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October 27, 2009

By Electronic Filing (IBFS)

Marlene H. Dortch  
Federal Communications Commission  
445 12th Street, S.W.  
Washington, D.C. 20554

**Re: SkyTerra Subsidiary LLC**  
***Ex Parte* Letter**  
**File Nos.: SES-MOD-20090429-00536**  
**SAT-MOD-20090429-00047**  
**SAT-MOD-20090429-00046**

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Dear Ms. Dortch:

On October 27, 2009, Jeff Carlisle and Gustavo Nader of SkyTerra Subsidiary LLC (“SkyTerra”) and Bruce Jacobs and Tony Lin, counsel for SkyTerra, met with William Bell, Stephen Duall, Karl Kensinger, Sylvia Lam, Hsing Liu, Kathryn Medley, Robert Nelson, and Frank Peace, all of the Satellite Division, to discuss the above-referenced applications. At the meeting, SkyTerra discussed the importance of grant of the applications and provided the attached handout.

Very truly yours,

/s/

Tony Lin

Attachment

cc: (via email)  
William Bell  
Stephen Duall  
Karl Kensinger  
Sylvia Lam  
Hsing Liu  
Kathyrn Medley  
Robert Nelson  
Frank Peace



# ATC Modification Application

Presentation to  
Satellite Division  
International Bureau  
October 27, 2009



SkyTerra Confidential

# Application

The application contains 7 waivers reflecting the coordination agreement with Inmarsat:

- one that is general to ATC operations related to air interface protocols;
- five that relate to ATC base station operations;
- one that seeks additional flexibility for ATC user devices;

Better addresses real-world operating conditions, increases spectrum efficiency, and better controls and mitigates interference;

Is consistent with FCC policy encouraging and empowering L-band MSS operators to negotiate more flexible operating parameters;

Does not change the protection limits with respect to any operators other than Inmarsat or any services in adjacent frequencies; increases the coordination distance re SARTSAT in order to maintain the same protection.

# Filings

Party	Description	Pleading Type	Summary
Mississippi, Department of Public Safety	Public safety entity	Letter	SkyTerra service is instrumental in furthering mission of protecting public safety; Grant of the application will serve the public interest by accelerating the offering of innovative and potentially life-saving services to the public safety community.
Inmarsat	MSS Operator	Opposition to Petition to Deny	Interference concerns are addressed by SkyTerra's filings; Inmarsat is committed to work with its customers to resolve potential interference concerns; Coordination Agreement also permits Inmarsat's reuse of certain, scarce satellite spectrum, allows Inmarsat's new I-4 satellites to operate at full potential, completes coordination of Inmarsat's entire fleet of satellites, and resolves long-standing spectrum dispute.
U.S. GPS Industry Council	Organization of GPS stakeholders	Comments	Use of L-band femtocells indoors may cause interference to indoor operation of GPS devices; Pleading withdrawn after agreement reached with SkyTerra re indoor use of femtocells.
SkyWave	Reseller of Inmarsat capacity	Comments	Proposed ATC base station operations may cause unacceptable increase in interference to its land mobile customers.
Amtech	Reseller of Inmarsat capacity	Petition to Deny	Proposed ATC base station operations may cause unacceptable increase in interference to its land mobile customers.

# Details

	Waiver Request/Issue	Amtech/SkyWave position	SkyTerra position
	<b>General</b>		
1.	Use of any air interface protocol that conforms to the parameters agreed to in the Coordination Agreement, rather than use of only those protocols in compliance with the Commission's L-band specific ATC technical rules.	New air interface protocols may have peak-to-average ratios that cause harmful interference.	Peak-to-average ratio of the base station carrier will be no more than 5.5 dB with 1% probability; such short, transient spurs will be inconsequential from an interference perspective.*
	<b>Mobile Terminals</b>		
2.	Deployment of mobile terminals operating 1) in compliance with agreed Delta T/T limits specified in the coordination agreement, 2) with an OOCE limit of -58 dBW/4kHz, and 3) with a maximum power of 6 dBW, rather than a peak EIRP limit of 0 dBW and an OOCE limit of -67 dBW/4kHz as specified in 47 C.F.R. § 25.253(g)(1).	None	
	<b>Base Stations</b>		
3.	<p>a) Total PFD from BTS emissions in the 1.5 GHz band that is calculated to be receivable at an AES receiver at an altitude of at least 100 meters from the Earth's surface shall not exceed <b>-26.8 dBW/ m<sup>2</sup></b>.</p> <p>b) Total PFD from any single ATC BTS sector within 1300 meters of an airport that is calculated to be receivable at an AES receiver, when on the ground on a runway or aircraft stand area at such airport, shall not exceed <b>-26.8 dBW/ m<sup>2</sup></b>, rather than -56.8 dBW/m<sup>2</sup>/200 kHz at the edge of all airport runways and aircraft stand areas as specified in 47 C.F.R. § 25.253(d)(5).</p> <p>c) Total PFD from any single ATC BTS sector within 1300 meters of a navigable waterway shall not exceed <b>-34.6 dBW/ m<sup>2</sup></b>, rather than -56.6 dBW/m<sup>2</sup>/200kHz at the water's edge of any navigable waterway from all carriers operating in the 1525-1541.5 MHz and 1547-1559 MHz frequency bands as specified in 47 C.F.R. § 25.253(d)(6) and -64.6 dBW/m<sup>2</sup>/200kHz at the water's edge of any navigable waterway from all carriers operating in the 1541.5-1547.5 MHz frequency band as specified in 47 C.F.R. § 25.253(d)(7).</p>	None	
4.	Use of more precise and flexible operating metrics specified in the coordination agreement, rather than compliance with the left-hand circular polarization, 16 dBi maximum antenna gain, and overhead gain suppression requirements specified in 25.253(d)(8) and (e).	None	
5.	Protection of SARSAT receivers through coordination of base stations within 80 km or radio horizon of SARSAT receivers, rather than 27 km or radio horizon as specified in 47 C.F.R. § 25.253(f)(1).	None	

\* This is uncontested in the Amtech/SkyWave Replies.

# Details (con't)

	Waiver Request/Issue	Amtech/SkyWave position	SkyTerra position
6.	<p>Rather than the general OOCE restriction of -57.9 dBW/MHz specified in 47 C.F.R. § 25.253(b), the limit on OOCE will be based on total PFSD from base station emissions in the 1.5 GHz band, as follows:</p> <p>a) -187.27 dBW/m<sup>2</sup>-Hz at a spectral offset of 2 MHz from the nominal edge of spectrum at the input of the AES receiver;</p> <p>b) -181.27 dBW/m<sup>2</sup>-Hz within 1300 meters of an airport at a spectral offset of 2 MHz from the nominal edge of spectrum; and</p> <p>c) -181.27 dBW/m<sup>2</sup>-Hz within 1300 meters of a navigable waterway at a spectral offset of 1 MHz from the nominal edge of spectrum.</p>	<p>Amtech/SkyWave oppose any request to replace the general requirements with a new set of limits that would apply only to the protection for aeronautical and maritime terminals.</p>	<p>Amtech/SkyWave concerns are moot; the application proposes to operate all base stations within the same OOCE limits.*</p>
7.	<p>Rather than the peak EIRP limits established in 47 C.F.R. § 25.253(d)(1)-(4), base stations shall not exceed a maximum average EIRP of 42 dBW per BTS sector in the 1.5 GHz band, and the total EIRP in any 1 MHz segment shall not exceed 32 dBW/MHz regardless of the number of carriers and bandwidth of each carrier.</p>	<p>SkyTerra's proposed base station operations at a maximum EIRP of 45 dBW per BTS sector will generate added front-end overload interference and intermodulation interference to Amtech/SkyWave;</p> <p>SkyTerra's interference model is a best case analysis that understates real world interference.</p>	<p>Amtech/SkyWave have misunderstood and overstated the proposed base station power levels;*</p> <p>Proposed base stations will operate at levels no higher than levels already authorized for other MSS systems with ATC or for other terrestrial wireless providers;*</p> <p>Amtech/SkyWave use an unrealistic propagation model that overstates overload and intermodulation interference;</p> <p>Amtech/SkyWave could significantly reduce overload exposure by deploying better-designed receivers.</p>

\*This is uncontested in the Amtech/SkyWave Replies.

# Interference Analysis

- Amtech/SkyWave's interference calculations are based on an unrealistic LOS propagation model that exaggerates potential interference
- SkyTerra estimates that, for a typical market, the area of potential overload interference will be less than 0.05% and the area of potential intermodulation interference will be less than 2% of the entire market
- Amtech/SkyWave are wrong in their speculation about possible deficiencies in testing procedures and assumptions regarding the drive test
  - the study was conducted by a professional, independent company (Bechtel) primarily to provide information for ATC network deployment plans
  - the routes were selected to be statistically representative of the overall urban/suburban environment;
  - the receivers were mounted on the exterior of the vehicles;
  - the base station antennas were placed at typical heights for cellular installations (i.e. building rooftops and other high structures);
- Amtech/SkyWave can also alleviate interference by installing filters; redesigning equipment; or making use of hybrid terminals and terrestrial frequencies in urban areas



# Deference due Coordination Agreement

- Consistent with L-band regulatory regime, ATC orders and rules expressly encourage and empower L-band MSS operators to negotiate and agree to less restrictive L-band ATC operational limits, in order to promote more efficient use of the spectrum.
- FCC rules and policies as a general matter support deference to operator coordination. See, e.g., *In the Matter of Row 44, Inc.*, DA 09-1752 (August 4, 2009); 47 C.F.R. 25.220(d).
- Any interpretation requiring coordination with resellers or individual users would be unworkable and undermine the FCC's grant of ATC authority to MSS operators.
- Deference to the Coordination Agreement is good policy.
  - System operators are the only entities with the ability to make the necessary decisions regarding system trade-offs and compromises; and
  - The appropriate course for Amtech/SkyWave is to pursue private discussions with Inmarsat in the context of any satellite capacity or other applicable agreement.

# Additional support for grant

- A balance of public interest considerations weighs strongly in favor of approving SkyTerra's request.
  - ATC will increase availability of broadband, improve spectrum efficiency, enhance the value and flexibility of MSS, provide additional communications options to protect the public, facilitate U.S. technological innovation, and create new high-paying jobs.
  - In contrast, Amtech/SkyWave seek additional, unnecessary protection involving a relatively small number of users for the provision of legacy, narrowband services.
- Amtech is the only party to file a formal petition to deny, and there are questions regarding whether it actually has any