CIVA ET Training

CIVA 2015 Training – ET

INNOBIZ 벤처기업 R&D서비스기업
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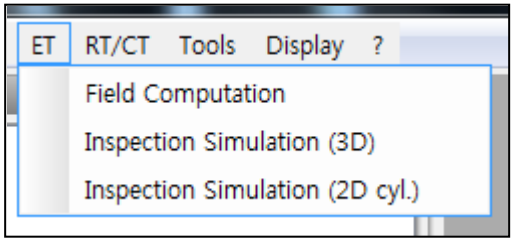
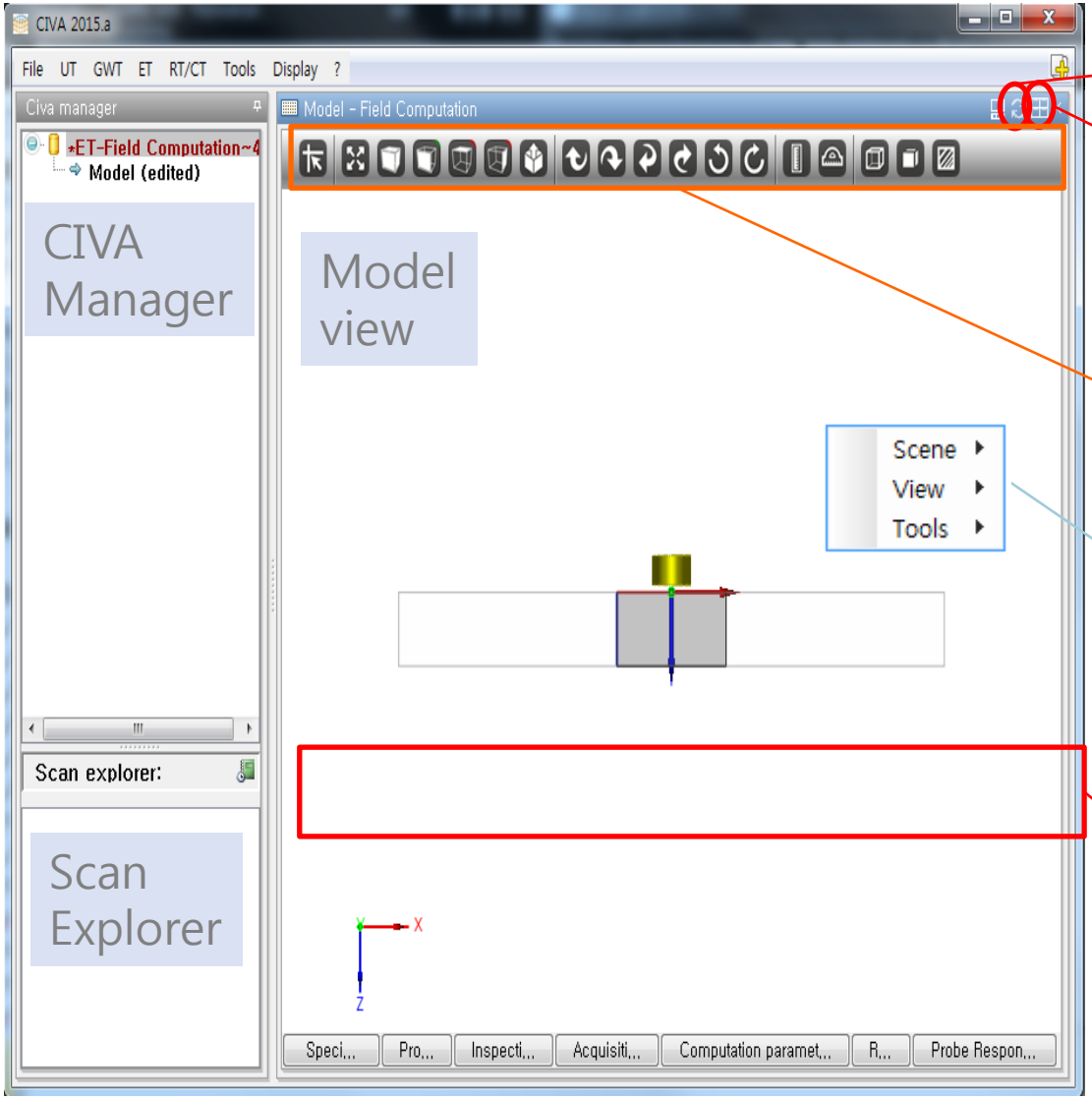
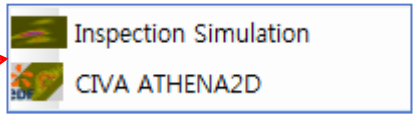
❖ET – main menu

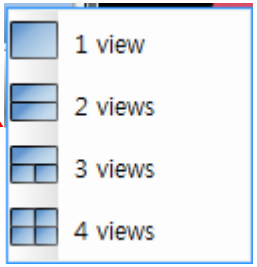
- Field Computation : 탐침으로 부터 생성되는 자계 값 계산
- Inspection Simulation(3D) : 3차원 형상의 결함으로 부터의 탐상 계산
- Inspection Simulation(2D cyl.) : 축대칭 형상에서의 결함의 ET 계산



❖MENU 및 화면 안내





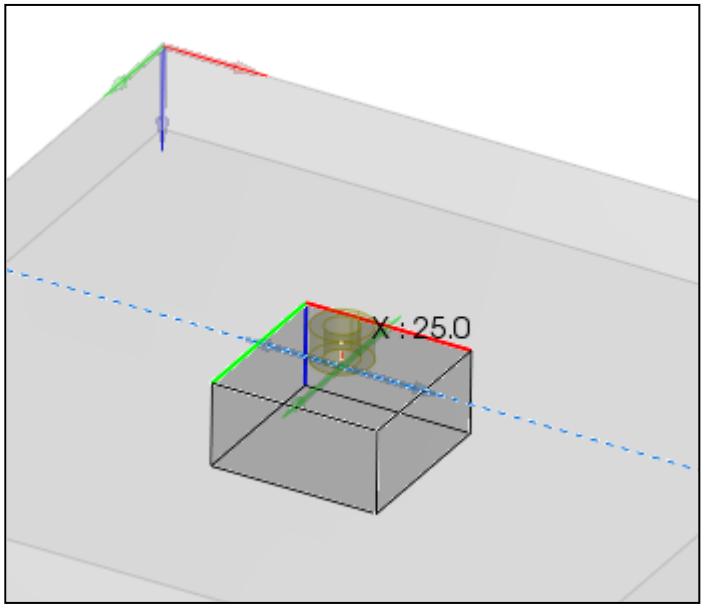


화면 정열, 회전 및 치수 측정

화면 우클릭시 팝업 메뉴
-거리 계산
-화면 이동 및 정열
등

작업 메뉴

❖마우스 이용 방법



-화면에서의 마우스는

1. 좌 클릭 : 화면 이동
2. 우 클릭 : 화면 확대(아래), 축소(위)
3. 휠 버튼 클릭 : 회전

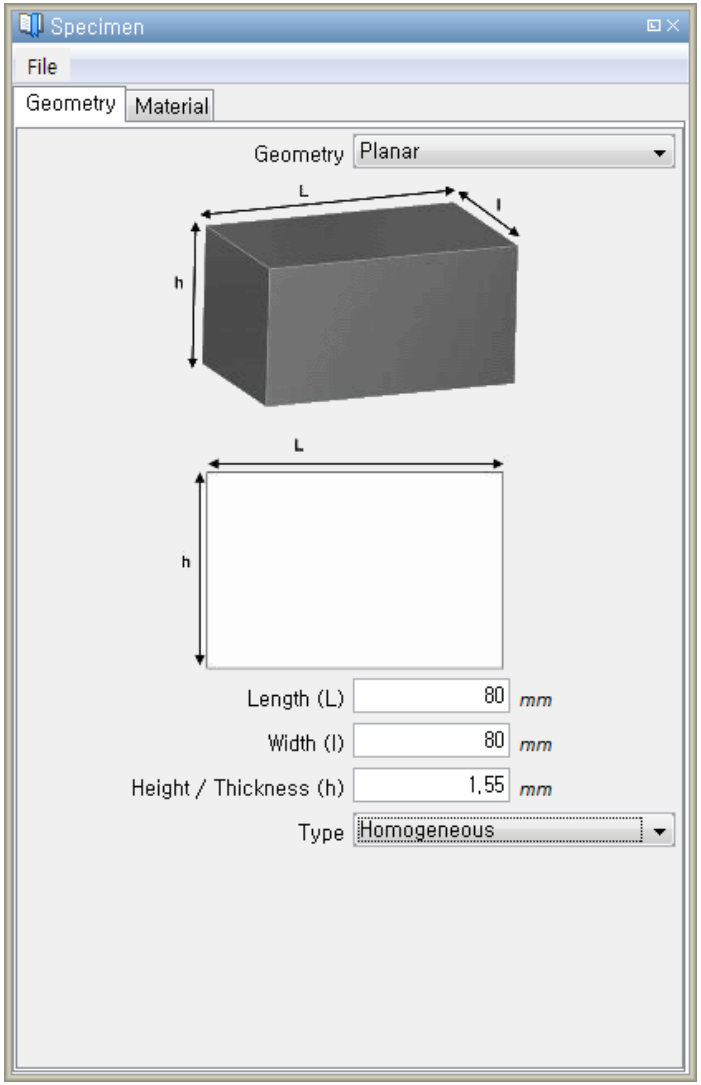
-Probe 및 Specimen 선택

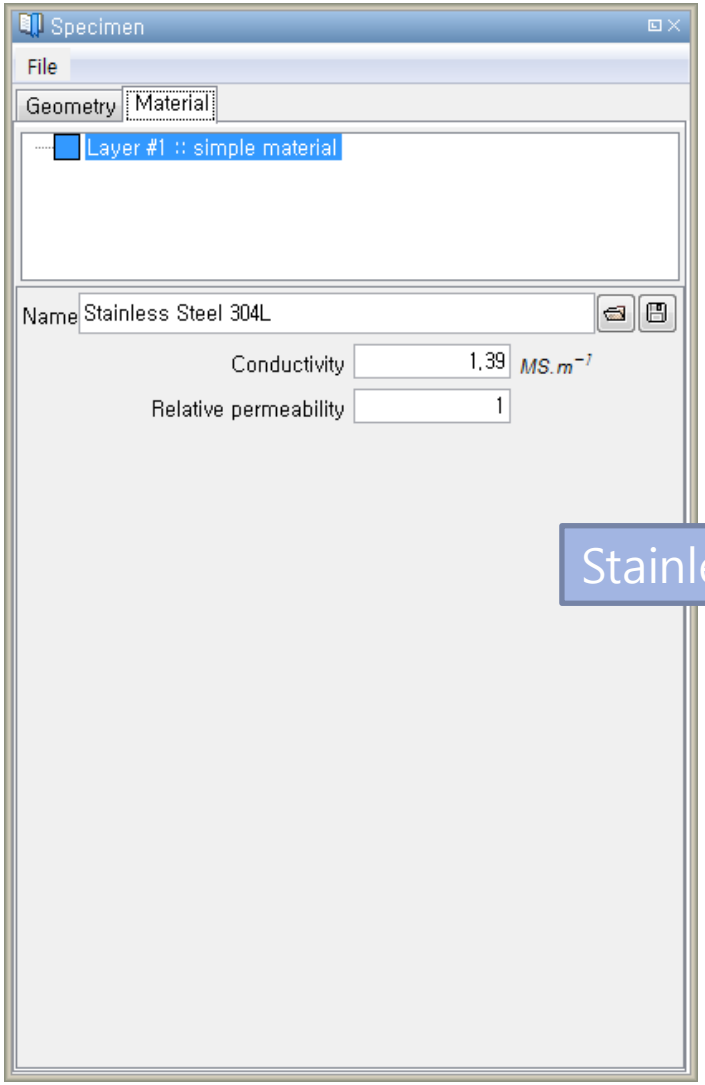
Probe 및 Specimen을 마우스 좌버튼 더블 클릭시 활성화 되며 동시에 x,y,z 축의 화살표가 생성이 됩니다.

생성된 화살표를 이용하여 각 축을 따라 이동 시킬 수 있습니다.

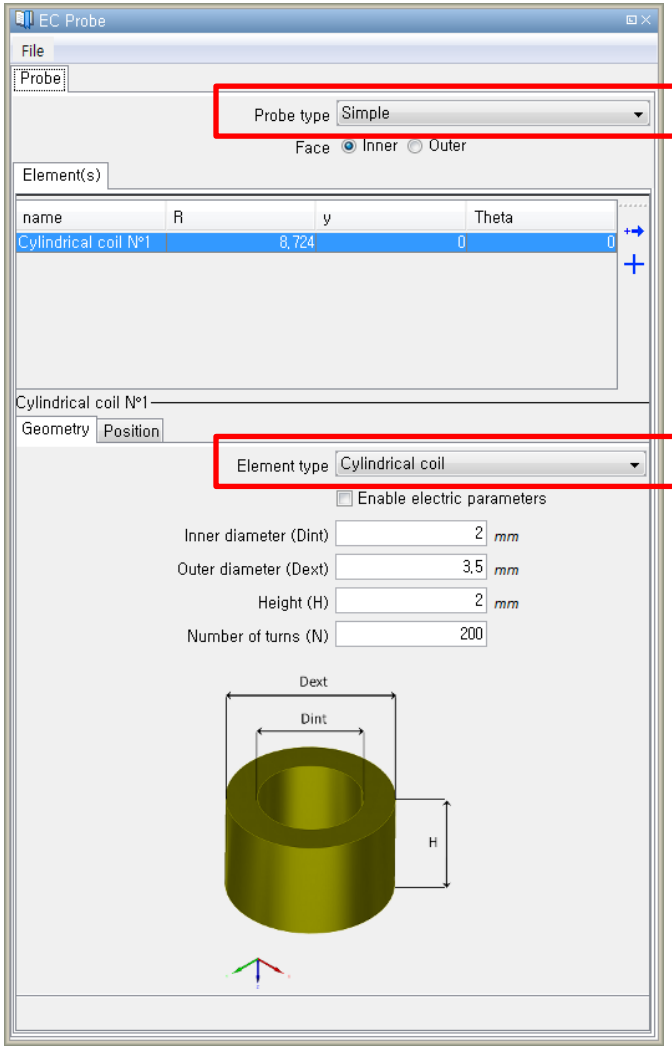
이러한 방법으로 화면에 표현되는 형태의 위치를 변경할 수 있습니다.

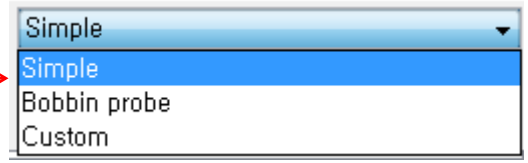
❖Specimen 설정

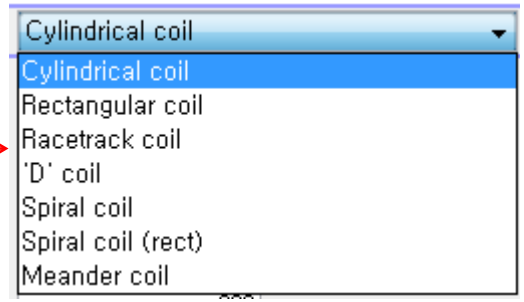




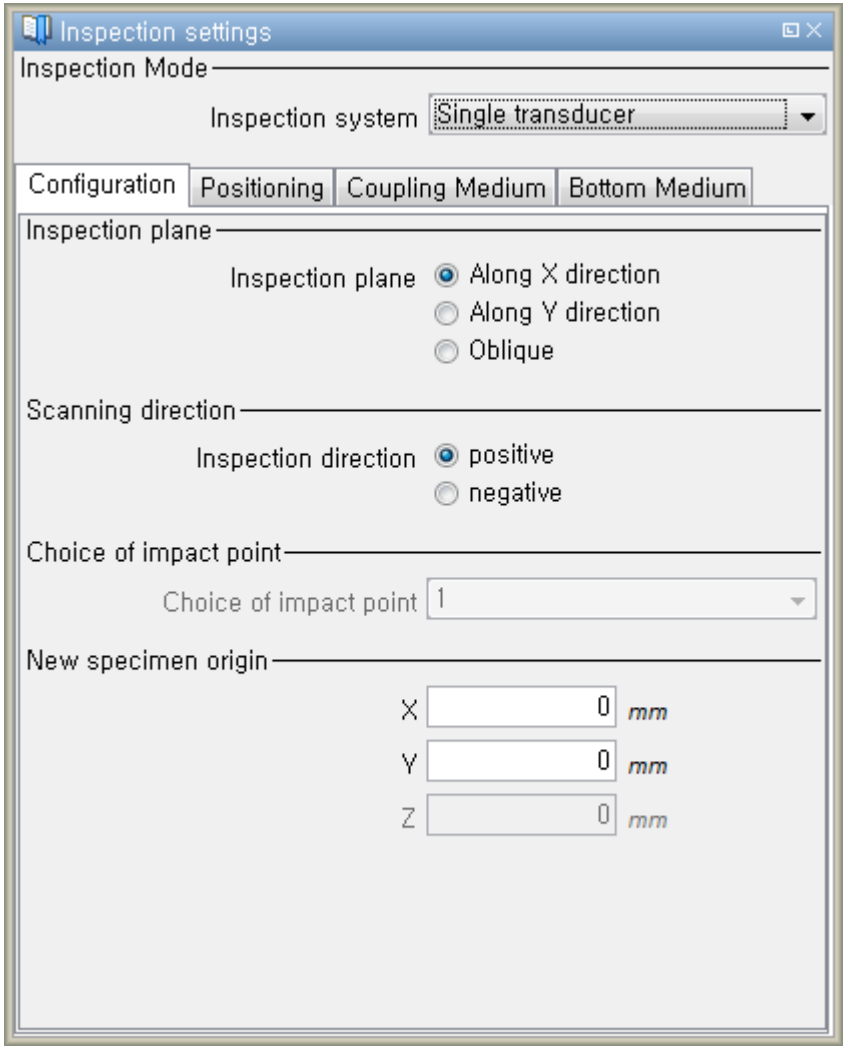
Stainless Steel 304L 이용

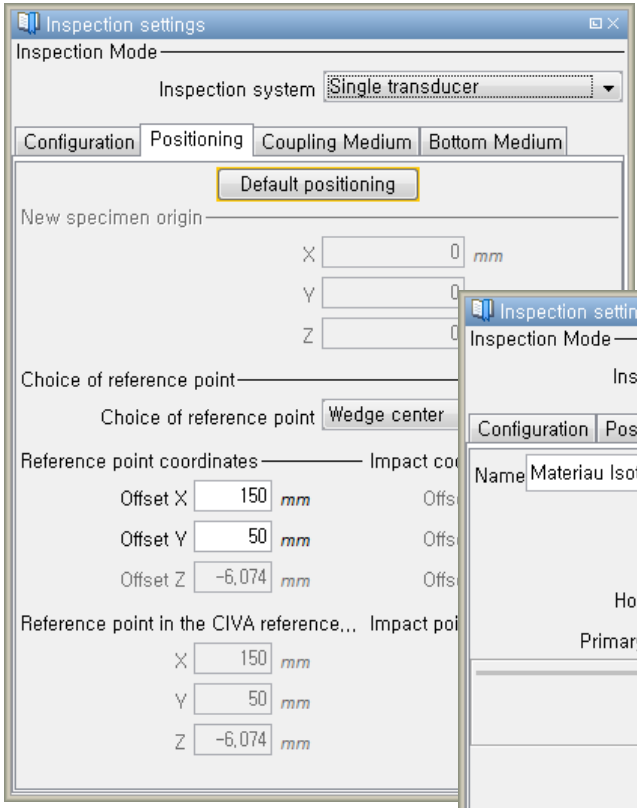

EC Probe
File
Probe
Probe type
Simple
Face
Inner
Outer
Element(s)
name
R
y
Theta
Cylindrical coil N°1
8,724
0
0
Cylindrical coil N°1
Geometry
Position
Element type
Cylindrical coil
Enable electric parameters
Inner diameter (Dint)
2
mm
Outer diameter (Dext)
3,5
mm
Height (H)
2
mm
Number of turns (N)
200
Dext
Dint
H

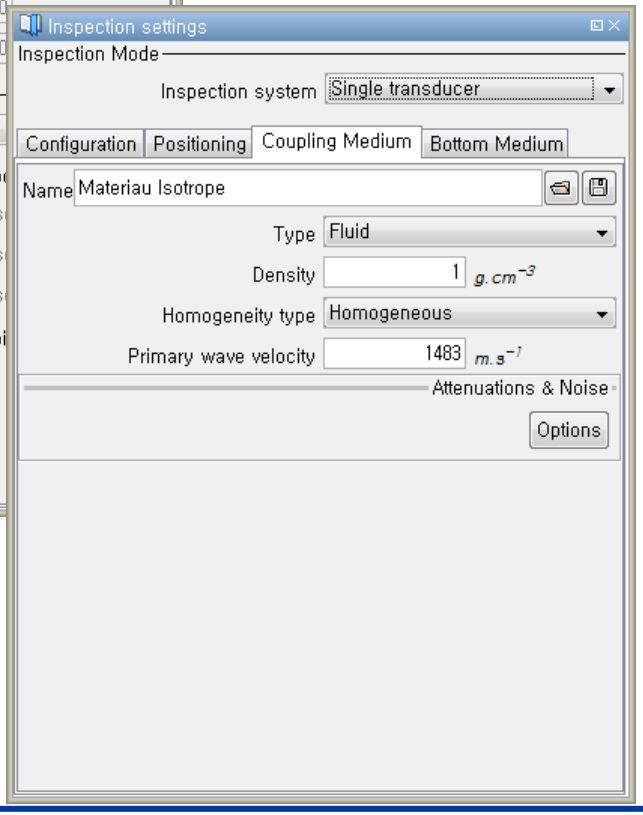

Simple
Simple
Bobbin probe
Custom


Cylindrical coil
Cylindrical coil
Rectangular coil
Racetrack coil
'D' coil
Spiral coil
Spiral coil (rect)
Meander coil

❖Inspection settings



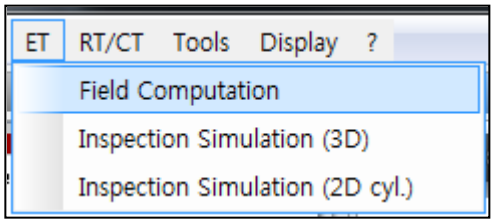




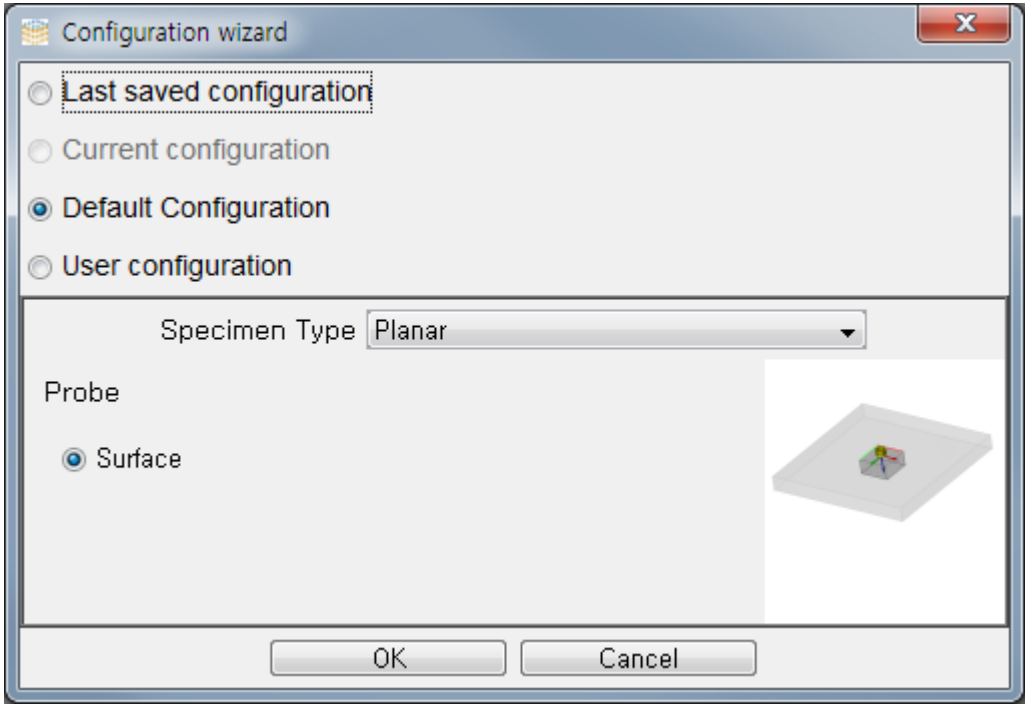
- Flat component inspection

1.1 Impedance diagram calculation

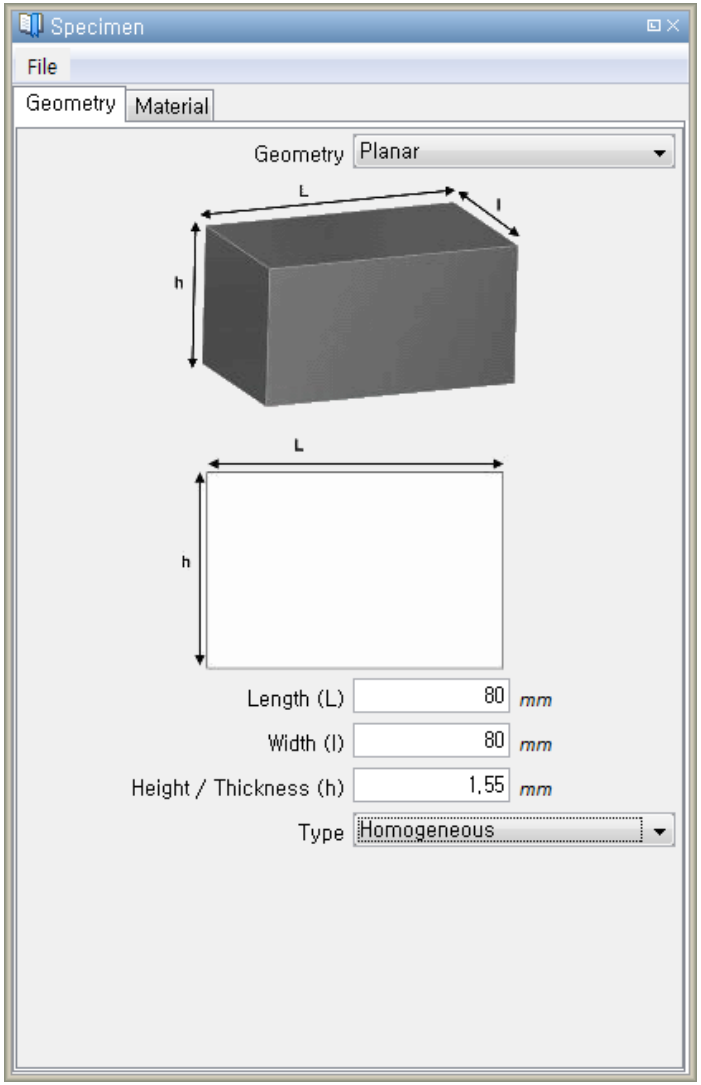
- Field computation 실행

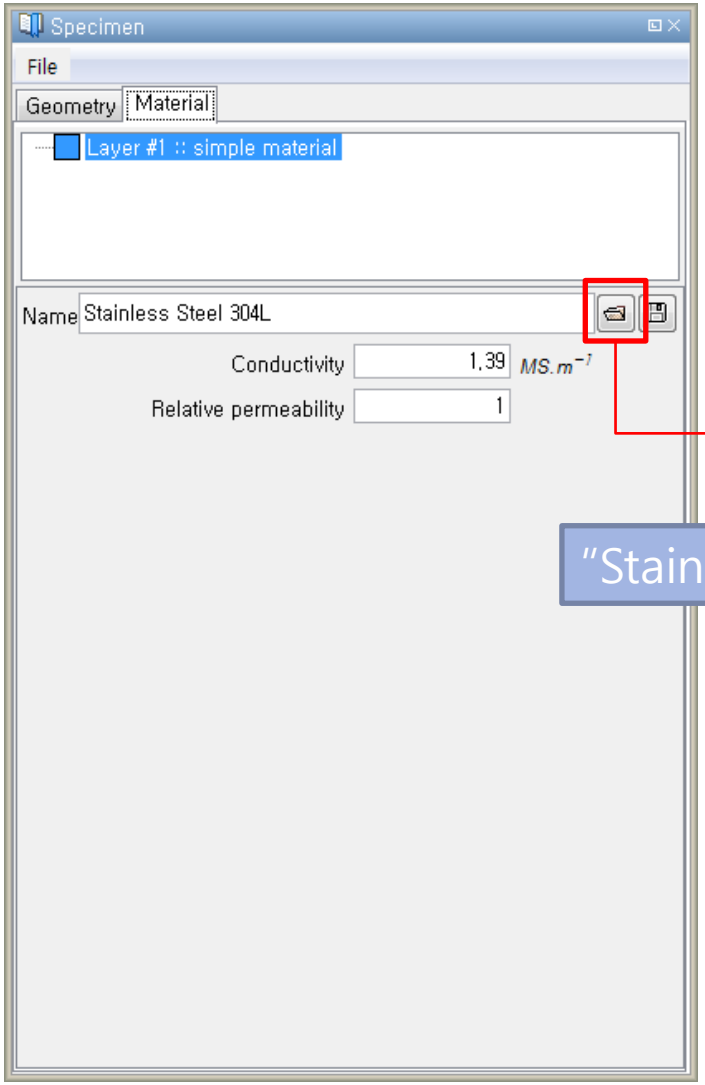


- Configuration wizard



❖Specimen 설정

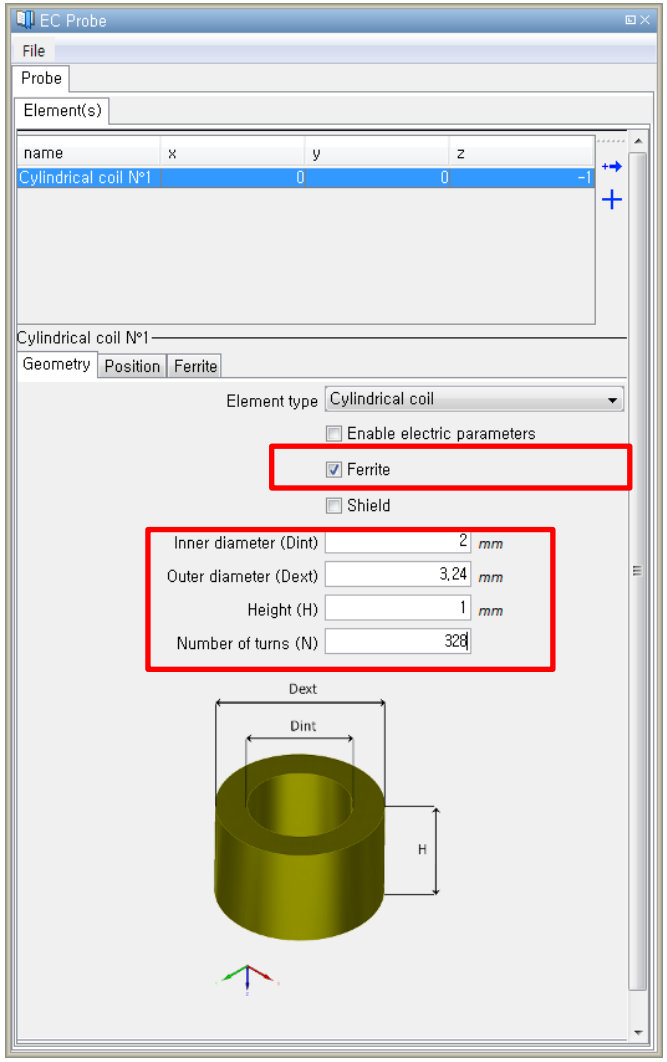


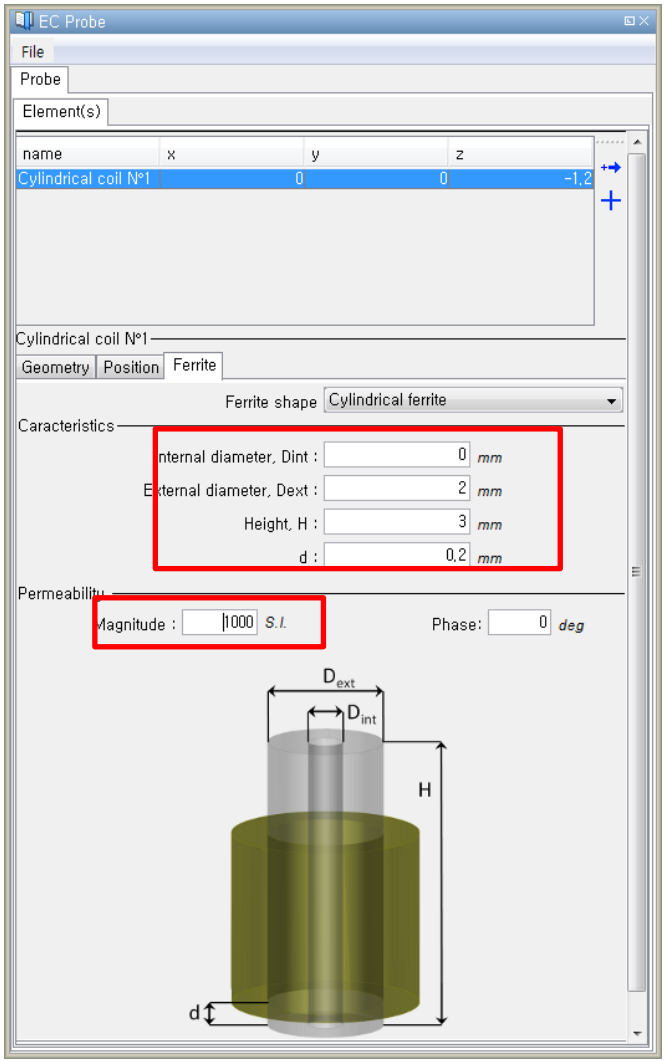


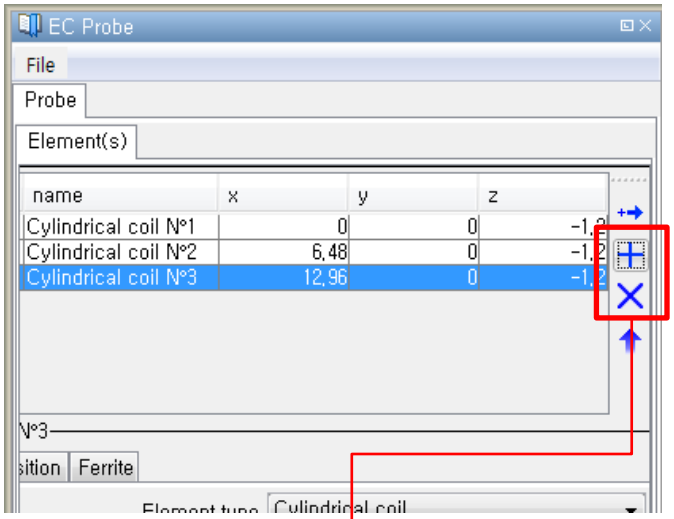
"Stainless Steel 304L" 이용

❖Probe 생성(1/2)

- Probe 생성

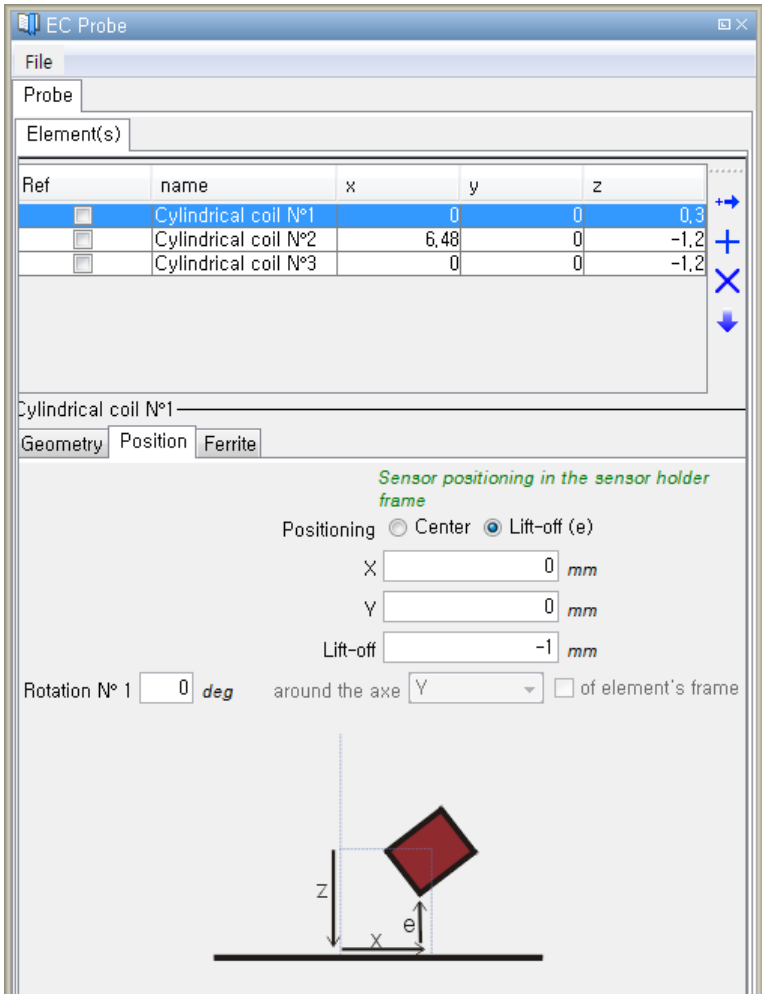


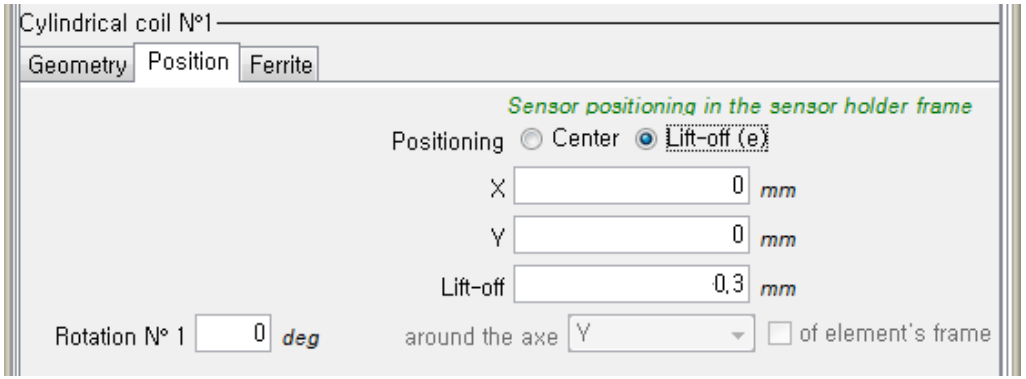


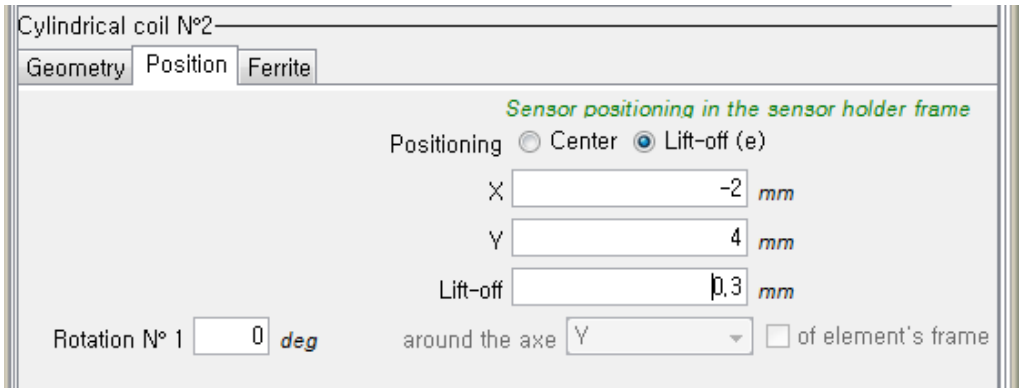


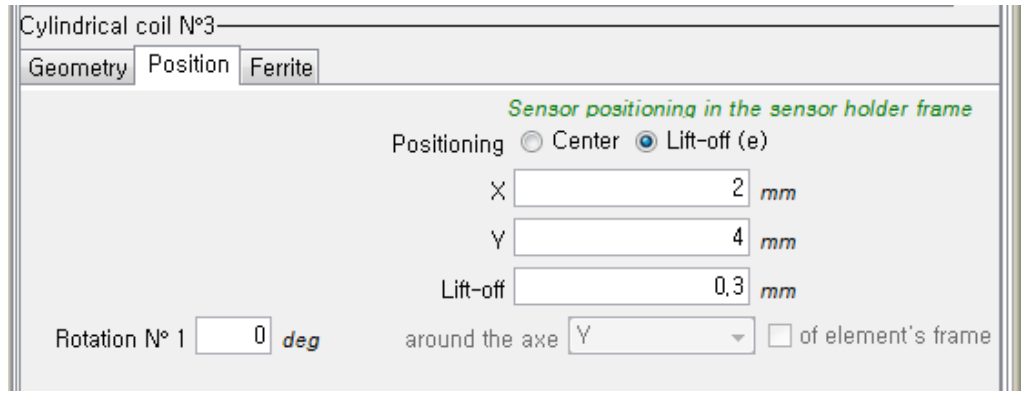
Element 추가 및 삭제
(2개 추가로 생성)

❖Probe 생성(2/2)

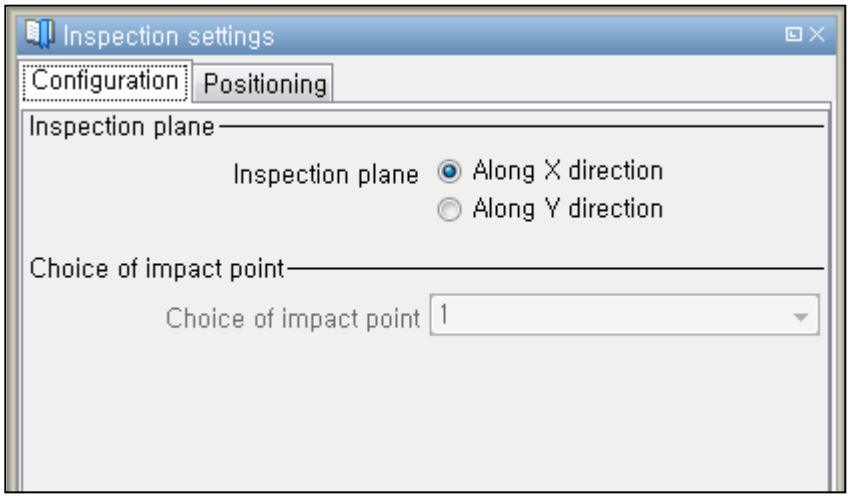

EC Probe
File
Probe
Element(s)
Ref
name
x
y
z
Cylindrical coil N°1
0
0
0,3
Cylindrical coil N°2
6,48
0
-1,2
Cylindrical coil N°3
0
0
-1,2
Cylindrical coil N°1
Geometry
Position
Ferrite
Sensor positioning in the sensor holder frame
Positioning
Center
Lift-off (e)
X
0
mm
Y
0
mm
Lift-off
-1
mm
Rotation N° 1
0
deg
around the axe
Y
of element's frame
Z
X
e

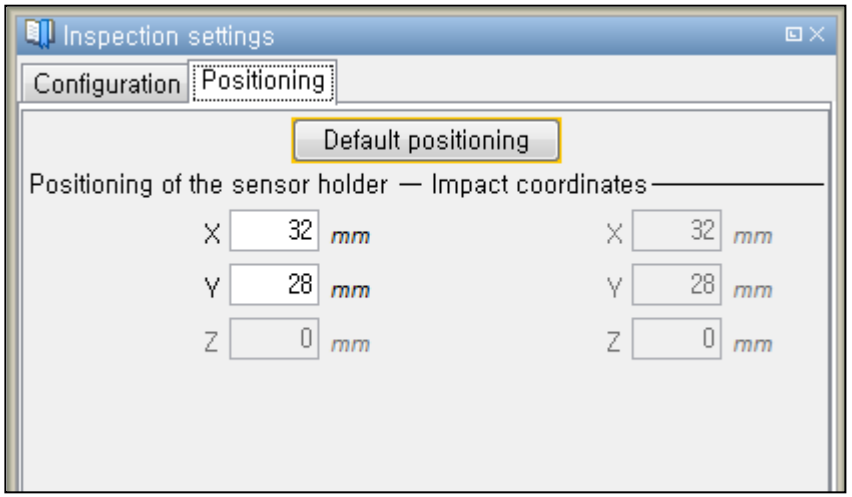

Cylindrical coil N°1
Geometry
Position
Ferrite
Sensor positioning in the sensor holder frame
Positioning
Center
Lift-off (e)
X
0
mm
Y
0
mm
Lift-off
0,3
mm
Rotation N° 1
0
deg
around the axe
Y
of element's frame


Cylindrical coil N°2
Geometry
Position
Ferrite
Sensor positioning in the sensor holder frame
Positioning
Center
Lift-off (e)
X
-2
mm
Y
4
mm
Lift-off
0,3
mm
Rotation N° 1
0
deg
around the axe
Y
of element's frame

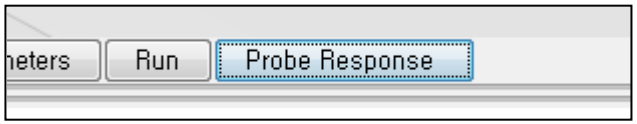

Cylindrical coil N°3
Geometry
Position
Ferrite
Sensor positioning in the sensor holder frame
Positioning
Center
Lift-off (e)
X
2
mm
Y
4
mm
Lift-off
0,3
mm
Rotation N° 1
0
deg
around the axe
Y
of element's frame

❖Inspection 설정

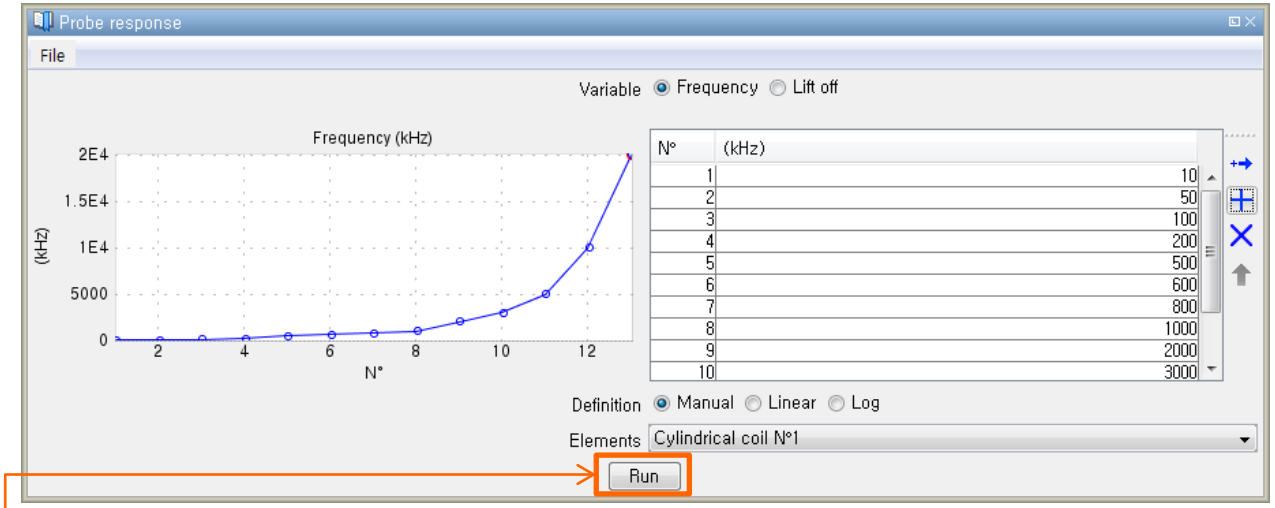




❖Probe response 계산



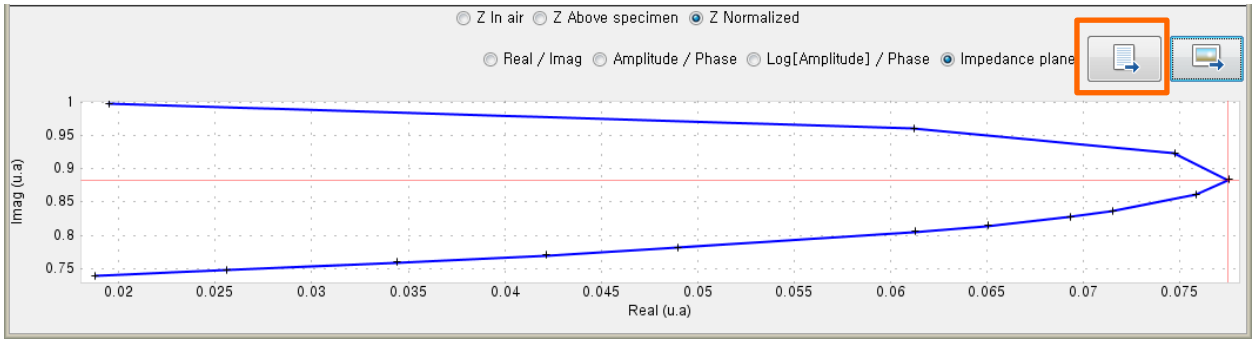
- 우측 하단의 Probe Response 클릭



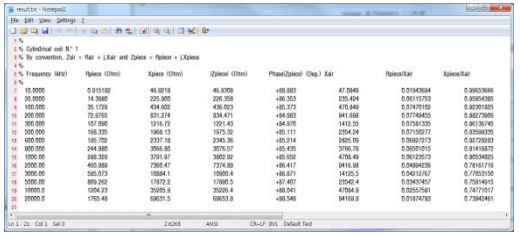
- 우측 + 클 클릭하여 항목을 늘려 1~14까지 10kHz~2000kHZ까지 입력합니다.

Nº	kHz	Nº	kHz
1	10	8	800
2	50	9	1000
3	100	10	2000
4	200	11	3000
5	300	12	5000
6	500	13	10000
7	600	14	20000

우측의 14개의 주파수를 입력하고 4번 400kHz를 선택한 후 RUN을 클릭하여 계산 진행



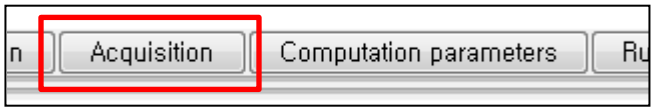
- Txt export를 통하여 계산 결과 확인(임피던스 계산)



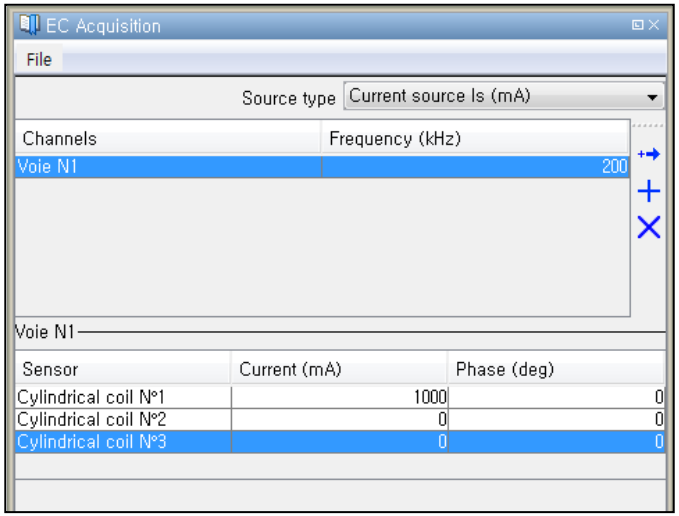
- Flat component inspection

  1.2 Field computation

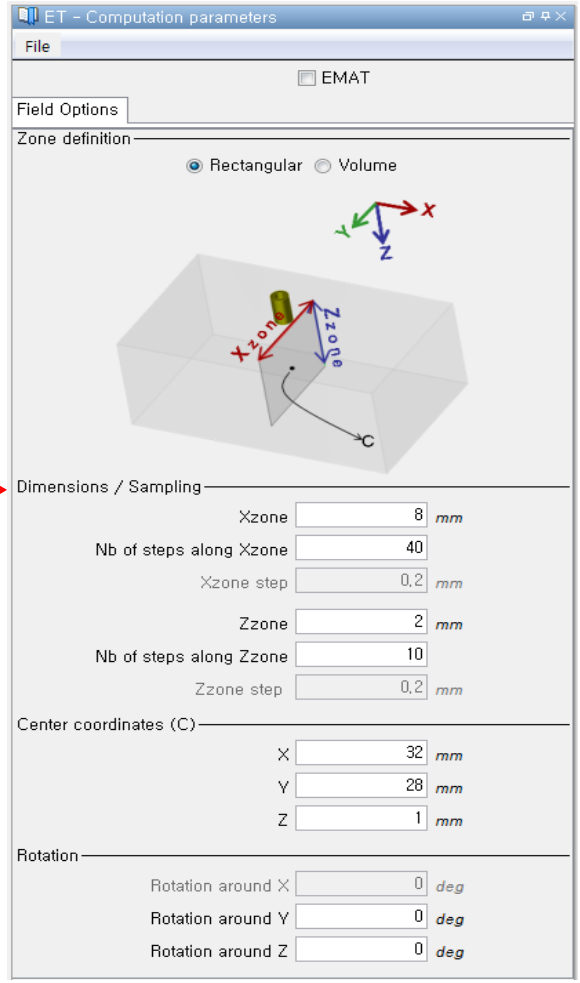
❖Acquisition 선정

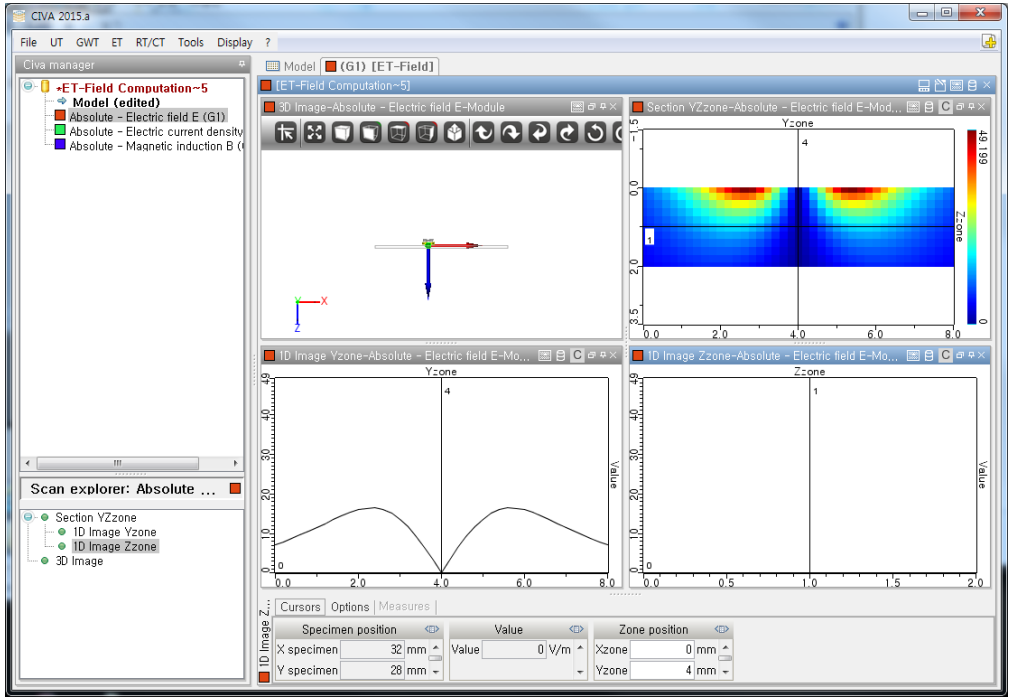


- 우측 하단에 Acquisition, Computation parameters의 계산 영역 지원

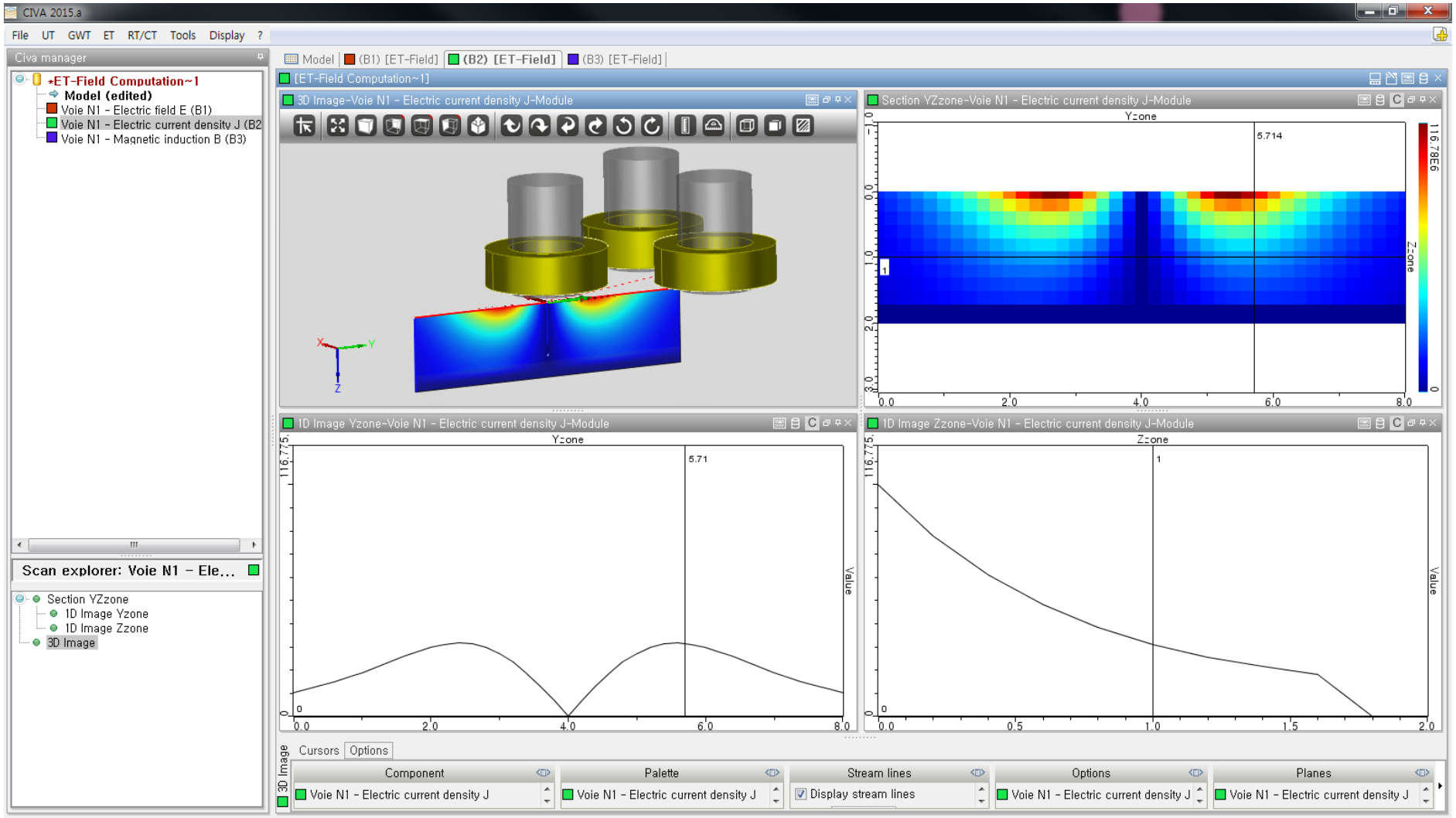


❖Computation parameters설정 및 Analysis





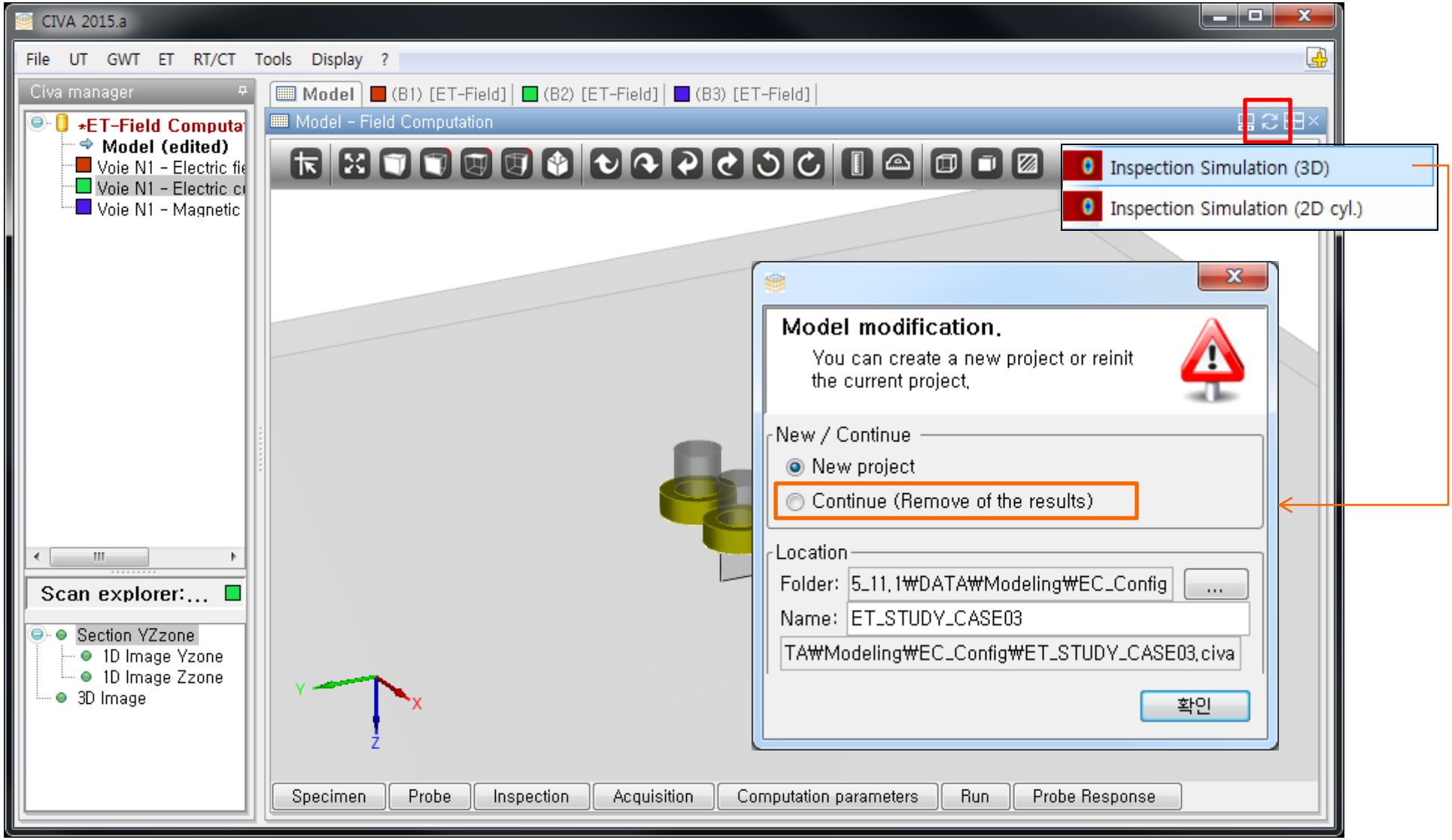
❖Result – Electric current density J



- Flat component inspection

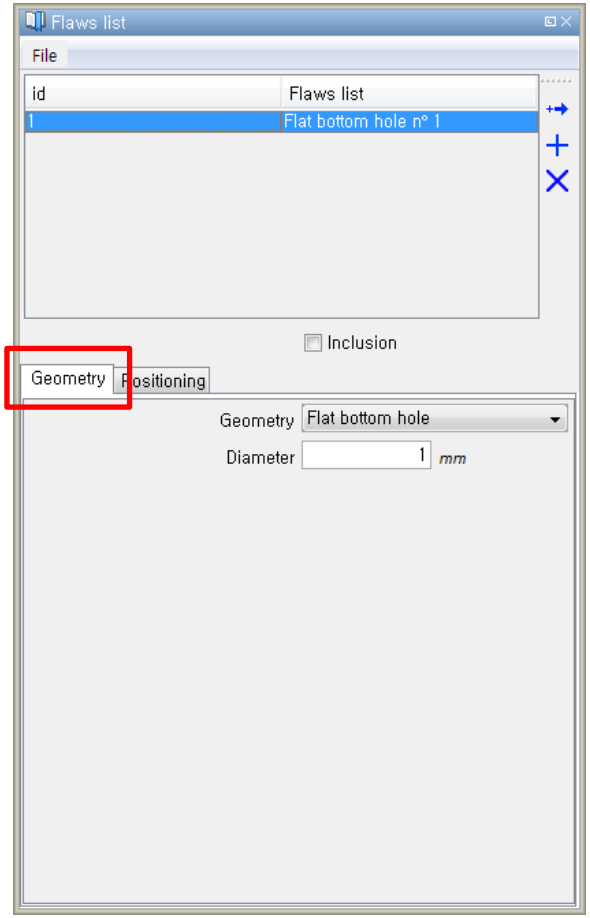
1.3 Inspection Simulation with a calibration hole

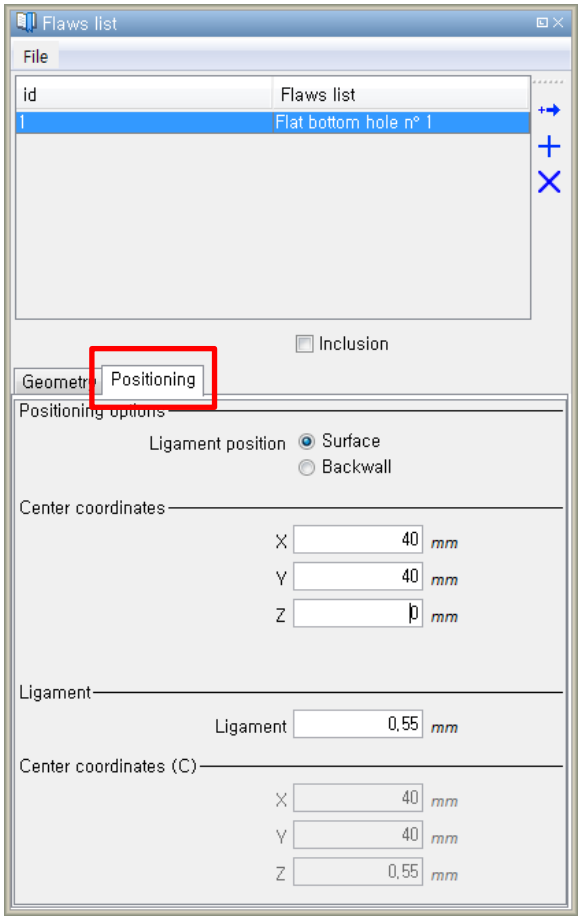
❖Inspection Simulation(3D)로 변경



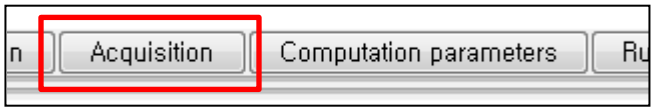
❖Flaws 생성

- 하단에 Flaws가 새로 생겨남

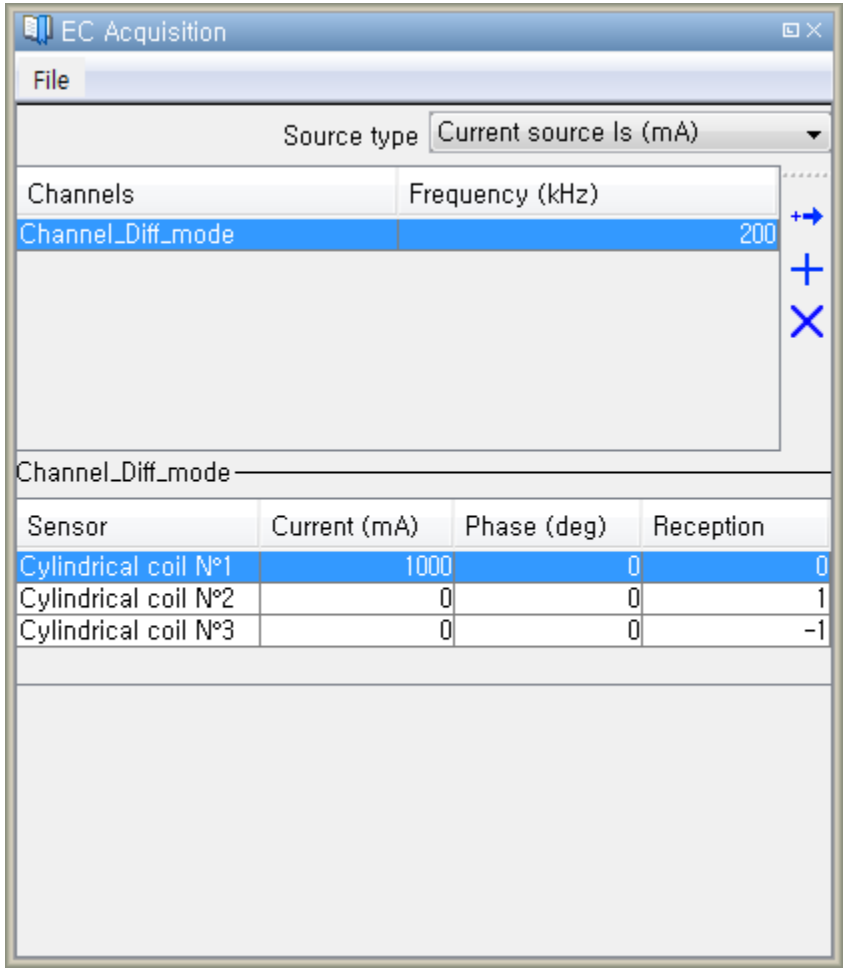




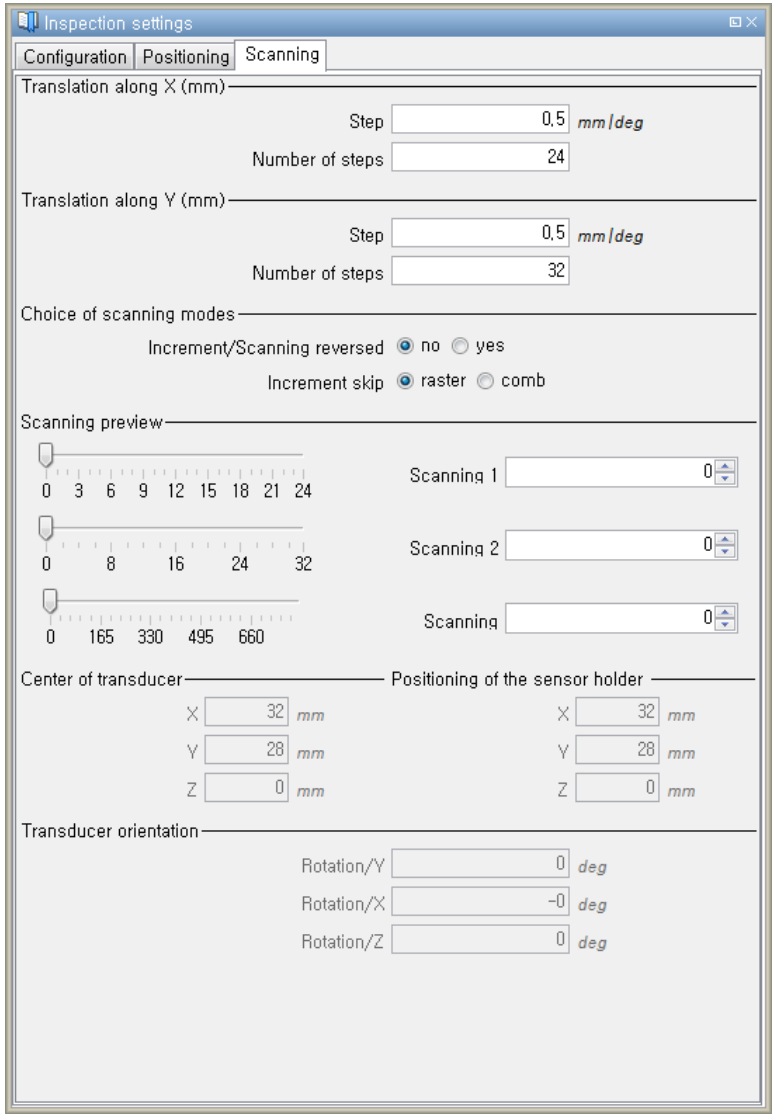
❖Acquisition 수정

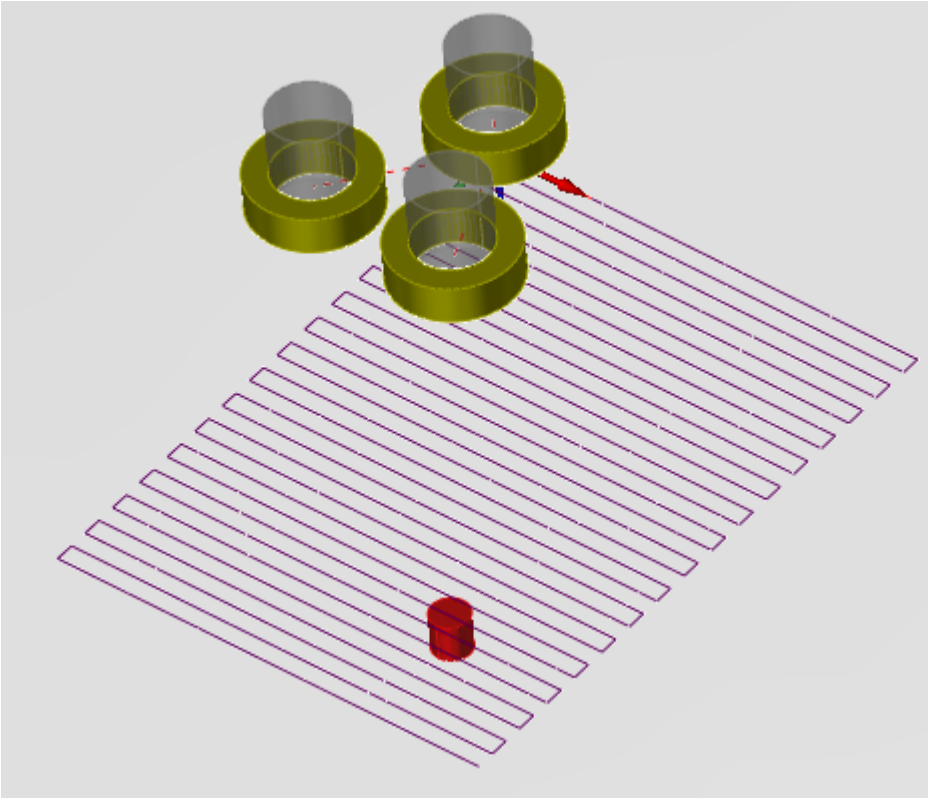


- 센서 변경(N1 – 송신부, N2, N3 – 수신부)

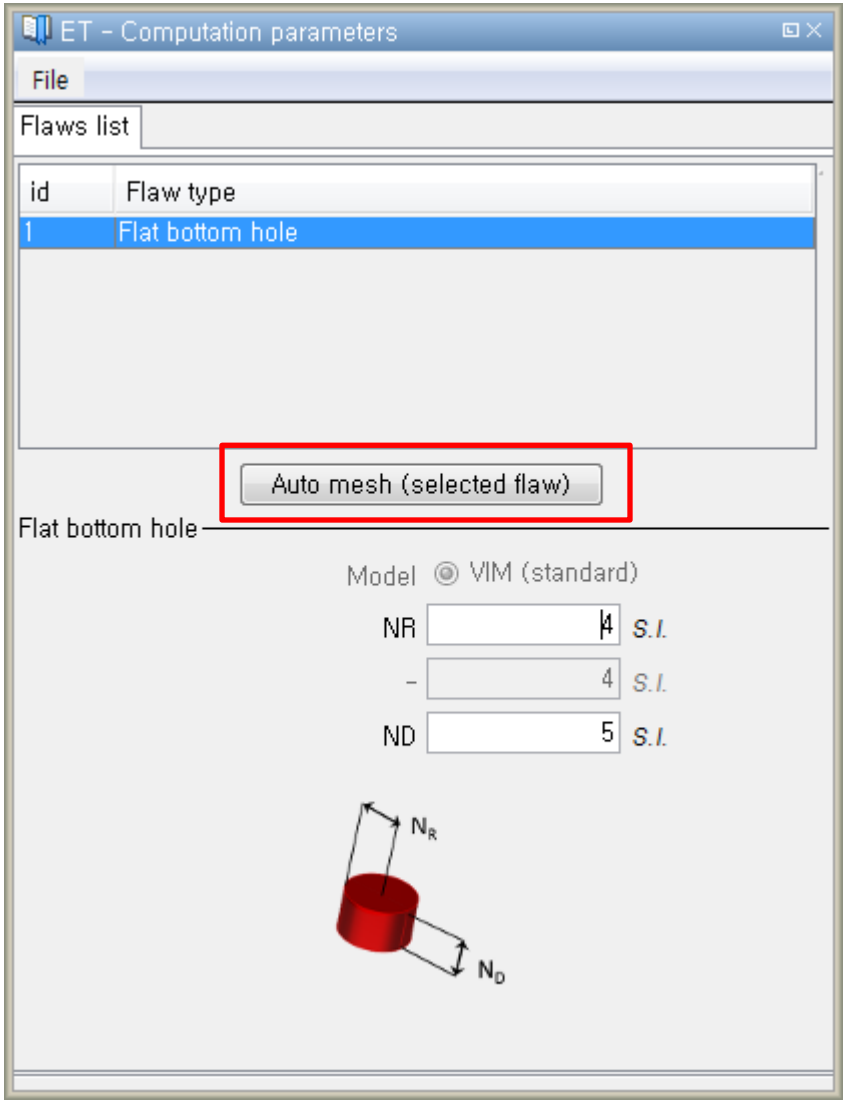


❖Inspection Settings 수정

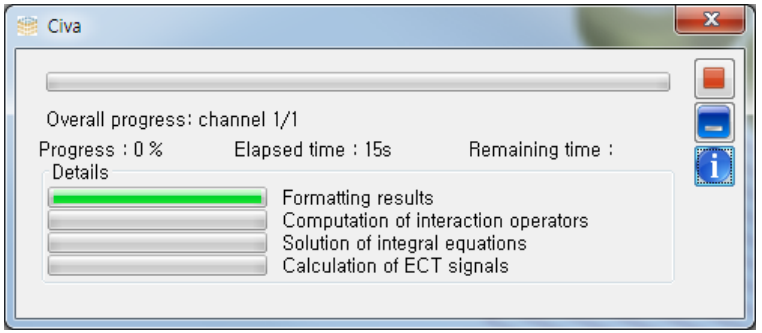


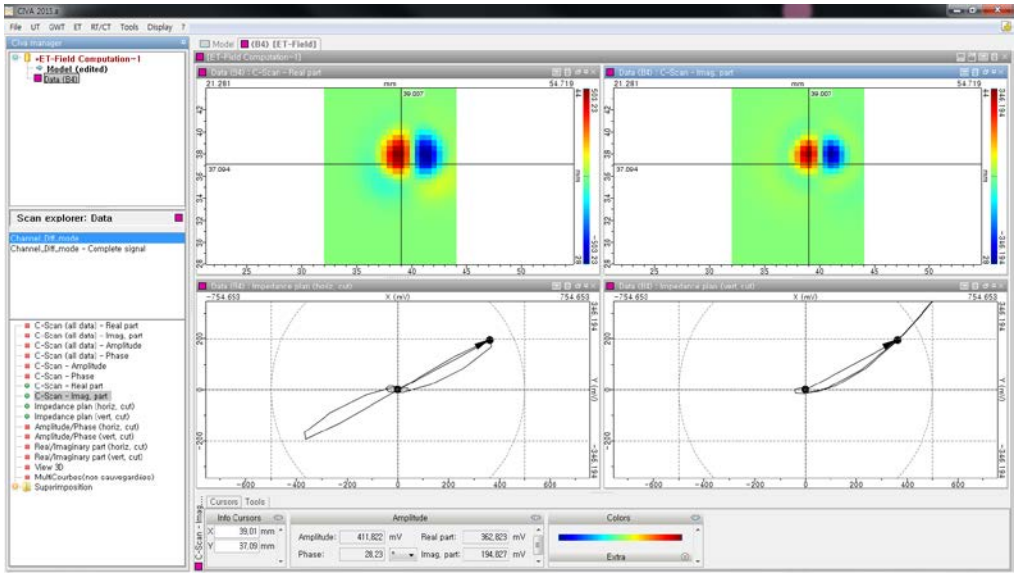


❖Computation parameters 수정 및 Analysis

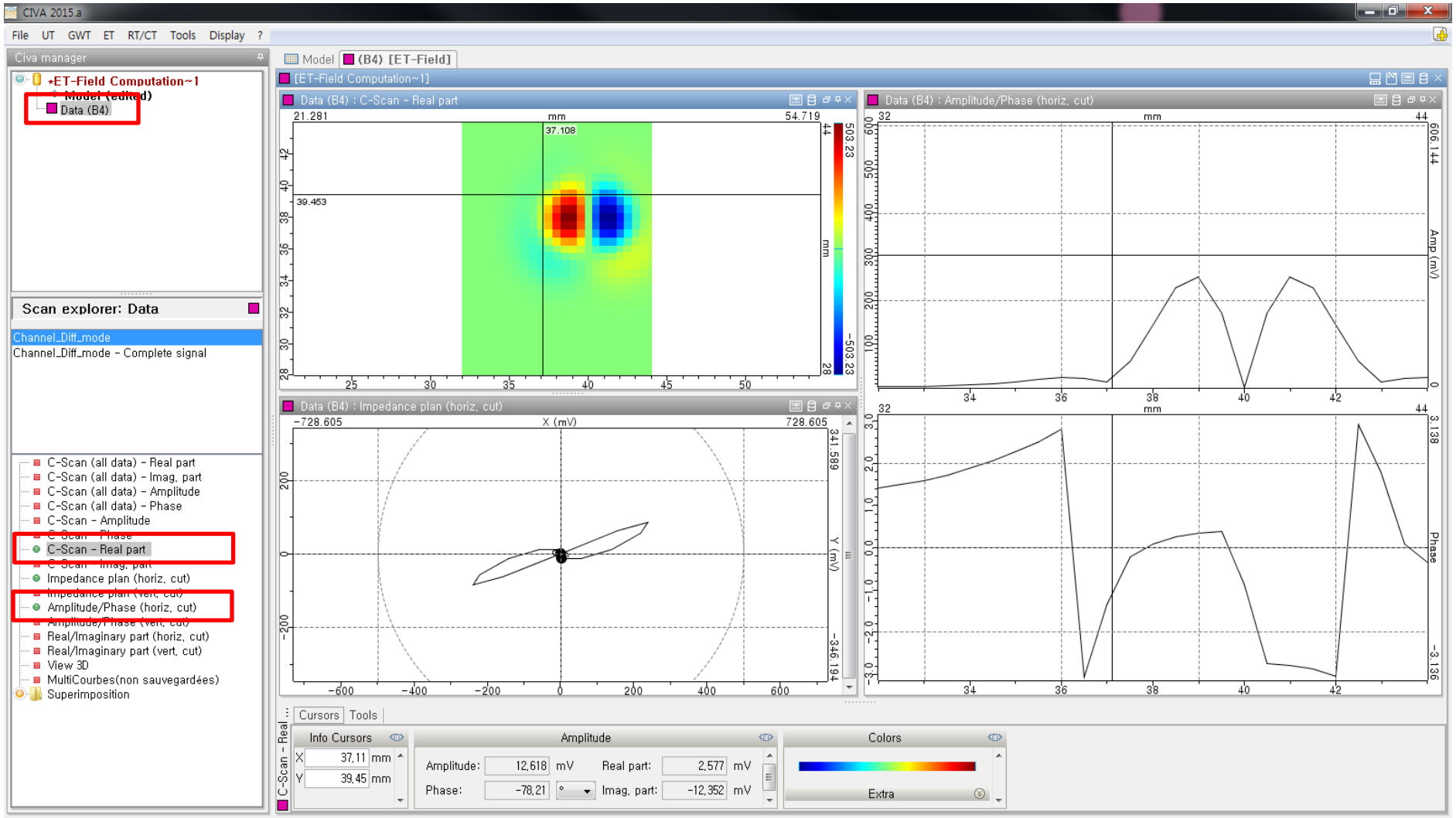


- 해석 진행





❖Results


CIVA 2015.a
File UT GWT ET RT/CT Tools Display ?
Civa manager
*ET-Field Computation~1
Model (edited)
Data (B4)
Scan explorer: Data
Channel_Diff_mode
Channel_Diff_mode - Complete signal
C-Scan (all data) - Real part
C-Scan (all data) - Imag. part
C-Scan (all data) - Amplitude
C-Scan (all data) - Phase
C-Scan - Amplitude
C-Scan - Real part
Impedance plan (horiz. cut)
Amplitude/Phase (horiz. cut)
Real/Imaginary part (horiz. cut)
Real/Imaginary part (vert. cut)
View 3D
MultiCourbes(non sauvegardées)
Superimposition
Model
(B4) [ET-Field]
[ET-Field Computation~1]
Data (B4) : C-Scan - Real part
21.281
mm
54.719
37.108
39.453
503.23
-503.23
Data (B4) : Amplitude/Phase (horiz. cut)
606.144
Amp (mV)
Phase
3.138
-3.136
Data (B4) : Impedance plan (horiz. cut)
-728.605
X (mV)
728.605
341.589
-346.194
Y (mV)
Cursors
Tools
C-Scan - Real
Info Cursors
X 37,11 mm
Y 39,45 mm
Amplitude
Amplitude: 12,618 mV
Real part: 2,577 mV
Phase: -78,21 °
Imag. part: -12,352 mV
Colors
Extra

Thank You !

대한민국 전기 · 기계

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