NVLAP LAB CODE 200707-0

# FCC PART 15D

# MEASUREMENT AND TEST REPORT

For

## Shandong Bittel Electronics Co., Ltd.

No. 1 Rizhao N Rd, Rizhao, Shandong, P. R. of China

## FCC ID: WI6HWDCDBS

| **Report Type:** | **Product Type:** |
|---|---|
| Additional Report | Cordless Phone |

| | |
|---|---|
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| **Report Number:** | RSZ08122904 |
| **Report Date:** | 2009-04-29 |
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# TABLE OF CONTENTS

**GENERAL INFORMATION** ..... **5**
PRODUCT DESCRIPTION FOR EQUIPMENT UNDER TEST (EUT) ..... 5
OBJECTIVE ..... 5
RELATED SUBMITTAL(S)/GRANT(S) ..... 5
TEST METHODOLOGY ..... 5
TEST FACILITY ..... 6
**SYSTEM TEST CONFIGURATION** ..... **7**
JUSTIFICATION ..... 7
EUT EXERCISE SOFTWARE ..... 7
SPECIAL ACCESSORIES ..... 7
EQUIPMENT MODIFICATIONS ..... 7
EXTERNAL I/O CABLE ..... 7
CONFIGURATION OF TEST SETUP ..... 8
BLOCK DIAGRAM OF TEST SETUP ..... 8
**SUMMARY OF TEST RESULTS** ..... **9**
**§ 15.319 (I) - RF RADIATION EXPOSURE** ..... **10**
APPLICABLE STANDARD ..... 10
MPE PREDICATION ..... 10
**§15.317&§15.203 - ANTENNA REQUIREMENT** ..... **11**
STANDARD APPLICABLE ..... 11
**§15.315 & §15.207 - CONDUCTED EMISSIONS** ..... **12**
MEASUREMENT UNCERTAINTY ..... 12
EUT SETUP ..... 12
EMI TEST RECEIVER SETUP ..... 13
TEST EQUIPMENT LIST AND DETAILS ..... 13
TEST PROCEDURE ..... 13
TEST RESULTS SUMMARY ..... 13
TEST DATA ..... 14
PLOT(S) OF TEST DATA ..... 14
**§15.319 (G) - RADIATED EMISSIONS** ..... **17**
MEASUREMENT UNCERTAINTY ..... 17
EUT SETUP ..... 17
EMI TEST RECEIVER SETUP ..... 18
TEST EQUIPMENT LIST AND DETAILS ..... 18
TEST PROCEDURE ..... 18
CORRECTED AMPLITUDE & MARGIN CALCULATION ..... 19
TEST RESULTS SUMMARY ..... 19
TEST DATA ..... 19
**§15.323 (A) - EMISSION BANDWIDTH** ..... **22**
STANDARD APPLICABLE ..... 22
TEST DATA ..... 22
**§15.319 (C) - PEAK TRANSMIT POWER** ..... **23**

STANDARD APPLICABLE ..... 23
TEST DATA ..... 23
**§15.319 (D) - POWER SPECTRAL DENSITY ..... 24**
STANDARD APPLICABLE ..... 24
TEST DATA ..... 24
**§15.323 (D) - EMISSION INSIDE AND OUTSIDE THE SUB-BAND ..... 25**
STANDARD APPLICABLE ..... 25
TEST DATA ..... 25
**§15.323 (F) - FREQUENCY STABILITY BASE ..... 26**
STANDARD APPLICABLE ..... 26
TEST DATA ..... 26
**§15.323 (C) (E) & §15.319(F) – SPECIFIC REQUIREMENTS FOR UPCS DEVICE ..... 27**
TEST DATA ..... 27
**DECLARATION LETTER ..... 28**

# DOCUMENT HISTORY

| Revision # | Report Number | Description of Revision | Date of Revision |
|---|---|---|---|
| 0 | RSZ08070805 | Original Report | 2008-10-07 |
| 1 | RSZA08122904* | Additional Report | 2009-04-29 |

* Note: This is the Additional Report application of the device, the change is the model name, and the difference between the original device and the current one was explained in the attached Declaration Letter.

# GENERAL INFORMATION

## Product Description for Equipment under Test (EUT)

The *Shandong Bittel Electronics Co., Ltd.* 's product, model: *HWDCD9888(38)TSD*, or the "EUT" as referred to in this report is a *Cordless phone* which measures approximately 22.1 cm L x 15.8 cm W x 7.6 cm H, rated input voltage: DC 9 V adapter.

Adapter Information:
Model: HKD090030U;
Input: 120V AC 60Hz; Output: 9V DC 300mA.

Note: The serial models HWDCD9888 (38)TSD-NS, HWDCD9888(38)TSD-TN, HWDCD9888(38)TSD, HWDCD9888(38)TS-NS, HWDCD9888(38)TS(Base) Note: For all the models, (N=P, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10), the all models have same circuit diagram, PCB, only appearance have difference, which was explained in the attached Declaration Letter, so we selected the *HWDCD9888(38)TSD* to test.

* All measurement and test data in this report was gathered from production sample serial number: 0812082 (Assigned by BACL, Shenzhen). The EUT was received on 2008-12-29.

## Objective

This document is a test report based on the Electromagnetic Interference (EMI) tests performed on the EUT. The EMI measurements were performed according to the measurement procedure described in ANSI C63.17 – 2006, and ANSI C63.4-2003

The tests were performed in order to determine compliance with FCC Part 15, Subpart D, and section 15.203, 15.315, 15.317, 15.319 and 15.323 rules.

## Related Submittal(s)/Grant(s)

The original submission FCC ID was **WI6HWD,** which was granted on 2008-10-07.

## Test Methodology

All measurements contained in this report were conducted with ANSI C63.17 - 1998, American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the range of 9 kHz to 40 GHz. All radiated and conducted emissions measurement was performed at Bay Area Compliance Laboratories Corp. (Shenzhen). The radiated testing was performed at an antenna-to-EUT distance of 3 meters.

## Test Facility

The Test site used by Bay Area Compliance Laboratories Corp. (Shenzhen) to collect test data is located in the 6/F, the 3rd Phase of WanLi Industrial Building, ShiHua Road, FuTian Free Trade Zone Shenzhen, Guangdong, China.

Test site at Bay Area Compliance Laboratories Corp. (Shenzhen) has been fully described in reports submitted to the Federal Communication Commission (FCC). The details of these reports have been found to be in compliance with the requirements of Section 2.948 of the FCC Rules on November 21, 2007. The facility also complies with the radiated and AC line conducted test site criteria set forth in ANSI C63.4-2003.

The Federal Communications Commission has the reports on file and is listed under FCC Registration No.: 382179. The test site has been approved by the FCC for public use and is listed in the FCC Public Access Link (PAL) database.

Additionally, Bay Area Compliance Laboratories Corp. (Shenzhen) is a National Institute of Standards and Technology (NIST) accredited laboratory, under the National Voluntary Laboratory Accredited Program (Lab Code 200707-0).

NVLAP LAB CODE 200707-0

The current scope of accreditations can be found at
http://ts.nist.gov/Standards/scopes/2007070.htm

# SYSTEM TEST CONFIGURATION

## Justification

The system was configured for testing in a typical fashion (as normally used by a typical user).

## EUT Exercise Software

N/A.

## Special Accessories

The special accessories were supplied by Bay Area Compliance Laboratories Corp. (Shenzhen).

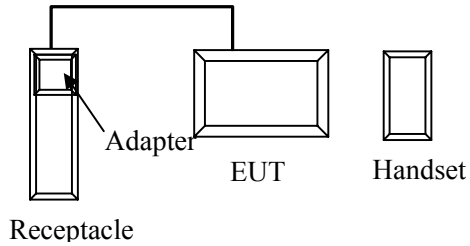
## Equipment Modifications

No modifications were made to the unit tested.

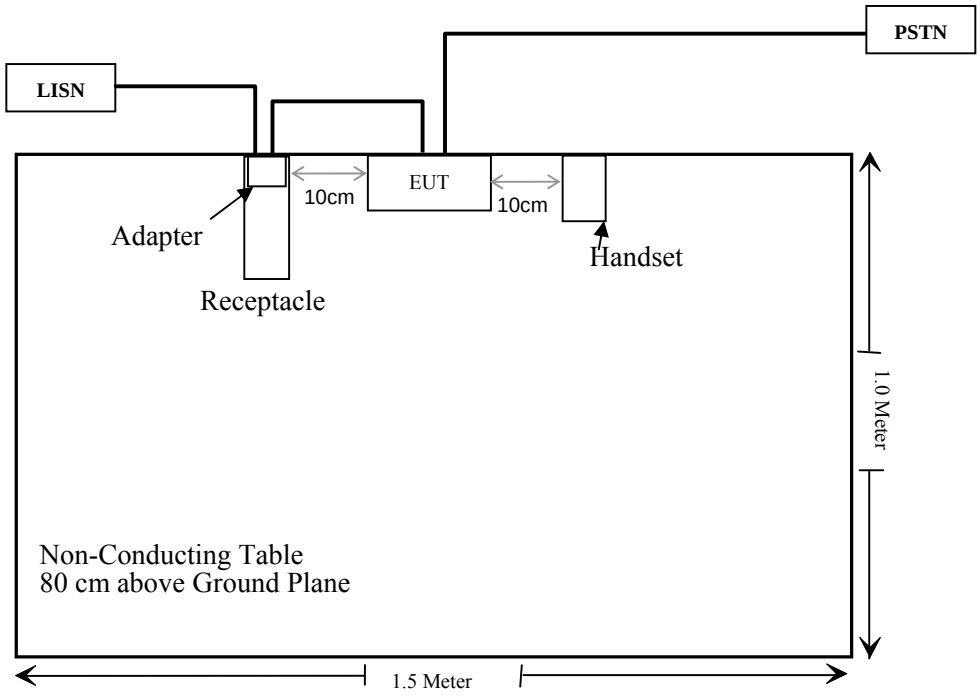
## External I/O Cable

| Cable Description | Length (m) | From/Port | To |
|---|---|---|---|
| Unshielded Detectable Power Cable | 1.84 | Adapter | EUT |
| Unshielded Detectable RJ11 Cable | 4.50 | EUT | Power&RJ11 Adapter |

## Configuration of Test Setup




## Block Diagram of Test Setup



# SUMMARY OF TEST RESULTS

| FCC Rules | Description of Test | Result |
|---|---|---|
| § 15.319 (i) | RF Radiation Exposure | Compliant |
| § 15.317<br>§ 15.203 | Antenna Requirement | Compliant |
| § 15.315<br>§ 15.207 | Conducted Emission | Compliant |
| § 15.319 (g) | Radiated Emission | Compliant* |
| § 15.323 (a) | Emission Bandwidth | Compliant** |
| § 15.319 (c) | Peak Transmit Power | Compliant** |
| § 15.319 (d) | Power Spectral Density | Compliant** |
| § 15.323 (d) | Emission Inside and Outside the sub-band | Compliant** |
| § 15.323 (f) | Frequency Stability | Compliant** |
| § 15.323 (c)(e)<br>§ 15.319 (f) | Verification of Access Protocols | Compliant** |

* Within measurement uncertainty.
** Original submission FCC ID: WI6HWD filed 2008-10-07, Report No.: RSZ08070805.

# § 15.319 (i) - RF RADIATION EXPOSURE

## Applicable Standard

According to §1.1307(b)(1), systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy level in excess of the Commission's guidelines.

According to §1.1310 and §2.1091 RF exposure is calculated.

Limits for Maximum Permissible Exposure (MPE)

| Frequency Range (MHz) | Electric Field Strength (V/m) | Magnetic Field Strength (A/m) | Power Density ($mW/cm^2$) | Averaging Time (minute) |
|---|---|---|---|---|
| **Limits for General Population/Uncontrolled Exposure** | | | | |
| 0.3-1.34 | 614 | 1.63 | *(100) | 30 |
| 1.34-30 | 842/f | 2.19/f | *(180/f\2\) | 30 |
| 30-300 | 27.5 | 0.073 | 0.2 | 30 |
| 300-1500. | / | / | f/1500 | 30 |
| 1500-100,000. | / | / | 1.0 | 30 |

f = frequency in MHz
* = Plane-wave equivalent power density

## MPE Predication

Predication of MPE limit at a given distance
Equation from page 19 of OET Bulletin 65, Edition 97-01

$$S = \frac{PG}{4\pi R^2}$$

where: S = power density (in appropriate units, e.g. mW/cm2)
P = power input to the antenna (in appropriate units, e.g., mW).
G = power gain of the antenna in the direction of interest relative to an isotropic radiator, the power gain factor, is normally numeric gain.
R = distance to the center of radiation of the antenna (appropriate units, e.g., cm)

Maximum peak output power at antenna input terminal: 18.41 (dBm)
Maximum peak output power at antenna input terminal: 69.34 (mW)
Prediction distance: >20 (cm)
Predication frequency: 1921.536(MHz)
Antenna Gain (typical): 3 (dBi)
Antenna Gain (typical): 2 numeric
The worst case is power density at predication frequency at 20 cm: 0.028 ($mW/cm^2$)
MPE limit for general population exposure at prediction frequency: 1 ($mW/cm^2$)

0.028($mW/cm^2$) < 1 ($mW/cm^2$)

**Conclusion**

MPE meets the RF exposure limit at 20 cm distance.

# §15.317&§15.203 - ANTENNA REQUIREMENT

## Standard Applicable

An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall 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 EUT has an integral antenna soldered on PCB. The maximum gain is 3 dBi, please refer to the internal photos.

**Test Result:** Pass

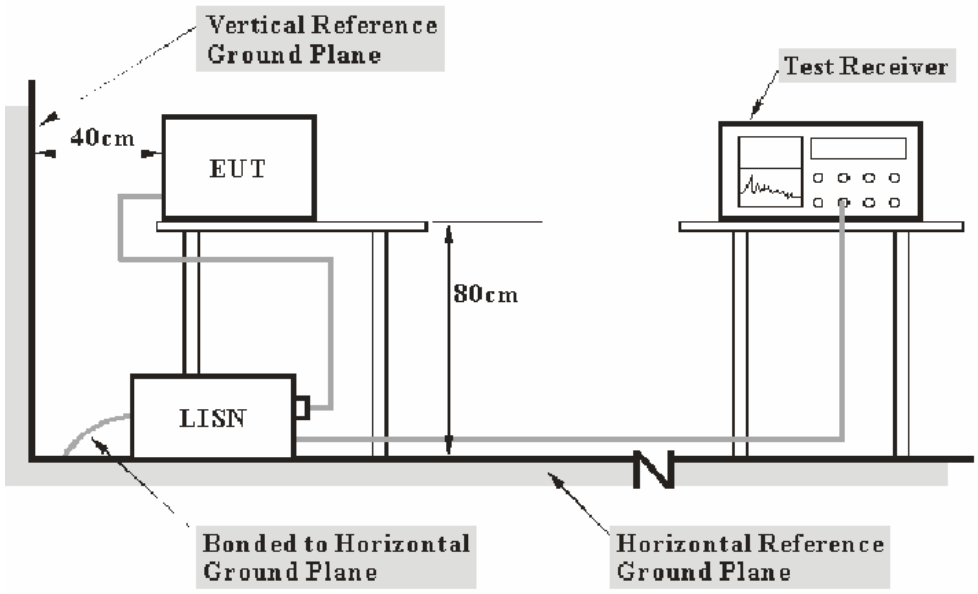
# §15.315 & §15.207 - CONDUCTED EMISSIONS

## Measurement Uncertainty

All measurements involve certain levels of uncertainties, especially in field of EMC. The factors contributing to uncertainties are spectrum analyzer, cable loss, and LISN.

Based on NIS 81, The Treatment of Uncertainty in EMC Measurements, the best estimate of the uncertainty of any conducted emissions measurement at Bay Area Compliance Laboratories Corp. (Shenzhen) is ±2.4 dB.

## EUT Setup




Note: 1. Support units were connected to second LISN.
2. Both of LISNs (AMN) 80 cm from EUT and at the least 80 cm from other units and other metal planes support units.

The setup of EUT is according with per ANSI C63.4 - 2003 measurement procedure. The specification used was with the FCC Part 15.207 limits.

The external I/O cables were draped along the test table and formed a bundle 30 to 40 cm long in the middle.

The spacing between the peripherals was 10 cm.

The adapter of the EUT was connected to a 120 VAC/60 Hz power source.

## EMI Test Receiver Setup

The EMI test receiver was set to investigate the spectrum from 150 kHz to 30 MHz.

During the conducted emission test, the EMI test receiver was set with the following configurations:

| ***Frequency Range*** | ***IFBW*** |
|---|---|
| 150 kHz – 30 MHz | 9 kHz |

## Test Equipment List and Details

| Manufacturer | Description | Model | Serial Number | Calibration Date | Calibration Due Date |
|---|---|---|---|---|---|
| Com-Power | L.I.S.N. | LI-200 | 12005 | N/A | N/A |
| Com-Power | L.I.S.N. | LI-200 | 12208 | N/A | N/A |
| Rohde & Schwarz | EMI Test Receiver | ESCS30 | DE25330 | 2009-03-25 | 2010-03-25 |
| Rohde & Schwarz | L.I.S.N. | ESH2-Z5 | 892107/021 | 2009-03-25 | 2010-03-25 |

***** Com-Power's LISN were used as the supporting equipment.
*** Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Shenzhen) attests that all calibrations have been performed in accordance to NVLAP requirements, traceable to the NIST.

## Test Procedure

During the conducted emission test, the adapter of the EUT was connected to the outlet of the LISN.

Maximizing procedure was performed on the six (6) highest emissions of the EUT.

All data was recorded in the Quasi-peak and average detection mode.

## Test Results Summary

According to the recorded data in following table, the EUT complied with the FCC Part 15 .207, with the worst margin reading of:

**22.90 dB** at **1.055 MHz** in the **Neutral** conductor mode.

## Test Data

### Environmental Conditions

| | |
|---|---|
| **Temperature:** | 23 ° C |
| **Relative Humidity:** | 55 % |
| **ATM Pressure:** | 100.0 kPa |

*The testing was performed by Bruce Zhang on 2009-03-27.*

*Test Mode: Talking*

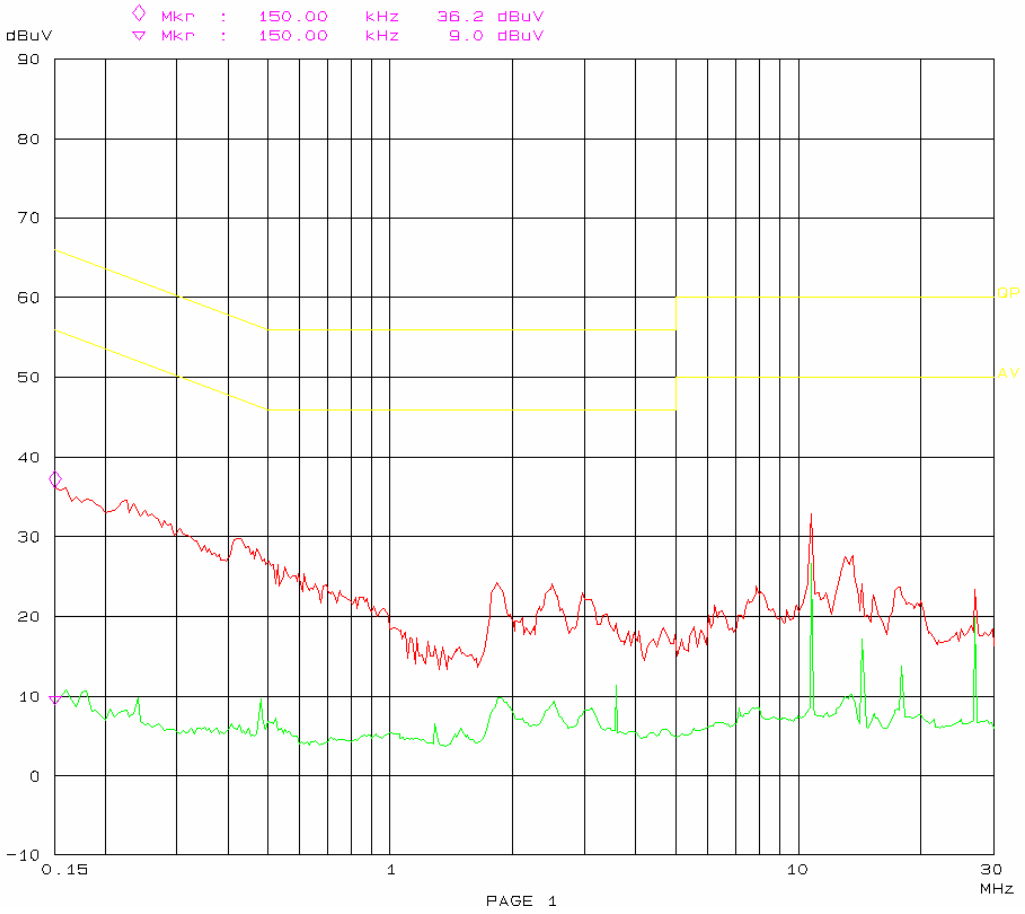
| Line Conducted Emissions | | | | FCC Part 15.207 | |
|---|---|---|---|---|---|
| **Frequency (MHz)** | **Amplitude (dBµV)** | **Detector (QP/AV)** | **Conductor (Line/Neutral)** | **Limit (dBµV)** | **Margin (dB)** |
| 1.055 | 33.10 | QP | Neutral | 56.00 | 22.90 |
| 10.750 | 26.90 | AV | Neutral | 50.00 | 23.10 |
| 10.750 | 26.70 | AV | Line | 50.00 | 23.30 |
| 0.240 | 38.10 | QP | Neutral | 62.10 | 24.00 |
| 0.160 | 39.00 | QP | Neutral | 65.50 | 26.50 |
| 10.750 | 32.90 | QP | Line | 60.00 | 27.10 |
| 27.120 | 22.00 | AV | Neutral | 50.00 | 28.00 |
| 0.240 | 33.20 | QP | Line | 62.10 | 28.90 |
| 1.055 | 16.90 | AV | Neutral | 46.00 | 29.10 |
| 10.750 | 30.80 | QP | Neutral | 60.00 | 29.20 |
| 0.150 | 36.20 | QP | Line | 66.00 | 29.80 |
| 2.505 | 26.00 | QP | Neutral | 56.00 | 30.00 |
| 27.120 | 19.80 | AV | Line | 50.00 | 30.20 |
| 1.825 | 24.20 | QP | Line | 56.00 | 31.80 |
| 2.490 | 24.10 | QP | Line | 56.00 | 31.90 |
| 27.120 | 25.10 | QP | Neutral | 60.00 | 34.90 |
| 1.830 | 9.80 | AV | Line | 46.00 | 36.20 |
| 2.495 | 9.60 | AV | Neutral | 46.00 | 36.40 |
| 27.120 | 23.40 | QP | Line | 60.00 | 36.60 |
| 2.510 | 9.30 | AV | Line | 46.00 | 36.70 |
| 0.240 | 11.10 | AV | Neutral | 52.10 | 41.00 |
| 0.160 | 13.20 | AV | Neutral | 55.50 | 42.30 |
| 0.240 | 9.80 | AV | Line | 52.10 | 42.30 |
| 0.150 | 9.00 | AV | Line | 56.00 | 47.00 |

## Plot(s) of Test Data

Plot(s) of Test Data is presented hereinafter as reference.

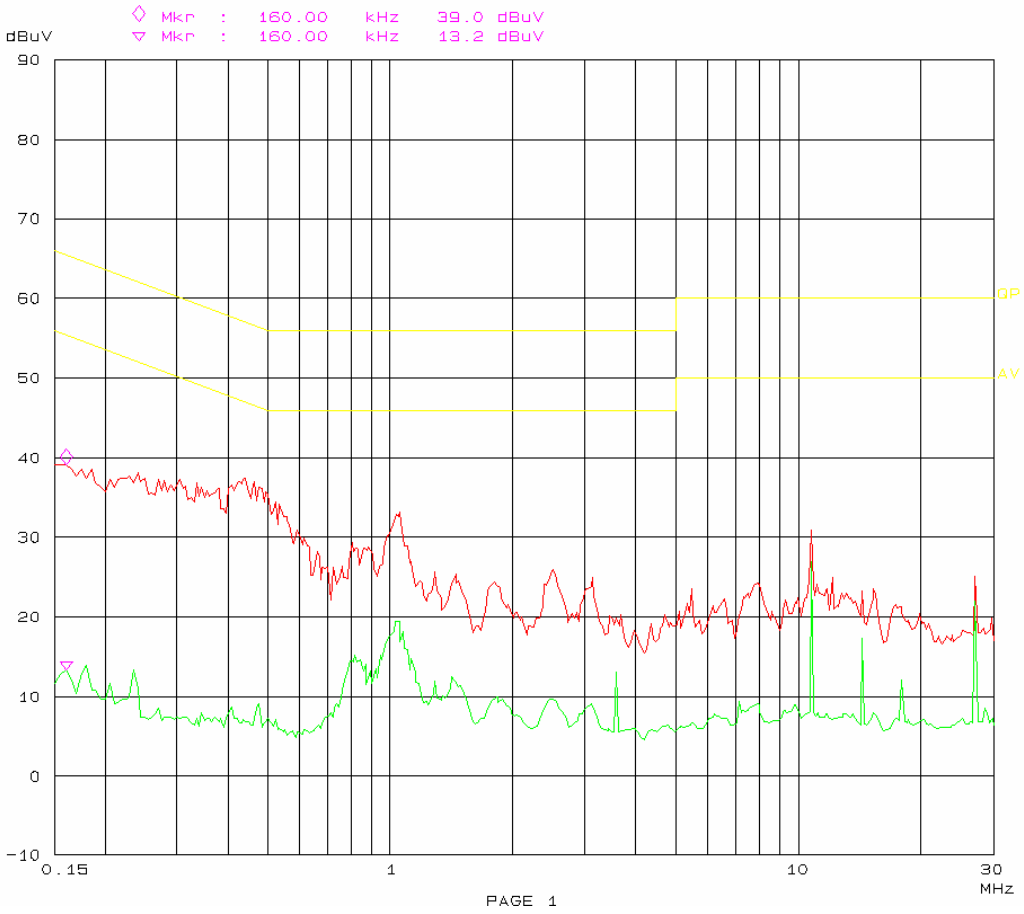
Conducted emission 27. Mar 09 13:21
FCC Part 15

EUT: Cordless phone M/N:HWDCD9888(38)TSD-NS
Manuf: Bittel
Op Cond: Talking
Operator: Bruce
Test Spec: AC 120V 60HZ L
Comment: Temp: 23 Hum: 55%
BACL



Conducted emission 27. Mar 09 11:51
FCC Part 15

EUT: Cordless phone M/N:HWDCD9888(38)TSD-NS
Manuf: Bittel
Op Cond: Talking
Operator: Bruce
Test Spec: AC 120V 60HZ N
Comment: Temp: 23 Hum: 55%
BACL



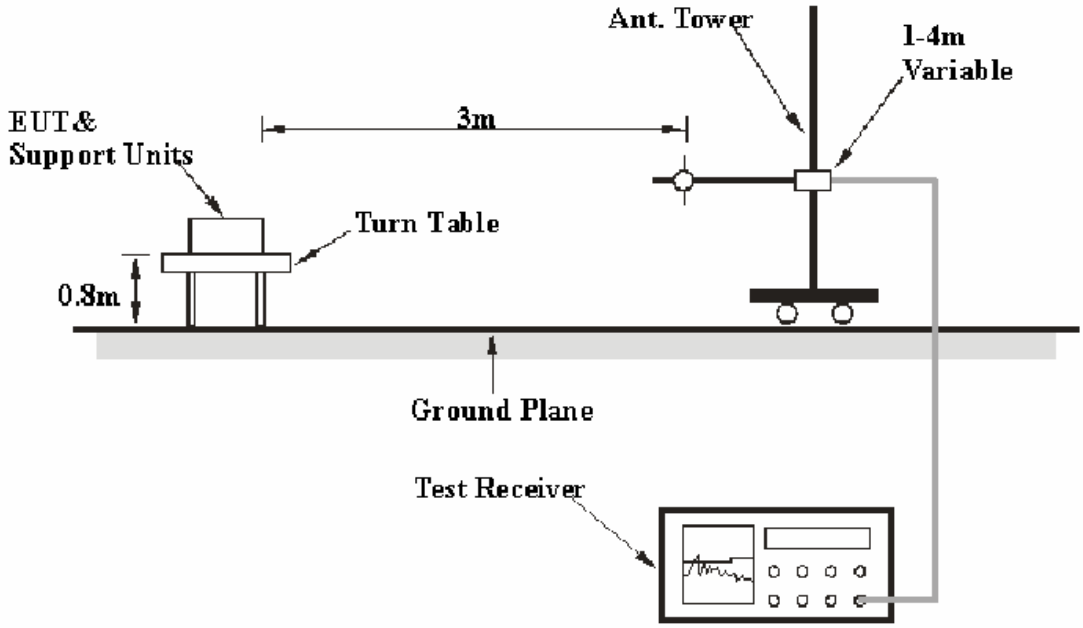
# §15.319 (g) - RADIATED EMISSIONS

## Measurement Uncertainty

All measurements involve certain levels of uncertainties, especially in field of EMC. The factors contributing to uncertainties are spectrum analyzer, cable loss, antenna factor calibration, antenna directivity, antenna factor variation with height, antenna phase center variation, antenna factor frequency interpolation, measurement distance variation, site imperfections, mismatch (average), and system repeatability.

Based on NIS 81, The Treatment of Uncertainty in EMC Measurements, the best estimate of the uncertainty of a radiation emission measurement at Bay Area Compliance Laboratories Corp. (Shenzhen) is±4.0 dB.

## EUT Setup




The radiated emission tests were performed in the 3 meters chamber B test site, using the setup accordance with the ANSI C63.17 - 2006. The specification used was the FCC 15 § 15.319(g).

The external I/O cables were draped along the test table and formed a bundle 30 to 40 cm long in the middle.

The spacing between the peripherals was 10 cm.

The adapter of the EUT was connected to a 120 VAC/60 Hz power source.

## EMI Test Receiver Setup

The system was investigated from 30 MHz to 5 GHz.

During the radiated emission test, the test receiver was set with the following configurations:

| ***Frequency Range*** | ***RBW*** | ***VBW*** |
|---|---|---|
| 30 – 1000 MHz | 100 kHz | 300 kHz |
| 1000 MHz –5 GHz | 1 MHz | 3 MHz |

## Test Equipment List and Details

| Manufacturer | Description | Model | Serial Number | Calibration Date | Calibration Due Date |
|---|---|---|---|---|---|
| HP | Amplifier | HP8447D | 2944A09795 | 2008-11-15 | 2009-11-15 |
| Rohde & Schwarz | EMI Test Receiver | ESCI | 100035 | 2008-11-07 | 2009-11-06 |
| Sunol Sciences | Broadband Antenna | JB1 | A040904-1 | 2009-03-11 | 2010-03-11 |
| HP | Amplifier | 8449B | 3008A00277 | 2008-09-29 | 2009-09-29 |
| Sunol Sciences | Horn Antenna | DRH-118 | A052604 | 2008-09-25 | 2009-09-25 |
| Rohde & Schwarz | Spectrum Analyzer | FSEM30 | 849720/019 | 2008-08-28 | 2009-08-27 |

*** Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Shenzhen) attests that all calibrations have been performed per the NVLAP requirements, traceable to NIST.

## Test Procedure

For the radiated emissions test, the adapter was connected to the AC floor outlet.

Maximizing procedure was performed on the highest emissions to ensure that the EUT complied with all installation combinations.

All data was recorded in the Peak and Average detection mode.

## Corrected Amplitude & Margin Calculation

The Corrected Amplitude is calculated by adding the Antenna Loss and Cable Loss, and subtracting the Amplifier Gain from the Meter Reading. The basic equation is as follows:

Corrected Amplitude = Meter Reading + Antenna Factor + Cable Loss - Amplifier Gain

The "**Margin**" column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of -5.8dB means the emission is 5.8 dB below the limit. The equation for margin calculation is as follows:

Margin = Limit – Corrected Amplitude

## Test Results Summary

According to the data in the following table, the EUT complied with the FCC Part 15.319 (g), with the worst margin reading of:

**30 MHz-1GHz:**

**11.3 dB** at **511.391475 MHz** in the **Vertical** polarization.

**Above 1 GHz:**

**High Channel: 8.47 dB** at **7713.792 MHz** in the **Vertical** polarization.
**Low Channel: 10.36 dB** at **7686.144 MHz** in the **Vertical** polarization.

## Test Data

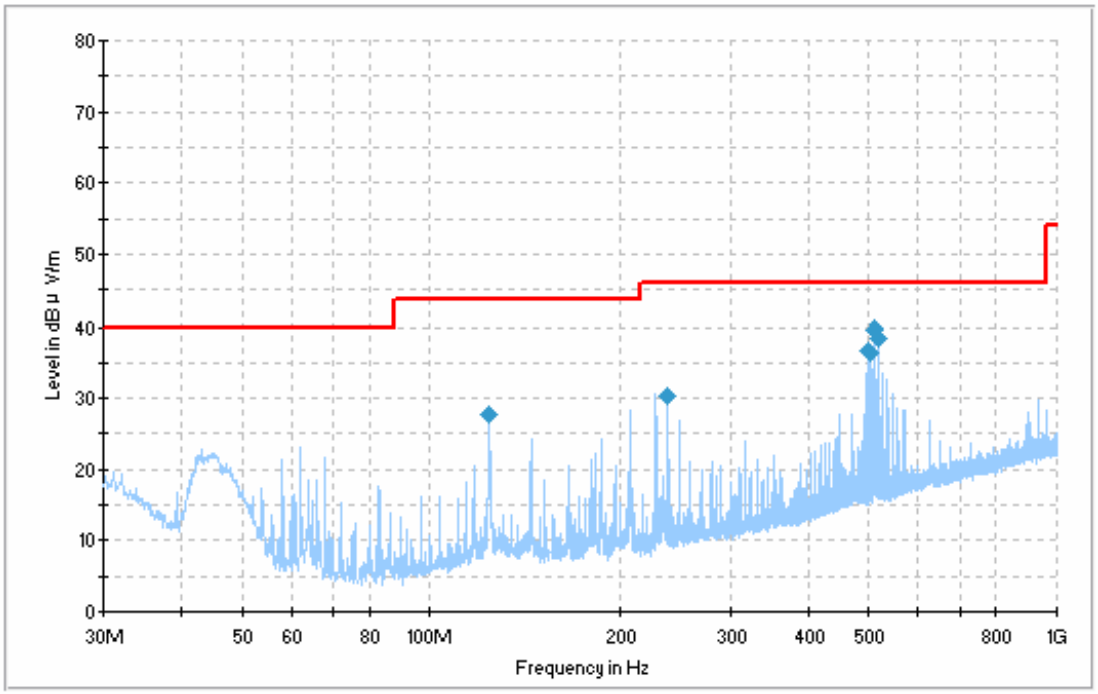
### Environmental Conditions

| | |
|---|---|
| **Temperature:** | 25 ° C |
| **Relative Humidity:** | 56 % |
| **ATM Pressure:** | 100.0 kPa |

*The testing was performed by Bruce Zhang on 2009-03-17.*

*Test Mode: Transmitting*

**30 MHz – 1 GHz:**




| Frequency (MHz) | Corrected Amp. (dBµV/m) | Antenna Height (cm) | Antenna Polarity (H/V) | Turntable Position (deg) | Correction Factor (dB) | Limit (dBµV/m) | Margin (dB) |
|---|---|---|---|---|---|---|---|
| 511.391475 | 34.7 | 102.0 | V | 87.0 | -10.3 | 46.0 | 11.3 |
| 518.101250 | 33.6 | 167.0 | V | 211.0 | -3.6 | 46.0 | 12.4 |
| 501.290250 | 32.1 | 103.0 | V | 29.0 | -3.9 | 46.0 | 13.9 |
| 504.364050 | 31.5 | 162.0 | V | 344.0 | -3.9 | 46.0 | 14.5 |
| 235.473550 | 30.4 | 101.0 | H | 84.0 | -10.6 | 46.0 | 15.6 |
| 124.332500 | 27.2 | 105.0 | H | 104.0 | -11.3 | 43.5 | 16.3 |

**Above 1 GHz:**

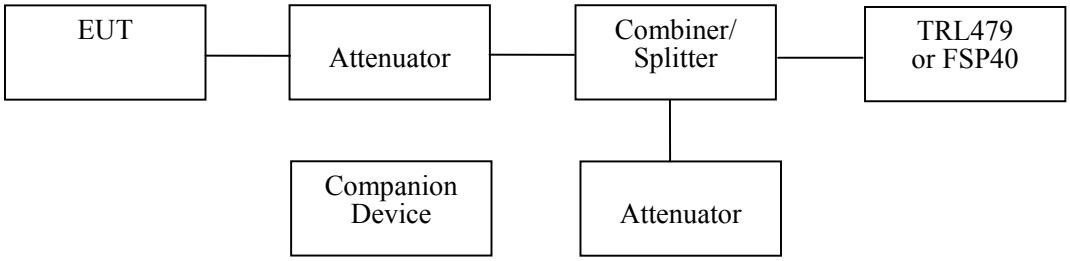
| Freq. (MHz) | Meter Reading (dBuV) | Detector PK/QP/AV | Direction Degree | Test Antenna | | | Cable Loss (dB) | Pre. Amp. Gain (dB) | Cord. Amp. (dBuV/m) | FCC Part 15.319(g)/209 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Height (m) | Polar (H/V) | Factor (dB/m) | | | | Limit (dBuV/m) | Margin (dB) | Remarks |
| High Channel | | | | | | | | | | | | |
| 7713.792 | 53.33 | PK | 147 | 1.3 | V | 37.3 | 8.50 | 33.6 | 65.53 | 74 | 8.47 | Harmonic |
| 7713.792 | 52.73 | PK | 150 | 1.3 | H | 37.1 | 8.50 | 33.6 | 64.73 | 74 | 9.27 | Harmonic |
| 7713.792 | 28.95 | AV | 147 | 1.3 | V | 37.3 | 8.50 | 33.6 | 41.15 | 54 | 12.85 | Harmonic |
| 7713.792 | 28.85 | AV | 150 | 1.3 | H | 37.1 | 8.50 | 33.6 | 40.85 | 54 | 13.15 | Harmonic |
| 5785.344 | 50.12 | PK | 345 | 1.5 | V | 35.4 | 6.50 | 33.6 | 58.42 | 74 | 15.58 | Harmonic |
| 5785.344 | 30.07 | AV | 345 | 1.5 | V | 35.4 | 6.50 | 33.6 | 38.37 | 54 | 15.63 | Harmonic |
| 5785.344 | 50.39 | PK | 345 | 1.5 | H | 35.0 | 6.50 | 33.6 | 58.29 | 74 | 15.71 | Harmonic |
| 3856.896 | 55.33 | PK | 150 | 1.0 | V | 32.3 | 4.32 | 33.7 | 58.25 | 74 | 15.75 | Harmonic |
| 5785.344 | 29.87 | AV | 345 | 1.5 | H | 35.0 | 6.50 | 33.6 | 37.77 | 54 | 16.23 | Harmonic |
| 3856.896 | 34.00 | AV | 150 | 1.0 | V | 32.3 | 4.32 | 33.7 | 36.92 | 54 | 17.08 | Harmonic |
| 3856.896 | 50.16 | PK | 198 | 1.0 | H | 32.1 | 4.32 | 33.7 | 52.88 | 74 | 21.12 | Harmonic |
| 3856.896 | 29.27 | AV | 198 | 1.0 | H | 32.1 | 4.32 | 33.7 | 31.99 | 54 | 22.01 | Harmonic |
| Low Channel | | | | | | | | | | | | |
| 7686.144 | 52.28 | PK | 146 | 1.5 | V | 37.0 | 7.96 | 33.6 | 63.64 | 74 | 10.36 | Harmonic |
| 7686.144 | 52.67 | PK | 125 | 1.5 | H | 36.3 | 7.96 | 33.6 | 63.33 | 74 | 10.67 | Harmonic |
| 7686.144 | 28.45 | AV | 146 | 1.5 | V | 37.0 | 7.96 | 33.6 | 39.81 | 54 | 14.19 | Harmonic |
| 5764.608 | 51.40 | PK | 350 | 1.5 | V | 35.4 | 6.50 | 33.6 | 59.70 | 74 | 14.30 | Harmonic |
| 3843.072 | 56.26 | PK | 280 | 1.5 | V | 32.3 | 4.32 | 33.7 | 59.18 | 74 | 14.82 | Harmonic |
| 7686.144 | 28.50 | AV | 125 | 1.5 | H | 36.3 | 7.96 | 33.6 | 39.16 | 54 | 14.84 | Harmonic |
| 5764.608 | 50.60 | PK | 144 | 1.7 | H | 35.0 | 6.50 | 33.6 | 58.50 | 74 | 15.50 | Harmonic |
| 5764.608 | 30.02 | AV | 350 | 1.5 | V | 35.4 | 6.50 | 33.6 | 38.32 | 54 | 15.68 | Harmonic |
| 3843.072 | 35.23 | AV | 280 | 1.5 | V | 32.3 | 4.32 | 33.7 | 38.15 | 54 | 15.85 | Harmonic |
| 5764.608 | 28.86 | AV | 120 | 1.6 | H | 35.0 | 6.50 | 33.6 | 36.76 | 54 | 17.24 | Harmonic |
| 3843.072 | 29.16 | AV | 280 | 2.0 | H | 32.1 | 4.32 | 33.7 | 31.88 | 54 | 22.12 | Harmonic |
| 3843.072 | 48.76 | PK | 280 | 2.0 | H | 32.1 | 4.32 | 33.7 | 51.48 | 74 | 22.52 | Harmonic |

# §15.323 (a) - EMISSION BANDWIDTH

## Standard Applicable

Operation shall be contained within the 1920–1930 MHz band. The emission bandwidth shall be less then 2.5 MHz and greater than 50 kHz.

The emission bandwidth is measured in accordance with ANSI C63.17 sub-clause 6.1.3 using the setup below:




The width, in Hz, of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, that is 26 dB down relative to the maximum level of the modulated carrier. It is based on the use of measurement instrumentation employing a peak detector function with an instrument resolution bandwidth approximately equal to 1% of the emission band-width of the device under measurement. [Extraction from 47 VFR 15, subpart D, 15.303 (C)].

## Test Data

Please refer to FCC ID: WI6HWD certified on 2008-10-07, report No.: RSZ08070805.

# §15.319 (c) - PEAK TRANSMIT POWER

## Standard Applicable

Per FCC Part15.319 (a), Peak transmit power shall not exceed 100 microwatts multiplied by the square root of the emission bandwidth in hertz.

Per FCC Part15.319 (e), The peak transmit power shall be reduced by the amount in decibels that the maximum directional gain of the antenna exceeds 3 dBi.

Calculation of Peak Transmit Power Limit ($P_{max}$):

$P_{max} = 100\mu w \times (EBW)^{1/2}$
EBW is the transmit emission bandwidth in Hz determined in the other test item:
EBW = 1404000Hz
$P_{max} = 100\ \mu\ W \times (1404000)^{1/2}$ , i.e. $P_{max}$ = 20.74 dBm

## Test Data

Please refer to FCC ID: WI6HWD certified on 2008-10-07, report No.: RSZ08070805.

# §15.319 (d) - POWER SPECTRAL DENSITY

## Standard Applicable

The average pulse energy in a 3 kHz bandwidth divided by the pulse duration.

The power spectral density shall not exceed 3mW in any 3 kHz bandwidth as measured with a spectrum analyzer having a resolution bandwidth of 3 kHz.

## Test Data

Please refer to FCC ID: WI6HWD certified on 2008-10-07, report No.: RSZ08070805.

# §15.323 (d) - EMISSION INSIDE AND OUTSIDE THE SUB-BAND

## Standard Applicable

Emissions inside the sub-band must comply with the following emission mask:

1. In the bands between 1B and 2B measured from the center of the emission bandwidth the total power emitted by the device shall be at least 30 dB below the transmit power permitted for that device;
2. in the bands between 2B and 3B measured from the center of the emission bandwidth the total power emitted by an intentional radiator shall be at least 50 dB below the transmit power permitted for that radiator;
3. in the bands between 3B and the sub-band edge the total power emitted by an intentional radiator in the measurement bandwidth shall be at least 60 dB below the transmit power permitted for that radiator.

   Where B = emission bandwidth

Emission Outside the sub-band shall be attenuated below a reference power of 112 mw (20.5 dBm) as follows:

1. 30 dB between the sub-band and 1.25 MHz above or below the sub-band;
2. 50 dB between 1.25 and 2.5 MHz above or below the sub-band;
3. 60 dB at 2.5 MHz or greater above or below the sub-band.

## Test Data

Please refer to FCC ID: WI6HWD certified on 2008-10-07, report No.: RSZ08070805.

# §15.323 (f) - FREQUENCY STABILITY BASE

## Standard Applicable

This procedure should be carried out for each of the following test cases:

| Temperature | Supply Voltage |
|---|---|
| 20℃ | 85-115% or new batteries |
| -20℃[a] | Normal |
| +50℃ | Normal |

[a] Use the lowest temperature at which the EUT is specified to operate if it is above -20 ℃.

Using the mean carrier frequency at 20℃ and at nominal supply voltage as the reference, the mean carrier frequency shall be maintained within ±10 ppm at the two extreme temperatures (or as declared by the manufacturer) and at normal temperature (typically 20℃) at the two extreme supply voltages.

## Test Data

Please refer to FCC ID: WI6HWD certified on 2008-10-07, report No.: RSZ08070805.

# §15.323 (c) (e) & §15.319(f) – SPECIFIC REQUIREMENTS FOR UPCS DEVICE

## Test Data

Please refer to FCC ID: WI6HWD certified on 2008-10-07, report No.: RSZ08070805.

# DECLARATION LETTER

Shandong Bittel Electronics Co., Ltd.
No.1 N. Rizhao Rd., Rizhao, Shandong, P. R. China
Tel：0633-2212149 Fax：0633-2212149

Date: 2009-4-17

Declaration letter

For: Our Product ： Cordless phone ： Model name：HWDCD9888(38)TSD
We are going to change the following information：

| | Original | New |
|---|---|---|
| Appearance | External photos are submitted as attachments | |
| model | HWD9888(48)TSD | HWDCD9888(38)TSD |
| FCC ID | WI6HWD | WI6HWDCDBS |

This Change of identification request applies for a new FCC ID: WI6HWDCDBS as established in Part 15 for a currently approved device，The original grant to Shandong Bittel Electronics Co., Ltd.will remain in effect.

Base：

RF module is the same. The Antenna/PCB layout/Key board are different. Detailed changes as following:

1. Antenna changed because chassis is different and the original antenna affects audio-frequency，so high-frequency spurious is needed as well.
2. As to New mainboard has adds a function of charge and a display

Sincerely Yours,

Signature:

Typed or Printed Name: Jiangwen Tian
Title: Engineer
Company Name: Shandong Bittel Electronics Co.，LTD

******* END OF REPORT *******