Test Report

Report Number: 3196083MPK-001
Project Number: 3196083
Report Date: September 4, 2009

Testing performed on the
Platform with Wireless Indicator
Model Number: PLP-4/4-2500/5000 Wireless

FCC ID: X4H792054
to

FCC Part, Subpart C (15.249)
FCC Part 15, Subpart B
for

Fabricantes de Basculas Torrey, S.A. de C.V.

Test Performed by:	**Test Authorized by:**
Intertek	Fabricantes de Basculas Torrey, S.A. de C.V.
1365 Adams Court	Av. Los Andes No. 605 Col. Coyoacan
Menlo Park, CA 94025	64510 Monterry NL, Mexico

Prepared by: _____ **Date:** September 4, 2009
Bruce Gordon, Project Engineer

Reviewed by: _____ **Date:** September 4, 2009
Krishna Vemuri, EMC Senior Staff Engineer

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1.0 Introduction

1.1 Product Description

The Equipment under Test (EUT), model PLP-4/4-2500/5000 Wireless, is a weight scale platform (transmitter) with an indicator display (receiver).

Technical specification:

Measured RF Output Power	80.2 dBuV/m @ 3 meters
Frequency Ranges, MHz	915 MHz
Type of modulation	FSK
Channel Bandwidth	40.4875 kHz (see Appendix A for graph of 26dB bandwidth)
Detachable antenna	No, Internal Mounted

EUT receive date: June 6, 2009
EUT receive condition: The production version of the EUT was received in good condition with no apparent damage.
Test start date: June 8, 2009
Test completion date: September 3, 2009

1.2 Summary of Test Results

The following list of requirements are applicable to the transmitter portion (scale) of the Equipment Under Test (EUT)

FCC Part 15.249		
TEST	**REFERENCE**	**RESULT**
Field Strength of Fundamental	15.249a	Complies
Field Strength of Harmonics	15.249a	Complies
Radiated Emissions outside the band	15.249d	Complies
Radiated Emissions in restricted bands	15.205	Complies
AC Line Conducted Emissions	15.207	Complies
Antenna requirement	15.203	Complies. The EUT contains an integral antenna.

The following list of requirements are applicable to the receiver portion (controller) of the Equipment Under Test (EUT)

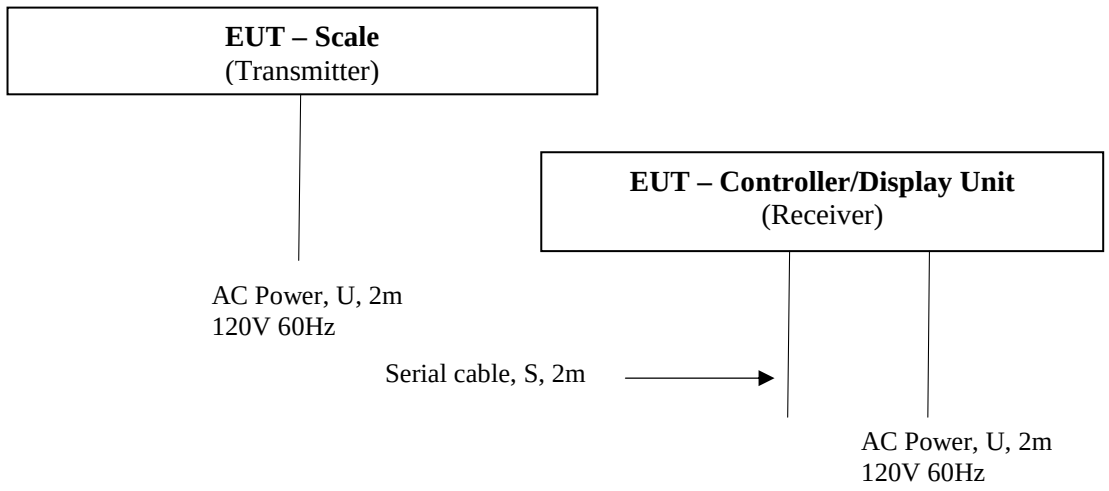
FCC Part 15.107 and 15.109		
TEST	**REFERENCE**	**RESULT**
Radiated Emissions	15.109	Complies
AC Line Conducted Emissions	15.107	Complies

1.3 Test Configuration

1.3.1 Support Equipment

None.

1.3.2 Block diagram of Test Setup



S = Shielded **U** = Unshielded	**F** = With Ferrite **m** = Length in Meters

1.4 Mode of Operation

During testing the Scale was setup to continuously transmit and the Display Unit was continuously receiving.

1.5 Related Submittal(s) Grants

None.

2.0 Transmitter Radiated Emissions

FCC 15.249, 15.209

2.1 Requirement

For radiated emission measurements, the EUT was placed on a non-conductive support structure. The signal is maximized through rotation and placement in the three orthogonal axes.

The Field Strength of emissions shall not exceed the following levels:
94 dB(μV/m) for fundamental frequency
54 dB(μV/m) for harmonics (Average)

Emissions radiated outside of the specified frequency band, except for harmonics, shall be attenuated by at least 50 dB below the level of fundamental or to the general radiated emission limits in 15.209, whichever is the lesser attenuation.

2.2 Test Procedure

For radiated emission measurements, the EUT is placed a non-conductive support structure. The signal is maximized through rotation and placement in the three orthogonal axes.

During the test the EUT is rotated and the antenna height and polarization are varied during the search for maximum signal level. The antenna height is varied from 1 to 4 meters.

Radiated emissions are taken at three meters unless the signal level is too low for measurement at that distance. If necessary, a pre-amplifier is used and/or the test is conducted at a closer distance. All readings are extrapolated back to the equivalent three-meter reading using inverse scaling with distance.

Radiated emission measurements were performed from 30 MHz to 10 GHz.
Analyzer resolution BW is:

100 kHz or greater for frequencies below 1 MHz.
1 MHz for frequencies above 1000 MHz. Peak and average values were measured.

Data is included of the 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.

Field Strength Calculation

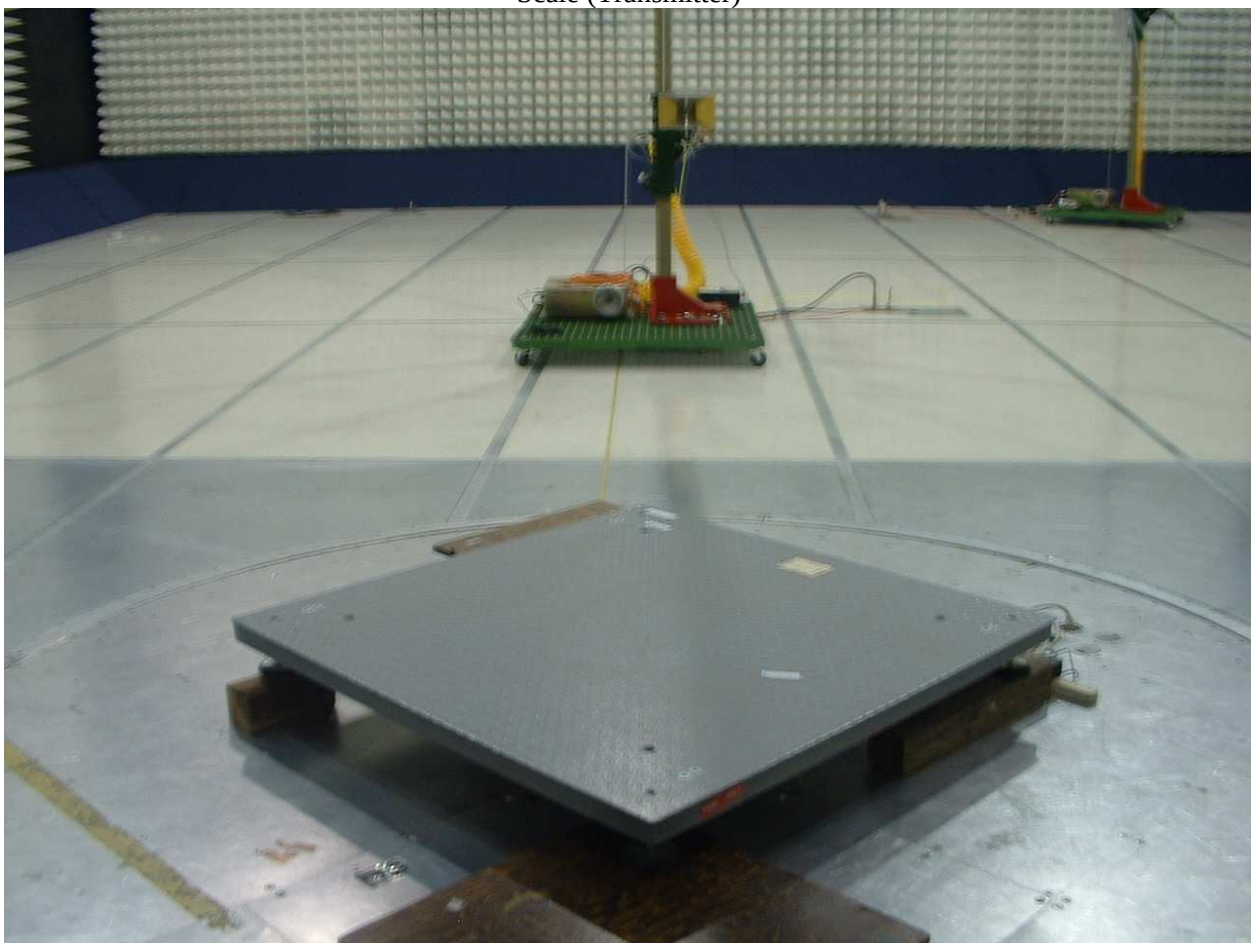
The field strength is calculated by adding the Antenna Factor and Cable Factor, and subtracting the Amplifier Gain (if any) from the measured reading. The basic equation is as follows:

FS = RA + AF + CF - AG

Where FS = Field Strength in dB (μV/m)
RA = Receiver Amplitude (including preamplifier) in dB (μV)
CF = Cable Attenuation Factor in dB
AF = Antenna Factor in dB(1/m)
AG = Amplifier Gain in dB

2.3 Test Configuration Photographs

Scale (Transmitter)

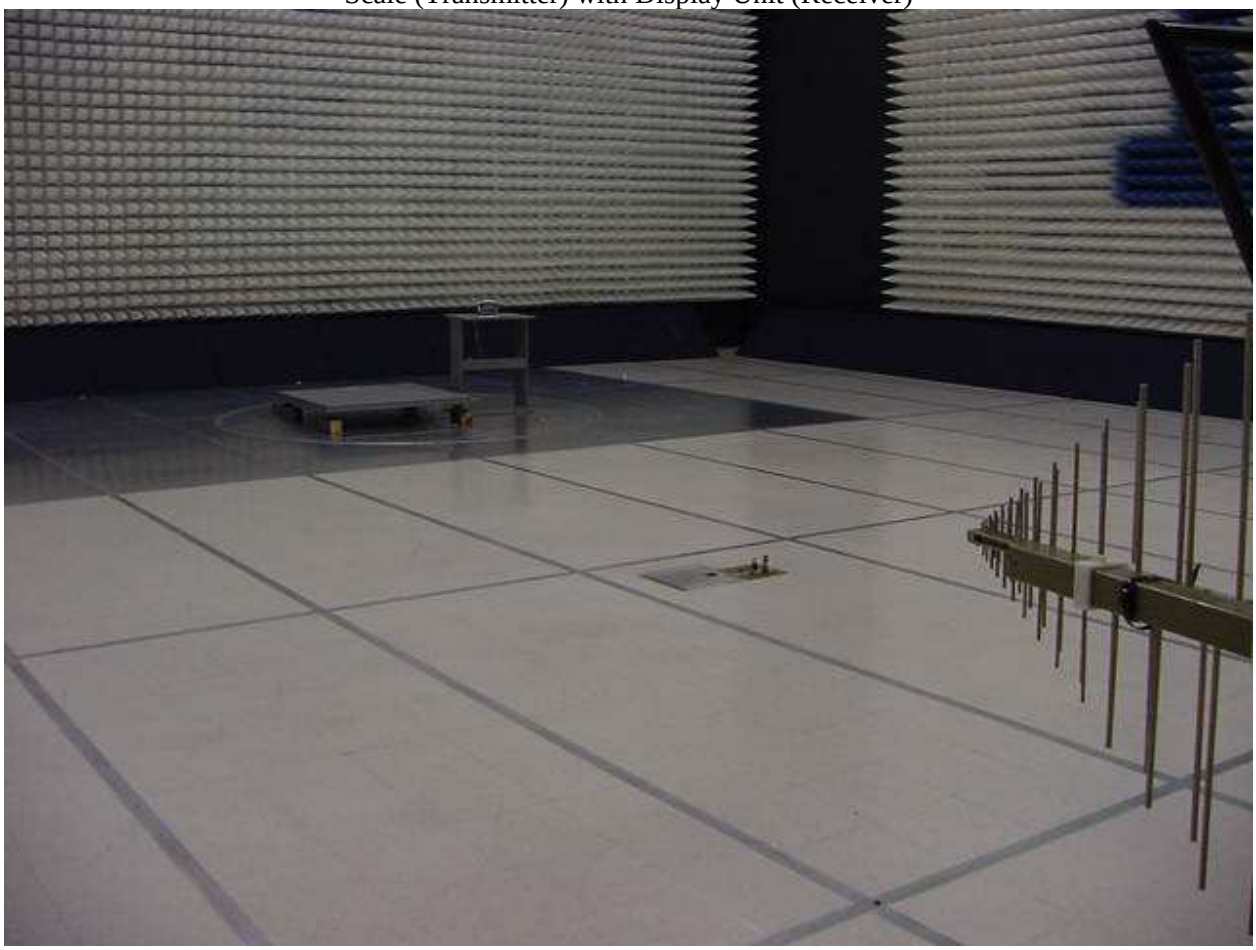


2.3 Test Configuration Photographs- Continued

Scale (Transmitter)

2.3 Test Configuration Photographs- Continued

Scale (Transmitter) with Display Unit (Receiver)



2.4 Test Results

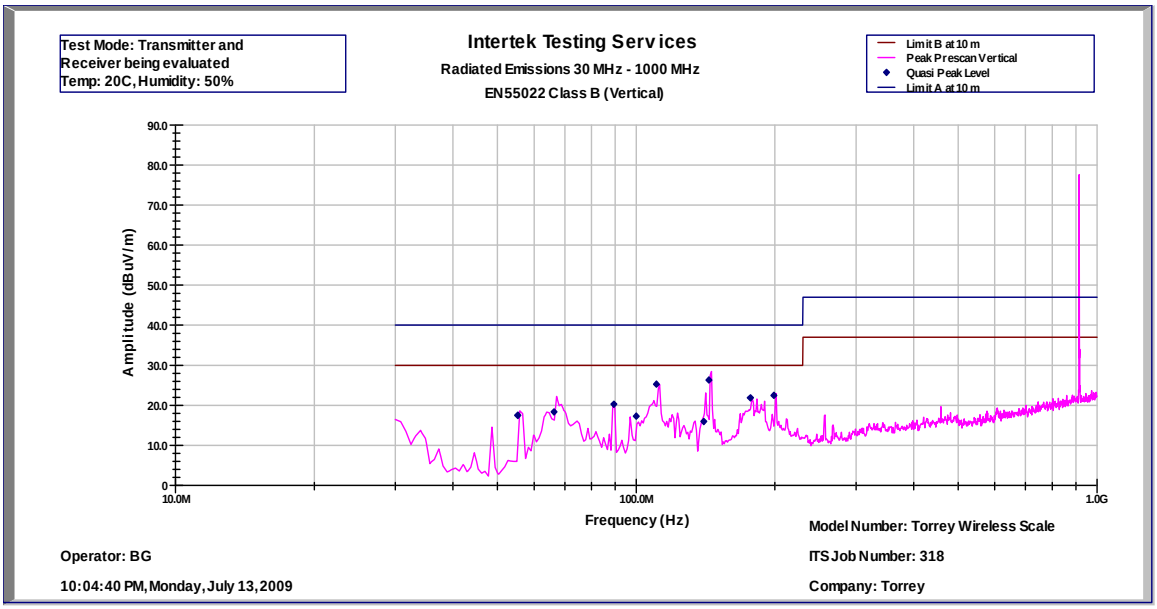
Fundamental Frequency and Harmonics

Frequency	Av Level	Pk Level	Av Limit	Pk Limit	Av Margin	Pk Margin	Ant. Pol.
MHz	dB(uV/m)	dB(uV/m)	dB(uV/m)	dB(uV/m)	dB	dB	
915.0	-	80.2	-	94.0	-	-13.8	H
1830.0	51.0	52.3	54.0	74.0	-3.0	-21.7	H
2745.0	49.3	51.4	54.0	74.0	-4.7	-22.6	H
3660.0	52.8	55.7	54.0	74.0	-1.2	-18.3	H
4575.0	48.4	52.8	54.0	74.0	-5.6	-21.2	H
5490.0	50.4	55.3	54.0	74.0	-3.6	-18.7	H
6405.0	50.0	54.6	54.0	74.0	-4.0	-19.4	H
7320.0	47.3	51.9	54.0	74.0	-6.7	-22.1	V
8235.0	48.0	53.4	54.0	74.0	-6.0	-20.6	V
9150.0	48.6	53.4	54.0	74.0	-5.4	-20.6	V

Result	**Complies** by: 1.2 dB

2.4 Test Results- Continued

Spurious Radiation below 1 GHz



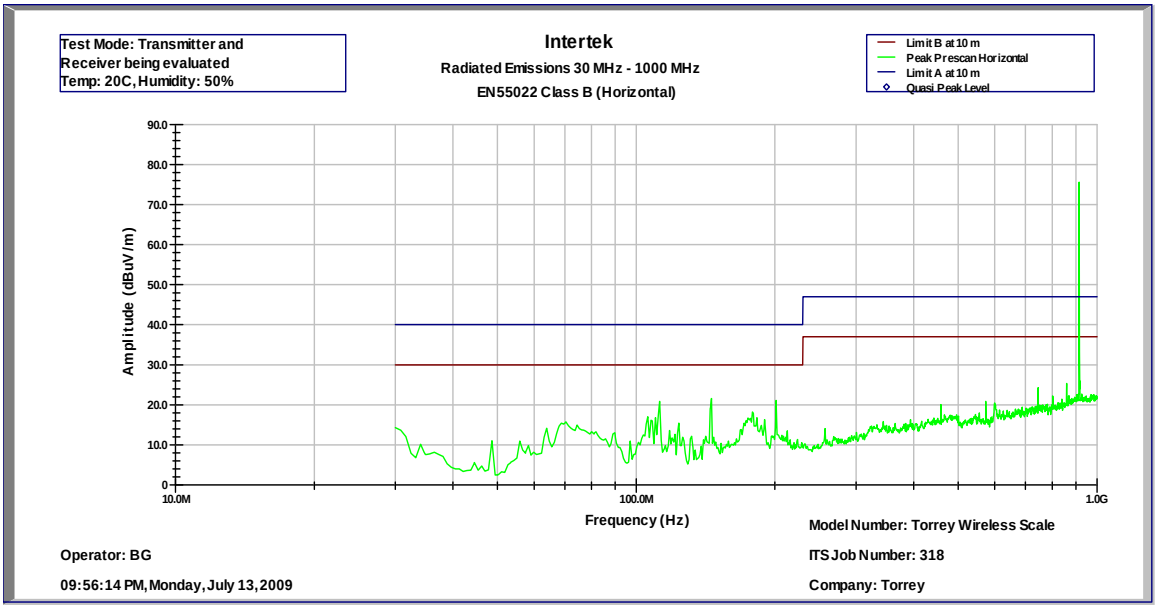
Intertek
Radiated Emissions 30 MHz - 1000 MHz
EN55022 Class B (QP-Vertical)
Operator: BG Model Number: Torrey Wireless Scale

July 13, 2009 Company: Basculas Torrey

Frequency	Quasi Pk FS	Limit@10m	Margin	RA	AG	AF	CF
Hz	dB(uV/m)	dB(uV/m)	dB	dB(uV)	dB	dB(1/m)	dB
5.53E+07	17.5	30.0	-12.5	45.0	32.0	3.7	0.8
6.64E+07	18.3	30.0	-11.7	44.9	32.0	4.6	0.8
8.94E+07	20.3	30.0	-9.7	44.2	32.0	7.1	1.0
1.00E+08	17.3	30.0	-12.7	41.5	32.0	6.7	1.0
1.11E+08	25.3	30.0	-4.7	49.6	32.0	6.6	1.1
1.40E+08	16.0	30.0	-14.0	37.5	31.9	9.2	1.2
1.44E+08	26.3	30.0	-3.7	45.8	31.9	11.2	1.2
1.77E+08	21.9	30.0	-8.1	42.4	31.9	10.0	1.4
1.99E+08	22.4	30.0	-7.6	41.7	31.9	11.2	1.5

Test Mode: Transmitter ON and Receiver ON
Temp: 20C, Humidity: 50%

2.4 Test Results- Continued



Intertek
Radiated Emissions 30 MHz - 1000 MHz
EN55022 Class B (QP-Horizontal)
Operator: BG

Model Number: Torrey Wireless Scale

July 13, 2009

Company: BasculasTorrey

Frequency	Quasi Pk FS	Limit@10m	Margin	RA	AG	AF	CF
Hz	dB(uV/m)	dB(uV/m)	dB	dB(uV)	dB	dB(1/m)	dB
The highest amplitude signals were measured with the search antenna vertically polarized.							

Test Mode: Transmitter ON and Receiver ON
Temp: 20C, Humidity: 50%

Result	**Complies** by: 3.7 dB

3.0 Transmitter AC Line Conducted Emissions

FCC 15.107(b)

3.1 Requirement

The following conducted emission limits apply to intentional radiators:

Conducted Emissions Limits, Section 15.207(b)

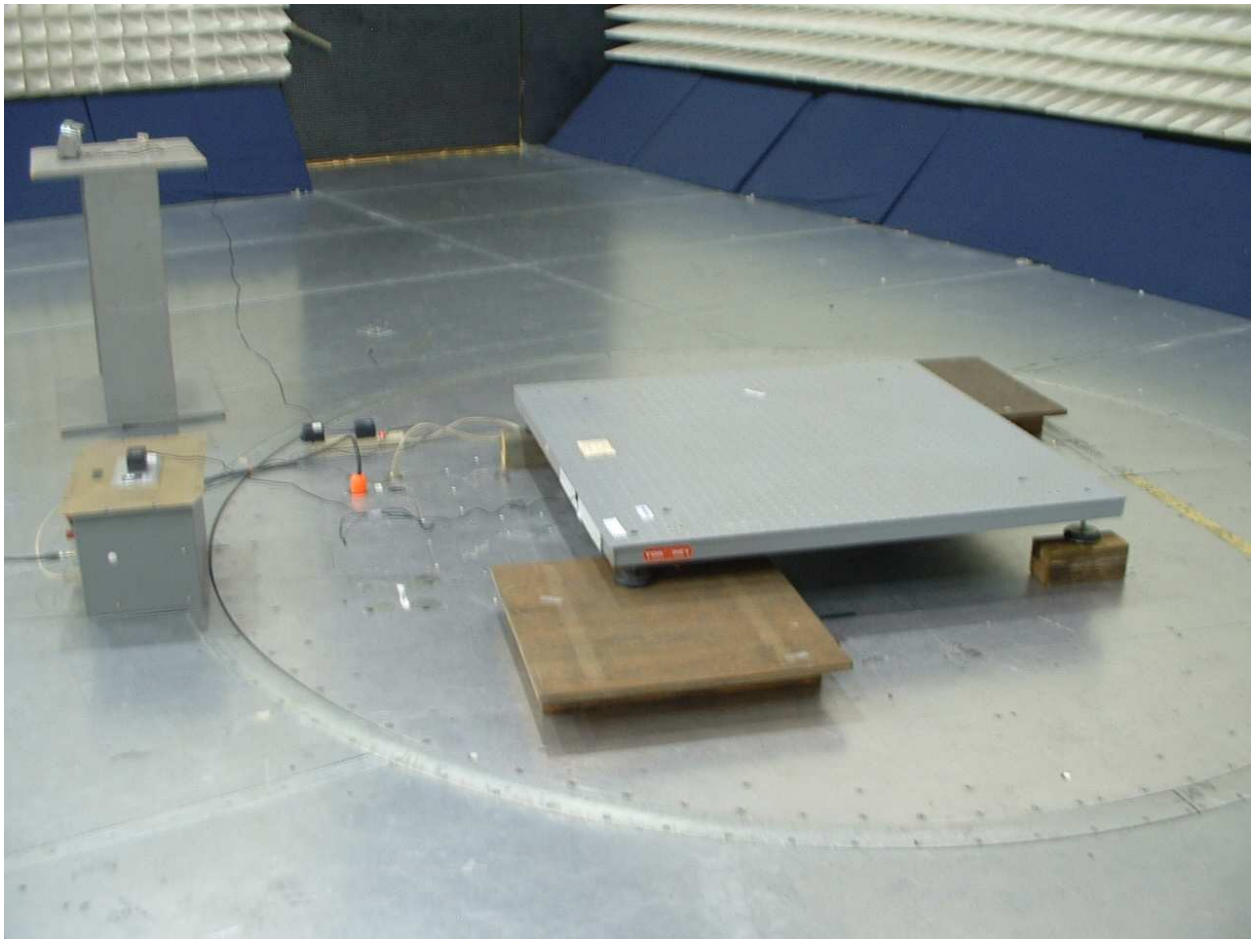
Frequency Band MHz	Class B Limit dB (µV)	
	Quasi-Peak	**Average**
0.15-0.50	66 to 56 Decreases linearly with the logarithm of the frequency	56 to 46 Decreases linearly with the logarithm of the frequency
0.50-5.00	56	46
5.00-30.00	60	50

Note: At the transition frequency the lower limit applies.

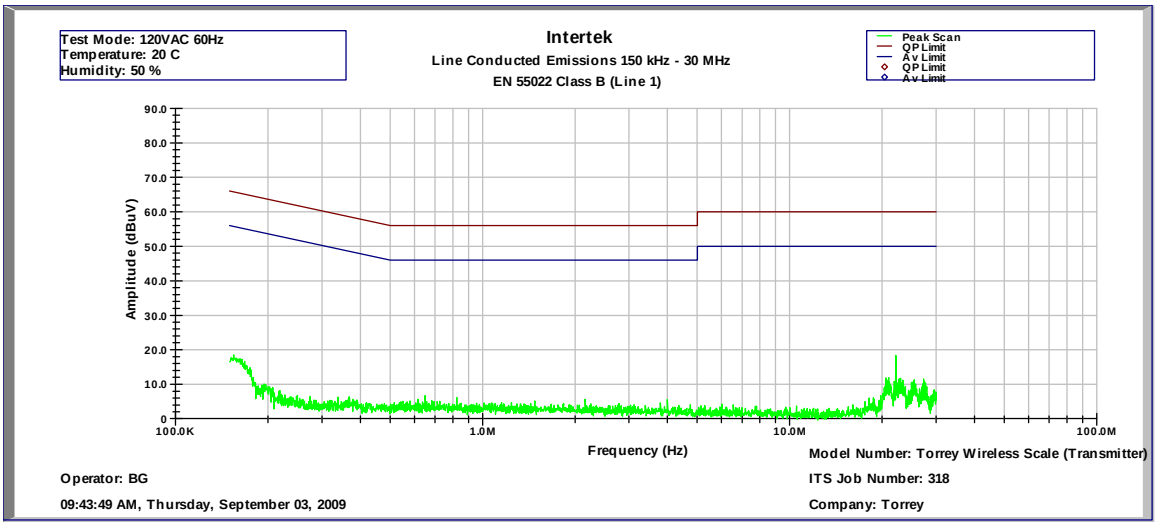
3.2 Test Procedure

AC line conducted emission test was performed according the ANSI C63.4 standard. The EUT was connected to the AC Line through the LISN's.

3.3 Test Configuration Photographs



3.4 Test Results



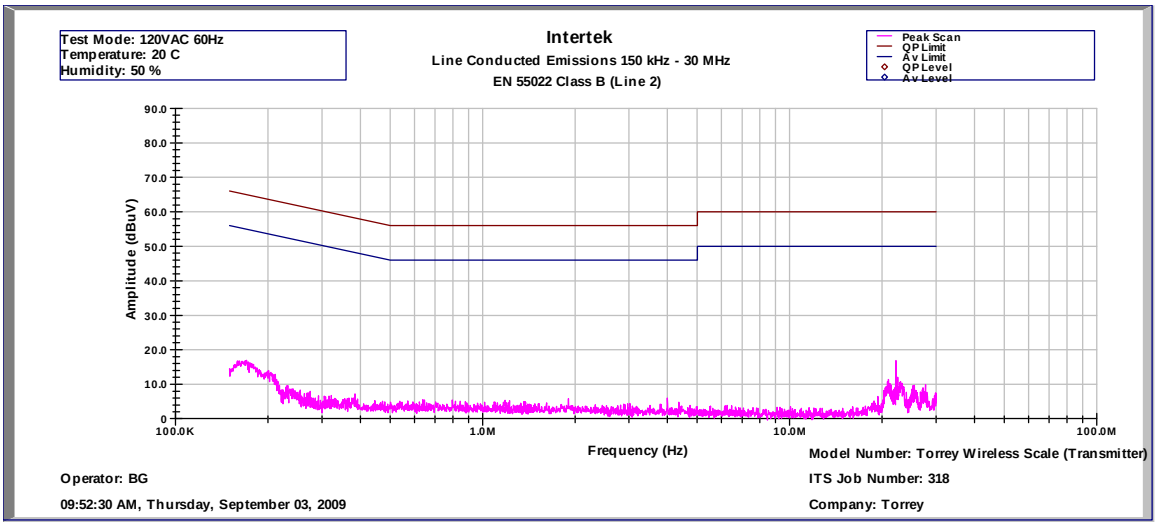
Intertek
Line Conducted Emissions 150 kHz - 30 MHz
EN 55022 Class B (Line 1)
Operator: BG Model Number: Torrey Wireless Scale (Transmitter)

3-Sep-09 Company: Torrey

Frequency	Pk Level	Av Limit	QP Limit	Pk Margin
Hz	dB(uV)	dB(uV)	dB(uV)	dB
154762	18.5	55.9	65.9	-37.4
2.10E+07	11.9	50.0	60.0	-38.1
2.22E+07	18.3	50.0	60.0	-31.7
2.54E+07	11.2	50.0	60.0	-38.8
2.73E+07	11.4	50.0	60.0	-38.6
2.96E+07	8.4	50.0	60.0	-41.6

Test Mode: 120VAC 60Hz
Temperature: 20 C
Humidity: 50 %

3.4 Test Results- Continued



Intertek
Line Conducted Emissions 150 kHz - 30 MHz
EN 55022 Class B (Line 2)
Operator: BG Model Number: Torrey Wireless Scale (Transmitter)

3-Sep-09 Company: Torrey

Frequency	Pk Level	Av Limit	QP Limit	Pk Margin
Hz	dB(uV)	dB(uV)	dB(uV)	dB
170347	16.9	55.4	65.4	-38.5
2.10E+07	11.4	50.0	60.0	-38.6
2.22E+07	16.9	50.0	60.0	-33.1
2.25E+07	12.0	50.0	60.0	-38.0
2.55E+07	9.7	50.0	60.0	-40.3
2.77E+07	9.8	50.0	60.0	-40.2

Test Mode: 120VAC 60Hz
Temperature: 20 C
Humidity: 50 %

Result	**Complies** by: 31.7 dB

4.0 Receiver Radiated Emissions

FCC 15.109

4.1 Requirement

The following radiated emission limits apply to Class A and Class B unintentional radiators:

Radiated Emissions Limits, Section 15.109(b)

Frequency **(MHz)**	**Class B at 3m (µV/m)**	**Class B at 3m (dBµV/m)**
30-88	100	40
88-216	150	43.5
216-960	210	46.4
Above 960	500	54

Note: Three sets of units are commonly used for EMI measurement, decibels below one milliwatt (-dBm), decibels above a microvolt (dBµV), and microvolts (µV). To convert between them, use the following formulas: 20 LOG$_{10}$ (µV) = dBµV, dBm = dBµV-107.

Note: Alternatively FCC Section 15.109 states the EUT is compliant if it meets the radiated emission requirements of CISPR 22.

Radiated Emissions Limits, CISPR 22

Frequency **(MHz)**	**Class A at 10m (dBµV/m)**	**Class B at 10m (dBµV/m)**
30-230	40	30
230-1000	47	37

Note: The more stringent limit applies at the transition frequency.

4.2 Test Procedure

For radiated emission measurements, EUT is placed on a non-conductive support structure. The signal is maximized through rotation and placement in the three orthogonal axes.

During the test the EUT is rotated and the antenna height and polarization are varied during the search for maximum signal level. The antenna height is varied from 1 to 4 meters.

Radiated emissions are taken at three meters unless the signal level is too low for measurement at that distance. If necessary, a pre-amplifier is used and/or the test is conducted at a closer distance. All readings are extrapolated back to the equivalent three-meter reading using inverse scaling with distance.

Radiated emission measurements were performed from 30 MHz to 1000 MHz.
Analyzer resolution is:

100 kHz or greater for frequencies below 1 MHz.
1 MHz for frequencies above 1000 MHz.

Data is included of the 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.

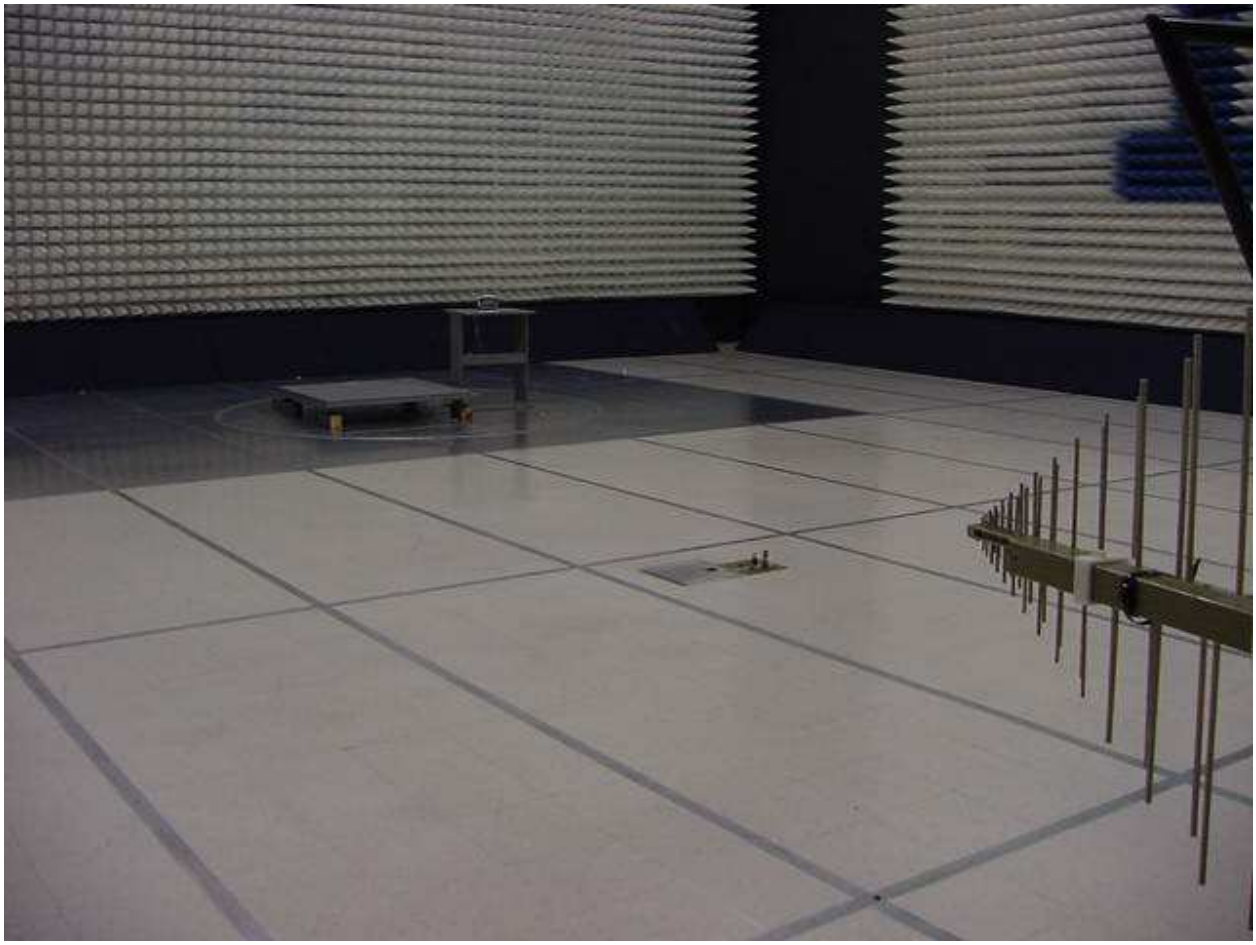
Field Strength Calculation

The field strength is calculated by adding the Antenna Factor and Cable Factor, and subtracting the Amplifier Gain (if any) from the measured reading. The basic equation is as follows:

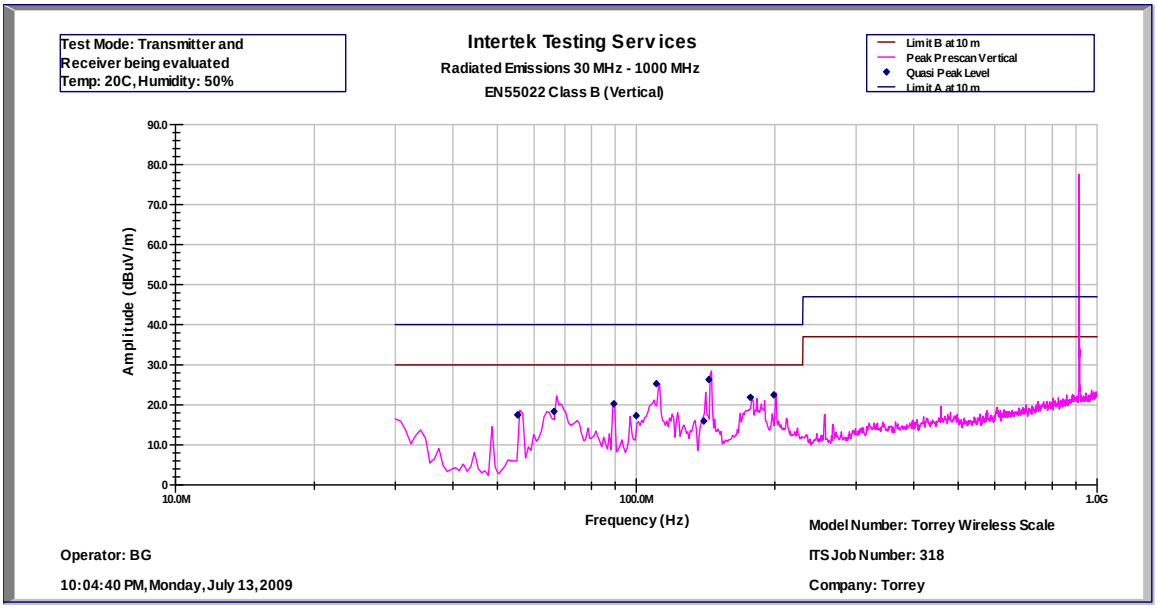
FS = RA + AF + CF - AG

Where FS = Field Strength in dB (μV/m)
RA = Receiver Amplitude (including preamplifier) in dB (μV)
CF = Cable Attenuation Factor in dB
AF = Antenna Factor in dB(1/m)
AG = Amplifier Gain in dB

4.3 Test Configuration Photographs



4.4 Test Results



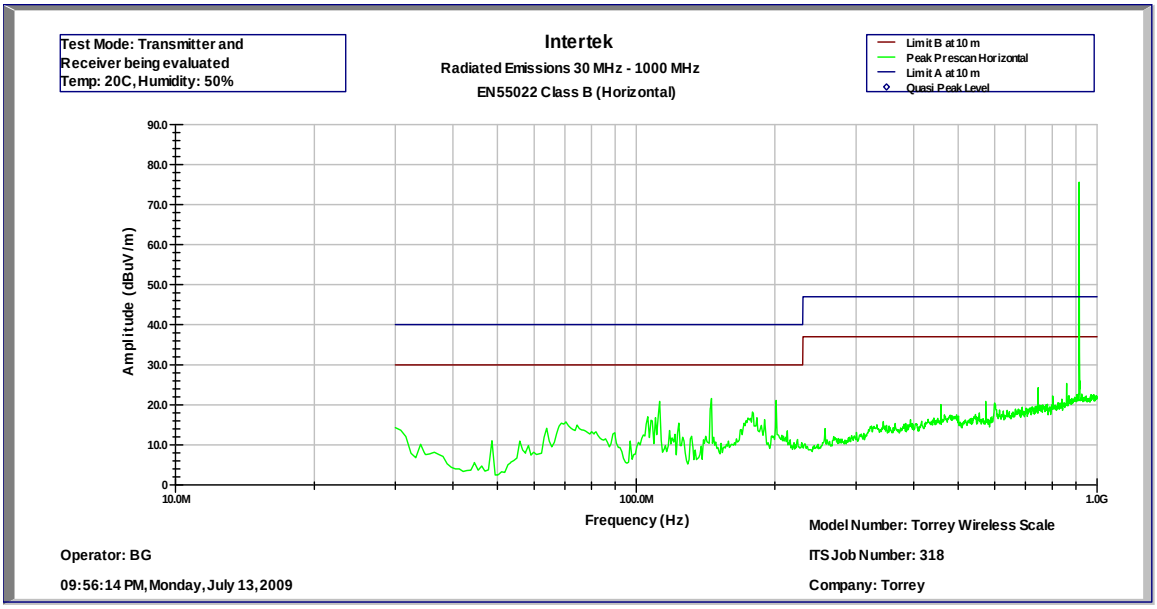
Intertek
Radiated Emissions 30 MHz - 1000 MHz
EN55022 Class B (QP-Vertical)
Operator: BG — Model Number: Torrey Wireless Scale

July 13, 2009 — Company: Torrey

Frequency	Quasi Pk FS	Limit@10m	Margin	RA	AG	AF	CF
Hz	dB(uV/m)	dB(uV/m)	dB	dB(uV)	dB	dB(1/m)	dB
5.53E+07	17.5	30.0	-12.5	45.0	32.0	3.7	0.8
6.64E+07	18.3	30.0	-11.7	44.9	32.0	4.6	0.8
8.94E+07	20.3	30.0	-9.7	44.2	32.0	7.1	1.0
1.00E+08	17.3	30.0	-12.7	41.5	32.0	6.7	1.0
1.11E+08	25.3	30.0	-4.7	49.6	32.0	6.6	1.1
1.40E+08	16.0	30.0	-14.0	37.5	31.9	9.2	1.2
1.44E+08	26.3	30.0	-3.7	45.8	31.9	11.2	1.2
1.77E+08	21.9	30.0	-8.1	42.4	31.9	10.0	1.4
1.99E+08	22.4	30.0	-7.6	41.7	31.9	11.2	1.5

Test Mode: Transmitter and Receiver being evaluated
Temp: 20C, Humidity: 50%

4.4 Test Results- Continued



Intertek
Radiated Emissions 30 MHz - 1000 MHz
EN55022 Class B (QP-Horizontal)
Operator: BG — Model Number: Torrey Wireless Scale

July 13, 2009 — Company: Torrey

Frequency	Quasi Pk FS	Limit@10m	Margin	RA	AG	AF	CF
Hz	dB(uV/m)	dB(uV/m)	dB	dB(uV)	dB	dB(1/m)	dB
The highest amplitude signals were measured with the search antenna vertically polarized.							

Test Mode: Transmitter and Receiver being evaluated
Temp: 20C, Humidity: 50%

Result	**Complies** by: 3.7 dB

5.0 Receiver AC Line Conducted Emissions

FCC 15.107

5.1 Requirement

The following conducted emission limits apply to Class A and Class B unintentional radiators:

Conducted Emissions Limits, Section 15.107(b)

Frequency Band MHz	Class A Limit dB (µV)		Class B Limit dB (µV)	
	Quasi-Peak	Average	Quasi-Peak	Average
0.15-0.50	79	66	66 to 56 Decreases linearly with the logarithm of the frequency	56 to 46 Decreases linearly with the logarithm of the frequency
0.50-5.00	73	60	56	46
5.00-30.00	73	60	60	50

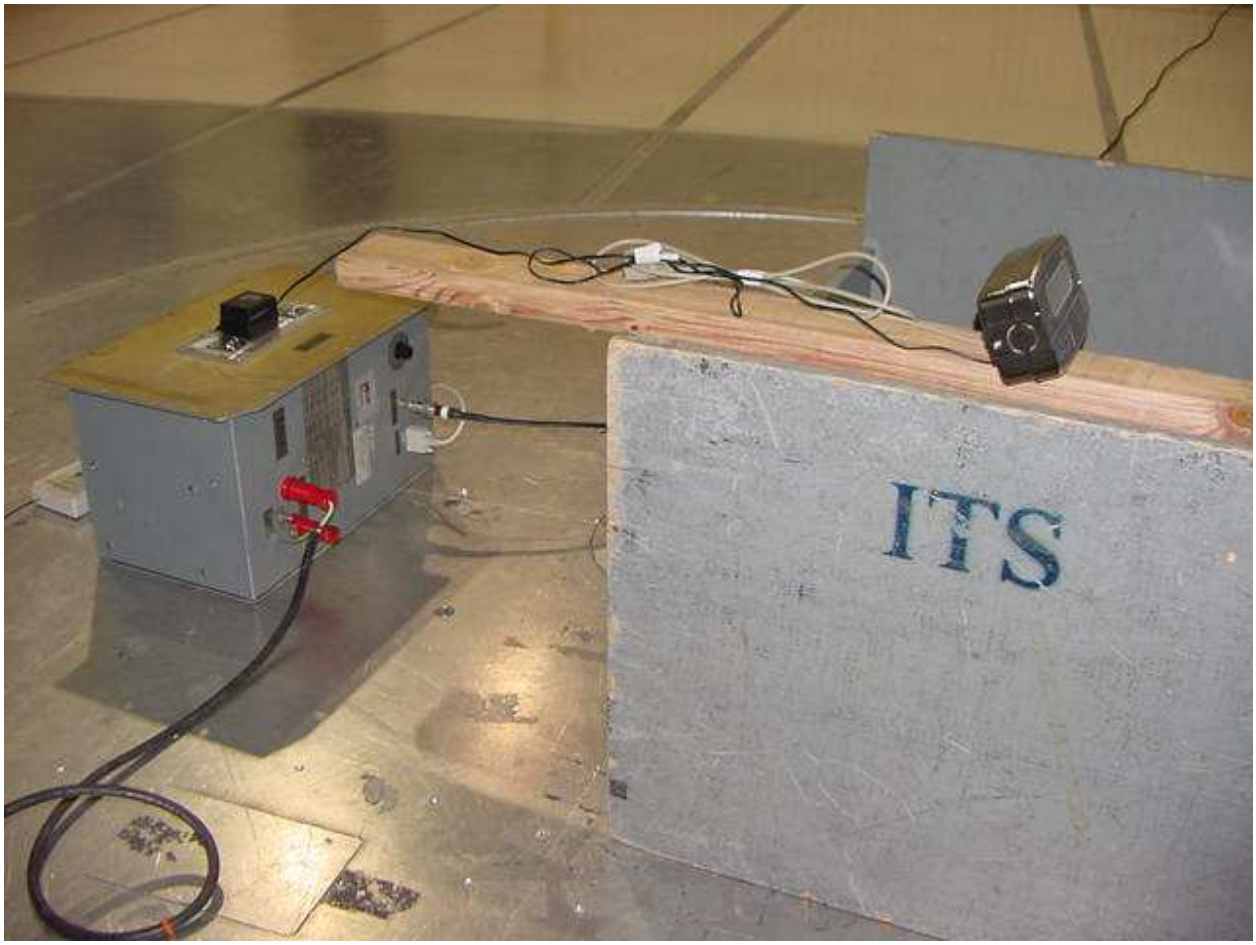
Note: At the transition frequency the lower limit applies.

5.2 Test Procedure

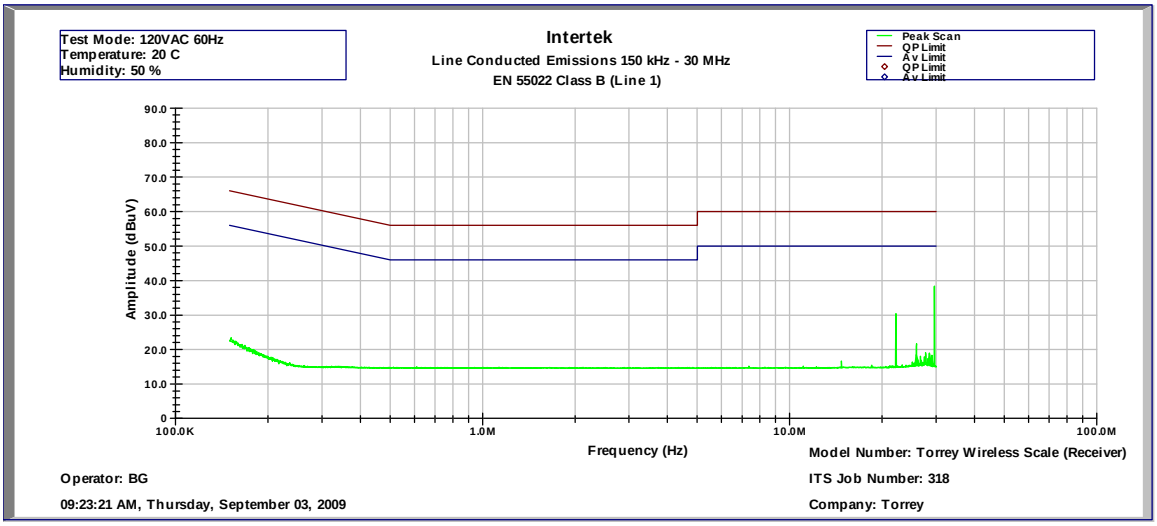
AC line conducted emission test was performed according the ANSI C63.4 standard. The EUT was connected to AC Line through the LISN's.

5.3 Configuration Photographs

AC Line Conducted Emission Test Setup



5.4 Test Results



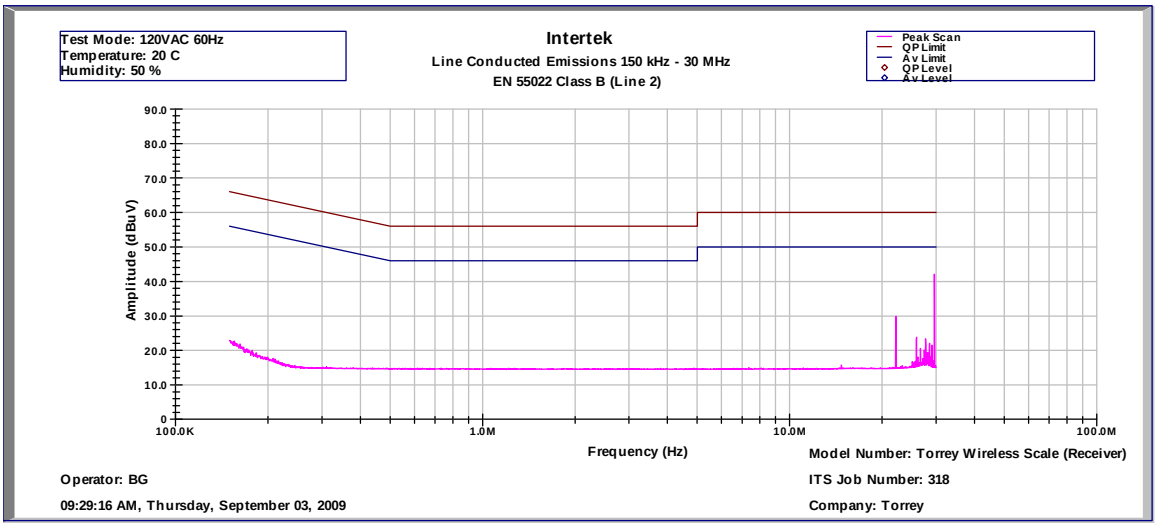
Intertek
Line Conducted Emissions 150 kHz - 30 MHz
EN 55022 Class B (Line 1)
Operator: BG Model Number: Torrey Wireless Scale (Receiver)

3-Sep-09 Company: Torrey

Frequency	Pk Level	Av Limit	QP Limit	Pk Margin
Hz	dB(uV)	dB(uV)	dB(uV)	dB
151732	23.4	56.0	66.0	-32.5
2.22E+07	30.4	50.0	60.0	-19.6
2.59E+07	21.7	50.0	60.0	-28.3
2.96E+07	38.3	50.0	60.0	-11.7

Note: all other emissions were more than 10dB below the specified limit.
Test Mode: 120VAC 60Hz
Temperature: 20 C
Humidity: 50 %

5.4 Test Results- Continued



Intertek
Line Conducted Emissions 150 kHz - 30 MHz
EN 55022 Class B (Line 2)
Operator: BG Model Number: Torrey Wireless Scale (Receiver)

3-Sep-09 Company: Torrey

Frequency	Pk Level	Av Limit	QP Limit	Pk Margin
Hz	dB(uV)	dB(uV)	dB(uV)	dB
150433	22.9	56.0	66.0	-33.1
2.22E+07	29.8	50.0	60.0	-20.2
2.59E+07	23.8	50.0	60.0	-26.2
2.77E+07	23.3	50.0	60.0	-26.7
2.85E+07	22.1	50.0	60.0	-27.9
2.90E+07	21.5	50.0	60.0	-28.5
2.96E+07	42.1	50.0	60.0	-7.9

Note: all other emissions were more than 10dB below the specified limit.
Test Mode: 120VAC 60Hz
Temperature: 20 C
Humidity: 50 %

Result	**Complies by 7.9 dB**

6.0 List of Test Equipment

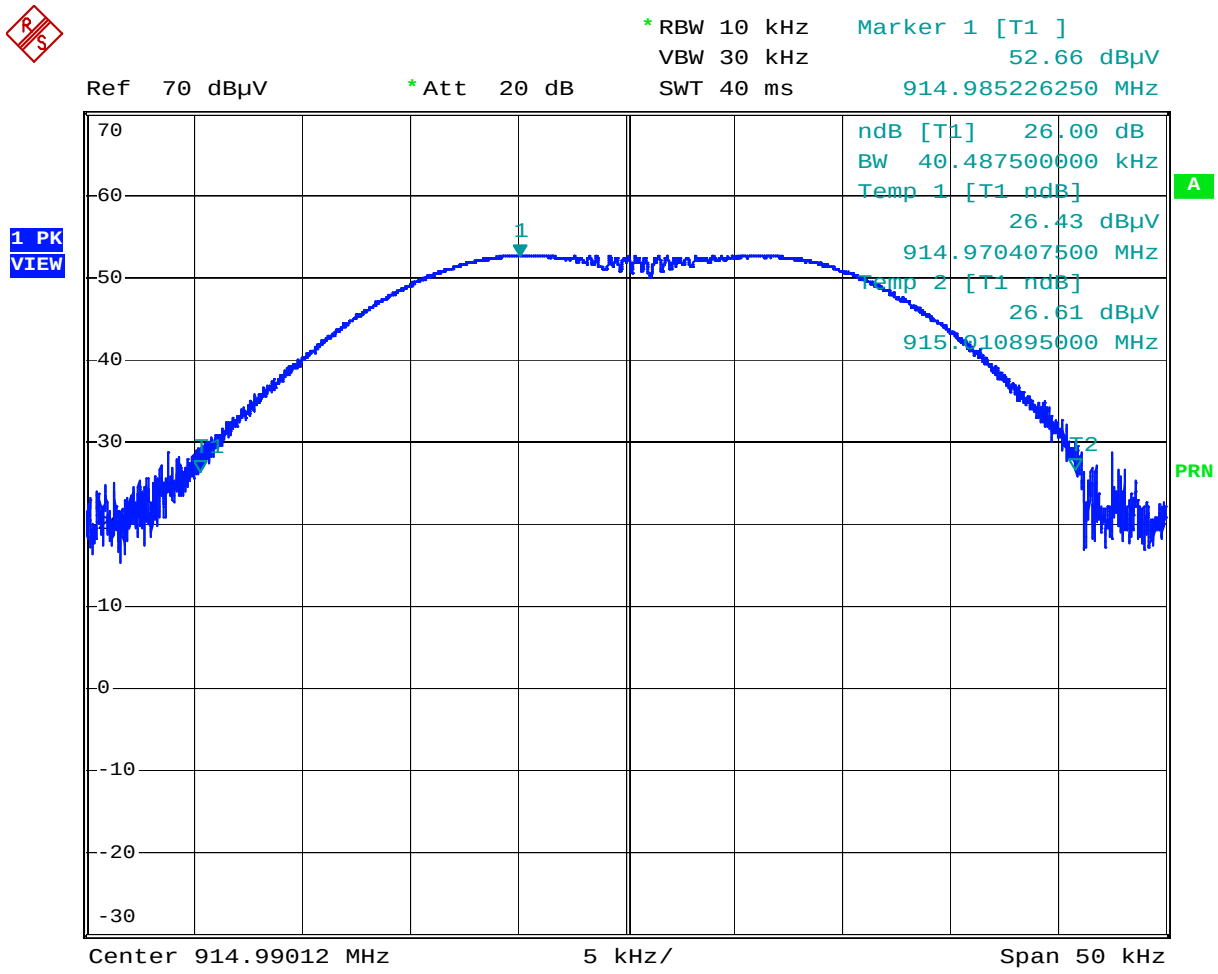
Measurement equipment used for compliance testing utilized the equipment on the following list:

Equipment	Manufacturer	Model/Type	Serial #	Cal Int	Cal Due
RF Filter Section	Hewlett Packard	85460A	3448A00267	12	7/01/10
EMI Receiver	Hewlett Packard	8546A	3710A00373	12	7/01/10
Spectrum Analyzer	Rohde & Schwarz	FSU	200482	12	2/27/10
BI-Log Antenna	EMCO	3143	9509	12	11/07/09
Pre-Amplifier	Sonoma	310N	185634	12	11/10/09
Pre-Amplifier	Miteq	AMF-4D-001180-24-10P	799159	12	7/29/10
LISN	FCC	FCC-LISN-50-50-M-H	2011	12	9/19/09
Horn Antenna	EMCO	3115	9509-3712	12	10/22/09

7.0 Document History

Revision/ Job Number	Writer Initials	Date	Change
1.0 / 3186405	BG	September 4, 2009	Original document

Appendix A – Occupied Bandwidth



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