



HCT CO., LTD.

CERTIFICATE OF COMPLIANCE

FCC Certification

Applicant Name:
LG Electronics MobileComm U.S.A., Inc.

Address:
1000 Sylvan Avenue, Englewood Cliffs NJ 07632

Date of Issue:
May 29, 2014

Test Site/Location:
HCT CO., LTD., 74, Seoicheon-ro 578beon-gil, Majang-myeon, Icheon-si, Gyeonggi-do, Korea

Report No.: HCT-R-1405-F018-1

HCT FRN: 0005866421

FCC ID : ZNFD855P

APPLICANT : LG Electronics MobileComm U.S.A., Inc.

FCC Model(s): LG-D855P

Additional FCC Model(s): LG-D855p, D855P, D855p, LGD855P, LGD855p, LG-D855AR, LG-D855ar, LGD855AR, LGD855ar, D855AR, D855ar

EUT Type: Cellular/PCS GSM/GPRS/EDGE/WCDMA/HSDPA/HSUPA/LTE Phone with Bluetooth, WLAN, NFC

Max. RF Output Power: Wi-Fi 802.11b (22.15 dBm) / Wi-Fi 802.11g (21.51 dBm) / Wi-Fi 802.11n (2.4 GHz) (20.55 dBm)
/ Wi-Fi 802.11a (5.8 GHz) (16.22 dBm) / Wi-Fi 802.11n_20 MHz BW (5.8 GHz) (15.31 dBm)
/ Wi-Fi 802.11n_40 MHz BW (5.8 GHz) (14.50 dBm) / Wi-Fi 802.11ac_20 MHz BW (5.8 GHz) (15.42 dBm)
/ Wi-Fi 802.11ac_40 MHz BW (5.8 GHz) (14.61 dBm) / Wi-Fi 802.11ac_80 MHz BW (5.8 GHz) (14.43 dBm)

Frequency Range: 2412 MHz - 2462 MHz (2.4 GHz Band)
5745 MHz - 5825 MHz (5.8 GHz Band)_20 MHz BW, 5755 MHz - 5795 MHz (5.8 GHz Band)_40 MHz BW
5775 MHz (5.8 GHz Band)_80 MHz BW

Modulation type CCK/DSSS/OFDM

FCC Classification: Digital Transmission System(DTS)

FCC Rule Part(s): Part 15.247

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
: Kyoung Houn Seo
Test engineer of RF Team


Approved by
: Chang Seok Choi
Manager of RF Team

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FCC PT.15.247 TEST REPORT		FCC CERTIFICATION REPORT		www.hct.co.kr
Test Report No. HCT-R-1405-F018-1	Date of Issue: May 29, 2014	EUT Type: Cellular/PCS GSM/GPRS/EDGE/WCDMA/HSDPA/HSUPA/LTE Phone with Bluetooth, WLAN, NFC	FCC ID: ZNFD855P	

Version

TEST REPORT NO.	DATE	DESCRIPTION
HCT-R-1405-F018	May 21, 2014	- First Approval Report
HCT-R-1405-F018-1	May 29, 2014	- Add the include details identifying WCP on page 4 - Revised the calibration note Section 9.1 - Revised the output power levels listed on page 1 and 4

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1. GENERAL INFORMATION

Applicant: LG Electronics MobileComm U.S.A., Inc.

Address: 1000 Sylvan Avenue, Englewood Cliffs NJ 07632

FCC ID: ZNFD855P

EUT Type: Cellular/PCS GSM/GPRS/EDGE/WCDMA/HSDPA/HSUPA/LTE Phone with Bluetooth, WLAN, NFC

Model name(s): LG-D855P

Additional Model name(s): LG-D855p, D855P, D855p, LGD855P, LGD855p, LG-D855AR, LG-D855ar, LGD855AR, LGD855ar, D855AR, D855ar

Date(s) of Tests: April 09, 2014 ~ May 19, 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	Cellular/PCS GSM/GPRS/EDGE/WCDMA/HSDPA/HSUPA/LTE Phone with Bluetooth, WLAN, NFC	
FCC Model Name	LG-D855P	
Additional FCC Model Name	LG-D855p, D855P, D855p, LGD855P, LGD855p, LG-D855AR, LG-D855ar, LGD855AR, LGD855ar, D855AR, D855ar	
Power Supply	DC 3.8 V	
Battery type	Li-ion Battery(Standard)	
Frequency Range	TX	: 2412 MHz~2462 MHz, 5745 MHz~5825 MHz_20 MHz, 5755 MHz~5795 MHz_40 MHz 5775 MHz_80 MHz
	RX	: 2412 MHz~2462 MHz, 5745 MHz~5825 MHz_20 MHz, 5755 MHz~5795 MHz_40 MHz 5775 MHz_80 MHz
Max. RF Output Power	Peak	Wi-Fi 802.11b (22.15 dBm) / Wi-Fi 802.11g (21.51 dBm) / Wi-Fi 802.11n (2.4 GHz) (20.55 dBm) / Wi-Fi 802.11a (5.8 GHz) (16.22 dBm) / Wi-Fi 802.11n_20 MHz BW (5.8 GHz) (15.31 dBm) / Wi-Fi 802.11n_40 MHz BW (5.8 GHz) (14.50 dBm) / Wi-Fi 802.11ac_20 MHz BW (5.8 GHz) (15.42 dBm) / Wi-Fi 802.11ac_40 MHz BW (5.8 GHz) (14.61 dBm) / Wi-Fi 802.11ac_80 MHz BW (5.8 GHz) (14.43 dBm)
	Average	Wi-Fi 802.11b (16.18 dBm) / Wi-Fi 802.11g (13.01 dBm) / Wi-Fi 802.11n (2.4 GHz) (12.16 dBm) / Wi-Fi 802.11a (5.8 GHz) (9.06 dBm) / Wi-Fi 802.11n_20 MHz BW (5.8 GHz) (7.80 dBm) / Wi-Fi 802.11n_40 MHz BW (5.8 GHz) (7.32 dBm) / Wi-Fi 802.11ac_20 MHz BW (5.8 GHz) (8.05 dBm) / Wi-Fi 802.11ac_40 MHz BW (5.8 GHz) (7.39 dBm) / Wi-Fi 802.11ac_80 MHz BW (5.8 GHz) (7.34 dBm)
Modulation Type	DSSS/CCK(802.11b), OFDM(802.11a, 802.11g, 802.11n, 802.11ac)	
Antenna Specification	Manufacturer: AT&C Co.LTD Antenna type: FPCB Antenna Peak Gain : -3.09 dBi (2.4 GHz Band), -0.13 dBi (5.8 GHz Band)	
Wireless Charger Pad	FCC ID: BEJWCP300 Manufacturer: LG Electronics USA	

Note: All test performed with the battery cover already incorporate the NFC antenna and Wireless charging capability.

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3. TEST METHODOLOGY

FCC KDB 558074 D01 DTS Meas Guidance v03r01 dated April 09, 2013 entitled “Guidance for Performing Compliance Measurements on Digital Transmission Systems(DTS) and the measurement procedure described in the American National Standard for Testing Unlicensed Wireless Devices(ANSI C63.4-2003) Operating Under §15.247” were used in the measurement. For 802.11ac, KDB644545 D01 v01r01 dated April 08, 2013.

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 15.247 under the FCC Rules Part 15 Subpart C.

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 9.1 to 9.2.(KDB 558074)

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.

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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 February 28, 2014 (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

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7. SUMMARY TEST OF RESULTS

Test Description	FCC Part Section(s)	Test Limit	Test Condition	Test Result
6 dB Bandwidth	§15.247(a)(2)	> 500 kHz	CONDUCTED	PASS
Conducted Maximum Peak Output Power	§15.247(b)(3)	< 1 Watt		PASS
Power Spectral Density	§15.247(e)	< 8 dBm / 3 kHz Band		PASS
Band Edge(Out of Band Emissions)	§15.247(d)	Conducted < 20 dBc		PASS
AC Power line Conducted Emissions	§15.207	cf. Section 8.6		PASS
Radiated Spurious Emissions	§15.205, 15.209	cf. Section 8.5.1	RADIATED	PASS
Radiated Restricted Band Edge	§15.247(d), 15.205, 15.209	cf. Section 8.5.2		PASS

8. TEST RESULT

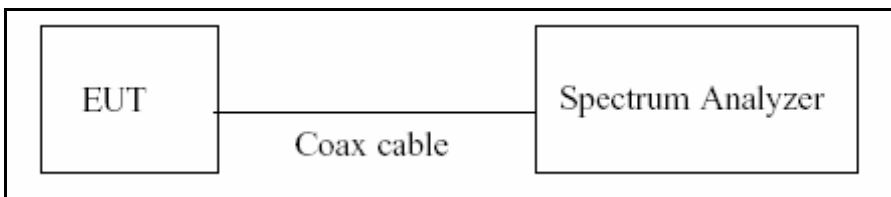
8.1 DUTY CYCLE(802.11a/b/g/n/ac)

TEST PROCEDURE

According to KDB558074)6)b), issued 04/09/2013)

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 $\geq$ OBW 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 $> 50/T$ 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, 6.0)b) in KDB 558074(issued 04/09/2013)

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 = $10 \cdot \log(1/\text{Duty Cycle})$

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Duty Cycle Factor

Mode	Data Rate	T _{on} (ms)	T _{total} (ms)	Duty Cycle	Duty Cycle Factor (dB)
2.4 GHz Band 802.11b	1	12.240	12.330	0.99270073	0.032
	2	6.210	6.330	0.98104265	0.083
	5.5	2.370	2.475	0.95757576	0.188
	11	1.281	1.379	0.92893401	0.320
2.4 GHz Band 802.11g and 5.8 GHz Band 802.11a	6	2.019	2.132	0.94699812	0.237
	9	1.341	1.454	0.92228336	0.351
	12	1.009	1.130	0.89292035	0.492
	18	0.685	0.790	0.86708861	0.619
	24	0.510	0.615	0.82926829	0.813
	36	0.356	0.456	0.78070175	1.075
	48	0.272	0.376	0.72340426	1.406
	54	0.242	0.342	0.70760234	1.502
2.4 GHz Band 802.11n_20 MHz BW and 5.8 GHz Band 802.11n_20 MHz BW	6.5	1.861	1.966	0.94659207	0.238
	13	0.941	1.047	0.89875836	0.464
	19.5	0.625	0.738	0.84688347	0.722
	26	0.483	0.591	0.81725888	0.876
	39	0.333	0.435	0.76551724	1.160
	52	0.252	0.351	0.71794872	1.439
	58.5	0.225	0.330	0.68181818	1.663
	65	0.204	0.306	0.66666667	1.761
2.4 GHz & 5.8 GHz Band 802.11n_40 MHz BW	13.5	0.910	1.022	0.89041096	0.504
	27	0.464	0.572	0.81118881	0.909
	40.5	0.314	0.422	0.74407583	1.284
	54	0.241	0.348	0.69252874	1.596
	81	0.166	0.276	0.60144928	2.208
	108	0.128	0.235	0.54468085	2.639
	121.5	0.116	0.223	0.52017937	2.838
	135	0.108	0.215	0.50232558	2.990
5.8 GHz Band 802.11ac_20 MHz BW	6.5	0.972	1.074	0.90502793	0.433
	13	0.507	0.606	0.83663366	0.775
	19.5	0.351	0.449	0.78173719	1.069
	26	0.276	0.374	0.73796791	1.320
	39	0.195	0.294	0.66326531	1.783
	52	0.159	0.258	0.61627907	2.102
	58.5	0.144	0.242	0.59504132	2.255
	65	0.136	0.234	0.58119658	2.357
	78	0.120	0.218	0.55045872	2.593

Mode	Data Rate	T _{on} (ms)	T _{total} (ms)	Duty Cycle	Duty Cycle Factor (dB)
5.8 GHz Band 802.11ac_40 MHz BW	13.5	0.490	0.592	0.82770270	0.821
	27	0.267	0.367	0.72752044	1.382
	40.5	0.192	0.291	0.65979381	1.806
	54	0.154	0.255	0.60392157	2.190
	81	0.115	0.215	0.53488372	2.717
	108	0.100	0.200	0.50000000	3.010
	121.5	0.092	0.191	0.48167539	3.172
	135	0.088	0.187	0.47058824	3.274
	162	0.079	0.179	0.44134078	3.552
	180	0.076	0.175	0.43428571	3.622
5.8 GHz Band 802.11ac_80 MHz BW	29.3	0.247	0.347	0.71181556	1.476
	58.5	0.142	0.244	0.58196721	2.351
	87.8	0.111	0.212	0.52358491	2.810
	117	0.092	0.192	0.47916667	3.195
	175.5	0.075	0.176	0.42613636	3.705
	234	0.067	0.168	0.39880952	3.992
	263.3	0.063	0.164	0.38414634	4.155
	292.5	0.062	0.165	0.37575758	4.251
	351	0.059	0.160	0.36875000	4.333
	390	0.056	0.156	0.35897436	4.449

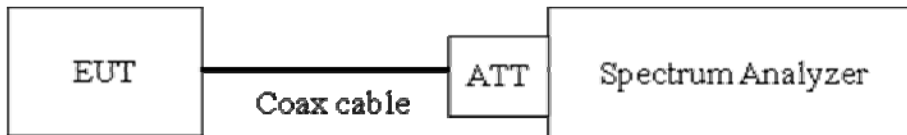
8.2 6dB BANDWIDTH (802.11a/b/g/n/ac)

Test Requirements and limit, §15.247(a)(2)

The bandwidth at 6dB down from the highest in-band spectral density is measured with a spectrum analyzer connected to the receive antenna while the EUT is operating in transmission mode at the appropriate frequencies.

The minimum permissible 6dB bandwidth is 500 kHz.

TEST CONFIGURATION



TEST PROCEDURE

The transmitter output is connected to the Spectrum Analyzer.

The Spectrum Analyzer is set to (Page 5 in KDB 558074, issued 04/09/2013)

RBW = 100 kHz

VBW $\geq 3 \times$ RBW

Detector = Peak

Trace mode = max hold

Sweep = auto couple

Allow the trace to stabilize

Note : We tested 6 dB bandwidth using the automatic bandwidth measurement capability of a spectrum analyzer. X dB is set 6 dB.

TEST RESULTS

2.4 GHz Band

Conducted 6dB Bandwidth Measurements for 802.11b

802.11b Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
2412	1	8.12	0.500	Pass
2437	6	8.12	0.500	Pass
2462	11	8.11	0.500	Pass

Conducted 6dB Bandwidth Measurements for 802.11g

802.11g Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
2412	1	16.42	0.500	Pass
2437	6	16.42	0.500	Pass
2462	11	16.41	0.500	Pass

Conducted 6dB Bandwidth Measurements for 802.11n_20 MHz BW

802.11n Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
2412	1	17.62	0.500	Pass
2437	6	17.63	0.500	Pass
2462	11	17.62	0.500	Pass

5.8 GHz Band

Conducted 6 dB Bandwidth Measurements for 802.11a

802.11a Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5745	149	16.42	0.500	Pass
5785	157	16.41	0.500	Pass
5825	165	16.42	0.500	Pass

Conducted 6 dB Bandwidth Measurements for 802.11n_20 MHz BW

802.11n Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5745	149	17.62	0.500	Pass
5785	157	17.61	0.500	Pass
5825	165	17.62	0.500	Pass

Conducted 6 dB Bandwidth Measurements for 802.11n_40 MHz BW

802.11n Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5755	151	35.39	0.500	Pass
5795	159	35.19	0.500	Pass

Conducted 6 dB Bandwidth Measurements for 802.11ac_20 MHz BW

802.11ac Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5745	149	17.63	0.500	Pass
5785	157	17.61	0.500	Pass
5825	165	17.64	0.500	Pass

Conducted 6 dB Bandwidth Measurements for 802.11ac_40 MHz BW

802.11ac Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5755	151	35.25	0.500	Pass
5795	159	35.25	0.500	Pass

Conducted 6 dB Bandwidth Measurements for 802.11ac_80 MHz BW

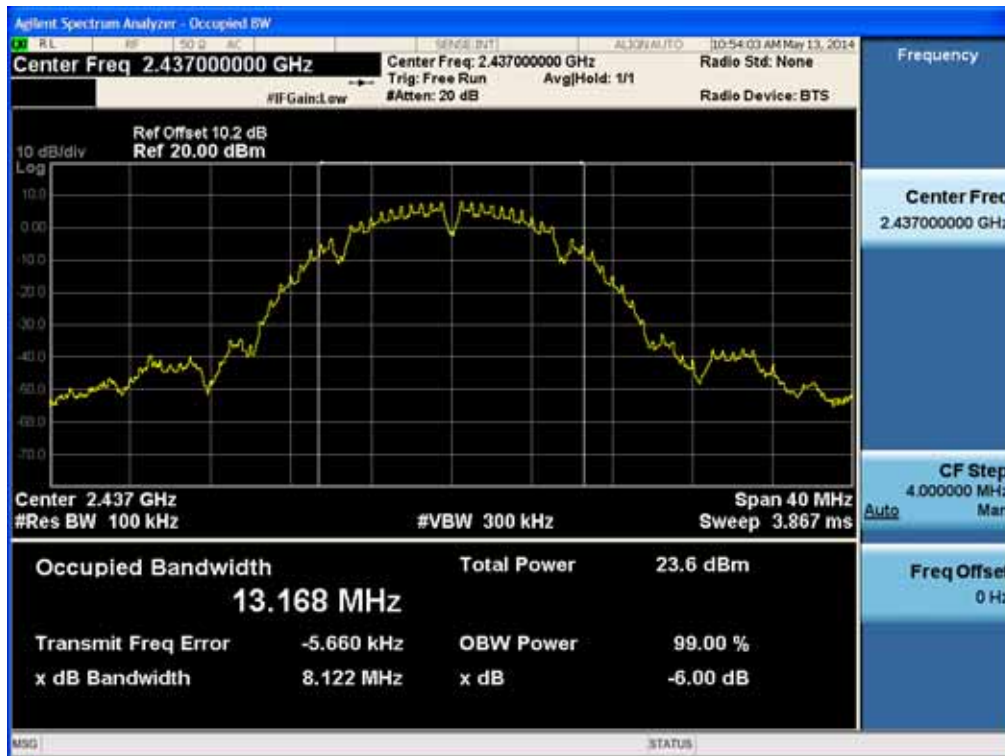
802.11ac Mode		Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
Frequency [MHz]	Channel No.			
5775	155	75.17	0.500	Pass

Note : In order to simplify the report, attached plots were only the most wide 6 dB BW channel.

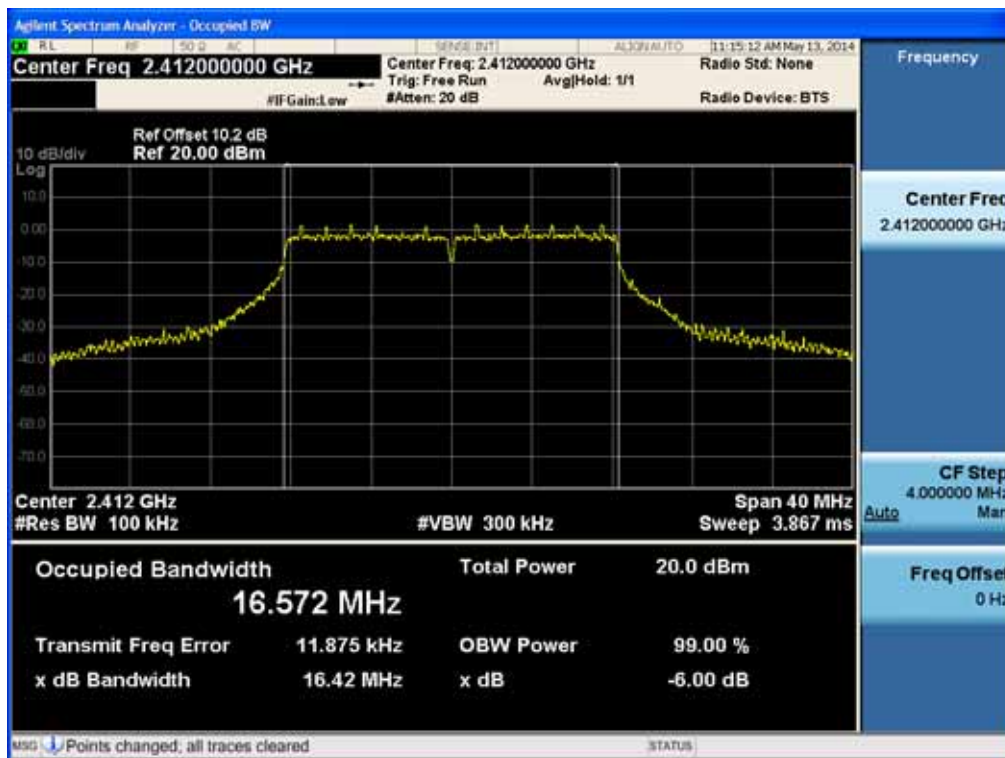
RESULT PLOTS

2.4 GHz Band

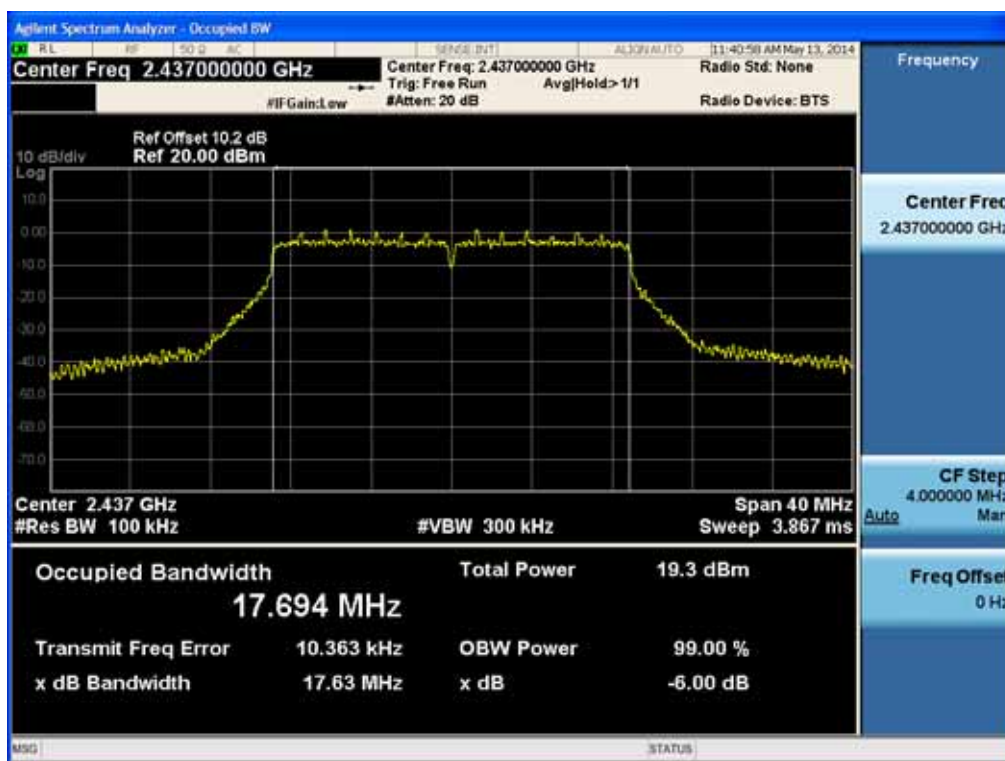
6dB Bandwidth plot (802.11b-CH 6)



6dB Bandwidth plot (802.11g-CH 1)



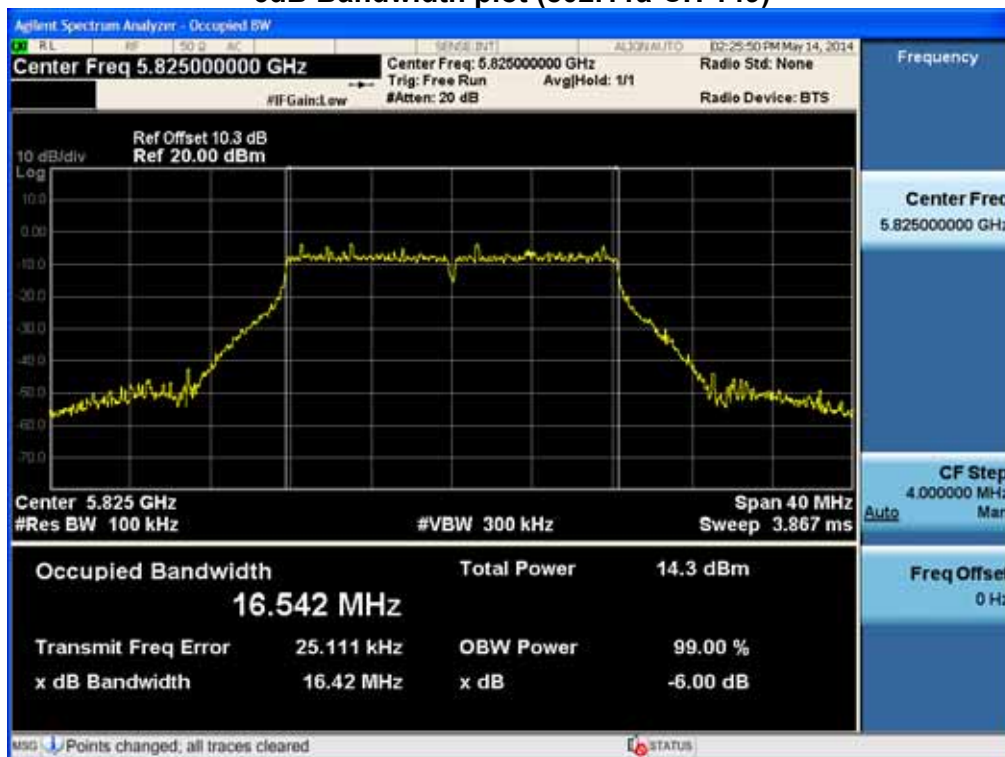
6dB Bandwidth plot (802.11n-CH 6)



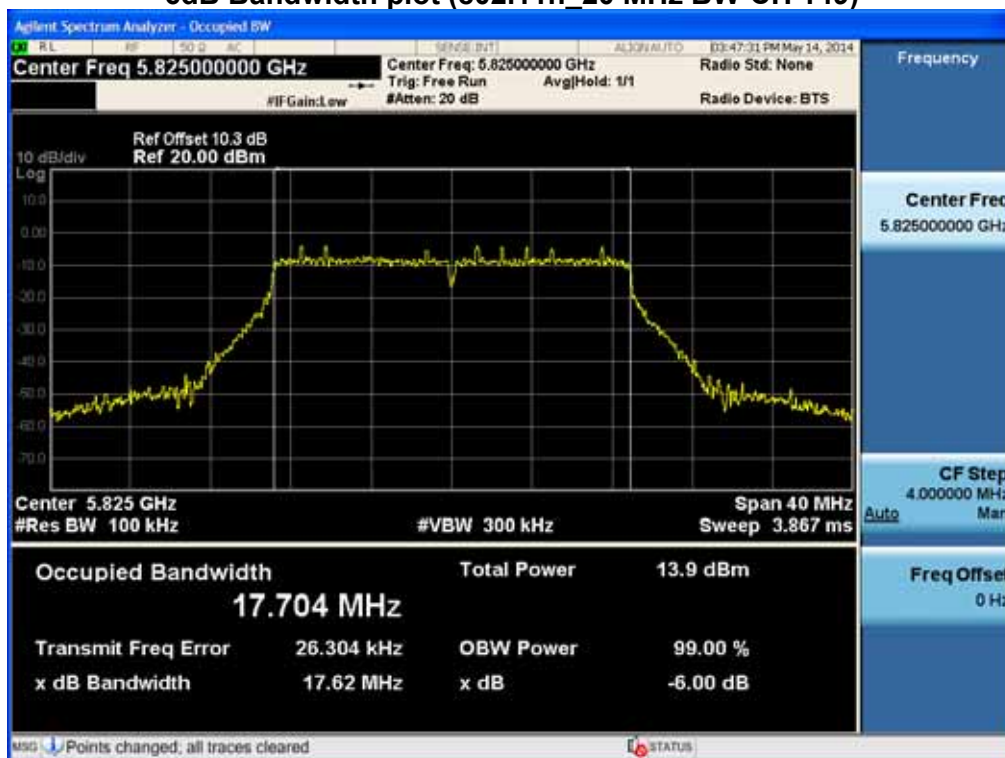
FCC PT.15.247 TEST REPORT	FCC CERTIFICATION REPORT		www.hct.co.kr
Test Report No. HCT-R-1405-F018-1	Date of Issue: May 29, 2014	EUT Type: Cellular/PCS GSM/GPRS/EDGE/WCDMA/HSDPA/HSUPA/LTE Phone with Bluetooth, WLAN, NFC	FCC ID: ZNFD855P

5.8 GHz Band

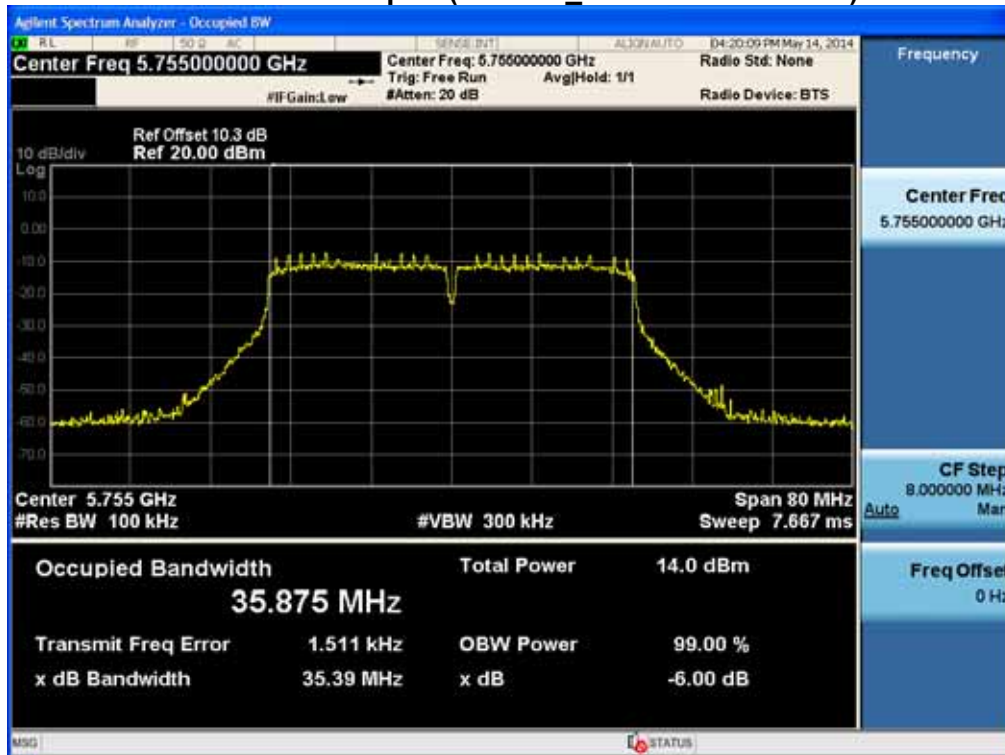
6dB Bandwidth plot (802.11a-CH 149)



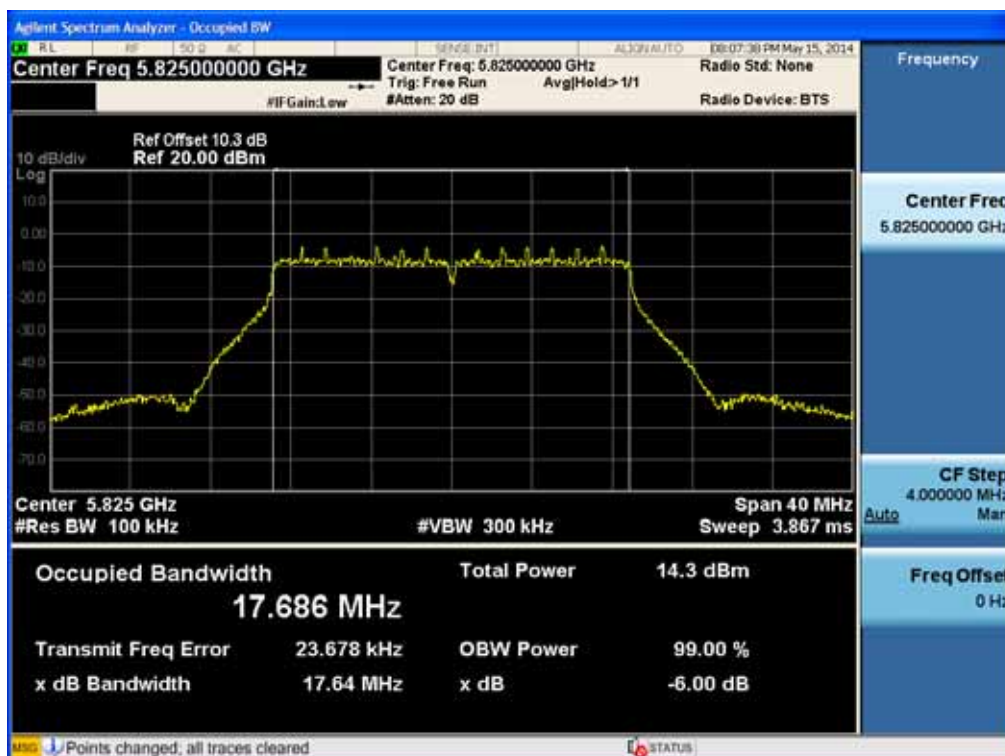
6dB Bandwidth plot (802.11n_20 MHz BW-CH 149)



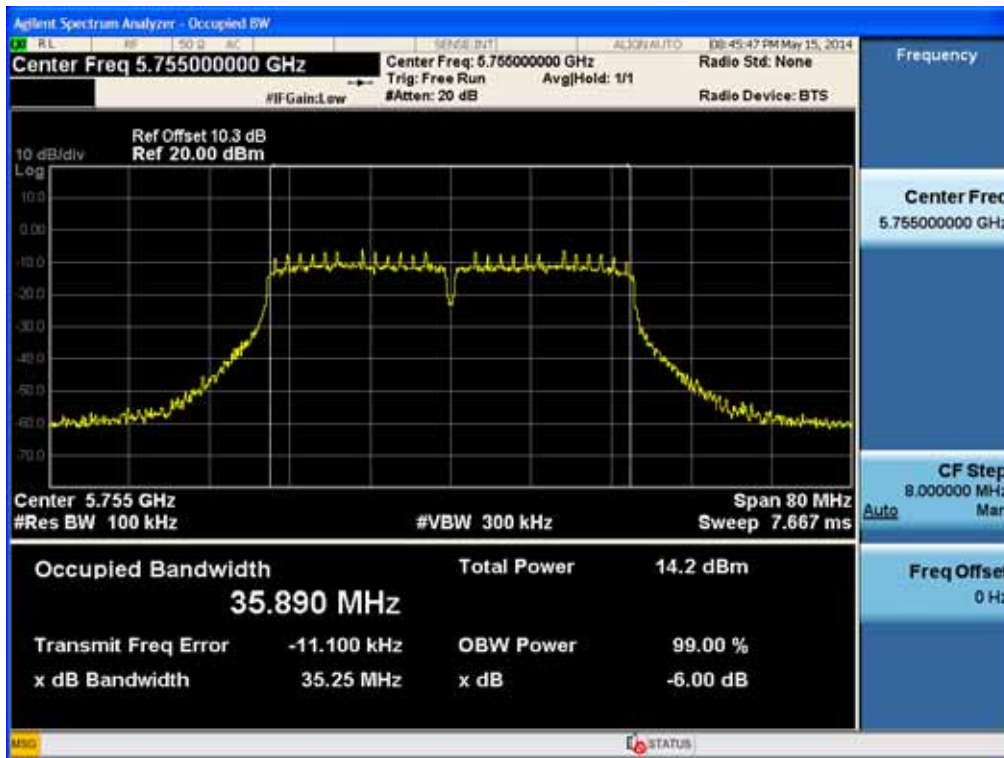
6dB Bandwidth plot (802.11n_40 MHz BW-CH 151)



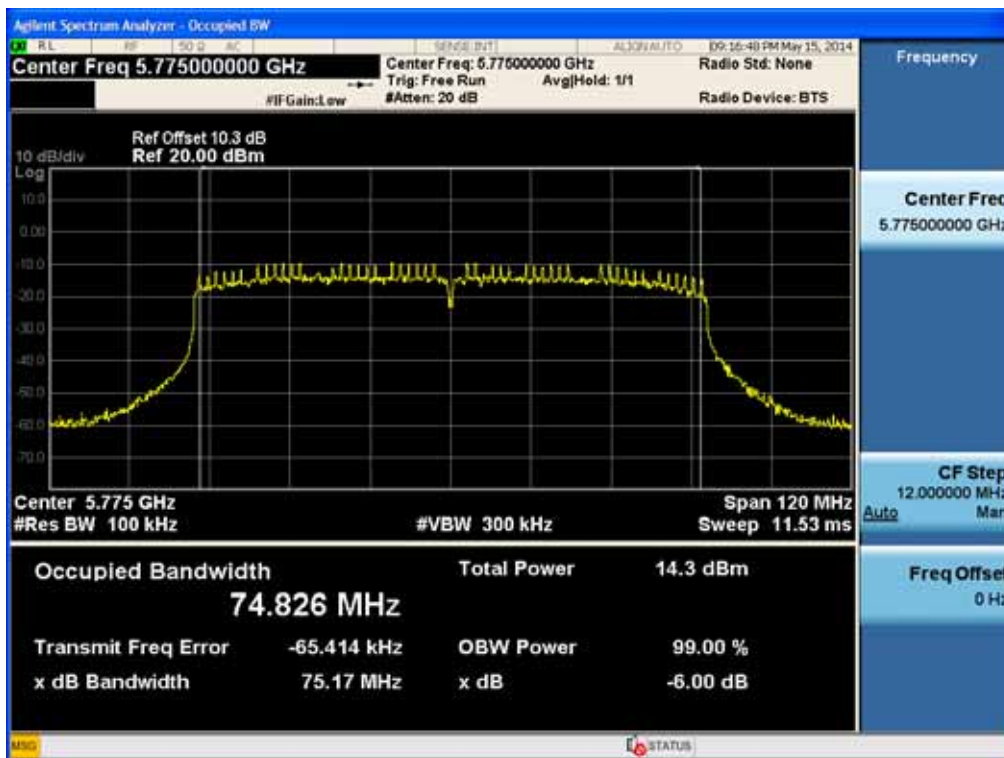
6dB Bandwidth plot (802.11ac_20 MHz BW-CH 165)



6dB Bandwidth plot (802.11ac_40 MHz BW-CH 151)



6dB Bandwidth plot (802.11ac_80 MHz BW-CH 155)



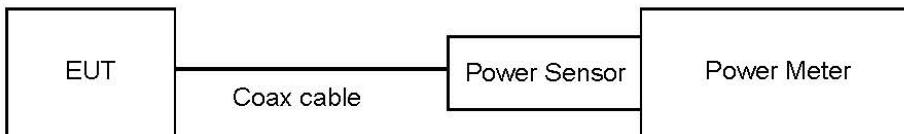
8.3 OUTPUT POWER (802.11a/b/g/n/ac)

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

The transmitter output is connected to the input of an RF power sensor. Measurement is made using a broadband power meter capable of making peak and average measurements while the EUT is operating at its maximum duty cycle, at maximum power, and at the appropriate frequencies.

The maximum permissible conducted output power is 1 Watt.

TEST CONFIGURATION(20 MHz BW)



TEST PROCEDURE(20 MHz BW)

- Peak Power (Procedure 9.1.3 in KDB 558074, issued 04/09/2013)
 1. Measure the peak power of the transmitter.
- Average Power (Procedure 9.2.3.1 in KDB 558074, issued 04/09/2013)
 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 :

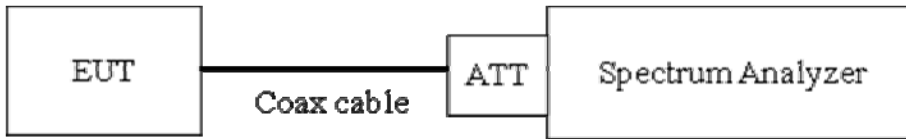
1. We apply to the offset in the 2.4 GHz and 5.8 GHz range that was rounded off to the closest tenth dB. So, 20.2 dB is offset for 2.4 GHz Band and 20.3 dB is offset for 5.8 GHz Band.

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

Band	Frequency(MHz)	Loss(dB)
2.4 GHz	2412	20.21
	2437	20.24
	2462	20.24
5.8 GHz	5745	20.31
	5755	20.30
	5785	20.29
	5795	20.26
	5825	20.28

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

TEST CONFIGURATION(40 MHz & 80 MHz BW)



TEST PROCEDURE(40 MHz & 80 MHz BW)

The transmitter output is connected to the Spectrum Analyzer. We use the spectrum analyzer's integrated band power measurement function.

The Spectrum Analyzer is set to

- Peak Power (Procedure 9.1.2 in KDB 558074, issued 04/09/2013)

RBW = 1 MHz

VBW $\geq 3 \times$ RBW

SPAN $\geq 1.5 \times$ DTS bandwidth

Detector Mode = Peak

Sweep = auto couple

Trace Mode = max hold

Allow trace to fully stabilize.

Use the instrument's band/channel power measurement function with the band limits set equal to the DTS bandwidth edges (for some instruments, this may require a manual override to select peak detector).

- Average Power (Procedure 9.2.2.4 in KDB 558074, issued 04/09/2013)

Measure the duty cycle

Set span to at least 1.5 times the OBW

RBW = 1-5 % of the OBW, not to exceed 1 MHz.

VBW $\geq 3 \times$ RBW.

Number of points in sweep $\geq 2 \times$ span / RBW. (This gives bin-to-bin spacing $\leq$ RBW/2, so that narrowband signals are not lost between frequency bins.)

Sweep time = auto.

Detector = RMS(i.e., power averaging)

Do not use sweep triggering. Allow the sweep to "free run".

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

Compute power by integrating the spectrum across the OBW of the signal using the instrument's band power measurement function with band limits set equal to the OBW band edges.

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.

FCC PT.15.247 TEST REPORT	FCC CERTIFICATION REPORT		www.hct.co.kr
Test Report No. HCT-R-1405-F018-1	Date of Issue: May 29, 2014	EUT Type: Cellular/PCS GSM/GPRS/EDGE/WCDMA/HSDPA/HSUPA/LTE Phone with Bluetooth, WLAN, NFC	FCC ID: ZNFD855P

Sample Calculation

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

Output Power = 10 dBm + 20 dB + 0.8 dB + 0.2 dB = 31.0 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 2.4 GHz and 5.8 GHz range that was rounded off to the closest tenth dB. So, 10.2 dB is offset for 2.4 GHz Band and 10.3 dB is offset for 5.8 GHz Band.

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

Band	Frequency(MHz)	Loss(dB)
2.4 GHz	2412	20.21
	2437	20.24
	2462	20.24
5.8 GHz	5745	20.31
	5755	20.30
	5785	20.29
	5795	20.26
	5825	20.28

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

TEST RESULTS-Peak

2.4 GHz Band

Conducted Output Power Measurements (802.11b Mode)

802.11b Mode		Rate (Mbps)	Measured Power(dBm)	Limit (dBm)
Frequency[MHz]	Channel No.			
2412	1	1 Mbps	18.22	30
		2 Mbps	18.45	30
		5.5 Mbps	20.13	30
		11 Mbps	21.94	30
2437	6	1 Mbps	18.37	30
		2 Mbps	18.66	30
		5.5 Mbps	20.31	30
		11 Mbps	22.13	30
2462	11	1 Mbps	18.38	30
		2 Mbps	18.67	30
		5.5 Mbps	20.36	30
		11 Mbps	22.15	30

Conducted Output Power Measurements (802.11g Mode)

802.11g Mode		Rate (Mbps)	Measured Power(dBm)	Limit (dBm)
Frequency[MHz]	Channel No.			
2412	1	6 Mbps	20.62	30
		9 Mbps	20.65	30
		12 Mbps	20.74	30
		18 Mbps	20.76	30
		24 Mbps	21.17	30
		36 Mbps	21.21	30
		48 Mbps	21.27	30
		54 Mbps	21.15	30
2437	6	6 Mbps	20.74	30
		9 Mbps	20.77	30
		12 Mbps	20.75	30
		18 Mbps	20.90	30
		24 Mbps	21.35	30
		36 Mbps	21.39	30
		48 Mbps	21.33	30
		54 Mbps	21.35	30
2462	11	6 Mbps	20.96	30
		9 Mbps	20.93	30
		12 Mbps	21.02	30
		18 Mbps	20.96	30
		24 Mbps	21.43	30
		36 Mbps	21.35	30
		48 Mbps	21.45	30
		54 Mbps	21.51	30

Conducted Output Power Measurements (802.11n Mode)

802.11n Mode		Rate (Mbps)	Measured Power(dBm)	Limit (dBm)
Frequency[MHz]	Channel No.			
2412	1	6.5 Mbps	19.89	30
		13 Mbps	19.98	30
		19.5 Mbps	19.94	30
		26 Mbps	20.47	30
		39 Mbps	20.30	30
		52 Mbps	20.30	30
		58.5 Mbps	20.32	30
		65 Mbps	20.32	30
2437	6	6.5 Mbps	20.00	30
		13 Mbps	19.91	30
		19.5 Mbps	20.09	30
		26 Mbps	20.47	30
		39 Mbps	20.44	30
		52 Mbps	20.43	30
		58.5 Mbps	20.49	30
		65 Mbps	20.39	30
2462	11	6.5 Mbps	19.85	30
		13 Mbps	20.12	30
		19.5 Mbps	20.19	30
		26 Mbps	20.55	30
		39 Mbps	20.50	30
		52 Mbps	20.52	30
		58.5 Mbps	20.54	30
		65 Mbps	20.52	30

Conducted Output Power Measurements (802.11n Mode)

802.11n Mode		Rate (Mbps)	Measured Power(dBm)	Limit (dBm)
Frequency[MHz]	Channel No.			
2412	1	6.5 Mbps	19.89	30
		13 Mbps	19.98	30
		19.5 Mbps	19.94	30
		26 Mbps	20.47	30
		39 Mbps	20.30	30
		52 Mbps	20.30	30
		58.5 Mbps	20.32	30
		65 Mbps	20.32	30
2437	6	6.5 Mbps	20.00	30
		13 Mbps	19.91	30
		19.5 Mbps	20.09	30
		26 Mbps	20.47	30
		39 Mbps	20.44	30
		52 Mbps	20.43	30
		58.5 Mbps	20.49	30
		65 Mbps	20.39	30
2462	11	6.5 Mbps	19.85	30
		13 Mbps	20.12	30
		19.5 Mbps	20.19	30
		26 Mbps	20.55	30
		39 Mbps	20.50	30
		52 Mbps	20.52	30
		58.5 Mbps	20.54	30
		65 Mbps	20.52	30

5.8 GHz Band

Conducted Output Power Measurements (802.11a Mode: 5745~5825)

802.11a Mode		Rate (Mbps)	Measured Power(dBm)	Limit (dBm)
Frequency[MHz]	Channel No.			
5745	149	6 Mbps	15.98	30
		9 Mbps	16.00	30
		12 Mbps	15.65	30
		18 Mbps	15.66	30
		24 Mbps	16.19	30
		36 Mbps	16.22	30
		48 Mbps	16.20	30
		54 Mbps	16.07	30
5785	157	6 Mbps	15.83	30
		9 Mbps	15.94	30
		12 Mbps	15.64	30
		18 Mbps	15.62	30
		24 Mbps	15.99	30
		36 Mbps	15.93	30
		48 Mbps	16.01	30
		54 Mbps	16.03	30
5825	165	6 Mbps	15.10	30
		9 Mbps	15.11	30
		12 Mbps	14.80	30
		18 Mbps	14.79	30
		24 Mbps	15.38	30
		36 Mbps	15.07	30
		48 Mbps	15.20	30
		54 Mbps	15.25	30

Conducted Output Power Measurements (802.11n_20 MHz BW Mode: 5745~5825)

802.11n Mode		Rate (Mbps)	Measured Power(dBm)	Limit (dBm)
Frequency[MHz]	Channel No.			
5745	149	6.5 Mbps	15.16	30
		13 Mbps	14.87	30
		19.5 Mbps	14.76	30
		26 Mbps	15.24	30
		39 Mbps	15.19	30
		52 Mbps	15.25	30
		58.5 Mbps	15.31	30
		65 Mbps	15.19	30
5785	157	6.5 Mbps	14.88	30
		13 Mbps	14.64	30
		19.5 Mbps	14.63	30
		26 Mbps	14.90	30
		39 Mbps	14.99	30
		52 Mbps	14.96	30
		58.5 Mbps	14.93	30
		65 Mbps	14.93	30
5825	165	6.5 Mbps	14.57	30
		13 Mbps	14.26	30
		19.5 Mbps	14.29	30
		26 Mbps	14.74	30
		39 Mbps	14.70	30
		52 Mbps	14.71	30
		58.5 Mbps	14.75	30
		65 Mbps	14.73	30

Conducted Output Power Measurements (802.11n_40 MHz BW Mode: 5755~5795)

802.11n Mode		Rate (Mbps)	Measured Power(dBm)	Limit (dBm)
Frequency[MHz]	Channel No.			
5755	151	13.5 Mbps	14.43	30
		27 Mbps	14.19	30
		40.5 Mbps	14.20	30
		54 Mbps	14.35	30
		81 Mbps	14.33	30
		108 Mbps	14.33	30
		121.5 Mbps	14.50	30
		135 Mbps	14.41	30
5795	159	13.5 Mbps	14.40	30
		27 Mbps	14.47	30
		40.5 Mbps	13.64	30
		54 Mbps	14.03	30
		81 Mbps	13.91	30
		108 Mbps	13.95	30
		121.5 Mbps	13.92	30
		135 Mbps	13.87	30

Conducted Output Power Measurements (802.11ac_20 MHz BW Mode: 5745~5825)

802.11ac Mode		Rate (Mbps)	Measured Power(dBm)	Limit (dBm)
Frequency[MHz]	Channel No.			
5745	149	6.5	15.42	30
		13	15.13	30
		19.5	15.02	30
		26	15.19	30
		39	15.27	30
		52	15.08	30
		58.5	15.31	30
		65	14.97	30
		78	15.04	30
5785	157	6.5	15.06	30
		13	14.85	30
		19.5	14.76	30
		26	14.98	30
		39	14.93	30
		52	14.80	30
		58.5	14.99	30
		65	14.81	30
		78	14.58	30
5825	165	6.5	15.03	30
		13	14.65	30
		19.5	14.53	30
		26	14.92	30
		39	14.79	30
		52	14.67	30
		58.5	14.81	30
		65	14.60	30
		78	14.47	30

Conducted Output Power Measurements (802.11ac_40 MHz BW Mode: 5755~5795)

802.11ac Mode		Rate (Mbps)	Measured Power(dBm)	Limit (dBm)
Frequency[MHz]	Channel No.			
5755	151	13.5	14.61	30
		27	14.46	30
		40.5	14.21	30
		54	14.54	30
		81	14.59	30
		108	14.25	30
		121.5	14.18	30
		135	14.04	30
		162	14.15	30
		180	14.39	30
5795	159	13.5	14.34	30
		27	14.22	30
		40.5	14.08	30
		54	14.27	30
		81	14.27	30
		108	13.95	30
		121.5	14.06	30
		135	13.89	30
		162	14.01	30
		180	14.33	30

Conducted Output Power Measurements (802.11ac_80 MHz BW Mode: 5775)

802.11ac Mode		Rate (Mbps)	Measured Power(dBm)	Limit (dBm)
Frequency[MHz]	Channel No.			
5775	155	29.3	14.43	30
		58.5	14.10	30
		87.8	14.02	30
		117	14.22	30
		175.5	14.39	30
		234	14.10	30
		263.3	13.85	30
		292.5	14.06	30
		351	14.24	30
		390	14.02	30

TEST RESULTS-Average

2.4 GHz Band

Conducted Output Power Measurements (802.11b Mode)

802.11b Mode		Rate (Mbps)	Measured Power(dBm)	Duty Cycle Factor	Measured Power(dBm) + Duty Cycle Factor	Limit (dBm)
Frequency [MHz]	Channel No.					
2412	1	1 Mbps	15.80	0.032	15.83	30
		2 Mbps	15.72	0.083	15.80	30
		5.5 Mbps	15.79	0.188	15.98	30
		11 Mbps	15.59	0.320	15.91	30
2437	6	1 Mbps	15.97	0.032	16.00	30
		2 Mbps	15.92	0.083	16.01	30
		5.5 Mbps	15.94	0.188	16.13	30
		11 Mbps	15.79	0.320	16.11	30
2462	11	1 Mbps	15.98	0.032	16.01	30
		2 Mbps	15.98	0.083	16.06	30
		5.5 Mbps	15.99	0.188	16.18	30
		11 Mbps	15.85	0.320	16.17	30

Conducted Output Power Measurements (802.11g Mode)

802.11g Mode		Rate (Mbps)	Measured Power(dBm)	Duty Cycle Factor	Measured Power(dBm) + Duty Cycle Factor	Limit (dBm)
Frequency [MHz]	Channel No.					
2412	1	6 Mbps	12.49	0.237	12.72	30
		9 Mbps	12.36	0.351	12.71	30
		12 Mbps	12.29	0.492	12.78	30
		18 Mbps	12.11	0.619	12.73	30
		24 Mbps	11.94	0.813	12.75	30
		36 Mbps	11.66	1.075	12.74	30
		48 Mbps	11.41	1.406	12.82	30
		54 Mbps	11.11	1.502	12.61	30
2437	6	6 Mbps	12.52	0.237	12.75	30
		9 Mbps	12.39	0.351	12.74	30
		12 Mbps	12.43	0.492	12.92	30
		18 Mbps	12.27	0.619	12.89	30
		24 Mbps	12.08	0.813	12.89	30
		36 Mbps	11.83	1.075	12.90	30
		48 Mbps	11.42	1.406	12.83	30
		54 Mbps	11.32	1.502	12.83	30
2462	11	6 Mbps	12.75	0.237	12.99	30
		9 Mbps	12.57	0.351	12.92	30
		12 Mbps	12.52	0.492	13.01	30
		18 Mbps	12.31	0.619	12.93	30
		24 Mbps	12.14	0.813	12.95	30
		36 Mbps	11.82	1.075	12.90	30
		48 Mbps	11.52	1.406	12.92	30
		54 Mbps	11.47	1.502	12.97	30

Conducted Output Power Measurements (802.11n Mode)

802.11n Mode		Rate (Mbps)	Measured Power(dBm)	Duty Cycle Factor	Measured Power(dBm) + Duty Cycle Factor	Limit (dBm)
Frequency [MHz]	Channel No.					
2412	1	6.5 Mbps	11.63	0.238	11.87	30
		13 Mbps	11.49	0.464	11.95	30
		19.5 Mbps	11.13	0.722	11.85	30
		26 Mbps	11.10	0.876	11.97	30
		39 Mbps	10.61	1.160	11.77	30
		52 Mbps	10.28	1.439	11.72	30
		58.5 Mbps	10.21	1.663	11.87	30
		65 Mbps	10.06	1.761	11.82	30
2437	6	6.5 Mbps	11.76	0.238	12.00	30
		13 Mbps	11.37	0.464	11.83	30
		19.5 Mbps	11.35	0.722	12.07	30
		26 Mbps	11.08	0.876	11.96	30
		39 Mbps	10.75	1.160	11.91	30
		52 Mbps	10.42	1.439	11.86	30
		58.5 Mbps	10.29	1.663	11.96	30
		65 Mbps	10.21	1.761	11.97	30
2462	11	6.5 Mbps	11.63	0.238	11.87	30
		13 Mbps	11.60	0.464	12.07	30
		19.5 Mbps	11.43	0.722	12.16	30
		26 Mbps	11.25	0.876	12.13	30
		39 Mbps	10.89	1.160	12.05	30
		52 Mbps	10.52	1.439	11.96	30
		58.5 Mbps	10.42	1.663	12.08	30
		65 Mbps	10.29	1.761	12.05	30

5.8 GHz Band

Conducted Output Power Measurements (802.11a Mode: 5745~5825)

802.11a Mode		Rate (Mbps)	Measured Power(dBm)	Duty Cycle Factor	Measured Power(dBm) + Duty Cycle Factor	Limit (dBm)
Frequency [MHz]	Channel No.					
5745	149	6 Mbps	8.17	0.237	8.40	30
		9 Mbps	8.26	0.351	8.61	30
		12 Mbps	8.06	0.492	8.55	30
		18 Mbps	7.86	0.619	8.48	30
		24 Mbps	7.74	0.813	8.56	30
		36 Mbps	7.53	1.075	8.61	30
		48 Mbps	7.21	1.406	8.62	30
		54 Mbps	7.03	1.502	8.53	30
5785	157	6 Mbps	8.67	0.237	8.91	30
		9 Mbps	8.66	0.351	9.01	30
		12 Mbps	8.53	0.492	9.02	30
		18 Mbps	8.39	0.619	9.01	30
		24 Mbps	8.25	0.813	9.06	30
		36 Mbps	7.86	1.075	8.94	30
		48 Mbps	7.48	1.406	8.88	30
		54 Mbps	7.43	1.502	8.93	30
5825	165	6 Mbps	8.35	0.237	8.58	30
		9 Mbps	8.25	0.351	8.61	30
		12 Mbps	8.16	0.492	8.65	30
		18 Mbps	8.08	0.619	8.69	30
		24 Mbps	7.74	0.813	8.56	30
		36 Mbps	7.53	1.075	8.60	30
		48 Mbps	7.33	1.406	8.74	30
		54 Mbps	6.99	1.502	8.49	30

Conducted Output Power Measurements (802.11n_20 MHz BW Mode: 5745~5825)

802.11n Mode		Rate (Mbps)	Measured Power(dBm)	Duty Cycle Factor	Measured Power(dBm) + Duty Cycle Factor	Limit (dBm)
Frequency [MHz]	Channel No.					
5745	149	6.5 Mbps	7.39	0.238	7.62	30
		13 Mbps	7.21	0.464	7.67	30
		19.5 Mbps	6.97	0.722	7.69	30
		26 Mbps	6.79	0.876	7.67	30
		39 Mbps	6.52	1.160	7.68	30
		52 Mbps	6.17	1.439	7.61	30
		58.5 Mbps	6.14	1.663	7.80	30
		65 Mbps	5.93	1.761	7.69	30
5785	157	6.5 Mbps	7.12	0.238	7.36	30
		13 Mbps	6.94	0.464	7.40	30
		19.5 Mbps	6.81	0.722	7.53	30
		26 Mbps	6.43	0.876	7.30	30
		39 Mbps	6.22	1.160	7.38	30
		52 Mbps	5.88	1.439	7.32	30
		58.5 Mbps	5.75	1.663	7.41	30
		65 Mbps	5.69	1.761	7.45	30
5825	165	6.5 Mbps	6.78	0.238	7.02	30
		13 Mbps	6.67	0.464	7.13	30
		19.5 Mbps	6.43	0.722	7.15	30
		26 Mbps	6.31	0.876	7.19	30
		39 Mbps	5.98	1.160	7.14	30
		52 Mbps	5.64	1.439	7.07	30
		58.5 Mbps	5.51	1.663	7.17	30
		65 Mbps	5.31	1.761	7.07	30

Conducted Output Power Measurements (802.11n_40 MHz BW Mode: 5755~5795)

802.11n Mode		Rate (Mbps)	Measured Power(dBm)	Duty Cycle Factor	Measured Power(dBm) + Duty Cycle Factor	Limit (dBm)
Frequency [MHz]	Channel No.					
5755	151	13.5 Mbps	6.45	0.504	6.95	30
		27 Mbps	6.08	0.909	6.99	30
		40.5 Mbps	5.80	1.284	7.09	30
		54 Mbps	5.35	1.596	6.94	30
		81 Mbps	4.74	2.208	6.95	30
		108 Mbps	4.47	2.639	7.11	30
		121.5 Mbps	4.36	2.838	7.20	30
		135 Mbps	4.24	2.990	7.23	30
5795	159	13.5 Mbps	6.28	0.504	6.78	30
		27 Mbps	6.41	0.909	7.32	30
		40.5 Mbps	5.32	1.284	6.61	30
		54 Mbps	4.97	1.596	6.57	30
		81 Mbps	4.54	2.208	6.74	30
		108 Mbps	4.04	2.639	6.68	30
		121.5 Mbps	3.82	2.838	6.66	30
		135 Mbps	3.77	2.990	6.76	30

Conducted Output Power Measurements (802.11ac_20 MHz BW Mode: 5745~5825)

802.11ac Mode		Rate (Mbps)	Measured Power(dBm)	Duty Cycle Factor	Measured Power(dBm) + Duty Cycle Factor	Limit (dBm)
Frequency [MHz]	Channel No.					
5745	149	6.5	7.50	0.433	7.93	30
		13	7.21	0.775	7.99	30
		19.5	6.91	1.069	7.98	30
		26	6.52	1.320	7.84	30
		39	6.12	1.783	7.91	30
		52	5.95	2.102	8.05	30
		58.5	5.80	2.255	8.05	30
		65	5.58	2.357	7.93	30
		78	5.38	2.593	7.98	30
5785	157	6.5	7.25	0.433	7.68	30
		13	6.98	0.775	7.75	30
		19.5	6.72	1.069	7.79	30
		26	6.24	1.320	7.56	30
		39	5.90	1.783	7.69	30
		52	5.70	2.102	7.80	30
		58.5	5.50	2.255	7.76	30
		65	5.38	2.357	7.73	30
		78	4.93	2.593	7.52	30
5825	165	6.5	7.21	0.433	7.64	30
		13	6.73	0.775	7.50	30
		19.5	6.49	1.069	7.56	30
		26	6.20	1.320	7.52	30
		39	5.64	1.783	7.42	30
		52	5.45	2.102	7.55	30
		58.5	5.30	2.255	7.55	30
		65	5.19	2.357	7.55	30
		78	4.86	2.593	7.45	30

Conducted Output Power Measurements (802.11ac_40 MHz BW Mode: 5755~5795)

802.11ac Mode		Rate (Mbps)	Measured Power(dBm)	Duty Cycle Factor	Measured Power(dBm) + Duty Cycle Factor	Limit (dBm)
Frequency [MHz]	Channel No.					
5755	151	13.5	6.42	0.821	7.24	30
		27	5.89	1.382	7.27	30
		40.5	5.48	1.806	7.28	30
		54	5.10	2.190	7.29	30
		81	4.57	2.717	7.29	30
		108	4.29	3.010	7.30	30
		121.5	4.04	3.172	7.21	30
		135	3.91	3.274	7.19	30
		162	3.76	3.552	7.31	30
		180	3.77	3.622	7.39	30
5795	159	13.5	6.18	0.821	7.00	30
		27	5.75	1.382	7.13	30
		40.5	5.39	1.806	7.20	30
		54	4.74	2.190	6.93	30
		81	4.36	2.717	7.07	30
		108	4.10	3.010	7.11	30
		121.5	3.94	3.172	7.12	30
		135	3.77	3.274	7.04	30
		162	3.64	3.552	7.19	30
		180	3.60	3.622	7.22	30

Conducted Output Power Measurements (802.11ac_80 MHz BW Mode: 5775)

802.11ac Mode		Rate (Mbps)	Measured Power(dBm)	Duty Cycle Factor	Measured Power(dBm) + Duty Cycle Factor	Limit (dBm)
Frequency [MHz]	Channel No.					
5775	155	29.3	5.55	1.476	7.03	30
		58.5	4.87	2.351	7.22	30
		87.8	4.32	2.810	7.13	30
		117	4.09	3.195	7.28	30
		175.5	3.61	3.705	7.31	30
		234	3.16	3.992	7.16	30
		263.3	2.94	4.155	7.09	30
		292.5	3.09	4.251	7.34	30
		351	2.87	4.333	7.20	30
		390	2.58	4.449	7.03	30

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

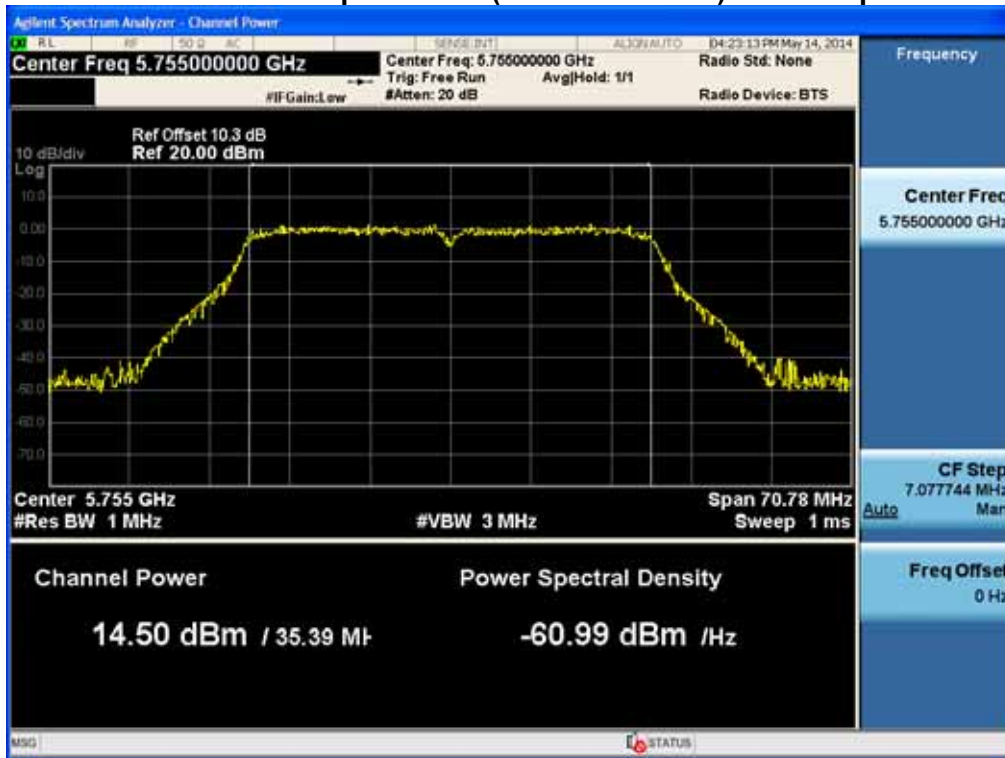


RESULT PLOTS-Peak

40 MHz BW

(5755 MHz ~5795 MHz)

Conducted Output Power (802.11n-CH 151) 121.5 Mbps



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



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80 MHz BW
(5775 MHz)

Conducted Output Power (802.11ac-CH 155) 29.3 Mbps



RESULT PLOTS-Average

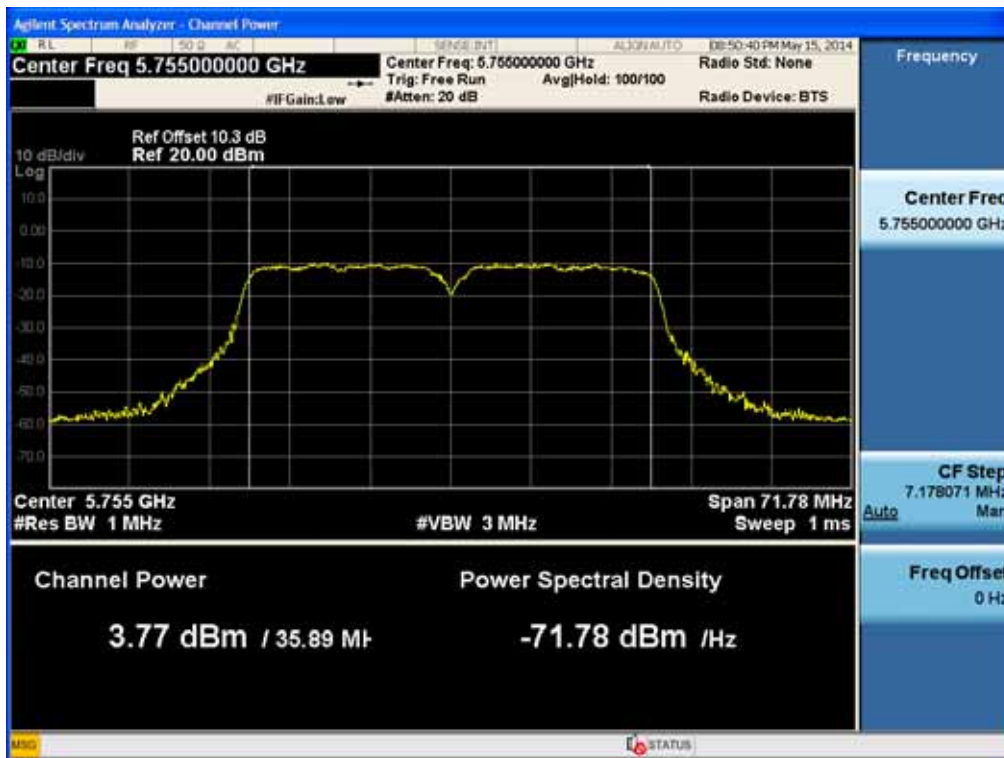
40 MHz BW
(5755 MHz ~5795 MHz)

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



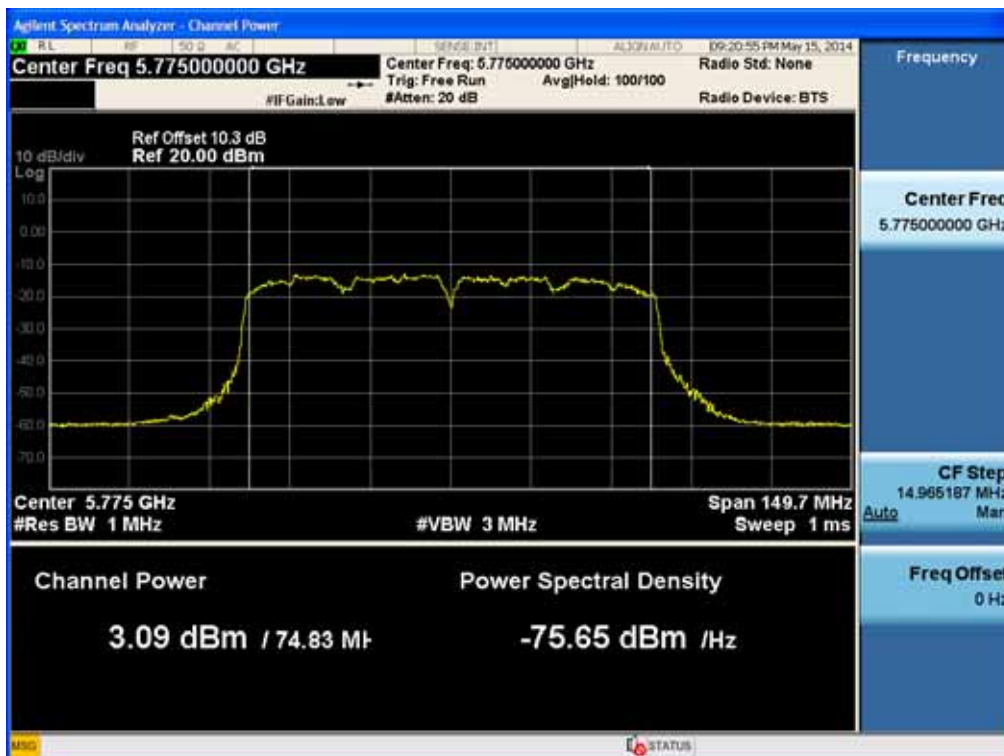
FCC PT.15.247 TEST REPORT	FCC CERTIFICATION REPORT		www.hct.co.kr
Test Report No. HCT-R-1405-F018-1	Date of Issue: May 29, 2014	EUT Type: Cellular/PCS GSM/GPRS/EDGE/WCDMA/HSDPA/HSUPA/LTE Phone with Bluetooth, WLAN, NFC	FCC ID: ZNFD855P

Conducted Output Power (802.11ac-CH 151) 180 Mbps



80 MHz BW
(5775 MHz)

Conducted Output Power (802.11ac-CH 155) 292.5 Mbps



FCC PT.15.247 TEST REPORT	FCC CERTIFICATION REPORT		www.hct.co.kr
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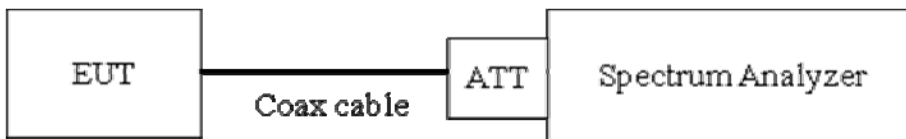
8.4 POWER SPECTRAL DENSITY (802.11a/b/g/n/ac)

Test Requirements and limit, §15.247(e)

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

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

TEST CONFIGURATION



TEST PROCEDURE

We tested according to Procedure 10.2 in KDB 558074, issued 04/09/2013

The spectrum analyzer is set to :

Set analyzer center frequency to DTS channel center frequency.

Span = 1.5 times the DTS channel bandwidth.

RBW = 3 kHz ≤ RBW ≤ 100 kHz.

VBW ≥ 3 × RBW.

Sweep = auto couple

Detector = peak

Trace Mode = max hold

Allow trace to fully stabilize.

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

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

Sample Calculation

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

Output Power = -5 dBm + 10 dB + 0.8 dB = 5.8 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 2.4 GHz and 5.8 GHz range that was rounded off to the closest tenth dB. So, 20.2 dB is offset for 2.4 GHz Band and 20.3 dB is offset for 5.8 GHz Band.

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

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Band	Frequency(MHz)	Loss(dB)
2.4 GHz	2412	20.21
	2437	20.24
	2462	20.24
5.8 GHz	5745	20.31
	5755	20.30
	5785	20.29
	5795	20.26
	5825	20.28

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

TEST RESULTS

Conducted Power Density Measurements

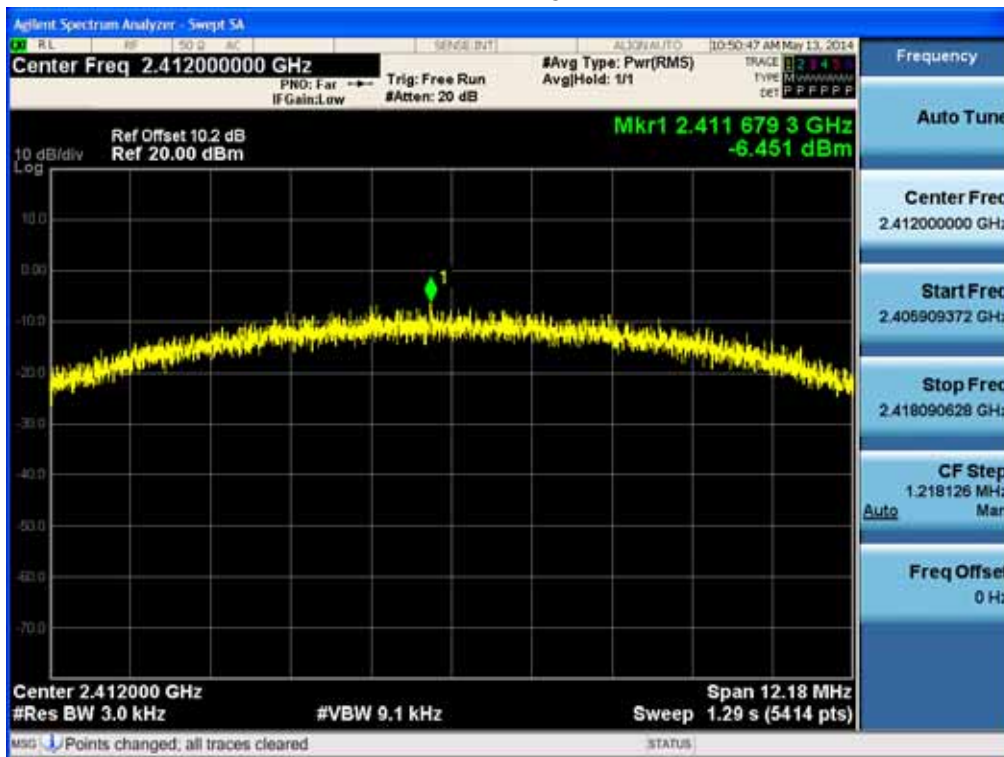
Frequency (MHz)	Channel No.	Mode	Test Result		
			PSD (dBm)	Limit (dBm)	Pass/Fail
2412	1	802.11b	-6.451	8	Pass
2437	6		-7.195		Pass
2462	11		-6.685		Pass
2412	1	802.11g	-12.686		Pass
2437	6		-12.544		Pass
2462	11		-12.153		Pass
2412	1	802.11n 2.4 GHz Band	-13.884		Pass
2437	6		-14.740		Pass
2462	11		-13.854		Pass
5745	149	802.11a	-17.326		Pass
5785	157		-15.978		Pass
5825	165		-16.839		Pass
5745	149	802.11n_20 MHz BW 5.8 GHz Band	-18.445		Pass
5785	157		-18.081		Pass
5825	165		-18.791		Pass
5755	151	802.11n_40 MHz BW 5.8 GHz Band	-21.862		Pass
5795	159		-20.594		Pass
5745	149	802.11ac_20 MHz BW 5.8 GHz Band	-19.077		Pass
5785	157		-17.197		Pass
5825	165		-17.519		Pass
5755	151	802.11ac_40 MHz BW 5.8 GHz Band	-21.737		Pass
5795	159		-22.465		Pass
5775	155	802.11ac_80 MHz BW 5.8 GHz Band	-14.961		Pass

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

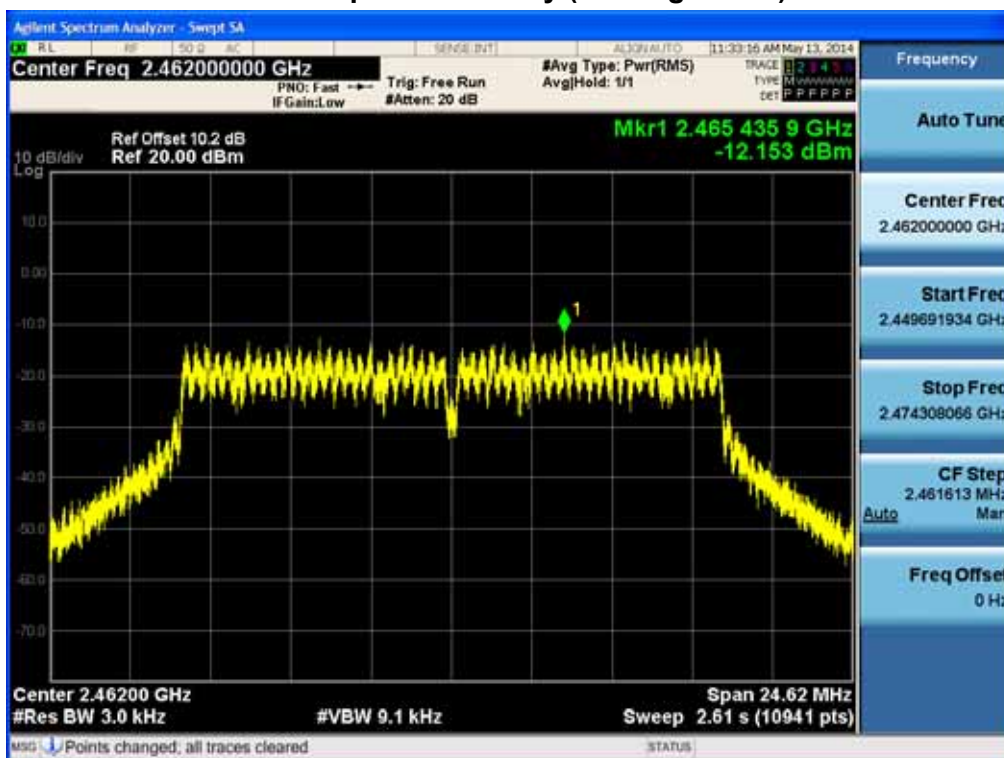
RESULT PLOTS

2.4 GHz Band

Power Spectral Density (802.11b-CH 1)



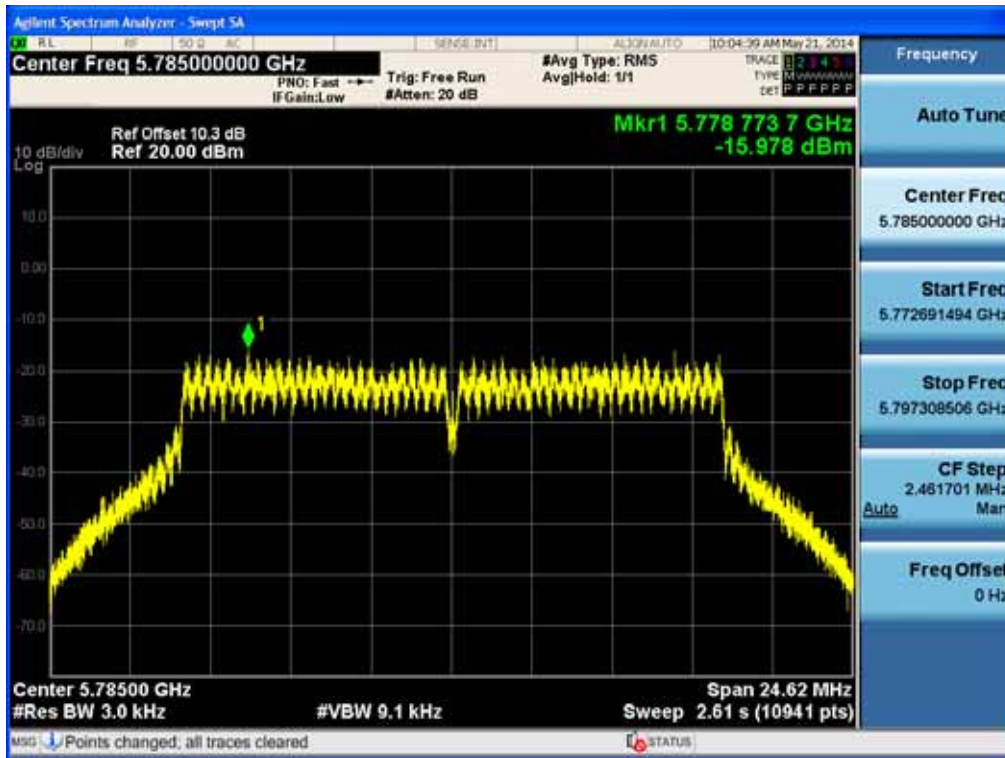
Power Spectral Density (802.11g-CH 11)



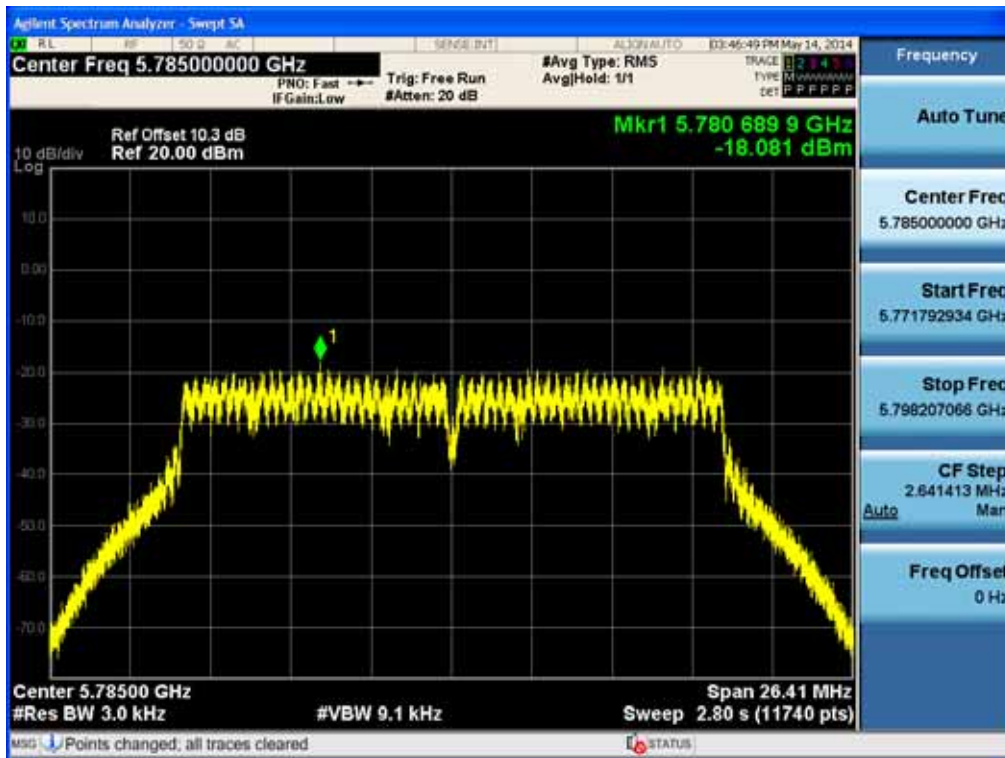
FCC PT.15.247 TEST REPORT	FCC CERTIFICATION REPORT			www.hct.co.kr
Test Report No. HCT-R-1405-F018-1	Date of Issue: May 29, 2014	EUT Type: Cellular/PCS GSM/GPRS/EDGE/WCDMA/HSDPA/HSUPA/LTE Phone with Bluetooth, WLAN, NFC		FCC ID: ZNFD855P

5.8 GHz Band

Power Spectral Density (802.11a-CH 157)

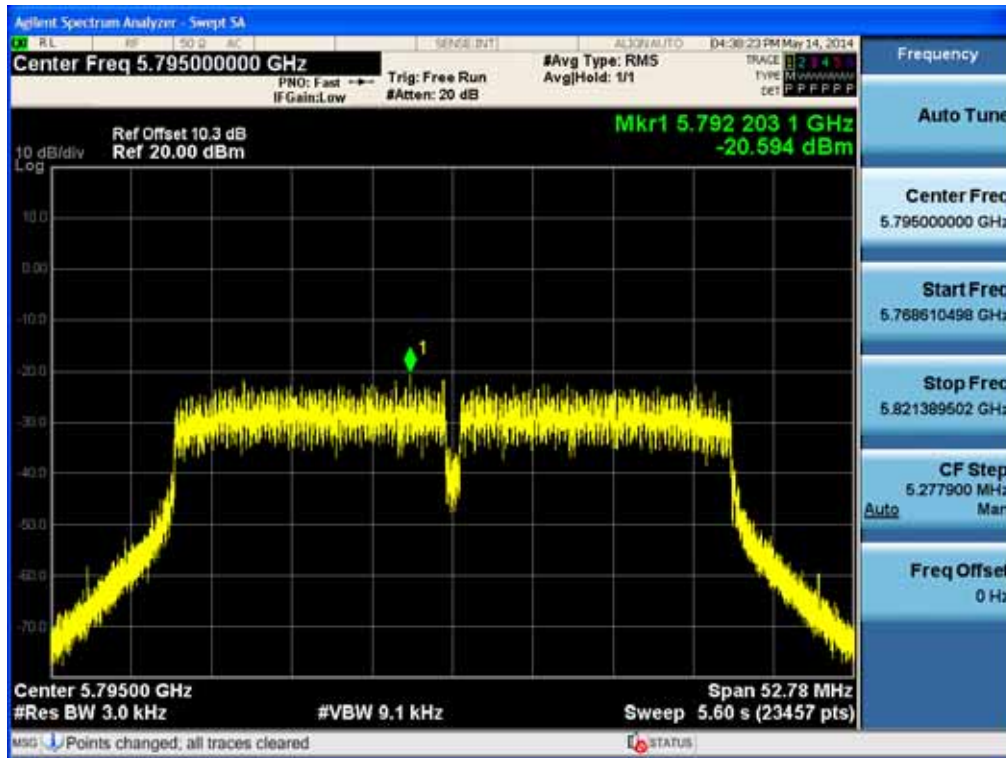


Power Spectral Density (802.11n_20 MHz BW -CH 157)

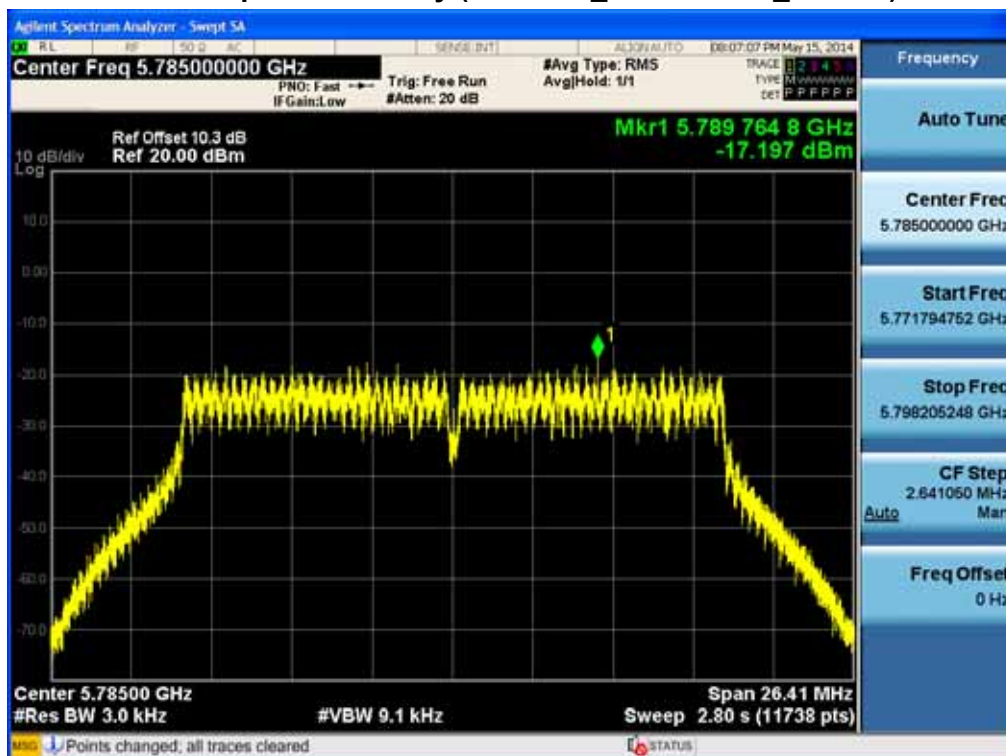


FCC PT.15.247 TEST REPORT	FCC CERTIFICATION REPORT		www.hct.co.kr
Test Report No. HCT-R-1405-F018-1	Date of Issue: May 29, 2014	EUT Type: Cellular/PCS GSM/GPRS/EDGE/WCDMA/HSDPA/HSUPA/LTE Phone with Bluetooth, WLAN, NFC	FCC ID: ZNF855P

Power Spectral Density (802.11n_40 MHz BW -CH 159)

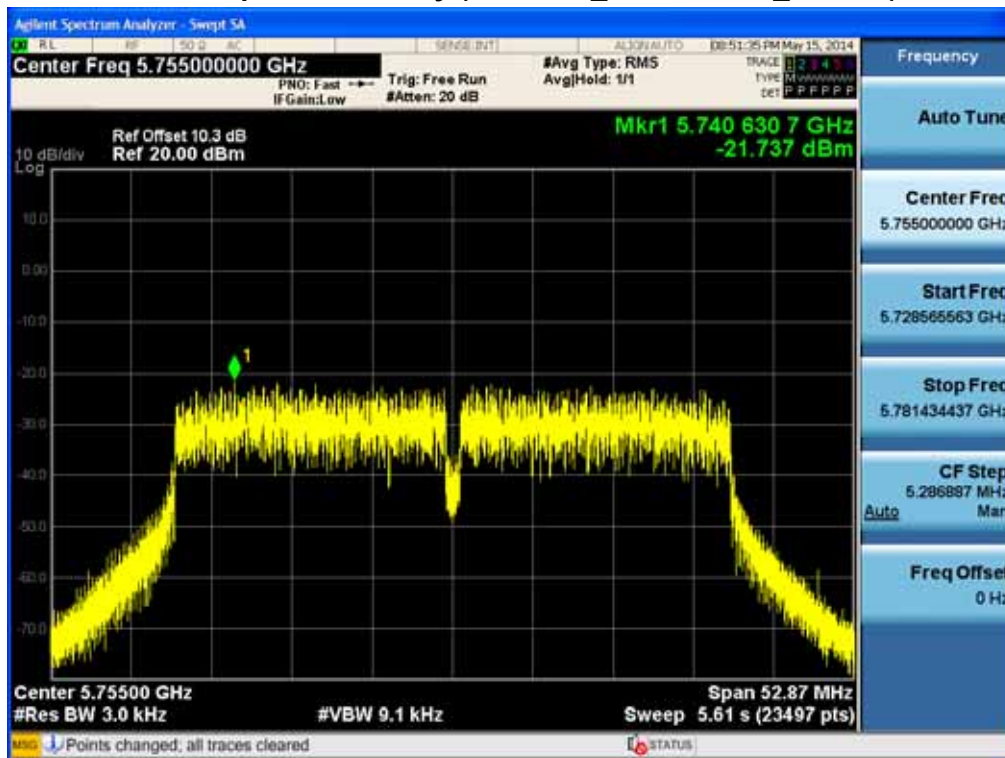


Power Spectral Density (802.11ac_20 MHz BW _CH 157)

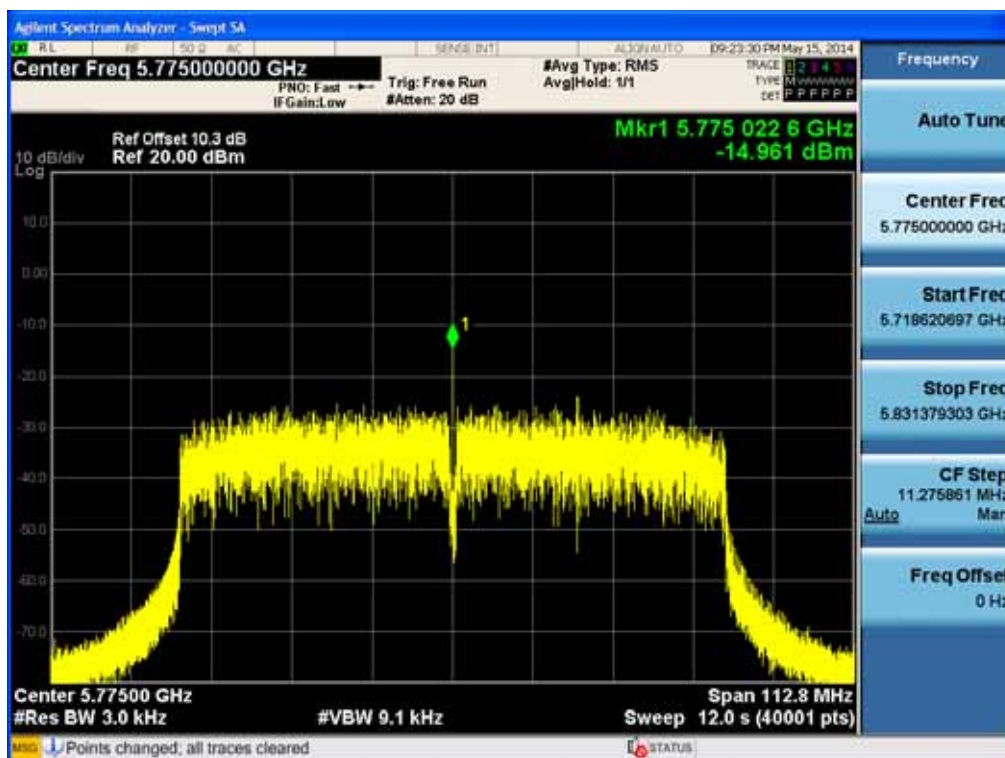


FCC PT.15.247 TEST REPORT	FCC CERTIFICATION REPORT		www.hct.co.kr
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Power Spectral Density (802.11ac_40 MHz BW _CH 151)



Power Spectral Density (802.11ac_80 MHz BW _CH 155)



FCC PT.15.247 TEST REPORT	FCC CERTIFICATION REPORT		www.hct.co.kr
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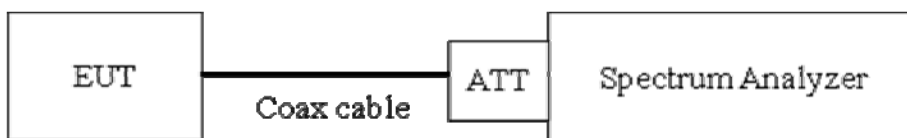
8.5 OUT OF BAND EMISSIONS AT THE BAND EDGE/ CONDUCTED SPURIOUS EMISSIONS

Test Requirements and limit, §15.247(d)

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

Limit : 20 dBc

TEST CONFIGURATION



TEST PROCEDURE

The transmitter output is connected to the spectrum analyzer. (Procedure 11.0 in KDB 558074, issued 04/09/2013)

RBW = 100 kHz

VBW $\geq 3 \times$ RBW

Set span to encompass the spectrum to be examined

Detector = Peak

Trace Mode = max hold

Sweep time = auto couple

Ensure that the number of measurement points $\geq$ Span/RBW

Allow trace to fully stabilize.

Use peak marker function to determine the maximum amplitude level.

Measurements are made over the 30 MHz to 10th harmonic range with the transmitter set to the lowest, middle, and highest channels.

Note :

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

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20.2 dB is offset for 2.4 GHz Band and 20.3 dB is offset for 5.8 GHz Band.

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

Band	Frequency(MHz)	Loss(dB)
2.4 GHz	2412	20.21
	2437	20.24
	2462	20.24
5.8 GHz	5745	20.31
	5755	20.30
	5785	20.29
	5795	20.26
	5825	20.28

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

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

5. In order to simplify the report, attached plots were only the worst case channel and data rate.

FACTORS FOR FREQUENCY

Freq(MHz)	Factor(dB)
30	19.95
100	20.01
200	20.03
300	20.04
400	20.05
500	20.04
600	20.03
700	20.09
800	20.10
900	20.08
1000	20.11
2000	20.25
2400*	20.19
2500*	20.26
3000	20.27
4000	20.22
5000	20.48
5700*	20.42
5800*	20.48
6000	20.48

7000	20.57
8000	20.45
9000	20.50
10000	20.64
11000	20.69
12000	20.75
13000	20.92
14000	21.90
15000	21.00
16000	21.03
17000	20.93
18000	20.96
19000	20.85
20000	22.11
21000	21.17
22000	20.99
23000	21.12
24000	21.10
25000	21.42
26000	21.28
27000	20.83
28000	21.03
29000	20.99
30000	22.08
31000	20.99
32000	21.32
33000	21.33
34000	22.62
35000	24.85
36000	24.78
37000	25.73
38000	25.81
39000	23.47
40000	24.89

Note : 1. ‘*’ is fundamental frequency range.

2. Factor = Cable loss + Attenuator loss

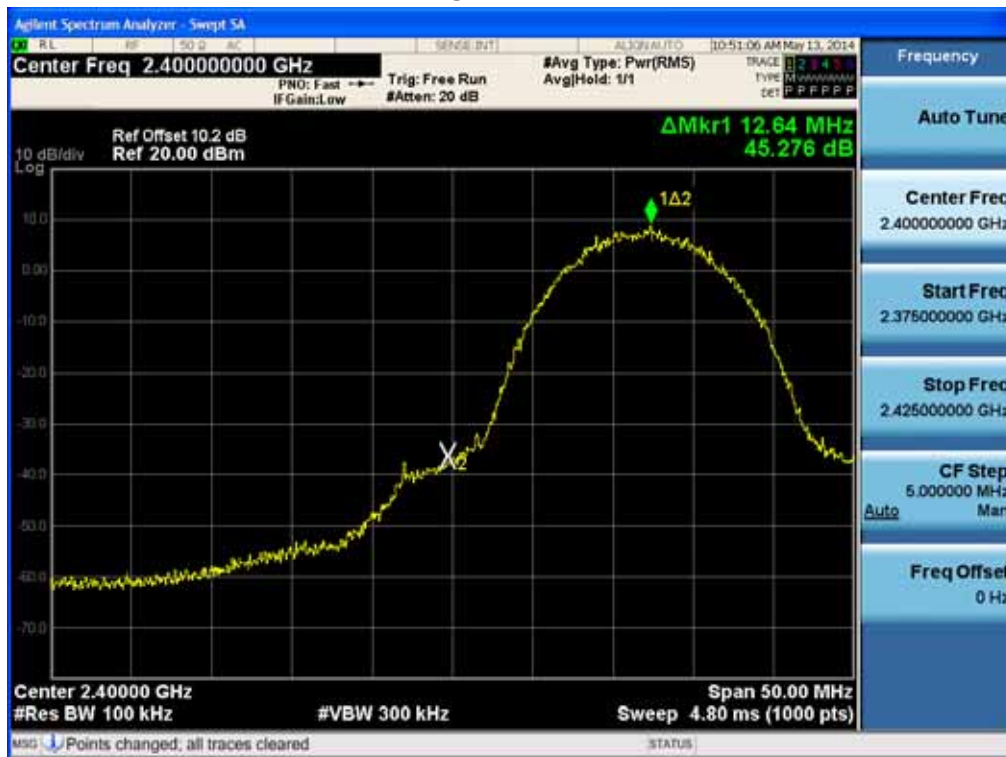
FCC PT.15.247 TEST REPORT		FCC CERTIFICATION REPORT		www.hct.co.kr
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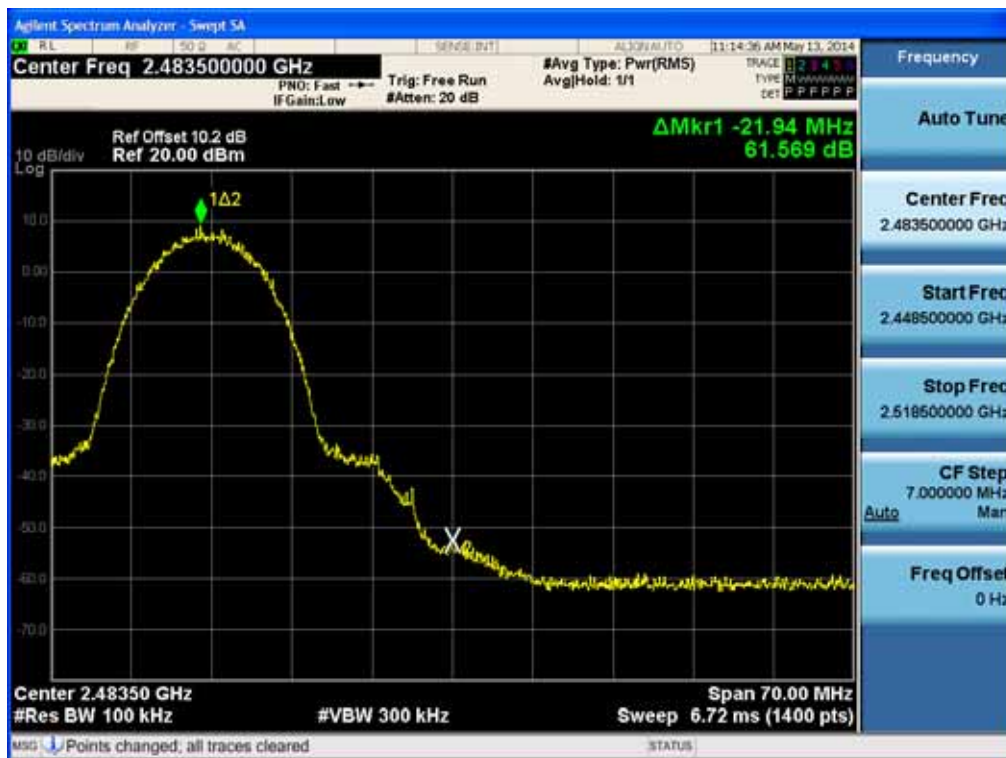
RESULT PLOTS

2.4 GHz Band

BandEdge (802.11b-CH1)

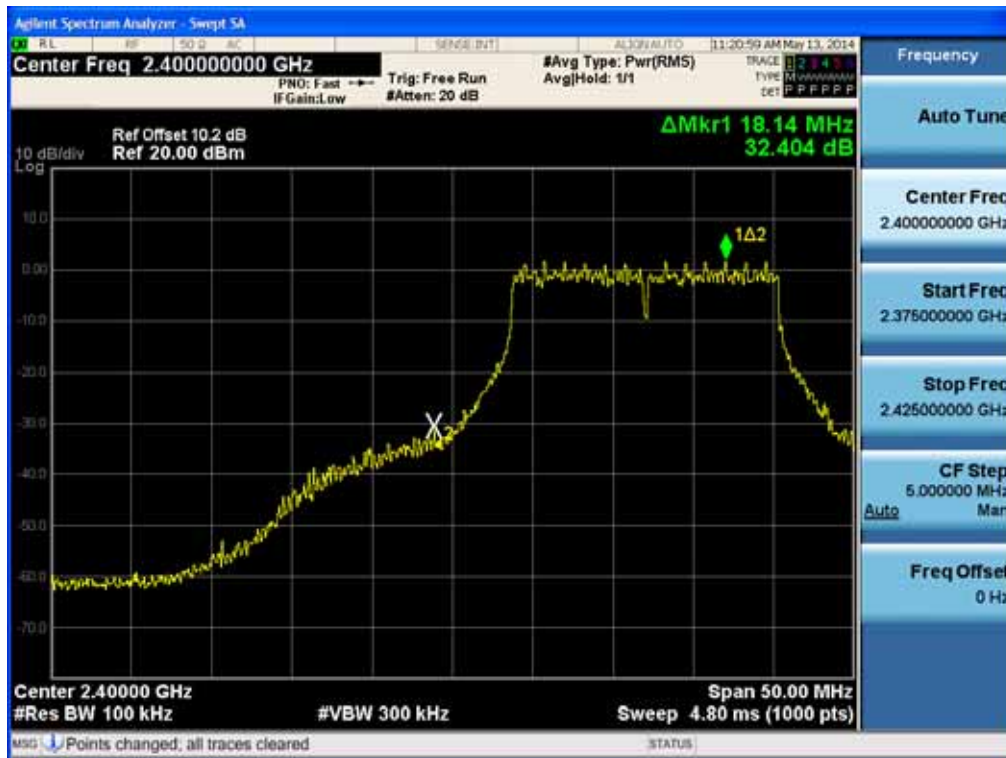


BandEdge (802.11b-CH11)

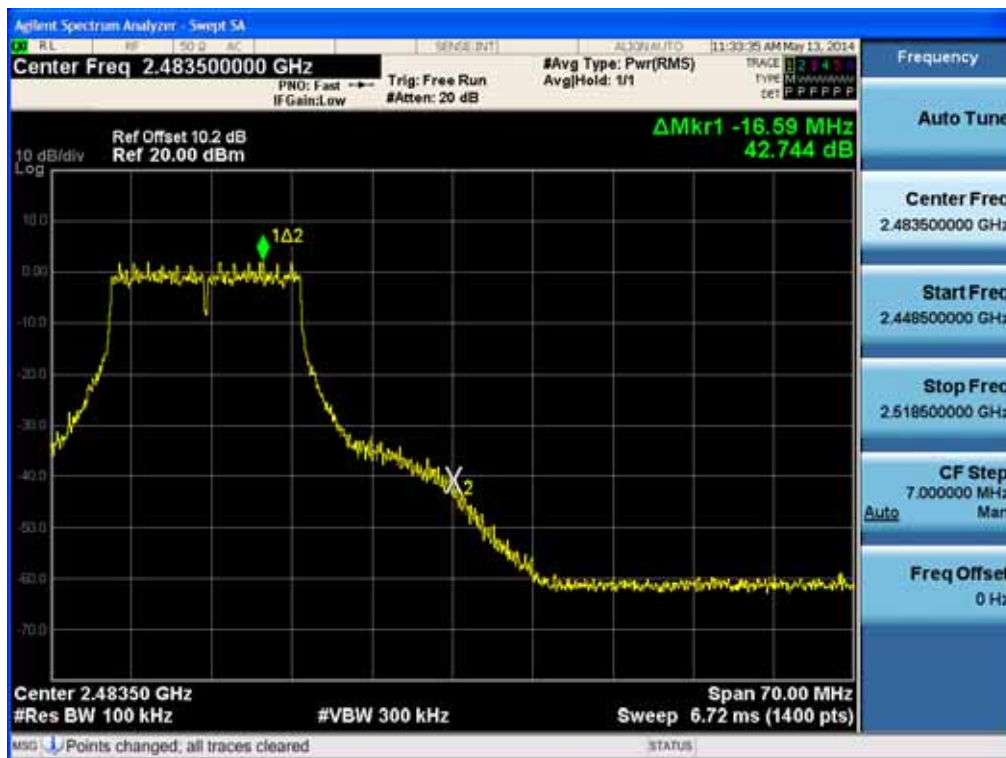


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BandEdge (802.11g-CH1)



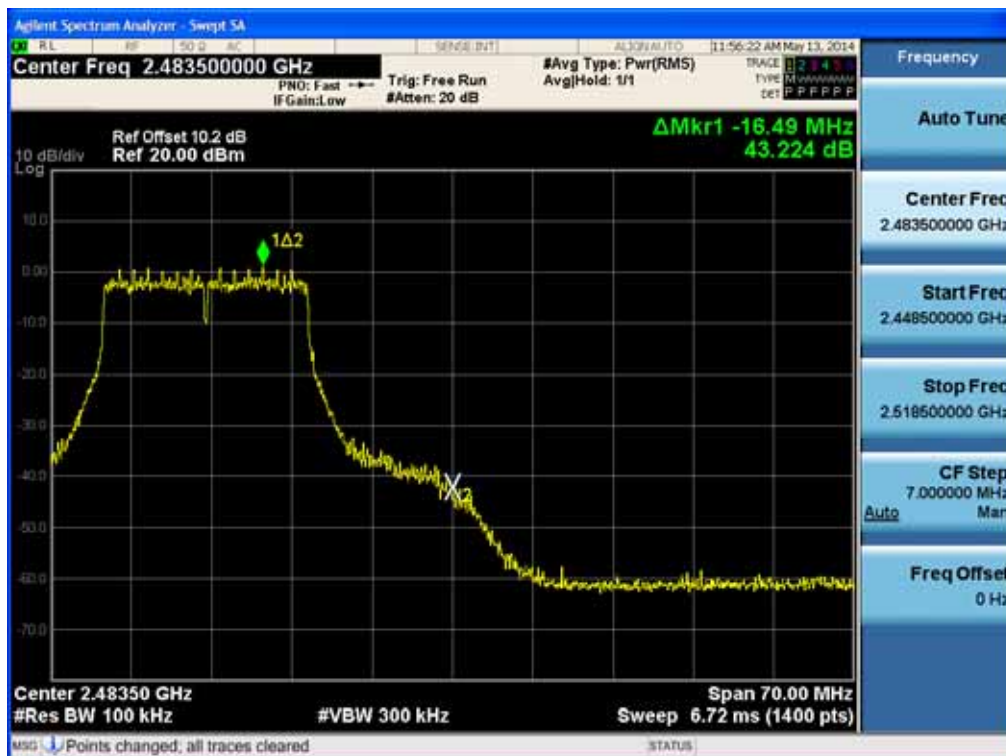
BandEdge (802.11g-CH11)



BandEdge (802.11n-CH1)



BandEdge (802.11n-CH11)

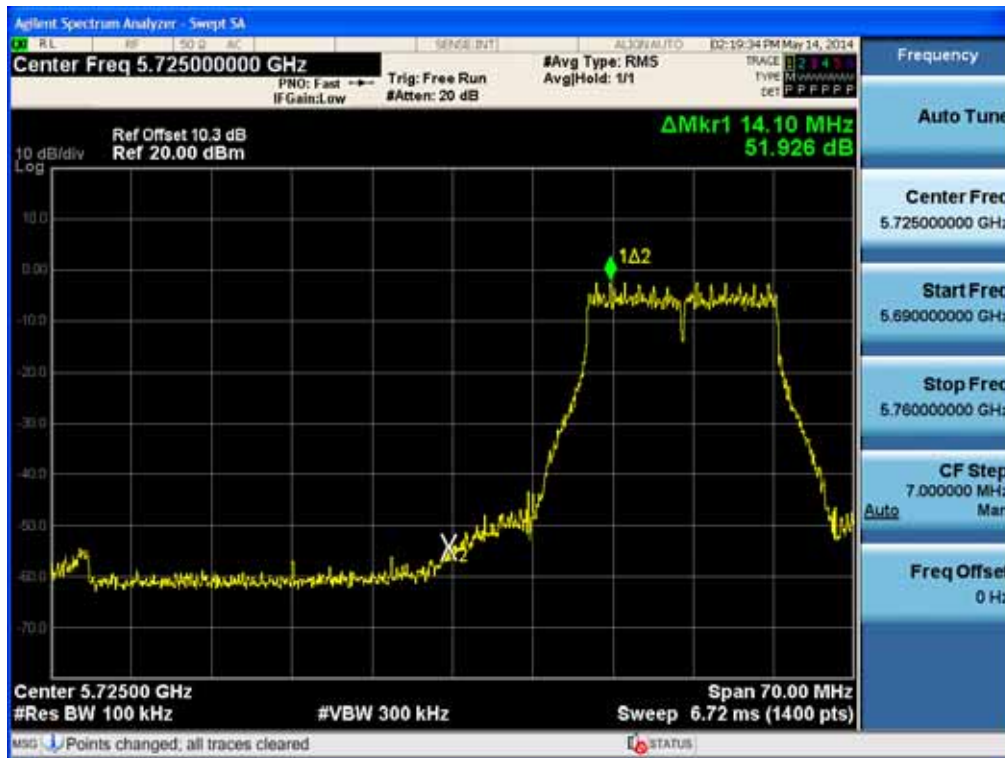


FCC PT.15.247 TEST REPORT	FCC CERTIFICATION REPORT		www.hct.co.kr
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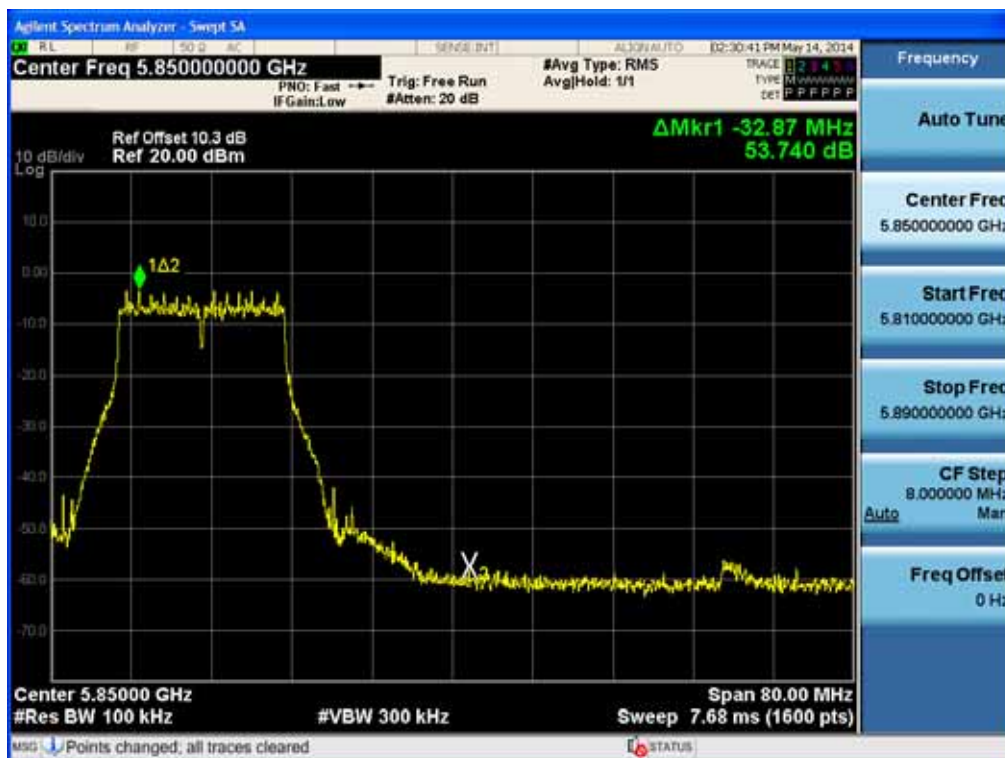
5.8 GHz Band

20 MHz BW

BandEdge (802.11a-CH 149)

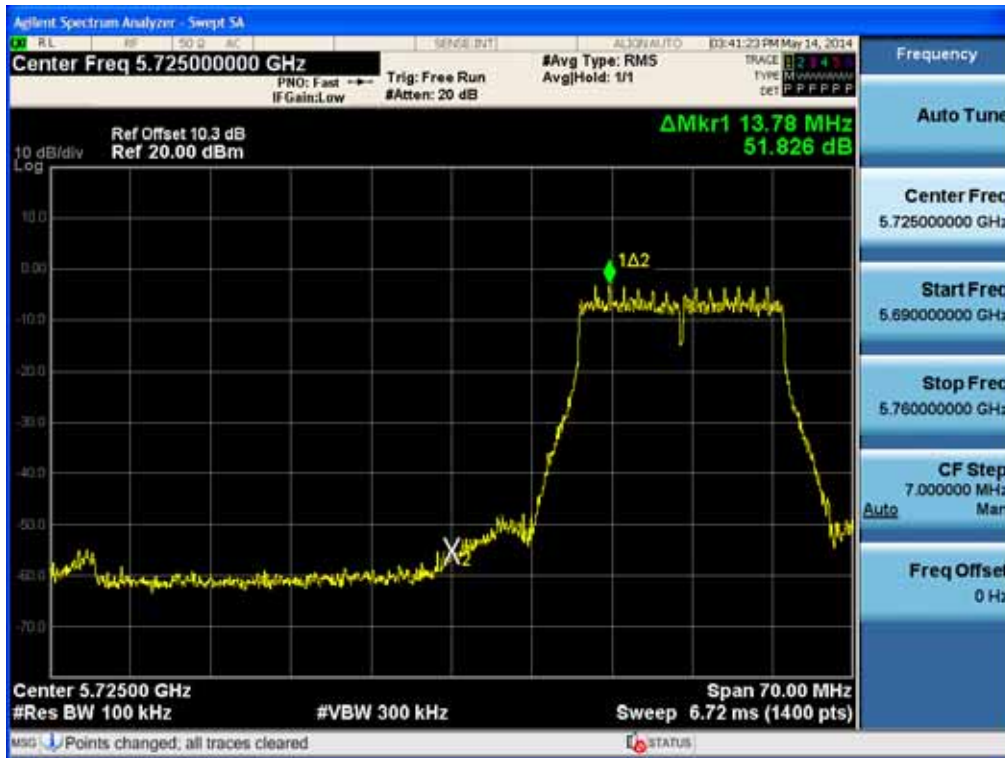


BandEdge (802.11a-CH 165)



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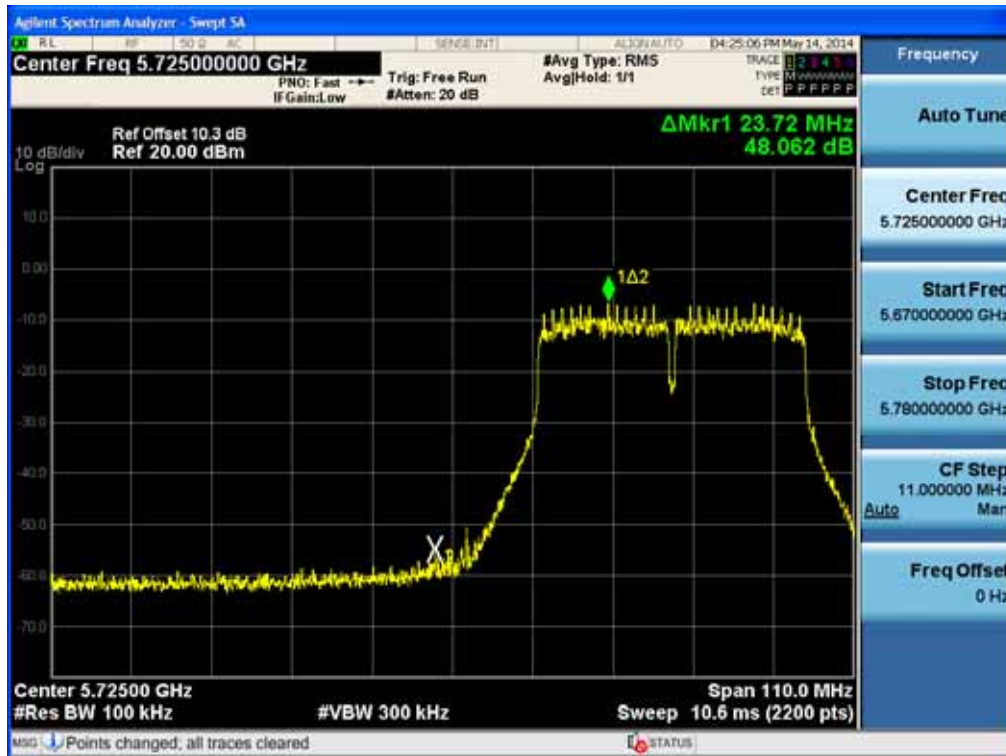
BandEdge (802.11n_20 MHz BW -CH 149)



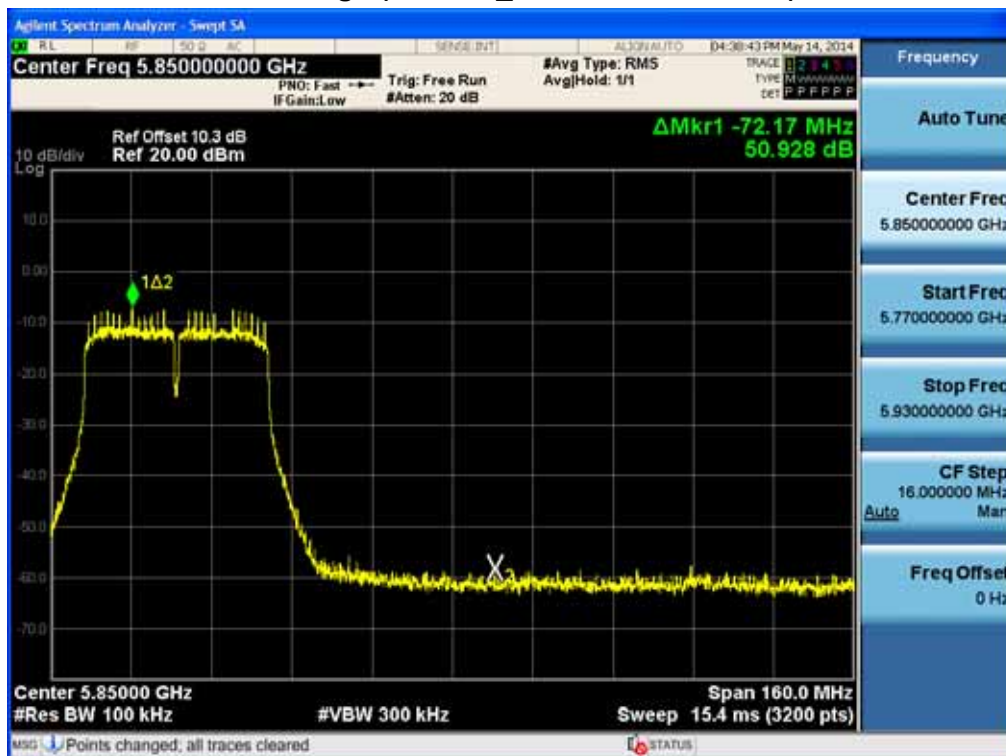
BandEdge (802.11n_20 MHz BW -CH 165)



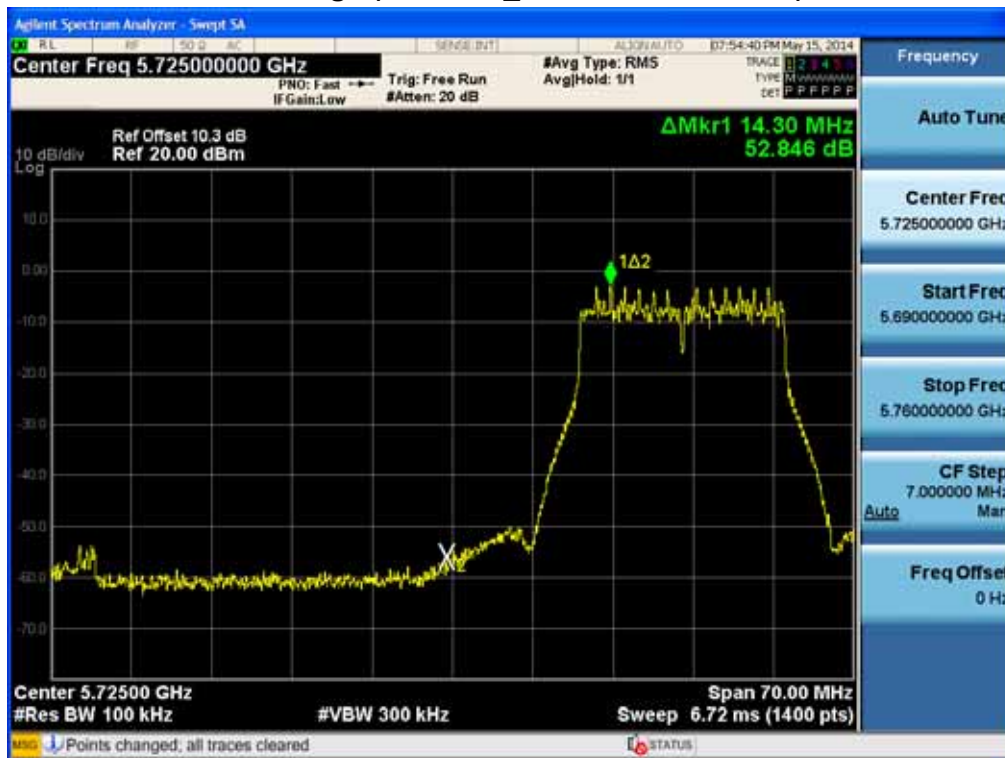
BandEdge (802.11n_40 MHz BW -CH 151)



BandEdge (802.11n_40 MHz BW -CH 159)



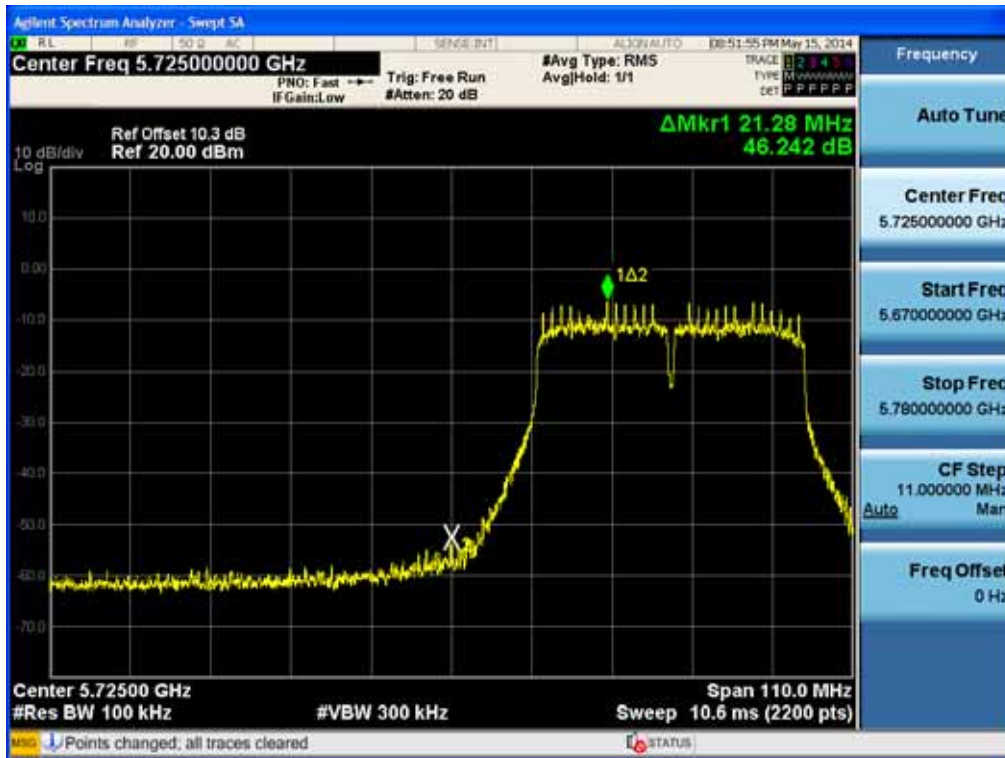
BandEdge (802.11ac_20 MHz BW -CH 149)



BandEdge (802.11ac_20 MHz BW -CH 165)



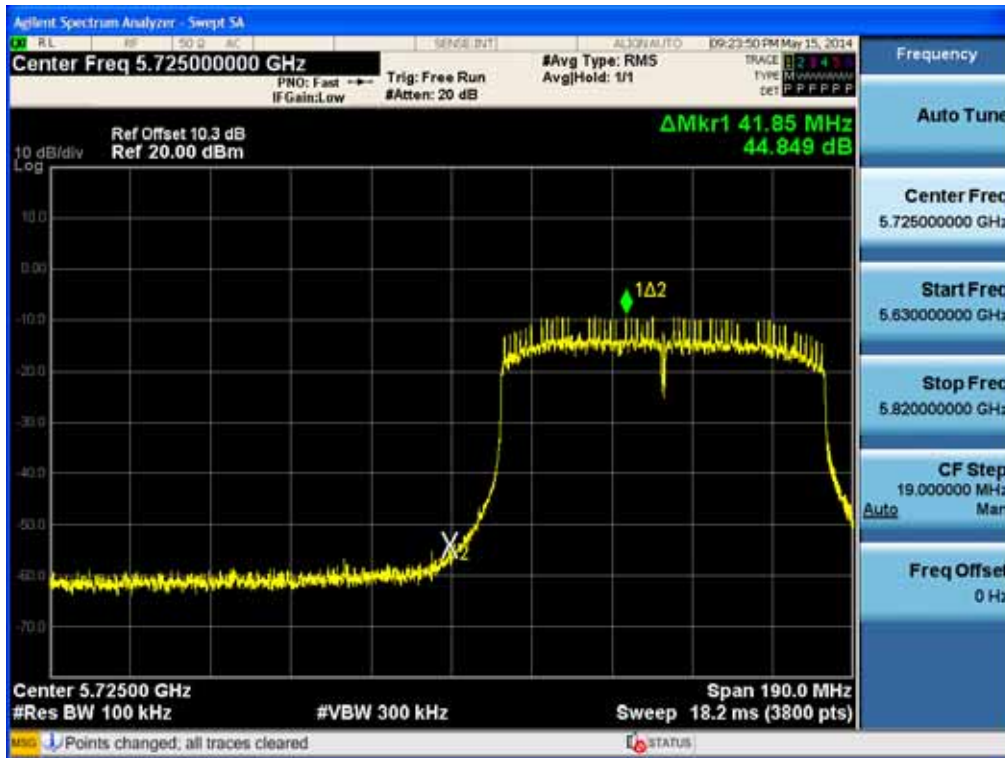
BandEdge (802.11ac_40 MHz BW -CH 151)



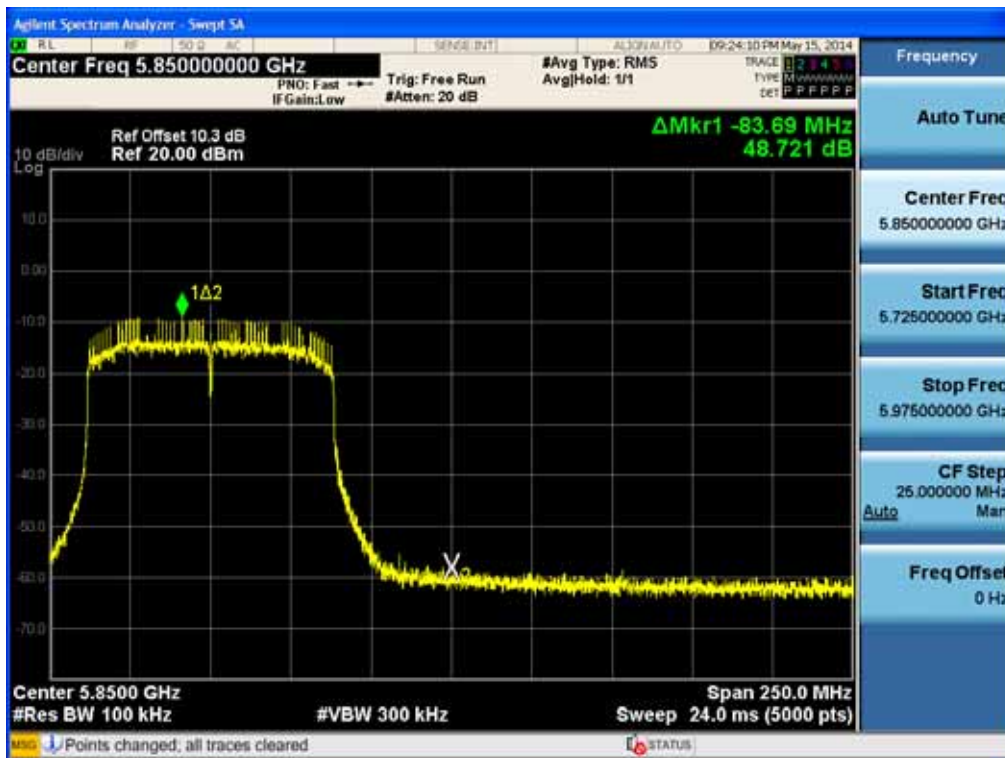
BandEdge (802.11ac_40 MHz BW -CH 159)



BandEdge (802.11ac_80 MHz BW -CH 155)



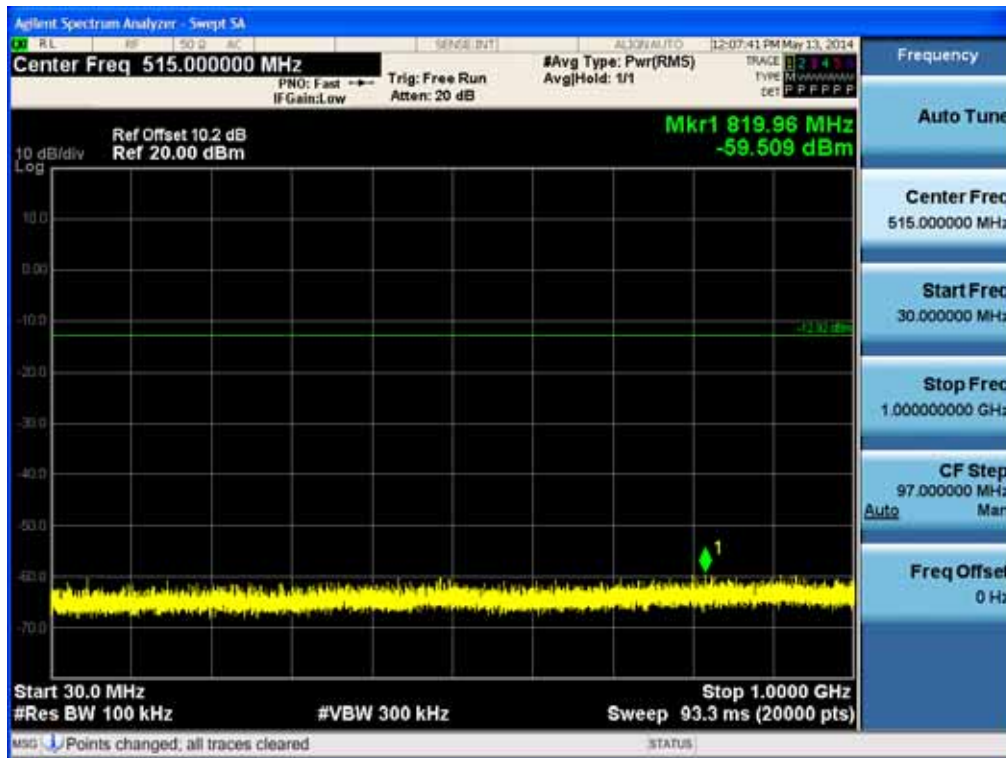
BandEdge (802.11ac_80 MHz BW -CH 155)



2.4 GHz Band

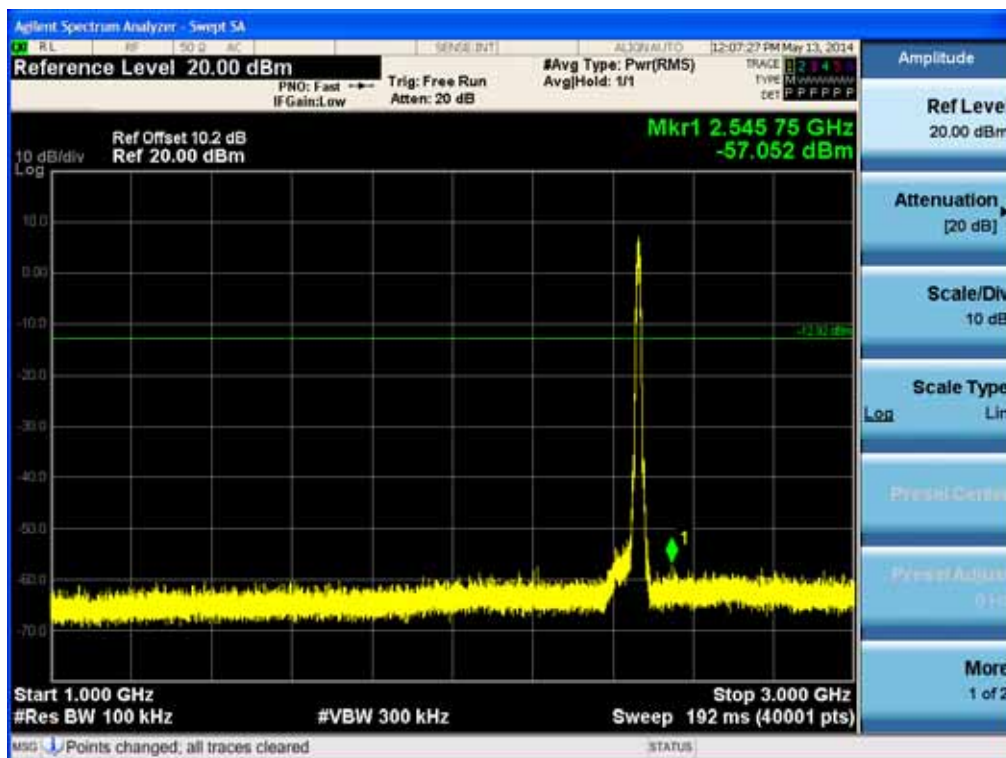
30 MHz ~ 1 GHz

Conducted Spurious Emission (802.11b-CH11)



1 GHz ~ 3 GHz

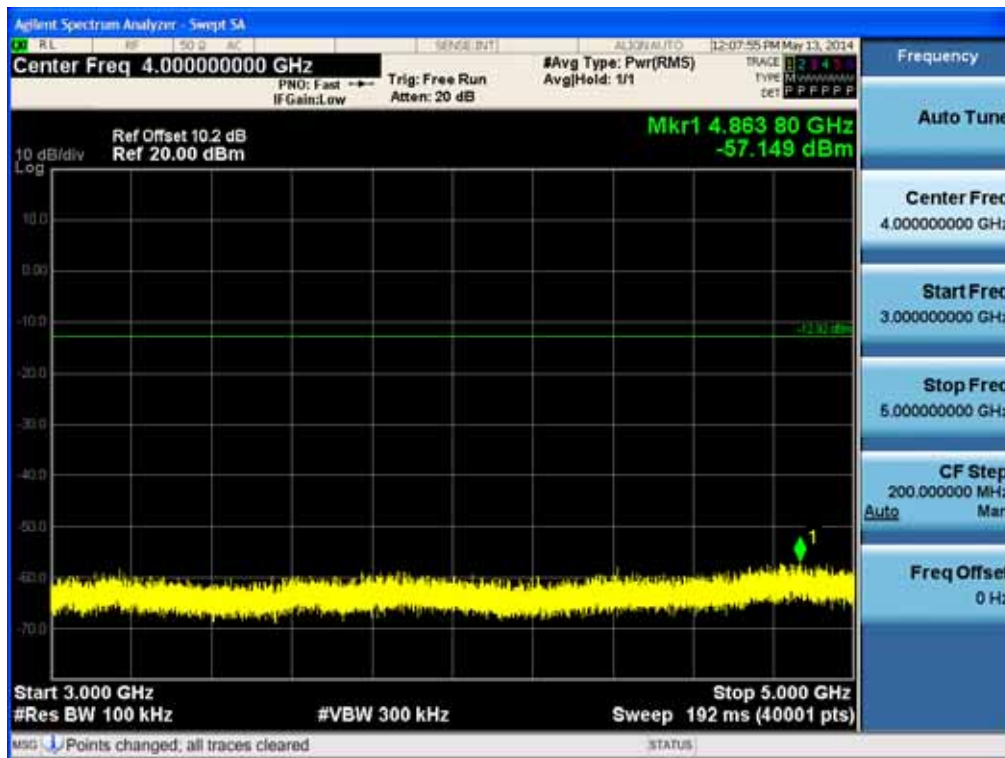
Conducted Spurious Emission (802.11b-CH11)



FCC PT.15.247 TEST REPORT	FCC CERTIFICATION REPORT			www.hct.co.kr
Test Report No. HCT-R-1405-F018-1	Date of Issue: May 29, 2014	EUT Type: Cellular/PCS GSM/GPRS/EDGE/WCDMA/HSDPA/HSUPA/LTE Phone with Bluetooth, WLAN, NFC		FCC ID: ZNFD855P

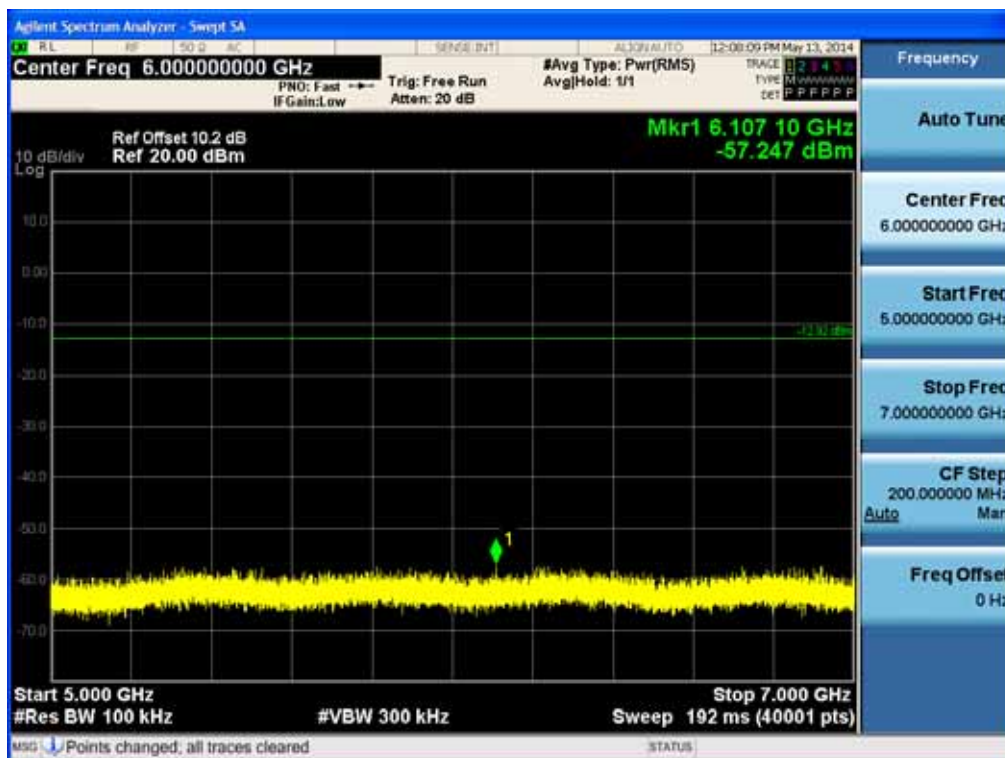
3 GHz ~ 5 GHz

Conducted Spurious Emission (802.11b-CH11)



5 GHz ~ 7 GHz

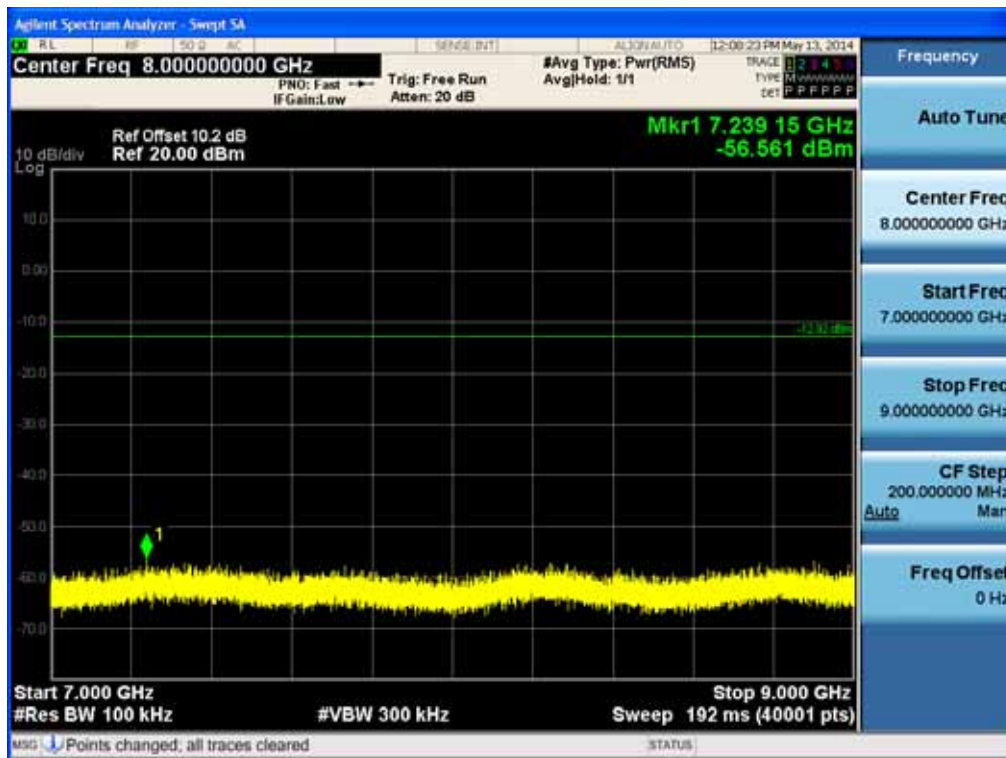
Conducted Spurious Emission (802.11b-CH11)



FCC PT.15.247 TEST REPORT	FCC CERTIFICATION REPORT		www.hct.co.kr
Test Report No. HCT-R-1405-F018-1	Date of Issue: May 29, 2014	EUT Type: Cellular/PCS GSM/GPRS/EDGE/WCDMA/HSDPA/HSUPA/LTE Phone with Bluetooth, WLAN, NFC	FCC ID: ZNFD855P

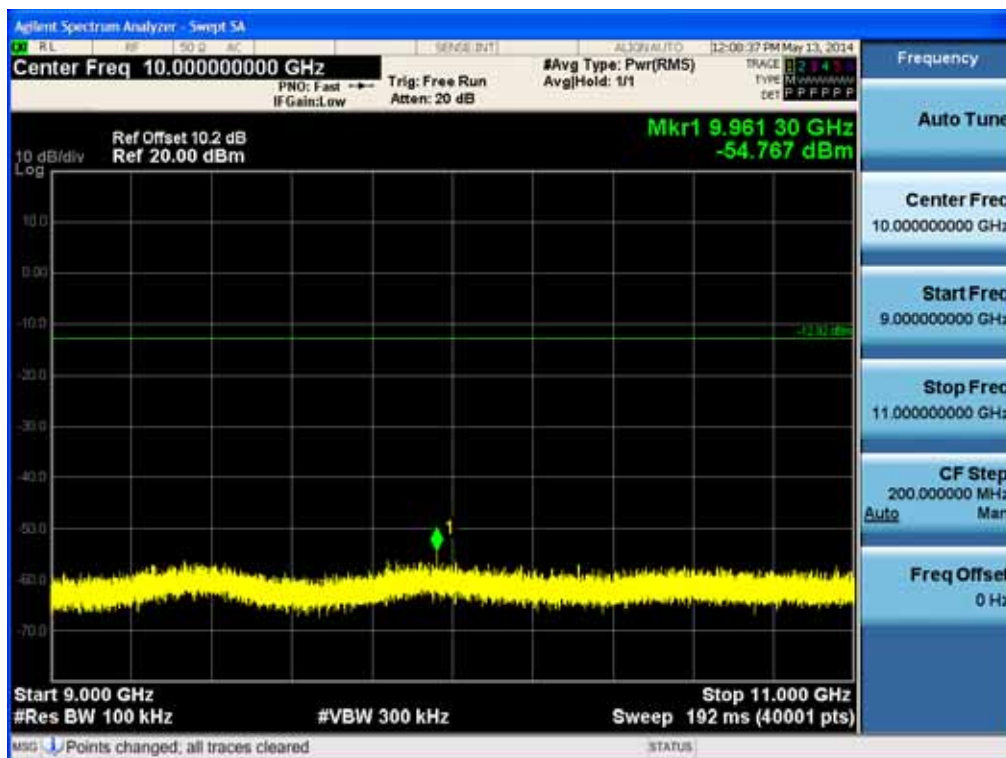
7 GHz ~ 9 GHz

Conducted Spurious Emission (802.11b-CH11)



9 GHz ~ 11 GHz

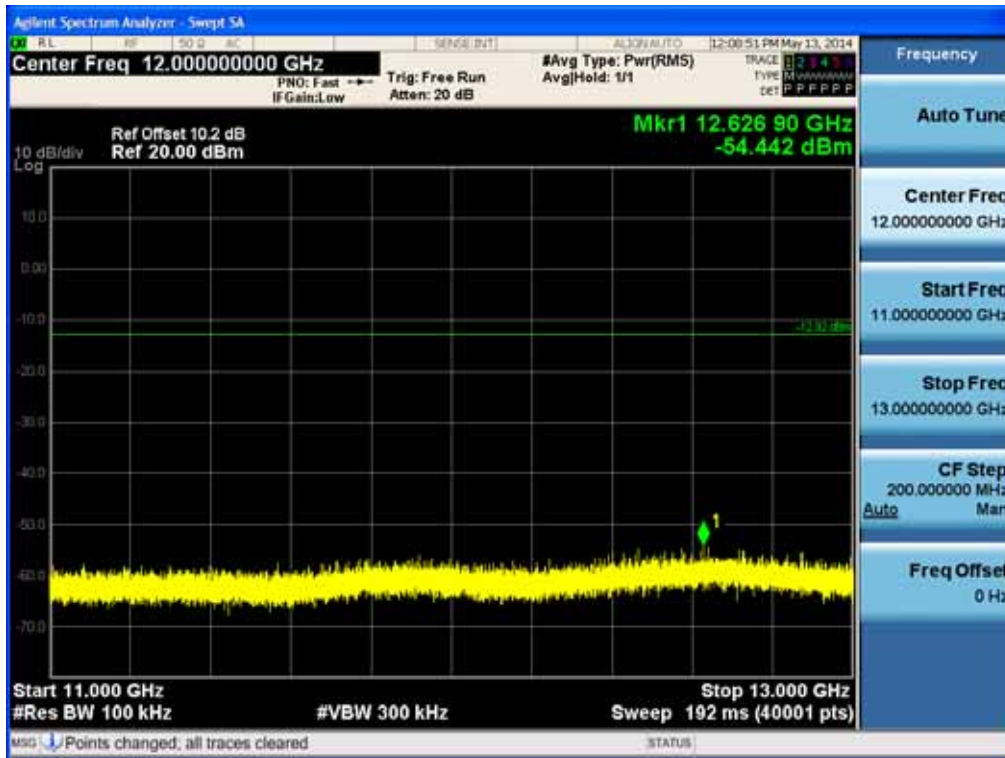
Conducted Spurious Emission (802.11b-CH11)



FCC PT.15.247 TEST REPORT	FCC CERTIFICATION REPORT		www.hct.co.kr
Test Report No. HCT-R-1405-F018-1	Date of Issue: May 29, 2014	EUT Type: Cellular/PCS GSM/GPRS/EDGE/WCDMA/HSDPA/HSUPA/LTE Phone with Bluetooth, WLAN, NFC	FCC ID: ZNFD855P

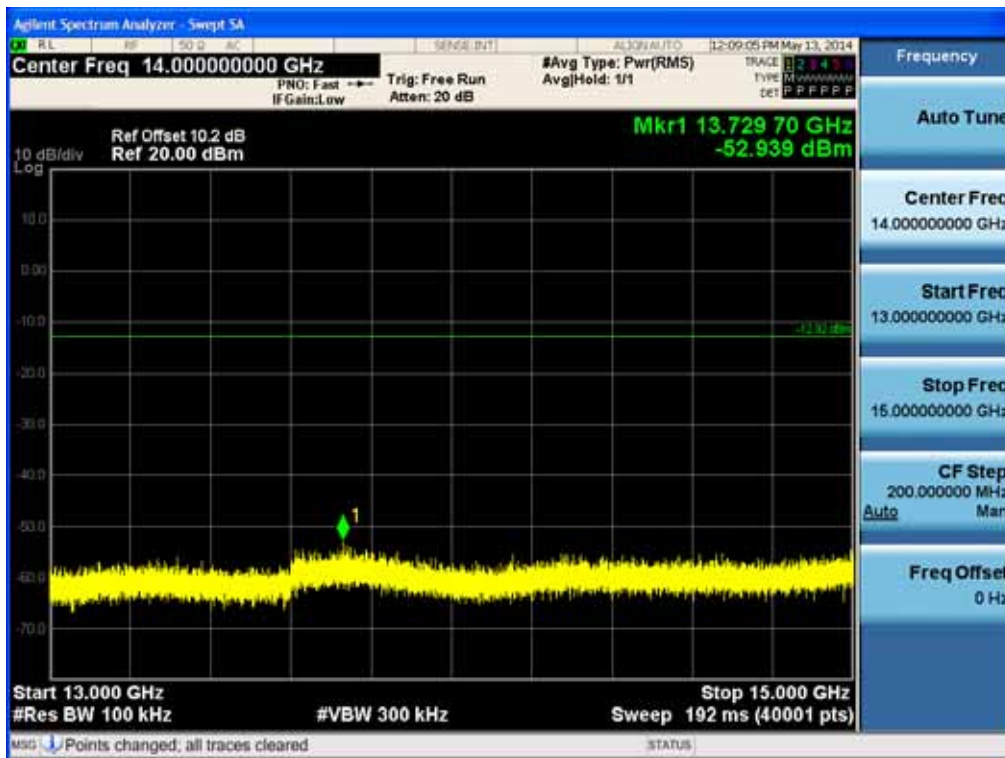
11 GHz ~ 13 GHz

Conducted Spurious Emission (802.11b-CH11)



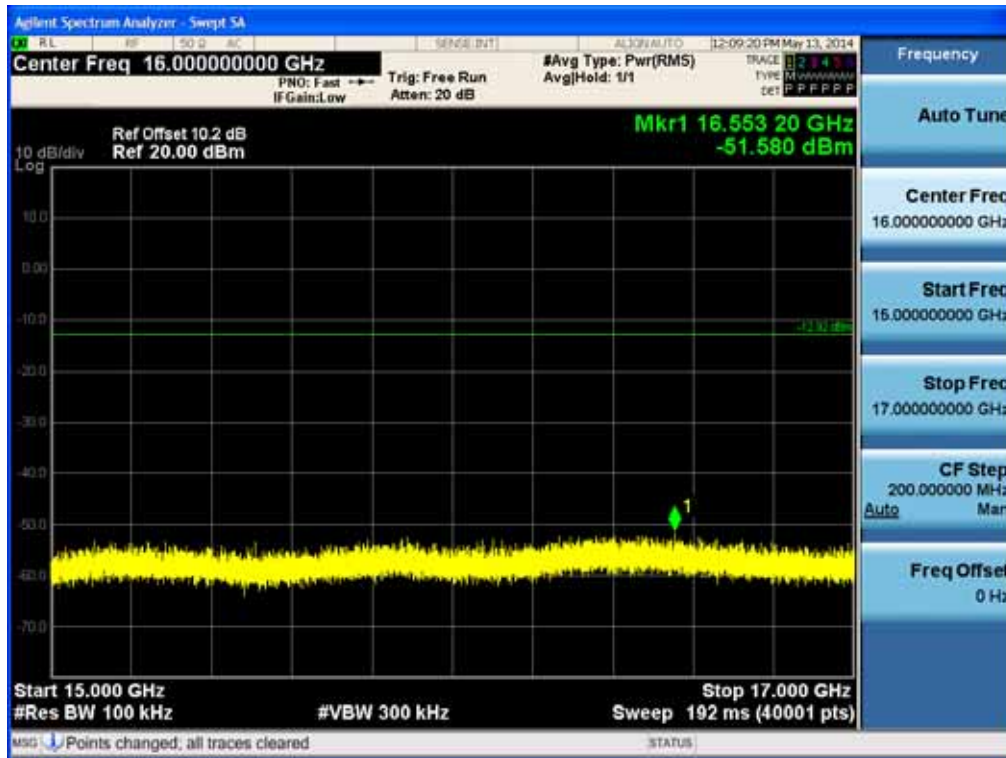
13 GHz ~ 15 GHz

Conducted Spurious Emission (802.11b-CH11)



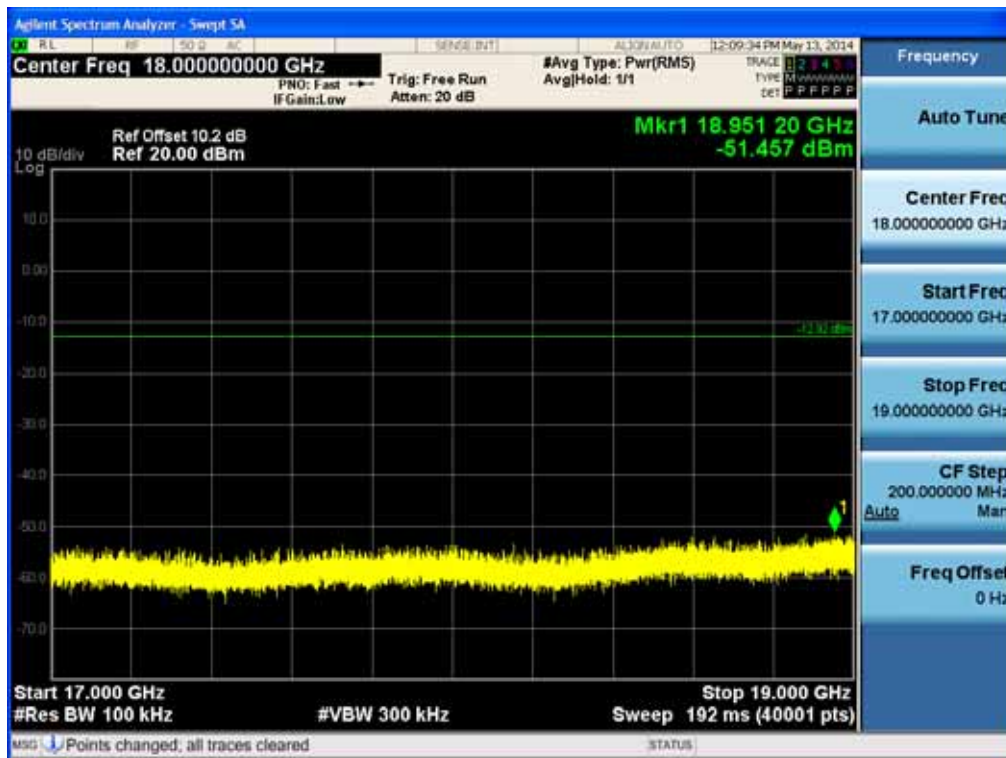
15 GHz ~ 17 GHz

Conducted Spurious Emission (802.11b-CH11)



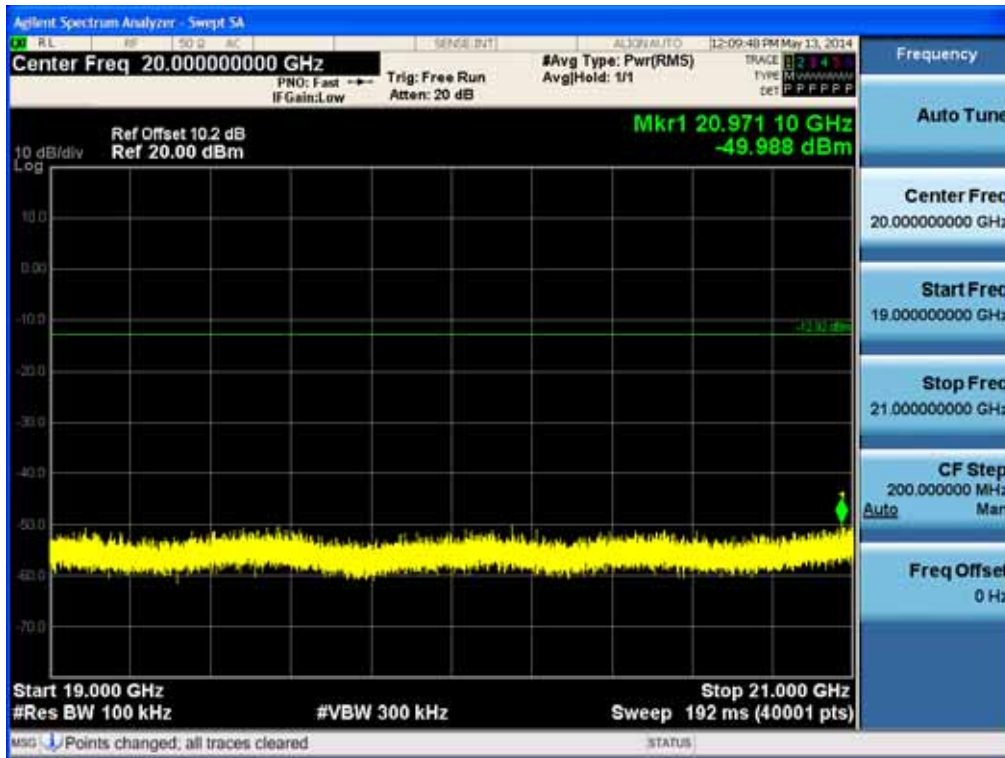
17 GHz ~ 19 GHz

Conducted Spurious Emission (802.11b-CH11)



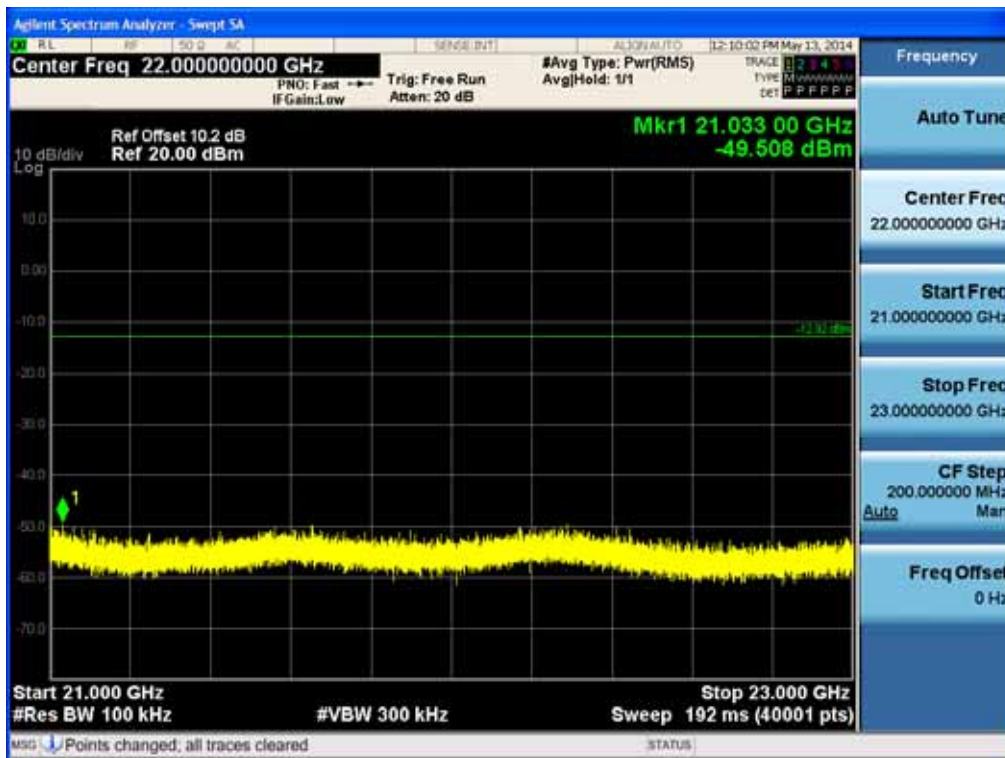
19 GHz ~ 21 GHz

Conducted Spurious Emission (802.11b-CH11)



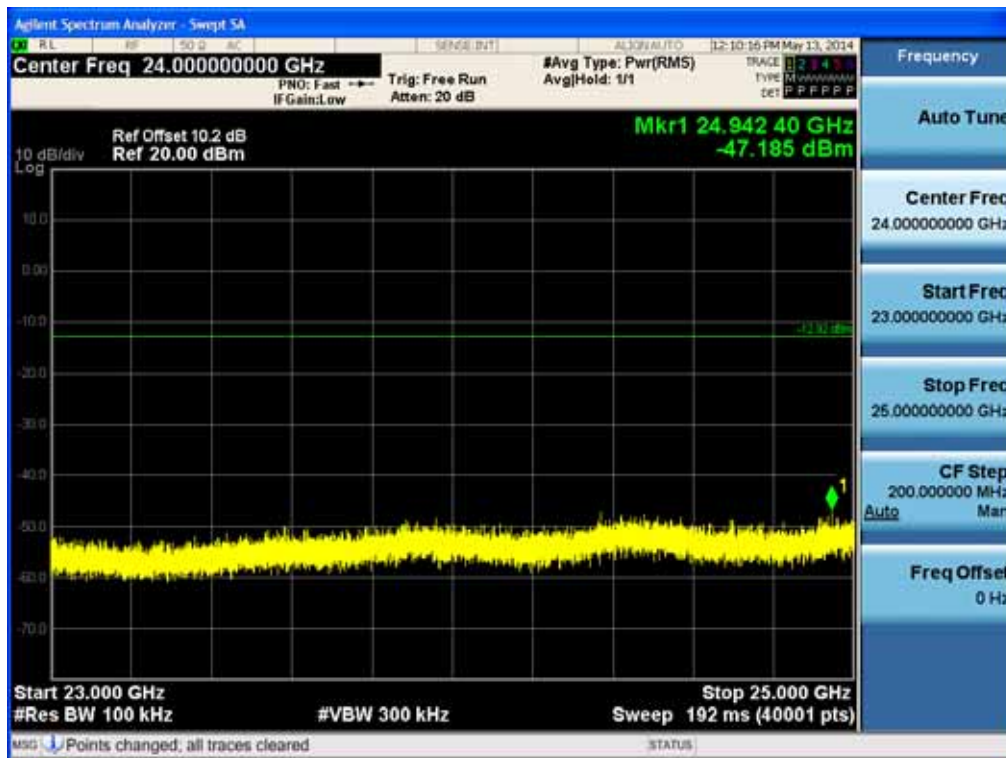
21 GHz ~ 23 GHz

Conducted Spurious Emission (802.11b-CH11)



23 GHz ~ 25 GHz

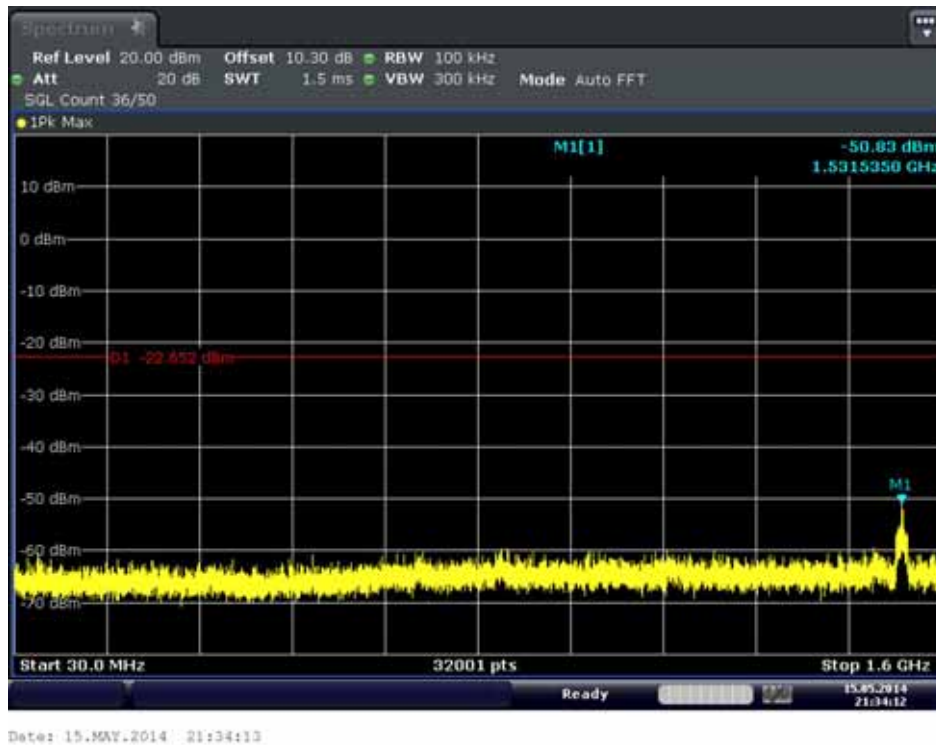
Conducted Spurious Emission (802.11b-CH11)



FCC PT.15.247 TEST REPORT	FCC CERTIFICATION REPORT		www.hct.co.kr
Test Report No. HCT-R-1405-F018-1	Date of Issue: May 29, 2014	EUT Type: Cellular/PCS GSM/GPRS/EDGE/WCDMA/HSDPA/HSUPA/LTE Phone with Bluetooth, WLAN, NFC	FCC ID: ZNFD855P

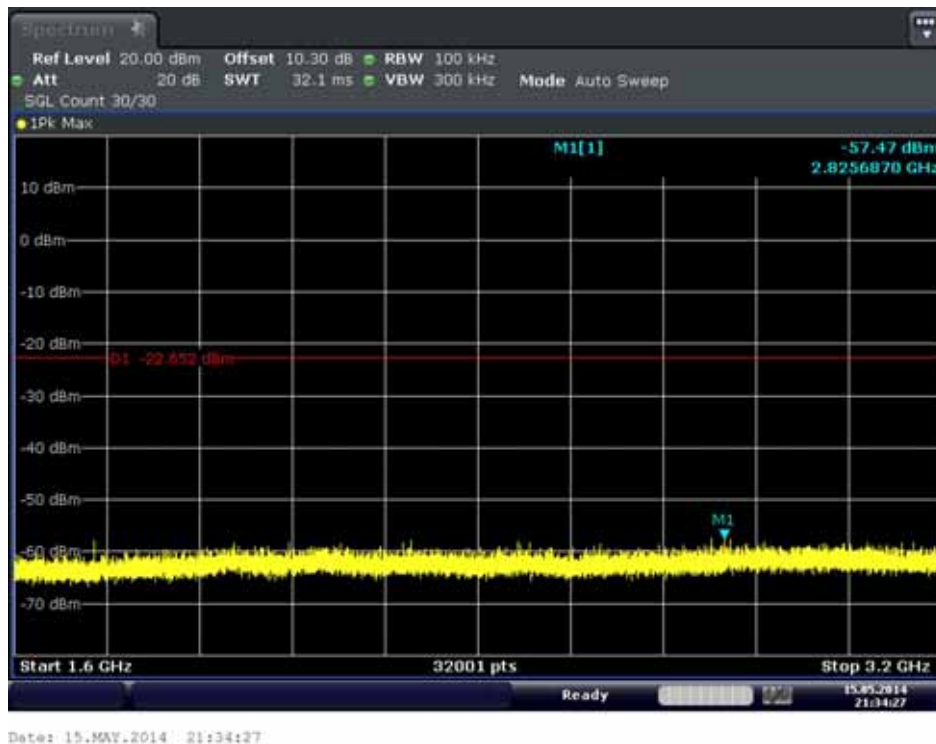
5 GHz Band 30 MHz ~ 1.6 GHz

Conducted Spurious Emission (802.11a-CH149) _20 MHz BW



1.6 GHz ~ 3.2 GHz

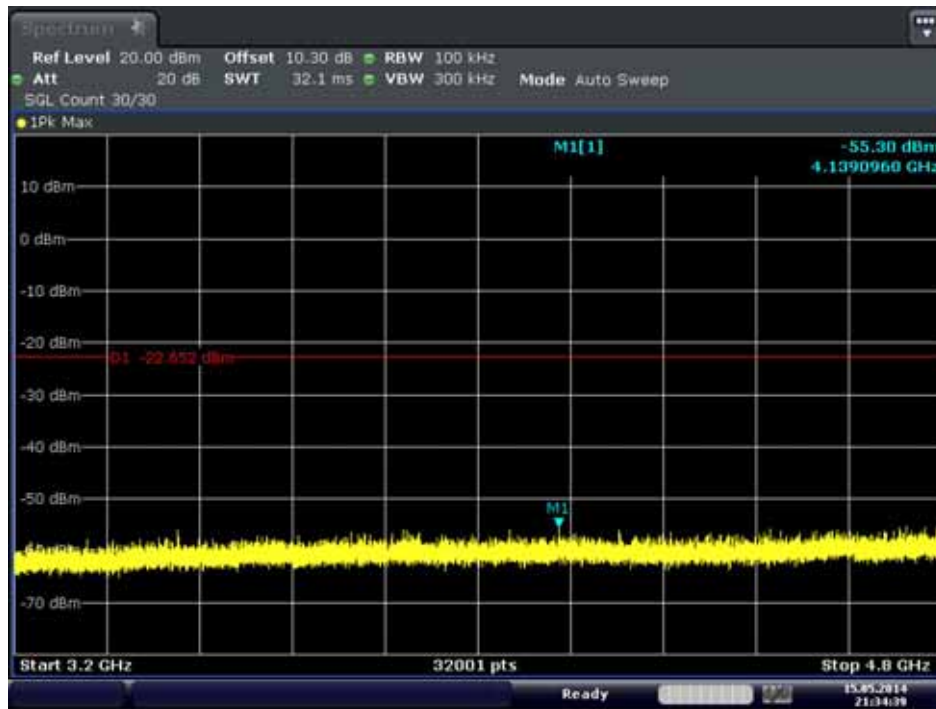
Conducted Spurious Emission (802.11a-CH149) _20 MHz BW



FCC PT.15.247 TEST REPORT	FCC CERTIFICATION REPORT		www.hct.co.kr
Test Report No. HCT-R-1405-F018-1	Date of Issue: May 29, 2014	EUT Type: Cellular/PCS GSM/GPRS/EDGE/WCDMA/HSDPA/HSUPA/LTE Phone with Bluetooth, WLAN, NFC	FCC ID: ZNFD855P

3.2 GHz ~ 4.8 GHz

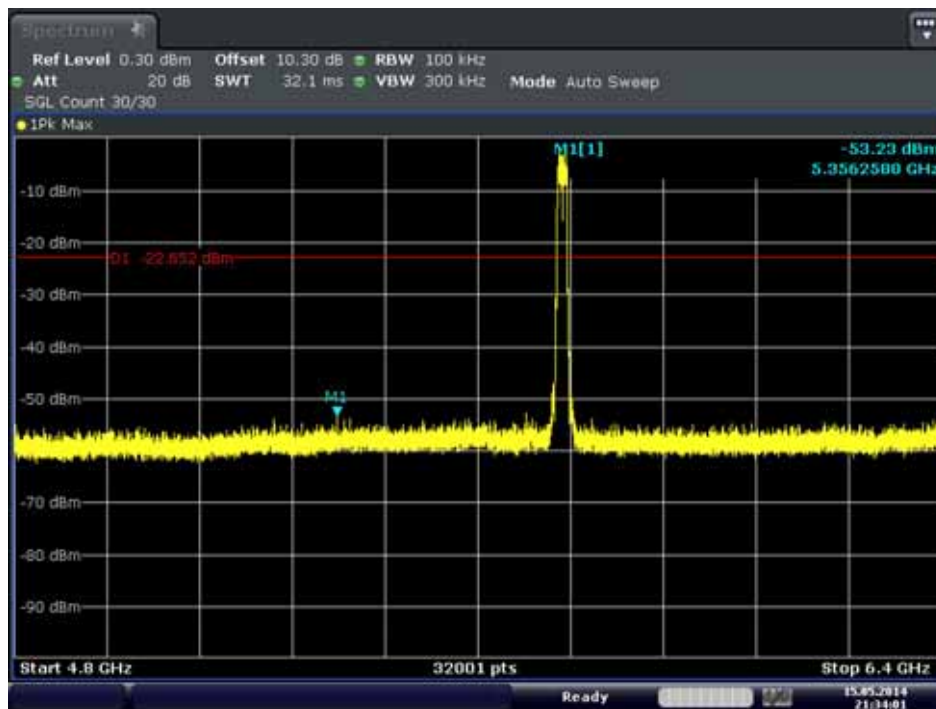
Conducted Spurious Emission (802.11a-CH149) _20 MHz BW



Date: 15.MAY.2014 21:34:39

4.8 GHz ~ 6.4 GHz

Conducted Spurious Emission (802.11a-CH149) _20 MHz BW

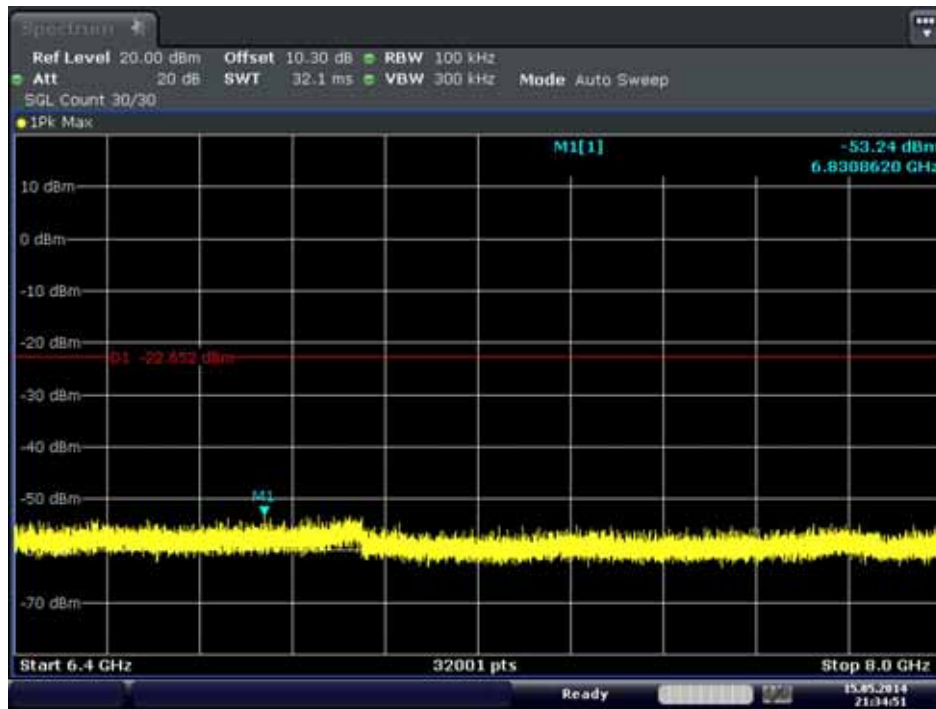


Date: 15.MAY.2014 21:34:02

FCC PT.15.247 TEST REPORT	FCC CERTIFICATION REPORT		www.hct.co.kr
Test Report No. HCT-R-1405-F018-1	Date of Issue: May 29, 2014	EUT Type: Cellular/PCS GSM/GPRS/EDGE/WCDMA/HSDPA/HSUPA/LTE Phone with Bluetooth, WLAN, NFC	FCC ID: ZNFD855P

6.4 GHz ~ 8 GHz

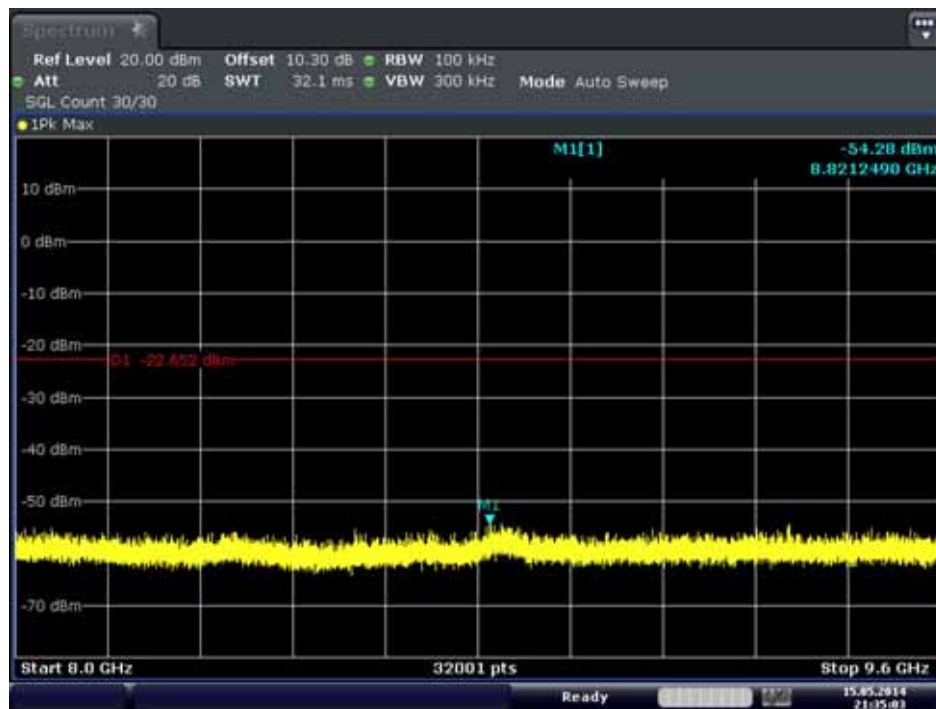
Conducted Spurious Emission (802.11a-CH149) _20 MHz BW



Date: 15.MAY.2014 21:34:51

8 GHz ~ 9.6 GHz

Conducted Spurious Emission (802.11a-CH149) _20 MHz BW

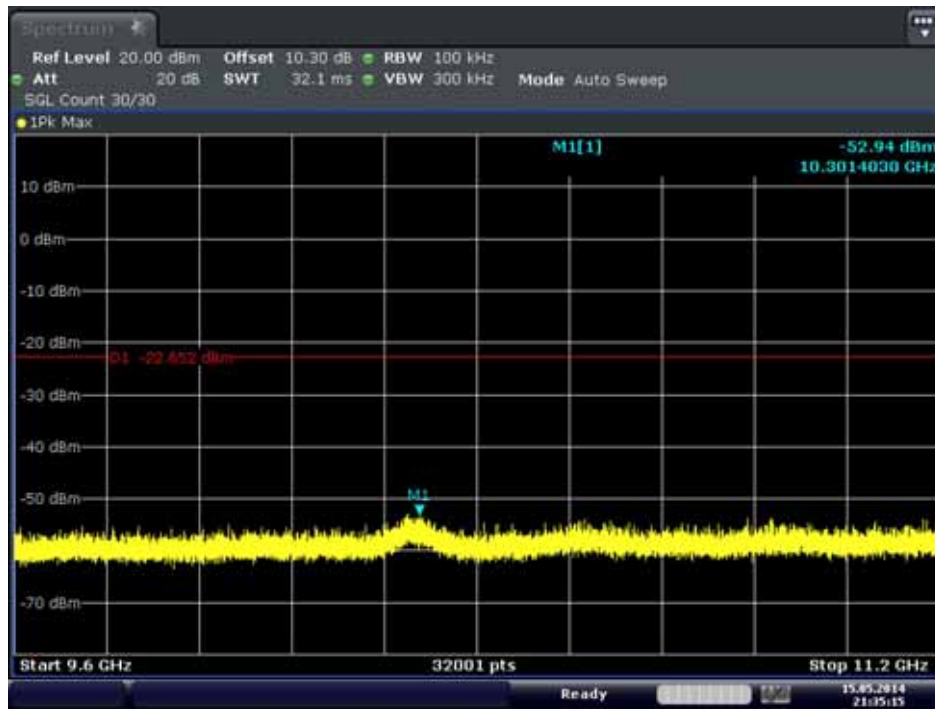


Date: 15.MAY.2014 21:35:04

FCC PT.15.247 TEST REPORT	FCC CERTIFICATION REPORT		www.hct.co.kr
Test Report No. HCT-R-1405-F018-1	Date of Issue: May 29, 2014	EUT Type: Cellular/PCS GSM/GPRS/EDGE/WCDMA/HSDPA/HSUPA/LTE Phone with Bluetooth, WLAN, NFC	FCC ID: ZNF855P

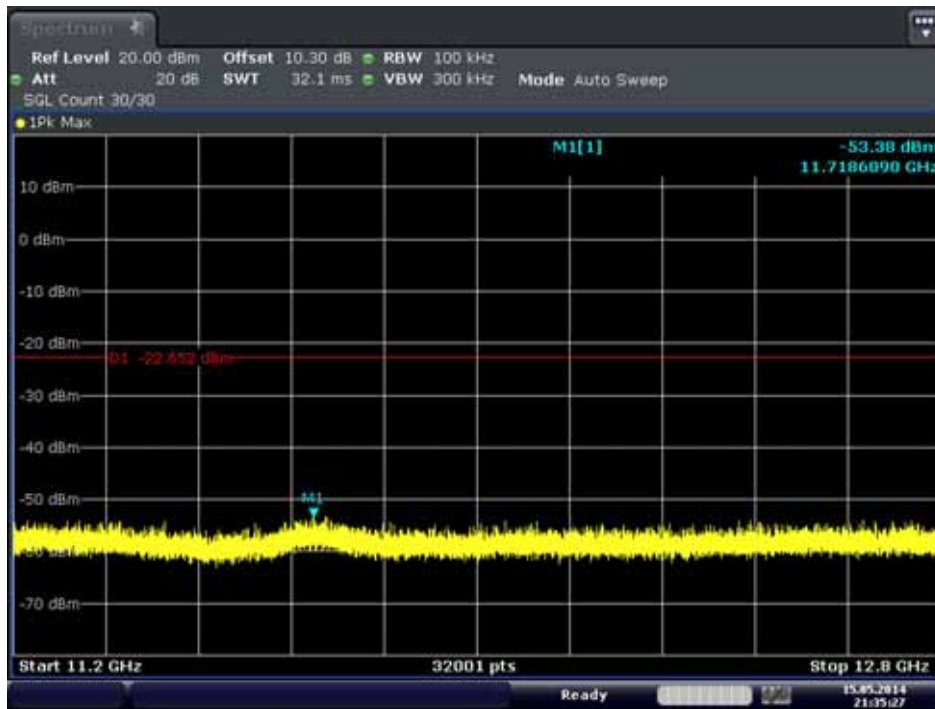
9.6 GHz ~ 11.2 GHz

Conducted Spurious Emission (802.11a-CH149) _20 MHz BW



11.2 GHz ~ 12.8 GHz

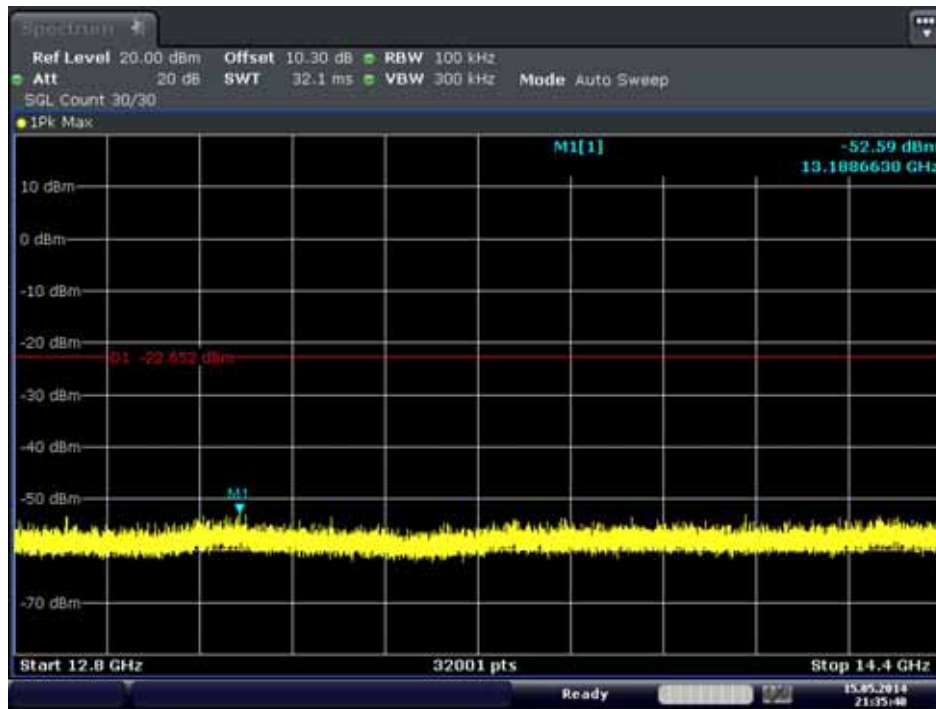
Conducted Spurious Emission (802.11a-CH149) _20 MHz BW



FCC PT.15.247 TEST REPORT	FCC CERTIFICATION REPORT		www.hct.co.kr
Test Report No. HCT-R-1405-F018-1	Date of Issue: May 29, 2014	EUT Type: Cellular/PCS GSM/GPRS/EDGE/WCDMA/HSDPA/HSUPA/LTE Phone with Bluetooth, WLAN, NFC	FCC ID: ZNFD855P

12.8 GHz ~ 14.4 GHz

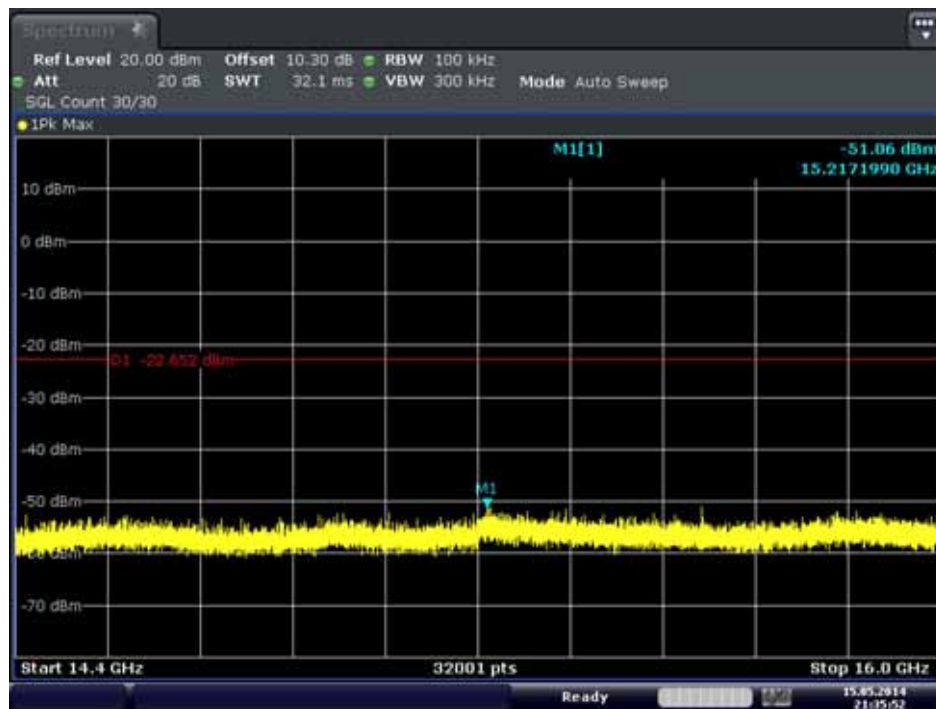
Conducted Spurious Emission (802.11a-CH149) _20 MHz BW



Date: 15.MAY.2014 21:35:40

14.4 GHz ~ 16 GHz

Conducted Spurious Emission (802.11a-CH149) _20 MHz BW



Date: 15.MAY.2014 21:35:52

FCC PT.15.247 TEST REPORT	FCC CERTIFICATION REPORT		www.hct.co.kr
Test Report No. HCT-R-1405-F018-1	Date of Issue: May 29, 2014	EUT Type: Cellular/PCS GSM/GPRS/EDGE/WCDMA/HSDPA/HSUPA/LTE Phone with Bluetooth, WLAN, NFC	FCC ID: ZNF0855P

16 GHz ~ 17.6 GHz

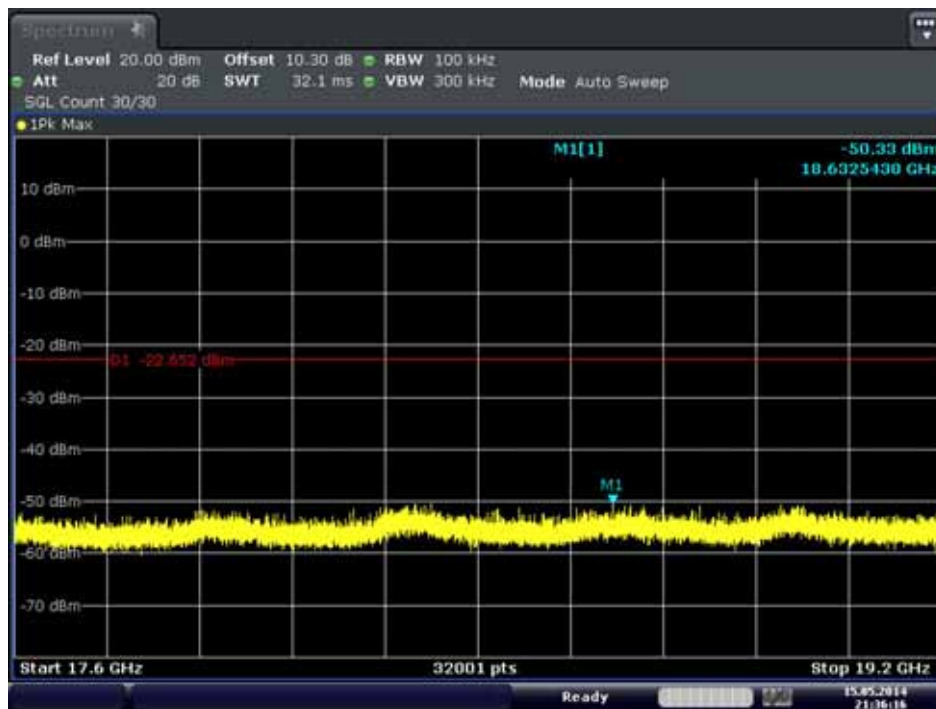
Conducted Spurious Emission (802.11a-CH149) _20 MHz BW



Date: 15.MAY.2014 21:36:05

17.6 GHz ~ 19.2 GHz

Conducted Spurious Emission (802.11a-CH149) _20 MHz BW

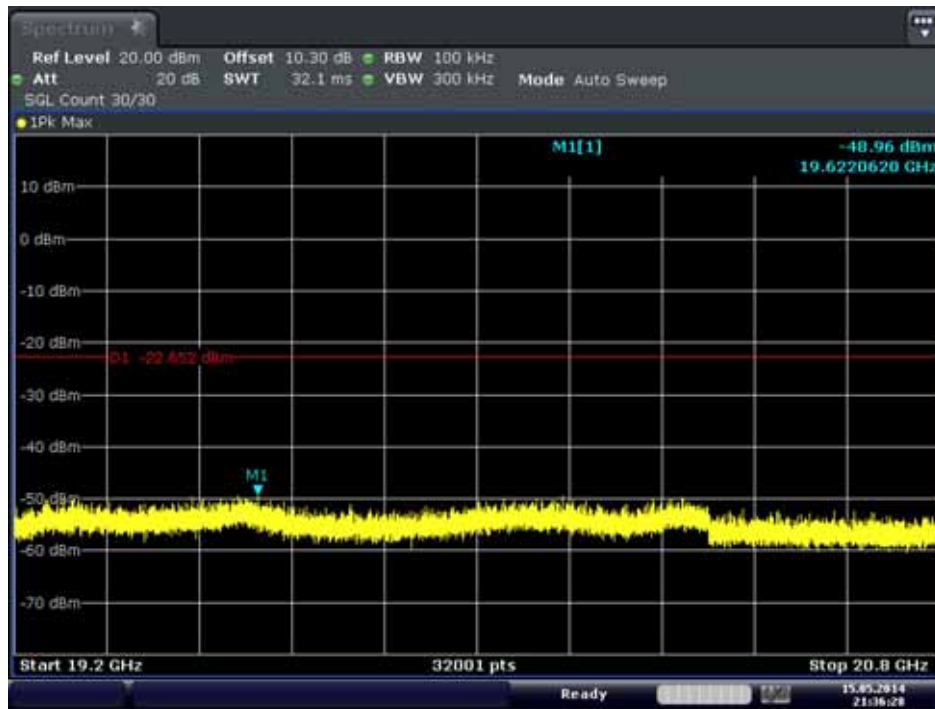


Date: 15.MAY.2014 21:36:17

FCC PT.15.247 TEST REPORT	FCC CERTIFICATION REPORT		www.hct.co.kr
Test Report No. HCT-R-1405-F018-1	Date of Issue: May 29, 2014	EUT Type: Cellular/PCS GSM/GPRS/EDGE/WCDMA/HSDPA/HSUPA/LTE Phone with Bluetooth, WLAN, NFC	FCC ID: ZNFD855P

19.2 GHz ~ 20.8 GHz

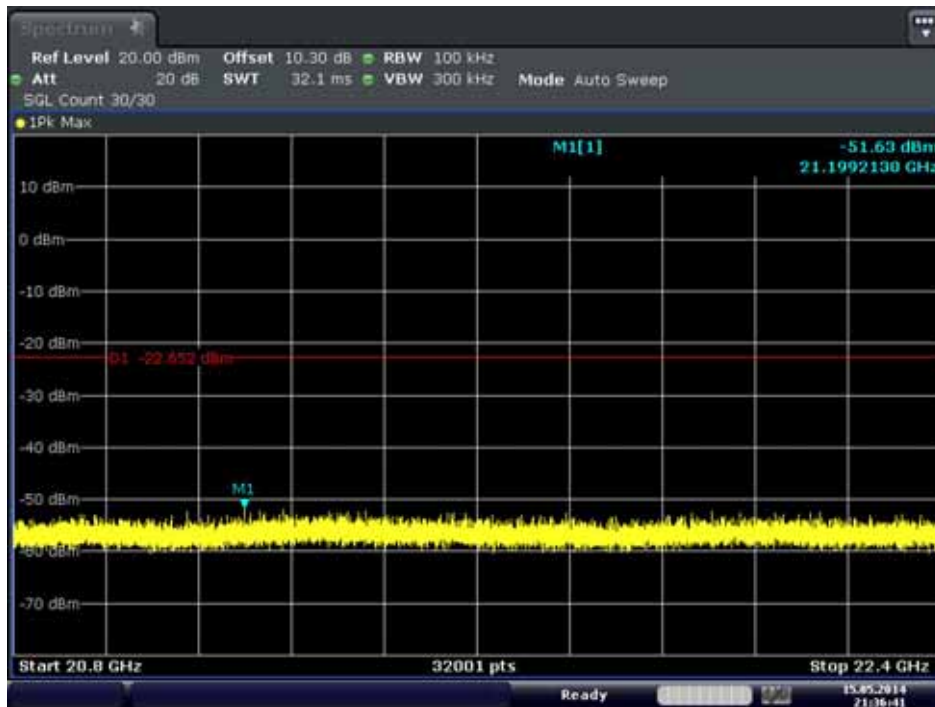
Conducted Spurious Emission (802.11a-CH149) _20 MHz BW



Date: 15.MAY.2014 21:36:29

20.8 GHz ~ 22.4 GHz

Conducted Spurious Emission (802.11a-CH149) _20 MHz BW

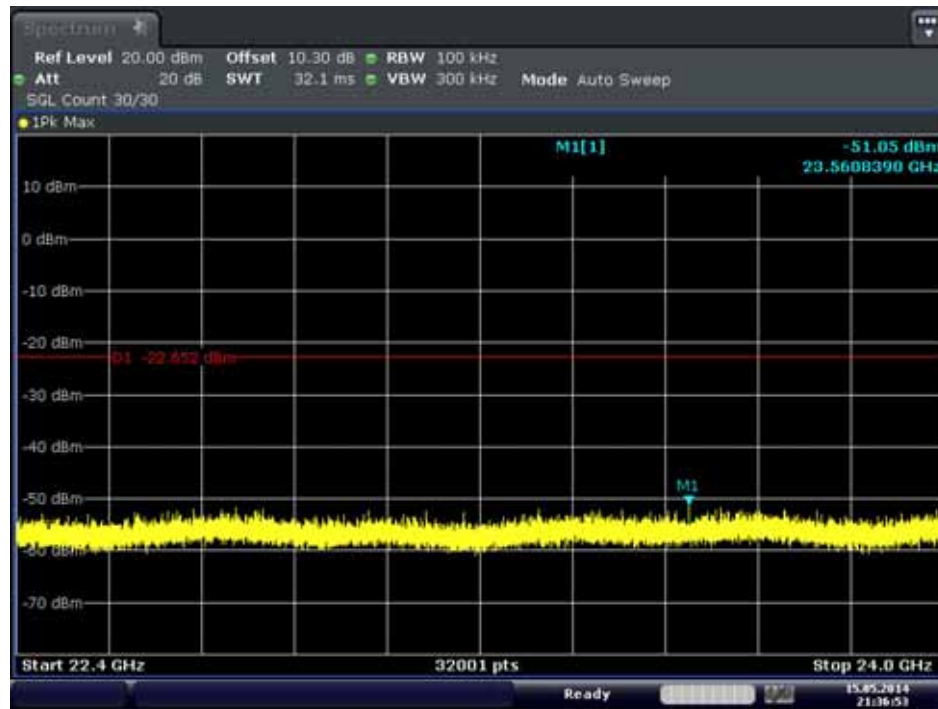


Date: 15.MAY.2014 21:36:41

FCC PT.15.247 TEST REPORT	FCC CERTIFICATION REPORT		www.hct.co.kr
Test Report No. HCT-R-1405-F018-1	Date of Issue: May 29, 2014	EUT Type: Cellular/PCS GSM/GPRS/EDGE/WCDMA/HSDPA/HSUPA/LTE Phone with Bluetooth, WLAN, NFC	FCC ID: ZNFD855P

22.4 GHz ~ 24 GHz

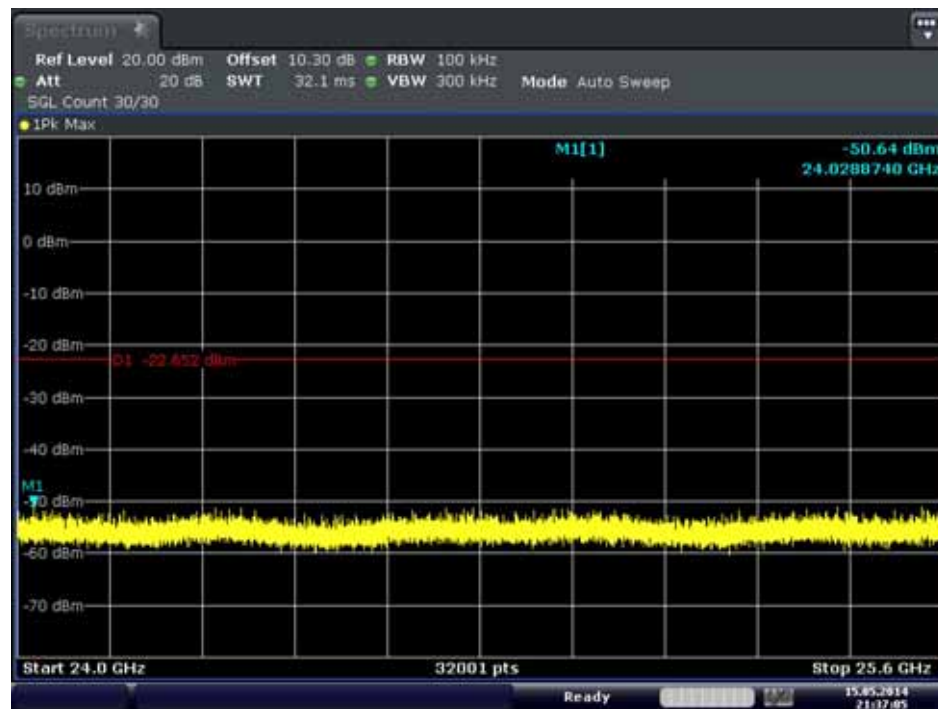
Conducted Spurious Emission (802.11a-CH149) _20 MHz BW



Date: 15.MAY.2014 21:36:53

24 GHz ~ 25.6 GHz

Conducted Spurious Emission (802.11a-CH149) _20 MHz BW



Date: 15.MAY.2014 21:37:06

FCC PT.15.247 TEST REPORT	FCC CERTIFICATION REPORT		www.hct.co.kr
Test Report No. HCT-R-1405-F018-1	Date of Issue: May 29, 2014	EUT Type: Cellular/PCS GSM/GPRS/EDGE/WCDMA/HSDPA/HSUPA/LTE Phone with Bluetooth, WLAN, NFC	FCC ID: ZNF0855P

25.6 GHz ~ 27.2 GHz

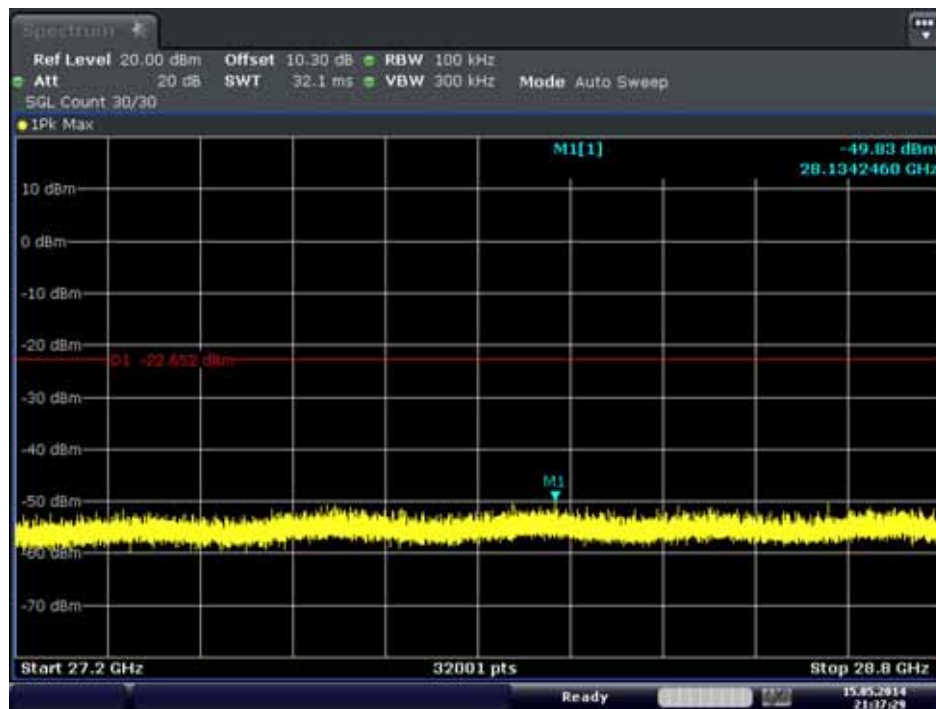
Conducted Spurious Emission (802.11a-CH149) _20 MHz BW



Date: 15.MAY.2014 21:37:18

27.2 GHz ~ 28.8 GHz

Conducted Spurious Emission (802.11a-CH149) _20 MHz BW



Date: 15.MAY.2014 21:37:30

FCC PT.15.247 TEST REPORT	FCC CERTIFICATION REPORT		www.hct.co.kr
Test Report No. HCT-R-1405-F018-1	Date of Issue: May 29, 2014	EUT Type: Cellular/PCS GSM/GPRS/EDGE/WCDMA/HSDPA/HSUPA/LTE Phone with Bluetooth, WLAN, NFC	FCC ID: ZNF0855P

28.8 GHz ~ 30.4 GHz

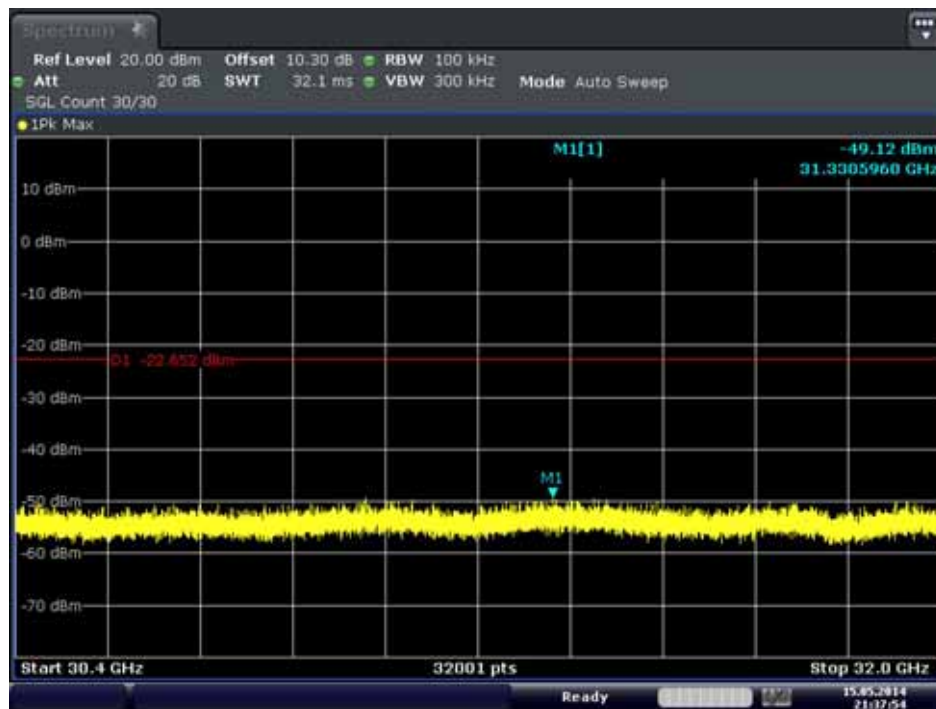
Conducted Spurious Emission (802.11a-CH149) _20 MHz BW



Date: 15.MAY.2014 21:37:42

30.4 GHz ~ 32 GHz

Conducted Spurious Emission (802.11a-CH149) _20 MHz BW

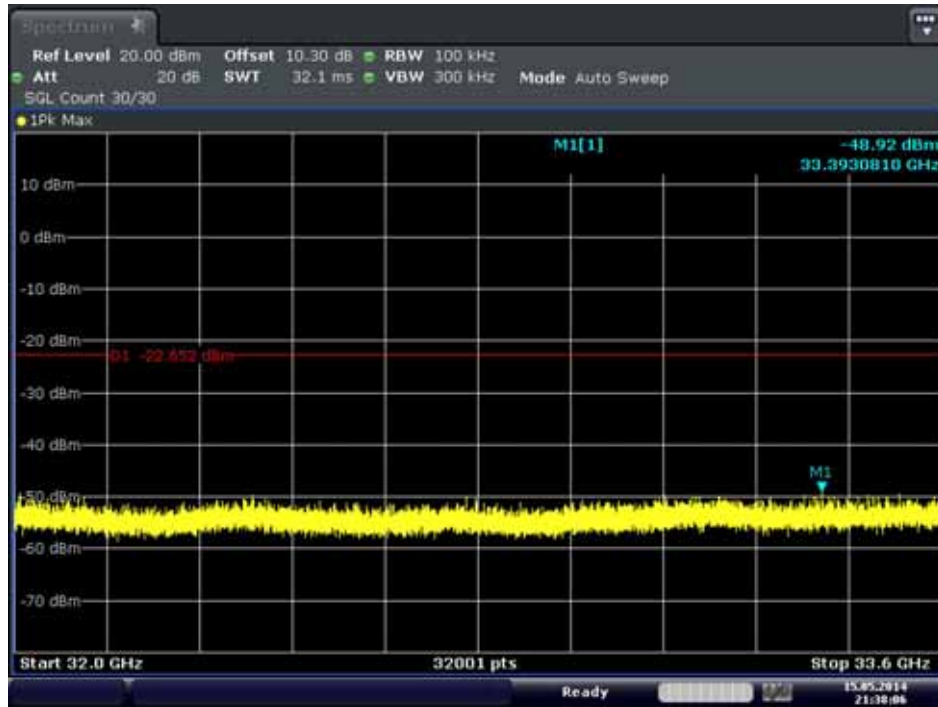


Date: 15.MAY.2014 21:37:54

FCC PT.15.247 TEST REPORT	FCC CERTIFICATION REPORT		www.hct.co.kr
Test Report No. HCT-R-1405-F018-1	Date of Issue: May 29, 2014	EUT Type: Cellular/PCS GSM/GPRS/EDGE/WCDMA/HSDPA/HSUPA/LTE Phone with Bluetooth, WLAN, NFC	FCC ID: ZNF0855P

32 GHz ~ 33.6 GHz

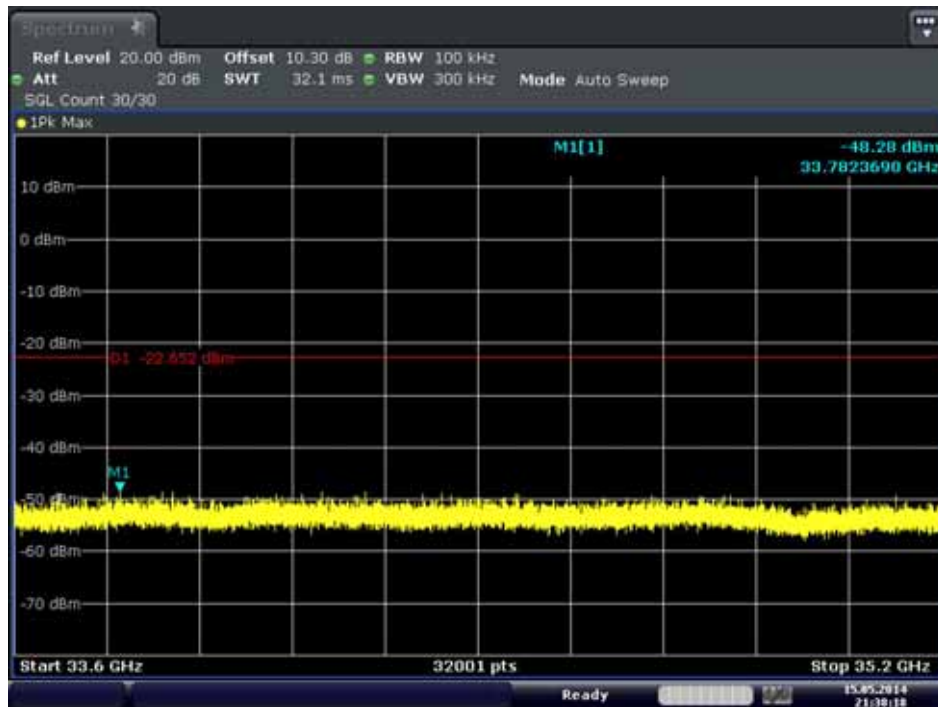
Conducted Spurious Emission (802.11a-CH149) _20 MHz BW



Date: 15.MAY.2014 21:38:07

33.6 GHz ~ 35.2 GHz

Conducted Spurious Emission (802.11a-CH149) _20 MHz BW

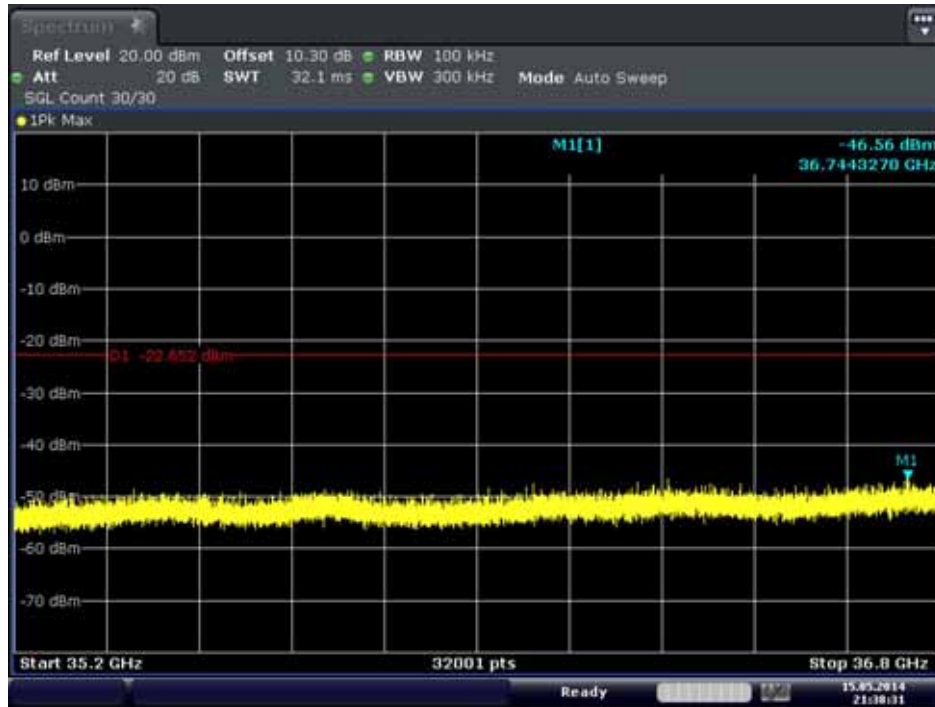


Date: 15.MAY.2014 21:38:19

FCC PT.15.247 TEST REPORT	FCC CERTIFICATION REPORT		www.hct.co.kr
Test Report No. HCT-R-1405-F018-1	Date of Issue: May 29, 2014	EUT Type: Cellular/PCS GSM/GPRS/EDGE/WCDMA/HSDPA/HSUPA/LTE Phone with Bluetooth, WLAN, NFC	FCC ID: ZNFD855P

35.2 GHz ~ 36.8 GHz

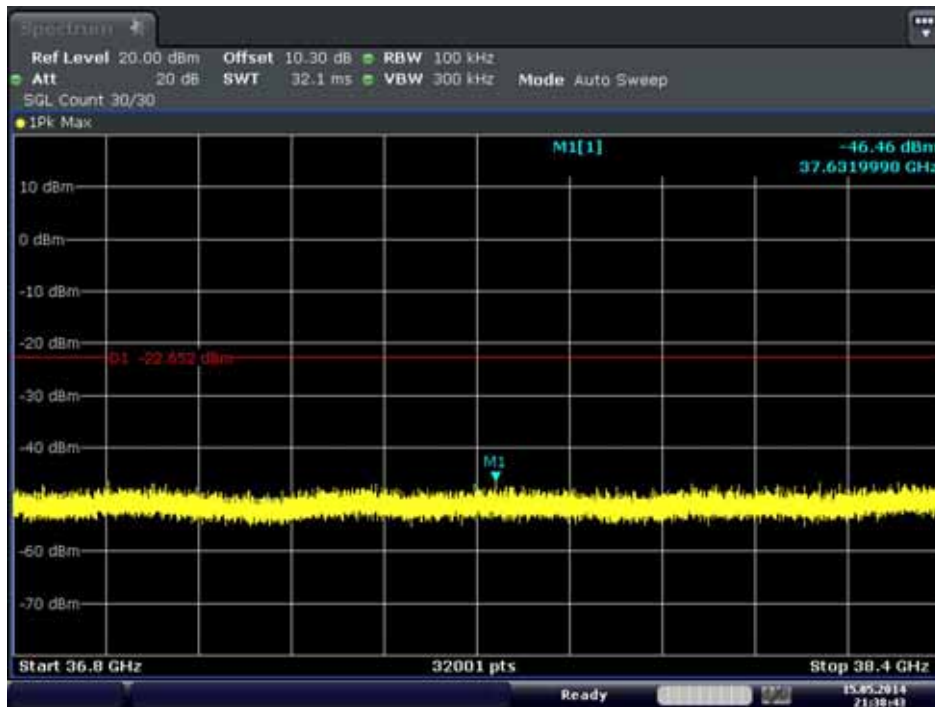
Conducted Spurious Emission (802.11a-CH149) _20 MHz BW



Date: 15.MAY.2014 21:38:31

36.8 GHz ~ 38.4 GHz

Conducted Spurious Emission (802.11a-CH149) _20 MHz BW

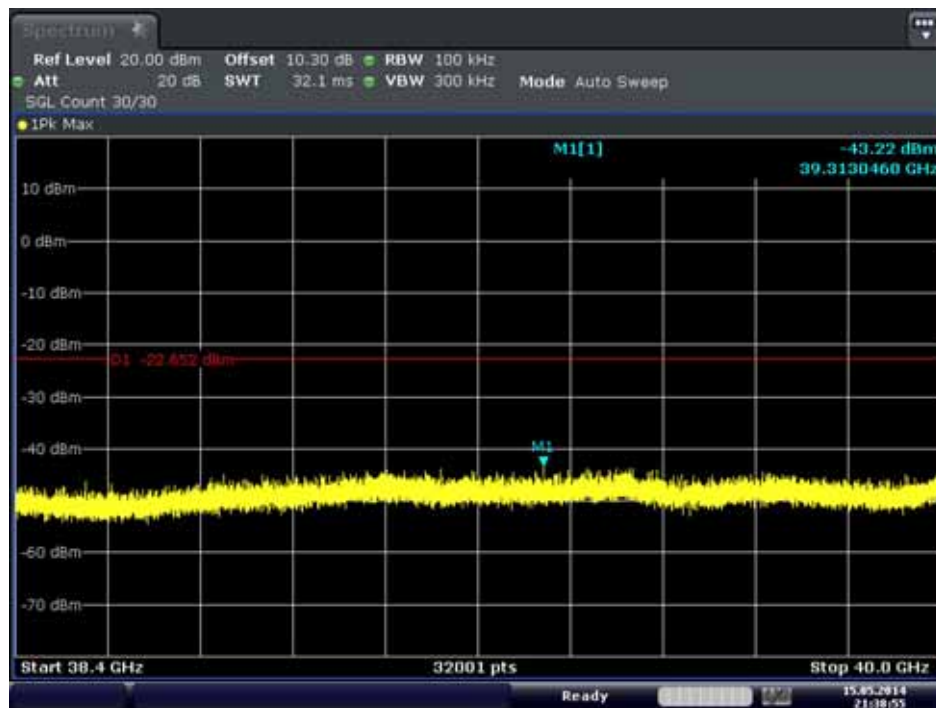


Date: 15.MAY.2014 21:38:43

FCC PT.15.247 TEST REPORT	FCC CERTIFICATION REPORT		www.hct.co.kr
Test Report No. HCT-R-1405-F018-1	Date of Issue: May 29, 2014	EUT Type: Cellular/PCS GSM/GPRS/EDGE/WCDMA/HSDPA/HSUPA/LTE Phone with Bluetooth, WLAN, NFC	FCC ID: ZNFD855P

38.4 GHz ~ 40 GHz

Conducted Spurious Emission (802.11a-CH149) _20 MHz BW



Date: 15.MAY.2014 21:38:55

FCC PT.15.247 TEST REPORT	FCC CERTIFICATION REPORT		www.hct.co.kr
Test Report No. HCT-R-1405-F018-1	Date of Issue: May 29, 2014	EUT Type: Cellular/PCS GSM/GPRS/EDGE/WCDMA/HSDPA/HSUPA/LTE Phone with Bluetooth, WLAN, NFC	FCC ID: ZNFD855P

8.6 RADIATED MEASUREMENT.

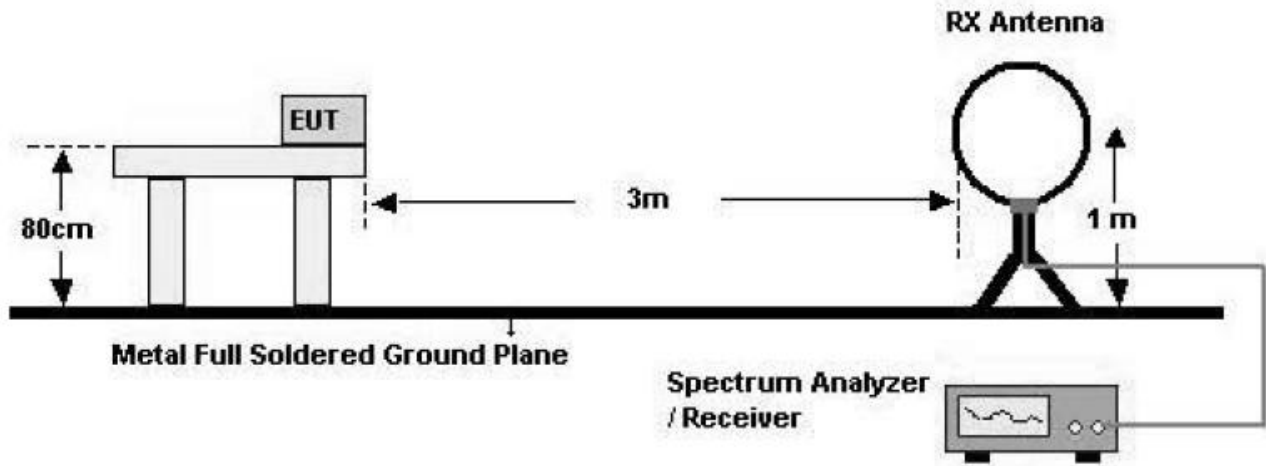
8.6.1 RADIATED SPURIOUS EMISSIONS.

Test Requirements and limit, §15.205, §15.209

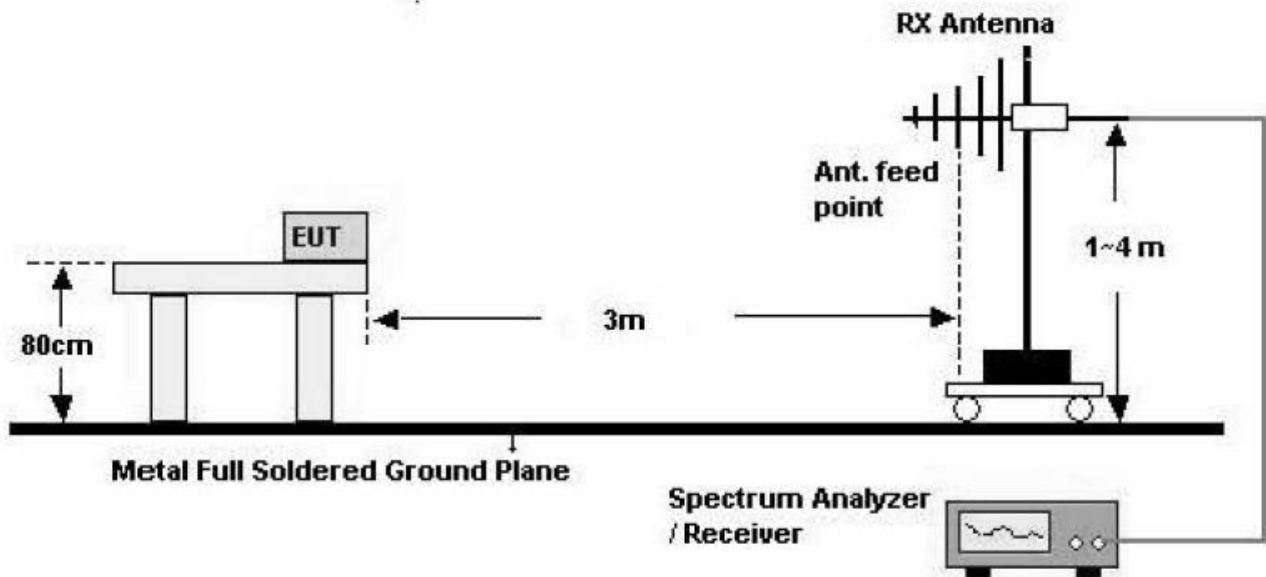
Frequency (MHz)	Field Strength (uV/m)	Measurement Distance (m)
0.009 – 0.490	2400/F(kHz)	300
0.490 – 1.705	24000/F(kHz)	30
1.705 – 30	30	30
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

Test Configuration

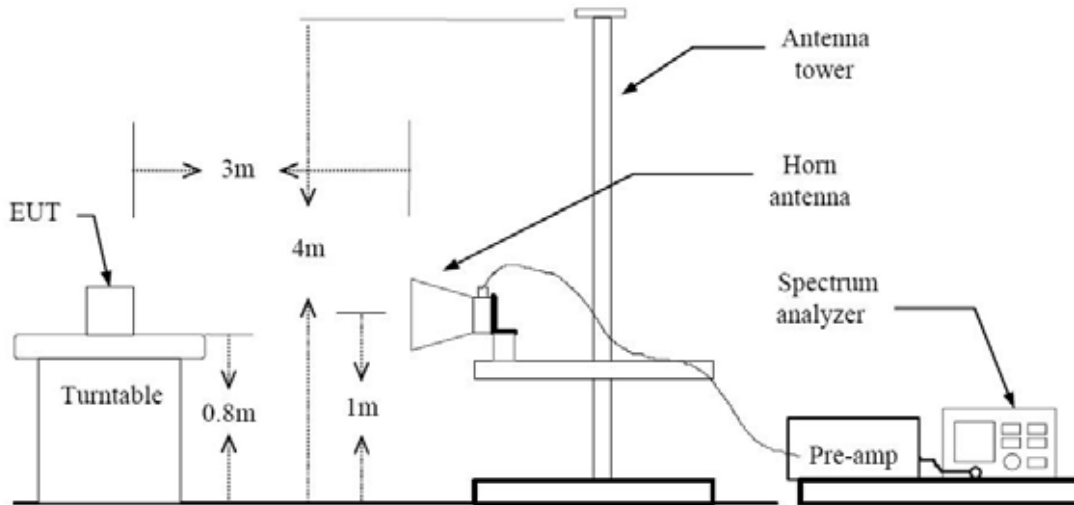
Below 30 MHz



30 MHz - 1 GHz



Above 1 GHz



TEST PROCEDURE USED

ANSI C63.4(2003)

Method 12.2.4 in KDB 558074, issued 04/09/2013

Spectrum Setting

- Peak

Peak emission levels are measured by setting the instrument as follows:

RBW = cf. Table 1.

VBW $\geq 3 \times$ RBW.

Detector = Peak.

Sweep time = auto.

Trace mode = max hold.

Allow sweeps to continue until the trace stabilizes.

(Note that the required measurement time may be longer for low duty cycle applications).

Table 1 —RBW as a function of frequency

Frequency	RBW
9-150 kHz	200-300 Hz
0.15-30 MHz	9-10 kHz
30-1000 MHz	100-120 kHz
> 1000 MHz	1 MHz

- Average

Set RBW = 1 MHz

Set VBW $\geq 1/T$. (at least 100 times less than the resolution bandwidth, but no less than 10 Hz.)

Select spectrum analyzer linear display mode.

Detector = Peak.

Sweep time = auto.

Trace mode = max hold.

Note :

1. We used the case 1 for 802.11b mode and the case 2 for 802.11a/g/n_20/n_40/ac_20/ac_40/ac_80 to perform the average filed strength measurements for RSE and radiated band edge test.
2. The actual setting value of VBW for 802.11a/g/n_20/n_40/ac_20/ac_40/ac_80.

Mode	Worst Data rate (Mbps)	T _{on} (ms)	T _{total} (ms)	Duty Cycle (%)	VBW(1/T) (Hz)	The actual setting value of VBW (Hz)
b	1	12.240	12.330	99.27	82	1000
a	6	2.019	2.132	94.70	495	1000
g	6	2.019	2.132	94.70	495	1000
n_20	6.5	1.861	1.966	94.66	537	1000
n_40	13.5	0.910	1.022	89.04	1099	3000
5.8 GHz band ac_20	6.5	0.972	1.074	90.50	1029	1000
ac_40	13.5	0.490	0.592	82.77	2041	3000
ac_80	29.3	0.247	0.347	71.18	4049	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/m	dBm /m	dBm	(H/V)	dB μ V/m	dB μ V/m	dB
No Critical peaks found							

Notes:

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

TEST RESULTS

Below 1 GHz

Operation Mode: Normal Mode

Frequency	Reading	Ant. factor	Cable loss	Ant. POL	Total	Limit	Margin
MHz	dB μ V/m	dBm /m	dBm	(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.

Stand alone
Above 1 GHz

Band :	2.4 GHz
Operation Mode:	802.11 b
Transfer Rate:	1 Mbps
Operating Frequency	2412
Channel No.	01 Ch

Frequency [MHz]	Reading [dBuV/m]	AN.+CL-AMP G [dBm]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
4824	53.01	-4.25	V	48.76	73.98	25.22	PK
4824	40.12	-4.25	V	35.87	53.98	18.11	AV
7236	52.37	5.21	V	57.58	73.98	16.40	PK
7236	38.02	5.21	V	43.23	53.98	10.75	AV
4824	52.19	-4.25	H	47.94	73.98	26.04	PK
4824	39.50	-4.25	H	35.25	53.98	18.73	AV
7236	51.95	5.21	H	57.16	73.98	16.82	PK
7236	37.93	5.21	H	43.14	53.98	10.84	AV

Band :	2.4 GHz
Operation Mode:	802.11 b
Transfer Rate:	1 Mbps
Operating Frequency	2437
Channel No.	06 Ch

Frequency [MHz]	Reading [dBuV/m]	AN.+CL-AMP G [dBm]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
4874	51.48	-3.93	V	47.55	73.98	26.43	PK
4874	38.60	-3.93	V	34.67	53.98	19.31	AV
7311	51.57	4.97	V	56.54	73.98	17.44	PK
7311	37.71	4.97	V	42.68	53.98	11.30	AV
4874	51.35	-3.93	H	47.42	73.98	26.56	PK
4874	37.57	-3.93	H	33.64	53.98	20.34	AV
7311	51.40	4.97	H	56.37	73.98	17.61	PK
7311	37.66	4.97	H	42.63	53.98	11.35	AV

Band :	2.4 GHz
Operation Mode:	802.11 b
Transfer Rate:	1 Mbps
Operating Frequency	2462
Channel No.	11 Ch

Frequency [MHz]	Reading [dBuV/m]	AN.+CL-AMP G [dBm]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
4924	51.43	-3.75	V	47.68	73.98	26.30	PK
4924	38.84	-3.75	V	35.09	53.98	18.89	AV
7386	52.37	5.60	V	57.97	73.98	16.01	PK
7386	38.27	5.60	V	43.87	53.98	10.11	AV
4924	51.38	-3.75	H	47.63	73.98	26.35	PK
4924	37.54	-3.75	H	33.79	53.98	20.19	AV
7386	52.17	5.60	H	57.77	73.98	16.21	PK
7386	38.10	5.60	H	43.70	53.98	10.28	AV

Notes:

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

Band : 2.4 GHz

Operation Mode: 802.11 g

Transfer Rate: 6 Mbps

Operating Frequency 2412

Channel No. 01 Ch

Frequency [MHz]	Reading [dBuV/m]	AN.+CL-AMP G [dBm]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
4824	52.36	-4.25	V	48.11	73.98	25.87	PK
4824	38.37	-4.25	V	34.12	53.98	19.86	AV
7236	51.86	5.21	V	57.07	73.98	16.91	PK
7236	38.05	5.21	V	43.26	53.98	10.72	AV
4824	52.17	-4.25	H	47.92	73.98	26.06	PK
4824	38.35	-4.25	H	34.10	53.98	19.88	AV
7236	51.60	5.21	H	56.81	73.98	17.17	PK
7236	38.01	5.21	H	43.22	53.98	10.76	AV

Band : 2.4 GHz

Operation Mode: 802.11 g

Transfer Rate: 6 Mbps

Operating Frequency 2437

Channel No. 06 Ch

Frequency [MHz]	Reading [dBuV/m]	AN.+CL-AMP G [dBm]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
4874	51.98	-3.93	V	48.05	73.98	25.93	PK
4874	37.58	-3.93	V	33.65	53.98	20.33	AV
7311	52.36	4.97	V	57.33	73.98	16.65	PK
7311	37.74	4.97	V	42.71	53.98	11.27	AV
4874	51.83	-3.93	H	47.90	73.98	26.08	PK
4874	37.55	-3.93	H	33.62	53.98	20.36	AV
7311	52.30	4.97	H	57.27	73.98	16.71	PK
7311	37.70	4.97	H	42.67	53.98	11.31	AV

Band :	2.4 GHz
Operation Mode:	802.11 g
Transfer Rate:	6 Mbps
Operating Frequency	2462
Channel No.	11 Ch

Frequency [MHz]	Reading [dBuV/m]	AN.+CL-AMP G [dBm]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
4924	51.22	-3.75	V	47.47	73.98	26.51	PK
4924	37.15	-3.75	V	33.40	53.98	20.58	AV
7386	52.03	5.60	V	57.63	73.98	16.35	PK
7386	38.04	5.60	V	43.64	53.98	10.34	AV
4924	51.20	-3.75	H	47.45	73.98	26.53	PK
4924	37.13	-3.75	H	33.38	53.98	20.60	AV
7386	51.94	5.60	H	57.54	73.98	16.44	PK
7386	38.00	5.60	H	43.60	53.98	10.38	AV

Notes:

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

Band : 2.4 GHz

Operation Mode: 802.11 n

Transfer Rate: 6.5 Mbps

Operating Frequency 2412

Channel No. 01 Ch

Frequency [MHz]	Reading [dBuV/m]	AN.+CL-AMP G [dBm]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
4824	52.66	-4.25	V	48.41	73.98	25.57	PK
4824	38.28	-4.25	V	34.03	53.98	19.95	AV
7236	52.40	5.21	V	57.61	73.98	16.37	PK
7236	37.95	5.21	V	43.16	53.98	10.82	AV
4824	52.38	-4.25	H	48.13	73.98	25.85	PK
4824	38.22	-4.25	H	33.97	53.98	20.01	AV
7236	52.17	5.21	H	57.38	73.98	16.60	PK
7236	37.91	5.21	H	43.12	53.98	10.86	AV

Band : 2.4 GHz

Operation Mode: 802.11 n

Transfer Rate: 6.5 Mbps

Operating Frequency 2437

Channel No. 06 Ch

Frequency [MHz]	Reading [dBuV/m]	AN.+CL-AMP G [dBm]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
4874	51.65	-3.93	V	47.72	73.98	26.26	PK
4874	37.50	-3.93	V	33.57	53.98	20.41	AV
7311	51.91	4.97	V	56.88	73.98	17.10	PK
7311	37.75	4.97	V	42.72	53.98	11.26	AV
4874	51.38	-3.93	H	47.45	73.98	26.53	PK
4874	37.46	-3.93	H	33.53	53.98	20.45	AV
7311	51.67	4.97	H	56.64	73.98	17.34	PK
7311	37.72	4.97	H	42.69	53.98	11.29	AV

Band :	2.4 GHz
Operation Mode:	802.11 n
Transfer Rate:	6.5 Mbps
Operating Frequency	2462
Channel No.	11 Ch

Frequency [MHz]	Reading [dBuV/m]	AN.+CL-AMP G [dBm]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
4924	50.96	-3.75	V	47.21	73.98	26.77	PK
4924	37.18	-3.75	V	33.43	53.98	20.55	AV
7386	52.14	5.60	V	57.74	73.98	16.24	PK
7386	38.02	5.60	V	43.62	53.98	10.36	AV
4924	50.82	-3.75	H	47.07	73.98	26.91	PK
4924	37.15	-3.75	H	33.40	53.98	20.58	AV
7386	51.96	5.60	H	57.56	73.98	16.42	PK
7386	37.99	5.60	H	43.59	53.98	10.39	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 802.11n mode and all data rate. Worst data rate is the lowest data of each mode.
6. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.

Band : 5.8 GHz

Operation Mode: 802.11 a

Transfer Rate: 6 Mbps

Operating Frequency 5745 MHz

Channel No. 149 Ch

Frequency [MHz]	Reading [dBuV/m]	AN.+CL-AMP G [dBm]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
11490	42.08	11.22	V	53.30	73.98	20.68	PK
11490	36.38	11.22	V	47.60	53.98	6.38	AV
11490	43.15	11.22	H	54.37	73.98	19.61	PK
11490	37.85	11.22	H	49.07	53.98	4.91	AV

Band : 5.8 GHz

Operation Mode: 802.11 a

Transfer Rate: 6 Mbps

Operating Frequency 5785 MHz

Channel No. 157 Ch

Frequency [MHz]	Reading [dBuV/m]	AN.+CL-AMP G [dBm]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
11570	42.11	11.71	V	53.82	73.98	20.16	PK
11570	36.59	11.71	V	48.30	53.98	5.68	AV
11570	43.28	11.71	H	54.99	73.98	18.99	PK
11570	38.04	11.71	H	49.75	53.98	4.23	AV

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

Frequency [MHz]	Reading [dBuV/m]	AN.+CL-AMP G [dBm]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
11650	42.12	11.34	V	53.46	73.98	20.52	PK
11650	36.35	11.34	V	47.69	53.98	6.29	AV
11650	43.39	11.34	H	54.73	73.98	19.25	PK
11650	37.96	11.34	H	49.30	53.98	4.68	AV

Notes:

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

Band : 5.8 GHz

Operation Mode: 802.11 n_20 MHz BW

Transfer Rate: 6.5 Mbps

Operating Frequency 5745 MHz

Channel No. 149 Ch

Frequency [MHz]	Reading [dBuV/m]	AN.+CL-AMP G [dBm]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
11490	42.11	11.22	V	53.33	73.98	20.65	PK
11490	36.51	11.22	V	47.73	53.98	6.25	AV
11490	43.20	11.22	H	54.42	73.98	19.56	PK
11490	37.85	11.22	H	49.07	53.98	4.91	AV

Band : 5.8 GHz

Operation Mode: 802.11 n_20 MHz BW

Transfer Rate: 6.5 Mbps

Operating Frequency 5785 MHz

Channel No. 157 Ch

Frequency [MHz]	Reading [dBuV/m]	AN.+CL-AMP G [dBm]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
11570	42.15	11.71	V	53.86	73.98	20.12	PK
11570	37.12	11.71	V	48.83	53.98	5.15	AV
11570	43.67	11.71	H	55.38	73.98	18.60	PK
11570	38.24	11.71	H	49.95	53.98	4.03	AV

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

Frequency [MHz]	Reading [dBuV/m]	AN.+CL-AMP G [dBm]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
11650	42.31	11.34	V	53.65	73.98	20.33	PK
11650	36.95	11.34	V	48.29	53.98	5.69	AV
11650	43.82	11.34	H	55.16	73.98	18.82	PK
11650	38.12	11.34	H	49.46	53.98	4.52	AV

Notes:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.
3. Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
4. Total = Reading Value + Antenna Factor + Cable Loss - Amp Gain
5. We have done 802.11n_20 MHz BW mode and all data rate. Worst data rate is the lowest data of each mode
6. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna

Band : 5.8 GHz

Operation Mode: 802.11 ac_20 MHz BW

Transfer Rate: 6.5 Mbps

Operating Frequency 5745 MHz

Channel No. 149 Ch

Frequency [MHz]	Reading [dBuV/m]	AN.+CL-AMP G [dBm]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
11490	42.01	11.22	V	53.23	73.98	20.75	PK
11490	36.85	11.22	V	48.07	53.98	5.91	AV
11490	43.82	11.22	H	55.04	73.98	18.94	PK
11490	38.12	11.22	H	49.34	53.98	4.64	AV

Band : 5.8 GHz

Operation Mode: 802.11 ac_20 MHz BW

Transfer Rate: 6.5 Mbps

Operating Frequency 5785 MHz

Channel No. 157 Ch

Frequency [MHz]	Reading [dBuV/m]	AN.+CL-AMP G [dBm]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
11570	42.12	11.71	V	53.83	73.98	20.15	PK
11570	36.97	11.71	V	48.68	53.98	5.30	AV
11570	43.53	11.71	H	55.24	73.98	18.74	PK
11570	38.28	11.71	H	49.99	53.98	3.99	AV

Band :	5.8 GHz
Operation Mode:	802.11 ac_20 MHz BW
Transfer Rate:	6.5 Mbps
Operating Frequency	5825 MHz
Channel No.	165 Ch

Frequency [MHz]	Reading [dBuV/m]	AN.+CL-AMP G [dBm]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
11650	41.95	11.34	V	53.29	73.98	20.69	PK
11650	36.45	11.34	V	47.79	53.98	6.19	AV
11650	43.61	11.34	H	54.95	73.98	19.03	PK
11650	37.95	11.34	H	49.29	53.98	4.69	AV

Notes:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.
3. Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
4. Total = Reading Value + Antenna Factor + Cable Loss - Amp Gain
5. We have done 802.11ac mode and all data rate. Worst data rate is the lowest data of each mode
6. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna
7. In case of 802.11ac, we applied the limit of spurious emissions according to KDB 644545 D01 Alternative Guidance for 802.11ac v01.



With wiress charge pad

Above 1 GHz

Band :	2.4 GHz
Operation Mode:	802.11 b
Transfer Rate:	1 Mbps
Operating Frequency	2412
Channel No.	01 Ch

Frequency [MHz]	Reading [dBuV/m]	AN.+CL-AMP G [dBm]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
4824	51.58	-4.25	V	47.33	73.98	26.65	PK
4824	38.39	-4.25	V	34.14	53.98	19.84	AV
7236	52.22	5.21	V	57.43	73.98	16.55	PK
7236	38.35	5.21	V	43.56	53.98	10.42	AV
4824	52.62	-4.25	H	48.37	73.98	25.61	PK
4824	38.95	-4.25	H	34.70	53.98	19.28	AV
7236	52.63	5.21	H	57.84	73.98	16.14	PK
7236	38.40	5.21	H	43.61	53.98	10.37	AV

Band :	2.4 GHz
Operation Mode:	802.11 b
Transfer Rate:	1 Mbps
Operating Frequency	2437
Channel No.	06 Ch

Frequency [MHz]	Reading [dBuV/m]	AN.+CL-AMP G [dBm]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
4874	51.77	-3.93	V	47.84	73.98	26.14	PK
4874	37.83	-3.93	V	33.90	53.98	20.08	AV
7311	52.27	4.97	V	57.24	73.98	16.74	PK
7311	37.94	4.97	V	42.91	53.98	11.07	AV
4874	51.94	-3.93	H	48.01	73.98	25.97	PK
4874	38.00	-3.93	H	34.07	53.98	19.91	AV
7311	52.58	4.97	H	57.55	73.98	16.43	PK
7311	37.98	4.97	H	42.95	53.98	11.03	AV

Band :	2.4 GHz
Operation Mode:	802.11 b
Transfer Rate:	1 Mbps
Operating Frequency	2462
Channel No.	11 Ch

Frequency [MHz]	Reading [dBuV/m]	AN.+CL-AMP G [dBm]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
4924	51.08	-3.75	V	47.33	73.98	26.65	PK
4924	37.30	-3.75	V	33.55	53.98	20.43	AV
7386	52.31	5.60	V	57.91	73.98	16.07	PK
7386	38.15	5.60	V	43.75	53.98	10.23	AV
4924	51.30	-3.75	H	47.55	73.98	26.43	PK
4924	37.31	-3.75	H	33.56	53.98	20.42	AV
7386	52.41	5.60	H	58.01	73.98	15.97	PK
7386	38.24	5.60	H	43.84	53.98	10.14	AV

Notes:

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

Band : 2.4 GHz

Operation Mode: 802.11 g

Transfer Rate: 6 Mbps

Operating Frequency 2412

Channel No. 01 Ch

Frequency [MHz]	Reading [dBuV/m]	AN.+CL-AMP G [dBm]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
4824	52.76	-4.25	V	48.51	73.98	25.47	PK
4824	38.24	-4.25	V	33.99	53.98	19.99	AV
7236	52.13	5.21	V	57.34	73.98	16.64	PK
7236	38.24	5.21	V	43.45	53.98	10.53	AV
4824	53.23	-4.25	H	48.98	73.98	25.00	PK
4824	38.32	-4.25	H	34.07	53.98	19.91	AV
7236	52.24	5.21	H	57.45	73.98	16.53	PK
7236	38.39	5.21	H	43.60	53.98	10.38	AV

Band : 2.4 GHz

Operation Mode: 802.11 g

Transfer Rate: 6 Mbps

Operating Frequency 2437

Channel No. 06 Ch

Frequency [MHz]	Reading [dBuV/m]	AN.+CL-AMP G [dBm]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
4874	51.88	-3.93	V	47.95	73.98	26.03	PK
4874	37.82	-3.93	V	33.89	53.98	20.09	AV
7311	51.75	4.97	V	56.72	73.98	17.26	PK
7311	37.92	4.97	V	42.89	53.98	11.09	AV
4874	52.06	-3.93	H	48.13	73.98	25.85	PK
4874	37.89	-3.93	H	33.96	53.98	20.02	AV
7311	52.66	4.97	H	57.63	73.98	16.35	PK
7311	37.95	4.97	H	42.92	53.98	11.06	AV

Band :	2.4 GHz
Operation Mode:	802.11 g
Transfer Rate:	6 Mbps
Operating Frequency	2462
Channel No.	11 Ch

Frequency [MHz]	Reading [dBuV/m]	AN.+CL-AMP G [dBm]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
4924	51.08	-3.75	V	47.33	73.98	26.65	PK
4924	37.33	-3.75	V	33.58	53.98	20.40	AV
7386	52.41	5.60	V	58.01	73.98	15.97	PK
7386	38.15	5.60	V	43.75	53.98	10.23	AV
4924	51.36	-3.75	H	47.61	73.98	26.37	PK
4924	37.36	-3.75	H	33.61	53.98	20.37	AV
7386	52.73	5.60	H	58.33	73.98	15.65	PK
7386	38.23	5.60	H	43.83	53.98	10.15	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 802.11g mode and all data rate. Worst data rate is the lowest data of each mode.
6. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.

Band : 2.4 GHz

Operation Mode: 802.11 n

Transfer Rate: 6.5 Mbps

Operating Frequency 2412

Channel No. 01 Ch

Frequency [MHz]	Reading [dBuV/m]	AN.+CL-AMP G [dBm]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
4824	52.25	-4.25	V	48.00	73.98	25.98	PK
4824	38.32	-4.25	V	34.07	53.98	19.91	AV
7236	52.11	5.21	V	57.32	73.98	16.66	PK
7236	38.14	5.21	V	43.35	53.98	10.63	AV
4824	52.33	-4.25	H	48.08	73.98	25.90	PK
4824	38.33	-4.25	H	34.08	53.98	19.90	AV
7236	52.34	5.21	H	57.55	73.98	16.43	PK
7236	38.29	5.21	H	43.50	53.98	10.48	AV

Band : 2.4 GHz

Operation Mode: 802.11 n

Transfer Rate: 6.5 Mbps

Operating Frequency 2437

Channel No. 06 Ch

Frequency [MHz]	Reading [dBuV/m]	AN.+CL-AMP G [dBm]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
4874	51.86	-3.93	V	47.93	73.98	26.05	PK
4874	37.73	-3.93	V	33.80	53.98	20.18	AV
7311	52.14	4.97	V	57.11	73.98	16.87	PK
7311	37.92	4.97	V	42.89	53.98	11.09	AV
4874	51.90	-3.93	H	47.97	73.98	26.01	PK
4874	37.84	-3.93	H	33.91	53.98	20.07	AV
7311	52.33	4.97	H	57.30	73.98	16.68	PK
7311	37.96	4.97	H	42.93	53.98	11.05	AV

Band :	2.4 GHz
Operation Mode:	802.11 n
Transfer Rate:	6.5 Mbps
Operating Frequency	2462
Channel No.	11 Ch

Frequency [MHz]	Reading [dBuV/m]	AN.+CL-AMP G [dBm]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
4924	51.22	-3.75	V	47.47	73.98	26.51	PK
4924	37.35	-3.75	V	33.60	53.98	20.38	AV
7386	52.21	5.60	V	57.81	73.98	16.17	PK
7386	38.20	5.60	V	43.80	53.98	10.18	AV
4924	51.54	-3.75	H	47.79	73.98	26.19	PK
4924	37.36	-3.75	H	33.61	53.98	20.37	AV
7386	52.26	5.60	H	57.86	73.98	16.12	PK
7386	38.28	5.60	H	43.88	53.98	10.10	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 802.11n mode and all data rate. Worst data rate is the lowest data of each mode.
6. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.

Band : 5.8 GHz

Operation Mode: 802.11 a

Transfer Rate: 6 Mbps

Operating Frequency 5745 MHz

Channel No. 149 Ch

Frequency [MHz]	Reading [dBuV/m]	AN.+CL-AMP G [dBm]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
11490	46.99	11.22	V	58.21	73.98	15.77	PK
11490	38.21	11.22	V	49.43	53.98	4.55	AV
11490	44.81	11.22	H	56.03	73.98	17.95	PK
11490	36.43	11.22	H	47.65	53.98	6.33	AV

Band : 5.8 GHz

Operation Mode: 802.11 a

Transfer Rate: 6 Mbps

Operating Frequency 5785 MHz

Channel No. 157 Ch

Frequency [MHz]	Reading [dBuV/m]	AN.+CL-AMP G [dBm]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
11570	47.02	11.71	V	58.73	73.98	15.25	PK
11570	38.63	11.71	V	50.34	53.98	3.64	AV
11570	45.18	11.71	H	56.89	73.98	17.09	PK
11570	36.51	11.71	H	48.22	53.98	5.76	AV

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

Frequency [MHz]	Reading [dBuV/m]	AN.+CL-AMP G [dBm]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
11650	46.25	11.34	V	57.59	73.98	16.39	PK
11650	38.28	11.34	V	49.62	53.98	4.36	AV
11650	44.81	11.34	H	56.15	73.98	17.83	PK
11650	36.72	11.34	H	48.06	53.98	5.92	AV

Notes:

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

Band : 5.8 GHz

Operation Mode: 802.11 n_20 MHz BW

Transfer Rate: 6.5 Mbps

Operating Frequency 5745 MHz

Channel No. 149 Ch

Frequency [MHz]	Reading [dBuV/m]	AN.+CL-AMP G [dBm]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
11490	46.26	11.22	V	57.48	73.98	16.50	PK
11490	38.16	11.22	V	49.38	53.98	4.60	AV
11490	44.09	11.22	H	55.31	73.98	18.67	PK
11490	36.28	11.22	H	47.50	53.98	6.48	AV

Band : 5.8 GHz

Operation Mode: 802.11 n_20 MHz BW

Transfer Rate: 6.5 Mbps

Operating Frequency 5785 MHz

Channel No. 157 Ch

Frequency [MHz]	Reading [dBuV/m]	AN.+CL-AMP G [dBm]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
11570	45.64	11.71	V	57.35	73.98	16.63	PK
11570	38.58	11.71	V	50.29	53.98	3.69	AV
11570	44.28	11.71	H	55.99	73.98	17.99	PK
11570	36.29	11.71	H	48.00	53.98	5.98	AV

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

Frequency [MHz]	Reading [dBuV/m]	AN.+CL-AMP G [dBm]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
11650	45.17	11.34	V	56.51	73.98	17.47	PK
11650	38.58	11.34	V	49.92	53.98	4.06	AV
11650	43.85	11.34	H	55.19	73.98	18.79	PK
11650	36.18	11.34	H	47.52	53.98	6.46	AV

Notes:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.
3. Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
4. Total = Reading Value + Antenna Factor + Cable Loss - Amp Gain
5. We have done 802.11n_20 MHz BW mode and all data rate. Worst data rate is the lowest data of each mode
6. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna

Band : 5.8 GHz

Operation Mode: 802.11 n_40 MHz BW

Transfer Rate: 13.5 Mbps

Operating Frequency 5755 MHz

Channel No. 151 Ch

Frequency [MHz]	Reading [dBuV/m]	AN.+CL-AMP G [dBm]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
11510	45.41	11.53	V	56.94	73.98	17.04	PK
11510	37.25	11.53	V	48.78	53.98	5.20	AV
11510	43.25	11.53	H	54.78	73.98	19.20	PK
11510	35.88	11.53	H	47.41	53.98	6.57	AV

Band : 5.8 GHz

Operation Mode: 802.11 n_40 MHz BW

Transfer Rate: 13.5 Mbps

Operating Frequency 5795 MHz

Channel No. 159 Ch

Frequency [MHz]	Reading [dBuV/m]	AN.+CL-AMP G [dBm]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
11590	46.74	11.64	V	58.38	73.98	15.60	PK
11590	38.21	11.64	V	49.85	53.98	4.13	AV
11590	43.87	11.64	H	55.51	73.98	18.47	PK
11590	36.23	11.64	H	47.87	53.98	6.11	AV

Notes:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.
3. Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
4. Total = Reading Value + Antenna Factor + Cable Loss - Amp Gain
5. We have done 802.11n_40 MHz BW mode and all data rate. Worst data rate is the lowest data of each mode
6. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.

Band : 5.8 GHz

Operation Mode: 802.11 ac_20 MHz BW

Transfer Rate: 6.5 Mbps

Operating Frequency 5745 MHz

Channel No. 149 Ch

Frequency [MHz]	Reading [dBuV/m]	AN.+CL-AMP G [dBm]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
11490	45.67	11.22	V	56.89	73.98	17.09	PK
11490	38.05	11.22	V	49.27	53.98	4.71	AV
11490	42.85	11.22	H	54.07	73.98	19.91	PK
11490	36.02	11.22	H	47.24	53.98	6.74	AV

Band : 5.8 GHz

Operation Mode: 802.11 ac_20 MHz BW

Transfer Rate: 6.5 Mbps

Operating Frequency 5785 MHz

Channel No. 157 Ch

Frequency [MHz]	Reading [dBuV/m]	AN.+CL-AMP G [dBm]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
11570	45.42	11.71	V	57.13	73.98	16.85	PK
11570	38.64	11.71	V	50.35	53.98	3.63	AV
11570	43.12	11.71	H	54.83	73.98	19.15	PK
11570	36.12	11.71	H	47.83	53.98	6.15	AV

Band :	5.8 GHz
Operation Mode:	802.11 ac_20 MHz BW
Transfer Rate:	6.5 Mbps
Operating Frequency	5825 MHz
Channel No.	165 Ch

Frequency [MHz]	Reading [dBuV/m]	AN.+CL-AMP G [dBm]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
11650	45.46	11.34	V	56.80	73.98	17.18	PK
11650	38.55	11.34	V	49.89	53.98	4.09	AV
11650	43.16	11.34	H	54.50	73.98	19.48	PK
11650	36.28	11.34	H	47.62	53.98	6.36	AV

Notes:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.
3. Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
4. Total = Reading Value + Antenna Factor + Cable Loss - Amp Gain
5. We have done 802.11ac mode and all data rate. Worst data rate is the lowest data of each mode
6. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna
7. In case of 802.11ac, we applied the limit of spurious emissions according to KDB 644545 D01 Alternative Guidance for 802.11ac v01.

Band : 5.8 GHz

Operation Mode: 802.11 ac_40 MHz BW

Transfer Rate: MCS0

Operating Frequency 5755 MHz

Channel No. 151 Ch

Frequency [MHz]	Reading [dBuV/m]	AN.+CL-AMP G [dBm]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
11510	45.24	11.53	V	56.77	73.98	17.21	PK
11510	37.01	11.53	V	48.54	53.98	5.44	AV
11510	43.81	11.53	H	55.34	73.98	18.64	PK
11510	35.51	11.53	H	47.04	53.98	6.94	AV

Band : 5.8 GHz

Operation Mode: 802.11 ac_40 MHz BW

Transfer Rate: MCS0

Operating Frequency 5795 MHz

Channel No. 159 Ch

Frequency [MHz]	Reading [dBuV/m]	AN.+CL-AMP G [dBm]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
11590	46.59	11.64	V	58.23	73.98	15.75	PK
11590	38.14	11.64	V	49.78	53.98	4.20	AV
11590	45.12	11.64	H	56.76	73.98	17.22	PK
11590	36.25	11.64	H	47.89	53.98	6.09	AV

Band :	UNII 4
Operation Mode:	802.11 ac _80 MHz BW
Transfer Rate:	MCS0
Operating Frequency	5775 MHz
Channel No.	155 Ch

Frequency [MHz]	Reading [dBuV/m]	AN.+CL-AMP G [dBm]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
11550	46.78	11.50	V	58.28	73.98	15.70	PK
11550	37.92	11.50	V	49.42	53.98	4.56	AV
11550	44.92	11.50	H	56.42	73.98	17.56	PK
11550	35.48	11.50	H	46.98	53.98	7.00	AV

Notes:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.
3. Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
4. Total = Reading Value + Antenna Factor + Cable Loss - Amp Gain
5. We have done 802.11ac mode and all data rate. Worst data rate is the lowest data of each mode
6. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna
7. In case of 802.11ac, we applied the limit of spurious emissions according to KDB 644545 D01 Alternative Guidance for 802.11ac v01.

8.6.2 RADIATED RESTRICTED BAND EDGES

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

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement. Attenuation below the general limits specified in Section 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in section 15.209(a) (See section 15.205(c)).

Stand alone

Band :	2.4 GHz
Operation Mode:	802.11g
Transfer Rate:	6 Mbps
Operating Frequency	2412 MHz, 2462 MHz
Channel No.	01 Ch, 11 Ch

Frequency [MHz]	Reading [dBuV/m]	AN.+CL [dBm]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
2390.0	31.68	33.90	H	65.58	73.98	8.40	PK
2390.0	13.33	33.90	H	47.23	53.98	6.75	AV
2390.0	26.64	33.90	V	60.54	73.98	13.44	PK
2390.0	11.88	33.90	V	45.78	53.98	8.20	AV
2483.5	27.56	33.99	H	61.55	73.98	12.43	PK
2483.5	12.71	33.99	H	46.70	53.98	7.28	AV
2483.5	25.49	33.99	V	59.48	73.98	14.50	PK
2483.5	11.66	33.99	V	45.65	53.98	8.33	AV

Band : 2.4 GHz
 Operation Mode: 802.11b
 Transfer Rate: 1 Mbps
 Operating Frequency 2412 MHz, 2462 MHz
 Channel No. 01 Ch, 11 Ch

Frequency [MHz]	Reading [dBuV/m]	AN.+CL [dBm]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
2390.0	25.29	33.90	H	59.19	73.98	14.79	PK
2390.0	11.96	33.90	H	45.86	53.98	8.12	AV
2390.0	25.11	33.90	V	59.01	73.98	14.97	PK
2390.0	11.85	33.90	V	45.75	53.98	8.23	AV
2483.5	25.28	33.99	H	59.27	73.98	14.71	PK
2483.5	12.05	33.99	H	46.04	53.98	7.94	AV
2483.5	24.89	33.99	V	58.88	73.98	15.10	PK
2483.5	11.46	33.99	V	45.45	53.98	8.53	AV

Band : 2.4 GHz
 Operation Mode: 802.11n
 Transfer Rate: 6.5 Mbps
 Operating Frequency 2412 MHz, 2462 MHz
 Channel No. 01 Ch, 11 Ch

Frequency [MHz]	Reading [dBuV/m]	AN.+CL [dBm]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
2390.0	31.58	33.90	H	65.48	73.98	8.50	PK
2390.0	12.94	33.90	H	46.84	53.98	7.14	AV
2390.0	26.11	33.90	V	60.01	73.98	13.97	PK
2390.0	11.86	33.90	V	45.76	53.98	8.22	AV
2483.5	28.50	33.99	H	62.49	73.98	11.49	PK
2483.5	12.32	33.99	H	46.31	53.98	7.67	AV
2483.5	26.41	33.99	V	60.40	73.98	13.58	PK
2483.5	13.15	33.99	V	47.14	53.98	6.84	AV

Band: 5.8 GHz

Operation Mode: 802.11ac_20 MHz

Transfer Rate: 6.5 Mbps

Operating Frequency: 5825 MHz

Channel No. 165 Ch

Frequency [MHz]	Reading dBuV	AN.+CL-Amp Gain [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
*5850	58.24	0.94	H	59.18	73.98	14.80	PK
*5850	58.59	0.94	V	59.53	73.98	14.45	PK

Band: 5.8 GHz

Operation Mode: 802.11ac_40 MHz

Transfer Rate: 13.5 Mbps

Operating Frequency: 5795 MHz

Channel No. 159 Ch

Frequency [MHz]	Reading dBuV	AN.+CL-Amp Gain [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
*5850	54.46	0.94	H	55.40	73.98	18.58	PK
*5850	54.89	0.94	V	55.83	73.98	18.15	PK

Band: 5.8 GHz

Operation Mode: 802.11ac_80 MHz

Transfer Rate: 29.3 Mbps

Operating Frequency: 5775 MHz

Channel No. 155 Ch

Frequency [MHz]	Reading dBuV	AN.+CL-Amp Gain [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
*5850	59.41	0.94	H	60.35	73.98	13.63	PK
*5850	59.58	0.94	V	60.52	73.98	13.46	PK

Notes:

1. Total = Reading Value + Antenna Factor + Cable Loss
2. We have done 802.11b/g/n/ac mode and all data rate. Worst data rate is the lowest data of each mode.



3. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.
4. In case of 5.8 GHz band 802.11ac, we applied the limit of spurious emissions according to KDB 644545 D01 Alternative Guidance for 802.11ac v01.
5. “*” is radiated band edge test frequency(not restricted band emissions).

FCC PT.15.247 TEST REPORT		FCC CERTIFICATION REPORT		www.hct.co.kr
Test Report No. HCT-R-1405-F018-1	Date of Issue: May 29, 2014	EUT Type: Cellular/PCS GSM/GPRS/EDGE/WCDMA/HSDPA/HSUPA/LTE Phone with Bluetooth, WLAN, NFC		FCC ID: ZNFD855P

With wiress charge pad

Band :	2.4 GHz
Operation Mode:	802.11g
Transfer Rate:	6 Mbps
Operating Frequency	2412 MHz, 2462 MHz
Channel No.	01 Ch, 11 Ch

Frequency [MHz]	Reading [dBuV/m]	AN.+CL [dBm]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
2390.0	31.11	33.90	H	65.01	73.98	8.97	PK
2390.0	12.53	33.90	H	46.43	53.98	7.55	AV
2390.0	25.26	33.90	V	59.16	73.98	14.82	PK
2390.0	11.80	33.90	V	45.70	53.98	8.28	AV
2483.5	26.41	33.99	H	60.40	73.98	13.58	PK
2483.5	12.08	33.99	H	46.07	53.98	7.91	AV
2483.5	24.77	33.99	V	58.76	73.98	15.22	PK
2483.5	11.21	33.99	V	45.20	53.98	8.78	AV

Band :	2.4 GHz
Operation Mode:	802.11b
Transfer Rate:	1 Mbps
Operating Frequency	2412 MHz, 2462 MHz
Channel No.	01 Ch, 11 Ch

Frequency [MHz]	Reading [dBuV/m]	AN.+CL [dBm]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
2390.0	25.24	33.90	H	59.14	73.98	14.84	PK
2390.0	11.79	33.90	H	45.69	53.98	8.29	AV
2390.0	25.77	33.90	V	59.67	73.98	14.31	PK
2390.0	11.89	33.90	V	45.79	53.98	8.19	AV
2483.5	24.57	33.99	H	58.56	73.98	15.42	PK
2483.5	11.40	33.99	H	45.39	53.98	8.59	AV
2483.5	24.66	33.99	V	58.65	73.98	15.33	PK
2483.5	11.33	33.99	V	45.32	53.98	8.66	AV

Band : 2.4 GHz
 Operation Mode: 802.11n
 Transfer Rate: 6.5 Mbps
 Operating Frequency 2412 MHz, 2462 MHz
 Channel No. 01 Ch, 11 Ch

Frequency [MHz]	Reading [dBuV/m]	AN.+CL [dBm]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
2390.0	30.97	33.90	H	64.87	73.98	9.11	PK
2390.0	12.42	33.90	H	46.32	53.98	7.66	AV
2390.0	24.80	33.90	V	58.70	73.98	15.28	PK
2390.0	11.82	33.90	V	45.72	53.98	8.26	AV
2483.5	26.90	33.99	H	60.89	73.98	13.09	PK
2483.5	11.79	33.99	H	45.78	53.98	8.20	AV
2483.5	24.77	33.99	V	58.76	73.98	15.22	PK
2483.5	11.42	33.99	V	45.41	53.98	8.57	AV

Band: 5.8 GHz
 Operation Mode: 802.11ac_20 MHz
 Transfer Rate: 6.5 Mbps
 Operating Frequency 5825 MHz
 Channel No. 165 Ch

Frequency [MHz]	Reading dBuV	AN.+CL-Amp Gain [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
*5850	56.50	0.94	H	57.44	73.98	16.54	PK
*5850	55.91	0.94	V	56.85	73.98	17.13	PK

Band:	5.8 GHz
Operation Mode:	802.11ac_40 MHz
Transfer Rate:	13.5 Mbps
Operating Frequency	5795 MHz
Channel No.	159 Ch

Frequency [MHz]	Reading dBuV	AN.+CL-Amp Gain [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
*5850	55.37	0.94	H	56.31	73.98	17.67	PK
*5850	54.13	0.94	V	55.07	73.98	18.91	PK

Band:	5.8 GHz
Operation Mode:	802.11ac_80 MHz
Transfer Rate:	29.3 Mbps
Operating Frequency	5775 MHz
Channel No.	155 Ch

Frequency [MHz]	Reading dBuV	AN.+CL-Amp Gain [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
*5850	57.10	0.94	H	58.04	73.98	15.94	PK
*5850	56.61	0.94	V	57.55	73.98	16.43	PK

Notes:

1. Total = Reading Value + Antenna Factor + Cable Loss
2. We have done 802.11b/g/n/ac mode and all data rate. Worst data rate is the lowest data of each mode.
3. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.
4. In case of 5.8 GHz band 802.11ac, we applied the limit of spurious emissions according to KDB 644545 D01 Alternative Guidance for 802.11ac v01.
5. “*” is radiated band edge test frequency(not restricted band emissions).

8.7 POWERLINE CONDUCTED EMISSIONS

Test Requirements and limit, §15.207

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

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

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

Test Configuration

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

TEST PROCEDURE

1. The EUT is placed on a wooden table 80 cm above the reference ground plane.
2. The EUT is connected via LISN to a test power supply.
3. The measurement results are obtained as described below:
4. Detectors – Quasi Peak and Average Detector.
5. We are performed the AC Power Line Conducted Emission test for 11 Mbps, Ch.11 and 802.11b. Because 802.11b mode is worst case.

Stand alone

RESULT PLOTS

Conducted Emissions (Line 1)

EMI Auto Test(2)

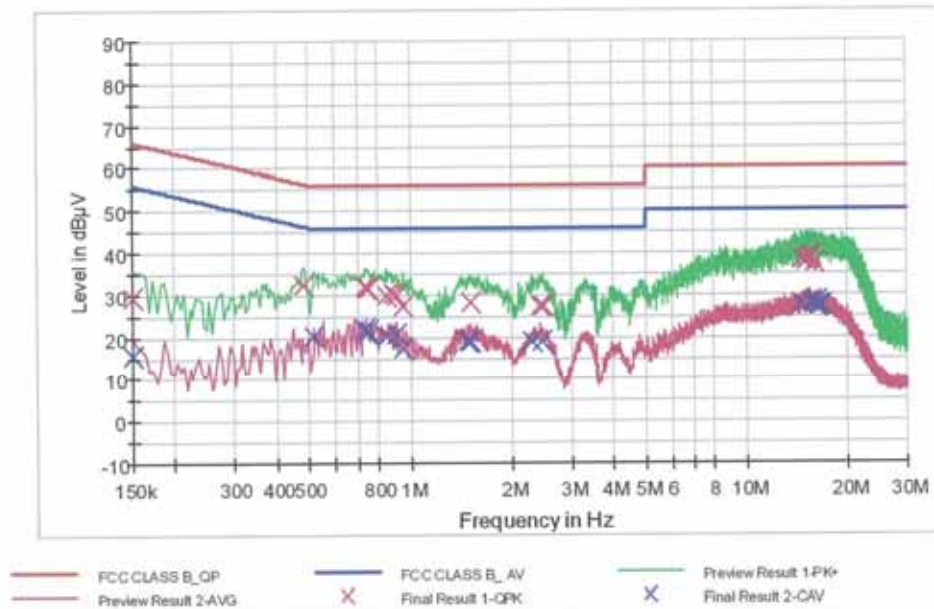
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HCT TEST Report

Common Information

EUT: LG-D855P
 Manufacturer: LG
 Test Site: SHIELD ROOM
 Operating Conditions: WLAN MODE
 Operator Name: KS KANG

FCC CLASS B



Final Result 1

Frequency (MHz)	QuasiPeak (dBμV)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.150000	29.6	9.000	Off	L1	9.7	36.4	66.0
0.483000	32.3	9.000	Off	L1	9.7	24.0	56.3
0.734000	32.1	9.000	Off	L1	9.7	23.9	56.0
0.743000	31.5	9.000	Off	L1	9.7	24.5	56.0
0.752000	31.4	9.000	Off	L1	9.7	24.6	56.0
0.846500	29.8	9.000	Off	L1	9.7	26.2	56.0
0.882500	30.4	9.000	Off	L1	9.7	25.6	56.0
0.905000	30.0	9.000	Off	L1	9.7	26.0	56.0
0.954500	27.6	9.000	Off	L1	9.7	28.4	56.0
1.512500	28.2	9.000	Off	L1	9.8	27.8	56.0
2.426000	27.6	9.000	Off	L1	9.9	28.4	56.0
2.484500	27.4	9.000	Off	L1	9.9	28.6	56.0
14.504000	38.4	9.000	Off	L1	10.6	21.6	60.0
14.963000	37.8	9.000	Off	L1	10.6	22.2	60.0
15.156500	38.9	9.000	Off	L1	10.7	21.1	60.0
15.174500	38.4	9.000	Off	L1	10.7	21.6	60.0

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EMI Auto Test(2)

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Frequency (MHz)	QuasiPeak (dBμV)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
15.566000	39.2	9.000	Off	L1	10.7	20.8	60.0
15.854000	37.4	9.000	Off	L1	10.7	22.6	60.0

Final Result 2

Frequency (MHz)	CAverage (dBμV)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.150000	15.5	9.000	Off	L1	9.7	40.5	56.0
0.518000	20.4	9.000	Off	L1	9.7	25.6	46.0
0.734000	21.9	9.000	Off	L1	9.7	24.1	46.0
0.743000	20.9	9.000	Off	L1	9.7	25.1	46.0
0.752000	21.6	9.000	Off	L1	9.7	24.4	46.0
0.846600	20.3	9.000	Off	L1	9.7	25.7	46.0
0.905000	20.8	9.000	Off	L1	9.7	25.2	46.0
0.954500	17.4	9.000	Off	L1	9.7	28.6	46.0
1.476500	19.1	9.000	Off	L1	9.8	26.9	46.0
1.512500	19.2	9.000	Off	L1	9.8	26.8	46.0
2.291000	19.0	9.000	Off	L1	9.9	27.0	46.0
2.471000	18.9	9.000	Off	L1	9.9	27.1	46.0
14.504000	27.7	9.000	Off	L1	10.6	22.3	50.0
15.566000	28.1	9.000	Off	L1	10.7	22.0	50.0
15.854000	27.6	9.000	Off	L1	10.7	22.4	50.0
16.133000	28.1	9.000	Off	L1	10.7	21.9	50.0
16.362500	27.6	9.000	Off	L1	10.7	22.4	50.0
16.596500	27.4	9.000	Off	L1	10.7	22.6	50.0

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Conducted Emissions (Line 2)

EMI Auto Test(2)

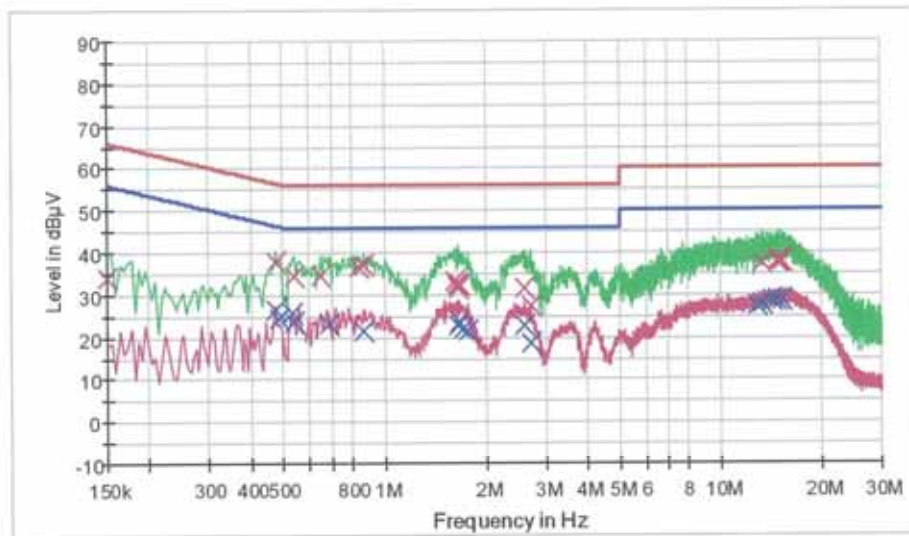
1 / 2

HCT TEST Report

Common Information

EUT: LG-D855P
 Manufacturer: LG
 Test Site: SHIELD ROOM
 Operating Conditions: WLAN MODE
 Operator Name: KS KANG

FCC CLASS B



— FCC CLASS B_QP — FCC CLASS B_AV — Preview Result 1-PK
 — Preview Result 2-AVG × Final Result 1-QPK × Final Result 2-CAV

Final Result 1

Frequency (MHz)	QuasiPeak (dBμV)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.150000	34.2	9.000	Off	N	9.7	31.8	66.0
0.478500	37.7	9.000	Off	N	9.7	18.7	56.4
0.540500	34.7	9.000	Off	N	9.7	21.3	56.0
0.648500	34.5	9.000	Off	N	9.7	21.5	56.0
0.842000	36.6	9.000	Off	N	9.8	19.4	56.0
0.869000	37.0	9.000	Off	N	9.8	19.0	56.0
1.616000	33.5	9.000	Off	N	9.8	22.5	56.0
1.629500	32.5	9.000	Off	N	9.8	23.5	56.0
1.656500	31.7	9.000	Off	N	9.8	24.3	56.0
1.665500	32.5	9.000	Off	N	9.8	23.5	56.0
2.615000	31.8	9.000	Off	N	9.9	24.2	56.0
2.709500	27.4	9.000	Off	N	9.9	28.6	56.0
13.235000	37.4	9.000	Off	N	10.5	22.6	60.0
14.783000	38.0	9.000	Off	N	10.6	22.0	60.0
14.832500	38.2	9.000	Off	N	10.6	21.8	60.0
14.850500	38.0	9.000	Off	N	10.6	22.0	60.0

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EMI Auto Test(2)

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Frequency (MHz)	QuasiPeak (dBµV)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
15.170000	38.0	9.000	Off	N	10.6	22.0	60.0
15.264500	37.9	9.000	Off	N	10.6	22.1	60.0

Final Result 2

Frequency (MHz)	CAverage (dBµV)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.474000	26.5	9.000	Off	N	9.7	19.9	46.4
0.487500	24.5	9.000	Off	N	9.7	21.7	46.2
0.531500	25.8	9.000	Off	N	9.7	20.2	46.0
0.540500	23.6	9.000	Off	N	9.7	22.4	46.0
0.684500	23.1	9.000	Off	N	9.7	22.9	46.0
0.869000	21.4	9.000	Off	N	9.8	24.6	46.0
1.656500	22.8	9.000	Off	N	9.8	23.2	46.0
1.665500	23.8	9.000	Off	N	9.8	22.2	46.0
1.701500	21.9	9.000	Off	N	9.8	24.1	46.0
1.764500	21.6	9.000	Off	N	9.8	24.4	46.0
2.615000	22.9	9.000	Off	N	9.9	23.1	46.0
2.709500	18.4	9.000	Off	N	9.9	27.6	46.0
12.780500	27.5	9.000	Off	N	10.5	22.5	50.0
13.235000	27.7	9.000	Off	N	10.5	22.3	50.0
14.189000	28.5	9.000	Off	N	10.6	21.5	50.0
14.783000	28.5	9.000	Off	N	10.6	21.5	50.0
15.170000	28.6	9.000	Off	N	10.6	21.4	50.0
15.264500	28.6	9.000	Off	N	10.6	21.4	50.0

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With wiress charge pad

RESULT PLOTS

Conducted Emissions (Line 1)

EMI Auto Test(2)

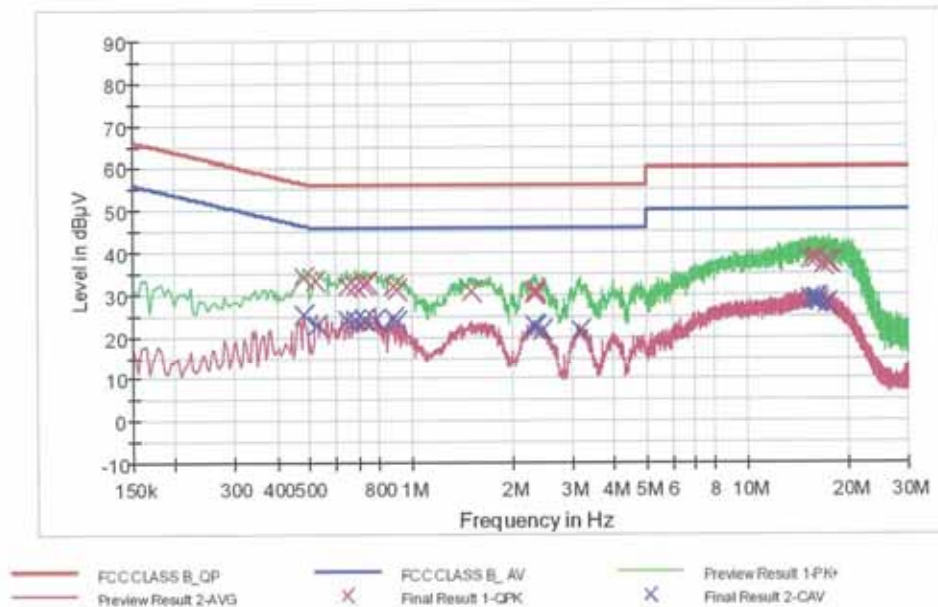
1 / 2

HCT TEST Report

Common Information

EUT: LG-D855P
 Manufacturer: LG (Wireless Charger)
 Test Site: SHIELD ROOM
 Operating Conditions: WLAN MODE (2.4G)
 Operator Name: KS KANG

FCC CLASS B



Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.483000	34.3	9.000	Off	L1	9.7	22.0	56.3
0.522500	33.2	9.000	Off	L1	9.7	22.8	56.0
0.644000	32.2	9.000	Off	L1	9.7	23.8	56.0
0.684500	32.0	9.000	Off	L1	9.7	24.0	56.0
0.720500	32.6	9.000	Off	L1	9.7	23.4	56.0
0.743000	32.9	9.000	Off	L1	9.7	23.1	56.0
0.882500	32.1	9.000	Off	L1	9.7	23.9	56.0
0.905000	31.4	9.000	Off	L1	9.7	24.6	56.0
1.503500	30.7	9.000	Off	L1	9.8	25.3	56.0
2.322500	30.5	9.000	Off	L1	9.9	25.5	56.0
2.336000	30.5	9.000	Off	L1	9.9	25.5	56.0
2.349500	31.0	9.000	Off	L1	9.9	25.0	56.0
15.431000	38.5	9.000	Off	L1	10.7	21.5	60.0
15.858500	38.2	9.000	Off	L1	10.7	21.8	60.0
16.097000	38.5	9.000	Off	L1	10.7	21.5	60.0
16.911500	37.2	9.000	Off	L1	10.7	22.8	60.0

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EMI Auto Test(2)

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Frequency (MHz)	QuasiPeak (dBμV)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
17.177000	37.7	9.000	Off	L1	10.8	22.3	60.0
17.609000	37.3	9.000	Off	L1	10.8	22.7	60.0

Final Result 2

Frequency (MHz)	CAverage (dBμV)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.483000	25.1	9.000	Off	L1	9.7	21.2	46.3
0.527000	22.8	9.000	Off	L1	9.7	23.2	46.0
0.644000	24.1	9.000	Off	L1	9.7	21.9	46.0
0.684500	24.1	9.000	Off	L1	9.7	21.9	46.0
0.720500	24.1	9.000	Off	L1	9.7	21.9	46.0
0.783500	23.8	9.000	Off	L1	9.7	22.2	46.0
0.882500	24.4	9.000	Off	L1	9.7	21.6	46.0
0.905000	23.5	9.000	Off	L1	9.7	22.5	46.0
2.327000	22.8	9.000	Off	L1	9.9	23.2	46.0
2.336000	22.5	9.000	Off	L1	9.9	23.5	46.0
2.453000	21.6	9.000	Off	L1	9.9	24.4	46.0
3.173000	21.5	9.000	Off	L1	10.0	24.5	46.0
15.431000	29.0	9.000	Off	L1	10.7	21.0	50.0
15.858500	28.9	9.000	Off	L1	10.7	21.1	50.0
15.962000	28.7	9.000	Off	L1	10.7	21.3	50.0
16.097000	29.0	9.000	Off	L1	10.7	21.0	50.0
16.349000	28.4	9.000	Off	L1	10.7	21.6	50.0
17.177000	27.8	9.000	Off	L1	10.8	22.2	50.0

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Conducted Emissions (Line 2)

EMI Auto Test(2)

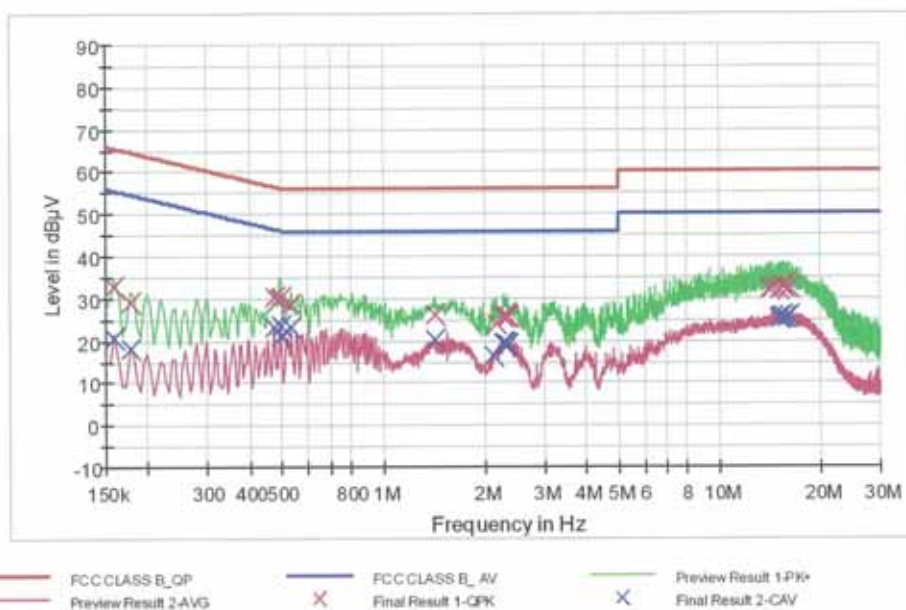
1 / 2

HCT TEST Report

Common Information

EUT: LG-D855P
 Manufacturer: LG (Wireless Charger)
 Test Site: SHIELD ROOM
 Operating Conditions: WLAN MODE (2.4G)
 Operator Name: KS KANG

FCC CLASS B



Final Result 1

Frequency (MHz)	QuasiPeak (dBμV)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.159000	32.8	9.000	Off	N	9.7	32.7	65.5
0.177000	29.1	9.000	Off	N	9.7	35.5	64.6
0.478500	30.4	9.000	Off	N	9.7	26.0	56.4
0.492000	30.1	9.000	Off	N	9.7	26.0	56.1
0.500000	30.5	9.000	Off	N	9.7	25.5	56.0
0.536000	28.5	9.000	Off	N	9.7	27.5	56.0
1.427000	26.1	9.000	Off	N	9.8	29.9	56.0
2.160500	24.2	9.000	Off	N	9.9	31.8	56.0
2.282000	25.8	9.000	Off	N	9.9	30.2	56.0
2.300000	26.2	9.000	Off	N	9.9	29.8	56.0
2.322500	25.6	9.000	Off	N	9.9	30.4	56.0
2.340500	25.8	9.000	Off	N	9.9	30.2	56.0
13.973000	32.0	9.000	Off	N	10.5	28.0	60.0
14.441000	32.2	9.000	Off	N	10.6	27.8	60.0
15.107000	32.0	9.000	Off	N	10.6	28.0	60.0
15.327500	32.7	9.000	Off	N	10.6	27.3	60.0

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Frequency (MHz)	QuasiPeak (dBμV)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
15.512000	32.8	9.000	Off	N	10.6	27.2	60.0
16.173500	32.3	9.000	Off	N	10.6	27.7	60.0

Final Result 2

Frequency (MHz)	CAverage (dBμV)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.159000	20.9	9.000	Off	N	9.7	34.6	55.5
0.177000	18.2	9.000	Off	N	9.7	36.4	54.6
0.478500	23.3	9.000	Off	N	9.7	23.1	46.4
0.496500	23.8	9.000	Off	N	9.7	22.3	46.1
0.500000	20.9	9.000	Off	N	9.7	25.1	46.0
0.536000	23.1	9.000	Off	N	9.7	22.9	46.0
1.427000	20.1	9.000	Off	N	9.8	25.9	46.0
2.115500	16.4	9.000	Off	N	9.9	29.6	46.0
2.282000	19.2	9.000	Off	N	9.9	26.8	46.0
2.300000	19.3	9.000	Off	N	9.9	26.7	46.0
2.322500	18.9	9.000	Off	N	9.9	27.1	46.0
2.340500	19.1	9.000	Off	N	9.9	26.9	46.0
15.107000	25.2	9.000	Off	N	10.6	24.8	50.0
15.269000	25.2	9.000	Off	N	10.6	24.8	50.0
15.327500	25.7	9.000	Off	N	10.6	24.3	50.0
15.341000	25.6	9.000	Off	N	10.6	24.4	50.0
15.795500	25.5	9.000	Off	N	10.6	24.5	50.0
16.173500	25.6	9.000	Off	N	10.6	24.4	50.0

9. LIST OF TEST EQUIPMENT

9.1 LIST OF TEST EQUIPMENT(Conducted Test)

Manufacturer	Model / Equipment	Calibration Date	Calibration Interval	Calibration Due	Serial No.
Rohde & Schwarz	ENV216/ LISN	01/29/2014	Annual	01/29/2015	100073
Agilent	E4440A/ Spectrum Analyzer	04/09/2014	Annual	04/09/2015	US45303008
Agilent	N9020A/ SIGNAL ANALYZER	05/23/2014	Annual	05/23/2015	MY51110063
Agilent	N1911A/Power Meter	01/24/2014	Annual	01/24/2015	MY45100523
Agilent	N1921A /POWER SENSOR	07/11/2013	Annual	07/11/2014	MY45241059
Hewlett Packard	11636B/Power Divider	10/22/2013	Annual	10/22/2014	11377
Agilent	87300B/Directional Coupler	12/18/2013	Annual	12/18/2014	3116A03621
Hewlett Packard	11667B / Power Splitter	05/29/2013	Annual	05/29/2014	05001
DIGITAL	EP-3010 /DC POWER SUPPLY	10/29/2013	Annual	10/29/2014	3110117
ITECH	IT6720 / DC POWER SUPPLY	11/05/2013	Annual	11/05/2014	0100021562870011 99
TESCOM	TC-3000C / BLUETOOTH TESTER	04/24/2014	Annual	04/24/2015	3000C000276
Rohde & Schwarz	CBT / BLUETOOTH TESTER	05/07/2014	Annual	05/07/2015	100422
Agilent	8493C / Attenuator(10 dB)	07/24/2013	Annual	07/24/2014	76649
WEINSCHEL	2-3 / Attenuator(3 dB)	10/28/2013	Annual	10/28/2014	BR0617

Note: This equipment (E4440A/ Spectrum Analyzer) is used after 04/09/2014 and actual calibration date is 04/09/2014

This equipment (TC-3000C / BLUETOOTH TESTER) is used after 04/24/2014 and actual calibration date is 04/24/2014

This equipment (CBT / BLUETOOTH TESTER) is used after 05/07/2014 and actual calibration date is 05/07/2014

9.2 LIST OF TEST EQUIPMENT(Radiated Test)

Manufacturer	Model / Equipment	Calibration Date	Calibration Interval	Calibration Due	Serial No.
Schwarzbeck	VULB 9160/ TRILOG Antenna	12/17/2012	Biennial	12/17/2014	3150
Rohde & Schwarz	ESCI / EMI TEST RECEIVER	01/24/2014	Annual	01/24/2015	100584
HD	MA240/ Antenna Position Tower	N/A	N/A	N/A	556
EMCO	1050/ Turn Table	N/A	N/A	N/A	114
HD GmbH	HD 100/ Controller	N/A	N/A	N/A	13
HD GmbH	KMS 560/ SlideBar	N/A	N/A	N/A	12
Rohde & Schwarz	SCU-18/ Signal Conditioning Unit	09/10/2013	Annual	09/10/2014	10094
CERNEX	CBL18265035 / POWER AMP	07/24/2013	Annual	07/24/2014	22966
CERNEX	CBL26405040 / POWER AMP	04/04/2014	Annual	04/04/2015	19660
Schwarzbeck	BBHA 9120D/ Horn Antenna	07/05/2013	Biennial	07/05/2015	1151
Schwarzbeck	BBHA9170 / Horn Antenna(15 GHz ~ 40 GHz)	10/30/2012	Biennial	10/30/2014	BBHA9170124
Rohde & Schwarz	FSP / Spectrum Analyzer	01/24/2014	Annual	01/24/2015	839117/011
Wainwright Instrument	WHF3.0/18G-10EF / High Pass Filter	02/03/2014	Annual	02/03/2015	F6
Wainwright Instrument	WHNX6.0/26.5G-6SS / High Pass Filter	04/09/2014	Annual	04/09/2015	1
Wainwright Instrument	WHNX7.0/18G-8SS / High Pass Filter	04/04/2014	Annual	04/04/2015	29
Wainwright Instrument	WRCJ2400/2483.5-2370/2520-60/14SS / Band Reject Filter	06/24/2013	Annual	06/24/2014	1
TESCOM	TC-3000C / BLUETOOTH TESTER	04/24/2014	Annual	04/24/2015	3000C000276
Rohde & Schwarz	CBT / BLUETOOTH TESTER	05/07/2014	Annual	05/07/2015	100422
Rohde & Schwarz	LOOP ANTENNA	08/14/2012	Biennial	08/14/2014	100179
CERNEX	CBL06185030 / POWER AMP	07/24/2013	Annual	07/24/2014	22965
CERNEX	CBLU1183540 / POWER AMP	07/24/2013	Annual	07/24/2014	22964

Note:

This equipment (WHNX6.0/26.5G-6SS / High Pass Filter) is used after 04/09/2014 and actual calibration date is 04/09/2014

This equipment (TC-3000C / BLUETOOTH TESTER) is used after 04/24/2014 and actual calibration date is 04/24/2014

This equipment (CBT / BLUETOOTH TESTER) is used after 05/07/2014 and actual calibration date is 05/07/2014