

TEST REPORT



CTK Co., Ltd.

(Ho-dong), 113, Yejik-ro, Cheoin-gu, Yongin-si, Gyeonggi-do, Korea
Tel: +82-31-339-9970
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Report No.:
CTK-2024-03273
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1. Applicant

- Name : Samsung Electronics Co Ltd
- Address : 19 Chapin Rd, Building D. Pine Brook, New Jersey, United States
- Date of Receipt : 2024-09-26

2. Manufacturer

- Name : Samsung Electronics Co., Ltd.
- Address : 129, Samsung-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16677, Republic of Korea

3. Factory

- Name #1: CHEMTRONICS CO.,LTD.
- Address #1: 35, Buk-ri, Namsa-myeon, Cheoin-gu, Yongin-si, Gyeonggi-do, Korea
- Name #2: Chengdu Xuguang Technology Co., Ltd.
- Address #2: No.86 2nd Section, Park Road, Longquanyi District, Chengdu City, Sichuan Province, P.R.China
- Name #3: CHEMTROVINA COMPANY LIMITED
- Address #3: Nhon Trach 2 - Loc Khang IZ, Hiep Phuoc Town, Nhon Trach District, Dong Nai Province, Vietnam
- Name #4: SJIT CO., LTD.
- Address #4: 54-11, Dongtanhana 1gil, Hwaseong-si, Gyeonggi-Do, Korea
- Name #5: SJIT VINA Co., Ltd
- Address #5: Lot X2, Ho Nai Industrial Zone, Ho Nai 3 Commune, Trang Bom District, Dong Nai Province, Vietnam
- Name #6: XUGUANG TECHNOLOGY (VIETNAM) COMPANY LIMITED
- Address #6: Factory No. 4, Lot CN1, An Duong Industrial Park, Hong Phong Commune, An Duong District, Hai Phong City, Vietnam

4. Use of Report : For FCC Conformance

5. Test Sample / Model: Wi-Fi/BT Transceiver / WCF730M

6. Date of Test : 2024-11-11

7. Test Standard(method) used : FCC 47 CFR part 15 subpart E 15.407

8. Testing Environment: Temp.: (21 ± 1) °C, Humidity: (52 ± 3) % R.H.

9. Test Results : Compliance

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10. Location of Test : ☒ Permanent Testing Lab ☐ On Site Testing

(Address : (Unhak-Dong) 5, Dongbu-ro 221beon-gil, Cheoin-gu, Yong-in-si,
Gyeonggi-do, Korea)

The results shown in this test report refer only to the sample(s) tested unless otherwise stated. This report cannot be reproduced or copied without the written consent of CTK.

Approval	Tested by	Technical Manager
	Su-jun Hwang: (Signature)	Won-Jae Hwang: (Signature)

Remark. This report is not related to KOLAS accreditation and relevant regulation.

2024-12-03

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REPORT REVISION HISTORY

Date	Revision	Page No
2024-12-03	Issued (CTK-2024-03273)	all

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1. General Product Description

1.1 Applicant Information

Company	Samsung Electronics Co Ltd
Contact Point	19 Chapin Rd, Building D. Pine Brook, New Jersey, United States
Contact Person	Name : JENNI CHUN E-mail : j1.chun@samsung.com Tel : 973-808-6375 Fax : -

1.2 Product Information

FCC ID	A3LWCF730M	
Product Description	Wi-Fi/BT Transceiver	
Model name	WCF730M	
Variant Model name	-	
Operating Frequency	UNII 1	20 MHz_BW : 5 180 MHz – 5 240 MHz 40 MHz_BW : 5 190 MHz – 5 230 MHz 80 MHz_BW : 5 210 MHz
	UNII 2A	20 MHz_BW : 5 260 MHz – 5 320 MHz 40 MHz_BW : 5 270 MHz – 5 310 MHz 80 MHz_BW : 5 290 MHz
	UNII 2C	20 MHz_BW : 5 500 MHz – 5 720 MHz 40 MHz_BW : 5 510 MHz – 5 710 MHz 80 MHz_BW : 5 530 MHz – 5 690 MHz
	UNII 3	20 MHz_BW : 5 745 MHz – 5 825 MHz 40 MHz_BW : 5 755 MHz – 5 795 MHz 80 MHz_BW : 5 775 MHz
RF Output Power	802.11a : 17.62 dBm (57.81 mW) 802.11n_HT20 : 17.62 dBm (57.81 mW) 802.11n_HT40 : 17.59 dBm (57.41 mW) 802.11ac_VHT20 : 18.26 dBm (66.99 mW) 802.11ac_VHT40 : 18.22 dBm (66.37 mW) 802.11ac_VHT80 : 17.96 dBm (62.52 mW)	
Antenna Specification	Antenna type : Chip Antenna	
	UNII 1, UNII 2A	Peak Gain : 0.54 dBi (ANT1), 1.58 dBi (ANT2)
	UNII 2C, UNII 3	Peak Gain : 1.69 dBi (ANT1), 3.75 dBi (ANT2)
Antenna Configurations	802.11a : SISO(ANT1, ANT2) 802.11n : SISO(ANT1, ANT2), MIMO(ANT1+ANT2) 802.11ac : SISO(ANT1, ANT2), MIMO(ANT1+ANT2)	
Type of Modulation	802.11a/n/ac : OFDM	
Data Rate	802.11a : 54 / 48 / 36 / 24 / 18 / 12 / 9 / 6 Mbps 802.11n : up to 300 Mbps 802.11ac : up to 867 Mbps	
Power Source	DC 5 V	
Hardware Rev	WCF730M	
Software Rev	FC *0.*	
Dynamic Frequency Selection	Slave without radar detection	

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1.3 Peripheral Devices

Device	Manufacturer	Model No.	Serial No.
Note Computer	msi	MS-1245	-
AC/DC Adapter	HP	ADP-40PH	-
WLAN Access Point	tp-link	Archer AXE75	22221J6000455
AC/DC Adapter	Dong Guan City Gang Qi Electronic Co., Ltd	GQ48-120300-AK	

1.4 Model Differences

Not applicable

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2. Accreditations

2.1 Laboratory Accreditations and Listings

Country	Agency	Registration Number
USA	FCC	805871
CANADA	ISED	CN : 8737A CAB ID : KR0025
KOREA	NRRA	KR0025

2.2 Calibration Details of Equipment Used for Measurement

Test equipment and test accessories are calibrated on regular basis. The maximum time between calibrations is one year or what is recommended by the manufacturer, whichever is less. All test equipment calibrations are traceable to the Korea Research Institute of Standards and Science (KRISS), therefore, all test data recorded in this report is traceable to KRISS.

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3. Test Specifications

3.1 Summary of tests

Requirement(s)	Limit	Status (Note 1)	Test Condition
Channel Move Time	10 seconds	C	Conducted
Channel Closing Transmission Time	200ms + aggregate of 60ms over remaining 10 second period	C	
Client beacon test	Monitored for 10 minutes with no client transmission	C	
<u>Note 1</u> : C=Complies NC=Not Complies NT=Not Tested NA=Not Applicable			
<u>Note 2</u> : The data in this test report are traceable to the national or international standards.			
<u>Note 3</u> : The sample was tested according to the following specification: FCC Part 15.407, ANSI C63.10-2013			
<u>Note 4</u> : The tests were performed according to the method of measurements prescribed in KDB No.905462.			

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3.2 Description of Dynamic Frequency Selection Test

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

Requirement	Operational Mode		
	Master	Client Without Radar Detection	Client With Radar Detection
<i>Non-Occupancy Period</i>	Yes	Not required	Yes
<i>DFS Detection Threshold</i>	Yes	Not required	Yes
<i>Channel Availability Check Time</i>	Yes	Not required	Not required
<i>U-NII Detection Bandwidth</i>	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
<i>DFS Detection Threshold</i>	Yes	Not required
<i>Channel Closing Transmission Time</i>	Yes	Yes
<i>Channel Move Time</i>	Yes	Yes
<i>U-NII Detection Bandwidth</i>	Yes	Not required

Additional requirements for devices with multiple bandwidth modes	Master Device or Client with Radar Detection	Client Without Radar Detection
<i>U-NII Detection Bandwidth and Statistical Performance Check</i>	All BW modes must be tested	Not required
<i>Channel Move Time and Channel Closing Transmission Time</i>	Test using widest BW mode available	Test using the widest BW mode available for the link
<i>All other tests</i>	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.		

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**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 $\geq$ 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
<i>Non-occupancy period</i>	Minimum 30 minutes
<i>Channel Availability Check Time</i>	60 seconds
<i>Channel Move Time</i>	10 seconds See Note 1.
<i>Channel Closing Transmission Time</i>	200 milliseconds + an aggregate of 60 milliseconds over remaining 10 second period. See Notes 1 and 2.
<i>U-NII Detection Bandwidth</i>	Minimum 100% of the U- NII 99% transmission power bandwidth. See Note 3.
Note 1: <i>Channel Move Time</i> and the <i>Channel Closing Transmission Time</i> should be performed with Radar Type 0. The measurement timing begins at the end of the Radar Type 0 burst. Note 2: The <i>Channel Closing Transmission Time</i> is comprised of 200 milliseconds starting at the beginning of the <i>Channel Move Time</i> plus any additional intermittent control signals required to facilitate a <i>Channel move</i> (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 <i>U-NII Detection Bandwidth</i> 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.	

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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.					

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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

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

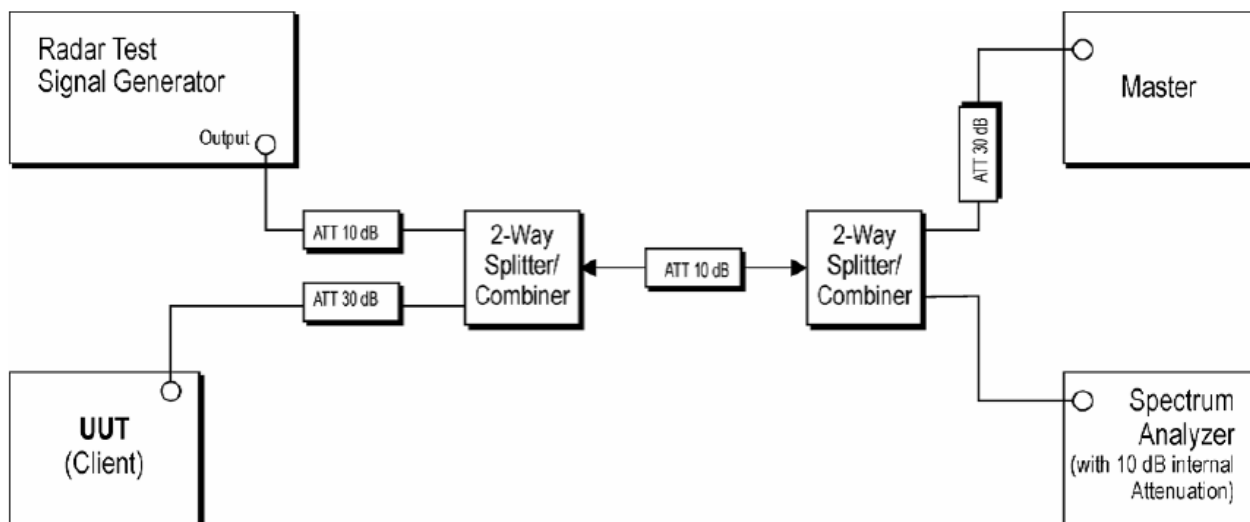


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3.3 Measuring Systematic diagram



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3.4 Description of EUT

Overview Of EUT With Respect To §15.407 (H) Requirements

The EUT operates over the 5250-5350 MHz and 5470-5725 MHz range.

The EUT is a Client Device that does not have radar detection capability.

The Slave device associated with the EUT during these tests does not have radar detection capability.

All tests are conducted with Pulse Type 0.

A sample with temporary antenna connector was provided to perform the measurements in a conducted way.

Iperf was used to generate the required channel load (duty cycle greater than 17%).

The EUT utilizes the 802.11a/n/ac architecture, with a nominal channel bandwidth of 20/40/80 MHz.

The Master Device is a ASUS RT-AX88U 802.11a/b/g/n/ac/ax WLAN Access Point,

FCC ID: MSQ-RTAXHP00

Threshold level is lower than the required level hence it provides margin to the limit.

3.4.1 Test Channel

All test were performed at a channel center frequency of 5 320 MHz and 5 500 MHz for 20 MHz Bandwidth.

All test were performed at a channel center frequency of 5 290 MHz and 5 530 MHz for 80 MHz Bandwidth.

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3.4.2 Test Result

DFS In-Service Monitoring (5320 MHz; 20.000 dBm; 20 MHz)

Test according to FCC title 47 part 15 75.407(h), KDB 905462 D02 U-NII DFS Compliance Procedures New Rules v02

Measurement Summary

DUT Frequency (MHz)	Radar Type No.	Type of Measurement value	Overall Result
5320.000000	0.00	First of all Transmitt Test	---
5320.000000	0.00	Channel Move Time	PASS
5320.000000	0.00	Channel Closing Transmission Time	PASS
5320.000000	0.00	Non-occupancy period	PASS

(continuation of the "Measurement Summary" table from column 4 ...)

DUT Frequency (MHz)	Overall Comment
5320.000000	not performed / not finished
5320.000000	
5320.000000	
5320.000000	

Channel Move Time Detailed Result

DUT Frequency (MHz)	Radar Type No.	CMT Tx Time (s)	CMT Limit (s)	CMT Result	CMT Comment
5320.000000	0.00	0.816	10.000	PASS	Tx Time value is last trailing edge found within sweep. See Note 1.

Channel Closing Transmission Time Detailed Results

DUT Frequency (MHz)	Radar Type No.	CCTT Type of Value	CCTT No. of Pulses found	CCTT Tx Time (ms)
5320.000000	0.00	first 200 ms	17	1.332
5320.000000	0.00	remaining 10.0 second(s) period	105	6.672

(continuation of the "Channel Closing Transmission Time Detailed Results" table from column 5 ...)

DUT Frequency (MHz)	CCTT Tx Time Limit (ms)	CCTT Result	CCTT Comment
5320.000000	200.000	PASS	See Note 1.
5320.000000	60.000	PASS	See Note 1.

Non-occupancy period Detailed Results

DUT Frequency (MHz)	Radar Type No.	NOP No. of Pulses found	NOP No. of Pulses Limit	NOP Tx Time (s)	NOP Tx Time Limit (s)	NOP Result
5320.000000	0.00	0	0	0.000	0.000	PASS

Transmitting Test Detailed Results

DUT Frequency (MHz)	Tx-Test Result	Tx-Test Comment
5320.000000	---	not performed / not finished



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Radar level verification

Description / Formula	Value	Unit
IF(({DFS Mode(0/1/2)}=0)or({DFS Mode(0/1/2)}=1) , IF((dBm2W({Nominal Power[dBm]}>0.2) , -64 , IF({Configured PSD[dBm]}<10) , -62 , -64))+ {Attenuation Vector Generator to DUT[dB]} , -50+ {Attenuation Vector Generator to COMP[dB]}+ {Radar Signal Level Offset[dB]})	Given setting / formula to calculate Vector Generator level	--
Configured DUT EIRP:	100.00	mW
Configured DUT PSD:	6.99	dBm/MHz
Requirement of the Detection threshold value for this given values acc. to FCC clause 5.2 / Table 3	-62	dBm
Vector Generator level setting	-0.07	dBm
Configured overall pathloss from Vector Generator RF out to DUT connector of 'DUT to OSP'-cable	36.50	dB
Given additional level added to the amplitude of the waveform to account for variations in measurement equipment acc. to FCC clause 5.2 / Table 3 / Note 2	1.00	dB
This results in the following radar signal level at the DUT	-36.57	dBm

Additional Information

Note	Description
Note 1:	Because of the radar pulse event at the beginning, the investigation of the trace begins with an offset of 28.7 ms conforming to the end of the Radar burst.
Note 2:	Channel move time (CMT) / channel closing transmission time (CCTT) measurement was made with hi resolution video sweep using OSP DAQ channel
Note 3:	Because of the substantially higher sampling rate of the video signal the results for CCTT and CMT are more accurate than in the graphics visible. Reached timing accuracy of the video trace: approx 4
Note 4:	The Non-Occupancy Period trace starts at the end of the Channel move time trace (20.000 secs.) Labeling of the x-axis (time) is relative to its beginning (0 secs.)

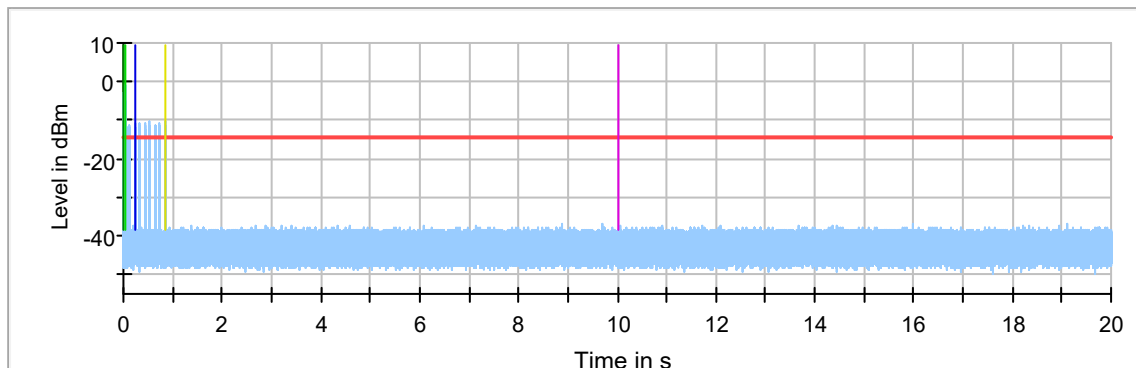


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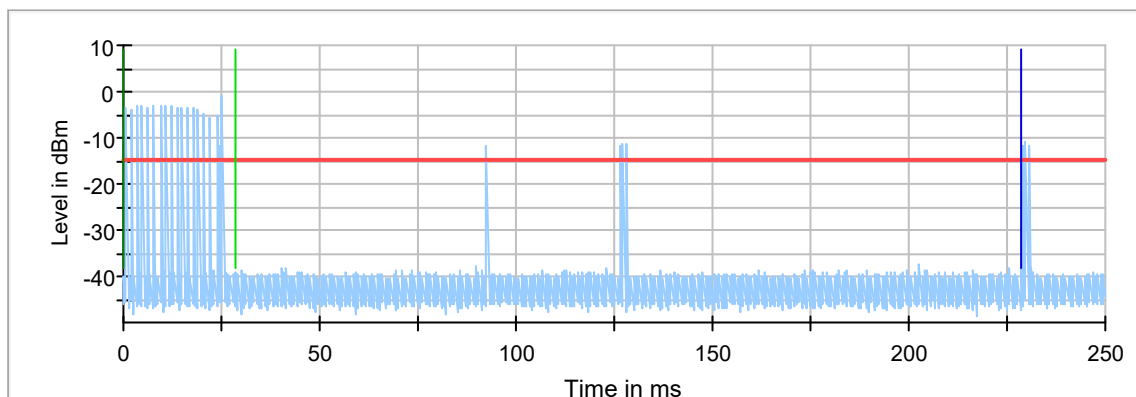
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Channel Move Time



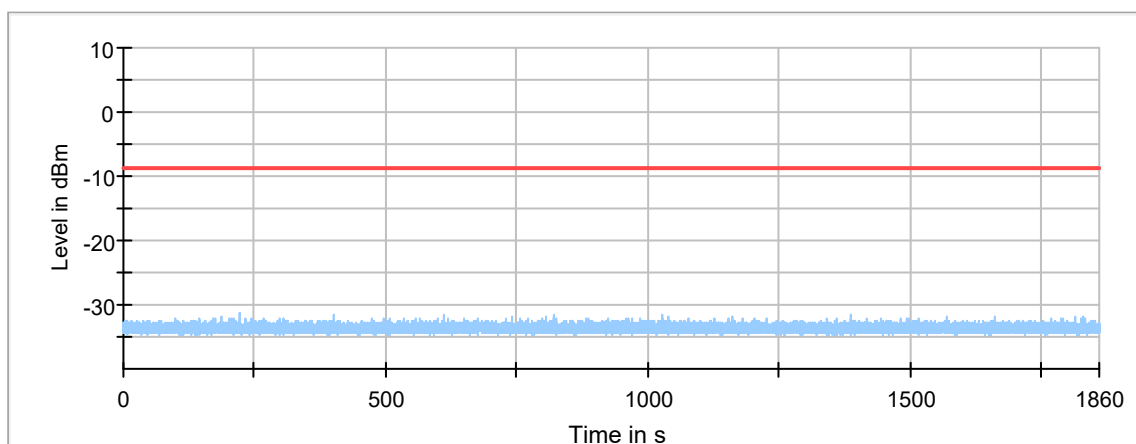
- Channel Move Time
- Start of Radar
- First 200ms of Channel Closing Tx Time
- Last measured edge of Channel Closing Tx Time
- Threshold
- Trigger at end of Radar
- 10sec Channel Move Time Limit

Channel Move Time first 200ms



- Channel Move Time first 200ms
- Start of Radar
- First 200ms of Channel Closing Tx Time
- Threshold
- Trigger at end of Radar

Non-occupancy period



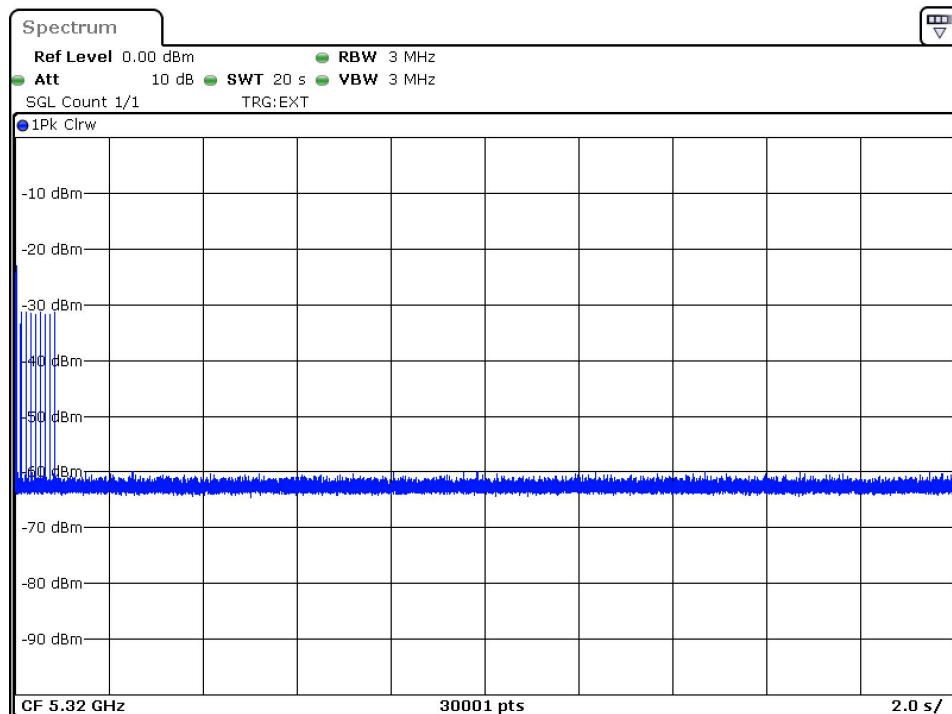
- Non-occupancy period
- Threshold



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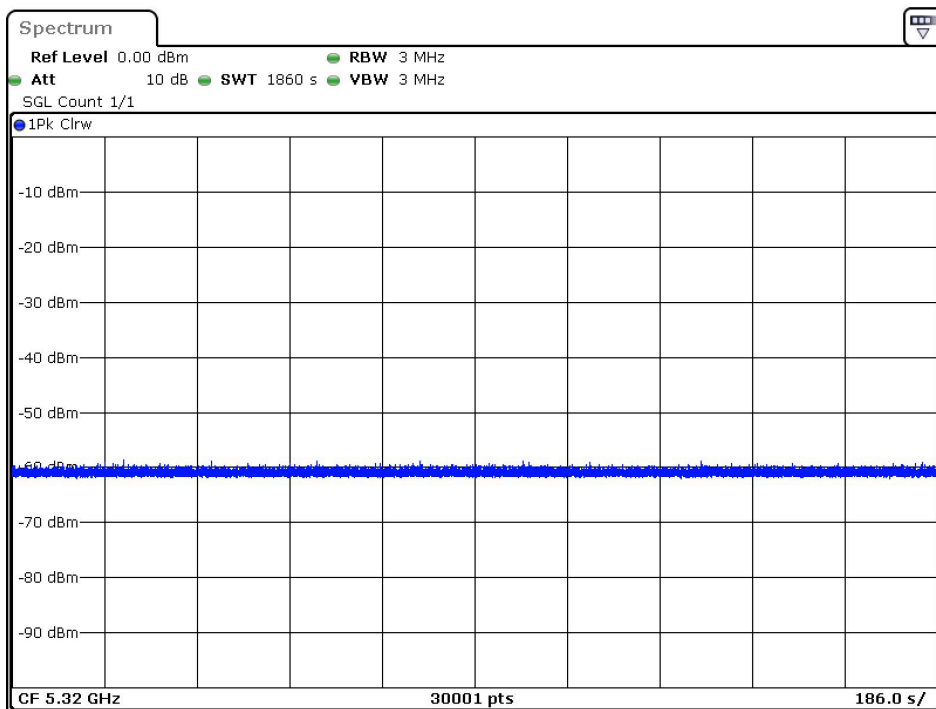
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Channel Move Time



Date: 11.NOV.2024 10:30:53

Non-occupancy period



Date: 11.NOV.2024 11:02:02

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DFS In-Service Monitoring (5500 MHz; 20.000 dBm; 20 MHz)

Test according to FCC title 47 part 15 ?5.407(h), KDB 905462 D02 U-NII DFS Compliance Procedures New Rules v02

Measurement Summary

DUT Frequency (MHz)	Radar Type No.	Type of Measurement value	Overall Result
5500.000000	0.00	First of all Transmitt Test	---
5500.000000	0.00	Channel Move Time	PASS
5500.000000	0.00	Channel Closing Transmission Time	PASS
5500.000000	0.00	Non-occupancy period	PASS

(continuation of the "Measurement Summary" table from column 4 ...)

DUT Frequency (MHz)	Overall Comment
5500.000000	not performed / not finished
5500.000000	
5500.000000	
5500.000000	

Channel Move Time Detailed Result

DUT Frequency (MHz)	Radar Type No.	CMT Tx Time (s)	CMT Limit (s)	CMT Result	CMT Comment
5500.000000	0.00	0.741	10.000	PASS	Tx Time value is last trailing edge found within sweep. See Note 1.

Channel Closing Transmission Time Detailed Results

DUT Frequency (MHz)	Radar Type No.	CCTT Type of Value	CCTT No. of Pulses found	CCTT Tx Time (ms)
5500.000000	0.00	first 200 ms	37	28.520
5500.000000	0.00	remaining 10.0 second(s) period	23	6.728

(continuation of the "Channel Closing Transmission Time Detailed Results" table from column 5 ...)

DUT Frequency (MHz)	CCTT Tx Time Limit (ms)	CCTT Result	CCTT Comment
5500.000000	200.000	PASS	See Note 1.
5500.000000	60.000	PASS	See Note 1.

Non-occupancy period Detailed Results

DUT Frequency (MHz)	Radar Type No.	NOP No. of Pulses found	NOP No. of Pulses Limit	NOP Tx Time (s)	NOP Tx Time Limit (s)	NOP Result
5500.000000	0.00	0	0	0.000	0.000	PASS

Transmitting Test Detailed Results

DUT Frequency (MHz)	Tx-Test Result	Tx-Test Comment
5500.000000	---	not performed / not finished



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Radar level verification

Description / Formula	Value	Unit
IF(({DFS Mode(0/1/2)}=0)or({DFS Mode(0/1/2)}=1) , IF((dBm2W({Nominal Power[dBm]}>0.2) , -64 , IF({Configured PSD[dBm]}<10) , -62 , -64))+ {Attenuation Vector Generator to DUT[dB]} , -50+ {Attenuation Vector Generator to COMP[dB]}+ {Radar Signal Level Offset[dB]})	Given setting / formula to calculate Vector Generator level	--
Configured DUT EIRP:	100.00	mW
Configured DUT PSD:	6.99	dBm/MHz
Requirement of the Detection threshold value for this given values acc. to FCC clause 5.2 / Table 3	-62	dBm
Vector Generator level setting	1.06	dBm
Configured overall pathloss from Vector Generator RF out to DUT connector of 'DUT to OSP'-cable	37.44	dB
Given additional level added to the amplitude of the waveform to account for variations in measurement equipment acc. to FCC clause 5.2 / Table 3 / Note 2	1.00	dB
This results in the following radar signal level at the DUT	-36.38	dBm

Additional Information

Note	Description
Note 1:	Because of the radar pulse event at the beginning, the investigation of the trace begins with an offset of 28.7 ms conforming to the end of the Radar burst.
Note 2:	Channel move time (CMT) / channel closing transmission time (CCTT) measurement was made with hi resolution video sweep using OSP DAQ channel
Note 3:	Because of the substantially higher sampling rate of the video signal the results for CCTT and CMT are more accurate than in the graphics visible. Reached timing accuracy of the video trace: approx 4
Note 4:	The Non-Occupancy Period trace starts at the end of the Channel move time trace (20.000 secs.) Labeling of the x-axis (time) is relative to its beginning (0 secs.)

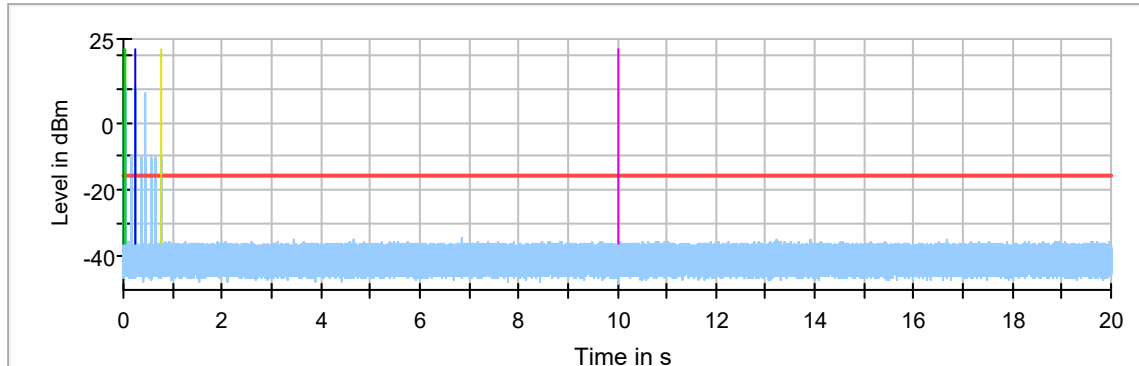


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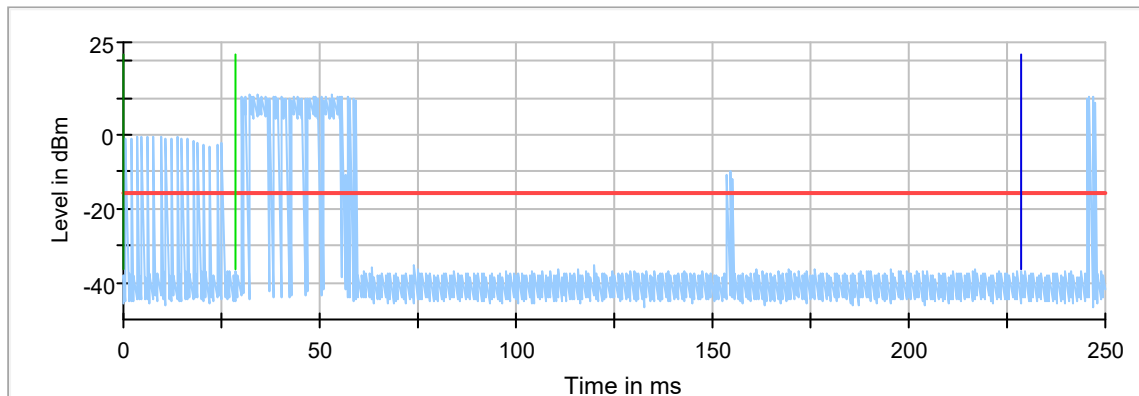
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Channel Move Time



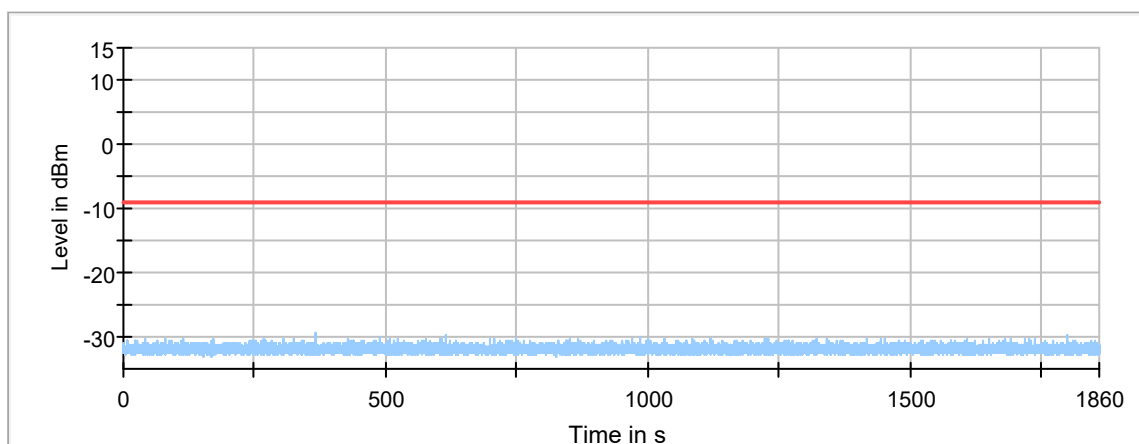
- Channel Move Time
- Start of Radar
- First 200ms of Channel Closing Tx Time
- Last measured edge of Channel Closing Tx Time
- Threshold
- Trigger at end of Radar
- 10sec Channel Move Time Limit

Channel Move Time first 200ms



- Channel Move Time first 200ms
- Start of Radar
- First 200ms of Channel Closing Tx Time
- Threshold
- Trigger at end of Radar

Non-occupancy period



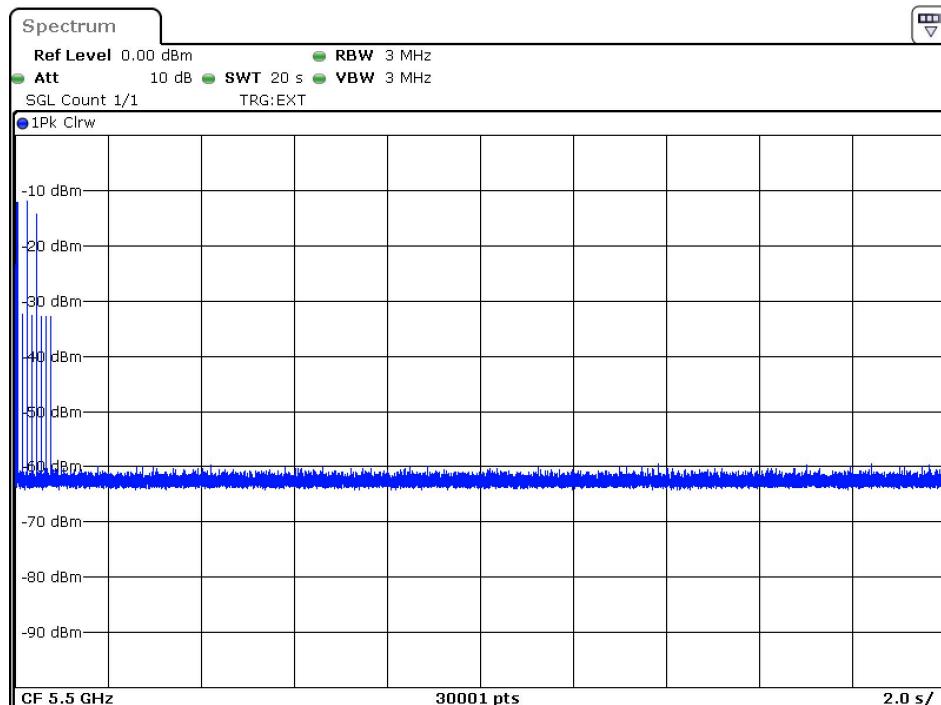
- Non-occupancy period
- Threshold



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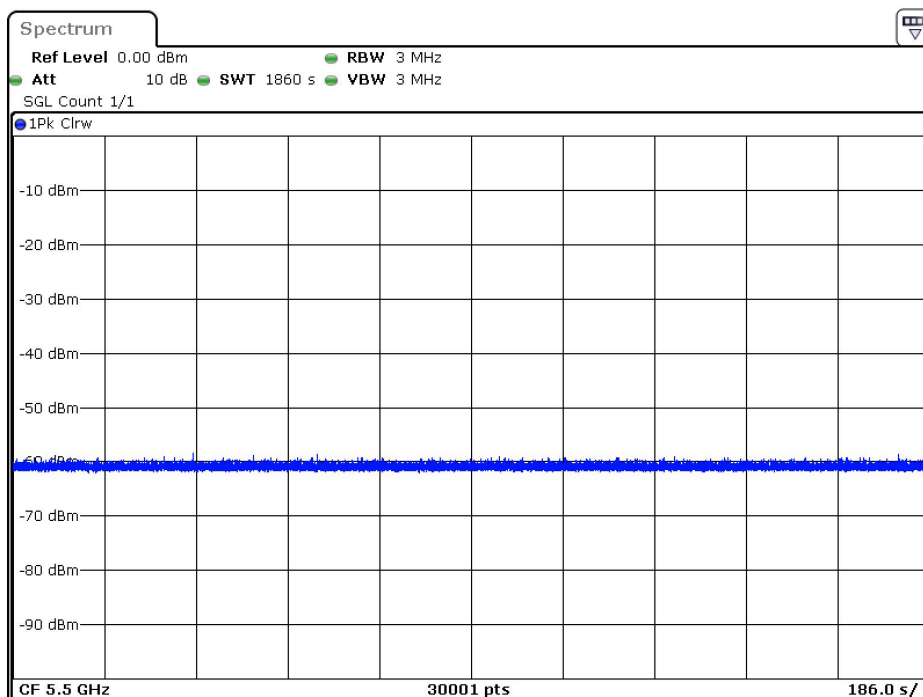
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Channel Move Time



Date: 11.NOV.2024 12:14:53

Non-occupancy period



Date: 11.NOV.2024 12:46:01

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DFS In-Service Monitoring (5290 MHz; 20.000 dBm; 80 MHz)

Test according to FCC title 47 part 15 ?5.407(h), KDB 905462 D02 U-NII DFS Compliance Procedures New Rules v02

Measurement Summary

DUT Frequency (MHz)	Radar Type No.	Type of Measurement value	Overall Result
5290.000000	0.00	First of all Transmitt Test	---
5290.000000	0.00	Channel Move Time	PASS
5290.000000	0.00	Channel Closing Transmission Time	PASS
5290.000000	0.00	Non-occupancy period	PASS

(continuation of the "Measurement Summary" table from column 4 ...)

DUT Frequency (MHz)	Overall Comment
5290.000000	not performed / not finished
5290.000000	
5290.000000	
5290.000000	

Channel Move Time Detailed Result

DUT Frequency (MHz)	Radar Type No.	CMT Tx Time (s)	CMT Limit (s)	CMT Result	CMT Comment
5290.000000	0.00	0.483	10.000	PASS	Tx Time value is last trailing edge found within sweep. See Note 1.

Channel Closing Transmission Time Detailed Results

DUT Frequency (MHz)	Radar Type No.	CCTT Type of Value	CCTT No. of Pulses found	CCTT Tx Time (ms)
5290.000000	0.00	first 200 ms	v	0.528
5290.000000	0.00	remaining 10.0 second(s) period	4	0.052

(continuation of the "Channel Closing Transmission Time Detailed Results" table from column 5 ...)

DUT Frequency (MHz)	CCTT Tx Time Limit (ms)	CCTT Result	CCTT Comment
5290.000000	200.000	PASS	See Note 1.
5290.000000	60.000	PASS	See Note 1.

Non-occupancy period Detailed Results

DUT Frequency (MHz)	Radar Type No.	NOP No. of Pulses found	NOP No. of Pulses Limit	NOP Tx Time (s)	NOP Tx Time Limit (s)	NOP Result
5290.000000	0.00	0	0	0.000	0.000	PASS

Transmitting Test Detailed Results

DUT Frequency (MHz)	Tx-Test Result	Tx-Test Comment
5290.000000	---	not performed / not finished



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Radar level verification

Description / Formula	Value	Unit
IF(({DFS Mode(0/1/2)}=0)or({DFS Mode(0/1/2)}=1) , IF((dBm2W({Nominal Power[dBm]}>0.2) , -64 , IF({Configured PSD[dBm]}<10) , -62 , -64))+ {Attenuation Vector Generator to DUT[dB]} , -50+ {Attenuation Vector Generator to COMP[dB]}+ {Radar Signal Level Offset[dB]})	Given setting / formula to calculate Vector Generator level	--
Configured DUT EIRP:	100.00	mW
Configured DUT PSD:	0.97	dBm/MHz
Requirement of the Detection threshold value for this given values acc. to FCC clause 5.2 / Table 3	-62	dBm
Vector Generator level setting	-0.88	dBm
Configured overall pathloss from Vector Generator RF out to DUT connector of 'DUT to OSP'-cable	36.62	dB
Given additional level added to the amplitude of the waveform to account for variations in measurement equipment acc. to FCC clause 5.2 / Table 3 / Note 2	1.00	dB
This results in the following radar signal level at the DUT	-37.51	dBm

Additional Information

Note	Description
Note 1:	Because of the radar pulse event at the beginning, the investigation of the trace begins with an offset of 28.7 ms conforming to the end of the Radar burst.
Note 2:	Channel move time (CMT) / channel closing transmission time (CCTT) measurement was made with hi resolution video sweep using OSP DAQ channel
Note 3:	Because of the substantially higher sampling rate of the video signal the results for CCTT and CMT are more accurate than in the graphics visible. Reached timing accuracy of the video trace: approx 4
Note 4:	The Non-Occupancy Period trace starts at the end of the Channel move time trace (20.000 secs.) Labeling of the x-axis (time) is relative to its beginning (0 secs.)

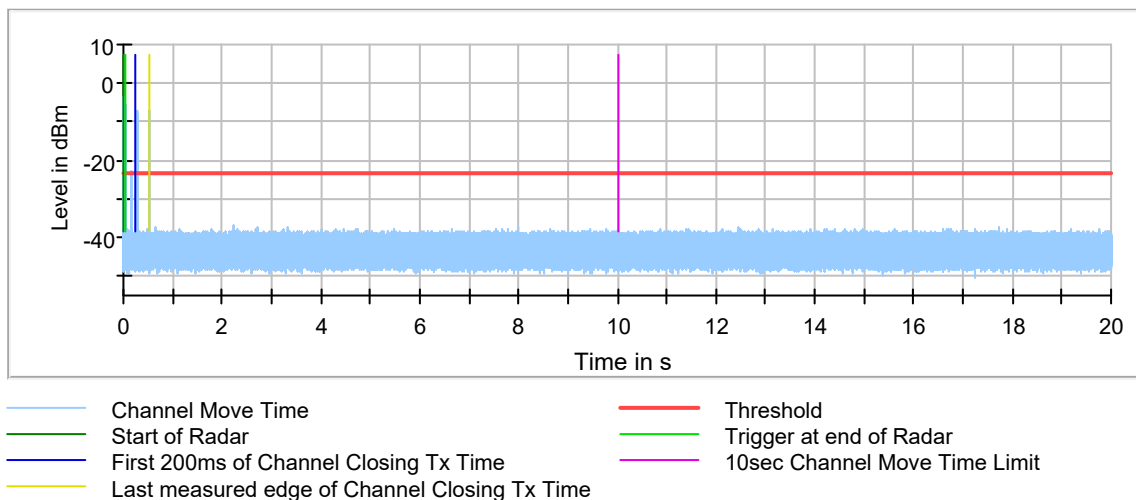


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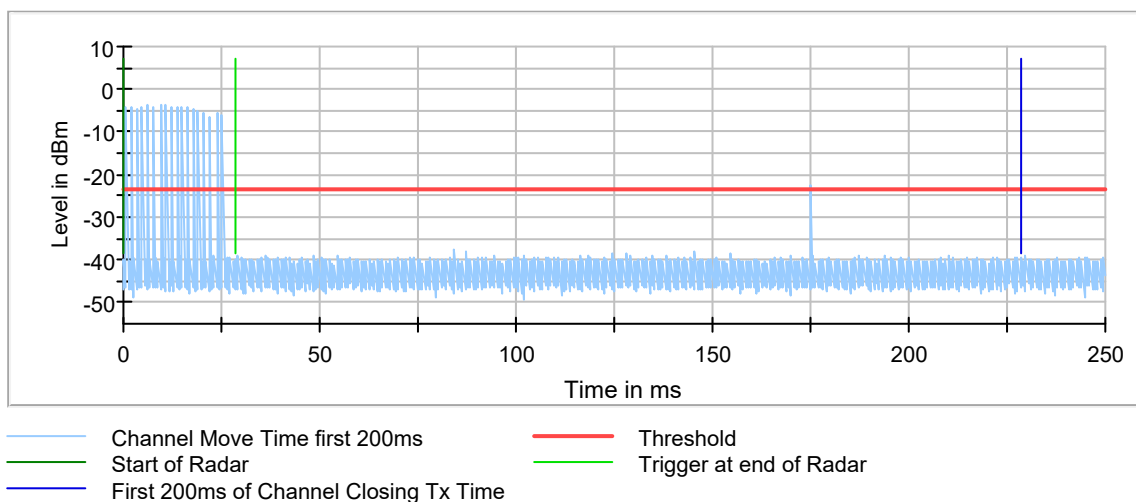
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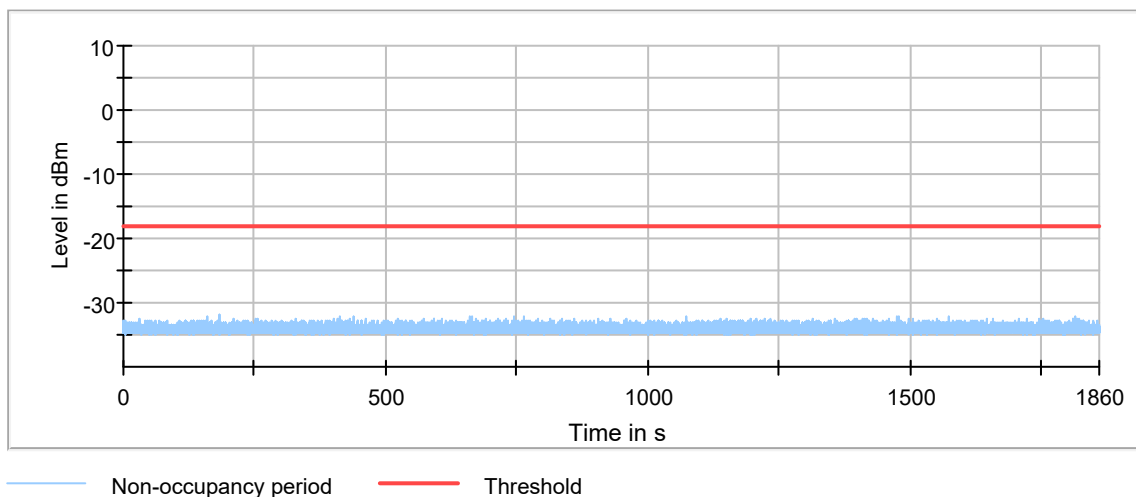
Channel Move Time



Channel Move Time first 200ms



Non-occupancy period

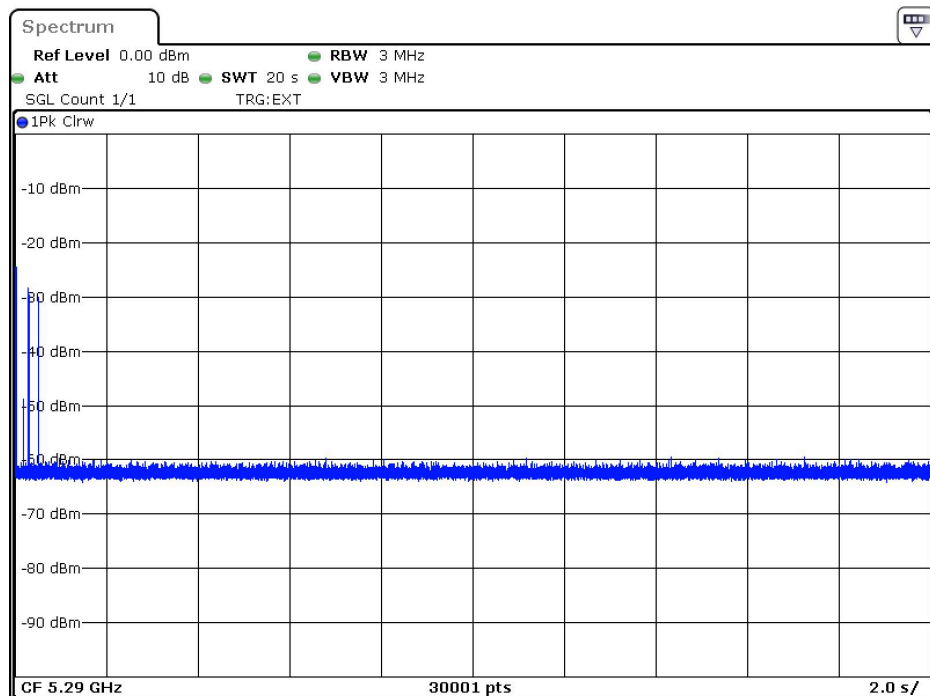




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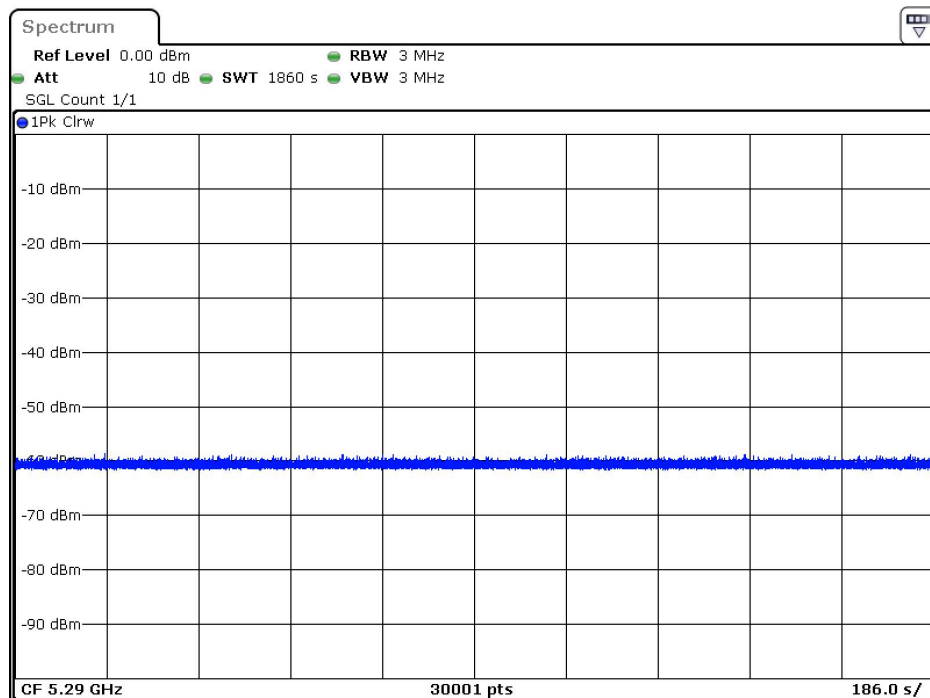
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Channel Move Time



Date: 11.NOV.2024 12:54:23

Non-occupancy period



Date: 11.NOV.2024 13:25:31

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DFS In-Service Monitoring (5530 MHz; 20.000 dBm; 80 MHz)

Test according to FCC title 47 part 15 ?5.407(h), KDB 905462 D02 U-NII DFS Compliance Procedures New Rules v02

Measurement Summary

DUT Frequency (MHz)	Radar Type No.	Type of Measurement value	Overall Result
5530.000000	0.00	First of all Transmitt Test	---
5530.000000	0.00	Channel Move Time	PASS
5530.000000	0.00	Channel Closing Transmission Time	PASS
5530.000000	0.00	Non-occupancy period	PASS

(continuation of the "Measurement Summary" table from column 4 ...)

DUT Frequency (MHz)	Overall Comment
5530.000000	not performed / not finished
5530.000000	
5530.000000	
5530.000000	

Channel Move Time Detailed Result

DUT Frequency (MHz)	Radar Type No.	CMT Tx Time (s)	CMT Limit (s)	CMT Result	CMT Comment
5530.000000	0.00	0.421	10.000	PASS	Tx Time value is last trailing edge found within sweep. See Note 1.

Channel Closing Transmission Time Detailed Results

DUT Frequency (MHz)	Radar Type No.	CCTT Type of Value	CCTT No. of Pulses found	CCTT Tx Time (ms)
5530.000000	0.00	first 200 ms	13	0.404
5530.000000	0.00	remaining 10.0 second(s) period	2	0.000

(continuation of the "Channel Closing Transmission Time Detailed Results" table from column 5 ...)

DUT Frequency (MHz)	CCTT Tx Time Limit (ms)	CCTT Result	CCTT Comment
5530.000000	200.000	PASS	See Note 1.
5530.000000	60.000	PASS	See Note 1.

Non-occupancy period Detailed Results

DUT Frequency (MHz)	Radar Type No.	NOP No. of Pulses found	NOP No. of Pulses Limit	NOP Tx Time (s)	NOP Tx Time Limit (s)	NOP Result
5530.000000	0.00	0	0	0.000	0.000	PASS

Transmitting Test Detailed Results

DUT Frequency (MHz)	Tx-Test Result	Tx-Test Comment
5530.000000	---	not performed / not finished



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Radar level verification

Description / Formula	Value	Unit
IF(({DFS Mode(0/1/2)}=0)or({DFS Mode(0/1/2)}=1) , IF((dBm2W({Nominal Power[dBm]}>0.2) , -64 , IF({Configured PSD[dBm]}<10) , -62 , -64))+ {Attenuation Vector Generator to DUT[dB]} , -50+ {Attenuation Vector Generator to COMP[dB]}+ {Radar Signal Level Offset[dB]})	Given setting / formula to calculate Vector Generator level	--
Configured DUT EIRP:	100.00	mW
Configured DUT PSD:	0.97	dBm/MHz
Requirement of the Detection threshold value for this given values acc. to FCC clause 5.2 / Table 3	-62	dBm
Vector Generator level setting	0.76	dBm
Configured overall pathloss from Vector Generator RF out to DUT connector of 'DUT to OSP'-cable	37.59	dB
Given additional level added to the amplitude of the waveform to account for variations in measurement equipment acc. to FCC clause 5.2 / Table 3 / Note 2	1.00	dB
This results in the following radar signal level at the DUT	-36.83	dBm

Additional Information

Note	Description
Note 1:	Because of the radar pulse event at the beginning, the investigation of the trace begins with an offset of 28.7 ms conforming to the end of the Radar burst.
Note 2:	Channel move time (CMT) / channel closing transmission time (CCTT) measurement was made with hi resolution video sweep using OSP DAQ channel
Note 3:	Because of the substantially higher sampling rate of the video signal the results for CCTT and CMT are more accurate than in the graphics visible. Reached timing accuracy of the video trace: approx 4
Note 4:	The Non-Occupancy Period trace starts at the end of the Channel move time trace (20.000 secs.) Labeling of the x-axis (time) is relative to its beginning (0 secs.)

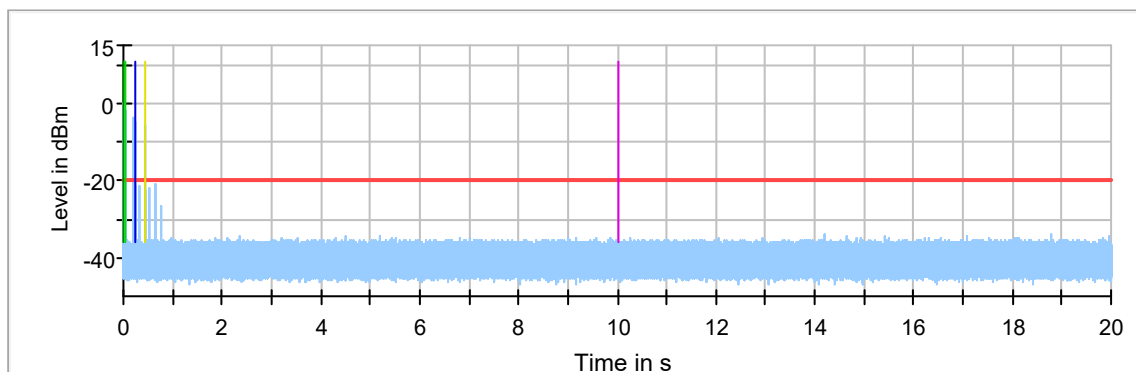


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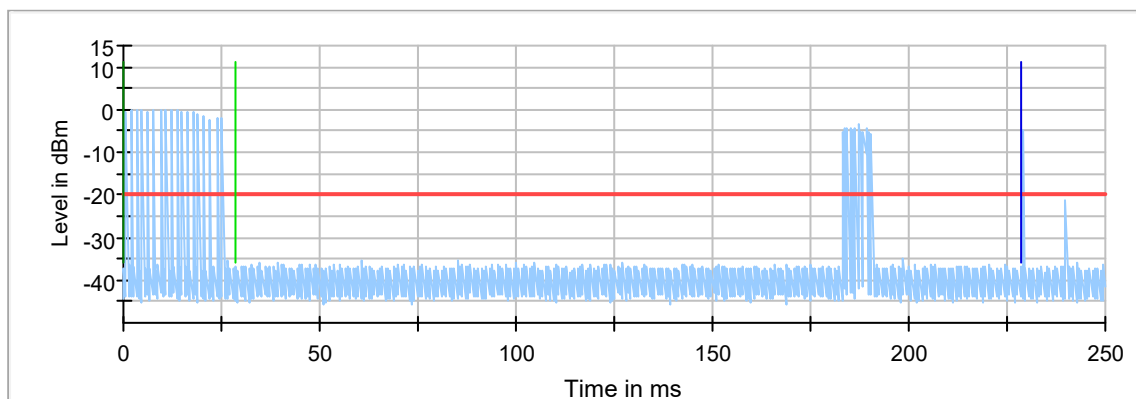
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Channel Move Time



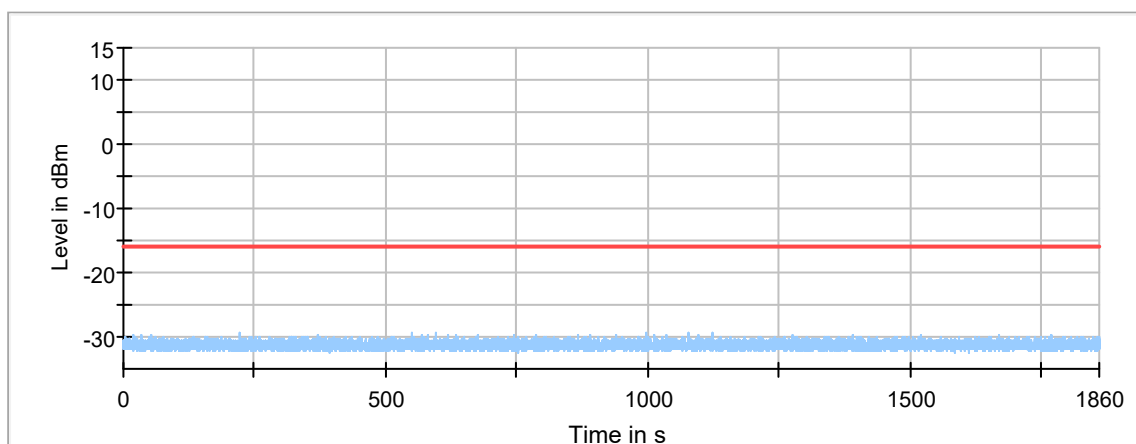
- Channel Move Time
- Start of Radar
- First 200ms of Channel Closing Tx Time
- Last measured edge of Channel Closing Tx Time
- Threshold
- Trigger at end of Radar
- 10sec Channel Move Time Limit

Channel Move Time first 200ms



- Channel Move Time first 200ms
- Start of Radar
- First 200ms of Channel Closing Tx Time
- Threshold
- Trigger at end of Radar

Non-occupancy period



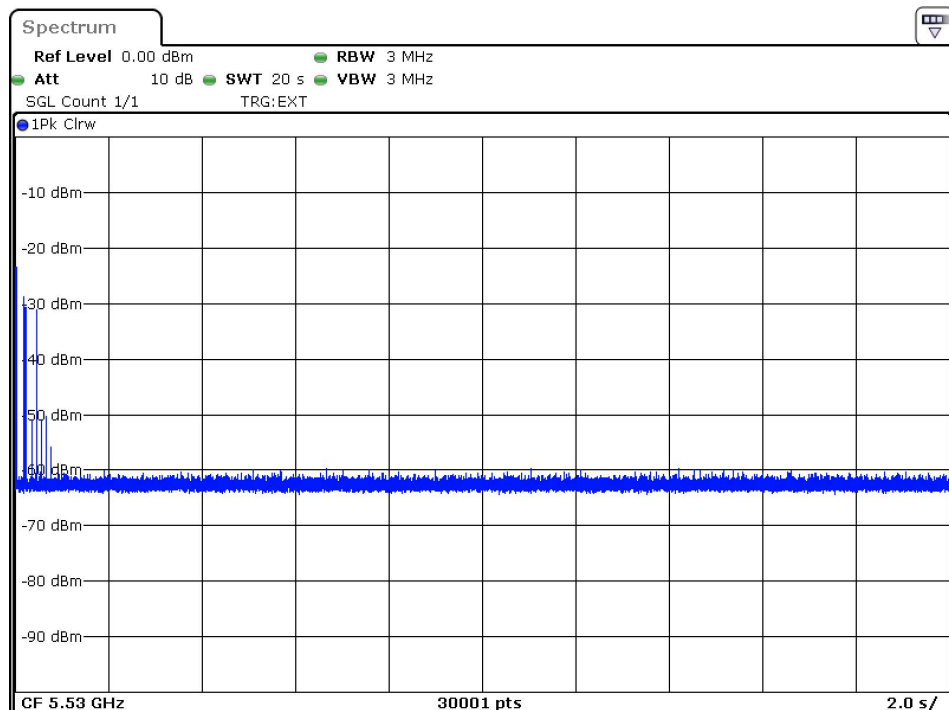
- Non-occupancy period
- Threshold



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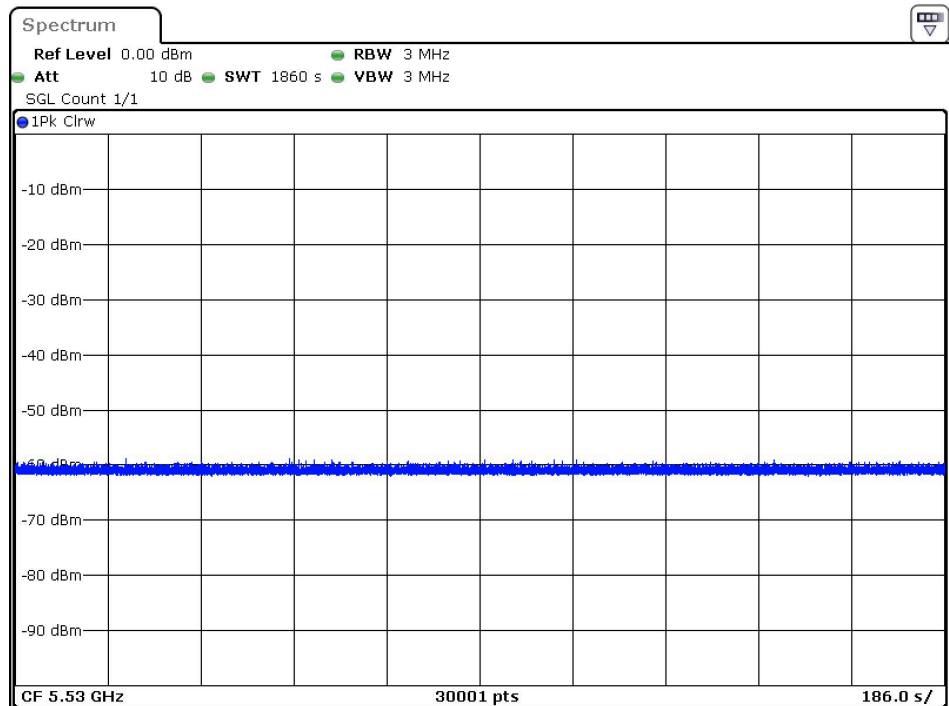
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Channel Move Time



Date: 11.NOV.2024 13:29:06

Non-occupancy period



Date: 11.NOV.2024 14:00:14

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APPENDIX A – Test Equipment Used For Tests

	Name of Equipment	Manufacturer	Model No.	Serial No.	Date of Calibration	Due Date
1	Signal Analyzer	Rohde & Schwarz	FSV-30	100925	2023-12-05	2024-12-05
2	Signal Generator	Rohde & Schwarz	SMB100A	175528	2024-03-21	2025-03-21
3	VECTOR SIGNAL GENERATOR	Rohde & Schwarz	SMBV100A	258008	2023-12-04	2024-12-04
4	OSP-B157W8 8 PORT	Rohde & Schwarz	OSP-B157W8	101051	2024-01-11	2025-01-11

	Cable	Manufacturer	Model No.	Serial No.	Check Date
1	RF Cable	Junkosha Inc.	MWX221	2008S243	2024-11-11
2	RF Cable	Junkosha Inc.	MWX221	2008S249	2024-11-11
3	RF Cable	Junkosha Inc.	MWX221	1802S129	2023-09-24
4	RF Cable	Junkosha Inc.	MWX221	1802S137	2023-09-24
5	RF Cable	Junkosha Inc.	MWX221	1802S138	2023-09-24
6	RF Cable	Junkosha Inc.	MWX221	J12J102248-00-4	2023-09-24

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