

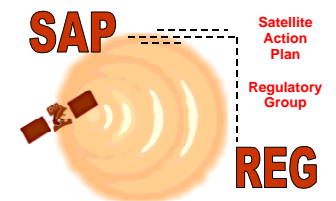


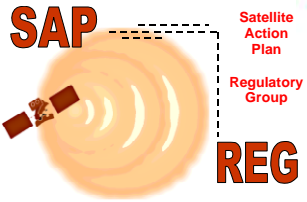
KA-BAND SATELLITE SYSTEMS & REGULATORY THEMES FOR MENA REGION

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SAP REG – Background

- ❑ Satellite Action Plan is a satellite industry representative body created circa 2000 - result of a formal mandate from the European Commission.
- ❑ Primary focus of the Satellite Action Plan Regulatory Group (SAP REG) is to:
 - Discuss and develop satellite industry positions on market access, spectrum management and licensing issues.
 - Interact with CEPT, / EU Administrations, the European Commission (EC) and EU bodies (such as European Parliament).on above matters.
- ❑ SAP REG members includes all major European and Global satellite operators as members as well as all major European satellite manufacturing companies.
- ❑ SAP REG membership includes participation from the GVF, ESOA and MSUA.
- ❑ *Disclaimer: Views expressed are those of the author, and not of Avanti or SAP REG.*

Ka-band Systems

□ Why Ka-band ?

- Ku-band FSS / Ku-band BSS ‘capacity crunch’ / ‘GEO slot crunch’
- Ka-band FSS allows for affordable / high quality two-way broadband services.(consumer, corporate, government)
- Ka-band technology mature as a result of US Ka-band experience.

□ Why Ka-band In MENA (Engineers View)

- Ka-band rain fade margins in MENA region are comparable with Ku-band rain fade margins in Europe.
- Ka-band is “ideal” for MENA region.

Ka-band Systems – Planned for MENA

Ka-band Capable GEO Satellites With Coverage of MENA

- ❑ Nilesat / NILESAT-201
- ❑ Arabsat / BADR-6 / ARABSAT-5C / ARABSAT-X
- ❑ Yahsat / YAHSAT-1A / YAHSAT-1B
- ❑ Avanti HYLAS-2
- ❑ Eutelsat / KA-SAT
- ❑ Turksat / TURKSAT-4X
- ❑ Others

Ka-band Systems – Frequency Bands

Space-to-Earth	Earth-to-Space	Notes
17.7 – 20.2 GHz	27.5 – 30.0 GHz	ITU Region 1 FSS etc
20.2 – 21.2 GHz	30.0 – 31.0 GHz	ITU Region 1 FSS + MSS “NATO / Gov Bands”
21.4 – 22.0 GHz	-	ITU “HDTV / BSS”
17.3 – 17.7 GHz	-	FSS (shared with BSS Feederlinks)
29.5 – 30.0 GHz	19.7 – 20.2 GHz	‘Exclusive’ FSS ITU HDFSS Bands Used For SITs
27.5 – 29.5 GHz	17.7 – 19.7 GHz	Shared FSS & FS etc Used for Gateways

Ka-band Systems – Regulatory Issues

Topic	Gateway Earth Stations	Notes
National Frequency Coordination	Feasible / Careful Site Selection /	<ul style="list-style-type: none">- Need fibre connectivity- Site shielding.- Coordination with adjacent countries.
Licensing	Feasible Licence Conditions Licence Fees	Highly variable conditions across MENA countries
Other Issues	Variable (depends on national regulatory context)	

Ka-band Systems – Regulatory Issues

Topic	Satellite Interactive Terminals	Notes
National Frequency Coordination	Feasible / Careful Site Selection /	- Adjacent band compatibility
Licensing	Feasible ? Licence Conditions Licence Fees	Highly variable conditions across MENA countries
Other Issues	Variable (depends on national regulatory context)	

Ka-Regulations – Some Examples

Topic	Satellite Interactive Terminals	Notes
CEPT (ECC Framework via ECC Decisions)	-Licence Exemption For Individual Users For SITs in 29.5-30.0 / 19.7-20.2 GHz + - Notification regime / spectrum licensing or network licensing	Requirements: -Meet ETSI standards -Up to 50 / 60 dBW EIRP - Off-Axis EIRP Density Limits
USA	-Blanket Licensing For Individual FSS User Terminals in 29.5-30.0 / 19.7-20.2 GHz + “Space-Segment Licence” (US systems) or Lol Approval (non-US systems)	Requirements: - Off-Axis EIRP Density Limits (similar to ITU-R Recommendation S 524-9)

CEPT European Harmonisation

- ❑ The Electronic Communications Committee of the CEPT develops Reports, Recommendations and Decisions relating to the authorisation and use of spectrum within the 48 members of the CEPT;
- ❑ These Decisions are **not binding on CEPT administrations** but in many cases are adopted by 30 or more administrations, **which greatly facilitates harmonised approaches to national authorisation processes**;
- ❑ The ECC Decisions, as well as national authorisation requirements, typically reference harmonised European Standards developed by the European Telecommunications Standards Institute (ETSI) which provide relevant technical and operating conditions;
- ❑ The Frequency Management Working Group of the ECC is currently developing a Report on Ka band satellites, the prime purpose of which is to provide information to national regulatory authorities on the characteristics of these systems and preferred options for authorisation which would minimise any regulatory burden.



CEPT: ECC Decisions

- ❑ **ERC/DEC/(00)07:** on the shared use of the band **17.7 - 19.7 GHz** by the fixed service and earth stations of the fixed-satellite service (space-to-Earth);
- ❑ **ECC/DEC/(05)01:** on the use of the band **27.5-29.5 GHz** by the Fixed Service and uncoordinated earth stations of the Fixed-Satellite Service (Earth-to-space);
- ❑ **ECC/DEC/(06)02:** on Exemption from Individual Licensing of low EIRP satellite terminals (LEST) operating within the frequency bands 10.70 - 12.75 GHz or **19.70 - 20.20 GHz** Space-to-Earth and 14.00 - 14.25 GHz or **29.50 - 30.00 GHz** Earth-to-Space;
- ❑ **ECC/DEC/(06)03:** on Exemption from Individual Licensing of high EIRP satellite terminals (HEST) operating within the frequency bands 10.70 - 12.75 GHz or **19.70 - 20.20 GHz** space-to-Earth and 14.00 -14.25 GHz or **29.50 - 30.00 GHz** Earth-to-space;
- ❑ **ECC/DEC/(05)08:** on the availability of frequency bands for high density applications in the Fixed-Satellite Service (space-to-Earth and Earth-to-space.)

ETSI: Harmonised Standards



Radio equipment referenced in ECC Decisions and national regulations is normally required to operate in accordance with the relevant ETSI harmonised standard:

- ❑ **EN 301 360:** Satellite Interactive Terminals (SIT) and Satellite User Terminals (SUT) transmitting towards geostationary satellites in the 27.5 GHz to 29.5 GHz frequency bands;
- ❑ **EN 301 459:** Satellite Interactive Terminals (SIT) and Satellite User Terminals (SUT) transmitting towards satellites in geostationary orbit in the 29.5 GHz to 30.0 GHz frequency bands;

Possible Themes For MENA ?

- ❑ Question: Is there scope for GCC or Arab League steps to facilitate development and use of Ka-band satellite services ?
 - ❑ Support use of Ka-band “VSAT / Satellite Broadband” networks for delivering broadband connectivity objectives.

- ❑ Possible *first* step:
 - ❑ Blanket Licensing / Licence Exemption of Ka-band SITs in relevant bands for **individual users** (consumers/corporates).
 - ❑ Coupled with appropriate ‘light touch’ spectrum / network authorisation regime(s) for **Ka-band VSAT network operators / service providers** at national level.
 - ❑ *But also:* Take proper account of national policy requirements.