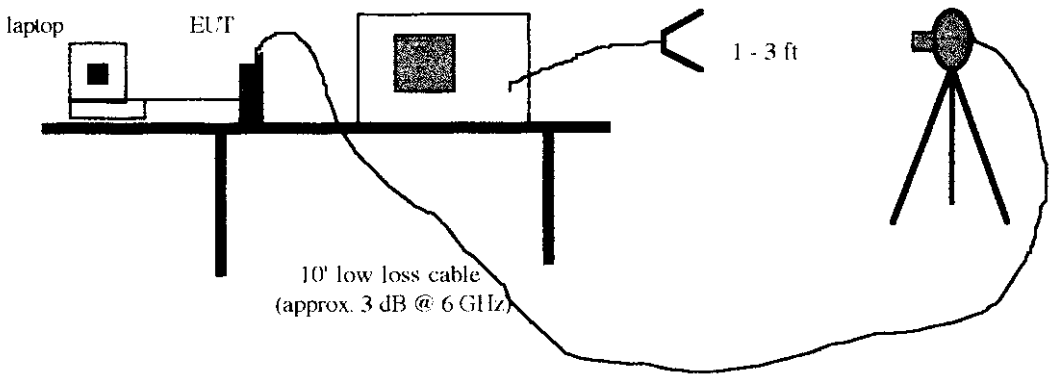
5725 - 5825 MHz UNII Transmitter Emissions Test Report

Applicant:	RadioLAN 455 DeGuigne Drive Sunnyvale, CA 94089
Product Description:	5725-5825 MHz UNII transceiver
FCC ID:	MCIPUNIIT
FCC Rule Paragraphs	15.405, 15.205, 15.209, 15.107

TEST LOCATION

Radiated emissions were performed on the roof of RadioLAN's main building. The 15 dBi transmit antenna was placed on a tripod approximately 1.5 meters high. Antenna to antenna distance was as little as 1 ft so that low level signals up to 40 GHz could be detected above measurement system noise floor.



Radiated Test Set-up

TRANSMITTER TEST PROCEDURES

Radiated Emissions and RF Radiation Exposure

The EUT was connected to the RadioLAN PCMCIA interface card installed in a laptop computer. The laptop was programmed to send a constant stream of data to the EUT.

The search antenna was raised and lowered in both horizontal and vertical polarities thin order to maximize received levels at each emission.

TEST EQUIPMENT

Description	Manufacturer	Model
Spectrum analyzer	HP	8564E
Horn Antenna, 1-18 GHz	AH Systems	SAS-200/571
Low loss cable, 2 ft	WL Gore	52214
Harmonic Mixer, 18-26.5 GHZ	HP	11970K
Harmonic Mixer, 26.5-40 GHZ	HP	11970A
Levelling Pre-amplifier for Mixers	HP	11975A

TEST RESULTS

15.205, 15.209 Emissions are below limits for transmitter harmonics and out of band emissions. Refer to attached Radiated Emissions Spreadsheet.

CLASS 2 PERMISSIVE CHANGE: RADIATED EMISSIONS

Company: RadioLan Date: 12-Mar-98

RadioLAN/ PCMCIA Product with 15 dBi antenna

FCC ID: MCIPUNIIT Tested At: RadioLAN

Tested To: 15.205, 15.209 455 DeGuigne Drive

Sunnyvale, CA 94089

Tested By: T.N. Cokenias

Test Distance: 1 ft

F(MHz)	Level, dBuV	AF, dB	Dist, dB	Amp, dB	Cable loss	Duty Cycle	E, dBuV/m	Limit, dBuV
11599Pk(V)	34	40.8	-20	0	2	0	56.8	74
11599Av(V)	34	40.8	-20	0	2	-23.2	33.6	54
17397Pk(V)	33	45.7	-20	0	2.4	0	61.1	74
17397Av(V)	33	45.7	-20	0	2.4	-23.2	37.9	54
23231Pk(V)	34	45.3	-20	0	3	0	62.3	74
23231Av(V)	34	45.3	-20	0	3	-23.2	39.1	54
29002Pk(NF)*	21	46.6	-20	0	3.6	0	51.2	74
29002Av(NF)*	21	46.6	-20	0	3.6	-23.2	28	54
to 40 GHz	no emissions detected within 20 dB of limit							

Notes:		Meas. Dist, Ft.	Dist, dB
NF:	Noise floor		
AF:	Antenna Factor		
Dist:	Distance Corr.	1 ft	-20

* = RES BW of 10 KHz

15.407(f) Radio Frequency Exposure Requirements

From Table 2B: Maximum Permissible Exposure, Uncontrolled Environment: 1 mW/cm2

E2/377 = W/m2, E2/3770 = mW/m2 = 1 mW/m2

E = 61.4 V/m

Again using the relationship between field strength E, power in watts P, numeric gain over isotropic G, distance in meters d and solving for d,

G = 15 dBi = 31.6

d =((0.05Wpk*30*31.6)^0.5)/61.4

d = 11.2 cm, assuming peak power output is constant, which it never is.

The pulse position modulation system results in an average power of 3.46 mW. This is obtained in the following fashion:

Pulse duty cycle 0.121 * packet duty cycle 0.572*50 mW = 3.46 mW. If this power level is put into the equation,

d = 2.9 cm

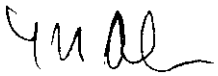
A statement shall be placed in the user manual with the following wording:

NOTICE

While operating this radio with the 15 dBi directional antenna, the radio frequency exposure limits may be exceeded at distances closer than 11.2 cm from the antenna of this device.

CONCLUSION

The RadioLAN low power UNII transceiver, FCC ID: MCIPUNIIT, continues to meet all emissions requirements in Part 15 when used with the 15 dBi antenna.



T.N. Cokenias 31 March 1998

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