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August 14, 2015

**VIA ELECTRONIC FILING IN IBFS**

Ms. Marlene H. Dortch
Secretary
Federal Communications Commission
445 12th Street, SW
Washington, DC 20554

Re: ISAT US, Inc., Supplemental Submission; File No. SES-LIC-20150625-00383, Call Sign E150097

Dear Ms. Dortch:

ISAT US, Inc. ("ISAT US") supplements the above-referenced application for a blanket license to operate fixed and temporary-fixed terminals with the following additional and corrected information.

24-Hour Point of Contact

Attached hereto is Exhibit G, which identifies the 24-hour point of contact with the ability to shut down any of the proposed terminals immediately upon notification of harmful interference.

Corrected Antenna Diameter

Each of the antennas identified for Site 7 in the associated Form 312, Item E32 (antenna models Connect 100, Connect 100T and SKY98GX/01) has a diameter equivalent to 0.934 meters. The minor and major diameters of these elliptical antennas are correctly identified in the form as 0.877 meters and 0.97041 meters, respectively.

Amended Radiation Hazard Analysis

Attached hereto is an Amended Exhibit C Radiation Hazard Analysis. The calculations in the exhibit have been revised to reflect the antenna gain level and frequency as provided in the Form 312 Schedule B.

If you have any questions regarding this submission, please feel free to contact the undersigned.

Respectfully submitted,

/s/

Giselle Creeser

Attachments

cc: Paul Blais
Trang Nguyen

**ISAT US Inc.**
**FCC Form 312**
**AMENDED Exhibit C**
**Radiation Hazard Analysis**

## 1.0 Introduction

This Exhibit analyzes the non-ionizing radiation levels for the earth stations included in this application. The analysis and calculations performed in this Exhibit 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.

Bulletin No. 65 and the FCC R&O 96-326 specifies two Maximum Permissible Exposure (MPE) limits that are dependent on the situation in which the exposure takes place and/or the status of the individuals who are subject to the exposure. These are described below:

• General Population/Uncontrolled environment MPE limit is 1 $mW/cm^2$. The General Population / Uncontrolled MPE is a function of transmit frequency and is for an exposure period of thirty minutes or less.

• Occupational/Controlled environment MPE limit is 5 $mW/cm^2$. The Occupational MPE is a function of transmit frequency and is for an exposure period of six minutes or less.

The analysis determined the power flux density levels of the earth station in the 1) far-field, 2) near-field, 3) transition region, 4) region between the feed and main reflector surface, 5) at the main reflector surface, and 6) between the antenna edge and the ground. The summary of results and discussion is provided in Section 2 and the detailed analyses are provided in Section 3.

## Section 2.0 – Summary of Results

The terminals proposed in this application are for professional use and not for use by the general public. The analysis of the non-ionizing radiation levels provided in Section 3 assumed the maximum allowed input power to antenna of 5W and a 100% duty cycle resulting in worst case radiation levels. In a significant number of deployments the terminals duty cycle would be below 100% and the actual power required would be lower than the 5W maximum resulting in lower radiation levels than those calculated. As with any directional antenna the maximum level of non-ionizing radiation is in the main beam of the antenna that is pointed to the satellite. As one moves around the antenna to the side lobes and back lobes the radiation levels decrease significantly. So the maximum radiation level from an antenna occurs in a limited area in the direction the antenna is pointed to. The terminals proposed in this application are designed not to transmit if the receive signal from the satellite is blocked, which could be caused by a person standing in front of the terminal or from other blockage. If the receive signal is blocked the transmitter is shut down and will not resume operating until the signal from the satellite is reacquired. This operational feature of the terminal minimizes the potential for human radiation exposure. The terminals will be turned off prior to any maintenance being conducted when a person may need to be in close proximity to the feed flange and main reflector.

The Tables below summarize the result for each antenna terminal type. As shown all but the two smaller antenna terminals meet the controlled environment limit of $\leq 5$ $mW/cm^2$ except at the feed flange. For the two smaller antennas the level is also exceeded at the main reflector. In a controlled environment technicians are trained and procedures are put in place to ensure that a safe distance is maintained from the antenna while in operation. These procedures can include fencing around the terminal, limits on the operation of the terminal, warning signs and other means of alerting workers, as appropriate, for the specific deployment scenario.

The terminals when operating with maximum input power and a 100% duty cycle vary in meeting the uncontrolled environment limit of ≤ 1 mW/cm$^2$. For the 1.8 m antenna the limit is met except at the feed flange, however for most of the other antennas the level is exceeded except in the far field. As described above the maximum radiation levels occur in a limited area in the direction the antenna is pointed to and the automatic shut off capability of the terminal when the satellite receive signal is blocked will reduce potential human exposure. In addition these terminals are for professional use so the operators will be trained in how to operate the terminal safely. Furthermore the manuals for these terminals will explicitly indicate that precautions, such has not standing in front of the terminal, are required to limit potential exposure. The terminals will also clearly be marked to ensure that the terminal operator and the general public are aware of the potential radiation exposure and the need to avoid physical proximity to the terminal. It is noted that the highest radiation levels are at the feed flange and main reflector. The feed flange is a very small area of the terminal antenna and it is extremely unlikely that a person would be near the feed flange or the main reflector while the terminal is in operation.

**Cobham 3075 & 5075**

| Region | Distance (m) | Calculated Power Density (mW/cm2) | Limit Controlled Environment ≤ 5 mW/cm2 | Limit Uncontrolled Environment ≤ 1 mW/cm2 |
|---|---|---|---|---|
| Near Field | 13.9 | 2.2 | Meets Limit | Exceeds Limit |
| Far Field | 33.5 | 0.9 | Meets Limit | Meets Limit |
| Transition Region | 13.9 | 2.2 | Meets Limit | Exceeds Limit |
| Feed Flange | NA | 1370.9 | Exceeds Limit | Exceeds Limit |
| Main Reflector | NA | 4.5 | Meets Limit | Exceeds Limit |

**Cobham 7100**

| Region | Distance (m) | Calculated Power Density (mW/cm2) | Limit Controlled Environment ≤ 5 mW/cm2 | Limit Uncontrolled Environment ≤ 1 mW/cm2 |
|---|---|---|---|---|
| Near Field | 24.8 | 1.6 | Meets Limit | Exceeds Limit |
| Far Field | 59.5 | 0.7 | Meets Limit | Meets Limit |
| Transition Region | 24.8 | 1.6 | Meets Limit | Exceeds Limit |
| Feed Flange | NA | 698.0 | Exceeds Limit | Exceeds Limit |
| Main Reflector | NA | 2.5 | Meets Limit | Exceeds Limit |

**L3 GCS Chettah II**

| Region | Distance (m) | Calculated Power Density (mW/cm2) | Limit Controlled Environmen ≤ 5 mW/cm2 | Limit Uncontrolled Environment ≤ 1 mW/cm2 |
|---|---|---|---|---|
| Near Field | 17.9 | 2.5 | Meets Limit | Exceeds Limit |
| Far Field | 43.0 | 1.1 | Meets Limit | Exceeds Limit |
| Transition Region | 17.9 | 2.5 | Meets Limit | Exceeds Limit |

| | | | | |
|---|---|---|---|---|
| Feed Flange | NA | 873.3 | Exceeds Limit | Exceeds Limit |
| Main Reflector | NA | 3.5 | Meets Limit | Exceeds Limit |

**L3 GCS Hawkeye III**

| Region | Distance (m) | Calculated Power Density (mW/cm2) | Limit Controlled Environment ≤ 5 mW/cm2 | Limit Uncontrolled Environment ≤ 1 mW/cm2 |
|---|---|---|---|---|
| Near Field | 35.7 | 1.1 | Meets Limit | Exceeds Limit |
| Far Field | 85.7 | 0.5 | Meets Limit | Meets Limit |
| Transition Region | 35.7 | 1.1 | Meets Limit | Exceeds Limit |
| Feed Flange | NA | 873.3 | Exceeds Limit | Exceeds Limit |
| Main Reflector | NA | 1.8 | Meets Limit | Exceeds Limit |

**Paradigm/SWT Connect70**

| Region | Distance (m) | Calculated Power Density (mW/cm2) | Limit Controlled Environment ≤ 5 mW/cm2 | Limit Uncontrolled Environment ≤ 1 mW/cm2 |
|---|---|---|---|---|
| Near Field | 11.8 | 3.5 | Meets Limit | Exceeds Limit |
| Far Field | 28.3 | 1.5 | Meets Limit | Exceeds Limit |
| Transition Region | 11.8 | 3.5 | Meets Limit | Exceeds Limit |
| Feed Flange | NA | 679.9 | Exceeds Limit | Exceeds Limit |
| Main Reflector | NA | 5.3 | Exceeds Limit | Exceeds Limit |

**SWT ATOM 65/GX/01 ATOM 65AAGX/01**

| Region | Distance (m) | Calculated Power Density (mW/cm2) | Limit Controlled Environment ≤ 5 mW/cm2 | Limit Uncontrolled Environment ≤ 1 mW/cm2 |
|---|---|---|---|---|
| Near Field | 10.5 | 2.8 | Meets Limit | Exceeds Limit |
| Far Field | 25.1 | 1.2 | Meets Limit | Exceeds Limit |
| Transition Region | 10.5 | 2.8 | Meets Limit | Exceeds Limit |
| Feed Flange | NA | 1471.5 | Exceeds Limit | Exceeds Limit |
| Main Reflector | NA | 6.0 | Exceeds Limit | Exceeds Limit |

**Paradigm/SWT Connect 100, 100T, Sky 98**

| Region | Distance (m) | Calculated Power Density (mW/cm2) | Limit Controlled Environment ≤ 5 mW/cm2 | Limit Uncontrolled Environment ≤ 1 mW/cm2 |
|---|---|---|---|---|
| Near Field | 21.6 | 1.5 | Meets Limit | Exceeds Limit |
| Far Field | 51.9 | 0.7 | Meets Limit | Meets Limit |
| Transition | 21.6 | 1.5 | Meets Limit | Exceeds Limit |

| | | | | |
|---|---|---|---|---|
| Region | | | | |
| Feed Flange | NA | 679.9 | Exceeds Limit | Exceeds Limit |
| Main Reflector | NA | 2.9 | Meets Limit | Exceeds Limit |

**Paradigm/SWT Connect 180, Sky 180GX/01**

| Region | Distance (m) | Calculated Power Density (mW/cm2) | Limit Controlled Environment ≤ 5 mW/cm2 | Limit Uncontrolled Environment ≤ 1 mW/cm2 |
|---|---|---|---|---|
| Near Field | 80.3 | 0.4 | Meets Limit | Meets Limit |
| Far Field | 192.8 | 0.2 | Meets Limit | Meets Limit |
| Transition Region | 80.3 | 0.4 | Meets Limit | Meets Limit |
| Feed Flange | NA | 1327.4 | Exceeds Limit | Exceeds Limit |
| Main Reflector | NA | 0.8 | Meets Limit | Meets Limit |

## Section 3.0 – Detailed calculations

### 3.1 Cobham 3075/5075

"Input Parameters" Table from page 51

| Input Parameter | Value | Units | Symbol |
|---|---|---|---|
| Antenna Diameter | 0.75 | m | D |
| Antenna Transmit Gain | 44.2 | dBi | G |
| Transmit Frequency | 29750 | MHz | f |
| Antenna Feed Flange Diameter | 4.31 | cm | d |
| Power Input to the Antenna | 5 | Watts | P |

"Calculated Parameters" table from page 52

| Calculated Parameter | Value | Units | Symbol | Formula |
|---|---|---|---|---|
| Antenna Surface Area | 0.4418 | $m^2$ | A | $\pi D^2/4$ |
| Area of Antenna Flange | 14.5892 | $cm^2$ | a | $\pi d^2/4$ |
| Antenna Efficiency | 0.4818 | real | η | $g\lambda^2/(\pi^2 D^2)$ |
| Gain Factor | 26302.6799 | real | g | 10^(G/10) |
| Wavelength | 0.0101 | m | λ | 300/f |

"Antenna Field Definitions" table from page 54

| Calculated Parameter | Value | Units | Symbol | Formula |
|---|---|---|---|---|
| Near-Field Distance | 13.9453125 | m | Rnf | $D^2/(4\lambda)$ |
| Distance to Far-Field | 33.46875 | m | Rff | $0.6D^2/\lambda$ |
| Distance of Transition Range | 13.9453125 | m | Rt | Rt=Rnf |

Power Flux Density table from page 54

| Calculated Parameter | Value | Units | Symbol | Formula |
|---|---|---|---|---|
| Power Density in the Near Field | 2.1812 | $mW/cm^2$ | Snf | $16\eta P/(\pi D^2)$ |
| Power Density in the Far Field | 0.9343 | $mW/cm^2$ | Sff | $gP/(4\pi Rff^2)$ |
| Power Density in the Transition Region | 2.1812 | $mW/cm^2$ | St | Snf*Rnf/Rt |

Flange Power Density table from page 54

| Calculated Parameter | Value | Units | Symbol | Formula |
|---|---|---|---|---|
| Power Density at the Feed Flange | 1370.8767 | $mW/cm^2$ | Sfa | 4P/a |

Main Reflector Power Density table from page 54

| Calculated Parameter | Value | Units | Symbol | Formula |
|---|---|---|---|---|
| Power Density at Main Reflector | 4.5272 | $mW/cm^2$ | Ssurface | 4P/A |

Main Reflector Power Density table from page 54

| Calculated Parameter | Value | Units | Symbol | Formula |
|---|---|---|---|---|
| Power Density between Reflector and Ground | 1.1318 | $mW/cm^2$ | Sg | P/A |

## 3.2 Cobham 7100

"Input Parameters" Table from page 51

| Input Parameter | Value | Units | Symbol |
|---|---|---|---|
| Antenna Diameter | 1 | m | D |
| Antenna Transmit Gain | 47.9 | dBi | G |
| Transmit Frequency | 29750 | MHz | f |
| Antenna Feed Flange Diameter | 6.04 | cm | d |
| Power Input to the Antenna | 5 | Watts | P |

"Calculated Parameters" table from page 52

| Calculated Parameter | Value | Units | Symbol | Formula |
|---|---|---|---|---|
| Antenna Surface Area | 0.7854 | $m^2$ | A | $\pi D^2/4$ |
| Area of Antenna Flange | 28.6517 | $cm^2$ | a | $\pi d^2/4$ |
| Antenna Efficiency | 0.6353 | real | η | $g\lambda^2/(\pi^2 D^2)$ |
| Gain Factor | 61659.5002 | real | g | 10^(G/10) |
| Wavelength | 0.0101 | m | λ | 300/f |

"Antenna Field Definitions" table from page 54

| Calculated Parameter | Value | Units | Symbol | Formula |
|---|---|---|---|---|
| Near-Field Distance | 24.8 | m | Rnf | $D^2/(4\lambda)$ |
| Distance to Far-Field | 59.5 | m | Rff | $0.6D^2/\lambda$ |
| Distance of Transition Range | 24.8 | m | Rt | Rt=Rnf |

Power Flux Density table from page 54

| Calculated Parameter | Value | Units | Symbol | Formula |
|---|---|---|---|---|
| Power Density in the Near Field | 1.6179 | $mW/cm^2$ | Snf | $16\eta P/(\pi D^2)$ |
| Power Density in the Far Field | 0.6930 | $mW/cm^2$ | Sff | $gP/(4\pi Rff^2)$ |
| Power Density in the Transition Region | 1.6179 | $mW/cm^2$ | St | Snf*Rnf/Rt |

Flange Power Density table from page 54

| Calculated Parameter | Value | Units | Symbol | Formula |
|---|---|---|---|---|
| Power Density at the Feed Flange | 698.0380 | $mW/cm^2$ | Sfa | 4P/a |

Main Reflector Power Density table from page 54

| Calculated Parameter | Value | Units | Symbol | Formula |
|---|---|---|---|---|
| Power Density at Main Reflector | 2.5466 | $mW/cm^2$ | Ssurface | 4P/A |

Main Reflector Power Density table from page 54

| Calculated Parameter | Value | Units | Symbol | Formula |
|---|---|---|---|---|
| Power Density between Reflector and Ground | 0.6366 | $mW/cm^2$ | Sg | P/A |

## 3.3 L3 Cheetah II

"Input Parameters" Table from page 51

| Input Parameter | Value | Units | Symbol |
|---|---|---|---|
| Antenna Diameter | 0.85 | m | D |
| Antenna Transmit Gain | 46.9 | dBi | G |
| Transmit Frequency | 29750 | MHz | f |
| Antenna Feed Flange Diameter | 5.4 | cm | d |
| Power Input to the Antenna | 5 | Watts | P |

"Calculated Parameters" table from page 52

| Calculated Parameter | Value | Units | Symbol | Formula |
|---|---|---|---|---|
| Antenna Surface Area | 0.5674 | $m^2$ | A | $\pi D^2/4$ |
| Area of Antenna Flange | 22.9015 | $cm^2$ | a | $\pi d^2/4$ |
| Antenna Efficiency | 0.6985 | real | η | $g\lambda^2/(\pi^2 D^2)$ |
| Gain Factor | 48977.8819 | real | g | 10^(G/10) |
| Wavelength | 0.0101 | m | λ | 300/f |

"Antenna Field Definitions" table from page 54

| Calculated Parameter | Value | Units | Symbol | Formula |
|---|---|---|---|---|
| Near-Field Distance | 17.91197917 | m | Rnf | $D^2/(4\lambda)$ |
| Distance to Far-Field | 42.98875 | m | Rff | $0.6D^2/\lambda$ |
| Distance of Transition Range | 17.91197917 | m | Rt | Rt=Rnf |

Power Flux Density table from page 54

| Calculated Parameter | Value | Units | Symbol | Formula |
|---|---|---|---|---|
| Power Density in the Near Field | 2.4619 | $mW/cm^2$ | Snf | $16\eta P/(\pi D^2)$ |
| Power Density in the Far Field | 1.0545 | $mW/cm^2$ | Sff | $gP/(4\pi Rff^2)$ |
| Power Density in the Transition Region | 2.4619 | $mW/cm^2$ | St | Snf*Rnf/Rt |

Flange Power Density table from page 54

| Calculated Parameter | Value | Units | Symbol | Formula |
|---|---|---|---|---|
| Power Density at the Feed Flange | 873.3039 | $mW/cm^2$ | Sfa | 4P/a |

Main Reflector Power Density table from page 54

| Calculated Parameter | Value | Units | Symbol | Formula |
|---|---|---|---|---|
| Power Density at Main Reflector | 3.5246 | $mW/cm^2$ | Ssurface | 4P/A |

Main Reflector Power Density table from page 54

| Calculated Parameter | Value | Units | Symbol | Formula |
|---|---|---|---|---|
| Power Density between Reflector and Ground | 0.8812 | $mW/cm^2$ | Sg | P/A |

## 3.4 L3 Hawkeye III

"Input Parameters" Table from page 51

| Input Parameter | Value | Units | Symbol |
|---|---|---|---|
| Antenna Diameter | 1.2 | m | D |
| Antenna Transmit Gain | 49.4 | dBi | G |
| Transmit Frequency | 29750 | MHz | f |
| Antenna Feed Flange Diameter | 5.4 | cm | d |
| Power Input to the Antenna | 5 | Watts | P |

"Calculated Parameters" table from page 52

| Calculated Parameter | Value | Units | Symbol | Formula |
|---|---|---|---|---|
| Antenna Surface Area | 1.1309 | $m^2$ | A | $\pi D^2/4$ |
| Area of Antenna Flange | 22.9015 | $cm^2$ | a | $\pi d^2/4$ |
| Antenna Efficiency | 0.6232 | real | $\eta$ | $g\lambda^2/(\pi^2 D^2)$ |
| Gain Factor | 87096.3590 | real | g | 10^(G/10) |
| Wavelength | 0.0101 | m | $\lambda$ | 300/f |

"Antenna Field Definitions" table from page 54

| Calculated Parameter | Value | Units | Symbol | Formula |
|---|---|---|---|---|
| Near-Field Distance | 35.7 | m | Rnf | $D^2/(4\lambda)$ |
| Distance to Far-Field | 85.68 | m | Rff | $0.6D^2/\lambda$ |
| Distance of Transition Range | 35.7 | m | Rt | Rt=Rnf |

Power Flux Density table from page 54

| Calculated Parameter | Value | Units | Symbol | Formula |
|---|---|---|---|---|
| Power Density in the Near Field | 1.1021 | $mW/cm^2$ | Snf | $16\eta P/(\pi D^2)$ |
| Power Density in the Far Field | 0.4721 | $mW/cm^2$ | Sff | $gP/(4\pi Rff^2)$ |
| Power Density in the Transition Region | 1.1021 | $mW/cm^2$ | St | Snf*Rnf/Rt |

Flange Power Density table from page 54

| Calculated Parameter | Value | Units | Symbol | Formula |
|---|---|---|---|---|
| Power Density at the Feed Flange | 873.3039 | $mW/cm^2$ | Sfa | 4P/a |

Main Reflector Power Density table from page 54

| Calculated Parameter | Value | Units | Symbol | Formula |
|---|---|---|---|---|
| Power Density at Main Reflector | 1.7684 | $mW/cm^2$ | Ssurface | 4P/A |

Main Reflector Power Density table from page 54

| Calculated Parameter | Value | Units | Symbol | Formula |
|---|---|---|---|---|
| Power Density between Reflector and Ground | 0.4421 | $mW/cm^2$ | Sg | P/A |

## 3.5 Paradigm/SWT Connect 70

"Input Parameters" Table from page 51

| Input Parameter | Value | Units | Symbol |
|---|---|---|---|
| Antenna Diameter | 0.69 | m | D |
| Antenna Transmit Gain | 44.8 | dBi | G |
| Transmit Frequency | 29750 | MHz | f |
| Antenna Feed Flange Diameter | 6.12 | cm | d |
| Power Input to the Antenna | 5 | Watts | P |

"Calculated Parameters" table from page 52

| Calculated Parameter | Value | Units | Symbol | Formula |
|---|---|---|---|---|
| Antenna Surface Area | 0.3739 | $m^2$ | A | $\pi D^2/4$ |
| Area of Antenna Flange | 29.4157 | $cm^2$ | a | $\pi d^2/4$ |
| Antenna Efficiency | 0.6536 | real | η | $g\lambda^2/(\pi^2 D^2)$ |
| Gain Factor | 30199.5172 | real | g | 10^(G/10) |
| Wavelength | 0.0101 | m | λ | 300/f |

"Antenna Field Definitions" table from page 54

| Calculated Parameter | Value | Units | Symbol | Formula |
|---|---|---|---|---|
| Near-Field Distance | 11.8033125 | m | Rnf | $D^2/(4\lambda)$ |
| Distance to Far-Field | 28.32795 | m | Rff | $0.6D^2/\lambda$ |
| Distance of Transition Range | 11.8033125 | m | Rt | Rt=Rnf |

Power Flux Density table from page 54

| Calculated Parameter | Value | Units | Symbol | Formula |
|---|---|---|---|---|
| Power Density in the Near Field | 3.4958 | $mW/cm^2$ | Snf | $16\eta P/(\pi D^2)$ |
| Power Density in the Far Field | 1.4974 | $mW/cm^2$ | Sff | $gP/(4\pi Rff^2)$ |
| Power Density in the Transition Region | 3.4958 | $mW/cm^2$ | St | Snf*Rnf/Rt |

Flange Power Density table from page 54

| Calculated Parameter | Value | Units | Symbol | Formula |
|---|---|---|---|---|
| Power Density at the Feed Flange | 679.9079 | $mW/cm^2$ | Sfa | 4P/a |

Main Reflector Power Density table from page 54

| Calculated Parameter | Value | Units | Symbol | Formula |
|---|---|---|---|---|
| Power Density at Main Reflector | 5.3488 | $mW/cm^2$ | Ssurface | 4P/A |

Main Reflector Power Density table from page 54

| Calculated Parameter | Value | Units | Symbol | Formula |
|---|---|---|---|---|
| Power Density between Reflector and Ground | 1.3372 | $mW/cm^2$ | Sg | P/A |

## 3.6 SWT ATOM 65/GX/01 ATOM 65AAGX/01

"Input Parameters" Table from page 51

| Input Parameter | Value | Units | Symbol |
|---|---|---|---|
| Antenna Diameter | 0.65 | m | D |
| Antenna Transmit Gain | 42.8 | dBi | G |
| Transmit Frequency | 29750 | MHz | f |
| Antenna Feed Flange Diameter | 4.16 | cm | d |
| Power Input to the Antenna | 5 | Watts | P |

"Calculated Parameters" table from page 52

| Calculated Parameter | Value | Units | Symbol | Formula |
|---|---|---|---|---|
| Antenna Surface Area | 0.3318 | $m^2$ | A | $\pi D^2/4$ |
| Area of Antenna Flange | 13.5914 | $cm^2$ | a | $\pi d^2/4$ |
| Antenna Efficiency | 0.4647 | real | η | $g\lambda^2/(\pi^2 D^2)$ |
| Gain Factor | 19054.6072 | real | g | 10^(G/10) |
| Wavelength | 0.0101 | m | λ | 300/f |

"Antenna Field Definitions" table from page 54

| Calculated Parameter | Value | Units | Symbol | Formula |
|---|---|---|---|---|
| Near-Field Distance | 10.47447917 | m | Rnf | $D^2/(4\lambda)$ |
| Distance to Far-Field | 25.13875 | m | Rff | $0.6D^2/\lambda$ |
| Distance of Transition Range | 10.47447917 | m | Rt | Rt=Rnf |

Power Flux Density table from page 54

| Calculated Parameter | Value | Units | Symbol | Formula |
|---|---|---|---|---|
| Power Density in the Near Field | 2.8009 | $mW/cm^2$ | Snf | $16\eta P/(\pi D^2)$ |
| Power Density in the Far Field | 1.1997 | $mW/cm^2$ | Sff | $gP/(4\pi Rff^2)$ |
| Power Density in the Transition Region | 2.8009 | $mW/cm^2$ | St | Snf*Rnf/Rt |

Flange Power Density table from page 54

| Calculated Parameter | Value | Units | Symbol | Formula |
|---|---|---|---|---|
| Power Density at the Feed Flange | 1471.5203 | $mW/cm^2$ | Sfa | 4P/a |

Main Reflector Power Density table from page 54

| Calculated Parameter | Value | Units | Symbol | Formula |
|---|---|---|---|---|
| Power Density at Main Reflector | 6.0273 | $mW/cm^2$ | Ssurface | 4P/A |

Main Reflector Power Density table from page 54

| Calculated Parameter | Value | Units | Symbol | Formula |
|---|---|---|---|---|
| Power Density between Reflector and Ground | 1.5068 | $mW/cm^2$ | Sg | P/A |

## 3.7 Paradigm/SWT Connect 100, 100T, Sky 98

"Input Parameters" Table from page 51

| Input Parameter | Value | Units | Symbol |
|---|---|---|---|
| Antenna Diameter | 0.934 | m | D |
| Antenna Transmit Gain | 46.5 | dBi | G |
| Transmit Frequency | 29750 | MHz | f |
| Antenna Feed Flange Diameter | 6.12 | cm | d |
| Power Input to the Antenna | 5 | Watts | P |

"Calculated Parameters" table from page 52

| Calculated Parameter | Value | Units | Symbol | Formula |
|---|---|---|---|---|
| Antenna Surface Area | 0.6851 | $m^2$ | A | $\pi D^2/4$ |
| Area of Antenna Flange | 29.4157 | $cm^2$ | a | $\pi d^2/4$ |
| Antenna Efficiency | 0.5276 | real | η | $g\lambda^2/(\pi^2 D^2)$ |
| Gain Factor | 44668.3592 | real | g | 10^(G/10) |
| Wavelength | 0.0101 | m | λ | 300/f |

"Antenna Field Definitions" table from page 54

| Calculated Parameter | Value | Units | Symbol | Formula |
|---|---|---|---|---|
| Near-Field Distance | 21.62715917 | m | Rnf | $D^2/(4\lambda)$ |
| Distance to Far-Field | 51.905182 | m | Rff | $0.6D^2/\lambda$ |
| Distance of Transition Range | 21.62715917 | m | Rt | Rt=Rnf |

Power Flux Density table from page 54

| Calculated Parameter | Value | Units | Symbol | Formula |
|---|---|---|---|---|
| Power Density in the Near Field | 1.5401 | $mW/cm^2$ | Snf | $16\eta P/(\pi D^2)$ |
| Power Density in the Far Field | 0.6597 | $mW/cm^2$ | Sff | $gP/(4\pi Rff^2)$ |
| Power Density in the Transition Region | 1.5401 | $mW/cm^2$ | St | Snf*Rnf/Rt |

Flange Power Density table from page 54

| Calculated Parameter | Value | Units | Symbol | Formula |
|---|---|---|---|---|
| Power Density at the Feed Flange | 679.9079 | $mW/cm^2$ | Sfa | 4P/a |

Main Reflector Power Density table from page 54

| Calculated Parameter | Value | Units | Symbol | Formula |
|---|---|---|---|---|
| Power Density at Main Reflector | 2.9192 | $mW/cm^2$ | Ssurface | 4P/A |

Main Reflector Power Density table from page 54

| Calculated Parameter | Value | Units | Symbol | Formula |
|---|---|---|---|---|
| Power Density between Reflector and Ground | 0.7298 | $mW/cm^2$ | Sg | P/A |

## 3.8 Paradigm/SWT Connect 180, Sky 180

"Input Parameters" Table from page 51

| Input Parameter | Value | Units | Symbol |
|---|---|---|---|
| Antenna Diameter | 1.8 | m | D |
| Antenna Transmit Gain | 52.4 | dBi | G |
| Transmit Frequency | 29750 | MHz | f |
| Antenna Feed Flange Diameter | 4.38 | cm | d |
| Power Input to the Antenna | 5 | Watts | P |

"Calculated Parameters" table from page 52

| Calculated Parameter | Value | Units | Symbol | Formula |
|---|---|---|---|---|
| Antenna Surface Area | 2.5446 | $m^2$ | A | $\pi D^2/4$ |
| Area of Antenna Flange | 15.0669 | $cm^2$ | a | $\pi d^2/4$ |
| Antenna Efficiency | 0.5526 | real | η | $g\lambda^2/(\pi^2 D^2)$ |
| Gain Factor | 173780.0829 | real | g | 10^(G/10) |
| Wavelength | 0.0101 | m | λ | 300/f |

"Antenna Field Definitions" table from page 54

| Calculated Parameter | Value | Units | Symbol | Formula |
|---|---|---|---|---|
| Near-Field Distance | 80.325 | m | Rnf | $D^2/(4\lambda)$ |
| Distance to Far-Field | 192.78 | m | Rff | $0.6D^2/\lambda$ |
| Distance of Transition Range | 80.325 | m | Rt | Rt=Rnf |

Power Flux Density table from page 54

| Calculated Parameter | Value | Units | Symbol | Formula |
|---|---|---|---|---|
| Power Density in the Near Field | 0.4344 | $mW/cm^2$ | Snf | $16\eta P/(\pi D^2)$ |
| Power Density in the Far Field | 0.1861 | $mW/cm^2$ | Sff | $gP/(4\pi Rff^2)$ |
| Power Density in the Transition Region | 0.4344 | $mW/cm^2$ | St | Snf*Rnf/Rt |

Flange Power Density table from page 54

| Calculated Parameter | Value | Units | Symbol | Formula |
|---|---|---|---|---|
| Power Density at the Feed Flange | 1327.4088 | $mW/cm^2$ | Sfa | 4P/a |

Main Reflector Power Density table from page 54

| Calculated Parameter | Value | Units | Symbol | Formula |
|---|---|---|---|---|
| Power Density at Main Reflector | 0.7860 | $mW/cm^2$ | Ssurface | 4P/A |

Main Reflector Power Density table from page 54

| Calculated Parameter | Value | Units | Symbol | Formula |
|---|---|---|---|---|
| Power Density between Reflector and Ground | 0.1965 | $mW/cm^2$ | Sg | P/A |

**ISAT US Inc.**
**FCC Form 312**
**Exhibit G**

## 24-Hour Point of Contact

The 24-hour point of contact with the ability to shut down any of the terminals immediately upon notification of harmful interference is at Inmarsat's Lino Lakes Gateway, call sign E120072:

Kevin Baker
6211 Glen Circle
Lino Lakes, MN 55014
Tel: (808) 469-7104