



EMC EMISSIONS - TEST REPORT

Test Report No.	BC106875-1	Issue Date	October 24, 2001
Model / Serial No.	86345601 / EMC1		
Product Type	RF ID Reader		
Client	Translogic		
Manufacturer	Translogic		
License holder	Translogic		
Address	10825 East 47th Ave		
	Denver, CO 80239		
Test Criteria Applied	FCC Part 15	47 CFR 15: Radio Frequency Devices	
	Class B		
Test Result	PASS		
Test Project Number	BC106875		
References			
Total Pages Including Appendices:	34		



Reviewed By : Todd Seeley



Reviewed By : Robert Cresswell

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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: 18 October 2001

Testing Start Date: 18 October 2001

Testing End Date: 18 October 2001

■ - FCC Part 15:2001

■ Class B

Conducted emissions, Powerline 450 kHz- 30 MHz

Test Result

PASS

Minimum limit margin

11.9 dB

at

8.18 MHz

Maximum limit exceeding

dB

at

MHz

Remarks:

Radiated emissions (electric field) 30 MHz - 1000 MHz

Test Result

PASS

Minimum limit margin

2.1 dB

at

128.05 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

Appendix A

Test Data Sheets
and
Test Equipment Used



Non-Intentional Radiator Data

Conducted Electromagnetic Emissions



Test Report #: **BC106875 Run 01** Test Area: Pinewood Site 1 Cond
Test Method: FCC Test Date: 18-Oct-2001
EUT Model #: 86345601 EUT Power: 120 VAC / 60 Hz
EUT Serial #: EMC1 Temperature: 22 °C
Manufacturer: Translogic Relative Humidity: <26 %
EUT Description: RF ID Reader Air Pressure: 80 kPa
Notes: Page: 1 of 2

FREQ (MHz)	LEVEL (dBuV)	CABLE / LISN / ATTEN (dB)	FINAL (dBuV)	TEST POINT	DELTA1 (dB) FCC B	DELTA2 (dB) N/A
0.491	19.4 Qp	0.1 / 0.0 / -10.0	29.5	Neutral	-18.5	N/A
0.690	18.7 Qp	0.1 / 0.0 / -10.0	28.8	Neutral	-19.2	N/A
1.38	18.8 Qp	0.2 / 0.0 / -10.0	29.0	Neutral	-19.0	N/A
1.48	19.4 Qp	0.2 / 0.0 / -10.0	29.6	Neutral	-18.4	N/A
3.25	19.8 Qp	0.3 / 0.0 / -10.0	30.1	Neutral	-17.9	N/A
8.18	25.3 Qp	0.6 / 0.0 / -10.0	35.9	Neutral	-12.1	N/A
0.493	18.6 Pk	0.1 / 0.0 / -10.0	28.7	Line 1	-19.3	N/A
0.690	16.9 Qp	0.1 / 0.0 / -10.0	27.0	Line 1	-21.0	N/A
1.38	17.0 Qp	0.2 / 0.0 / -10.0	27.2	Line 1	-20.8	N/A
1.48	17.3 Qp	0.2 / 0.0 / -10.0	27.5	Line 1	-20.5	N/A
3.25	18.1 Qp	0.3 / 0.0 / -10.0	28.4	Line 1	-19.6	N/A
8.18	25.5 Qp	0.6 / 0.0 / -10.0	36.1	Line 1	-11.9	N/A
9.16	23.9 Qp	0.7 / 0.0 / -10.0	34.6	Line 1	-13.4	N/A

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Conducted Electromagnetic Emissions



Test Report #: **BC106875 Run 01** Test Area: Pinewood Site 1 Cond
Test Method: FCC Test Date: 18-Oct-2001
EUT Model #: 86345601 EUT Power: 120 VAC / 60 Hz
EUT Serial #: EMC1 Temperature: 22 °C
Manufacturer: Translogic Relative Humidity: <26 %
EUT Description: RF ID Reader Air Pressure: 80 kPa
Notes: Page: 2 of 2

FREQ (MHz)	LEVEL (dBuV)	CABLE / LISN / ATTEN (dB)	FINAL (dBuV)	TEST POINT	DELTA1 (dB) FCC B	DELTA2 (dB) N/A
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***** MEASUREMENT SUMMARY *****						
8.18	25.5 Qp	0.6 / 0.0 / -10.0	36.1	Line 1	-11.9	N/A
9.16	23.9 Qp	0.7 / 0.0 / -10.0	34.6	Line 1	-13.4	N/A
3.25	19.8 Qp	0.3 / 0.0 / -10.0	30.1	Neutral	-17.9	N/A
1.48	19.4 Qp	0.2 / 0.0 / -10.0	29.6	Neutral	-18.4	N/A
0.491	19.4 Qp	0.1 / 0.0 / -10.0	29.5	Neutral	-18.5	N/A
1.38	18.8 Qp	0.2 / 0.0 / -10.0	29.0	Neutral	-19.0	N/A
0.690	18.7 Qp	0.1 / 0.0 / -10.0	28.8	Neutral	-19.2	N/A

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Radiated Electromagnetic Emissions



Test Report #:	BC106875 Run 06	Test Area:	Pinewood Site 1 (3m)		
Test Method:	FCC Part 15	Test Date:	18-Oct-2001		
EUT Model #:	86345601	EUT Power:	120 VAC / 60 Hz		
EUT Serial #:	EMC1			Temperature:	21.3 °C
Manufacturer:	Translogic			Relative Humidity:	<26 %
EUT Description:	RF ID Reader			Air Pressure:	80 kPa
Notes:	EUT was placed in worst case orientation on the table.			Page:	1 of 13

FREQ (MHz)	LEVEL (dBuV)	CABLE / ANT / PREAMP (dB) (dBm) (dB)	FINAL (dBuV/m)	POL / HGT / AZ (m) (DEG)	DELTA1 (dB) FCC B (< 1GHz)	DELTA2 (dB) N/A
192.04	35.5 Qp	0.7 / 13.5 / 27.5	22.3	V / 1.0 / 0.0	-21.2	N/A
96.00	50.7 Pk	0.6 / 8.4 / 27.9	31.8	V / 1.0 / 0.0	-11.7	N/A
128.04	43.8 Qp	0.6 / 11.9 / 27.8	28.6	V / 1.0 / 0.0	-14.9	N/A
128.05	45.0 Qp	0.6 / 11.9 / 27.8	29.8	V / 1.0 / 90.0	-13.7	N/A
No higher emissions found: 180 Deg, vertical						
128.05	45.6 Qp	0.6 / 11.9 / 27.8	30.3	V / 1.0 / 270.0	-13.2	N/A
192.04	38.4 Qp	0.7 / 13.5 / 27.5	25.1	V / 1.0 / 270.0	-18.4	N/A
The following were maximized between 30 and 200 MHz, vertical						
96.00	50.8 Pk	0.6 / 8.4 / 27.9	31.9	V / 1.0 / 31.0	-11.6	N/A
96.00	53.7 Qp	0.6 / 8.4 / 27.9	34.8	H / 2.0 / 0.0	-8.7	N/A
128.05	55.6 Qp	0.6 / 11.9 / 27.8	40.3	H / 2.0 / 0.0	-3.2	N/A
192.04	49.6 Qp	0.7 / 13.5 / 27.5	36.4	H / 2.0 / 0.0	-7.1	N/A
160.04	54.1 Qp	0.7 / 12.5 / 27.6	39.7	H / 2.0 / 0.0	-3.8	N/A
64.04	29.5 Pk	0.4 / 9.0 / 27.9	11.0	H / 2.0 / 0.0	-29.0	N/A
176.05	44.1 Qp	0.7 / 12.8 / 27.6	30.0	H / 2.0 / 0.0	-13.5	N/A
144.05	48.6 Qp	0.7 / 12.2 / 27.7	33.7	H / 2.0 / 0.0	-9.8	N/A
112.05	50.4 Qp	0.6 / 10.3 / 27.8	33.5	H / 2.0 / 0.0	-10.0	N/A
80.05	35.5 Pk	0.5 / 8.0 / 27.8	16.1	H / 2.0 / 0.0	-23.9	N/A
48.05	34.0 Pk	0.3 / 10.9 / 27.9	17.3	H / 2.0 / 0.0	-22.7	N/A

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Radiated Electromagnetic Emissions



Test Report #:	BC106875 Run 06	Test Area:	Pinewood Site 1 (3m)		
Test Method:	FCC Part 15	Test Date:	18-Oct-2001		
EUT Model #:	86345601	EUT Power:	120 VAC / 60 Hz		
EUT Serial #:	EMC1			Temperature:	21.3 °C
Manufacturer:	Translogic			Relative Humidity:	<26 %
EUT Description:	RF ID Reader			Air Pressure:	80 kPa
Notes:	EUT was placed in worst case orientation on the table.			Page:	2 of 13

FREQ (MHz)	LEVEL (dBuV)	CABLE / ANT / PREAMP (dB) (dBm) (dB)	FINAL (dBuV/m)	POL / HGT / AZ (m) (DEG)	DELTA1 (dB) FCC B (< 1GHz)	DELTA2 (dB) N/A
192.04	51.0 Qp	0.7 / 13.5 / 27.5	37.8	H / 2.0 / 90.0	-5.7	N/A
64.04	31.4 Pk	0.4 / 9.0 / 27.9	13.0	H / 2.0 / 180.0	-27.0	N/A
80.05	36.2 Pk	0.5 / 8.0 / 27.8	16.9	H / 2.0 / 180.0	-23.1	N/A
96.00	54.4 Pk	0.6 / 8.4 / 27.9	35.5	H / 2.0 / 180.0	-8.0	N/A
176.05	45.1 Qp	0.7 / 12.8 / 27.6	31.0	H / 2.0 / 180.0	-12.5	N/A
192.04	50.6 Qp	0.7 / 13.5 / 27.5	37.3	H / 2.0 / 270.0	-6.2	N/A
The following were maximized between 30 and 200 MHz, horizontal						
128.05	56.6 Qp	0.6 / 11.9 / 27.8	41.4	H / 2.6 / 0.0	-2.1	N/A
160.04	54.5 Qp	0.7 / 12.5 / 27.6	40.0	H / 2.1 / 15.0	-3.5	N/A
192.04	54.3 Qp	0.7 / 13.5 / 27.5	41.1	H / 1.6 / 41.0	-2.4	N/A
208.04	41.4 Qp	0.8 / 12.4 / 27.4	27.1	V / 1.0 / 0.0	-16.4	N/A
224.04	32.2 Qp	0.8 / 14.1 / 27.3	19.8	V / 1.0 / 0.0	-26.2	N/A
240.04	31.4 Qp	0.8 / 14.3 / 27.3	19.3	V / 1.0 / 0.0	-26.7	N/A
256.04	33.0 Qp	0.8 / 14.3 / 27.2	20.9	V / 1.0 / 0.0	-25.1	N/A
272.04	30.2 Qp	0.9 / 14.1 / 27.1	18.1	V / 1.0 / 0.0	-27.9	N/A
288.04	35.6 Qp	0.9 / 14.3 / 27.1	23.7	V / 1.0 / 0.0	-22.3	N/A
304.04	37.9 Qp	0.9 / 14.4 / 27.0	26.2	V / 1.0 / 0.0	-19.8	N/A
336.04	34.4 Qp	1.0 / 14.6 / 27.2	22.7	V / 1.0 / 0.0	-23.3	N/A
352.04	27.7 Qp	1.0 / 14.8 / 27.3	16.2	V / 1.0 / 0.0	-29.8	N/A

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Radiated Electromagnetic Emissions



Test Report #:	BC106875 Run 06	Test Area:	Pinewood Site 1 (3m)		
Test Method:	FCC Part 15	Test Date:	18-Oct-2001		
EUT Model #:	86345601	EUT Power:	120 VAC / 60 Hz		
EUT Serial #:	EMC1			Temperature:	21.3 °C
Manufacturer:	Translogic			Relative Humidity:	<26 %
EUT Description:	RF ID Reader			Air Pressure:	80 kPa
Notes:	EUT was placed in worst case orientation on the table.			Page:	3 of 13

FREQ (MHz)	LEVEL (dBuV)	CABLE / ANT / PREAMP (dB) (dBm) (dB)	FINAL (dBuV/m)	POL / HGT / AZ (m) (DEG)	DELTA1 (dB) FCC B (< 1GHz)	DELTA2 (dB) N/A
368.04	26.7 Qp	1.0 / 14.9 / 27.4	15.2	V / 1.0 / 0.0	-30.8	N/A
384.04	30.8 Qp	1.1 / 15.9 / 27.5	20.3	V / 1.0 / 0.0	-25.7	N/A
400.04	25.2 Qp	1.1 / 17.8 / 27.6	16.5	V / 1.0 / 0.0	-29.5	N/A
432.04	30.1 Qp	1.2 / 16.8 / 27.8	20.2	V / 1.0 / 0.0	-25.8	N/A
448.04	38.6 Qp	1.2 / 16.9 / 27.9	28.8	V / 1.0 / 0.0	-17.2	N/A
464.04	31.4 Qp	1.2 / 17.3 / 28.0	22.0	V / 1.0 / 0.0	-24.0	N/A
480.04	35.2 Qp	1.3 / 17.8 / 28.1	26.2	V / 1.0 / 0.0	-19.8	N/A
496.04	33.0 Qp	1.3 / 18.2 / 28.2	24.3	V / 1.0 / 0.0	-21.7	N/A
512.04	31.7 Qp	1.3 / 18.1 / 28.2	22.9	V / 1.0 / 0.0	-23.1	N/A
544.04	39.6 Qp	1.3 / 18.8 / 28.2	31.5	V / 1.0 / 0.0	-14.5	N/A
560.04	29.0 Qp	1.4 / 19.5 / 28.1	21.7	V / 1.0 / 0.0	-24.3	N/A
576.04	35.9 Qp	1.4 / 20.1 / 28.1	29.2	V / 1.0 / 0.0	-16.8	N/A
608.04	31.6 Qp	1.4 / 20.3 / 28.1	25.2	V / 1.0 / 0.0	-20.8	N/A
624.04	25.9 Qp	1.4 / 20.9 / 28.1	20.1	V / 1.0 / 0.0	-25.9	N/A
640.04	35.6 Qp	1.4 / 21.0 / 28.1	29.9	V / 1.0 / 0.0	-16.1	N/A
656.04	28.2 Qp	1.5 / 21.0 / 28.0	22.6	V / 1.0 / 0.0	-23.4	N/A
672.04	36.1 Qp	1.5 / 20.9 / 28.0	30.4	V / 1.0 / 0.0	-15.6	N/A
688.04	29.0 Qp	1.5 / 20.8 / 28.0	23.3	V / 1.0 / 0.0	-22.7	N/A
704.04	27.2 Qp	1.5 / 20.8 / 28.0	21.5	V / 1.0 / 0.0	-24.5	N/A
736.04	26.3 Qp	1.5 / 21.1 / 28.0	20.9	V / 1.0 / 0.0	-25.1	N/A
752.04	26.2 Qp	1.6 / 21.3 / 27.9	21.1	V / 1.0 / 0.0	-24.9	N/A
768.04	26.5 Qp	1.6 / 21.7 / 27.9	21.8	V / 1.0 / 0.0	-24.2	N/A
784.04	26.2 Qp	1.6 / 21.9 / 27.9	21.7	V / 1.0 / 0.0	-24.3	N/A
800.04	26.1 Qp	1.6 / 22.1 / 27.9	21.9	V / 1.0 / 0.0	-24.1	N/A
816.04	27.4 Qp	1.6 / 22.4 / 27.8	23.6	V / 1.0 / 0.0	-22.4	N/A
832.04	25.7 Qp	1.6 / 22.6 / 27.8	22.1	V / 1.0 / 0.0	-23.9	N/A
848.04	28.6 Qp	1.7 / 22.8 / 27.7	25.3	V / 1.0 / 0.0	-20.7	N/A

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Radiated Electromagnetic Emissions



Test Report #:	BC106875 Run 06	Test Area:	Pinewood Site 1 (3m)		
Test Method:	FCC Part 15	Test Date:	18-Oct-2001		
EUT Model #:	86345601	EUT Power:	120 VAC / 60 Hz		
EUT Serial #:	EMC1			Temperature:	21.3 °C
Manufacturer:	Translogic			Relative Humidity:	<26 %
EUT Description:	RF ID Reader			Air Pressure:	80 kPa
Notes:	EUT was placed in worst case orientation on the table.			Page:	4 of 13

FREQ (MHz)	LEVEL (dBuV)	CABLE / ANT / PREAMP (dB) (dBm) (dB)	FINAL (dBuV/m)	POL / HGT / AZ (m) (DEG)	DELTA1 (dB) FCC B (< 1GHz)	DELTA2 (dB) N/A
912.04	25.6 Qp	1.8 / 24.7 / 27.5	24.5	V / 1.0 / 0.0	-21.5	N/A
944.04	23.5 Qp	1.8 / 25.5 / 27.4	23.4	V / 1.0 / 0.0	-22.6	N/A
960.04	23.4 Qp	1.8 / 25.7 / 27.3	23.6	V / 1.0 / 0.0	-30.4	N/A
508.84	28.3 Qp	1.3 / 18.1 / 28.2	19.5	V / 1.0 / 0.0	-26.5	N/A
542.01	33.4 Qp	1.3 / 18.7 / 28.2	25.3	V / 1.0 / 0.0	-20.7	N/A
575.22	30.4 Qp	1.4 / 20.1 / 28.1	23.7	V / 1.0 / 0.0	-22.3	N/A
586.26	30.3 Qp	1.4 / 20.1 / 28.1	23.6	V / 1.0 / 0.0	-22.4	N/A
597.32	25.9 Qp	1.4 / 20.0 / 28.1	19.2	V / 1.0 / 0.0	-26.8	N/A
630.51	25.0 Qp	1.4 / 20.9 / 28.1	19.3	V / 1.0 / 0.0	-26.7	N/A
696.88	24.6 Qp	1.5 / 20.8 / 28.0	18.9	V / 1.0 / 0.0	-27.1	N/A
785.37	24.6 Qp	1.6 / 21.9 / 27.9	20.2	V / 1.0 / 0.0	-25.8	N/A
796.45	25.7 Qp	1.6 / 22.1 / 27.9	21.5	V / 1.0 / 0.0	-24.5	N/A
818.55	27.7 Qp	1.6 / 22.4 / 27.8	23.8	V / 1.0 / 0.0	-22.2	N/A
829.60	27.1 Qp	1.6 / 22.6 / 27.8	23.5	V / 1.0 / 0.0	-22.5	N/A
840.68	26.6 Qp	1.7 / 22.7 / 27.8	23.1	V / 1.0 / 0.0	-22.9	N/A
807.49	26.6 Qp	1.6 / 22.2 / 27.9	22.6	V / 1.0 / 0.0	-23.4	N/A
564.16	32.4 Qp	1.4 / 19.7 / 28.1	25.3	V / 1.0 / 0.0	-20.7	N/A
553.08	34.1 Qp	1.4 / 19.2 / 28.1	26.5	V / 1.0 / 0.0	-19.5	N/A
530.96	31.7 Qp	1.3 / 18.1 / 28.2	22.9	V / 1.0 / 0.0	-23.1	N/A
497.79	33.8 Qp	1.3 / 18.2 / 28.2	25.1	V / 1.0 / 0.0	-20.9	N/A
486.74	27.8 Qp	1.3 / 18.0 / 28.1	18.9	V / 1.0 / 0.0	-27.1	N/A
475.67	27.5 Qp	1.3 / 17.7 / 28.1	18.4	V / 1.0 / 0.0	-27.6	N/A
453.54	28.4 Qp	1.2 / 17.0 / 27.9	18.6	V / 1.0 / 0.0	-27.4	N/A
442.49	26.6 Qp	1.2 / 16.8 / 27.9	16.8	V / 1.0 / 0.0	-29.2	N/A
331.87	26.0 Qp	1.0 / 14.5 / 27.2	14.3	V / 1.0 / 0.0	-31.7	N/A
320.82	25.9 Qp	0.9 / 14.4 / 27.1	14.1	V / 1.0 / 0.0	-31.9	N/A
309.77	28.5 Qp	0.9 / 14.4 / 27.1	16.8	V / 1.0 / 0.0	-29.2	N/A

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Radiated Electromagnetic Emissions



Test Report #:	BC106875 Run 06	Test Area:	Pinewood Site 1 (3m)
Test Method:	FCC Part 15	Test Date:	18-Oct-2001
EUT Model #:	86345601	EUT Power:	120 VAC / 60 Hz
EUT Serial #:	EMC1	Temperature:	21.3 °C
Manufacturer:	Translogic	Relative Humidity:	<26 %
EUT Description:	RF ID Reader	Air Pressure:	80 kPa
Notes:	EUT was placed in worst case orientation on the table.		Page: 5 of 13

FREQ (MHz)	LEVEL (dBuV)	CABLE / ANT / PREAMP (dB) (dBm) (dB)	FINAL (dBuV/m)	POL / HGT / AZ (m) (DEG)	DELTA1 (dB) FCC B (< 1GHz)	DELTA2 (dB) N/A
298.68	31.0 Qp	0.9 / 14.4 / 27.0	19.3	V / 1.0 / 0.0	-26.7	N/A
287.63	29.0 Qp	0.9 / 14.3 / 27.1	17.1	V / 1.0 / 0.0	-28.9	N/A
276.58	26.3 Qp	0.9 / 14.1 / 27.1	14.2	V / 1.0 / 0.0	-31.8	N/A
265.51	26.6 Qp	0.8 / 14.2 / 27.2	14.5	V / 1.0 / 0.0	-31.5	N/A
208.04	43.9 Qp	0.8 / 12.4 / 27.4	29.6	V / 1.0 / 90.0	-13.9	N/A
224.04	43.0 Qp	0.8 / 14.1 / 27.3	30.5	V / 1.0 / 90.0	-15.5	N/A
240.04	41.1 Qp	0.8 / 14.3 / 27.3	29.0	V / 1.0 / 90.0	-17.0	N/A
256.04	39.2 Qp	0.8 / 14.3 / 27.2	27.2	V / 1.0 / 90.0	-18.8	N/A
265.51	33.4 Qp	0.8 / 14.2 / 27.2	21.3	V / 1.0 / 90.0	-24.7	N/A
272.04	45.4 Qp	0.9 / 14.1 / 27.1	33.3	V / 1.0 / 90.0	-12.7	N/A
276.58	33.0 Qp	0.9 / 14.1 / 27.1	20.9	V / 1.0 / 90.0	-25.1	N/A
287.63	33.5 Qp	0.9 / 14.3 / 27.1	21.6	V / 1.0 / 90.0	-24.4	N/A
288.04	41.1 Qp	0.9 / 14.3 / 27.1	29.1	V / 1.0 / 90.0	-16.9	N/A
298.68	35.6 Qp	0.9 / 14.4 / 27.0	23.9	V / 1.0 / 90.0	-22.1	N/A
304.04	41.6 Qp	0.9 / 14.4 / 27.0	29.9	V / 1.0 / 90.0	-16.1	N/A
309.77	30.1 Qp	0.9 / 14.4 / 27.1	18.3	V / 1.0 / 90.0	-27.7	N/A
320.82	30.9 Qp	0.9 / 14.4 / 27.1	19.2	V / 1.0 / 90.0	-26.8	N/A
331.87	27.8 Qp	1.0 / 14.5 / 27.2	16.0	V / 1.0 / 90.0	-30.0	N/A
336.04	34.9 Qp	1.0 / 14.6 / 27.2	23.2	V / 1.0 / 90.0	-22.8	N/A
352.04	35.3 Qp	1.0 / 14.8 / 27.3	23.8	V / 1.0 / 90.0	-22.2	N/A
368.04	31.9 Qp	1.0 / 14.9 / 27.4	20.4	V / 1.0 / 90.0	-25.6	N/A
384.04	31.9 Qp	1.1 / 15.9 / 27.5	21.4	V / 1.0 / 90.0	-24.6	N/A
400.04	25.3 Qp	1.1 / 17.8 / 27.6	16.6	V / 1.0 / 90.0	-29.4	N/A
432.04	31.6 Qp	1.2 / 16.8 / 27.8	21.7	V / 1.0 / 90.0	-24.3	N/A
448.04	39.1 Qp	1.2 / 16.9 / 27.9	29.2	V / 1.0 / 90.0	-16.8	N/A
453.54	28.6 Qp	1.2 / 17.0 / 27.9	18.9	V / 1.0 / 90.0	-27.1	N/A

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Radiated Electromagnetic Emissions



Test Report #:	BC106875 Run 06	Test Area:	Pinewood Site 1 (3m)
Test Method:	FCC Part 15	Test Date:	18-Oct-2001
EUT Model #:	86345601	EUT Power:	120 VAC / 60 Hz
EUT Serial #:	EMC1	Temperature:	21.3 °C
Manufacturer:	Translogic	Relative Humidity:	<26 %
EUT Description:	RF ID Reader	Air Pressure:	80 kPa
Notes:	EUT was placed in worst case orientation on the table.		Page: 6 of 13

FREQ (MHz)	LEVEL (dBuV)	CABLE / ANT / PREAMP (dB) (dBm) (dB)	FINAL (dBuV/m)	POL / HGT / AZ (m) (DEG)	DELTA1 (dB) FCC B (< 1GHz)	DELTA2 (dB) N/A
464.04	35.5 Qp	1.2 / 17.3 / 28.0	26.0	V / 1.0 / 90.0	-20.0	N/A
475.67	30.8 Qp	1.3 / 17.7 / 28.1	21.7	V / 1.0 / 90.0	-24.3	N/A
480.04	39.2 Qp	1.3 / 17.8 / 28.1	30.2	V / 1.0 / 90.0	-15.8	N/A
486.74	30.6 Qp	1.3 / 18.0 / 28.1	21.7	V / 1.0 / 90.0	-24.3	N/A
512.04	32.5 Qp	1.3 / 18.1 / 28.2	23.7	V / 1.0 / 90.0	-22.3	N/A
704.04	29.7 Qp	1.5 / 20.8 / 28.0	24.0	V / 1.0 / 90.0	-22.0	N/A
736.04	28.9 Qp	1.5 / 21.1 / 28.0	23.5	V / 1.0 / 90.0	-22.5	N/A
752.04	26.8 Qp	1.6 / 21.3 / 27.9	21.7	V / 1.0 / 90.0	-24.3	N/A
784.04	26.4 Qp	1.6 / 21.9 / 27.9	22.0	V / 1.0 / 90.0	-24.0	N/A
785.37	25.3 Qp	1.6 / 21.9 / 27.9	20.9	V / 1.0 / 90.0	-25.1	N/A
944.04	24.6 Qp	1.8 / 25.5 / 27.4	24.5	V / 1.0 / 90.0	-21.5	N/A
960.04	25.9 Qp	1.8 / 25.7 / 27.3	26.1	V / 1.0 / 90.0	-27.9	N/A
960.04	26.1 Qp	1.8 / 25.7 / 27.3	26.3	V / 1.0 / 90.0	-27.7	N/A
384.04	32.7 Qp	1.1 / 15.9 / 27.5	22.2	V / 1.0 / 180.0	-23.8	N/A
442.49	28.1 Qp	1.2 / 16.8 / 27.9	18.3	V / 1.0 / 180.0	-27.7	N/A
448.04	40.2 Qp	1.2 / 16.9 / 27.9	30.4	V / 1.0 / 180.0	-15.6	N/A
453.54	31.1 Qp	1.2 / 17.0 / 27.9	21.3	V / 1.0 / 180.0	-24.7	N/A
464.04	36.5 Qp	1.2 / 17.3 / 28.0	27.1	V / 1.0 / 180.0	-18.9	N/A
475.67	32.3 Qp	1.3 / 17.7 / 28.1	23.2	V / 1.0 / 180.0	-22.8	N/A
480.04	40.8 Qp	1.3 / 17.8 / 28.1	31.8	V / 1.0 / 180.0	-14.2	N/A
496.04	34.3 Qp	1.3 / 18.2 / 28.2	25.6	V / 1.0 / 180.0	-20.4	N/A
508.84	31.3 Qp	1.3 / 18.1 / 28.2	22.5	V / 1.0 / 180.0	-23.5	N/A
512.04	39.5 Qp	1.3 / 18.1 / 28.2	30.7	V / 1.0 / 180.0	-15.3	N/A
597.32	27.8 Qp	1.4 / 20.0 / 28.1	21.1	V / 1.0 / 180.0	-24.9	N/A
785.37	26.1 Qp	1.6 / 21.9 / 27.9	21.7	V / 1.0 / 180.0	-24.3	N/A
796.45	26.2 Qp	1.6 / 22.1 / 27.9	22.0	V / 1.0 / 180.0	-24.0	N/A

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Radiated Electromagnetic Emissions



Test Report #:	BC106875 Run 06	Test Area:	Pinewood Site 1 (3m)		
Test Method:	FCC Part 15	Test Date:	18-Oct-2001		
EUT Model #:	86345601	EUT Power:	120 VAC / 60 Hz		
EUT Serial #:	EMC1			Temperature:	21.3 °C
Manufacturer:	Translogic			Relative Humidity:	<26 %
EUT Description:	RF ID Reader			Air Pressure:	80 kPa
Notes:	EUT was placed in worst case orientation on the table.			Page:	7 of 13

FREQ (MHz)	LEVEL (dBuV)	CABLE / ANT / PREAMP (dB) (dBm) (dB)	FINAL (dBuV/m)	POL / HGT / AZ (m) (DEG)	DELTA1 (dB) FCC B (< 1GHz)	DELTA2 (dB) N/A
912.04	30.8 Qp	1.8 / 24.7 / 27.5	29.7	V / 1.0 / 180.0	-16.3	N/A
944.04	26.6 Qp	1.8 / 25.5 / 27.4	26.5	V / 1.0 / 180.0	-19.5	N/A
208.04	47.5 Qp	0.8 / 12.4 / 27.4	33.2	V / 1.0 / 270.0	-10.3	N/A
309.77	30.8 Qp	0.9 / 14.4 / 27.1	19.0	V / 1.0 / 270.0	-27.0	N/A
384.04	33.5 Qp	1.1 / 15.9 / 27.5	23.0	V / 1.0 / 270.0	-23.0	N/A
400.04	26.4 Qp	1.1 / 17.8 / 27.6	17.7	V / 1.0 / 270.0	-28.3	N/A
432.04	32.8 Qp	1.2 / 16.8 / 27.8	22.9	V / 1.0 / 270.0	-23.1	N/A
448.04	40.8 Qp	1.2 / 16.9 / 27.9	31.0	V / 1.0 / 270.0	-15.0	N/A
464.04	40.0 Qp	1.2 / 17.3 / 28.0	30.6	V / 1.0 / 270.0	-15.4	N/A
486.74	32.0 Qp	1.3 / 18.0 / 28.1	23.2	V / 1.0 / 270.0	-22.8	N/A
530.96	35.0 Qp	1.3 / 18.1 / 28.2	26.3	V / 1.0 / 270.0	-19.7	N/A
542.01	36.5 Qp	1.3 / 18.7 / 28.2	28.3	V / 1.0 / 270.0	-17.7	N/A
544.04	43.5 Qp	1.3 / 18.8 / 28.2	35.5	V / 1.0 / 270.0	-10.5	N/A
553.08	36.8 Qp	1.4 / 19.2 / 28.1	29.2	V / 1.0 / 270.0	-16.8	N/A
560.04	32.6 Qp	1.4 / 19.5 / 28.1	25.4	V / 1.0 / 270.0	-20.6	N/A
564.16	35.2 Qp	1.4 / 19.7 / 28.1	28.1	V / 1.0 / 270.0	-17.9	N/A
575.22	32.8 Qp	1.4 / 20.1 / 28.1	26.1	V / 1.0 / 270.0	-19.9	N/A
576.04	37.6 Qp	1.4 / 20.1 / 28.1	31.0	V / 1.0 / 270.0	-15.0	N/A
608.04	32.8 Qp	1.4 / 20.3 / 28.1	26.4	V / 1.0 / 270.0	-19.6	N/A
The following were maximized between 200 and 1000 MHz, vertical						
208.04	49.5 Qp	0.8 / 12.4 / 27.4	35.2	V / 1.0 / 241.0	-8.3	N/A
544.04	43.6 Qp	1.3 / 18.8 / 28.2	35.5	V / 1.0 / 265.0	-10.5	N/A

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Radiated Electromagnetic Emissions



Test Report #:	BC106875 Run 06	Test Area:	Pinewood Site 1 (3m)		
Test Method:	FCC Part 15	Test Date:	18-Oct-2001		
EUT Model #:	86345601	EUT Power:	120 VAC / 60 Hz		
EUT Serial #:	EMC1			Temperature:	21.3 °C
Manufacturer:	Translogic			Relative Humidity:	<26 %
EUT Description:	RF ID Reader			Air Pressure:	80 kPa
Notes:	EUT was placed in worst case orientation on the table.			Page:	8 of 13

FREQ (MHz)	LEVEL (dBuV)	CABLE / ANT / PREAMP (dB) (dBm) (dB)	FINAL (dBuV/m)	POL / HGT / AZ (m) (DEG)	DELTA1 (dB) FCC B (< 1GHz)	DELTA2 (dB) N/A
208.04	41.8 Qp	0.8 / 12.4 / 27.4	27.5	H / 1.5 / 0.0	-16.0	N/A
544.04	48.4 Qp	1.3 / 18.8 / 28.2	40.3	H / 1.5 / 0.0	-5.7	N/A
224.04	44.4 Qp	0.8 / 14.1 / 27.3	31.9	H / 1.5 / 0.0	-14.1	N/A
265.51	34.5 Qp	0.8 / 14.2 / 27.2	22.4	H / 1.5 / 0.0	-23.6	N/A
272.04	46.6 Qp	0.9 / 14.1 / 27.1	34.5	H / 1.5 / 0.0	-11.5	N/A
276.58	34.0 Qp	0.9 / 14.1 / 27.1	21.9	H / 1.5 / 0.0	-24.1	N/A
287.63	36.2 Qp	0.9 / 14.3 / 27.1	24.3	H / 1.5 / 0.0	-21.7	N/A
288.04	46.6 Qp	0.9 / 14.3 / 27.1	34.7	H / 1.5 / 0.0	-11.3	N/A
298.68	39.0 Qp	0.9 / 14.4 / 27.0	27.2	H / 1.5 / 0.0	-18.8	N/A
304.04	50.2 Qp	0.9 / 14.4 / 27.0	38.5	H / 1.5 / 0.0	-7.5	N/A
309.77	37.6 Qp	0.9 / 14.4 / 27.1	25.9	H / 1.5 / 0.0	-20.1	N/A
320.82	33.1 Qp	0.9 / 14.4 / 27.1	21.3	H / 1.5 / 0.0	-24.7	N/A
331.87	28.2 Qp	1.0 / 14.5 / 27.2	16.4	H / 1.5 / 0.0	-29.6	N/A
336.04	37.4 Qp	1.0 / 14.6 / 27.2	25.7	H / 1.5 / 0.0	-20.3	N/A
400.04	27.4 Qp	1.1 / 17.8 / 27.6	18.7	H / 1.5 / 0.0	-27.3	N/A
448.04	42.8 Qp	1.2 / 16.9 / 27.9	32.9	H / 1.5 / 0.0	-13.1	N/A
453.54	32.9 Qp	1.2 / 17.0 / 27.9	23.1	H / 1.5 / 0.0	-22.9	N/A
464.04	41.4 Qp	1.2 / 17.3 / 28.0	31.9	H / 1.5 / 0.0	-14.1	N/A
475.67	36.9 Qp	1.3 / 17.7 / 28.1	27.8	H / 1.5 / 0.0	-18.2	N/A
480.04	46.1 Qp	1.3 / 17.8 / 28.1	37.2	H / 1.5 / 0.0	-8.8	N/A
486.74	36.3 Qp	1.3 / 18.0 / 28.1	27.4	H / 1.5 / 0.0	-18.6	N/A
496.04	39.8 Qp	1.3 / 18.2 / 28.2	31.1	H / 1.5 / 0.0	-14.9	N/A
497.79	38.4 Qp	1.3 / 18.2 / 28.2	29.8	H / 1.5 / 0.0	-16.2	N/A
508.84	37.3 Qp	1.3 / 18.1 / 28.2	28.5	H / 1.5 / 0.0	-17.5	N/A
512.04	45.5 Qp	1.3 / 18.1 / 28.2	36.7	H / 1.5 / 0.0	-9.3	N/A
530.96	41.9 Qp	1.3 / 18.1 / 28.2	33.2	H / 1.5 / 0.0	-12.8	N/A
542.01	40.6 Qp	1.3 / 18.7 / 28.2	32.4	H / 1.5 / 0.0	-13.6	N/A

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Radiated Electromagnetic Emissions



Test Report #:	BC106875 Run 06	Test Area:	Pinewood Site 1 (3m)		
Test Method:	FCC Part 15	Test Date:	18-Oct-2001		
EUT Model #:	86345601	EUT Power:	120 VAC / 60 Hz		
EUT Serial #:	EMC1			Temperature:	21.3 °C
Manufacturer:	Translogic			Relative Humidity:	<26 %
EUT Description:	RF ID Reader			Air Pressure:	80 kPa
Notes:	EUT was placed in worst case orientation on the table.			Page:	9 of 13

FREQ (MHz)	LEVEL (dBuV)	CABLE / ANT / PREAMP (dB) (dBm) (dB)	FINAL (dBuV/m)	POL / HGT / AZ (m) (DEG)	DELTA1 (dB) FCC B (< 1GHz)	DELTA2 (dB) N/A
544.04	48.4 Qp	1.3 / 18.8 / 28.2	40.4	H / 1.5 / 0.0	-5.6	N/A
553.08	39.1 Qp	1.4 / 19.2 / 28.1	31.5	H / 1.5 / 0.0	-14.5	N/A
560.04	34.5 Qp	1.4 / 19.5 / 28.1	27.2	H / 1.5 / 0.0	-18.8	N/A
564.16	38.1 Qp	1.4 / 19.7 / 28.1	30.9	H / 1.5 / 0.0	-15.1	N/A
575.22	39.3 Qp	1.4 / 20.1 / 28.1	32.6	H / 1.5 / 0.0	-13.4	N/A
576.04	48.1 Qp	1.4 / 20.1 / 28.1	41.4	H / 1.5 / 0.0	-4.6	N/A
586.26	38.9 Qp	1.4 / 20.1 / 28.1	32.2	H / 1.5 / 0.0	-13.8	N/A
597.32	33.1 Qp	1.4 / 20.0 / 28.1	26.5	H / 1.5 / 0.0	-19.5	N/A
608.04	37.3 Qp	1.4 / 20.3 / 28.1	30.9	H / 1.5 / 0.0	-15.1	N/A
208.04	53.5 Qp	0.8 / 12.4 / 27.4	39.2	H / 1.5 / 90.0	-4.3	N/A
224.04	55.1 Qp	0.8 / 14.1 / 27.3	42.6	H / 1.5 / 90.0	-3.4	N/A
240.04	48.9 Qp	0.8 / 14.3 / 27.3	36.8	H / 1.5 / 90.0	-9.2	N/A
256.04	47.6 Qp	0.8 / 14.3 / 27.2	35.6	H / 1.5 / 90.0	-10.4	N/A
265.51	37.7 Qp	0.8 / 14.2 / 27.2	25.6	H / 1.5 / 90.0	-20.4	N/A
272.04	52.0 Qp	0.9 / 14.1 / 27.1	39.9	H / 1.5 / 90.0	-6.1	N/A
276.58	36.9 Qp	0.9 / 14.1 / 27.1	24.8	H / 1.5 / 90.0	-21.2	N/A
287.63	37.6 Qp	0.9 / 14.3 / 27.1	25.6	H / 1.5 / 90.0	-20.4	N/A
288.04	48.3 Qp	0.9 / 14.3 / 27.1	36.4	H / 1.5 / 90.0	-9.6	N/A
287.63	38.0 Qp	0.9 / 14.3 / 27.1	26.1	H / 1.5 / 180.0	-19.9	N/A
298.68	39.8 Qp	0.9 / 14.4 / 27.0	28.1	H / 1.5 / 180.0	-17.9	N/A
309.77	38.6 Qp	0.9 / 14.4 / 27.1	26.8	H / 1.5 / 180.0	-19.2	N/A
320.82	35.0 Qp	0.9 / 14.4 / 27.1	23.2	H / 1.5 / 180.0	-22.8	N/A
331.87	30.8 Qp	1.0 / 14.5 / 27.2	19.1	H / 1.5 / 180.0	-26.9	N/A
336.04	40.9 Qp	1.0 / 14.6 / 27.2	29.2	H / 1.5 / 180.0	-16.8	N/A
368.04	32.6 Qp	1.0 / 14.9 / 27.4	21.1	H / 1.5 / 180.0	-24.9	N/A

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Radiated Electromagnetic Emissions



Test Report #:	BC106875 Run 06	Test Area:	Pinewood Site 1 (3m)		
Test Method:	FCC Part 15	Test Date:	18-Oct-2001		
EUT Model #:	86345601	EUT Power:	120 VAC / 60 Hz		
EUT Serial #:	EMC1			Temperature:	21.3 °C
Manufacturer:	Translogic			Relative Humidity:	<26 %
EUT Description:	RF ID Reader			Air Pressure:	80 kPa
Notes:	EUT was placed in worst case orientation on the table.			Page:	10 of 13

FREQ (MHz)	LEVEL (dBuV)	CABLE / ANT / PREAMP (dB) (dBm) (dB)	FINAL (dBuV/m)	POL / HGT / AZ (m) (DEG)	DELTA1 (dB) FCC B (< 1GHz)	DELTA2 (dB) N/A
442.49	29.6 Qp	1.2 / 16.8 / 27.9	19.7	H / 1.5 / 180.0	-26.3	N/A
464.04	42.0 Qp	1.2 / 17.3 / 28.0	32.5	H / 1.5 / 180.0	-13.5	N/A
475.67	38.1 Qp	1.3 / 17.7 / 28.1	29.1	H / 1.5 / 180.0	-16.9	N/A
480.04	46.9 Qp	1.3 / 17.8 / 28.1	37.9	H / 1.5 / 180.0	-8.1	N/A
486.74	37.8 Qp	1.3 / 18.0 / 28.1	28.9	H / 1.5 / 180.0	-17.1	N/A
496.04	42.5 Qp	1.3 / 18.2 / 28.2	33.8	H / 1.5 / 180.0	-12.2	N/A
497.79	41.1 Qp	1.3 / 18.2 / 28.2	32.5	H / 1.5 / 180.0	-13.5	N/A
508.84	39.6 Qp	1.3 / 18.1 / 28.2	30.8	H / 1.5 / 180.0	-15.2	N/A
512.04	47.4 Qp	1.3 / 18.1 / 28.2	38.5	H / 1.5 / 180.0	-7.5	N/A
542.01	41.9 Qp	1.3 / 18.7 / 28.2	33.8	H / 1.5 / 180.0	-12.2	N/A
544.04	48.5 Qp	1.3 / 18.8 / 28.2	40.5	H / 1.5 / 180.0	-5.5	N/A
553.08	41.1 Qp	1.4 / 19.2 / 28.1	33.6	H / 1.5 / 180.0	-12.4	N/A
560.04	35.2 Qp	1.4 / 19.5 / 28.1	27.9	H / 1.5 / 180.0	-18.1	N/A
704.04	29.6 Qp	1.5 / 20.8 / 28.0	23.9	H / 1.5 / 270.0	-22.1	N/A
784.04	26.6 Qp	1.6 / 21.9 / 27.9	22.2	H / 1.5 / 270.0	-23.8	N/A
The following were maximized between 200 and 1000 MHz, horizontal						
208.04	55.5 Qp	0.8 / 12.4 / 27.4	41.2	H / 1.4 / 126.0	-2.3	N/A
224.04	56.2 Qp	0.8 / 14.1 / 27.3	43.7	H / 1.3 / 115.0	-2.3	N/A
544.04	49.5 Qp	1.3 / 18.8 / 28.2	41.5	H / 1.6 / 349.0	-4.5	N/A
576.04	48.5 Qp	1.4 / 20.1 / 28.1	41.8	H / 1.5 / 0.0	-4.2	N/A

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Radiated Electromagnetic Emissions



Test Report #:	BC106875 Run 06	Test Area:	Pinewood Site 1 (3m)
Test Method:	FCC Part 15	Test Date:	18-Oct-2001
EUT Model #:	86345601	EUT Power:	120 VAC / 60 Hz
EUT Serial #:	EMC1	Temperature:	21.3 °C
Manufacturer:	Translogic	Relative Humidity:	<26 %
EUT Description:	RF ID Reader	Air Pressure:	80 kPa
Notes:	EUT was placed in worst case orientation on the table.		Page: 11 of 13

FREQ (MHz)	LEVEL (dBuV)	CABLE / ANT / PREAMP (dB) (dBm) (dB)	FINAL (dBuV/m)	POL / HGT / AZ (m) (DEG)	DELTA1 (dB) FCC B (< 1GHz)	DELTA2 (dB) N/A
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***** MEASUREMENT SUMMARY *****						
128.05	56.6 Qp	0.6 / 11.9 / 27.8	41.4	H / 2.6 / 0.0	-2.1	N/A
208.04	55.5 Qp	0.8 / 12.4 / 27.4	41.2	H / 1.4 / 126.0	-2.3	N/A
224.04	56.2 Qp	0.8 / 14.1 / 27.3	43.7	H / 1.3 / 115.0	-2.3	N/A
192.04	54.3 Qp	0.7 / 13.5 / 27.5	41.1	H / 1.6 / 41.0	-2.4	N/A
160.04	54.5 Qp	0.7 / 12.5 / 27.6	40.0	H / 2.1 / 15.0	-3.5	N/A
576.04	48.5 Qp	1.4 / 20.1 / 28.1	41.8	H / 1.5 / 0.0	-4.2	N/A
544.04	49.5 Qp	1.3 / 18.8 / 28.2	41.5	H / 1.6 / 349.0	-4.5	N/A
272.04	52.0 Qp	0.9 / 14.1 / 27.1	39.9	H / 1.5 / 90.0	-6.1	N/A
304.04	50.2 Qp	0.9 / 14.4 / 27.0	38.5	H / 1.5 / 0.0	-7.5	N/A
512.04	47.4 Qp	1.3 / 18.1 / 28.2	38.5	H / 1.5 / 180.0	-7.5	N/A
96.00	54.4 Pk	0.6 / 8.4 / 27.9	35.5	H / 2.0 / 180.0	-8.0	N/A
480.04	46.9 Qp	1.3 / 17.8 / 28.1	37.9	H / 1.5 / 180.0	-8.1	N/A
240.04	48.9 Qp	0.8 / 14.3 / 27.3	36.8	H / 1.5 / 90.0	-9.2	N/A
288.04	48.3 Qp	0.9 / 14.3 / 27.1	36.4	H / 1.5 / 90.0	-9.6	N/A
144.05	48.6 Qp	0.7 / 12.2 / 27.7	33.7	H / 2.0 / 0.0	-9.8	N/A
112.05	50.4 Qp	0.6 / 10.3 / 27.8	33.5	H / 2.0 / 0.0	-10.0	N/A
256.04	47.6 Qp	0.8 / 14.3 / 27.2	35.6	H / 1.5 / 90.0	-10.4	N/A
496.04	42.5 Qp	1.3 / 18.2 / 28.2	33.8	H / 1.5 / 180.0	-12.2	N/A
542.01	41.9 Qp	1.3 / 18.7 / 28.2	33.8	H / 1.5 / 180.0	-12.2	N/A
553.08	41.1 Qp	1.4 / 19.2 / 28.1	33.6	H / 1.5 / 180.0	-12.4	N/A
176.05	45.1 Qp	0.7 / 12.8 / 27.6	31.0	H / 2.0 / 180.0	-12.5	N/A
530.96	41.9 Qp	1.3 / 18.1 / 28.2	33.2	H / 1.5 / 0.0	-12.8	N/A
448.04	42.8 Qp	1.2 / 16.9 / 27.9	32.9	H / 1.5 / 0.0	-13.1	N/A
575.22	39.3 Qp	1.4 / 20.1 / 28.1	32.6	H / 1.5 / 0.0	-13.4	N/A
464.04	42.0 Qp	1.2 / 17.3 / 28.0	32.5	H / 1.5 / 180.0	-13.5	N/A

Tested by: Dan Dillon

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Reviewed by: Robert Cresswell

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Radiated Electromagnetic Emissions



Test Report #:	BC106875 Run 06	Test Area:	Pinewood Site 1 (3m)		
Test Method:	FCC Part 15	Test Date:	18-Oct-2001		
EUT Model #:	86345601	EUT Power:	120 VAC / 60 Hz		
EUT Serial #:	EMC1			Temperature:	21.3 °C
Manufacturer:	Translogic			Relative Humidity:	<26 %
EUT Description:	RF ID Reader			Air Pressure:	80 kPa
Notes:	EUT was placed in worst case orientation on the table.			Page:	12 of 13

FREQ (MHz)	LEVEL (dBuV)	CABLE / ANT / PREAMP (dB) (dBm) (dB)	FINAL (dBuV/m)	POL / HGT / AZ (m) (DEG)	DELTA1 (dB) FCC B (< 1GHz)	DELTA2 (dB) N/A
497.79	41.1 Qp	1.3 / 18.2 / 28.2	32.5	H / 1.5 / 180.0	-13.5	N/A
586.26	38.9 Qp	1.4 / 20.1 / 28.1	32.2	H / 1.5 / 0.0	-13.8	N/A
564.16	38.1 Qp	1.4 / 19.7 / 28.1	30.9	H / 1.5 / 0.0	-15.1	N/A
608.04	37.3 Qp	1.4 / 20.3 / 28.1	30.9	H / 1.5 / 0.0	-15.1	N/A
508.84	39.6 Qp	1.3 / 18.1 / 28.2	30.8	H / 1.5 / 180.0	-15.2	N/A
672.04	36.1 Qp	1.5 / 20.9 / 28.0	30.4	V / 1.0 / 0.0	-15.6	N/A
640.04	35.6 Qp	1.4 / 21.0 / 28.1	29.9	V / 1.0 / 0.0	-16.1	N/A
912.04	30.8 Qp	1.8 / 24.7 / 27.5	29.7	V / 1.0 / 180.0	-16.3	N/A
336.04	40.9 Qp	1.0 / 14.6 / 27.2	29.2	H / 1.5 / 180.0	-16.8	N/A
475.67	38.1 Qp	1.3 / 17.7 / 28.1	29.1	H / 1.5 / 180.0	-16.9	N/A
486.74	37.8 Qp	1.3 / 18.0 / 28.1	28.9	H / 1.5 / 180.0	-17.1	N/A
298.68	39.8 Qp	0.9 / 14.4 / 27.0	28.1	H / 1.5 / 180.0	-17.9	N/A
560.04	35.2 Qp	1.4 / 19.5 / 28.1	27.9	H / 1.5 / 180.0	-18.1	N/A
309.77	38.6 Qp	0.9 / 14.4 / 27.1	26.8	H / 1.5 / 180.0	-19.2	N/A
597.32	33.1 Qp	1.4 / 20.0 / 28.1	26.5	H / 1.5 / 0.0	-19.5	N/A
944.04	26.6 Qp	1.8 / 25.5 / 27.4	26.5	V / 1.0 / 180.0	-19.5	N/A
287.63	38.0 Qp	0.9 / 14.3 / 27.1	26.1	H / 1.5 / 180.0	-19.9	N/A
265.51	37.7 Qp	0.8 / 14.2 / 27.2	25.6	H / 1.5 / 90.0	-20.4	N/A
848.04	28.6 Qp	1.7 / 22.8 / 27.7	25.3	V / 1.0 / 0.0	-20.7	N/A
276.58	36.9 Qp	0.9 / 14.1 / 27.1	24.8	H / 1.5 / 90.0	-21.2	N/A
704.04	29.7 Qp	1.5 / 20.8 / 28.0	24.0	V / 1.0 / 90.0	-22.0	N/A
352.04	35.3 Qp	1.0 / 14.8 / 27.3	23.8	V / 1.0 / 90.0	-22.2	N/A
818.55	27.7 Qp	1.6 / 22.4 / 27.8	23.8	V / 1.0 / 0.0	-22.2	N/A
816.04	27.4 Qp	1.6 / 22.4 / 27.8	23.6	V / 1.0 / 0.0	-22.4	N/A
736.04	28.9 Qp	1.5 / 21.1 / 28.0	23.5	V / 1.0 / 90.0	-22.5	N/A
829.60	27.1 Qp	1.6 / 22.6 / 27.8	23.5	V / 1.0 / 0.0	-22.5	N/A
48.05	34.0 Pk	0.3 / 10.9 / 27.9	17.3	H / 2.0 / 0.0	-22.7	N/A

Tested by: Dan Dillon

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Radiated Electromagnetic Emissions



Test Report #:	BC106875 Run 06	Test Area:	Pinewood Site 1 (3m)		
Test Method:	FCC Part 15	Test Date:	18-Oct-2001		
EUT Model #:	86345601	EUT Power:	120 VAC / 60 Hz		
EUT Serial #:	EMC1			Temperature:	21.3 °C
Manufacturer:	Translogic			Relative Humidity:	<26 %
EUT Description:	RF ID Reader			Air Pressure:	80 kPa
Notes:	EUT was placed in worst case orientation on the table.			Page:	13 of 13

FREQ (MHz)	LEVEL (dBuV)	CABLE / ANT / PREAMP (dB) (dBm) (dB)	FINAL (dBuV/m)	POL / HGT / AZ (m) (DEG)	DELTA1 (dB) FCC B (< 1GHz)	DELTA2 (dB) N/A
688.04	29.0 Qp	1.5 / 20.8 / 28.0	23.3	V / 1.0 / 0.0	-22.7	N/A
320.82	35.0 Qp	0.9 / 14.4 / 27.1	23.2	H / 1.5 / 180.0	-22.8	N/A
453.54	32.9 Qp	1.2 / 17.0 / 27.9	23.1	H / 1.5 / 0.0	-22.9	N/A
840.68	26.6 Qp	1.7 / 22.7 / 27.8	23.1	V / 1.0 / 0.0	-22.9	N/A
384.04	33.5 Qp	1.1 / 15.9 / 27.5	23.0	V / 1.0 / 270.0	-23.0	N/A
80.05	36.2 Pk	0.5 / 8.0 / 27.8	16.9	H / 2.0 / 180.0	-23.1	N/A
432.04	32.8 Qp	1.2 / 16.8 / 27.8	22.9	V / 1.0 / 270.0	-23.1	N/A
656.04	28.2 Qp	1.5 / 21.0 / 28.0	22.6	V / 1.0 / 0.0	-23.4	N/A
807.49	26.6 Qp	1.6 / 22.2 / 27.9	22.6	V / 1.0 / 0.0	-23.4	N/A
784.04	26.6 Qp	1.6 / 21.9 / 27.9	22.2	H / 1.5 / 270.0	-23.8	N/A
832.04	25.7 Qp	1.6 / 22.6 / 27.8	22.1	V / 1.0 / 0.0	-23.9	N/A
796.45	26.2 Qp	1.6 / 22.1 / 27.9	22.0	V / 1.0 / 180.0	-24.0	N/A
800.04	26.1 Qp	1.6 / 22.1 / 27.9	21.9	V / 1.0 / 0.0	-24.1	N/A
768.04	26.5 Qp	1.6 / 21.7 / 27.9	21.8	V / 1.0 / 0.0	-24.2	N/A
752.04	26.8 Qp	1.6 / 21.3 / 27.9	21.7	V / 1.0 / 90.0	-24.3	N/A
785.37	26.1 Qp	1.6 / 21.9 / 27.9	21.7	V / 1.0 / 180.0	-24.3	N/A
368.04	32.6 Qp	1.0 / 14.9 / 27.4	21.1	H / 1.5 / 180.0	-24.9	N/A
624.04	25.9 Qp	1.4 / 20.9 / 28.1	20.1	V / 1.0 / 0.0	-25.9	N/A
442.49	29.6 Qp	1.2 / 16.8 / 27.9	19.7	H / 1.5 / 180.0	-26.3	N/A
630.51	25.0 Qp	1.4 / 20.9 / 28.1	19.3	V / 1.0 / 0.0	-26.7	N/A
331.87	30.8 Qp	1.0 / 14.5 / 27.2	19.1	H / 1.5 / 180.0	-26.9	N/A
64.04	31.4 Pk	0.4 / 9.0 / 27.9	13.0	H / 2.0 / 180.0	-27.0	N/A
696.88	24.6 Qp	1.5 / 20.8 / 28.0	18.9	V / 1.0 / 0.0	-27.1	N/A
400.04	27.4 Qp	1.1 / 17.8 / 27.6	18.7	H / 1.5 / 0.0	-27.3	N/A
960.04	26.1 Qp	1.8 / 25.7 / 27.3	26.3	V / 1.0 / 90.0	-27.7	N/A

Tested by: Dan Dillon

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Intentional Radiator Data

Radiated Electromagnetic Emissions



Test Report #: **BC106875 Run 1** Test Area: Pinewood Site 1 (30m)
Test Method: FCC pt. 15.209 below .490 Test Date: 18-Oct-2001
EUT Model #: 86345601 EUT Power: 120 VAC / 60 Hz
EUT Serial #: EMC1 Temperature: _____ °C
Manufacturer: Translogic Relative Humidity: _____ %
EUT Description: RF ID Reader Air Pressure: _____ kPa
Notes: _____ Page: 1 of 2

FREQ (MHz)	LEVEL (dBuV)	CABLE / ANT / PREAMP (dB) (dB/m) (dB)	FINAL (dbuV)	POL / HGT / AZ (m) (DEG)	DELTA1 (dB) 15.209 <0.490 MHz	DELTA2 (dB) 15.209 <30MHz
0.125	62.6 Av	0.0 / 10.0 / 13.8	58.7	V / 1.0 / 0.0	N/A	N/A
0.125	64.3 Av	0.0 / 10.0 / 13.8	60.5	H / 1.0 / 0.0	N/A	N/A

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Radiated Electromagnetic Emissions



Test Report #: **BC106875 Run 1** Test Area: Pinewood Site 1 (30m)
Test Method: FCC pt. 15.209 below .490 Test Date: 18-Oct-2001
EUT Model #: 86345601 EUT Power: 120 VAC / 60 Hz
EUT Serial #: EMC1 Temperature: _____ °C
Manufacturer: Translogic Relative Humidity: _____ %
EUT Description: RF ID Reader Air Pressure: _____ kPa
Notes: _____ Page: 2 of 2

FREQ (MHz)	LEVEL (dBuV)	CABLE / ANT / PREAMP (dB) (dBm) (dB)	FINAL (dbuV)	POL / HGT / AZ (m) (DEG)	DELTA1 (dB) 15.209 <0.490 MHz	DELTA2 (dB) 15.209 <30MHz
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***** MEASUREMENT SUMMARY *****						
0.125	64.3 Av	0.0 / 10.0 / 13.8	60.5	H / 1.0 / 0.0	N/A	N/A

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Radiated Electromagnetic Emissions



Test Report #:	BC106875 Run 05	Test Area:	Pinewood Site 1 (3m)
Test Method:	N/A	Test Date:	18-Oct-2001
EUT Model #:	86345601	EUT Power:	120 VAC / 60 Hz
EUT Serial #:	EMC1	Temperature:	21.3 °C
Manufacturer:	Translogic	Relative Humidity:	<26 %
EUT Description:	RF ID Reader	Air Pressure:	80 kPa
Notes:	EUT was placed in worst case orientation on the table.		Page: 1 of 1

FREQ (MHz)	LEVEL (dBuV)	CABLE / ANT / PREAMP (dB) (dB\m) (dB)	FINAL (dBuV)	POL / HGT / AZ (m) (DEG)	DELTA1 (dB) FCC 15.209 <0.490MHz	DELTA2 (dB) FCC 15.209 0.49 – 1.7 MHz
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Measured roll off @ 125 KHz from 3 - 30 Meters						
Fall off 3 – 30 meters = 47.8 dB / Decade						
Vertical = Parallel to EUT						
The following measurements were maximized for worst-case.						
The following margins are calculated by actual measurement data taken at 3 meters and 30 meters (2 points min.) and then calculated taking the square of the inverse distance in accordance to FCC CFR47 Part 15.31 to give the extrapolated measurement at 300 meters.						
0.125	96.5 Av	0.0 / 10.0 / 0.0	106.5	V / 1.0 / 0.0	-14.2	N/A
0.252	45.3 Av	0.0 / 10.0 / 0.0	55.3	V / 1.0 / 0.0	-65.4	N/A
0.377	46.9 Av	0.0 / 10.0 / 0.0	56.9	V / 1.0 / 0.0	-63.8	N/A
The following margins are calculated utilizing the straight 40dB/Decade distance roll off in accordance to FCC CFR47 Part 15.31.						
0.503	32.2 Qp	0.0 / 10.0 / 0.0	42.2	V / 1.0 / 0.0	N/A	-31.4
0.619	30.8 Qp	0.0 / 10.0 / 0.0	40.8	V / 1.0 / 0.0	N/A	-31
0.744	34.5 Qp	0.0 / 10.0 / 0.0	44.5	V / 1.0 / 0.0	N/A	-25.7
0.869	27.6 Qp	0.0 / 10.0 / 0.0	37.6	V / 1.0 / 0.0	N/A	-31.2
1.00	26.3 Qp	0.0 / 10.0 / 0.0	36.3	V / 1.0 / 0.0	N/A	-31.3
1.20	25.1 Qp	0.0 / 10.0 / 0.0	35.1	V / 1.0 / 0.0	N/A	-30.9
Note: Refer to the next page for the calculation and measurement data utilized to calculate the roll of for frequency measurement below 0.49 MHz.						

Tested by: Dan Dillon

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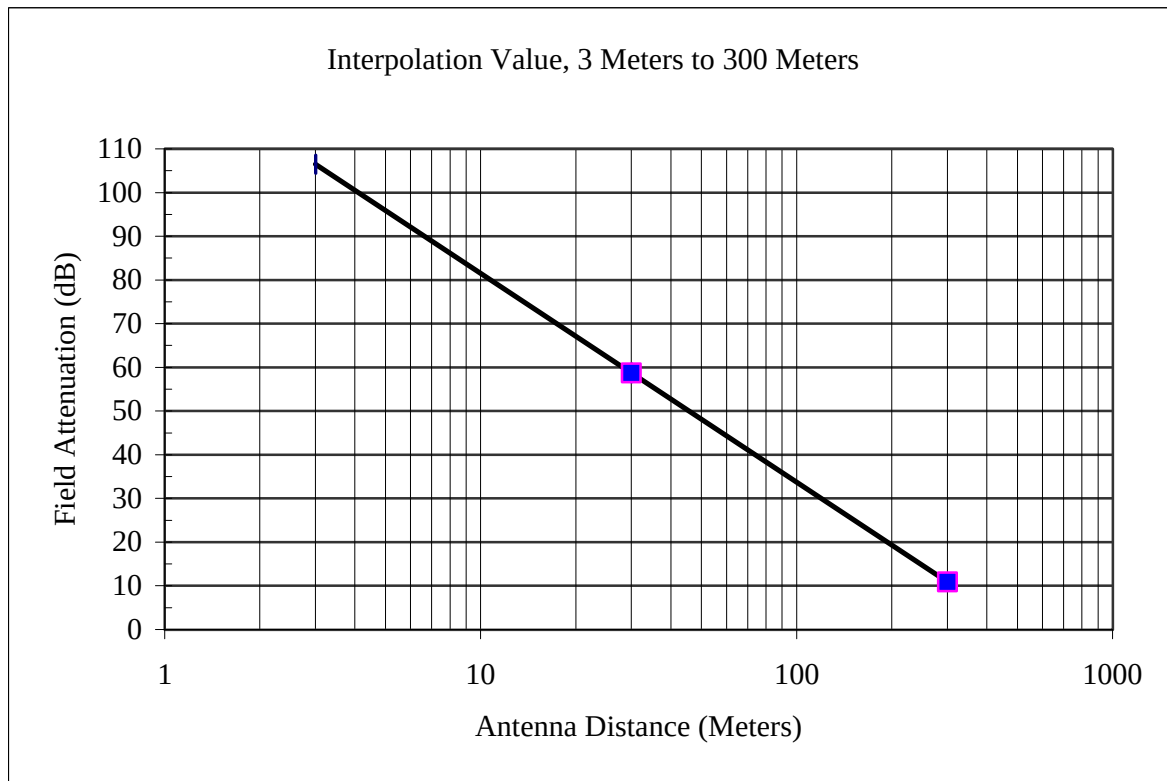
Measured Radiated Fields, At 3 Meters & 30 Meters, Interpolated to 300 Meters

Frequency (kHz)	Measured		Delta Amplitude (dB)	Interpolation		300 Meter Specification Limit (dBuV/m)
	3 Meters Amplitude (dBuV/m)	30 Meters Amplitude (dBuV/m)		Interpolation Factor at 300 Meters (dB)	300 Interpolated Final Reading at 300 Meters (dBuV/m)	
125	106.5	58.7	47.8	95.6	10.9	25.1

Note: The radiated field at 3 meters was corrected to 300 Meters using the slope shown on the below graph.

Note: The Passive Tag Reader was tested at 120Vac / 60Hz and was set on the table in a manner that would maximize the carrier signal. The signal was then measured at a distance of 3 and 30 meters to find the attenuation slope of the site at the carrier frequency (125kHz) as stated in FCC CFR47 Part 15.31. "this method was used for frequencies < 0.49MHz"

Signals measured were maximized by peaking the azimuth as well as the elevation axes of the loop antenna.



Equipment Report

18-Oct-2001

Project Number: BC106875

Project Date: 18-Oct-2001

Company Name: Translogic

Equip ID	Manufacturer	Model Number	Serial Number	Description	Date	Calibration Interval	Due	Cal Code
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Test Performed

8215	HEWLETT PACKARD	85650A	2043A00256	Quasi Peak Adapter (set 1)	24-Aug-2001	12	24-Aug-2002	G
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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)	26-Sep-2001	12	26-Sep-2002	G
8005	HEWLETT PACKARD	8447F	3113A04923	Option H64 Dual Preamp	04-Apr-2001	12	04-Apr-2002	B
8169	EMCO	6502	9205-2738	Magnetic loop	18-Jan-2001	12	18-Jan-2002	G
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
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

Appendix B

Test Plan
and
Constructional Data 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: SWISSLOG TRANSLOGIC

Address: 10825 EAST 47TH AVE
DENVER, CO 80239-2913

Contact: CHUCK VANDERSCHAAF Position: TEST LAB TECH

Phone: 303-373-7972 Fax: 303-3737872

E-mail Address: chuck.vanderschaaf@swisslog.co
m

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

EUT Description RADIO FREQUENCY IDENTIFICATION TAG READER

EUT Name RFID READER

Model No.: 86-3456-01 Serial No.: NA

Product Options: _____

Configurations to be tested: READER WITH ANTENNA

Test Objective

- | | |
|--|---|
| ☒ EMC Directive 89/336/EEC (EMC) | ☒ FCC: Class ☐ A ☐ B Part <u>15</u> |
| 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: _____ |
| ☐ Vehicle Directive 72/245/EEC (EMC) | |
| Std: _____ | |
| ☐ FDA Reviewers Guidance for Premarket Notification Submissions (EMC) | |

EMC Test Plan and Constructional Data Form

**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, TÜV 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: 15CM Width: 12CM Height: 7CM Weight: 540G

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: 120 (If battery powered, make sure battery life is sufficient to complete testing.)

of Phases: 1

Current (Amps/phase(max)): 110MA Current (Amps/phase(nominal)): 100MA

Other _____

Other Special Requirements**Typical Installation and/or Operating Environment**

(ie. Hospital, Small Business, Industrial/Factory, etc.)
HOSPITAL

EMC Test Plan and Constructional Data Form



EUT Power Cable

☐	Permanent	OR	☒	Removable	Length (in meters):	<u>2</u>
☒	Shielded	OR	☐	Unshielded		
☐	Not Applicable					

EMC Test Plan and Constructional Data Form



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	☒	☐
ANTENNA	☒	☐	4	☐	☐	BELDEN AWM2587 20AWG		2 PIN PLASTIC		0	☒	☐
POWER	☐	☐	1	☐	☐	22AWG PAIR		METAL 9 PIN D-SUB		0	☒	☐
	☐	☐		☐	☐						☐	☐
	☐	☐		☐	☐						☐	☐
	☐	☐		☐	☐						☐	☐
	☐	☐		☐	☐						☐	☐
	☐	☐		☐	☐						☐	☐
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	☐	☐		☐	☐						☐	☐
	☐	☐		☐	☐						☐	☐
	☐	☐		☐	☐						☐	☐

EMC Test Plan and Constructional Data Form

Description: NA

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. CONTINUOUS READ OF TAG
- 2.
- 3.

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 #
RFID READER	86-3456-01	NA	
ANTENNA	NA	NA	

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)

<i>Description</i>	<i>Model #</i>	<i>Serial #</i>	<i>FCC ID #</i>
POWER SUPPLY	QUINT 2.5	1158	NA

Oscillator Frequencies

<i>Frequency</i>	<i>Derived Frequency</i>	<i>Component # / Location</i>	<i>Description of Use</i>
11.0592MHZ	NA	X1	CPU CLOCK
16.00MHZ	125KHZ	IC2	RF FIELD

Power Supply

<i>Manufacturer</i>	<i>Model #</i>	<i>Serial #</i>	<i>Type</i>
PHOENIX	QUINT 2.5	1158	☒ Switched-mode: (Frequency) <u>NA</u> ☐ Linear ☐ Other: _____
			☐ Switched-mode: (Frequency) _____ ☐ Linear ☐ Other: _____

Power Line Filters

<i>Manufacturer</i>	<i>Model #</i>	<i>Location in EUT</i>
NA		

Form

EMC Test Plan and Constructional Data Form



Critical EMI Components (Capacitors, ferrites, etc.)

Description	Manufacturer	Part # or Value	Qty	Component # / Location
NA				

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

NA

(PLEASE INSERT "ELECTRONIC SIGNATURE" BELOW IF POSSIBLE)

Authorization Signatures

CHUCK VANDERSCHAAF

10/30/01

Customer authorization to perform tests
according to this test plan.

Date

CHUCK VANDERSCHAAF

10/30/01

Test Plan/CDF Prepared By (please print)

Date

10/30/01

Reviewed by TÜV Product Service Associate

Date