

# E6950B eCall / NG-eCall / Hybrid eCall / China eCall AECS Testing Solution

Emergency Safety Through End-To-End Validation and Standards Conformance

## Introduction

Emergency call systems have become a critical safety feature in connected vehicles, enabling automatic or manual communication with emergency services following a vehicle incident. As global regulations and communication technologies continue to evolve, automotive manufacturers must support multiple regional emergency calling implementations, including eCall, NG-eCall, Hybrid eCall, ERA-GLONASS, and China eCall (Automotive Emergency Call System, AECS).

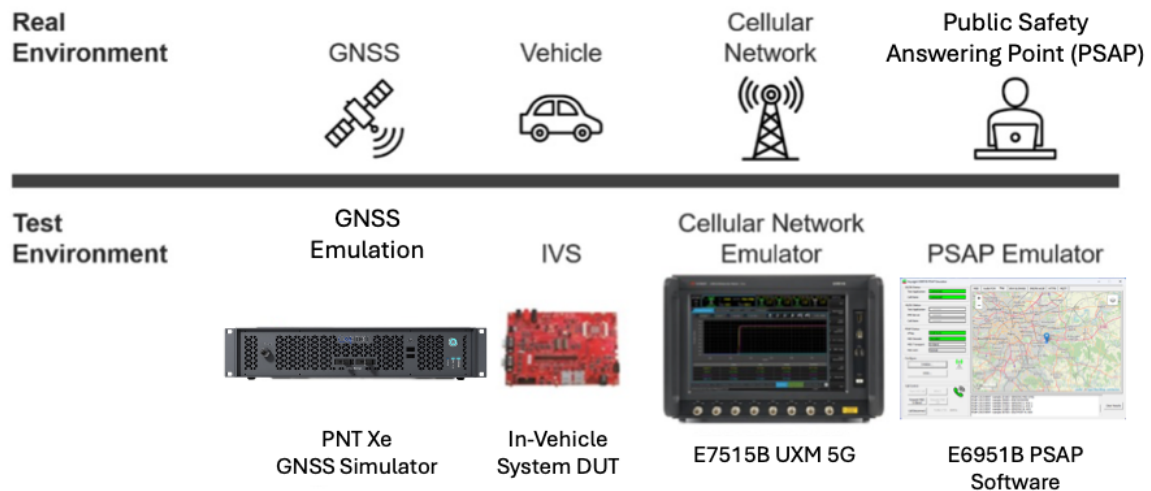
The In-Vehicle System (IVS) is the core component responsible for detecting emergency events, determining vehicle position through Global Navigation Satellite System (GNSS) receivers, establishing emergency network connectivity, and transmitting emergency data to the Public Safety Answering Point (PSAP). Depending on regional requirements and network availability, emergency communication may be delivered through circuit-switched voice services, IMS-based NG-eCall architectures, or packet-based emergency communication mechanisms.

Validating emergency call functionality requires comprehensive testing of multiple interacting technologies, including cellular communications, GNSS positioning, emergency call protocols, voice services, and PSAP connectivity. Accurate and repeatable testing is essential to ensure standards compliance, certification readiness, interoperability, and reliable operation under real-world conditions.

The Keysight E6950B eCall / NG-eCall Conformance Test Solution provides automated end-to-end validation for automotive emergency communication systems, supporting eCall, NG-eCall, Hybrid eCall, ERA-GLONASS, and China eCall (AECS) requirements. Built on the industry-leading Keysight UXM wireless test platform, the solution enables OEMs, Tier 1 suppliers, module vendors, and test laboratories to accelerate development, simplify certification programs, and reduce validation complexity through a scalable and repeatable test environment.

In a typical eCall test setup (Figure 1), the UXM Wireless Test Platform emulates the cellular network infrastructure, while Keysight Positioning, Navigation, and Timing (PNT) solutions provide controlled and repeatable location information to the IVS. Together, these solutions enable complete validation of emergency call workflows, from IVS activation and call establishment to MSD transmission, PSAP connectivity, and voice communication testing.

For GNSS simulation in eCall testing, Keysight PNT Xe provides high-fidelity multi-constellation and dual-frequency GNSS support, covering GPS, Galileo, GLONASS, BeiDou, QZSS, IRNSS, and SBAS. With up to 128 channels and support for two concurrent frequency bands per unit (L1, L2, L5, or L6), PNT Xe enables realistic and repeatable positioning scenarios that support global validation of legacy eCall, NG-eCall, ERA-GLONASS, and China eCall systems.



**Figure 1.** eCall Testing Environment

As part of the eCall test environment, the E6951B PSAP Emulator does the following:

- Controls the call box to emulate a cellular network and the signal generator to provide the GNSS coordinates.
- Simulates a PSAP to respond to the IVS under test and decode MSD data.
- Verifies that the IVS modem can trigger an emergency call, send raw MSD data and establish a voice connection with the PSAP.
- Supports eCall, NG-eCall, Hybrid eCall, ERA-GLONASS, and China eCall (AECS) testing.

For information about the Keysight instruments, see:

- [Cellular Network Emulator E7515B UXM 5G](#)
- [GNSS Simulator PNT Xe](#)
- [E6951B PSAP Free Trial Software](#)

# Ordering Configuration

Recommended Configuration for Software and Hardware

## Choose your Hardware

| Model                                                                                                              | Function                                                                                                                                                                                                  | Hardware Options                                                                                    |
|--------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------|
| E7515B UXM5G<br>                  | This UXM5G model requires 2G/3G Test Application for eCall and 4G and beyond for the Next-Generation eCall network emulation. IMS-SIP server required for NG eCall.                                       | <ul style="list-style-type: none"> <li>E7515B-002 above HW</li> </ul>                               |
| PNTXE100A<br>Signal Generator<br> | PNT Xe Signal Generator provides high-fidelity multi-constellation GNSS simulation, supporting GPS, Galileo, GLONASS, BeiDou, QZSS, IRNSS, and SBAS, with up to 128 channels and dual-frequency operation | <ul style="list-style-type: none"> <li>HW items:<br/>PNTXE100A-101/102<br/>PNTXE100A-200</li> </ul> |

## Choose your Software Licenses

### Legacy eCall / ERA-GLONASS

| License Category | Model Number | Description                                    | Mandatory/Optional |
|------------------|--------------|------------------------------------------------|--------------------|
| UXM              | C8700200A    | Test Application Framework                     | Mandatory          |
|                  | C8731108A    | GSM Rel 8 - signaling                          | Mandatory          |
|                  | C8733113A    | W-CDMA Rel 13 - signaling                      | Mandatory          |
| PSAP             | E69511B      | PSAP Framework                                 | Mandatory          |
|                  | E69512B      | PSAP EU Geographic (eCall)                     | Mandatory          |
|                  | E69525B      | PSAP ERA-GLONASS oad                           | Optional           |
|                  | E69521B      | PSAP CS SMS Transport                          | Optional           |
|                  | E69522B      | PSAP PS and IMS SMS Transport                  | Optional           |
|                  | E69524B      | PSAP Live Network                              | Optional           |
|                  | E69526B      | PSAP VW Infotainment Proprietary OAD (VW Only) | Optional           |
| TAP Automation   | KS8400B      | PathWave Test Automation                       | Mandatory          |
|                  | KS82051B     | Ecall Automated Test Cases                     | Mandatory          |
|                  | KS82052B     | ERA-GLONASS Automated Test Cases               | Optional           |
|                  | KS82053B     | GNSS Automated Test Cases                      | Optional           |

## NG eCall

| License Category | Model Number | Description                                    | Mandatory/Optional |
|------------------|--------------|------------------------------------------------|--------------------|
| UXM              | C8700200A    | Test Application Framework                     | Mandatory          |
|                  | C8730115A    | LTE Rel 15 - core signaling                    | Mandatory          |
|                  | C8735115A    | 5G NR Rel 15 - core signaling                  | Optional           |
|                  | C8735415A    | 5G NR Rel 15 - core supplementary SA signaling | Optional           |
|                  | C8700202A    | Mobility (for 4G and 5G simultaneous cells)    | Optional           |
|                  | C8700201A    | IMS-SIP Emulation                              | Optional           |
| PSAP             | E69511B      | PSAP Framework                                 | Mandatory          |
|                  | E69512B      | PSAP EU Geographic (eCall)                     | Mandatory          |
|                  | E69520B      | PSAP IMS Transport and NGeCall                 | Mandatory          |
| TAP Automation   | KS8400B      | PathWave Test Automation                       | Mandatory          |
|                  | KS82054B     | NG eCall Automation Framework                  | Mandatory          |
|                  | KS82055B     | NG eCall CEN 17240 Automated Tests Cases       | Optional           |
|                  | KS82056B     | NG eCall ETSI 103 683 Automated Test Cases     | Optional           |

## Hybrid eCall

| License Category | Model Number | Description                                    | Mandatory/Optional |
|------------------|--------------|------------------------------------------------|--------------------|
| UXM              | C8700200A    | Test Application Framework                     | Mandatory          |
|                  | C8731108A    | GSM Rel 8 - signaling                          | Mandatory          |
|                  | C8733113A    | W-CDMA Rel 13 - signaling                      | Optional           |
|                  | C8730115A    | LTE Rel 15 - core signaling                    | Mandatory          |
|                  | C8700201A    | IMS-SIP Emulation                              | Mandatory          |
|                  | C8735115A    | 5G NR Rel 15 - core signaling                  | Optional           |
|                  | C8735415A    | 5G NR Rel 15 - core supplementary SA signaling | Optional           |
|                  | C8700202A    | Mobility (for 4G and 5G simultaneous cells)    | Optional           |
| PSAP             | E69511B      | PSAP Framework                                 | Mandatory          |
|                  | E69512B      | PSAP EU Geographic (eCall)                     | Mandatory          |
|                  | E69520B      | PSAP IMS Transport and NGeCall                 | Optional           |
| TAP Automation   | KS8400B      | PathWave Test Automation                       | Mandatory          |
|                  | KS82054B     | NG eCall Automation Framework                  | Mandatory          |
|                  | KS82055B     | NG eCall CEN 17240 Automated Tests Cases       | Optional           |
|                  | KS82056B     | NG eCall ETSI 103 683 Automated Test Cases     | Optional           |
|                  | KS82057B     | Hybrid eCall CEN18052 Automated Test Cases     | Mandatory          |

## China eCall - AECS

| License Category | Model Number | Description                                    | Mandatory/Optional |
|------------------|--------------|------------------------------------------------|--------------------|
| UXM              | C8700200A    | Test Application Framework                     | Mandatory          |
|                  | C8730115A    | LTE Rel 15 - core signaling                    | Mandatory          |
|                  | C8735115A    | 5G NR Rel 15 - core signaling                  | Optional           |
|                  | C8735415A    | 5G NR Rel 15 - core supplementary SA signaling | Optional           |
|                  | C8700201A    | IMS-SIP Emulation                              | Optional           |
| PSAP             | E69511B      | PSAP Framework                                 | Mandatory          |
|                  | E69513B      | PSAP China Geographic                          | Mandatory          |
|                  | E69523B      | PSAP HTTP and HTTPS Transport                  | Optional           |
|                  | E69527B      | MQTT MSD Transport                             | Optional           |
| TAP Automation   | KS8400B      | PathWave Test Automation                       | Mandatory          |
|                  | KS82054B     | NG eCall Automation Framework                  | Mandatory          |
|                  | KS82058B     | China eCall AECS Automated Test Cases          | Mandatory (TBD)    |

## PNT XE Feature Keys

| License Category        | Model Number  | Description                                    | Mandatory/Optional |
|-------------------------|---------------|------------------------------------------------|--------------------|
| Control software        | PNTXE401A     | PNTXe Control Software (PNTXE-4001)            | Mandatory          |
| GPS<br>feature keys     | PNTXE100A-301 | PNTXe Feature Key GPSL1 (PNTXE-3011)           | Optional           |
|                         | PNTXE100A-302 | PNTXe Feature Key GPSL2 (PNTXE-3012)           | Optional           |
|                         | PNTXE100A-303 | PNTXe Feature Key GPSL5 (PNTXE-3013)           | Optional           |
| GALILEO<br>feature keys | PNTXE100A-304 | PNTXe Feature Key GalileoE1 (PNTXE-3021)       | Optional           |
|                         | PNTXE100A-305 | PNTXe Feature Key GalileoE5 (PNTXE-3021)       | Optional           |
|                         | PNTXE100A-306 | PNTXe Feature Key GalileoE6 (PNTXE-3023)       | Optional           |
| GLONASS<br>feature keys | PNTXE100A-307 | PNTXe Feature Key GlonassL1 (PNTXE-3031)       | Optional           |
|                         | PNTXE100A-308 | PNTXe Feature Key GlonassL2(PNTXE-3032)        | Optional           |
|                         | PNTXE100A-309 | PNTXe Feature Key Glonass CDMA L1 (PNTXE-3033) | Optional           |
|                         | PNTXE100A-310 | PNTXe Feature Key Glonass CDMA L2 (PNTXE-3034) | Optional           |
|                         | PNTXE100A-311 | PNTXe Feature Key Glonass CDMA L3 (PNTXE-3035) | Optional           |
| BEIDOU<br>feature keys  | PNTXE100A-312 | PNTXe Feature Key Beidou B1I (PNTXE-3041)      | Optional           |
|                         | PNTXE100A-313 | PNTXe Feature Key Beidou B2I (PNTXE-3042)      | Optional           |
|                         | PNTXE100A-314 | PNTXe Feature Key Beidou B1C (PNTXE-3043)      | Optional           |
|                         | PNTXE100A-315 | PNTXe Feature Key Beidou B2a (PNTXE-3044)      | Optional           |
|                         | PNTXE100A-316 | PNTXe Feature Key Beidou B3I (PNTXE-3045)      | Optional           |
| QZSS<br>feature keys    | PNTXE100A-317 | PNTXe Feature Key Beidou B2b (PNTXE-3046)      | Optional           |
|                         | PNTXE100A-318 | PNTXe Feature Key QZSS L1 (PNTXE-3051)         | Optional           |
|                         | PNTXE100A-319 | PNTXe Feature Key QZSS L2 (PNTXE-3052)         | Optional           |
|                         | PNTXE100A-320 | PNTXe Feature Key QZSS L5 (PNTXE-3053)         | Optional           |
| IRNSS<br>feature Keys   | PNTXE100A-321 | PNTXe Feature Key QZSS L6 (PNTXE-3054)         | Optional           |
|                         | PNTXE100A-322 | PNTXe Feature Key IRNSS L1 (PNTXE-3061)        | Optional           |
| EXTRA features          | PNTXE100A-323 | PNTXe Feature Key IRNSS L5 (PNTXE-3062)        | Optional           |
|                         | PNTXE100A-351 | PNTXe Remote Vehicle Feature Key (PNTXE-3301)  | Optional           |
|                         | PNTXE100A-352 | PNTXe NMEA Output Feature Key (PNTXE-3302)     | Optional           |
|                         | PNTXE100A-353 | PNTXe Data Streaming Feature Key (PNTXE-3303)  | Optional           |
|                         | PNTXE100A-354 | PNTXe RTCM Feature Key (PNTXE-3304)            | Optional           |

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