Database of EESS Space and Ground Assets in 8025-8400 MHz

EESS Wideband Downlink Workshop
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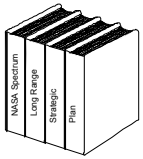
Rodger Andrews
ASRC Aerospace Corporation
Ralph Cager
ASRC Aerospace Corporation

Background

- Part of Effort to "Characterize Current/Planned Use of EESS 8025-8400 MHz Band"
  - Credible Base For Technical Studies of Band Saturation
    - Conflicting Information Exists in Public Records
    - Key: Feedback and Validation By System Operators Themselves
  - Prior Technical Studies Limited in Scope and Validation By User Communities
- Provide Vehicle for Update/Maintenance of Band Usage
  - Satellites and Associated Orbital & RF Parameters
  - Earth Stations and Associated Geo-location & RF Parameters
  - Satellite/Earth Station Linkages and Associated Frequencies
  - Satellite and Earth Station Owners/Operators and Points of Contact
- Approach: Develop Initial Draft for Comment and Feedback By Community
  - Handouts At This Workshop
- Distribution Method For Initial Validated Version Still Under Discussion
  - Depends on Organization Assuming Final Responsibility For Maintenance.
  - Database Distribution Options Include Web-Based and Direct File

Information Sources Utilized

[often with conflicting information]



Flight Project Documentation

-- Reliable but very limited in scope and open availability

ITU BR

-- Often unreliable due to long lead times required

FCC

-- Moderately reliable but limited to US ops only

Owner/Operator Web Sites

-- Mixed reliability….some very good, others questionable.

Workshop Handouts

- ppt file: "*Database of EESS Space and Ground Assets in 8025-8400 MHz*"
  - *Current Presentation*
- pdf file: "*Draft Listing of Current/Planned Spacecraft Owners/Operators in the 8025-8400 MHz Earth Exploration Satellite Service*"
  - *Database Extract Identifying Space Assets and their Owners*
- pdf file: "*Draft Listing of Current Earth Station Owners/Operators in the 8025-8400 MHz Earth Exploration Satellite Service*"
  - *Database Extract Identifying Ground Assets and their Owners*
- pdf file: "*Table of Current/Planned Satellites in the 8025-8400 MHz Earth Exploration Satellite Service*"
  - *Database Extract Identifying Spacecraft Parameters*
- *pdf file: "Table of Current Earth Stations in the 8025-8400 MHz Earth Exploration Satellite Service"*
  - *Database Extract Identifying Earth Station Parameters*
- *pdf file: "Spacecraft Frequency Utilization by the 8025-8400 MHz Earth Exploration Satellite Service"*
  - *Database Extract Depicting Spacecraft Frequency Use*

Sample Satellite Record

EESS Satellite Occupancy [8025-8400 MHz]

satName	ADEOS-II
satFullName	aka Midori 2; Advanced Earth Orbiting Satellite 2
adminName	J [Japan]
ownerName	NASDA
orbitInclination	98.62
orbitApogee	802.92
orbitPerigee	802.92
geoLongitude	
orbitDesc	LEO
ascentCrossingTime	
descentCrossingTime	10:30
biuDate	
launchDate	Nov 14, 2002
status	IO
stkDB	Yes *ssc#* 27597
	intSat# 2002-056A
recordUpdate	2/20/2003
comments	1. ITU BR Database [11/14/02]. 2. SFCG Database [GSFC/ Jen Zhou] - - - - other nfo sources: (1) ADEOS-II to Ground Station Interface Document, AD2-EO-96-126,

X-Band Signals:

	#1	*#2*	*#3*	*#4*	*#5*	*#6*
dumCenterFreq	8150	8250				
dumLowerFreq	8120	8247				
dumUpperFreq	8180	8253				

X-Band Links:

esName	*linkNum*	*centerFreq*	*lowerFreq*	*upperFreq*	*req PPD*
ASF_11.3m	1	8150	8120	8180	
ASF_11.3m	2	8250	8247	8253	
Hatoyama-City	1	8150	8120	8180	
Hatoyama-City	2	8250	8247	8253	
Kiruna_Esrange	1	8150	8120	8180	
Kiruna_Esrange	2	8250	8247	8253	
Taejon	1	8150	8120	8180	

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Sample Satellite Owner/Operator Record

EESS Satellite Owner/Operators [8025-8400 MHz]

satOwnerName NRSA

fullSatOwnerName National Remote Sensing Agency

satOwnerAddress Department of Space
Government of India
Balanagar, Hyderabad 500 037
INDIA

satOwnerPhone

satOwnerFax

satOwnerEmail

satOwnerWebSite http://nrsa.gov.in/

satOwnerComments

satOwnerPointOfContact

satName	*orbitDesc*	*status*
IRS-1B	LEO	IO
IRS-1C	LEO	IO
IRS-1D	LEO	IO
Oceansat-1	LEO	IO
Cartosat-1	LEO	P

recordUpdate 4/23/2003

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Sample Earth Station Record

Active EESS Earth Stations [8025-8400 MHz]

esName Cordoba

esFullName Cordoba

esLocation Argentina, Cordoba

esLatitude -31.5242

esLongitude -64.4636

esAltitude

Geodetic

antennaDiameter 13

gOverT

gainRx 54.9

noiseTemp

notes station name is Falda Del Carmen in ITU BR filing for SAC-C;
note: location specified as longitude -64.18, latitude -31.4

esOwner CONAE

recordUpdate 2/24/2003

satName	*centerFreq*	*lowerFreq*	*upperFreq*	*reqPassesPerDay*
AQUA	8160	8152.5	8167.5	broadcast
EROS-A1	8150	8106.25	8193.75	
EROS-A1	8250	8206.25	8293.75	
ERS-2	8140	8100	8180	
LANDSAT-7	8082.5	8007.5	8157.5	
LANDSAT-7	8212.5	8132.5	8292.5	
LANDSAT-7	8342.5	8262.5	8422.5	
SAC-C	8307.5	8215	8400	

Sample Earth Station Owner/Operator Record

Earth Station Owner/Operators [8025-8400 MHz]

esOwner DigitalGlobe

esOwnerFullName DigitalGlobe

esPointOfContact

esOwnerAddress 4900 Pike Road
Longmont, CO 80501-6700
USA

esOwnerPhone +1.800.655.7929

esOwnerFax

esOwnerEmail www.digitalglobe.com

esOwnerWebSite

recordUpdate 4/22/2003

notes rcve Quickbird-2

esName	*esLocation*
Longmont-DigitalGlobe	Colorado, Longmont
Fairbanks-DigitalGlobe	Alaska, Fairbanks

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Table of Satellites *Handout*

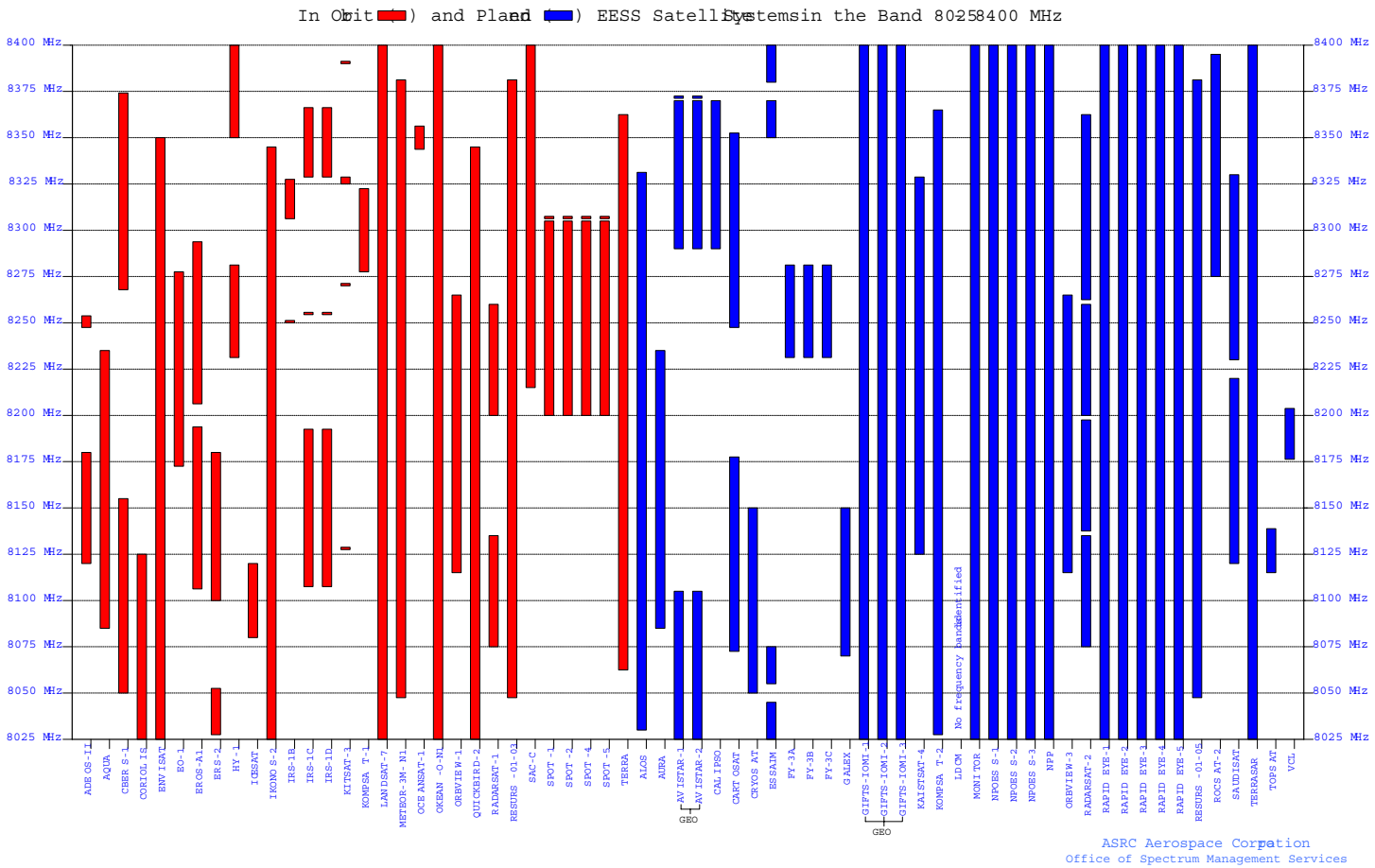
DRAFT
List of EESS Satellites in the Band
8025 - 8400 MHz

3/14/2003

Draft List of In-Orbit & Planned EESS X-Band Satellites and Associated Link Parameters [March 2003]

Name	Orb	Inc deg	Apoge km	Perig km	Ascen	Descen	Stat	C-Fr MHz	Lo-Fr MHz	Hi-Fr MHz	B/Wid MHz	D-Ra bp	Mod	Tx-Pow dBw	PSD dBw/H	Eir	Sat-A Gai	Sat-A Patte	Associated Earth Locatic	Comment	Admi	Owne	Bil	Launc
NOTE																								
1: Frequency Bands in Yellow are associated with Earth Stations in Yel																								
2: The label 'Have' indicates that Antenna Pattern Data, obtaine																								
ADEOS-II	LEO	98.62	802.92	802.92		10:30	IO	8150	8120	8180	60.000			15	-54.4		7.9	Have	Fairbanks..Ak, Kiruna..Esrange..S,		J	NASDA		11/14/2002
																			Hayatoma..J, Taejon..Kor					
								8250	8247	8253	6.000			5.5	-58.3		7.9	Have	Fairbanks..Ak, Kiruna Esrange..S, Hayatoma..J					
ALOS	LEO	98.2	692	692		10:30	P	8180	8029.387	8330.613	301.226			15	-55.6		7.4		Fairbanks..Ak, Hiroshima..J		J	NASDA	Jan 2004	
AQUA	LEO	98.2	686	673	13:30		IO	8160	8085	8235	150.000			14	-56.9		7.4		Poker Flats..Ak, Svalbard..N, McMurdo..Ant,		USA	NASA		5/4/2002
								8160	8152.5	8167.5	15.000			14	-55.3		7.4		Anchorage..Ak, Snug Harbor..Hi, Sioux Falls..SDak, Scripps..Ca					
																			Cordoba..Arg, Cuiaba..B, Mayaquez..PR					
																			Neustrelitz..G, Oberpfaffenhaffen..G, Lannion..F, Mateia..I					
																			Goteberg..S, Tromso..N, Novosibirsk..R, Obrinsk..R					
																			Ahmedabad..Ind, Singapore..Mal, Ladkrabang..Thi					
																			Urumqi..C, Miyun..C, Hiroshima..J, Kumamoto..J					
																			Alice Spr..Aus, Hobart..Aus					
AURA	LEO	98.2	705	705	13:45		P	8160	8085	8235	150.000	150M	SQPSK	12.15	-66.24		8	Have	Poker Flats..Ak, Svalbard..N	Playback	USA	NASA	Jun 2003	
								8160	8152.5	8167.5	15.000	15M	SQPSK	12.15	-56.24		8	Have	Anchorage..Ak, U-Haw..Hi, Seaspace..Ca, Scripps..Ca	Real Time				
																			Sioux Falls..Sd, Madison..Wi, GSFC..Md, St Pete..Fl,					
																			Cordoba..Arg, Cuiaba..B,					
																			Kiruna..S, Goteberg..S, Tromso..N,					
																			Neustrelitz..G, Oberpfaffenhaffen..G, Lannion..F, Rome..I					
																			Sodanklya..Fin, Moscow..R, Verkhoyank..R					
																			Pretoria..SAfr					
																			Ahmedabad..Ind, Bangkok..Thi					
																			Urumqi..C, Hiroshima..J, Tokyo..J					
																			Alice Spr..Aus, Hobart..Aus					
AVSTAR*1	GEO		long = -90				P	8065	8025	8105	80.000			10	-69		35.2		Typ-5m..USA		USA	AstroVision	ca.3rd Qtr 2003	
								8330	8290	8370	80.000			10	-69		35.2		Typ-10m..USA					
									8370.95	8371.05	0.010			-3	-39		4							
AVSTAR*2	GEO		long = -160				P	8065	8025	8105	80.000			10	-69		35.2		Typ-5m		USA	AstroVision	ca. 2004	
								8330	8290	8370	80.000			10	-69		35.2		Typ-10m					
									8370.955	8371.045	0.010			-3	-39		4							
CALIPSO	LEO	98.1	705	705		10:30	P	8330	8290	8370	80.000			9.4	-65.5		7		Poker Flats..Alaska, S Point..Hawaii		USA	NASA	April 2004	
(Picasso)																			Kiruna Esr..S, Dongara..Aus,					
CARTOSAT	LEO	97.9	623	623			P	8125.0	8072.5	8177.5	105.000			16	-64.2		7		Fairbanks..Ak, SanDeigo..Ca, Norman..Ok,		IND	NRSA	CY'2004-2004	
(IRS-P5)								8300.0	8247.5	8352.5	105.000			16	-64.2		7		Cotopaxi..Equador					
																			Neustralitz..G, Ramstein..G, Val..del..Revbil..F					
																			Liberville..Gab					
																			Abu Dhabi..UAE					
																			India, Japan, S..Korea, Tiawan, Thailand					
																			Australia					
CBERS-1	LEO	98.6	745	733		10:30	IO	8103	8050	8156	106.000			12.5	-71.3		4	Have	Cuiaba..B,		CHN	P.R.C. [Unknown]		10/14/1999
								8321	8268	8374	106.000			12.5	-71.3		4	Have	Nanning..C, Urumgui..C, Mijun..C,					

Frequency Utilization *Handout*



Summary

- Input Requested From All Owners/Operators
  - Follow Up w/ Organization's Workshop Attendee
- Points of Contact For Technical Feedback
  - Mr. Thomas vonDeak
    - NASA Glenn Research Center
    - NASA Spectrum Management Program Office
    - Ph: +1.216.433.3277
    - Email: <tvondeak@grc.nasa.gov>
  - Ms. Charlene Y. Chen
    - ASRC Aerospace Corporation
    - Office of Spectrum Management Services
    - Ph: +1.571.203.1341
    - Email: <charlene.chen@akspace.com>