KIDDESIGNS INC

Application
For
Certification

Two Way Radio with FRS

(FCC ID: IAJ210)

HK11010174-1
KS/ cl
March 08, 2011

Intertek Testing Services Hong Kong Ltd.
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INTERTEK TESTING SERVICES

MEASUREMENT/TECHNICAL REPORT

Applicant : KIDDESIGNS INC
Trade Name/Model No : Disney / CR-210
PF-210
Date : March 08, 2011

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

Equipment Type: FRF – Part 95 Family Radio Face Held Transmitter

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.

Report prepared by:

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EXHIBIT 1

GENERAL DESCRIPTION

1.0 General Description

1.1 Product Description

The Equipment Under Test (EUT) is a Two Way Radio with FRS, operating at 462.6625MHz. The EUT is powered by 6V (4 x "AAA" size 1.5V alkaline batteries).

Transmitter Portion

(i) Type of Emission : FRS: 5K60F3E
(ii) Frequency Range : FRS 1 Channel 462.6625MHz
(iii) Maximum Power Rating : FRS: 0.000133W ERP
(iv) Antenna Type : Integral, 0dBi, vertically polarized
(V) DC Voltage and DC current of final RF amplifying device (refer to technical description): 5VDC and 40mA respectively.

The Model: PF-210 is the same as the Model: CR-210 in electronics/electrical designs, including software & firmware and PCB layout. The only differences between these models are color, cosmetic and model number, to be sold for marketing purpose.

The brief circuit description is saved with filename: descri.pdf

1.2 Test Methodology

Radiated emission measurements were performed according to the procedures in ANSI C63.4 (2003) and ANSI/TIA-603-C-2004. All radiated measurement were performed in Open Area Test Sites. Preliminary scans were performed in the Open Area Test Sites only to determine worst case modes. All Radiated tests were performed at an antenna the EUT distance of 3 meters, unless stated otherwise in the **"Justification Section"** of this Application.

1.3 Test Facility

The open area test site used to collect the emission data is located at Garment Centre, 576 Castle Peak Road, Kowloon, Hong Kong. The 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 device was configured for testing in a typical fashion (as a customer would normally use it). The device was placed on a turntable, which enabled the engineer to maximize emissions through its placement in the three orthogonal axes.

The device was powered by 4 x new "AAA" size 1.5V alkaline batteries.

The frequency range of transmitter from 30MHz to 10th harmonics 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.

For transmitter radiated spurious measurement, the spectrum analyzer resolution bandwidth was 10kHz for emissions below 1GHz, and 1MHz for emissions above 1GHz. Video bandwidth was 300kHz for emissions below 1GHz, and 3MHz for emissions above 1GHz.

2.2 EUT Exercising Software

There was no special software to exercise the device. Once the PTT button was pushed, a signal was transmitted.

2.3 Special Accessories

No special accessory is needed for compliance of this device.

2.4 Measurement Uncertainty

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

2.5 Support Equipment

N/A

Confirmed by:

Sit Kim Wai, Ken
Manager
Intertek Testing Services Hong Kong Ltd.
Agent for KIDDESIGNS INC

Signature

March 08, 2011 Date

EXHIBIT 3

RF POWER OUTPUT

3.0 RF Power Output (Section 2.1046(a), 95.639(d))

A. Testing Procedure

1. On a test site, the EUT shall be placed at 0.8m height on a wooden turntable, and in the position closest to normal use as declared by the applicant.

2. The test antenna shall be oriented initially for vertical polarisation located 3m from EUT to correspond to the frequency of the transmitter.

3. The output of the test antenna shall be connected to the measuring receiver and the peak detector is used for the measurement.

4. The transmitter shall be switched on, if possible, without modulation and the measuring receiver shall be tuned to the frequency of the transmitter under test.

5. The test antenna shall be raised and lowered through the specified range of height until a maximum signal level is detected by the measuring receiver.

6. The transmitter shall then the rotated through 360° in the horizontal plane, until the maximum signal level is detected by the measuring receiver.

7. The test antenna shall be raised and lowered again through the specified range of height until a maximum signal level is detected by the measuring receiver.

8. The maximum signal level detected by the measuring receiver shall be noted.

9. The transmitter shall be replaced by a tuned dipole (substitution antenna).

10. The substitution antenna shall be orientated for vertical polarisation and the length of the substitution antenna shall be adjusted to correspond to the frequency of the transmitter.

11. The substitution antenna shall be connected to a calibrated signal generator.

12. If necessary, the input attenuator setting of the measuring receiver shall be adjusted in order to increase the sensitivity of the measuring receiver.

13. The test antenna shall be raised and lowered through the specified range of height to ensure that the maximum signal is received.

14. The input signal to the substitution antenna shall be adjusted to the level that produces a level detected by the measuring received, that is equal to the level noted while the transmitter radiated power was measured, corrected for the change of input attenuator setting of the measuring receiver.

15. The input level to the substitution antenna shall be recorded as power level in dBm, corrected for any change of input attenuator setting of the measuring receiver.

16. The measurement shall be repeated with the test antenna and the substitution antenna orientated for horizontal polarisation.

17. The measure of the effective radiated power is the larger of the two levels recorded, at the input to the substitution antenna, corrected for gain of the substitution antenna if necessary.

B. Test Result

Table 1

KIDDESIGNS INC
CR-210

Transmission Power

Frequency	Effective Radiated Power		FCC 95.639 & RSS-210 Limit	Margin
(MHz)	(dBm)	(W)	(W)	(W)
462.5625	-8.8	0.000133	0.50	-0.499867

Notes: Negative sign in the margin column shows the value below limits.

Verdict: Passed

For RF Safety, the information is saved with filename: RF exposure info.pdf

Test Engineer: Koo Wai Ip Date of Test: January 06-12, 2011

EXHIBIT 4

MODULATION CHARACTERISTICS

4.0 **Modulation Characteristics (Section 2.1047(a)(b), 95.637(a))**

In order to satisfy the 95.637(a) and 2.1047(b) requirements, Modulation Frequency Response and Modulation Limiting Characteristics are attached in Exhibit 4.1 & 4.2.

In order to satisfy the 2.1047(a) requirement, Audio Low Pass Filter Response is attached in Exhibit 4.3.

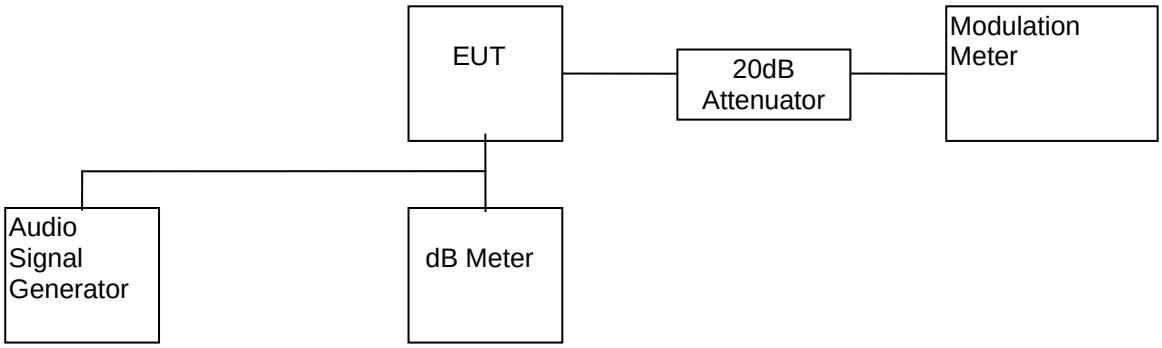
For electronic filing, the modulation frequency response & modulation limiting characteristic curve are saved with filename: mfr.pdf & mlc.pdf respectively.

For electronic filing, the audio low pass frequency response curve is saved with filename: lpf.pdf.

4.1 Modulation Frequency Response (Section 2.1047(a), 95.637(a))

A. Testing Procedure

1) Set-up the test equipment in the following configuration:



2) Set the audio signal generator frequency to the sound pressure level 97.0dBSPL at the microphone of the EUT.
3) The frequency of the audio signal generator is changed from 100Hz to 5kHz.
4) Record the frequency deviation.
5) The peak frequency deviation must not exceed:

   FRS : ±2.5kHz

6) Calculate the audio frequency response at each frequency as:

   response = $20 \log_{10}(DEV_{FREQ} / DEV_{REF})$;

   DEV_{REF} = Frequency deviation at 1000Hz ;
   DEV_{FREQ} = Frequency deviation at 100 - 5000Hz ;

7) From the plot, audio frequency response rolls off before 3.125kHz.

B. Test Result

Table 2

KIDDESIGNS INC
CR-210

Modulation Frequency Response

Input level = 97.0dBSPL

Modulation Frequency(Hz)	Frequency Deviation(kHz)	Audio Frequency Response
100	0.105	-23.99
200	1.502	-0.88
300	1.475	-1.04
400	1.518	-0.79
500	1.568	-0.51
600	1.662	0.00
700	1.695	0.17
800	1.705	0.22
900	1.672	0.05
1000	1.662	0.00
1250	1.668	0.03
1500	1.695	0.17
1750	1.685	0.12
2000	1.692	0.16
2250	1.605	-0.30
2500	1.272	-2.32
2750	1.208	-2.77
3000	1.282	-2.25
3125	1.375	-1.65
3250	1.388	-1.56
3500	1.352	-1.79
4000	0.922	-5.12
5000	0.619	-8.58

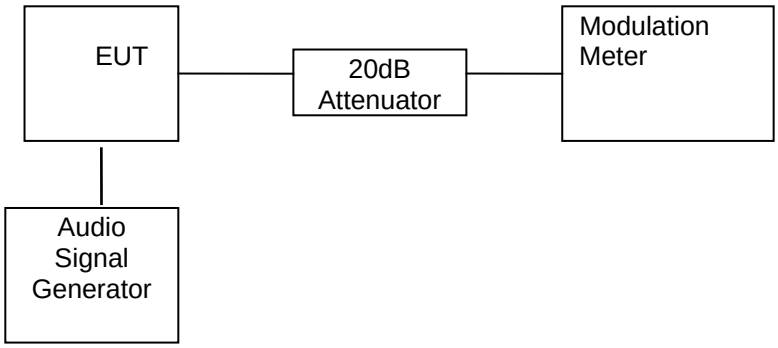
Verdict: Passed

Test Engineer: Koo Wai Ip Date of Test: January 06-12, 2011

4.2 Modulation Limiting Characteristics (Section 2.1047(b), 95.637(a))

A. Testing Procedure

1) Set-up the test equipment in the following configuration:



2) Set the frequency of the audio signal generator to 500Hz and adjust the level from 47dBSPL to 137dBSPL.
3) Record the maximum value of plus or minus peak frequency deviation.
4) Repeat the above procedure with frequency 1000Hz, 2500Hz & 3125Hz.
5) The peak frequency deviation must not exceed:

FRS : ±2.5kHz

B. Test Result

Table 3

KIDDESIGNS INC
CR-210

Modulation Limiting Characteristics

Modulation Input (dBSPL)	Peak Frequency Deviation (kHz) at 500Hz	Peak Frequency Deviation (kHz) at 1000Hz	Peak Frequency Deviation (kHz) at 2500Hz	Peak Frequency Deviation (kHz) at 3125Hz
47	0.032	0.036	0.034	0.034
57	0.035	0.045	0.037	0.040
67	0.052	0.102	0.056	0.069
77	0.130	0.501	0.099	0.119
87	0.684	1.321	0.521	0.593
97	1.592	1.668	1.282	1.378
107	1.655	1.645	1.628	1.535
117	1.618	1.652	1.662	1.605
127	1.622	1.622	1.698	1.612
137	1.548	1.592	1.712	1.562

Verdict: Passed

Test Engineer: Koo Wai Ip Date of Test: January 06-12, 2011

4.3 Audio Low Pass Filter Response (Section 2.1047(a), 95.637(b))

A. Testing Procedure

1) Connect the audio signal generator to the input of the post limiter low pass filter and the dB meter to the output of the post limiter low pass filter.
2) Apply a 1000 Hz tone from the audio signal generator and adjust the level per manufacturer's specifications. Record the dB level of the 1000 Hz tone as LEV_{REF}.
3) Set the audio signal generator to the desired test frequency between 3000 Hz and the upper low pass filter limit. Record the dB level at the test frequency as LEV_{FREQ}.
4) Calculate the audio frequency response at the test frequency as:

   low pass filter response **=** LEV_{FREQ} **-** LEV_{REF}

5) Repeat the above procedure for all the desired test frequencies.

B. Test Result

Table 4

KIDDESIGNS INC
CR-210

Low-Pass Filter Response

Audio Input Strength = -53.5 dBV

Frequency (kHz)	dB relative to 1 kHz	TIA/EIA-603C
1	0.0	0.0
3	-14.0	0.0
4	-20.5	-7.5
5	-28.0	-13.3
6	-33.0	-18.1
8	-41.8	-25.6
10	-49.0	-31.4
15	-57.5	-41.9
20	-58.0	-50.0
30	-58.0	-50.0
40	-58.0	-50.0
50	-58.0	-50.0
60	-58.0	-50.0
70	-58.0	-50.0
80	-58.0	-50.0
90	-58.0	-50.0
100	-58.0	-50.0

Audio Output at 1kHz: -10.0dBV

Verdict: Passed

Test Engineer: Koo Wai Ip Date of Test: January 06-12, 2011

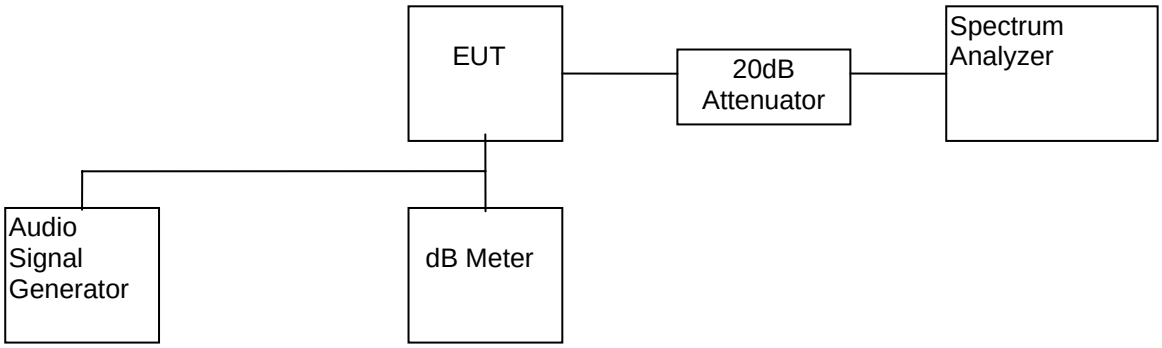
EXHIBIT 5

OCCUPIED BANDWIDTH

5.0 Occupied Bandwidth (Section 2.1049, 95.633(c))

A. Testing Procedure

1) Set-up the test equipment in the following configuration:



2) Set the level of audio signal generator to obtain 16 dB greater than required for 50% modulation.
3) The occupied bandwidth is measured with the spectrum analyzer set at 2kHz/div scan and 10dB/div.

B. Test Result

Table 5

KIDDESIGNS INC
CR-210

Measured Bandwidth (kHz)	Limit (kHz)
5.60	≤12.5

Verdict: Passed

For the electronic filing, the bandwidth plot is saved with filename: bw.pdf

Test Engineer: Koo Wai Ip Date of Test: January 06-12, 2011

EXHIBIT 6

SPURIOUS EMISSION

6.0 **Spurious Emission**

In order to satisfy the 95.635(b) requirement, the spurious emission from the EUT are measured and shown in the Exhibit 6.1.

6.1 Power of Spurious Radiation (Section 2.1053, 95.635(b))

A. Testing Procedure

Radiated emission measurements were performed according to the procedures in ANSI/TIA-603-C-2004. All measurements were performed in Open Area Test Sites located at Roof Top of Garment Centre, 576 Castle Peak Road, Kowloon, Hong Kong.

B. Radiated Emission Configuration Photograph

Worst Case Radiated Emission

For electronic filing, the radiated emission configurations photograph is saved with filename: config photos.pdf

C. Test Result

KIDDESIGNS INC
CR-210

Table 6(a)

1) Unwanted emission from CARRIER ±6.25kHz to CARRIER ±31.25kHz

(Refer to the plots which is saved with filename: spurious.pdf)

Region	Unwanted emission
CARRIER ±6.25kHz to ±12.5kHz	<25dB
CARRIER ±12.5kHz to ±31.25kHz	<35dB

Table 6(b)

Frequency (MHz)	Effective Radiated Power (dBm)	Transmission Power (dBm)	Attenuation (dBc)	Limit (dBc)	Margin (dB)
925.326	-51.0	-8.8	42.2	4.2	-38.0
1387.989	-51.8	-8.8	43.0	4.2	-38.8
1850.652	-51.2	-8.8	42.4	4.2	-38.2
2313.315	-52.0	-8.8	43.2	4.2	-39.0
2775.978	-51.2	-8.8	42.4	4.2	-38.2
3238.641	-52.1	-8.8	43.3	4.2	-39.1
3701.304	-49.8	-8.8	41.0	4.2	-36.8
4163.967	-51.9	-8.8	43.1	4.2	-38.9

Remark: 1. Transmission power is -8.8 dBm or -38.8 dB(W).

2. According to Section 95.635(b7), the unwanted emission should be attenuated below TP by at least $43 + 10 \log_{10}$ (TP) dB or 4.2 dB.

3. The test is performed according to ANSI/TIA-603-C-2004.

Verdict: Passed

Test Engineer: Koo Wai Ip Date of Test: January 06-12, 2011

EXHIBIT 7

FREQUENCY STABILITY

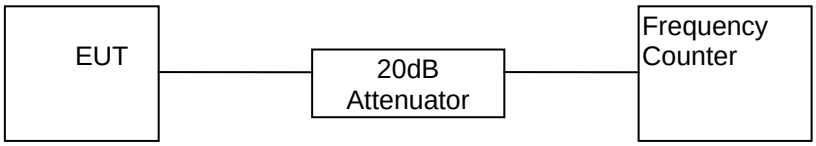
7.0 **Frequency Stability (Section 2.1055(a)(b)(d), 95.627(b) for FRS)**

The frequency tolerance was tested in normal condition & over extreme ambient conditions with respect to voltage and temperature variation.

7.1 Frequency Tolerance (Section 95.627(b) for FRS)

A. Testing Procedure

1) Set-up the test equipment in the following configuration:



2) Measure the transmit channel frequency in MHz.

B. Test Result

Table 7

KIDDESIGNS INC
CR-210

Frequency Tolerance

Frequency (MHz)	Measured Frequency (MHz)	Tolerance (%)
462.6625	462.66231	-0.000041

FCC Limit for FRS (95.627(b)): ≤±0.00025%
RSS-210 Limit for FRS (A6.1.6): <±5ppm

Verdict: Passed

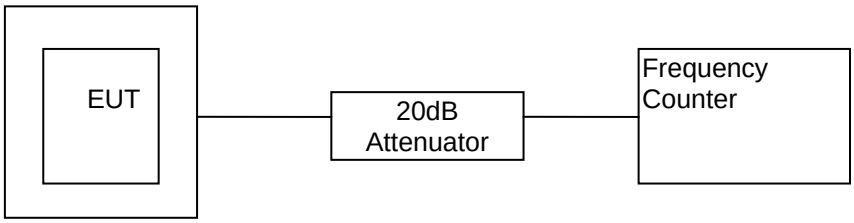
Test Engineer: Koo Wai Ip Date of Test: January 06-12, 2011

7.2 Frequency Stability - Temperature (Section 2.1055(a)(b), 95.627(b) for FRS)

A. Testing Procedure

1) Set-up the test equipment in the following configuration:

Temperature Chamber



2) Set the Temperature Chamber to 20°C and stabilize the EUT temperature for one hour. Set transmitter ON for two minutes.
3) Measure the channel frequency in MHz.
4) Turn the EUT OFF.
5) Repeat the above procedure from -20°C to 50°C with 10°C increment for FRS.

B. Test Result

Table 8

KIDDESIGNS INC
CR-210

Frequency Tolerance with Temperature Variation

Temperature (°C)	Assigned Frequency (MHz)	Measured Frequency (MHz)	Tolerance (%)	*Frequency Tolerance with reference to its value at +20°C (ppm)
-20	462.66250	462.66290	0.000086	1.3
-10	462.66250	462.66290	0.000086	1.3
0	462.66250	462.66316	0.000143	1.8
10	462.66250	462.66295	0.000097	1.4
20	462.66250	462.66231	-0.000041	0.0
30	462.66250	462.66176	-0.000160	-1.2
40	462.66250	462.66156	-0.000203	-1.6
50	462.66250	462.66140	-0.000238	-2.0

Remark: 1) For FRS, frequency tolerance must be maintained within a frequency tolerance of 0.00025%.
2) *This column is presentable for Industry Canada Certification only.

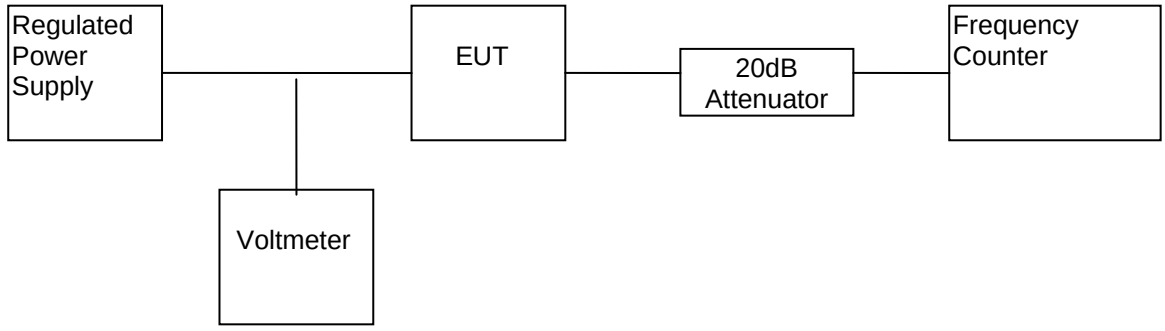
Verdict: Passed

Test Engineer: Koo Wai Ip Date of Test: January 06-12, 2011

7.3 Frequency Stability - Voltage (Section 2.1055(d), 95.627(b) for FRS)

A. Testing Procedure

1) Set-up the test equipment in the following configuration:



2) Vary the level of regulated power supply to the manufacturer specified battery end point of the EUT.
3) Measure the channel frequency in MHz.

B. Test Result

Table 9

KIDDESIGNS INC
CR-210

Frequency Tolerance with Voltage Variation

The manufacturer specified battery end point 3.3V

Frequency (MHz)	Measured Frequency (MHz)	Tolerance (%)
462.6625	462.66145	-0.000227

Remark: 1) For FRS, frequency tolerance must be maintained within a frequency tolerance of 0.00025%.
2) The test voltage is from primary supply voltage to 3.3V

Test Engineer: Koo Wai Ip Date of Test: January 06-12, 2011

EXHIBIT 8

EQUIPMENT LIST

8.0 **Equipment List**

Equipment	Biconical Antenna	Log Periodic Antenna	Double Ridged Guide Antenna
Registration No.	EW-0954	EW-0446	EW-1015
Manufacturer	EMCO	EMCO	EMCO
Model No.	3104C	3146	3115
Calibration Date	Apr. 14, 2010	Apr. 26, 2010	Feb. 09, 2010
Calibration Due Date	Oct. 14, 2011	Oct. 26, 2011	Aug. 09, 2011

Equipment	EMI Test Receiver	Spectrum Analyzer	
Registration No.	EW-2251	EW-2188	EW-2466
Manufacturer	R&S	AGILENTTECH	R&S
Model No.	ESCI	E4407B	FSP30
Calibration Date	Oct. 22, 2009	Dec. 27, 2010	Nov. 11, 2009
Calibration Due Date	Apr. 22, 2011	Dec. 31, 2011	Feb. 11, 2011

Equipment	Signal Generator	Roberts Antennas	Temperature & Humidity Chamber
Registration No.	EW-1983	EW-0160	EW-2134
Manufacturer	AGILENTTECH	CDI	GIANT FORCE
Model No.	E8247C	A100	GTH-750-40-CP-SD
Calibration Date	Jan. 16, 2009	Dec. 28, 2010	Aug. 17, 2010
Calibration Due Date	Apr. 16,2011	Jun. 28, 2012	Aug. 29, 2011

Equipment	Audio Signal Generator	AC Millivoltmeter	Digital Multimeter
Registration No.	EW-1168	EW-0054	EW-1237
Manufacturer	TRONEER	LEADER	FLUKE
Model No.	TAG-101	LMV-182A	179
Calibration Date	Feb. 10, 2010	Oct. 20, 2010	Sep. 01, 2010
Calibration Due Date	Feb. 07, 2011	Oct. 26, 2011	Oct. 01, 2011

Equipment	Sine Generator	Communication Service Monitor	Frequency Counter
Registration No.	EW-0211	EW-1443	EW-1069
Manufacturer	BK	R&S	OPTOELECTRON
Model No.	1051A	CMS54	3000A/TCXO
Calibration Date	Jul. 19, 2010	Jan. 22, 2010	Apr. 15, 2010
Calibration Due Date	Jul. 17, 2011	Jan. 22, 2011	Apr. 15, 2011