

4 December, 2009

***MORNING SOUND INDUSTRIES CO., LTD.
B2/8F, No. 2, Fusing 4rd Rd., Cianjhen Dist,
Kaohsiung, Taiwan***

Dear Doris Lin,

Enclosed you will find your file copy of a Part 15 Certification (FCC ID: XY6CLS7XXT).

For your reference, review normally takes 1 week. Approval will then be granted when no query is sorted.

Please contact me if you have any questions regarding the enclosed material.

Sincerely,

A handwritten signature in black ink, appearing to read "Shawn Xing", with a stylized flourish at the end.

***Shawn Xing
Assistant Manager***

Enclosure



MORNING SOUND INDUSTRIES CO., LTD.

Application
For
Certification
(FCC ID: XY6CLS7XXT)

FM Transmitter

Model: CLS725

We hereby certify that the sample of the above item is considered to comply with the requirements of FCC Part 15, Subpart C for Intentional Radiator, mention 47 CFR [10-1-2008]

SZ090100001-1
Billy Li
4 December, 2009

- 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.
- This report is for the exclusive use of Intertek's Client and is provided pursuant to the agreement between Intertek and its Client. Intertek's responsibility and liability are limited to the terms and conditions of the agreement. Intertek assumes no liability to any party, other than to the Client in accordance with the agreement, for any loss, expense or damage occasioned by the use of this report. Only the Client is authorized to copy or distribute this report. Any use of the Intertek name or one of its marks for the sale or advertisement of the tested material, product or service must first be approved in writing by Intertek. The observations and test results referenced from this report are relevant only to the sample tested. This report by itself does not imply that the material, product, or service is or has ever been under an Intertek certification program.
- 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.

TRF no.: FCC 15C_TXa
FCC ID: XY6CLS7XXT

Intertek Testing Services Shenzhen Ltd. Kejiyuan Branch

6F, D Block, Huahan Building, Langshan Road, Nanshan District, Shenzhen, P. R. China
Tel: (86 755) 8601 6288 Fax: (86 755) 8601 6751 Website: www.china.intertek-etlsemko.com

INTERTEK TESTING SERVICES

LIST OF EXHIBITS

INTRODUCTION

<i>EXHIBIT 1:</i>	General Description
<i>EXHIBIT 2:</i>	System Test Configuration
<i>EXHIBIT 3:</i>	Emission Results
<i>EXHIBIT 4:</i>	Equipment Photographs
<i>EXHIBIT 5:</i>	Product Labelling
<i>EXHIBIT 6:</i>	Technical Specifications
<i>EXHIBIT 7:</i>	Instruction Manual
<i>EXHIBIT 8:</i>	Miscellaneous Information
<i>EXHIBIT 9:</i>	Test Equipment List

INTERTEK TESTING SERVICES

MEASUREMENT/TECHNICAL REPORT

MORNING SOUND INDUSTRIES CO., LTD. - MODEL: CLS725

Additional Model: CLS721, CLS729

FCC ID: XY6CLS7XXT

4 December, 2009

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

Equipment Type: DXX – Part 15 Low Power Communication Device Transmitter

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 C for intentional radiator – the new 47 CFR [10-1-2008 Edition] provision.

Report prepared by:

Shawn Xing
Intertek Testing Services Shenzhen Ltd.
Kejiyuan Branch
6/F, Block D, HuaHan Building, Longshan
Road, Nanshan District, Shenzhen, China.
Development Zone, Guangzhou, P. R.China.
Phone: (86 755) 8601 6288
Fax: (86 755) 8601 6751

INTERTEK TESTING SERVICES

Table of Contents

1.0	<u>General Description</u>	2
1.1	Product Description	2
1.2	Related Submittal(s) Grants	2
1.3	Test Methodology	3
1.4	Test Facility	3
2.0	<u>System Test Configuration</u>	5
2.1	Justification	5
2.2	EUT Exercising Software	5
2.3	Special Accessories	5
2.4	Equipment Modification	5
2.5	Measurement Uncertainty	6
2.6	Support Equipment List and Description	6
3.0	<u>Emission Results</u>	8
3.1	Field Strength Calculation	9
3.1	Field Strength Calculation (cont'd)	10
3.2	Radiated Emission Configuration Photograph	11
3.3	Radiated Emission Data	12
3.4	Conducted Emission Configuration Photograph	14
3.5	Conducted Emission Data	15
4.0	<u>Equipment Photographs</u>	15
5.0	<u>Product Labelling</u>	17
6.0	<u>Technical Specifications</u>	19
7.0	<u>Instruction Manual</u>	21
8.0	<u>Miscellaneous Information</u>	23
8.1	Measured Bandwidth and Band Edge	24
8.2	Discussion of Pulse Desensitization	25
8.3	Emission Test Procedures	27
9.0	<u>Test Equipment List</u>	29

INTERTEK TESTING SERVICES

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	Bandwidth Plot	bw.pdf
Test Report	Band Edge Plot	band edge.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	fcc label.pdf
User Manual	User Manual	manual.pdf
Cover Letter	Letter of Agency	agency.pdf

INTERTEK TESTING SERVICES

EXHIBIT 1

GENERAL DESCRIPTION

INTERTEK TESTING SERVICES

1.0 **General Description**

1.1 Product Description

The Equipment Under Test (EUT) is a FM Transmitter which can operate at 72.1-72.9 MHz. The EUT is powered by an Input AC 120V, 60Hz, Output DC 12V, 300mA adapter.

Antenna Type: Dedicated, Telescopic antenna was used.

The brief circuit description is saved with file name: descri.pdf

1.2 Related Submittal(s) Grants

This is an application for Certification of a Transmitter. The receiver, associated with this transmitter, has FCC ID: XY6CLS7XX has been filed at the same time.

INTERTEK TESTING SERVICES

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 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 shield room used to collect the radiated data and conducted data is **Interterk Testing Services Shenzhen Ltd. Kejiyuan Branch** and located at 6F, Block D, 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.

INTERTEK TESTING SERVICES

EXHIBIT 2

SYSTEM TEST CONFIGURATION

INTERTEK TESTING SERVICES

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 Input AC 120V, 60Hz, Output DC 12V, 300mA adapter during test for the audio input Mic-input test mode.

For maximizing emissions below 30 MHz, the EUT was rotated through 360°, the centre of the loop antenna was placed 1 meter above the ground, and the antenna polarization was changed. For maximizing emission at and above 30 MHz, 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. This step by step procedure for maximizing emissions led to the data report 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 a turn table, and the Antenna of EUT was fully extended, which enabled the engineer to maximize emissions through its placement in the three orthogonal axes.

For simplicity of testing, the unit was wired to transmit continuously.

2.2 EUT Exercising Software

There was no special software to exercise the device.

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 MORNING SOUND INDUSTRIES 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.

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

This product was tested in the following configuration:

Refer List:

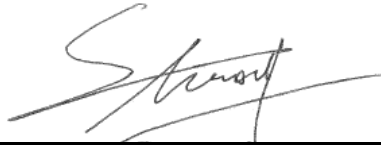
Description	Manufacturer	Model No.
iPod Player	Apple	A1236
Microphone	--	--

Note: The above equipment is provided by Intertek.

All the items listed under section 2.0 of this report are

Confirmed by:

Shawn Xing
Assistant Manager
Intertek Testing Services Shenzhen Ltd. Kejiyuan Branch
Agent for MORNING SOUND INDUSTRIES CO., LTD.



Signature

4 December, 2009

Date

INTERTEK TESTING SERVICES

EXHIBIT 3

EMISSION RESULTS

INTERTEK TESTING SERVICES

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.

INTERTEK TESTING SERVICES

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 μ V/m
- RA = Receiver Amplitude (including preamplifier) in dB μ 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:

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

INTERTEK TESTING SERVICES

3.1 Field Strength Calculation (cont'd)

Example

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

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

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

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

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

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

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

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

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

INTERTEK TESTING SERVICES

3.2 Radiated Emission Configuration Photograph

Worst Case Radiated Emission

507.500 MHz

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

INTERTEK TESTING SERVICES

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 17.3 dB

TEST PERSONNEL:



Signature

Billy Li, Compliance Engineer
Typed/Printed Name

4 December, 2009
Date

INTERTEK TESTING SERVICES

Applicant: MORNING SOUND INDUSTRIES CO., LTD.

Date of Test: 4 December, 2009

Model: CLS725

Mode: Transmit, Audio input

Sample: 72.5MHz

Table 1

Radiated Emissions

Polarization	Frequency (MHz)	Reading (dB μ V)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dB μ V/m)	Limit at 3m (dB μ V/m)	Margin (dB)
Vertical	72.500	76.5	20.0	15.6	72.1	98.1	-26.0
Vertical	74.730	49.9	20.0	9.5	39.4	63.5	-24.1
Vertical	78.362	48.2	20.0	11.0	39.2	63.5	-24.3
Vertical	145.000	47.7	20.0	13.1	40.8	63.5	-22.7
Vertical	217.500	47.2	20.0	15.7	42.9	63.5	-20.6
Vertical	290.000	41.3	20.0	18.4	39.7	63.5	-23.8
Vertical	362.500	48.9	20.0	10.7	39.6	63.5	-23.9
Vertical	435.000	40.7	20.0	10.5	31.2	63.5	-32.3
Vertical	507.500	57.0	20.0	9.2	46.2	63.5	-17.3

Notes: 1. Peak Detector Data unless otherwise stated.

2. All measurements were made at 3 meter. Harmonic emissions not detected at the 3 meter distance 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.

*Emission within the restricted band meets the requirement of part 15.205. The corresponding limit as per 15.209 is based on Quasi peak detector data for frequencies below 1000 MHz and peak detector data with average factor for frequencies over 1000 MHz.

Test Engineer: Billy Li

INTERTEK TESTING SERVICES

3.4 Conducted Emission Configuration Photograph

Worst Case Line-Conducted Configuration
at

18.126 MHz

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

INTERTEK TESTING SERVICES

3.5 Conducted Emission Data

Judgement: Passed by 22.0 dB margin

TEST PERSONNEL:



Signature

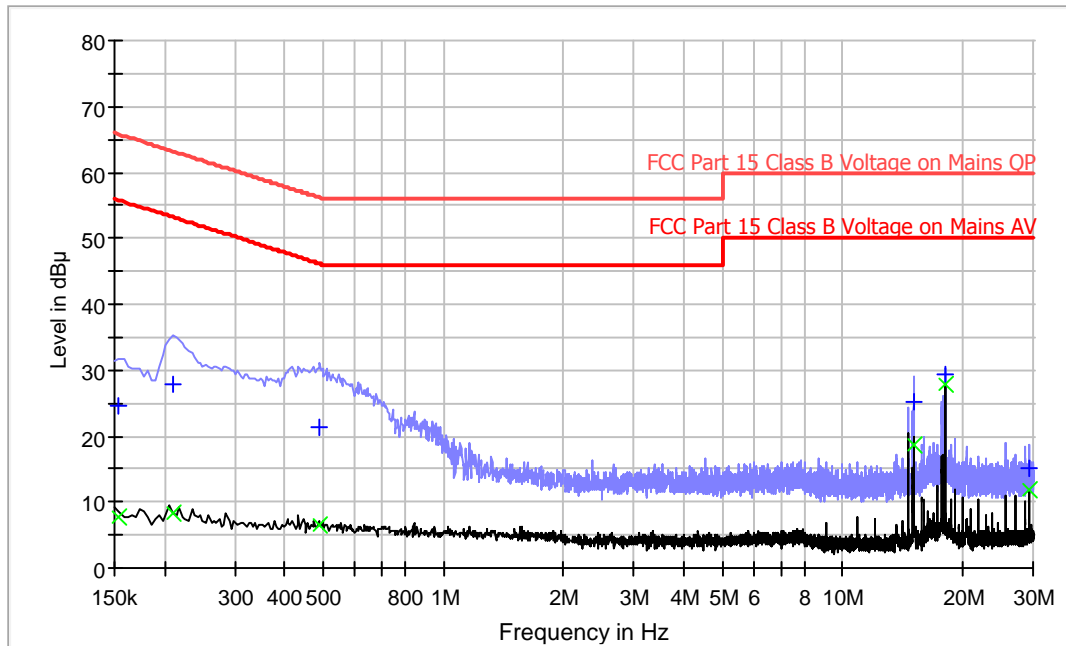
Billy Li, Compliance Engineer
Typed/Printed Name

4 December, 2009
Date

INTERTEK TESTING SERVICES

Company: Morning Sound Industries Co., Ltd.
Model: CLS725
Worst Case Operating Mode: Transmit

Date of Test: 4 December, 2009



Result Table-QP

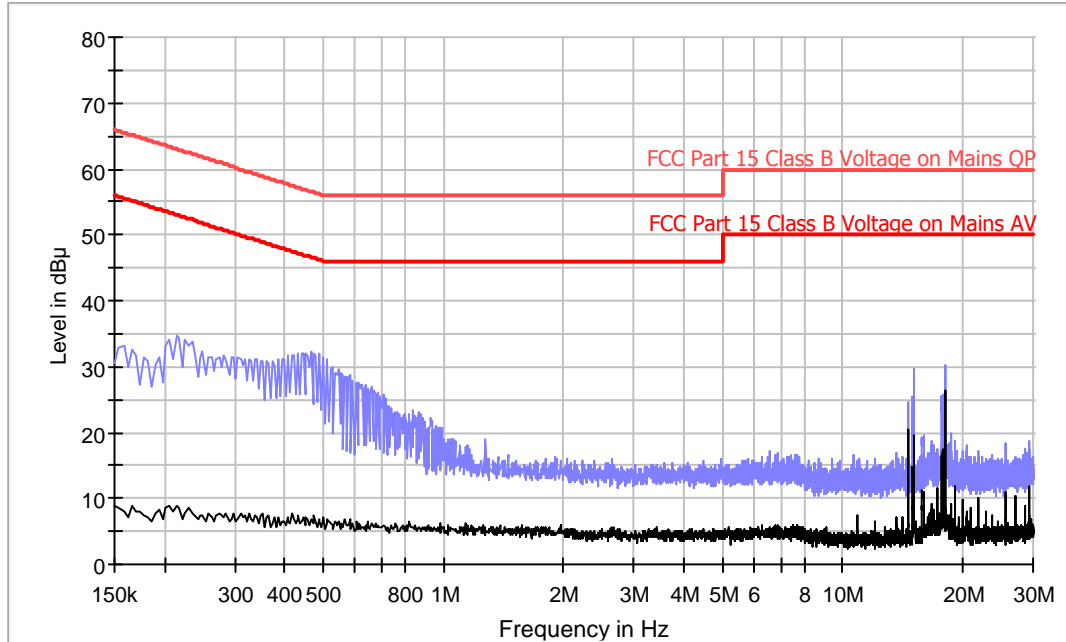
Frequency (MHz)	QuasiPeak (dB μ V)	Line	Corr. (dB)	Margin (dB)	Limit (dB μ V)
0.154000	24.6	L1	9.6	41.2	65.8
0.210000	27.9	L1	9.6	35.3	63.2
0.490000	21.4	L1	9.6	34.8	56.2
15.066000	25.0	L1	10.0	35.0	60.0
18.126000	29.3	L1	10.0	30.7	60.0
29.186000	15.0	L1	10.2	45.0	60.0

Result Table-AV

Frequency (MHz)	Average (dB μ V)	Line	Corr. (dB)	Margin (dB)	Limit (dB μ V)
0.154000	7.8	L1	9.6	48.0	55.8
0.210000	8.3	L1	9.6	44.9	53.2
0.490000	6.4	L1	9.6	39.8	46.2
15.066000	18.7	L1	10.0	31.3	50.0
18.126000	27.9	L1	10.0	22.1	50.0
29.186000	11.9	L1	10.2	38.1	50.0

TRF no.: FCC 15C_TXa
FCC ID: XY6CLS7XXT

INTERTEK TESTING SERVICES



Result Table-QP

Frequency (MHz)	QuasiPeak (dB μ V)	Line	Corr. (dB)	Margin (dB)	Limit (dB μ V)
0.154000	24.4	N1	9.6	41.4	65.8
0.210000	27.8	N1	9.6	35.4	63.2
0.490000	21.5	N1	9.6	34.7	56.2
15.066000	25.6	N1	10.0	34.4	60.0
18.126000	29.8	N1	10.0	30.2	60.0
29.186000	15.0	N1	10.2	45.0	60.0

Result Table-AV

Frequency (MHz)	Average (dB μ V)	Line	Corr. (dB)	Margin (dB)	Limit (dB μ V)
0.154000	7.8	N1	9.6	48.0	55.8
0.210000	8.3	N1	9.6	44.9	53.2
0.490000	6.3	N1	9.6	39.9	46.2
15.066000	18.9	N1	10.0	31.1	50.0
18.126000	28.0	N1	10.0	22.0	50.0
29.186000	11.9	N1	10.2	38.1	50.0

Test Engineer: Billy Li

TRF no.: FCC 15C_TXa
FCC ID: XY6CLS7XXT

INTERTEK TESTING SERVICES

EXHIBIT 4

EQUIPMENT PHOTOGRAPHS

INTERTEK TESTING SERVICES

4.0 **Equipment Photographs**

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

INTERTEK TESTING SERVICES

EXHIBIT 5

PRODUCT LABELLING

INTERTEK TESTING SERVICES

5.0 **Product Labelling**

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

INTERTEK TESTING SERVICES

EXHIBIT 6

TECHNICAL SPECIFICATIONS

INTERTEK TESTING SERVICES

6.0 **Technical Specifications**

For electronic filing, the block diagram and schematics are saved with filename:
block.pdf and circuit.pdf

INTERTEK TESTING SERVICES

EXHIBIT 7

INSTRUCTION MANUAL

INTERTEK TESTING SERVICES

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

EXHIBIT 8

MISCELLANEOUS INFORMATION

INTERTEK TESTING SERVICES

8.0 **Miscellaneous Information**

This miscellaneous information includes details of the measured bandwidth, band edge, the test procedure and calculation of factors such as pulse desensitization.

INTERTEK TESTING SERVICES

8.1 **Measured Bandwidth and Band Edge**

For electronic filing, the plot saved in bw.pdf shows the fundamental emission which is applied audio input source (worst case) in maximum volume. From the plot, it shows the emission is within the 200 KHz band. It meets the requirement of Section 15.237(b).

And the plot saved in bandedge.pdf shows that the emission is at least 60.2 dB below the carrier level at the band edge 72.0 MHz and at least 45.4 dB below the carrier level at the band edge 73.0 MHz. It meets the requirement of Section 15.237(c) and 15.205.

INTERTEK TESTING SERVICES

8.2 Discussion of Pulse Desensitization

Pulse Desensitization is not applicable for this device. Since the transmitter transmits the RF signal continuously.

INTERTEK TESTING SERVICES

8.3 Emissions Test Procedures

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

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

The transmitting 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.

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. A detailed description for the calculation of the average factor can be found in Exhibit 8.3.

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

INTERTEK TESTING SERVICES

8.3 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 - 2003.

The IF bandwidth used for measurement of radiated signal strength was 10 kHz for emission below 30 MHz and 120 kHz for emission from 30 MHz to 1000 MHz. Where transmissions of short enough pulse duration warrant, a greater bandwidth pulsed 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 1000 MHz, a resolution bandwidth of 1 MHz is used.

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

INTERTEK TESTING SERVICES

EXHIBIT 9

TEST EQUIPMENT LIST

INTERTEK TESTING SERVICES

9.0 Test Equipment List

Equipment No.	Equipment	Manufacturer	Model No.	Serial No.	Cal. Date	Due Date
SZ061-03	BiConiLog Antenna	ETS	3142C	00066460	25-Nov-09	25-May-11
SZ185-01	EMI Receiver	R&S	ESCI	100547	18-May-09	18-May-10
SZ188-01	Anechoic Chamber	ETS	RFD-F/A-100	4102	31-Oct-09	31-Oct-10
SZ062-02	RF Cable	RADIAL	RG 213U	--	26-Oct-09	26-Apr-10
SZ062-06	RF Cable	RADIAL	0.04-26.5GHz	--	17-Aug-09	17-Aug-10
SZ187-01	LISN	R & S	ENV216	100072	23-Nov-09	23-Nov-10
SZ187-02	LISN	R & S	ENV216	100073	23-Nov-09	23-Nov-10
SZ185-02	EMI Test Receiver	R&S	ESCI	100692	23-Nov-09	23-Nov-10
SZ188-03	Shielding Room	ETS	RFD-100	4100	15-Sep-07	15-Sep-10
SZ056-03	Spectrum Analyzer	R&S	FSP 30	101148	19-Mar-09	19-Mar-10