



4.8	RF Exposure Evaluation	
Reference Standard(s):	<input checked="" type="checkbox"/> KDB 447498 RF Exposure Guidance v06 <input type="checkbox"/> KDB 447498 Interim RF Exposure Guidance v01 <input checked="" type="checkbox"/> RSS 102, Issue 6	<input type="checkbox"/> MPE <input type="checkbox"/> SAR Evaluation <input checked="" type="checkbox"/> SAR Test Exclusion
Frequency Range(s):	<input checked="" type="checkbox"/> 2425.0MHz <input checked="" type="checkbox"/> 2402-2480.0MHz	
Antenna Separation Distance:	>10mm	
RF Exposure Conditions:	Portable (Body-worn)	
Pak Tracker Antenna Gain:	2.83dBi	
Pak Tracker the source-based conducted output power:	112mW(20.5dBm)* 0.00872 (worst case duty cycle)= 0.98mW(-0.1dBm)	
Pak Tracker EIRP/ERP output power:	EIRP=-0.1dBm + 2.83dBi=2.73dBm(1.9mW), ERP=2.73dBm - 2.15dB = 0.58dBm(1.14mW)	
The estimated 1-g SAR Value of the BT EDR transmitter:	[(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 (1.14mW/10mm)*(√2.45/7.5) =(0.114)*(1.57/7.5)=0.023 W/Kg	
BLE Antenna Gain:	2.0dBi	
BLE the source-based conducted output power:	2.24mW(3.5dBm)*0.85(worst case duty cycle)=1.9mW(2.8dBm)	
BLE EIRP/ERP output power:	EIRP=2.8dBm + 2.0dBi=4.8dBm(3.0mW), ERP=4.8dBm - 2.15dB= 2.65dBm(1.84mW)	
The estimated 1-g SAR Value of the BLE transmitter:	[(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 (1.84mW/10mm)*(√2.45/7.5) =(0.184)*(1.57/7.5)=0.04 W/Kg	
The sum of ratios for all simultaneously transmitting BLE and Pak Tracker	1.14/10+1.84/10=0.32 (sum of ratio is < 1.0)	
The sum of ratios (1-g SAR value) for all simultaneously transmitting Pack Tracker and BLE antennas incorporated in a radio:	(SAR value of Pak Tracker Transmitter/SAR limit) + (SAR value of BLE Transmitter/SAR limit) = (0.023/0.4) + (0.04/0.4) = 0.06+0.1= 0.16 < 1	
RSS-102, Controlled Environment SAR estimation for Pak Tracker transmitters	SAR _{Estimated} =(P _{max} /P _{max,exemption})×0.25 ×SAR _{limit} W/kg (Whole Body 0.4 W/kg) SAR= (1.9mw/7mW)*0.1W/kg=0.03W/kg	
RSS-102, Controlled Environment SAR estimation for BLE transmitters	SAR _{Estimated} =(P _{max} /P _{max,exemption})×0.25 ×SAR _{limit} W/kg (Whole Body 0.4 W/kg) SAR= (3.0mw/7mW)*0.1W/kg=0.04W/kg	
RSS-102 SAR-based ER (above 10 MHz to 6 GHz)	(SAR value of Pak Tracker/SAR limit) + (SAR value of BLE/SAR limit) (0.03/0.4) + (0.04/0.4) = 0.08+0.1= 0.18 < 1	
The SAR Exclusion Threshold Level		
FCC Part 2.1093	19mW<10mm @2.45GHz	
RSS 102, Issue 6	7mW>10mm @2.45GHz	
Note:	The device has two simultaneously transmitting antennas for Pak Tracker and BLE.	