Full

TEST REPORT

No. I18D00122-SRD08

For

Client	:	**Mobiwire SAS**
Production	:	**4G Smartphone**
Model Name	:	**MobiWire Huritt, Altice S61**
FCC ID	:	**QPN-S61**
Hardware Version:		**V01**
Software Version:		**VQ551-EH5511**
Issued date:		**2018-08-30**

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 ECIT Shanghai.

Test Laboratory:

ECIT Shanghai, East China Institute of Telecommunications

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Revision Version

Report Number	Revision	Date	Memo
I18D00122-SRD08	00	2018-08-30	Initial creation of test report

CONTENTS

1. Test Laboratory

1.1. Testing Location

Company Name:	ECIT Shanghai, East China Institute of Telecommunications
Address:	7-8F, G Area, No. 668, Beijing East Road, Huangpu District, Shanghai, P. R. China
Postal Code:	200001
Telephone:	(+86)-021-63843300
Fax:	(+86)-021-63843301

1.2. Testing Environment

Normal Temperature:	15-35℃
Extreme Temperature:	-30/+50℃
Relative Humidity:	20-75%

1.3. Project data
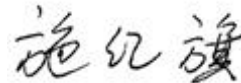
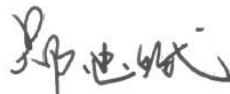| Project Leader:	Yu Anlu
Testing Start Date:	2018-07-14
Testing End Date:	2018-08-17

1.4. Signature

Yang Dejun
(Prepared this test report)

Shi Hongqi
(Reviewed this test report)

Zheng Zhongbin
Director of the laboratory
(Approved this test report)

2. Client Information

2.1. Applicant Information

Company Name:	Mobiwire SAS
Address:	79 AVENUE FRANCOIS ARAGO 92017 NANTERRE CEDEX France.
Postcode:	France 92017
Telephone:	+86 574 59555707

2.2. Manufacturer Information

Company Name:	Mobiwire SAS
Address:	79 AVENUE FRANCOIS ARAGO 92017 NANTERRE CEDEX France.
Postcode:	France 92017
Telephone:	+86 574 59555707

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

3.1. About EUT

EUT Description	4G Smartphone
Model name	MobiWire Huritt, Altice S61
WLAN Frequency Range	ISM Bands: 5150MHz~5350MHz 5470MHz~5725MHz 5725MHz~5850MHz
EUT Modes of Modulation	802.11a, 802.11n(HT20), 802.11n(HT40)
WLAN type of modulation	OFDM
Operating Mode	Slave
Extreme Temperature	-30/+50℃
Nominal Voltage	3.85V
Extreme High Voltage	4.4V
Extreme Low Voltage	3.6V

Note: Photographs of EUT are shown in ANNEX A of this test report.

3.2. Internal Identification of EUT used during the test

EUT ID*	Model Name	SN or IMEI	HW Version	SW Version	Date of receipt
N04	MobiWire Huritt, Altice S61	N/A	V01	VQ551-EH5511	2018-07-05

*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	RF cable	---
AE2	---	---

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

4. Reference Documents

4.1. 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	2017
ANSI 63.10	Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz	2013
UNII: KDB 789033	Information Infrastructure (U-NII) Devices - Part 15, Subpart E	2017
KDB905462	COMPLIANCE MEASUREMENT PROCEDURES FOR UNLICENSED-NATIONAL INFORMATION INFRASTRUCTURE DEVICES OPERATING IN THE 5250-5350 MHz AND 5470-5725 MHz BANDS INCORPORATING DYNAMIC FREQUENCY SELECTION	2016

5. Summary of Test Results

A brief summary of the tests carried out is shown as following.

SUMMARY OF MEASUREMENT RESULTS	Sub-clause of Part15E	Sub-clause of IC	Verdict
DFS	15.407	/	**P**

 Please refer to section 6 for detail.

 Terms used in Verdict column

P	Pass, the EUT complies with the essential requirements in the standard.
NP	Not Perform, the test was not performed by ECIT.
NA	Not Applicable, the test was not applicable.
F	Fail, the EUT does not comply with the essential requirements in the standard.

Test Conditions

Tnom	Normal temperature
Tmin	Low Temperature
Tmax	High Temperature
Vnom	Normal Voltage
Vmin	Low Voltage
Vmax	High Voltage
Hnom	Norm Humidity
Anom	Norm Air Pressure

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

Temperature	Tnom	25℃
Voltage	Vnom	3.85V
Humidity	Hnom	48%

5.1. Notes

All reported tests were carried out on a sample equipment to demonstrate limited compliance with section 3.

The test results of this test report relate exclusively to the item(s) tested as specified in section 5.

5.2. Statements

The MobiWire Huritt, Altice S61, supporting GSM/GPRS/EDGE/WCDMA/HSDPA/HSUPA/LTE/BT/BLE/WIFI, manufactured by Mobiwire SAS, which is a new product for testing. In this report, we test all the cases except the RSE data, and the RSE data please refer to Report No: C180816R01-RPW1, which was prepared by Compliance Certification Service Inc Kun Shan Laboratory.

ECIT has verified that the compliance of the tested device specified in section 5 of this test report is successfully evaluated according to the procedure and test methods as defined in type certification requirement listed in section 5 of this test report.

6. Test result

6.1. DFS

Radar Waveform Calibration Procedure

The Interference Radar Detection Threshold Level is － 64dBm or － 62dBm + 0 [dBi] + 1 dB that had been taken into account the output power range and antenna gain. The above equipment setup was used to calibrate the conducted Radar Waveform. A vector signal generator was utilized to establish the test signal level for each radar type. During this process there were replace 50ohm terminal form Master and Client device and no transmissions by either the Master or Client Device. The spectrum analyzer was switched to the zero span (Time Domain) at the frequency of the Radar Waveform generator. Peak detection was used. The spectrum analyzer resolution bandwidth (RBW) and video bandwidth (VBW) were set to at least 3MHz. The vector signal generator amplitude was set so that the power level measured at the spectrum analyzer was － 64dBm or － 62dBm + 0 [dBi] + 1 dB. Capture the spectrum analyzer plots on short pulse radar types, long pulse radar type and hopping radar waveform.

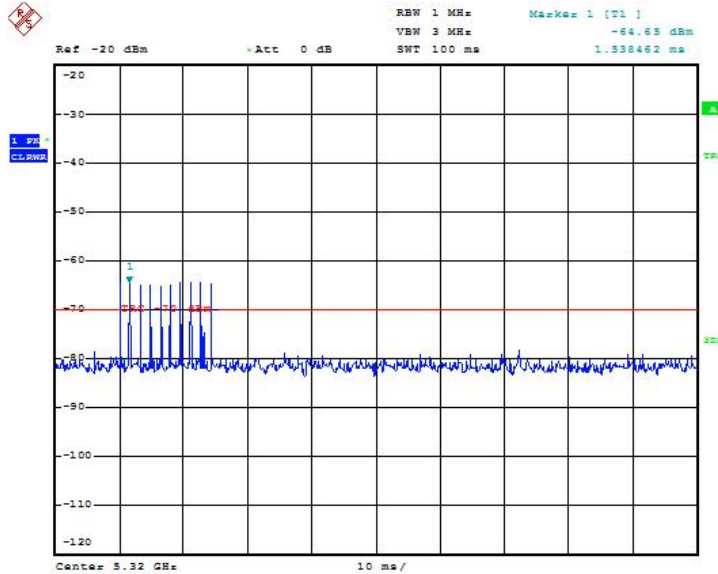Central Frequency of Calibration:

Bandwidth 20MHz: 5320MHz

Radar Waveform Calibration Result
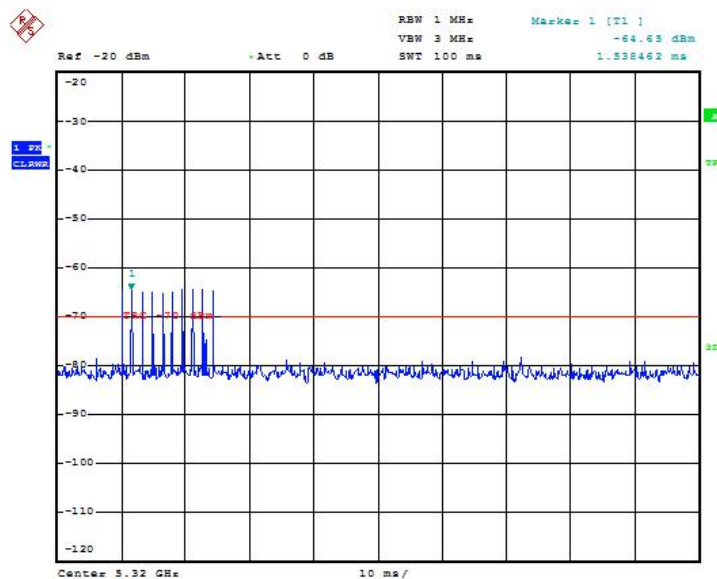

5320MHz,Radar 0

Bandwidth 20MHz: 5500MHz

Radar Waveform Calibration Result

RBW	1 MHz	Marker 1 [T1]	
VBW	3 MHz		-64.65 dBm
SWT	100 ms		1.538462 ms

5500MHz,Radar 0

Measurement Method:

The measurement is made according to KDB 905462 D03 (a) and (b).

The below figure shows the DFS setup, where the EUT is a RLAN 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.
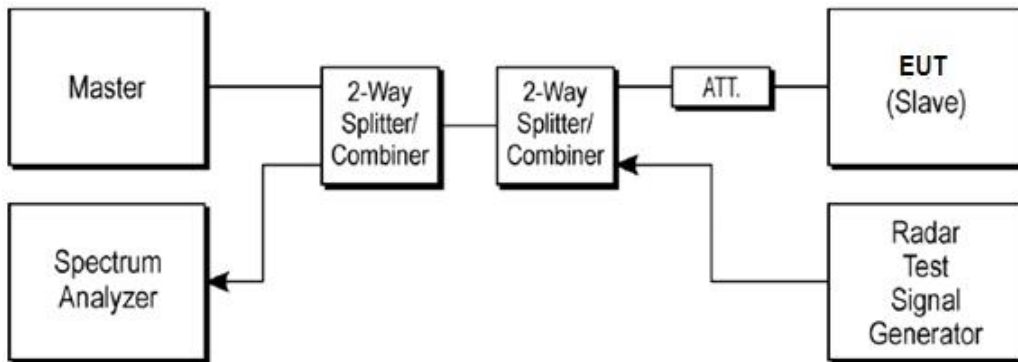

Testing Process:

a)　One frequency will be chosen from the Operating Channels of the UUT within the 5250-5350 MHz or 5470-5725 MHz bands.　For 802.11 devices, the test frequency must contain control signals.　This can be verified by disabling channel loading and monitoring the spectrum analyzer.　If no control signals are detected, another frequency must be selected within the emission bandwidth where control signals are detected.

b)　In case the UUT is a U-NII device operating as a Client Device (with or without DFS), a U-NII device operating as a Master Device will be used to allow the UUT (Client device)

to Associate with the Master Device.   In case the UUT is a Master Device, a U-NII device operating as a Client Device will be used and it is assumed that the Client will Associate with the UUT (Master).   In both cases for conducted tests, the Radar Waveform generator will be connected to the Master Device.   For radiated tests, the emissions of the Radar Waveform generator will be directed towards the Master Device.   If the Master Device has antenna gain, the main beam of the antenna will be directed toward the radar emitter.   Vertical polarization is used for testing.

c)   Stream the channel loading test file from the Master Device to the Client Device on the test Channel for the entire period of the test.

d)   At time T0 the Radar Waveform generator sends a Burst of pulses for one of the Radar Type 0 in Table 5 at levels defined in Table 3, on the Operating Channel.   An additional 1 dB is added to the radar test signal to ensure it is at or above the DFS Detection Threshold, accounting for equipment variations/errors.

e)   Observe the transmissions of the UUT at the end of the radar Burst on the Operating Channel for duration greater than 10 seconds.   Measure and record the transmissions from the UUT during the observation time (Channel Move Time).   Measure and record the Channel Move Time and Channel Closing Transmission Time if radar detection occurs. Figure 17 illustrates Channel Closing Transmission Time.

f)   When operating as a Master Device, monitor the UUT for more than 30 minutes following instant T2 to verify that the UUT does not resume any transmissions on this Channel.   Perform this test once and record the measurement result.

g)   In case the UUT is a U-NII device operating as a Client Device with In-Service Monitoring, perform steps a) to f).
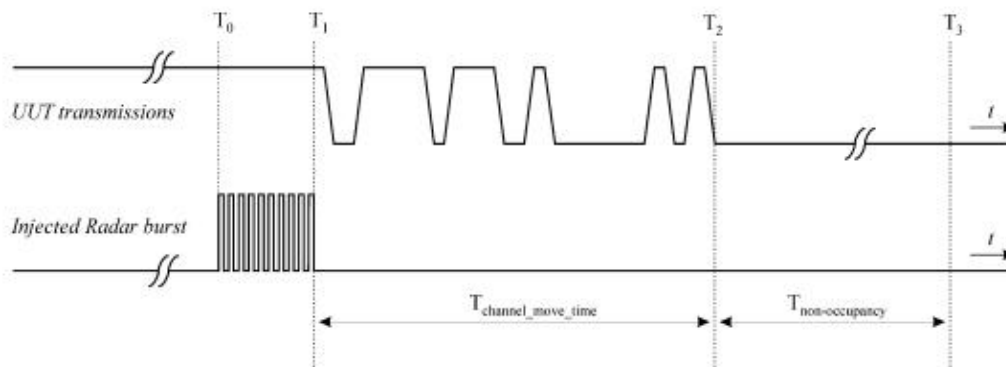
Note:
1)   All Measurements are performed with the EUT's narrowest channel bandwidth.
2)   The master device information is as follows
      Vendor: Cisco
      Model: AIR-CAP3702E-A-K9
      FCC ID: LDK102087
3)   The software of radar signal generator (R&S SMU200A) is completely designed based on KDB 905462 requirement.

Channel Loading

System testing will be performed with channel-loading using means appropriate to the data types that are used by the unlicensed device.   The following requirements apply:

a) The data file must be of a type that is typical for the device (i.e., MPEG-2, MPEG-4, WAV, MP3, MP4, AVI, etc.) and must generally be transmitting in a streaming mode.

b) Software to ping the client is permitted to simulate data transfer but must have random ping intervals.

c) Timing plots are required with calculations demonstrating a minimum channel loading of approximately 17% or greater.   For example, channel loading can be estimated by setting the spectrum analyzer for zero span and approximate the Time On/ (Time On + Off Time).   This can be done with any appropriate channel BW and modulation type.

d) Unicast or Multicast protocols are preferable but other protocols may be used. The appropriate protocol used must be described in the test procedures.

Measurement uncertainty:

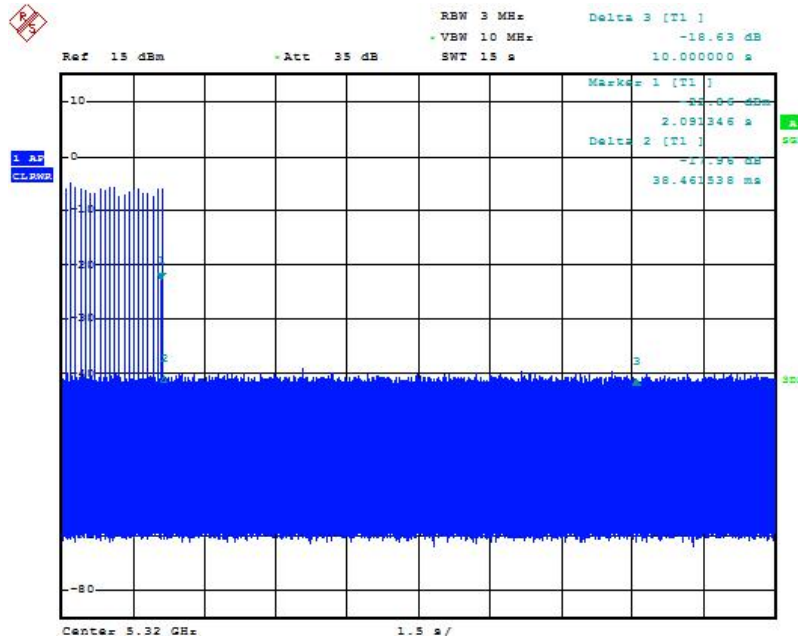| Item	Measurement Uncertainty
Time	0.70 ms
Power	0.75 dBm

Measurement Limit:

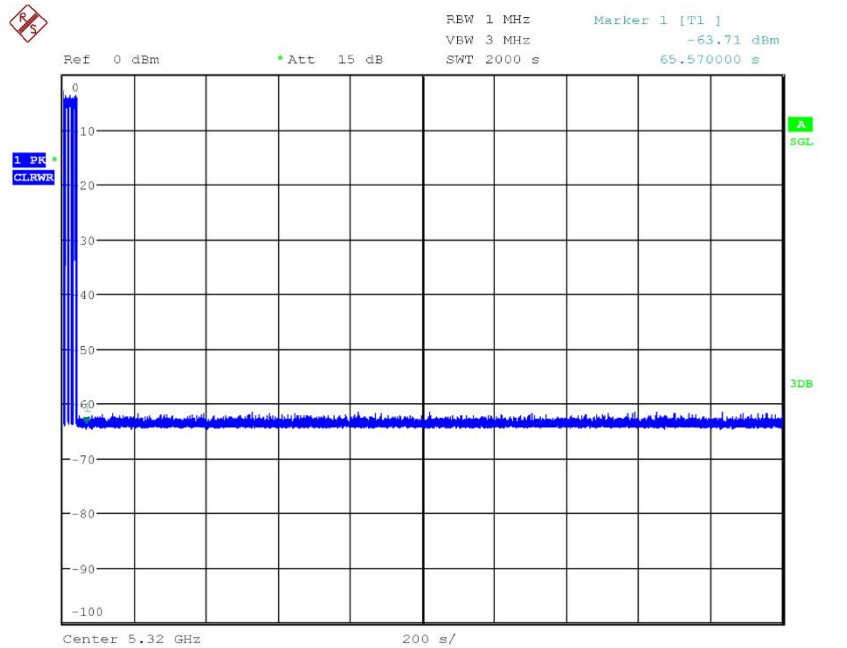| Test Items	Limit
channel closing transmission time	< 200 ms + 60 ms
Channel move time	< 10 s

Measurement Results:
Channel move time and channel closing transmission 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. The closing transmission time is as the figure, and the result is 38.46ms

Non–Occupancy Period

Test Item	Limit	Results
Non-Occupancy Period	30 minutes	Pass

Channel move time and channel closing transmission time
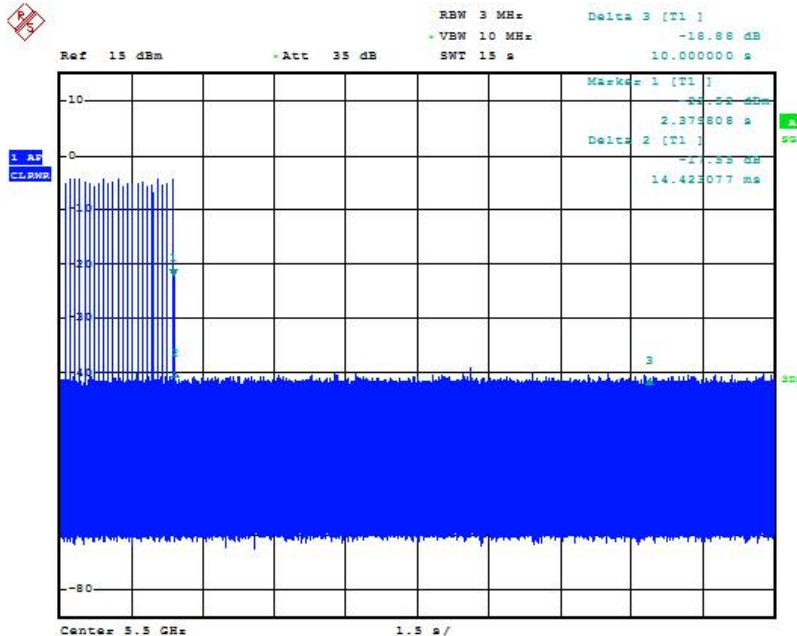
HT20 Frequency Band: 5470MHz ~ 5725MHz

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. The closing

transmission time is as the figure, and the result is 14.42ms
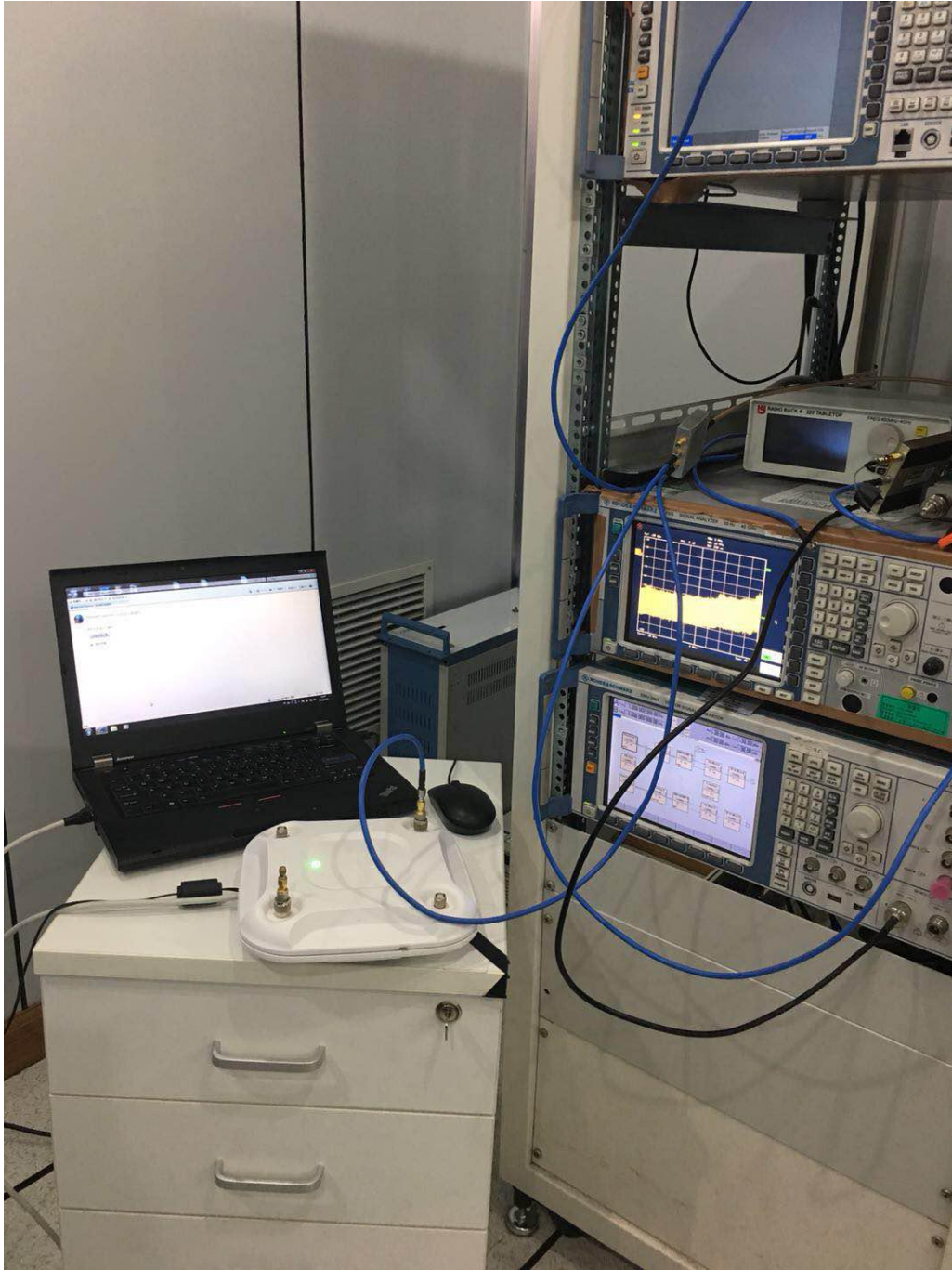
Non−Occupancy Period
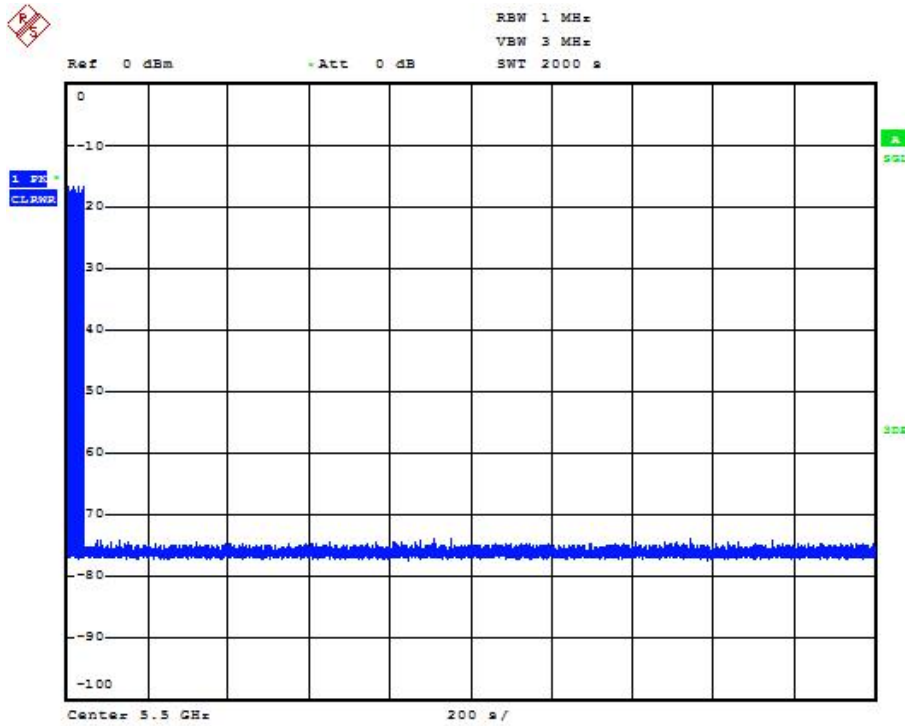
Test Item	Limit	Results
Non-Occupancy Period	30 minutes	Pass

Conclusion: PASS

6.2.   Radar Waveform Calibration Procedure

DFS test setup photos

7. Test Equipment and Ancillaries Used For Tests

The test equipment and ancillaries used are as follows.

Conducted test system

No.	Equipment	Model	Serial Number	Manufacturer	Calibration date	Cal.interval
1	Vector Signal Analyzer	FSQ40	200063	Rohde&Schwarz	2017-12-17	1 Year
2	DC Power Supply	ZUP60-14	LOC-220Z006-0007	TDL-Lambda	2018-05-11	1 Year
3	Universal Radio Communication Tester	CMW500	104178	R&S	2018-05-11	1 Year
4	CISCO	AIR-CAP3702E-A-K9	FJC2015F2BA	Mexico	2018-05-11	1 Year
5	Vector Signal Generator	SMU 200A	104684	Rohde&Schwarz	2018-05-11	1 Year

Anechoic chamber

Fully anechoic chamber by Frankonia German.

8. Test Environment

Shielding Room1 (6.0 meters×3.0 meters×2.7 meters) did not exceed following limits along the conducted RF performance testing:

Temperature	Min. = 15 ℃, Max. = 35 ℃
Relative humidity	Min. = 20 %, Max. = 75 %
Shielding effectiveness	> 100 dB
Ground system resistance	< 0.5

Control room did not exceed following limits along the EMC testing:

Temperature	Min. = 15 ℃, Max. = 35 ℃

Relative humidity	Min. =25 %, Max. = 75 %
Shielding effectiveness	> 100 dB
Electrical insulation	> 10 k
Ground system resistance	< 0.5

Fully-anechoic chamber1 (6.9 meters×10.9 meters×5.4 meters) did not exceed following limits along the EMC testing:

Temperature	Min. = 15 ℃, Max. = 35 ℃
Relative humidity	Min. = 25 %, Max. = 75 %
Shielding effectiveness	> 100 dB
Electrical insulation	> 10 k
Ground system resistance	< 0.5
VSWR	Between 0 and 6 dB, from 1GHz to 18GHz
Site Attenuation Deviation	Between -4 and 4 dB,30MHz to 1GHz
Uniformity of field strength	Between 0 and 6 dB, from 80MHz to 3000 MHz

ANNEX A.   Accreditation Certificate

Accredited Laboratory

A2LA has accredited

EAST CHINA INSTITUTE OF TELECOMMUNICATIONS

Shanghai, People's Republic of China

for technical competence in the field of

Electrical Testing

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2005 *General requirements for the competence of testing and calibration laboratories.* This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (refer to joint ISO-ILAC-IAF Communiqué dated 8 January 2009).

Presented this 15th day of March 2017.

President and CEO
For the Accreditation Council
Certificate Number 3682.01
Valid to February 28, 2019

For the tests to which this accreditation applies, please refer to the laboratory's Electrical Scope of Accreditation.

**********END OF REPORT**********