Ligado Networks Overview

March 25, 2016
Ligado Networks Company Overview

New Ownership and Board of Directors
- Company restructuring plan and FCC Change of Control Order approved in 2015
- Focus of new board and management team on fully resolving spectrum compatibility issues and working with stakeholders
- Working to deploy network providing next generation connectivity

Spectrum Holdings
- Spectrum licenses in the 1.5 GHz to 1.6 GHz band that include:
  - Ancillary terrestrial authority for L-Band spectrum
  - 5MHz terrestrially authorized in the 1670-1675 MHz Band
  - Dedicated satellite spectrum

Network Operator
- Mobile Satellite Service (MSS) operations in North America since launch of MSAT-2 in 1995 and MSAT-1 in 1996
- Next-generation satellite, Sky Terra 1, launched in 2010 provides North American coverage for voice and data services

Company Products and Background
- Provider of MSAT Push-To-Talk and Voice, M2M, Broadcast Data, and GPS augmentation solutions
- Offices in Reston, Virginia and Ottawa, Canada
GPS and Mobile Broadband Coexistence

<table>
<thead>
<tr>
<th>2010 FCC Authorization</th>
<th>12/31 Omnibus Filing at FCC</th>
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<tbody>
<tr>
<td>L-Band Lower Downlink</td>
<td>L-Band Lower Downlink</td>
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<tr>
<td>L-Band Upper Downlink</td>
<td>L-Band Upper Downlink</td>
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<td>L-Band Upper Uplink</td>
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<td>Crown Castle</td>
<td>Downlink</td>
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</table>

- Terrestrial authority for 1545-1555 MHz relinquished creating 10MHz guard band for GPS
- Reduced power levels and stronger OOBE limits
- No remaining issues with “Right Hand Spectrum” for broadband use
- Technical issues on “Left Hand Spectrum” limited to certified aviation and MSS augmentation
- Placement of Ligado’s license modification request on public notice by FCC will allow for the identification of any unresolved issues
Ligado’s Service Offerings
Ligado Legacy of Push-To-Talk Connectivity

For 20+ years, Ligado has set the standard for Satellite PTT

- MSAT PTT is the solution of choice for First Responders and Enterprise users in emergency situations and for remote operations
- **SMART™ Program**: Nationwide interoperable public safety talkgroups

**Timeline**

- **1997**: MSAT PTT Service Launches under TMI and AMSC brands
- **2001**: AMSC & TMI merge, become MSV -- Sole provider of MSAT PTT
- **2006**: MSAT-G2 terminal is introduced
- **2007**: SMART™ program launched with Department of Justice and FBI
- **2011**: MSAT services moved to SkyTerra 1 Satellite
- **2016**: Cobham, Viasat and Ligado join forces to launch the EXPLORER MSAT-G3
Talk Groups: Interoperability

Interoperability can be achieve by configuring and sharing talk groups

- Shared local and state talk groups already exist throughout North America
- Agencies and organizations are free to manage their talk groups
- Mutual aid talk groups have been established at the Local, Regional and National level

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<tr>
<td>15</td>
<td>J-SMART</td>
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</tr>
</tbody>
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Agency Interoperability

Regional Interoperability

National Interoperability
Regional SMART™ Talkgroups

**NESMART** - CT, DE, MA, ME, NH, NY, NJ, PA, RI, and VT
Manager: Connecticut State Police

**MWSMART** - IA, IL, IN, KS, KY, MI, MN, MO, OH, ND, NE, SD, WI, and WV
Manager: IN Department of Homeland Security

**M-SMART** - DC, DE, MD, PA, VA, and WV
Manager: Allegany County (MD) Dept. of Public Safety and Homeland Security

**SWSMART** - AZ, CA, CO, NV, NM, OK, TX, and UT
Manager: Contra Costa County Fire Protection District

**M-SMART** - DC, DE, MD, PA, VA, and WV
Manager: Allegany County (MD) Dept. of Public Safety and Homeland Security

**SESMART** - AL, AR, FL, GA, KY, LA, MS, NC, SC, TN, VA, and WV
Manager: Fairfax County (VA) OEM/Public Safety Comm.

**W-SMART** - AK, AZ, CA, CO, HI, ID, MT, NM, NV, OR, UT, WA, and WY
Manager: California Emergency Management Agency

**G-SMART** - AL, FL, LA, MS, TX, PR, and VI
Manager: LA Governor’s Office of Homeland Security and Emergency Preparedness

**NWSMART** - AK, CA, ID, MT, OR, WA, and WY
Manager: WA State Emergency Management Division

**CUSEC-1** - AL, AR, IL, IN, KY, MS, MO, and TN
Manager: Central United States Earthquake Consortium
National SMART™ Talkgroups

**J-SMART & SMART-T – Public Safety**
Manager: FBI Operational Technology Division

**F-SMART - Fire Service**
Manager: Seattle Fire Department

**NPHST-1 / NPHST-2 – Public Health**
Manager: KY Department for Public Health

**I-SMART – Critical Infrastructure**
Manager: Seattle Public Utilities

**E-SMART – EMS**
Manager: KY Dept. for Public Health

**L-SMART - Law Enforcement**
Manager: U.S. Marshals Service

**U-SMART – Urban Search & Rescue**
Manager: Montgomery County (MD) Fire & Rescue Service
Ligado Networks, Cobham SATCOM and Viasat have joined forces to bring to market EXPLORER MSAT-G3 PTT

**Groundbreaking SkyTerra-1 satellite based network:**
- Ubiquitous coverage throughout North America
- Dynamic satellite beam formation and system resource allocation
- 22 meter reflector enables use of smaller device form factors at higher data throughputs

**Service Provider**
All-IP Based Mobile Satellite Services Platform
- Multicast network
- Low Latency
- Embedded AES256 Encryption

**Equipment/Hardware Provider**
EXPLORER MSAT-G3 Radio
- EXPLORER 122 IP Data Terminal
- EXPLORER PTT
- PTT Server Infrastructure
EXPLORER MSAT-G3 Distribution Overview

LIGADO NETWORKS
Satellite Network Operator

VIASAT
IP based Connectivity to PTT and Data service Platforms

COBHAMP
EXPLORER MSAT-G3 solution equipment Provider

PTT and Data Service Subscription Purchase
Via Partner Contract

Distribution Channel Partners

PTT equipment Purchase
Via Partner Contract

End Users
Next Generation IP Data Products – ViaSat and Ligado Partnership

### Products in 2016
- **Fixed / Portable**
  - AT 2225
- **Mobile**
  - AT 2220
- **MT 2220**
- **Hot Spot**
  - M2M/IoT
- **Embedded Module**
  - Chipset Module

### Future Products

#### Fixed and Mobile (Land, Air, Maritime) Designs
- Smaller form factors, lower cost
- Embedded GPS
- WiFi, Bluetooth, Ethernet, and USB
  - Single and dual channel models
- Land mobile and maritime enclosures
  - Being developed
- NextGen voice and PTT Platform

#### Bring your Own Device (BYOD) Enablement
- Battery powered
- Embedded connectivity
- WiFi, Bluetooth, Ethernet, and USB interfaces
- Cellular augmentation
- Personal (consumer/prosumer)
- Low cost device
- M2M IoT modules

ViaSat IP Product Introduction will Enable the Transition of Legacy Customers to NextGen L-Band Platform
Conclusion

• Ligado has a track record of fostering integration and interoperability among various teams and workgroups at a local, regional, national and even international level

• We are committed to drive innovation in satellite, terrestrial and integrated networks

• New era of collaboration being driven by new ownership and leadership

• We especially look forward to continuing to demonstrate our commitment to public safety communications at all levels