



# FCC PART 15 TEST REPORT No. I15Z42269-SRD01

for

**Huawei Technologies Co.,Ltd**

**LTE/WCDMA/GSM Smart Phone**

**Model Name: H1511**

**FCC ID: QISH1511**

with

**Hardware Version: HL3 NINAMH**

**Software Version: User release M MDA2**

**Issued Date: 2015-09-10**



**Note:**

The test results in this test report relate only to the devices specified in this report. This report shall not be reproduced except in full without the written approval of CTTL.

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## **REPORT HISTORY**

| Report Number   | Revision | Description | Issue Date |
|-----------------|----------|-------------|------------|
| I15Z42269-SRD01 | Rev.0    | 1st edition | 2015-09-10 |
|                 |          |             |            |



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## **1. TEST LATORATORY**

### **1.1. Testing Location**

Location 1:CTTL(huayuan North Road)

Address: No. 52, Huayuan North Road, Haidian District, Beijing,  
P. R. China100191

Location 2:CTTL(Shouxiang)

Address: No. 51 Shouxiang Science Building, Xueyuan Road,  
Haidian District, Beijing, P. R. China100191

### **1.2. Testing Environment**

Normal Temperature: 15-35°C  
Extreme Temperature: 0/+35°C  
Relative Humidity: 20-75%

### **1.3. Project data**

Testing Start Date: 2015-08-25  
Testing End Date: 2015-09-10

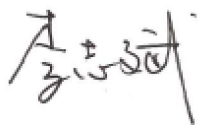
### **1.4. Signature**



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Xu Zhongfei

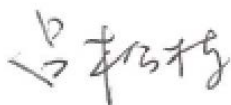
(Prepared this test report)



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Li Zhibin

(Reviewed this test report)



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Lv Songdong

(Approvedthis test report)



## **2. CLIENT INFORMATION**

### **2.1. Applicant Information**

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### **2.2. Manufacturer Information**

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Address /Post: Administration Building, Headquarters of Huawei Technologies Co.,  
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Fax: 027-59675620

### **3. EQUIPMENT UNDER TEST (EUT) AND ANCILLARY**

#### **EQUIPMENT(AE)**

##### **3.1. About EUT**

|                      |                                                          |
|----------------------|----------------------------------------------------------|
| Description          | LTE/WCDMA/GSM Smart Phone                                |
| Model name           | H1511                                                    |
| FCC ID               | QISH1511                                                 |
| WLAN Frequency Range | ISM Band:<br>-5250MHz~5350MHz<br>-5470MHz~5725MHz        |
| Type of modulation   | OFDM                                                     |
| Number of Channels   | 15                                                       |
| Antenna              | Integral Antenna                                         |
| Extreme vol. Limits  | 3.8V DC by Battery                                       |
| Device Type (DFS)    | Client without radar detection(only support client mode) |
| TPC mechanism        | Not support                                              |

##### **3.2. Internal Identification of EUT used during the test**

| <b>EUT ID*</b> | <b>S/N</b>      | <b>HW Version</b> | <b>SW Version</b>   |
|----------------|-----------------|-------------------|---------------------|
| EUT1           | 867686020003180 | HL3 NINAMH        | User release M MDA2 |

\*EUT ID: is used to identify the test sample in the lab internally.

##### **3.3. General Description**

The Equipment Under Test (EUT) is a model of LTE/WCDMA/GSM Smart Phone with integrated antenna. It consists of normal options: lithium battery, charger. Manual and specifications of the EUT were provided to fulfil the test.



#### **4. REFERENCE DOCUMENTS**

##### **4.1. Documents supplied by applicant**

EUT feature information is supplied by the applicant or manufacturer, which is the basis of testing.

##### **4.2. Reference Documents for testing**

The following documents listed in this section are referred for testing.

|            |                                                                                                                                                       |      |
|------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|------|
| FCC Part15 | Title 47 of the Code of Federal Regulations; Chapter I<br>Part 15 - Radio frequency devices<br>Subpart E – UNII Devices                               | 2014 |
| FCC 06-96  | Revision of Parts 2 and 15 of the Commission's Rules to<br>Permit Unlicensed National Information Infrastructure<br>(U-NII) devices in the 5 GHz band | 2006 |

## **5. LABORATORY ENVIRONMENT**

Measurement is performed in shielding room.

## 6. SUMMARY OF TEST RESULTS

### 6.1. Summary of Test Results

| SUMMARY OF MEASUREMENT RESULTS                          | Sub-clause of Part15E | Verdict  |
|---------------------------------------------------------|-----------------------|----------|
| Channel move time and channel closing transmission time | 15.407 (h)(2)(iii)    | <b>P</b> |
| Non-Occupancy Period                                    | 15.407 (h)(2) (iv)    | <b>P</b> |

Please refer to **ANNEX A** for detail.

Terms used in Verdict column

|    |                                                                               |
|----|-------------------------------------------------------------------------------|
| P  | Pass, The EUT complies with the essential requirements in the standard.       |
| NM | Not measured, The test was not measured by CTTL                               |
| NA | Not Applicable, The test was not applicable                                   |
| F  | Fail, The EUT does not comply with the essential requirements in the standard |

### 6.2. Statements

CTTL has evaluated the test cases requested by the client/manufacture as listed in section 6.1 of this report for the EUT specified in section 3 according to the standards or reference documents listed in section 4.1.

This report only deal with the UNII DFS functions among the features described in section 3, and The EUT met all requirements of the reference documents.

The end user is not available to get and modify the parameters of the detected Radar Waveforms in this product.

#### Test Conditions

|       |                    |
|-------|--------------------|
| T nom | Normal Temperature |
| T min | Low Temperature    |
| T max | High Temperature   |
| V nom | Normal Voltage     |
| V min | Low Voltage        |
| V max | High Voltage       |
| H nom | Norm Humidity      |
| A nom | Norm Air Pressure  |

For this report, all the test case listed above is tested under Normal Temperature and Normal Voltage, and also under norm humidity, the specific conditions as following:

|              |       |                  |
|--------------|-------|------------------|
| Temperature  | T nom | 26 °C            |
| Voltage      | V nom | 3.8V(By battery) |
| Humidity     | H nom | 44%              |
| Air Pressure | A nom | 1010hPa          |

**7. TEST EQUIPMENTS UTILIZED****Conducted test system**

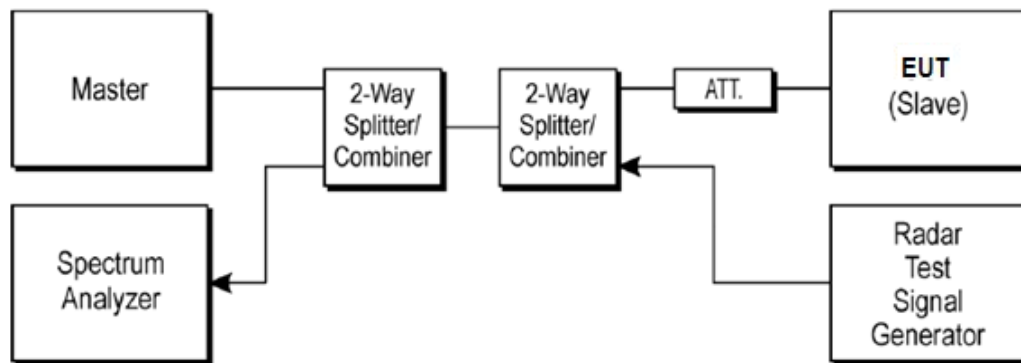
| No. | Equipment              | Model   | Serial Number | Manufacturer    | Calibration Date | Calibration Due Date |
|-----|------------------------|---------|---------------|-----------------|------------------|----------------------|
| 1   | Vector Signal Analyzer | FSQ40   | 200089        | Rohde & Schwarz | 2015-07-19       | 2016-07-19           |
| 2   | Vector Signal General  | SMU200A | 103752        | Rohde & Schwarz | 2015-07-19       | 2016-07-19           |
| 3   | Shielding Room         | S81     | /             | ETS-Lindgren    | /                | /                    |

## ANNEX A: MEASUREMENT RESULTS

### A.1. Measurement Method

#### A.1.1. Conducted Measurements

The below figure shows the DFS setup, where the EUT is a WLAN device operating in slave mode, without Radar Interference Detection function. This setup also contains a device operating in master mode. The radar test signals are injected into the master device. The EUT (slave device) is associated with the master device. WLAN traffic is generated by streaming the mpeg file from the master to the slave in full monitor video mode using the media player.



Note:

- 1) All Measurements are performed with the EUT's narrowest channel bandwidth.
- 2) The master device information is as follows  
Vendor: Cisco  
Model: AIR-AP1252AG-A-K9  
FCC ID: LDK102061, 1DK102062
- 3) The software of radar signal generator (R&S SMU200A) is completely designed based on FCC-06-96A1/NTIA requirement.

#### A.1.2. Parameters of DFS test signal

1). Interference threshold values, master or client incorporation in service monitoring. For device power less than 23dBm (E.I.R.P.), the threshold level is -62 dBm at the antenna port after correction for antenna gain and procedural adjustments.

Because of conducted measurement performed, the calibration power from radar signal generator to antenna port of DFS test equipment is -62 dBm.

| Maximum Transmit Power | Value   |
|------------------------|---------|
| > 200 mW               | -64 dBm |
| < 200 mW               | -62 dBm |

## 2). DFS requirement values

The required values are as the following table.

| Parameter                         | Value                                                  |
|-----------------------------------|--------------------------------------------------------|
| Non-occupancy                     | > 1800 s                                               |
| Channel Availability Check Time   | 60 s                                                   |
| Channel Move Time                 | 10 s                                                   |
| Channel Closing Transmission Time | 200 ms + 60 ms                                         |
| U-NII Detection Bandwidth         | Minimum 80% of the 99%<br>transmission power bandwidth |

As the EUT is IP based system, the MPEG video file from NTIA website is used to stream to EUT via the Master device.

**A.1.3. Measurement Uncertainty**

| Item  | Measurement Uncertainty |
|-------|-------------------------|
| Time  | 0.70 ms                 |
| Power | 0.75 dBm                |

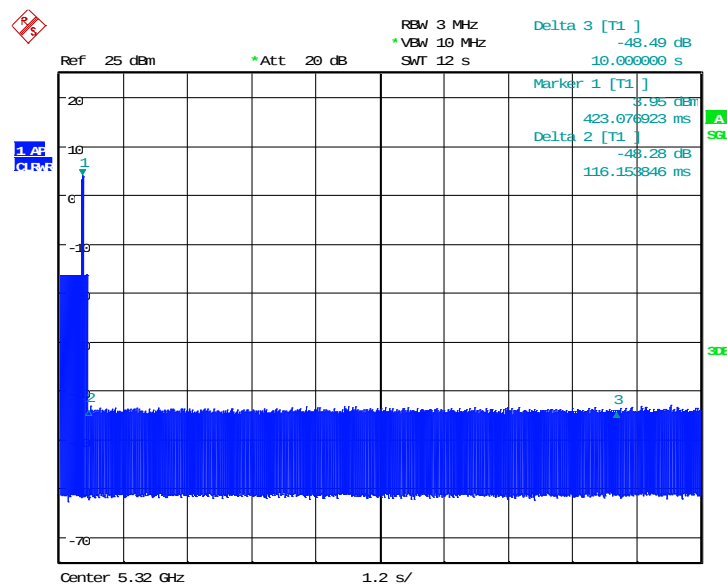
## A.2. Channel move time and channel closing transmission time

### Measurement Limit:

| Test Items                        | Limit            |
|-----------------------------------|------------------|
| channel closing transmission time | < 200 ms + 60 ms |
| Channel move time                 | < 10 s           |

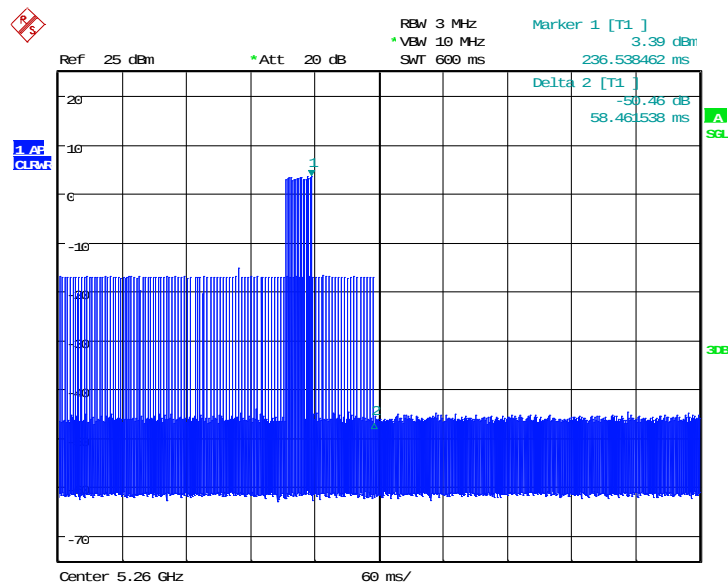
### Measurement Results:

HT20 Frequency Band: 5250MHz ~ 5350MHz



Date: 8.SEP.2015 18:05:57

The channel move time is as the figure. It shows the time of the radar and the client pulses. The figure shows that the client stops transmission within 10 seconds, and no transmissions occur after 10 seconds later of the radar burst signal.

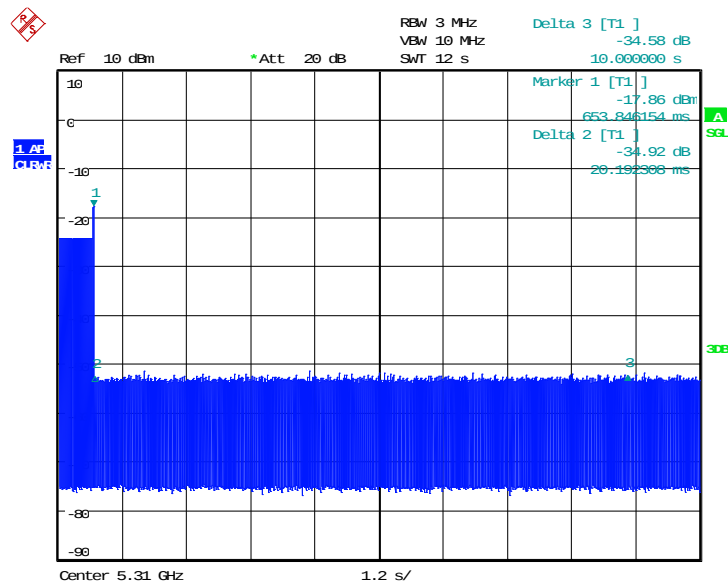


Date: 8.SEP.2015 18:07:59

The closing transmission time is as the figure, and the result is 58.46ms.

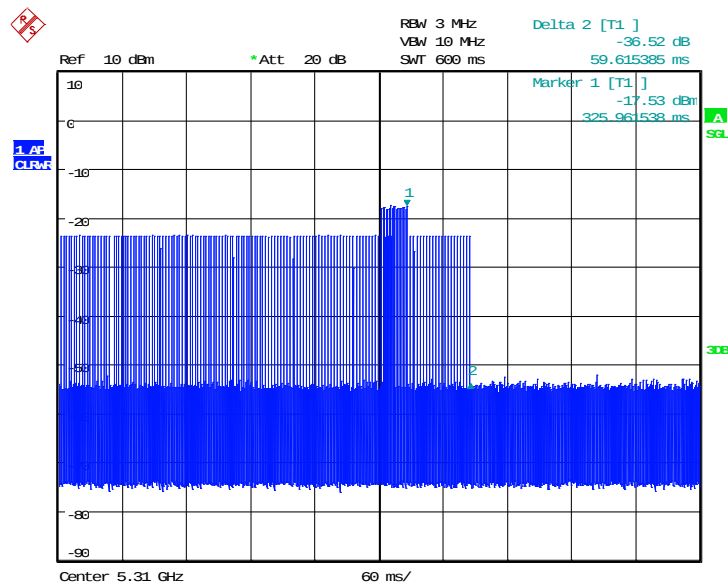
**Conclusion: PASS**

**HT40 Frequency Band: 5250MHz ~ 5350MHz**



Date: 9.SEP.2015 14:38:38

The channel move time is as the figure. It shows the time of the radar and the client pulses. The figure shows that the client stops transmission within 10 seconds, and no transmissions occur after 10 seconds later of the radar burst signal.

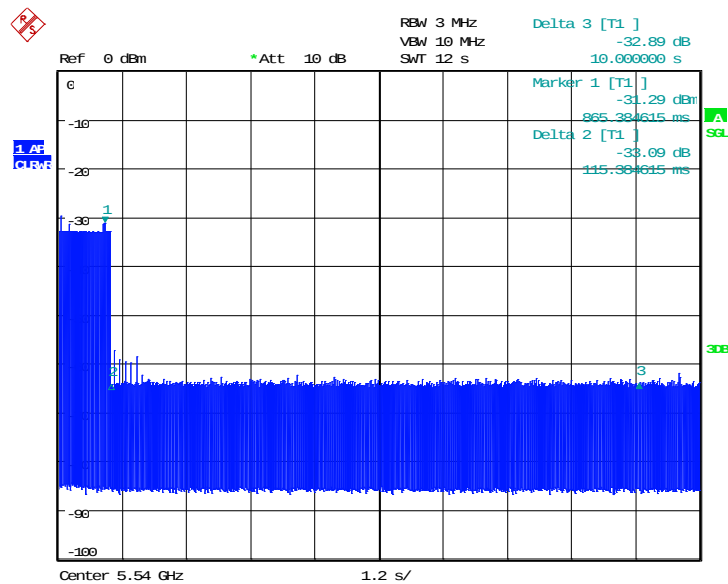


Date: 9.SEP.2015 14:36:32

The closing transmission time is as the figure, and the result is 59.62ms

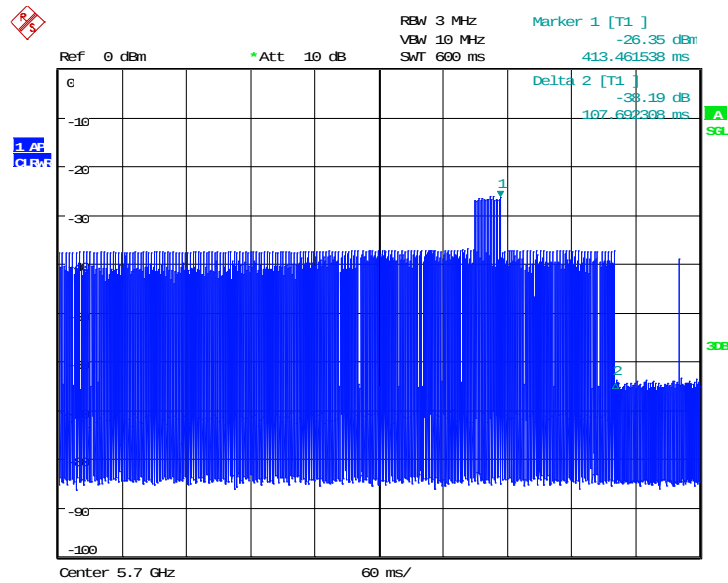
**Conclusion: PASS**

### HT20 Frequency Band 5470MHz ~ 5725MHz



Date: 8.SEP.2015 14:45:14

The channel move time is as the figure. It shows the time of the radar and the client pulses. The figure shows that the client stops transmission within 10 seconds, and no transmissions occur after 10 seconds later of the radar burst signal.

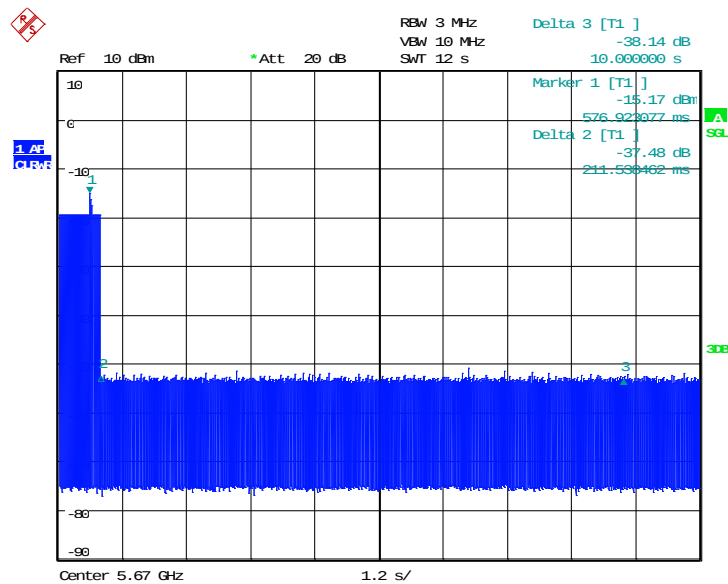


Date: 8.SEP.2015 15:07:43

The closing transmission time is as the figure, and the result is 107.69ms

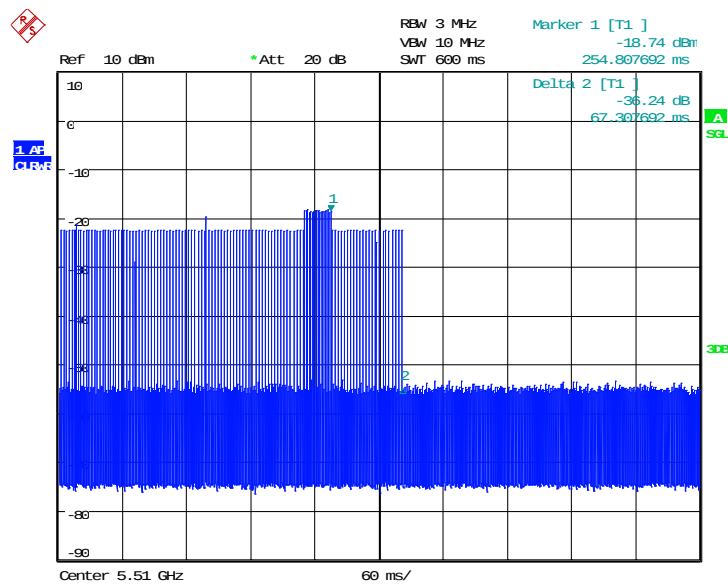
**Conclusion: PASS**

#### HT40 Frequency Band 5470MHz ~ 5725MHz



Date: 9.SEP.2015 12:19:43

The channel move time is as the figure. It shows the time of the radar and the client pulses. The figure shows that the client stops transmission within 10 seconds, and no transmissions occur after 10 seconds later of the radar burst signal.



Date: 9.SEP.2015 14:42:35

The closing transmission time is as the figure, and the result is 67.31ms

**Conclusion: PASS**

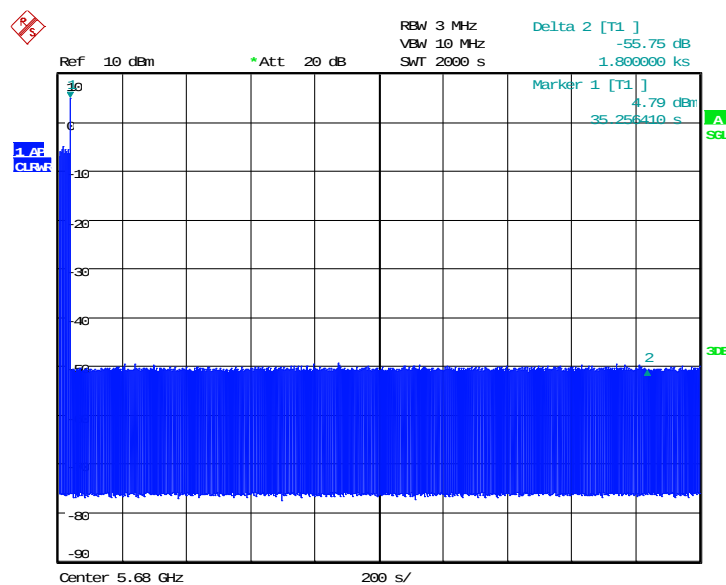
### A.3. Non-Occupancy Period

#### Measurement Limit:

| Test Items           | Limit    |
|----------------------|----------|
| Non-Occupancy Period | > 1800 s |

#### A3.1 Associated test

Associate the master and client, transmit specified stream between the master and client; monitor the analyzer on the operating frequency to make sure no beacons have been transmitted for 1800 seconds.



Date: 9.SEP.2015 15:21:59

The figure above shows that the client does not transmit any emission within 1800 seconds after getting the order of “stop transmits” from the DFS master (access point).

**Conclusion: PASS**