SMK MANUFACTURING, INC. TEST REPORT

FOR THE

2 WAY IR REMOTE CONTROL, RRC9001-4041E & RRC9001-4001L

FCC PART 15 SUBPART B SECTIONS 15.107 AND 15.109 CLASS B & ICES-003 ISSUE 4

TESTING

DATE OF ISSUE: MAY 29, 2008

PREPARED FOR:

SMK Manufacturing, Inc.
1055 Tierra Del Rey, Suite H
Chula Vista, CA 91910

P.O. No.: 29318
W.O. No.: 87968

PREPARED BY:

Mary Ellen Clayton
CKC Laboratories, Inc.
5046 Sierra Pines Drive
Mariposa, CA 95338

Date of test: May 15, 2008

Report No.: FC08-048

TABLE OF CONTENTS

ADMINISTRATIVE INFORMATION

DATE OF TEST: May 15, 2008

DATE OF RECEIPT: May 15, 2008

REPRESENTATIVE: Manuch Dizechi

MANUFACTURER:
SMK Manufacturing, Inc.
1055 Tierra Del Rey, Suite H
Chula Vista, CA 91910

TEST LOCATION:
CKC Laboratories, Inc.
110 Olinda Place
Brea, CA 92823

TEST METHOD: ANSI C63.4 (2003) and ICES-003 Issue 4

PURPOSE OF TEST: To perform testing of the 2 Way IR Remote Control, RRC9001-4041E & RRC9001-4001L with the requirements for FCC Part 15 Subpart B Sections 15.107 and 15.109 Class B & ICES-003 devices.

APPROVALS

QUALITY ASSURANCE:

Steve Behm, Director of Engineering Services

TEST PERSONNEL:

Septimiu Apahidean, EMC Engineer

SITE FILE REGISTRATION NUMBERS

Location	Japan	Canada	FCC
Brea A	R-301 & C-314	IC 3172-A	90473

SUMMARY OF RESULTS

Test	Specification	Results
Conducted Emissions	FCC Part 15 Subpart B Section 15.107 Class B ICES-003 Issue 4	NA
Radiated Emissions	FCC Part 15 Subpart B Section 15.109 Class B ICES-003 Issur 4	Pass

NA = Not Applicable

CONDITIONS DURING TESTING

No modifications to the EUT were necessary during testing. Conducted emissions not required for this device because it is battery powered.

EQUIPMENT UNDER TEST (EUT) DESCRIPTION

The customer declares the EUT tested by CKC Laboratories was representative of a production unit.

EQUIPMENT UNDER TEST

IR Remote

Manuf: SMK Manufacturing, Inc.
Model: RRC9001-4041E
Serial: NA
FCC ID: NA

IR/FSK Remote

Manuf: SMK Manufacturing, Inc.
Model: RRC9001-4001L
Serial: NA
FCC ID: NA

PERIPHERAL DEVICES

The EUT was not tested with peripheral devices.

REPORT OF EMISSIONS MEASUREMENTS

TESTING PARAMETERS

The cables were routed consistent with the typical application by varying the configuration of the test sample. Interface cables were connected to the available ports of the test unit. The effect of varying the position of the cables was investigated to find the configuration that produced maximum emissions. Cables were of the type and length specified in the individual requirements. The length of cable that produced maximum emissions was selected.

The equipment under test (EUT) was set up in a manner that represented its normal use, as shown in the setup photographs. Any special conditions required for the EUT to operate normally are identified in the comments that accompany the emissions tables.

The emissions data was taken with a spectrum analyzer or receiver. Incorporating the applicable correction factors for distance, antenna, cable loss and amplifier gain, the data was reduced as shown in the table below. The corrected data was then compared to the applicable emission limits. 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 dBµV/m, the spectrum analyzer reading in dBµV was corrected by using the following formula. This reading was then compared to the applicable specification limit.

SAMPLE CALCULATIONS		
	Meter reading	(dBµV)
+	Antenna Factor	(dB)
+	Cable Loss	(dB)
-	Distance Correction	(dB)
-	Preamplifier Gain	(dB)
=	Corrected Reading	(dBµV/m)

TEST INSTRUMENTATION AND ANALYZER SETTINGS

The test instrumentation and equipment listed were used to collect the emissions data. A spectrum analyzer or receiver was used for all measurements. The following table shows the measuring equipment bandwidth settings that were used in designated frequency bands. For testing emissions, an appropriate reference level and a vertical scale size of 10 dB per division were used.

MEASURING EQUIPMENT BANDWIDTH SETTINGS PER FREQUENCY RANGE			
TEST	BEGINNING FREQUENCY	ENDING FREQUENCY	BANDWIDTH SETTING
RADIATED EMISSIONS	30 MHz	1000 MHz	120 kHz
RADIATED EMISSIONS	1000 MHz	>1 GHz	1 MHz

SPECTRUM ANALYZER/RECEIVER DETECTOR FUNCTIONS

The notes that accompany the measurements contained in the emissions 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 highest readings, this is indicated as a "QP" or an "Ave" on the appropriate rows of the data sheets. 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/receiver readings were recorded all emissions at their peak value as the frequency band selected was scanned. By combining this function with another feature of the measuring device called "peak hold," the measuring device had the ability to measure transients or low duty cycle transient emission peak levels. In this mode the measuring device 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 quasi-peak detector.

Average

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

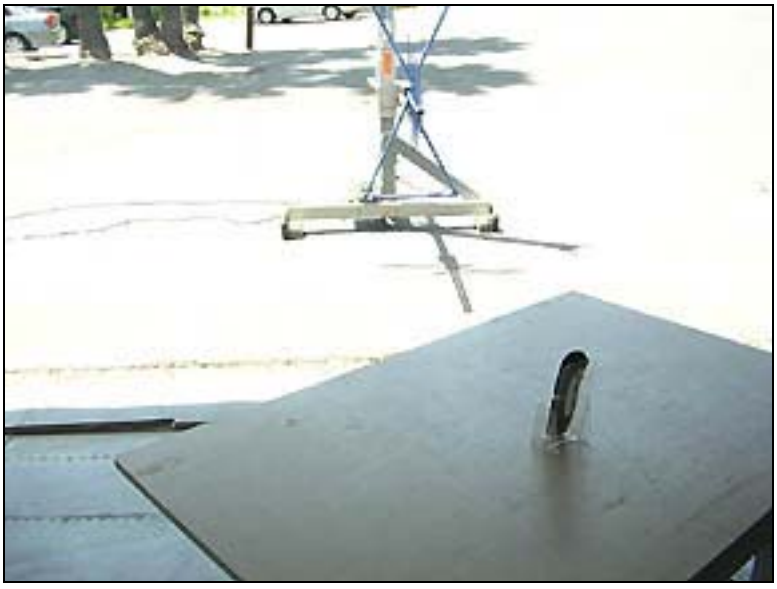
FCC 15.109 RADIATED EMISSIONS

Test Setup Photos

RCC9001-4041E

RCC9001-4041E

RCC9001-4001L



RCC9001-4001L

Test Data Sheets

Test Location: CKC Laboratories, Inc. •110 N Olinda Place • Brea, CA 92823 • 714-993-6112

Customer: **SMK Manufacturing, Inc.**
Specification: **FCC 15.109 (2006) Radiated Class B**
Work Order #: **87968** Date: 5/15/2008
Test Type: **Maximized Emissions** Time: 12:44:02
Equipment: **IR Remote** Sequence#: 2
Manufacturer: SMK Manufacturing, Inc. Tested By: Sep Apahidean
Model: RRC9001-4001L
S/N:

***Test Equipment*:**

Function	S/N	Calibration Date	Cal Due Date	Asset #
Spectrum Analyzer	MY46186290	02/12/2007	02/12/2009	02869
Bilog Antenna	2451	01/21/2008	01/21/2010	01995
Pre amp to SA Cable	Cable #10	05/16/2007	05/16/2009	P05050
Cable	Cable15	01/05/2007	01/05/2009	P05198
Pre Amp	1937A02548	06/01/2006	06/01/2008	00309

***Equipment Under Test* (* = EUT):**

Function	Manufacturer	Model #	S/N
IR Remote*	SMK Manufacturing, Inc.	RRC9001-4001L	

Support Devices:

Function	Manufacturer	Model #	S/N

Test Conditions / Notes:

The equipment under test (EUT) is an infrared remote. The EUT is powered on and sending a signal continuously. The EUT is powered from four AAA batteries. New batteries were installed prior to testing. Temperature: 23°C, Humidity: 44%, Pressure: 100kPa.

Transducer Legend:

T1=Preamp 8447D_AN00309_ 060108	T2=Bilog-AN01995 BILOG_012110
T3=Cable #10_P05050_ 051609	T4=Cable #15_P05198_ Site A, 010509

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

#	Freq MHz	Rdng dBµV	T1 dB	T2 dB	T3 dB	T4 dB	Dist Table	Corr dBµV/m	Spec dBµV/m	Margin dB	Polar Ant
1	31.555M	41.5	-27.8	+17.8	+0.1	+0.9	+0.0	32.5	40.0	-7.5	Vert
2	48.257M	48.7	-27.7	+9.5	+0.1	+1.2	+0.0	31.8	40.0	-8.2	Vert
3	167.326M	50.0	-27.7	+10.0	+0.3	+2.3	+0.0	34.9	43.5	-8.6	Vert
4	40.030M	43.6	-27.8	+13.9	+0.1	+1.1	+0.0	30.9	40.0	-9.1	Vert
5	127.934M	46.8	-27.6	+11.8	+0.3	+2.0	+0.0	33.3	43.5	-10.2	Horiz
6	55.686M	46.9	-27.7	+7.1	+0.1	+1.3	+0.0	27.7	40.0	-12.3	Vert
7	168.031M	42.6	-27.7	+9.9	+0.3	+2.3	+0.0	27.4	43.5	-16.1	Horiz

8	112.106M	40.7	-27.6	+11.1	+0.3	+1.9	+0.0	26.4	43.5	-17.1	Vert
9	167.651M	41.2	-27.7	+9.9	+0.3	+2.3	+0.0	26.0	43.5	-17.5	Horiz
10	223.989M	41.6	-27.6	+10.9	+0.2	+2.7	+0.0	27.8	46.0	-18.2	Horiz
11	135.964M	38.6	-27.6	+11.8	+0.3	+2.1	+0.0	25.2	43.5	-18.3	Horiz
12	223.974M	38.1	-27.6	+10.9	+0.2	+2.7	+0.0	24.3	46.0	-21.7	Vert
13	167.706M	36.5	-27.7	+9.9	+0.3	+2.3	+0.0	21.3	43.5	-22.2	Vert

Test Location: CKC Laboratories, Inc. •110 N Olinda Place • Brea, CA 92823 • 714-993-6112

Customer: **SMK Manufacturing, Inc.**
Specification: **FCC 15.109 (2006) Radiated Class B**
Work Order #: **87968** Date: 5/15/2008
Test Type: **Maximized Emissions** Time: 12:30:50
Equipment: **IR Remote** Sequence#: 1
Manufacturer: SMK Manufacturing, Inc. Tested By: Sep Apahidean
Model: RRC9001-4041E
S/N:

***Test Equipment*:**

Function	S/N	Calibration Date	Cal Due Date	Asset #
Spectrum Analyzer	MY46186290	02/12/2007	02/12/2009	02869
Bilog Antenna	2451	01/21/2008	01/21/2010	01995
Pre amp to SA Cable	Cable #10	05/16/2007	05/16/2009	P05050
Cable	Cable15	01/05/2007	01/05/2009	P05198
Pre Amp	1937A02548	06/01/2006	06/01/2008	00309

***Equipment Under Test* (* = EUT):**

Function	Manufacturer	Model #	S/N
IR Remote*	SMK Manufacturing, Inc.	RRC9001-4041E	

Support Devices:

Function	Manufacturer	Model #	S/N

Test Conditions / Notes:

The equipment under test (EUT) is an infrared remote. The EUT is powered on and sending a signal continuously. The EUT is powered from four AAA batteries. New batteries were installed prior to testing. Temperature: 23°C, Humidity: 44%, Pressure: 100kPa.

Transducer Legend:

T1=Preamp 8447D_AN00309_ 060108	T2=Bilog-AN01995 BILOG_012110
T3=Cable #10_P05050_ 051609	T4=Cable #15_P05198_ Site A, 010509

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

#	Freq MHz	Rdng dBµV	T1 dB	T2 dB	T3 dB	T4 dB	Dist Table	Corr dBµV/m	Spec dBµV/m	Margin dB	Polar Ant
1	40.110M	43.1	-27.8	+13.8	+0.1	+1.1	+0.0	30.3	40.0	-9.7	Vert
2	48.042M	44.6	-27.7	+9.6	+0.1	+1.2	+0.0	27.8	40.0	-12.2	Vert
3	128.254M	42.8	-27.6	+11.8	+0.3	+2.0	+0.0	29.3	43.5	-14.2	Vert
4	32.060M	32.9	-27.8	+17.6	+0.1	+0.9	+0.0	23.7	40.0	-16.3	Vert
5	56.241M	42.8	-27.7	+7.0	+0.1	+1.3	+0.0	23.5	40.0	-16.5	Horiz
6	136.204M	37.7	-27.6	+11.8	+0.3	+2.1	+0.0	24.3	43.5	-19.2	Vert

7	112.081M	38.3	-27.6	+11.1	+0.3	+1.9	+0.0	24.0	43.5	-19.5	Horiz
8	168.046M	36.2	-27.7	+9.9	+0.3	+2.3	+0.0	21.0	43.5	-22.5	Vert
9	167.901M	34.9	-27.7	+9.9	+0.3	+2.3	+0.0	19.7	43.5	-23.8	Horiz
10	223.994M	35.3	-27.6	+10.9	+0.2	+2.7	+0.0	21.5	46.0	-24.5	Vert

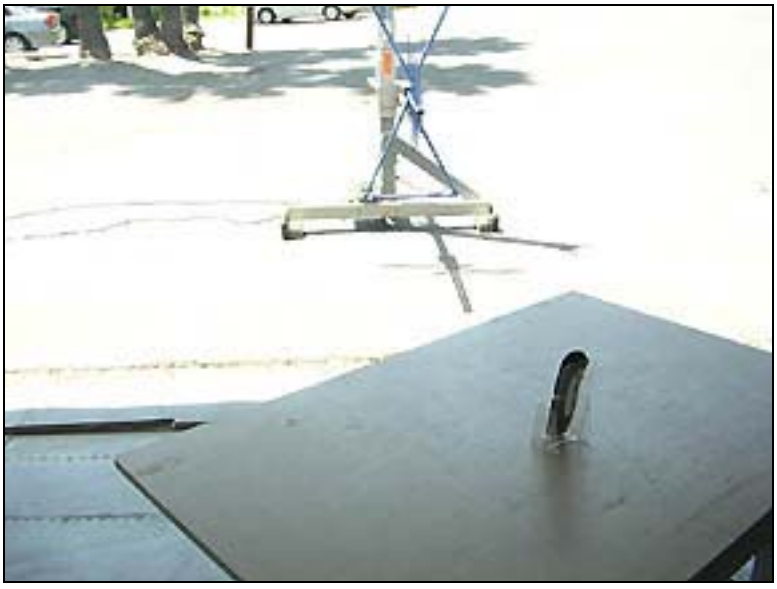
ICES-003 RADIATED EMISSIONS

Test Setup Photos

RCC9001-4041E

RCC9001-4041E

RCC9001-4001L



RCC9001-4001L

Test Data Sheets

Test Location: CKC Laboratories, Inc. •110 N Olinda Place • Brea, CA 92823 • 714-993-6112

Customer: **SMK Manufacturing, Inc.**
Specification: **ICES-003 -Issue 4 (CISPR 22 B) RADIATED**
Work Order #: **87968** Date: 5/15/2008
Test Type: **Maximized Emissions** Time: 12:44:02
Equipment: **IR Remote** Sequence#: 2
Manufacturer: SMK Manufacturing, Inc. Tested By: Sep Apahidean
Model: RRC9001-4001L
S/N:

***Test Equipment*:**

Function	S/N	Calibration Date	Cal Due Date	Asset #
Spectrum Analyzer	MY46186290	02/12/2007	02/12/2009	02869
Bilog Antenna	2451	01/21/2008	01/21/2010	01995
Pre amp to SA Cable	Cable #10	05/16/2007	05/16/2009	P05050
Cable	Cable15	01/05/2007	01/05/2009	P05198
Pre Amp	1937A02548	06/01/2006	06/01/2008	00309

***Equipment Under Test* (* = EUT):**

Function	Manufacturer	Model #	S/N
IR Remote*	SMK Manufacturing, Inc.	RRC9001-4001L	

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Function	Manufacturer	Model #	S/N

Test Conditions / Notes:

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T3=Cable #10_P05050_ 051609	T4=Cable #15_P05198_ Site A, 010509

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

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2	127.934M	46.8	-27.6	+11.8	+0.3	+2.0	-10.0	23.3	30.0	-6.7	Horiz
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Test Location: CKC Laboratories, Inc. •110 N Olinda Place • Brea, CA 92823 • 714-993-6112

Customer: **SMK Manufacturing, Inc.**
Specification: **ICES-003 -Issue 4 (CISPR 22 B) RADIATED**
Work Order #: **87968** Date: 5/15/2008
Test Type: **Maximized Emissions** Time: 12:30:50
Equipment: **IR Remote** Sequence#: 1
Manufacturer: SMK Manufacturing, Inc. Tested By: Sep Apahidean
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S/N:

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Pre amp to SA Cable	Cable #10	05/16/2007	05/16/2009	P05050
Cable	Cable15	01/05/2007	01/05/2009	P05198
Pre Amp	1937A02548	06/01/2006	06/01/2008	00309

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Function	Manufacturer	Model #	S/N

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3	48.042M	44.6	-27.7	+9.6	+0.1	+1.2	-10.0	17.8	30.0	-12.2	Vert
4	136.204M	37.7	-27.6	+11.8	+0.3	+2.1	-10.0	14.3	30.0	-15.7	Vert
5	112.081M	38.3	-27.6	+11.1	+0.3	+1.9	-10.0	14.0	30.0	-16.0	Horiz
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8	223.994M	35.3	-27.6	+10.9	+0.2	+2.7	-10.0	11.5	30.0	-18.5	Vert
9	168.046M	36.2	-27.7	+9.9	+0.3	+2.3	-10.0	11.0	30.0	-19.0	Vert
10	167.901M	34.9	-27.7	+9.9	+0.3	+2.3	-10.0	9.7	30.0	-20.3	Horiz