FCC	312	
Sche	dule	S

FEDERAL COMMUNICATIONS COMMISSION SATELLITE SPACE STATION AUTHORIZATIONS (Technical and Operational Description)

Page 1: General, Frequency Bands, and GSO Orbit

S1. G	SENERAL	INFORMATION	Complete for	all satellite	applications
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a. Space Station or Satellite No INMARSAT-3 F3	etwork Name:	e. Estimated Date of Placement into Service: 1/25/1997		i Will the space station(s) operate on a Common Carrier Basis:		
b. Construction Commenceme	nt Date:	f. Estimated Lifetime of Satellite(s): 13	Years	j. Number of transponders offered on a common carrier ba		
c. Construction Completion Da	te:	g. Total Number of Transponders: 4		k. Total Common Carrier Transponder Bandwidth: 0 MHz		
d1. Est Launch Date Begin:	d2. Est Launch Date End:	h. Total Transponder Bandwidth (no. transponder 68	rs x Bandwidth) MHz	I. Orbit Type: Mark all boxes that apply: X GSO	NGSO	

S2. OPERATING FREQUENCY BANDS Identify the frequency range and transmit/receive mode for all frequency bands in which this station will oper Also indicate the nature of service(s) for each frequency band.

	Frequency	Band Limits						
Lower Frequency (_Hz)		Upper Frequency (_Hz)		e. T/R Mode	f. Nature of Service(s): List all that apply to this band			
a. Numeric	b. Unit (K/M/G)	c. Numeric	d. Unit (K/M/G)					
1525	M	1559	M	R	Mobile-Satellite Service			
1626.5	1626.5 M 1660.5 M		M	Т	Mobile-Satellite Service			
6425	М	6454	М	R	Feeder Link for Mobile Satellite Service in FSS			
3600 M 3629 M		T	Feeder Link for Mobile Satellite Service in FSS					

S3. ORBITAL INFORMATION FOR GEOSTATIONARY SATELLITES ONLY:

a. Nominal Orbital Longitude	(Degrees E/W):	b. Alternate Orbital Longitu	ıde (Degrees E/W):	c. Reason for orbital location selection:	
178.1 E	W 0: '' K		In		Inmarsat is authorized by the United Kingdom to
d. Toward West: e. Toward East:	1 0		Range of orbital are in which adequate s provided (Optional):	ervice can be	operate the Inmarsat-3 F3 satellite at 178.1 E.L.
i. Reason for service are	selection (Optional):	•	n. Easieninost.		

Page 2: NGSO Orbits

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S4. ORBITAL INFORMATION FOR NON-GEOSTATIONARY SATELLITES ONLY

S4a. Total Number of Satellites in Network or System:

S4c. Celestial Reference Body (Earth, Sun, Moon, etc.):

S4b. Total Number of Orbital Planes in Network or System: S4d. Orbit Epoch Date:

For each Orbital Plane Provide:

(e) Orbital	(f) No. of	(g) Inclination	(h) Orbital	(i) Apogee (km)	(j) Perigee (km)	(k) Right Ascension	(I) Argument of	Active Service Arc Ra		Range (Degrees)	
Plane No.	Satellites in	Angle (degrees)	Period			of the Ascending	Perigee	(m) Begin	(n) End	(o) Other	
	Plane		(Seconds)			Node (Deg.)	(Degrees)	Angle	Ångle	. ,	
			(=====)			(9-)	(5,000)	,g.o	gio		

S5. INITIAL SATELLITE PHASE ANGLE For each satellite in each orbital plane, provide the intital phase angle.

(a) Orbital Plane No.	(b) Satellite Number	(c) Initial Phase Angle
		(Degrees)

NO NGSO DATA FILED

FCC Form 312 - Schedule S: (Technical and Operational Description)

S6. SERVICE AREA CHARACTERISTICS for each service area provide:

	(a) Service Area ID	(b) Type of Associated Station (Earth or Space)	(d) Service Area Description. Provide list of geographic areas (state postal codes or ITU 3-ltr codes), satellites or Figure No. of Service Area Diagram.
Ī	GLOBAL	S	All visible areas of the Earth.

Page 3: Service Areas

Page 4: Antenna Beams

FCC Form 312 - Schedule S: (Technical and Operational Description)

S7. SPACE STATION ANTENNA BEAM CHARACTERISTICS For each antenna beam provide:

(a)	(b)	Isotropic	Antenna	(e)	(f)	(g) Min.	(h) Polar-	(i) Polarization	(j) Service	Transmit			Receive				
Beam	T/R	Ga	ain	0	Rotational	Cross-	ization	Alignment Rel.	Area ID	(k)	(I) Effective	(m)	(n)	(o) G/T	(p) Min.	Input Attenu	uator (dB)
ID	Mode	(c) Peak (dBi)	(d) Edge (dBi)	Error (Degrees)	Error (Degrees)	Polar Iso- lation (dB)		Equatorial Plane (Degrees)		Input Losses	Output Power (W)	Max. EIRP			Saturation Flux Density	(q) Max. Value	(r) Step Size
							(Y/N)			(dB)		(dBW)	Temp (k)	(db/K)	(dBW/m2)	Value	OIZO
CGU	R	20.5	16.5	0.1	0.1	30	Ν		GLOBAL				891	-9	-98	24	2
CGU	R	20.5	16.5	0.1	0.1	30	Ν		GLOBAL				891	-9	-98	24	2
CGD	T	20	16.5	0.1	0.1	30	Ν		GLOBAL	3.3	10.5	30.5					
CGD	T	20	16.5	0.1	0.1	30	Ν		GLOBAL	3.3	10.5	30.5					
LGU	R	18.5	16	0.1	0.1		Ν		GLOBAL				562	-9	-109	23	2
LGD	Т	19.5	17	0.1	0.1	·	N		GLOBAL	4.1	159	41.5			·	·	

FCC Form 312 - Schedule S: (Technical and Operational Description)

S8. ANTENNA BEAM DIAGRAMS For each beam pattern provide the reference to the graphic image and numerical data:
Also provide the power flux density levels in each beam that result from the emission with the highest power flux density.

(a)	(b)	(c) Co-or	(d) GSO	(e) NGSO Antenna Gain	(f) GSO Antenna		Max. Power F	lux Density (dB	W/M2/Hz)	
Beam	T/R	Cross	Ref.	Contour Description	Gain Contour Data	At Angle of	Arrival above ho	orizontal (for em	ission with higl	nest PFD)
ID	Mode	Polar Mode ("C"	Orbital Longitude	(Figure/Table/ Exhibit)	(GXT File)	(g) 5 Deg	(h) 10 Deg	(i) 15 Deg	(j) 20 Deg	(k) 25 Deg
		or" X")	(Deg. E/W)							
CGU	R	С	178.1		CGUR.GXT					
CGU	R	С	178.1		CGUL.GXT					
CGD	Т	С	178.1		CGDR.GXT	-180.2	-180	-179.8	-179.5	-179.2
CGD	Т	С	178.1		CGDL.GXT	-180.2	-180	-179.8	-179.5	-179.2
LGU	R	С	178.1		LGUR.GXT					
LGD	Т	С	178.1		LGDR.GXT					

Page 5: Beam Diagrams

Page 6: Channels and Transponders

FCC Form 312 - Schedule S: (Technical and Operational Description)

S9. SPACE STATION CHANNELS For each frequency channel provide:

(c) T/R (d) Center Frequency (MHz) (e) Polarization (f) TTC (B) Assigned (a) Bandwidth or Comm Channel (kHz) Mode (H, V, L, R) Channel No. (T or C) 6439.5 CUR 29000 R CUL 29000 R 6439.5 CDR 29000 3614.5 CDL 29000 3614.5

1542

1643.5

LUR

LDR

34000 R

34000

S10. SPACE STATION TRANSPONDERS For each transponder p	provide:
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(a)	(b)	Receive	Band	Transmit Band			
Transponder ID	Transponder Gain (dB)	(c) Channel No.	(d) Beam ID	(e) Channel No.	(f) Beam ID		
FL1	137	CUR	CGUR	LDR	LGDR		
FL2	137	CUL	CGUL	LDR	LGDR		
RL1	127	LUR	LGUR	CDR	CGDR		
RL2	127	LUR	LGUR	CDL	CGDL		

Page 7: Digital Modulation

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S11. DIGITAL MODULATION PARAMETERS For each digital emission provide:

(a) Digital Mod. ID	(b) Emission Designator	(c) Assigned Bandwidth (kHz)	(d) No. of Phases	(e)Uncoded Data Rate (kbps)	(f) FEC Error Correction Coding Rate	Processing	(h) Total C/N Performance Objective (dB)	
D1	5K00G1D	5	2	0.3	0.5		3.5	15.7

Page 8: Analog Modulation

FCC Form 312 - Schedule S: (Technical and Operational Description)

S12. ANALOG MODULATION PARAMETERS For each analog emission provide:

(a)	(b) Emission	(c)	(d) Signal	(e)	Multi-channel Telephony			(j) Video	(k) Video (I) Video		(m) SCPC/FM	(n) Total C/N	(o) Single	
Analo Mod.		Assigned Bandwidth (kHz)	Туре	Channels per Carrier	(f) Ave. Companded Talker Level (dBm0)	(g) Bottom Baseband Freq. (MHz)		(i) RMS Modulation Index	Standard NTSC, PAL, etc.	- 3 - 3	and SCPC/FM Modulation Index	Compander, Preemphasis, and Noise Weighting (dB)	Performance Objective (dB)	Entry C/I Objective (dB)

Page 9: Typical Emissions

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S13. TYPICAL EMISSIONS For each planned type of emission provide:

Associated		Modulation ID		(-)	` ' ' ' ' ' ' ' ' ' ' ' ' ' ' ' ' ' ' '	(3)	(h) Energy	Receive Ba	and (Assoc. Ti	ransmit Stn)	Trai	nsmit Band	(This Space Stat	ace Station)	
(a) Start	er ID Range (b) End	(C) Digital (Table	C) Digital (d) Analog Transponder (kHz)	. 0				Assoc. Station Transmit Power (dBW)		EIRP (dBW)		Power Flux	(o)Assoc. Stn Rec. G/T		
		511)			·	Antenna Gain (dBi)	(j) Min.	(k) Max.	(I) Min.	(m) Max.		(dB/K)			
FL1	FL2	D1		83	10000	FL INM-C LB.d		54	1.5	7.1	19.8	24.3		-23	
RL1	RL2	D1		2900	10000	RL INM-C LB.d		54	10.5	16	-24.7	-13.4	-175.5	30.7	

Page 10: TT and C

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S14. Is the space station(s) controlled and monitored remotely? If Yes, provide the location and telephone number of the TT and C control point(s): #Error

FEDERAL COMMUNICATIONS COMMISSION **SATELLITE SPACE STATION AUTHORIZATIONS** FCC Form 312 - Schedule S: (Technical and Operational Description)

Page 11: Characteristics and Certifications

S15. SPACECRAFT PHYSICAL CHARACTERISTICS:

S15a: Mass of spacecraft without fuel (kg): 865	Spacecraft Dimensions (meters)	Probability of Survival to End of Life (0.0 - 1.0)
S15b. Mass of fuel and disposables at launch (kg): 1175		
S15c. Mass of spacecraft and fuel at launch (kg): 2040	S15f. Length (m): 3.15	S15i. Payload: 0.72
S15d. Mass of fuel, in orbit, at beginning of life (kg): 283	S15g. Width (m): 20.67	S15j. Bus: 0.9
S15e. Deployed Area of Solar Array (square meters): 30.5	S15h. Height (m): 2.31	S15k. Total: 0.65

S16. SPACECRAFT ELECTRICAL CHARACTERISTICS:

Spacecraft Subsystem		ver (Watts) At ng of Life	Electrical Power (Watts) A End of Life					
	At Equinox	At Solstice	At Equinox	At Solstice				
Payload (Watts):	^{(a):} 2099	^{(f):} 2132	^{(k):} 2099	^{(p):} 2132				
Bus (Watts):	^{(b):} 717	^{(g):} 478	^{(l):} 717	^{(q):} 478				
Total (Watts):	^{(c):} 2816	^{(h):} 2610	^(m) 2816	^{(r):} 2610				
Solar Array (Watts):	^{(d):} 3700	^{(i):} 3250	^{(n):} 3105	^{(s):} 2832				
Depth of Battery Discharge (%):	^(e) 70 %	^(j) 0 %	⁽⁰⁾ 70 %	^(t) 0 %				

S17. CERTIFICATIONS:

a. Are the power flux density limits of § 25.208 met?:	Χ	YES		NO		N/A		
b. Are the appropriate service area coverage requirements of § 25.143(b)(ii) and (iii), or § 25.145(c)(1) and (2) met?		YES		NO	Χ	N/A		
c. Are the frequency tolerances of § 25.202(e) and the out-of-band emission limits of § 25.202(f)(1), (2) and (3) met	? X	YES		NO		N/A		
In addition to the information required in this Form, the space station applicant is required to provide all the information specified in Section 25.114 of the								

Commission's rules, 47 C.F.R § 25.114.