

FCC ID PER PART 15 CLASS B
EMI MEASUREMENT AND TEST REPORT

For

CIS Eletronica IND. e COM. Ltda.

Rua Rishin Matsuda, 585,
Sao Paulo, SP, Brazil

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This Report Concerns: ☒ Original Report	Equipment Type: Magnetic Card Reader Easy Tone - ITE
Test Engineer: <u>Jerry Wang</u>	
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Certified By: 	
John Y. Chan – Engineering Manager	
Prepared By: Bay Area Compliance Laboratory Corporation 230 Commercial Street Sunnyvale, CA 94085 Tel: (408) 732-9162 Fax: (408) 732-9164	

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1 - GENERAL INFORMATION

1.1 Product Description for Equipment Under Test (EUT)

The *CIS Eletronica IND. e COM. Ltda.*'s product, model *LCMTEC-5060-T0* or the "EUT" as referred to in this report is a Magnetic Card Reader Easy Tone which measures approximately 4.5"L x 2.5" W x 2" H.

** The test data was only good for the test sample. It may have deviation for other test sample.*

1.2 Objective

The following Class B report is prepared on behalf of *CIS Eletronica IND. e COM. Ltda.* in accordance with Part 2, Subpart J, and Part 15, Subparts A and B of the Federal Communication Commissions rules and regulations and to ICES-003 of the Canadian Interference – Causing Equipment Regulations.

The objective of the manufacturer is to demonstrate compliance with FCC Class B limits for Information Technology Equipment.

1.3 Related Submittal(s)/Grant(s)

No Related Submittals.

1.4 Test Methodology

All measurements contained in this report were conducted with ANSI C63.4 –1992, American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the range of 9 kHz to 40 GHz. All radiated and conducted emissions measurement was performed at Bay Area Compliance Laboratory Corporation. The radiated testing was performed at an antenna-to-EUT distance of 3 meters.

1.5 Test Facility

The Open Area Test site used by Bay Area Compliance Laboratory Corporation to collect radiated and conducted emission measurement data is located in the back parking lot of the building at 230 Commercial Street, Sunnyvale, California, USA.

Test site at Bay Area Compliance Laboratory Corporation has been fully described in reports submitted to the Federal Communication Commission (FCC) and Voluntary Control Council for Interference (VCCI). The details of these reports has been found to be in compliance with the requirements of Section 2.948 of the FCC Rules on February 11 and December 10, 1997 and Article 8 of the VCCI regulations on December 25, 1997. The facility also complies with the radiated and AC line conducted test site criteria set forth in ANSI C63.4-1992.

The Federal Communications Commission and Voluntary Control Council for Interference has the reports on file and is listed under FCC file 31040/SIT 1400F2 and VCCI Registration No.: C-1298 and R-1234. The test site has been approved by the FCC and VCCI for public use and is listed in the FCC Public Access Link (PAL) database.

Additionally, Bay Area Compliance Laboratory Corporation is a National Institute of Standards and Technology (NIST) accredited laboratory, under the National Voluntary Laboratory Accredited Program (NVLAP). The scope of the accreditation covers the FCC Method - 47 CFR Part 15 - Digital Devices, IEC/CISPR 22: 1998, and AS/NZS 3548: Electromagnetic Interference - Limits and Methods of measurement of Information Technology Equipment test methods under NVLAP Lab Code 200167-0.

1.6 Test Equipment List

Manufacturer	Description	Model	Serial Number	Cal. Due Date
HP	Spectrum Analyzer	8568B	2610A02165	12/6/02
HP	Spectrum Analyzer	8593B	2919A00242	12/20/02
HP	Amplifier	8349B	2644A02662	12/20/02
HP	Quasi-Peak Adapter	85650A	917059	12/6/02
HP	Amplifier	8447E	1937A01046	12/6/02
A.H. System	Horn Antenna	SAS0200/571	261	12/27/02
Com-Power	Log Periodic Antenna	AL-100	16005	11/2/02
Com-Power	Biconical Antenna	AB-100	14012	11/2/02
Solar Electronics	LISN	8012-50-R-24-BNC	968447	12/28/02
Com-Power	LISN	LI-200	12208	12/20/02
Com-Power	LISN	LI-200	12005	12/20/02
BACL	Data Entry Software	DES001	0001	12/20/02

* **Statement of Traceability:** Bay Area Compliance Laboratory Corp. certifies that all calibration has been performed using suitable standards traceable to the NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY (NIST)

1.7 Equipment Under Test (EUT)

Manufacturer	Description	Model	Serial Number	FCC ID
CIS Eletronica IND. e COM. Ltda	Magnetic Card Reader Easy Tone	LCMTEC-5060-T0	1229890	QCQEZC5060T0

1.8 Local Support Equipment List and Details

Manufacturer	Description	Model	Serial Number	FCC ID
CHP Elec	Telephone	None	20632837	None

1.9 Remote Support Equipment List and Details

Manufacturer	Description	Model	Serial Number	FCC ID
Pacific Bell	Wall Jack	N/A	None	None

1.10 External I/O Cabling List and Details

Cable Description	Length (M)	From/Port	To
Unshielded RJ11 Cable	50	RJ11 Port/EUT	Telephone
Unshielded RJ11 Cable	50	RJ11 Port/EUT	Wall Jack

2 - SYSTEM TEST CONFIGURATION

2.1 Justification

The system was configured for testing in a typical fashion (as normally used by a typical user).

2.2 EUT Exercise Software

The EUT exercising program used during radiated and conducted testing was designed to exercise the various system components in a manner similar to a typical use.

2.3 Special Accessories

As shown in section 2.5, all interface cables used for compliance testing are shielded as normally supplied by INMAC, Monster Cable, Y.C. Cables and Qubbain Data Max.

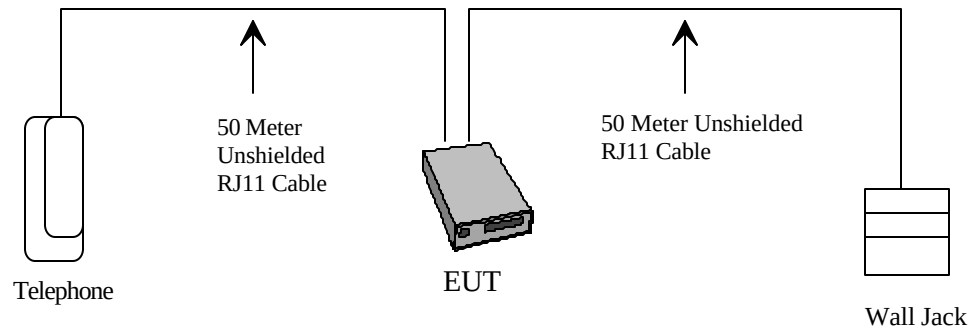
2.4 Block Diagram

A copy of the EUT's schematics or block diagram is provided in appendix A of this report as reference.

2.5 Equipment Modifications

No modifications were made by BACL to ensure EUT to comply with the applicable limits and requirements.

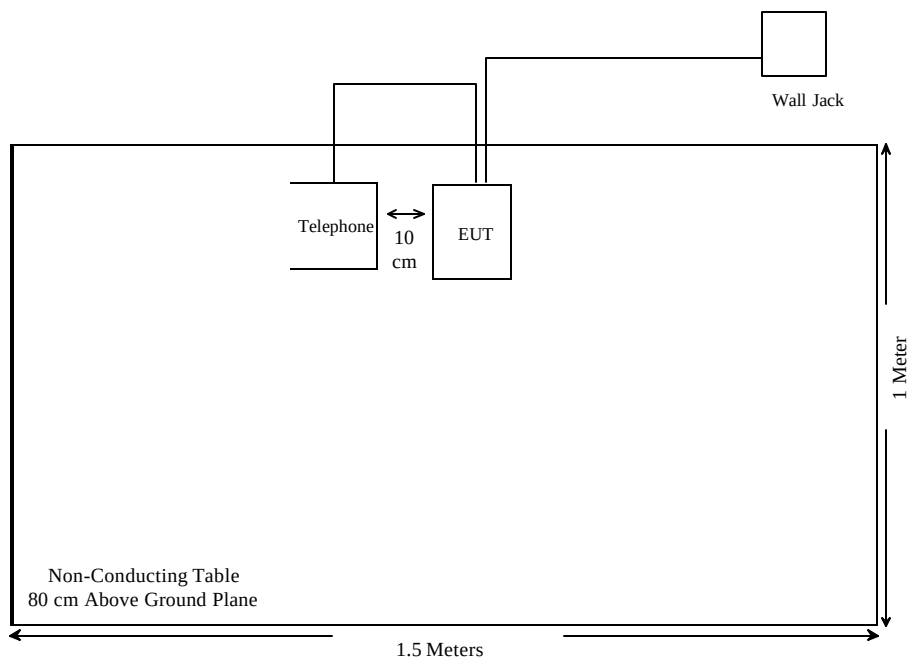
2.6 Configuration of Test System



2.7 Test Setup Block Diagram

LISN 1

LISN 2



3 - CONDUCTED EMISSIONS TEST DATA

The EUT was operated without power supply. Therefore, the conducted emissions test is not applicable.

4 - RADIATED EMISSION DATA

4.1 Measurement Uncertainty

All measurements involve certain levels of uncertainties, especially in field of EMC. The factors contributing to uncertainties are spectrum analyzer, cable loss, antenna factor calibration, antenna directivity, antenna factor variation with height, antenna phase center variation, antenna factor frequency interpolation, measurement distance variation, site imperfections, mismatch (average), and system repeatability.

Based on NIS 81, The Treatment of Uncertainty in EMC Measurements, the best estimate of the uncertainty of a radiation emissions measurement at BACL is ± 4.0 dB.

4.2 EUT Setup

The radiated emission tests were performed in the open area 3-meter test site, using the setup accordance with the ANSI C63.4 - 1992. The specification used was the FCC Class B limits.

The EUT was placed on the center of the back edge on the test table with one telephone placed on its left side.

The external I/O cables were draped along the test table and flushed if necessary.

The spacing between the peripherals was 10 cm.

The EUT was connected to a 110 VAC/ 60Hz power source.

4.3 Spectrum Analyzer Setup

According to FCC Rules, the system was tested to 1000 MHz.

The spectrum analyzer was set with the following configurations during the radiated emission test:

Start Frequency	30 MHz
Stop Frequency	1000 MHz
Sweep Speed.....	Auto
IF Bandwidth.....	100 KHz
Video Bandwidth	1 MHz
Quasi-Peak Adapter Bandwidth	120 kHz
Quasi-Peak Adapter Mode.....	Normal
Resolution Bandwidth.....	1MHz

4.4 Test Procedure

For the radiated emissions test, the EUT, the monitor and other support equipment were connected to the AC floor outlet. Maximizing procedure was performed on the highest emissions to ensure that the EUT complied with all installation combinations.

All data was recorded in the peak detection mode. Quasi-peak readings performed only when an emission was found to be marginal (within -4 dB μ V of specification limits), and are distinguished with a "Qp" in the data table.

4.5 Corrected Amplitude & Margin Calculation

The Corrected Amplitude is calculated by adding the Antenna Factor and Cable Factor, and subtracting the Amplifier Gain from the Amplitude reading. The basic equation is as follows:

$$\text{Corr. Ampl.} = \text{Indicated Reading} + \text{Antenna Factor} + \text{Cable Factor} - \text{Amplifier Gain}$$

The "**Margin**" column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of -7dB μ V means the emission is 7dB μ V below the maximum limit for Class B. The equation for margin calculation is as follows:

$$\text{Margin} = \text{Corr. Ampl.} - \text{Class B Limit}$$

4.6 Summary of Test Results

According to the data in section 4.7, the EUT complied with the FCC Class B standards, and these test results are deemed satisfactory evidence of compliance with ICES-003 of the Canadian Interference-Causing Equipment Regulations, and had the worst margin of:

-13.2 dBmV at 33.16 MHz in the Vertical polarization, 30 MHz to 1000 MHz, 3 Meters

4.7 Radiated Emissions Test Result Data**4.7.1 Final Test Data, 30 to 1000 MHz. 3 meters**

INDICATED		TABLE	ANTENNA		CORRECTION FACTOR			CORRECTED AMPLITUDE	FCC CLASS B	
Frequency MHz	Ampl. dBmV/m	Angle Degree	Height Meter	Polar H/ V	Antenna dBmV/m	Cable dB	Amp. dB	Corr. Ampl. dBmV/m	Limit dBmV/m	Margin dB
33.16	36.2	45	1.2	V	15.1	0.5	25.0	26.8	40	-13.2
33.15	35.8	200	2.0	H	15.1	0.5	25.0	26.4	40	-13.6
553.02	33.8	45	2.0	H	18.8	2.7	25.0	30.3	46	-15.7
57.23	38.9	90	1.2	V	9.7	0.5	25.0	24.1	40	-15.9
172.12	38.6	120	1.2	V	12.9	0.9	25.0	27.4	43.5	-16.1
200.02	37.9	30	1.2	V	12.5	0.9	25.0	26.3	43.5	-17.2
553.02	32.1	90	1.2	V	18.8	2.7	25.0	28.6	46	-17.4
88.53	39.8	120	1.2	V	9.4	0.3	25.0	24.5	43.5	-19.0
132.41	36.9	120	1.2	V	12.2	0.0	25.0	24.1	43.5	-19.4
358.00	34.8	120	2.0	H	15.1	1.3	25.0	26.2	46	-19.8
132.41	36.1	200	2.0	H	12.2	0.0	25.0	23.3	43.5	-20.2
358.00	33.2	120	1.2	V	15.1	1.3	25.0	24.6	46	-21.4
276.50	33.8	180	1.2	V	13.5	1.1	25.0	23.4	46	-22.6
88.45	33.9	270	2.0	H	9.4	0.3	25.0	18.6	43.5	-24.9

5 – FCC PRODUCT LABELING AND WARNING STATEMENT

5.1 Proposed FCC Label Format

FCC ID: QCQEZC5060T0

Specifications: Text is Black or white in color and is left justified. Labels are printed in indelible ink on permanent adhesive backing or silk-screened onto the EUT or shall be affixed at a conspicuous location on the EUT.

5.2 Location of Label on EUT

Rear View of EUT

FCC Label Location



5.3 FCC Warning Statement

The FCC labels should contain FCC statement in FCC .19 paragraph (3). If the EUT is too small, the statement could contain in the product manual. A sample of the statement is presented hereinafter as reference.

“ This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

6 - RADIATED SETUP PHOTOGRAPHS

6.1 Radiated Emission Photograph – Front View



6.2 Radiated Emission Photograph – Rear View



7 – EUT PHOTOGRAPHS

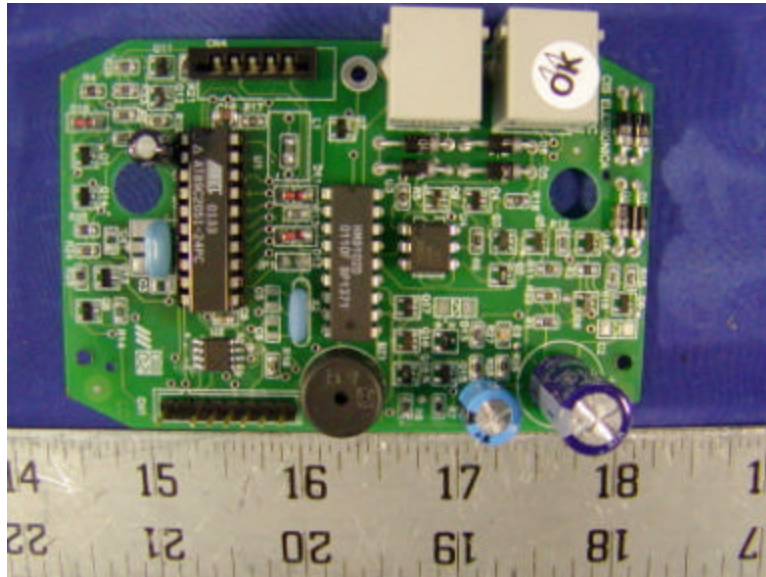
7.1 EUT- Chassis Front View



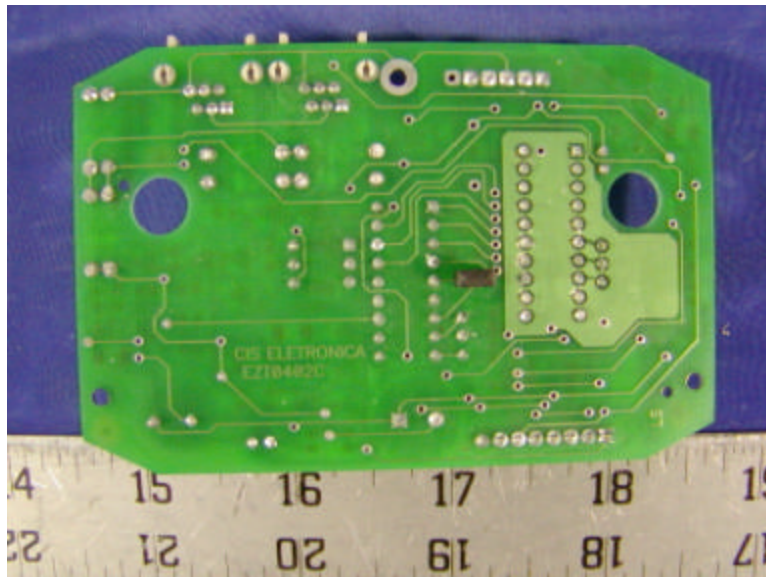
7.2 EUT- Chassis Rear View



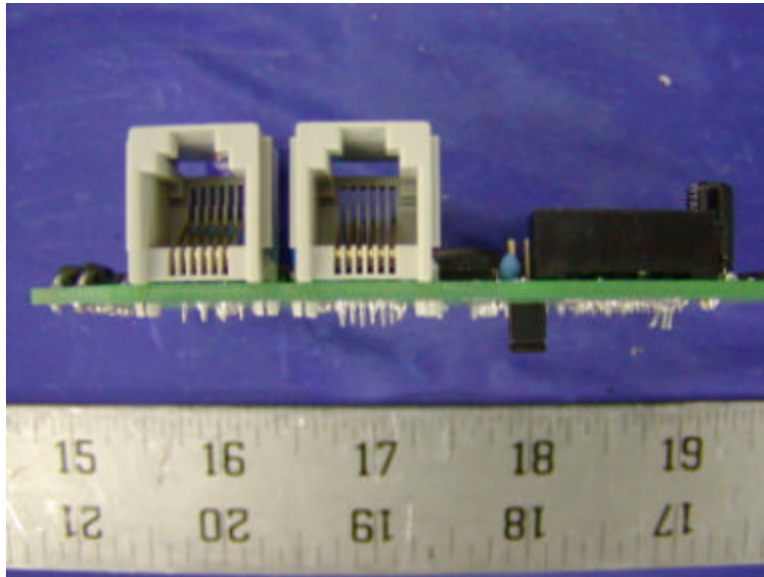
7.3 EUT – Component View



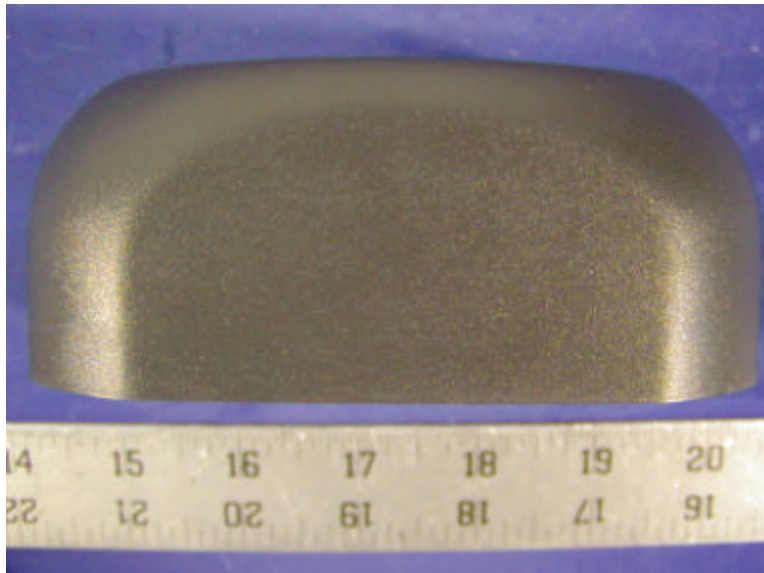
7.4 EUT – Solder View



7.5 EUT – Port View



7.6 EUT – Left Side View



7.7 EUT – Right Side View



APPENDIX A – EUT BLOCK DIAGRAM/SCHEMATICS/PART LIST

APPENDIX B – USER MANUAL
