



December 21, 1999

FEDERAL COMMUNICATIONS COMMISSION

7435 Oakland Mills Road
Columbia, MD 21046
USA

Subject: FCC Certification Authorization Application under FCC PART 15, Subpart C, Sec. 15.247 - Direct Sequence Spread Spectrum Transmitters operating in the frequency band 2412 - 2462 MHz.

Product: LUCENT WAVELAN/IEEE 2.4 GHz (11 Mb/s) DSSS TRANSCEIVER
Model No.: TRX7431
FCC ID: GM3WLPC24H

Dear Sir/Madam,

We discovered that there was an error on the maximum peak output power and EIRP measurements. This situation was rectified by a retest, the new results effect the previously submitted application forms and the following sections in the original Test Report:

2.3. EUT'S TECHNICAL SPECIFICATIONS
RF Output Power Rating (page 7)

3.2. OPERATIONAL TEST CONDITONS & ARRANGEMENT FOR TESTS
RF Power Output (page 14)

5.7.5. Test Data (page 27)

The modifications of the above sections are attached along with this cover letter. Please allow us to correct the power rating in the application form wherever it is applicable.

If you have any queries, please do not hesitate to contact us.

Yours truly,

Tri Minh Luu, P. Eng.,
V.P., Engineering

Encl



Canada

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4. The antenna of Teklogix 8255 and 8260 Mobile Terminals are required to be located at least 20 cm away from the users.
5. The antenna of Teklogix 9150 base is required to be located on the roof of a building or outside antenna tower.

2.3. EUT'S TECHNICAL SPECIFICATIONS

TRANSMITTER	
Equipment Type:	<ul style="list-style-type: none"> ▪ Portable ▪ Mobile ▪ Base station (fixed use)
Intended Operating Environment:	<ul style="list-style-type: none"> ▪ Residential ▪ Commercial, light industry & heavy industry
Power Supply Requirement:	7.2 Vdc regulated voltage from the Teklogix Systems 7035, 8255, 8260 & 9150
RF Output Power Rating:	38.6 mW Peak
Operating Frequency Range:	2412 - 2462 MHz
RF Output Impedance:	50 Ohms
Duty Cycle:	Continuous
6 dB Bandwidth:	10.64 MHz
Emission Designation:	Direct Sequence Spread Spectrum (DSSS)
Oscillator Frequencies:	352 MHz
Antenna Connector Type:	Reversed thrust SMA connector (Teklogix 7035, 8255 and 8260) Standard SMA connector (Teklogix 9150)
Antenna Description:	<ul style="list-style-type: none"> • Teklogix 7035 (Portable) Manufacturer: NCC Type: Current fed ½ wave antenna with reversed thrust SMA connector Model: N2400SM10B Frequency Range: 2.4-2.5 GHz In/Out Impedance: 50 Ohms Gain: 2 dBi • Teklogix 8255 (Mobile) and 8260 (Mobile) Manufacturer: Larsen Type: ¼ wave antenna with reversed thrust SMA connector Model: KD MUQ 2400 RSM Frequency Range: 2.4-2.5 GHz In/Out Impedance: 50 Ohms Gain: 0 dBi • Teklogix 9150 (Base) Manufacturer: CushCraft Type: Directlink wall mount antenna Model: S2307AMP10SMF Frequency Range: 2.3-2.5 GHz In/Out Impedance: 50 Ohms Gain: 7.5 dBi

ULTRATECH GROUP OF LABS

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File #: TEK-208FTX
 Nov. 23, 1999

- Assessed by ITI (UK) Competent Body, NVLAP (USA) Accreditation Body & ACA/AUSTEL (Australia)
- Recognized/Listed by FCC (USA), Industry Canada (Canada)
- All test results contained in this engineering test report are traceable to National Institute of Standards and Technology (NIST)

EXHIBIT 3. EUT OPERATING CONDITIONS AND CONFIGURATIONS DURING TESTS

3.1. CLIMATE TEST CONDITIONS

The climate conditions of the test environment are as follows:

Temperature:	21°C
Humidity:	51%
Pressure:	101 kPa
Power input source:	7.2 Vdc regulated voltage from the Teklogix Systems 7035, 8255, 8260 & 9150

3.2. OPERATIONAL TEST CONDITIONS & ARRANGEMENT FOR TESTS

Operating Modes:	<ul style="list-style-type: none"> ▪ Each of lowest, middle and highest channel frequencies transmits continuously for emissions measurements. ▪ The EUT operates in normal Direct Sequence mode for occupancy duration, and frequency separation.
Special Test Software:	<ul style="list-style-type: none"> ▪ Special software is provided by the Applicant to select and operate the EUT at each channel frequency continuously. For example, the transmitter will be operated at each of lowest, middle and highest frequencies individually continuously during testing.
Special Hardware Used:	Teklogix software is provided to operate the EUT at different channel frequency.
Transmitter Test Antenna:	The EUT is tested with the antenna fitted in a manner typical of normal intended use as non-integral antenna equipment.

Transmitter Test Signals:	
Frequencies: <ul style="list-style-type: none"> ▪ 2412 - 2462 MHz band: 	Lowest, middle and highest channel frequencies tested: 2412, 2437 and 2462 MHz
Transmitter Wanted Output Test Signals: <ul style="list-style-type: none"> ▪ RF Power Output (measured maximum output power): ▪ Normal Test Modulation ▪ Modulating signal source: 	<ul style="list-style-type: none"> ▪ 38.6 mW Peak ▪ Direct Sequence Spread Spectrum @ 11 Mb/s data rate ▪ Internal

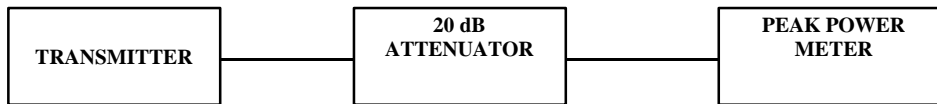
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5.7.3. Test Arrangement



5.7.4. Test Equipment List

Test Instruments	Manufacturer	Model No.	Serial No.	Frequency Range
Spectrum Analyzer/ EMI Receiver	Hewlett Packard	HP 8593EM	3412A00103	9 kHz – 26.5 GHz
Peak Power Meter & Peak Power Sensor	Hewlett Packard	8900 8481A	2131A00124 2551A01965	0.1-18 GHz 50 Ohms Input
Microwave Amplifier	Hewlett Packard	HP 83017A		1 GHz to 26.5 GHz
Horn Antenna	EMCO	3155	9701-5061	1 GHz – 18 GHz

5.7.5. Test data

Channel No.	Frequency (MHz)	Measured Total Peak Power @ Antenna Port (mW)	Limit (mW)
1	2412	36.4	1000
2	2437	36.1	1000
3	2462	38.6	1000

EUT Tested	E-Field in 1 MHz BW @3m (dBuV/m)/MHz	99% BW (MHz)	E-Field in 99% BW @3m (dBuV/m)/99%BW	Tx Antenna Gain [G] (dBi)	Calculated total EIRP = (3E) ² /30 (dBm)	Measured EIRP @ 1MHz BW (dBm)	Measured Peak EIRP @ 99% BW (dBm)	RF Safety Distance (cm)	Note
Test Jig @2412 MHz	106.3	10.6	126.8	0.0	21.3	12.5	22.8	3.9	None
Teklogix 8255 @ 2437 MHz	106.6	10.6	127.1	0.0	21.6	3.8	14.1	1.4	(1), (2)
Teklogix 8260 @ 2437 MHz	106.8	10.6	127.3	0.0	21.8	4.3	14.6	1.5	(1), (2)
Teklogix 7035 @ 2437 MHz	114.4	10.6	134.9	2.0	29.4	17.4	27.7	6.8	(4)
Teklogix 9150 @ 2462 MHz	114.7	10.6	135.2	7.5	29.7	23.5	33.8	13.7	(3)

Notes:

- (1) The measured EIRP value is less than the calculated value. It may be due to the fact that for vehicle mounts terminals, the antennae were connected to an antenna mount which is connected to the transmitter port through a minimum 10 feet long coaxial cable.
- (1) EXPOSURE DISTANCE LIMITS: $r = (PG/4\pi IIS)^{1/2} = (EIRP/4\pi IIS)^{1/2}$
- (2) Antenna of mobile equipment must be located at least 20 cm away from the users'. Refer to manufacturer antenna instruction.
- (3) Antenna of base station must be located outdoor on the building roof or antenna tower at the location were the users do not reach. Refer to manufacturer antenna instruction.
- (4) The Specific Absorption Rate (SAR) test was performed by 3D-EMC Laboratory Inc. for the portable radio, the test results will be submitted by Ultratech Engineering Labs Inc.

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