

# SHUOYING DIGITAL SCIENCE&TECHNOLOGY (CHINA) Co., Ltd.

Application
For
Certification
(FCC ID: YGB-DV577)

Computer Peripheral

Prepared and Checked by:	Approved by:
Sign on file	
Chris chen Engineer	Billy Li Team Leader Date: 12 July, 2012

- The test results reported in this test report shall refer only to the sample actually tested and shall not refer or be deemed to refer to bulk from which such a sample may be said to have been obtained.
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- For Terms And Conditions of the services, it can be provided upon request.
- The evaluation data of the report will be kept for 3 years from the date of issuance.

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## **MEASUREMENT / TECHNICAL REPORT**

# SHUOYING DIGITAL SCIENCE&TECHNOLOGY (CHINA) Co., Ltd. MODEL: DV577 FCC ID: YGB-DV577

12 July, 2012

This report concerns (check one:)	Original Grant	X Class	II Change
Equipment Type: JBP-Class B Computin	ng Device Peripher	<u>ral</u>	
Deferred grant requested per 47 CFR 0.4	457(d)(1)(ii)?	Yes	No X
	If yes, def	er until:	date
Company Name agrees to notify the Con	nmission by:		
		date	
of the intended date of announcement of that date.	of the product so t	that the grant o	can be issued on
Transition Rules Request per 15.37?		Yes	No <u>X</u>
If no, assumed Part 15, Subpart C for Edition] provision.	intentional radiato	or – the new 47	7 CFR [10-01-11
Report prepared by:			_
	Billy Li Intertek Testing Kejiyuan Branc		nzhen Ltd.

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## List of attached file

Exhibit Type	File Description	Filename
Test Report	Test Report	report.pdf
Test Setup Photo	Radiated photos	radiated photos.pdf
Test Setup Photo	Conducted photos	conducted photos.pdf
External Photo	External Photos	external photos.pdf
Internal Photo	Internal Photos	internal photos.pdf
Block Diagram	Block Diagram	block.pdf
ID Label / Location	Label Artwork and Location	label.pdf
User Manual	User Manual	manual.pdf
Cover Letter	Letter of Agency	agency.pdf

# EXHIBIT 1 GENERAL DESCRIPTION

## 1.0 **General Description**

## 1.1 Product Description

The Equipment Under Test (EUT) is a DIGITAL VIDEO CAMERA. The device can be used to transfer data connecting PC by USB port. The EUT is powered by DC 6.0V (4 x 1.5V"AAA") batteries or PC USB port with PC download and PC camera model.

## 1.2 Related Submittal(s) Grants

This is an application for certification of a computer peripheral.

## 1.3 Test Methodology

Both AC mains line-conducted and radiated emission measurements were performed according to the procedures in ANSI C63.4 (2009). Radiated emission measurement was performed in Semi-anechoic chamber and conducted emission measurement was performed in shield room. For radiated emission measurement, preliminary scans were performed in the semi-anechoic chamber only to determine the worst case modes. 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 Semi-anechoic chamber and shielding room used to collect the radiated data and conducted data are **Intertek Testing Services Shenzhen Ltd. Kejiyuan Branch** and located at 6F, D Block, Huahan Building, Langshan Road, Nanshan District, Shenzhen, P. R. China. This test facility and site measurement data have been fully placed on file with the FCC (Registration Number: 242492).

TRF No.: FCC 15C\_PC\_b FCC ID: YGB-DV577 Report No.: SZ12060481-1

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# 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 (2009).

The device is powered by DC 6.0V (4 x 1.5V"AAA") new batteries or PC USB port with PC download model and PC camera model during the test. The worst case data was reported in this report.

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.

The frequency range from 30MHz to 1GHz was searched for spurious emissions from the device. Only those emissions reported were detected. All other emissions were at least 20 dB below the applicable limits.

#### 2.2 EUT Exercising Software

There is a CD attached to exercise the device.

#### 2.3 Special Accessories

Shielded USB cable with ferrite ring.

#### 2.4 Equipment Modification

Any modifications installed previous to testing by SHUOYING DIGITAL SCIENCE&TECHNOLOGY (CHINA) Co., Ltd. will be incorporated in each production model sold / leased in the United States.

No modifications were installed by Intertek Testing Services Shenzhen Ltd. Kejiyuan Branch.

## 2.5 Measurement Uncertainty

When determining the test conclusion, the Measurement Uncertainty of test has been considered.

## 2.6 Support Equipment List and Description

This product was tested in the following configuration:

#### Refer List:

Description	Manufacturer Model No.	
Laptop	Lenovo	T61
SD Card	SanDisk	33806
Hard Disk	Smart.drive	HD-003
USB Cable	Smart.drive	shielded, Length 100cm
1394 Cable	Smart.drive	shielded, Length 180cm
USB Cable	Shuoying	Shielded with ferrite ring, Length 80cm
AV out Cable	Shuoying	Un-shielded ,Length 122cm
Dummy Load	MTC DL-002	

# 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  $dB\mu V/m$ 

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:

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

#### 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  $\mu V/m$ .

 $RA = 62.0dB\mu V$ 

AF = 7.4dB

CF = 1.6dB

AG = 29.0dB

PD = 0dB

AV = -10dB

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

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

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## 3.2 Radiated Emission Configuration Photograph

Worst Case Radiated Emission At 959.985MHz (PC Download Mode)

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 1.2dB margin (PC Download Mode)

TEST PERSONNEL:
Sign on file
Chris Chen, Engineer Typed/Printed Name
12 July, 2012 Date

Company: SHUOYING DIGITAL SCIENCE&TECHNOLOGY (CHINA) Co., Ltd.

Date of Test: 12 July, 2012

Model: DV577

Operating Mode: PC Download

Table 1
Radiated Emissions

Polarization	Frequency	Reading	Pre-	Antenna	Net	Limit	Margin
	(MHz)	(dBµV)	Amp	Factor	at 3m	at 3m	(dB)
			Gain	(dB)	(dBµV/m)	(dBµV/m)	
			(dB)				
Horizontal	312.039	47.9	20.0	15.4	43.3	46.0	-2.7
Horizontal	407.945	45.0	20.0	16.8	41.8	46.0	-4.2
Horizontal	957.989	38.2	20.0	26.4	44.6	46.0	-1.4
Vertical	31.455	27.9	20.0	17.9	25.8	40.0	-14.2
Vertical	408.005	39.6	20.0	16.8	36.4	46.0	-9.6
Vertical	959.985	38.4	20.0	26.4	44.8	46.0	-1.2

#### NOTES:

- 1. Quasi-Peak detector is used for frequency up to 1GHz.
- 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. All emissions up to 1GHz are below the QP limit.

Test Engineer: Chris chen

Company: SHUOYING DIGITAL SCIENCE&TECHNOLOGY (CHINA) Co., Ltd.

Date of Test: 12 July, 2012

Model: DV577

Operating Mode: Play back

Table 2
Radiated Emissions

Polarization	Frequency	Reading	Pre-	Antenna	Net	Limit	Margin
	(MHz)	(dBµV)	Amp	Factor	at 3m	at 3m	(dB)
			Gain	(dB)	(dBµV/m)	(dBµV/m)	
			(dB)				
Horizontal	407.815	38.9	20.0	16.8	35.7	46.0	-10.3
Horizontal	816.180	36.4	20.0	24.2	40.6	46.0	-5.4
Horizontal	864.200	35.2	20.0	24.6	39.8	46.0	-6.2
Vertical	816.185	33.2	20.0	24.2	37.4	46.0	-8.6
Vertical	864.180	34.9	20.0	24.6	39.5	46.0	-6.5
Vertical	960.230	32.5	20.0	26.4	38.9	54.0	-15.1

#### NOTES:

- 1. Quasi-Peak detector is used for frequency up to 1GHz.
- 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. All emissions up to 1GHz are below the QP limit.

Test Engineer: Chris chen

Company: SHUOYING DIGITAL SCIENCE&TECHNOLOGY (CHINA) Co., Ltd.

Date of Test: 12 July, 2012

Model: DV577

Operating Mode: AV Out

Table 3
Radiated Emissions

Polarization	Frequency	Reading	Pre-	Antenna	Net	Limit	Margin
	(MHz)	(dBµV)	Amp	Factor	at 3m	at 3m	(dB)
			Gain	(dB)	(dBµV/m)	(dBµV/m)	
			(dB)				
Horizontal	161.920	45.4	20.0	10.0	35.4	43.5	-8.1
Horizontal	288.020	44.0	20.0	14.3	38.3	46.0	-7.7
Horizontal	959.103	31.4	20.0	26.4	37.8	46.0	-8.2
Vertical	85.290	44.2	20.0	7.0	31.2	40.0	-8.8
Vertical	220.475	46.4	20.0	9.2	35.6	46.0	-10.4
Vertical	960.230	31.2	20.0	26.4	37.6	54.0	-16.4

#### NOTES:

- 1. Quasi-Peak detector is used for frequency up to 1GHz.
- 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. All emissions up to 1GHz are below the QP limit.

Test Engineer: Chris chen

Company: SHUOYING DIGITAL SCIENCE&TECHNOLOGY (CHINA) Co., Ltd.

Date of Test: 12 July, 2012

Model: DV577

Operating Mode: Video Record

Table 4
Radiated Emissions

Polarization	Frequency	Reading	Pre-	Antenna	Net	Limit	Margin
	(MHz)	(dBµV)	Amp	Factor	at 3m	at 3m	(dB)
			Gain	(dB)	(dBµV/m)	(dBµV/m)	
			(dB)				
Horizontal	408.001	43.8	20.0	16.8	40.6	46.0	-5.4
Horizontal	790.125	38.8	20.0	23.3	42.1	46.0	-3.9
Horizontal	863.957	38.7	20.0	24.6	43.3	46.0	-2.7
Vertical	791.935	32.5	20.0	23.3	35.8	46.0	-10.2
Vertical	864.180	35.6	20.0	24.6	40.2	46.0	-5.8
Vertical	960.230	33.2	20.0	26.4	39.6	54.0	-14.4

#### NOTES:

- 1. Quasi-Peak detector is used for frequency up to 1GHz.
- 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. All emissions up to 1GHz are below the QP limit.

Test Engineer: Chris chen

Company: SHUOYING DIGITAL SCIENCE&TECHNOLOGY (CHINA) Co., Ltd.

Date of Test: 12 July, 2012

Model: DV577

Operating Mode: PC Camera

Table 4
Radiated Emissions

Polarization	Frequency	Reading	Pre-	Antenna	Net	Limit	Margin
	(MHz)	(dBµV)	Amp	Factor	at 3m	at 3m	(dB)
			Gain	(dB)	(dBµV/m)	(dBµV/m)	
			(dB)				
Horizontal	280.419	47.1	20.0	15.0	42.1	46.0	-3.9
Horizontal	392.350	43.7	20.0	16.8	40.5	46.0	-5.5
Horizontal	961.226	37.9	20.0	26.4	44.3	54.0	-9.7
Vertical	31.455	26.5	20.0	17.9	24.4	40.0	-15.6
Vertical	407.105	40.4	20.0	16.8	37.2	46.0	-8.8
Vertical	961.215	37.4	20.0	26.4	43.8	54.0	-10.2

#### NOTES:

- 1. Quasi-Peak detector is used for frequency up to 1GHz.
- 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. All emissions up to 1GHz are below the QP limit.

Test Engineer: Chris chen

3.4 Conducted Emission Configuration Photograph

Worst Case Neutral-Conducted Configuration at 0.194 MHz (PC Download Mode)

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

## 3.5 Conducted Emission Data

Judgement: Passed by 6.6 dB margin (PC Download Mode)

TEST PERSONNEL:
Sign on file
Chris chen, Engineer Typed/Printed Name

12 July, 2012 Date

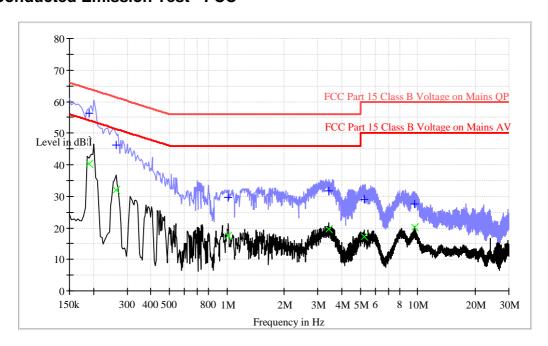
Company: SHUOYING DIGITAL SCIENCE&TECHNOLOGY (CHINA) Co., Ltd.

Date of Test: 12 July, 2012

Model: DV577

Operating Mode: PC Download

#### **Conducted Emission Test - FCC**



## Result Table QP

Frequency	QuasiPeak	Line	Corr.	Margin	Limit
(MHz)	(dB μ V)		(dB)	(dB)	(dB µ V)
0.189	56.3	L1	9.6	7.8	64.1
0.262	46.2	L1	9.6	15.2	61.4
1.018	29.6	L1	9.7	26.4	56.0
3.406	31.6	L1	9.7	24.4	56.0
5.218	29.0	L1	9.8	31.0	60.0
9.602	27.5	L1	10.0	32.5	60.0

## Result Table AV

Frequency	Average	Line	Corr.	Margin	Limit
(MHz)	(dB µ V)		(dB)	(dB)	(dB µ V)
0.189	40.2	L1	9.6	13.9	54.1
0.262	32.0	L1	9.6	19.4	51.4
1.018	17.5	L1	9.7	28.5	46.0
3.406	19.5	L1	9.7	26.5	46.0
5.218	17.1	L1	9.8	32.9	50.0
9.602	20.1	L1	10.0	29.9	50.0

Test Engineer: Chris chen

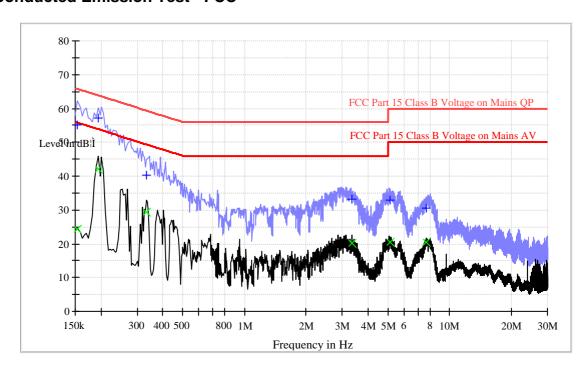
Company: SHUOYING DIGITAL SCIENCE&TECHNOLOGY (CHINA) Co., Ltd.

Date of Test: 12 July, 2012

Model: DV577

Operating Mode: PC Download

#### **Conducted Emission Test - FCC**



## **Result Table QP**

Frequency	QuasiPeak	Line	Corr.	Margin	Limit
(MHz)	(dB μ V)		(dB)	(dB)	(dB μ V)
0.154	55.0	N	9.7	10.8	65.8
0.194	57.3	N	9.6	6.6	63.9
0.334	40.4	N	9.6	19.0	59.4
3.342	33.0	N	9.7	23.0	56.0
5.134	33.0	N	9.8	27.0	60.0
7.706	30.4	N	9.9	29.6	60.0

## **Result Table AV**

Frequency (MHz)	Average (dB µ V)	Line	Corr. (dB)	Margin (dB)	Limit (dB µ V)
0.154	24.2	N	9.7	31.6	55.8
0.194	42.2	N	9.6	11.7	53.9
0.334	29.3	N	9.6	20.1	49.4
3.342	20.2	N	9.7	25.8	46.0
5.134	20.3	N	9.8	29.7	50.0
7.706	20.4	N	9.9	29.6	50.0

Test Engineer: Chris chen

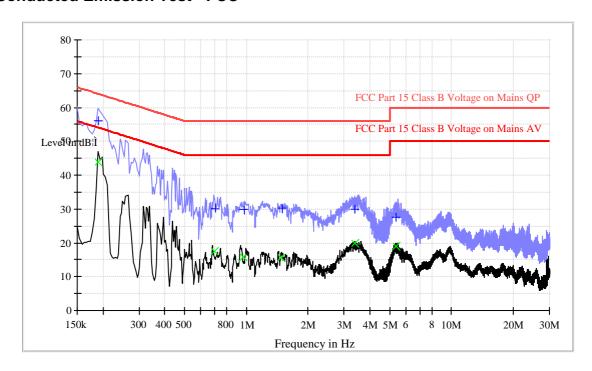
Company: SHUOYING DIGITAL SCIENCE&TECHNOLOGY (CHINA) Co., Ltd.

Date of Test: 12 July, 2012

Model: DV577

W Operating Mode: PC Camera

#### **Conducted Emission Test - FCC**



## **Result Table QP**

Frequency	QuasiPeak	Line	Corr.	Margin	Limit
(MHz)	(dB μ V)		(dB)	(dB)	(dB µ V)
0.190	55.5	L1	9.6	8.5	64.0
0.701	29.8	L1	9.7	26.2	56.0
0.960	29.5	L1	9.7	26.5	56.0
1.524	30.2	L1	9.7	25.8	56.0
3.400	29.0	L1	9.8	27.0	56.0
5.320	27.7	L1	9.8	32.3	60.0

## **Result Table AV**

Frequency (MHz)	Average (dB µ V)	Line	Corr. (dB)	Margin (dB)	Limit (dB µ V)
0.190	43.0	L1	9.6	11.0	54.0
0.701	17.0	L1	9.7	29.0	46.0
0.960	15.2	L1	9.7	30.8	46.0
1.524	15.3	L1	9.7	30.7	46.0
3.400	19.9	L1	9.8	26.1	46.0
5.320	18.9	L1	9.8	31.1	50.0

Test Engineer: Chris chen

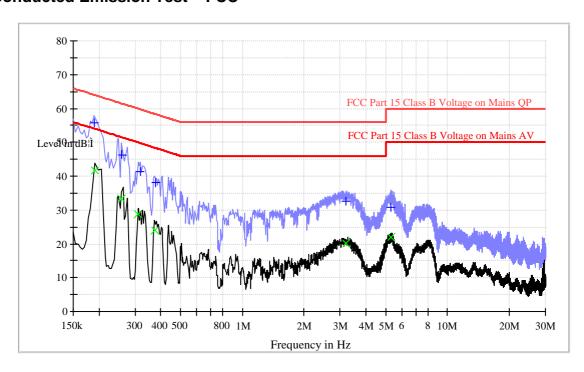
Company: SHUOYING DIGITAL SCIENCE&TECHNOLOGY (CHINA) Co., Ltd.

Date of Test: 12 July, 2012

Model: DV577

Operating Mode: PC Camera

#### **Conducted Emission Test - FCC**



## **Result Table QP**

Frequency	QuasiPeak	Line	Corr.	Margin	Limit
(MHz)	(dB µ V)		(dB)	(dB)	(dB µ V)
0.191	55.3	N	9.6	8.7	64.0
0.252	46.0	N	9.6	15.5	61.5
0.309	41.1	N	9.6	18.4	59.5
0.371	37.8	N	9.6	19.7	57.5
3.212	32.0	N	9.8	24.0	56.0
5.308	30.7	N	9.9	29.3	60.0

## **Result Table AV**

Frequency (MHz)	Average (dB µ V)	Line	Corr. (dB)	Margin (dB)	Limit (dB µ V)
0.191	40.5	N	9.6	13.5	54.0
0.252	33.8	N	9.6	17.7	51.5
0.309	28.2	N	9.6	21.3	49.5
0.371	24.5	N	9.6	23.0	47.5
3.212	20.3	N	9.8	25.7	46.0
5.308	22.1	N	9.9	27.9	50.0

Test Engineer: Chris chen

# 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 <u>Technical Specifications</u>

For electronic filing, the block diagram of the tested EUT is saved with filename: block.pdf.

# 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 <u>Miscellaneous Information</u>

This miscellaneous information includes emission measuring procedure.

#### 8.1 Emissions Test Procedures

The following is a description of the test procedure used by Intertek Testing Services in the measurements of computer peripheral 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 – 2009.

The computer peripheral 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 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 are in QP mode from the frequency band 30MHz to 1GHz with RBW setting 120kHz. Detector function for conducted emissions are in QP & AV mode and IFBW setting is 9kHz from the frequency band 150kHz to 30MHz.

For radiated emission, the frequency range scanned is 30MHz to 1GHz. For line-conducted emissions, the range scanned is 150kHz to 30MHz.

## 8.1 Emissions Test Procedures (cont'd)

The EUT is warmed up for 15 minutes prior to the test.

Conducted measurements are made as described in ANSI C63.4 – 2009.

## **EXHIBIT 9**

## **TEST EQUIPMENT LIST**

## 9.0 Test Equipment List

Equipment No.	Equipment	Manufacturer	Model No.	Serial No.	Cal. Date	Due Date
SZ061-03	BiConiLog Antenna	ETS	3142C	00066460	02-Jul-11	02-Jan-13
SZ185-01	EMI Receiver	R&S	ESCI	100547	11-Mar-12	11-Mar-13
SZ061-06	Active Loop Antenna	Electro- Metrics	EM-6876	217	11-Mar-12	11-Mar-13
SZ188-01	Anechoic Chamber	ETS	RFD-F/A- 100	4102	03-Mar-12	03-Mar-13
SZ185-02	EMI Test Receiver	R&S	ESCI	100692	12-Nov-11	12-Nov-12
SZ187-01	Two-Line V- Network	R&S	ENV216	100072	12-Nov-11	12-Nov-12
SZ188-03	Shielding Room	ETS	RFD-100	4100	16-Sep-11	16-Sep-12

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