

## MDO-2000E's four built-in spectrum analysis demonstrations

Dear Madam/Sir,

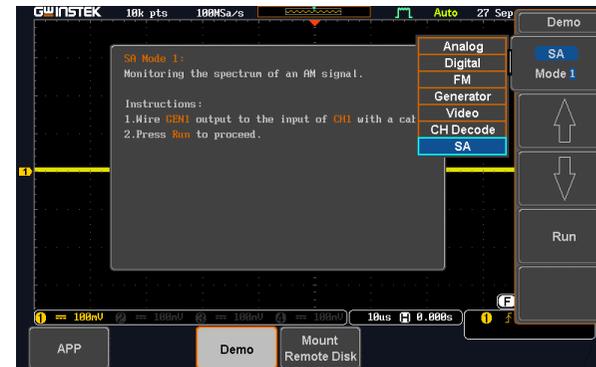
For the same category oscilloscopes, only MDO-2000E provides spectrum analysis function. Via the built-in arbitrary waveform generator, users can observe AM, FM, FSK and Linear Frequency Sweep spectrum analysis demonstrations. The demonstrated software collocating with the built-in arbitrary waveform generator provides a tool for preliminary spectrum analyzer users or educational courses to better understand the operation of spectrum analyzer as well as to learn and show how spectrum analyzer clearly displays frequency domain signals.

Demonstration procedures are as follows:

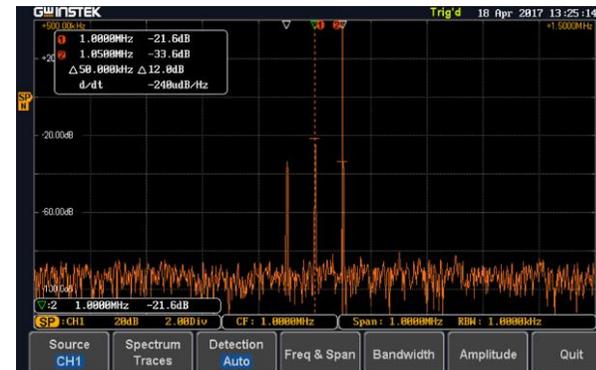
First of all, connect oscilloscope's channel one with waveform generator's GNE1 on the rear panel by a BNC cable.



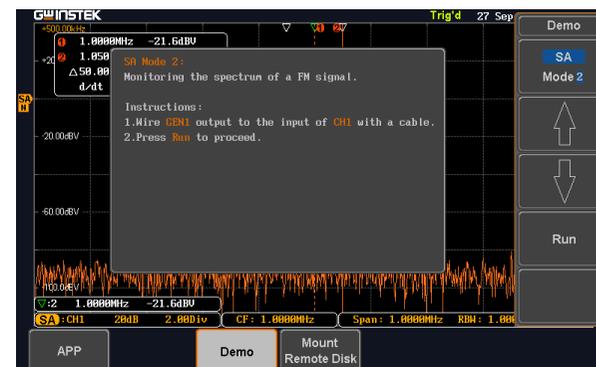
Press APP>demo>F1> SA sequentially on the oscilloscope to select SA mode 1~4.



1. Select SA mode 1 and RUN, the screen will display AM frequency domain waveforms. This carrier waveform of AM signal is sine waveform 1MHz, 500mVpp; AM frequency is 50kHz. Demo App has automatically set Start, Stop and Span frequency to correctly display frequency domain waveforms. Now, we could clearly observe the data of frequency domain signal (1MHz & 1.05MHz) from cursor's markers. If you desire to change settings, press option key > "Freq&Span".



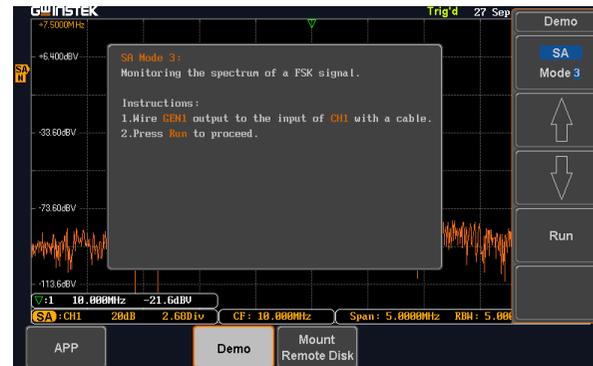
2. Press APP>demo> to select SA mode 2 and RUN. The screen will display FM frequency domain.



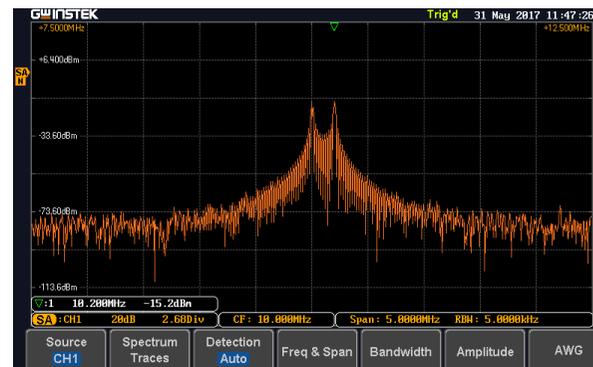
This carrier waveform of FM is sine 15MHz, 500mVpp;  
 FM frequency is 50kHz; Frequency deviation is 5MHz.  
 Now, we could clearly observe the data of frequency domain  
 signal (approximately 10MHz) from cursor's markers.



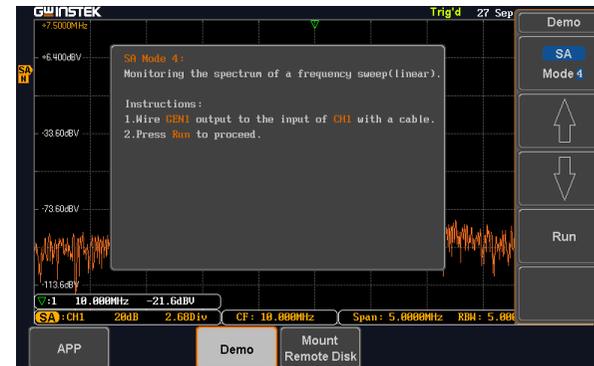
3. Select SA mode 3 and RUN, the screen will display  
 FSK frequency domain.



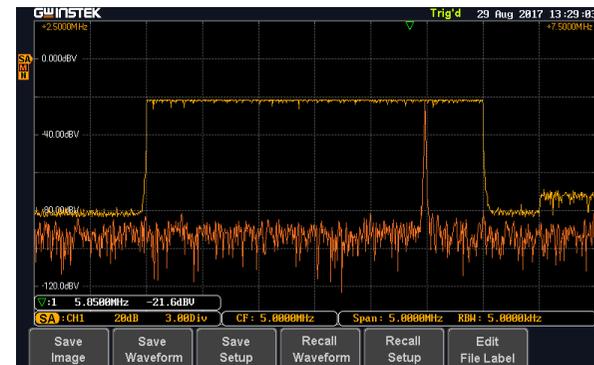
This FSK's carrier waveform is sine 10MHz, 500mVpp;  
 Hop frequency is 10.2MHz and FSK rate is 10kHz.  
 Now, we could clearly observe the data of frequency domain  
 signal (10MHz & 10.2MHz) from cursor's markers.



4. Select SA mode 4 and RUN, the screen will display linear frequency sweep in the frequency domain.



This carrier waveform is sine 500mVpp; linear frequency sweep is start from 3.5MHz and stop on the 6.5MHz. Spectrum trace is setup on the max. hold. Now, we could clearly observe the high speed frequency sweep from 3.5MHz to 6.5MHz on the MDO-2000E.



With the above 4 signal demonstrations we can clearly understand the frequency domain analysis capability of MDO-2000E. MDO-2000E standardly provides a 25MHz AWG, which can be collocated with this demo APP to allow beginners to quickly learn and show the operation of spectrum analyzer without preparing other signal generators or DUTs. Settings include start, stop, span frequency, spectrum traces, and RBW etc. MDO-2000E, the only oscilloscope of the same category, provides the spectrum analysis function. MDO-2000E, with dual domain analysis capability, is ideal for educational courses and the applications of low frequency domain analysis.