Binatone Electronics International Ltd.

Application
For
Certification

1.9GHz Digital Modulation Cordless Phone with Bluetooth and Digital Answering Machine - Base Unit Bluetooth Portion

(FCC ID: VLJ80-7058-01)

HK09040571-1
KS/cl
May 15, 2009

Intertek Testing Services Hong Kong Ltd.
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MEASUREMENT/TECHNICAL REPORT

Binatone Electronics International Ltd. - Model: B801, B802, B803, B804, B805, B80x & B8
FCC ID: VLJ80-7058-01

This report concerns (check one:) Original Grant __X__ Class II Change ___

Equipment Type : DXX - Low Power Transmitter (example: computer, printer, modem, etc.)

Deferred grant requested per 47 CFR 0.457(d)(1)(ii)? Yes ____ No __X__

If yes, defer until : _____ date

Company Name agrees to notify the Commission by: _____ date

of the intended date of announcement of the product so that the grant can be issued on that date.

Transition Rules Request per 15.37 ? Yes ____ No __X__

If no, assumed Part 15, Subpart C for intentional radiator - the new 47 CFR [10-01-07 Edition] Provision.

Report prepared by:

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EXHIBIT 1
GENERAL DESCRIPTION

1.0 General Description

1.1 Product Description

The B802 is a 1.9GHz Digital Modulation Cordless Phone with Bluetooth and Digital Answering Machine - Base Unit Bluetooth Portion. Only base unit offers Bluetooth as a feature and it operates at frequency range of 2402MHz-2480MHz with 79 channels. It is powered by 100-120VAC to 6VDC 400mA adaptor. With Bluetooth and 1.9GHz wireless communications enable, the base unit allows a user uses a cordless handset to dial out or receive Bluetooth-equipped cellular phone calls via the cellular network or uses a corresponding Bluetooth-equipped headset instead of a corded headset, but only one cellular phone or headset can be on a call at a time.

The antennas used in base unit and handset are integral, and the tested sample is a prototype.

The Model: B801, B803, B804, B805, B80X and B8 is the same as the Model: B802 in hardware aspect. The difference in model number serves as marketing strategy.

The circuit description is saved with filename: descri.pdf

Connection between the base unit and the telephone network is accomplished through the use of USOC RJ11C in the 2-wire loop calling central office line.

1.2 Related Submittal(s) Grants

This is an Application for Certification of DXX – Part 15 Low Power Com. Device Tx. One transmitter is included in this application. On the other hand, a 1.9GHz transmitter, composite device is subject to an additional equipment authorization, has the same as this FCC ID: VLJ80-7058-01 and is in the process of being filed. The receivers are subject to the verification authorization process, in accordance with 15.101(b). A verification report has been prepared for the receiver sections of each device. The device is also subject to Part 68 Registration.

1.3 Test Methodology

Both AC mains line-conducted and radiated emission measurements were performed according to the procedures in ANSI C63.4 (2003). Preliminary scans were performed in the Open Area Test Site only to determine worst case modes. All measurements were performed in Open Area Test Sites. All Radiated tests were performed at an antenna to EUT distance of 3 meters, unless stated otherwise in the "**Justification Section**" of this Application.

1.4 Test Facility

The open area test site and conducted measurement facility used to collect the radiated data and conducted data are located at Garment Centre, 576 Castle Peak Road, Kowloon, Hong Kong. This test facility and site measurement data have been fully placed on file with the FCC.

EXHIBIT 2
SYSTEM TEST CONFIGURATION

2.0 System Test Configuration

2.1 Justification

For emissions testing, the equipment under test (EUT) was setup to transmit continuously to simplify the measurement methodology. Care was taken to ensure proper power supply voltages during testing. During testing, all cables (if any) were manipulated to produce worst case emissions. The EUT was powered by an AC adaptor 100-120VAC to 6VDC 400mA.

For the measurements, the EUT is attached to a plastic stand if necessary and placed on the wooden turntable. If the base unit attaches to peripherals, they are connected and operational (as typical as possible). Else, the base is wired to transmit full power without modulation. The signal is maximized through rotation and placement in the three orthogonal axes. The antenna height and polarization are varied during the search for maximum signal level. The antenna height is varied from 1 to 4 meters. Radiated emissions are taken at three meters unless the signal level is too low for measurement at that distance. If necessary, a pre-amplifier is used and/or the test is conducted at a closer distance.

Measurements of the radiated signal level of the fundamental frequency component of the emission was performed with the supply voltage varied between 85% and 115% of the nominal rated supply voltage.

Analyzer resolution is 100 kHz or greater for frequencies below 1000 MHz. The resolution is 1 MHz or greater for frequencies above 1000 MHz. The spurious emissions more than 20 dB below the permissible value are not reported.

Radiated emission measurement were performed the lowest radio frequency signal generated in the device which is greater than 9 kHz to the tenth harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower.

Determination of pulse desensitization was made according to *Hewlett Packard Application Note 150-2, Spectrum Analysis... Pulsed RF.* The effective period (τ_{eff}) was 625μs for Bluetooth. With the resolution bandwidth 1MHz and spectrum analyzer IF bandwidth 3 dB, the pulse desensitization factor was 0 dB.

2.2 EUT Exercising Software

The EUT exercise program used during radiated and conducted testing was designed to exercise the various system components in a manner similar to a typical use.

2.3 Details of EUT and Description of Peripherals

Details of EUT:

An AC adaptor and/or a battery (provided with the unit) were used to power the device. Their description are listed below.

(1) Base Unit: An AC adaptor (100-120VAC to 6VDC 400mA, Model: S0051U060040) (Supplied by Client)

Description of Peripherals:

(1) Handset: A "Ni-MH" Type Rechargeable Battery Pack type rechargeable battery (2.4V 500mAh) (Supplied by Client)
(2) Handset, Model No.: B802 FCC ID: VLJ80-7058-01 (Supplied by Client)
(3) Mobile phone, Model No.: Nokia 5300, IMEI: 352772015773193 (Supplied by Intertek)
(4) Telecommunication cable with RJ11C connectors (1m, unshielded), terminated (Supplied by Intertek)

2.4 Measurement Uncertainty

When determining of the test conclusion, the Measurement Uncertainty test has been considered.

Uncertainty and Compliance - Unless the standard specifically states that measured values are to be extended by the measurement uncertainty in determining compliance, all compliance determinations are based on the actual measured value.

2.5 Equipment Modification

Any modifications installed previous to testing by Binatone Electronics International Ltd. will be incorporated in each production model sold/leased in the United States.

No modifications were installed by Commercial & Electrical Division, Intertek Testing Services Hong Kong Ltd.

All the items listed under section 2.0 of this report are confirmed by:

Confirmed by:

Sit Kim Wai, Ken
Assistant Manager
Intertek Testing Services

Signature

May 15, 2009 Date

EXHIBIT 3
EMISSION RESULTS

3.0 **Emission Results**

Data is included of the worst case configuration (the configuration which resulted in the highest emission levels). A sample calculation, configuration photographs and data tables of the emissions are included.

3.1 Field Strength Calculation

The field strength is calculated by adding the Antenna Factor and Cable Factor, and subtracting the Amplifier Gain (if any) from the measured reading. The basic equation with a sample calculation is as follows:

FS = RA + AF + CF - AG

where FS = Field Strength in dBμV/m
RA = Receiver Amplitude (including preamplifier) in dBμV
CF = Cable Attenuation Factor in dB
AF = Antenna Factor in dB
AG = Amplifier Gain in dB

In the following table(s), the reading shown on the data table reflects the preamplifier gain. An example for the calculations in the following table is as follows:-

FS = RR + LF

where FS = Field Strength in dBμV/m
RR = RA - AG in dBμV
LF = CF + AF in dB

Assume a receiver reading of 52.0 dBμV is obtained. The antenna factor of 7.4 dB and cable factor of 1.6 dB is added. The amplifier gain of 29 dB is subtracted, giving a field strength of 32 dBμV/m. This value in dBμV/m was converted to its corresponding level in μV/m.

RA = 52.0 dBμV
AF = 7.4 dB
CF = 1.6 dB
AG = 29.0 dB
FS = RR + LF
FS = 23 + 9 = 32 dBμV/m

RR = 23.0 dBμV
LF = 9.0 dB

Level in μV/m = Common Antilogarithm [(32 dBμV/m)/20] = 39.8 μV/m

3.2 Radiated Emission Configuration Photograph - Base Unit

Worst Case Radiated Emission

at 2441.000 MHz

For electronic filing, the worst case radiated emission configuration photographs are saved with filename: config photos.pdf

3.3 Radiated Emission Data - Base Unit

The data on the following pages list the significant emission frequencies, the limit and the margin of compliance.

Judgement : Passed by 2.4 dB margin compare with the average limit

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TEST PERSONNEL:

Tester Signature

Melvin Nip, Supervisor
Typed/Printed Name

May 15, 2009
Date

Company: Binatone Electronics International Ltd. Date of Test: April 20-21, 2009
Model: B802
Mode : Base Bluetooth (TX-Channel 00)

Table 1, Base unit

Radiated Emissions
Pursuant To FCC Part 15 Section 15.249(a) Emissions Requirements

Polari-zation	Frequency	Reading (dBμV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Calculated at 3m (dBμV/m)	Average Limit at 3m (dBμV/m)	Margin (dB)
V	2402.000	94.8	33	29.4	91.2	94.0	-2.8
H	*4804.000	46.7	33	34.9	48.6	54.0	-5.4
H	7206.000	43.3	33	37.9	48.2	54.0	-5.8
H	9608.000	40.2	33	40.4	47.6	54.0	-6.4
H	*12010.000	39.7	33	40.5	47.2	54.0	-6.8
H	14412.000	38.4	33	40.0	45.4	54.0	-8.6

NOTES: 1. Peak detector is used for the emission measurement.

2. All measurements were made at 3 meters. Radiated emissions not detected at the 3-meter distance were measured at 0.3-meter and an inverse proportional extrapolation was performed to compare the signal level to the 3-meter limit. No other radiated emissions than those reported were detected at a test distance of 0.3-meter.

3. Negative value in the margin column shows emission below limit.

4. Horn antenna is used for the emission over 1000MHz.

5. Emissions radiated outside of the specified frequency bands, except harmonics, are attenuated by 50 dB below the level of the fundamental or to the general radiated emission limits in Section 15.209, whichever is the lesser attenuation, which meet the requirement of part 15.249(d).

* Emission within the restricted band meets the requirement of part 15.205.

Test Engineer: Melvin Nip

Company: Binatone Electronics International Ltd. Date of Test: April 20-21, 2009
Model: B802
Mode : Base Bluetooth (TX-Channel 39)

Table 2, Base unit

Radiated Emissions
Pursuant To FCC Part 15 Section 15.249(a) Emissions Requirements

Polari-zation	Frequency	Reading (dBμV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Calculated at 3m (dBμV/m)	Average Limit at 3m (dBμV/m)	Margin (dB)
V	2441.000	95.2	33	29.4	91.6	94.0	-2.4
H	*4882.000	46.5	33	34.9	48.4	54.0	-5.6
H	*7323.000	43.1	33	37.9	48.0	54.0	-6.0
H	9764.000	40.4	33	40.4	47.8	54.0	-6.2
H	*12205.000	39.7	33	40.5	47.2	54.0	-6.8
H	14646.000	40.0	33	38.4	45.4	54.0	-8.6

NOTES: 1. Peak detector is used for the emission measurement.

2. All measurements were made at 3 meters. Radiated emissions not detected at the 3-meter distance were measured at 0.3-meter and an inverse proportional extrapolation was performed to compare the signal level to the 3-meter limit. No other radiated emissions than those reported were detected at a test distance of 0.3-meter.

3. Negative value in the margin column shows emission below limit.

4. Horn antenna is used for the emission over 1000MHz.

5. Emissions radiated outside of the specified frequency bands, except harmonics, are attenuated by 50 dB below the level of the fundamental or to the general radiated emission limits in Section 15.209, whichever is the lesser attenuation, which meet the requirement of part 15.249(d).

* Emission within the restricted band meets the requirement of part 15.205.

Test Engineer: Melvin Nip

Company: Binatone Electronics International Ltd. Date of Test: April 20-21, 2009
Model: B802
Mode : Base Bluetooth (TX-Channel 78)

Table 3, Base unit

Radiated Emissions
Pursuant To FCC Part 15 Section 15.249(a) Emissions Requirements

Polari-zation	Frequency	Reading (dBμV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Calculated at 3m (dBμV/m)	Average Limit at 3m (dBμV/m)	Margin (dB)
V	2480.000	94.8	33	29.4	91.2	94.0	-2.8
H	*4960.000	46.4	33	34.9	48.3	54.0	-5.7
H	*7440.000	43.3	33	37.9	48.2	54.0	-5.8
H	9920.000	39.8	33	40.4	47.2	54.0	-6.8
H	*12400.000	39.5	33	40.5	47.0	54.0	-7.0
H	14880.000	40.1	33	38.4	45.5	54.0	-8.5

NOTES: 1. Peak detector is used for the emission measurement.

2. All measurements were made at 3 meters. Radiated emissions not detected at the 3-meter distance were measured at 0.3-meter and an inverse proportional extrapolation was performed to compare the signal level to the 3-meter limit. No other radiated emissions than those reported were detected at a test distance of 0.3-meter.

3. Negative value in the margin column shows emission below limit.

4. Horn antenna is used for the emission over 1000MHz.

5. Emissions radiated outside of the specified frequency bands, except harmonics, are attenuated by 50 dB below the level of the fundamental or to the general radiated emission limits in Section 15.209, whichever is the lesser attenuation, which meet the requirement of part 15.249(d).

* Emission within the restricted band meets the requirement of part 15.205.

Test Engineer: Melvin Nip

Company: Binatone Electronics International Ltd. Date of Test: April 20-21, 2009
Model: B802
Mode: Talk

Table 4, Base unit

Radiated Emissions
Pursuant To FCC Part 15 Section 15.209 Emissions Requirements

Polari-zation	Frequency (MHz)	Reading (dBµV)	Pre-amp (dB)	Antenna Factor (dB)	Net at 3m (dBµV/m)	Limit at 3m (dBµV/m)	Margin (dB)
V	52.000	38.9	16	11.0	33.9	40.0	-6.1
V	104.000	36.6	16	13.0	33.6	43.5	-9.9
V	156.000	34.4	16	16.0	34.4	43.5	-9.1
H	182.000	30.2	16	20.0	34.2	43.5	-9.3
H	208.000	36.6	16	17.0	37.6	43.5	-5.9
H	*260.000	30.2	16	21.0	35.2	46.0	-10.8
H	338.000	27.6	16	24.0	35.6	46.0	-10.4
H	416.000	26.4	16	25.0	35.4	46.0	-10.6
H	456.000	26.2	16	26.0	36.2	46.0	-9.8
H	468.000	24.6	16	26.0	34.6	46.0	-11.4
H	546.000	22.2	16	28.0	34.2	46.0	-11.8

NOTES: 1. Peak detector is used for the emission measurement.

2. All measurements were made at 3 meters.

3. Negative value in the margin column shows emission below limit.

* Emission within the restricted band meets the requirement of part 15.205.

Test Engineer: Melvin Nip

3.4 Radiated Emission on the Bandedge

From the following plots, they show that the fundamental emissions are confined in the specified band (2400MHz and 2483.5MHz). In case of the fundamental emissions are within two standard bandwidths from the bandedge, the delta measurement technique is used for determining bandedge compliance. Standard bandwidth is the bandwidth specified by ANSI C63.4 (2003) for frequency being measured.

Emissions radiated outside of the specified frequency bands, except harmonics, are attenuated by 50 dB below the level of the fundamental or to the general radiated emission limits in Section 15.209, whichever is the lesser attenuation, which meet the requirement of part 15.249(d).

Please refer to the following plots for radiated emission on the bandedge:

Plot B1A: Base Unit - Low Channel Emissions
Plot B1B: Base Unit - High Channel Emissions

For electronic filing, the above plots are saved with filename: emission.pdf

Pursuant to FCC Part 15 Section 15.215(c), the 20dB bandwidth of the emission was contained within the frequency band designated (mentioned as above) which the EUT operated. The effects, if any, from frequency sweeping, frequency hopping, other modulation techniques and frequency stability over expected variations in temperature and supply voltage were considered.

3.5 Line Conducted Configuration Photograph - Base Unit

Worst Case Line-Conducted Configuration

For electronic filing, the worst case line conducted configuration photographs are saved with filename: config photos.pdf

3.6 Line Conducted Emission Data

The data on the following pages list the significant emission frequencies, the limit, and the margin of compliance.

Judgement : Passed by more than 20 dB margin

TEST PERSONNEL:

Tester Signature

Melvin Nip, Supervisor
Typed/Printed Name

May 15, 2009
Date

Company: Binatone Electronics International Ltd. Date of Test: April 20-21, 2009
Model: B802

3.7 Transmitter Duty Cycle Calculation, FCC Rule 15.35(b, c)

Based on the Bluetooth Specification Version 2.1 + EDR, transmitter ON time is independent of the packet type (DH1, DH3 and DH5) and packet length (single-slot and multi-slot). The maximum transmitter ON time for the Bluetooth is 625μs.

Each TX and RX time slot is 625μs in length. A TDD scheme is used where master and slave alternately transmit. For one period for a pseudo-random hopping through all 79 RF channels, it takes: 79 x (0.625 x 2)ms = 98.75ms.

Therefore,

Average Factor (AF) of Bluetooth in dB = $20 \log_{10} (0.625/98.75)$ dB
= $20 \log_{10} (0.00633)$ dB
= -43.9dB