# RF Exposure Statement: JP2521A5 001



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|---|---|
| **Client:**<br>*Auftraggeber:* | Nextorage Corporation<br>Kawasaki-eki-mae Tower Riverk 9F, 12-1, Ekimaehoncho, Kawasaki-ku, Kawasaki, Kanagawa 210-0007 Japan |
| **Test Item:**<br>*Prüfgegenstand:* | Multi-functional SSD with security |
| **Identification / Type No.:**<br>*Bezeichnung / Typ-Nr.:* | NX-PFS1PRO1TB |

## FCC Requirement

According to FCC §1.1307 (b)(1)(i)(B), Mobile Device must comply with the following applicable limit for **M**aximum **P**ermissible **E**xposure (MPE) listed in §1.1310 (e)(1), Table 1.

| **Equipment Use: General Population / Uncontrolled Exposure** | | | | |
|---|---|---|---|---|
| **Transmitter** | **Frequency Range [MHz]** | **Applicable Limit** | | **Averaging Time [minutes]** |
| | | **Magnetic Field Strength [A/m]** | **Power Density [mW/cm$^2$]** | |
| 13.56MHz RF-ID | 1.34 – 30 | 2.19/f | -/- | <30 |
| 2.4GHz Wireless LAN | 1,500 – 100,000 | -/- | 1.0 | |

Note: Limit for Magnetic Field Strength [A/m] is calculated by the following formula.
Limit for Magnetic Field Strength = 2.19/f = 2.19/13.56 = 0.161 [A/m], f = frequency in MHz

## Evaluation for Single RF Sources

### 1) For 13.56MHz RF-ID Transmitter

The maximum magnetic field strength from transmitter (**EUT**) is given in the following table.

| **Measured E-Field Strength E [dBuV/m]** | **Measured H-Field Strength H [dBuA/m]** | **Measured Distance R [m]** | **DCF [dB]** | **Evaluated Distance r [cm]** | **Calculated H-Field Strength H [A/m]** | **Magnetic field strength Limit [A/m]** |
|---|---|---|---|---|---|---|
| +55.3 | +3.8 | 3.0 | 47.0 | 20 | **0.0003467** | **0.161** |

H-Field Strength is converted by the following formula.

H-Field Strength at 3m = E-Field Strength [dBuV/m] -51.5 [dB] = 55.3 – 51.5 = 3.8 [dBuA/m]

H-Field Strength at 20cm = H-Field Strength at 3m + DCF = 3.8 + 47.0 =50.8 [dBuA/m]

$10^{(50.8/20)} = 3.4674 \times 10^2$ [uA/m] = 0.0003467 [A/m]

Distance Conversion Factor (DCF) is calculated by the following formula.

$DCF = 40 \times \mathrm{Log}_{10}(R/r) = 40 \times \mathrm{Log}_{10}(3.0/0.2) = 47.0$ [dB]

Note: The magnetic field strength of 13.56MHz RF-ID is cited from the test report JP25EM5I 001 by TUV Rheinland Japan.

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## 2) For 2.4GHz Wireless LAN Transmitter

The maximum Power Density from the pre-certified transmitter module (2.4GHz Wireless LAN) is given in the following table.

| Maximum Cond. Output Power [dBm] | Antenna Gain [dBi] | Calculated EIRP | | Evaluated Distance r [cm] | Calculated Power Density S [mW/cm$^2$] | Power Density Limit [mW/cm$^2$] |
|---|---|---|---|---|---|---|
| | | [dBm] | [mW] | | | |
| 17.56 | 3.26 | 20.82 | 120.781 | **20** | **0.0240260** | **1.0** |

The EIRP in dBm is calculated in conjunction with the following formula:

EIRP = Maximum Cond. Output Power + Antenna Gain = 17.56 + 3.26 = 20.82 [dBm]

The power density S in mW/cm$^2$ is calculated in conjunction with the next formula:

$S = EIRP / (4 \times \pi \times r^2) = 120.781 / (4 \times \pi \times 20^2) =$ **0.0240260 [mW/cm$^2$]**

Note: Conducted output power and antenna gain information are quoted from the module test report (R2106A0492-R1 issued by TA Technology Co., Ltd.), see section 5.1 for details.

## Evaluation for Simultaneous Transmissions

As per §1.1307 (b)(3)(ii)(B) and the product specification, the following possible combinations are evaluated to identify the overall worst case for the Multiple RF Sources.

| Transmitter | Maximum Level | Limit | Ratio | Sum of Ratios | Limit |
|---|---|---|---|---|---|
| 13.56MHz RF-ID | 0.0003467 [A/m] | 0.161 [A/m] | 0.0021534 | **0.02618** | 1 |
| 2.4GHz Wireless LAN | 0.0240260 [mW/cm$^2$] | 1.0 [mW/cm$^2$] | 0.0240260 | | |

## Conclusion

These transmitters are classified as Mobile Device by the client. One pre-certified transmitter module is incorporated into the EUT with the separation distance more than 20cm. Therefore, simultaneous transmission operations are evaluated, too.

SAR evaluation is not required, since each single RF source and all possible simultaneous transmissions are below the applicable MPE limit and the summation ratio (≤1) (**0.02618**) at the separation distance of **20cm** between a body of a user and transmitters, respectively.