



European Organization for Nuclear Research

Vibration measurements on the concrete platform in CMS for LC studies

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Outline

- Slide 1 setup
- Slide 2 sensor position
- Slide 3 + 4 PSD
- Slide 5 Coherence
- Slide 6 transfer function with ref 2
- Slide 7 + 8 transfer function between ref 1 and ref 2

Equipments and setup

- Sensors :

- 4 Geophones (GURALP CMG-6T)

	SN T6946	SN T6945	SN T6998	SN T6997
Vertical	2 x 998 V/(m/s)	2 x 996 V/(m/s)	2 x 998 V/(m/s)	2 x 996 V/(m/s)
North/South	2 x 998 V/(m/s)	2 x 1016 V/(m/s)	2 x 998 V/(m/s)	2 x 1016 V/(m/s)
East/West	2 x 1003 V/(m/s)	2 x 991 V/(m/s)	2 x 1003 V/(m/s)	2 x 991 V/(m/s)

- DAQ :

- MKII spectrum analyzer with ICP42s cards (24bits-10mV) / PAK software v5.5

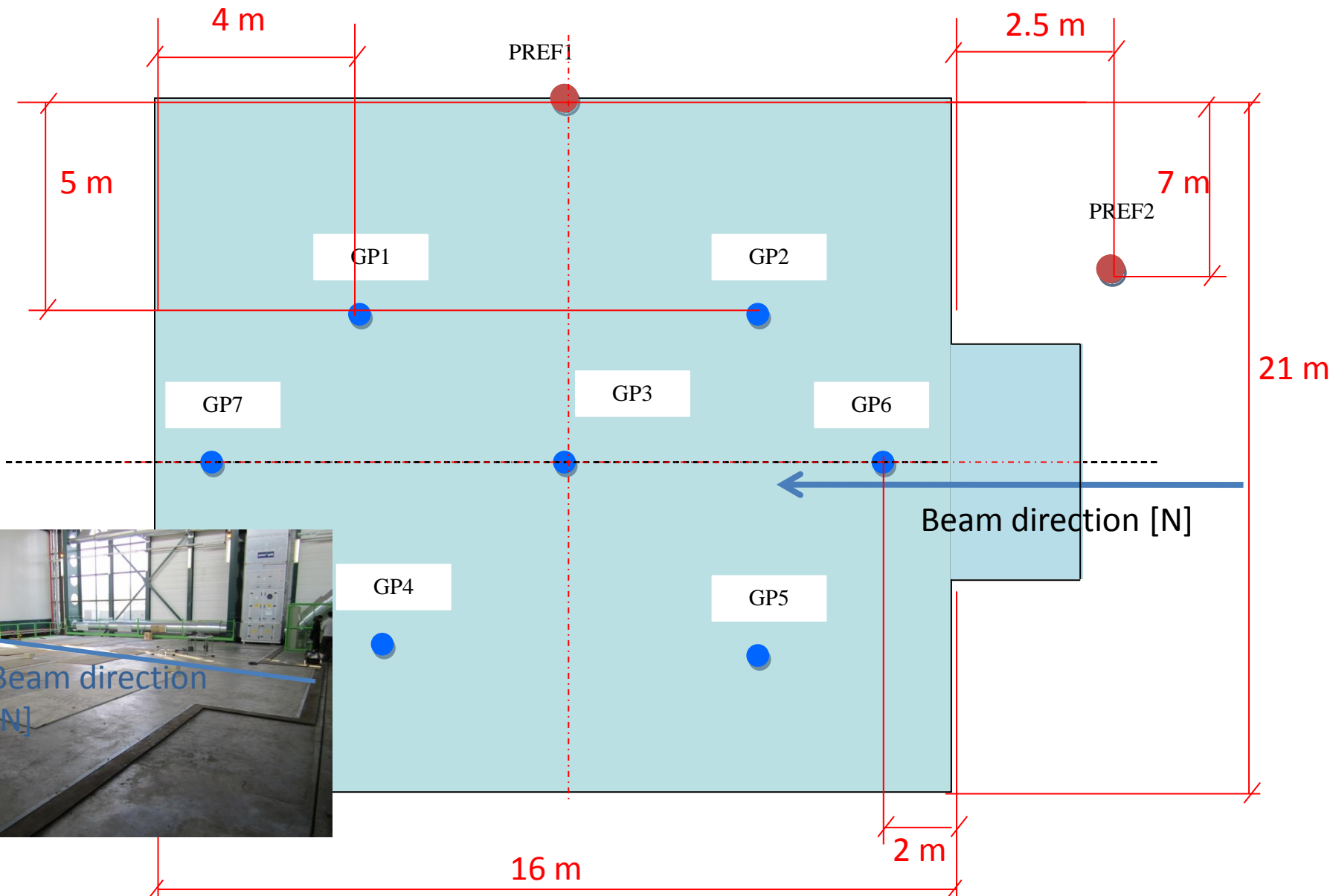
- Analysis parameters :

Sampling rate	1024 Hz
Measurement Length	1321 s
Block duration	64 s
Overlap	66,7%
Window	Hanning
Averaging	Linear

- Four measurements were performed to cover 7 measured positions with two reference points for each.

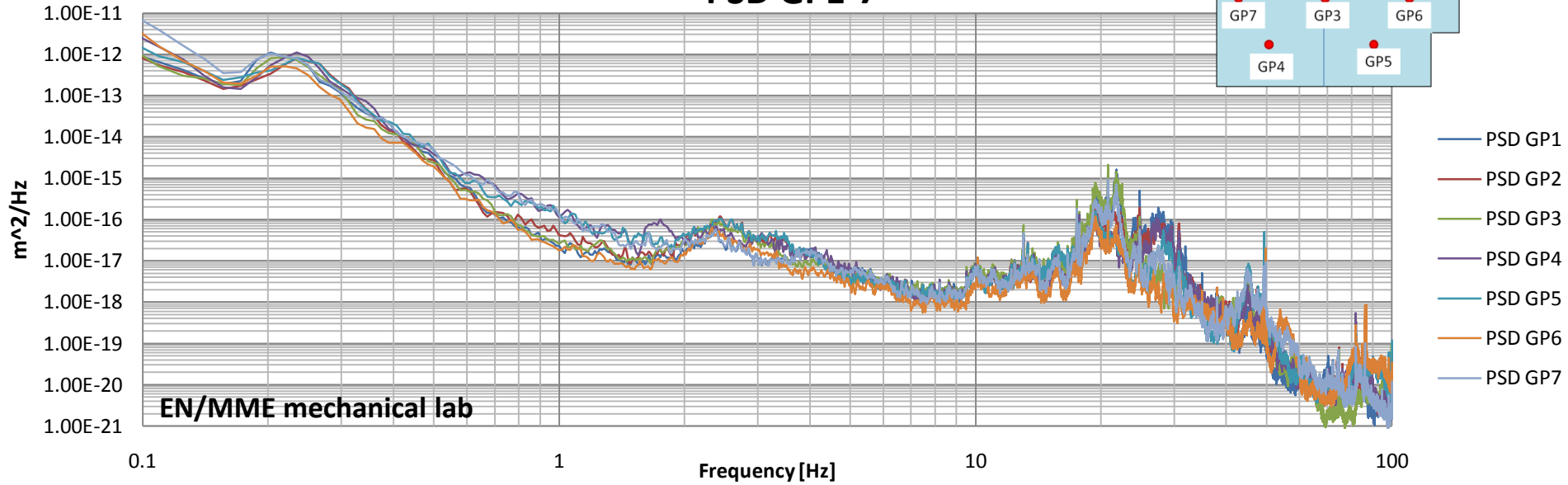
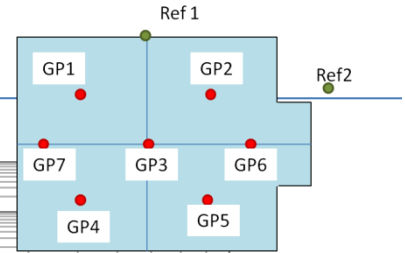
- Measurement 1 GP 3 and 6
- Measurement 2 GP 1 and 7
- Measurement 3 GP 4
- Measurement 4 GP 2 and 5

Sensor position

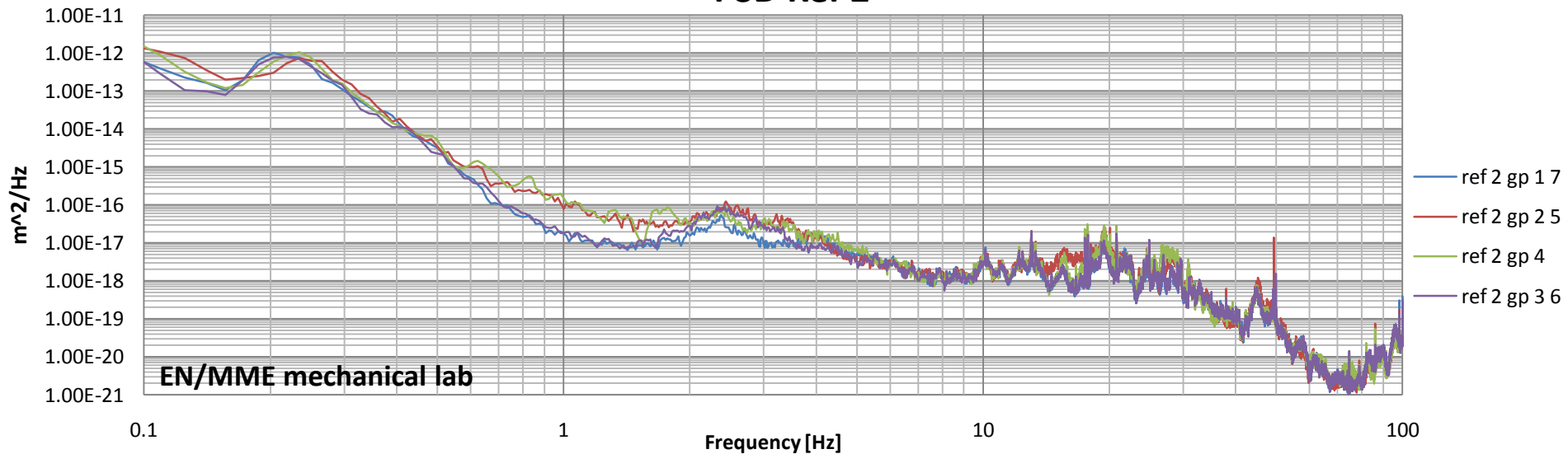


PSD: Vertical direction

PSD GP1-7

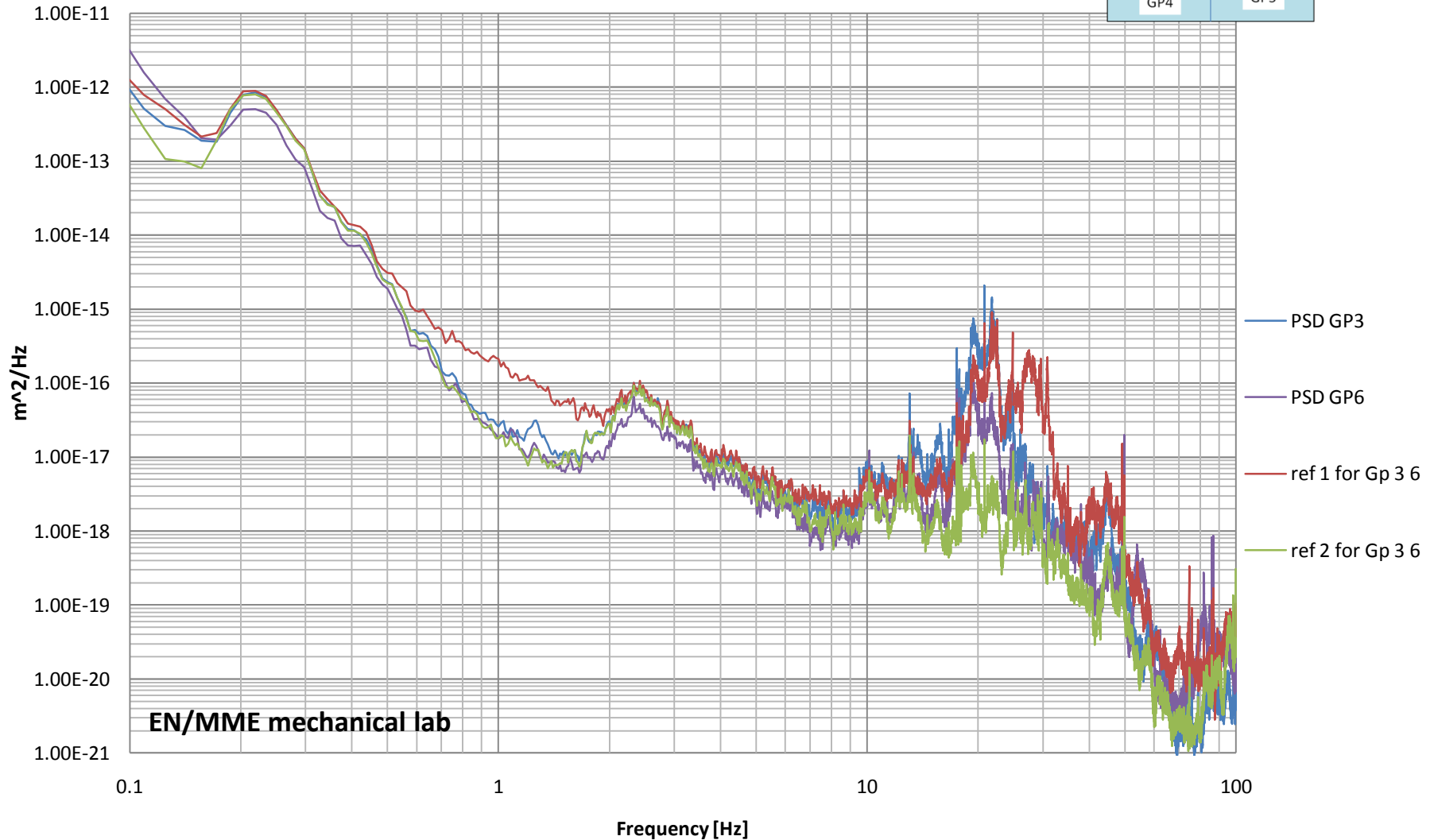


PSD Ref 2



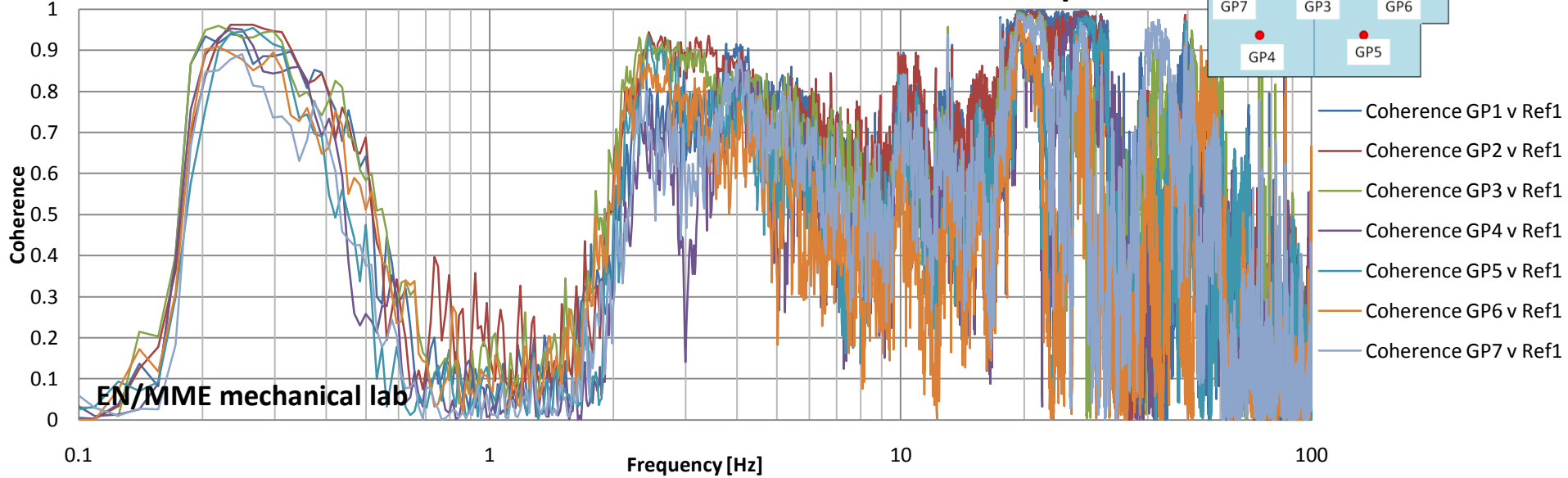
PSD for a typical measurement

PSD

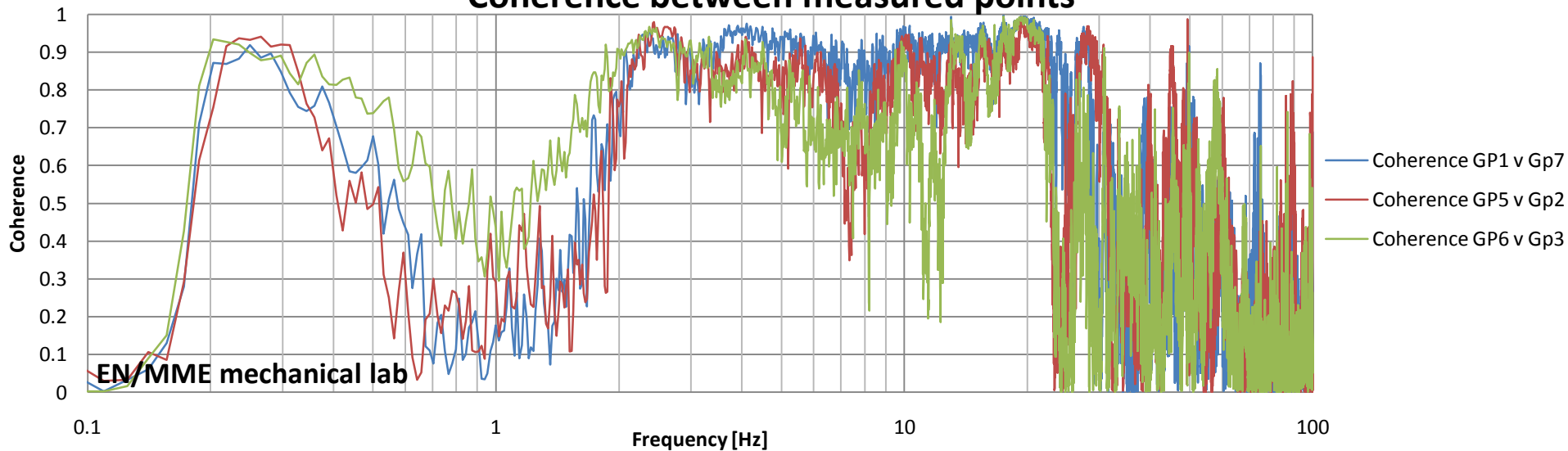


Coherence Vertical direction

Coherence between reference 1 and measured points

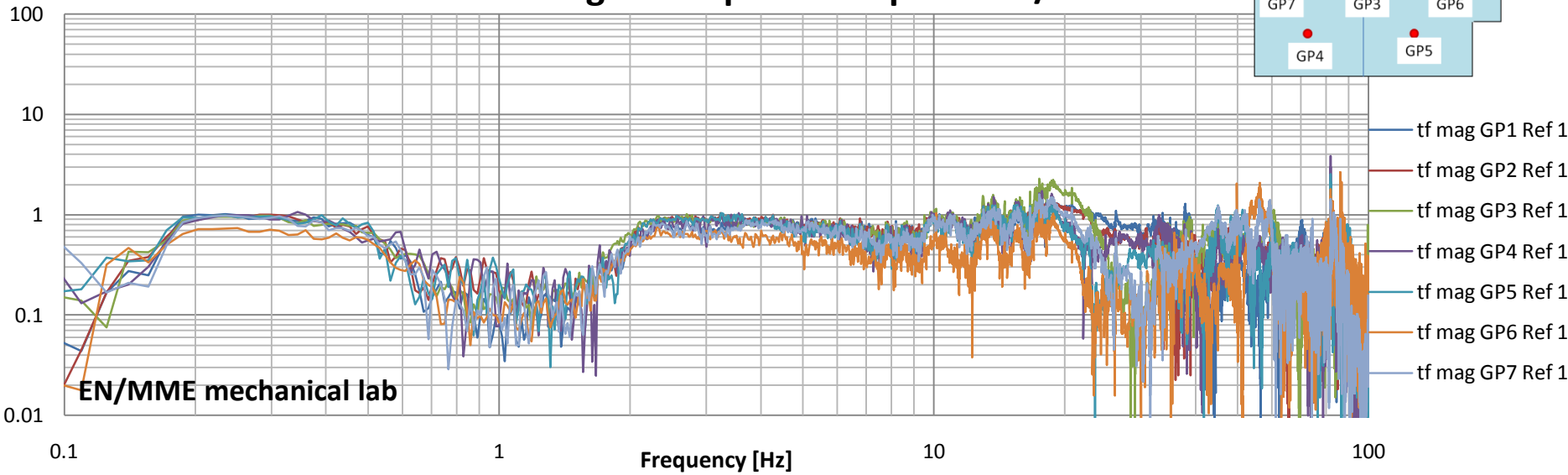


Coherence between measured points

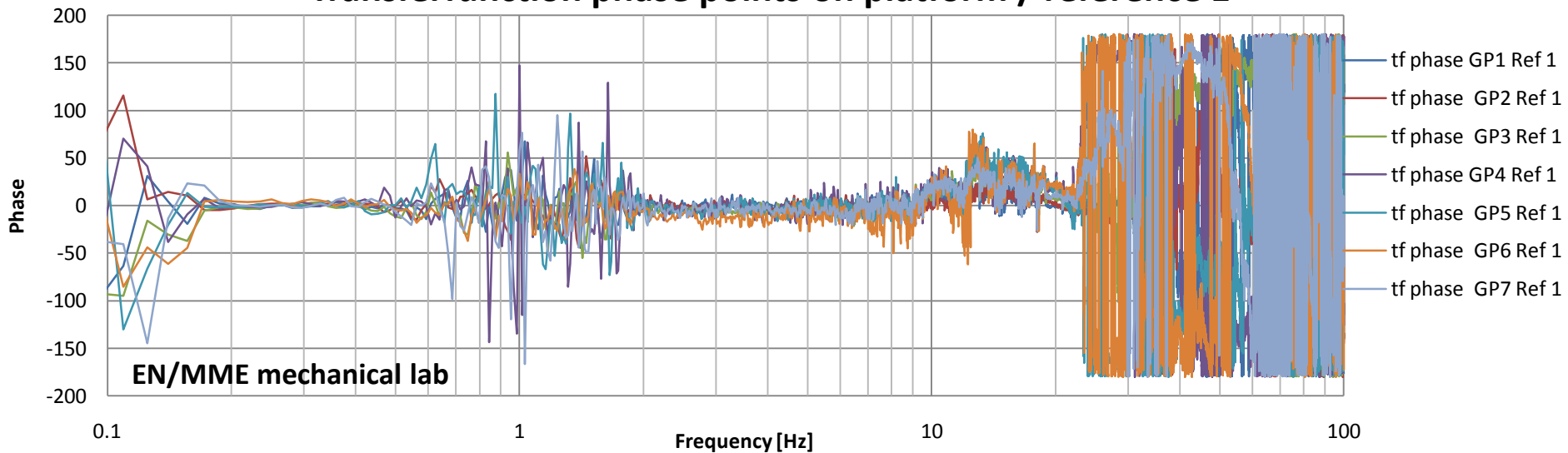


Transfer function: Vertical direction platform / ref 1

Transfer function magnitude points on platform/ reference1

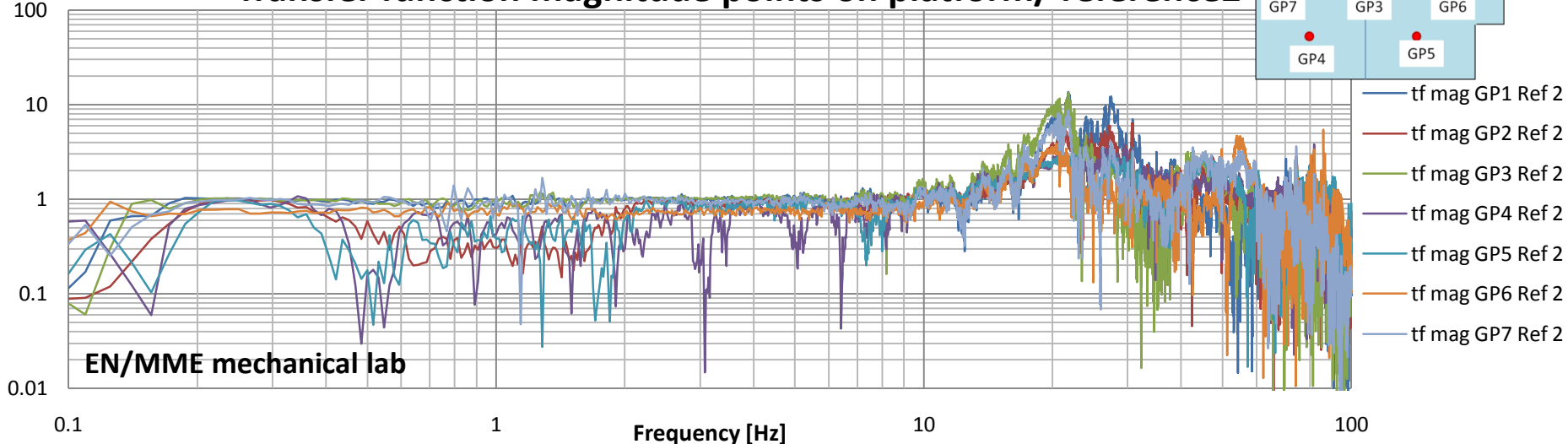


Transferfunction phase points on platform / reference 1



Transfer function: Vertical direction platform / ref 2

Transfer function magnitude points on platform/ reference2



Transferfunction phase points on platform / reference 2

