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Before the
Federal Communications Commission
Washington, D.C. 20554

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FEDERAL COMMUNICATIONS COMMISSION
OFFICE OF THE SECRETARY

In the Matter of

Improving Public Safety Communications in the 800 MHz Band

WT Docket No. 02-55

Consolidating the 900 MHz Industrial/Land Transportation and Business Pool Channels

COMMENTS OF SMARTLINK RADIO NETWORKS, INC.

SmartLink Radio Networks, Inc. (SmartLink) submits these Comments in response to the Commission's Notice of Proposed Rulemaking (Notice) entitled *In the Matter of Improving Public Safety Communications in the 800 MHz Band and Consolidating the 900 MHz Industrial/Land Transportation and Business Pool Channels.*

SMARTLINK

SmartLink provides radio communications systems to industrial, commercial and government entities worldwide. SmartLink radio system technology enables real time communications between disparate frequencies and protocols in both trunked and conventional environments. SmartLink has an affordable, straightforward solution to interoperability requirements allowing the use of existing radios and infrastructure. SmartLink's technology allows public safety agencies to provide seamless interoperability with no manual intervention. A detailed description of SmartLink's technology is set forth on Attachment A.

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THE COMMISSION SHOULD RECOGNIZE THE MARKET RESPONSE TO PUBLIC SAFETY'S INTEROPERABILITY NEEDS

SmartLink supports the Commission's effort to address and eliminate interference circumstances public safety agencies face in the 800 MHz band. SmartLink also endorses the Commission's effort to improve public safety communications through the provision of additional spectrum.

SmartLink's design philosophy and mission is to facilitate full interoperability between current, older, and to the extent predictable, future generations of radio systems. This demonstrated architectural approach allows current systems to use existing base stations, repeater and subscriber unit technology in enhanced modes, while providing an incremental migration path to other more current and future sophisticated technologies.

In the Notice, the Commission solicited comment addressing whether transmissions on interoperability channels should conform to a common modulation protocol, e.g., conventional analog 25 kMz or 12.5 kHz FM or the ANSI/EIA/TIA 102, Project 25 suite of standards adopted for use in the 700 MHz public safety band.

SmartLink urges the Commission to be cognizant that standards by themselves do not bring about interoperability capability among and between public safety agencies. Beyond the time frame that must be devoted to particular standard setting process and the resulting delay, is the potential to temper the market with regard to technology that is available and being deployed. SmartLink is presently providing technology to public safety agencies, utilities and a range of other industrial entities that enables real time communications between disparate frequencies and protocols in both trunked and

conventional environments. The rollout of this critical interoperability capability should not be thwarted by the anticipation that a government standard setting process is about to commence.

Respectfully submitted,

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May 6, 2002

ATTACHMENT A

SmartLink Radio Networks Inc.

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Universal Interface Module

Robert L. Stone – Executive Vice President

SmartLink's design philosophy and mission is to facilitate full interoperability between current, older, and, to the extent predictable, future generations of communications hardware and signaling. This architectural approach allows system integrators to utilize existing base station, repeater and subscriber unit technology in enhanced modes, while providing an incremental migration path to other more current and future sophisticated technologies. A good example of the use of this technology is the ability to interoperate the earliest form of channel signaling, CTCSS or PL, with the most sophisticated trunking protocol systems. Field applications of this technology range from the incremental upgrade of an older system to creating an integrated multi-protocol and multi-frequency interoperable radio system network capable of handling large public emergency and mutual aid incidents where many types of equipment arrive on scene.

To accommodate the ever increasing variety of electrical and protocol interfaces required to provide flexibility and interoperability, SmartLink is introducing the Universal Interface Module (UIM) to its line of system building blocks. The UIM provides the flexible electrical interface, digital voice handling capability, signaling and computing power needed for both today's and tomorrow's system integration needs. The use of Field Programmable Gate Array (FPGA) technology and software, allow the UIM to be field programmed to accommodate a wide variety of interfaces, both analog and digital. As in many state of the art systems, the UIM may be considered programmable soft-hardware.

The UIM addresses the need to communicate to other radio systems protocols that are not embedded within SmartLink's network technology. These 'foreign' networks or outside systems often have closed access architectures, including proprietary radio protocol and system formats. The UIM allows the use of a subscriber unit to bridge this gap to out of network resources. The flexible, programmable electrical and software interface allows tight integration of these subscriber units to the SmartLink network. This integration maybe as simple as controlling PTT to initiate or detecting a call from the foreign system to as sophisticated as reading displays to detect and/or controlling front panel buttons to select channels or trunking groups. RS-232 and I^2C serial interfaces are provided for equipment requiring these.

The UIM provides the ability to interface non-traditional equipment to the expected Land Mobile Radio (LMR) environment common to Public Safety. A variety of High Frequency, Aircraft, Marine, Amateur Radio and Military equipment interfaces have been accommodated in the design of the UIM.

The current generation of analog interfaces are accommodated by onboard analog circuitry and conversion to the SmartLink PCM, digital backbone through the use of a CODEC. Signaling is filtered and information extracted for processing by the microprocessor or protocol chips plugged into the expansion bus. Expansion chips will allow CTCSS/DCS, Multi-tone signaling, FSK and MPT1327 hardware to be added when needed. The Microprocessor provides

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LTR and LTRNet protocol management. Complex digital interface to subscriber units or specialized application is provided by an FPGA between the microprocessor and the outside world logic lines. Provision for both single ended high impedance and balanced 600/High Z interfaces are provided for both Data and Audio Lines.

The current generation of digital radio equipment is currently designed, for the most part, as closed systems, despite the clear and pressing public safety need for open architectures and radio interoperability. While this is changing, APCO25, once it becomes a fully completed and adopted standard is a prime example of a UIM application because it will allow the use of a subscriber unit for integrating these protocols into the SmartLink system. Once licensable digital technology becomes available, the SmartLink architecture is designed to accommodate the digital protocol at deeper system level integration points. As in the case of the analog system, the FPGA is available to provide programmable hardware for the electrical interface. The FPGA has been provided with fast clocks and PLL hardware to allow timing generation and extractions. 8000 Gate equivalent capability allows very complex hardware to be created for manipulation of sophisticated protocols. The SmartLink PCM backplane is fractional rate ready and thus can handle voice rates from 2.4Kbit to full rate 64Kbit PCM channels. An expansion, mezzanine board position is provided to add a Vocoder board for rate expansion/compression or specialized DSP hardware as dictated by the evolving digital standards. Having the Vocoder and DSP capability onboard guarantees the SmartLink system will retain its ability to interoperate analog radio, telephone and communications console technology with the most modern digital systems. Also, the ability to pass the vocoded audio directly between digital end points prevents distortion created by multiple expansion and compression processes.

Modular construction of these modules allows selection of onboard intelligence. The currently available, standard CPU board provides sufficient processing power for today's tasks. Again, using the flexibility the SmartLink system for which it has been designed for, the modular construction allows SmartLink to introduce a more sophisticated CPU board as the need arises

Interface circuits are vulnerable to damage through lightning, electrostatic discharge, short circuit to ground and other circuits as well as high RF fields. SmartLink uses a combination of fast circuit limiting devices, filtering, wave front delay techniques and automatically re-settable semiconductor fuses to protect the interface circuits. EMI and susceptibility to RF field are limited by filtering and shielding techniques minimizing these effects.

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Certificate of Service

On May 6, 2002, I caused to be delivered the attached Comments of SmartLink Radio Networks, Inc. via First Class Mail, except where noted:

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