

# HCT CO., LTD.

## CERTIFICATE OF COMPLIANCE

### FCC Certification

**Applicant Name:**  
CATCHWELL, Inc.

**Date of Issue:**  
November 03, 2011

**Test Site/Location:**

**Address:**  
B-405, Bundang Technopark, 148, Yatap-Dong,  
Bundang-Gu, Seongnam-Si, Gyeonggi-Do, Korea

HCT CO., LTD., 105-1, Jangam-ri, Majang-Myeon, Icheon-si,  
Kyunggi-Do, Korea

**Test Report No.:** HCTR1111FR06

**HCT FRN:** 0005866421

**FCC ID** : ZP4CW20

**APPLICANT** : CATCHWELL, Inc.

**Model(s):** CW20  
**EUT Type:** GSM/WCDMA PDA with Bluetooth & WLAN  
**RF Output Field Strength** 26.59 dBuV/m  
**Frequency of Operation:** 13.56 MHz  
**Modulation type** ASK  
**FCC Classification:** Low Power Communication Device – Transmitter  
**FCC Rule Part(s):** FCC Part 15.225 Subpart C

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

: Jone Seok Lee

Test engineer of RF Team



Approved by

: Sang Jun Lee

Manager of RF Team

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FCC PT.15.247 TEST REPORT	FCC CERTIFICATION REPORT			<a href="http://www.hct.co.kr">www.hct.co.kr</a>
Test Report No. HCTR1111FR06	Date of Issue: November 03, 2011	EUT Type: GSM/WCDMA PDA with Bluetooth & WLAN	FCC ID: ZP4CW20	Page 1 of 25

## Version

TEST REPORT NO.	DATE	DESCRIPTION
HCTR1111FR06	November 03, 2011	First Approval Report

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## 1. GENERAL INFORMATION

**Applicant:** CATCHWELL, Inc.  
**Address:** B-405, Bundang Technopark, 148, Yatap-Dong,  
Bundang-Gu, Seongnam-Si, Gyeonggi-Do, Korea  
**FCC ID:** ZP4CW20  
**EUT:** GSM/WCDMA PDA with Bluetooth & WLAN  
**Model:** CW20  
**Date of Test:** October 18, 2011 ~ October 20, 2011  
**Contact person:** Name: Young-Hwan Kim  
**Tel/ Fax:** Phone #: +82-31-788-5243

## 2. EUT DESCRIPTION

<b>Product</b>	GSM/WCDMA PDA with Bluetooth & WLAN
<b>Model Name</b>	CW20
<b>Power Supply</b>	DC 3.7 V
<b>Battery Type</b>	Li-ion Battery(Standard)
<b>Frequency of Operation</b>	13.56 MHz
<b>Transmit Power</b>	26.59 dBuV/m
<b>Modulation Type</b>	ASK
<b>Manufacturer</b>	CATCHWELL, Inc.

### 3. TEST METHODOLOGY

The measurement procedure described in the American National Standard for Methods of Measurement of Radio-Noise Emission from Low-Voltage Electrical and Electronic Equipment in the Range of 9kHz to 40GHz(ANSI C63.4-2003)

#### 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 15.225 under the FCC Rules Part 15 Subpart C.

#### 3.3 GENERAL TEST PROCEDURES

##### Conducted Emissions

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

##### Radiated Emissions

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

#### 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.

### 3.5 STANDARDS

The following tests were conducted on a sample of the equipment for the purpose of demonstrating compliance With

FCC Part 15.Subpart C

Regulation	Measurement standard	Range
Title 47 of the CFR:2005, Part 15 Subpart (c), Clause 15.225(a)	ANSI C63.4:2003	13.553MHz to 13.567MHz
Title 47 of the CFR:2005, Part 15 Subpart (c), Clause 15.225(d)	ANSI C63.4:2003	outside of the 13.110-14.010 MHz band
Title 47 of the CFR:2005, Part 15 Subpart (c), Clause 15.209	ANSI C63.4:2003	9kHz to 30MHz
Title 47 of the CFR:2005, Part 15 Subpart (c), Clause 15.209	ANSI C63.4:2003	30MHz to 1GHz
Title 47 of the CFR:2005, Part 15 Subpart (c), Clause 15.207	ANSI C63.4:2003	150kHz to 30MHz
Title 47 of the CFR:2005, Part 15 Subpart (c), Clause 15.225(e)	ANSI C63.4:2003	0.01% of nominal
Title 47 of the CFR:2005, Part 15 Subpart (c), Clause 15.215(c)	ANSI C63.4:2003	-

## 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 open area test site and conducted measurement facility used to collect the radiated data are located at the 105-1, Jangam -ri, Majang-Myeon, Ichon-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 June 10, 2009 (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

## 7. TEST SUMMARY

The results in this report apply only to sample tested

Regulation T	est Type	Range	Result
Title 47 of the CFR:2009, Part 15 Subpart (c), Clause 15.225(a)	Radiated Electric Field Emissions	13.553MHz to 13.567MHz	Pass
Title 47 of the CFR:2009, Part 15 Subpart (c), Clause 15.225(b)	Radiated Electric Field Emissions	13.410MHz to 13.553M Hz and 13.567MHz to 13.710MHz	Pass
Title 47 of the CFR:2009, Part 15 Subpart (c), Clause 15.225(c)	Radiated Electric Field Emissions	13.110 MHz to 13.410 MHz and 13.710 MHz to 14.010 MHz	Pass
Title 47 of the CFR:2009, Part 15 Subpart (c), Clause 15.209 (d)	Radiated Electric Field Emissions	9kHz to 30MHz	Pass
Title 47 of the CFR:2009, Part 15 Subpart (c), Clause 15.209	Radiated Electric Field Emissions	30MHz to 1GHz	Pass
Title 47 of the CFR:2009, Part 15 Subpart (c), Clause 15.207	AC power conducted emissions	150kHz to 30MHz	N/A
Title 47 of the CFR:2009, Part 15 Subpart (c), Clause 15.225(e)	Frequency Stability	0.01% of nominal	Pass
Title 47 of the CFR:2009, Part 15 Subpart (c), Clause 15.215(c)	20 dB Bandwidth	-	Pass



## 8. RADIATED EMISSION MEASUREMENT

Requirement(s): 15.209, 15.225

Except as provided elsewhere in this paragraph the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

Minimum Standard: FCC Part 15.225 / 15.209

Rule Part	Frequency (MHz)	Limit
Part 15. 209	0.009 ~ 0.490	2400/F(kHz)uV/m@300
	0.490 ~1.705	24000/F(kHz)uV/m@30
	1.705 ~ 30	30 uV/m@30
	30 ~ 88	100 ** uV/m@3m
	88 ~ 216	150 ** uV/m@3m
	216 ~ 960	200 ** uV/m@3m
	Above 960	500 uV/m@3m

\*\* Except as provided in 15.209(g), fundamental emissions from intentional radiators operating under this Section shall not be located in the frequency bands 54-72 MHz, 76-88MHz, 174-216MHz or 470-806MHz. However, operation within these frequency bands is permitted under other sections of this Part, e.g. 15.231 and 15.241.

### 15.225 Operation within the band 13.110 – 14.010 MHz.

(a) The field strength of any emissions within the band 13.553-13.567 MHz shall not exceed 15,848 microvolts/meter (= 84 dBuV/m) at 30 meters.

(b) Within the bands 13.410-13.553 MHz and 13.567-13.710 MHz, the field strength of any emissions shall not exceed 334 microvolts/meter (=50.5dBuV/m) at 30 meters.

(c) Within the bands 13.110-13.410 MHz and 13.710-14.010 MHz the field strength of any emissions shall not exceed 106 microvolts/meter (=40.5 dBuV/m) at 30 meters.

(d) The field strength of any emissions appearing outside of the 13.110-14.010 MHz band shall not exceed the general radiated emission limits in § 15.209.

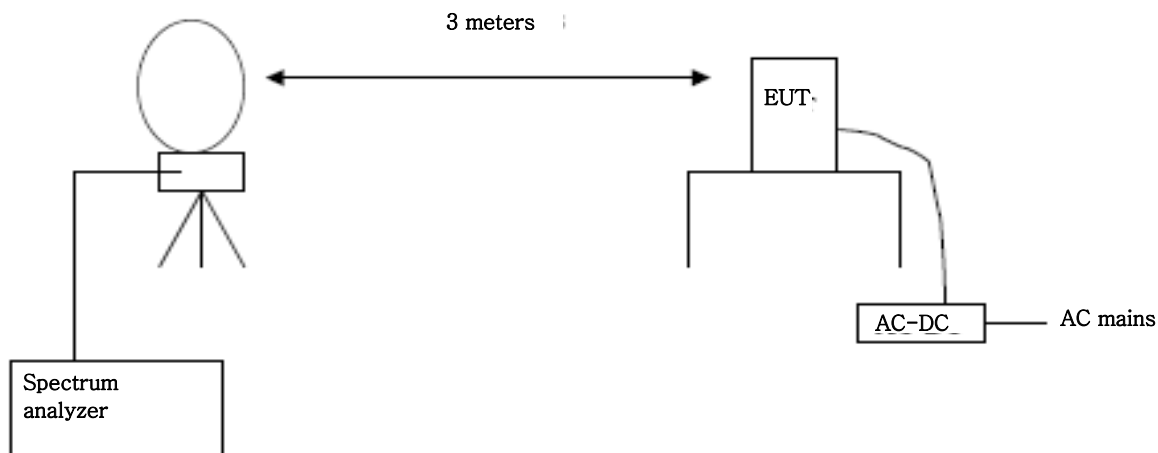
(e) The frequency tolerance of the carrier signal shall be maintained within +/- 0.01% of the operating frequency over a temperature variation of -20 degrees to +50 degrees C at normal supply voltage, and for a variation in the primary supply voltage from 85% to 115% of the rated supply voltage at a temperature of 20 degrees C. For battery operated equipment, the equipment tests shall be performed using a new battery.

(f) In the case of radio frequency powered tags designed to operate with a device authorized under this section, the tag may be approved with the device or be considered as a separate device subject to its own authorization. Powered tags approved with a device under a single application shall be labeled with the same identification number as the device.

FCC PT.15.225 TEST REPORT	FCC CERTIFICATION REPORT			<a href="http://www.hct.co.kr">www.hct.co.kr</a>
Test Report No. HCTR1111FR06	Date of Issue: November 03, 2011	EUT Type: GSM/WCDMA PDA with Bluetooth & WLAN	FCC ID: ZP4CW20	Page 9 of 25

## 8.1. RADIATED EMISSION 9 kHz – 30 MHz

### Test Set-up



### Test Procedure

The EUT was placed on a non-conductive table located on a large open test site. The loop antenna was placed at a location 3m from the EUT. Radiated emissions were measured with the loop antenna both parallel and perpendicular to the plane of the EUT loop antenna.

The limit is converted from microvolts/meter to decibel microvolts/meter. Sample Calculation:

Corrected Amplitude = Raw Amplitude(dBμV/m) + ACF(dB) + Cable Loss(dB) – Distance Correction Factor

The spectrum analyzer is set to:

Frequency Range = 9 kHz ~ 1GHz

RBW = 9 kHz (9 kHz ~ 30MHz)  
= 120 kHz (30 MHz ~ 1 GHz)

Trace Mode = max hold

Detector Mode = peak / Quasi-peak

Sweep time = auto

## Test Results

13.553 MHz-13.567 MHz						
Frequency (MHz)	Read Level (dBuV)@3m	Ant.Factor+Cable Loss (dB/m)	Distance Correction (dB)	Result Level (dBuV/m)@30m	Limit (dBuV/m)@30m	Margin (dB)
13.56	55.54	11.05	-40	26.59	84	57.41
13.56	48.79	11.05	-40	19.84	84	64.16

13.410 MHz-13.553 MHz and 13.567 MHz-13.710 MHz						
Frequency (MHz)	Read Level (dBuV)@3m	Ant.Factor+Cable Loss (dB/m)	Distance Correction (dB)	Result Level (dBuV/m)@30m	Limit (dBuV/m)@30m	Margin (dB)
13.553	44.00	11.05	-40	15.05	50.47	35.42
13.553	37.15	11.05	-40	8.20	50.47	42.27
13.567	48.22	11.05	-40	19.27	50.47	31.20
13.567	41.17	11.05	-40	12.22	50.47	38.25

13.110 MHz – 13.410 MHz and 13.710 MHz-14.010 MHz						
Frequency (MHz)	Read Level (dBuV)@3m	Ant.Factor+Cable Loss (dB/m)	Distance Correction (dB)	Result Level (dBuV/m)@30m	Limit (dBuV/m)@30m	Margin (dB)
13.220	23.80	11.05	-40	-5.15	40.51	45.66
13.299	24.35	11.05	-40	-4.60	40.51	45.11
13.929	23.58	11.05	-40	-5.37	40.51	45.88
13.832	23.98	11.05	-40	-4.97	40.51	45.48

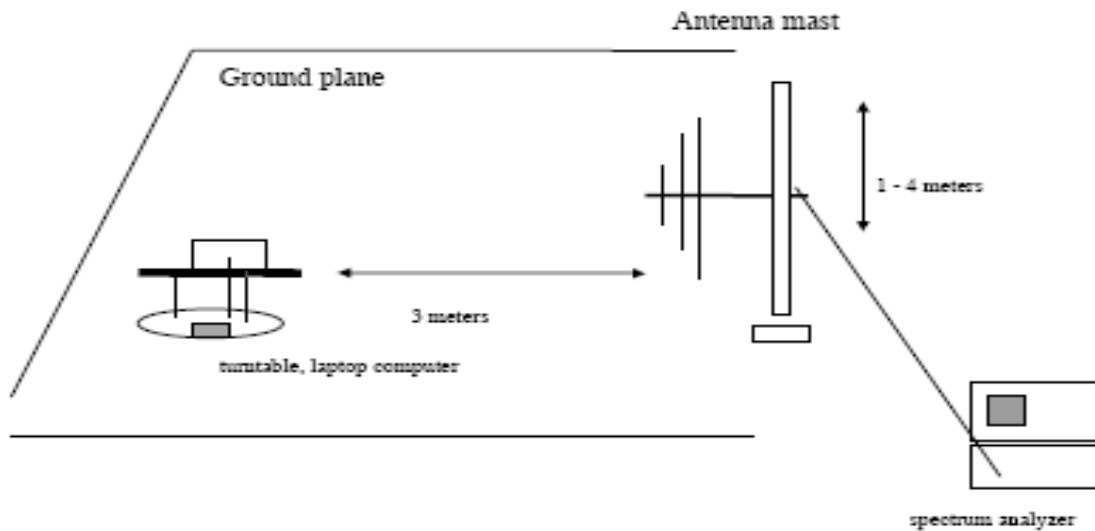
9 kHz-30 MHz						
Frequency (MHz)	Read Level (dBuV)@3m	Ant.Factor+Cable Loss (dB/m)	Distance Correction (dB)	Result Level (dBuV/m)@30m	Limit (dBuV/m)@30m	Margin (dB)
27.129 30.06		9.33	-40	-0.61	29.54	30.15
27.129 28.94		9.33	-40	-1.73	29.54	31.27

Remark :

1. Distance Correction Below 30MHz =  $40\log(3m/30m) = -40$   
dB Measurement Distance : 3 m (Below 30MHz)
2. Factor = Antenna Factor + Cable Loss
3. Result Level = Read Level + Factor + Distance Correction
4. Margin = Limit – Result Level

## 8.2. RADIATED EMISSION 30 MHz – 1000 MHz

Test Set-up



Test Procedures: Radiated emissions were measured according to ANSI C63.4.

The EUT was set to transmit at the highest output power.

The EUT was set 3 meter away from the measuring antenna.

Frequency MHz	Reading dBuV	Ant. Factor dB/m	Cable Loss dB	ANT POL (H/V)	Total dBuV/m	Limit dBuV/m	Margin dB
882.70	35.83	23.1	3.4	H	62.33	46	16.33
911.39	35.53	23.4	3.5	V	62.43	46	16.43

Remark

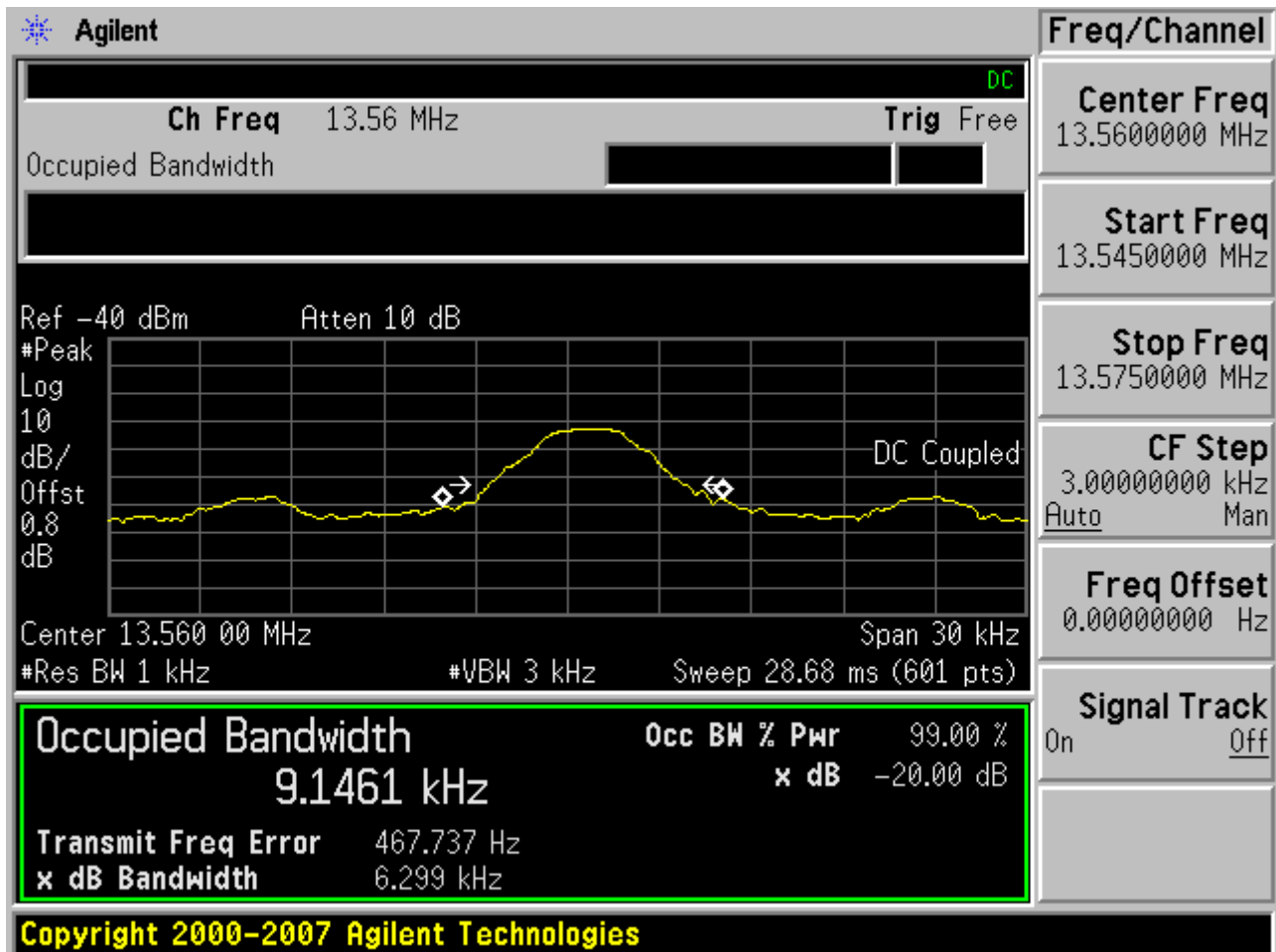
1. Result Level = Read Level + (ANT+ CL Factor)
2. Margin = Limit – Result Level

## 9. EMISSION BANDWIDTH PLOT.

### Requirement(s):

Test Set-up: The EUT was connected to a spectrum analyzer.

Test Procedure: The 20dB bandwidth was measured by using a spectrum analyzer.



## 10. FREQUENCY TOLERANCE

Procedure: Part 15.225, ANSI 63.4

If required, the operating or transmitting frequency of an intentional radiator should be measured in accordance with the following procedure to ensure that the device operates outside certain precluded frequency bands and within the frequency range. No modulation needs to be supplied to the intentional radiator during these tests, unless modulation is required to produce an output, e.g., single-sideband suppressed carrier transmitters.

The frequency stability of the transmitter is measured by:

- a) Temperature: The temperature is varied from -20°C to + 50°C using an environmental chamber.
- b) For battery operated equipment, the equipment tests shall be performed using a new battery.

The frequency tolerance of the carrier signal shall be maintained within +/- 0.01% of the operating frequency.

Measurement Result:

VOLTAGE (%)	POWER	Temperature (°C)	Frequency (MHz)	Frequency Error
100%	3.7 V	-20	13.56018	-0.00003
100%		-10	13.56016	-0.00001
100%		0	13.56016	-0.00001
100% 10			13.56017	-0.00002
100% 20			13.56015	0.00000
100% 30			13.56013	0.00002
100% 40			13.56012	0.00003
100%		50	13.56010	0.00005

### Notes:

1. The EUT is supplied with the fully re-charged battery.

## 11. POWERLINE CONDUCTE EMISSIONS

### LIMIT

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

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

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

### Test Configuration

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

### TEST PROCEDURE

1. The EUT is placed on a wooden table 80 cm above the reference ground plane.
2. The EUT is connected via LISN to a test power supply.
3. The measurement results are obtained as described below:
4. Detectors – Quasi Peak and Average Detector.



## Test Plots

### Unterminate the Antenna

### Conducted Emissions (Line 1)

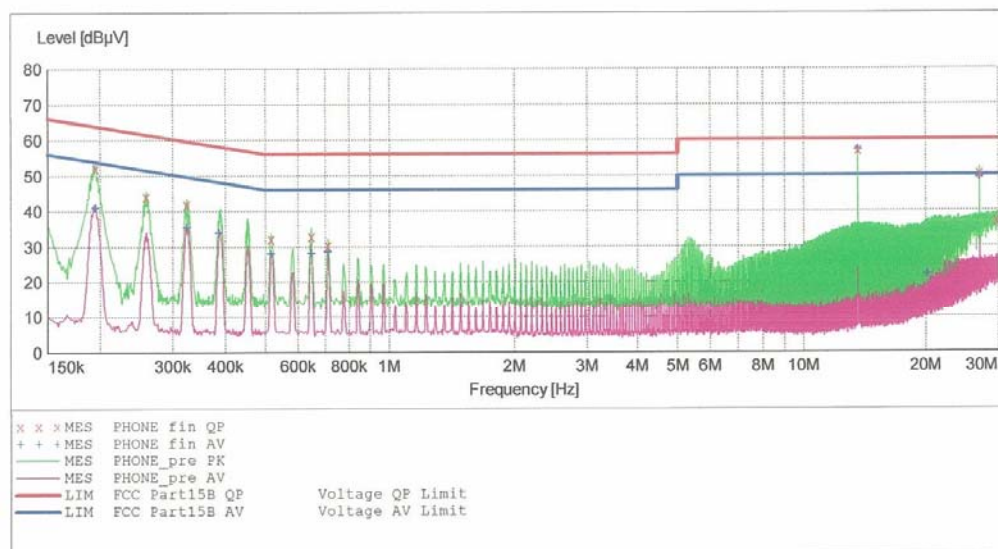
HCT

EMC

EUT: CW20  
 Manufacturer: CATCHWELL  
 Operating Condition: NFC MODE  
 Test Site: SHIELD ROOM  
 Operator: JS LEE  
 Test Specification: FCC PART15 CLASS B  
 Comment: H

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

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



#### MEASUREMENT RESULT: "PHONE\_fin\_QP"

10/13/2011 5:09PM

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Line	PE
0.195010	52.20	10.1	64	11.6	---	---
0.259010	44.10	10.1	62	17.4	---	---
0.324010	41.90	10.1	60	17.7	---	---
0.516000	32.10	10.1	56	23.9	---	---
0.648000	32.90	10.1	56	23.1	---	---
0.712000	30.50	10.1	56	25.5	---	---
13.560000	57.10	11.3	60	2.9	---	---
27.120000	50.30	12.2	60	9.7	---	---
29.832000	37.10	12.3	60	22.9	---	---

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

10/13/2011 5:09PM

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Line	PE
0.195010	40.90	10.1	54	12.9	---	---
0.324010	35.50	10.1	50	14.1	---	---
0.387010	33.90	10.1	48	14.3	---	---
0.516000	28.00	10.1	46	18.0	---	---
0.648000	28.10	10.1	46	17.9	---	---
0.712000	28.60	10.1	46	17.4	---	---
13.560000	57.10	11.3	50	-7.1	---	---
20.124000	22.00	11.9	50	28.0	---	---
27.120000	49.20	12.2	50	0.8	---	---

## Conducted Emissions (Line 2)

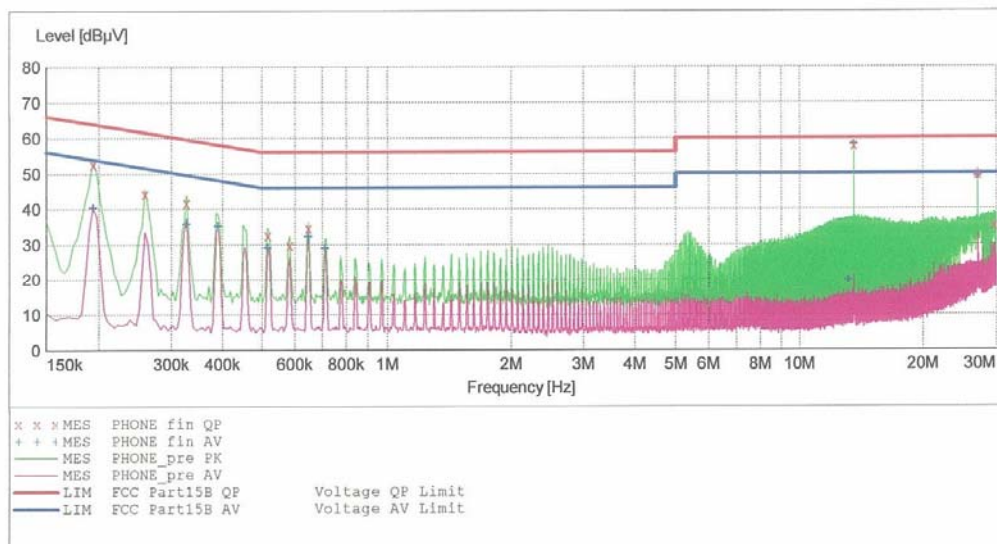
HCT

EMC

EUT: CW20  
 Manufacturer: CATCHWELL  
 Operating Condition: NFC MODE  
 Test Site: SHIELD ROOM  
 Operator: JS LEE  
 Test Specification: FCC PART15 CLASS B  
 Comment: N

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

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



### MEASUREMENT RESULT: "PHONE\_fin QP"

10/13/2011 5:05PM

Frequency	Level	Transd	Limit	Margin	Line	PE
MHz	dBμV	dB	dBμV	dB		
0.194010	52.50	10.3	64	11.4	---	---
0.258010	44.20	10.3	62	17.3	---	---
0.326010	41.80	10.3	60	17.7	---	---
0.516000	32.60	10.3	56	23.4	---	---
0.584000	29.80	10.3	56	26.2	---	---
0.648000	34.60	10.3	56	21.4	---	---
13.560000	57.90	11.3	60	2.1	---	---
27.124000	49.60	11.8	60	10.4	---	---
29.596000	35.40	11.9	60	24.6	---	---

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

10/13/2011 5:05PM

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Line	PE
0.194010	40.40	10.3	54	13.5	---	---
0.326010	35.80	10.3	50	13.8	---	---
0.390010	35.20	10.3	48	12.9	---	---
0.516000	29.10	10.3	46	16.9	---	---
0.648000	32.30	10.3	46	13.7	---	---
0.712000	28.90	10.4	46	17.1	---	---
13.152000	19.80	11.3	50	30.2	---	---
13.560000	58.00	11.3	50	-8.0	---	---
27.120000	49.00	11.8	50	1.0	---	---

## Terminate the Antenna

### Conducted Emissions (Line 1)

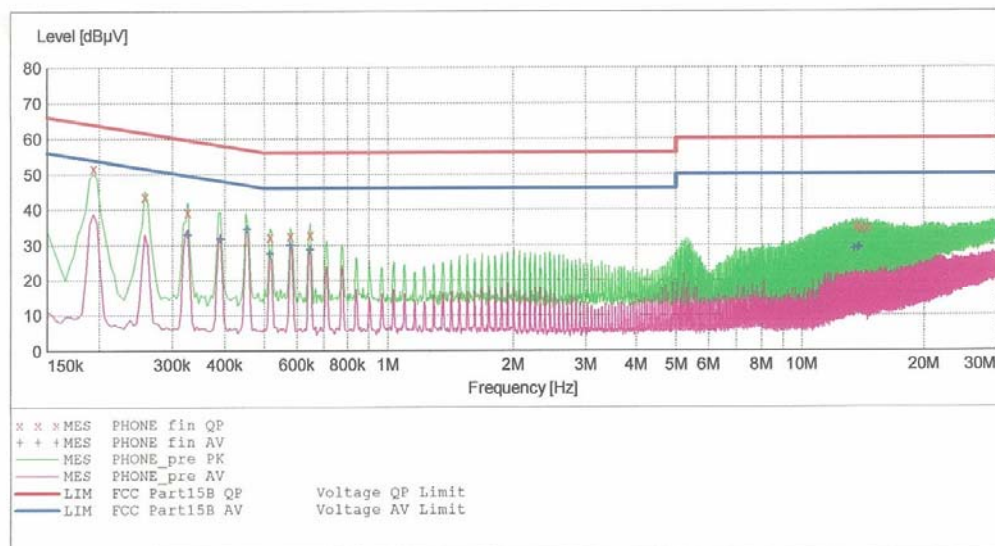
HCT

EMC

EUT: CW20  
 Manufacturer: CATCHWELL  
 Operating Condition: NFC MODE  
 Test Site: SHIELD ROOM  
 Operator: JS LEE  
 Test Specification: FCC PART15 CLASS B  
 Comment: N(Terminated NFC)

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

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



#### MEASUREMENT RESULT: "PHONE\_fin\_QP"

10/13/2011 5:26PM

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Line	PE
0.194010	51.60	10.3	64	12.3	---	---
0.258010	43.60	10.3	62	17.9	---	---
0.326010	39.30	10.3	60	20.3	---	---
0.516000	32.30	10.3	56	23.7	---	---
0.580000	32.60	10.3	56	23.4	---	---
0.648000	32.90	10.3	56	23.1	---	---
13.632000	35.10	11.3	60	24.9	---	---
14.024000	34.60	11.3	60	25.4	---	---
14.472000	34.70	11.3	60	25.3	---	---

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

10/13/2011 5:26PM

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Line	PE
0.326010	32.90	10.3	50	16.7	---	---
0.390010	31.70	10.3	48	16.3	---	---
0.454010	34.50	10.3	47	12.3	---	---
0.516000	27.50	10.3	46	18.5	---	---
0.580000	29.90	10.3	46	16.1	---	---
0.648000	28.70	10.3	46	17.3	---	---
13.440000	28.80	11.3	50	21.2	---	---
13.764000	28.90	11.3	50	21.1	---	---
13.828000	29.30	11.3	50	20.7	---	---

## Conducted Emissions (Line 2)

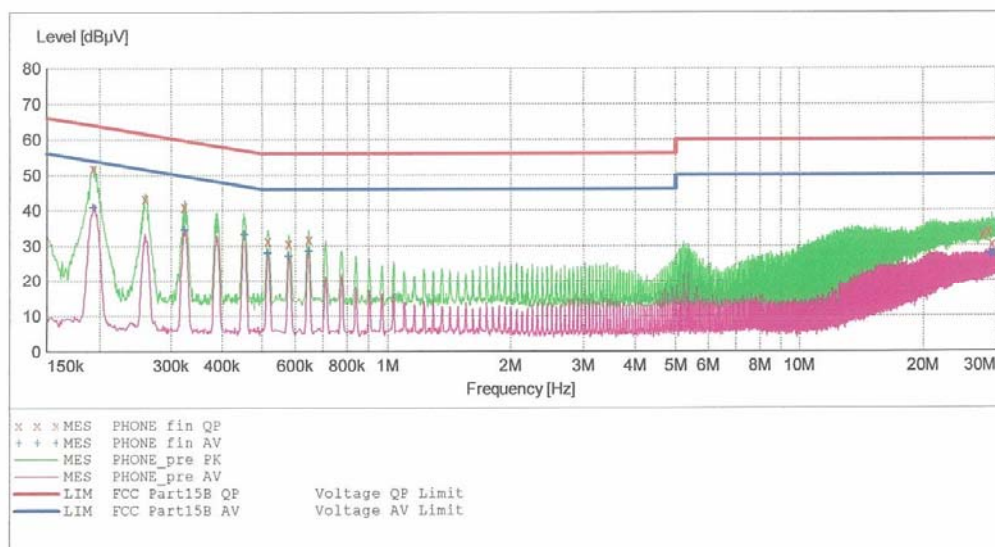
HCT

EMC

EUT: CW20  
 Manufacturer: CATCHWELL  
 Operating Condition: NFC MODE  
 Test Site: SHIELD ROOM  
 Operator: JS LEE  
 Test Specification: FCC PART15 CLASS B  
 Comment: H(Terminated NFC)

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

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



### MEASUREMENT RESULT: "PHONE\_fin QP"

10/13/2011 5:22PM

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Line	PE
0.193010	51.70	10.1	64	12.2	---	---
0.258010	43.40	10.1	62	18.1	---	---
0.323010	41.00	10.1	60	18.6	---	---
0.516000	31.50	10.1	56	24.5	---	---
0.580000	30.70	10.1	56	25.3	---	---
0.648000	31.90	10.1	56	24.1	---	---
27.792000	33.20	12.2	60	26.8	---	---
28.692000	34.10	12.2	60	25.9	---	---
29.236000	30.40	12.2	60	29.6	---	---



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

10/13/2011 5:22PM

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Line	PE
0.193010	40.70	10.1	54	13.2	---	---
0.323010	34.50	10.1	50	15.1	---	---
0.452010	33.20	10.1	47	13.7	---	---
0.516000	28.00	10.1	46	18.0	---	---
0.580000	27.10	10.1	46	18.9	---	---
0.648000	28.50	10.1	46	17.5	---	---
29.008000	27.50	12.2	50	22.5	---	---
29.332000	27.60	12.3	50	22.4	---	---
29.524000	27.50	12.3	50	22.5	---	---



## 12. LIST OF TEST EQUIPMENT

Manufacturer	Model / Equipment	Calibration Interval	Calibration Due	Serial No.
Rohde & Schwarz	ESH2-Z5/ LISN	Annual	02/01/2012	861741/013
Schwarzbeck VULB	9168/ TRILOG Antenna	Biennial	02/09/2013	200
Rohde & Schwarz	ESI 40 / EMI TEST RECEIVER	Annual	05/26/2012	831564103
Agilent E4440A/	Spectrum Analyzer	Annual	05/02/2012	US45303008
Agilent	N9020A/ SIGNAL ANALYZER	Annual	09/23/2012	MY51110020
HD MA240/	Antenna Position Tower	N/A	N/A 556	
EMCO 1050/	Turn Table	N/A	N/A 1	14
HD GmbH	HD 100/ Controller	N/A	N/A 13	
HD GmbH	KMS 560/ SlideBar	N/A	N/A 12	
Rohde & Schwarz	ESH3-Z2/ PULSE LIMITER	Annual	08/01/2012	375.8810.352
Rohde & Schwarz	SCU-18/ Signal Conditioning Unit	Annual	09/19/2012	10094
MITEQ AFS44-001	02650-42-10P-44-PS/ POWER AMP	Annual	09/23/2012	1532439
Schwarzbeck	BBHA 9120D/ Horn Antenna	Biennial	04/13/2012	147
Schwarzbeck	BBHA9170 / Horn Antenna(15 GHz ~ 40 GHz)	Biennial	10/26/2012	BBHA9170342
Rohde & Schwarz	FSP / Spectrum Analyzer	Annual	03/23/2012	839117/011
Agilent	E4440A / Spectrum Analyzer	Annual	05/02/2012	US45303008
Agilent E4416A	/Power Meter	Annual	01/04/2012	GB41291412
Agilent	E9327A /POWER SENSOR	Annual	05/02/2012	MY4442009
Wainwright Instrument	WHF3.3/18G-10EF / High Pass Filter	Annual	05/02/2012	1
Wainwright Instrument	WRCJ2400/2483.5-2370/2520-60/14SS / Band Reject Filter	Annual 05/02/2012		1
Hewlett Packard	11636B/Power Divider	Annual	12/29/2011	11377
Hewlett Packard	11667B / Power Splitter	Annual	11/08/2011	10126
DIGITAL	EP-3010 /DC POWER SUPPLY	Annual	01/04/2012	3110117
ITECH	IT6720 / DC POWER SUPPLY	Annual	12/01/2011	010002156287001199
TESCOM	TC-3000C / BLUETOOTH TESTER	Annual	04/01/2012	3000C000276
Rohde & Schwarz	CBT / BLUETOOTH TESTER	Annual	05/02/2012	100422
EMCO 6502.L	OOP ANTENNA	Biennial	01/13/2012	9009-2536