

# Bosch Engineering Labs: Research and Development



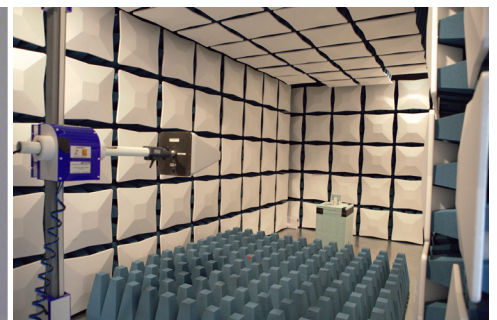
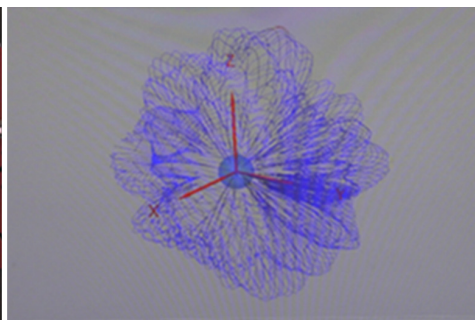
**Our intrusion products go through rigorous testing in our engineering labs to provide you with only the highest quality motion sensors and intrusion systems for your applications.**

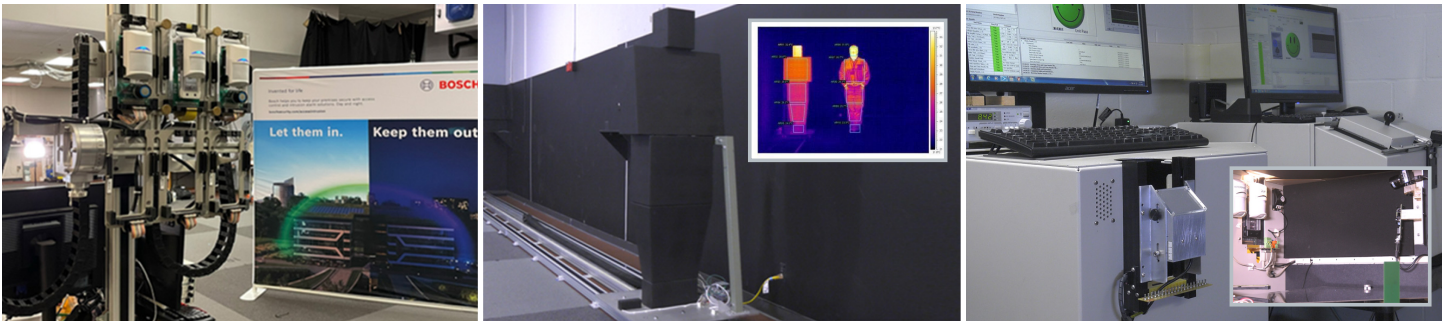
**Chambers:** We use different chambers to test the design and efficiency of our motion detectors.

- **ETS:** Spectral Emissions – **Efficiency**
  - Our ETS chamber tests the efficiency so that the radar looks where it's supposed to, optimizing catch performance and minimizing false alarms.
- **RFI:** Radio Frequency interference - **Robustness**
  - Our RFI testing chamber ensures the detector will not be impacted or jammed by interference from other transmitting devices (e.g. Cell phones, WiFi) or malicious intent to defeat the detector.

■ **Temperature Chambers**

- Our temperature chamber is used to ensure robust operating performance across specified temperature ranges, plus a significant buffer testing extreme temperatures.





**Range Room:** Our range room simulates real-world conditions including “walk tests” in a 5000 sq ft lab, mimicking commercial spaces and satisfying all UL and Global testing requirements.

■ **Our variety of tests mimic various real-world conditions like:**

- Pet immunity: robots for both large and small animals
- Temperature compensation: Room temp increases or decreases makes unit more or less sensitive
- Heater/AC turns on: draft doesn't cause false alarm

- Microwave noise: constant motion from fan does not alarm
- Photo sensor: headlights or flashlights are shined on the unit to test for false alarms
- Break varying types of glass to record signals and adapt algorithms

■ **Test Fixture**

- Our test fixture assures that every motion sensor is fully tested for its detection performance on the production line through this scaled-down walk test simulation. We do not sample test, we test every unit produced.

**Systems and Software**

■ **Automated test:** Our automated test validates our robust systems, checking for product quality and reliability

- Our automated test is 24/7
- We test early and often
- All results are recorded and reproducible
- We can easily simulate large systems (modeling applications using; keypads, panels, cameras, cloud connections, etc.)
- We use the same interfaces (APIs) to test internally as well as to integrate with external partners

■ **Reduced Time To Market:**

- The automated test reduces the duration of time to complete testing

■ **Software Integration Lab:**

- Our software integration lab tests and simulates customer scenarios in order to resolve challenges quickly and efficiently



Test Statistics							
Total Statistics							
All Tests	Total	Pass	Fail	Skip	Elapsed	Pass / Fail / Skip	
	8729	8288	2	439	210:28:24		
Statistics by Tag							
	Total	Pass	Fail	Skip	Elapsed	Pass / Fail / Skip	
3.08	2826	2780	0	46	41:57:29		
3.09	154	138	0	16	08:24:23		
3.10	910	884	0	26	11:50:46		
3.11	447	435	0	12	08:03:38		
3.11.5	356	352	0	4	08:26:48		
3.12	943	883	0	60	29:46:30		
3.13	2242	2160	2	80	96:30:13		
3.14	92	86	0	6	04:18:52		
3.15	156	10	0	146	00:36:53		
4.0	13	10	0	3	00:34:55		
4.00	220	220	0	0	02:44:40		
abc_key	6	6	0	0	00:22:39		
abcKeys	5	5	0	0	00:06:15		
abcKeys	88	87	0	1	00:48:03		

**210 Hours of testing time on 5 Intrusion Panels in under 2 days!**

**Bosch Security and Safety Systems**  
Visit [boschsecurity.com](http://boschsecurity.com) for more information.

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