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August 3, 2015

**FILED ELECTRONICALLY**

Ms. Marlene H. Dortch  
Secretary  
Federal Communications Commission  
445 12th Street, S.W.  
Washington, D.C. 20554

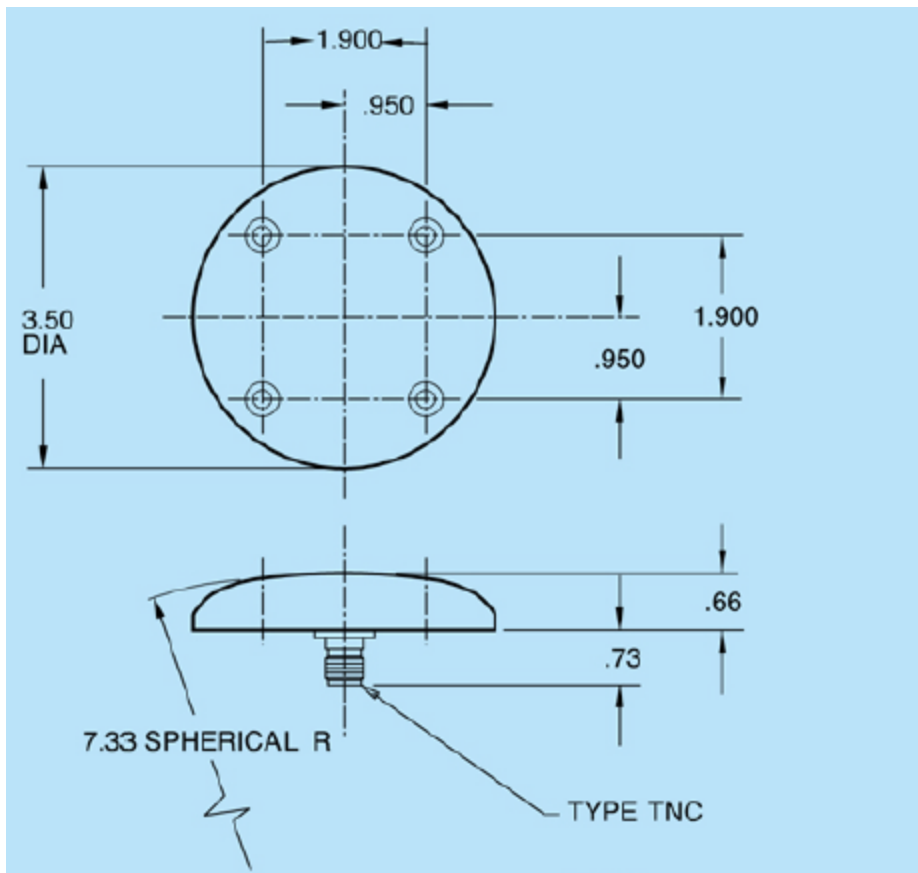
**Re: *Ex parte* filing  
Applications of Iridium Satellite LLC and Iridium Carrier Services LLC for  
Modification of Blanket Earth Station Licenses to Permit AMS(R)S  
Communications  
File Nos. SES-MOD-20130416-00322 and SES-MOD-20130416-00323**

Dear Ms. Dortch:

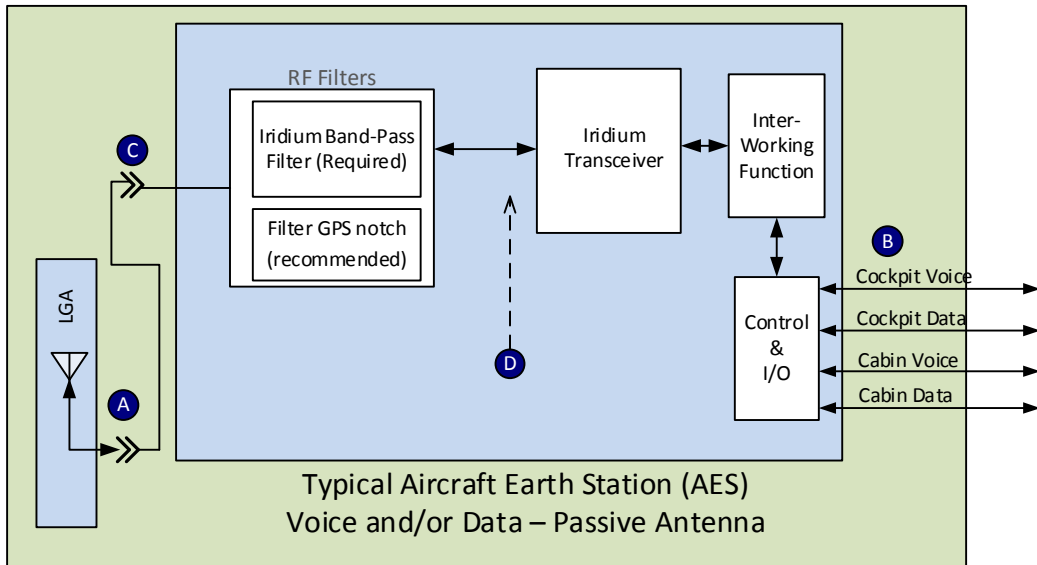
On July 29, 2015, the representatives of Iridium Satellite LLC and Iridium Carrier Services LLC (collectively, "Iridium") identified in Attachment A met with the FCC staff also identified in Attachment A concerning the above-referenced applications.

Iridium's representatives clarified that the persons in the cockpit of an aircraft who communicate via Iridium's AMS(R)S service will not be using a handheld Iridium device. Rather, a small radome that includes a patch antenna will be mounted on the exterior of the aircraft, commonly on the crown of the aircraft's fuselage. The antenna will be connected via coaxial cable to a box typically in the belly of the aircraft that houses all avionics. No external or in-line amplifiers are required between the antenna on the fuselage and the avionics box. There is an integrated, hard-wired connection between the cockpit and all avionics.

The radome and associated coaxial connection look like this:



The following diagram shows a typical aircraft installation for AMS(R)S services:



In the above, diagram, the following points are referenced:

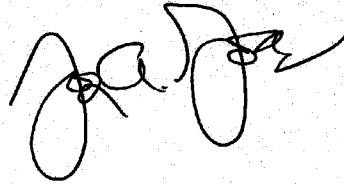
- A. The connection of the Low-Gain Antenna on the exterior of the aircraft
- B. The connection of the Iridium transceiver to the aircraft CMU (communications management unit)
- C. The connection of the antenna cable to the Iridium transceiver
- D. The reference point for calculations for measuring Iridium transceiver output

The Low Gain Antenna used for Iridium’s AMS(R)S service has the following technical specifications:

$\Theta_{MIN}$	Minimum elevation angle for satellite coverage.	8 degrees
$G_{MIN}$	Minimum gain of the aeronautical antenna pattern in the upper hemisphere above minimum elevation angle $\Theta_{MIN}$	-2 dBic (weighted)
$L_{MAX}$	Maximum cable loss between AES antenna port and the AES transceiver input port (A) to (C)	3dB

Iridium's representatives clarified that no "portable" devices will be or have been associated with Iridium's AMS(R)S service and that Iridium's blanket licenses already authorize operation of mobile devices with the technical specifications proposed in Iridium's above-referenced AMS(R)S applications. Finally, Iridium's representatives made the points shown in Attachment B, which respond to arguments made by Inmarsat in this proceeding.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "Joe Godles", written in a cursive style.

Joseph A. Godles  
*Counsel for Iridium Satellite LLC and Iridium Carrier  
Services LLC*

cc (via e-mail):        Jose Albuquerque, FCC  
                              Karl Kensinger, FCC  
                              Kerry Murray, FCC  
                              Chip Fleming, FCC  
                              Stephen Duall, FCC  
                              Paul Blais, FCC  
                              Sankar Persaud, FCC  
                              Cindy Spiers, FCC  
                              Hsing Liu, FCC  
                              George John, FCC  
                              John Janka, counsel for Inmarsat  
                              Elizabeth Park, counsel for Inmarsat

## **ATTACHMENT A**

From Iridium: Thomas Hickey  
Brian Pemberton  
Mike Hooper

Representing Iridium (from Goldberg, Godles, Wiener & Wright):

Joseph Godles  
Thomas Tycz

From the FCC: Jose Albuquerque  
Karl Kensinger  
Kerry Murray  
Chip Fleming  
Stephen Duall  
Paul Blais  
Cindy Spiers  
Hsing Liu  
George John

## ATTACHMENT B

### Responses to Inmarsat

- Inmarsat has mischaracterized Iridium's antennas.
  - **Directionality**
    - Inmarsat claims that the omni-directionality of Iridium's AMS(R)S terminals differs from the directionality of Iridium's licensed portable handheld antennas.
    - In fact, the AMS(R)S antennas and the portable handheld antennas both are omni-directional.
  - **Gain**
    - Inmarsat questions whether the Iridium gain of the AMS(R)S terminals studied by RTCA, which Inmarsat claims is 0 dBi, is the same as the gain of Iridium's licensed portable handheld antennas.
    - In fact, the gain of the AMS(R)S terminals studied by RTCA, as defined in DO-262, is -2dBic, not 0 dBi (and the antenna patterns do not go down to the horizon, so there is zero gain from 0° to 8.2°).
    - The gain of Iridium's licensed portable handheld antennas also is -2dBic.
  - **Intermediate Gain and High Gain Antennas**
    - Inmarsat claims, based on DO-262B, that Iridium is seeking to use Intermediate Gain Antennas ("IGAs") and High Gain Antennas ("HGAs"), but
    - DO-262B is being changed under RTCA SC-222 to remove the IGAs and HGAs that were described in the document, and
    - Iridium is not seeking FCC authority at this time to operate IGAs and HGAs.

- Interference between Iridium and Inmarsat AMS(R)S devices on the same aircraft should not be a concern.
  - Iridium’s AMS(R)S terminals have been approved with the express understanding that an Inmarsat AMS(R)S terminal could interfere with an Iridium AMS(R)S terminal if operated on the same aircraft at the same time.
  - Inmarsat concedes that “RTCA DO-262B, RTCA DO-270, and RTCA DO-343 all explicitly warn practitioners that there is a significant possibility of interference between [an] Inmarsat AES and an Iridium AES on the same aircraft.” (Inmarsat *ex parte*, April 13, 2015, Attachment A, p. 7).
  - Notwithstanding this explicit warning to practitioners, Inmarsat asks that the FCC require Iridium to warn users that use both kinds of terminals on the same aircraft that the Iridium terminals may experience interference.
  - Inmarsat’s request should be rejected because
    - An FCC warning requirement is unnecessary given the RTCA warnings.
    - An FCC warning requirement would mean that Iridium would have to modify its FCC license if the RTCA warning changed.
- Interference between Iridium and Inmarsat AMS(R)S devices on different aircraft should not be a concern.
  - In a working paper that was presented to ICAO’s Aeronautical Communications Panel (“ACP”), it was determined that harmful interference to Iridium’s aeronautical terminals is improbable and is within levels that Inmarsat considers “acceptable.”<sup>1</sup>
  - The analysis was based on “the on-going volumetric analysis by Honeywell and Inmarsat towards ensuring the RF compatibility of Inmarsat/MTSAT and Iridium services.”<sup>2</sup>

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<sup>1</sup> Aeronautical Communications Panel, First Meeting of the Working Group of the Whole, Montreal, Canada 21 – 25 April 2008, ACP-WGW2/WP-12 (Apr. 21, 2008).

<sup>2</sup> *Id.*

- Because the findings were “still being checked for accuracy,” the ACP asked that Honeywell provide a further briefing at a follow-up meeting. Honeywell reaffirmed the prior findings at that meeting.<sup>3</sup>
- Although the findings presented to the ACP focused on oceanic airspace, they are applicable to polar and remote regions, too, because the separation standards for aircraft operating in polar and remote regions, outside of radar coverage, are consistent with the regulations for operation in oceanic airspace.
- In Inmarsat’s most recent *ex parte* filing (dated April 13, 2015), Inmarsat’s concern with aircraft-to-aircraft interference seems to be limited to IGAs and HGAs. IGA/HGA interference is a moot point because
  - DO-262B is being changed under RTCA SC-222 to remove the IGAs and HGAs that were described in the document (see above).
  - Iridium is not seeking FCC authority at this time to operate IGAs and HGAs (see above).

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<sup>3</sup> E.F.C. LaBerge, “Updated Analysis of Inmarsat and Iridium Aeronautical Services in the Same Oceanic Airspace,” released to ICAO ACP WGM (June 18, 2008), based on work “jointly supported by Inmarsat and Honeywell” (*id.* at 4).