

Digisonde to Digisonde (D2D) Scheduling

NOTE: Move older entries to the end of the table

1. Pruhonice to Juliusruh

Date from	Date to	Sch offsets, min:sec	Frequencies, kHz	Switch Rules	Comments
14 May 2023	-	02:35, 07:35, 12:35	6850 (04:30-19:00 UT), 2950 (19:00-04:30)		
13 Feb 2023	-	02:35, 07:35, 12:35	6050 (06:30-18:00 UT), 2950 (16:00-06:30)		
12 Oct 2022	-	02:35, 07:35, 12:35	6050 (06:30-16:00 UT), 2950 (16:00-06:30)		
24 Mar 2022	-	02:35, 07:35, 12:35	5500 (06:00-18:00 UT), 2050 (18:00-06:00)		
08 Mar 2022	-	02:35, 07:35, 12:35	5500 (06:00-17:00 UT), 2050 (17:00-06:00)		
21 Oct 2021	-	02:35, 07:35, 12:35	4750 (06:30-16:00 UT), 2050 (16:00-06:30)		
30 Mar 2021	-	02:35, 07:35, 12:35	4750 (05:30-18:30 UT), 2050 (18:30-05:30)		
18 Feb 2021	-	02:35, 07:35, 12:35	4750 (06:30-16:00 UT), 3075 (16:00-06:30)		
23 Nov 2020	-	02:35, 07:35, 12:35	4750 (07:30-15:00 UT), 3075 (15:00-07:30)		
20 Oct 2020	-	02:35, 07:35, 12:35	4750 (06:30-16:00 UT), 3075 (16:00-06:30)		
17 Sep 2020	-	02:35, 07:35, 12:35	4750 (06:30-17:30 UT), 3075 (17:30-06:30)		
25 Jun 2020	-	02:35, 07:35, 12:35	4750 (05:30-18:30 UT), 3075 (18:30-05:30)		
01 Apr 2020	-				

		02:35, 07:35, 12:35	5050 (05:30-18:30 UT), 2475 (18:30-05:30)
27 Nov 2019	-	02:35, 07:35, 12:35	5050 (08:00-14:45 UT), 2475 (14:45-08:00)
16 Apr 2019	-	02:35, 07:35, 12:35	5050 (6:30-20:00 UT), 2475 (20:00-6:30)
27 Feb 2019	-	02:35, 07:35, 12:35	5050 (6:30-16:30 UT), 2475 (16:30-6:30)
09 Nov 2018	-	02:35, 07:35, 12:35	5050 (6:45-15:30 UT), 2475 (15:30-6:45)
02 Nov 2018	-	02:35, 07:35, 12:35	5050 (6:45-15:30 UT), 2450 (15:30-6:45)
24 Sep 2018	-	02:35, 07:35, 12:35	5050 (6:45-17:00 UT), 2450 (17:00-6:45)
28 May 2018	-	02:35, 07:35, 12:35	5050 (6:45-20:00 UT), 2450 (20:00-6:45)
04 December 2017	...	02:35, 07:35, 12:35	5760 (7:30-15:00 UT), 2450 (15:00-7:30)
17 December 2015	-	02:35, 07:35, 12:35	7900 (8:00-14:00 UT), 5050 (14:00-15:30 & 7:00-8:00), 2450 (15:30-7:00)
21 November 2015	17 December 2015	02:35, 07:35, 12:35	7900 (7:30-15:00 UT), 5050 (15:00-18:30 & 6:30-7:30), 2450 (18:30-6:30)
13 November 2015	21 November	02:35, 07:35, 12:35	7900 (7:30-15:00 UT), 5050 (15:00-18:30 & 5:00-7:30), 3050 (18:30-5:00)
11 November 2015	13 November 2015	02:35, 07:35, 12:35	7900 (day), 3450 (night)
24 October 2015	11 November 2015	02:35, 07:35, 12:35	7900 (day), 3450 (night)
9 October	23 October		

missing or unreliable DOP
data: 21.06.2019 09 UT -
17.07.2019 09 UT
(unsynchronized operation)

accurate timing

accurate timing

back to normal

PQ052 sync inaccurate

2015	2015				
21 August 2015 1303z	8 October 2015				PQ052 no sync to GPS
15 July 2015 1130z	21 August 2015 1300z				PQ052 no sync to GPS
02 June 2015 0915z	15 July 2015 1130z				PQ052 down for repairs
25 April 2015 0127z	02 June 2015 0915z	02:35, 07:35, 12:35	7900 (day)	continuous	02:35 no reception at JR055
30 March 2015 0852z	25 April 2015 0127z	02:35, 07:35, 12:35	7900 (day), 3000 (night)	TBD	02:35 no reception at JR055
17 March 2015 1559z	30 March 2015 0829z	04:18, 09:18, 14:18	8000 (day), 3000 (night)	TBD	
12 March 2015 0310z	17 March 2015 1540z	10:00	8000 (day), 3000 (night)	TBD	

2. Dourbes to Juliusruh

Date from	Date to	Sch offsets, min:sec	Frequencies, kHz	Switch Rules	Comments
14 May 2023	---	04:15, 09:15, 14:15	9050 (04:30-19:00), 3450 (19:00-04:30)		-
13 Feb 2023	---	04:15, 09:15, 14:15	9300 (06:30-18:00), 3450 (16:00-06:30)		-
11 Oct 2022	---	04:15, 09:15, 14:15	9300 (06:30-16:00), 3450 (16:00-06:30)		-
19 May 2022	11 Oct 2022	04:15, 09:15, 14:15	9150 (06:00-20:00), 2950 (20:00-06:00)		implemented at 0620
12 Apr 2022	19 May 2022	04:15, 09:15, 14:15	8850 (06:00-18:00), 2950 (18:00-06:00)		
30 Mar 2022	12 Apr 2022	04:15, 06:45, 09:15, 11:45, 14:15	6950 (06:00-18:00), 2950 (18:00-06:00)		
24 Mar 2022	30 Mar 2022	04:15, 06:45, 09:15, 11:45, 14:15	8850 (06:00-18:00), 2950 (18:00-06:00)		
10 Mar 2022	24 Mar 2022	04:15, 06:45, 09:15, 11:45, 14:15	8850 (06:00-17:00), 2950 (17:00-06:00)		
21 Oct 2021	10 Mar	04:15, 06:45, 09:15, 11:45, 14:15	6650 (06:30-16:00), 2950 (16:00-06:30)		
30 Mar 2021	21 Oct	04:15, 06:45, 09:15, 11:45,	6950 (05:30-18:30), 2950 (18:30-05:30)		

		14:15	
18 Feb 2021	30 Mar	04:15, 06:45, 09:15, 11:45, 14:15	6650 (06:30-16:00), 3450 (16:00-06:30)
23 November 2020	18 Feb	04:15, 08:45, 09:15, 11:45, 14:15	6650 (07:30-15:00), 3450 (15:00-07:30)
20 October 2020	23 November 2020	04:15, 06:45, 09:15, 11:45, 14:15	6650 (06:30-16:00), 3450 (16:00-06:30)
17 September 2020	20 October 2020	04:15, 06:45, 09:15, 11:45, 14:15	6650 (05:30-17:30), 3450 (17:30-05:30)
25 Jun 2020	17 September 2020	04:15, 06:45, 09:15, 11:45, 14:15	6650 (05:30-18:30), 3450 (18:30-05:30)
01 Apr 2020	25 Jun 2020	04:15, 06:45, 09:15, 11:45, 14:15	7250 (05:30-18:30), 3450 (18:30-05:30)
14 February 2020	01 Apr 2020	04:15, 06:45, 09:15, 11:45, 14:15	7250 (06:30-16:30), 3450 (16:30-06:30)
29 November 2019	14 February 2020	04:15, 06:45, 09:15, 11:45, 14:15	7250 (08:00-14:45), 3450 (14:45-08:00)
16 September 2019	29 Nov 2019	04:15, 06:45, 09:15, 11:45, 14:15	7250 (06:30-16:15), 3450 (16:15-06:30)
16 April 2019	16 September 2019	04:15, 06:45, 09:15, 11:45, 14:15	7250 (06:30-20:00), 3450 (20:00-06:30)
27 February 2019	16 April 2019	04:15, 06:45, 09:15, 11:45, 14:15	7250 (06:30-16:30), 3450 (16:30-06:30)
02 November 2018	7 February 2019	04:15, 06:45, 09:15, 11:45, 14:15	7250 (06:45-15:30), 3450 (15:30-06:45)
15 October 2018	27 February 2019	04:15, 06:45, 09:15, 11:45, 14:15	7250 (07:30-17:00), 3500 (17:00-07:30)
25 September 2018	5 October 2018	04:15, 09:15, 14:15	7250 (07:30-17:00), 3500 (17:00-07:30)
24 September 2018	25 September 2018	04:15, 09:15, 14:15	7250 (07:30-19:00), 3500 (19:00-07:30)
16 April 2018	24 September 2018	03:55, 08:55, 13:55	7250 (06:45-20:30), 3500 (20:30-06:44)

the 08:45 is probably 06:45

Change made after 12 UT

Change made after 12 UT

Staggered evening frequency switch for compatibility with DB049-EB040 link

Started using 128-chip code

9 April 2018	16 April 2018	03:55, 08:55, 13:55	7500 (06:45-20:30), 3500 (20:30-06:44)
15 March 2018	9 April 2018	03:55, 08:55, 13:55	7500 (06:45-19:00), 3500 (19:00-06:45)
Dec 2017	15 March 2018	-	-
28 August 2015 0853	-	08:40	8950 (day)
27 August 2015 1434z	28 August 2015 0853z	04:15, 09:15	8950 (day)

no D2D link active

3. Dourbes to Roquetes

Sopron also listening to Dourbes Tx at 04:39, 09:39 & 14:39. Intermittently starting 2018-10-11, systematic Dourbes to Sopron data available from April 2021.

Date from	Date to	Sch offsets, min:sec	Frequencies, kHz	Switch Rules	Comments
10 April 2024	current	02:06, 04:36, 07:06, 09:36, 12:06, 14:36	11125 (06:30-21:00), 7225 (21:00-06:30)		At 02:06 only during night
9 April 2024	10 April 2024	02:06, 04:36, 07:06, 09:36, 12:06, 14:36	11125 (06:30-21:00), 5625 (21:00-06:30)		At 02:06 only during night
14 December 2022	9 April 2024	02:06, 04:36, 07:06, 09:36, 12:06, 14:36	11125 (07:15-16:30), 4725 (16:30-07:15)		At 02:06 only during night, starting around 09 UT
15 November 2022	14 December 2022	02:06, 04:36, 07:06, 09:36, 12:06, 14:36	11125 (07:00-17:00), 5625 (17:00-07:00)		At 02:06 only during night
3 November 2022	15 November 2022	02:06, 04:36, 07:06, 09:36, 12:06, 14:36	11125 (06:45-18:00), 5625 (18:00-06:45)		At 02:06 only during night
5 October 2022	3 November 2022	02:06, 04:36, 07:06, 09:36, 12:06, 14:36	11125 (06:45-19:15), 5625 (19:15-06:45)		At 02:06 only during night
28 April 2022	5 October 2022	02:06, 04:36, 07:06, 09:36, 12:06, 14:36	11125 (06:45-21:00), 5625 (21:00-06:45)		At 02:06 only during night, implemented at 07:10
24 March 2022	28 April 2022	02:06, 04:36, 07:06, 09:36, 12:06, 14:36	11125 (06:45-20:00), 5625 (20:00-06:45)		At 02:06 only during night, implemented at 07:20
10 March 2022	24 March 2022	02:06, 04:36, 07:06, 09:36, 12:06, 14:36	10425 (07:00-19:00), 4725 (19:00-07:00)		At 02:06 only during night, implemented

				after 07:15
27 January 2022	10 March 2022	02:06, 04:36, 07:06, 09:36, 12:06, 14:36	10425 (07:15-17:15), 4725 (17:15-07:15)	At 02:06 only during night, implemented after 07:15
2 December 2021	27 January 2022	02:06, 04:36, 07:06, 09:36, 12:06, 14:36	10425 (07:15-16:15), 4725 (16:15-07:15)	At 02:06 only during night, implemented after 07:15
17 November 2021	2 December 2021	02:06, 04:36, 07:06, 09:36, 12:06, 14:36	10425 (07:00-16:45), 4725 (16:45-07:00)	At 02:06 only during night
27 October 2021	17 November 2021	02:06, 04:36, 07:06, 09:36, 12:06, 14:36	10425 (07:00-17:30), 4725 (17:30-07:00)	At 02:06 only during night, new day-time frequency from 07:00 UT
21 October 2021	27 October 2021	02:06, 04:36, 07:06, 09:36, 12:06, 14:36	9125 (07:00-19:00), 4725 (19:00-07:00)	At 02:06 only during night
10 August 2021	21 October 2021	02:06, 04:36, 07:06, 09:36, 12:06, 14:36	9125 (07:00-21:00), 4725 (21:00-07:00)	At 02:06 only during night
17 May 2021	10 August 2021	02:06, 04:36, 07:06, 09:36, 12:06, 14:36	9125 (06:45-22:15), 4725 (22:15-06:45)	At 02:06 only during night; changes applied at 06:45
11 May 2021	17 May 2021	02:09, 04:39, 07:09, 09:39, 12:09, 14:39	9125 (07:00-22:00), 4725 (22:00-07:00)	At 02:09 only during night (mistake between 14:45 & 22:15)
6 April 2021	11 May 2021	02:09, 04:39, 07:09, 09:39, 12:09, 14:39	9125 (07:00-19:45), 4725 (19:45-07:00)	At 02:09 only during night
23 March 2021	6 April 2021	02:09, 04:39, 07:09, 09:39, 12:09, 14:39	9125 (07:15-18:45), 4725 (18:45-07:15)	At 02:09 only during night
18 February 2021	23 March 2021	02:09, 04:39, 07:09, 09:39, 12:09, 14:39	9125 (07:15-17:30), 4725 (17:30-07:15)	At 02:09 only during night
23 November 2020	18 February 2021	02:09, 04:39, 07:09, 09:39, 12:09, 14:39	9125 (07:15-16:45), 4725 (16:45-07:15)	At 02:09 only during night
19 October 2020	23 November 2020	02:09, 04:39, 07:09, 09:39, 12:09, 14:39	9125 (07:00-17:30), 4725 (17:30-07:00)	At 02:09 only during night

17 September 2020	19 October 2020	02:09, 04:39, 07:09, 09:39, 12:09, 14:39	9125 (07:15-19:30), 4725 (19:30-07:15)	At 02:09 only during night
30 April 2020	17 September 2020	02:09, 04:39, 07:09, 09:39, 12:09, 14:39	9125 (07:15-21:30), 4725 (21:30-07:15)	At 02:09 only during night
1 April 2020	30 April 2020	02:09, 04:39, 07:09, 09:39, 12:09, 14:39	9125 (07:15-19:30), 4725 (19:30-07:15)	At 02:09 only during night
9 March 2020	1 April 2020	02:09, 04:39, 07:09, 09:39, 12:09, 14:39	9125 (07:15-18:15), 4725 (18:15-07:15)	At 02:09 only during night
12 February 2020	9 March 2020	02:09, 04:39, 07:09, 09:39, 12:09, 14:39	9125 (07:30-17:15), 4725 (17:15-07:30)	At 02:09 only during night
29 November 2019	12 February 2020	02:09, 04:39, 07:09, 09:39, 12:09, 14:39	9125 (07:30-16:15), 4725 (16:15-07:30)	At 02:09 only during night
13 November 2019	29 November 2019	02:09, 04:39, 07:09, 09:39, 12:09, 14:39	9125 (07:15-17:00), 4725 (17:00-07:15)	At 02:09 only during night
22 October 2019	13 November 2019	02:09, 04:39, 07:09, 09:39, 12:09, 14:39	9125 (07:00-17:30), 4725 (17:30-07:00)	At 02:09 only during night
3 October 2019	22 October 2019	02:09, 04:39, 07:09, 09:39, 12:09, 14:39	9125 (07:30-18:15), 4725 (18:15-07:30)	At 02:09 only during night
16 September 2019	3 October 2019	02:09, 04:39, 07:09, 09:39, 12:09, 14:39	9125 (07:15-19:15), 4725 (19:15-07:15)	At 02:09 only during night
29 April 2019	16 September 2019	02:09, 04:39, 07:09, 09:39, 12:09, 14:39	9125 (06:45-21:30), 4725 (21:30-06:45)	At 02:09 only during night
15 April 2019	29 April 2019	02:09, 04:39, 07:09, 09:39, 12:09, 14:39	9125 (06:45-20:00), 4725 (20:00-06:45)	At 02:09 only during night
18 February 2019	15 April 2019	02:09, 04:39, 07:09, 09:39, 12:09, 14:39	9125 (07:00-18:00), 4725 (18:00-07:00)	At 02:09 only during night
20 November 2018	18 February 2019	02:09, 04:39, 07:09, 09:39, 12:09, 14:39	9125 (07:15-16:30), 4725 (16:30-07:15)	At 02:09 only during night
26 October 2018	20 November 2018	02:09, 04:39, 07:09, 09:39, 12:09, 14:39	9125 (07:15-17:30), 4725 (17:30-07:15)	At 02:09 only during night
24 September 2018	26 October 2018	02:09, 04:39, 07:09, 09:39,	9125 (07:30-19:00), 4725 (19:00-07:30)	At 02:09 only during night

		12:09, 14:39		
9 April 2018	24 September 2018	02:09, 04:39, 07:09, 09:39, 12:09, 14:39	9125 (06:45-20:30), 4725 (20:30-06:44)	At 02:09 only during night
9 March 2018	8 April 2018	02:09, 04:39, 07:09, 09:39, 12:09, 14:39	9125 (06:45-19:00), 4725 (19:00-06:45)	At 02:09 only during night
28 February 2018	8 March 2018	02:09, 04:39, 07:09, 09:39, 12:09, 14:39	9125 (07:15-17:30), 4725 (17:30-07:15)	At 02:09 only during night
19 February 2018	27 February 2018	Campaign to test 128-chip and 64-chip codes		
5 December 2017	9 April 2018	03:40, 08:40, 13:40	9125 (07:30-16:30), 4725 (16:30-07:30)	TV: Made effective after 10:00; DA: Made effective after 9:10
21 September 2017	5 December 2017	03:40, 08:40, 13:40	9125 (06:45-19:15), 4725 (19:15-06:45)	DA: Made effective after 09:45
15 May 2017	21 September 2017	03:40, 08:40, 13:40	9125 (6:15-21:15), 4725 (21:15-6:15)	DA: Made effective after 20:15
11 April 2017	15 May	03:40, 08:40, 13:40	9125 (6:15-20:15), 4725 (20:15-6:15)	DA: Made effective after 20:15
21 March 2017	11 April 2017	03:40, 08:40, 13:40	9125 (6:15-19:00), 4725 (19:00-6:15)	
20 February 2017	21 March 2017	03:40, 08:40, 13:40	9125 (6:45-17:30), 4725 (17:30-6:45)	
27 January 2017 1230	20 February 2017	03:40, 08:40, 13:40	9125 (7:15-16:30), 4725 (16:30-7:15)	
13 December 2016 0845	26 January 2017 1230	03:40, 08:40, 13:40	10425 (7:45-16:00), 4725 (16:00-7:45)	
13 October 2016 1630	13 December 2016 0725	03:40, 08:40, 13:40	10425 (9:15-16:30), 7825 (6:15-9:15 & 16:30-19:15), 4355 (19:15-6:15)	
11 October 2016 0930	13 October 2016 1630	03:40, 08:40, 13:40	10425 (9:45-16:30), 7675 (6:45-9:45 & 16:30-19:15), 4355 (19:15-6:45)	
7 September 2016 0725	11 October 2016 0930	03:40, 08:40, 13:40	8950 (7:00-21:00), 4845 (21:00-7:00)	
9 May 2016 1220	7 September 2016 0725	03:40, 08:40, 13:40	11145 (9:45-18:30), 8950 (6:45-9:45 & 18:30-21:00), 4845 (21:00-6:45)	

23 March 2016 1100	9 May 2016 1220		11145 (9:45-18:30), 8950 (6:45-9:00 & 18:30-19:45), 4845 (19:45-6:45)
15 February 2016 1830	23 March 2016 1100		11350 (9:00-18:30), 8950 (7:00-9:00 & 16:30-18:30), 4845 (18:30-7:00)
11 December 2015 1630	15 February 2016 1830		8950 (7:30-16:30), 3450 (16:30-7:30)
30 October 2015 1800	11 December 2015 1630		8950 (7:00-18:00), 4845 (18:00-7:00)
29 October 2015 1900	30 October 2015 1800		8950 (7:00-19:00), 4400 (19:00-7:00)
28 October 2015 1900	29 October 2015 1900		8950 (7:00-19:00), 4000 (19:00-7:00)
30 August 2015 0000	28 October 2015 1900		8950 (7:00-22:00), 4845 (22:00-7:00)

4. Dourbes to Athens [Suspended]

Date from	Date to	Sch offsets, min:sec	Frequencies, kHz	Switch Rules	Comments
29 May 2017	2 June 2017	03:40, 08:40, 13:40	9125 (6:15-21:15), 4725 (21:15-6:15)		New transmitter card testing period for Athens
16 May 2017 0735	29 May 2017	03:40, 08:40, 13:40	9125 (6:15-21:15), 4725 (21:15-6:15)		
12 April 2017 0825	16 May 2017 0735	03:40, 08:40, 13:40	9125 (6:15-20:15), 4725 (20:15-6:15)		
6 April 2017 1055	12 April 2017 0825	03:40, 08:40, 13:40	9125 (6:15-19:00), 4725 (19:00-6:15)		
21 February 2017 1250	11 March 2017	03:40, 08:40, 13:40	9125 (6:45-17:30), 4725 (17:30-6:45)		
27 January 2017 0948	21 February 2017 1250	03:40, 08:40, 13:40	9125 (7:15-16:30), 4725 (16:30-7:15)		
13 December 2016 0845	27 January 2017 0948	03:40, 08:40, 13:40	10425 (7:45-16:00), 4725 (16:00-7:45)		
13 October 2016 1200	13 December 2016 0725	03:40, 08:40, 13:40	10425 (9:15-16:30), 7825 (6:15-9:45 & 16:30-19:15), 4355 (19:15-6:15)		
11 October 2016 0909	13 October 2016 1200	03:40, 08:40,	10425 (9:45-16:30), 7675 (6:45-9:45 & 16:30-19:15),		

		13:40	4355 (19:15-6:45)
7 September 2016 0749	11 October 2016 0909	03:40, 08:40, 13:40	8950 (day), 4845(night)
6 May 2016 0928	7 September 2016 0749	03:40, 08:40, 13:40	11145 (day), 4845(night)

5. Athens to Roquetes [Suspended]

Date from	Date to	Sch offsets, min:sec	Frequencies, kHz	Switch Rules	Comments
13 March 2018	??	[03:15, 08:15, 13:15]@128-chip	11750 (128-chip/06:45-19:00) 4725 (19:00-06:45)		AM: Made effective after 09:55
16 January 2018	13 March 2018	-	-		AM: AT138 offline due to amplifier failure
22 December 2017	16 January 2018	[03:15, 08:15, 13:15]@128-chip, [03:40, 08:40, 13:40]@16-chip	11750 (128-chip/07:30-16:30), 9525 (16-chip/07:30-16:30) 4725 (16:30-07:30)		AM: Made effective after 12:20; DA: Made effective after 12:30
11 December 2017	22 December 2017	[03:15, 08:15, 13:15]@128-chip, [03:40, 08:40, 13:40]@16-chip	9525 (128-chip/07:30-16:30), 9525 (16-chip/07:30-16:30) 4725 (16:30-07:30)		AM: Made effective after 09:20
5 December 2017	11 December 2017	03:15, 08:15, 13:15	9525 (07:30-16:30), 4725 (16:30-07:30)		AM: Made effective after 10:00; DA: Made effective after 9:10
21 September 2017	5 December 2017	03:15, 08:15, 13:15	9525 (6:14:58-21:14:59), 4725 (21:14:59-6:14:58)		DA: Made effective after 09:45
2 June 2017	21 September 2017	03:15, 08:15, 13:15	9525 (6:14:58-21:14:59), 4725 (21:14:59-6:14:58)		
29 May 2017	2 June 2017	03:15, 08:15, 13:15	9525 (6:14:58-21:14:59), 4725 (21:14:59-6:14:58)		New transmitter card testing period for Athens

6. Sopron to Athens

Date from	Date to	Sch offsets, min:sec	Frequencies, kHz	Switch Rules	Comments
24 March 2022	1 April 2022	[06:53, 21:53, 36:53,51:53]	11145 (06:45-18:00) 4845 (20:00-06:00)		128-chip
17 March 2022	24 March 2022	[06:53, 21:53, 36:53,51:53]	11145 (07:00-17:00) 4845 (19:00-06:00)		128-chip