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# Report On

FCC Testing of the  
Continental Automotive Systems  
Quad Band Module

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FCC ID: LHJGNAD1A

IC ID: 2807E- GNAD1A

Document 75903749 Report 01 Issue 3

June 2008



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**REPORT ON**

FCC Testing of the  
Continental Automotive Systems  
Quad Band Module

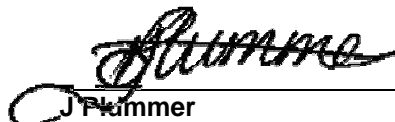
Document 75903749 Report 01 Issue 3

June 2008


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**DATED**

18 June 2008

**This report has been re-issued as Issue 3  
to change the applicant and manufacturers addresses.**

**ENGINEERING STATEMENT**

The measurements shown in this report were made in accordance with the procedures described on test pages. All reported testing was carried out on a sample equipment to demonstrate limited compliance with FCC CFR 47: Part 15 B and Industry Canada RSS-Gen: 2005. The sample tested was found to comply with the requirements defined in the applied rules.

Test Engineers;



G Lawler

Document 75903749 Report 01 Issue 3





## CONTENTS

<b>Section</b>		<b>Page No</b>
<b>1</b>	<b>REPORT SUMMARY .....</b>	<b>3</b>
1.1	Introduction .....	4
1.2	Brief Summary of Results .....	5
1.3	Declaration of Build Status .....	6
1.4	Product Information .....	7
1.5	Test Conditions .....	9
1.6	Deviations From the Standard .....	9
1.7	Modification Record .....	9
<b>2</b>	<b>TEST DETAILS .....</b>	<b>10</b>
2.1	Radiated Emissions (Enclosure Port) .....	11
<b>3</b>	<b>TEST EQUIPMENT USED .....</b>	<b>14</b>
3.1	Test Equipment Used .....	15
3.2	Measurement Uncertainty .....	16
<b>4</b>	<b>PHOTOGRAPHS.....</b>	<b>17</b>
4.1	Photographs of Equipment Under Test (EUT) .....	18
4.2	Photographs of Test Setup .....	19
<b>5</b>	<b>ACCREDITATION, DISCLAIMERS AND COPYRIGHT .....</b>	<b>20</b>
5.1	Accreditation, Disclaimers and Copyright.....	21



## **SECTION 1**

### **REPORT SUMMARY**

FCC Testing of the  
Continental Automotive Systems  
Quad Band Module



## 1.1 INTRODUCTION

The information contained in this report is intended to show verification of the Continental Automotive Systems Quad Band Module to the requirements of FCC CFR 47: Part 15 B: 2006 and Industry Canada RSS-Gen: 2005.

Objective	To perform FCC Testing to determine the Equipment Under Test's (EUT's) compliance with the Test Specification, for the series of tests carried out.
Manufacturer	Continental Automotive Nogales S.A. de C.V. Cortinez Lot 6 Parque Industrial 84000 San Carlos Nogales Mexico
Part Number(s)	GNAD1A
Serial Number(s)	N1A006L4WP N1A006L4VC N1A006L4WP
Software Version	16R
Hardware Version	P6
Number of Samples Tested	1
Test Specification/Issue/Date	FCC CFR 47: Part 15: 2006 Industry Canada RSS-Gen: 2005
Incoming Release Date	Declaration of Build Status 2 May 2008
Disposal Reference Number Date	Held Pending Disposal Not Applicable Not Applicable
Order Number Date	PMDE084151 29 April 2008
Start of Test	04 May 2008
Finish of Test	04 May 2008
Name of Engineer(s)	G Lawler



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**1.2 BRIEF SUMMARY OF RESULTS**

A brief summary of results in accordance with FCC CFR 47: Part 15: 2006, is shown below.

Configuration 1 - EUT Connected to 5V DC Supply							
Section	Spec Clause		Test Description	Mode	Mod State	Result	Base Standard
	CFR FCC	Industry Canada					
2.1	15.109	RSS-Gen, 6.0	Radiated Emissions (Enclosure Port)	850 Idle	0	Pass	FCC CFR 47: Part 15: 2006
				1900 Idle	0	Pass	
	15.107	RSS-Gen, 7.2.2	Conducted Emissions (AC Power Port)	850 Idle	-	N/A	FCC CFR 47: Part 15: 2006
				1900 Idle	-	N/A	

N/A – Not Applicable



## 1.3 DECLARATION OF BUILD STATUS

MAIN EUT	
MANUFACTURING DESCRIPTION	
MANUFACTURER	Temic Automotive of North America, Inc.
TYPE	Quad band GSM module
PART NUMBER	GNAD1A
SERIAL NUMBER	N1A006L4VC, N1A006L4WP, N1A006L4WN
HARDWARE VERSION	P6
SOFTWARE VERSION	16R
TRANSMITTER OPERATING RANGE	GSM 850/900/1800/1900
RECEIVER OPERATING RANGE	GSM 850/900/1800/1900
COUNTRY OF ORIGIN	Mexico
INTERMEDIATE FREQUENCIES	Not relevant
ITU DESIGNATION OF EMISSION	Not relevant
HIGHEST INTERNALLY GENERATED FREQUENCY	3980 MHz
OUTPUT POWER (W or dBm)	850/900 MHz - class 4 (2 Watt) 1800/1900 MHz - Class 1 (1 Watt)
FCC ID	LHJGNAD1A
INDUSTRY CANADA ID	2807E- GNAD1A
TECHNICAL DESCRIPTION (a brief description of the intended use and operation)	The intended use is in automotive applications, e.g. telematic control units, emergency call functionality
BATTERY/POWER SUPPLY	
MANUFACTURING DESCRIPTION	Not Applicable
MANUFACTURER	Not Applicable
TYPE	Powered by device which integrates the module. The device itself will be powered by 12 VDC car battery.
PART NUMBER	Not Applicable
VOLTAGE	Minimum 4,5 VDC, nominal 5,0 VDC, maximum 5,5 VDC
COUNTRY OF ORIGIN	Not Applicable
MODULES (Not Applicable)	
ANCILLARIES (Not Applicable)	

**Signature :** Completed Electronically

**Date:** 16 May 2008

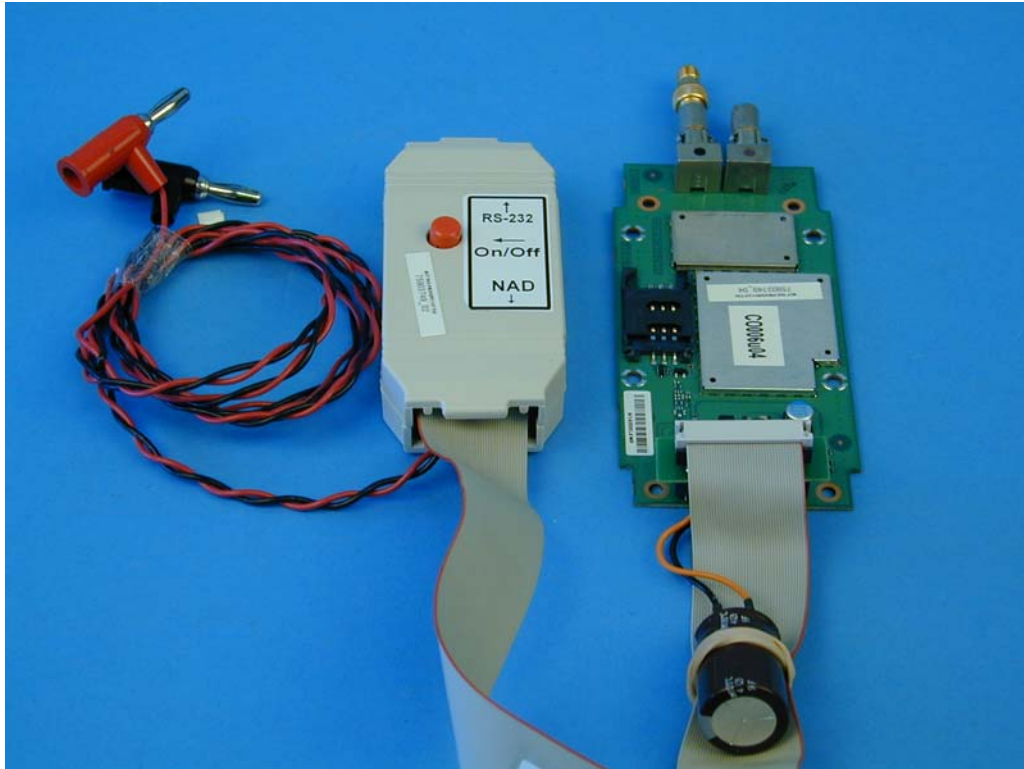
**Declaration of Build Status Serial Number:** 75903749



## 1.4 PRODUCT INFORMATION

### 1.4.1 Technical Description

The Equipment Under Test (EUT) was a Continental Automotive Systems Quad Band Module as shown in the photograph below. A full technical description can be found in the Manufacturers documentation.



Equipment Under Test





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#### **1.4.2 Test Configuration**

##### Configuration 1: EUT Connected to 5V DC Supply

The EUT was configured in accordance with FCC CFR 47: Part 15: 2006 and Industry Canada RSS-Gen: 2005.

#### **1.4.3 Modes of Operation**

Modes of operation of each EUT during testing were as follows:

Mode 1 - 850 Idle

Mode 2 - 1900 Idle

Information on the specific test modes utilised are detailed in the test procedure for each individual test.



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## **1.5 TEST CONDITIONS**

For all tests the EUT was set up in accordance with the relevant test standard and to represent typical operating conditions. Tests were applied with the EUT situated in a shielded enclosure, test laboratories or an open test area as appropriate.

The EUT was powered from a 5V DC (Vehicular) supply.

FCC Accreditation  
90987 Octagon House, Fareham Test Laboratory

Industry Canada Accreditation  
IC4270 Octagon House, Fareham Test Laboratory

## **1.6 DEVIATIONS FROM THE STANDARD**

No deviations from the applicable test standards or test plan were made during testing.

## **1.7 MODIFICATION RECORD**

No modifications were made to the EUT during testing.



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## **SECTION 2**

### **TEST DETAILS**

FCC Testing of the  
Continental Automotive Systems  
Quad Band Module



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## **2.1 RADIATED EMISSIONS (ENCLOSURE PORT)**

### **2.1.1 Specification Reference**

FCC CFR 47: Part 15: 2006, Clause 15.109  
Industry Canada RSS-Gen: 2005, 6.0

### **2.1.2 Equipment Under Test**

Quad Band Module, S/N: N1A006L4WP

### **2.1.3 Date of Test and Modification State**

04 May 2008 - Modification State 0

### **2.1.4 Test Equipment Used**

The major items of test equipment used for the above tests are identified in Section 3.1.

### **2.1.5 Test Method and Operating Modes**

The test was applied in accordance with the test method requirements of FCC CFR 47: Part 15: 2006.

The test was performed with the EUT in the following configurations and modes of operation:

Configuration 1 - Mode 1  
                                  - Mode 2

### **2.1.6 Environmental Conditions**

	04 May 2008
Ambient Temperature	20.7°C
Relative Humidity	39%
Atmospheric Pressure	1018mbar



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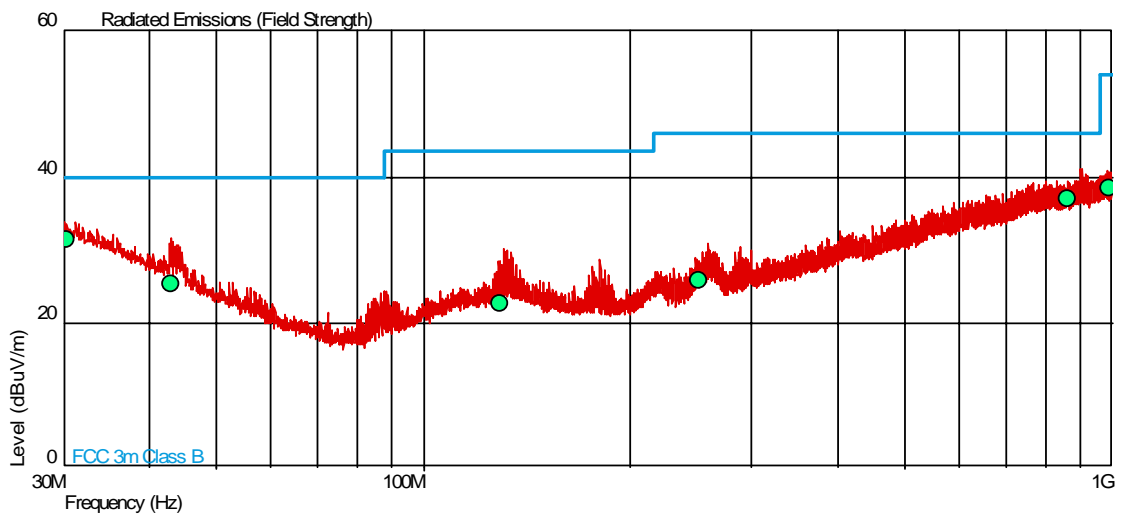
**2.1.7 Test Results**

For the period of test the EUT met the requirements of FCC CFR 47: Part 15: 2006 for Radiated Emissions (Enclosure Port).

The test results are shown below.

Configuration 1 - Mode 1

30MHz to 1GHz



Frequency (MHz)	QP Level		QP Limit		QP Margin		Angle(Deg)	Height(m)	Polarity
	(dBuV/m)	( $\mu$ V/m)	(dBuV/m)	( $\mu$ V/m)	(dBuV/m)	( $\mu$ V/m)			
30.315	31.3	36.7	40.0	100.0	-8.7	63.3	291	1.00	Vertical
42.899	25.2	18.2	40.0	100.0	-14.8	81.8	217	1.00	Vertical
128.887	22.5	13.3	43.5	150.0	-21.0	136.7	267	1.00	Vertical
251.963	25.8	19.5	46.0	200.0	-20.2	180.5	32	1.00	Horizontal
860.634	37.0	70.8	46.0	200.0	-9.0	129.3	54	1.00	Horizontal
988.980	38.5	84.1	54.0	500.0	-15.5	415.9	349	1.00	Horizontal

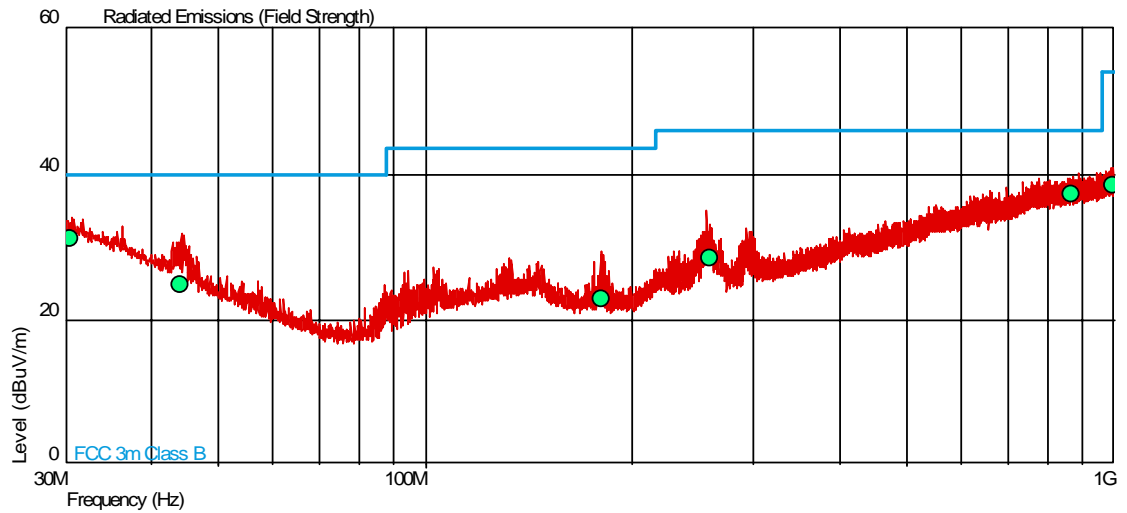
1GHz to 10GHz

No emissions were detected with in 15 dB of the limit. Therefore no plots are presented.



Configuration 1 - Mode 2

30MHz to 1GHz



Frequency (MHz)	QP Level		QP Limit		QP Margin		Angle(Deg)	Height(m)	Polarity
	(dBuV/m)	( $\mu$ V/m)	(dBuV/m)	( $\mu$ V/m)	(dBuV/m)	( $\mu$ V/m)			
30.514	31.3	36.7	40.0	100.0	-8.8	63.3	153	1.00	Vertical
44.124	25.2	18.2	40.0	100.0	-15.1	81.8	220	1.00	Vertical
180.250	22.5	13.3	43.5	150.0	-20.8	136.7	112	1.00	Horizontal
259.485	25.8	19.5	46.0	200.0	-17.6	180.5	22	1.00	Horizontal
869.382	37.0	70.8	46.0	200.0	-8.9	129.2	49	1.00	Vertical
997.756	38.5	84.1	54.0	500.0	-15.5	415.9	332	1.00	Vertical

1GHz to 10GHz

No emissions were detected with in 15 dB of the limit. Therefore no plots are presented.



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### **SECTION 3**

#### **TEST EQUIPMENT USED**



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### 3.1 TEST EQUIPMENT USED

List of absolute measuring and other principal items of test equipment.

Instrument	Manufacturer	Type No.	TE No.	Calibration Period (months)	Calibration Due
<b>Section 2.1 EMC - Radiated Emissions</b>					
Antenna (Double Ridge Guide, 1GHz-18GHz)	EMCO	3115	235	12	29-Jun-2008
Pre-Amplifier	Phase One	PS04-0085	1532	-	TU
Pre-Amplifier	Phase One	PS04-0086	1533	-	TU
Screened Room (5)	Rainford	Rainford	1545	36	11-Feb-2011
Antenna (Bilog)	Chase	CBL6143	2904	24	28-Nov-2009
Comb Generator	Schaffner	RSG1000	3034	-	TU
EMI Test Receiver	Rohde & Schwarz	ESU40	3506	12	15-Mar-2009

TU – Traceability Unscheduled





### 3.2 MEASUREMENT UNCERTAINTY

For a 95% confidence level, the measurement uncertainties for defined systems are:-

Test Discipline	Frequency / Parameter	MU
Radiated Emissions, Bilog Antenna, AOATS	30MHz to 1GHz Amplitude	5.1dB*
Radiated Emissions, Horn Antenna, AOATS	1GHz to 40GHz Amplitude	6.3dB*
Conducted Emissions, LISN	150kHz to 30MHz Amplitude	3.2dB*
Conducted Emissions, ISN	150kHz to 30MHz Amplitude	2.1dB
Substitution Antenna, Radiated Field	30MHz to 18GHz Amplitude	2.6dB
Discontinuous Interference	150kHz to 30MHz Amplitude	3.0dB*
Interference Power	30MHz to 300MHz Amplitude	3.0dB*
Radiated E-Field Susceptibility	26MHz to 2.5GHz Test Amplitude	1.4dB†
Conducted Susceptibility	100kHz to 250MHz Amplitude	1.8dB†
Power Frequency Magnetic Field	50Hz/60Hz Amplitude	0.45%
Magnetic Emissions	9kHz to 30MHz Amplitude	3.4dB*
Magnetic Field/Flux iaw EN 50366	10Hz to 400kHz	2.64%
Harmonics and Flicker	The test was applied using proprietary equipment that meets the requirements of EN 61000-3-2 and EN 61000-3-3	—
Mains Voltage Variations and Interrupts	The test was applied using proprietary equipment that meets the requirements of EN 61000-4-11	—
Fast Transient Burst	The test was applied using proprietary equipment that meets the requirements of EN 61000-4-4	—
Electrostatic Discharge	The test was applied using proprietary equipment that meets the requirements of EN 61000-4-2	—
Surge	The test was applied using proprietary equipment that meets the requirements of EN 61000-4-5	—
Vehicle Transients	The test was applied using proprietary equipment that meets the requirements of ISO 7637-1 and 2	—
Compass Safe Distance	Azimuth Accuracy	0.10°

Worst case error for both Time and Frequency measurement 12 parts in 10<sup>6</sup>.

\* In accordance with CISPR 16-4

† In accordance with UKAS Lab 34



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## **SECTION 4**

### **PHOTOGRAPHS**

4.1 PHOTOGRAPHS OF EQUIPMENT UNDER TEST (EUT)



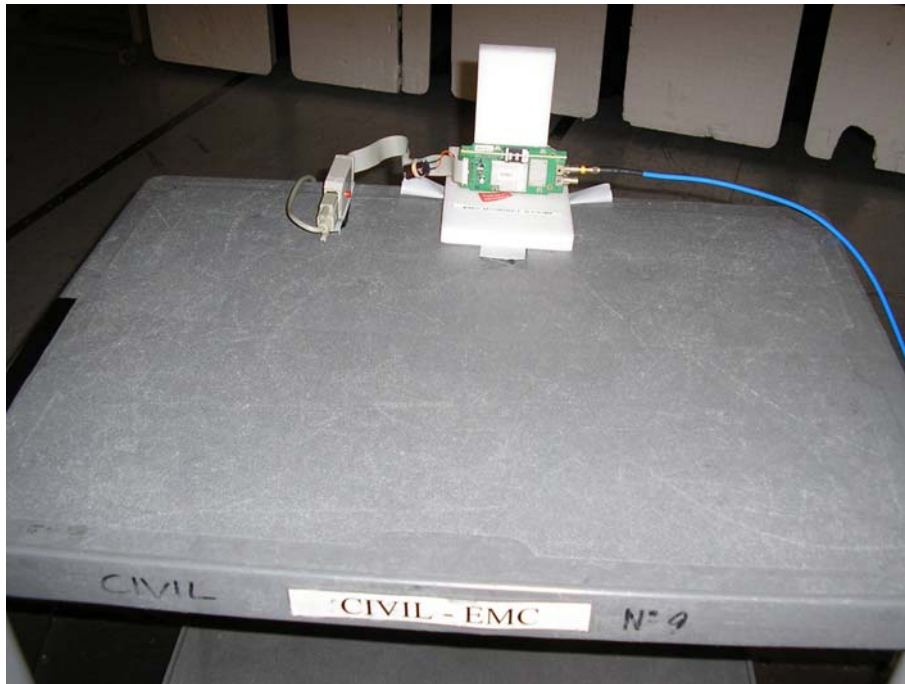
EUT Front View



EUT Rear View



#### 4.2 PHOTOGRAPHS OF TEST SETUP



Radiated Emissions (Enclosure Port) Test Setup



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## **SECTION 5**

### **ACCREDITATION, DISCLAIMERS AND COPYRIGHT**



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## 5.1 ACCREDITATION, DISCLAIMERS AND COPYRIGHT



This report relates only to the actual item/items tested.

Our UKAS Accreditation does not cover opinions and interpretations and any expressed are outside the scope of our UKAS Accreditation.

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