

Test Report

Applicant : China Satellite Navigation and Communication Co., Ltd
Address : C5-C6, Siwei Tuxin Building, Yongfeng Road
Haidian District, Beijing, 100012 CN
Product Name : Machine entertainment system
Brand Mark : N/A
Model : SV5734015
Series model : SK8734011, SV5734016, MILA734003,
MILA734006, MIFA734002, MIFA734001,
SK8734023, SK8734025,
FCC ID : 2BACQ6125
Report Number : BLA-EMC-202403-A9205
Date of Receipt : 2024.03.27
Date of Test : 2024.04.05 to 2024.05.23
Test Standard : FCC CFR Title 47 Part 15 Subpart E Section
15.407
Test Result : Pass

Compiled by:

charlie

Review by:

Sueels

Approved by:

J. Zheng

Issued Date:

2024.05.24



BlueAsia of Technical Services(Shenzhen) Co.,Ltd.

Address: Building C, No. 107, Shihuan Road, Shiyan Sub-District, Baoan District,
Shenzhen, Guangdong Province, China



The test report is effective only with both signature and specialized stamp and The result(s) shown in this report refer only to the sample(s) tested. Without written approval of BlueAsia, this report can't be reproduced except in full. The results described in this report do not represent the quality or characteristics of the sampled batch, nor do they represent any similar or identical products that are not explicitly stated.

Table of Contents

1 General information	4
1.1 General information	4
1.2 General description of EUT	4
2 Test summary	6
3 Test Configuration	7
3.1 Test mode	7
3.2 EUT Configuration for DFS Test channel	7
3.3 Auxiliary equipment	7
3.4 Test environment	7
4 Laboratory information	8
4.1 Laboratory and accreditations	8
4.2 Measurement uncertainty	8
5 Test equipment	9
6 DFS Technical Requirements	10
6.1 DFS Parameters	10
6.2 DFS Technical Requirements	12
6.3 DFS Threshold Level	12
6.4 Test Setup Block	12
7 Test Result	14
7.1 Non-Occupancy Period	14
7.2 Channel Move Time and Channel Closing Transmission Time	16
8 Test photos	18
9 Appendix B: photographs of EUT	19

Revise Record

Version No.	Date	Description
01	2024.05.24	Original

BlueAsia

1 General information

1.1 General information

Applicant	China Satellite Navigation and Communication Co., Ltd
Address	C5-C6, Siwei Tuxin Building, Yongfeng Road Haidian District, Beijing, 100012 CN
Manufacturer	China Satellite Navigation and Communication Co., Ltd
Address	C5-C6, Siwei Tuxin Building, Yongfeng Road Haidian District, Beijing, 100012 CN
Factory	China Satellite Navigation and Communication Co., Ltd
Address	C5-C6, Siwei Tuxin Building, Yongfeng Road Haidian District, Beijing, 100012 CN

1.2 General description of EUT

Product name	Machine entertainment system
Model no.	SV5734015
Series model	SK8734011, SV5734016, MILA734003, MILA734006, MIFA734002, MIFA734001, SK8734023, SK8734025,
Desc of series model	SV5734015, MILA734006, MIFA734002, and SK8734025 support Ethernet, camera digital surround view (962), and 3-way (host, OTG, tbox) for network connectivity configuration SK8734011, SV5734016, MILA734003, and MIFA734001 are non networked configurations that do not support Ethernet or cameras - digital surround view (962), and support 2-way (host, OTG) SK8734023 is a non networked configuration that does not support Ethernet, supports camera digital surround view (962), and supports 2-way (host, OTG) They are the same in terms of hardware, configuration, and wireless components.
Transmitter frequency range	5150MHz~5250MHz, 5250MHz~5350MHz 5470MHz~5725MHz, 5725MHz~5825MHz
Modulation type:	OFDM
WLAN Function	802.11a/802.11n/802.11ac
Bandwidth	20MHz/40MHz/80MHz
Antenna Type	FPC Antenna
Antenna Gain	2.73 dBi
DFS Operation Type	☐ Master Device ☐ Slaver Device with Radar detection function ☒ Slaver Device without Radar detection function

Power supply or adapter information	DC12V/10A
Hardware Version	N/A
Software Version	N/A
Engineer sample no	BLA-EMC-202403-A92
<i>Note: For a more detailed description, please refer to Specification or User's Manual supplied by the applicant and/or manufacturer.</i>	

2 Test summary

Test Items	Limit	Result
Channel Availability Check	> 60 seconds	N/A
UNII Detection Bandwidth	> 100% of the UNII 99% transmission power bandwidth	N/A
Statistical Performance Check	Radar type 1,2,3,4 $\geq$ 60% Aggregate Radar type 1~4 and 5 $\geq$ 80% Radar type 6 $\geq$ 70%	N/A
Channel Move Time	< 10 seconds	Pass
Channel Closing Transmission Time	< 20ms + aggregate of 60ms over remaining 10 second period	Pass
Non-Occupancy Period	> 30 minutes	Pass
Note: "Pass" means meet the requirements, "N/A" means not applicable		

3 Test Configuration

3.1 Test mode

Test Mode	Description
Normal working	Keep the EUT in continuously working in normal mode.

3.2 EUT Configuration for DFS Test channel

Test Items	Channel Frequency
Channel Move Time	5260MHz, 5290MHz 5500MHz, 5610MHz
Channel Closing Transmission Time	5260MHz, 5290MHz 5500MHz, 5610MHz
Non-Occupancy Period	5260MHz, 5290MHz 5500MHz, 5610MHz

3.3 Auxiliary equipment

Device Type	Manufacturer	Model Name	Serial No.	Remark
Lenovo	Laptop	SL510	2847A65	Lenovo
ASUS	WiFi Router	RT-AC86U	N/A	FCCID:MSQ-RTACHN00

Note:

“--” mean no any auxiliary device during testing.

3.4 Test environment

Temperature	20 ~ 25 °C
Humidity	60% ~ 65%
Atmospheric pressure	1012 kPa

4 Laboratory information

4.1 Laboratory and accreditations

The test facility is recognized, certified, or accredited by the following organizations:

Company name:	BlueAsia of Technical Services(Shenzhen) Co., Ltd.
Address:	Building C, No. 107, Shihuan Road, Shiyan Sub-District, Baoan District, Shenzhen, Guangdong Province, China
CNAS accredited No.:	L9788
A2LA Cert. No.:	5071.01
FCC Designation No.:	CN1252
ISED CAB identifier No.:	CN0028
Telephone:	+86-755-28682673
FAX:	+86-755-28682673

4.2 Measurement uncertainty

This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of $k=1.96$.

Parameter	Expanded Uncertainty
RF output power, conducted	± 1.5 dB
Temperature	± 3 °C
Supply voltages	± 3 %
Time	± 5 %

5 Test equipment

Equipment No.	Equipment Name	Model No.	Manufacture	S/N	Cal. Date	Next Cal. Date
BLA-EMC-008	Spectrum	FSP40	R&S	100817	2023/08/30	2024/08/29
BLA-EMC-016	Signal Generator	N5182A	Agilent	MY52420567	2023/11/16	2024/11/15
BLA-EMC-038	Spectrum	N9020A	Agilent	MY49100060	2023/08/30	2024/08/29
BLA-EMC-044	Wideband radio communication tester	CMW500	R&S	132429	2023/08/30	2024/08/29
BLA-EMC-064	Signal Generator	N5182B	KEYSIGHT	MY58108892	2023/07/07	2024/07/06

6 DFS Technical Requirements

6.1 DFS Parameters

Table D.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	Yes	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 D.2: Applicability of DFS requirements during normal operation		
Requirement	Operational Mode	
	Master	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	Operational Mode	
	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 D.3: DFS Detection Thresholds	
Maximum Transmit Power	Value (See Notes 1,2, and 3)
EIRP $\geq$ 200 mW	-64 dBm
EIRP < 200 mW and power spectral density < 10 dBm/MHz	-62 dBm
EIRP < 200 mW 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 D.4: DFS 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 ms + an aggregate of 60ms over remaining 10 second period (See Notes 1 and 2)
U-NII Detection Bandwidth	Minimum 100% of the UNII 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 D.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 Test B	$\text{Roundup} \left\{ \left(\frac{1}{360} \right) \cdot \left(\frac{19 \cdot 10^6}{\text{PRI}_{\mu\text{sec}}} \right) \right\}$	60%	30
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.

Table D.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

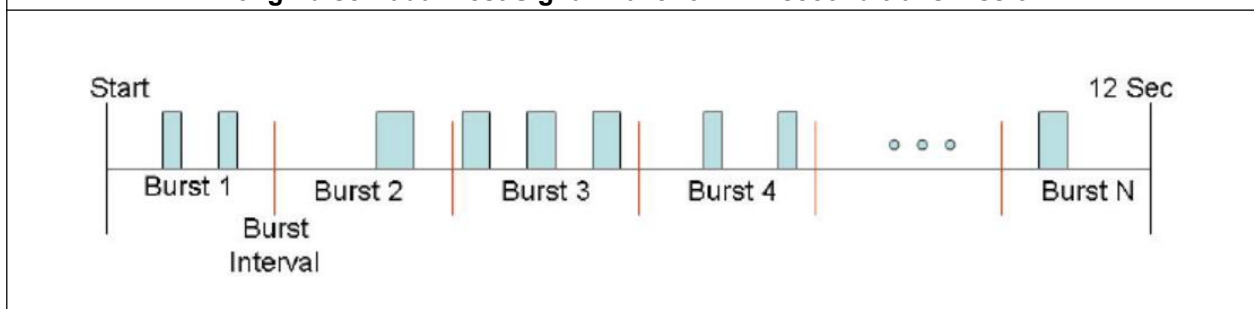
Long Pulse Radar Test Signal Wave form 12 second transmission


Table D.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	0	0.333	300	70%	30

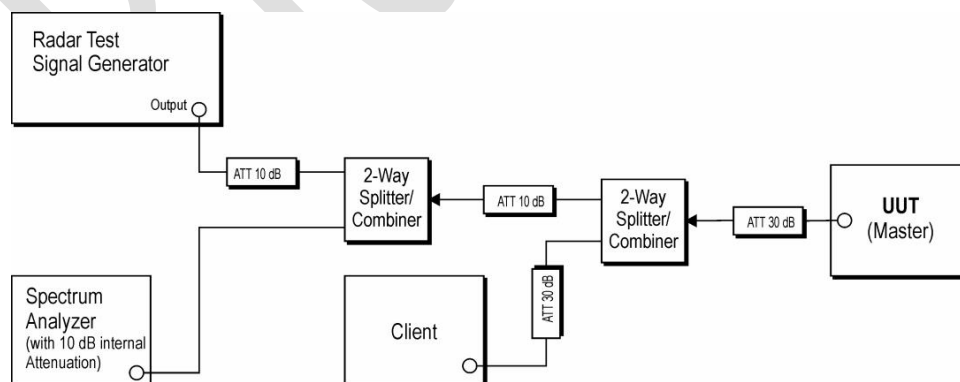
6.2 DFS Technical Requirements

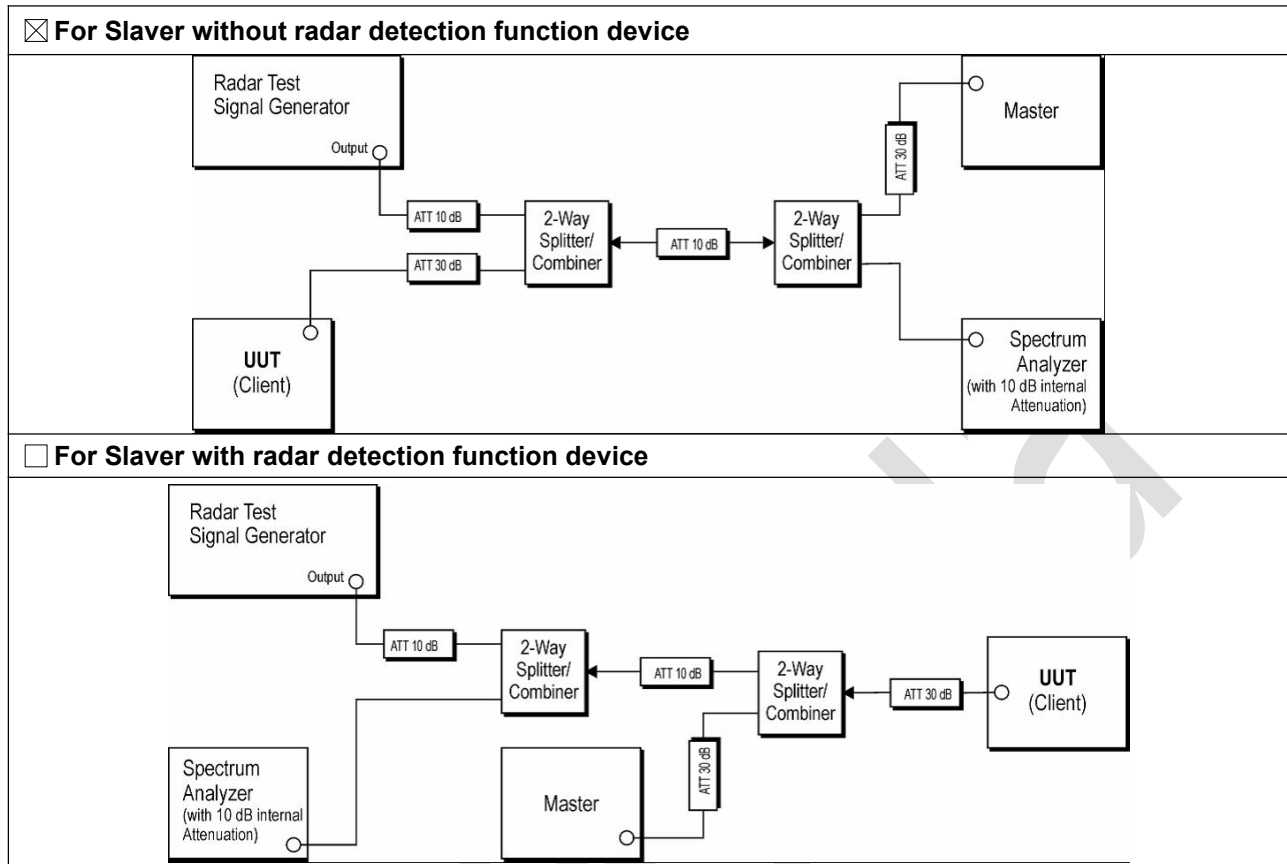
Requirement	DFS Operational mode		
	☐ Master	☒ Slave without Radar Detection	☐ Slave with Radar Detection
Channel Availability Check	√	Not Required	Not Required
UNII Detection Bandwidth	√	Not Required	√
Statistical Performance Check	√	Not Required	√
Channel Move Time	√	√	√
Channel Closing Transmission Time	√	√	√
Non-Occupancy Period	√	√	√

6.3 DFS Threshold Level

DFS Threshold Level	
5250MHz ~ 5350MHz	-62dBm @ antenna connector
5470MHz~5725MHz	-62dBm @ antenna connector
Note: The worst case level was selected to perform the test.	

6.4 Test Setup Block

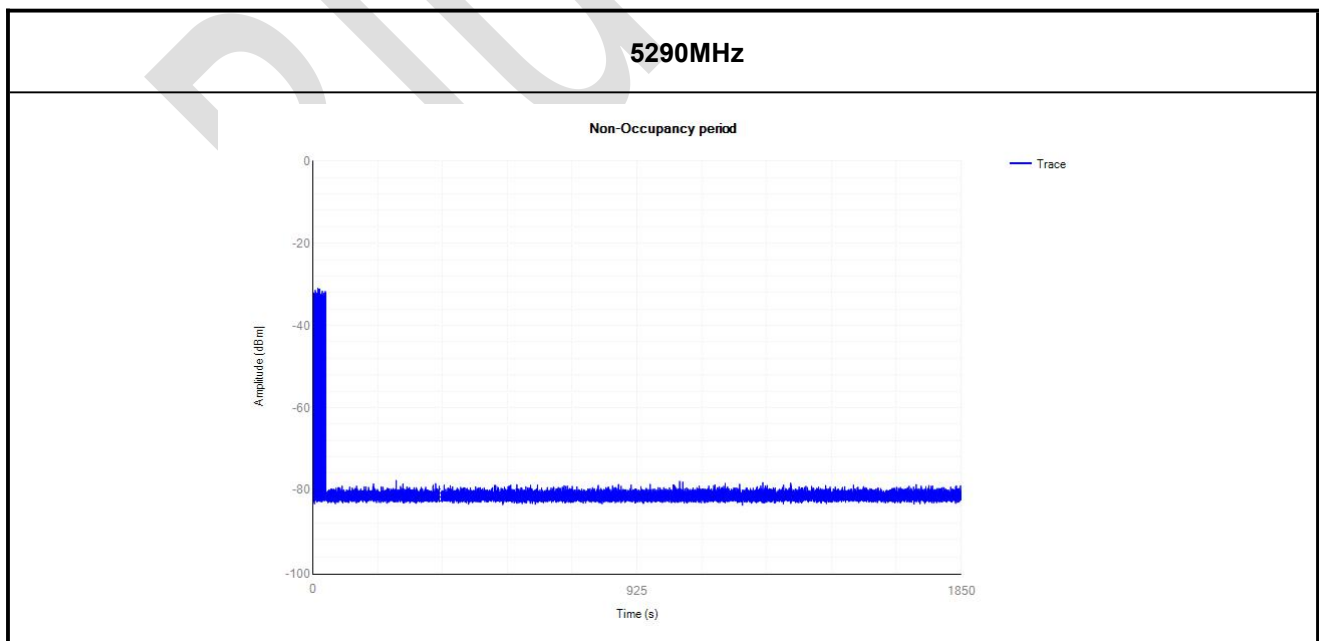
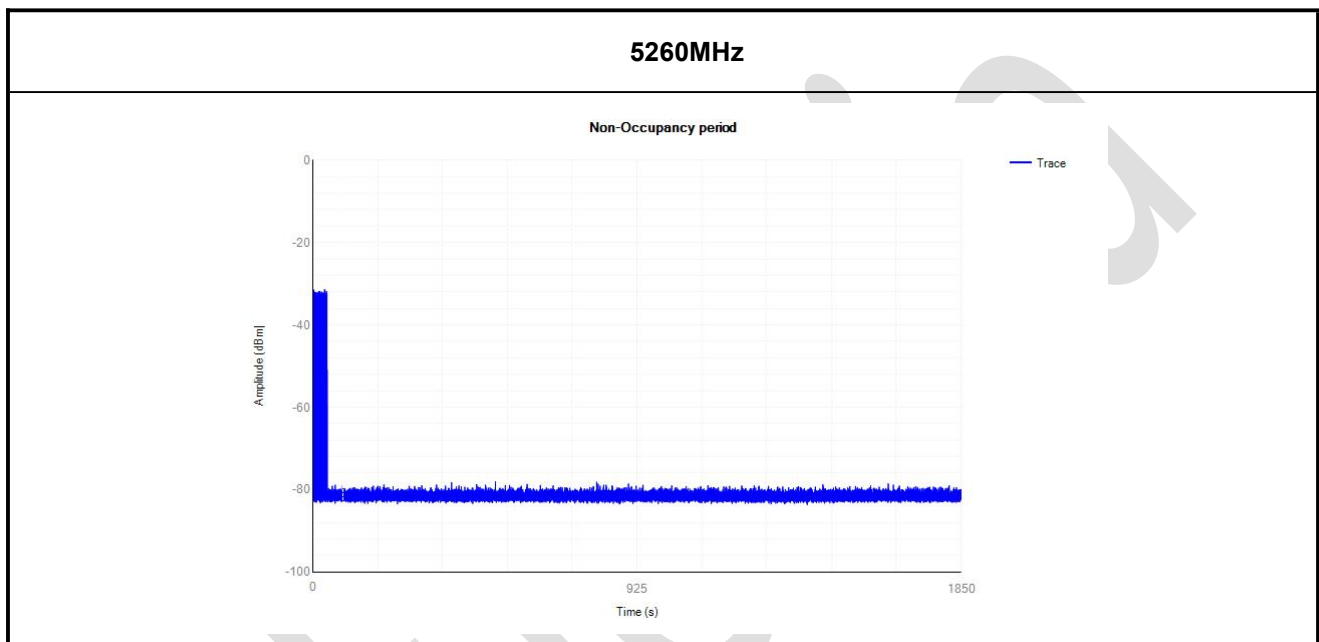
☐ For master device




7 Test Result

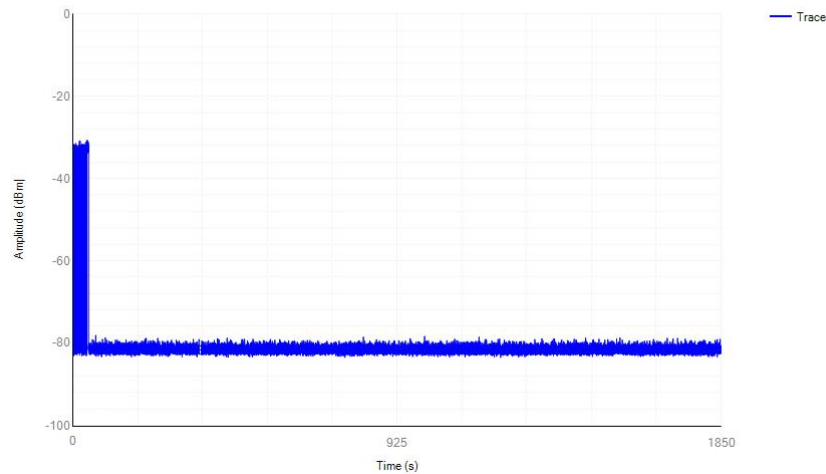
7.1 Non-Occupancy Period

Test Items	Value	Limit	Result
Non-Occupancy Period	> 30 minutes	Minimum 30 minutes	Pass

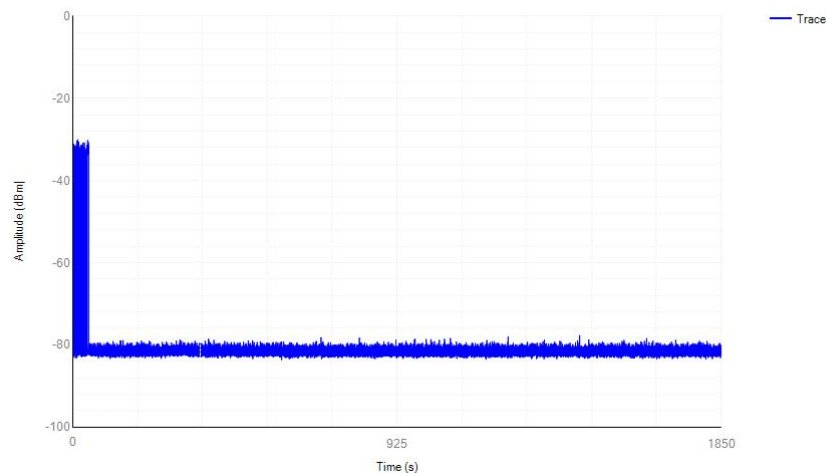


5500MHz

Non-Occupancy period

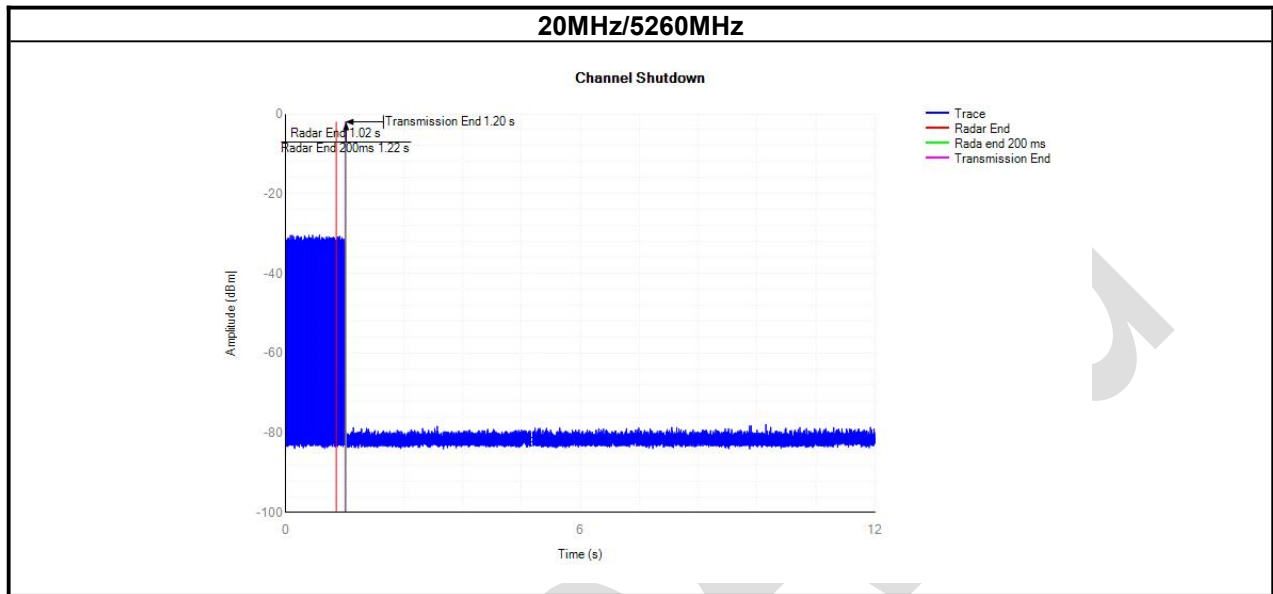
**5610MHz**

Non-Occupancy period

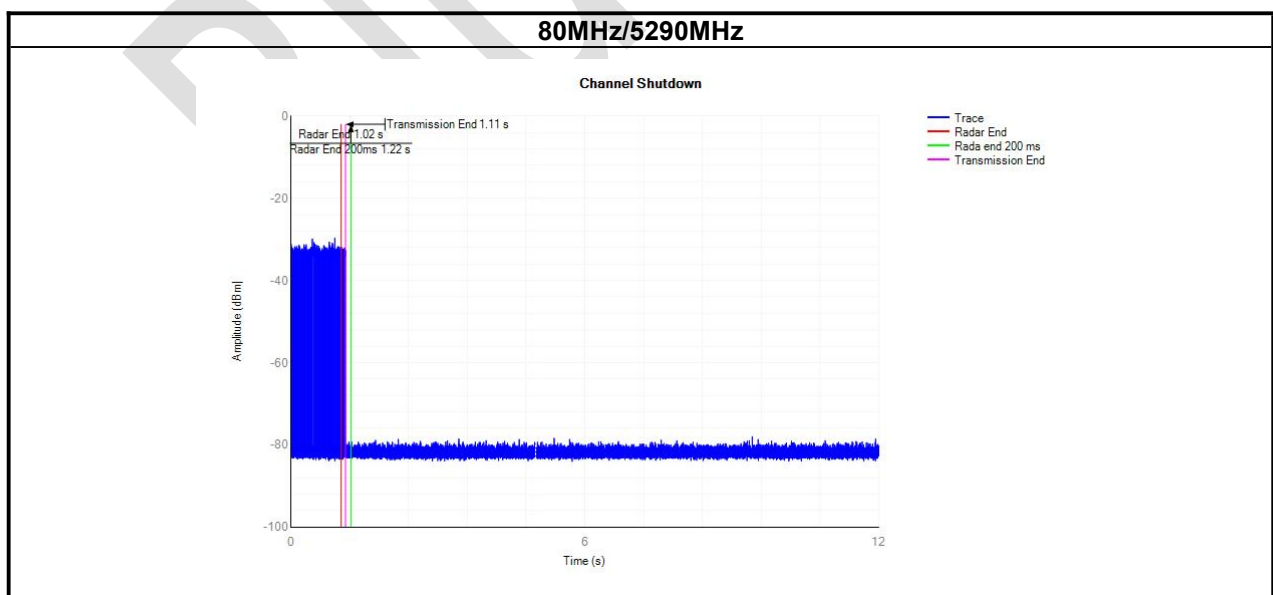


7.2 Channel Move Time and Channel Closing Transmission Time

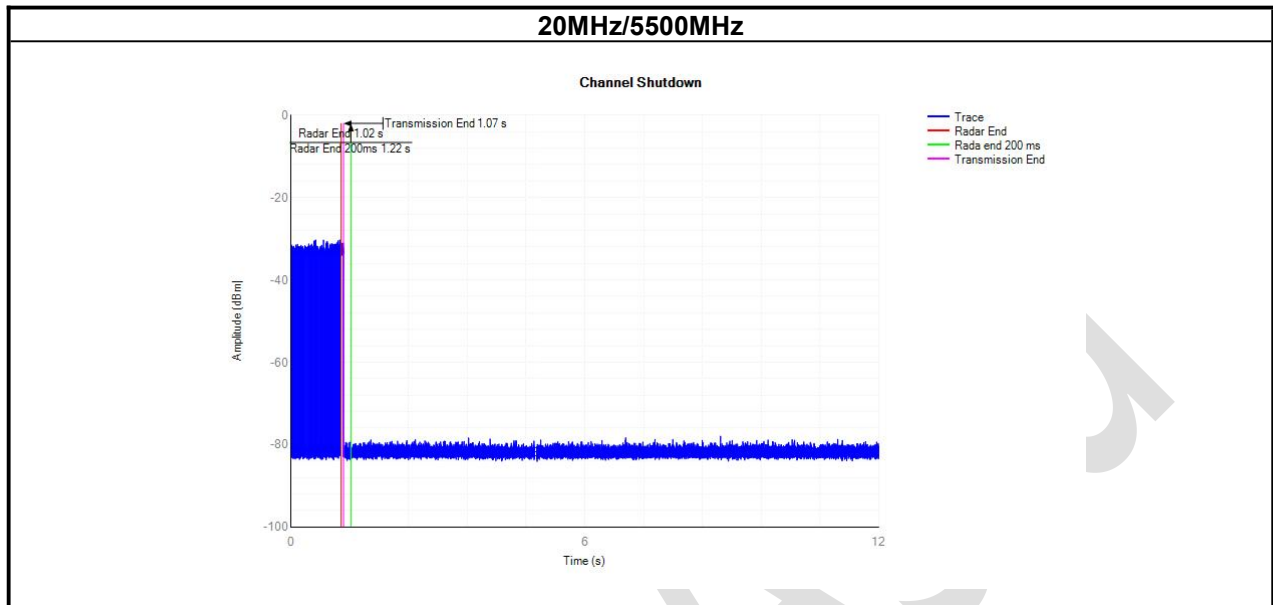
Test Items	Value	Limit	Result
Channel Closing Transmission Time	0.0832s	1s	Pass
Channel Move Time	0.1781s	10 s	Pass



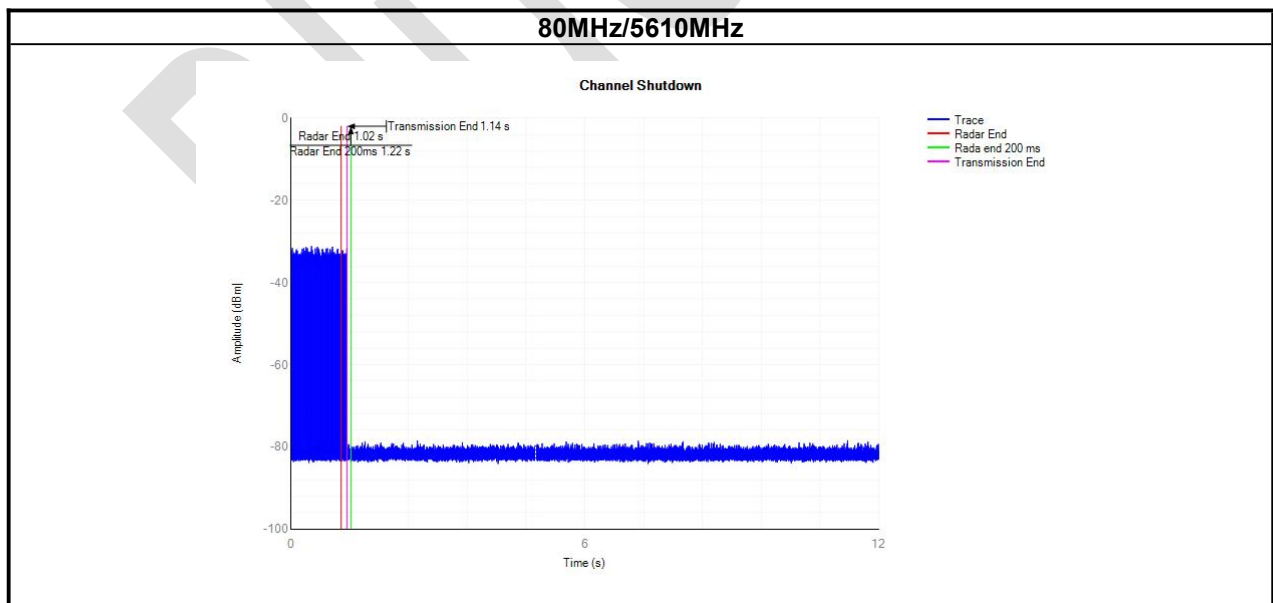
Test Items	Value	Limit	Result
Channel Closing Transmission Time	0.0356s	1s	Pass
Channel Move Time	0.0897s	10 s	Pass



Test Items	Value	Limit	Result
Channel Closing Transmission Time	0.0456s	1s	Pass
Channel Move Time	0.0477s	10s	Pass



Test Items	Value	Limit	Result
Channel Closing Transmission Time	0.0412s	1s	Pass
Channel Move Time	0.1177s	10s	Pass



8 Test photos



9 Appendix B: photographs of EUT

Reference to the test report no. BLA-EMC-202403-A9201

----END OF REPORT----

The test report is effective only with both signature and specialized stamp, the result(s) shown in this report refer only to the sample(s) tested. Without written approval of BlueAsia, this report can't be reproduced except in full.

BlueAsia