

# **Tonic Digital Products Limited**

Application  
For  
Certification  
**(FCC ID: TX7T569)**  
TV Interface Device

0601332  
TC/el  
June 09, 2006

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**Intertek Testing Services Hong Kong Ltd.**

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# INTERTEK TESTING SERVICES

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## INTERTEK TESTING SERVICES

### MEASUREMENT / TECHNICAL REPORT

**Tonic Digital Products Limited – MODEL: TONIC T569**  
**RCA DRC6355N**  
**FCC ID: TX7T569**

**June 09, 2006**

This report concerns (check one:)      Original Grant ☒      Class II Change ☐

Equipment Type: TV Interface Device (example: computer, printer, modem, etc.)

Deferred grant requested per 47 CFR 0.457(d)(1)(ii)?      Yes ☐      No ☒

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 ☒

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

Report prepared by:      Lo Po Kong, Alfred  
Intertek Testing Services  
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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.pdf
Test Setup Photo	Conducted Emission	conducted photos.pdf
Test Report	Conducted Emission Test Result	conducted.pdf
External Photo	External Photo	external photos.pdf
Internal Photo	Internal Photo	internal photos.pdf
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
RF Signal	Modulator Signal Output	ch3.pdf and ch4.pdf
Cover Letter	Confidentiality Request	request.pdf

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## **EXHIBIT 1**

### **GENERAL DESCRIPTION**

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### 1.0 **General Description**

#### 1.1 Product Description

This Equipment Under Test (EUT) is a DVD and VCR combo player. It used to DVD playback, VHS playback and records the TV program via VHS tape. This EUT is powered by 120VAC. Besides, it can also modulated the DVD or VHS tape signal to TV receiver via RF output terminal which is designed to convert the Audio/Video signal to standard NTSC CH3 or CH4 RF signal. There are two different channels available, Channel 3 and Channel 4, it can be selected by the switch on the front panel or selected by the remote control. Most of the input or output terminals are located at the back panel, such as S-Video output, component output, coaxial output and a progressive scan switch. On the other hand, it can be seen that the ANT IN, RF OUT TV 75ohms "F" connector are used for connecting the antenna outlet and the television RF signal input respectively. Disc/tape tray button, power button and others control switches are located on the front panel, for example, play button, channel selecting buttons and one AV input jack.

The Model: RCA DRC6355N is the same as the Model: TONIC T569 in hardware aspect. The difference in model number serves as marketing strategy.

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

#### 1.2 Related Submittal(s) Grants

This is a single application for certification of a TV interface device.

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### 1.3 Test Methodology

Both AC mains line-conducted and radiated emission measurements were performed according to the procedures in ANSI C63.4 (2003). Radiated Emission measurement was performed in Open Area Test Sites and Conducted Emission was performed in Shield Room. Preliminary scans were performed in the Open Area Test Sites 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 fully placed on file with the FCC.



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### **EXHIBIT 2**

### **SYSTEM TEST CONFIGURATION**

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### 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 EUT was powered by 120VAC.

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 rear of unit shall be flushed with the rear of the table.

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

#### 2.2 EUT Exercising Software

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

#### 2.3 Special Accessories

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

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### 2.4 Equipment Modification

Any modifications installed previous to testing by Tonic Digital Products Limited 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 the test conclusion, the Measurement Uncertainty of test has been considered.

### 2.6 Support Equipment List and Description

1. TV Signal Generator Multistandard (EW-1274);
2. Spectrum Analyzer (EW-1710);
3. Noise Figure Analyzer (EW-1547b);
4. Noise Sources (EW-1547a);
5. Test DVD Disc (EW-1542);
6. 1 × 1.5m S-Video cable with termination load;
7. 1 × 1.5m coaxial cable with 75Ω termination load;
8. 5 × 1.5m AV cables with 47kΩ and 75Ω termination load respectively.  
(Provided by Intertek)

All the items listed under section 2.0 of this report are

*Confirmed by:*

*Lo Po Kong, Alfred  
Technical Manager  
Intertek Testing Services Hong Kong Ltd.  
Agent for Tonic Digital Products Limited*



\_\_\_\_\_  
*Signature*

\_\_\_\_\_  
June 09, 2006

\_\_\_\_\_  
*Date*

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### **EXHIBIT 3**

### **EMISSION RESULTS**

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### 3.0 **Emission Results**

Data is included 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.

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### 3.1 Field Strength Calculation

The field strength is calculated by adding the reading on the Spectrum Analyzer to the factors associated with preamplifiers (if any), antennas, cables, pulse desensitization and average factors (when specified limit is in average and measurements are made with peak detectors). A sample calculation is included below.

$$FS = RA + AF + CF - AG + PD + AV$$

where FS = Field Strength in dB $\mu$ V/m

RA = Receiver Amplitude (including preamplifier) in dB $\mu$ V

CF = Cable Attenuation Factor in dB

AF = Antenna Factor in dB

AG = Amplifier Gain in dB

PD = Pulse Desensitization in dB

AV = Average Factor in -dB

In the radiated emission table which follows, the reading shown on the data table may reflect the preamplifier gain. An example of the calculations, where the reading does not reflect the preamplifier gain, follows:

$$FS = RA + AF + CF - AG + PD + AV$$

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### 3.1 Field Strength Calculation (cont'd)

#### Example

Assume a receiver reading of 62.0dB $\mu$ V is obtained. The antenna factor of 7.4dB and cable factor of 1.6dB is added. The amplifier gain of 29dB is subtracted. The pulse desensitization factor of the spectrum analyzer was 0dB, and the resultant average factor was -10dB. The net field strength for comparison to the appropriate emission limit is 32dB $\mu$ V/m. This value in dB $\mu$ V/m was converted to its corresponding level in  $\mu$ V/m.

$$RA = 62.0\text{dB}\mu\text{V}$$

$$AF = 7.4\text{dB}$$

$$CF = 1.6\text{dB}$$

$$AG = 29.0\text{dB}$$

$$PD = 0\text{dB}$$

$$AV = -10\text{dB}$$

$$FS = 62 + 7.4 + 1.6 - 29 + 0 + (-10) = 32\text{dB}\mu\text{V/m}$$

$$\text{Level in } \mu\text{V/m} = \text{Common Antilogarithm } [(32\text{dB}\mu\text{V/m})/20] = 39.8\mu\text{V/m}$$

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### 3.2 Radiated Emission Configuration Photograph

Worst Case Radiated Emission  
at  
204.984MHz

For electronic filing, the worst case radiated emission configuration photograph is saved with filename: radiated photos.pdf.



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### 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 4.8dB margin

#### **TEST PERSONNEL:**



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*Signature*

Terry C. H. Chan, Compliance Engineer  
*Typed / Printed Name*

June 09, 2006  
*Date*

## INTERTEK TESTING SERVICES

Company: Tonic Digital Products Limited

Date of Test: February 02, 2006

Model: TONIC T569

Worst Case Operating Mode: DVD Playing (Modulating On)

**Table 1**  
**Radiated Emissions**

Polarization	Frequency (MHz)	Reading (dB $\mu$ V)	Pre-amp (dB)	Antenna Factor (dB)	Net at 3m (dB $\mu$ V/m)	Limit at 3m (dB $\mu$ V/m)	Margin (dB)
V	37.100	35.7	16.0	10.0	29.7	40.0	-10.3
V	40.615	36.0	16.0	10.0	30.0	40.0	-10.0
V	86.574	38.9	16.0	8.0	30.9	40.0	-9.1
H	114.965	33.0	16.0	14.0	31.0	43.5	-12.5
H	127.818	36.7	16.0	14.0	34.7	43.5	-8.8
H	157.957	30.5	16.0	16.0	30.5	43.5	-13.0
H	164.596	32.4	16.0	17.0	33.4	43.5	-10.1
H	170.373	36.0	16.0	18.0	38.0	43.5	-5.5
H	192.625	37.8	16.0	16.0	37.8	43.5	-5.7
H	198.710	35.9	16.0	16.0	35.9	43.5	-7.6
H	204.984	38.7	16.0	16.0	38.7	43.5	-4.8
H	207.859	33.5	16.0	17.0	34.5	43.5	-9.0
H	209.527	34.8	16.0	17.0	35.8	43.5	-7.7
H	214.910	33.7	16.0	17.0	34.7	43.5	-8.8
H	229.254	29.5	16.0	18.0	31.5	46.0	-14.5
H	272.579	24.5	16.0	22.0	30.5	46.0	-15.5
H	286.961	24.4	16.0	22.0	30.4	46.0	-15.6
H	325.682	26.7	16.0	24.0	34.7	46.0	-11.3
H	529.725	19.5	16.0	27.0	30.5	46.0	-15.5

- 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 value in the margin column shows emission below limit.
  4. Horn antenna is used for the emission over 1000MHz.
  5. All emissions below the peak limit, 20 dB above the QP limit.

Test Engineer: Terry C. H. Chan

## INTERTEK TESTING SERVICES

Company: Tonic Digital Products Limited  
Model: TONIC T569  
Worst Case Operating Mode: VHS Recording

Date of Test: February 02, 2006

**Table 2**  
**Radiated Emissions**

Polarization	Frequency (MHz)	Reading (dB $\mu$ V)	Pre-amp (dB)	Antenna Factor (dB)	Net at 3m (dB $\mu$ V/m)	Limit at 3m (dB $\mu$ V/m)	Margin (dB)
V	37.100	35.6	16.0	10.0	29.6	40.0	-10.4
V	40.615	36.0	16.0	10.0	30.0	40.0	-10.0
V	86.574	38.9	16.0	8.0	30.9	40.0	-9.1
H	114.965	33.2	16.0	14.0	31.2	43.5	-12.3
H	127.818	36.6	16.0	14.0	34.6	43.5	-8.9
H	157.957	30.9	16.0	16.0	30.9	43.5	-12.6
H	164.428	32.6	16.0	17.0	33.6	43.5	-9.9
H	170.373	36.1	16.0	18.0	38.1	43.5	-5.4
H	192.625	37.9	16.0	16.0	37.9	43.5	-5.6
H	198.710	35.9	16.0	16.0	35.9	43.5	-7.6
H	204.984	38.6	16.0	16.0	38.6	43.5	-4.9
H	207.859	33.5	16.0	17.0	34.5	43.5	-9.0
H	209.527	34.6	16.0	17.0	35.6	43.5	-7.9
H	214.910	33.7	16.0	17.0	34.7	43.5	-8.8
H	229.254	29.6	16.0	18.0	31.6	46.0	-14.4
H	272.579	25.6	16.0	22.0	31.6	46.0	-14.4
H	286.961	24.5	16.0	22.0	30.5	46.0	-15.5
H	325.682	22.4	16.0	24.0	30.4	46.0	-15.6
H	529.725	23.1	16.0	27.0	34.1	46.0	-11.9

- 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 value in the margin column shows emission below limit.
  4. Horn antenna is used for the emission over 1000MHz.
  5. All emissions below the peak limit, 20 dB above the QP limit.

Test Engineer: Terry C. H. Chan

## INTERTEK TESTING SERVICES

Company: Tonic Digital Products Limited  
Model: TONIC T569  
Worst Case Operating Mode: TV Mode

Date of Test: February 02, 2006

**Table 3**  
**Radiated Emissions**

### **Channel 02**

Polarization	Frequency (MHz)	Reading (dB $\mu$ V)	Pre-amp (dB)	Antenna Factor (dB)	Net at 3m (dB $\mu$ V/m)	Limit at 3m (dB $\mu$ V/m)	Margin (dB)
H	101.001	37.2	16.0	13.0	34.2	43.5	-9.3
H	202.002	32.8	16.0	16.0	32.8	43.5	-10.7
H	303.003	24.4	16.0	22.0	30.4	46.0	-15.6
H	404.004	22.2	16.0	24.0	30.2	46.0	-15.8

### **Channel 03**

Polarization	Frequency (MHz)	Reading (dB $\mu$ V)	Pre-amp (dB)	Antenna Factor (dB)	Net at 3m (dB $\mu$ V/m)	Limit at 3m (dB $\mu$ V/m)	Margin (dB)
H	107.005	35.8	16.0	14.0	33.8	43.5	-9.7
H	214.010	32.2	16.0	17.0	33.2	43.5	-10.3
H	321.015	25.4	16.0	23.0	32.4	46.0	-13.6
H	428.020	23.1	16.0	25.0	32.1	46.0	-13.9

### **Channel 04**

Polarization	Frequency (MHz)	Reading (dB $\mu$ V)	Pre-amp (dB)	Antenna Factor (dB)	Net at 3m (dB $\mu$ V/m)	Limit at 3m (dB $\mu$ V/m)	Margin (dB)
H	113.002	35.8	16.0	14.0	33.8	43.5	-9.7
H	226.004	31.4	16.0	18.0	33.4	46.0	-12.6
H	339.006	24.6	16.0	24.0	32.6	46.0	-13.4
H	452.012	22.1	16.0	26.0	32.1	46.0	-13.9

- 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 value in the margin column shows emission below limit.
  4. Horn antenna is used for the emission over 1000MHz.
  5. All emissions below the peak limit, 20 dB above the QP limit.

Test Engineer: Terry C. H. Chan

## INTERTEK TESTING SERVICES

Company: Tonic Digital Products Limited  
Model: TONIC T569  
Worst Case Operating Mode: TV Mode

Date of Test: February 02, 2006

**Table 3 (Cont'd)**  
**Radiated Emissions**

### **Channel 05**

Polarization	Frequency (MHz)	Reading (dB $\mu$ V)	Pre-amp (dB)	Antenna Factor (dB)	Net at 3m (dB $\mu$ V/m)	Limit at 3m (dB $\mu$ V/m)	Margin (dB)
H	123.002	36.8	16.0	14.0	34.8	43.5	-8.7
H	246.004	30.2	16.0	20.0	34.2	46.0	-11.8
H	369.006	25.8	16.0	24.0	33.8	46.0	-12.2
H	492.008	22.4	16.0	26.0	32.4	46.0	-13.6

### **Channel 06**

Polarization	Frequency (MHz)	Reading (dB $\mu$ V)	Pre-amp (dB)	Antenna Factor (dB)	Net at 3m (dB $\mu$ V/m)	Limit at 3m (dB $\mu$ V/m)	Margin (dB)
H	129.004	36.8	16.0	14.0	34.8	43.5	-8.7
H	258.008	28.4	16.0	21.0	33.4	46.0	-12.6
H	387.012	25.2	16.0	24.0	33.2	46.0	-12.8
H	516.016	21.6	16.0	27.0	32.6	46.0	-13.4

### **Channel 07**

Polarization	Frequency (MHz)	Reading (dB $\mu$ V)	Pre-amp (dB)	Antenna Factor (dB)	Net at 3m (dB $\mu$ V/m)	Limit at 3m (dB $\mu$ V/m)	Margin (dB)
H	221.003	33.8	16.0	17.0	34.8	46.0	-11.2
H	442.006	23.9	16.0	26.0	33.9	46.0	-12.1
H	663.009	20.2	16.0	29.0	33.2	46.0	-12.8
H	884.012	16.8	16.0	32.0	32.8	46.0	-13.2

- 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 value in the margin column shows emission below limit.
  4. Horn antenna is used for the emission over 1000MHz.
  5. All emissions below the peak limit, 20 dB above the QP limit.

Test Engineer: Terry C. H. Chan

## INTERTEK TESTING SERVICES

Company: Tonic Digital Products Limited  
Model: TONIC T569  
Worst Case Operating Mode: TV Mode

Date of Test: February 02, 2006

**Table 3 (Cont'd)**  
**Radiated Emissions**

### **Channel 08**

Polarization	Frequency (MHz)	Reading (dB $\mu$ V)	Pre-amp (dB)	Antenna Factor (dB)	Net at 3m (dB $\mu$ V/m)	Limit at 3m (dB $\mu$ V/m)	Margin (dB)
H	227.003	32.8	16.0	18.0	34.8	46.0	-11.2
H	454.006	24.2	16.0	26.0	34.2	46.0	-11.8
H	681.009	20.6	16.0	29.0	33.6	46.0	-12.4
H	908.012	16.1	16.0	32.0	32.1	46.0	-13.9

### **Channel 09**

Polarization	Frequency (MHz)	Reading (dB $\mu$ V)	Pre-amp (dB)	Antenna Factor (dB)	Net at 3m (dB $\mu$ V/m)	Limit at 3m (dB $\mu$ V/m)	Margin (dB)
H	233.003	31.5	16.0	19.0	34.5	46.0	-11.5
H	466.008	23.6	16.0	26.0	33.6	46.0	-12.4
H	699.012	18.6	16.0	30.0	32.6	46.0	-13.4
H	932.015	16.0	16.0	33.0	33.0	46.0	-13.0

### **Channel 10**

Polarization	Frequency (MHz)	Reading (dB $\mu$ V)	Pre-amp (dB)	Antenna Factor (dB)	Net at 3m (dB $\mu$ V/m)	Limit at 3m (dB $\mu$ V/m)	Margin (dB)
H	239.006	31.8	16.0	19.0	34.8	46.0	-11.2
H	478.010	23.6	16.0	26.0	33.6	46.0	-12.4
H	717.015	19.2	16.0	30.0	33.2	46.0	-12.8
H	956.020	15.4	16.0	33.0	32.4	46.0	-13.6

- 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 value in the margin column shows emission below limit.
  4. Horn antenna is used for the emission over 1000MHz.
  5. All emissions below the peak limit, 20 dB above the QP limit.

Test Engineer: Terry C. H. Chan

## INTERTEK TESTING SERVICES

Company: Tonic Digital Products Limited  
Model: TONIC T569  
Worst Case Operating Mode: TV Mode

Date of Test: February 02, 2006

**Table 3 (Cont'd)**  
**Radiated Emissions**

### **Channel 11**

Polarization	Frequency (MHz)	Reading (dB $\mu$ V)	Pre-amp (dB)	Antenna Factor (dB)	Net at 3m (dB $\mu$ V/m)	Limit at 3m (dB $\mu$ V/m)	Margin (dB)
H	245.001	31.4	16.0	20.0	35.4	46.0	-10.6
H	490.002	24.1	16.0	26.0	34.1	46.0	-11.9
H	735.003	19.8	16.0	30.0	33.8	46.0	-12.2
H	980.006	15.6	16.0	33.0	32.6	54.0	-21.4

### **Channel 12**

Polarization	Frequency (MHz)	Reading (dB $\mu$ V)	Pre-amp (dB)	Antenna Factor (dB)	Net at 3m (dB $\mu$ V/m)	Limit at 3m (dB $\mu$ V/m)	Margin (dB)
H	251.002	31.6	16.0	20.0	35.6	46.0	-10.4
H	502.004	24.1	16.0	26.0	34.1	46.0	-11.9
H	753.006	19.6	16.0	30.0	33.6	46.0	-12.4
H	1004.008	39.3	33.0	26.1	32.4	54.0	-21.6

### **Channel 13**

Polarization	Frequency (MHz)	Reading (dB $\mu$ V)	Pre-amp (dB)	Antenna Factor (dB)	Net at 3m (dB $\mu$ V/m)	Limit at 3m (dB $\mu$ V/m)	Margin (dB)
H	257.002	30.0	16.0	21.0	35.0	46.0	-11.0
H	514.004	23.0	16.0	27.0	34.0	46.0	-12.0
H	771.006	18.6	16.0	31.0	33.6	46.0	-12.4
H	1028.008	39.3	33.0	26.1	32.4	54.0	-21.6

- 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 value in the margin column shows emission below limit.
  4. Horn antenna is used for the emission over 1000MHz.
  5. All emissions below the peak limit, 20 dB above the QP limit.

Test Engineer: Terry C. H. Chan

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## INTERTEK TESTING SERVICES

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Company: Tonic Digital Products Limited  
Model: TONIC T569  
Worst Case Operating Mode: TV Mode

Date of Test: February 02, 2006

**Table 3 (Cont'd)**  
**Radiated Emissions**

**Channel 15**

Polarization	Frequency (MHz)	Reading (dB $\mu$ V)	Pre-amp (dB)	Antenna Factor (dB)	Net at 3m (dB $\mu$ V/m)	Limit at 3m (dB $\mu$ V/m)	Margin (dB)
H	523.001	24.4	16.0	27.0	35.4	46.0	-10.6
H	1106.002	40.3	33.0	26.1	33.4	54.0	-20.6
H	1659.003	39.0	33.0	27.2	33.2	54.0	-20.8
H	2212.004	36.0	33.0	29.4	32.4	54.0	-21.6

**Channel 20**

Polarization	Frequency (MHz)	Reading (dB $\mu$ V)	Pre-amp (dB)	Antenna Factor (dB)	Net at 3m (dB $\mu$ V/m)	Limit at 3m (dB $\mu$ V/m)	Margin (dB)
H	107.005	35.8	16.0	14.0	33.8	43.5	-9.7
H	214.010	32.2	16.0	17.0	33.2	43.5	-10.3
H	321.015	25.4	16.0	23.0	32.4	46.0	-13.6
H	428.020	23.1	16.0	25.0	32.1	46.0	-13.9

**Channel 28**

Polarization	Frequency (MHz)	Reading (dB $\mu$ V)	Pre-amp (dB)	Antenna Factor (dB)	Net at 3m (dB $\mu$ V/m)	Limit at 3m (dB $\mu$ V/m)	Margin (dB)
H	601.002	22.4	16.0	29.0	35.4	46.0	-10.6
H	1202.004	41.5	33.0	26.1	34.6	54.0	-19.4
H	1803.006	38.9	33.0	27.2	33.1	54.0	-20.9
H	2404.008	36.8	33.0	29.4	33.2	54.0	-20.8

- 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 value in the margin column shows emission below limit.
  4. Horn antenna is used for the emission over 1000MHz.
  5. All emissions below the peak limit, 20 dB above the QP limit.

Test Engineer: Terry C. H. Chan



## INTERTEK TESTING SERVICES

Company: Tonic Digital Products Limited  
Model: TONIC T569  
Worst Case Operating Mode: TV Mode

Date of Test: February 02, 2006

**Table 3 (Cont'd)**  
**Radiated Emissions**

### **Channel 36**

Polarization	Frequency (MHz)	Reading (dB $\mu$ V)	Pre-amp (dB)	Antenna Factor (dB)	Net at 3m (dB $\mu$ V/m)	Limit at 3m (dB $\mu$ V/m)	Margin (dB)
H	649.002	22.1	16.0	29.0	35.1	46.0	-10.9
H	1298.004	41.5	33.0	26.1	34.6	54.0	-19.4
H	1947.006	39.0	33.0	27.2	33.2	54.0	-20.8
H	2596.008	35.6	33.0	30.4	33.0	54.0	-21.0

### **Channel 45**

Polarization	Frequency (MHz)	Reading (dB $\mu$ V)	Pre-amp (dB)	Antenna Factor (dB)	Net at 3m (dB $\mu$ V/m)	Limit at 3m (dB $\mu$ V/m)	Margin (dB)
H	703.004	22.0	16.0	30.0	36.0	46.0	-10.0
H	1406.008	42.1	33.0	26.1	35.2	54.0	-18.8
H	2109.012	38.6	33.0	29.4	35.0	54.0	-19.0
H	2812.016	37.4	33.0	30.4	34.8	54.0	-19.2

### **Channel 53**

Polarization	Frequency (MHz)	Reading (dB $\mu$ V)	Pre-amp (dB)	Antenna Factor (dB)	Net at 3m (dB $\mu$ V/m)	Limit at 3m (dB $\mu$ V/m)	Margin (dB)
H	751.006	22.4	16.0	30.0	36.4	46.0	-9.6
H	1502.012	43.9	33.0	27.2	38.1	54.0	-15.9
H	2253.018	41.6	33.0	29.4	38.0	54.0	-16.0
H	3004.024	38.1	33.0	31.9	37.0	54.0	-17.0

- 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 value in the margin column shows emission below limit.
  4. Horn antenna is used for the emission over 1000MHz.
  5. All emissions below the peak limit, 20 dB above the QP limit.

Test Engineer: Terry C. H. Chan

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## INTERTEK TESTING SERVICES

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Company: Tonic Digital Products Limited  
Model: TONIC T569  
Worst Case Operating Mode: TV Mode

Date of Test: February 02, 2006

**Table 3 (Cont'd)**  
**Radiated Emissions**

***Channel 61***

Polarization	Frequency (MHz)	Reading (dB $\mu$ V)	Pre-amp (dB)	Antenna Factor (dB)	Net at 3m (dB $\mu$ V/m)	Limit at 3m (dB $\mu$ V/m)	Margin (dB)
H	799.002	22.4	16.0	31.0	37.4	46.0	-8.6
H	1598.004	42.2	33.0	27.2	36.4	54.0	-17.6
H	2397.006	39.4	33.0	29.4	35.8	54.0	-18.2
H	3196.008	36.3	33.0	31.9	35.2	54.0	-18.8

***Channel 69***

Polarization	Frequency (MHz)	Reading (dB $\mu$ V)	Pre-amp (dB)	Antenna Factor (dB)	Net at 3m (dB $\mu$ V/m)	Limit at 3m (dB $\mu$ V/m)	Margin (dB)
H	847.001	21.8	16.0	31.0	36.8	46.0	-9.2
H	1694.002	41.6	33.0	27.2	35.8	54.0	-18.2
H	2541.003	37.8	33.0	30.4	35.2	54.0	-18.8
H	3388.004	35.3	33.0	31.9	34.2	54.0	-19.8

- 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 value in the margin column shows emission below limit.
  4. Horn antenna is used for the emission over 1000MHz.
  5. All emissions below the peak limit, 20 dB above the QP limit.

Test Engineer: Terry C. H. Chan

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## INTERTEK TESTING SERVICES

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Company: Tonic Digital Products Limited  
Model: TONIC T569  
Worst Case Operating Mode: TV Mode

Date of Test: February 02, 2006

**Table 4**

**Antenna Power Conduction Measurement  
Pursuant To FCC Part 15 Section 15.111 Emissions Requirements**

Channel	Frequency (MHz)	Measured Frequency (MHz)	Reading (dBμV)	Limit (dBμV)
2	101.000	100.820	<20.0	51.6
	202.000	202.284	<20.0	51.6
3	107.000	106.663	<20.0	51.6
	214.000	214.268	<20.0	51.6
4	113.000	113.258	<20.0	51.6
	226.000	225.332	<20.0	51.6
5	123.000	123.364	<20.0	51.6
	246.000	245.004	<20.0	51.6
6	129.000	128.191	<20.0	51.6
	258.000	258.200	<20.0	51.6
7	221.000	221.012	<20.0	51.6
	442.000	442.244	<20.0	51.6
8	227.000	227.388	<20.0	51.6
	454.000	453.348	<20.0	51.6
9	233.000	233.360	<20.0	51.6
	466.000	466.680	<20.0	51.6
10	239.000	239.152	<20.0	51.6
	478.000	477.692	<20.0	51.6
11	245.000	245.024	<20.0	51.6
	490.000	490.028	<20.0	51.6
12	251.000	250.396	<20.0	51.6
	502.000	501.944	<20.0	51.6
13	257.000	256.468	<20.0	51.6
	514.000	514.520	<20.0	51.6

Notes: 1. Only emissions from local oscillator and its harmonics (if any) were detected.  
2. Limit should not exceed 2nW or 51.6dBμV (at 75Ω).  
3. The matching-impedance pad (6.0dB attenuation) was employed (Reading = Meter Reading + Pad Loss).

Test Engineer: Terry C. H. Chan

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## INTERTEK TESTING SERVICES

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Company: Tonic Digital Products Limited  
Model: TONIC T569  
Worst Case Operating Mode: TV Mode

Date of Test: February 02, 2006

**Table 4 (Cont'd)**

**Antenna Power Conduction Measurement  
Pursuant To FCC Part 15 Section 15.111 Emissions Requirements**

Channel	Frequency (MHz)	Measured Frequency (MHz)	Reading (dB $\mu$ V)	Limit (dB $\mu$ V)
14	517.000	517.000	<20.0	51.6
	1034.000	1034.000	<20.0	51.6
15	523.000	523.024	<20.0	51.6
	1046.000	1046.048	<20.0	51.6
20	553.000	553.000	<20.0	51.6
	1106.000	1106.042	23.7	51.6
28	601.000	601.028	<20.0	51.6
	1202.000	1202.054	22.4	51.6
36	649.000	649.004	<20.0	51.6
	1298.000	1298.048	<20.0	51.6
45	703.000	703.024	20.1	51.6
	1406.000	1406.018	23.7	51.6
53	751.000	751.032	21.6	51.6
	1502.000	1502.030	26.1	51.6
61	799.000	799.020	20.4	51.6
	1598.000	1598.042	29.6	51.6
69	847.000	847.024	<20.0	51.6
	1694.000	1694.054	34.2	51.6

Notes: 1. Only emissions from local oscillator and its harmonics (if any) were detected.  
2. Limit should not exceed 2nW or 51.6dB $\mu$ V (at 75 $\Omega$ ).  
3. The matching-impedance pad (6.0dB attenuation) was employed (Reading = Meter Reading + Pad Loss).

Test Engineer: Terry C. H. Chan

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## INTERTEK TESTING SERVICES

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Company: Tonic Digital Products Limited  
Model: TONIC T569  
Worst Case Operating Mode: TV Mode

Date of Test: February 02, 2006

**Table 5**

**Noise Figure Measurement  
Pursuant To FCC Part 15 Section 15.117 (g) Requirements**

Channel	Measured Frequency (MHz)	Gain (dB)	Noise Figure (dB)	Limit (dB)
14	471.250	28.4	12.3	14.0
20	507.250	28.4	12.3	14.0
26	543.250	28.4	12.3	14.0
32	579.250	28.3	12.3	14.0
38	615.250	28.3	12.3	14.0
44	651.250	28.3	12.3	14.0
50	687.250	28.3	12.3	14.0
56	723.250	28.3	12.3	14.0
62	759.250	28.3	12.3	14.0
69	801.250	28.3	12.3	14.0

Test Engineer: Terry C. H. Chan

## **INTERTEK TESTING SERVICES**

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### 3.4 Conducted Emission Configuration Photograph

Worst Case Line-Conducted Emission  
at  
0.405MHz

For electronic filing, the worst case line-conducted configuration photographs are saved with filename: conducted photos.pdf.

## INTERTEK TESTING SERVICES

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### 3.5 Conducted Emission Data

For electronic filing, the graph and data table of conducted emission are saved with filename: conducted.pdf. The data table lists the significant emission frequencies, the limit and the margin of compliance. Numbers with a minus sign are below the limit.

Judgement: Passed by 19.8dB margin

### **TEST PERSONNEL:**



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*Signature*

Terry C. H. Chan, Compliance Engineer  
*Typed / Printed Name*

June 09, 2006  
*Date*

## **INTERTEK TESTING SERVICES**

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### 3.6 RF Output Level Measurement

Worst Case RF Output Level Emission  
at  
61.250MHz



## INTERTEK TESTING SERVICES

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### 3.7 RF Output Level Data

The data on 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 9.6dB margin

### **TEST PERSONNEL:**



---

*Signature*

Terry C. H. Chan, Compliance Engineer  
*Typed / Printed Name*

June 09, 2006  
*Date*

## INTERTEK TESTING SERVICES

Company: Tonic Digital Products Limited  
Model: TONIC T569

Date of Test: February 02, 2006

**Table 6**  
**RF Output Level Measurement**

Test Mode	Channel	Type	Frequency (MHz)	Meter Reading (dB $\mu$ V)	Pre-amp (dB)	Pad Loss (dB)	Result (dB $\mu$ V)	Limit (dB $\mu$ V)	Margin (dB)
DVD	03	Aural	56.750	62.0	22.5	6.0	45.5	56.5	-11.0
	03	Visual	61.250	76.4	22.5	6.0	59.9	69.5	-9.6
	03	Aural	65.750	62.4	22.5	6.0	45.9	56.5	-10.6
VCR	03	Aural	56.750	61.9	22.5	6.0	45.4	56.5	-11.1
	03	Visual	61.250	76.1	22.5	6.0	59.6	69.5	-9.9
	03	Aural	65.750	62.3	22.5	6.0	45.8	56.5	-10.7
Record	03	Aural	56.750	61.9	22.5	6.0	45.4	56.5	-11.1
	03	Visual	61.250	76.0	22.5	6.0	59.5	69.5	-10.0
	03	Aural	65.750	62.3	22.5	6.0	45.8	56.5	-10.7
TV	03	Aural	56.750	62.2	22.5	6.0	45.7	56.5	-10.8
	03	Visual	61.250	76.4	22.5	6.0	59.9	69.5	-9.6
	03	Aural	65.750	62.6	22.5	6.0	46.1	56.5	-10.4

- NOTES: 1. Test according to section 12.2.5 of ANSI C63.4.
2. The 50 to 75 $\Omega$  (6dB attenuation) matching-impedance pad was employed.
3. Negative sign in the column shows value below limit.
4. External VITS signal 1Vp-p and then 5Vp-p; were applied, and the worst case data which are shown at above were found in input signal 5Vp-p.
5. Technical Limits: Video signal:  $346.4 \times \sqrt{R}$  in microvolts  
= 3000.0 $\mu$ V or 69.5dB $\mu$ V  
Audio signal:  $77.5 \times \sqrt{R}$  in microvolts  
= 671.0 $\mu$ V or 56.5dB $\mu$ V

Test Engineer: Terry C. H. Chan

## INTERTEK TESTING SERVICES

Company: Tonic Digital Products Limited  
Model: TONIC T569

Date of Test: February 02, 2006

**Table 6 (Cont'd)**  
**RF Output Level Measurement**

Test Mode	Channel	Type	Frequency (MHz)	Meter Reading (dB $\mu$ V)	Pre-amp (dB)	Pad Loss (dB)	Result (dB $\mu$ V)	Limit (dB $\mu$ V)	Margin (dB)
DVD	04	Aural	62.750	61.7	22.5	6.0	45.2	56.5	-11.3
	04	Visual	67.250	75.9	22.5	6.0	59.4	69.5	-10.1
	04	Aural	71.750	61.8	22.5	6.0	45.3	56.5	-11.2
VCR	04	Aural	62.750	61.7	22.5	6.0	45.2	56.5	-11.3
	04	Visual	67.250	75.7	22.5	6.0	59.2	69.5	-10.3
	04	Aural	71.750	61.9	22.5	6.0	45.4	56.5	-11.1
Record	04	Aural	62.750	61.6	22.5	6.0	45.1	56.5	-11.4
	04	Visual	67.250	75.6	22.5	6.0	59.1	69.5	-10.4
	04	Aural	71.750	61.8	22.5	6.0	45.3	56.5	-11.2
TV	04	Aural	62.750	62.1	22.5	6.0	45.6	56.5	-10.9
	04	Visual	67.250	75.9	22.5	6.0	59.4	69.5	-10.1
	04	Aural	71.750	62.1	22.5	6.0	45.6	56.5	-10.9

- NOTES: 1. Test according to section 12.2.5 of ANSI C63.4.
2. The 50 to 75 $\Omega$  (6dB attenuation) matching-impedance pad was employed.
3. Negative sign in the column shows value below limit.
4. External VITS signal 1Vp-p and then 5Vp-p; were applied, and the worst case data which are shown at above were found in input signal 5Vp-p.
5. Technical Limits:    Video signal:  $346.4 \times \sqrt{R}$  in microvolts  
                                     = 3000.0 $\mu$ V or 69.5dB $\mu$ V  
                                     Audio signal:  $77.5 \times \sqrt{R}$  in microvolts  
                                     = 671.0 $\mu$ V or 56.5dB $\mu$ V

Test Engineer: Terry C. H. Chan

## INTERTEK TESTING SERVICES

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### 3.8 Spurious Emission Measurement

Conducted spurious emissions measurement more than 4.6MHz below or 7.4MHz above the carrier frequency.

1. The range for measurement is from 30MHz to 4.6MHz below the visual carrier frequency, and any emissions in range from 7.4MHz above the visual carrier frequency to 1G.
2. The measuring instrument was set to 100kHz bandwidth and the detector function to peak mode.
3. Technical Limits:  $-4.6\text{MHz}$  of video carrier frequency and  $+7.4\text{MHz}$  shall not exceed  $10.95 \times \sqrt{R}$  in microvolts or 39.5dB $\mu$ V.

## INTERTEK TESTING SERVICES

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### 3.9 Spurious Emission Measurement Data

All spurious emission was measured and found to be at least 20dB below the limit.

#### **TEST PERSONNEL:**



---

*Signature*

Terry C. H. Chan, Compliance Engineer  
*Typed / Printed Name*

June 09, 2006  
*Date*

## **INTERTEK TESTING SERVICES**

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### 3.10 Antenna Transfer Switch Measurement

Worst Case Antenna Transfer Switch Emission  
at  
67.250MHz

## INTERTEK TESTING SERVICES

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### 3.11 Antenna Transfer Switch Measurement Data

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

Judgement: Passed by 14.2dB margin

#### **TEST PERSONNEL:**



---

*Signature*

Terry C. H. Chan, Compliance Engineer  
*Typed / Printed Name*

June 09, 2006  
*Date*

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## INTERTEK TESTING SERVICES

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Company: Tonic Digital Products Limited  
Model: TONIC T569  
Worst Case Operating Mode: Modulating

Date of Test: February 02, 2006

**Table 7**  
**Antenna Transfer Switch Measurement**  
**Pursuant to FCC Part 15 Section 15.115 Requirement**

Channel	Frequency (MHz)	Reading (dB $\mu$ V)	Pre-amp (dB)	Pad Loss (dB)	Result (dB $\mu$ V)	Limit (dB $\mu$ V)	Margin (dB)
03	61.250	11.9	22.5	6.0	-4.9	9.5	-14.4
04	67.250	12.1	22.5	6.0	-4.7	9.5	-14.2

- NOTES:
1. Test according to section 12.2.6 of ANSI C63.4.
  2. The 50 to 75 $\Omega$  (6dB attenuation) matching-impedance pad was employed.
  3. Negative sign in the column shows value below limit.
  4. The measuring instrument was set to 100kHz bandwidth and the detector function to peak mode.
  5. Limit should not exceed 3.0 $\mu$ V or 9.5dB $\mu$ V.

Test Engineer: Terry C. H. Chan



## **INTERTEK TESTING SERVICES**

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### **EXHIBIT 4**

### **EQUIPMENT PHOTOGRAPHS**

## INTERTEK TESTING SERVICES

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### 4.0 **Equipment Photographs**

For electronic filing, photographs of the tested EUT are saved with filename: external photos.pdf and internal photos.pdf.

**EXHIBIT 5**  
**PRODUCT LABELLING**

## INTERTEK TESTING SERVICES

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### 5.0 **Product Labelling**

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

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## **INTERTEK TESTING SERVICES**

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### **EXHIBIT 6**

### **TECHNICAL SPECIFICATIONS**

## INTERTEK TESTING SERVICES

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### 6.0 **Technical Specifications**

For electronic filing, the block diagram and schematic of the tested EUT are saved with filename: block.pdf and circuit.pdf respectively.

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## **INTERTEK TESTING SERVICES**

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### **EXHIBIT 7**

### **INSTRUCTION MANUAL**

## INTERTEK TESTING SERVICES

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### 7.0 **Instruction Manual**

For electronic filing, a preliminary copy of the Instruction Manual is saved with filename: manual.pdf.

This manual will be provided to the end-user with each unit sold / leased in the United States.



## **INTERTEK TESTING SERVICES**

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### **EXHIBIT 8**

### **MISCELLANEOUS INFORMATION**

## INTERTEK TESTING SERVICES

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### 8.0 **Miscellaneous Information**

The miscellaneous information includes details of the measured RF output signal and the test procedure.

## **INTERTEK TESTING SERVICES**

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### **8.1 Measured RF Output Signal**

For electronic filing, the plot shows the RF output signal of the EUT is saved with filename: ch3.pdf and ch4.pdf.

## **INTERTEK TESTING SERVICES**

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### **8.2 Discussion of Pulse Desensitization**

This device is a RF modulator. No desensitization of the measurement equipment is required as the transmitted signals are continuously.

## **INTERTEK TESTING SERVICES**

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### **8.3 Calculation of Average Factor**

This device is a RF modulator. It is not necessary to apply average factor to the measurement result.

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## INTERTEK TESTING SERVICES

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### 8.4 Emissions Test Procedures

The following is a description of the test procedure used by Intertek Testing Services in the measurements of TV interface device operating under Part 15, Subpart B rules.

The test set-up and procedures described below are designed to meet the requirements of ANSI C63.4 – 2003.

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 ground plane. 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 axes to obtain maximum emission levels. The antenna height and polarization are 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.

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

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### 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 are made as described in ANSI C63.4 – 2003.

The IF bandwidth used for measurement of radiated signal strength was 100kHz or greater when frequency is below 1000MHz. 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 1000MHz, a resolution bandwidth of 1MHz is used.

Measurements are normally conducted at a measurement distance of three meters. However, to assure low enough noise floor in the forbidden bands and above 1GHz, signals are acquired at a distance of one meter or less. All measurements are extrapolated to three meters using inverse scaling, unless otherwise reported. Measurements taken at a closer distance are so marked.

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## **INTERTEK TESTING SERVICES**

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### **EXHIBIT 9**

### **CONFIDENTIALITY REQUEST**



## INTERTEK TESTING SERVICES

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### 9.0 **Confidentiality Request**

For electronic filing, a confidentiality request is saved with filename: request.pdf.