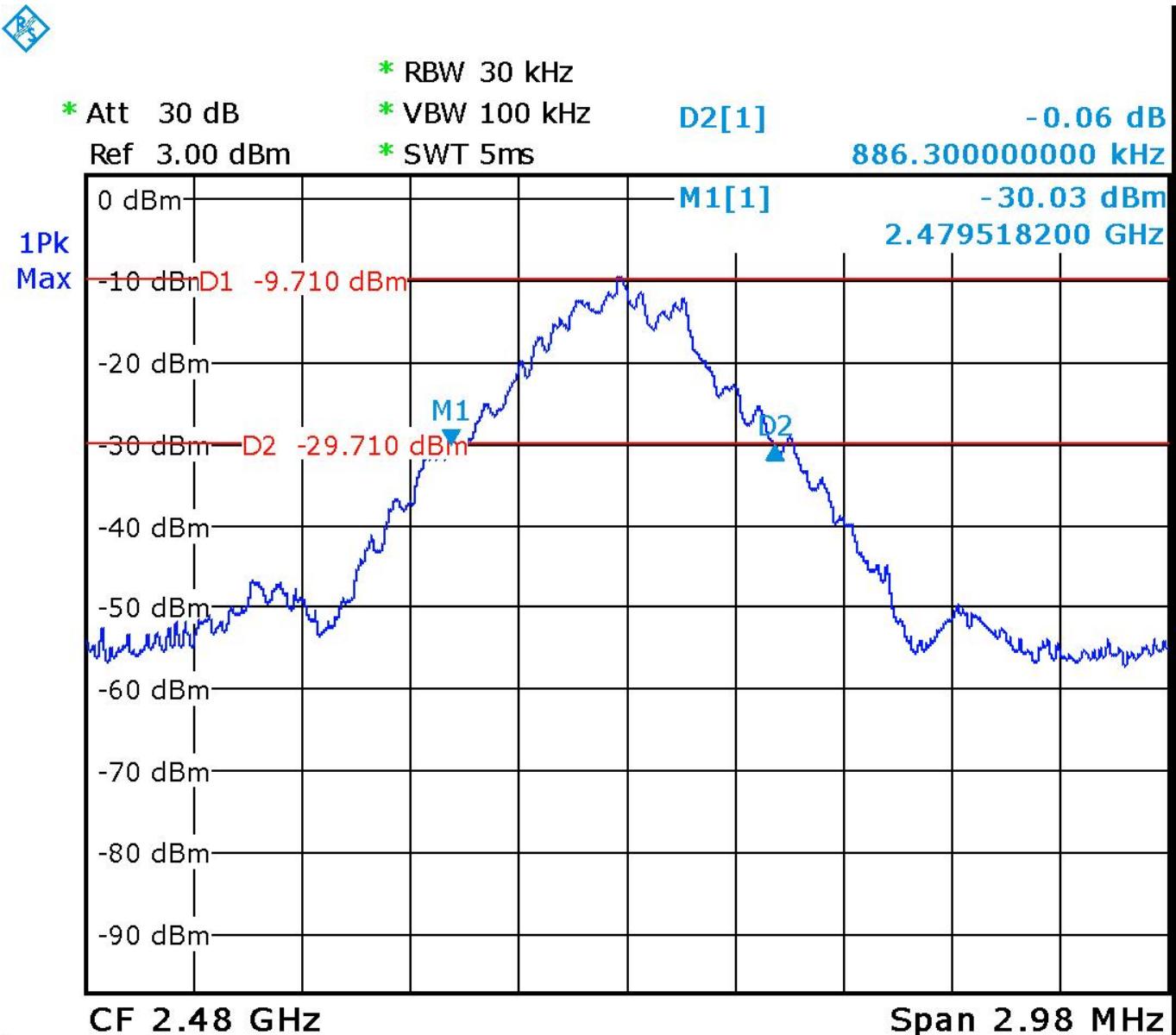
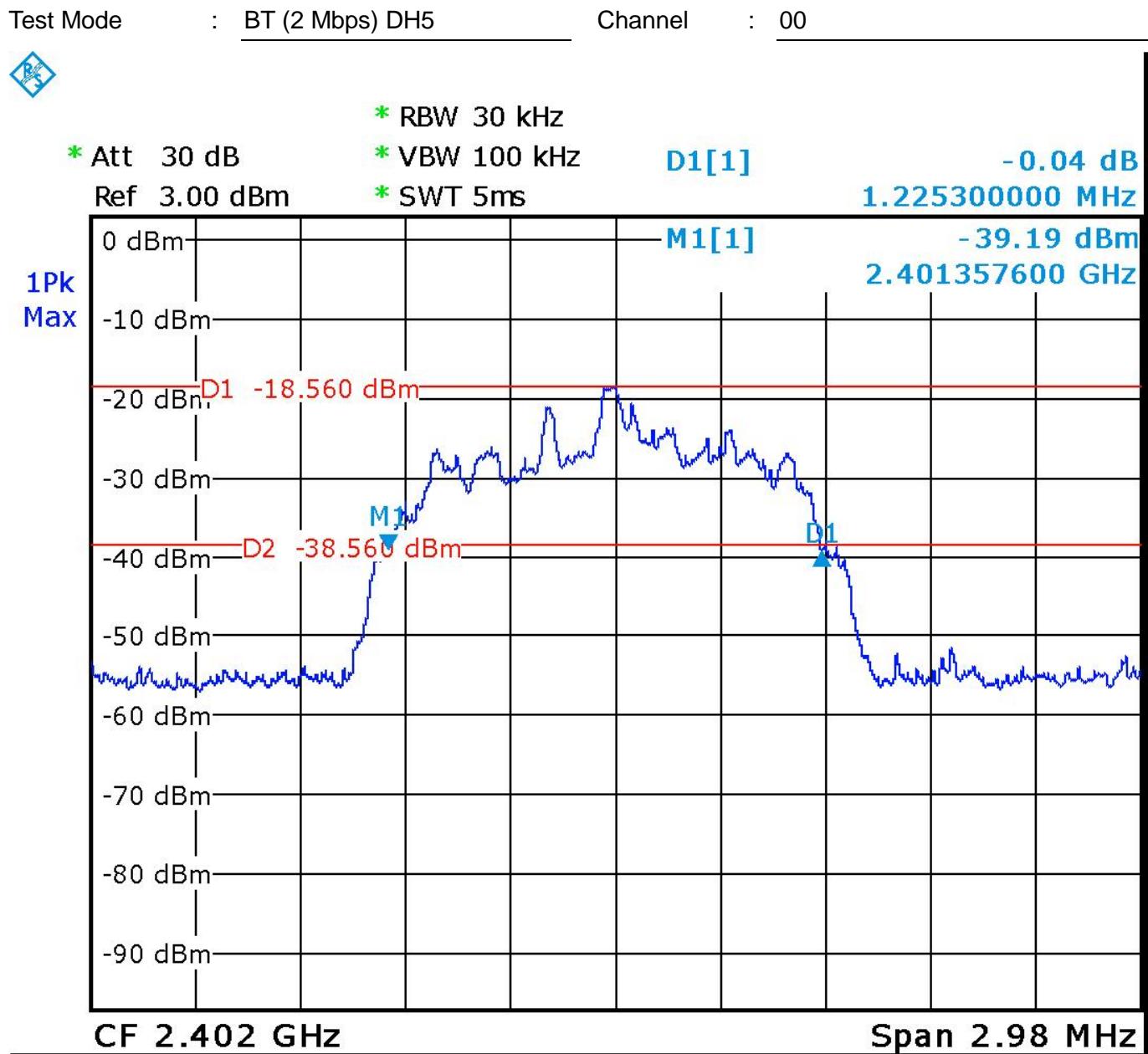


Test Mode : BT (1 Mbps) DH5 Channel : 78

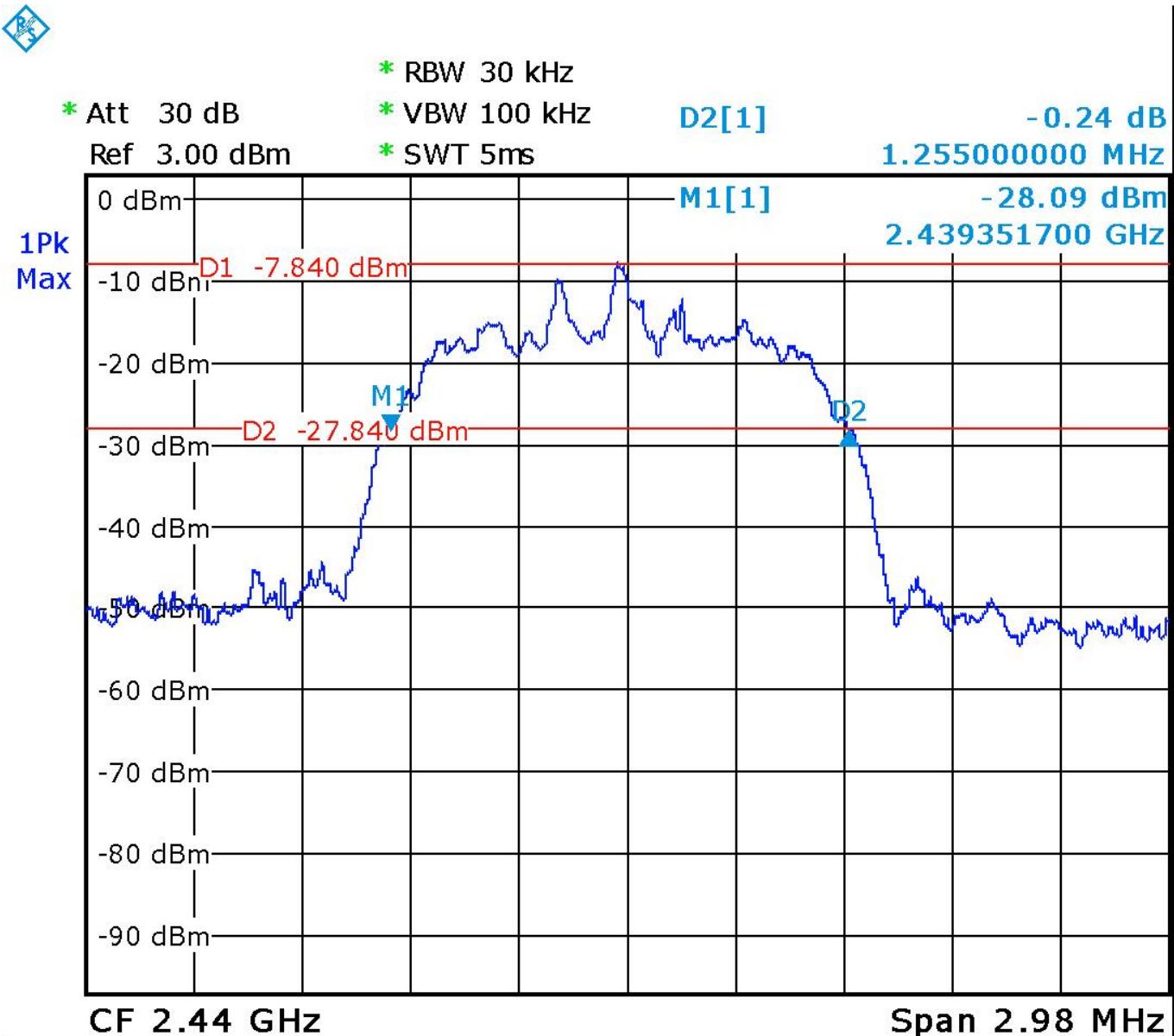


Date: 6.OCT.2015 11:51:09

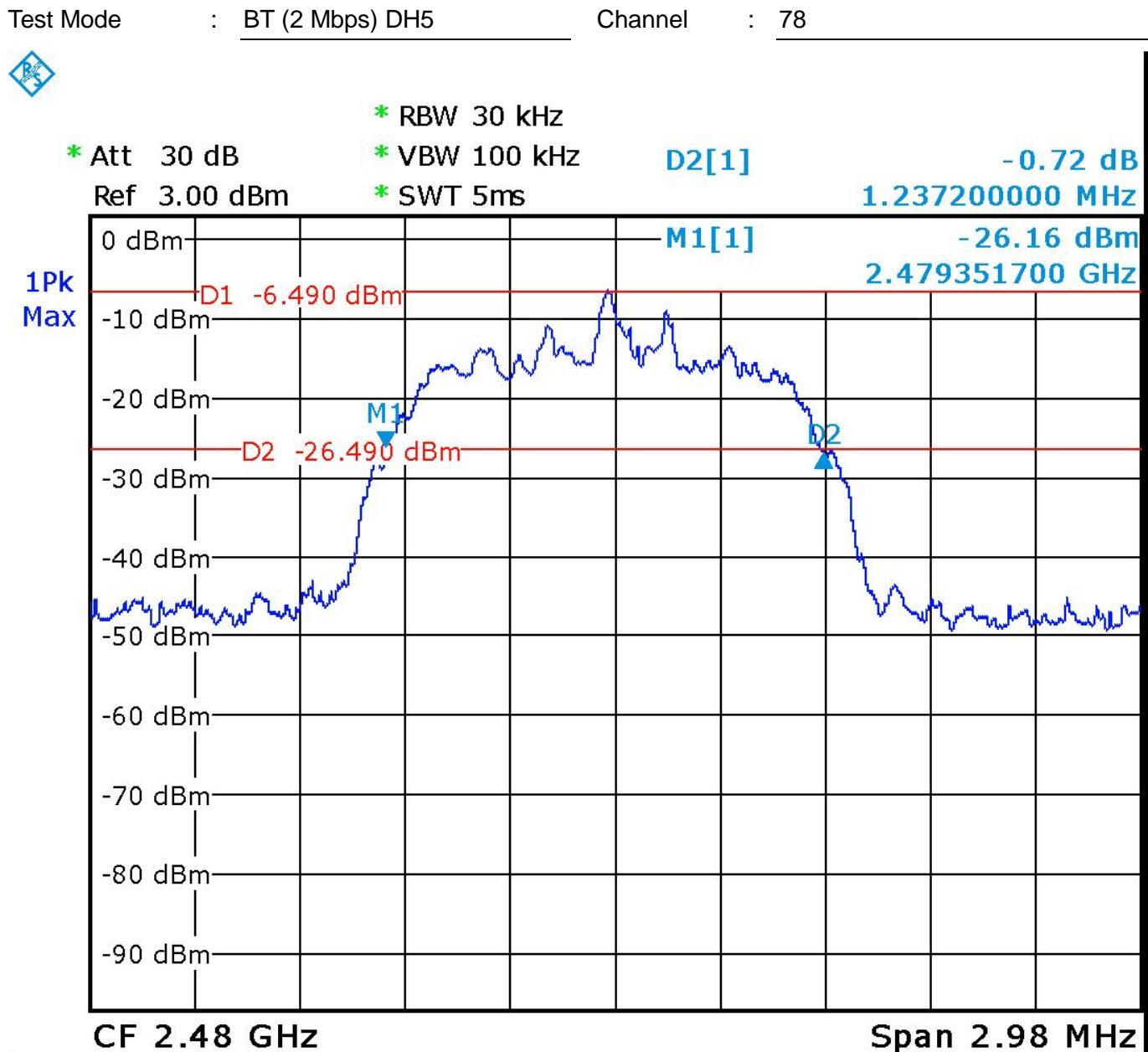


Date: 6.OCT.2015 11:40:08

Test Mode : BT (2 Mbps) DH5 Channel : 39

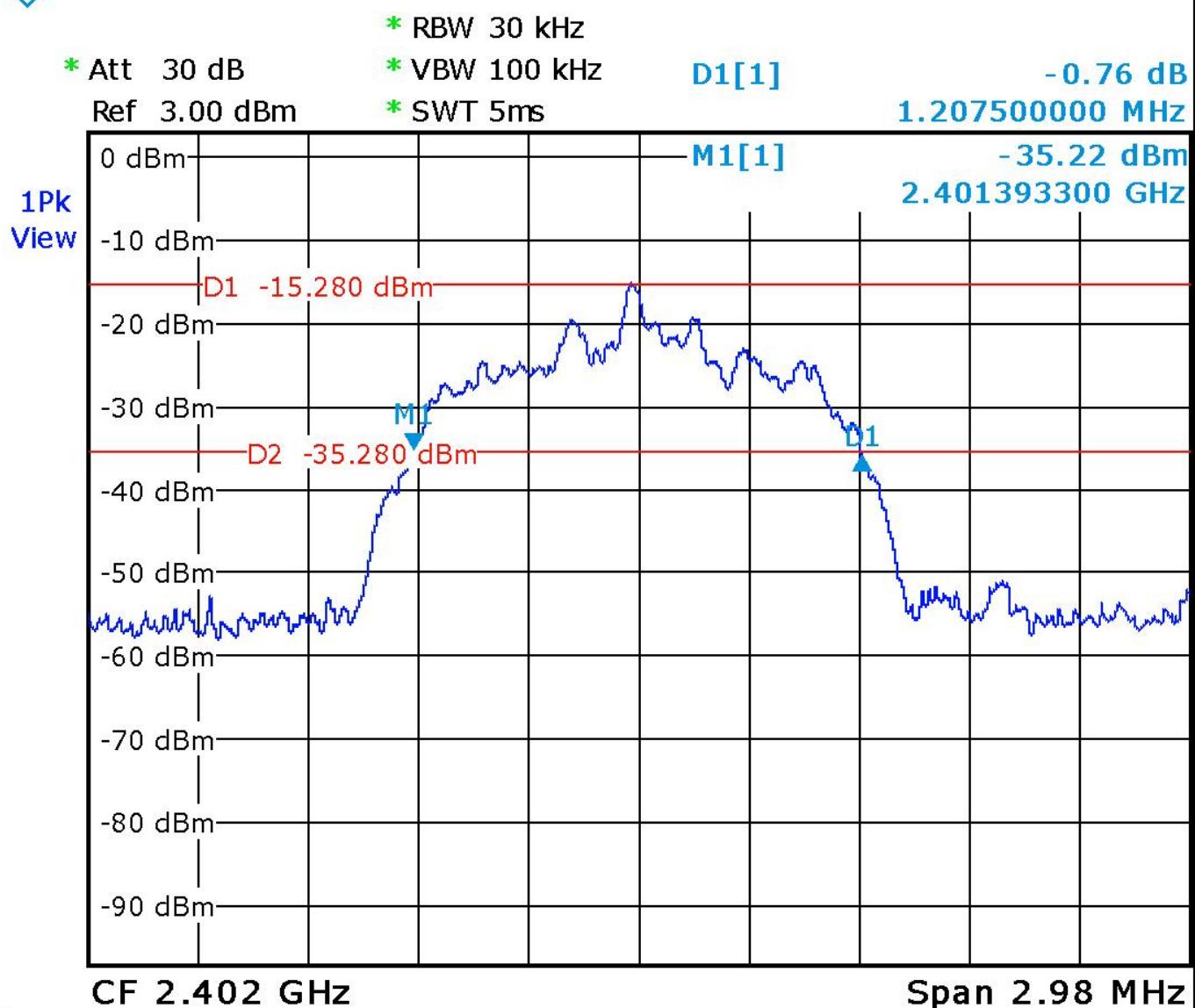


Date: 6.OCT.2015 11:45:41

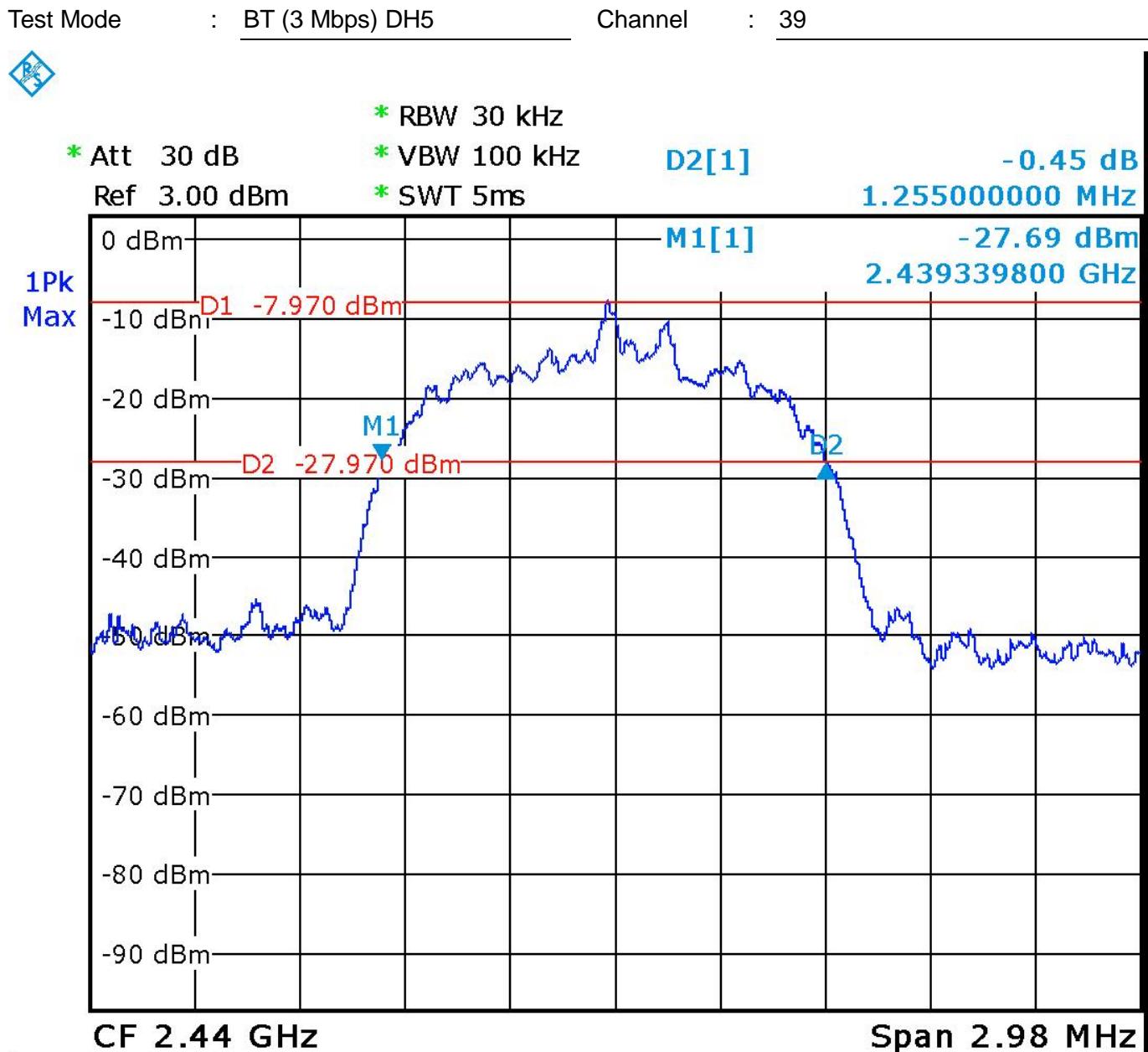


Date: 6.OCT.2015 11:53:37

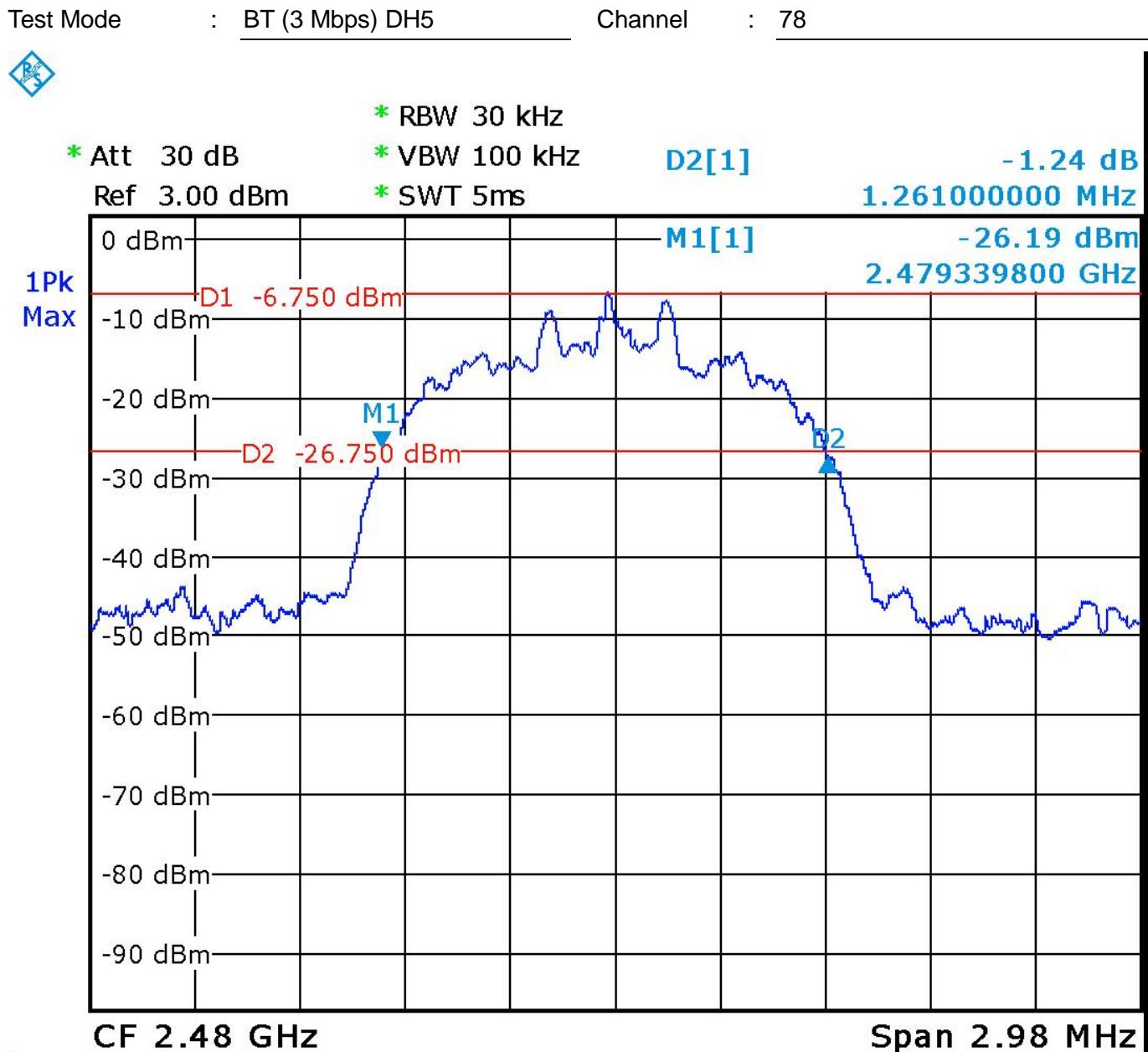
Test Mode : BT (3 Mbps) DH5 Channel : 00



Date: 6.OCT.2015 11:41:51



Date: 6.OCT.2015 11:47:44



Date: 6.OCT.2015 11:58:26

## 5 Hopping Frequency Separation

### 5.1 Test Instruments

Refer to Sec. 1.2 Test Instruments.

### 5.2 Test Arrangement and Procedure



1. The transmitter output was connected to a spectrum analyzer (through an attenuator, if it's necessary).
2. The bandwidth of the fundamental frequency was measured by spectrum analyzer with 30kHz RBW and 100kHz VBW.
3. Mark the peak outputs of two adjacent channels. And, measured the separation between the marked peak outputs of two adjacent channels.

### 5.3 Limit (§ 15.247(a)(1))

Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater. Alternatively, frequency hopping systems operating in the 2400-2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater, provided the systems operate with an output power no greater than 125 mW.

### 5.4 Test Result

#### Compliance.

The final test data are shown on the following page(s).

**Bluetooth 1 Mbps DH5**

Channel	Frequency (MHz)	20 dB bandwidth (MHz)	Limit (2/3 of 20dB bandwidth) (MHz)	Result	Verdict
Low	2402	0.797	0.531	0.994	Pass
Middle	2440	0.951	0.634	0.998	Pass
High	2480	0.886	0.590	0.998	Pass

**Bluetooth 2 Mbps DH5**

Channel	Frequency (MHz)	20 dB bandwidth (MHz)	Limit (2/3 of 20dB bandwidth) (MHz)	Result	Verdict
Low	2402	1.225	0.816	1.002	Pass
Middle	2440	1.255	0.836	1.002	Pass
High	2480	1.237	0.824	1.006	Pass

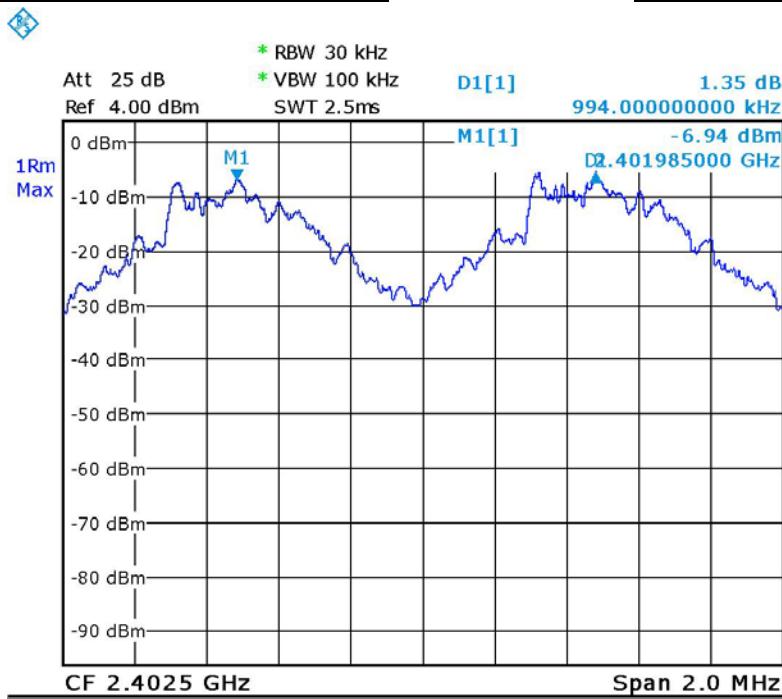
**Bluetooth 3 Mbps DH5**

Channel	Frequency (MHz)	20 dB bandwidth (MHz)	Limit (2/3 of 20dB bandwidth) (MHz)	Result	Verdict
Low	2402	1.207	0.804	1.002	Pass
Middle	2440	1.255	1.836	1.006	Pass
High	2480	1.261	0.840	1.014	Pass



Temperature : 22°C  
Test Date : 20-OCT-2015  
Test Mode : BT (1 Mbps) DH5

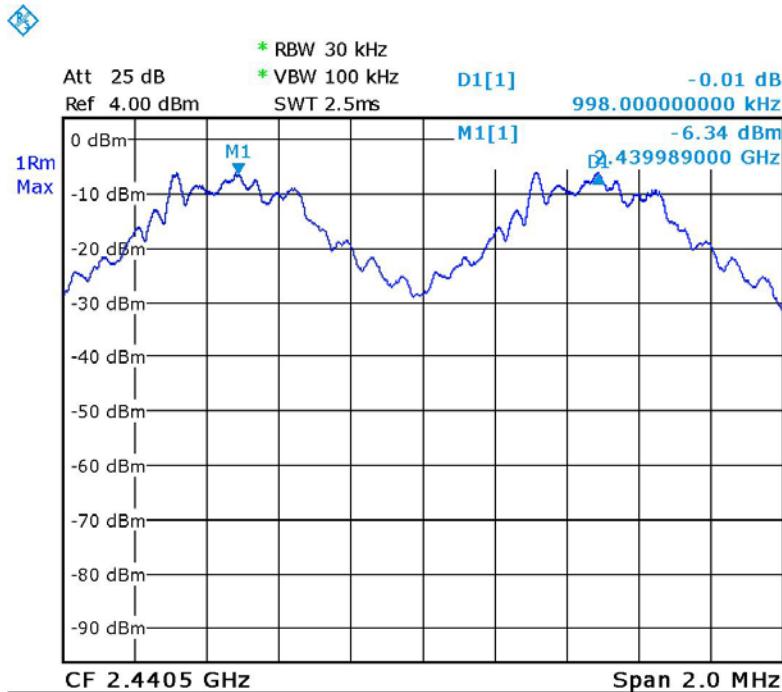
Humidity : 57%  
Tested by : Leon Chen  
Channel : Low



Date: 20.OCT.2015 13:29:39

Test Mode : BT (1 Mbps) DH5

Channel : Middle



Date: 20.OCT.2015 13:42:10

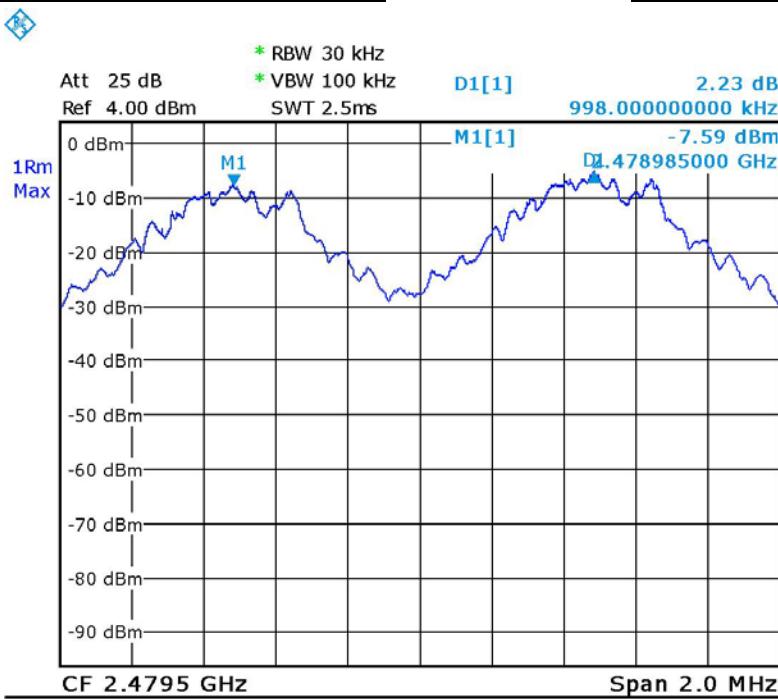


Test Mode

: BT (1 Mbps) DH5

Channel

: High

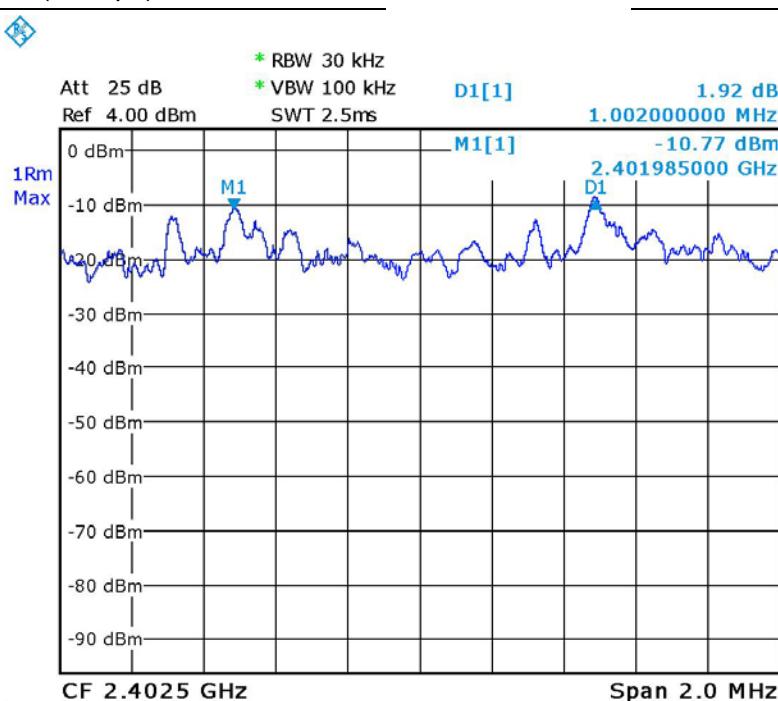


Test Mode

: BT (2 Mbps) DH5

Channel

: Low



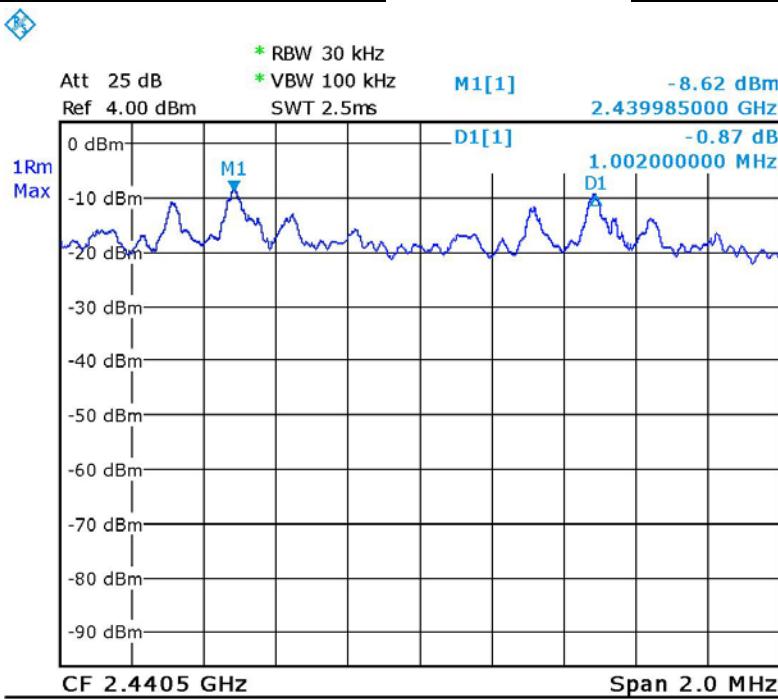


Test Mode

: BT (2 Mbps) DH5

Channel

: Middle



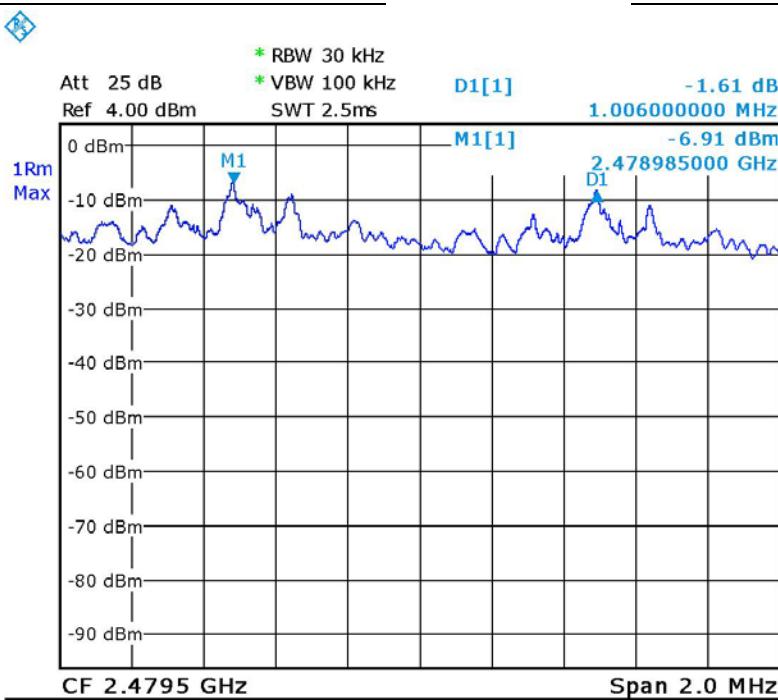
Date: 20.OCT.2015 13:44:05

Test Mode

: BT (2 Mbps) DH5

Channel

: High



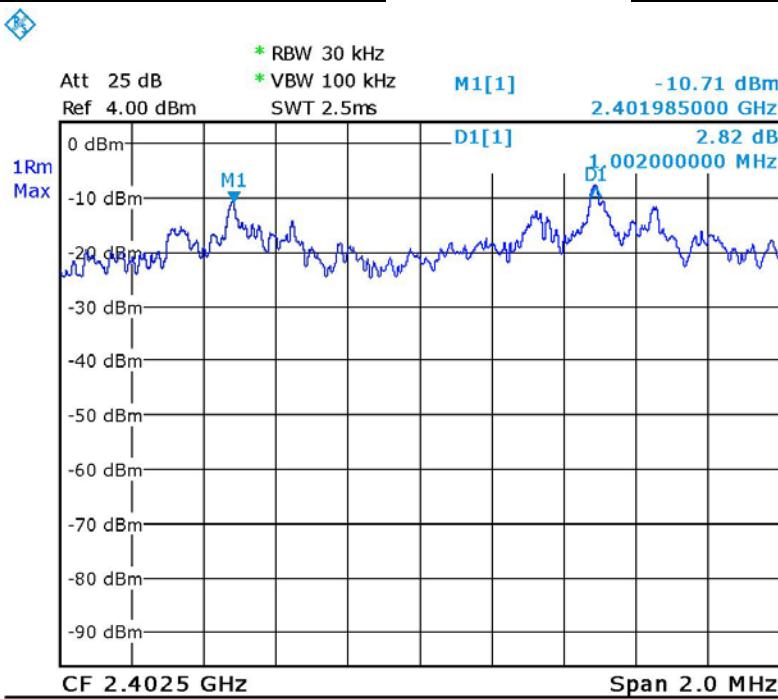
Date: 20.OCT.2015 13:50:02

Test Mode

: BT (3 Mbps) DH5

Channel

: Low



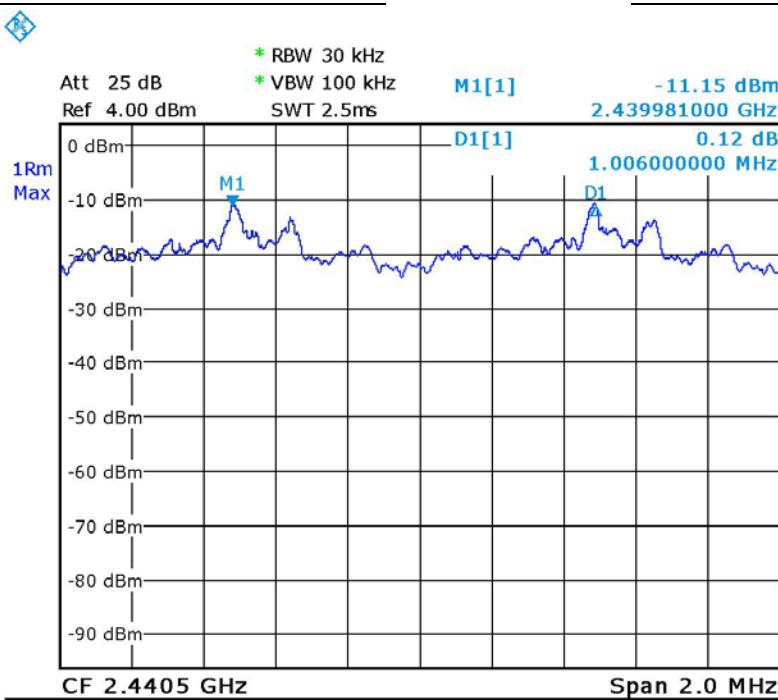
Date: 20.OCT.2015 13:38:35

Test Mode

: BT (3 Mbps) DH5

Channel

: Middle



Date: 20.OCT.2015 13:45:31

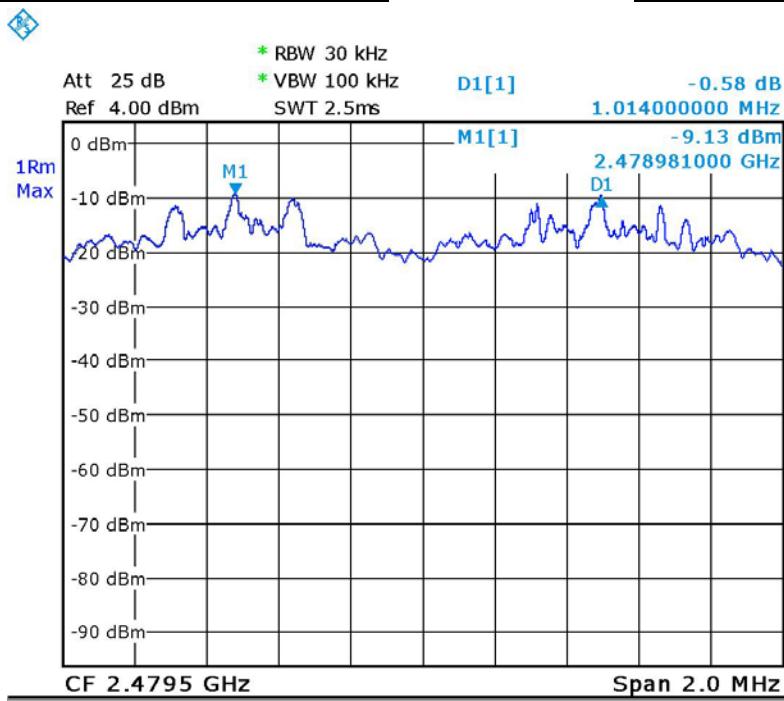


Test Mode

: BT (3 Mbps) DH5

Channel

: High



Date: 20.OCT.2015 13:51:34

## 6 Number of Hopping Channels

### 6.1 Test Instruments

Refer to Sec. 1.2 Test Instruments.

### 6.2 Test Arrangement and Procedure



1. The transmitter output was connected to a spectrum analyzer (through an attenuator, if it's necessary).
2. The span is set to cover the entire authorized band, in either a single sweep or in multiple contiguous sweeps.
3. The RBW is set to 1 MHz and VBW is set to 1 MHz .
4. Max Hold.

### 6.3 Limit (§ 15.247(a)(1)(iii))

Frequency hopping systems in the 2400-2483.5 MHz band shall use at least 15 channels.

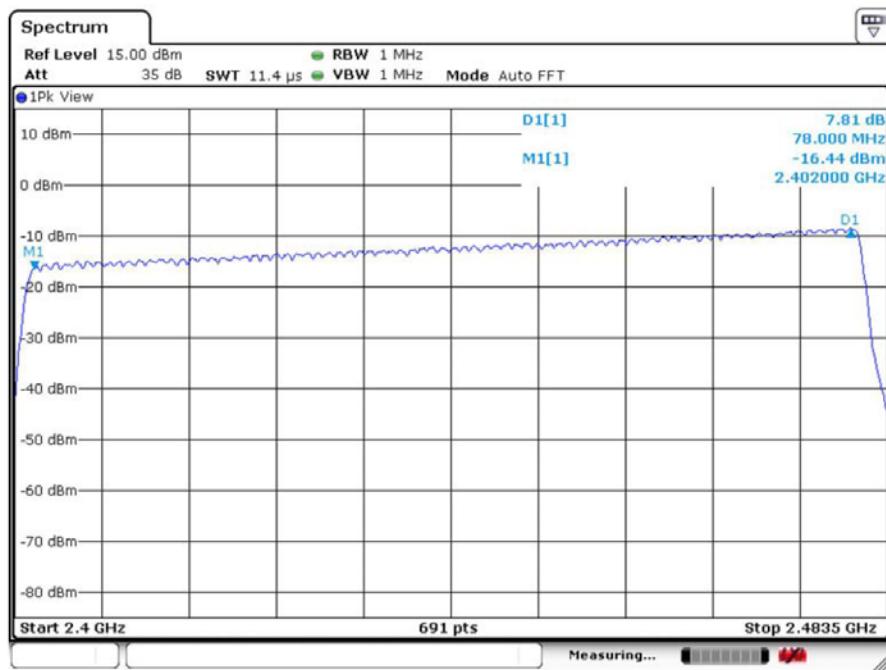
### 6.4 Test Result

**79 Channels have been used.**

**Compliance.**

The final test data are shown on the following page(s).

Test Mode : BT (3 Mbps) DH5



Note : After pre-test, we found that each and every operation mode has using all 79 channels. All test data are similar to the above one. Therefore, we choice the very plot to represent them all.

## 7 Average Time of Occupancy

### 7.1 Test Instruments

Refer to Sec. 1.2 Test Instruments.

### 7.2 Test Arrangement and Procedure



1. The transmitter output was connected to a spectrum analyzer (through an attenuator, if it's necessary).
2. First, measure the number of pulses per 5 second, the RBW is set to 100 kHz and VBW is set to 100 kHz. Sweep is set to 5 sec. Span 0 Hz.
3. Second, measure the Pulse width, the RBW is set to 1MHz and VBW is set to 1MHz. Sweep is adjusted to appropriate time to show a complete pulse. Span 0 Hz.

### 7.3 Limit (§ 15.247(a)(1)(iii))

The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed.

### 7.4 Test Result

#### Compliance.

The final test data are shown on the following page(s).

**Bluetooth (1 Mbps) Channel 00**

DH Packet	Number of Hopping channels	Number of Pulses per 5 sec	Pulse Width (sec)	AV time of Occupancy (sec)	Limit (sec)
DH1	79	52	0.0004274	0.140460	0.4
DH3	79	26	0.0017462	0.286935	0.4
DH5	79	17	0.0029978	0.322083	0.4

**Bluetooth (2 Mbps) Channel 00**

DH Packet	Number of Hopping channels	Number of Pulses per 5 sec	Pulse Width (sec)	AV time of Occupancy (sec)	Limit (sec)
DH1	79	52	0.0004654	0.152949	0.4
DH3	79	26	0.0017234	0.283189	0.4
DH5	79	18	0.0030434	0.346217	0.4

**Bluetooth (3 Mbps) Channel 00**

DH Packet	Number of Hopping channels	Number of Pulses per 5 sec	Pulse Width (sec)	AV time of Occupancy (sec)	Limit (sec)
DH1	79	51	0.0004810	0.158075	0.4
DH3	79	25	0.0017082	0.280691	0.4
DH5	79	17	0.0030082	0.323201	0.4

Remark:

AV time of Occupancy (sec) = 79 (number of hopping channels) \* 0.4 (sec) \* Number of Pulses per 5 sec/5 \* Pulse Width (sec)

Note : 1. The EUT does not support AFH mode.



<b>Bluetooth (1 Mbps) Channel 39</b>					
<b>DH Packet</b>	<b>Number of Hopping channels</b>	<b>Number of Pulses per 5 sec</b>	<b>Pulse Width (sec)</b>	<b>AV time of Occupancy (sec)</b>	<b>Limit (sec)</b>
DH1	79	52	0.0004383	0.144042	0.4
DH3	79	26	0.0017100	0.280987	0.4
DH5	79	17	0.0029900	0.321245	0.4

<b>Bluetooth (2 Mbps) Channel 39</b>					
<b>DH Packet</b>	<b>Number of Hopping channels</b>	<b>Number of Pulses per 5 sec</b>	<b>Pulse Width (sec)</b>	<b>AV time of Occupancy (sec)</b>	<b>Limit (sec)</b>
DH1	79	52	0.000454	0.149202	0.4
DH3	79	26	0.001744	0.286574	0.4
DH5	79	17	0.003024	0.324898	0.4

<b>Bluetooth (3 Mbps) Channel 39</b>					
<b>DH Packet</b>	<b>Number of Hopping channels</b>	<b>Number of Pulses per 5 sec</b>	<b>Pulse Width (sec)</b>	<b>AV time of Occupancy (sec)</b>	<b>Limit (sec)</b>
DH1	79	51	0.0004490	0.147559	0.4
DH3	79	26	0.0017562	0.288578	0.4
DH5	79	18	0.0029774	0.338709	0.4

Remark:

AV time of Occupancy (sec) = 79 (number of hopping channels) \* 0.4 (sec) \* Number of Pulses per 5 sec/ 5 \* Pulse Width (sec)

Note : 1. The EUT does not support AFH mode.



<b>Bluetooth (1 Mbps) Channel 78</b>					
<b>DH Packet</b>	<b>Number of Hopping channels</b>	<b>Number of Pulses per 5 sec</b>	<b>Pulse Width (sec)</b>	<b>AV time of Occupancy (sec)</b>	<b>Limit (sec)</b>
DH1	79	52	0.0004314	0.141775	0.4
DH3	79	26	0.0017736	0.291437	0.4
DH5	79	18	0.0029840	0.339459	0.4

<b>Bluetooth (2 Mbps) Channel 78</b>					
<b>DH Packet</b>	<b>Number of Hopping channels</b>	<b>Number of Pulses per 5 sec</b>	<b>Pulse Width (sec)</b>	<b>AV time of Occupancy (sec)</b>	<b>Limit (sec)</b>
DH1	79	52	0.0004749	0.156071	0.4
DH3	79	26	0.0017125	0.281398	0.4
DH5	79	18	0.0030000	0.341280	0.4

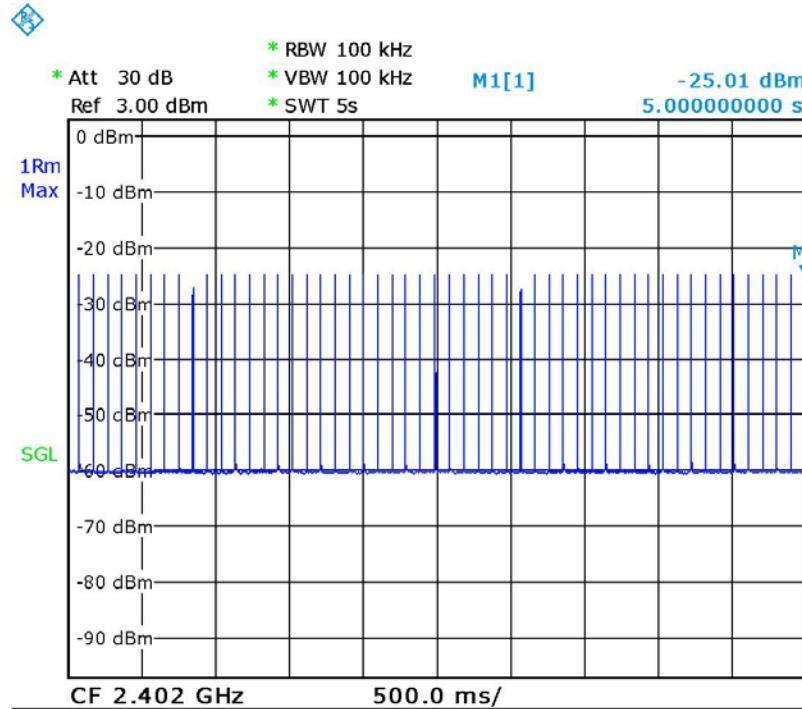
<b>Bluetooth (3 Mbps) Channel 78</b>					
<b>DH Packet</b>	<b>Number of Hopping channels</b>	<b>Number of Pulses per 5 sec</b>	<b>Pulse Width (sec)</b>	<b>AV time of Occupancy (sec)</b>	<b>Limit (sec)</b>
DH1	79	52	0.0004485	0.147395	0.4
DH3	79	26	0.0017040	0.280001	0.4
DH5	79	18	0.0029700	0.337867	0.4

Remark:

AV time of Occupancy (sec) = 79 (number of hopping channels) \* 0.4 (sec) \* Number of Pulses per 5 sec/  
5 \* Pulse Width (sec)

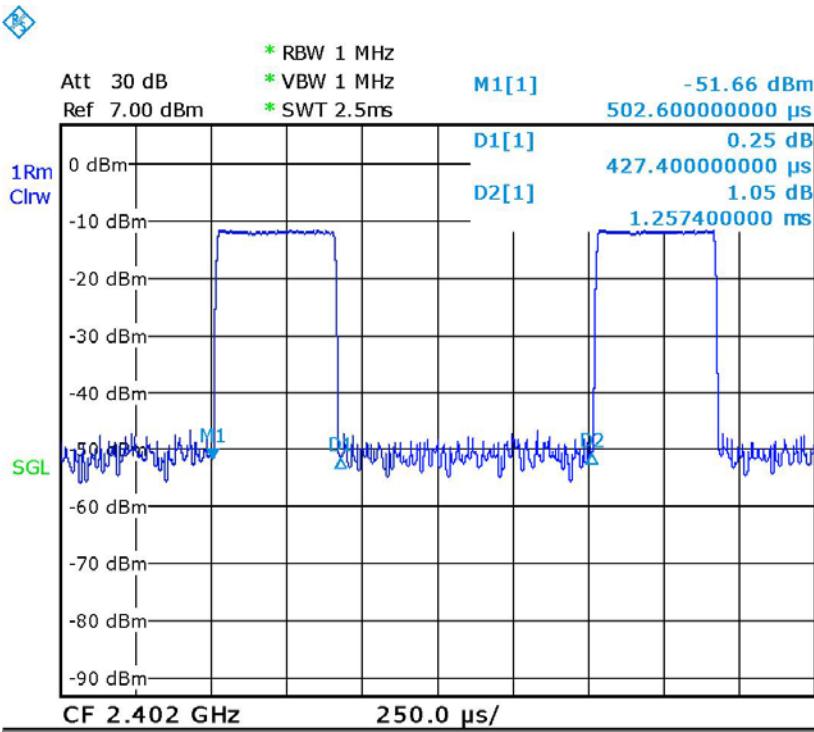
Temperature : 22°C      Humidity : 57%  
Test Date : 06-OCT-2015      Tested by : Leon Chen  
Test Mode : BT (1Mbps) DH1      Channel : 00

## Number of Pulses Per 5 sec



Date: 6.OCT.2015 13:23:05

## Pulse Width (sec)

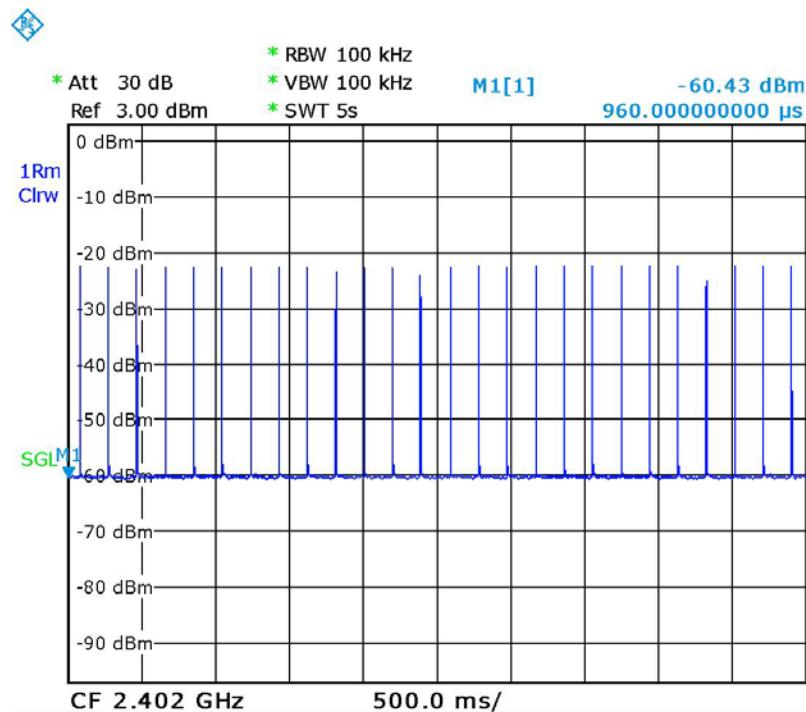


Date: 12.OCT.2015 18:36:11



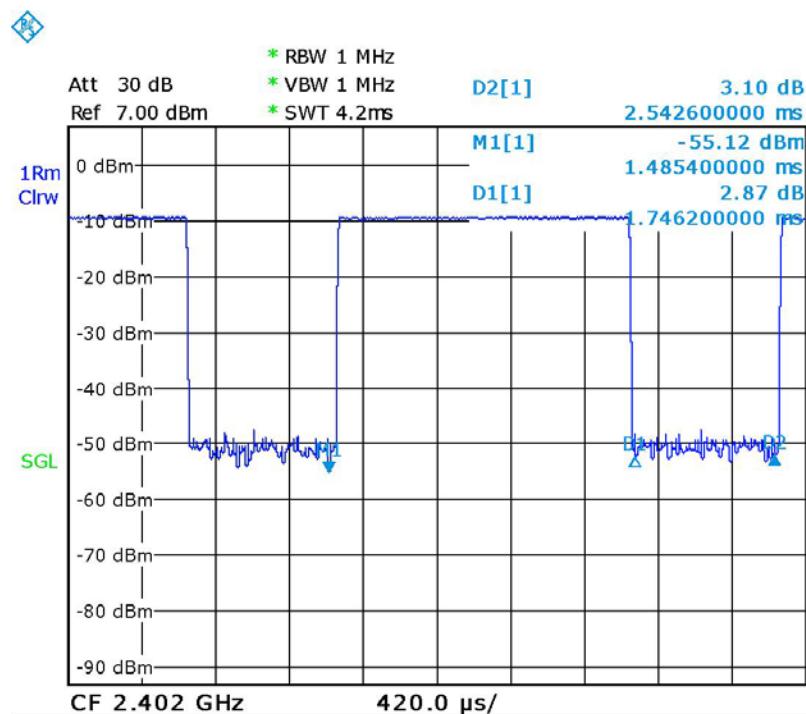
Test Mode : BT (1 Mbps) DH3 Channel : 00

Number of Pulses Per 5 sec



Date: 6.OCT.2015 15:07:35

Pulse Width (sec)

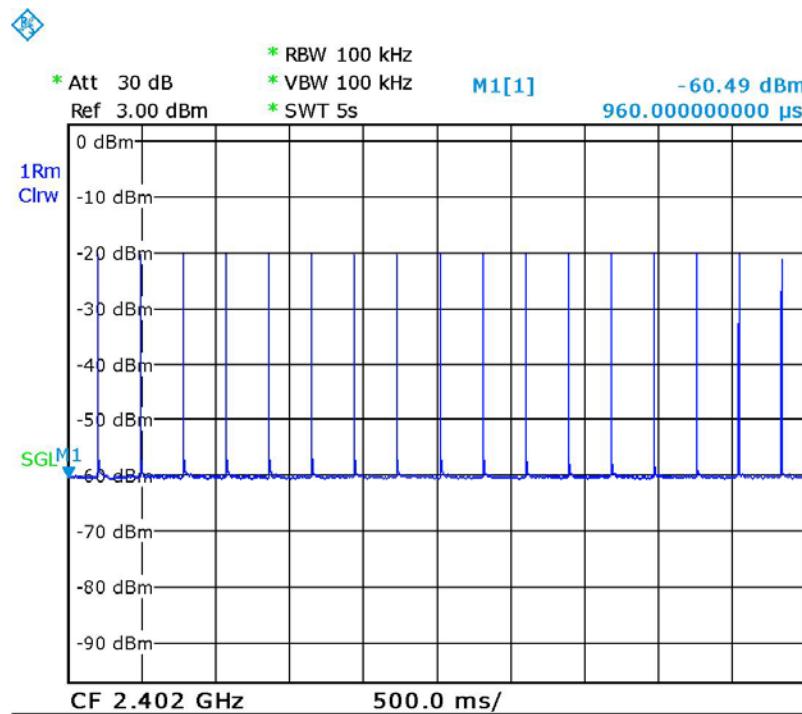


Date: 12.OCT.2015 18:37:51



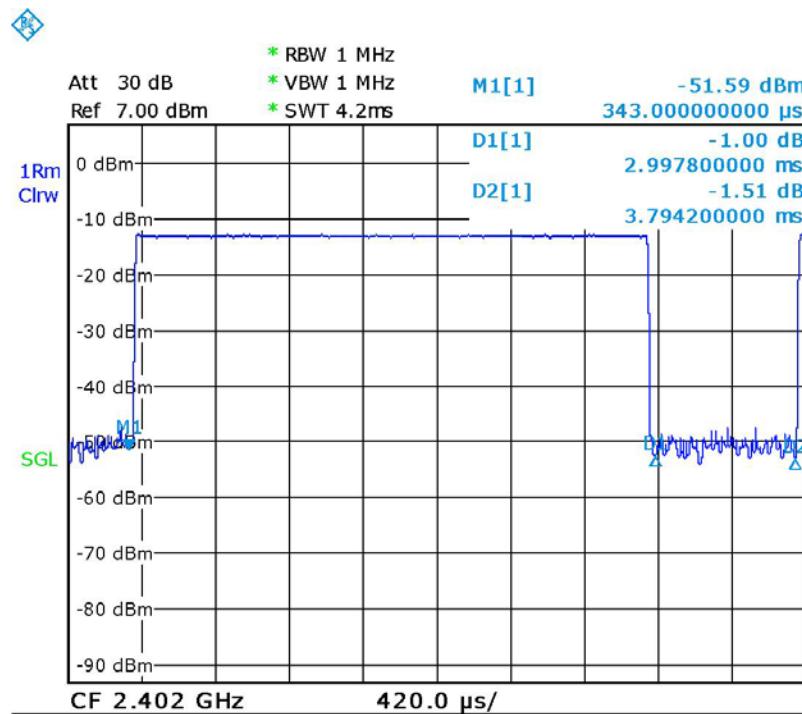
Test Mode : BT (1 Mbps) DH5 Channel : 00

Number of Pulses Per 5 sec



Date: 6.OCT.2015 15:06:40

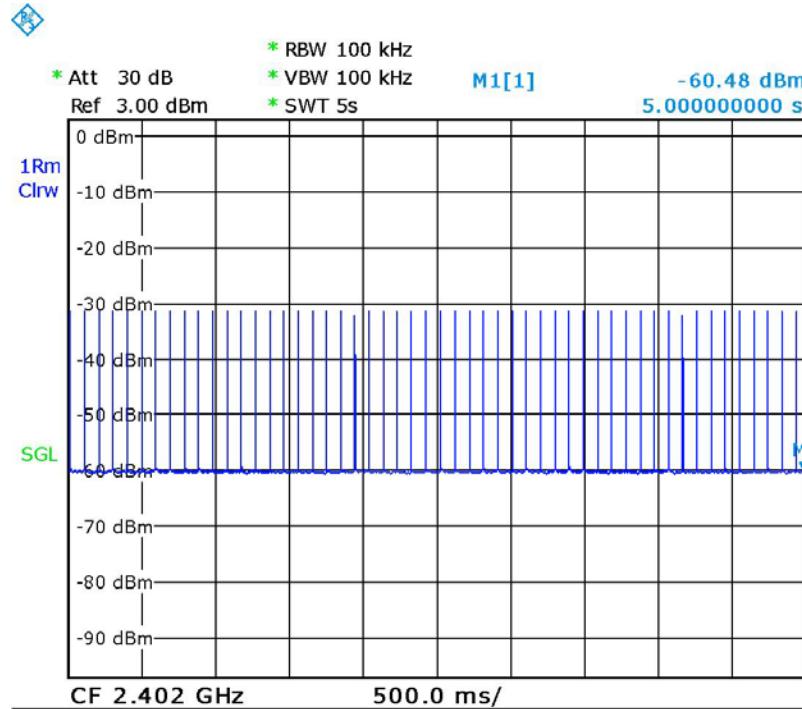
Pulse Width (sec)



Date: 12.OCT.2015 18:41:33

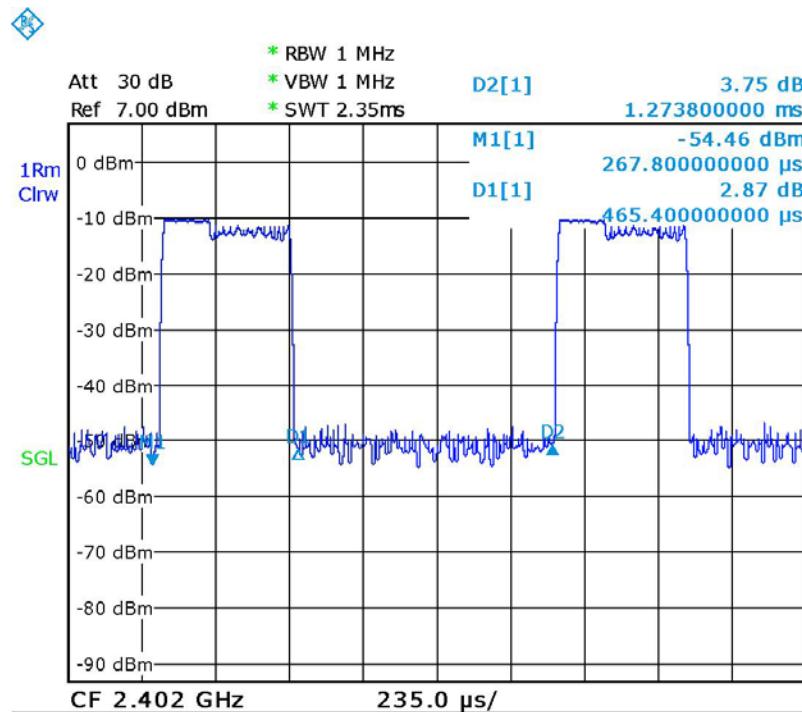
Temperature : 22°C      Humidity : 57%  
Test Date : 06-OCT-2015      Tested by : Leon Chen  
Test Mode : BT (2Mbps) DH1      Channel : 00

## Number of Pulses Per 5 sec



Date: 6.OCT.2015 13:24:27

## Pulse Width (sec)

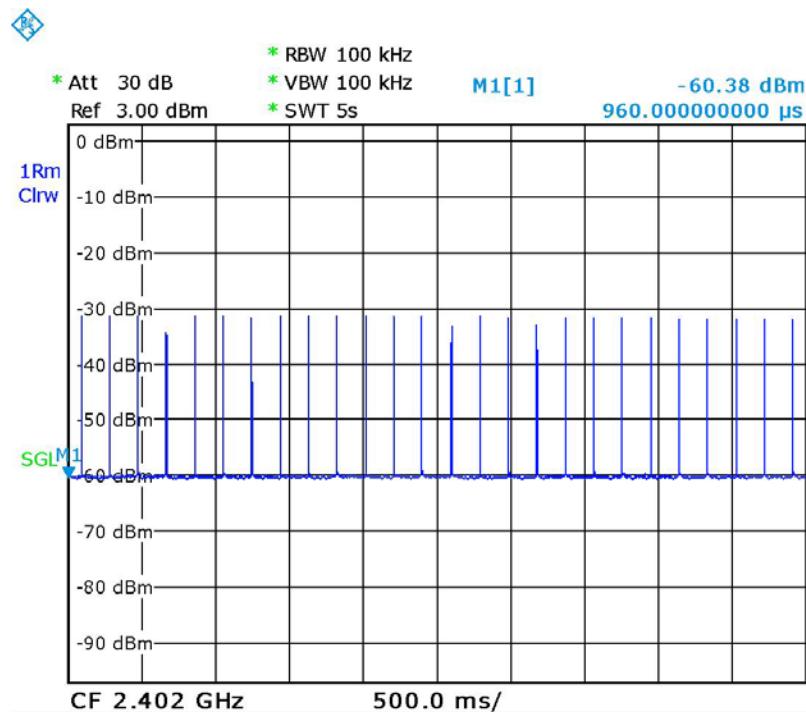


Date: 12.OCT.2015 18:43:27



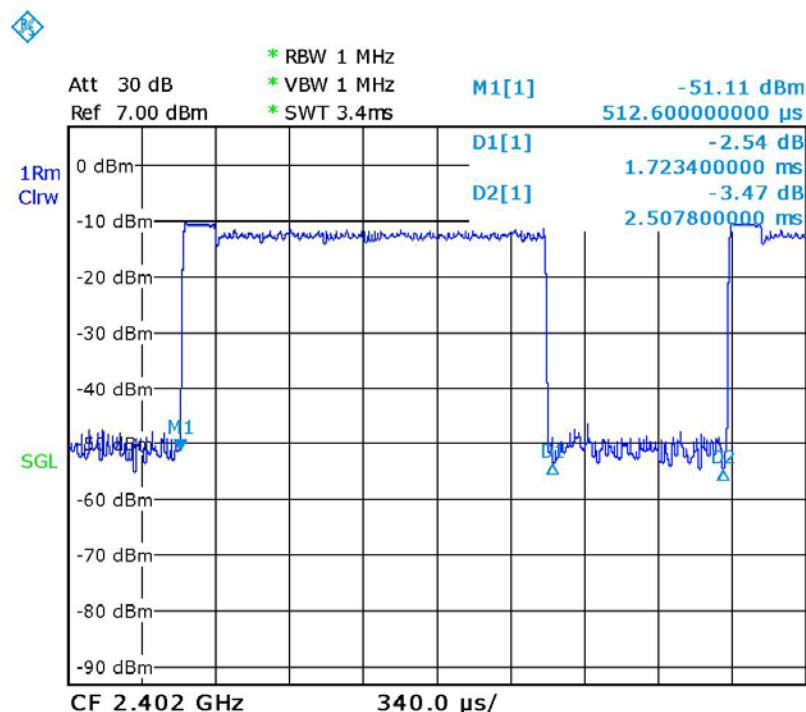
Test Mode : BT (2 Mbps) DH3 Channel : 00

Number of Pulses Per 5 sec



Date: 6.OCT.2015 15:05:43

Pulse Width (sec)

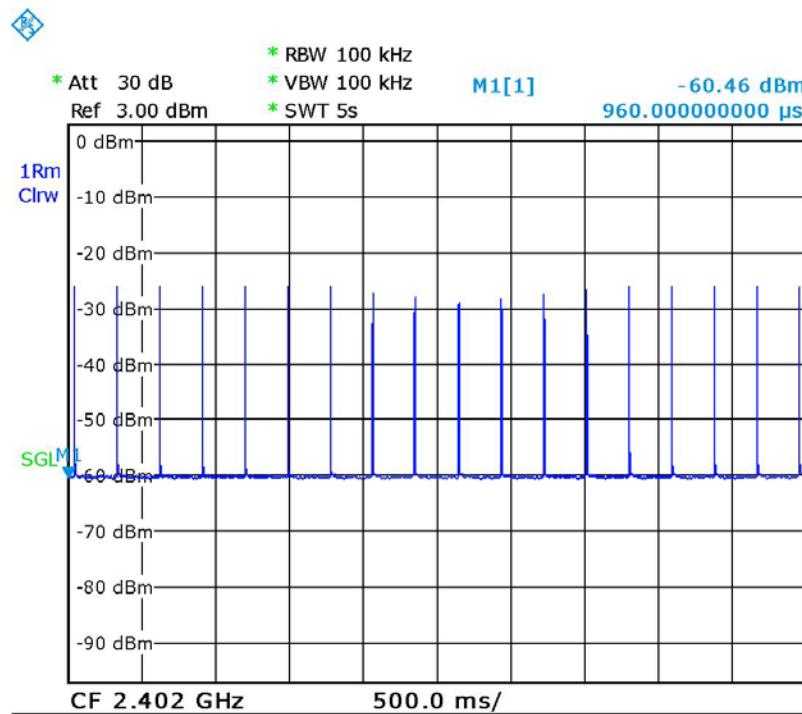


Date: 12.OCT.2015 18:45:17



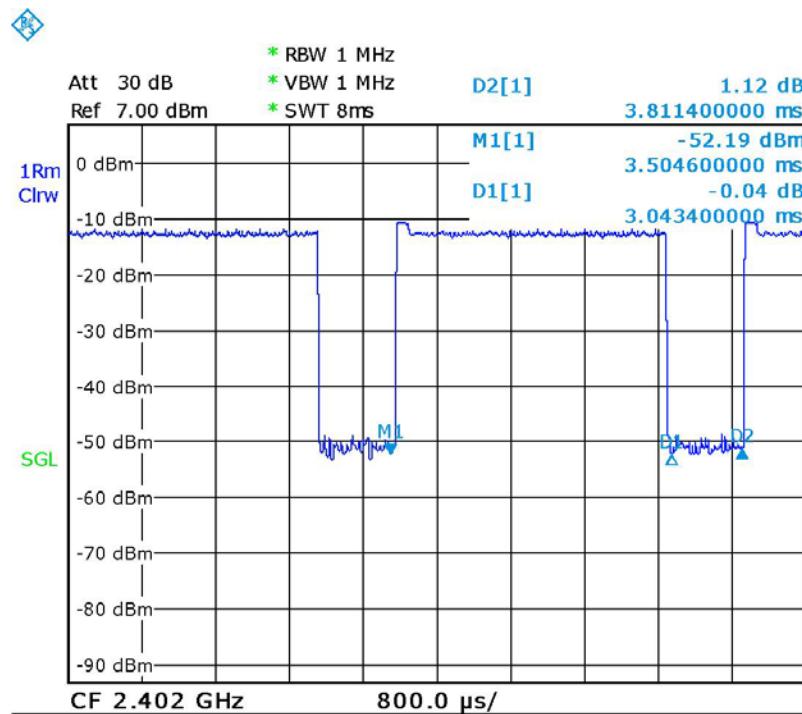
Test Mode : BT (2 Mbps) DH5 Channel : 00

Number of Pulses Per 5 sec



Date: 6.OCT.2015 15:00:51

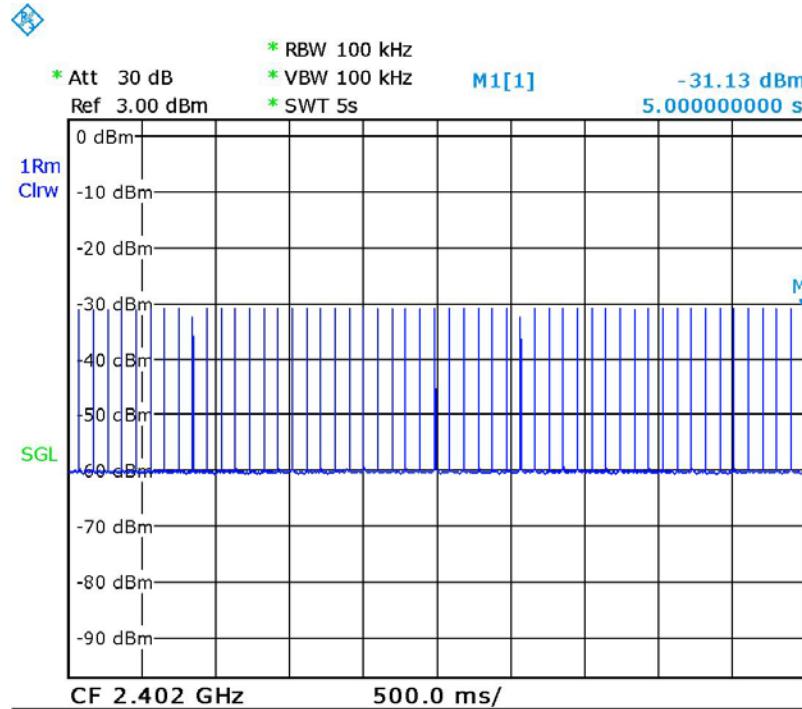
Pulse Width (sec)



Date: 12.OCT.2015 18:46:56

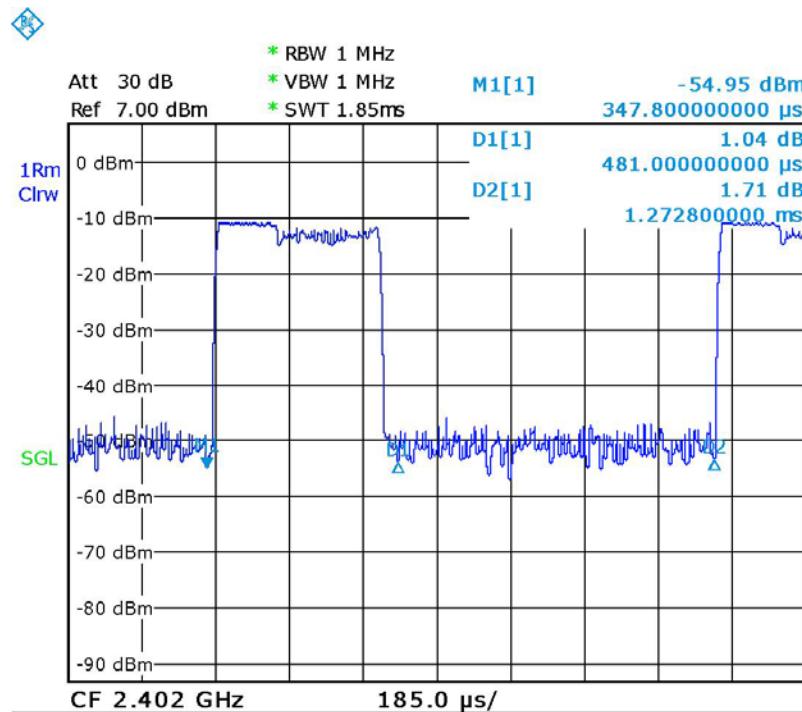
Temperature : 22°C      Humidity : 57%  
Test Date : 06-OCT-2015      Tested by : Leon Chen  
Test Mode : BT (3Mbps) DH1      Channel : 00

## Number of Pulses Per 5 sec



Date: 6.OCT.2015 13:26:47

## Pulse Width (sec)

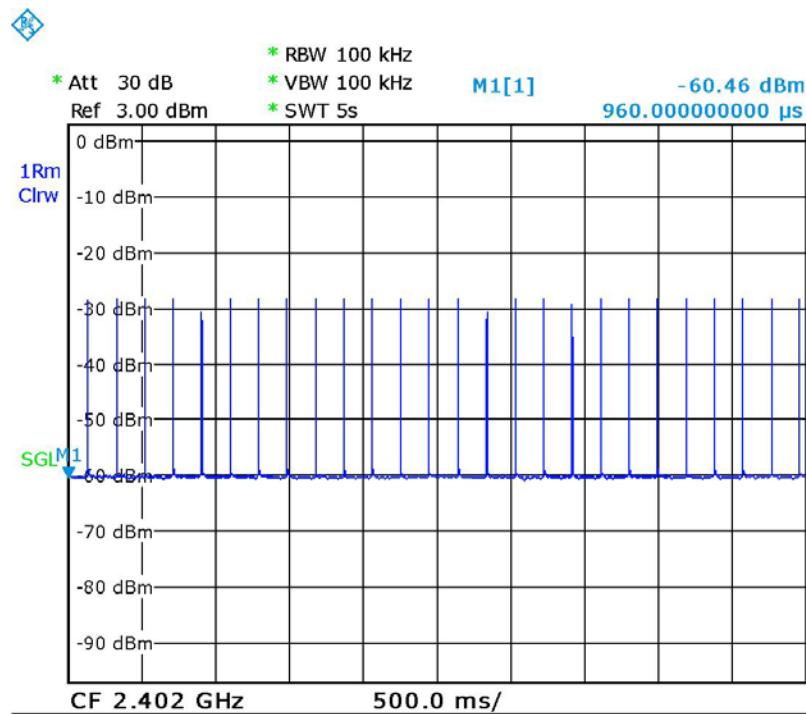


Date: 12.OCT.2015 18:48:57



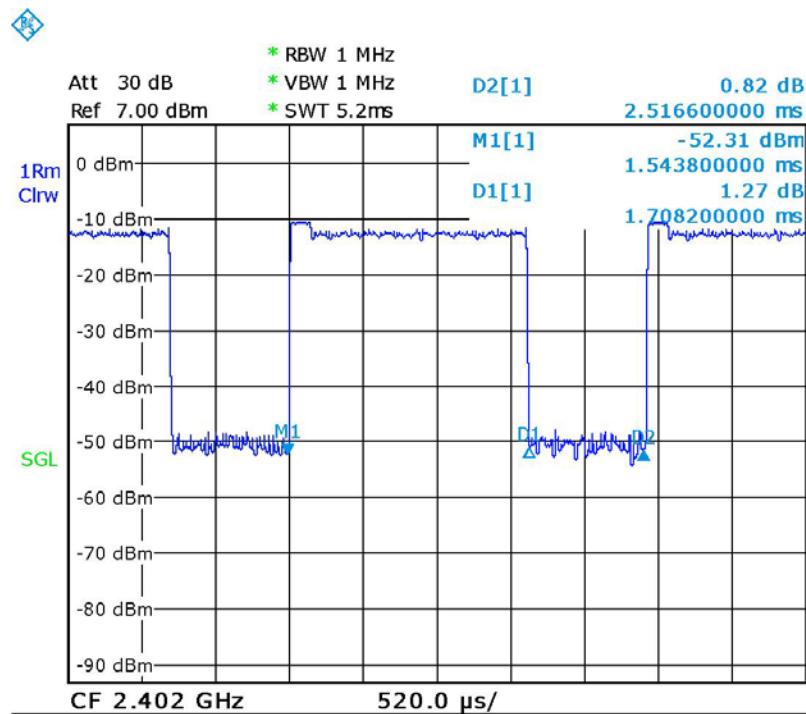
Test Mode : BT (3 Mbps) DH3 Channel : 00

Number of Pulses Per 5 sec



Date: 6.OCT.2015 15:02:01

Pulse Width (sec)

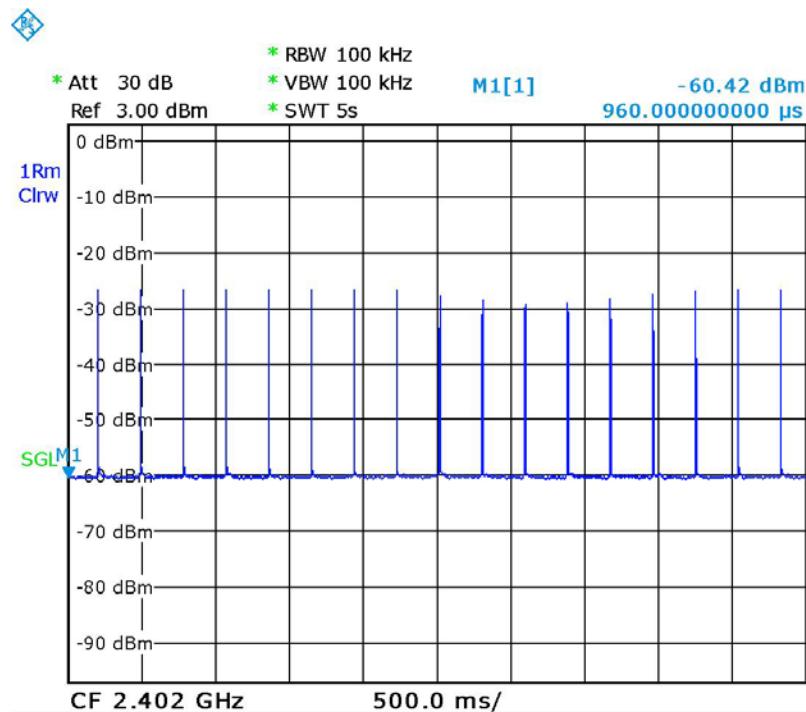


Date: 12.OCT.2015 18:51:29



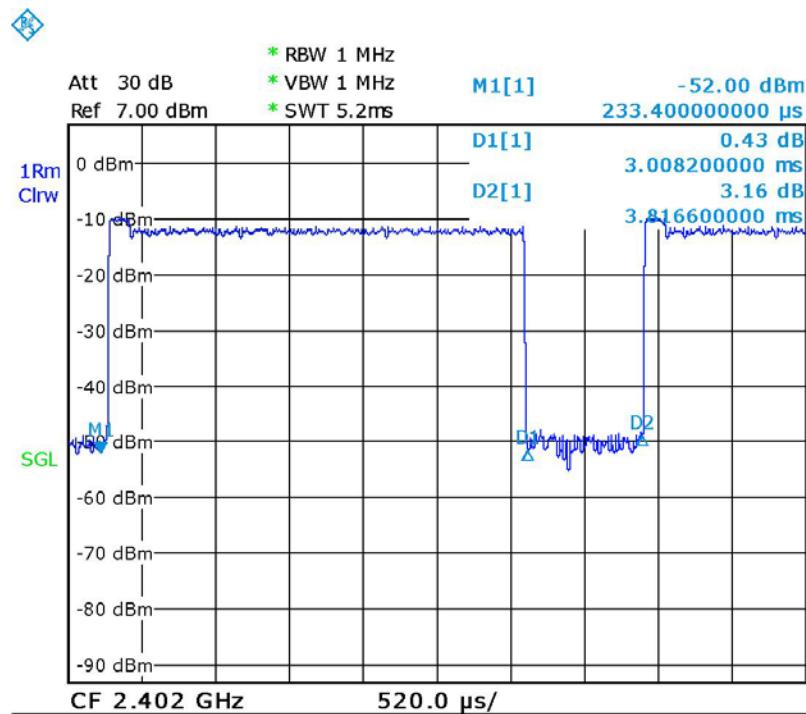
Test Mode : BT (3 Mbps) DH5 Channel : 00

Number of Pulses Per 5 sec



Date: 6.OCT.2015 15:03:07

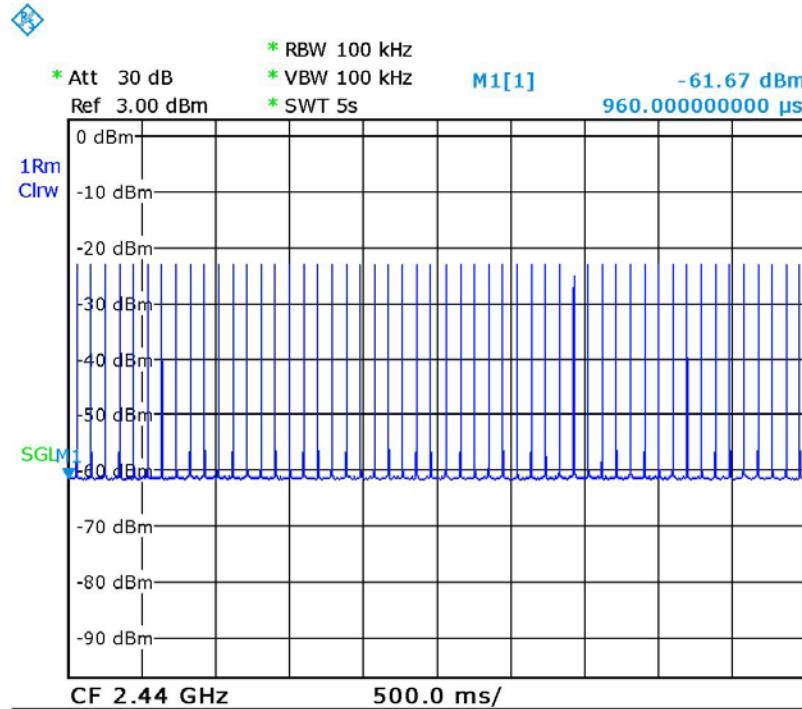
Pulse Width (sec)



Date: 12.OCT.2015 18:52:49

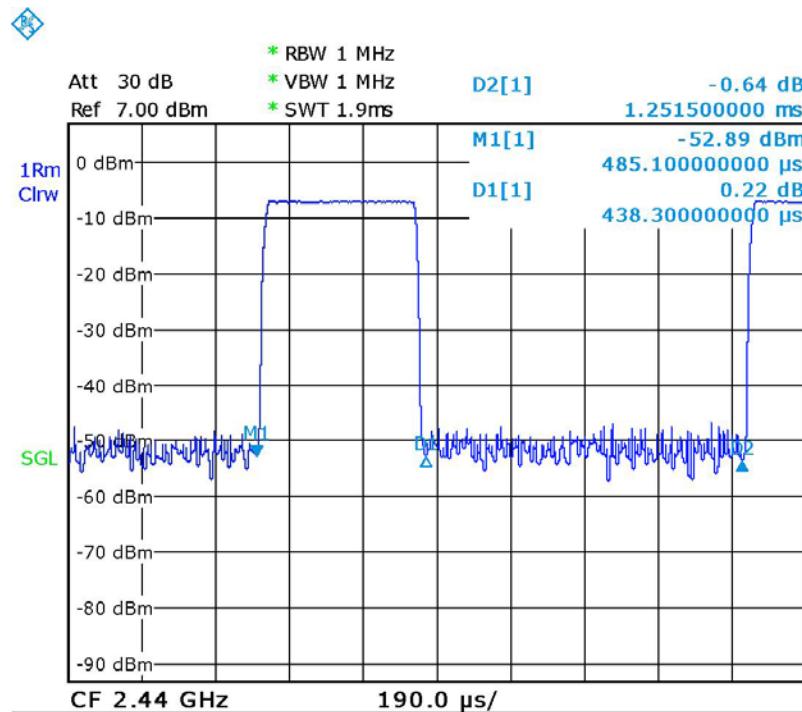
Temperature : 22°C      Humidity : 57%  
Test Date : 06-OCT-2015      Tested by : Leon Chen  
Test Mode : BT (1Mbps) DH1      Channel : 39

## Number of Pulses Per 5 sec



Date: 6.OCT.2015 15:12:39

## Pulse Width (sec)



Date: 12.OCT.2015 18:17:54