Tonic Digital Products Limited

Application
For
Certification
(FCC ID: TX7T557)

TV Interface Device

0600342
TC/el
June 09, 2006

Intertek Testing Services Hong Kong Ltd.
2/F., Garment Centre, 576 Castle Peak Road, Kowloon, Hong Kong.
Tel: (852) 2173 8888 Fax: (852) 2785 5487 Website: www.hk.intertek-etlsemko.com

LIST OF EXHIBITS

MEASUREMENT / TECHNICAL REPORT

Tonic Digital Products Limited – MODEL: Tonic T557
DAEWOO DV-C520 and MEMOREX MVD4543
FCC ID: TX7T557

June 09, 2006

This report concerns (check one:) Original Grant __X__ 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 __X__

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 __X__

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
2/F., Garment Center,
576 Castle Peak Road,
Kowloon, Hong Kong.
Phone: 852-2173-8545
Fax: 852-2371-0914

Table of Contents

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

EXHIBIT 1

GENERAL DESCRIPTION

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: DAEWOO DV-C520 and MEMOREX MVD4543 are the same as the Model: Tonic T557 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.

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.

EXHIBIT 2

SYSTEM TEST CONFIGURATION

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 flush 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.

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. DVD Test 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*

EXHIBIT 3

EMISSION RESULTS

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.

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 dBμV/m
RA = Receiver Amplitude (including preamplifier) in dBμV
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:

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

3.1 Field Strength Calculation (cont'd)

Example

Assume a receiver reading of 62.0dBμV 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 32dBμV/m. This value in dBμV/m was converted to its corresponding level in μV/m.

RA = 62.0dBμV
AF = 7.4dB
CF = 1.6dB
AG = 29.0dB
PD = 0dB

AV = −10dB

FS = 62 + 7.4 + 1.6 − 29 + 0 + (−10) = 32dBμV/m

Level in μV/m = Common Antilogarithm [(32dBμV/m)/20] = 39.8μV/m

3.2 Radiated Emission Configuration Photograph

Worst Case Radiated Emission
at
192.513MHz

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

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 8.6dB margin

TEST PERSONNEL:

Signature

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

June 09, 2006
Date

Company: Tonic Digital Products Limited Date of Test: December 17, 2005
Model: Tonic T557
Worst Case Operating Mode: DVD Playing (Modulating On)

Table 1
Radiated Emissions

Polarization	Frequency (MHz)	Reading (dBμV)	Pre-amp (dB)	Antenna Factor (dB)	Net at 3m (dBμV/m)	Limit at 3m (dBμV/m)	Margin (dB)
V	71.608	35.3	16.0	7.0	26.3	40.0	-13.7
H	85.926	36.1	16.0	8.0	28.1	40.0	-11.9
H	114.566	26.7	16.0	14.0	24.7	43.5	-18.8
H	143.197	29.6	16.0	14.0	27.6	43.5	-15.9
H	157.516	29.1	16.0	16.0	29.1	43.5	-14.4
H	171.834	27.4	16.0	18.0	29.4	43.5	-14.1
H	186.151	30.8	16.0	16.0	30.8	43.5	-12.7
H	192.513	34.9	16.0	16.0	34.9	43.5	-8.6
H	200.461	32.1	16.0	16.0	32.1	43.5	-11.4
H	209.003	29.3	16.0	17.0	30.3	43.5	-13.2
H	214.791	30.6	16.0	17.0	31.6	43.5	-11.9
H	229.110	28.4	16.0	18.0	30.4	46.0	-15.6
H	272.064	26.1	16.0	22.0	32.1	46.0	-13.9
H	286.382	28.0	16.0	22.0	34.0	46.0	-12.0
H	300.700	23.9	16.0	22.0	29.9	46.0	-16.1
H	343.653	21.3	16.0	24.0	29.3	46.0	-16.7
H	355.104	21.0	16.0	24.0	29.0	46.0	-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, 20dB above the QP limit.

Test Engineer: Terry C. H. Chan

Company: Tonic Digital Products Limited Date of Test: December 17, 2005
Model: Tonic T557
Worst Case Operating Mode: VHS Recording

Table 2
Radiated Emissions

Polarization	Frequency (MHz)	Reading (dBμV)	Pre-amp (dB)	Antenna Factor (dB)	Net at 3m (dBμV/m)	Limit at 3m (dBμV/m)	Margin (dB)
V	71.608	33.7	16.0	7.0	24.7	40.0	-15.3
H	85.926	33.6	16.0	8.0	25.6	40.0	-14.4
H	114.566	29.9	16.0	14.0	27.9	43.5	-15.6
H	143.197	30.0	16.0	14.0	28.0	43.5	-15.5
H	157.516	28.6	16.0	16.0	28.6	43.5	-14.9
H	171.834	26.4	16.0	18.0	28.4	43.5	-15.1
H	186.151	31.4	16.0	16.0	31.4	43.5	-12.1
H	192.513	34.0	16.0	16.0	34.0	43.5	-9.5
H	200.461	30.4	16.0	16.0	30.4	43.5	-13.1
H	209.003	29.1	16.0	17.0	30.1	43.5	-13.4
H	214.791	30.3	16.0	17.0	31.3	43.5	-12.2
H	229.110	34.3	16.0	18.0	36.3	46.0	-9.7
H	272.064	24.4	16.0	22.0	30.4	46.0	-15.6
H	286.382	24.4	16.0	22.0	30.4	46.0	-15.6
H	300.700	24.8	16.0	22.0	30.8	46.0	-15.2
H	343.653	21.8	16.0	24.0	29.8	46.0	-16.2
H	355.103	21.6	16.0	24.0	29.6	46.0	-16.4

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, 20dB above the QP limit.

Test Engineer: Terry C. H. Chan

Company: Tonic Digital Products Limited Date of Test: December 17, 2005
Model: Tonic T557
Worst Case Operating Mode: TV Mode

Table 3
Radiated Emissions

Channel 02

Polarization	Frequency (MHz)	Reading (dBμV)	Pre-amp (dB)	Antenna Factor (dB)	Net at 3m (dBμV/m)	Limit at 3m (dBμV/m)	Margin (dB)
H	101.001	37.0	16.0	13.0	34.0	43.5	-9.5
H	202.002	32.3	16.0	16.0	32.3	43.5	-11.2
H	303.003	24.4	16.0	22.0	30.4	46.0	-15.6
H	404.004	21.1	16.0	24.0	29.1	46.0	-16.9

Channel 03

Polarization	Frequency (MHz)	Reading (dBμV)	Pre-amp (dB)	Antenna Factor (dB)	Net at 3m (dBμV/m)	Limit at 3m (dBμV/m)	Margin (dB)
H	107.005	35.9	16.0	14.0	33.9	43.5	-9.6
H	214.010	31.6	16.0	17.0	32.6	43.5	-10.9
H	321.015	23.5	16.0	23.0	30.5	46.0	-15.5
H	428.020	20.9	16.0	25.0	29.9	46.0	-16.1

Channel 04

Polarization	Frequency (MHz)	Reading (dBμV)	Pre-amp (dB)	Antenna Factor (dB)	Net at 3m (dBμV/m)	Limit at 3m (dBμV/m)	Margin (dB)
H	113.002	35.9	16.0	14.0	33.9	43.5	-9.6
H	226.004	30.3	16.0	18.0	32.3	46.0	-13.7
H	339.006	22.0	16.0	24.0	30.0	46.0	-16.0
H	452.012	20.0	16.0	26.0	30.0	46.0	-16.0

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, 20dB above the QP limit.

Test Engineer: Terry C. H. Chan

Company: Tonic Digital Products Limited Date of Test: December 17, 2005
Model: Tonic T557
Worst Case Operating Mode: TV Mode

Table 3 (Cont'd)
Radiated Emissions

Channel 05

Polarization	Frequency (MHz)	Reading (dBμV)	Pre-amp (dB)	Antenna Factor (dB)	Net at 3m (dBμV/m)	Limit at 3m (dBμV/m)	Margin (dB)
H	123.002	36.7	16.0	14.0	34.7	43.5	-8.8
H	246.004	30.0	16.0	20.0	34.0	46.0	-12.0
H	369.006	24.0	16.0	24.0	32.0	46.0	-14.0
H	492.008	21.0	16.0	26.0	31.0	46.0	-15.0

Channel 06

Polarization	Frequency (MHz)	Reading (dBμV)	Pre-amp (dB)	Antenna Factor (dB)	Net at 3m (dBμV/m)	Limit at 3m (dBμV/m)	Margin (dB)
H	129.004	36.6	16.0	14.0	34.6	43.5	-8.9
H	258.008	28.4	16.0	21.0	33.4	46.0	-12.6
H	387.012	24.1	16.0	24.0	32.1	46.0	-13.9
H	516.016	20.0	16.0	27.0	31.0	46.0	-15.0

Channel 07

Polarization	Frequency (MHz)	Reading (dBμV)	Pre-amp (dB)	Antenna Factor (dB)	Net at 3m (dBμV/m)	Limit at 3m (dBμV/m)	Margin (dB)
H	221.003	33.7	16.0	17.0	34.7	46.0	-11.3
H	442.006	23.6	16.0	26.0	33.6	46.0	-12.4
H	663.009	19.0	16.0	29.0	32.0	46.0	-14.0
H	884.012	15.4	16.0	32.0	31.4	46.0	-14.6

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, 20dB above the QP limit.

Test Engineer: Terry C. H. Chan

Company: Tonic Digital Products Limited Date of Test: December 17, 2005
Model: Tonic T557
Worst Case Operating Mode: TV Mode

Table 3 (Cont'd)
Radiated Emissions

Channel 08

Polarization	Frequency (MHz)	Reading (dBμV)	Pre-amp (dB)	Antenna Factor (dB)	Net at 3m (dBμV/m)	Limit at 3m (dBμV/m)	Margin (dB)
H	227.003	32.7	16.0	18.0	34.7	46.0	-11.3
H	454.006	23.1	16.0	26.0	33.1	46.0	-12.9
H	681.009	19.0	16.0	29.0	32.0	46.0	-14.0
H	908.012	15.3	16.0	32.0	31.3	46.0	-14.7

Channel 09

Polarization	Frequency (MHz)	Reading (dBμV)	Pre-amp (dB)	Antenna Factor (dB)	Net at 3m (dBμV/m)	Limit at 3m (dBμV/m)	Margin (dB)
H	233.004	31.6	16.0	19.0	34.6	46.0	-11.4
H	466.008	23.2	16.0	26.0	33.2	46.0	-12.8
H	699.012	18.1	16.0	30.0	32.1	46.0	-13.9
H	932.016	14.3	16.0	33.0	31.3	46.0	-14.7

Channel 10

Polarization	Frequency (MHz)	Reading (dBμV)	Pre-amp (dB)	Antenna Factor (dB)	Net at 3m (dBμV/m)	Limit at 3m (dBμV/m)	Margin (dB)
H	239.005	31.9	16.0	19.0	34.9	46.0	-11.1
H	478.010	23.9	16.0	26.0	33.9	46.0	-12.1
H	717.015	18.6	16.0	30.0	32.6	46.0	-13.4
H	956.020	15.0	16.0	33.0	32.0	46.0	-14.0

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, 20dB above the QP limit.

Test Engineer: Terry C. H. Chan

Company: Tonic Digital Products Limited Date of Test: December 17, 2005
Model: Tonic T557
Worst Case Operating Mode: TV Mode

Table 3 (Cont'd)
Radiated Emissions

Channel 11

Polarization	Frequency (MHz)	Reading (dBμV)	Pre-amp (dB)	Antenna Factor (dB)	Net at 3m (dBμV/m)	Limit at 3m (dBμV/m)	Margin (dB)
H	245.001	31.6	16.0	20.0	35.6	46.0	-10.4
H	490.002	23.8	16.0	26.0	33.8	46.0	-12.2
H	735.003	19.1	16.0	30.0	33.1	46.0	-12.9
H	980.006	15.1	16.0	33.0	32.1	54.0	-21.9

Channel 12

Polarization	Frequency (MHz)	Reading (dBμV)	Pre-amp (dB)	Antenna Factor (dB)	Net at 3m (dBμV/m)	Limit at 3m (dBμV/m)	Margin (dB)
H	251.002	31.9	16.0	20.0	35.9	46.0	-10.1
H	502.004	24.0	16.0	26.0	34.0	46.0	-12.0
H	753.006	19.7	16.0	30.0	33.7	46.0	-12.3
H	1004.008	39.9	33.0	26.1	33.0	54.0	-21.0

Channel 13

Polarization	Frequency (MHz)	Reading (dBμV)	Pre-amp (dB)	Antenna Factor (dB)	Net at 3m (dBμV/m)	Limit at 3m (dBμV/m)	Margin (dB)
H	257.002	29.9	16.0	21.0	34.9	46.0	-11.1
H	514.004	22.0	16.0	27.0	33.0	46.0	-13.0
H	771.006	17.9	16.0	31.0	32.9	46.0	-13.1
H	1028.008	39.0	33.0	26.1	32.1	54.0	-21.9

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, 20dB above the QP limit.

Test Engineer: Terry C. H. Chan

Company: Tonic Digital Products Limited Date of Test: December 17, 2005
Model: Tonic T557
Worst Case Operating Mode: TV Mode

Table 3 (Cont'd)
Radiated Emissions

Channel 15

Polarization	Frequency (MHz)	Reading (dBμV)	Pre-amp (dB)	Antenna Factor (dB)	Net at 3m (dBμV/m)	Limit at 3m (dBμV/m)	Margin (dB)
H	523.001	25.4	16.0	27.0	36.4	46.0	-9.6
H	1046.002	41.9	33.0	26.1	35.0	54.0	-19.0
H	1569.003	39.5	33.0	27.2	33.7	54.0	-20.3
H	2092.004	36.0	33.0	29.4	32.4	54.0	-21.6

Channel 20

Polarization	Frequency (MHz)	Reading (dBμV)	Pre-amp (dB)	Antenna Factor (dB)	Net at 3m (dBμV/m)	Limit at 3m (dBμV/m)	Margin (dB)
H	553.001	23.6	16.0	28.0	35.6	46.0	-10.4
H	1106.002	40.3	33.0	26.1	33.4	54.0	-20.6
H	1659.003	38.8	33.0	27.2	33.0	54.0	-21.0
H	2212.004	35.7	33.0	29.4	32.1	54.0	-21.9

Channel 28

Polarization	Frequency (MHz)	Reading (dBμV)	Pre-amp (dB)	Antenna Factor (dB)	Net at 3m (dBμV/m)	Limit at 3m (dBμV/m)	Margin (dB)
H	601.002	22.6	16.0	29.0	35.6	46.0	-10.4
H	1202.004	40.9	33.0	26.1	34.0	54.0	-20.0
H	1803.006	38.9	33.0	27.2	33.1	54.0	-20.9
H	2404.008	35.6	33.0	29.4	32.0	54.0	-22.0

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, 20dB above the QP limit.

Test Engineer: Terry C. H. Chan

Company: Tonic Digital Products Limited Date of Test: December 17, 2005
Model: Tonic T557
Worst Case Operating Mode: TV Mode

Table 3 (Cont'd)
Radiated Emissions

Channel 36

Polarization	Frequency (MHz)	Reading (dBμV)	Pre-amp (dB)	Antenna Factor (dB)	Net at 3m (dBμV/m)	Limit at 3m (dBμV/m)	Margin (dB)
H	649.002	22.4	16.0	29.0	35.4	46.0	-10.6
H	1298.004	40.0	33.0	26.1	33.1	54.0	-20.9
H	1947.006	40.2	33.0	27.2	34.4	54.0	-19.6
H	2596.008	36.9	33.0	30.4	34.3	54.0	-19.7

Channel 45

Polarization	Frequency (MHz)	Reading (dBμV)	Pre-amp (dB)	Antenna Factor (dB)	Net at 3m (dBμV/m)	Limit at 3m (dBμV/m)	Margin (dB)
H	703.004	22.1	16.0	30.0	36.1	46.0	-9.9
H	1406.008	42.6	33.0	26.1	35.7	54.0	-18.3
H	2109.012	38.6	33.0	29.4	35.0	54.0	-19.0
H	2812.016	36.8	33.0	30.4	34.2	54.0	-19.8

Channel 53

Polarization	Frequency (MHz)	Reading (dBμV)	Pre-amp (dB)	Antenna Factor (dB)	Net at 3m (dBμV/m)	Limit at 3m (dBμV/m)	Margin (dB)
H	751.006	22.3	16.0	30.0	36.3	46.0	-9.7
H	1502.012	41.9	33.0	27.2	36.1	54.0	-17.9
H	2253.018	38.7	33.0	29.4	35.1	54.0	-18.9
H	3004.024	35.8	33.0	31.9	34.7	54.0	-19.3

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, 20dB above the QP limit.

Test Engineer: Terry C. H. Chan

Company: Tonic Digital Products Limited Date of Test: December 17, 2005
Model: Tonic T557
Worst Case Operating Mode: TV Mode

Table 3 (Cont'd)
Radiated Emissions

Channel 61

Polarization	Frequency (MHz)	Reading (dBμV)	Pre-amp (dB)	Antenna Factor (dB)	Net at 3m (dBμV/m)	Limit at 3m (dBμV/m)	Margin (dB)
H	799.002	21.3	16.0	31.0	36.3	46.0	-9.7
H	1598.004	41.5	33.0	27.2	35.7	54.0	-18.3
H	2397.006	38.3	33.0	29.4	34.7	54.0	-19.3
H	3196.008	35.2	33.0	31.9	34.1	54.0	-19.9

Channel 69

Polarization	Frequency (MHz)	Reading (dBμV)	Pre-amp (dB)	Antenna Factor (dB)	Net at 3m (dBμV/m)	Limit at 3m (dBμV/m)	Margin (dB)
H	847.001	21.7	16.0	31.0	36.7	46.0	-9.3
H	1694.002	41.6	33.0	27.2	35.8	54.0	-18.2
H	2541.003	37.5	33.0	30.4	34.9	54.0	-19.1
H	3388.004	35.5	33.0	31.9	34.4	54.0	-19.6

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, 20dB above the QP limit.

Test Engineer: Terry C. H. Chan

Company: Tonic Digital Products Limited Date of Test: December 17, 2005
Model: Tonic T557
Worst Case Operating Mode: TV Mode

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	100.756	29.4	50.0
	202.000	202.000	<20.0	50.0
3	107.000	107.000	27.7	50.0
	214.000	214.000	<20.0	50.0
4	113.000	113.000	27.9	50.0
	226.000	226.000	<20.0	50.0
5	123.000	123.000	27.2	50.0
	246.000	246.000	<20.0	50.0
6	129.000	129.000	28.1	50.0
	258.000	258.000	<20.0	50.0
7	221.000	221.000	27.0	50.0
	442.000	442.000	<20.0	50.0
8	227.000	227.000	26.9	50.0
	454.000	454.000	<20.0	50.0
9	233.000	233.000	26.7	50.0
	466.000	466.000	<20.0	50.0
10	239.000	239.000	26.9	50.0
	478.000	478.000	<20.0	50.0
11	245.000	245.000	26.6	50.0
	490.000	490.000	<20.0	50.0
12	251.000	251.000	27.0	50.0
	502.000	502.000	<20.0	50.0
13	257.000	257.000	26.7	50.0
	514.000	514.000	<20.0	50.0

Notes: 1. Only emissions from local oscillator and its harmonics (if any) were detected.
2. Limit should not exceed 2nW or 50.0dBμV (at 50Ω).
3. The matching-impedance pad (6.0dB attenuation) was employed (Reading = Meter Reading + Pad Loss).

Test Engineer: Terry C. H. Chan

Company: Tonic Digital Products Limited Date of Test: December 17, 2005
Model: Tonic T557
Worst Case Operating Mode: TV Mode

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 (dBμV)	Limit (dBμV)
14	517.000	517.000	27.1	50.0
	1034.000	1034.000	<20.0	50.0
15	523.000	523.000	26.8	50.0
	1046.000	1046.000	<20.0	50.0
20	553.000	553.000	27.4	50.0
	1106.000	1106.000	<20.0	50.0
28	601.000	601.000	26.9	50.0
	1202.000	1202.000	<20.0	50.0
36	649.000	649.000	26.9	50.0
	1298.000	1298.000	<20.0	50.0
45	703.000	703.000	27.3	50.0
	1406.000	1406.000	<20.0	50.0
53	751.000	751.000	27.0	50.0
	1502.000	1502.000	30.3	50.0
61	799.000	799.000	27.3	50.0
	1598.000	1598.260	33.4	50.0
69	847.000	847.000	27.1	50.0
	1694.000	1694.200	34.1	50.0

Notes: 1. Only emissions from local oscillator and its harmonics (if any) were detected.
2. Limit should not exceed 2nW or 50.0dBμV (at 50Ω).
3. The matching-impedance pad (6.0dB attenuation) was employed (Reading = Meter Reading + Pad Loss).

Test Engineer: Terry C. H. Chan

Company: Tonic Digital Products Limited Date of Test: December 17, 2005
Model: Tonic T557
Worst Case Operating Mode: TV Mode

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	28.9	13.8	14.0
20	507.250	28.9	13.7	14.0
26	543.250	28.9	13.8	14.0
32	579.250	28.9	13.8	14.0
38	615.250	28.9	13.7	14.0
44	651.250	28.9	13.8	14.0
50	687.250	28.9	13.8	14.0
56	723.250	28.9	13.8	14.0
62	759.250	28.9	13.8	14.0
69	801.250	28.9	13.8	14.0

Test Engineer: Terry C. H. Chan

3.4 Conducted Emission Configuration Photograph

Worst Case Line-Conducted Emission
at
0.270MHz

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

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 18.1dB margin

TEST PERSONNEL:

Signature

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

June 09, 2006
Date

3.6 RF Output Level Measurement

Worst Case RF Output Level Emission
at
61.250MHz

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 12.7dB margin

TEST PERSONNEL:

Signature

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

June 09, 2006
Date

Company: Tonic Digital Products Limited Date of Test: December 17, 2005
Model: Tonic T557

Table 6
RF Output Level Measurement

Test Mode	Channel	Type	Frequency (MHz)	Meter Reading (dBμV)	Pre-amp (dB)	Pad Loss (dB)	Result (dBμV)	Limit (dBμV)	Margin (dB)
DVD	03	Aural	56.750	58.3	22.5	6.0	41.8	56.5	-14.7
	03	Visual	61.250	73.1	22.5	6.0	56.6	69.5	-12.9
	03	Aural	65.750	58.6	22.5	6.0	42.1	56.5	-14.4
VCR	03	Aural	56.750	58.1	22.5	6.0	41.6	56.5	-14.9
	03	Visual	61.250	70.6	22.5	6.0	54.1	69.5	-15.4
	03	Aural	65.750	58.5	22.5	6.0	42.0	56.5	-14.5
Record	03	Aural	56.750	58.2	22.5	6.0	41.7	56.5	-14.8
	03	Visual	61.250	71.9	22.5	6.0	55.4	69.5	-14.1
	03	Aural	55.750	58.3	22.5	6.0	41.8	56.5	-14.7
TV	03	Aural	56.750	58.6	22.5	6.0	42.1	56.5	-14.4
	03	Visual	61.250	69.7	22.5	6.0	53.2	69.5	-16.3
	03	Aural	65.750	60.3	22.5	6.0	43.8	56.5	-12.7

NOTES: 1. Test according to section 12.2.5 of ANSI C63.4.

2. The 50 to 75Ω (6dB attenuation) matching-impedance pad was employed.

3. Negative sign in the column shows value below limit.

4. Technical Limits: Video signal: $346.4 \times \sqrt{R}$ in microvolts
= 3000.0μV or 69.5dBμV
Audio signal: $77.5 \times \sqrt{R}$ in microvolts
= 671.0μV or 56.5dBμV

Test Engineer: Terry C. H. Chan

Company: Tonic Digital Products Limited Date of Test: December 17, 2005
Model: Tonic T557

Table 6 (Cont'd)
RF Output Level Measurement

Test Mode	Channel	Type	Frequency (MHz)	Meter Reading (dBμV)	Pre-amp (dB)	Pad Loss (dB)	Result (dBμV)	Limit (dBμV)	Margin (dB)
DVD	04	Aural	62.750	58.2	22.5	6.0	41.7	56.5	-14.8
	04	Visual	67.250	72.8	22.5	6.0	56.3	69.5	-13.2
	04	Aural	71.750	58.2	22.5	6.0	41.7	56.5	-14.8
VCR	04	Aural	62.750	58.2	22.5	6.0	41.7	56.5	-14.8
	04	Visual	67.250	69.8	22.5	6.0	53.3	69.5	-16.2
	04	Aural	71.750	58.2	22.5	6.0	41.7	56.5	-14.8
Record	04	Aural	62.750	58.5	22.5	6.0	42.0	56.5	-14.5
	04	Visual	67.250	72.8	22.5	6.0	56.3	69.5	-13.2
	04	Aural	71.750	58.6	22.5	6.0	42.1	56.5	-14.4
TV	04	Aural	62.750	58.8	22.5	6.0	42.3	56.5	-14.2
	04	Visual	67.250	68.9	22.5	6.0	52.4	69.5	-17.1
	04	Aural	71.750	58.3	22.5	6.0	41.8	56.5	-14.7

NOTES: 1. Test according to section 12.2.5 of ANSI C63.4.

2. The 50 to 75Ω (6dB attenuation) matching-impedance pad was employed.

3. Negative sign in the column shows value below limit.

4. Technical Limits: Video signal: $346.4 \times \sqrt{R}$ in microvolts
= 3000.0μV or 69.5dBμV
Audio signal: $77.5 \times \sqrt{R}$ in microvolts
= 671.0μV or 56.5dBμV

Test Engineer: Terry C. H. Chan

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: −4.6MHz of video carrier frequency and +7.4MHz shall not exceed $10.95 \times \sqrt{R}$ in microvolts or 39.5dBμV.

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

3.10 Antenna Transfer Switch Measurement

Worst Case Antenna Transfer Switch Emission
at
67.250MHz

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

Company: Tonic Digital Products Limited Date of Test: December 17, 2005
Model: Tonic T557
Worst Case Operating Mode: Modulating

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

Channel	Frequency (MHz)	Reading (dBμV)	Pre-amp (dB)	Pad Loss (dB)	Result (dBμV)	Limit (dBμV)	Margin (dB)
03	61.250	11.6	22.5	6.0	-4.9	9.5	-14.4
04	67.250	11.8	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 75Ω (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 3.0μV or 9.5dBμV.

Test Engineer: Terry C. H. Chan

EXHIBIT 4

EQUIPMENT PHOTOGRAPHS

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

5.0 **Product Labelling**

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

EXHIBIT 6

TECHNICAL SPECIFICATIONS

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.

EXHIBIT 7

INSTRUCTION MANUAL

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.

EXHIBIT 8

MISCELLANEOUS INFORMATION

8.0 Miscellaneous Information

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

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.

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.

8.3 Calculation of Average Factor

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

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 1000MHz. For line-conducted emissions, the range scanned is 150kHz to 30MHz.

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.

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 of less. All measurements are extrapolated to three meters using inverse scaling, unless otherwise reported. Measurements taken at a closer distance are so marked.

EXHIBIT 9

CONFIDENTIALITY REQUEST

9.0 **Confidentiality Request**

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