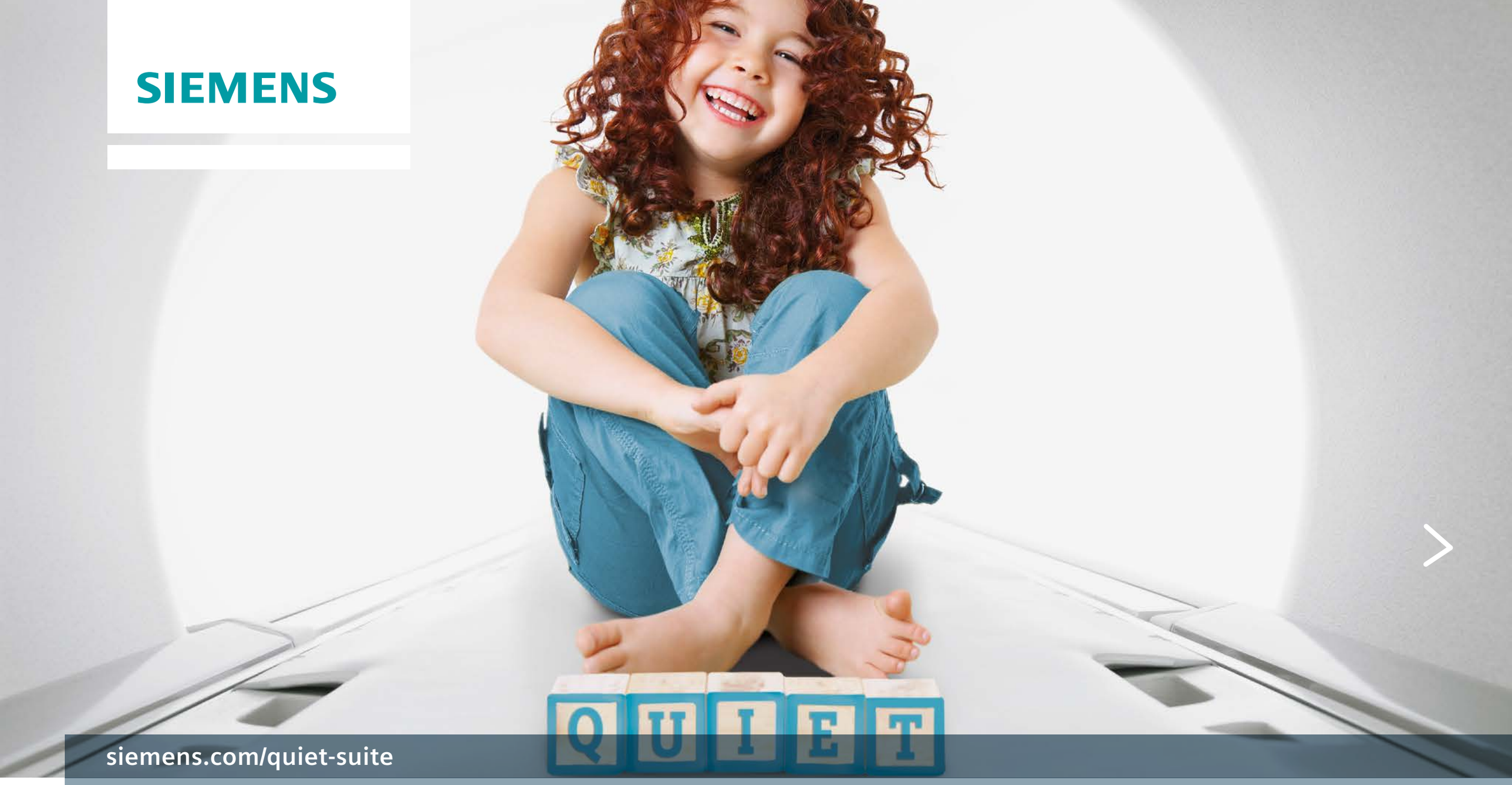
SIEMENS




siemens.com/quiet-suite

# Quiet Suite

## Imaging is to be seen, not heard.

# Imaging

## is to be seen, not heard.

### Complete, quiet exams for neurology and orthopedics

+ Noise reduction right from the start, with the QuietX localizer
+ Complete clinical examinations with QuietX[1] TSE, SE and GRE for T1, T2 and DarkFluid contrasts, QuietX SWI and the inaudible PETRA
+ No need for hardware modifications

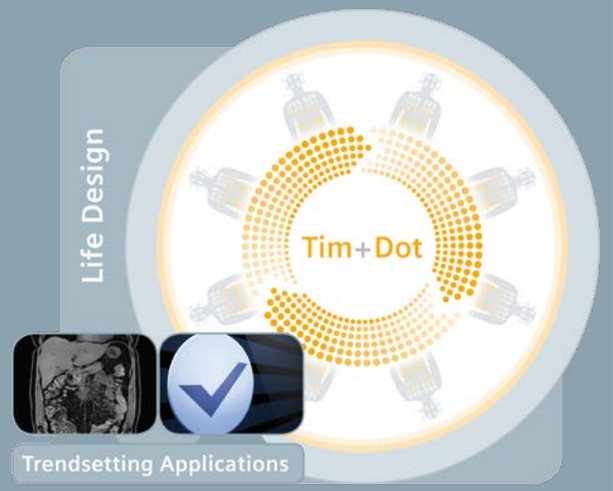
### Up to 97% reduction in sound pressure[2]

+ Reduced need for sedation
+ Easier communication with patients, reducing anxiety and the need for rescans
+ Higher patient comfort and satisfaction

### No compromises in image quality

+ Diagnostic quality of images are maintained
+ Improve clinical care for vulnerable patients

Life Design is the Siemens MRI design philosophy. Since the beginning, the guiding principle in our MRI development has been to design our systems around you and your patients. With Quiet Suite[1], we take noise reduction to a new level. Benefit from up to 97 percent reduction in sound pressure[2] for complete and quiet neurological and orthopedic exams. Quiet Suite includes QuietX sequences and PETRA as well as optimized protocols for neurological and orthopedic exams. With no compromises in image quality and scan time and no need for hardware modifications, your patients can immediately benefit from more comfortable MRI examinations.



dBA 96

64

Press here

# Quiet Suite

## Imaging is to be seen, not heard.

- Complete, quiet exams for neurology and orthopedics
- Up to 97% reduction in sound pressure[2]
- No compromises in image quality

97%

# Address the cause,

## not the effects.

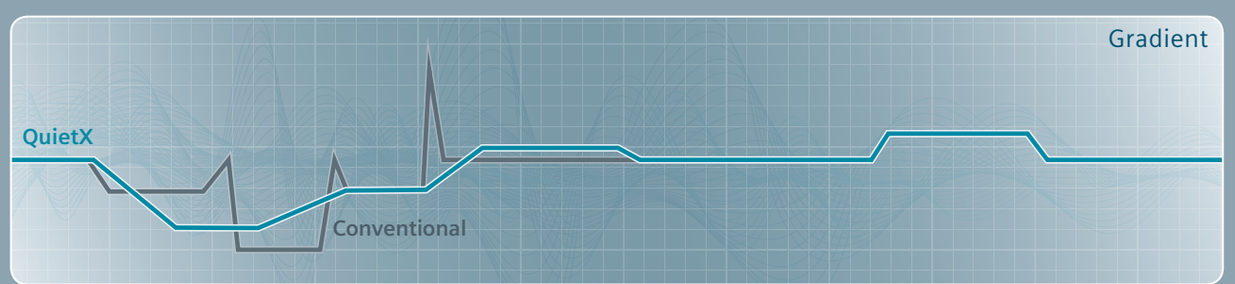
The main source of MRI acoustic noise is the gradient coils. Rapid switching of the gradients generates significant mechanical vibrations, akin to a jackhammer or a loudspeaker at a rock concert.

To effectively reduce noise beyond what can be achieved by conventional methods (gradient insulation, force compensation), the cause of the noise – sharp gradient switching – must be addressed directly. The challenge lies in developing a solution that is effective and intelligent and does not compromise image quality or scan time.

QuietX[1], a unique Siemens innovation, is a smart algorithm for optimizing gradient switching. QuietX works to provide the best possible gradient trajectory through intelligent summation of gradients and reduction of the slew rate, while maintaining timing parameters in the same range. The results include significant reductions in acoustic noise and smoother, more pleasant sounds – with no impact on image quality and scan time.

Conventional MRI examinations are accompanied by sharp gradient switches, producing mechanical vibrations that translate into loud, unpleasant sounds. QuietX overcomes these sound peaks by optimizing and smoothing the gradient trajectory and consequently lowering the noise.

**Schematic illustration: Conventional and QuietX**

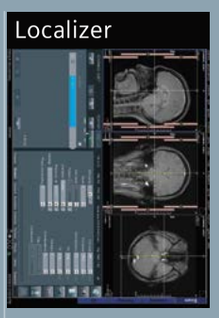


*The realization of quiet MRI is truly exciting. It will improve clinical care for many pediatric, dementia and psychiatric patients, while providing a more comfortable experience for all patients. For the many patients scanned at our hospital, T1-weighted PETRA provided the same diagnostic information as MPRAGE. PETRA even provided diagnostic advantages in some cases; for example, paranasal sinuses could be imaged without susceptibility-related distortion.*[3,4]

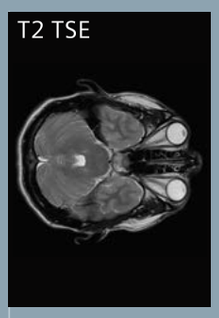
**Dr. Masahiro Ida**,
Tokyo Metropolitan Ebara Hospital,
Tokyo, Japan

# neurological exam

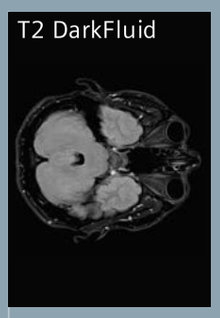
## Conventional



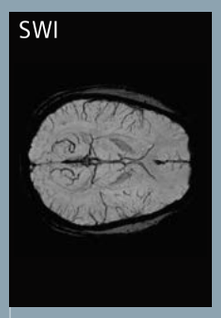

dBA 93
82
↘ reduction 72 %[2]



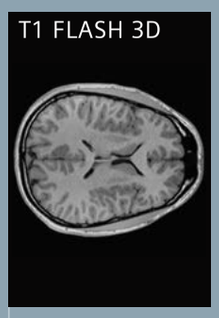

dBA 91
75
↘ reduction 84 %[2]




dBA 83
68
↘ reduction 82 %[2]

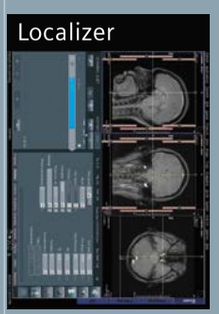



dBA 91
77
↘ reduction 80 %[2]

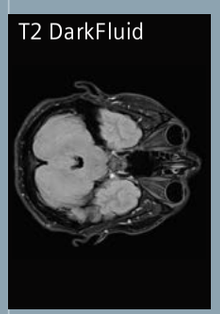


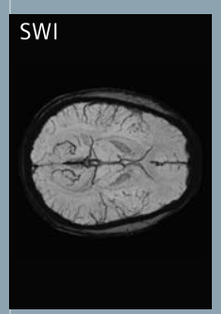

dBA 93
72
↘ reduction 91 %[2]

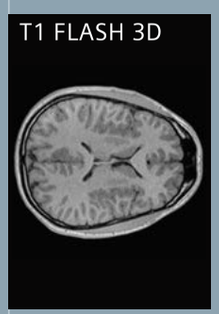
## Quiet Suite[1]







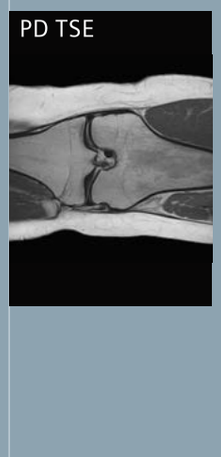



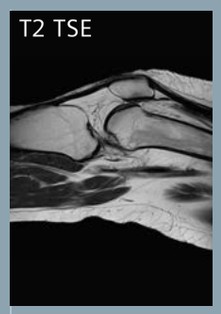



## knee exam


dBA 85 75

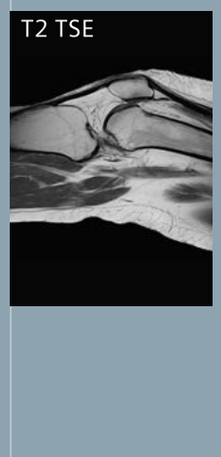
↘ reduction 70 %²

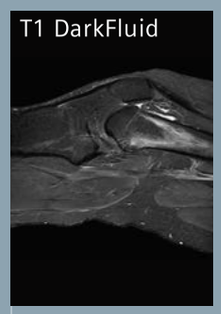



dBA 88 73

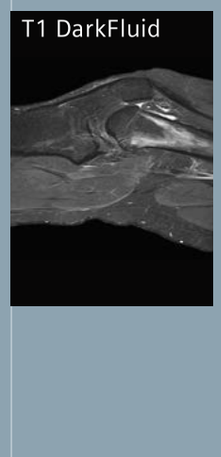
↘ reduction 82 %²



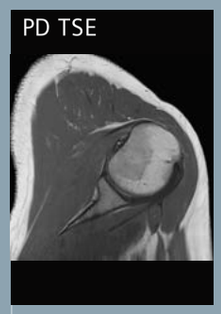




dBA 83 72

↘ reduction 72 %²

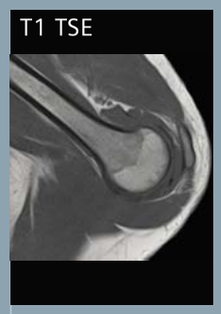



## shoulder exam




dBA 88 74

↘ reduction 80 %²

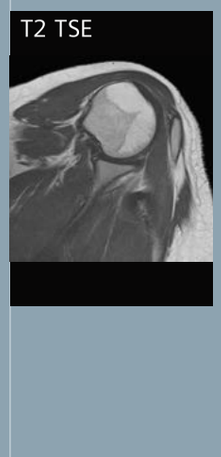

dBA 92 81

↘ reduction 72 %²

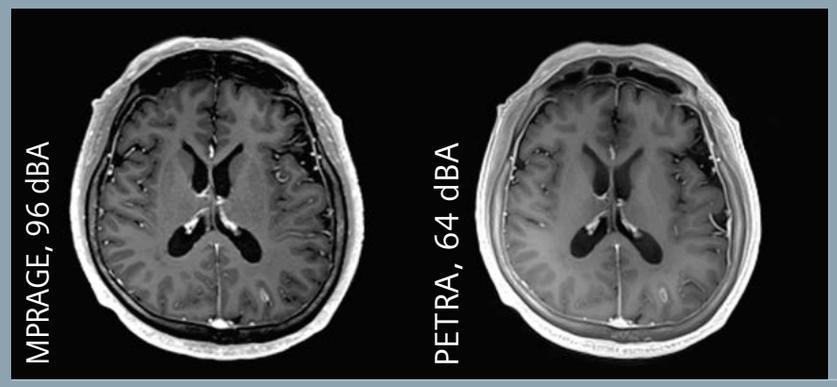


dBA 89 79

↘ reduction 70 %²



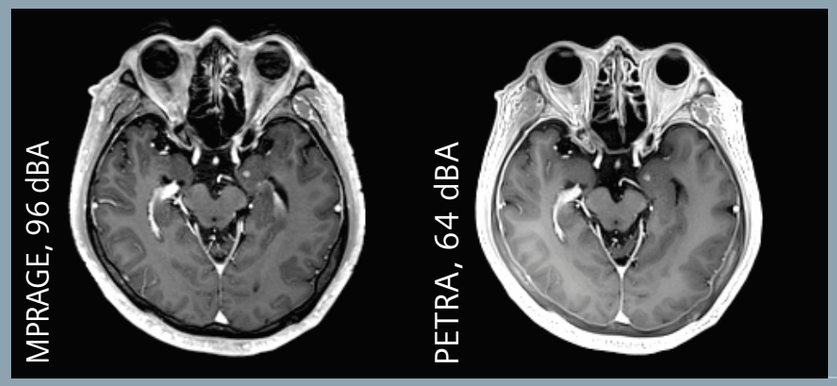

MAGNETOM Aera. Background noise: 55 dBA.



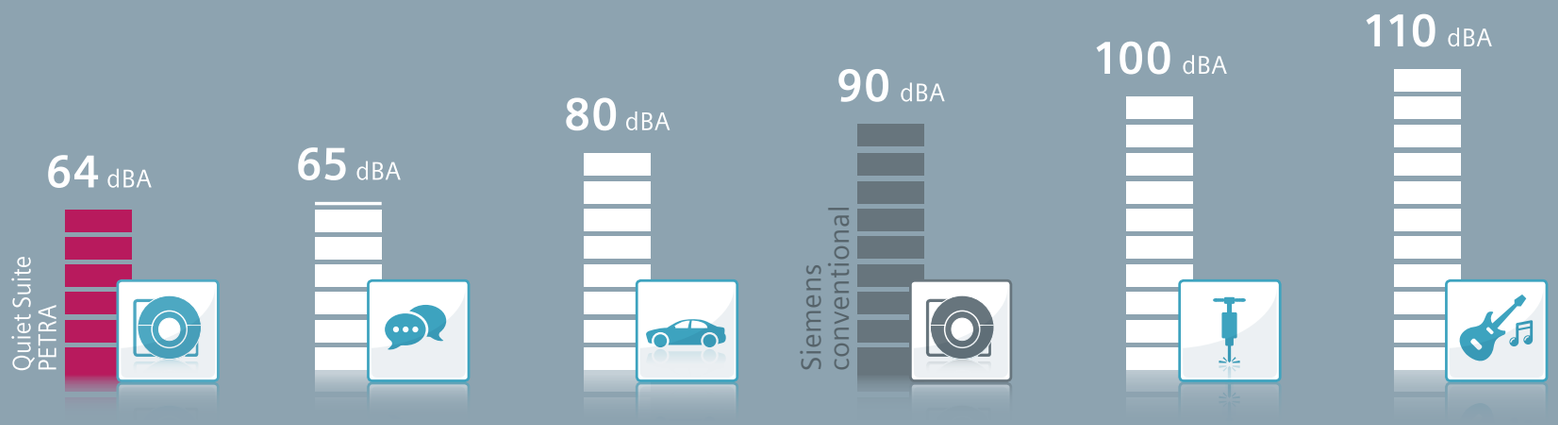

# Inaudible imaging with PETRA

Quiet Suite includes PETRA[1], a sequence for 3D T1 imaging. With standard receive coils, PETRA can barely be heard over ambient background noise.

With a Tx/Rx coil, PETRA is inaudible.




Tokyo Metropolitan Ebara Hospital, Tokyo, Japan

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[2] Data on file. Results may vary.
[3] The statements by Siemens' customers described herein are based on results that were achieved in the customer's unique setting. Because there is no "typical" hospital and many variables exist (such as hospital size, case mix, level of IT adoption) there can be no guarantee that other customers will achieve the same results.
[4] MR scanning has not been established as safe for imaging fetuses and infants under two years of age. The responsible physician has to decide about the benefit of the MRI examination in comparison to other imaging procedures.

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