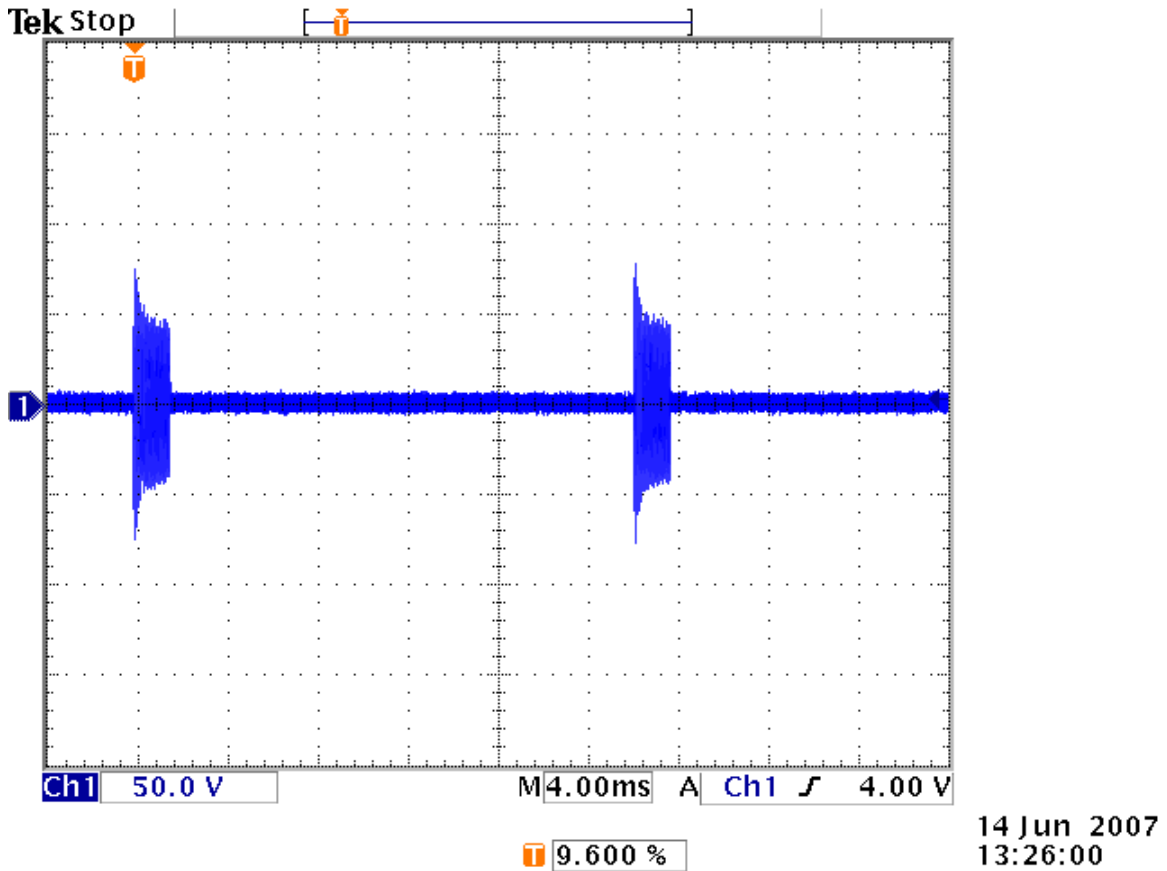


AMB-9010 FCC Information
June 14, 2007

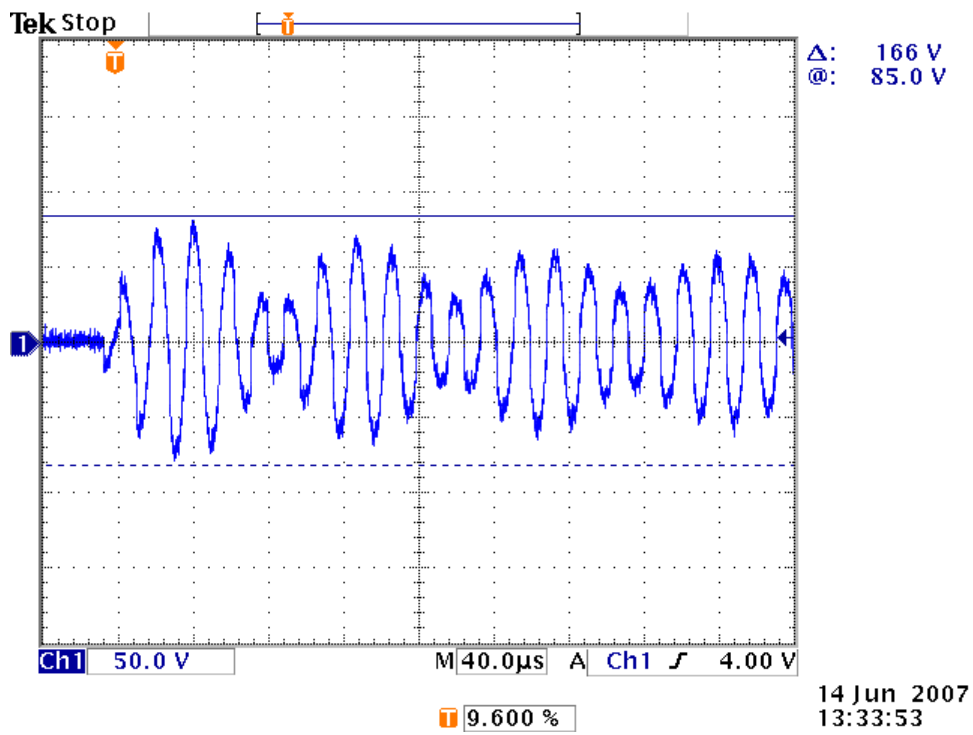
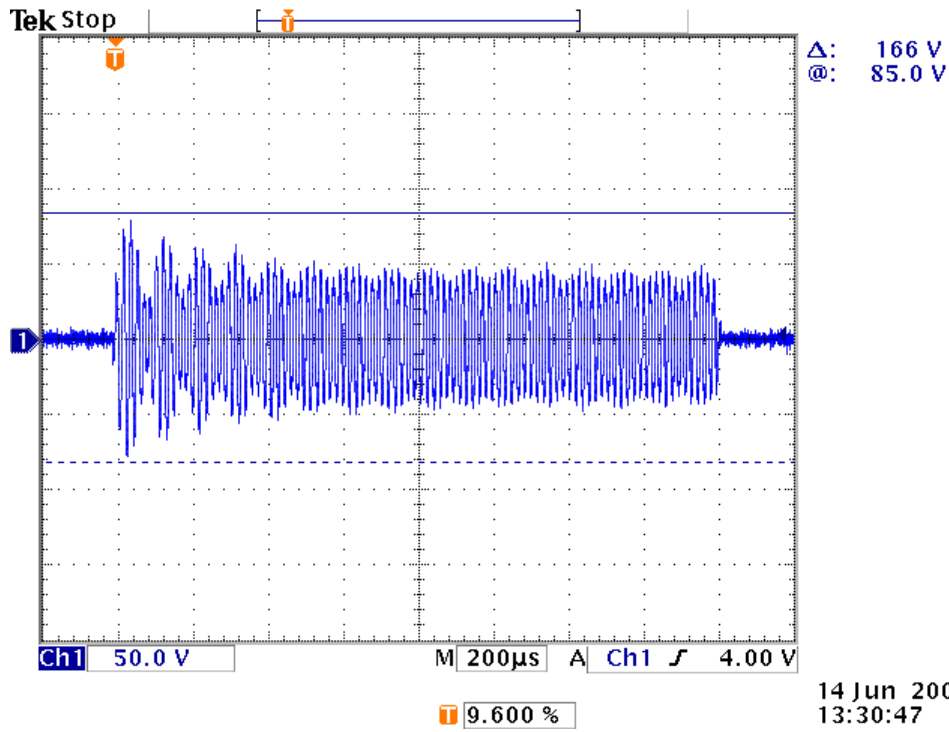
Transmitter measurements at antenna connector P1, Pin 1 to chassis

Typical transmitter bursts are for 1.6mS and at intervals of 5.55mS, 11.11mS, 16.67mS, or 22.22mS on the 60Hz ac line or 6.67mS, 13.33mS, 20mS, or 26.67 for a 50Hz ac line.

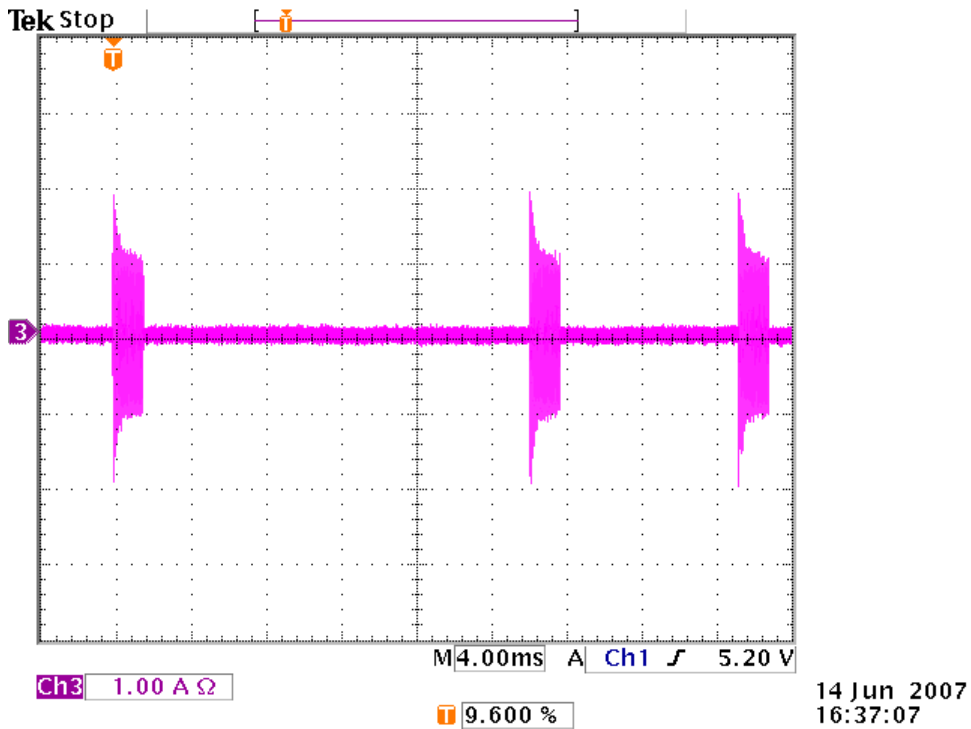


This Tx voltage waveform shows the 22.22mS burst interval.

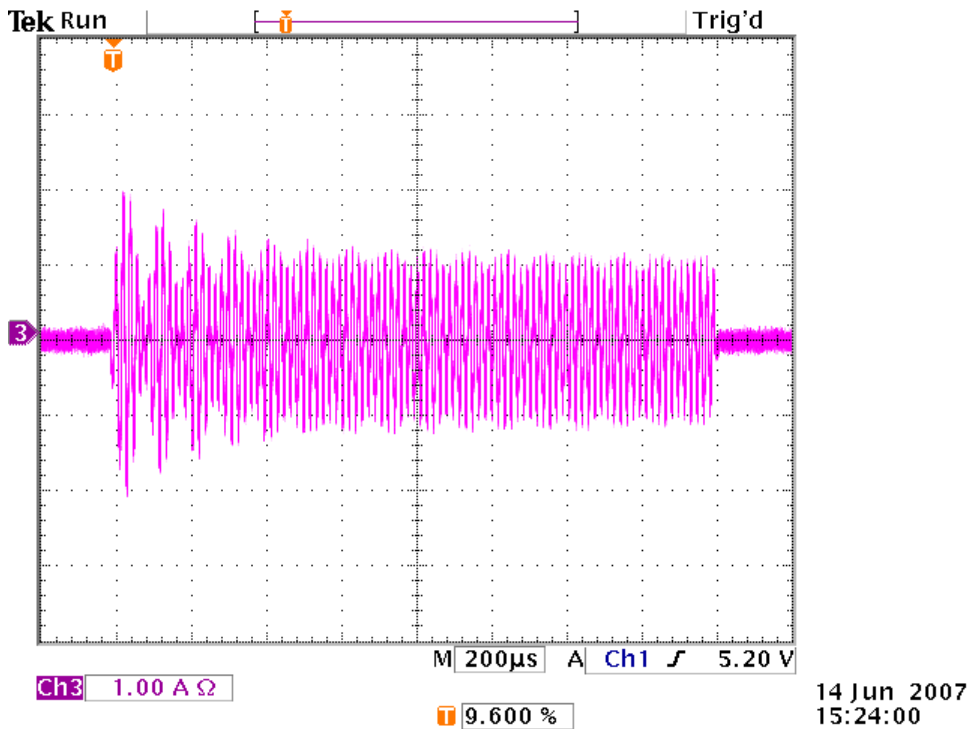
The cursors in the next waveform show that the Tx bursts are less than 166V peak to peak on the antenna connector, and provides more detail of a single Tx burst. The Tx burst contains swept frequencies in 7 discrete steps from 57.5kHz to 60kHz.



Transmitter currents, Channel 1 (X), through antenna connector P1-1 to P1-3

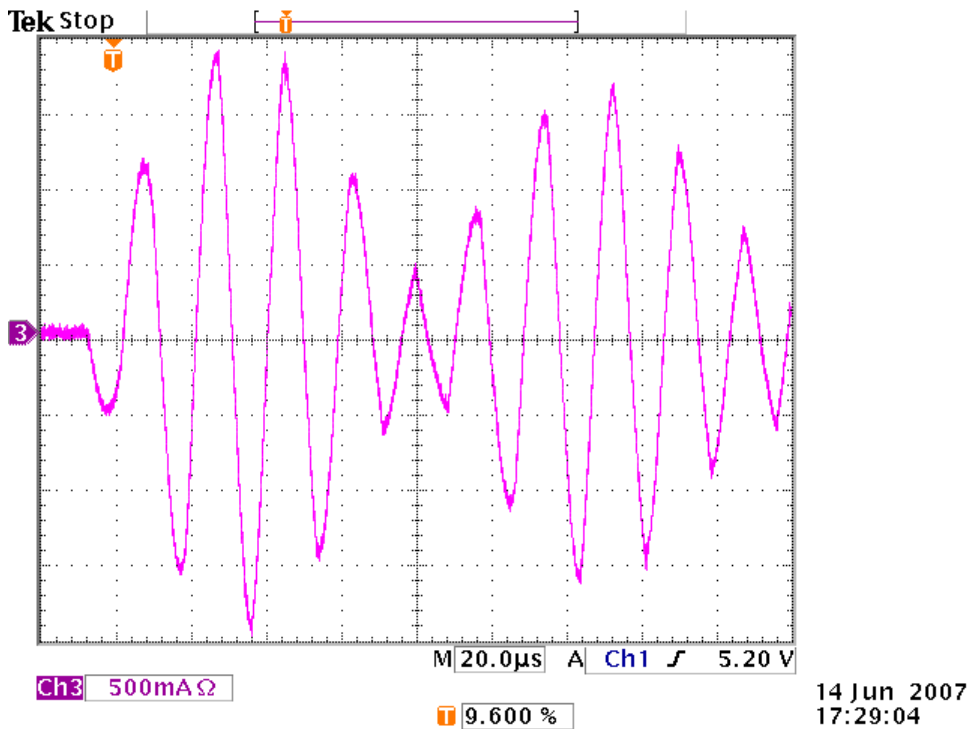
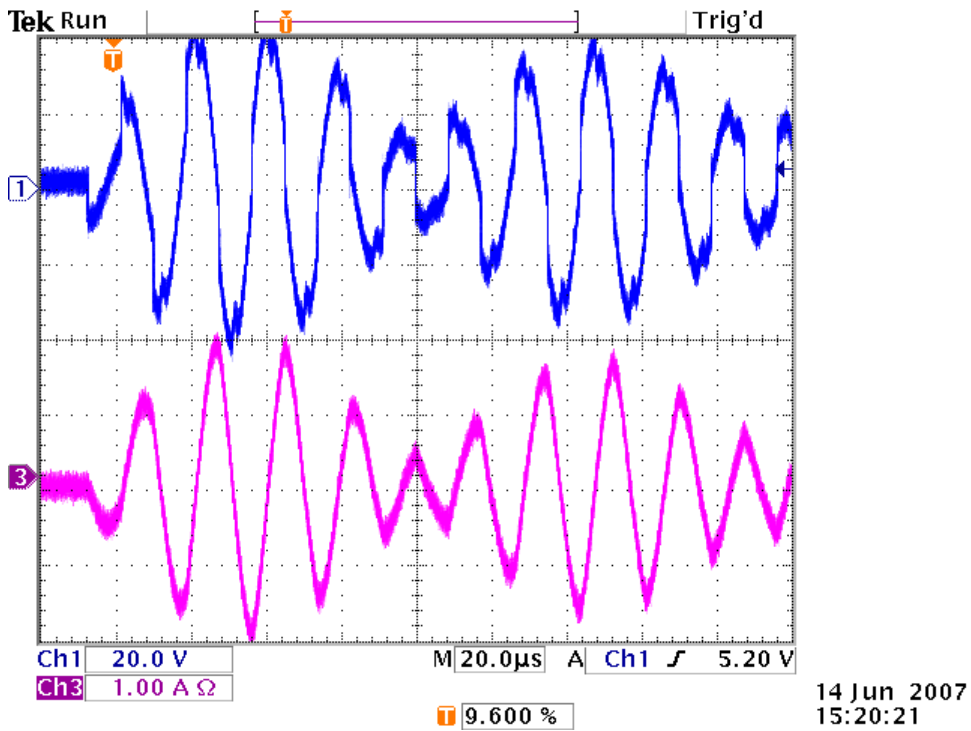


The above waveform is the Tx current in a low inductance antenna (70uH) at the normal transmit power level. It is less than 2A peak.



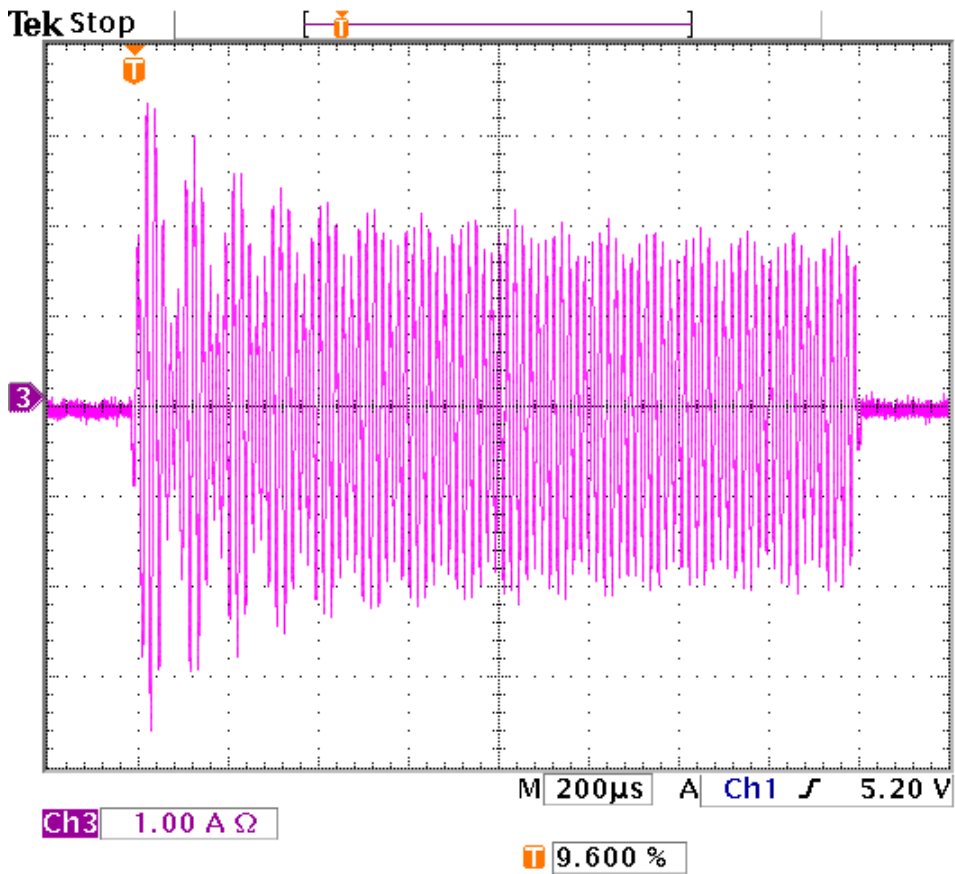
This waveform is a single Tx current burst.

The next waveform shows both the Tx voltage at P1-1 and the Tx current, as well as their inductive phase relationship.



This waveform shows more Tx current detail at the start of the Tx burst..

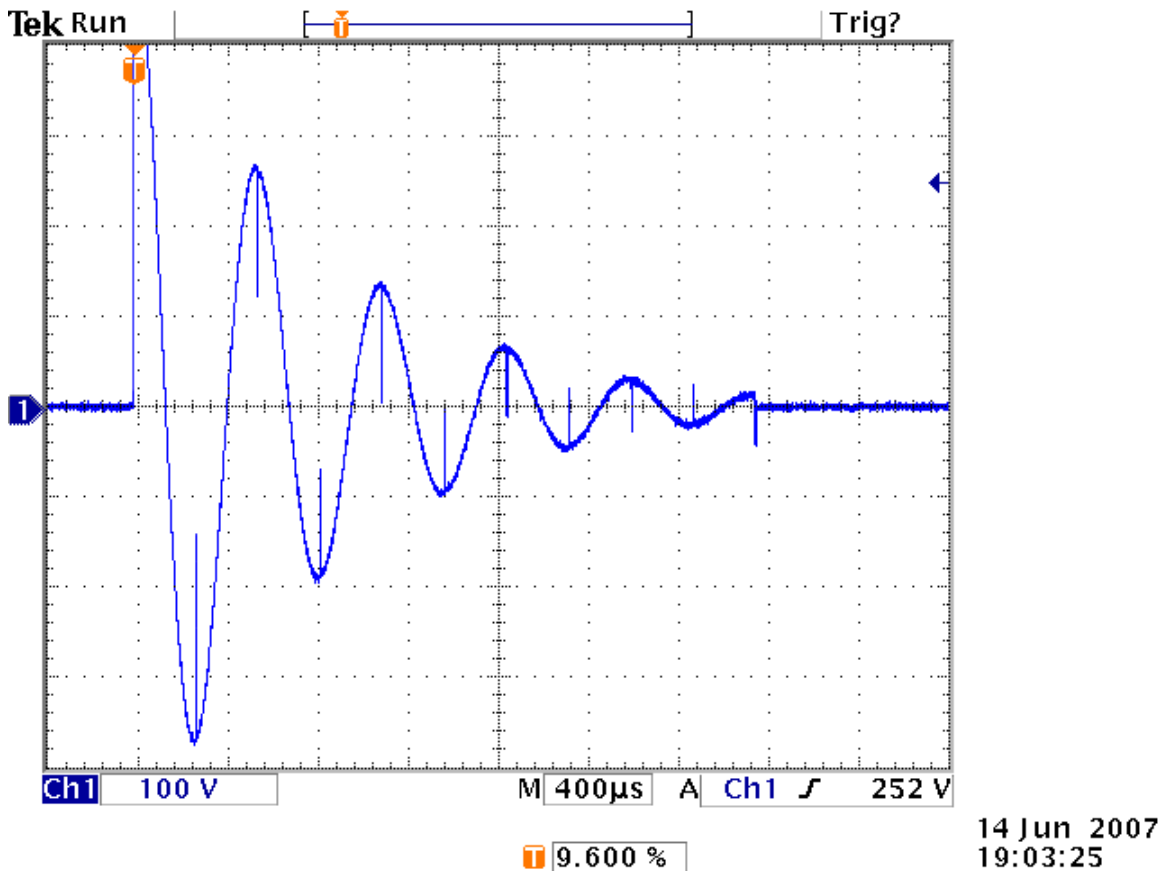
The waveform below is a single Tx current burst at the boost transmit power level (maximum for the 70uH antenna family). It is less than 3.6A peak.



14 Jun 2007
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Deactivation Waveforms

Deactivation Voltage Waveform at P1-1 to P1-3 (Chassis)



The waveform starts at the 535V dc level, and follows the equation:

$$v(t) = 535 * \exp(-a*t) * \cos((1/2*\pi()*\text{sqrt}(LC))*t)$$

The waveform voltage glitches are the SCR commutation spikes and do not appear in the current waveform.

The current waveform follows the equation:

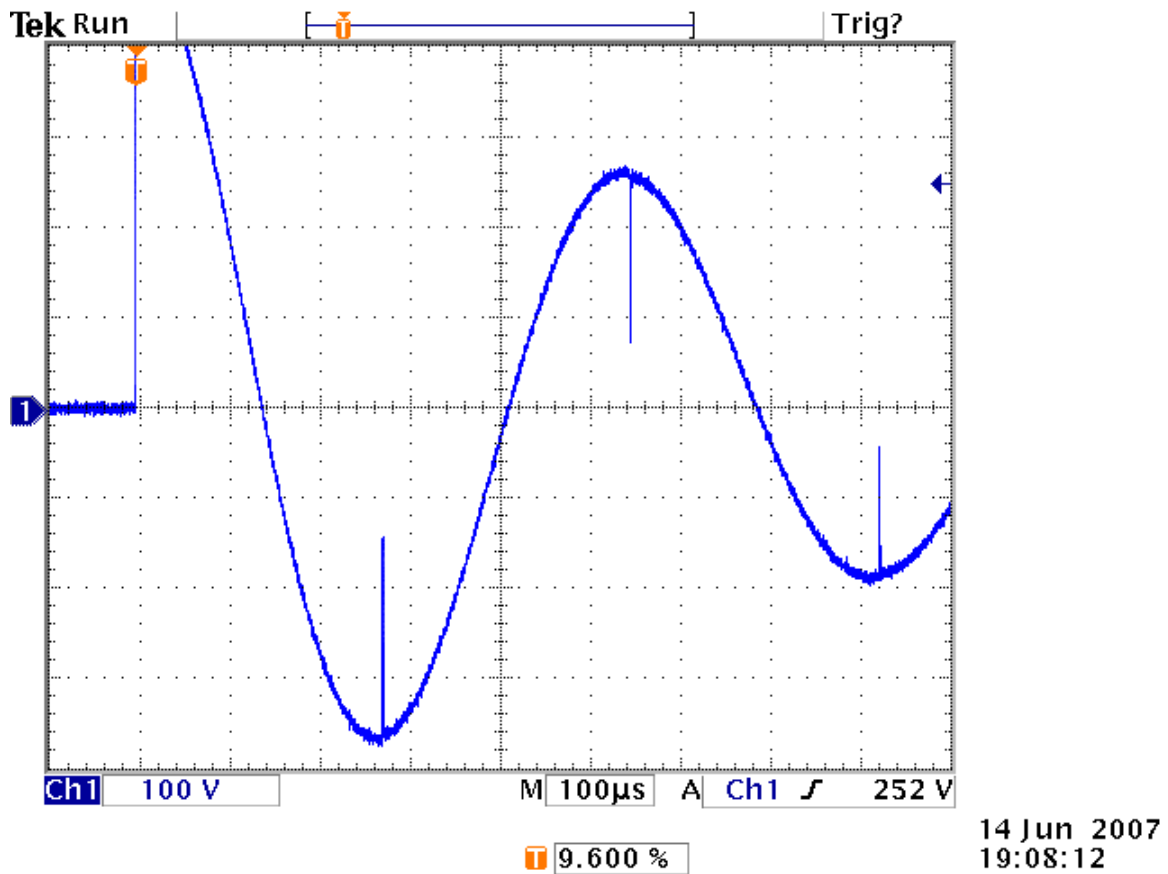
$$i(t) = (535 / \text{sqrt}(L/C)) * \exp(-a*t) * \sin((1/2*\pi()*\text{sqrt}(LC))*t)$$

The measured current peak was 600A for the 70uH antenna family.

L = 70uH and C = 100uF typical, while a is approximately 1070 Nepers.

The frequency f is about 1900Hz. The maximum repetition rate is 3 times per second.

Additional detail of the initial deactivation voltage waveform.



The ring down typically takes 5 to 7 cycles for the 70 uH antennas and takes 7 to 9 cycles for the 1 mH antennas.

70uH antennas
 $V_{\text{initial}} = 535\text{V}$
 $a = 1070$ Neper
 $f = 1900\text{Hz}$
 $L = 70\text{uH}$
 $C = 100\text{uF}$

1mH antennas
 $V_{\text{initial}} = 500\text{V}$
 $a = 178$ Neper
 $f = 480\text{Hz}$
 $L = 1000\text{uH}$
 $C = 100\text{uF}$