

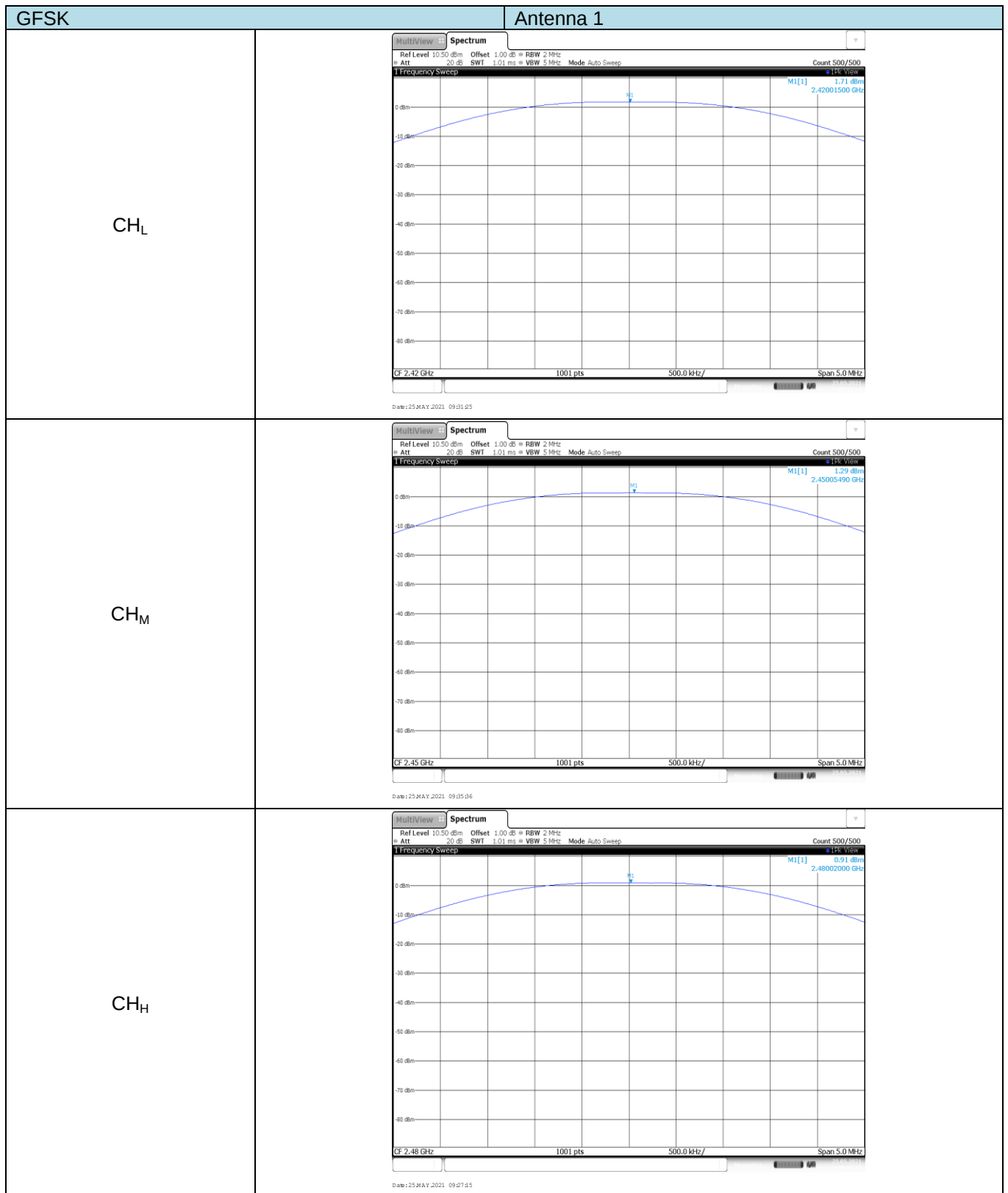
APPENDIX REPORT

Project No.	SHT2103084409EW	Radio Specification	GFSK
Model No.	SWAN-K1		
Start test date	2021-05-25	Finish date	2021-05-25
Temperature	24.6°C	Humidity	32%
Test Engineer	Hailey Chen	Auditor	Xiaodong Zhao

Appendix clause	Test item	Result
A	Conducted Peak Output Power	PASS
B	Power Spectral Density	PASS
C	6 dB Bandwidth	PASS
D	99% Occupied Bandwidth	PASS
E	Duty Cycle	PASS
F	Band edge and Spurious Emissions(coducted)	PASS

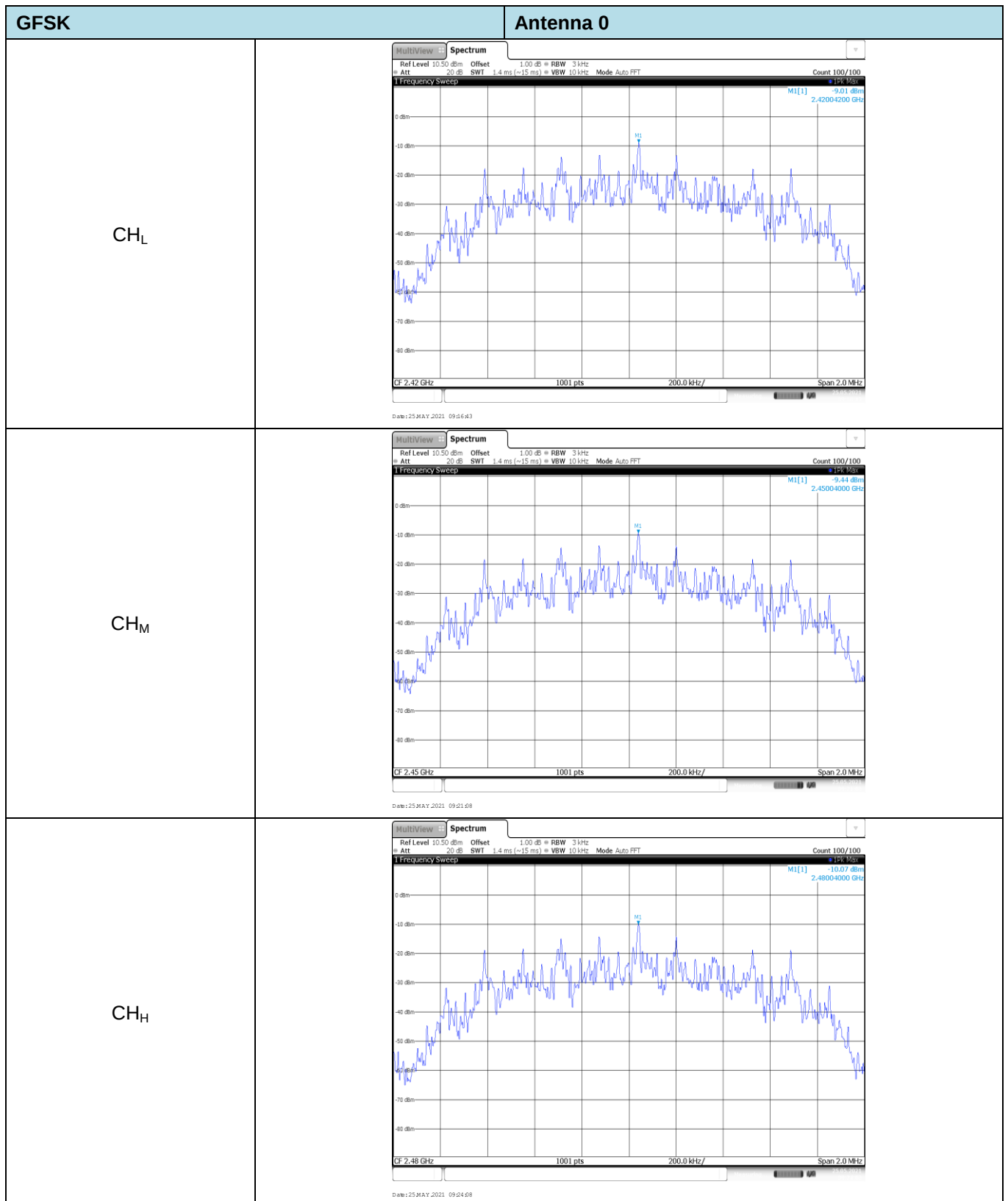
Appendix A: Conducted Peak Output Power

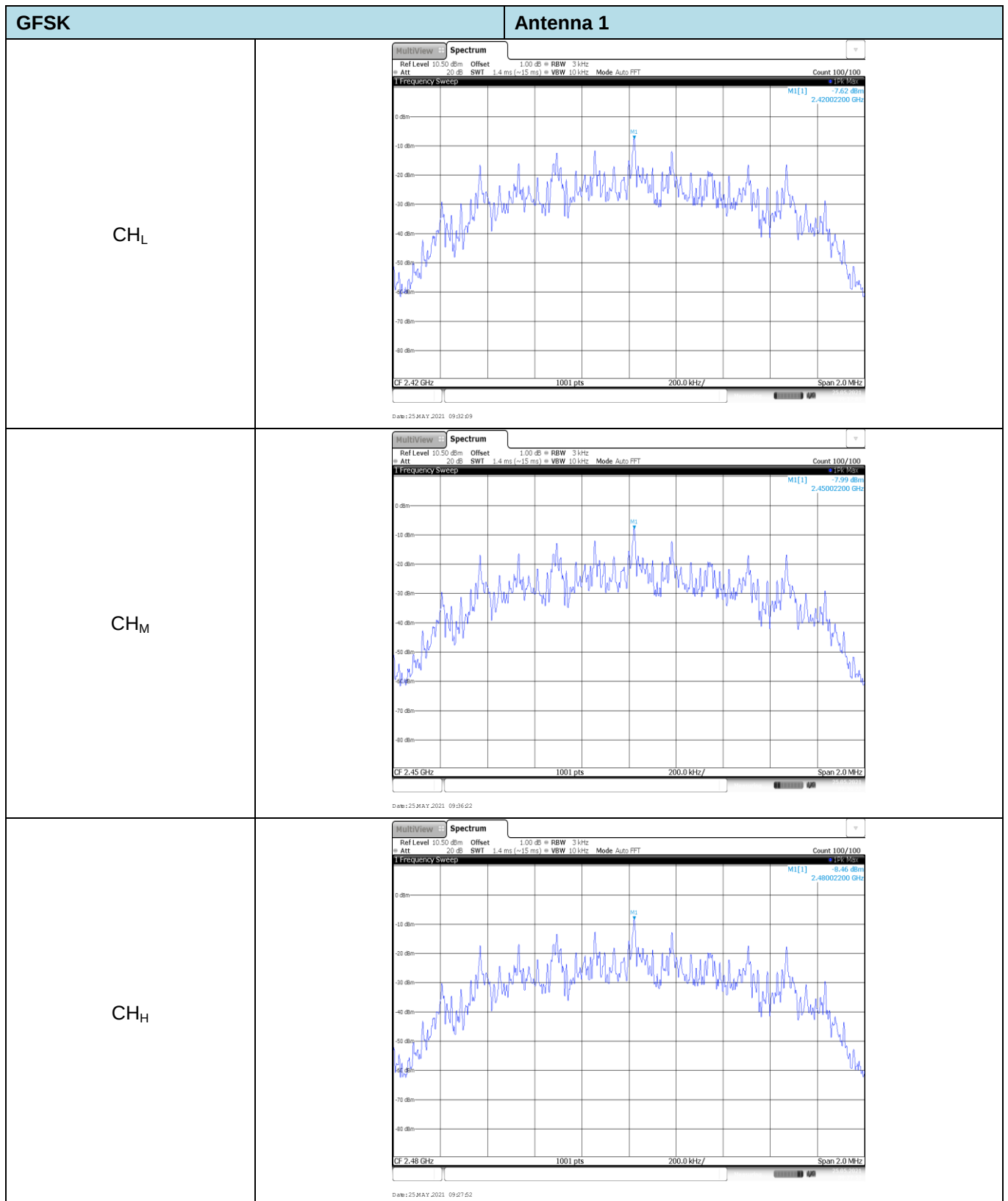
Type	Channel	Peak Output power (dBm)			Average Output power (dBm)			Limit (dBm)	Result
		Antenna 0	Antenna 1	Total	Antenna 0	Antenna 1	Total		
GFSK	CH _L	0.33	1.71	4.08	0.27	1.65	4.02	≤30.00	Pass
	CH _M	-0.21	1.29	3.61	-0.26	1.24	3.56		
	CH _H	-0.64	0.91	3.21	-0.71	0.84	3.14		



Appendix B: Power Spectral Density

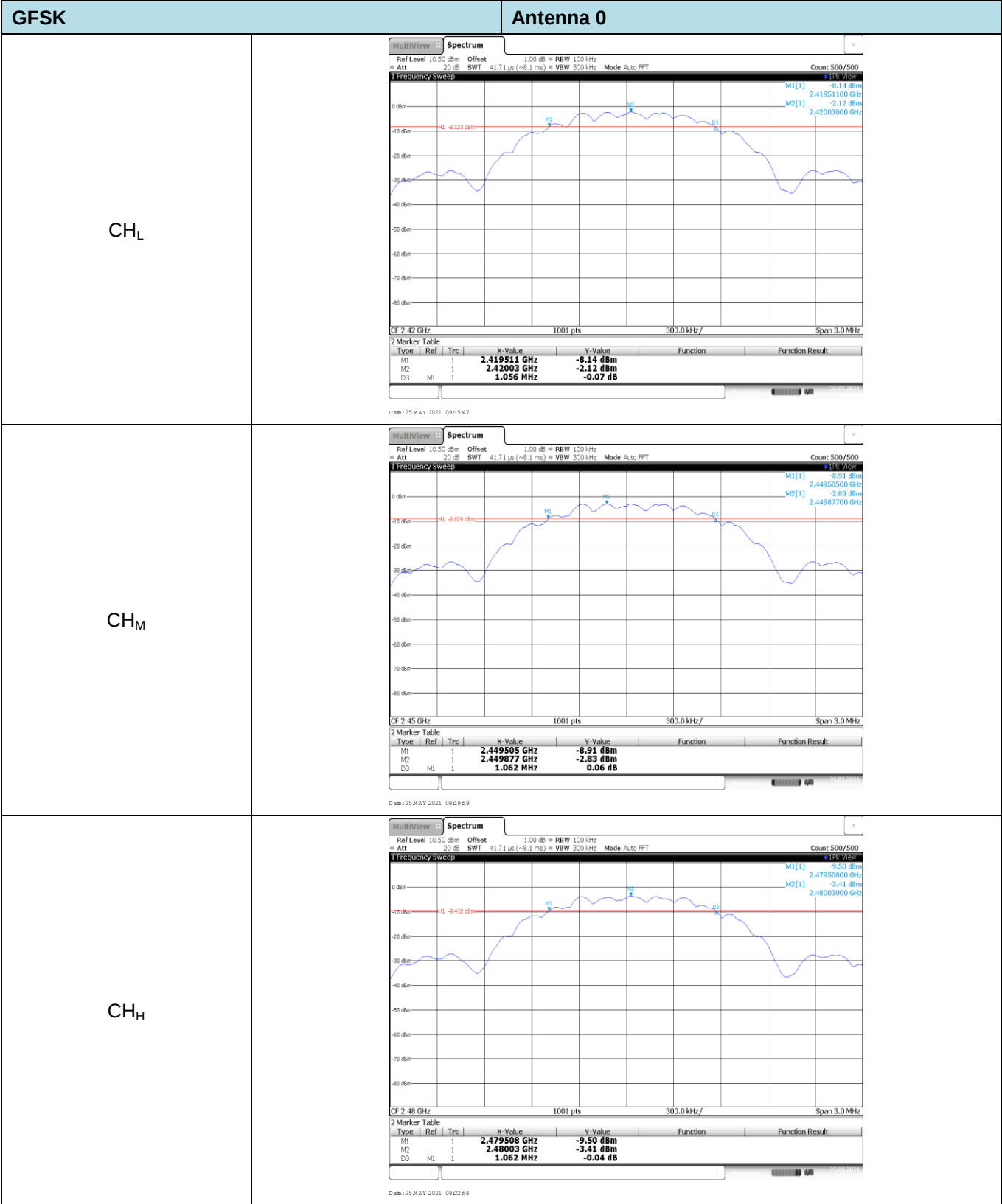
Type	Channel	Power Spectral Density (dBm/30KHz)		Total Power Spectral Density (dBm/3KHz)	Limit (dBm/3KHz)	Result
		Antenna 0	Antenna 1			
GFSK	CH _L	-9.01	-7.62	-5.25	≤8.00	Pass
	CH _M	-9.44	-7.99	-5.64		
	CH _H	-10.07	-8.46	-6.18		

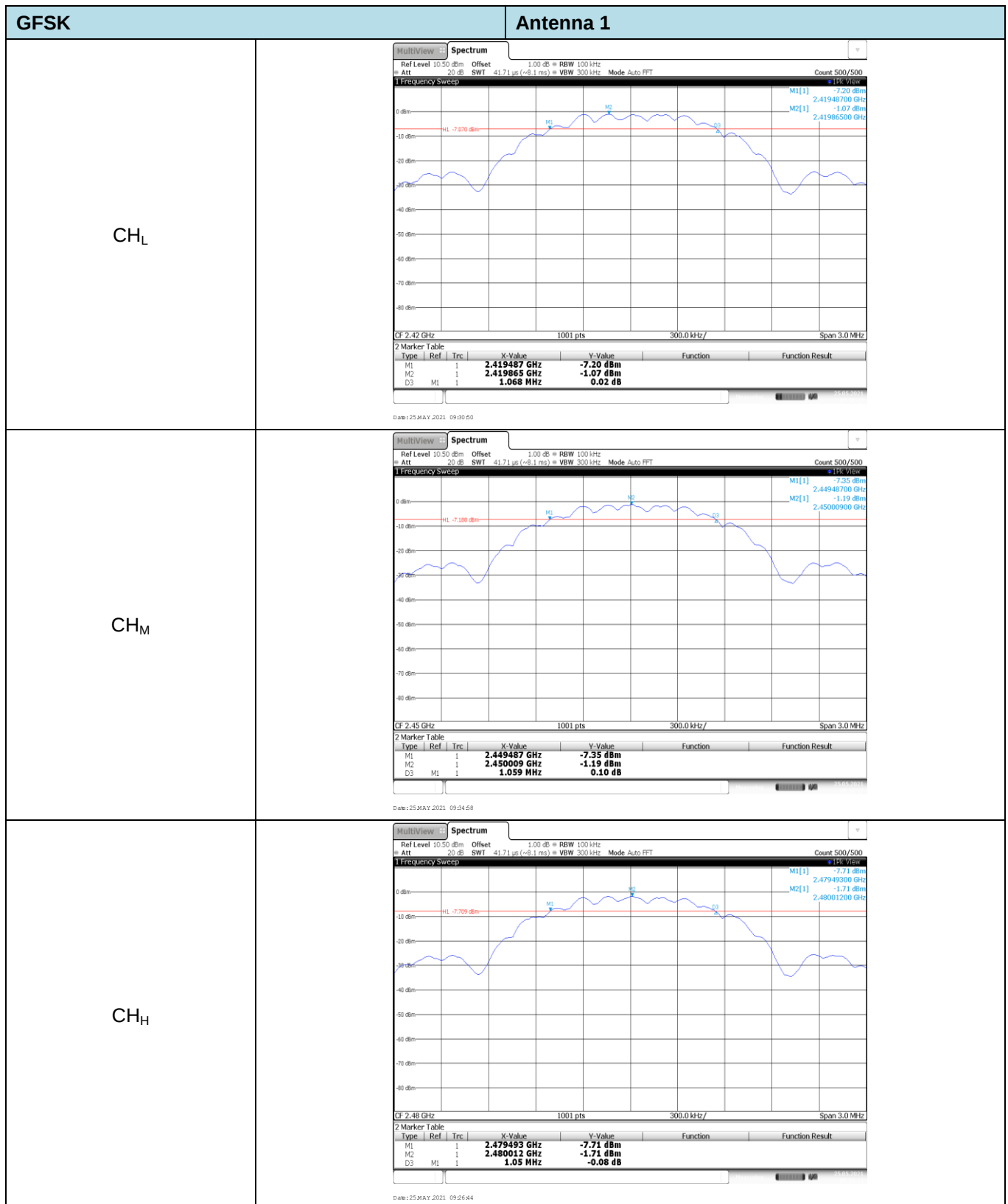




Appendix C: 6dB Bandwidth

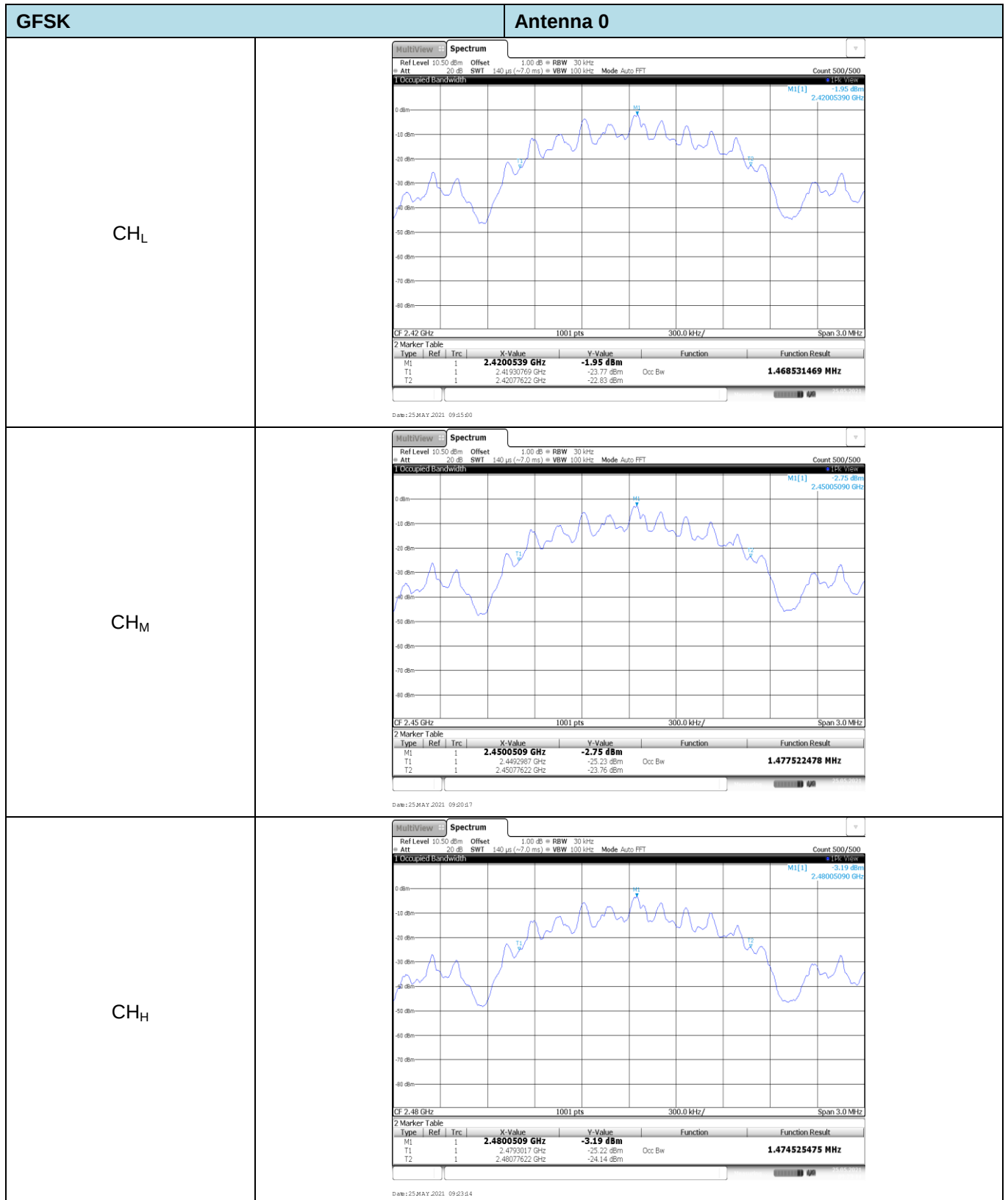
Type	Channel	6dB Bandwidth (MHz)		Limit (kHz)	Result
		Antenna 0	Antenna 1		
GFSK	CH _L	1.056	1.068	≥500	Pass
	CH _M	1.062	1.059		
	CH _H	1.062	1.050		

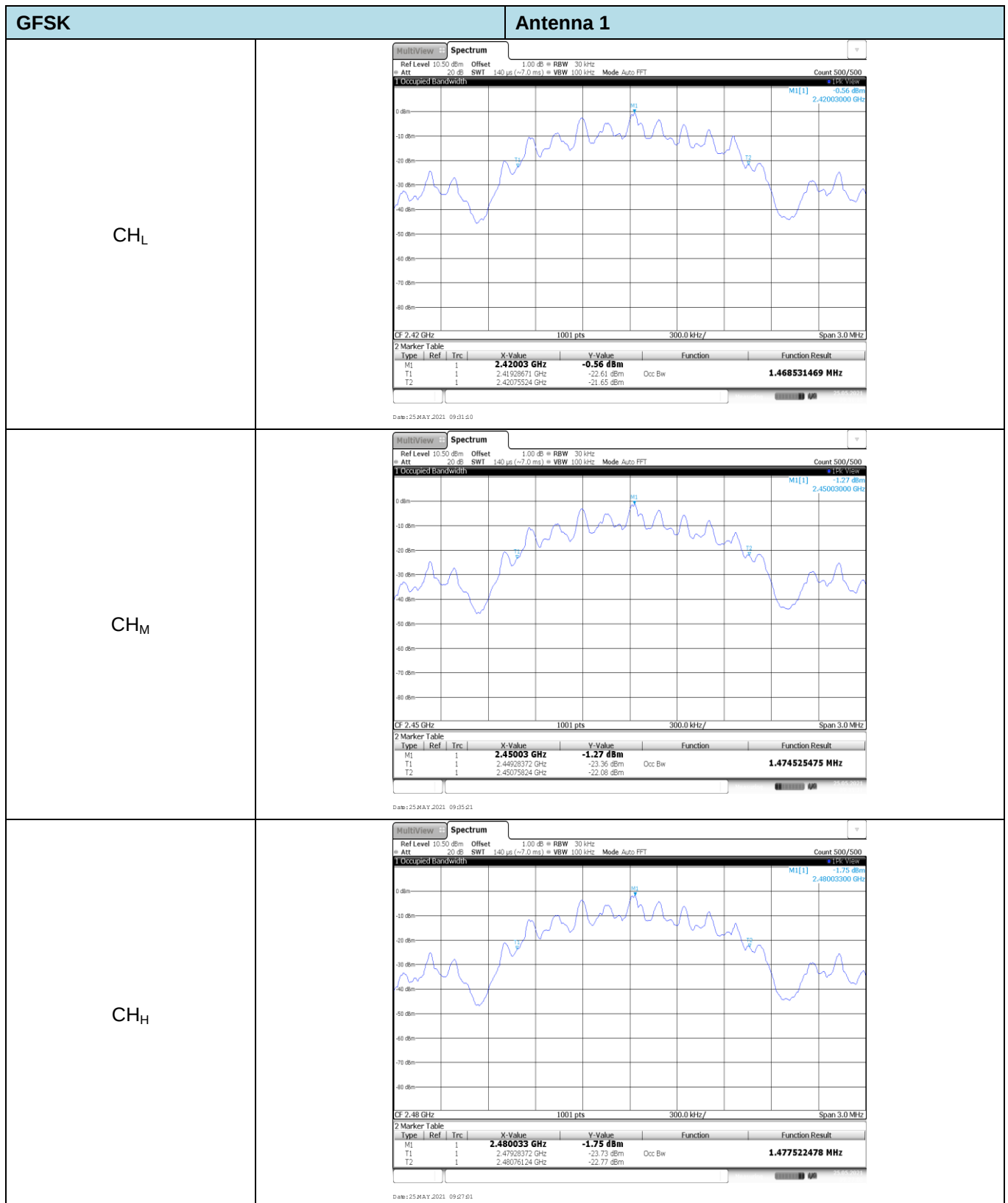




Appendix D: 99% Occupied Bandwidth

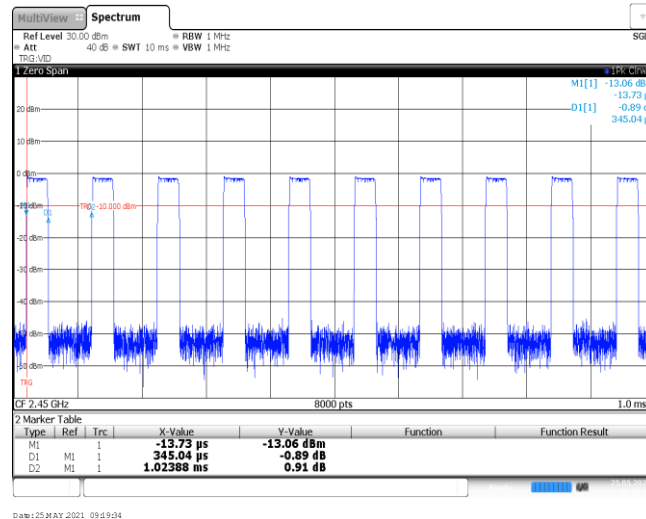
Type	Channel	99% Bandwidth (MHz)		Limit (kHz)	Result
		Antenna 0	Antenna 1		
GFSK	CH _L	1.47	1.47	-	Pass
	CH _M	1.48	1.47		
	CH _H	1.47	1.48		





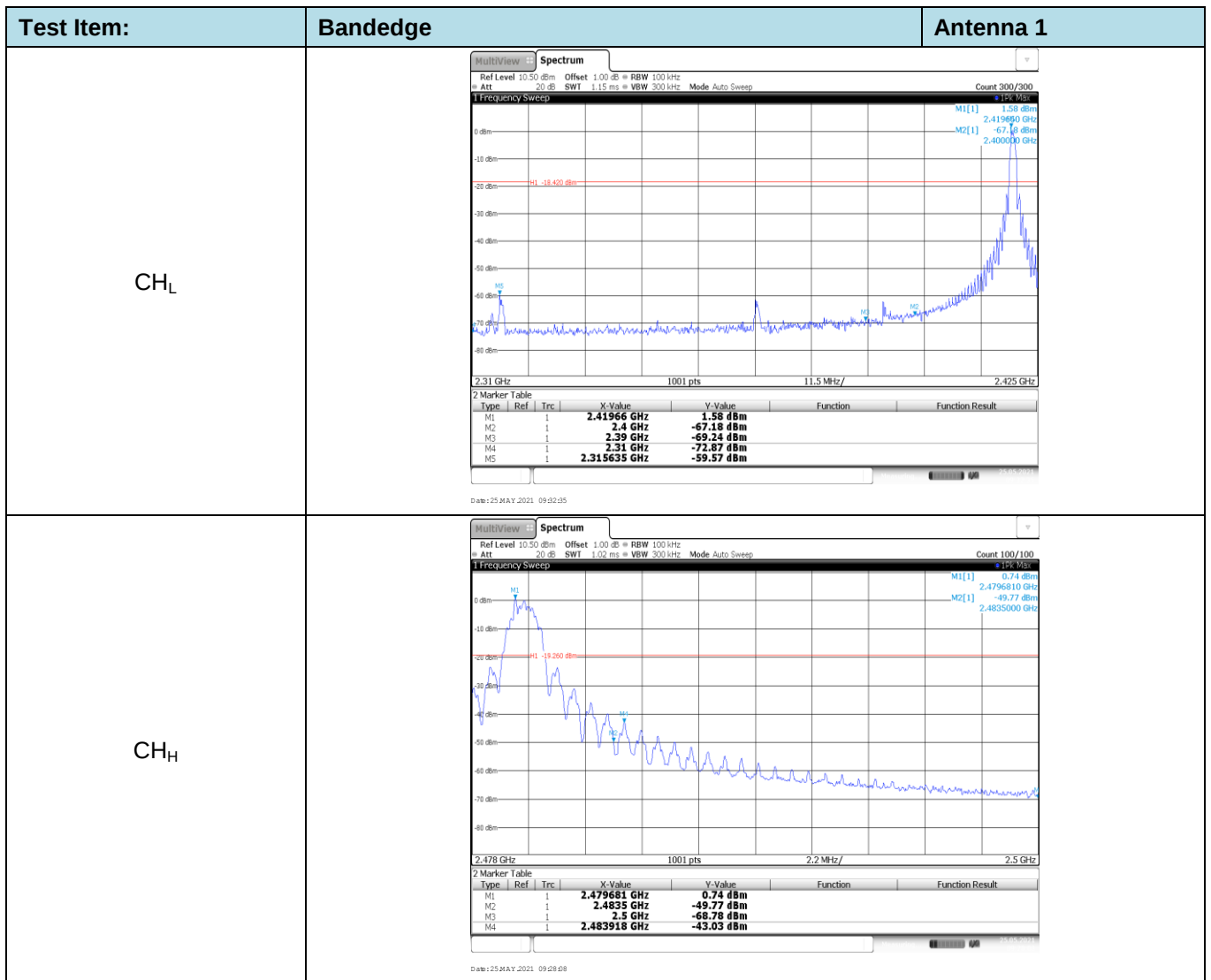
Appendix E: Duty Cycle

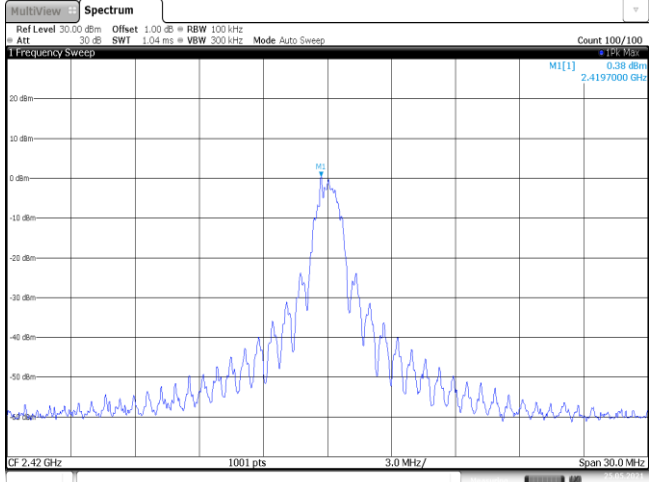
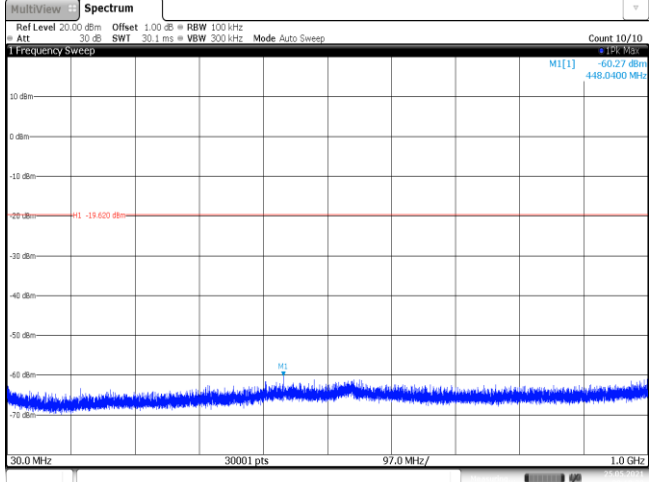
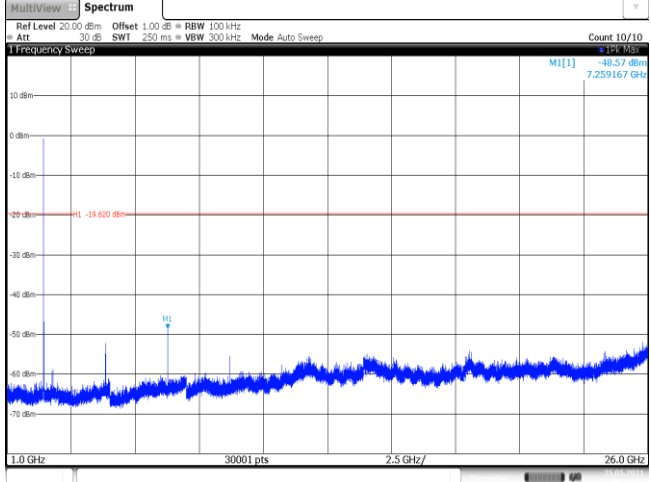
Test Frequency (MHz)	T _{on} time for single burst (ms)	T _{period} (ms)	Duty cycle	1/T _{on} time (kHz)
2450	0.35	1.02	34.3%	2.9

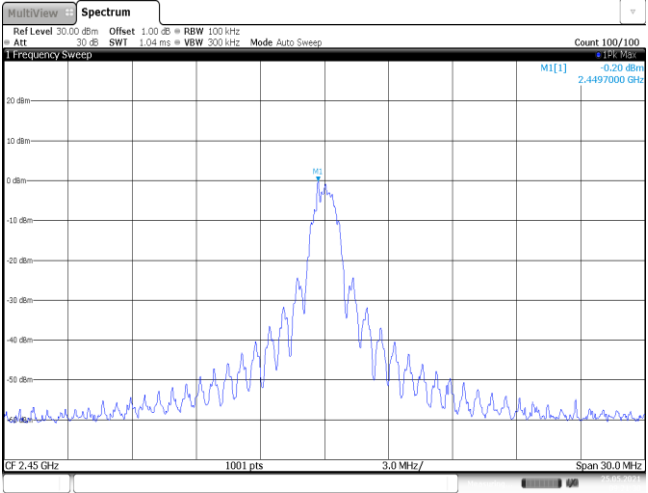
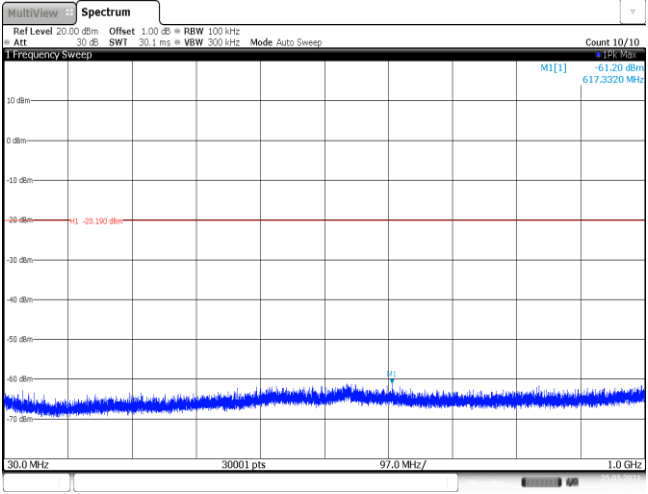
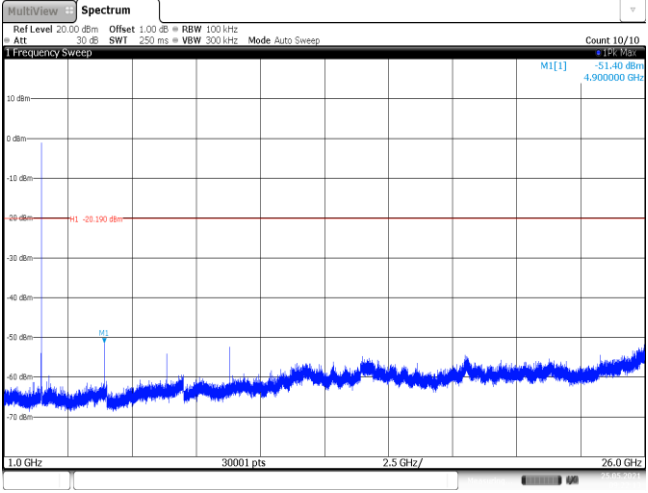


Appendix F: Band Edge and Spurious Emissions (Conducted)

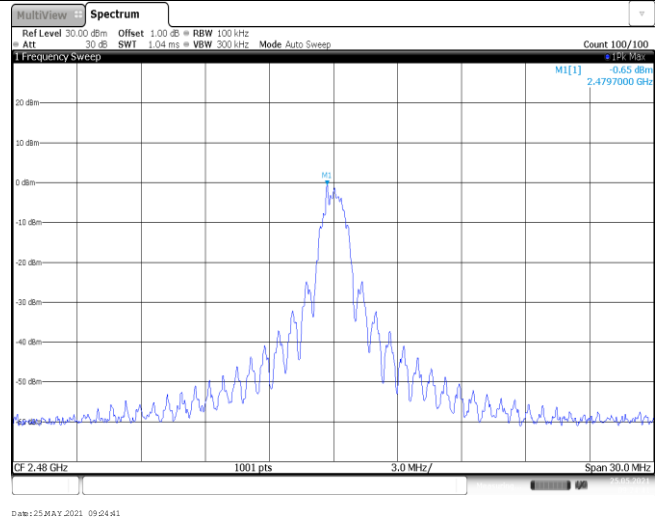
Test Item:	Bandedge	Antenna 0																																									
CH _L	MultiView Spectrum Ref Level 10.50 dBm Offset 1.00 dB RBW 100 kHz Att 20 dB SWI 1.15 ms VBW 300 kHz Mode Auto Sweep Count 300/300 Frequency Sweep 150 MHz M1[1] 0.14 dBm 2.419660 GHz M2[1] -68.09 dBm 2.400000 GHz 0 dBm -10 dBm -20 dBm -30 dBm -40 dBm -50 dBm -60 dBm -70 dBm -80 dBm 2.31 GHz 1001 pts 11.5 MHz/ 2.425 GHz 2 Marker Table <table><tr><th>Type</th><th>Ref</th><th>Trc</th><th>X-Value</th><th>Y-Value</th><th>Function</th><th>Function Result</th></tr><tr><td>M1</td><td>1</td><td></td><td>2.41966 GHz</td><td>0.14 dBm</td><td></td><td></td></tr><tr><td>M2</td><td>1</td><td></td><td>2.4 GHz</td><td>-68.09 dBm</td><td></td><td></td></tr><tr><td>M3</td><td>1</td><td></td><td>2.39 GHz</td><td>-70.52 dBm</td><td></td><td></td></tr><tr><td>M4</td><td>1</td><td></td><td>2.31 GHz</td><td>-75.13 dBm</td><td></td><td></td></tr><tr><td>M5</td><td>1</td><td></td><td>2.315635 GHz</td><td>-60.54 dBm</td><td></td><td></td></tr></table> Date: 25.MAY.2021 09:17:38	Type	Ref	Trc	X-Value	Y-Value	Function	Function Result	M1	1		2.41966 GHz	0.14 dBm			M2	1		2.4 GHz	-68.09 dBm			M3	1		2.39 GHz	-70.52 dBm			M4	1		2.31 GHz	-75.13 dBm			M5	1		2.315635 GHz	-60.54 dBm		
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CH _H	MultiView Spectrum Ref Level 10.50 dBm Offset 1.00 dB RBW 100 kHz Att 20 dB SWI 1.02 ms VBW 300 kHz Mode Auto Sweep Count 100/100 Frequency Sweep 3.0 GHz M1[1] -0.78 dBm 2.4797030 GHz M2[1] -50.07 dBm 2.4835000 GHz 0 dBm -10 dBm -20 dBm -30 dBm -40 dBm -50 dBm -60 dBm -70 dBm -80 dBm 2.478 GHz 1001 pts 2.2 MHz/ 2.5 GHz 2 Marker Table <table><tr><th>Type</th><th>Ref</th><th>Trc</th><th>X-Value</th><th>Y-Value</th><th>Function</th><th>Function Result</th></tr><tr><td>M1</td><td>1</td><td></td><td>2.479703 GHz</td><td>-0.78 dBm</td><td></td><td></td></tr><tr><td>M2</td><td>1</td><td></td><td>2.4835 GHz</td><td>-50.07 dBm</td><td></td><td></td></tr><tr><td>M3</td><td>1</td><td></td><td>2.5 GHz</td><td>-68.78 dBm</td><td></td><td></td></tr><tr><td>M4</td><td>1</td><td></td><td>2.48394 GHz</td><td>-44.50 dBm</td><td></td><td></td></tr></table> Date: 25.MAY.2021 09:24:23	Type	Ref	Trc	X-Value	Y-Value	Function	Function Result	M1	1		2.479703 GHz	-0.78 dBm			M2	1		2.4835 GHz	-50.07 dBm			M3	1		2.5 GHz	-68.78 dBm			M4	1		2.48394 GHz	-44.50 dBm									
Type	Ref	Trc	X-Value	Y-Value	Function	Function Result																																					
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M3	1		2.5 GHz	-68.78 dBm																																							
M4	1		2.48394 GHz	-44.50 dBm																																							



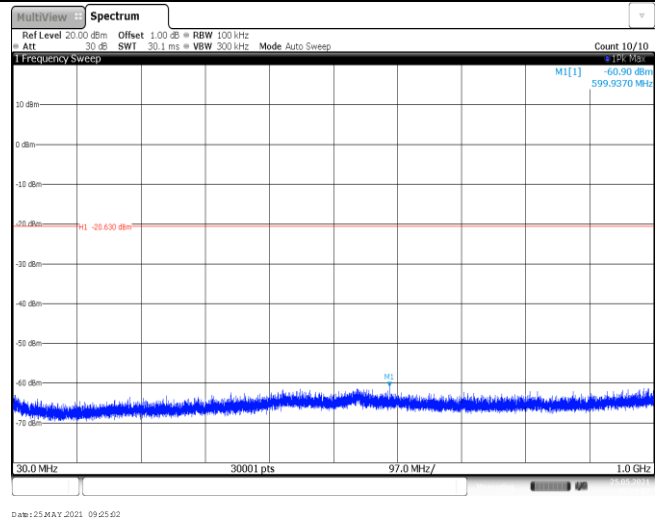
Test Item:	SE	Antenna 0
CH _L Reference level	 Ref Level 30.00 dBm Offset 1.00 dB RBW 100 kHz Att 30 dB SWF 1.04 ms VBW 300 kHz Mode Auto Sweep Count 100/100 M1[1] -0.38 dBm 2.4197000 GHz CF 2.42 GHz 1001 pts 3.0 MHz/ Span 30.0 MHz Date: 25 MAY 2021 09:17:58	
CH _L 30MHz~1000MHz	 Ref Level 20.00 dBm Offset 1.00 dB RBW 100 kHz Att 30 dB SWF 30.1 ms VBW 300 kHz Mode Auto Sweep Count 10/10 M1[1] -60.27 dBm 448.0400 MHz 30.0 MHz 30001 pts 97.0 MHz/ 1.0 GHz Date: 25 MAY 2021 09:18:19	
CH _L 1GHz~26GHz	 Ref Level 20.00 dBm Offset 1.00 dB RBW 100 kHz Att 30 dB SWF 250 ms VBW 300 kHz Mode Auto Sweep Count 10/10 M1[1] -48.57 dBm 7.259167 GHz 1.0 GHz 30001 pts 2.5 GHz/ 26.0 GHz Date: 25 MAY 2021 09:18:42	

CH_M Reference level	 The spectrum plot shows a single, sharp peak at 2.4497000 GHz. The y-axis represents power in dBm, ranging from -70 to 20. The x-axis represents frequency in GHz, ranging from 2.45 to 2.46. The peak is labeled 'M1[1]' with a value of -61.20 dBm. The plot is titled 'Spectrum' and includes parameters: Ref Level 30.00 dBm, Offset 1.00 dB, RBW 100 kHz, Att 30 dB, SWI 1.04 ms, VSW 300 kHz, Mode Auto Sweep, Count 100/100. The date is 25 MAY 2021 09:21:29.
CH_M 30MHz~1000MHz	 The spectrum plot shows a noisy baseline across the frequency range from 30.0 MHz to 1.0 GHz. The y-axis represents power in dBm, ranging from -70 to 10. The x-axis represents frequency in GHz, ranging from 0.030 to 1.0. A red horizontal line is drawn at -25.100 dBm. The plot is titled 'Spectrum' and includes parameters: Ref Level 20.00 dBm, Offset 1.00 dB, RBW 100 kHz, Att 30 dB, SWI 30.1 ms, VSW 300 kHz, Mode Auto Sweep, Count 10/10. The date is 25 MAY 2021 09:21:51.
CH_M 1GHz~26GHz	 The spectrum plot shows a noisy baseline across the frequency range from 1.0 GHz to 26.0 GHz. The y-axis represents power in dBm, ranging from -70 to 10. The x-axis represents frequency in GHz, ranging from 1.0 to 26.0. A red horizontal line is drawn at -25.100 dBm. The plot is titled 'Spectrum' and includes parameters: Ref Level 20.00 dBm, Offset 1.00 dB, RBW 100 kHz, Att 30 dB, SWI 250 ms, VSW 300 kHz, Mode Auto Sweep, Count 10/10. The date is 25 MAY 2021 09:22:13.

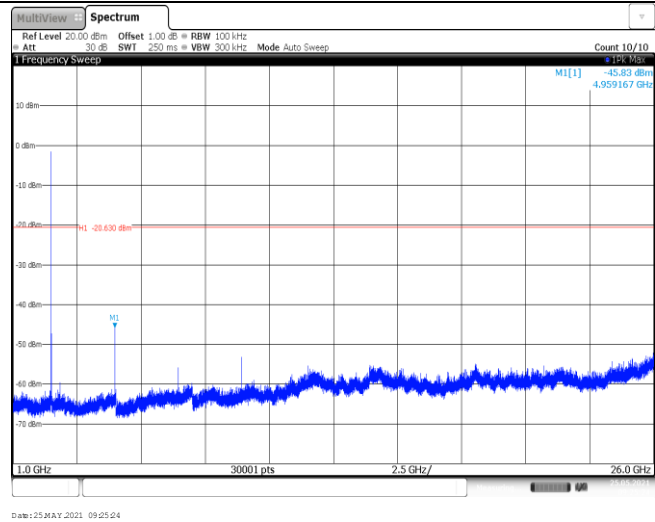
CH_H
Reference level

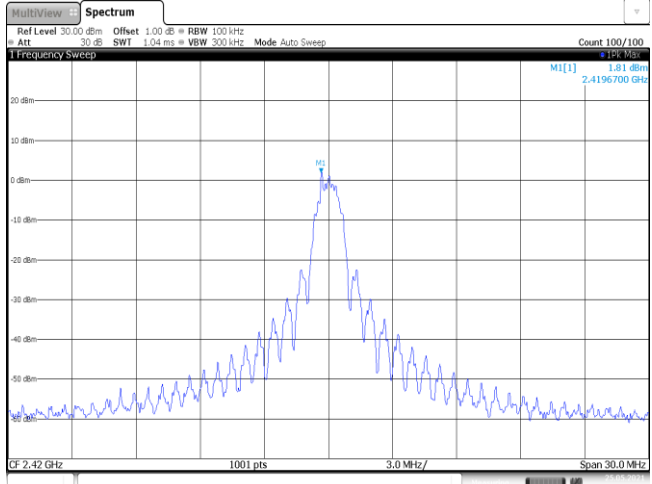
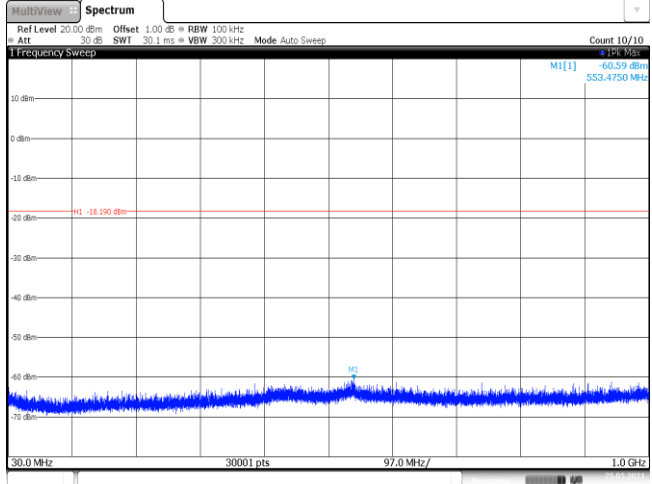
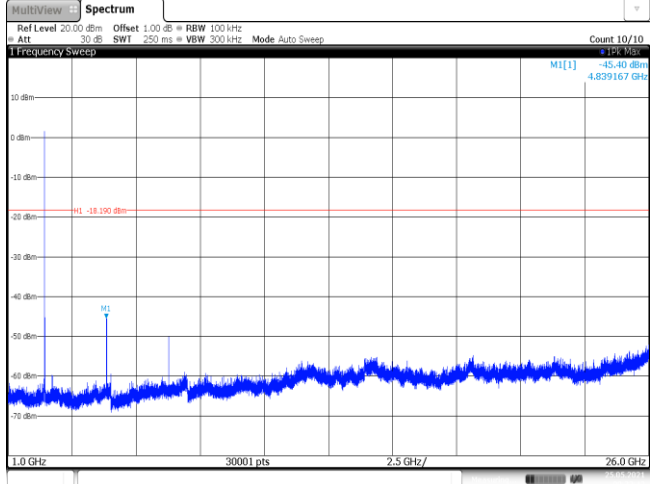


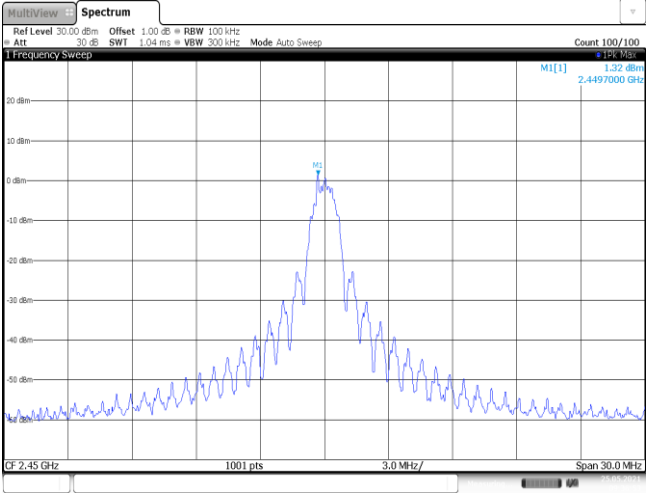
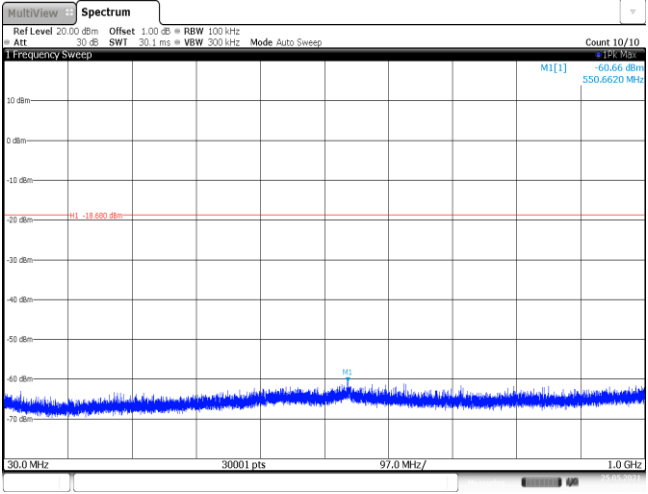
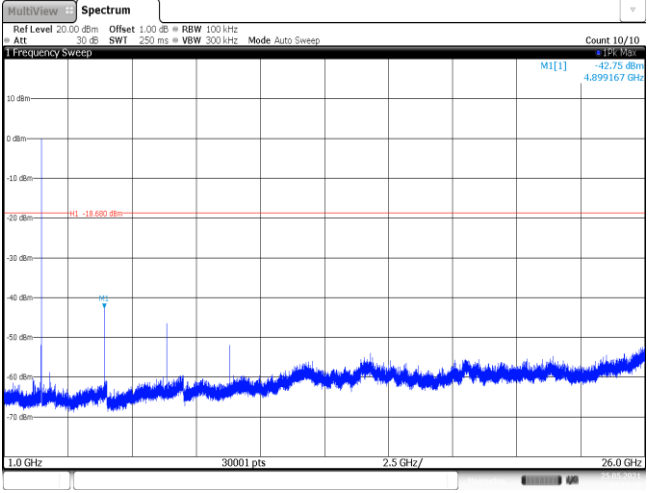
CH_H
30MHz~1000MHz



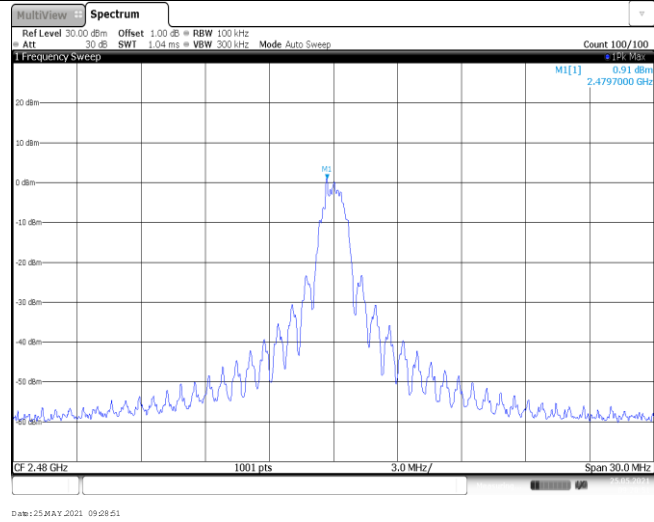
CH_H
1GHz~26GHz



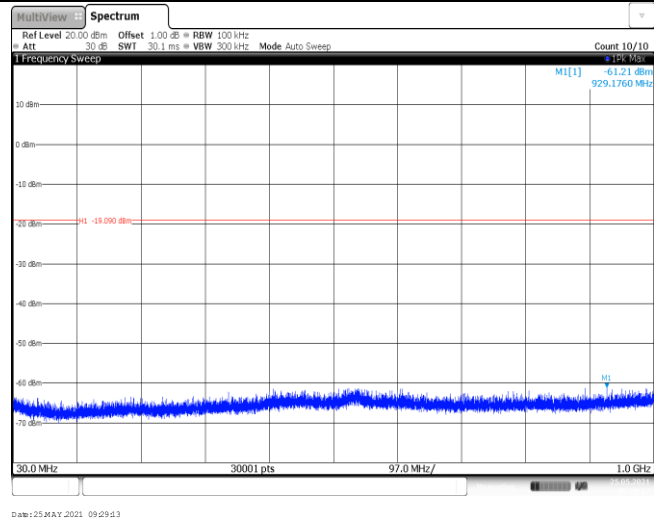
Test Item:	SE	Antenna 1
CH _L Reference level	 Ref Level 30.00 dBm Offset 1.00 dB RBW 100 kHz Att 30 dB SWF 1.04 ms VBW 300 kHz Mode Auto Sweep Count 100/100 M1[1] 1.81 dBm 2.4196700 GHz CF 2.42 GHz 1001 pts 3.0 MHz/ Span 30.0 MHz Date: 25 MAY 2021 09:33:40	
CH _L 30MHz~1000MHz	 Ref Level 20.00 dBm Offset 1.00 dB RBW 100 kHz Att 30 dB SWF 30.1 ms VBW 300 kHz Mode Auto Sweep Count 10/10 M1[1] -60.59 dBm 553.4750 MHz M1 -18.100 dBm 30.0 MHz 30001 pts 97.0 MHz/ 1.0 GHz Date: 25 MAY 2021 09:33:21	
CH _L 1GHz~26GHz	 Ref Level 20.00 dBm Offset 1.00 dB RBW 100 kHz Att 30 dB SWF 250 ms VBW 300 kHz Mode Auto Sweep Count 10/10 M1[1] -45.40 dBm 4.839167 GHz M1 -18.100 dBm 1.0 GHz 30001 pts 2.5 GHz/ 26.0 GHz Date: 25 MAY 2021 09:33:43	

CH_M Reference level	 Ref Level 30.00 dBm Offset 1.00 dB BW 100 kHz Att 30 dB SWI 1.04 ms VSW 300 kHz Mode Auto Sweep Count 100/100 M1[1] -12.52 dBm 2.4497000 GHz CF 2.45 GHz 1001 pts 3.0 MHz/ Span 30.0 MHz Date: 25 MAY 2021 09:36:54
CH_M 30MHz~1000MHz	 Ref Level 20.00 dBm Offset 1.00 dB BW 100 kHz Att 30 dB SWI 30.1 ms VSW 300 kHz Mode Auto Sweep Count 10/10 M1[1] -60.66 dBm 550.6620 MHz 30.0 MHz 30001 pts 97.0 MHz/ 1.0 GHz Date: 25 MAY 2021 09:37:15
CH_M 1GHz~26GHz	 Ref Level 20.00 dBm Offset 1.00 dB BW 100 kHz Att 30 dB SWI 250 ms VSW 300 kHz Mode Auto Sweep Count 10/10 M1[1] -42.75 dBm 4.899167 GHz 1.0 GHz 30001 pts 2.5 GHz/ 26.0 GHz Date: 25 MAY 2021 09:37:37

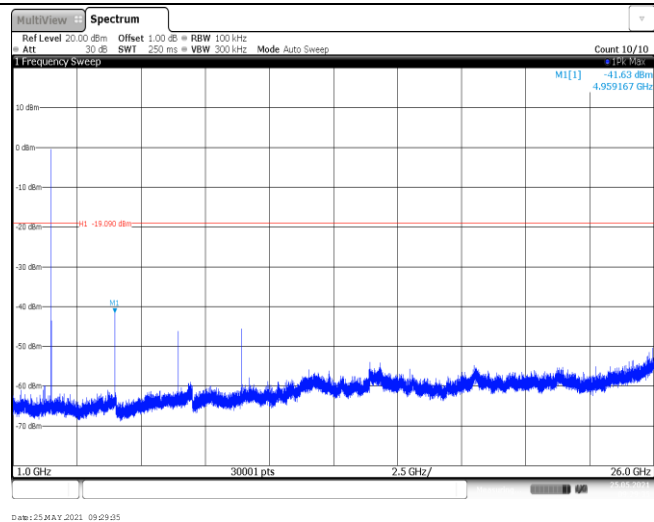
CH_H
Reference level



CH_H
30MHz~1000MHz



CH_H
1GHz~26GHz



.....End of Report.....