

European Commission Green Paper on Satellite Navigation Applications



Response by the Radio Society of Great Britain

April-2007

Introduction

This response to the above European Commission Green Paper is from the Radio Society of Great Britain (RSGB, www.rsgb.org.uk) on behalf of its members and the wider UK Amateur Radio community. The latter includes our national affiliates who have microwave spectrum interests - Amsat-UK (www.uk.amsat.org), UK Microwave Group (UKuG, www.microwavers.org) and the British Amateur Television Club (BATC, www.batc.org.uk).

RSGB is recognised as one of the leading organisations in the world in the field of amateur radio. It collaborates with its fellow national societies via the International Amateur Radio Union (IARU) through IARU Region-1 (www.iaru-r1.org).

Amateur radio is a science based technical hobby enjoyed by over three million people worldwide. From a statutory point of view it is fully recognised by the International Telecommunication Union (ITU) as a service and is listed in the ITU Radio Regulations as the Amateur Service and the Amateur-Satellite Service. The wide-ranging role of amateur radio from training/education to emergency communications was recently highlighted in an exhibition, "Amateur Radio, a European Resource", which took place in the European Parliament at Brussels in March 2007.

We would be pleased to provide any additional information on request or participate in any future discussions, both with the Commission or any other stakeholder who has an interest in this topic.

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RSGB, Amsat-UK, UKuG & BATC, April 2007

Questions & Answers

Question 1: *After indicating your area of interest in the above list (3.1 to 3.12), please give your opinion on:*

- *what measures should be taken to accelerate the market introduction of your application,*
- *the appropriateness of the legal and regulatory framework and the need to further develop it, the benefits of compulsory use of GNSS or equivalent positioning systems for your selected application, in accordance with the World Trade Organisation rules and commitments*
- *the role of public authorities,*
- *the protection of citizens (in terms of safety and security and other aspects of civil protection)*
- *the benefits of GNSS,*
- *the market perspective in your domain (in relation with the expected volume of use)*
- *sensitivity to costs,*
- *minimum accuracy requirements and other performance parameters,*
- *the certification process,*
- *integration with communication systems and*
- *other issues you deem important.*

Amateur services currently exploit public domain civil GPS signals for location based applications (such as automatic position reporting) and for providing time and frequency references to communications equipment and propagation beacons. Amateur Satellites not only carry GPS equipment to assist navigation but have even been used to scientifically characterise the orbital environment for GPS at radii beyond the GPS constellation.

The Amateur Service (1240-1300MHz) and Amateur Satellite Service (1260-1270MHz) have international Secondary frequency allocations that share spectrum with the Primary Radio Navigation Service (which has overall priority).

Whilst we would welcome the advent of the Galileo Open Service and the prospect of combined GPS/Galileo receivers, we have significant concerns regarding the overlap our own allocations and the Galileo E6 signal (1260-1300MHz) that would be used for the Commercial Service (CS) and Public Regulated Service (PRS).

At a broader level we also find it unclear at this time how planned upgrades to the GPS, Glonass and the Chinese Beidou/Compass systems would interact with Galileo – both technically and commercially.

It is also unclear to us whether Galileo would be any more robust when adverse ‘space weather’ events occur, such as X-class solar flares

Question 2: *what is your perception of the existing legal framework governing privacy issues regarding the introduction of services based on GNSS? Do you see a need for any additional measures to address specific privacy issues?*

No comment

Question 3: *Is the overall research effort in Europe commensurate with the general objective of giving Europe state-of-the-art competence? In which relevant fields and sectors of research should efforts be concentrated? What needs to be done to increase the research effort and exploit research results at best?*

No comment

Question 4: *How should public authorities stimulate SMEs? Should competence centres, training programmes or any other instruments be supported (and in that case, which ones)?*

No comment

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Question 5: *What is the most important cooperation issue to be implemented? Is there a particular sector of the world that needs to be targeted?*

See our comments in answer to Q1 above regarding Glonass and other systems

Question 6: *Do you believe that more effort should be devoted to the establishment of standards for satellite navigation devices and services, and at which level?*

It would be helpful if standards organisations could provide minimum guidelines for robust receiver rf design and benchmarking.

In addition some of our members have also encountered a lack of standardisation in the format of data (such as NMEA) from existing GPS receivers. This can inhibit 'plug-and-play' third-party use for time and frequency references such as GPS disciplined oscillators

Question 7: *Which safety applications do you believe require certification? Are the GALILEO infrastructure safety-related requirements sufficient to constitute the basis for system certification, including infrastructure lifetime? What are your liability concerns and how do you think they could best be addressed?*

No comment

Question 8:

i) Do you foresee the need for a better coordination of spectrum at the international and European level?

Existing arrangements for GNSS at both European and International level are satisfactory. The radio spectrum is a precious resource that all users must do their best to use efficiently. There is a clear responsibility to develop robust systems that are able to SHARE spectrum with other users rather than to demand exclusivity. There are good examples of this in radar, navigation and communications systems.

ii) Should measures be adopted regarding potential sources of interference?

Yes, receivers should always be designed to be robust enough to exist in the high levels of noise, radio and radar signals that are characteristic of today's environment.

The techniques for recovering and processing spread spectrum navigation signals from noise and interference have been under progressive development for over 30 years since the first operation in the mid-1970s of the GPS system and as a consequence are well understood. Many of these techniques use digital processing which in that period has become cheaper, consumes less power and has increased in capability. The rapid rise of 'Software Defined Radio' receivers is a good example of this. Other techniques used include adaptive antennas and aiding from other sensors.

It is unreasonable therefore to demand a "cleared allocation" for Galileo. Galileo receivers will have to contend with high power long-range surveillance radar for many years to come even if the 2010 operations date is achieved. There is also the consideration of whether it makes sense to build receivers which are aimed at important commercial markets and which might be easily disturbed or denied operation by either accidental or deliberate interference.

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Question 9: *Do you consider that the current IPR rules are adequate to ensure that innovators will be able to benefit from their activities while allowing users to enjoy these innovations?*

No comment

Question 10: *Are there any legal or regulatory barriers at national or EU level that need to be overcome for the market introduction of your application?*

Are national laws or EU directives or regulations required in your application domain?

Give details of the relevant sectors and the benefits anticipated.

What approach should be followed for the European Radio Navigation Plan?

No comment