

APPLICATION

Advanced intelligent Clear-IQ Engine (AiCE) is an optional software available with the MR system. AiCE intelligently removes noise from images which results in high SNR and leads to enhanced anatomical and spatial resolution. Achieve sharp, clear and distinct images utilizing the power of Deep Learning, allowing you to see through the noise.

APPLICABLE SYSTEM

This option is applicable to the following system.

System	Software version
Vantage Galan 3T	V7.0 or later
Vantage Orian	V7.0 or later
Vantage Fortian	V8.0 or later

* Advanced Image Reconstruction Unit is required for this application.

- Vantage Galan 3T MZDL-010B/S3
- Vantage Orian MZDL-010B/S1 or MZDL-011B/S1
- Vantage Fortian MZDL-011B/S1

COMPOSITION

Software (License) 1 set

This package does not include an operation manual.

Refer to the operation manual supplied with the MRI system.

PERFORMANCE SPECIFICATIONS

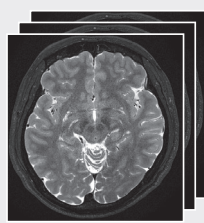
The specifications when this option is used are described below. Installation of this system does not result in any changes in the basic specifications of the MRI system. (For the specifications of the MRI system, refer to the Product Data for the MRI system.)

Algorithm

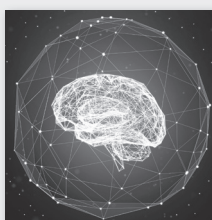
This option is a noise reduction algorithm that improves image quality and reduces thermal noise by employing Deep Convolutional Neural Network (DCNN). This option is designed to remove Gaussian distributed noise in MR images for reducing contributions of thermal noise. In order to train a DCNN that can learn a model that represents thermal noise, the training datasets are created by adding Gaussian noise of different amplitudes to high-SNR images acquired with large number of averages.

Training Phase

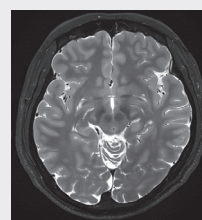
Using high SNR images, Advanced intelligent Clear-IQ Engine (AiCE) learns to differentiate between signal and noise in low SNR images.



Low SNR



Deep Learning

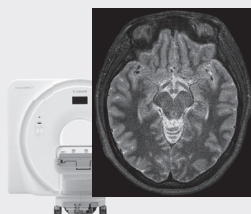


High SNR

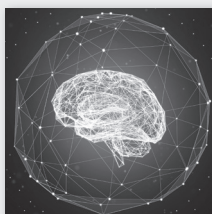
Operational Phase

Using the intelligence from the Training Phase, AiCE removes noise from images which results in high SNR.

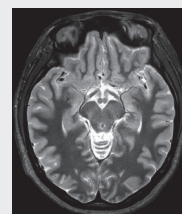
Advanced intelligent Clear-IQ Engine (AiCE)



Data Acquisition



Deep Convolutional Neural Network



High SNR

Applicable Scan Parameters

This processing can be used for all pulse sequences except 2D Fast Spine Echo with JET technique, MP2RAGE, UTE, mUTE*, mUTE 4D-MRA, Quick Star, Phase Shift Angiograph, 2D-FE-EPI and Spectroscopy.

* minimized acoustic noise utilizing UTE

INSTALLATION CONDITIONS

The power and environmental conditions are the same as for the MRI system.

APPLICABLE STANDARDS

This application complies with the same standards as the MRI System.

MASS

Unit	Mass (kg)
Advanced intelligent Clear-IQ Engine	Approx. 0.5

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