



TEST REPORT

No. I20N02988-DFS

Guangdong OPPO Mobile Telecommunications Corp., Ltd.

Mobile Phone

Model Name: CPH2205

with

Hardware Version: 11

Software Version: ColorOS V11.1

FCC ID: R9C-CPH2205

Issued Date: 2021-01-11

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 SAICT.

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CONTENTS

| | | |
|-----------|---|-----------|
| 1. | SUMMARY OF TEST REPORT..... | 3 |
| 1.1. | TEST ITEMS..... | 3 |
| 1.2. | TEST STANDARDS | 3 |
| 1.3. | TEST RESULT | 3 |
| 1.4. | TESTING LOCATION | 3 |
| 1.5. | PROJECT DATA | 3 |
| 1.6. | SIGNATURE | 3 |
| 2. | CLIENT INFORMATION..... | 4 |
| 2.1. | APPLICANT INFORMATION | 4 |
| 2.2. | MANUFACTURER INFORMATION | 4 |
| 3. | EQUIPMENT UNDER TEST (EUT) AND ANCILLARY EQUIPMENT(AE) | 5 |
| 3.1. | ABOUT EUT | 5 |
| 3.2. | INTERNAL IDENTIFICATION OF EUT USED DURING THE TEST | 5 |
| 3.3. | INTERNAL IDENTIFICATION OF AE USED DURING THE TEST | 5 |
| 3.4. | GENERAL DESCRIPTION..... | 5 |
| 4. | REFERENCE DOCUMENTS | 6 |
| 4.1. | DOCUMENTS SUPPLIED BY APPLICANT | 6 |
| 4.2. | REFERENCE DOCUMENTS FOR TESTING..... | 6 |
| 5. | TEST RESULTS..... | 7 |
| 5.1. | TESTING ENVIRONMENT..... | 7 |
| 5.2. | TEST RESULTS | 7 |
| 5.3. | STATEMENTS..... | 7 |
| 6. | TEST EQUIPMENTS UTILIZED | 8 |
| 7. | LABORATORY ENVIRONMENT..... | 9 |
| | ANNEX A: MEASUREMENT RESULTS..... | 10 |
| A.1. | MEASUREMENT METHOD | 10 |
| A.2. | CHANNEL MOVE TIME AND CHANNEL CLOSING TRANSMISSION TIME | 12 |
| A.3. | NON-OCCUPANCY PERIOD | 15 |
| | ANNEX B: PHOTOGRAPHS OF THE TEST SET-UP..... | 17 |

1. Summary of Test Report

1.1. Test Items

| | |
|---------------------|--|
| Description | Mobile Phone |
| Model Name | CPH2205 |
| Applicant's name | Guangdong OPPO Mobile Telecommunications Corp., Ltd. |
| Manufacturer's Name | Guangdong OPPO Mobile Telecommunications Corp., Ltd. |

1.2. Test Standards

FCC Part15-2019; FCC 06-96-2006; KDB 905462-D02

1.3. Test Result

Pass

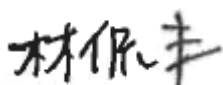
1.4. Testing Location

Address: Building G, Shenzhen International Innovation Center, No.1006 Shennan Road, Futian District, Shenzhen, Guangdong, P. R. China

1.5. Project data

Testing Start Date: 2020-11-23
Testing End Date: 2020-12-14

1.6. Signature



Lin Kanfeng
(Prepared this test report)



Tang Weisheng
(Reviewed this test report)



Zhang Bojun
(Approved this test report)



2. Client Information

2.1. Applicant Information

Company Name: Guangdong OPPO Mobile Telecommunications Corp., Ltd.
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City, Guangdong, China
Contact Person Mei XiLi
E-Mail meixili@oppo.com
Telephone: (86)76986076999
Fax: /

2.2. Manufacturer Information

Company Name: Guangdong OPPO Mobile Telecommunications Corp., Ltd.
Address: NO.18 HaiBin Road, Wusha village, Chang An Town, DongGuan
City, Guangdong, China
Contact Person Mei XiLi
E-Mail meixili@oppo.com
Telephone: (86)76986076999
Fax: /

3. Equipment Under Test (EUT) and Ancillary Equipment(AE)

3.1.About EUT

| | |
|------------------------------|---|
| Description | Mobile Phone |
| Model name | CPH2205 |
| RLAN Frequency Range | ISM Bands: 5250MHz~5350MHz; 5470MHz~5725MHz |
| RLAN Protocol | IEEE 802.11a,802.11n-HT20/40,802.11ac-VHT20/40/80 |
| Type of modulation | OFDM |
| Antenna | Integrated |
| Antenna Gain | -3dBi |
| Power Supply | 3.85V DC by Battery |
| FCC ID | R9C-CPH2205 |
| Device Type (DFS) | Client without radar detection (only support client mode) |
| Condition of EUT as received | No abnormality in appearance |

3.2.Internal Identification of EUT used during the test

| EUT ID* | IMEI | HW Version | SW Version | Receive Date |
|----------------|-----------------|-------------------|-------------------|---------------------|
| EUT1 | 866811050019317 | 11 | ColorOS V11.1 | 2020-11-23 |
| EUT2 | 866811050019119 | 11 | ColorOS V11.1 | 2020-11-23 |

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

3.3.Internal Identification of AE used during the test

| AE ID* | Description | SN |
|---------------|--------------------|-----------|
| AE1 | Battery | / |
| AE2 | Charger | / |

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

3.4.General Description

The Equipment under Test (EUT) is a model of Mobile Phone with integrated antenna and battery. It consists of normal options: Lithium Battery and Charger.

Manual and specifications of the EUT were provided to fulfil the test.

Samples undergoing test were selected by the client.



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.

| Reference | Title | Version |
|------------------|--|----------------|
| FCC Part15 | Title 47 of the Code of Federal Regulations; Chapter I Part 15 - Radio frequency devices Subpart E – UNII Devices | 2019 |
| FCC 06-96 | Revision of Parts 2 and 15 of the Commission's Rules to Permit Unlicensed National Information Infrastructure (U-NII) devices in the 5 GHz band | 2006 |
| KDB 905462 | Compliance Measurement Procedures for Unlicensed-national Information Infrastructure Devices Operating in the 5250-5350 MHz and 5470-5725 MHz Bands Incorporating Dynamic Frequency Selection | D02 |

Note: This report is only for DFS

5. Test Results

5.1. Testing Environment

Normal Temperature: 15~35°C

Relative Humidity: 20~75%

5.2. Test Results

| No | Test cases | Sub-clause of Part15E | Verdict |
|----|---|-----------------------|---------|
| 1 | Channel move time and channel closing transmission time | 15.407 (h)(2)(iii) | P |
| 2 | Non-Occupancy Period | 15.407 (h)(2) (iv) | P |

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

5.3. Statements

SAICT has evaluated the test cases requested by the applicant/manufacture as listed in section 5.2 of this report, for the EUT specified in section 3, according to the standards or reference documents listed in section 4.2.

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.

6. Test Equipments Utilized

Conducted test system

| No. | Equipment | Model | Serial Number | Manufacturer | Calibration Due date | Calibration Period |
|-----|------------------------|-----------|------------------|-----------------|----------------------|--------------------|
| 1 | Vector Signal Analyzer | FSV40 | 100903 | Rohde & Schwarz | 2021-01-15 | 1 year |
| 2 | Vector Signal General | SMU200A | 104096 | Rohde & Schwarz | 2021-12-31 | 1 year |
| 3 | Shielding Room | S81 | / | ETS-Lindgren | 2022-11-14 | 3 year |
| No. | Equipment | Model | FCC ID | Manufacturer | Calibration Due date | Calibration Period |
| 4 | Master AP | BCM94709R | QDS-BR CM1091 | BROADCOM | / | / |

7. Laboratory Environment

Measurement is performed in shielding room.

Shielded room

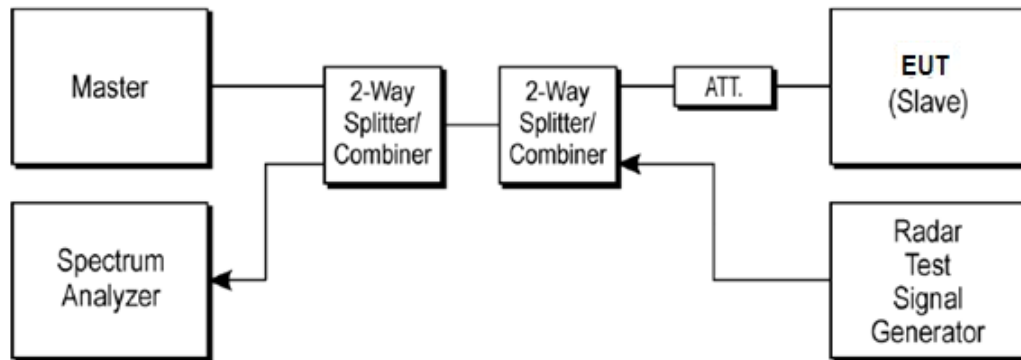
| | |
|--------------------------|---|
| Temperature | Min. = 15 °C, Max. = 35 °C |
| Relative humidity | Min. = 20 %, Max. = 75 % |
| Shielding effectiveness | 0.014 MHz - 1 MHz, > 60 dB; 1 MHz - 1000 MHz, > 90 dB. |
| Electrical insulation | > 2 MΩ |
| Ground system resistance | < 4 Ω |

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.



A.1.2. Parameters of DFS test signal

1). Interference threshold values, master or client incorporation in service monitoring. For device Power less than 23 dBm (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

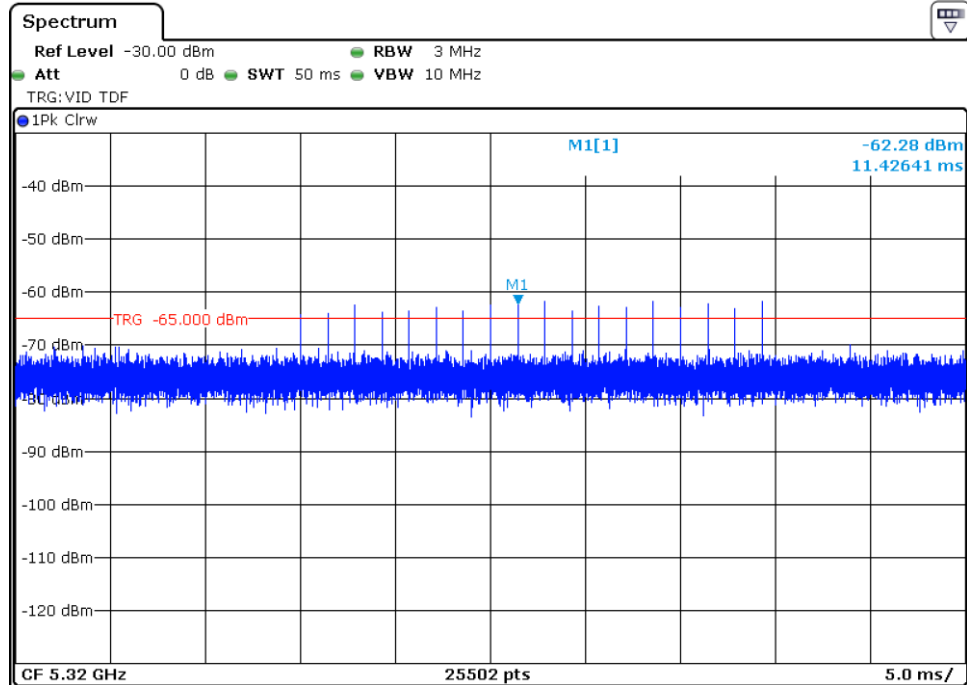
The required values are as the following table.

| 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% 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.

3). Parameters of the reference DFS test signal

| Pulse width W (μ s) | Pulse repetition frequency PRF (PPS) | Pulses per burst (PPB) |
|--------------------------|--------------------------------------|------------------------|
| 1 | 700 | 18 |



Radar Signal (Type 0)

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

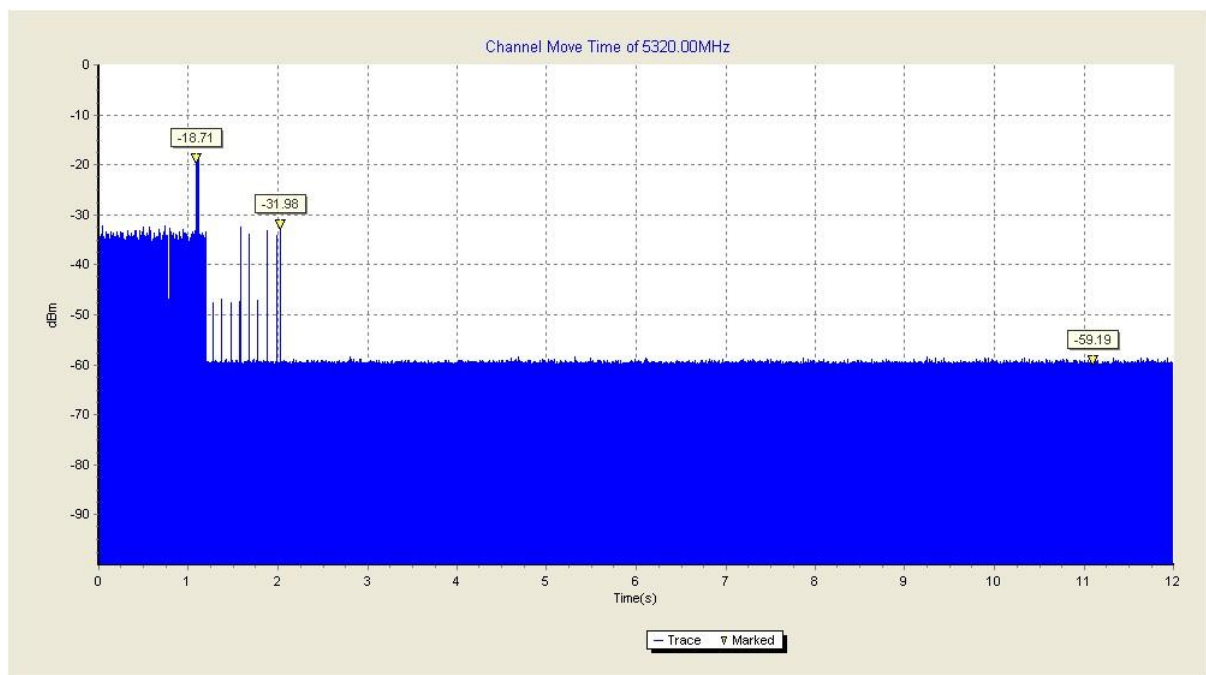


Fig.1 channel move time (HT20 Frequency Band: 5250MHz ~ 5350MHz)

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.

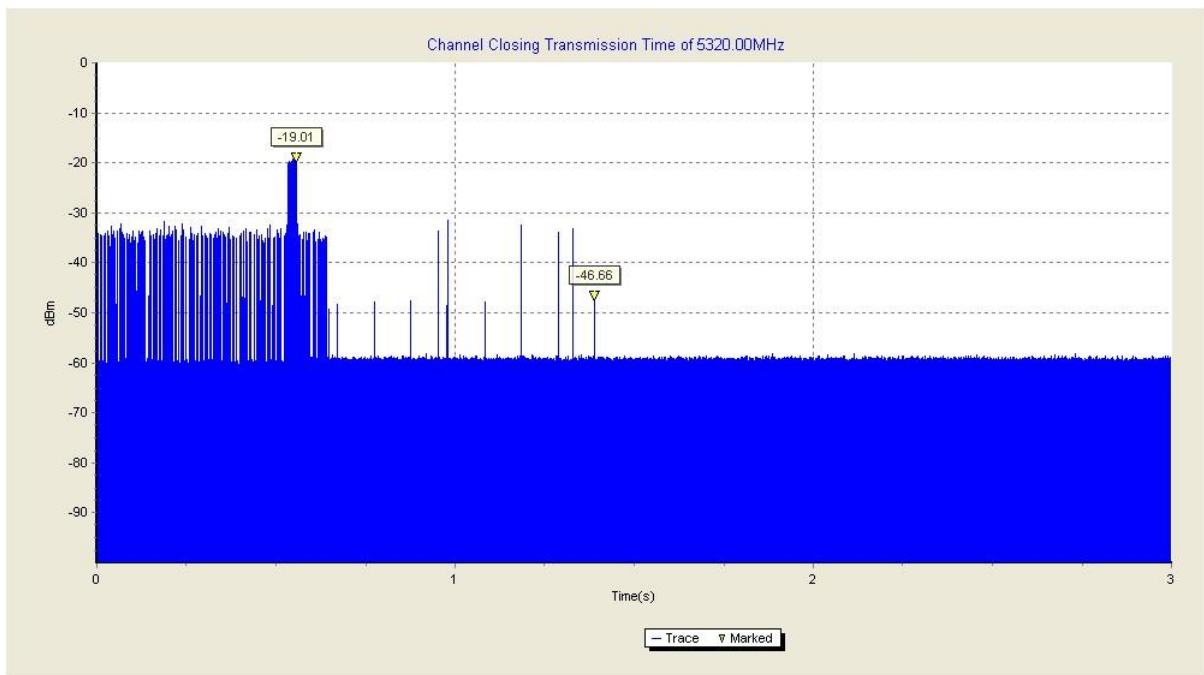


Fig.2 channel closing transmission time (HT20 Frequency Band: 5250MHz ~ 5350MHz)

The closing transmission time is as the figure, and the result is 87ms.

HT80 Frequency Band: 5470MHz ~ 5725MHz

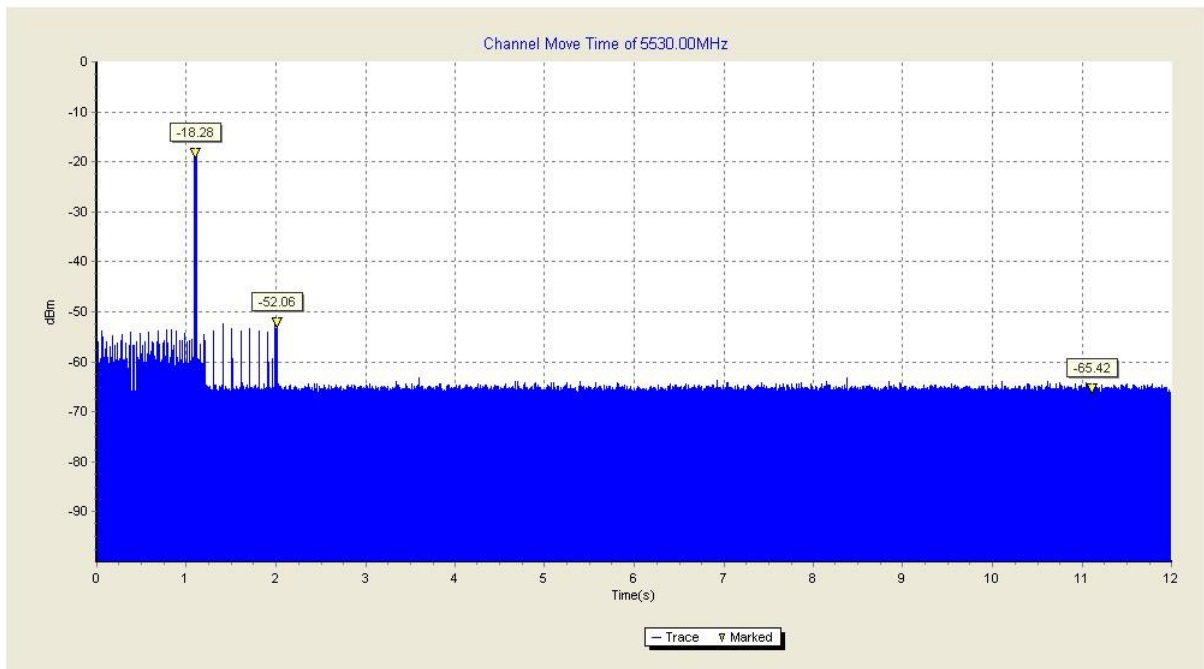


Fig.3 channel move time (HT80 Frequency Band: 5470MHz ~ 5725MHz)

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.

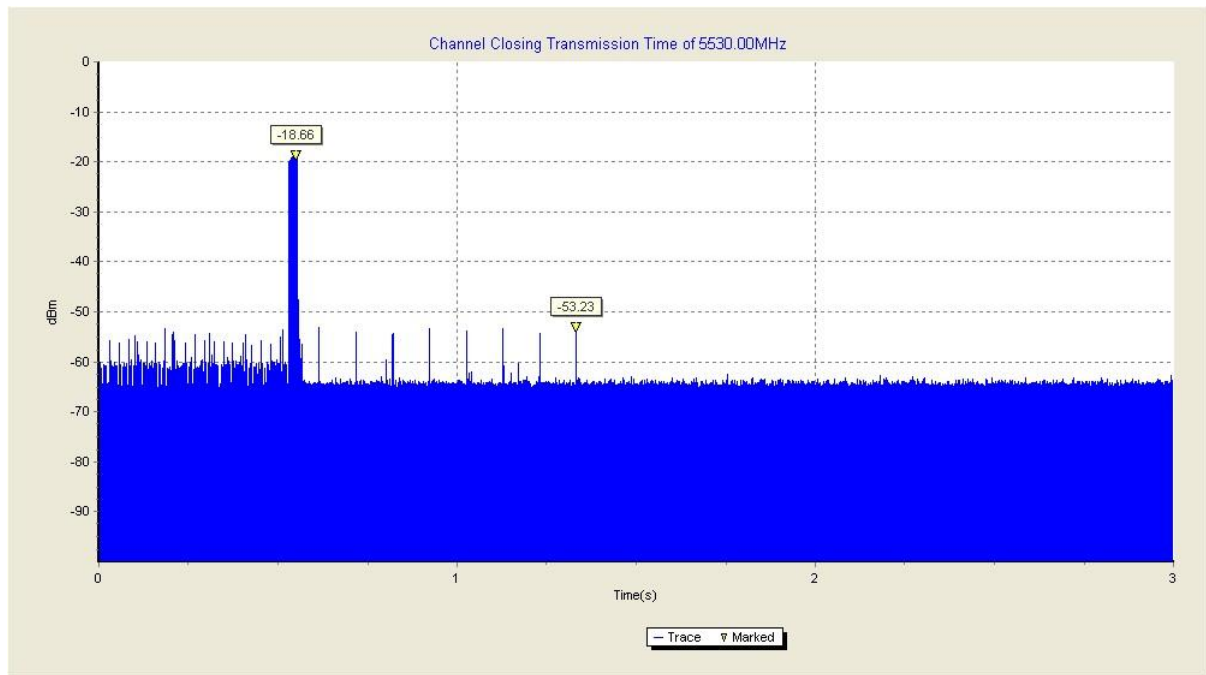


Fig.4 channel closing transmission time (HT80 Frequency Band: 5470MHz ~ 5725MHz)

The closing transmission time is as the figure, and the result is 17ms.

Conclusion: PASS

A.3. Non-Occupancy Period

Measurement Limit:

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

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.

HT20 Frequency Band: 5250MHz ~ 5350MHz

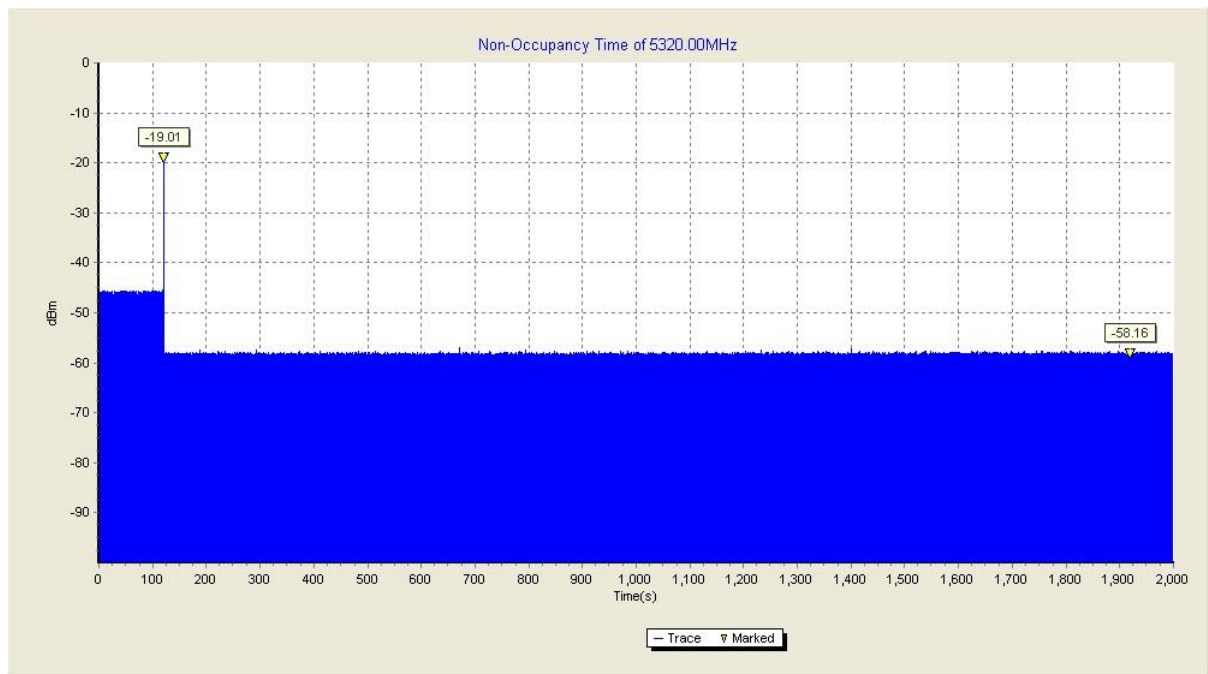


Fig.5 Non-Occupancy Period (HT20 Frequency Band: 5250MHz ~ 5350MHz)

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).

HT80 Frequency Band: 5470MHz ~ 5725MHz

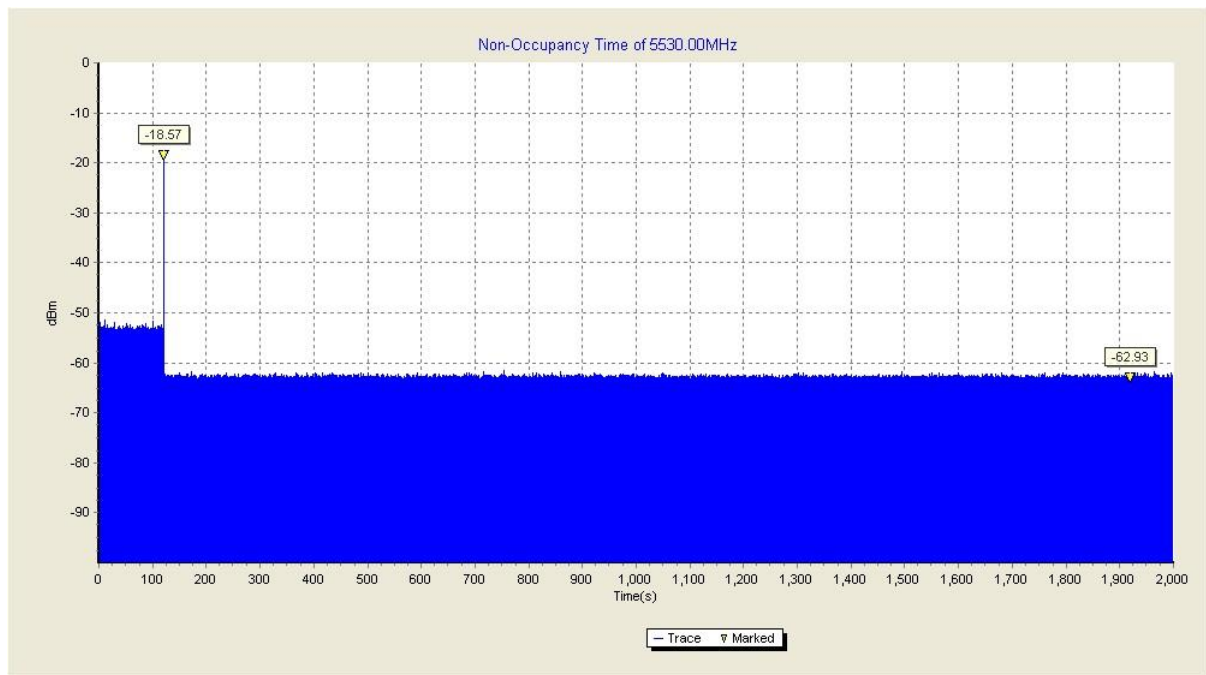


Fig.6 Non-Occupancy Period (HT80 Frequency Band: 5470MHz ~ 5725MHz)

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

ANNEX B: PHOTOGRAPHS OF THE TEST SET-UP

Layout of Conducted Test



*** END OF REPORT BODY ***