



FCC Raises Questions about U.S. Access to Non-GPS GNSS

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No reality show contestant ever neared the finish line without the producers serving up another challenge. And so it is for would-be multi-GNSS users in the United States.

After dodging budget cuts, thwarting other teams' attempts to grab critical frequencies, and dealing with jamming and technical problems, members of the U.S. GNSS community were thrown another curve late last year when they learned

that signals from GLONASS and other international constellations must be authorized for use in the United States.

"There's an authorization that is required in order to operate with those signals," said Ronald Repasi, deputy chief of the Federal Communications Commission (FCC) Office of Engineering and Technology.

"That's the key word 'operate with.' The capability to receive in a piece of equipment a signal from a foreign system doesn't in itself make it legal. It is the process that the receiver goes through to operate with those signals that requires the authorization."

The genesis of the regulation goes back to World Trade Organization (WTO) agreements made in the late 90s, Repasi explained to the December meeting of the National Space-Based Positioning, Navigation, and Timing (PNT) Advisory Board.

"Countries around the world were worried about access to each other's markets," Repasi said. "One of the things that's important from the Commission's standpoint is that there are effective competitive opportunities in the foreign country that operates that satellite for all our individuals who want to serve their country. The process that

was set up under the WTO codified that point as far as establishing competitive opportunities."

Although it is doubtful that the rules in question were originally aimed at radio navigation satellite services (RNSS), the term of art used in spectrum allocations that include GNSS systems, they are in place and must be dealt with, said an expert familiar with the subject.

"That rule was written largely for communications outlets but it was written very generally to include all kinds of signals that might be coming from space," said the expert, who like nearly all who spoke to *Inside GNSS*, asked not to be named so as to speak freely on the subject.

"While I don't think the people were really thinking about RNSS systems back in the day, the language is such that it does apply. Technically there needs to be an authorization or an allowance, if you will, to accept foreign RNSS signals in the U.S."

The consequences of not getting authorized are twofold. First, the unauthorized signal cannot be used for official, nonfederal purposes such as helping determine locations of mobile E911 callers. And, second, the signal will not be protected against interference.

That reality is part of why the issue is coming to a head now.

"We would like all the pieces of critical infrastructure in the United States to be able to take advantage of these signals with appropriate integrity," said another expert familiar with the issue.

"That implies, at least as far as the FAA [Federal Aviation Administration] level of integrity, that we have some kind of integrity monitoring system in place. As soon as you dig into that, you discover not only isn't there anything in place in any formal way, [but] furthermore, in general, the signals aren't even authorized to be received and used in the United States."

"To use these other (signals) in any meaningful way," this source asserted, "you have to ensure that they have integrity and that they are authorized to be used."

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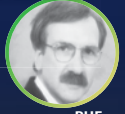
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WASHINGTON VIEW

Five Criteria

Fortunately, the process to get over this hurdle is fairly straightforward. The

National Telecommunications and Information Administration (NTIA), on behalf of the executive branch, recommended in 2011 that waivers be granted as long as the GNSS system applying for the waiver met five criteria.

First, the system would have to comply with United Nations' space debris mitigation guidelines. This is something the FCC has to do for a lot of other communication satellites, explained a source familiar with the process.

Second, granting the waiver has to be consistent with U.S. trade and other treaty obligations. "So we wouldn't be granting a waiver to, say, a space system built by Iran, where we have sanctions," the expert quipped.

Then it must be clear that the waiver is limited to receive-only RNSS, said the source, "including positioning, standard time and frequency satellite services. So, we're not talking about waiving messaging services, data transmissions, or other sorts of things."

The fourth criteria is that the incoming signal has to be compatible with U.S. government systems operating in the same band — that is, in this case, the international signal must not interfere with GPS.

Generally speaking, the technical information being requested to address that criterion is already filed publicly at the International Telecommunication Union (ITU), said the expert, and filing an application should not put a system at a competitive disadvantage.

"We're not asking for anything sensitive or for any trade secret information," said the source. "[W]e would not want to do the same reciprocally. So, we want it to be as simple as possible."

Finally, granting the waiver must be in the public interest.

Few would question the new signals as being in the public interest, according to the first source. Access to additional satellites from other GNSSs will improve service for users and reduce the need for the U.S. to launch even more GPS satellites to deal with signal blockage caused by steep terrain or tall buildings.

"You get police or firemen in places where there are tall buildings, and they are sky-impaired," said the expert. "For heaven's sake, they ought to be authorized formally to use that signal."

Although the government-to-government process is not complicated, a risk exists that other nations will not look kindly on having to file for a waiver — something the U.S. is not required to do anywhere on behalf of GPS service. The source said that delegates to the recent meeting of the International Committee on GNSS (ICG) were incredulous when they learned of the requirement.

In fact, concern has arisen that the United States could find itself filing for GPS landing rights in other nations.

"Despite the fact that this a fair [application] process because everyone has to do it," said another expert familiar with what

is going on, “some of the nations around the world might decide that they might want to try to apply this process to GPS.”

Having to submit an application is not the issue, the expert explained.

If another nation’s application process “was as simple as our process, that would be fine,” the source said. “It would be bad for anyone to use this process as an excuse to create their own process which is not fair and actually is a trade barrier.”

Given that, would it not be simpler still to void the requirement and allow other nations to skip the process altogether? It would be, said one of the sources, but that is not possible. Today’s radio regulations and the other provisions that apply don’t have a carve-out for RNSS.

“The executive branch can’t issue a waiver,” the source explained. Although the White House can request a waiver, the independent FCC is the one that must issue it.

Certified Confusion

The process for getting waivers may be clear, but the process, if there is one, for U.S. receivers using non-GPS signals, is not.

“I’m trying to see if there’s any way through this morass, said Brad Parkinson, the acting chair of the PNT Advisory Board. “Right now there are literally hundreds of thousands of GPS–GLONASS, nonfederal receivers using GLONASS for very useful purposes to navigate tractors and all kinds of stuff — and iPhones probably. The horse has sort of left the barn, but is he going to get shot? What are you going to do with this thing?”

“It comes down to what we expect to happen in the public comment process when we get the request to operate with those foreign systems,” replied Repasi.

During the comment process, he explained, “the public has the opportunity to object to us, agree to issuing that authorization or supporting it, or finding

some other issues that may be important from their perspective, like power levels and out-of-band emission levels and such. The Commission, in adjudicating those differences of opinion that come in during that comment period, will issue an order giving a rationale why we are granting in part or perhaps even denying an authorization request.”

Any public comment process, however, has the potential to open the door to debate over other the considerations.

“I would imagine,” said Repasi, “that, when there are requests to waive the FCC rules to permit operation with foreign signals, that the first question some may have is ‘What are the interference protection rights that are being afforded by any kind of a waiver.’”

One of the issues, an expert pointed out, is that a previous proposal by would-be wireless broadband supplier LightSquared to use bands adjacent to GPS would have impacted signals from other

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GNSS systems as well. Giving interference protection to those services through a waiver or authorization could color debate on that issue, which is not fully resolved.

Another attendee at the advisory board meeting expressed concern to *Inside GNSS* that the process may become a back door to trying to set receiver GNSS standards so that a wider range of other applications could use bands adjacent to those used for satellite navigation.

LightSquared Redux?

It's easy to see what might prompt such a concern. During his talk Repasi mentioned several issues rooted in the ongoing standards debate, some of which seemed out of context for a discussion about a seemingly straightforward GNSS waiver process.

Noting that the primary RNSS band at 1575 MHz was surrounded by noisy

mobile satellite services, he said he thought "this is where we start focusing on what exactly is adjacent to this RNSS allocation. If you look at Globalstar, Iridium, Inmarsat, these are all systems that have been deployed in handsets as

frequency can tolerate that type of power level."

Repasi added, "I think that's something that the [Department of Transportation (DoT) Adjacent Band Compatibility (ABC)] Assessment may want

"It is incumbent upon us as part of **our policy of promoting interoperability and compatibility** that we not put up **artificial restrictions to foreign systems in the U.S.** lest other people try to do the same to us."

well as terminals. Those are operating a very high power levels compared to, like, a cell phone. . . . There are ships out there that have these terminals on the same mast as the GPS antenna, and it would be an interesting question to understand how something in their close proximity geographically and that closer proximity

to start looking at. What is actually out there as far as the RF environment goes and see how these receivers are able to tolerate that?"

The ABC Assessment is considering ways to limit interference to GNSS services by setting maximum power levels for adjacent bands. It is the flip side of

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receiver standards, which put the onus for dealing with interference on the receivers.

Repasi noted that an FCC technical advisory council is weighing whether “risk informed” interference assessments should be introduced to take into account the risk of interference occurring as opposed to using the worst-case scenario, he said which was traditionally used by the DoT.

Repasi also suggested, based on the experience of the WiFi Alliance, that standards will not stifle innovation.

Receiver Standards & Certification

The WiFi discussion sprang from a question on ensuring that equipment, particularly imported devices, complied with the rules.


“We have accredited certification bodies throughout the world,” Repasi said. “So, those devices [for example, imported] from Bangladesh would go into a certification body of their choice. They have to be accredited, of course; there are some hoops that they would have to jump through to show that they get the accreditation, these certification bodies.”

He added, “But after going through the process of certification bodies, if they are going to be bringing their equipment into the U.S., they have to respect our compliance rules. So, they have to test against what the FCC rules would be for entering U.S. markets. And they get it an identifier associated with that device to show that they passed the certification process.”

While discussion of certifying GPS receivers is part of the separate debate over setting receiver standards for spectrum reasons, said one expert, “I don’t see any legislative or regulatory authority” for doing so as part of the waiver process. “I certainly don’t see anybody on the GPS industry side or any of the government agencies that think that’s a good idea.”

The apples and oranges juxtaposition of the signal waivers/authorizations requests with elements of setting standards for GNSS receivers and certification process for foreign-made devices, created confusion around the requirements for receivers, suggested another person following the issue. Indeed, the half a dozen people who spoke to *Inside GNSS* after attending the meeting were split on whether equipment certification was required or not for multi-GNSS equipment. Requests to Repasi for more information were not returned by press time. Repasi did say that existing multi-GNSS receivers are not illegal.

Whatever the confusion, GNSS advocates agree on one point in particular — that any holdup in granting landing rights would be antithetical to America’s clearly stated and inclusive GNSS policy.

“There is a vulnerability in that we need to be good global citizens because other people are relying on GPS,” explained one of the experts. “I think it is incumbent upon us as part of our policy of promoting interoperability and compatibility that we not put up artificial restrictions to foreign systems in the U.S. lest other people try to do the same to us. We want to set a good example.” 

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