3048 MS

Option 001 Supplement to Operating Manual

Model HP 3585B
Spectrum Analyzer

Warning

To prevent potential fire or shock hazard, do not
expose equipment to rain or moisture.

**HEWLETT
PACKARD**

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Table of Contents

1

General Information

This Operating Manual Supplement introduces and explains Option 001 (Sweep Gating) for the HP 3585B Spectrum Analyzer. To fully understand and use the Sweep Gating feature, you should use this supplement in conjunction with the HP 3585B Operating Manual. When necessary, individual parts of the operating manual are referenced within this supplement.

Specifications for the standard HP 3585B (when performing non-gated measurements) are not changed with the installation of the Option 001. When using gated modes, measurement accuracy will settle to within ± 0.2 dB of stated accuracy if you use a gate delay that is $\geq$ the minimum recommended signal setup time.

The Counter function (Marker/Continuous Entry section) may give incorrect results when trying to measure burst signals. This happens because the counter will continue to count during the period of time when the desired signal is not present.

Installation Verification

Verify that the Gated Sweep option is installed using the following procedure:

Press
Instr Preset
(Entry section)

Press (blue) Menu   The menu shown in figure 1-1 should appear on the screen.
(Trigger section)

Press Ext   With no signal applied to the external trigger input the displayed trace will not be
(Trigger section)   updated.
twice

Press Free Run   The displayed trace should now be continuously updated.
(Trigger section)

General Information

```
REF -25.0 dBm              MARKER 20 000 000.0 Hz
10 dB/DIV      RANGE -25.0 dBm      -100.0 dBm
┌──────────────────────────────────────────────┐
│              EXT TRIGGER MENU                  │
│   Use the "uV" key for uSec delimiter          │
│   Use the "mV" key for mSec delimiter          │
│                                                │
│   Key 7: Ext Trigger Mode: NORMAL              │
│                                                │
│                                                │
│   Key 5: Ext Trigger slope: NEG                │
│                                                │
│   Note: The default gate delay for the         │
│         current RBW/VBW is .06 mSEC            │
│                                                │
│   Use the "Ext" Trigger key to exit this menu  │
│                                                │
│    ROM: 6-20-89 9:45                           │
└──────────────────────────────────────────────┘
CENTER 20 000 000.0 Hz     SPAN 40 000 000.0 Hz
RBW 30 KHz          VBW 30 KHZ      ST .2 SEC
```

Figure 1-1 External Trigger Menu (Normal Mode)

Overview

What is Sweep Gating?

Sweep Gating (HP 3585B, Opt 001) adds the capability to pause and continue the analyzer's internal data collection process. This chapter introduces Sweep Gating and provides a quick overview of its advantages. To learn how to use Sweep Gating, see Chapter 3 of this supplement.

Sweep Gating lets you view the spectrum of an interrupted RF signal without displaying unwanted spectral components. These components can be caused by the interrupt frequency or by signals that are present during the interrupts. In other words, it's now possible to make measurements of steady-state signals whose duration is less than the analyzer's sweep time.

Sweep Gating is often used to analyze burst signals from devices such as videotape recorders or computer disk drives. Figure 2-1 shows a typical spectrum from this type of burst signal using a conventional sweep mode. Figure 2-2 shows the same spectrum using Sweep Gating.

Sweep Gating is functional in all of the HP 3585B sweep modes, including manual and zero span.
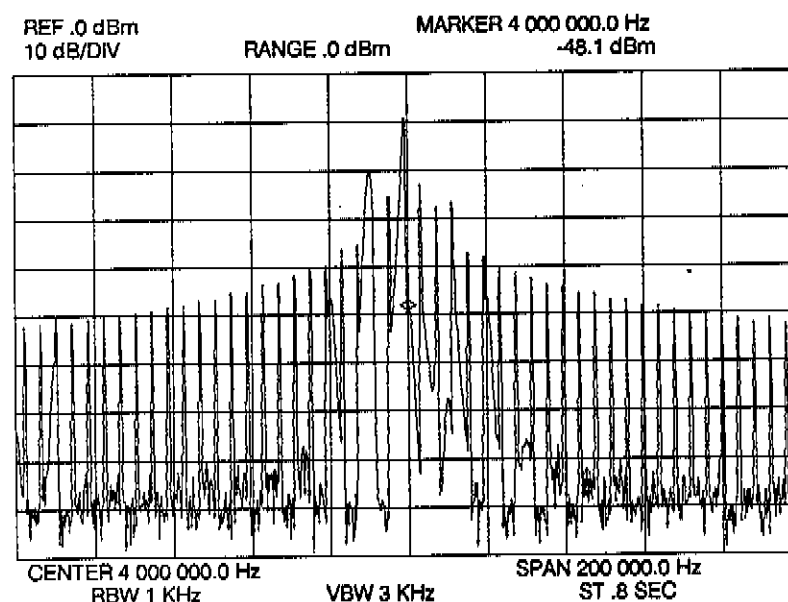

Figure 2-1 Burst Spectrum Without Sweep Gating

REF .0 dBm   MARKER 4 000 000.0 Hz
10 dB/DIV   RANGE .0 dBm   -.3 dBm

CENTER 4 000 000.0 Hz   SPAN 200 000.0 Hz
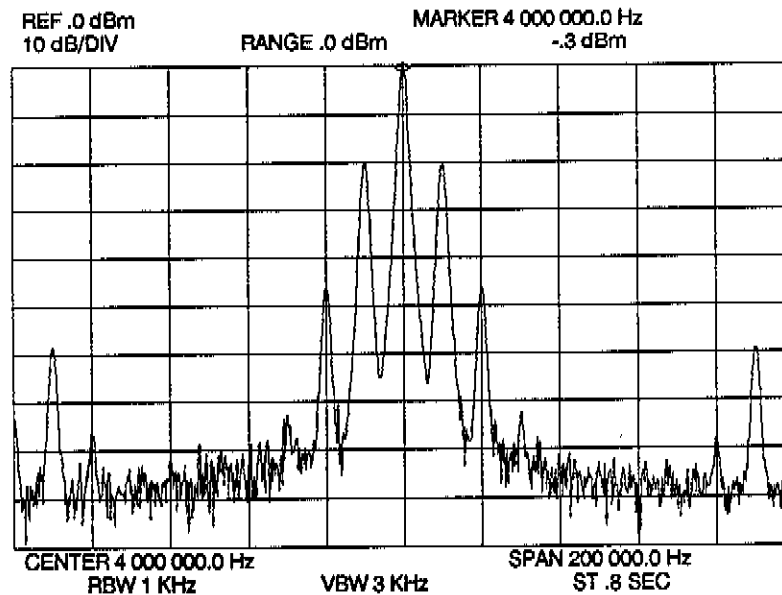   RBW 1 KHz   VBW 3 KHz   ST .8 SEC

Figure 2-2 Burst Spectrum With Sweep Gating

How Does it Work?

When Sweep Gating is on, the analyzer collects and updates the display data only during a specified data collection time. This is called the "Internal Data Collection Gate" time. The length and position of the data collection gate can be specified relative to an external trigger signal. This can be done locally using front panel controls or remotely via the HP-IB.

When using Sweep Gating in continuous or single sweep mode, the analyzer displays a complete spectrum by combining data from a series of short sweeps. These short sweeps are accomplished by activating the analyzer's internal data collection process at controlled intervals. Each short sweep is triggered by an external trigger signal. This signal must recur often enough for the analyzer to generate a complete spectrum. Figure 2-3 shows a typical example.

To successfully use Sweep Gating, a suitable trigger signal must accompany the signal you want to measure. This trigger signal should also occur at a consistent point relative to the signal you want to measure. You can select a positive trigger or negative trigger slope to activate the sweep.
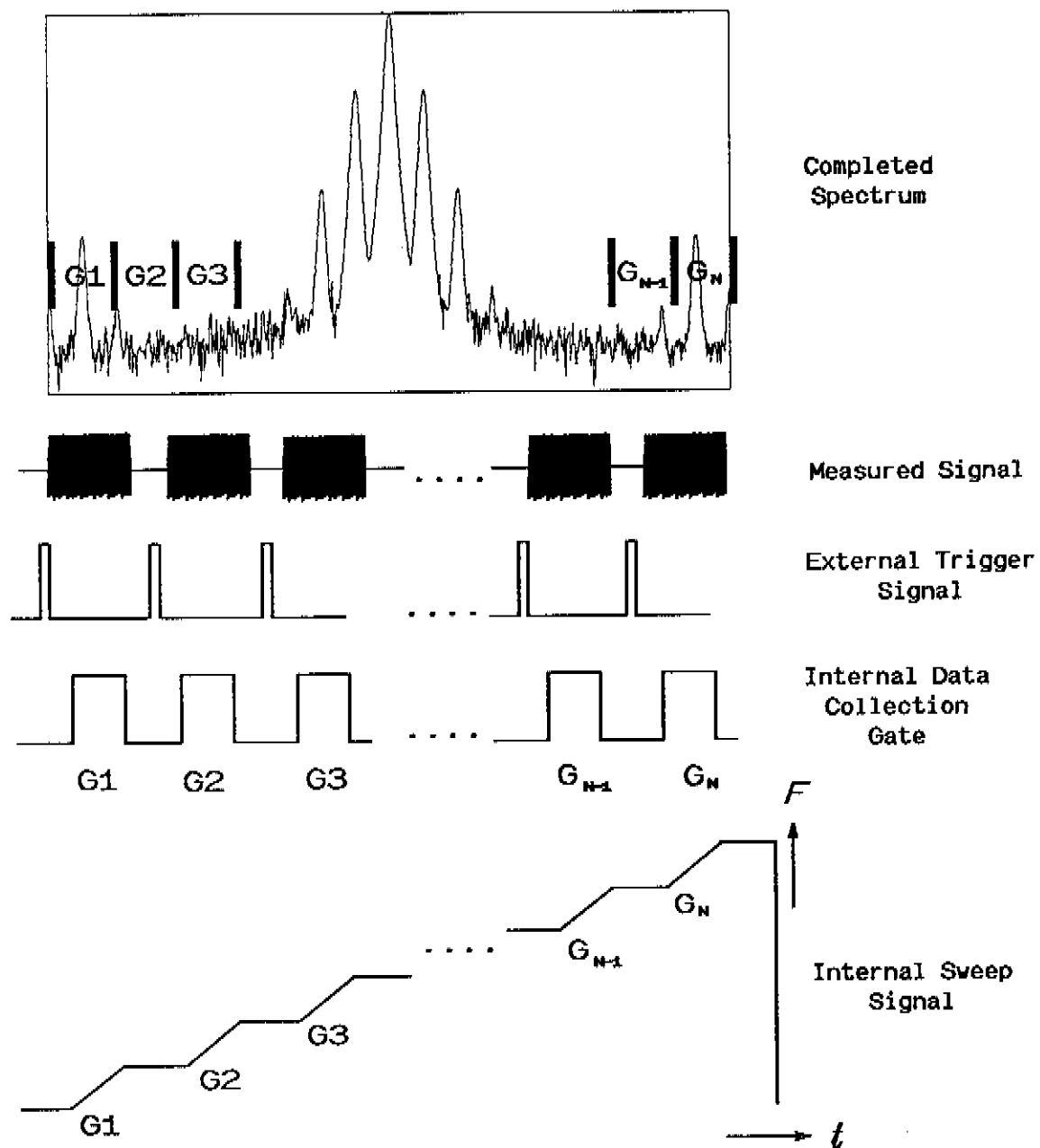
Figure 2-3 Using Sweep Gating to Build a Spectrum

Gate Delay

Keep in mind that the analyzer does not begin collecting data immediately after the trigger signal changes state — rather, there is a slight delay, called "Gate Delay." Gate Delay can be adjusted from 10 μs to 655 ms. Some amount of Gate Delay is necessary to maintain the analyzer's measurement accuracy. For each combination of Resolution Bandwidth (RBW) and Video Bandwidth (VBW) you select, the analyzer suggests a minimum-recommended Gate Delay (the default value). These values are displayed in each of the external trigger menus (shown in figure 3-2). If you enter a smaller value than the default value, the analyzer will still make a measurement, but there may be additional noise and degradation of accuracy.

Gate Delay can be lengthened to better synchronize the trigger signal with a particular signal you want to measure. For example, you may elect to use a longer Gate Delay if the signal you want to measure occurs quite a bit after the trigger signal.

Choice of Trigger Modes

There are two ways to use Sweep Gating — External Gate mode and Timed Gate mode. Of course, Normal external trigger mode is still available, and is similar to the external trigger on the standard HP 3585B (with one exception).

External Gate mode: In External Gate mode, the analyzer begins sweeping when the external trigger signal changes state (once the current Gate Delay time has elapsed), and continues sweeping as long as the trigger signal remains in the active state.

This mode is usually used when the trigger input signal is synchronous with the measured signal.

Timed Gate mode: In Timed Gate mode, the analyzer begins sweeping when the external trigger signal changes state (once the current Gate Delay time has elapsed). However, once the sweep begins, the analyzer ignores the trigger signal and continues sweeping for a predetermined time. This time is called "Gate Length," and is programmable from 100 μs to 13.1 s.

This mode would be is usually used for edge triggered measurements, when you need to specify exact gate length times or when a gate length of 100 μs is required.

Normal mode: In Normal mode, the analyzer begins sweeping when the external trigger signal changes state (unlike the standard HP 3585B, the HP 3585B Option 001 allows choice of negative or positive trigger slope). Once the sweep starts, the analyzer ignores the trigger signal and continues sweeping until one complete sweep is accomplished. At this point, the analyzer either stops sweeping (single sweep) or sweeps again when it detects an appropriate change of trigger state (continuous sweep).

Using Sweep Gating

Calling up Sweep Gating Menus

To call up the Sweep Gating menus, you will be using "shifted" functions of the three trigger keys on the analyzer's front panel. In addition, you will also use the numeric entry keys to adjust Sweep Gating parameters and call up triggering menus. And once you've used these menus to select an appropriate external triggering mode, you can use a "quick entry" method to change Gate Delay and Gate Length — two commonly-adjusted Sweep Gating values (see "Quick Entry" later in this chapter).

You'll find the external trigger connector on the analyzer's front panel. Suitable signals for HIGH trigger level are: +2.0V to +35V, or open circuit. Suitable signals for LOW trigger level are: −35V to +1.3V, or short to ground (outer shell of BNC connector). Figure 3-1 shows the trigger area on the front panel.

For a general overview of the three external trigger modes (two of which are Sweep Gating modes), refer to Chapter 2 of this supplement.
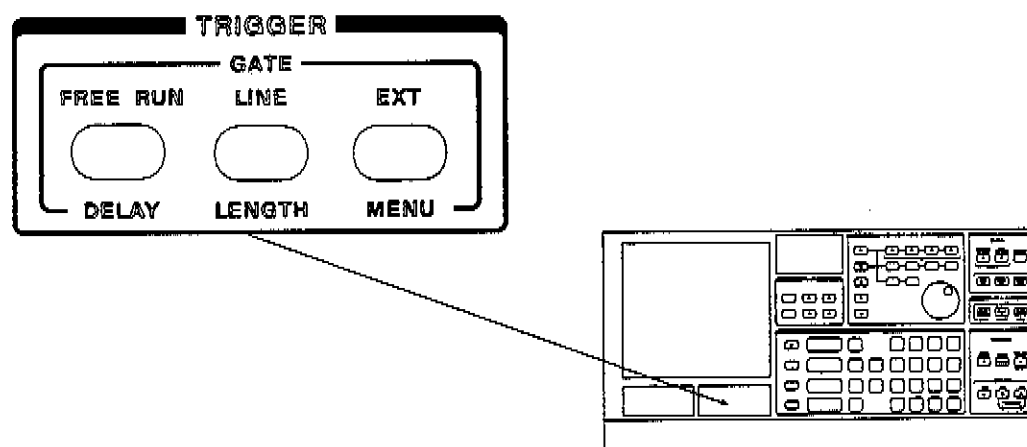

Figure 3-1 HP 3585B Front Panel (Trigger Area)

```
              EXT TRIGGER MENU

     Use the 'uV' key for uSec delimiter
     Use the 'mV' key for mSec delimiter

     Key 7: Ext Trigger Mode: NORMAL




     Key 5: Ext Trigger slope: NEG

     Note: The default gate delay for the
           current RBW/VBW is .06 mSEC

     Use the 'Ext' Trigger key to exit this menu

     ROM: 6-20-89 9:45
```

```
          EXT TRIGGER MENU                              EXT TRIGGER MENU

Use the 'uV' key for uSec delimiter           Use the 'uV' key for uSec delimiter
Use the 'mV' key for mSec delimiter           Use the 'nV' key for mSec delimiter

Key 7: Ext Trigger Mode: EXT GATE             Key 7: Ext Trigger Mode: TIMED GATE
Key 8: Gate Delay: Default                    Key 8: Gate Delay: Default
                                              Key 9: Gate Length: .2 mSEC

Key 4: Use default gate delay                 Key 4: Use default gate delay
Key 5: Ext Trigger active level: LOW          Key 5: Ext Trigger slope: NEG

Note: The default gate delay for the          Note: The default gate delay for the
      current RBW/VBW is .06 mSEC                   current RBW/VBW is .06 mSEC

Use the 'Ext' Trigger key to exit this menu   Use the 'Ext' Trigger key to exit this menu

ROM: 6-20-89 9:45                             ROM: 6-20-89 9:45
```
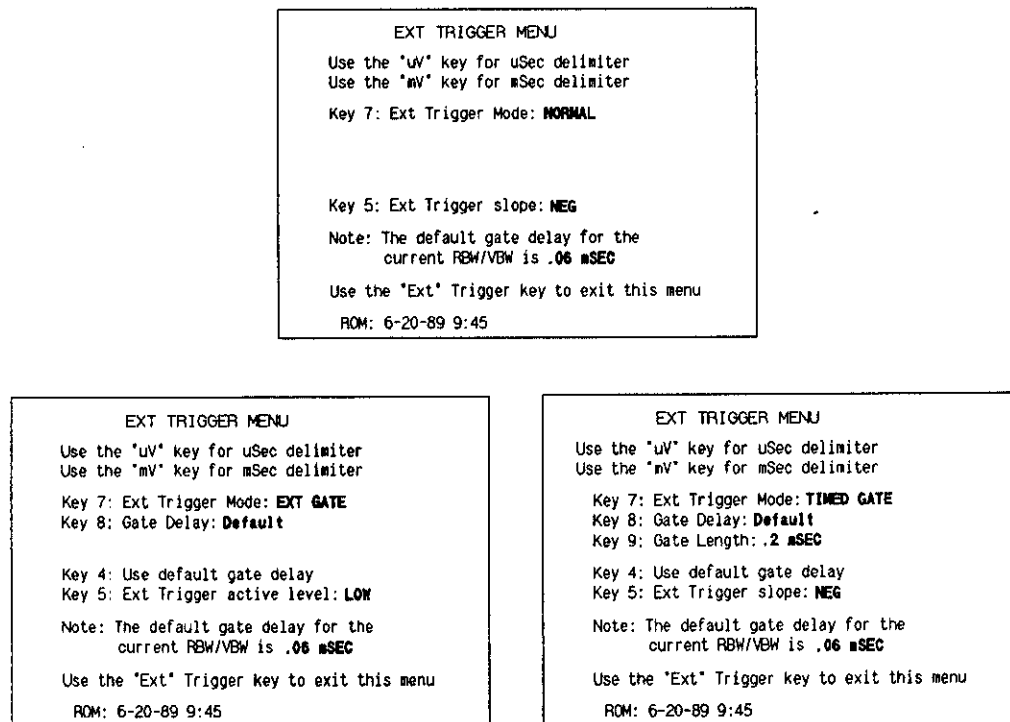
Figure 3-2 External Trigger Menus

Figure 3-2 shows the menus associated with each of these modes. To call up the trigger menus, press (blue) **Menu** (Trigger section). Then press **7** (Entry section) to cycle through the three menus.

Here are some additional things to keep in mind:

- If you exit the external trigger menus, the last menu viewed is the one that will appear first the next time you call up the menus. However, if you press the **INSTR PRESET** key, the NORMAL menu will appear first.

- Parameters that share functionality are interactive between menus. For example, if you specify NEGative slope in the NORMAL mode menu, the active level in the EXTERNAL GATE mode menu will be LOW, and the slope in the TIMED GATE mode menu will be NEGative.

- Pressing a front-panel key that is invalid while the current menu is active will cause a beep (if the beeper is not disabled) and will intensify the 'Use the "EXT" key to exit this menu' message. This has no effect on the current menu, however.

- The current version of the analyzer's internal ROM is displayed in the last line of each menu.

Sweep Gating Status Line

There is also a status line that reflects the current settings for both Gate Delay and Gate Length (not simultaneously). This status line appears in the lower left corner of the analyzer's CRT display (see figure 3-3). Press (blue) **Gate Delay** to display the current Gate Delay value. Press (blue) **Gate Length** to display the current Gate Length value.
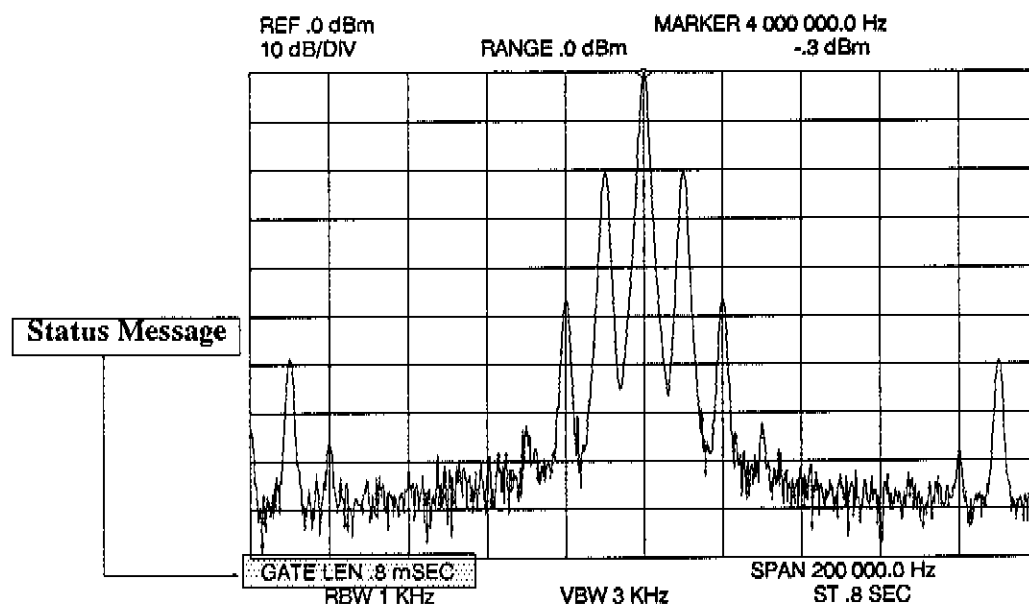
Figure 3-3 Gate Delay/Gate Length Status Line

Using Gate Delay

Gate Delay is used to control the start of the data collection gate as shown in figure 3-4. This delay must be adjusted so that the data collection gate begins a time period, called the Signal Setup Time (t_s), after the signal to be measured is present at the input of the analyzer. This time, t_s, is needed to maintain the analyzer's accuracy.

Table 3-1 shows the minimum recommended signal setup time for each combination of resolution bandwidth (RBW) and video bandwidth (VBW). These times are also displayed in each of the EXTERNAL TRIGGER menus.

The programmable Gate Delay, t_d, must be set so that it is $\geq$ Signal Setup Time, t_s, as shown in table 3-1.

Table 3-1. Minimum Recommended Signal Setup Time, (t_s)

RBW ≥ 3VBW		RBW=VBW		RBW<VBW	
VBW	delay (t_s)	RBW	delay (t_s)	RBW	delay (t_s)
1 Hz	*				
3 Hz	500 ms	3 Hz	*	3 Hz	*
10 Hz	150 ms	10 Hz	360 ms	10 Hz	300 ms
30 Hz	50 ms	30 Hz	120 ms	30 Hz	100 ms
100 Hz	15 ms	100 Hz	36 ms	100 Hz	30 ms
300 Hz	5.1 ms	300 Hz	12 ms	300 Hz	10 ms
1 kHz	1.55 ms	1 kHz	3.3 ms	1 kHz	3 ms
3 kHz	0.40 ms	3 kHz	0.88 ms	3 kHz	0.83 ms
10 kHz	0.08 ms	10 kHz	0.25 ms	10 kHz	0.22 ms
		30 kHz	0.06 ms		

* The required times are longer than the hardware maximum of 655.35 ms.

Using External Gate mode

In External Gate mode, the analyzer begins sweeping when the external trigger signal changes state (once the current Gate Delay time has elapsed), and continues sweeping as long as the trigger signal remains in the active state. For each combination of RBW and VBW the analyzer displays a minimum recommended value for t_d (this value is displayed in the EXTERNAL TRIGGER menu). You can set t_d from the front panel or over the HP-IB.

Figure 3-5 shows the relationship between the measured signal, external trigger signal, and the internal data collection gate (for External Gate mode).
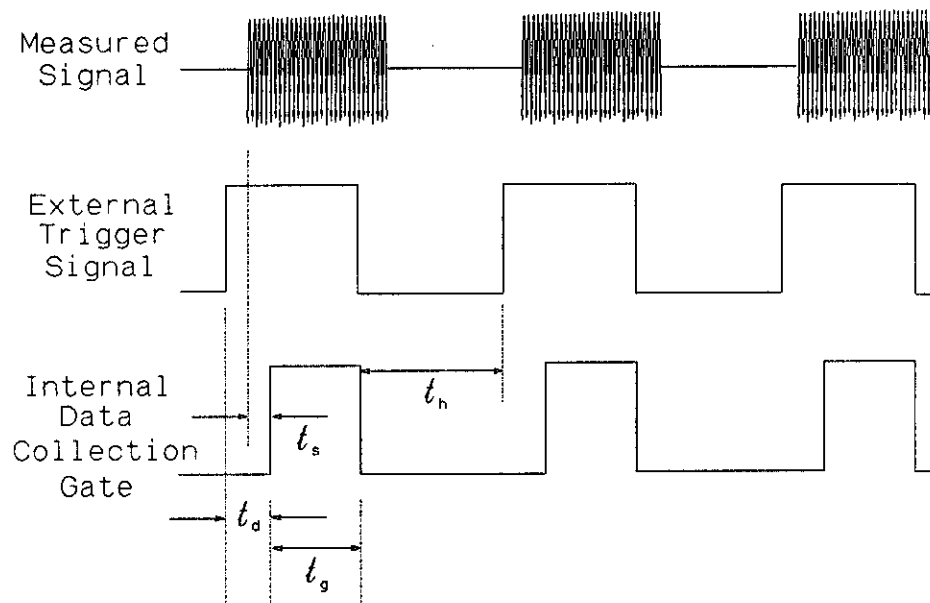

Figure 3-4 Signal Suitable for External Gate Mode

t_d: PROGRAMMABLE GATE DELAY: (Programmable from $10\,\mu s$ to 655 ms, with a $10\,\mu s$ resolution. Must be $\geq t_s$ to maintain instrument accuracy.)

t_g: TRIGGER CONTROLLED GATE LENGTH: (Derived from the External Trigger signal. 200 μs minimum, with a $200\,\mu s$ resolution. As a result a $200\,\mu s$ gate length resolution the internal data collection gate may close up to $200\,\mu s$ early. If the External trigger is active less than $200\,\mu s$ (plus the gate delay time), the sweep will not progress even though the 'SWEEPING' light may be on intermittently.)

t_h: TRIGGER HOLD-OFF TIME: (Any trigger occurring during the hold-off time will be ignored. This time is required for internal hardware reset. See Appendix A for an explanation of how to determine t_h for any combination of t_d, RBW, and VBW.)

t_s: SIGNAL SETUP TIME: (Minimum recommended values are listed in table 3-1.)

```
REF  -25.0 dBm                 MARKER  20 000 000.0 Hz
10 dB/DIV        RANGE -25.0 dBm       -100.0 dBm
```

```
            EXT TRIGGER MENU

      Use the "uV" key for uSec delimiter
      Use the "mV" key for mSec delimiter

      Key 7: Ext Trigger Mode: EXT GATE
      Key 8: Gate Delay: Default


      Key 4: Use default gate delay
      Key 5: Ext Trigger active level: LOW

      Note: The default gate delay for the
            current RBW/VBW is .06 mSEC

      Use the "Ext" Trigger key to exit this menu

        ROM: 6-20-89 9:45
```

```
CENTER 20 000 000.0 Hz     SPAN 40 000 000.0 Hz
RBW 30 KHz          VBW 30 KHZ          ST .2 SEC
```

Figure 3-5 External Trigger Menu (External Gate Mode)

Press (blue) Menu (Trigger section)	If you haven't done so already, this displays the External Trigger menus. Press 7 (Entry section) to cycle through the menus until you reach the EXTERNAL GATE menu. This menu is shown in Figure 3-5.
Press 8 (Entry section)	This lets you enter a specific Gate Delay time. You should adjust the Gate Delay to best synchronize the signal you're trying to measure with the available trigger signal. Remember, a delay which is $\geq$ the Default delay is necessary to maintain measurement accuracy.
	When you're ready to enter a Gate Delay value, use the numeric keys (Entry section), and terminate the entry by pressing the μV, mV, or SEC key (Entry section). The analyzer will continue to use this value even if you change the RBW/VBW settings.
OR	Press 4 (Entry section)
	This sets GATE DELAY value to the default setting. The default value changes as you select different RBW (Resolution Bandwidth) and VBW (Video Bandwidth).
Press 5 (Entry section)	This toggles the active trigger level between LOW and HIGH. The default is LOW.
Press Ext (Trigger section)	This exits the menu.
Press Ext (Trigger section) again	Activates the EXTERNAL GATE trigger mode.

Using Timed Gate mode

In Timed Gate mode, the analyzer begins sweeping when the external trigger signal changes state (once the current Gate Delay time has elapsed). For each combination of RBW and VBW the analyzer displays a minimum recommended value for t_d (this value is displayed in the EXTERNAL TRIGGER menu). You can set t_d from the front panel or over the HP-IB.

Once a sweep begins, the analyzer ignores the trigger signal and continues sweeping for a predetermined time, t_L. This time is called "Gate Length". You can set t_L from the front panel or over the HP-IB.

Figure 3-7 shows the relationship between the input signal, external trigger signal, and the internal data collection gate (for Timed Gate mode).
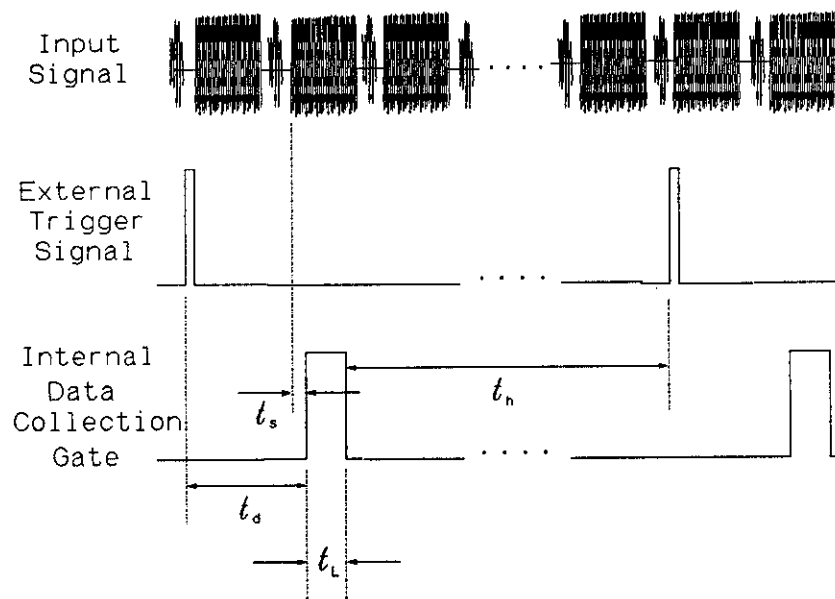
Figure 3-6 Signal Suitable for Timed Gate Mode

t_d: PROGRAMMABLE GATE DELAY: (Programmable from $10\,\mu$s to 655 ms, with a $10\,\mu$s resolution. Must be $\geq t_s$ to maintain instrument accuracy.)

t_L: PROGRAMMABLE GATE LENGTH: (Programmable from $100\,\mu$s minimum, or from $200\,\mu$s to 13.1 s with a $200\,\mu$s resolution.)

t_h: TRIGGER HOLD-OFF TIME: (Any trigger occurring during the hold-off time will be ignored. This time is required for internal hardware reset. See Appendix A for an explanation of how to determine t_h for any combination of t_d, RBW, and VBW.)

t_s: SIGNAL SETUP TIME: (Minimum recommended values are listed in table 3-1.)

```
REF  -25.0 dBm              MARKER  20 000 000.0 Hz
10 dB/DIV        RANGE  -25.0 dBm      -100.0 dBm
     ┌─────────────────────────────────────────────┐
     │            EXT  TRIGGER  MENU                │
     │                                             │
     │   Use the 'uV' key for uSec delimiter       │
     │   Use the 'mV' key for mSec delimiter       │
     │                                             │
     │   Key 7: Ext Trigger Mode: TIMED GATE       │
     │   Key 8: Gate Delay: Default                │
     │   Key 9: Gate Length: .2 mSEC               │
     │                                             │
     │   Key 4: Use default gate delay             │
     │   Key 5: Ext Trigger slope: NEG             │
     │                                             │
     │   Note: The default gate delay for the      │
     │         current RBW/VBW is .06 mSEC         │
     │                                             │
     │   Use the 'Ext' Trigger key to exit this menu│
     │                                             │
     │     ROM: 6-20-89 9:45                       │
     └─────────────────────────────────────────────┘
CENTER  20 000 000.0 Hz      SPAN  40 000 000.0 Hz
RBW  30 KHz            VBW  30 KHZ      ST .2 SEC
```

Figure 3-7 External Trigger Menu (Timed Gate Mode)

Press (blue) Menu (Trigger section)	If you haven't done so already, this displays the External Trigger menus. Press 7 (Entry section) to cycle through the menus until you reach the TIMED GATE menu. This menu is shown in Figure 3-7.
Press 8 (Entry section)	This lets you enter a specific Gate Delay time. You should adjust the Gate Delay to best synchronize the signal you're trying to measure with the available trigger signal. Remember, a delay which is ≥ the Default delay is necessary to maintain measurement accuracy. When you're ready to enter a Gate Delay value, use the numeric keys (Entry section), and terminate the entry by pressing the μV, mV, or SEC key (Entry section). The analyzer will continue to use this value even if you change the RBW/VBW settings.
Press 9 (Entry section)	This lets you enter a specific Gate Length. To do this, use the numeric keys (Entry section), and terminate the entry by pressing the μS, mV, or SEC key (Entry section). The analyzer will continue to use this value even if you change the RBW/VBW settings.
OR	Press 4 (Entry section) Sets GATE DELAY value to 'Default' setting. The default value changes as you select different RBW/VBW combinations.

Press 5
(Entry section)

This toggles the slope between NEGative and POSitive. Default is NEGative.

Press **Ext**
(Trigger section)

This exits the menu.

Press **Ext**
(Trigger section)
again

Activates the TIMED GATE trigger mode.

Using Normal mode

In Normal mode, the analyzer begins sweeping when the external trigger signal changes state (unlike the standard HP 3585B, the HP 3585B Option 001 allows choice of negative or positive trigger slope). Once the sweep starts, the analyzer ignores the trigger signal and continues sweeping until one complete sweep is accomplished. At this point, the analyzer either stops sweeping (single sweep) or sweeps again when it detects an appropriate change of trigger state (continuous sweep).

Press (blue) Menu (Trigger section)

This calls up one of the External Trigger menus. If the Normal mode menu doesn't appear, simply press 7 (Entry section) to cycle through the menus until you reach the Normal mode menu. This menu is shown in figure 3-8

Press 5 (Entry section)

This toggles the slope between NEGative and POSitive. If you select a negative slope, the analyzer will respond when the trigger signal makes a high-to-low transitions. If you select a positive slope, the analyzer will respond when the trigger signal makes a low-to-high transition. The default slope is NEGative.

Press Ext (Trigger section)

This exits the menu.

Press Ext (Trigger section) again

Activates the NORMAL external trigger mode.

```
REF -25.0 dBm                MARKER 20 000 000.0 Hz
10 dB/DIV        RANGE -25.0 dBm       -100.0 dBm
┌─────────────────────────────────────────────────┐
│              EXT TRIGGER MENU                     │
│                                                   │
│     Use the "uV" key for uSec delimiter           │
│     Use the "mV" key for mSec delimiter           │
│                                                   │
│     Key 7: Ext Trigger Mode: NORMAL               │
│                                                   │
│                                                   │
│                                                   │
│     Key 5: Ext Trigger slope: NEG                 │
│                                                   │
│     Note: The default gate delay for the          │
│           current RBW/VBW is .06 mSEC             │
│                                                   │
│     Use the "Ext" Trigger key to exit this menu   │
│                                                   │
│      ROM: 6-20-89 9:45                            │
└─────────────────────────────────────────────────┘
CENTER 20 000 000.0 Hz      SPAN 40 000 000.0 Hz
RBW 30 KHz            VBW 30 KHZ      ST .2 SEC
```

Figure 3-8 External Trigger Menu (Normal Mode)

Quick Entry

There's also a way to quickly change GATE DELAY or GATE LENGTH values without re-entering the External Trigger menus.

Press (blue)   Displays the current GATE DELAY value in the Sweep Gating Status Line.
Gate Delay
(Trigger section)

There are two ways to enter a new GATE DELAY time:

- Use the up or down arrow keys (Entry section). This will increment or decrement the current value by $10\,\mu s$.

- Enter the delay value using numeric keys (Entry section). Pressing the μV, **mV** or SEC (Entry section) key terminates the entry and activates a sweep following the next inactive-to-active transition of the external trigger signal.

Press (blue)   Displays the current timed gate length.
Gate Length
(Trigger section)

There are two ways to enter a new GATE LENGTH value:

- Use the up or down arrow keys (Entry section). This will increment or decrement the current value by $200\,\mu s$. However, if the current setting is already at $200\,\mu s$, pressing the down arrow will decrement to $100\,\mu s$ (this is the minimum gate length). If the current setting is $100\,\mu s$, pressing the up arrow will increment $100\,\mu s$ (to $200\,\mu s$).

- Enter the gate length using numeric keys (Entry section). Pressing the μV, **mV** or SEC (Entry section) key terminates the entry and activates a sweep following the next inactive-to-active transition of the external trigger signal.

4

Remote Operation

HP-IB commands for Sweep Gating operate in similar fashion to the HP-IB commands for the standard HP 3585B. To review HP-IB programming, see Section III, Chapter 9 of the HP 3585B Operating Manual. There are six new commands and one new suffix ,US, added by this option. They arc summarized in the following table.

Table 4-1. HP 3585 Option 001 HP-IB Commands

Command	Mnemonic	Data Description	Suffixes	Message Format
Gate clear	GC	No data (sets default value for Gate Delay)		3
Gate delay	GD	1-5 digits and decimal pt. (10 μs to 655 ms with 10 μs resolution)	SC, MV, US	1
Gate length	GL	1-6 digits and decimal pt. (100 μ to 13.3 s with 200 μs resolution)	SC, MV, US	1
Gate polarity	GP	0 (for neg) or 1 (for pos)		2
External Gate	T7	No data		3
Timed Gate	T8	No data		3

Notes: The T3 command will select the NORMAL external trigger mode. In addition to selecting the external trigger mode within the EXT TRIGGER menu, T3, T7, and T8 will enable the selected mode.

The 'MV' suffix is used for milliseconds.

The 'US' suffix is used for microseconds.

'MS' is not milliseconds; it is the 'Marker to Step' function.

Appendix

Determination of Trigger Holdoff Time

The trigger holdoff time (T_h) is a function of the reset time for current RBW/VBW combination, the programmed Gate Delay time (T_d) and the selected gating mode (EXT or TIMED). The hardware reset time (T_r) is given in Table A-1.

External Gate Mode:

$T_h = 200\,\mu s$ if $T_d \leq 20\,\mu s$

$T_h = T_d + 190\,\mu s$ if $20\,\mu S < T_d \leq T_r$

$T_h = T_r + 200\,\mu s$ if $T_d > T_r$

Timed Gate Mode:

$T_h = 90\,\mu s$ if $T_d \leq 100\,\mu s$

$T_h = T_d - 10\,\mu s$ if $100\,\mu s < T_d \leq T_r$

$T_h = T_r$ if $T_d > T_r$

Table A-1. Hardware Reset Time (t_r)

RBW	VBW				
	300 Hz	1 kHz	3 kHz	10 kHz	30 kHz
300 Hz	1.85 ms	1.85 ms	1.85 ms	1.85 ms	1.85 ms
1 kHz	1.85 ms	0.60 ms	0.60 ms	0.60 ms	0.60 ms
3 kHz	1.85 ms	0.60 ms	0.28 ms	0.28 ms	0.28 ms
10 kHz	1.85 ms	0.60 ms	0.28 ms	0.25 ms	0.22 ms
30 kHz	1.85 ms	0.60 ms	0.28 ms	0.14 ms	0.09 ms

Note: Reset times for all bandwidths not given in the above table are 2.56ms.

B

Appendix

Functional Changes to the HP 3585B

When the Option 001 is installed in the HP 3585B there are three shifted keys that function differently. They are as follows:

1. Pressing (blue) **Free Run** (Trigger section) no longer displays the ROM version. This information is now available in the EXTernal TRIGGER MENU by pressing (blue) **Menu** (Trigger section).

2. Pressing (blue) **Line** (Trigger section) no longer toggles the display annotation on and off. This function is now accessed by pressing (blue)**View A** (Trace section).

3. Pressing (blue) **Ext** (Trigger section) no longer toggles the script display on and off. This function is now accessed by pressing (blue)**View B** (Trace section).