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## 1. GENERAL INFORMATION

### 1.1 Verification of Compliance

EUT: Z-WAVE ILT INTERFACE

Model: 1870171

Applicant: SOMFY SYSTEM, INC.

Test Type: FCC Part 15C CERTIFICATION

Result: PASS

Tested by: ADVANCED COMPLIANCE LABORATORY

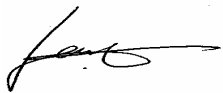
Test Completion Date: October 2, 2009

Report Number: 0048-090924-01

The above equipment was tested by Compliance Laboratory, Advanced Technologies, Inc. for compliance with the requirement set forth in the FCC rules and regulations Part 15 subpart C. This said equipment in the configuration described in the report, shows the maximum emission levels emanating from equipment are within the compliance requirements.

The estimated uncertainty of the test result is given as following. The method of uncertainty calculation is provided in Advanced Compliance Lab. Doc. No. 0048-01-01.

	Prob. Dist.	Uncertainty(dB)	Uncertainty(dB)	Uncertainty(dB)
		30-1000MHz	1-6.5GHz	Conducted
Combined Std. Uncertainty $u_c$	norm.	$\pm 2.36$	$\pm 2.99$	$\pm 1.83$



Wei Li  
Lab Manager  
Advanced Compliance Lab

Date: OCTOBER 2, 2009

## **1.2 Equipment Modifications**

N/A

### 1.3 Product Information

#### System Configuration

ITEM	DESCRIPTION	FCC ID	CABLE
Product	Z-WAVE ILT INTERFACE 1870171 (1)	DWNZILT	
Housing	PLASTICS		
Power Supply	12VDC from Remote Power Interface/Parts No.122647- 03&112810-01		
Operation Freq.	<b>908.4 MHz</b>		
Accessories	Sonesse 50 & Sonesse 30 Motor		
Receiver	1870171(RX)	Verification	

(1) EUT submitted for grant.

### 1.4 Test Methodology

Radiated tests were performed according to the procedures in ANSI C63.4-2003 at an antenna to EUT distance of 3 meters.

### 1.5 Test Facility

The open area test site and conducted measurement facility used to collect the radiated and conducted data are located at Hillsborough, New Jersey. This site has been accepted by FCC to perform measurements under Part 15 or 18 in a letter dated May 19, 1997 (Refer to: 31040/PRV 1300F2). The NVLAP Lab code for accreditation of FCC EMC Test Method is: 200101-0.

### 1.6 Test Equipment

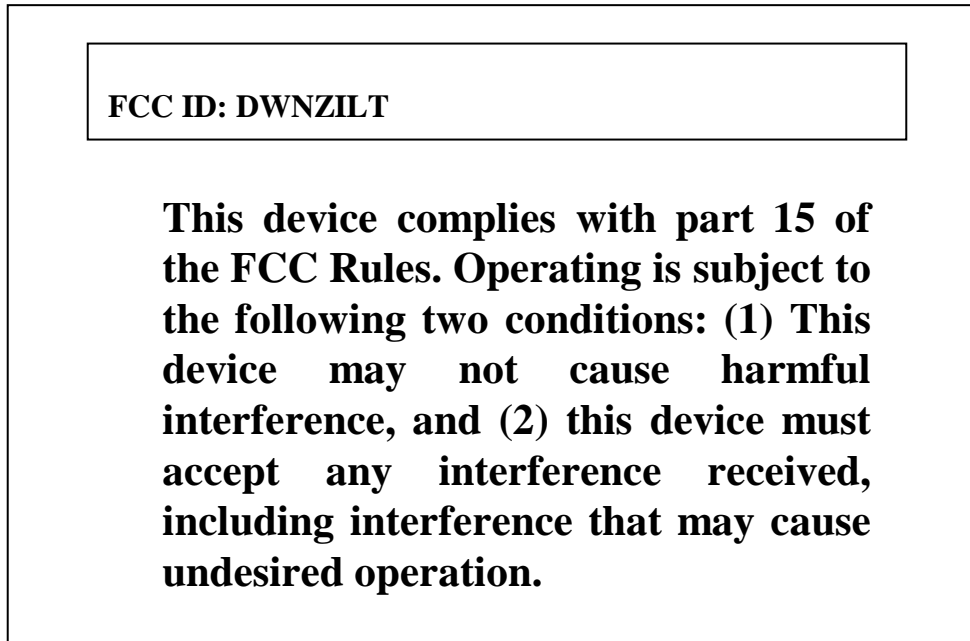
Manufacture	Model	Serial No.	Description	Last Cal dd/mm/yy	Cal Due dd/mm/yy
Hewlett-Packard	HP8546A	3625A00341	EMI Receiver	25/09/09	25/09/10
EMCO	3115	4945	Double Ridge Guide Horn Antenna	17/10/08	17/10/09
EMCO	3104C	9307-4396	20-300MHz Biconical Antenna	19/10/08	19/10/09
EMCO	3146	9008-2860	200-1000MHz Log-Periodic Antenna	19/10/08	19/10/09
Fischer Custom	LISN-2	900-4-0008	Line Impedance Stabilization Networks	18/10/08	18/10/09
Fischer Custom	LISN-2	900-4-0009	Line Impedance Stabilization Networks	05/10/08	05/10/09

All Test Equipment Used are Calibrated Traceable to NIST Standards.

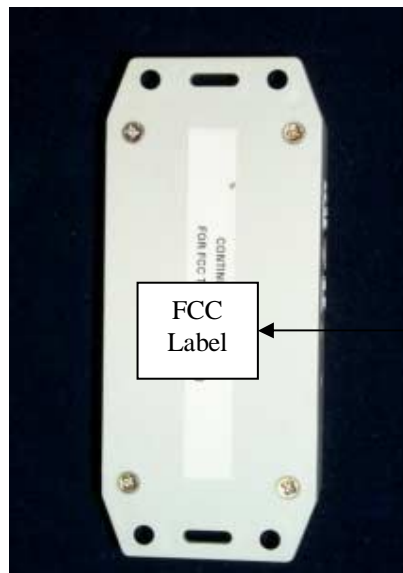
**1.7 Statement for the Document Use**

This report shall not be reproduced except in full, without the written approval of the laboratory. And this report must not be used by the client to claim product endorsement by NVLAP or any agency of the U.S. Government.

## 2. PRODUCT LABELING



**Figure 2.1 FCC ID Label  
(Only FCC ID shown on EUT)**



**Figure 2.2 FCC Label Location**



### **3. SYSTEM TEST CONFIGURATION**

#### **3.1 Justification**

The system was configured for testing in a typical fashion (as a customer would normally use it). And its antenna was permanently attached to the EUT with max length, 3”.

Testing was performed as EUT was continuously operated at the following frequency channels:  
908.4 MHz.

#### **3.2 Special Accessories**

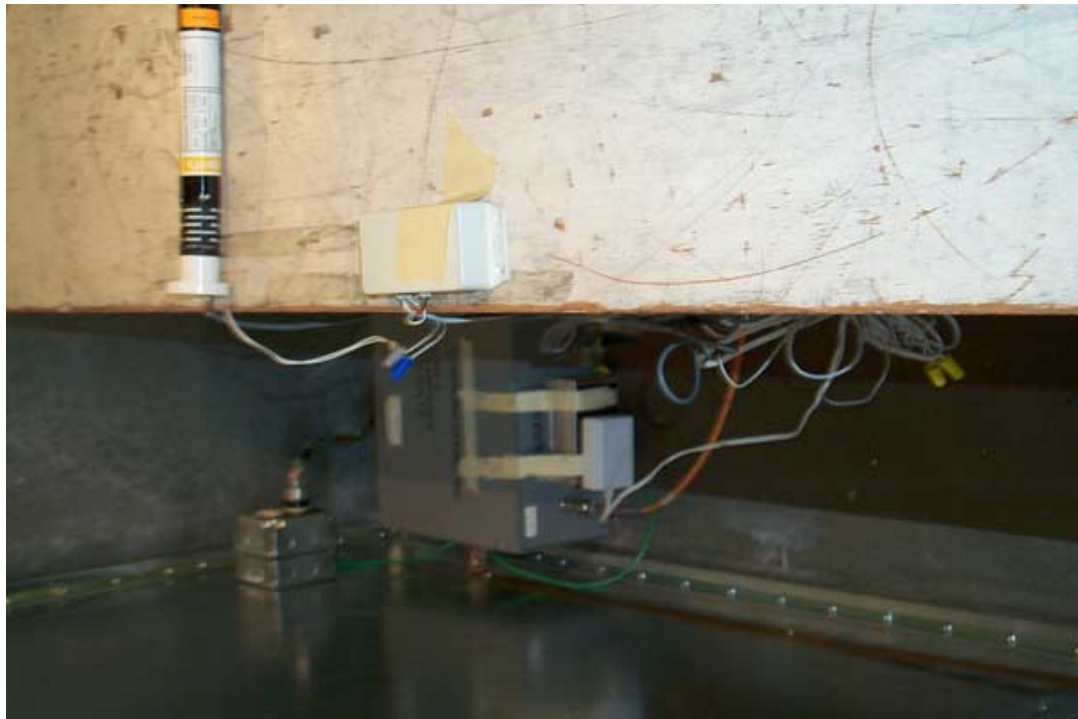
N/A

#### **3.3 Configuration of Tested System**

Figure 3.1&3.2 illustrate this system, which is tested standing along.



**Figure 3.1 Radiated Test Setup**



**Figure 3.2 Conducted Test Setup**

## **4. SYSTEM SCHEMATICS**

**See Attachment.**

**Figure 4.1 System Schematics**

## 5. RADIATED EMISSION DATA

### 5.1 Field Strength Calculation

The corrected field strength is automatically calculated by EMI Receiver using following:

$$FS = RA + AF + CF + AG$$

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

RA: Amplitude of EMI Receiver before correction in dB $\mu$ V

AF: Antenna Factor in dB/m

CF: Cable Attenuation Factor in dB

AG: Built-in Preamplifier Gain in dB (Stored in receiver as part of the calibration data)

### 5.2 Test Methods and Conditions

The initial step in collecting radiated data is a EMI Receiver scan of the measurement range below 30MHz using peak detector and 9KHz IF bandwidth / 30KHz video bandwidth. For the range 30MHz - 1GHz, 120KHz IF bandwidth / 120KHz video bandwidth are used. Both bandwidths are 1MHz for above 1GHz measurement. Up to 10<sup>th</sup> harmonics were investigated.

### 5.3 Test Data

The following data lists the significant emission frequencies, polarity and position, peak reading of the EMI Receiver, the FCC limit, and the difference between the peak reading and the limit. Explanation of the correction and calculation are given in section 5.1. Worst case was recorded in which the AC/DC power was used.

Test Personnel:



Typed/Printed Name: David Tu

Date: OCTOBER 2, 2009

**Radiated Test Data (worst Case with DC motor)**

Frequency (MHz)	Polarity (H or V)	Antenna Height (m)	Azimuth (Degree)	Peak Reading at 3m(2) (dBuV/m)	After Correction (dBuV/m)	FCC 3m Limit(1) (dBuV/m)	Difference (dBuV/m)
36.4	HX	1.5	270	33.2		40	-6.8
56.6(3)	HX	1.5	270	36.9		40	-3.1
36.8	VX	1.2	180	32.4		40	-7.6
41.1	VX	1.2	180	32.8		40	-7.2
57.2	VX	1.2	180	30.5		40	-9.5
75.1	VX	1.2	180	28.0		40	-12
908.4	HX	1.1	180	90.3		94	-3.7
908.4	VX	1.4	270	79.9		94	-14.1
1816.8	HX	1.0	000	51.4		54	-2.6
1816.8	VX	1.0	135	44.0		54	-10
2725.2	HX	1.0	000	52.0		54	-2
2725.2	VX	1.0	000	46.8		54	-7.2

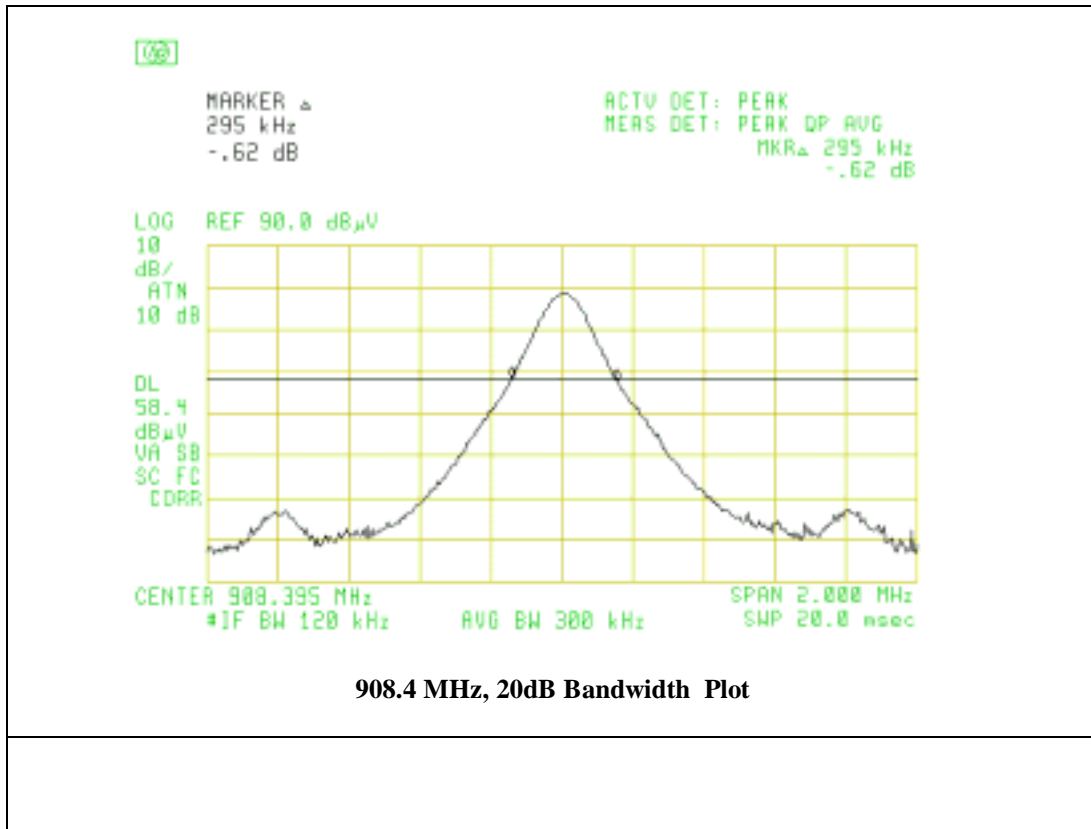
**Radiated Test Data (with AC motor)**

Frequency (MHz)	Polarity (H or V)	Antenna Height (m)	Azimuth (Degree)	Peak Reading at 3m(2) (dBuV/m)	After Correction (dBuV/m)	FCC 3m Limit(1) (dBuV/m)	Difference (dBuV/m)
908.4	HX	1.2	180	89.7		94	-4.3
908.4	VX	1.4	250	78.6		94	-15.4
1816.8	HX	1.1	010	50.6		54	-3.4
1816.8	VX	1.1	150	45.4		54	-8.6
2725.2	HX	1.0	350	51.1		54	-2.9
2725.2	VX	1.0	000	48.0		54	-6

(1) The limit for emissions within the 902-928MHz band is 50mV(94dB) per Sec. 15.249. The limit for its harmonics is 500uV (54dB). Other spurious emissions shall be lower than either its fundamental by 50dB or the limit defined in Sec. 15.209, whichever is higher.

(2) If each peak reading is less than the FCC average limit, it'll be not necessary to show the measured/ calculated average reading.

(3) Most low frequency emissions are from accessory, DC motor.



## 6. CONDUCTED EMISSIONS DATA

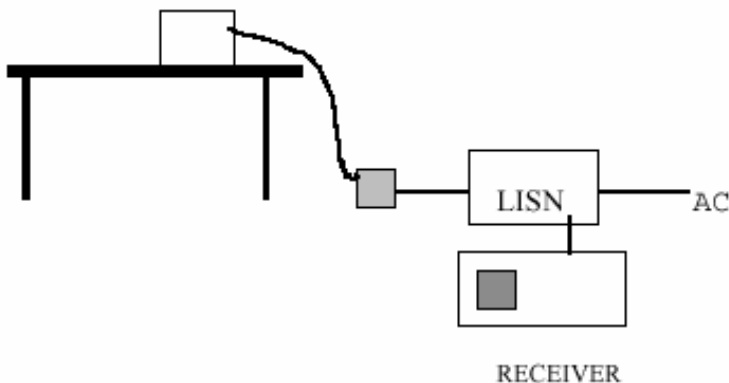
### 6.1 Test Methods and Conditions

The EUT exercise program was loaded during the conducted emission test. EMI Receiver was scanned from 150KHz to 30MHz with maximum hold mode for maximum emission. The IF Bandwidth is 9KHz. Recorded data was sent to the plotter to generate output in linear format. At the input of the spectrum analyzer, a HP transient limiter is inserted for protective purpose. This limiter has a 10 dB attenuation in the range of 150KHz to 30MHz. That factor was automatically compensated by the receiver, so the readings are the corrected readings. The reference of the plots is using FCC Part 15 & CISPR22 Class B limit given as following:

Conducted Emission Technical Requirements				
Frequency Range	Class A		Class B	
	Quasi-Peak dBuV	Average dBuV	Quasi-Peak DBuV	Average dBuV
150kHz –0.5MHz	79 (8912uV)	66 (1995uV)	66-56	56-46
0.5MHz-30MHz	73 (4467uV)	60 (1000uV)	---	---
0.5MHz- 5MHz	---	---	56	46
5MHz-30MHz	---	---	60	50

Emissions that have peak values close to ( or over) the specification limit (if any) are also measured in the quasi-peak mode to determine the compliance.

### 6.2 Measurement Instrument Configuration for Conducted Emission






### 6.3 Testing Data

The following plots show the neutral and line conducted emissions for the typical operation condition. The conducted test data shows the worst case emissions still below the FCC Part 15/CISPR22 Class B limits.

Highest Data for AC Line Conducted Emissions (w/ DC motor)						
Frequency (MHz)	0.17	0.24	0.31	0.38	12.28	12.28/12.82
Peak Reading (dBuV) from Line*	53.4	45.1	43.4	43.3	53.8	35.9(average)
Peak Reading(dBuV) from Neural *	52.9	44.8	44.0	43.8	54.0	32.6(average)

\* No average reading is needed since the peak reading is already below average limit.

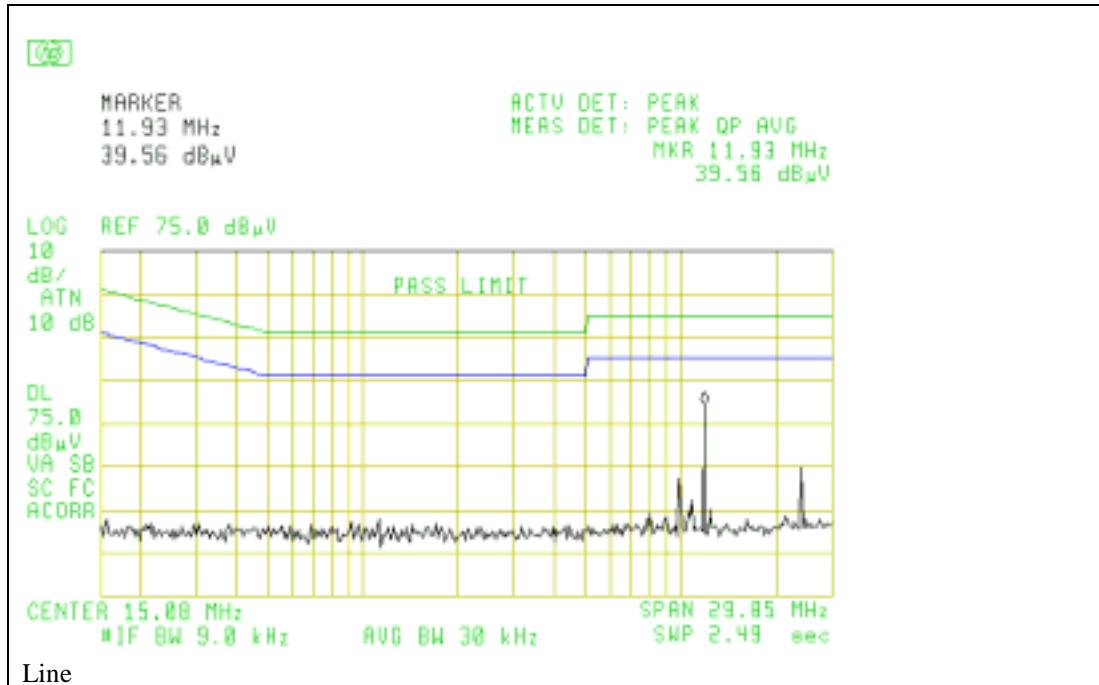
Test Personnel:

Tester Signature: 

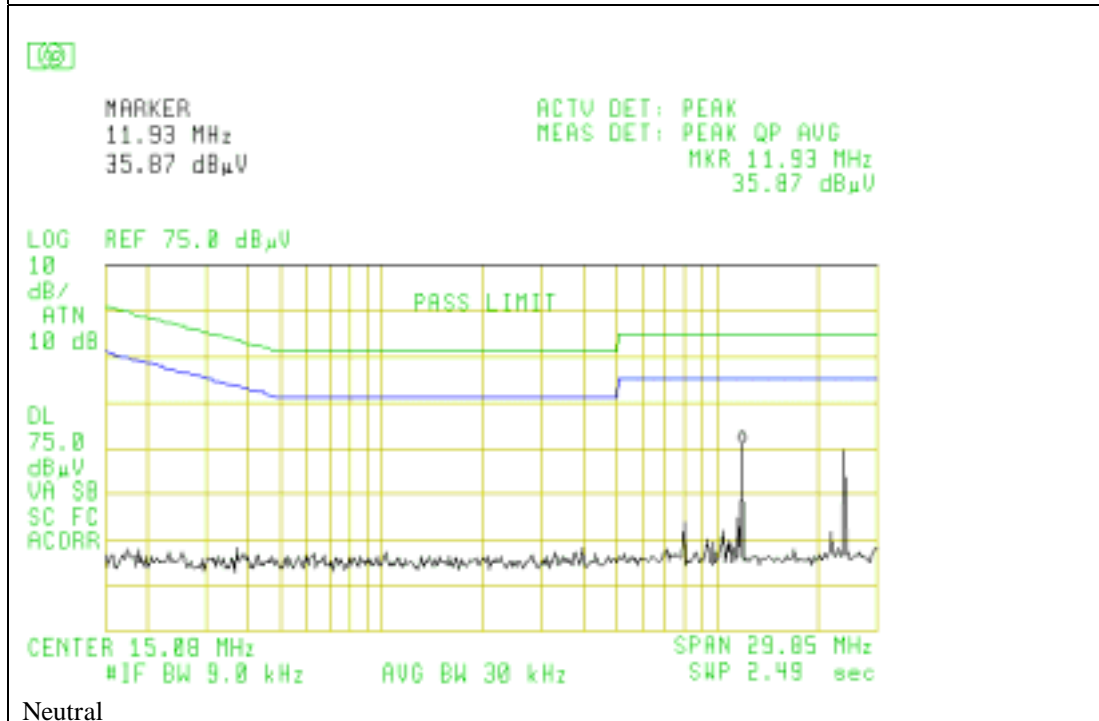
Date: OCTOBER 2, 2009

Typed/Printed Name: David Tu

With AC motor

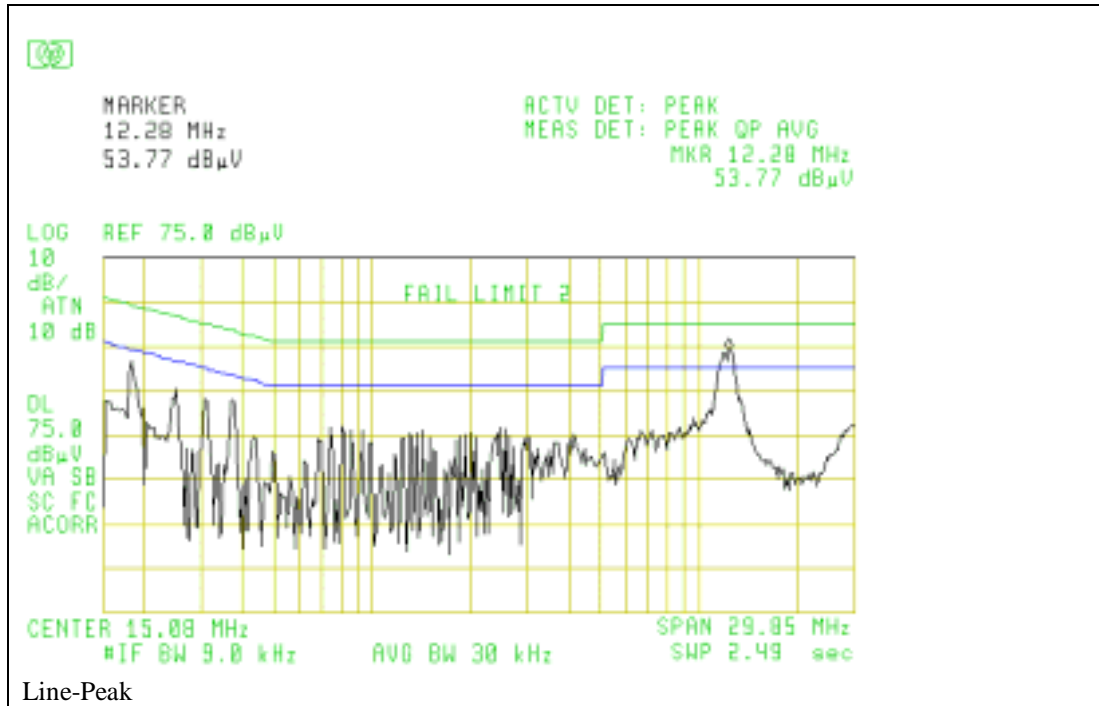


Line

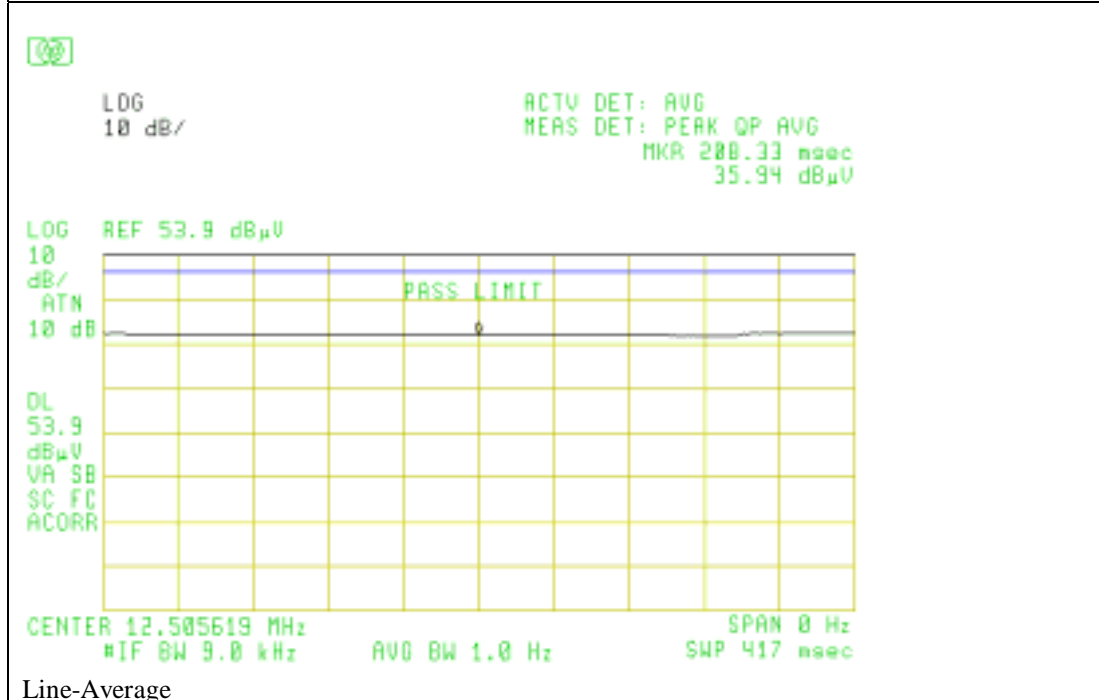


Neutral

With DC Motor- Line

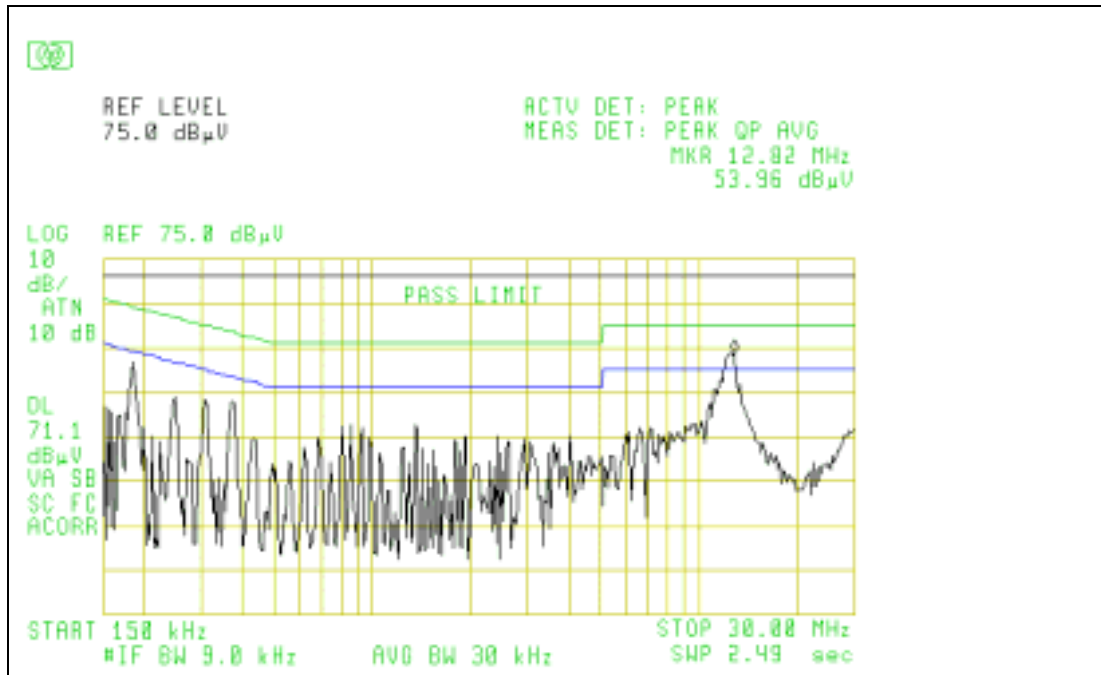


Line-Peak

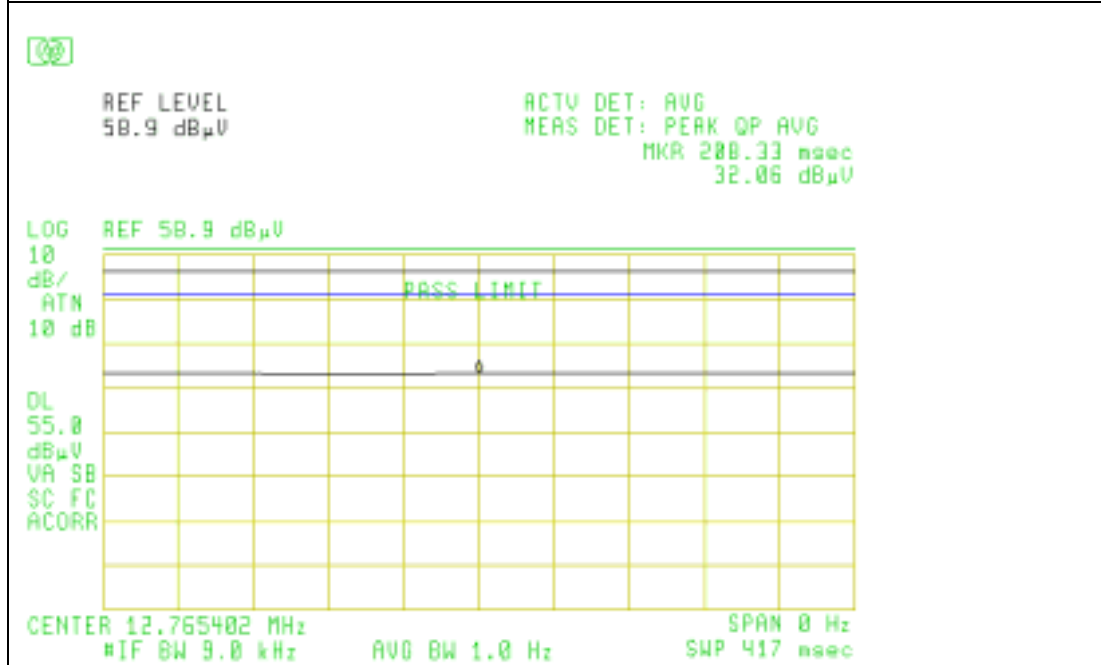


Line-Average

With DC Motor- Neutral



Neutral-Peak



Neutral-Average