NVLAP TESTING
NVLAP LAB CODE 600338-0

BACL Bay Area Compliance Labs Corp.

FCC PART 15.407

TEST REPORT

For

Feitian Technologies Co., Ltd.

Floor 17th, Tower B, Huizhi Mansion, No.9 Xueqing Road, Haidian District, Beijing, China

FCC ID: ZD3FTF360

Report Type:	**Product Name:**
Original Report	Android POS Terminal

Report Number:	RKSA240319001-00F
Report Date:	2024-06-26
Reviewed By:	Bard Liu
Approved By:	Kyle Xu
Prepared By:	Bay Area Compliance Laboratories Corp. (Kunshan) No.248 Chenghu Road, Kunshan, Jiangsu Province, China Tel: +86-512-86175000 Fax: +86-512-88934268 www.baclcorp.com.cn

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REPORT REVISION HISTORY

Number of Revisions	Report No.	Version	Issue Date	Description
0	RKSA240319001-00F	R1V1	2024-06-26	Initial Release

GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

Applicant:	Feitian Technologies Co., Ltd.	
Tested Model:	F360	
Product Name:	Android POS Terminal	
Power Supply:	DC 3.7V from battery or DC 5V charging by adapter	
Maximum Average Output Power	5G Wi-Fi B2:	5G Wi-Fi B3:
	802.11a: 13.53 dBm	15.81 dBm
	802.11ac20: 13.50 dBm	14.14 dBm
	802.11ac40: 13.44 dBm	15.18 dBm
	802.11ac80: 10.40 dBm	15.62 dBm
Operating Frequency	5G Wi-Fi B2: 5260~5320 MHz, B3: 5500~5720 MHz	
Channel Number	5G Wi-Fi B2: 7, B3: 21	
Channel Separation	5G Wi-Fi: a/ac20/n20: 20 MHz, ac40/n40: 40 MHz, ac80: 80 MHz	
Modulation Type	OFDM	
Antenna Type	FPC Antenna	
★Maximum Antenna Gain	Band 2: -0.51 dBi Band 3: -2.30 dBi	

Adapter Information:
Model: TEKA-UCA20US
Input: 100-240V, 50/60Hz, 0.35A Max
Output: 5.0V, 2.0A

Note: The maximum antenna gain was declared by the manufacturer.

All measurement and test data in this report was gathered from production sample serial number: RKSA240319001-1 (Assigned by the BACL (Kunshan). The EUT supplied by the applicant was received on 2024-03-19.)

Objective

This type approval report is prepared for *Feitian Technologies Co., Ltd.* in accordance with

This test report is in accordance with Part 2-Subpart J, Part 15-Subparts E of the Federal Communications Commission’s rules.
The objective is to determine compliance with FCC Part 15, Subpart E, section 15.407 Dynamic Frequency Selection (DFS) for devices operating in the bands 5250-5350 MHz, 5470-5725 MHz.

Test Methodology

FCC KDB 905462 D02 UNII DFS Compliance Procedures New Rules v02.
Each test item follows test standards and with no deviation.

Measurement Uncertainty

Item	Uncertainty
Occupied Bandwidth	0.5kHz
Temperature	1.0℃
Humidity	6%

Test Facility

The Test site used by Bay Area Compliance Laboratories Corp. (Kunshan) to collect test data is located on the No.248 Chenghu Road, Kunshan, Jiangsu Province, China.

Bay Area Compliance Laboratories Corp. (Kunshan) is accredited in accordance with ISO/IEC 17025:2017 by NVLAP (Lab code: 600338-0), and the lab has been recognized as the FCC accredited lab under the KDB 974614 D01, the FCC Designation No.: CN5055.

SYSTEM TEST CONFIGURATION

Description of Test Configuration

The EUT was configured for testing in an engineering mode which was provided by the manufacturer.

Equipment Modifications

No modifications were made to the EUT.

EUT Exercise Software

No exercise software was used to test.

Support Equipment List and Details

Manufacturer	Description	Model	Serial Number
Ruckus Wireless, Inc	Router (FCC ID: S9GT300)	T300	211404000213
Dell	Notebook	L530	R9-OFYDHK
Tonscend	RF Control Unit	JS0806-2	24C80620830

External I/O Cable

Cable Description	Length(m)	From Port	To Port
/	/	/	/

SUMMARY OF TEST RESULTS

The following result table represents the list of measurements required under the CFR § 47 Part 15.407(h), KDB: 905462 D02 UNII DFS Compliance Procedures New Rules v02

Items	Description of Test	Result
Detection Bandwidth	UNII Detection Bandwidth	Not Applicable (See Note 1)
Performance Requirements Check	Initial Channel Availability Check Time (CAC)	Not Applicable (See Note 1)
	Radar Burst at the Beginning of the CAC	Not Applicable (See Note 1)
	Radar Burst at the End of the CAC	Not Applicable (See Note 1)
In-Service Monitoring	Channel Move Time	Compliant
	Channel Closing Transmission Time	Compliant
	Non-Occupancy Period	Compliant
Radar Detection	Statistical Performance Check	Not Applicable (See Note 1)

Note 1: EUT is a client without radar detection.

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Rohde & Schwarz	SIGNAL ANALYZER	FSV40	101116	2024-04-24	2025-04-23
Rohde & Schwarz	VECTOR SIGNAL GENERATOR	SMBV100A	261558	2024-04-25	2025-04-24
Tonscend Corporation	RF Control Unit	JS0806-2	JS0806001	2024-04-24	2025-04-23
Eastsheep	Attenuator	2W-N-JK-18G	20dB-02	2024-04-24	2025-04-23
Eastsheep	Attenuator	2W-N-JK-18G	10dB-01	2024-04-24	2025-04-23
Tonscend Corporation	RF Test System	JS1120-3	N/A	N/A	N/A

Statement of Traceability: Bay Area Compliance Laboratories Corp. (Kunshan) attests that all calibrations have been performed in accordance to requirements that traceable to National Primary Standards and International System of Units (SI).

APPLICABLE STANARDS

DFS Requirement

CFR § 47 Part 15.407(h)

FCC KDB 905462 D02 UNII DFS Compliance Procedures New Rules v02

Table 1: Applicability of DFS Requirements Prior to Use of a Channel

Requirement	Operational Mode		
	Master	Client Without Radar Detection	Client With Radar Detection
Non-Occupancy Period	Yes	Not required	Yes
DFS Detection Threshold	Yes	Not required	Yes
Channel Availability Check Time	Yes	Not required	Not required
U-NII Detection Bandwidth	Yes	Not required	Yes

Table 2: Applicability of DFS requirements during normal operation

Requirement	Operational Mode	
	Master Device or Client with Radar Detection	Client Without Radar Detection
DFS Detection Threshold	Yes	Not required
Channel Closing Transmission Time	Yes	Yes
Channel Move Time	Yes	Yes
U-NII Detection Bandwidth	Yes	Not required

Additional requirements for devices with multiple bandwidth modes	Master Device or Client with Radar Detection	Client Without Radar Detection
U-NII Detection Bandwidth and Statistical Performance Check	All BW modes must be tested	Not required
Channel Move Time and Channel Closing Transmission Time	Test using widest BW mode available	Test using the widest BW mode available for the link
All other tests	Any single BW mode	Not required
Note: Frequencies selected for statistical performance check (Section 7.8.4) should include several frequencies within the radar detection bandwidth and frequencies near the edge of the radar detection bandwidth. For 802.11 devices it is suggested to select frequencies in each of the bonded 20 MHz channels and the channel center frequency.		

Table 3: DFS Detection Thresholds for Master Devices and Client Devices With Radar Detection

Maximum Transmit Power	Value (See Notes 1, 2, and 3)
EIRP ≥ 200 milliwatt	-64 dBm
EIRP < 200 milliwatt and power spectral density < 10 dBm/MHz	-62 dBm
EIRP < 200 milliwatt that do not meet the power spectral density requirement	-64 dBm
Note 1: This is the level at the input of the receiver assuming a 0 dBi receive antenna. **Note 2:** Throughout these test procedures an additional 1 dB has been added to the amplitude of the test transmission waveforms to account for variations in measurement equipment. This will ensure that the test signal is at or above the detection threshold level to trigger a DFS response. **Note3:** EIRP is based on the highest antenna gain. For MIMO devices refer to KDB Publication 662911 D01.	

Table 4: DFS Response Requirement Values

Parameter	Value
Non-occupancy period	Minimum 30 minutes
Channel Availability Check Time	60 seconds
Channel Move Time	10 seconds See Note 1.
Channel Closing Transmission Time	200 milliseconds + an aggregate of 60 milliseconds over remaining 10 second period. See Notes 1 and 2.
U-NII Detection Bandwidth	Minimum 100% of the U-NII 99% transmission power bandwidth. See Note 3.
Note 1: *Channel Move Time* and the *Channel Closing Transmission Time* should be performed with Radar Type 0. The measurement timing begins at the end of the Radar Type 0 burst. **Note 2:** The *Channel Closing Transmission Time* is comprised of 200 milliseconds starting at the beginning of the *Channel Move Time* plus any additional intermittent control signals required to facilitate a *Channel* move (an aggregate of 60 milliseconds) during the remainder of the 10 second period. The aggregate duration of control signals will not count quiet periods in between transmissions. **Note 3:** During the *U-NII Detection Bandwidth* detection test, radar type 0 should be used. For each frequency step the minimum percentage of detection is 90 percent. Measurements are performed with no data traffic.	

Table 5 – Short Pulse Radar Test Waveforms

Radar Type	Pulse Width (μsec)	PRI (μsec)	Number of Pulses	Minimum Percentage of Successful Detection	Minimum Number of Trials
0	1	1428	18	See Note 1	See Note 1
1	1	Test A: 15 unique PRI values randomly selected from the list of 23 PRI values in Table 5a	$\text{Roundup}\left\{\left(\frac{1}{360}\right)\cdot\left(\frac{19\cdot 10^6}{\text{PRI}_{\mu\text{sec}}}\right)\right\}$	60%	30
		Test B: 15 unique PRI values randomly selected within the range of 518-3066 μsec, with a minimum increment of 1 μsec, excluding PRI values selected in Test A			
2	1-5	150-230	23-29	60%	30
3	6-10	200-500	16-18	60%	30
4	11-20	200-500	12-16	60%	30
Aggregate (Radar Types 1-4)				80%	120
Note 1: Short Pulse Radar Type 0 should be used for the detection bandwidth test, channel move time, and channel closing time tests.					

A minimum of 30 unique waveforms are required for each of the Short Pulse Radar Types 2 through 4. If more than 30 waveforms are used for Short Pulse Radar Types 2 through 4, then each additional waveform must also be unique and not repeated from the previous waveforms. If more than 30 waveforms are used for Short Pulse Radar Type 1, then each additional waveform is generated with Test B and must also be unique and not repeated from the previous waveforms in Tests A or B.

For example if in Short Pulse Radar Type 1 Test B a PRI of 3066 usec is selected, the number of pulses would be $\text{Roundup}\left\{\left(\frac{1}{360}\right)\cdot\left(\frac{19\cdot 10^6}{3066}\right)\right\} = \text{Roundup}\{17.2\} = 18.$

Table 5a - Pulse Repetition Intervals Values for Test A

Pulse Repetition Frequency Number	Pulse Repetition Frequency (Pulses Per Second)	Pulse Repetition Interval (Microseconds)
1	1930.5	518
2	1858.7	538
3	1792.1	558
4	1730.1	578
5	1672.2	598
6	1618.1	618
7	1567.4	638
8	1519.8	658
9	1474.9	678
10	1432.7	698
11	1392.8	718
12	1355	738
13	1319.3	758
14	1285.3	778
15	1253.1	798
16	1222.5	818
17	1193.3	838
18	1165.6	858
19	1139	878
20	1113.6	898
21	1089.3	918
22	1066.1	938
23	326.2	3066

The aggregate is the average of the percentage of successful detections of Short Pulse Radar Types 1-4. For example, the following table indicates how to compute the aggregate of percentage of successful detections.

Radar Type	Number of Trials	Number of Successful Detections	Minimum Percentage of Successful Detection
1	35	29	82.9%
2	30	18	60%
3	30	27	90%
4	50	44	88%
Aggregate (82.9% + 60% + 90% + 88%)/4 = 80.2%			

Table 6 – Long Pulse Radar Test Waveform

Radar Type	Pulse Width (µsec)	Chirp Width (MHz)	PRI (µsec)	Number of Pulses per *Burst*	Number of *Bursts*	Minimum Percentage of Successful Detection	Minimum Number of Trials
5	50-100	5-20	1000-2000	1-3	8-20	80%	30

Table 7 – Frequency Hopping Radar Test Waveform

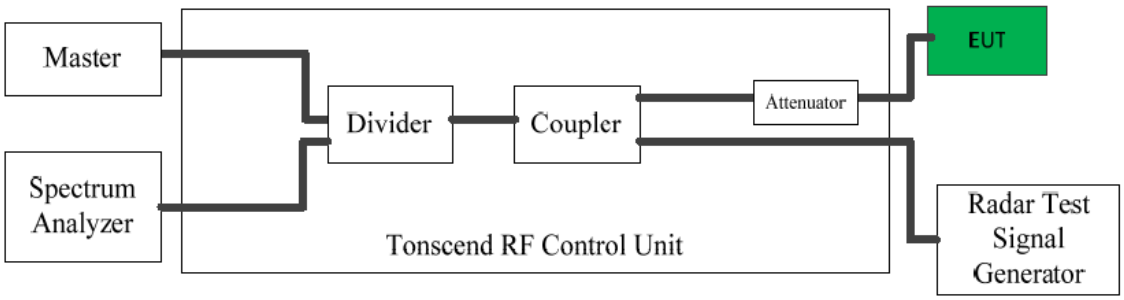
Radar Type	Pulse Width (µsec)	PRI (µsec)	Pulses per Hop	Hopping Rate (kHz)	Hopping Sequence Length (msec)	Minimum Percentage of Successful Detection	Minimum Number of Trials
6	1	333	9	0.333	300	70%	30

DFS Measurement System

DFS measurement system consists of two subsystems:

(1) The radar signal generating subsystem and
(2) The traffic monitoring subsystem.

Block Diagram of Test Setup



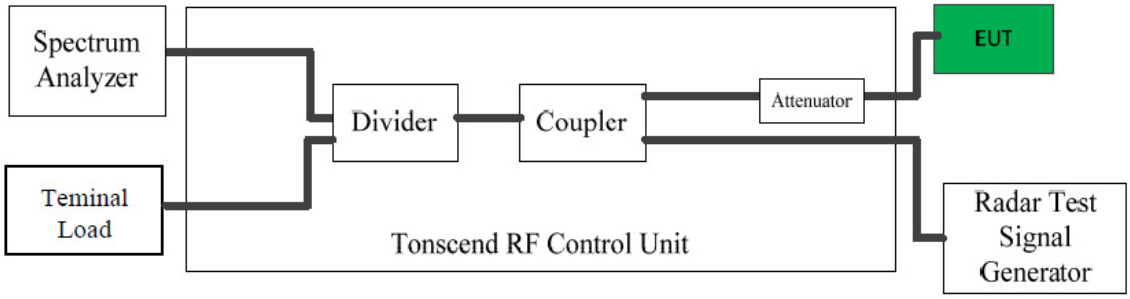
Test Procedure

A spectrum analyzer is used as a monitor verifies that the EUT status including Channel Closing Transmission Time and Channel Move Time, and does not transmit on a Channel during the Non-Occupancy Period after the diction and Channel move.

APPLICABLE STANARDS

Description of EUT

The calibrated radiated DFS detection threshold level is set to -64 dBm.



Test Data: See Appendix.

CHANNEL MOVE TIME AND CHANNEL CLOSING TRANSMISSION TIME

Description of EUT

Channel Move Time and the Channel Closing Transmission Time should be performed with Radar Type 0. The measurement timing begins at the end of the Radar Type 0 burst. repeat using a long pulse radar type5 waveform.
The Channel Closing Transmission Time is comprised of 200 milliseconds starting at the beginning of the Channel Move Time plus any additional intermittent control signals required to facilitate a Channel move (an aggregate of 60 milliseconds) during the remainder of the 10 second period. The aggregate duration of control signals will not count quiet periods in between transmissions.
The aggregate channel closing transmission time is calculated as follows:
Aggregate Transmission Time = N*Dwell Time
N is the number of spectrum analyzer bins showing a device transmission Dwell Time is the dwell time per bin (i.e. Dwell Time = S/B, S is the sweep time and B is the number of bin, i.e. 8192

Test Data: See Appendix.

NON-OCCUPANCY PERIOD

Test Procedure

Measure the EUT for more than 30 minutes following the channel close/move time to very that the EUT does not resume any transmissions on this channel. Provide one plot to demonstrate no transmission on the channel for the non-occupancy period (30 minutes observation time)

Test Data: See Appendix

EUT PHOTOGRAPHS

Please refer to the attachment EXHIBIT A - EUT EXTERNAL PHOTOGRAPHS and EXHIBIT B - EUT INTERNAL PHOTOGRAPHS.

TEST SETUP PHOTOGRAPHS

Please refer to the attachment EXHIBIT E - TEST SETUP PHOTOGRAPHS.

APPENDIX - TEST DATA

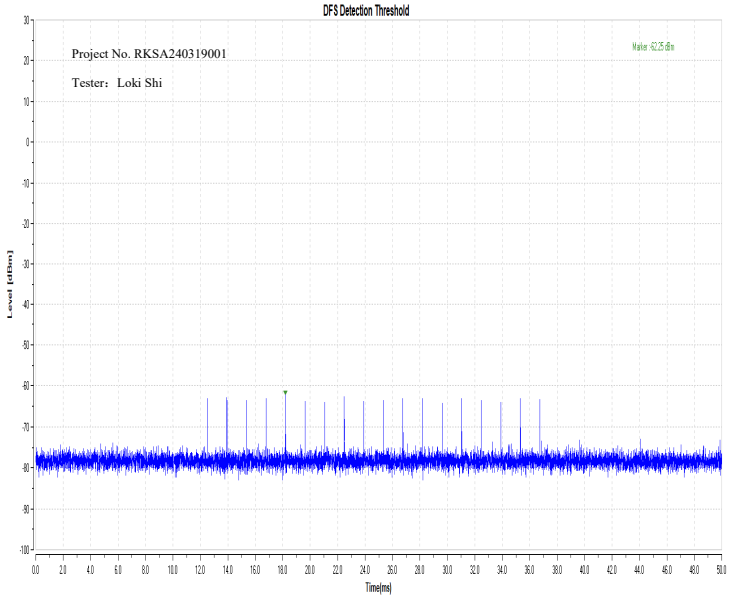
Environmental Conditions & Test Information

Test Item:	DFS DETECTION THRESHOLDS	CHANNEL MOVE TIME AND CHANNEL CLOSING TRANSMISSION TIME	NON-OCCUPANCY PERIOD
Temperature:	22.6 ℃	22.8 ℃	22.8 ℃
Relative Humidity:	49 %	50 %	50 %
ATM Pressure:	102.1 kPa	102.0 kPa	102.0 kPa
Test Date:	2024-05-15	2024-05-17	2024-05-17
Test Engineer:	Loki Shi	Loki Shi	Loki Shi

DFS Detection Thresholds

Test Mode	Frequency(MHz)	Radar Type	Result (dBm)	Limit (dBm)	Verdict
11AC80SISO	5290	Type0	-62.25	-62.00	PASS

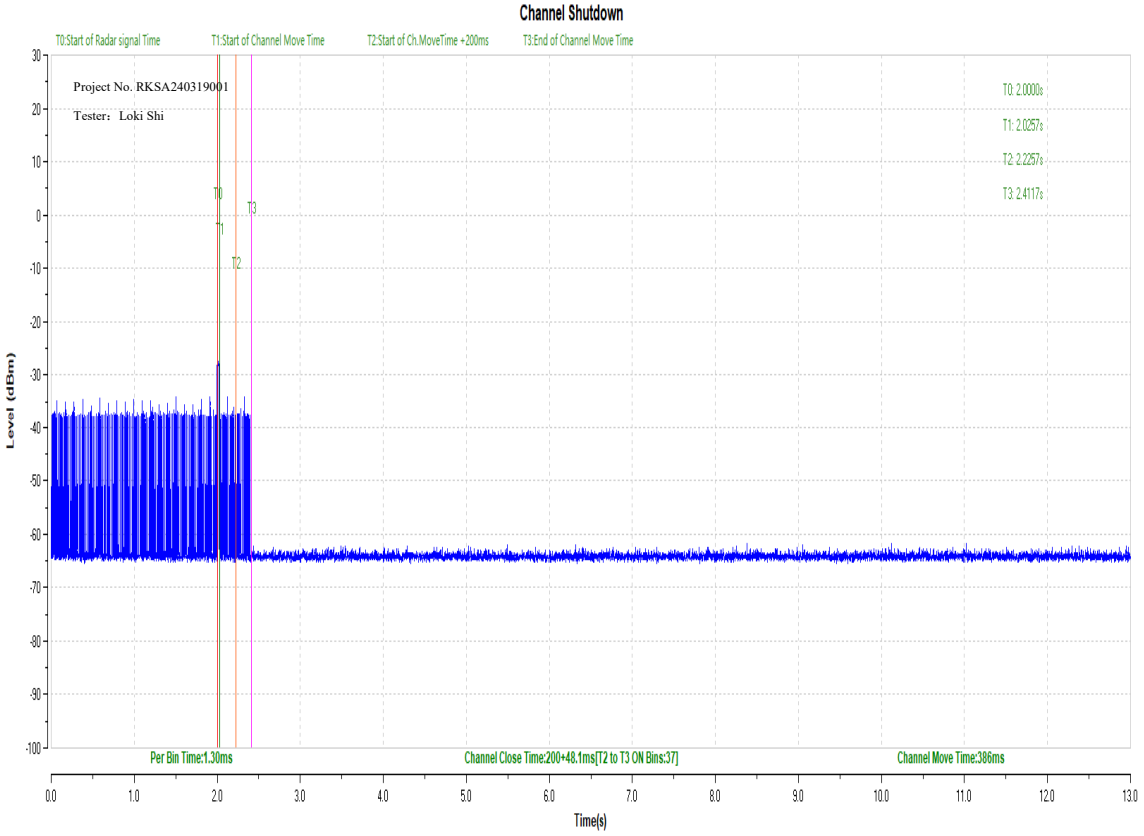
5290 MHz Bandwidth 11AC80SISO



CHANNEL MOVE TIME AND CHANNEL CLOSING TRANSMISSION TIME

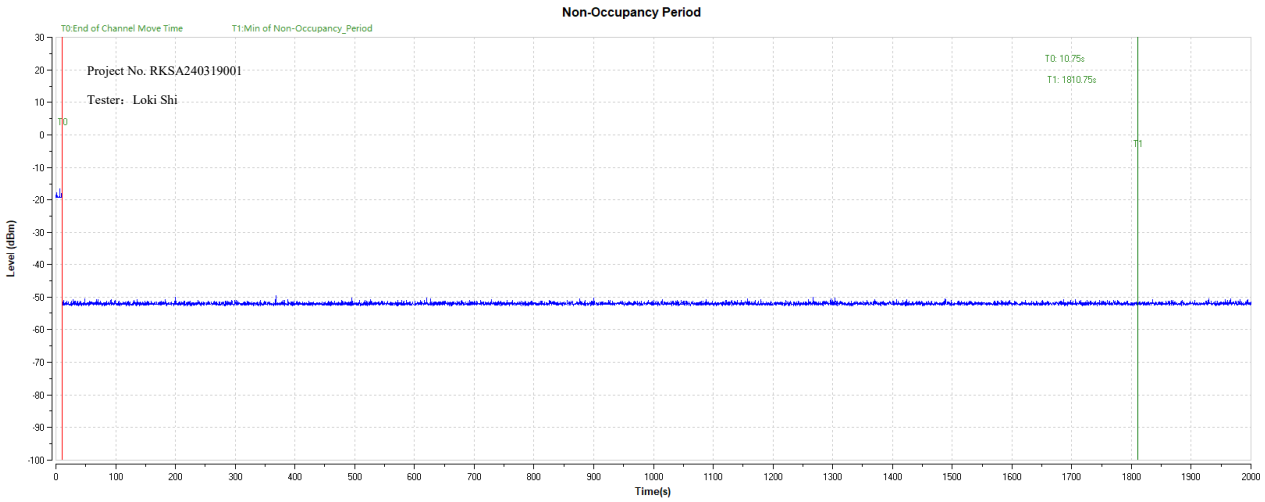
Test Mode	Frequency(MHz)	CCTT (ms)	Limit (ms)	CMT (ms)	Limit (ms)	Verdict
11AC80SISO	5290	200+48.1	200+60	386	10000	PASS

5290 MHz Bandwidth 11AC80SISO



NON-OCCUPANCY PERIOD

TestMode	Frequency[MHz]	Result	Limit[s]	Verdict
11AC80SISO	5290	see test graph	≥1800	Pass



Declarations

1. The laboratory is not responsible for the authenticity of any information provided by the applicant. Information from the applicant that may affect test results is marked with "★".

2. The test data was only valid for the test sample(s).

3. This report is valid only with a valid digital signature. The digital signature may be available only under the Adobe software above version 7.0.

4. Otherwise required by the applicant or Product Regulations, Decision Rule in this report did not consider the uncertainty.

5. The extended uncertainty given in this report is obtained by combining the standard uncertainty times the coverage factor k=2 with the 95.45% confidence interval.

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