

# FCC PART 15 B, CLASS B TEST REPORT

For

## **Kenyazi Investment Limited**

Flat A-1, 8/F, Yip Fung Ind.BLDG, 28-36 Kwai Fung Crescent Kwai Fong, N.T.Hong Kong

**FCC ID: PKH-678XX-RX**

<b>Report Type:</b> Original Report	<b>Product Type:</b> Outdoor Remote Control LNS (Receiver Unit)
<b>Test Engineer:</b> Jimmy Xiao	<i>Jimmy Xiao</i>
<b>Report Number:</b> RSZ130521007-00B	
<b>Report Date:</b> 2013-06-14	
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**Note:** This test report is prepared for the customer shown above and for the device described herein. It may not be duplicated or used in part without prior written consent from Bay Area Compliance Laboratories Corp.

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## GENERAL INFORMATION

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### Product Description for Equipment under Test (EUT)

The *Kenya Investment Limited*'s product, model number: 67816 (FCC ID: PKH-678XX-RX) or the "EUT" in this report was the receiver unit of an *Outdoor Remote Control LNS*, which was measured approximately: 21.5 cm (L) x 13 cm (W) x 10 cm (H), rated with input voltage: AC 120V/60Hz. The highest operating frequency is 433.92 MHz.

*Note: Product Outdoor Remote Control LNS, model 67816, 67817, 67818, 67819, 67825, 67826, 67827, 67828 and 67829 are electrically identical, they have the same PCB layout and schematic, the difference between them is just the model number due to marketing purposes, which was explained in the attached declaration letter. Model 67816 was selected for fully testing, which was stated and guaranteed by the applicant.*

*\*All measurement and test data in this report was gathered from production sample serial number: 1305113 (Assigned by BACL, Shenzhen). The EUT supplied by the applicant was received on 2013-05-21.*

### Objective

This test report is prepared on behalf of *Kenya Investment Limited* in accordance with Part 2-Subpart J, Part 15-Subparts A and B of the Federal Communication Commissions rules.

The objective of the manufacturer is to determine the compliance of the EUT with FCC Part 15 B.

### Related Submittal(s)/Grant(s)

FCC Part 15.231 DSC, the transmitter part of the system submission with FCC ID: PKH-678XX

### Test Facility

The test site used by Bay Area Compliance Laboratories Corp. (Shenzhen) to collect test data is located on the 6/F, the 3rd Phase of WanLi Industrial Building, ShiHua Road, FuTian Free Trade Zone Shenzhen, Guangdong, China.

Test site at Bay Area Compliance Laboratories Corp. (Shenzhen) has been fully described in reports submitted to the Federal Communication Commission (FCC). The details of these reports have been found to be in compliance with the requirements of Section 2.948 of the FCC Rules on December 06, 2010. The facility also complies with the radiated and AC line conducted test site criteria set forth in ANSI C63.4-2009.

The Federal Communications Commission has the reports on file and is listed under FCC Registration No.: 382179. The test site has been approved by the FCC for public use and is listed in the FCC Public Access Link (PAL) database.

## SYSTEM TEST CONFIGURATION

### Description of Test Configuration

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

### EUT Exercise Software

No exercise software.

### Equipment Modifications

No modification was made to the EUT tested.

### Support Equipment List and Details

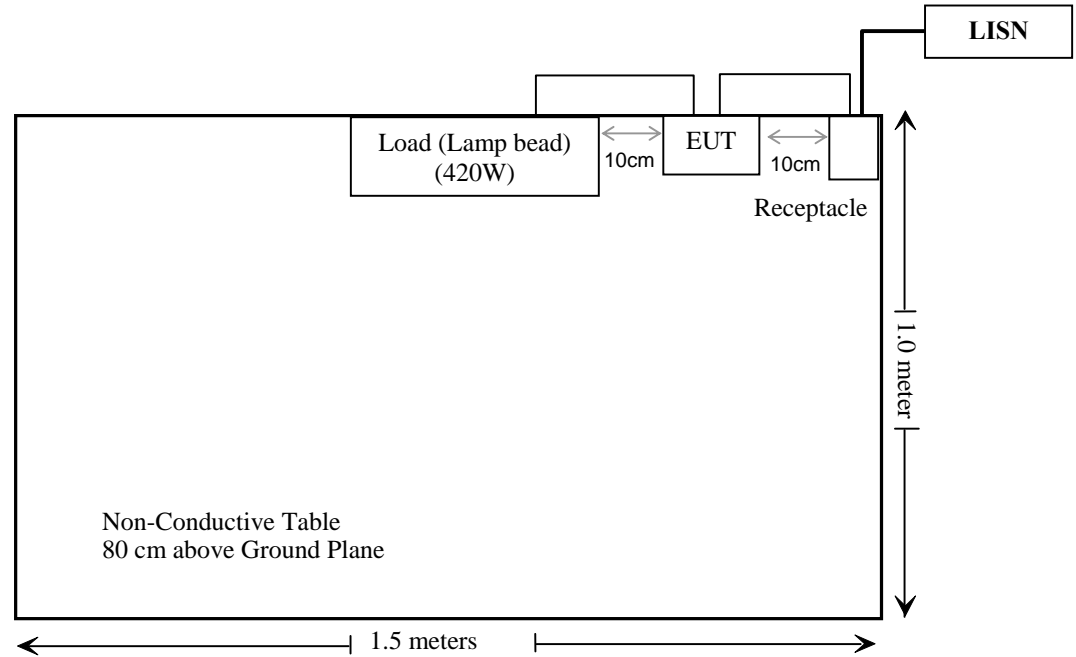
Manufacturer	Description	Model	Serial Number
N/A	Load (Lamp bead)	N/A	N/A

### External I/O Cable

Cable Description	Length (m)	From/Port	To
Un-shielding Undetachable AC Cable	0.36	EUT	Receptcle

Block Diagram of Test Setup

For conducted emission:



## SUMMARY OF TEST RESULTS

FCC Rules	Description of Test	Results
§15.107	AC Line Conducted Emissions	Compliance
§15.109	Radiated Spurious Emissions	Compliance

## FCC §15.107 – AC LINE CONDUCTED EMISSIONS

### Applicable Standard

According to FCC §15.107

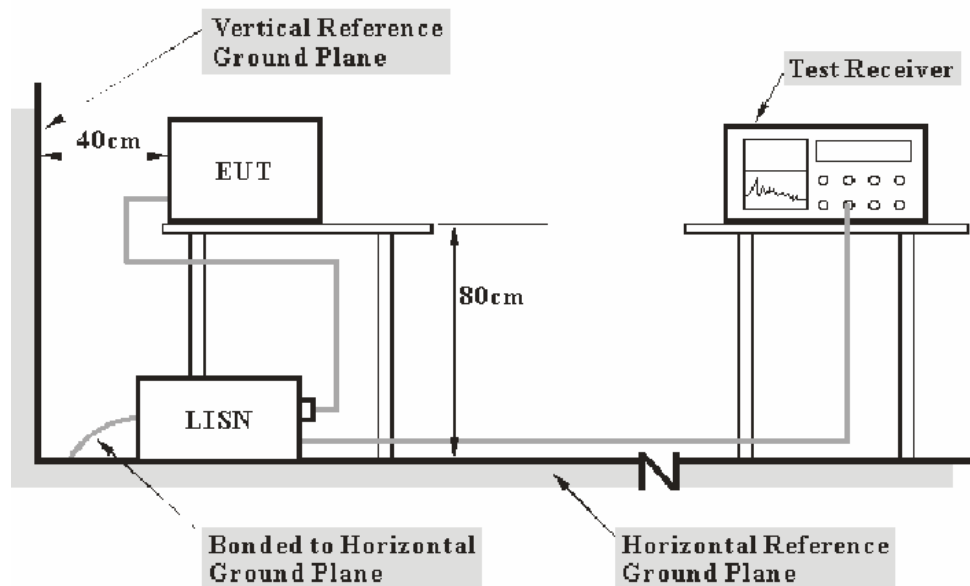
### Measurement Uncertainty

Input quantities to be considered for conducted disturbance measurements may be receiver reading, attenuation of the connection between AMN/ISN and receiver, AMN/ISN voltage division factor, AMN/ISN VDF frequency interpolation and receiver related input quantities, etc.

Based on CISPR 16-4-2:2011, the expanded combined standard uncertainty of conducted disturbance test at Bay Area Compliance Laboratories Corp. (Shenzhen) is shown as below. And the uncertainty will not be taken into consideration for the test data recorded in the report

Port	Measurement uncertainty
AC Mains	3.26 dB (k=2, 95% level of confidence)
CAT 3	3.70 dB (k=2, 95% level of confidence)
CAT 5	3.86 dB (k=2, 95% level of confidence)
CAT 6	4.64 dB (k=2, 95% level of confidence)

### EUT Setup



- Note: 1. Support units were connected to second LISN.  
 2. Both of LISNs (AMN) 80 cm from EUT and at the least 80 cm from other units and other metal planes support units.

The measurement procedure of EUT setup is according with per ANSI C63.4-2009. The related limit was specified in FCC Part 15.107 Class B.

The spacing between the peripherals was 10 cm.

### EMI Test Receiver Setup

The EMI test receiver was set to investigate the spectrum from 150 kHz to 30 MHz.

During the conducted emission test, the EMI test receiver was set with the following configurations:

Frequency Range	IF B/W
150 kHz – 30 MHz	9 kHz

### Test Procedure

Maximizing procedure was performed on the six (6) highest emissions of the EUT.

All data was recorded in the Quasi-peak and average detection mode.

### Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Rohde & Schwarz	EMI Test Receiver	ESCI	101122	2013-05-09	2014-05-09
Rohde & Schwarz	1st LISN	ESH2-Z5	892107/021	2012-08-22	2013-08-22
COM-POWER	2nd LISN	LI-200	12208	NCR	NCR

\* **Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Shenzhen) attests that all calibrations have been performed in accordance to requirements that traceable to National Primary Standards and International System of Units (SI).

### Corrected Factor & Margin Calculation

The Corrected factor is calculated by adding LISN/ISN VDF (Voltage Division Factor) and Cable Loss. The basic equation is as follows:

$$\text{Correction Factor} = \text{LISN VDF} + \text{Cable Loss}$$

The “**Margin**” column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of 7dB means the emission is 7 dB below the limit. The equation for margin calculation is as follows:

$$\text{Margin} = \text{Limit} - \text{Corrected Amplitude}$$



**Test Results Summary**

According to the recorded data in following table, the EUT complied with the FCC Part 15.107, with the worst margin reading of:

**20.3 dB at 0.290446 MHz** in the **Line** conducted mode

**Test Data****Environmental Conditions**

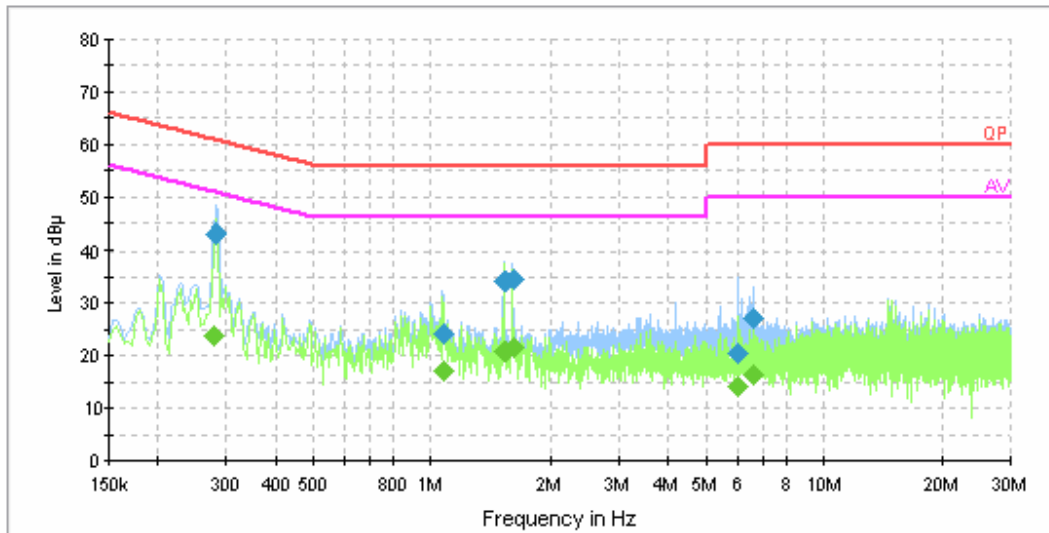
<b>Temperature:</b>	26 °C
<b>Relative Humidity:</b>	54 %
<b>ATM Pressure:</b>	101.0 kPa

*The testing was performed by Jimmy Xiao on 2013-05-27.*

EUT Operation Mode: Receiving

AC 120V/60 Hz, Line

EMI Auto Test L



Quasi-peak detection mode

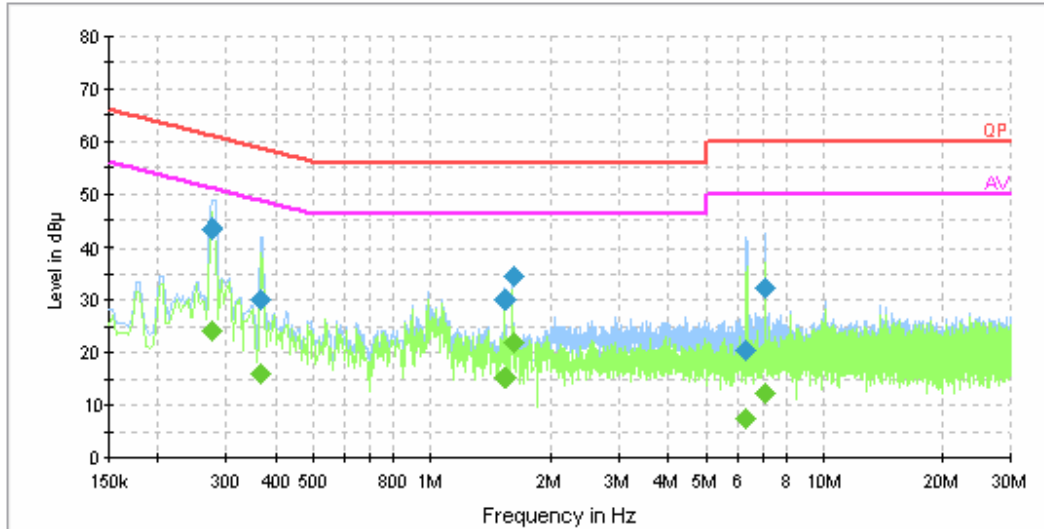
Frequency (MHz)	Corrected Amplitude (dB $\mu$ V)	Corrected Factor (dB)	Limit (dB $\mu$ V)	Margin (dB)	Remark (PK/QP/Ave.)
0.290446	40.8	0.3	61.1	20.3	QP
1.614174	34.6	0.4	56.0	21.4	QP
1.537204	34.4	0.4	56.0	21.6	QP
1.072676	24.0	0.4	56.0	32.0	QP
6.593023	27.1	0.5	60.0	33.0	QP
5.996942	20.6	0.4	60.0	39.4	QP

Average detection mode

Frequency (MHz)	Corrected Amplitude (dB $\mu$ V)	Corrected Factor (dB)	Limit (dB $\mu$ V)	Margin (dB)	Remark (PK/QP/Ave.)
1.614174	21.7	0.4	46.0	24.3	Ave.
1.537204	20.8	0.4	46.0	25.2	Ave.
0.290446	24.0	0.3	51.1	27.1	Ave.
1.072676	17.2	0.4	46.0	28.8	Ave.
6.593023	16.5	0.5	50.0	33.5	Ave.
5.996942	14.0	0.4	50.0	36.0	Ave.

**AC 120V/60 Hz, Neutral**

EMI Auto Test N



## Quasi-peak detection mode

Frequency (MHz)	Corrected Amplitude (dBμV)	Corrected Factor (dB)	Limit (dBμV)	Margin (dB)	Remark (PK/QP/Ave.)
0.289168	40.6	0.3	61.5	20.8	QP
1.615790	34.6	0.4	56.0	21.4	QP
1.533261	30.0	0.4	56.0	26.0	QP
7.065656	32.7	0.5	60.0	27.3	QP
0.365008	30.2	0.3	58.6	28.4	QP
6.326953	20.4	0.5	60.0	39.6	QP

## Average detection mode

Frequency (MHz)	Corrected Amplitude (dBμV)	Corrected Factor (dB)	Limit (dBμV)	Margin (dB)	Remark (PK/QP/Ave.)
1.615790	21.8	0.4	46.0	24.2	Ave.
0.289168	24.1	0.3	51.5	27.4	Ave.
1.533261	15.1	0.4	46.0	30.9	Ave.
0.365008	15.9	0.3	48.6	32.7	Ave.
7.065656	12.3	0.5	50.0	37.7	Ave.
6.326953	7.3	0.5	50.0	42.7	Ave.

## FCC §15.109 - RADIATED SPURIOUS EMISSIONS

### Applicable Standard

FCC §15.109

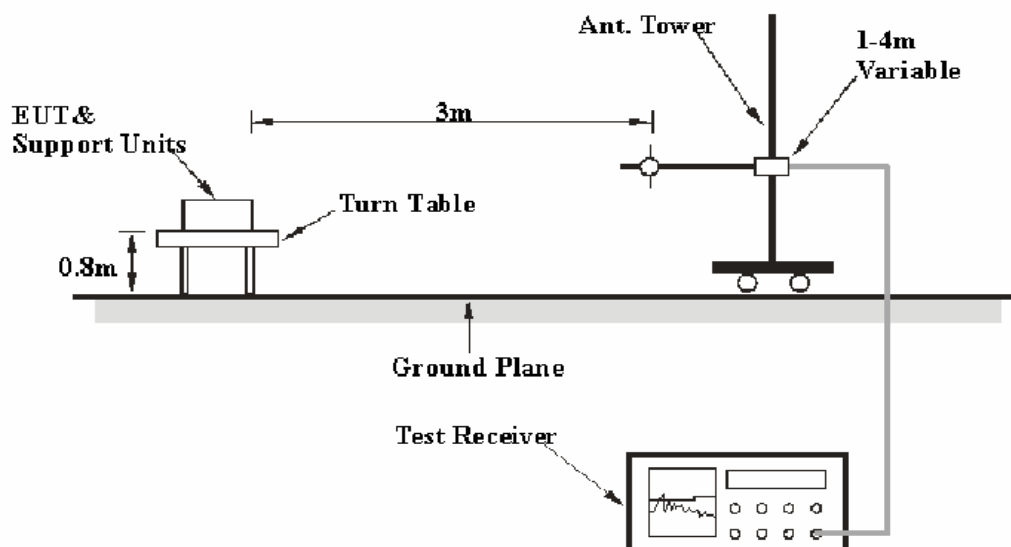
### Measurement Uncertainty

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 CISPR 16-4-2:2011, the expended combined standard uncertainty of radiation emissions at Bay Area Compliance Laboratories Corp. (Shenzhen) is shown in below table. And the uncertainty will not be taken into consideration for the test data recorded in the report

Frequency	Polarity	Measurement uncertainty
30MHz~200MHz	Horizontal	4.62 dB (k=2, 95% level of confidence)
	Vertical	4.54 dB (k=2, 95% level of confidence)
200MHz~1GHz	Horizontal	4.84 dB (k=2, 95% level of confidence)
	Vertical	5.91 dB (k=2, 95% level of confidence)
1 GHz~6 GHz	Horizontal/Vertical	4.68 dB (k=2, 95% level of confidence)
Above 6 GHz	Horizontal/Vertical	4.92 dB (k=2, 95% level of confidence)

### EUT Setup



The radiated emission tests were performed in the 3 meters chamber test site, using the setup accordance with the ANSI C63.4-2009. The specification used was the FCC Part 15.109 Class B limits.

The external I/O cables were draped along the test table and formed a bundle 30 to 40 cm long in the middle.

The spacing between the peripherals was 10 cm.

### EMI Test Receiver Setup

The system was investigated from 30 MHz to 2 GHz.

During the radiated emission test, the EMI test receiver was set with the following configurations:

Frequency Range	RBW	Video B/W	Detector
30MHz – 1000 MHz	120 kHz	300 kHz	QP
1 GHz – 2 GHz	1 MHz	3 MHz	Peak
1 GHz – 2 GHz	1 MHz	10 Hz	Average

### Test Procedure

For the radiated emissions test, the EUT was connected to AC floor outlet.

Maximizing procedure was performed on the highest emissions to ensure that the EUT complied with all installation combinations.

### Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Sunol Sciences	Broadband Antenna	JB1	A040904-2	2011-11-28	2014-11-27
Mini-Circuits	Amplifier	ZVA-213+	N/A	2012-11-24	2013-11-23
Sunol Sciences	Horn Antenna	DRH-118	A052304	2011-12-01	2014-11-30
Rohde & Schwarz	EMI Test Receiver	ESCI	101122	2013-05-09	2014-05-09
HP	Amplifier	8447E	1937A01046	2012-11-24	2013-11-23

\* **Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Shenzhen) attests that all calibrations have been performed in accordance to requirements that traceable to National Primary Standards and International System of Units (SI).

## Corrected Amplitude & Margin Calculation

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

$$\text{Corrected Amplitude} = \text{Meter Reading} + \text{Antenna Factor} + \text{Cable Loss} - \text{Amplifier Gain}$$

The “**Margin**” column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of 7 dB means the emission is 7 dB below the limit. The equation for margin calculation is as follows:

$$\text{Margin} = \text{Limit} - \text{Corrected Amplitude}$$

## Test Results Summary

According to the data in the following table, the EUT complied with the FCC §15.109 Class B, with the worst margin reading of:

**15.0 dB at 151.487700 MHz in the Horizontal polarization**

## Test Data

### Environmental Conditions

<b>Temperature:</b>	26 °C
<b>Relative Humidity:</b>	54 %
<b>ATM Pressure:</b>	101.0 kPa

*The testing was performed by Jimmy Xiao on 2013-05-27.*

*EUT Operation Mode: Receiving*

**30 MHz -2 GHz:**

Frequency (MHz)	Corrected Amplitude (dBμV/m)	Antenna height (cm)	Antenna Polarity	Turntable position (degree)	Correction Factor (dB)	Limit (dBμV/m)	Margin (dB)
151.487700	28.5	206.0	H	38.0	-14.9	43.5	15.0
138.857900	26.8	303.0	H	48.0	-14.2	43.5	16.7
163.500000	26.8	124.0	V	145.0	-15.3	43.5	16.7
201.940300	26.5	173.0	H	37.0	-15.6	43.5	17.0
126.151250	23.5	122.0	V	125.0	-13.3	43.5	20.0
277.713750	25.7	171.0	V	110.0	-14.3	46.0	20.3

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## **PRODUCT SIMILARITY DECLARATION LETTER**

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### **Kenyazi Investment Limited**

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2013-6-14


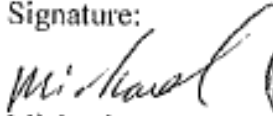
### **Product Similarity Declaration**

To Whom It May Concern,

We, Kenyazi Investment LTD hereby declare that our Outdoor Remote Control LNS, Model Number: 67817,67818,67819, 67825,67826,67827,67828, 67829 is electrically identical with 67816, that was certified by BACL. They are just different in model numbers due to marketing purposes.

Please contact me if you have any question.

Signature:



Michael  
General Manager

\*\*\*\*\* END OF REPORT \*\*\*\*\*