

ITU/MIC International Satellite Symposium 2015,
Danang Vietnam – 30 September 2015

WRC Agenda items 1.1, 1.6.2 and 10

Presented by
Ting Ling Lee

Presented on
30 September 2015



Who we are

- ▲ A world-leading satellite operator, providing reliable and secure satellite communication solutions
- ▲ Reach of over 312 million households world-wide
- ▲ Over 1,230 employees around the globe at 23 locations worldwide
- ▲ Listed on NYSE Euronext Paris and Luxembourg Stock Exchange under the ticker symbol SESG.
- ▲ Leading role in defending existing and seeking new additional satellite spectrum

Overview

- ▲ **Focus specifically on certain Agenda Items of key interest to SES: Agenda Items 1.1, 1.6.2 and 10 (relating to IMT)**
- ▲ **Structure of presentation:**
 - **What is the issue;**
 - **SES's Perspective and Position;**
 - **Preliminary APT Common Proposal (if any); and**
 - **Comparison with outcome of other Regional meetings**

Agenda item 1.1 (1)

- ▲ Issue: the terrestrial mobile industry is seeking more spectrum for broadband services and satellite C-band is one of its targets**
- ▲ Why is there a need to preserve C-band for satellite applications? Attributes of C-band are unique and irreplaceable:**
 - capable of large geographic coverage**
 - resilient to rain attenuation**
 - used for key applications where higher frequency bands are no substitute**
- ▲ SES's perspective:**
 - Harmonisation of frequency bands for IMT: potential new frequency bands to be identified for IMT at WRC-15, should have high probability for a global harmonization. Sees no such potential in C-band. C-band is still and continues to be widely used by satellites worldwide**
 - Sharing in C-band based on ITU-R studies: Report ITU-R S.2368 “Sharing studies between IMT-Advanced systems and geostationary satellite networks in the fixed-satellite service in the 3 400-4 200 MHz and 4 500-4 800 MHz frequency bands in the WRC study cycle leading to WRC-15” has similar conclusions as Report ITU-R M.2109**

Agenda item 1.1 (2)

- The results confirm again, even with the new IMT parameters, that sharing between FSS and IMT is not feasible in the same geographical area
- IMT spectrum requirements: Questions on the validity of some of the input assumptions to the IMT spectrum requirements estimation in Report ITU-R M.2290 have been raised during ITU meetings. So far no convincing clarifications from the mobile industry have been forthcoming
- Spectrum already identified for IMT services should be used before seeking for new frequency bands

▲ SES's Position:

Supports Method A No Change for downlink bands of 3400-3600 MHz, 3600-3700 MHz, 3700-3800 MHz and 3800-4200 MHz, as well as the uplink bands of 5725-5850 MHz and 5925-6425 MHz

- ▲ PACP was developed indicating APT supports Method A (NOC to the ITU Radio Regulations) for the following frequency bands 3400-3600MHz, 3600-3700MHz, 3700-3800MHz, 3800-4200MHz, 4500-4800MHz, 5725-5850MHz and 5925-6425MHz**

Agenda item 1.1 (3)

▲ Regional positions*

Frequency Band	APT	ASMG	ATU	CEPT	CITEL	RCC
3 400-3 600 MHz	A	B&C		B&C	B&C	A
3 600-3 700 MHz	A	A	A	B&C	A	A
3 700-3 800 MHz	A	A	A	B&C	A	A
3 800-4 200 MHz	A	A	A	A	A	A
4 500-4 800 MHz	A	A	A	A	A	A
5 725-5 850 MHz	A	A	A	A		A
5 925-6 425 MHz	A	A	A	A	A	C

* Derived from 3rd ITU Interregional Workshop on WRC-15 Preparation, Sept 2015, Geneva

Legend:

A: No Change

B: Make an allocation to the MS on a primary basis (either by a new allocation or the upgrade of an existing secondary allocation)

C: To identify the frequency band for IMT either in a new or existing footnote

Agenda item 1.6.2 (1)

- ▲ **Issue: To obtain additional 250/300 MHz of non-planned FSS frequency bands in uplink in the Americas and APAC regions respectively in order to balance the amount of spectrum available in downlink in those regions**
- ▲ **Why is there need for additional uplink spectrum?**
 - to reduce complexity when designing new spacecraft
 - to utilise spectrum in a more efficient, economical manner, while meeting the demands of myriad applications, ie DTH, VSAT etc
- ▲ **SES's perspective:**
 - 14.5-14.8 GHz band is the preferred candidate band as it is contiguous to existing uplink bands and is already allocated for BSS feeder-links
 - To protect AP 30A Plan/List and its proposed modifications in 14.5-14.8 GHz, a power-flux density limit could be used as a coordination trigger
 - To ensure compatibility with other services, the antenna size of FSS could be restricted. In particular, sharing between FSS and fixed service (FS) is similar to the current sharing between FS with a) FSS in 13.75-14.5 GHz and b) BSS feeder-links in 14.5-14.8 GHz

Agenda item 1.6.2 (2)

▲ SES's Position:

- **Support Method F2: Review regulatory provisions for the existing FSS allocation in 14.5-14.8 GHz, so that the usage is not limited to BSS feeder links only**
- **To protect AP 30A Plan/List and its proposed modifications in 14.5-14.8 GHz, Option B could be considered:**

Add a new Section 3 to Annex 4 to AP 30A to define a new power-flux density trigger based on studies conducted under this agenda item identifying the requirement to coordinate assignments of the unplanned FSS with assignments in, or proposed modifications to, the AP 30A Plan/List, in the band 14.5-14.8 GHz

- **To ensure compatibility with other services, limit the deployment of FSS by restricting the antenna diameter [2.4 to 6] m**

▲ PACP was developed for no change (NOC) method in the frequency bands 13.25-13.4GHz and 14.8-17GHz due to incompatibility with existing services. No consensus to develop PACP in the 13.4-13.75 GHz band and 14.5-14.8 GHz band was achieved

Agenda item 1.6.2 (3)

▲ Regional positions*

Frequency Band	APT	ASMG	ATU	CEPT	CITEL	RCC
14.5-14.8 GHz	No PACP	No constraint to R1	NOC	NO ECP	No IAP	support

* Derived from 3rd ITU Interregional Workshop on WRC-15 Preparation, Sept 2015, Geneva and updated for CEPT outcome

Agenda item 10 (IMT Spectrum above 6 GHz) (1)

- ▲ **Issue: A future agenda item by the mobile industry seeking to identify a broad range of additional spectrum for terrestrial 5G services**
- ▲ **Why is this is a concern for satellite operators?**
 - Identification of satellite frequencies for mobile in 2019 would make those frequencies unusable in the countries deciding to deploy mobile networks
- ▲ **SES's Perspective:**
 - It is resource and time consuming to carry out the sharing studies within the next WRC study period for such a large amount of spectrum
 - What is the scope of work and cost incurred by this agenda item, since it involves many ITU Study Groups/Working Parties?
 - Administrations should consider if there is a genuine requirement to identify large amount of IMT spectrum at the expense of other services
- ▲ **SES's Position:**
 - ensures that IMT spectrum requirements are properly justified and IMT characteristics are well defined
 - carve out the satellite spectrum in the Ku and Ka bands from being considered

Agenda item 10 (IMT Spectrum above 6 GHz) (2)

- ▲ PACP was developed to study potential candidate frequency bands for IMT in the following frequency bands:

From (GHz)	To (GHz)	Bandwidth (GHz)
25.25	25.5	0.25
31.8	33.4	1.6
39	47	8
47.2	50.2	3
50.4	52.6	2.2
66	76	10
81	86	5

Agenda item 10 (IMT Spectrum above 6 GHz) (3)

▲ Regional positions*

APT	25.25-25.5 GHz, 31.8-33.4 GHz, 39-47 GHz, 47.2-50.2 GHz, 50.4-52.6 GHz, 66-76 GHz, 81-86 GHz
ASMG	Additional Allocation to MS on primary basis and identify bands above 31 GHz for IMT
ATU	No position yet
CEPT	24.5-27.5 GHz, 31.8-33.4 GHz, 40.5-43.5 GHz, 45.5-48.9 GHz, 66-71 GHz, 71-76 GHz & 81-86 GHz strongly oppose to study the band 27.5-29.5 GHz
CITEL	10-10.45 GHz (for countries listed in No. 5.480), 23.15-23.6 GHz, 24.25-27.5 GHz, 27.5-29.5 GHz, 37-40.5 GHz, 45.5-47 GHz, 47.2-50.2 GHz, 50.4-52.6 GHz, 59.3-76 GHz, 31.8-33 GHz
RCC	Frequency bands of FSS and/or MSS in Ku and Ka bands shall be excluded

* Derived from 3rd ITU Interregional Workshop on WRC-15 Preparation, Sept 2015, Geneva and updated for RCC and CEPT outcome

Conclusion

- ▲ No Change for C-band
- ▲ Review regulatory provisions in 14.5-14.8 GHz, to enable use as non-planned FSS uplink band
- ▲ Exclude satellite Ku and Ka bands from being considered by IMT studies

Make the Right Decision for WRC-15