



# Enigma Explorer

## Series 4 Radio Processing Unit

### IP Hardware Core

Enigma™ Explorer is a family of high performance wireless IP cores, covering wireless connectivity such as Bluetooth and Wi-Fi and television and audio broadcast. Specifically designed to meet the requirements for high performance markets such as Home Entertainment, Personal Computing and Wireless Infrastructure, Enigma Explorer provides a highly flexible platform for solutions requiring both high performance and design flexibility.

Explorer Series 4 implements all of the connectivity and broadcast reception requirements of complex connectivity and broadcast SoCs. With more than thirty different deployable standards available, Explorer Series 4 provides the most comprehensive baseband solution for integration into SoCs and advanced chipsets. Explorer Series 4 is configurable to support a wide range of performance capabilities, ranging from MIMO-capable multi-stream cores featuring dynamic support for mixed simultaneous standards to single-stream configurations that can replace multiple hardwired cores.

Building on the previous generations of the highly successful Explorer platform, the Explorer Series 4 uniquely combines fully programmable multi standard modulation and coding processors with supporting hardware accelerators for optimised performance, along with a multi-stream DMA fabric, to provide a power and area optimised multi-standard baseband solution.

The Explorer Series 4 has an embedded low power 32 bit MIPS® processor which implements high level control APIs, removes system dependencies and performs tasks such as the Wi-Fi MAC that might otherwise be implemented on less power efficient application processors. A wide range of MIPS processor configurations may be embedded within the Explorer Series 4, enabling additional system scalability.

### Broadcast and Connectivity Standards Support

<b>TV Broadcast</b>	DVB-T2, DVB-T, ISDB-T, SBTVD, ATSC, GB20600-2006 (CTTB) DVB-S2, DVB-S, ISDB-S DVB-C2, DVB-C, J.83B, ISDB-C DVB-H, T-DMB, 1-Seg ISDB-T
<b>Audio Broadcast</b>	DAB/DAB+, HD Radio, 3-seg, ISDB-T, DRM, FM, AM
<b>Connectivity</b>	IEEE 802.11a/b/g/n/ac up to 4x4 MIMO IEEE 802.11ac With simultaneous Bluetooth LTE

### Features

- Multi-standard Demodulation and Connectivity Platform
- Scalable from Single Channel to Multi stream multi standard
- Flexible RF interfaces
- Industry-leading PHY performance
- Choice between Integrated Wi-Fi MAC's

### Benefits

- Complete Multi-standard baseband solution
- Proven solution that minimizes risk and time to market
- Can provide all the required connectivity for a world standard SoC
- Easy integration into an SoC

### Applications

- Digital TV and set-top boxes
- Digital Radio (consumer or automotive)
- Tablets/smartphones
- Connected consumer products
- Internet of Things

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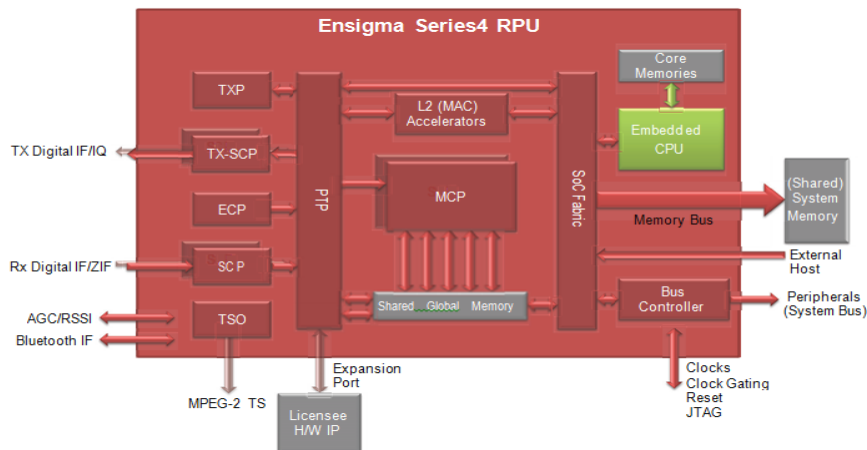


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**General Features**

- **Multi-standard TV/Radio Demodulation and Connectivity.** Explorer Series 4 supports applications as diverse as world-standard TV demodulation, consumer or automotive radio and a wide range of Wi-Fi configurations. This enables a single IP core to be leveraged throughout an organisation to provide baseband support for a broad range solutions – with the added benefit that should convergence bring those requirements together, the standards are running on common proven IP.
- **Scalable from single channel to multi-stream multi-standard.** Explorer Series 4 was designed with scalability in mind. Cores can be precisely configured to support just what a licensee requires, or what they envisage they will require over the lifetime of their SoC. The underlying fabric manages the streaming of data through accelerators enabling simple and efficient extension from single to multi-stream.
- **Flexible RF Interfaces.** Explorer Series 4 supports a wide range of tuners, with or without RSSI support. It has inherent flexibility in input sampling frequency and mixing via the configurable downsampling and filtering within the SCP. The transmit interface is optimised to simplify reconstruction filtering. Tuner access is made via an abstracted tuner Driver API, easing support for alternative tuners. Licensees may choose to interface to commercially available RF ICs or integrate with third-party RF and analogue IP available from Imagination’s ecosystem partners. Imagination’s IP is already field-proven with the majority of today’s solutions

- **Industry Leading PHY Performance.** It is recognised that the performance of every standard delivered on the Explorer Series 4 must be leading edge and, at worst, comparable to the best solutions on the market. Imagination are one of the very few companies with the required significant resources to research, develop, measure, compare, refine, and deliver solutions globally to multiple licensees, having invested hundreds of man years in the platform technology and algorithms to date.
- **Choice of Integrated Wi-Fi MACS.** Licensees have flexibility in how they configure the Wi-Fi MAC. As well as the more common complete MAC configuration, a thin MAC configuration that leverages Linux/Android’s mac80211 on an application processor, and a fully embedded configuration including IP stack and Wi-Fi supplicant are also available, making Enigma’s RPU able to fit into a diverse range of Wi-Fi applications.



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