Jeckson Electric Co., Ltd.

Application
For
Certification
(FCC ID: ELY547-47-1010-R)

Superregenerative Receiver

0527678
BC/ Sandy Lee
June 9, 2006

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MEASUREMENT/TECHNICAL REPORT

Jeckson Electric Co., Ltd. - MODEL: JECKSON 47-1010-R
Dimplex 47-1010-R
JECKSON 47-1010-B
Dimplex 47-1010-B

FCC ID: ELY547-47-1010-R

This report concerns (check one:) Original Grant __X__ Class II Change _____

Equipment Type: Superregenerative Receiver (example: computer, printer, modem, etc.)

Deferred grant requested per 47 CFR 0.457(d)(1)(ii)? Yes_____ No__X__

If yes, defer until: _____
date

Company Name agrees to notify the Commission by: _____
date

of the intended date of announcement of the product so that the grant can be issued on that date.

Transition Rules Request per 15.37? Yes_____ No__X__

If no, assumed Part 15, Subpart B for unintentional radiator - the new 47 CFR [04-05-05 Edition] provision.

Report prepared by:

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List of attached file

Exhibit type	File Description	filename
Test Report	Test Report	report.pdf
Operation Description	Technical Description	descri.pdf
Test Setup Photo	Radiated Emission	radiated photos.doc
Test Setup Photo	Conducted Emission	conducted photos.doc
Test Report	Conducted Emission Test Result	conducted.pdf
External Photo	External Photo	external photos.doc
Internal Photo	Internal Photo	internal photos.doc
Block Diagram	Block Diagram	block.pdf
Schematics	Circuit Diagram	circuit.pdf
ID Label/Location	Label Artwork and Location	label.pdf
User Manual	User Manual	manual.pdf
Test Report	Stabilization Waveform	superreg.pdf

EXHIBIT 1

GENERAL DESCRIPTION

1.0 General Description

1.1 Product Description

The Equipment Under Test (EUT) is a Receiver operating at 433MHz. The EUT is powered by 120V a.c. It receives control signal from remote transmitter and the device connected to it will be on/off accordingly.

Model differences/similarities are as follow:

1. The Model: Dimplex 47-1010-R is the same as the Model: JECKSON 47-1010-R in hardware aspect. The difference in trade name serves as marketing strategy.
2. The Model: Dimplex 47-1010-B is the same as the Model: JECKSON 47-1010-B in hardware aspect. The difference in trade name serves as marketing strategy.
3. The Model: JECKSON 47-1010-B is the same as the Model: JECKSON 47-1010-R in hardware aspect except that JECKSON 47-1010-B is a bare board version and has no enclosure. Also, the receptacle is replaced by tabs.
4. Each model can have alternative relay.

Antenna Type : Integral, Internal

For electronic filing, the brief circuit description is saved with filename: descri.pdf.

1.2 Related Submittal(s) Grants

This is an application for Certification of a receiver. The transmitter, associated with this receiver, has FCC ID: ELY547-47-1010-T and has been filed at the same time.

1.3 Test Methodology

Both AC mains line-conducted and radiated emission measurements were performed according to the procedures in ANSI C63.4 (2003). All radiated measurements were performed in an Open Area Test Site. Preliminary scans were performed in the Open Area Test Site only to determine worst case modes. For each scan, the procedure for maximizing emissions in Appendices D and E were followed. All radiated tests were performed at an antenna to EUT distance of 3 meters, unless stated otherwise in the **"Justification Section"** of this Application.

1.4 Test Facility

The open area test site and conducted measurement facility used to collect the radiated data is located at Garment Centre, 576 Castle Peak Road, Kowloon, Hong Kong. This test facility and site measurement data have been placed on file with the FCC.

EXHIBIT 2

SYSTEM TEST CONFIGURATION

2.0 System Test Configuration

2.1 Justification

The system was configured for testing in a typical fashion (as a customer would normally use it), and in the confines as outlined in ANSI C63.4 (2003).

The device was powered from 120V a.c.

For maximizing emissions, the EUT was rotated through 360°, the antenna height was varied from 1 meter to 4 meters above the ground plane, and the antenna polarization was changed. The step by step procedure for maximizing emissions led to the data reported in Exhibit 3.0.

The equipment under test (EUT) was configured for testing in a typical fashion (as a customer would normally use it). The EUT was mounted to a cardboard box, which enabled the engineer to maximize emissions through its placement in the three orthogonal axes.

Model: JECKSON 47-1010-R was used for testing. The test results on both relay versions are demonstrated on the report.

2.2 EUT Exercising Software

There was no special software to exercise the device. Once the unit is powered up, it received continuously.

2.3 Special Accessories

There are no special accessories necessary for compliance of this product.

During test, a 100W light bulb was connected to the socket-outlet on the EUT.

2.4 Equipment Modification

Any modifications installed previous to testing by Jeckson Electric Co., Ltd. will be incorporated in each production model sold/leased in the United States.

No modifications were installed by Intertek Testing Services.

2.5 Measurement Uncertainty

When determining of the test conclusion, the Measurement Uncertainty of test has been considered.

2.6 Support Equipment List and Description

This product was tested in standalone configuration.

All the items listed under section 2.0 of this report are

Confirmed by:

Chow Chi Ming, Billy
Assistant Manager
Intertek Testing Services Hong Kong Ltd.
Agent for Jeckson Electric Co., Ltd.

Signature

June 9, 2006 Date

EXHIBIT 3

EMISSION RESULTS

3.0 Emission Results

Data is included of the worst case configuration (the configuration which resulted in the highest emission levels). A sample calculation, configuration photographs and data tables of the emissions are included.

3.1 Field Strength Calculation

The field strength is calculated by adding the Antenna Factor and Cable Factor, and subtracting the Amplifier Gain (if any) from the measured reading. The basic equation with a sample calculation is as follows:

FS = RA + AF + CF - AG

where FS = Field Strength in dBµV/m
RA = Receiver Amplitude (including preamplifier) in dBµV
CF = Cable Attenuation Factor in dB
AF = Antenna Factor in dB
AG = Amplifier Gain in dB

In the following table(s), the reading shown on the data table reflects the preamplifier gain. An example for the calculations in the following table is as follows:

FS = RR + LF

where FS = Field Strength in dBµV/m
RR = RA - AG in dBµV
LF = CF + AF in dB

Assume a receiver reading of 52.0 dBµV is obtained. The antenna factor of 7.4 dB and cable factor of 1.6 dB are added. The amplifier gain of 29 dB is subtracted, giving a field strength of 32 dBµV/m. This value in dBµV/m was converted to its corresponding level in µV/m.

RA = 52.0 dBµV/m
AF = 7.4 dB RR = 23.0 dBµV
CF = 1.6 dB LF = 9.0 dB
AG = 29.0 dB
FS = RR + LF
FS = 23 + 9 = 32 dBµV/m

Level in µV/m = Common Antilogarithm [(32 dBµV/m)/20] = 39.8 µV/m

3.2 Radiated Emission Configuration Photograph

Worst Case Radiated Emission
at
426.570 MHz

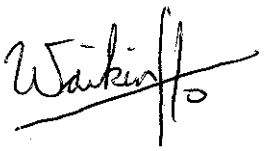
For electronic filing, the worst case radiated emission configuration photographs are saved with filename: radiated photos.doc.

3.3 Radiated Emission Data

The data on the following page lists the significant emission frequencies, the limit and the margin of compliance. Numbers with a minus sign are below the limit.

Judgement: Passed by 7.5 dB

TEST PERSONNEL:



Signature

Ben W. K. Ho, Compliance Engineer
Typed/Printed Name

June 9, 2006
Date

Applicant: Jeckson Electric Co., Ltd. Date of Test: 29 May, 2005
Model: JECKSON 47-1010-R
Mode: Rx (Relay Version 1)

Table 1

FCC Class B Radiated Emissions

Polarization	Frequency (MHz)	Reading (dBμV)	Antenna Factor (dB)	Pre-Amp Gain (dB)	Net at 3m (dBμV/m)	Limit at 3m (dBμV/m)	Margin (dB)
H	412.790	23.0	25.0	16	32.0	46.0	-14.0
H	415.430	23.9	25.0	16	32.9	46.0	-13.1
H	419.290	27.8	25.0	16	36.8	46.0	-9.2
H	422.430	28.6	25.0	16	37.6	46.0	-8.4
H	426.570	28.9	25.0	16	37.9	46.0	-8.1
H	430.790	23.9	25.0	16	32.9	46.0	-13.1
H	433.070	28.8	25.0	16	37.8	46.0	-8.2
H	436.710	20.5	26.0	16	30.5	46.0	-15.5
H	850.430	19.4	31.0	16	34.4	46.0	-11.6
H	851.430	20.6	31.0	16	35.6	46.0	-10.4
H	853.230	21.0	31.0	16	36.0	46.0	-10.0
H	1277.110	46.9	26.1	34	39.0	54.0	-15.0
H	1278.300	46.6	26.1	34	38.7	54.0	-15.3
H	1279.036	46.5	26.1	34	38.6	54.0	-15.4

NOTES:
1. Peak Detector Data unless otherwise stated.
2. All measurements were made at 3 meters. Harmonic emissions not detected at the 3-meter distances were measured at 0.3-meter and an inverse proportional extrapolation was performed to compare the signal level to the 3-meter limit. No other harmonic emissions than those reported were detected at a test distance of 0.3-meter.
3. Negative sign in the column shows value below limit.
4. Horn antenna is used for the emission over 1000MHz.

Test Engineer: Ben W. K. Ho

Applicant: Jeckson Electric Co., Ltd. Date of Test: 29 May, 2005
Model: JECKSON 47-1010-R
Mode: Rx (Relay Version 2)

Table 2

FCC Class B Radiated Emissions

Polarization	Frequency (MHz)	Reading (dBμV)	Antenna Factor (dB)	Pre-Amp Gain (dB)	Net at 3m (dBμV/m)	Limit at 3m (dBμV/m)	Margin (dB)
H	412.790	23.4	25.0	16	32.4	46.0	-13.6
H	415.430	23.8	25.0	16	32.8	46.0	-13.2
H	419.290	28.0	25.0	16	37.0	46.0	-9.0
H	422.430	28.7	25.0	16	37.7	46.0	-8.3
H	426.570	29.5	25.0	16	38.5	46.0	-7.5
H	430.790	24.5	25.0	16	33.5	46.0	-12.5
H	433.070	28.5	25.0	16	37.5	46.0	-8.5
H	436.710	21.6	26.0	16	31.6	46.0	-14.4
H	850.430	20.0	31.0	16	35.0	46.0	-11.0
H	851.430	19.8	31.0	16	34.8	46.0	-11.2
H	853.230	20.9	31.0	16	35.9	46.0	-10.1
H	1277.110	45.7	26.1	33	38.8	54.0	-15.2
H	1278.305	46.0	26.1	33	39.1	54.0	-14.9
H	1279.036	46.5	26.1	33	39.6	54.0	-14.4

NOTES: 1. Peak Detector Data unless otherwise stated.

2. All measurements were made at 3 meters. Harmonic emissions not detected at the 3-meter distances were measured at 0.3-meter and an inverse proportional extrapolation was performed to compare the signal level to the 3-meter limit. No other harmonic emissions than those reported were detected at a test distance of 0.3-meter.

3. Negative sign in the column shows value below limit.

4. Horn antenna is used for the emission over 1000MHz.

Test Engineer: Ben W. K. Ho

3.4 Conducted Emission Configuration Photograph

Worst Case Conducted Emission

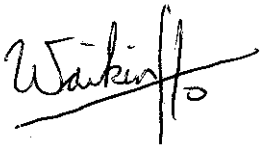
For electronic filing, the worst case conducted emission configuration photographs are saved with filename: conducted photos.doc.

3.5 Conducted Emission Data

For electronic filing, the graph and data table of conducted emission is saved with filename: conducted.pdf.

Judgement: Passed by at least 20 dB

TEST PERSONNEL:



Signature

Ben W. K. Ho, Compliance Engineer
Typed/Printed Name

June 9, 2006
Date

EXHIBIT 4

EQUIPMENT PHOTOGRAPHS

4.0 **Equipment Photographs**

For electronic filing, the photographs are saved with filename: external photos.doc and internal photos.doc.

EXHIBIT 5

PRODUCT LABELLING

5.0 **Product Labelling**

For electronics filing, the FCC ID label artwork and the label location are saved with filename: label.pdf.

EXHIBIT 6

TECHNICAL SPECIFICATIONS

8.1 Stabilization Waveform

Previous to the testing, the superregenerative receiver was stabilized as outlined in the test procedure. For the electronic filing, the plot saved with filename: superreg.pdf shows the fundamental emission when a signal generator was used to stabilize the receiver. Please note that the antenna was placed as close as possible to the EUT for clear demonstration of the waveform and that accurate readings are not possible from this plot.

8.2 Discussion of Pulse Desensitization

The determination of pulse desensitivity was made in accordance with Hewlett Packard Application Note 150-2, *Spectrum Analysis ... Pulsed RF.*

This device is a superregenerative receiver. The stabilized signals are continuous, and no desensitization of the measurement equipment occurs.

8.3 Calculation of Average Factor

The emission limits are specified using spectrum analyzers or receivers which incorporate quasi-peak detectors. Typical measurements are made using peak detectors, however, emissions which approach the respective emission limit are measured using a quasi-peak detector.

For measurements above 1 GHz, spectrum analyzers or receivers using average detectors are employed, or the appropriate average factor can be applied.

Measurements using spectrum analyzers with filters other than peak detectors are recorded in the data table section of this report.

This device is a superregenerative receiver.

It is not necessary to apply average factor to the measurement results.

8.4 Emissions Test Procedures

The following is a description of the test procedure used by Intertek Testing Services Hong Kong Ltd. in the measurements of superregenerative receivers operating under the Part 15, Subpart B rules.

The test set-up and procedures described below are designed to meet the requirements of ANSI C63.4 - 2003. Superregenerative receivers are stabilized prior to measurement by generating a signal well above the receiver threshold whose frequency is tuned until the emissions stabilize into a line spectrum. The signal is usually generated as CW with a Marconi 2022D signal generator and a short whip antenna and is at a level of several hundred to several thousand mV/m. Plots of the stabilized signal will be shown. If a modulated signal is used, it will be noted.

The equipment under test (EUT) is placed on a wooden turntable which is four feet in diameter and approximately one meter in height above the groundplane. During the radiated emissions test, the turntable is rotated and any cables leaving the EUT are manipulated to find the configuration resulting in maximum emissions. The EUT is adjusted through all three orthogonal axis to obtain maximum emission levels. The antenna height and polarization are also varied during the testing to search for maximum signal levels. The height of the antenna is varied from one to four meters.

Detector function for radiated emissions is in peak mode. Average readings, when required, are taken by measuring the duty cycle of the equipment under test and subtracting the corresponding amount in dB from the measured peak readings. A detailed description for the calculation of the average factor can be found in Exhibit 8.3.

The frequency range scanned is from the lowest radio frequency signal generated in the device which is greater than 9 kHz to the tenth harmonic of the highest fundamental frequency or 40 GHz, whichever is lower. For line conducted emissions, the range scanned is 150 kHz to 30 MHz.

8.4 Emissions Test Procedures (cont'd)

The EUT is warmed up for 15 minutes prior to the test.

AC power to the unit is varied from 85% to 115% nominal and variation in the fundamental emission field strength is recorded. If battery powered, a new, fully charged battery is used.

Conducted measurements were made as described in ANSI C63.4 - 2003.

The IF bandwidth used for measurement of radiated signal strength was 100 kHz or greater when frequency is below 1000 MHz. Where pulsed transmissions of short enough pulse duration warrant, a greater bandwidth is selected according to the recommendations of Hewlett Packard Application Note 150-2. A discussion of whether pulse desensitivity is applicable to this unit is included in this report (See Exhibit 8.2). Above 1000 MHz, a resolution bandwidth of 1 MHz is used.

Measurements are normally conducted at a measurement distance of three meters. All measurements are extrapolated to three meters using inverse scaling, unless otherwise reported. Measurements taken at a closer distance are so marked.