

Statement of Human Exposure to Radiofrequency Electromagnetic Field

Certified module:

Type of Equipment	WLAN / Bluetooth module
Model	SDC-SSD40NBT
FCC ID	SCC-SDC SSD40NBT
Manufacturer	Nordic ID Oy

Standards

- 47 CFR §1.1307, §1.1310, §2.1091
- KDB 4477498 D01 V05R02

RF Exposure compliance calculation for FCC

Module SDC-SSD40NBT has been certified as mobile module and Nordic ID intention is to integrate it into portable host device(s).

Calculations in below show minimum distances and maximum allowed output powers in human body / extremity conditions.

From KDB447498 clause 4.3.1

- a) For 100 MHz to 6 GHz and *test separation distances* ≤ 50 mm, the 1-g and 10-g SAR test exclusion thresholds are determined by the following:

$[(\text{max. power of channel, including tune-up tolerance, mW}) / (\text{min. test separation distance, mm})] \cdot [\sqrt{f(\text{GHz})}] \leq 3.0$ for 1-g SAR, and ≤ 7.5 for 10-g extremity SAR,³⁰ where $f(\text{GHz})$ is the RF channel transmit frequency in GHz

The highest average output powers of the module:

2.4GHz band: 39mW
 U-NII 1 band: 12mW
 U-NII 2a band: 26mW
 U-NII 2b band: 31mW
 U-NII 3 band: 37mW

Minimum separation distances for body (Example):

$(37\text{mW/d}) \cdot (\sqrt{5.8\text{GHz}}) \leq 3.0$

$(37/\text{d}) \cdot (2.41) \leq 3.0$

$(37/\text{d}) = 3/2.41 = 1.245$

$(37/1.245) = \text{d}$

$\text{d} = 30\text{mm}$ is the minimum distance for body SAR @5.8GHz

2.4GHz band: 20mm
 U-NII 1 band: 9mm
 U-NII 2a band: 20mm
 U-NII 2b band: 24mm
 U-NII 3 band: 30mm

Minimum separation distances for extremity use (Example):

$$(12\text{mW/d}) \cdot (\sqrt{5.2\text{GHz}}) \leq 7.5$$

$$(12/d) \cdot (2.3) \leq 7.5$$

$$(12/d) = 7.5/2.3 = 3.3$$

$$(12/3.3) = d$$

$d=4\text{mm}$ is the minimum distance for extremity use @5.2GHz

2.4GHz band: 8mm

U-NII 1 band: 4mm

U-NII 2a band: 8mm

U-NII 2b band: 10mm

U-NII 3 band: 12mm

Max allowed output powers are as follows:

From KDB447498 clause 4.3.1

a) For 100 MHz to 6 GHz and *test separation distances* $\leq 50\text{ mm}$, the 1-g and 10-g SAR test exclusion thresholds are determined by the following:

$$[(\text{max. power of channel, including tune-up tolerance, mW}) / (\text{min. test separation distance, mm})] \cdot [\sqrt{f(\text{GHz})}] \leq$$

3.0 for 1-g SAR, and ≤ 7.5 for 10-g extremity SAR,³⁰ where

$f(\text{GHz})$ is the RF channel transmit frequency in GHz

Example (Body SAR):

We need P_{max} at $d=50\text{mm}$ distance

$$P_{\text{max}} \leq (3.0/\sqrt{5.8\text{GHz}}) * 50\text{mm} = 62\text{mW}$$

2.4GHz band: 97mW

U-NII 1 band: 66mW

U-NII 2a band: 65mW

U-NII 2b band: 63mW

U-NII 3 band: 62mW

Example (Extremity SAR):

$$P_{\text{max}} \leq (7.5/\sqrt{5.8\text{GHz}}) * 50\text{mm} = 156\text{mW}$$

2.4GHz band: 242mW

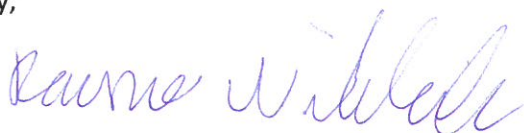
U-NII 1 band: 164mW

U-NII 2a band: 163mW

U-NII 2b band: 158mW

U-NII 3 band: 156mW

Sincerely,



Rauno Nikkilä
Certification Specialist
Nordic ID Oy