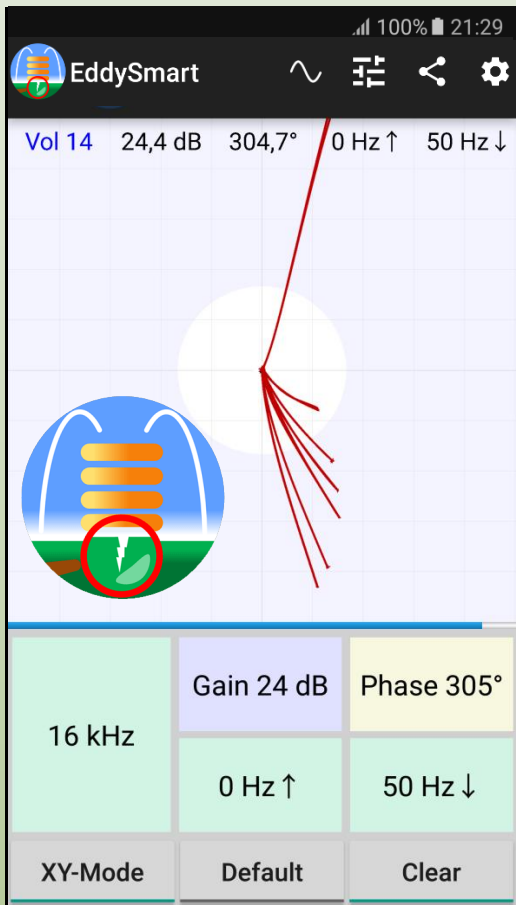# EddySmart
for Android

What is EddySmart?

EddySmart converts your smartphone into a digital eddy current instrument for education. It does not substitute but accompanies lectures and textbook stuff to help you learning eddy current inspection. The frequency range from 1 to 20 kHz makes it possible to practice tasks like

- Surface crack detection and evaluation
- Hidden defect detection and evaluation
- Material sorting
- Wall and coating assessment
- Conductivity assessment

The kit contains

- An absolute shoe probe
- Reference pieces
- USB stick with the EddySmart software
- This manual

Please, take into account that EddyCationSmart software drives your sound system up to its limit. Disturbances being negligible at normal use may reduce the signal to noise ratio visibly. Hence, unplug any USB cable connection of your smartphone.

If you want to use other than the shipped probe, please contact the EddyCation team eddycation@t-online.de
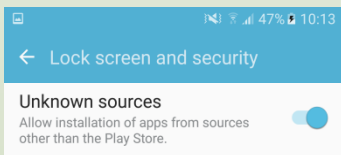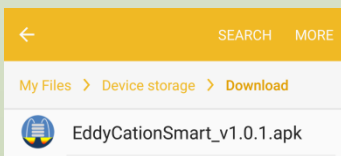
Symbols and legend

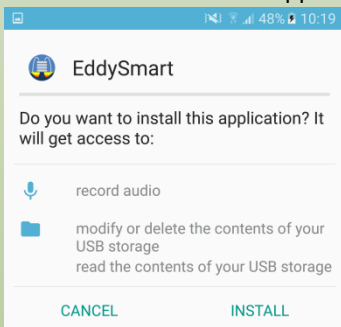**Focus your attention**   **Tap on screen**

Quick Start

Enable installation from unknown sources:
Settings -> Lock screen and security:

Select the folder with EddySmart.apk, e.g.:
My Files -> Device storage -> Download:
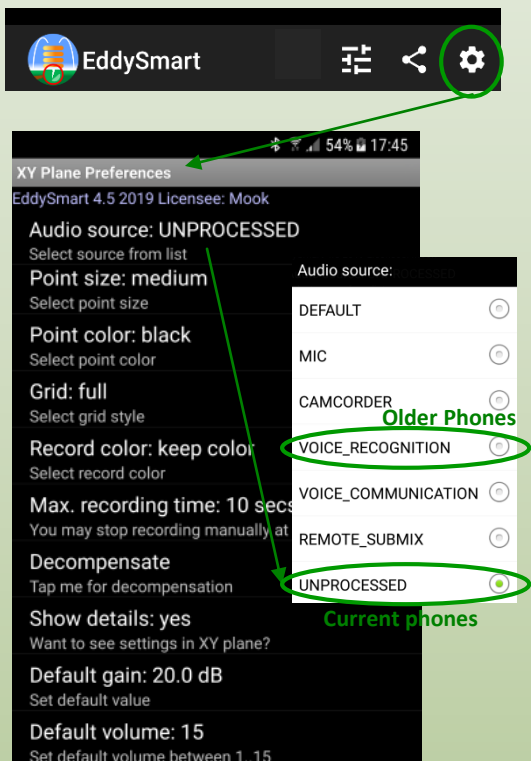

Tap the name and install the app:

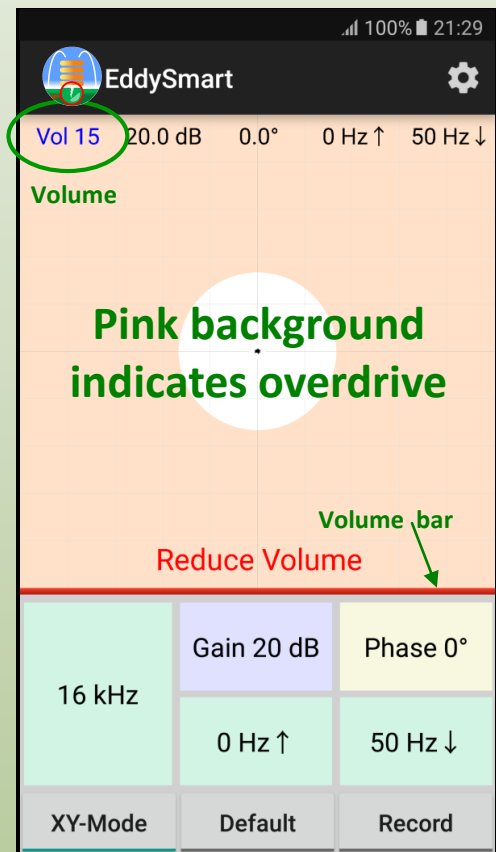Plug the probe cable to
the audio jack and run:

Preferences

Depending on your smartphone select the following preferences.

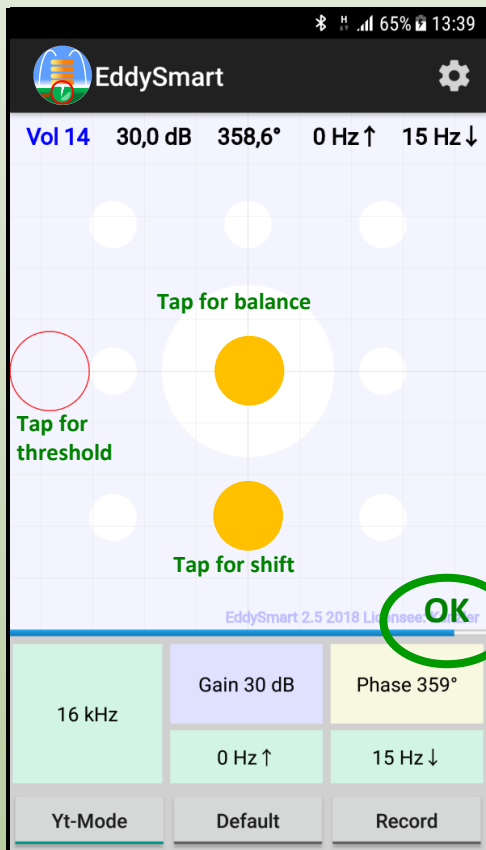**Older Phones**

Current phones

Avoid Overdrive

Pink background indicates overdrive. Reduce sound volume until pink background vanishes.
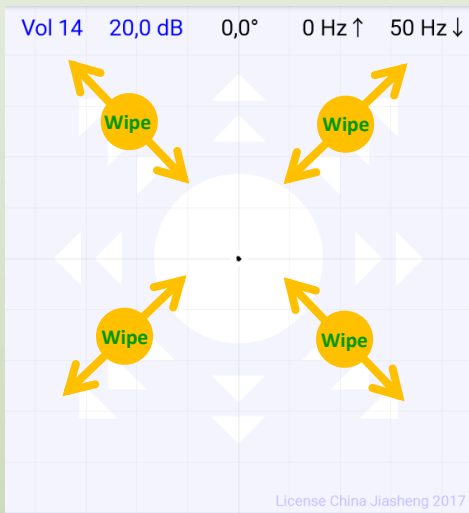
Balance and Shift
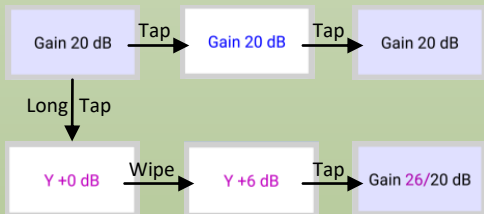
Tap the central spot for balancing.
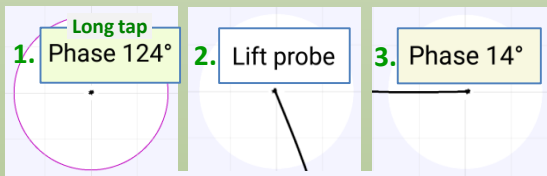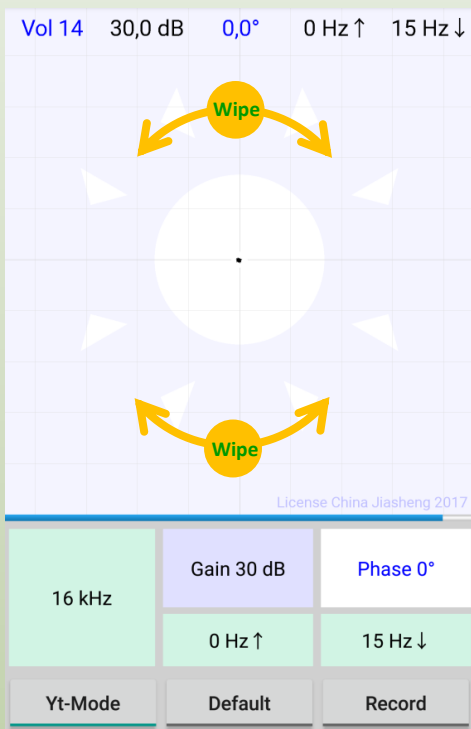Tap outside for shift points.

Gain

| Vol 14 | 20,0 dB | 0,0° | 0 Hz ↑ | 50 Hz ↓ |

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4 kHz	Gain 20 dB	Phase 0°
	0 Hz ↑	50 Hz ↓
Yt-Mode	Default	Record

Gain 20 dB	→Tap→	Gain 20 dB	→Tap→	Gain 20 dB

Long Tap ↓

Y +0 dB	→Wipe→	Y +6 dB	→Tap→	Gain 26/20 dB

7

Phase

| Vol 14 | 30,0 dB | 0,0° | 0 Hz ↑ | 15 Hz ↓ |

Wipe

Wipe

License China Jiasheng 2017

| 16 kHz | Gain 30 dB | Phase 0° |
| | 0 Hz ↑ | 15 Hz ↓ |

| Yt-Mode | Default | Record |

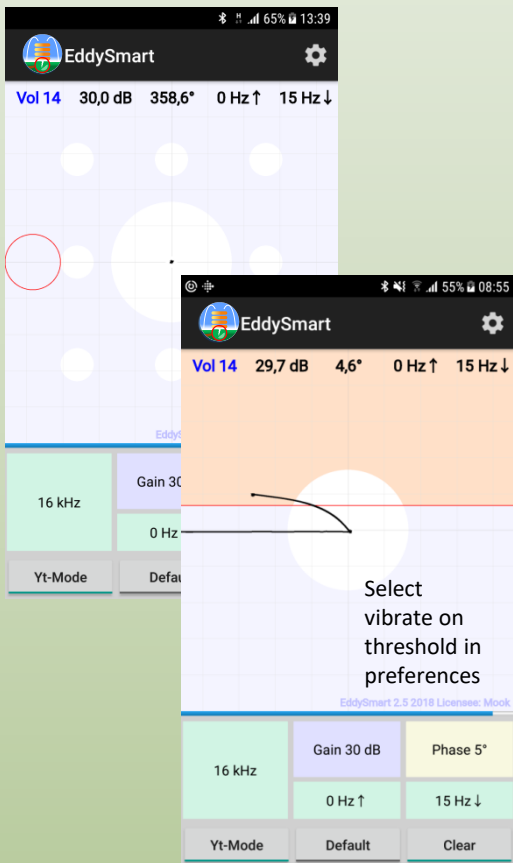**1.** Long tap Phase 124°   **2.** Lift probe   **3.** Phase 14°

Automatic phase setting
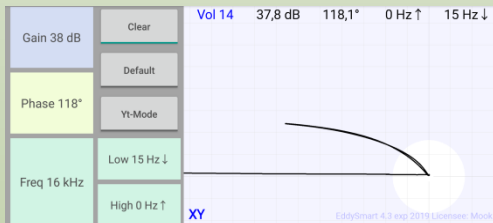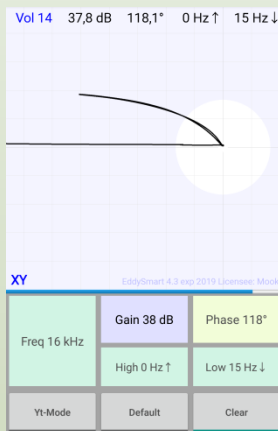
Threshold

Tap and move for setting.
Move to x-axis for removing.

Select
vibrate on
threshold in
preferences

Orientation

Long tap Default for flipping horizontally.
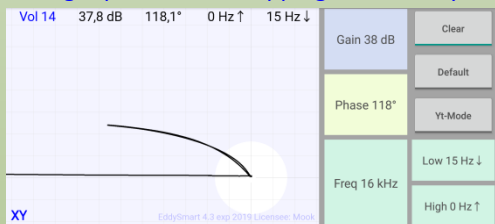
Frequency and Filters

Tap the button for possible settings.
Tap the setting for selection.

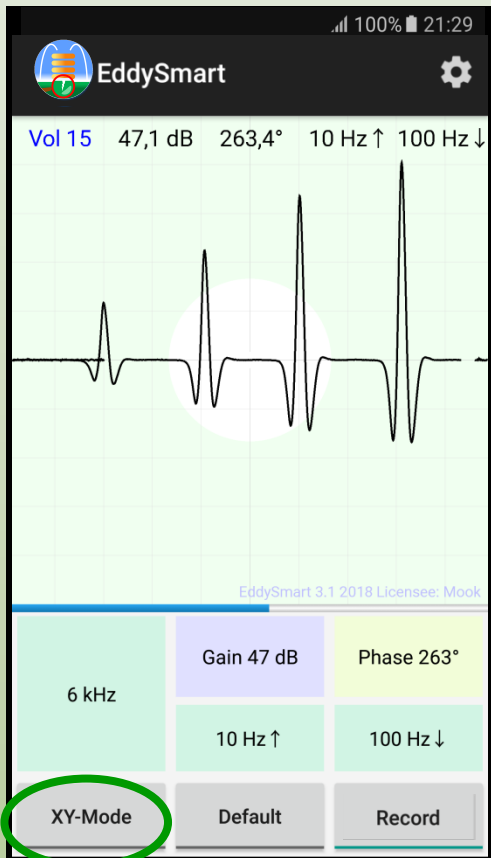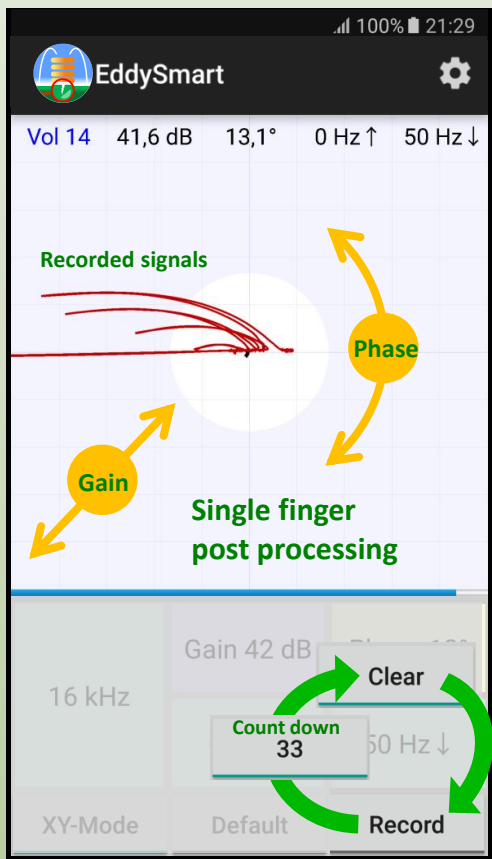| Vol 14	50,7 dB	0,4°	0 Hz ↑	50 Hz ↓

XY and Yt Mode

Tap mode button for mode selection.
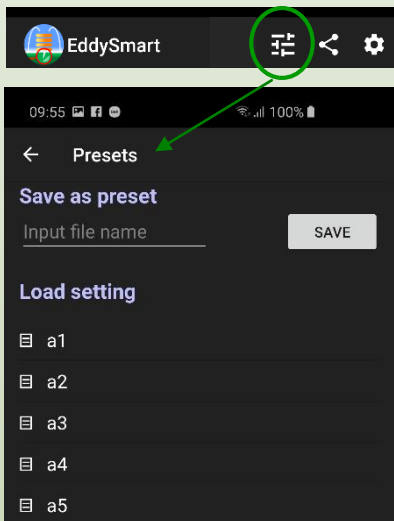The selected mode is indicated.

Interruptible Recording and Post Processing

Presets

Save current setting as preset by name.

Presets are saved in
Internal memory -> EddySmart/Presets

Screen Sharing

Share screenshot via e-mail, messenger
or social media.
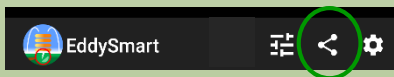
Examples
Surface slot signals

Vol 14   46,9 dB   12,9°   0 Hz ↑   10 Hz ↓

16 kHz

Slots of different depth (mm) in aluminium

2,0
1,5
1,0
0,5

Lift-off signal

Vol 14   53,0 dB   313,7°   0 Hz ↑   10 Hz ↓

16 kHz

0,5

Slots of different depth (mm) in austenitic steel

0,2

Lift-off signal
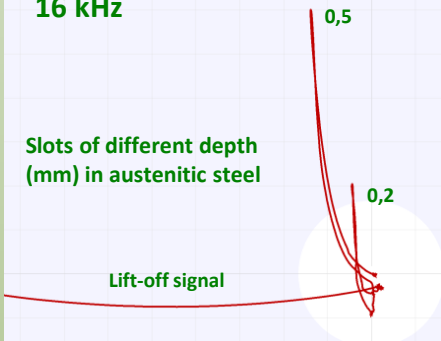
Examples
Wall reduction signals

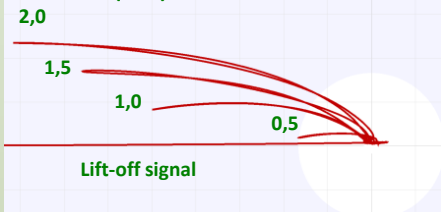Vol 14   47,7 dB   180,1°   0 Hz↑   10 Hz↓

0,8

4 kHz

1,2

Wall reduction in aluminium from 3 mm to x mm

1,6

2,0

Lift-off signal

Vol 14   50,1 dB   279,9°   0 Hz↑   10 Hz↓

12 kHz

0,8

Wall reduction in aluminium from 3 mm to x mm

1,2

Lift-off signal

1,6
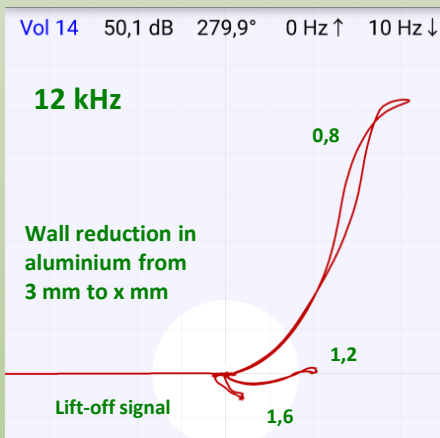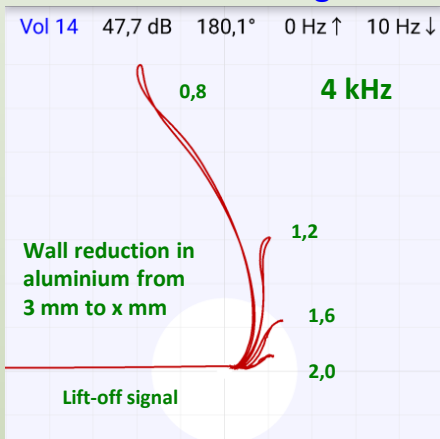
Examples
Signals of different materials

Reference pieces
For training

Aluminium carrier

| Ferritic steel | Austenitic steel | Nickel silver |
| Bronze | Brass | Copper |

Aluminium — Surface slots

Aluminium — Wall reductions (Aluminium)

Austenitic steel — Surface slots

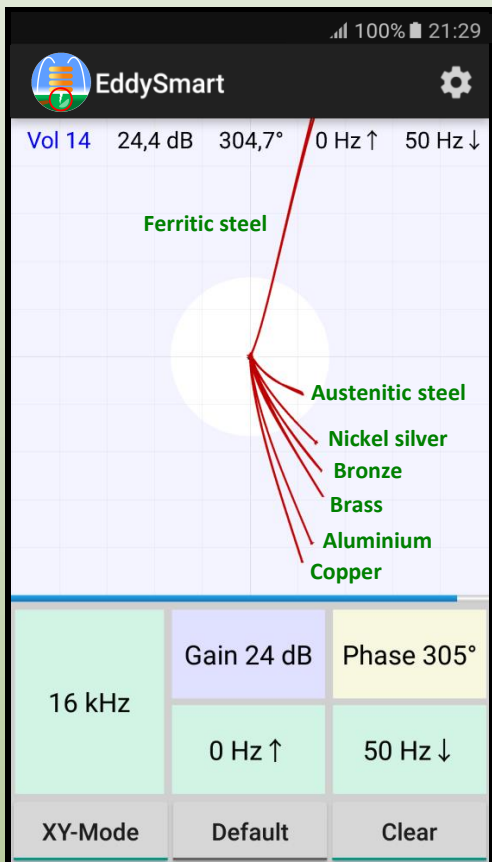### Disclaimer of liability

Despite all care in the development and adaption of the eddy current probe, a damage of the smartphone can not be excluded. The sensor is used at your own risk. We are not liable for any damage of your smartphone. Only the electrical integrity of the sensor in the intended use is guaranteed. There is no claim to the improvement of the software.

Intended use

Sensor, references and, if shipped, the smartphone are intended exclusively for demonstrating and practicing the eddy current method for non-destructive material testing on the shipped references.

The sensor and the software are developed for the smartphone Samsung Galaxy S6/S7 running at least Android 5 (Lollipop API 21). Other smartphones have not been tested.

Tested Compatibility

Samsung Galaxy S5 – S10, Note 4
Motorola G4+, G5

Contact

For questions please visit http://eddycation.de or mail to info@eddycation.de

We wish you lots of fun and success!

Memos

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Photos

Pencil probe

Shoe probe

ID probe