Technical Exhibit In Support Of General Atomics Aeronautical Systems' Ku-band Earth Station License Application

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Revision History

Revision	Date	Description
Rev A	2/26/2021	Initial Release

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1.1 GOVERNMENT DOCUMENTS

1.1.1 Standards

Table 1-1 Government Standards Document

Document Number	Reference Document Title	Date
N/A	N/A	N/A

1.1.2 Other Publications

Table 1-2 Other Government Documents

Document Number	Reference Document Title	Date
N/A	N/A	N/A

1.2 NON-GOVERNMENT DOCUMENTS

1.2.1 Standards

Table 1-3 Non-Government Standards Documents

Document Number	Reference Document Title	Date	Source
N/A	N/A	N/A	N/A

1.2.2 Other Documents

Table 1-4 Other Non-Government Documents

Document Number	Reference Document Title	Date	Source
N/A	N/A	N/A	N/A

2. INTRODUCTION

General Atomics Aeronautical Systems Inc. (GA-ASI), pursuant to 47 CFR Part 25 of the Rules and Regulations of the Federal Communications Commission, respectfully requests the issuance of a new license to operate the temporary-fixed Ku-band Earth Station in the United States. The proposed terminals will receive in the 11.7-12.2 GHz (Space-to-Earth) Ku-band frequencies and transmit in the 14.0-14.5 GHz (Earth-to-Space) conventional Ku-band frequencies with Geostationary Satellites in the Fixed-Satellite Service. The proposed terminals will be installed on the ground and communicate with Ku-band Geostationary satellites in the permitted list. The proposed terminal utilizes the DKET 3420 antenna with a circular aperture and is 4.2 meters in diameter.

2.1 RESPONSE TO FCC EXAMINER COMMENTS

This section summarizes GA-ASI response to FCC examiner's comments. The GA's revision is made by marking directly on the printout of the original application file on pdf. The marked pdf is accompanying this Technical Exhibit.

1. [FCC] Power level of EIRP density per carrier for each antenna should not be over the limit in 47 CFR §25.212 (c)(2).

   [GA] The cell E38, E40, E48, and E49 in Form 312 are updated to 150 Watt, 76.4 dBW, 70.4 dBW, and 34.3 dBW/4kHz, respectively. The spreadsheet with calculation is attached below as Excel sheet with formulas. The maximum power at antenna flange is reduced to 150 Watt, corresponding to -14.3 dBW/4kHz. In operation, there may be a maximum of four carriers total of 150 Watt, so the per carrier power becomes 37.5 Watt (= 150/4).

All Carriers			Cell in Form312	
150	W	Max Amp Power	E38	
21.76091	dBW			
-14.2597	dBW/4 kHz	PSD		
54.6	dBi	Antenna gain @ 14.24 GHz		
76.36091	dBW	EIRP	E40	
40.34031	dBW/4 kHz	Max ESD		
Four Carrier				
150	W	Total Power from Amp		
15.76091	dBW	Per carrier (-6 dB backoff for x4 carriers)		
-20.2597	dBW/4 kHz	PSD per carrier		
54.6	dBi	Antenna gain @ 14.24 GHz		
70.36091	dBW	EIRP per carrier	E48	
34.34031	dBW/4 kHz	ESD per carrier	E49	

2. [FCC] EIRP of -100.0 dBW for receive frequency should be removed.

[GA] In Form 312, the values associated with receiver EIRP are replaced by "N/A" in the following fields E48, E49 and E60.

3. [FCC] "N/A" for question E15 of Form 312 should be either "Y" or "N".

   [GA] The answer is marked "Yes".

4. [FCC] The applicant must certify that the transmitting earth station is pursuant to 47 CFR §25.132(a)(1), which requires the equipment to meet relevant off-axis gain standards in §25.209(a)(1).

   [GA] The antenna gain profiles off-axis in the azimuth direction are provided in Figure 2-1 and Figure 2-2 for carrier frequency at 14 GHz and 14.5 GHz, respectively. The corresponding profiles off-axis in the elevation direction are provided in Figure 2-3 and Figure 2-4. The FCC limit of off-axis gain is overlaid on the gain profile in red lines. The antenna meets the requirement in §25.209(a)(1).

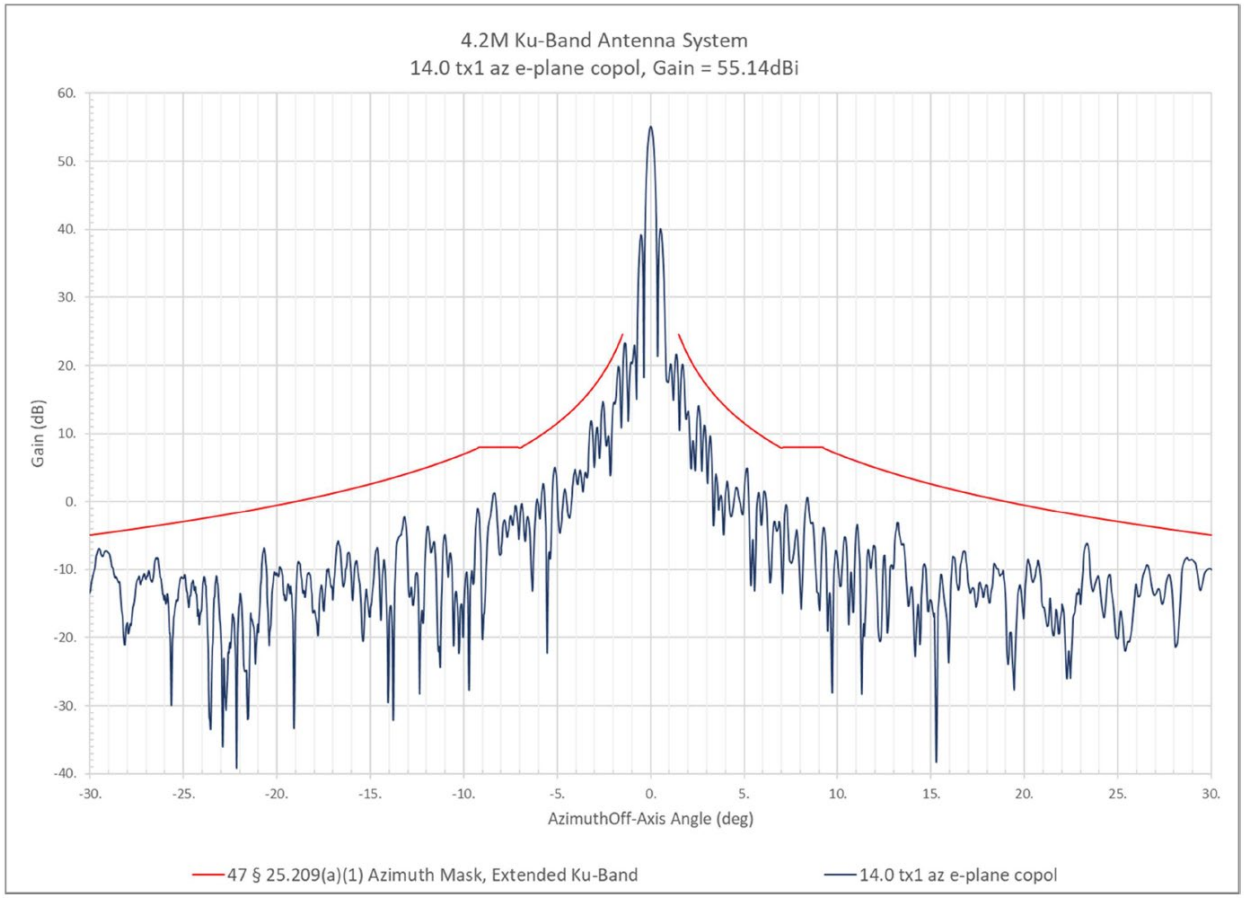

Figure 2-1 Antenna gain profile off-axis in azimuth (14.0 GHz)

s

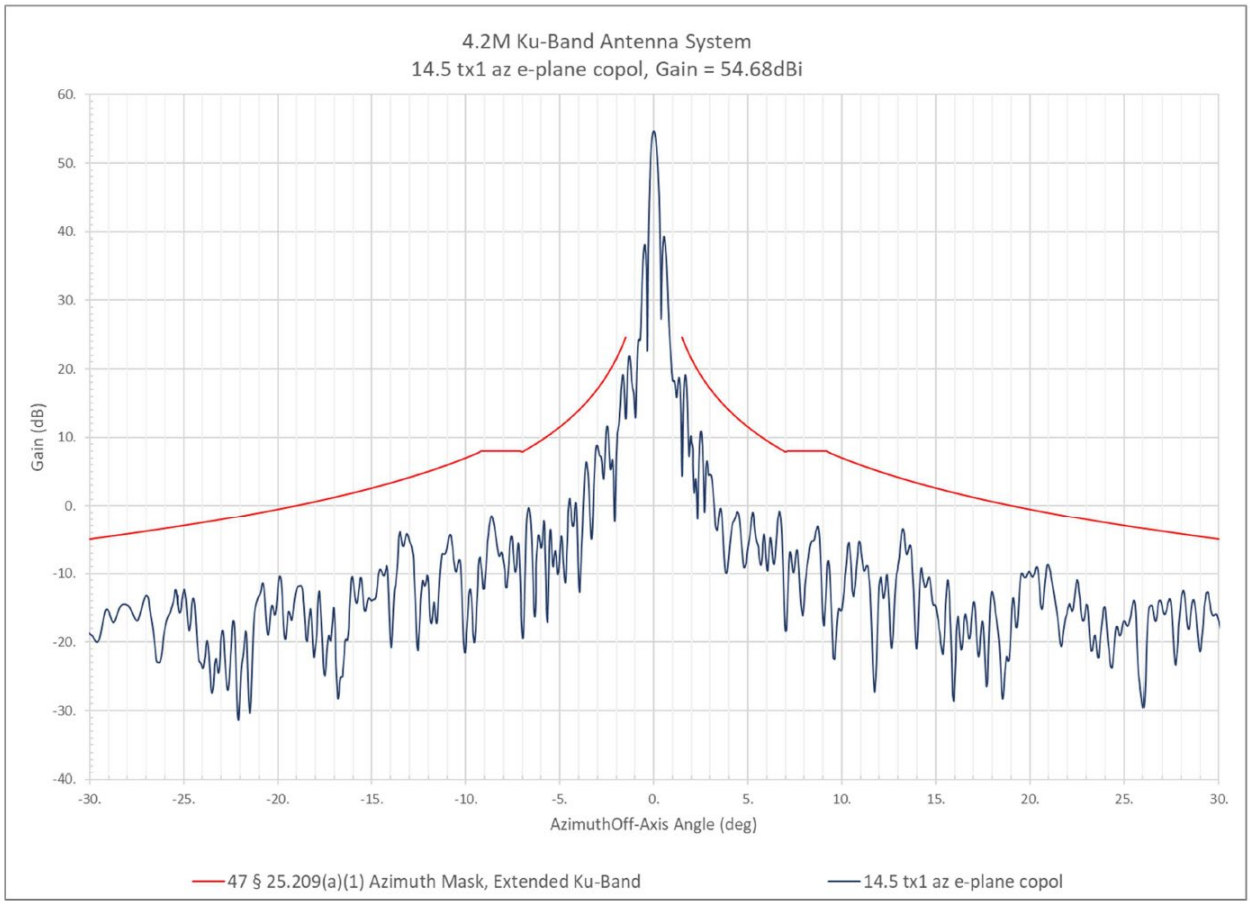

Figure 2-2 Antenna gain profile off-axis in azimuth (14.5 GHz)

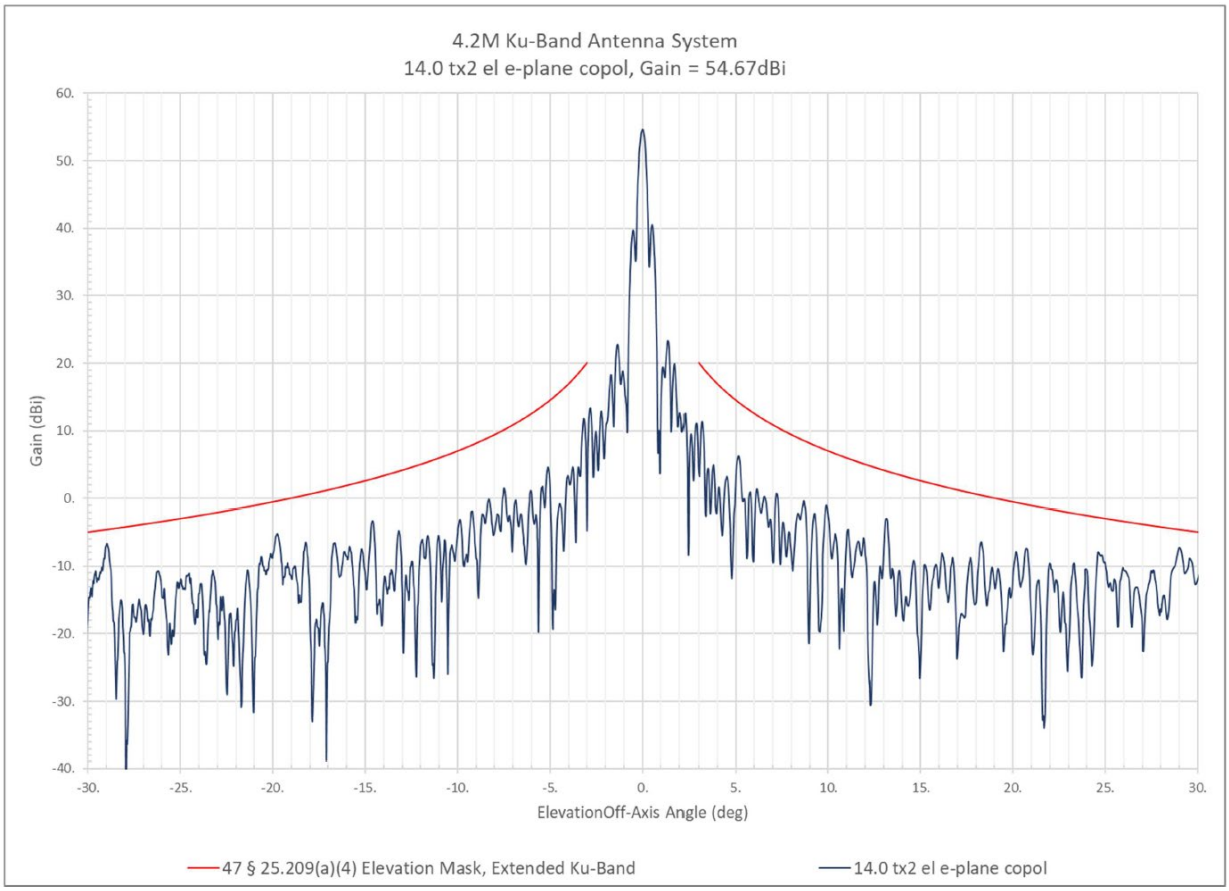

Figure 2-3 Antenna gain profile off-axis in elevation (14.0 GHz)

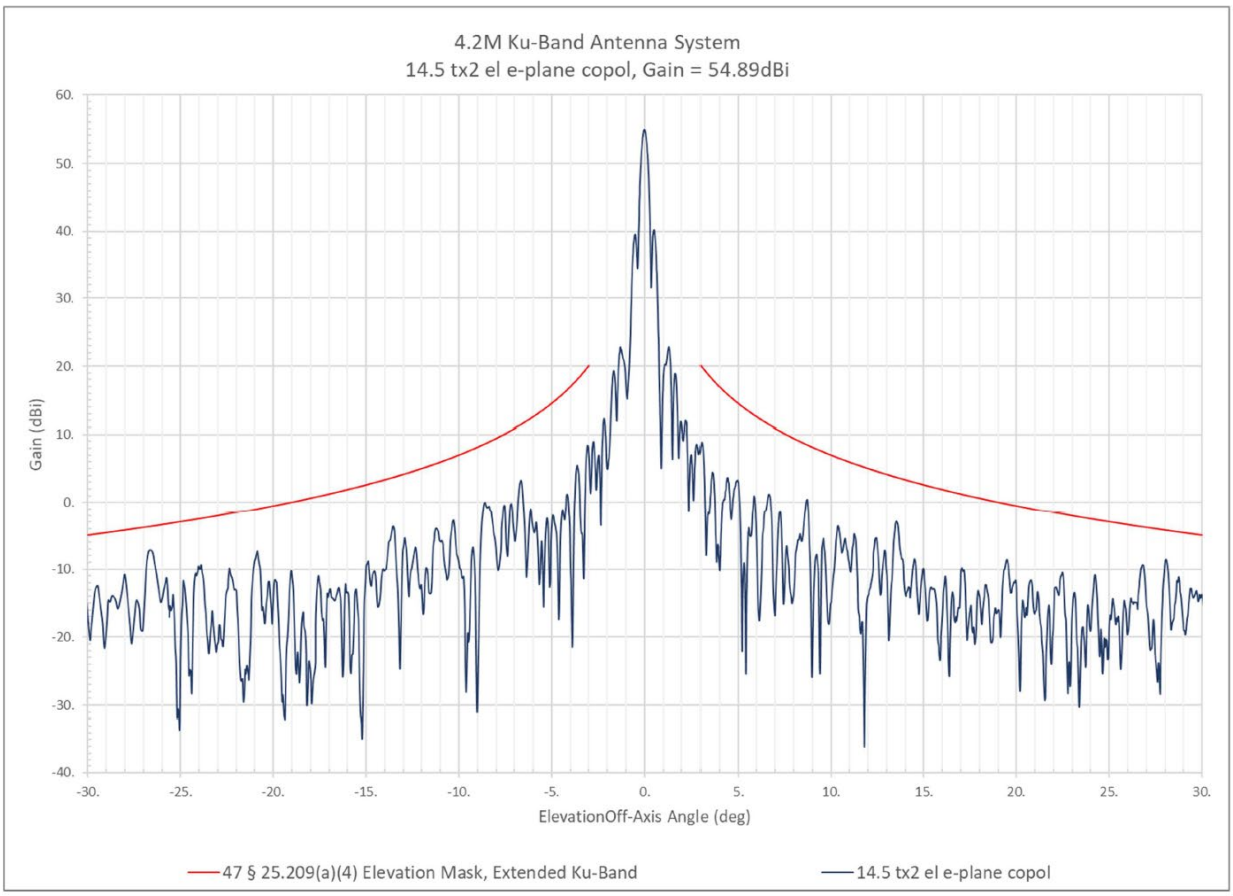

Figure 2-4 Antenna gain profile off-axis in elevation (14.0 GHz)