

Table 1: Observational results of solar radio bursts

| Event | Start | Stop | QPP | L | F | S | P | III | DC | U | IV | Class |
|-------------|------------|-------------|-----|---|---|---|---|-----|----|---|----|------------------------|
| 2014 Nov 11 | 3:59 | 5:52 | | | | | ✓ | ✓ | ✓ | | | C3.6* |
| | 6:13(6:02) | 6:30(7:14) | ✓ | | | | | ✓ | | | | C3.1 |
| | 7:59(7:27) | 8:00(8:41) | | | | | | ✓ | | | | C2.3 |
| 2014 Dec 17 | 1:46(1:11) | 2:27(2:27) | | | ✓ | | | | | | ✓ | M1.1 |
| | 4:22(3:55) | 5:22(5:50) | ✓ | ✓ | ✓ | ✓ | | ✓ | ✓ | ✓ | ✓ | M8.7 |
| 2015 May 21 | 5:55(4:52) | 5:57(6:23) | | | | | | ✓ | | | | B6.3 |
| 2015 Jun 20 | 1:13 | 1:25 | | ✓ | | | | ✓ | | | | B7.3* |
| | 2:08(2:06) | 2:42(3:14) | ✓ | | | | | ✓ | ✓ | | | C2.3 |
| 2015 Jun 21 | 1:17(0:32) | 6:13(3:32) | ✓ | ✓ | | ✓ | | ✓ | | ✓ | ✓ | M2.0 M2.6 |
| | | | | | | | | | | | | M2.6 in decay phase |
| 2015 Nov 4 | 3:57(3:23) | 4:04(4:35) | | | | | ✓ | ✓ | | | | C1.4 |
| | 4:52(4:20) | 4:56(5:29) | | | | | ✓ | ✓ | | | | C1.0 |
| 2015 Nov 22 | 4:51 | 4:53 | | | | | | ✓ | | | | C1.2* |
| | 5:35(5:01) | 5:38(6:11) | | | | | | ✓ | | | | C5.6 |
| 2016 Aug 29 | 3:44(3:04) | 3:50(4:32) | | | | | | ✓ | | | | C2.2 |
| 2016 Sep 22 | 3:26(2:53) | 3:27(4:02) | | | | | | ✓ | | | | B4.7 |
| 2016 Nov 29 | 7:07(6:33) | 7:09(7:42) | | | | | | ✓ | | | | C7.5 |
| 2017 Feb 28 | 6:28(5:53) | 6:30(7:02) | | | | | | ✓ | | | | B3.5 |
| 2017 May 1 | 3:58(3:25) | 4:00(4:35) | | | | | | ✓ | | | | B9.9 |
| 2017 Jun 2 | 1:31(0:59) | 1:48(2:21) | | | | | | ✓ | | ✓ | | B8.5 C1.1 |
| | 9:49(9:17) | 9:51(10:26) | | | | | | ✓ | | | | B4.6 |
| 2017 Jun 3 | 4:08 | 4:10 | | | | | | | ✓ | ✓ | | B1.5* |
| | 9:37(9:07) | 9:55(10:35) | | | | | | ✓ | ✓ | | | C2.1 |
| 2017 Jun 22 | 8:24 | 8:26 | | | | | | ✓ | | | | A6.5* |
| 2017 Jul 10 | 1:23 | 1:26 | | | | | | | | | ✓ | B3.4* |
| | 3:51(3:39) | 5:06(7:20) | | | | | | | | ✓ | ✓ | B5.4 |
| | 9:48 | 9:53 | | | | | | | | | ✓ | B2.7* |
| 2017 Jul 12 | 8:18 | 8:25 | | | | | | | | | ✓ | B2.3* |
| 2017 Jul 14 | 1:18(0:37) | 2:50(3:54) | ✓ | | | ✓ | | ✓ | | ✓ | ✓ | M2.4 |
| 2017 Jul 16 | 1:58(1:28) | 2:11(3:27) | | | | | | ✓ | ✓ | | ✓ | C3.1 |
| 2017 Jul 17 | 7:24 | 7:25 | | | | | | ✓ | | | | B2.9* |
| 2017 Aug 15 | 4:30(3:54) | 4:33(5:03) | | | | | | ✓ | | | | B8.7 |
| | 5:05(4:30) | 5:07(5:39) | | | | | | ✓ | | | | B7.1 |
| 2017 Aug 16 | 8:27(7:59) | 8:34(9:10) | | | | ✓ | | ✓ | | | | B5.2 |
| 2017 Aug 20 | 1:45(1:06) | 2:00(2:33) | | | | | | ✓ | | ✓ | | M1.1 |
| 2017 Aug 21 | 2:30(1:59) | 2:32(3:12) | | | | | | ✓ | | | | B7.3 |
| 2017 Aug 22 | 4:00(3:45) | 4:30(4:54) | | | | | | ✓ | | ✓ | ✓ | B6.2 |
| | 8:31(8:01) | 8:37(9:09) | | | | | | ✓ | | | ✓ | B5.5 |
| 2017 Aug 23 | 6:25(5:54) | 6:27(7:27) | | | | | ✓ | | | | | C1.6 |
| 2017 Aug 24 | 4:29 | 4:33 | | | | | | ✓ | | | | B2.0* |
| 2017 Aug 25 | 7:24(6:45) | 7:28(8:16) | | | | | | ✓ | ✓ | | ✓ | C5.5 |
| 2017 Sep 4 | 1:11 | 1:12 | | | | | | ✓ | | | | C1.3* |
| | 2:11(1:48) | 2:23(2:59) | | | | | | ✓ | | | | C1.1 |
| 2017 Sep 5 | 4:43(4:03) | 4:47(5:37) | | | | | | | | | ✓ | M3.2 |

Table 1: Continue

| Event | Start | Stop | QPP | L | F | S | P | III | DC | U | IV | Class |
|-------------|------------|-------------|-----|---|---|---|---|-----|----|---|-------|-----------------------------|
| 2017 Sep 6 | 6:40(6:03) | 7:08(7:13) | | | | | | ✓ | | | | M3.8 |
| | 7:31(6:59) | 7:39(8:18) | ✓ | | | | | ✓ | | | | C2.7 |
| | 8:49(8:27) | 9:16(9:47) | ✓ | | | | | ✓ | ✓ | | ✓ | X2.2 |
| 2017 Sep 7 | 2:00 | 2:05 | | | | ✓ | | ✓ | | | ✓ | C1.8* |
| | 2:52 | 2:55 | | | | | | ✓ | | | ✓ | C2.3* |
| | 5:32(4:29) | 5:38(5:38) | | | | | | ✓ | | | ✓ | M2.4 |
| 2017 Sep 8 | 6:17(5:49) | 7:11(7:12) | ✓ | | | ✓ | | ✓ | | | ✓ | C8.2 |
| | 7:25 | 7:49 | | | | | | ✓ | | | ✓ | C3.7* |
| | 8:22 | 8:39 | | | | ✓ | | ✓ | | | ✓ | C1.7* |
| | 9:16(8:46) | 9:28(9:54) | | | | ✓ | | ✓ | | | ✓ | C2.3 |
| | 1:25(1:06) | 1:47(2:12) | ✓ | | | | | ✓ | | | ✓ | C5.3 |
| | 2:11(1:40) | 2:14(2:45) | ✓ | | | | | ✓ | | | ✓ | C1.2 |
| | 2:30(1:49) | 2:59(2:59) | | | | | | ✓ | | | ✓ | M1.3 |
| | 3:27(3:00) | 3:35(4:07) | | | | | | ✓ | | ✓ | ✓ | C1.4 |
| | 3:39(3:09) | 3:47(4:15) | ✓ | | | | | ✓ | | ✓ | ✓ | M1.2 |
| | 4:20 | 4:56 | | | | | | ✓ | | | ✓ | C1.0* |
| 2017 Sep 9 | 5:08(5:01) | 6:57(7:11) | ✓ | | | ✓ | | ✓ | | ✓ | ✓ | C8.3 C2.9 C1.7 |
| | 7:03(6:34) | 7:11(7:40) | ✓ | | | ✓ | | ✓ | | ✓ | ✓ | C6.0 |
| | 7:20(7:10) | 9:32(8:28) | | | ✓ | ✓ | | ✓ | | ✓ | ✓ | M8.1 M8.1 in decay phase |
| | 9:36(9:06) | 9:39(10:11) | | | | | | ✓ | | | ✓ | C1.3 |
| | 5:14 | 5:19 | ✓ | | | | | ✓ | | | | M1.1 in decay phase |
| 2017 Sep 10 | 6:52(6:21) | 7:00(7:28) | | | | | | ✓ | ✓ | | ✓ | C1.7 |
| | 2:54(2:10) | 2:56(3:55) | | | | | | ✓ | | | | C9.0 |
| | 4:38 | 4:40 | | | | | | ✓ | | | | C9.0 in decay phase |
| 2017 Sep 11 | 3:07 | 3:11 | | | | | ✓ | | | ✓ | C2.0* | |
| 2017 Sep 12 | 7:24(6:52) | 7:30(8:04) | | ✓ | | | ✓ | ✓ | | ✓ | C3.0 | |
| 2017 Sep 13 | 5:39(5:08) | 5:51(6:21) | | | | ✓ | ✓ | | | ✓ | B1.1 | |
| 2017 Sep 14 | 0:57 | 1:05 | | | | | ✓ | ✓ | | ✓ | B1.0* | |
| 2017 Sep 24 | 8:22 | 8:23 | | | | | ✓ | | | | B2.7* | |
| 2017 Sep 26 | 2:33(1:59) | 2:36(3:08) | ✓ | | | | ✓ | | | | C1.8 | |
| 2017 Oct 7 | 2:21(1:49) | 2:23(2:58) | | | | | ✓ | | | | | B4.9 |
| | 8:33 | 8:35 | | | | | ✓ | | | | | B1.3* |
| 2017 Oct 18 | 5:33 | 5:36 | | | | | | | ✓ | | | A8.5* |
| | 7:41 | 7:47 | | | | | | | ✓ | | | A6.0* |
| 2018 Mar 24 | 4:34 | 4:35 | | | | ✓ | | | | | A2.4* | |
| 2018 Mar 30 | 4:11(3:41) | 4:18(4:49) | | | | | ✓ | | | | | B1.8 |
| | 4:47(4:37) | 5:16(5:51) | | | | | ✓ | | | | | B4.5 |
| | 7:59(7:27) | 8:06(8:38) | | | | | ✓ | | | ✓ | | C4.6 |
| 2019 May 5 | 6:38(6:07) | 6:44(7:14) | | | | | ✓ | | | | B2.3 | |
| 2019 May 6 | 5:01(4:34) | 5:12(5:42) | ✓ | | | | ✓ | | | | | C9.9 |
| | 6:23 | 6:25 | | | | | ✓ | | | | | B2.1* |
| | 8:10(6:53) | 8:54(9:21) | | | | | ✓ | | | | | C1.7 C2.0 |

Table 1: Continue

| Event | Start | Stop | QPP | L | F | S | P | III | DC | U | IV | Class |
|------------|------------|------------|-----|---|---|---|---|-----|----|---|----|-------|
| 2019 May 7 | 1:40(1:08) | 1:47(2:18) | | | | | | ✓ | ✓ | | | B6.5 |
| | 2:53 | 2:54 | | | | | | ✓ | | | | B2.0* |
| | 3:18(3:13) | 3:20(4:22) | | | | | | ✓ | | | | B2.4 |
| | 5:36 | 5:40 | | | | | | ✓ | | | | B1.8* |
| | 7:22(6:48) | 7:26(7:57) | | | | | | ✓ | | | | B3.1 |
| 2019 May 9 | 5:43(5:10) | 6:04(6:26) | | | | | | ✓ | ✓ | | | C6.7 |

Notes:

Event - date of the solar radio burst events;

Start and stop time is universal time;

QPP - quasi-periodic pulsation; L - lace; F - fiber;

S - spike; P - pulse; III - type III burst;

DC - diffuse continua; U - type U burst; IV - type IV burst;

* - means that there is no corresponding flares defined by the *GOES* soft X-ray flux corresponding to the time range in the flare event list, which is the maximum peak flux level of the corresponding radio bursts interval in *GOES* SXR flux.