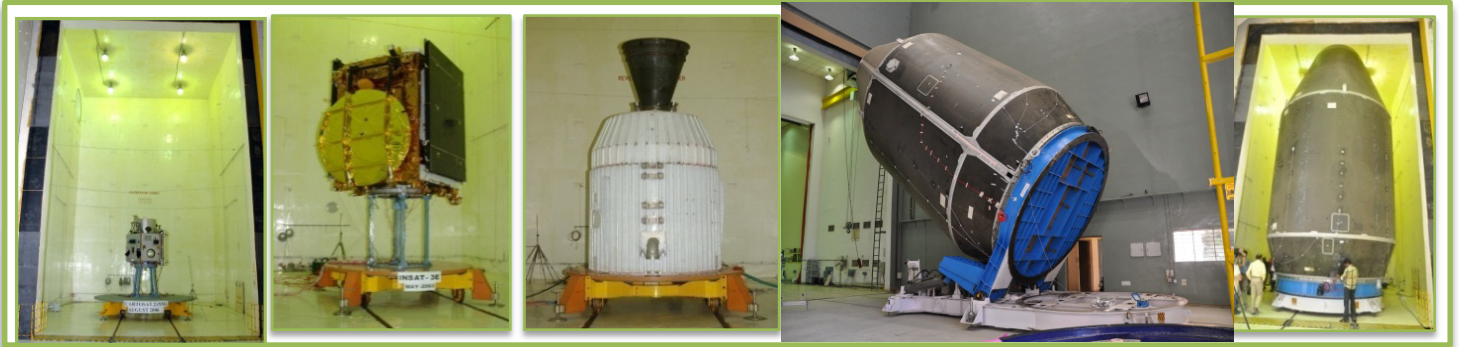


# Acoustic Test Facility



Acoustic Test Facility (ATF) is a national facility for acoustic environment qualification testing of satellites, launch vehicle stages and their subsystems for the ISRO. ATF carries out noise and vibration studies for automobile, white goods and electronic equipment manufacturers. Specialised acoustic studies for aircraft and helicopter development projects have also been undertaken. ATF has expertise in the design, development and commissioning of reverberation chamber based acoustic test facilities for spacecraft and launch vehicle ground testing.

## Reverberation chamber specification

### Geometry

Volume (cu.m)	: 1100
Dimensions (l x b x h – mtrs)	: 10.33 x 8.2 x 13

### Acoustic parameters

Maximum Overall	
Sound Pressure Level (OASPL) dB	: 157 (Ref. 20 $\mu$ Pa)
Frequency range (Hz)	: 25 – 10,000
Spatial Distribution OASPL (dB)	: +/- 1 in central 10% volume

### Instrumentation and data recording

Real-Time acoustic measurements	: 11 channel (B&K PULSE)
Vibration measurement	: 192 channel (PROSIG)
Strain measurement	: 16 Channel (PROSIG)

### Clean room facility

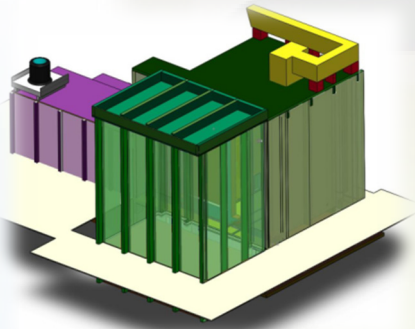
Class	: 100,000
Clean room area	: 210 sq. m

### Specimen handling system

Electric hoist	: 5 ton – 2 Nos
EOT	: 5 ton– 1 No & 20 ton–1 No.
Specimen transport trolley	: 10 ton with rail system

## Acoustic Testing

The ATF has a 1100 cu.m reverberation chamber in which a maximum sound pressure level of 157 dB (Spectrum controlled) can be generated. It has performed more than 2700 blowdowns over 120 acoustic test programmes for the Department of Space. ATF has accumulated more than 25 years of experience in the qualification of spacecraft and launch vehicles for the Indian Space Industry and is continuing to provide very active test support. Experimental support for aero-acoustic and acoustic fatigue activities can also be provided by ATF.



**Design, development and commissioning of acoustic test facilities**

ATF can build large volume reverberation chamber and air/nitrogen based acoustic test facilities on a turnkey mode. Expertise in the design and operation of large reverberation chambers with spring based vibration isolation, massive reverberation room doors, exponential horns, gaseous nitrogen generation systems, acoustic drive systems with closed loop controllers, data acquisition systems is available at ATF. ATF has designed, built and operated/handed over a 1500 cu.m reverberation chamber based acoustic test facility for the Indian Space Research Organisation at their ISITE campus.

**Jet Noise Generator**

ATF has developed a jet noise generator capable of producing high frequency random noise in the frequencies above 2 kHz for which no commercially manufactured generators are available. This device is ideally suited for simulation of the required acoustic environment in reverberation chambers at high frequencies for spacecraft testing. The jet noise generator can also be used to simulate the high frequency noise environment for automobile testing. ATF supplied jet noise generators are currently operational in several acoustic test facilities worldwide, the major ones being those operated by Boeing and Lockheed in the USA, NSPO in Taiwan and Kobe Steel in Japan.



**Acoustic Calibrator**

Acoustic testing requires the use of microphones as measuring devices. Multi/High level calibrators for microphones are currently not available worldwide. Piezo Electric sensors used for noise measurements during acoustic testing require to be calibrated at high sound pressure levels. ATF initially designed, developed and manufactured such a Multi /High Level, multi-frequency calibrator for inhouse use. These calibrators have also been supplied to several users abroad as well as various ISRO facilities for development of indigenous acoustic transducers as well as for the calibration of acoustic sensors used in satellite launches.



**Vibration and Acoustic Measurements for Industry**

ATF offers vibration, ground displacement and acoustic measurement solutions for industry. ATF can provide customized measurement solutions for the automotive, white goods manufacturers and manufacturers of electronic equipment. Complete vibration evaluation right from construction of plant, installation of air conditioning systems, gas piping for wafer coating, installation of high accuracy etching equipment with foundation isolation, can be carried out for LSI and VLSI plants. ATF has carried out such a study with excellent results for the Indian Telephone Industries in Bangalore. ATF can also evaluate the acoustic properties of materials used for acoustic insulation.



**Environmental and Industrial Noise Pollution Measurements**

ATF can offer total solutions - evaluation of environmental/industrial noise pollution, identification of noise sources and customized solutions/services for noise reduction in high noise areas. ATF is a Ministry of Environment & Forests/ Central Pollution Control Board recognized certification agency for Noise Type Approval of petrol, gas and diesel power generating equipment.



**For more information please contact:**

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