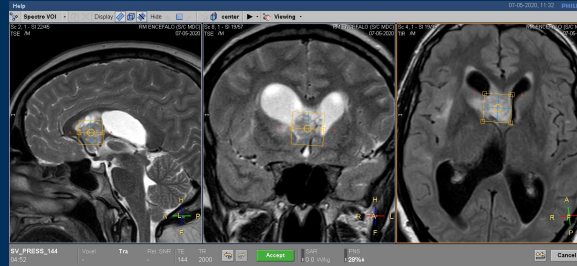


Tutorial



Gemelli



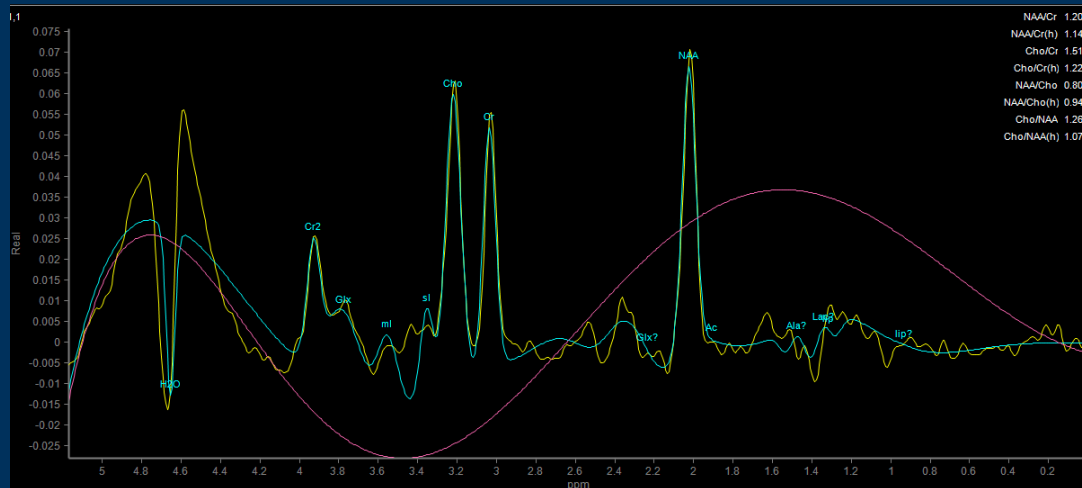
Formazione
per l'eccellenza

set. '26



Fondazione Policlinico Universitario Agostino Gemelli IRCCS
Università Cattolica del Sacro Cuore





Gemelli

SPETTROSCOPIA SINGLE VOXEL



Formazione
per l'eccellenza

set. '26

Fondazione Policlinico Universitario Agostino Gemelli IRCCS
Università Cattolica del Sacro Cuore



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🖥️ ^{set. '26} <https://www.variodyne.it>



Fondazione Policlinico Universitario Agostino Gemelli IRCCS
Università Cattolica del Sacro Cuore





Ver 1.1

Apparecchiatura utilizzata



MR Systems Ingenia

Ingenia 12.3 (2025-11-06)

RM Ingenia 1.5T

PHILIPS

Healthcare



PHILIPS

dStream



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Unknown Anatomy

Anatomy is not yet defined for this series.

Please specify the anatomy for this study.

Brain

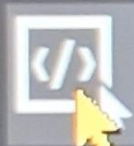
OK

Spettroscopia SV



/view **SpectroView** Print

Current Script: BasicProc_sv



Select Script

Scan Nr. 3, 2 Slice 04/50
T1TFE /M
TE 3.5ms - TR 7.6ms

Please Select a Script

Name	Description	Nucleus	Anatomy	Field	TE
BasicProc_sv	Basic Processing (1H SV)	1H	Brain	1.0T, 1.5T, 3.0T, 7.0T	short
LongTeBrain_sv	Long-TE Brain (1H SV)	1H	Brain	1.0T, 1.5T, 3.0T, 7.0T	long
SPETTRO	Based on Basic Processing (1...	1H	Brain	1.5T	long

Filter:

- ☒ Nucleus
- ☒ Anatomy
- ☒ Field
- ☒ TE

Script Parameters

Name: SPETTRO

Description: Based on Basic Processing (1H SV)

Anatomy: Brain

Nucleus: 1H

Echo Time: ☐ Short ☐ Long

Supported Field Strengths: ☐ 1.0T ☒ 1.5T ☐ 3.0T ☐ 7.0T

Processing Step: Dual Volume Decode

☒ Dual Volume Decode

☒ Residual Water Subtraction

☐ Time Domain Signal Shifting

☒ Apodization Filtering

☒ Zero-Fill and FT

☐ Spectrum Phase Adjustment

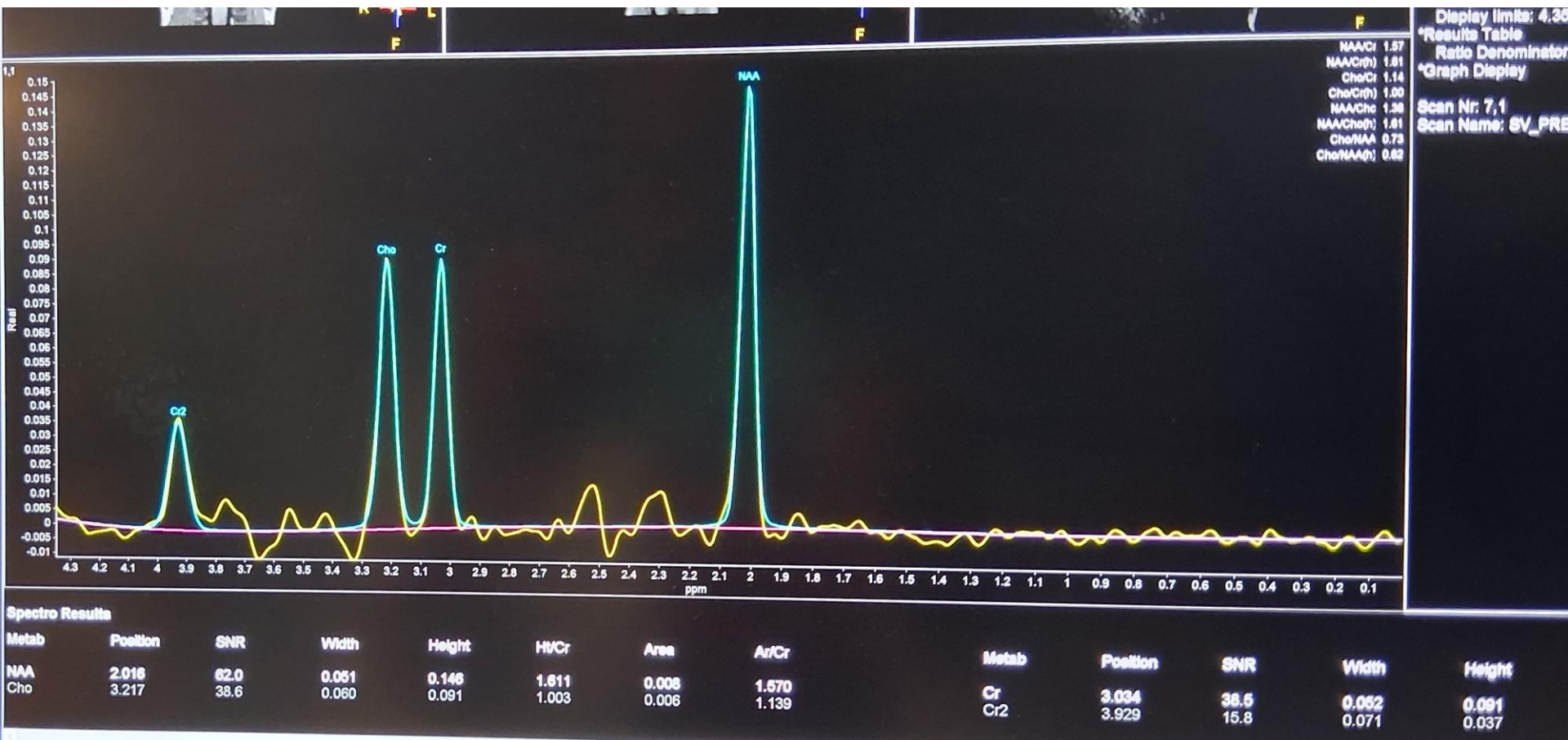
☐ Shift Peak Frequency

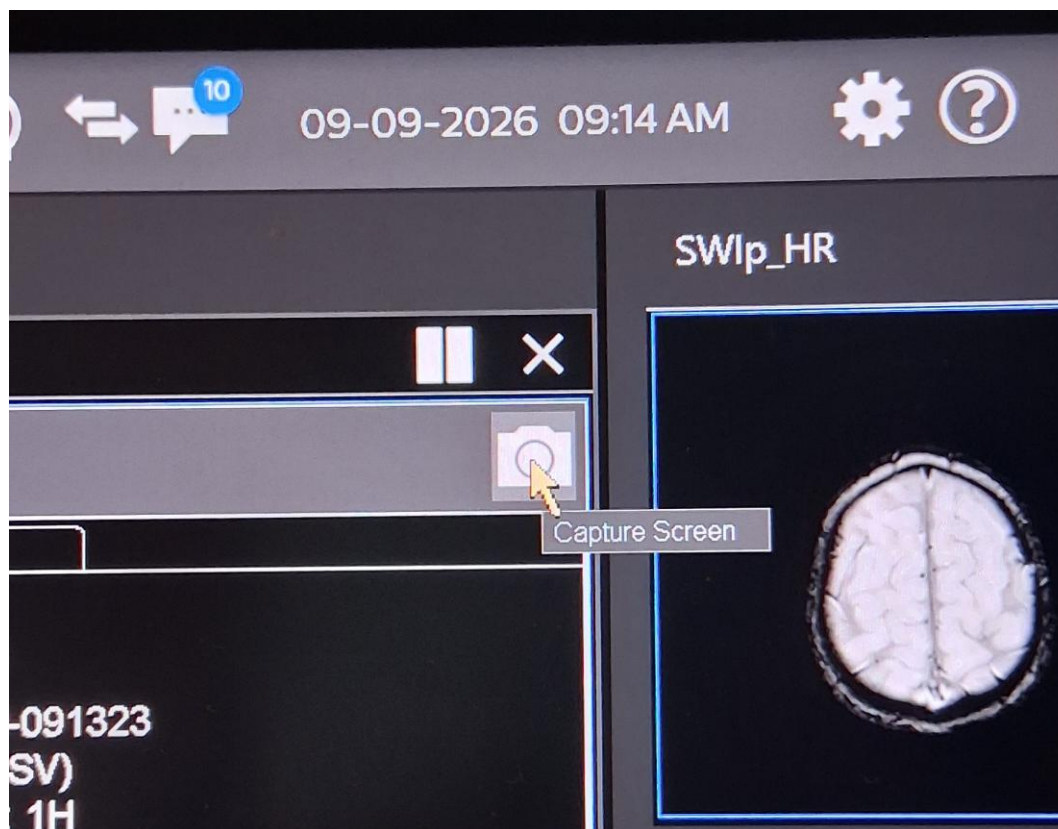
☒ Graph Display

There are no parameters for this processing step.

Cancel OK Run

Spettroscopia SV





Apparecchiatura utilizzata

MR Systems Ingenia

Ingenia 5.8 (2022-03-16)



www.philips.com/ifu



RM Ingenia 1.5T

PHILIPS

Healthcare



PHILIPS

dStream

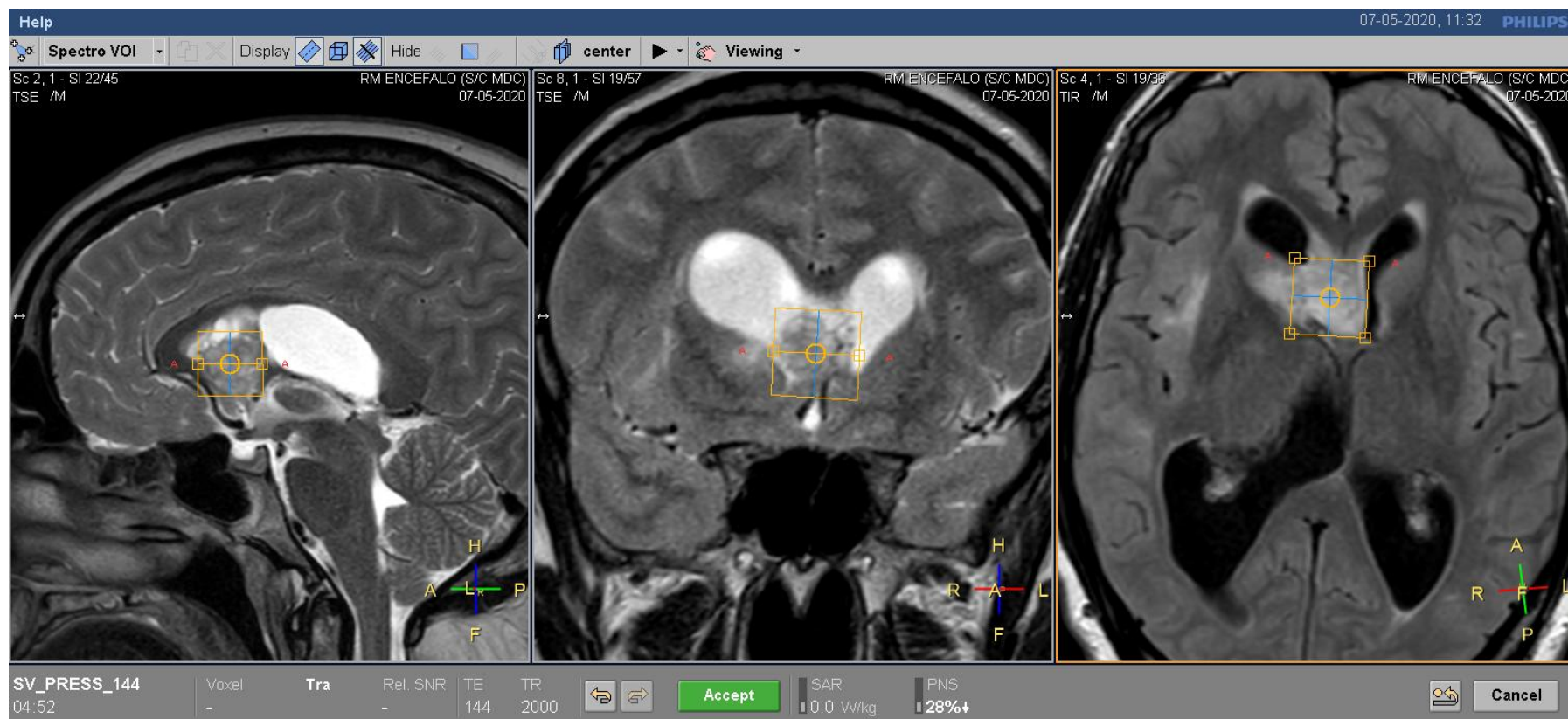


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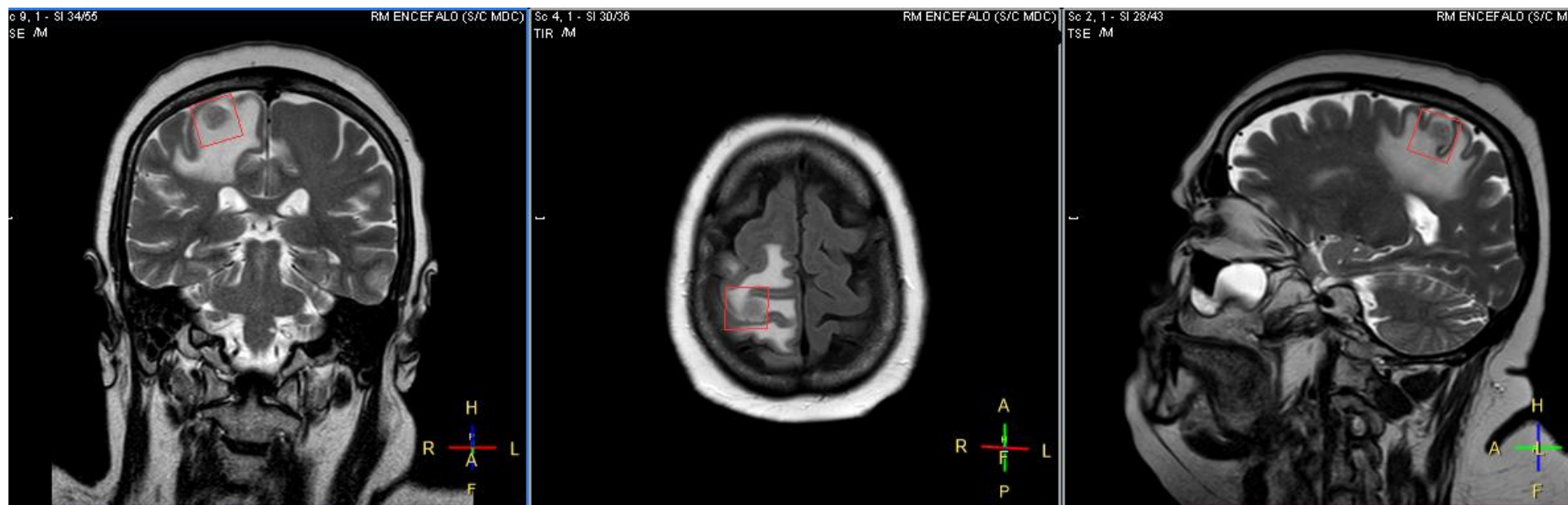
14



Esempio d'impostazione di spettroscopia «Single Voxel»

Ricostruzione spettroscopia SV

Esempio d'impostazione della sequenza Spettroscopia «Single Voxel»



Spettroscopia SV

SV_PRESS_144	Voxel	Tra	Rel. SNR	TE	TR			Accept
04:52	-	-	-	144	2000			
Initial	Geometry	Contrast	Motion	Dyn/Ang	Postproc	Offc/Ang	Coils	Conflicts
TE	user defined		Total scan duration		04:52.0			
(ms)	144		Act. TR/TE (ms)		2000 / 144			
TR	user defined		Min. TR/TE (ms)		1437 / 46			
(ms)	2000		Spectral resolution (Hz/p...)		0.98			
NSA	128		Readout duration (ms)		1024			
Preparation phases	auto		Head SAR		< 5 %			
			Whole body SAR / level		0.0 W/kg / normal			
			SED		0.0 kJ/kg			
			Max B1+rms		1.10 uT			
			PNS / level		28 % / normal			
			dB/dt		14.3 T/s			
			Sound Pressure Level (dB)		-11.9			

Esempio di parametri - spettroscopia «Single Voxel»

Spettroscopia SV

SV_PRESS_144		Voxel	Tra	
04:52		-		
Initial	Geometry	Contrast	Motion	Dyn/Ang
VOI orientation		transverse		
VOI size AP (mm)		20		
RL (mm)		20		
FH (mm)		20		
Samples		1024		
Spectral BW (Hz)		1000		
Chem. shift Dir AP		A		
Chem. shift Dir LR		L		
Chem. shift Dir FH		F		
REST slabs		0		

Il Voxel può essere sicuramente ridotto, in caso di necessità, a $15*15*15$

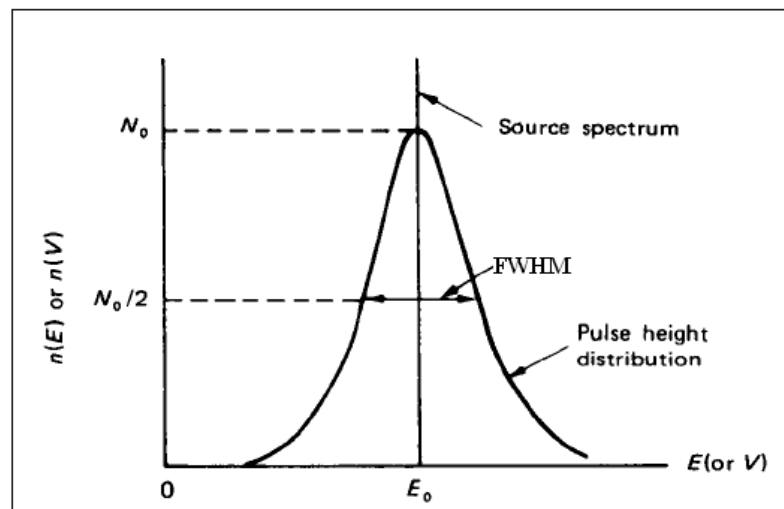
Sulla parte inferiore del monitor è possibile seguire i vari passaggi di preparazione all'esecuzione vera e propria della sequenza...

16:02 Optimal water suppression final value: 342.8 (deg)
16:01 Performing automatic water suppression optimization...
16:01 FWHM of peak 5.9 Hz
16:00 Iterative shimming on VOI procedure finished
15:59 Performing iterative shimming...

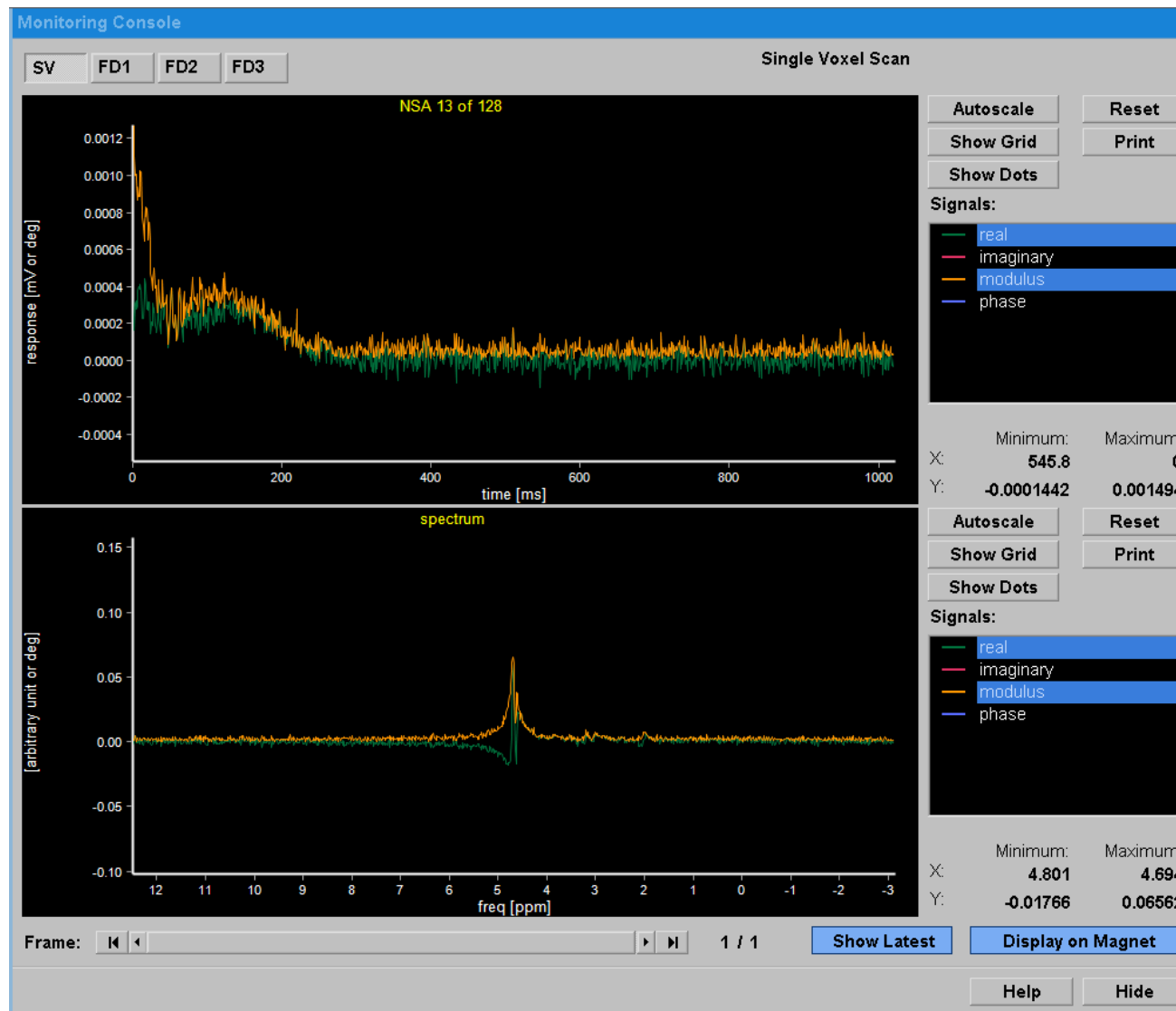
Spettroscopia SV

Importante controllare la qualità dello shimming (FWHM del segnale dell'acqua nel range 13-20 Hz)

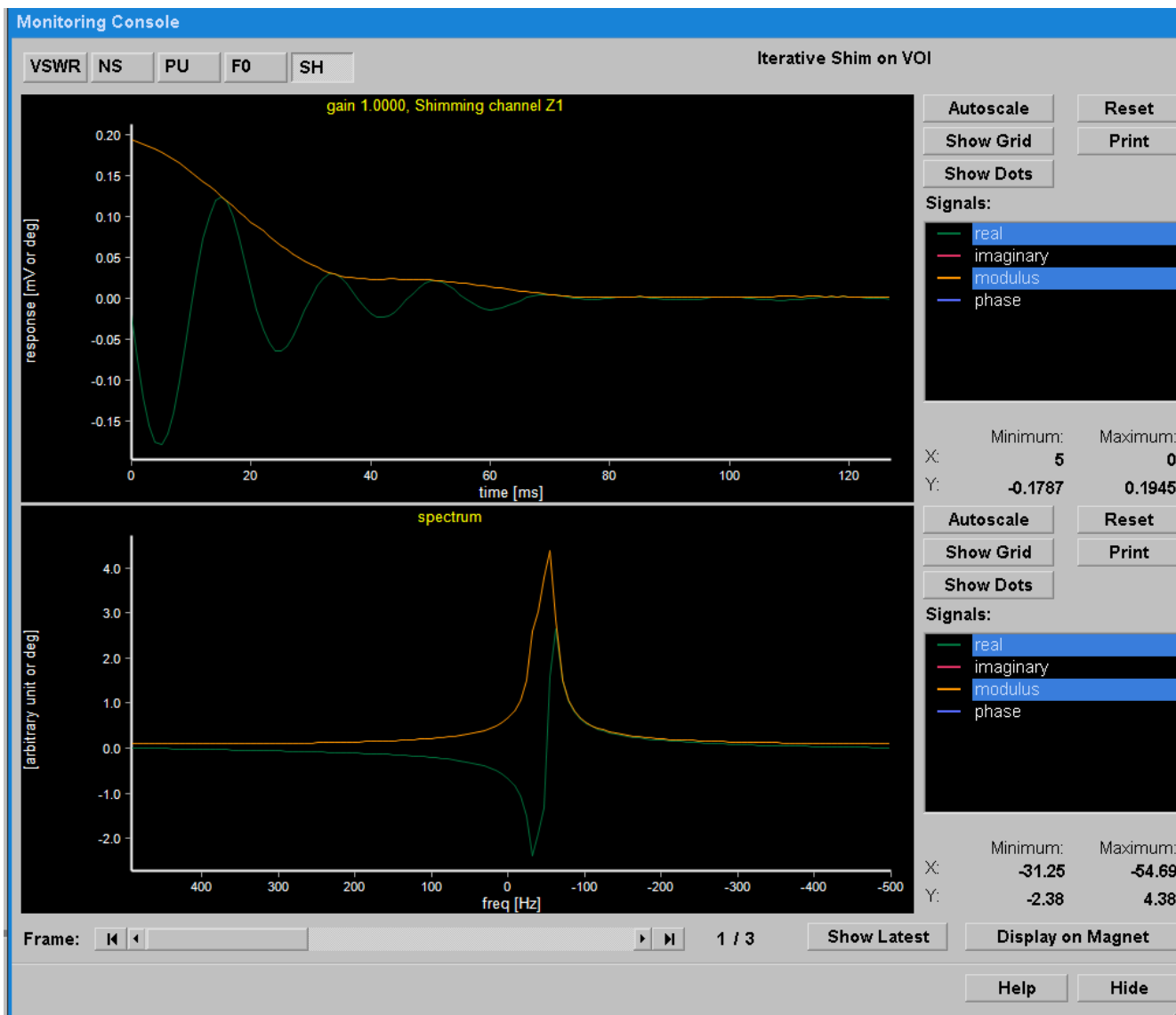
```
16:02 Optimal water suppression final value: 342.8 (deg)
16:01 Performing automatic water suppression optimization...
16:01 FWHM of peak 5.9 Hz
16:00 Iterative shimming on VOI procedure finished
15:59 Performing iterative shimming...
```



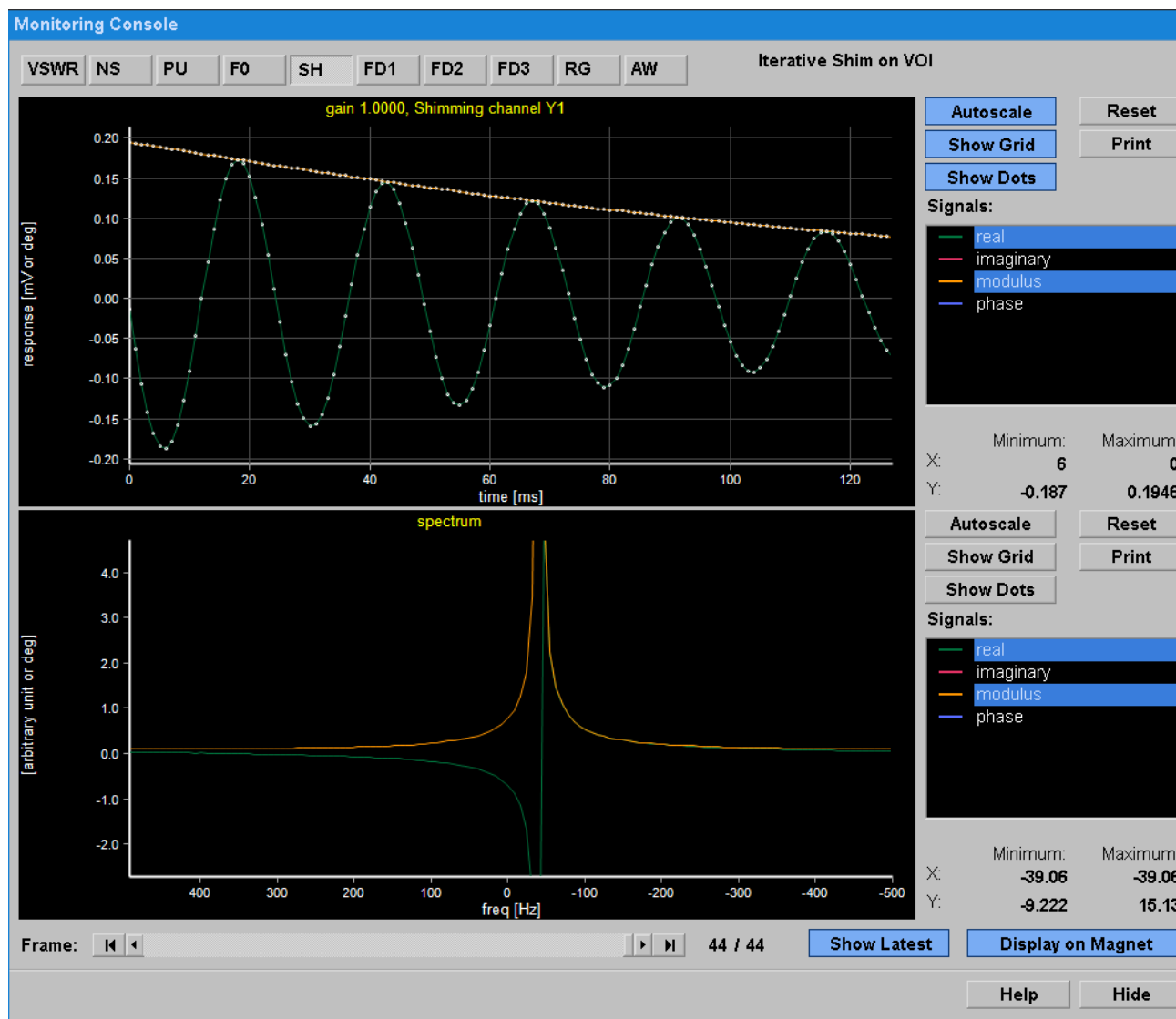
La larghezza intera a metà altezza (FWHM full width at half maximum) è la larghezza spettrale a metà ampiezza del segnale. È uno degli indici di shimming, poiché se lo shimming fosse scarso, i picchi sarebbero ampi e quindi FWHM sarebbe più grande. La FWHM desiderabile per i dispositivi MRS a 1,5 e 3 T è rispettivamente inferiore a 15 e 30 Hz



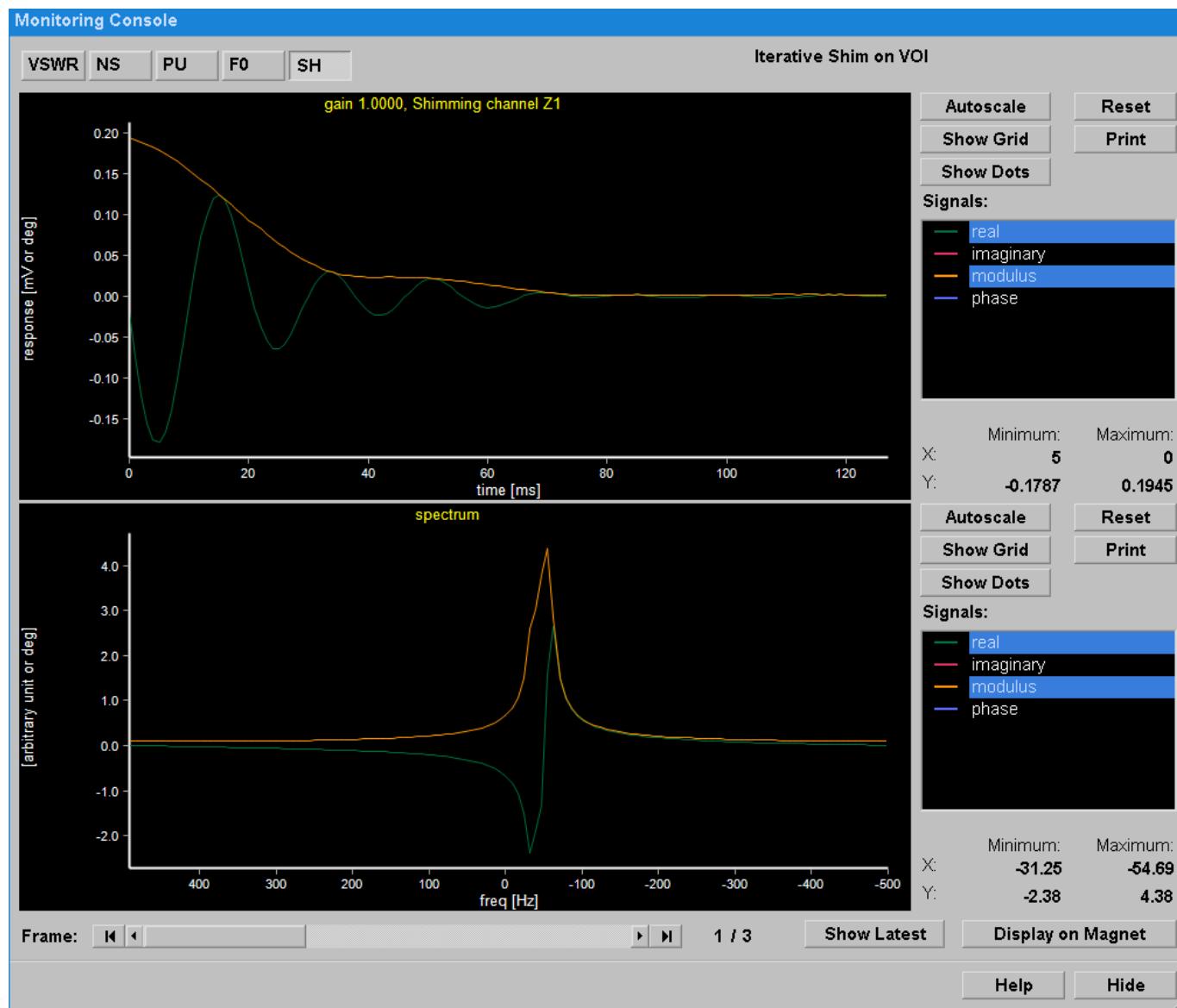
Spettroscopia SV

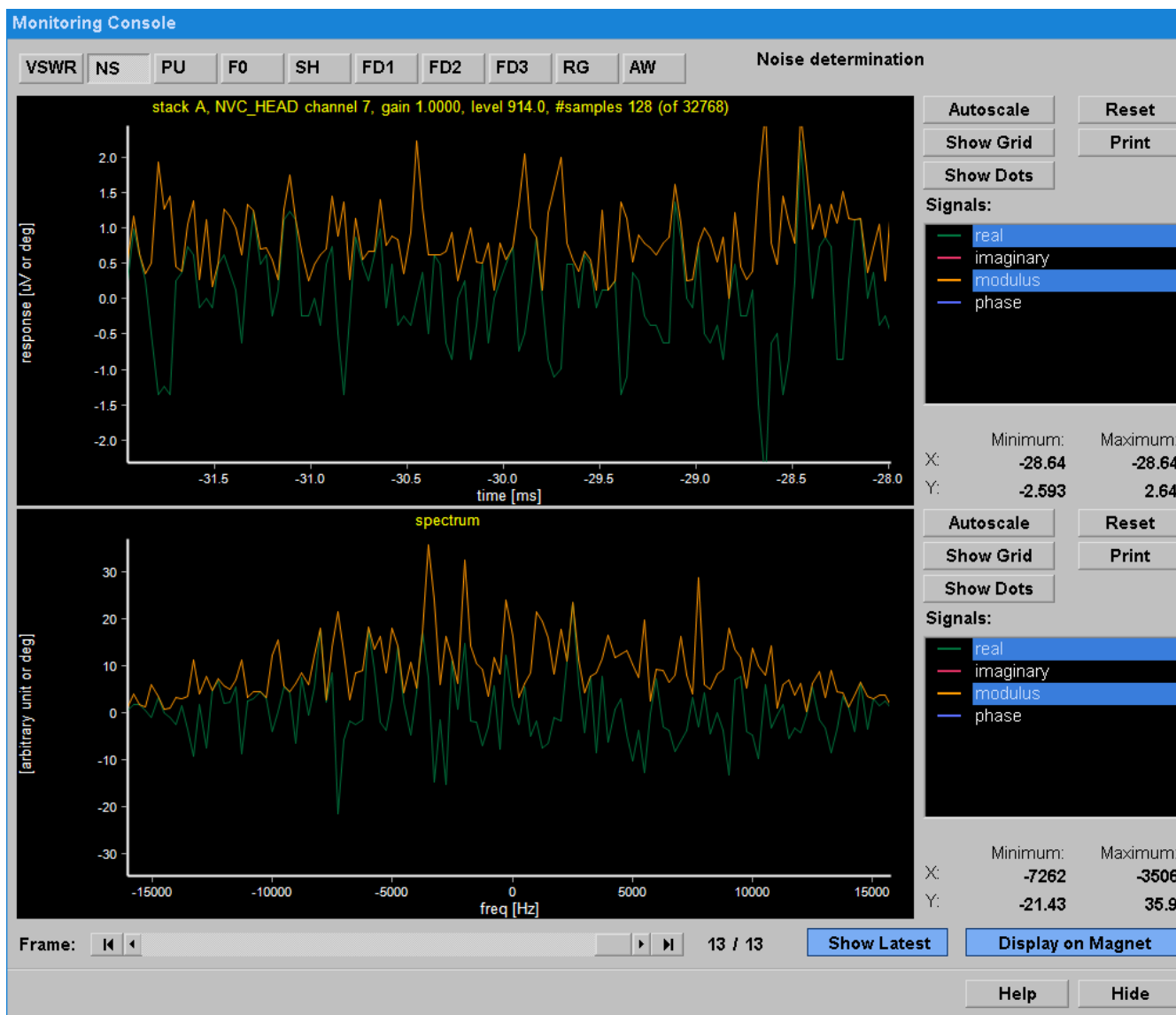


Spettroscopia SV

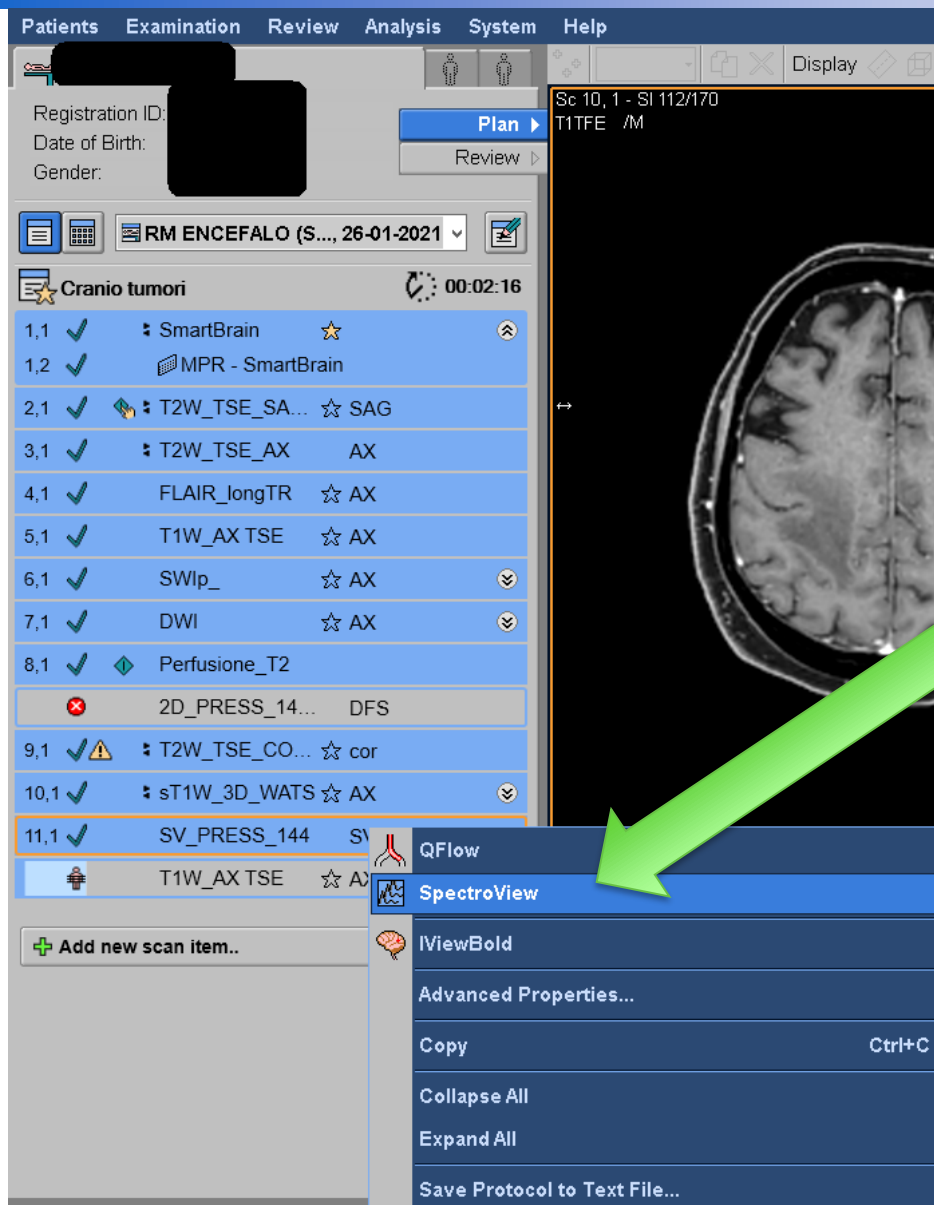


Spettroscopia SV





Ricostruzione spettroscopia SV



Selezionare la sequenza
SV_PRESS_144 e fare clic con
il tasto dx.
Selezionare «**SpectroView**»



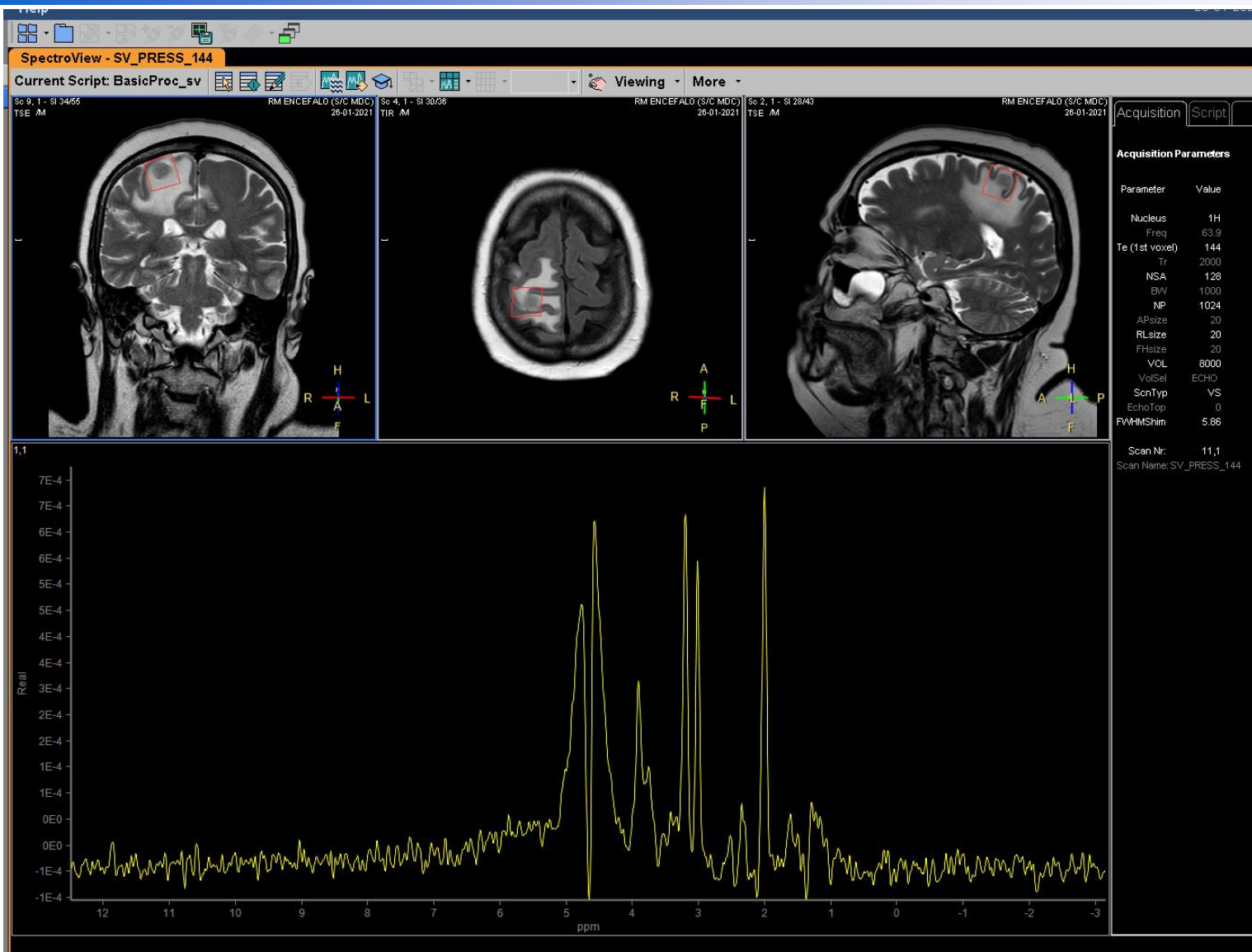
Ricostruzione spettroscopia SV

The screenshot shows the Philips SpectroView software interface. On the left, there is a list of MRI sequences under the heading 'Cranio tumori'. The sequence 'SV_PRESS_144' is highlighted. On the right, a dialog box titled 'Unknown Anatomy' is displayed. The dialog box contains the text 'Anatomy is not yet defined for this series.' and 'Please specify the anatomy for this study.' Below this text is a dropdown menu with 'Brain' selected. At the bottom of the dialog box, the 'OK' button is highlighted with a red circle, and a green arrow points to it from below.



Apparirà questa schermata...
fare clic su OK

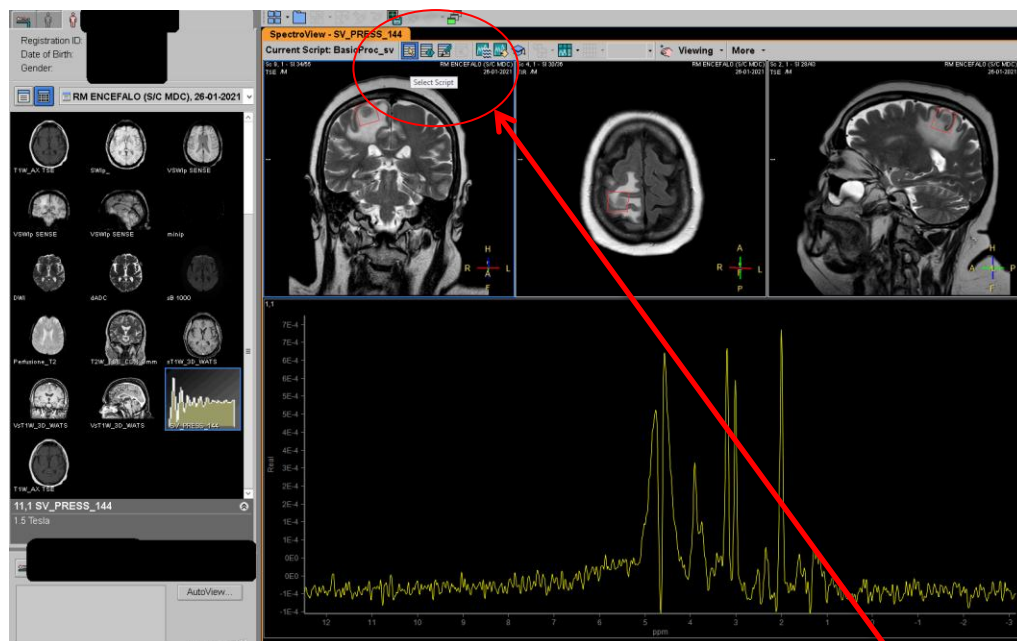
Ricostruzione spettroscopia SV



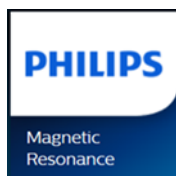
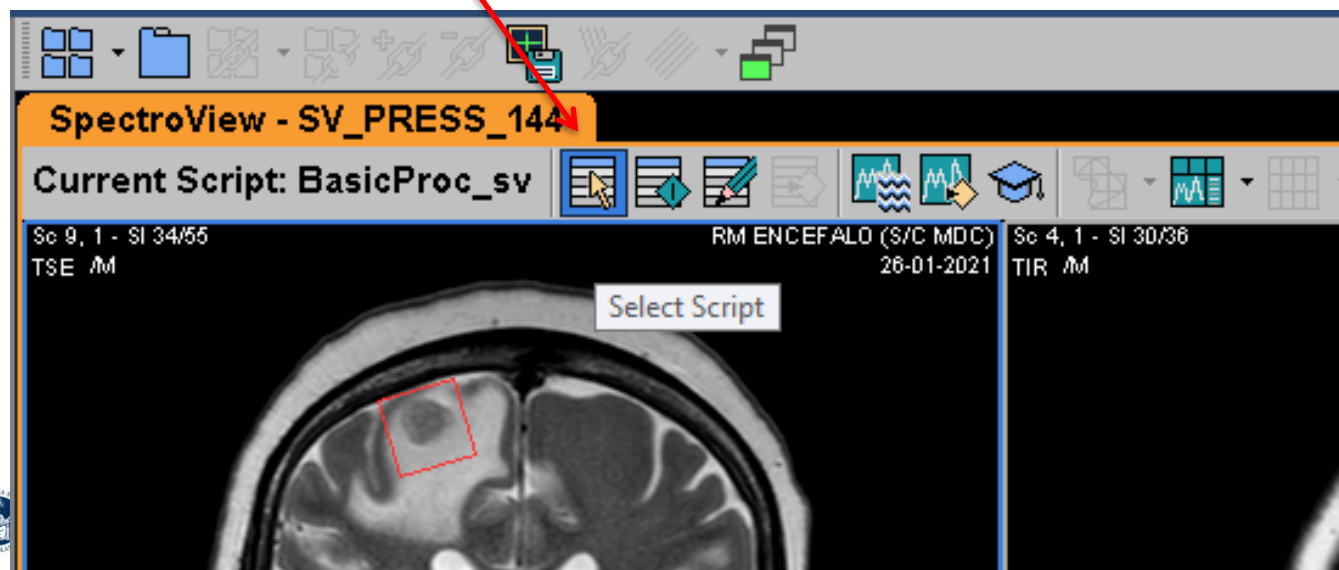
Apparirà
questo...



Ricostruzione spettroscopia SV



Selezionare
«Select Script»

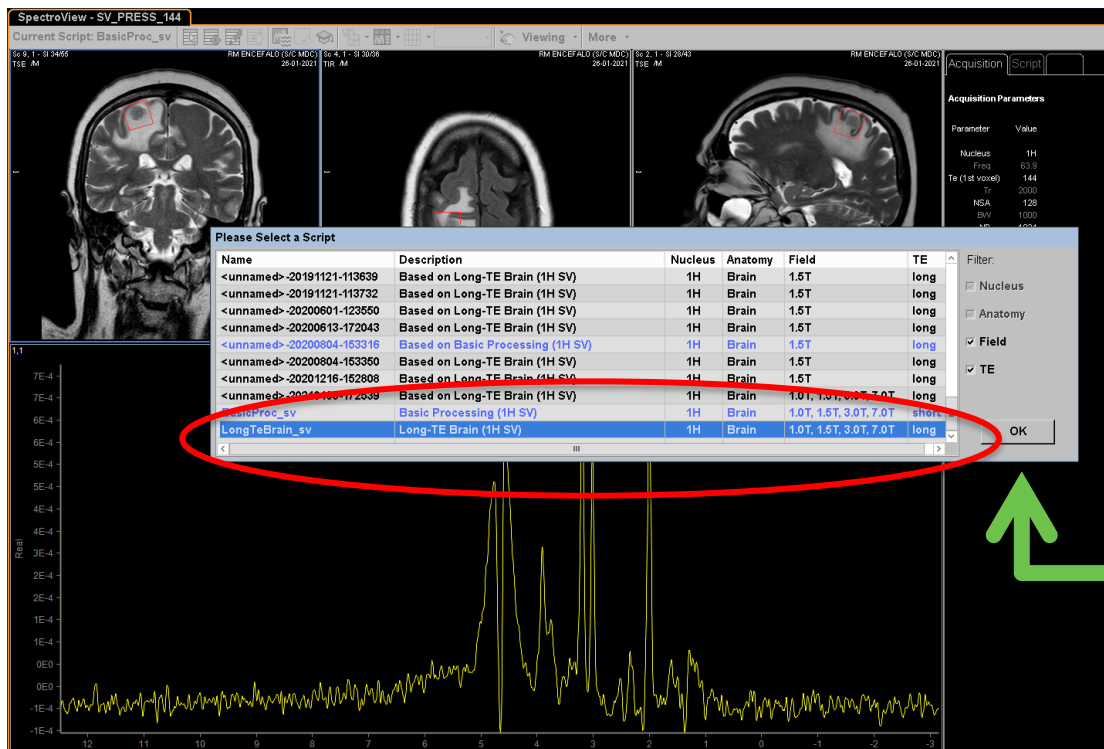


Ricostruzione spettroscopia SV



Selezionare: «**Long-TE Brain (1H SV)**» come indicato nella figura...

E fare clic su **OK**



LongTeBrain_sv	Long-TE Brain (1H SV)	1H	Brain	1.0T, 1.5T, 3.0T, 7.0T	long
----------------	-----------------------	----	-------	------------------------	------

Ricostruzione spettroscopia SV



Help

SpectroView - SV_PRESS_144

Current Script: LongTeBrain_sv

Script Parameters

Name: <unnamed> -20210126-170148

Description: Based on Long-TE Brain (1H SV)

Anatomy: Brain

Nucleus: 1H

Echo Time: ☐ Short ☒ Long

Processing Step: Initial Baseline Subtraction

Supported Field Strengths: ☐ 1.0T ☒ 1.5T ☐ 3.0T ☐ 7.0T

☐ Dual Volume Decode

☐ Spectrum Phase Adjustment

☒ Initial Baseline Subtraction

☐ Shift Peak Frequency

☒ Select Peaks

☒ Peak Fitting

☒ Results Table

☒ Graph Display

Baseline Terms: 7

Run OK Cancel

Apparirà la
seguente
schermata ...



Controllare che sia
selezionato 1.5T e
siano selezionati (in
blu) i metaboliti di
interesse

Fare quindi clic su
«**RUN**»

SpectroView - SV_PRESS_144

Current Script: LongTeBrain_sv

Script Parameters

Name: <unnamed>-20210126-170148

Description: Based on Long-TE Brain (1H SV)

Anatomy: Brain

Nucleus: 1H

Supported Field Strengths: 1.0T ☒ 1.5T 3.0T 7.0T

Echo Time: ☐ Short ☒ Long

Processing Step: Select Peaks

☐ Dual Volume Decode

☐ Spectrum Phase Adjustment

☒ Initial Baseline Subtraction

☐ Shift Peak Frequency

☒ Select Peaks

☒ Peak Fitting

☒ Results Table

☒ Graph Display

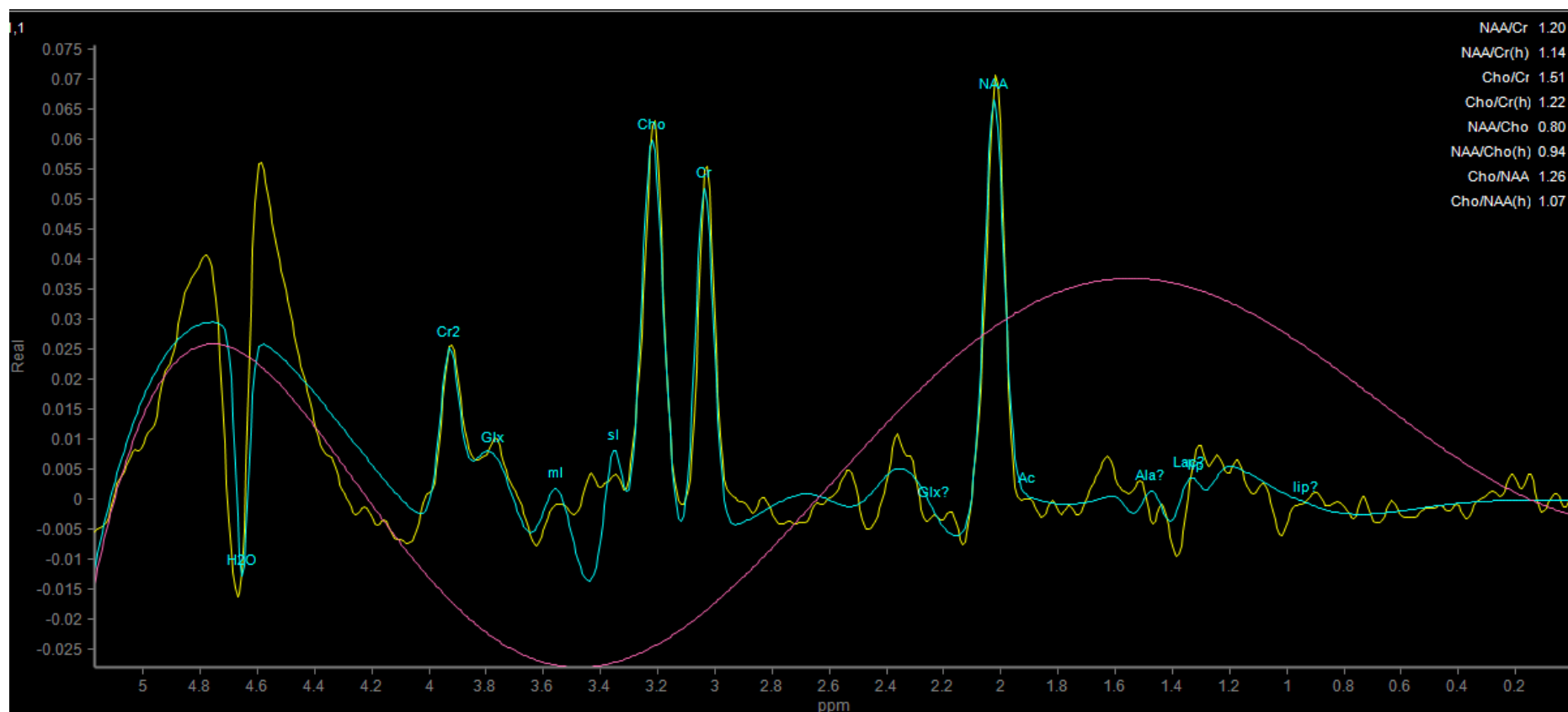
All None

Ac
Ala
Cho
Cr
Cr2
Glx
H2O
Lac
lip
ml
NAA
sl

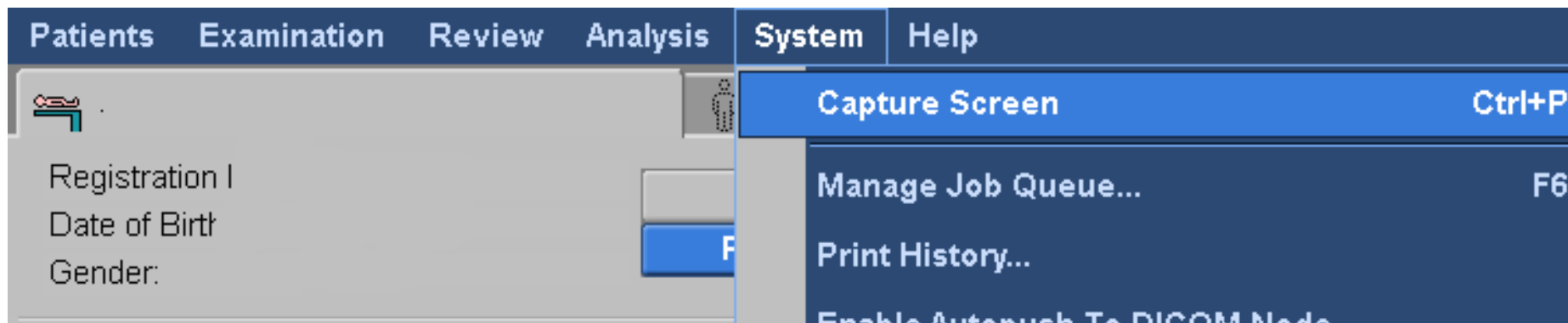
Run OK Cancel

Ricostruzione spettroscopia SV

Ecco il risultato finale!



Ricostruzione spettroscopia SV



L'ultimo passaggio è salvare il risultato ...

Fare «**Capture Screen**» e ricordarsi di inviare in archivio l'immagine salvata ...

