マイクロ同軸ケーブル試作２号機のチャンネルマップ確認

宍倉、加藤、藤木

1.チャンネルマップの導線確認

2.HARNESS　CHECHER(CN50機)を用いた導通測定

チャンネルマップの導線確認

1. マイクロ同軸ケーブルROC側とBEX側のそれぞれのJ1コネクタに写真のDF18拡張基板を取り付ける。
2. 例えば、BDタイプのJ1チャンネル2はBEX側で0_CHIP1_OUT_1Pなので、ROC側のテーブルで同じ名前0_CHIP1_OUT_1Pのチャンネルを探す。
3. 拡張基板上の対応するチャンネルのパッドや半田面にテスターのプローブをあて、導通しているか確認する。
4. 対応するチャンネル以外で導通していないか確認する。

BEX側チャンネルマップ

HDI側

HEADER (TOP)

J1 (out side)				J2 (in side)			
#	name (net)	#	name (net)	#	name (net)	#	name (net)
1	DGND	100	AGND	1	AGND	100	DGND
2	0_CHIP1_OUT_1P	99	0_CHIP1_OUT_0P	2	1_CHIP1_OUT_1P	99	1_CHIP1_OUT_0P
3	0_CHIP1_OUT_1N	98	0_CHIP1_OUT_0N	3	1_CHIP1_OUT_1N	98	1_CHIP1_OUT_0N
4	0_CHIP2_OUT_1P	97	0_CHIP2_OUT_0P	4	1_CHIP2_OUT_1P	97	1_CHIP2_OUT_0P
5	0_CHIP2_OUT_1N	96	0_CHIP2_OUT_0N	5	1_CHIP2_OUT_1N	96	1_CHIP2_OUT_0N
6	0_CHIP3_OUT_1P	95	0_CHIP3_OUT_0P	6	1_CHIP3_OUT_1P	95	1_CHIP3_OUT_0P
7	0_CHIP3_OUT_1N	94	0_CHIP3_OUT_0N	7	1_CHIP3_OUT_1N	94	1_CHIP3_OUT_0N
8	0_CHIP4_OUT_1P	93	0_CHIP4_OUT_0P	8	1_CHIP4_OUT_1P	93	1_CHIP4_OUT_0P
9	0_CHIP4_OUT_1N	92	0_CHIP4_OUT_0N	9	1_CHIP4_OUT_1N	92	1_CHIP4_OUT_0N
10	DGND	91	0_CAL_INJECT0	10	1_CAL_INJECT1	91	DGN
11	DGND	90	AGND	11	AGND	90	DGN
12	0_CHIP5_OUT_1P	89	0_CHIP5_OUT_0P	12	1_CHIP5_OUT_1P	89	1_CI
13	0_CHIP5_OUT_1N	88	0_CHIP5_OUT_0N	13	1_CHIP5_OUT_1N	88	1_CI
14	0_CHIP7_OUT_1P	87	0_CHIP7_OUT_0P	14	1_CHIP7_OUT_1P	87	1_CI
15	0_CHIP7_OUT_1N	86	0_CHIP7_OUT_0N	15	1_CHIP7_OUT_1N	86	1_CI
16	0_CHIP9_OUT_1P	85	0_CHIP9_OUT_0P	16	1_CHIP9_OUT_1P	85	1_CI
17	0_CHIP9_OUT_1N	84	0_CHIP9_OUT_0N	17	1_CHIP9_OUT_1N	84	1_CI
18	0_CHIP11_OUT_1P	83	0_CHIP11_OUT_0P	18	1_CHIP11_OUT_1P	83	1_CI
19	0_CHIP11_OUT_1N	82	0_CHIP11_OUT_0N	19	1_CHIP11_OUT_1N	82	1_CI
20	0_CHIP13_OUT_1P	81	0_CHIP13_OUT_0P	20	1_CHIP13_OUT_1P	81	1_CI
21	0_CHIP13_OUT_1N	80	0_CHIP13_OUT_0N	21	1_CHIP13_OUT_1N	80	1_CI
22	DGND	79	AGND	22	AGND	79	DGN
23	DGND	78	AGND	23	AGND	78	DGN
24	0_CHIP6_OUT_1P	77	0_CHIP6_OUT_0P	24	1_CHIP6_OUT_1P	77	1_CI
25	0_CHIP6_OUT_1N	76	0_CHIP6_OUT_0N	25	1_CHIP6_OUT_1N	76	1_CI
26	0_CHIP8_OUT_1P	75	0_CHIP8_OUT_0P	26	1_CHIP8_OUT_1P	75	1_CI
27	0_CHIP8_OUT_1N	74	0_CHIP8_OUT_0N	27	1_CHIP8_OUT_1N	74	1_CI
28	0_CHIP10_OUT_1P	73	0_CHIP10_OUT_0P	28	1_CHIP10_OUT_1P	73	1_CI
29	0_CHIP10_OUT_1N	72	0_CHIP10_OUT_0N	29	1_CHIP10_OUT_1N	72	1_CI
30	0_CHIP12_OUT_1P	71	0_CHIP12_OUT_0P	30	1_CHIP12_OUT_1P	71	1_CI
31	0_CHIP12_OUT_1N	70	0_CHIP12_OUT_0N	31	1_CHIP12_OUT_1N	70	1_CI
32	DGND	69	AGND	32	AGND	69	DGN
33	DGND	68	AGND	33	AGND	68	DGN
34	0_SC_OUT0n	67	0_OUT_CLK0n	34	1_OUT_CLK1n	67	1_SC
35	0_SC_OUT0p	66	0_OUT_CLK0p	35	1_OUT_CLK1p	66	1_SC_OUT1p
36	DGND	65	0_BCO_CLK0n	36	1_BCO_CLK1n	65	DGND
37	DGND	64	0_BCO_CLK0p	37	1_BCO_CLK1p	64	DGND
38	DGND	63	0_SC_IN0n	38	1_SC_IN1n	63	DGND
39	DGND	62	0_SC_IN0p	39	1_SC_IN1p	62	DGND
40	DGND	61	0_RESET0n	40	1_RESET1n	61	DGND
41	DGND	60	0_RESET0p	41	1_RESET1p	60	DGND
42	DGND	59	AGND	42	AGND	59	DGND
43	DGND	58	AGND	43	AGND	58	DGND
44	+2.5VA	57	AGND	44	+2.5VD	57	+2.5VD
45	+2.5VA	56	AGND	45	+2.5VD	56	+2.5VD
46	+2.5VA	55	+2.5VA	46	+2.5VD	55	+2.5VD
47	+2.5VA	54	+2.5VA	47	+2.5VD	54	+2.5VD
48	+2.5VA	53	+2.5VA	48	+2.5VD	53	+2.5VD
49	+2.5VA	52	+2.5VA	49	+2.5VD	52	+2.5VD
50	+2.5VA	51	+2.5VA	50	+2.5VD	51	+2.5VD

ROC側チャンネルマップ

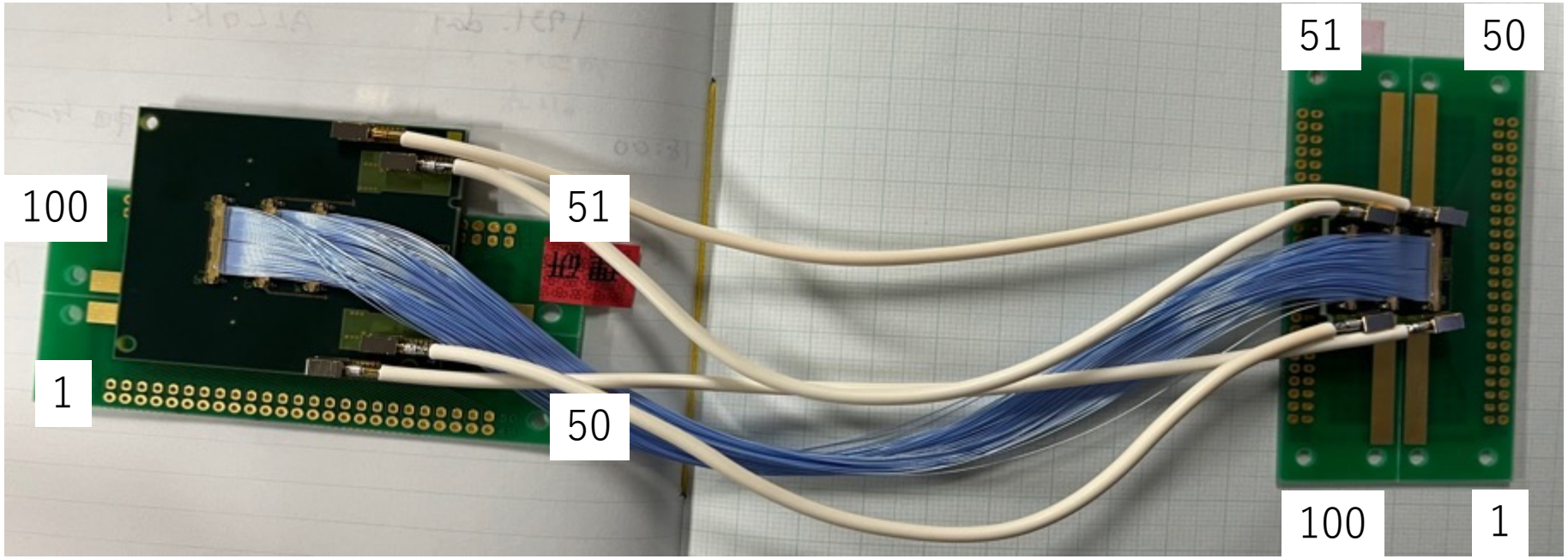
ROC側

RECEPTACLE (TOP)

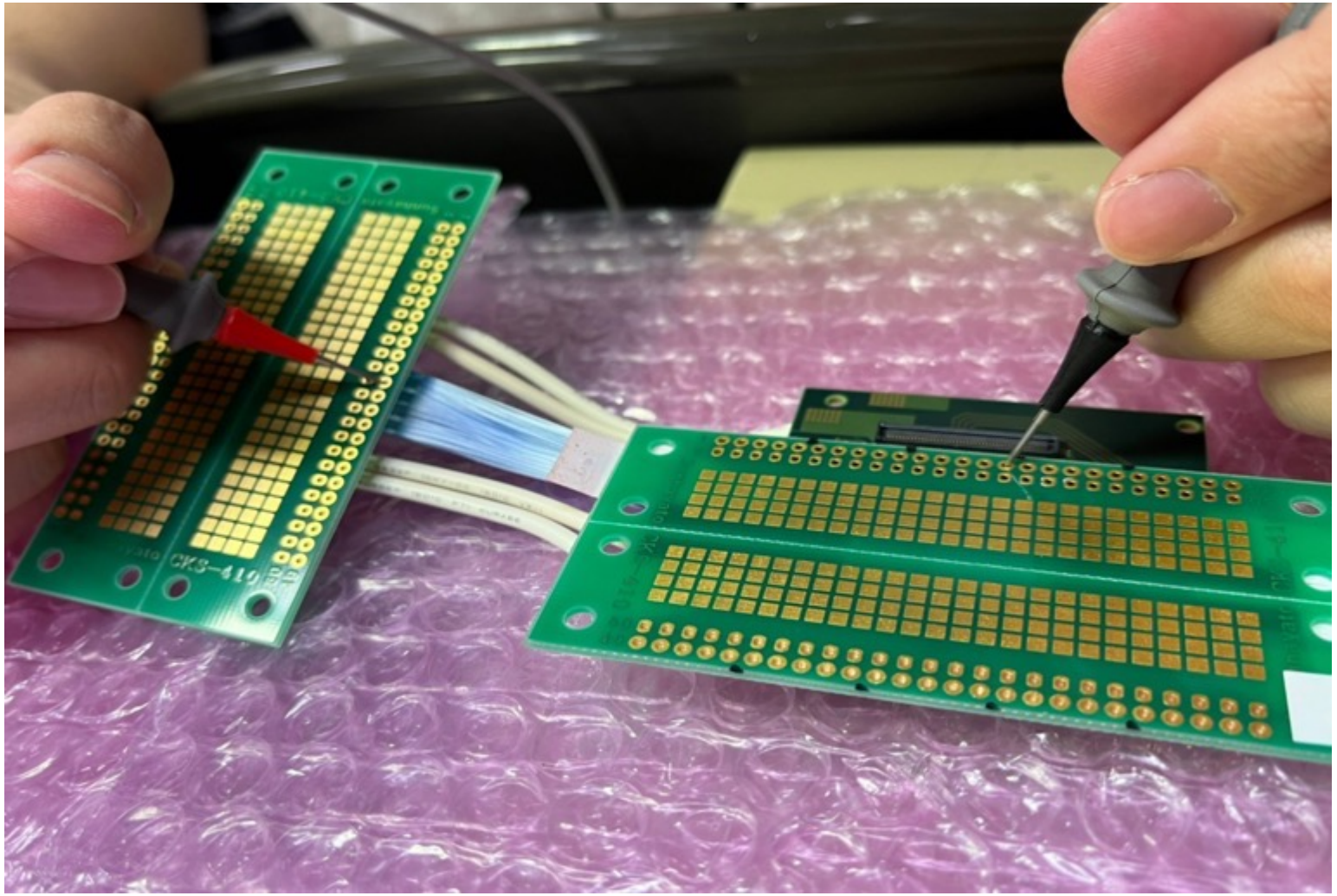
J1 (out side)				J2 (in side)			
#	name (net)	#	name (net)	#	name (net)	#	name (net)
1	AGND	100	DGND	1	AGND	100	DGND
2	1_CHIP1_OUT_1P	99	1_CHIP1_OUT_0P	2	SC_IN1p	99	RESET1p
3	1_CHIP1_OUT_1N	98	1_CHIP1_OUT_0N	3	SC_IN1n	98	RESET1n
4	1_CHIP2_OUT_1P	97	1_CHIP2_OUT_0P	4	DGND	97	BCO_CLK1p
5	1_CHIP2_OUT_1N	96	1_CHIP2_OUT_0N	5	DGND	96	BCO_CLK1n
6	1_CHIP3_OUT_1P	95	1_CHIP3_OUT_0P	6	OUT_CLK1p	95	SC_OUT1p
7	1_CHIP3_OUT_1N	94	1_CHIP3_OUT_0N	7	OUT_CLK1n	94	SC_OUT1n
8	1_CHIP4_OUT_1P	93	1_CHIP4_OUT_0P	8	DGND	93	DGND
9	1_CHIP4_OUT_1N	92	1_CHIP4_OUT_0N	9	DGND	92	DGND
35	0_CHIP9_OUT_0P	66	0_CHIP9_OUT_1P	35	0_CHIP12_OUT_0P	66	0_CHIP12_OUT_1P
36	0_CHIP7_OUT_0N	65	0_CHIP7_OUT_1N	36	0_CHIP10_OUT_0N	65	0_CHIP10_OUT_1N
37	0_CHIP7_OUT_0P	64	0_CHIP7_OUT_1P	37	0_CHIP10_OUT_0P	64	0_CHIP10_OUT_1P
38	0_CHIP5_OUT_0N	63	0_CHIP5_OUT_1N	38	0_CHIP8_OUT_0N	63	0_CHIP8_OUT_1N
39	0_CHIP5_OUT_0P	62	0_CHIP5_OUT_1P	39	0_CHIP8_OUT_0P	62	0_CHIP8_OUT_1P
40	AGND	61	DGND	40	0_CHIP6_OUT_0N	61	0_CHIP6_OUT_1N
41	CAL_INJECT0	60	DGND	41	0_CHIP6_OUT_0P	60	0_CHIP6_OUT_1P
42	0_CHIP4_OUT_0N	59	0_CHIP4_OUT_1N	42	DGND	59	DGND
43	0_CHIP4_OUT_0P	58	0_CHIP4_OUT_1P	43	DGND	58	DGND
44	0_CHIP3_OUT_0N	57	0_CHIP3_OUT_1N	44	OUT_CLK0n	57	SC_OUT0p
45	0_CHIP3_OUT_0P	56	0_CHIP3_OUT_1P	45	OUT_CLK0p	56	SC_OUT0n
46	0_CHIP2_OUT_0N	55	0_CHIP2_OUT_1N	46	DGND	55	RESET0p
47	0_CHIP2_OUT_0P	54	0_CHIP2_OUT_1P	47	DGND	54	RESET0n
48	0_CHIP1_OUT_0N	53	0_CHIP1_OUT_1N	48	SC_IN0p	53	BCO_CLK0p
49	0_CHIP1_OUT_0P	52	0_CHIP1_OUT_1P	49	SC_IN0n	52	BCO_CLK0n
50	AGND	51	DGND	50	AGND	51	DGND

0_CHIP1_OUT_1PはラダーのSide-0 (Chip1-13側)、Chip1の読み出しデータライン1番の+側を表す。このチャンネルはBEX側では、J1コネクタのチャンネル2に現れROC側ではJ1コネクタのチャンネル52番に繋がれているはず。拡張基板上でテスターのプローブをこの二つのチャンネルにあてると、導通しているはず。

マイクロ同軸ケーブル試作２号機



確認方法



BDタイプの変換ケーブル製作は今回が初めてのため、CN50機のリファレンスマップがないので、テスターで信号線一本一本導通確認をした。

結果

HDI側								ROC側							
HEADER (TOP)								RECEPTACLE (TOP)							
J1 (out side)				J2 (in side)				J1 (out side)				J2 (in side)			
#	name (net)	#	name (net)	#	name (net)	#	name (net)	#	name (net)	#	name (net)	#	name (net)	#	name (net)
1	DGND	100	AGND	1	AGND	100	DGND	1	AGND	100	DGND	1	AGND	100	DGND
2	0_CHIP1_OUT 1P	99	0_CHIP1_OUT 0P	2	1_CHIP1_OUT 1P	99	1_CHIP1_OUT 0P	2	1_CHIP1_OUT 1P	99	1_CHIP1_OUT 0P	2	SC_IN1p	99	RESET1p
3	0_CHIP1_OUT 1N	98	0_CHIP1_OUT 0N	3	1_CHIP1_OUT 1N	98	1_CHIP1_OUT 0N	3	1_CHIP1_OUT 1N	98	1_CHIP1_OUT 0N	3	SC_IN1n	98	RESET1n
4	0_CHIP2_OUT 1P	97	0_CHIP2_OUT 0P	4	1_CHIP2_OUT 1P	97	1_CHIP2_OUT 0P	4	1_CHIP2_OUT 1P	97	1_CHIP2_OUT 0P	4	DGND	97	BCO_CLK1p
5	0_CHIP2_OUT 1N	96	0_CHIP2_OUT 0N	5	1_CHIP2_OUT 1N	96	1_CHIP2_OUT 0N	5	1_CHIP2_OUT 1N	96	1_CHIP2_OUT 0N	5	DGND	96	BCO_CLK1n
6	0_CHIP3_OUT 1P	95	0_CHIP3_OUT 0P	6	1_CHIP3_OUT 1P	95	1_CHIP3_OUT 0P	6	1_CHIP3_OUT 1P	95	1_CHIP3_OUT 0P	6	OUT_CLK1p	95	SC_OUT1p
7	0_CHIP3_OUT 1N	94	0_CHIP3_OUT 0N	7	1_CHIP3_OUT 1N	94	1_CHIP3_OUT 0N	7	1_CHIP3_OUT 1N	94	1_CHIP3_OUT 0N	7	OUT_CLK1n	94	SC_OUT1n
8	0_CHIP4_OUT 1P	93	0_CHIP4_OUT 0P	8	1_CHIP4_OUT 1P	93	1_CHIP4_OUT 0P	8	1_CHIP4_OUT 1P	93	1_CHIP4_OUT 0P	8	DGND	93	DGND
9	0_CHIP4_OUT 1N	92	0_CHIP4_OUT 0N	9	1_CHIP4_OUT 1N	92	1_CHIP4_OUT 0N	9	1_CHIP4_OUT 1N	92	1_CHIP4_OUT 0N	9	DGND	92	DGND
10	DGND	91	0_CAL_INJECT0	10	1_CAL_INJECT1	91	DGND	10	CAL_INJECT1	91	DGND	10	1_CHIP6_OUT 1P	91	1_CHIP6_OUT 0P
11	DGND	90	AGND	11	AGND	90	DGND	11	AGND	90	DGND	11	1_CHIP6_OUT 1N	90	1_CHIP6_OUT 0N
12	0_CHIP5_OUT 1P	89	0_CHIP5_OUT 0P	12	1_CHIP5_OUT 1P	89	1_CHIP5_OUT 0P	12	1_CHIP5_OUT 1P	89	1_CHIP5_OUT 0P	12	1_CHIP8_OUT 1P	89	1_CHIP8_OUT 0P
13	0_CHIP5_OUT 1N	88	0_CHIP5_OUT 0N	13	1_CHIP5_OUT 1N	88	1_CHIP5_OUT 0N	13	1_CHIP5_OUT 1N	88	1_CHIP5_OUT 0N	13	1_CHIP8_OUT 1N	88	1_CHIP8_OUT 0N
14	0_CHIP7_OUT 1P	87	0_CHIP7_OUT 0P	14	1_CHIP7_OUT 1P	87	1_CHIP7_OUT 0P	14	1_CHIP7_OUT 1P	87	1_CHIP7_OUT 0P	14	1_CHIP10_OUT 1P	87	1_CHIP10_OUT 0P
15	0_CHIP7_OUT 1N	86	0_CHIP7_OUT 0N	15	1_CHIP7_OUT 1N	86	1_CHIP7_OUT 0N	15	1_CHIP7_OUT 1N	86	1_CHIP7_OUT 0N	15	1_CHIP10_OUT 1N	86	1_CHIP10_OUT 0N
16	0_CHIP9_OUT 1P	85	0_CHIP9_OUT 0P	16	1_CHIP9_OUT 1P	85	1_CHIP9_OUT 0P	16	1_CHIP9_OUT 1P	85	1_CHIP9_OUT 0P	16	1_CHIP12_OUT 1P	85	1_CHIP12_OUT 0P
17	0_CHIP9_OUT 1N	84	0_CHIP9_OUT 0N	17	1_CHIP9_OUT 1N	84	1_CHIP9_OUT 0N	17	1_CHIP9_OUT 1N	84	1_CHIP9_OUT 0N	17	1_CHIP12_OUT 1N	84	1_CHIP12_OUT 0N
18	0_CHIP11_OUT 1P	83	0_CHIP11_OUT 0P	18	1_CHIP11_OUT 1P	83	1_CHIP11_OUT 0P	18	1_CHIP11_OUT 1P	83	1_CHIP11_OUT 0P	18	AGND	83	DGND
19	0_CHIP11_OUT 1N	82	0_CHIP11_OUT 0N	19	1_CHIP11_OUT 1N	82	1_CHIP11_OUT 0N	19	1_CHIP11_OUT 1N	82	1_CHIP11_OUT 0N	19	AGND	82	DGND
20	0_CHIP13_OUT 1P	81	0_CHIP13_OUT 0P	20	1_CHIP13_OUT 1P	81	1_CHIP13_OUT 0P	20	1_CHIP13_OUT 1P	81	1_CHIP13_OUT 0P	20	AGND	81	DGND
21	0_CHIP13_OUT 1N	80	0_CHIP13_OUT 0N	21	1_CHIP13_OUT 1N	80	1_CHIP13_OUT 0N	21	1_CHIP13_OUT 1N	80	1_CHIP13_OUT 0N	21	AGND	80	+2.5VD
22	DGND	79	AGND	22	AGND	79	DGND	22	AGND	79	DGND	22	AGND	79	+2.5VD
23	DGND	78	AGND	23	AGND	78	DGND	23	AGND	78	DGND	23	+2.5VA	78	+2.5VD
24	0_CHIP6_OUT 1P	77	0_CHIP6_OUT 0P	24	1_CHIP6_OUT 1P	77	1_CHIP6_OUT 0P	24	+2.5VA	77	+2.5VD	24	+2.5VA	77	+2.5VD
25	0_CHIP6_OUT 1N	76	0_CHIP6_OUT 0N	25	1_CHIP6_OUT 1N	76	1_CHIP6_OUT 0N	25	+2.5VA	76	+2.5VD	25	+2.5VA	76	+2.5VD
26	0_CHIP8_OUT 1P	75	0_CHIP8_OUT 0P	26	1_CHIP8_OUT 1P	75	1_CHIP8_OUT 0P	26	+2.5VA	75	+2.5VD	26	+2.5VA	75	+2.5VD
27	0_CHIP8_OUT 1N	74	0_CHIP8_OUT 0N	27	1_CHIP8_OUT 1N	74	1_CHIP8_OUT 0N	27	+2.5VA	74	+2.5VD	27	+2.5VA	74	+2.5VD
28	0_CHIP10_OUT 1P	73	0_CHIP10_OUT 0P	28	1_CHIP10_OUT 1P	73	1_CHIP10_OUT 0P	28	AGND	73	DGND	28	+2.5VA	73	+2.5VD
29	0_CHIP10_OUT 1N	72	0_CHIP10_OUT 0N	29	1_CHIP10_OUT 1N	72	1_CHIP10_OUT 0N	29	AGND	72	DGND	29	AGND	72	+2.5VD
30	0_CHIP12_OUT 1P	71	0_CHIP12_OUT 0P	30	1_CHIP12_OUT 1P	71	1_CHIP12_OUT 0P	30	0_CHIP13_OUT 0N	71	0_CHIP13_OUT 1N	30	AGND	71	+2.5VD
31	0_CHIP12_OUT 1N	70	0_CHIP12_OUT 0N	31	1_CHIP12_OUT 1N	70	1_CHIP12_OUT 0N	31	0_CHIP13_OUT 0P	70	0_CHIP13_OUT 1P	31	AGND	70	DGND
32	DGND	69	AGND	32	AGND	69	DGND	32	0_CHIP11_OUT 0N	69	0_CHIP11_OUT 1N	32	AGND	69	DGND
33	DGND	68	AGND	33	AGND	68	DGND	33	0_CHIP11_OUT 0P	68	0_CHIP11_OUT 1P	33	AGND	68	DGND
34	0_SC_OUT0n	67	0_OUT_CLK0n	34	1_OUT_CLK1n	67	1_SC_OUT1n	34	0_CHIP9_OUT 0N	67	0_CHIP9_OUT 1N	34	0_CHIP12_OUT 0N	67	0_CHIP12_OUT 1N
35	0_SC_OUT0p	66	0_OUT_CLK0p	35	1_OUT_CLK1p	66	1_SC_OUT1p	35	0_CHIP9_OUT 0P	66	0_CHIP9_OUT 1P	35	0_CHIP12_OUT 0P	66	0_CHIP12_OUT 1P
36	DGND	65	0_BCO_CLK0n	36	1_BCO_CLK1n	65	DGND	36	0_CHIP7_OUT 0N	65	0_CHIP7_OUT 1N	36	0_CHIP10_OUT 0N	65	0_CHIP10_OUT 1N
37	DGND	64	0_BCO_CLK0p	37	1_BCO_CLK1p	64	DGND	37	0_CHIP7_OUT 0P	64	0_CHIP7_OUT 1P	37	0_CHIP10_OUT 0P	64	0_CHIP10_OUT 1P
38	DGND	63	0_SC_IN0n	38	1_SC_IN1n	63	DGND	38	0_CHIP5_OUT 0N	63	0_CHIP5_OUT 1N	38	0_CHIP8_OUT 0N	63	0_CHIP8_OUT 1N
39	DGND	62	0_SC_IN0p	39	1_SC_IN1p	62	DGND	39	0_CHIP5_OUT 0P	62	0_CHIP5_OUT 1P	39	0_CHIP8_OUT 0P	62	0_CHIP8_OUT 1P
40	DGND	61	0_RESET0n	40	1_RESET1n	61	DGND	40	AGND	61	DGND	40	0_CHIP6_OUT 0N	61	0_CHIP6_OUT 1N
41	DGND	60	0_RESET0p	41	1_RESET1p	60	DGND	41	CAL_INJECT0	60	DGND	41	0_CHIP6_OUT 0P	60	0_CHIP6_OUT 1P
42	DGND	59	AGND	42	AGND	59	DGND	42	0_CHIP4_OUT 0N	59	0_CHIP4_OUT 1N	42	DGND	59	DGND
43	DGND	58	AGND	43	AGND	58	DGND	43	0_CHIP4_OUT 0P	58	0_CHIP4_OUT 1P	43	DGND	58	DGND
44	+2.5VA	57	AGND	44	+2.5VD	57	+2.5VD	44	0_CHIP3_OUT 0N	57	0_CHIP3_OUT 1N	44	OUT_CLK0n	57	SC_OUT0p
45	+2.5VA	56	AGND	45	+2.5VD	56	+2.5VD	45	0_CHIP3_OUT 0P	56	0_CHIP3_OUT 1P	45	OUT_CLK0p	56	SC_OUT0n
46	+2.5VA	55	+2.5VA	46	+2.5VD	55	+2.5VD	46	0_CHIP2_OUT 0N	55	0_CHIP2_OUT 1N	46	DGND	55	RESET0p
47	+2.5VA	54	+2.5VA	47	+2.5VD	54	+2.5VD	47	0_CHIP2_OUT 0P	54	0_CHIP2_OUT 1P	47	DGND	54	RESET0n
48	+2.5VA	53	+2.5VA	48	+2.5VD	53	+2.5VD	48	0_CHIP1_OUT 0N	53	0_CHIP1_OUT 1N	48	SC_IN0p	53	BCO_CLK0p
49	+2.5VA	52	+2.5VA	49	+2.5VD	52	+2.5VD	49	0_CHIP1_OUT 0P	52	0_CHIP1_OUT 1P	49	SC_IN0n	52	BCO_CLK0n
50	+2.5VA	51	+2.5VA	50	+2.5VD	51	+2.5VD	50	AGND	51	DGND	50	AGND	51	DGND

信号ライン
問題なし！

CN50を用いた導通測定(AC用)

1.まずACタイプのFPCを使って、HARNESS CHECKERのリファレンスファイルを作成し、登録する。

2. マイクロ同軸ケーブルをつなげ、測定する。
→FPCのチャンネルマップ通りに導通していればOKとなる。

測定方法


CN-B
4
CN-A
3
JAEA
HARNESS CHECKER
SLAVE MODE
UNIT=1(51-100)
OK
NG
MENU
ENTER
START
CN-A
2
1
JAEA
MASTER
HARNESS CHECKER
INSPECTION
OK
OK
NG
MENU
ENTER
START

結果

AC用では、マイクロ同軸ケーブルはFPCと同じチャンネル
マップであることがわかった。

また導通チェックをしたBD用マイクロ同軸ケーブルのチャンネルマップを
CN50に登録した。今後、BD用はこれをもとに導通チェックを行う。