CMA Testing and Certification Laboratories
廠商會檢定中心

TEST REPORT

Report No. : AE004974-1 Date : 2004 July 12

Applicant : Team Caliber, Inc.
4606 Roush Place,
Concord North Caroline,
28027 United States

Sample Description : One(1) submitted sample stated to be 1:32 Remote Control Nascar Monte Carlo series.
Rating : 2 x 1.5 V AA size batteries
No. of sample(s) : Two(2) sets ***

Date Received : 2004 April 02.

Test Period : 2004 April 02 – 2004 June 28.

Test Requested : FCC Part 15 Certification

Test Method : FCC Rules and Regulations Part 15 – Dec 2003
ANSI C63.4 – 2001

Test Result : See attached sheet(s) from page 2 to 11.

Conclusion : The submitted sample was found to comply with requirement of FCC Part 15 Subpart C.

Remark : All three models are the same in circuitry and components and construction; and therefore model 1:32 Remote Control Nascar Monte Carlo series was chosen to be the representative of the test sample.

FOR AND ON BEHALF OF
CMA Testing and Certification Laboratories

Authorized Signature : _____

Danny Chui
EMC Engineer - EL. Division

FCC ID : RIO-32-TR094-27

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1 General Information

1.1 General Description

The equipment under test (EUT) is a transmitter for 1:32 Remote Control Nascar Monte Carlo series operating at 27.145 MHz which is controlled by a crystal. The EUT is powered by 2 x 1.5 V AA size battery. There are four buttons on the front side of the EUT. When the forward or backward button is pressed, it will transmit a radio frequency for the receiver go forward or backward. When the left or right button is pressed, it will transmit a radio frequency for the receiver turn left or right.

The brief circuit description is listed as follows :
- X1 and associated circuit act as oscillator
- L2, L3, L4 and associated circuit act as RF Amp.
- R3 and associated circuit act as oscillator for encoder
- U1 and associated circuit act as encoder

The models 1:32 Remote Control Nascar Dodge series and 1:32 Remote Control Ford Taurus series, are the same model with 1:32 Remote Control Nascar Monte Carlo series in hardware aspect. The difference in model is the body of the car.

1.2 Related Submittal Grants

This is a single application for certification of a transmitter.

The receiver for this transmitter is exempted from the Part 15 technical rules per 15.101(b).

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1.3 Location of the test site

Radiated emissions measurements are investigated and taken pursuant to the procedures of ANSI C63.4 – 2001. An Open Area Testing Site is set up for investigation and located at :

Top of the Roof, Yan Hing Centre,
9 – 13 Wong Chuk Yeung Street,
Fo Tan, Shatin,
New Territories,
Hong Kong.

Conducted emissions measurements are investigated and also taken pursuant to the procedures of ANSI C63.4 – 2001. A double shielded room is located at :

Roof Floor, Yan Hing Centre,
9 – 13 Wong Chuk Yeung Street,
Fo Tan, Shatin,
New Territories,
Hong Kong.

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1.4 List of measuring equipment

Equipment	Manufacturer	Model No.	Serial No.	Calibration Certification No.
EMI Test Receiver	R&S	ESCS30	100001	S21141
Broadband Antenna	Schaffner	CBL6113B	2718	AC1753
Signal Generator	IFR	2023B	202302/938	Nil
LISN	R&S	ESH3-Z5	100038	S21142
Pulse Limiter	R&S	ESH3-Z2	100001	20-73194
Biconical Antenna	R&S	HK116	837414/004	4000.7752.02

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2 Description of the radiated emission test

2.1 Test Procedure

Radiated emissions measurements are investigated and taken pursuant to the procedures of ANSI C63.4 – 2001.

The equipment under test (EUT) was placed on a non-conductive turntable with dimensions of 1.5m x 1m and 0.8m high above the ground. 3m from the EUT, a broadband antenna mounting on the mast received the signal strength. The turntable was rotated to maximize the emission level. The antenna was then moving along the mast from 1m up to 4m until no more higher value was found. Both horizontal and vertical polarization of the antenna were placed and investigated.

The device was rotated through three orthogonal axes to determine which attitude and configuration produce the highest emission during measurement.

2.2 Test Result

Peak Detector data was measured unless otherwise stated.

* Emissions appearing within the restricted bands shall follow the requirement of section 15.205.

It was found that the EUT meet the FCC requirement.

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2.3 Radiated Emission Measurement Data

Radiated emission

pursuant to

the requirement of FCC Part 15 subpart C

Frequency (MHz)	Polarity (H/V)	Reading at 3m (dBμV/m)	Antenna and Cable factor (dB)	Averaging factor (-dB)	Field Strength (dBμV/m)	Limit at 3m (dBμV/m)	Margin (dB)
27.145	V	52.7	16.4	-6.1	63.0	80.0	-17.0
54.292	H	9.1	8.7	--	17.8	40.0	-22.2
81.438	H	17.9	8.0	--	25.9	40.0	-14.1
*108.584	H	12.9	11.8	--	24.7	43.5	-18.8
*135.730	H	20.4	13.1	--	33.5	43.5	-10.0
*162.876	H	14.1	11.0	--	25.1	43.5	-18.4
190.021	H	19.8	10.5	--	30.3	43.5	-13.2
217.168	H	22.3	10.1	--	32.4	46.0	-13.6
*244.314	H	17.9	10.1	--	28.0	46.0	-18.0
*271.459	H	23.1	14.2	--	37.3	46.0	-8.7

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3 Description of the Line-conducted Test

3.1 Test Procedure

Conducted emissions measurements are investigated and also taken pursuant to the procedures of ANSI C63.4 – 2001. The EUT was setup as described in the procedures, and both lines were measured.

3.2 Test Result

No measurement is required as the EUT is a battery-operated product.

3.3 Graph and Table of Conducted Emission Measurement Data

Not Applicable

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4 Photograph

4.1 Photographs of the Test Setup for Radiated Emission and Conduction Emission

For electronic filing, the photos are saved with filename TSup1.jpg to TSup2.jpg

4.2 Photographs of the External and Internal Configurations of the EUT

For electronic filing, the photos are saved with filename ExPho1.jpg to ExPho2.jpg and InPho1.jpg to InPho2.jpg.

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5. Supplementary document

The following document were submitted by applicant, and for electronic filing, the document are saved with the following filenames:

Document	Filename
ID Label/Location	LabelSmp.jpg
Block Diagram	BlkDia.pdf
Schematic Diagram	Schem.pdf
Users Manual	UserMan.pdf
Operational Description	OpDes.pdf

5.1 Bandwidth

The plot on saved in TestRpt2.pdf shows the fundamental emission is confined in the specified band. It also shows that the band edge met the 15.209 requirement at 26.9599 and 27.2801 MHz.

5.2 The duty cycle is simply the on-time divided by the period :

The duration of one cycle = 32.95 ms.

Effective period of the cycle = (0.96 x 8) ms + (0.48 x 18) ms

= 16.32 ms.

Duty Cycle = 16.32 / 32. 95 ms.

= 0.495

Therefore, the average factor is found by $\underline{20 \log_{10}}$ 0.495 = -6.1 dB

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A3.	Photos of Internal Configurations	1 page
A4.	ID Label/Location	1 page
A5.	Bandwidth Plot	1 page
A6.	Average Factor	2 pages
A7.	Block Diagram	1 page
A8.	Schematics	1 page
A9.	User Manual	4 pages
A10.	Operation Description	1 page

***** End of Report *****

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