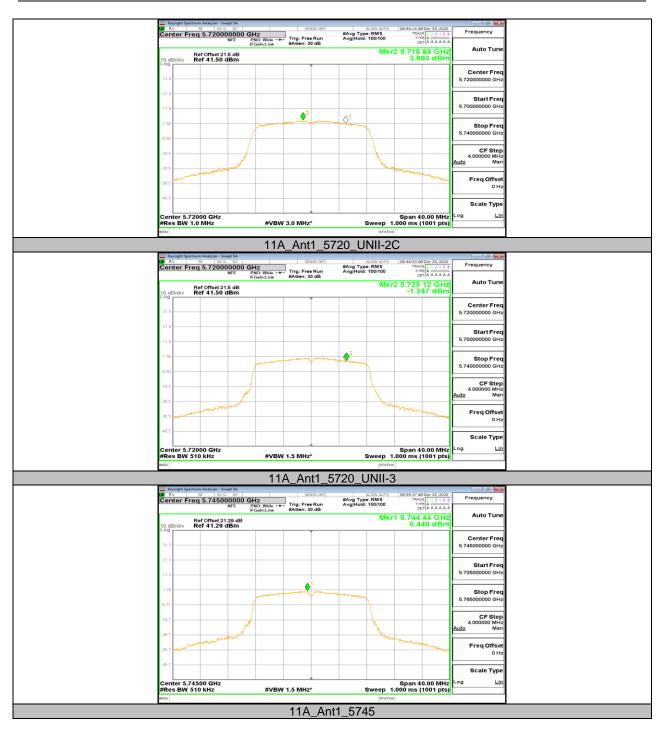
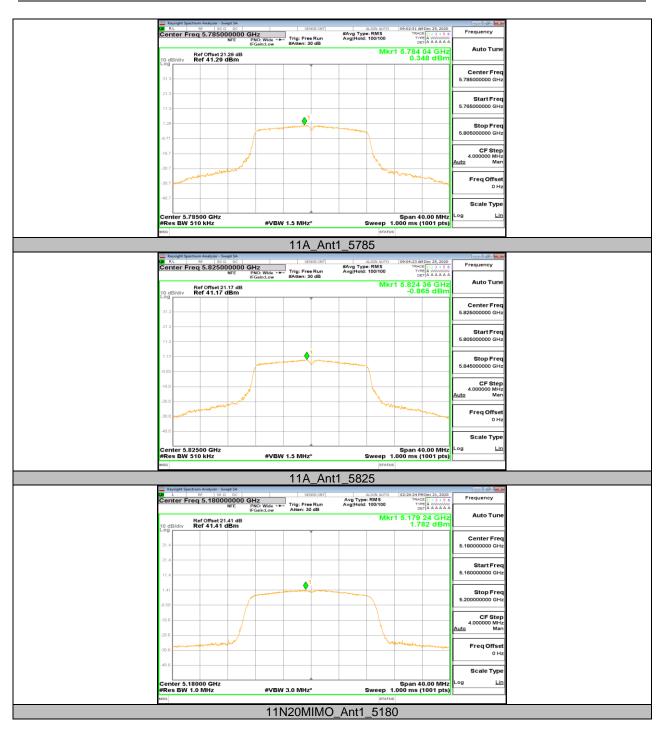


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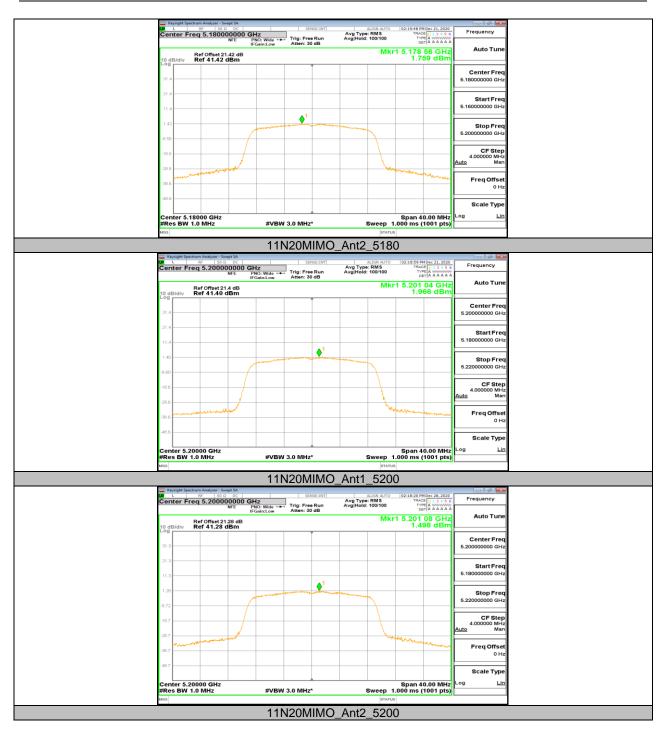


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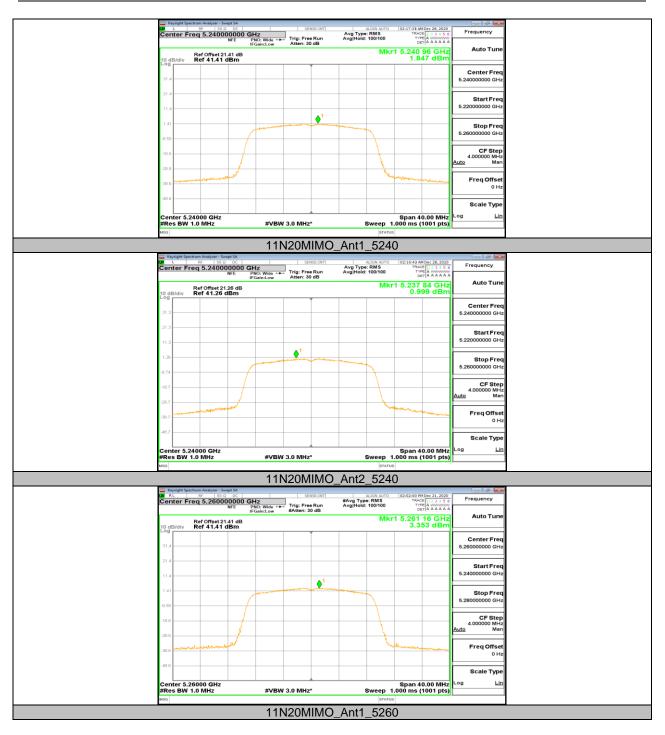


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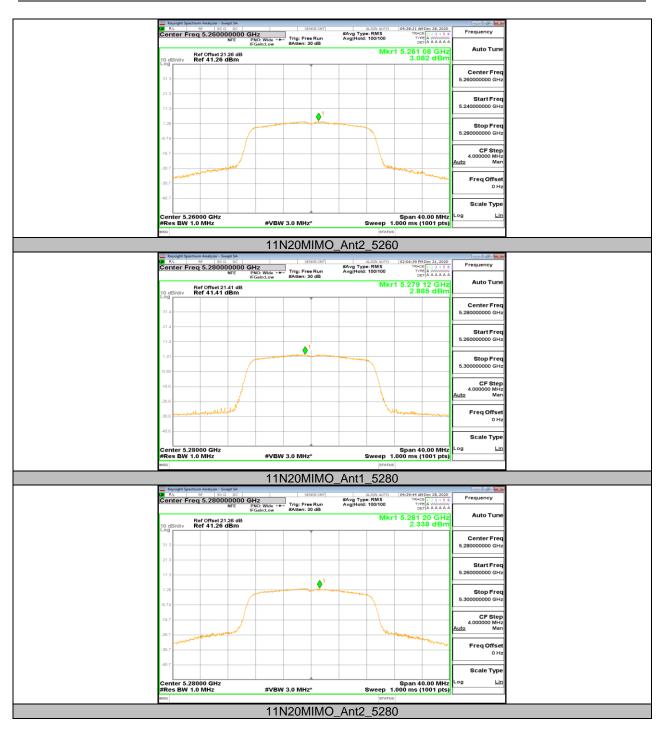


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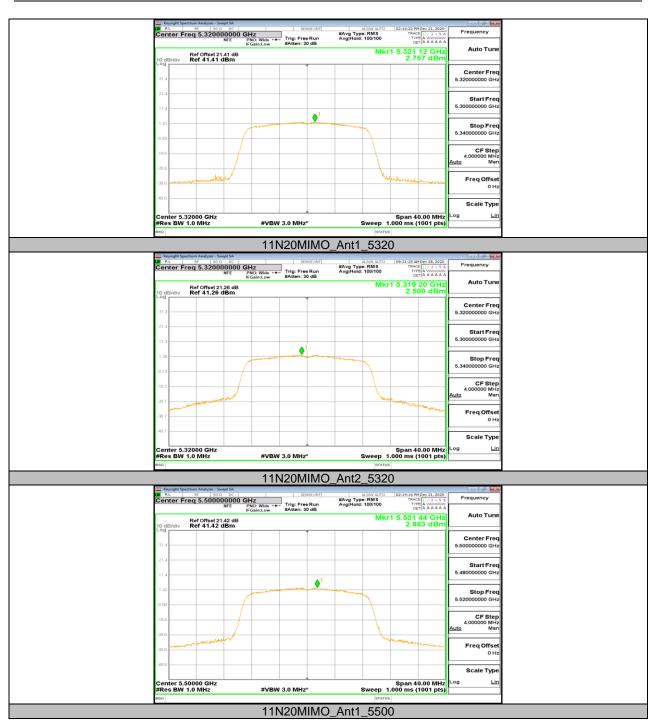




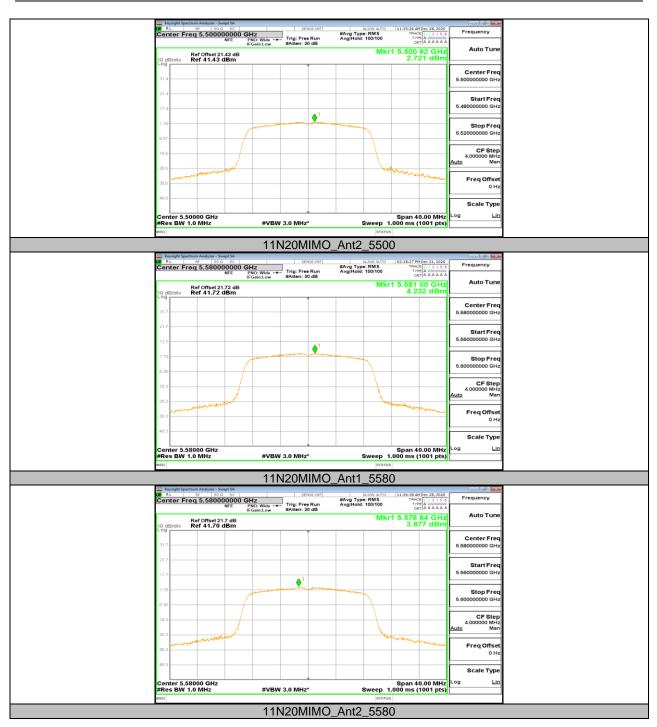
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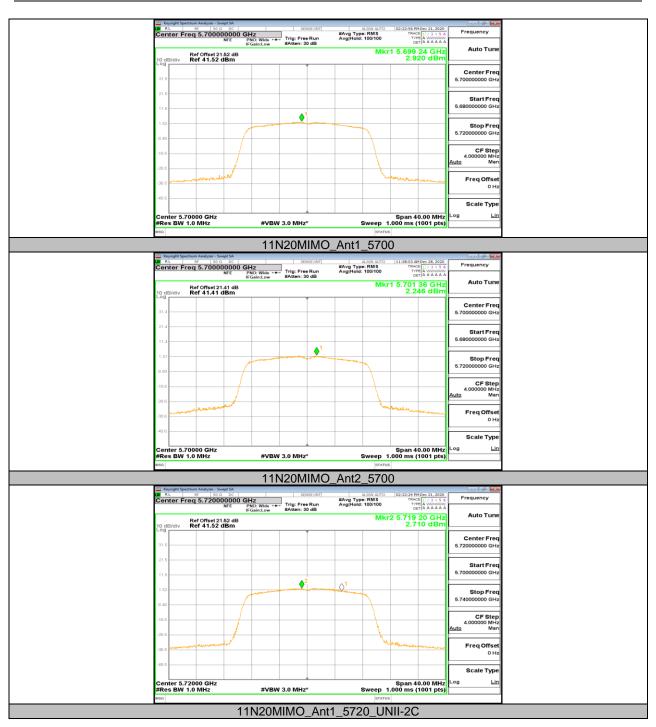






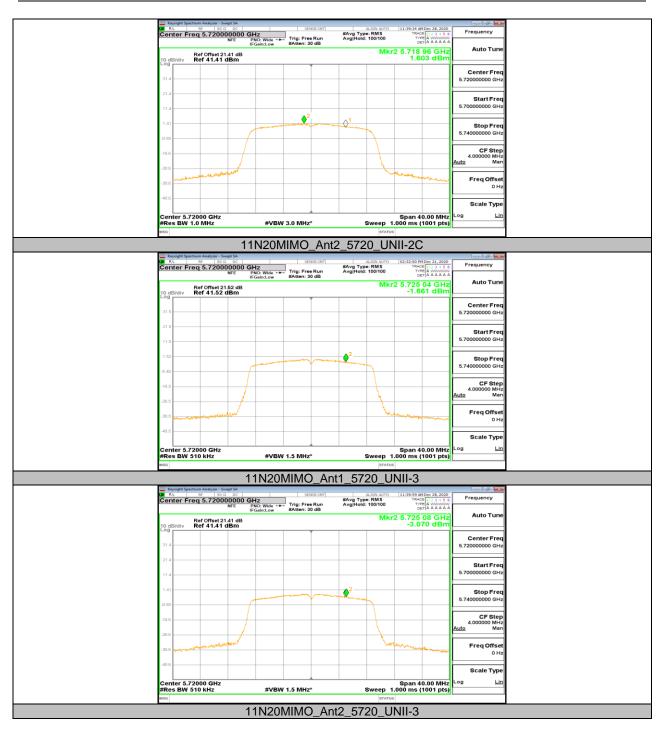






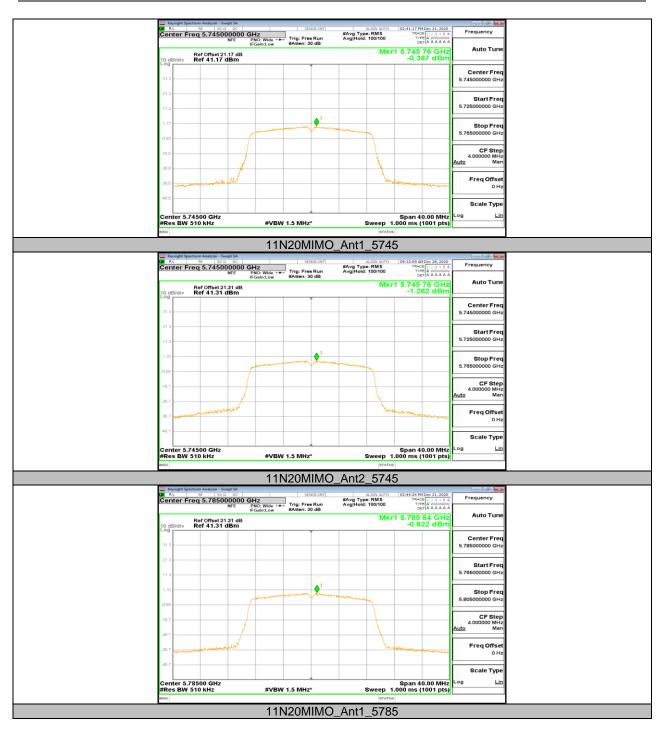


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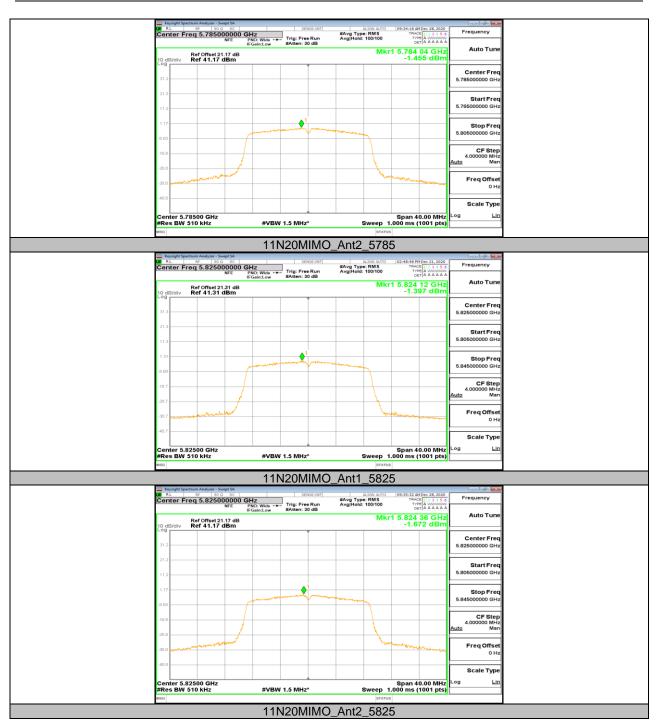




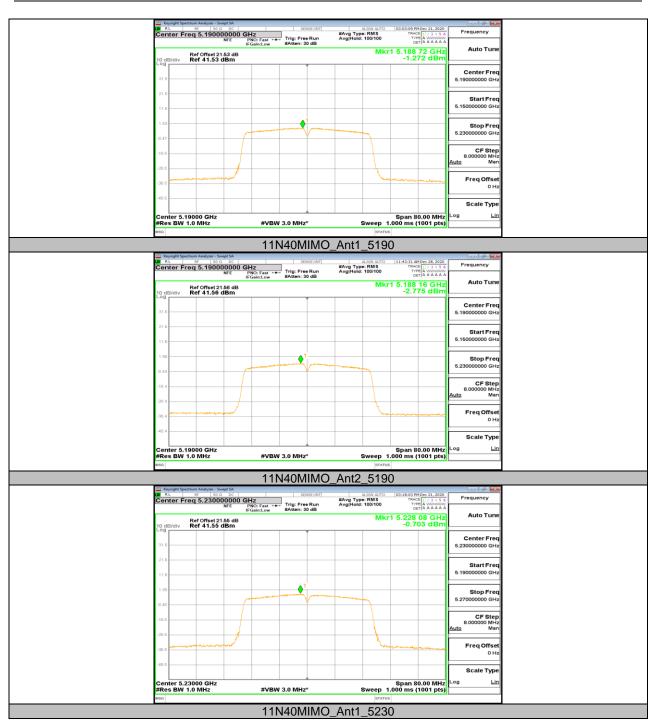
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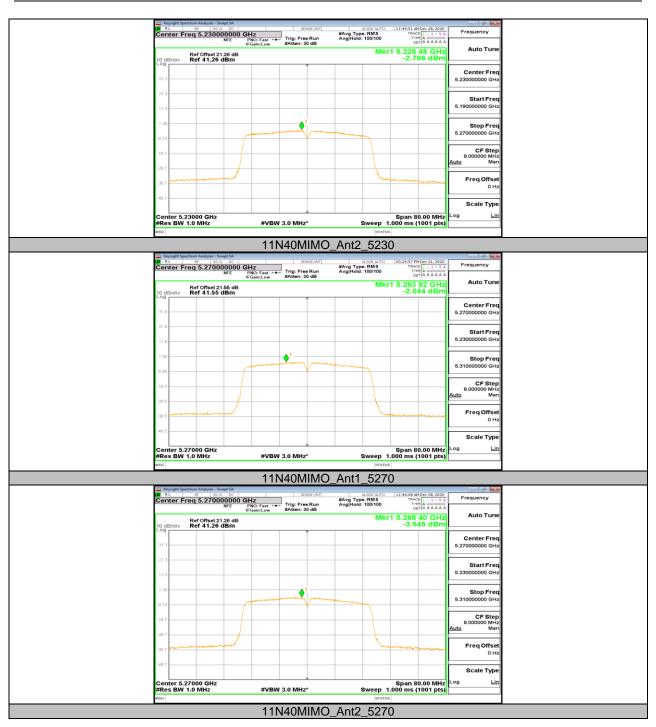




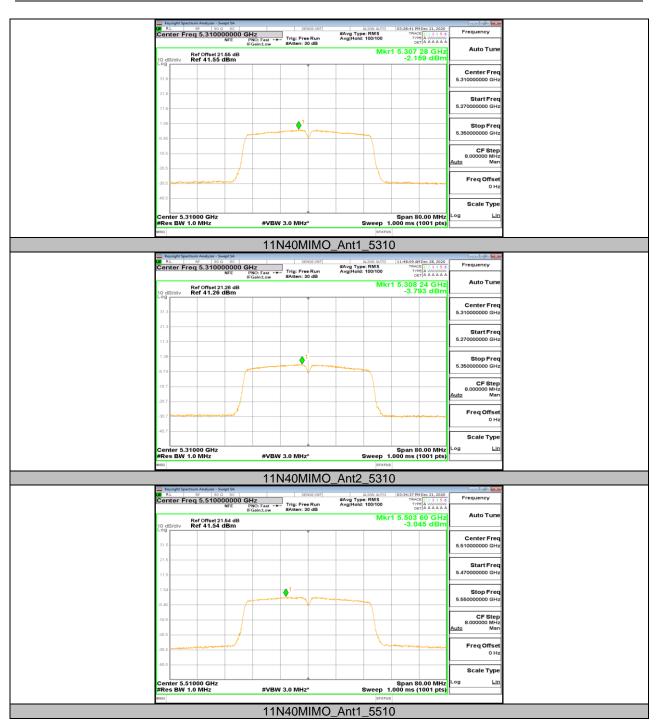




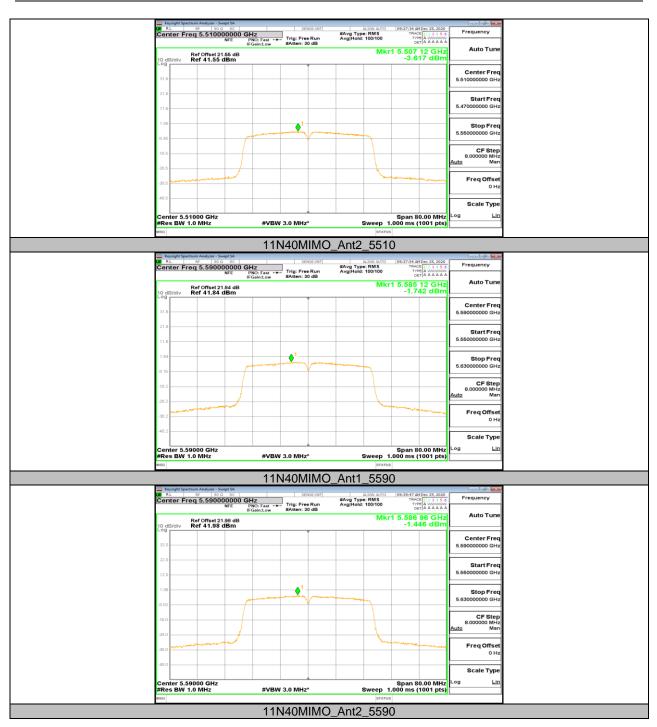




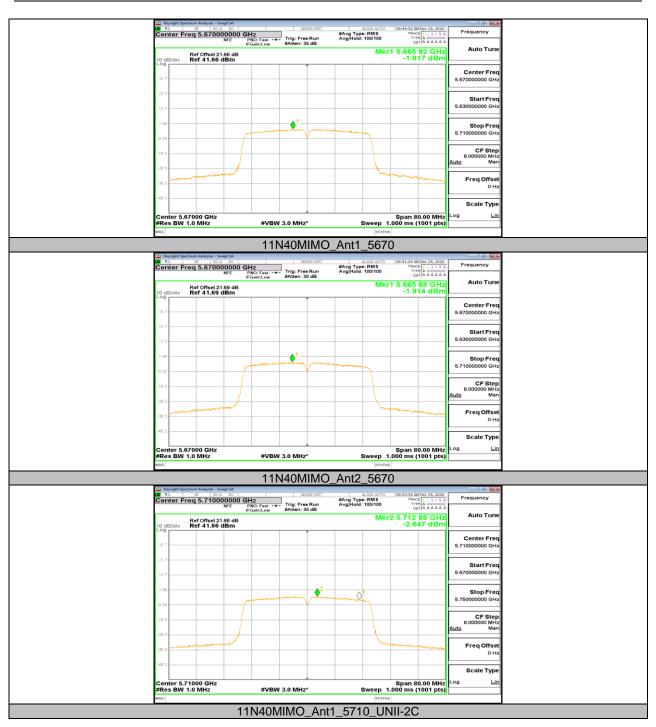




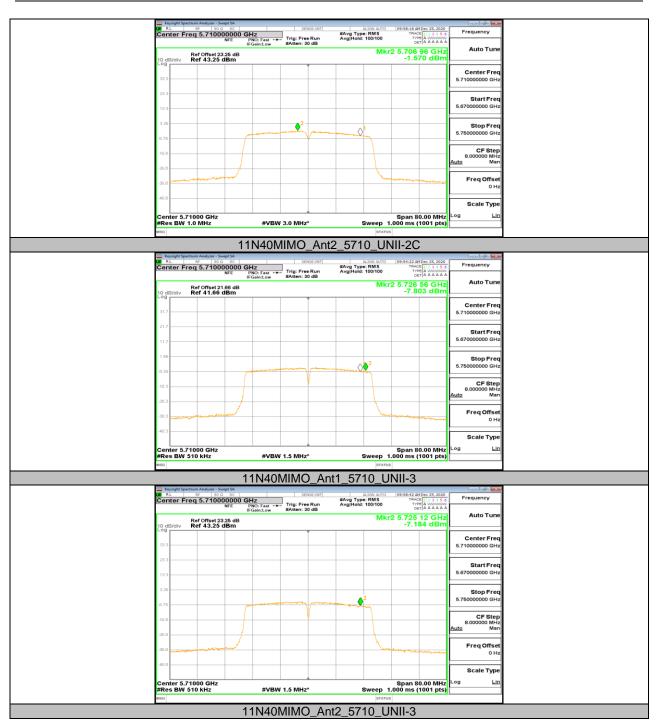




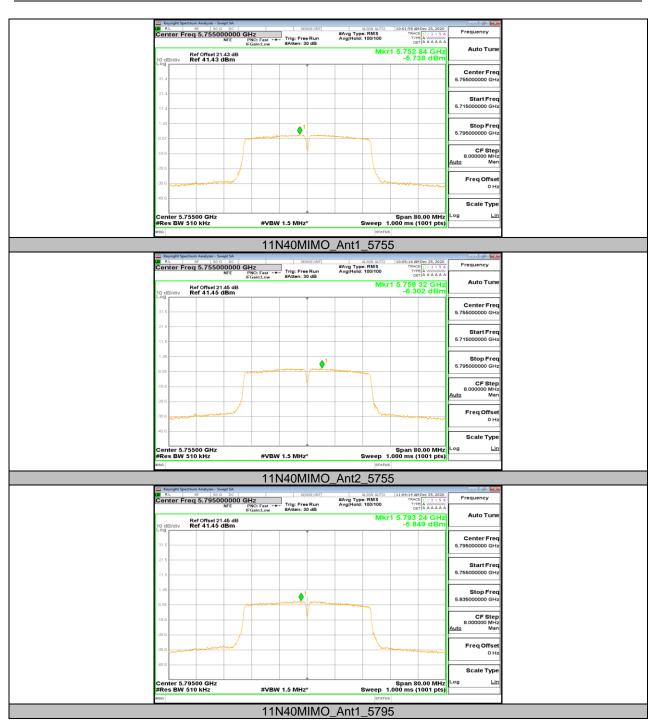














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	Keysight Spectrum Analyzer - Swept SA				
	RL RF 50 Ω DC		ALIGN AUTO #Avg Type: RMS Avg Hold: 100/100	11:08:13 AM Dec 25, 2020 TRACE 1 2 3 4 5 6 TYPE A WWWWW DET A A A A A A	Frequency
10.	Ref Offset 21.45 dB	ain:Low #Atten: 30 dB		5.798 68 GHz -6.456 dBm	Auto Tune
31.	9				Center Freq 5.79500000 GHz
21.					Start Freq 5.755000000 GHz
-8.52		······			Stop Freq 5.835000000 GHz
-18.		V			CF Step 8.000000 MHz <u>Auto</u> Man
-38.6	6		- \	mananterman	Freq Offset 0 Hz
Ce	enter 5.79500 GHz les BW 510 kHz	#VBW 1.5 MHz*	Sweep 1.0	Span 80.00 MHz 000 ms (1001 pts)	Scale Type
MSG	8		STATUS		
		11N40MIMO_	_Ant2_5795	5	



Appendix D: Frequency Stability Test Result

	Frequency Error vs. Voltage									
				802.1	1a:5200MH	z				
Taman	Valt	0 Min	ute	2 Min	2 Minute		5 Minute		ute	
Temp.	Volt.	Freq.Error (MHz)	Tolerance (ppm)	Freq.Error (MHz)	Tolerance (ppm)	Freq.Error (MHz)	Tolerance (ppm)	Freq.Error (MHz)	Tolerance (ppm)	
TN	VL	5200.0023	0.45	5199.9833	-3.22	5200.0104	2.00	5200.0246	4.72	
TN	VN	5200.0223	4.30	5199.9843	-3.01	5199.9941	-1.14	5200.0092	1.76	
TN	VH	5200.0235	4.52	5199.9796	-3.93	5200.0030	0.57	5199.9969	-0.59	
	Frequency Error vs. Temperature									
	802.11a:5200MHz									
-	N. K	0 Minute		2 Minu	ıte	5 Minute		10 Minute		
Temp.	Volt.	Freq.Error (MHz)	Tolerance (ppm)	Freq.Error (MHz)	Tolerance (ppm)	Freq.Error (MHz)	Tolerance (ppm)	Freq.Error (MHz)	Tolerance (ppm)	
40	VN	5200.0160	3.08	5199.9859	-2.71	5200.0237	4.55	5200.0192	3.69	
30	VN	5200.0171	3.30	5200.0044	0.85	5200.0091	1.76	5199.9865	-2.59	
20	VN	5199.9755	-4.72	5199.9770	-4.43	5199.9933	-1.29	5200.0162	3.12	
10	VN	5200.0023	0.45	5200.0182	3.50	5199.9872	-2.46	5200.0031	0.59	
0	VN	5199.9958	-0.81	5199.9899	-1.94	5199.9787	-4.09	5200.0240	4.62	

	Frequency Error vs. Voltage										
	802.11a:5825MHz										
Tamm	Valt	0 Minute		2 Min	2 Minute		5 Minute		ute		
Temp.	Volt.	Freq.Error (MHz)	Tolerance (ppm)	Freq.Error (MHz)	Tolerance (ppm)	Freq.Error (MHz)	Tolerance (ppm)	Freq.Error (MHz)	Tolerance (ppm)		
TN	VL	5825.0162	2.77	5824.9803	-3.38	5825.0192	3.30	5825.0006	0.10		
TN	VN	5825.0191	3.29	5824.9842	-2.72	5825.0169	2.91	5825.0221	3.79		
TN	VH	5825.0143	2.46	5824.9862	-2.37	5825.0209	3.59	5825.0234	4.01		
Frequency Error vs. Temperature											
	802.11a:5825MHz										
-	N. K	0 Minute		2 Minute		5 Minute		10 Minute			
Temp.	Volt.	Freq.Error (MHz)	Tolerance (ppm)	Freq.Error (MHz)	Tolerance (ppm)	Freq.Error (MHz)	Tolerance (ppm)	Freq.Error (MHz)	Tolerance (ppm)		
40	VN	5825.0065	1.12	5825.0028	0.49	5824.9948	-0.89	5824.9881	-2.05		
30	VN	5825.0205	3.51	5824.9823	-3.03	5825.0127	2.19	5825.0127	2.18		
20	VN	5824.9862	-2.37	5824.9996	-0.07	5825.0208	3.57	5824.9893	-1.84		
10	VN	5824.9977	-0.39	5824.9836	-2.81	5824.9852	-2.54	5824.9755	-4.20		
0	VN	5825.0059	1.00	5825.0173	2.97	5825.0090	1.55	5825.0247	4.24		

Note: All antennas and test modes have been tested, only the worst data record in the report.



Appendix E: Duty Cycle Test Result

Mode	On Time (msec)	Period (msec)	Duty Cycle x (Linear)	Duty Cycle (%)	Duty Cycle Correction Factor (dB)	1/T Minimum VBW (kHz)	Final setting For VBW (kHz)
11A	1.39	1.43	0.9720	97.20	0.12	0.72	1
11N20MIMO	1.30	1.34	0.9701	97.01	0.13	0.77	1
11N40MIMO	0.65	0.68	0.9559	95.59	0.20	1.54	2

Note:

Duty Cycle Correction Factor=10log (1/x). Where: x is Duty Cycle (Linear) Where: T is On Time If that calculated VBW is not available on the analyzer then the next higher value should be used.



Test Graphs

• Regular System Reading: Solution • Frequency • Auto Ture • Optimize Freq • Solution
Ref Offiset 21:27 dB Auto Tune 10 gB/div Ref 30.00 dBm 32.1 10 gB/div Ref 30.00 dBm 10 gB/div 10 gB/div Ref 30.00 dBm 10 gB/div 10 gB/div Ref 30.00 dBm 10 gB/div 10 gB/div Ref 30.00 gB/div 10 gB/div 10 gB/div Ref 30.00 gB/div Sweep 5.000 ms (8000 pB/div 10 gB/div 11 gB/div 11 gB/div 11 gB/div 11 gB/div 11 gB/div 11 gB/div 11 gB/div 11 gB/div 11 gB/div 11 gB/div 11 gB/div 11 gB/div 11 gB/div 11 gB/div 11 gB/div 11 gB/div 11 gB/div 11 gB/div 11 gB/div 11 gB/div 11 gB/div 11 gB/div 11 gB/div 1
Ref Offiset 21:27 dB ΔMkr3 1.428 mg Auto Tune 10 gBid Center Freq 0.02 dB Center Freq 10 gBid 10 gBid 10 gBid 0.02 dB Center Freq 10 gBid 10 gBid 10 gBid 10 gBid Center Freq 5.2000000 GHz 10 gBid 10 gBid
Auto rune Auto rune 00 efforte rel 22 27 48 0.428 ms 00 efforte rel 22 27 48 0.02 cB 010 efforte rel 22 200000000 cHz 52000000 cHz 010 efforte rel 22 200000000 cHz efforte rel 22 200000000 cHz 010 efforte rel 22 200000000 cHz efforte rel 22 200000000 cHz 011 t (a) 1.321 ms (a) 0.91 dB 011 t (a) 1.02 cB efforte rel 20 cB 011
0 dBludiv Ref 30.00 dBm 0.02 dB 1 dBludiv 1.02 Bludiv 1.02 Bludiv 1 dBludiv 1.02 Bludiv 0.02 dB 1 dBludiv 0.02 dB 0.02 dB <
Content Find Content Find Content Find Content Find Content Find Content Find Start Find S
0.0 Control of the
000 The column is a second s
100 300 5200000000 GHz 520000000 GHz 300 400 500 520000000 GHz 400 500 5200000000 GHz 520000000 GHz Center 5.200000000 GHz #VBW 8.0 MHz Sweep 5.000 ms (8000 PHz) 52000000 MHz Contracting Eccl 4882 us 17.67 dBm 10051000 PHz Booting Public Pu
30 30 30 520000000 GHz 30 40 520000000 GHz 30 520000000 GHz Center 5.20000000 GHz Sweep 5.000 ms (8000 pts) 30 41 1 (Δ) 34 1 41 1 (Δ) 41 1 (Δ) 1 428 ms (Δ) 0.022 dB 0.022 dB 0 0.022 dB
30.0 30.0
400 500 500 500 500 5000000000000000000000000000000000000
Stop Freq 520000000 GHz Res BW 8 MHz Stop Freq 52000000 GHz Sweep 5.000 ms (8000 pts) Stop Freq 52000000 GHz CF Step 8 MHz Stop Freq 52000000 GHz CF Step 8 MHz Stop Freq 62000000 GHz CF Step 8 MHz Stop Freq 62000000 GHz CF Step 8 MHz Stop Freq 62000000 GHz Man 100 Mixed
Center 5,20000000 CHz #VBW 8.0 MHz Speep 5.000 ms (800 pHz) CF 5tep 8.000000 MHz Center 5,20000000 CHz #VBW 8.0 MHz Sweep 5.000 ms (800 pHz) CF 5tep 8.00000 MHz Contracting Ect 488 2 us 1767 Hm Forescoll protection of 100 ms (800 pHz) Stresson phz 2 A1 1 t (A) 1.391 ms (A) 0.91 dB Forescoll phz Stresson phz 4 1 t (A) 1.428 ms (A) 0.91 dB Forescoll phz Stresson phz 6 1 1.428 ms (A) 0.91 dB Forescoll phz Stresson phz 1 t (A) 1.428 ms (A) 0.91 dB Forescoll phz Stresson phz 6 1 1.428 ms (A) 0.92 dB Forescoll phz Stresson phz 11 t (A) 1.428 ms (A) 0.92 dB Forescoll phz Log 11 t (A) 1.428 ms (A) 0.92 dB Forescoll phz Log
Center 5.200000000 CHz #VBW 8.0 MHz Span 0 Hz CF Step Res BW 8 MHz #VBW 8.0 MHz Sweep 5.000 ms (8000 pts) Auto Auto Auto Man 1 1 1 1 1 1 1 Auto Man 2 Δ1 1 1 1.428 ms (Δ) 0.02 dB Freq Offset Freq Offset 6 6 0 0.02 dB 0 Hz Log Lig 1 1 1.428 ms (Δ) 0.02 dB 0 Hz Log Lig
Res BW 8 MHz #VGW30 MHz Sweep 5.000 ms (8000 pts) 8.000000 MHz CDUENDENDER Z
Res BW 8 MHz #VEW 30 MHz Sweep 5.000 ms (8000 pts) 8.00000 MHz C0120000 Hol Ecs 2 2 7 600 ms (8000 pts) Auto Auto Man 1 N t 488 2 us 17.67 dBm 600 ms (8000 pts) 600 ms (8000 pts) Auto Man 2 A1 t (A) 1.39 ms (A) 0.02 dB 600 ms (8000 pts) 600 ms (8000 pts) Auto Man 3 A1 t (A) 1.428 ms (A) 0.02 dB 600 ms (8000 pts) 600 ms (8000 pts) Auto Man 6 6 6 6 600 ms (A) 0.02 dB 600 ms (B) 0 hz 600 ms (B) 600 ms (B)<
Local Coll Line Coll 489.2 μs 17.67 dBm Discretion of the coll coll Discretion of the coll coll 2 Δ1 1 t (Δ) 1.428 ms (Δ) 0.02 dB 4 1 1.428 ms (Δ) 0.02 dB 0.02 dB 7 7 7 7 1 10 1 1 1.428 ms 1
4 0 Hz 6 7 7 8 9 10 10 11
4 6 7 7 8 9 10 11 11 11 11 11 11 11 11 11
Scale Type
4
4
MSG STATUS
11A_Ant1_5200
Konging Spectra Analyzer - Sweg KA. K № 5.5.0. D.C. SSNGELINT ALLON AUTO 01:32:39 PM Dec 21, 32:02
Center Freq 5 20000000 GHz Trig Delay-200.0 µs #Avg Type: RMS TRACE 1/2 3 4 5 6 Frequency
NEC PHOLENA → Trig Video Trig Video Composition Alter 40 dB Composition Compo
Bet official 27 dB Auto Tune
10 dB/div Ref 30.00 dBm 0.35 dB
200 Attracted and a set of the se
StartFreq
30.0 5.20000000 GHz
Stop Freq
5.20000000 GHz
Center 5.20000000 GHz Span 0 Hz CF Step
Res BW 8 MHz #VBW 8.0 MHz Sweep 5.000 ms (8000 pts)
1 N 1 t 26.88 μs 17.08 dBm 2 Δ1 1 t (Δ) 1.299 ms (Δ) -0.45 dB 3 Δ1 1 t (Δ) 1.335 ms (Δ) 0.35 dB Freq Offset
Δ 1 1 t (Δ) 1.336 ms (Δ) 0.35 dB
5
6 7 8 Scale Type
9
45G STATUS
11N20MIMO_Ant1_5200
Keyigidi Sectrum Analyzer Sanget SA Keyigidi Sectrum Analyzer Sanget SA Keyigidi Sectrum SA (Sector Sector S
Frequency
Center Freq 5, 1900000000 GHz Ing balay 2000 µs #Avg Type: RMS PROCE 1234.56 NFE PROF Frage Strate S
Ref Offset2127 dB ∆Mkr3 683.2 µs Auto Tune 10 dB/dlv Ref 30.00 dBm 11.25 dB
Log
Start Freq
300
Stop Freq
5.19000000 GHz
Center 5.190000000 GHz Span 0 Hz CF Step Res BW 8 MHz #VBW 8.0 MHz Sweep 5.000 ms (8000 pts) 8.000000 MHz
MRR MODELTRC SCL X Y FUNCTION FUNCTION VALUE
1 N 1 t 6332 us -7.28 dBm 2 Δ1 t (Δ) 647.0 us (Δ) 18.43 dB 3 Δ1 t (Δ) 643.2 us (Δ) 11.26 dB Freq Offset
7 8 8
2 Contraction of the second se
9 10 11
MIG STATUS
* W



Appendix F DYNAMIC FREQUENCY SELECTION

DFS In-Service Monitoring (5510 MHz; 22.000 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
5510.000000	0	First of all Transmitt Test	
5510.000000	0	Channel Move Time	PASS
5510.000000	0	Channel Closing Transmission Time	PASS
5510.000000	0	Non-occupancy period	PASS

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

DUT Frequency	Overall Comment
(MHz)	
5510.000000	not performed / not finished
5510.000000	
5510.000000	
5510.000000	

Channel Move Time Detailed Results

DUT Frequency (MHz)	Radar Type No.	CMT Tx Time (s)	CMT Limit (s)	CMT Result
5510.000000	0	0.483	10.000	PASS

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

DUT Frequency (MHz)	CMT Comment
5510.000000	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)
5510.000000	0	first 200 ms	951	65.364
5510.000000	0	remaining 10.0 second(s) period	712	44.244

(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
5510.000000	200.000	PASS	See Note 1.
5510.000000	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)
5510.000000	0	0	0	0.000	0.000



(continuation of the "Non-occupancy period Detailed Results" table from column 6 ...)

DUT Frequency (MHz)	NOP Result	NOP Comment
5510.000000	PASS	not performed because of Channel Closing Transmission Time / Channel Move Time Test failed

Transmitting Test Detailed Results

DUT Frequency (MHz)	Tx-Test Result	Tx-Test Comment
5510.000000		not performed / not finished

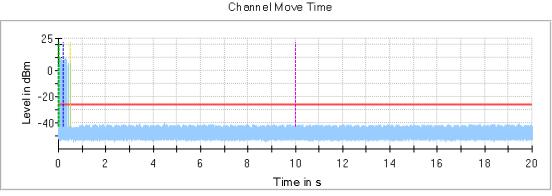
Radar level verification

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:	63.10	mW
Configured DUT PSD:	-2.00	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	-10.40	dBm
Configured overall pathloss from Vector Generator RF out to DUT connector of 'DUT to OSP'-cable	50.60	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	-61.00	dBm



Additional Information

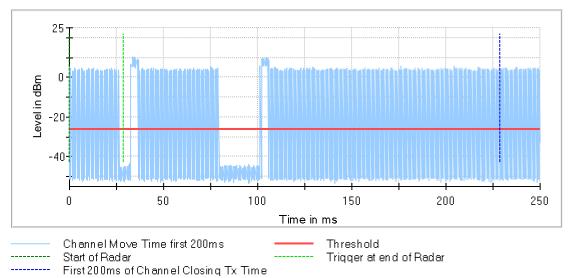
Note	Description
Note 1:	Because of the radar pulse event at the beginning, the investigation of the trace begins with an offset of 28.7 ms conforming to the end of the Radar burst.
Note 2:	Channel move time (CMT) / channel closing transmission time (CCTT) measurement was made with hi resolution video 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 μ s
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.)

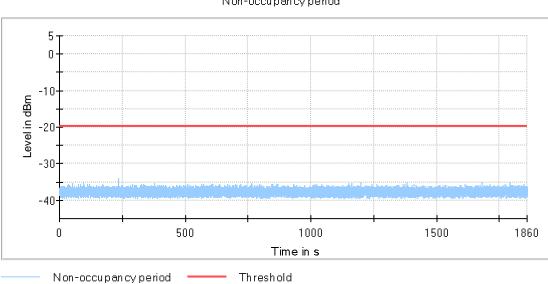


- Channel Move Time
- Threshold
- ----- Start of Radar
- ----- Trigger at end of Radar
- First 200ms of Channel Closing Tx Time
- ----- 10 sec Channel Move Time Limit
- ----- Last measured edge of Channel Closing Tx Time



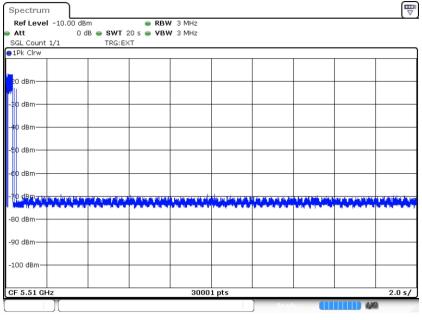
Channel Move Time first 200ms



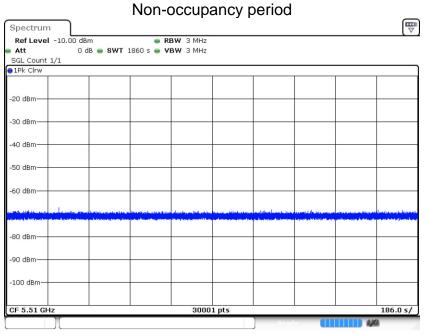


Non-occupancy period

Channel Move Time



Date: 7.JAN.2021 04:35:00



Date: 7.JAN.2021 05:15:32

END OF REPORT