

**CONFORMANCE TEST REPORT
FOR
EN 301489-1 / -17****Report No.: 09-06-MAS-242-03**

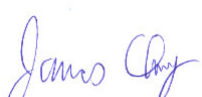
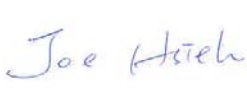
Client: Ezurio Limited.
Product: Bluetooth AT Data Module
Model: BTM410
Manufacturer/supplier: Aerocomm Inc

Date test item received: 2009/06/18
Date test campaign completed: 2009/06/25
Date of issue: 2009/08/28

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- ⑤ FCC Registration Number: 90588, 91094, 91095

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1. TEST REPORT CERTIFICATION

Client : Ezurio Limited.

Address : Saturn House, Mercury Park, Wycombe Lane, Wooburn Green HP10 0HH UK

Manufacturer : Aerocomm Inc

Address : 11160 Thompson Ave Lenexa, KS 66219

EUT : Bluetooth AT Data Module

Trade name : EZURiO

Model No. : BTM410

Test standard : EN 301489-1: V1.8.1
EN 301489-17: V2.1.1

Emissions	Immunity
EN 55022:2006/A1:2000/A2:2006 (Class B)	EN 61000-4-2:1995/A1:1998/A2:2001
	EN 61000-4-3:2002/A1:2002

The testing described in this report has been carried out to the best of our knowledge and ability, and our responsibility is limited to the exercise of reasonable care. This certification is not intended to believe the sellers from their legal and/or contractual obligations.

2.GENERAL INFORMATIONS

2.1 Description of EUT:

The EUT is a Bluetooth AT Data Module, based on the Bluetooth technology. Bluetooth is a short-range radio link intended to be a cable replacement between portable or fixed electronic devices. Bluetooth operates in the unlicensed ISM Band at 2.4GHz. In this band, 79 RF channels spaced 1MHz apart are defined.

2.2 Related Information of EUT:

Power Supply : DC 3.3V (From Test Jig to Module)

Power Line : ☐ Nonshielded ☐ Shielded ☒ None , length: _____ m

Signal Line : ☐ Nonshielded ☐ Shielded ☒ None , length: _____ m

Control Line : ☐ Nonshielded ☐ Shielded ☒ None , length: _____ m

* For more detailed features, please refer to User's Manual.

2.3 Tested Configuration:

Product	Manufacturer	Model No.	Power Line
Notebook PC	HP	nx6320	3.1m*1, Unshielded Power Line
Test Jig	N/A	N/A	1.5m Unshielded Signal Line/USB

2.4 Deviations Record:

(If any deviation from additions to or exclusions from test method must be stated)

N/A

2.5 Modification Record:

N/A

3. SUMMARY OF TEST RESULTS

3.1 Emissions:

3.1.1 Radiated emissions

■-PASS

Peak EMI Value to the limit: -1.02 dB at 1000.0000 MHz

3.2 Immunity:

3.2.1 Immunity criteria:

The results of all of the immunity tests performed on the EUT were evaluated according to the following criteria, and according to the manufacturer's specifications for the EUT:

☐ **Performance criterion for continuous phenomena applied to transmitters and receivers:**

If no further details are given in the relevant part of the present document dealing with the particular type of radio equipment, the following general performance criteria for continuous phenomena shall apply.

During and after the test, the apparatus shall continue to operate as intended. No degradation of performance or loss of function is allowed below a permissible performance level specified by the manufacturer when the apparatus is used as intended. In some cases this permissible performance level may be replaced by a permissible loss of performance.

During the test the EUT shall not unintentionally transmit or change its actual operating state and stored data.

If the minimum performance level or the permissible performance loss is not specified by the manufacturer, then either of these may be deduced from the product description and documentation and what the user may reasonably expect from the apparatus if used as intended.

☐ **Performance criterion for equipment which does not provide a continuous communication link:**

If no further details are given in the relevant part of the present document dealing with the particular type of radio equipment, the following general performance criteria for transient phenomena shall apply.

After the test, the apparatus shall continue to operate as intended. No degradation of performance or loss of function is allowed below a permissible performance level specified by the manufacturer, when the apparatus is used as intended. In some cases this permissible performance level may be replaced by a permissible loss of performance.

☐ **Performance criterion for criteria for equipment which does not provide a continuous communication link:**

For radio equipment which does not provide a continuous communication link, the performance criteria described in the subclauses above are not appropriate, then the manufacturer shall declare, for inclusion in the test report, his own specification for an acceptable level of performance or degradation of performance during and/or after the immunity tests. The performance specification shall be included in the product description and documentation.

The performance criteria specified by the manufacturer shall give the same degree of immunity protection as called for in the foregoing subclauses.

☐ **Performance criterion for ancillary equipment tested on a stand alone basis:**

If ancillary equipment is intended to be tested on a stand alone basis, the performance criteria described in the subclauses above are not appropriate, then the manufacturer shall declare, for inclusion in the test report, his own specification for an acceptable level of performance or degradation of performance during and/ or after the immunity tests. The performance specification shall be included in the product description and documentation. The performance criteria specified by the manufacturer shall give the same degree of immunity protection as called for in the foregoing subclauses.

☐ **Performance criterion CT:**

If the equipment is of type I or II including ancillary equipment tested on a stand alone basis, the performance criteria A of the applicable class as given in subclause 6.3 shall apply. For equipment of type II or type III that requires a communication link that is maintained during the test, it shall be verified by appropriate means supplied by the manufacturer that the communication link is maintained during each individual exposure in the test sequence. Where the EUT is a transmitter, tests shall be repeated with the EUT in standby mode to ensure that unintentional transmission does not occur.

☐ **Performance criterion TT:**

If the equipment is of the type I or II, including ancillary equipment tested on a stand alone basis, the performance criteria B of the applicable class as given in subclause 6.3 shall apply, except for power interruptions exceeding a certain time the performance criteria deviations are specified in subclause 7.2.2. For equipment of the type II or type III that requires a communication link that is maintained during the test, this shall be verified by appropriate means supplied by the manufacturer during each individual exposure in the test sequence. Where the EUT is a transmitter, tests shall be repeated with the EUT in standby mode to ensure that unintentional transmission does not occur.

☐ **Performance criterion CR:**

If the equipment is of the type I or II, including ancillary equipment tested on a stand alone basis, the performance criteria A of the applicable class as given in subclause 6.3 shall apply. For equipment of the type II or III that requires a communication link that is maintained during the test, shall be verified by appropriate means supplied by the means supplied by the manufacturer that the communication link maintained during each individual exposure in the test sequence. Where the EUT is a transceiver, under no circumstances shall the transmitter operate unintentionally during the test.

☐ **Performance criterion TR:**

If the equipment is of the type I or II, including ancillary equipment tested on a stand alone basis, the performance criteria B of the applicable class as given in subclause 6.3 shall apply, except for power interruptions exceeding a certain time the performance criteria deviations are specified in subclause 7.2.2. For equipment of the type II or type III that requires communication link that is maintained during the test, this shall be verified by appropriate means supplied by the manufacturer during each individual exposure in the test sequence. Where the EUT is a transceiver, under no circumstances shall the transmitter operate intentionally during the test.

3.2.2 Electrostatic discharge:**■ -PASS**

For transmitters the performance criteria for transient phenomena for transmitter shall apply. For receivers the performance criteria for transient phenomena for receivers shall apply. For ancillary equipment the pass/ failure criteria supplied by the manufacturer shall apply, unless the ancillary equipment is tested in connection with a receiver or transmitter in which case the corresponding performance criteria above shall apply.

3.2.3 Radio frequency electromagnetic field (80~1000MHz and 1400~2700MHz):**■ - PASS**

For transmitters the performance criteria for continuous phenomena for transmitters shall apply. For receivers the performance criteria for continuous phenomena for receivers shall apply. For ancillary equipment the pass/ failure criteria supplied by the manufacturer shall apply, unless the ancillary equipment is tested in connection with a receiver or transmitter in which case the corresponding performance criteria above shall apply.

4. TEST DATA & RELATED INFORMATION

4.1 Emissions:

4.1.1 Radiated emissions test:

4.1.1.1 Radiated emissions test data:

Operation Conditions of the EUT: Operation Mode

Test Date: Jun. 18, 2009

Test Specification	EN 55022:2006/A1:2000/A2:2006 (Class B)		
Climatic Condition	Ambient Temperature : <u>28</u> °C		Relative Humidity : <u>68</u> %RH
Power Supply System	3.3Vdc		

Horizontal

	Freq (MHz)	QP Level (dBuV)	Factor (dB/m)	QP Result (dBuV/m)	QP Limit (dBuV/m)	QP Margin (dB)
1	203.006	15.29	13.2	28.49	30.0	-1.51
2	265.2104	16.71	16.4	33.11	37.0	-3.89
3	339.0782	12.45	18.8	31.25	37.0	-5.75
4	498.4770	9.36	22.9	32.26	37.0	-4.74
5	758.9579	5.56	29.3	34.86	37.0	-2.14
6	996.1122	2.72	32.5	35.22	37.0	-1.78

Vertical

	Freq (MHz)	QP Level (dBuV)	Factor (dB/m)	QP Result (dBuV/m)	QP Limit (dBuV/m)	QP Margin (dB)
1	30.0000	8.44	18.6	27.04	30.0	-2.96
2	203.0060	13.64	13.2	26.84	30.0	-3.16
3	271.0421	11.62	16.4	28.02	37.0	-8.98
4	514.0281	4.57	23.9	28.47	37.0	-8.53
5	1000.0000	3.28	32.7	35.98	37.0	-1.02

- Notes:
- 1) Place of Measurement: Measuring site of the ETC
 - 2) Measurement Distance: 10 m
 - 3) Height of table on which the EUT was placed: 0.8 m
 - 4) Height of Receiving Antenna: 1 - 4 m
 - 5) Example Calculation : result for 1000.0000 MHz: $3.28 + (32.7) = 35.98 \text{ dB } \mu \text{V/m}$
 - 6) ① If the data table appeared symbol of "****" means the value was too low to be measured.
 ② If the data table appeared symbol of “#” means the noise was low, so record the peak value.
 - 7) The estimated measurement uncertainty of the result measurement is
 $+ 4.5\text{dB} / - 4.6\text{dB} (30\text{MHz} \leq f \leq 300\text{MHz})$
 $+ 4.3\text{dB} / - 4.3\text{dB} (300\text{MHz} \leq f \leq 1\text{GHz})$

4.2 Immunity:

4.2.1 Electrostatic discharge:

4.2.1.1 Electrostatic discharge test data:

Operation Conditions of the EUT: Operation Mode

Test Date: Jun. 24, 2009

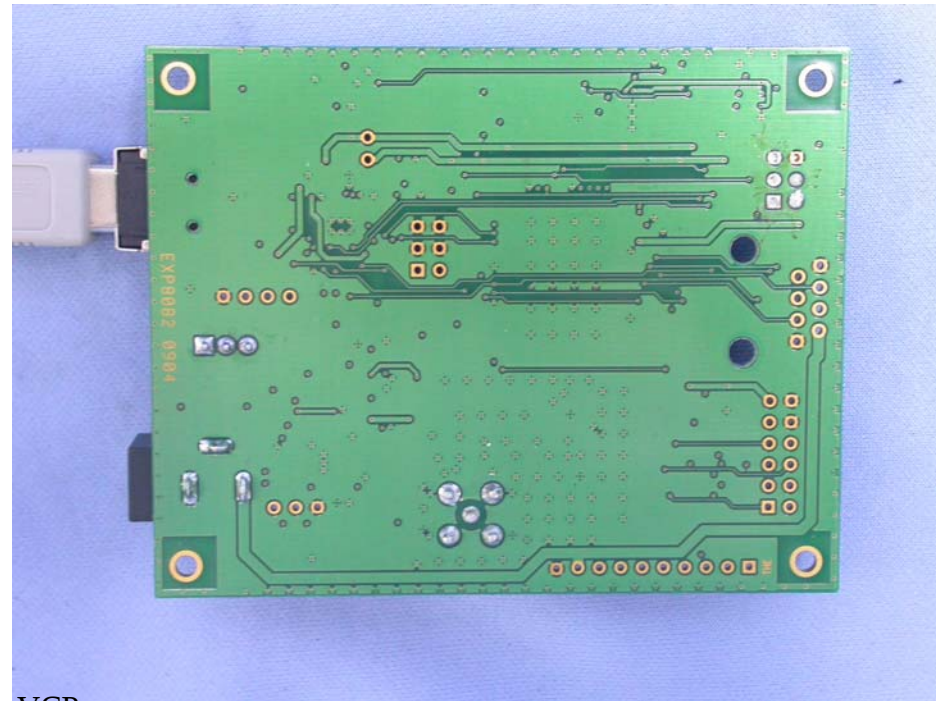
Test Specification	EN 61000-4-2:1995/A1:1998/A2:2001
Climatic Condition	Ambient Temperature: <u>21</u> °C Relative Humidity: <u>58%</u> RH Atmospheric Pressure: <u>1018</u> mbar
Power Supply System	3.3VDC

Energy-Storage Capacitor : <u>150</u> pF Discharge Resistor : <u>330</u> Ω Discharge Times : <u>10</u> times/each condition																
\ Discharge Mode	Contact Discharge								Air Discharge							
\ESD Voltage	<u>2</u> kV		<u>4</u> kV		___ kV		___ kV		<u>2</u> kV		<u>4</u> kV		<u>8</u> kV		___ kV	
\Points\Result\Polarity	+	-	+	-	+	-	+	-	+	-	+	-	+	-	+	-
VCP	A	A	A	A	--	--	--	--	--	--	--	--	--	--	--	--
HCP	A	A	A	A	--	--	--	--	--	--	--	--	--	--	--	--

Note: “A ” means the EUT function was correct during the test.

“ -- ” means the test could not be carried out.

TEST POINTS



4.2.2 Radio frequency electromagnetic field (80~1000MHz and 1400~2700MHz):

4.2.2.1 Radio frequency electromagnetic field test data:

Operation Conditions of the EUT: Operation Mode

Test Date: Jun. 25, 2009

Test Specification	EN 61000-4-3:2002/A1:2002	
Climatic Condition	Ambient Temperature: <u>22</u> °C	Relative Humidity: <u>61</u> % RH
Power Supply System	3.3VDC	

Frequency Range : <u>80</u> MHz ~ <u>1000</u> MHz <u>1400</u> MHz ~ <u>2700</u> MHz		Field Strength : <u>3</u> V/m	Modulation (AM 1kHz 80%)
Sweep Rate : $\leq 1.5 \times 10^{-3}$ decades/s	Step Size : ≤ 1 % of preceding frequency value		Dwell Time : <u>3</u> s
Frequency Range (MHz)	Polarization of Device	Test Result	
80~1000	Vertical	A	
80~1000	Horizontal	A	
1400~2700	Vertical	A	
1400~2700	Horizontal	A	

Note: "A" means the EUT function was correct during the test.

5. EQUIPMENTS LIST FOR TESTING

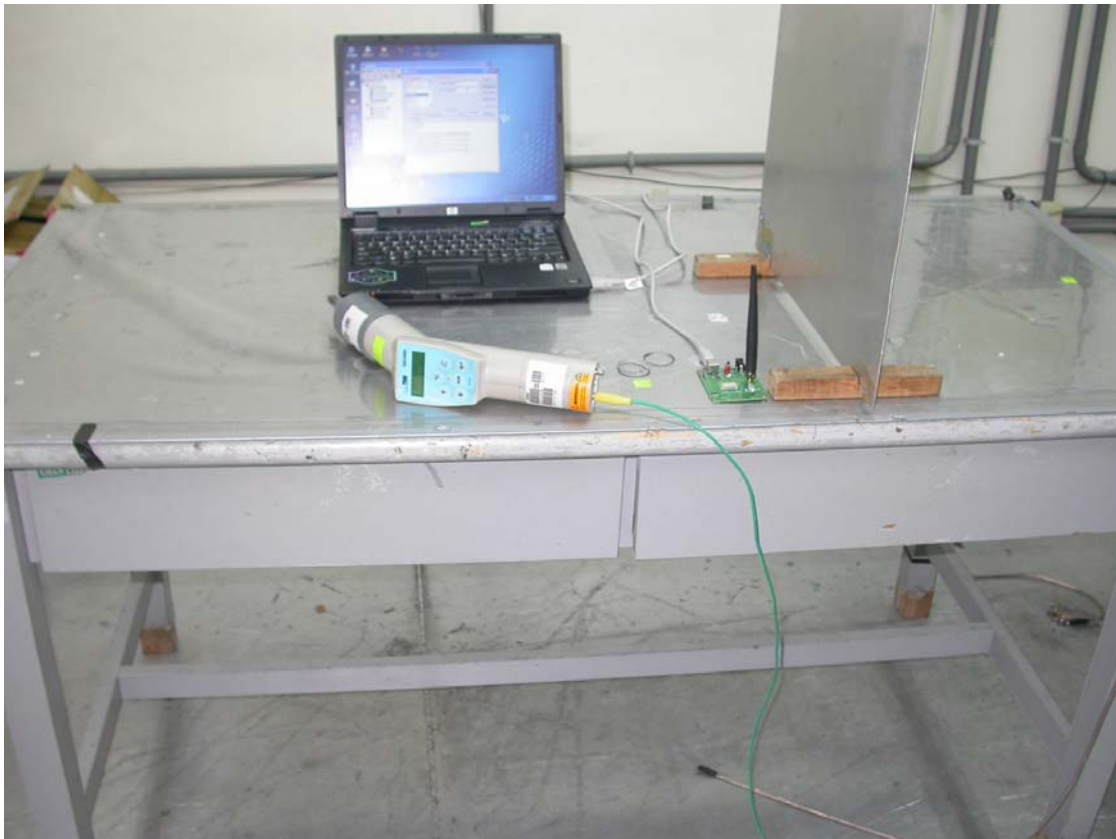
Item	Name	Manufacturer	Model	Calibration Date	Recommended Recal. Date
1	EMI Test Receiver	R&S	ESU	Jul. 20, 2009	Jul. 19, 2010
2	Ant.-LogBicone	EMCO	3142	May 21, 2009	May 20, 2010
3	ESD Simulator	EMC-Partner	ESD3000	Jun. 30, 2009	Jul. 01, 2010
4	RF Power Amplifier	AR	50S1G4AM1	Jun. 03, 2009	Jun. 02, 2010
5	RF Power Amplifier	AR	250W1000AM1	Jun. 03, 2009	Jun. 02, 2010
6	DC Power Supply	Good Will	GPC3030D	NCR	NCR

ANNEX A: PHOTOS

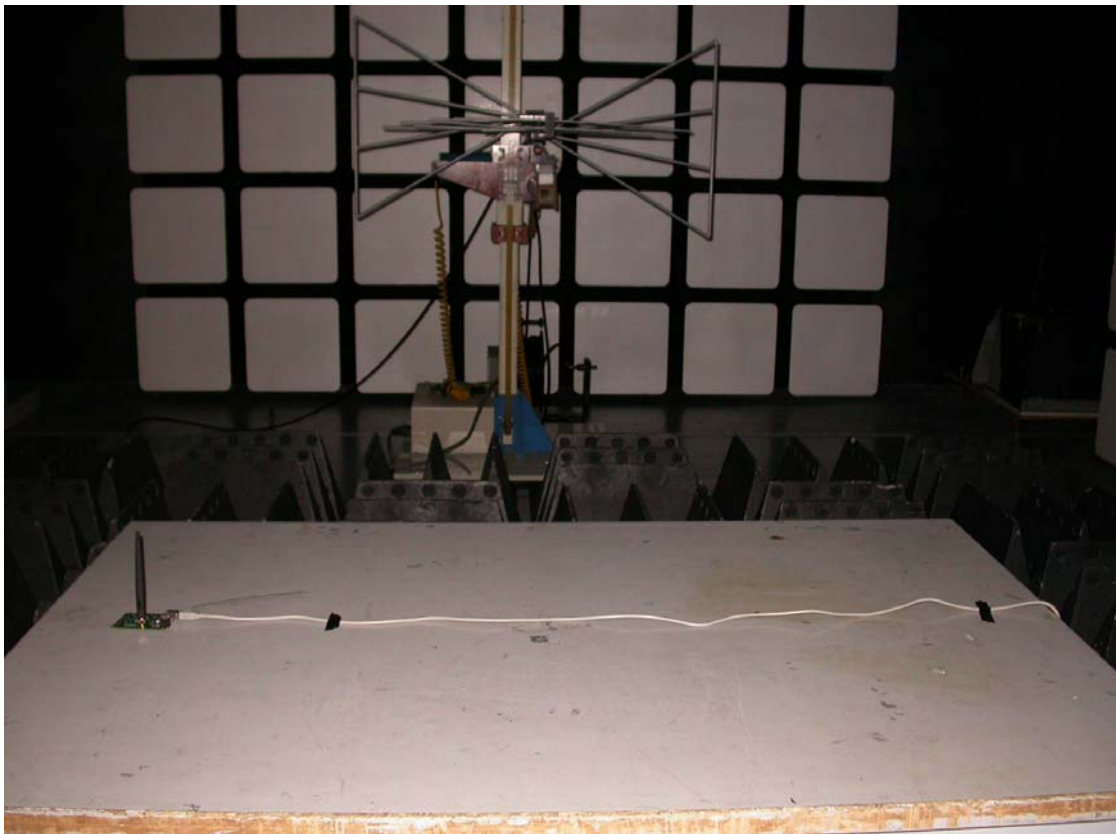
1. Radiated Emissions Test Setup Photos



2. Electrostatic Discharge Immunity Test Setup Photo



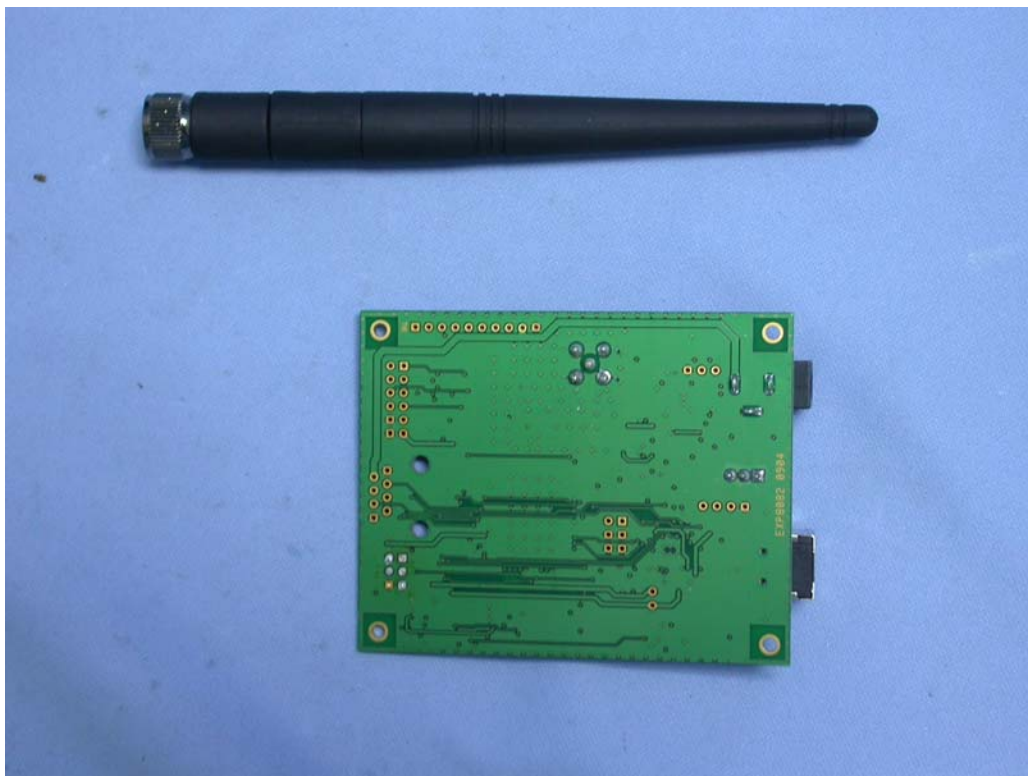
3. RF Radiated Fields Test Setup Photo



4. Outside view 1 of EUT



5. Outside view 2 of EUT



6. antenna connect

