

**EXHIBIT A - APPLICATION SUMMARY & TABLE OF CONTENTS**

**1.0 - Description of Application**

Deere & Company, (“Deere”), by way of the underlying application submitted by its attorneys, seeks Commission authority to operate up to 700,000 receive-only Mobile Earth Stations (“METs”) downlinking L-band signals from Inmarsat geostationary spacecraft.

The proposed service has no transmission component. Uplink service to the above-referenced Inmarsat spacecraft is provided from gateway earth stations operated by third party teleports.

**2.0 - Exhibit Table of Contents**

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## **EXHIBIT B - SERVICE DESCRIPTION**

### **1.0 - Deere & Company**

Deere & Company (“Deere”; NYSE: DE), employing over 50,000 people, is a worldwide leader in the manufacture of agricultural and construction equipment with revenues of over \$29 billion for 2011. Since 1837, John Deere has been an iconic American company known to deliver innovative products of superior quality built on a long tradition of integrity. Deere has been a pioneer and leading provider of state-of-the-art data and information solutions designed to greatly enhance productivity and environmental safety to those operating in the \$133 billion agricultural sector and the \$537 billion construction sector.<sup>1</sup>

### **2.0 - Introduction & Public Interest Benefits of StarFire Navigational Technology**

Deere incorporates its high-precision StarFire<sup>TM</sup> navigational technology in agricultural, construction and other equipment, which enables end user operators to pinpoint their location to within 2-10 centimeters. Deere’s StarFire network has operated pursuant to FCC authority since 2001,<sup>2</sup> and employs terminals consisting of integrated GPS receivers and receive-only Mobile Earth Stations (“METs”) that downlink augmentation signals from L-band commercial satellites. The L-band augmentation signal provides correctional data that greatly enhances the accuracy of the GPS measurements. In 2012 the StarFire network has a global footprint, covering the United States and all other arable regions of the world.

In the agricultural sector, the StarFire system enables growers to manage land, water, seed, fertilizer, pesticides and labor resources to significantly minimize costs and waste, greatly increase efficiency and crop yield, and responsibly manage important environmental concerns. The per annum economic benefit of StarFire and other GPS-enabled high-precision navigation systems on the domestic agricultural industry is projected at \$14-30 billion.<sup>3</sup>

### **3.0 - Authority Requested for SF3000 Family of Receivers**

Deere seeks authority to operate a network of 700,000 receive-only StarFire SF3000, SF3040 and SF3050 METs terminals. The SF3000 and derivative SF3040 and SF3050 high-precision navigational receivers enjoy the following characteristics.<sup>4</sup>

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<sup>1</sup> See Bureau of Economic Analysis, United States Department of Commerce, *Survey of Current Business* at 21, at [http://www.bea.gov/scb/pdf/2011/01January/0111\\_indy\\_accts\\_tables.pdf](http://www.bea.gov/scb/pdf/2011/01January/0111_indy_accts_tables.pdf) (last visited, Dec. 12, 2012).

<sup>2</sup> See FCC Call Sign E010011.

<sup>3</sup> See Comments of Deere & Company at 5, Docket 11-109, filed August 1, 2011.

<sup>4</sup> SF3000 models may be enabled with UHF transmitters operated pursuant to Part 90 of the Commission’s rules in the 450-470 MHz frequency range. UHF-enabled SF3000 terminals have successfully undergone equipment authorization (see FCC ID: OV5PCSRAMP450A). All SF3000 models satisfy spurious emission limits specified in Part 2 and Part 15 of the Commission’s rules.

SF3000, SF3040 & SF3050 Technical Characteristics	
Antenna Gain (@ 1.5 GHz)	2.0 dBi
Antenna Size	0.2 Meters
L-band Antenna Polarization	Right-Hand Circular
Tunable Frequency Range	1525-1559 MHz

Individual models within the SF3000 family include the following:

**SF3000:** Agricultural high-precision METs navigational receivers, mounted to tractors, implements and/or stationary mounts.



<b>SF3000 Terminal Deployment:</b>	500,000 units
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**SF3040:** Pole mounted high-precision METs-enabled survey receiver.



<b>SF3040 Terminal Deployment:</b>	100,000 units
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**SF3050:** Original Equipment Manufacturer (“OEM”) model made available for integration into third-party platforms.



<b>SF3050 Terminal Deployment:</b>	100,000 units
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#### **4.0 - Receive-Only Downlink Signal Characteristics**

##### Space-to-Earth Signal 1-

Satellite: Inmarsat 3F2  
Nominal Orbital Position: 15.5 degrees West longitude  
Emission: 2K50D1D  
Center Frequency: 1539.8525 MHz

##### Space-to-Earth Signal 2-

Satellite: Inmarsat 3F3  
Nominal Orbital Position: 178 degrees East longitude  
Emission: 2K50D1D  
Center Frequency: 1539.8625 MHz

##### Space-to-Earth Signal 3-

Satellite: Inmarsat 3F4  
Nominal Orbital Position: 54 degrees West longitude  
Emission: 2K50D1D  
Center Frequency: 1539.8425 MHz

##### Space-to-Earth Signal 4-

Satellite: Inmarsat 4F1  
Nominal Orbital Position: 143.5 degrees East longitude  
Emission: 2K50D1D  
Center Frequency: 1539.8925 MHz

##### Space-to-Earth Signal 5-

Satellite: Inmarsat 4F3  
Nominal Orbital Position: 98 degrees West longitude

Emission: 2K50D1D  
Center Frequency: 1539.8725 MHz

### **5.0 - Fixed METs Operation**

The operation of fixed terminals in radio frequency bands allocated for mobile-satellite service (“MSS”) is a common practice, and fixed installations are consistent with Commission rules and precedent.<sup>5</sup> The Commission routinely grants authority to operate fixed METs terminals.<sup>6</sup>

Certain end-users may deploy SF3000 receivers at permanent or semi-permanent fixed sites. The proposed deployment of receivers at fixed sites will not adversely affect other L-band spectrum users. As described above, SF3000, SF3040 and SF3050 receivers are not transmit enabled and are incapable of creating harmful interference for other licensed L-band spectrum users.

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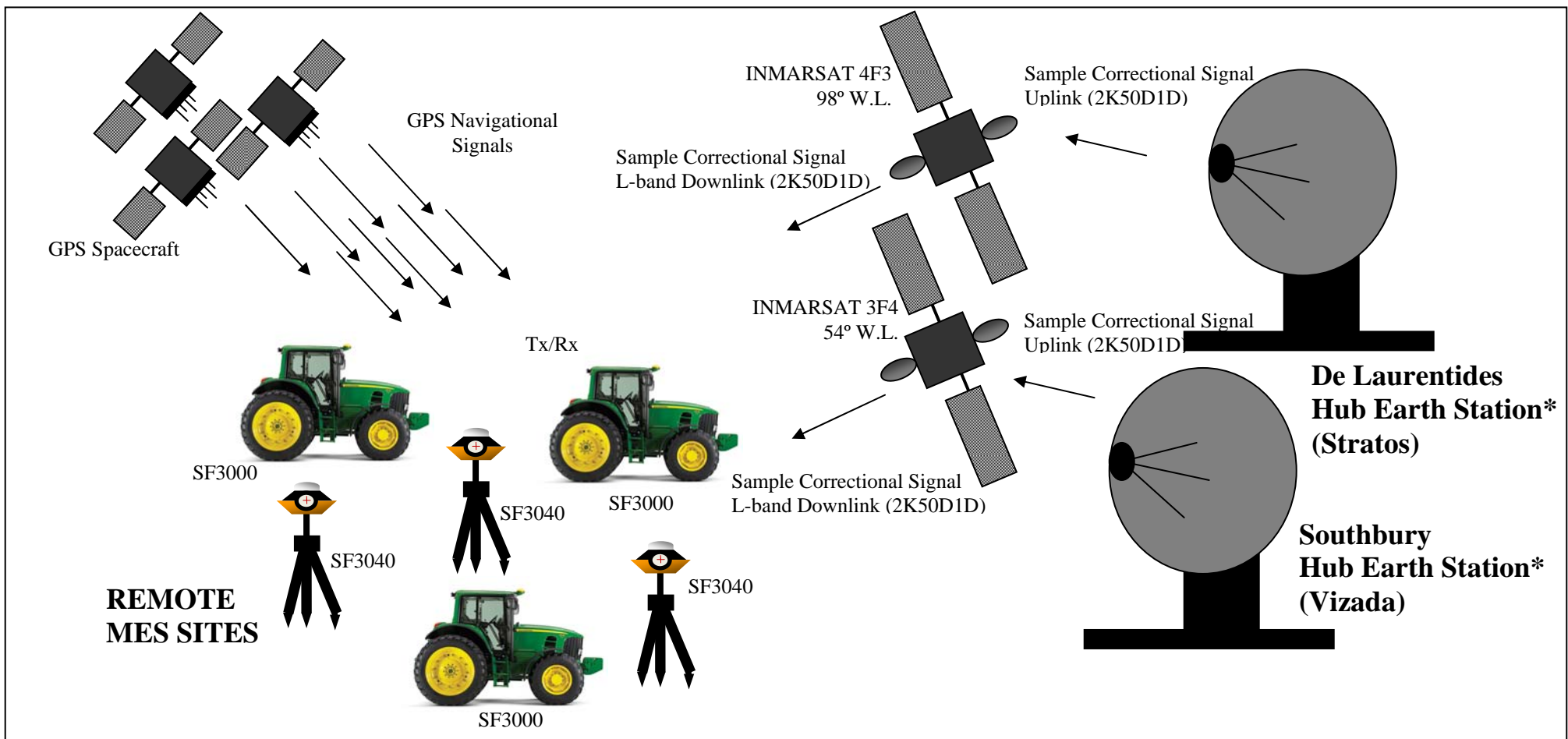
<sup>5</sup> See, e.g., *Application of Motorola Satellite Communications, Inc. for Modification of License, Order and Authorization*, 11 FCC Rcd 13952, 13955-6 (1996) (clarifying that fixed METs deployment was contemplated under the Commission’s MSS rules).

<sup>6</sup> Inmarsat, Iridium and others market fixed METs terminals (For example: the Hughes 9502 is actively marketed by Inmarsat plc ; see <http://www.inmarsat.com/services/terminals/Hughes9502.htm>, last visited Dec. 4, 2012); the Commission routinely adds fixed terminals to existing METs authorizations (see, e.g., Inmarsat Solutions (US) Inc., File No. SES-AMD-20120302-00234 (granted May 4, 2012)).

**EXHIBIT C – NETWORK OVERVIEW**

The proposed Mobile Earth Station (“METs”) network utilizes StarFire SF3000, SF3040 and SF3050 terminals (“SF300 terminals”). These terminals concurrently downlink Global Positioning System (“GPS”) navigational signals and correctional signals. Correctional signals, delivered to the StarFire terminals via L-band space-to-earth carriers transmitted from the Inmarsat 3F2, 3F3, 3F4, 4F1 and 4F3<sup>1</sup> augment the accuracy of GPS navigational data by correcting inherent inaccuracies/anomalies, enabling StarFire equipped agricultural equipment, surveying sites and other systems to determine their geographic position with an extremely high degree of accuracy. SF3000 terminals generally enable navigational accuracy to within 2-10 centimeters.

**Figure 1.0 - SF3000 R/O Network**



<sup>1</sup> Correctional data is uplinked via earth-to-space carriers transmitted from gateway earth stations licensed and operated by third parties.

**EXHIBIT D - FOREIGN SATELLITE STATEMENT**

**1.0 - Response to Questions 42a**

The mobile earth station terminals that are the subject of this application will communicate with Inmarsat spacecraft on the ISAT list. These satellites are operated by Inmarsat and utilize the United Kingdom as their filing and coordinating administration. The Commission has authorized earth stations licensed in the United States with the "ISAT" designation to communicate with the satellites on the ISAT list. *See Inmarsat, Inc.*, DA 08-2323 (rel. Oct. 21, 2008). The Commission has already previously authorized communications with the ISAT satellites by the licensee, Deere & Company. *See Call Sign E010011*. This application does not affect the justification underlying the Commission's prior approval of Deere's ISAT satellite use. *See generally id.*