





CURTIS-STRAUS

Test Report

Report No	EI0786-2
Client	Beltronics USA 5440 West Chester Road West Chester, OH 45069
Phone	(513)-870-8542
FRN	0007600588
Model	Pro GX65 Radar Detector
FCC ID	QL4G7GX
Equipment Type Equipment Code	Radar Detector CRD
Results	As detailed within this report
Prepared by	 Kyle Neffendorf – Compliance Engineer
Authorized by	 Michael Buchholz – EMC Manager
Issue Date	9/3/08
Conditions of issue	This Test Report is issued subject to the conditions stated in 'terms and conditions' section of this report.

Curtis-Straus LLC is accredited by the American Association for Laboratory Accreditation for the specific scope of accreditation under Certificate Number 1627-01. This report may contain data which is not covered by the A2LA accreditation.



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Summary

This report is an application for Certification of a radar detector operating pursuant to 47 CFR 15.109(h). This report is designed to demonstrate the compliance of the Pro GX65 Radar Detector with the requirements outlined in Part 15 (using the methods outlined in Part 2) of 47 CFR.

Two samples of the EUT were tested for radiated emissions. Original sample which did not have the shield over the main circuit board. A second sample was tested with a new GPS board layout and a shield over the main circuit board. Internal picture exhibits shows the differences between the board.

EUT Configuration

EUT Configuration										
Work Order: I0786 Company: Beltronics USA Inc. Company Address: 5442 West Chester Raod West Chester, OH 45069 Contact: John Kuhn										
MN			FCC ID				SN			
EUT: GX65			QL4G7GX				XX999999999			
EUT Description: Pro GX65 Radar Detector EUT Max Frequency: 16MHz										
Support Equipment:			MN				SN			
HP Power supply			E3612A				Not listed			
EUT Ports:										
Port Label	Port Type	No. of ports	No. Populated	Cable Type	Shielded	Ferrites	Length	Max Length	In/Out NEBS Type	Unpopulated Reason
No label	RJ11	1	All	DC power	No	None	1m	1m	In Vehicle	N/A
No label	USB mini 5	1	None	NA	NA	NA	NA	NA	NA	Used in setup only
No label	3.5mm audio	1	All	Audio	Yes	None	2m	2m	In Vehicle	N/A
Software / Operating Mode Description:										
EUT connects to dc power source, in this case AC/DC 120VAC/60Hz power adapter. The EUT starts in Autoscan default mode.										
Performance Criteria:										
EUT monitors/detects radar signals.										



Statement of Conformity

47 CFR 15.109(h) states that “*Radar detectors shall comply with the emissions limits...of [section 15.109(a)] over the frequency range of 11.7 – 12.2GHz.*” The applicable limit being 500 μ V/m measured at a distance of 3m. The Escort Pro GX65 Radar Detector has been tested and found to comply with this requirement.

Test Methodology

Radiated emission testing was performed according to the procedures in ANSI C63.4 (2003). The testing was performed at a distance of 1 meter. The device's performance was investigated in the range 11.7-12.2GHz. The Pro GX65 Radar Detector was powered by an HP E3612A variable DC power supply. Since the device is a hand-held unit, the emissions were maximized around the three orthogonal axes and the maximum reading was recorded. The integrated antenna cannot be maximized separately.

Radiated Emissions Measurements

LIMIT

Average: $500\mu\text{V/m} = 54\text{dB}\mu\text{V/m @ 3m [15.109(a)]}$

Note: If peak measurements meet the Average limit, then Average measurements are not required.

MEASUREMENTS

Original Board: No Emissions were found within the range of 11.7-12.2GHz.

Radiated Emissions Table										Curtis-Straus LLC					
Date: 25-Aug-08			Company: Escort				Work Order: I1027								
Engineer: Nate Sanford			EUT Desc: GX65				EUT Operating Voltage/Frequency: 12VDC								
Frequency Range: 11.7-12.2GHz							Measurement Distance: 1 m								
Notes: New GPS board layout and shield over the main circuit board.															
Antenna Polarization (H/V)	Frequency (MHz)	Peak Reading (dBμV)	Average Reading (dBμV)	Preamp Factor (dB)	Antenna Factor (dB/m)	Cable Factor (dB)	Adjusted Peak Reading (dBμV/m)	Adjusted Avg Reading (dBμV/m)	FCC Class B High Frequency - Peak			FCC Class B High Frequency - Average			
									Limit (dBμV/m)	Margin (dB)	Result (Pass/Fail)	Limit (dBμV/m)	Margin (dB)	Result (Pass/Fail)	
no emissions found															
Table Result: Pass by dB											Worst Freq: MHz				
Test Site: "F"		Pre-Amp: Red-Blue		Cable: EMIR-HIGH-21			Analyzer: White			Antenna: Black Horn					

Test Equipment Used

SPECTRUM ANALYZERS / RECEIVERS		RANGE	MN	MFR	SN	ASSET	CAT	CALIBRATION DUE
WHITE		9kHz-22GHz	8593E	Agilent	3547U01252	00022	I	31-OCT-2008

OPEN AREA TEST SITES (OATS)		FCC CODE	IC CODE	VCCI CODE	CAT	CALIBRATION DUE
SITE T		93448	2762A-2	R-905	II	06-DEC-2009

PREAMPS / COUPLERS ATTENUATORS / FILTERS		RANGE	MN	MFR	SN	ASSET	CAT	CALIBRATION DUE
RED-BLUE		1-20GHz	PE2-38-218-4R5-17-15-SFF	C-S	PL3177	1257	II	29-APR-2009

ANTENNAS		RANGE	MN	MFR	SN	ASSET	CAT	CALIBRATION DUE
BLACK HORN		1-18GHz	3115	EMCO	9703-5148	00056	I	22-JUN-2009(EMI) / 22-MAY-2009 (RFI)

All equipment is calibrated using standards traceable to NIST or other nationally recognized calibration standard.



Measurement Uncertainty

The listed uncertainties are the worst case uncertainty for the entire range of measurement. Please note that the uncertainty values are provided for informational purposes only and are not used in determining the PASS/FAIL results.

Measurement	Expanded Uncertainty k=2	Maximum allowable uncertainty (ETS)
Radiated Emissions (30-1000MHz)	5.6dB	N/A
Radiated Emissions (1-26.5GHz)	4.6dB	N/A
Radiated Emissions (above 26.5GHz)	4.9dB	N/A
Magnetic Radiated Emissions	5.6dB	N/A
Conducted Emissions	3.9dB	N/A
Telco Conducted Emissions (Current)	2.9dB	N/A
Telco Conducted Emissions (Voltage)	4.4dB	N/A
Electrostatic Discharge	11.5%	N/A
Radiated RF Immunity (Uniform Field)	1.6dB	N/A
Electrical Fast Transients	23.1%	N/A
Surge	23.1%	N/A
Conducted RF Immunity	3dB	N/A
Magnetic Immunity	12.8%	N/A
Dips and Interrupts	2.3V	N/A
Harmonics	3.5%	N/A
Flicker	3.5%	N/A
Radio frequency	8.2×10^{-8}	1×10^{-7}
RF power, conducted	0.7dB	0.75dB
Maximum frequency deviation:		
• Within 300Hz and 6kHz of audio frequency	• 1.2%	• 5%
• Within 6kHz and 25kHz of audio frequency	• 0.1dB	• 3dB
Adjacent channel power	1.9dB	3dB
Conducted spurious emission of transmitter, valid up to 12.75GHz	0.7dB	3dB
Conducted emission of receivers	0.7dB	1dB
Radiated emission of transmitter, valid up to 26.5GHz	5.6dB	6dB
Radiated emission of transmitter, valid up to 80GHz	5.6dB	6dB
Radiated emission of receiver, valid up to 26.5GHz	5.6dB	6dB
Radiated emission of receiver, valid up to 80GHz	5.6dB	6dB
RF level uncertainty for a given BER	0.7dB	1dB
Humidity	2.31%	5%
Temperature	0.6°C	1.0°C
Time	0.8%	10%
RF Power Density, Conducted	2.2dB	3dB
DC and low frequency voltages	1.29%	3%
Voltage (AC, <10kHz)	1.29%	2%
Voltage (DC)	0.23%	1%
The above reflects a 95% confidence level		

Terms And Conditions

Paragraph 1. SERVICES. LABORATORY will:

- 1.1 Use the degree of care and skill ordinarily exercised by and consistent with the standards of the profession.
- 1.2 Perform all technical services in substantial accordance with the generally accepted laboratory principles and practices.
- 1.3 Retain all pertinent records relating to the services performed for a period of three (3) years following submission of the report describing such services, during which period the records will be made available to CLIENT upon reasonable request.

Paragraph 2. CLIENT'S RESPONSIBILITIES. CLIENT or his authorized representative will:

- 2.1 Provide LABORATORY with all plans, schematics, specifications, addenda, change orders, drawings and other information for the proper performance of technical services.
- 2.2 Designate a person to act as CLIENT's representative with respect to LABORATORY's services to be performed on behalf of the CLIENT; such person or firm to have complete authority to transmit instructions, receive information and data, interpret and define CLIENT's policies and decisions with respect to the LABORATORY's work on behalf of the CLIENT and to order, at CLIENT's expense, such technical services as may be required.
- 2.3 Designate a person who is authorized to receive copies of LABORATORY's reports.
- 2.4 Undertake the following:
 - (a) Secure and deliver to LABORATORY, without cost to LABORATORY, preliminary representative samples of the equipment proposed to require technical services, together with any relevant data.
 - (b) Furnish such labor and equipment needed by LABORATORY to handle samples at the LABORATORY and to facilitate the specified technical services.

Paragraph 3. GENERAL CONDITIONS:

- 3.1 LABORATORY, by the performance of services covered hereunder, does not in any way assume any of those duties or responsibilities customarily vested in the CLIENT, its employees, or any other party, agency or authority.
- 3.2 LABORATORY shall not be responsible for acts of omissions of any other party or parties involved in the design, manufacture or maintenance of the equipment or the failure of any employee, contractor or subcontractor to undertake any aspect of equipment's design, manufacture or maintenance.
- 3.3 LABORATORY is not authorized to revoke, alter, release, enlarge or release any requirement of the equipment's design, manufacture or maintenance unless specifically authorized by CLIENT or his authorized representative.
- 3.4 THE ONLY WARRANTY MADE BY LABORATORY IN CONNECTION WITH ITS SERVICE PERFORMED HEREUNDER IS THAT IT WILL USE THAT DEGREE OF CARE AND SKILL AS SET FORTH IN PARAGRAPH 1 ABOVE. NO OTHER WARRANTY, EXPRESS OR IMPLIED, IS MADE OR INTENDED FOR SERVICES PROVIDED HEREUNDER.
- 3.5 Where the LABORATORY indicates that additional testing is advisable to obtain more valid or useful data, and where such testing has not been authorized, CLIENT agrees to view such test reports as inconclusive and preliminary.
- 3.6 The LABORATORY will supply technical service and prepare a report based solely on the sample submitted to the LABORATORY by the CLIENT. The CLIENT understands that application of the data to other devices is highly speculative and should be applied with extreme caution.
- 3.7 The LABORATORY agrees to exercise ordinary care in receiving, preserving and shipping (F.O.B. Littleton, MA) any sample to be tested, but assumes no responsibility for damages, either direct or consequential, which arise from loss, damage or destruction of the samples due to the act of examination, modification or testing, or technical services or circumstances beyond LABORATORY's control.
- 3.8 The LABORATORY will hold samples for thirty (30) days after tests are completed, or until the CLIENT's outstanding debts to the LABORATORY are satisfied, whichever is later.
- 3.9 The CLIENT recognizes that generally accepted error variances apply and agrees to consider such error variances in its use of test data.
- 3.10 It is agreed between LABORATORY and CLIENT that no distribution of any tests, reports or analysis other than that described below shall be made to any third party without the prior written consent of both parties unless such distribution is mandated by operation of law. It is agreed that tests, reports, or analysis results may be disclosed to third party auditors of the laboratory at the laboratory facility in the course of accreditation maintenance audits. No reference to reports or technical services of the LABORATORY shall be made in any advertising or promotional literature without the express written permission of the LABORATORY.
- 3.11 The CLIENT acknowledges that all employees of LABORATORY operate under employment contracts with the LABORATORY and CLIENT agrees not to solicit employment of such employees or to solicit information related to other clients from said employees.
- 3.12 In recognition of the relative risks and benefits of the project to both CLIENT and LABORATORY, the risks have been allocated such that the CLIENT agrees, to the fullest extent permitted by law, to limit the liability of the LABORATORY to the CLIENT for any and all claims, losses, costs, damages of any nature whatsoever or claims expenses from any cause or causes, including attorneys' fees and costs and expert witness fees and costs, so that the total aggregate liability of the LABORATORY to the CLIENT shall not exceed \$100,000, or the LABORATORY'S total fee for services rendered on this project, whichever is greater. It is intended that this limitation apply to any and all liability or cause of action however alleged or arising, unless otherwise prohibited by law.

Paragraph 4. INSURANCE:

- 4.1 LABORATORY shall secure and maintain throughout the full period of the services provided to the CLIENT adequate insurance to protect it from claims under applicable Workmen's Compensation Acts and also shall maintain one million dollars of general liability coverage to cover claims for bodily injury, death or property damage as may arise from the performance of its services.
- 4.2 The CLIENT hereby warrants that it has sufficient insurance to protect its employees adequately under applicable Workmen's Compensation Acts and for bodily injury, death, or property damage.
- 4.3 No insurance of whatever kind or type, which may be carried by either party is to be considered as in any way limiting any other party's responsibility for damages resulting from their operations or for furnishing work and materials.

Paragraph 5. PAYMENT:

- 5.1 CLIENT shall pay to LABORATORY such fees for services as previously agreed, orally or in writing, within 30 days of presentment of a bill for such services performed. In the event CLIENT ordered, orally or in writing, services but such services were not assigned a rate for billing, such services shall be billed at the LABORATORY's reasonable and customary rate.

- 5.2 CLIENT shall be responsible for all shipping, customs and other expenses related to services provided by LABORATORY to the CLIENT, and shall fully insure any test sample or other equipment provided to LABORATORY by the CLIENT.
- 5.3 Amounts overdue from CLIENT to LABORATORY shall be charged interest at a rate of 1½% per month.

Paragraph 6. ISO/IEC GUIDE 17025 ADDITIONS:

- 6.1 CLIENT agrees that this test report will not be reproduced except in full, without written approval from the LABORATORY.
- 6.2 CLIENT agrees that this test report shall not be used to claim product endorsement by A2LA or ANSI or any agency of the U.S. Government.
- 6.3 CLIENT agrees that test results presented herein relate only to the sample tested by the LABORATORY.A2LA