Marlboro Test Labs

EN55011 Test Report /FCC Part 15

Applicant:	Advanced Fiber Solutions 45 Franklin Street Milton, MA 02186
Equipment Under Test:	
	Product: UOR-200 Series
	Model: UOR-200
Test Location:	Marlboro Test Labs 55 Fairbanks Boulevard Marlboro, MA 01752-1298
Test Date:	October 24, 2005

Tested & Reviewed By:

G. Abboud
Test Engineer

Reviewed By:

Charles Nasser

ACCREDITED
Certificate: 2053-01

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1.0 OVERVIEW

This report has been compiled to document the EN55011 & CFR 47, FCC Part 15 test parameters, effects and results of the Advanced Fiber Solutions UOR-200, in comparison to the requirements for equipment, as specified in the following documents:

89/336/EEC (3 May 1989)	Official Journal of the European Communities Council Directive on Electromagnetic Compatibility
92/31/EEC (28 April 1992)	Official Journal of the European Communities Amending Directive 89/336/EEC on: Council Directive on Electromagnetic Compatibility
CFR47 Part 15	Requirements for commercial data processing equipment. Class A: Residential
EN55011 (1998)	Limits and methods of measurement of radio interference characteristics of industrial, scientific and medical equipment. Class A: Industrial and commercial

2.0 PRODUCT IDENTIFICATION

Equipment Under Test: Advanced Fiber Solutions UOR-200

Type: The UOR-200 is a optical time domain reflectometer used to test fiber optic cables.

Model	**Serial Number**
UOR-200	N/A

EUT Power Requirements
USB powered

EUT Internal Board(s)					
Description	Clock Freq.(s)	P/N	S/N	Rev.	Slot #
	33MHz, 66MHz, 100MHz				

Modifications made to Equipment Required for Compliance

No modifications were necessary.

3.0 TEST DESCRIPTION

The EUT was operated in a normal configuration on a wooden table, 80cm above a four-foot diameter turntable. Required local peripherals were connected and located as in typical installations as identified by the customer. All incidental support and test equipment were located below the ground plane. The power input cables were routed through a hole in the center of the turntable to a central set of power outlets located just below the ground plane. The external cables dropped vertically and were wound in a figure 8, 30-40cmwide, and 40cm above the ground plane.

Radiated E-Field emission measurements were performed from 30 MHz to 1 GHz while the EUT was operating normally. The receive antenna was located 10 meters from the EUT for testing up to 1GHz.The maximum emission level was determined by rotating the equipment on the turntable, varying the antenna height from 1 to 4 meters, and varying the antenna polarization between horizontal and vertical orientation.

Per EN55011, Conducted emission measurements from 150 KHz to 30 MHz were not performed due to the EUT requiring USB power.

Deviations: There were no deviations to the test procedure.

Mode of EUT Operation: EUT was measuring distance of target placed in front of it during testing.

Test Equipment Mode of Operation: The Rohde & Schwarz ESMI test equipment allows the test engineer to look at specific frequencies of noise produced by the EUT. While watching the noise level, the test engineer maximizes them by rotating the EUT 360 degrees, raising and lowering the antenna and changing antenna polarization. When the signals are maximized, the test engineer performs a Quasi-Peak measurement. The EMI software then captures the data taken by the receiver and displays it in a table and graph along with the cable loss and antenna factor

4.0 TEST RESULTS

The Advanced Fiber Solutions UOR-200, met the EN55011 & CFR 47, FCC Part 15 Class A requirements for radiated emissions.

5.0 TEST DATA

Test Location: IQS Marlboro Test Labs •55 Fairbanks Blvd • Marlboro, MA 01752 • 508-460-1400

Customer: **Advanced Fiber Solutions**
Specification: **EN55011A GROUP 1**
Work Order #:
Test Type: **Radiated Scan**
Equipment: **UOR-200 Series**
Manufacturer: Advanced Fiber Solutions
Model: UOR-200
S/N:

Date: 10/24/2005
Time: 14:29:17
Sequence#: 1
Tested By: Gaby Abboud

***Test Equipment*:**

Function	S/N	Calibration Date	Cal Due Date	Asset #
R&S ESMI		05/31/2005	05/31/2006	426

***Equipment Under Test* (* = EUT):**

Function	Manufacturer	Model #	S/N
UOR-200 Series*	Advanced Fiber Solutions	UOR-200	

Support Devices:

Function	Manufacturer	Model #	S/N

Test Conditions / Notes:

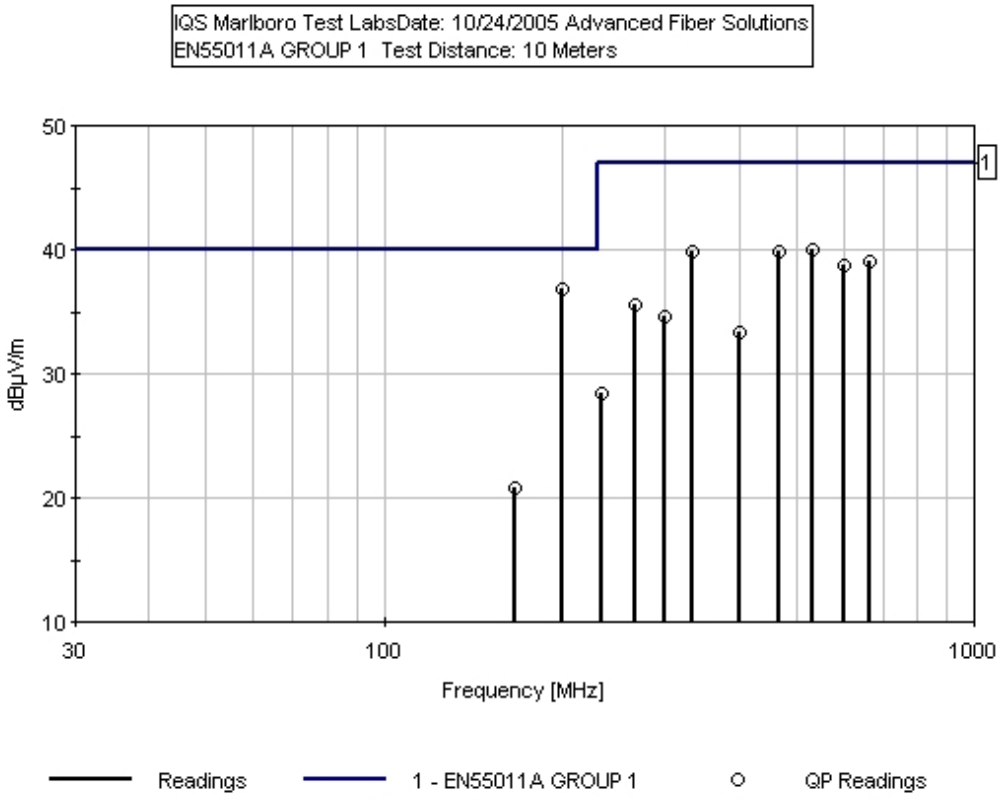
Transducer Legend:

T1=10 meter cable loss with 25dB pre-amp	T2=EMCO 3142 Biconolog

Measurement Data: Reading listed by margin. Test Distance: 10 Meters

#	Freq	Rdng	T1	T2			Dist	Corr	Spec	Margin	Polar
	MHz	dBµV	dB	dB	dB	dB	Table	dBµV/m	dBµV/m	dB	Ant
1	199.955M	50.7	-24.5	+10.6			+0.0	36.8	40.0	-3.2	Vert
	QP						250				100
2	533.259M	40.1	-20.0	+19.9			+0.0	40.0	47.0	-7.0	Horiz
	QP						294				175
3	333.345M	47.6	-22.2	+14.5			+0.0	39.9	47.0	-7.1	Vert
	QP						90				106
4	466.677M	42.3	-20.7	+18.2			+0.0	39.8	47.0	-7.2	Horiz
	QP						266				167
5	666.591M	35.5	-18.7	+22.2			+0.0	39.0	47.0	-8.0	Horiz
	QP						292				150
6	600.016M	37.1	-18.4	+20.0			+0.0	38.7	47.0	-8.3	Horiz
	QP						268				110
7	266.605M	44.9	-23.3	+13.9			+0.0	35.5	47.0	-11.5	Vert
	QP						235				106
8	299.929M	44.2	-22.7	+13.1			+0.0	34.6	47.0	-12.4	Vert
	QP						260				113
9	400.014M	38.2	-21.3	+16.4			+0.0	33.3	47.0	-13.7	Horiz
	QP						253				135
10	233.260M	39.7	-23.9	+12.6			+0.0	28.4	47.0	-18.6	Vert
	QP						125				106
11	166.616M	36.6	-25.1	+9.3			+0.0	20.8	40.0	-19.2	Vert
	QP						360				100

5.0 TEST DATA (Continued)



6.0 TEST EQUIPMENT

	Equipment	Serial #	Last Cal	Cal Due
*	Test Site #1		02/16/05	02/16/06
*	Rohde & Schwarz ESMI Receiver (DE23825)	Display 825035/002	05/31/05	05/31/06
		RF. 849937/001	05/31/05	05/31/06
	Agilent 8564EC Spectrum Analyzer	4046A00333	02/28/03	02/28/05
	Conducted Testing			
	Rohde & Schwarz ESH2-Z5 LISN	890484/018	10/08/04	10/08/05
	EMCO 3825/2 LISN	9501-2293	10/08/04	10/08/05
	EMCO 3625/2 LISN (5µH)	00034722	09/24/04	09/24/05
	1 meter BNC/Type N Coax Cable (Rec. – BH)	006	05/28/04	05/28/05
	0.1 meter BNC Coax Cable (LISN – GP)	010	05/28/04	05/28/05
	1.2 meter BNC/Type N Coax Cable	011	01/14/04	01/14/05
	Conducted Heliax Cable	009	05/28/04	05/28/05
	Radiated Testing			
*	EMCO Biconilog Antenna Model 3142	9804-1267	10/15/04	10/15/06
	EMCO 3121C Dipole Antenna	8812-0345	11/13/02	11/13/05
	EMCO 3121C Dipole Antenna	8812-0346	11/13/02	11/13/05
	EMCO Double Ridge Guide Antenna (Horn) Model 3115	9508-4556	10/21/04	10/21/05
	FCC Clamp Model F-201-32mm	363	03/29/04	03/29/05
	HP 84125-80001 Wave Guide (26.5GHz – 40GHz)	000028-001	N/A	N/A
	HP 84125-80008 Wave Guide (18GHz – 26.5GHz)	991383-006	N/A	N/A
*	.5 meter RG214/U Cable (Rec. to BH)	001	06/24/05	06/24/06
	.5 meter RG214/U Cable (Rec. to BH)	002	06/24/04	06/24/05
*	Heliax Cable for 10 meter testing (BH – GP)	003	06/24/05	06/24/06
	Heliax Cable for 3 meter testing (BH – GP)	005	06/24/04	06/24/05
*	6 meter RG214/U Cable (Ant. – GP, 10 Meter)	004	06/24/05	06/24/06
	6 meter RG214/U Cable (Ant. – GP, 3 Meter)	012	06/24/04	06/24/05
	.5 meter BNC to Type N Cable (Pre-Amp – Rec.)	007	02/26/04	02/26/05
	Pasternak Microwave Coax Cable (x2)	012, 013	11/08/04	11/08/05
	8 meter BNC Cable	008	02/26/04	02/26/05
	HP8349B Amplifier (2GHz – 20GHz)	2548A00508	03/19/04	03/19/05
	HP8447D Amplifier (.1MHz – 1300MHz)	2727A05454	09/01/04	09/01/05
	HP83050A Microwave Amp (1GHz – 50GHz)	654370	08/10/04	08/10/05

* Indicates equipment used for this testing.
All equipment used for testing has been calibrated according to methods and procedures defined by the National Institute of Standards and Technology (NIST).
Standard Uncertainty per NIST Technical Note 1297 1994 is estimated to be 4.17db for 10m Radiated Emissions, 4.31db for 3m Radiated Emissions and 4.64db for Conducted Emissions.

7.0 PHOTOGRAPHS (Radiated Testing)

7.0 PHOTOGRAPHS (Support Equipment)