



FCC PART 15 TEST REPORT No. I15Z43176-SRD01

for

Huawei Technologies Co., Ltd.

Smart Phone

Model Name: EVA-L19

FCC ID: QISEVA-L19

with

Hardware Version: HL1UEVAM

Software Version: A168-L09C900B072

Issued Date: 2016-02-17



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.

Test Laboratory:

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REPORT HISTORY

Report Number	Revision	Description	Issue Date
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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℃
Extreme Temperature: 0/+35℃
Relative Humidity: 20-75%

1.3. Project data

Testing Start Date: 2015-12-31
Testing End Date: 2016-02-17

1.4. Signature

Xu Zhongfei
(Prepared this test report)

Li Zhibin
(Reviewed this test report)

Lv Songdong
(Approved this test report)



2. CLIENT INFORMATION

2.1. Applicant Information

Company Name: Huawei Technologies Co., Ltd.
Address: Administration Building, Headquarters of Huawei Technologies Co.,
Ltd., Bantian, Longgang District, Shenzhen 518129, P.R.China
City: Shenzhen
Postal Code: 518129
Country: China
Telephone: 18121057839/021-61752571
Fax: /

2.2. Manufacturer Information

Company Name: Huawei Technologies Co., Ltd.
Address: Administration Building, Headquarters of Huawei Technologies Co.,
Ltd., Bantian, Longgang District, Shenzhen 518129, P.R.China
City: Shenzhen
Postal Code: /
Country: /
Telephone: /
Fax: /



3. EQUIPMENT UNDER TEST (EUT) AND ANCILLARY

EQUIPMENT(AE)

3.1. About EUT

Description	Smart Phone
Model name	EVA-L19
FCC ID	QISEVA-L19
WLAN Frequency Range	ISM Band: -5250MHz~5350MHz -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

EUT ID*	S/N	HW Version	SW Version
EUT1	004401725302141	HL1UEVAM	A168-L09C900B072

*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 Smart Phone mobile 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 Part 15 - Radio frequency devices Subpart E – UNII Devices	2014
KDB 443999 D01	Interim plans to approve U-NII devices operating in the 5470-5725MHZ band with radar detection and DFS capabilities.	2015
KDB 905462 D07	OVERVIEW OF REVISED RULES FOR U-NII DEVICES	2015

LABORATORY ENVIRONMENT

Measurement is performed in shielding room.

5. SUMMARY OF TEST RESULTS

5.1. 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)	P
Non-Occupancy Period	15.407 (h)(2) (iv)	P
DFS Detection Threshold	15.407 (h)(2)	P
DFS Detection Bandwidth	FCC Order, ET Docket No.03-122 (FCC 06-96) 5.3	P

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

5.2. Statements

CTTL has evaluated the test cases requested by the client/manufacturer 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

6. TEST EQUIPMENTS UTILIZED

Conducted test system

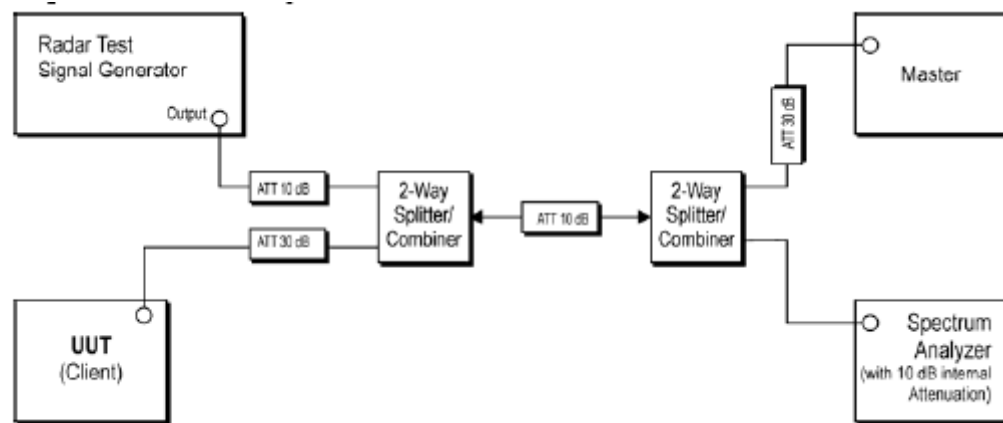
No.	Equipment	Model	Serial Number	Manufacturer	Calibration Date	Calibration Due Date
1	Vector Signal Analyzer	FSQ40	200089	Rohde & Schwarz	2015-07-19	2016-07-19
2	Vector Signal General	SMU200A	103752	Rohde & Schwarz	2015-07-19	2016-07-19
3	Shielding Room	S81	/	ETS-Lindgren	/	/

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% transmission power bandwidth

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

A.1.3. Measurement Uncertainty

Item	Measurement Uncertainty
Time	0.70 ms
Power	0.75 dBm

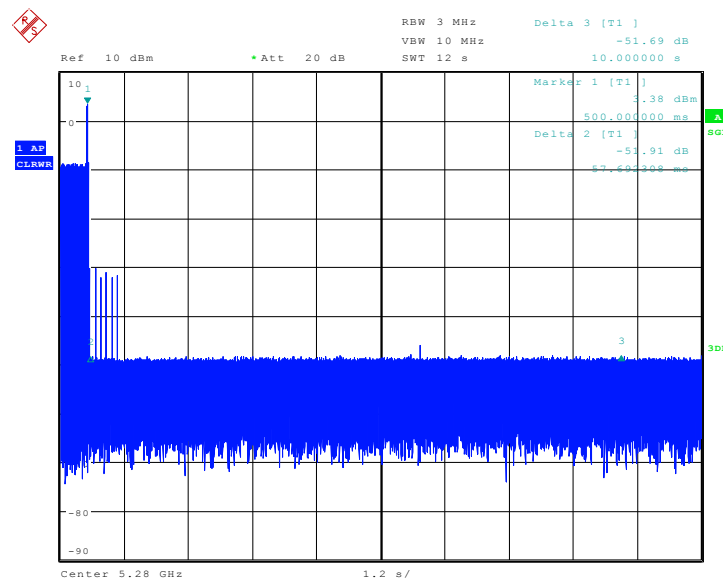
A.2. Channel move time and channel closing transmission time

Measurement Limit:

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

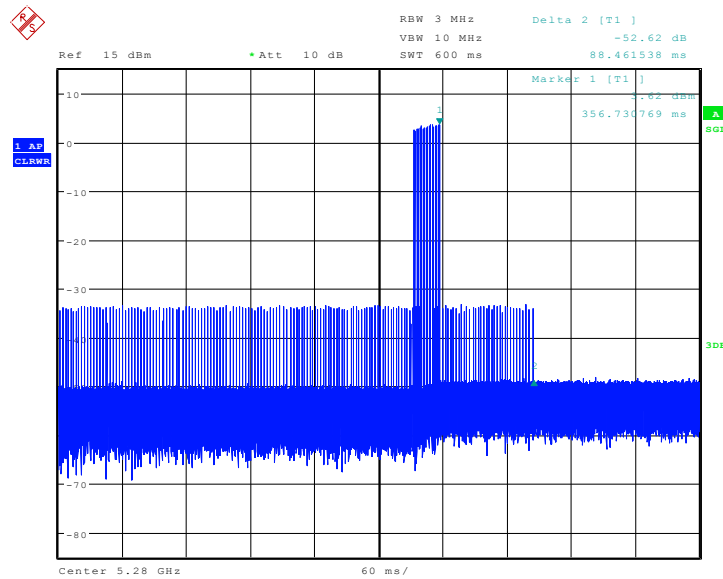
Measurement Results:

HT20 Frequency Band: 5250MHz ~ 5350MHz



Date: 25.MAR.2003 06:44:57

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.

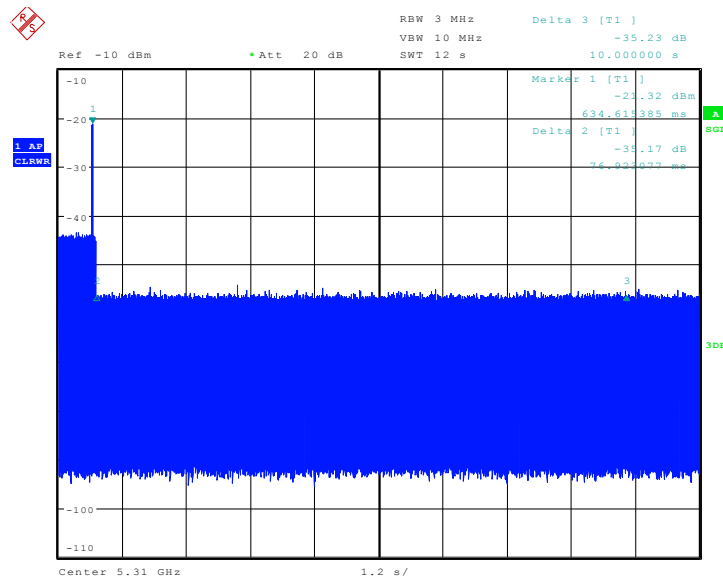


Date: 25.MAR.2003 22:19:33

The closing transmission time is as the figure, and the result is 88.46ms.

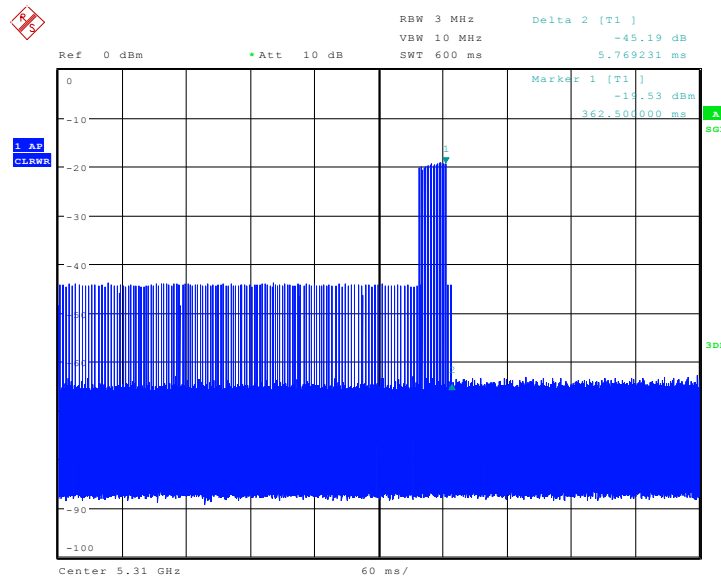
Conclusion: PASS

HT40 Frequency Band: 5250MHz ~ 5350MHz



Date: 28.MAR.2003 04:59:59

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.

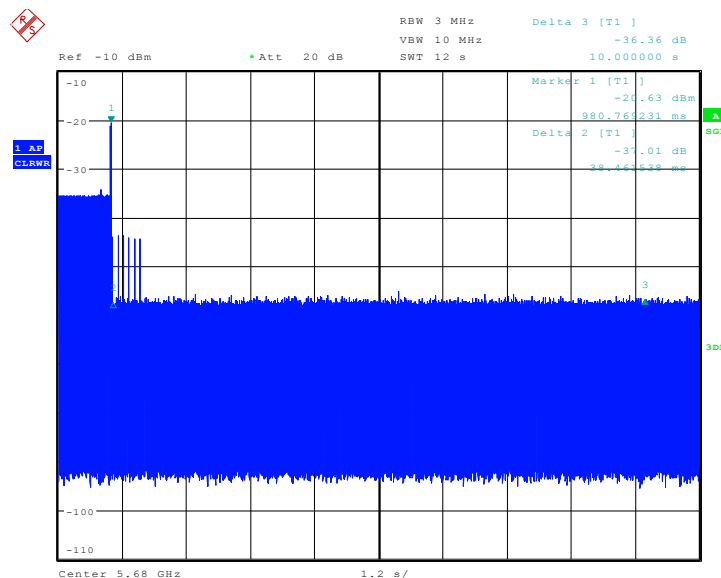


Date: 25.MAR.2003 22:22:32

The closing transmission time is as the figure, and the result is 5.77ms

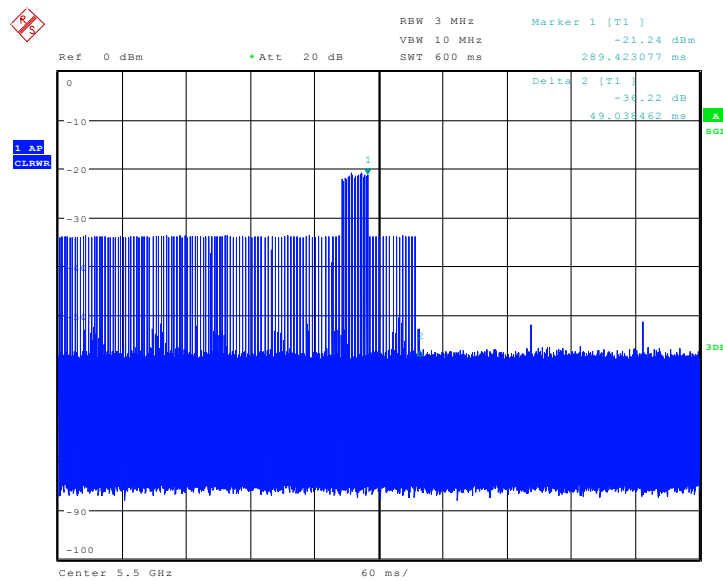
Conclusion: PASS

HT20 Frequency Band 5470MHz ~ 5725MHz



Date: 28.MAR.2003 02:21:06

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.

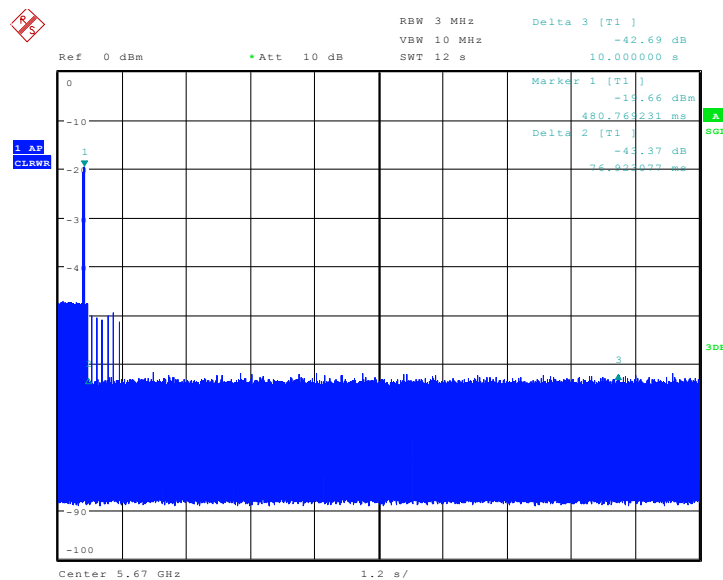


Date: 28.MAR.2003 03:09:50

The closing transmission time is as the figure, and the result is 49.04ms

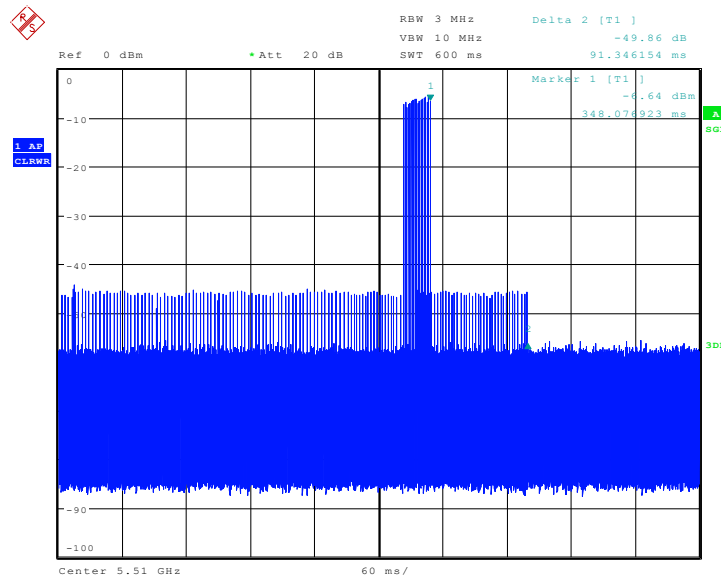
Conclusion: PASS

HT40 Frequency Band 5470MHz ~ 5725MHz



Date: 25.MAR.2003 22:04:18

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.

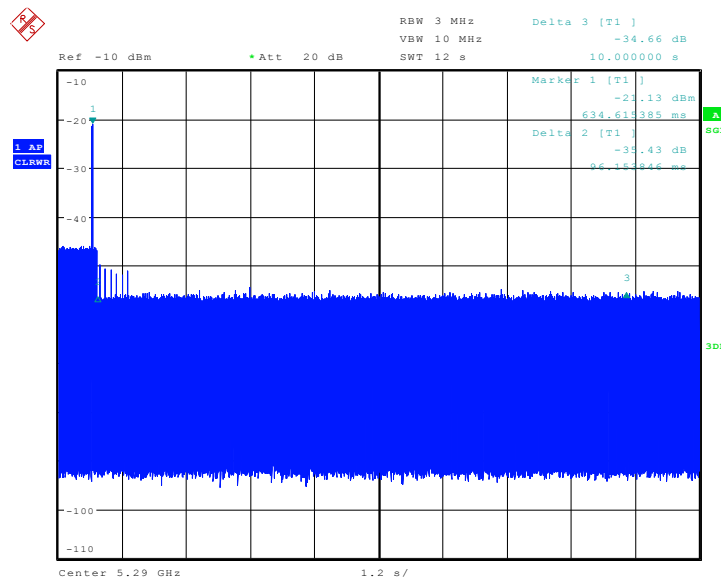


Date: 27.MAR.2003 21:25:02

The closing transmission time is as the figure, and the result is 91.35ms

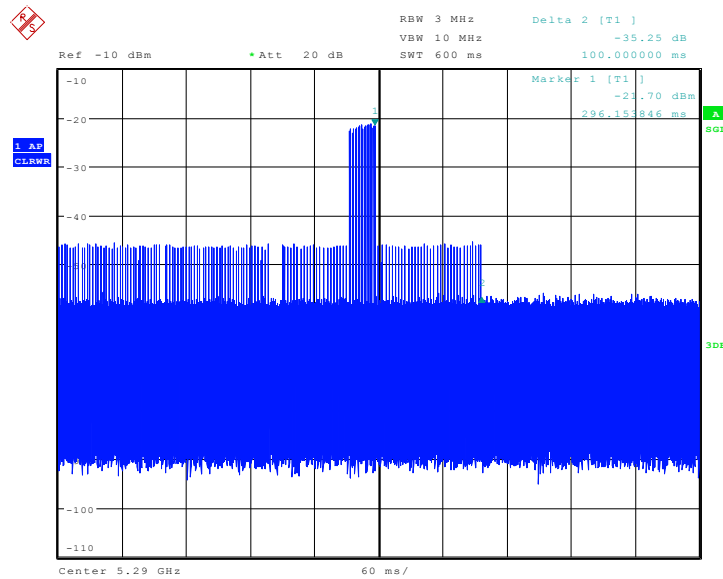
Conclusion: PASS

HT80 Frequency Band: 5250MHz ~ 5350MHz



Date: 28.MAR.2003 02:10:02

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.

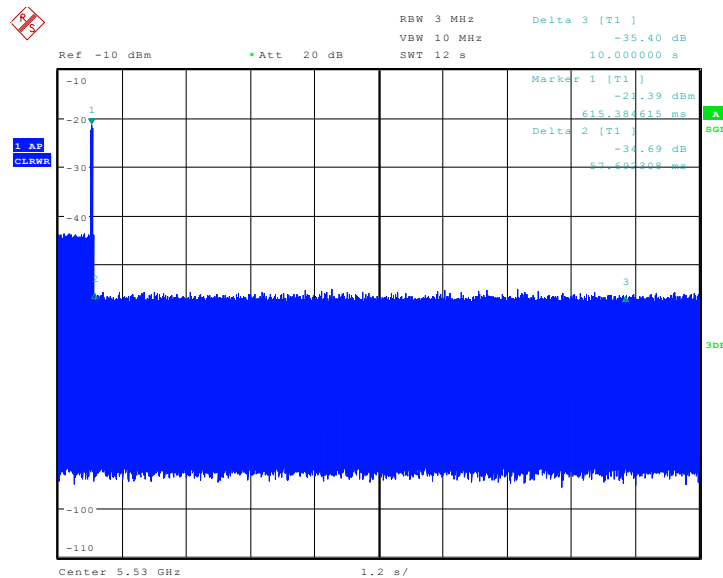


Date: 28.MAR.2003 03:20:15

The closing transmission time is as the figure, and the result is 100.00ms.

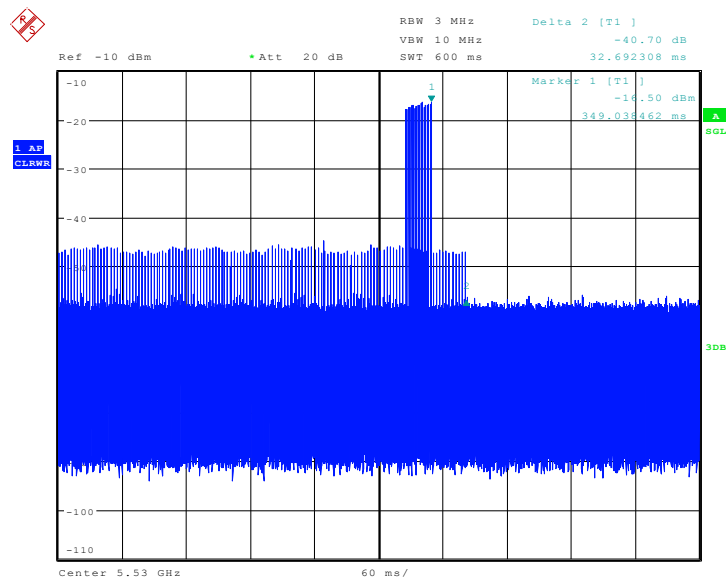
Conclusion: PASS

HT80 Frequency Band 5470MHz ~ 5725MHz



Date: 28.MAR.2003 03:07:20

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: 28.MAR.2003 04:35:54

The closing transmission time is as the figure, and the result is 32.69ms

Conclusion: PASS

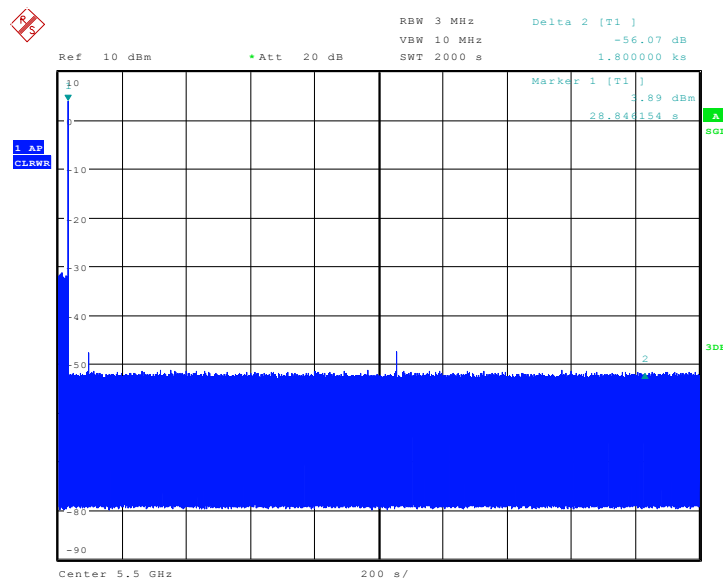
A.3. Non-Occupancy Period

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: 26.MAR.2003 00:16:05

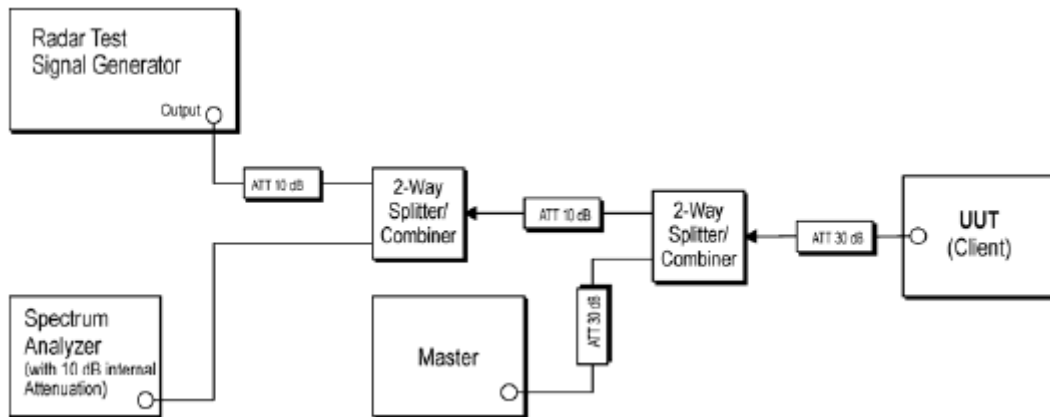
The figure above shows that the client does not transmit any emission within 1800 seconds after getting the order of “stop transmits” from the DFS master (access point).

Conclusion: PASS

A.4. DFS Detection ThresholdA.4. Measurement Method

A.4.1. Conducted Measurements

The below figure shows the DFS setup, where the EUT is a WLAN device operating in slave with detection function. This setup also contains a device operating in master mode. The radar test signals are injected into the client 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.4.2. Parameters of DFS test signal

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

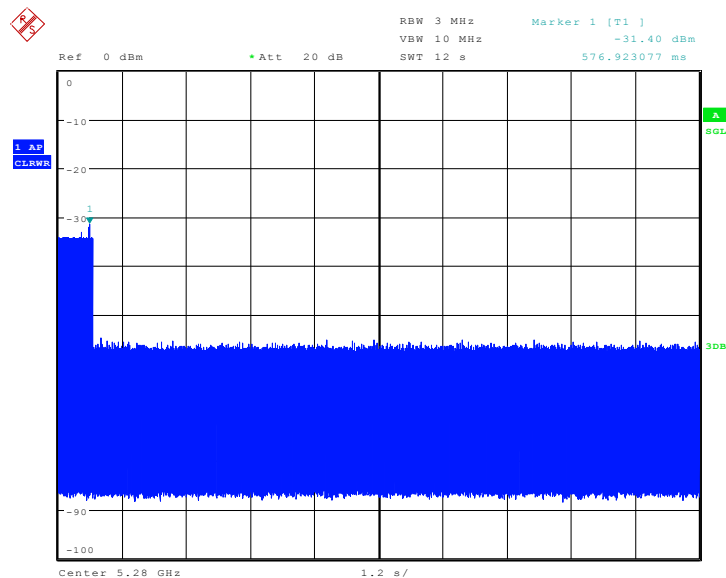
As the EUT is IP based system, the MPEG video file from NTIA website is used to steam to EUT via the Master device.

A.4.3. Measurement Uncertainty

Item	Measurement Uncertainty
Time	0.70 ms
Power	0.75 dBm

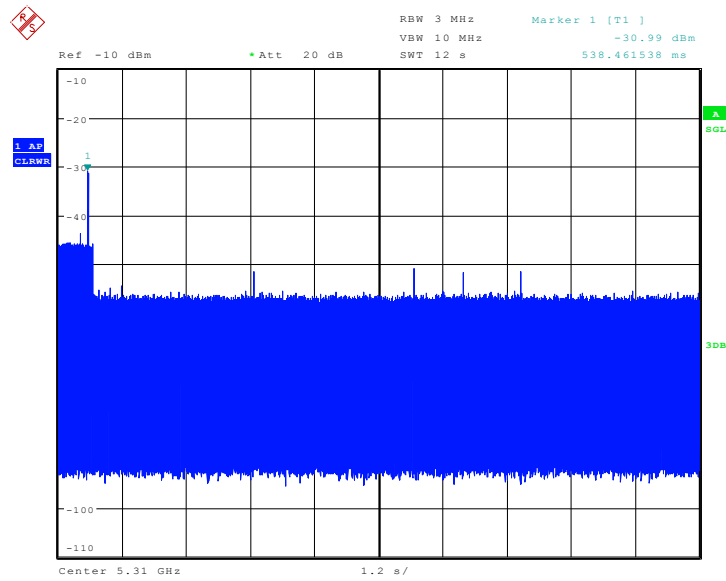
A.4.4. Measurement results

HT20 Frequency Band Frequency Band :5250MHz ~ 5350MHz



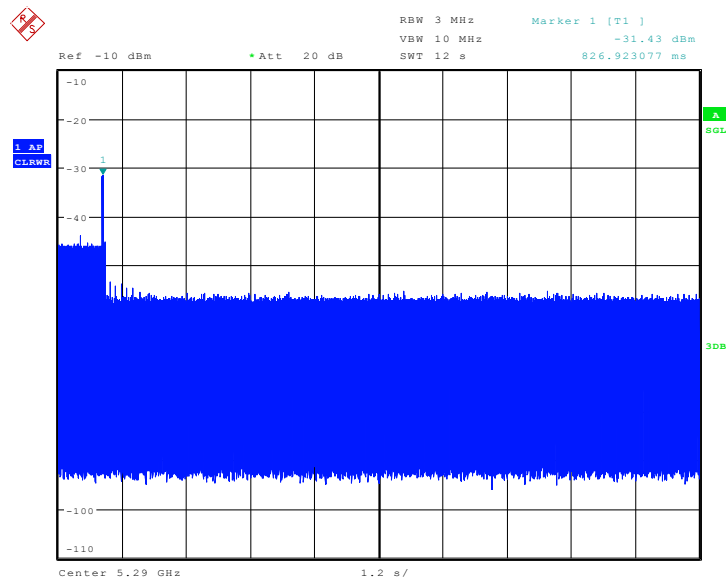
Date: 27.MAR.2003 21:33:01

HT40 Frequency Band Frequency Band: 5250MHz ~ 5350MHz



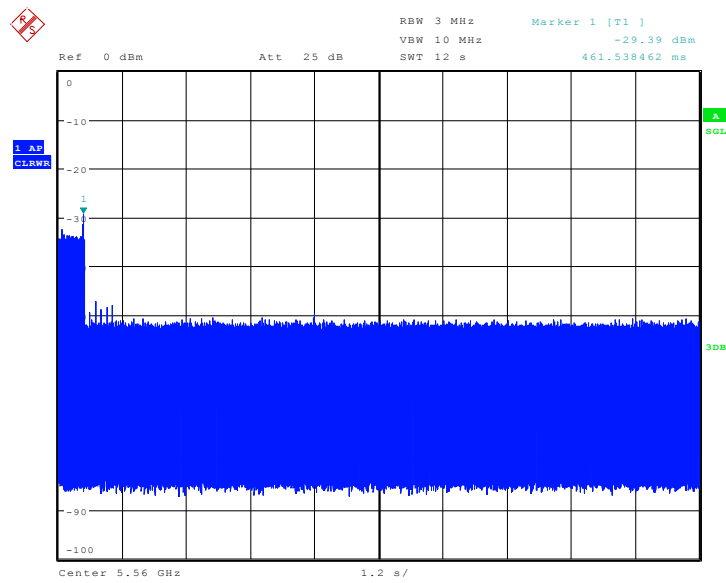
Date: 27.MAR.2003 21:35:26

HT80 Frequency Band Frequency Band :5250MHz ~ 5350MHz



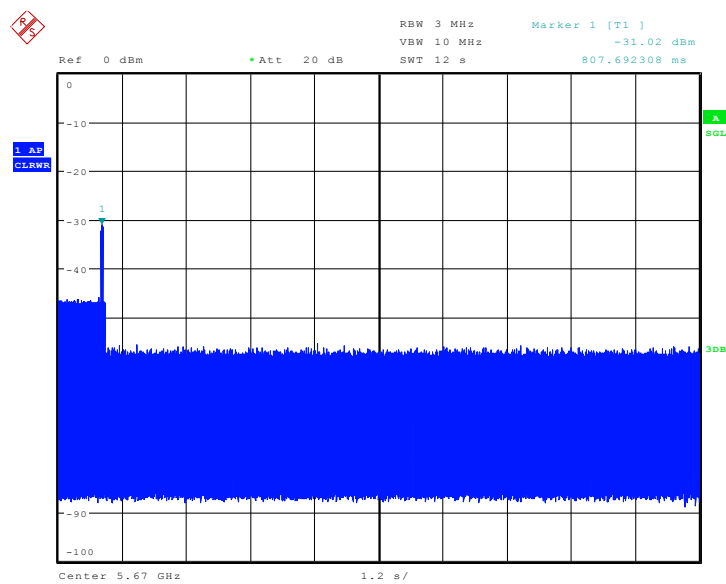
Date: 28.MAR.2003 04:20:58

HT20 Frequency Band Frequency Band :5470MHz ~ 5725MHz



Date: 27.MAR.2003 20:58:51

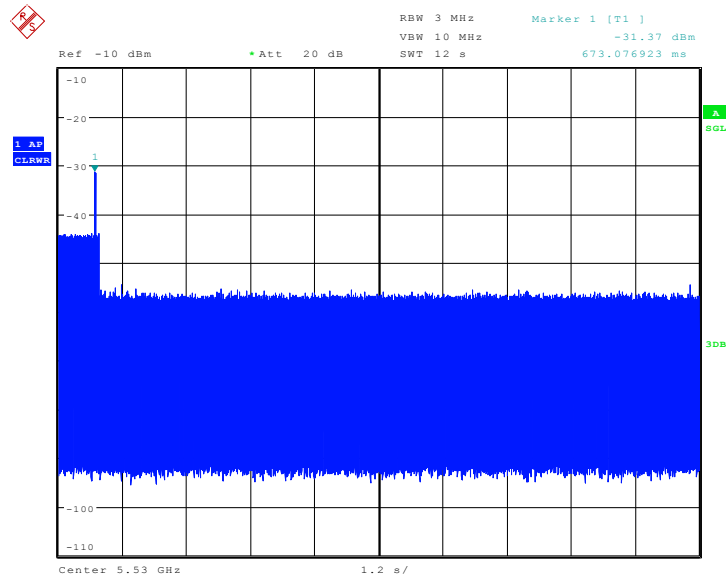
HT40 Frequency Band Frequency Band: 5470MHz ~ 5725MHz



Date: 27.MAR.2003 21:13:46



HT80 Frequency Band Frequency Band: 5470MHz ~ 5725MHz



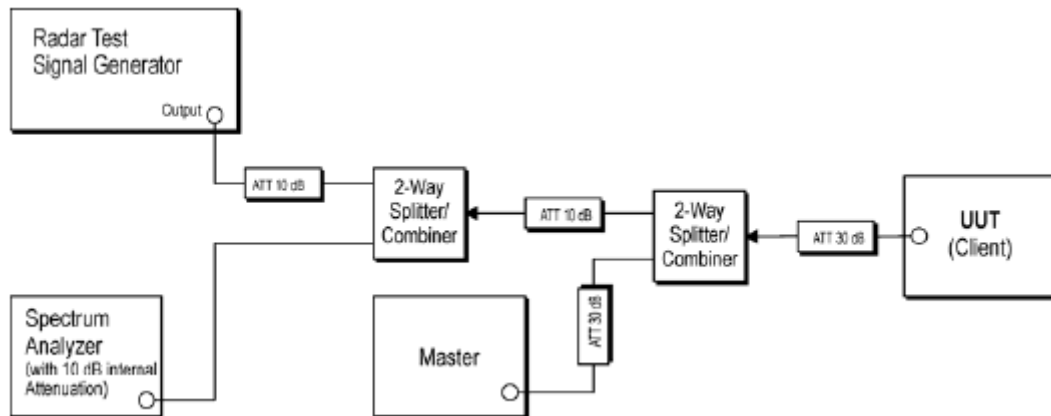
Date: 28.MAR.2003 04:40:37

A.5. DFS Detection Bandwidth

A.5. Measurement Method

A.5.1. Conducted Measurements

The below figure shows the DFS setup, where the EUT is a WLAN device operating in slave with detection function. This setup also contains a device operating in master mode. The radar test signals are injected into the client 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.5.2. 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.

2) Use the radar type 1.

Item	Limit
<i>U-NII Detection Bandwidth</i>	Minimum 80% of the UNII 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.

A.5.3. Measurement Uncertainty

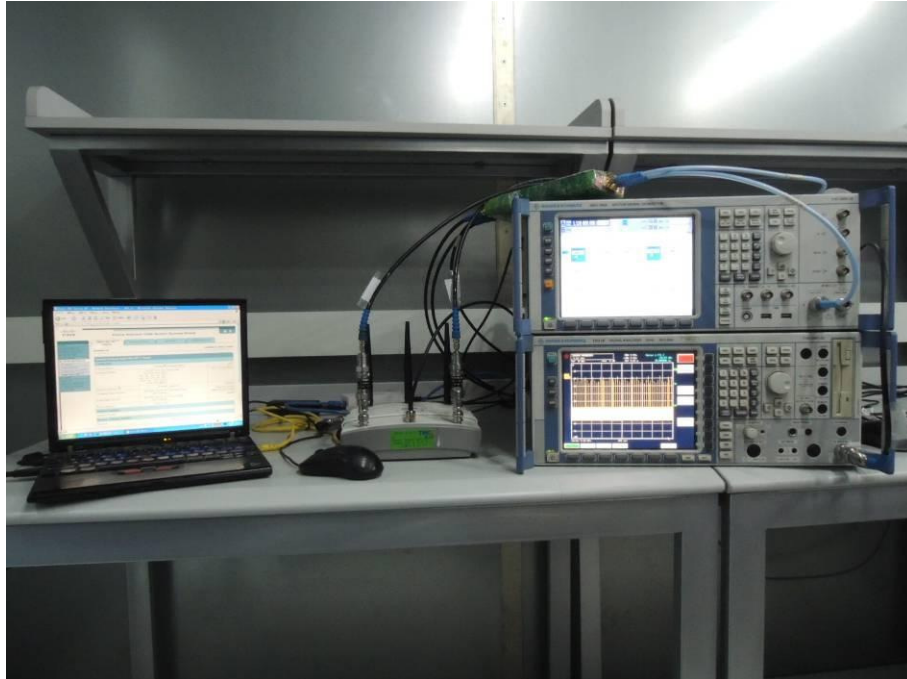
Item	Measurement Uncertainty
Time	0.70 ms
Power	0.75 dBm

A.5.4. Measurement results

116 channel	Radar type	Detection threshold	Minimum Percentage of Successful Detection	Minimum Trials	Test type	Test result	P
	1(test A)	-62	80%	30	in server monitor	97%	PASS

ANNEX B: PHOTOGRAPHS OF THE TEST SET-UP

Layout of Conducted Test



*** END OF REPORT BODY ***