02 May 2013

Re: Support for ESOA Response to the Draft RSPG Opinion on "Strategic Challenges facing Europe in addressing the Growing Spectrum Demand for Wireless Broadband"

To Whom It May Concern:

The Global VSAT Forum ("GVF") thanks the RSPG for the opportunity to comment on the "Draft RSPG Opinion on Strategic Challenges facing Europe in addressing the Growing Spectrum Demand for Wireless Broadband", hereafter referred to as the "draft Opinion", and is pleased to confirm its support for the European Satellite Operators' Association's (ESOA) response to the public consultation.

The GVF is a U.K.-based non-profit association representing the global satellite industry. The organisation's membership comprises more than 200 companies from scores of countries located in every major region of the world, including Europe. The member companies of the GVF represent all sectors of the industry, including satellite operators, satellite manufacturers, ground segment and network operators, manufacturers, as well as consultants, law firms and other organizations involved in the satellite industry.[1]

As a global organisation, GVF is concerned not only by the draft Opinion's implications for Europe, but also for all of the world's major regions, where continued access to and reliance upon spectrum allocated for use by satellite communications service providers is of paramount importance. Indeed, global demand for satellite communications has been growing for decades and there are now hundreds of millions of end users who depend upon numerous of applications delivered using the bands cited in the draft Opinion.

Some examples of services delivered through satellite networks are distance learning, telemedicine, universal Internet access through low-cost VSAT equipment, video transmissions to homes, video transmissions to cable head-ends for distribution to homes, backhaul for linking terrestrial mobile base stations to the core network, and communications in support of aviation air traffic management.

Thanks to its robust qualities, satellite services played a vital role in recovery and relief operations for many disasters that occurred in recent years, such as the 2004 Asian tsunami, the 2010 Haiti earthquake and other major events.

Satellite communications provided using frequency bands cited in the draft Opinion are also used for the exchange of telemetry, telecommand and control (TT&C) information between satellites and earth stations used to manage their operations. This application requires highly reliable protection from all interferences, due to the risk of losing control of the affected space station (and the associated loss of commercial/non-commercial services supported by the satellite) and the possibility of causing catastrophic damage to other spacecraft including

[1] For more information regarding the GVF, please visit the association's web site (www.gvf.org).

spacecraft used by governments for critical national defence and homeland security purposes. In particular, and due to its high reliability, C-band is often used for TT&C to manage satellites.

Some satellite operators also use C-band for MSS feeder-links, through which hundreds of thousands of customers can enjoy connectivity on mobile platforms – on land, at sea and in the air – where other communication means are not available. This includes safety communication services for GMDSS and AMS(R)S applications. The use of C-band for feeder-links for the MSS is of high importance for disaster recovery and relief, when terrestrial networks cannot fulfil the communication needs after a major disaster.

C-band is used for the support of Air Traffic Control systems in regions where terrestrial coverage is poor or unreliable. For example, in Africa, the interconnection between the remote VHF aeronautical communication towers and the air traffic control centres is provided by C-band FSS systems. Only C-band can cost-effectively provide the necessary reliability for such safety services.

The characteristics of C-band have led to the use of this frequency band for satellite distribution of TV broadcast channels in many parts of the World. These channels are either received directly by the user or through a cable head-end facility. For example, in the United States C-band FSS is used to transmit video programming to over 7000 cable head-end stations for subsequent distribution to 60 million customers. In Brazil, there are over 20 million C-band receiving earth stations.

In support of these and other mission-critical services, the global satellite industry has invested billions of Euros in satellites. A summary of current and planned C-band satellites is provided in the accompanying Annex.

Potential use of C-band frequencies by Wireless Broadband

The band 3400-3600 MHz was identified for terrestrial IMT in a number of countries at WRC-07. Before and since that time, many administrations have licensed parts of this band for IMT systems. The use of this band for terrestrial mobile broadband has not been successful. In several countries, licences have been returned[2]. Where systems have been deployed, mostly based on WiMAX technology, there has been little commercial success.

This lack of success is likely a consequence of a number of factors. Firstly, the propagation conditions for terrestrial mobile applications are not favourable. For example, the range of a macro-cell base station in this band is about 2.5 km[3] and is probably lower in an urban environment.

Second, in comparison to other lower frequency bands in use today by wireless systems, the wall and glass penetration losses at C-band are relatively high. This means that indoor coverage is poor when compared to those lower frequency systems.

Third, there is limited availability of consumer equipment for mobile broadband systems in C-band. This probably reflects a lack of confidence of equipment manufacturers that there is a sizable market for C-band IMT systems.

These technical factors and the lack of commercial success at C-band raise doubts as to whether C-band frequencies are suitable for meeting the spectrum demand for terrestrial mobile systems.

[2] For example reference to licences for Broadband Wireless Access systems in C-band returned in 2010 in included in document RSPG13-511 Rev.1 or the European Radio Spectrum Policy Group.
[3] Report ITU-R M.2109 gives the intersite distance for macro cells as 5 km.

Conclusion

Accordingly, the GVF supports each of the representations made by ESOA and affirms the need for the bands currently identified for satellite wireless broadband (the 1.5/1.6 GHz, 2 GHz and 2.4 GHz MSS bands), continue to be available for such applications. The GVF supports and joins ESOA in opposing the identification of any more C-band spectrum for terrestrial wireless broadband. Finally, the GVF supports the the proposals made, notably that the Opinion be modified as follows:

1. The Opinion should be modified so as to give use a consistent definition of wireless broadband, being as described in page 22 of the draft Opinion as “high-speed wireless transmission of data and may be provided via either fixed, mobile or satellite platforms”. In particular the text in section VIII of the draft Opinion should be modified to be consistent with this definition.
2. All the issues in section 2 of this contribution which discuss the drivers against the need for more spectrum for terrestrial wireless broadband should be included in the Opinion. Some of the issues are already included, but others are not.
3. As explained in section 3 of this contribution, the bands 3800-4200 MHz, 5725-5875 and 5875-5925 MHz are not suitable as candidate bands for terrestrial mobile broadband, and the text on pages 21 and 22 of the draft Opinion should be modified to remove suggestions of these bands as having potential for terrestrial wireless broadband.
4. The bands 1980-2010 MHz and 2170-2200 MHz should remain identified for *satellite* wireless broadband, as they currently are in Annex 1 of the draft Opinion. For the reasons explained in section 4 above, the section starting on page 19 of the draft Opinion on the 2 GHz mobile satellite service bands should not suggest the possibility for re-allocation of these bands to *terrestrial* wireless broadband.

Sincerely,

David Hartshorn
Secretary General
Global VSAT Forum

Annex
Current and planned C-band Satellites

Table 1 – Current C-band Satellites

Orbital location	Satellite name	Orbital location	Satellite name	Orbital location	Satellite name
-177	NSS 9	-72	GE 6	-5	Stellat
-174	TDRS 10	-70	Brasilsat C2	-3.1	Mabuhay 1
-168	TDRS 5	-68	Brasilsat B2	-1	Intelsat 1002
-139	GE 8	-67	GE 3	2.9	Rascom QAF1R
-142.5	Inmarsat 2F2	-67	GE 4	3.2	Sinosat 3
-137	GE 7	-65	Brasilsat C1	5	Astra 4B
-135	GE 10	-62.5	TDRS 6	10	Eutelsat W2A
-133	Galaxy 15	-61	Amazonas 2	12	Raduga 1-9
-131	GE 11	-61	Amazonas	11.5	Intelsat 603
-129	Galaxy 12	-58	Panamsat 9	17	Amos 5
-127	Galaxy 13	-55.5	Galaxy 11	19	GE 2
-125	Galaxy 14	-55.5	Intelsat 805	20	Arabsat 5C
-123	Galaxy 18	-53	Intelsat 707	24.8	Inmarsat 3F5
-121	Echostar 9	-51.3	Intelsat 21	24.9	Inmarsat 4F2
-118.7	Anik F3	-50	Panamsat 1R	26	Arabsat 4AR
-116.8	Morelos 3	-49	TDRS 3	30.5	Arabsat 5A
-114.9	Solidaridad 2	-48	SES 3	32.8	Intelsat New Dawn
-113	Satmex 6	-47	Intelsat 703	34.5	Arabsat 2B
-111.1	Anik F2	-46	TDRS 4	38	Paksat 1R
-107.3	Anik F1	-45	Intelsat 14	40	Express AM1
-107.3	Anik F1R	-43	Panamsat 11	42.5	Nigcomsat 1R
-104.9	GE 18	-40.9	TDRS 9	43.5	Thuraya 2
-103	GE 1	-40.5	Intelsat 806	45.1	Telstar 7
-101	SES 1	-37.5	GE 1i	46	Measat 1
-99	Galaxy 16	-34.5	Intelsat 903	47.5	Intelsat 702
-98.1	Inmarsat 4F3	-33.9	Marisat 3	47.5	Yahsat 1B
-97	Telstar 9	-31.5	Protostar 1	49	Intelsat 709
-95	Galaxy 3C	-29.5	Intelsat 801	49	Yamal 202
-93.1	Telstar 5	-27.5	Intelsat 907	50	Telstar 6
-92.8	ICO G1	-24.5	Intelsat 905	50.2	Jcsat 4
-91	Galaxy 17	-22	NSS 14	50.5	Intelsat 803
-89	Telstar 8	-20	NSS 7	51.5	Apstar 1A
-87	SES 2	-18	Intelsat 901	52.5	Yahsat 1A
-84	Brasilsat B4	-15.5	Inmarsat 3F2	55	Insat 3E
-83	GE 9	-14	Express A1R	57	NSS 12
-78	Venesat 1	-11	Express AM44	60	Intelsat 904
-75	Brasilsat B3	-7.9	Telecom 2D	62	Intelsat 902

Table 1 (continued) – Current C-band Satellites

Orbital location	Satellite name	Orbital location	Satellite name	Orbital location	Satellite name
64	Intelsat 20	88	ST 2	127.9	Jcsat 12
64.2	Intelsat 906	90	Yamal 201	128	Jcsat 10
64.5	Inmarsat 3F1	91.5	Measat 3	130	DFH 95
66	Intelsat 17	91.5	Measat 1R	132	Vinasat 1
68.5	Panamsat 10	93.5	Insat 3A	132	Jcsat 9
68.7	Panamsat 7	93.5	Insat 4B	134	Apstar 6
70	Comstar 4	96.5	Express AM33	136	N Star C
70	Raduga 1-8	98	DFH 48	138	Apstar 5
72.1	Intelsat 22	98.1	DFH 58	140	Express AM3
72.1	Intelsat 706	98.5	Thuraya 3	143.5	Inmarsat 4F1
75	LMI 1	100.5	Asiasat 5	144	Apstar 1
76.5	Apstar 2R	102.7	Express A2	146.5	Sinosat 1
76.5	Apstar 7	103.2	DFH 69	148	Measat 2
78.5	Thaicom 5	105.5	Asiasat 7	150.5	Palapa C2
80	Cosmos 2473	105.5	Asiasat 3S	157	Intelsat 701
80	Express MD1	108	Telkom 1	166	Panamsat 8
80	Express AM2	110.5	Sinosat 5	169	Intelsat 19
83	Gsat 12	113	Palapa D	169	Panamsat 5
83	Insat 4A	115.5	Chinasat 6B	172	AMC 23
85	Raduga 1-10	118	Telkom 2	178	Inmarsat 3F3
85	TDRS 7	122	Asiasat 4	180	Intelsat 18
87.5	Chinastar 1	124	Jcsat 6		
88	ST 1	125	Sinosat 6		

Table 2 – Planned C-band Satellites, 2013

Appox year of launch	Satellite name	Appox year of launch	Satellite name	Appox year of launch	Satellite name
2013	Alphasat	2013	Express AM5	2014	G-Sat 15
2013	Amazonas 3	2013	Express AM6	2014	Intelsat 30
2013	AzerSpace/Africasat 1A	2013	Thaicom 6	2014	Express AM7
2013	SatMex 8	2013	Arsat 2	2014	SatMex 7
2013	G-Sat 11	2014	Turksat 4B	2015	Belarus Sat 1
2013	Anik G1	2014	Mexsat 1	2015	G-Sat 13
2013	SES 6	2014	Express AM8	2015	Intelsat 31
2013	G-Sat 6	2014	Eutelsat 3B	2015	Eutelsat 8 West B
2013	G-Sat 7	2014	AsiaSat 6/Thaicom 7	2015	Amos 6
2013	ABS 2	2014	Express AM4R	2015	Turksat 5A
2013	Yamal 401	2014	Measat 2a		