FCC MPE Calculation

EUT Description: RFID Time Attendance/ Access Control/ Data Collection Terminal
Company: Kaba GmbH
FCC ID: NVIB-WEB9600
Model No.: B-web 96 00
Typical use distance: d ≥ 0.2 m

Maximum measured peak power:
(not averaged over 6 minutes, assuming continuous transmitting, 100% duty is worst case scenario)

P(GPRS/EGPRS/WCDMA850) = 1.35. W ERP (limit=7 W ERP)
P(GPRS/EGPRS/WCDMA1900) = 0.923 W EIRP (limit=2 W EIRP)
P(11bgn(20)/2400) = 13.42dBm peak + 2 dBi gain == 16.42 dBi == 43.85 mW EIRP (limit=1 W EIRP)
P(HF RFID(13.56)=N/A
P(LF RFID(125k)=N/A

Power Density Limits:

Power Density limit for mobile devices within 300 MHz - 1500 MHz: $S \leq f / 1500$ mW/cm^2
==>For 850MHz (top of band): $S \leq 850 / 1500 = 0.57$ mW/cm^2
Power density limit for mobile devices at within 1500MHz-100 GHz: $S \leq 1$ mW/cm^2
==>For 1900MHz and 2400 range: S ≤ 1 mW/cm2

Power Density Calculation:

Maximum power density at 0.2 meter from the antenna:
S(GPRS/EGPRS/WCDMA850) = (Pradiated) / ($4\pi \times d^2$) = 1350 / 5026 = 0.269 mW/ cm^2 (≤ 1 mW/cm^2)
S(GPRS/EGPRS/WCDMA1900) = (Pradiated) / ($4\pi \times d^2$) = 923 / 5026 = 0.184 mW/ cm^2 (≤ 0.57 mW/cm^2)
S(11bgn(20)/2400) = (Pradiated) / ($4\pi \times d^2$) = 43.85 / 5026 = 0.009 mW/cm^2 (≤ 1 mW/cm^2)
S(HF RFID(13.56)=N/A
S(LF RFID(125k)=N/A

Sum of powers < 100%:

GPRS/EGPRS/WCDMA850) =1.350/7 = 0.193
GPRS/EGPRS/WCDMA1900) =0.923/2 = 0.462
==> worst case value in 3G mode is 0.462
11bgn(20) 0.04385/1= 0.04385
HF RFID(13.56=N/A
LF RFID(125k=N/A
==> Sum: 3G+11bgn(20) = 0.462 + 0.04385=0.491 ==> 50.6 % ==> approx 50% (requirement < 100%)

Conclusion: At given distance and simultaneous TX modes, the EUT emits under the specified limits.