FCCID: UIX 0701A

Emissions Test Report

EUT Name: TransDock

EUT Model: TransDock

FCC Title 47, Part 15.239, Subpart C

Prepared for:

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Report/Issue Date: 2 February 2007
Report Number: 30760114.001

Statement of Compliance

Manufacturer:	Digital Lifestyle Outfitters 3871 S. Aliston Durham, NC 27713 843 577-7067
Requester / Applicant:	Garey De Angelis
Name of Equipment:	TransDock
Model No.	TransDock
Type of Equipment:	Information Technology Equipment (ITE)
Class of Equipment:	Intentional Radiator
Application of Regulations:	FCC Title 47, Part 15.239, Subpart C
Test Dates:	15 January 2007 to 18 January 2007

Guidance Documents:

Emissions: FCC 47 CFR Part 15

Test Methods:

Emissions: FCC 47CFR Part 15.239 and ANSI C63.4:2005

The electromagnetic compatibility test and documented data described in this report has been performed and recorded by TUV Rheinland, in accordance with the standards and procedures listed herein. As the responsible authorized agent of the EMC laboratory, I hereby declare that a sample of one, of the equipment described above, has been shown to be compliant with the EMC requirements of the stated regulations and standards based on these results. If any special accessories and/or modifications were required for compliance, they are listed in the Executive Summary of this report.

This report must not be used to claim product endorsement by NVLAP or any agency of the U.S. Government. This report contains data that are not covered by NVLAP accreditation. This report shall not be reproduced except in full, without the written authorization of the laboratory.

Test Engineer	Date
Randall E. Masline	2 February 2007

NVLAP® 200094-0

FCC 90552 and 100881

Industry Canada IC3755

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1 Executive Summary

1.1 Scope

This report is intended to document the status of conformance with the requirements of the FCC Title 47, Part 15.239, Subpart C based on the results of testing performed on *15 January* 2007 through *18 January* 2007 on the *TransDock* Model No. *TransDock* manufactured by Digital Lifestyle Outfitters. This report only applies to the specific samples tested under the stated test conditions. It is the responsibility of the manufacturer to assure that additional production units of this model are manufactured with identical or EMI equivalent electrical and mechanical components. This report is further intended to document changes and modifications to the EUT throughout its life cycle. All documentation will be included as a supplement.

1.2 Purpose

Testing was performed to evaluate the EMC performance of the EUT in accordance with the applicable requirements, procedures, and criteria defined in the application of regulations and application of standards listed in this report.

1.3 Summary of Test Results

Table 1 - Summary of Test Results

Emission	Test Method(s)	Test Parameters	Measured	Result
Radiated Emissions	47 CFR Part 15.239, ANSI C63.4:2005	Fundamental ≤ 250 µV/m Spurious Emissions per 15.209	45.29dBµV @ 98.1 MHz	**compliant**
Bandwidth	47 CFR Part 15, ANSI C63.4:2005	≤ 200 kHz	172.5 kHz	**compliant**
Temperature Frequency Stability	FCC Part 2.1055(a) (1)	-30º C to +50º C	-20º C 88.1040	**compliant**
Voltage Variation Stability	FCC Part 2.1055 (4) (d) (1)	Vary from 85 to 115 percent of nominal		**compliant**

1.4 Equipment Modifications

The Internal antenna was re-routed as shown in the accompanied Internal Photos Document, from its original design.

2 Laboratory Information

2.1 Accreditations & Endorsements

2.1.1 US Federal Communications Commission

TUV Rheinland at the 762 Park Ave., Youngsville, N.C 27596 address is accredited by the commission for performing testing services for the general public on a fee basis. This laboratory test facilities have been fully described in reports submitted to and accepted by the FCC (Registration No 90552 and 100881). The laboratory scope of accreditation includes: Title 47 CFR Part 15, 18, and 90. The accreditation is updated every 3 years.

2.1.2 NIST / NVLAP

TUV Rheinland is accredited by the National Voluntary Laboratory Accreditation Program, which is administered under the auspices of the National Institute of Standards and Technology. The laboratory has been assessed and accredited in accordance with ISO Standard 17025:2005 (Lab code 200094-0). The scope of laboratory accreditation includes emission and immunity testing. The accreditation is updated annually.

2.1.3 Canada – Industry Canada

Registration No. IC3755

2.1.4 Japan - VCCI

The Voluntary Control Council for Interference by Information Technology Equipment (VCCI) is a group that consists of Information Technology Equipment (ITE) manufacturers and EMC test laboratories. The purpose of the Council is to take voluntary control measures against electromagnetic interference from Information Technology Equipment, and thereby contribute to the development of a socially beneficial and responsible state of affairs in the realm of Information Technology Equipment in Japan. TUV Rheinland at the 762 Park Ave. Youngsville, N.C 27596 address has been assessed and approved in accordance with the Regulations for Voluntary Control Measures. (Registration No. R-1174, R-1679, C-1790 and C-1791).

2.1.5 Acceptance By Mutual Recognition Arrangement

The United States has an established agreement with specific countries under the Asia Pacific Laboratory Accreditation Corporation (APLAC) Mutual Recognition Arrangement. Under this agreement, all TUV Rheinland at the 762 Park Ave. Youngsville, N.C 27596 address test results and test reports within the scope of the laboratory NIST / NVLAP accreditation will be accepted by each member country.

2.2 Test Facilities

All of the test facilities are located at 762 Park Ave., Youngsville, North Carolina 27596, USA.

2.2.1 Emission Test Facility

The Open Area Test Site and AC Line Conducted measurement facility used to collect the radiated and conducted data has been constructed in accordance with ANSI C63.7:1992. The site has been measured in accordance with and verified to comply with the theoretical normalized site attenuation requirements of ANSI C63.4:2003, at a test distance of 3 and 10 meters. This site has been described in reports dated May 12, 1997, submitted to the FCC, and accepted by letter dated June 25, 1997 (31040/SIT 1300F2). The site is listed with the FCC and accredited by NVLAP (code 200094-0). The 5m semi-anechoic chamber used to collect the radiated data has been verified to comply with the theoretical normalized site attenuation requirements of ANSI C63.4:2003, at a test distance of 3 meters. A report detailing this site can be obtained from TUV Rheinland.

2.2.2 Immunity Test Facility

ESD, EFT, Surge, PQF: These tests are performed in an environmentally controlled room with a 3.7m x 3.7m x 3.175mm thick aluminum floor connected to PE ground. For ESD testing, tabletop equipment is placed on a 0.5mm thick insulated mat on a 1.6m x 0.8m x 0.8m high non-conductive table with a 3.175mm aluminum top (Horizontal Coupling Plane). The HCP is connected to the main ground plane via a low impedance ground strap through two 470 kΩ resistors. The Vertical Coupling Plane consists of an aluminum plate 50cm x 50cm x 3.175mm thick. The VCP is connected to the main ground plane via a low impedance ground strap through two 470 kΩ resistors. For each of the other tests, the HCP is removed.

RF Field Immunity testing is performed in a 7.3m x 3.7m x 3.2m anechoic chamber.

RF Conducted and Magnetic Field Immunity testing is performed on a 4.9m x 3.7m x 3.175mm thick aluminum ground plane which is connected to one end of the anechoic chamber.

All test areas allow a minimum distance of 1 meter from the EUT to walls or conducting objects.

2.3 Measurement Uncertainty

Two types of measurement uncertainty are expressed in this report, per *ISO Guide To The Expression Of Uncertainty In Measurement*, 1st addition, 1995.

The Combined Standard Uncertainty is the standard uncertainty of the result of a measurement when that result is obtained from the values of a number of other quantities, equal to the positive square root of a sum of terms, the terms being the variances or co-variances of these other quantities weighted according to how the measurement result varies with changes in these quantities. The term standard uncertainty is the result of a measurement expressed as a standard deviation.

The Expanded Uncertainty defines an interval about the result of a measurement that may be expected to encompass a large fraction of the distribution of values that could reasonably be attributed to the measurand. The fraction may be viewed as the coverage probability or level of confidence of the interval.

The test system for conducted emissions is defined as the LISN, spectrum analyzer, coaxial cables, and pads. The test system for radiated emissions is defined as the antenna, spectrum analyzer, pre-amplifier, coaxial cables, and pads. The test system for radiated immunity is defined as the antenna, amplifier, cables, signal generator field probe and spectrum analyzer. The test system for conducted immunity is defined as the coupling/decoupling device, amplifier, cables, signal generator and spectrum analyzer. The test system for voltage variations and interruptions immunity is defined as the AC power source and the interruptions generator. The test system for electrical fast transient immunity is defined as the AC power output source and the fast transient generator. The test system for lightning surge immunity is defined as the AC power output source and the lightning surge generator. The test system for electrostatic discharge immunity is defined as the air and contact discharge generators. The test system for power frequency magnetic field immunity is defined as the AC voltage source. The test system for the damped oscillatory wave immunity is defined as the AC power output source and the oscillatory wave generator. The test system for harmonic current and voltage flicker test is defined as the AC power source and the detection devices. The conducted emissions test system has a combined standard uncertainty of ± 1.2 dB. The radiated emissions test system has a combined standard uncertainty of ± 1.6 dB. The radiated immunity test system has a combined standard uncertainty of ± 2.7 dB. The conducted immunity test system has a combined standard uncertainty of ± 1.5 dB. The voltage variations and interruptions immunity test system has a combined standard uncertainty of ± 4.3 dB. The electrical fast transients immunity test system has a combined standard uncertainty of ± 5.8 dB. The lightning surge immunity test system has a combined standard uncertainty of ± 8.0 dB. The electrostatic discharge immunity test system has a combined standard uncertainty of ± 4.1 dB. The power frequency magnetic field immunity test system has a combined standard uncertainty of ± 0.58 dB. The damped oscillatory wave immunity test system has a combined standard uncertainty of ± 8.7 dB. The harmonic current and voltage flicker test system has a combined standard uncertainty of ± 11.6 dB. The expanded uncertainty at a level of 95% confidence is obtained by multiplying the combined standard uncertainty by a coverage factor of 2. Compliance criteria are not based on measurement uncertainty.

2.4 Calibration Traceability

All measurement instrumentation is traceable to the National Institute of Standards and Technology (NIST). Measurement method complies with ANSI/NCSL Z540-1-1994 and ISO Standard 17025:2005.

3 Product Information

3.1 *Type of Antenna*

The product uses an internal whip antenna located inside the plastic case and permanently affixed to the circuit board. No access to the antenna connection or RF signal path is provided to the user and thus no alternative or auxiliary antenna may be used with the device. This device does not use the cars wiring as the transmitting antenna.

3.2 *Tunable Frequency Range*

The controls on the TransDock were manually adjusted to verify maximum tuning range from 88.1 MHz to 107.9 MHz.

3.3 *Accessories used in testing*

A nano ipod s/nYM53707UTJU and a 30GB Video ipod s/n 8LG43LQPV9K was used as the audio input device. All tests were performed with the audio output level at maximum volume.

Photo of EUT (Front)

Photo of EUT (Back)

4 Emissions

4.1 Radiated Emissions

Testing was performed in accordance with 47 CFR Part 15.239, ANSI C63.4:2005. These test methods are listed under the laboratory's NVLAP Scope of Accreditation. This test measures the levels emanating from the EUT, thus evaluating the potential for the EUT to cause radio frequency interference to other electronic devices.

Investigative measurements were taken at Three (3) orthogonal positions X, Y and Z as shown in the Test setup photos, and the "worst case" position was then used for final measurements.

4.1.1 Test Methodology

4.1.1.1 Final Test

Measurements were made on 3 transmit frequencies across the frequency band and on the spurious emissions generated by the transmitter. The transmitter was placed on a table 80 cm high, inside an anechoic chamber and the emissions were maximized by raising and lowering the antenna from 1 to 4 meters and rotating the turntable 360 degrees. The six highest spurious emissions relative to the limit were recorded.

Final testing was performed on an NSA compliant test site.

4.1.1.2 Deviations

There were no deviations from this test methodology.

4.1.2 Test Results

Section 4.1.2.1 lists the final measurement data under the worst case operating modes, configurations, and/or cable positions.

As originally tested, the EUT was found to be compliant to the requirements of the test standard(s).

4.1.2.1 Final Data

The data recorded in this section contains the final results under the worst-case conditions and with any modifications or special accessories implemented as the manufacturer intends.

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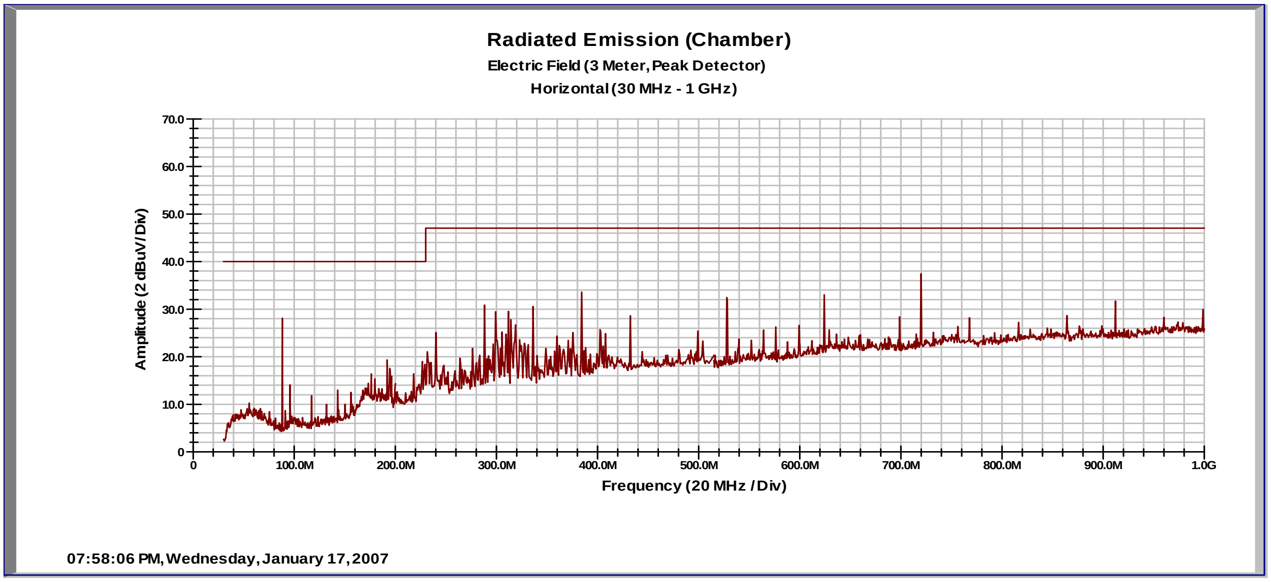
EUT Name	TransDock	**Date**	January 17, 2007
EUT Model	TransDock	**Temp / Hum in**	70 deg F / 25% rh
EUT Serial	none	**Temp / Hum out**	N/A
Standard	FCC 47 CFR Part 15	**Line AC / Freq.**	+13.8VDC
Deg/sweep	12 degrees	**RBW / VBW**	120kHz/300kHz
Dist/Ant Used	3 Meters/CBL-6140A s/n 1108	**Performed by**	Randy Masline
Configuration	Transmitting at 88.1 MHz		



Emission Freq (MHz)	ANT Polar (H/V)	ANT Pos (m)	Table Pos (deg)	FIM Value (dBuV)	Amp Gain (dB)	Cable Loss (dB)	ANT Factor (dB/m)	E-Field Value (dBuV/m)	Spec Limit (dBuV/m)	Spec Margin (dB)
288.00	H	1.0	270	13.08	0.00	1.88	13.02	27.98	47.00	-19.02
383.00	H	1.0	238	13.67	0.00	2.18	14.92	30.78	47.00	-16.22
719.00	H	1.0	327	11.34	0.00	3.04	20.88	35.26	47.00	-11.74

Spec Margin = E-Field Value - Limit, E-Field Value = FIM Value - Amp Gain + Cable Loss + ANT Factor ± Uncertainty

Combined Standard Uncertainty $u_c(y)$ = ± 1.6dB Expanded Uncertainty $U = ku_c(y)$ k = 2 for 95% confidence

Notes: This scan satisfies the unintentional radiator requirements under Part 15.209

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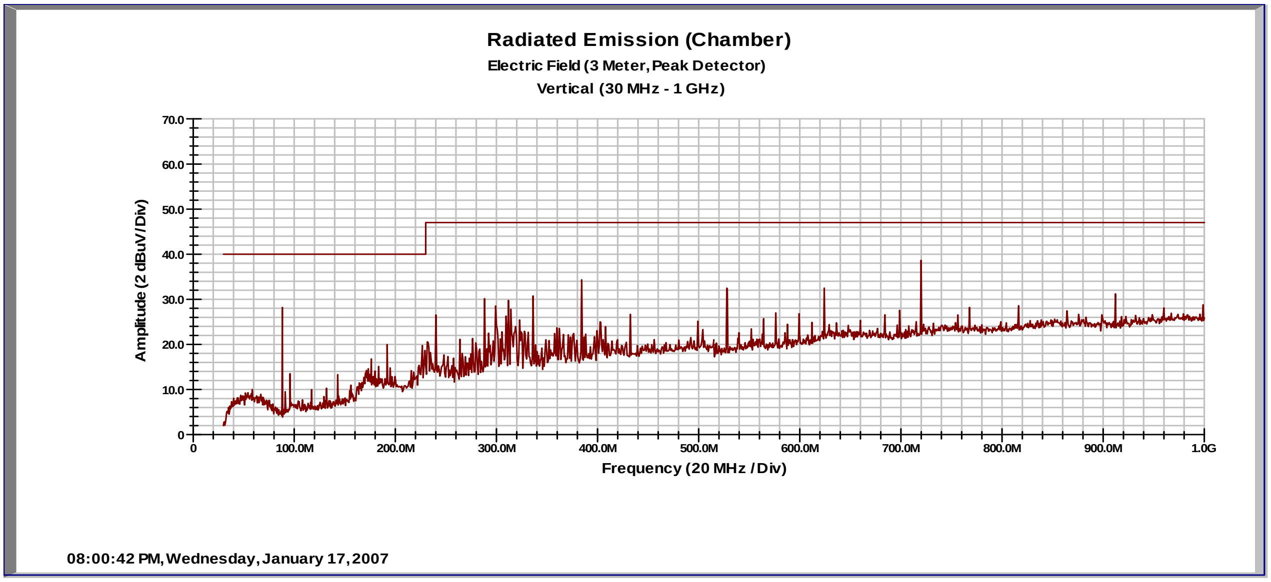
EUT Name	TransDock	**Date**	January 17, 2007
EUT Model	TransDock	**Temp / Hum in**	70 deg F / 25% rh
EUT Serial	none	**Temp / Hum out**	N/A
Standard	FCC 47 CFR Part 15	**Line AC / Freq.**	+13.8VDC
Deg/sweep	12 degrees	**RBW / VBW**	120kHz/300kHz
Dist/Ant Used	3 Meters/CBL-6140A s/n 1108	**Performed by**	Randy Masline
Configuration	Transmitting at 88.1 MHz		



Emission Freq (MHz)	ANT Polar (H/V)	ANT Pos (m)	Table Pos (deg)	FIM Value (dBuV)	Amp Gain (dB)	Cable Loss (dB)	ANT Factor (dB/m)	E-Field Value (dBuV/m)	Spec Limit (dBuV/m)	Spec Margin (dB)
336.00	V	1.0	57	10.88	0.00	2.03	14.66	27.57	47.00	-19.43
623.99	V	1.0	52	11.49	0.00	2.81	20.06	34.36	47.00	-12.64
719.99	V	1.0	112	12.10	0.00	3.04	21.00	36.14	47.00	-10.86

Spec Margin = E-Field Value - Limit, E-Field Value = FIM Value - Amp Gain + Cable Loss + ANT Factor ± Uncertainty

Combined Standard Uncertainty $u_c(y)$ = ± 1.6dB Expanded Uncertainty $U = ku_c(y)$ k = 2 for 95% confidence

Notes: This scan satisfies the unintentional radiator requirements under Part 15.209

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EUT Name	TransDock	**Date**	January 17, 2007
EUT Model	TransDock	**Temp / Hum in**	70 deg F/ 25 %rh
EUT Serial	None	**Temp / Hum out**	N/A
Standard	FCC 47 CFR Part 15	**Line AC / Freq.**	DC +13.8V
Deg/sweep		**RBW / VBW**	120kHz/300kHz
Dist/Ant Used	3 Meters/Di-pole s/n 9302-914	**Performed by**	Randy Masline
Configuration	Average Measurements		

Emission Freq (MHz)	ANT Polar (H/V)	ANT Pos (m)	Table Pos (deg)	FIM Value (dBuV)	Amp Gain (dB)	Cable Loss (dB)	ANT Factor (dB/m)	E-Field Value (dBuV/m)	Spec Limit (dBuV/m)	Spec Margin (dB)
88.10	V	1.0	253	29.51	0.00	1.01	10.29	40.81	47.95	-7.14
98.10	V	1.0	258	33.43	0.00	1.07	10.79	45.29	47.95	-2.66
107.90	V	1.0	250	28.72	0.00	1.13	11.32	41.17	47.95	-6.78
107.90	H	1.0	250	10.03	0.00	1.13	10.73	21.89	47.95	-26.06
98.10	H	1.0	250	8.46	0.00	1.07	10.15	19.68	47.95	-28.27
88.10	H	1.0	253	8.56	0.00	1.01	9.62	19.20	47.95	-28.75

Spec Margin = E-Field Value - Limit, E-Field Value = FIM Value - Amp Gain + Cable Loss + ANT Factor ± Uncertainty

Combined Standard Uncertainty $u_c(y)$ = ± 1.6dB Expanded Uncertainty $U = ku_c(y)$ k = 2 for 95% confidence

Notes:

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EUT Name	TransDock	**Date**	January 17, 2007
EUT Model	TransDock	**Temp / Hum in**	70 deg F/ 25 %rh
EUT Serial	None	**Temp / Hum out**	N/A
Standard	FCC 47 CFR Part 15	**Line AC / Freq.**	DC +13.8V
Deg/sweep		**RBW / VBW**	120kHz/300kHz
Dist/Ant Used	3 Meters/Di-pole s/n 9302-914	**Performed by**	Randy Masline
Configuration	Peak Measurements		

Emission Freq (MHz)	ANT Polar (H/V)	ANT Pos (m)	Table Pos (deg)	FIM Value (dBuV)	Amp Gain (dB)	Cable Loss (dB)	ANT Factor (dB/m)	E-Field Value (dBuV/m)	Spec Limit (dBuV/m)	Spec Margin (dB)
88.10	V	1.0	253	31.97	0.00	1.01	10.29	43.27	67.95	-24.68
98.10	V	1.0	258	34.91	0.00	1.07	10.79	46.77	67.95	-21.18
107.90	V	1.0	250	31.47	0.00	1.13	11.32	43.92	67.95	-24.03
107.90	H	1.0	250	21.12	0.00	1.13	10.73	32.98	67.95	-34.97
98.10	H	1.0	258	20.22	0.00	1.07	10.15	31.44	67.95	-36.51
88.10	H	1.0	253	20.94	0.00	1.01	9.62	31.58	67.95	-36.37

Spec Margin = E-Field Value - Limit, E-Field Value = FIM Value - Amp Gain + Cable Loss + ANT Factor ± Uncertainty

Combined Standard Uncertainty $u_c(y)$ = ± 1.6dB Expanded Uncertainty $U = ku_c(y)$ k = 2 for 95% confidence

Notes:

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EUT Name	TransDock	**Date**	January 17, 2007
EUT Model	TransDock	**Temp / Hum in**	70 deg F/ 25 %rh
EUT Serial	None	**Temp / Hum out**	N/A
Standard	FCC 47 CFR Part 15	**Line AC / Freq.**	+13.8 VDC
Deg/sweep	12 degrees	**RBW / VBW**	120 kHz / 300 kHz
Dist/Ant Used	3 Meters	**Performed by**	Randy Masline
Configuration	Spurious Emissions for 88.1 MHz		

Emission Freq (MHz)	ANT Polar (H/V)	ANT Pos (m)	Table Pos (deg)	FIM Value (dBuV)	Amp Gain (dB)	Cable Loss (dB)	ANT Factor (dB/m)	E-Field Value (dBuV/m)	Spec Limit (dBuV/m)	Spec Margin (dB)
176.20	V	1	250	8.80	0.00	1.44	14.54	24.78	43.50	-18.72
264.30	V	1	250	9.04	0.00	1.81	19.56	30.40	46.00	-15.60
352.40	V	1	250	8.48	0.00	2.09	15.24	25.81	46.00	-20.19
176.20	H	1	250	8.85	0.00	1.44	13.30	23.58	43.50	-19.92
264.30	H	1	250	8.96	0.00	1.81	19.06	29.83	46.00	-16.17
352.40	H	1	250	8.47	0.00	2.09	15.10	25.66	46.00	-20.34

Spec Margin = E-Field Value - Limit, E-Field Value = FIM Value - Amp Gain + Cable Loss + ANT Factor ± Uncertainty

Combined Standard Uncertainty $u_c(y) = \pm 1.6$dB Expanded Uncertainty $U = ku_c(y)$ $k = 2$ for 95% confidence

Notes:
For Measurements up to 300 MHz the Bicon Antenna was used. s/n 3367
For Measurements above 300 MHz the Log Periodic Antenna was used. s/n 133

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EUT Name	TransDock	**Date**	January 17, 2007
EUT Model	TransDock	**Temp / Hum in**	70 deg F/ 25 %rh
EUT Serial	None	**Temp / Hum out**	N/A
Standard	FCC 47 CFR Part 15	**Line AC / Freq.**	+13.8 VDC
Deg/sweep	12 degrees	**RBW / VBW**	120 kHz / 300 kHz
Dist/Ant Used	3 Meters/	**Performed by**	Randy Masline
Configuration	Spurious Emissions for 98.1 Mhz		

Emission Freq (MHz)	ANT Polar (H/V)	ANT Pos (m)	Table Pos (deg)	FIM Value (dBuV)	Amp Gain (dB)	Cable Loss (dB)	ANT Factor (dB/m)	E-Field Value (dBuV/m)	Spec Limit (dBuV/m)	Spec Margin (dB)
196.20	H	1	250	8.80	0.00	1.53	15.82	26.16	43.50	-17.34
294.30	H	1	250	9.05	0.00	1.90	21.54	32.50	46.00	-13.50
392.40	H	1	250	8.56	0.00	2.20	16.44	27.20	46.00	-18.80
196.20	V	1	250	8.88	0.00	1.53	15.17	25.58	43.50	-17.92
294.30	V	1	250	9.05	0.00	1.90	20.74	31.70	46.00	-14.30
392.40	V	1	250	8.42	0.00	2.20	15.40	26.01	46.00	-19.99

Spec Margin = E-Field Value - Limit, E-Field Value = FIM Value - Amp Gain + Cable Loss + ANT Factor ± Uncertainty

Combined Standard Uncertainty $u_c(y)$ = ± 1.6dB Expanded Uncertainty $U = ku_c(y)$ k = 2 for 95% confidence

Notes:

For Measurements up to 300 MHz the Bicon Antenna was used. s/n 3367
For Measurements above 300 MHz the Log Periodic Antenna was used. s/n 133

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EUT Name	TransDock	**Date**	January 17, 2007
EUT Model	TransDock	**Temp / Hum in**	70 deg F/ 25 %rh
EUT Serial	None	**Temp / Hum out**	N/A
Standard	FCC 47 CFR Part 15	**Line AC / Freq.**	+13.8 VDC
Deg/sweep	12 degrees	**RBW / VBW**	120 kHz / 300 kHz
Dist/Ant Used	3 Meters/3142-1007	**Performed by**	Randy Masline
Configuration	Spurious Emissions for 107.9 MHz		

Emission Freq (MHz)	ANT Polar (H/V)	ANT Pos (m)	Table Pos (deg)	FIM Value (dBuV)	Amp Gain (dB)	Cable Loss (dB)	ANT Factor (dB/m)	E-Field Value (dBuV/m)	Spec Limit (dBuV/m)	Spec Margin (dB)
215.20	H	1	250	8.80	0.00	1.62	16.20	26.62	43.50	-16.88
322.80	H	1	250	8.56	0.00	1.99	14.50	25.05	46.00	-20.95
430.40	H	1	250	8.65	0.00	2.30	16.78	27.74	46.00	-18.26
215.20	V	1	250	8.50	0.00	1.62	16.52	26.64	43.50	-16.86
322.80	V	1	250	8.41	0.00	1.99	14.31	24.71	46.00	-21.29
430.40	V	1	250	8.68	0.00	2.30	16.19	27.17	46.00	-18.83

Spec Margin = E-Field Value - Limit, E-Field Value = FIM Value - Amp Gain + Cable Loss + ANT Factor ± Uncertainty

Combined Standard Uncertainty $u_c(y)$ = ± 1.6dB Expanded Uncertainty $U = ku_c(y)$ k = 2 for 95% confidence

Notes:

For Measurements up to 300 MHz the Bicon Antenna was used. s/n 3367
For Measurements above 300 MHz the Log Periodic Antenna was used. s/n 133

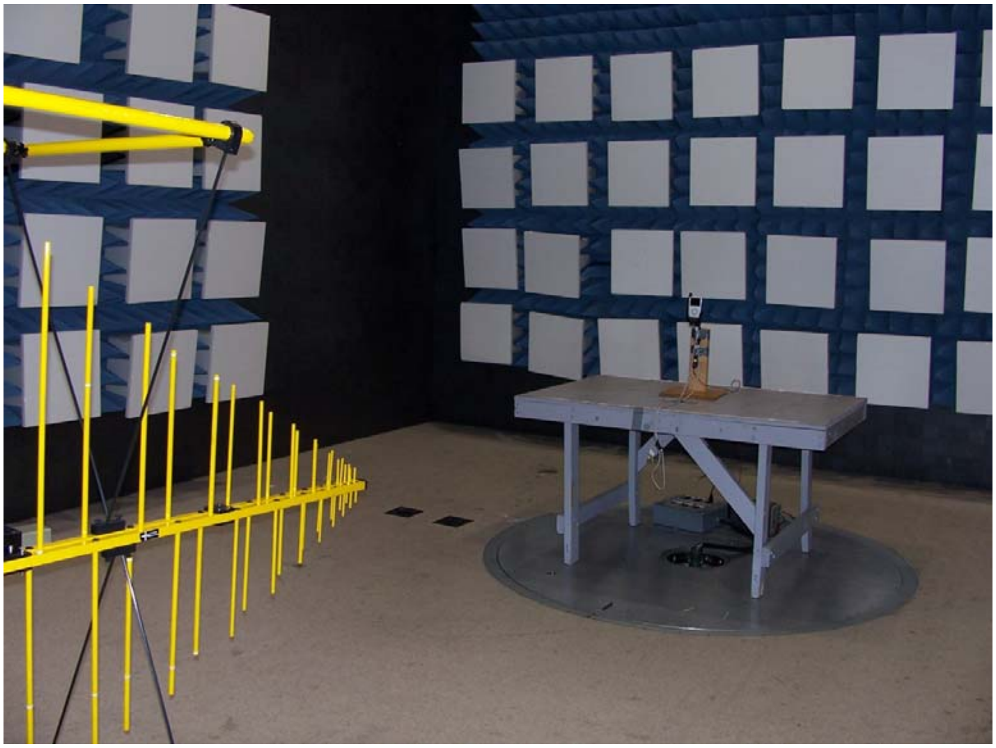

Figure 1 - Photo of Part 15.209 testing set up (Front)

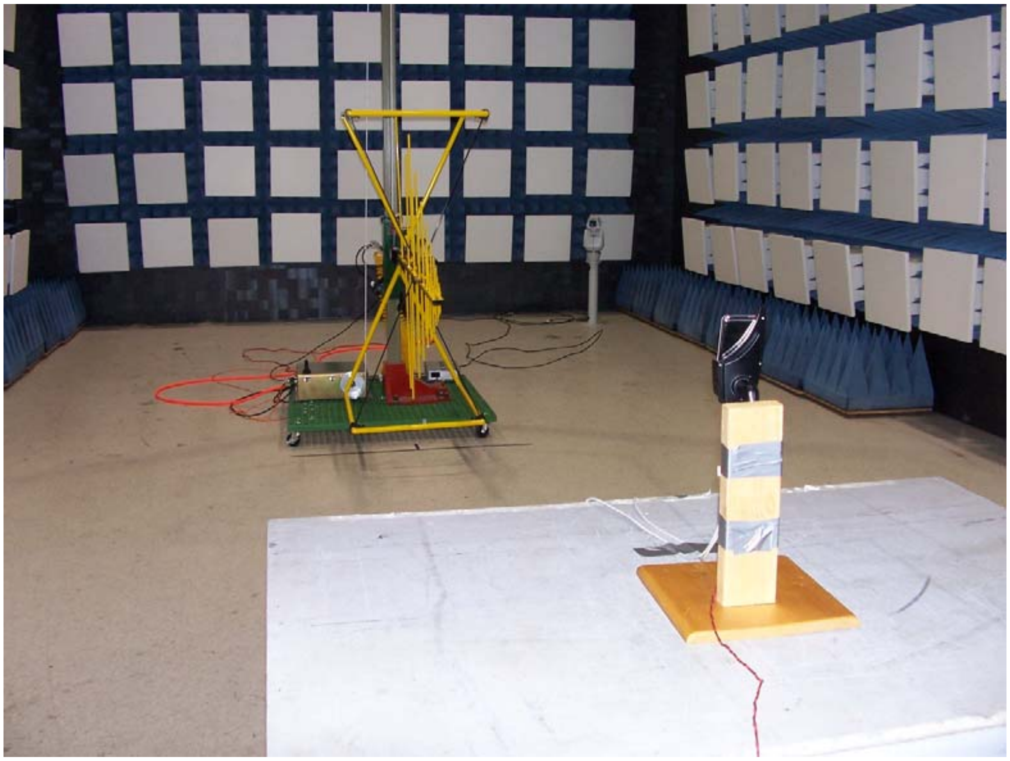

Figure 2- Photo of Part 15.209 testing set up (Back)

Figure 3 - Photo of Part 15.239 testing set up (Front)

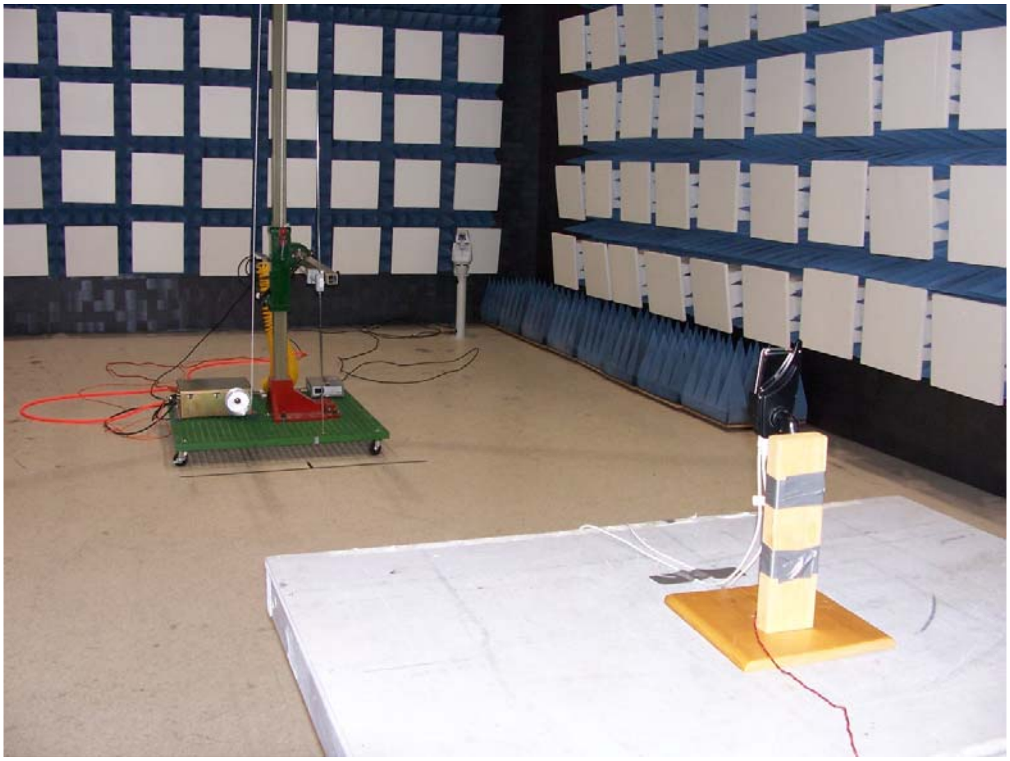

Figure 4 - Photo of Part 15.209 testing set up (Back)

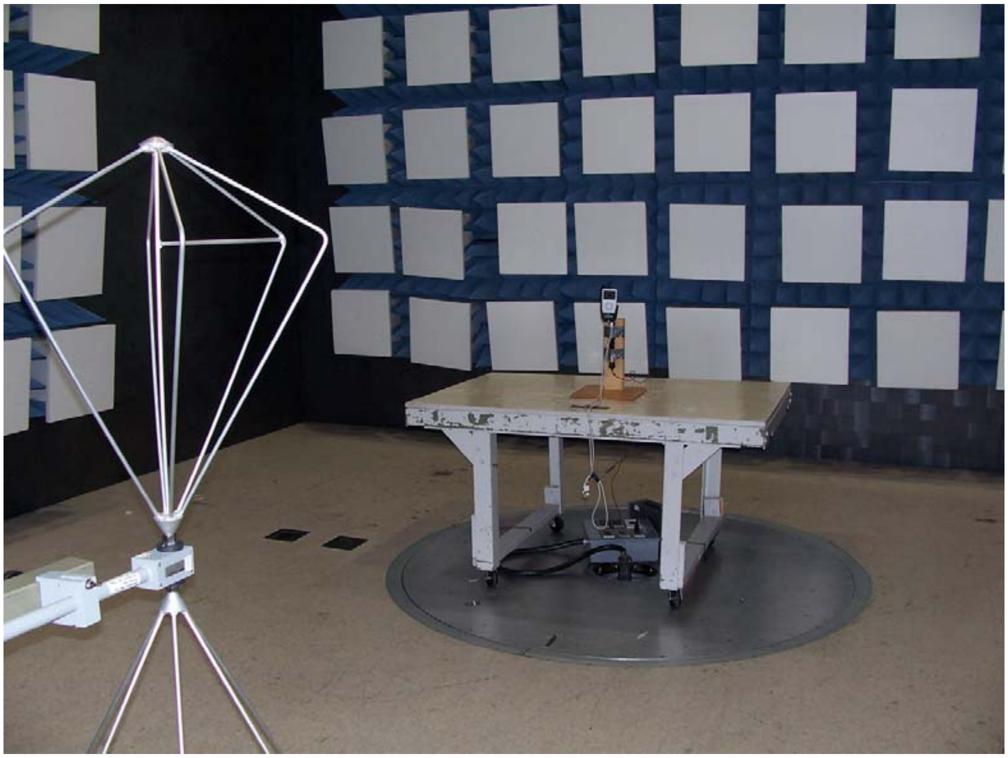

Figure 5 - Photo of Part 15.239 testing set up (Front)

Figure 6 - Photo of Part 15.209 testing set up (Back)

Figure 7 - Photo of Part 15.239 testing set up (Front)

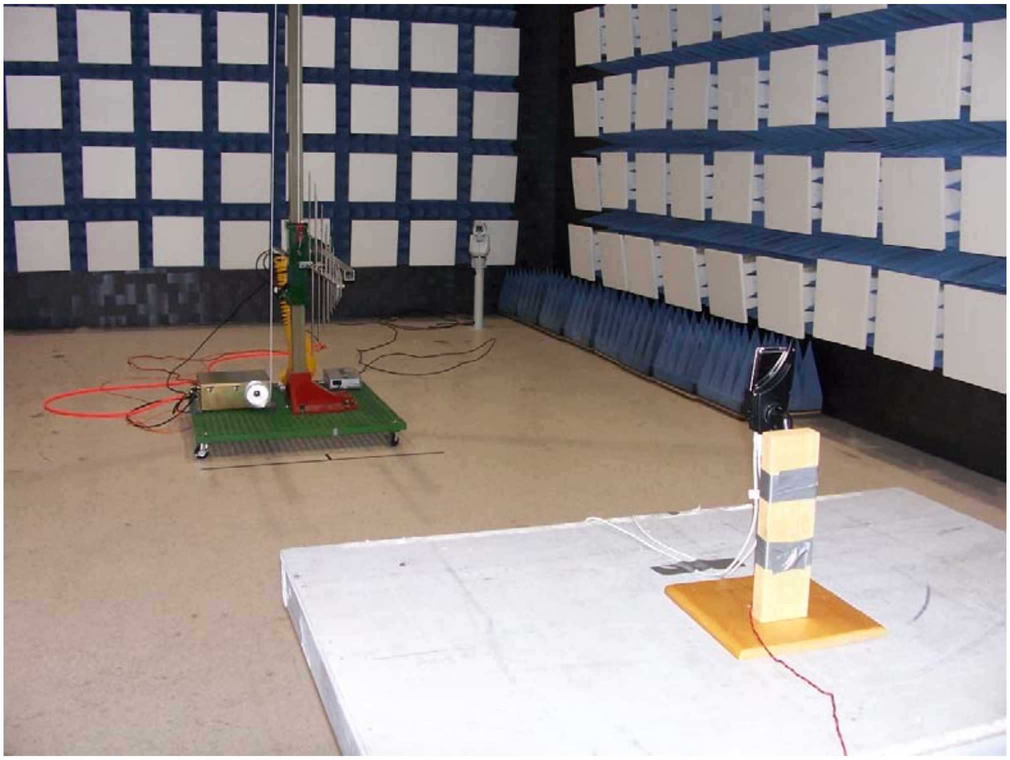

Figure 8 - Photo of Part 15.209 testing set up (Back)

4.1.3 Sample Calculation

The field strength is calculated by subtracting the Amplifier Gain and adding the Cable Loss and Antenna Correction Factor to the measured reading. The basic equation is as follows:

Field Strength (dBµV/m) = FIM - AMP + CBL + ACF

Where: FIM = Field Intensity Meter (dBµV)
AMP = Amplifier Gain (dB)
CBL = Cable Loss (dB)
ACF = Antenna Correction Factor (dB/m)

$$\mu V/m = 10^{\frac{dB\mu V/m}{20}}$$

4.2 20dB Bandwidth

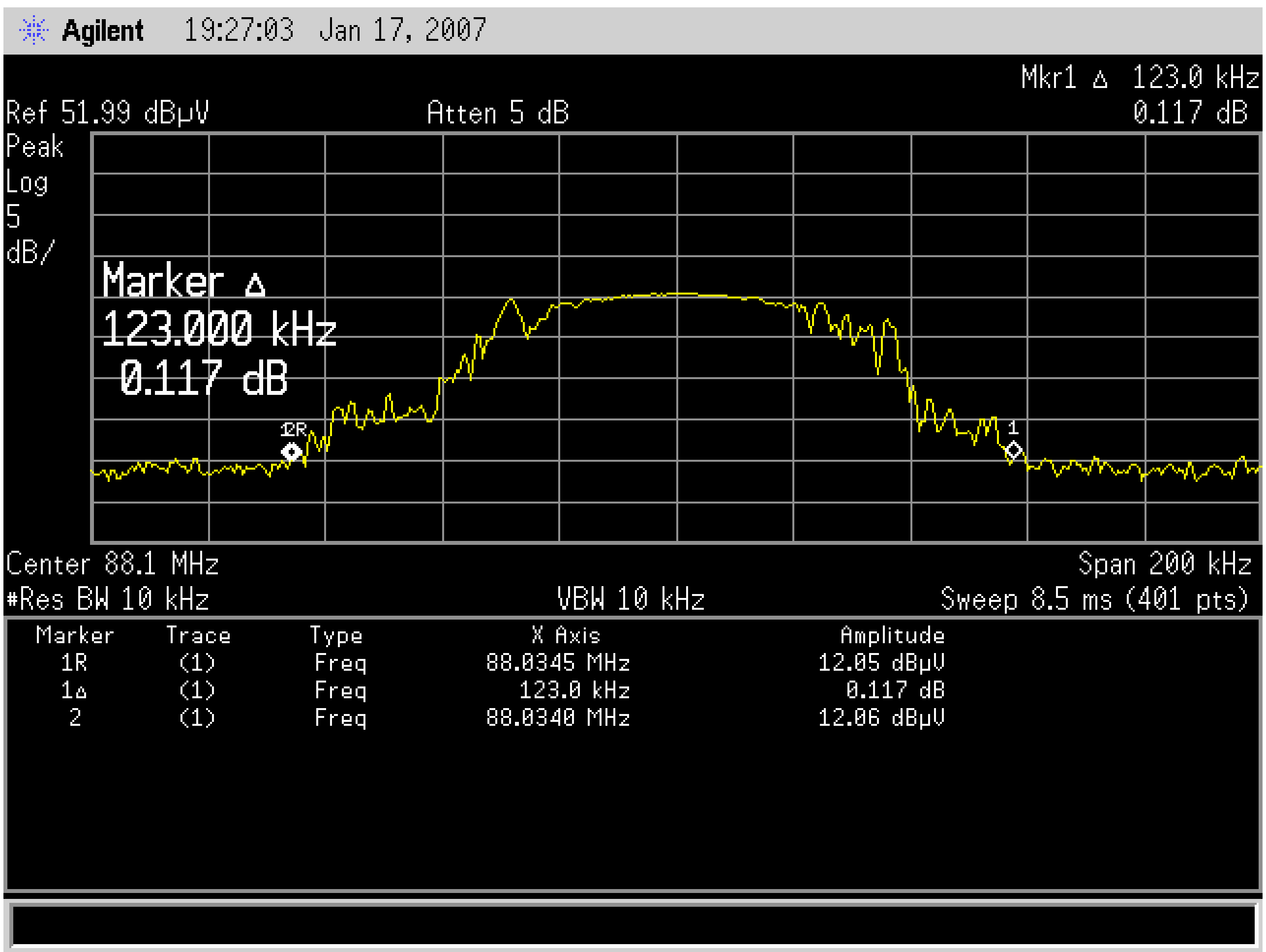

Figure 9 - 88.1 MHz

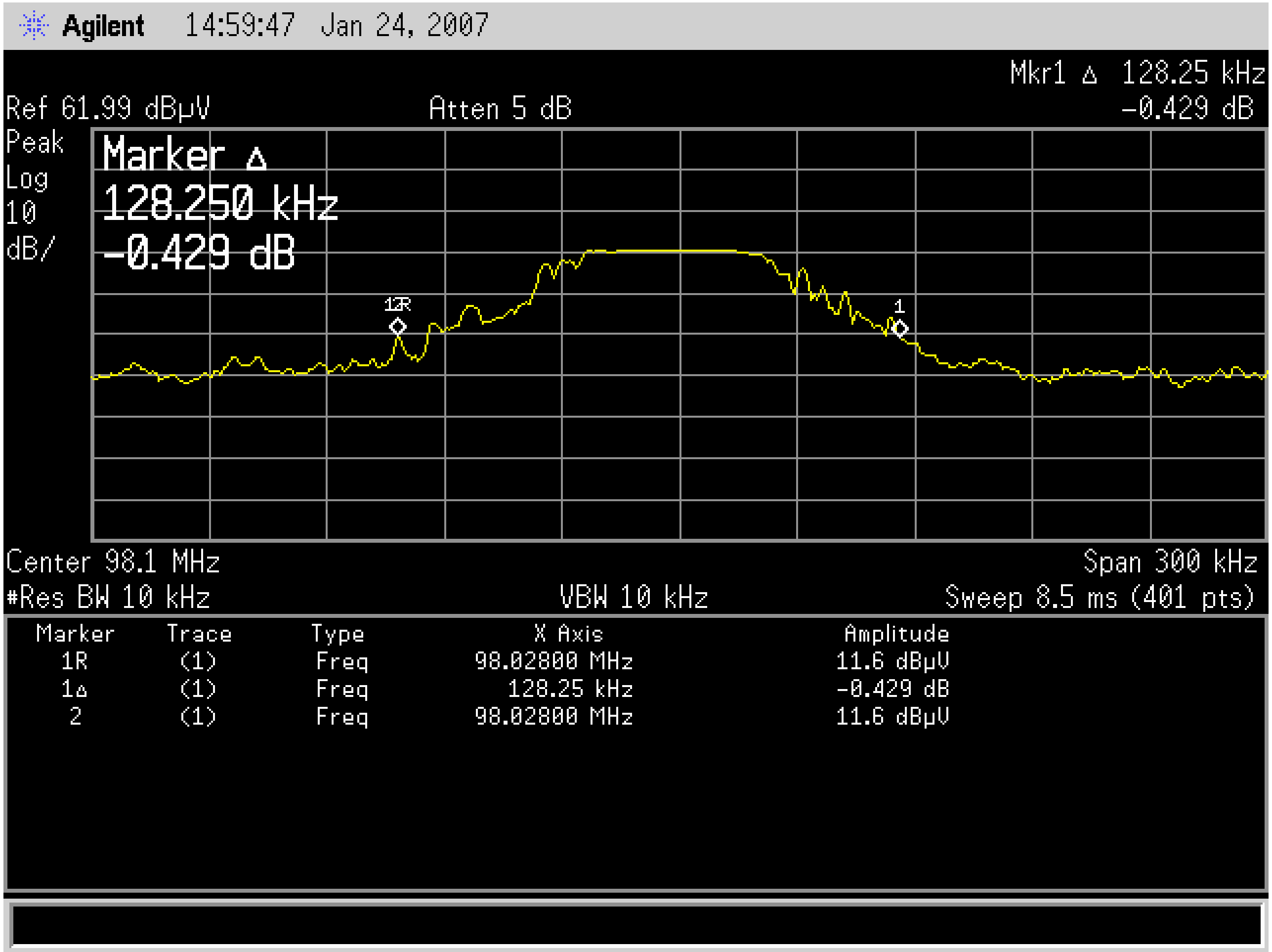

Figure 10 – 98.1 MHz

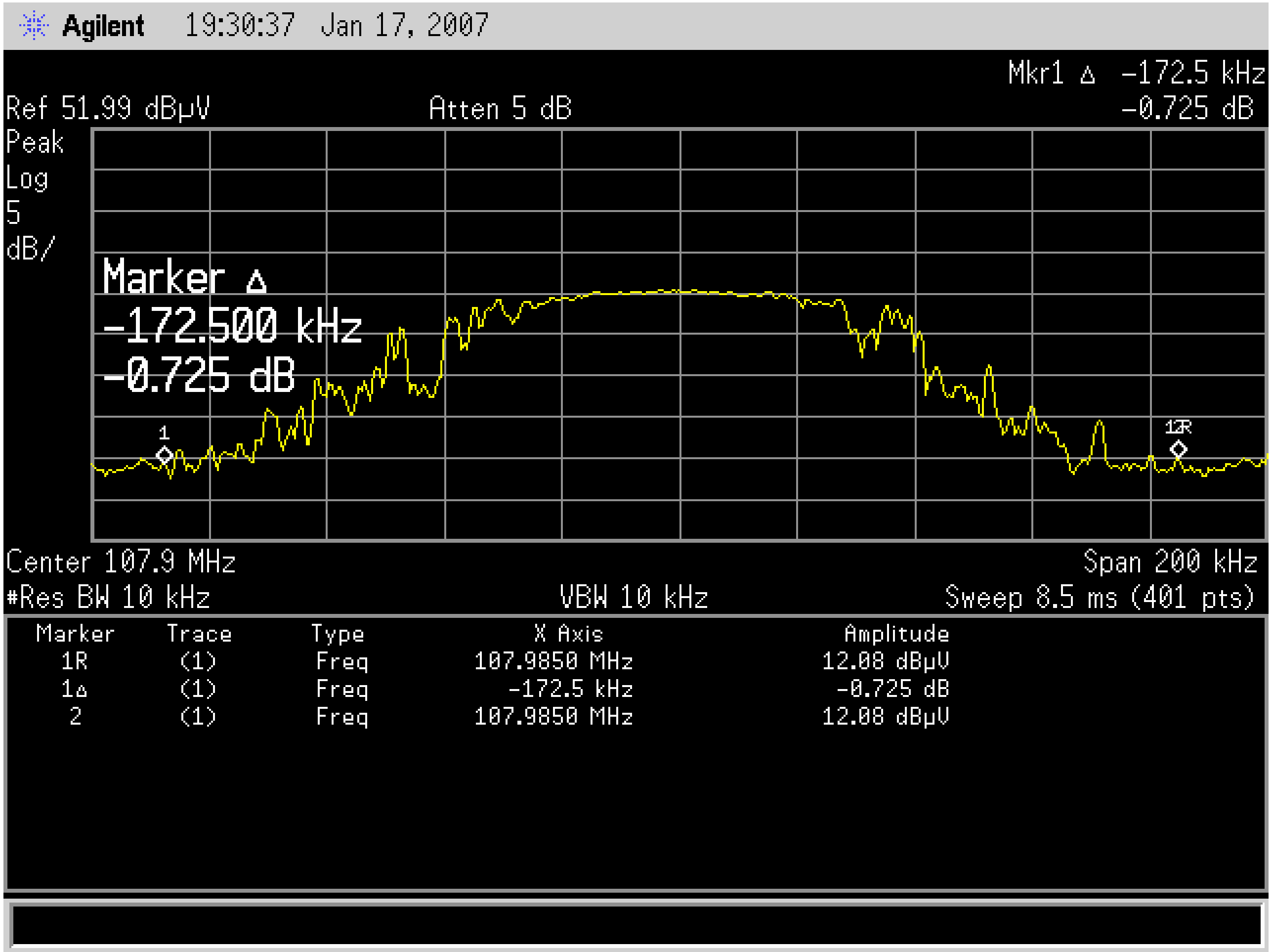

Figure 11 - 107.9 MHz

Figure 12 - Photo of 20dB Bandwidth measurement set up

5 Frequency Stability FCC Part 2.1055(a)(1)-(4) (1)

The frequency stability shall be measured with variation of ambient temperatures and supply voltage.

5.1.1 Containment of the Emission during Variations in Temperature

The EUT was placed in an environmental temperature test chamber, supplied with the normal DC voltage, and with a spectrum analyzer with attenuator was attached to the output port.

The temperature inside the chamber is then raised to the highest temperature specified and allowed sufficient time for the temperature of the chamber to stabilize. While maintaining a constant temperature inside the environmental chamber, the carrier signal was then measured 40 min after temperature stabilization. Then the above process is repeated for the lowest temperature specified and 10 degree Centigrade increments between the extremes thereafter.

5.1.1.1 Results

The EUT was placed in a temperature chamber that was increased in 10º steps from the extremes of equipment operation (-30ºC to +50ºC). No appreciable change in fundamental frequency was observed during this period. The equipment complied with the specification.

Table 2 – Temperature Stability

Temperature ° C	Transmitting At 88.1 MHz Peak Reading	Results
-30	88.1030	**Pass**
-20	88.1040	**Pass**
-10	88.1010	**Pass**
0	88.1010	**Pass**
10	88.1020	**Pass**
20	88.1000	**Pass**
30	88.1000	**Pass**
40	88.1000	**Pass**
50	88.1000	**Pass**

Spectrum Analyzer Parameters:

RBW=10kHz
VBW=30kHz
Span=500kHz
LOG dB/div.= 10dB
Sweep = 50 mS

Figure 13 - Photo of test setup for Frequency Stability over Temperature Variations

5.1.2 Containment of the Emission during Variations in Voltage

The setup was identical section 4.10.1. The variation in voltage tests were made simultaneously with the variations in temperature tests. A reference was taken at the nominal voltage, and then the Voltage was varied from 85% to 115% of the nominal voltage.

The power supply as a voltage range of 12 VDC, so the low voltage was set to 10.2 VDC and the high voltage was set at 13.8 VDC. 12 VDC was used as the nominal value.

5.1.2.1 Results

The dc supply voltage was varied between 85% and 115% of the nominal rated supply voltage. No change in fundamental frequency was observed during the variation. The equipment was found to be compliant.

Table 3 – Voltage Stability

Voltage	Transmitting at 88.1 MHz	Transmitting At 98.1 MHz	Transmitting at 107.9MHz	Results
	Peak Reading	Peak Reading	Peak Reading	
10.2	88.1013	98.1010	107.9013	**Pass**
12	88.1010	98.1013	107.9010	**Pass**
13.8	88.1010	98.1015	107.9013	**Pass**

Spectrum Analyzer Parameters:

RBW=10kHz
VBW=30kHz
Span=500kHz
LOG dB/div.= 10dB
Sweep = 50 mS

Figure 14 - Photo of test setup for Frequency Stability over Voltage Variations

6 Test Equipment Use List

Equipment	Manufacturer	Model #	Serial/Inst #	Last Cal dd/mm/yy	Next Cal dd/mm/yy
SOP 1 - Radiated Emissions (OATS)					
Ant. BiconiLog	EMCO	CBL6140A	1108	16-May-06	16-May-07
Cable, Coax	Andrew	FSJ1-50A	030	16-Jan-06	16-Jan-07
Cable, Coax	Andrew	FSJ1-50A	045	16-Jan-06	16-Jan-07
Spectrum Analyzer	Agilent Tec.	E7405A	US39440161	27-Feb-06	27-Feb-07
Ant. Di-pole	EMCO	3121C-DB2	9302-914	14-Sep-06	14-Sep-07
Ant. Biconical	ETS	3110B	3367	15-Feb-06	15-Feb-07
Ant. Log Periodic	AH Systems	SAS-516	133	13-Mar-06	13-Mar-07
Temperature Chamber	ESPEC			N/A	N/A
Temperature Probe	Fluke	179	82940101	19-Sep-06	19-Sep-07

General Laboratory Equipment					
Meter, Temp/Humid/Barom	Extech	445815	G085363	11-Oct-06	11-Oct-07

* Calibration of equipment past due for re-calibration will be performed expeditiously. If any equipment is found to be out of tolerance at that time, affected customers will be notified accordingly.