



Global Product Certification
EMC-EMF-Safety Approvals

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MPE Calculation Report

Report Number: M131204-MPE

Test Sample: Iridium Wi-Fi Access Point with
satellite transceiver

Model Number: 9560

Tested For: Iridium Satellite, LLC

Date of Issue: 20th March 2014

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**FCC Maximum Permissible Exposure (MPE) Calculation
Iridium Wi-Fi Access Point with Satellite Transceiver, Model: 9560
Report Number: M131204-MPE**

1.0 GENERAL INFORMATION

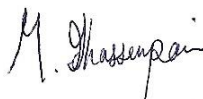
Test Sample: Iridium Wi-Fi Access Point with satellite transceiver
Model Number: 9560
IMEI Number: 300325010001030
FCC ID: Q639560
IC ID: 4629A-9560
Hardware Version: REV.03
Software Version: 0.25.121
Serial Number: 1003
Device Category: Mobile Transmitter
Test Device: Production Unit / Prototype Sample
RF exposure Category: General Public/Unaware user

Tested for: Iridium Satellite, LLC
Address: 1750 Tysons Blvd Suite 1400
McLean, VA 22102
Contact: Hermon Pon, VP Technology Development & Network Engineering
Phone: +1.703.287.7434
Email: Hermon.Pon@Iridium.com

Test Standard/s: 447498 D01 General RF Exposure Guidance v05r01

Calculation Summary: A MPE calculation was performed according to 47CFR2.1091 for the Iridium Wi-Fi Access Point with satellite transceiver, model 9560. The maximum percentage of MPE was **21.7%** occurring at the minimum separation distance from device and **27.1%** at minimum separation distance from external antenna.

Test Dates: 20th March 2014



Test Officer: **Mahan Ghassempouri**

Authorised Signature: 
Stephen Phillips

2.0 DESCRIPTION OF DEVICE

2.1 Description of Test Sample

The device assessed was an Iridium Wi-Fi Access Point with satellite transceiver, Model: 9560 operating in 1616 MHz to 1626 MHz frequency band and also in 2450 MHz WLAN frequency band. It has fixed length integral antennas. It will be referred to as the device under test (DUT) throughout this report.

DUT can also be used with an external antenna for satellite communication with the gain of no more than 3 dBi.

Integral antenna and external antenna cannot be used simultaneously.

Table: DUT Parameters

Number of antennas	3
Antenna 1 transmit frequency (WiFi)	2450 MHz
Antenna 1 gain	0 dBi
Antenna 1 input power	0.082 W
Antenna 2 transmit frequency (Satellite)	1621.12 MHz
Antenna 2 gain	1.8 dBi
Antenna 2 input power	0.682 W
External antenna frequency (only for satellite communication)	1621.12 MHz
External antenna gain	3.00
External antenna input power	0.682

2.2 Transmitting Antennas Location

DUT includes two transmitting antennas, one for satellite communication and the other for WiFi. Dimensions of DUT is 12 cm x 8 cm. Position of transmitting antennas in (X, Y) coordinates is shown in Figure 1. For WiFi and satellite antenna positions are (4,-3.3) cm and (-4.5, 1.5) cm, respectively. DUT can be used with external antenna (for satellite communication) of the gain less than or equal to 3 dBi. According to device architecture, external satellite antenna and integral satellite antenna cannot transmit simultaneously.

Two calculations are done:

1. WiFi antenna positioned at (4,-3.3) cm and satellite (integral) antenna positioned at (-4.5, 1.5) cm
2. External antenna investigated separately

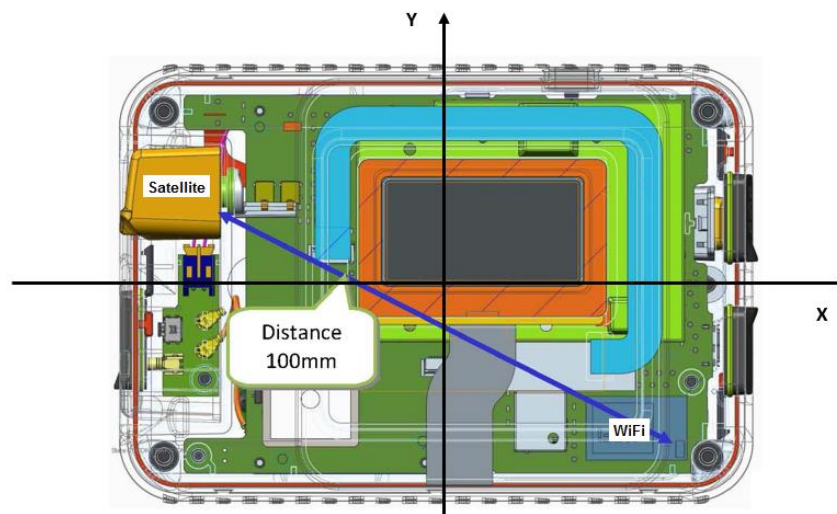


Figure 1: Location of transmitting antennas

2.3 Limits

As specified in table 1B of 47 CFR 1.1310 limits for occupational/controlled exposure and general public/uncontrolled exposure are as follows:

Frequency (MHz)	Power Density (mW/cm ²)
General public/Uncontrolled	
1500-100000	1
Occupational/Controlled	
1500-100000	5

2.4 Device Category

According to the manufacturer declaration and based on DUT intended use, DUT is considered as Mobile device.

For purposes of 47 CFR 2.1091, a mobile device is defined as a transmitting device designed to be used in other than fixed locations and to generally be used in such a way that a separation distance of at least 20 centimetres is normally maintained between the transmitter's radiating structure(s) and the body of the user or nearby persons. In this context, the term "fixed location" means that the device is physically secured at one location and is not able to be easily moved to another location. Transmitting devices designed to be used by consumers or workers that can be easily re-located, such as wireless devices associated with a personal computer, are considered to be mobile devices if they meet the 20 centimetre separation requirement.

3.0 Method of Calculation

Calculation is done according to KDB 447498 D01 v05r02 and using excel sheet provided by FCC at <http://transition.fcc.gov/oet/ea/presentations/files/oct05/MPE-mobile.xls>

4.0 Calculation Results

4.1 Basic Application without External Antenna

Calculation results are shown in below table and graphical presentation of %MPE Contour is shown in Figure 2.

Antenna No.	Total	1	2
Frequency (MHz)	-	2450	1621.12
MPE General public/Uncontrolled Limit (mW/cm ²)	-	1.00	1.00
Max % MPE	21.7	1.6	20.5
Power (W)	0.764	0.082	0.682
Antenna Gain (dBi)	-	0.00	1.80
EIRP (W)	1.11	0.082	1.032
X (cm)	-	4.4	-4.5
Y (cm)	-	-3.3	1.5

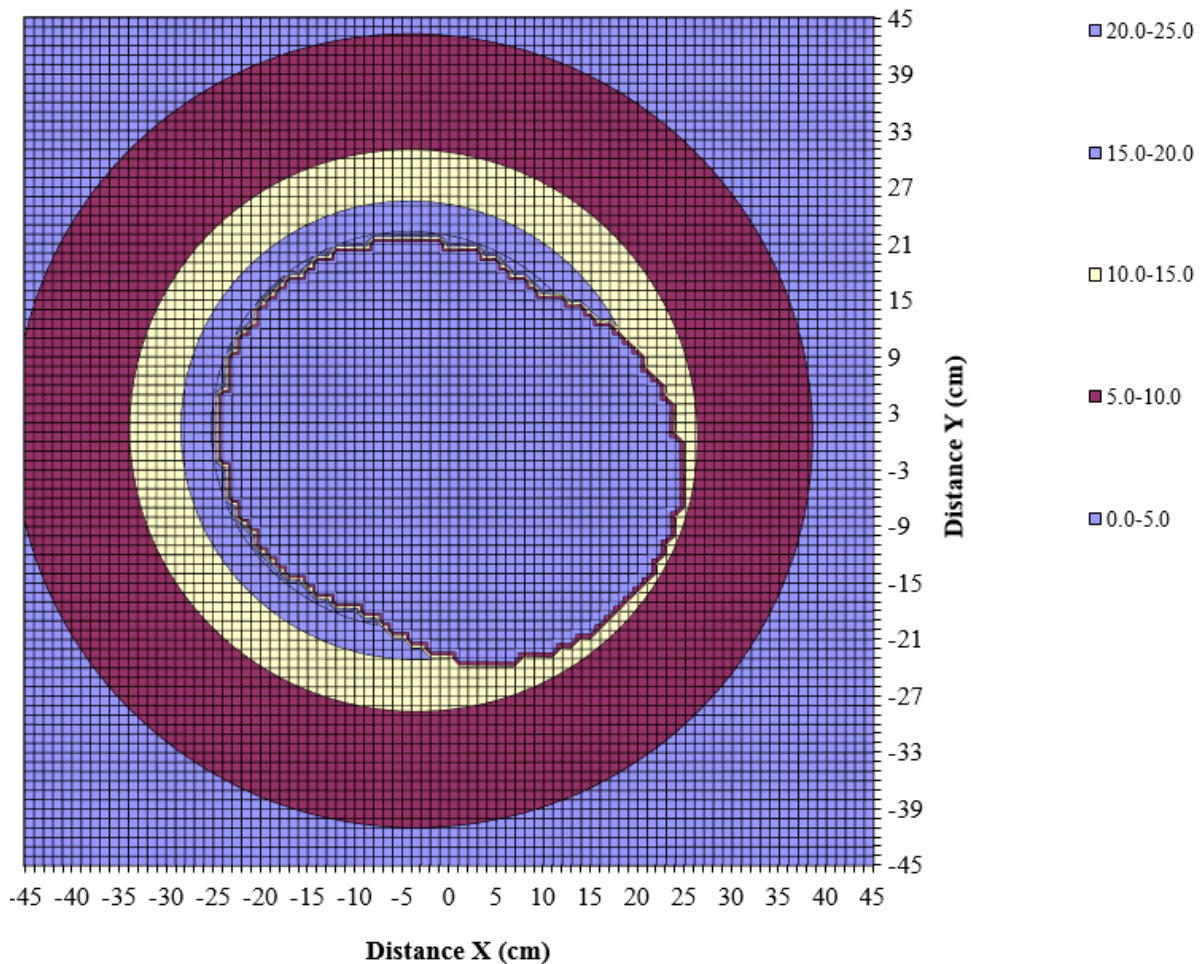


Figure 2: % MPE Contour for basic application without external antenna

Note: The 0% contour surrounding the antennas identifies the 20 cm perimeter surrounding all active antennas.

Maximum percentage of MPE limit considering simultaneous transmission is **21.7%** occurring at minimum separation distance.

4.2 Separate External Antenna

Calculation results are shown in below table and graphical presentation of %MPE Contour is shown in Figure 3.

Antenna No.	Total	1
Frequency (MHz)	-	1621.12
MPE General public/Uncontrolled Limit (mW/cm ²)	-	1.00
Max % MPE	27.1	27.1
Power (W)	0.682	0.682
Antenna Gain (dBi)	-	3.00
EIRP (W)	1.36	1.361
X (cm)	-	0
Y (cm)	-	0

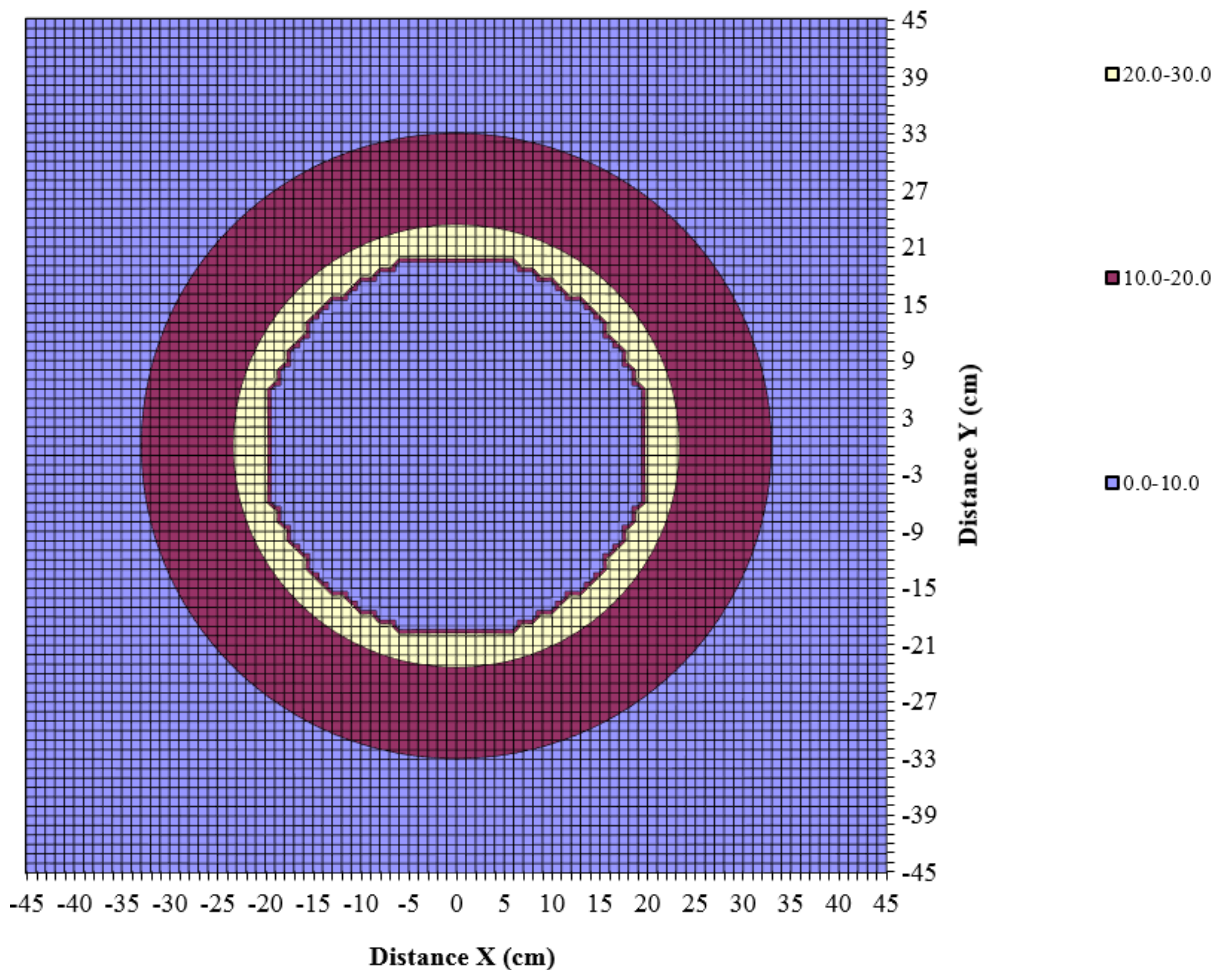


Figure 3: % MPE Contour for separate external antenna

Note: The 0% contour surrounding the antennas identifies the 20 cm perimeter surrounding all active antennas.

Maximum percentage of MPE limit is **27.1%** occurring at minimum separation distance.