



ADDENDUM TO INDALA TEST REPORT FC02-039B

FOR THE

HEAVY DUTY KEYPAD READER, FP50tcf

FCC PART 15 SUBPART C SECTION 15.209 AND 15.207

COMPLIANCE

DATE OF ISSUE: MAY 12, 2004

PREPARED FOR:

Indala
6850 B Santa Teresa Blvd.
San Jose, CA 95119-1205

W.O. No.: 82188

PREPARED BY:

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5473A Clouds Rest
Mariposa, CA 95338

Date of test: May 10, 2004

Report No.: FC02-039C

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ADMINISTRATIVE INFORMATION

DATE OF TEST: May 10, 2004

DATE OF RECEIPT: May 10, 2004

PURPOSE OF TEST: To demonstrate the compliance of the Proximity Access Control Reader, ARK-501 with the requirements for FCC Part 15 Subpart C Sections 15.207 and 15.209 devices.
Addendum A is to change the name to FlexPass™ Keypad Readers and clarify the voltage variation testing.
Addendum B is to revise the fundamental data sheet.
Addendum C is to demonstrate the compliance of the Heavy Duty Keypad Reader, FP50tcf with the requirements for FCC Part 15 Subpart C Section 15.209 and 15.207 devices with new testing.

TEST METHOD: ANSI C63.4 (1992)

MANUFACTURER: Indala
6850 B Santa Teresa Blvd.
San Jose, CA 95119-1205

REPRESENTATIVE: Steve Rose

TEST LOCATION: CKC Laboratories, Inc.
5473A Clouds Rest
Mariposa, CA 95338

SUMMARY OF RESULTS

As received, the Indala Heavy Duty Keypad Reader, FP50tcf was found to be fully compliant with the following standards and specifications:

Canadian Standard	Canadian Section	FCC Standard	FCC Section	Test Description
RSS 210	5.5	47CFR	15.203	Antenna Connector Requirements
RSS 210	6.2.1	47CFR	15.209	General Radiated Emissions Requirement
RSS 210	6.3	47CFR	15.205	Restricted Bands of Operation
RSS 210	6.4	47CFR	15.215(c)	Frequency Stability Recommendation
RSS 210	6.6	47CFR	15.207	AC Mains Conducted Emissions Requirement

CONDITIONS FOR COMPLIANCE

EUT drain wire tied to DC common.

APPROVALS

Steve Behm, Director of Engineering Services

QUALITY ASSURANCE:

TEST PERSONNEL:

A handwritten signature in black ink that reads "Steve Behm".

Steve Behm, Director of Engineering Services

A handwritten signature in black ink that reads "Randy Clark".

Randy Clark, EMC Engineer

A handwritten signature in black ink that reads "Joyce Walker".

Joyce Walker, Quality Assurance Administrative Manager

FCC 15.31(m) Number Of Channels

This device operates on a single channel.

FCC 15.33(a) Frequency Ranges Tested

15.207 Conducted Emissions: 150 kHz – 30 MHz

15.209 Radiated Emissions: 9 kHz – 1000 MHz

FCC SECTION 15.35: ANALYZER BANDWIDTH SETTINGS PER FREQUENCY RANGE			
TEST	BEGINNING FREQUENCY	ENDING FREQUENCY	BANDWIDTH SETTING
CONDUCTED EMISSIONS	150 kHz	30 MHz	9 kHz
RADIATED EMISSIONS	9 kHz	150 kHz	200 Hz
RADIATED EMISSIONS	150 kHz	30 MHz	9 kHz
RADIATED EMISSIONS	30 MHz	1000 MHz	120 kHz

FCC 15.203 Antenna Requirements

The antenna is an integral part of the EUT and is non-removable; therefore the EUT complies with Section 15.203 of the FCC rules.

Eut Operating Frequency

The EUT was operating at 125 kHz.

Temperature And Humidity During Testing

The temperature during testing was within +15°C and + 35°C.

The relative humidity was between 20% and 75%.

EQUIPMENT UNDER TEST (EUT) DESCRIPTION

The EUT tested by CKC Laboratories was a production unit. The following model has been tested by CKC Laboratories: **Access Control Reader, FP507XX**

The manufacturer states that the following additional models are identical electrically to the one which was tested, or any differences between them do not affect their EMC characteristics, and therefore they comply to the level of testing equivalent to the tested models.

Heavy Duty Keypad Reader, FP50tcf where t = type, c = color and f = format

KEYPAD READER PRODUCT NUMBERS

PRODUCT NAME "HEAVY DUTY KEYPAD READER"

	Style	Read Range	Type	Color	Output Protocol	Description				
FP	5	0	6	1	M	KEYPAD	5"	MEMBRANE	Black	3X4 MATRIX
FP	5	0	6	7	M	KEYPAD	5"	MEMBRANE	Biege	3X4 MATRIX
FP	5	0	6	1	B	KEYPAD	5"	MEMBRANE	Black	BUFFERED
FP	5	0	6	7	B	KEYPAD	5"	MEMBRANE	Biege	BUFFERED
FP	5	0	7	1	B	KEYPAD	5"	HEVY DUTY	Black	BUFFERED
FP	5	0	7	7	B	KEYPAD	5"	HEVY DUTY	Biege	BUFFERED
		FP	5	0	t	c	f			
							----	Output Format		
						-----	Color			
					-----	Type				

EQUIPMENT UNDER TEST

Heavy Duty Keypad Reader

Manuf: Indala
Model: FP50tcf
Serial: 051004-001
FCC ID: E9UARK501

PERIPHERAL DEVICES

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

DC Power Supply

Manuf: Topward Electric Instruments Co., Ltd.
Model: TPS-2000
Serial: 920035
FCC ID: NA

REPORT OF MEASUREMENTS

The following tables report the worst case emissions levels recorded during the tests performed on the EUT. All readings taken were peak readings unless otherwise stated. The data sheets from which the emissions tables were compiled are contained in Appendix C.

Table 1: FCC 15.209 Fundamental									
FREQUENCY MHz	METER READING dB μ V	CORRECTION FACTORS				CORRECTED READING dB μ V/m	SPEC LIMIT dB μ V/m	MARGIN dB	NOTES
		Ant dB	Amp dB	Cable dB	Corr dB				
0.125	68.1	9.6		0.1	-80.0	-2.2	25.7	-27.9	V
0.125	63.6	9.6		0.1	-80.0	-6.7	25.7	-32.4	H

Test Method: ANSI C63.4 (1992)
Spec Limit: FCC Part 15 Subpart C Section 15.209
Test Distance: 3 Meters

NOTES: H = Horizontal Polarization
V = Vertical Polarization

COMMENTS: EUT is an Access Control Reader operating of a frequency of 125kHz. The EUT is powered by 12VDC supplied via support DC power supply. The EUT is mounted vertically on a board simulating normal installation. Frequency Range Investigated: Carrier. Test distance correction factor 40dB per decade applied in accordance with 15.31 to correct test data taken at 3 meters for comparison at the limit distance of 300 meters. Temperature: 19°C, Humidity: 40%. EUT drain wire tied to DC common.

Table 2: FCC 15.209 Six Highest Radiated Emission Levels: 9 kHz - 30 MHz

FREQUENCY MHz	METER READING dB μ V	CORRECTION FACTORS				CORRECTED READING dB μ V/m	SPEC LIMIT dB μ V/m	MARGIN dB	NOTES
		Ant dB	Amp dB	Cable dB	Corr dB				
0.252	47.8	9.6		0.1	-80.0	-22.5	19.6	-42.1	H
0.500	35.3	9.6		0.2	-40.0	5.1	33.6	-28.5	H
0.625	32.2	9.6		0.2	-40.0	2.0	31.7	-29.7	H
0.750	29.2	9.7		0.2	-40.0	-0.9	30.1	-31.0	H
0.875	29.4	9.7		0.2	-40.0	-0.7	28.7	-29.4	H
1.000	28.4	9.8		0.3	-40.0	-1.5	27.6	-29.1	H

Test Method: ANSI C63.4 (1992)
Spec Limit: FCC Part 15 Subpart C Section 15.209
Test Distance: 3 Meters

NOTES: H = Horizontal Polarization

COMMENTS: EUT is an Access Control Reader operating of a frequency of 125kHz. The EUT is powered by 12VDC supplied via support DC power supply. The EUT is mounted vertically on a board simulating normal installation. Frequency Range Investigated 9 kHz to 30 MHz. Test distance correction factor 40dB per decade applied in accordance with 15.31 to correct test data taken at 3 meters for comparison at the limit distance of 30 and 300 meters. Temperature: 19°C, Humidity: 40%. No EUT emissions detected within 20dB of the limit within this frequency range. EUT drain wire tied to DC common.

Table 3: FCC 15.209 Six Highest Radiated Emission Levels: 30-1000 MHz

FREQUENCY MHz	METER READING dB μ V	CORRECTION FACTORS				CORRECTED READING dB μ V/m	SPEC LIMIT dB μ V/m	MARGIN dB	NOTES
		Ant dB	Amp dB	Cable dB	Dist dB				
64.088	40.9	5.9	-27.3	1.8	10.0	31.3	40.0	-8.7	VQ
352.092	34.5	14.2	-26.8	4.5	10.0	36.4	46.0	-9.6	H
384.092	34.1	15.0	-27.1	4.9	10.0	36.9	46.0	-9.1	H
432.112	34.1	16.1	-27.4	5.0	10.0	37.8	46.0	-8.2	H
480.112	32.1	17.0	-27.7	5.3	10.0	36.7	46.0	-9.3	VQ
624.087	32.4	19.4	-27.9	6.1	10.0	40.0	46.0	-6.0	H

Test Method: ANSI C63.4 (1992)
Spec Limit: FCC Part 15 Subpart C Section 15.209
Test Distance: 10 Meters

NOTES: H = Horizontal Polarization
V = Vertical Polarization
Q = Quasi Peak Reading

COMMENTS: EUT is an Access Control Reader operating of a frequency of 125kHz. The EUT is powered by 12VDC supplied via support DC power supply. The EUT is mounted vertically on a board simulating normal installation. Frequency Range Investigated 30-1000MHz. Temperature: 19°C, Humidity: 40%. Test distance correction factor 20dB per decade applied in accordance with 15.31 to correct test data taken at 10 meters for comparison at the limit distance of 3 meters. EUT drain wire tied to DC common.

Table 4: FCC 15.207 Six Highest Conducted Emission Levels

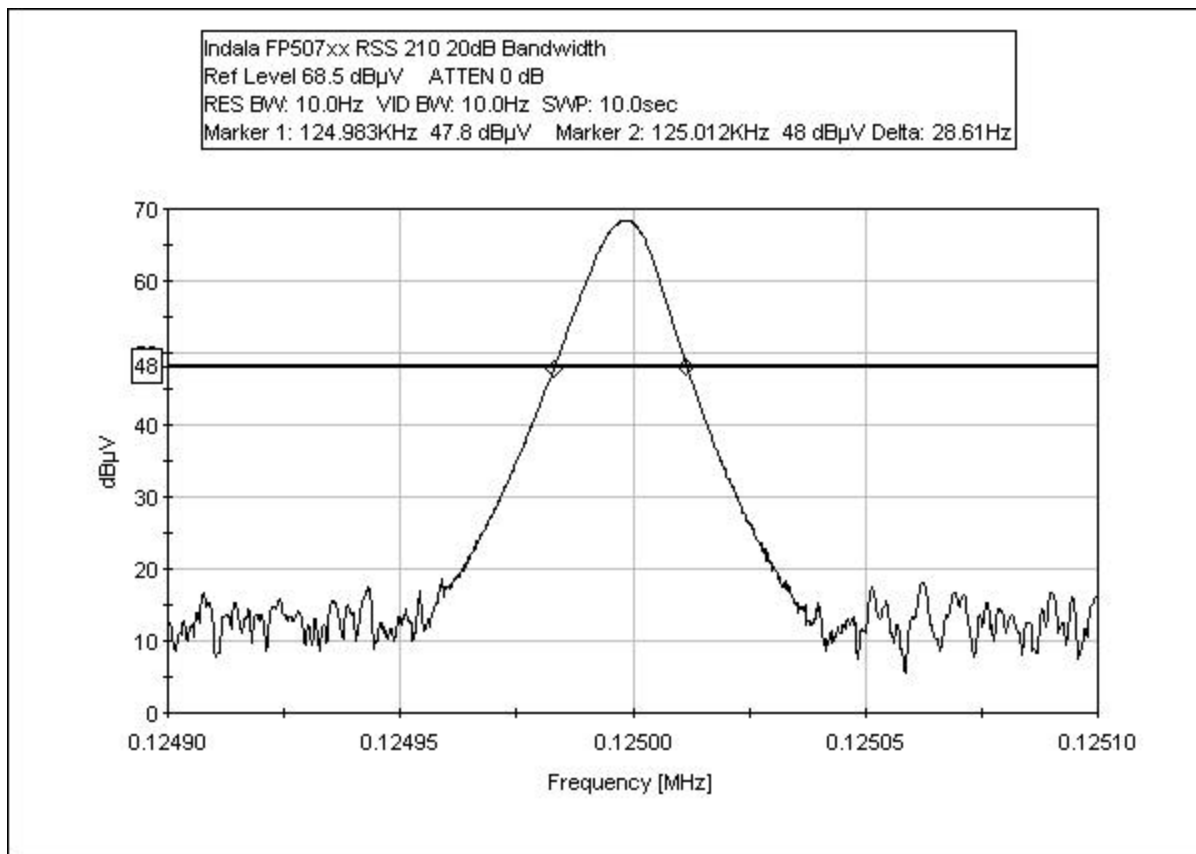
FREQUENCY MHz	METER READING dBμV	CORRECTION FACTORS				CORRECTED READING dBμV	SPEC LIMIT dBμV	MARGIN dB	NOTES
		Lisn dB	HPF dB	Cable dB					
10.011880	33.0	0.4	0.1	0.3		33.8	50.0	-16.2	B
13.678540	32.2	0.5	0.1	0.4		33.2	50.0	-16.8	W
13.804670	34.6	0.5	0.1	0.4		35.6	50.0	-14.4	W
13.822680	32.8	0.4	0.1	0.4		33.7	50.0	-16.3	B
16.011870	36.9	0.4	0.1	0.4		37.8	50.0	-12.2	B
16.020880	38.9	0.4	0.1	0.4		39.8	50.0	-10.2	W

Test Method: ANSI C63.4 (1992)
Spec Limit: FCC Part 15.207

NOTES: B = Black Lead
W = White Lead

COMMENTS: EUT is an Access Control Reader operating of a frequency of 125kHz. The EUT is powered by 12VDC supplied via support DC power supply. EUT LISN is connected to DC power supply. The EUT is mounted vertically on a board simulating normal installation. Frequency Range Investigated 150 kHz to 30 MHz. Temperature: 19°C, Humidity: 40%. EUT drain wire tied to DC common.

RSS 210 20dB BANDWIDTH



EUT SETUP

The equipment under test (EUT) was set up in a manner that represented its normal use, as shown in the photographs in Appendix A. Any special conditions required for the EUT to operate normally are identified in the comments that accompany the emissions tables. The corrected data was then compared to the applicable emission limits to determine compliance.

The radiated and conducted emissions data of the EUT was taken with the HP Spectrum Analyzer. Incorporating the applicable correction factors for distance, antenna, cable loss and amplifier gain, the data was reduced as shown in Table A.

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 μ V/m, the spectrum analyzer reading in dB μ V was corrected by using the following formula in Table A. This reading was then compared to the applicable specification limit to determine compliance.

TABLE A: SAMPLE CALCULATIONS		
	Meter reading	(dB μ V)
+	Antenna Factor	(dB)
+	Cable Loss	(dB)
-	Distance Correction	(dB)
-	Preamplifier Gain	(dB)
=	Corrected Reading	(dB μ V/m)

TEST INSTRUMENTATION AND ANALYZER SETTINGS

The test instrumentation and equipment listed in Appendix B were used to collect both the radiated and conducted emissions data. For radiated measurements from 9 kHz to 30 MHz, the magnetic loop antenna was used. For frequencies from 30 to 1000 MHz, the biconilog antenna was used. Conducted emissions tests required the use of the FCC type LISNs.

The HP spectrum analyzer was used for all measurements. Table B shows the analyzer bandwidth settings that were used in designated frequency bands. For conducted emissions, an appropriate reference level and a vertical scale size of 10 dB per division were used. A 10 dB external attenuator was also used during conducted tests, with internal offset correction in the analyzer. During radiated testing, the measurements were made with 0 dB of attenuation, a reference level of 97 dB μ V, and a vertical scale of 10 dB per division.

SPECTRUM ANALYZER DETECTOR FUNCTIONS

The notes that accompany the measurements contained in the 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 six highest readings, this is indicated as a "Q" or an "A" in the appropriate table. 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 or test engineer recorded all emissions at their peak value as the frequency band selected was scanned. By combining this function with another feature of the analyzer called "peak hold," the analyzer had the ability to measure transients or low duty cycle transient emission peak levels. In this mode the analyzer 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 HP Quasi-Peak Adapter for the HP Spectrum Analyzer. The detailed procedure for making quasi peak measurements contained in the HP Quasi-Peak Adapter manual were followed.

Average

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

EUT TESTING

Mains Conducted Emissions

During conducted emissions testing, the EUT was located on a wooden table measuring approximately 80 cm high, 1 meter deep, and 1.5 meters in length. One wall of the room where the EUT was located has a minimum 2 meter by 2 meter conductive plane. The EUT was mounted on the wooden table 40 cm away from the conductive plane, and 80 cm from any other conductive surface.

The vertical metal plane used for conducted emissions was grounded to the earth. Power to the EUT was provided through a LISN. The LISN was grounded to the ground plane. All other objects were kept a minimum of 80 cm away from the EUT during the conducted test.

The LISNs used were 50 μH / ± 50 ohms. Above 150 kHz, a 0.15 μF series capacitor was added in-line prior to connecting the analyzer to restore the proper impedance for the range. A 30 to 50 second sweep time was used for automated measurements in the frequency bands of 150 kHz to 500 kHz, and 500 kHz to 30 MHz. All readings within 20 dB of the limit were recorded, and those within 6 dB of the limit were examined with additional measurements using a slower sweep time.

Radiated Emissions

The EUT was mounted on a nonconductive, rotating table 80 cm above the conductive grid. The nonconductive table dimensions were 1 meter by 1.5 meters.

During the preliminary radiated scan, the EUT was powered up and operating in its defined FCC test mode. For radiated measurements from 9 kHz to 30 MHz, the magnetic loop antenna was used. The frequency range of 30 MHz to 1000 MHz was scanned with the biconilog antenna located about 1.5 meter above the ground plane in the vertical polarity. During this scan, the turntable was rotated and all peaks at or near the limit were recorded. A scan of the FM band from 88 to 110 MHz was then made using a reduced resolution bandwidth and frequency span. The biconilog antenna was changed to the horizontal polarity and the above steps were repeated. Care was taken to ensure that no frequencies were missed within the FM and TV bands. An analysis was performed to determine if the signals that were at or near the limit were caused by an ambient transmission. If unable to determine by analysis, the equipment was powered down to make the final determination if the EUT was the source of the emission.

A thorough scan of all frequencies was made manually using a small frequency span, rotating the turntable as needed. The test engineer maximized the readings with respect to the table rotation, antenna height, and configuration of EUT. Maximizing of the EUT was achieved by monitoring the spectrum analyzer on a closed circuit television monitor.

APPENDIX A

TEST SETUP PHOTOGRAPHS

PHOTOGRAPH SHOWING RADIATED EMISSIONS



Radiated Emissions - Front View

PHOTOGRAPH SHOWING RADIATED EMISSIONS



Radiated Emissions - Back View

PHOTOGRAPH SHOWING MAINS CONDUCTED EMISSIONS



Mains Conducted Emissions - Front View

APPENDIX B

TEST EQUIPMENT LIST

15.209 Fundamental and <30 MHz

Function	S/N	Calibration Date	Cal Due Date	Asset #
HP 8566B SA	2209A01404	02/26/2003	02/26/2005	00490
HP 8566B SA Display	2403A08241	02/26/2003	02/26/2005	00489
HP 85650A QPA	2811A01267	02/26/2003	02/26/2005	00478
EMCO Loop Antenna	1074	05/21/2003	05/21/2005	00226

15.209 30-1000 MHz

Function	S/N	Calibration Date	Cal Due Date	Asset #
HP 8566B SA	2209A01404	02/26/2003	02/26/2005	00490
HP 8566B SA Display	2403A08241	02/26/2003	02/26/2005	00489
HP 85650A QPA	2811A01267	02/26/2003	02/26/2005	00478
HP 8447D Preamp	1937A02604	03/07/2003	03/07/2005	00099
Chase CBL6111C Bilog	2456	12/13/2002	12/13/2004	1991

15.207

Function	S/N	Calibration Date	Cal Due Date	Asset #
HP 8566B SA	2209A01404	02/26/2003	02/26/2005	00490
HP 8566B SA Display	2403A08241	02/26/2003	02/26/2005	00489
HP 85650A QPA	2811A01267	02/26/2003	02/26/2005	00478
LISN Model 8028-50-TS-24-BNC	8379276 & 8379280	06/05/2003	06/05/2005	00330
150kHz HP Filter TTE	G7754	04/20/2004	04/20/2006	02608

APPENDIX C:
MEASUREMENT DATA SHEETS

Test Location: CKC Laboratories • 5473A Clouds Rest • Mariposa, CA 95338 • 1-800-500-4EMC (4362)

Customer: **Indala**
 Specification: **FCC 15.209**
 Work Order #: **82188**
 Test Type: **Maximized Emissions**
 Equipment: **Access Control Reader**
 Manufacturer: **Indala**
 Model: **FP507XX**
 S/N: **051004-001**

Date: 05/10/2004
 Time: 13:32:07
 Sequence#: 5
 Tested By: Randal Clark

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
Access Control Reader*	Indala	FP507XX	051004-001

Support Devices:

Function	Manufacturer	Model #	S/N
DC Power Supply	Topward Electric Instruments Co., Ltd.	TPS-2000	920035

Test Conditions / Notes:

EUT is an Access Control Reader operating of a frequency of 125kHz. The EUT is powered by 12VDC supplied via support DC power supply. The EUT is mounted vertically on a board simulating normal installation. Frequency Range Investigated: Carrier. Test distance correction factor 40dB per decade applied in accordance with 15.31 to correct test data taken at 3 meters for comparison at the limit distance of 300 meters. Temperature: 19°C, Humidity: 40%. EUT drain wire tied to DC common.

Transducer Legend:

T1=Cable - 10 Meter	T2=Mag Loop - Site B - AN 00226 - 9kHz-30M
T3=15.31 3m 40dB/Dec Correction	

Measurement Data: Reading listed by margin. Test Distance: 3 Meters

#	Freq MHz	Rdng dBμV	T1 dB	T2 dB	T3 dB	Dist dB	Corr dBμV/m	Spec dBμV/m	Margin dB	Polar Ant
1	125.000k	68.1	+0.1	+9.6	-80.0	+0.0	-2.2	25.7	-27.9	Vert 100
2	125.000k	63.6	+0.1	+9.6	-80.0	+0.0	-6.7	25.7	-32.4	Horiz 100

Test Location: CKC Laboratories • 5473A Clouds Rest • Mariposa, CA 95338 • 1-800-500-4EMC (4362)

Customer: **Indala**
 Specification: **FCC 15.209**
 Work Order #: **82188**
 Test Type: **Maximized Emissions**
 Equipment: **Access Control Reader**
 Manufacturer: **Indala**
 Model: **FP507XX**
 S/N: **051004-001**

Date: 05/10/2004
 Time: 13:57:35
 Sequence#: 6
 Tested By: Randal Clark

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
Access Control Reader*	Indala	FP507XX	051004-001

Support Devices:

Function	Manufacturer	Model #	S/N
DC Power Supply	Topward Electric Instruments Co., LTD	TPS-2000	920035

Test Conditions / Notes:

EUT is an Access Control Reader operating of a frequency of 125kHz. The EUT is powered by 12VDC supplied via support DC power supply. The EUT is mounted vertically on a board simulating normal installation. Frequency Range Investigated 9 kHz to 30 MHz. Test distance correction factor 40dB per decade applied in accordance with 15.31 to correct test data taken at 3 meters for comparison at the limit distance of 30 and 300 meters. Temperature: 19°C, Humidity: 40%. No EUT emissions detected within 20dB of the limit within this frequency range. EUT drain wire tied to DC common.

Transducer Legend:

T1=Cable - 10 Meter	T2=Mag Loop - Site B - AN 00226 - 9kHz-30M
T3=15.31 3m 40dB/Dec Correction	

Measurement Data:

Reading listed by margin.

Test Distance: 3 Meters

#	Freq MHz	Rdng dB μ V	T1 dB	T2 dB	T3 dB	dB	Dist Table	Corr dB μ V/m	Spec dB μ V/m	Margin dB	Polar Ant
1	499.950k	35.3	+0.2	+9.6	-40.0		+0.0 180	5.1	33.6	-28.5	Horiz 100
2	999.800k	28.4	+0.3	+9.8	-40.0		+0.0 180	-1.5	27.6	-29.1	Horiz 100
3	875.150k	29.4	+0.2	+9.7	-40.0		+0.0 180	-0.7	28.7	-29.4	Horiz 100
4	625.090k	32.2	+0.2	+9.6	-40.0		+0.0 180	2.0	31.7	-29.7	Horiz 100
5	749.950k	29.2	+0.2	+9.7	-40.0		+0.0 180	-0.9	30.1	-31.0	Horiz 100
6	252.400k	47.8	+0.1	+9.6	-80.0		+0.0 180	-22.5	19.6	-42.1	Horiz 100
7	374.930k	36.0	+0.2	+9.6	-80.0		+0.0 180	-34.2	16.1	-50.3	Horiz 100

Test Location: CKC Laboratories • 5473A Clouds Rest • Mariposa, CA 95338 • 1-800-500-4EMC (4362)

Customer: **Indala**
 Specification: **FCC 15.209**
 Work Order #: **82188**
 Test Type: **Maximized Emissions**
 Equipment: **Access Control Reader**
 Manufacturer: **Indala**
 Model: **FP507XX**
 S/N: **051004-001**

Date: 05/10/2004
 Time: 17:39:28
 Sequence#: 1
 Tested By: Randal Clark

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
Access Control Reader*	Indala	FP507XX	051004-001

Support Devices:

Function	Manufacturer	Model #	S/N
DC Power Supply	Topward Electric Instruments Co., LTD.	TPS-2000	920035

Test Conditions / Notes:

EUT is an Access Control Reader operating of a frequency of 125kHz. The EUT is powered by 12VDC supplied via support DC power supply. The EUT is mounted vertically on a board simulating normal installation. Frequency Range Investigated 30-1000MHz. Temperature: 19°C, Humidity: 40%. Test distance correction factor 20dB per decade applied in accordance with 15.31 to correct test data taken at 10 meters for comparison at the limit distance of 3 meters. EUT drain wire tied to DC common.

Transducer Legend:

T1=Amp - S/N 604	T2=Bilog Site B
T3=Cable - 10 Meter	

Measurement Data:

Reading listed by margin.

Test Distance: 10 Meters

#	Freq MHz	Rdng dBμV	T1 dB	T2 dB	T3 dB		Dist Table	Corr dBμV/m	Spec dBμV/m	Margin dB	Polar Ant
1	624.087M	32.4	-27.9	+19.4	+6.1		+10.0 180	40.0	46.0	-6.0	Horiz 152
2	432.112M	34.1	-27.4	+16.1	+5.0		+10.0 180	37.8	46.0	-8.2	Horiz 152
3	64.088M QP	40.9	-27.3	+5.9	+1.8		+10.0	31.3	40.0	-8.7	Vert 107
4	384.092M	34.1	-27.1	+15.0	+4.9		+10.0 4	36.9	46.0	-9.1	Horiz 215
5	480.112M QP	32.1	-27.7	+17.0	+5.3		+10.0 180	36.7	46.0	-9.3	Vert 119
6	352.092M	34.5	-26.8	+14.2	+4.5		+10.0 180	36.4	46.0	-9.6	Horiz 215
7	528.112M	29.6	-27.8	+17.9	+5.8		+10.0 180	35.5	46.0	-10.5	Horiz 152
8	320.083M	34.3	-26.6	+13.4	+4.3		+10.0 180	35.4	46.0	-10.6	Horiz 215
9	80.078M QP	37.2	-27.2	+6.7	+2.0		+10.0 149	28.7	40.0	-11.3	Vert 119

Test Location: CKC Laboratories • 5473A Clouds Rest • Mariposa, CA 95338 • 1-800-500-4EMC (4362)

Customer: **Indala**
 Specification: **FCC 15.207 - AVE**
 Work Order #: **82188**
 Test Type: **Conducted Emissions**
 Equipment: **Access Control Reader**
 Manufacturer: **Indala**
 Model: **FP507XX**
 S/N: **051004-001**

Date: 05/10/2004
 Time: 3:51:26 PM
 Sequence#: 8
 Tested By: Randal Clark
 120V 60Hz

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
Access Control Reader*	Indala	FP507XX	051004-001

Support Devices:

Function	Manufacturer	Model #	S/N
DC Power Supply	Topward Electric Instruments Co., Ltd	TPS-2000	920035

Test Conditions / Notes:

EUT is an Access Control Reader operating of a frequency of 125kHz. The EUT is powered by 12VDC supplied via support DC power supply. EUT LISN is connected to DC power supply. The EUT is mounted vertically on a board simulating normal installation. Frequency Range Investigated 150 kHz to 30 MHz Temperature: 19°C, Humidity: 40%. EUT drain wire tied to DC common.

Transducer Legend:

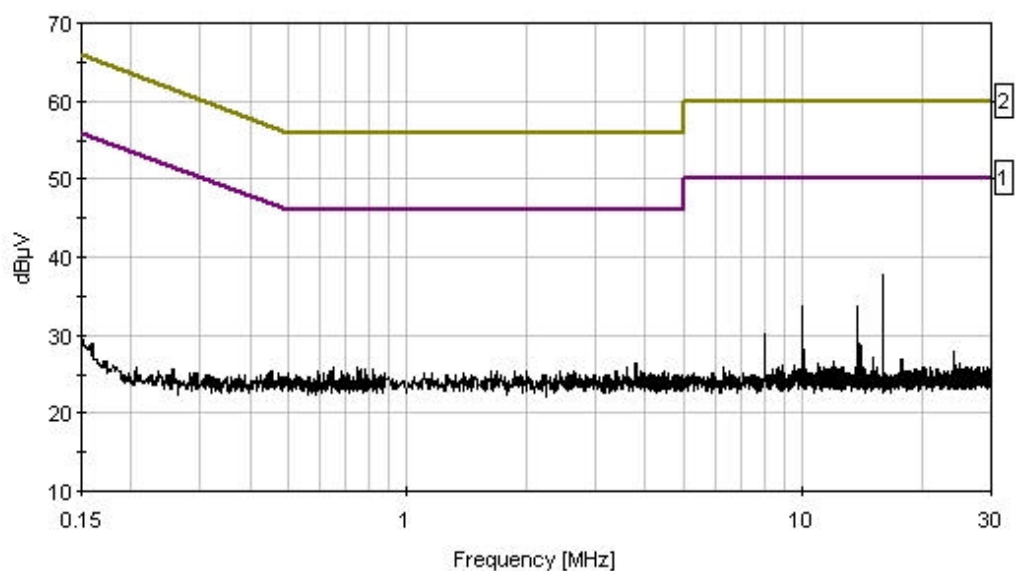
T1=Cable - Internal + cab	T2=LISN Insertion Loss s/n280
T3=HP Filter AN02608	

Measurement Data: Reading listed by margin. Test Lead: Black

#	Freq MHz	Rdng dBμV	T1 dB	T2 dB	T3 dB	Dist dB	Table	Corr dBμV	Spec dBμV	Margin dB	Polar Ant
1	16.012M	36.9	+0.4	+0.4	+0.1	+0.0		37.8	50.0	-12.2	Black
2	10.012M	33.0	+0.3	+0.4	+0.1	+0.0		33.8	50.0	-16.2	Black
3	13.823M	32.8	+0.4	+0.4	+0.1	+0.0		33.7	50.0	-16.3	Black
4	3.782M	25.5	+0.3	+0.4	+0.1	+0.0		26.3	46.0	-19.7	Black
5	8.012M	29.2	+0.3	+0.5	+0.1	+0.0		30.1	50.0	-19.9	Black
6	14.003M	27.7	+0.4	+0.4	+0.1	+0.0		28.6	50.0	-21.4	Black
7	24.017M	26.7	+0.5	+0.4	+0.2	+0.0		27.8	50.0	-22.2	Black
8	15.012M	26.3	+0.4	+0.4	+0.1	+0.0		27.2	50.0	-22.8	Black
9	17.661M	25.8	+0.5	+0.4	+0.2	+0.0		26.9	50.0	-23.1	Black

10	17.814M	25.7	+0.5	+0.4	+0.2	+0.0	26.8	50.0	-23.2	Black
11	151.454k	26.3	+0.1	+0.3	+2.6	+0.0	29.3	55.9	-26.6	Black

CKC Laboratories Date: 05/10/2004 Time: 3:51:26 PM Indala WVO#: 82188
FCC 15.207 - AVE Test Lead: Black 120V 60Hz Sequence#: 8
Indala MN FP507XX



1 - FCC 15.207 - AVE 2 - FCC 15.207 - QP

Test Location: CKC Laboratories • 5473A Clouds Rest • Mariposa, CA 95338 • 1-800-500-4EMC (4362)

Customer: **Indala**
 Specification: **FCC 15.207 - AVE**
 Work Order #: **82188**
 Test Type: **Conducted Emissions**
 Equipment: **Access Control Reader**
 Manufacturer: **Indala**
 Model: **FP507XX**
 S/N: **051004-001**

Date: 05/10/2004
 Time: 4:00:13 PM
 Sequence#: 10
 Tested By: Randal Clark
 120V 60Hz

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
Access Control Reader*	Indala	FP507XX	051004-001

Support Devices:

Function	Manufacturer	Model #	S/N
DC Power Supply	Topward Electric Instruments Co., Ltd	TPS-2000	920035

Test Conditions / Notes:

EUT is an Access Control Reader operating of a frequency of 125kHz. The EUT is powered by 12VDC supplied via support DC power supply. EUT LISN is connected to DC power supply. The EUT is mounted vertically on a board simulating normal installation. Frequency Range Investigated 150 kHz to 30 MHz Temperature: 19°C, Humidity: 40%. EUT drain wire tied to DC common.

Transducer Legend:

T1=Cable - Internal + cab	T2=LISN Insertion Loss s/n276
T3=HP Filter AN02608	

Measurement Data: Reading listed by margin. Test Lead: White

#	Freq MHz	Rdng dBµV	T1 dB	T2 dB	T3 dB	Dist dB	Table	Corr dBµV	Spec dBµV	Margin dB	Polar Ant
1	16.021M	38.9	+0.4	+0.4	+0.1	+0.0		39.8	50.0	-10.2	White
2	13.805M	34.6	+0.4	+0.5	+0.1	+0.0		35.6	50.0	-14.4	White
3	13.679M	32.2	+0.4	+0.5	+0.1	+0.0		33.2	50.0	-16.8	White
4	13.994M	30.1	+0.4	+0.5	+0.1	+0.0		31.1	50.0	-18.9	White
5	15.021M	29.6	+0.4	+0.4	+0.1	+0.0		30.5	50.0	-19.5	White
6	953.554k	25.3	+0.2	+0.3	+0.2	+0.0		26.0	46.0	-20.0	White
7	8.003M	29.1	+0.3	+0.5	+0.1	+0.0		30.0	50.0	-20.0	White
8	15.453M	28.9	+0.4	+0.4	+0.1	+0.0		29.8	50.0	-20.2	White
9	844.476k	25.1	+0.1	+0.2	+0.3	+0.0		25.7	46.0	-20.3	White
10	24.010M	28.6	+0.5	+0.4	+0.2	+0.0		29.7	50.0	-20.3	White

11	10.003M	28.6	+0.3	+0.5	+0.1	+0.0	29.5	50.0	-20.5	White
12	15.174M	28.0	+0.4	+0.4	+0.1	+0.0	28.9	50.0	-21.1	White
13	11.742M	26.7	+0.4	+0.5	+0.1	+0.0	27.7	50.0	-22.3	White
14	12.003M	25.9	+0.4	+0.5	+0.1	+0.0	26.9	50.0	-23.1	White
15	150.727k	26.3	+0.1	+0.4	+2.6	+0.0	29.4	56.0	-26.6	White

CKC Laboratories Date: 05/10/2004 Time: 4:00:13 PM Indala WO#: 82188
FCC 15.207 - AVE Test Lead: White 120V 60Hz Sequence#: 10
Indala MN FP507XX

