

<u>APPLICANT</u>	<u>MANUFACTURER</u>
Amplidyne Inc. 59 LaGrauge Street Raritan, NJ 08869	Amplidyne Inc. 59 LaGrauge Street Raritan, NJ 08869

TEST SPECIFICATION: FCC Rules and Regulations Part 15, Subpart C

TEST PROCEDURE: ANSI C63.4:1992

TEST SAMPLE DESCRIPTION

BRANDNAME: Amplidyne Inc.

MODEL: MICROCELL

FCC ID: OZMMCELL2411A

TYPE: 2.4 GHz Direct Sequence Spread Spectrum Transmitter System

FREQUENCY RANGE: 2400 MHz TO 2483.5 MHz

POWER REQUIREMENTS: 12 VDC derived from DC Injection

TESTS PERFORMED

- 15.207(a) Conducted Emissions, AC Power
- 15.209(a) Spurious Case Radiated Emissions, Restricted Bands
- 15.247(a)(2) Occupied Bandwidth
- 15.247(b)(1) Power Output
- 15.247(c) Spurious Emissions, Antenna Conducted Emissions
- 15.247(d) Power Density
- 15.247(e) Processing Gain Data

REPORT OF MEASUREMENTS

Applicant: Amplidyne Inc.
Device: 2.4 GHz Direct Sequence Spread Spectrum Transmitter System
FCC ID: OZMMCELL2411A
Power Requirements: 12 VDC derived from DC Injection
Applicable Rule Section: Part 15, Subpart C, Section 15.247

TEST RESULTS

- 15.207(a): The radio frequency voltage that was conducted back on to the AC power line on any frequency/frequencies within the bandwidth of 450kHz to 30MHz did not exceed 250 microvolts.
- 15.247(a)(2): The minimum 6dB bandwidth was no less than 500 kHz.
- 15.247(b)(1): The maximum peak output power of the transmitter did not exceed 1 watt. The test samples peak power measured 213.8 mW(23.3 dBm) at the antenna terminals.
- 15.247(b)(3) The system utilizes antennas which have directional gain greater than 6 dBi. The device operates in the 2400 to 2483.5 MHz band and is used exclusively for fixed point to point operations. The maximum gain antenna used with this system has a gain of 16 dBi. Therefore the output power was reduced 1 dB for every 3 dB above a gain of 6dBi yielding a maximum allowable output power at the antenna terminal of 26.7 dBm= 464 mW.
- 15.247(b)(4) The device does not operate in such a manner that causes the public to be exposed to levels in excess of the commissions guidelines. The device is used for fixed point to point operations where the transmit antenna is located on a mast external to a building well away from public exposure. In addition the installation guide states that the installer should keep the antenna at least 1 foot from possible human exposure and if this is not possible, appropriate warning signs shall be posted.
- 15.247(c): The antenna conducted emissions were found to be at least 20dB down from the fundamental frequencies. All other emissions within the restricted bands specified in 15.205 did not exceed the general radiated emissions limits specified in 15.209(a).
- 15.247(d): The power density did not exceed 8dBm in any 3 kHz bandwidth averaged over 1 second.
- 15.247(e) The process gain information was supplied by Amplidyne Inc. and can be found as a separate e-file attachment named Processing Gain.pdf.

GENERAL NOTES

1. All readings were taken using a peak detector function at a distance of 3 meters.
2. The duty cycle was applied to the peak readings in order to determine the average value of emissions.
3. The device operates from 2400 MHz TO 2483.5 MHz. Therefore, where applicable, measurements were taken at three center frequencies; low, middle and high (2422 MHz, 2447 MHz and 2462 MHz).
4. The frequency range was scanned from 30 MHz to 25 GHz. All emissions not reported were more than 10dB below the specified limit.
5. Spurious Radiated Emissions located in the restricted bands listed in Paragraph 15.205 were measured with each of the following antennas attached to the system:
 - 1). AOM - 5
 - 2). AOM - 8
 - 3). INET-OMNI-10
 - 4). INET-ANT-15
 - 5). Flat "wall mount" APN - 7
6. The device is a spread spectrum transmission system consisting of a spread spectrum transmitter (FCC ID: M4Y-WL2450), a DC Injector, a lightning arrestor, an RF amplifier/transmitter, and the five antennas listed above. In accordance with Paragraph 15.204, this device is being marketed as a system and will only be used in this configuration.

EXHIBIT 4

Conducted Emissions

Para. 15.207(a)

(Please see separate e-file attachments named CEdata.pdf)

EXHIBIT 4

Occupied Bandwidth

Para. 15.247(a)(2)

(Please see separate e-file attachments named OccBw.pdf)

EXHIBIT 4

Power Output

Para. 15.247(b)

(Please see separate e-file attachments named pwrout.pdf)

EXHIBIT 4

Antenna Conducted Emissions

Para. 15.247(c)

(Please see separate e-file attachments named antce2.462 GHz, 1-7.pdf, antce2.462 GHz, 8-14.pdf, antce2.412 GHz, 1-7.pdf, antce2.412 GHz, 8-14.pdf, antce2.437 GHz, 1-7.pdf, antce2.437 GHz, 8-14.pdf)

EXHIBIT 4

Spurious Case Radiated Emissions, Restricted Bands

Para. 15.209(a)

(Please see separate e-file attachments named Radiated Emissions.pdf)

EXHIBIT 4

Power Density

Para. 15.247(d)

(Please see separate e-file attachments named pwrden.pdf)

EXHIBIT 4

Processing Gain Data

Para. 15.247(e)

(Please see separate e-file attachments named ProcessGain1.pdf, ProcessGain2.pdf, ProcessGain3.pdf)

EQUIPMENT LISTS

Radiated Emissions Fundamental and Harmonics, 30MHz-25GHz

EN	Type	Manufacturer	Description	Model No.	Cal Date	Due Date
032G	H.P. Filter	Microlab/FXR	3 GHz - 6 GHz	HA-30N	05/02/2000	05/02/2001
067	Open Area Test Site	Retlif	3 Meter	RNY	09/20/2000	09/20/2003
128C	Double Ridge Guide	Eaton Corporation	1 GHz - 18 GHz	96001	09/18/2000	09/18/2001
133	Broadband Pre-Amplifier	Electro-Metrics	10 kHz - 1 GHz, 26dB	BPA-1000	06/13/2000	06/13/2001
141	Spectrum Analyzer	Hewlett Packard	100 Hz - 40 GHz	8566B	02/20/2001	08/20/2001
141A	Graphics Plotter	Hewlett Packard	N/A	7470A	03/05/2001	03/05/2002
141B	Quasi-Peak Adaptor	Hewlett Packard	100 Hz - 1 GHz	85650A	02/20/2001	08/20/2001
333	Attenuator	Narda	DC - 11 GHz	768-10	06/26/2000	06/26/2001
523	Biconilog	Electro-Mechanics	26 - 2000 MHz	3142B	06/08/2000	06/08/2001
543	Preamplifier	Hewlett Packard	1.0 GHz - 26.5 GHz	8449B	06/16/1999	06/16/2001
617	Interference Analyzer	Electro-Metrics	10 kHz - 1 GHz	EMC-30	02/27/2001	02/27/2002

FCC15.207(a) Conducted Emissions, 450kHz to 30MHz

EN	Type	Manufacturer	Description	Model No.	Cal Date	Due Date
077	LISN	Solar Electronics	10 kHz - 30 MHz	8028-50-TS24BNC	02/09/2001	02/09/2002
079	LISN	Solar Electronics	10 kHz - 30 MHz	8028-50-TS24BNC	04/27/2000	04/27/2001
141	Spectrum Analyzer	Hewlett Packard	100 Hz - 40 GHz	8566B	02/20/2001	08/20/2001
141A	Graphics Plotter	Hewlett Packard	N/A	7470A	03/05/2001	03/05/2002
141B	Quasi-Peak Adaptor	Hewlett Packard	100 Hz - 1 GHz	85650A	02/20/2001	08/20/2001
202	Transient Limiter	Hewlett Packard	.009 MHz - 200 MHz	11947A	07/24/2000	07/24/2001
617	Interference Analyzer	Electro-Metrics	10 kHz - 1 GHz	EMC-30	02/27/2001	02/27/2002

TEST SETUP PHOTOGRAPHS

