

**Before the  
FEDERAL COMMUNICATIONS COMMISSION  
Washington, D.C. 20554**

In the Matter of	)	
	)	
Unlicensed Operation in the Band 3650-3700 MHz	)	ET Docket No. 04-151
	)	
Additional Spectrum for Unlicensed Devices Below 900 Mhz and in the 3 GHz Band	)	ET Docket No. 02-380
	)	
Amendment of the Commission’s Rules With Regard to the 3650-3700 MHz Government Transfer Band	)	ET Docket No. 98-237
	)	

**COMMENTS OF CONVERGENCE TECHNOLOGIES INC. / CTI**

Convergence Technologies Inc./CWLab (“CTI”), headquartered in Chicago, IL, submits the following reply comment in response to the FCC’s Notice of Proposed Rulemaking, ET Docket No. 04-151, discussing the allowance of unlicensed band operations in the 3650-3700 MHz band (“3650 MHz band”).

ABOUT CTI

CTI is a last-mile broadband wireless access solutions provider that serves 1000+ Independent Wireless Internet Service Providers (“WISPs”) throughout the United States. CTI estimates that its customers alone serve over 250,000 broadband subscribers in underserved communities throughout the United States via unlicensed broadband wireless access technology utilizing the 900 MHz, 2.4 & 5 GHz bands under the FCC Part 15 rules.

UNLICENSED DESIGNATION OF THE 3650 MHZ BAND

CTI believes that unlicensed designation in the 3650 MHz band would facilitate more efficient utilization of the band for broadband wireless access than licensed designation because of

lowered barriers of entry for entrepreneurial service providers and greater opportunities for equipment manufacturers. In contrast to the licensed broadband wireless access bands (e.g., MMDS & LMDS) where companies like Winstar, Nucentrix, Teligent & Worldcom have become “Telecom Horror Stories” while spectrum still remains largely unused, lower barriers to market entry created by the unlicensed Part-15 bands have resulted in free-market economics and a growing, vibrant and flourishing market. For example, in 2002, amidst the spectacular bankruptcies of many licensed broadband wireless access operators sitting in the depths of the Telecom meltdown, revenues generated by the 1500+ unlicensed & profitable WISPs operating within the United States were estimated to be greater than \$250 million.<sup>1</sup> Juniper Research reports that unlicensed “last mile” broadband wireless access revenues in North America are projected to exceed \$1 billion by 2005.<sup>2</sup>

#### AVAILABLE PRODUCT & IMMEDIATE UTILIZATION WITHIN THE 3650 MHz BAND

CTI is currently aware of two manufacturers within North America, RedLine Communications<sup>3</sup> & Aperto Networks<sup>4</sup>, who are already shipping broadband wireless access products that operate within the 3650 MHz band. As of February 2004, there were 12 manufacturers around the world who currently build products for the 3.5 GHz band and 4 more players that plan on introducing a 3.5 GHz product in 2004.<sup>5</sup> All these products could be easily adapted for operation within the 3650 MHz band. CTI believes that there would be immediate and significant deployments of readily available unlicensed 3650 MHz systems from WISPs seeking to enhance and expand their existing networks.

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<sup>1</sup> <http://www.instat.com/press.asp?Sku=IN020617WN&ID=517>

<sup>2</sup> <http://www.researchandmarkets.com/reports/495/>

<sup>3</sup> <http://www.redlinecommunications.com/products/an100/an100.pdf>

<sup>4</sup> <http://www.apertonet.com/en/products/sheets/3.5.pdf>

<sup>5</sup> “WiMAX, NLOS and Broadband Wireless Access (Sub-11 GHz) Worldwide Market Analysis 2004-2008) <http://www.maravedis-bwa.com/indexz.htm#>

## NO DEVICE IDENTIFICATION SIGNAL REQUIREMENT

CTI believes that the method of requiring a device identification signal amongst unlicensed devices within the 3650 MHz band would preclude widespread usage as such an onerous technical rule would STIFLE innovation; it could take years and substantial investment to develop a common device identification signal standard. In the interest of promoting innovation and growth while minimizing upfront manufacturer investment costs, CTI believes that the rules for device certification within the 3650 MHz band should mirror existing unlicensed bands as much as possible. CTI also believes that, with the advent and increased awareness of training organizations like NARTE & Part-15.org, the first suggested approach towards band regulation of “require[ing] the professional installation of each device to ensure that certain criteria are met<sup>6</sup>” would sufficiently protect licensed FSS earth stations and Federal Government operations within the 3650 MHz band.

## EIRP RECOMMENDATIONS WITHIN THE UNLICENSED 3650 MHZ BAND

In order to maximize the efficient use of frequency within the 3650 band, CTI believes that the FCC should adopt rules similar to ET Docket No. 03-201, where operators are encouraged to utilize advanced antenna technologies in the interest of promoting increased spectrum efficiency. In order to maximize frequency use within the 3650 MHz band, CTI believes that the maximum EIRP of base station systems with antenna beam-widths less than 120\* should be 25W, while the maximum EIRP of base station systems utilizing omni-directional antennas should be limited to 4W. CTI agrees with the FCC that any combination of transmitter output power & antenna gain not exceeding EIRP limits should be allowed as that would maximize system flexibility thus easing operator deployments.

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<sup>6</sup> Paragraph 38 - [http://hraunfoss.fcc.gov/edocs\\_public/attachmatch/FCC-04-100A1.doc](http://hraunfoss.fcc.gov/edocs_public/attachmatch/FCC-04-100A1.doc)

## HIGHER EIRP THRESHOLDS FOR MORE “EFFICIENT” MODULATION SCHEMES

CTI believes that higher order modulation schemes (e.g., 64 QAM vs. BPSK) that utilize narrower channel bandwidths (e.g., 5 MHz vs 25 MHz) should be given preferential treatment within the 3650 MHz band in the order of higher EIRP limits. Such a rule would maximize spectrum efficiency and reuse, as operators would be motivated to deploy smaller, more efficient channels in their systems in order to reap the benefits of increase range and larger cell capacities and sizes.

## FINAL COMMENTS

CTI believes that the opening up of additional unlicensed spectrum is beneficial to the continued expansion of available broadband access services. In closing, CTI believes that this band would be best utilized if it is dedicated SOLELY for outdoor broadband wireless access networks. With this in mind, CTI agrees with the FCC’s plans to convert the 3650 MHz band into an unlicensed band.

Respectfully submitted,

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