EMC EMISSION - TEST REPORT
UNITED STATES STANDARD 47 CFR PART 15, SUBPART C

Test Report File No.	: **BC105646**	Date of Issue:	September 7, 2001
Model / Serial No.	: **930010-002 / 201283012P**		
Product Type	: **ISO Compatible RFID Stick Reader**		
Applicant	: **Allflex USA, Inc.**		
Manufacturer	: **Allflex USA, Inc.**		
License holder	: **Allflex USA, Inc.**		
Address	: **2820 Wilderness Place, Suite A**		
	: **Boulder, CO 80301**		
Test Result	: ■ **Positive** ☐ **Negative**		
Test Project Number	**BC105646**		
Reference(s)	:		
Total pages - Test Report	: 21		

NOTE: All test equipment used during testing is calibrated and traceable to NIST.

TÜV PRODUCT SERVICE 5541 Central Ave. Boulder, Co 80301 Phone (303) 786-7999 FAX (303) 449-3004

DIRECTORY - EMISSIONS
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EMISSIONS TEST REGULATIONS :

The emissions tests were performed according to the following regulations:

☐ - EN 50081-1 / 1991

☐ - EN 55011 / 1998 ☐ - Group 1 ☐ - Group 2
☐ - Class A ☐ - Class B

☐ - EN 55014 / 1993 ☐ - Household appliances and similar
☐ - Portable tools
☐ - Semiconductor devices

■ - EN 55022 / 1987 ■ - Class A ☐ - Class B

☐ - EN 55022 / 1998 ☐ - Class A ☐ - Class B

☐ - VCCI ☐ - Class A ITE ☐ - Class B ITE

■ - 47 CFR Part 15, Subpart C

☐ 15.231
☐ - 107(b)
☐ - 107(a)
☐ - 107(e) ☐ - Class A ☐ - Class B
☐ - 207

■ - 15.209
☐ - 109(b)
☐ - 109(a)
☐ - 109(g) ■ - Class A ☐ - Class B
☐ - 239

☐ - AS/NZS 3548: 1995 ☐ - Class A ☐ - Class B

☐ - CISPR 11 (1997) ☐ - Group 1 ☐ - Group 2
☐ - Class A ☐ - Class B

■ - CISPR 22 (1997) ■ - Class A ☐ - Class B

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Environmental Conditions In The Laboratory:

	Actual
Temperature:	: 20.3 °C
Relative Humidity:	: 56 %
Atmospheric Pressure:	: 80 kPa

Power Supply Utilized:

Power supply system : 6.5 VDC

Symbol Definitions:

■ - Applicable
☐ - Not Applicable

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Emissions Test Conditions: RADIATED EMISSIONS (Electric Field)

The *RADIATED EMISSIONS (ELECTRIC FIELD)* measurements, in the frequency range of 30 MHz-1000 MHz, were tested in a horizontal and vertical polarization at the following test location :

☐ - Test not applicable

■ - Pinewood Site #1 (10- and 30-Meter Open Area Test Site)

Testing was performed at a test distance of :

■ - 3 meters, 10 meters, 30 meters, 100 meters

Equipment Report

Project Number: BC105646 **Project Date:** 26-June-2001

Company Name: Allflex USA, Inc.

Equip ID	Manufacturer	Model Number	Serial Number	Description	Calibration Date	Interval	Due	Cal Code
Test Performed R		Radiated Emissions						
8169	EMCO	6502	9205-2738	Magnetic loop	18-Jan-2001	12	18-Jan-2002	G
8005	HEWLETT PACKARD	8447F	3113A04923	Option H64 Dual Preamp	04-Apr-2001	12	04-Apr-2002	B
8213	HEWLETT PACKARD	8566B	2410A00154	Spectrum Analyzer (dc-22 GHz)	04-May-2001	12	04-May-2002	G
8214	HEWLETT PACKARD	85662A	2403A08749	Display Section	04-May-2001	12	04-May-2002	G
8345	HEWLETT-PACKARD	85650A	2811A01300	Q.P Adapter	24-Feb-2001	12	24-Feb-2002	G

Cal Code Legend: G=Out Source, Y=No Cal required, R=Out of Service, B=In-House Verification Required

Remarks: One year calibration cycle for all test equipment.

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Equipment Under Test (EUT) Test Operation Mode - Emissions Tests :

The equipment under test was operated under the following conditions during emissions testing:

☐ - Standby
☐ - Test Program (H - Pattern)
☐ - Test Program (Color Bar)
☐ - Test Program (Customer Specified)
☐ - Practice Operation
■ - Normal Operating Mode
☐ - _____

Configuration of the equipment under test:

■ - See Constructional Data Form in Appendix B - Page B2
■ - See Product Information Form(s) in Appendix B - Page B2

The following peripheral devices and interface cables were connected during the testing:

☐ - _____ Type : _____
☐ - _____ Type : _____
☐ - _____ Type : _____
☐ - _____ Type : _____
☐ - _____ Type : _____
☐ - _____ Type : _____
☐ - _____ Type : _____
☐ - _____ Type : _____

☐ - unshielded power cable
☐ - unshielded cables
☐ - shielded cables MPS.No.: _____
☐ - customer specific cables
☐ - _____
☐ - _____

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Emissions Test Results:

Conducted Emissions, 150 kHz - 30 MHz

☐ - PASS ☐ - FAIL ■ - NOT PERFORMED

Minimum limit margin _____ dB at _____ MHz

Maximum limit exceeding _____ dB at _____ MHz

Remarks: _____

Radiated Emissions (Electric Field), 30 MHz - 1000 MHz (15.209)

■ - PASS ☐ - FAIL ☐ - NOT APPLICABLE

Minimum limit margin _____ dB at _____ MHz

Maximum limit exceeding _____ dB at _____ MHz

Remarks: _____

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GENERAL REMARKS:

NOTE: All photographs are representative of setup for maximum emissions.

SUMMARY:

All tests according to the regulations cited on page 3 were
■ - Performed
☐ - **Not** Performed

The Equipment Under Test

■ - **Fulfills** the general approval requirements cited on page 3.
☐ - **Does not** fulfill the general approval requirements cited on page 3.

Statement of Measurement Uncertainty

The data and results referenced in this document are true and accurate. The measurement uncertainty is calculated to be ±2 dB for conducted emissions and ±4 dB for radiated emissions.

Equipment Received Date: **26 July 2001**

Testing Start Date: **26 July 2001**

Testing End Date: **26 July 2001**

- TÜV PRODUCT SERVICE, INC. -

Reviewed By:

Robert Cresswell

Tested By:

Dan Dillion

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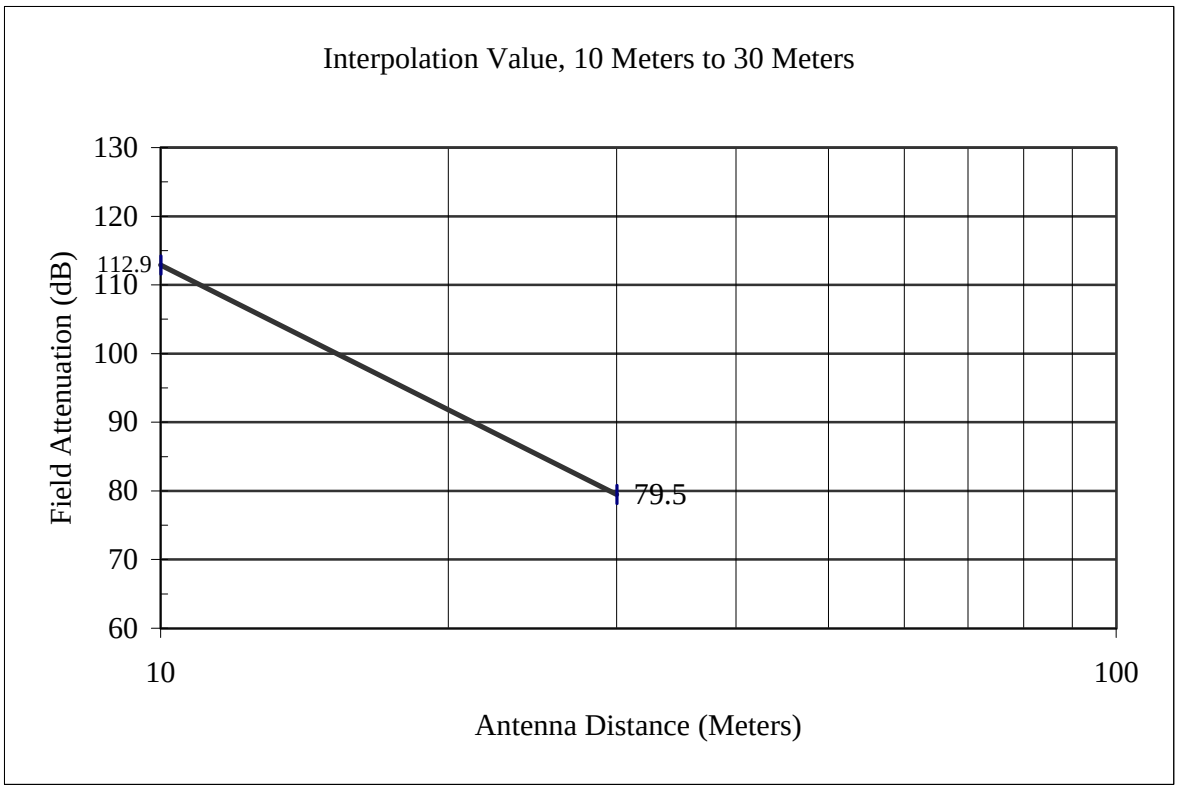
Measured Radiated Fields, Between 10 Meter & 30 Meters, Interpolated to 300 Meters

Frequency (kHz)	10 Meters Amplitude (dBuV/m)	30 Meters Amplitude (dBuV/m)	Delta Amplitude (dB)	Interpolation Factor at 300 Meters (dB)	Interpolated Final Reading at 300 Meters (dBuV/m)	300 Meter Specification Limit (dBuV/m)
134	112.9	79.5	33.4	100.2	12.7	25.1

Note: The radiated field at 10 meters was corrected to 300 Meters using the slope shown on the below graph.



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Measured Radiated Fields, Measured at 10 Meters, Interpolated to 300 Meters

Test Report #: BC105646 Run 3
Test Method: 10 Meter data Interpolated to 300 Meters
EUT Model: 930010-001
EUT Serial Number: N/A
Manufacturer: Allflex
EUT Description: Stick Reader

Test Area: Pinewood Site 1
Test Date: 26-July 2001
EUT Power: Various dc values

Note: The stick reader was tested at the following dc voltages: 6.5 Vdc Battery, 6 Vdc Power Supply, 6.5 Vdc Power Supply, 9 Vdc Power Supply, 12 Vdc Power Supply.
Signals measured were maximized by peaking the azimuth as well as the elevation axes of the loop antenna.

Frequency (kHz)	10 Meter Amplitude Level (dBuV)	Cable / Ant. / Pre-amp Transducers (dB)	(dB/m)	(dB)	Final Reading (dBuV/m)	10 Meter to 300 Meter Interpolation Factor Adjusted to 300 Meters (dB)	Interpolated Final Reading at 300 Meters (dBuV/m)	300 Meter Specification Limit (dBuV/m)	Passing Margin (dB)
Note: 6.5 Vdc Battery									
134	71.5		10		81.5	100.2	-18.7	25.1	43.8
269	30.3		10		40.3	100.2	-59.9	81.5	141.4
400	35.6		10		45.6	100.2	-54.6	81.5	136.1
Note: 6.0 Vdc Power Supply									
134	70.4		10		80.4	100.2	-19.8	25.1	44.9
Note: 6.5 Vdc Power Supply									
134	71.4		1		72.4	100.2	-27.8	25.1	52.9
Note: 9.0 Vdc Power Supply									
134	74.5		10		84.5	100.2	-15.7	25.1	40.8
Note: 12.0 Vdc Power Supply									
134	77.2		10		87.2	100.2	-13.0	25.1	38.1

Note: No other emissions were measureable

Appendix B

Test Set-Up Photographs

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Appendix C

EMC Test Plan and Constructional Data Form

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Form

EMC Test Plan and Constructional Data Form

PLEASE COMPLETE THIS DOCUMENT IN FULL, ENTERING N/A IF THE FIELD IS NOT APPLICABLE.

Applicant -- ***NOTE: This information will be input into your test report as shown below.***
Press the F1 key at any time to get HELP for the current field selected.

Company: Allflex USA, Inc.

Address: 2820 Wilderness Place
Suite A
Boulder, CO 80301

Contact: Bob Stewart Position: Technical Director

Phone: 303/449-4509 Fax: 303/449-4529

E-mail Address: rstewart@allflex-boulder.com

General Equipment Description -- ***NOTE: This information will be input into your test report as shown below.***

EUT Description: Radio frequency identification scanning device for passive transponder devices

EUT Name: ISO Compatible RFID Stick Reader

Model No.: 930010-002 Serial No.: 201283012P

Product Options: Coiled or straight interface cable, upgradeable embedded S/W

Configurations to be tested: Straight cable w/V1.03 S/W

Test Objective

☒	EMC Directive 89/336/EEC (EMC)	☒	FCC:	Class	☒	A	☐	B	Part 15
	Std:	☐	VCCI:	Class	☐	A	☐	B	
☐	Machinery Directive 89/392/EEC (EMC	☐	BCIQ:	Class	☐	A	☐	B	
	Std:	☒	Canada:	Class	☒	A	☐	B	
☐	Medical Device Directive 93/42/EEC (EMC)	☐	Australia:	Class	☐	A	☐	B	
	Std:	☒	Other:	FCC CFR-47, Part 15.209 Intentional					
☐	Vehicle Directive 72/245/EEC (EMC)								
	Std:								
☐	FDA Reviewers Guidance for Premarket Notification Submissions (EMC)								

Form

EMC Test Plan and Constructional Data Form

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TÜV Product Service Certification Requested

☐ Attestation of Conformity (AoC) ☒ International EMC Mark (IEM)
☐ Certificate of Conformity (CoC) ☐ Compliance Document

Protection Class (N/A for vehicles) ☐ Class I ☐ Class II ☐ Class III

(Press **F1** when field is selected to show additional information on Protection Class.)

Attendance

Test will be: ☒ Attended by the customer ☐ Unattended by the customer

Failure - *Complete this section if testing will not be attended by the customer.*

If a failure occurs, TUV Product Service should:
☐ Call contact listed above, if not available then stop testing. (After hrs phone): _____
☐ Continue testing to complete test series.
☐ Continue testing to define corrective action.
☐ Stop testing.

EUT Specifications and Requirements

Length: 45cm Width: 32mm dia. Height: _____ Weight: 0.6 kg

Power Requirements

Regulations require testing to be performed at typical power ratings in the countries of intended use. (i.e., European power is typically 230 VAC 50 Hz or 400 VAC 50 Hz, single and three phase, respectively)

Voltage: 6-12 VDC (If battery powered, make sure battery life is sufficient to complete testing.)

# of Phases: n/a

Current (Amps/phase(max)): n/a Current (Amps/phase(nominal)): n/a

Other n/a

Other Special Requirements

Intentional radiator test limit is defined in Part 15.209 as 2400/Fc uV/m at 300 meters, which for this device = 2400/134.2KHz = 17.9 uV/m. If testing is conducted at 10 meters or 30 meters, an extrapolation factor must be measured, as assuming 40dBuV/decade of distance is not accurate for the near field at this frequency. Extrapolation factor will be closer to 60dBuV/decade.

Typical Installation and/or Operating Environment

(ie. Hospital, Small Business, Industrial/Factory, etc.)
Equipment is used for reading electronic identification tags on livestock in farm, feedlot, and packing plant environments (all industrial class).

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EUT Power Cable					
☒ Permanent	OR	☐ Removable	Length (in meters):	3 meters (extended)	
☒ Shielded	OR	☐ Unshielded			
☐ Not Applicable					

EMC Test Plan and Constructional Data Form

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EUT Interface Ports and Cables

Interface				Shielding								
Type	Analog	Digital	Qty	Yes	No	Type	Termination	Connector Type	Port Termination	Length (In meters)	Removable	Permanent
EXAMPLE: *RS232*	☐	☒	*2*	☒	☐	*Foil over braid*	*Coaxial*	*Metallized 9-pin D-Sub*	*Characteristic Impedance*	*6*	☒	☐
RS232	☐	☒	1	☒	☐	Foil w/drain wire		Molded DB9(f) w/integral coaxial power		3	☐	☒
	☐	☐		☐	☐						☐	☐
	☐	☐		☐	☐						☐	☐
	☐	☐		☐	☐						☐	☐
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EMC Test Plan and Constructional Data Form

EUT Software.

Revision Level: V1.03

Description: Software is downloadable/upgradeable installed in flash memory based embedded microcontroller. Software decodes a received signal and transmits the hexadecimal code via the RS232 serial port. Device can be configured via commands issued via RS232 port for various operational modes and output data formats

EUT Operating Modes to be Tested -- list the operating modes to be used during test. It is recommended the equipment be tested while operating in a typical operation mode. FCC testing of personal computers and/or peripherals requires that a simple program generate a complete line of upper case H's. Provide a general description of all software, firmware, and PLD algorithms used in the equipment. List all code modules as described above, with the revision level used during testing.
Consult with your TÜV Product Service Representative if additional assistance is required.

1. Mode 1: Intentional Radiator - EUT to be placed in continuous scan mode where 134.2 KHz signal is radiated in an 80mSec on / 30mSec off burst pattern

2. Mode 2: Unintentional Radiator - EUT to be placed in idle mode (not scanning) and check for EMC emissions compliance.

3. Mode 3: Unintentional Readiator - EUT is commanded to read transponders and send data to PC via RS232 interface to check for EMC emissions compliance.

EUT System Components -- List and describe all components which are part of the EUT. For FCC testing a minimum configuration is required. (ie. Mouse, Printer, Monitor, External Disk Drive, Motherboard, etc.)

Description	Model #	Serial #	FCC ID #

EMC Test Plan and Constructional Data Form

Support Equipment -- List and describe all support equipment which is not part of the EUT. (i.e. peripherals, simulators, etc)

Description	*Model #*	*Serial #*	*FCC ID #*
Toshiba Portege Laptop PC	T3400	03421977	CJ6UN827
Linear Pwr Supply - 6-12 VDC	Tektronix PS280	TW59932	n/a
Allflex Test Transponders			n/a

Oscillator Frequencies

Frequency	*Derived Frequency*	*Component # / Location*	*Description of Use*
17.1776 MHz		X1	uC Clock
17.1776 MHz	134.2 KHz	U13 (74HC4040)	Exciter signal output
~200KHz	Data Bit Rate	U15 (ADM202E)	RS232 Serial Interface

Power Supply

Manufacturer	*Model #*	*Serial #*	*Type*
n/a			☐ Switched-mode: (Frequency) _____ ☐ Linear ☐ Other: _____
			☐ Switched-mode: (Frequency) _____ ☐ Linear ☐ Other: _____

Power Line Filters

Manufacturer	*Model #*	*Location in EUT*
n/a		

EMC Test Plan and Constructional Data Form

Critical EMI Components (Capacitors, ferrites, etc.)

Description	*Manufacturer*	*Part # or Value*	*Qty*	*Component # / Location*
n/a				

EMC Critical Detail -- Describe other EMC Design details used to reduce high frequency noise.

(a) PCB is 4 layer with intermediate ground and power planes
(b) power/data cable is foil shielded and terminated to DB9 connector shell
(c) RS232 interface device is 89/336/EEC EMC Directive compliant

(PLEASE INSERT "**ELECTRONIC SIGNATURE**" BELOW IF POSSIBLE)

Authorization Signatures

Robert C. Stewart	16-Jul-01
Customer authorization to perform tests according to this test plan.	Date
Robert C. Stewart	16-Jul-01
Test Plan/CDF Prepared By (please print)	Date
Robert Cresswell	9-Sep-01
Reviewed by TÜV Product Service Associate	Date

EMC EMISSIONS - TEST REPORT

Test Report No.	**BC105907-1b**	Issue Date	August 27, 2001
Model / Serial No.	**930010-001 / 20128313P**		
Product Type	**Stick Reader**		
Client	**Allflex-Boulder**		
Manufacturer	Allflex-Boulder		
License holder	Allflex-Boulder		
Address	2820 Wilderness Place- Suite A Boulder, CO 80301		
Test Criteria Applied	**EN55022 Class B**	Limits and methods of measurement of radio disturbance characteristics of information technology equipment.	
Test Result	**PASS**		
Test Project Number	**BC105907**		
References			
Total Pages Including Appendices:	23		

Reviewed By : Carlos Marrero

Reviewed By : Robert Cresswell

TÜV Product Service Inc is a subcontractor to TÜV Product Service, GmbH according to the principles outlined in ISO/IEC Guide 25 and EN 45001.

TÜV Product Service Inc reports apply only to the specific samples tested under stated test conditions. It is the manufacturer's responsibility to assure that additional production units of this model are manufactured with identical electrical and mechanical components. TÜV Product Service Inc shall have no liability for any deductions, inferences or generalizations drawn by the client or others from TÜV Product Service Inc issued reports.

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TÜV Product Service Inc and its professional staff hold government and professional organization certifications and are members of AAMI, ACIL, AEA, ANSI, IEEE, NVLAP, and VCCI

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DIRECTORY

STATEMENT OF MEASUREMENT UNCERTAINTY

The data and results referenced in this document are true and accurate. The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities that can account for a nominal measurement error. Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.

EUT Received Date: 22 August 2001

Testing Start Date: 22 August 2001

Testing End Date: 22 August 2001

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The tests were performed according to following regulations :

■ - EMC Directive 89/336/EEC

■ - Federal Communication Commision Part 15	■Class B
■ - EN55022:1994	■Class B
■ - CISPR22:1993	■Class B
■ - VCCI	■Class B
■ - CNS13438:	■Class B

Emission Test Results:

Conducted emissions 150 kHz - 30 MHz

Test Result	**PASS**			
Minimum limit margin	14.7 dB	at	1.73	MHz
Maximum limit exceeding	____ dB	at	____	MHz

Remarks: _____

Radiated emissions (electric field) 30 MHz - 1000 MHz

Test Result	**PASS**			
Minimum limit margin	12.7 dB	at	206.16	MHz
Maximum limit exceeding	____ dB	at	____	MHz

Remarks: _____

GENERAL REMARKS:

None

Modifications required to pass:

None

Test Specification Deviations: Additions to or Exclusions from:

None

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Appendix A

Test Data Sheets

and

Test Equipment Used

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Conducted Electromagnetic Emissions

Test Report #:	**BC105907 Run 03**	Test Area:	Pinewood Site 1 Cond			
Test Method:	EN55022	Test Date:	22-Aug-2001			
EUT Model #:	930010-001	EUT Power:	6VDC to EUT 120VAC / 60 Hz for DC supply.			
EUT Serial #:	201283013P			Temperature:	21	°C
Manufacturer:	Allflex			Relative Humidity:	48	%
EUT Description:	Stick Reader			Air Pressure:	80	kPa
Notes:	Not all support Equipment tested on the table with the EUT.			Page:	1 of 3	
	Supply is not universal, only tested at 120 / 60					

FREQ (MHz)	LEVEL (dBuV)	CABLE / LISN / ATTEN (dB)	FINAL (dBuV)	TEST POINT	DELTA1 (dB) EN55022 B Avg	DELTA2 (dB) EN55022 B QP
0.150	33.1 Qp	0.1 / 0.0 / -10.0	43.2	Line 1	N/A	-22.8
0.150	2.8 Av	0.1 / 0.0 / -10.0	12.9	Line 1	-43.1	N/A
0.288	26.7 Qp	0.1 / 0.0 / -10.0	36.8	Line 1	N/A	-23.8
0.288	7.1 Av	0.1 / 0.0 / -10.0	17.2	Line 1	-33.4	N/A
0.578	13.4 Qp	0.1 / 0.0 / -10.0	23.5	Line 1	N/A	-32.5
0.578	11.0 Av	0.1 / 0.0 / -10.0	21.1	Line 1	-24.9	N/A
1.73	25.5 Qp	0.3 / 0.0 / -10.0	35.8	Line 1	N/A	-20.2
1.73	21.0 Av	0.3 / 0.0 / -10.0	31.3	Line 1	-14.7	N/A
1.87	26.1 Qp	0.3 / 0.0 / -10.0	36.4	Line 1	N/A	-19.6
1.87	18.3 Av	0.3 / 0.0 / -10.0	28.6	Line 1	-17.4	N/A
2.83	25.2 Qp	0.3 / 0.0 / -10.0	35.5	Line 1	N/A	-20.5
2.83	8.3 Av	0.3 / 0.0 / -10.0	18.6	Line 1	-27.4	N/A
3.11	25.0 Qp	0.3 / 0.0 / -10.0	35.3	Line 1	N/A	-20.7
3.11	10.7 Av	0.3 / 0.0 / -10.0	21.0	Line 1	-25.0	N/A
17.17	19.1 Qp	0.9 / 0.0 / -10.0	30.0	Line 1	N/A	-30.0
17.17	18.4 Av	0.9 / 0.0 / -10.0	29.3	Line 1	-20.7	N/A
0.150	34.0 Qp	0.1 / 0.0 / -10.0	44.1	Line 1	N/A	-21.9
0.150	2.9 Av	0.1 / 0.0 / -10.0	13.0	Line 1	-43.0	N/A
0.288	27.1 Qp	0.1 / 0.0 / -10.0	37.2	Line 1	N/A	-23.4
0.288	4.3 Av	0.1 / 0.0 / -10.0	14.4	Line 1	-36.2	N/A
0.578	10.2 Qp	0.1 / 0.0 / -10.0	20.3	Line 1	N/A	-35.7
0.578	7.0 Av	0.1 / 0.0 / -10.0	17.2	Line 1	-28.8	N/A
1.73	21.0 Qp	0.3 / 0.0 / -10.0	31.3	Line 1	N/A	-24.7
1.73	19.0 Av	0.3 / 0.0 / -10.0	29.3	Line 1	-16.7	N/A
1.87	22.4 Qp	0.3 / 0.0 / -10.0	32.7	Line 1	N/A	-23.3
1.87	12.7 Av	0.3 / 0.0 / -10.0	23.0	Line 1	-23.0	N/A
2.83	11.4 Qp	0.3 / 0.0 / -10.0	21.7	Line 1	N/A	-34.3

Tested by: Mike Spataro (Printed) — Michael Spataro (Signature)

Reviewed by: Carlos Marrero (Printed) — Carlos Marrero (Signature)

TÜV PRODUCT SERVICE INC 5541 Central Avenue Boulder, Colorado 80301 Tel: 303 786 7999 Fax: 303 449 3004 Rev.No 1.0

Conducted Electromagnetic Emissions

Test Report #:	**BC105907 Run 03**	Test Area:	Pinewood Site 1 Cond			
Test Method:	EN55022	Test Date:	22-Aug-2001			
EUT Model #:	930010-001	EUT Power:	6VDC to EUT 120VAC / 60 Hz for DC supply.			
EUT Serial #:	201283013P			Temperature:	21	°C
Manufacturer:	Allflex			Relative Humidity:	48	%
EUT Description:	Stick Reader			Air Pressure:	80	kPa
Notes:	Not all support Equipment tested on the table with the EUT.			Page:	2 of 3	
	Supply is not universal, only tested at 120 / 60					

FREQ (MHz)	LEVEL (dBuV)	CABLE / LISN / ATTEN (dB)	FINAL (dBuV)	TEST POINT	DELTA1 (dB) EN55022 B Avg	DELTA2 (dB) EN55022 B QP
2.83	0.0 Av	0.3 / 0.0 / -10.0	10.3	Line 1	-35.7	N/A
17.17	19.9 Qp	0.9 / 0.0 / -10.0	30.8	Line 1	N/A	-29.2
17.17	19.3 Av	0.9 / 0.0 / -10.0	30.2	Line 1	-19.8	N/A

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Conducted Electromagnetic Emissions

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EUT Serial #:	201283013P			Temperature:	21	°C
Manufacturer:	Allflex			Relative Humidity:	48	%
EUT Description:	Stick Reader			Air Pressure:	80	kPa
Notes:	Not all support Equipment tested on the table with the EUT.			Page:	3 of 3	
	Supply is not universal, only tested at 120 / 60					

FREQ (MHz)	LEVEL (dBuV)	CABLE / LISN / ATTEN (dB)	FINAL (dBuV)	TEST POINT	DELTA1 (dB) EN55022 B Avg	DELTA2 (dB) EN55022 B QP
********** **MEASUREMENT SUMMARY** **********						
1.73	21.0 Av	0.3 / 0.0 / -10.0	31.3	Line 1	-14.7	N/A
1.87	18.3 Av	0.3 / 0.0 / -10.0	28.6	Line 1	-17.4	N/A
17.17	19.3 Av	0.9 / 0.0 / -10.0	30.2	Line 1	-19.8	N/A
2.83	25.2 Qp	0.3 / 0.0 / -10.0	35.5	Line 1	N/A	-20.5
3.11	25.0 Qp	0.3 / 0.0 / -10.0	35.3	Line 1	N/A	-20.7
17.17	18.4 Av	0.9 / 0.0 / -10.0	29.3	Line 1	-20.7	N/A
0.150	34.0 Qp	0.1 / 0.0 / -10.0	44.1	Line 1	N/A	-21.9
0.288	27.1 Qp	0.1 / 0.0 / -10.0	37.2	Line 1	N/A	-23.4
0.578	11.0 Av	0.1 / 0.0 / -10.0	21.1	Line 1	-24.9	N/A

Tested by: Mike Spataro
Printed

Michael Spataro
Signature

Reviewed by: Carlos Marrero
Printed

Carlos Marrero
Signature

TÜV PRODUCT SERVICE INC 5541 Central Avenue Boulder, Colorado 80301 Tel: 303 786 7999 Fax: 303 449 3004 Rev.No 1.0

Radiated Electromagnetic Emissions

Test Report #:	**BC105907 Run 04**	Test Area:	Pinewood Site 1 (10m)			
Test Method:	EN55022	Test Date:	22-Aug-2001			
EUT Model #:	930010-001	EUT Power:	6VDC 120 VAC / 60 Hz for DC Supply			
EUT Serial #:	201283013P			Temperature:	21.0	°C
Manufacturer:	Allflex			Relative Humidity:	48	%
EUT Description:	Stick Reader			Air Pressure:	80	kPa
Notes:	Not all support Equipment tested on the table with the EUT.			Page:	1 of 4	

FREQ (MHz)	LEVEL (dBuV)	CABLE / ANT / PREAMP (dB) (dB\m) (dB)	FINAL (dBuV/m)	POL / HGT / AZ (m) (DEG)	DELTA1 (dB) EN55022 B	DELTA2 (dB) N/A
200.54	23.2 Qp	2.4 / 12.5 / 27.4	10.7	H / 2.5 / 0.0	-19.3	N/A
206.16	22.3 Qp	2.4 / 13.0 / 27.4	10.3	H / 2.5 / 0.0	-19.7	N/A
400.06	23.7 Qp	3.5 / 17.2 / 27.6	16.7	H / 2.5 / 0.0	-20.3	N/A
206.16	28.1 Qp	2.4 / 13.0 / 27.4	16.1	H / 2.5 / 90.0	-13.9	N/A
223.33	22.9 Qp	2.5 / 15.1 / 27.3	13.1	H / 2.5 / 90.0	-16.9	N/A
309.20	23.4 Qp	3.1 / 13.5 / 27.1	12.9	H / 2.5 / 90.0	-24.1	N/A
200.54	23.2 Qp	2.4 / 12.5 / 27.4	10.7	H / 2.5 / 180.0	-19.3	N/A
257.70	23.4 Qp	2.8 / 14.4 / 27.2	13.4	H / 2.5 / 270.0	-23.6	N/A
343.55	22.9 Qp	3.3 / 14.6 / 27.3	13.5	H / 2.5 / 270.0	-23.5	N/A
The following were maximized between 200 and 1000 MHz.						
200.54	24.3 Qp	2.4 / 12.5 / 27.4	11.7	H / 2.5 / 84.0	-18.3	N/A
223.33	26.2 Qp	2.5 / 15.1 / 27.3	16.5	H / 3.8 / 70.0	-13.5	N/A
206.16	29.4 Qp	2.4 / 13.0 / 27.4	17.3	H / 3.1 / 94.0	-12.7	N/A
200.54	25.4 Qp	2.4 / 12.5 / 27.4	12.8	V / 1.0 / 0.0	-17.2	N/A
240.05	23.7 Qp	2.7 / 15.1 / 27.3	14.1	V / 1.0 / 0.0	-22.9	N/A
248.96	23.8 Qp	2.7 / 14.9 / 27.2	14.2	V / 1.0 / 0.0	-22.8	N/A
251.81	26.0 Qp	2.7 / 14.8 / 27.2	16.3	V / 1.0 / 0.0	-20.7	N/A
248.96	24.1 Qp	2.7 / 14.9 / 27.2	14.5	V / 1.0 / 90.0	-22.5	N/A

Tested by: Mike Spataro (Printed) — Michael Spataro (Signature)

Reviewed by: Carlos Marrero (Printed) — Carlos Marrero (Signature)

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Radiated Electromagnetic Emissions

Test Report #:	**BC105907 Run 04**	Test Area:	Pinewood Site 1 (10m)			
Test Method:	EN55022	Test Date:	22-Aug-2001			
EUT Model #:	930010-001	EUT Power:	6VDC 120 VAC / 60 Hz for DC Supply			
EUT Serial #:	201283013P			Temperature:	21.0	°C
Manufacturer:	Allflex			Relative Humidity:	48	%
EUT Description:	Stick Reader			Air Pressure:	80	kPa
Notes:	Not all support Equipment tested on the table with the EUT.			Page:	2 of 4	

FREQ (MHz)	LEVEL (dBuV)	CABLE / ANT / PREAMP (dB) (dB\m) (dB)	FINAL (dBuV/m)	POL / HGT / AZ (m) (DEG)	DELTA1 (dB) EN55022 B	DELTA2 (dB) N/A
280.07	23.4 Qp	3.0 / 14.2 / 27.1	13.4	V / 1.0 / 180.0	-23.6	N/A
240.05	24.7 Qp	2.7 / 15.1 / 27.3	15.1	V / 1.0 / 270.0	-21.9	N/A
251.81	27.1 Qp	2.7 / 14.8 / 27.2	17.4	V / 1.0 / 270.0	-19.6	N/A
Noise floor.						
999.10	17.2 Qp	6.0 / 24.3 / 27.2	20.4	V / 1.0 / 270.0	-16.6	N/A
501.01	18.7 Qp	3.9 / 17.0 / 28.2	11.3	V / 1.0 / 270.0	-25.7	N/A
200.04	19.6 Qp	2.4 / 12.5 / 27.4	7.0	V / 1.0 / 270.0	-23.0	N/A
The following were maximized between 200 and 1000 MHz.						
200.54	27.6 Qp	2.4 / 12.5 / 27.4	15.0	V / 1.5 / 0.0	-15.0	N/A
240.05	24.8 Qp	2.7 / 15.1 / 27.3	15.2	V / 1.5 / 14.0	-21.8	N/A
251.81	28.6 Qp	2.7 / 14.8 / 27.2	18.9	V / 1.0 / 232.0	-18.1	N/A
Cables were maximized.						
30.07	28.9 Pk	0.9 / 13.2 / 28.0	15.0	V / 1.0 / 0.0	-15.0	N/A
48.08	32.0 Qp	1.1 / 10.9 / 27.9	16.0	V / 1.0 / 0.0	-14.0	N/A
51.59	32.7 Qp	1.1 / 10.4 / 27.9	16.3	V / 1.0 / 0.0	-13.7	N/A
85.93	29.6 Pk	1.5 / 7.7 / 27.8	10.9	V / 1.0 / 0.0	-19.1	N/A
60.17	30.2 Qp	1.2 / 9.3 / 27.9	12.8	V / 1.0 / 90.0	-17.2	N/A
85.93	33.0 Qp	1.5 / 7.7 / 27.8	14.4	V / 1.0 / 90.0	-15.6	N/A

Tested by: Mike Spataro (Printed) — Michael Spataro (Signature)

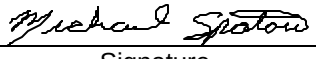
Reviewed by: Carlos Marrero (Printed) — Carlos Marrero (Signature)

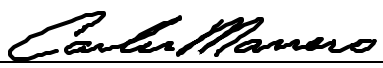
TÜV PRODUCT SERVICE INC 5541 Central Avenue Boulder, Colorado 80301 Tel: 303 786 7999 Fax: 303 449 3004 Rev.No 1.0

Radiated Electromagnetic Emissions

Test Report #:	**BC105907 Run 04**	Test Area:	Pinewood Site 1 (10m)			
Test Method:	EN55022	Test Date:	22-Aug-2001			
EUT Model #:	930010-001	EUT Power:	6VDC 120 VAC / 60 Hz for DC Supply			
EUT Serial #:	201283013P			Temperature:	21.0	°C
Manufacturer:	Allflex			Relative Humidity:	48	%
EUT Description:	Stick Reader			Air Pressure:	80	kPa
Notes:	Not all support Equipment tested on the table with the EUT.			Page:	3 of 4	

FREQ (MHz)	LEVEL (dBuV)	CABLE / ANT / PREAMP (dB) (dB\m) (dB)	FINAL (dBuV/m)	POL / HGT / AZ (m) (DEG)	DELTA1 (dB) EN55022 B	DELTA2 (dB) N/A
No higher emissions found: 180Deg, Vertical.						
85.93	33.4 Qp	1.5 / 7.7 / 27.8	14.8	V / 1.0 / 270.0	-15.2	N/A
171.81	23.4 Pk	2.1 / 12.6 / 27.6	10.5	V / 1.0 / 270.0	-19.5	N/A
The following were maximized between 30 and 200 MHz.						
30.07 MHz did not maximize any higher.						
48.08	32.6 Qp	1.1 / 10.9 / 27.9	16.6	V / 1.0 / 355.0	-13.4	N/A
51.59	33.4 Qp	1.1 / 10.4 / 27.9	17.0	V / 1.0 / 355.0	-13.0	N/A
No higher emissions found: 0Deg, Horizontal.						
No higher emissions found: 90Deg, Horizontal.						
No higher emissions found: 180Deg, Horizontal.						
No higher emissions found: 270Deg, Horizontal.						
Noise floor.						
30.00	21.4 Qp	0.9 / 13.2 / 28.0	7.5	H / 2.5 / 270.0	-22.5	N/A
80.00	24.5 Qp	1.4 / 8.0 / 27.8	6.1	H / 2.5 / 270.0	-23.9	N/A
195.00	17.9 Qp	2.3 / 13.7 / 27.5	6.4	H / 2.5 / 270.0	-23.6	N/A

Tested by: Mike Spataro (Printed)  (Signature)

Reviewed by: Carlos Marrero (Printed)  (Signature)

TÜV PRODUCT SERVICE INC 5541 Central Avenue Boulder, Colorado 80301 Tel: 303 786 7999 Fax: 303 449 3004 Rev.No 1.0

Radiated Electromagnetic Emissions

Test Report #:	**BC105907 Run 04**	Test Area:	Pinewood Site 1 (10m)			
Test Method:	EN55022	Test Date:	22-Aug-2001			
EUT Model #:	930010-001	EUT Power:	6VDC 120 VAC / 60 Hz for DC Supply			
EUT Serial #:	201283013P			Temperature:	21.0	°C
Manufacturer:	Allflex			Relative Humidity:	48	%
EUT Description:	Stick Reader			Air Pressure:	80	kPa
Notes:	Not all support Equipment tested on the table with the EUT.			Page:	4 of 4	

FREQ (MHz)	LEVEL (dBuV)	CABLE / ANT / PREAMP (dB) (dB\m) (dB)	FINAL (dBuV/m)	POL / HGT / AZ (m) (DEG)	DELTA1 (dB) EN55022 B	DELTA2 (dB) N/A
********** **MEASUREMENT SUMMARY** **********						
206.16	29.4 Qp	2.4 / 13.0 / 27.4	17.3	H / 3.1 / 94.0	-12.7	N/A
51.59	33.4 Qp	1.1 / 10.4 / 27.9	17.0	V / 1.0 / 355.0	-13.0	N/A
48.08	32.6 Qp	1.1 / 10.9 / 27.9	16.6	V / 1.0 / 355.0	-13.4	N/A
223.33	26.2 Qp	2.5 / 15.1 / 27.3	16.5	H / 3.8 / 70.0	-13.5	N/A
30.07	28.9 Pk	0.9 / 13.2 / 28.0	15.0	V / 1.0 / 0.0	-15.0	N/A
200.54	27.6 Qp	2.4 / 12.5 / 27.4	15.0	V / 1.5 / 0.0	-15.0	N/A
85.93	33.4 Qp	1.5 / 7.7 / 27.8	14.8	V / 1.0 / 270.0	-15.2	N/A
999.10	17.2 Qp	6.0 / 24.3 / 27.2	20.4	V / 1.0 / 270.0	-16.6	N/A
60.17	30.2 Qp	1.2 / 9.3 / 27.9	12.8	V / 1.0 / 90.0	-17.2	N/A
251.81	28.6 Qp	2.7 / 14.8 / 27.2	18.9	V / 1.0 / 232.0	-18.1	N/A
171.81	23.4 Pk	2.1 / 12.6 / 27.6	10.5	V / 1.0 / 270.0	-19.5	N/A
400.06	23.7 Qp	3.5 / 17.2 / 27.6	16.7	H / 2.5 / 0.0	-20.3	N/A
240.05	24.8 Qp	2.7 / 15.1 / 27.3	15.2	V / 1.5 / 14.0	-21.8	N/A
30.00	21.4 Qp	0.9 / 13.2 / 28.0	7.5	H / 2.5 / 270.0	-22.5	N/A
248.96	24.1 Qp	2.7 / 14.9 / 27.2	14.5	V / 1.0 / 90.0	-22.5	N/A
200.04	19.6 Qp	2.4 / 12.5 / 27.4	7.0	V / 1.0 / 270.0	-23.0	N/A
343.55	22.9 Qp	3.3 / 14.6 / 27.3	13.5	H / 2.5 / 270.0	-23.5	N/A
195.00	17.9 Qp	2.3 / 13.7 / 27.5	6.4	H / 2.5 / 270.0	-23.6	N/A
257.70	23.4 Qp	2.8 / 14.4 / 27.2	13.4	H / 2.5 / 270.0	-23.6	N/A
280.07	23.4 Qp	3.0 / 14.2 / 27.1	13.4	V / 1.0 / 180.0	-23.6	N/A
80.00	24.5 Qp	1.4 / 8.0 / 27.8	6.1	H / 2.5 / 270.0	-23.9	N/A
309.20	23.4 Qp	3.1 / 13.5 / 27.1	12.9	H / 2.5 / 90.0	-24.1	N/A
501.01	18.7 Qp	3.9 / 17.0 / 28.2	11.3	V / 1.0 / 270.0	-25.7	N/A

Tested by: Mike Spataro (Printed) — Michael Spataro (Signature)

Reviewed by: Carlos Marrero (Printed) — Carlos Marrero (Signature)

TÜV PRODUCT SERVICE INC 5541 Central Avenue Boulder, Colorado 80301 Tel: 303 786 7999 Fax: 303 449 3004 Rev.No 1.0

Equipment Report

22-Aug-2001

Project Number: BC105907 **Project Date:** 22-Aug-2001

Company Name: Allflex

Equip ID	Manufacturer	Model Number	Serial Number	Description	Calibration Date	Interval	Due	Cal Code
Test Performed								
8345	HEWLETT-PACKARD	85650A	2811A01300	Q.P Adapter	24-Feb-2001	6	25-Aug-2001	G
Test Performed C		Conducted Emissions						
8184	RHODE & SCHWARZ	ESH2-Z5	830364/002	LISN 50 ohm/50uH 3 line (1kHz - 30 MHz)	23-Mar-2001	12	23-Mar-2002	B
8189	HEWLETT PACKARD	11947A	2820A00277	Transient Limiter	14-Dec-2000	12	14-Dec-2001	G
8191	RHODE & SCHWARTZ	ESHS 30	842806/001	EMI Test Receiver	07-Mar-2001	12	07-Mar-2002	G
Test Performed R		Radiated Emissions						
7514	A.H.SYSTEMS	SAS-200/512	104	Log Periodic Antenna (200-1500 MHz)	12-Sep-2000	12	12-Sep-2001	G
8005	HEWLETT PACKARD	8447F	3113A04923	Option H64 Dual Preamp	04-Apr-2001	12	04-Apr-2002	B
8179	EMCO	3108	2149	Biconical Dipole Antenna (30-300 MHz)	18-Jun-2001	12	18-Jun-2002	G
8213	HEWLETT PACKARD	8566B	2410A00154	Spectrum Analyzer (dc-22 GHz)	04-May-2001	12	04-May-2002	G

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8214	HEWLETT PACKARD	85662A	2403A08749	Display Section	04-May-2001	12	04-May-2002	G

Cal Code Legend: G=Out Source, Y=No Cal required, R=Out of Service, B=In-House Verification Required ***1 of 1***

TÜV PRODUCT SERVICE INC 5541 Central Avenue Boulder, Colorado 80301 Tel: 303 786 7999 Fax: 303 449 3004 Rev.No 1.0

Appendix B

Test Plan

and

Constructional Data Form

TÜV PRODUCT SERVICE INC 5541 Central Avenue Boulder, Colorado 80301 Tel: 303 786 7999 Fax: 303 449 3004 Rev.No 1.0

Form

EMC Test Plan and Constructional Data Form

PLEASE COMPLETE THIS DOCUMENT IN FULL, ENTERING N/A IF THE FIELD IS NOT APPLICABLE.

Applicant -- ***NOTE: This information will be input into your test report as shown below.***
Press the F1 key at any time to get HELP for the current field selected.

Company: Allflex USA, Inc.

Address: 2820 Wilderness Place
Suite A
Boulder, CO 80301

Contact: Bob Stewart Position: Technical Director

Phone: 303/449-4509 Fax: 303/449-4529

E-mail Address: rstewart@allflex-boulder.com

General Equipment Description -- ***NOTE: This information will be input into your test report as shown below.***

EUT Description: Radio frequency identification scanning device for passive transponder devices

EUT Name: ISO Compatible RFID Stick Reader

Model No.: 930010-002 Serial No.: 201283012P

Product Options: Coiled or straight interface cable, upgradeable embedded S/W

Configurations to be tested: Straight cable w/V1.03 S/W

Test Objective

☒ EMC Directive 89/336/EEC (EMC)	☒	FCC:	Class	☒ A	☐ B	Part	15	
Std:	☐	VCCI:	Class	☐ A	☐ B			
☐ Machinery Directive 89/392/EEC (EMC	☐	BCIQ:	Class	☐ A	☐ B			
Std:	☒	Canada:	Class	☒ A	☐ B			
☐ Medical Device Directive 93/42/EEC (EMC)	☐	Australia:	Class	☐ A	☐ B			
Std:	☒	Other:	FCC CFR-47, Part 15.209 Intentional					

☐ Vehicle Directive 72/245/EEC (EMC)
Std:

☐ FDA Reviewers Guidance for Premarket Notification Submissions (EMC)

Form

EMC Test Plan and Constructional Data Form

TÜV PRODUCT SERVICE

TÜV Product Service Certification Requested

☐ Attestation of Conformity (AoC) ☒ International EMC Mark (IEM)
☐ Certificate of Conformity (CoC) ☐ Compliance Document

Protection Class (N/A for vehicles) ☐ Class I ☐ Class II ☐ Class III

(Press **F1** when field is selected to show additional information on Protection Class.)

Attendance

Test will be: ☒ Attended by the customer ☐ Unattended by the customer

Failure - *Complete this section if testing will not be attended by the customer.*

If a failure occurs, TUV Product Service should:
☐ Call contact listed above, if not available then stop testing. (After hrs phone): _____
☐ Continue testing to complete test series.
☐ Continue testing to define corrective action.
☐ Stop testing.

EUT Specifications and Requirements

Length: 45cm Width: 32mm dia. Height: _____ Weight: 0.6 kg

Power Requirements

Regulations require testing to be performed at typical power ratings in the countries of intended use. (i.e., European power is typically 230 VAC 50 Hz or 400 VAC 50 Hz, single and three phase, respectively)

Voltage: 6-12 VDC (If battery powered, make sure battery life is sufficient to complete testing.)

# of Phases: n/a

Current (Amps/phase(max)): n/a Current (Amps/phase(nominal)): n/a

Other n/a

Other Special Requirements

Intentional radiator test limit is defined in Part 15.209 as 2400/Fc uV/m at 300 meters, which for this device = 2400/134.2KHz = 17.9 uV/m. If testing is conducted at 10 meters or 30 meters, an extrapolation factor must be measured, as assuming 40dBuV/decade of distance is not accurate for the near field at this frequency. Extrapolation factor will be closer to 60dBuV/decade.

Typical Installation and/or Operating Environment

(ie. Hospital, Small Business, Industrial/Factory, etc.)
Equipment is used for reading electronic identification tags on livestock in farm, feedlot, and packing plant environments (all industrial class).

TÜV PRODUCT SERVICE INC 5541 Central Avenue Boulder, Colorado 80301 Tel: 303 786 7999 Fax: 303 449 3004 Rev.No 1.0

EMC Test Plan and Constructional Data Form

EUT Power Cable					
☒ Permanent	OR	☐ Removable	Length (in meters):	3 meters (extended)	
☒ Shielded	OR	☐ Unshielded			
☐ Not Applicable					

EMC Test Plan and Constructional Data Form

TÜV PRODUCT SERVICE

EUT Interface Ports and Cables

Interface				Shielding								
Type	Analog	Digital	Qty	Yes	No	Type	Termination	Connector Type	Port Termination	Length (In meters)	Removable	Permanent
EXAMPLE: *RS232*	☐	☒	*2*	☒	☐	*Foil over braid*	*Coaxial*	*Metallized 9-pin D-Sub*	*Characteristic Impedance*	*6*	☒	☐
RS232	☐	☒	1	☒	☐	Foil w/drain wire		Molded DB9(f) w/integral coaxial power		3	☐	☒
	☐	☐		☐	☐						☐	☐
	☐	☐		☐	☐						☐	☐
	☐	☐		☐	☐						☐	☐
	☐	☐		☐	☐						☐	☐
	☐	☐		☐	☐						☐	☐
	☐	☐		☐	☐						☐	☐
	☐	☐		☐	☐						☐	☐
	☐	☐		☐	☐						☐	☐
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TÜV PRODUCT SERVICE INC 5541 Central Avenue Boulder, Colorado 80301 Tel: 303 786 7999 Fax: 303 449 3004 Rev.No 1.0

EMC Test Plan and Constructional Data Form

EUT Software.

Revision Level: V1.03

Description: Software is downloadable/upgradeable installed in flash memory based embedded microcontroller. Software decodes a received signal and transmits the hexadecimal code via the RS232 serial port. Device can be configured via commands issued via RS232 port for various operational modes and output data formats

EUT Operating Modes to be Tested -- list the operating modes to be used during test. It is recommended the equipment be tested while operating in a typical operation mode. FCC testing of personal computers and/or peripherals requires that a simple program generate a complete line of upper case H's. Provide a general description of all software, firmware, and PLD algorithms used in the equipment. List all code modules as described above, with the revision level used during testing.
Consult with your TÜV Product Service Representative if additional assistance is required.

1. Mode 1: Intentional Radiator - EUT to be placed in continuous scan mode where 134.2 KHz signal is radiated in an 80mSec on / 30mSec off burst pattern

2. Mode 2: Unintentional Radiator - EUT to be placed in idle mode (not scanning) and check for EMC emissions compliance.

3. Mode 3: Unintentional Readiator - EUT is commanded to read transponders and send data to PC via RS232 interface to check for EMC emissions compliance.

EUT System Components -- List and describe all components which are part of the EUT. For FCC testing a minimum configuration is required. (ie. Mouse, Printer, Monitor, External Disk Drive, Motherboard, etc.)

Description	Model #	Serial #	FCC ID #

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Support Equipment -- List and describe all support equipment which is not part of the EUT. (i.e. peripherals, simulators, etc)

Description	*Model #*	*Serial #*	*FCC ID #*
Toshiba Portege Laptop PC	T3400	03421977	CJ6UN827
Linear Pwr Supply - 6-12 VDC	Tektronix PS280	TW59932	n/a
Allflex Test Transponders			n/a

Oscillator Frequencies

Frequency	*Derived Frequency*	*Component # / Location*	*Description of Use*
17.1776 MHz		X1	uC Clock
17.1776 MHz	134.2 KHz	U13 (74HC4040)	Exciter signal output
~200KHz	Data Bit Rate	U15 (ADM202E)	RS232 Serial Interface

Power Supply

Manufacturer	*Model #*	*Serial #*	*Type*
n/a			☐ Switched-mode: (Frequency) _____ ☐ Linear ☐ Other: _____
			☐ Switched-mode: (Frequency) _____ ☐ Linear ☐ Other: _____

Power Line Filters

Manufacturer	*Model #*	*Location in EUT*
n/a		

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Critical EMI Components (Capacitors, ferrites, etc.)

Description	*Manufacturer*	*Part # or Value*	*Qty*	*Component # / Location*
n/a				

EMC Critical Detail -- Describe other EMC Design details used to reduce high frequency noise.

(a) PCB is 4 layer with intermediate ground and power planes
(b) power/data cable is foil shielded and terminated to DB9 connector shell
(c) RS232 interface device is 89/336/EEC EMC Directive compliant

(PLEASE INSERT "**ELECTRONIC SIGNATURE**" BELOW IF POSSIBLE)

Authorization Signatures

Robert C. Stewart	16-Jul-01
Customer authorization to perform tests according to this test plan.	Date
Robert C. Stewart	16-Jul-01
Test Plan/CDF Prepared By (please print)	Date
Robert Cresswell	9-Sep-01
Reviewed by TÜV Product Service Associate	Date

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