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Retlif Testing Laboratories Report No. R-3578P-6B

For

**Siemens Mobility, Inc.
On-Board Radio**

FCC ID: 2A8HRS25441-B57-A3

**Requirement: 1.1310(d)(2), Radiofrequency Radiation Exposure Limits
(MPE Calculations)**



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Requirements and Test Results

Requirement: 1.1310(d)(2), Radiofrequency Radiation Exposure Limits

For operations within the frequency range of 300 kHz and 6 GHz (inclusive), the limits for maximum permissible exposure (MPE), derived from whole-body SAR limits and listed in Table 1 in [paragraph \(e\)\(1\)](#) of this section, may be used instead of whole-body SAR limits as set forth in [paragraphs \(a\)](#) through [\(c\)](#) of this section to evaluate the environmental impact of human exposure to RF radiation as specified in [§ 1.1307\(b\) of this part](#), except for portable devices as defined in [§ 2.1093 of this chapter](#) as these evaluations shall be performed according to the SAR provisions in [§ 2.1093](#).

Table 1 FCC [§ 1.1310\(e\)\(1\)](#) - Limits for Maximum Permissible Exposure (MPE)

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm ²)	Averaging time (minutes)
(i) Limits for Occupational/Controlled Exposure				
0.3-3.0	614	1.63	*(100)	≤6
3.0-30	1842/f	4.89/f	*(900/f ²)	<6
30-300	61.4	0.163	1.0	<6
300-1,500			f/300	<6
1,500-100,000			5	<6
(ii) Limits for General Population/Uncontrolled Exposure				
0.3-1.34	614	1.63	*(100)	<30
1.34-30	824/f	2.19/f	*(180/f ²)	<30
30-300	27.5	0.073	0.2	<30
300-1,500			f/1500	<30
1,500-100,000			1.0	<30

f = frequency in MHz. * = Plane-wave equivalent power density.

- Results:
The calculated power density based on the manufacturers specified antenna gain and maximum measured output power did not exceed the specified MPE limits at a distance of 20 cm for both General Population/Uncontrolled Exposure and for Occupational/Controlled Exposure.

MPE CALCULATION DATA SHEET

Test Specification:	FCC Part 1.1310, Radiofrequency radiation exposure limits													
Method:	FCC Part 1.1310 (d)(2), Maximum Permissible Exposure (MPE)													
Limit:	FCC Part 1.1310 (e)(1), Table 1, Section(ii), Limits for General Population / Uncontrolled Exposure													
Job Number/Customer:	R-3578P-6B/ Siemens Mobility													
Test Sample:	2.4 GHz ZRadio System, Train to Wayside Communications													
Model Number:	S25441-B57-A3-1.B; 8708660000 (P/S)													
Serial Number:	6101142745-003; 7508000291 (P/S)													
Date(s):	2/23													
Radio														
The test sample is a DTS Radio operating in the 2400 to 2483.5 MHz frequency band														
Antenna Employed														
The test sample utilizes the following antenna:														
Manufacturer: Huber+Suhner														
Model: SENCITY Spot-S														
Part Number: 1324.17.0098														
Antenna Gain: 8.5 dBi														
MPE Evaluation for Single Source Emitters														
Band	Antenna Gain		Conducted Output		EIRP	PG	Result	Limit						
	dB _i	Numeric	dBm	mW	dBm	mW	mW/cm ²	mW/cm ²						
WiFi	8.5	7.079	9.01	7.962	17.510	56.364	0.011	1.000						
The transmitter complies with the specified MPE limits at a distance of 20 cm for both General Population/Uncontrolled Exposure and for Occupational Controlled Exposure.														

Data Sheet

HUBER+SUHNER

SENCITY® Spot-S WiFi Antenna 1324.17.0098

Description

Small directional, planar, linear vertical polarized WiFi antenna with 8.5 dBi gain
WLAN IEEE 802.11 b/g - WiFi band 2.4 - 2.485 GHz

Rugged design, meets EN 50155 and EN 50125-3 railway standards

Fire retardant acc. to EN 45545-2 and NFPA130

For outdoor and indoor applications

Ingress protection IP 66 and IP 67

Wall mounting material included



Product Configuration

Technical Data

Electrical Data

Band 1	
Frequency (MHz)	2400 - 2500
VSWR	1.5
Impedance (Ohm)	50
Gain (dBi)	8.5
3dB beamwidth (h) (°)	75
3dB beamwidth (v) (°)	75
Composite power max (W)	30
Ambient temperature (°C)	25
Front to back ratio (dB)	12
Vertical electrical tilt (°)	0

Ports

Port 1	
Connector	N, jack (female)
Polarization	vertical
DC grounded	Yes