

The SES software portfolio covers the following two commercial software products:

## Spark Modulator DRM30

Spark Modulator DRM30 comprises of a DRM content processor with OFDM and MDI output generator.



## Spark MDI Client

The Spark MDI Client processes MDI input via network or file and generates an OFDM signal.

The products can be extended by optional plug-ins as subsequently listed:

Base Product A	Spark Modulator DRM30
Option A1	DRM+ signal generator option
Option A2	MDI UDP streaming or file generator
Option A3	AM/AMSS signal generator
Option A4	FM/RDS signal generator
Option A5	xHE-AAC/HE-AAC encoder instance

  

Base Product B	Spark MDI Client
Option B1	DRM+ signal generator option

For **purchasing and pricing information**, please contact us at [mail@drm-sender.de](mailto:mail@drm-sender.de). If you are interested in a detailed quotation, please include a list of your items of interest together with your company information.

## A: Spark Modulator DRM30

Spark Modulator DRM30 is a software-defined real-time Digital Radio Mondiale (DRM) signal generator for Linux and Windows® operating systems. The license covers a content management system with flexible datarate switching, service configurability as well as many DRM-related content generation features, such as AAC+, MOT slideshow<sup>1</sup>, MOT website<sup>2</sup>, PRBS<sup>3</sup> and pre-coded or live (license required) xHE-AAC. DRM30 robustness modes A, B, C, D as well as many baseband-postprocessing features are included (FIR, AWGN, PAPR reduction) and different baseband output devices such as the Ettus USRP™ are supported. *This product with can be extended with optional packages as described below.*

### A1: DRM+ Option

The DRM+ Option extends the functionality of Spark Modulator DRM30 to support robustness mode E for transmissions in the VHF range.

### A2: MDI<sup>4</sup> Streaming Option

The MDI Streaming Option extends the Spark Modulator DRM30 to encode the DRM multiplex configuration and transmit the MDI-formatted content via UDP/IP in real-time to another OFDM modulator or processor. The MDI packet stream can also be received and modulated by the Spark MDI Client DRM30 (see B) or by other MDI-compatible broadcast decoders.

### A3: AM/AMSS<sup>5</sup> Option

The AM/AMSS Option is an extension to the Spark Modulator DRM30 to support the transmission of high-quality AM signals, along with digital service information on short-, long- and medium-wave. AMSS enables the transmission of SDC service information via a

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<sup>1</sup> Multimedia Object Transfer (MOT) SlideShow – see ETSI TS 101 499  
<sup>2</sup> Multimedia Object Transfer (MOT) Broadcast website – see ETSI TS 101 498  
<sup>3</sup> Pseudo-Random Binary Sequence as defined in ETSI TS 102 349 Figure 7.1  
<sup>4</sup> Multiplex Distribution Interface (MDI) – see ETSI TS 102 820  
<sup>5</sup> AM signalling system (AMSS) – see ETSI TS 102 386

phase-modulated carrier.

## **A4: FM/RDS Option**

The FM/RDS Option extends the Spark Modulator DRM30 by a FM multiplex generation and monitoring engine, including audio pre-processing and RDS service encoding and modulation.

## **A5: xHE-AAC / HE-AAC Encoder Instance**

Spark Modulator DRM30 can be extended by up to four xHE-AAC / HE-AAC encoder instances for DRM30 and DRM+. The supported encoder engine is provided by Fraunhofer-Gesellschaft zur Förderung der angewandten Forschung e.V. and can be licensed with Spark Modulator DRM30.

## **B: Spark MDI Client DRM30**

The Spark MDI Client DRM30 is a PC-based real-time decoder software that generates OFDM IQ-baseband by decoding and modulating MDI streams supplied via UDP/IP or MDI file. Ettus USRP™ devices, IQ file output and National Instruments hardware is supported.

### **B1: DRM+ Option**

The DRM+ Option extends the functionality of Spark MDI Client DRM30 to support robustness mode E for transmissions in the VHF range.