# **Ingersoll Rand**

### **TEST REPORT FOR**

Physical Access Control Reader, XF2100 Rev. C & XF2110 Rev. C

**Tested To The Following Standards:** 

FCC Part 15 Subpart C Sections 15.207, 15.225
And
RSS-210 Issue 7

Report No.: 91096-12

Date of issue: November 16, 2010



TESTING CERT #803.01, 803.02, 803.05, 803.06 This test report bears the accreditation symbol indicating that the testing performed herein meets the test and reporting requirements of ISO/IEC 17025 under the applicable scope of EMC testing for CKC Laboratories, Inc.

We strive to create long-term, trust based relationships by providing sound, adaptive, customer first testing services. We embrace each of our customers' unique EMC challenges, not as an interruption to set processes, but rather as the reason we are in business.

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## **ADMINISTRATIVE INFORMATION**

## **Test Report Information**

REPORT PREPARED FOR: REPORT PREPARED BY:

Ingersoll Rand Joyce Walker

500 Golden Ridge Road., Bldg. 1 CKC Laboratories, Inc.
Golden, CO 80401 5046 Sierra Pines Drive
Mariposa, CA 95338

Wanposa, e.v. 55550

REPRESENTATIVE: Chao Lor Project Number: 91096

Customer Reference Number: 306477

**DATE OF EQUIPMENT RECEIPT:** October 5, 2010 **DATE(S) OF TESTING:** October 5 - 11, 2010

## **Report Authorization**

The test data contained in this report documents the observed testing parameters pertaining to and are relevant for only the sample equipment tested in the agreed upon operational mode(s) and configuration(s) as identified herein. Compliance assessment remains the client's responsibility. This report may not be used to claim product endorsement by A2LA or any government agencies. This test report has been authorized for release under quality control from CKC Laboratories, Inc.

Steve Behm

Director of Quality Assurance & Engineering Services CKC Laboratories, Inc.

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# **Test Facility Information**



Our laboratories are configured to effectively test a wide variety of product types. CKC utilizes first class test equipment, anechoic chambers, data acquisition and information services to create accurate, repeatable and affordable test results.

TEST LOCATION(S): CKC Laboratories, Inc. 5046 Sierra Pines Drive Mariposa, CA 95338

# **Site Registration & Accreditation Information**

Location	CB#	JAPAN	CANADA	FCC
Mariposa A	US0103	R-563, C-578, T-1492 & G-87	3082A-2	90477

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## **SUMMARY OF RESULTS**

## Standard / Specification: FCC Part 15 Subpart C & RSS-210 Issue 7

Description	Test Procedure/Method	Results
Conducted Emissions	FCC Part 15 Subpart C Section 15.207 / ANSI C63.4 (2003)	Pass
Carrier	FCC Part 15 Subpart C Section 15.209 / ANSI C63.4 (2003)	Pass
Occupied Band Width	FCC Part 15 Subpart C Section 15.209 / ANSI C63.4 (2003) and RSS-210 Issue 7	Pass
Carrier	FCC Part 15 Subpart C Section 15.225 / ANSI C63.4 (2003)	Pass
Occupied Band Width	FCC Part 15 Subpart C Section 15.225 / ANSI C63.4 (2003) and RSS-210 Issue 7	Pass
Frequency Stability	FCC Part 15 Subpart C Section 15.225 / ANSI C63.4 (2003)	Pass
Spurious Emissions	FCC Part 15 Subpart C Section 15.209 / ANSI C63.4 (2003)	Pass

# **Conditions During Testing**

This list is a summary of the conditions noted for or modifications made to the equipment during testing.

Summary of Conditions
None

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## **EQUIPMENT UNDER TEST (EUT)**

The following models have been tested by CKC Laboratories: XF2100C & XF2110C

The manufacturer states that the following model name revision to the EUTs do not effect them electrically and they remain identical to the ones which were tested, or any differences between them do not affect their EMC characteristics, and therefore meets the level of testing equivalent to the tested models:

**Physical Access Control Reader** 

Manuf: Ingersoll Rand

Model: XF2110 Rev. C

Serial: 0100

XF2100 Rev. C & XF2110 Rev. C

#### **EQUIPMENT UNDER TEST**

### **Physical Access Control Reader**

Manuf: Ingersoll Rand Model: XF2100 Rev. C

Serial: 0100

### **Physical Access Control Reader\***

Manuf: Ingersoll Rand Model: XF1100 Rev. C

Serial: 0100

\*Model XF1100 Rev. C was tested together with the EUTs (XF2110 Rev. C and XF2100 Rev. C) during radiated emissions.

### **PERIPHERAL DEVICES**

The EUT was tested with the following peripheral device(s):

### **DC Power Supply**

Manuf: Topward Electric Instruments

Model: TPS 4000 Serial: 918520

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## **15.207 AC Conducted Emissions**

### **Test Data Sheets**

Test Location: CKC Laboratories, Inc. • 5046 Sierra Pines Drive • Mariposa, CA 95338 • (209) 966-5240

Customer: Ingersoll Rand (XceedID)
Specification: 15.207 AC Mains - Average

Work Order #: 91096 Date: 11/11/2010
Test Type: Conducted Emissions Time: 16:25:55
Equipment: Physical Access Control Reader Sequence#: 16

Manufacturer: Ingersoll Rand Tested By: Chuck Kendall Model: XF2100C 120V 60Hz

S/N: 0100

Test Equipment:

	- 050 = q 000p	P				
Ī	ID	Asset #	Description	Model	Calibration Date	Cal Due Date
	T1	AN00374	50uH LISN-BLACK	8028-TS-50-BNC	4/22/2009	4/22/2011
			LEAD			
ſ	T2	AN01183	Spectrum Analyzer	85662A	3/10/2009	3/10/2011
			Display			
	Т3	AN01184	Spectrum Analyzer	8568B	3/10/2009	3/10/2011
Ī	T4	AN00069	Quasi Peak Adapter	85650A	3/10/2009	3/10/2011
Ī	T5	AN02608	High Pass Filter	HE9615-150K-	2/11/2010	2/11/2012
				50-720B		
Ī	T6	ANP02229	Attenuator	PE7010-10	5/20/2009	5/20/2011
Ī	T7	ANMACOND	Cable		5/10/2009	5/10/2011

Equipment Under Test (\* = EUT):

. 1 1	,			
Function	Manufacturer	Model #	S/N	
Physical Access Control	Ingersoll Rand	XF2100C	0100	
Reader*				

Support Devices:

Function	Manufacturer	Model #	S/N	
DC Power Supply	Topward Electric	TPS 4000	918520	
	Instruments			

### Test Conditions / Notes:

FCC 15.207

Tag reader is setting upright (vertical) to the surface of the wooden support table 80cm atop a plastic cart. It is displaying a red light until the tag activates it.

Transmitters are on.

Actual integral antenna is connected.

Emissions measurements at fundamental frequency taken with integral antenna for reference and taken with dummy load attached for final results.

From 150 kHz to 30 MHz - RBW=9kHz, VBW=30kHz

 $Temp = 65^{\circ}F$ 

Relative Humidity = 50 %

Press = 97.2 mb

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Ext Attn: 0 dB

	rement Data:		eading lis						ad: Black		
#	Freq	Rdng	T1	T2	T3	T4	Dist	Corr	Spec	Margin	Polar
		1D 11	T5	T6	T7	15		1D 11	15. 11	170	
	MHz	dBμV	dB	dB	dB	dB	Table	dBμV	dBμV	dB	Ant
1	13.337M	56.9	+0.6	+0.0	+0.0	+0.0	+0.0	68.6	50.0	+18.6	Black
			+0.1	+9.9	+1.1				Fundamen		
	10 175) 1	25.0	0.6	0.0	0.0	0.0	0.0	467	integral ar		D1 1
2	13.175M	35.0	+0.6	+0.0	+0.0	+0.0	+0.0	46.7	50.0	-3.3	Black
	12.0043.6	24.0	+0.1	+9.9	+1.1	0.0	0.0	45.7	<b>50.0</b>	1.0	D1 1
3	13.094M	34.0	+0.6	+0.0	+0.0	+0.0	+0.0	45.7	50.0	-4.3	Black
	12.71614	22.2	+0.1	+9.9	+1.1	.00	. 0. 0	45 1	<b>50.0</b>	4.0	D11
4	13.716M	33.3	+0.6	+0.0	+0.0	+0.0	+0.0	45.1	50.0	-4.9	Black
~	12 12014	20.6	+0.2	+9.9	+1.1	. 0. 0	. 0. 0	44.2	<b>70.0</b>		D1 1
5	13.130M	32.6	+0.6	+0.0	+0.0	+0.0	+0.0	44.3	50.0	-5.7	Black
	12.02214	22.0	+0.1	+9.9	+1.1	. 0. 0	. 0. 0	42.0	<b>70.0</b>		D1 1
6	13.833M	32.0	+0.6	+0.0	+0.0	+0.0	+0.0	43.8	50.0	-6.2	Black
	12.07014	21.7	+0.2	+9.9	+1.1	. 0. 0	. 0. 0	42.2	<b>50.0</b>	67	D1 1
7	12.878M	31.7	+0.5	+0.0	+0.0	+0.0	+0.0	43.3	50.0	-6.7	Black
0	12.00414	21.6	+0.1	+9.9	+1.1	. 0. 0	. 0. 0	42.2	50.0		D11
8	13.004M	31.6	+0.6	+0.0	+0.0	+0.0	+0.0	43.3	50.0	-6.7	Black
0	27.02614	20.2	+0.1	+9.9	+1.1	. 0. 0	. 0. 0	42.0	50.0	7.0	D11
9	27.026M	30.2	+1.2	+0.0	+0.0	+0.0	+0.0	42.8	50.0	-7.2	Black
10	12 707M	20.0	+0.1	+9.9	+1.4	+ O O	+ O O	42.7	50.0	7.2	D11
10	13.797M	30.9	+0.6	+0.0	+0.0	+0.0	+0.0	42.7	50.0	-7.3	Black
11	13.914M	20.6	+0.2	+9.9	+1.1	ι Ο Ο	+ΩΩ	42.4	50.0	-7.6	Dlasl
11	13.914101	30.6	+0.6 +0.2	+0.0 +9.9	$+0.0 \\ +1.1$	+0.0	+0.0	42.4	50.0	-7.0	Black
12	13.752M	29.1	+0.2	+0.0	+0.0	+0.0	+0.0	40.9	50.0	-9.1	Black
12	13.732101	29.1	+0.0	+9.9	+1.1	+0.0	+0.0	40.7	30.0	-9.1	Diacr
13	1.341M	26.4	+0.2	+0.0	+0.0	+0.0	+0.0	36.8	46.0	-9.2	Black
13	1.541111	20.4	+0.0	+9.9	+0.4	+0.0	+0.0	30.0	40.0	-9.2	Diacr
14	220.538k	33.3	+0.1	+0.0	+0.0	+0.0	+0.0	43.4	52.8	-9.4	Black
14	220.336K	33.3	+0.1	+9.7	+0.0	+0.0	+0.0	43.4	32.0	-2.4	Diack
15	747.758k	25.3	+0.0	+0.0	+0.0	+0.0	+0.0	35.7	46.0	-10.3	Black
13	, 1, 1, 50K	23.3	+0.0	+9.9	+0.3	10.0	10.0	33.1	70.0	10.5	Diack
16	4.045M	24.7	+0.2	+0.0	+0.0	+0.0	+0.0	35.5	46.0	-10.5	Black
10	15111	2	+0.1	+9.9	+0.6	. 0.0	. 5.0	33.3	10.0	10.5	Diuci
17	551.414k	25.3	+0.0	+0.0	+0.0	+0.0	+0.0	35.4	46.0	-10.6	Black
11	001.11 IN	20.0	+0.1	+9.8	+0.2	. 0.0	. 0.0	55.1	10.0	10.0	2 iuci
18	4.211M	24.5	+0.2	+0.0	+0.0	+0.0	+0.0	35.3	46.0	-10.7	Black
			+0.1	+9.9	+0.6	. 0.0		20.0			_ 1001
19	4.509M	24.6	+0.1	+0.0	+0.0	+0.0	+0.0	35.3	46.0	-10.7	Black
-			+0.1	+9.9	+0.6						
20	4.947M	24.6	+0.1	+0.0	+0.0	+0.0	+0.0	35.3	46.0	-10.7	Black
			+0.1	+9.9	+0.6						
21	3.271M	24.7	+0.1	+0.0	+0.0	+0.0	+0.0	35.3	46.0	-10.7	Black
	•		+0.1	+9.9	+0.5						
22	2.591M	24.6	+0.1	+0.0	+0.0	+0.0	+0.0	35.2	46.0	-10.8	Black
22	2.3311VI	27.0									

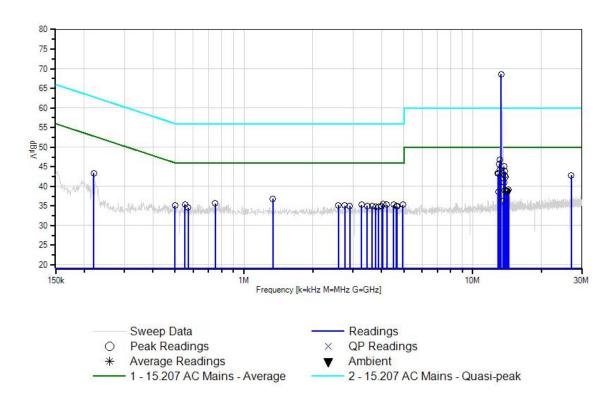


23	499.056k	24.9	+0.1	+0.0	+0.0	+0.0	+0.0	35.1	46.0	-10.9	Black
			+0.1	+9.8	+0.2						
24	2.761M	24.5	+0.1	+0.0	+0.0	+0.0	+0.0	35.1	46.0	-10.9	Black
			+0.1	+9.9	+0.5						
25	14.337M	27.3	+0.6	+0.0	+0.0	+0.0	+0.0	39.1	50.0	-10.9	Black
			+0.2	+9.9	+1.1						
26	2.906M	24.4	+0.1	+0.0	+0.0	+0.0	+0.0	35.0	46.0	-11.0	Black
			+0.1	+9.9	+0.5						
27	3.459M	24.4	+0.1	+0.0	+0.0	+0.0	+0.0	35.0	46.0	-11.0	Black
			+0.1	+9.9	+0.5						
28	13.869M	27.2	+0.6	+0.0	+0.0	+0.0	+0.0	39.0	50.0	-11.0	Black
			+0.2	+9.9	+1.1						
29	4.011M	24.1	+0.2	+0.0	+0.0	+0.0	+0.0	34.9	46.0	-11.1	Black
			+0.1	+9.9	+0.6						
30	3.641M	24.2	+0.2	+0.0	+0.0	+0.0	+0.0	34.9	46.0	-11.1	Black
			+0.1	+9.9	+0.5						
31	4.679M	24.2	+0.1	+0.0	+0.0	+0.0	+0.0	34.9	46.0	-11.1	Black
			+0.1	+9.9	+0.6						
32	4.645M	24.2	+0.1	+0.0	+0.0	+0.0	+0.0	34.9	46.0	-11.1	Black
			+0.1	+9.9	+0.6						
33	3.769M	24.1	+0.2	+0.0	+0.0	+0.0	+0.0	34.8	46.0	-11.2	Black
			+0.1	+9.9	+0.5						
34	3.875M	24.0	+0.2	+0.0	+0.0	+0.0	+0.0	34.8	46.0	-11.2	Black
			+0.1	+9.9	+0.6			•			
35	14.040M	27.0	+0.6	+0.0	+0.0	+0.0	+0.0	38.8	50.0	-11.2	Black
26	1 4 1013 6	260	+0.2	+9.9	+1.1	0.0	0.0	20.7	<b>50.0</b>	11.0	D1 1
36	14.121M	26.9	+0.6	+0.0	+0.0	+0.0	+0.0	38.7	50.0	-11.3	Black
27	1.4.0.473.4	260	+0.2	+9.9	+1.1	0.0	0.0	20.7	<b>50.0</b>	11.0	D1 1
37	14.247M	26.9	+0.6	+0.0	+0.0	+0.0	+0.0	38.7	50.0	-11.3	Black
20	571 0401	24.5	+0.2	+9.9	+1.1	. 0. 0	. 0. 0	21.6	46.0	11 /	D11.
38	571.049k	24.5	+0.0	+0.0	+0.0	+0.0	+0.0	34.6	46.0	-11.4	Black
39	12.05014	27.0	+0.1	+9.8	+0.2	+0.0	+0.0	38.6	50.0	11 /	Dlool-
39	12.959M	27.0	+0.5	+0.0	+0.0	+0.0	+0.0	38.0	30.0	-11.4	Black
40	12 5 COM	24.4	+0.1	+9.9	+1.1	100	+ O O	26.0	50.0	12.0	D1c -1-
40	13.560M	24.4	+0.6 +0.2	+0.0 +9.9	$+0.0 \\ +1.1$	+0.0	+0.0	36.2	50.0 Fundamenta	-13.8	Black
			+0.∠	+7.7	+1.1				dummy load		
									•		
									antenna por	L .	

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CKC Laboratories, Inc. Date: 11/11/2010 Time: 16:25:55 Ingersoll Rand (XceedID) WO#: 91096 15.207 AC Mains - Average Test Lead: Black 120V 60Hz Sequence#: 16 Ext ATTN: 0 dB





Test Location: CKC Laboratories, Inc. • 5046 Sierra Pines Drive • Mariposa, CA 95338 • (209) 966-5240

Customer: Ingersoll Rand (XceedID)
Specification: 15.207 AC Mains - Average

Work Order #: 91096 Date: 10/7/2010
Test Type: Conducted Emissions Time: 16:15:38
Equipment: Physical Access Control Reader Sequence#: 15

Manufacturer: Ingersoll Rand Tested By: Chuck Kendall Model: XF2100C 120V 60Hz

S/N: 0100

#### Test Equipment:

1 cst Equip	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,				
ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	AN00374	50uH LISN-WHITE	8028-TS-50-BNC	4/22/2009	4/22/2011
		LEAD			
T2	AN01183	Spectrum Analyzer	85662A	3/10/2009	3/10/2011
		Display			
T3	AN01184	Spectrum Analyzer	8568B	3/10/2009	3/10/2011
T4	AN00069	Quasi Peak Adapter	85650A	3/10/2009	3/10/2011
T5	AN02608	High Pass Filter	HE9615-150K-	2/11/2010	2/11/2012
			50-720B		
T6	ANP02229	Attenuator	PE7010-10	5/20/2009	5/20/2011
T7	ANMACOND	Cable		5/10/2009	5/10/2011

**Equipment Under Test (\* = EUT):** 

Function	Manufacturer	Model #	S/N
Physical Access Control	Ingersoll Rand	XF2100C	0100
Reader*			

#### Support Devices:

Function	Manufacturer	Model #	S/N	
DC Power Supply	Topward Electric	TPS 4000	918520	
	Instruments			

#### Test Conditions / Notes:

### FCC 15.207

Tag reader is setting upright (vertical) to the surface of the wooden support table 80cm atop a plastic cart. It is displaying a red light until the tag activates it.

Transmitters are on.

Actual integral antenna is connected.

Emissions measurements at fundamental frequency taken with integral antenna for reference and taken with dummy load attached for final results.

From 150 kHz to 30 MHz - RBW=9kHz, VBW=30kHz

 $Temp = 65^{\circ}F$ 

Relative Humidity = 50 %

Press = 97.2 mb

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Ext Attn: 0 dB

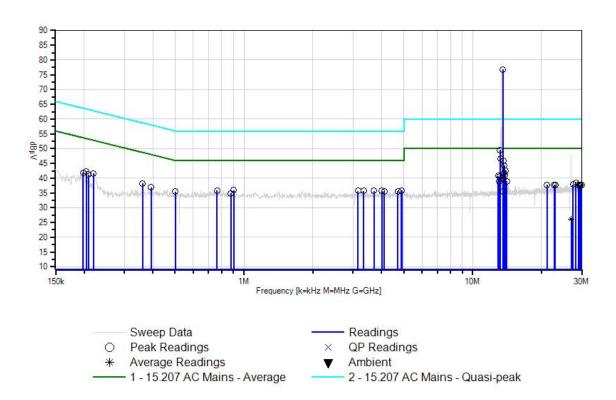
Measur	ement Data:	$R\epsilon$	eading lis	ted by ma	argin.	Test Lead: White						
#	Freq	Rdng	T1	T2	T3	T4	Dist	Corr	Spec	Margin	Polar	
	1104	rung	T5	T6	T7		2100	0011	Spee	11111111111	1 0141	
	MHz	dΒμV	dB	dB	dB	dB	Table	dΒμV	dΒμV	dB	Ant	
1	13.560M	64.6	+1.0	+0.0	+0.0	+0.0	+0.0	76.8	50.0	+26.8	White	
			+0.2	+9.9	+1.1				Fundamen			
									integral ar	ntenna		
2	13.157M	37.4	+1.0	+0.0	+0.0	+0.0	+0.0	49.5	50.0	-0.5	White	
			+0.1	+9.9	+1.1							
3	13.202M	34.5	+1.0	+0.0	+0.0	+0.0	+0.0	46.6	50.0	-3.4	White	
			+0.1	+9.9	+1.1							
4	13.616M	33.7	+1.0	+0.0	+0.0	+0.0	+0.0	45.9	50.0	-4.1	White	
			+0.2	+9.9	+1.1							
5	13.770M	32.0	+1.0	+0.0	+0.0	+0.0	+0.0	44.2	50.0	-5.8	White	
			+0.2	+9.9	+1.1							
6	13.896M	30.2	+1.0	+0.0	+0.0	+0.0	+0.0	42.4	50.0	-7.6	White	
			+0.2	+9.9	+1.1							
7	13.707M	29.7	+1.0	+0.0	+0.0	+0.0	+0.0	41.9	50.0	-8.1	White	
			+0.2	+9.9	+1.1							
8	13.860M	28.9	+1.0	+0.0	+0.0	+0.0	+0.0	41.1	50.0	-8.9	White	
	12.0703.5	20.5	+0.2	+9.9	+1.1	0.0	0.0	40.0	<b>70.0</b>	0.0	****	
9	12.950M	28.7	+1.0	+0.0	+0.0	+0.0	+0.0	40.8	50.0	-9.2	White	
10	12 12111	20.4	+0.1	+9.9	+1.1	. 0. 0	. 0. 0	10.5	<b>50.0</b>	0.5	XX 71. 14 .	
10	13.121M	28.4	+1.0	+0.0	+0.0	+0.0	+0.0	40.5	50.0	-9.5	White	
1.1	002 5101-	25.1	+0.1	+9.9	+1.1	.00	.00	25.0	46.0	10.1	XX71a:4a	
11	902.518k	25.1	+0.5	+0.0 +9.9	+0.0 +0.3	+0.0	+0.0	35.9	46.0	-10.1	White	
12	761.575k	24.8	+0.1	+0.0	+0.0	+0.0	+0.0	35.8	46.0	-10.2	White	
12	/01.5/5K	24.0	+0.0	+9.9	+0.0	+0.0	+0.0	33.6	40.0	-10.2	WIIILE	
13	4.905M	24.5	+0.2	+0.0	+0.0	+0.0	+0.0	35.8	46.0	-10.2	White	
13	4.703WI	27.3	+0.1	+9.9	+0.6	10.0	10.0	33.0	<del>-10.0</del>	-10.2	VV IIIC	
14	3.339M	24.6	+0.6	+0.0	+0.0	+0.0	+0.0	35.7	46.0	-10.3	White	
17	3.337111	27.0	+0.1	+9.9	+0.5	10.0	10.0	55.1	10.0	10.5	,, 11100	
15	3.148M	24.6	+0.6	+0.0	+0.0	+0.0	+0.0	35.7	46.0	-10.3	White	
10	2.1 10111	2 1.0	+0.1	+9.9	+0.5	. 0.0	. 0.0	55.1	10.0	10.5	. , 11100	
16	3.709M	24.6	+0.6	+0.0	+0.0	+0.0	+0.0	35.7	46.0	-10.3	White	
	2 0,2,2	20	+0.1	+9.9	+0.5	. 0.0				-0.0		
17	4.875M	24.4	+0.7	+0.0	+0.0	+0.0	+0.0	35.7	46.0	-10.3	White	
		=	+0.1	+9.9	+0.6		0			- 3.0		
18	4.011M	24.5	+0.6	+0.0	+0.0	+0.0	+0.0	35.7	46.0	-10.3	White	
_			+0.1	+9.9	+0.6							
19	4.109M	24.4	+0.6	+0.0	+0.0	+0.0	+0.0	35.6	46.0	-10.4	White	
			+0.1	+9.9	+0.6							
20	4.717M	24.3	+0.7	+0.0	+0.0	+0.0	+0.0	35.6	46.0	-10.4	White	
			+0.1	+9.9	+0.6							
21	13.653M	27.3	+1.0	+0.0	+0.0	+0.0	+0.0	39.5	50.0	-10.5	White	
			+0.2	+9.9	+1.1							
22	360.161k	27.7	+0.4	+0.0	+0.0	+0.0	+0.0	38.2	48.7	-10.5	White	
			+0.1	+9.8	+0.2							



23	500.510k	24.9	+0.5	+0.0	+0.0	+0.0	+0.0	35.5	46.0	-10.5	White
			+0.1	+9.8	+0.2						
24	13.085M	26.9	+1.0	+0.0	+0.0	+0.0	+0.0	39.0	50.0	-11.0	White
			+0.1	+9.9	+1.1						
25	204.540k	31.9	+0.4	+0.0	+0.0	+0.0	+0.0	42.3	53.4	-11.1	White
			+0.2	+9.7	+0.1						
26	392.158k	26.3	+0.4	+0.0	+0.0	+0.0	+0.0	36.9	48.0	-11.1	White
27	14 11014	267	+0.2	+9.8	+0.2	. 0. 0	. 0. 0	20.0	50.0	11 1	XX71. 14 .
27	14.112M	26.7	$+1.0 \\ +0.2$	+0.0 +9.9	+0.0	+0.0	+0.0	38.9	50.0	-11.1	White
28	219.811k	31.2	+0.2	+0.0	+1.1 +0.0	+0.0	+0.0	41.6	52.8	-11.2	White
20	219.011K	31.2	+0.4	+0.0 +9.7	+0.0	+0.0	+0.0	41.0	32.6	-11.2	vv IIILE
29	877.000k	24.0	+0.5	+0.0	+0.0	+0.0	+0.0	34.8	46.0	-11.2	White
	077.000K	20	+0.1	+9.9	+0.3	10.0	10.0	21.0	10.0	11.2	***************************************
30	28.280M	24.9	+2.0	+0.0	+0.0	+0.0	+0.0	38.5	50.0	-11.5	White
			+0.2	+9.9	+1.5						
31	197.995k	31.5	+0.4	+0.0	+0.0	+0.0	+0.0	41.9	53.7	-11.8	White
			+0.2	+9.7	+0.1						
32	208.903k	30.8	+0.4	+0.0	+0.0	+0.0	+0.0	41.2	53.2	-12.0	White
			+0.2	+9.7	+0.1						
33	27.437M	24.5	+1.9	+0.0	+0.0	+0.0	+0.0	37.9	50.0	-12.1	White
			+0.1	+9.9	+1.5						
34	22.689M	24.8	+1.5	+0.0	+0.0	+0.0	+0.0	37.8	50.0	-12.2	White
25	20.070M	24.2	+0.2	+9.9	+1.4	.00	.00	27.0	50.0	12.2	VV/1-:4
35	28.979M	24.2	+2.0	+0.0	+0.0	+0.0	+0.0	37.8	50.0	-12.2	White
36	29.431M	24.1	+0.2	+9.9	$+1.5 \\ +0.0$	+0.0	+0.0	37.8	50.0	-12.2	White
30	29.431WI	24.1	+0.2	+9.9	+1.5	+0.0	+0.0	37.0	30.0	-12.2	vv iiite
37	21.166M	24.9	+1.4	+0.0	+0.0	+0.0	+0.0	37.7	50.0	-12.3	White
	211100111		+0.2	+9.9	+1.3	. 0.0	. 0.0	0,,,	20.0	12.0	***************************************
38	22.977M	24.6	+1.6	+0.0	+0.0	+0.0	+0.0	37.7	50.0	-12.3	White
			+0.2	+9.9	+1.4						
39	29.514M	23.8	+2.1	+0.0	+0.0	+0.0	+0.0	37.6	50.0	-12.4	White
			+0.3	+9.9	+1.5						
40	29.664M	23.8	+2.1	+0.0	+0.0	+0.0	+0.0	37.6	50.0	-12.4	White
			+0.3	+9.9	+1.5						
41	29.897M	23.8	+2.1	+0.0	+0.0	+0.0	+0.0	37.6	50.0	-12.4	White
12	12 5 603 5	22.2	+0.3	+9.9	+1.5	.00	.0.0	25.5	<i>50.0</i>	145	XX71 *·
42	13.560M	23.3	+1.0	+0.0	+0.0	+0.0	+0.0	35.5	50.0	-14.5	White
			+0.2	+9.9	+1.1				Fundament dummy loa antenna por	d at	
43	27.017M	12.8	+1.9	+0.0	+0.0	+0.0	+0.0	26.1	50.0	-23.9	White
	Ave	12.0	+0.1	+9.9	+1.4	. 3.0	10.0	20.1	20.0	23.7	,,,,,,,,
^	27.026M	34.6	+1.9	+0.0	+0.0	+0.0	+0.0	47.9	50.0	-2.1	White
			+0.1	+9.9	+1.4						



CKC Laboratories, Inc. Date: 10/7/2010 Time: 16:15:38 Ingersoll Rand (XceedID) WO#: 91096 15.207 AC Mains - Average Test Lead: White 120V 60Hz Sequence#: 15 Ext ATTN: 0 dB





Test Location: CKC Laboratories, Inc. • 5046 Sierra Pines Drive • Mariposa, CA 95338 • (209) 966-5240

Customer: Ingersoll Rand (XceedID)
Specification: 15.207 AC Mains - Average

Work Order #: 91096 Date: 10/7/2010
Test Type: Conducted Emissions Time: 3:38:59 PM

Equipment: Physical Access Control Reader Sequence#: 13

Manufacturer: Ingersoll Rand Tested By: Chuck Kendall Model: XF2110C 120V 60Hz

S/N: 0100

#### Test Equipment:

z est z quip					
ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	AN00374	50uH LISN-BLACK	8028-TS-50-BNC	4/22/2009	4/22/2011
		LEAD			
T2	AN01183	Spectrum Analyzer	85662A	3/10/2009	3/10/2011
		Display			
Т3	AN01184	Spectrum Analyzer	8568B	3/10/2009	3/10/2011
T4	AN00069	Quasi Peak Adapter	85650A	3/10/2009	3/10/2011
T5	AN02608	High Pass Filter	HE9615-150K-	2/11/2010	2/11/2012
			50-720B		
T6	ANP02229	Attenuator	PE7010-10	5/20/2009	5/20/2011
T7	ANMACOND	Cable		5/10/2009	5/10/2011

### Equipment Under Test (\* = EUT):

Function	Manufacturer	Model #	S/N
Physical Access Control	Ingersoll Rand	XF2110C	0100
Reader*			

#### Support Devices:

Function	Manufacturer	Model #	S/N	
DC Power Supply	Topward Electric	TPS 4000	918520	
	Instruments			

#### Test Conditions / Notes:

### FCC 15.207

Tag reader is setting upright (vertical) to the surface of the wooden support table 80cm atop a plastic cart. It is displaying a red light until the tag activates it.

Transmitters are on.

Actual integral antenna is connected.

Emissions measurements at fundamental frequency taken with integral antenna for reference and taken with dummy load attached for final results.

From 150 kHz to 30 MHz - RBW=9kHz, VBW=30kHz

 $Temp = 65^{\circ}F$ 

Relative Humidity = 50 %

Press = 97.2 mb

Page 15 of 49 Report No.: 91096-12



Ext Attn: 0 dB

## Freq Rough   T1   T2   T3   T4   Dist   Corr   Spec   Margin   Polar		un: 0 aB <b>ement Data:</b>	· P	eadino lie	ted by ma	argin	Test Lead: Black						
MHz							T4	Dist			Margin	Polar	
MHz	"	1104	Rung				14	וסו	C011	Spec	1414115111	1 Olai	
1   13.560M   72.2   +0.6   +0.0   +0.0   +0.0   +0.0   +0.0   Endmental with regral anternal with regral with regraph with regrand		MHz	dBuV				dВ	Table	dBuV	dBuV	dB	Ant	
+0.2	1		•										
12.941M	-	10.0001.1	,				. 0.0	. 0.0	0			Diweii	
2   12.941M   36.3   +0.5   +0.0   +0.0   +0.0   +0.0   47.9   50.0   -2.1   Black   +0.1   +9.9   +1.1   +9.9   +1.1   +9.9   +1.1   +1.1   +0.2   +9.9   +1.1   +0.2   +9.9   +1.1   +0.2   +9.9   +1.1   +0.6   +0.0   +0.0   +0.0   +0.0   46.3   50.0   -3.7   Black   +0.2   +9.9   +1.1   +0.6   +0.0   +0.0   +0.0   +0.0   45.9   50.0   -4.1   Black   +0.2   +9.9   +1.1   +0.2   +9.9   +1.1   +0.2   +9.9   +1.1   +0.2   +9.9   +1.1   +0.2   +9.9   +1.1   +0.1   +9.9   +1.1   +0.1   +9.9   +1.1   +0.1   +9.9   +1.1   +0.1   +9.9   +1.1   +0.1   +9.9   +1.1   +0.2   +0.2   +9.9   +1.1   +0.2   +0.2													
13.896M   36.0   +0.6   +0.0   +0.0   +0.0   +0.0   47.8   50.0   -2.2   Black   +0.2   +9.9   +1.1	2	12.941M	36.3	+0.5	+0.0	+0.0	+0.0	+0.0	47.9			Black	
13.698M   34.5   +0.6   +0.0   +0.0   +0.0   +0.0   46.3   50.0   -3.7   Black   +0.2   +9.9   +1.1       5   13.860M   34.1   +0.6   +0.0   +0.0   +0.0   +0.0   +0.0   45.9   50.0   -4.1   Black   +0.2   +9.9   +1.1       6   13.121M   33.7   +0.6   +0.0   +0.0   +0.0   +0.0   45.4   50.0   -4.6   Black   +0.1   +9.9   +1.1       7   13.824M   32.7   +0.6   +0.0   +0.0   +0.0   +0.0   44.5   50.0   -5.5   Black   +0.1   +9.9   +1.1       8   12.995M   32.4   +0.6   +0.0   +0.0   +0.0   +0.0   +0.0   44.1   50.0   -5.9   Black   +0.1   +9.9   +1.1       9   13.653M   32.3   +0.6   +0.0   +0.0   +0.0   +0.0   44.1   50.0   -5.9   Black   +0.1   +9.9   +1.1       10   12.860M   32.1   +0.5   +0.0   +0.0   +0.0   +0.0   44.1   50.0   -5.9   Black   +0.1   +9.9   +1.1       11   13.076M   30.9   +0.6   +0.0   +0.0   +0.0   +0.0   42.6   50.0   -7.4   Black   +0.1   +9.9   +1.1       12   14.103M   30.4   +0.6   +0.0   +0.0   +0.0   +0.0   40.0   42.2   50.0   -7.8   Black   +0.1   +9.9   +1.1       13   13.977M   28.2   +0.6   +0.0   +0.0   +0.0   +0.0   40.0   50.0   -10.0   Black   +0.1   +9.9   +0.5   +0.1   +9.9   +1.1      14   3.161M   25.2   +0.1   +0.0   +0.0   +0.0   +0.0   40.0   50.0   -10.3   Black   +0.1   +9.9   +0.5   +0.1   +9.9   +0.5      15   13.950M   27.9   +0.6   +0.0   +0.0   +0.0   +0.0   35.6   46.0   -10.2   Black   +0.1   +9.9   +0.5   +0.1   +9.9   +0.5      16   793.572k   25.2   +0.1   +0.0   +0.0   +0.0   +0.0   35.5   46.0   -10.5   Black   +0.1   +9.9   +0.5   +0.1   +0.0   +0.0   +0.0   +0.0   35.5   46.0   -10.5   Black   +0.1   +9.9   +0.5   +0.1   +9.9   +0.5   +0.1   +9.9   +0.5   +0.				+0.1	+9.9	+1.1							
13.698M   34.5	3	13.896M	36.0	+0.6	+0.0	+0.0	+0.0	+0.0	47.8	50.0	-2.2	Black	
13.860M				+0.2	+9.9	+1.1							
5         13.860M         34.1         +0.6         +0.0         +0.0         +0.0         +0.0         +0.0         45.9         50.0         -4.1         Black           6         13.121M         33.7         +0.6         +0.0         +0.0         +0.0         +0.0         45.4         50.0         -4.6         Black           7         13.824M         32.7         +0.6         +0.0         +0.0         +0.0         +0.0         44.5         50.0         -5.5         Black           8         12.995M         32.4         +0.6         +0.0         +0.0         +0.0         +0.0         44.1         50.0         -5.9         Black           9         13.653M         32.3         +0.6         +0.0         +0.0         +0.0         +0.0         44.1         50.0         -5.9         Black           10         12.860M         32.1         +0.5         +0.0         +0.0         +0.0         +0.0         +0.0         44.1         50.0         -5.9         Black           11         13.076M         30.9         +0.6         +0.0         +0.0         +0.0         +0.0         42.6         50.0         -7.4         Black	4	13.698M	34.5	+0.6	+0.0	+0.0	+0.0	+0.0	46.3	50.0	-3.7	Black	
13.121M   33.7   +0.6   +0.0   +0.0   +0.0   +0.0   45.4   50.0   -4.6   Black   +0.1   +9.9   +1.1   +0.1   +9.9   +1.1   +0.1   +0.0   +0.0   +0.0   +0.0   44.5   50.0   -5.5   Black   +0.2   +9.9   +1.1   +0.0   +0.0   +0.0   +0.0   44.5   50.0   -5.5   Black   +0.2   +9.9   +1.1   +0.0   +0.0   +0.0   +0.0   44.1   50.0   -5.9   Black   +0.1   +9.9   +1.1   +0.0   +0.0   +0.0   +0.0   44.1   50.0   -5.9   Black   +0.2   +9.9   +1.1   +0.1   +9.9   +1.1   +0.1   +0.0   +0.0   +0.0   +0.0   +0.0   44.1   50.0   -5.9   Black   +0.2   +9.9   +1.1   +0.1   +9.9   +1.1   +0.1   +0.0   +0.0   +0.0   +0.0   +0.0   43.7   50.0   -6.3   Black   +0.1   +9.9   +1.1   +0.1   +9.9   +1.1   +0.1   +0.9   +1.1   +0.0   +0.0   +0.0   +0.0   +0.0   42.6   50.0   -7.4   Black   +0.1   +9.9   +1.1   +0.1   +0.0   +0.0   +0.0   +0.0   +0.0   42.2   50.0   -7.8   Black   +0.2   +9.9   +1.1   +0.1   +0.0   +0.0   +0.0   +0.0   40.0   50.0   -10.0   Black   +0.2   +9.9   +1.1   +0.0   +0.0   +0.0   +0.0   40.0   50.0   -10.0   Black   +0.1   +9.9   +0.5   +0.1   +9.9   +0.5   +0.1   +9.9   +0.5   +0.1   +9.9   +0.5   +0.1   +9.9   +0.5   +0.1   +9.9   +0.5   +0.1   +9.9   +0.5   +0.1   +9.9   +0.5   +0.1   +9.9   +0.3   +0.1   +9.9   +0.3   +0.1   +9.9   +0.5   +0.1				+0.2	+9.9	+1.1							
6         13.121M         33.7         +0.6         +0.0         +0.0         +0.0         +0.0         +0.0         45.4         50.0         -4.6         Black           7         13.824M         32.7         +0.6         +0.0         +0.0         +0.0         +0.0         44.5         50.0         -5.5         Black           8         12.995M         32.4         +0.6         +0.0         +0.0         +0.0         +0.0         44.1         50.0         -5.9         Black           9         13.653M         32.3         +0.6         +0.0         +0.0         +0.0         +0.0         44.1         50.0         -5.9         Black           10         12.860M         32.1         +0.5         +0.0         +0.0         +0.0         +0.0         43.7         50.0         -5.9         Black           11         13.076M         30.9         +0.6         +0.0         +0.0         +0.0         +0.0         42.6         50.0         -7.4         Black           12         14.103M         30.4         +0.6         +0.0         +0.0         +0.0         +0.0         42.2         50.0         -7.8         Black           12	5	13.860M	34.1	+0.6	+0.0	+0.0	+0.0	+0.0	45.9	50.0	-4.1	Black	
13.824M   32.7   +0.6   +0.0   +0.0   +0.0   +0.0   +0.0   44.5   50.0   -5.5   Black   +0.2   +9.9   +1.1   +1.				+0.2	+9.9	+1.1							
7         13.824M         32.7         +0.6         +0.0         +0.0         +0.0         +0.0         44.5         50.0         -5.5         Black           8         12.995M         32.4         +0.6         +0.0         +0.0         +0.0         +0.0         44.1         50.0         -5.9         Black           9         13.653M         32.3         +0.6         +0.0         +0.0         +0.0         +0.0         44.1         50.0         -5.9         Black           10         12.860M         32.1         +0.5         +0.0         +0.0         +0.0         +0.0         43.7         50.0         -6.3         Black           11         13.076M         30.9         +0.6         +0.0         +0.0         +0.0         +0.0         42.6         50.0         -7.4         Black           12         14.103M         30.4         +0.6         +0.0         +0.0         +0.0         +0.0         42.6         50.0         -7.8         Black           12         14.103M         30.4         +0.6         +0.0         +0.0         +0.0         +0.0         40.0         50.0         -7.8         Black           12         14.103M <td>6</td> <td>13.121M</td> <td>33.7</td> <td></td> <td></td> <td>+0.0</td> <td>+0.0</td> <td>+0.0</td> <td>45.4</td> <td>50.0</td> <td>-4.6</td> <td>Black</td>	6	13.121M	33.7			+0.0	+0.0	+0.0	45.4	50.0	-4.6	Black	
10   12.860M   32.4   +0.6   +0.0													
8         12.995M         32.4         +0.6         +0.0         +0.0         +0.0         +0.0         44.1         50.0         -5.9         Black           9         13.653M         32.3         +0.6         +0.0         +0.0         +0.0         +0.0         +0.0         44.1         50.0         -5.9         Black           10         12.860M         32.1         +0.5         +0.0         +0.0         +0.0         +0.0         43.7         50.0         -6.3         Black           11         13.076M         30.9         +0.6         +0.0         +0.0         +0.0         +0.0         42.6         50.0         -7.4         Black           12         14.103M         30.4         +0.6         +0.0         +0.0         +0.0         +0.0         42.2         50.0         -7.8         Black           12         14.103M         30.4         +0.6         +0.0         +0.0         +0.0         +0.0         42.2         50.0         -7.8         Black           12         14.103M         30.4         +0.6         +0.0         +0.0         +0.0         +0.0         40.0         50.0         -10.0         Black           13	7	13.824M	32.7				+0.0	+0.0	44.5	50.0	-5.5	Black	
+0.1													
9 13.653M 32.3 +0.6 +0.0 +0.0 +0.0 +0.0 44.1 50.0 -5.9 Black +0.2 +9.9 +1.1 1	8	12.995M	32.4				+0.0	+0.0	44.1	50.0	-5.9	Black	
10   12.860M   32.1   +0.5   +0.0   +0.0   +0.0   +0.0   +0.0   43.7   50.0   -6.3   Black   +0.1   +9.9   +1.1     13.076M   30.9   +0.6   +0.0   +0.0   +0.0   +0.0   +0.0   42.6   50.0   -7.4   Black   +0.1   +9.9   +1.1     12   14.103M   30.4   +0.6   +0.0   +0.0   +0.0   +0.0   +0.0   42.2   50.0   -7.8   Black   +0.2   +9.9   +1.1     13   13.977M   28.2   +0.6   +0.0   +0.0   +0.0   +0.0   +0.0   40.0   50.0   -10.0   Black   +0.2   +9.9   +1.1													
10	9	13.653M	32.3				+0.0	+0.0	44.1	50.0	-5.9	Black	
+0.1													
11       13.076M       30.9       +0.6       +0.0       +0.0       +0.0       +0.0       +0.0       42.6       50.0       -7.4       Black         12       14.103M       30.4       +0.6       +0.0       +0.0       +0.0       +0.0       42.2       50.0       -7.8       Black         13       13.977M       28.2       +0.6       +0.0       +0.0       +0.0       +0.0       40.0       50.0       -10.0       Black         14       3.161M       25.2       +0.1       +0.0       +0.0       +0.0       +0.0       +0.0       50.0       -10.2       Black         15       13.950M       27.9       +0.6       +0.0       +0.0       +0.0       +0.0       39.7       50.0       -10.3       Black         16       793.572k       25.2       +0.1       +0.0       +0.0       +0.0       +0.0       35.6       46.0       -10.4       Black         17       12.526M       28.0       +0.5       +0.0       +0.0       +0.0       +0.0       39.6       50.0       -10.4       Black         18       4.428M       24.7       +0.2       +0.0       +0.0       +0.0       +0.0       +0.	10	12.860M	32.1				+0.0	+0.0	43.7	50.0	-6.3	Black	
12   14.103M   30.4   +0.6   +0.0   +0.0   +0.0   +0.0   +0.0   42.2   50.0   -7.8   Black   +0.2   +9.9   +1.1     +0.0   +0.0   +0.0   +0.0   40.0   50.0   -10.0   Black   +0.2   +9.9   +1.1   +0.0   +0.0   +0.0   +0.0   35.8   46.0   -10.2   Black   +0.1   +9.9   +0.5   +0.1   +9.9   +0.5   +0.1   +9.9   +0.5   +0.1   +9.9   +0.5   +0.1   +9.9   +0.3   +0.1   +9.9   +0.3   +0.1   +9.9   +0.3   +0.1   +9.9   +0.3   +0.1   +9.9   +1.1   +0.0   +0.0   +0.0   +0.0   35.6   46.0   -10.4   Black   +0.1   +9.9   +1.1   +0.0   +0.0   +0.0   +0.0   +0.0   39.6   50.0   -10.4   Black   +0.1   +9.9   +1.1   +0.0   +0.0   +0.0   +0.0   +0.0   35.5   46.0   -10.5   Black   +0.1   +9.9   +1.1   +0.0   +0.0   +0.0   +0.0   +0.0   35.5   46.0   -10.5   Black   +0.1   +9.9   +0.6   +0.1   +9.9   +1.1   +0.0   +0.0   +0.0   +0.0   +0.0   35.5   46.0   -10.5   Black   +0.1   +9.9   +0.6   +0.1   +9.9   +1.1   +0.0   +0.0   +0.0   +0.0   35.3   46.0   -10.5   Black   +0.1   +9.9   +0.6   +0.0   +0.0   +0.0   +0.0   35.2   46.0   -10.7   Black   +0.1   +9.9   +0.3   +0.1   +9.9   +0.6   +0.1   +9.9   +0.6   +0.1   +9.9   +0.6   +0.1   +9.9   +0.6   +0.1   +9.9   +0.6   +0.1   +9.9   +0.6   +0.0   +0.0   +0.0   +0.0   35.2   46.0   -10.8   Black   +0.1   +9.9   +0.6   +0.1   +9.9   +0.6   +0.1   +9.9   +0.6   +0.1   +9.9   +0.6   +0.1   +9.9   +0.6   +0.1   +9.9   +0.6   +0.1   +9.9   +0.6   +0.0   +0.0   +0.0   +0.0   +0.0   +0.0   +0.0   +0.0   -10.8   Black   +0.1   +9.9   +0.6   +0.1   +9.9   +0.6   +0.1   +9.9   +0.6   +0.0   +0			•••							<b></b>			
12       14.103M       30.4       +0.6       +0.0       +0.0       +0.0       +0.0       42.2       50.0       -7.8       Black         13       13.977M       28.2       +0.6       +0.0       +0.0       +0.0       +0.0       40.0       50.0       -10.0       Black         14       3.161M       25.2       +0.1       +0.0       +0.0       +0.0       +0.0       +0.0       35.8       46.0       -10.2       Black         15       13.950M       27.9       +0.6       +0.0       +0.0       +0.0       +0.0       39.7       50.0       -10.3       Black         16       793.572k       25.2       +0.1       +0.0       +0.0       +0.0       +0.0       35.6       46.0       -10.4       Black         17       12.526M       28.0       +0.5       +0.0       +0.0       +0.0       +0.0       39.6       50.0       -10.4       Black         18       4.428M       24.7       +0.2       +0.0       +0.0       +0.0       +0.0       35.5       46.0       -10.5       Black         19       14.247M       27.7       +0.6       +0.0       +0.0       +0.0       +0.0       35	11	13.076M	30.9				+0.0	+0.0	42.6	50.0	-7.4	Black	
+0.2	10	1410016	20.4				0.0	0.0	10.0	<b>70.0</b>	7.0	D1 1	
13       13.977M       28.2       +0.6       +0.0       +0.0       +0.0       +0.0       40.0       50.0       -10.0       Black         14       3.161M       25.2       +0.1       +0.0       +0.0       +0.0       +0.0       +0.0       35.8       46.0       -10.2       Black         15       13.950M       27.9       +0.6       +0.0       +0.0       +0.0       +0.0       39.7       50.0       -10.3       Black         16       793.572k       25.2       +0.1       +0.0       +0.0       +0.0       +0.0       35.6       46.0       -10.4       Black         17       12.526M       28.0       +0.5       +0.0       +0.0       +0.0       +0.0       39.6       50.0       -10.4       Black         18       4.428M       24.7       +0.2       +0.0       +0.0       +0.0       +0.0       35.5       46.0       -10.5       Black         19       14.247M       27.7       +0.6       +0.0       +0.0       +0.0       +0.0       +0.0       39.5       50.0       -10.5       Black         20       1.115M       25.0       +0.0       +0.0       +0.0       +0.0       +0	12	14.103M	30.4				+0.0	+0.0	42.2	50.0	-7.8	Black	
+0.2	12	12.07714	20.2				. 0 0	+ O O	40.0	50.0	10.0	Dlasla	
14       3.161M       25.2       +0.1       +0.0       +0.0       +0.0       +0.0       35.8       46.0       -10.2       Black         15       13.950M       27.9       +0.6       +0.0       +0.0       +0.0       +0.0       +0.0       39.7       50.0       -10.3       Black         16       793.572k       25.2       +0.1       +0.0       +0.0       +0.0       +0.0       +0.0       35.6       46.0       -10.4       Black         17       12.526M       28.0       +0.5       +0.0       +0.0       +0.0       +0.0       39.6       50.0       -10.4       Black         18       4.428M       24.7       +0.2       +0.0       +0.0       +0.0       +0.0       35.5       46.0       -10.5       Black         19       14.247M       27.7       +0.6       +0.0       +0.0       +0.0       +0.0       39.5       50.0       -10.5       Black         20       1.115M       25.0       +0.0       +0.0       +0.0       +0.0       +0.0       +0.0       35.3       46.0       -10.7       Black         21       4.275M       24.4       +0.2       +0.0       +0.0       +0.	13	13.977M	28.2				+0.0	+0.0	40.0	50.0	-10.0	Втаск	
+0.1       +9.9       +0.5         15       13.950M       27.9       +0.6       +0.0       +0.0       +0.0       +0.0       39.7       50.0       -10.3       Black         16       793.572k       25.2       +0.1       +0.0       +0.0       +0.0       +0.0       35.6       46.0       -10.4       Black         17       12.526M       28.0       +0.5       +0.0       +0.0       +0.0       +0.0       39.6       50.0       -10.4       Black         18       4.428M       24.7       +0.2       +0.0       +0.0       +0.0       +0.0       35.5       46.0       -10.5       Black         19       14.247M       27.7       +0.6       +0.0       +0.0       +0.0       +0.0       +0.0       39.5       50.0       -10.5       Black         20       1.115M       25.0       +0.0       +0.0       +0.0       +0.0       +0.0       +0.0       35.3       46.0       -10.7       Black         21       4.275M       24.4       +0.2       +0.0       +0.0       +0.0       +0.0       +0.0       -10.0       35.2       46.0       -10.8       Black         22	1.4	2 161M	25.2				+ΩΩ	+0.0	25.0	16.0	10.2	Dlask	
15       13.950M       27.9       +0.6       +0.0       +0.0       +0.0       +0.0       39.7       50.0       -10.3       Black         16       793.572k       25.2       +0.1       +0.0       +0.0       +0.0       +0.0       +0.0       35.6       46.0       -10.4       Black         17       12.526M       28.0       +0.5       +0.0       +0.0       +0.0       +0.0       39.6       50.0       -10.4       Black         18       4.428M       24.7       +0.2       +0.0       +0.0       +0.0       +0.0       35.5       46.0       -10.5       Black         19       14.247M       27.7       +0.6       +0.0       +0.0       +0.0       +0.0       39.5       50.0       -10.5       Black         20       1.115M       25.0       +0.0       +0.0       +0.0       +0.0       +0.0       +0.0       35.3       46.0       -10.7       Black         21       4.275M       24.4       +0.2       +0.0       +0.0       +0.0       +0.0       +0.0       -10.8       Black         22       515.054k       25.0       +0.1       +0.0       +0.0       +0.0       +0.0       -	14	3.101M	23.2				+0.0	+0.0	33.0	40.0	-10.2	Diack	
+0.2       +9.9       +1.1         16       793.572k       25.2       +0.1       +0.0       +0.0       +0.0       +0.0       35.6       46.0       -10.4       Black         17       12.526M       28.0       +0.5       +0.0       +0.0       +0.0       +0.0       39.6       50.0       -10.4       Black         18       4.428M       24.7       +0.2       +0.0       +0.0       +0.0       +0.0       35.5       46.0       -10.5       Black         19       14.247M       27.7       +0.6       +0.0       +0.0       +0.0       +0.0       39.5       50.0       -10.5       Black         20       1.115M       25.0       +0.0       +0.0       +0.0       +0.0       +0.0       35.3       46.0       -10.7       Black         21       4.275M       24.4       +0.2       +0.0       +0.0       +0.0       +0.0       +0.0       -10.0       35.2       46.0       -10.8       Black         22       515.054k       25.0       +0.1       +0.0       +0.0       +0.0       +0.0       +0.0       -10.8       Black	15	13 050M	27.0				+0.0	+0.0	30.7	50.0	10.3	Plack	
16       793.572k       25.2       +0.1       +0.0       +0.0       +0.0       +0.0       35.6       46.0       -10.4       Black         17       12.526M       28.0       +0.5       +0.0       +0.0       +0.0       +0.0       39.6       50.0       -10.4       Black         18       4.428M       24.7       +0.2       +0.0       +0.0       +0.0       +0.0       35.5       46.0       -10.5       Black         19       14.247M       27.7       +0.6       +0.0       +0.0       +0.0       +0.0       39.5       50.0       -10.5       Black         20       1.115M       25.0       +0.0       +0.0       +0.0       +0.0       +0.0       35.3       46.0       -10.7       Black         21       4.275M       24.4       +0.2       +0.0       +0.0       +0.0       +0.0       +0.0       35.2       46.0       -10.8       Black         22       515.054k       25.0       +0.1       +0.0       +0.0       +0.0       +0.0       35.2       46.0       -10.8       Black	13	13.930W	21.9				+0.0	+0.0	37.1	30.0	-10.5	Diack	
+0.1 +9.9 +0.3  17 12.526M 28.0 +0.5 +0.0 +0.0 +0.0 +0.0 39.6 50.0 -10.4 Black +0.1 +9.9 +1.1  18 4.428M 24.7 +0.2 +0.0 +0.0 +0.0 +0.0 35.5 46.0 -10.5 Black +0.1 +9.9 +0.6  19 14.247M 27.7 +0.6 +0.0 +0.0 +0.0 +0.0 39.5 50.0 -10.5 Black +0.2 +9.9 +1.1  20 1.115M 25.0 +0.0 +0.0 +0.0 +0.0 +0.0 35.3 46.0 -10.7 Black +0.1 +9.9 +0.3  21 4.275M 24.4 +0.2 +0.0 +0.0 +0.0 +0.0 35.2 46.0 -10.8 Black +0.1 +9.9 +0.6  22 515.054k 25.0 +0.1 +0.0 +0.0 +0.0 +0.0 35.2 46.0 -10.8 Black	16	793 572k	25.2				+0.0	+0.0	35.6	46.0	-104	Black	
17       12.526M       28.0       +0.5       +0.0       +0.0       +0.0       +0.0       39.6       50.0       -10.4       Black         18       4.428M       24.7       +0.2       +0.0       +0.0       +0.0       +0.0       35.5       46.0       -10.5       Black         19       14.247M       27.7       +0.6       +0.0       +0.0       +0.0       +0.0       39.5       50.0       -10.5       Black         20       1.115M       25.0       +0.0       +0.0       +0.0       +0.0       +0.0       35.3       46.0       -10.7       Black         21       4.275M       24.4       +0.2       +0.0       +0.0       +0.0       +0.0       35.2       46.0       -10.8       Black         22       515.054k       25.0       +0.1       +0.0       +0.0       +0.0       +0.0       35.2       46.0       -10.8       Black	10	1 / J . J 1 4 K	43.4				10.0	10.0	55.0	+0.0	-1U. <del>1</del>	DIACK	
+0.1 +9.9 +1.1  18 4.428M 24.7 +0.2 +0.0 +0.0 +0.0 +0.0 35.5 46.0 -10.5 Black +0.1 +9.9 +0.6  19 14.247M 27.7 +0.6 +0.0 +0.0 +0.0 +0.0 39.5 50.0 -10.5 Black +0.2 +9.9 +1.1  20 1.115M 25.0 +0.0 +0.0 +0.0 +0.0 +0.0 35.3 46.0 -10.7 Black +0.1 +9.9 +0.3  21 4.275M 24.4 +0.2 +0.0 +0.0 +0.0 +0.0 35.2 46.0 -10.8 Black +0.1 +9.9 +0.6  22 515.054k 25.0 +0.1 +0.0 +0.0 +0.0 +0.0 35.2 46.0 -10.8 Black	17	12 526M	28.0				+0.0	+0.0	39.6	50.0	-10.4	Black	
18       4.428M       24.7       +0.2       +0.0       +0.0       +0.0       +0.0       35.5       46.0       -10.5       Black         19       14.247M       27.7       +0.6       +0.0       +0.0       +0.0       +0.0       39.5       50.0       -10.5       Black         20       1.115M       25.0       +0.0       +0.0       +0.0       +0.0       +0.0       35.3       46.0       -10.7       Black         21       4.275M       24.4       +0.2       +0.0       +0.0       +0.0       +0.0       35.2       46.0       -10.8       Black         22       515.054k       25.0       +0.1       +0.0       +0.0       +0.0       +0.0       35.2       46.0       -10.8       Black	1 /	12.520111	20.0				10.0	10.0	37.0	50.0	10.7	Diack	
19     14.247M     27.7     +0.6     +0.0     +0.0     +0.0     +0.0     39.5     50.0     -10.5     Black       20     1.115M     25.0     +0.0     +0.0     +0.0     +0.0     +0.0     +0.0     +0.0     35.3     46.0     -10.7     Black       21     4.275M     24.4     +0.2     +0.0     +0.0     +0.0     +0.0     +0.0     35.2     46.0     -10.8     Black       22     515.054k     25.0     +0.1     +0.0     +0.0     +0.0     +0.0     35.2     46.0     -10.8     Black	18	4.428M	24.7				+0.0	+0.0	35.5	46.0	-10.5	Black	
19       14.247M       27.7       +0.6       +0.0       +0.0       +0.0       +0.0       39.5       50.0       -10.5       Black         20       1.115M       25.0       +0.0       +0.0       +0.0       +0.0       +0.0       35.3       46.0       -10.7       Black         21       4.275M       24.4       +0.2       +0.0       +0.0       +0.0       +0.0       35.2       46.0       -10.8       Black         22       515.054k       25.0       +0.1       +0.0       +0.0       +0.0       35.2       46.0       -10.8       Black	10	1. 120111	21.7				. 0.0	1 3.0	55.5	10.0	10.5	Diack	
+0.2 +9.9 +1.1  20 1.115M 25.0 +0.0 +0.0 +0.0 +0.0 +0.0 35.3 46.0 -10.7 Black +0.1 +9.9 +0.3  21 4.275M 24.4 +0.2 +0.0 +0.0 +0.0 +0.0 35.2 46.0 -10.8 Black +0.1 +9.9 +0.6  22 515.054k 25.0 +0.1 +0.0 +0.0 +0.0 +0.0 35.2 46.0 -10.8 Black	19	14.247M	27.7				+0.0+	+0.0	39.5	50.0	-10.5	Black	
20 1.115M 25.0 +0.0 +0.0 +0.0 +0.0 +0.0 35.3 46.0 -10.7 Black +0.1 +9.9 +0.3 21 4.275M 24.4 +0.2 +0.0 +0.0 +0.0 +0.0 35.2 46.0 -10.8 Black +0.1 +9.9 +0.6 22 515.054k 25.0 +0.1 +0.0 +0.0 +0.0 +0.0 35.2 46.0 -10.8 Black													
+0.1 +9.9 +0.3 21 4.275M 24.4 +0.2 +0.0 +0.0 +0.0 +0.0 35.2 46.0 -10.8 Black +0.1 +9.9 +0.6 22 515.054k 25.0 +0.1 +0.0 +0.0 +0.0 +0.0 35.2 46.0 -10.8 Black	20	1.115M	25.0				+0.0	+0.0	35.3	46.0	-10.7	Black	
21 4.275M 24.4 +0.2 +0.0 +0.0 +0.0 +0.0 35.2 46.0 -10.8 Black +0.1 +9.9 +0.6 22 515.054k 25.0 +0.1 +0.0 +0.0 +0.0 +0.0 35.2 46.0 -10.8 Black													
+0.1 +9.9 +0.6 22 515.054k 25.0 +0.1 +0.0 +0.0 +0.0 +0.0 35.2 46.0 -10.8 Black	21	4.275M	24.4				+0.0	+0.0	35.2	46.0	-10.8	Black	
22 515.054k 25.0 +0.1 +0.0 +0.0 +0.0 +0.0 35.2 46.0 -10.8 Black													
	22	515.054k	25.0				+0.0	+0.0	35.2	46.0	-10.8	Black	

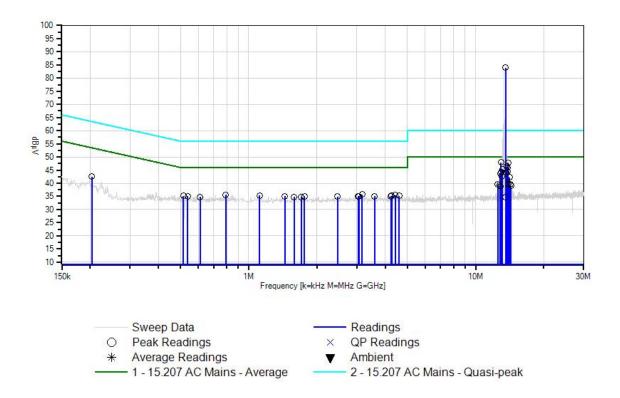
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23	12.815M	27.6	+0.5	+0.0	+0.0	+0.0	+0.0	39.2	50.0	-10.8	Black
			+0.1	+9.9	+1.1						
24	4.603M	24.5	+0.1	+0.0	+0.0	+0.0	+0.0	35.2	46.0	-10.8	Black
			+0.1	+9.9	+0.6						
25	1.762M	24.7	+0.1	+0.0	+0.0	+0.0	+0.0	35.1	46.0	-10.9	Black
			+0.0	+9.9	+0.4						
26	539.052k	24.9	+0.1	+0.0	+0.0	+0.0	+0.0	35.1	46.0	-10.9	Black
			+0.1	+9.8	+0.2						
27	3.586M	24.4	+0.2	+0.0	+0.0	+0.0	+0.0	35.1	46.0	-10.9	Black
			+0.1	+9.9	+0.5						
28	3.063M	24.5	+0.1	+0.0	+0.0	+0.0	+0.0	35.1	46.0	-10.9	Black
			+0.1	+9.9	+0.5						
29	1.443M	24.6	+0.1	+0.0	+0.0	+0.0	+0.0	35.0	46.0	-11.0	Black
			+0.0	+9.9	+0.4						
30	203.813k	32.4	+0.1	+0.0	+0.0	+0.0	+0.0	42.5	53.5	-11.0	Black
			+0.2	+9.7	+0.1						
31	3.038M	24.4	+0.1	+0.0	+0.0	+0.0	+0.0	35.0	46.0	-11.0	Black
			+0.1	+9.9	+0.5						
32	14.319M	27.2	+0.6	+0.0	+0.0	+0.0	+0.0	39.0	50.0	-11.0	Black
			+0.2	+9.9	+1.1						
33	4.245M	24.2	+0.2	+0.0	+0.0	+0.0	+0.0	35.0	46.0	-11.0	Black
			+0.1	+9.9	+0.6						
34	2.463M	24.3	+0.1	+0.0	+0.0	+0.0	+0.0	34.9	46.0	-11.1	Black
			+0.1	+9.9	+0.5						
35	12.905M	27.3	+0.5	+0.0	+0.0	+0.0	+0.0	38.9	50.0	-11.1	Black
			+0.1	+9.9	+1.1						
36	610.318k	24.6	+0.0	+0.0	+0.0	+0.0	+0.0	34.8	46.0	-11.2	Black
			+0.2	+9.8	+0.2						
37	1.587M	24.4	+0.1	+0.0	+0.0	+0.0	+0.0	34.8	46.0	-11.2	Black
			+0.0	+9.9	+0.4						
38	1.702M	24.4	+0.1	+0.0	+0.0	+0.0	+0.0	34.8	46.0	-11.2	Black
			+0.0	+9.9	+0.4						
39	13.560M	23.0	+0.6	+0.0	+0.0	+0.0	+0.0	34.8	50.0	-15.2	Black
			+0.2	+9.9	+1.1				Fundament	al with	
									dummy loa	d at	
									antenna por	<u>rt</u>	



CKC Laboratories, Inc. Date: 10/7/2010 Time: 3:38:59 PM Ingersoll Rand (XceedID) WO#: 91096 15.207 AC Mains - Average Test Lead: Black 120V 60Hz Sequence#: 13 Ext ATTN: 0 dB





Test Location: CKC Laboratories, Inc. • 5046 Sierra Pines Drive • Mariposa, CA 95338 • (209) 966-5240

Customer: Ingersoll Rand (XceedID)
Specification: 15.207 AC Mains - Average

Work Order #: 91096 Date: 10/7/2010
Test Type: Conducted Emissions Time: 15:50:30
Equipment: Physical Access Control Reader Sequence#: 14

Manufacturer: Ingersoll Rand Tested By: Chuck Kendall Model: XF2110C 120V 60Hz

S/N: 0100

#### Test Equipment:

_ rest Equit	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,				
ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	AN00374	50uH LISN-WHITE	8028-TS-50-BNC	4/22/2009	4/22/2011
		LEAD			
T2	AN01183	Spectrum Analyzer	85662A	3/10/2009	3/10/2011
		Display			
Т3	AN01184	Spectrum Analyzer	8568B	3/10/2009	3/10/2011
T4	AN00069	Quasi Peak Adapter	85650A	3/10/2009	3/10/2011
T5	AN02608	High Pass Filter	HE9615-150K-	2/11/2010	2/11/2012
			50-720B		
Т6	ANP02229	Attenuator	PE7010-10	5/20/2009	5/20/2011
T7	ANMACOND	Cable		5/10/2009	5/10/2011

Equipment Under Test (\* = EUT):

Function	Manufacturer	Model #	S/N
Physical Access Control	Ingersoll Rand	XF2110C	0100
Reader*			

#### Support Devices:

Function	Manufacturer	Model #	S/N	
DC Power Supply	Topward Electric	TPS 4000	918520	
	Instruments			

#### Test Conditions / Notes:

### FCC 15.207

Tag reader is setting upright (vertical) to the surface of the wooden support table 80cm atop a plastic cart. It is displaying a red light until the tag activates it.

Transmitters are on.

Actual integral antenna is connected.

Emissions measurements at fundamental frequency taken with integral antenna for reference and taken with dummy load attached for final results.

From 150 kHz to 30 MHz - RBW=9kHz, VBW=30kHz

 $Temp = 65^{\circ}F$ 

Relative Humidity = 50 %

Press = 97.2 mb

### Ext Attn: 0 dB

Measur	ement Data:	Re	eading lis	ted by ma	argin.			Test Lea	d: White		
#	Freq	Rdng	T1	T2	T3	T4	Dist	Corr	Spec	Margin	Polar
			T5	T6	T7						
	MHz	dΒμV	dB	dB	dB	dB	Table	dΒμV	dΒμV	dB	Ant
1	13.560M	51.2	+1.0	+0.0	+0.0	+0.0	+0.0	63.4	50.0	+13.4	White
			+0.2	+9.9	+1.1				Fundamen	ntal with	
									integral ar	ntenna	

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2	13.454M	36.6	+1.0	+0.0	+0.0	+0.0	+0.0	48.7	50.0	-1.3	White
	12 2113 4	26.1	+0.1	+9.9	+1.1	. 0. 0	. 0. 0	40.0	50.0	1.0	XX71 *.
3	13.211M	36.1	$+1.0 \\ +0.1$	+0.0 +9.9	$+0.0 \\ +1.1$	+0.0	+0.0	48.2	50.0	-1.8	White
4	13.247M	35.9	+1.0	+0.0	+0.0	+0.0	+0.0	48.0	50.0	-2.0	White
	13.217141	33.7	+0.1	+9.9	+1.1	10.0	10.0	10.0	30.0	2.0	vv inte
5	13.589M	33.7	+1.0	+0.0	+0.0	+0.0	+0.0	45.9	50.0	-4.1	White
	13.507111	55.7	+0.2	+9.9	+1.1	10.0	10.0	10.7	20.0	111	***************************************
6	13.634M	32.8	+1.0	+0.0	+0.0	+0.0	+0.0	45.0	50.0	-5.0	White
			+0.2	+9.9	+1.1						
7	13.535M	31.9	+1.0	+0.0	+0.0	+0.0	+0.0	44.1	50.0	-5.9	White
			+0.2	+9.9	+1.1						
8	13.716M	30.2	+1.0	+0.0	+0.0	+0.0	+0.0	42.4	50.0	-7.6	White
			+0.2	+9.9	+1.1						
9	13.175M	30.1	+1.0	+0.0	+0.0	+0.0	+0.0	42.2	50.0	-7.8	White
			+0.1	+9.9	+1.1						
10	13.797M	29.1	+1.0	+0.0	+0.0	+0.0	+0.0	41.3	50.0	-8.7	White
			+0.2	+9.9	+1.1						
11	801.571k	25.0	+0.6	+0.0	+0.0	+0.0	+0.0	35.9	46.0	-10.1	White
			+0.1	+9.9	+0.3						
12	672.857k	25.2	+0.5	+0.0	+0.0	+0.0	+0.0	35.8	46.0	-10.2	White
			+0.1	+9.8	+0.2						
13	789.936k	24.8	+0.6	+0.0	+0.0	+0.0	+0.0	35.7	46.0	-10.3	White
			+0.1	+9.9	+0.3						
14	13.905M	27.5	+1.0	+0.0	+0.0	+0.0	+0.0	39.7	50.0	-10.3	White
			+0.2	+9.9	+1.1						
15	717.216k	24.7	+0.5	+0.0	+0.0	+0.0	+0.0	35.6	46.0	-10.4	White
			+0.2	+9.9	+0.3						
16	454.697k	25.7	+0.5	+0.0	+0.0	+0.0	+0.0	36.4	46.8	-10.4	White
			+0.2	+9.8	+0.2						
17	738.305k	24.7	+0.5	+0.0	+0.0	+0.0	+0.0	35.6	46.0	-10.4	White
			+0.2	+9.9	+0.3						
18	14.238M	27.3	+1.1	+0.0	+0.0	+0.0	+0.0	39.6	50.0	-10.4	White
10	4.5003.6	242	+0.2	+9.9	+1.1	0.0	0.0	27.5	4.5.0	10.1	****
19	4.700M	24.3	+0.7	+0.0	+0.0	+0.0	+0.0	35.6	46.0	-10.4	White
20	0.7003.5	24.4	+0.1	+9.9	+0.6	.00	.00	25.5	460	10.5	3371 *-
20	2.782M	24.4	+0.6	+0.0	+0.0	+0.0	+0.0	35.5	46.0	-10.5	White
21	2.0041/4	24.2	+0.1	+9.9	+0.5	ι Ο Ο	+0.0	25.5	16.0	10.5	W/h:4-
21	3.994M	24.3	+0.6	+0.0	+0.0	+0.0	+0.0	35.5	46.0	-10.5	White
22	12 922M	27.3	+0.1	+9.9	+0.6	ι Ο Ο	+0.0	39.5	50.0	-10.5	White
22	13.833M	21.3	$+1.0 \\ +0.2$	+0.0 +9.9	$+0.0 \\ +1.1$	+0.0	+0.0	39.3	30.0	-10.5	vv iiite
23	13.013M	27.3	+1.0	+0.0	+0.0	+0.0	+0.0	39.4	50.0	-10.6	White
23	13.013101	41.3	+0.1	+9.9	+0.0 +1.1	+0.0	+0.0	37 <b>.4</b>	50.0	-10.0	VV IIILE
24	829.205k	24.5	+0.6	+0.0	+0.0	+0.0	+0.0	35.4	46.0	-10.6	White
	027.203K	27.5	+0.1	+9.9	+0.3	10.0	10.0	55.7	10.0	10.0	***************************************
25	641.587k	24.8	+0.5	+0.0	+0.0	+0.0	+0.0	35.4	46.0	-10.6	White
23	0.11.50/K	21.0	+0.1	+9.8	+0.2	10.0	. 0.0	55.7	10.0	10.0	,, 11110
26	632.134k	24.8	+0.5	+0.0	+0.0	+0.0	+0.0	35.4	46.0	-10.6	White
			+0.1	+9.8	+0.2	. 0.0		20.1		20.0	
27	4.726M	24.1	+0.7	+0.0	+0.0	+0.0	+0.0	35.4	46.0	-10.6	White
	-	•	+0.1	+9.9	+0.6						

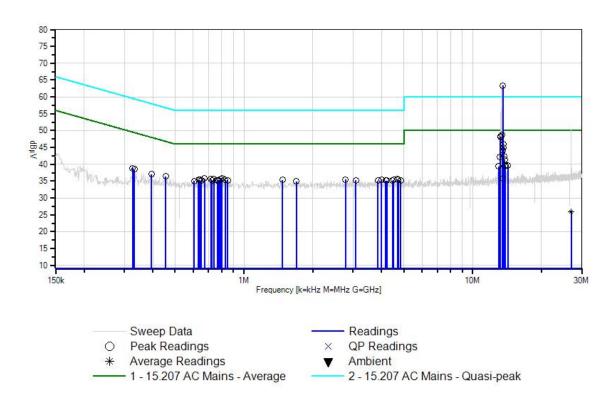
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28	4.518M	24.1	+0.7	+0.0	+0.0	+0.0	+0.0	35.4	46.0	-10.6	White
20	4 4553 6	24.5	+0.1	+9.9	+0.6	0.0	0.0	27.1	4.5.0	10.5	****
29	1.477M	24.5	+0.6	+0.0	+0.0	+0.0	+0.0	35.4	46.0	-10.6	White
20	77.6 1 1 0 1	24.4	+0.0	+9.9	+0.4	. 0. 0	. 0. 0	25.2	46.0	10.7	XX71 *.
30	776.119k	24.4	+0.6	+0.0	+0.0	+0.0	+0.0	35.3	46.0	-10.7	White
21	765 2111-	24.4	+0.1	+9.9	+0.3	+ O O	. 0. 0	25.2	46.0	10.7	W/la:4a
31	765.211k	24.4	+0.6 +0.1	+0.0 +9.9	+0.0 +0.3	+0.0	+0.0	35.3	46.0	-10.7	White
32	3.084M	24.2	+0.1	+0.0	+0.0	+0.0	+0.0	35.3	46.0	-10.7	White
32	3.004WI	24.2	+0.0	+9.9	+0.5	+0.0	+0.0	33.3	40.0	-10.7	vv IIILE
33	849.566k	24.5	+0.5	+0.0	+0.0	+0.0	+0.0	35.3	46.0	-10.7	White
	047.500K	24.5	+0.1	+9.9	+0.3	10.0	10.0	33.3	40.0	-10.7	vv iiite
34	325.982k	28.3	+0.4	+0.0	+0.0	+0.0	+0.0	38.8	49.6	-10.8	White
	323.702R	20.5	+0.1	+9.8	+0.2	10.0	10.0	20.0	17.0	10.0	***************************************
35	725.215k	24.3	+0.5	+0.0	+0.0	+0.0	+0.0	35.2	46.0	-10.8	White
			+0.2	+9.9	+0.3						
36	4.169M	24.0	+0.6	+0.0	+0.0	+0.0	+0.0	35.2	46.0	-10.8	White
			+0.1	+9.9	+0.6						
37	650.314k	24.5	+0.5	+0.0	+0.0	+0.0	+0.0	35.1	46.0	-10.9	White
			+0.1	+9.8	+0.2						
38	394.339k	26.5	+0.4	+0.0	+0.0	+0.0	+0.0	37.1	48.0	-10.9	White
			+0.2	+9.8	+0.2						
39	331.800k	28.0	+0.4	+0.0	+0.0	+0.0	+0.0	38.5	49.4	-10.9	White
			+0.1	+9.8	+0.2						
40	3.854M	23.9	+0.6	+0.0	+0.0	+0.0	+0.0	35.1	46.0	-10.9	White
			+0.1	+9.9	+0.6						
41	4.854M	23.8	+0.7	+0.0	+0.0	+0.0	+0.0	35.1	46.0	-10.9	White
			+0.1	+9.9	+0.6						
42	4.467M	23.9	+0.6	+0.0	+0.0	+0.0	+0.0	35.1	46.0	-10.9	White
			+0.1	+9.9	+0.6						
43	4.220M	23.9	+0.6	+0.0	+0.0	+0.0	+0.0	35.1	46.0	-10.9	White
11	(0.6.6021	24.2	+0.1	+9.9	+0.6	0.0	0.0	25.0	460	11.0	XX 71
44	606.682k	24.3	+0.5	+0.0	+0.0	+0.0	+0.0	35.0	46.0	-11.0	White
4.5	1.60434	240	+0.2	+9.8	+0.2	.00	.0.0	240	460	11 1	<b>XX</b> 71: 14 :
45	1.694M	24.0	+0.6	+0.0 +9.9	+0.0	+0.0	+0.0	34.9	46.0	-11.1	White
46	13.560M	23.7	+0.0	+9.9	+0.4	+0.0	+0.0	35.9	50.0	-14.1	White
40	13.300101	43.1	+0.2	+0.0 +9.9	+0.0 +1.1	+0.0	+0.0	33.9	Fundament		vv iiite
			<b>⊤∪.</b> ∠	<b>⊤</b> ፆ•ፆ	⊤1.1				dummy loa		
									antenna poi		
47	27.026M	12.7	+1.9	+0.0	+0.0	+0.0	+0.0	26.0	50.0	-24.0	White
	Ave	12.7	+0.1	+9.9	+1.4	. 3.0	10.0	20.0	20.0	21.0	,, 11100
٨	27.026M	37.0	+1.9	+0.0	+0.0	+0.0	+0.0	50.3	50.0	+0.3	White
		- / • 0	+0.1	+9.9	+1.4			20.0	20.0	. 0.2	



CKC Laboratories, Inc. Date: 10/7/2010 Time: 15:50:30 Ingersoll Rand (XceedID) WO#: 91096 15:207 AC Mains - Average Test Lead: White 120V 60Hz Sequence#: 14 Ext ATTN: 0 dB





## Test Setup Photos



XF2100C



XF2100C





XF2110C



XF2110C



## **15.209 Carrier**

### **Test Data Sheets**

Test Location: CKC Laboratories, Inc. • 5046 Sierra Pines Drive • Mariposa, CA 95338 • (209) 966-5240

Customer: Ingersoll Rand (XceedID)
Specification: 15.209 Radiated Emissions

Work Order #: 91096 Date: 10/6/2010
Test Type: Maximized Emissions Time: 13:53:25
Equipment: Physical Access Control Reader Sequence#: 6

Equipment: **Physical Access Control Reader** Sequence#: 6
Manufacturer: Ingersoll Rand Tested By: Chuck Kendall

Model: XF2100C/XF2110C

S/N: 0100/0100

Test Equipment:

	z est Equip	***************************************				
	ID	Asset #	Description	Model	Calibration Date	Cal Due Date
		AN01992	Biconilog Antenna	CBL6111C	10/9/2009	10/9/2011
		AN00062	Preamp	8447D	6/23/2010	6/23/2012
	T1	AN02660	Spectrum Analyzer	E4446A	6/30/2010	6/30/2012
		ANP05904	Cable	32022-2-29094K- 144TC	6/9/2009	6/9/2011
<u> </u>				14410		
		ANP01403	Cable	58758-23	6/10/2009	6/10/2011
	T2	AN00226	Loop Antenna	6502	4/10/2009	4/10/2011
	Т3	ANMA10M	Cable		5/10/2009	5/10/2011

#### **Equipment Under Test (\* = EUT):**

=quipilient entire rest (				
Function	Manufacturer	Model #	S/N	
Physical Access Control	Ingersoll Rand	XF2110C	0100	
Reader				
Physical Access Control	Ingersoll Rand	XF2100C	0100	
Reader				

#### Support Devices:

STIFF STIFF STIFF				
Function	Manufacturer	Model #	S/N	
DC Power Supply	Topward Electric	TPS 4000	918520	
	Instruments			

#### Test Conditions / Notes:

Tag reader is setting upright (vertical) to the surface of the wooden support table 80cm atop a 40' diameter flush-mounted turntable. It is displaying a red light until the tag activates it.

Range of frequencies: 125 kHz

From 9 kHz to 150 kHz -RBW=200Hz, VBW=1kHz

No detectable change in field strength amplitude on voltage variations in accordance with 15.31(e).

Temp = 60°F RH = 50 %

Press = 97.2 mb

All antennas are less than 0.05m<sup>2</sup>

XF2100C ant dims are 3.94" x 5.24" or .1001 m x .1331 m or 0.0133233 m<sup>2</sup> XF2110C ant dims are 3.94" x 5.24" or .1001 m x .1331 m or 0.0133233 m<sup>2</sup>

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Ext Attn: 0 dB

Measurement Data:		Re	eading list	ted by ma	argin.		Te	st Distanc	e: 3 Meters		
#	Freq	Rdng	T1	T2	T3		Dist	Corr	Spec	Margin	Polar
	MHz	dΒμV	dB	dB	dB	dB	Table	$dB\muV/m$	$dB\mu V/m$	dB	Ant
1	124.870k	89.8	+0.0	+9.7	+0.0		-80.0	19.5	25.7	-6.2	Vert
									XF2100C		
									fundamenta	al	
2	124.810k	88.0	+0.0	+9.7	+0.0		-80.0	17.7	25.7	-8.0	Vert
									XF2100C		
									fundamenta	al	
3	124.960k	87.9	+0.0	+9.7	+0.0		-80.0	17.6	25.7	-8.1	Vert
									XF2110C		
									fundamenta	al	
4	124.935k	79.9	+0.0	+9.7	+0.0		-80.0	9.6	25.7	-16.1	Horiz
									XF2110C		
									fundamenta	al	

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## **Test Setup Photos**



Low Frequency - Horizontal



Low Frequency - Vertical



# 15.209 / RSS-210 Occupied Band Width

Engineer Name: Chuck Kendall

	Test Equipment									
Asset/Serial #	Description	Model	Manufacturer	Cal Date	Cal Due					
AN02660	Spectrum Analyzer	E4446A	Agilent	6/30/2010	6/30/2012					
AN00226	Loop Antenna	6502	EMCO	4/10/2009	4/10/2011					
ANMA10M	Cable			5/10/2009	5/10/2011					

## **Test Conditions**

Tag reader is setting upright (vertical) to the surface of the wooden support table 80cm atop a 40' diameter flush-mounted turntable. It is displaying a red light until the tag activates it.

Range of frequencies: 125 kHz

From 9 kHz to 150 kHz -RBW=200Hz, VBW=1kHz

Temp =  $60^{\circ}F$ 

Relative Humidity = 50 %

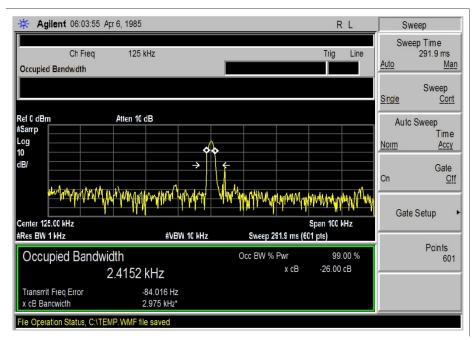
Press = 97.2 mb

Model	Occupied Bandwidth (kHz)
XF2100C	2.415
XF2110C	1.953

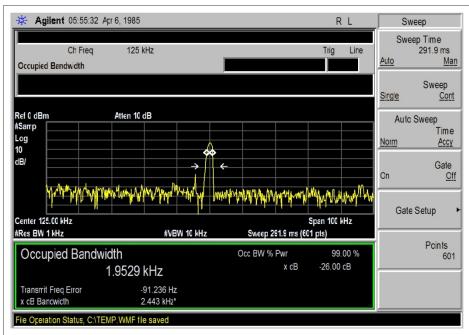
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### **Test Plots**



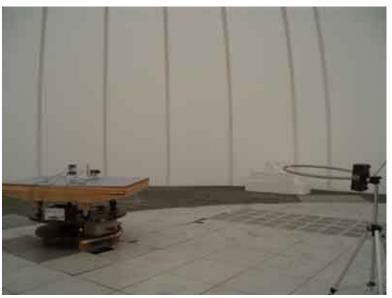
XF2100C



XF2110C



## **Test Setup Photos**



Low Frequency - Horizontal



Low Frequency - Vertical



## **15.225 Carrier**

#### **Test Data Sheets**

Test Location: CKC Laboratories, Inc. • 5046 Sierra Pines Drive • Mariposa, CA 95338 • (209) 966-5240

Customer: Ingersoll Rand (XceedID)

Specification: 15.225 Carrier and Spurious Emissions (13.110-14.010 MHz Transmitter)

 Work Order #:
 91096
 Date:
 10/6/2010

 Test Type:
 Maximized Emissions
 Time:
 13:53:25

Equipment: Physical Access Control Reader Sequence#: 5

Manufacturer: Ingersoll Rand Tested By: Chuck Kendall

Model: XF2100C/XF2110C

S/N: 0100/0100

Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
	AN01992	Biconilog Antenna	CBL6111C	10/9/2009	10/9/2011
	AN00062	Preamp	8447D	6/23/2010	6/23/2012
T1	AN02660	Spectrum Analyzer	E4446A	6/30/2010	6/30/2012
	ANP05904	Cable	32022-2-29094K-	6/9/2009	6/9/2011
			144TC		
	ANP01403	Cable	58758-23	6/10/2009	6/10/2011
T2	AN00226	Loop Antenna	6502	4/10/2009	4/10/2011
Т3	ANMA10M	Cable		5/10/2009	5/10/2011

Equipment Under Test (\* = EUT):

Function	Manufacturer	Model #	S/N
Physical Access Control	Ingersoll Rand	XF2110C	0100
Reader	_		
Physical Access Control	Ingersoll Rand	XF2100C	0100
Reader	-		

Support Devices:

Function	Manufacturer	Model #	S/N
DC Power Supply	Topward Electric	TPS 4000	918520
	Instruments		

#### Test Conditions / Notes:

Tag reader is setting upright (vertical) to the surface of the wooden support table 80cm atop a 40' diameter flush-mounted turntable. It is displaying a red light until the tag activates it.

Range of frequencies: 13.56 MHz

From 150 kHz to 30 MHz - RBW=9kHz, VBW=30kHz

 $Temp = 60^{\circ}F$ 

Relative Humidity = 50 %

Press = 97.2 mb

All antennas are less than 0.05m<sup>2</sup>

XF2100C ant dims are 3.94" x 5.24" or .1001 m x .1331 m or 0.0133233 m<sup>2</sup> XF2110C ant dims are 3.94" x 5.24" or .1001 m x .1331 m or 0.0133233 m<sup>2</sup>

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Ext Attn: 0 dB

Measur	Measurement Data: R			ted by margin. Test l			est Distanc	st Distance: 3 Meters			
#	Freq	Rdng	T1	T2	T3		Dist	Corr	Spec	Margin	Polar
	MHz	dΒμV	dB	dB	dB	dB	Table	$dB\muV/m$	$dB\mu V/m$	dB	Ant
1	13.562M	77.1	+0.0	+10.2	+0.8		-40.0	48.1	84.0	-35.9	Vert
									XF2100C		
									fundament	al	
2	13.562M	75.4	+0.0	+10.2	+0.8		-40.0	46.4	84.0	-37.6	Vert
									XF2110C		
									fundament	al	
3	13.562M	70.2	+0.0	+10.2	+0.8		-40.0	41.2	84.0	-42.8	Horiz
									XF2110C		
									fundament	al	
4	13.561M	70.1	+0.0	+10.2	+0.8		-40.0	41.1	84.0	-42.9	Horiz
									XF2100C		
									fundament	al	

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## Test Setup Photos



Low Frequency - Horizontal



Low Frequency - Vertical



# 15.225 / RSS-210 Occupied Band Width

Engineer Name: Chuck Kendall

	Test Equipment								
Asset/Serial #	Description	Model	Manufacturer	Cal Date	Cal Due				
AN02660	Spectrum Analyzer	E4446A	Agilent	6/30/2010	6/30/2012				
AN00226	Loop Antenna	6502	EMCO	4/10/2009	4/10/2011				
ANMA10M	Cable			5/10/2009	5/10/2011				

## **Test Conditions**

Tag reader is setting upright (vertical) to the surface of the wooden support table 80cm atop a 40' diameter flush-mounted turntable. It is displaying a red light until the tag activates it.

Range of frequencies: 13.56 MHz

From 150 kHz to 30 MHz - RBW=9kHz, VBW=30kHz

Temp =  $60^{\circ}F$ 

Relative Humidity = 50 %

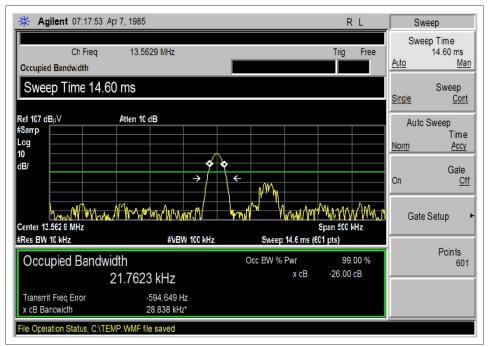
Press = 97.2 mb

Model	99% Bandwidth (kHz)	26dB Bandwidth (kHz)
XF2100C	21.762	28.838
XF2110C	21.733	29.245

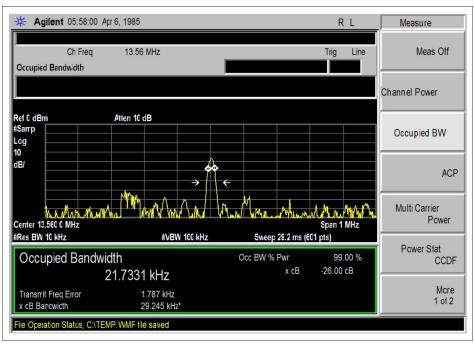
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## **Test Plots**



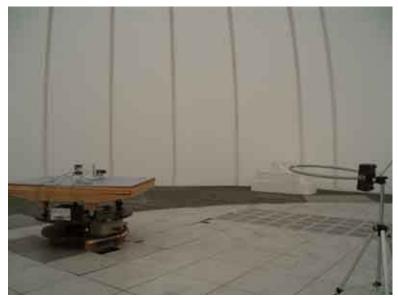
XF2100C



XF2110C



## **Test Setup Photos**



Low Frequency - Horizontal



Low Frequency - Vertical



# 15.225 Frequency Stability

Engineer Name: Chuck Kendall

	Test Equipment								
Asset/Serial #	Description	Model	Manufacturer	Cal Date	Cal Due				
AN02660	Spectrum Analyzer	E4446A	Agilent	6/30/2010	6/30/2012				
AN00226	Loop Antenna	6502	EMCO	4/10/2009	4/10/2011				
ANMA10M	Cable			5/10/2009	5/10/2011				
AN01879	Temperature Chamber	S-1.2 Min.	Thermotron	12/16/2008	12/16/2010				
AN02242	Thermometer	HH-26K	Omega	10/20/2009	10/20/2011				

### **Test Conditions**

Ambient conditions: Tag reader is setting upright (vertical) to the surface of the wooden support table 80cm atop a 40' diameter flush-mounted turntable. It is displaying a red light until the tag activates it. For temperature testing, the equipment is placed inside a temperature chamber.

Range of frequencies: 13.56 MHz

Temp = 60°F Relative Humidity = 50 % Press = 97.2 mb All antennas are less than 0.05m^2

XF2100C ant dims are 3.94" x 5.24" or .1001 m x .1331 m or 0.0133233 m^2

XF2110C ant dims are 3.94" x 5.24" or .1001 m x .1331 m or 0.0133233 m^2

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### Test Data

Frequency Stability

Customer: Ingersoll Rand

WO#: 91096

Date: 8-Oct-10

Test Engineer: Chuck Kendall

Test Specification FCC 15.225

Device Model #: XF2100C

Operating Voltage: 12 VDC/VAC Frequency Limit: 0.01 PPM/%

## **Temperature Variations**

	o ranationo		
		Channel 1 (MHz)	Dev. (MHz)
Channel Frequ	iency:	13.5621	
Temp (C)	Voltage		
-20	12	13.56187	0.00023
-10	12	13.56213	0.00003
0	12	13.56217	0.00007
10	12	13.56217	0.00007
20	12	13.56213	0.00003
30	12	13.5621	0.00000
40	12	13.56203	0.00007
50	12	13.562	0.00010

## **Voltage Variations (±15%)**

Tollage Fallatione	_:•/	7	
20	10.2	13.56213	0.00003
20	12	13.56213	0.00003
20	13.8	13.56213	0.00003

Max Deviation (MHz)	0.00023
Max Deviation (%)	0.00170
	PASS

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# Frequency Stability

Customer: Ingersoll Rand

WO#: 91096

Date: 8-Oct-10

Test Engineer: Chuck Kendall

Test Specification FCC 15.225

Device Model #: XF2110C

Operating Voltage:12VDC/VACFrequency Limit:0.01PPM/%

**Temperature Variations** 

		Channel 1 (MHz)	Dev. (MHz)
Channel Frequency:		13.561797	
Temp (C)	Voltage		
-20	12	13.56187	0.00007
-10	12	13.56187	0.00007
0	12	13.56187	0.00007
10	12	13.56187	0.00007
20	12	13.56180	0.00000
30	12	13.56183	0.00003
40	12	13.5618	0.00000
50	12	13.56177	0.00003

**Voltage Variations (±15%)** 

20	10.2	13.56180	0.00000
20	12	13.56180	0.00000
20	13.8	13.56180	0.00000

Max Deviation (MHz)	0.00135
Max Deviation (%)	0.00054
	PASS



# Test Setup Photos



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# 15.209 Spurious Emissions

#### **Test Data**

Test Location: CKC Laboratories, Inc. • 5046 Sierra Pines Drive • Mariposa, CA 95338 • (209) 966-5240

Customer: Ingersoll Rand (XceedID)
Specification: 15.209 Radiated Emissions

 Work Order #:
 91096
 Date: 10/5/2010

 Test Type:
 Maximized Emissions
 Time: 11:51:18

Equipment: **Physical Access Control Reader** Sequence#: 3
Manufacturer: Ingersoll Rand Tested By: Chuck Kendall

Manufacturer: Ingersoll Rand
Model: XF2100C/XF2110C/XF1100C

Model: XF2100C/XF2110C/XF1100 S/N: 0100/0100/0100

Test Equipment:

_ rest =qtt	Pilleritt				
ID	Asset #	Description	Model	Calibration Date	Cal Due Date
	AN01992	Biconilog Antenna	CBL6111C	10/9/2009	10/9/2011
	AN00062	Preamp	8447D	6/23/2010	6/23/2012
	AN02660	Spectrum Analyzer	E4446A	6/30/2010	6/30/2012
	ANP05904	Cable	32022-2-29094K-	6/9/2009	6/9/2011
			144TC		
	ANP01403	Cable	58758-23	6/10/2009	6/10/2011
T1	AN00226	Loop Antenna	6502	4/10/2009	4/10/2011
T2	ANMA10M	Cable		5/10/2009	5/10/2011

Equipment Under Test (\* = EUT):

Function	Manufacturer	Model #	S/N
Physical Access Control Reader	Ingersoll Rand	XF2110C	0100
Physical Access Control Reader	Ingersoll Rand	XF2100C	0100
Physical Access Control Reader	Ingersoll Rand	XF1100C	0100

Support Devices:

Function	Manufacturer	Model #	S/N
DC Power Supply	Topward Electric	TPS 4000	918520
	Instruments		

#### Test Conditions / Notes:

Tag reader is setting upright (vertical) to the surface of the wooden support table 80cm atop a 40' diameter flush-mounted turntable. It is displaying a red light until the tag activates it.

Range of frequencies: 0.009 MHz to 30 MHz Range of frequencies: 0.009 MHz to 30 MHz From 9 kHz to 150 kHz -RBW=200Hz, VBW=1kHz From 150 kHz to 30 MHz - RBW=9kHz, VBW=30kHz

 $Temp = 60^{\circ}F$ 

Relative Humidity = 50 %

Press = 97.2 mb

Note: An extra model, XF1100C, was tested at the same time but does not pertain to this report.

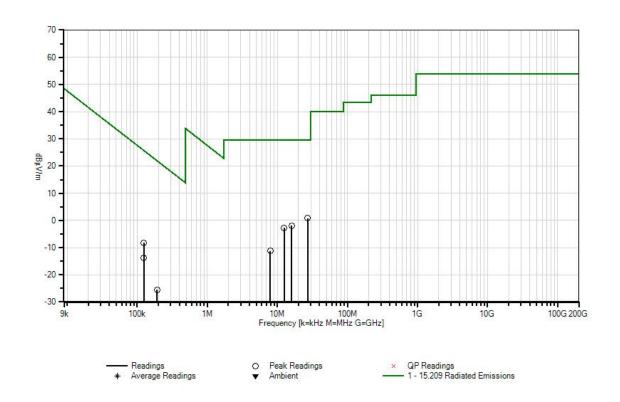
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Ext Attn: 0 dB

Measur	ement Data:	Re	eading list	ted by ma	ırgin.		Τe	est Distance	e: 3 Meters		
#	Freq	Rdng	T1	T2			Dist	Corr	Spec	Margin	Polar
	MHz	dΒμV	dB	dB	dB	dB	Table	$dB\muV/m$	$dB\muV/m$	dB	Ant
1	27.146M	33.5	+6.2	+1.2			-40.0	0.9	29.5	-28.6	Vert
2	15.984M	26.8	+10.3	+0.9			-40.0	-2.0	29.5	-31.5	Vert
3	12.517M	26.6	+9.9	+0.8			-40.0	-2.7	29.5	-32.2	Vert
4	124.392k	62.0	+9.7	+0.0			-80.0	-8.3	25.7	-34.0	Vert
5	124.916k	56.5	+9.7	+0.0			-80.0	-13.8	25.7	-39.5	Vert
6	7.942M	18.9	+9.3	+0.6			-40.0	-11.2	29.5	-40.7	Vert
7	192.830k	44.7	+9.8	+0.0			-80.0	-25.5	21.9	-47.4	Vert

CKC Laboratories, Inc. Date: 10/5/2010 Time: 11:51:18 Ingersoll Rand (XceedID) WO#: 91096 15.209 Radiated Emissions Test Distance: 3 Meters Sequence#: 3 Ext ATTN: 0 dB





Test Location: CKC Laboratories, Inc. • 5046 Sierra Pines Drive • Mariposa, CA 95338 • (209) 966-5240

Customer: Ingersoll Rand (XceedID)
Specification: 15.209 Radiated Emissions

Work Order #: 91096 Date: 10/5/2010
Test Type: Maximized Emissions Time: 10:33:03
Equipment: Physical Access Control Reader Sequence#: 1

Manufacturer: Ingersoll Rand Tested By: Chuck Kendall

Model: XF2100C/XF2110C

S/N: 0100/0100

#### Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	AN01992	Biconilog Antenna	CBL6111C	10/9/2009	10/9/2011
T2	AN00062	Preamp	8447D	6/23/2010	6/23/2012
	AN02660	Spectrum Analyzer	E4446A	6/30/2010	6/30/2012
T3	ANP05904	Cable	32022-2-29094K-	6/9/2009	6/9/2011
			144TC		
T4	ANP01403	Cable	58758-23	6/10/2009	6/10/2011

#### Equipment Under Test (\* = EUT):

Function	Manufacturer	Model #	S/N	
Physical Access Control	Ingersoll Rand	XF2110C	0100	
Reader				
Physical Access Control	Ingersoll Rand	XF2100C	0100	
Reader				

#### Support Devices:

Function	Manufacturer	Model #	S/N	
DC Power Supply	Topward Electric	TPS 4000	918520	
	Instruments			

#### Test Conditions / Notes:

Tag reader is setting upright (vertical) to the surface of the wooden support table 80cm atop a 40' diameter flush-mounted turntable. It is displaying a red light until the tag activates it.

Range of frequencies: 30 MHz to 1000 MHz

Temp =  $60^{\circ}$ F

Relative Humidity = 50 %

Press = 97.2 mb

#### Ext Attn: 0 dB

Med	ารนา	rement Data:	Re	eading lis	ted by ma	argin.		Τe	est Distance	e: 3 Meters		
#		Freq	Rdng	T1	T2	T3	T4	Dist	Corr	Spec	Margin	Polar
		MHz	dΒμV	dB	dB	dB	dB	Table	$dB\muV/m$	$dB\muV/m$	dB	Ant
	1	244.102M	58.3	+12.2	-30.0	+0.8	+0.7	+0.0	42.0	46.0	-4.0	Horiz
	2	366.165M	54.1	+15.8	-30.1	+1.0	+0.9	+0.0	41.7	46.0	-4.3	Vert
	3	189.870M	58.7	+9.1	-30.2	+0.7	+0.6	+0.0	38.9	43.5	-4.6	Horiz
	(	QP										
	٨	189.864M	59.9	+9.1	-30.2	+0.7	+0.6	+0.0	40.1	43.5	-3.4	Horiz
	5	393.298M	53.1	+16.5	-30.3	+1.0	+0.9	+0.0	41.2	46.0	-4.8	Vert
	(	QP										

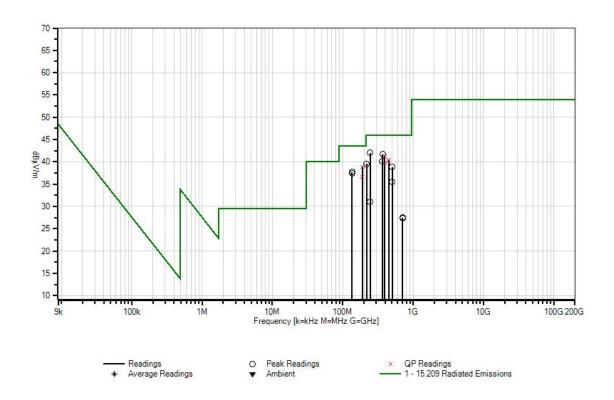
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٨	393.298M	54.1	+16.5	-30.3	+1.0	+0.9	+0.0	42.2	46.0	-3.8	Vert
7	447.547M QP	51.4	+17.5	-30.5	+1.0	+1.0	+0.0	40.4	46.0	-5.6	Horiz
٨	447.544M	52.5	+17.5	-30.5	+1.0	+1.0	+0.0	41.5	46.0	-4.5	Horiz
9	135.635M	55.4	+11.8	-30.6	+0.6	+0.5	+0.0	37.7	43.5	-5.8	Vert
10	447.541M QP	51.2	+17.5	-30.5	+1.0	+1.0	+0.0	40.2	46.0	-5.8	Vert
٨	447.548M	53.6	+17.5	-30.5	+1.0	+1.0	+0.0	42.6	46.0	-3.4	Vert
12	366.161M	52.5	+15.8	-30.1	+1.0	+0.9	+0.0	40.1	46.0	-5.9	Horiz
13	135.630M	55.2	+11.8	-30.6	+0.6	+0.5	+0.0	37.5	43.5	-6.0	Horiz
	393.289M QP	51.6	+16.5	-30.3	+1.0	+0.9	+0.0	39.7	46.0	-6.3	Horiz
٨	393.293M	53.7	+16.5	-30.3	+1.0	+0.9	+0.0	41.8	46.0	-4.2	Horiz
16	216.990M	57.9	+10.4	-30.1	+0.7	+0.6	+0.0	39.5	46.0	-6.5	Vert
	189.873M QP	56.5	+9.1	-30.2	+0.7	+0.6	+0.0	36.7	43.5	-6.8	Vert
٨	189.870M	57.7	+9.1	-30.2	+0.7	+0.6	+0.0	37.9	43.5	-5.6	Vert
	216.985M QP	57.4	+10.4	-30.1	+0.7	+0.6	+0.0	39.0	46.0	-7.0	Horiz
٨	216.983M	59.9	+10.4	-30.1	+0.7	+0.6	+0.0	41.5	46.0	-4.5	Horiz
21	501.778M	49.0	+18.3	-30.5	+1.0	+1.0	+0.0	38.8	46.0	-7.2	Vert
22	501.795M	45.7	+18.3	-30.5	+1.0	+1.0	+0.0	35.5	46.0	-10.5	Horiz
23	244.110M	47.3	+12.2	-30.0	+0.8	+0.7	+0.0	31.0	46.0	-15.0	Vert
24	705.207M	34.2	+21.3	-30.5	+1.2	+1.3	+0.0	27.5	46.0	-18.5	Vert
25	705.204M	34.1	+21.3	-30.5	+1.2	+1.3	+0.0	27.4	46.0	-18.6	Horiz



CKC Laboratories, Inc. Date: 10/5/2010 Time: 10:33:03 Ingersoll Rand (XceedID) WO#: 91096 15.209 Radiated Emissions Test Distance: 3 Meters Sequence#: 1 Ext ATTN: 0 dB





# Test Setup Photos



Low Frequency - Horizontal



Low Frequency - Vertical





High Frequency



# SUPPLEMENTAL INFORMATION

## **Measurement Uncertainty**

Uncertainty Value	Parameter
4.73 dB	Radiated Emissions
3.34 dB	Mains Conducted Emissions
3.30 dB	Disturbance Power

The reported measurement uncertainties are calculated based on the worst case of all laboratory environments from CKC Laboratories, Inc. test sites. Only those parameters which require estimation of measurement uncertainty are reported. The reported worst case measurement uncertainty is less than the maximum values derived in CISPR 16-4-2. Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k=2. Compliance is deemed to occur provided measurements are below the specified limits.

### **Emissions Test Details**

#### **TESTING PARAMETERS**

The cables were routed consistent with the typical application by varying the configuration of the test sample. Interface cables were connected to the available ports of the test unit. The effect of varying the position of the cables was investigated to find the configuration that produced maximum emissions. Cables were of the type and length specified in the individual requirements. The length of cable that produced maximum emissions was selected.

The equipment under test (EUT) was set up in a manner that represented its normal use, as shown in the setup photographs. Any special conditions required for the EUT to operate normally are identified in the comments that accompany the emissions tables.

The emissions data was taken with a spectrum analyzer or receiver. Incorporating the applicable correction factors for distance, antenna, cable loss and amplifier gain, the data was reduced as shown in the table below. The corrected data was then compared to the applicable emission limits. Preliminary and final measurements were taken in order to ensure that all emissions from the EUT were found and maximized.

#### **CORRECTION FACTORS**

The basic spectrum analyzer reading was converted using correction factors as shown in the highest emissions readings in the tables. For radiated emissions in dB $\mu$ V/m, the spectrum analyzer reading in dB $\mu$ V was corrected by using the following formula. This reading was then compared to the applicable specification limit.

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SAMPLE CALCULATIONS						
	Meter reading (dBμV)					
+	Antenna Factor	(dB)				
+	Cable Loss	(dB)				
-	<b>Distance Correction</b>	(dB)				
-	Preamplifier Gain	(dB)				
=	Corrected Reading	(dBμV/m)				

#### **TEST INSTRUMENTATION AND ANALYZER SETTINGS**

The test instrumentation and equipment listed were used to collect the emissions data. A spectrum analyzer or receiver was used for all measurements. The following table shows the measuring equipment bandwidth settings that were used in designated frequency bands. For testing emissions, an appropriate reference level and a vertical scale size of 10 dB per division were used.

MEASURING EQUIPMENT BANDWIDTH SETTINGS PER FREQUENCY RANGE						
TEST BEGINNING FREQUENCY ENDING FREQUENCY BANDWIDTH SET						
CONDUCTED EMISSIONS	150 kHz	30 MHz	9 kHz			
RADIATED EMISSIONS	30 MHz	1000 MHz	120 kHz			
RADIATED EMISSIONS	1000 MHz	>1 GHz	1 MHz			

#### SPECTRUM ANALYZER/RECEIVER DETECTOR FUNCTIONS

The notes that accompany the measurements contained in the emissions tables indicate the type of detector function used to obtain the given readings. Unless otherwise noted, all readings were made in the "Peak" mode. Whenever a "Quasi-Peak" or "Average" reading is listed as one of the highest readings, this is indicated as a "QP" or an "Ave" on the appropriate rows of the data sheets. The following paragraphs describe in more detail the detector functions and when they were used to obtain the emissions data.

#### Peak

In this mode, the spectrum analyzer/receiver readings recorded all emissions at their peak value as the frequency band selected was scanned. By combining this function with another feature of the measuring device called "peak hold," the measuring device had the ability to measure transients or low duty cycle transient emission peak levels. In this mode the measuring device made a slow scan across the frequency band selected and measured the peak emission value found at each frequency across the band.

#### **Quasi-Peak**

When the true peak values exceeded or were within 2 dB of the specification limit, quasi-peak measurements were taken using the quasi-peak detector.

#### <u>Average</u>

For certain frequencies, average measurements may be made using the spectrum analyzer/receiver. To make these measurements, the test engineer reduces the video bandwidth on the measuring device until the modulation of the signal is filtered out. At this point the measuring device is set into the linear mode and the scan time is reduced.

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