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FCC PART 15.249 TEST REPORT

UNLICENSED INTENTIONAL RADIATOR

Applicant	HYPER-INTERACTIVE TEACHING TECHNOLOGY LLC	
Address	1625 RIDGEWAY DRIVE	
	FAYETTEVILLE, ARKANSAS 72701	
FCC ID	UH9TX3000	
Model Number	TX 3000	
Product Description	TRANSMITTER	
Date Sample Received	8/3/2006	
Date Tested	8/23/06	
Tested By	Nam Nguyen	
Approved By	Mario de Aranzeta	
Report Number	H\HYPER\2295UT6\2295UT6TestReport.doc	
Total Pages	9	
Test Results	<input checked="" type="checkbox"/> PASS	<input type="checkbox"/> FAIL

**THE ATTACHED REPORT SHALL NOT BE REPRODUCED EXCEPT IN FULL
WITHOUT THE WRITTEN APPROVAL OF TIMCO ENGINEERING, INC.**



Certificate # 0955-01



Certificate # 0955-01



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STATEMENT OF COMPLIANCE

This equipment has been tested in accordance with the standards identified in the referenced test report. To the best of my knowledge and belief, these tests were performed using the measurement procedures described in this report and demonstrate that the equipment complies with the appropriate standards. No modifications were made to the equipment during testing in order to demonstrate compliance with these standards.

I attest that the necessary measurements were made by me or under my supervision, at TIMCO ENGINEERING, INC. located at 849 N.W. State Road 45, Newberry, Florida 32669.

Authorized by: Mario de Aranzeta

Signature: <*Mario de Aranzeta*>

Function: Engineer

Date: 8/23/2006

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GENERAL INFORMATION

DUT Specification

The test results relate only to the items tested.		
Applicable Standard	Part 15.249	
DUT Description	TRANSMITTER	
FCC ID	UH9TX3000	
Model Number	TX 3000	
Serial Number	N/A	
Operating Frequency	TX: 2401.00 MHz – 2462.50 MHz	RX
No. of Channels	62	
DUT Power Source	<input type="checkbox"/> 110–120Vac/50– 60Hz	
	<input type="checkbox"/> DC Power	
	<input checked="" type="checkbox"/> Battery Operated Exclusively	
Test Item	<input type="checkbox"/> Prototype	<input type="checkbox"/> Pre-Production <input checked="" type="checkbox"/> Production
Type of Equipment	<input checked="" type="checkbox"/> Fixed	<input type="checkbox"/> Mobile <input type="checkbox"/> Portable
Antenna	N/A	
Antenna Connector	N/A	
Test Conditions	Temperature - 26°C Humidity – 50%	
Modifications	None	
Test Exercise	Continuous transmit mode of operation	
Test Standard	ANSI C63.4 - 2003	



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**EMC EQUIPMENT LIST**

Device	Manufacturer	Model	Serial Number	Cal/Char Date	Due Date
3/10-Meter OATS	TEI	N/A	N/A	Listed 3/27/04	3/26/07
3-Meter OATS	TEI	N/A	N/A	Listed 1/11/06	1/10/09
Antenna: Biconnical	Eaton	94455-1	1057	CAL 12/12/05	12/12/07
Antenna: Biconnical	Electro-Metrics	BIA-25	1171	CAL 4/29/05	4/29/07
Analyzer	HP	85650A	2811A01279	CAL 4/13/05	4/13/07
Blue Tower Quasi-Peak Adapter Analyzer	HP	85685A	2926A00983	CAL 9/5/05	9/5/07
Blue Tower RF Preselector Analyzer	HP	8568B	2928A04729 2848A18049	CAL 4/13/05	4/13/07
Blue Tower Spectrum Analyzer	Electro-Metrics	ANS-25/2	2604	CAL 10/5/06	10/5/08
LISN	Electro-Metrics	EM-7820	2682	CAL 4/28/05	4/28/07
LISN	Eaton	96005	1243	CAL 12/14/05	12/14/07
Antenna: Log-Periodic					

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TEST PROCEDURE

Radiation Interference: ANSI Standard C63.4-2003 using a spectrum analyzer, a preselector, a quasi-peak adapter, and an appropriate antenna. The analyzer was calibrated in dB above a microvolt at the output of the antenna. The resolution bandwidth was 100 kHz with an appropriate sweep speed and the video bandwidth was 300 kHz up to 1.0GHz and 1.0 MHz with a video BW of 3.0 MHz above 1.0GHz. When an emission was found, the table was rotated to produce the maximum signal strength. The antenna was placed in both the horizontal and vertical planes and the worse case emissions were reported. The spectrum was searched to at least the tenth (10) harmonic of the fundamental.

Formula Of Conversion Factors: The field strength at 3m was established by adding the meter reading of the spectrum analyzer (which is set to read in units of dBuV) to the antenna correction factor supplied by the antenna manufacturer. The antenna correction factors are stated in terms of dB. The gain of the preselector was accounted for in the spectrum analyzer meter reading.

Example:

Freq (MHz)	Meter Reading	+ ACF	+ CL	= FS
33	20 dBuV	+ 10.36 dB	+ 0.5	= 30.86 dBuV/m @ 3m

Power Line Conducted Interference: The procedure used was ANSI Standard C63.4-2003 using a 50uH LISN. Both lines were observed. The bandwidth of the spectrum analyzer was 10 kHz with an appropriate sweep speed. The spectrum was scanned from 0.15 to 30 MHz.

Occupied Bandwidth: A small sample of the transmitter output was fed into the spectrum analyzer and the attached plot was printed. The vertical scale is set to -10 dBm per division.

ANSI Standard C63.4-2003 10.1 Measurement Procedures: The UUT was placed on a table 80 cm high and with dimensions of 1m by 1.5m. The UUT was placed in the center of the table (1.5m side). The table used for radiated measurements is capable of continuous rotation.

When an emission was found, the table was rotated to produce the maximum signal strength. At this point, the antenna was raised and lowered from 1m to 4m. The antenna was placed in both the horizontal and vertical planes.



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RADIATION INTERFERENCE

Rules Part No.: 15.249, 15.209

Requirements:

Frequency	Limits
Part 15.209	
9 to 490 kHz	2400/F (kHz) μ V/m @ 300 meters
490 to 1705 kHz	24000/F (kHz) μ V/m @ 30 meters
1705 kHz to 30 MHz	29.54 dB μ V/m @ 30 meters
30 - 88	40.0 dB μ V/m @ 3 meters
80 - 216	43.5 dB μ V/m @ 3 meters
216 - 960	46.0 dB μ V/m @ 3 meters
Above 960	54.0 dB μ V/m @ 3 meters
Part 15.249	
Fundamental 902 - 928 MHz	94.0 dB μ V/m @ 3 meters
Fundamental 2.4 - 2.4835 MHz	94.0 dB μ V/m @ 3 meters
Harmonics	54.0 dB μ V/m @ 3 meters

Test Data:

Tuned Frequency MHz	Emission Frequency MHz	Meter Reading dBuV	Ant. Polarity V/H	Coax Loss dB	Correction Factor db/m	Field Strength dBuV/m	Margin dB
2,401.40	2,401.40	50.7	H	3.18	32.32	86.2	7.8
2,401.40	2,401.40	57.4	V	3.18	32.32	92.9	1.1
2,401.40	4,802.80	14.4	V	4.9	34.34	53.64	0.36
2,401.40	4,802.80	14.6	H	4.9	34.34	53.84	0.16
2,401.40	7,203.90	8.1	V	5.72	36.14	49.96	4.04
2,401.40	7,203.90	8.7	H	5.72	36.14	50.56	3.44
2,401.40	9,605.30	6.4	H	6.78	37.53	50.71	3.29
2,401.40	9,605.30	8.4	V	6.78	37.53	52.71	1.29
2,401.40	12,007.00	6.3	H	7.8	38.9	53	1
2,401.40	12,007.00	6.5	V	7.8	38.9	53.2	0.8
2,431.40	2,431.40	49.3	H	3.2	32.41	84.91	9.09
2,431.40	2,431.40	54.9	V	3.2	32.41	90.51	3.49
2,431.40	4,862.80	13.8	H	4.93	34.39	53.12	0.88
2,431.40	4,863.80	14.2	V	4.93	34.39	53.52	0.48
2,431.40	7,295.70	8.1	H	5.78	36.25	50.13	3.87
2,431.40	7,295.70	8.4	V	5.78	36.25	50.43	3.57
2,431.40	9,727.60	7.1	H	6.82	37.67	51.59	2.41
2,431.40	9,727.60	8	V	6.82	37.67	52.49	1.51
2,431.40	12,159.50	6.3	V	7.91	38.96	53.17	0.83
2,431.40	12,159.50	6.9	H	7.91	38.96	53.77	0.23
2,462.30	2,462.30	50.8	H	3.22	32.49	86.51	7.49
2,462.30	2,462.30	55.9	V	3.22	32.49	91.61	2.39
2,462.30	4,924.60	14.4	V	4.96	34.44	53.8	0.2
2,462.30	4,924.60	14.2	H	4.96	34.44	53.6	0.4
2,462.30	7,386.90	8.8	V	5.83	36.36	50.99	3.01
2,462.30	7,387.50	9.1	H	5.83	36.37	51.3	2.7
2,462.30	9,841.20	6.8	H	6.85	37.81	51.46	2.54
2,462.30	9,849.20	7.3	V	6.85	37.82	51.97	2.03
2,462.30	12,311.50	6.5	V	8.02	39.02	53.54	0.46
2,462.30	12,312.10	6.4	H	8.02	39.02	53.44	0.56

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OCCUPIED BANDWIDTH

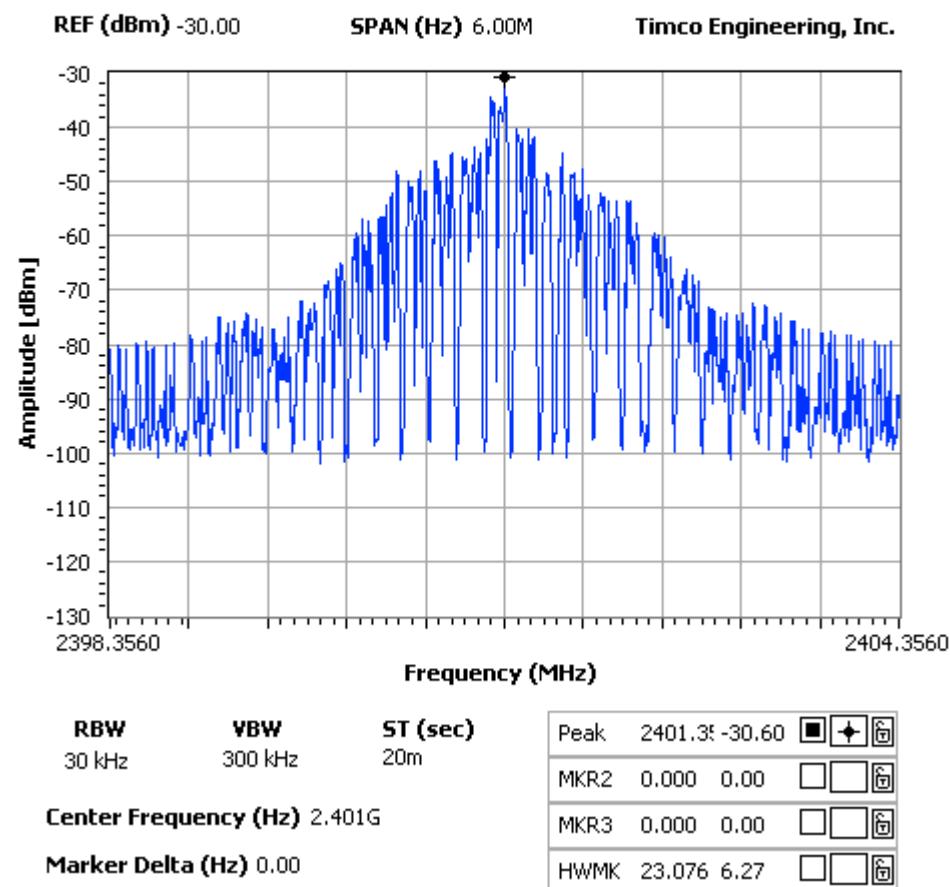
Rules Part No.: 15.249 (d)

Requirements: The field strength of any emissions appearing outside the band edges and up to 10 kHz above and below the band edges shall be attenuated at least 50 dB below the level of the carrier or to the general limits of 15.249.

Test Data:

NOTES:

HYPER-INTERACTIVE TEACHING TECHNOLOGY LLC - FCC ID: UH9TX3000
OCCUPIED BANDWIDTH PLOT



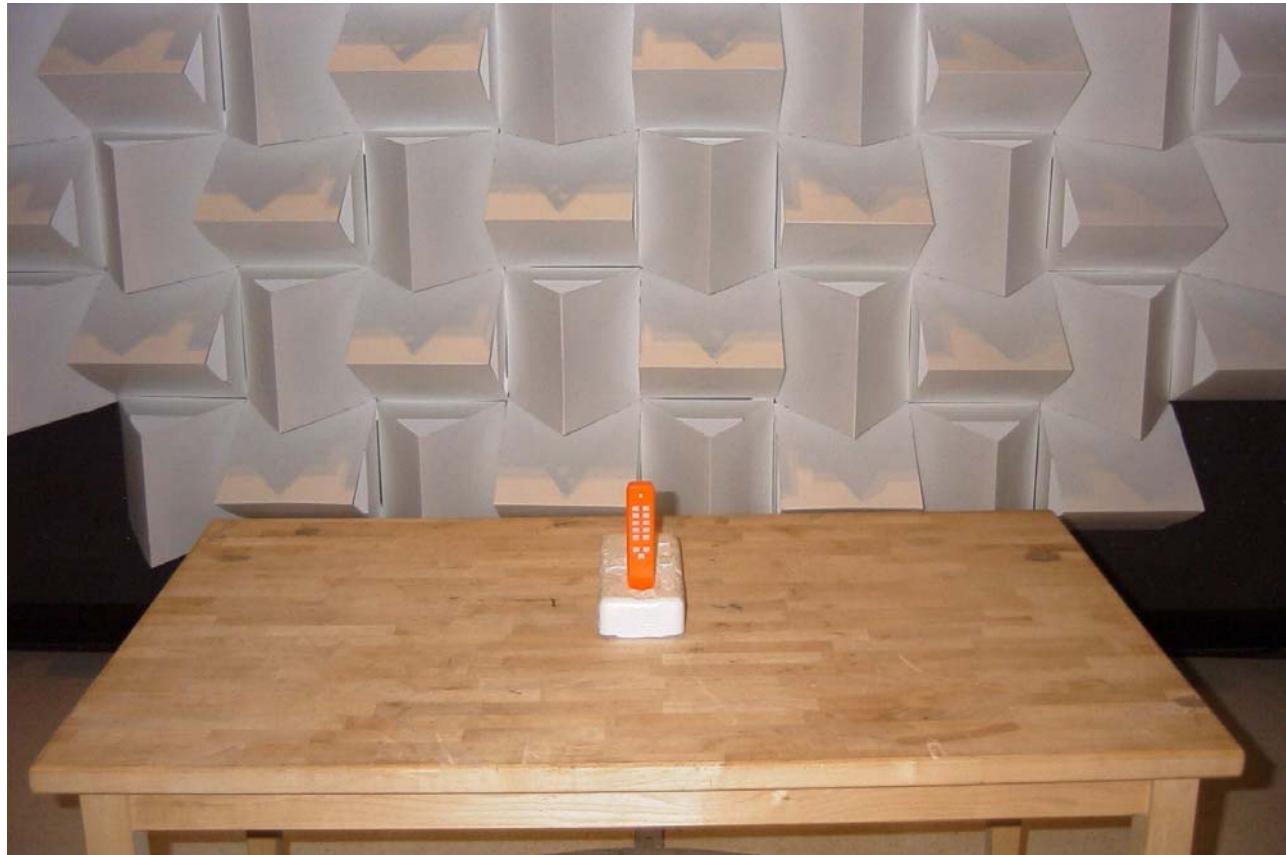
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RADIATED EMISSIONS TEST SET UP PHOTO



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