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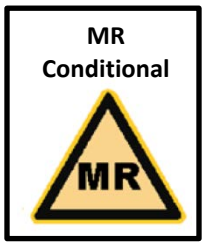
Guidelines for Safest Use of the S14 Earphones

Non-clinical testing has demonstrated that the Sensimetrics S14 earphones are MR Conditional. They can be used safely while scanning under the following conditions:

- Static magnetic field of 1.5 or 3 Tesla
- Normal operating mode (with the exception noted below, in next bullet point)
- Maximum whole body averaged specific absorption rate (SAR) of 0.4W/kg for 10 minutes of scanning



In non-clinical testing, the S14 earphones produced a temperature rise of less than 0.57°C at a maximum whole-body-averaged specific absorption rate (SAR) of 0.4 W/kg, as assessed by calorimetry for 10 minutes of MR scanning in a 3T Siemens Tim Trio (software version VB 15A) MR scanner.

Parameter	Conditions for safest use	Notes
MRI field strength	1.5T and 3T only	Field strengths above 3T use a higher transmit frequency, which may increase the coupling of RF currents on the earphone cables.
RF transmit coil	Body volume transmit coil Head-only volume transmit coil	
RF receive coil	Any receive coil can be used.	
Cable positioning	• Cabling must be routed as close to the center axis of the scanner bore as is possible. • Cables must not be crossed and should be kept at least 10cm apart. • Avoid loops of any kind. • Cables must not be held by the subject. • Under no circumstances should the earphone cable be disconnected from the cable assembly.	Loops in cables can increase RF coupling.
SAR	Sequence power must be restricted to less than 0.4W/kg (20% of the allowed whole body SAR under the IEC's regulations) and 20W time-averaged power.	Lower sequence powers reduce the risk of heating. Therefore it is recommended that sequences should be adapted to use less power if possible. Additionally high and low power sequences can be interleaved, or pauses in scanning can be introduced, to reduce the time-averaged power.
Sequence type	Any sequence with power less than 20W time-averaged power and 0.4W/kg whole-body SAR may be used.	This limit should facilitate standard GE-EPI fMRI scans, localizer, and T_1-weighted structural scans (e.g. MDEFT or MP-RAGE). Spin echo scans are not advised as sequence power is much higher; for these scans the earphones must be removed.

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