



Full

TEST REPORT

No. I18D00022-SRD09

For

Client : Datalogic S.r.l

Production : Smartphone

Model Name : MEMOR 10

FCC ID : U4GDL35US

IC ID: 3862E-DL35US

Hardware Version: V00 (US)

Software Version: 0.02.06D.20180716-userdebug-customer1

Issued date: 2018-11-14

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
I18D00022-SRD09	00	2018-10-24	Initial creation of test report
I18D00022-SRD09	01	2018-10-24	Second creation of test report

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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
FCC registration No	958356

1.2. Testing Environment

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

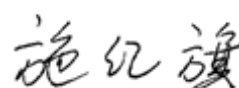
1.3. Project data

Project Leader:	Yu Anlu
Testing Start Date:	2018-07-14
Testing End Date:	2018-10-24

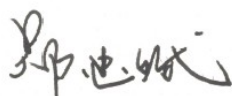
1.4. Signature



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: Datalogic S.r.l.
Address: Via San Vitalino no. 13, Calderara di Reno - 40012 (BO) - Italy
Telephone: +39 051 314 72 16
Postcode: /

2.2. Manufacturer Information

Company Name: Datalogic S.r.l.
Address: Via San Vitalino no. 13, Calderara di Reno - 40012 (BO) - Italy
Telephone: +39 051 314 72 16
Postcode: /

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

3.1. About EUT

EUT Description	Smartphone
Model name	MEMOR 10
GSM Frequency Band	GSM850/GSM900/GSM1800/GSM1900
UMTS Frequency Band	Band I /Band II /Band IV /Band V /Band VIII
CDMA Frequency Band	BC0/BC1
LTE Frequency Band	LTE 2/4/5/7/12/13/17/25/26
Additional Communication Function	BT4.2, BLE; WiFi 802.11a,b,g,n,ac; NFC, GPS; GLONASS; WLC, Beidou.
WLAN Frequency Range	ISM Bands: 5150MHz~5350MHz 5470MHz~5725MHz 5725MHz~5850MHz
EUT Modes of Modulation	802.11a, 802.11n(HT20), 802.11n(HT40), 802.11ac(HT20), 802.11ac(HT40)
WLAN type of modulation	OFDM
Operating Mode	Slave
Extreme Temperature	-30/+50°C
Nominal Voltage	3.8V
Extreme High Voltage	4.35V
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
N17	MEMOR 10	359737090202 608	V00 (US)	0.02.06D.20 180716-user debug-customer1	2018-07-04

*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	2017/10/ 1
ANSI 63.10	American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices	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
RSS-247	Digital Transmission Systems (DTSs), Frequency Hopping Systems (FHSs) and Licence-Exempt Local Area Network (LE-LAN) Devices	2017/2
RSS-Gen	General Requirements for Compliance of Radio Apparatus	2018/4

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	RSS-247,6 .2	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°C
Voltage	Vnom	3.8V
Humidity	Hnom	47%

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 MEMOR 10, supporting GSM/GPRS/EDGE/WCDMA/LTE/CDMA/BT/BLE/NFC/WLAN, manufactured by Datalogic S.r.l., which is a new product for testing.

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

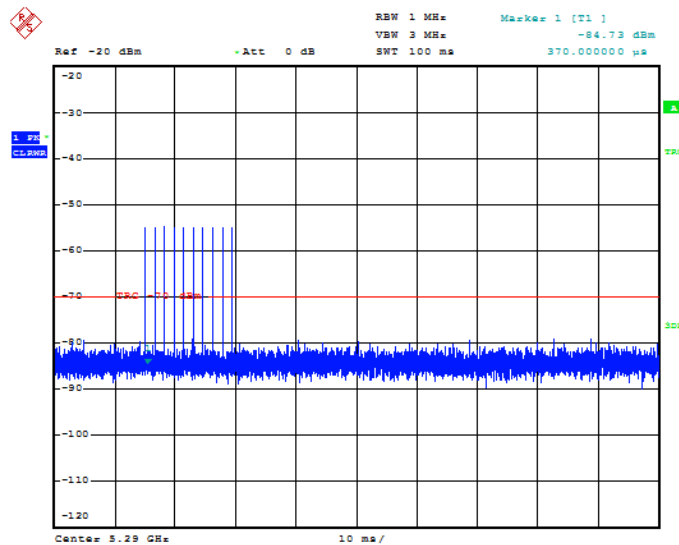
Radar Waveform Calibration Procedure

The Interference Radar Detection Threshold Level is -64dBm or $-62\text{dBm} + 0 [\text{dBi}] + 1 \text{ dB}$ 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 $-62\text{dBm} + 0 [\text{dBi}] + 1 \text{ dB}$. Capture the spectrum analyzer plots on short pulse radar types, long pulse radar type and hopping radar waveform.

Central Frequency of Calibration:

Bandwidth 20MHz: 5290MHz

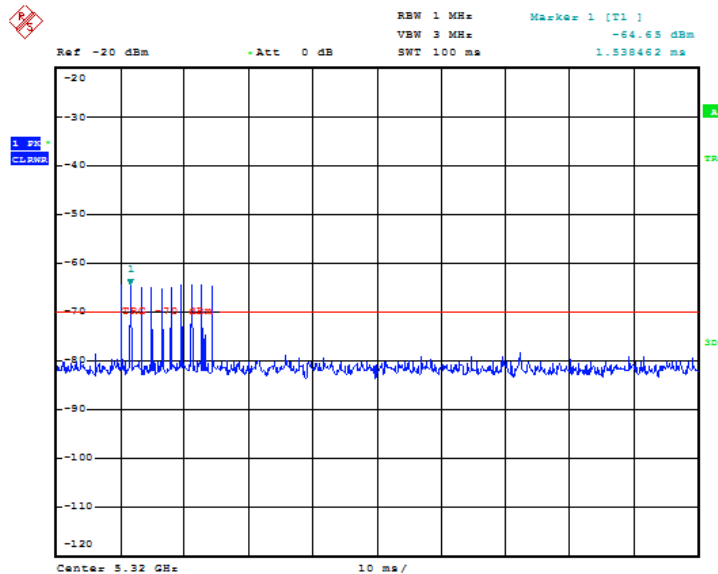
Radar Waveform Calibration Result



5290MHz,Radar 0

Bandwidth 20MHz: 5500MHz

Radar Waveform Calibration Result

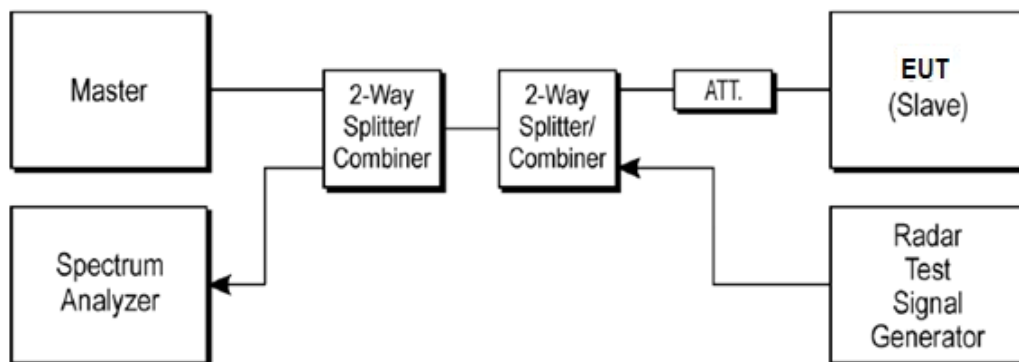


5500MHz,Radar 0

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 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.

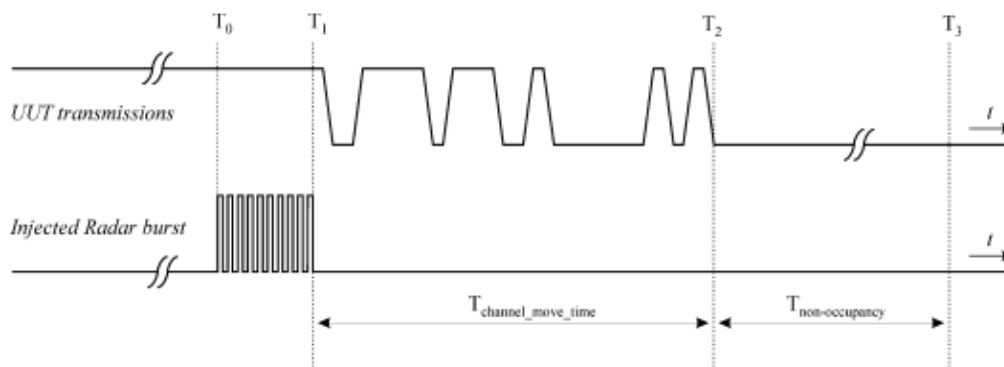


Testing Process:

- 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.
- 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 T_0 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 T_2 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:

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

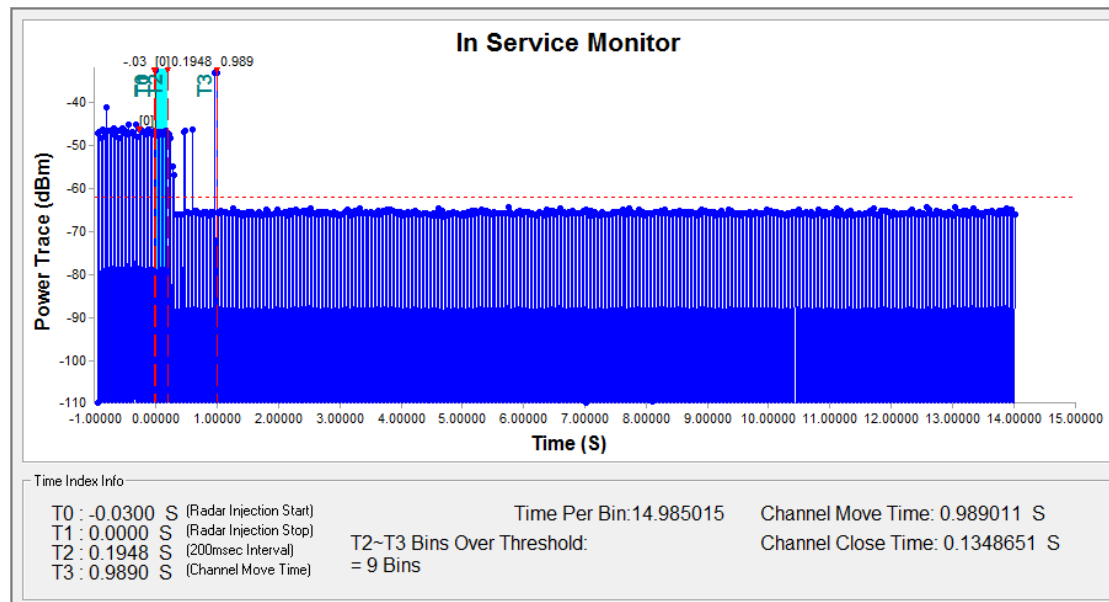
Measurement Limit:

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

Measurement Results:

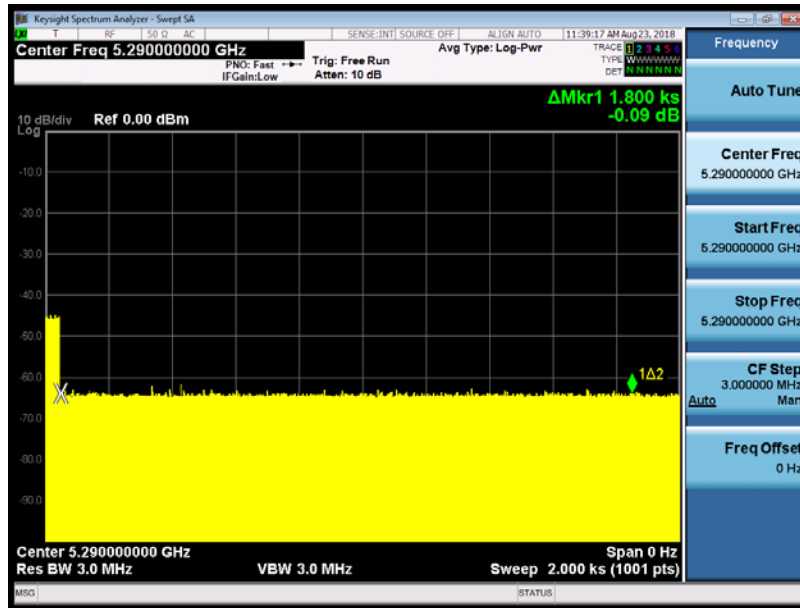
Channel move time and channel closing transmission time

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 0.135s

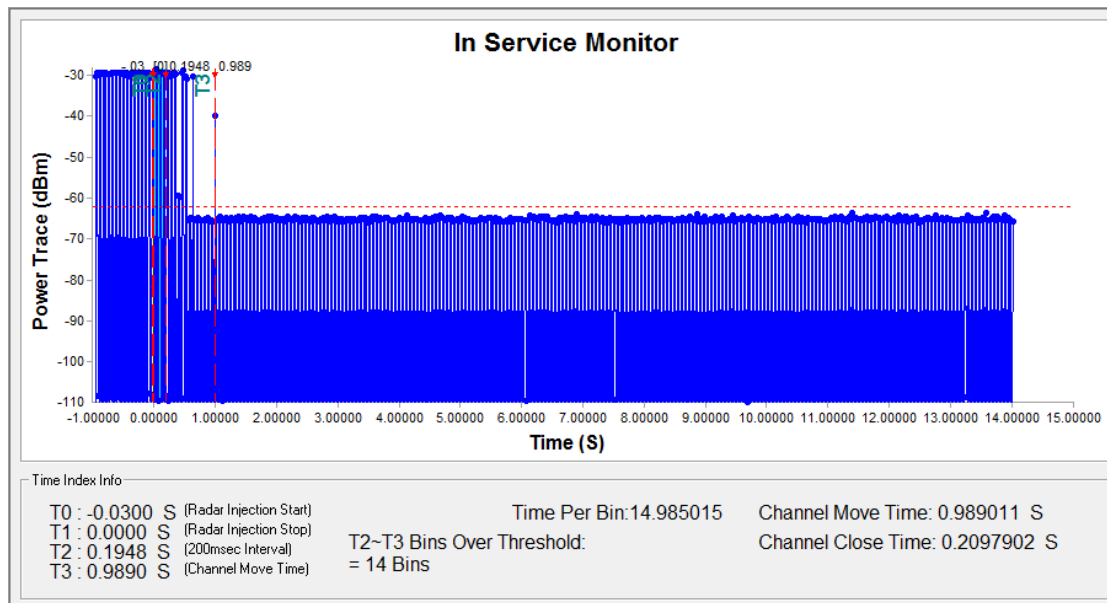
Non-Occupancy Period



Test Item	Limit	Results
Non-Occupancy Period	30 minutes	Pass

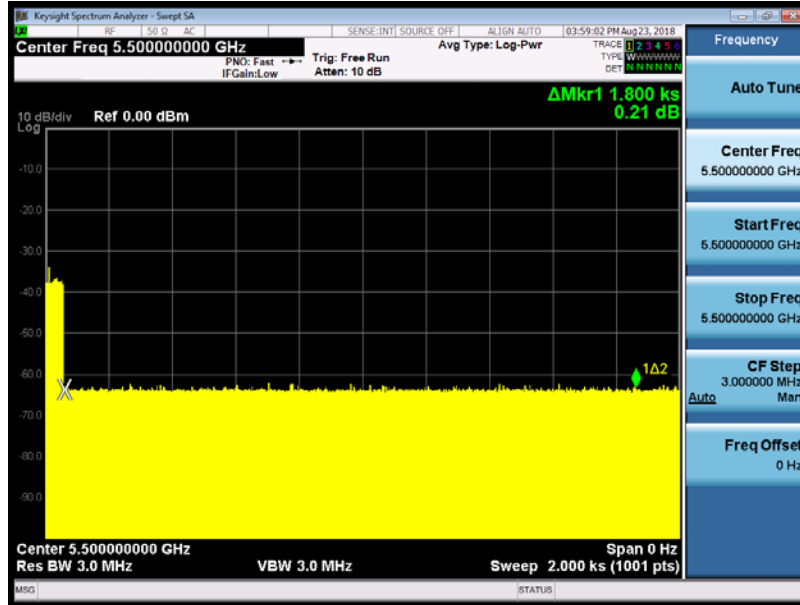
Channel move time and channel closing transmission time

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 0.210s

Non-Occupancy Period

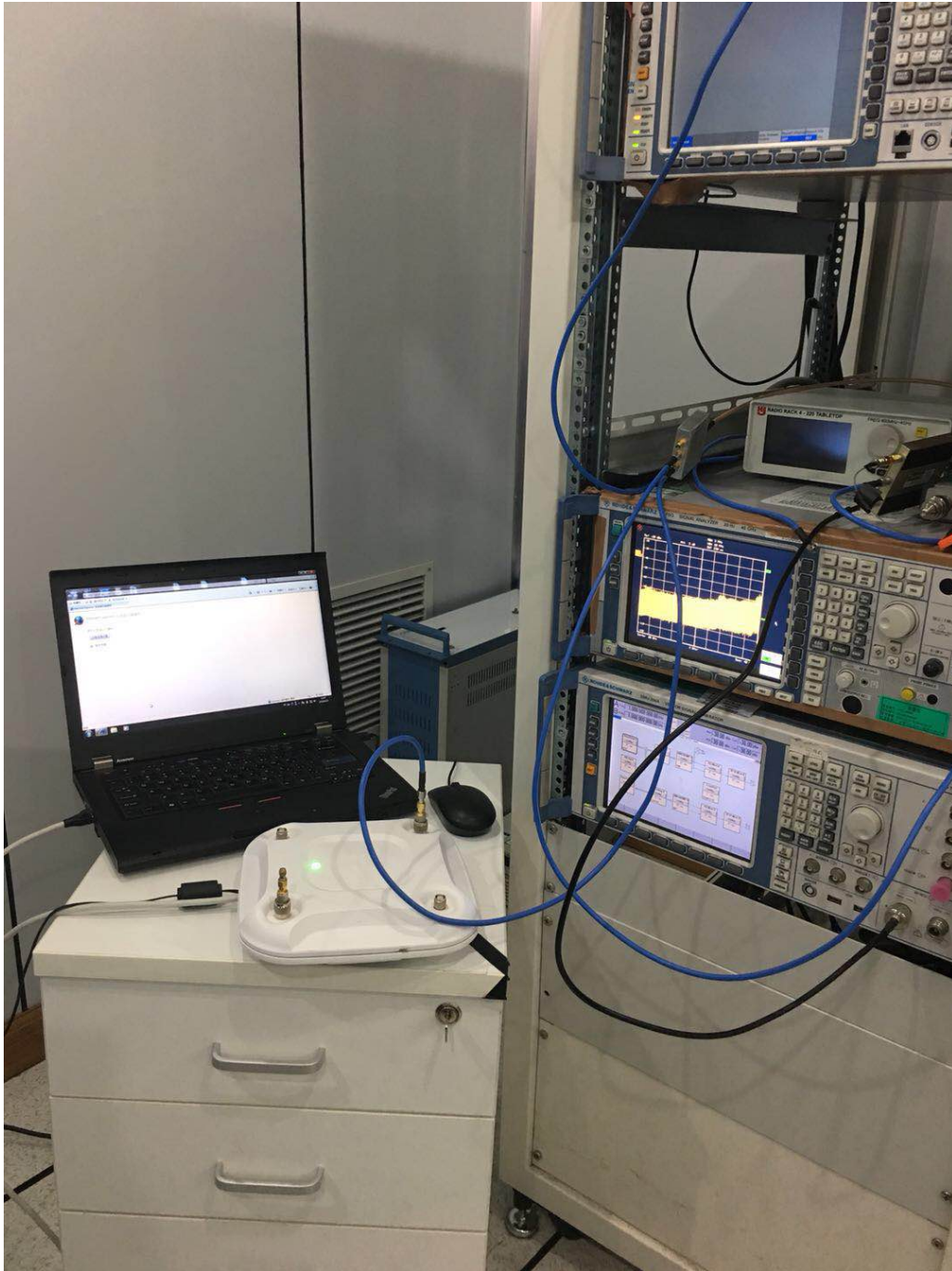


Test Item	Limit	Results
Non-Occupancy Period	30 minutes	Pass

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
6	Spectrum Analyzer	N9020A	MY52330084	Agilent	2018-05-20	1 Year
7	Signal Generator	N5182B	MY51350303	Agilent	2018-05-20	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 °C, Max. = 35 °C
Relative humidity	Min. = 20 %, Max. = 75 %
Shielding effectiveness	> 100 dB
Ground system resistance	< 0.5 Ω

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

Temperature	Min. = 15 °C, Max. = 35 °C
Relative humidity	Min. = 25 %, Max. = 75 %
Shielding effectiveness	> 100 dB
Electrical insulation	> 10 kΩ
Ground system resistance	< 0.5 Ω

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

Temperature	Min. = 15 °C, Max. = 35 °C
Relative humidity	Min. = 25 %, Max. = 75 %
Shielding effectiveness	> 100 dB
Electrical insulation	> 10 kΩ
Ground system resistance	< 0.5 Ω
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

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