FCC 15.407 DFS only 2017

DUT Information

DUT Name:	GEM Hemochron 100
Manufacturer:	Accriva Diagnostics
Serial Number:	
Hardware Rev:	
Software Rev:	
Comment:	802.11a and 802.11n DFS for Client only

Frequencies

WLAN CH 56 (5280 MHz)	WLAN CH 62 (5310 MHz)

Bandwidths

20 MHz (20 MHz)	40 MHz (40 MHz)

Power

10.000 dBm (10 dBm)

Beamforming Gain

10.000 dBm (10 dBm)	0 dB

Gain Tables

10.000 dBm (10 dBm)	Port 1: 4.9 dBi

DUT Settings

No. of transmission chains	1
DFS capability	Yes
DFS Mode	Client without radar detection
Startup time (incl. CAC)	120 seconds
Startup time delay	0 seconds
Conf. occ. bandwidth for :	nom. Bandwidth '20000000' = 20 MHz
Conf. occ. bandwidth for :	nom. Bandwidth '40000000' = 40 MHz

Hardware Setup: WMS Measurements\TS8997

Spectrum Analyzer:	SA FSV 30 (SA FSV 30) @ VISA (ADR TCPIP::192.168.48.2::INST0::INSTR), SN 1321.3008K30/103166, FW 3.40, CAL 4/11/19
Vector Generator:	VG SMBV100A (VG SMBV100A) @ VISA (ADR TCPIP::192.168.48.7::INST0::INSTR), SN 260734, FW 3.1.19.15-3.50.082.47, CAL 11/13/18
Generator:	SMB100A (SMB100A) @ VISA (ADR TCPIP::192.168.48.3::INST0::INSTR), SN 175750, FW 3.01.203.44 / Drv:Rev 2.21.0, 07/2016, CVI 2015, CAL 11/07/18
OSP:	OSP with B157 (OSP) @ VISA (ADR TCPIP::192.168.48.147::INST0::INSTR), SN OSP120, 101310, FW 2.51, CAL 12/27/18
Power Meter:	OSP-B157 Power Meter (OSP-B157 Power Meter) @ USB (ADR 20), SN 26675676, FW 3.1, CAL 12/27/18

Summary

Test	Frequency (MHz)	Nominal Power (dBm)	Nominal Bandwidth (MHz)	Result
DFS In-Service Monitoring	5280.000	10.0	20.000000	PASS
DFS In-Service Monitoring	5310.000	10.0	40.000000	PASS

DFS In-Service Monitoring (5280 MHz; 10.000 dBm; 20 MHz)

Test according to FCC title 47 part 15 §15.407(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
5280.000000	0	First of all Transmitt Test	---
5280.000000	0	Channel Move Time	PASS
5280.000000	0	Channel Closing Transmission Time	PASS
5280.000000	0	Non-occupancy period	PASS

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

DUT Frequency (MHz)	Overall Comment
5280.000000	not performed / not finished
5280.000000	
5280.000000	
5280.000000	

Channel Move Time Detailed Results

DUT Frequency (MHz)	Radar Type No.	CMT Tx Time (s)	CMT Limit (s)	CMT Result	CMT Comment
5280.000000	0	0.595	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)
5280.000000	0	first 200 ms	21	0.252
5280.000000	0	remaining 10.0 second(s) period	20	0.176

(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
5280.000000	200.000	PASS	See Note 1.
5280.000000	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
5280.000000	0	0	0	0.000	0.000	PASS

Transmitting Test Detailed Results

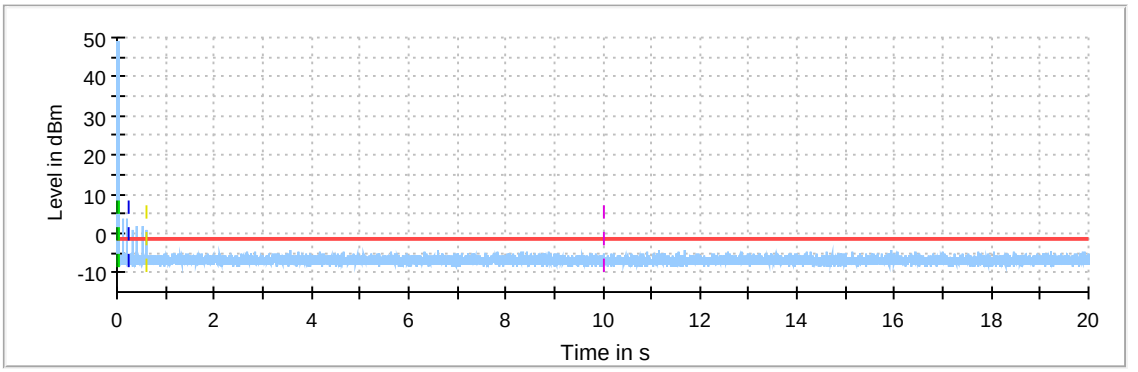
DUT Frequency (MHz)	Tx-Test Result	Tx-Test Comment
5280.000000	---	not performed / not finished

Additional Information

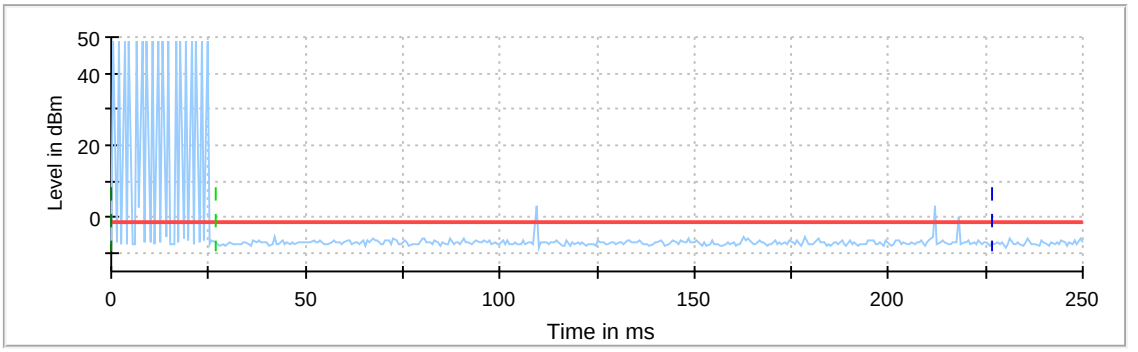
Note	Description
Note 1:	**Because of the radar pulse event at the beginning, the investigation of the trace begins with an offset of 26.7 ms conforming to the end of the Radar burst.**
Note 2:	**Channel move time (CMT) / channel closing transmission time (CCTT) measurement was made with hi resolution 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 µs**
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.)**

Radar level verification

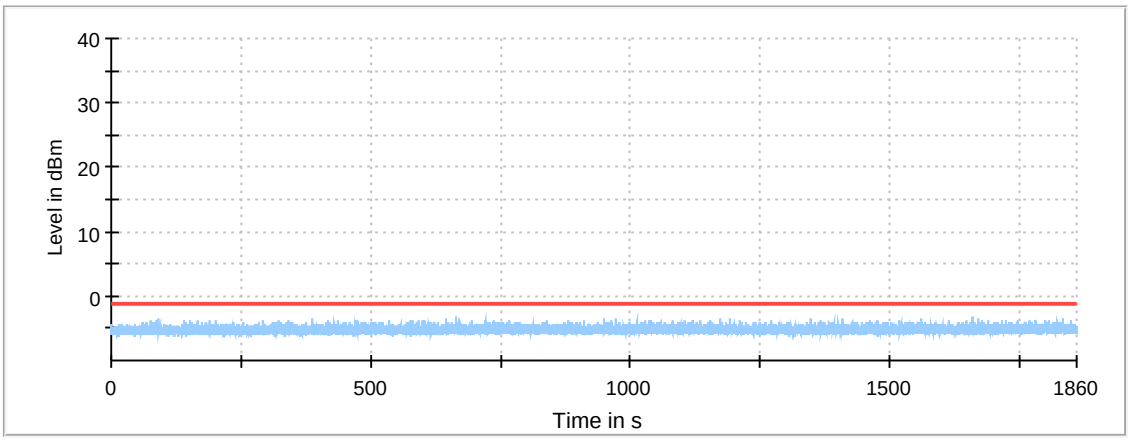
Description	Value	Unit
Configured DUT EIRP:	10.00	mW
Configured DUT PSD:	10.00	dBm/MHz
Requirement of the Detection threshold value for this given values acc. to FCC clause 5.2 / Table 3	-64	dBm
Vector Generator level setting	1.50	dBm
Configured overall pathlost from Vector Generator RF out to DUT connector of 'DUT to OSP'-cable	64.50	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	-63.00	dBm



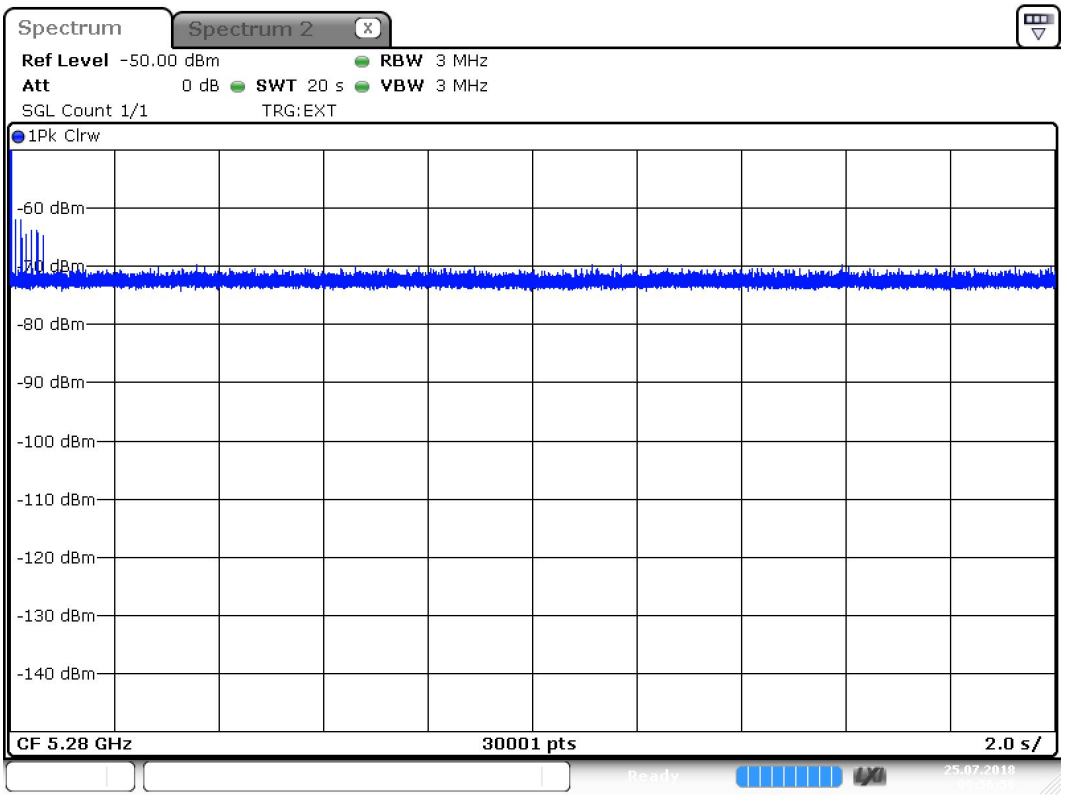
In-Service Monitoring Channel Move Time
Start of Radar
First 200ms of Channel Closing Tx Time
Last measured edge of Channel Closing Tx Time
Threshold
Trigger at end of Radar
10sec Channel Move Time Limit



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



In-Service Monitoring Channel Move Time



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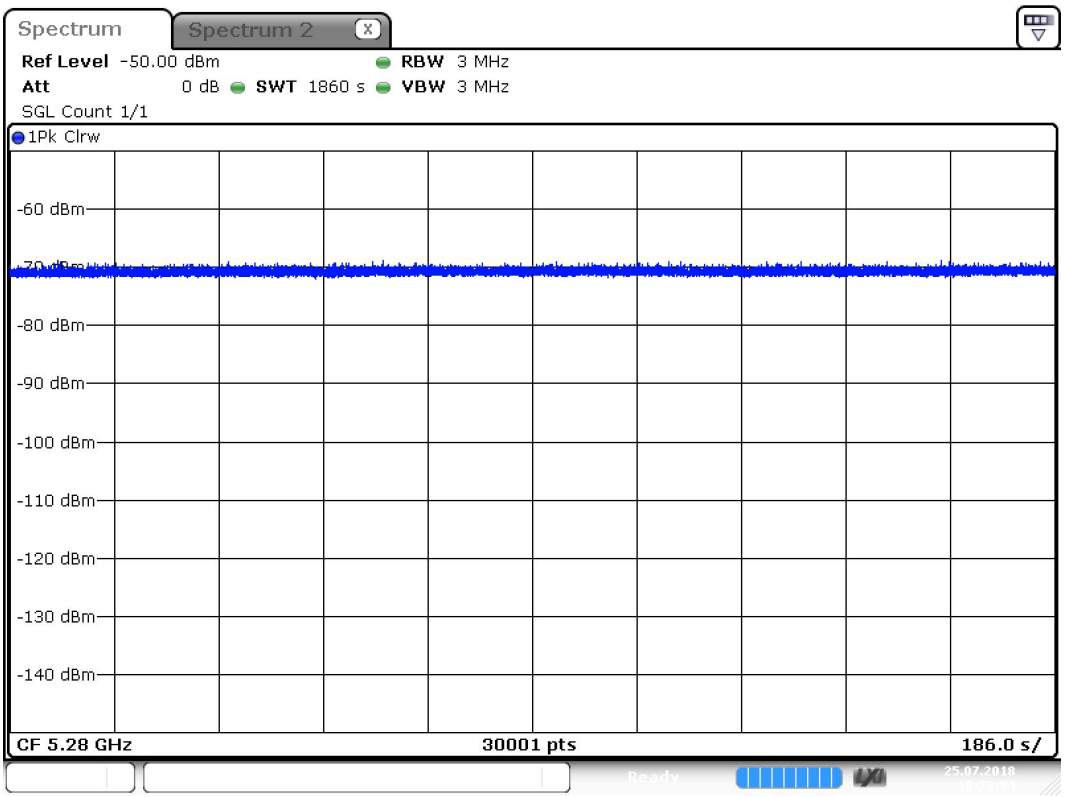
In-Service Monitoring Non-occupancy period



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Channel Move Time; Channel Closing Transmission Time

Setting	Instrument Value	Target Value
Center Frequency	5.28000 GHz	5.28000 GHz
Span	ZeroSpan	ZeroSpan
RBW	3.000 MHz	>= 3.000 MHz
VBW	3.000 MHz	>= 3.000 MHz
SweepPoints	30001	~ 30001
Sweeptime	20.000 s	20.000 s
Reference Level	-50.000 dBm	-50.000 dBm
Attenuation	0.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	1	1
Filter	3 dB	3 dB
Trace Mode	Clear Write	Clear Write
Sweeptype	Sweep	AUTO
Preamp	off	off
Trigger	External	External
Trigger Offset	0.000 ms	0.000 ms

Non-occupancy period

Setting	Instrument Value	Target Value
Center Frequency	5.28000 GHz	5.28000 GHz
Span	ZeroSpan	ZeroSpan
RBW	3.000 MHz	>= 3.000 MHz
VBW	3.000 MHz	>= 3.000 MHz
SweepPoints	30001	~ 30001
Sweeptime	1.860 ks	1.860 ks
Reference Level	-50.000 dBm	-50.000 dBm

Setting	Instrument Value	Target Value
Attenuation	0.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	1	1
Filter	3 dB	3 dB
Trace Mode	Clear Write	Clear Write
Sweeptype	Sweep	AUTO
Preamp	off	off

DFS In-Service Monitoring (5310 MHz; 18.000 dBm; 40 MHz)

Test according to FCC title 47 part 15 §15.407(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
5310.000000	0	First of all Transmitt Test	---
5310.000000	0	Channel Move Time	PASS
5310.000000	0	Channel Closing Transmission Time	PASS
5310.000000	0	Non-occupancy period	PASS

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

DUT Frequency (MHz)	Overall Comment
5310.000000	not performed / not finished
5310.000000	
5310.000000	
5310.000000	

Channel Move Time Detailed Results

DUT Frequency (MHz)	Radar Type No.	CMT Tx Time (s)	CMT Limit (s)	CMT Result	CMT Comment
5310.000000	0	0.000	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)
5310.000000	0	first 200 ms	0	0.000
5310.000000	0	remaining 10.0 second(s) period	0	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
5310.000000	200.000	PASS	See Note 1.
5310.000000	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
5310.000000	0	0	0	0.000	0.000	PASS

Transmitting Test Detailed Results

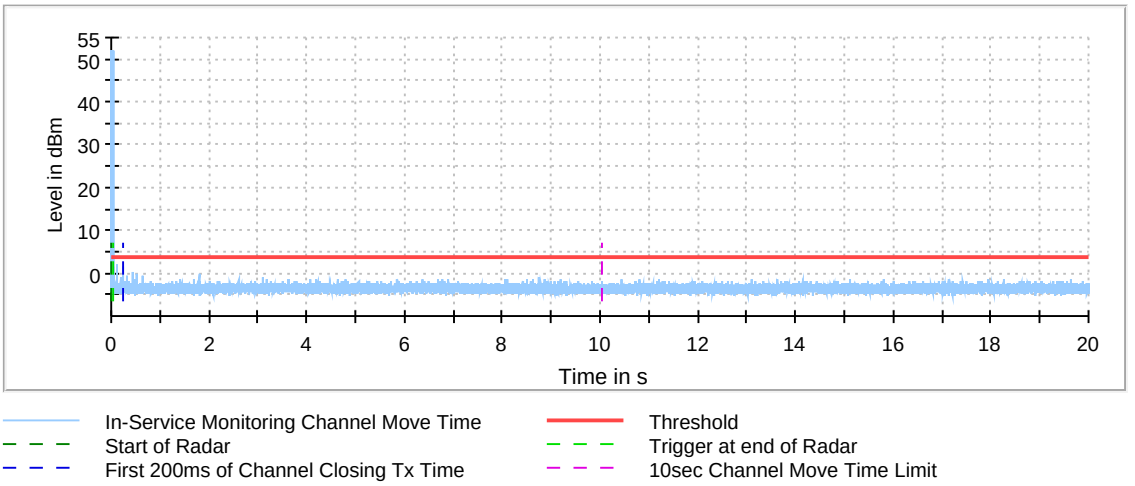
DUT Frequency (MHz)	Tx-Test Result	Tx-Test Comment
5310.000000	---	not performed / not finished

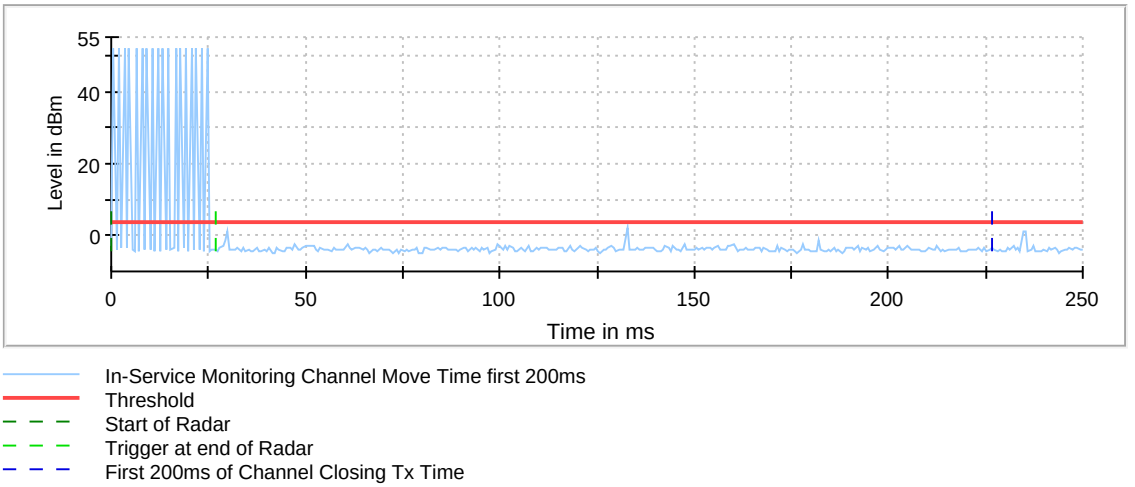
Additional Information

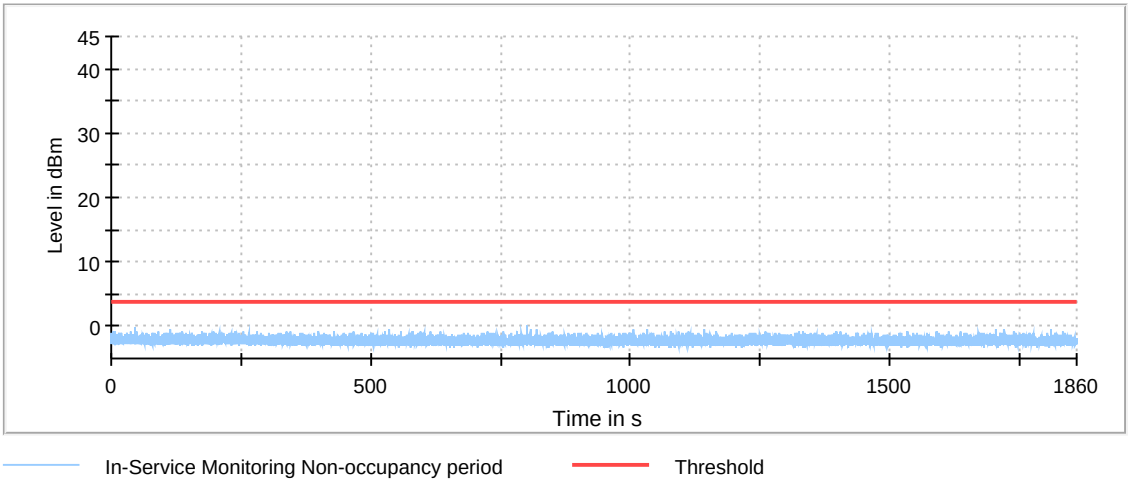
Note	Description
Note 1:	**Because of the radar pulse event at the beginning, the investigation of the trace begins with an offset of 26.7 ms conforming to the end of the Radar burst.**
Note 2:	**Channel move time (CMT) / channel closing transmission time (CCTT) measurement was made with hi resolution 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 µs**
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.)**

Radar level verification

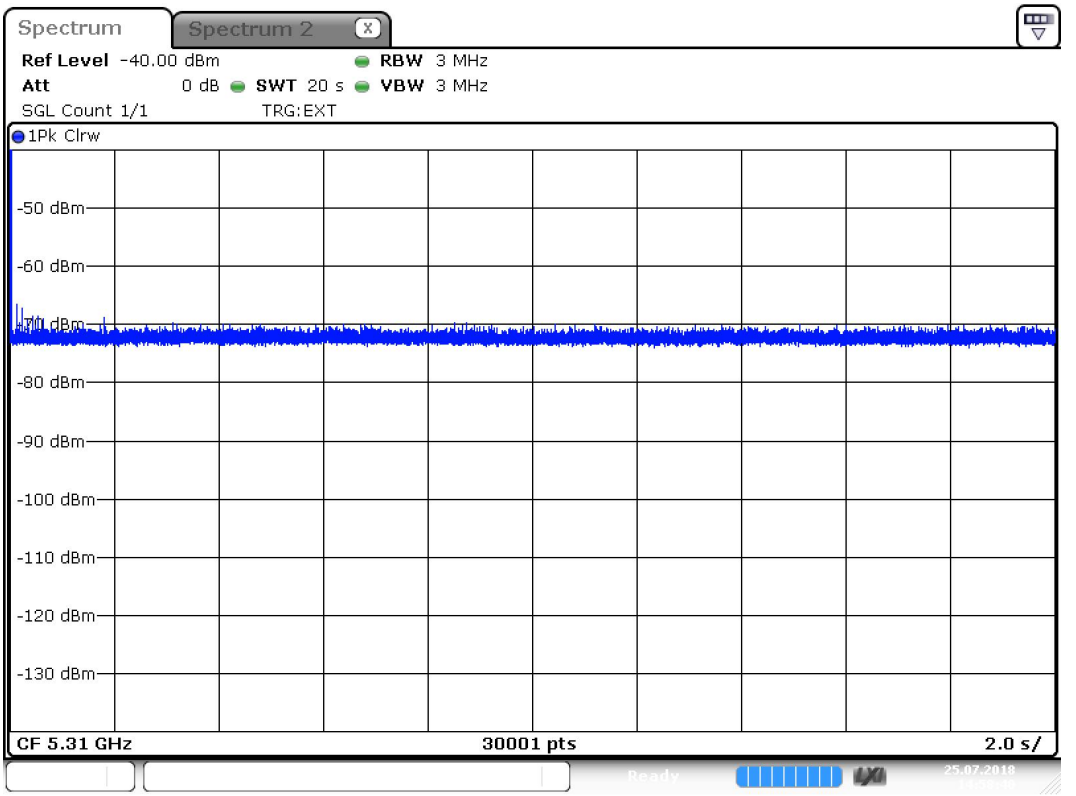
Description	Value	Unit
Configured DUT EIRP:	63.10	mW
Configured DUT PSD:	18.00	dBm/MHz
Requirement of the Detection threshold value for this given values acc. to FCC clause 5.2 / Table 3	-64	dBm
Vector Generator level setting	1.38	dBm
Configured overall pathlost from Vector Generator RF out to DUT connector of 'DUT to OSP'-cable	64.38	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	-63.00	dBm







In-Service Monitoring Channel Move Time



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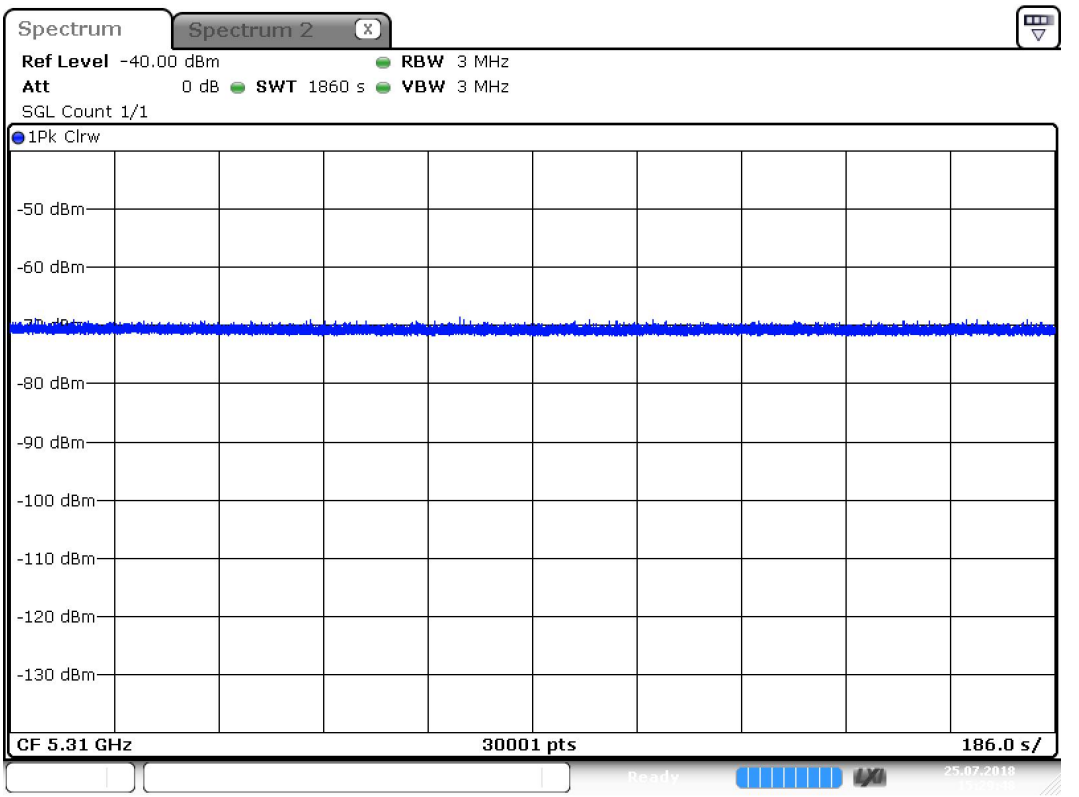
In-Service Monitoring Non-occupancy period



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Channel Move Time; Channel Closing Transmission Time

Setting	Instrument Value	Target Value
Center Frequency	5.31000 GHz	5.31000 GHz
Span	ZeroSpan	ZeroSpan
RBW	3.000 MHz	>= 3.000 MHz
VBW	3.000 MHz	>= 3.000 MHz
SweepPoints	30001	~ 30001
Sweeptime	20.000 s	20.000 s
Reference Level	-40.000 dBm	-40.000 dBm
Attenuation	0.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	1	1
Filter	3 dB	3 dB
Trace Mode	Clear Write	Clear Write
Sweeptype	Sweep	AUTO
Preamp	off	off
Trigger	External	External
Trigger Offset	0.000 ms	0.000 ms

Non-occupancy period

Setting	Instrument Value	Target Value
Center Frequency	5.31000 GHz	5.31000 GHz
Span	ZeroSpan	ZeroSpan
RBW	3.000 MHz	>= 3.000 MHz
VBW	3.000 MHz	>= 3.000 MHz
SweepPoints	30001	~ 30001
Sweeptime	1.860 ks	1.860 ks
Reference Level	-40.000 dBm	-40.000 dBm

Setting	Instrument Value	Target Value
Attenuation	0.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	1	1
Filter	3 dB	3 dB
Trace Mode	Clear Write	Clear Write
Sweeptype	Sweep	AUTO
Preamp	off	off