IDS GeoRadar

IBIS-FS

An innovative sensor for remote monitoring of structural movements and deformations

IBIS-FS: real time vibration analysis utilizing microwave interferometry

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IDS GeoRadar: Innovative Interferometric Radar for Environmental and Civil Engineering Applications

www.idsgeoradar.com

IBIS-FS

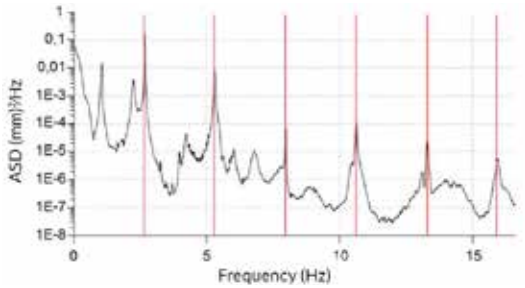
IBIS-FS is a microwave interferometry based system for remote static and dynamic monitoring of bridges and other structures including buildings, historical monuments and towers. IBIS-FS is able to remotely monitor for static applications such as structural load testing, structural displacement and risk of collapse as well as in the preservation of cultural heritage sites, without needing direct access to the site or the use of any invasive equipment. It is also able to perform dynamic monitoring applications including structural resonance frequency measurements, structural modal shape analysis and real-time deformation monitoring.

IBIS-FS BENEFITS

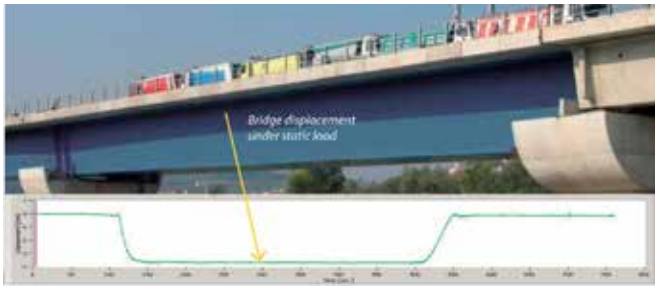
- **Increase structural health monitoring efficiency** through the use of a non-invasive vibration monitoring technique
- **Accurate and remote** monitoring of a bridge or structure without the need to mount any fixed point reflectors on the surface
- **Reduces the time necessary** for static or dynamic bridge structural testing to just a few minutes
- Real-time data for structure desplacement

IBIS-FS FEATURES

- **Remote sensing:** Real-time remote sensing at up to 1 km with no need for equipment to be installed on the monitored structure
- **Accurate measurements:** Measures displacements of as little as 0.01 mm at up to 0.5 km. No standard instrument can achieve such accuracy
- **Sampling:** Structural vibration sampling up to 200 Hz
- **Always operative:** Operates day & night and in all weather conditions

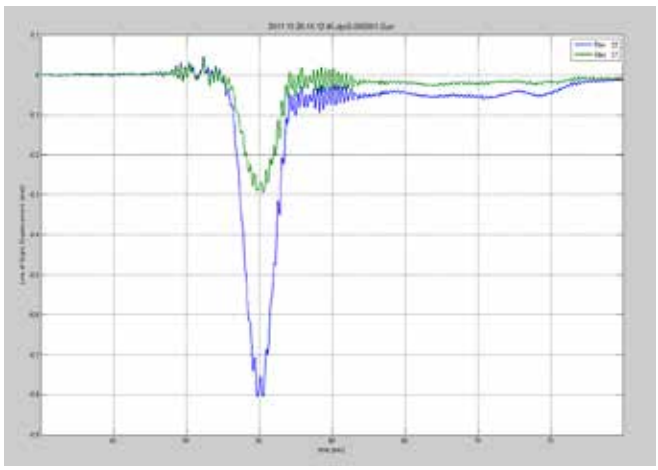


Structural resonance frequency



IBIS-FS static bridge monitoring

IBIS-FS monitoring an iron bridge



Dynamic monitoring : real-time displacement of two reflectors

IBIS-FS Configuration:

IBIS-FS consists of portable radar head which can be mounted on a tripod anywhere within 1km of the target structure with a line of sight. IBIS-FS's IBIS Surveyor software is specifically developed to process the raw files generated during measurement sessions and includes a complete set of features for the static and dynamic evaluation of the overall structural displacement. The software is able to display a power image of the monitored scenario, the displacement of the overall scenario and the displacement among selected points of the scenario. IBIS-FS is available with several types of antenna, depending on the application.

SYSTEM SPECIFICATIONS	
OVERALL WEIGHT (INCLUDING BATTERIES)	30 kg
RECOMMENDED LAPTOP	Panasonic CF-19 Tough-Book
AUTONOMY	More than 10 hours
MAXIMUM RANGE	1 km
FREQUENCY BAND	17.1 - 17.3 GHz
DISPLACEMENT ACCURACY	0.01 - 0.1 mm (depending on range)
POWER SUPPLY	SLA Battery 12VDC 12 AH
SPATIAL RESOLUTION	0.5 m. The resolution may change due to specific national radio regulations
ACQUISITION FREQUENCY	up to 200 Hz
ENVIRONMENTAL	IP65
POWER CONSUMPTION	25.5 W
CERTIFICATION:	EC, FCC, IC

SOFTWARE SPECIFICATIONS	
IBIS SURVEYOR	IBIS Surveyor is equipped with a complete set of features for the static and dynamic evaluation of the overall structural displacement. The software includes: • power image of the monitored scenario • real-time and temporal histories of selected point displacement • Dynamic structural analysis tools to identify the resonance frequencies and modal shapes of the monitored structures.

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