




Exhibit: RF Exposure – FCC/ISED

FCC/ISED RF exposure evaluation of the
System in accordance with FCC 1.1310 & RSS-102

COMMERCIAL-IN-CONFIDENCE

FCC: SAPPIXELPLUS
IC: 4652A-PIXELPLUS

Report File #: 7169014286B-000

Client	Dormakaba	
Product	Saflok Quantum® Pixel and Quantum Pixel Plus	
Standard(s)	FCC 1.1310 & RSS-102	

RF Exposure – ISED

The EUT contains an several types of transmitters as depicted in the table below.

Radiofrequency Radiation Exposure Evaluation: Mobile Devices

The power density can be calculate using the formula:

$$P_d = (P_{out} * G) / (4 * \pi * R^2)$$

where,

f = frequency in MHz


P_d = Power density in mW/cm²

P_{out} = Conducted output power to antenna in mW

G = Numeric Antenna Gain


π = 3.1416

R = uncontrolled distance of 20 cm as per normal operation.

Client	Dormakaba	 Canada
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Standard(s)	FCC 1.1310 & RSS-102	

MPE Calculation (RFID):

<u>Prediction of MPE limit at a given distance</u>	
Equation from page 18 of OET Bulletin 65, Edition 97-01	
$S = \frac{PG}{4\pi R^2}$	
where:	S = power density P = power input to the antenna G = power gain of the antenna in the direction of interest relative to an isotropic radiator R = distance to the center of radiation of the antenna
Maximum peak output power at antenna input terminal:	-29.10 (dBm)
Maximum peak output power at antenna input terminal:	0.001230269 (mW)
Number of Ports	1
Antenna gain(typical):	0
Antenna gain(total):	0 (dBi)
Maximum antenna gain:	1 (numeric)
Time Averaging:	100 (%)
Prediction distance:	20 (cm)
Prediction frequency:	13.56 (MHz)
FCC MPE limit for uncontrolled exposure at prediction frequency:	0.978933354 (mW/cm²)
Power density at prediction frequency:	0.000000 (mW/cm²)
Margin of compliance:	-66.0 (dB)
This equates to	2.44754E-06 W/m²
RSS-102 Issue 5 limit	0.155568538 W/m²
FCC Percentage of limit	0.00003%
RSS-102 Percentage of limit	0.00157%
Note: This device does not exceed the 60 / f (GHz) in mW limit as per FCC KDB 447498 2(a)(i), so it is allowable to be used in portable exposure conditions with no restrictions on host platforms	

Client	Dormakaba	 Canada
Product	Saflok Quantum® Pixel and Quantum Pixel Plus	
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MPE Calculation (BlueTooth™):

<u>Prediction of MPE limit at a given distance</u>	
Equation from page 18 of OET Bulletin 65, Edition 97-01	
$S = \frac{PG}{4\pi R^2}$	
where:	S = power density P = power input to the antenna G = power gain of the antenna in the direction of interest relative to an isotropic radiator R = distance to the center of radiation of the antenna
Maximum peak output power at antenna input terminal:	-6.10 (dBm)
Maximum peak output power at antenna input terminal:	0.245470892 (mW)
Number of Ports	1
Antenna gain(typical):	0
Antenna gain(total):	0 (dBi)
Maximum antenna gain:	1 (numeric)
Time Averaging:	100 (%)
Prediction distance:	20 (cm)
Prediction frequency:	2440 (MHz)
FCC MPE limit for uncontrolled exposure at prediction frequency:	1 (mW/cm²)
Power density at prediction frequency:	0.000049 (mW/cm²)
Margin of compliance:	-43.1 (dB)
This equates to	0.000488349 W/m²
RSS-102 Issue 5 limit	5.408510856 W/m²
FCC Percentage of limit	0.00488%
RSS-102 Percentage of limit	0.00903%
Note: This device does not exceed the 60 / f (GHz) in mW limit as per FCC KDB 447498 2(a)(i), so it is allowable to be used in portable exposure conditions with no restrictions on host platforms	