

## BLATLA11 MULTIBAND LAUNCH AMPLIFIER

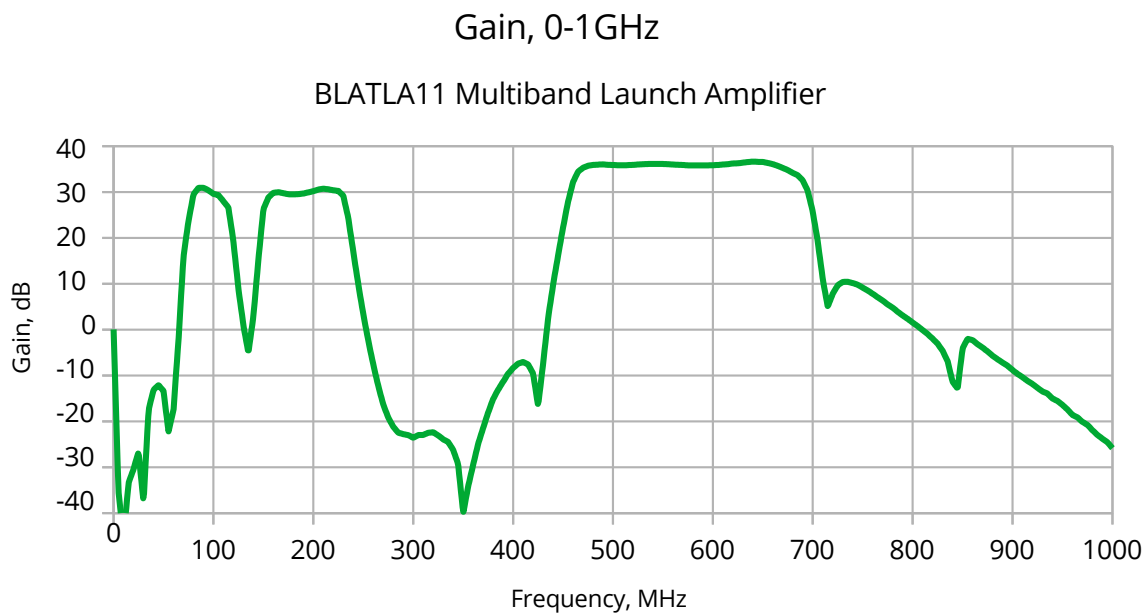
### Introduction

The BLATLA11 Multiband Launch Amplifier is intended for use in small to medium sized MATV Systems. Using a single input port, it provides up to 30dB gain in three separate sub-bands: FM, DAB and UHF TV, with separate gain adjustment for each sub-band, and is rated at 118dB $\mu$ V output power. In-service maintenance is aided by a -30 dB TEST port. The input port provides a protected DC output to power an up-stream amplifier, with an LED indicating that a short circuit has been detected on the input.



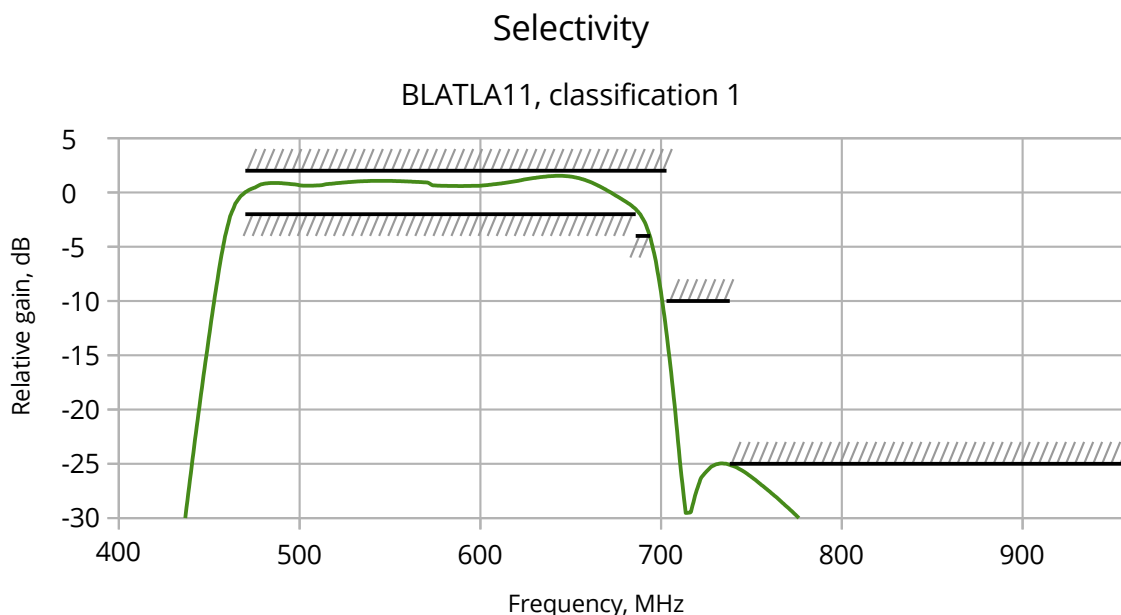
Results of tests of the amplifier's main performance characteristics are presented in this report. A number of references are made to *EN 303 354, "Amplifiers and active antennas for TV broadcast reception in domestic premises; Harmonised Standard covering the essential requirements of article 3.2 of Directive 2014/53/EU"*. This is the standard used for demonstrating compliance with UK Radio Equipment Regulations for amplifiers in domestic TV reception systems.

## Gain



The figure above shows the gain in all three sub-bands, with each sub-band gain control set to maximum. Note that EN 303 354 requires the measured gain in the UHF TV band (470 MHz to 694 MHz) to exceed the stated gain (30 dB). The amplifier is clearly compliant with this requirement.

## Selectivity



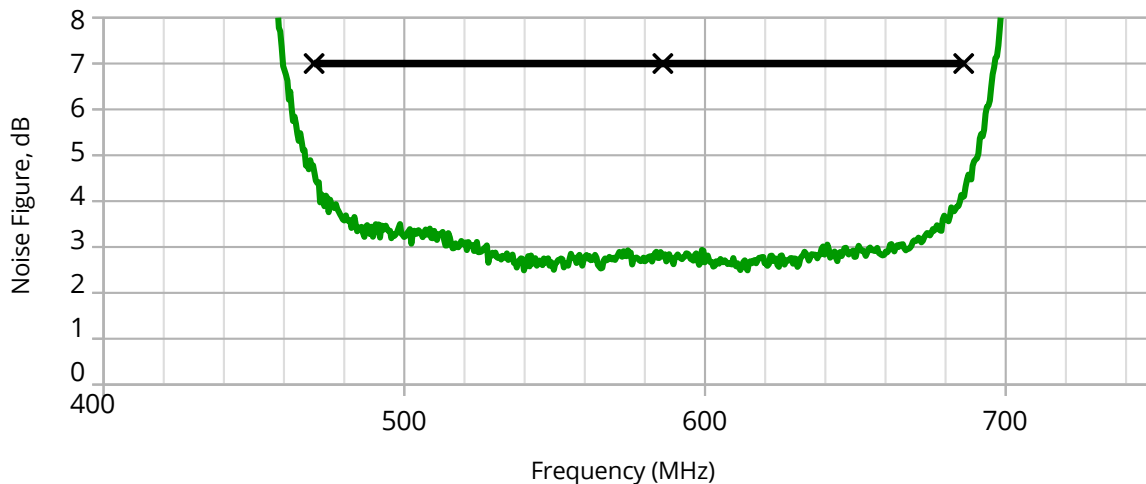
EN 303 354 requires classification 1 amplifiers to meet the relative gain mask shown in the figure above to ensure that there is a reasonable degree of protection of TV signals from interference caused by mobile communications signals in the band immediately above 700 MHz. The amplifier is compliant with this requirement.

## Noise figure

Noise figure is a measure of the amount of noise that an amplifier adds to a received signal. EN 303 354 requires a launch amplifier's noise figure not to exceed 7 dB.

### Noise figure

BLATLA11, classification L1



The 7 dB limit is shown in the figure above by the heavy black line, and it can be seen that the measured noise figure meets this requirement by a wide margin.

### Amplifier intermodulation

Non-linearity in an amplifier introduces unwanted intermodulation products, which are a form of distortion added to the received signal. One way of characterising an amplifier in this regard is to measure its third order input intercept (TOI). EN 303 354 specifies how this measurement should be made, and that TOI must exceed -4 dBm at three specified frequencies.

Frequency (MHz)	Measured input intercept (dBm)	Limit (dBm)
470	+0.5	-4
586	-0.1	-4
686	+2.7	-4

The table above shows the measured TOI values, which all exceed the specified limit.

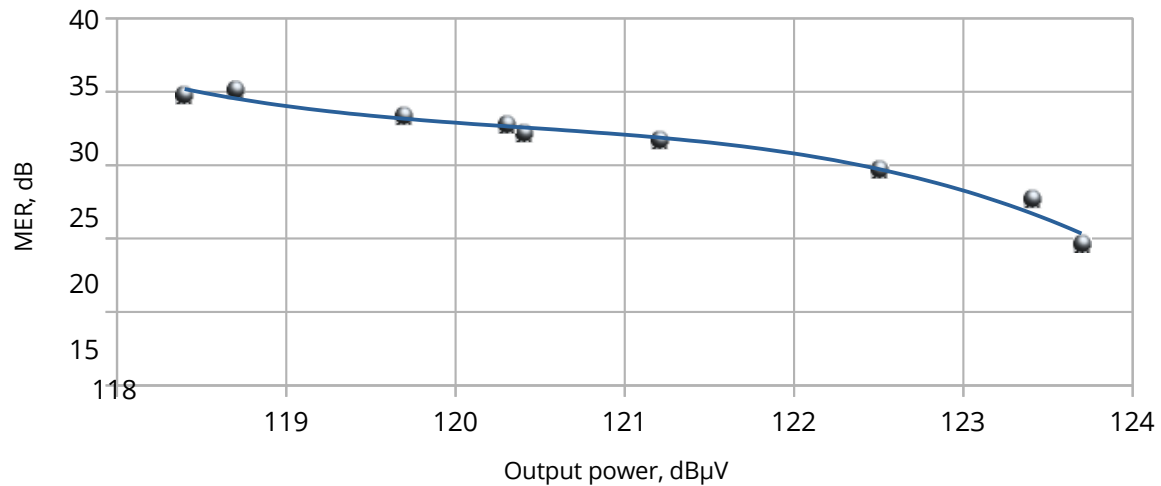
Another way of evaluating the effect of nonlinearity is to measure how the amount of distortion of a DTT signal varies with output power level. MER (modulation error ratio) is a measure of how much a TV signal deviates from perfect, so the MER of a signal from a clean source which has been passed through the amplifier will give a useful indication of the operating level that can be achieved.

The figure below shows measured values of MER of a single multiplex plotted against the output power. It was not possible to obtain values of MER for output powers less than the rated power (118 dBμV), as the meter used cannot measure MER values greater than 36 dB.

Note that the measurements were made without any signals in the FM and DAB sub-bands. In normal operation, signals in these bands are likely to be significantly lower power than TV signals, so should cause only a very small additional degradation.

## MER vs OUTPUT POWER

BLATLA11 Multiband Launch Amplifier



## Environmental

Power consumption was measured at approximately 4.5W, giving an annual consumption in 24 hour use of about 38.4 kWh.



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*Draft 1*