

This note discusses the use of the test harness. The test harness is a C# application (with source code) optimized to exercise discrete function calls. The purpose of the test harness is to allow the user to become familiar with the various calls required to accomplish certain tasks. This note will show how to make the most basic measurements. Specifically:

- CW measurements
- Pulse modulation measurements
- Pulse profiling measurements

We'll start by assuming:

1. You've installed the Ladybug applications
2. You have a sensor connected
3. You've been able to make measurements

After doing this you'll need to copy the files to directory of your choosing. Then you can start the application. The name of the application is:

Ladybug\_TestHarness.exe

When you start the application you should see a window similar to the one below:

The screenshot shows the 'RgrTest\_Tabbed' application window. A red box labeled 'Sensor Count' is overlaid on the top left. The window has a menu bar with options: Index & Address Functions, Init, CW & Pulse Mod, Meas Criteria & Offsets, Limits, Triggering, Recorder Out, PP - Setup, PP - Get Trace, PP - Markers, PP - Gates, and Options. The 'Index & Address Functions' menu is open, displaying a grid of function call buttons. A table below the buttons shows the status of various functions. The 'LB\_SensorCnt()' button is highlighted with a red arrow. The 'LB\_SensorList()' button is also visible. The 'Auto fill on select' checkbox is checked. The 'Model No.' field is empty. The 'Ser No.' field is empty. The 'Index' field is set to 1. The 'Address' field is set to 1. The 'Clear' button is visible. The 'LB\_GetAddress\_Idx()' button is set to 1. The 'LB\_GetAddress\_SN()' button is set to 1. The 'LB\_SetAddress\_Idx()' button is set to 1. The 'LB\_SetAddress\_SN()' button is set to 1. The 'LB\_ChangeAddress' button is set to 1. The 'LB\_GetIndex\_Addr()' button is set to 1. The 'LB\_GetIndex\_SN()' button is set to 1. The 'LB\_AddressConflictExists()' button is set to 'not tested'. The 'LB\_WillAddressConflict()' button is set to 1. The 'LB\_GetSerNo\_Idx()' button is set to 1. The 'LB\_GetSerNo\_Addr()' button is set to 1. The 'LB\_DriverVersion' button is set to 1. The 'LB\_BlinkLED\_Idx()' button is set to 1. The 'LB\_BlinkLED\_Addr()' button is set to 1. The 'LB\_BlinkLED\_SN()' button is set to 1. The 'LB\_GetFirmwareVersion()' button is set to 1. The 'LB\_GetCalDueDate()' button is set to 10/27/08. The 'LB\_SetCalDueDate()' button is set to 10/27/08. The 'GetModelNumber\_SN()' button is set to 1. The 'GetModelNumber\_Idx()' button is set to 1. The 'GetModelNumber\_Addr()' button is set to 1. The 'IsSensorConnected\_SN()' button is set to 1. The 'IsSensorConnected\_Addr()' button is set to 1. The 'Close' button is visible in the bottom right corner.

Idx	Adr	SN
1	1	1

Function	Value
LB_GetAddress_Idx()	1
LB_GetAddress_SN()	1
LB_SetAddress_Idx()	1
LB_SetAddress_SN()	1
LB_ChangeAddress	1
LB_GetIndex_Addr()	1
LB_GetIndex_SN()	1
LB_AddressConflictExists()	not tested
LB_WillAddressConflict()	1
LB_GetSerNo_Idx()	1
LB_GetSerNo_Addr()	1
LB_DriverVersion	1

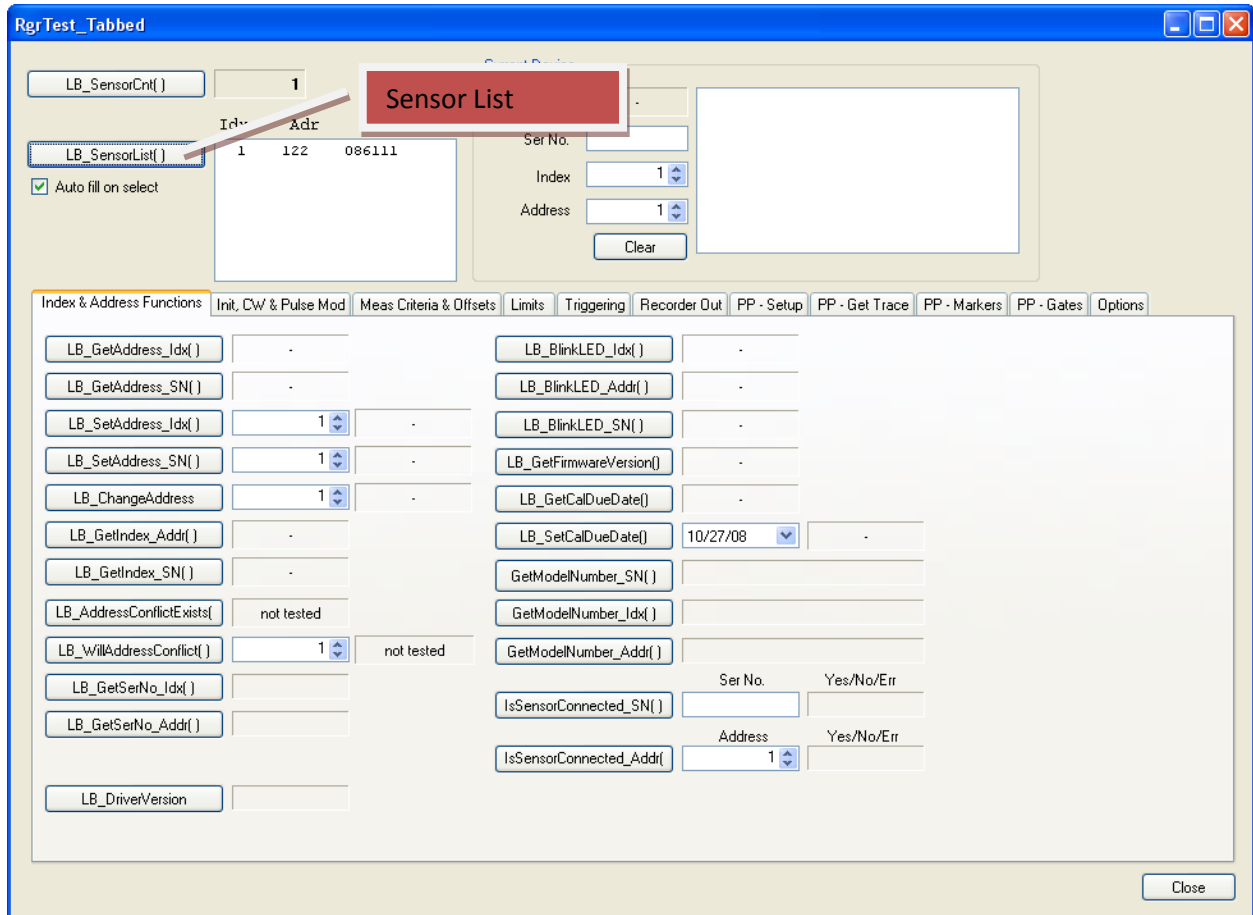
We'll start by focusing on getting basic information. Click the sensor count button. You should get a count in the adjacent label. Sensor count is a very simple call. It has the following prototype:

```
int LB_SensorCnt()
```

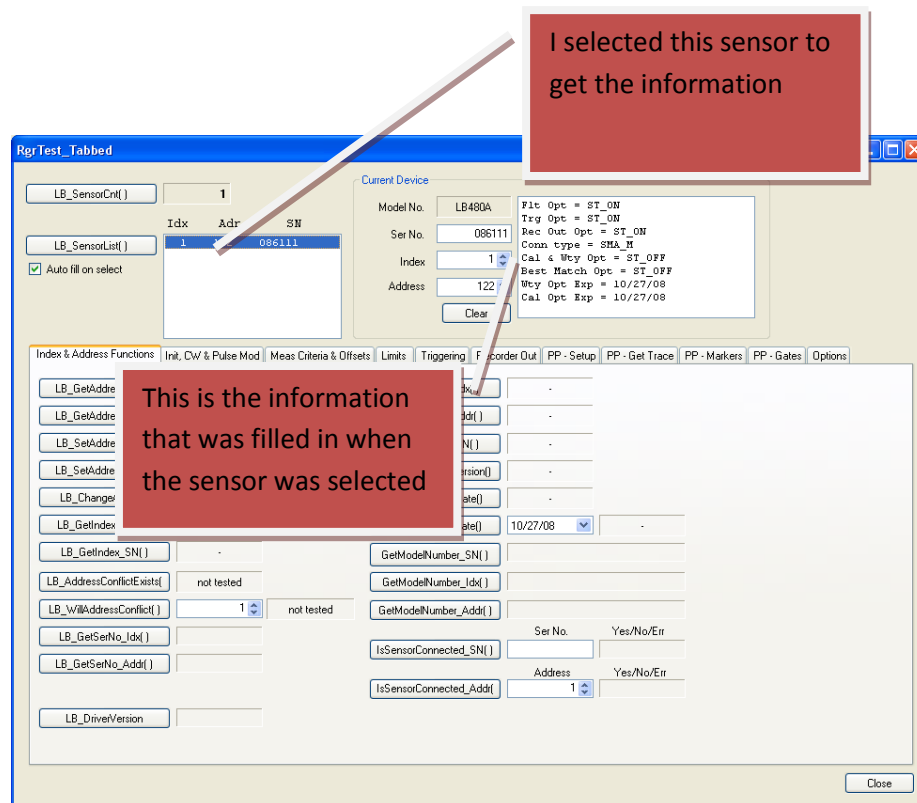
Note in the above line that the return value is "int". It's important to remember that the C# "int" is the same as a C++ LONG or a 32 bit integer. The line of code that makes use of this call is:

```
lblLB_SensorCount.Text = LB_API2_Declarations.LB_SensorCnt().ToString();
```

This call does exactly it says it does. It returns a count of sensors. The "LB\_" indicates that this function is useful for CW, pulse modulation and pulse profiling measurements. You'll note that there are several tabs.



Now click the sensor list button (as shown above). This will bring up a list of your sensor. You'll note that the USB index, address and serial number are list. Now is the time to get acquainted with how this panel works. To start this process, select or click a sensor in the list box. I've selected the sensor with a USB index of 1, an address of 122 and a serial number of 086111. When this is done all the labels and the list box to the right are filled in. This is done through a series of calls.



You can see options, cal date, serial number, model number etc are all acquired. Clearly this requires a number of calls. Fortunately each is fairly simple. Below is a snippet of the code in the IndexChanged event for the list box. You'll note that these calls (as do most) require you to identify the sensor. Sometimes you have an option of serial number, address or index. However, the most common identifier is the address.

```
rslt = LB_API2_Declarations.LB_GetModelNumber_Addr(currAddr, ref mn);  
rslt = LB_API2_Declarations.LB_GetFilterOpt(currSN, ref optVal);
```

The first line gets the model number (as an enumeration) and the second one retrieves the value of the filter option. This is characteristic of most of the code. Some error checking is required. This is primarily needed to trap null pointers to serial number strings.

Now we'll examine how this panel works. The top portion we just filled in with the serial number, model number, address, etc is used to identify the sensor with which we want to communicate. If you don't select a sensor you'll get numerous errors. So let's make a few calls:

I've clicked four buttons (marked in light green). Next to each button is a value. On the two top buttons you'll note the address has been returned. On the bottom two indicated buttons you'll see the indexes have been returned.

Now we'll change the address of our selected device. There are three possible calls to change the address. They are LB\_SetAddress\_Idx, LB\_SetAddress\_SN and LB\_ChangeAddress. The first two use the index ( \_Idx) and serial number ( \_SN) to change the serial number. The last one passes the current address and new address. In each case the calls are obtaining the current serial number, address or index filled in when we clicked the sensor list box.

To complete the information we set the numeric up/down counter adjacent to the button to set the address we want to change to. The result of the call is then indicated by a “Success” or “Failed” message. After each address change you will need to click the LB\_SensorList button to refresh the list box. Then you’ll need to select the device in the list box.

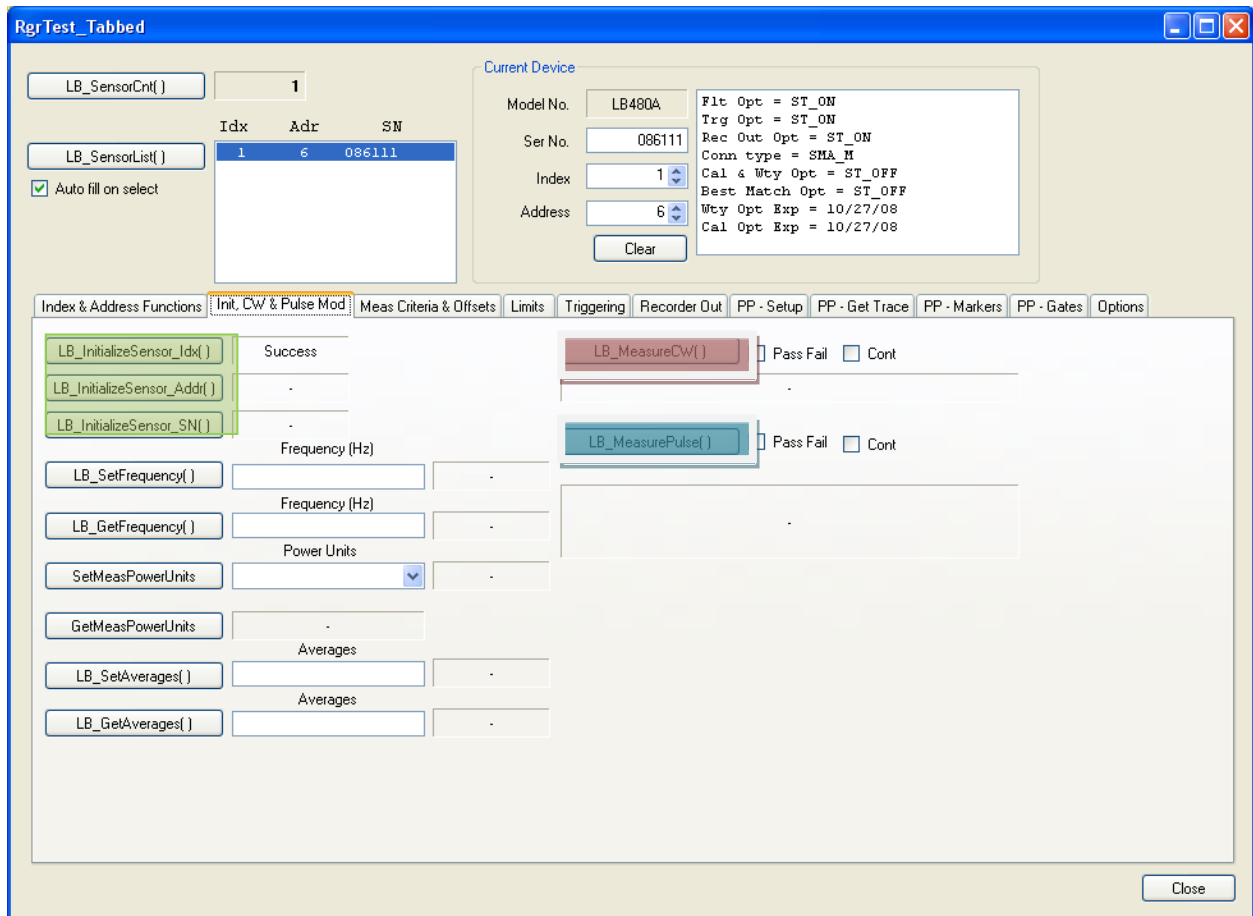
The screenshot shows the 'RgrTest\_Tabbed' application window. The 'Current Device' tab is active, displaying device information for 'LB480A' with serial number '086111'. The 'Index & Address Functions' section is visible, showing a list of functions and their results. The 'LB\_SensorList()' button is highlighted, and the 'Auto fill on select' checkbox is checked. The 'Index & Address Functions' section is divided into two columns of functions, each with a numeric input field and a result field.

Function	Value	Result
LB_GetAddress_Idx()	6	
LB_GetAddress_SNI()	6	
LB_SetAddress_Idx()	6	Success
LB_SetAddress_SNI()	1	-
LB_ChangeAddress	1	-
LB_GetIndex_Addr()	1	
LB_GetIndex_SNI()	1	
LB_AddressConflictExists()	not tested	
LB_WillAddressConflict()	1	not tested
LB_GetSetNo_Idx()	086111	
LB_GetSetNo_Addr()	086111	
LB_DriverVersion		

The 'Current Device' section shows the following information:

- Model No.: LB480A
- Ser No.: 086111
- Index: 1
- Address: 6
- Clear button
- Fit Opt = ST\_ON
- Trg Opt = ST\_ON
- Rec Out Opt = ST\_ON
- Conn type = SMA\_M
- Cal & Wty Opt = ST\_OFF
- Best Match Opt = ST\_OFF
- Wty Opt Exp = 10/27/08
- Cal Opt Exp = 10/27/08

Now we’re ready to make a simple CW measurement. To begin click the next tab (Init, CW & Pulse Mod). You should get a screen like the one below.

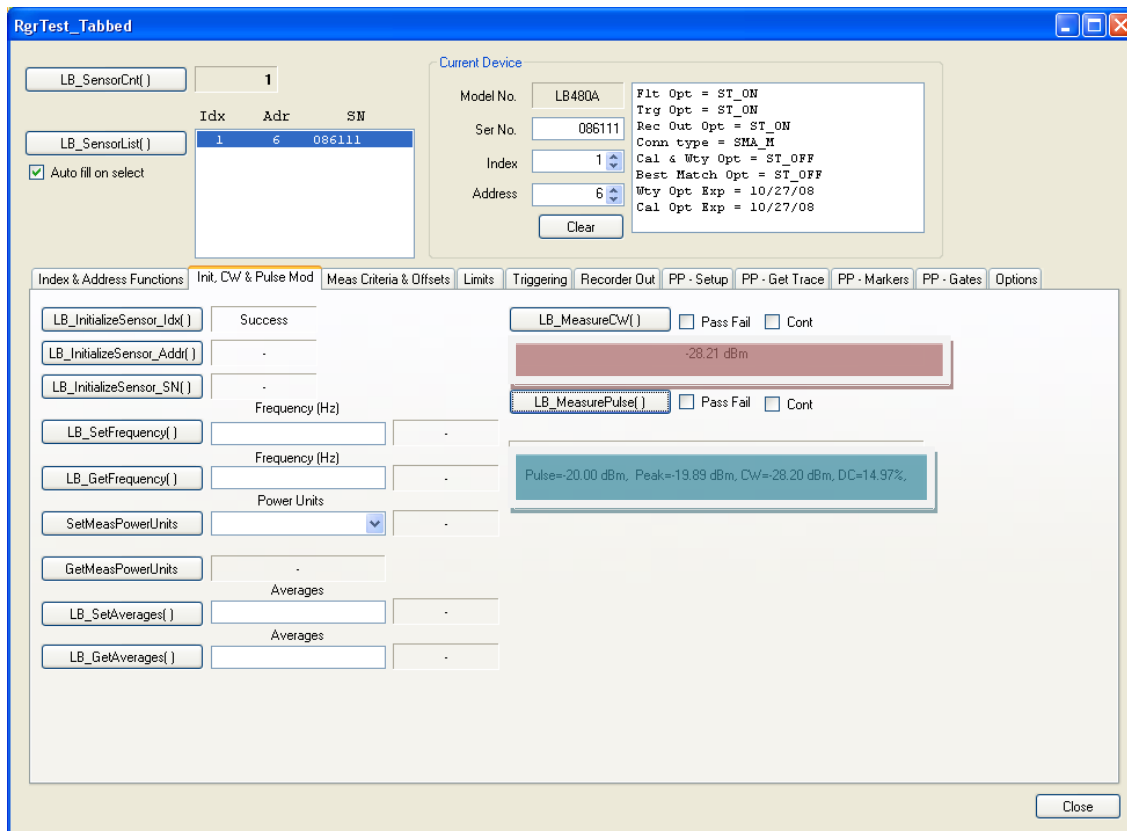


Before making any measurements we must initialize the sensor. This takes about 5 seconds. This needs to be done once when the program starts...but before any measurements are taken or any measurement settings are made.

The previous tab does not require initialization. Almost all remaining calls require initialization. To begin initialization click one of the three buttons highlighted in green above. The only difference in these initializations is the form of identification. Most people will choose to use address since it is the only form of identity under programmatic control.

When you click the button you'll see a message informing you that initialization is in process. When it is completed you'll see a success message. If you initialize again you'll see that the call returns very quickly. This is because the software has already initialized the sensor. Now we can make a CW measurement. This is done very easily by clicking the LB\_MeasureCW button highlighted in red.

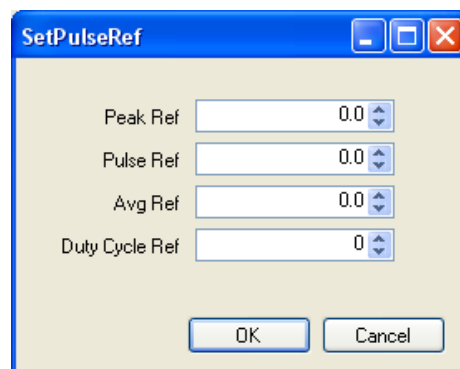
To make a pulse measurement click the button highlighted in blue-green



I've highlighted my test result in red and blue green above. To make relative CW measurement follow the process outlined below:

1. Select the "Meas Criteria & Offsets" tab
2. Set the CW offset by using the Set(Get)CWReference
3. Return to the Init, CW & Pulse measurements tab
4. Use Set(Get)MeasPowerUnits to DBREL (this enables relative measurements)
5. Now click the CW measurement. You should see measurements made relative to the current reference.

To make relative use a similar process but use the LB\_Set(Get)PluseReference button. You should see a dialog box similar to the one below:



Fill dialog box with appropriate values. And then follow the CW procedure outlined above.

Now we'll proceed with getting a pulse profiling trace, displaying the trace and then making a few measurements with gates. Start by selecting the "PP-Setup" tab. You should see a window like the one shown below:

The screenshot shows the RgrTest\_Tabbed software interface. The top section contains controls for the current device, including a table of sensors and a list of device parameters. The bottom section is a tabbed interface with the 'PP-Setup' tab selected, showing various pulse profiling setup parameters.

**Current Device**

Model No.	LB480A
Ser No.	086111
Index	1
Address	6

**Current Device Parameters:**

- Flt Opt = ST\_ON
- Trg Opt = ST\_ON
- Rec Out Opt = ST\_ON
- Conn type = SMA\_M
- Cal & Wty Opt = ST\_OFF
- Best Match Opt = ST\_OFF
- Wty Opt Exp = 10/27/08
- Cal Opt Exp = 10/27/08

**Index & Address Functions**

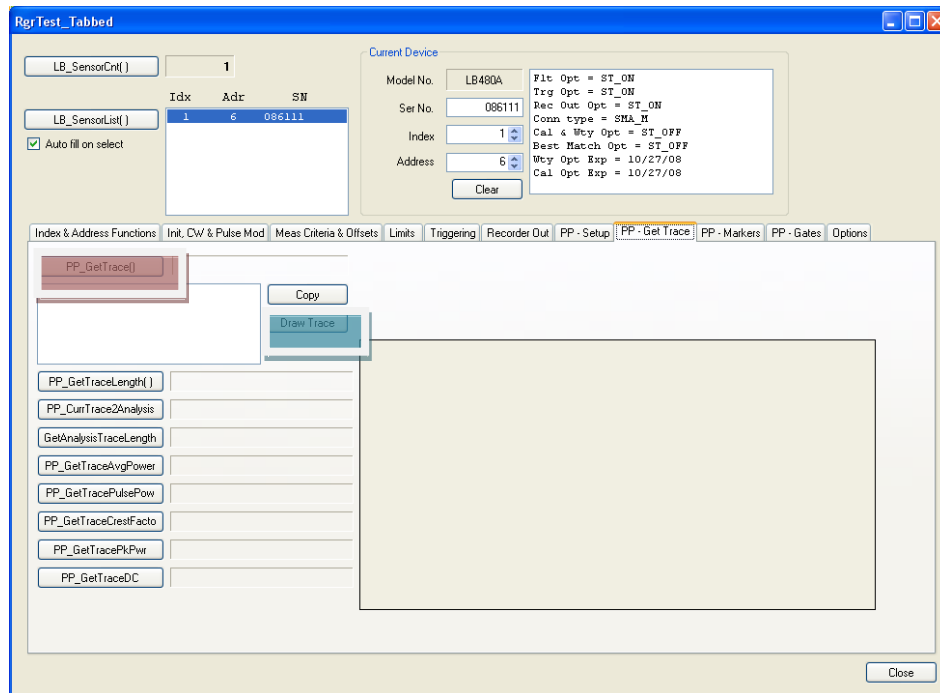
Idx	Adr	SN
1	6	086111

**PP-Setup Tab Parameters:**

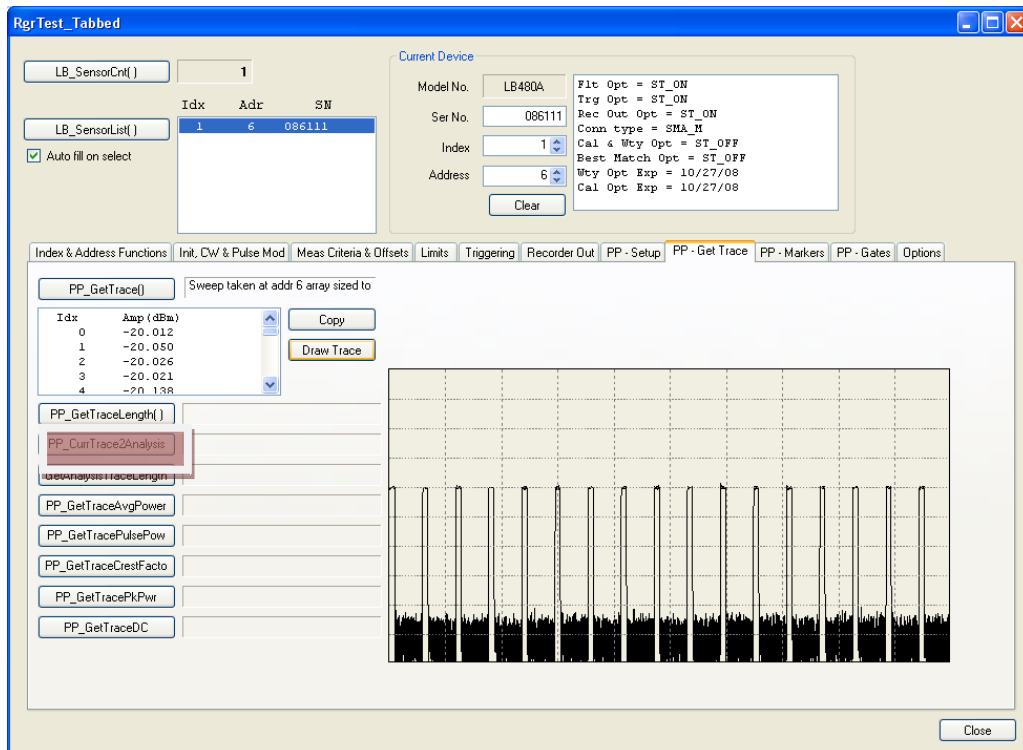
Parameter	Value
InitializeSensor_Addr()	-
PP_SetSweepTime()	-
PP_SetTriggerLevel()	0.0
PP_SetTriggerSource()	-
PP_SetTriggerEdge	-
PP_SetTriggerOut	-
PP_SetFilter()	-
PP_SetPoles()	-
PP_SetTraceAvg	1
PP_SetAvgMode()	-
PP_SetSweepDelay()	1
SetSweepDelayMode	-

**Close**

Not the initialize sensor button (highlighted in red). We've already initialized so it is not necessary to do so at this time. This button is provided as a convenience. The defaults for pulse measurements will suffice for now so proceed to the next tab: "PP-GetTrace".



You should see a screen like the one above. Click PP\_GetTrace() button highlighted in red. Then click the draw trace button highlighted in blue green. I have a pulse signal going into my sensor. With this signal I see the trace shown below





As you can see the list box below the PP\_GetTrace button has been filled with data (trace points) and the trace has been drawn.

#### IMPORTANT:

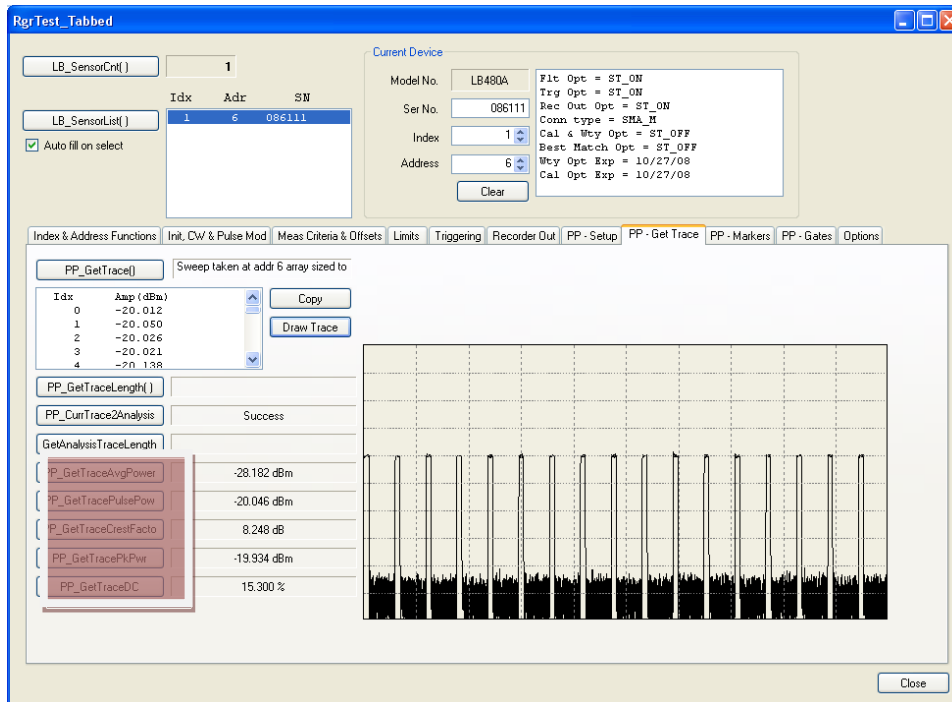
The Ladybug sensor has two traces. It has the current trace and the analysis trace. All measurements are made on the analysis trace. The trace we are looking at is the current trace. To make measurements we must first tell the system to make the current trace the analysis trace.

While this may seem a bit odd a first...other functions will allow you to pass a trace (either one you've created by hand or one that you've acquired and saved) to the analysis trace and make measurements. In this way you can decouple the collection of data from the analysis of the data.

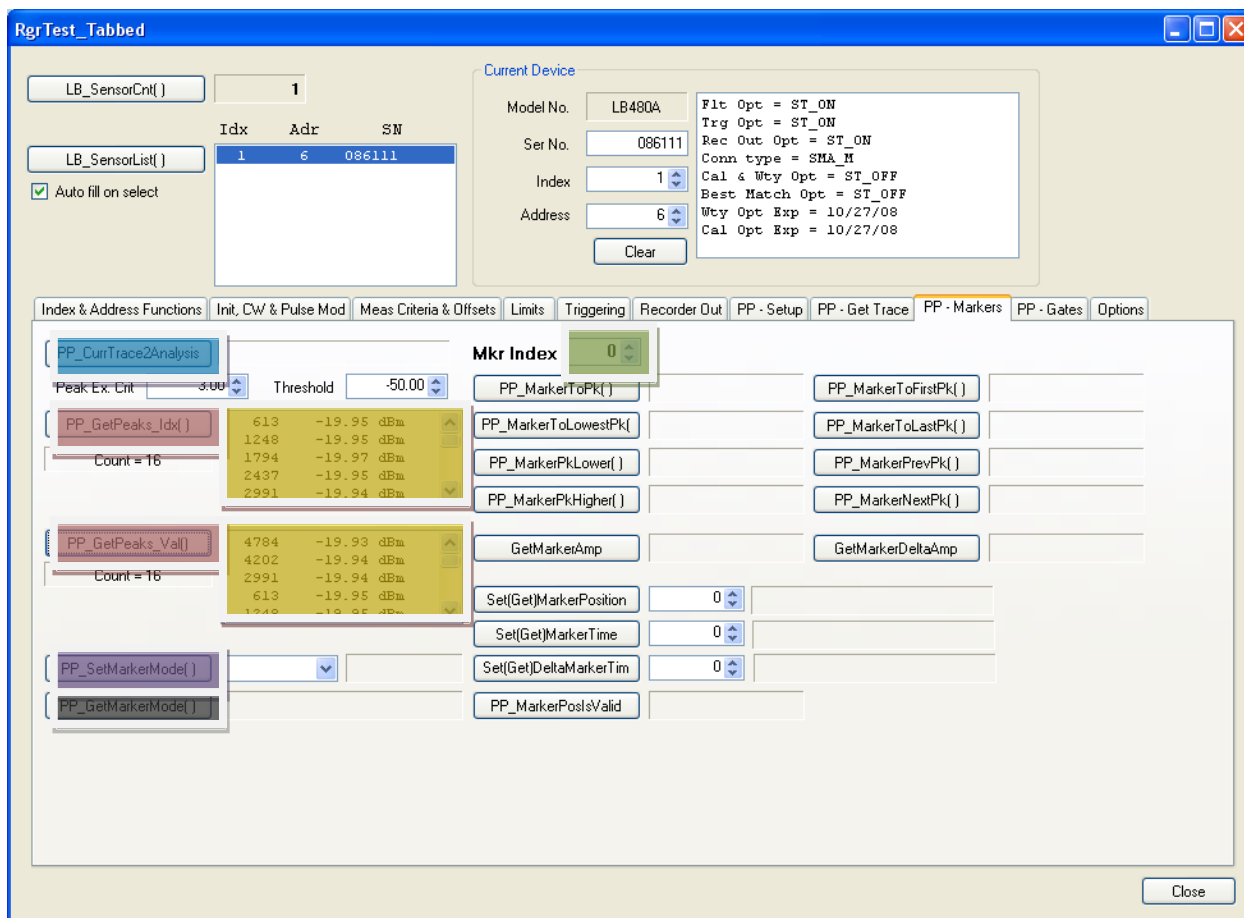
To make the current trace the analysis trace we click the CurrTrace2AnalysisTrace button highlighted above in red. Now you can click the buttons highlighted in red below to make trace based measurements. These measurements apply to the entire trace. You can measure:

- Average Power
- Peak power
- Pulse Power
- Crest Factor
- Duty Cycle

Again, it's important to note that these measurements differ from the Gate based measurements we'll make in a few minutes.



Now we'll do a little work with markers then close with gate measurements.



Click the PP-Markers tab. It should look like the one above. You'll note the large "Mkr Index" in the top center of the page. This indicates the index of the current marker we're working with. Assuming you've taken a trace, we must do is ensure that we have an analysis trace. Click the PP\_GurrTrace2Analysis now (highlighted in blue).

Now we can continue by getting a list of ordered peaks, first by index, then by amplitude. Click the two buttons highlighted in red. Then examine the adjacent list boxes highlighted in yellow. These are lists of peaks. You'll see a label indicating the number of peaks in each list. Each entry in the list box has the index in the trace and the amplitude.

To use a marker select a marker index (I've used 0) highlighted in green. Then proceed by selecting the marker mode and clicking PP\_SetMarkerMode button (purple). You can test the marker mode by clicking PP\_GetMarkerMode (gray).

**RgrTest\_Tabbed**

LB\_SensorCnt( )

LB\_SensorList( )

Idx	Adr	SN
1	6	086111

☒ Auto fill on select

**Current Device**

Model No. LB480A

Ser No. 086111

Index 1

Address 6

Clear

Fit Opt = ST\_ON  
Trg Opt = ST\_ON  
Rec Out Opt = ST\_ON  
Conn type = SMA\_M  
Cal & Wty Opt = ST\_OFF  
Best Match Opt = ST\_OFF  
Wty Opt Exp = 10/27/08  
Cal Opt Exp = 10/27/08

Index & Address Functions | Init, CW & Pulse Mod | Meas Criteria & Offsets | Limits | Triggering | Recorder Out | PP - Setup | PP - Get Trace | **PP - Markers** | PP - Gates | Options

PP\_CurrTrace2Analysis

Peak Ex. Crit 3.00 Threshold -50.00

PP\_GetPeaks\_Idx( )

613	-19.95	dBm
1248	-19.95	dBm
1794	-19.97	dBm
2437	-19.95	dBm
2991	-19.94	dBm

Count = 16

PP\_GetPeaks\_Val( )

4784	-19.93	dBm
4202	-19.94	dBm
2991	-19.94	dBm
613	-19.95	dBm
1248	-19.95	dBm

Count = 16

PP\_SetMarkerMode( ) NORMAL\_MK Success

PP\_GetMarkerMode( ) NORMAL\_MKR = 1

**Mkr Index 0**

PP_MarkerToPk( )	Idx = 4784 -19.934 d...	PP_MarkerToFirstPk( )	Idx = 613 -19.946 dB...
PP_MarkerToLowestPk( )	Idx = 8886 -19.977 d...	PP_MarkerToLastPk( )	Idx = 9484 -19.97 dB...
PP_MarkerPkLower( )	Idx = 8886 -19.977 d...	PP_MarkerPrevPk( )	Idx = 8886 -19.977 d...
PP_MarkerPkHigher( )	Idx = 1794 -19.973 d...	PP_MarkerNextPk( )	Idx = 9484 -19.97 dB...

GetMarkerAmp GetMarkerDeltaAmp

Set(Get)MarkerPosition 0

Set(Get)MarkerTime 0

Set(Get)DeltaMarkerTim 0

PP\_MarkerPosValid

Close

Now you can test the marker functionality by clicking the buttons highlighted in yellow. To make delta marker measurements you first have to set the mode to delta marker (blue green) then use the marker measurements. To make delta marker measurements use the two buttons highlighted in red. Finally, markers can be positioned by index or time. The buttons highlighted in orange are for this purpose.

Now we can move to gated measurements. Select the "PP-Gates" tab. You should see a window like the one shown below:

RgrTest\_Tabbed

LB\_SensorCnt( )

1

LB\_SensorList( )

Idx	Adr	SN
1	6	086111

Auto fill on select

☒

Current Device

Model No.

LB480A

Ser No.

086111

Index

1

Address

6

Clear

Fit Opt = ST\_ON

Trg Opt = ST\_ON

Rec Out Opt = ST\_ON

Conn type = SMA\_M

Cal & Wty Opt = ST\_OFF

Best Match Opt = ST\_OFF

Wty Opt Exp = 10/27/08

Cal Opt Exp = 10/27/08

Index & Address Functions

Init, CW & Pulse Mod

Meas Criteria & Offsets

Limits

Triggering

Recorder Out

PP - Setup

PP - Get Trace

PP - Markers

PP - Gates

Options

PP\_CurrTrace2Analysis

Gate Index

0

GateStartEndPosition

0

0

GateStartEndTime

0

0

Peak Ex. Lmt

3.00

Threshold

-50.00

Mode/Position/Time

Result/Message

PP\_Get(Set)GateMode

GatePosition's Valid

SetGateEndPosition

0

GetGateEndPosition

SetGateStartPosition

0

GetGateStartPosition

SetGateEndTime

0

GetGateEndTime

SetGateStartTime

0

GetGateStartTime

PP\_GetGatePeakPower

PP\_GetGateAveragePo

PP\_GetGateCrestFactor

PP\_GetGateRiseTime

PP\_GetGateFallTime

PP\_GetGatePulseWidth

PP\_GetGatePRT

PP\_GetGatePRF

PP\_GetGateDutyCycle

PP\_GetGateDroop

PP\_GetGateOverShoot

Close

This window is very much like the marker window. You'll have a large up/down button labeled Gate Index. This is used to set the gate index. It applies to all buttons on this tab. Like the markers, if you haven't set the analysis trace do so now by clicking the button highlighted in blue.

Like the markers we must first turn on the gate we are interested in. Use the PP\_Set(Get)GateMode button (highlighted in red). Check the gate position. It should be invalid since we haven't yet set the position (yellow).

I'm going to start by just positioning my gate at the 1000 and 4000 index points as shown below (green). Then I'll make a number of measurements by clicking the buttons highlighted in red. Some of the measurements are meaningful (peak power, pulse power, pulse width, PRF, PRT and duty cycle). Others have numbers but are fairly meaningless because of the gates position (droop, overshoot, etc). And finally, you'll note that the rise time and fall time failed. They failed because of a poorly positioned gate.

RgrTest\_Tabbed

LB\_SensorCnt( )

1

LB\_SensorList( )

Idx	Adr	SN
1	6	086111

☒ Auto fill on select

Current Device

Model No.

LB480A

Ser No.

086111

Index

1

Address

6

Clear

Fit Opt = ST\_ON

Trg Opt = ST\_ON

Rec Out Opt = ST\_ON

Conn type = SMA\_M

Cal & Wty Opt = ST\_OFF

Best Match Opt = ST\_OFF

Wty Opt Exp = 10/27/08

Cal Opt Exp = 10/27/08

Index & Address Functions

Init, CW & Pulse Mod

Meas Criteria & Offsets

Limits

Triggering

Recorder Out

PP - Setup

PP - Get Trace

PP - Markers

PP - Gates

Options

PP\_CurrTrace2Analysis

Gate Index

0

GateStartEndPosition

1000

4000

Success: 1000 4000

GateStartEndTime

0

0

Peak Ex. Crit

3.00

Threshold

-50.00

Mode/Position/Time

Result/Message

PP\_Get(Set)GateModel

GATE\_ON = 1

Success: GATE\_ON

GatePosition'sValid

SetGateEndPosition

0

GetGateEndPosition

SetGateStartPosition

0

GetGateStartPosition

SetGateEndTime

0

GetGateEndTime

SetGateStartTime

0

GetGateStartTime

PP\_GetGatePeakPower

Success: -19.936 dBm

PP\_GetGateAveragePo

Success: -28.268 dBm

PP\_GetGateCrestFactor

Success: 8.332 dB

PP\_GetGateRiseTime

Failed

PP\_GetGateFallTime

Failed

PP\_GetGatePulseWidth

Success: 9.064404 usec

PP\_GetGatePRT

Success: 58.906 usec

PP\_GetGatePRF

Success: 16.976 kHz

PP\_GetGateDutyCycle

Success: 15.388 %

PP\_GetGateDroop

Success: 0.000 dB

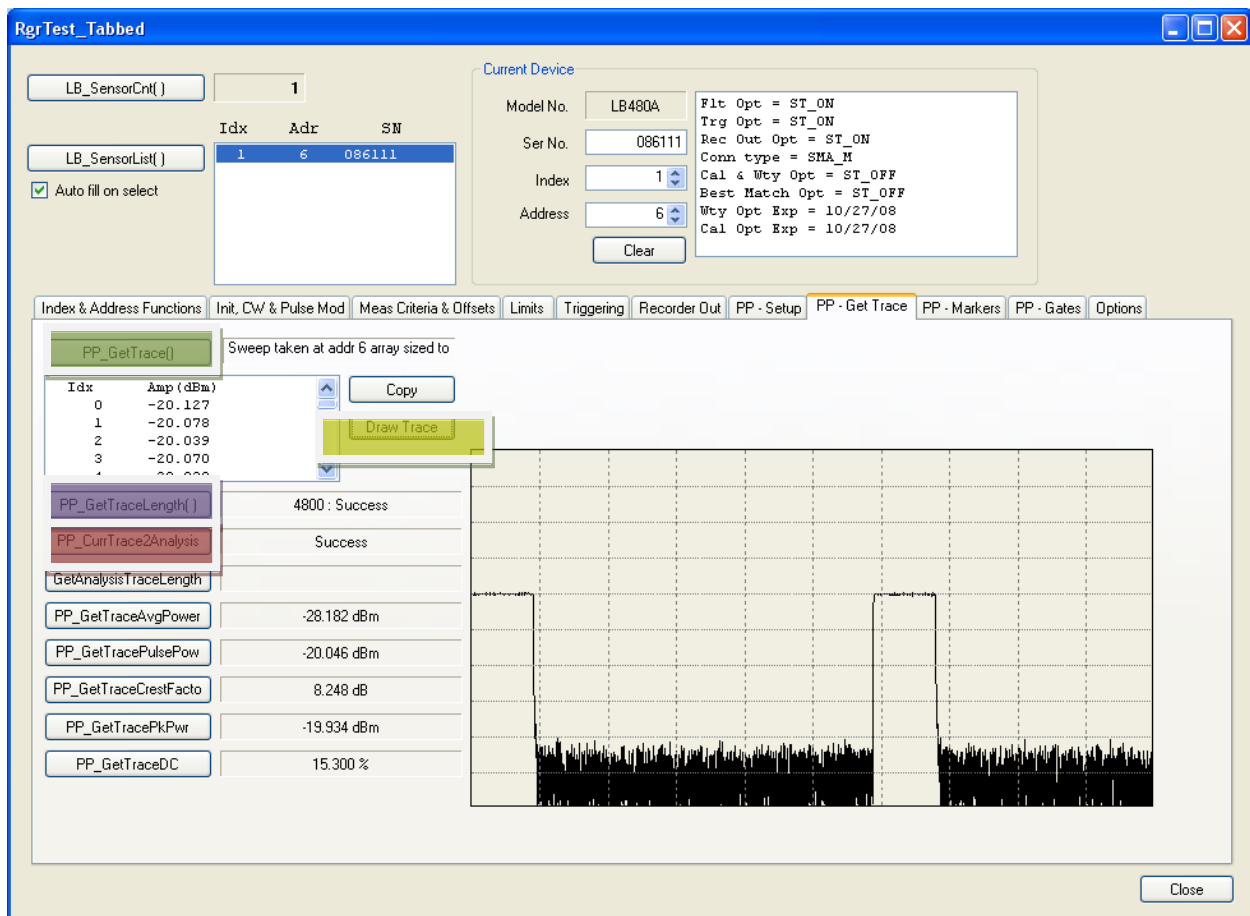
PP\_GetGateOverShoot

Success: 30.064 dB

Close

Now I'll demonstrate a rise time measurement. First I'll set the sweep time so that I can easily place the start and stop of the gate. I'm going to use 100usec. This is done by selecting the "PP-Setup" tab. Finding the PP\_SetSweepTime button, selecting a sweep time using the drop down box, then clicking the PP\_SetSweepTime button. You can check the sweep time by clicking the PP\_GetSweepTime button.

Then return the to PP-GetTrace tab and click the PP\_GetTrace button (green). Next click Draw Trace (yellow). If you've used 100usec as I have you should be able to click PP\_GetTraceLength (purple) and see a result of 4800 points. Finally, click the PP\_CurrTrace2Analysis (red). After this I'm left with a window that appears as the one shown below:



Now we can return to the gates tab. I'm going to set my gate of using time instead of indexes. So I'll set my gate to (remember it's a 100usec trace) start with 50usec and end at 65usec (yellow in the picture below). Then I measure my rise time (about 60nsec). Then I reposition my gate (or you can use a different gate) for 65usec and 80usec and measure fall time. I get a fall time of about 30nsec.

Now I'll make an over shoot measurement. For this to be successful I need to position the end of the gate as starting or reference point. I'll use the back part of my pulse. I cheated and looked at the list of trace data (on the PP-GetTrace tab) and determined that my pulse ends at about index 3240. And it starts about 2800 (yellow) and then measure overshoot (red).

Positioning the start of the gate at about 2875 lets me measure droop fairly well.

RgrTest\_Tabbed

LB\_SensorCnt( )

1

LB\_SensorList( )

Idx	Adr	SN
1	6	086111

☒ Auto fill on select

Current Device

Model No.

LB480A

Ser No.

086111

Index

1

Address

6

Clear

Fit Opt = ST\_ON

Trg Opt = ST\_ON

Rec Out Opt = ST\_ON

Conn type = SMA\_M

Cal & Wty Opt = ST\_OFF

Best Match Opt = ST\_OFF

Wty Opt Exp = 10/27/08

Cal Opt Exp = 10/27/08

Index &amp; Address Functions
Init, CW &amp; Pulse Mod
Meas Criteria &amp; Offsets
Limits
Triggering
Recorder Out
PP - Setup
PP - Get Trace
PP - Markers
PP - Gates
Options

PP\_CurrTrace2Analysis

Success

Gate Index

0

GateStartEndPosition

2800

3240

Success: 2800 3240

GateStartEndTime

65.000

65.000

Success: 65.000 65.000

Peak Ex. Crit

3.00

Threshold

-50.00

Mode/Position/Time

Result/Message

PP\_Get(Set)GateModel

GATE\_ON = 1

Success: GATE\_ON

GatePositionValid

PP\_GetGatePeakPower

Failed

PP\_GetGateAveragePo

Success: Infinity dBm

PP\_GetGateCrestFactor

Failed

PP\_GetGateRiseTime

Success: 0.059997 usec

PP\_GetGateFallTime

Success: 0.033140 usec

PP\_GetGatePulseWidth

Failed

PP\_GetGatePRT

Failed

PP\_GetGatePRF

Failed

PP\_GetGateDutyCycle

Failed

PP\_GetGateDrpoo

Failed

PP\_GetGateOverShoot

Success: 0.117 dB

SetGateEndPosition

0

GetGateEndPosition

Success: Pos = 3119

SetGateStartPosition

0

GetGateStartPosition

Success: Pos = 2399

SetGateEndTime

0

GetGateEndTime

Success: 65.000usec

SetGateStartTime

0

GetGateStartTime

Success: 50.000 usec

Close

Well, I think that does it. We started off by getting basic information, initializing, then making CW and pulse modulation measurements. Then we setup to get a trace, make some trace based measurements (similar to the pulse modulation measurements then went on to peaks, markers and gates. Now we need to deal with one other issue. That is offsets and response adjustments to the measured values.

The offset applies to the CW, pulse modulation and the pulse profiling measurements. I'll make some simple adjustments then we'll be done. So return to the Meas Criteria & Offsets tab. You should see a tab similar to the one below:

**RgrTest\_Tabbed**

LB\_SensorCnt( )

LB\_SensorList( )

Idx	Adr	SN
1	6	086111

☒ Auto fill on select

**Current Device**

Model No. LB480A

Ser No. 086111

Index 1

Address 6

Clear

Fit Opt = ST\_ON  
Trg Opt = ST\_ON  
Rec Out Opt = ST\_ON  
Conn type = SMA\_M  
Cal & Wty Opt = ST\_OFF  
Best Match Opt = ST\_OFF  
Wty Opt Exp = 10/27/08  
Cal Opt Exp = 10/27/08

Index & Address Functions | Init, CW & Pulse Mod | **Meas Criteria & Offsets** | Limits | Triggering | Recorder Out | PP - Setup | PP - Get Trace | PP - Markers | PP - Gates | Options

LB\_SetAntiAliasing

LB\_GetAntiAliasing

SetAutoPulseEnabled

GetAutoPulseEnabled

LB\_SetPulseCriteria

LB\_GetPulseCriteria

SetDutyCycleEnabled

GetAutoPulseEnabled

SetDutyCyclePerCent

GetDutyCyclePerCent

LB\_SetOffsetEnabled   Failed

LB\_GetOffsetEnabled  ST\_OFF: Success

LB\_SetOffset   Success

LB\_GetOffset  Success

LB\_SetCwReference   Success

LB\_GetCwReference  Success

LB\_Get(Set)PulseReference...  Cancelled

LB\_SetResponseEnabled

LB\_GetResponseEnabled

LB\_Get(Set)Response...

Close

The set and get offsets are highlighted in red. The response is highlighted in yellow. If you enter an offset (in dB) then click LB\_SetOffset followed by LB\_GetOffset you should get a sense for how offset operates. I've entered a value of 30dB. Finally, you have to enable the offset (blue). When this is done and you make a CW, pulse modulation measurement you'll see a 30dB offset.

If you want the offset to be a function of frequency you must use the response command. When you click this button (yellow) you'll see a small dialog like the one shown below:

**RgrTst\_SetGetResponse**

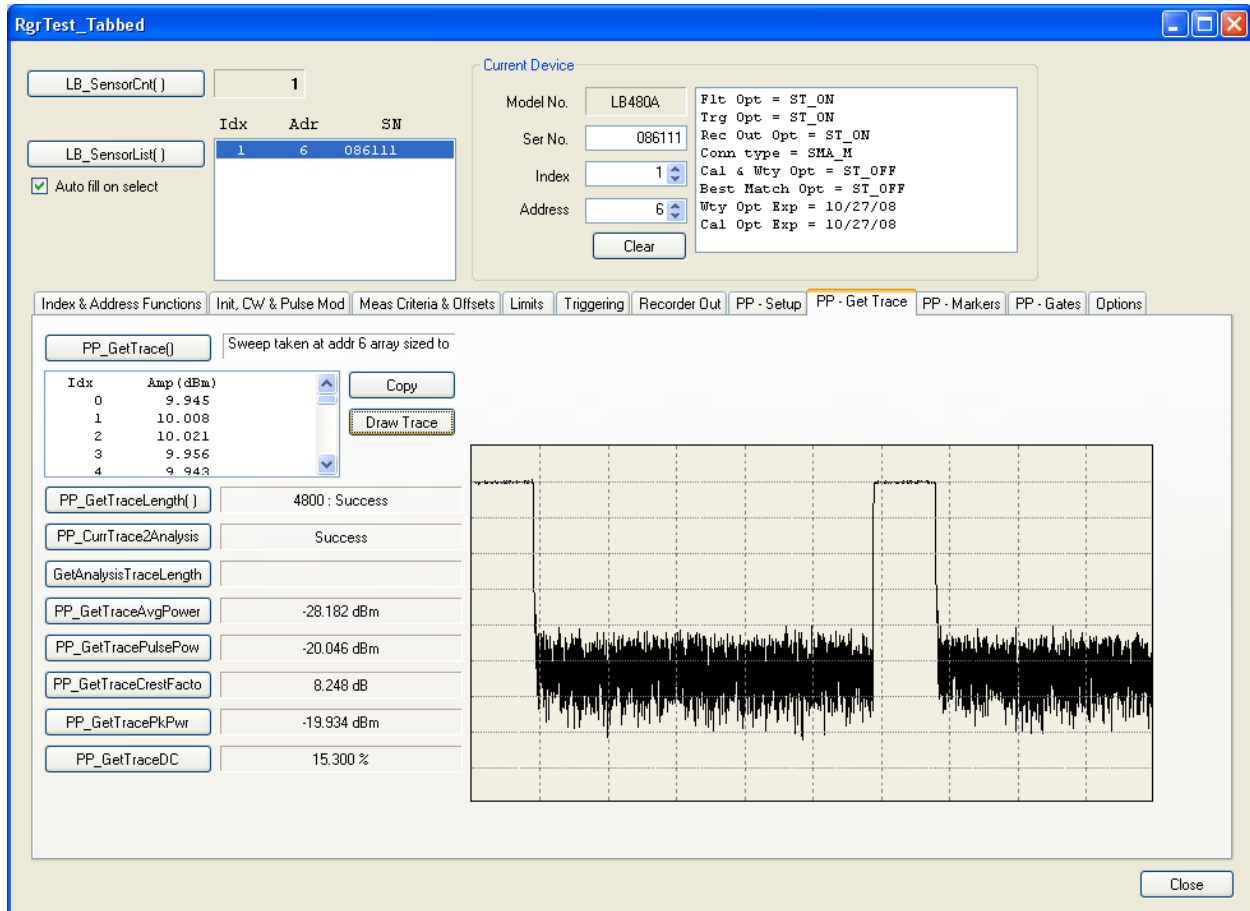
Frequency (MHz)	Correction (dB)
5000	30.0
1000	0
5000	30

Add Delete

OK Cancel



Enter your correct and select OK. Then enable the response (orange) and your measurements will be adjusted. I've acquired a trace after setting up for a 30dB offset. You can see the result below.



I hope this helps. The code for the test harness has been supplied along with new a driver.