What is claimed is:

1. Automatic test equipment (ATE) comprising:

a first test instrument comprising digital pins that is capable of performing device testing, the first test instrument being configured to output pulses on at least two of the digital pins, where a first digital pin is for pulses having a positive polarity and a second digital pin is for pulses having a negative polarity;

circuitry comprising an adder to receive the pulses from the at least two digital pins and to combine the pulses to produce a signal and to generate a waveform based on the signal; and

a second test instrument that is capable of performing device testing, the second test instrument being configured to perform one or more tests on a device under test (DUT) based on the waveform, the second test instrument comprising a connection to a transmission line to output a test signal based on the waveform to the DUT to test the DUT;

wherein the device testing that the first test instrument is capable of performing and the device testing that the second test instrument is capable of performing each comprises outputting test signals to a respective device, receiving response signals based on the test signals, and processing the response signals.

2. The ATE of claim 1, wherein the first test instrument comprises a pattern generator to control the pulses.

3. The ATE of claim 1, wherein the first test instrument comprises a digital instrument that is programmable to produce the pulses and to vary parameters of the pulses on the at least two digital pins.

4. The ATE of claim 1, wherein the first test instrument comprises a digital instrument that is programmable to control a timing of the pulses on the at least two digital pins.

5. The ATE of claim 1, wherein the first test instrument comprises a digital instrument that is programmable to control widths of the pulses on the at least two digital pins.

6. The ATE of claim 1, wherein the first test instrument comprises a digital instrument that is programmable to control polarities of the pulses on the at least two digital pins.

7. The ATE of claim 1, wherein the first test instrument comprises a digital instrument that is programmable to control locations of the pulses on the at least two digital pins.

8. The ATE of claim 1, wherein the first test instrument comprises a digital instrument that is programmable to control delays of the pulses on the at least two digital pins.

9. The ATE of claim 1, further comprising:

modulator circuitry to modulate a radio frequency (RF) carrier signal using the waveform to produce the test signal;

wherein the second test instrument is configured to perform the one or more tests by outputting the test signal to the DUT.

10. The ATE of claim 1, wherein the test signal comprises the waveform.

11. The ATE of claim 1, wherein the first test instrument is a digital test instrument; and

wherein the second test instrument is a radio frequency (RF) test instrument.

12. The ATE of claim 1, wherein the circuitry comprises a bandpass filter.

13. The ATE of claim 1, wherein the at least two digital pins comprises two or more pairs of digital pins, the two or more pairs of digital pins comprising a first pair of digital pins including the first digital pin and a second pair of digital pins including the second digital pin;

wherein first pulses on a first pair of digital pins are wider than second pulses on the second pair of digital pins; and

wherein the adder is configured to add the first pulses and the second pulses.

14. The ATE of claim 1, wherein the at least two digital pins comprises two or more pairs of digital pins, the two or more pairs of digital pins comprising a first pair of digital pins including the first digital pin and a second pair of digital pins including the second digital pin;

wherein first pulses on a first pair of digital pins have different amplitudes than second pulses on the second pair of digital pins; and

wherein the adder is configured to add the first pulses and the second pulses.

15. The ATE of claim 13, wherein the signal is an intermediate signal and generating the waveform comprises filtering the intermediate signal to produce the waveform; and

wherein adding the first pulses and the second pulses produces the intermediate signal having multiple steps.

16. The ATE of claim 1, wherein the waveform is broken into timeslots, each timeslot encoding multiple bits of data based on a polarity of the waveform within the timeslot and a timing of a local minimum or local maximum within the timeslot.

17. The ATE of claim 16, wherein the waveform encodes two bits per timeslot, a first of the two bits being based on the polarity and a second of the two bits being based on whether the local minimum or the local maximum is nearer to a beginning or to an end of the timeslot.

18. The ATE of claim 1, wherein the first test instrument is configured to introduce delay into the pulses on the at least two digital pins to simulate time-of-flight delays of the waveform through air.

19. The ATE of claim 1, wherein the waveform is produced independent of a dedicated waveform generator.

20. The ATE of claim 1, wherein at least one of the digital pins is controllable to drive three levels, the three levels including logic high, logic low, and high impedance.

21. The ATE of claim 1, wherein:

the second test instrument is configured to receive a second waveform from the DUT over the connection to the transmission line, the second waveform being analog and being based on the test signal output to the DUT;

wherein the second test instrument comprises second circuitry comprising a digitizer to generate second pulses based on the second waveform; and

wherein the first test instrument or a third test instrument is configured to receive the second pulses and to process the second pulses to test the DUT;

wherein the third test instrument is capable of performing device testing comprising outputting second test signals to a device, receiving second response signals based on the second test signals, and processing the second response signals.

22. The ATE of claim 21, wherein the second test instrument is a radio frequency (RF) test instrument; and

wherein the first test instrument is a digital test instrument.

23. The ATE of claim 1, wherein the circuitry is part of the second test instrument.

24. A method of producing a waveform, comprising:

outputting pulses on at least two digital pins of a first test instrument in automatic test equipment (ATE), the first test instrument being capable of performing device testing and generating the pulses, where a first digital pin is for pulses having a positive polarity and a second digital pin is for pulses having a negative polarity;

combining the pulses to produce a signal;

generating the waveform based on the signal; and

a second test instrument that is capable of performing device testing, the second test instrument performing, based on the waveform, one or more tests on a device under test (DUT) being tested by the ATE, the second test instrument comprising a connection to a transmission line to output a test signal based on the waveform to the DUT to test the DUT;

wherein the device testing that the first test instrument is capable of performing and the device testing that the second test instrument is capable of performing each comprises outputting test signals to a respective device, receiving response signals based on the test signals, and processing the response signals.

25. The method of claim 24, further comprising:

controlling the pulses using a pattern generator.

26. The method of claim 25, further comprising:

programming a digital instrument to produce the pulses on the at least two digital pins, the digital instrument comprising the first test instrument.

27. The method of claim 26, further comprising:

programming the digital instrument to control a timing of the pulses on the at least two digital pins.

28. The method of claim 26, further comprising:

programming the digital instrument to control polarities of the pulses on the at least two digital pins.

29. The method of claim 26, further comprising:

programming the digital instrument to control locations of the pulses on the at least two digital pins.

30. The method of claim 26, further comprising:

programming the digital instrument to control delays of the pulses on the at least two digital pins.

31. The method of claim 24, further comprising:

modulating a radio frequency (RF) carrier signal using the waveform to produce the test signal;

wherein performing the one or more tests comprises outputting the test signal to the DUT.

32. The method of claim 24, further comprising:

performing the one or more tests using the waveform.

33. The method of claim 24, wherein:

the first test instrument comprises a digital test instrument comprising the at least two digital pins;

the second test instrument comprises a radio frequency (RF) test instrument for performing the one or more tests on the DUT; and

modulator circuitry in the first test instrument modulates a radio frequency (RF) carrier signal using the waveform to produce the test signal for output to the DUT by the RF test instrument to perform the one or more tests.

34. The method of claim 24, wherein the waveform is filtered using a bandpass filter.

35. The method of claim 24, wherein the at least two digital pins comprises two or more pairs of digital pins, the two or more pairs of digital pins comprising a first pair of digital pins including the first digital pin and a second pair of digital pins including the second digital pin;

wherein first pulses on the first pair of digital pins are wider than second pulses on the second pair of digital pins; and

wherein combining the pulses comprises adding the first pulses and the second pulses.

36. The method of claim 35, wherein generating the waveform comprises filtering the signal; and

wherein the combining the pulses comprises adding the first pulses and the second pulses to produce the signal, the signal having multiple steps.

37. The method of claim 24, wherein the waveform is broken into timeslots, each timeslot encoding multiple bits of data based on a polarity of the waveform within the timeslot and a timing of a local minimum or local maximum within the timeslot.

38. The method of claim 37, wherein the waveform encodes two bits per timeslot, a first of the two bits being based on the polarity and a second of the two bits being based on whether the local minimum or local maximum is nearer to the beginning or to the end of the timeslot.

39. The method of claim 24, further comprising:

introducing delay into the pulses on the at least two digital pins to simulate time-of-flight delays of the waveform through air.

40. The method of claim 24, further comprising:

programming a digital instrument to control widths of the pulses on the at least two digital pins, the digital instrument comprising the first test instrument.