

Appendix H

Miscellaneous Characterization of White Space Devices

This appendix documents the data collected from measurements that were not specified in the test plan but were performed in an effort to investigate unexpected performance exhibited by some of the WSD prototypes. The tables provided in Section H.1 document the results obtained from exercising the WSD sensing/detection capability within the laboratory. Section H.2 presents spectral plots illustrating the data collected from radiated spurious emissions measurements performed on the devices.

H.1. Results of preliminary sensing tests performed at the FCC laboratory.

Adaptrum Prototype

Reported DTV Occupied Channels in Ch 21-51 Tuning Range
With Provided Antenna (3/6, 3/11 & 4/1, 2008)

CHANNEL #	INDOOR			OUTDOOR			CHAMBER		
	Scan #			Scan #			Scan #		
	1	2	3	1	2	3	1	2	3
21	A	A	A	A	A	A	A	A	A
22	A	A	A	O	O	O	A	A	A
23	A	A	A	A	A	A	A	A	A
24	A	A	A	O	O	O	A	A	A
25	A	A	A	A	A	A	A	A	A
26	A	A	A	O	O	O	A	A	A
27	O	O	O	O	O	O	A	A	A
28	O	A	O	O	O	O	A	A	A
29	O	O	O	O	O	O	A	A	A
30	O	O	O	O	O	O	A	A	A
31	A	O	A	A	A	A	O	O	O
32	A	A	A	O	O	O	A	A	A
33	A	A	A	O	O	O	A	A	A
34	O	O	O	O	O	O	A	A	A
35	A	A	A	A	O	A	A	A	A
36	O	O	O	O	O	O	A	A	A
37	O	A	A	A	A	A	A	A	A
38	O	O	O	O	O	O	A	A	A
39	O	O	O	O	O	O	A	A	A
40	O	O	O	O	O	O	A	A	A
41	A	A	A	O	O	O	A	A	A
42	O	O	O	O	O	O	A	A	A
43	A	A	A	A	A	A	A	A	A
44	A	A	A	A	A	A	A	A	A
45	A	A	A	O	O	O	A	A	A
46	O	O	O	O	O	O	A	A	A
47	A	A	A	A	A	A	A	A	A
48	O	O	O	O	O	O	A	A	A
49	A	A	A	A	A	A	A	A	A
50	A	A	A	O	O	O	O	A	A
51	O	O	O	O	O	O	A	O	O

O = occupied channel
A = available channel (unoccupied)
Blank = no data

Adaptrum Prototype

Reported DTV Occupied Channels in Ch 21-51 Tuning Range
With Antenna Port Terminated into 50Ω Load (3/6, 4/1 & 4/2, 2008)

CHANNEL #	INDOOR			OUTDOOR			CHAMBER		
	Scan #			Scan #			Scan #		
	1	2	3	1	2	3	1	2	3
21	A	A	A	A	A	A			
22	A	A	A	O	O	O			
23	A	A	A	A	A	A			
24	A	A	A	O	O	O			
25	A	A	A	A	A	A			
26	A	A	A	A	A	A			
27	A	A	A	A	A	A			
28	A	A	A	A	A	A			
29	A	A	A	A	A	O			
30	O	A	A	A	A	A			
31	O	O	O	O	O	O			
32	A	A	A	A	A	A			
33	A	A	A	A	A	A			
34	A	A	A	O	O	O			
35	A	A	A	A	A	A			
36	A	A	A	O	O	O			
37	A	A	A	A	A	A			
38	O	O	O	O	O	O			
39	A	O	O	O	O	O			
40	A	O	O	O	O	O			
41	A	A	A	A	A	A			
42	O	O	O	A	O	O			
43	A	A	A	A	A	A			
44	A	A	A	A	A	A			
45	A	A	A	A	A	A			
46	A	A	A	A	O	A			
47	A	A	A	A	A	A			
48	A	A	A	O	O	O			
49	A	A	A	A	A	A			
50	A	A	A	A	A	A			
51	A	A	A	A	A	O			

O = occupied channel
A = available channel (unoccupied)
Blank = no data

Microsoft Prototype

Reported Occupied Channels in Ch 21-51 Tuning Range with Provided Antenna
(3/4& 3/5, 2008)

CHANNEL #	INDOOR			OUTDOOR			CHAMBER		
	Scan #			Scan #			Scan #		
	1	2	3	1	2	3	1	2	3
21	O	O	O				O	O	O
22	O	O	O				O	O	O
23	O	O	O				O	O	O
24	O	O	O				O	O	O
25	O	O	O				O	O	O
26	O	O	O				O	O	O
27	O	O	O				O	O	O
28	O	O	O				O	O	O
29	O	O	O				O	O	O
30	O	O	O				A	A	O
31	O	O	O				O	O	O
32	O	O	O				O	O	O
33	O	O	O				O	O	O
34	O	O	O				O	O	O
35	O	O	O				O	O	O
36	O	O	O				O	O	O
37	O	O	O				O	O	O
38	O	O	O				O	O	O
39	O	O	O				O	O	O
40	O	O	O				O	O	O
41	O	O	O				A	A	A
42	O	O	O				O	O	O
43	O	O	O				O	O	O
44	O	O	O				O	O	O
45	O	O	O				O	O	O
46	O	O	O				O	O	O
47	O	O	O				O	O	O
48	O	O	O				O	O	O
49	O	O	O				O	O	O
50	O	O	O				O	O	O
51	O	O	O				O	O	O

O = occupied channel
A = available channel (unoccupied)
Blank = no data

Microsoft Prototype

Reported Occupied Channels in Ch 21-51 Tuning Range
With Antenna Port Terminated into 50Ω Load (3/4/08)

CHANNEL #	INDOOR			OUTDOOR			CHAMBER		
	Scan #			Scan #			Scan #		
	1	2	3	1	2	3	1	2	3
21	A	A	A				A	A	A
22	A	A	A				A	A	A
23	A	A	A				A	A	A
24	A	A	A				A	A	A
25	A	A	A				A	A	A
26	A	A	A				A	A	A
27	A	A	A				A	A	A
28	A	A	A				A	A	A
29	A	A	A				A	A	A
30	A	A	A				A	A	A
31	A	A	A				A	A	A
32	A	A	A				A	A	A
33	A	A	A				A	A	A
34	A	A	A				A	A	A
35	A	A	A				A	A	A
36	A	A	A				A	A	A
37	A	A	A				A	A	A
38	A	A	A				A	A	A
39	A	A	A				A	A	A
40	A	A	A				A	A	A
41	A	A	A				A	A	A
42	A	A	A				A	A	A
43	A	A	A				A	A	A
44	A	A	A				A	A	A
45	A	A	A				A	A	A
46	A	A	A				A	A	A
47	A	A	A				A	A	A
48	A	A	A				A	A	A
49	A	A	A				A	A	A
50	A	A	A				A	A	A
51	A	A	A				A	A	A

O = occupied channel
A = available channel (unoccupied)
Blank = no data

Motorola Prototype

Reported Occupied DTV Channels in Ch 21-51 Tuning Range
With Provided Antenna (3/4, 3/5 & 3/27, 2008)

CHANNEL #	INDOOR			OUTDOOR			CHAMBER		
	Scan #			Scan #			Scan #		
	1	2	3	1	2	3	1	2	3
21	A	A	A	A	A	A	A	A	A
22	A	A	A	A	A	A	A	A	A
23	A	A	A	A	A	A	A	A	A
24	A	A	A	A	A	A	A	A	A
25	A	A	A	A	A	A	A	A	A
26	A	A	A	A	A	A	A	A	A
27	O	O	O	O	O	O	A	A	A
28	A	A	A	O	O	O	A	A	A
29	O	O	O	O	O	O	A	A	A
30	A	A	A	A	A	A	A	A	A
31	A	A	A	A	A	O	A	A	A
32	A	A	A	A	A	A	A	A	A
33	A	A	A	A	A	A	A	A	A
34	O	O	O	O	O	O	A	A	A
35	O	O	O	O	O	O	A	A	A
36	O	O	O	O	O	O	A	A	A
37	A	A	A	A	A	A	A	A	A
38	O	O	O	O	O	O	A	A	A
39	O	O	O	O	O	O	A	A	A
40	O	O	O	O	O	O	A	A	A
41	O	O	O	O	O	O	O	O	O
42	O	O	O	O	O	O	A	A	A
43	O	O	O	O	O	O	O	O	O
44	A	A	A	A	A	A	A	A	A
45	A	A	A	A	A	A	A	A	A
46	O	O	O	O	O	O	A	A	A
47	A	A	A	A	A	A	A	A	A
48	O	O	O	O	O	O	A	A	A
49	A	A	A	O	O	A	A	A	A
50	A	A	A	A	A	A	A	A	A
51	O	O	O	O	O	O	A	A	A

O = occupied channel
A = available channel (unoccupied)
Blank = no data

Motorola Prototype

Reported DTV Occupied Channels in Ch 21-51 Tuning Range
With Antenna Port Terminated into 50Ω Load (3/4 & 3/27, 2008)

CHANNEL #	INDOOR			OUTDOOR			CHAMBER		
	Scan #			Scan #			Scan #		
	1	2	3	1	2	3	1	2	3
21	A	A	A	A	A	A	A	A	A
22	A	A	A	A	A	A	A	A	A
23	A	A	A	A	A	A	A	A	A
24	A	A	A	A	A	A	A	A	A
25	A	A	A	A	A	A	A	A	A
26	A	A	A	A	A	A	A	A	A
27	A	A	A	A	A	A	A	A	A
28	A	A	A	A	A	A	A	A	A
29	A	A	A	A	A	A	A	A	A
30	A	A	A	A	A	A	A	A	A
31	A	A	A	A	A	A	A	A	A
32	A	A	A	A	A	A	A	A	A
33	A	A	A	A	A	A	A	A	A
34	A	A	A	A	A	A	A	A	A
35	A	A	A	A	A	A	A	A	A
36	A	A	A	A	A	A	A	A	A
37	A	A	A	A	A	A	A	A	A
38	A	A	A	A	A	A	A	A	A
39	A	A	A	A	A	A	A	A	A
40	A	A	A	A	A	A	A	A	A
41	A	A	A	A	A	A	A	A	A
42	A	A	A	A	A	A	A	A	A
43	A	A	A	A	A	A	A	A	A
44	A	A	A	A	A	A	A	A	A
45	A	A	A	A	A	A	A	A	A
46	A	A	A	A	A	A	A	A	A
47	A	A	A	A	A	A	A	A	A
48	A	A	A	A	A	A	A	A	A
49	A	A	A	A	A	A	A	A	A
50	A	A	A	A	A	A	A	A	A
51	A	A	A	A	A	A	A	A	A

O = occupied channel
A = available channel (unoccupied)
Blank = no data

Philips Prototype

Reported Occupied Channels in Ch 21-51 Tuning Range with Provided Antenna
(3/12/08)

CHANNEL #	INDOOR			OUTDOOR			CHAMBER		
	Scan #			Scan #			Scan #		
	1	2	3	1	2	3	1	2	3
21	A	A	O	O	A	O	A	A	A
22	O	O	O	O	O	O	O	O	O
23	O	O	O	O	O	O	O	O	O
24	O	O	O	O	O	O	O	O	O
25	O	O	O	O	O	O	O	O	O
26	O	O	O	O	O	O	O	O	O
27	O	O	O	O	O	O	O	O	O
28	O	O	O	O	O	O	A	A	A
29	O	O	O	O	O	O	O	O	O
30	O	O	O	O	O	O	O	O	O
31	O	O	O	O	O	O	O	O	O
32	O	O	O	O	O	O	O	O	O
33	O	O	O	O	O	O	A	A	A
34	O	O	O	O	O	O	A	O	A
35	O	O	O	O	O	O	O	O	O
36	O	O	O	O	O	O	O	O	O
37	O	A	O	O	O	O	O	O	O
38	O	O	O	O	O	O	O	O	O
39	O	O	O	O	O	O	A	O	A
40	O	O	O	O	O	O	O	O	O
41	O	O	O	O	O	O	O	O	O
42	O	O	O	O	O	O	A	A	A
43	O	O	O	O	O	O	O	O	O
44	O	A	O	O	O	O	A	A	A
45	O	O	O	O	O	O	O	O	O
46	O	O	O	O	O	O	O	O	O
47	O	O	O	O	O	O	O	O	O
48	O	O	O	O	O	O	O	O	O
49	O	O	O	O	O	O	A	A	A
50	O	O	O	O	O	O	O	O	O
51	O	O	O	O	O	O	O	O	O

O = occupied channel
A = available channel (unoccupied)
Blank = no data

Philips Prototype

Reported Occupied Channels in Ch 21-51 Tuning Range
With Antenna Port Terminated into 50Ω Load (3/12/08)

CHANNEL #	INDOOR			OUTDOOR			CHAMBER		
	Scan #			Scan #			Scan #		
	1	2	3	1	2	3	1	2	3
21	A	A	A	A	A	A	A	A	A
22	A	A	O	O	O	O	A	A	A
23	A	A	A	A	A	A	A	A	A
24	A	O	O	O	O	O	A	A	A
25	A	A	A	A	A	A	A	A	A
26	A	A	A	O	O	O	A	A	A
27	A	A	A	A	O	O	A	A	A
28	A	A	A	A	A	A	A	A	A
29	A	A	A	A	A	O	A	A	A
30	A	A	A	A	A	A	A	A	A
31	A	A	A	A	A	A	A	A	A
32	A	A	A	O	O	O	A	A	A
33	A	A	A	O	O	O	A	A	A
34	A	A	A	O	O	O	A	A	A
35	A	A	A	O	O	O	A	A	A
36	A	A	A	O	O	O	A	A	A
37	A	A	A	A	A	A	A	A	A
38	O	A	A	O	O	O	A	A	A
39	A	A	A	O	O	O	A	A	A
40	A	A	A	O	O	O	A	A	A
41	A	A	A	A	A	A	A	A	A
42	A	A	A	O	O	O	A	A	A
43	A	A	A	A	A	A	A	A	A
44	A	A	A	A	A	A	A	A	A
45	O	O	A	O	O	O	A	A	A
46	A	A	A	O	O	O	A	A	A
47	A	A	A	A	A	A	A	A	A
48	A	A	A	O	O	O	A	A	A
49	A	A	A	A	A	A	A	A	A
50	A	A	O	O	O	O	A	A	A
51	A	A	A	O	O	O	A	A	A

O = occupied channel
A = available channel (unoccupied)
Blank = no data

H.2. Results of radiated spurious emissions measurements performed on the WSDs

Adaptrum WSD Spurious Energy

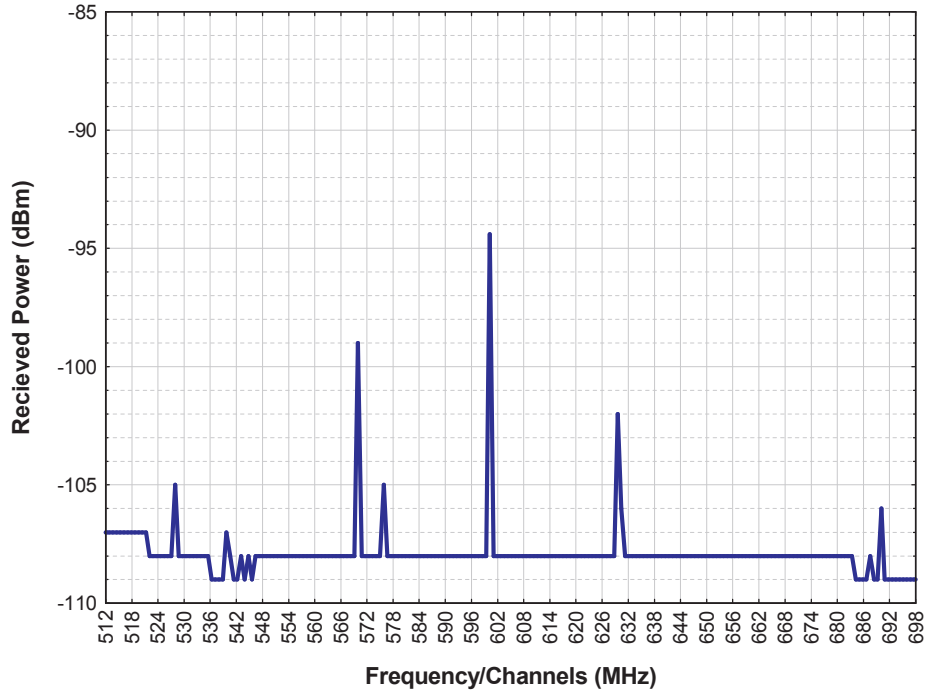


Figure 1. Adaptrum WSD Spurious Emissions at 3m.

MS WSD Spurious Energy

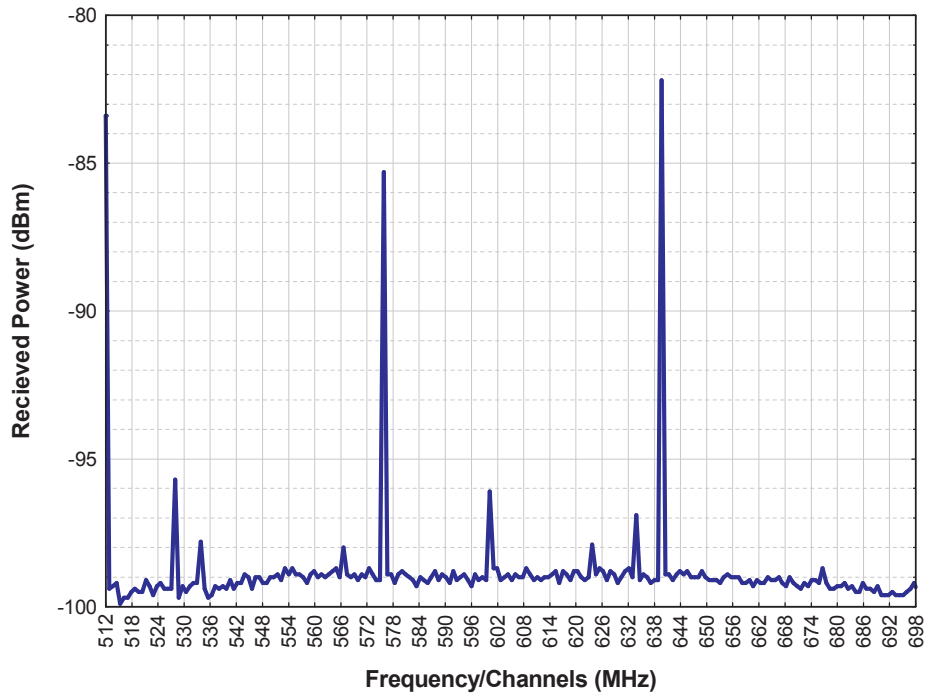


Figure 2. Microsoft WSD Spurious Emissions at 3m.

Motorola WSD Spurious Energy

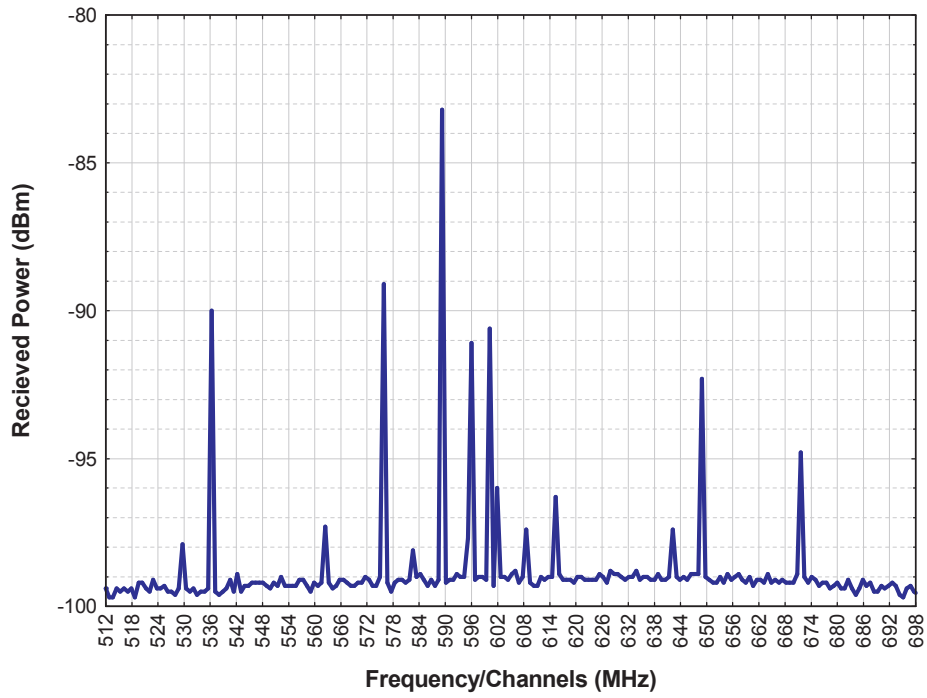


Figure 3. Motorola WSD Spurious Emissions at 3m.

Philips WSD Spurious Energy

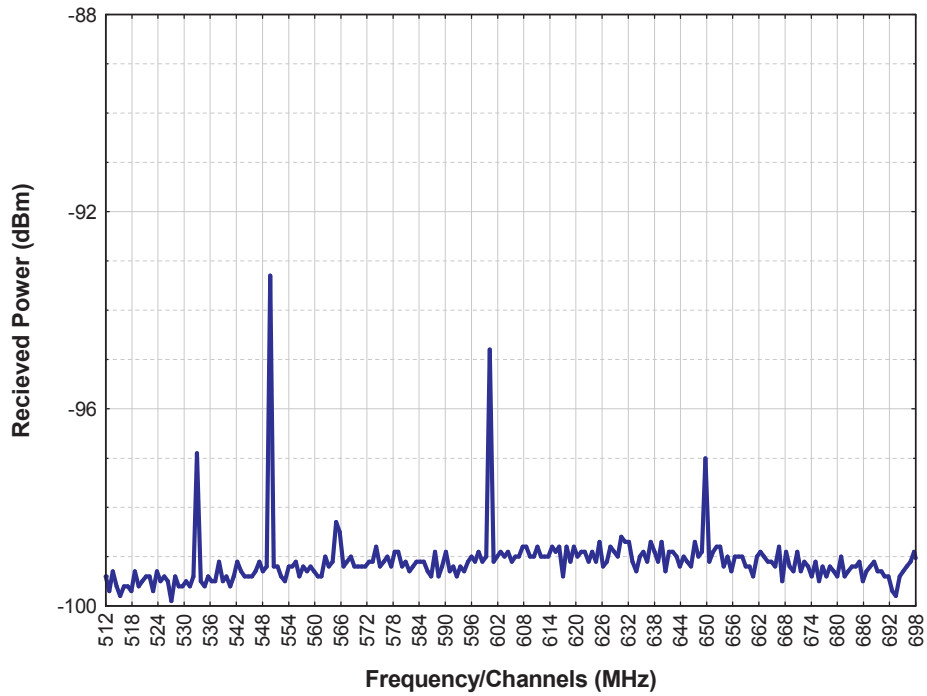


Figure 4. Philips WSD Spurious Emissions at 3m.

Philips WSD #1 Spurious Output at 1-meter

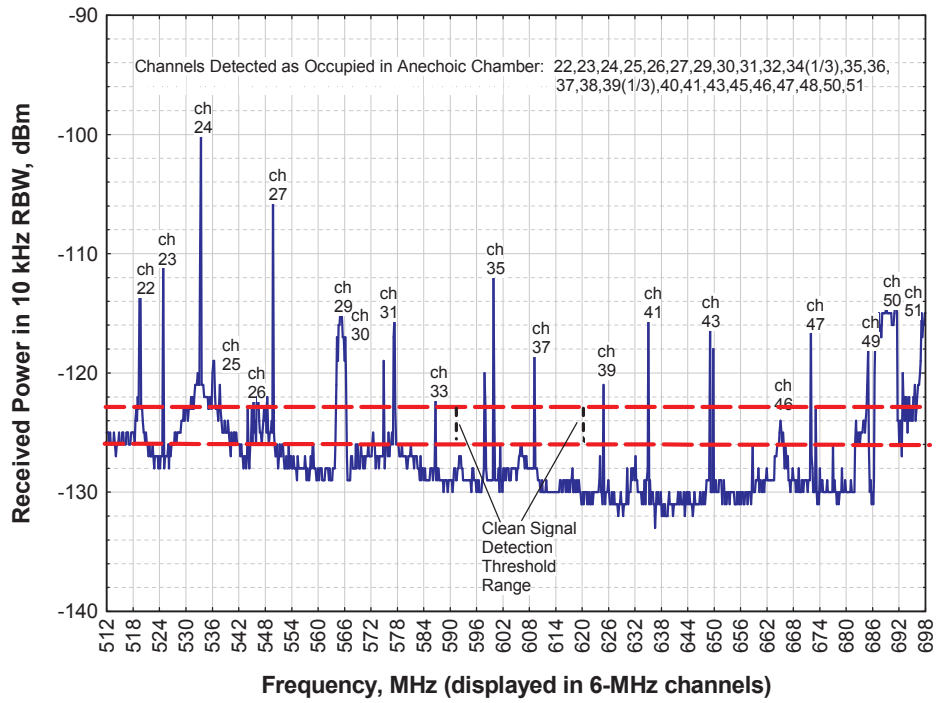


Figure 5. Philips Spurious Emissions at 1-meter Correlated with TV Channels.