

US company SmartSky Networks is in the process of developing and launching a new ATG system for aircraft connectivity. This will operate with 60MHz bandwidth, and will have full US coverage. Airline launch will be late 2018.

SmartSky offers new ATG passenger connectivity for US

SmartSky Networks of Charlotte, NC, USA is in the process of developing and launching a new air-to-ground (ATG) connectivity system for the passenger cabins and flightdecks of corporate jets and commercial airliners. This will provide a high data transmission rate system, and offer an alternative to Gogo's ATG system.

The development of SmartSky's system started in 2012 with the operation of private jets. "These experienced poor WiFi service when using the Gogo ATG system, so the decision was taken to develop a high data transmission rate ATG system," says Mary Rogozinski, vice president of airlines at SmartSky Networks. "The plan is to start with business jets, and then develop the first supplemental type certificate (ATC), while also building a network of transmitters so that the system could be used across the continental USA."

The first commitment that SmartSky has made is to provide a service to business jet operators, but this will be followed by the launch of a service for airlines in the second half of 2018.

"SmartSky is leasing space on ATG towers that are already in place for a variety of radio transmissions across the US," says Rogozinski. "The radio transmitter that we will be using for our system will be placed halfway up the towers. We already have space on seven towers to test the system, which is being done now. This will increase to 230 or more towers across the continental USA."

Rogozinski claims that airlines have experienced a number of problems with current cabin connectivity systems, including: latency with satellite communication (satcom) systems; heavy equipment; and the fact that the Gogo ATG system is expensive and has low transmission rates.

"Another issue with many of these

systems is that they can only be used for cabin entertainment, and not for flightdeck transmissions," says Rogozinski. "The SmartSky system will offer 4G, ATG technology. 4G LTE provides the best bandwidth for cellphone use on the ground, so our aim is to offer a bi-directional, high bandwidth system. SmartSky has 60MHz of bandwidth available for our system to use when in operation. This compares to Gogo's system which has 4MHz of bandwidth available.

"Our system will be able to use half of the 60MHz available bandwidth for a return link to the ground. This will provide a lot of benefits for flight operations applications," continues Rogozinski. "The system will not, however, be certified for safety-of-flight transmissions. Instead it will deliver a high-bandwidth, low-latency cabin connectivity system."

A main advantage of the SmartSky system is that the on-board equipment itself is very small and light. The signal is picked up via a blade-shaped antenna mounted on the belly of the aircraft. The radio transmitter on the tower is pointed to the aircraft at an angle of 45 degrees.

"This ensures that those aircraft flying in the same area are not competing with each other for the signal," explains Rogozinski. "This means that there will be one beam for each aircraft that is flying in close proximity to the transmitter tower."

SmartSky is testing the system using a Learjet, while radio transmitter towers are coming into operation. The network will have grown to the point where most of the continental USA has coverage, with the exception of central northern states such as Montana, Idaho, Utah and Wyoming.

"The network is being developed in this way because the majority of air traffic operates along the eastern seaboard of the US," says Rogozinski.

"We expect to have full coverage for the 48 states of the continental US by the end of 2018. There will also be some overlap of transmissions along the borders with Canada and Mexico.

"We can also add more towers and more radios to existing towers to improve the system in areas where there is high demand," continues Rogozinski. "This feature is not possible with the Gogo system.

"In addition to the main 48 states, we also have plans to have towers in Alaska," adds Rogozinski. "In addition, we are talking to the Canadian and Mexican governments about erecting towers there so that we can provide the system across the whole of mainland North America. Finally, we are also developing plans to cover the Caribbean as well."

The SmartSky Network (SSN) supports applications that require high-speed, low-latency data transmissions to and from the aircraft. The low-latency quality of the system has already been tested on SmartSky's Learjet using Skype calls.

"The SSN system provides the least-cost routing opportunities, which means that it provides cheap data connectivity for passengers," says Rogozinski. "We expect this to be an excellent system for regional aircraft, and it will make cabin connectivity affordable for them for the first time."

SmartSky has already made proposals to airlines to operate the system. The equipment that has to be installed on the test Learjet aircraft weighs about 60lbs (27Kg). The weight of the system equipment should be similar for a narrowbody, claims Rogozinski.

In addition to extending geographic coverage of transmission towers for the ATG system, SmartSky is also talking to satcom providers about offering a combined connectivity service to airlines.

"The two systems will complement each other. The satcom system can be used by aircraft when operating over water to provide live streaming of video and TV, while the SSN system can be used for Skype calls, text messaging, email and internet access by passengers," says Rogozinski. "SSN does not support live TV services in the passenger cabin."

SmartSky claims that the SSN system should be cheaper than satcom and other cabin connectivity systems. The capital cost of the system, for example, is cheap compared to that of a satcom system. SmartSky's commercial aviation plan will be finalised in late 2017, and it expects to have its launch airline customer during 2018. **AC**

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