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March 19, 1996

VIA MESSENGER

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FEDERAL COMMUNICATIONS COMMISSION
OFFICE OF SECRETARY

The Honorable William F. Caton
Acting Secretary
Federal Communications Commission
1919 M Street, N.W.
Room 222
Washington, D.C. 20554

Re: ET Docket No. 94-124
Amendment of Parts 2, 15, and 97 of the Commission's Rules to Permit Use of Radio Frequencies Above 40 GHz for New Radio Applications

Dear Mr. Caton:

On Monday March 18th, Sky Station International, Inc. ("Sky Station") met with David R. Siddall, Legal Advisor to Commissioner Ness, to discuss the authorization of a Global Stratospheric Telecommunications Service using spectrum proposed for millimeter wave operations in the above-referenced proceeding. The discussion focused on the issues outlined in the attached materials which were provided during the presentation. Please associate these materials with the above-referenced proceeding.

Any questions concerning this matter should be addressed to Paul Mahon of Mahon & Patusky at (202) 483-4000 or Lee J. Tiedrich of Covington & Burling at (202) 662-5403.

Sincerely,

Lee J. Tiedrich

LJT/djw
Attachment

cc: David R. Siddall, Esq.

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List ABCDE

Sky Station International Inc.

Regulatory Briefing

Service Definition

GSTS:
Global Stratospheric Telecommunications Service

"a *Radiocommunications service* between *stratospheric stations* and any combination of *mobile stations* and *fixed stations*, with such service intended for capability of operation beyond the geographical limits of a country or continent."

Stratospheric Station Definition

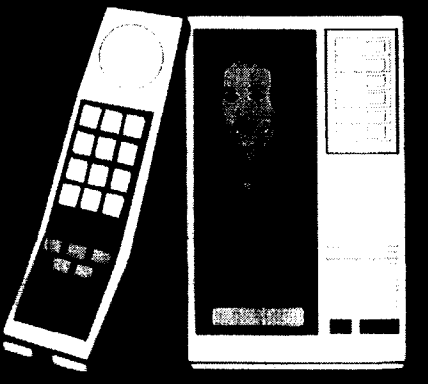
***Stratospheric Station*: A *station* located at a fixed position in the stratosphere**

Note: The stratosphere is that portion of the earth-space environment which is too high for air-dependant flight and too low for orbital maintenance: approximately 13-50 miles above the earth: above 99% of the breathable atmosphere.

GSTS Applications

Regulatory
Baseline

Global and fully portable 10¢/minute picturephone service, with capacity for > 1 billion users.



Global and fully portable 10¢/minute wireless world wide web connectivity, with capacity for > 1 billion users

GSTS Schematic

Markets and Competition Matrix

Regulatory Briefing

Mobility

	High	Medium	Low
Cost to user High	LEO MSS (eg Iridium)		Ka-Band (eg Teledesic)
Medium		GSTS (eg Sky Station)	
Low	Cellular & PCS (eg Sprint Spectrum)		Fiber Optic (eg Cable)

Bandwidth to user

	Low	Medium	High

Global Coverage

	Geography	People	Cities
	all	all	all

GSTS Billion Person Capacity
for Broadband Portable Service

- 300 times user bandwidth (2,100 cells divided by 7 times reuse), divided by 70 KHz.
- At Bandwidth limit, assuming 50% used for base station and 9% guardband width
- 300 × 140 MHz/70 KHz = 600,000 Simultaneous Users 6,000,000 Subscribers at 0.1 Erlang
- Nominally, Platform Capacity times 250 = 1.5 Billion Subscribers Worldwide

Why Sky Stations Now?

- Stratospheric Platforms are old idea.
- New technology, using GPS, makes geostationary (Fixed location over earth) platforms practical
- New composite materials and electronics make long duration (10 years) and high capacity communications practical
- Concepts like Iridium and Teledesic validated the Global Wireless market.

Sky Station International Inc. (SSI) Schedule

1999	2000	2001	2002	2003	2004
1%	20%	40%	60%	80%	90%

GSTS Complete

Coverage of world's population

GSTS Spectrum Requirements

Regulatory Business

47.2 - 47.5 GHz (Earth-to-Stratosphere)
47.9 - 48.2 GHz (Stratosphere-to-Earth)

Current Allocation: 47.2 - 50.2 GHz is allocated to Fixed Mobile. Fixed Satellite (Earth-to-Space)

Proposed FCC Allocation: 47.2 - 48.2 GHz should be limited to licensed millimeter wave services

Our Proposal:

1. Revise footnotes 901 and US297 to limit use of required sub-bands to GSTS
2. Create rules for a GSTS

Frequency Allocation

[illegible] International Allocation [illegible]

Region 1	Region 2	Region 3
47.2 - 50.2		
FIXED		
FIXED-SATELLITE (Earth-to-space) 901		
MOBILE 905		
904		

[illegible] Government [illegible]

Government Allocation	Non-Government Allocation
FIXED	FIXED
FIXED-SATELLITE (Earth-to-space)	FIXED-SATELLITE (Earth-to-space)
MOBILE	MOBILE
US264, US297, 904	US264, US297, 904

Footnote 901 Language

"The allocation of the spectrum for the fixed-satellite service in the bands 42.5 - 43.5 GHz and 47.2 - 50.2 GHz for earth-to-space transmission is greater than that in the band 37.5 - 39.5 GHz for space-to-earth transmission in order to accomodate feeder links to broadcasting satellites. Administrations are urged to take all practical steps to reserve the band 47.2 - 49.2 GHz for feeder links for the broadcasting satellite service operating in the band 40.5 - 42.5 GHz"

Proposed Revised Footnote 901 Language

"Use of the bands 47.2 - 47.5 GHz (Earth-to- stratosphere) and 47.9 - 48.2 GHz (stratosphere-to-earth) by the fixed service and by the mobile service is limited to global stratospheric telecommunications service. Stations in the fixed-satellite service may be operated subject to not causing harmful interference to the global stratospheric telecommunications service.

Administrations are urged to take all practical steps to reserve the band 47.5 - 47.9 GHz and 48.2 - 49.2 GHz for feeder links for the broadcasting-satellite service operating in the band 40.5 - 42.5 GHz."

Footnote US297 Language

Current: "The bands 47.2 - 49.2 GHz and 74.0 - 75.5 GHz are also available for feeder links for the broadcasting-satellite service."

Proposed: "Use of the bands 47.2 - 47.5 GHz (Earth-to-stratosphere) and 47.9 - 48.2 GHz (Stratosphere-to-earth) by the fixed service and by the mobile service is limited to global stratospheric telecommunications service. The bands 47.2 - 47.5 GHz, 47.5 - 47.9 GHz, 48.2 - 49.2 GHz and 74.0 - 75.5 GHz are also available for feeder links for the broadcasting-satellite service."

Why 47.2 - 47.5 GHz & 47.9 - 48.2 GHz ?

Regulatory Hearing

- 300 MHz in each direction is needed for a non mutually exclusive billion person mass-access (10¢/minute) service.
- Very high elevation angles of GSTS are compatible with the severe losses of the millimeter band
- Least congested non-government band allocated to fixed and mobile service.
- Only impact is to reduce an unused FSS and BSS feeder-link band from 2000 MHz bandwidth to 1400 MHz bandwidth.

Proposed Rules for GSTS

- All technically, financially and legally qualified applicants authorized to launch with 300+300 MHz, but to power only a pro rata percentage of the bandwidth, after international coordination
- Failure to meet construction and launch milestones forfeits bandwidth back to spectrum assignment pool.
- No mutual exclusivity

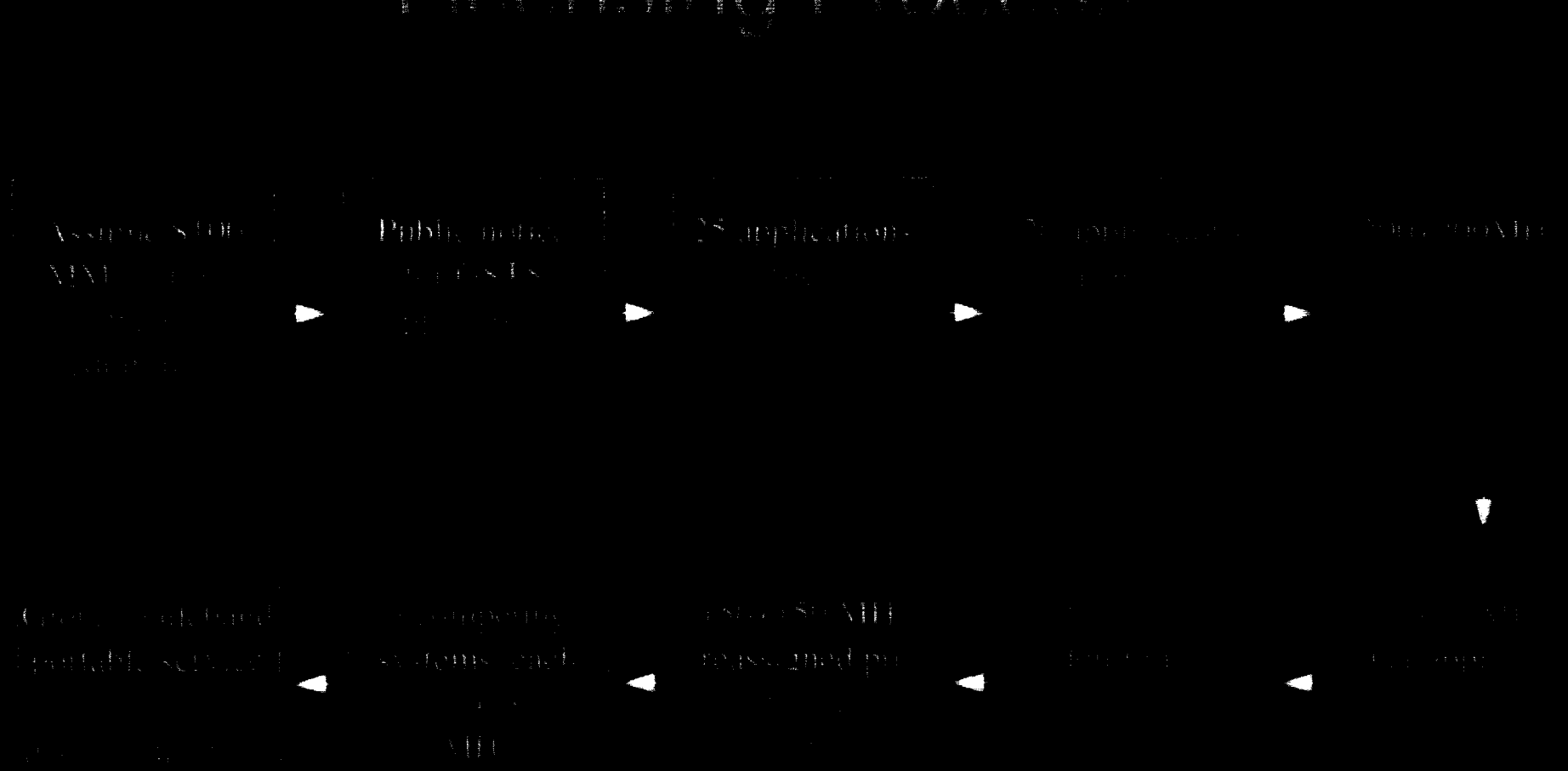
Proposed Technical Qualifications

- Documentation of GSTS technology (e.g., ability to remain geostationary)
- Ability to provide coverage to at least 80% of world's population
- Engineering certifications

Proposed Legal/Financial Qualifications

- Cash in bank for first n sky stations.
- Meet foreign ownership limitations
- Agreement to international coordination and national authorization constraints.

Example of Non-Exclusive Licensing Process



Example of Non-Exclusive Licensing Process

Regulatory
Roadmap
[illegible]

Assume state
NNI [illegible]
[illegible]
[illegible]

Public notice
[illegible]
[illegible]

25 applications
[illegible]

25 applications
[illegible]

Three for NNI
[illegible]

[illegible]
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[illegible]
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Two for NNI
reassigned [illegible]

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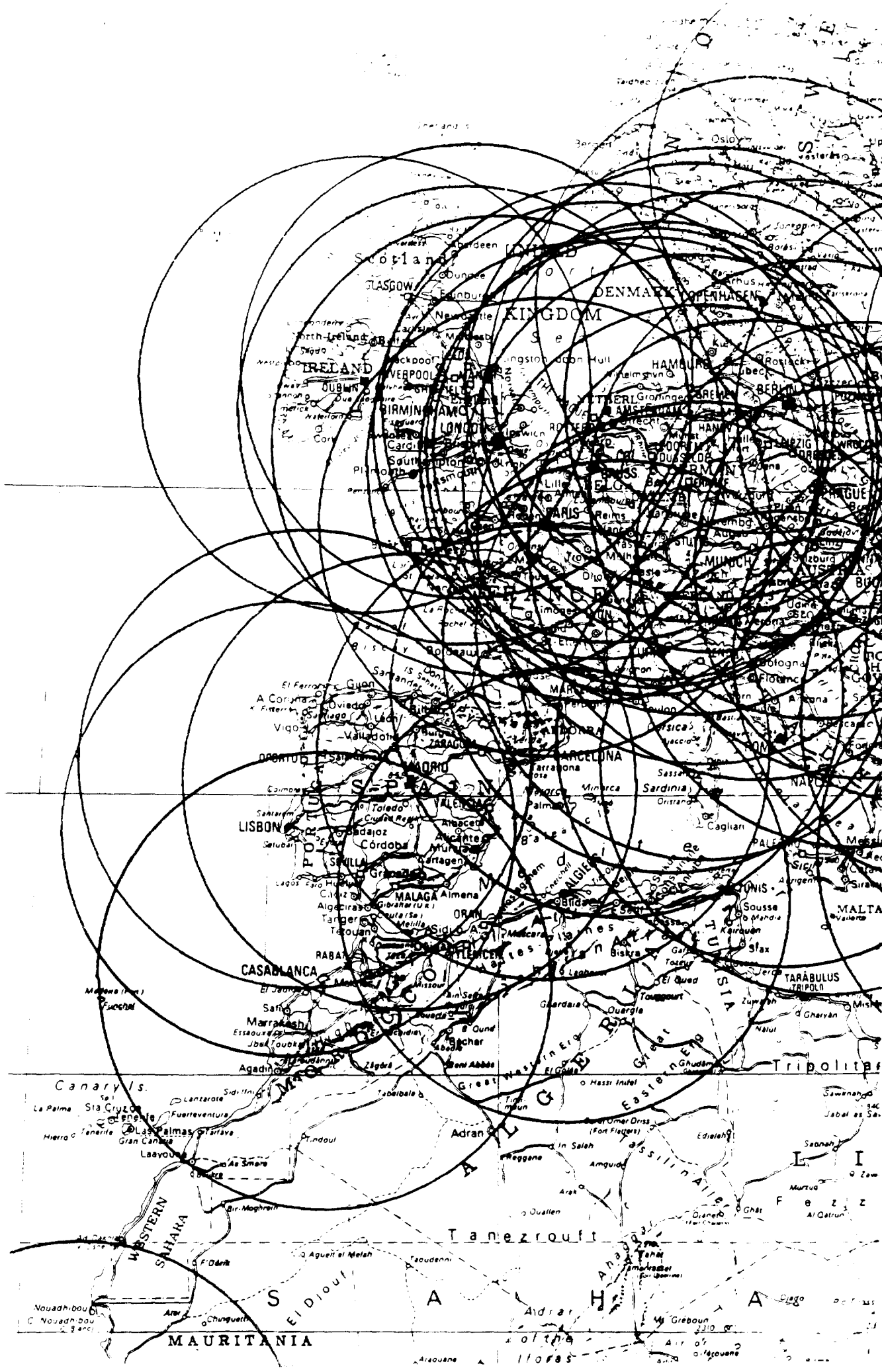
Requested Government Actions

- Get GSTS definitions and revision of footnote 901 on the agenda for WRC-97.
- Issue NPRM to establish rules for a non-MX GSTS in the existing fixed/mobile allocation at 47 GHz including revision of footnote US297.
- Authorize Sky Station International, Inc. to start constructing and operating a GSTS at its own risk (Experimental service in the DC-NY corridor).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Great Eastern Erg
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