

EMISSIONS TEST REPORT FOR A LOW POWER TRANSMITTER

I. GENERAL INFORMATION

Requirement: Federal Communications Commissions
 Test Requirements: 15.205, 15.207, 15.209, 15.247

Applicant: RadioLAN Marketing Group
 185 Lewis Road - Suite 30
 San Jose, CA 95111

FCC ID: MCI-397

II. DESCRIPTION OF EQUIPMENT UNDER TEST (EUT)

RadioLAN FCC ID: MCI-397 is a DTS transceiver in the 5,725 - 5,850 MHz band.

Output power : 50 mW (17 dBm) nominal
 63 mW (18dBm) maximum

Center frequency: 5.775 GHz (single channel)
 6 dB BW 26.6 MHz
 20 dB BW: 43 MHz

The product is a self-contained wireless ethernet bridge product used with a separate power inserter and AC-DC converter. Input to the bridge unit is ethernet and DC power over CAT5 cable. The EUT was tested with the following antennas:

Antenna type	Mfr	Model ID	Gain (dBi)
Flat panel	Gabriel	DFPD-1-52	23.5
omni	Maxrad	MFB58009	9.0

Additional antennas available for this transceiver:

Flat panel European Antennas DPD18 18 dBi

III. TEST LOCATION

All emissions tests were performed at:

Compliance Certification Services
 571F Monterey Road
 Morgan Hill, CA 95037

T.N. Cokenias
 EMC Consultant/Agent for RadioLAN Marketing Group

15 June 2003

TEST PROCEDURES

Radiated Emissions

Test Requirement: 15.109, 15.205, 15.209, 15.247

Measurement Equipment Used:

Agilent 4441 Spectrum Analyzer

HP 8566 Spectrum analyzer

HP 8447D pre-amplifier

Miteq NSP2600-44 Preamp, 1- 26 GHz

HP 11975A Preamplifier, 2 - 8 GHz (used with HP11970 external mixers)

Schaffner Chase Bilog antenna, 30 - 2000 MHz

EMCO Double Ridge Waveguide Horn, 1 - 18 GHz

Antenna Research Associates MWH 1826/B, 18 - 26.5 GHz

HP 11970A Harmonic mixer, 26.5 - 40 GHz

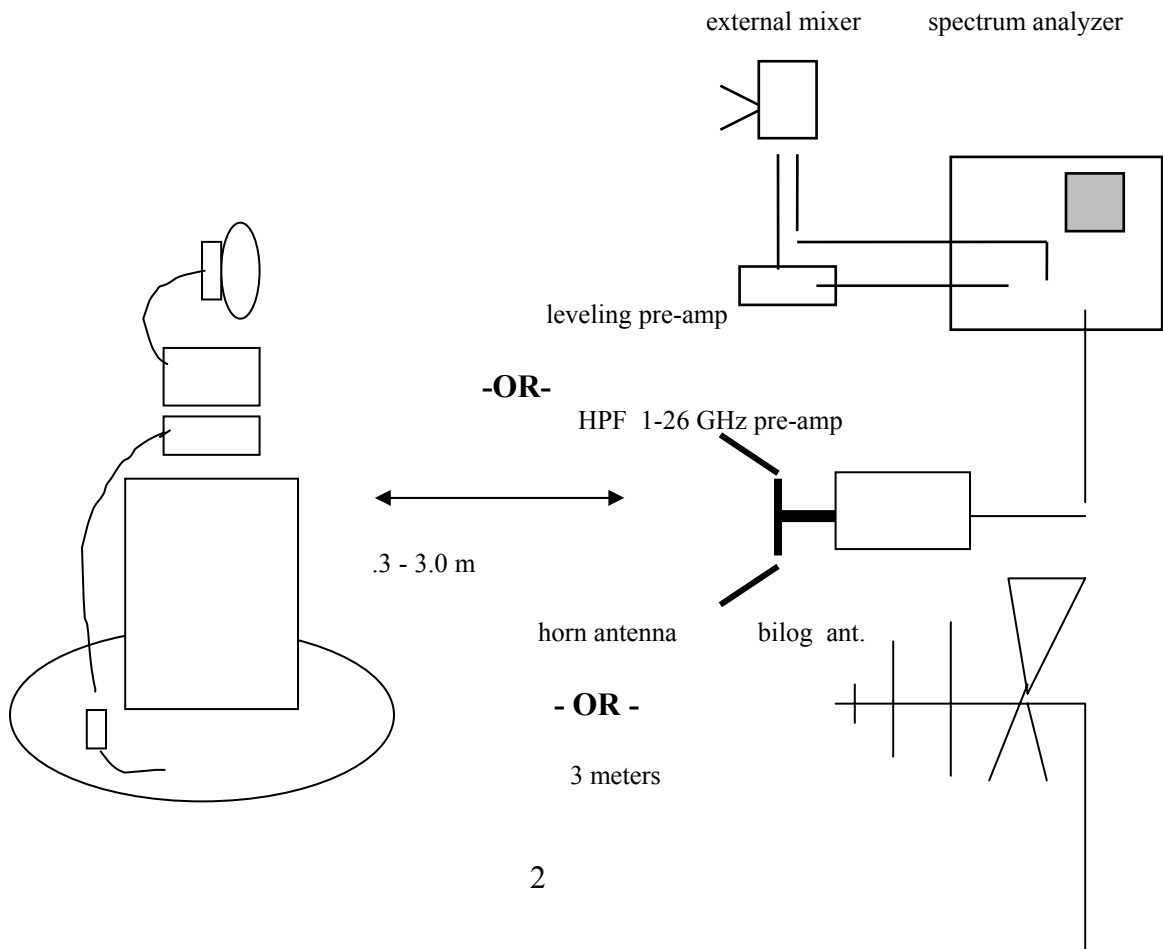
HP 11970Q Harmonic mixer, 33 - 50 GHz

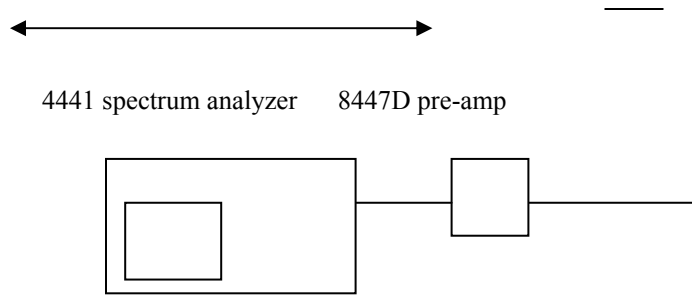
HP 11970V Harmonic mixer, 50 - 75 GHz

HP 11970W Harmonic mixer, 75 - 110 GHz

Low loss antenna cable (0.7 dB/ft @ 24 GHz)

Test Set-Up





Test Method 1-40 GHz

With the transmitter operating, the EUT was rotated 360° and the search antenna was raised and lowered in both polarities, all in an attempt to maximize the levels of the received emission for each harmonic and spurious emission up to 40 GHz. Testing was performed for two different types of antennas.

Antenna type	Mfr	Model ID	Gain (dBi)
Flat panel	Gabriel	DFPD-1-52	23.5
omni	Maxrad	MFB58009	9.0

Test Results, 1- 40 GHz

Refer to test results in separate Excel spreadsheets for each antenna

Test Method 30 – 1000 MHz

1. The EUT was placed on a wooden table resting on a turntable on the open air test site. The search antenna was placed 10m from the EUT. The EUT antenna was mounted vertically as per normal installation. The EUT was set to transmit continuously .
2. The turntable was slowly rotated to locate the direction of maximum emission at each frequency generated by the EUT.
3. Once maximum direction was determined, the search antenna was raised and lowered in both vertical and horizontal polarizations. The maximum readings so obtained are recorded

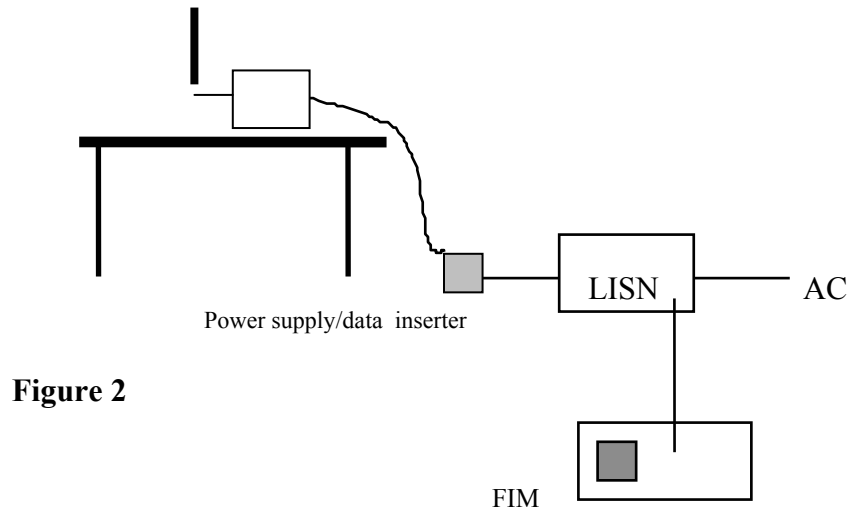
Test Results, 30 - 1000 MHz

PASSES EN55022 class B limits. Refer to separate attachment.

Test Requirement: 15.107, 15.207**Measurement Equipment Used:**

Rohde & Schwarz EMI Receiver ESHS-20

Fischer Custom Communication LISN, FCC-LISN-50/250-25-2

Test Set-up**Figure 2****Test Procedure**

1. The EUT was placed on a wooden table 40 cm from a vertical ground plane and approximately 80 cm above the horizontal ground plane on the floor. The EUT was set to transmit in normal mode.
2. Line conducted data was recorded for both NEUTRAL and HOT lines.

Test Results

Refer to separate attached graph.

Minimum 6 dB Bandwidth**Test Requirement: 15.247(a)2****Measurement Equipment Used:**

HP 8593EM Spectrum Analyzer
6' length low loss coaxial cable

Test Procedures

The EUT was configured on a test bench. The EUT was set for continuous operation. While the transmitter broadcast a steady stream of digital data, the analyzer MAX HOLD function was used to capture the envelope of the transmission occupied bandwidth.

Test Results: Refer to attached spectrum analyzer charts. Data taken with RES BW of 100 kHz shows minimum 6 dB BW of 26.7 MHz. Minimum requirement is 500 kHz.

Minimum 6 dB Bandwidth



RF Power Output**Test Requirement: 15.247(b)****Measurement Equipment Used:**

HP 8566 Spectrum Analyzer
2 ft low loss RF cable

Test Procedures

1. The EUT was configured on a test bench.
2. The pulse position modulation of the EUT was disabled. Pulse position modulation is achieved by switching RF output ON and OFF in a pre-determined time sequence. When the modulation is turned off, the resulting CW signal is the peak power output of the transmitter.

Test Results

Maximum output power is 18 dBm.

Spurious Emissions, Conducted
Test Requirement: 15.247(c)

Measurement Equipment Used:

Agilent 4441 Spectrum Analyzer
2 ft length low loss A coaxial RF cable

Test Procedure

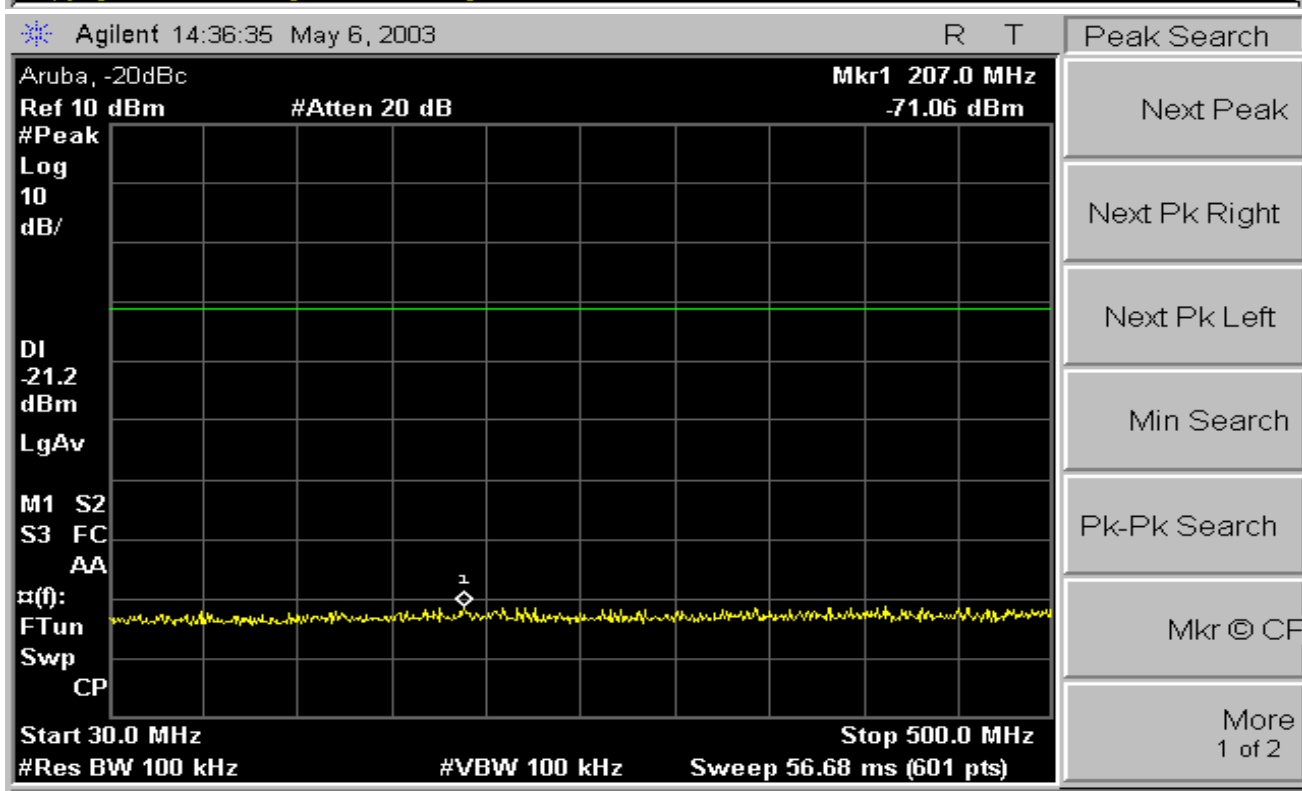
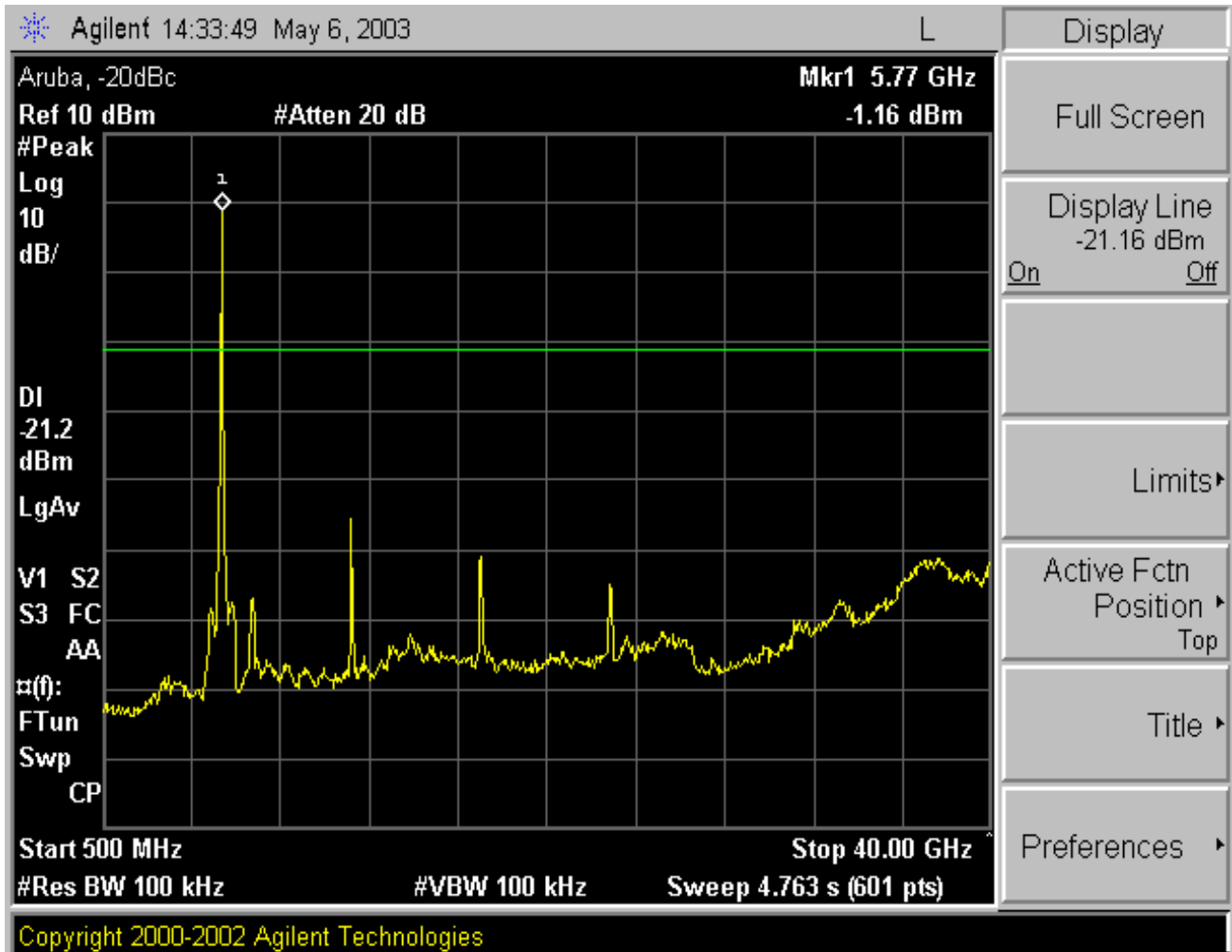
The EUT was configured on a test bench. The cable was connected between the EUT antenna port and the spectrum analyzer input port.

Spectrum analyzer RES BW was set to 100 kHz. While the transmitter broadcast a steady stream of digital data, the analyzer MAX HOLD function was used to capture the envelope of the transmission.

Test Results

Refer to attached data sheets for conducted emissions 30 MHz - 40Hz. . Data shows out of band emissions are suppressed well below the -20 dBc minimum required by the Rules.

15.247(c): Spurious Emissions, Conducted



Power Spectral Density**Test Requirement: 15.247(d)****Measurement Equipment Used:**

Agilent 4441 Spectrum Analyzer
2 ft length low loss A coaxial RF cable

Test Procedure

The emission peak was set to the center of the display. The SPAN was set to 300 kHz, the RES BW and VID BW were set to 3 kHz, and SWEEP TIME was set to 100 seconds. The maximum trace was recorded and compared to the 8 dBm limit.

Test Results

Maximum measured PSD was -7.18 dBm. Refer to spectrum analyzer chart below.

15.247(d): Power Spectral Density

