ST25R300 NFC reader
Product presentation

ST25R300 overview

High performance NFC reader for payment, industrial & consumer




ST25R300 offers extended range and outstanding robustness

ST25R300 is the successor of ST25R3916B

Why choose the ST25R300?

- **2.2W** output power with Dynamic Power Output & Active Wave Shaping
- Enables fast **EMVCo** certification cycles
- Noise Suppression for antenna behind or close to displays
- Best **sensitivity** and LPCD
- -40°C to +105°C extended ambient temperature range
- **10-year** longevity commitment

ST25R300 main markets

Payment

EMVCo® 3.x
Additional NFC services

eGovernment, Medical, Access control

Authentication

Consumer, Gaming

Pairing
Power & data transfer

NFC charging, Ki-kitchen

Power & data transfer

Qi wireless charging protection

Card or phone identification
Authentication

Industrial

Tracking & inventory
Data transfer & programming

High-end reader product lineup
ST25R300 is the successor of ST25R3916B/17B

	ST25R3916B	ST25R3917B	ST25R300
Description	NFC Universal Device & EMVCo Reader	NFC & EMVCo Reader	High performance NFC Universal Device & EMVCo Reader
Reader/Writer mode	ISO14443A/B ISO15693 FeliCa	ISO14443A/B ISO15693 FeliCa	ISO14443A/B ISO15693 FeliCa
Card emulation mode	Yes	-	Yes
P2P mode	Active & Passive Initiator & Target	Passive Initiator	Passive Initiator & Target
LPCD range	Standard range (Wakeup<<Read)	Standard range (Wakeup<<Read)	**Extended range (Wakeup≥Read)**
MFI timing compliance	Via external MCU	Via external MCU	**Internal timer**
Automatic Antenna Tuning	Voltage controlled capacitors	none	**Capacitor bank**
Reset Pin	No	No	**Yes**
Advanced features	AAT, DPO, NSR, DSA, AWS, IWU, EMD	DPO, NSR, DSA, AWS, IWU, EMD	AAT, DPO, NSR, DSA, AWS, IWU, EMD
HW interface	I²C // SPI 10Mbps	I²C // SPI 10Mbps	SPI 10Mbps
SW interface	RFAL Unified Software Library for Frontends		
Power supply	2.4V – 5.5V	2.4V – 5.5V	2.7V – **6.0V**
Output power	1.6W	1.6W	**2.2W**
Temperature range	-40°C to +105°C (A)	-40°C to +105°C (A)	-40°C to +105°C (A)
Package	5x5 QFN 32-pin / WLCSP-36	5x5 QFN 32-pin	5x5 QFN 32-pin

AAT: Automatic Antenna Tuning
DPO: Dynamic Power Output
NSR: Noise Suppression Receiver
DSA: Drive Slope Adjustment
AWS: Active Wave Shaping
IWU: Inductive Wakeup
EMD: Electromagnetic Disturbance suppression
P2P: Peer to Peer mode
LPCD: Low Power Card Detection

ST25R300
High-perf. NFC universal device & EMVCo® reader

ST25R300

Reader Writer	ISO14443 ISO15693 FeliCa	RAM BUFFER	SPI
P2P Card Emulation	NFC 848kb/s	256-Byte	**Vdd:** 2.7-6V **Vio:** 1.65-5.5V 10Mb/s >2.7V 5Mb/s <2.7V
2.2W	DPO: Dynamic Power Output LRCD: Long Range Card Detection AWS: Active Wave shaping NSR: Noise Suppression Receiver AAT: Automatic antenna tuning EMD: Automatic EMD Error Handling		

5x5 QFN32

Use cases

- Payment, NFC charging, Access control, Industrial & Consumer

Key Features

- EMVCo and CR13 NFC Forum Universal Device
- **2.2W** output power with DPO, **Active Waveshaping**
- **Noise Suppression** for antenna behind or close to displays
- **Long Range LPCD**
- Vdd 2.7-6V with reduced capacitor BOM
- SPI interface: Vio 1.8-5V (+/-10%)
- QFN-32 5x5mm package
- -40°C to +**105°C** ambient temperature range

Key Benefits

- Excellent output power and sensitivity for EMVCo applications and various other use cases.

ST25R300 key performance parameters

Outstanding range Consistent experience
DPO: Dynamic Power Output

- Largest wakeup range on the market (surpassing ST25R3916B by double digit %)

Low power consumption
IWU: Inductive WakeUp

- Increase battery lifetime during key detection
- Inductive wakeup enables low power consumption while in card detection mode

Noise immunity
NSR: Noise Suppression Receiver

- Increased immunity to interference from noise sources
- Simplifies electro-magnetic immunity and eases certification

Fast time to market

- EMVCo, NFC Forum, and ISO compliant SW library
- Single SW library for all products
- Full integration into STM32 eco system

Dynamic Power Output (DPO)

Achieve min/max power limits easier

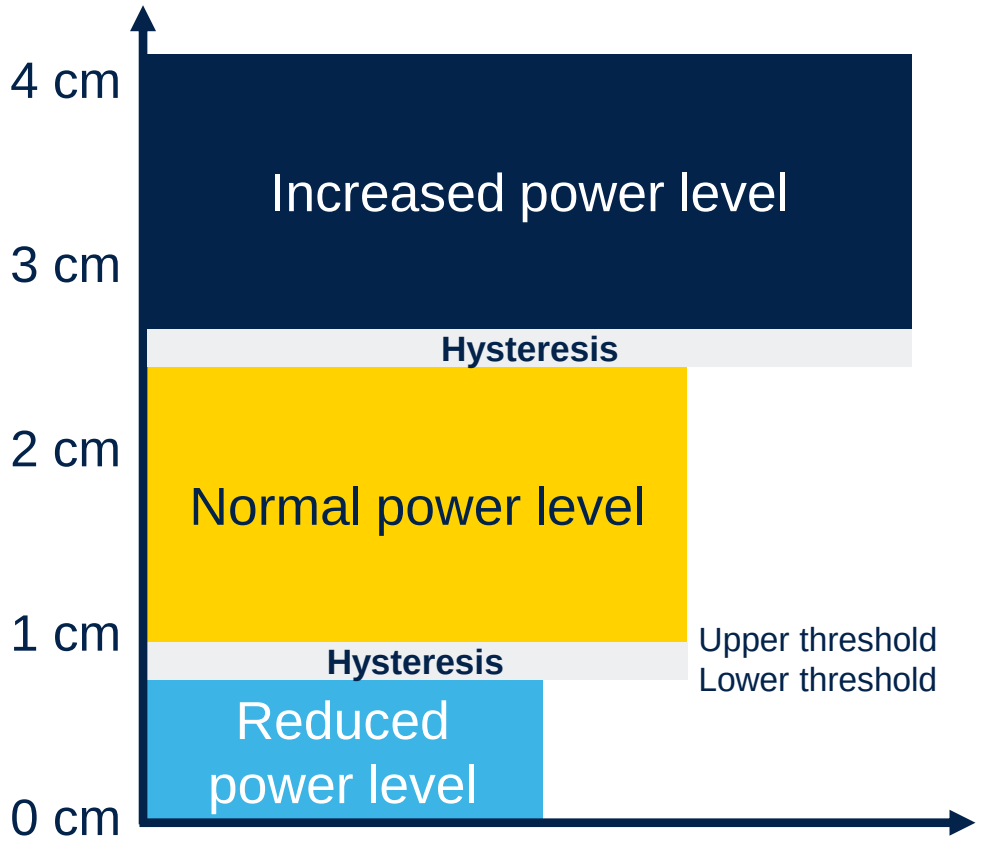
The ST25R series allows for dynamic adjustment of the output power via DPO.

Optimal performance for weak to strong card response

The ST25R series allows adaptation to different power levels of card responses via Active Gain Control.

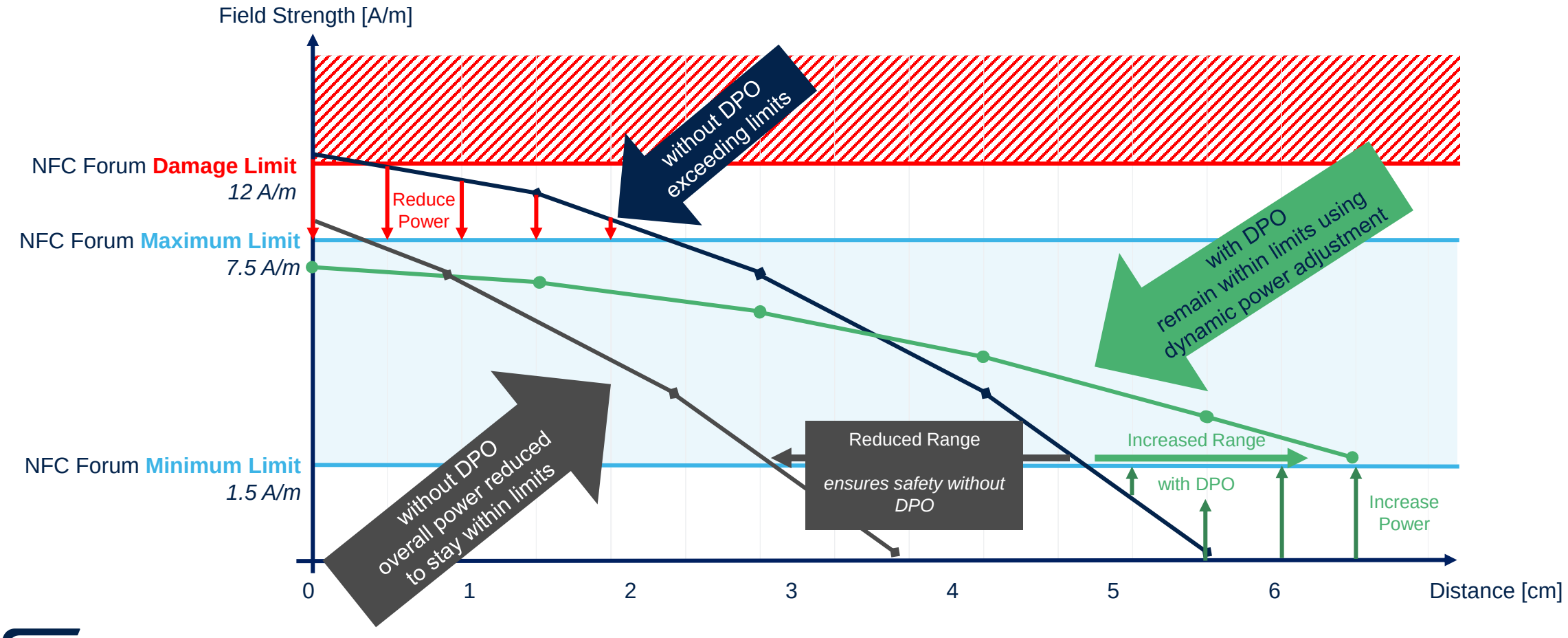
Improved noise immunity

The Squelch feature allows scaling of the signal level to improve immunity against noise.



Dynamic Power Output (DPO)

DPO of reader keeps power levels within requirements & limits

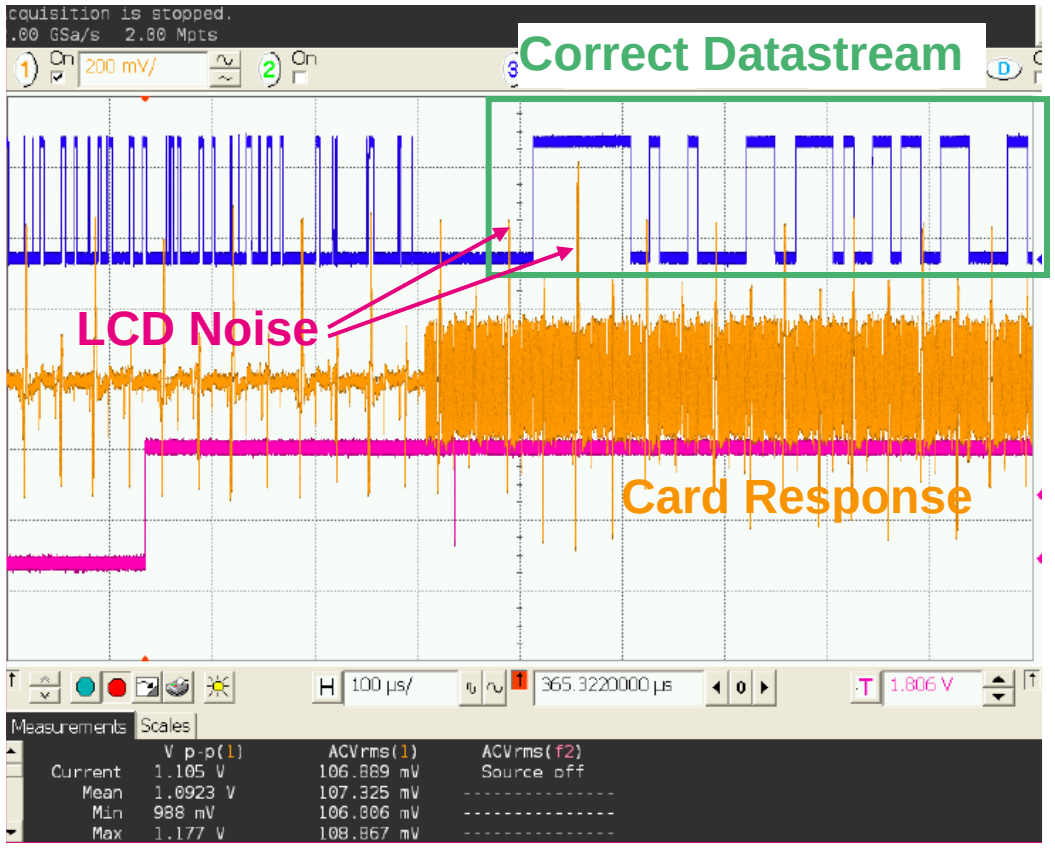


Noise Suppression Receiver (NSR)

Proper decoding

- Proper decoding is still possible even when the noise level (e.g., from LCD displays) exceeds card signal strength.
- Active noise suppression jumps in as soon as the receiver locks onto a card response.

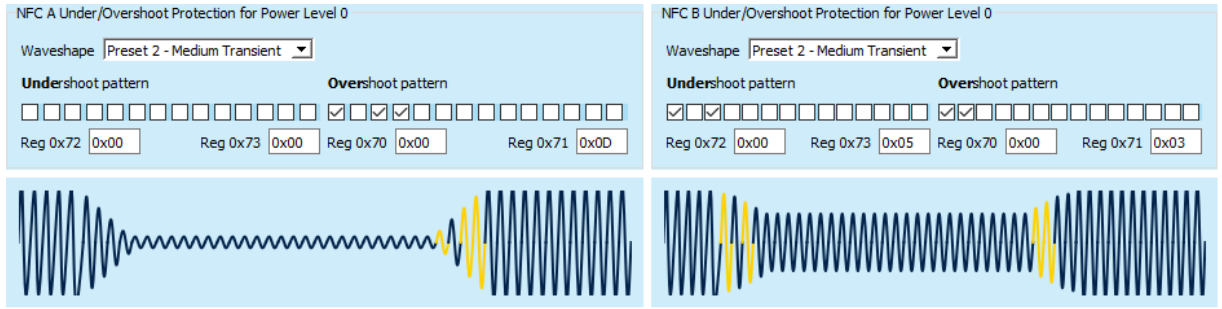
Higher noise immunity

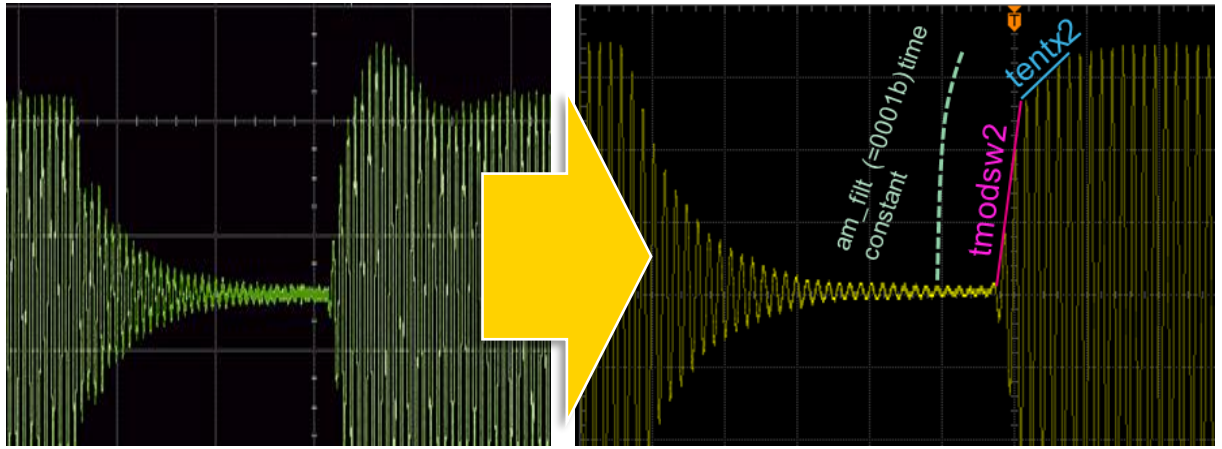


Active Wave Shaping (AWS)

Improved Active Wave Shape (AWS) function

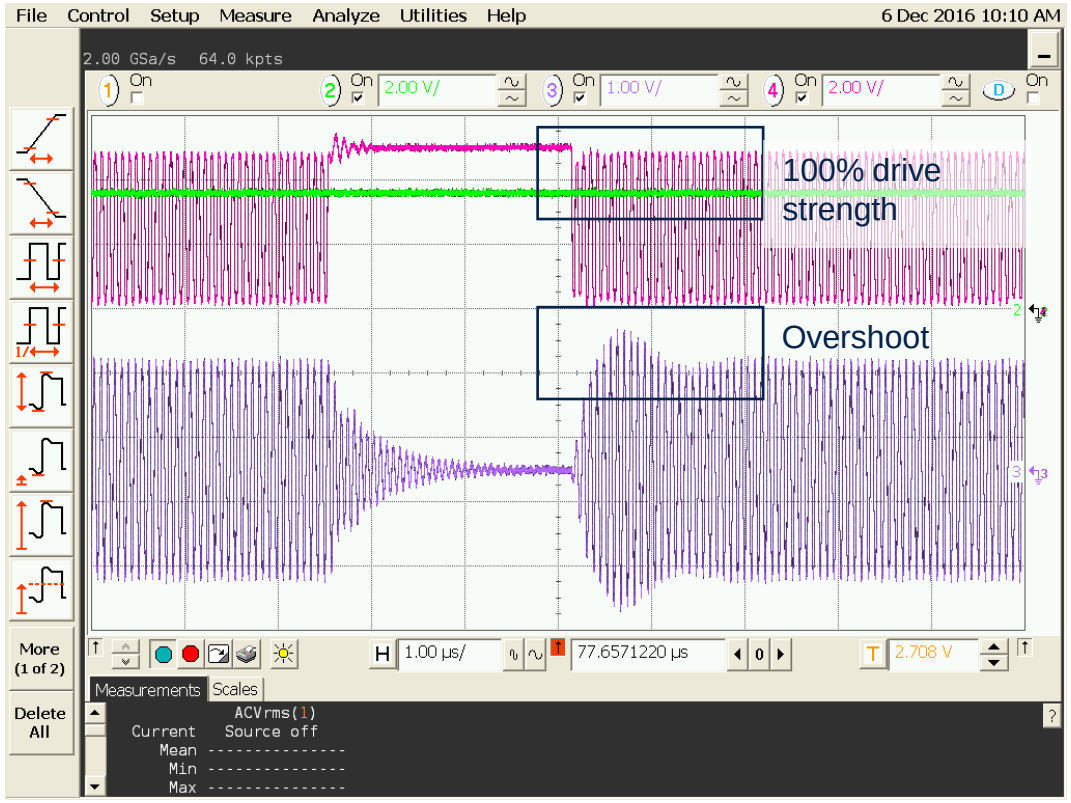
- Reduces over- and under-shoots more effectively than before.
- Brings them to an acceptable level even in the most challenging designs.
- The function is easily enabled with 2x registers and 14x bits for each over- and undershoot protection.



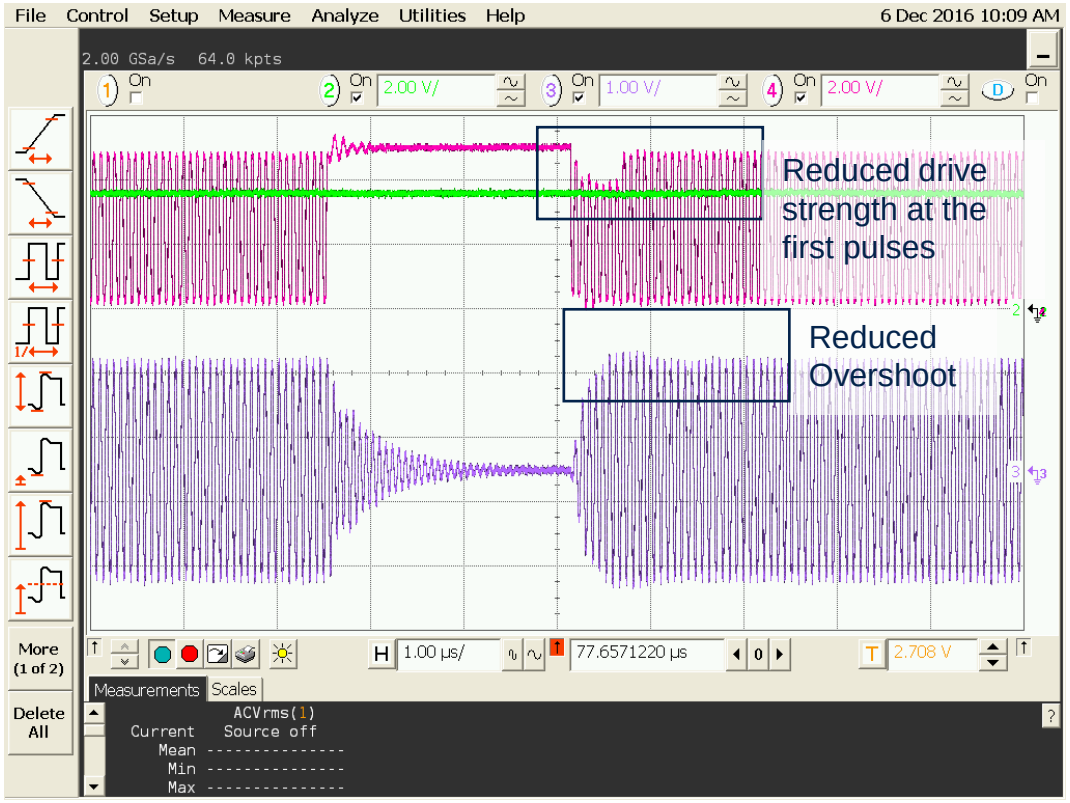


Overshoot Protection (OSP)

Traditional A106 modulation pulse



Improved A106 modulation pulse with OSP



Over/undershoots can be solved with register settings.
No rematching of antenna required.

Our technology starts with You

Find out more at www.st.com/st25r300