible party can be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section."

* The antennas of this E.U.T are permanently attached.

*The E.U.T Complies with the requirement of §15.203

FCC PT.15.407 TEST REPORT	FCC CERTIFICATION REPORT		www.hct.co.kr
Test Report No. HCTR1402F011	Date of Issue: February 12, 2014	EUT Type: Mobile Phone	FCC ID: A3LSMN7506V

7. SUMMARY OF TEST RESULTS

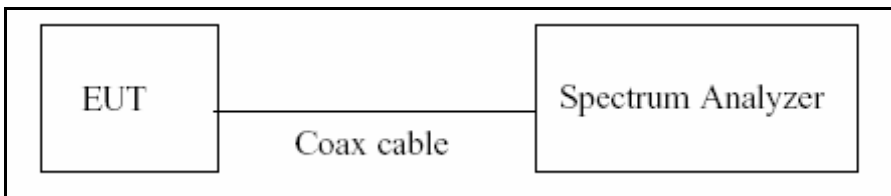
Test Description	FCC Part Section(s)	Test Limit	Test Condition	Test Result
TRANSMITTER MODE(TX)				
26dB Bandwidth	NA	NA	CONDUCTED	PASS
Maximum Conducted Output Power	§15.407(a)(1)	$< 4 + 10 \log_{10} (BW) \text{ dBm}$ (5150-5250 MHz) $< 11 + 10 \log_{10} (BW) \text{ dBm}$ (5250-5350 MHz) $< 11 + 10 \log_{10} (BW) \text{ dBm}$ (5470-5725 MHz)		PASS
Peak Power Spectral Density	§15.407(a)(1), (5)	$< 4 \text{ dBm/ MHz}$ (5150-5250) $< 11 \text{ dBm/ MHz}$ (5250-5350) $< 11 \text{ dBm/ MHz}$ (5470-5725)		PASS
Peak Excursion	§15.407(a)(6)	$< 13 \text{ dB/ MHz}$ maximum difference		PASS
Frequency Stability	§15.407(g)	NA		PASS
Undesirable Emissions	§15.407(b)(1), (2), (3)	$< -27 \text{ dBm/ MHz EIRP}$ (5150-5350 MHz, 5470-5725 MHz)	RADIATED	PASS
General Field Strength Limits(Restricted Bands and Radiated Emission Limits)	15.205, 5.407(b)(1), (5), (6)	Emissions in restricted bands must meet the radiated limits detailed in 15.209		PASS
AC Conducted Emissions 150 kHz-30 MHz	15.207	$< \text{FCC 15.207 limits}$	LINE CONDUCTED	PASS

8. TEST RESULT

8.1 DUTY CYCLE

The zero-span mode on a spectrum analyzer or EMI receiver, if the response time and spacing between bins on the sweep are sufficient to permit accurate measurements of the on and off times of the transmitted signal. Set the center frequency of the instrument to the center frequency of the transmission. Set RBW $\geq$ EBW if possible; otherwise, set RBW to the largest available value. Set VBW $\geq$ RBW. Set detector = peak or average. The zero-span measurement method shall not be used unless both RBW and VBW are $> 50/T$, where T is defined in section B)1)a), and the number of sweep points across duration T exceeds 100. (For example, if VBW and/or RBW are limited to 3 MHz, then the zero-span method of measuring duty cycle shall not be used if $T \leq 16.7$ microseconds.)

▣ TEST CONFIGURATION



▣ TEST PROCEDURE

The transmitter output is connected to the Spectrum Analyzer. We tested according to the zero-span measurement method, B)2) in KDB 789033(issued 04/08/2013)

The largest available value of RBW is 8 MHz and VBW is 50 MHz. The zero-span method of measuring duty cycle shall not be used if $T \leq 6.25$ microseconds. ($50/6.25 = 8$)

The zero-span method was used because all measured T data are > 6.25 microseconds and both RBW and VBW are $> 50/T$.

1. RBW = 8 MHz (the largest available value)
2. VBW = 8 MHz ($\geq$ RBW)
3. SPAN = 0 Hz
4. Detector = Peak
5. Number of points in sweep > 100
6. Trace mode = Clear write
7. Measure T_{total} and T_{on}
8. Calculate Duty Cycle = T_{on} / T_{total} and Duty Cycle Factor = $10 \cdot \log(1/\text{Duty Cycle})$

▣ Duty Cycle Factor

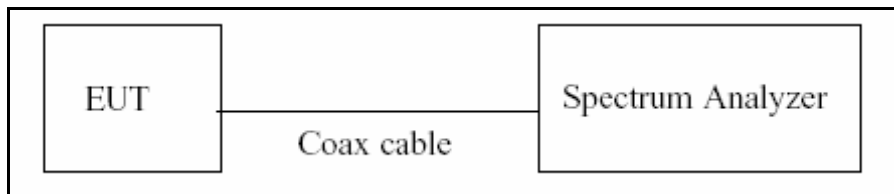
Mode	Data Rate	T _{on} (ms)	T _{total} (ms)	Duty Cycle	Duty Cycle Factor
802.11a Mode	6	1.392	1.497	0.92985972	0.316
	9	0.939	1.041	0.90201729	0.448
	12	0.706	0.808	0.87376238	0.586
	18	0.478	0.578	0.82698962	0.825
	24	0.364	0.464	0.78448276	1.054
	36	0.251	0.351	0.71509972	1.456
	48	0.191	0.291	0.65635739	1.829
	54	0.175	0.275	0.63636364	1.963
802.11n Mode 20 MHz BW	6.5	1.293	1.395	0.92688172	0.330
	13	0.657	0.756	0.86904762	0.610
	19.5	0.446	0.546	0.81684982	0.879
	26	0.342	0.442	0.77375566	1.114
	39	0.234	0.334	0.70059880	1.545
	52	0.183	0.282	0.64893617	1.878
	58.5	0.167	0.266	0.62781955	2.022
	65	0.152	0.250	0.60800000	2.161
802.11n Mode 40 MHz BW	13.5	0.634	0.734	0.86376022	0.636
	27	0.330	0.432	0.76388889	1.170
	40.5	0.227	0.328	0.69207317	1.598
	54	0.179	0.279	0.64157706	1.928
	81	0.127	0.228	0.55701754	2.541
	108	0.103	0.203	0.50738916	2.947
	121.5	0.092	0.192	0.47916667	3.195
	135	0.088	0.188	0.46808511	3.297

8.2 26 dB BANDWIDTH MEASUREMENT

The bandwidth at 26 dB down from the highest in-band spectral density is measured with a spectrum analyzer connected to the antenna terminal while the EUT is operating at its maximum power control level, as defined in KDB 789033(issued 04/08/2013), at the appropriate frequencies. The spectrum analyzer's bandwidth measurement function is configured to measure the 26 dB bandwidth.

The 26 dB bandwidth is used to determine the conducted power limits.

▣ TEST CONFIGURATION



▣ TEST PROCEDURE

The transmitter output is connected to the Spectrum Analyzer.

The Spectrum Analyzer is set to(Page 3 in KDB 789033, issued 04/08/2013)

9. RBW = approximately 1 % of the emission bandwidth
10. VBW > RBW
11. Detector = Peak
12. Trace mode = max hold
13. Measure the maximum width of the emission that is 26 dB down from the peak of the emission. Compare this with the RBW setting of the analyzer. Readjust RBW and repeat measurement as needed until the RBW/EBW ratio is approximately 1 %.

■ TEST RESULTS

Conducted 26 dB Bandwidth Measurements for 802.11a

802.11a Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5180	36	21.95	N/A	Pass
5200	40	21.86	N/A	Pass
5240	48	21.87	N/A	Pass

Conducted 26 dB Bandwidth Measurements for 802.11a

802.11a Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5260	52	21.58	N/A	Pass
5300	60	21.73	N/A	Pass
5320	64	21.77	N/A	Pass

Conducted 26 dB Bandwidth Measurements for 802.11a

802.11a Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5500	100	22.04	N/A	Pass
5580	116	21.66	N/A	Pass
5700	140	22.30	N/A	Pass

■ TEST RESULTS

20 MHz BW

Conducted 26 dB Bandwidth Measurements for 802.11n

802.11n Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5180	36	22.19	N/A	Pass
5200	40	22.21	N/A	Pass
5240	48	22.11	N/A	Pass

Conducted 26 dB Bandwidth Measurements for 802.11n

802.11n Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5260	52	22.18	N/A	Pass
5300	60	22.25	N/A	Pass
5320	64	22.28	N/A	Pass

Conducted 26 dB Bandwidth Measurements for 802.11n

802.11n Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5500	100	22.47	N/A	Pass
5580	116	22.22	N/A	Pass
5700	140	22.23	N/A	Pass

40 MHz BW

Conducted 26 dB Bandwidth Measurements for 802.11n

802.11n Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5190	38	43.01	N/A	Pass
5230	46	42.83	N/A	Pass

Conducted 26 dB Bandwidth Measurements for 802.11n

802.11n Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5270	54	42.96	N/A	Pass
5310	62	43.26	N/A	Pass

Conducted 26 dB Bandwidth Measurements for 802.11n

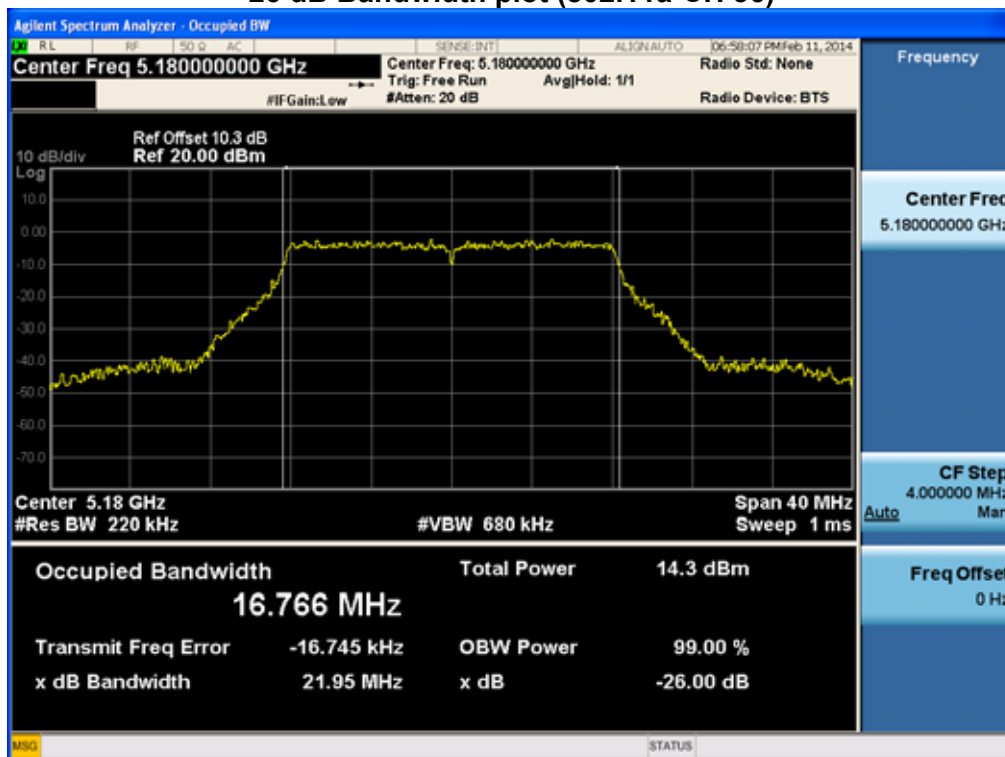
802.11n Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5510	102	43.93	N/A	Pass
5550	110	42.48	N/A	Pass
5670	134	43.01	N/A	Pass

Note :

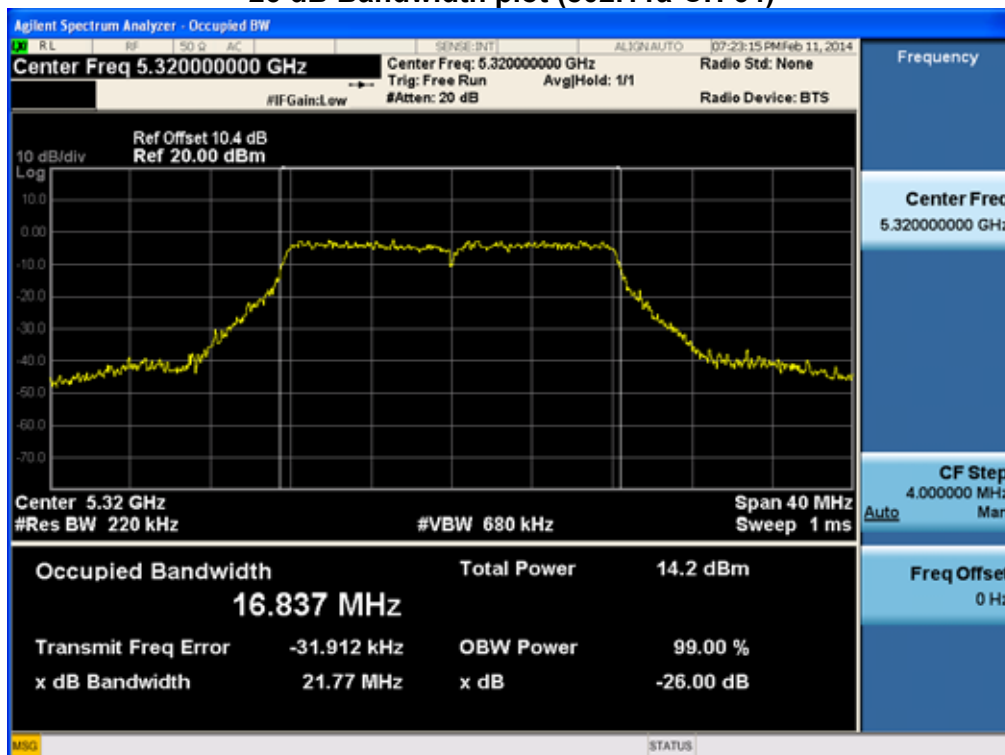
1. In order to simplify the report, attached plots were only the most wide channel.

RESULT PLOTS

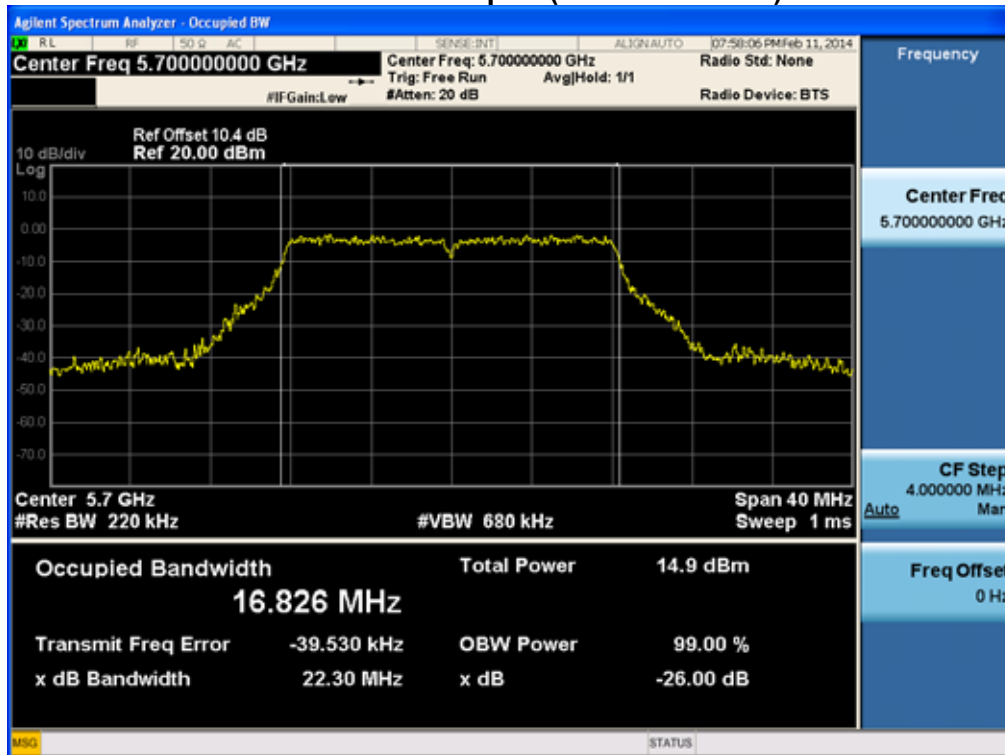
26 dB Bandwidth plot (802.11a-CH 36)



26 dB Bandwidth plot (802.11a-CH 64)

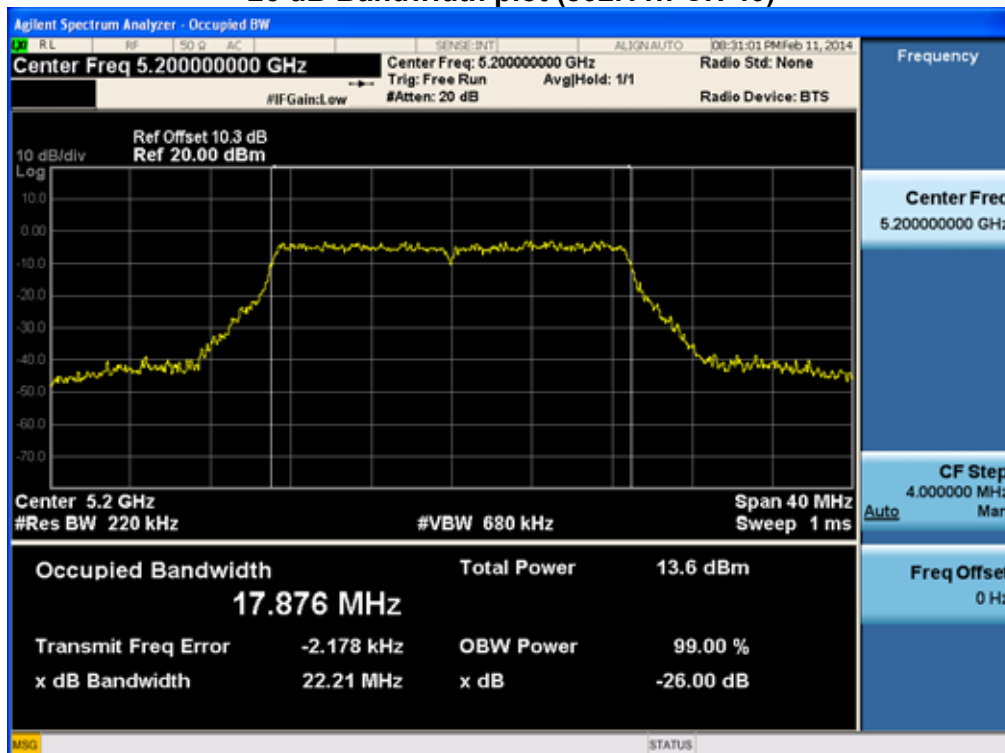


26 dB Bandwidth plot (802.11a-CH 140)

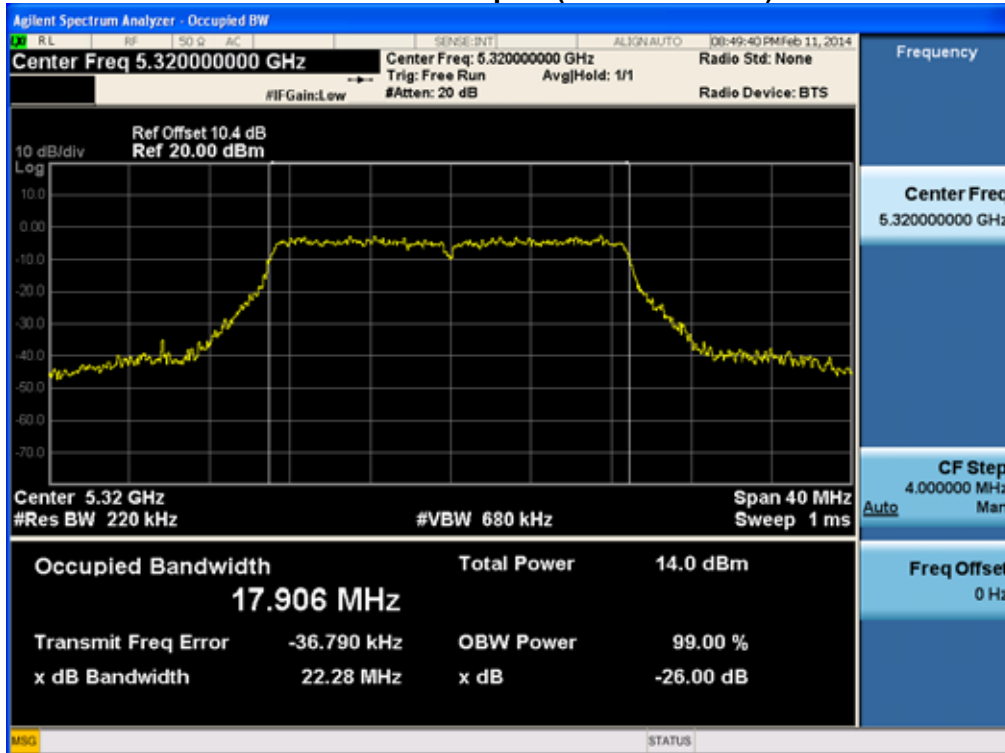


20 MHz BW

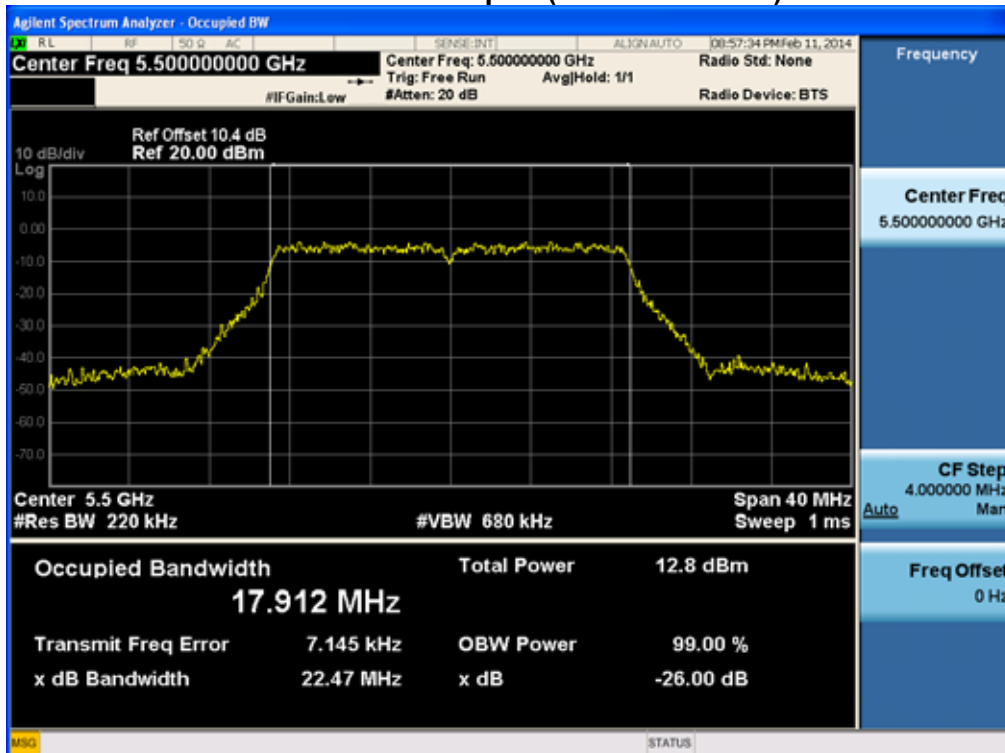
26 dB Bandwidth plot (802.11n-CH 40)



26 dB Bandwidth plot (802.11n-CH 64)

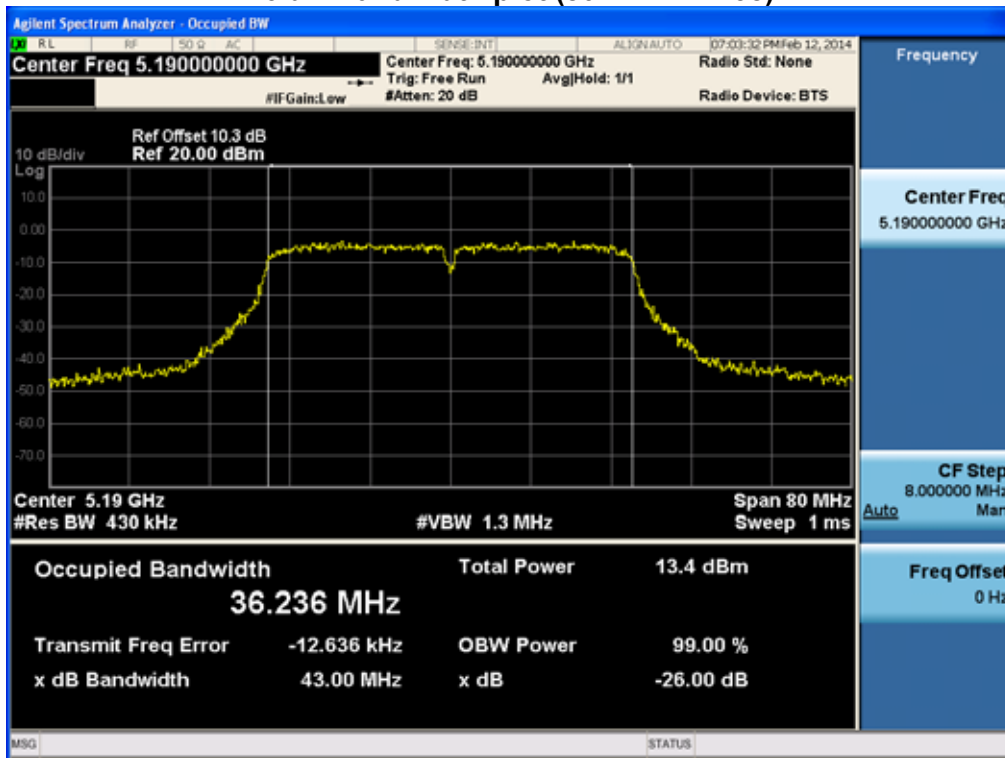


26 dB Bandwidth plot (802.11n-CH 100)

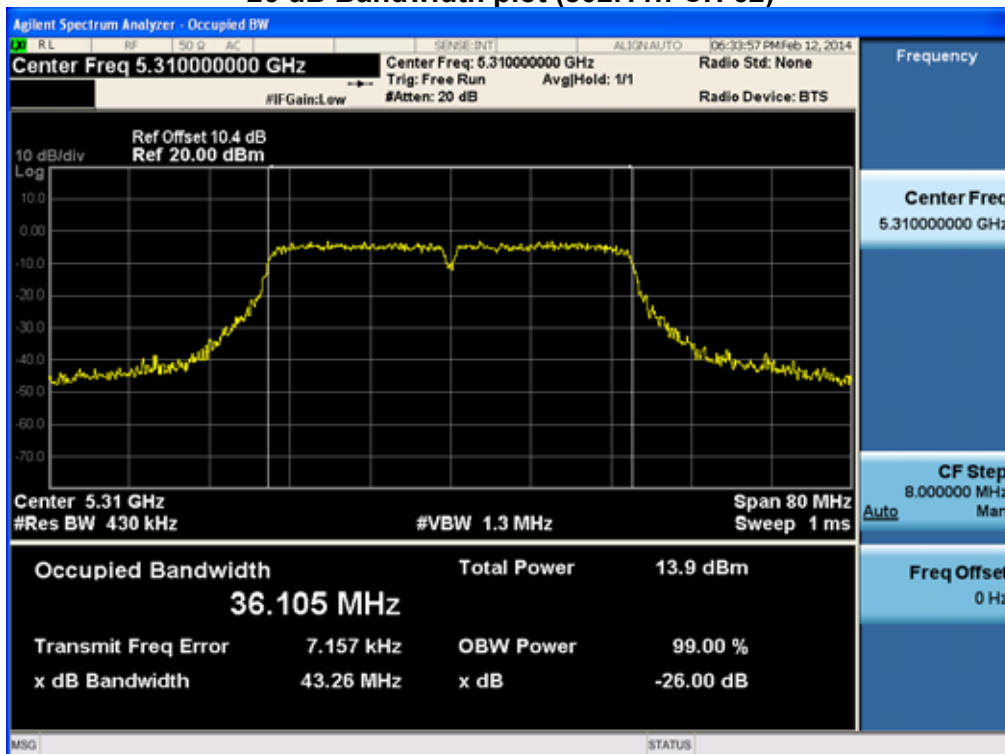


40 MHz BW

26 dB Bandwidth plot (802.11n-CH 38)

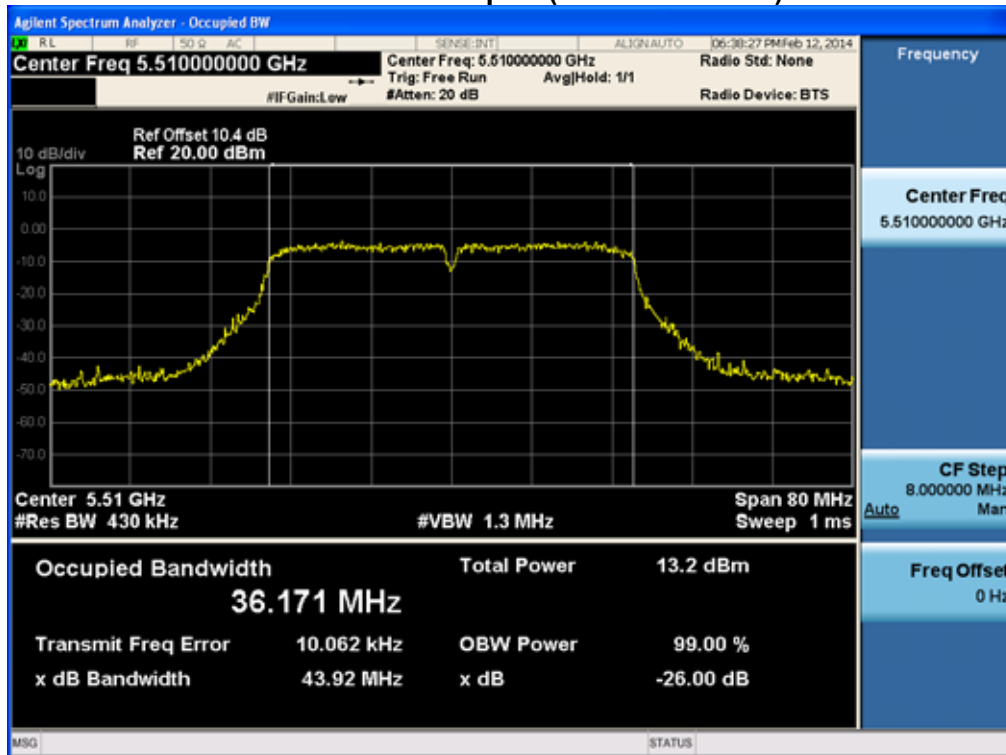


26 dB Bandwidth plot (802.11n-CH 62)



FCC PT.15.407 TEST REPORT	FCC CERTIFICATION REPORT		www.hct.co.kr
Test Report No. HCTR1402F011	Date of Issue: February 12, 2014	EUT Type: Mobile Phone	FCC ID: A3LSMN7506V

26 dB Bandwidth plot (802.11n-CH 102)



FCC PT.15.407 TEST REPORT	FCC CERTIFICATION REPORT		www.hct.co.kr
Test Report No. HCTR1402F011	Date of Issue: February 12, 2014	EUT Type: Mobile Phone	FCC ID: A3LSMN7506V

8.3 OUTPUT POWER MEASUREMENT

Test Requirements and limit, §15.247(b)(3)

A transmitter antenna terminal of EUT is connected to the input of a Spectrum Analyzer.

Measurement is made while the EUT is operating in transmission mode at the appropriate frequencies. In the 5.15 – 5.25 GHz band, the maximum permissible conducted output power is the lesser of 50 mW ((16.99 dBm) and $4 \text{ dBm} + 10 \log_{10} (26 \text{ dB BW})$

frequencies. In the 5.25 – 5.35 GHz band, the maximum permissible conducted output power is the lesser of 250 mW (23.98 dBm) and $11 \text{ dBm} + 10 \log_{10} (26 \text{ dB BW})$

frequencies. In the 5.47 – 5.725 GHz band, the maximum permissible conducted output power is the lesser of 250 mW (23.98 dBm) and $11 \text{ dBm} + 10 \log_{10} (26 \text{ dB BW})$

Limit : 802.11a_UNII-1 = 16.99 dBm

802.11n_UNII-1_20 MHz BW = 16.99 dBm

802.11n_UNII-1_40 MHz BW = 16.99 dBm

802.11a_UNII-2 = 23.98 dBm

802.11n_UNII-2_20 MHz BW = 23.98dBm

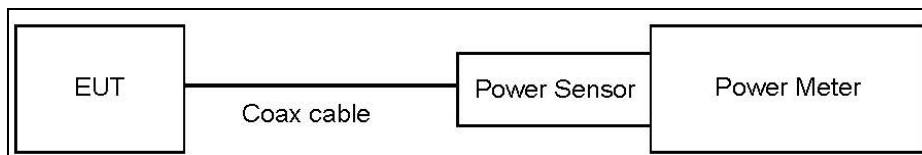
802.11n_UNII-2_40 MHz BW = 23.98 dBm

802.11a_UNII-2e = 23.98dBm

802.11n_UNII-2e_20 MHz BW = 23.98 dBm

802.11n_UNII-2e_40 MHz BW = 23.98 dBm

▣ TEST CONFIGURATION(20 MHz BW)



▣ TEST PROCEDURE(20 MHz BW)

We tested according to Method E)3)a) in KDB 789033(issued 04/08/2013).

▪ Average Power

1. Measure the duty cycle.
2. Measure the average power of the transmitter. This measurement is an average over both the on and off periods of the transmitter.
3. Add $10 \log (1/x)$, where x is the duty cycle, to the measured power in order to compute the average power during the actual transmission times.

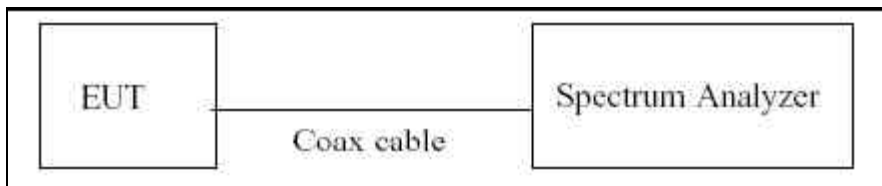
Note :

1. We apply to the offset in the 5.2 GHz, 5.3 GHz and 5.6 GHz range that was rounded off to the closest tenth dB. Actual value of loss for the attenuator and cable combination is below table.

Band	Frequency(MHz)	Loss(dB)
UNII 1	5180	10.30
	5190	10.29
	5200	10.28
	5230	10.29
	5240	10.34
UNII 2	5260	10.37
	5270	10.38
	5300	10.40
	5310	10.39
	5320	10.39
UNII 2e	5500	10.35
	5510	10.36
	5550	10.41
	5580	10.43
	5670	10.43

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

■ TEST CONFIGURATION(40 MHz BW & 80 MHz BW)



■ TEST PROCEDURE(40 MHz BW)

The transmitter output is connected to the Spectrum Analyzer. We use the spectrum analyzer's integrated band power measurement function. We tested according to Method SA-2 in KDB 789033(issued 04/08/2013).

The Spectrum Analyzer is set to

- Average Power
 1. Measure the duty cycle.
 2. Set span to encompass the 26 dB EBW of the signal.
 3. RBW = 1 MHz.
 4. VBW $\geq$ 3 MHz.
 5. Number of points in sweep $\geq$ 2*span/RBW.

6. Sweep time = auto.
7. Detector = RMS.
8. Do not use sweep triggering. Allow the sweep to “free run”.
9. Trace average at least 100 traces in power averaging(RMS) mode
10. Integrated bandwidth = OBW
11. Add $10\log(1/x)$, where x is the duty cycle, to the measured power in order to compute the average power during the actual transmission times.

▣ Sample Calculation

Output Power = Reading Value + ATT loss + Cable loss(1 ea) + Duty Cycle Factor

Output Power = 10 dBm + 10 dB + 0.8 dB + 0.21 dB = 21.01 dBm

Note :

1. Spectrum reading values are not plot data. The power 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 5.2 GHz, 5.3 GHz and 5.6 GHz range that was rounded off to the closest tenth dB. Actual value of loss for the attenuator and cable combination is below table.

Band	Frequency(MHz)	Loss(dB)
UNII 1	5180	10.30
	5190	10.29
	5200	10.28
	5230	10.29
	5240	10.34
UNII 2	5260	10.37
	5270	10.38
	5300	10.40
	5310	10.39
	5320	10.39
UNII 2e	5500	10.35
	5510	10.36
	5550	10.41
	5580	10.43
	5670	10.43

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

■ TEST RESULTS

20 MHz BW

Conducted Output Power Measurements (802.11a Mode: 5180~5240)

802.11a Mode		Rate (Mbps)	Measured Power(dBm)	Duty Cycle Factor	Measured Power(dBm) + Duty Cycle Factor	Limit (dBm)
Frequency [MHz]	Channel No.					
5180	36	6	7.68	0.316	8.00	16.99
		9	7.44	0.448	7.89	16.99
		12	7.44	0.586	8.03	16.99
		18	7.15	0.825	7.97	16.99
		24	6.89	1.054	7.94	16.99
		36	6.55	1.456	8.01	16.99
		48	6.20	1.829	8.03	16.99
		54	6.03	1.963	7.99	16.99
5200	40	6	7.19	0.316	7.51	16.99
		9	7.06	0.448	7.51	16.99
		12	6.96	0.586	7.54	16.99
		18	6.67	0.825	7.50	16.99
		24	6.43	1.054	7.49	16.99
		36	6.12	1.456	7.58	16.99
		48	5.79	1.829	7.61	16.99
		54	5.64	1.963	7.60	16.99
5240	48	6	7.78	0.316	8.10	16.99
		9	7.59	0.448	8.04	16.99
		12	7.46	0.586	8.04	16.99
		18	7.28	0.825	8.10	16.99
		24	7.02	1.054	8.08	16.99
		36	6.67	1.456	8.13	16.99
		48	6.29	1.829	8.12	16.99
		54	6.22	1.963	8.18	16.99

Conducted Output Power Measurements (802.11a Mode: 5260~5320)

802.11a Mode		Rate (Mbps)	Measured Power(dBm)	Duty Cycle Factor	Measured Power(dBm) + Duty Cycle Factor	Limit (dBm)
Frequency [MHz]	Channel No.					
5260	52	6	7.97	0.316	8.28	23.98
		9	7.83	0.448	8.28	23.98
		12	7.67	0.586	8.26	23.98
		18	7.40	0.825	8.23	23.98
		24	7.22	1.054	8.27	23.98
		36	6.71	1.456	8.17	23.98
		48	6.50	1.829	8.33	23.98
		54	6.41	1.963	8.38	23.98
5300	60	6	7.98	0.316	8.30	23.98
		9	7.85	0.448	8.30	23.98
		12	7.81	0.586	8.39	23.98
		18	7.51	0.825	8.33	23.98
		24	7.27	1.054	8.32	23.98
		36	6.86	1.456	8.32	23.98
		48	6.51	1.829	8.33	23.98
		54	6.48	1.963	8.44	23.98
5320	64	6	7.55	0.316	7.86	23.98
		9	7.41	0.448	7.85	23.98
		12	7.33	0.586	7.91	23.98
		18	7.05	0.825	7.88	23.98
		24	6.81	1.054	7.87	23.98
		36	6.48	1.456	7.93	23.98
		48	6.12	1.829	7.94	23.98
		54	5.98	1.963	7.94	23.98

Conducted Output Power Measurements (802.11a Mode: 5500~5700)

802.11a Mode		Rate (Mbps)	Measured Power(dBm)	Duty Cycle Factor	Measured Power(dBm) + Duty Cycle Factor	Limit (dBm)
Frequency [MHz]	Channel No.					
5500	100	6	7.54	0.316	7.86	23.98
		9	7.38	0.448	7.83	23.98
		12	7.30	0.586	7.88	23.98
		18	7.03	0.825	7.85	23.98
		24	6.85	1.054	7.91	23.98
		36	6.44	1.456	7.89	23.98
		48	6.09	1.829	7.92	23.98
		54	5.92	1.963	7.89	23.98
5580	116	6	7.57	0.316	7.88	23.98
		9	7.35	0.448	7.80	23.98
		12	7.21	0.586	7.80	23.98
		18	7.04	0.825	7.87	23.98
		24	6.73	1.054	7.78	23.98
		36	6.46	1.456	7.92	23.98
		48	6.13	1.829	7.96	23.98
		54	5.85	1.963	7.81	23.98
5700	140	6	8.27	0.316	8.58	23.98
		9	8.08	0.448	8.53	23.98
		12	7.96	0.586	8.54	23.98
		18	7.78	0.825	8.61	23.98
		24	7.54	1.054	8.59	23.98
		36	7.18	1.456	8.64	23.98
		48	6.75	1.829	8.58	23.98
		54	6.72	1.963	8.69	23.98

Conducted Output Power Measurements (802.11n Mode: 5180~5240)

802.11n Mode		Rate (Mbps)	Measured Power(dBm)	Duty Cycle Factor	Measured Power(dBm) + Duty Cycle Factor	Limit (dBm)
Frequency [MHz]	Channel No.					
5180	36	6.5	7.29	0.330	7.62	16.99
		13	7.10	0.610	7.71	16.99
		19.5	6.80	0.879	7.68	16.99
		26	6.56	1.114	7.67	16.99
		39	6.06	1.545	7.60	16.99
		52	5.78	1.878	7.66	16.99
		58.5	5.70	2.022	7.72	16.99
		65	5.57	2.161	7.73	16.99
5200	40	6.5	6.79	0.330	7.12	16.99
		13	6.58	0.610	7.19	16.99
		19.5	6.31	0.879	7.19	16.99
		26	6.11	1.114	7.22	16.99
		39	5.64	1.545	7.19	16.99
		52	5.36	1.878	7.24	16.99
		58.5	5.21	2.022	7.23	16.99
		65	5.07	2.161	7.23	16.99
5240	48	6.5	6.90	0.330	7.23	16.99
		13	6.67	0.610	7.28	16.99
		19.5	6.42	0.879	7.30	16.99
		26	6.14	1.114	7.26	16.99
		39	5.76	1.545	7.30	16.99
		52	5.43	1.878	7.31	16.99
		58.5	5.31	2.022	7.33	16.99
		65	5.13	2.161	7.29	16.99

Conducted Output Power Measurements (802.11n Mode: 5260~5320)

802.11n Mode		Rate (Mbps)	Measured Power(dBm)	Duty Cycle Factor	Measured Power(dBm) + Duty Cycle Factor	Limit (dBm)
Frequency [MHz]	Channel No.					
5260	52	6.5	7.09	0.330	7.41	23.98
		13	6.83	0.610	7.44	23.98
		19.5	6.61	0.879	7.49	23.98
		26	6.34	1.114	7.46	23.98
		39	5.99	1.545	7.53	23.98
		52	5.67	1.878	7.54	23.98
		58.5	5.55	2.022	7.57	23.98
		65	5.33	2.161	7.49	23.98
5300	60	6.5	7.66	0.330	7.99	23.98
		13	7.45	0.610	8.06	23.98
		19.5	7.18	0.879	8.05	23.98
		26	6.97	1.114	8.08	23.98
		39	6.60	1.545	8.15	23.98
		52	6.17	1.878	8.05	23.98
		58.5	6.15	2.022	8.17	23.98
		65	5.92	2.161	8.08	23.98
5320	64	6.5	7.23	0.330	7.56	23.98
		13	6.98	0.610	7.59	23.98
		19.5	6.71	0.879	7.59	23.98
		26	6.48	1.114	7.59	23.98
		39	6.12	1.545	7.67	23.98
		52	5.69	1.878	7.57	23.98
		58.5	5.62	2.022	7.64	23.98
		65	5.45	2.161	7.61	23.98

Conducted Output Power Measurements (802.11n Mode: 5500~5700)

802.11n Mode		Rate (Mbps)	Measured Power(dBm)	Duty Cycle Factor	Measured Power(dBm) + Duty Cycle Factor	Limit (dBm)
Frequency [MHz]	Channel No.					
5500	100	6.5	5.95	0.330	6.28	23.98
		13	5.79	0.610	6.40	23.98
		19.5	5.51	0.879	6.39	23.98
		26	5.24	1.114	6.36	23.98
		39	4.88	1.545	6.43	23.98
		52	4.46	1.878	6.34	23.98
		58.5	4.39	2.022	6.41	23.98
		65	4.20	2.161	6.36	23.98
5580	116	6.5	6.50	0.330	6.83	23.98
		13	6.22	0.610	6.83	23.98
		19.5	5.99	0.879	6.87	23.98
		26	5.74	1.114	6.85	23.98
		39	5.32	1.545	6.87	23.98
		52	5.00	1.878	6.88	23.98
		58.5	4.92	2.022	6.94	23.98
		65	4.75	2.161	6.91	23.98
5700	140	6.5	7.22	0.330	7.55	23.98
		13	7.03	0.610	7.63	23.98
		19.5	6.80	0.879	7.68	23.98
		26	6.54	1.114	7.66	23.98
		39	6.08	1.545	7.62	23.98
		52	5.83	1.878	7.71	23.98
		58.5	5.69	2.022	7.71	23.98
		65	5.52	2.161	7.68	23.98

Conducted Output Power Measurements (802.11n Mode: 5190~5230)

802.11n Mode		Rate (Mbps)	Measured Power(dBm)	Duty Cycle Factor	Measured Power(dBm) + Duty Cycle Factor	Limit (dBm)
Frequency [MHz]	Channel No.					
5190	38	13.5	6.48	0.636	7.11	16.99
		27	6.02	1.170	7.19	16.99
		40.5	5.57	1.598	7.17	16.99
		54	5.25	1.928	7.18	16.99
		81	4.65	2.541	7.19	16.99
		108	4.29	2.947	7.24	16.99
		121.5	4.05	3.195	7.25	16.99
		135	3.95	3.297	7.24	16.99
5230	46	13.5	6.56	0.636	7.19	16.99
		27	6.11	1.170	7.28	16.99
		40.5	5.64	1.598	7.23	16.99
		54	5.28	1.928	7.21	16.99
		81	4.79	2.541	7.33	16.99
		108	4.33	2.947	7.28	16.99
		121.5	4.14	3.195	7.33	16.99
		135	4.07	3.297	7.36	16.99

Conducted Output Power Measurements (802.11n Mode: 5270~5310)

802.11n Mode		Rate (Mbps)	Measured Power(dBm)	Duty Cycle Factor	Measured Power(dBm) + Duty Cycle Factor	Limit (dBm)
Frequency [MHz]	Channel No.					
5270	54	13.5	6.75	0.636	7.39	23.98
		27	6.28	1.170	7.45	23.98
		40.5	5.85	1.598	7.45	23.98
		54	5.52	1.928	7.44	23.98
		81	4.94	2.541	7.49	23.98
		108	4.56	2.947	7.51	23.98
		121.5	4.34	3.195	7.53	23.98
		135	4.12	3.297	7.41	23.98
5310	62	13.5	6.78	0.636	7.41	23.98
		27	6.34	1.170	7.51	23.98
		40.5	5.95	1.598	7.55	23.98
		54	5.65	1.928	7.58	23.98
		81	4.99	2.541	7.53	23.98
		108	4.60	2.947	7.55	23.98
		121.5	4.32	3.195	7.51	23.98
		135	4.20	3.297	7.50	23.98

Conducted Output Power Measurements (802.11n Mode: 5510~5670)

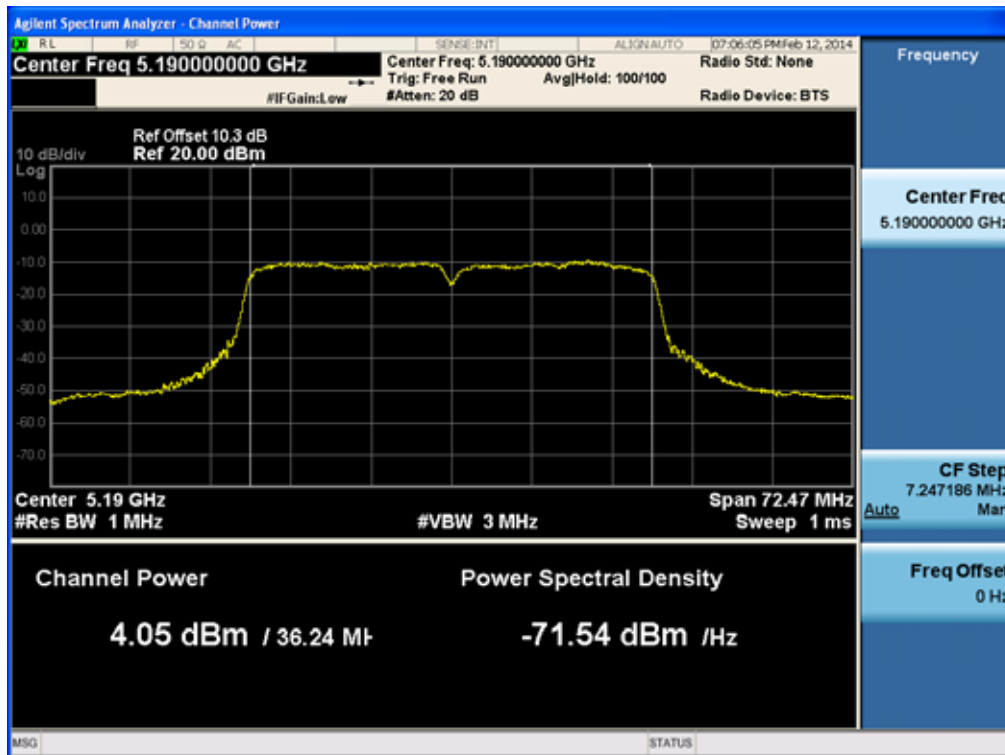
802.11n Mode		Rate (Mbps)	Measured Power(dBm)	Duty Cycle Factor	Measured Power(dBm) + Duty Cycle Factor	Limit (dBm)
Frequency [MHz]	Channel No.					
5510	102	13.5	6.16	0.636	6.80	23.98
		27	5.71	1.170	6.88	23.98
		40.5	5.35	1.598	6.95	23.98
		54	4.90	1.928	6.83	23.98
		81	4.32	2.541	6.86	23.98
		108	3.94	2.947	6.89	23.98
		121.5	3.67	3.195	6.87	23.98
		135	3.53	3.297	6.83	23.98
5550	110	13.5	6.72	0.636	7.36	23.98
		27	6.27	1.170	7.44	23.98
		40.5	5.81	1.598	7.41	23.98
		54	5.50	1.928	7.43	23.98
		81	4.96	2.541	7.50	23.98
		108	4.50	2.947	7.45	23.98
		121.5	4.32	3.195	7.52	23.98
		135	4.15	3.297	7.44	23.98
5670	134	13.5	6.88	0.636	7.51	23.98
		27	6.41	1.170	7.58	23.98
		40.5	5.98	1.598	7.57	23.98
		54	5.61	1.928	7.54	23.98
		81	5.07	2.541	7.61	23.98
		108	4.61	2.947	7.55	23.98
		121.5	4.50	3.195	7.70	23.98
		135	4.33	3.297	7.63	23.98

Note : In order to simplify the report, attached plots were only the highest conducted power channel.

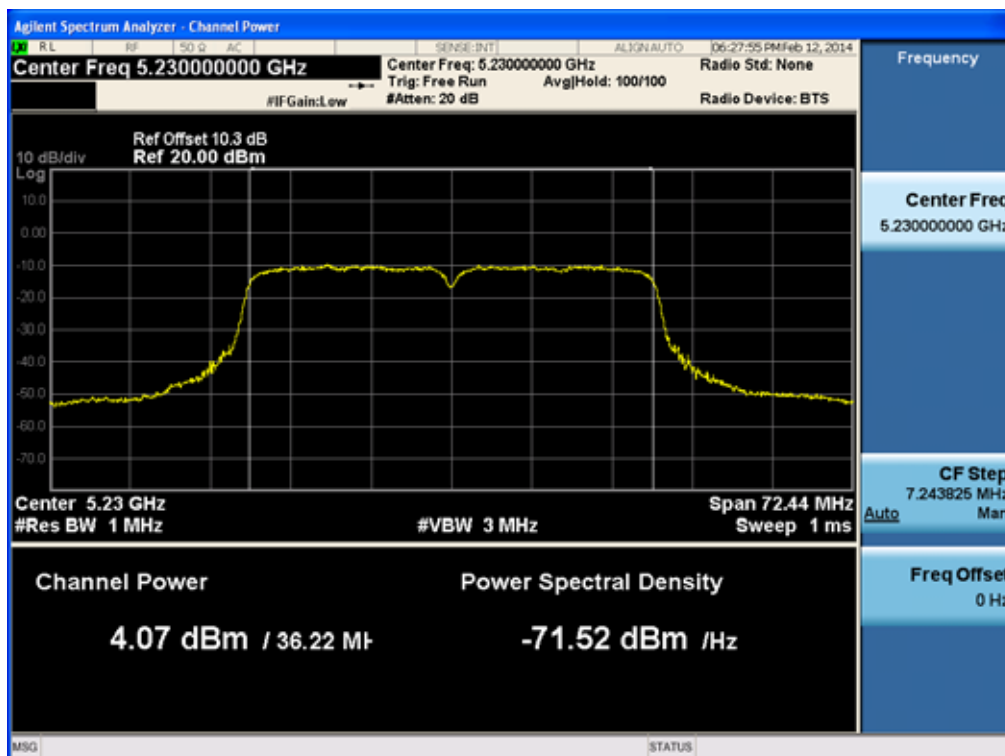
RESULT PLOTS 40 MHz BW

(5190 MHz ~5230 MHz)

Conducted Output Power (802.11n-CH 38) 121.5 Mbps



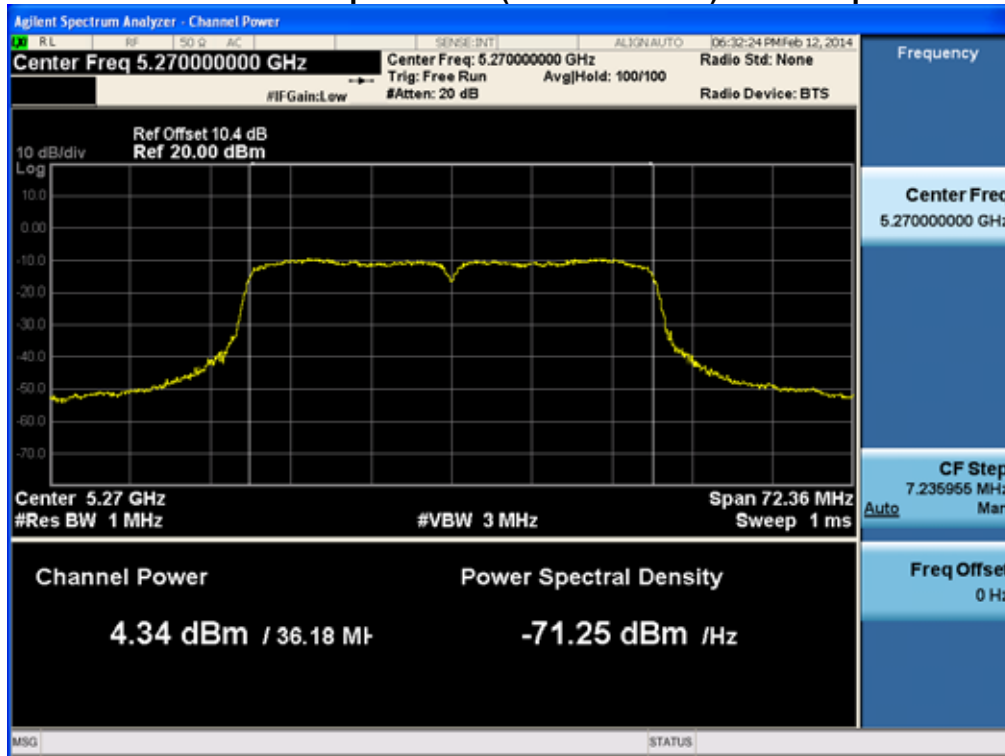
Conducted Output Power (802.11n-CH 46) 135 Mbps



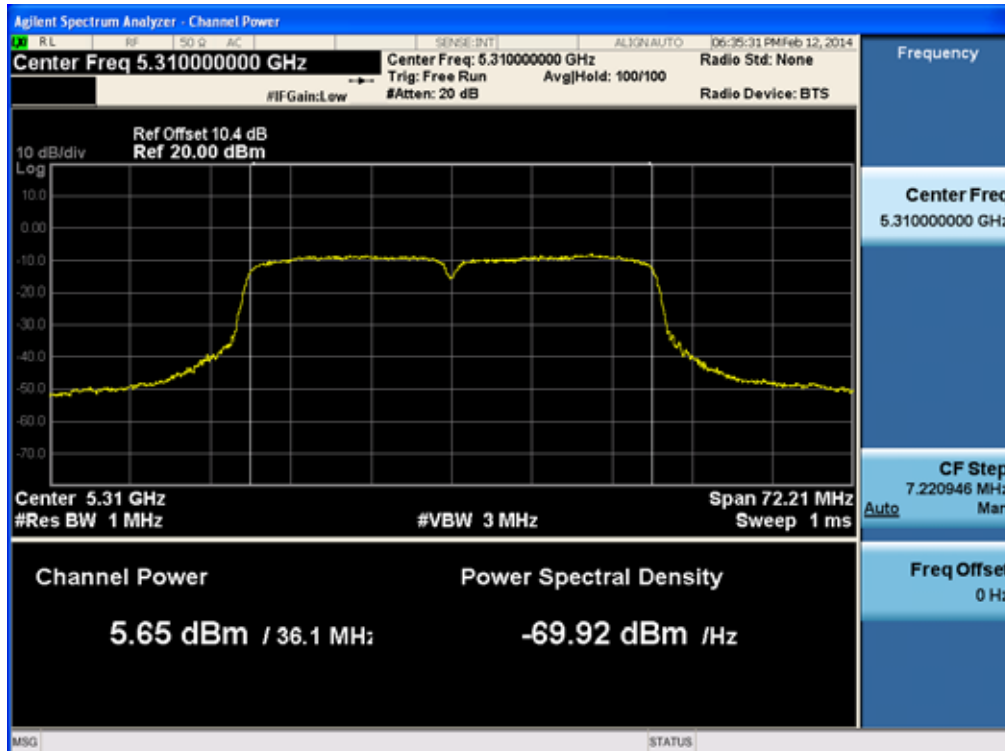
FCC PT.15.407 TEST REPORT	FCC CERTIFICATION REPORT		www.hct.co.kr
Test Report No. HCTR1402F011	Date of Issue: February 12, 2014	EUT Type: Mobile Phone	FCC ID: A3LSMN7506V

(5270 MHz ~5310 MHz)

Conducted Output Power (802.11n-CH 54) 121.5 Mbps



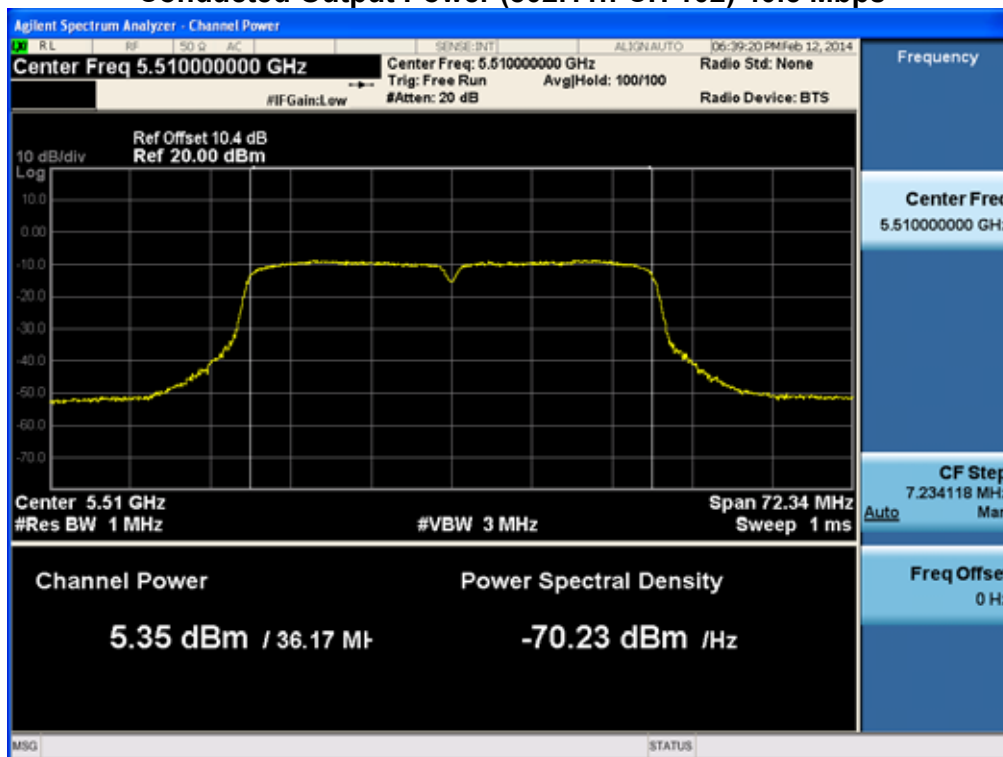
Conducted Output Power (802.11n-CH 62) 54 Mbps



FCC PT.15.407 TEST REPORT	FCC CERTIFICATION REPORT		www.hct.co.kr
Test Report No. HCTR1402F011	Date of Issue: February 12, 2014	EUT Type: Mobile Phone	FCC ID: A3LSMN7506V

(5510 MHz ~5670 MHz)

Conducted Output Power (802.11n-CH 102) 40.5 Mbps

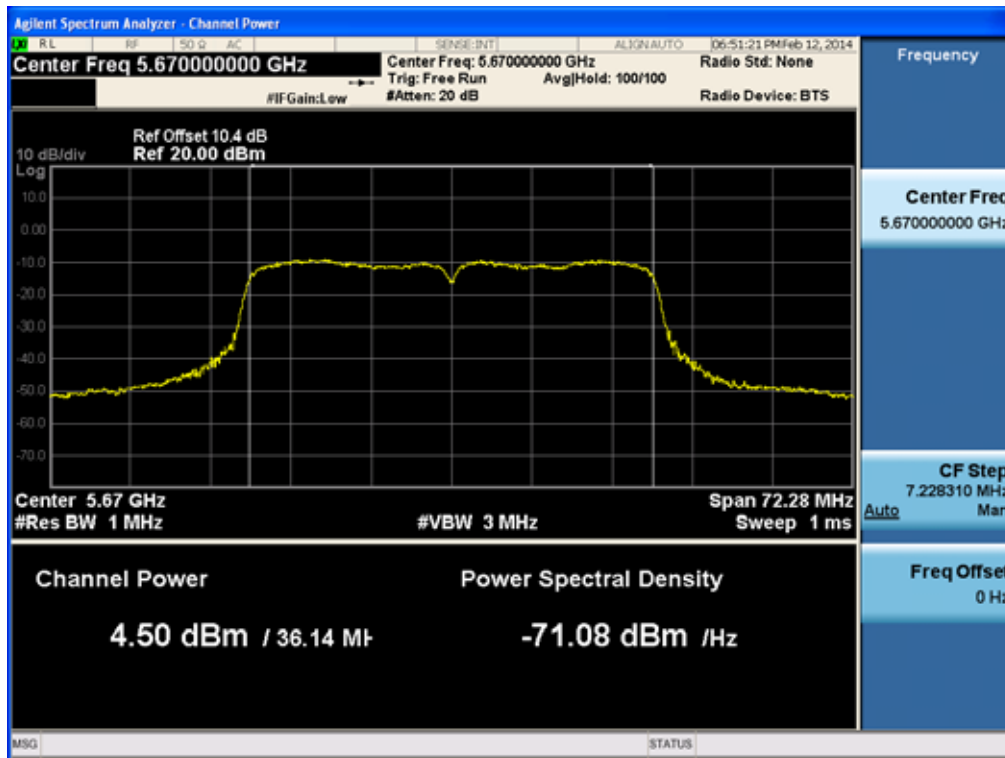


Conducted Output Power (802.11n-CH 110) 121.5 Mbps



FCC PT.15.407 TEST REPORT	FCC CERTIFICATION REPORT		www.hct.co.kr
Test Report No. HCTR1402F011	Date of Issue: February 12, 2014	EUT Type: Mobile Phone	FCC ID: A3LSMN7506V

Conducted Output Power (802.11n-CH 134) 121.5 Mbps

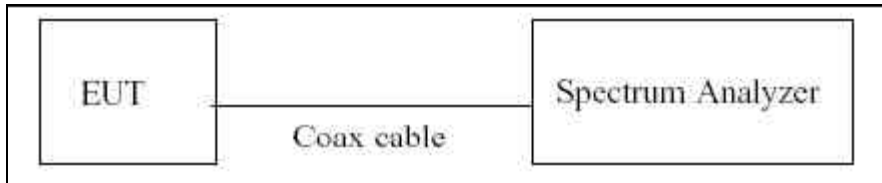


FCC PT.15.407 TEST REPORT	FCC CERTIFICATION REPORT		www.hct.co.kr
Test Report No. HCTR1402F011	Date of Issue: February 12, 2014	EUT Type: Mobile Phone	FCC ID: A3LSMN7506V

8.4 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

We tested according to Method in KDB 789033(issued 04/08/2013).

The spectrum analyzer is set to :

1. Set span to encompass the entire emission bandwidth(EBW) of the signal.
2. RBW = 1 MHz.
3. VBW ≥ 3 MHz.
4. Number of points in sweep ≥ 2*span/RBW.
5. Sweep time = auto.
6. Detector = RMS(i.e., power averaging), if available. Otherwise, use sample detector mode.
7. Do not use sweep triggering. Allow the sweep to “free run”.
8. Trace average at least 100 traces in power averaging(RMS) mode
9. Use the peak search function on the spectrum analyzer to find the peak of the spectrum.
10. If Method SA-2 was used, add $10 \log(1/x)$, where x is the duty cycle, to the peak of the spectrum.

▣ Sample Calculation

PSD = Reading Value + ATT loss + Cable loss(1 ea) + Duty Cycle Factor

Output Power = -5 dBm + 10 dB + 0.8 dB + 0.21 dB = 16.01 dBm

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 5.2 GHz, 5.3 GHz and 5.6 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.15.407 TEST REPORT	FCC CERTIFICATION REPORT		www.hct.co.kr
Test Report No. HCTR1402F011	Date of Issue: February 12, 2014	EUT Type: Mobile Phone	FCC ID: A3LSMN7506V

Band	Frequency(MHz)	Loss(dB)
UNII 1	5180	10.30
	5190	10.29
	5200	10.28
	5230	10.29
	5240	10.34
UNII 2	5260	10.37
	5270	10.38
	5300	10.40
	5310	10.39
	5320	10.39
UNII 2e	5500	10.35
	5510	10.36
	5550	10.41
	5580	10.43
	5670	10.43
	5700	10.30

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

■ TEST RESULTS

Conducted Power Density Measurements

Frequency (MHz)	Channel No.	Mode	Test Result				
			Measured Power Density (dBm)	Duty Cycle Factor (dB)	Measured Power Density(dBm) + Duty Cycle Factor	Limit (dBm)	Pass/Fail
5180	36	802.11a	-4.574	1.829	-2.745	4	Pass
5200	40		-5.114	1.829	-3.285	4	Pass
5240	48		-4.178	1.963	-2.215	4	Pass
5260	52		-4.551	1.963	-2.588	11	Pass
5300	60		-4.045	1.963	-2.082	11	Pass
5320	64		-4.782	1.829	-2.953	11	Pass
5500	100		-4.798	1.829	-2.969	11	Pass
5580	116		-4.685	1.829	-2.856	11	Pass
5700	140		-3.917	1.963	-1.954	11	Pass

Conducted Power Density Measurements

Frequency (MHz)	Channel No.	Mode	Test Result				
			Measured Power Density (dBm)	Duty Cycle Factor (dB)	Measured Power Density(dBm) + Duty Cycle Factor	Limit (dBm)	Pass/Fail
5180	36	802.11n 20MHz BW	-5.255	2.161	-3.094	4	Pass
5200	40		-5.324	1.878	-3.446	4	Pass
5240	48		-5.423	2.022	-3.401	4	Pass
5260	52		-5.121	2.022	-3.099	11	Pass
5300	60		-4.749	2.022	-2.727	11	Pass
5320	64		-5.000	1.545	-3.455	11	Pass
5500	100		-6.136	1.545	-4.591	11	Pass
5580	116		-5.381	2.022	-3.359	11	Pass
5700	140		-5.182	2.022	-3.160	11	Pass

Conducted Power Density Measurements

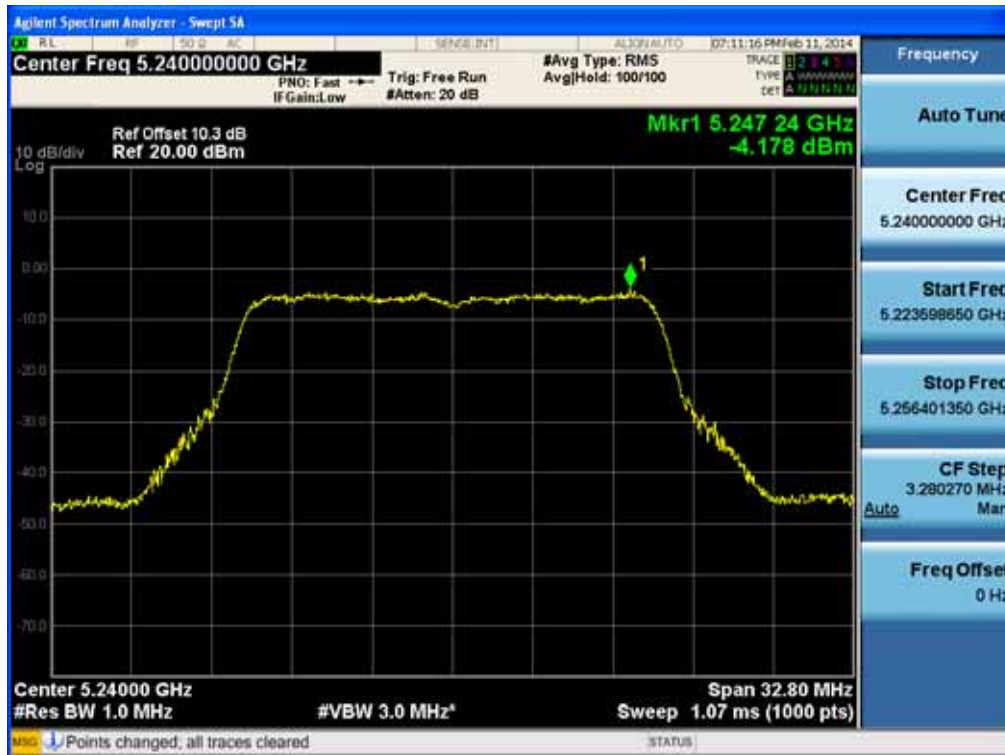
Frequency (MHz)	Channel No.	Mode	Test Result				
			Measured Power Density (dBm)	Duty Cycle Factor (dB)	Measured Power Density(dBm) + Duty Cycle Factor	Limit (dBm)	Pass/Fail
5190	38	802.11n 40MHz BW	-9.844	3.195	-6.649	4	Pass
5230	46		-9.706	3.297	-6.409	4	Pass
5270	54		-9.192	3.195	-5.997	11	Pass
5310	62		-8.444	1.928	-6.516	11	Pass
5510	102		-8.633	1.598	-7.035	11	Pass
5550	110		-9.273	3.195	-6.078	11	Pass
5670	134		-9.550	3.195	-6.355	11	Pass

Note : In order to simplify the report, attached plots were only the highest PSD channel.

RESULT PLOTS

20 MHz BW

Power Spectral Density (802.11a-CH 48)

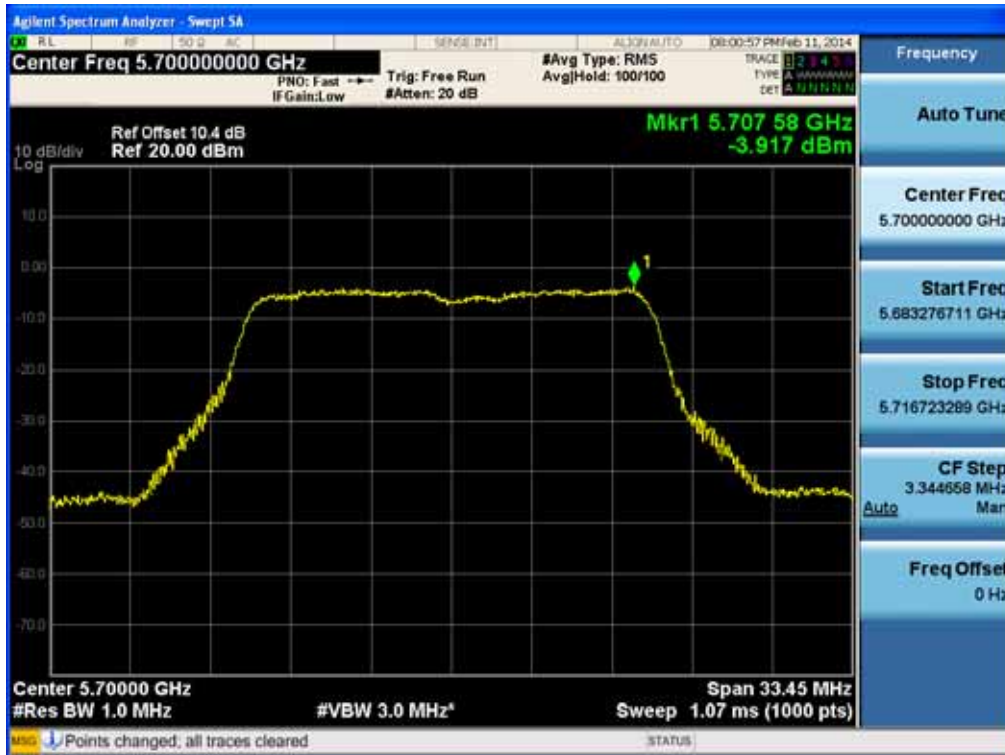


Power Spectral Density (802.11a-CH 60)

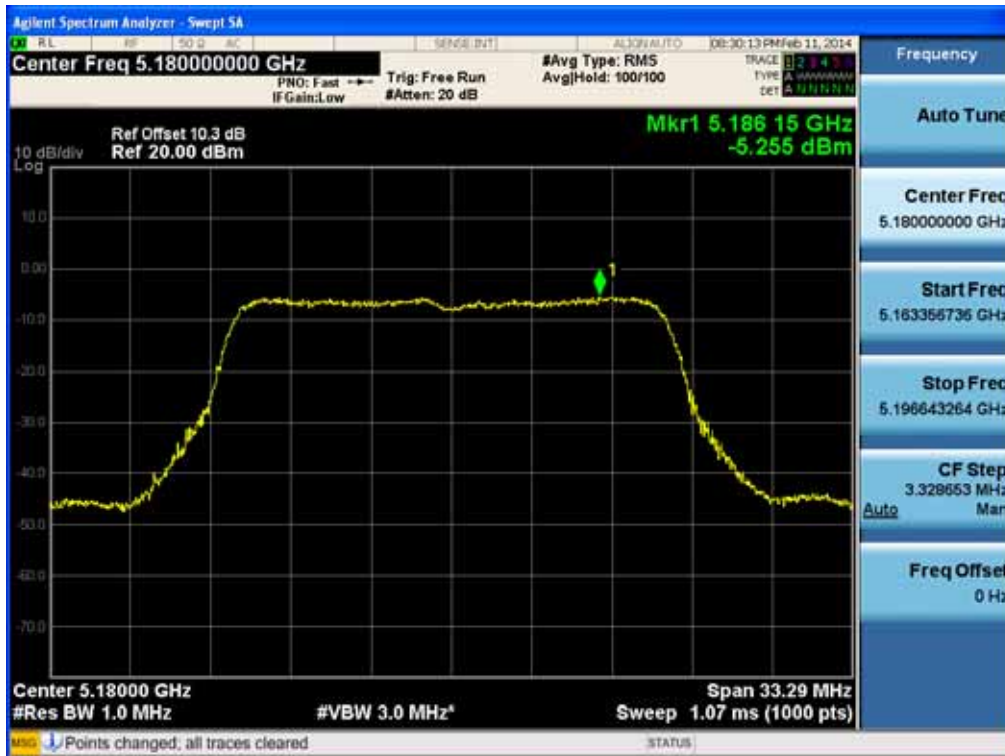


FCC PT.15.407 TEST REPORT	FCC CERTIFICATION REPORT		www.hct.co.kr
Test Report No. HCTR1402F011	Date of Issue: February 12, 2014	EUT Type: Mobile Phone	FCC ID: A3LSMN7506V

Power Spectral Density (802.11a-CH 140)



Power Spectral Density (802.11n-CH 36)

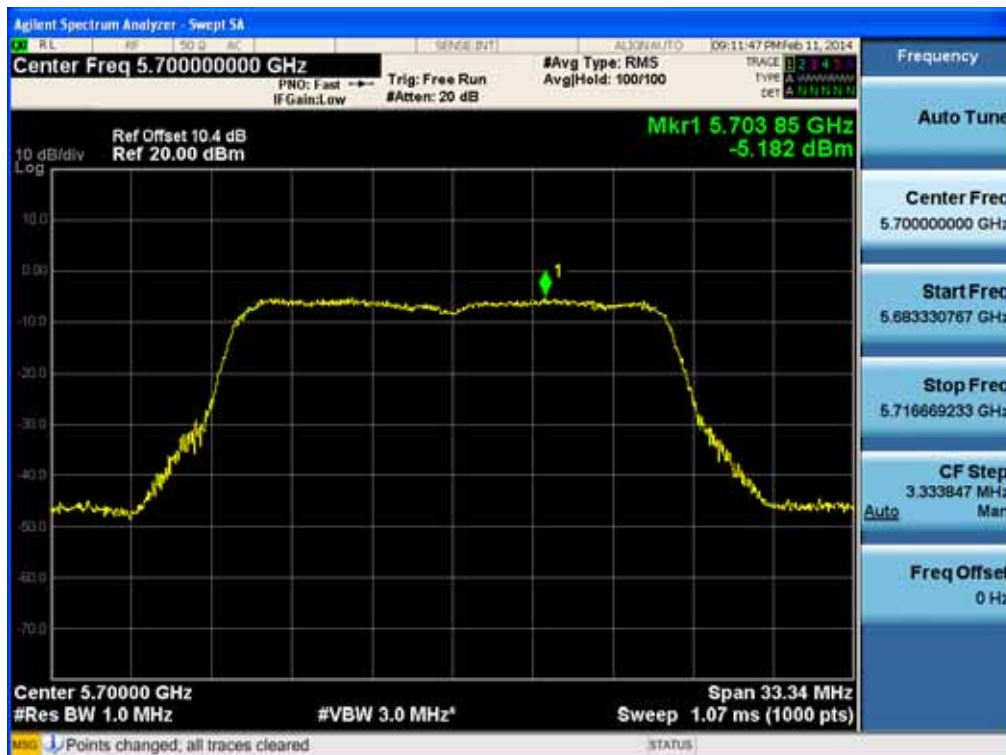


FCC PT.15.407 TEST REPORT	FCC CERTIFICATION REPORT		www.hct.co.kr
Test Report No. HCTR1402F011	Date of Issue: February 12, 2014	EUT Type: Mobile Phone	FCC ID: A3LSMN7506V

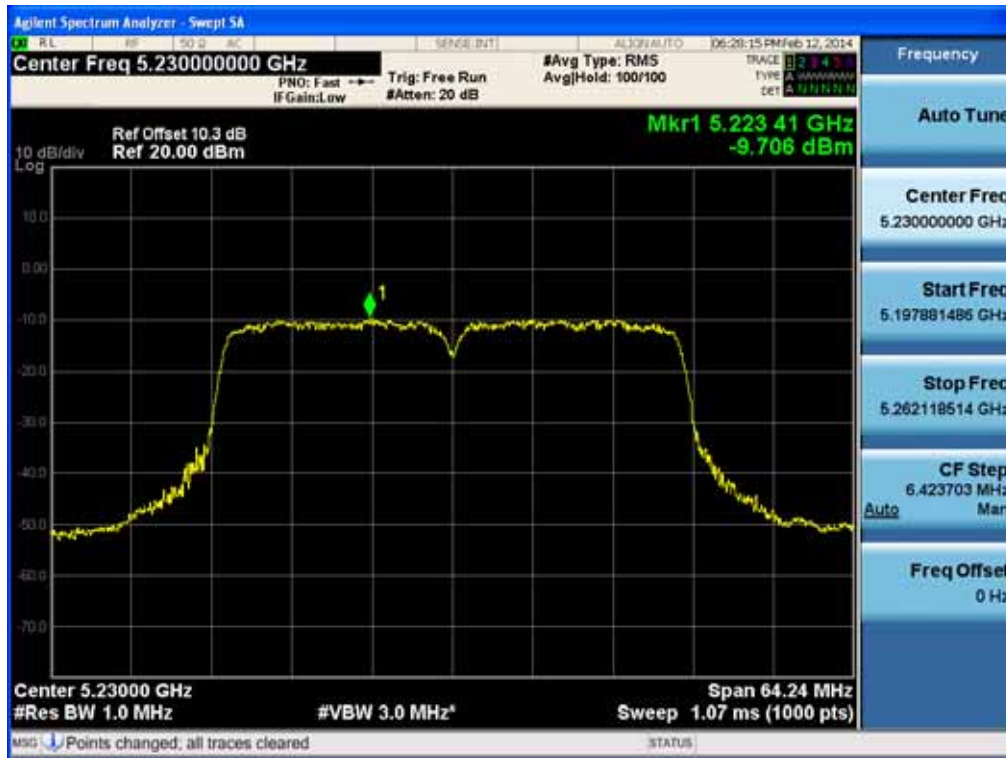
Power Spectral Density (802.11n-CH 60)



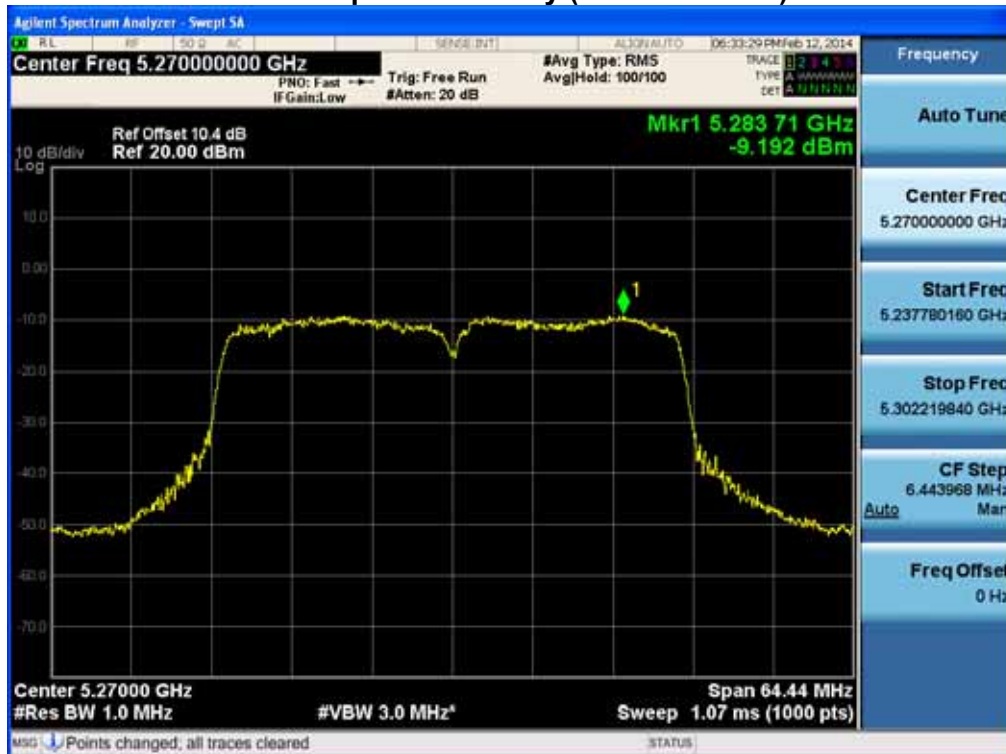
Power Spectral Density (802.11n-CH 140)



Power Spectral Density (802.11n-CH 46)

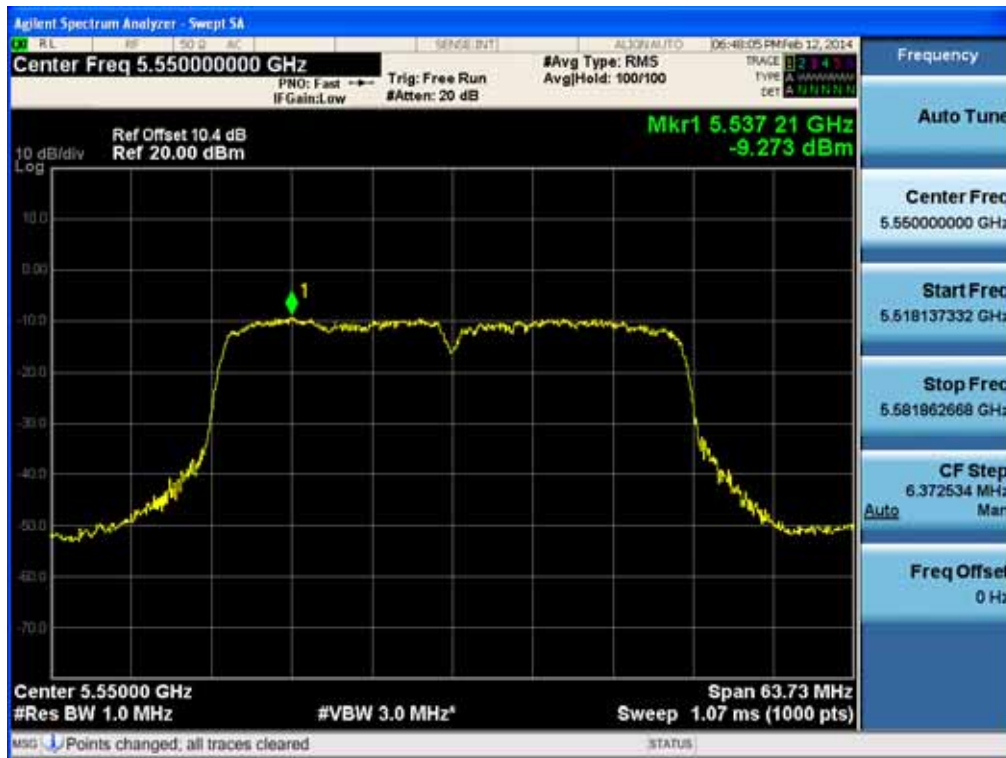


Power Spectral Density (802.11n-CH 54)



FCC PT.15.407 TEST REPORT	FCC CERTIFICATION REPORT		www.hct.co.kr
Test Report No. HCTR1402F011	Date of Issue: February 12, 2014	EUT Type: Mobile Phone	FCC ID: A3LSMN7506V

Power Spectral Density (802.11n-CH 110)

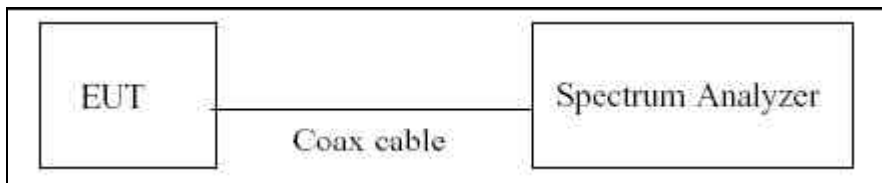


FCC PT.15.407 TEST REPORT	FCC CERTIFICATION REPORT		www.hct.co.kr
Test Report No. HCTR1402F011	Date of Issue: February 12, 2014	EUT Type: Mobile Phone	FCC ID: A3LSMN7506V

8.5 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 dB/MHz.

▣ TEST CONFIGURATION



▣ TEST PROCEDURE

We tested according to KDB 789033(issued 04/08/2013).

The spectrum analyzer is set to :

1. Span = Set the span to view the entire emission bandwidth.
2. RBW = 1 MHz
3. VBW $\geq$ 3 MHz
4. Detector Mode = Peak
5. Trace Mode = Max hold
6. Allow the sweeps to continue until the trace stabilizes.
7. Use the peak search function to find the peak of the spectrum.
8. Use the procedure to measure the PPSD
9. Compute the ratio of the maximum of the peak-max-hold spectrum to the PPSD.

Note :

1. 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 5.2 GHz, 5.3 GHz and 5.6 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.15.407 TEST REPORT	FCC CERTIFICATION REPORT		www.hct.co.kr
Test Report No. HCTR1402F011	Date of Issue: February 12, 2014	EUT Type: Mobile Phone	FCC ID: A3LSMN7506V

Band	Frequency(MHz)	Loss(dB)
UNII 1	5180	10.30
	5190	10.29
	5200	10.28
	5230	10.29
	5240	10.34
UNII 2	5260	10.37
	5270	10.38
	5300	10.40
	5310	10.39
	5320	10.39
UNII 2e	5500	10.35
	5510	10.36
	5550	10.41
	5580	10.43
	5670	10.43
	5700	10.30

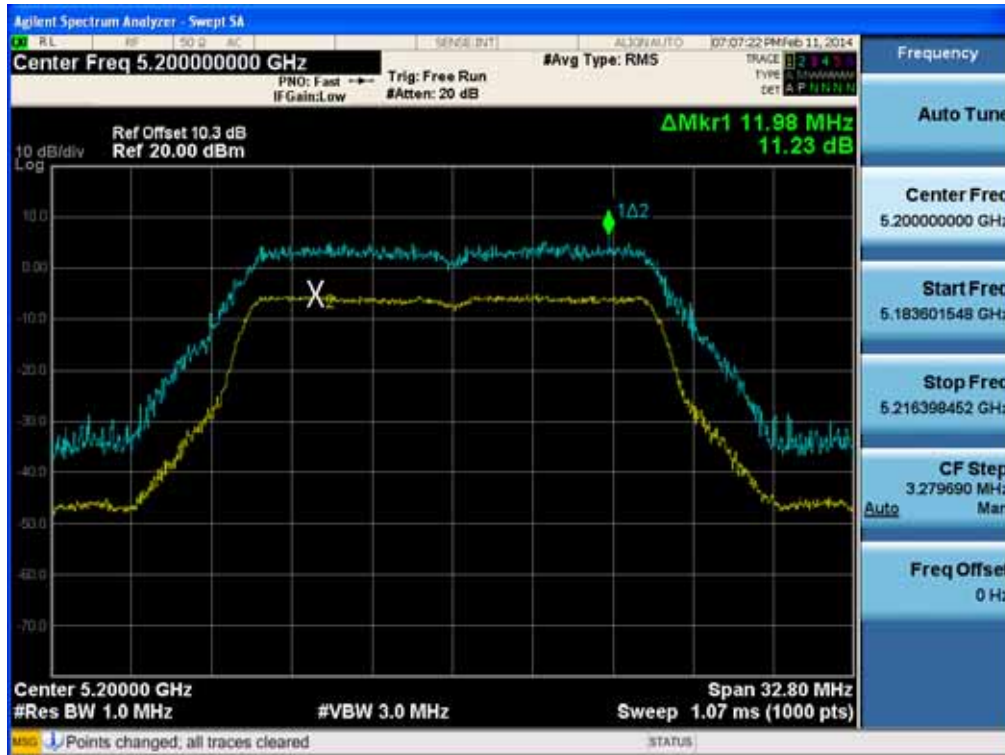
(Actual value of loss for the attenuator and cable combination)

RESULT PLOTS

Peak Excursion Ratio (802.11a-CH 36)



Peak Excursion Ratio (802.11a-CH 40)



FCC PT.15.407 TEST REPORT	FCC CERTIFICATION REPORT		www.hct.co.kr
Test Report No. HCTR1402F011	Date of Issue: February 12, 2014	EUT Type: Mobile Phone	FCC ID: A3LSMN7506V

Peak Excursion Ratio (802.11a-CH 48)



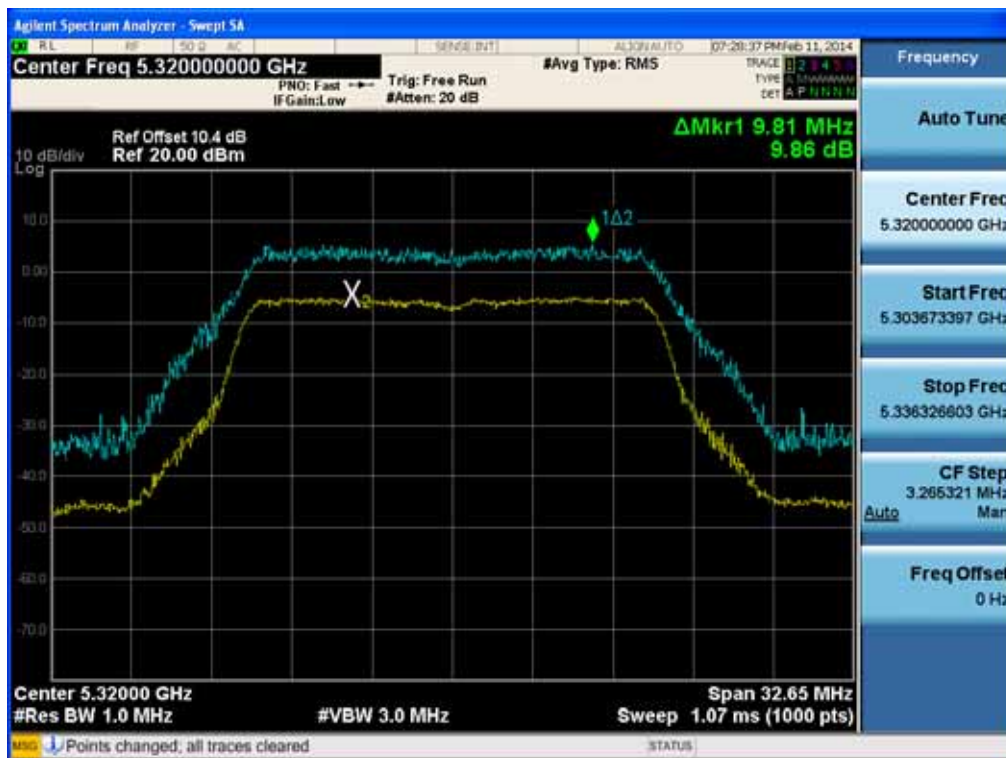
Peak Excursion Ratio (802.11a-CH 52)



Peak Excursion Ratio (802.11a-CH 60)

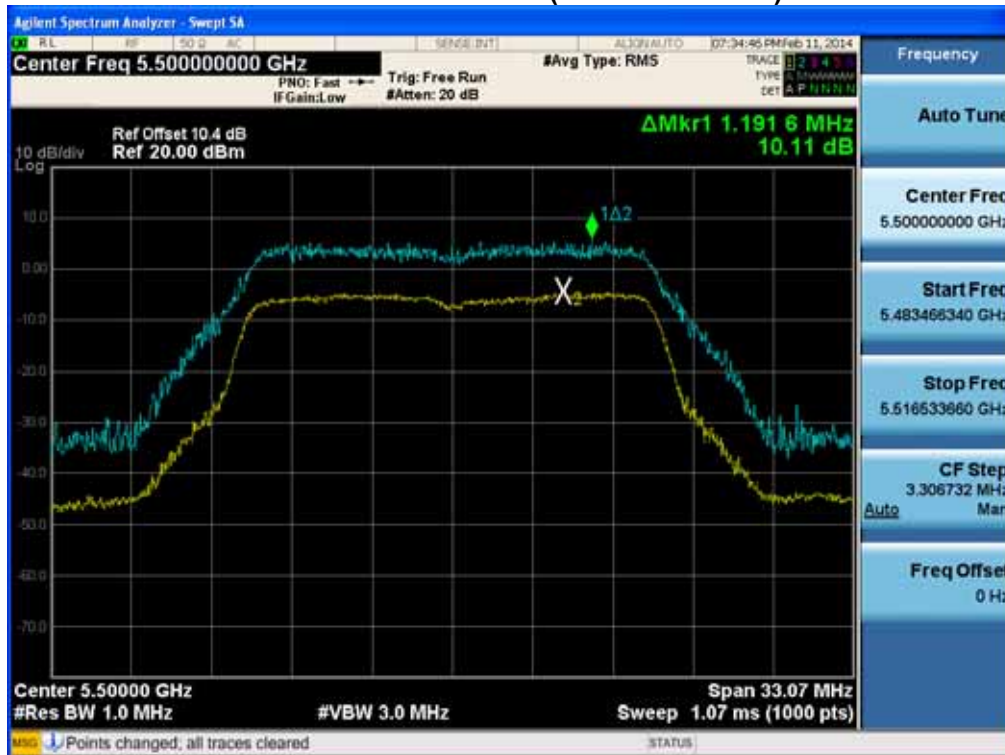


Peak Excursion Ratio (802.11a-CH 64)

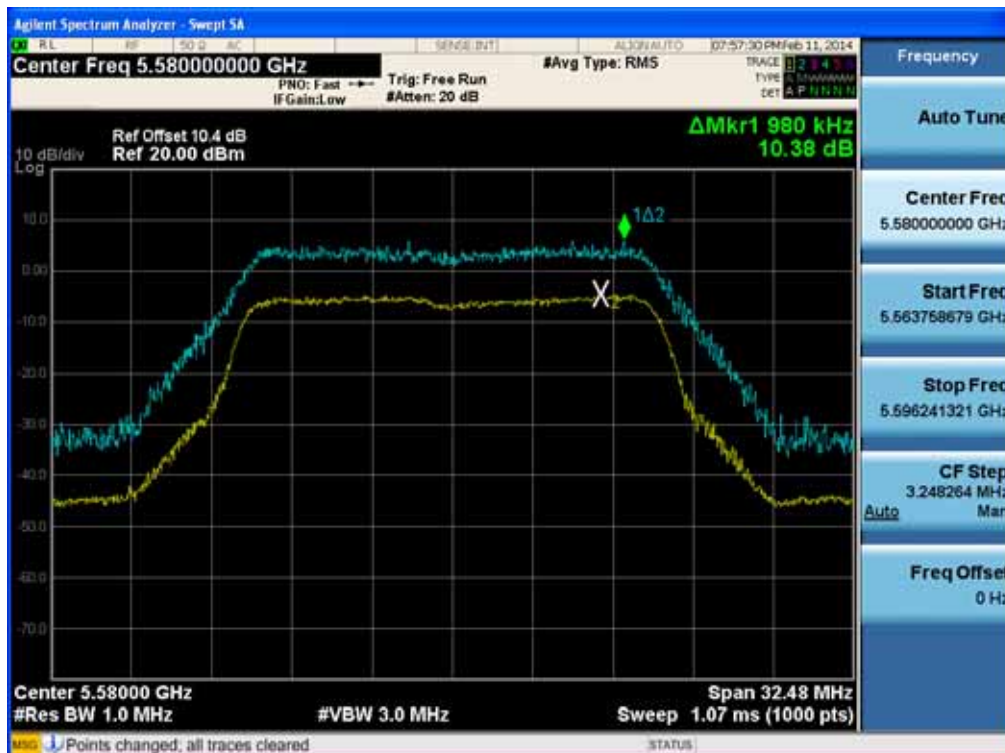


FCC PT.15.407 TEST REPORT	FCC CERTIFICATION REPORT		www.hct.co.kr
Test Report No. HCTR1402F011	Date of Issue: February 12, 2014	EUT Type: Mobile Phone	FCC ID: A3LSMN7506V

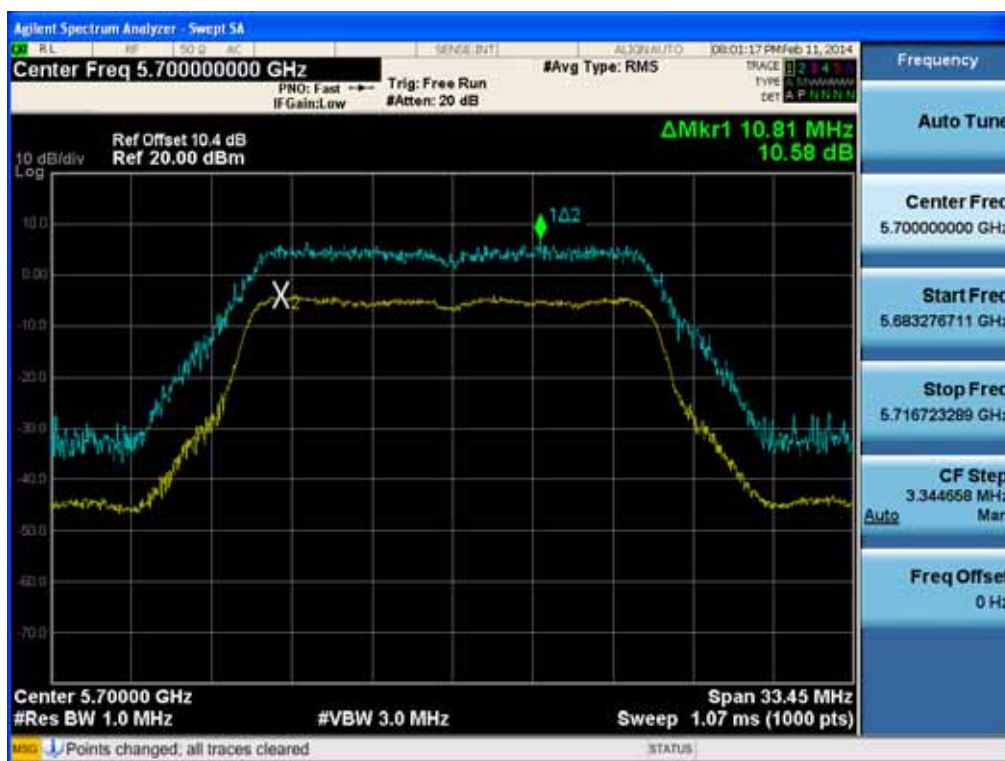
Peak Excursion Ratio (802.11a-CH 100)



Peak Excursion Ratio (802.11a-CH 116)



Peak Excursion Ratio (802.11a-CH 140)



FCC PT.15.407 TEST REPORT	FCC CERTIFICATION REPORT		www.hct.co.kr
Test Report No. HCTR1402F011	Date of Issue: February 12, 2014	EUT Type: Mobile Phone	FCC ID: A3LSMN7506V

20 MHz BW

Peak Excursion Ratio (802.11n-CH 36)



Peak Excursion Ratio (802.11n-CH 40)



FCC PT.15.407 TEST REPORT	FCC CERTIFICATION REPORT		www.hct.co.kr
Test Report No. HCTR1402F011	Date of Issue: February 12, 2014	EUT Type: Mobile Phone	FCC ID: A3LSMN7506V

Peak Excursion Ratio (802.11n-CH 48)



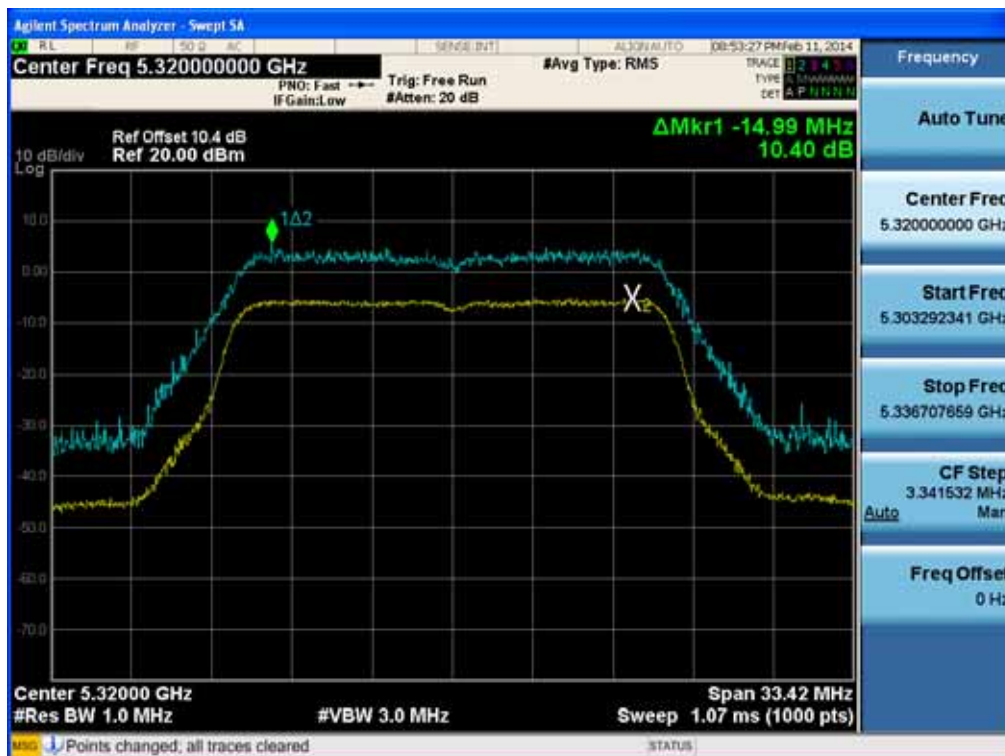
Peak Excursion Ratio (802.11n-CH 52)



Peak Excursion Ratio (802.11n-CH 60)



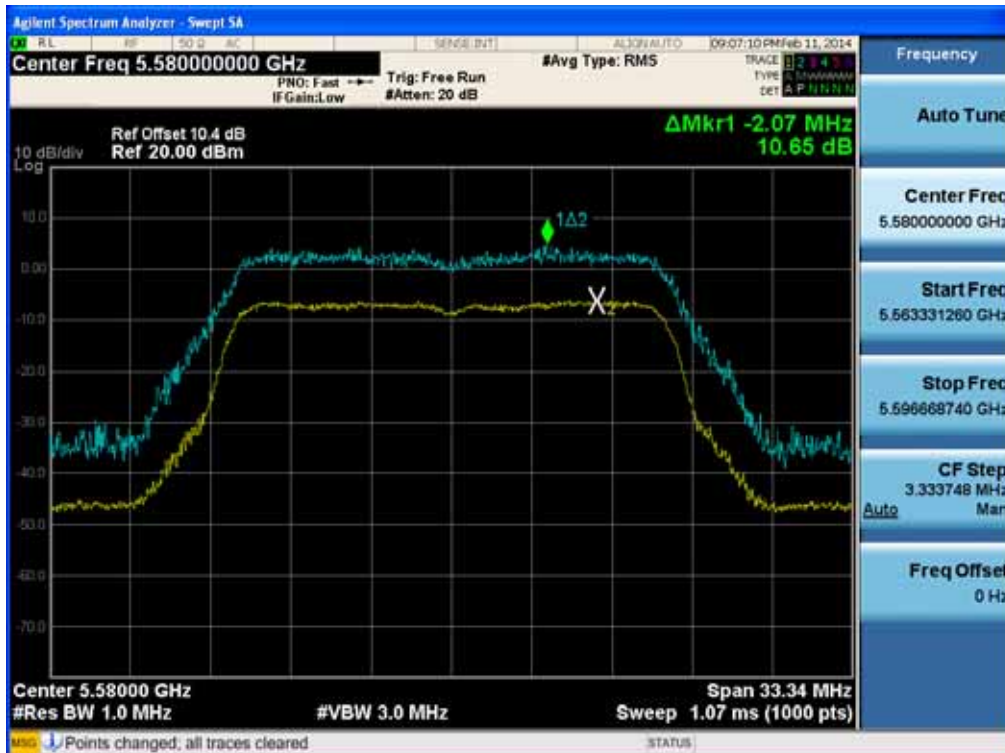
Peak Excursion Ratio (802.11n-CH 64)



Peak Excursion Ratio (802.11n-CH 100)

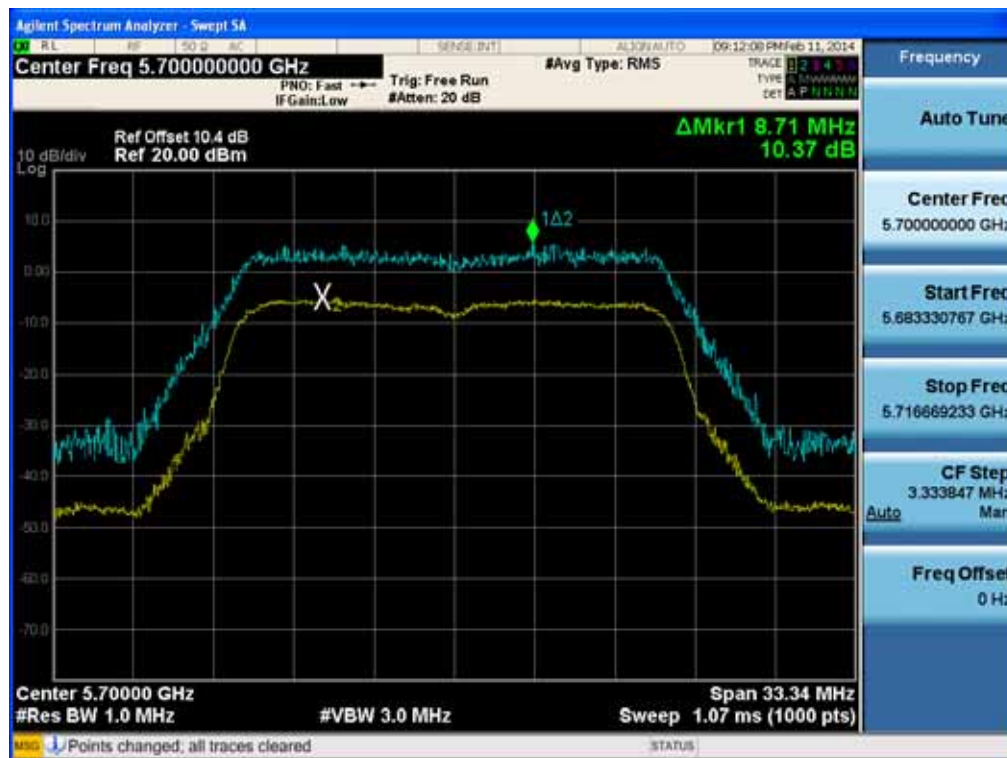


Peak Excursion Ratio (802.11n-CH 116)



FCC PT.15.407 TEST REPORT	FCC CERTIFICATION REPORT			www.hct.co.kr
Test Report No. HCTR1402F011	Date of Issue: February 12, 2014	EUT Type: Mobile Phone	FCC ID: A3LSMN7506V	

Peak Excursion Ratio (802.11n-CH 140)

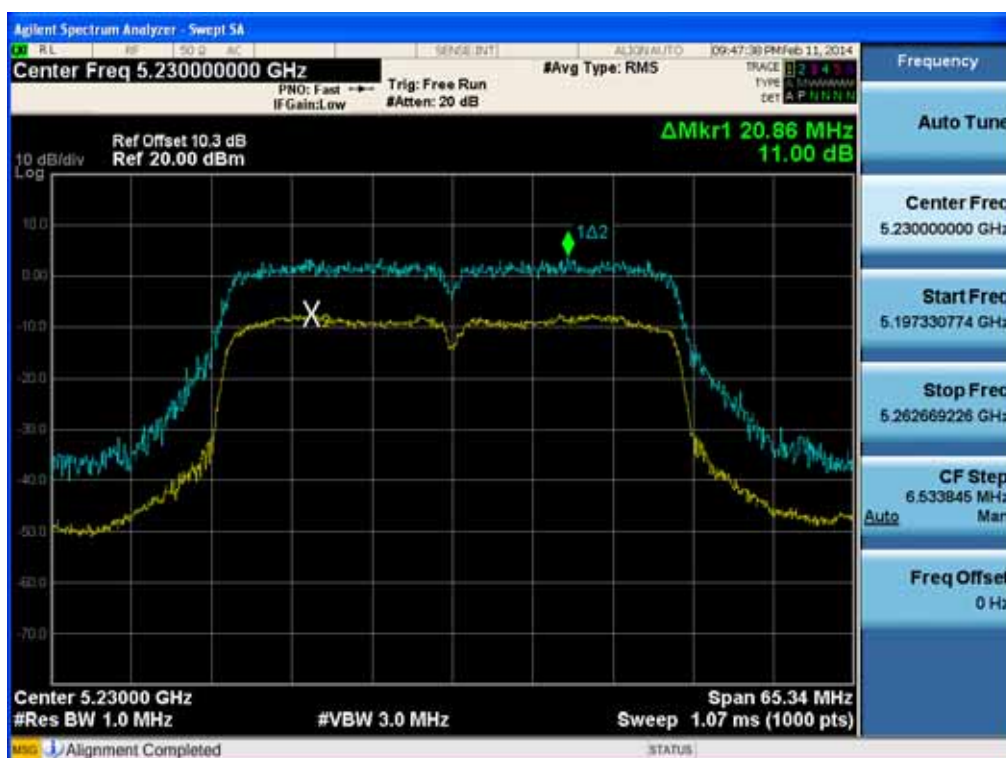


40 MHz BW

Peak Excursion Ratio (802.11n-CH 38)

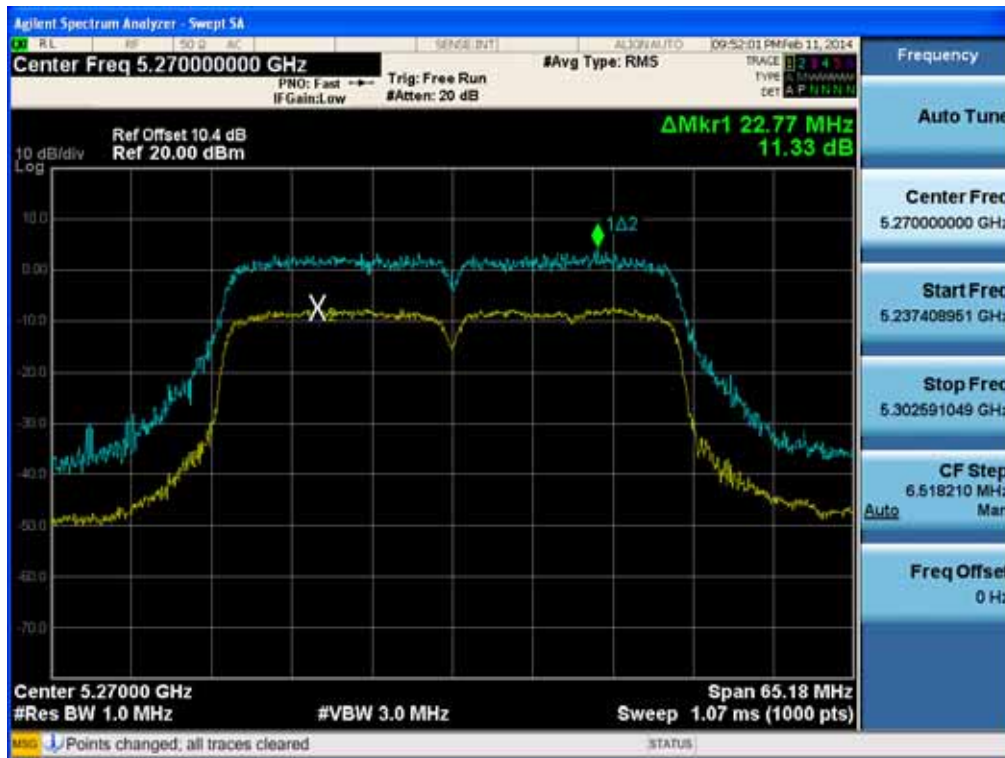


Peak Excursion Ratio (802.11n-CH 46)

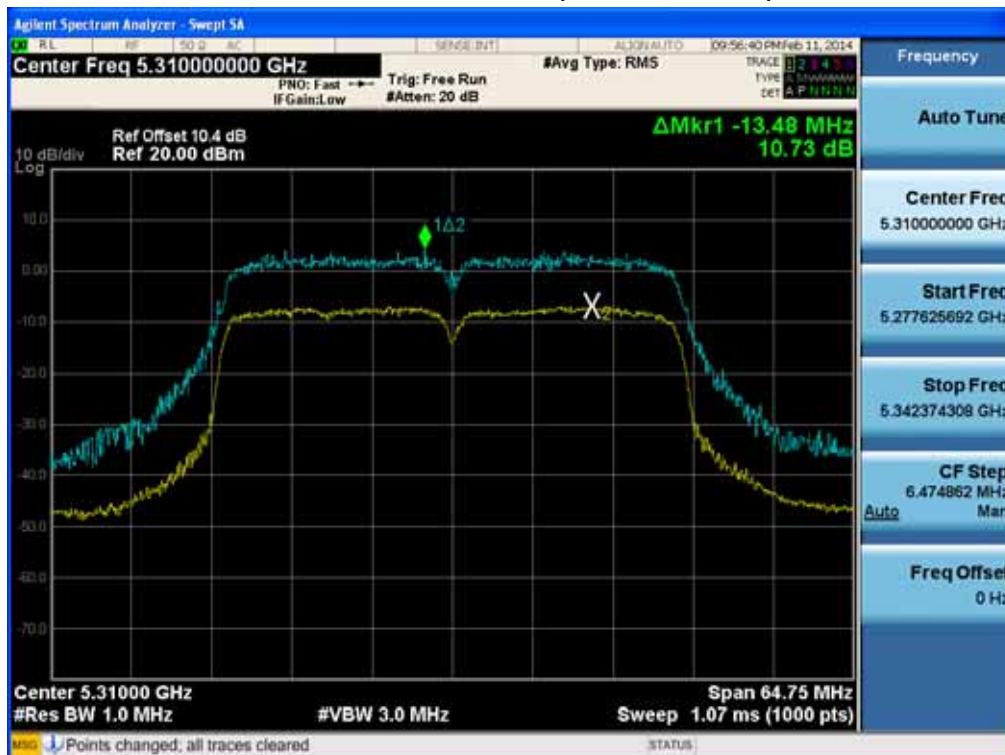


FCC PT.15.407 TEST REPORT	FCC CERTIFICATION REPORT		www.hct.co.kr
Test Report No. HCTR1402F011	Date of Issue: February 12, 2014	EUT Type: Mobile Phone	FCC ID: A3LSMN7506V

Peak Excursion Ratio (802.11n-CH 54)



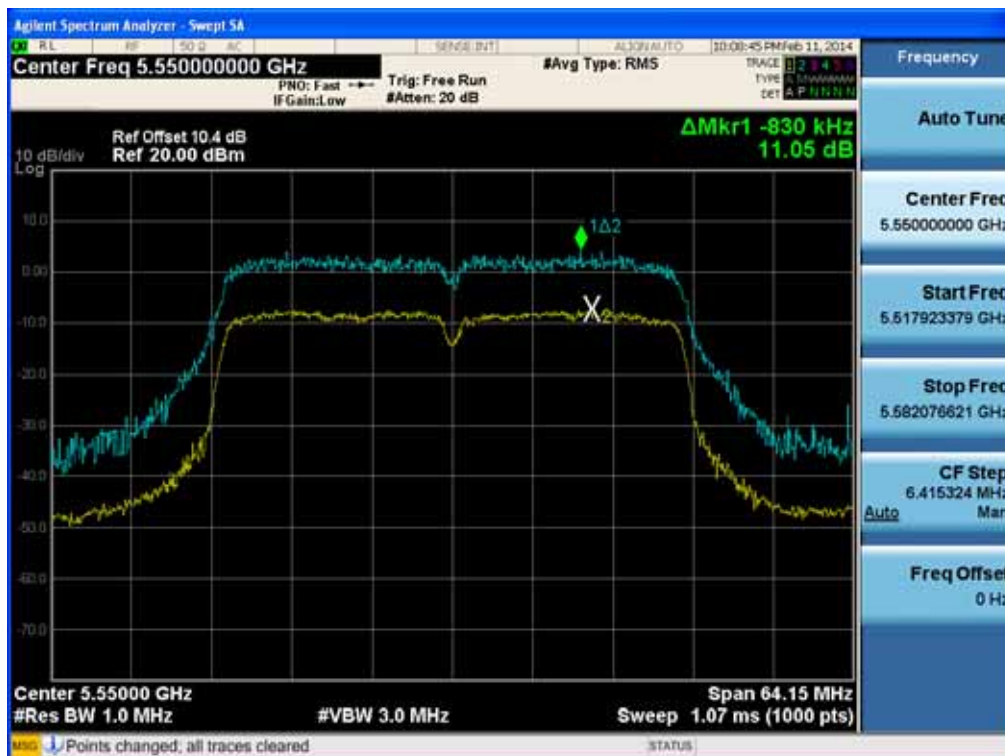
Peak Excursion Ratio (802.11n-CH 62)



Peak Excursion Ratio (802.11n-CH 102)

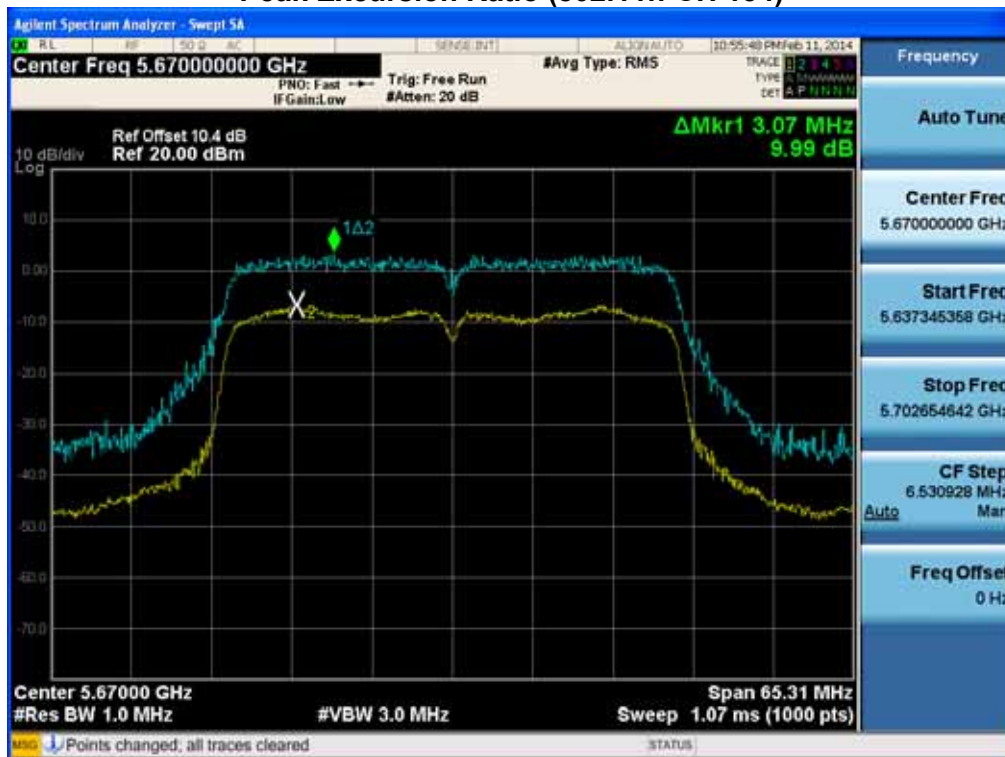


Peak Excursion Ratio (802.11n-CH 110)



FCC PT.15.407 TEST REPORT	FCC CERTIFICATION REPORT		www.hct.co.kr
Test Report No. HCTR1402F011	Date of Issue: February 12, 2014	EUT Type: Mobile Phone	FCC ID: A3LSMN7506V

Peak Excursion Ratio (802.11n-CH 134)



FCC PT.15.407 TEST REPORT	FCC CERTIFICATION REPORT			www.hct.co.kr
Test Report No. HCTR1402F011	Date of Issue: February 12, 2014	EUT Type: Mobile Phone	FCC ID: A3LSMN7506V	

8.6 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.

20 MHz BW

OPERATING BAND: UNII Band 1
 OPERATING FREQUENCY: 5,180,000,000 Hz
 CHANNEL: 36
 REFERENCE VOLTAGE: 3.8 VDC

Voltage (%)	Power (VDC)	Temp. (°C)	Frequency (kHz)	Frequency Error (kHz)
100%	3.800	+20(Ref)	5 179 968.50	-31.50
100%		-30	5 179 979.50	-20.50
100%		-20	5 179 984.10	-15.90
100%		-10	5 179 989.39	-10.61
100%		0	5 179 998.33	-1.67
100%		+10	5 179 971.50	-28.50
100%		+30	5 179 968.39	-31.61
100%		+40	5 179 984.35	-15.65
100%		+50	5 179 986.82	-13.18
115%	4.370	+20	5 179 971.38	-28.62
Batt. Endpoint	3.500	+20	5 179 984.16	-15.84

Note:

Based on the results of the frequency stability test shown above the frequency deviation results measured are very small. As such it is determined that the channels at the band edge would remain in-band when the maximum measured frequency error noted during the frequency stability tests is applied. Therefore the device is determined to remain operating in band over the temperature and voltage range as tested.

OPERATING BAND: UNII Band 2
 OPERATING FREQUENCY: 5,260,000,000 Hz
 CHANNEL: 52
 REFERENCE VOLTAGE: 3.8 VDC

Voltage (%)	Power (VDC)	Temp. (°C)	Frequency (kHz)	Frequency Error (kHz)
100%	3.800	+20(Ref)	5 259 964.00	-36.00
100%		-30	5 259 981.57	-18.43
100%		-20	5 259 986.33	-13.67
100%		-10	5 259 990.13	-9.87
100%		0	5 259 996.36	-3.64
100%		+10	5 259 975.90	-24.1
100%		+30	5 259 988.22	-11.78
100%		+40	5 259 983.63	-16.37
100%		+50	5 259 986.33	-13.67
115%	4.370	+20	5 259 968.84	-31.16
Batt. Endpoint	3.500	+20	5 259 982.54	-17.46

Note:

Based on the results of the frequency stability test shown above the frequency deviation results measured are very small. As such it is determined that the channels at the band edge would remain in-band when the maximum measured frequency error noted during the frequency stability tests is applied. Therefore the device is determined to remain operating in band over the temperature and voltage range as tested.

OPERATING BAND: UNII Band 3
 OPERATING FREQUENCY: 5,500,000,000 Hz
 CHANNEL: 100
 REFERENCE VOLTAGE: 3.8 VDC

Voltage (%)	Power (VDC)	Temp. (°C)	Frequency (kHz)	Frequency Error (kHz)
100%	3.800	+20(Ref)	5 499 962.50	-37.50
100%		-30	5 499 982.54	-17.46
100%		-20	5 499 988.66	-11.34
100%		-10	5 499 989.85	-10.15
100%		0	5 499 996.06	-3.94
100%		+10	5 499 979.49	-20.51
100%		+30	5 499 981.44	-18.56
100%		+40	5 499 984.44	-15.56
100%		+50	5 499 989.42	-10.58
115%	4.370	+20	5 499 975.39	-24.61
Batt. Endpoint	3.500	+20	5 499 986.85	-13.15

Note:

Based on the results of the frequency stability test shown above the frequency deviation results measured are very small. As such it is determined that the channels at the band edge would remain in-band when the maximum measured frequency error noted during the frequency stability tests is applied. Therefore the device is determined to remain operating in band over the temperature and voltage range as tested.

40 MHz BW

OPERATING BAND:	UNII Band 1
OPERATING FREQUENCY:	5,190,000,000 Hz
CHANNEL:	38
REFERENCE VOLTAGE:	3.8 VDC

Voltage (%)	Power (VDC)	Temp. (°C)	Frequency (kHz)	Frequency Error (kHz)
100%	3.800	+20(Ref)	5 189 964.50	-35.50
100%		-30	5 189 984.32	-15.68
100%		-20	5 189 986.36	-13.64
100%		-10	5 189 989.36	-10.64
100%		0	5 189 995.39	-4.61
100%		+10	5 189 978.79	-21.21
100%		+30	5 189 991.36	-8.64
100%		+40	5 189 987.82	-12.18
100%		+50	5 189 985.44	-14.56
115%	4.370	+20	5 189 969.91	-30.09
Batt. Endpoint	3.500	+20	5 189 985.06	-14.94

Note:

Based on the results of the frequency stability test shown above the frequency deviation results measured are very small. As such it is determined that the channels at the band edge would remain in-band when the maximum measured frequency error noted during the frequency stability tests is applied. Therefore the device is determined to remain operating in band over the temperature and voltage range as tested.

OPERATING BAND: UNII Band 2
 OPERATING FREQUENCY: 5,270,000,000 Hz
 CHANNEL: 54
 REFERENCE VOLTAGE: 3.8 VDC

Voltage (%)	Power (VDC)	Temp. (°C)	Frequency (kHz)	Frequency Error (kHz)
100%	3.800	+20(Ref)	5 269 964.00	-36.00
100%		-30	5 269 985.39	-14.61
100%		-20	5 269 988.16	-11.84
100%		-10	5 269 990.16	-9.84
100%		0	5 269 993.33	-6.67
100%		+10	5 269 981.80	-18.2
100%		+30	5 269 994.33	-5.67
100%		+40	5 269 989.05	-10.95
100%		+50	5 269 986.03	-13.97
115%	4.370	+20	5 269 971.16	-28.84
Batt. Endpoint	3.500	+20	5 269 987.23	-12.77

Note:

Based on the results of the frequency stability test shown above the frequency deviation results measured are very small. As such it is determined that the channels at the band edge would remain in-band when the maximum measured frequency error noted during the frequency stability tests is applied. Therefore the device is determined to remain operating in band over the temperature and voltage range as tested.

OPERATING BAND: UNII Band 3
 OPERATING FREQUENCY: 5,510,000,000 Hz
 CHANNEL: 102
 REFERENCE VOLTAGE: 3.8 VDC

Voltage (%)	Power (VDC)	Temp. (°C)	Frequency (kHz)	Frequency Error (kHz)
100%	3.800	+20(Ref)	5 509 962.50	-37.50
100%		-30	5 509 987.82	-12.18
100%		-20	5 509 988.53	-11.47
100%		-10	5 509 991.22	-8.78
100%		0	5 509 994.46	-5.54
100%		+10	5 509 983.06	-16.94
100%		+30	5 509 992.63	-7.37
100%		+40	5 509 988.82	-11.18
100%		+50	5 509 984.49	-15.51
115%	4.370	+20	5 509 973.22	-26.78
Batt. Endpoint	3.500	+20	5 509 988.11	-11.89

Note:

Based on the results of the frequency stability test shown above the frequency deviation results measured are very small. As such it is determined that the channels at the band edge would remain in-band when the maximum measured frequency error noted during the frequency stability tests is applied. Therefore the device is determined to remain operating in band over the temperature and voltage range as tested.

8.7 RADIATED MEASUREMENT.

8.7.1 RADIATED SPURIOUS EMISSIONS.

Test Requirements and limit, §15.205, §15.209, §15.407

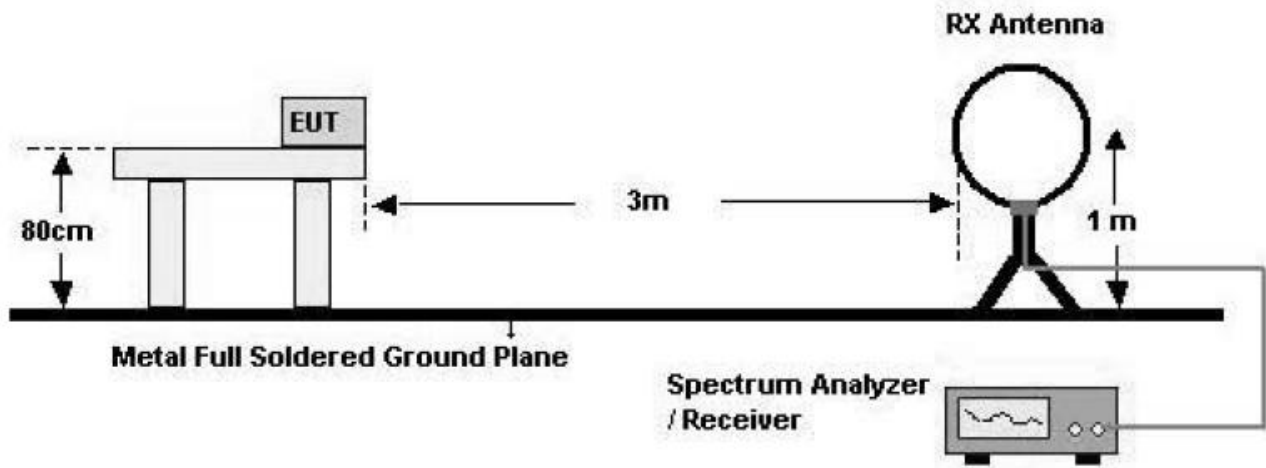
Frequency (MHz)	Field Strength (uV/m)	Measurement Distance (m)
0.009 – 0.490	2400/F(kHz)	300
0.490 – 1.705	24000/F(kHz)	30
1.705 – 30	30	30
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

▣ §15.407, KDB 789033

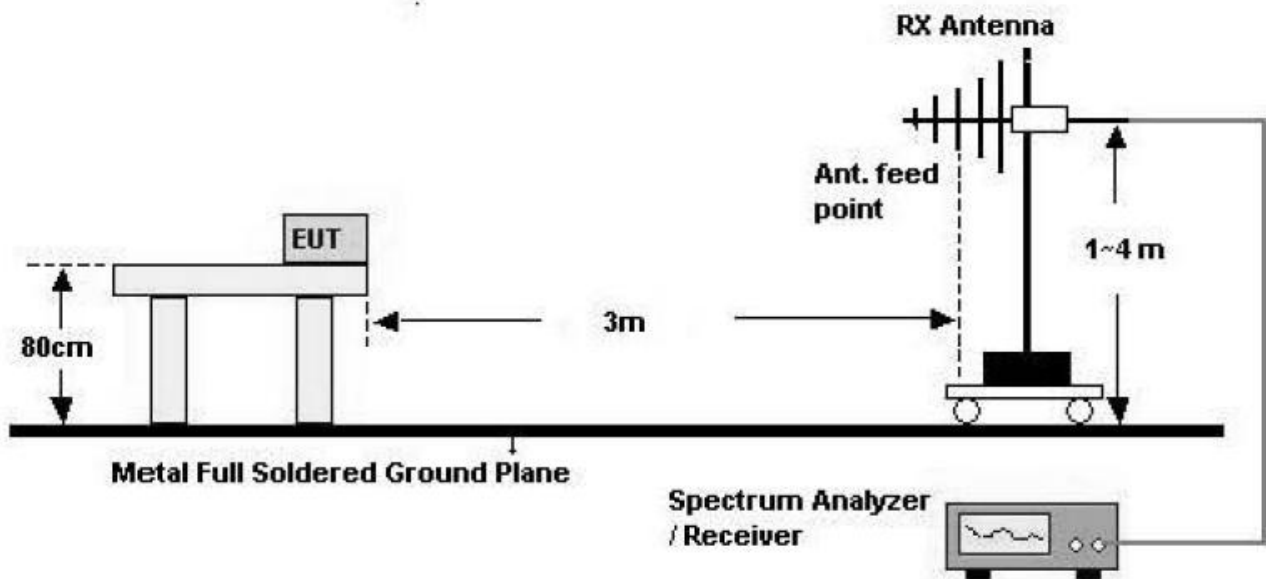
All harmonics that do not lie in a restricted band are subject to a peak limit of -27 dBm/MHz. At a distance of 3 meters the field strength limit in dBμV/m can be determined by adding a “conversion” factor of 95.2 dB to the EIRP limit of -27 dBm/MHz to obtain the limit for out of band spurious emissions of 68.2 dBμV/m.

Test Configuration

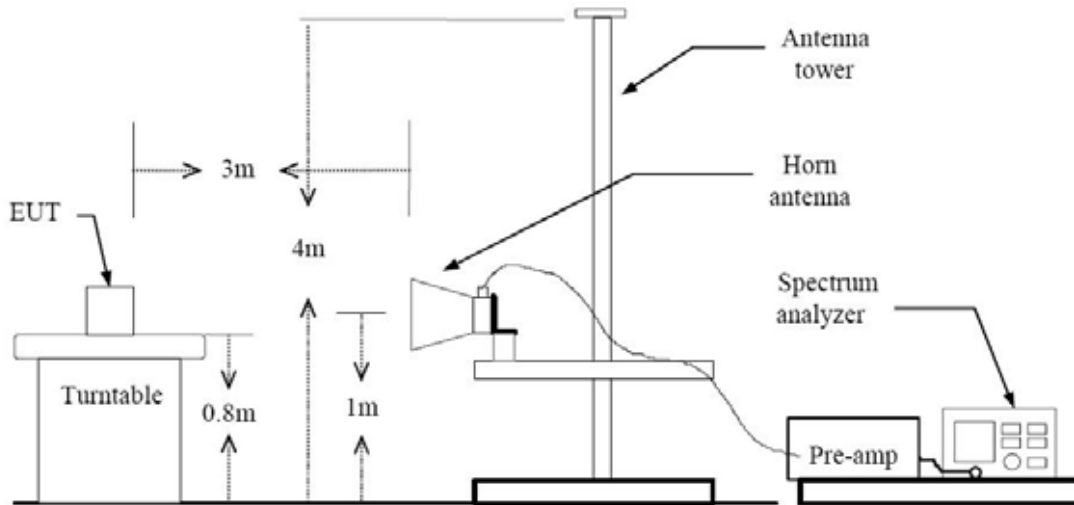
Below 30 MHz



30 MHz - 1 GHz



Above 1 GHz



TEST PROCEDURE USED

ANSI C63.4(2003)

Method H)5) in KDB 789033, issued 04/08/2013 (Peak)

Method H)6)d) in KDB 789033, issued 04/08/2013 (Average)

. Spectrum setting:

- Peak.

1. RBW = 1 MHz

2. VBW $\geq$ 3 MHz

3. Detector = Peak

4. Sweep Time = auto

5. Trace mode = max hold

6. Allow sweeps to continue until the trace stabilizes.

7. Note that if the transmission is not continuous, the time required for the trace to stabilize will increase by a factor of approximately $1/x$, where x is the duty cycle.

- Average (Method VB :Averaging using reduced video bandwidth)

1. RBW = 1 MHz

2. VBW

2.1. If the EUT is configured to transmit with duty cycle $\geq$ 98 percent, set $VBW \leq RBW/100$ (i.e., 10 kHz) but not less than 10 Hz.

2.2. If the EUT duty cycle is $<$ 98 percent, set $VBW \geq 1/T$, where T is the minimum transmission duration.

3. The analyzer is set to linear detector mode.

4. Detector = Peak.

FCC PT.15.407 TEST REPORT	FCC CERTIFICATION REPORT		www.hct.co.kr
Test Report No. HCTR1402F011	Date of Issue: February 12, 2014	EUT Type: Mobile Phone	FCC ID: A3LSMN7506V

5. Sweep time = auto.
6. Trace mode = max hold.
7. Allow max hold to run for at least 50 traces if the transmitted signal is continuous or has at least 98 percent duty cycle. For lower duty cycles, increase the minimum number of traces by a factor of $1/x$, where x is the duty cycle.

Note :

1. We used the case 2 for 802.11a/g/n_20/n_40 mode to perform the average field strength measurements.
2. The actual setting value of VBW for 802.11a/g/n_20/n_40

Mode	Worst Data rate (Mbps)	T _{on} (ms)	T _{total} (ms)	Duty Cycle (%)	VBW(1/T) (Hz)	The actual setting value of VBW (Hz)
a	6	1.392	1.497	93.0	718.4	1000
n_20	6.5	1.293	1.395	92.7	773.4	1000
n_40	13.5	0.634	0.734	86.4	1577.3	3000

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 = $40 \log (\text{specific distance} / \text{test distance})$ (dB)
4. Limit line = specific Limits (dB μ V) + 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

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
10360	41.23	9.33	V	50.56	68.20	17.64	PK
15540	44.98	14.61	V	59.59	73.98	14.39	PK
15540	30.99	14.61	V	45.60	53.98	8.38	AV
10360	43.02	9.33	H	52.35	68.20	15.85	PK
15540	45.00	14.61	H	59.61	73.98	14.37	PK
15540	31.02	14.61	H	45.63	53.98	8.35	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 all data rate in 802.11a. Worst case is 6 Mbps in 802.11a.
6. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.

Band :	UNII 1
Operation Mode:	802.11 a
Transfer Rate:	6 Mbps
Operating Frequency	5200 MHz
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	41.03	10.13	V	51.16	68.20	17.04	PK
15600	45.37	14.60	V	59.97	73.98	14.01	PK
15600	31.26	14.60	V	45.86	53.98	8.12	AV
10400	42.96	10.13	H	53.09	68.20	15.11	PK
15600	45.40	14.60	H	60.00	73.98	13.98	PK
15600	31.28	14.60	H	45.88	53.98	8.10	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 all data rate in 802.11a. Worst case is 6 Mbps in 802.11a.
6. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.

Band :	UNII 1
Operation Mode:	802.11 a
Transfer Rate:	6 Mbps
Operating Frequency	5240 MHz
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	42.58	10.20	V	52.78	68.20	15.42	PK
15720	46.24	13.47	V	59.71	73.98	14.27	PK
15720	32.33	13.47	V	45.80	53.98	8.18	AV
10480	44.48	10.20	H	54.68	68.20	13.52	PK
15720	46.33	13.47	H	59.80	73.98	14.18	PK
15720	32.36	13.47	H	45.83	53.98	8.15	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 > 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 all data rate in 802.11a. Worst case is 6 Mbps in 802.11a.
6. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.

Band :	UNII 1
Operation Mode:	802.11 n_20 MHz BW
Transfer Rate:	6.5 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
10360	42.11	9.33	V	51.44	68.20	16.76	PK
15540	45.15	14.61	V	59.76	73.98	14.22	PK
15540	31.11	14.61	V	45.72	53.98	8.26	AV
10360	43.03	9.33	H	52.36	68.20	15.84	PK
15540	45.16	14.61	H	59.77	73.98	14.21	PK
15540	31.13	14.61	H	45.74	53.98	8.24	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 all data rate in 802.11n_20 MHz BW. Worst case is 6.5 Mbps in 802.11n_20 MHz BW.
6. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.

Band :	UNII 1
Operation Mode:	802.11 n_20 MHz BW
Transfer Rate:	6.5 Mbps
Operating Frequency	5200 MHz
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	41.92	10.13	V	52.05	68.20	16.15	PK
15600	45.20	14.60	V	59.80	73.98	14.18	PK
15600	31.38	14.60	V	45.98	53.98	8.00	AV
10400	42.85	10.13	H	52.98	68.20	15.22	PK
15600	45.23	14.60	H	59.83	73.98	14.15	PK
15600	31.39	14.60	H	45.99	53.98	7.99	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 all data rate in 802.11n_20 MHz BW. Worst case is 6.5 Mbps in 802.11n_20 MHz BW.
6. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.

Band :	UNII 1
Operation Mode:	802.11 n_20 MHz BW
Transfer Rate:	6.5 Mbps
Operating Frequency	5240 MHz
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	42.59	10.20	V	52.79	68.20	15.41	PK
15720	45.59	13.47	V	59.06	73.98	14.92	PK
15720	32.30	13.47	V	45.77	53.98	8.21	AV
10480	43.65	10.20	H	53.85	68.20	14.35	PK
15720	45.61	13.47	H	59.08	73.98	14.90	PK
15720	32.33	13.47	H	45.80	53.98	8.18	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 all data rate in 802.11n_20 MHz BW. Worst case is 6.5 Mbps in 802.11n_20 MHz BW.
6. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.

Band :	UNII 1
Operation Mode:	802.11n_40 MHz BW
Transfer Rate:	13.5 Mbps
Operating Frequency	5190 MHz
Channel No.	38 Ch

Frequency [MHz]	Reading dBuV	AN.+CL-Amp G. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
10380	42.68	9.70	V	52.38	68.20	15.82	PK
15570	45.21	14.62	V	59.83	73.98	14.15	PK
15570	31.86	14.62	V	46.48	53.98	7.50	AV
10380	43.50	9.70	H	53.20	68.20	15.00	PK
15570	45.23	14.62	H	59.85	73.98	14.13	PK
15570	31.87	14.62	H	46.49	53.98	7.49	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 all data rate in 802.11n_40 MHz BW. Worst case is 13.5 Mbps in 802.11n_40 MHz BW.
6. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.

Band :	UNII 1
Operation Mode:	802.11n_40 MHz BW
Transfer Rate:	13.5 Mbps
Operating Frequency	5230 MHz
Channel No.	46 Ch

Frequency [MHz]	Reading dBuV	AN.+CL-Amp G. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
10460	41.85	10.26	V	52.11	68.20	16.09	PK
15690	45.51	14.33	V	59.84	73.98	14.14	PK
15690	32.98	14.33	V	47.31	53.98	6.67	AV
10460	42.78	10.26	H	53.04	68.20	15.16	PK
15690	45.52	14.33	H	59.85	73.98	14.13	PK
15690	32.99	14.33	H	47.32	53.98	6.66	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 all data rate in 802.11n_40 MHz BW. Worst case is 13.5 Mbps in 802.11n_40 MHz BW.
6. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.

Band :	UNII 2
Operation Mode:	802.11 a
Transfer Rate:	6 Mbps
Operating Frequency	5260 MHz
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	41.59	10.38	V	51.97	68.20	16.23	PK
15780	46.00	14.38	V	60.38	73.98	13.60	PK
15780	32.20	14.38	V	46.58	53.98	7.40	AV
10520	42.83	10.38	H	53.21	68.20	14.99	PK
15780	46.02	14.38	H	60.40	73.98	13.58	PK
15780	32.21	14.38	H	46.59	53.98	7.39	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 all data rate in 802.11a. Worst case is 6 Mbps in 802.11a.
6. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.

Band :	UNII 2
Operation Mode:	802.11 a
Transfer Rate:	6 Mbps
Operating Frequency	5300 MHz
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	42.02	10.39	V	52.41	73.98	21.57	PK
10600	33.89	10.39	V	44.28	53.98	9.70	AV
15900	44.95	14.00	V	58.95	73.98	15.03	PK
15900	30.89	14.00	V	44.89	53.98	9.09	AV
10600	42.74	10.39	H	53.13	73.98	20.85	PK
10600	34.71	10.39	H	45.10	53.98	8.88	AV
15900	44.97	14.00	H	58.97	73.98	15.01	PK
15900	30.94	14.00	H	44.94	53.98	9.04	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 all data rate in 802.11a. Worst case is 6 Mbps in 802.11a.
6. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.

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-Amp G. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
10640	41.78	10.50	V	52.28	73.98	21.70	PK
10640	32.46	10.50	V	42.96	53.98	11.02	AV
15960	44.21	14.27	V	58.48	73.98	15.50	PK
15960	30.49	14.27	V	44.76	53.98	9.22	AV
10640	42.21	10.50	H	52.71	73.98	21.27	PK
10640	33.37	10.50	H	43.87	53.98	10.11	AV
15960	44.23	14.27	H	58.50	73.98	15.48	PK
15960	30.51	14.27	H	44.78	53.98	9.20	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 all data rate in 802.11a. Worst case is 6 Mbps in 802.11a.
6. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.

Band :	UNII 2
Operation Mode:	802.11 n_20 MHz BW
Transfer Rate:	6.5 Mbps
Operating Frequency	5260 MHz
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	42.23	10.38	V	52.61	68.20	15.59	PK
15780	47.00	14.38	V	61.38	73.98	12.60	PK
15780	32.20	14.38	V	46.58	53.98	7.40	AV
10520	43.15	10.38	H	53.53	68.20	14.67	PK
15780	47.02	14.38	H	61.40	73.98	12.58	PK
15780	32.21	14.38	H	46.59	53.98	7.39	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 all data rate in 802.11n_20 MHz BW. Worst case is 6.5 Mbps in 802.11n_20 MHz BW.
6. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.

Band :	UNII 2
Operation Mode:	802.11 n_20 MHz BW
Transfer Rate:	6.5 Mbps
Operating Frequency	5300 MHz
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	42.12	10.39	V	52.51	73.98	21.47	PK
10600	33.89	10.39	V	44.28	53.98	9.70	AV
15900	44.50	14.00	V	58.50	73.98	15.48	PK
15900	30.75	14.00	V	44.75	53.98	9.23	AV
10600	42.68	10.39	H	53.07	73.98	20.91	PK
10600	34.71	10.39	H	45.10	53.98	8.88	AV
15900	44.52	14.00	H	58.52	73.98	15.46	PK
15900	30.77	14.00	H	44.77	53.98	9.21	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 all data rate in 802.11n_20 MHz BW. Worst case is 6.5 Mbps in 802.11n_20 MHz BW.
6. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.

Band :	UNII 2
Operation Mode:	802.11 n_20 MHz BW
Transfer Rate:	6.5 Mbps
Operating Frequency	5320 MHz
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	41.69	10.50	V	52.19	73.98	21.79	PK
10640	32.89	10.50	V	43.39	53.98	10.59	AV
15960	43.72	14.27	V	57.99	73.98	15.99	PK
15960	30.49	14.27	V	44.76	53.98	9.22	AV
10640	42.11	10.50	H	52.61	73.98	21.37	PK
10640	33.67	10.50	H	44.17	53.98	9.81	AV
15960	43.73	14.27	H	58.00	73.98	15.98	PK
15960	30.51	14.27	H	44.78	53.98	9.20	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 all data rate in 802.11n_20 MHz BW. Worst case is 6.5 Mbps in 802.11n_20 MHz BW.
6. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.

Band :	UNII 2
Operation Mode:	802.11n_40 MHz BW
Transfer Rate:	13.5 Mbps
Operating Frequency	5270 MHz
Channel No.	54 Ch

Frequency [MHz]	Reading dBuV	AN.+CL-Amp G. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
10540	41.78	10.55	V	52.33	68.20	15.87	PK
15810	46.19	14.26	V	60.45	73.98	13.53	PK
15810	32.43	14.26	V	46.69	53.98	7.29	AV
10540	42.62	10.55	H	53.17	68.20	15.03	PK
15810	46.21	14.26	H	60.47	73.98	13.51	PK
15810	32.44	14.26	H	46.70	53.98	7.28	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 all data rate in 802.11n_40 MHz BW. Worst case is 13.5 Mbps in 802.11n_40 MHz BW.
6. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.

Band :	UNII 2
Operation Mode:	802.11n_40 MHz BW
Transfer Rate:	13.5 Mbps
Operating Frequency	5310 MHz
Channel No.	62 Ch

Frequency [MHz]	Reading dBuV	AN.+CL-Amp G. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
10620	42.01	10.25	V	52.26	73.98	21.72	PK
10620	33.59	10.25	V	43.84	53.98	10.14	AV
15930	44.04	13.62	V	57.66	73.98	16.32	PK
15930	31.15	13.62	V	44.77	53.98	9.21	AV
10620	42.47	10.25	H	52.72	73.98	21.26	PK
10620	34.42	10.25	H	44.67	53.98	9.31	AV
15930	44.06	13.62	H	57.68	73.98	16.30	PK
15930	31.17	13.62	H	44.79	53.98	9.19	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 all data rate in 802.11n_40 MHz BW. Worst case is 13.5 Mbps in 802.11n_40 MHz BW.
6. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.

Band :	UNII 2e
Operation Mode:	802.11 a
Transfer Rate:	6 Mbps
Operating Frequency	5500 MHz
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	45.16	11.28	V	56.44	73.98	17.54	PK
11000	39.14	11.28	V	50.42	53.98	3.56	AV
16500	45.48	14.19	V	59.67	68.20	8.53	PK
11000	44.76	11.28	H	56.04	73.98	17.94	PK
11000	38.21	11.28	H	49.49	53.98	4.49	AV
16500	45.47	14.19	H	59.66	68.20	8.54	PK

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 all data rate in 802.11a. Worst case is 6 Mbps in 802.11a.
6. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.

Band :	UNII 2e
Operation Mode:	802.11 a
Transfer Rate:	6 Mbps
Operating Frequency	5580 MHz
Channel No.	116 Ch

Frequency [MHz]	Reading dBuV	AN.+CL-Amp G. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
11160	44.89	11.10	V	55.99	73.98	17.99	PK
11160	39.74	11.10	V	50.84	53.98	3.14	AV
16740	45.54	15.70	V	61.24	68.20	6.96	PK
11160	44.23	11.10	H	55.33	73.98	18.65	PK
11160	38.89	11.10	H	49.99	53.98	3.99	AV
16740	45.52	15.70	H	61.22	68.20	6.98	PK

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 all data rate in 802.11a. Worst case is 6 Mbps in 802.11a.
6. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.

Band :	UNII 2e
Operation Mode:	802.11 a
Transfer Rate:	6 Mbps
Operating Frequency	5700 MHz
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	42.87	10.97	V	53.84	73.98	20.14	PK
11400	37.14	10.97	V	48.11	53.98	5.87	AV
17100	45.01	17.82	V	62.83	68.20	5.37	PK
11400	42.38	10.97	H	53.35	73.98	20.63	PK
11400	36.24	10.97	H	47.21	53.98	6.77	AV
17100	45.00	17.82	H	62.82	68.20	5.38	PK

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 all data rate in 802.11a. Worst case is 6 Mbps in 802.11a.
6. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.

Band :	UNII 2e
Operation Mode:	802.11 n_20 MHz BW
Transfer Rate:	6.5 Mbps
Operating Frequency	5500 MHz
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	44.84	11.28	V	56.12	73.98	17.86	PK
11000	39.08	11.28	V	50.36	53.98	3.62	AV
16500	45.59	14.19	V	59.78	68.20	8.42	PK
11000	44.36	11.28	H	55.64	73.98	18.34	PK
11000	38.12	11.28	H	49.40	53.98	4.58	AV
16500	45.57	14.19	H	59.76	68.20	8.44	PK

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 all data rate in 802.11n_20 MHz BW. Worst case is 6.5 Mbps in 802.11n_20 MHz BW.
6. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.

Band :	UNII 2e
Operation Mode:	802.11 n_20 MHz BW
Transfer Rate:	6.5 Mbps
Operating Frequency	5580 MHz
Channel No.	116 Ch

Frequency [MHz]	Reading dBuV	AN.+CL-Amp G. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
11160	45.22	11.10	V	56.32	73.98	17.66	PK
11160	39.72	11.10	V	50.82	53.98	3.16	AV
16740	45.55	15.70	V	61.25	68.20	6.95	PK
11160	44.69	11.10	H	55.79	73.98	18.19	PK
11160	38.89	11.10	H	49.99	53.98	3.99	AV
16740	45.53	15.70	H	61.23	68.20	6.97	PK

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 all data rate in 802.11n_20 MHz BW. Worst case is 6.5 Mbps in 802.11n_20 MHz BW.
6. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.

Band :	UNII 2e
Operation Mode:	802.11 n_20 MHz BW
Transfer Rate:	6.5 Mbps
Operating Frequency	5700 MHz
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	43.04	10.97	V	54.01	73.98	19.97	PK
11400	37.17	10.97	V	48.14	53.98	5.84	AV
17100	45.31	17.82	V	63.13	68.20	5.07	PK
11400	42.59	10.97	H	53.56	73.98	20.42	PK
11400	36.23	10.97	H	47.20	53.98	6.78	AV
17100	45.29	17.82	H	63.11	68.20	5.09	PK

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 all data rate in 802.11n_20 MHz BW. Worst case is 6.5 Mbps in 802.11n_20 MHz BW.
6. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.

Band :	UNII 2e
Operation Mode:	802.11n_40 MHz BW
Transfer Rate:	13.5 Mbps
Operating Frequency	5510 MHz
Channel No.	102 Ch

Frequency [MHz]	Reading dBuV	AN.+CL-Amp G. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
11020	44.75	11.28	V	56.03	73.98	17.95	PK
11020	39.11	11.28	V	50.39	53.98	3.59	AV
16530	45.27	14.83	V	60.10	68.20	8.10	PK
11020	44.31	11.28	H	55.59	73.98	18.39	PK
11020	38.28	11.28	H	49.56	53.98	4.42	AV
16530	45.25	14.83	H	60.08	68.20	8.12	PK

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 all data rate in 802.11n_40 MHz BW. Worst case is 13.5 Mbps in 802.11n_40 MHz BW.
6. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.

Band :	UNII 2e
Operation Mode:	802.11n_40 MHz BW
Transfer Rate:	13.5 Mbps
Operating Frequency	5550 MHz
Channel No.	110 Ch

Frequency [MHz]	Reading dBuV	AN.+CL-Amp G. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
11180	44.78	11.12	V	55.90	73.98	18.08	PK
11180	39.08	11.12	V	50.20	53.98	3.78	AV
16770	45.38	16.52	V	61.90	68.20	6.30	PK
11180	44.31	11.12	H	55.43	73.98	18.55	PK
11180	38.20	11.12	H	49.32	53.98	4.66	AV
16770	45.36	16.52	H	61.88	68.20	6.32	PK

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 all data rate in 802.11n_40 MHz BW. Worst case is 13.5 Mbps in 802.11n_40 MHz BW.
6. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.

Band :	UNII 2e
Operation Mode:	802.11n_40 MHz BW
Transfer Rate:	13.5 Mbps
Operating Frequency	5670 MHz
Channel No.	134 Ch

Frequency [MHz]	Reading dBuV	AN.+CL-Amp G. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
11340	43.39	10.86	V	54.25	73.98	19.73	PK
11340	38.17	10.86	V	49.03	53.98	4.95	AV
17010	44.65	18.15	V	62.80	68.20	5.40	PK
11340	42.89	10.86	H	53.75	73.98	20.23	PK
11340	37.33	10.86	H	48.19	53.98	5.79	AV
17010	44.62	18.15	H	62.77	68.20	5.43	PK

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 all data rate in 802.11n_40 MHz BW. Worst case is 13.5 Mbps in 802.11n_40 MHz BW.
6. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.

8.7.2 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+ATT. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
5150	53.47	-0.51	H	52.96	73.98	21.02	PK
5150	40.44	-0.51	H	39.93	53.98	14.05	AV
5150	55.81	-0.51	V	55.30	73.98	18.68	PK
5150	41.93	-0.51	V	41.42	53.98	12.56	AV

Band :	UNII 1
Operation Mode:	802.11 n_20 MHz BW
Transfer Rate:	6.5 Mbps
Operating Frequency	5180 MHz
Channel No.	36 Ch

Frequency [MHz]	Reading dBuV	AN.+CL+AMP+ATT. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
5150	53.59	-0.51	H	53.08	73.98	20.90	PK
5150	40.57	-0.51	H	40.06	53.98	13.92	AV
5150	54.75	-0.51	V	54.24	73.98	19.74	PK
5150	42.12	-0.51	V	41.61	53.98	12.37	AV

Band :	UNII 1
Operation Mode:	802.11n_40 MHz BW
Transfer Rate:	13.5 Mbps
Operating Frequency	5190 MHz
Channel No.	38 Ch

Frequency [MHz]	Reading dBuV	AN.+CL+AMP+ATT. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
5150	64.59	-0.51	H	64.08	73.98	9.90	PK
5150	44.57	-0.51	H	44.06	53.98	9.92	AV
5150	65.51	-0.51	V	65	73.98	8.98	PK
5150	46.73	-0.51	V	46.22	53.98	7.76	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+AMP+ATT. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
5350	53.18	-0.19	H	52.99	73.98	20.99	PK
5350	38.88	-0.19	H	38.69	53.98	15.29	AV
5350	56.63	-0.19	V	56.44	73.98	17.54	PK
5350	41.00	-0.19	V	40.81	53.98	13.17	AV

Band :	UNII 2
Operation Mode:	802.11 n_20 MHz BW
Transfer Rate:	6 Mbps
Operating Frequency	5320 MHz
Channel No.	64 Ch

Frequency [MHz]	Reading dBuV	AN.+CL+AMP+ATT. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
5350	52.57	-0.19	H	52.38	73.98	21.60	PK
5350	38.68	-0.19	H	38.49	53.98	15.49	AV
5350	54.90	-0.19	V	54.71	73.98	19.27	PK
5350	40.84	-0.19	V	40.65	53.98	13.33	AV

Band :	UNII 2
Operation Mode:	802.11n_40 MHz BW
Transfer Rate:	13.5 Mbps
Operating Frequency	5310 MHz
Channel No.	62 Ch

Frequency [MHz]	Reading dBuV	AN.+CL+AMP+ATT. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
5350	63.58	-0.19	H	63.39	73.98	10.59	PK
5350	45.55	-0.19	H	45.36	53.98	8.62	AV
5350	65.23	-0.19	V	65.04	73.98	8.94	PK
5350	47.30	-0.19	V	47.11	53.98	6.87	AV

Band : UNII 2e

Operation Mode: 802.11 a

Transfer Rate: 6 Mbps

Operating Frequency 5500 MHz

Channel No. 100 Ch

Frequency [MHz]	Reading DBuV	AN.+CL+AMP+ATT. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
5460	50.47	0.38	H	50.85	73.98	23.13	PK
5460	38.57	0.38	H	38.95	53.98	15.03	AV
5470	52.49	0.24	H	52.73	68.20	15.47	PK
5460	52.96	0.38	V	53.34	73.98	20.64	PK
5460	40.23	0.38	V	40.61	53.98	13.37	AV
5470	54.73	0.24	V	54.97	68.20	13.23	PK

Band : UNII 2e

Operation Mode: 802.11 a

Transfer Rate: 6 Mbps

Operating Frequency 5700 MHz

Channel No. 140 Ch

Frequency [MHz]	Reading DBuV	AN.+CL+AMP+ATT. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
5725	61.57	1.05	H	62.62	68.20	5.59	PK
5725	64.25	1.05	V	65.30	68.20	2.91	PK

Band :	UNII 2e
Operation Mode:	802.11 n_20 MHz BW
Transfer Rate:	6 Mbps
Operating Frequency	5500 MHz
Channel No.	100 Ch

Frequency [MHz]	Reading DBuV	AN.+CL+AMP+ATT. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
5460	51.07	0.38	H	51.45	73.98	22.53	PK
5460	38.48	0.38	H	38.86	53.98	15.12	AV
5470	51.57	0.24	H	51.81	68.20	16.39	PK
5460	53.32	0.38	V	53.70	73.98	20.28	PK
5460	40.05	0.38	V	40.43	53.98	13.55	AV
5470	53.59	0.24	V	53.83	68.20	14.37	PK

Band :	UNII 2e
Operation Mode:	802.11 n_20 MHz BW
Transfer Rate:	6.5 Mbps
Operating Frequency	5700 MHz
Channel No.	140 Ch

Frequency [MHz]	Reading DBuV	AN.+CL+AMP+ATT. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
5725	61.17	1.05	H	62.22	68.20	5.99	PK
5725	63.46	1.05	V	64.51	68.20	3.70	PK

Band :	UNII 2e
Operation Mode:	802.11n_40 MHz BW
Transfer Rate:	13.5 Mbps
Operating Frequency	5510 MHz
Channel No.	102 Ch

Frequency [MHz]	Reading dBuV	AN.+CL+AMP+ATT. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
5460	51.67	0.38	H	52.05	73.98	21.93	PK
5460	37.94	0.38	H	38.32	53.98	15.66	AV
5470	58.57	0.24	H	58.81	68.20	9.39	PK
5460	53.08	0.38	V	53.46	73.98	20.52	PK
5460	38.03	0.38	V	38.41	53.98	15.57	AV
5470	63.47	0.24	V	63.71	68.20	4.49	PK

Band :	UNII 2e
Operation Mode:	802.11 n_40 MHz BW
Transfer Rate:	13.5 Mbps
Operating Frequency	5670 MHz
Channel No.	134 Ch

Frequency [MHz]	Reading DBuV	AN.+CL+AMP+ATT. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
5725	56.84	1.05	H	57.89	68.20	10.32	PK
5725	58.50	1.05	V	59.55	68.20	8.66	AV

8.8 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.
5. We are performed the AC Power Line Conducted Emission test for 121.5 Mbps, Ch.110 and 802.11n_HT40 mode in UNII 2e. Because 802.11n_HT40 mode in UNII 2e is worst case.

RESULT PLOTS

Conducted Emissions (Line 1)

EMI Auto Test(1)

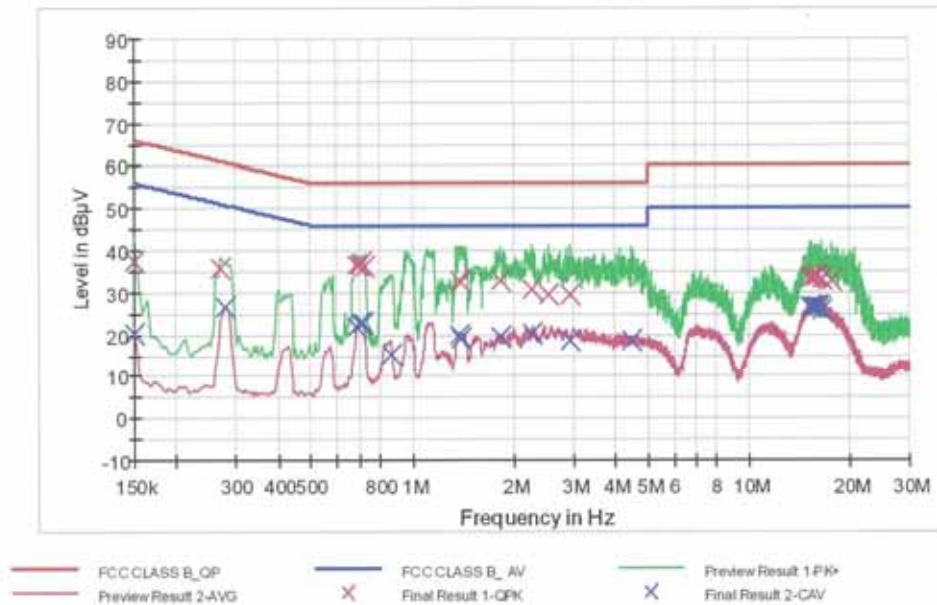
1 / 2

HCT TEST Report

Common Information

EUT: SM-N7506V
 Manufacturer: SAMSUNG
 Test Site: SHIELD ROOM
 Operating Conditions: WLAN MODE(UNII)
 Operator Name: JC SHIN

FCC CLASS B



Final Result 1

Frequency (MHz)	QuasiPeak (dBμV)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.150000	37.6	9.000	Off	L1	9.7	28.4	66.0
0.271500	35.7	9.000	Off	L1	9.7	25.4	61.1
0.684500	36.6	9.000	Off	L1	9.8	19.4	56.0
0.698000	36.7	9.000	Off	L1	9.8	19.3	56.0
0.707000	37.0	9.000	Off	L1	9.8	19.0	56.0
0.720500	36.3	9.000	Off	L1	9.8	19.7	56.0
1.386500	32.9	9.000	Off	L1	9.8	23.1	56.0
1.400000	32.6	9.000	Off	L1	9.8	23.4	56.0
1.836500	32.7	9.000	Off	L1	9.9	23.3	56.0
2.277500	30.9	9.000	Off	L1	9.9	25.1	56.0
2.538500	29.7	9.000	Off	L1	9.9	26.3	56.0
2.961500	29.4	9.000	Off	L1	10.0	26.6	56.0
15.186500	33.2	9.000	Off	L1	10.7	26.8	60.0
15.314000	33.6	9.000	Off	L1	10.7	26.4	60.0
15.818000	33.6	9.000	Off	L1	10.7	26.4	60.0
15.962000	33.6	9.000	Off	L1	10.7	26.4	60.0

2/10/2014

10:30:56

EMI Auto Test(1)

2 / 2

Frequency (MHz)	QuasiPeak (dBμV)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
16.403000	33.3	9.000	Off	L1	10.8	26.7	60.0
17.528000	32.6	9.000	Off	L1	10.8	27.4	60.0

Final Result 2

Frequency (MHz)	CAverage (dBμV)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.150000	20.3	9.000	Off	L1	9.7	35.7	56.0
0.280500	26.6	9.000	Off	L1	9.7	24.2	50.8
0.684500	22.1	9.000	Off	L1	9.8	23.9	46.0
0.698000	22.8	9.000	Off	L1	9.8	23.2	46.0
0.711500	22.8	9.000	Off	L1	9.8	23.2	46.0
0.864500	15.4	9.000	Off	L1	9.8	30.6	46.0
1.386500	19.7	9.000	Off	L1	9.8	26.3	46.0
1.400000	19.2	9.000	Off	L1	9.8	26.8	46.0
1.836500	19.6	9.000	Off	L1	9.9	26.4	46.0
2.277500	20.1	9.000	Off	L1	9.9	25.9	46.0
2.961500	18.5	9.000	Off	L1	10.0	27.5	46.0
4.469000	18.7	9.000	Off	L1	10.1	27.3	46.0
15.156500	26.4	9.000	Off	L1	10.7	23.6	50.0
15.314000	26.6	9.000	Off	L1	10.7	23.4	50.0
15.818000	26.6	9.000	Off	L1	10.7	23.4	50.0
15.962000	26.5	9.000	Off	L1	10.7	23.5	50.0
16.200500	26.4	9.000	Off	L1	10.8	23.6	50.0
16.403000	25.9	9.000	Off	L1	10.8	24.1	50.0

2/10/2014

10:30:56

FCC PT.15.407 TEST REPORT	FCC CERTIFICATION REPORT		www.hct.co.kr
Test Report No. HCTR1402F011	Date of Issue: February 12, 2014	EUT Type: Mobile Phone	FCC ID: A3LSMN7506V

Conducted Emissions (Line 2)

EMI Auto Test(1)

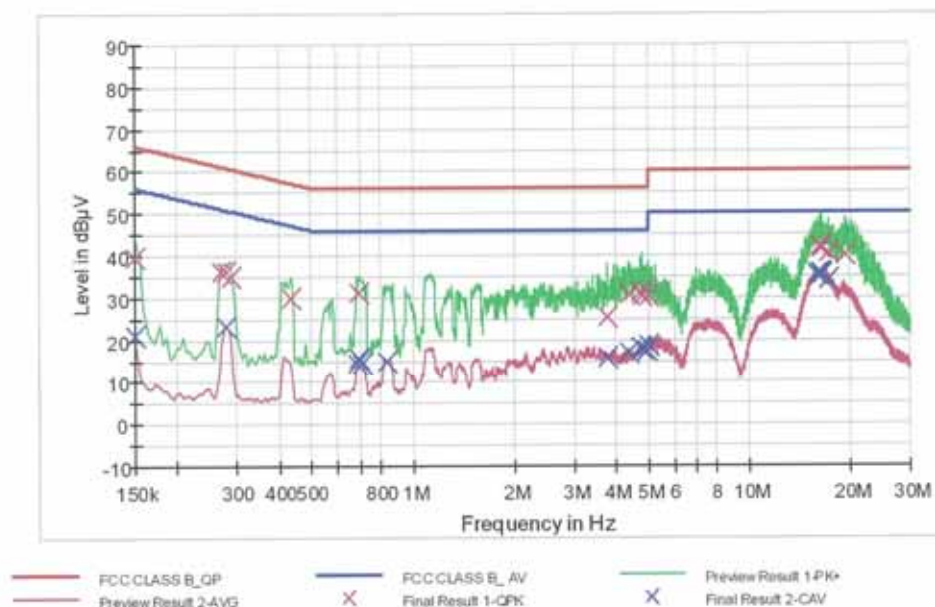
1 / 2

HCT TEST Report

Common Information

EUT: SM-N7506V
 Manufacturer: SAMSUNG
 Test Site: SHIELD ROOM
 Operating Conditions: WLAN MODE(UNII)
 Operator Name: JC SHIN

FCC CLASS B



Final Result 1

Frequency (MHz)	QuasiPeak (dBμV)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.150000	39.8	9.000	Off	N	9.7	26.2	66.0
0.271500	36.0	9.000	Off	N	9.7	25.1	61.1
0.280500	36.0	9.000	Off	N	9.7	24.8	60.8
0.289500	34.9	9.000	Off	N	9.7	25.6	60.5
0.433500	30.0	9.000	Off	N	9.8	27.2	57.2
0.689000	31.3	9.000	Off	N	9.8	24.7	56.0
3.780500	25.4	9.000	Off	N	10.1	30.6	56.0
4.361000	31.0	9.000	Off	N	10.1	25.0	56.0
4.743500	31.1	9.000	Off	N	10.1	24.9	56.0
4.775000	30.2	9.000	Off	N	10.1	25.8	56.0
4.802000	30.4	9.000	Off	N	10.1	25.6	56.0
5.004500	30.3	9.000	Off	N	10.1	29.7	60.0
16.187000	41.5	9.000	Off	N	10.7	18.5	60.0
16.308500	41.9	9.000	Off	N	10.7	18.1	60.0
16.434500	41.8	9.000	Off	N	10.7	18.2	60.0
16.466000	41.6	9.000	Off	N	10.7	18.4	60.0

2/10/2014

10:25:06

EMI Auto Test(1)

2 / 2

Frequency (MHz)	QuasiPeak (dBμV)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
17.276000	40.3	9.000	Off	N	10.7	19.7	60.0
19.382000	40.0	9.000	Off	N	10.8	20.0	60.0

Final Result 2

Frequency (MHz)	CAverage (dBμV)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.150000	20.9	9.000	Off	N	9.7	35.1	56.0
0.280500	23.0	9.000	Off	N	9.7	27.8	50.8
0.680000	14.3	9.000	Off	N	9.8	31.7	46.0
0.689000	15.6	9.000	Off	N	9.8	30.4	46.0
0.707000	14.4	9.000	Off	N	9.8	31.6	46.0
0.837500	14.9	9.000	Off	N	9.8	31.1	46.0
3.780500	15.8	9.000	Off	N	10.1	30.2	46.0
4.361000	16.9	9.000	Off	N	10.1	29.1	46.0
4.743500	18.0	9.000	Off	N	10.1	28.0	46.0
4.775000	17.7	9.000	Off	N	10.1	28.3	46.0
4.959500	17.4	9.000	Off	N	10.1	28.6	46.0
5.004500	18.5	9.000	Off	N	10.1	31.5	50.0
15.876500	35.3	9.000	Off	N	10.7	14.7	50.0
16.187000	35.6	9.000	Off	N	10.7	14.4	50.0
16.308500	35.6	9.000	Off	N	10.7	14.4	50.0
16.434500	35.4	9.000	Off	N	10.7	14.6	50.0
16.461500	35.5	9.000	Off	N	10.7	14.5	50.0
17.276000	34.3	9.000	Off	N	10.7	15.7	50.0

2/10/2014

10:25:06

FCC PT.15.407 TEST REPORT	FCC CERTIFICATION REPORT		www.hct.co.kr
Test Report No. HCTR1402F011	Date of Issue: February 12, 2014	EUT Type: Mobile Phone	FCC ID: A3LSMN7506V

9. LIST OF TEST EQUIPMENT

Manufacturer	Model / Equipment	Calibration Interval	Calibration Due	Serial No.
Rohde & Schwarz	ENV216/ LISN	Annual	01/29/2015	100073
Schwarzbeck	VULB 9160/ TRILOG Antenna	Biennial	12/17/2014	3150
Rohde & Schwarz	ESI 40 / EMI TEST RECEIVER	Annual	04/16/2014	831564103
Agilent	E4440A/ Spectrum Analyzer	Annual	04/25/2014	US45303008
Agilent	N9020A/ SIGNAL ANALYZER	Annual	05/14/2014	MY51110063
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	09/10/2014	10094
CERNEX	CBL18265035 / POWER AMP	Annual	07/24/2014	22966
CERNEX	CBL26405040 / POWER AMP	Annual	04/16/2014	19660
Schwarzbeck	BBHA 9120D/ Horn Antenna	Biennial	07/05/2015	1151
Schwarzbeck	BBHA9170 / Horn Antenna(15 GHz ~ 40 GHz)	Biennial	10/30/2014	BBHA9170124
Rohde & Schwarz	FSP / Spectrum Analyzer	Annual	01/24/2015	839117/011
Agilent	N1911A/Power Meter	Annual	01/24/2015	MY45100523
Agilent	N1921A /POWER SENSOR	Annual	07/11/2014	MY45241059
Wainwright Instrument	WHF3.0/18G-10EF / High Pass Filter	Annual	02/03/2015	F6
Wainwright Instrument	WHNX6.0/26.5G-6SS / High Pass Filter	Annual	04/16/2014	1
Wainwright Instrument	WHNX7.0/18G-8SS / High Pass Filter	Annual	04/16/2014	29
Wainwright Instrument	WRCJ2400/2483.5-2370/2520-60/14SS / Band Reject Filter	Annual	03/19/2014	1
Hewlett Packard	11636B/Power Divider	Annual	10/22/2014	11377
Agilent	87300B/Directional Coupler	Annual	12/18/2014	3116A03621
Hewlett Packard	11667B / Power Splitter	Annual	05/29/2014	05001
DIGITAL	EP-3010 /DC POWER SUPPLY	Annual	10/29/2014	3110117
ITECH	IT6720 / DC POWER SUPPLY	Annual	11/05/2014	010002156287001199
TESCOM	TC-3000C / BLUETOOTH TESTER	Annual	04/24/2014	3000C000276
Rohde & Schwarz	CBT / BLUETOOTH TESTER	Annual	04/25/2014	100422
Rohde & Schwarz	LOOP ANTENNA	Biennial	08/14/2014	100179
Agilent	8493C / Attenuator(10 dB)	Annual	07/24/2014	76649
WEINSCHL	2-3 / Attenuator(3 dB)	Annual	10/28/2014	BR0617
CERNEX	CBL06185030 / POWER AMP	Annual	07/24/2014	22965
CERNEX	CBLU1183540 / POWER AMP	Annual	07/24/2014	22964