11 HOPPING CHANNEL CARRIER FREQUENCY SEPARATED

11.1 Standard Applicable

According to 15.247(a)(1), the frequency hopping system shall have hopping channel carrier frequencies seperated by minimum of 25kHz or the 20dB bandwidth of hopping channel, whichever is greater.

11.2 Measurement Procedure

1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
2. The setup of the EUT as shown in figure 4. Turn on the EUT and connect its antenna terminal to measurement instrument via a low loss cable. Then set it to any measurement frequency within its operating ragne and make sure the instrument is operated in its linear range.
3. Set spectrum analyzer maximum hold to measure channel carrier frequency , then adjust channel carrier frequency to adjacent channel.
4. Repeat above procedure until all measured frequencies were complete.

11.3 Measurement Equipment

Equipment	Manufacturer	Model No.	Next Cal. Due
Spectrum Analyzer	Agilent	8564EC	09/23/2006

11.4 Measurement Data

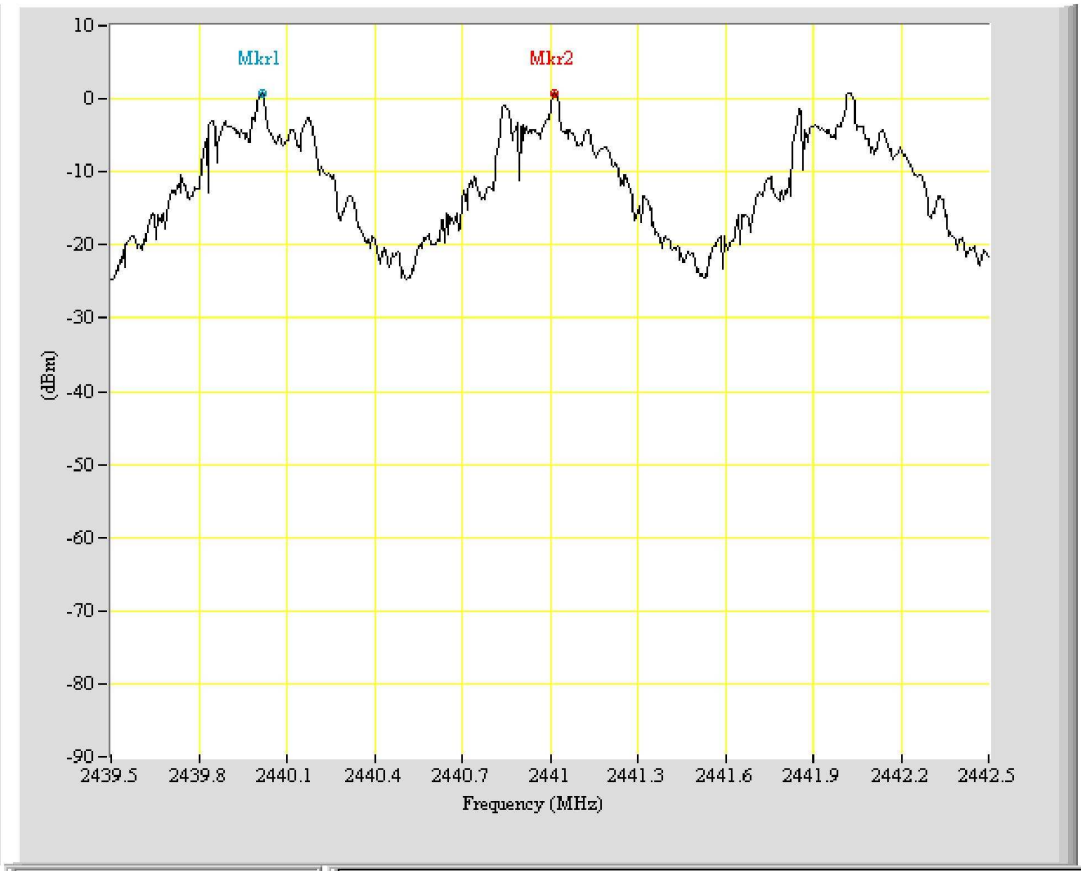
Test Date : Nov. 23, 2005 Temperature : 21℃ Humidity : 70%

Channel	Frequency (MHz)	Hopping Channel Carrier Frequency Separated (MHz)	Chart
0	2402	1	Page 55
39	2441	1	Page 56
78	2480	1	Page 57

Note: Please refer to page 55 to page 57 for chart.

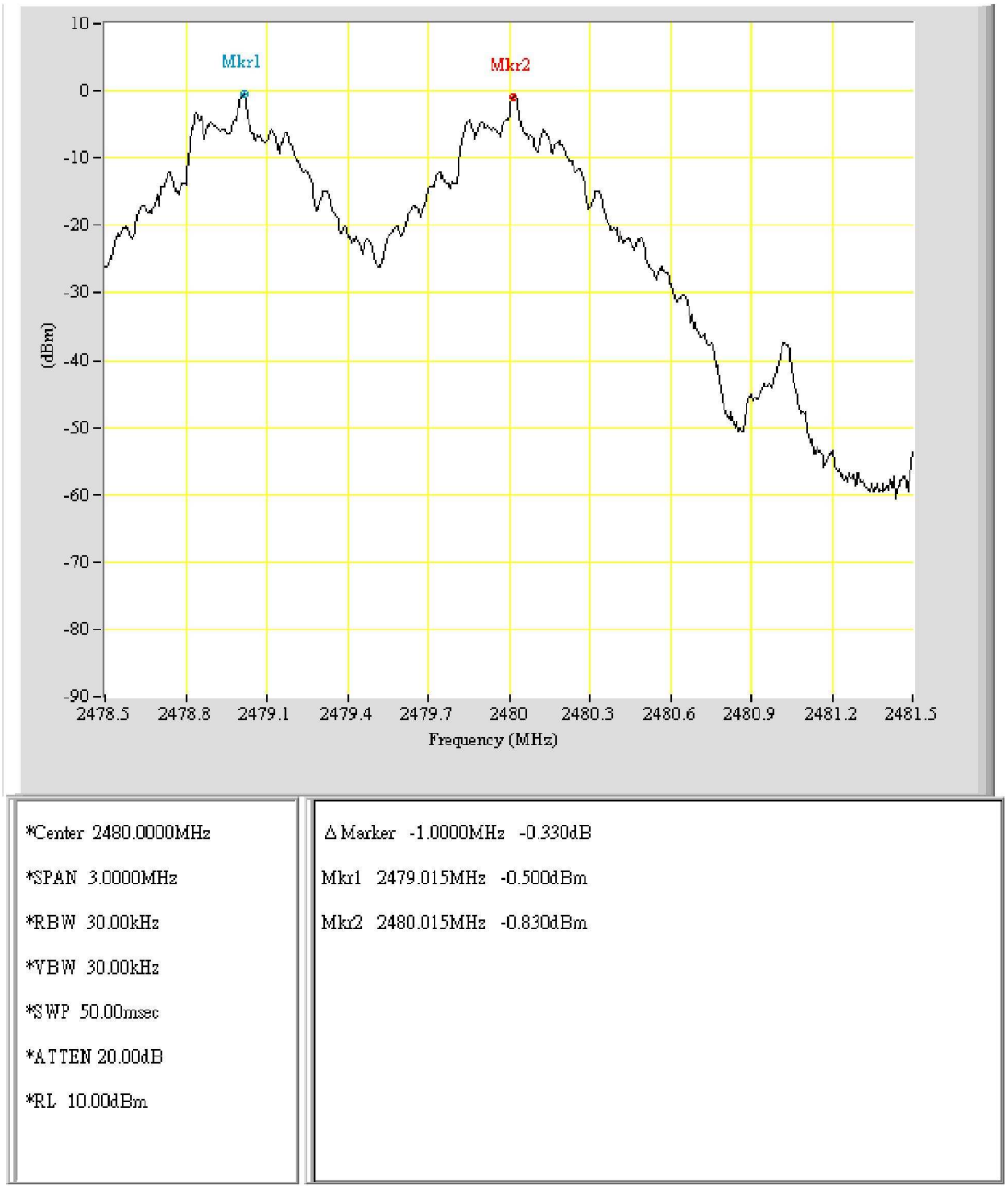
*Center 2402.0000MHz	Δ Marker -1.0000MHz 0.000dB
*SPAN 3.0000MHz	Mkr1 2402.010MHz 2.000dBm
*RBW 30.00kHz	Mkr2 2403.010MHz 2.000dBm
*VBW 30.00kHz	
*SWP 50.00msec	
*ATTEN 20.00dB	
*RL 10.00dBm	

EUT: BLUETOOTH
Purpose: Channel_Seperation
Condition: CH0
Note:



*Center 2441.0000MHz	ΔMarker -1.0000MHz 0.170dB
*SPAN 3.0000MHz	Mkr1 2440.015MHz 0.670dBm
*RBW 30.00kHz	Mkr2 2441.015MHz 0.840dBm
*VBW 30.00kHz	
*SWP 50.00msec	
*ATTEN 20.00dB	
*RL 10.00dBm	

EUT: BLUETOOTH
Purpose: Channel_Seperation
Condition: CH39
Note:



EUT: BLUETOOTH
Purpose: Channel_Seperation
Condition: CH78
Note:

12 POWER SPECTRAL DENSITY

12.1 Standard Applicable

According to 15.247(d), for bluetooth device, the peak power spectral density conducted from the intentional radiator to the antenna shall not be greater them 8dBm in any 3kHz band during any time interral of continuous transmission.

12.2 Measurement Procedure

1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
2. The setup of the EUT as shown in figure 4. Turn on the EUT and connect its antenna terminal to measurement instrument via a low loss cable. Then set it to any measured frequency within its operating range and make sure the instrument is operated in its linear range.
3. Set RBW of spectrum analyzer to 3kHz, VBW to 30 kHz, sweep 300kHz and sweep time 100 sec.
4. Measure the highest amplitude appearing on spectral display and record the level to calculate result data.
5. Repeat above procedures until all frequencies measured were complete.

12.3 Measurement Equipment

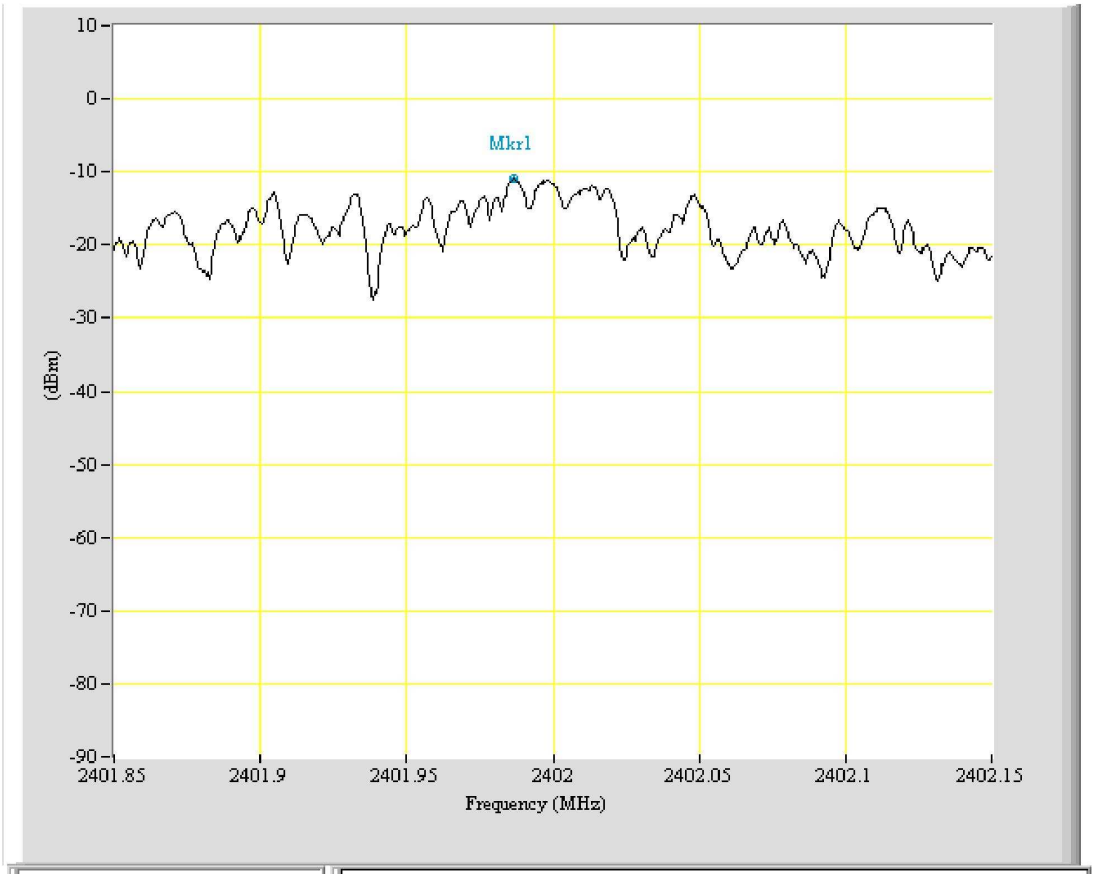
Equipment	Manufacturer	Model No.	Next Cal. Due
Spectrum Analyzer	Agilent	8564EC	09/23/2006

12.4 Measurement Data

Test Date : Nov. 23, 2005 Temperature : 21℃ Humidity : 70%

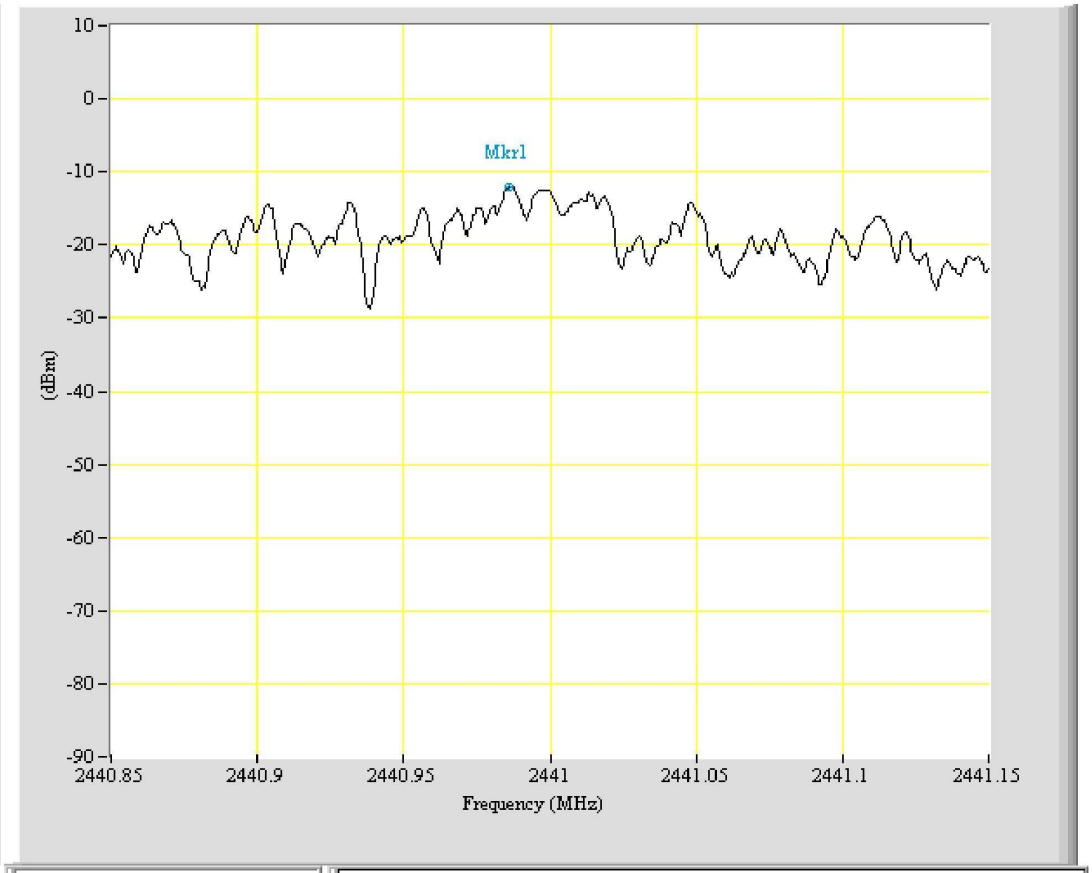
Channel	Frequency (MHz)	Reading (dBm)	Cable Loss (dB)	Power Spectral Density (dBm)	FCC Limit (dBm)	Chart
0	2402	-11.00	0.5	-10.50	8	Page 60
39	2441	-12.16	0.5	-11.66	8	Page 61
78	2480	-13.33	0.5	-12.83	8	Page 62

Note: Please refer to page 60 to page 62 for chart.



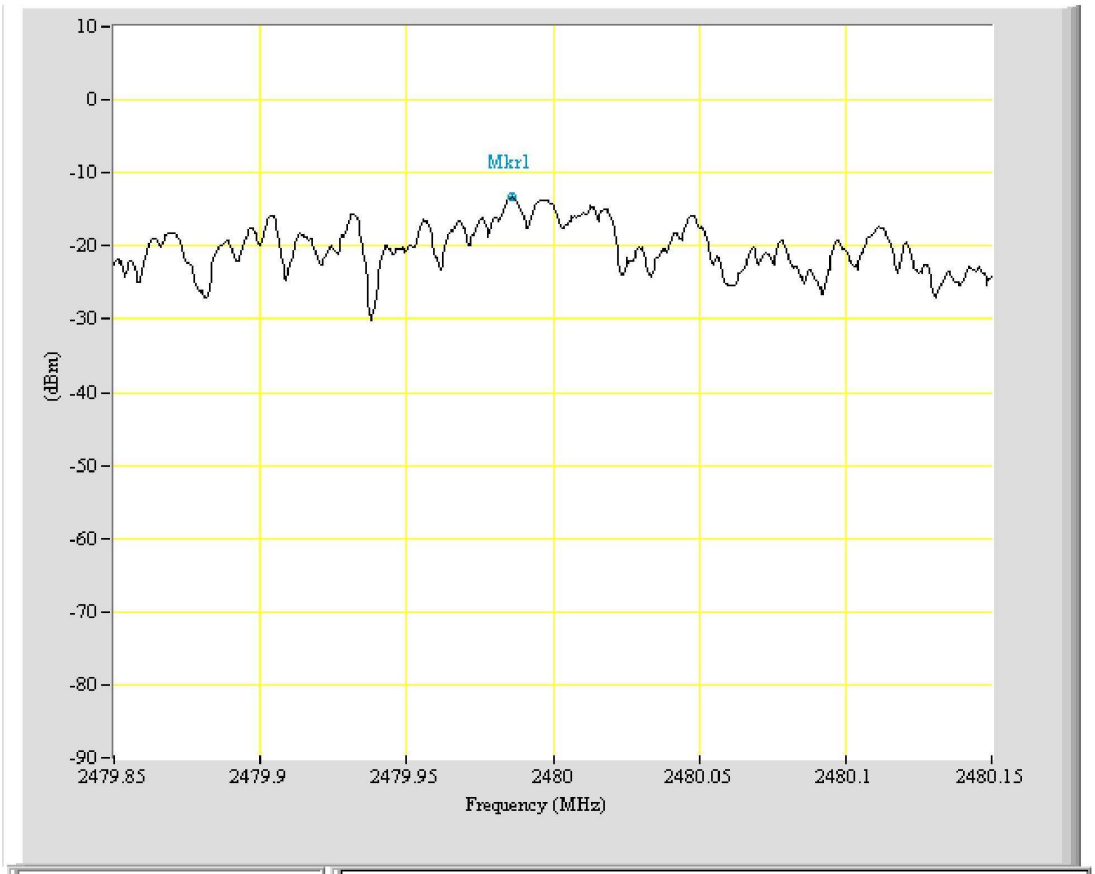
*Center 2402.0000MHz *SPAN 0.3000MHz *RBW 3.00kHz *VBW 10.00kHz *SWP 100000.00msec *ATTEN 20.00dB *RL 10.00dBm	Marker 2401.986MHz -11.000dBm

EUT: BLUETOOTH
Purpose: PwrDensity
Condition: CH0
Note:



*Center 2441.0000MHz *SPAN 0.3000MHz *RBW 3.00kHz *VBW 10.00kHz *SWP 100000.00msec *ATTEN 20.00dB *RL 10.00dBm	Marker 2440.986MHz -12.160dBm

EUT: BLUETOOTH
Purpose: PwrDensity
Condition: CH39
Note:



*Center 2480.0000MHz *SPAN 0.3000MHz *RBW 3.00kHz *VBW 10.00kHz *SWP 100000.00msec *ATTEN 20.00dB *RL 10.00dBm	Marker 2479.986MHz -13.330dBm

EUT: BLUETOOTH
Purpose: PwrDensity
Condition: CH78
Note:

13 Dwell Time

13.1 Standard Applicable

According to 15.247(a)(1)(iii), frequency hopping system in the 2400-2483.5MHz band employing at least 15 non-overlapping channels. The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 second multiplied by the number of hopping channels employed.

13.2 Measurement Procedure

1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
2. The setup of the EUT as shown in figure 4.

13.3 Measurement Equipment

Equipment	Manufacturer	Model No.	Next Cal. Due
Spectrum Analyzer	Agilent	8564EC	09/23/2006

13.4 Measurement Data

Test Date : Nov. 23, 2005 Temperature : 21℃ Humidity : 70%

13.4.1 DH1

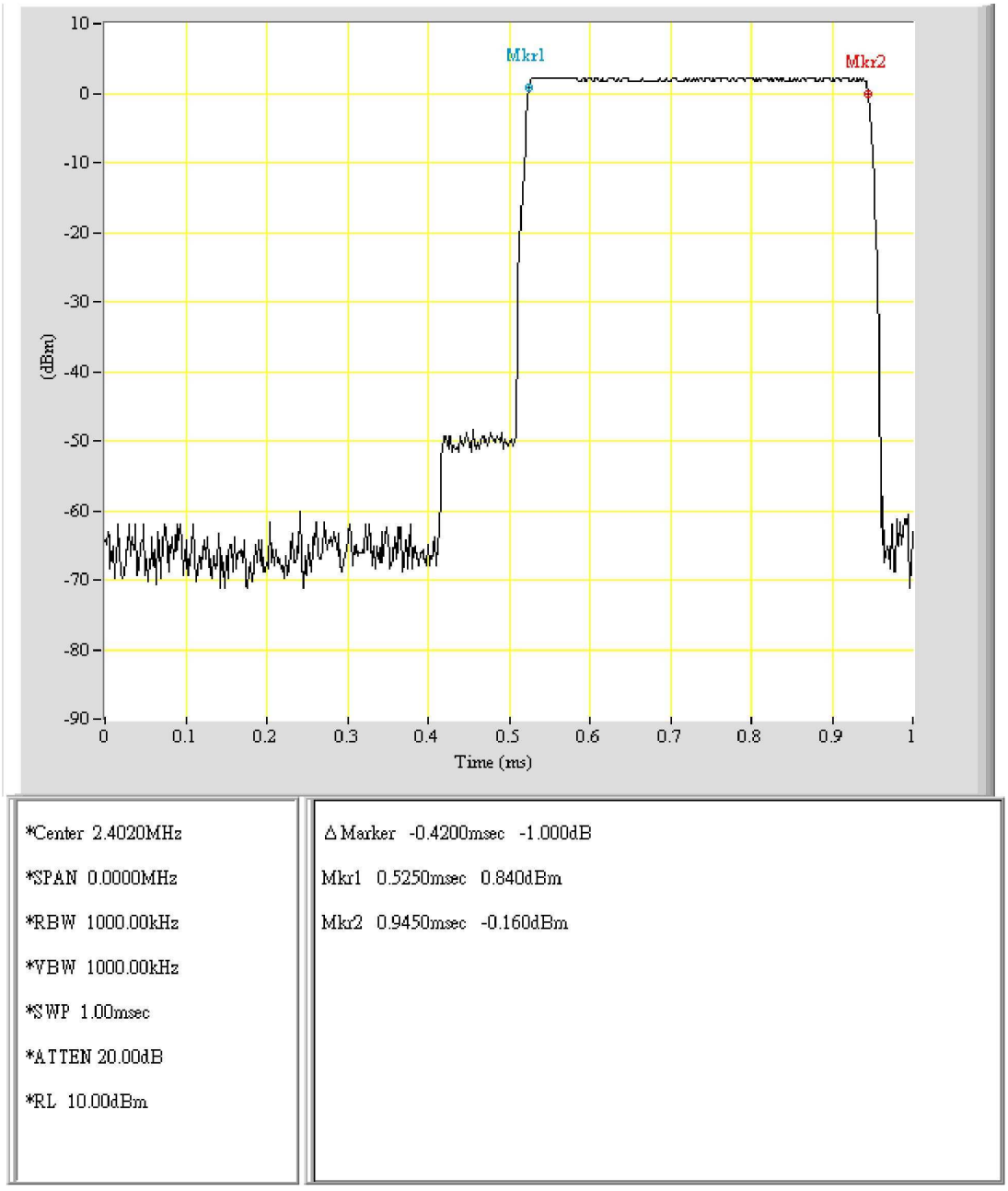
Test period=0.4(second/channel)$\times$ 79 channel=31.6sec

a) 2402MHz dwell time= 420.0 us$\times \frac{800}{79} \times 31.6$ = 134.4 ms

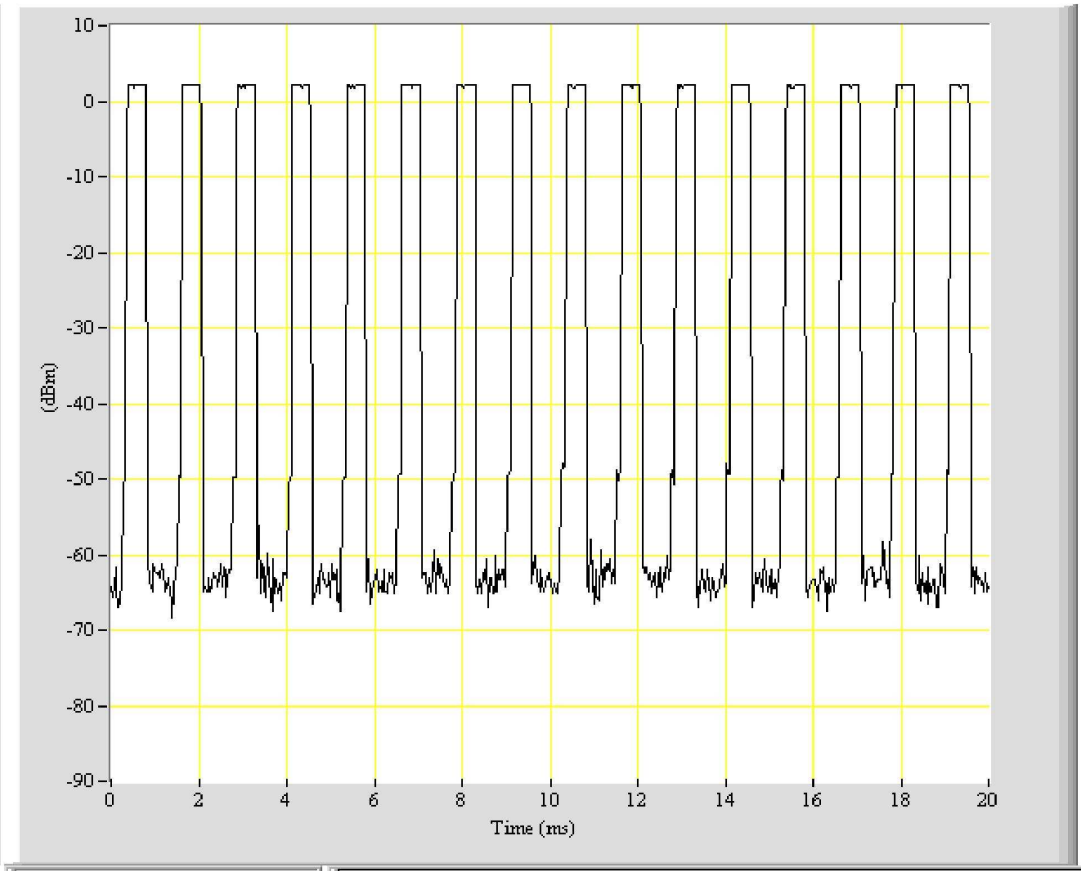
b) 2441MHz dwell time= 420.0 us$\times \frac{800}{79} \times 31.6$ = 134.4 ms

c) 2480MHz dwell time= 420.0 us$\times \frac{800}{79} \times 31.6$ = 134.4 ms

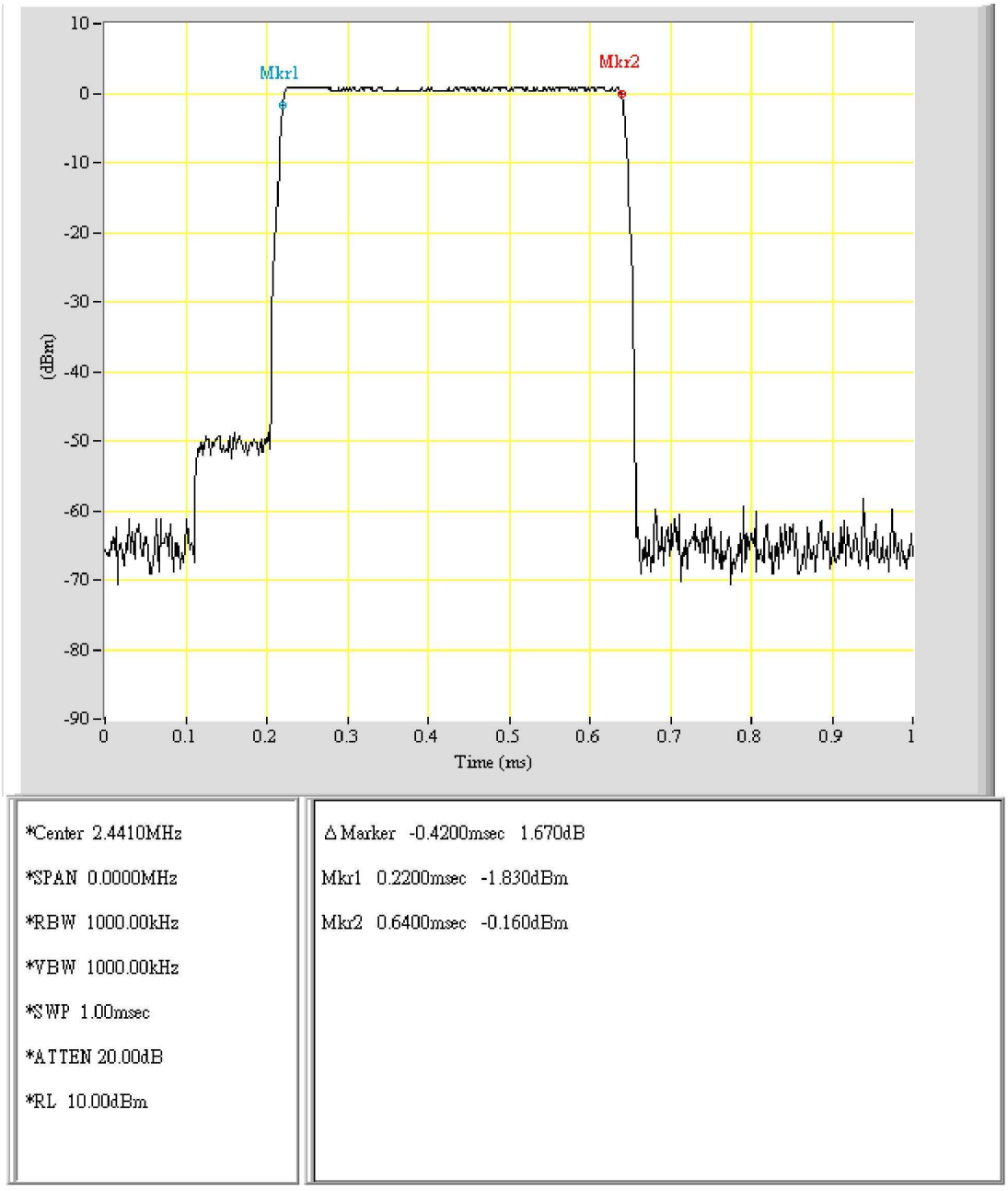
Note: Please refer to page 64 to page 69 for chart.



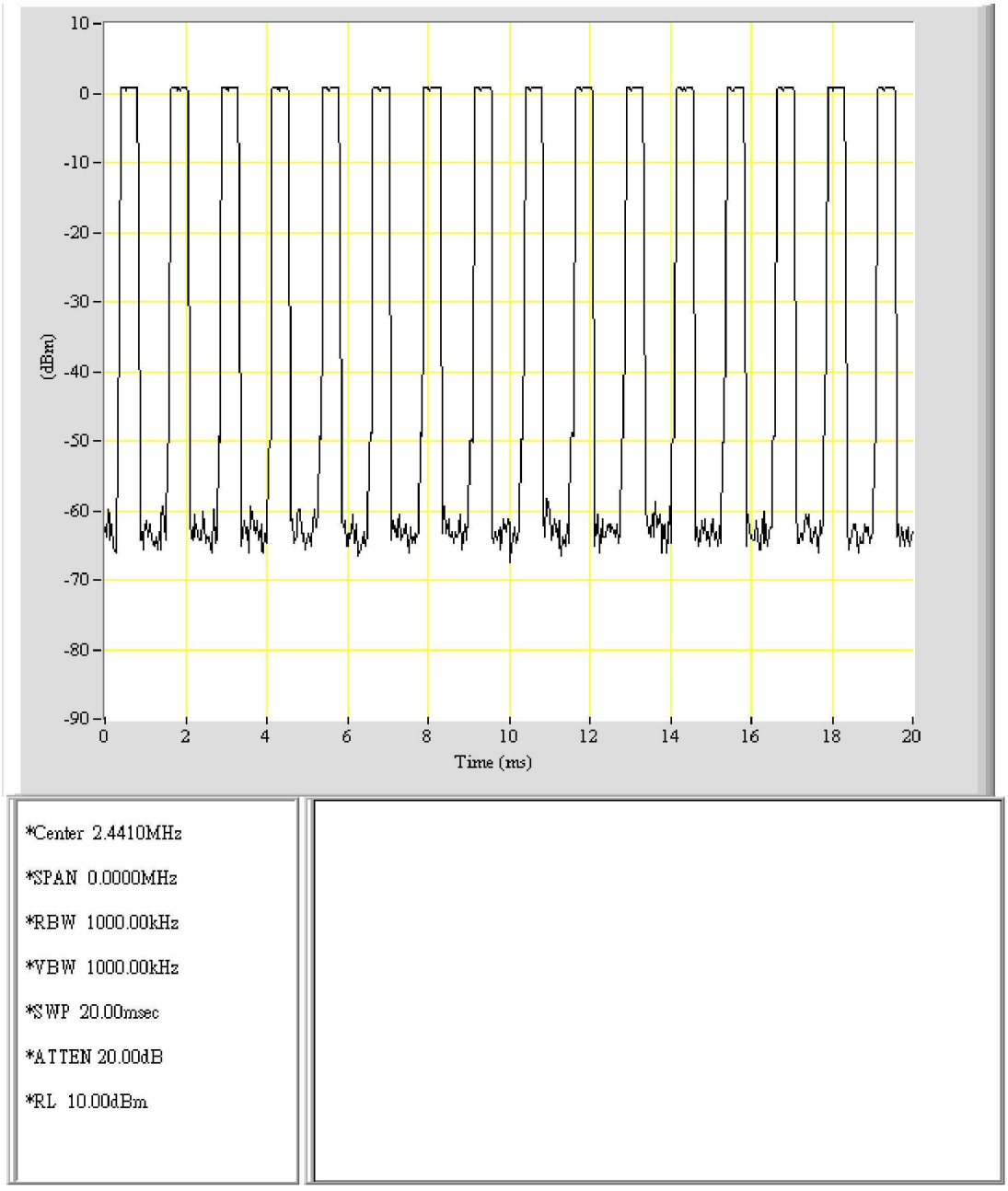
EUT: BLUETOOTH
Purpose: Dwell_Time
Condition: DH1_CH0
Note:



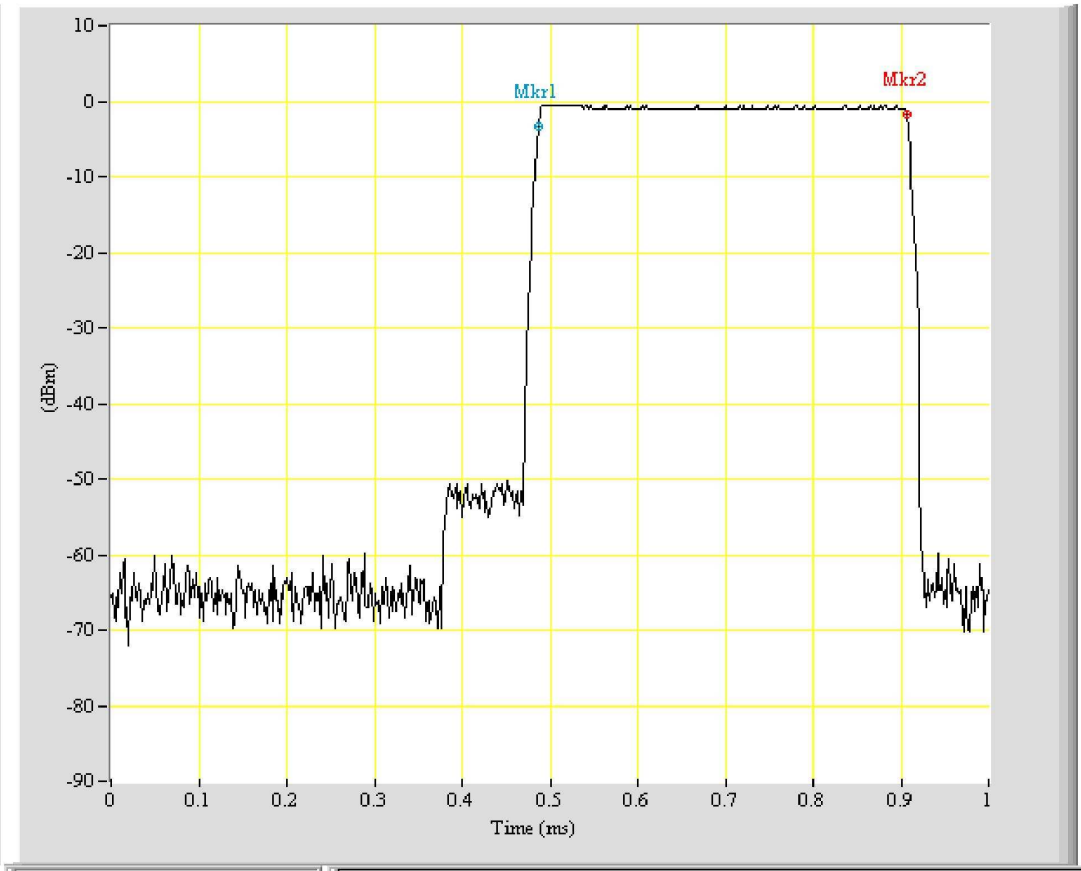
EUT: BLUETOOTH
Purpose: Dwell_Time_Peroid
Condition: DH1_CH0
Note:



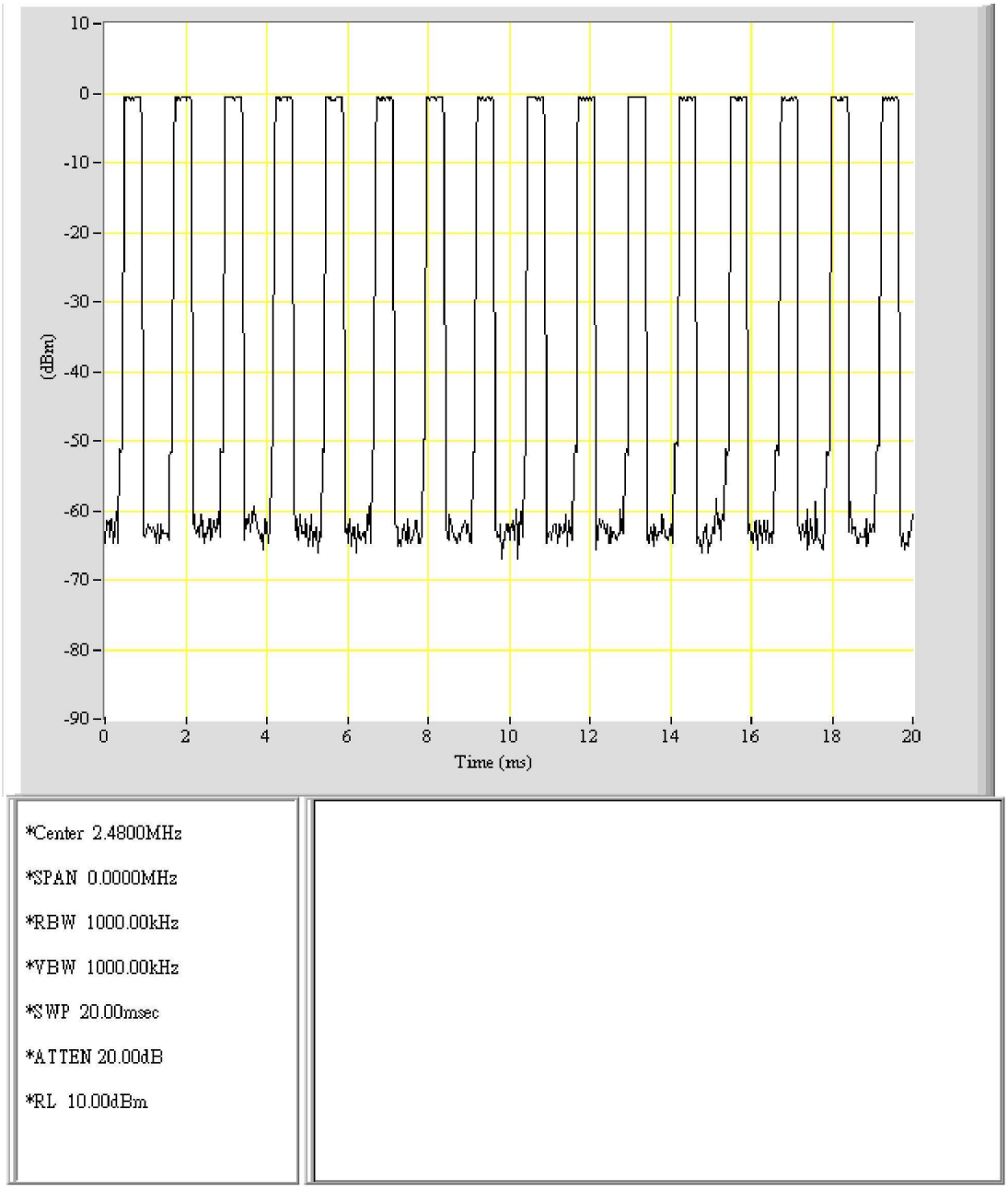
EUT: BLUETOOTH
Purpose: Dwell_Time
Condition: DH1_CH39
Note:



EUT: BLUETOOTH
Purpose: Dwell_Time_Peroid
Condition: DH1_CH39
Note:



EUT: BLUETOOTH
Purpose: Dwell_Time
Condition: DH1_CH78
Note:



EUT: BLUETOOTH
Purpose: Dwell_Time_Peroid
Condition: DH1_CH78
Note: