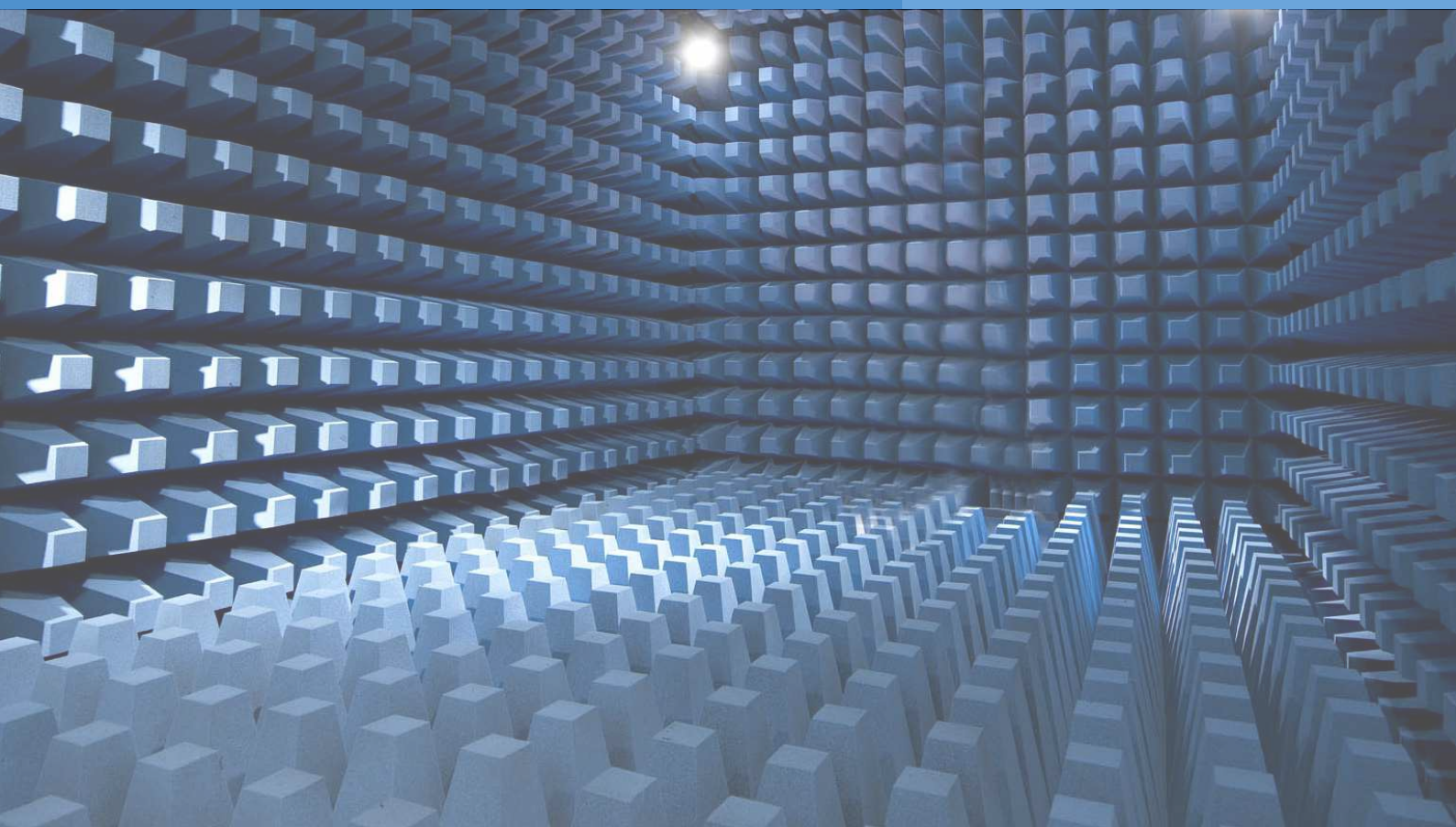


RADIOFREQUENCY & MICROWAVE



**PRODUCTS FOR
AEROSPACE AND DEFENCE**

SLTL GROUP'S VISION MISSION



Dr. Arvind Patel
Chairman and M.D.

VISION:

We believe in continuous innovation & challenging our capabilities to deliver high tech solutions valuable for all strata of Industry.

MISSION:

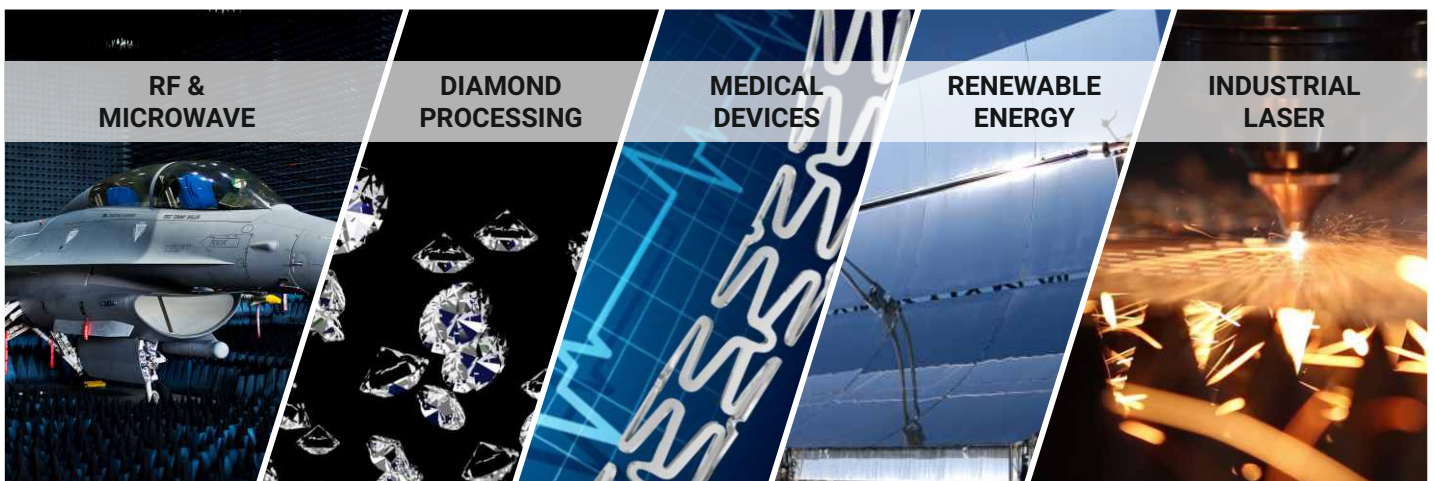
SLTL is committed to bring the best innovation, reliable products, service and total solution to customers for global market with strong coordination & learnings of cross-functional department through its world class manufacturing practices & best in class work culture to attain customer delight.

Journey of RF and Microwave with Dr. Kanhiya Lal

Dr. Kanhiya Lal is the Executive Director of RF & Microwave Division and responsible for most of developmental activities of the Division. Dr. Lal did his doctoral and post-doctoral work on properties of composites as a function of its constituents. After post doctoral work, Dr. Lal started his work in the field of Radio Frequency and Microwave. Through his extensive knowledge in the field he went on developing solutions in the form of microwave (radar) absorbers for various applications such as Anechoic chambers, antenna shrouds, matched loads, RAM's for warships etc. In the year 2007, Dr. Lal joined Sahajanand Laser Technology Ltd. with an aim to increase his solutions outreach in the global market. Dr. Lal has made many Anechoic Chamber and supplied RAM's for various applications in India and abroad including USA, Germany, France, Italy, Canada, Israel etc. Recently Dr. Kanhiya Lal was conferred an award for his contribution in field of RF Absorber and EMI/EMC by Society of EMC Engineers, India during Intl. Conf. on EMI&C (INCEMIC) 2018 at Bangalore.

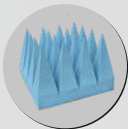

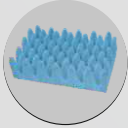

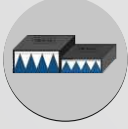
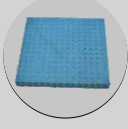

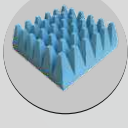

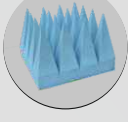


GROUP TODAY



Since, decades SLTL Group is proving to be backbone of the industry by pioneering futuristic technologies. Today, the company is known for providing best research based solutions for the industry's most complex challenges.

ANTENNA PATTERN ENHANCEMENT MATERIAL

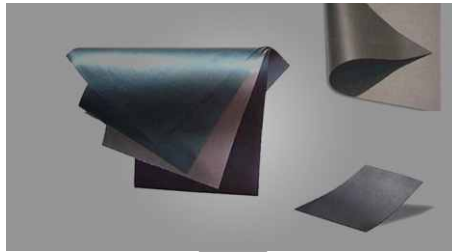
	SERIES NAME		TYPE / SHAPE	STANDARD THICKNESS	FREQUENCY BAND	INDOOR / OUTDOOR	POWER HANDLING CAPACITY	FUNCTION
LOW POWER	FU-SE		Pyramidal Absorber	4", 8", 12", 18", 24", 36"	80MHz-40 GHz and beyond	Indoor	0.5 Watt/in ²	Broadband High Performance Pyramidal Absorber
LOW POWER	FW-SE		Wedge Absorber	4", 8", 12", 18", 24"	80MHz-40 GHz and beyond	Indoor	0.5 Watt/in ²	Broadband High Performance Wedge Absorber
LOW POWER	FC		Convuluted Absorber	2", 4"	5GHz-80 GHz and beyond	Indoor	0.5 Watt/in ²	High Performance at High Frequency
LOW POWER	FU-ML		Flat Multilayer Absorber	18mm-150mm	800MHz-40GHz and beyond	Indoor	0.5 Watt/in ²	Flat Multilayered Electrically Graded Absorber
LOW POWER	FU-FL		Walk On Absorber	40", 28", 22", 18"	80MHz-18 GHz and beyond	Indoor	0.5 Watt/in ²	Intended for use in areas on the floor in an anechoic chamber
LOW POWER	FAS		Flat Antenna Shroud Absorber	10mm-45mm	4GHz- 40 GHz and beyond	Indoor	0.5 Watt/in ²	Flat Broadband Embedded Pyramid Absorber
LOW POWER	FU-SE-PC		Plastic Coated Pyramidal Absorber	4", 8", 12", 18", 24", 36"	80MHz-40 GHz and beyond	Indoor / Outdoor	2 kW/m ²	Broadband High Performance Absorber Suitable For Outdoor Applications
LOW POWER	FHY		Hybrid Absorbers	12", 18", 24"	30 MHz-20 Ghz	Indoor	0.5 Watt/in ²	Truncated absorbers for EMI /EMC chambers
MEDIUM POWER	FU-SE-P		Reticulated Foam Based Medium Power Pyramidal Absorber	4", 8", 12", 18", 24"	300MHz-40GHz and beyond	Indoor	1500 W/m ² to 15000 W/m ²	Open cell absorber Suitable For High power & ventilation applications
HIGH POWER	KV-SC		High Power Pyramidal Absorber	4", 8"	1GHz-40 GHz	Indoor	30 kWatt/m ²	High Power Testing

* Customized solution available in all types of Absorbers



EMI/EMC SHIELDED GASKETS

- **Composition:** Silicon Rubber and Nickel Coated Graphite based EMI/EMC gaskets.
- High shielding effectiveness.
- Minimum galvanic corrosion.
- Can be supplied given in desired size.



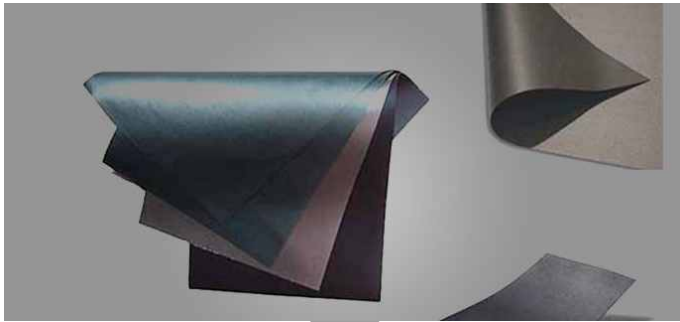
THIN FLEXIBLE RESONATING RAM

- Thin Flexible Narrowband Resonating absorber.
- Performance 15 dB at $\pm 5\%$ band with around the centre frequency
- Temperature withstand capacity from -40°C to $+90^{\circ}\text{C}$.
- Resonating absorbers sheets are available at others frequency ranging from 2GHz - 18GHz.



VERY SHORT STEPPED MATCHED LOADS FOR WAVEGUIDE

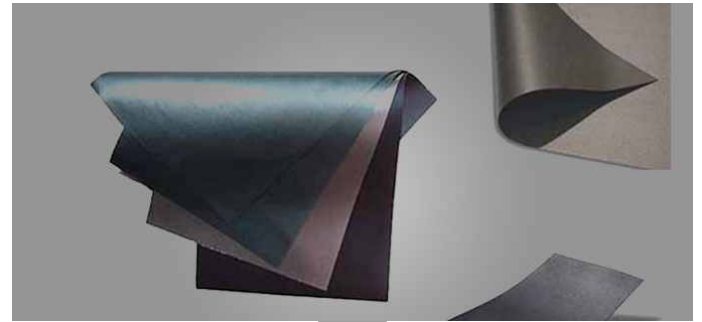
- Matched Load is a device used to terminate a transmission line or waveguide so that all the energy from the signal source will be absorbed.
- We have developed a series of short match loads which can be used for various frequency bands.
- These step short match loads can be customized as per the customer's requirement.



SURFACE CURRENT ATTENUATING SHEET

KV-SR-CN-15

- **Composition:** Magnetically loaded silicone rubber sheet.
- **Thickness:** 0.5mm to 1mm.
- **Useful Temperature Range:** -45°C to $+200^{\circ}\text{C}$.
- Typical **Attenuation** shall vary from about 5.0 dB / cm at 1.0 GHz to 50.0 dB / cm at 10.0 GHz rising up to 90.0 dB/ cm at 18.0 GHz.



EMI SUPPRESSOR SHEET

KV-SCA-SK-1

- **Composition:** Synthetic rubber with magnetic metal flake filler.
- Broad-band thin EMI suppression absorbers were designed to suppress radiated noise from electronic devices for broadband frequency range.
- **Thickness:** $\leq 1.5\text{mm}$
- Measured **power loss** of The KV-SCA-SK-1 was found gradually increasing from a value of 0.24 at 600 MHz to 0.6 at 900 MHz to 0.75 at 1.0 GHz to 0.9 at 1.4 GHz to more than 0.92 between 2.0 GHz to 3.0 GHz
- Useful Temperature Range: -25°C to $+85^{\circ}\text{C}$.

MICROWAVE ABSORBENT PAINT

KV-SCA-P-PU-4.6

- The Microwave Absorbent Paint has been aimed to use on blend surfaces where Surface Current Attenuating Sheet and foam based absorbers are not desirable.
- Reduces RCS of complex object, attenuate surface currents that are generated on metal surfaces, can be used to reduce Q of cavities.
- **Attenuation** Performance is Minimum 20 dB/Cm and 63 dB/Cm at 3.0GHz and 10.0 GHz respectively as insertion loss.
- Single coating thickness can vary from 100 micron to 200 micron.



CONICAL SHAPED RUBBER ABSORBER FOR OUTDOOR USE:

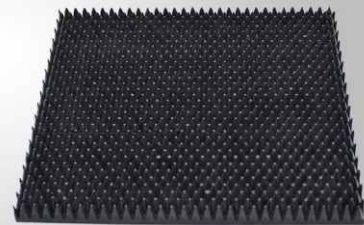


KVCRA-100

- **Size:** 300 x 300 x 100 mm
- Rubber based absorber suitable for outdoor applications.
- **Frequency range:** 0.8 GHz to 18 GHz and higher frequencies.
- **Reflection loss min.** -10 dB at 0.8 GHz, rising to min. -15 dB at 2 GHz, further rising to -20 dB at 5 GHz to 18 GHz and beyond.
- **Supplied to 3 Indian Naval Ships:** INS Kolkata, INS Kochi and INS Chennai

KVCRA-18

- **Size:** 300 x 300 x 18 mm
- Rubber based absorber suitable for outdoor applications.
- **Frequency range** of 5GHz to 18 GHz and higher frequencies.
- **Reflection loss min.** -15 dB at 5 GHz, rising to min. -17 dB at 8 GHz and min. -20 dB at 10 GHz and higher frequencies.
- **Supplied to 5 Italian Naval Boats and 18 Indian Naval ships**



BROADBAND MICROWAVE HONEYCOMB ABSORBER:



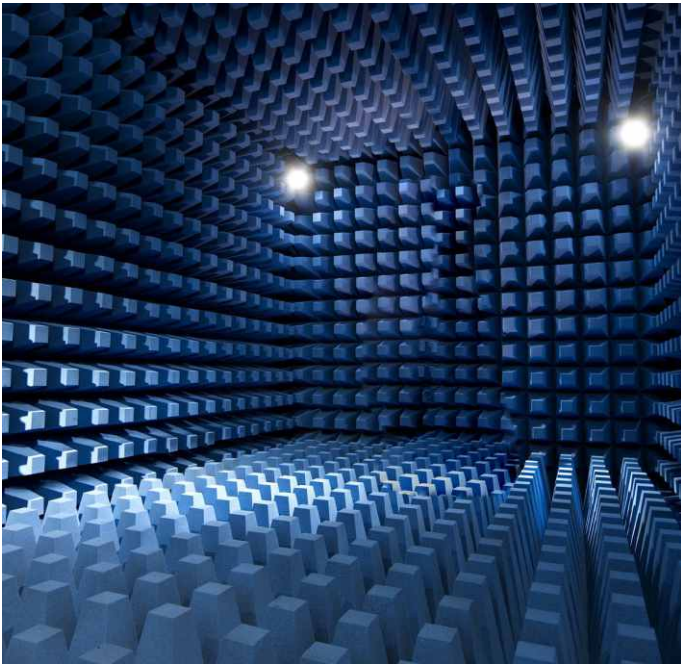
FAS-12-HC

- Honeycomb absorber is fabricated in poly carbonate based Honeycomb core.
- Electrically Graded, High power handling capacity, Low weight, High mechanical strength.
- **Size:** 300 x 300 x 12 mm
- -11 dB **reflection loss** from 8 to 18 GHz.
- **Supplying to Israel.**

FAS-25-HC

- **Size:** 300 x 300 x 25 mm
- -17 dB **reflection loss** from 8 to 18 GHz.
- The Honeycomb absorber can have a uniform coating to optimize **insertion loss** or a graded coating to optimize **reflection loss**.

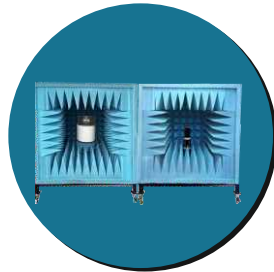




SHIELDED ANECHOIC CHAMBERS

- MIL-STD/Commercial EMI/EMC Measurements
- Turn-Key Solutions
- 3M Ranges
- 10M Ranges
- RCS Measurements
- Faraday Cage
- Antenna Pattern Measurements

ANECHOIC TEST BOXES



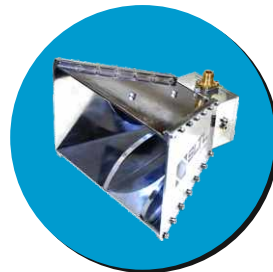
- Low cost solution to anechoic chamber
- Set consists of two boxes one is transmitter and other is receiver box.
- Five side absorber covered metallic movable box.
- **Frequency range:** 800 MHz to 18 GHz and beyond.
- Reflection signal (reaching test zone) down by min -30dB with respect to direct signal at 800 MHz raised up to -40dB at 3.0 GHz and higher frequencies.

- Modular PAN Type or Welded enclosure.
- RF Tight Locking & Gasket System.
- **Shielding effectiveness** > -80 dB to -100 dB.
- RF & Microwave absorber lining provided if required. Power & signal filters.
- Waveguides for data communication.
- Customizable I/O Connector Panels.
- Wave guide air vents for air ventilation.
- Fully customized solution provided in shielded boxes.



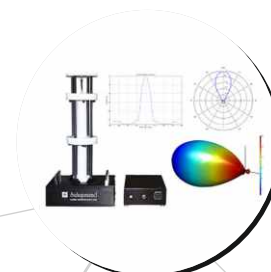
SHIELDED BOX

DOUBLE RIDGED HORN ANTENNA



- Ultra Broadband: 800MHz-18GHz
- Gain in dBi : 5-14 (Typically)
- VSWR Ratio: < 1.75: 1 (Typically)
- Front to Back Ratio: 22 dB
- Cross Polarization: 23dB minimum

- 360 degree continuous azimuth range.
- DC to 18 GHz measurement range.
- Our PC based antenna radiation pattern measurement Software can be synchronized with various analyzers like VNA, Power Meter, Spectrum Analyzer etc, to record
- Power reading automatically at various positions.
- Measurement facilities such as Antenna Radiation Pattern Linear Plot, Polar Plot, 3D Plot and Axial Ratio.



SINGLE AXIS ANTENNA POSITIONER

SPECIAL FEATURE:

Absorbers can be made compatible for clean room conditions.

Clean Room Absorbers are specially treated so that it does not emit more particles and this treatment does not affect the overall performance. Clean room treatment can be done on any polyurethane foam based absorber. If required can be coated with binder which makes it Clean Room Absorbers suitable for use in class 10,000 to 100,000 of FED STD 209E clean room standard which is equivalent to ISO-7 and ISO-8 of ISO 14644-1 clean room standard.

Our Medium power Clean Room Absorbers installed at European Space Agency (Thales Alenia Space)

ABSORBERS MATERIAL PROPERTIES

COLOUR

As desired, generally available in blue colour

STANDARD BASE SIZE

60 cm X 60 cm

CHEMICAL COMPOSITION

Carbon ferrite impregnated polyurethane foam.

MAXIMUM SERVICE TEMPERATURE

90 degree centigrade.

FIRE RETARDENCY

Passes NRL-8093, USA test 1, 2 & 3 with **Zero Halogen Means**

FIRE RETARDANT

Foam absorbers are fire retardant with zero halogen

TOXIC GAS RETARDANT

toxic gases like HCL/HBr and poisonous gases like phosgene.

COMPLIANCE

RoHS & Reach Compliant.

GROUP TODAY

LASER CUTTING
MARKING
WELDING
HARDENING & CLADDING
MICRO MACHINING

Diamond Processing
Bending
Sheet Storage
Loading - Unloading
Renewable Energy
Medical Stents
RF&Microwave
Automation

SLTL'S STRENGTH

Experience 33+ Years	6 Mfg. Plants Laying Over 54000 Sq. mtr.	10% Yearly R&D	27+ Awards
15000+ Systems	ISO 9001-2015	26+ Patents	Exports 40+ Countries

WE CARE

MTTR 90% CALLS < 8 HRS	MTBF 6000 HRS BEST IN CLASS	ONLINE SERVICE RESPONSE 100% CALLS < 10 MIN	PHYSICAL RESPONSE 97.3% < 6 HRS	60% REPEAT CUSTOMERS	98.7% DELIGHTED CUSTOMERS
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An ISO 9001:2015 Certified Company

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