FCC TEST REPORT

For

ELEYEA ELECTRONICS INC.

reader

Model No.	:	80901
FCC ID	:	XPI-80901
Operating Frequency	:	13.56M
Applicant	:	ELEYEA ELECTRONICS INC. 1039E, VALLEY BLVD., B111 SAN GABRIEL, CA91776
Regulation	:	***FCC Part 15.225 Subpart C***
Prepared by	:	AOV Testing Technology Co., Ltd AOV Building, Xueyuan Road East, University City, Shenzhen (Tanglang Village, Xili Town, Nanshan District), China
Test Date	:	August 20-25, 2009
Date of Report	:	August 25, 2009

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TEST REPORT DECLARATION

Applicant	:	ELEYEA ELECTRONICS INC.
Manufacturer	:	ELEYEA ELECTRONICS INC.
EUT Description	:	reader
Power Supply	:	Input DC 12V

Test Procedure Used:
FCC Part 15.225 Subpart C

The E. U. T. listed below has been completed RFI testing by Shenzhen AOV Testing Technology Co., Ltd at the test site of Bontek Compliance Testing Laboratory Ltd. and the Interference emissions can pass ***FCC Part 15.225 Subpart C*** limitations.

The test configurations and the facility comply with the radiated criteria in **ANSI C63.4-2003**.

Date of Test: August 20-25, 2009

Prepared by: Jessica

Project Engineer

Reviewer : Kevin

Project Manager

1. GENERAL INFORMATION

1.1 General Information

Description	:	reader
Operating Frequency	:	13.56M
Model No.	:	80901
Applicant	:	ELEYEA ELECTRONICS INC. 1039E, VALLEY BLVD., B111 SAN GABRIEL, CA91776
Manufacturer	:	ELEYEA ELECTRONICS INC. 1039E, VALLEY BLVD., B111 SAN GABRIEL, CA91776

1.2 Test Facility

Test Firm	:	Bontek Compliance Testing Laboratory Ltd. Certificated by FCC, Registration No.: 338263
Address	:	FL.1, Building H-3, Hua Qiao Cheng East Industrial Area Qiaocheng East Road, Nanshan, Shenzhen, P.R.China
Tel	:	86-755-86337020
Fax	:	86-755-86337028

1.3 Test Summary

For the EUT described above. The standards used were FCC Part 15 Subpart C Section 15.225 for Emissions

Tests Carried Out Under FCC Part 15 Subpart C

Standard	**Test Items**	**Status**
Part 15 Subpart C Section 15.225	RADIATION INTERFERENCE	Complied
	CALCULATION OF DUTY CYCLE	Complied
	FREQUENCY TOLERANCE	Complied
	OCCUPIED BANDWIDTH/BAND-EDGES COMPLIANCE	Complied
	POWER LINE CONDUCTED INTERFERENCE	N/A
Part 15 Subpart C Section 15.203	ANTENNA REQUIREMENT	Complied

1.4 Test Instrument Used

No.	Equipment	Manufacturer	Model No.	S/N	Calculator date
1.	EMI Test Receiver	R&S	ESCI	100687	2009-2-22
2.	EMI Test Receiver	R&S	FSU	BCT-019	2009-2-22
3.	Amplifier	HP	8447D	1937A02492	2009-2-22
4.	TRILOG Broadband Test-Antenna	SCHWARZBECK	VULB9163	9163-324	2009-2-22
5.	Horn Antenna	SCHWARZBECK	BBHA9120A	B08000991-0001	2009-2-27
6.	High Field Biconical Antenna	ELECTRO-METRICS	EM-6913	166	2009-2-22
7.	Log Periodic Antenna	ELECTRO-METRICS	EM-6950	811	2009-2-22
8.	Remote Active Vertical Antenna	ELECTRO-METRICS	EM-6892	304	2009-2-22
9.	Teo Line Single Phase Module	SCHWARZBECK	NSLK8128	D-69250	2009-3-31
10.	Positioning Controller	C&C	CC-C-1F	MF7802113	2009-2-22
11.	Loop Antenna	SCHWARZBECK	FMZB1516	1516131	2009-2-22
12.	Bilog Antenna	SCHWARZBECK	VULB9163	9163-323	2009-2-22
13.	Horn Antenna	SCHWARZBECK	BBHA9120D	9120D-655	2009-2-22
14.	Horn Antenna	SCHWARZBECK	BBHA9170D	9170-359	2009-2-22
15.	10dB attenuator	SCHWARZBECK	MTAIMP-136	R65.90.0001#06	2009-2-22

1.5 Test Procedure

Power Line Conducted Interference:
The procedure used was ANSI STANDARD C63.4-2003 using a 50uH LISN. Both lines were observed with the DUT transmitting. The resolution bandwidth of the spectrum analyzer was 10 kHz with an appropriate sweep speed.

Radiation Interference:
The test procedure used was ANSI C63.4-2003 using an Agilent spectrum analyzer with a preselector. The bandwidth of the spectrum analyzer was 100 kHz with an appropriate sweep speed. The analyzer was calibrated in dB above a microvolt at the output of the antenna. The resolution bandwidth was 100 kHz and the video bandwidth was 300 kHz.

ANSI Standard C63.4-2003 10.1.7 Measurement Procedures:
The DUT was placed on a table 80 cm high and with dimensions of 1m by 1.5m. The DUT was placed in the center of the table. The table used for radiated measurements is capable of continuous rotation. The spectrum was scanned from 30 MHz to 10th harmonic of the fundamental.

Peak readings were taken in three (3) orthogonal planes if necessary and the highest readings were converted to average readings based on the duration of "ON" time in 100 mseconds.

When an emission was found, the table was rotated to produce the maximum signal strength. At this point, the antenna was raised and lowered from 1m to 4m. The antenna was placed in both the horizontal and vertical planes.

Frequency Stability:

The test procedure used was ANSI C63.4: 2003. Temperature and voltage tests were performed to verify that the frequency tolerance of the carrier signal remains within the ±0.01% of the operating frequency over a temperature variation of –20ºC to +50ºC at normal supply voltage and for a variation in the primary supply voltage from 85% to 115% of the rated supply voltage at a temperature of 20 ºC.

The test was conducted as follows: The transmitter was placed in the temperature chamber at 25ºC and allowed to stabilize for one hour. The transmitter was keyed ON for one minute during which time four frequency readings were recorded at 15-second intervals. The worse case number was recorded. The assigned channel frequency was considered to be the reference frequency. The temperature was then reduced to -20ºC after which the transmitter was again allowed to stabilize. The transmitter was keyed ON for one minute, and again frequency readings were noted at 15-second intervals. This procedure was repeated in 10ºC increments up to +50ºC.

Readings were also taken at 15% of the battery voltage.

2. RADIATION INTERFERENCE

2.1.Rules Part No.

Part 15.225, Part 15.209

2.2.Limits

The field strength of emissions from intentional radiators operated within these frequency bands shall comply with the following:

Fundamental Frequency (MHz)	Field Strength of Fundamental dBµV/m @ 3 meters
13.553 – 13.567	124

Fundamental Frequency (MHz)	Field Strength of Harmonics and Spurious Emissions
0.009 – 0.490	2400/F (kHz) uV/m @ 300 meters
0.490 – 1.705	24000/F (kHz) uV/m @ 30 meters
1.705 – 30.0	29.54 dBuV/m @ 30 meters or 69.54 dBuV/m @ 3 meters
30 – 88	40.00 dBuV/m @ 3 meters
88 – 216	43.50 dBuV/m @ 3 meters
216 – 960	46.00 dBuV/m @ 3 meters
Above 960	54.00 dBuV/m @ 3 meters

2.3.Test Result

PASS

Field Strength of Fundamental:

Frequency (MHz)	Read Level (dBuV/m)	Limit (dBuV/m)	Margin (dBuV/m)
13.5601	42.20	124.00	81.80

Field Strength of Spurious Emission:

Frequency (MHz)	Antenna Polarity (H/V)	Read Level (dBuV/m)	Limit (dBuV/m)	Margin (dBuV/m)
27.13	N/A	34.20	69.50	35.30
40.70	H	33.15	40.00	6.85
54.26	H	34.60	40.00	5.40
67.70	H	33.65	40.00	6.35
81.26	H	35.40	40.00	4.60
94.82	H	37.06	46.00	8.96
122.04	H	35.80	46.00	10.20
134.60	H	35.20	46.00	10.80
135.64	H	37.40	46.00	8.60
40.70	V	33.13	40.00	6.87
54.26	V	34.30	40.00	5.70
67.70	V	33.55	40.00	6.45
81.26	V	35.45	40.00	4.55
94.82	V	37.66	46.00	8.34
122.04	V	35.83	46.00	10.17
134.00	V	35.10	46.00	10.90
135.64	V	37.45	46.00	8.55

3. CALCULATION OF DUTY CYCLE

The period of the pulse train is determined by observing it on an oscilloscope or a spectrum analyzer with zero (0) frequency span. A plot is then made of the pulse train with a sweep time of 100 milliseconds. This sweep determines the duration of the pulse train. This sweep allows the determination of the number of and type of pulses, i.e. long & short. Plots are then made showing the duration of each type of pulse and its duration. From the 100 millisecond plot, the number of a given type of pulse is then multiplied by the duration of that type pulse. This allows the calculation of the amount of time the DUT is on within 100 ms. If the pulse train is longer than 100 ms then this number is multiplied by 100 to determine the percentage ON TIME. If the pulse train is less than 100 ms the total on time is divided by the length of the pulse train and then multiplied by 100 to determine the percentage ON TIME.

100% ON time. CW Signal. No correction taken.

4. FREQUENCY TOLERANCE

4.1.Rules Part No.

Part 15.225(e), Part 2.1055

4.2.Limits

The frequency tolerance shall be maintained within ±0.01% (100PPM) of the operating frequency

4.3.Test Result

PASS

TEST DATA

Assigned Frequency (MHz)	13.5607 MHz	
Temperature °C	Measured Frequency MHz	PPM
-20	13.564320	12.40
-10	13.564316	12.07
0	13.564282	9.56
+10	13.564243	6.64
+20	13.564242	1.84
+30	13.564177	-2.74
+40	13.564104	-2.26
+50	13.564116	-2.02
Battery 85% End-point at 20ºC	13.564147	-0.37
Battery 115% End-point at 20ºC	13.564148	-0.27

5. OCCUPIED BANDWIDTH/BAND-EDGES COMPLIANCE

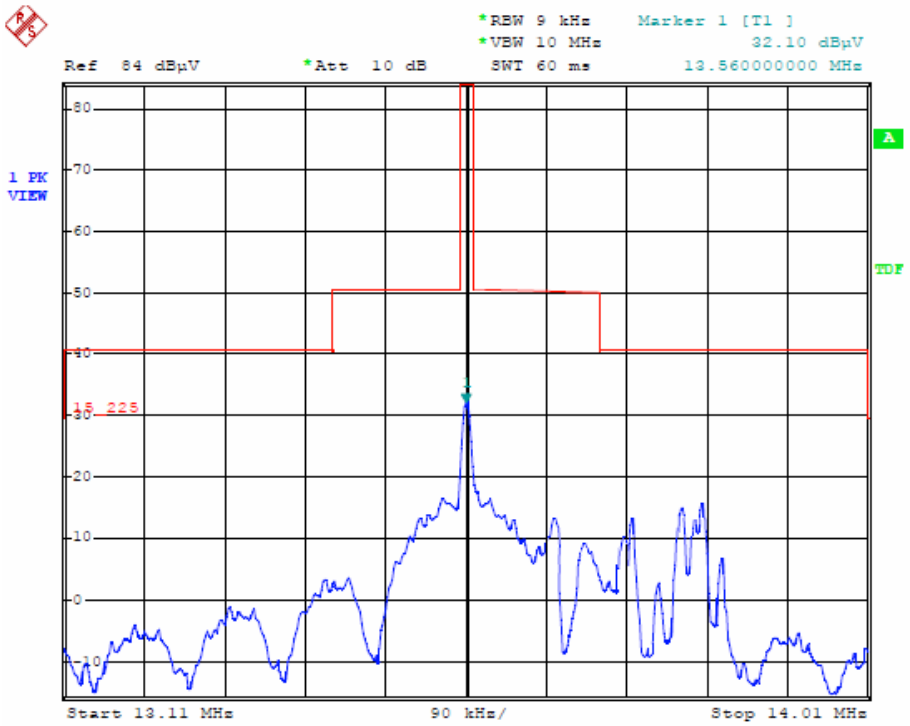
5.1.Rules Part No.

Part 15.225

5.2.Limits

(a) The field strength of any emissions within this band shall not exceed 10,000 microvolts/meter at 30 meters.
(b) The field strength of any emissions appearing outside of this band shall not exceed the general radiated emission limits shown in §15.209.
(c) The frequency tolerance of the carrier signal shall be maintained within ±0.01% of the operating frequency over a temperature variation of ￥20 degrees to +50 degrees C at normal supply voltage, and for a variation in the primary supply voltage from 85% to 115% of the rated supply voltage at a temperature of 20 degrees C. For battery operated equipment, the equipment tests shall be performed using a new battery.

5.3.Test Result



6. POWER LINE CONDUCTED INTERFERENCE

6.1.Rules Part No.

Part 15.207

6.2.Limits

Frequency (MHz)	Quasi Peak Limits (dBuV)	Average Limits (dBuV)
0.15-0.5	66-56	56-46
0.5-5.0	56	46
5.0-30	60	50

6.3.Test Result

Not applicable

7. ANTENNA REQUIREMENT

According to Section 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

Antenna is fixed by enclosure, can not be changed except take apart the product.

8. PHOTOGRAPH OF TEST

Radiated Emission test

(9K-30MHz)

(30MHz-1GHz)