


APPLICATION FOR EARTH STATION SPECIAL TEMPORARY AUTHORITY

APPLICANT INFORMATION Enter a description of this application to identify it on the main menu:
E000232 - Request to Extend the March AFB STA

1. Applicant

Name: Allen Holdings, Inc. d/b/a Allen Communications Phone Number: 562-902-7691
DBA Name: Fax Number: 562-902-7695
Street: 10813 El Arco Drive E-Mail:
City: Whittier State: CA
Country: USA Zipcode: 90603
Attention: Mr Bill Allen

File # SES-STA-20150318-00170
E000232 Grant Date 3-23-15
(or other identifier)
Team Dates From 3-23-15 To 4-22-15
Approved: [Signature]





GRANTED
International Bureau

Applicant: Allen Holdings, Inc d/b/a Allen Communications
Call Sign: E000232
File Number: SES-STA-20150318-00170
Special Temporary Authority

Allen Holdings, Inc d/b/a Allen Communications (Allen Communications) is granted Special Temporary Authority (STA), for 30 days, to communicate from March AFB to Intelsat 19 (S2850) at the 166 E.L. , and/or Intelsat 8 (S2460) at the 169 E.L. orbital locations on center frequencies: 6085.0 MHz (Earth-space) with emission designator 36M0G7W, at a max EIRP density of 33.3 dBW/4kHz and to receive on 3860.0 MHz (space-to-Earth), under the following conditions:

1. Operations, shall not cause harmful interference to, and shall not claim protection from, interference caused to it by any other lawfully operating station and it shall cease transmission(s) immediately upon notice of such interference and notify the FCC in writing.
2. Any action taken or expense incurred as a result of operations pursuant to this STA is solely at Allen Communications' risk.
3. Grant of this STA is without prejudice to any determination that the Commission may make regarding pending or future Allen Communications' applications.
4. Operations during the period March 20, 2015 to the date of this grant were authorized pursuant to Section 1.62 of the Commission's rules 47 C.F.R. §1.62.

This action is issued pursuant to Section 0.261 of the Commission's rules on delegated authority, 47 C.F.R. § 0.261, and is effective immediately.

 GRANTED International Bureau	File #	SES-STA-20150318-00170
	Call Sign	E000232
	(or other identifier)	
	Grant Date	3-23-15
	Term Dates	From 3-23-15 To 4-22-15
Approver:		

2. Contact	
Name:	Frank R. Jazzo, Esq.
Company:	Fletcher, Heald & Hildreth, PLC
Street:	1300 N 17th Street 11th Floor
City:	Arlington
Country:	USA
Attention:	
Phone Number:	703-812-0470
Fax Number:	703-812-0486
E-Mail:	jazzo@fhlhlaw.com
State:	VA
Zipcode:	22209 -
Relationship:	Legal Counsel
(If your application is related to an application filed with the Commission, enter either the file number or the IB Submission ID of the related application. Please enter only one.)	
3. Reference File Number SESSTA2015021300075 or Submission ID	
4a. Is a fee submitted with this application?	
<input checked="" type="radio"/> If Yes, complete and attach FCC Form 159. If No, indicate reason for fee exemption (see 47 C.F.R. Section 1.1114).	
<input type="radio"/> Governmental Entity <input type="radio"/> Noncommercial educational licensee	
<input type="radio"/> Other (please explain):	
4b. Fee Classification CGX - Fixed Satellite Transmit/Receive Earth Station	
5. Type Request	
<input type="radio"/> Use Prior to Grant <input type="radio"/> Change Station Location <input checked="" type="radio"/> Other	
6. Requested Use Prior Date	
7. City/March AFB	
8. Latitude (dd mm ss.s h) 33 54 21.7 N	

9. State CA	10. Longitude (dd mm ss.s h) 117 14 57.8 W
11. Please supply any need attachments. Attachment 1: STA Extension Attachment 2: Attachment 3:	
12. Description. (If the complete description does not appear in this box, please go to the end of the form to view it in its entirety.) Allen Holdings, Inc. seeks an extension of the authority to operate E000232 using an alternate satellite. A modification application for E000232 is nearly complete and is expected to be filed within the coming weeks. The requested extension will allow Allen Holdings, Inc. to continue to provide service to the military while modification of the	
13. By checking Yes, the undersigned certifies that neither applicant nor any other party to the application is subject to a denial of Federal benefits that includes FCC benefits pursuant to Section 5301 of the Anti-Drug Act of 1988, 21 U.S.C. Section 862, because of a conviction for possession or distribution of a controlled substance. See 47 CFR 1.2002(b) for the meaning of "party to the application"; for these purposes. Yes <input checked="" type="radio"/> No <input type="radio"/>	
14. Name of Person Signing William Allen	15. Title of Person Signing President
WILLFUL FALSE STATEMENTS MADE ON THIS FORM ARE PUNISHABLE BY FINE AND / OR IMPRISONMENT (U.S. Code, Title 18, Section 1001), AND/OR REVOCATION OF ANY STATION AUTHORIZATION (U.S. Code, Title 47, Section 312(a)(1)), AND/OR FORFEITURE (U.S. Code, Title 47, Section 503).	

FCC NOTICE REQUIRED BY THE PAPERWORK REDUCTION ACT

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THE FOREGOING NOTICE IS REQUIRED BY THE PAPERWORK REDUCTION ACT OF 1995, PUBLIC LAW 104-13, OCTOBER 1, 1995, 44 U.S.C. SECTION 3507.

12. Description

Allen Holdings, Inc. seeks an extension of the authority to operate E000232 using an alternate satellite. A modification application for E000232 is nearly complete and is expected to be filed within the coming weeks. The requested extension will allow Allen Holdings, Inc. to continue to provide service to the military while modification of the current authorization is sought.

STA Extension Request

E000232 provides service to the Defense Media Center (“DMC”) located at March AFB. E000232 provides Armed Forces Radio (“AFR”) and Armed Forces Television (“AFT”) to U.S. Military installations throughout the Pacific Rim. Due to operational and budgetary changes, DMC was required to change the satellite it uses to distribute AFR and AFT to ISS19, or possibly ISS8. This change took place on February 19, 2015. Prior Coordination for an application to modify the license for E000232 is complete (see attached) and the application is being prepared. Accordingly, an extension of the special temporary authority (“STA”) is hereby requested to permit continuity of AFR and AFT service throughout the Pacific Rim.

FREQUENCY COORDINATION AND INTERFERENCE ANALYSIS REPORT

Prepared for
Allen Holdings, Inc
MARCHAFB, CA
Satellite Earth Station

Prepared By:
COMSEARCH
19700 Janelia Farm Boulevard
Ashburn, VA 20147
March 12, 2015

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1. CONCLUSIONS

An interference study considering all existing, proposed and prior coordinated microwave facilities within the coordination contours of the proposed earth station demonstrates that this site will operate satisfactorily with the common carrier microwave environment. Further, there will be no restrictions of its operation due to interference considerations.

2. SUMMARY OF RESULTS

A number of great circle interference cases were identified during the interference study of the proposed earth station. Each of the cases, which exceeded the interference objective on a line-of-sight basis, was profiled and the propagation losses estimated using NBS TN101 (Revised) techniques. The losses were found to be sufficient to reduce the signal levels to acceptable magnitudes in every case.

The following companies reported potential great circle interference conflicts that did not meet the objectives on a line-of-sight basis. When over-the-horizon losses are considered on the interfering paths, sufficient blockage exists to negate harmful interference from occurring with the proposed transmit-receive earth station.

Company

California, State of
Southern California Gas Company

No other carriers reported potential interference cases.

3. SUPPLEMENTAL SHOWING

Pursuant to Part 25.203(c) of the FCC Rules and Regulations, the satellite earth station proposed in this application was coordinated by Comsearch using computer techniques and in accordance with Part 25 of the FCC Rules and Regulations.

Coordination data for this earth station was sent to the below listed carriers with a letter dated 02/11/2015.

Company

ABC Holding Company Inc.
AT&T California
AirSites2000, LLC
American Tower, LLC
Anaheim City, of
BNSF Railway Company
CCO SoCal I, LLC
CNG Communications, Inc.
California, State of
Calvary Chapel of Costa Mesa
Cellco Partnership - California
City of Los Angeles Dept Water & Power
Coachella Valley Water District
Coast Community College District
DRS Technical Services
Entravision Holdings, LLC
Glendale, City of
ION Media Los Angeles License, Inc.
KTLA, LLC
LOS ANGELES UNIFIED SCHOOL DISTRICT
Los Angeles City Info Technology Agency
Los Angeles County Dept of Public Works
Los Angeles County FCC Licensing Section
Los Angeles County Metro Transit Auth
Los Angeles SMSA Ltd. Partnership
MHO Networks
MOBILE RELAY ASSOCIATES INC
MONTEBELLO CITY CALIFORNIA
Metropolitan Water Dist of So California
NRJ TV LA License Co, LLC
New Cingular Wireless PCS - Los Angeles
New Cingular Wireless PCS LLC -San Diego
Nextel of California Inc.
Norris, Samuel O
Orange, County of, CA
QUALCOMM INC.
Regional 3Cs
Riverside, County of
San Bernardino County of California
San Diego Broadband
San Diego County Water Authority

San Diego Gas & Electric Company
San Diego, City of
San Diego, County of
Skyriver Communications
Southern California Edison Company
Southern California Gas Company
Southern California Regional Rail Auth.
Station Venture Operations, LP
T-Mobile License LLC
TV MICROWAVES CO
Turn Wireless, LLC
Ultimate Internet Access, Inc
Union Pacific Railroad Company
University of California, HPWREN
Verizon California Inc.
Verizon Wireless (VAW) LLC (Southern CA)
Western Technical Services
White, Fred K

4. EARTH STATION COORDINATION DATA

This section presents the data pertinent to frequency coordination of the proposed earth station that was circulated to all carriers within its coordination contours.

COMSEARCH

Earth Station Data Sheet

19700 Janelia Farm Boulevard, Ashburn, VA 20147
(703)726-5500 <http://www.comsearch.com>

Date: 03/12/2015
Job Number: 150211COMSTC06

Administrative Information

Call Sign: E000232
Licensee Name: Allen Holdings, Inc

Site Information

MARCHAFB, CA
Latitude (NAD 83): 33° 54' 21.7" N
Longitude (NAD 83): 117° 14' 57.8" W
Climate Zone: A
Rain Zone: 4
Ground Elevation (AMSL): 468.5 m / 1537.1 ft

Link Information

Satellite Type: Geostationary
Mode: TR - Transmit-Receive
Modulation: Digital
Satellite Arc: 194° W to 194° West Longitude
Azimuth Range: 262.5° to 262.5°
Corresponding Elevation Angles: 2.3° / 2.3°
Antenna Centerline (AGL): 5.49 m / 18.0 ft

Antenna Information

	Receive - A40931	Transmit - A60931
Manufacturer	COMMSCOPE	COMMSCOPE
Model	ESA9.3-46	ESA9.3-46
Gain / Diameter	50.7 dBi / 9.3 m	53.9 dBi / 9.3 m
3-dB / 15-dB Beamwidth	0.52° / 1.00°	0.30° / 0.60°

		1M23G7W - 36M0G7W			
Max Available RF Power	(dBW/4 kHz)	-20.6	-20.6		
	(dBW/MHz)	3.4	3.4		
Maximum EIRP	(dBW/4 kHz)	33.3	33.3		
	(dBW/MHz)	57.3	57.3		
	(dBW)	72.8	58.2		
Interference Objectives:	Long Term	-156.0 dBW/MHz	20%	-154.0 dBW/4 kHz	20%
	Short Term	-146.0 dBW/MHz	0.01%	-131.0 dBW/4 kHz	0.0025%

Frequency Information

	Receive 4.0 GHz	Transmit 6.1 GHz
Emission / Frequency Range (MHz)	1M23G7W - 36M0G7W / 3482.0 - 3878.0	1M23G7W - 36M0G7W / 6067.0 - 6103.0

Max Great Circle Coordination Distance	799.5 km / 496.8 mi	315.6 km / 196.1 mi
Precipitation Scatter Contour Radius	508.2 km / 315.7 mi	100.0 km / 62.1 mi

COMSEARCH

Earth Station Data Sheet

19700 Janelia Farm Boulevard, Ashburn, VA 20147
(703)726-5500 <http://www.comsearch.com>

Coordination Values

MARCHAFB, CA

Licensee Name	Allen Holdings, Inc				
Latitude (NAD 83)	33° 54' 21.7" N				
Longitude (NAD 83)	117° 14' 57.8" W				
Ground Elevation (AMSL)	468.5 m / 1537.1 ft				
Antenna Centerline (AGL)	5.49 m / 18.0 ft				
Antenna Model	Commscope ESA9.3-46				
Antenna Mode	Receive 4.0 GHz		Transmit 6.1 GHz		
Interference Objectives:	Long Term	-156.0 dBW/MHz	20%	-154.0 dBW/4 kHz	20%
	Short Term	-146.0 dBW/MHz	0.01%	-131.0 dBW/4 kHz	0.0025%
Max Available RF Power			-20.6 (dBW/4 kHz)		

Azimuth (°)	Horizon Elevation (°)	Antenna Discrimination (°)	Receive 4.0 GHz		Transmit 6.1 GHz	
			Horizon Gain (dBi)	Coordination Distance (km)	Horizon Gain (dBi)	Coordination Distance (km)
0	0.81	97.48	-10.30	228.91	-10.10	100.00
5	1.80	102.48	-10.30	198.67	-10.10	100.00
10	0.92	107.48	-10.30	222.99	-10.10	100.00
15	1.14	112.48	-11.79	207.40	-11.59	100.00
20	2.69	117.48	-14.29	155.26	-15.09	100.00
25	3.04	122.48	-15.30	143.31	-17.10	100.00
30	2.35	127.48	-15.30	158.14	-17.10	100.00
35	1.92	132.48	-15.30	170.82	-17.10	100.00
40	1.83	137.48	-15.30	173.63	-17.10	100.00
45	1.52	142.48	-15.30	182.86	-17.10	100.00
50	0.90	147.46	-15.30	203.06	-17.10	100.00
55	0.62	152.44	-15.30	214.70	-17.10	100.00
60	0.54	157.42	-15.30	219.21	-17.10	100.00
65	0.81	162.43	-15.30	205.06	-17.10	100.00
70	0.92	167.41	-15.30	202.18	-17.10	100.00
75	0.51	172.28	-13.93	227.54	-15.27	100.00
80	0.00	176.61	-11.66	274.97	-12.13	110.12
85	0.00	176.63	-11.65	275.02	-12.12	110.15
90	0.00	172.18	-13.99	261.16	-15.36	102.12
95	0.57	167.40	-15.30	217.26	-17.10	100.00
100	0.76	162.45	-15.30	207.46	-17.10	100.00
105	0.61	157.46	-15.30	215.55	-17.10	100.00
110	1.14	152.49	-15.30	194.23	-17.10	100.00
115	1.93	147.51	-15.30	170.68	-17.10	100.00
120	2.38	142.51	-15.30	157.42	-17.10	100.00
125	2.57	137.51	-15.30	153.22	-17.10	100.00
130	1.77	132.51	-15.30	175.44	-17.10	100.00
135	0.76	127.50	-15.30	207.54	-17.10	100.00
140	0.00	122.49	-15.30	253.82	-17.10	100.00
145	0.00	117.49	-14.30	259.43	-15.09	102.76
150	0.00	112.50	-11.80	274.10	-11.60	111.47
155	0.00	107.50	-10.30	283.38	-10.10	115.27
160	0.00	102.51	-10.30	283.38	-10.10	115.27
165	0.00	97.51	-10.30	283.38	-10.10	115.27
170	0.00	92.51	-10.30	283.38	-10.10	115.27
175	0.00	87.52	-10.30	283.38	-10.10	115.27
180	0.00	82.52	-10.30	283.38	-10.10	115.27
185	0.00	77.53	-10.30	283.38	-10.10	115.27

COMSEARCH

Earth Station Data Sheet

19700 Janelia Farm Boulevard, Ashburn, VA 20147
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Coordination Values		MARCHAFB, CA			
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Antenna Mode	Receive 4.0 GHz		Transmit 6.1 GHz		
Interference Objectives: Long Term	-156.0 dBW/MHz	20%	-154.0 dBW/4 kHz	20%	
Short Term	-146.0 dBW/MHz	0.01%	-131.0 dBW/4 kHz	0.0025%	
Max Available RF Power			-20.6 (dBW/4 kHz)		

Azimuth (°)	Horizon Elevation (°)	Antenna Discrimination (°)	Receive 4.0 GHz		Transmit 6.1 GHz	
			Horizon Gain (dBi)	Coordination Distance (km)	Horizon Gain (dBi)	Coordination Distance (km)
190	0.00	72.53	-10.30	283.38	-10.10	115.27
195	0.27	67.53	-10.30	274.87	-10.10	109.79
200	0.55	62.53	-10.30	245.03	-10.10	100.00
205	0.48	57.53	-10.30	250.23	-10.10	100.00
210	0.44	52.54	-10.30	255.17	-10.10	100.00
215	0.56	47.54	-9.81	246.81	-9.61	100.00
220	0.56	42.54	-8.32	256.12	-8.61	100.00
225	0.55	37.55	-6.81	266.00	-7.12	100.00
230	0.50	32.56	-5.81	276.03	-5.61	103.16
235	0.51	27.57	-5.30	278.46	-5.10	103.85
240	0.54	22.58	-5.30	276.42	-5.10	102.51
245	0.60	17.59	-3.37	285.21	-3.17	104.72
250	0.66	12.62	1.08	314.45	1.28	113.95
255	0.74	7.67	7.36	359.83	7.23	127.21
260	0.77	2.93	16.97	445.73	17.17	160.02
265	0.73	2.93	17.00	799.55	17.20	315.65
270	0.72	7.64	7.41	361.81	7.26	128.26
275	0.54	12.60	1.10	323.51	1.30	119.64
280	0.33	17.59	-3.37	314.34	-3.17	122.86
285	0.22	22.57	-5.30	314.31	-5.10	126.29
290	0.00	27.57	-5.30	317.55	-5.10	128.30
295	0.00	32.56	-5.81	313.95	-5.61	126.95
300	0.00	37.54	-6.81	306.39	-7.12	122.98
305	0.23	42.52	-8.31	292.85	-8.60	116.97
310	0.00	47.53	-9.81	286.52	-9.61	116.54
315	0.00	52.52	-10.30	283.38	-10.10	115.27
320	0.22	57.51	-10.30	280.70	-10.10	113.56
325	0.58	62.50	-10.30	243.20	-10.10	100.00
330	2.92	67.49	-10.30	171.83	-10.10	100.00
335	3.88	72.49	-10.30	148.94	-10.10	100.00
340	2.69	77.49	-10.30	177.22	-10.10	100.00
345	1.57	82.49	-10.30	204.67	-10.10	100.00
350	0.61	87.49	-10.30	240.79	-10.10	100.00
355	0.56	92.48	-10.30	243.95	-10.10	100.00

5. CERTIFICATION

I HEREBY CERTIFY THAT I AM THE TECHNICALLY QUALIFIED PERSON RESPONSIBLE FOR THE PREPARATION OF THE FREQUENCY COORDINATION DATA CONTAINED IN THIS APPLICATION, THAT I AM FAMILIAR WITH PARTS 101 AND 25 OF THE FCC RULES AND REGULATIONS, THAT I HAVE EITHER PREPARED OR REVIEWED THE FREQUENCY COORDINATION DATA SUBMITTED WITH THIS APPLICATION, AND THAT IT IS COMPLETE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF.



Timothy O. Crutcher
Frequency Planner
COMSEARCH
19700 Janelia Farm Boulevard
Ashburn, VA 20147

DATED: March 12, 2015

Analysis of Non-Ionizing Radiation for a 9.3-Meter Earth Station System

This report analyzes the non-ionizing radiation levels for a 9.3-meter earth station system. The analysis and calculations performed in this report comply with the methods described in the FCC Office of Engineering and Technology Bulletin, No. 65 first published in 1985 and revised in 1997 in Edition 97-01. The radiation safety limits used in the analysis are in conformance with the FCC R&O 96-326. Bulletin No. 65 and the FCC R&O specifies that there are two separate tiers of exposure limits that are dependant on the situation in which the exposure takes place and/or the status of the individuals who are subject to the exposure. The Maximum Permissible Exposure (MPE) limits for persons in a General Population/Uncontrolled environment are shown in Table 1. The General Population/Uncontrolled MPE is a function of transmit frequency and is for an exposure period of thirty minutes or less. The MPE limits for persons in an Occupational/Controlled environment are shown in Table 2. The Occupational MPE is a function of transmit frequency and is for an exposure period of six minutes or less. The purpose of the analysis described in this report is to determine the power flux density levels of the earth station in the far-field, near-field, transition region, between the subreflector or feed and main reflector surface, at the main reflector surface, and between the antenna edge and the ground and to compare these levels to the specified MPEs.

Table 1. Limits for General Population/Uncontrolled Exposure (MPE)

Frequency Range (MHz)	Power Density (mW/cm ²)
30-300	0.2
300-1500	Frequency (MHz)*(0.8/1200)
1500-100,000	1.0

Table 2. Limits for Occupational/Controlled Exposure (MPE)

Frequency Range (MHz)	Power Density (mW/cm ²)
30-300	1.0
300-1500	Frequency (MHz)*(4.0/1200)
1500-100,000	5.0

Table 3. Formulas and Parameters Used for Determining Power Flux Densities

Parameter	Symbol	Formula	Value	Units
Antenna Diameter	D	Input	9.3	m
Antenna Surface Area	A _{surface}	$\pi D^2 / 4$	67.93	m ²
Subreflector Diameter	D _{sr}	Input	120.0	cm
Area of Subreflector	A _{sr}	$\pi D_{sr}^2 / 4$	11309.73	cm ²
Frequency	F	Input	6175	MHz
Wavelength	λ	300 / F	0.048583	m
Transmit Power	P	Input	78.30	W
Antenna Gain (dBi)	G _{es}	Input	53.9	dBi
Antenna Gain (factor)	G	10 ^{G_{es}/10}	245470.9	n/a
Pi	π	Constant	3.1415927	n/a
Antenna Efficiency	η	$G\lambda^2 / (\pi^2 D^2)$	0.68	n/a

1. Far Field Distance Calculation

The distance to the beginning of the far field can be determined from the following equation:

$$\begin{aligned} \text{Distance to the Far Field Region} \quad R_{ff} &= 0.60 D^2 / \lambda \\ &= 1068.2 \text{ m} \end{aligned} \quad (1)$$

The maximum main beam power density in the far field can be determined from the following equation:

$$\begin{aligned} \text{On-Axis Power Density in the Far Field} \quad S_{ff} &= G P / (4 \pi R_{ff}^2) \\ &= 1.341 \text{ W/m}^2 \\ &= 0.134 \text{ mW/cm}^2 \end{aligned} \quad (2)$$

2. Near Field Calculation

Power flux density is considered to be at a maximum value throughout the entire length of the defined Near Field region. The region is contained within a cylindrical volume having the same diameter as the antenna. Past the boundary of the Near Field region, the power density from the antenna decreases linearly with respect to increasing distance.

The distance to the end of the Near Field can be determined from the following equation:

$$\begin{aligned} \text{Extent of the Near Field} \quad R_{nf} &= D^2 / (4 \lambda) \\ &= 445.1 \text{ m} \end{aligned} \quad (3)$$

The maximum power density in the Near Field can be determined from the following equation:

$$\begin{aligned} \text{Near Field Power Density} \quad S_{nf} &= 16.0 \eta P / (\pi D^2) \\ &= 3.129 \text{ W/m}^2 \\ &= 0.313 \text{ mW/cm}^2 \end{aligned} \quad (4)$$

3. Transition Region Calculation

The Transition region is located between the Near and Far Field regions. The power density begins to decrease linearly with increasing distance in the Transition region. While the power density decreases inversely with distance in the Transition region, the power density decreases inversely with the square of the distance in the Far Field region. The maximum power density in the Transition region will not exceed that calculated for the Near Field region. The power density calculated in Section 1 is the highest power density the antenna can produce in any of the regions away from the antenna. The power density at a distance R_t can be determined from the following equation:

$$\begin{aligned} \text{Transition Region Power Density} \quad S_t &= S_{nf} R_{nf} / R_t \\ &= 0.313 \text{ mW/cm}^2 \end{aligned} \quad (5)$$

4. Region between the Main Reflector and the Subreflector

Transmissions from the feed assembly are directed toward the subreflector surface, and are reflected back toward the main reflector. The most common feed assemblies are waveguide flanges, horns or subreflectors. The energy between the subreflector and the reflector surfaces can be calculated by determining the power density at the subreflector surface. This can be determined from the following equation:

$$\begin{aligned} \text{Power Density at the Subreflector} \quad S_{sr} &= 4000 P / A_{sr} & (6) \\ &= 27.693 \text{ mW/cm}^2 \end{aligned}$$

5. Main Reflector Region

The power density in the main reflector is determined in the same manner as the power density at the subreflector. The area is now the area of the main reflector aperture and can be determined from the following equation:

$$\begin{aligned} \text{Power Density at the Main Reflector Surface} \quad S_{\text{surface}} &= 4 P / A_{\text{surface}} & (7) \\ &= 4.611 \text{ W/m}^2 \\ &= 0.461 \text{ mW/cm}^2 \end{aligned}$$

6. Region between the Main Reflector and the Ground

Assuming uniform illumination of the reflector surface, the power density between the antenna and the ground can be determined from the following equation:

$$\begin{aligned} \text{Power Density between Reflector and Ground} \quad S_g &= P / A_{\text{surface}} & (8) \\ &= 1.153 \text{ W/m}^2 \\ &= 0.115 \text{ mW/cm}^2 \end{aligned}$$

7. Summary of Calculations

Table 4. Summary of Expected Radiation levels for Uncontrolled Environment

Region	Calculated Maximum Radiation Power Density Level (mW/cm ²)		Hazard Assessment
1. Far Field ($R_{ff} = 1068.2$ m)	S_{ff}	0.134	Satisfies FCC MPE
2. Near Field ($R_{nf} = 445.1$ m)	S_{nf}	0.313	Satisfies FCC MPE
3. Transition Region ($R_{nf} < R_t < R_{ff}$)	S_t	0.313	Satisfies FCC MPE
4. Between Main Reflector and Subreflector	S_{sr}	27.693	Potential Hazard
5. Main Reflector	$S_{surface}$	0.461	Satisfies FCC MPE
6. Between Main Reflector and Ground	S_g	0.115	Satisfies FCC MPE

Table 5. Summary of Expected Radiation levels for Controlled Environment

Region	Calculated Maximum Radiation Power Density Level (mW/cm ²)		Hazard Assessment
1. Far Field ($R_{ff} = 1068.2$ m)	S_{ff}	0.134	Satisfies FCC MPE
2. Near Field ($R_{nf} = 445.1$ m)	S_{nf}	0.313	Satisfies FCC MPE
3. Transition Region ($R_{nf} < R_t < R_{ff}$)	S_t	0.313	Satisfies FCC MPE
4. Between Main Reflector and Subreflector	S_{sr}	27.693	Potential Hazard
5. Main Reflector	$S_{surface}$	0.461	Satisfies FCC MPE
6. Between Main Reflector and Ground	S_g	0.115	Satisfies FCC MPE

It is the applicant's responsibility to ensure that the public and operational personnel are not exposed to harmful levels of radiation.

8. Conclusions

Based on the above analysis it is concluded that harmful levels of radiation will not exist in regions normally occupied by the public or the earth station's operating personnel. The transmitter will be turned off during antenna maintenance so that the FCC MPE of 5.0 mW/cm² will be complied with for those regions with close proximity to the reflector that exceed acceptable levels.

Table
 Interference Case Summary – Case between 258 and 266 Degrees
 MARCHAFB, CALIFORNIA

Case #	Path ID	Band (GHz)	Distance (km)	Azimuth (°)	ES Disc (°)	ES Gain (dBi)	LOS Required (dB)	OH Loss 20% (dB)	OH Loss 0.01% (dB)	Revised Margin 20% (dB)	Revised Margin 0.01% (dB)	Center Freq MHz
2	PALOS VERDE	6.1	102.2	260.4	2.9	17.2	24.5	59.4	10.9	CLEAR	CLEAR	6315.84
3	BUENA VISTA	6.1	30.7	264.4	2.9	17.2	21.2	67.4	33.2	CLEAR	CLEAR	6345.49
4	SIERRA PK	6.1	37.9	260.7	2.9	17.2	19.6	14.0	5.8	5.6	CLEAR	5974.85
7	SIGNAL HILL	6.1	85.4	262.3	2.9	17.2	18.2	59.4	8.0	CLEAR	CLEAR	6315.84
23	YORBA LIN 2	6.1	53.0	264.4	2.9	17.2	12.1	63.3	10.6	CLEAR	CLEAR	6197.24
30	SIERRA PEAK	6.1	37.9	260.7	2.9	17.2	7.6	14.4	6.2	CLEAR	CLEAR	6123.24
32	ANAHEIM	6.1	62.5	262.5	2.9	17.2	7.6	61.2	50.1	CLEAR	CLEAR	6226.89
36	ANAHEIM PAS	6.1	60.6	259.2	3.7	15.5	5.5	58.9	47.7	CLEAR	CLEAR	6315.84
41	SIERRA PEAK	6.1	37.9	260.6	2.9	17.2	2.2	13.6	5.4	CLEAR	CLEAR	6063.80
43	SIERRA PEAK	6.1	37.9	260.6	2.9	17.2	2.2	13.6	5.4	CLEAR	CLEAR	5945.20
44	SIERRA PEAK	6.1	37.9	260.6	2.9	17.2	2.2	14.1	5.9	CLEAR	CLEAR	6034.15
45	SIERRA PEAK	6.1	37.9	260.6	2.9	17.2	2.2	13.6	5.4	CLEAR	CLEAR	6093.45
46	SIERRA PEAK	6.1	37.9	260.6	2.9	17.2	2.2	14.1	5.9	CLEAR	CLEAR	6152.75
59	SEAL BEACH	6.1	79.1	258.1	4.7	13.5	-0.9	57.3	46.2	CLEAR	CLEAR	6004.50
63	SAN PEDRO HI	6.1	102.2	260.4	2.9	17.2	-2.8	59.5	12.0	CLEAR	CLEAR	6423.75
64	SEAL BEACH	6.1	79.1	258.1	4.7	13.5	-3.0	57.3	46.2	CLEAR	CLEAR	5945.20
66	SERRANO SUB	6.1	50.7	260.4	2.9	17.2	-3.3	77.8	26.8	CLEAR	CLEAR	6375.14
71	SIERRA PEAK	6.1	37.8	260.6	2.9	17.2	-3.9	14.6	6.5	CLEAR	CLEAR	6004.50

All cases clear with OH loss or frequency separation

Antenna Type: Commscope ESA9.3-46
 Uplink Power: -20.6 dBW/4 kHz
 Satellite Arc: 194.0 W to 194.0 W
 Objectives: Long Term: -154.0 dBW/4 kHz Short Term: -131.0 dBW/4 kHz