

HCT CO., LTD.

CERTIFICATE OF COMPLIANCE FCC Class II Permissive Change

Applicant Name: LG Electronics MobileComm U.S.A., Inc.	Date of Issue: August 01, 2013
Address: 1000 Sylvan Avenue, Englewood Cliffs NJ 07632	Test Site/Location: HCT CO., LTD., 105-1, Jangam-ri, Majang-Myeon, Icheon-si, Kyunggi-Do, Korea
	Report No.: HCTR1308FR10
	HCT FRN: 0005866421

FCC ID : ZNFVS980

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

FCC Model(s): LG-VS980
EUT Type: GSM/WCDMA/CDMA/LTE Phone Bluetooth, WLAN and NFC
Frequency Range: 20 MHz BW: 5180 MHz - 5240 MHz (UNII 1)/ 5260 MHz - 5320 MHz (UNII 2)/
5500 MHz - 5700 MHz (UNII 2e)
40 MHz BW: 5190 MHz - 5230 MHz (UNII 1)/ 5270 MHz - 5310 MHz (UNII 2)/
5510 MHz - 5670 MHz (UNII 2e)
80 MHz BW: 5210 MHz(UNII 1)/ 5290 MHz(UNII 2)/ 5530 MHz - 5690 MHz(UNII 2e)
Modulation type OFDM
FCC Classification: Unlicensed National Information Infrastructure(UNII)
FCC Rule Part(s): Part 15.407

Engineering Statement:

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

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



Report prepared by
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Approved by
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FCC PT.15.247 TEST REPORT	FCC Class II Permissive Change REPORT		www.hct.co.kr
Test Report No. HCTR1308FR10	Date of Issue: August 01, 2013	EUT Type: GSM/WCDMA/CDMA/LTE Phone Bluetooth, WLAN and NFC	FCC ID: ZNFVS980

Version

TEST REPORT NO.	DATE	DESCRIPTION
HCTR1308FR10	August 01, 2013	- First Approval Report

Table of Contents

1. GENERAL INFORMATION	4
2. EUT DESCRIPTION	4
3. TEST METHODOLOGY	5
3.1 EUT CONFIGURATION	5
3.2 EUT EXERCISE	5
3.3 GENERAL TEST PROCEDURES	5
3.4 DESCRIPTION OF TEST MODES	5
4. INSTRUMENT CALIBRATION.....	6
5. FACILITIES AND ACCREDITATIONS	6
5.1 FACILITIES	6
5.2 EQUIPMENT	6
6. ANTENNA REQUIREMENTS	6
7. SUMMARY OF TEST RESULTS	7
8. TEST RESULT	8
8.1 RADIATED MEASUREMENT.....	8
8.1.1 RADIATED SPURIOUS EMISSIONS.....	8
8.1.2 RADIATED RESTRICTED BAND EDGE MEASUREMENTS	1 0 4
9. LIST OF TEST EQUIPMENT	1 2 6

FCC PT.15.247 TEST REPORT		FCC Class II Permissive Change REPORT		www.hct.co.kr
Test Report No. HCTR1308FR10	Date of Issue: August 01, 2013	EUT Type: GSM/WCDMA/CDMA/LTE Phone Bluetooth, WLAN and NFC		FCC ID: ZNFVS980



1. GENERAL INFORMATION

Applicant: LG Electronics MobileComm U.S.A., Inc.
Address: 1000 Sylvan Avenue, Englewood Cliffs NJ 07632
FCC ID: ZNFVS980
EUT Type: GSM/WCDMA/CDMA/LTE Phone Bluetooth, WLAN and NFC
Model name(s): LG-VS980
Date(s) of Tests: July 11, 2013 ~ July 25, 2013
Place of Tests: HCT Co., Ltd.
 105-1, Jangam-ri , Majang-Myeon, Icheon-si, Kyunggi-Do, 467-811, KOREA.
 (IC Recognition No. : 5944A-3)

2. EUT DESCRIPTION

EUT Type	GSM/WCDMA/CDMA/LTE Phone Bluetooth, WLAN and NFC	
FCC Model Name	LG-VS980	
Power Supply	DC 3.8 V	
Frequency Range	TX_20 MHz BW: 40 MHz BW: 80 MHz BW: RX_20 MHz BW: 40 MHz BW: 80 MHz BW:	5180 MHz - 5240 MHz (UNII 1)/ 5260 MHz - 5320 MHz (UNII 2)/ 5500 MHz - 5700 MHz (UNII 2e) where) Not supported 5600 MHz – 5640 MHz 5190 MHz - 5230 MHz (UNII 1)/ 5270 MHz - 5310 MHz (UNII 2)/ 5510 MHz - 5670 MHz (UNII 2e) where) Not supported 5590 MHz – 5630 MHz 5210 MHz(UNII 1)/ 5290 MHz(UNII 2)/ 5530 MHz - 5690 MHz(UNII 2e) where) Not supported 5610 MHz 5180 MHz - 5240 MHz (UNII 1)/ 5260 MHz - 5320 MHz (UNII 2)/ 5500 MHz - 5700 MHz (UNII 2e) where) Not supported 5580 MHz – 5640 MHz 5190 MHz - 5230 MHz (UNII 1)/ 5270 MHz - 5310 MHz (UNII 2)/ 5510 MHz - 5670 MHz (UNII 2e) where) Not supported 5580 MHz – 5640 MHz 5210 MHz(UNII 1)/ 5290 MHz(UNII 2)/ 5530 MHz - 5690 MHz(UNII 2e) Where) Not supported 5610 MHz
Modulation Type	OFDM(802.11a, 802.11n, 802.11ac)	
Antenna Specification	Antenna type: FPCB Antenna Peak Gain : -1.00 dBi	

FCC PT.15.247 TEST REPORT	FCC Class II Permissive Change REPORT		www.hct.co.kr
Test Report No. HCTR1308FR10	Date of Issue: August 01, 2013	EUT Type: GSM/WCDMA/CDMA/LTE Phone Bluetooth, WLAN and NFC	FCC ID: ZNFVS980



3. TEST METHODOLOGY

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

3.1 EUT CONFIGURATION

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

3.2 EUT EXERCISE

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

3.3 GENERAL TEST PROCEDURES

Conducted Emissions

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

Radiated Emissions

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

Conducted Antenna Terminal

See Section from 8.1 to 8.4.(KDB 789033)

3.4 DESCRIPTION OF TEST MODES

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

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

FCC PT.15.247 TEST REPORT	FCC Class II Permissive Change REPORT		www.hct.co.kr
Test Report No. HCTR1308FR10	Date of Issue: August 01, 2013	EUT Type: GSM/WCDMA/CDMA/LTE Phone Bluetooth, WLAN and NFC	FCC ID: ZNFVS980



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 105-1, Jangam-ri, Majang-Myeon, Icheon-si, Kyunggi-Do, 467-811, Korea. The site is constructed in conformance with the requirements of ANSI C63.4. (Version :2003) and CISPR Publication 22. Detailed description of test facility was submitted to the Commission and accepted dated March 02, 2011 (Registration Number: 90661)

5.2 EQUIPMENT

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

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

6. ANTENNA REQUIREMENTS

According to FCC 47 CFR §15.203:

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

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

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

FCC PT.15.247 TEST REPORT	FCC Class II Permissive Change REPORT		www.hct.co.kr
Test Report No. HCTR1308FR10	Date of Issue: August 01, 2013	EUT Type: GSM/WCDMA/CDMA/LTE Phone Bluetooth, WLAN and NFC	FCC ID: ZNFVS980

7. SUMMARY OF TEST RESULTS

Test Description	FCC Part Section(s)	Test Limit	Test Condition	Test Result
Undesirable Emissions	§15.407(b)(1), (2), (3)	<-27 dBm/ MHz EIRP (5150-5350 MHz, 5470-5725 MHz)	RADIATED	PASS
General Field Strength Limits(Restricted Bands and Radiated Emission Limits)	15.205, 5.407(b)(1), (5), (6)	Emissions in restricted bands must meet the radiated limits detailed in 15.209		PASS

8. TEST RESULT

8.1 RADIATED MEASUREMENT.

8.1.1 RADIATED SPURIOUS EMISSIONS.

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

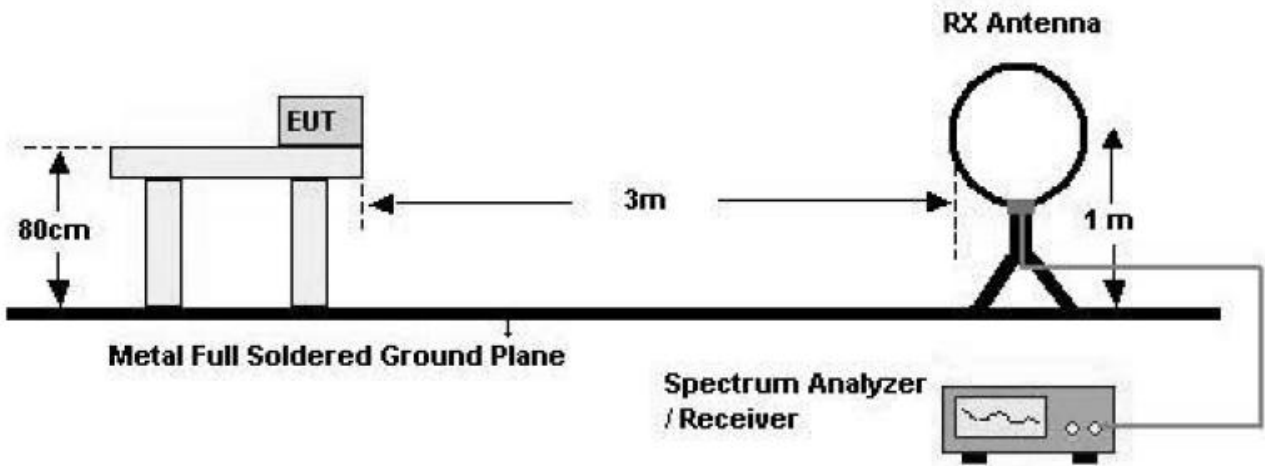
Frequency (MHz)	Field Strength (uV/m)	Measurement Distance (m)
0.009 – 0.490	2400/F(kHz)	300
0.490 – 1.705	24000/F(kHz)	30
1.705 – 30	30	30
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

§15.407, KDB 789033

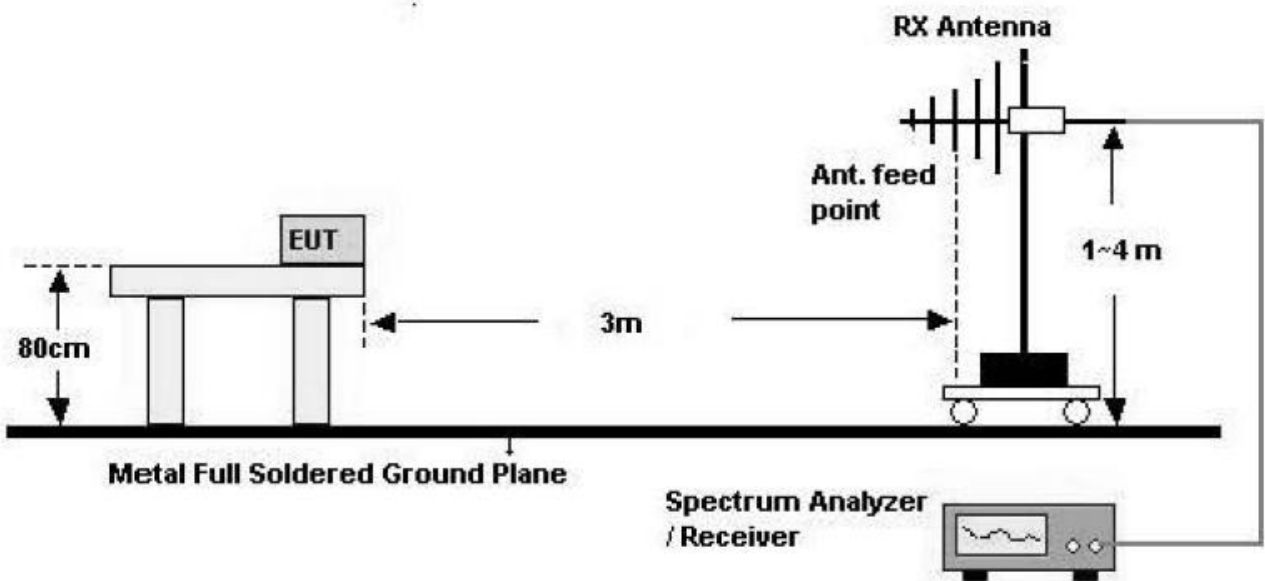
All harmonics that do not lie in a restricted band are subject to a peak limit of -27 dBm/MHz. At a distance of 3 meters the field strength limit in dBµV/m can be determined by adding a “conversion” factor of 95.2 dB to the EIRP limit of -27 dBm/MHz to obtain the limit for out of band spurious emissions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

Test Configuration

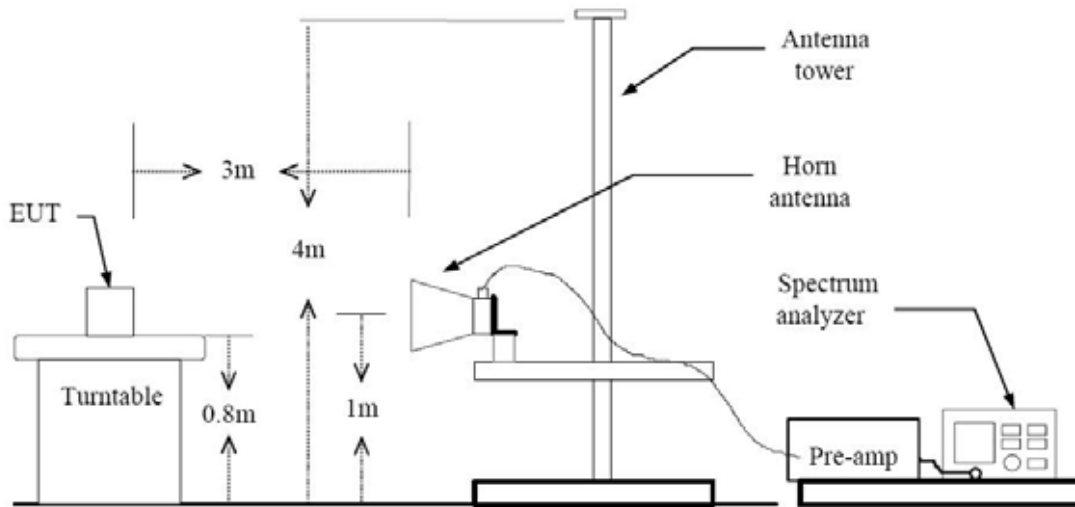
Below 30 MHz



30 MHz - 1 GHz



Above 1 GHz



TEST PROCEDURE USED

ANSI C63.4(2003)

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

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

. Spectrum setting:

- Peak.

1. RBW = 1 MHz

2. VBW \geq 3 MHz

3. Detector = Peak

4. Sweep Time = auto

5. Trace mode = max hold

6. Allow sweeps to continue until the trace stabilizes.

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

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

1. RBW = 1 MHz

2. VBW

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

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

3. The analyzer is set to linear detector mode.

FCC PT.15.247 TEST REPORT	FCC Class II Permissive Change REPORT		www.hct.co.kr
Test Report No. HCTR1308FR10	Date of Issue: August 01, 2013	EUT Type: GSM/WCDMA/CDMA/LTE Phone Bluetooth, WLAN and NFC	FCC ID: ZNFVS980

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

Note :

1. We used the case 2 for 802.11a/n_20/n_40/ac_20/ac_40/ac_80 to perform the average field strength measurements.
2. The actual setting value of VBW for 802.11a/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)
a	6	2.065	2.165	95.38	484.3	1000
n_20	6.5	1.923	2.025	94.96	520.0	1000
n_40	13.5	0.942	1.044	90.23	1061.6	3000
ac_20	6.5	1.930	2.030	95.07	518.1	1000
ac_40	13.5	0.953	1.051	90.68	1049.3	3000
ac_80	29.3	0.463	0.561	82.53	2159.8	3000



TEST RESULTS

9 kHz – 30MHz

Operation Mode: Normal Mode

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

Notes:

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

FCC PT.15.247 TEST REPORT	FCC Class II Permissive Change REPORT		www.hct.co.kr
Test Report No. HCTR1308FR10	Date of Issue: August 01, 2013	EUT Type: GSM/WCDMA/CDMA/LTE Phone Bluetooth, WLAN and NFC	FCC ID: ZNFVS980



TEST RESULTS

Below 1 GHz

Operation Mode: Normal Mode

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

Notes:

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

FCC PT.15.247 TEST REPORT	FCC Class II Permissive Change REPORT		www.hct.co.kr
Test Report No. HCTR1308FR10	Date of Issue: August 01, 2013	EUT Type: GSM/WCDMA/CDMA/LTE Phone Bluetooth, WLAN and NFC	FCC ID: ZNFVS980



Above 1 GHz

Stand alone

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

Frequency [MHz]	Reading dBuV	AN.+CL-Amp G. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
10360	46.31	9.33	V	55.64	68.2	12.56	PK
15540	45.42	14.61	V	60.03	74.0	13.95	PK
15540	31.69	14.61	V	46.30	54.0	7.68	AV
10360	48.86	9.33	H	58.19	68.2	10.01	PK
15540	44.91	14.61	H	59.52	74.0	14.46	PK
15540	31.65	14.61	H	46.26	54.0	7.72	AV

Notes:

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

FCC PT.15.247 TEST REPORT	FCC Class II Permissive Change REPORT		www.hct.co.kr
Test Report No. HCTR1308FR10	Date of Issue: August 01, 2013	EUT Type: GSM/WCDMA/CDMA/LTE Phone Bluetooth, WLAN and NFC	FCC ID: ZNFVS980



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

Frequency [MHz]	Reading dBuV	AN.+CL-Amp G. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
10400	46.27	10.13	V	56.40	68.2	11.80	PK
15600	45.38	14.60	V	59.98	74.0	14.00	PK
15600	31.47	14.60	V	46.07	54.0	7.91	AV
10400	45.50	10.13	H	55.63	68.2	12.57	PK
15600	44.90	14.60	H	59.50	74.0	14.48	PK
15600	31.56	14.60	H	46.16	54.0	7.82	AV

Notes:

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

FCC PT.15.247 TEST REPORT	FCC Class II Permissive Change REPORT		www.hct.co.kr
Test Report No. HCTR1308FR10	Date of Issue: August 01, 2013	EUT Type: GSM/WCDMA/CDMA/LTE Phone Bluetooth, WLAN and NFC	FCC ID: ZNFVS980



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

Frequency [MHz]	Reading dBuV	AN.+CL-Amp G. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
10480	46.10	10.20	V	56.30	68.2	11.90	PK
15720	46.32	13.47	V	59.79	74.0	14.19	PK
15720	32.63	13.47	V	46.10	54.0	7.88	AV
10480	45.57	10.20	H	55.77	68.2	12.43	PK
15720	45.61	13.47	H	59.08	74.0	14.90	PK
15720	32.63	13.47	H	46.10	54.0	7.88	AV

Notes:

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

FCC PT.15.247 TEST REPORT	FCC Class II Permissive Change REPORT		www.hct.co.kr
Test Report No. HCTR1308FR10	Date of Issue: August 01, 2013	EUT Type: GSM/WCDMA/CDMA/LTE Phone Bluetooth, WLAN and NFC	FCC ID: ZNFVS980



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

Frequency [MHz]	Reading dBuV	AN.+CL-Amp G. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
10360	43.32	9.33	V	52.65	68.2	15.55	PK
15540	45.02	14.61	V	59.63	74.0	14.35	PK
15540	31.48	14.61	V	46.09	54.0	7.89	AV
10360	45.76	9.33	H	55.09	68.2	13.11	PK
15540	44.87	14.61	H	59.48	74.0	14.50	PK
15540	31.59	14.61	H	46.20	54.0	7.78	AV

Notes:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.
3. Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
4. Total = Reading Value + Antenna Factor + Cable Loss - Amp Gain
5. We have done all data rate in 802.11n_20 MHz BW. Worst case is 6.5 Mbps in 802.11n_20 MHz BW.
6. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.

FCC PT.15.247 TEST REPORT	FCC Class II Permissive Change REPORT		www.hct.co.kr
Test Report No. HCTR1308FR10	Date of Issue: August 01, 2013	EUT Type: GSM/WCDMA/CDMA/LTE Phone Bluetooth, WLAN and NFC	FCC ID: ZNFVS980



Band :	UNII 1
Operation Mode:	802.11 n_20 MHz BW
Transfer Rate:	6.5 Mbps
Operating Frequency	5200 MHz
Channel No.	40 Ch

Frequency [MHz]	Reading dBuV	AN.+CL-Amp G. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
10400	43.38	10.13	V	53.51	68.2	14.69	PK
15600	44.98	14.60	V	59.58	74.0	14.40	PK
15600	31.39	14.60	V	45.99	54.0	7.99	AV
10400	42.30	10.13	H	52.43	68.2	15.77	PK
15600	45.03	14.60	H	59.63	74.0	14.35	PK
15600	31.54	14.60	H	46.14	54.0	7.84	AV

Notes:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.
3. Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
4. Total = Reading Value + Antenna Factor + Cable Loss - Amp Gain
5. We have done all data rate in 802.11n_20 MHz BW. Worst case is 6.5 Mbps in 802.11n_20 MHz BW.
6. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.

FCC PT.15.247 TEST REPORT	FCC Class II Permissive Change REPORT		www.hct.co.kr
Test Report No. HCTR1308FR10	Date of Issue: August 01, 2013	EUT Type: GSM/WCDMA/CDMA/LTE Phone Bluetooth, WLAN and NFC	FCC ID: ZNFVS980



Band :	UNII 1
Operation Mode:	802.11 n_20 MHz BW
Transfer Rate:	6.5 Mbps
Operating Frequency	5240 MHz
Channel No.	48 Ch

Frequency [MHz]	Reading dBuV	AN.+CL-Amp G. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
10480	42.98	10.20	V	53.18	68.2	15.02	PK
15720	46.17	13.47	V	59.64	74.0	14.34	PK
15720	32.61	13.47	V	46.08	54.0	7.90	AV
10480	42.79	10.20	H	52.99	68.2	15.21	PK
15720	45.34	13.47	H	58.81	74.0	15.17	PK
15720	32.59	13.47	H	46.06	54.0	7.92	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 all data rate in 802.11n_20 MHz BW. Worst case is 6.5 Mbps in 802.11n_20 MHz BW.
6. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.

FCC PT.15.247 TEST REPORT	FCC Class II Permissive Change REPORT		www.hct.co.kr
Test Report No. HCTR1308FR10	Date of Issue: August 01, 2013	EUT Type: GSM/WCDMA/CDMA/LTE Phone Bluetooth, WLAN and NFC	FCC ID: ZNFVS980



Band :	UNII 1
Operation Mode:	802.11 ac_20 MHz BW
Transfer Rate:	6.5 Mbps
Operating Frequency	5180 MHz
Channel No.	36 Ch

Frequency [MHz]	Reading dBuV	AN.+CL-Amp G. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
10360	43.18	9.33	V	52.51	68.2	15.69	PK
15540	45.14	14.61	V	59.75	74.0	14.23	PK
15540	31.50	14.61	V	46.11	54.0	7.87	AV
10360	45.12	9.33	H	54.45	68.2	13.75	PK
15540	44.65	14.61	H	59.26	74.0	14.72	PK
15540	31.49	14.61	H	46.10	54.0	7.88	AV

Notes:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.
3. Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
4. Total = Reading Value + Antenna Factor + Cable Loss - Amp Gain
5. We have done all data rate in 802.11ac_20 MHz BW. Worst case is 6.5 Mbps in 802.11ac_20 MHz BW.
6. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.

FCC PT.15.247 TEST REPORT	FCC Class II Permissive Change REPORT		www.hct.co.kr
Test Report No. HCTR1308FR10	Date of Issue: August 01, 2013	EUT Type: GSM/WCDMA/CDMA/LTE Phone Bluetooth, WLAN and NFC	FCC ID: ZNFVS980



Band :	UNII 1
Operation Mode:	802.11 ac_20 MHz BW
Transfer Rate:	6.5 Mbps
Operating Frequency	5200 MHz
Channel No.	40 Ch

Frequency [MHz]	Reading dBuV	AN.+CL-Amp G. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
10400	43.19	10.13	V	53.32	68.2	14.88	PK
15600	45.05	14.60	V	59.65	74.0	14.33	PK
15600	31.47	14.60	V	46.07	54.0	7.91	AV
10400	41.78	10.13	H	51.91	68.2	16.29	PK
15600	45.13	14.60	H	59.73	74.0	14.25	PK
15600	31.48	14.60	H	46.08	54.0	7.90	AV

Notes:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.
3. Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
4. Total = Reading Value + Antenna Factor + Cable Loss - Amp Gain
5. We have done all data rate in 802.11ac_20 MHz BW. Worst case is 6.5 Mbps in 802.11ac_20 MHz BW.
6. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.

FCC PT.15.247 TEST REPORT	FCC Class II Permissive Change REPORT		www.hct.co.kr
Test Report No. HCTR1308FR10	Date of Issue: August 01, 2013	EUT Type: GSM/WCDMA/CDMA/LTE Phone Bluetooth, WLAN and NFC	FCC ID: ZNFVS980



Band :	UNII 1
Operation Mode:	802.11 ac_20 MHz BW
Transfer Rate:	6.5 Mbps
Operating Frequency	5240 MHz
Channel No.	48 Ch

Frequency [MHz]	Reading dBuV	AN.+CL-Amp G. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
10480	42.87	10.20	V	53.07	68.2	15.13	PK
15720	46.04	13.47	V	59.51	74.0	14.47	PK
15720	32.59	13.47	V	46.06	54.0	7.92	AV
10480	42.68	10.20	H	52.88	68.2	15.32	PK
15720	45.29	13.47	H	58.76	74.0	15.22	PK
15720	32.48	13.47	H	45.95	54.0	8.03	AV

Notes:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.
3. Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
4. Total = Reading Value + Antenna Factor + Cable Loss - Amp Gain
5. We have done all data rate in 802.11ac_20 MHz BW. Worst case is 6.5 Mbps in 802.11ac_20 MHz BW.
6. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.

FCC PT.15.247 TEST REPORT	FCC Class II Permissive Change REPORT		www.hct.co.kr
Test Report No. HCTR1308FR10	Date of Issue: August 01, 2013	EUT Type: GSM/WCDMA/CDMA/LTE Phone Bluetooth, WLAN and NFC	FCC ID: ZNFVS980



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

Frequency [MHz]	Reading dBuV	AN.+CL-Amp G. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
10380	39.87	9.70	V	49.57	68.2	18.63	PK
15570	45.26	14.62	V	59.88	74.0	14.10	PK
15570	31.73	14.62	V	46.35	54.0	7.63	AV
10380	39.90	9.70	H	49.60	68.2	18.60	PK
15570	45.32	14.62	H	59.94	74.0	14.04	PK
15570	31.87	14.62	H	46.49	54.0	7.49	AV

Notes:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.
3. Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
4. Total = Reading Value + Antenna Factor + Cable Loss - Amp Gain
5. We have done all data rate in 802.11n_40 MHz BW. Worst case is 13.5 Mbps in 802.11n_40 MHz BW.
6. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.

FCC PT.15.247 TEST REPORT	FCC Class II Permissive Change REPORT		www.hct.co.kr
Test Report No. HCTR1308FR10	Date of Issue: August 01, 2013	EUT Type: GSM/WCDMA/CDMA/LTE Phone Bluetooth, WLAN and NFC	FCC ID: ZNFVS980



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

Frequency [MHz]	Reading dBuV	AN.+CL-Amp G. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
10460	40.40	10.26	V	50.66	68.2	17.54	PK
15690	45.72	14.33	V	60.05	74.0	13.93	PK
15690	32.35	14.33	V	46.68	54.0	7.30	AV
10460	40.62	10.26	H	50.88	68.2	17.32	PK
15690	45.89	14.33	H	60.22	74.0	13.76	PK
15690	32.69	14.33	H	47.02	54.0	6.96	AV

Notes:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.
3. Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
4. Total = Reading Value + Antenna Factor + Cable Loss - Amp Gain
5. We have done all data rate in 802.11n_40 MHz BW. Worst case is 13.5 Mbps in 802.11n_40 MHz BW.
6. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.

FCC PT.15.247 TEST REPORT		FCC Class II Permissive Change REPORT		www.hct.co.kr
Test Report No. HCTR1308FR10	Date of Issue: August 01, 2013	EUT Type: GSM/WCDMA/CDMA/LTE Phone Bluetooth, WLAN and NFC		FCC ID: ZNFVS980



Band :	UNII 1
Operation Mode:	802.11ac_40 MHz BW
Transfer Rate:	13.5 Mbps
Operating Frequency	5190 MHz
Channel No.	38 Ch

Frequency [MHz]	Reading dBuV	AN.+CL-Amp G. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
10380	39.59	9.70	V	49.29	68.2	18.91	PK
15570	45.13	14.62	V	59.75	74.0	14.23	PK
15570	31.77	14.62	V	46.39	54.0	7.59	AV
10380	39.69	9.70	H	49.39	68.2	18.81	PK
15570	45.38	14.62	H	60.00	74.0	13.98	PK
15570	31.58	14.62	H	46.20	54.0	7.78	AV

Notes:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.
3. Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
4. Total = Reading Value + Antenna Factor + Cable Loss - Amp Gain
5. We have done all data rate in 802.11ac_40 MHz BW. Worst case is 13.5 Mbps in 802.11ac_40 MHz BW.
6. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.

FCC PT.15.247 TEST REPORT	FCC Class II Permissive Change REPORT		www.hct.co.kr
Test Report No. HCTR1308FR10	Date of Issue: August 01, 2013	EUT Type: GSM/WCDMA/CDMA/LTE Phone Bluetooth, WLAN and NFC	FCC ID: ZNFVS980



Band :	UNII 1
Operation Mode:	802.11ac_40 MHz BW
Transfer Rate:	6.5 Mbps
Operating Frequency	5230 MHz
Channel No.	46 Ch

Frequency [MHz]	Reading dBuV	AN.+CL-Amp G. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
10460	40.55	10.26	V	50.81	68.2	17.39	PK
15690	45.98	14.33	V	60.31	74.0	13.67	PK
15690	32.56	14.33	V	46.89	54.0	7.09	AV
10460	40.76	10.26	H	51.02	68.2	17.18	PK
15690	46.30	14.33	H	60.63	74.0	13.35	PK
15690	32.37	14.33	H	46.70	54.0	7.28	AV

Notes:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.
3. Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
4. Total = Reading Value + Antenna Factor + Cable Loss - Amp Gain
5. We have done all data rate in 802.11ac_40 MHz BW. Worst case is 13.5 Mbps in 802.11ac_40 MHz BW.
6. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.

FCC PT.15.247 TEST REPORT		FCC Class II Permissive Change REPORT		www.hct.co.kr
Test Report No. HCTR1308FR10	Date of Issue: August 01, 2013	EUT Type: GSM/WCDMA/CDMA/LTE Phone Bluetooth, WLAN and NFC		FCC ID: ZNFVS980



Band :	UNII 1
Operation Mode:	802.11ac_80 MHz BW
Transfer Rate:	29.3 Mbps
Operating Frequency	5210 MHz
Channel No.	42 Ch

Frequency [MHz]	Reading dBuV	AN.+CL-Amp G. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
10420	39.77	10.43	V	50.20	68.2	18.00	PK
15630	45.32	14.15	V	59.47	74.0	14.51	PK
15630	31.86	14.15	V	46.01	54.0	7.97	AV
10420	39.87	10.43	H	50.30	68.2	17.90	PK
15630	45.42	14.15	H	59.57	74.0	14.41	PK
15630	31.69	14.15	H	45.84	54.0	8.14	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 all data rate in 802.11ac_80 MHz BW. Worst case is 29.3 Mbps in 802.11ac_80 MHz BW.
6. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.

FCC PT.15.247 TEST REPORT	FCC Class II Permissive Change REPORT		www.hct.co.kr
Test Report No. HCTR1308FR10	Date of Issue: August 01, 2013	EUT Type: GSM/WCDMA/CDMA/LTE Phone Bluetooth, WLAN and NFC	FCC ID: ZNFVS980



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

Frequency [MHz]	Reading dBuV	AN.+CL-Amp G. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
10520	46.36	10.38	V	56.74	68.2	11.46	PK
15780	46.04	14.38	V	60.42	74.0	13.56	PK
15780	32.76	14.38	V	47.14	54.0	6.84	AV
10520	46.48	10.38	H	56.86	68.2	11.34	PK
15780	45.79	14.38	H	60.17	74.0	13.81	PK
15780	32.62	14.38	H	47.00	54.0	6.98	AV

Notes:

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

FCC PT.15.247 TEST REPORT	FCC Class II Permissive Change REPORT		www.hct.co.kr
Test Report No. HCTR1308FR10	Date of Issue: August 01, 2013	EUT Type: GSM/WCDMA/CDMA/LTE Phone Bluetooth, WLAN and NFC	FCC ID: ZNFVS980



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

Frequency [MHz]	Reading dBuV	AN.+CL-Amp G. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
10600	43.88	10.39	V	54.27	74	19.71	PK
10600	30.75	10.39	V	41.14	54	12.84	AV
15900	44.79	14.00	V	58.79	74	15.19	PK
15900	31.04	14.00	V	45.04	54	8.94	AV
10600	43.67	10.39	H	54.06	74	19.92	PK
10600	29.91	10.39	H	40.30	54	13.68	AV
15900	44.33	14.00	H	58.33	74	15.65	PK
15900	31.03	14.00	H	45.03	54	8.95	AV

Notes:

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

FCC PT.15.247 TEST REPORT	FCC Class II Permissive Change REPORT		www.hct.co.kr
Test Report No. HCTR1308FR10	Date of Issue: August 01, 2013	EUT Type: GSM/WCDMA/CDMA/LTE Phone Bluetooth, WLAN and NFC	FCC ID: ZNFVS980



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

Frequency [MHz]	Reading dBuV	AN.+CL-Amp G. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
10640	44.95	10.50	V	55.45	74	18.53	PK
10640	31.27	10.50	V	41.77	54	12.21	AV
15960	43.78	14.27	V	58.05	74	15.93	PK
15960	30.77	14.27	V	45.04	54	8.94	AV
10640	43.75	10.50	H	54.25	74	19.73	PK
10640	30.00	10.50	H	40.50	54	13.48	AV
15960	44.08	14.27	H	58.35	74	15.63	PK
15960	30.86	14.27	H	45.13	54	8.85	AV

Notes:

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

FCC PT.15.247 TEST REPORT	FCC Class II Permissive Change REPORT		www.hct.co.kr
Test Report No. HCTR1308FR10	Date of Issue: August 01, 2013	EUT Type: GSM/WCDMA/CDMA/LTE Phone Bluetooth, WLAN and NFC	FCC ID: ZNFVS980



Band :	UNII 2
Operation Mode:	802.11 n_20 MHz BW
Transfer Rate:	6.5 Mbps
Operating Frequency	5260 MHz
Channel No.	52 Ch

Frequency [MHz]	Reading dBuV	AN.+CL-Amp G. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
10520	41.05	10.38	V	51.43	68.2	16.77	PK
15780	46.15	14.38	V	60.53	74.0	13.45	PK
15780	32.71	14.38	V	47.09	54.0	6.89	AV
10520	41.07	10.38	H	51.45	68.2	16.75	PK
15780	45.87	14.38	H	60.25	74.0	13.73	PK
15780	32.68	14.38	H	47.06	54.0	6.92	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 all data rate in 802.11n_20 MHz BW. Worst case is 6.5 Mbps in 802.11n_20 MHz BW.
6. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.

FCC PT.15.247 TEST REPORT	FCC Class II Permissive Change REPORT		www.hct.co.kr
Test Report No. HCTR1308FR10	Date of Issue: August 01, 2013	EUT Type: GSM/WCDMA/CDMA/LTE Phone Bluetooth, WLAN and NFC	FCC ID: ZNFVS980



Band :	UNII 2
Operation Mode:	802.11 n_20 MHz BW
Transfer Rate:	6.5 Mbps
Operating Frequency	5300 MHz
Channel No.	60 Ch

Frequency [MHz]	Reading dBuV	AN.+CL-Amp G. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
10600	40.45	10.39	V	50.84	74	23.14	PK
10600	28.58	10.39	V	38.97	54	15.01	AV
15900	44.74	14.00	V	58.74	74	15.24	PK
15900	31.05	14.00	V	45.05	54	8.93	AV
10600	39.99	10.39	H	50.38	74	23.60	PK
10600	27.89	10.39	H	38.28	54	15.70	AV
15900	44.54	14.00	H	58.54	74	15.44	PK
15900	31.04	14.00	H	45.04	54	8.94	AV

Notes:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.
3. Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
4. Total = Reading Value + Antenna Factor + Cable Loss - Amp Gain
5. We have done all data rate in 802.11n_20 MHz BW. Worst case is 6.5 Mbps in 802.11n_20 MHz BW.
6. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.

FCC PT.15.247 TEST REPORT	FCC Class II Permissive Change REPORT		www.hct.co.kr
Test Report No. HCTR1308FR10	Date of Issue: August 01, 2013	EUT Type: GSM/WCDMA/CDMA/LTE Phone Bluetooth, WLAN and NFC	FCC ID: ZNFVS980



Band :	UNII 2
Operation Mode:	802.11 n_20 MHz BW
Transfer Rate:	6.5 Mbps
Operating Frequency	5320 MHz
Channel No.	64 Ch

Frequency [MHz]	Reading dBuV	AN.+CL-Amp G. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
10640	41.25	10.50	V	51.75	74	22.23	PK
10640	28.59	10.50	V	39.09	54	14.89	AV
15960	43.89	14.27	V	58.16	74	15.82	PK
15960	30.71	14.27	V	44.98	54	9.00	AV
10640	40.27	10.50	H	50.77	74	23.21	PK
10640	28.23	10.50	H	38.73	54	15.25	AV
15960	44.11	14.27	H	58.38	74	15.60	PK
15960	30.68	14.27	H	44.95	54	9.03	AV

Notes:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.
3. Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
4. Total = Reading Value + Antenna Factor + Cable Loss - Amp Gain
5. We have done all data rate in 802.11n_20 MHz BW. Worst case is 6.5 Mbps in 802.11n_20 MHz BW.
6. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.

FCC PT.15.247 TEST REPORT	FCC Class II Permissive Change REPORT		www.hct.co.kr
Test Report No. HCTR1308FR10	Date of Issue: August 01, 2013	EUT Type: GSM/WCDMA/CDMA/LTE Phone Bluetooth, WLAN and NFC	FCC ID: ZNFVS980



Band :	UNII 2
Operation Mode:	802.11 ac_20 MHz BW
Transfer Rate:	6.5 Mbps
Operating Frequency	5260 MHz
Channel No.	52 Ch

Frequency [MHz]	Reading dBuV	AN.+CL-Amp G. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
10520	41.06	10.38	V	51.44	68.2	16.76	PK
15780	46.07	14.38	V	60.45	74.0	13.53	PK
15780	32.57	14.38	V	46.95	54.0	7.03	AV
10520	41.02	10.38	H	51.40	68.2	16.80	PK
15780	45.47	14.38	H	59.85	74.0	14.13	PK
15780	32.44	14.38	H	46.82	54.0	7.16	AV

Notes:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.
3. Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
4. Total = Reading Value + Antenna Factor + Cable Loss - Amp Gain
5. We have done all data rate in 802.11ac_20 MHz BW. Worst case is 6.5 Mbps in 802.11ac_20 MHz BW.
6. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.

FCC PT.15.247 TEST REPORT	FCC Class II Permissive Change REPORT		www.hct.co.kr
Test Report No. HCTR1308FR10	Date of Issue: August 01, 2013	EUT Type: GSM/WCDMA/CDMA/LTE Phone Bluetooth, WLAN and NFC	FCC ID: ZNFVS980



Band :	UNII 2
Operation Mode:	802.11 ac_20 MHz BW
Transfer Rate:	6.5 Mbps
Operating Frequency	5300 MHz
Channel No.	60 Ch

Frequency [MHz]	Reading dBuV	AN.+CL-Amp G. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
10600	40.18	10.39	V	50.57	74	23.41	PK
10600	28.01	10.39	V	38.40	54	15.58	AV
15900	44.28	14.00	V	58.28	74	15.70	PK
15900	31.03	14.00	V	45.03	54	8.95	AV
10600	39.78	10.39	H	50.17	74	23.81	PK
10600	27.47	10.39	H	37.86	54	16.12	AV
15900	44.37	14.00	H	58.37	74	15.61	PK
15900	31.01	14.00	H	45.01	54	8.97	AV

Notes:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.
3. Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
4. Total = Reading Value + Antenna Factor + Cable Loss - Amp Gain
5. We have done all data rate in 802.11ac_20 MHz BW. Worst case is 6.5 Mbps in 802.11ac_20 MHz BW.
6. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.

FCC PT.15.247 TEST REPORT	FCC Class II Permissive Change REPORT		www.hct.co.kr
Test Report No. HCTR1308FR10	Date of Issue: August 01, 2013	EUT Type: GSM/WCDMA/CDMA/LTE Phone Bluetooth, WLAN and NFC	FCC ID: ZNFVS980



Band :	UNII 2
Operation Mode:	802.11 ac_20 MHz BW
Transfer Rate:	6.5 Mbps
Operating Frequency	5320 MHz
Channel No.	64 Ch

Frequency [MHz]	Reading dBuV	AN.+CL-Amp G. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
10640	40.78	10.50	V	51.28	74	22.70	PK
10640	28.39	10.50	V	38.89	54	15.09	AV
15960	43.48	14.27	V	57.75	74	16.23	PK
15960	30.64	14.27	V	44.91	54	9.07	AV
10640	40.20	10.50	H	50.70	74	23.28	PK
10640	28.03	10.50	H	38.53	54	15.45	AV
15960	44.04	14.27	H	58.31	74	15.67	PK
15960	30.57	14.27	H	44.84	54	9.14	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 all data rate in 802.11ac_20 MHz BW. Worst case is 6.5 Mbps in 802.11ac_20 MHz BW.
6. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.

FCC PT.15.247 TEST REPORT	FCC Class II Permissive Change REPORT		www.hct.co.kr
Test Report No. HCTR1308FR10	Date of Issue: August 01, 2013	EUT Type: GSM/WCDMA/CDMA/LTE Phone Bluetooth, WLAN and NFC	FCC ID: ZNFVS980



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

Frequency [MHz]	Reading dBuV	AN.+CL-Amp G. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
10540	40.89	10.55	V	51.44	68.2	16.76	PK
15810	45.68	14.26	V	59.94	74.0	14.04	PK
15810	32.19	14.26	V	46.45	54.0	7.53	AV
10540	40.67	10.55	H	51.22	68.2	16.98	PK
15810	45.63	14.26	H	59.89	74.0	14.09	PK
15810	32.18	14.26	H	46.44	54.0	7.54	AV

Notes:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.
3. Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
4. Total = Reading Value + Antenna Factor + Cable Loss - Amp Gain
5. We have done all data rate in 802.11n_40 MHz BW. Worst case is 13.5 Mbps in 802.11n_40 MHz BW.
6. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.

FCC PT.15.247 TEST REPORT	FCC Class II Permissive Change REPORT		www.hct.co.kr
Test Report No. HCTR1308FR10	Date of Issue: August 01, 2013	EUT Type: GSM/WCDMA/CDMA/LTE Phone Bluetooth, WLAN and NFC	FCC ID: ZNFVS980



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

Frequency [MHz]	Reading dBuV	AN.+CL-Amp G. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
10620	39.55	10.25	V	49.80	74	24.18	PK
10620	26.38	10.25	V	36.63	54	17.35	AV
15930	45.18	13.62	V	58.80	74	15.18	PK
15930	30.88	13.62	V	44.50	54	9.48	AV
10620	39.39	10.25	H	49.64	74	24.34	PK
10620	26.33	10.25	H	36.58	54	17.40	AV
15930	45.21	13.62	H	58.83	74	15.15	PK
15930	30.94	13.62	H	44.56	54	9.42	AV

Notes:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.
3. Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
4. Total = Reading Value + Antenna Factor + Cable Loss - Amp Gain
5. We have done all data rate in 802.11n_40 MHz BW. Worst case is 13.5 Mbps in 802.11n_40 MHz BW.
6. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.

FCC PT.15.247 TEST REPORT	FCC Class II Permissive Change REPORT		www.hct.co.kr
Test Report No. HCTR1308FR10	Date of Issue: August 01, 2013	EUT Type: GSM/WCDMA/CDMA/LTE Phone Bluetooth, WLAN and NFC	FCC ID: ZNFVS980



Band :	UNII 2
Operation Mode:	802.11ac_40 MHz BW
Transfer Rate:	6.5 Mbps
Operating Frequency	5270 MHz
Channel No.	54 Ch

Frequency [MHz]	Reading dBuV	AN.+CL-Amp G. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
10540	41.30	10.55	V	51.85	68.2	16.35	PK
15810	46.10	14.26	V	60.36	74.0	13.62	PK
15810	32.82	14.26	V	47.08	54.0	6.90	AV
10540	40.28	10.55	H	50.83	68.2	17.37	PK
15810	45.78	14.26	H	60.04	74.0	13.94	PK
15810	32.72	14.26	H	46.98	54.0	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 all data rate in 802.11ac_40 MHz BW. Worst case is 13.5 Mbps in 802.11ac_40 MHz BW.
6. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.

FCC PT.15.247 TEST REPORT	FCC Class II Permissive Change REPORT		www.hct.co.kr
Test Report No. HCTR1308FR10	Date of Issue: August 01, 2013	EUT Type: GSM/WCDMA/CDMA/LTE Phone Bluetooth, WLAN and NFC	FCC ID: ZNFVS980



Band :	UNII 2
Operation Mode:	802.11ac_40 MHz BW
Transfer Rate:	6.5 Mbps
Operating Frequency	5310 MHz
Channel No.	62 Ch

Frequency [MHz]	Reading dBuV	AN.+CL-Amp G. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
10620	39.89	10.25	V	50.14	74	23.84	PK
10620	26.73	10.25	V	36.98	54	17.00	AV
15930	45.20	13.62	V	58.82	74	15.16	PK
15930	30.59	13.62	V	44.21	54	9.77	AV
10620	40.21	10.25	H	50.46	74	23.52	PK
10620	26.83	10.25	H	37.08	54	16.90	AV
15930	45.01	13.62	H	58.63	74	15.35	PK
15930	30.69	13.62	H	44.31	54	9.67	AV

Notes:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.
3. Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
4. Total = Reading Value + Antenna Factor + Cable Loss - Amp Gain
5. We have done all data rate in 802.11ac_40 MHz BW. Worst case is 13.5 Mbps in 802.11ac_40 MHz BW.
6. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.

FCC PT.15.247 TEST REPORT	FCC Class II Permissive Change REPORT		www.hct.co.kr
Test Report No. HCTR1308FR10	Date of Issue: August 01, 2013	EUT Type: GSM/WCDMA/CDMA/LTE Phone Bluetooth, WLAN and NFC	FCC ID: ZNFVS980



Band :	UNII 2
Operation Mode:	802.11ac_80 MHz BW
Transfer Rate:	29.3 Mbps
Operating Frequency	5290 MHz
Channel No.	58 Ch

Frequency [MHz]	Reading dBuV	AN.+CL-Amp G. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
10580	40.51	10.42	V	50.93	68.2	17.27	PK
15870	45.81	13.96	V	59.77	74.0	14.21	PK
15870	31.64	13.96	V	45.60	54.0	8.38	AV
10580	39.99	10.42	H	50.41	68.2	17.79	PK
15870	45.61	13.96	H	59.57	74.0	14.41	PK
15870	31.54	13.96	H	45.50	54.0	8.48	AV

Notes:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.
3. Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
4. Total = Reading Value + Antenna Factor + Cable Loss - Amp Gain
5. We have done all data rate in 802.11ac_80 MHz BW. Worst case is 13.5 Mbps in 802.11ac_80 MHz BW.
6. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.

FCC PT.15.247 TEST REPORT	FCC Class II Permissive Change REPORT		www.hct.co.kr
Test Report No. HCTR1308FR10	Date of Issue: August 01, 2013	EUT Type: GSM/WCDMA/CDMA/LTE Phone Bluetooth, WLAN and NFC	FCC ID: ZNFVS980



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

Frequency [MHz]	Reading dBuV	AN.+CL-Amp G. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
11000	39.31	11.28	V	50.59	74.0	23.39	PK
11000	26.34	11.28	V	37.62	54.0	16.36	AV
16500	45.65	14.19	V	59.84	68.2	8.36	PK
11000	40.27	11.28	H	51.55	74.0	22.43	PK
11000	26.57	11.28	H	37.85	54.0	16.13	AV
16500	45.79	14.19	H	59.98	68.2	8.22	PK

Notes:

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

FCC PT.15.247 TEST REPORT	FCC Class II Permissive Change REPORT		www.hct.co.kr
Test Report No. HCTR1308FR10	Date of Issue: August 01, 2013	EUT Type: GSM/WCDMA/CDMA/LTE Phone Bluetooth, WLAN and NFC	FCC ID: ZNFVS980



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

Frequency [MHz]	Reading dBuV	AN.+CL-Amp G. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
11160	41.43	11.10	V	52.53	74.0	21.45	PK
11160	28.15	11.10	V	39.25	54.0	14.73	AV
16740	46.27	15.70	V	61.97	68.2	6.23	PK
11160	39.52	11.10	H	50.62	74.0	23.36	PK
11160	26.21	11.10	H	37.31	54.0	16.67	AV
16740	45.60	15.70	H	61.30	68.2	6.90	PK

Notes:

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

FCC PT.15.247 TEST REPORT	FCC Class II Permissive Change REPORT		www.hct.co.kr
Test Report No. HCTR1308FR10	Date of Issue: August 01, 2013	EUT Type: GSM/WCDMA/CDMA/LTE Phone Bluetooth, WLAN and NFC	FCC ID: ZNFVS980



Band :	UNII 2e
Operation Mode:	802.11 a
Transfer Rate:	6 Mbps
Operating Frequency	5700 MHz
Channel No.	140 Ch

Frequency [MHz]	Reading dBuV	AN.+CL-Amp G. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
11400	44.94	10.97	V	55.91	74.0	18.07	PK
11400	32.01	10.97	V	42.98	54.0	11.00	AV
17100	45.20	17.82	V	63.02	68.2	5.18	PK
11400	41.60	10.97	H	52.57	74.0	21.41	PK
11400	28.27	10.97	H	39.24	54.0	14.74	AV
17100	45.54	17.82	H	63.36	68.2	4.84	PK

Notes:

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

FCC PT.15.247 TEST REPORT	FCC Class II Permissive Change REPORT		www.hct.co.kr
Test Report No. HCTR1308FR10	Date of Issue: August 01, 2013	EUT Type: GSM/WCDMA/CDMA/LTE Phone Bluetooth, WLAN and NFC	FCC ID: ZNFVS980



Band :	UNII 2e
Operation Mode:	802.11 n_20 MHz BW
Transfer Rate:	6.5 Mbps
Operating Frequency	5500 MHz
Channel No.	100 Ch

Frequency [MHz]	Reading dBuV	AN.+CL-Amp G. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
11000	39.84	11.28	V	51.12	74.0	22.86	PK
11000	26.51	11.28	V	37.79	54.0	16.19	AV
16500	45.48	14.19	V	59.67	68.2	8.53	PK
11000	40.03	11.28	H	51.31	74.0	22.67	PK
11000	26.48	11.28	H	37.76	54.0	16.22	AV
16500	45.65	14.19	H	59.84	68.2	8.36	PK

Notes:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.
3. Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
4. Total = Reading Value + Antenna Factor + Cable Loss - Amp Gain
5. We have done all data rate in 802.11n_20 MHz BW. Worst case is 6.5 Mbps in 802.11n_20 MHz BW.
6. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.

FCC PT.15.247 TEST REPORT		FCC Class II Permissive Change REPORT		www.hct.co.kr
Test Report No. HCTR1308FR10	Date of Issue: August 01, 2013	EUT Type: GSM/WCDMA/CDMA/LTE Phone Bluetooth, WLAN and NFC		FCC ID: ZNFVS980



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

Frequency [MHz]	Reading dBuV	AN.+CL-Amp G. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
11160	40.34	11.10	V	51.44	74.0	22.54	PK
11160	27.87	11.10	V	38.97	54.0	15.01	AV
16740	46.08	15.70	V	61.78	68.2	6.42	PK
11160	39.58	11.10	H	50.68	74.0	23.30	PK
11160	26.24	11.10	H	37.34	54.0	16.64	AV
16740	45.89	15.70	H	61.59	68.2	6.61	PK

Notes:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.
3. Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
4. Total = Reading Value + Antenna Factor + Cable Loss - Amp Gain
5. We have done all data rate in 802.11n_20 MHz BW. Worst case is 6.5 Mbps in 802.11n_20 MHz BW.
6. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.

FCC PT.15.247 TEST REPORT		FCC Class II Permissive Change REPORT		www.hct.co.kr
Test Report No. HCTR1308FR10	Date of Issue: August 01, 2013	EUT Type: GSM/WCDMA/CDMA/LTE Phone Bluetooth, WLAN and NFC		FCC ID: ZNFVS980



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

Frequency [MHz]	Reading dBuV	AN.+CL-Amp G. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
11400	42.45	10.97	V	53.42	74.0	20.56	PK
11400	29.03	10.97	V	40.00	54.0	13.98	AV
17100	45.35	17.82	V	63.17	68.2	5.03	PK
11400	41.57	10.97	H	52.54	74.0	21.44	PK
11400	28.30	10.97	H	39.27	54.0	14.71	AV
17100	45.71	17.82	H	63.53	68.2	4.67	PK

Notes:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.
3. Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
4. Total = Reading Value + Antenna Factor + Cable Loss - Amp Gain
5. We have done all data rate in 802.11n_20 MHz BW. Worst case is 6.5 Mbps in 802.11n_20 MHz BW.
6. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.

FCC PT.15.247 TEST REPORT		FCC Class II Permissive Change REPORT		www.hct.co.kr
Test Report No. HCTR1308FR10	Date of Issue: August 01, 2013	EUT Type: GSM/WCDMA/CDMA/LTE Phone Bluetooth, WLAN and NFC		FCC ID: ZNFVS980



Band :	UNII 2e
Operation Mode:	802.11 ac_20 MHz BW
Transfer Rate:	6.5 Mbps
Operating Frequency	5500 MHz
Channel No.	100 Ch

Frequency [MHz]	Reading dBuV	AN.+CL-Amp G. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
11000	40.23	11.28	V	51.51	74.0	22.47	PK
11000	26.51	11.28	V	37.79	54.0	16.19	AV
16500	45.87	14.19	V	60.06	68.2	8.14	PK
11000	40.01	11.28	H	51.29	74.0	22.69	PK
11000	26.49	11.28	H	37.77	54.0	16.21	AV
16500	45.67	14.19	H	59.86	68.2	8.34	PK

Notes:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.
3. Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
4. Total = Reading Value + Antenna Factor + Cable Loss - Amp Gain
5. We have done all data rate in 802.11ac_20 MHz BW. Worst case is 6.5 Mbps in 802.11ac_20 MHz BW.
6. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.

FCC PT.15.247 TEST REPORT	FCC Class II Permissive Change REPORT		www.hct.co.kr
Test Report No. HCTR1308FR10	Date of Issue: August 01, 2013	EUT Type: GSM/WCDMA/CDMA/LTE Phone Bluetooth, WLAN and NFC	FCC ID: ZNFVS980



Band :	UNII 2e
Operation Mode:	802.11 ac_20 MHz BW
Transfer Rate:	6.5 Mbps
Operating Frequency	5580 MHz
Channel No.	116 Ch

Frequency [MHz]	Reading dBuV	AN.+CL-Amp G. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
11160	40.18	11.10	V	51.28	74.0	22.70	PK
11160	27.79	11.10	V	38.89	54.0	15.09	AV
16740	46.12	15.70	V	61.82	68.2	6.38	PK
11160	40.16	11.10	H	51.26	74.0	22.72	PK
11160	26.47	11.10	H	37.57	54.0	16.41	AV
16740	45.97	15.70	H	61.67	68.2	6.53	PK

Notes:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.
3. Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
4. Total = Reading Value + Antenna Factor + Cable Loss - Amp Gain
5. We have done all data rate in 802.11ac_20 MHz BW. Worst case is 6.5 Mbps in 802.11ac_20 MHz BW.
6. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.

FCC PT.15.247 TEST REPORT	FCC Class II Permissive Change REPORT		www.hct.co.kr
Test Report No. HCTR1308FR10	Date of Issue: August 01, 2013	EUT Type: GSM/WCDMA/CDMA/LTE Phone Bluetooth, WLAN and NFC	FCC ID: ZNFVS980



Band :	UNII 2e
Operation Mode:	802.11 ac_20 MHz BW
Transfer Rate:	6.5 Mbps
Operating Frequency	5720 MHz
Channel No.	144 Ch

Frequency [MHz]	Reading dBuV	AN.+CL-Amp G. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
11400	42.36	10.97	V	53.33	74.0	20.65	PK
11400	28.46	10.97	V	39.43	54.0	14.55	AV
17100	45.57	17.82	V	63.39	68.2	4.81	PK
11400	41.50	10.97	H	52.47	74.0	21.51	PK
11400	28.42	10.97	H	39.39	54.0	14.59	AV
17100	45.68	17.82	H	63.50	68.2	4.70	PK

Notes:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.
3. Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
4. Total = Reading Value + Antenna Factor + Cable Loss - Amp Gain
5. We have done all data rate in 802.11ac_20 MHz BW. Worst case is 6.5 Mbps in 802.11ac_20 MHz BW.
6. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.

FCC PT.15.247 TEST REPORT	FCC Class II Permissive Change REPORT		www.hct.co.kr
Test Report No. HCTR1308FR10	Date of Issue: August 01, 2013	EUT Type: GSM/WCDMA/CDMA/LTE Phone Bluetooth, WLAN and NFC	FCC ID: ZNFVS980



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

Frequency [MHz]	Reading dBuV	AN.+CL-Amp G. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
11020	39.34	11.28	V	50.62	74.0	23.36	PK
11020	25.97	11.28	V	37.25	54.0	16.73	AV
16530	45.32	14.83	V	60.15	68.2	8.05	PK
11020	39.07	11.28	H	50.35	74.0	23.63	PK
11020	25.92	11.28	H	37.20	54.0	16.78	AV
16530	45.29	14.83	H	60.12	68.2	8.08	PK

Notes:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.
3. Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
4. Total = Reading Value + Antenna Factor + Cable Loss - Amp Gain
5. We have done all data rate in 802.11n_40 MHz BW. Worst case is 13.5 Mbps in 802.11n_40 MHz BW.
6. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.

FCC PT.15.247 TEST REPORT		FCC Class II Permissive Change REPORT		www.hct.co.kr
Test Report No. HCTR1308FR10	Date of Issue: August 01, 2013	EUT Type: GSM/WCDMA/CDMA/LTE Phone Bluetooth, WLAN and NFC		FCC ID: ZNFVS980



Band :	UNII 2e
Operation Mode:	802.11n_40 MHz BW
Transfer Rate:	13.5 Mbps
Operating Frequency	5590 MHz
Channel No.	118 Ch

Frequency [MHz]	Reading dBuV	AN.+CL-Amp G. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
11180	38.86	11.12	V	49.98	74.0	24.00	PK
11180	25.48	11.12	V	36.60	54.0	17.38	AV
16770	45.33	16.52	V	61.85	68.2	6.35	PK
11180	38.74	11.12	H	49.86	74.0	24.12	PK
11180	25.40	11.12	H	36.52	54.0	17.46	AV
16770	45.92	16.52	H	62.44	68.2	5.76	PK

Notes:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.
3. Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
4. Total = Reading Value + Antenna Factor + Cable Loss - Amp Gain
5. We have done all data rate in 802.11n_40 MHz BW. Worst case is 13.5 Mbps in 802.11n_40 MHz BW.
6. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.

FCC PT.15.247 TEST REPORT		FCC Class II Permissive Change REPORT		www.hct.co.kr
Test Report No. HCTR1308FR10	Date of Issue: August 01, 2013	EUT Type: GSM/WCDMA/CDMA/LTE Phone Bluetooth, WLAN and NFC		FCC ID: ZNFVS980



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

Frequency [MHz]	Reading dBuV	AN.+CL-Amp G. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
11340	38.65	10.86	V	49.51	74.0	24.47	PK
11340	25.18	10.86	V	36.04	54.0	17.94	AV
17010	45.31	18.15	V	63.46	68.2	4.74	PK
11340	38.62	10.86	H	49.48	74.0	24.50	PK
11340	25.21	10.86	H	36.07	54.0	17.91	AV
17010	45.28	18.15	H	63.43	68.2	4.77	PK

Notes:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.
3. Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
4. Total = Reading Value + Antenna Factor + Cable Loss - Amp Gain
5. We have done all data rate in 802.11n_40 MHz BW. Worst case is 13.5 Mbps in 802.11n_40 MHz BW.
6. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.

FCC PT.15.247 TEST REPORT		FCC Class II Permissive Change REPORT		www.hct.co.kr
Test Report No. HCTR1308FR10	Date of Issue: August 01, 2013	EUT Type: GSM/WCDMA/CDMA/LTE Phone Bluetooth, WLAN and NFC		FCC ID: ZNFVS980



Band :	UNII 2e
Operation Mode:	802.11ac_40 MHz BW
Transfer Rate:	6.5 Mbps
Operating Frequency	5510 MHz
Channel No.	102 Ch

Frequency [MHz]	Reading dBuV	AN.+CL-Amp G. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
11020	39.76	11.28	V	51.04	74.0	22.94	PK
11020	25.90	11.28	V	37.18	54.0	16.80	AV
16530	45.55	14.83	V	60.38	68.2	7.82	PK
11020	39.54	11.28	H	50.82	74.0	23.16	PK
11020	25.87	11.28	H	37.15	54.0	16.83	AV
16530	45.84	14.83	H	60.67	68.2	7.53	PK

Notes:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.
3. Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
4. Total = Reading Value + Antenna Factor + Cable Loss - Amp Gain
5. We have done all data rate in 802.11ac_40 MHz BW. Worst case is 13.5 Mbps in 802.11ac_40 MHz BW.
6. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.

FCC PT.15.247 TEST REPORT		FCC Class II Permissive Change REPORT		www.hct.co.kr
Test Report No. HCTR1308FR10	Date of Issue: August 01, 2013	EUT Type: GSM/WCDMA/CDMA/LTE Phone Bluetooth, WLAN and NFC		FCC ID: ZNFVS980



Band :	UNII 2e
Operation Mode:	802.11ac_40 MHz BW
Transfer Rate:	6.5 Mbps
Operating Frequency	5590 MHz
Channel No.	118 Ch

Frequency [MHz]	Reading dBuV	AN.+CL-Amp G. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
11180	38.78	11.12	V	49.90	74.0	24.08	PK
11180	25.11	11.12	V	36.23	54.0	17.75	AV
16770	45.74	16.52	V	62.26	68.2	5.94	PK
11180	38.77	11.12	H	49.89	74.0	24.09	PK
11180	25.27	11.12	H	36.39	54.0	17.59	AV
16770	45.86	16.52	H	62.38	68.2	5.82	PK

Notes:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.
3. Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
4. Total = Reading Value + Antenna Factor + Cable Loss - Amp Gain
5. We have done all data rate in 802.11ac_40 MHz BW. Worst case is 13.5 Mbps in 802.11ac_40 MHz BW.
6. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.

FCC PT.15.247 TEST REPORT	FCC Class II Permissive Change REPORT		www.hct.co.kr
Test Report No. HCTR1308FR10	Date of Issue: August 01, 2013	EUT Type: GSM/WCDMA/CDMA/LTE Phone Bluetooth, WLAN and NFC	FCC ID: ZNFVS980



Band :	UNII 2e
Operation Mode:	802.11ac_40 MHz BW
Transfer Rate:	6.5 Mbps
Operating Frequency	5710 MHz
Channel No.	142 Ch

Frequency [MHz]	Reading dBuV	AN.+CL-Amp G. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
11420	39.20	10.73	V	49.93	74.0	24.05	PK
11420	25.42	10.73	V	36.15	54.0	17.83	AV
17130	45.92	18.11	V	64.03	68.2	4.17	PK
11420	39.27	10.73	H	50.00	74.0	23.98	PK
11420	25.44	10.73	H	36.17	54.0	17.81	AV
17130	45.78	18.11	H	63.89	68.2	4.31	PK

Notes:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.
3. Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
4. Total = Reading Value + Antenna Factor + Cable Loss - Amp Gain
5. We have done all data rate in 802.11ac_40 MHz BW. Worst case is 13.5 Mbps in 802.11ac_40 MHz BW.
6. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.

FCC PT.15.247 TEST REPORT		FCC Class II Permissive Change REPORT		www.hct.co.kr
Test Report No. HCTR1308FR10	Date of Issue: August 01, 2013	EUT Type: GSM/WCDMA/CDMA/LTE Phone Bluetooth, WLAN and NFC		FCC ID: ZNFVS980



Band :	UNII 2e
Operation Mode:	802.11ac_80 MHz BW
Transfer Rate:	6.5 Mbps
Operating Frequency	5530 MHz
Channel No.	106 Ch

Frequency [MHz]	Reading dBuV	AN.+CL-Amp G. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
11060	39.42	11.48	V	50.90	74.0	23.08	PK
11060	25.88	11.48	V	37.36	54.0	16.62	AV
16590	45.94	14.42	V	60.36	68.2	7.84	PK
11060	39.32	11.48	H	50.80	74.0	23.18	PK
11060	25.68	11.48	H	37.16	54.0	16.82	AV
16590	45.72	14.42	H	60.14	68.2	8.06	PK

Notes:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.
3. Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
4. Total = Reading Value + Antenna Factor + Cable Loss - Amp Gain
5. We have done all data rate in 802.11ac_80 MHz BW. Worst case is 13.5 Mbps in 802.11ac_80 MHz BW.
6. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.

FCC PT.15.247 TEST REPORT		FCC Class II Permissive Change REPORT		www.hct.co.kr
Test Report No. HCTR1308FR10	Date of Issue: August 01, 2013	EUT Type: GSM/WCDMA/CDMA/LTE Phone Bluetooth, WLAN and NFC		FCC ID: ZNFVS980



Band :	UNII 2e
Operation Mode:	802.11ac_80 MHz BW
Transfer Rate:	6.5 Mbps
Operating Frequency	5690 MHz
Channel No.	138 Ch

Frequency [MHz]	Reading dBuV	AN.+CL-Amp G. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
11380	38.28	11.05	V	49.33	74.0	24.65	PK
11380	24.38	11.05	V	35.43	54.0	18.55	AV
17070	45.94	18.08	V	64.02	68.2	4.18	PK
11380	38.33	11.05	H	49.38	74.0	24.60	PK
11380	24.18	11.05	H	35.23	54.0	18.75	AV
17070	45.25	18.08	H	63.33	68.2	4.87	PK

Notes:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.
3. Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
4. Total = Reading Value + Antenna Factor + Cable Loss - Amp Gain
5. We have done all data rate in 802.11ac_80 MHz BW. Worst case is 13.5 Mbps in 802.11ac_80 MHz BW.
6. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.

FCC PT.15.247 TEST REPORT		FCC Class II Permissive Change REPORT		www.hct.co.kr
Test Report No. HCTR1308FR10	Date of Issue: August 01, 2013	EUT Type: GSM/WCDMA/CDMA/LTE Phone Bluetooth, WLAN and NFC		FCC ID: ZNFVS980



With Wireless Charger

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

Frequency [MHz]	Reading dBuV	AN.+CL-Amp G. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
10360	43.33	9.33	V	52.66	68.2	15.54	PK
15540	45.12	14.61	V	59.73	74.0	14.25	PK
15540	31.61	14.61	V	46.22	54.0	7.76	AV
10360	48.35	9.33	H	57.68	68.2	10.52	PK
15540	44.15	14.61	H	58.76	74.0	15.22	PK
15540	31.50	14.61	H	46.11	54.0	7.87	AV

Notes:

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

FCC PT.15.247 TEST REPORT	FCC Class II Permissive Change REPORT		www.hct.co.kr
Test Report No. HCTR1308FR10	Date of Issue: August 01, 2013	EUT Type: GSM/WCDMA/CDMA/LTE Phone Bluetooth, WLAN and NFC	FCC ID: ZNFVS980



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

Frequency [MHz]	Reading dBuV	AN.+CL-Amp G. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
10400	44.35	10.13	V	54.48	68.2	13.72	PK
15600	45.21	14.60	V	59.81	74.0	14.17	PK
15600	31.44	14.60	V	46.04	54.0	7.94	AV
10400	45.01	10.13	H	55.14	68.2	13.06	PK
15600	44.58	14.60	H	59.18	74.0	14.80	PK
15600	31.51	14.60	H	46.11	54.0	7.87	AV

Notes:

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

FCC PT.15.247 TEST REPORT	FCC Class II Permissive Change REPORT		www.hct.co.kr
Test Report No. HCTR1308FR10	Date of Issue: August 01, 2013	EUT Type: GSM/WCDMA/CDMA/LTE Phone Bluetooth, WLAN and NFC	FCC ID: ZNFVS980



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

Frequency [MHz]	Reading dBuV	AN.+CL-Amp G. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
10480	46.20	10.20	V	56.40	68.2	11.80	PK
15720	46.02	13.47	V	59.49	74.0	14.49	PK
15720	32.65	13.47	V	46.12	54.0	7.86	AV
10480	45.12	10.20	H	55.32	68.2	12.88	PK
15720	45.60	13.47	H	59.07	74.0	14.91	PK
15720	32.69	13.47	H	46.16	54.0	7.82	AV

Notes:

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

FCC PT.15.247 TEST REPORT	FCC Class II Permissive Change REPORT		www.hct.co.kr
Test Report No. HCTR1308FR10	Date of Issue: August 01, 2013	EUT Type: GSM/WCDMA/CDMA/LTE Phone Bluetooth, WLAN and NFC	FCC ID: ZNFVS980



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

Frequency [MHz]	Reading dBuV	AN.+CL-Amp G. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
10360	43.28	9.33	V	52.61	68.2	15.59	PK
15540	45.30	14.61	V	59.91	74.0	14.07	PK
15540	31.49	14.61	V	46.10	54.0	7.88	AV
10360	45.63	9.33	H	54.96	68.2	13.24	PK
15540	44.38	14.61	H	58.99	74.0	14.99	PK
15540	31.56	14.61	H	46.17	54.0	7.81	AV

Notes:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.
3. Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
4. Total = Reading Value + Antenna Factor + Cable Loss - Amp Gain
5. We have done all data rate in 802.11n_20 MHz BW. Worst case is 6.5 Mbps in 802.11n_20 MHz BW.
6. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.

FCC PT.15.247 TEST REPORT	FCC Class II Permissive Change REPORT		www.hct.co.kr
Test Report No. HCTR1308FR10	Date of Issue: August 01, 2013	EUT Type: GSM/WCDMA/CDMA/LTE Phone Bluetooth, WLAN and NFC	FCC ID: ZNFVS980



Band :	UNII 1
Operation Mode:	802.11 n_20 MHz BW
Transfer Rate:	6.5 Mbps
Operating Frequency	5200 MHz
Channel No.	40 Ch

Frequency [MHz]	Reading dBuV	AN.+CL-Amp G. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
10400	43.83	10.13	V	53.96	68.2	14.24	PK
15600	44.89	14.60	V	59.49	74.0	14.49	PK
15600	31.40	14.60	V	46.00	54.0	7.98	AV
10400	42.03	10.13	H	52.16	68.2	16.04	PK
15600	45.30	14.60	H	59.90	74.0	14.08	PK
15600	31.45	14.60	H	46.05	54.0	7.93	AV

Notes:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.
3. Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
4. Total = Reading Value + Antenna Factor + Cable Loss - Amp Gain
5. We have done all data rate in 802.11n_20 MHz BW. Worst case is 6.5 Mbps in 802.11n_20 MHz BW.
6. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.

FCC PT.15.247 TEST REPORT	FCC Class II Permissive Change REPORT		www.hct.co.kr
Test Report No. HCTR1308FR10	Date of Issue: August 01, 2013	EUT Type: GSM/WCDMA/CDMA/LTE Phone Bluetooth, WLAN and NFC	FCC ID: ZNFVS980



Band :	UNII 1
Operation Mode:	802.11 n_20 MHz BW
Transfer Rate:	6.5 Mbps
Operating Frequency	5240 MHz
Channel No.	48 Ch

Frequency [MHz]	Reading dBuV	AN.+CL-Amp G. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
10480	42.48	10.20	V	52.68	68.2	15.52	PK
15720	46.71	13.47	V	60.18	74.0	13.80	PK
15720	32.58	13.47	V	46.05	54.0	7.93	AV
10480	42.00	10.20	H	52.20	68.2	16.00	PK
15720	45.24	13.47	H	58.71	74.0	15.27	PK
15720	32.65	13.47	H	46.12	54.0	7.86	AV

Notes:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.
3. Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
4. Total = Reading Value + Antenna Factor + Cable Loss - Amp Gain
5. We have done all data rate in 802.11n_20 MHz BW. Worst case is 6.5 Mbps in 802.11n_20 MHz BW.
6. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.

FCC PT.15.247 TEST REPORT	FCC Class II Permissive Change REPORT		www.hct.co.kr
Test Report No. HCTR1308FR10	Date of Issue: August 01, 2013	EUT Type: GSM/WCDMA/CDMA/LTE Phone Bluetooth, WLAN and NFC	FCC ID: ZNFVS980



Band :	UNII 1
Operation Mode:	802.11 ac_20 MHz BW
Transfer Rate:	6.5 Mbps
Operating Frequency	5180 MHz
Channel No.	36 Ch

Frequency [MHz]	Reading dBuV	AN.+CL-Amp G. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
10360	43.26	9.33	V	52.59	68.2	15.61	PK
15540	45.16	14.61	V	59.77	74.0	14.21	PK
15540	31.62	14.61	V	46.23	54.0	7.75	AV
10360	45.10	9.33	H	54.43	68.2	13.77	PK
15540	44.56	14.61	H	59.17	74.0	14.81	PK
15540	31.58	14.61	H	46.19	54.0	7.79	AV

Notes:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.
3. Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
4. Total = Reading Value + Antenna Factor + Cable Loss - Amp Gain
5. We have done all data rate in 802.11ac_20 MHz BW. Worst case is 6.5 Mbps in 802.11ac_20 MHz BW.
6. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.

FCC PT.15.247 TEST REPORT	FCC Class II Permissive Change REPORT		www.hct.co.kr
Test Report No. HCTR1308FR10	Date of Issue: August 01, 2013	EUT Type: GSM/WCDMA/CDMA/LTE Phone Bluetooth, WLAN and NFC	FCC ID: ZNFVS980



Band :	UNII 1
Operation Mode:	802.11 ac_20 MHz BW
Transfer Rate:	6.5 Mbps
Operating Frequency	5200 MHz
Channel No.	40 Ch

Frequency [MHz]	Reading dBuV	AN.+CL-Amp G. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
10400	42.19	10.13	V	52.32	68.2	15.88	PK
15600	45.21	14.60	V	59.81	74.0	14.17	PK
15600	31.72	14.60	V	46.32	54.0	7.66	AV
10400	41.88	10.13	H	52.01	68.2	16.19	PK
15600	45.32	14.60	H	59.92	74.0	14.06	PK
15600	31.85	14.60	H	46.45	54.0	7.53	AV

Notes:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.
3. Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
4. Total = Reading Value + Antenna Factor + Cable Loss - Amp Gain
5. We have done all data rate in 802.11ac_20 MHz BW. Worst case is 6.5 Mbps in 802.11ac_20 MHz BW.
6. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.

FCC PT.15.247 TEST REPORT	FCC Class II Permissive Change REPORT		www.hct.co.kr
Test Report No. HCTR1308FR10	Date of Issue: August 01, 2013	EUT Type: GSM/WCDMA/CDMA/LTE Phone Bluetooth, WLAN and NFC	FCC ID: ZNFVS980



Band :	UNII 1
Operation Mode:	802.11 ac_20 MHz BW
Transfer Rate:	6.5 Mbps
Operating Frequency	5240 MHz
Channel No.	48 Ch

Frequency [MHz]	Reading dBuV	AN.+CL-Amp G. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
10480	42.77	10.20	V	52.97	68.2	15.23	PK
15720	46.42	13.47	V	59.89	74.0	14.09	PK
15720	32.54	13.47	V	46.01	54.0	7.97	AV
10480	42.87	10.20	H	53.07	68.2	15.13	PK
15720	45.83	13.47	H	59.30	74.0	14.68	PK
15720	32.59	13.47	H	46.06	54.0	7.92	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 all data rate in 802.11ac_20 MHz BW. Worst case is 6.5 Mbps in 802.11ac_20 MHz BW.
6. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.

FCC PT.15.247 TEST REPORT	FCC Class II Permissive Change REPORT		www.hct.co.kr
Test Report No. HCTR1308FR10	Date of Issue: August 01, 2013	EUT Type: GSM/WCDMA/CDMA/LTE Phone Bluetooth, WLAN and NFC	FCC ID: ZNFVS980



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

Frequency [MHz]	Reading dBuV	AN.+CL-Amp G. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
10380	39.89	9.70	V	49.59	68.2	18.61	PK
15570	45.63	14.62	V	60.25	74.0	13.73	PK
15570	31.77	14.62	V	46.39	54.0	7.59	AV
10380	39.77	9.70	H	49.47	68.2	18.73	PK
15570	45.25	14.62	H	59.87	74.0	14.11	PK
15570	31.79	14.62	H	46.41	54.0	7.57	AV

Notes:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.
3. Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
4. Total = Reading Value + Antenna Factor + Cable Loss - Amp Gain
5. We have done all data rate in 802.11n_40 MHz BW. Worst case is 13.5 Mbps in 802.11n_40 MHz BW.
6. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.

FCC PT.15.247 TEST REPORT	FCC Class II Permissive Change REPORT		www.hct.co.kr
Test Report No. HCTR1308FR10	Date of Issue: August 01, 2013	EUT Type: GSM/WCDMA/CDMA/LTE Phone Bluetooth, WLAN and NFC	FCC ID: ZNFVS980



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

Frequency [MHz]	Reading dBuV	AN.+CL-Amp G. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
10460	40.35	10.26	V	50.61	68.2	17.59	PK
15690	45.28	14.33	V	59.61	74.0	14.37	PK
15690	32.61	14.33	V	46.94	54.0	7.04	AV
10460	40.63	10.26	H	50.89	68.2	17.31	PK
15690	45.99	14.33	H	60.32	74.0	13.66	PK
15690	32.97	14.33	H	47.30	54.0	6.68	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 all data rate in 802.11n_40 MHz BW. Worst case is 13.5 Mbps in 802.11n_40 MHz BW.
6. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.

FCC PT.15.247 TEST REPORT		FCC Class II Permissive Change REPORT		www.hct.co.kr
Test Report No. HCTR1308FR10	Date of Issue: August 01, 2013	EUT Type: GSM/WCDMA/CDMA/LTE Phone Bluetooth, WLAN and NFC		FCC ID: ZNFVS980



Band :	UNII 1
Operation Mode:	802.11ac_40 MHz BW
Transfer Rate:	13.5 Mbps
Operating Frequency	5190 MHz
Channel No.	38 Ch

Frequency [MHz]	Reading dBuV	AN.+CL-Amp G. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
10380	39.96	9.70	V	49.66	68.2	18.54	PK
15570	45.33	14.62	V	59.95	74.0	14.03	PK
15570	31.87	14.62	V	46.49	54.0	7.49	AV
10380	39.97	9.70	H	49.67	68.2	18.53	PK
15570	45.88	14.62	H	60.50	74.0	13.48	PK
15570	31.84	14.62	H	46.46	54.0	7.52	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 all data rate in 802.11ac_40 MHz BW. Worst case is 13.5 Mbps in 802.11ac_40 MHz BW.
6. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.

FCC PT.15.247 TEST REPORT		FCC Class II Permissive Change REPORT		www.hct.co.kr
Test Report No. HCTR1308FR10	Date of Issue: August 01, 2013	EUT Type: GSM/WCDMA/CDMA/LTE Phone Bluetooth, WLAN and NFC		FCC ID: ZNFVS980



Band :	UNII 1
Operation Mode:	802.11ac_40 MHz BW
Transfer Rate:	6.5 Mbps
Operating Frequency	5230 MHz
Channel No.	46 Ch

Frequency [MHz]	Reading dBuV	AN.+CL-Amp G. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
10460	40.57	10.26	V	50.83	68.2	17.37	PK
15690	45.87	14.33	V	60.20	74.0	13.78	PK
15690	32.64	14.33	V	46.97	54.0	7.01	AV
10460	40.66	10.26	H	50.92	68.2	17.28	PK
15690	46.31	14.33	H	60.64	74.0	13.34	PK
15690	32.70	14.33	H	47.03	54.0	6.95	AV

Notes:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.
3. Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
4. Total = Reading Value + Antenna Factor + Cable Loss - Amp Gain
5. We have done all data rate in 802.11ac_40 MHz BW. Worst case is 13.5 Mbps in 802.11ac_40 MHz BW.
6. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.

FCC PT.15.247 TEST REPORT		FCC Class II Permissive Change REPORT		www.hct.co.kr
Test Report No. HCTR1308FR10	Date of Issue: August 01, 2013	EUT Type: GSM/WCDMA/CDMA/LTE Phone Bluetooth, WLAN and NFC		FCC ID: ZNFVS980



Band :	UNII 1
Operation Mode:	802.11ac_80 MHz BW
Transfer Rate:	29.3 Mbps
Operating Frequency	5210 MHz
Channel No.	42 Ch

Frequency [MHz]	Reading dBuV	AN.+CL-Amp G. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
10420	39.98	10.43	V	50.41	68.2	17.79	PK
15630	45.84	14.15	V	59.99	74.0	13.99	PK
15630	31.69	14.15	V	45.84	54.0	8.14	AV
10420	39.77	10.43	H	50.20	68.2	18.00	PK
15630	45.80	14.15	H	59.95	74.0	14.03	PK
15630	31.87	14.15	H	46.02	54.0	7.96	AV

Notes:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.
3. Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
4. Total = Reading Value + Antenna Factor + Cable Loss - Amp Gain
5. We have done all data rate in 802.11ac_80 MHz BW. Worst case is 29.3 Mbps in 802.11ac_80 MHz BW.
6. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.

FCC PT.15.247 TEST REPORT		FCC Class II Permissive Change REPORT		www.hct.co.kr
Test Report No. HCTR1308FR10	Date of Issue: August 01, 2013	EUT Type: GSM/WCDMA/CDMA/LTE Phone Bluetooth, WLAN and NFC		FCC ID: ZNFVS980



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

Frequency [MHz]	Reading dBuV	AN.+CL-Amp G. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
10520	46.36	10.38	V	56.74	68.2	11.46	PK
15780	46.04	14.38	V	60.42	74.0	13.56	PK
15780	32.76	14.38	V	47.14	54.0	6.84	AV
10520	46.48	10.38	H	56.86	68.2	11.34	PK
15780	45.79	14.38	H	60.17	74.0	13.81	PK
15780	32.62	14.38	H	47.00	54.0	6.98	AV

Notes:

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

FCC PT.15.247 TEST REPORT	FCC Class II Permissive Change REPORT		www.hct.co.kr
Test Report No. HCTR1308FR10	Date of Issue: August 01, 2013	EUT Type: GSM/WCDMA/CDMA/LTE Phone Bluetooth, WLAN and NFC	FCC ID: ZNFVS980



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

Frequency [MHz]	Reading dBuV	AN.+CL-Amp G. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
10600	40.87	10.39	V	51.26	74	22.72	PK
10600	28.49	10.39	V	38.88	54	15.10	AV
15900	44.79	14.00	V	58.79	74	15.19	PK
15900	31.04	14.00	V	45.04	54	8.94	AV
10600	43.00	10.39	H	53.39	74	20.59	PK
10600	29.64	10.39	H	40.03	54	13.95	AV
15900	44.33	14.00	H	58.33	74	15.65	PK
15900	31.03	14.00	H	45.03	54	8.95	AV

Notes:

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

FCC PT.15.247 TEST REPORT	FCC Class II Permissive Change REPORT		www.hct.co.kr
Test Report No. HCTR1308FR10	Date of Issue: August 01, 2013	EUT Type: GSM/WCDMA/CDMA/LTE Phone Bluetooth, WLAN and NFC	FCC ID: ZNFVS980



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

Frequency [MHz]	Reading dBuV	AN.+CL-Amp G. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
10640	41.85	10.50	V	52.35	74	21.63	PK
10640	28.40	10.50	V	38.90	54	15.08	AV
15960	43.71	14.27	V	57.98	74	16.00	PK
15960	30.88	14.27	V	45.15	54	8.83	AV
10640	42.89	10.50	H	53.39	74	20.59	PK
10640	29.42	10.50	H	39.92	54	14.06	AV
15960	44.19	14.27	H	58.46	74	15.52	PK
15960	30.79	14.27	H	45.06	54	8.92	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 all data rate in 802.11a. Worst case is 6 Mbps in 802.11a.
6. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.

FCC PT.15.247 TEST REPORT	FCC Class II Permissive Change REPORT		www.hct.co.kr
Test Report No. HCTR1308FR10	Date of Issue: August 01, 2013	EUT Type: GSM/WCDMA/CDMA/LTE Phone Bluetooth, WLAN and NFC	FCC ID: ZNFVS980



Band :	UNII 2
Operation Mode:	802.11 n_20 MHz BW
Transfer Rate:	6.5 Mbps
Operating Frequency	5260 MHz
Channel No.	52 Ch

Frequency [MHz]	Reading dBuV	AN.+CL-Amp G. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
10520	40.89	10.38	V	51.27	68.2	16.93	PK
15780	46.25	14.38	V	60.63	74.0	13.35	PK
15780	32.68	14.38	V	47.06	54.0	6.92	AV
10520	41.08	10.38	H	51.46	68.2	16.74	PK
15780	45.80	14.38	H	60.18	74.0	13.80	PK
15780	32.58	14.38	H	46.96	54.0	7.02	AV

Notes:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.
3. Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
4. Total = Reading Value + Antenna Factor + Cable Loss - Amp Gain
5. We have done all data rate in 802.11n_20 MHz BW. Worst case is 6.5 Mbps in 802.11n_20 MHz BW.
6. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.

FCC PT.15.247 TEST REPORT		FCC Class II Permissive Change REPORT		www.hct.co.kr
Test Report No. HCTR1308FR10	Date of Issue: August 01, 2013	EUT Type: GSM/WCDMA/CDMA/LTE Phone Bluetooth, WLAN and NFC		FCC ID: ZNFVS980



Band :	UNII 2
Operation Mode:	802.11 n_20 MHz BW
Transfer Rate:	6.5 Mbps
Operating Frequency	5300 MHz
Channel No.	60 Ch

Frequency [MHz]	Reading dBuV	AN.+CL-Amp G. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
10600	40.50	10.39	V	50.89	74	23.09	PK
10600	28.36	10.39	V	38.75	54	15.23	AV
15900	44.47	14.00	V	58.47	74	15.51	PK
15900	31.20	14.00	V	45.20	54	8.78	AV
10600	39.88	10.39	H	50.27	74	23.71	PK
10600	27.77	10.39	H	38.16	54	15.82	AV
15900	44.45	14.00	H	58.45	74	15.53	PK
15900	31.05	14.00	H	45.05	54	8.93	AV

Notes:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.
3. Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
4. Total = Reading Value + Antenna Factor + Cable Loss - Amp Gain
5. We have done all data rate in 802.11n_20 MHz BW. Worst case is 6.5 Mbps in 802.11n_20 MHz BW.
6. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.

FCC PT.15.247 TEST REPORT	FCC Class II Permissive Change REPORT		www.hct.co.kr
Test Report No. HCTR1308FR10	Date of Issue: August 01, 2013	EUT Type: GSM/WCDMA/CDMA/LTE Phone Bluetooth, WLAN and NFC	FCC ID: ZNFVS980



Band :	UNII 2
Operation Mode:	802.11 n_20 MHz BW
Transfer Rate:	6.5 Mbps
Operating Frequency	5320 MHz
Channel No.	64 Ch

Frequency [MHz]	Reading dBuV	AN.+CL-Amp G. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
10640	41.52	10.50	V	52.02	74	21.96	PK
10640	28.59	10.50	V	39.09	54	14.89	AV
15960	43.88	14.27	V	58.15	74	15.83	PK
15960	30.48	14.27	V	44.75	54	9.23	AV
10640	40.39	10.50	H	50.89	74	23.09	PK
10640	28.33	10.50	H	38.83	54	15.15	AV
15960	43.96	14.27	H	58.23	74	15.75	PK
15960	30.69	14.27	H	44.96	54	9.02	AV

Notes:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.
3. Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
4. Total = Reading Value + Antenna Factor + Cable Loss - Amp Gain
5. We have done all data rate in 802.11n_20 MHz BW. Worst case is 6.5 Mbps in 802.11n_20 MHz BW.
6. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.

FCC PT.15.247 TEST REPORT	FCC Class II Permissive Change REPORT		www.hct.co.kr
Test Report No. HCTR1308FR10	Date of Issue: August 01, 2013	EUT Type: GSM/WCDMA/CDMA/LTE Phone Bluetooth, WLAN and NFC	FCC ID: ZNFVS980



Band :	UNII 2
Operation Mode:	802.11 ac_20 MHz BW
Transfer Rate:	6.5 Mbps
Operating Frequency	5260 MHz
Channel No.	52 Ch

Frequency [MHz]	Reading dBuV	AN.+CL-Amp G. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
10520	41.31	10.38	V	51.69	68.2	16.51	PK
15780	46.72	14.38	V	61.10	74.0	12.88	PK
15780	32.71	14.38	V	47.09	54.0	6.89	AV
10520	41.21	10.38	H	51.59	68.2	16.61	PK
15780	45.48	14.38	H	59.86	74.0	14.12	PK
15780	32.46	14.38	H	46.84	54.0	7.14	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 all data rate in 802.11ac_20 MHz BW. Worst case is 6.5 Mbps in 802.11ac_20 MHz BW.
6. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.

FCC PT.15.247 TEST REPORT	FCC Class II Permissive Change REPORT		www.hct.co.kr
Test Report No. HCTR1308FR10	Date of Issue: August 01, 2013	EUT Type: GSM/WCDMA/CDMA/LTE Phone Bluetooth, WLAN and NFC	FCC ID: ZNFVS980



Band :	UNII 2
Operation Mode:	802.11 ac_20 MHz BW
Transfer Rate:	6.5 Mbps
Operating Frequency	5300 MHz
Channel No.	60 Ch

Frequency [MHz]	Reading dBuV	AN.+CL-Amp G. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
10600	40.14	10.39	V	50.53	74	23.45	PK
10600	27.58	10.39	V	37.97	54	16.01	AV
15900	44.56	14.00	V	58.56	74	15.42	PK
15900	31.06	14.00	V	45.06	54	8.92	AV
10600	39.85	10.39	H	50.24	74	23.74	PK
10600	27.16	10.39	H	37.55	54	16.43	AV
15900	44.72	14.00	H	58.72	74	15.26	PK
15900	31.11	14.00	H	45.11	54	8.87	AV

Notes:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.
3. Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
4. Total = Reading Value + Antenna Factor + Cable Loss - Amp Gain
5. We have done all data rate in 802.11ac_20 MHz BW. Worst case is 6.5 Mbps in 802.11ac_20 MHz BW.
6. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.

FCC PT.15.247 TEST REPORT	FCC Class II Permissive Change REPORT		www.hct.co.kr
Test Report No. HCTR1308FR10	Date of Issue: August 01, 2013	EUT Type: GSM/WCDMA/CDMA/LTE Phone Bluetooth, WLAN and NFC	FCC ID: ZNFVS980



Band :	UNII 2
Operation Mode:	802.11 ac_20 MHz BW
Transfer Rate:	6.5 Mbps
Operating Frequency	5320 MHz
Channel No.	64 Ch

Frequency [MHz]	Reading dBuV	AN.+CL-Amp G. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
10640	40.44	10.50	V	50.94	74	23.04	PK
10640	28.02	10.50	V	38.52	54	15.46	AV
15960	43.85	14.27	V	58.12	74	15.86	PK
15960	30.48	14.27	V	44.75	54	9.23	AV
10640	40.12	10.50	H	50.62	74	23.36	PK
10640	27.85	10.50	H	38.35	54	15.63	AV
15960	44.42	14.27	H	58.69	74	15.29	PK
15960	30.76	14.27	H	45.03	54	8.95	AV

Notes:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.
3. Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
4. Total = Reading Value + Antenna Factor + Cable Loss - Amp Gain
5. We have done all data rate in 802.11ac_20 MHz BW. Worst case is 6.5 Mbps in 802.11ac_20 MHz BW.
6. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.

FCC PT.15.247 TEST REPORT	FCC Class II Permissive Change REPORT		www.hct.co.kr
Test Report No. HCTR1308FR10	Date of Issue: August 01, 2013	EUT Type: GSM/WCDMA/CDMA/LTE Phone Bluetooth, WLAN and NFC	FCC ID: ZNFVS980



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

Frequency [MHz]	Reading dBuV	AN.+CL-Amp G. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
10540	40.89	10.55	V	51.44	68.2	16.76	PK
15810	45.68	14.26	V	59.94	74.0	14.04	PK
15810	32.19	14.26	V	46.45	54.0	7.53	AV
10540	40.67	10.55	H	51.22	68.2	16.98	PK
15810	45.63	14.26	H	59.89	74.0	14.09	PK
15810	32.18	14.26	H	46.44	54.0	7.54	AV

Notes:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.
3. Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
4. Total = Reading Value + Antenna Factor + Cable Loss - Amp Gain
5. We have done all data rate in 802.11n_40 MHz BW. Worst case is 13.5 Mbps in 802.11n_40 MHz BW.
6. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.

FCC PT.15.247 TEST REPORT	FCC Class II Permissive Change REPORT		www.hct.co.kr
Test Report No. HCTR1308FR10	Date of Issue: August 01, 2013	EUT Type: GSM/WCDMA/CDMA/LTE Phone Bluetooth, WLAN and NFC	FCC ID: ZNFVS980



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

Frequency [MHz]	Reading dBuV	AN.+CL-Amp G. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
10620	39.47	10.25	V	49.72	74	24.26	PK
10620	26.29	10.25	V	36.54	54	17.44	AV
15930	45.82	13.62	V	59.44	74	14.54	PK
15930	30.79	13.62	V	44.41	54	9.57	AV
10620	39.92	10.25	H	50.17	74	23.81	PK
10620	26.32	10.25	H	36.57	54	17.41	AV
15930	45.13	13.62	H	58.75	74	15.23	PK
15930	30.53	13.62	H	44.15	54	9.83	AV

Notes:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.
3. Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
4. Total = Reading Value + Antenna Factor + Cable Loss - Amp Gain
5. We have done all data rate in 802.11n_40 MHz BW. Worst case is 13.5 Mbps in 802.11n_40 MHz BW.
6. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.

FCC PT.15.247 TEST REPORT	FCC Class II Permissive Change REPORT		www.hct.co.kr
Test Report No. HCTR1308FR10	Date of Issue: August 01, 2013	EUT Type: GSM/WCDMA/CDMA/LTE Phone Bluetooth, WLAN and NFC	FCC ID: ZNFVS980



Band :	UNII 2
Operation Mode:	802.11ac_40 MHz BW
Transfer Rate:	6.5 Mbps
Operating Frequency	5270 MHz
Channel No.	54 Ch

Frequency [MHz]	Reading dBuV	AN.+CL-Amp G. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
10540	41.04	10.55	V	51.59	68.2	16.61	PK
15810	46.03	14.26	V	60.29	74.0	13.69	PK
15810	32.74	14.26	V	47.00	54.0	6.98	AV
10540	40.83	10.55	H	51.38	68.2	16.82	PK
15810	45.86	14.26	H	60.12	74.0	13.86	PK
15810	32.69	14.26	H	46.95	54.0	7.03	AV

Notes:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.
3. Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
4. Total = Reading Value + Antenna Factor + Cable Loss - Amp Gain
5. We have done all data rate in 802.11ac_40 MHz BW. Worst case is 13.5 Mbps in 802.11ac_40 MHz BW.
6. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.

FCC PT.15.247 TEST REPORT		FCC Class II Permissive Change REPORT		www.hct.co.kr
Test Report No. HCTR1308FR10	Date of Issue: August 01, 2013	EUT Type: GSM/WCDMA/CDMA/LTE Phone Bluetooth, WLAN and NFC		FCC ID: ZNFVS980



Band :	UNII 2
Operation Mode:	802.11ac_40 MHz BW
Transfer Rate:	6.5 Mbps
Operating Frequency	5310 MHz
Channel No.	62 Ch

Frequency [MHz]	Reading dBuV	AN.+CL-Amp G. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
10620	39.99	10.25	V	50.24	74	23.74	PK
10620	26.72	10.25	V	36.97	54	17.01	AV
15930	45.06	13.62	V	58.68	74	15.30	PK
15930	30.71	13.62	V	44.33	54	9.65	AV
10620	40.16	10.25	H	50.41	74	23.57	PK
10620	26.68	10.25	H	36.93	54	17.05	AV
15930	45.11	13.62	H	58.73	74	15.25	PK
15930	30.82	13.62	H	44.44	54	9.54	AV

Notes:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.
3. Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
4. Total = Reading Value + Antenna Factor + Cable Loss - Amp Gain
5. We have done all data rate in 802.11ac_40 MHz BW. Worst case is 13.5 Mbps in 802.11ac_40 MHz BW.
6. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.

FCC PT.15.247 TEST REPORT	FCC Class II Permissive Change REPORT		www.hct.co.kr
Test Report No. HCTR1308FR10	Date of Issue: August 01, 2013	EUT Type: GSM/WCDMA/CDMA/LTE Phone Bluetooth, WLAN and NFC	FCC ID: ZNFVS980



Band :	UNII 2
Operation Mode:	802.11ac_80 MHz BW
Transfer Rate:	29.3 Mbps
Operating Frequency	5290 MHz
Channel No.	58 Ch

Frequency [MHz]	Reading dBuV	AN.+CL-Amp G. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
10580	40.16	10.42	V	50.58	68.2	17.62	PK
15870	45.29	13.96	V	59.25	74.0	14.73	PK
15870	31.40	13.96	V	45.36	54.0	8.62	AV
10580	40.23	10.42	H	50.65	68.2	17.55	PK
15870	45.67	13.96	H	59.63	74.0	14.35	PK
15870	31.48	13.96	H	45.44	54.0	8.54	AV

Notes:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.
3. Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
4. Total = Reading Value + Antenna Factor + Cable Loss - Amp Gain
5. We have done all data rate in 802.11ac_80 MHz BW. Worst case is 13.5 Mbps in 802.11ac_80 MHz BW.
6. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.

FCC PT.15.247 TEST REPORT		FCC Class II Permissive Change REPORT		www.hct.co.kr
Test Report No. HCTR1308FR10	Date of Issue: August 01, 2013	EUT Type: GSM/WCDMA/CDMA/LTE Phone Bluetooth, WLAN and NFC		FCC ID: ZNFVS980



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

Frequency [MHz]	Reading dBuV	AN.+CL-Amp G. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
11000	39.10	11.28	V	50.38	74.0	23.60	PK
11000	26.30	11.28	V	37.58	54.0	16.40	AV
16500	45.09	14.19	V	59.28	68.2	8.92	PK
11000	40.19	11.28	H	51.47	74.0	22.51	PK
11000	26.47	11.28	H	37.75	54.0	16.23	AV
16500	45.22	14.19	H	59.41	68.2	8.79	PK

Notes:

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

FCC PT.15.247 TEST REPORT		FCC Class II Permissive Change REPORT		www.hct.co.kr
Test Report No. HCTR1308FR10	Date of Issue: August 01, 2013	EUT Type: GSM/WCDMA/CDMA/LTE Phone Bluetooth, WLAN and NFC		FCC ID: ZNFVS980



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

Frequency [MHz]	Reading dBuV	AN.+CL-Amp G. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
11160	39.20	11.10	V	50.30	74.0	23.68	PK
11160	26.31	11.10	V	37.41	54.0	16.57	AV
16740	45.84	15.70	V	61.54	68.2	6.66	PK
11160	39.14	11.10	H	50.24	74.0	23.74	PK
11160	26.22	11.10	H	37.32	54.0	16.66	AV
16740	45.23	15.70	H	60.93	68.2	7.27	PK

Notes:

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

FCC PT.15.247 TEST REPORT		FCC Class II Permissive Change REPORT		www.hct.co.kr
Test Report No. HCTR1308FR10	Date of Issue: August 01, 2013	EUT Type: GSM/WCDMA/CDMA/LTE Phone Bluetooth, WLAN and NFC		FCC ID: ZNFVS980



Band :	UNII 2e
Operation Mode:	802.11 a
Transfer Rate:	6 Mbps
Operating Frequency	5700 MHz
Channel No.	140 Ch

Frequency [MHz]	Reading dBuV	AN.+CL-Amp G. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
11400	42.03	10.97	V	53.00	74.0	20.98	PK
11400	28.30	10.97	V	39.27	54.0	14.71	AV
17100	45.47	17.82	V	63.29	68.2	4.91	PK
11400	42.05	10.97	H	53.02	74.0	20.96	PK
11400	28.30	10.97	H	39.27	54.0	14.71	AV
17100	45.60	17.82	H	63.42	68.2	4.78	PK

Notes:

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

FCC PT.15.247 TEST REPORT	FCC Class II Permissive Change REPORT		www.hct.co.kr
Test Report No. HCTR1308FR10	Date of Issue: August 01, 2013	EUT Type: GSM/WCDMA/CDMA/LTE Phone Bluetooth, WLAN and NFC	FCC ID: ZNFVS980



Band :	UNII 2e
Operation Mode:	802.11 n_20 MHz BW
Transfer Rate:	6.5 Mbps
Operating Frequency	5500 MHz
Channel No.	100 Ch

Frequency [MHz]	Reading dBuV	AN.+CL-Amp G. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
11000	39.99	11.28	V	51.27	74.0	22.71	PK
11000	26.55	11.28	V	37.83	54.0	16.15	AV
16500	45.84	14.19	V	60.03	68.2	8.17	PK
11000	40.25	11.28	H	51.53	74.0	22.45	PK
11000	24.45	11.28	H	35.73	54.0	18.25	AV
16500	45.56	14.19	H	59.75	68.2	8.45	PK

Notes:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.
3. Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
4. Total = Reading Value + Antenna Factor + Cable Loss - Amp Gain
5. We have done all data rate in 802.11n_20 MHz BW. Worst case is 6.5 Mbps in 802.11n_20 MHz BW.
6. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.

FCC PT.15.247 TEST REPORT		FCC Class II Permissive Change REPORT		www.hct.co.kr
Test Report No. HCTR1308FR10	Date of Issue: August 01, 2013	EUT Type: GSM/WCDMA/CDMA/LTE Phone Bluetooth, WLAN and NFC		FCC ID: ZNFVS980



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

Frequency [MHz]	Reading dBuV	AN.+CL-Amp G. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
11160	40.30	11.10	V	51.40	74.0	22.58	PK
11160	27.80	11.10	V	38.90	54.0	15.08	AV
16740	46.10	15.70	V	61.80	68.2	6.40	PK
11160	39.85	11.10	H	50.95	74.0	23.03	PK
11160	26.50	11.10	H	37.60	54.0	16.38	AV
16740	45.99	15.70	H	61.69	68.2	6.51	PK

Notes:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.
3. Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
4. Total = Reading Value + Antenna Factor + Cable Loss - Amp Gain
5. We have done all data rate in 802.11n_20 MHz BW. Worst case is 6.5 Mbps in 802.11n_20 MHz BW.
6. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.

FCC PT.15.247 TEST REPORT		FCC Class II Permissive Change REPORT		www.hct.co.kr
Test Report No. HCTR1308FR10	Date of Issue: August 01, 2013	EUT Type: GSM/WCDMA/CDMA/LTE Phone Bluetooth, WLAN and NFC		FCC ID: ZNFVS980



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

Frequency [MHz]	Reading dBuV	AN.+CL-Amp G. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
11400	42.52	10.97	V	53.49	74.0	20.49	PK
11400	29.31	10.97	V	40.28	54.0	13.70	AV
17100	45.94	17.82	V	63.76	68.2	4.44	PK
11400	41.86	10.97	H	52.83	74.0	21.15	PK
11400	28.40	10.97	H	39.37	54.0	14.61	AV
17100	45.80	17.82	H	63.62	68.2	4.58	PK

Notes:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.
3. Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
4. Total = Reading Value + Antenna Factor + Cable Loss - Amp Gain
5. We have done all data rate in 802.11n_20 MHz BW. Worst case is 6.5 Mbps in 802.11n_20 MHz BW.
6. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.

FCC PT.15.247 TEST REPORT		FCC Class II Permissive Change REPORT		www.hct.co.kr
Test Report No. HCTR1308FR10	Date of Issue: August 01, 2013	EUT Type: GSM/WCDMA/CDMA/LTE Phone Bluetooth, WLAN and NFC		FCC ID: ZNFVS980



Band :	UNII 2e
Operation Mode:	802.11 ac_20 MHz BW
Transfer Rate:	6.5 Mbps
Operating Frequency	5500 MHz
Channel No.	100 Ch

Frequency [MHz]	Reading dBuV	AN.+CL-Amp G. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
11000	40.20	11.28	V	51.48	74.0	22.50	PK
11000	26.61	11.28	V	37.89	54.0	16.09	AV
16500	45.79	14.19	V	59.98	68.2	8.22	PK
11000	40.12	11.28	H	51.40	74.0	22.58	PK
11000	26.50	11.28	H	37.78	54.0	16.20	AV
16500	45.77	14.19	H	59.96	68.2	8.24	PK

Notes:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.
3. Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
4. Total = Reading Value + Antenna Factor + Cable Loss - Amp Gain
5. We have done all data rate in 802.11ac_20 MHz BW. Worst case is 6.5 Mbps in 802.11ac_20 MHz BW.
6. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.

FCC PT.15.247 TEST REPORT		FCC Class II Permissive Change REPORT		www.hct.co.kr
Test Report No. HCTR1308FR10	Date of Issue: August 01, 2013	EUT Type: GSM/WCDMA/CDMA/LTE Phone Bluetooth, WLAN and NFC		FCC ID: ZNFVS980



Band :	UNII 2e
Operation Mode:	802.11 ac_20 MHz BW
Transfer Rate:	6.5 Mbps
Operating Frequency	5580 MHz
Channel No.	116 Ch

Frequency [MHz]	Reading dBuV	AN.+CL-Amp G. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
11160	40.82	11.10	V	51.92	74.0	22.06	PK
11160	27.28	11.10	V	38.38	54.0	15.60	AV
16740	46.22	15.70	V	61.92	68.2	6.28	PK
11160	40.62	11.10	H	51.72	74.0	22.26	PK
11160	26.75	11.10	H	37.85	54.0	16.13	AV
16740	45.78	15.70	H	61.48	68.2	6.72	PK

Notes:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.
3. Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
4. Total = Reading Value + Antenna Factor + Cable Loss - Amp Gain
5. We have done all data rate in 802.11ac_20 MHz BW. Worst case is 6.5 Mbps in 802.11ac_20 MHz BW.
6. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.

FCC PT.15.247 TEST REPORT	FCC Class II Permissive Change REPORT		www.hct.co.kr
Test Report No. HCTR1308FR10	Date of Issue: August 01, 2013	EUT Type: GSM/WCDMA/CDMA/LTE Phone Bluetooth, WLAN and NFC	FCC ID: ZNFVS980



Band :	UNII 2e
Operation Mode:	802.11 ac_20 MHz BW
Transfer Rate:	6.5 Mbps
Operating Frequency	5720 MHz
Channel No.	144 Ch

Frequency [MHz]	Reading dBuV	AN.+CL-Amp G. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
11400	42.64	10.97	V	53.61	74.0	20.37	PK
11400	28.07	10.97	V	39.04	54.0	14.94	AV
17100	45.58	17.82	V	63.40	68.2	4.80	PK
11400	41.06	10.97	H	52.03	74.0	21.95	PK
11400	28.25	10.97	H	39.22	54.0	14.76	AV
17100	45.88	17.82	H	63.70	68.2	4.50	PK

Notes:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.
3. Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
4. Total = Reading Value + Antenna Factor + Cable Loss - Amp Gain
5. We have done all data rate in 802.11ac_20 MHz BW. Worst case is 6.5 Mbps in 802.11ac_20 MHz BW.
6. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.

FCC PT.15.247 TEST REPORT		FCC Class II Permissive Change REPORT		www.hct.co.kr
Test Report No. HCTR1308FR10	Date of Issue: August 01, 2013	EUT Type: GSM/WCDMA/CDMA/LTE Phone Bluetooth, WLAN and NFC		FCC ID: ZNFVS980



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

Frequency [MHz]	Reading dBuV	AN.+CL-Amp G. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
11020	39.44	11.28	V	50.72	74.0	23.26	PK
11020	25.78	11.28	V	37.06	54.0	16.92	AV
16530	45.26	14.83	V	60.09	68.2	8.11	PK
11020	39.71	11.28	H	50.99	74.0	22.99	PK
11020	25.87	11.28	H	37.15	54.0	16.83	AV
16530	45.67	14.83	H	60.50	68.2	7.70	PK

Notes:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.
3. Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
4. Total = Reading Value + Antenna Factor + Cable Loss - Amp Gain
5. We have done all data rate in 802.11n_40 MHz BW. Worst case is 13.5 Mbps in 802.11n_40 MHz BW.
6. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.

FCC PT.15.247 TEST REPORT	FCC Class II Permissive Change REPORT		www.hct.co.kr
Test Report No. HCTR1308FR10	Date of Issue: August 01, 2013	EUT Type: GSM/WCDMA/CDMA/LTE Phone Bluetooth, WLAN and NFC	FCC ID: ZNFVS980



Band :	UNII 2e
Operation Mode:	802.11n_40 MHz BW
Transfer Rate:	13.5 Mbps
Operating Frequency	5590 MHz
Channel No.	118 Ch

Frequency [MHz]	Reading dBuV	AN.+CL-Amp G. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
11180	38.69	11.12	V	49.81	74.0	24.17	PK
11180	25.51	11.12	V	36.63	54.0	17.35	AV
16770	45.26	16.52	V	61.78	68.2	6.42	PK
11180	38.49	11.12	H	49.61	74.0	24.37	PK
11180	25.41	11.12	H	36.53	54.0	17.45	AV
16770	45.28	16.52	H	61.80	68.2	6.40	PK

Notes:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.
3. Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
4. Total = Reading Value + Antenna Factor + Cable Loss - Amp Gain
5. We have done all data rate in 802.11n_40 MHz BW. Worst case is 13.5 Mbps in 802.11n_40 MHz BW.
6. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.

FCC PT.15.247 TEST REPORT	FCC Class II Permissive Change REPORT		www.hct.co.kr
Test Report No. HCTR1308FR10	Date of Issue: August 01, 2013	EUT Type: GSM/WCDMA/CDMA/LTE Phone Bluetooth, WLAN and NFC	FCC ID: ZNFVS980



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

Frequency [MHz]	Reading dBuV	AN.+CL-Amp G. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
11340	38.55	10.86	V	49.41	74.0	24.57	PK
11340	25.20	10.86	V	36.06	54.0	17.92	AV
17010	45.16	18.15	V	63.31	68.2	4.89	PK
11340	38.29	10.86	H	49.15	74.0	24.83	PK
11340	25.16	10.86	H	36.02	54.0	17.96	AV
17010	45.83	18.15	H	63.98	68.2	4.22	PK

Notes:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.
3. Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
4. Total = Reading Value + Antenna Factor + Cable Loss - Amp Gain
5. We have done all data rate in 802.11n_40 MHz BW. Worst case is 13.5 Mbps in 802.11n_40 MHz BW.
6. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.

FCC PT.15.247 TEST REPORT	FCC Class II Permissive Change REPORT		www.hct.co.kr
Test Report No. HCTR1308FR10	Date of Issue: August 01, 2013	EUT Type: GSM/WCDMA/CDMA/LTE Phone Bluetooth, WLAN and NFC	FCC ID: ZNFVS980



Band :	UNII 2e
Operation Mode:	802.11ac_40 MHz BW
Transfer Rate:	6.5 Mbps
Operating Frequency	5510 MHz
Channel No.	102 Ch

Frequency [MHz]	Reading dBuV	AN.+CL-Amp G. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
11020	39.65	11.28	V	50.93	74.0	23.05	PK
11020	25.86	11.28	V	37.14	54.0	16.84	AV
16530	45.74	14.83	V	60.57	68.2	7.63	PK
11020	39.87	11.28	H	51.15	74.0	22.83	PK
11020	25.77	11.28	H	37.05	54.0	16.93	AV
16530	46.02	14.83	H	60.85	68.2	7.35	PK

Notes:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.
3. Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
4. Total = Reading Value + Antenna Factor + Cable Loss - Amp Gain
5. We have done all data rate in 802.11ac_40 MHz BW. Worst case is 13.5 Mbps in 802.11ac_40 MHz BW.
6. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.

FCC PT.15.247 TEST REPORT	FCC Class II Permissive Change REPORT		www.hct.co.kr
Test Report No. HCTR1308FR10	Date of Issue: August 01, 2013	EUT Type: GSM/WCDMA/CDMA/LTE Phone Bluetooth, WLAN and NFC	FCC ID: ZNFVS980



Band :	UNII 2e
Operation Mode:	802.11ac_40 MHz BW
Transfer Rate:	6.5 Mbps
Operating Frequency	5590 MHz
Channel No.	118 Ch

Frequency [MHz]	Reading dBuV	AN.+CL-Amp G. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
11180	38.84	11.12	V	49.96	74.0	24.02	PK
11180	25.32	11.12	V	36.44	54.0	17.54	AV
16770	45.49	16.52	V	62.01	68.2	6.19	PK
11180	38.79	11.12	H	49.91	74.0	24.07	PK
11180	25.30	11.12	H	36.42	54.0	17.56	AV
16770	45.69	16.52	H	62.21	68.2	5.99	PK

Notes:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.
3. Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
4. Total = Reading Value + Antenna Factor + Cable Loss - Amp Gain
5. We have done all data rate in 802.11ac_40 MHz BW. Worst case is 13.5 Mbps in 802.11ac_40 MHz BW.
6. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.

FCC PT.15.247 TEST REPORT	FCC Class II Permissive Change REPORT		www.hct.co.kr
Test Report No. HCTR1308FR10	Date of Issue: August 01, 2013	EUT Type: GSM/WCDMA/CDMA/LTE Phone Bluetooth, WLAN and NFC	FCC ID: ZNFVS980



Band :	UNII 2e
Operation Mode:	802.11ac_40 MHz BW
Transfer Rate:	6.5 Mbps
Operating Frequency	5710 MHz
Channel No.	142 Ch

Frequency [MHz]	Reading dBuV	AN.+CL-Amp G. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
11420	39.71	10.73	V	50.44	74.0	23.54	PK
11420	25.34	10.73	V	36.07	54.0	17.91	AV
17130	45.74	18.11	V	63.85	68.2	4.35	PK
11420	39.73	10.73	H	50.46	74.0	23.52	PK
11420	25.41	10.73	H	36.14	54.0	17.84	AV
17130	45.88	18.11	H	63.99	68.2	4.21	PK

Notes:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.
3. Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
4. Total = Reading Value + Antenna Factor + Cable Loss - Amp Gain
5. We have done all data rate in 802.11ac_40 MHz BW. Worst case is 13.5 Mbps in 802.11ac_40 MHz BW.
6. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.

FCC PT.15.247 TEST REPORT	FCC Class II Permissive Change REPORT		www.hct.co.kr
Test Report No. HCTR1308FR10	Date of Issue: August 01, 2013	EUT Type: GSM/WCDMA/CDMA/LTE Phone Bluetooth, WLAN and NFC	FCC ID: ZNFVS980



Band :	UNII 2e
Operation Mode:	802.11ac_80 MHz BW
Transfer Rate:	6.5 Mbps
Operating Frequency	5530 MHz
Channel No.	106 Ch

Frequency [MHz]	Reading dBuV	AN.+CL-Amp G. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
11060	39.28	11.48	V	50.76	74.0	23.22	PK
11060	25.76	11.48	V	37.24	54.0	16.74	AV
16590	45.48	14.42	V	59.90	68.2	8.30	PK
11060	39.24	11.48	H	50.72	74.0	23.26	PK
11060	25.87	11.48	H	37.35	54.0	16.63	AV
16590	45.29	14.42	H	59.71	68.2	8.49	PK

Notes:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.
3. Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
4. Total = Reading Value + Antenna Factor + Cable Loss - Amp Gain
5. We have done all data rate in 802.11ac_80 MHz BW. Worst case is 13.5 Mbps in 802.11ac_80 MHz BW.
6. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.

FCC PT.15.247 TEST REPORT		FCC Class II Permissive Change REPORT		www.hct.co.kr
Test Report No. HCTR1308FR10	Date of Issue: August 01, 2013	EUT Type: GSM/WCDMA/CDMA/LTE Phone Bluetooth, WLAN and NFC		FCC ID: ZNFVS980



Band :	UNII 2e
Operation Mode:	802.11ac_80 MHz BW
Transfer Rate:	6.5 Mbps
Operating Frequency	5690 MHz
Channel No.	138 Ch

Frequency [MHz]	Reading dBuV	AN.+CL-Amp G. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
11380	38.61	11.05	V	49.66	74.0	24.32	PK
11380	24.40	11.05	V	35.45	54.0	18.53	AV
17070	45.49	18.08	V	63.57	68.2	4.63	PK
11380	38.94	11.05	H	49.99	74.0	23.99	PK
11380	24.20	11.05	H	35.25	54.0	18.73	AV
17070	45.56	18.08	H	63.64	68.2	4.56	PK

Notes:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.
3. Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
4. Total = Reading Value + Antenna Factor + Cable Loss - Amp Gain
5. We have done all data rate in 802.11ac_80 MHz BW. Worst case is 13.5 Mbps in 802.11ac_80 MHz BW.
6. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.

FCC PT.15.247 TEST REPORT		FCC Class II Permissive Change REPORT		www.hct.co.kr
Test Report No. HCTR1308FR10	Date of Issue: August 01, 2013	EUT Type: GSM/WCDMA/CDMA/LTE Phone Bluetooth, WLAN and NFC		FCC ID: ZNFVS980



8.1.2 RADIATED RESTRICTED BAND EDGE MEASUREMENTS

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

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

Stand alone

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

Frequency [MHz]	Reading dBuV	AN.+CL+AMP+ATT. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
5150	60.05	3.63	H	63.68	74	10.30	PK
5150	43.94	3.63	H	47.57	54	6.41	AV
5150	58.53	3.63	V	62.16	74	11.82	PK
5150	41.86	3.63	V	45.49	54	8.49	AV

Band :	UNII 1
Operation Mode:	802.11 n_20 MHz BW
Transfer Rate:	6 Mbps
Operating Frequency	5180 MHz
Channel No.	36 Ch

Frequency [MHz]	Reading dBuV	AN.+CL+AMP+ATT. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
5150	65.53	3.63	H	69.16	74	4.82	PK
5150	43.93	3.63	H	47.56	54	6.42	AV
5150	63.49	3.63	V	67.12	74	6.86	PK
5150	41.56	3.63	V	45.19	54	8.79	AV

FCC PT.15.247 TEST REPORT		FCC Class II Permissive Change REPORT		www.hct.co.kr
Test Report No. HCTR1308FR10	Date of Issue: August 01, 2013	EUT Type: GSM/WCDMA/CDMA/LTE Phone Bluetooth, WLAN and NFC		FCC ID: ZNFVS980



Band : UNII 1
 Operation Mode: 802.11 ac_20 MHz BW
 Transfer Rate: 6.5 Mbps
 Operating Frequency 5180 MHz
 Channel No. 36 Ch

Frequency [MHz]	Reading dBuV	AN.+CL+AMP+ATT. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
5150	65.05	3.63	H	68.68	74	5.30	PK
5150	42.48	3.63	H	46.11	54	7.87	AV
5150	64.12	3.63	V	67.75	74	6.23	PK
5150	40.94	3.63	V	44.57	54	9.41	AV

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

Frequency [MHz]	Reading dBuV	AN.+CL+AMP+ATT. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
5150	60.90	3.63	H	64.53	74	9.45	PK
5150	44.50	3.63	H	48.13	54	5.85	AV
5150	64.01	3.63	V	67.64	74	6.34	PK
5150	46.84	3.63	V	50.47	54	3.51	AV



Band : UNII 1
 Operation Mode: 802.11 ac_40 MHz BW
 Transfer Rate: 13.5 Mbps
 Operating Frequency 5190 MHz
 Channel No. 38 Ch

Frequency [MHz]	Reading dBuV	AN.+CL+AMP+ATT. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
5150	59.58	3.63	H	63.21	74	10.77	PK
5150	44.33	3.63	H	47.96	54	6.02	AV
5150	62.54	3.63	V	66.17	74	7.81	PK
5150	46.61	3.63	V	50.24	54	3.74	AV

Band : UNII 1
 Operation Mode: 802.11 ac_80 MHz BW
 Transfer Rate: 29.3 Mbps
 Operating Frequency 5210 MHz
 Channel No. 42 Ch

Frequency [MHz]	Reading dBuV	AN.+CL+AMP+ATT. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
5150	60.41	3.63	H	64.04	74	9.94	PK
5150	43.98	3.63	H	47.61	54	6.37	AV
5150	62.48	3.63	V	66.11	74	7.87	PK
5150	46.02	3.63	V	49.65	54	4.33	AV

Notes:

1. Total = Reading Value + Antenna Factor + Cable Loss - Amp Gain + ATT
2. We have done all data rate in 802.11a/n/ac mode test. . Worst case of EUT is lowest data rate in 802.11a/n/ac
3. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.

FCC PT.15.247 TEST REPORT		FCC Class II Permissive Change REPORT		www.hct.co.kr
Test Report No. HCTR1308FR10	Date of Issue: August 01, 2013	EUT Type: GSM/WCDMA/CDMA/LTE Phone Bluetooth, WLAN and NFC		FCC ID: ZNFVS980



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

Frequency [MHz]	Reading dBuV	AN.+CL+AMP+ATT. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
5350	51.14	4.45	H	55.59	74	18.39	PK
5350	37.91	4.45	H	42.36	54	11.62	AV
5350	50.41	4.45	V	54.86	74	19.12	PK
5350	37.09	4.45	V	41.54	54	12.44	AV

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

Frequency [MHz]	Reading dBuV	AN.+CL+AMP+ATT. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
5350	53.71	4.45	H	58.16	74	15.82	PK
5350	37.36	4.45	H	41.81	54	12.17	AV
5350	52.86	4.45	V	57.31	74	16.67	PK
5350	36.54	4.45	V	40.99	54	12.99	AV



Band : UNII 2
 Operation Mode: 802.11 ac_20 MHz BW
 Transfer Rate: 6.5 Mbps
 Operating Frequency 5320 MHz
 Channel No. 62 Ch

Frequency [MHz]	Reading dBuV	AN.+CL+AMP+ATT. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
5350	52.08	4.45	H	56.53	74	17.45	PK
5350	37.23	4.45	H	41.68	54	12.30	AV
5350	51.02	4.45	V	55.47	74	18.51	PK
5350	36.53	4.45	V	40.98	54	13.00	AV

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

Frequency [MHz]	Reading dBuV	AN.+CL+AMP+ATT. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
5350	59.36	4.45	H	63.81	74	10.17	PK
5350	40.67	4.45	H	45.12	54	8.86	AV
5350	57.68	4.45	V	62.13	74	11.85	PK
5350	38.91	4.45	V	43.36	54	10.62	AV



Band : UNII 2
 Operation Mode: 802.11 ac_40 MHz BW
 Transfer Rate: 13.5 Mbps
 Operating Frequency 5310 MHz
 Channel No. 62 Ch

Frequency [MHz]	Reading dBuV	AN.+CL+AMP+ATT. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
5350	56.84	4.45	H	61.29	74	12.69	PK
5350	39.15	4.45	H	43.6	54	10.38	AV
5350	55.92	4.45	V	60.37	74	13.61	PK
5350	38.35	4.45	V	42.8	54	11.18	AV

Band : UNII 2
 Operation Mode: 802.11 ac_80 MHz BW
 Transfer Rate: 29.3 Mbps
 Operating Frequency 5290 MHz
 Channel No. 58 Ch

Frequency [MHz]	Reading dBuV	AN.+CL+AMP+ATT. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
5350	59.75	4.45	H	64.20	74	9.78	PK
5350	39.04	4.45	H	43.49	54	10.49	AV
5350	57.82	4.45	V	62.27	74	11.71	PK
5350	38.21	4.45	V	42.66	54	11.32	AV

Notes:

1. Total = Reading Value + Antenna Factor + Cable Loss - Amp Gain + ATT
2. We have done all data rate in 802.11a/n/ac mode test. . Worst case of EUT is lowest data rate in 802.11a/n/ac
3. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.



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

Frequency [MHz]	Reading DBuV	AN.+CL+AMP+ATT. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
5460	51.24	5.54	H	56.78	74.0	17.20	PK
5460	37.23	5.54	H	42.77	54.0	11.21	AV
5470	51.89	5.44	H	57.33	68.2	10.87	PK
5460	49.88	5.54	V	55.42	74.0	18.56	PK
5460	36.35	5.54	V	41.89	54.0	12.09	AV
5470	50.48	5.44	V	55.92	68.0	12.28	PK

Band : UNII 2e
 Operation Mode: 802.11 a
 Transfer Rate: 6 Mbps
 Operating Frequency 5700 MHz
 Channel No. 140 Ch

Frequency [MHz]	Reading DBuV	AN.+CL+AMP+ATT. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
5725	56.94	6.80	H	63.74	68.2	4.46	PK
5725	53.69	6.80	V	60.49	68.2	7.71	AV



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

Frequency [MHz]	Reading DBuV	AN.+CL+AMP+ATT. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
5460	50.82	5.54	H	56.36	74.0	17.62	PK
5460	36.50	5.54	H	42.04	54.0	11.94	AV
5470	57.59	5.44	H	63.03	68.2	5.17	PK
5460	49.94	5.54	V	55.48	74.0	18.50	PK
5460	36.67	5.54	V	42.21	54.0	11.77	AV
5470	55.84	5.44	V	61.28	68.0	6.92	PK

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

Frequency [MHz]	Reading DBuV	AN.+CL+AMP+ATT. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
5725	56.53	6.80	H	63.33	68.2	4.87	PK
5725	44.45	6.80	V	51.25	68.2	16.95	PK



Band : UNII 2e
 Operation Mode: 802.11 ac_20 MHz BW
 Transfer Rate: 6.5 Mbps
 Operating Frequency 5500 MHz
 Channel No. 100 Ch

Frequency [MHz]	Reading DBuV	AN.+CL+AMP+ATT. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
5460	51.23	5.54	H	56.77	74.0	17.21	PK
5460	36.38	5.54	H	41.92	54.0	12.06	AV
5470	56.16	5.44	H	61.6	68.2	6.60	PK
5460	50.49	5.54	V	56.03	74.0	17.95	PK
5460	35.46	5.54	V	41	54.0	12.98	AV
5470	54.29	5.44	V	59.73	68.0	8.47	PK

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

Frequency [MHz]	Reading dBuV	AN.+CL+AMP+ATT. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
5460	53.22	5.54	H	58.76	74.0	15.22	PK
5460	37.12	5.54	H	42.66	54.0	11.32	AV
5470	58.78	5.44	H	64.22	68.2	3.98	PK
5460	51.15	5.54	V	56.69	74.0	17.29	PK
5460	36.59	5.54	V	42.13	54.0	11.85	AV
5470	56.87	5.44	V	62.31	68.0	5.89	PK



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

Frequency [MHz]	Reading DBuV	AN.+CL+AMP+ATT. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
5725	50.14	6.80	H	56.94	68.2	11.26	PK
5725	47.56	6.80	V	54.36	68.2	13.84	AV

Band : UNII 2e
 Operation Mode: 802.11 ac_40 MHz BW
 Transfer Rate: 13.5 Mbps
 Operating Frequency 5510 MHz
 Channel No. 102 Ch

Frequency [MHz]	Reading dBuV	AN.+CL+AMP+ATT. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
5460	52.67	5.54	H	58.21	74.0	15.77	PK
5460	36.75	5.54	H	42.29	54.0	11.69	AV
5470	58.50	5.44	H	63.94	68.2	4.26	PK
5460	51.23	5.54	V	56.77	74.0	17.21	PK
5460	36.21	5.54	V	41.75	54.0	12.23	AV
5470	57.03	5.44	V	62.47	68.0.	5.73	PK



Band : UNII 2e
 Operation Mode: 802.11 ac_80 MHz BW
 Transfer Rate: 29.3 Mbps
 Operating Frequency 5530 MHz
 Channel No. 106 Ch

Frequency [MHz]	Reading dBuV	AN.+CL+AMP+ATT. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
5460	54.53	5.54	H	60.07	74.0	13.91	PK
5460	37.95	5.54	H	43.49	54.0	10.49	AV
5470	57.77	5.44	H	63.21	68.2	4.99	PK
5460	56.84	5.54	V	62.38	74.0	11.60	PK
5460	38.56	5.54	V	44.1	54.0	9.88	AV
5470	56.92	5.44	V	62.36	68.0.	5.84	PK

Notes:

1. Total = Reading Value + Antenna Factor + Cable Loss - Amp Gain + ATT
2. We have done all data rate in 802.11a/n/ac mode test. . Worst case of EUT is lowest data rate in 802.11a/n/ac
3. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.



With Wireless Charger

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

Frequency [MHz]	Reading dBuV	AN.+CL+AMP+ATT. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
5150	56.94	3.63	H	60.57	74	13.41	PK
5150	40.88	3.63	H	44.51	54	9.47	AV
5150	56.33	3.63	V	59.96	74	14.02	PK
5150	40.07	3.63	V	43.7	54	10.28	AV

Band :	UNII 1
Operation Mode:	802.11 n_20 MHz BW
Transfer Rate:	6 Mbps
Operating Frequency	5180 MHz
Channel No.	36 Ch

Frequency [MHz]	Reading dBuV	AN.+CL+AMP+ATT. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
5150	64.57	3.63	H	68.20	74	5.78	PK
5150	43.11	3.63	H	46.74	54	7.24	AV
5150	62.47	3.63	V	66.1	74	7.88	PK
5150	40.97	3.63	V	44.6	54	9.38	AV



Band : UNII 1
 Operation Mode: 802.11 ac_20 MHz BW
 Transfer Rate: 6.5 Mbps
 Operating Frequency 5180 MHz
 Channel No. 36 Ch

Frequency [MHz]	Reading dBuV	AN.+CL+AMP+ATT. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
5150	63.28	3.63	H	66.91	74	7.07	PK
5150	41.87	3.63	H	45.5	54	8.48	AV
5150	63.19	3.63	V	66.82	74	7.16	PK
5150	40.47	3.63	V	44.1	54	9.88	AV

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

Frequency [MHz]	Reading dBuV	AN.+CL+AMP+ATT. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
5150	61.28	3.63	H	64.91	74	9.07	PK
5150	43.88	3.63	H	47.51	54	6.47	AV
5150	58.78	3.63	V	62.41	74	11.57	PK
5150	41.60	3.63	V	45.23	54	8.75	AV



Band : UNII 1
 Operation Mode: 802.11 ac_40 MHz BW
 Transfer Rate: 13.5 Mbps
 Operating Frequency 5190 MHz
 Channel No. 38 Ch

Frequency [MHz]	Reading dBuV	AN.+CL+AMP+ATT. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
5150	58.56	3.63	H	62.19	74	11.79	PK
5150	42.38	3.63	H	46.01	54	7.97	AV
5150	58.33	3.63	V	61.96	74	12.02	PK
5150	41.58	3.63	V	45.21	54	8.77	AV

Band : UNII 1
 Operation Mode: 802.11 ac_80 MHz BW
 Transfer Rate: 29.3 Mbps
 Operating Frequency 5210 MHz
 Channel No. 42 Ch

Frequency [MHz]	Reading dBuV	AN.+CL+AMP+ATT. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
5150	58.55	3.63	H	62.18	74	11.80	PK
5150	42.85	3.63	H	46.48	54	7.50	AV
5150	58.45	3.63	V	62.08	74	11.90	PK
5150	40.99	3.63	V	44.62	54	9.36	AV

Notes:

1. Total = Reading Value + Antenna Factor + Cable Loss - Amp Gain + ATT
2. We have done all data rate in 802.11a/n/ac mode test. . Worst case of EUT is lowest data rate in 802.11a/n/ac
3. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.



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

Frequency [MHz]	Reading dBuV	AN.+CL+AMP+ATT. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
5350	49.25	4.45	H	53.70	74	20.28	PK
5350	35.58	4.45	H	40.03	54	13.95	AV
5350	50.30	4.45	V	54.75	74	19.23	PK
5350	36.69	4.45	V	41.14	54	12.84	AV

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

Frequency [MHz]	Reading dBuV	AN.+CL+AMP+ATT. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
5350	53.18	4.45	H	57.63	74	16.35	PK
5350	36.74	4.45	H	41.19	54	12.79	AV
5350	51.99	4.45	V	56.44	74	17.54	PK
5350	36.04	4.45	V	40.49	54	13.49	AV



Band : UNII 2
 Operation Mode: 802.11 ac_20 MHz BW
 Transfer Rate: 6.5 Mbps
 Operating Frequency 5320 MHz
 Channel No. 62 Ch

Frequency [MHz]	Reading dBuV	AN.+CL+AMP+ATT. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
5350	51.27	4.45	H	55.72	74	18.26	PK
5350	36.44	4.45	H	40.89	54	13.09	AV
5350	50.36	4.45	V	54.81	74	19.17	PK
5350	36.04	4.45	V	40.49	54	13.49	AV

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

Frequency [MHz]	Reading dBuV	AN.+CL+AMP+ATT. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
5350	59.37	4.45	H	63.82	74	10.16	PK
5350	40.51	4.45	H	44.96	54	9.02	AV
5350	57.10	4.45	V	61.55	74	12.43	PK
5350	38.45	4.45	V	42.90	54	11.08	AV



Band : UNII 2
 Operation Mode: 802.11 ac_40 MHz BW
 Transfer Rate: 13.5 Mbps
 Operating Frequency 5310 MHz
 Channel No. 62 Ch

Frequency [MHz]	Reading dBuV	AN.+CL+AMP+ATT. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
5350	56.01	4.45	H	60.46	74	13.52	PK
5350	38.47	4.45	H	42.92	54	11.06	AV
5350	53.47	4.45	V	57.92	74	16.06	PK
5350	37.68	4.45	V	42.13	54	11.85	AV

Band : UNII 2
 Operation Mode: 802.11 ac_80 MHz BW
 Transfer Rate: 29.3 Mbps
 Operating Frequency 5290 MHz
 Channel No. 58 Ch

Frequency [MHz]	Reading dBuV	AN.+CL+AMP+ATT. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
5350	57.28	4.45	H	61.73	74	12.25	PK
5350	35.12	4.45	H	39.57	54	14.41	AV
5350	54.28	4.45	V	58.73	74	15.25	PK
5350	36.05	4.45	V	40.5	54	13.48	AV

Notes:

1. Total = Reading Value + Antenna Factor + Cable Loss - Amp Gain + ATT
2. We have done all data rate in 802.11a/n/ac mode test. . Worst case of EUT is lowest data rate in 802.11a/n/ac
3. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.



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

Frequency [MHz]	Reading DBuV	AN.+CL+AMP+ATT. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
5460	50.42	5.54	H	55.96	74.0	18.02	PK
5460	36.75	5.54	H	42.29	54.0	11.69	AV
5470	50.12	5.44	H	55.56	68.2	12.64	PK
5460	48.99	5.54	V	54.53	74.0	19.45	PK
5460	35.77	5.54	V	41.31	54.0	12.67	AV
5470	50.03	5.44	V	55.47	68.0	12.73	PK

Band : UNII 2e
 Operation Mode: 802.11 a
 Transfer Rate: 6 Mbps
 Operating Frequency 5700 MHz
 Channel No. 140 Ch

Frequency [MHz]	Reading DBuV	AN.+CL+AMP+ATT. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
5725	51.83	6.80	H	58.63	68.2	9.57	PK
5725	53.30	6.80	V	60.10	68.2	8.10	AV



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

Frequency [MHz]	Reading DBuV	AN.+CL+AMP+ATT. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
5460	50.11	5.54	H	55.65	74.0	18.33	PK
5460	36.08	5.54	H	41.62	54.0	12.36	AV
5470	57.07	5.44	H	62.51	68.2	5.69	PK
5460	49.42	5.54	V	54.96	74.0	19.02	PK
5460	36.67	5.54	V	42.21	54.0	11.77	AV
5470	55.33	5.44	V	60.77	68.0	7.43	PK

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

Frequency [MHz]	Reading DBuV	AN.+CL+AMP+ATT. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
5725	54.87	6.80	H	61.67	68.2	6.53	PK
5725	50.48	6.80	V	57.28	68.2	10.92	PK



Band : UNII 2e
 Operation Mode: 802.11 ac_20 MHz BW
 Transfer Rate: 6.5 Mbps
 Operating Frequency 5500 MHz
 Channel No. 100 Ch

Frequency [MHz]	Reading DBuV	AN.+CL+AMP+ATT. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
5460	51.00	5.54	H	56.54	74.0	17.44	PK
5460	35.88	5.54	H	41.42	54.0	12.56	AV
5470	55.31	5.44	H	60.75	68.2	7.45	PK
5460	50.10	5.54	V	55.64	74.0	18.34	PK
5460	35.03	5.54	V	40.57	54.0	13.41	AV
5470	53.77	5.44	V	59.21	68.0	8.99	PK

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

Frequency [MHz]	Reading dBuV	AN.+CL+AMP+ATT. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
5460	52.47	5.54	H	58.01	74.0	15.97	PK
5460	36.58	5.54	H	42.12	54.0	11.86	AV
5470	57.87	5.44	H	63.31	68.2	4.89	PK
5460	50.29	5.54	V	55.83	74.0	18.15	PK
5460	36.28	5.54	V	41.82	54.0	12.16	AV
5470	55.77	5.44	V	61.21	68.0	6.99	PK



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

Frequency [MHz]	Reading DBuV	AN.+CL+AMP+ATT. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
5725	49.86	6.80	H	56.66	68.2	11.54	PK
5725	46.33	6.80	V	53.13	68.2	15.07	AV

Band :	UNII 2e
Operation Mode:	802.11 ac_40 MHz BW
Transfer Rate:	13.5 Mbps
Operating Frequency	5510 MHz
Channel No.	102 Ch

Frequency [MHz]	Reading dBuV	AN.+CL+AMP+ATT. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
5460	52.47	5.54	H	58.01	74.0	15.97	PK
5460	36.20	5.54	H	41.74	54.0	12.24	AV
5470	55.36	5.44	H	60.8	68.2	7.40	PK
5460	50.48	5.54	V	56.02	74.0	17.96	PK
5460	35.43	5.54	V	40.97	54.0	13.01	AV
5470	55.17	5.44	V	60.61	68.0	7.59	PK

Band : UNII 2e
 Operation Mode: 802.11 ac_80 MHz BW
 Transfer Rate: 29.3 Mbps
 Operating Frequency 5530 MHz
 Channel No. 106 Ch

Frequency [MHz]	Reading dBuV	AN.+CL+AMP+ATT. [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
5460	54.48	5.54	H	60.02	74.0	13.96	PK
5460	36.48	5.54	H	42.02	54.0	11.96	AV
5470	56.29	5.44	H	61.73	68.2	6.47	PK
5460	55.48	5.54	V	61.02	74.0	12.96	PK
5460	35.59	5.54	V	41.13	54.0	12.85	AV
5470	55.42	5.44	V	60.86	68.0.	7.34	PK

Notes:

1. Total = Reading Value + Antenna Factor + Cable Loss - Amp Gain + ATT
2. We have done all data rate in 802.11a/n/ac mode test. . Worst case of EUT is lowest data rate in 802.11a/n/ac
3. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.

9. LIST OF TEST EQUIPMENT

Manufacturer	Model / Equipment	Calibration Interval	Calibration Due	Serial No.
Rohde & Schwarz	ENV216/ LISN	Annual	02/06/2014	100073
Schwarzbeck	VULB 9160/ TRILOG Antenna	Biennial	12/17/2014	3150
Rohde & Schwarz	ESI 40 / EMI TEST RECEIVER	Annual	04/16/2014	831564103
Agilent	E4440A/ Spectrum Analyzer	Annual	04/25/2014	US45303008
Agilent	N9020A/ SIGNAL ANALYZER	Annual	05/14/2014	MY51110063
HD	MA240/ Antenna Position Tower	N/A	N/A	556
EMCO	1050/ Turn Table	N/A	N/A	114
HD GmbH	HD 100/ Controller	N/A	N/A	13
HD GmbH	KMS 560/ SlideBar	N/A	N/A	12
Rohde & Schwarz	SCU-18/ Signal Conditioning Unit	Annual	09/11/2013	10094
MITEQ	AMF-6B-180265-35-10P / POWER AMP	Annual	04/16/2014	667624
CERNEX	CBL26405040 / POWER AMP	Annual	04/16/2014	19660
Schwarzbeck	BBHA 9120D/ Horn Antenna	Biennial	10/17/2013	937
Schwarzbeck	BBHA9170 / Horn Antenna(15 GHz ~ 40 GHz)	Biennial	10/30/2014	BBHA9170124
Rohde & Schwarz	FSP / Spectrum Analyzer	Annual	02/08/2014	839117/011
Agilent	E4416A /Power Meter	Annual	11/07/2013	GB41291412
Agilent	E9327A /POWER SENSOR	Annual	04/16/2014	MY4442009
Wainwright Instrument	WHF3.0/18G-10EF / High Pass Filter	Annual	02/08/2014	F6
Wainwright Instrument	WHNX6.0/26.5G-6SS / High Pass Filter	Annual	04/16/2014	1
Wainwright Instrument	WHNX7.0/18G-8SS / High Pass Filter	Annual	04/16/2014	29
Wainwright Instrument	WRCJ2400/2483.5-2370/2520-60/14SS / Band Reject Filter	Annual	03/19/2014	1
Hewlett Packard	11636B/Power Divider	Annual	11/07/2013	11377
Agilent	87300B/Directional Coupler	Annual	12/24/2013	3116A03621
Hewlett Packard	11667B / Power Splitter	Annual	05/29/2014	05001
DIGITAL	EP-3010 /DC POWER SUPPLY	Annual	11/07/2013	3110117
ITECH	IT6720 / DC POWER SUPPLY	Annual	11/07/2013	010002156287001199
TESCOM	TC-3000C / BLUETOOTH TESTER	Annual	04/24/2014	3000C000276
Rohde & Schwarz	CBT / BLUETOOTH TESTER	Annual	04/25/2014	100422
EMCO	6502.LOOP ANTENNA	Biennial	01/11/2014	9009-2536
CERNEX	CBLU1183540 / POWER AMP	Annual	07/24/2014	21691
Agilent	8493C / Attenuator(10 dB)	Annual	07/24/2014	76649
WEINSCHL	2-3 / Attenuator(3 dB)	Annual	11/07/2013	BR0617