Canon

MSSW-MRSS2

Single Voxel MRS Application

APPLICATION

The Single Voxel MRS Application is an optional application for Canon Medical Systems magnetic resonance imaging (MRI) systems.

This application provides new functions for proton spectroscopy analysis in order to expand the function of mNeuro Package.

Proton spectroscopy provides spectral and metabolic information for enhanced diagnostic confidence in neuro, prostate, and breast examinations and is fully integrated in the imaging routine.

APPLICABLE COMBINATIONS

This application is applicable to the following systems and second consoles.

System	Software version
Vantage Galan 3T	V4.0 or later
Vantage Titan 3T	V1.35 or later
Vantage Orian	V4.5 or later
Vantage Fortian	V8.0 or later
Vantage Titan	V1.37 or later
Vantage Elan	V3.0 or later
EXCELART Vantage Atlas	V1.36

Second Console (Option)
MKDN-011A/S1
MKDN-012A/S1
MKDN-013A/S1, S2
MKDN-013B/S1, S2
MKDN-014A/S2

To use the Single Voxel MRS Application, equipment of HIGH-ORDER SHIM KIT is recommended.

The optional mNeuro Package must be installed in the MRI system.

For Second Console, this option provides MRS analysis function both for single voxel and multi voxel.

COMPOSITION

• Software (License)...1 set

This application does not include an operation manual. Refer to the operation manual supplied with the MRI system.

PERFORMANCE SPECIFICATIONS

Single Voxel MRS

Single Voxel MRS Application provides functions for single voxel MR spectroscopy. Data acquisition, processing and display are available on the operator console. The Volume of Interest (VOI) can be set up on the locator MR images of arbitrary orientations. It is possible to compare two sets of data simultaneously on the console.

- Field strength: 1.5 T or 3 T
- Target nucleus: ^{1}H (Proton)
- Target anatomy: Head
                                     Prostate and Breast (V3.5 or later)
- Data acquisition: Single voxel
  – Pulse sequence: Spin Echo, Stimulated Echo
  – Repetition time (TR):

	Software version	TR [ms]
1.5T	until V2.10	1,500 to 30,000
	V2.20 to V3.1	821 to 20,000
	V3.6 or later	526 to 20,000
3T	until V2.10	1,500 to 30,000
	V2.21 to V2.5	426 to 20,000
	V3.5 or later	280 to 20,000

  – Echo time (TE)
   · Spin Echo:

	Software version	TE [ms]
1.5T 3T	until V2.10	25, 136, 272
	V2.20 or later	25, 32 to 288

   · Stimulated Echo:

	Software version	TE [ms]
1.5T	until V2.10	10, 20
	V2.20 or later	10 to 40
3T	until V2.10	10
	V2.20 or later	10 to 40

– Voxel orientation: Orthogonal, oblique
– Voxel size

	Software version	Min. Voxel size [mm]
1.5T	until V2.10	10 × 10 × 10
3T	V2.20 or later	5 × 5 × 5

– Number of
  Acquisitions (NAQ):   Max. 2048, variable
• Voxel localization: Setting ROI on the arbitrary MR
                          image

• Prescan
  – Automatic: Transmitter gain control
                         Local shimming
                         Center frequency
                         Water suppression (flip angle opti-
                         mization)
                         Receiver gain
  – Manual: Manual shimming (V3.5 or later)
• Data processing
  – Receiver gain correction: Auto
  – Baseline correction: Auto
                               (Elimination of residual water)
  – DC offset correction: Auto
  – Filtering: Auto (Exponential, Gaussian,
                               Lorentzian-to-Gaussian and
                               Convolution Difference filters)
  – Fourier transformation: Auto
  – Phase correction: 0 or first order (automatic or manual)
  – Curve fitting: Auto
  – Statistical processing: Measurements of peak, area, and
                               area ratio to arbitrary metabolite of
                               interest
  – Scaling: Y-axis (signal intensity),
                               X-axis (frequency)

The following processings are also possible with user
interface.
  – Baseline correction: Polynomial fitting

• Display
  – Post-processed spectrum
  – Peak information
  – ROI for reference: ROI display on the locator image
  – Comparing two data simultaneously
• Data management (archive)
  – Hard disk
  – External DVD
• Print to film
  – MR images
  – Spectroscopy data

INSTALLATION CONDITIONS

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

COMPLIANCE WITH STANDARDS

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

MASS

Unit	Mass (kg)
Single Voxel MRS Application	Approx. 0.5

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