



New Japan Radio Co., Ltd.

Technical
Information

Rev. 2

Nov 10 2015

STC function for high performance radar

New Japan Radio Co., Ltd.

Private Sector Business Department

Design Engineering Section

NewJRC has developed a new LNFE which allows the OEM to use sensitivity timing control (STC). This function can expand the dynamic range of receiving signal from low to high reflected signal level from the target on long range to very short range. Sensitivity timing control is used on high performance, high seas radar.

It is a timing control which adds extra attenuation to protect the low noise amplifier from saturating from strong, short range targets.

This happens in storms, channels, or rivers where the radar signals are reflected back quickly by short range targets.

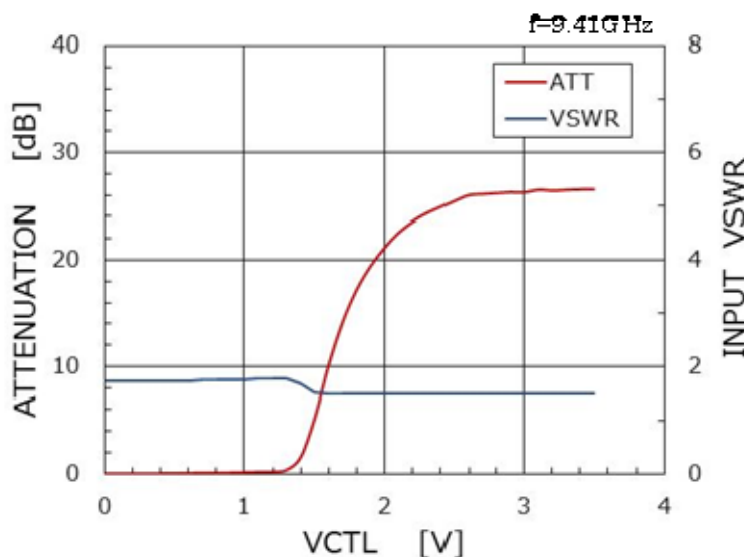
This strong return signal saturates the amplifier and the radar does not perform. With STC it protects the LNA from saturating so the radar always works. It is necessary to control to match the signal level to available amplifying level by amplifier. High power limiter (HPL) with STC and LNFE with STC can be controlled the input attenuation by the applied bias voltage. The signal level is controlled at each timing by the applied synchronized bias voltage.

This function is installed into below types of LNFE.

NJT1045 include variable attenuator for STC.

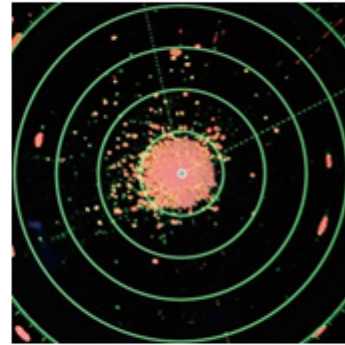
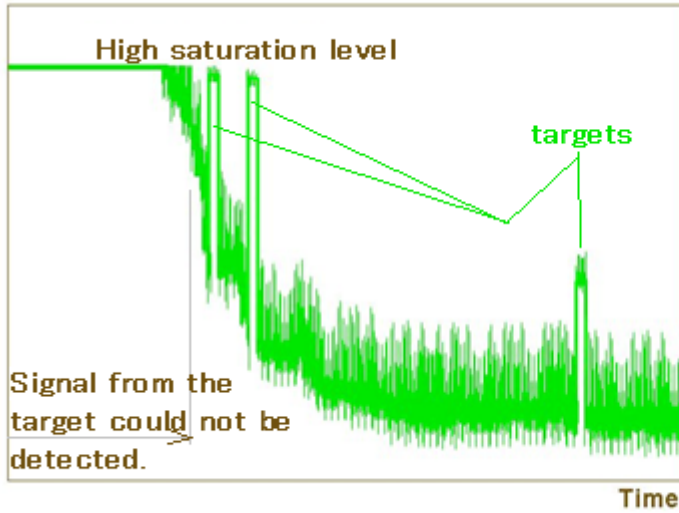
NJT1046 include variable attenuator for STC and on board high power limiter.

Attenuation characteristics:



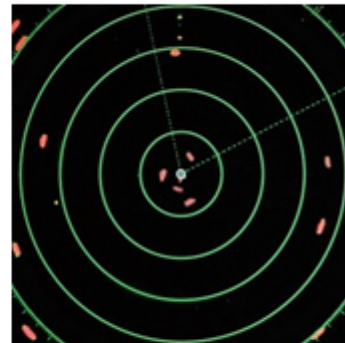
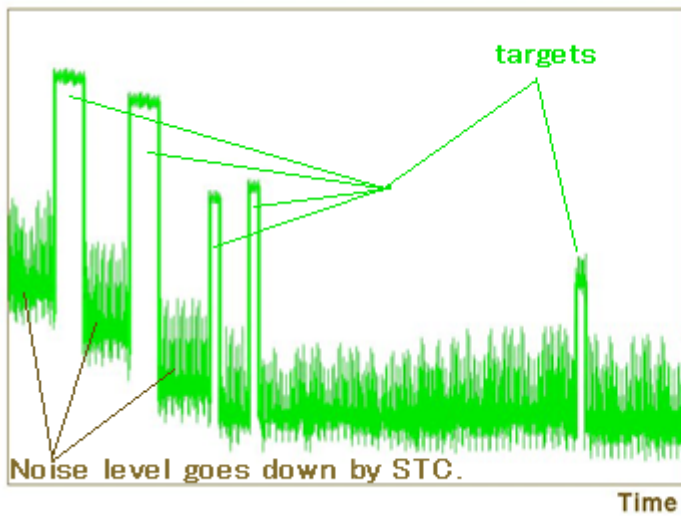
Conventional LNFE detected signal (echo)

A signal from short range could not be detected by LNFE, because the signal were submerged in the high level saturated noise.



Short range targets were submerged in the noise.

New designed LNFE with STC function detected signal (echo)



Short range targets also detected.

