

Marstech Limited

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Authorized by:
Professional Engineers
Ontario



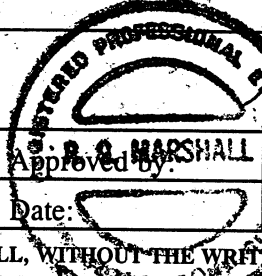
Engineering &
Administrative



Testing For FCC
Submissions/Verifications

Approved Test Facility



TEST REPORT			
REPORT DATE:		23 September 2002	
		REPORT NO: 22287D	
CONTENTS:		See Table of Contents	
SUBMITTOR:		Thomson Multimedia Inc. 10330 North Meridian Street Indianapolis, IN 46290 USA	
SUBJECT:		Model No: CRK76AH1	
		FCC ID: G95REM003	
TEST SPECIFICATION:		FCC 47 CFR Part 15 Subpart "C", Intentional Radiator NOTE: Tests Conducted Are "Type" Tests.	
DATE SAMPLE RECEIVED:		05 September 2002	DATE TESTED: 18 September 2002
RESULTS:		Equipment tested complies with referenced specification.	
ALTERATIONS:		None	
Tested By:			
			
		Approved by:	Robert G. Marshall, P. Eng.
		Date:	Sept 24/02
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TECHNICAL REPORT - FCC 2.1033(b)

Applicant

Thomson Multimedia Inc.
10330 North Meridian Street
Indianapolis, IN
46290 USA

FCC Identifier

G95REM003

Manufacturer

Thomson Television Indonesia
Kawasan Industri Batamindo
Block 213, JLN Beringin
Muka Kuning
INDONESIA

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B	Description of Circuit Functions	2.1033(b)(4)	Exhibit B Exhibit B(1)
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D	Report of Measurements	2.1033(b)(6)	Exhibit D
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EXHIBIT D

(FCC Ref. 2.1033(b)(6))

"Report of Measurements"

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TEST REPORT CONTAINING:

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Exhibit D(2)	Test Set-Up Photo

PRODUCT DESCRIPTION

The Thomson Multimedia Inc. Model CRK76AH1 is a remote control unit to be used with Thomson Multimedia's wireless transmitter Model RD900W.

TEST FACILITY AND EQUIPMENT LIST

FACILITIES:

Radiated: ANSI C63.4 (FCC OET/55) open field 3 metre test range. This test range is protected from the cold and moisture by a non-conductive enclosure.

EQUIPMENT

Anritsu 2601A Spectrum Analyzer
Advantest R3261A Spectrum Analyzer
Hewlett-Packard RF generator # 8640 B with an 002 doubler
A.H. Systems biconical antenna; 20 MHz to 330 MHz
A.H. Systems log periodic antenna; 300 MHz to 1.8 GHz
Eaton dipole antennas; T1, T2, T3 25 MHz to 1.0 GHz
Roberts dipole antennas; T1, T2, T3 & T4 25 MHz to 1.0 GHz
Compliance Design P950 Preamp (16 dB) ... 25 MHz to 1.0 GHz

NOTE:

The Anritsu 2601A Spectrum Analyzer and the Advantest R3261A Spectrum Analyzer are calibrated annually, and that calibration is directly traceable to the National Research Council of Canada. (NRC)
This equipment is only used by qualified technicians and only for the purpose of EMI measurements.
The three metre test range has been carefully evaluated to the ANSI document C63.4 and will be remeasured for reflections and losses every three years.

ADDITIONAL TEST EQUIPMENT LIST

1. Spectrum Analyzer: HP 8591EM, S/N 3639A00995, Calibrated April 2002
2. Spectrum Analyzer: ANRITSU 2601A, S/N MT64544, Calibrated May 2002
3. Spectrum Analyzer: IFR AN940, S/N 635001039, Calibrated March 2002
4. Preamp: HP 8449B, S/N 3008A00378, Calibrated August 2002
5. Horn Antenna: Q-PAR 6878/24, S/N 1721, 1.5-18GHz
6. Line Impedance Stabilization Network.: Marstech, Cal. July 2002

HU, OCT-05-00 11:13AM

COM-SERVE

519 748 0155

P.01

FEDERAL COMMUNICATIONS COMMISSION

Laboratory Division
7435 Oakland Mills Road
Columbia, MD. 21046

September 20, 2000

Registration Number: 90578

Electrohome Electronics Ltd.
809 Wellington St. N.
Kitchener, Ontario N2G 4J6
Canada

Attention: Gerry Gallagher

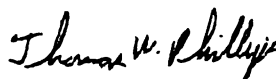
Re: Measurement facility located at Roseville
3 meter-site
Date of Listing: September 20, 2000

Gentlemen:

Your submission of the description of the subject measurement facility has been reviewed and found to be in compliance with the requirements of Section 2.948 of the FCC Rules. The description has, therefore, been placed on file and the name of your organization added to the Commission's list of facilities whose measurement data will be accepted in conjunction with applications for Certification under Parts 15 or 18 of the Commission's Rules. Please note that this filing must be updated for any changes made to the facility, and at least every three years from the date of listing the data on file must be certified as current.

If requested, the above mentioned facility has been added to our list of those who perform these measurement services for the public on a fee basis. An up-to-date list of such public test facilities is available on the Internet on the FCC Website at WWW.FCC.GOV, E-Filing, OET Equipment Authorization Electronic Filing.

Sincerely,



Thomas W Phillips
Electronics Engineer

15.231 SPURIOUS RADIATED EMISSIONS

RESULTS

Model CRK76AH1:

Remote Control: **Maximum field strength:** **44.10 dB μ V/M at 251.34 MHz**

TEST CONDITIONS

Equipment Positioning:

Receiver: N/A
Transmitter: Horizontal and vertical

Supply Voltage:

Transmitter: 3V battery
Receiver: N/A

METHODS OF MEASUREMENT

Transmitter:

The portable remote control unit was placed on a one meter high, non-metallic turntable. New 1.5 volt batteries were installed in the transmitter. The transmitter was activated by continuous pressure on the push button switch by a non-conductive actuator. Measurements were made in a minimum of 3 orthogonal equipment positions.

For each of the above conditions the turntable was rotated through 360 degrees while the receiving antenna was varied in height from 1 to 4 meters and set in both planes of polarization to find the maximum signal strength. The level was converted to a field strength using the antenna correction factors and cable losses.

FIELD STRENGTH OF EMISSIONS

Page 2 of 2

Test Data:

REMOTE CONTROL UNIT

Frequency Band MHz	Meter Reading @3m dB μ V/m	Detector & Band- width used	Antenna and Polariz- ation	Cable & Antenna Factor	Peak F. S. dB μ V/M	Peak FCC Limit dB μ V/M	Peak/ Average Ratio dB μ V/M	Average Field Strength dB μ V/M	Average FCC Limit	Margin and Limit Used
308.50	53.20	PK 100	T3 H	21.30	74.50	95	30	44.50	75	-30.50 Av
251.34	22.30	PK 100	BC H	21.80	44.10	75	30	14.10	55	-40.90 Pk
370.95	24.30	PK 100	LP H	19.30	43.60	75	30	13.60	55	-41.40 Pk
617.00	22.00	PK 100	LP H	23.10	45.10	75	30	15.10	55	-39.90 Av
1542.56	16.10	PK 1000	LP H	38.50	54.60	75	30	24.60	55	-30.40 Av
1851.00	21.00	PK 1000	Horn V	33.00	54.00	75	30	24.00	55	-31.00 Av
2159.50	16.00	PK 1000	Horn V	32.70	48.70	75	30	18.70	55	-36.30 Av
2468.00	19.00	PK 1000	Horn V	33.55	52.55	75	30	22.55	55	-32.45 Av
2776.50	19.00	PK 1000	Horn V	34.26	53.26	75	30	23.26	55	-31.74 Av
3085.00	21.00	PK 1000	Horn V	35.45	56.45	75	30	26.45	55	-28.55 Av

If the peak meets the average limit, nothing further is required.

If the peak exceeds the average limit, then an average measurement is required (may be calculated) and must be below the average limit and also:

The peak measurement cannot exceed the average limit +20dB.

PEAK TO AVERAGE RATIO

The peak to average ratio was measured and calculated as follows:

One complete cycle was **76 mS** (refer to Graph C)

The first pulse has an ON time of **0.106 mS** (refer to Graph A) and the others an ON time of **0.050 mS** (refer to Graph B)

The total number of pulses in one cycle is **52** (refer to Graph D).

The total number of ON pulses is **2 x 0.106 mS (Graph A) + 50 x 0.050 mS (Graph B)**
= 2.712 mS.

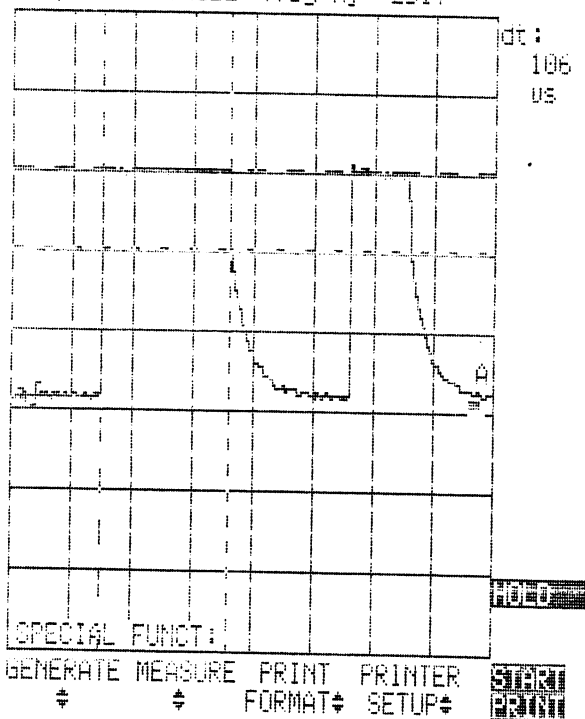
The peak to average ratio is the total ON time (**2.712 mS**) divided by the total cycle time (**100 mS**).

$$\text{Peak to average ratio: } \frac{2.712}{100} = 0.02712$$

$$\text{Peak to average ratio: } 20 \log 0.02712 = 31.33 \text{ dB}$$

ScopeMeter 97

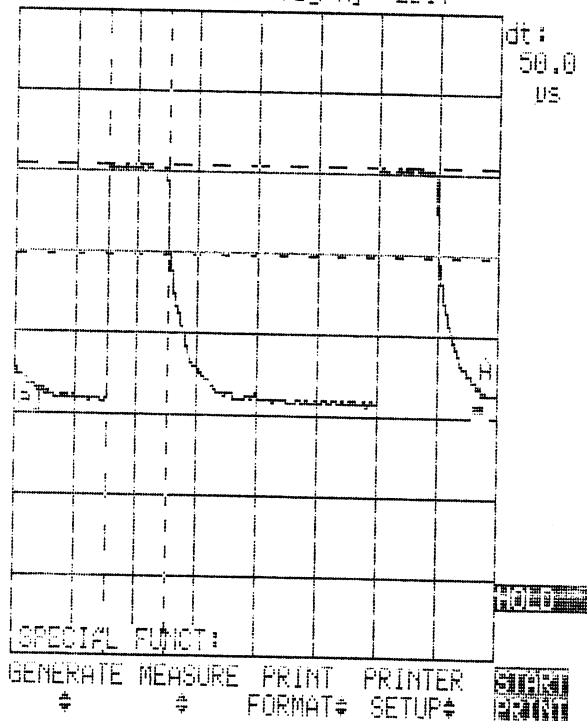
A100mV AC 1:1 PROBE B 2V OFF 10:1 PROBE
50us/DIV SINGLE Trig:AJ -2DIV



MODEL CRK76AH1
Graph A

ScopeMeter 97

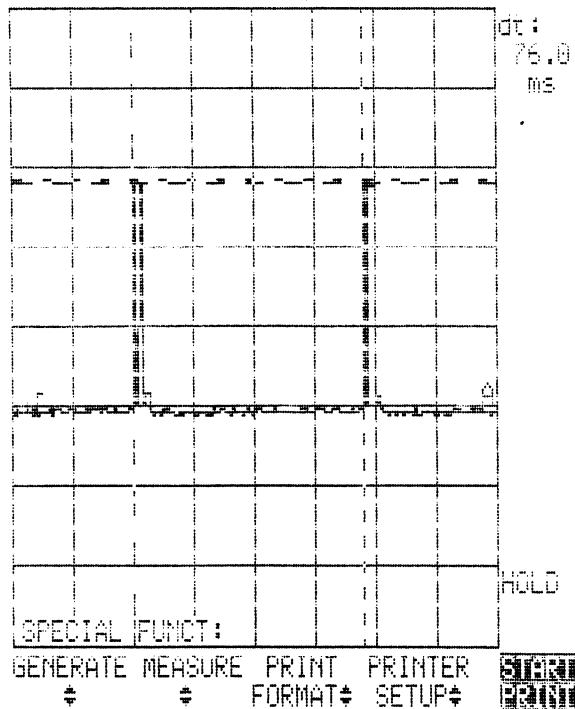
A100mV AC 1:1 PROBE B 2V OFF 10:1 PROBE
10us/DIV SINGLE Trig:AJ -2DIV



MODEL CRK76AH1
Graph B

ScopeMeter 97

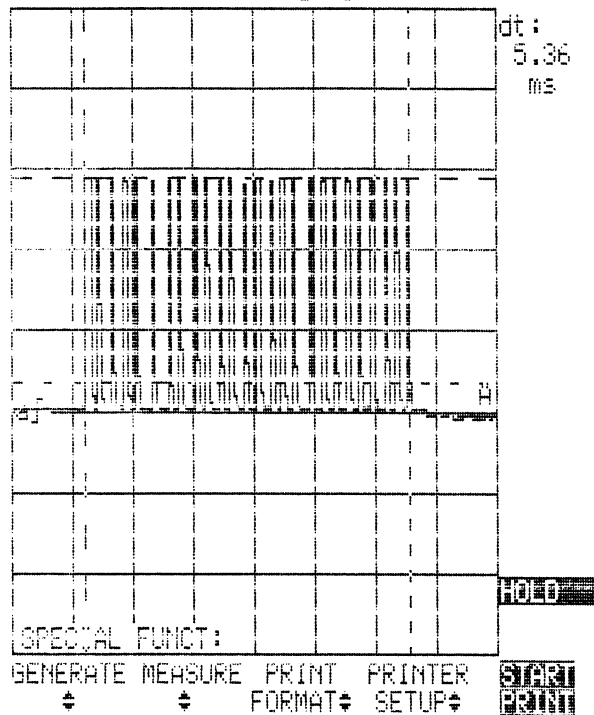
A100mV AC 1:1 PROBE B 2V OFF 10:1 PROBE
20ms/DIV SINGLE Trig:AJ -20IV



MODEL CRK76AH1
Group C

ScopeMeter 97

A100mV AC 1:1 PROBE B 2V OFF 10:1 PROBE
1ms/DIV SINGLE Trig:AJ -20IV



MODEL CRK76AH1
Group D

15.231(c) BANDWIDTH

Requirements:

The maximum 20 dB bandwidth shall be at least 770KHz (0.25% of the center frequency)

Measurement Procedure:

1. Position the EUT without connection to Spectrum Analyzer (SA). Turn on the EUT and connect its antenna terminal to SA via a low loss cable and set it to any one measured frequency within its operating range and ensure that the SA is operated in its linear range.
2. Set RBW of SA to 30KHz and VBW to 1 MHz and span to 3MHz.
3. Capture the total emission using appropriate SA settings and then set the markers to measure the 20 dB total band using delta markers.
4. Print the bandwidth measurement.

Measurement Data:

Bandwidth is 593 KHz [Refer to Exhibit D(1)-12]

BANDWIDTH
MODEL CRK76AH1

13:16:23 OCT 08, 2002

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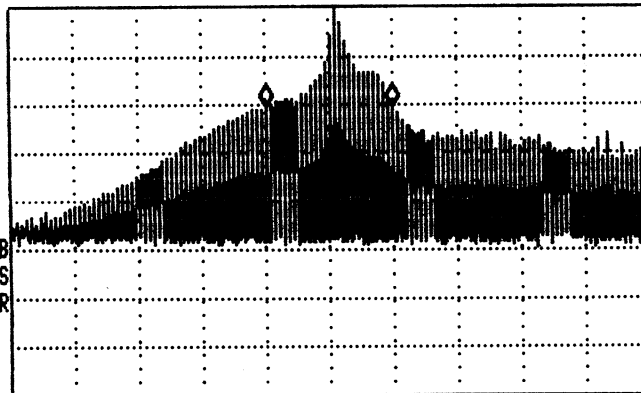
MARKER Δ
593 kHz
.05 dB

ACTV DET: PEAK
MEAS DET: PEAK QP AVG
MKR Δ 593 kHz
.05 dB

LOG REF 60.0 dB μ V

10
dB/
#ATN
0 dB

WA SB
SC FS
CORR



CENTER 308.475 MHz

#IF BW 30 kHz

#AVG BW 100 kHz

SPAN 3.000 MHz

#SWP 10.0 sec