RF exposure evaluation: 2.1093 Portable devices / KDB 447498/ RSS-102 2.5.1

Date	Temperature	Humidity
2013-09-02	23 °C ± 3 °C	47 % ± 5 %

Procedure

Systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy levels in excess limit for maximum permissible exposure. In accordance with 47 CFR FCC Part 2 Subpart J, section 2.1093 this device has been defined as a portable device to be used within 20 centimetres of the body of the user.

Results

Standalone SAR exclusion:

The following formula was used to calculate the RF exposure SAR exclusion threshold,
Thld = [Pout /r] x [√f]

where,
Thld = SAR exclusion threshold
Pout = Peak output power , in mW
r = minimum test separation distance , in mm
f=frequency, in GHz

Unit	Frequency f, (GHz)	Peak output power Pout, (mW)	Distance r, (mm)	Exclusion threshold Thld	Limit Threshold 1-g SAR	Limit Threshold 10-g SAR
Scale	2.450	0.2399	5	0.0751	< 3	< 7.5
Terminal	2.450	0.2754	5	0.0862	< 3	< 7.5
Button	2.452	0.2138	5	0.0670	< 3	< 7.5

The maximum radiated peak output power from Appendix 3 was used for calculation.

Unit	EIRP Peak output power (dBm)	Peak output power (mW)
DP II Smart scale	-6.2 Note 1	0.2399
DP II Computer terminal	-5.6 Note 1	0.2754
DP Radio Button	-6.7 Note 1	0.2138

Note 1: The measurements were performed in field strength in dBµV/m. The EIRP level was then calculated by the formula $P = (Exd)^2/30xG$, with G as unity gain of 1.

Simultaneous transmission SAR exclusion:

The DP II Computer terminal is co-located with a transmitter (FCC ID: QOQWT12).

The following formula was used to calculate the RF exposure simultaneous transmission SAR estimation for test separation distance ≤ 50 mm
st-SARe= [Pout /r] x [√f/x]

where,
st-SARe = Simultaneous transmission SAR estimation
Pout = Peak output power , in mW
r = minimum test separation distance , in mm
f=frequency, in GHz
x=7.5 for 1-g SAR

Unit	Frequency f, (GHz)	Peak output power Pout, (mW)	Distance r, (mm)	st-SARe W/kg	Sum of st-SARe W/kg	Limit Estimated 1-g SAR W/kg
Terminal	2.450	0.2754	5	0.011	0.104	0.4
QOQWT12	2402.0 - 2480.0	2.22	5	0.093		

Limits

FCC- 2.1093 / KDB 447498 (ver 5 rev 2)

4.3.1 Standalone SAR exclusion:

1) The 1-g and 10-g SAR test exclusion thresholds for 100 MHz to 6 GHz at test separation distances ≤ 50 mm are determined by:
[(max. power of channel, including tune-up tolerance, mW)/(min. test separation distance, mm)] x [√f(GHz)] ≤ 3.0 for 1-g SAR and ≤ 7.5 for 10-g extremity SAR, where

• f(GHz) is the RF channel transmit frequency in GHz
• Power and distance are rounded to the nearest mW and mm before calculation
• The result is rounded to one decimal place for comparison

The test exclusions are applicable only when the minimum test separation distance is ≤ 50 mm and for transmission frequencies between 100 MHz and 6 GHz. When the minimum test separation distance is < 5 mm, a distance of 5 mm is applied to determine SAR test exclusion.

2) At 100 MHz to 6 GHz and for test separation distances > 50 mm, the SAR test exclusion threshold is determined according to the following,
a) [Power allowed at numeric threshold for 50 mm in step 1) + (test separation distance - 50 mm)·(f(MHz)/150)] mW, at 100 MHz to 1500 MHz
b) [Power allowed at numeric threshold for 50 mm in step 1) + (test separation distance - 50 mm)·10] mW at > 1500 MHz and ≤ 6 GHz

4.3.2 Simultaneous transmission SAR exclusion

2) When the standalone SAR test exclusion of section 4.3.1 is applied to an antenna that transmits simultaneously with other antennas, the standalone SAR must be estimated according to the following to determine simultaneous transmission SAR test exclusion:

• (max. power of channel, including tune-up tolerance, mW)/(min. test separation distance, mm)]·[√f(GHz)/x] W/kg for test separation distances ≤ 50 mm;
where x = 7.5 for 1-g SAR, and x = 18.75 for 10-g SAR.
• 0.4 W/kg for 1-g SAR and 1.0 W/kg for 10-g SAR, when the test separation distances is > 50 mm.

IC-2.5.1 Exemption from Routine Evaluation Limits – SAR Evaluation

SAR evaluation is required if the separation distance between the user and the radiating element of the device is less than or equal to 20 cm, except when the device operates as follows:

from 3 kHz up to 1 GHz inclusively, and with output power (i.e. the higher of the conducted or equivalent isotropically radiated power (e.i.r.p.) source-based, time-averaged output power) that is less than or equal to 200 mW for general public use and 1000 mW for controlled use;

above 1 GHz and up to 2.2 GHz inclusively, and with output power (i.e. the higher of the conducted or radiated (e.i.r.p.) source-based, time-averaged output power) that is less than or equal to 100 mW for general public use and 500 mW for controlled use;

above 2.2 GHz and up to 3 GHz inclusively, and with output power (i.e. the higher of the conducted or radiated (e.i.r.p.) source-based, time-averaged output power) that is less than or equal to 20 mW for general public use and 100 mW for controlled use;

above 3 GHz and up to 6 GHz inclusively, and with output power (i.e. the higher of the conducted or radiated (e.i.r.p.) source-based, time-averaged output power) that is less than or equal to 10 mW for general public use and 50 mW for controlled use.

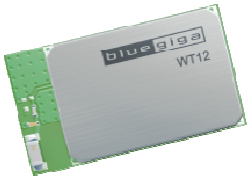
In these cases, the information contained in the RF exposure technical brief may be limited to information that demonstrates how the output power of the device was derived.

Complies?	Yes

Doc: **Exhibit 11, RF Exposure Info**
Product: **Digitech Professional II**
FCC ID: **2AAYWDPII**

Bluetooth module

The DPII Computer Terminal has a Bluetooth module, WT12 from Bluegiga Technologies Oy. This module has a FCC part 15 modular qualification, FCC ID:QOQWT12.



The schematic name of the WT12 Bluetooth module in the listings is BTM, see Exhibit 5(Schematics Part) and Exhibit 10(Part List).