MEASUREMENT/TECHNICAL REPORT

Company: Microtek Electronics, Inc.
FRN: 0007-4512-48
Model: Minilink 5.8T
FCC ID: JRR-PS37-4

Description: This is a report to support a request for an original grant of equipment authorization.

Equipment Type: Low Power Communications Device Transmitter (DXX)

Report prepared for: Microtek Electronics, Inc.
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Introduction

This report is an application for Certification of a Transmitter operating pursuant to Part 15.249 of the FCC Rules, Code of Federal Regulations 47. The model number covered by this report is Minilink 5.8. This report is designed to demonstrate the compliance of this device with the requirements outlined in Part 15 of CFR 47 using the methods outlined in Part 2 of CFR 47.

Statement of Conformity

The Microtek Minilink 5.8 has been found to conform with the following parts of the 47 CFR as detailed below:

Part 2	Part 15	Comments
	15.15(b)	The product contains no user accessible controls that increase transmission power above allowable levels.
2.925	15.19	The label is shown in the label exhibit.
	15.21	Information to the user is shown in the instruction manual exhibit.
	15.27	No special accessories are required for compliance.
	15.203	The antenna is soldered to the transmitter board, which is not user accessible, and there is no external antenna connection.
	15.205 15.209	The fundamental is not in a Restricted band and the spurious and harmonic emissions in the Restricted bands comply with the general emission limits of 15.209.
2.1055(d)		Amplitude is constant during voltage variations.
	15.207	The unit complies with the conducted emissions limits of 15.207.
	15.249	The unit complies with the field strength limits of 15.249

Test Methodology

Radiated emission testing was performed according to the procedures in ANSI C63.4 (1992). The testing was performed at an antenna to EUT distance of 3 meters from 30MHz to 18GHz, and 0.1 meters above 18GHz. The device's performance was investigated to 40GHz. The EUT was powered by a 12VDC adaptor. The emissions were maximized around the three orthogonal axes and the maximum reading was recorded. The integrated antenna cannot be maximized separately.

All other performance tests were made in accordance with the procedures outlined in Part 15 of CFR 47. The applicable sections provided under Part 15 are provided in the measurement section of this report.

Test Facility

Curtis-Straus LLC
All testing for the range 30MHz–40GHz was performed at Curtis-Straus (A2LA Certificate Number 1627-01). The open area test site used to collect the radiated data is located at 527 Great Road, Littleton, MA 01460. Site “T” was used.

Test Equipment

SPECTRUM ANALYZERS					
x	**Analyzer**	**Model No.**	**Company**	**Serial No.**	**Calibration Due**
X	**GREEN** 9kHz-26.5GHz	8593E	HP	3829A03618	04-OCT-2002
X	**ORANGE** 9kHz-26.5GHz	E4407B	HP	US39440975	07-JUN-2003

LISNS					
x	**LISN**	**Model No.**	**Company**	**Serial No.**	**Calibration Due**
X	**YELLOW-BLACK** 10kHz-30MHz	8012-50-R-24-BNC	Solar	984735	10-MAY-2003
X	**ORANGE** 10kHz-30MHz	8012-50-R-24-BNC	Solar	903707	02-OCT-2002

OPEN AREA TEST SITES (OATS)					
x	**Site**	**FCC Code**	**IC Code**	**VCCI Code**	**Calibration Due**
X	**"T"** Texas	93448	IC 2762-T	R-905/ C-480	04-FEB-2004

ANTENNAS					
x	**Antenna**	**Model No.**	**Company**	**Serial No.**	**Calibration Due**
X	**GREEN** Bilog: 30MHz-2GHz	CBL6112B	Chase	2742	26-JAN-2003
X	**ORANGE** Horn: 1-18GHz	3115	EMCO	0004-6123	27-MAY-2003
X	**WHITE** Std Gain Horn: 18-26.5GHz	3160-09	EMCO	9610-1068	26-JUN-2003

HARMONIC MIXER WITH HORN ANTENNA					
x	**Mixer**	**Model No.**	**Company**	**Serial No.**	**Calibration Due**
X	**HARMONIC MIXER/ HORN** 26.5-40 GHz	11970A/28-442-6	HP/ATM	2332A00900/ A046903-01	09-JUL-2003

PREAMPLIFIERS / ATTENUATORS					
x	**Preamplifier**	**Model No.**	**Company**	**Serial No.**	**Calibration Due**
X	**BLUE-BLACK** 0.01-2000MHz	ZFL-1000-LN	MiniCircuits/ C-S	n/a	24-SEP-2002
X	**ORANGE-BLACK** 1-20GHz	SMC-12A	MITEQ	690639	06-AUG-2002
X	**YELLOW** 18-26.5GHz	AFS4-18002650-60-8P-4	MITEQ	467559	29-AUG-2002

Unless otherwise noted the calibration interval is one year. All equipment is calibrated using standards traceable to NIST or other nationally recognized calibration standard.

Measurement Results

Operating Frequency

This device operates at 5741, 5754, 5767, 5780, 5793, 5806, 5819, 5832, 5845, 5858MHz.

Electric Field Strength Radiation Measurements

Radiated Emissions Table — *Curtis-Straus LLC*

Date: 19-Jul-02 **Company:** Microtek **Table** 1
Engineer: Evan Gould **EUT Desc:** Minilink 5.8 **Work Order:** C0490

Frequency Range: 30MHz-40GHz **Measurement Distance:** 3 m

Notes: Fundamental and 1/2 Fundamental measurements were taken with no modulation for worst-case readings. No other spurious emissions were found within 20dB of the limit.
EUT Max Freq: 5858MHz
Test Site: "T"

Antenna Polarization (H / V)	Frequency (MHz)	Reading (dBµV)	Preamp Factor (dB)	Antenna Factor (dB/m)	Cable Factor (dB)	Adjusted Reading (dBµV/m)	47 CFR 15.249 Limit (dBµV/m)	Margin (dB)	Result (Pass/Fail)
Ch.1 1/2 Fund. V av	2870.6	39.3	24.4	31.4	1.6	47.9	54.0	-6.1	Pass
Ch.5 1/2 Fund. V av	2896.5	34.4	24.4	31.5	1.6	43.1	54.0	-10.9	Pass
Ch.10 1/2 Fund. V av	2929.0	43.5	24.4	31.5	1.6	52.2	54.0	-1.8	Pass
lower band edge	5725.0	32.0	23.8	36.6	2.4	47.2	54.0	-6.8	Pass
Ch.1 Fundamental; V pk	5741.0	75.3	23.8	36.6	2.4	90.5	93.9	-3.4	Pass
Ch.5 Fundamental; V pk	5793.0	73.5	23.7	36.7	2.4	88.9	93.9	-5.0	Pass
Ch.10 Fundamental; V pk	5858.0	74.9	23.6	36.8	2.4	90.5	93.9	-3.4	Pass
upper band edge	5875.0	32.7	23.6	36.9	2.4	48.4	54.0	-5.6	Pass

Table Result: Pass by -1.8 dB ***Worst Freq:*** 2929.0 MHz

30-1000MHz >>	**Pre-Amp:** Blue-Blk	**Cable:** 65 ft RG8A/U	**Analyzer:** Green	**Antenna:** Green
1-18GHz >>	**Pre-Amp:** Or-Blk	**Cable:** 3m Microflex	**Analyzer:** Orange	**Antenna:** Yellow Horn
18-26.5GHz >>	**Pre-Amp:** Yellow	**Cable:** 3m Microflex	**Analyzer:** Orange	**Antenna:** White Horn
26.5-40GHz >>	**Pre-Amp:** none	**Cable:** 40GHz Mixer	**Analyzer:** Orange	**Antenna:** 40GHz Mixer

Electric Field Strength Conducted Measurements

AC Mains Conducted Emissions — *Curtis-Straus LLC*

Date: 19-Jul-02 **Company:** MicroTek **Table No:** 2
Engineer: Evan Gould **EUT Desc:** Minilink 5.8 **Work Order:** C0490
Range: 0.45-30Mhz **LISN(s):** Yellow-Black Orange **Spectrum Analyzer:** Red

Frequency (MHz)	Q.P. Readings QP1 (dBµV)	QP2 (dBµV)	Ave. Readings AV1 (dBµV)	AV2 (dBµV)	Impedance Factor (dB)	47 CFR 15.207 Limit (dBµV)	Margin dB	Overall Result (Pass/Fail)
0.45	10.7	10.8			20.0	47.9	-17.1	Pass
4.66	7.2	9.2			20.0	47.9	-18.7	Pass
8.65	3.5	6.5			20.0	47.9	-21.4	Pass
13.10	3.5	6.0			20.0	47.9	-21.9	Pass
17.70	3.0	5.9			20.0	47.9	-22.0	Pass
28.10	3.1	5.6			20.0	47.9	-22.3	Pass

Table Result: Pass by -17.10 dB ***Worst Freq:*** 0.45 MHz

Voltage Variations

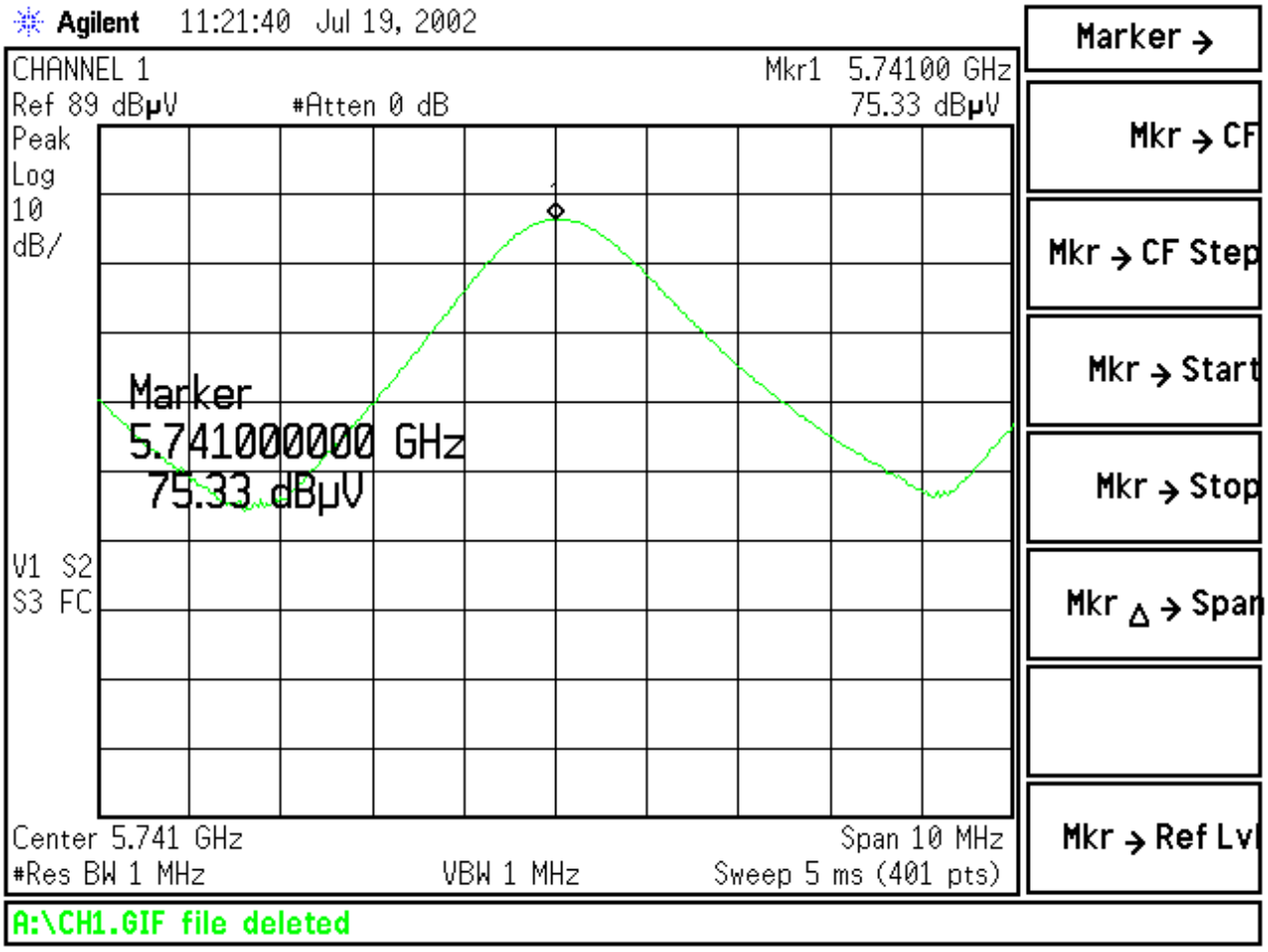
Voltage Variation Table

Date:	24-Jul-02	**Company:**	Microtek
Engineer:	Evan Gould	**EUT Desc:**	Minilink 5.8
Work Order:	C0490		
Notes:	Channel 10	**Cable:**	3m Microflex
Analyzer:	Orange	**Antenna:**	Black Horn

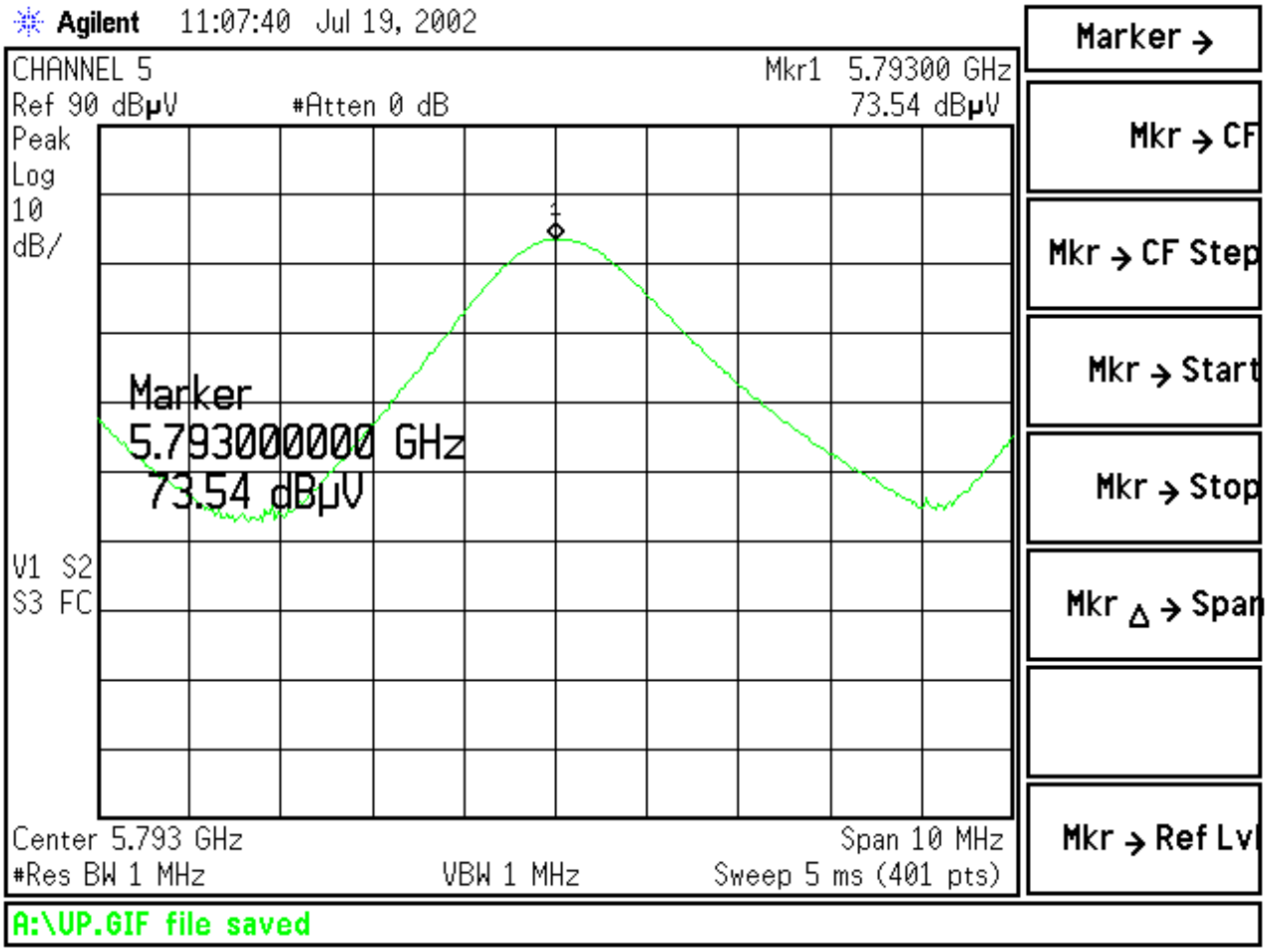
Antenna Polarization (H / V)	Frequency (MHz)	Reading (dBµV)
5.2V (lowest operable)	5858.0	71.1
6V, 12V, 14.5V	5858.0	71.3
16.68V (higest rated +15%)	5858.0	71.3

Emissions Plots

Channel 1 Fundamental



Channel 5 Fundamental



Channel 10 Fundamental