

MPE Test Report

of

Product Name

MINIBLUE

Model

MB100

(Brand: LIGHTEN DIGITAL)

Applied by:

LIGHTEN DIGITAL TECHNOLOGY CO.,LTD
NO. 317, 20th F, Ming Hwa Rd.,
Kushan District, Kaohsiung 804
Taiwan, R. O. C.

Test Performed by:

International Standards Laboratory

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LT LAB:NVLAP:200234-0;VCCI: R-1435,C-1440;NEMKO:ELA 113b,113d;BSMI:SL2-IN-E-0013;CNLA:0997

ISL-T10-R29-1

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1. General

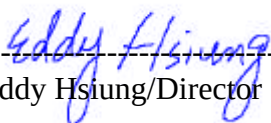
1.1 Certification of Accuracy of Test Data

Standards:	CFR 47 Part 15 Subpart B Class B CFR 47 Part 15 Subpart C (Section 15.247) CFR 47 Part 15 Subpart E (Section 15.407)
Test Procedure:	ANSI C63.4:2003
Equipment Tested:	MINIBLUE
Model:	MB100
Applied by:	LIGHTEN DIGITAL TECHNOLOGY CO.,LTD
Sample received Date:	2005/04/06
Final test Date :	2005/04/12
Test Result	PASS
Test Site:	Chamber 02, Conduction 02
Temperature	Refer to each site test data
Humidity:	Refer to each site test data
Test Engineer:	Mailes Hsieh

All the tests in this report have been performed and recorded in accordance with the standards described above and performed by an independent electromagnetic compatibility consultant, International Standards Laboratory.

The test results contained in this report accurately represent the measurements of the characteristics and the energy generated by sample equipment under test at the time of the test. The sample equipment tested as described in this report is in compliance with the limits of above standards.

Approve & Signature



Eddy Hsiung/Director

Test results given in this report apply only to the specific sample(s) tested under stated test conditions. This report shall not be reproduced other than in full without the explicit written consent of ISL. This report totally contains 9 pages, including 1 cover page, 1 contents page, and 7 pages for the test description. This report must not be used to claim product endorsement by NVLAP or any agency of the U.S. Government.

This test data shown below is traceable to NIST or national or international standard. International Standards Laboratory certifies that no party to this application has been denied the FCC benefits pursuant to Section 5301 of the Anti-Drug Abuse Act of 1988, 21 U.S.C. 853(a).

2. Description of Equipment Under Test (EUT)

Description:	MINIBLUE		
Model No.:	MB100		
Brand:	LIGHTEN		
Bluetooth Module:	Micro-Star International Co. LTD. (Model: MS-55162)		
Frequency Range:	2402 ~ 2480 MHz		
Support channel:	79 Channels		
Modulation Skill:	GFSK (1Mbps)		
Antennas Type:	Multilayer Chip Antenna made by Advanced Ceramic X Corp. Part No.: AT7020-B2R4HAA		
Antenna Connected:	The chip antenna is mounted to the PCB of the EUT. The user is not possible to change the antenna .		
Antenna peak Gain:	2.0 dBi		
Power Type of Bluetooth module:	3.3V DC from Notebook PC		
The channels and the operation frequency have listed below:			
Channel	Frequency(MHz)	Channel	Frequency(MHz)
00	2402	01	2403
02	2404	03	2405
04	2406	05	2407
.....			
75	2477	76	2478
77	2479	78	2480
Audio out/Power In Port:	one		
Front:	Back Button Play/Forward Button Stop Button Volume - Volume + LED for Charge LED for Power On LED for BlueTooth		
Rear:	Record Button BlueTooth Button		

EMI Noise Source:

Crystal:16MHz,24MHz

EMI Solution:

1.Add one core on USB Cable near EUT, Vendor: KingCore Type:KCF-50-B13*13*21mm.Clock Generator: U52

EMI Solution:

1. Added one conductive cloth between the center iron and hot sink .
2. 2. Add one gaskets on cardbus .

2.1 General Test Conditions

During the test, the EUT was set in continuously transmitting mode with a duty cycle of 100%.for 802.11b.

3. RF Exposure Measurement [Section 15.247(b)(4) & 1.1307(b)]

3.1 Applied Standards

FCC PART 1.1307, 1.1310, 2.1091, 2.1093 RF EXPOSURE

3.2 Test Procedure

The Transmitter output of EUT was connected to the Peak Power Analyzer

3.3 Test Setup



3.4 Calculation for Maximum Permissible Exposure (MPE)

From FCC 1.1310 Table 1B, the maximum permissible RF exposure for an uncontrolled environment is 1 mW/cm². The actual power density for the EUT with the antenna is calculated as shown below.

$$S = (P \times G) / (4 \times \pi \times d^2)$$

where:

S = power density

P = transmitter conducted power in (W)

G = antenna numeric gain

d = distance to radiation center (m)

Antenna Manufacturer	Antenna Type	Gain (dBi)	Numeric Gain	Frequency (MHz)	Power (dBm)	Power (mW)	Separation Distance (cm)	Power Density (W/m2)	Power Density (mW/cm2)
Advanced Ceramic X Corp. P/N:AT7020- B2R4HAA	Multilayer Chip	2	1.58	2412	3.26	2.12	20	0.0067	0.00067
				2437	2.47	1.77	20	0.0056	0.00056
				2462	2.25	1.68	20	0.0053	0.00053

WARNING:

It is the responsibility of the installer to ensure that the EUT is a WLAN module and a specified antenna inside. Only the specified antennas listed above may be used. The use of any other antenna is expressly forbidden in accordance with FCC rules CFR 47 part 15.204.

NOTICE:

FCC Radiation Exposure Statement

This equipment complies with FCC radiation exposure limits for an uncontrolled environment when installed as directed. This equipment should be installed and operated with the specified antenna listed in this report.

4. Appendix : Test Equipment

4.1 Test Equipment List

Location	Equipment Name	Brand	Model	S/N	Last Cal. Date	Next Cal. Date
Rad. Above 1Ghz	Peak Power Analyzer	HP	8990A	3621A01269	01/02/2005	01/02/2006

Note: Calibration traceable to NIST or national or international standards.