

Table S1

Observed saturation dip frequencies (MHz) and least-squares residuals for H(11)BS in its ground vibrational state.

J' F1' F' <-- J F1 F	observed	o-c	blends o-c	blends wt
1: 2 2 2	1 1 1	76330.3890	-0.0029	
2: 2 2 1	1 1 0	76330.4630	0.0084	0.0035 0.30
3: 2 3 3	1 3 3	76330.4630	0.0014	0.0035 0.70
4: 2 3 2	1 3 2	76330.5090	0.0026	
5: 2 4 3	1 3 2	76331.4330	0.0015	-0.0024 0.33
6: 2 3 3	1 2 2	76331.4330	-0.0022	-0.0024 0.24
7: 2 4 4	1 3 3	76331.4330	-0.0055	-0.0024 0.44
8: 2 2 1	1 2 1	76332.0680	0.0036	-0.0003 0.36
9: 2 2 2	1 2 2	76332.0680	-0.0024	-0.0003 0.64
10: 2 1 1	1 2 2	76332.9870	0.0000	
11: 3 4 4	2 4 4	114494.7790	0.0008	
12: 3 4 3	2 4 3	114494.8150	-0.0039	
13: 3 2 1	2 1 0	114495.5100	0.0130	0.0030 0.10
14: 3 2 2	2 1 1	114495.5100	0.0110	0.0030 0.26
15: 3 3 2	2 2 1	114495.5100	0.0013	0.0030 0.25
16: 3 3 3	2 2 2	114495.5100	-0.0039	0.0030 0.39
17: 3 4 3	2 3 2	114495.7560	0.0120	0.0003 0.17
18: 3 4 4	2 3 3	114495.7560	0.0008	0.0003 0.23
19: 3 5 4	2 4 3	114495.7560	-0.0013	0.0003 0.26
20: 3 5 5	2 4 4	114495.7560	-0.0049	0.0003 0.33
21: 3 3 3	2 3 3	114496.1540	0.0048	-0.0007 0.58
22: 3 3 2	2 3 2	114496.1540	-0.0083	-0.0007 0.42
23: 3 2 2	2 2 2	114496.4190	0.0034	0.0003 0.65
24: 3 2 1	2 2 1	114496.4190	-0.0056	0.0003 0.35
25: 4 5 5	3 5 5	152657.5390	0.0002	
26: 4 5 4	3 5 4	152657.5760	-0.0008	
27: 4 3 2	3 2 1	152658.3990	0.0072	0.0003 0.16
28: 4 3 3	3 2 2	152658.3990	0.0050	0.0003 0.26
29: 4 4 3	3 3 2	152658.3990	-0.0009	0.0003 0.25
30: 4 4 4	3 3 3	152658.3990	-0.0059	0.0003 0.33
31: 4 5 4	3 4 3	152658.5240	0.0087	0.0003 0.19
32: 4 5 5	3 4 4	152658.5240	0.0023	0.0003 0.24
33: 4 6 5	3 5 4	152658.5240	-0.0022	0.0003 0.26
34: 4 6 6	3 5 5	152658.5240	-0.0044	0.0003 0.31
35: 4 4 4	3 4 4	152658.7970	-0.0019	
36: 4 3 3	3 3 3	152659.3020	0.0063	0.0014 0.59
37: 4 3 2	3 3 2	152659.3020	-0.0056	0.0014 0.41
38: 5 4 3	4 3 2	190819.1190	0.0062	0.0003 0.19
39: 5 4 4	4 3 3	190819.1190	0.0046	0.0003 0.25
40: 5 5 4	4 4 3	190819.1190	-0.0015	0.0003 0.25
41: 5 5 5	4 4 4	190819.1190	-0.0052	0.0003 0.31
42: 5 6 5	4 5 4	190819.1990	0.0069	-0.0001 0.20

43: 5 6 6	4 5 5	190819.1990	0.0026	-0.0001	0.24
44: 5 7 6	4 6 5	190819.1990	-0.0031	-0.0001	0.26
45: 5 7 7	4 6 6	190819.1990	-0.0045	-0.0001	0.30

Table S2

Observed saturation dip frequencies (MHz) and least-squares residuals for H(11)BS in its $v_2 = 1$ vibrationally excited.

J' l' F1' F' <-- J l F1 F	observed	o-c	blends o-c	blends wt	
1: 2 -1 4 3	1 1 3 2	76332.7330	0.0161	0.0030	0.43
2: 2 -1 4 4	1 1 3 3	76332.7330	-0.0068	0.0030	0.57
3: 2 -1 1 1	1 1 1 0	76333.3800	0.0115	-0.0026	0.24
4: 2 -1 1 1	1 1 1 1	76333.3800	0.0021	-0.0026	0.50
5: 2 -1 1 0	1 1 1 1	76333.3800	-0.0252	-0.0026	0.25
6: 2 1 3 3	1 -1 2 2	76517.6960	0.0009		
7: 2 1 3 2	1 -1 2 1	76517.7330	0.0004		
8: 2 1 2 2	1 -1 2 2	76517.9880	-0.0007		
9: 2 1 2 1	1 -1 2 1	76518.0350	-0.0005		
10: 2 1 3 3	1 -1 3 3	76518.1690	0.0011	-0.0001	0.60
11: 2 1 3 2	1 -1 3 2	76518.1690	-0.0018	-0.0001	0.40
12: 2 1 4 3	1 -1 3 3	76518.6310	0.0046	-0.0030	0.43
13: 2 1 4 4	1 -1 3 3	76518.6310	-0.0086	-0.0030	0.57
14: 2 1 2 2	1 -1 1 1	76518.8480	-0.0026		
15: 2 1 1 1	1 -1 1 0	76519.2840	0.0129	-0.0010	0.24
16: 2 1 1 1	1 -1 1 1	76519.2840	0.0036	-0.0010	0.51
17: 2 1 1 0	1 -1 1 1	76519.2840	-0.0237	-0.0010	0.25
18: 3 1 4 4	2 -1 4 4	114496.8040	0.0106	0.0005	0.57
19: 3 1 4 3	2 -1 4 3	114496.8040	-0.0132	0.0005	0.43
20: 3 1 3 3	2 -1 2 2	114497.2890	0.0161	0.0014	0.24
21: 3 1 3 2	2 -1 2 1	114497.2890	0.0092	0.0014	0.15
22: 3 1 4 3	2 -1 3 2	114497.2890	-0.0050	0.0014	0.26
23: 3 1 4 4	2 -1 3 3	114497.2890	-0.0071	0.0014	0.35
24: 3 1 5 4	2 -1 4 3	114497.5290	0.0023	-0.0029	0.44
25: 3 1 5 5	2 -1 4 4	114497.5290	-0.0070	-0.0029	0.56
26: 3 1 2 2	2 -1 2 2	114497.9550	0.0071	0.0010	0.65
27: 3 1 2 1	2 -1 2 1	114497.9550	-0.0105	0.0010	0.35
28: 3 -1 4 4	2 1 4 4	114775.6750	0.0108	0.0008	0.57
29: 3 -1 4 3	2 1 4 3	114775.6750	-0.0129	0.0008	0.42
30: 3 -1 3 3	2 1 2 2	114776.1330	0.0127	0.0027	0.24
31: 3 -1 3 2	2 1 2 1	114776.1330	0.0057	0.0027	0.15
32: 3 -1 4 3	2 1 3 2	114776.1330	-0.0008	0.0027	0.26
33: 3 -1 4 4	2 1 3 3	114776.1330	-0.0028	0.0027	0.35
34: 3 -1 5 4	2 1 4 3	114776.3690	0.0025	-0.0027	0.44
35: 3 -1 5 5	2 1 4 4	114776.3690	-0.0068	-0.0027	0.56
36: 3 -1 2 2	2 1 2 2	114776.7680	0.0037	-0.0024	0.65

37:	3 -1 2 1	2 1 2 1	114776.7680	-0.0139	-0.0024	0.35
38:	4 -1 5 5	3 1 5 5	152660.0010	0.0124	-0.0004	0.56
39:	4 -1 5 4	3 1 5 4	152660.0010	-0.0167	-0.0004	0.44
40:	4 -1 4 3	3 1 3 2	152660.6680	-0.0038	-0.0040	0.42
41:	4 -1 4 4	3 1 3 3	152660.6680	-0.0042	-0.0040	0.58
42:	4 -1 5 4	3 1 4 3	152660.7300	0.0027	0.0005	0.44
43:	4 -1 5 5	3 1 4 4	152660.7300	-0.0012	0.0005	0.56
44:	4 -1 6 5	3 1 5 4	152660.8320	0.0055	0.0029	0.45
45:	4 -1 6 6	3 1 5 5	152660.8320	0.0006	0.0029	0.55
46:	4 -1 3 3	3 1 3 3	152661.4360	0.0088	0.0031	0.59
47:	4 -1 3 2	3 1 3 2	152661.4360	-0.0052	0.0031	0.41
48:	4 1 5 5	3 -1 5 5	153031.7960	0.0124	-0.0003	0.56
49:	4 1 5 4	3 -1 5 4	153031.7960	-0.0167	-0.0003	0.44
50:	4 1 4 3	3 -1 3 2	153032.4380	-0.0013	-0.0016	0.42
51:	4 1 4 4	3 -1 3 3	153032.4380	-0.0017	-0.0016	0.58
52:	4 1 5 4	3 -1 4 3	153032.4950	0.0038	0.0016	0.44
53:	4 1 5 5	3 -1 4 4	153032.4950	-0.0002	0.0016	0.56
54:	4 1 6 5	3 -1 5 4	153032.5930	0.0026	-0.0001	0.45
55:	4 1 6 6	3 -1 5 5	153032.5930	-0.0022	-0.0001	0.55
56:	4 1 4 4	3 -1 4 4	153032.7300	0.0121	0.0040	0.55
57:	4 1 4 3	3 -1 4 3	153032.7300	-0.0057	0.0040	0.45
58:	4 1 3 3	3 -1 3 3	153033.1730	0.0093	0.0036	0.59
59:	4 1 3 2	3 -1 3 2	153033.1730	-0.0047	0.0036	0.41
60:	5 1 5 4	4 -1 4 3	190821.9280	-0.0048	-0.0058	0.44
61:	5 1 5 5	4 -1 4 4	190821.9280	-0.0064	-0.0058	0.56
62:	5 1 4 4	4 -1 3 3	190821.9770	0.0069	-0.0011	0.22
63:	5 1 4 3	4 -1 3 2	190821.9770	0.0059	-0.0011	0.17
64:	5 1 6 5	4 -1 5 4	190821.9770	-0.0041	-0.0011	0.28
65:	5 1 6 6	4 -1 5 5	190821.9770	-0.0075	-0.0011	0.33
66:	5 1 7 6	4 -1 6 5	190822.0420	0.0066	0.0051	0.46
67:	5 1 7 7	4 -1 6 6	190822.0420	0.0037	0.0051	0.54
68:	5 -1 5 4	4 1 4 3	191286.5980	-0.0048	-0.0057	0.44
69:	5 -1 5 5	4 1 4 4	191286.5980	-0.0064	-0.0057	0.56
70:	5 -1 4 4	4 1 3 3	191286.6450	0.0050	-0.0018	0.22
71:	5 -1 4 3	4 1 3 2	191286.6450	0.0039	-0.0018	0.17
72:	5 -1 6 5	4 1 5 4	191286.6450	-0.0039	-0.0018	0.28
73:	5 -1 6 6	4 1 5 5	191286.6450	-0.0073	-0.0018	0.33
74:	5 -1 7 6	4 1 6 5	191286.7100	0.0068	0.0053	0.46
75:	5 -1 7 7	4 1 6 6	191286.7100	0.0039	0.0053	0.54

Table S3

Observed saturation dip frequencies (MHz) and least-squares residuals for H(10)BS in its ground vibrational state.

J' F1' F' <-- J F1 F observed o-c blends o-c blends wt

1:	2 3 4	1 2 3	80318.6660	-0.0015		
2:	2 3 3	1 2 2	80318.6970	-0.0025		
3:	2 4 5	1 4 5	80318.9820	-0.0001		
4:	2 4 4	1 4 4	80319.0050	0.0000		
5:	2 3 4	1 4 5	80319.1870	-0.0006		
6:	2 3 3	1 4 4	80319.2180	-0.0015		
7:	2 2 3	1 2 3	80319.6110	0.0097	0.0001	0.60
8:	2 2 2	1 2 2	80319.6110	-0.0146	0.0001	0.40
9:	2 5 5	1 4 4	80320.3880	0.0022	-0.0004	0.45
10:	2 5 6	1 4 5	80320.3880	-0.0025	-0.0004	0.55
11:	2 4 4	1 3 3	80320.5510	0.0087	0.0003	0.43
12:	2 4 5	1 3 4	80320.5510	-0.0062	0.0003	0.57
13:	2 1 1	1 2 2	80320.6030	0.0065	0.0043	0.35
14:	2 1 2	1 2 3	80320.6030	0.0030	0.0043	0.65
15:	2 4 5	1 3 4	(a) 80320.6580	0.1007	-0.0020	0.50
16:	2 3 4	1 3 4	(a) 80320.6580	-0.1047	-0.0020	0.50
17:	2 1 2	1 2 3	(a) 80320.6840	0.0840	0.0026	0.50
18:	2 3 4	1 3 4	(a) 80320.6840	-0.0787	0.0026	0.50
19:	2 3 3	1 3 3	80320.7600	0.0032	-0.0002	0.43
20:	2 3 4	1 3 4	80320.7600	-0.0027	-0.0002	0.57
21:	2 2 2	1 3 3	80321.6910	0.0081	0.0001	0.41
22:	2 2 3	1 3 4	80321.6910	-0.0054	0.0001	0.59
23:	3 5 6	2 5 6	120477.6650	0.0019		
24:	3 5 5	2 5 5	120477.6860	0.0025		
25:	3 2 3	2 1 2	120478.0260	0.0000		
26:	3 2 2	2 1 1	120478.0630	0.0023		
27:	3 3 4	2 2 3	120478.2870	0.0021	-0.0013	0.59
28:	3 3 3	2 2 2	120478.2870	-0.0062	-0.0013	0.41
29:	3 4 4	2 3 3	120478.7150	0.0022	0.0002	0.44
30:	3 4 5	2 3 4	120478.7150	-0.0013	0.0002	0.56
31:	3 4 5	2 3 4	(a) 120478.8210	0.1046	0.0019	0.50
32:	3 4 5	2 4 5	(a) 120478.8210	-0.1008	0.0019	0.50
33:	3 6 6	2 5 5	120478.9790	0.0013	-0.0001	0.46
34:	3 6 7	2 5 6	120478.9790	-0.0012	-0.0001	0.54
35:	3 5 5	2 4 4	120479.0700	0.0059	0.0019	0.45
36:	3 5 6	2 4 5	120479.0700	-0.0014	0.0019	0.55
37:	3 3 4	2 3 4	120479.2190	0.0004	0.0001	0.58
38:	3 3 3	2 3 3	120479.2190	-0.0003	0.0001	0.42
39:	3 3 4	2 3 4	(a) 120479.3210	0.1024	-0.0003	0.50
40:	3 3 4	2 4 5	(a) 120479.3210	-0.1030	-0.0003	0.50
41:	3 1 2	2 2 3	120479.6910	-0.0015	-0.0016	0.65
42:	3 1 1	2 2 2	120479.6910	-0.0016	-0.0016	0.35
43:	3 2 2	2 3 3	120479.9570	-0.0005	-0.0011	0.41
44:	3 2 3	2 3 4	120479.9570	-0.0014	-0.0011	0.59
45:	4 3 4	3 2 3	160635.4690	0.0018	0.0013	0.61
46:	4 2 3	3 1 2	160635.4690	0.0004	0.0013	0.39
47:	4 4 4	3 3 3	160635.5950	-0.0010	-0.0019	0.44
48:	4 4 5	3 3 4	160635.5950	-0.0024	-0.0019	0.56
49:	4 5 6	3 5 6	160635.6450	0.0034	-0.0002	0.56
50:	4 5 5	3 5 5	160635.6450	-0.0048	-0.0002	0.44

51:	4 5 6	3 5 6	(a) 160635.7150	0.0734	0.0009	0.50
52:	4 5 5	3 4 4	(a) 160635.7150	-0.0717	0.0009	0.50
53:	4 5 5	3 4 4	160635.7880	0.0013	-0.0011	0.45
54:	4 5 6	3 4 5	160635.7880	-0.0030	-0.0011	0.55
55:	4 7 7	3 6 6	160635.8770	-0.0011	-0.0020	0.46
56:	4 7 8	3 6 7	160635.8770	-0.0026	-0.0020	0.54
57:	4 6 6	3 5 5	160635.9340	0.0020	-0.0004	0.46
58:	4 6 7	3 5 6	160635.9340	-0.0025	-0.0004	0.54
59:	4 4 5	3 4 5	160636.0990	-0.0006	-0.0020	0.55
60:	4 4 4	3 4 4	160636.0990	-0.0036	-0.0020	0.45
61:	4 3 4	3 3 4	160636.2070	0.0000	-0.0010	0.58
62:	4 3 3	3 3 3	160636.2070	-0.0022	-0.0010	0.42
63:	5 3 4	4 2 3	200790.2510	0.0056	0.0009	0.25
64:	5 3 3	4 2 2	200790.2510	0.0038	0.0009	0.18
65:	5 4 4	4 3 3	200790.2510	-0.0019	0.0009	0.25
66:	5 4 5	4 3 4	200790.2510	-0.0023	0.0009	0.32
67:	5 5 5	4 4 4	200790.3350	0.0026	0.0014	0.36
68:	5 2 3	4 1 2	200790.3350	0.0015	0.0014	0.21
69:	5 5 6	4 4 5	200790.3350	0.0002	0.0014	0.44
70:	5 6 6	4 5 5	200790.4450	0.0018	0.0000	0.46
71:	5 6 7	4 5 6	200790.4450	-0.0015	0.0000	0.54
72:	5 8 8	4 7 7	200790.4870	0.0011	0.0006	0.47
73:	5 8 9	4 7 8	200790.4870	0.0001	0.0006	0.53
74:	5 7 7	4 6 6	200790.5250	0.0027	0.0011	0.46
75:	5 7 8	4 6 7	200790.5250	-0.0002	0.0011	0.54
76:	5 5 6	4 5 6	200790.6440	0.0006	-0.0017	0.54
77:	5 5 5	4 5 5	200790.6440	-0.0043	-0.0017	0.46
78:	5 4 5	4 4 5	200790.8640	0.0011	-0.0003	0.56
79:	5 4 4	4 4 4	200790.8640	-0.0020	-0.0003	0.44

 (a) cross-over transition.

Table S4

Observed saturation dip frequencies (MHz) and least-squares residuals for H(10)BS in its $v_2 = 1$ vibrationally excited.

	J' l' F1' F' <--	J l F1 F	observed	o-c	blends o-c	blends wt
1:	2 -1 4 5	1 1 3 4	80330.8210	0.0016	-0.0064	0.57
2:	2 -1 4 4	1 1 3 3	80330.8210	-0.0168	-0.0064	0.43
3:	2 -1 3 4	1 1 3 4	80330.9280	0.0089	-0.0009	0.57
4:	2 -1 3 3	1 1 3 3	80330.9280	-0.0140	-0.0009	0.43
5:	2 -1 2 3	1 1 3 4	80331.3990	0.0067	-0.0011	0.59
6:	2 -1 2 2	1 1 3 3	80331.3990	-0.0125	-0.0011	0.41
7:	2 -1 4 4	1 1 4 4	80331.5480	-0.0043	-0.0046	0.44
8:	2 -1 4 5	1 1 4 5	80331.5480	-0.0048	-0.0046	0.56
9:	2 -1 3 4	1 1 2 3	80331.9230	0.0025	0.0009	0.59

10:	2 -1 3 3	1 1 2 2	80331.9230	-0.0014	0.0009	0.41
11:	2 -1 5 5	1 1 4 4	80332.2700	0.0050	-0.0028	0.45
12:	2 -1 5 6	1 1 4 5	80332.2700	-0.0092	-0.0028	0.55
13:	2 -1 2 3	1 1 2 3	80332.3970	0.0033	0.0032	0.61
14:	2 -1 2 2	1 1 2 2	80332.3970	0.0031	0.0032	0.39
15:	2 -1 1 1	1 1 2 2	80332.8980	0.0103	0.0015	0.36
16:	2 -1 1 2	1 1 2 3	80332.8980	-0.0033	0.0015	0.64
17:	2 1 4 5	1 -1 3 4	80534.2300	0.0083	0.0003	0.57
18:	2 1 4 4	1 -1 3 3	80534.2300	-0.0101	0.0003	0.43
19:	2 1 3 4	1 -1 3 4	80534.3270	0.0140	0.0042	0.57
20:	2 1 3 3	1 -1 3 3	80534.3270	-0.0089	0.0042	0.43
21:	2 1 2 3	1 -1 3 4	80534.7590	0.0083	0.0005	0.59
22:	2 1 2 2	1 -1 3 3	80534.7590	-0.0108	0.0005	0.41
23:	2 1 4 4	1 -1 4 4	80535.0130	-0.0002	-0.0005	0.44
24:	2 1 4 5	1 -1 4 5	80535.0130	-0.0007	-0.0005	0.56
25:	2 1 5 5	1 -1 4 4	80535.6860	0.0124	0.0046	0.45
26:	2 1 5 6	1 -1 4 5	80535.6860	-0.0018	0.0046	0.55
27:	2 1 2 3	1 -1 2 3	80535.8330	0.0018	0.0018	0.61
28:	2 1 2 2	1 -1 2 2	80535.8330	0.0016	0.0018	0.39
29:	2 1 1 2	1 -1 2 2	80536.3010	0.0058	0.0004	0.09
30:	2 1 1 2	1 -1 2 3	80536.3010	-0.0001	0.0004	0.91
31:	3 1 5 6	2 -1 5 6	120495.4640	0.0077	0.0027	0.55
32:	3 1 5 5	2 -1 5 5	120495.4640	-0.0033	0.0027	0.45
33:	3 1 3 4	2 -1 2 3	120495.8690	0.0001	-0.0037	0.59
34:	3 1 3 3	2 -1 2 2	120495.8690	-0.0092	-0.0037	0.41
35:	3 1 4 5	2 -1 3 4	120495.9670	0.0016	0.0006	0.56
36:	3 1 4 4	2 -1 3 3	120495.9670	-0.0006	0.0006	0.44
37:	3 1 4 5	2 -1 4 5	120496.0680	0.0029	-0.0001	0.56
38:	3 1 4 4	2 -1 4 4	120496.0680	-0.0038	-0.0001	0.44
39:	3 1 4 5	2 -1 3 4 (a)	120496.0210	0.0556	0.0024	0.50
40:	3 1 4 4	2 -1 4 4 (a)	120496.0210	-0.0508	0.0024	0.50
41:	3 1 4 5	2 -1 4 5 (a)	120496.1240	0.0589	0.0001	0.50
42:	3 1 5 6	2 -1 4 5 (a)	120496.1240	-0.0587	0.0001	0.50
43:	3 1 5 5	2 -1 4 4	120496.1830	0.0029	0.0015	0.45
44:	3 1 5 6	2 -1 4 5	120496.1830	0.0002	0.0015	0.55
45:	3 1 6 6	2 -1 5 5	120496.4530	0.0000	-0.0033	0.46
46:	3 1 6 7	2 -1 5 6	120496.4530	-0.0060	-0.0033	0.54
47:	3 1 0 1	2 -1 1 2	120496.7150	-0.0009	-0.0033	0.70
48:	3 1 0 1	2 -1 1 1	120496.7150	-0.0087	-0.0033	0.30
49:	3 -1 5 6	2 1 5 6	120800.6190	0.0096	0.0047	0.55
50:	3 -1 5 5	2 1 5 5	120800.6190	-0.0014	0.0047	0.45
51:	3 -1 3 4	2 1 2 3	120801.0010	0.0021	-0.0018	0.59
52:	3 -1 3 3	2 1 2 2	120801.0010	-0.0072	-0.0018	0.41
53:	3 -1 4 4	2 1 3 3	120801.0820	0.0004	0.0001	0.97
54:	3 -1 4 4	2 1 3 4	120801.0820	-0.0095	0.0001	0.03
55:	3 -1 4 5	2 1 3 4 (a)	120801.1310	0.0516	0.0026	0.50
56:	3 -1 4 4	2 1 4 4 (a)	120801.1310	-0.0464	0.0026	0.50
57:	3 -1 4 5	2 1 4 5	120801.1720	0.0013	-0.0016	0.56
58:	3 -1 4 4	2 1 4 4	120801.1720	-0.0054	-0.0016	0.44
59:	3 -1 4 5	2 1 4 5 (a)	120801.2270	0.0563	0.0000	0.50

60:	3 -1 5 6	2 1 4 5 (a)	120801.2270	-0.0564	0.0000	0.50
61:	3 -1 5 5	2 1 4 4	120801.2840	0.0032	0.0018	0.45
62:	3 -1 5 6	2 1 4 5	120801.2840	0.0005	0.0018	0.55
63:	3 -1 6 6	2 1 5 5	120801.5580	0.0008	-0.0025	0.46
64:	3 -1 6 7	2 1 5 6	120801.5580	-0.0052	-0.0025	0.54
65:	3 -1 0 1	2 1 1 2	120801.8170	0.0017	-0.0006	0.70
66:	3 -1 0 1	2 1 1 1	120801.8170	-0.0060	-0.0006	0.30
67:	3 -1 1 2	2 1 2 3	120802.0070	0.0004	-0.0007	0.65
68:	3 -1 1 1	2 1 2 2	120802.0070	-0.0027	-0.0007	0.35
69:	4 -1 4 5	3 1 3 4	160658.7290	0.0000	-0.0003	0.57
70:	4 -1 4 4	3 1 3 3	160658.7290	-0.0008	-0.0003	0.43
71:	4 -1 5 5	3 1 4 4	160658.8500	0.0069	0.0058	0.45
72:	4 -1 5 6	3 1 4 5	160658.8500	0.0048	0.0058	0.55
73:	4 -1 6 6	3 1 5 5	160658.9830	0.0023	0.0004	0.46
74:	4 -1 6 7	3 1 5 6	160658.9830	-0.0012	0.0004	0.54
75:	4 -1 7 7	3 1 6 6	160659.0650	0.0033	0.0016	0.46
76:	4 -1 7 8	3 1 6 7	160659.0650	0.0001	0.0016	0.54
77:	4 1 6 6	3 -1 5 5	161065.7600	0.0008	-0.0010	0.46
78:	4 1 6 7	3 -1 5 6	161065.7600	-0.0026	-0.0010	0.54
79:	4 1 7 7	3 -1 6 6	161065.8440	0.0016	-0.0001	0.46
80:	4 1 7 8	3 -1 6 7	161065.8440	-0.0015	-0.0001	0.54
81:	4 1 2 3	3 -1 2 3	161066.0270	-0.0035	-0.0060	0.61
82:	4 1 2 2	3 -1 2 2	161066.0270	-0.0098	-0.0060	0.39

 (a) cross-over transition.

Table S5

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Observed saturation dip frequencies (MHz) and least-squares residuals for D(11)BS
 in its ground vibrational state.

	J' F1' F' <--	J F1 F	observed	o-c	blends o-c	blends wt
1:	2 2 3	1 1 2	63750.3720	0.0073	-0.0007	0.51
2:	2 2 1	1 1 1	63750.3720	-0.0137	-0.0007	0.15
3:	2 2 2	1 1 2	63750.3720	-0.0036	-0.0007	0.15
4:	2 2 2	1 1 1	63750.3720	-0.0099	-0.0007	0.19
5:	2 3 3	1 3 3	63750.4410	0.0060	-0.0028	0.32
6:	2 3 4	1 3 4	63750.4410	-0.0004	-0.0028	0.47
7:	2 3 2	1 3 2	63750.4410	-0.0213	-0.0028	0.21
8:	2 2 3	1 3 4	63751.0960	0.0001		
9:	2 1 2	1 1 2	63751.3020	0.0084	0.0018	0.39
10:	2 1 2	1 1 1	63751.3020	0.0020	0.0018	0.30
11:	2 1 1	1 1 2	63751.3020	-0.0068	0.0018	0.31
12:	2 3 4	1 2 3	63751.3880	-0.0036		
13:	2 4 5	1 3 4	63751.4060	0.0034	0.0009	0.44
14:	2 4 4	1 3 3	63751.4060	-0.0043	0.0009	0.32
15:	2 4 3	1 3 2	63751.4060	0.0032	0.0009	0.24

16:	2 2 3	1 2 3	63752.0500	0.0039	0.0023	0.85
17:	2 2 2	1 2 3	63752.0500	-0.0070	0.0023	0.15
18:	2 2 1	1 2 2	63752.0770	-0.0022	0.0031	0.24
19:	2 2 3	1 2 2	63752.0770	0.0124	0.0031	0.23
20:	2 2 2	1 2 2	63752.0770	0.0015	0.0031	0.53
21:	2 1 2	1 2 3	63752.9790	0.0040		
22:	3 4 4	2 4 4	95625.2000	0.0050	0.0010	0.36
23:	3 4 3	2 4 3	95625.2000	-0.0106	0.0010	0.21
24:	3 4 5	2 4 5	95625.2000	0.0035	0.0010	0.43
25:	3 3 2	2 2 1	95625.9150	0.0100	0.0035	0.18
26:	3 2 3	2 1 2	95625.9150	0.0077	0.0035	0.34
27:	3 3 4	2 2 3	95625.9150	-0.0018	0.0035	0.48
28:	3 2 2	2 1 1	95625.9380	0.0059	-0.0002	0.24
29:	3 3 3	2 2 2	95625.9380	0.0001	-0.0002	0.57
30:	3 2 2	2 1 2	95625.9380	-0.0093	-0.0002	0.19
31:	3 4 3	2 3 2	95626.1640	0.0128	-0.0001	0.09
32:	3 4 5	2 3 4	95626.1640	0.0065	-0.0001	0.18
33:	3 5 6	2 4 5	95626.1640	-0.0016	-0.0001	0.25
34:	3 5 4	2 4 3	95626.1640	-0.0011	-0.0001	0.16
35:	3 5 5	2 4 4	95626.1640	-0.0051	-0.0001	0.20
36:	3 4 4	2 3 3	95626.1640	-0.0063	-0.0001	0.13
37:	3 3 2	2 3 2	95626.5730	0.0000	-0.0021	0.23
38:	3 3 4	2 3 4	95626.5730	0.0017	-0.0021	0.50
39:	3 3 3	2 3 3	95626.5730	-0.0110	-0.0021	0.27
40:	3 2 3	2 2 2	95626.8340	0.0087	-0.0005	0.16
41:	3 2 3	2 2 3	95626.8340	-0.0022	-0.0005	0.84
42:	3 2 2	2 2 2	95626.8650	-0.0003	-0.0023	0.52
43:	3 2 2	2 2 3	95626.8650	-0.0113	-0.0023	0.25
44:	3 2 2	2 2 1	95626.8650	0.0033	-0.0023	0.23
45:	3 2 3	2 3 4	95627.4870	-0.0035		
46:	4 5 4	3 5 4	127498.9470	-0.0063	0.0016	0.39
47:	4 5 6	3 5 6	127498.9470	0.0067	0.0016	0.61
48:	4 4 5	3 3 4	127499.7950	0.0019	-0.0019	0.57
49:	4 4 4	3 3 3	127499.7950	-0.0071	-0.0019	0.43
50:	4 6 5	3 5 4	127499.9190	0.0018	0.0010	0.45
51:	4 6 6	3 5 5	127499.9190	0.0002	0.0010	0.55
52:	4 4 5	3 4 5	127500.2090	0.0021	-0.0012	0.62
53:	4 4 4	3 4 4	127500.2090	-0.0067	-0.0012	0.38
54:	4 3 4	3 3 4	127500.7090	0.0042	-0.0018	0.63
55:	4 3 3	3 3 3	127500.7090	-0.0120	-0.0018	0.37
56:	5 6 6	4 6 6	159371.3200	0.0003	0.0017	0.46
57:	5 6 7	4 6 7	159371.3200	0.0027	0.0017	0.54
58:	5 4 5	4 3 4	159372.2220	0.0068	0.0006	0.32
59:	5 5 6	4 4 5	159372.2220	-0.0002	0.0006	0.38
60:	5 5 5	4 4 4	159372.2220	-0.0048	0.0006	0.30
61:	5 6 6	4 5 5	159372.3000	0.0029	0.0003	0.29
62:	5 7 8	4 6 7	159372.3000	-0.0005	0.0003	0.41
63:	5 7 6	4 6 5	159372.3000	-0.0010	0.0003	0.30
64:	5 4 3	4 4 3	159373.1320	0.0017	0.0009	0.26
65:	5 4 5	4 4 5	159373.1320	0.0051	0.0009	0.44

66: 5 4 4	4 4 4	159373.1320	-0.0058	0.0009	0.30
67: 6 5 6	5 4 5	191242.9100	0.0037	-0.0010	0.26
68: 6 5 5	5 4 4	191242.9100	0.0016	-0.0010	0.20
69: 6 6 7	5 5 6	191242.9100	-0.0030	-0.0010	0.30
70: 6 6 6	5 5 5	191242.9100	-0.0057	-0.0010	0.25
71: 6 7 8	5 6 7	191242.9670	0.0042	0.0000	0.25
72: 6 7 7	5 6 6	191242.9670	0.0022	0.0000	0.21
73: 6 8 9	5 7 8	191242.9670	-0.0024	0.0000	0.29
74: 6 8 8	5 7 7	191242.9670	-0.0033	0.0000	0.25

Table S6

Observed saturation dip frequencies (MHz) and least-squares residuals for D(11)BS in its $v_2 = 1$ vibrationally excited.

J' I' F1' F' <-- J I F1 F	observed	o-c	blends o-c	blends wt	
1: 2 -1 3 3	1 1 2 2	63800.6450	0.0009	-0.0024	0.34
2: 2 -1 3 4	1 1 2 3	63800.6450	0.0010	-0.0024	0.50
3: 2 -1 3 2	1 1 2 1	63800.6450	-0.0196	-0.0024	0.16
4: 2 -1 2 3	1 1 2 3	63800.9720	0.0013		
5: 2 -1 3 2	1 1 3 2	63801.0890	0.0142	-0.0007	0.22
6: 2 -1 3 4	1 1 3 4	63801.0890	0.0047	-0.0007	0.44
7: 2 -1 3 3	1 1 3 3	63801.0890	-0.0181	-0.0007	0.33
8: 2 -1 4 5	1 1 3 4	63801.5750	-0.0055	0.0013	0.66
9: 2 -1 4 3	1 1 3 2	63801.5750	0.0142	0.0013	0.34
10: 2 -1 4 4	1 1 3 3	63801.6110	0.0002		
11: 2 -1 2 2	1 1 1 2	63801.7900	-0.0039	0.0002	0.14
12: 2 -1 2 3	1 1 1 2	63801.7900	0.0015	0.0002	0.60
13: 2 -1 2 2	1 1 1 1	63801.7900	-0.0007	0.0002	0.25
14: 2 -1 1 2	1 1 1 1	63802.2580	0.0042	-0.0002	0.30
15: 2 -1 1 2	1 1 1 2	63802.2580	0.0010	-0.0002	0.41
16: 2 -1 1 1	1 1 1 2	63802.2580	-0.0065	-0.0002	0.29
17: 2 1 3 3	1 -1 2 2	63963.2790	0.0001	0.0001	0.38
18: 2 1 3 4	1 -1 2 3	63963.2790	0.0001	0.0001	0.62
19: 2 1 2 3	1 -1 2 3	63963.5890	0.0018		
20: 2 1 3 3	1 -1 3 3	63963.7520	-0.0156	-0.0022	0.41
21: 2 1 3 4	1 -1 3 4	63963.7520	0.0071	-0.0022	0.59
22: 2 1 4 3	1 -1 3 2	63964.2100	0.0143	0.0015	0.35
23: 2 1 4 5	1 -1 3 4	63964.2100	-0.0053	0.0015	0.65
24: 2 1 4 4	1 -1 3 3	63964.2460	0.0003		
25: 2 1 2 3	1 -1 1 2	63964.4530	0.0017	0.0005	0.77
26: 2 1 2 2	1 -1 1 2	63964.4530	-0.0037	0.0005	0.23
27: 2 1 1 2	1 -1 1 1	63964.8940	0.0032	-0.0013	0.30
28: 2 1 1 2	1 -1 1 2	63964.8940	0.0000	-0.0013	0.39
29: 2 1 1 1	1 -1 1 2	63964.8940	-0.0076	-0.0013	0.30
30: 3 1 4 3	2 -1 4 3	95700.5270	-0.0013	0.0006	0.23

31:	3 1 4 5	2 -1 4 5	95700.5270	0.0043	0.0006	0.43
32:	3 1 4 4	2 -1 4 4	95700.5270	-0.0029	0.0006	0.34
33:	3 1 3 4	2 -1 2 3	95701.0150	0.0147	0.0018	0.26
34:	3 1 4 3	2 -1 3 2	95701.0150	0.0007	0.0018	0.20
35:	3 1 4 5	2 -1 3 4	95701.0150	-0.0038	0.0018	0.38
36:	3 1 3 3	2 -1 2 2	95701.0150	-0.0040	0.0018	0.17
37:	3 1 5 4	2 -1 4 3	95701.2580	0.0030	-0.0002	0.39
38:	3 1 5 6	2 -1 4 5	95701.2580	-0.0022	-0.0002	0.61
39:	3 1 3 4	2 -1 3 4	95701.3340	0.0070	0.0019	0.65
40:	3 1 3 3	2 -1 3 3	95701.3340	-0.0075	0.0019	0.35
41:	3 1 2 3	2 -1 2 2	95701.6930	0.0071	0.0025	0.16
42:	3 1 2 3	2 -1 2 3	95701.6930	0.0016	0.0025	0.84
43:	3 -1 4 3	2 1 4 3	95944.4960	-0.0025	-0.0007	0.23
44:	3 -1 4 5	2 1 4 5	95944.4960	0.0030	-0.0007	0.43
45:	3 -1 4 4	2 1 4 4	95944.4960	-0.0042	-0.0007	0.34
46:	3 -1 3 4	2 1 2 3	95944.9600	0.0088	-0.0005	0.26
47:	3 -1 4 3	2 1 3 2	95944.9600	0.0011	-0.0005	0.20
48:	3 -1 4 5	2 1 3 4	95944.9600	-0.0034	-0.0005	0.38
49:	3 -1 3 3	2 1 2 2	95944.9600	-0.0100	-0.0005	0.17
50:	3 -1 5 4	2 1 4 3	95945.2000	0.0004	-0.0027	0.39
51:	3 -1 5 6	2 1 4 5	95945.2000	-0.0047	-0.0027	0.61
52:	3 -1 3 4	2 1 3 4	95945.2640	0.0045	-0.0007	0.65
53:	3 -1 3 3	2 1 3 3	95945.2640	-0.0101	-0.0007	0.35
54:	3 -1 2 3	2 1 2 2	95945.6180	0.0069	0.0023	0.16
55:	3 -1 2 3	2 1 2 3	95945.6180	0.0014	0.0023	0.84
56:	4 -1 5 5	3 1 5 5	127599.1400	-0.0017	0.0007	0.46
57:	4 -1 5 6	3 1 5 6	127599.1400	0.0027	0.0007	0.54
58:	4 -1 4 3	3 1 3 2	127599.8140	-0.0019	-0.0026	0.35
59:	4 -1 4 5	3 1 3 4	127599.8140	-0.0029	-0.0026	0.65
60:	4 -1 5 6	3 1 4 5	127599.8760	0.0011	-0.0012	0.41
61:	4 -1 5 4	3 1 4 3	127599.8760	0.0030	-0.0012	0.25
62:	4 -1 5 5	3 1 4 4	127599.8760	-0.0073	-0.0012	0.33
63:	4 -1 6 7	3 1 5 6	127599.9760	0.0001	-0.0024	0.55
64:	4 -1 6 6	3 1 5 5	127599.9760	-0.0054	-0.0024	0.45
65:	4 -1 4 3	3 1 4 3	127600.1280	-0.0020	-0.0014	0.27
66:	4 -1 4 5	3 1 4 5	127600.1280	0.0030	-0.0014	0.45
67:	4 -1 4 4	3 1 4 4	127600.1280	-0.0079	-0.0014	0.28
68:	4 -1 3 2	3 1 3 2	127600.5960	0.0043	-0.0013	0.23
69:	4 -1 3 4	3 1 3 4	127600.5960	0.0034	-0.0013	0.48
70:	4 -1 3 3	3 1 3 3	127600.5960	-0.0139	-0.0013	0.29
71:	4 1 5 4	3 -1 5 4	127924.4120	-0.0019	0.0035	0.40
72:	4 1 5 6	3 -1 5 6	127924.4120	0.0071	0.0035	0.60
73:	4 1 4 4	3 -1 3 4	127925.0630	-0.0342	-0.0045	0.03
74:	4 1 4 4	3 -1 3 3	127925.0630	-0.0098	-0.0045	0.40
75:	4 1 4 5	3 -1 3 4	127925.0630	0.0012	-0.0045	0.56
76:	4 1 5 4	3 -1 4 3	127925.1190	0.0041	0.0000	0.26
77:	4 1 5 5	3 -1 4 4	127925.1190	-0.0062	0.0000	0.33
78:	4 1 5 6	3 -1 4 5	127925.1190	0.0022	0.0000	0.41
79:	4 1 3 3	3 -1 2 2	127925.1520	-0.0054	0.0014	0.38
80:	4 1 3 4	3 -1 2 3	127925.1520	0.0057	0.0014	0.62

81:	4 1 6 5	3 -1 5 4	127925.2200	0.0039	0.0009	0.27
82:	4 1 6 7	3 -1 5 6	127925.2200	0.0022	0.0009	0.40
83:	4 1 6 6	3 -1 5 5	127925.2200	-0.0032	0.0009	0.33
84:	4 1 3 3	3 -1 3 3	127925.8180	-0.0109	-0.0006	0.40
85:	4 1 3 4	3 -1 3 4	127925.8180	0.0063	-0.0006	0.60
86:	5 1 5 6	4 -1 4 5	159497.2170	-0.0025	-0.0026	0.61
87:	5 1 5 4	4 -1 4 3	159497.2170	-0.0026	-0.0026	0.39
88:	5 1 4 5	4 -1 3 4	159497.2670	0.0086	-0.0010	0.21
89:	5 1 6 7	4 -1 5 6	159497.2670	-0.0021	-0.0010	0.31
90:	5 1 6 5	4 -1 5 4	159497.2670	-0.0014	-0.0010	0.21
91:	5 1 6 6	4 -1 5 5	159497.2670	-0.0071	-0.0010	0.26
92:	5 1 7 8	4 -1 6 7	159497.3300	0.0068	0.0060	0.39
93:	5 1 7 6	4 -1 6 5	159497.3300	0.0073	0.0060	0.28
94:	5 1 7 7	4 -1 6 6	159497.3300	0.0036	0.0060	0.33
95:	5 -1 5 5	4 1 4 4	159903.7430	-0.0079	-0.0037	0.32
96:	5 -1 5 4	4 1 4 3	159903.7430	-0.0016	-0.0037	0.26
97:	5 -1 5 6	4 1 4 5	159903.7430	-0.0015	-0.0037	0.42
98:	5 -1 6 6	4 1 5 5	159903.7920	-0.0054	0.0004	0.26
99:	5 -1 6 5	4 1 5 4	159903.7920	0.0003	0.0004	0.22
100:	5 -1 4 5	4 1 3 4	159903.7920	0.0086	0.0004	0.22
101:	5 -1 6 7	4 1 5 6	159903.7920	-0.0004	0.0004	0.31
102:	5 -1 7 6	4 1 6 5	159903.8510	0.0051	0.0037	0.28
103:	5 -1 7 8	4 1 6 7	159903.8510	0.0046	0.0037	0.39
104:	5 -1 7 7	4 1 6 6	159903.8510	0.0014	0.0037	0.33

Table S7

Observed saturation dip frequencies (MHz) and least-squares residuals for D(10)BS in its ground vibrational state.

J' F1' F' <--	J F1 F	observed	o-c	blends o-c	blends wt
1:	2 3 3	1 2 2	66251.3540	0.0000	
2:	2 3 4	1 2 3	66251.3690	-0.0016	
3:	2 3 2	1 2 1	66251.3940	0.0006	
4:	2 4 4	1 4 4	66251.6700	-0.0003	
5:	2 4 5	1 4 5	66251.6950	0.0054	0.0009 0.63
6:	2 4 3	1 4 3	66251.6950	-0.0067	0.0009 0.37
7:	2 3 3	1 4 4	66251.8720	0.0002	
8:	2 3 4	1 4 5	66251.9120	0.0040	
9:	2 2 2	1 2 2	66252.2920	0.0048	0.0041 0.81
10:	2 2 2	1 2 3	66252.2920	0.0009	0.0041 0.19
11:	2 2 3	1 2 3	66252.3140	-0.0002	
12:	2 5 6	1 4 5	66253.0960	0.0039	0.0008 0.41
13:	2 5 4	1 4 3	66253.0960	0.0030	0.0008 0.27
14:	2 5 5	1 4 4	66253.0960	-0.0047	0.0008 0.33
15:	2 4 3	1 3 2	66253.2300	-0.0018	

16:	2 4 5	1 3 4	66253.2520	0.0002		
17:	2 4 3	1 3 3	66253.2860	0.0045	0.0005	0.11
18:	2 4 4	1 3 3	66253.2860	0.0000	0.0005	0.89
19:	2 1 2	1 2 2	66253.3130	0.0066	0.0037	0.10
20:	2 1 0	1 2 1	66253.3130	0.0052	0.0037	0.12
21:	2 1 1	1 2 2	66253.3130	0.0038	0.0037	0.28
22:	2 1 2	1 2 3	66253.3130	0.0026	0.0037	0.50
23:	2 3 2	1 3 2	66253.4670	0.0052	-0.0004	0.34
24:	2 3 4	1 3 4	66253.4670	-0.0032	-0.0004	0.66
25:	2 3 3	1 3 3	66253.4900	0.0026		
26:	2 2 3	1 3 4	66254.4160	0.0021	0.0032	0.69
27:	2 2 1	1 3 2	66254.4160	0.0054	0.0032	0.32
28:	3 4 4	2 5 5	99377.0710	0.0006		
29:	3 4 5	2 5 6	99377.1020	0.0037	-0.0027	0.59
30:	3 4 3	2 5 4	99377.1020	-0.0117	-0.0027	0.41
31:	3 4 4	2 5 5	(a) 99377.1460	0.0756	-0.0037	0.50
32:	3 5 5	2 5 5	(a) 99377.1460	-0.0830	-0.0037	0.50
33:	3 4 5	2 5 6	(a) 99377.1720	0.0737	0.0019	0.25
34:	3 4 3	2 5 4	(a) 99377.1720	0.0582	0.0019	0.25
35:	3 5 5	2 5 5	(a) 99377.1720	-0.0570	0.0019	0.25
36:	3 5 6	2 5 6	(a) 99377.1720	-0.0672	0.0019	0.25
37:	3 5 5	2 5 5	99377.2390	0.0099	-0.0001	0.33
38:	3 5 6	2 5 6	99377.2390	-0.0002	-0.0001	0.40
39:	3 5 4	2 5 4	99377.2390	-0.0120	-0.0001	0.27
40:	3 2 2	2 1 1	99377.6040	0.0112	0.0011	0.34
41:	3 2 3	2 1 2	99377.6040	-0.0042	0.0011	0.66
42:	3 3 2	2 2 1	99377.8530	0.0074	0.0010	0.30
43:	3 3 3	2 2 3	99377.8530	0.0023	0.0010	0.05
44:	3 3 4	2 2 3	99377.8530	-0.0019	0.0010	0.65
45:	3 3 3	2 2 2	99377.8750	0.0011	-0.0001	0.89
46:	3 3 2	2 2 2	99377.8750	-0.0103	-0.0001	0.11
47:	3 4 3	2 3 2	99378.2790	0.0040	-0.0006	0.38
48:	3 4 5	2 3 4	99378.2790	-0.0033	-0.0006	0.62
49:	3 4 5	2 3 4	(a) 99378.3950	0.1126	0.0034	0.50
50:	3 4 4	2 4 4	(a) 99378.3950	-0.1058	0.0034	0.50
51:	3 4 4	2 4 4	99378.4990	-0.0018	-0.0029	0.34
52:	3 4 5	2 4 5	99378.4990	-0.0018	-0.0029	0.39
53:	3 4 3	2 4 3	99378.4990	-0.0059	-0.0029	0.28
54:	3 6 7	2 5 6	99378.5530	-0.0006	-0.0019	0.39
55:	3 6 5	2 5 4	99378.5530	0.0000	-0.0019	0.28
56:	3 6 6	2 5 5	99378.5530	-0.0049	-0.0019	0.33
57:	3 5 6	2 4 5	99378.6440	0.0021	0.0020	0.61
58:	3 5 4	2 4 3	99378.6440	0.0017	0.0020	0.39
59:	3 3 2	2 3 2	99378.7980	0.0036	-0.0022	0.24
60:	3 3 4	2 3 4	99378.7980	-0.0005	-0.0022	0.45
61:	3 3 3	2 3 3	99378.7980	-0.0088	-0.0022	0.31
62:	3 3 4	2 3 4	(a) 99378.9090	0.1104	0.0012	0.50
63:	3 3 4	2 4 5	(a) 99378.9090	-0.1080	0.0012	0.50
64:	3 3 3	2 4 4	99379.0140	0.0057	-0.0027	0.28
65:	3 3 4	2 4 5	99379.0140	-0.0030	-0.0027	0.43

66:	3 3 2	2 4 3	99379.0140	-0.0103	-0.0027	0.29
67:	3 1 2	2 2 3	99379.2800	0.0026	0.0008	0.66
68:	3 1 1	2 2 2	99379.2800	-0.0025	0.0008	0.34
69:	3 2 3	2 3 4	99379.5480	0.0000	-0.0004	0.47
70:	3 2 2	2 3 3	99379.5480	0.0001	-0.0004	0.31
71:	3 2 1	2 3 2	99379.5480	-0.0020	-0.0004	0.22
72:	4 6 6	3 6 6	132501.6880	0.0084	0.0025	0.34
73:	4 6 7	3 6 7	132501.6880	0.0015	0.0025	0.40
74:	4 6 5	3 6 5	132501.6880	-0.0037	0.0025	0.26
75:	4 3 4	3 2 3	132502.5340	0.0045	-0.0031	0.42
76:	4 2 3	3 1 2	132502.5340	-0.0003	-0.0031	0.28
77:	4 3 3	3 2 2	132502.5340	-0.0163	-0.0031	0.30
78:	4 4 3	3 3 2	132502.6620	0.0090	-0.0026	0.25
79:	4 4 5	3 3 4	132502.6620	0.0002	-0.0026	0.41
80:	4 4 4	3 3 3	132502.6620	-0.0143	-0.0026	0.34
81:	4 5 5	3 5 5	132502.7150	0.0051	0.0017	0.39
82:	4 5 6	3 5 6	132502.7150	0.0017	0.0017	0.42
83:	4 1 1	3 0 1	132502.7150	-0.0056	0.0017	0.19
84:	4 1 1	3 0 1	(a) 132502.7850	0.0643	0.0001	0.50
85:	4 5 4	3 4 3	(a) 132502.7850	-0.0640	0.0001	0.50
86:	4 5 4	3 4 3	132502.8560	0.0069	-0.0015	0.26
87:	4 5 6	3 4 5	132502.8560	0.0017	-0.0015	0.41
88:	4 5 5	3 4 4	132502.8560	-0.0124	-0.0015	0.32
89:	4 7 8	3 6 7	132502.9440	-0.0014	-0.0022	0.38
90:	4 7 6	3 6 5	132502.9440	-0.0014	-0.0022	0.29
91:	4 7 7	3 6 6	132502.9440	-0.0039	-0.0022	0.33
92:	4 6 7	3 5 6	132503.0080	0.0070	0.0037	0.55
93:	4 6 6	3 5 5	132503.0080	-0.0004	0.0037	0.45
94:	4 3 3	3 3 4	132503.2860	-0.0010	-0.0047	0.08
95:	4 3 2	3 3 3	132503.2860	-0.0011	-0.0047	0.08
96:	4 3 3	3 3 3	132503.2860	-0.0053	-0.0047	0.84
97:	4 1 1	3 2 2	132503.7950	0.0023	-0.0006	0.16
98:	4 3 2	3 4 3	132503.7950	0.0000	-0.0006	0.23
99:	4 3 4	3 4 5	132503.7950	0.0000	-0.0006	0.37
100:	4 3 3	3 4 4	132503.7950	-0.0038	-0.0006	0.24
101:	4 2 1	3 3 2	132503.9590	0.0054	-0.0004	0.23
102:	4 2 3	3 3 4	132503.9590	0.0023	-0.0004	0.48
103:	4 2 2	3 3 3	132503.9590	-0.0094	-0.0004	0.29
104:	5 5 6	4 4 5	165625.7150	0.0003	-0.0001	0.57
105:	5 5 4	4 4 3	165625.7150	-0.0007	-0.0001	0.43
106:	5 6 5	4 5 4	165625.8300	0.0012	-0.0031	0.27
107:	5 6 7	4 5 6	165625.8300	-0.0010	-0.0031	0.39
108:	5 6 6	4 5 5	165625.8300	-0.0090	-0.0031	0.33
109:	5 8 9	4 7 8	165625.8750	0.0020	0.0015	0.38
110:	5 8 7	4 7 6	165625.8750	0.0019	0.0015	0.29
111:	5 8 8	4 7 7	165625.8750	0.0005	0.0015	0.33
112:	6 4 5	5 3 4	198746.8020	0.0072	-0.0016	0.32
113:	6 5 6	5 4 5	198746.8020	-0.0019	-0.0016	0.38
114:	6 5 5	5 4 4	198746.8020	-0.0102	-0.0016	0.31
115:	6 3 4	5 2 3	198746.8610	0.0094	0.0001	0.19

116:	6 6 5	5 5 4	198746.8610	0.0012	0.0001	0.22
117:	6 6 7	5 5 6	198746.8610	-0.0005	0.0001	0.31
118:	6 6 6	5 5 5	198746.8610	-0.0068	0.0001	0.27
119:	6 7 6	5 6 5	198746.9370	0.0032	0.0007	0.28
120:	6 7 8	5 6 7	198746.9370	0.0019	0.0007	0.38
121:	6 7 7	5 6 6	198746.9370	-0.0027	0.0007	0.33
122:	6 9 10	5 8 9	198746.9600	0.0020	0.0016	0.37
123:	6 9 8	5 8 7	198746.9600	0.0018	0.0016	0.30
124:	6 9 9	5 8 8	198746.9600	0.0009	0.0016	0.33
125:	6 8 7	5 7 6	198746.9880	0.0040	0.0022	0.29
126:	6 8 9	5 7 8	198746.9880	0.0029	0.0022	0.38
127:	6 8 8	5 7 7	198746.9880	-0.0001	0.0022	0.33

 (a) cross-over transition.

Table S8

Observed saturation dip frequencies (MHz) and least-squares residuals for D(10)BS in its $\nu_2 = 1$ vibrationally excited.

	J' I' F1' F' <-- J I F1 F	observed	o-c	blends o-c	blends wt	
1:	2 -1 4 4	1 1 3 3	66315.2880	0.0130	-0.0003	0.34
2:	2 -1 4 5	1 1 3 4	66315.2880	-0.0035	-0.0003	0.43
3:	2 -1 4 3	1 1 3 2	66315.2880	-0.0140	-0.0003	0.23
4:	2 -1 4 5	1 1 3 4 (a)	66315.3440	0.0524	-0.0017	0.50
5:	2 -1 3 4	1 1 3 4 (a)	66315.3440	-0.0557	-0.0017	0.50
6:	2 -1 3 4	1 1 3 4	66315.3980	-0.0017		
7:	2 -1 2 3	1 1 3 4	66315.8830	0.0072	0.0007	0.69
8:	2 -1 2 1	1 1 3 2	66315.8830	-0.0136	0.0007	0.31
9:	2 -1 4 3	1 1 4 3	66316.0310	0.0104	-0.0016	0.24
10:	2 -1 4 5	1 1 4 5	66316.0310	0.0021	-0.0016	0.42
11:	2 -1 4 4	1 1 4 4	66316.0310	-0.0149	-0.0016	0.34
12:	2 -1 3 3	1 1 2 2	66316.4120	0.0047	0.0011	0.32
13:	2 -1 3 2	1 1 2 1	66316.4120	0.0000	0.0011	0.22
14:	2 -1 3 4	1 1 2 3	66316.4120	-0.0007	0.0011	0.46
15:	2 -1 5 6	1 1 4 5	66316.7420	-0.0011		
16:	2 -1 5 5	1 1 4 4	66316.7780	0.0000		
17:	2 -1 2 2	1 1 2 2	66316.8850	0.0084	-0.0009	0.28
18:	2 -1 2 3	1 1 2 3	66316.8850	-0.0037	-0.0009	0.52
19:	2 -1 2 1	1 1 2 1	66316.8850	-0.0065	-0.0009	0.20
20:	2 -1 1 1	1 1 2 2	66317.3950	-0.0007		
21:	2 1 4 4	1 -1 3 3	66487.9640	0.0141	0.0009	0.34
22:	2 1 4 5	1 -1 3 4	66487.9640	-0.0024	0.0009	0.43
23:	2 1 4 3	1 -1 3 2	66487.9640	-0.0127	0.0009	0.23
24:	2 1 4 5	1 -1 3 4 (a)	66488.0130	0.0465	-0.0045	0.50
25:	2 1 3 4	1 -1 3 4 (a)	66488.0130	-0.0555	-0.0045	0.50
26:	2 1 3 4	1 -1 3 4	66488.0700	0.0014		

27:	2 1 2 3	1 -1 3 4	66488.5270	0.0087	0.0022	0.69
28:	2 1 2 1	1 -1 3 2	66488.5270	-0.0120	0.0022	0.31
29:	2 1 4 3	1 -1 4 3	66488.7530	0.0143	0.0023	0.24
30:	2 1 4 5	1 -1 4 5	66488.7530	0.0060	0.0023	0.42
31:	2 1 4 4	1 -1 4 4	66488.7530	-0.0110	0.0023	0.34
32:	2 1 3 3	1 -1 2 2	66489.1400	0.0055	0.0021	0.32
33:	2 1 3 2	1 -1 2 1	66489.1400	0.0008	0.0021	0.22
34:	2 1 3 4	1 -1 2 3	66489.1400	0.0001	0.0021	0.46
35:	2 1 5 6	1 -1 4 5	66489.4230	0.0002		
36:	2 1 5 5	1 -1 4 4	66489.4570	-0.0005		
37:	2 1 2 2	1 -1 2 2	66489.5880	0.0105	0.0013	0.28
38:	2 1 2 3	1 -1 2 3	66489.5880	-0.0015	0.0013	0.52
39:	2 1 2 1	1 -1 2 1	66489.5880	-0.0043	0.0013	0.20
40:	2 1 1 1	1 -1 2 2	66490.0690	0.0001		
41:	3 1 4 4	2 -1 5 5 (a)	99472.6280	0.0597	-0.0029	0.50
42:	3 1 5 6	2 -1 5 6 (a)	99472.6280	-0.0654	-0.0029	0.50
43:	3 1 5 5	2 -1 5 5	99472.6960	0.0022	0.0005	0.33
44:	3 1 5 6	2 -1 5 6	99472.6960	0.0025	0.0005	0.40
45:	3 1 5 4	2 -1 5 4	99472.6960	-0.0044	0.0005	0.27
46:	3 1 3 2	2 -1 2 1	99473.1040	0.0044	-0.0024	0.21
47:	3 1 3 4	2 -1 2 3	99473.1040	-0.0001	-0.0024	0.46
48:	3 1 3 3	2 -1 2 2	99473.1040	-0.0099	-0.0024	0.33
49:	3 1 2 2	2 -1 1 1	99473.1620	0.0114	0.0020	0.34
50:	3 1 2 3	2 -1 1 2	99473.1620	-0.0029	0.0020	0.66
51:	3 1 4 3	2 -1 3 2	99473.1940	0.0058	-0.0003	0.25
52:	3 1 4 5	2 -1 3 4	99473.1940	0.0025	-0.0003	0.42
53:	3 1 4 4	2 -1 3 3	99473.1940	-0.0085	-0.0003	0.33
54:	3 1 4 4	2 -1 3 3 (a)	99473.2520	0.0494	0.0009	0.50
55:	3 1 4 5	2 -1 4 5 (a)	99473.2520	-0.0476	0.0009	0.50
56:	3 1 4 5	2 -1 4 5	99473.3000	0.0003	-0.0009	0.39
57:	3 1 4 4	2 -1 4 4	99473.3000	-0.0004	-0.0009	0.33
58:	3 1 4 3	2 -1 4 3	99473.3000	-0.0032	-0.0009	0.28
59:	3 1 4 3	2 -1 4 3 (a)	99473.3560	0.0527	0.0005	0.50
60:	3 1 5 6	2 -1 4 5 (a)	99473.3560	-0.0517	0.0005	0.50
61:	3 1 5 6	2 -1 4 5	99473.4130	0.0052	-0.0009	0.41
62:	3 1 5 4	2 -1 4 3	99473.4130	0.0038	-0.0009	0.27
63:	3 1 5 5	2 -1 4 4	99473.4130	-0.0128	-0.0009	0.32
64:	3 1 6 5	2 -1 5 4	99473.6840	0.0020	-0.0001	0.42
65:	3 1 6 7	2 -1 5 6	99473.6840	-0.0016	-0.0001	0.58
66:	3 1 0 1	2 -1 1 1	99473.9580	-0.0012	-0.0035	0.34
67:	3 1 0 1	2 -1 1 2	99473.9580	-0.0033	-0.0035	0.55
68:	3 1 0 1	2 -1 1 0	99473.9580	-0.0113	-0.0035	0.11
69:	3 1 2 2	2 -1 3 3	99474.1410	0.0018	-0.0023	0.31
70:	3 1 2 3	2 -1 3 4	99474.1410	-0.0025	-0.0023	0.47
71:	3 1 2 1	2 -1 3 2	99474.1410	-0.0075	-0.0023	0.22
72:	3 1 1 1	2 -1 2 2	99474.1710	-0.0002	-0.0019	0.35
73:	3 1 1 2	2 -1 2 3	99474.1710	-0.0027	-0.0019	0.65
74:	3 -1 4 4	2 1 5 5 (a)	99731.6850	0.0645	0.0035	0.50
75:	3 -1 5 5	2 1 5 5 (a)	99731.6850	-0.0574	0.0035	0.50
76:	3 -1 5 5	2 1 5 5	99731.7460	0.0035	0.0018	0.33

77:	3 -1 5 6	2 1 5 6	99731.7460	0.0038	0.0018	0.40
78:	3 -1 5 4	2 1 5 4	99731.7460	-0.0032	0.0018	0.27
79:	3 -1 3 2	2 1 2 1	99732.1360	0.0046	-0.0022	0.21
80:	3 -1 3 4	2 1 2 3	99732.1360	0.0000	-0.0022	0.46
81:	3 -1 3 3	2 1 2 2	99732.1360	-0.0097	-0.0022	0.33
82:	3 -1 4 3	2 1 3 2	99732.2140	0.0059	0.0000	0.25
83:	3 -1 4 5	2 1 3 4	99732.2140	0.0027	0.0000	0.42
84:	3 -1 4 4	2 1 3 3	99732.2140	-0.0081	0.0000	0.33
85:	3 -1 4 4	2 1 3 3 (a)	99732.2690	0.0468	0.0013	0.50
86:	3 -1 4 5	2 1 4 5 (a)	99732.2690	-0.0443	0.0013	0.50
87:	3 -1 4 5	2 1 4 5	99732.3150	0.0017	0.0004	0.39
88:	3 -1 4 4	2 1 4 4	99732.3150	0.0009	0.0004	0.33
89:	3 -1 4 3	2 1 4 3	99732.3150	-0.0021	0.0004	0.28
90:	3 -1 4 3	2 1 4 3 (a)	99732.3680	0.0509	0.0005	0.50
91:	3 -1 5 6	2 1 4 5 (a)	99732.3680	-0.0499	0.0005	0.50
92:	3 -1 5 6	2 1 4 5	99732.4250	0.0070	0.0009	0.41
93:	3 -1 5 4	2 1 4 3	99732.4250	0.0054	0.0009	0.27
94:	3 -1 5 5	2 1 4 4	99732.4250	-0.0110	0.0009	0.32
95:	3 -1 3 2	2 1 3 2	99732.5850	0.0004	-0.0014	0.24
96:	3 -1 3 4	2 1 3 4	99732.5850	-0.0006	-0.0014	0.45
97:	3 -1 3 3	2 1 3 3	99732.5850	-0.0037	-0.0014	0.31
98:	3 -1 6 5	2 1 5 4	99732.6990	0.0043	0.0022	0.41
99:	3 -1 6 7	2 1 5 6	99732.6990	0.0006	0.0022	0.59
100:	3 -1 0 1	2 1 1 1	99732.9680	-0.0003	-0.0016	0.38
101:	3 -1 0 1	2 1 1 2	99732.9680	-0.0024	-0.0016	0.62
102:	3 -1 2 2	2 1 3 3	99733.1310	0.0073	0.0031	0.30
103:	3 -1 2 3	2 1 3 4	99733.1310	0.0029	0.0031	0.47
104:	3 -1 2 1	2 1 3 2	99733.1310	-0.0021	0.0031	0.22
105:	3 -1 1 1	2 1 2 2	99733.1680	0.0046	0.0030	0.34
106:	3 -1 1 2	2 1 2 3	99733.1680	0.0021	0.0030	0.66
107:	4 -1 6 6	3 1 6 6	132628.5990	0.0034	0.0007	0.35
108:	4 -1 6 7	3 1 6 7	132628.5990	0.0002	0.0007	0.40
109:	4 -1 6 5	3 1 6 5	132628.5990	-0.0022	0.0007	0.25
110:	4 -1 4 3	3 1 3 2	132629.3410	0.0091	0.0034	0.39
111:	4 -1 4 5	3 1 3 4	132629.3410	-0.0001	0.0034	0.61
112:	4 -1 1 1	3 1 1 2	132629.8710	0.0090	-0.0006	0.07
113:	4 -1 3 4	3 1 3 4	132629.8710	0.0065	-0.0006	0.37
114:	4 -1 3 3	3 1 3 3	132629.8710	-0.0059	-0.0006	0.25
115:	4 -1 2 3	3 1 2 3	132629.8710	-0.0069	-0.0006	0.31
116:	4 -1 5 4	3 1 4 3	132629.4600	0.0122	0.0036	0.26
117:	4 -1 5 6	3 1 4 5	132629.4600	0.0073	0.0036	0.42
118:	4 -1 5 5	3 1 4 4	132629.4600	-0.0082	0.0036	0.32
119:	4 -1 6 5	3 1 5 4	132629.5920	0.0093	-0.0003	0.27
120:	4 -1 6 7	3 1 5 6	132629.5920	0.0010	-0.0003	0.40
121:	4 -1 6 6	3 1 5 5	132629.5920	-0.0095	-0.0003	0.33
122:	4 -1 7 6	3 1 6 5	132629.6770	0.0054	0.0021	0.29
123:	4 -1 7 8	3 1 6 7	132629.6770	0.0041	0.0021	0.38
124:	4 -1 7 7	3 1 6 6	132629.6770	-0.0030	0.0021	0.33
125:	4 1 6 6	3 -1 6 6	132973.9650	0.0035	0.0009	0.35
126:	4 1 6 7	3 -1 6 7	132973.9650	0.0002	0.0009	0.40

127:	4 1 6 5	3 -1 6 5	132973.9650	-0.0019	0.0009	0.25
128:	4 1 4 3	3 -1 3 2	132974.6740	0.0030	-0.0028	0.39
129:	4 1 4 5	3 -1 3 4	132974.6740	-0.0065	-0.0028	0.61
130:	4 1 3 2	3 -1 3 2	132975.1910	0.0074	-0.0017	0.17
131:	4 1 3 4	3 -1 3 4	132975.1910	0.0048	-0.0017	0.33
132:	4 1 3 3	3 -1 3 3	132975.1910	-0.0076	-0.0017	0.22
133:	4 1 2 3	3 -1 2 3	132975.1910	-0.0106	-0.0017	0.28
134:	4 1 5 4	3 -1 4 3	132974.7920	0.0104	0.0017	0.26
135:	4 1 5 6	3 -1 4 5	132974.7920	0.0054	0.0017	0.42
136:	4 1 5 5	3 -1 4 4	132974.7920	-0.0101	0.0017	0.32
137:	4 1 6 5	3 -1 5 4	132974.9180	0.0056	-0.0041	0.26
138:	4 1 6 7	3 -1 5 6	132974.9180	-0.0028	-0.0041	0.40
139:	4 1 6 6	3 -1 5 5	132974.9180	-0.0134	-0.0041	0.33
140:	4 1 7 6	3 -1 6 5	132975.0040	0.0009	-0.0024	0.29
141:	4 1 7 8	3 -1 6 7	132975.0040	-0.0004	-0.0024	0.38
142:	4 1 7 7	3 -1 6 6	132975.0040	-0.0075	-0.0024	0.33
143:	5 1 6 6	4 -1 6 6	165783.8500	-0.0010	-0.0032	0.37
144:	5 1 6 7	4 -1 6 7	165783.8500	-0.0033	-0.0032	0.39
145:	5 1 6 5	4 -1 6 5	165783.8500	-0.0064	-0.0032	0.24
146:	5 1 4 3	4 -1 3 2	165783.9710	0.0030	0.0011	0.37
147:	5 1 4 5	4 -1 3 4	165783.9710	0.0000	0.0011	0.63
148:	5 1 3 4	4 -1 2 3	165784.0080	0.0098	0.0014	0.30
149:	5 1 5 6	4 -1 4 5	165784.0080	-0.0012	0.0014	0.39
150:	5 1 5 4	4 -1 4 3	165784.0080	-0.0034	0.0014	0.31
151:	5 1 6 5	4 -1 5 4	165784.1000	0.0027	0.0012	0.41
152:	5 1 6 7	4 -1 5 6	165784.1000	0.0001	0.0012	0.59
153:	5 1 7 8	4 -1 6 7	165784.2010	0.0154	0.0024	0.32
154:	5 1 7 7	4 -1 6 6	165784.2010	0.0083	0.0024	0.28
155:	5 1 8 9	4 -1 7 8	165784.2010	-0.0124	0.0024	0.40
156:	5 1 5 4	4 -1 5 4	165784.2880	0.0015	-0.0007	0.30
157:	5 1 5 6	4 -1 5 6	165784.2880	0.0016	-0.0007	0.42
158:	5 1 5 5	4 -1 5 5	165784.2880	-0.0065	-0.0007	0.28
159:	5 1 4 5	4 -1 4 5	165784.4980	0.0036	-0.0018	0.40
160:	5 1 4 3	4 -1 4 3	165784.4980	0.0000	-0.0018	0.28
161:	5 1 4 4	4 -1 4 4	165784.4980	-0.0103	-0.0018	0.32
162:	5 1 3 2	4 -1 3 2	165784.5760	0.0050	0.0018	0.25
163:	5 1 3 4	4 -1 3 4	165784.5760	0.0009	0.0018	0.46
164:	5 1 2 3	4 -1 2 3	165784.5760	0.0003	0.0018	0.30
165:	5 -1 4 3	4 1 3 2	166215.6060	-0.0004	-0.0024	0.37
166:	5 -1 4 5	4 1 3 4	166215.6060	-0.0035	-0.0024	0.63
167:	5 -1 3 4	4 1 2 3	166215.6420	0.0052	-0.0015	0.30
168:	5 -1 5 6	4 1 4 5	166215.6420	-0.0033	-0.0015	0.39
169:	5 -1 5 4	4 1 4 3	166215.6420	-0.0057	-0.0015	0.31
170:	5 -1 6 5	4 1 5 4	166215.7310	0.0003	-0.0011	0.41
171:	5 -1 6 7	4 1 5 6	166215.7310	-0.0021	-0.0011	0.59
172:	5 -1 7 8	4 1 6 7	166215.8290	0.0122	-0.0013	0.32
173:	5 -1 7 7	4 1 6 6	166215.8290	0.0051	-0.0013	0.28
174:	5 -1 8 9	4 1 7 8	166215.8290	-0.0167	-0.0013	0.40
175:	5 -1 5 4	4 1 5 4	166215.9190	0.0053	0.0030	0.30
176:	5 -1 5 6	4 1 5 6	166215.9190	0.0053	0.0030	0.42

177:	5 -1 5 5	4 1 5 5	166215.9190	-0.0029	0.0030	0.28
178:	5 -1 4 5	4 1 4 5	166216.1200	0.0048	-0.0008	0.39
179:	5 -1 4 3	4 1 4 3	166216.1200	0.0009	-0.0008	0.28
180:	5 -1 4 4	4 1 4 4	166216.1200	-0.0093	-0.0008	0.32
181:	5 -1 3 2	4 1 3 2	166216.1960	0.0053	0.0018	0.25
182:	5 -1 3 4	4 1 3 4	166216.1960	0.0012	0.0018	0.46
183:	5 -1 2 3	4 1 2 3	166216.1960	-0.0002	0.0018	0.30

(a) cross-over transition.