
REPORT ON

EMC Testing of a Itherm 280

FCC ID: RBPMOD280

Report No OO611347/2

September 2003

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FCC ID: RBPMOD280
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APPROVED BY



C H Gould
Chief Engineer

DATED

09-09-03

DISTRIBUTION

Transact Technologies Incorporated

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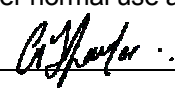
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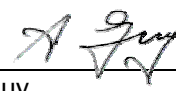
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ENGINEERING STATEMENT

I ATTEST: the measurements shown in this report were made in accordance with the procedures indicated, and that the emissions from this equipment were found to be within the applicable limits. I assume full responsibility for the accuracy and completeness of these measurements. On the basis of the measurements made, the equipment tested is capable of operation in accordance with the requirements of Part 15 of the FCC Rules under normal use and maintenance.


G Lawler
Test Engineer


A Guy
Test Engineer





STATUS

OBJECTIVE	To undertake measurements to determine the Equipment Under Test's (EUT's) compliance with the specification.
MANUFACTURING DESCRIPTION	ltherm 280
MANUFACTURER	Transact Technologies Incorporated
MANUFACTURERS MODEL NUMBER	ltherm 280
SERIAL NUMBER	Not Serialised
TEST SPECIFICATION NUMBER	47 CFR Part 15C: 2002
REGISTRATION NUMBER	Y611347
QUANTITY OF ITEMS TESTED	Two
SECURITY CLASSIFICATION OF EUT	Unclassified
INCOMING RELEASE SERIAL NUMBER DATE	Electronic Commercial Invoice 625912447074 11 th July 2003
DISPOSAL	Held Pending Disposal
ORDER NUMBER DATE	Email 13 th June 2003
START OF TEST FINISH OF TEST	4 th August 2003 8 th August 2003
TEST ENGINEERS	G Lawler A Guy
RELATED DOCUMENTS	ANSI C63.4: 2001. Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40GHz. EN 55022: 1998. Information Technology Equipment – radio Disturbance Characteristics – limits and Methods of Measurement.



SYSTEM CONFIGURATION DURING EMC TESTING

The Itherm 280 together with all associated cabling, was set-up simulating a typical user installation on the Alternative Open Area Test Site, then tested in accordance with the specification.

The EUT was functioning correctly prior to test and was tested with the EUT operating at frequencies of 2.412GHz, 2.437GHz and 2.462GHz.



EMISSION TESTING

Instrumentation used for Emission Testing:

Instrument	Manufacturer	Type No	EMC No	Cal to
EMI Receiver	Hewlett Packard	8542E	2286	13-12-03
Bilog Antenna	Chase	CBL 6143	2860	11-04-04
Turntable & Controller	HD Gmhb	HD 050	2528	TU
Antenna Mast	EMCO	1051/2070	—	TU
Antenna Mast Controller	EMCO	2090	—	TU
Low Noise Amplifier (1-8GHz)	Miteq	AMF-3D-001080-18-13P	2457	TU
EMI Receiver	Rhode & Schwarz	ESIB 40	2917	04-02-04
Horn	EMCO	3115	2397	04-07-04
Signal Generator	Hewlett Packard	8672A	411	26-02-04
Transient Limiter	Hewlett Packard	11947A	2243	23-01-04
Three Phase LISN	Rohde & Schwarz	ESH2-Z5	2380	08-01-04
Hygrometer	Rotronic	A1	INV4066	28-11-03
Barometer	Diplex	-	1938	TU
Amplifier 8 – 18GHz	Avantek	AWT 18036	1081	26-06-04
Amplifier 18 – 26.5GHz	Avantek	AMT 26177-33	2072	26-06-04
Screened Enclosure	Siemens	EAC54300	2533	TU

TU Traceability Unscheduled



RADIATED ELECTRIC FIELD EMISSIONS TEST PROCEDURE

TEST PROCEDURE

Testing to the requirements of FCC Part 15 Subpart C, Section 15.209, for Radiated Electric Field Emissions.

A preliminary profile of the Radiated Emissions was obtained by operating the Equipment Under Test (EUT) on a remotely controlled turntable within a semi-anechoic chamber; measurements were taken at a 3m distance unless otherwise stated. Measurements of emissions from the EUT were obtained with the Measurement Antenna in both Horizontal and Vertical Polarisations. The profiling produced a list of the worst case emissions together with the EUT azimuth and antenna polarisation.

Using the information from the preliminary profiling of the EUT, a search was made in the frequency range 30MHz to 25GHz. The list of worst case emissions was then confirmed or updated under Open Site conditions. Emission levels were maximised by adjusting the antenna height, antenna polarisation and turntable azimuth.

30MHz – 1GHz emissions levels were then formally measured using a CISPR Quasi-Peak detector. 1GHz – 25GHz emissions levels were then formally measured using Peak and Average detectors.

(Note: Peak measurements performed using a Resolution and Video Bandwidth of 1MHz, Average measurements performed using a Resolution Bandwidth of 1MHz and a Video Bandwidth of 10Hz)

Measurements were made with the EUT transmitting on the following channels.

Bottom:	2412MHz
Middle:	2437MHz
Top:	2462MHz

Radiated Emissions from 30MHz to 1GHz were made using a HP 8542E Test Receiver.

Radiated Emissions from 1GHz to 25GHz were made using a Rhode and Schwarz ESIB 40 Test Receiver.

The test was performed in accordance with ANSI C63.4.

The measurements were performed at a 3m distance unless otherwise stated.

The results are presented in Tables 1 to 3 (30MHz to 1GHz) and Tables 4 to 6 (1GHz to 25GHz).



RADIATED ELECTRIC FIELD TEST RESULTS

Equipment Designation : Intentional Radiator.

The EUT met the requirements of 47 CFR part 15, Subpart C, Section 15.209, for Radiated Electric Field Emissions, where the EUT was operating at 2.412GHz.

The emissions were measured at 3m.

EUT Tx on Bottom Channel (2.412GHz).

30MHz – 1GHz Alternative Open Area Test Site Results : The levels of the 6 highest emissions measured in accordance with the specification are presented in Table 1 below :-

Emission Frequency	Pol	Hgt	Azm	Field Strength at 3m		Specification Limit	
MHz	H/V	cm	deg	dBμV/m	μV/m	dBμV/m	μV/m
80.02	V	100	289	35.8	61.7	40.0	100
200.00	H	158	286	37.4	74.1	43.5	150
240.00	H	116	093	40.5	105.9	46.0	200
260.00	H	119	280	45.7	192.8	46.0	200
265.00	H	100	287	39.9	98.9	46.0	200
280.00	H	115	288	42.8	138.0	46.0	200

Table 1

The margin between the specification requirements and all other emissions was 6.3dB or more below the specification limit.

ABBREVIATIONS FOR ABOVE TABLE

H Horizontal Polarisation
Pol Polarisation
deg degree

V Vertical Polarisation
Hgt Height
Azm Azimuth

Procedure Test Performed in accordance with ANSI C63.4.

Performed by G Lawler, EMC Engineer.

RADIATED ELECTRIC FIELD TEST RESULTS

Equipment Designation : Intentional Radiator.

The EUT met the requirements of 47 CFR Part 15, Subpart C, Section 15.209, for Radiated Electric Field Emissions, where the EUT was operating at 2.437GHz.

The emissions were measured at 3m.

EUT Tx on Middle Channel (2.437GHz).

30 MHz – 1GHz Alternative Open Area Test Site Results : The levels of the 6 highest emissions measured in accordance with the specification are presented in Table 2 below :-

Emission Frequency MHz	Pol H/V	Hgt cm	Azm deg	Field Strength at 3m		Specification Limit	
				dBμV/m	μV/m	dBμV/m	μV/m
59.45	V	100	268	33.5	47.3	40.0	100
80.01	V	100	283	35.2	57.5	40.0	100
260.00	H	100	278	45.6	190.5	46.0	200
265.00	H	100	277	39.8	97.7	46.0	200
280.00	H	121	288	43.4	147.9	46.0	200
740.10	H	115	213	40.1	101.2	46.0	200

Table 2

The margin between the specification requirements and all other emissions was 6.6dB or more below the specification limit.

ABBREVIATIONS FOR ABOVE TABLE

H Horizontal Polarisation
Pol Polarisation
deg degree

V Vertical Polarisation
Hgt Height
Azm Azimuth

Procedure Test Performed in accordance with ANSI C63.4.

Performed by G Lawler, EMC Engineer.



RADIATED ELECTRIC FIELD TEST RESULTS

Equipment Designation : Intentional Radiator.

The EUT met the requirements of 47 CFR Part 15, Subpart C, Section 15.209, for Radiated Electric Field Emissions, where the EUT was operating at 2.462GHz.

The emissions were measured at 3m.

EUT Tx on Top Channel (2.462GHz).

30MHz – 1GHz Alternative Open Area Test Site Results : The levels of the 7 highest emissions measured in accordance with the specification are presented in Table 3 below :-

Emission Frequency	Pol	Hgt	Azm	Field Strength at 3m		Specification Limit	
				dBμV/m	μV/m	dBμV/m	μV/m
80.03	V	100	267	35.3	58.2	40.0	100
200.00	H	153	279	36.6	67.6	43.5	150
240.00	H	132	091	39.1	90.2	46.0	200
260.00	H	110	276	45.9	197.2	46.0	200
265.00	H	100	274	40.0	100.0	46.0	200
280.00	H	118	285	43.5	149.6	46.0	200
740.10	H	117	210	40.2	102.3	46.0	200

Table 3

The margin between the specification requirements and all other emissions was 7.0dB or more below the specification limit.

ABBREVIATIONS FOR ABOVE TABLE

H Horizontal Polarisation
Pol Polarisation
deg degree

V Vertical Polarisation
Hgt Height
Azm Azimuth

Procedure Test Performed in accordance with ANSI C63.4.

Performed by G Lawler, EMC Engineer.



RADIATED EMISSIONS TEST RESULTS

1GHz - 25GHz Range

Equipment Designation: Intentional Radiator.

The EUT met the requirements of 47 CFR Part 15, Subpart C, Section 15.247 (c) for Radiated Emissions (1GHz – 25GHz).

EUT Tx on Bottom Channel (2.412GHz)

Frequency	Antenna			Field Strength (Peak) at 3m	Limit (Peak)	Field Strength (Average) at 3m	Limit (Average)
	Polarisation	Height	Azimuth				
GHz	H/V	cm	Deg	dBµV/m	dBµV/m	dBµV/m	dBµV/m
4.075	H	155	306	53.0	74.0	49.2	54.0
4.824	H	100	187	50.8	74.0	46.1	54.0

Table 4

EUT Tx on Middle Channel (2.437GHz)

Frequency	Antenna			Field Strength (Peak) at 3m	Limit (Peak)	Field Strength (Average) at 3m	Limit (Average)
	Polarisation	Height	Azimuth				
GHz	H/V	cm	Deg	dBµV/m	dBµV/m	dBµV/m	dBµV/m
4.126	V	161	161	53.9	74.0	50.4	54.0
4.873	H	100	180	51.7	74.0	46.5	54.0

Table 5

EUT Tx on Top Channel (2.462GHz)

Frequency	Antenna			Field Strength (Peak) at 3m	Limit (Peak)	Field Strength (Average) at 3m	Limit (Average)
	Polarisation	Height	Azimuth				
GHz	H/V	cm	Deg	dBµV/m	dBµV/m	dBµV/m	dBµV/m
4.175	H	198	136	54.4	74.0	49.1	54.0
4.924	H	100	187	50.0	74.0	44.3	54.0

Table 6

Procedure: Test Performed in accordance with ANSI C63.4.

Performed by: A Guy, EMC Engineer.



RADIATED EMISSIONS

MEASUREMENT AT THE BAND EDGE (Marker Delta Method)

The following Test Results were obtained using the FCC Public Notice document (DA 00-705 released 30 March 2000) for making measurements at the Band Edge, incorporating the 'Marker Delta Method'.

Step 1

Bottom Channel Fundamental Field Strength Measurement.

Performed in accordance with ANSI C63.4

Peak measurements performed utilising a Resolution Bandwidth and Video Bandwidth of 1MHz.
Average measurements performed utilising a Resolution Bandwidth of 1MHz and Video Bandwidth of 10Hz.

Freq	Ant Pol	Hgt	Azi	Peak Field Strength	Average Field Strength
GHz	H/V	cm	deg	dBμV/m	dBμV/m
2.412	H	100	207	112.6	112.2

Step 2

Determine Marker Delta amplitude between 2.412GHz fundamental and 2.390GHz the Band Edge under investigation.

Using a span of 1MHz with Resolution Bandwidth and Video Bandwidth of 1MHz.

2.412GHz Peak using above instrument settings = 77.8dBμV

2.390GHz Peak using above instrument settings = 19.4dBμV

Therefore Marker Delta Amplitude (77.8dBμV – 19.4dBμV) = 58.4dBμV

Step 3

Subtracting the Marker Delta obtained from Step 2 from the 2.412GHz Field Strength measurement from Step 1, gives following Result

Peak of 112.6 dBμV/m – 58.4dB (Delta) = 54.2dBμV/m (Limit is 92.1dBμV/m = Pass)

Average of 112.2dBμV/m – 58.4dB (Delta) = 53.8dBμV/m (Limit is 54.0dBμV/m = Pass)

Procedure: Test Performed in accordance with FCC Public Notice document (DA 00-705 released 30 March 2000)

Performed by: A Guy, EMC Engineer.



RADIATED EMISSIONS

MEASUREMENT AT THE BAND EDGE (Marker Delta Method) Continued

Step 1

Top Channel Fundamental Field Strength Measurement.

Performed in accordance with ANSI C63.4

Peak measurements performed utilising a Resolution Bandwidth and Video Bandwidth of 1MHz.

Average measurements performed utilising a Resolution Bandwidth of 1MHz and Video Bandwidth of 10Hz.

Freq	Ant Pol	Hgt	Azi	Peak Field Strength	Average Field Strength
GHz	H/V	cm	deg	dBμV/m	dBμV/m
2.462	H	114	166	110.0	109.7

Step 2

Determine Marker Delta amplitude between 2.462GHz fundamental and 2.462GHz the Band Edge under investigation.

Using a span of 30MHz with Resolution Bandwidth and Video Bandwidth of 300kHz.

2.462GHz Peak using above instrument settings = 74.5dBμV

2.483GHz Peak using above instrument settings = 17.9dBμV

Therefore Marker Delta Amplitude (74.5dBμV – 17.9dBμV) = 56.6dBμV

Step 3

Subtracting the Marker Delta obtained from Step 2 from the 2.462GHz Field Strength measurement from Step 1, gives following Result

Peak of 110.0dBμV/m – 56.6dB (Delta) = 53.4dBμV/m (Limit is 89.7 dBμV/m = Pass)

Average of 109.7dBμV/m – 56.6dB (Delta) = 53.1dBμV/m (Limit is 54.0dBμV/m = Pass)

EUT meets the measurement at the Band Edge requirements for the Top and Bottom Channel.

Procedure: Test Performed in accordance with FCC Public Notice document (DA 00-705 released 30 March 2000)

Performed by: A Guy, EMC Engineer.



CONDUCTED EMISSIONS ON POWER LINES (TERMINAL VOLTAGES) TEST PROCEDURE

All Conducted Emission Measurements were undertaken within the semi-anechoic chamber. Emissions were measured on the Live and Neutral Lines.

Emissions were formally measured using a Quasi-Peak Detector which meets the CISPR requirements. The details of the worst case emissions were then recorded in the Job Log Book. Details of the worst case emissions for the Live and Neutral Lines are presented in Tables 7 and 8, Tables 9 and 10, and Table 11 and 12 with the EUT operating at 2.412GHz, 2.437Ghz and 2.462GHz, respectively.

The EUT was connected to a 115V 60Hz supply.

The Conducted Emission measurements were made using a Hewlett Packard 8542E EMI Receiver.

The test was performed in accordance with EN 55022

CONDUCTED EMISSION (TERMINAL VOLTAGES) RESULTS

Equipment Designation : Intentional Radiator. Live Line.

The EUT met the requirements of 47 CFR Part 15, Subpart C, Section 15.207 for Conducted Emissions on the Live Line with the EUT operating at 2.412GHz.

EUT Tx on Bottom Channel (2.412GHz).

Conducted Emissions Live Line : A search was made in the frequency range 150kHz to 30MHz. The levels of the 6 highest emissions were measured in accordance with the specification and are presented in Table 7 below :-

Emission Frequency	Quasi-Peak Level	Average Level	Quasi-Peak Limit	Average Limit	Pass / Fail
MHz	dBμV	dBμV	dBμV	dBμV	
0.1505	37.5	16.3	65.9	55.9	Pass
0.1583	35.5	24.4	65.6	55.6	Pass
0.2136	27.8	21.5	63.0	53.0	Pass
0.2665	21.9	15.0	61.2	51.2	Pass
0.4292	31.0	29.4	57.3	47.3	Pass
0.4825	25.5	22.4	56.3	46.3	Pass

Table 7

The margin between the specification requirements and all other emissions was 39.3dB or more below the specified Quasi-Peak limit and 39.6dB or more below the specified Average limit.

Procedure Test performed in accordance with EN 55022.

Performed by G Lawler, EMC Engineer.

CONDUCTED EMISSION (TERMINAL VOLTAGES) RESULTS

Equipment Designation : Intentional Radiator. Neutral Line.

The EUT met the requirements of 47 CFR Part 15, Subpart C, Section 15.207 for Conducted Emissions on the Neutral Line with the EUT operating at 2.412GHz.

EUT Tx on Bottom Channel (2.412GHz).

Conducted Emissions Neutral Line : A search was made in the frequency range 150kHz to 30MHz. The levels of the 7 highest emissions were measured in accordance with the specification and are presented in Table 8 below :-

Emission Frequency	Quasi-Peak Level	Average Level	Quasi-Peak Limit	Average Limit	Pass / Fail
MHz	dBμV	dBμV	dBμV	dBμV	
0.1509	27.8	13.9	65.9	55.9	Pass
0.1622	32.9	20.6	65.4	55.4	Pass
0.2152	25.8	16.2	63.0	53.0	Pass
0.2340	19.0	12.4	62.7	52.7	Pass
0.2657	22.0	15.4	61.2	51.2	Pass
0.4274	27.7	25.1	57.3	47.3	Pass
0.4797	24.9	21.6	56.3	46.3	Pass

Table 8

The margin between the specification requirements and all other emissions was 43.7dB or more below the specified Quasi-Peak limit and 42.0dB or more below the specified Average limit.

Procedure Test performed in accordance with EN 55022.

Performed by G Lawler, EMC Engineer.

CONDUCTED EMISSION (TERMINAL VOLTAGES) RESULTS

Equipment Designation : Intentional Radiator. Live Line.

The EUT met the requirements of 47 CFR Part 15, Subpart C, Section 15.207 for Conducted Emissions on the Live Line with the EUT operating at 2.437GHz.

EUT Tx on Middle Channel (2.437GHz).

Conducted Emissions Live Line : A search was made in the frequency range 150kHz to 30MHz. The levels of the 6 highest emissions were measured in accordance with the specification and are presented in Table 9 below :-

Emission Frequency	Quasi-Peak Level	Average Level	Quasi-Peak Limit	Average Limit	Pass / Fail
MHz	dBμV	dBμV	dBμV	dBμV	
0.1505	38.5	18.1	66.0	56.0	Pass
0.1595	36.2	25.6	65.5	55.5	Pass
0.2125	26.7	19.7	63.1	53.1	Pass
0.2613	21.5	14.4	61.2	51.2	Pass
0.4270	28.7	26.7	57.3	47.3	Pass
0.4799	27.2	24.6	56.4	46.4	Pass

Table 9

The margin between the specification requirements and all other emissions was 39.7dB or more below the specified Quasi-Peak limit and 37.9dB or more below the specified Average limit.

Procedure Test performed in accordance with EN 55022.

Performed by G Lawler, EMC Engineer.

CONDUCTED EMISSION (TERMINAL VOLTAGES) RESULTS

Equipment Designation : Intentional Radiator. Neutral Line.

The EUT met the requirements of 47 CFR part 15, Subpart , Section 15.207 for Conducted Emissions on the Neutral Line with the EUT operating at 2.437GHz.

EUT Tx on Middle Channel (2.437GHz).

Conducted Emissions Neutral Line : A search was made in the frequency range 150kHz to 30MHz. The levels of the 6 highest emissions were measured in accordance with the specification and are presented in Table 10 below :-

Emission Frequency	Quasi-Peak Level	Average Level	Quasi-Peak Limit	Average Limit	Pass / Fail
MHz	dBμV	dBμV	dBμV	dBμV	
0.1596	33.8	21.1	65.5	55.5	Pass
0.1787	24.1	12.3	64.5	54.5	Pass
0.2132	26.1	16.5	63.2	53.2	Pass
0.2673	22.6	16.1	61.2	51.2	Pass
0.4278	27.6	25.0	57.3	47.3	Pass
0.4802	25.1	21.9	56.3	46.3	Pass

Table 10

The margin between the specification requirements and all other emissions was 40.4dB or more below the specified Quasi-Peak limit and 42.2dB or more below the specified Average limit.

Procedure Test performed in accordance with EN 55022

Performed by G Lawler, EMC Engineer.

CONDUCTED EMISSION (TERMINAL VOLTAGES) RESULTS

Equipment Designation : Intentional Radiator. Live Line.

The EUT met the requirements of 47 CFR Part 15, Subpart C, Section 15.207 for Conducted Emissions on the Live Line with the EUT operating at 2.462GHz.

EUT Tx on Top Channel (2.462GHz).

Conducted Emissions Live Line : A search was made in the frequency range 150kHz to 30MHz. The levels of the 6 highest emissions were measured in accordance with the specification and are presented in Table 11 below :-

Emission Frequency	Quasi-Peak Level	Average Level	Quasi-Peak Limit	Average Limit	Pass / Fail
MHz	dB μ V	dB μ V	dB μ V	dB μ V	
0.1506	37.8	16.4	65.9	55.9	Pass
0.1590	36.8	18.0	65.5	55.5	Pass
0.2138	27.0	20.0	63.0	53.0	Pass
0.2664	21.2	14.1	61.2	51.2	Pass
0.4262	28.0	25.9	57.3	47.3	Pass
0.4796	26.9	24.4	56.3	46.3	Pass

Table 11

The margin between the specification requirements and all other emissions was 40.0dB or more below the specified Quasi-Peak limit and 39.5dB or more below the specified Average limit.

Procedure Test performed in accordance with EN 55022

Performed by G Lawler, EMC Engineer.

CONDUCTED EMISSION (TERMINAL VOLTAGES) RESULTS

Equipment Designation : Intentional Radiator. Neutral Line.

The EUT met the requirements of 47 CFR Part 15, Subpart C, Section 15.207 for Conducted Emissions on the Neutral Line with the EUT operating at 2.462GHz.

EUT Tx on Top Channel (2.462GHz).

Conducted Emissions Neutral Line : A search was made in the frequency range 150kHz to 30MHz. The levels of the 6 highest emissions were measured in accordance with the specification and are presented in Table 12 below :-

Emission Frequency	Quasi-Peak Level	Average Level	Quasi-Peak Limit	Average Limit	Pass / Fail
MHz	dBμV	dBμV	dBμV	dBμV	
0.1606	33.8	21.2	65.4	55.4	Pass
0.1727	25.4	13.0	64.8	54.8	Pass
0.2148	26.0	16.4	63.0	53.0	Pass
0.2667	22.6	16.0	61.2	51.2	Pass
0.4287	27.4	24.8	57.3	47.3	Pass
0.4827	25.2	22.0	56.3	46.3	Pass

Table 12

The margin between the specification requirements and all other emissions was 39.4dB or more below the specified Quasi-Peak limit and 41.8dB or more below the specified Average limit.

Procedure Test performed in accordance with EN 55022

Performed by G Lawler, EMC Engineer.



FCC SITE COMPLIANCE LETTER

FEDERAL COMMUNICATIONS COMMISSION

**Laboratory Division
7435 Oakland Mills Road
Columbia, MD 21046**

October 18, 2002

Registration Number: 90987

**TUV Product Service Ltd
Scgensworth Road
Titchfield
Fareham, Hampshire, PO15 5RH
United Kingdom
Attention: Kevan Adsetts**

**Re: Measurement facility located at Titchfield
Anechoic chamber (3 meters) and 3 & 10 meter OATS
Date of Listing: October 18, 2002**

Gentlemen:

Your request for registration of the subject measurement facility has been reviewed and found to be in compliance with the requirements of Section 2.948 of the FCC rules. The information has, therefore, been placed on file and the name of your organization added to the list of facilities whose measurement data will be accepted in conjunction with applications for Certification under Parts 15 or 18 of the Commission's Rules. Please note that the file must be updated for any changes made to the facility and the registration must be renewed at least every three years.

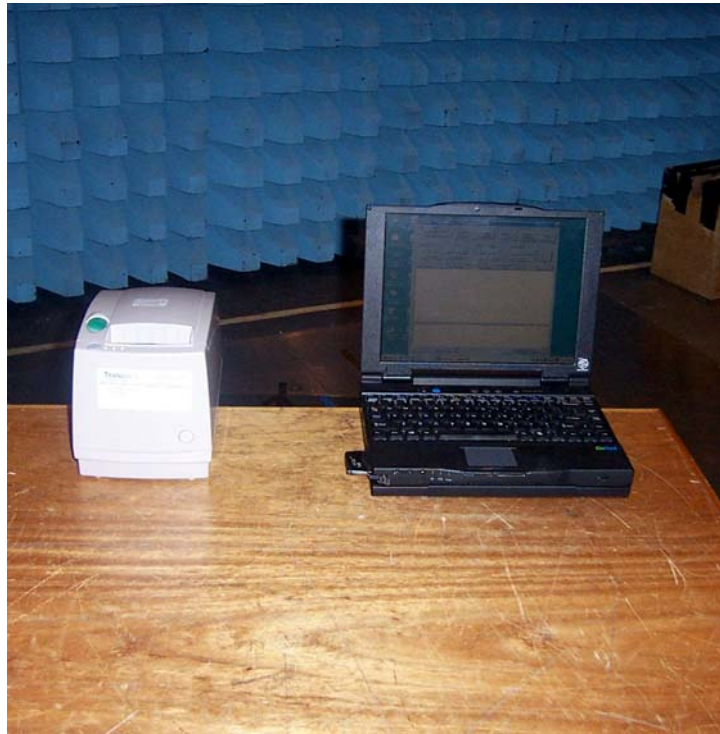
Measurement facilities that have indicated that they are available to the public to perform measurement services on a fee basis may be found on the FCC website www.fcc.gov under E-Filing, OET Equipment Authorization Electronic Filing, Test Firms.

Sincerely,

A handwritten signature in black ink that reads 'Thomas W. Phillips'.

**Thomas W Phillips
Electronics Engineer**

PHOTOGRAPHS OF EUT



Photograph showing Itherm 280 (EUT) and associated computer



Photograph showing Set-up for Radiated Emissions



SYSTEM MEASUREMENT UNCERTAINTY

For a 95% confidence level, the measurement uncertainties for defined systems are :-

For Radiated Emissions, Quasi-Peak Measurements taken in using the Hewlett Packard 8542E EMI Receiver:-

Amplitude	$\pm 3.7\text{dB}$ (30MHz to 1000MHz)
	$\pm 4.3\text{dB}$ (1GHz to 25GHz)

For Conducted Emissions, Quasi-Peak Measurements taken in using the Hewlett Packard 8542E EMI Receiver:-

Amplitude	$\pm 3.4\text{dB}$
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This report relates only to the actual item/items tested.

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