FS into M-Star Satellites (47.2 - 50.2 GHz)

- **Sharing Rule:**

  Peak transmit EIRP Density for Fixed Stations shall be below the values shown in Table 1 and Fixed Service antenna will meet reference radiation pattern of ITU-R F.699-2.

Table 1. Peak EIRP Density (dBW/MHz) vs. Elevation Angle of Fixed Service Boresite (theta)

EIRPD	= 60-3*theta/5	0 < theta < 15
	= 51-11*(theta-15)/2	15 <= theta < 25
	= -4	25 <= theta < 90

Analysis Details of Fixed Service into M-Star Uplink at 50 GHz

Peak EIRP Density OF FS to achive Io/No = -13 dB in M-Star Uplink

FS Elevation Angle (deg)	EIRP Density (dBW/MHz)
0	65.3
5	62.5
10	58.7
15	52.8
20	39.2
22	15.2

Note: Fixed Service Antenna is assumed to meet ITU-R F.699-2 Reference antenna patterns

FS TRANSMITTER PARAMETERS (Cell Site)

Power Radiated	dBW	-25.86
Output losses	dB	0.50
Carrier frequency	GHz	50
Channel Bandwidth	MHz	5
Pwr spectral density	dBW/Hz	-93.35
Antenna boresite gain	dBi	48.53
Off boresite angle	deg	0
Off boresite gain	dBi	48.53
EIRP (boresite)	dBW	22.17
ERIPSD (boresite)	dBW/MHz	15.18
EIRPSD (off boresite)	dBW/Hz	-44.82

CHANNEL PARAMETERS

Distance	km	2585.90
Total absorbtion	dB	13.60
Spreading loss	dB	194.67

M-Star RECEIVER PARAMETERS

System temperature	K	817
No	dBW/Hz	-199.48
Off boresite angle	degrees	0
Antenna diameter	m	0.265
Antenna boresite gain	dBi	40.61
Off boresight gain	dBi	40.61
Io	dBW/Hz	-212.49
Io/No	dB	-13.01

M-Star Sharing With Other Systems

- FSS Systems - Can share using space diversity but limited by spectrum availability.
- Point-to-Multipoint, Mobile, or SkyStation cannot share.

M-Star Sharing Rules

- Co-frequency sharing not possible with Mobile Service, Point-to-Multipoint Service.
- 37.5 - 40.5 GHz
  - ⇒ No coordination with EIRP density rules, otherwise coordinate.
- 47.2 - 50.2 GHz
  - ⇒ Coordination and EIRP density rules required.
- Intra-service sharing
  - ⇒ Coordination required.

Summary

- M-Star can share with Fixed Service using the recommended sharing rules.
- M-Star can share with other Satellite Systems using space diversity.
- M-Star cannot share with Mobile or Point-to-Multipoint Systems.

Joint Spectrum Center Data

- Study available to US Government agencies
- JCS Project Engineer - Capt. Richard DeSalvo
  Ph: 410-293-2681
- Title: Worldwide Electromagnetic Environment Characterization of the 29.5 to 60 GHz Band

  Doc #: DFS-95-007

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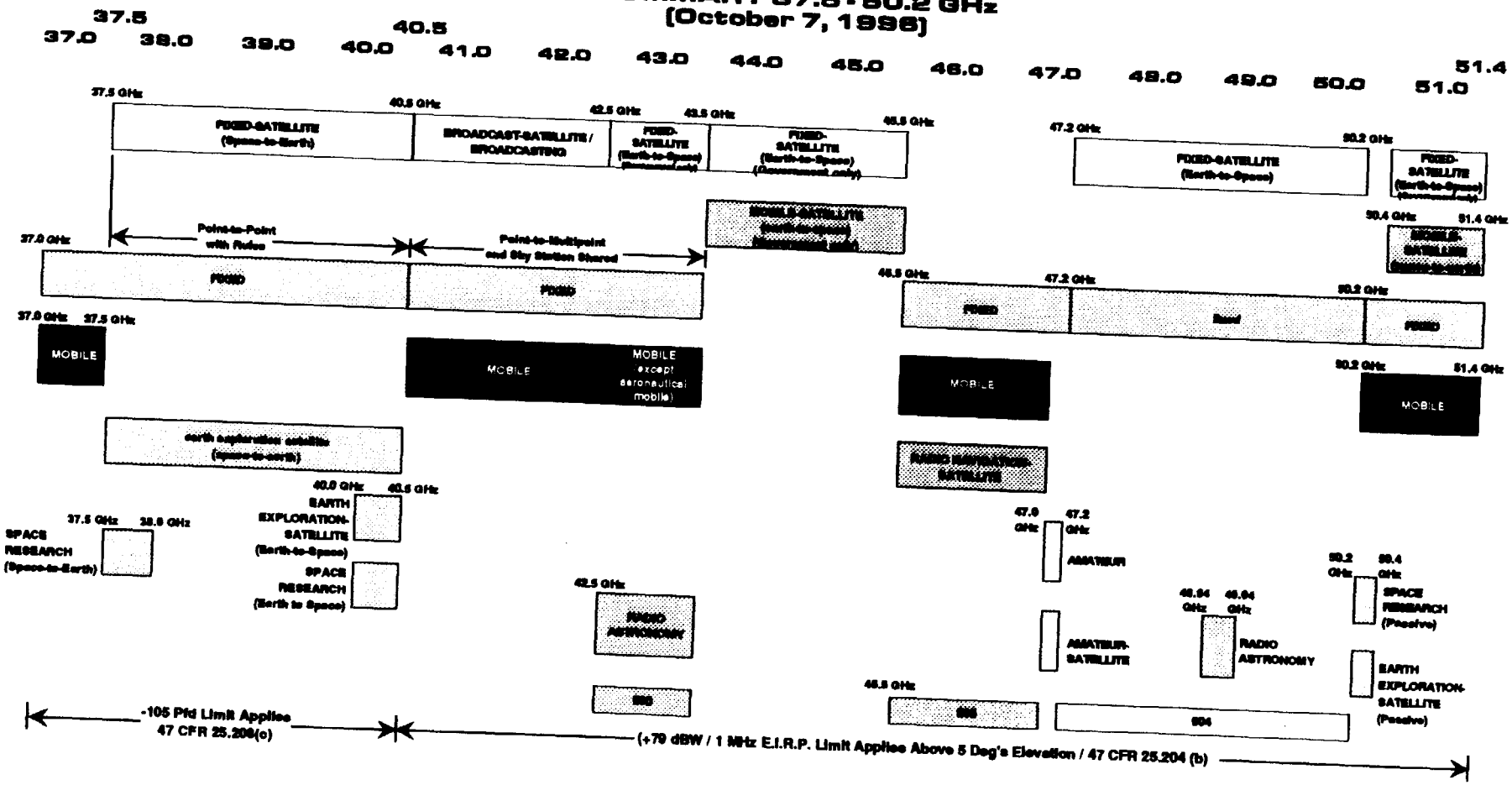
PROPOSED FCC FREQUENCY ALLOCATION SUMMARY 37.5 - 50.2 GHz (October 7, 1998)



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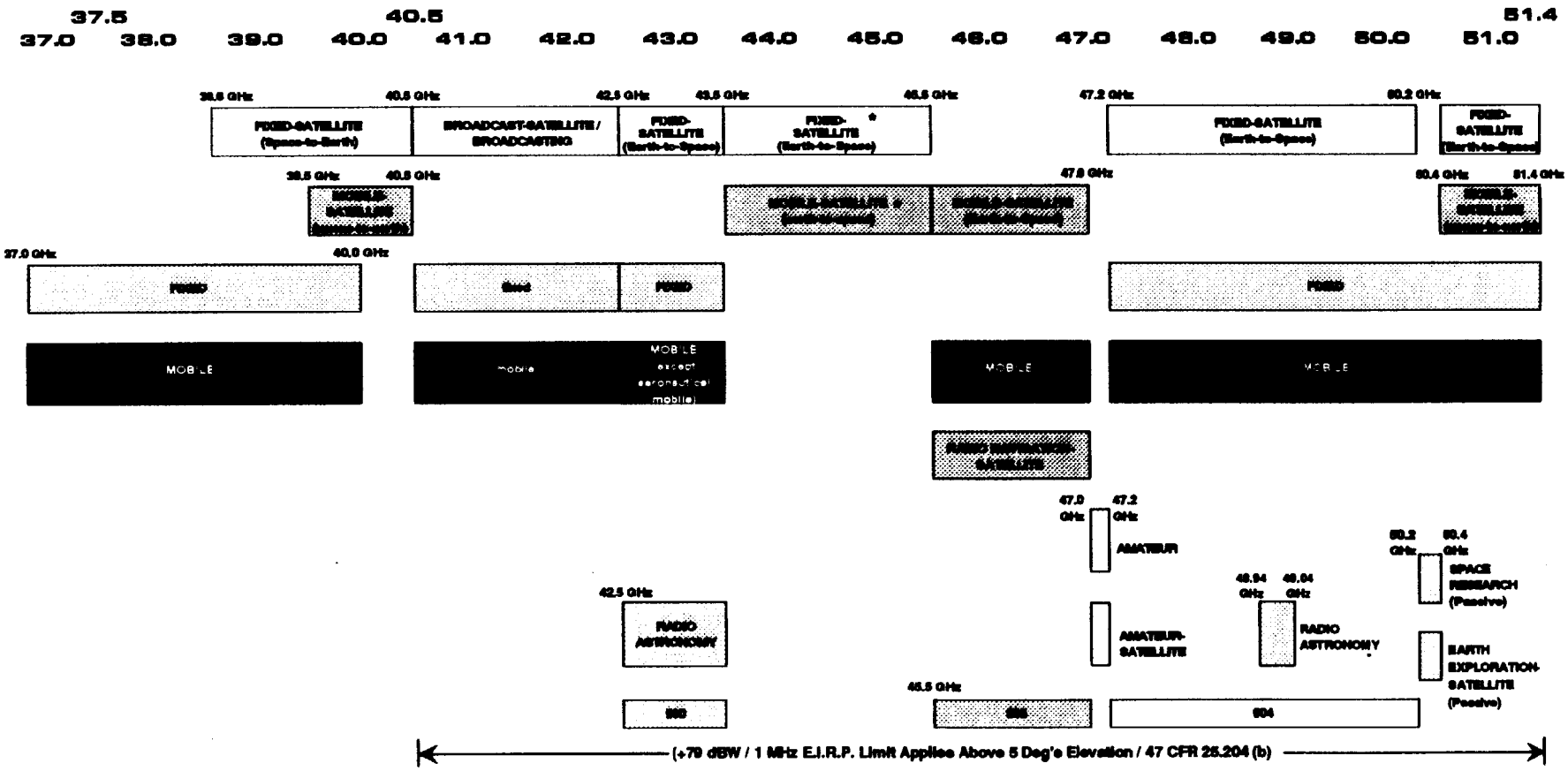
FCC FREQUENCY ALLOCATION SUMMARY 37.5 - 50.2 GHz



* Government only

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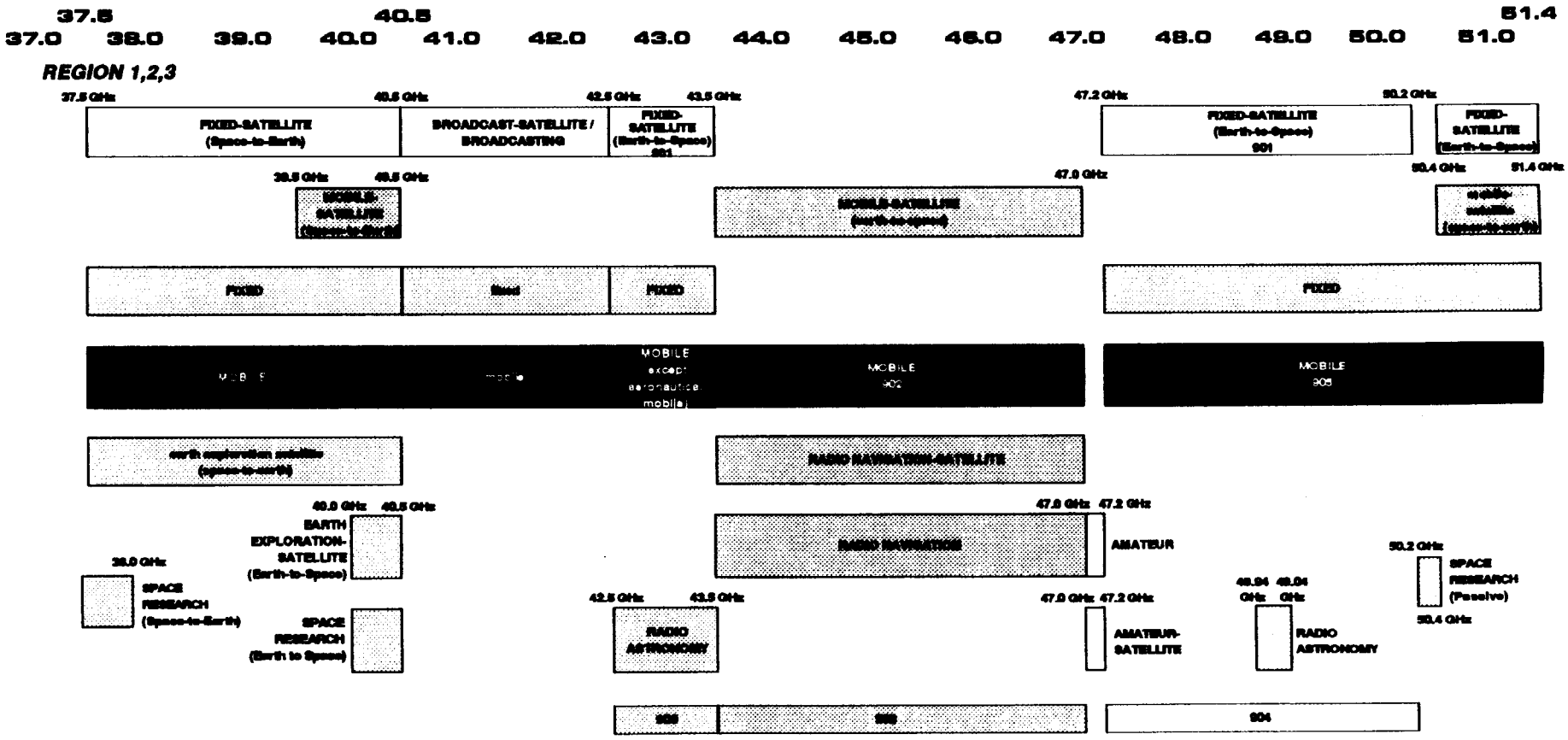
ITU FREQUENCY ALLOCATION SUMMARY 37.5 - 50.2 GHz



(-105 PFD Limit Applies / 2581, 2582, 2582.1, 2583, 2584)
Note: The limits given may be exceeded . . .
the administration of which has so agreed / 2585