



# AKD4358-B

## Evaluation board Rev.0 for AK4358

### GENERAL DESCRIPTION

The AKD4358-B is an evaluation board for the AK4358. The AK4358 accepts up to 192kHz PCM data and 1-Bit DSD data making it ideal for a wide range of applications including DVD-Audio and SACD. The AKD4358-B has a digital audio interface that can interface with digital audio systems via opt-conector or RCA connector. The AKD4358-B also has several ports allowing you to interface the AK4358 to external devices such as a DSP, DSD processor or AC3 decoder.

■ **Ordering Guide**

AKD4358-B --- Evaluation board for AK4358  
 (Cable for connecting the board with printer port of an IBM-AT compatible PC and control software is packed with this. This control software does not operate on Windows NT.)

### FUNCTION

- **On-board 2nd order LPF**
- **On-board clock generator (AK4114)**
- **Compatible with 3 types of interface**
  - **Direct interface with AKM's A/D converter evaluation boards and direct interface**
  - **On-board AK4114 (DIR) that accepts optical or BNC Input.**
  - **Direct interface with DSD Decoder via 10pin header**
- **10pin header for serial control interface**
  - **Supports I2C and 3-wire control interface**

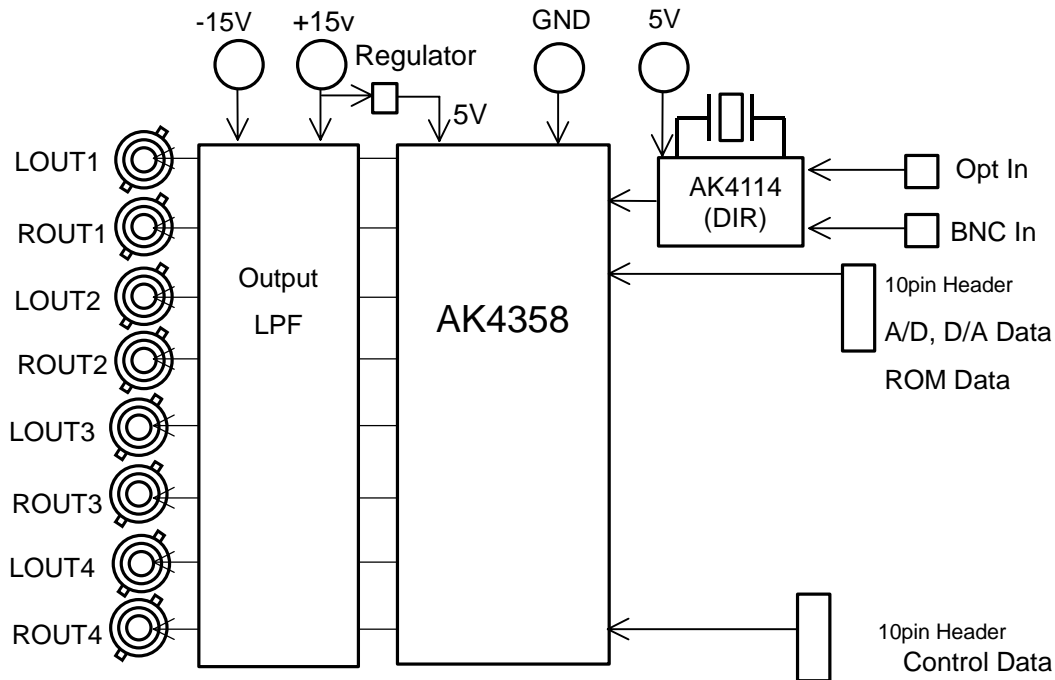


Figure 1. AKD4358-B Block Diagram

\* Circuit diagram and PCB layout are attached at the end of this manual.

■ Operation Sequence

1) Set power supply voltages in the following ranges.

[+15]	(green)	=+12V~+18V
[-15]	(blue)	= -12V~-18V
[4358_VD]	(red)	= 4.75~5.25V
[4358_VA]	(red)	= 4.75~5.25V
[4114_5V]	(red)	= 4.75~5.25V(Note2)
[AGND]	(black)	= 0V
[DGND]	(black)	= 0V

Notes: 1. Each supply line should be distributed from the power supply unit.  
 2. “4358\_VA” should be selected on JP1 (AVDD) and “4114\_5V” should be selected on JP7 (4114\_5V) if the power supplies of AK4358,digital circuit ,and DIR(AK4114) are not supplied from the regulator.

2) Set-up jumper pins and DIP switches for desired mode. (See Evaluation Mode Setup.)

3) Power on.

The AK4358 should be reset once by bringing SW1(PDN) “L” upon power-up.

■ Evaluation Mode Setup

Evaluation Modes Options

PCM Mode

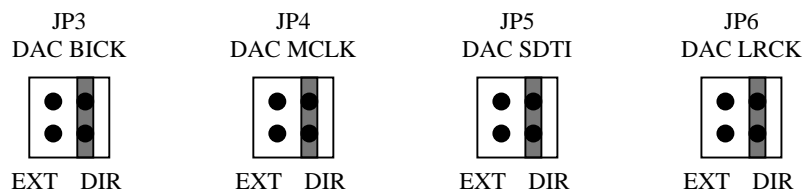
- 1) DIR (Optical Link or BNC input) (default)
- 2) Feeding PCM data and clocks from an external source

DSD Mode

- 3) Feeding 1bit data and clocks from an external source

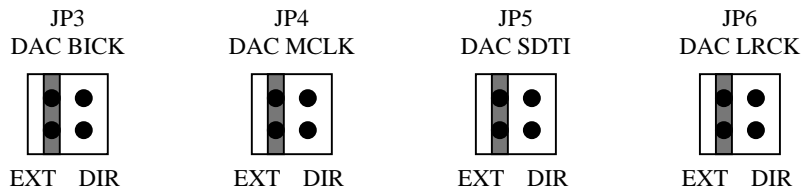
1) DIR (Optical Link or BNC) <default>

The AK4114(DIR) generates MCLK, BICK, LRCK and SDATA from the received data through PORT1(TORX141: optical link) or J9(BNC). Nothing should be connected to PORT3-5. If the desired input is the optical connector (TORX141), “TORX” should be selected on JP8(TORX/BNC). If the BNC input is desired, select “BNC” on JP8(TORX/BNC).



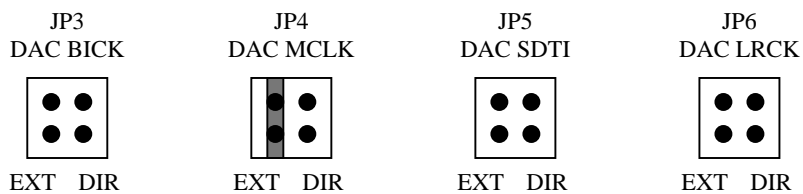
2) Feeding PCM data and clocks from an external source

The following set-up allows the MCLK, BICK, LRCK and SDATA to be fed from an external source to the AK4358. The AKD4358-B gives you two choices of ports to input these clocks and data. Use PORT3 if you want to input separate data for SDTI1, SDTI2, SDTI3, and SDTI4. Use PORT4 if you want to input only one data stream and select which AK4358 data input pins you send data to. You can select this by JP10, JP11, JP12, and JP13. Shorting these jumpers will send data to that individual SDTI pin and open will leave a pull down resistor connected to that SDTI pin.



3) Feeding 1bit data and clocks from an external source

The following set-up allows 1bit data to be fed to DCLK (pin#22), DSDL1,2,3,4(pin#25,27,29,23), and DSDR1,2,3,4(pin#26,28,30,24) pins from an external source. This is achieved by feeding these signals to PORT5(DSD\_port). Make sure JP4(DAC\_MCLK) is set to EXT, while the other PCM clock jumpers are left open.



## ■ DIP Switch Setup

AK4114 is setup using DIP switch S2. Set-up of S2 is only needed for evaluation mode 1.

\*ON is "H" and OFF is "L".

No.	Pin	Default	Description
1	CM0	OFF	Clock Mode Setup (Refer to the table 3.)
2	CM1	OFF	
3	OCKS1	ON	MCLK Frequency Setup (Refer to the table 4.)
4	OCKS0	OFF	
5	DIF0	OFF	Audio Data Format (Refer to the table 5.)
6	DIF1	OFF	
7	DIF2	ON	

Table 2. S2

CM1 (SW3-2)	CM0 (SW3-1)	MCKO	SDTO
OFF	OFF	TORX or BNC	TORX or BNC
OFF	ON	X'tal	"0" data

Table 3. AK4114 Clock Mode Setup

OCKS1 (SW3-3)	OCKS0 (SW3-4)	MCLK	LRCK	
			Normal	Double
OFF	OFF	256fs	Yes	Yes
ON	OFF	512fs	Yes	No

Table 4. AK4114 MCLK Frequency Setup

Mode	DIF2	DIF1	DIF0	DAUX	SDTO	LRCK		BICK	
							I/O		I/O
0	0	0	0	24bit, Left justified	16bit, Right justified	H/L	O	64fs	O
1	0	0	1	24bit, Left justified	18bit, Right justified	H/L	O	64fs	O
2	0	1	0	24bit, Left justified	20bit, Right justified	H/L	O	64fs	O
3	0	1	1	24bit, Left justified	24bit, Right justified	H/L	O	64fs	O
4	1	0	0	24bit, Left justified	24bit, Left justified	H/L	O	64fs	O
5	1	0	1	24bit, I <sup>2</sup> S	24bit, I <sup>2</sup> S	L/H	O	64fs	O
6	1	1	0	24bit, Left justified	24bit, Left justified	H/L	I	64-128fs	I
7	1	1	1	24bit, I <sup>2</sup> S	24bit, I <sup>2</sup> S	L/H	I	64-128fs	I

Table 5. AK4114 Audio Data Format

AK4358 is setup using DIP switch S3.

\*ON is "H" and OFF is "L".

No.	Pin	Default	Description
1	CAD0	OFF	Chip address setup
2	CAD1	OFF	Chip address setup (I <sup>2</sup> C only)
3	I2C	OFF	I2C pin select OFF: 3wire, ON I <sup>2</sup> C
4	DIF0	OFF	DIF0pin select
5	ACKSN	OFF	ACKSN pin select

Table 6. S3

## ■ Jumpers Descriptions

[JP1](AVDD)	: AVDD supply selection for the AK4358
REG	: AVDD is supplied from the regulator. <default>
4358_AVDD	: AVDD is supplied from “4358_AVDD” jack.
[JP2](DVDD)	: DVDD supply selection for the AK4358
AVDD	: DVDD is supplied from the selected AVDD source through a 5Ω resistor. <default>
4358_VD	: DVDD is supplied from “4358_DVDD” jack.
[JP3](DAC_BICK)	: BICK clock selection for the AK4358
EXT	: External port supplies BICK to AK4358
DIR	: DIR (AK4114) supplies BICK to AK4358. <default>
[JP4](DAC_MCLK)	: MCLK clock selection for the AK4358
EXT	: External port supplies MCLK to AK4358
DIR	: DIR (AK4114) supplies MCLK to AK4358. <default>
[JP5](DAC_SDTI)	: SDTI pins data selection for the AK4358
EXT	: External port supplies data to the AK4358
DIR	: DIR (AK4114) supplies data to AK4358. <default>
[JP6](DAC_LRCK)	: LRCK clock selection for the AK4358
EXT	: External port supplies LRCK to AK4358
DIR	: DIR (AK4114) supplies LRCK to AK4358. <default>
[JP7](4114_5V)	: 5V supply selection for the AK4114
4358_VD	: AK4114 is supplied from the selected DVDD source for the AK4358. <default>
4114_5V	: AK4114 is supplied from “4114_5V” jack.
[JP8](TORX/BNC)	: The source of the biphas signal input to AK4114
TORX	: PORT1(TORX141: optical link) <default>
BNC	: J3(BNC)
[JP9](GND)	: Digital GND and Analog GND
Open	: Digital GND and Analog GND are disconnected.
Short	: Digital GND and Analog GND are connected. <default>
[JP10-13](SDTI1-4)	: SDTI1-4 selection for the AK4358
Open	: Input “0” data
Short	: Input data <default>

## ■ Toggle SW Function

[SW1] (DIR_PDN)	: Resets the AK4114 and AK4358. Keep “H” during normal operation.
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## ■ The indication content for LED

[LE1] (DZF1)	: Zero detection
[LE2] (DZF2)	: Zero detection
[LE3] (DZF3)	: Zero detection
[LE4] (INT1)	: AK4114 Error flag. Please refer to AK4114 datasheet for specific error codes.
[LE5] (INT0)	: AK4114 Error flag. Please refer to AK4114 datasheet for specific error codes.

■ **Serial control**

The AKD4358-B can be controlled via the printer port (parallel port) of an IBM-AT compatible PC. Connect PORT2(uP-I/F) to the PC with the 10-wire flat ribbon cable packed with the AKD4358-B.

Pay attention to the direction of the 10pin header. There is a mark at 1pin. The pin layout of PORT2 is shown in Figure 2. Proper connection makes the flat ribbon cable going away from the board.

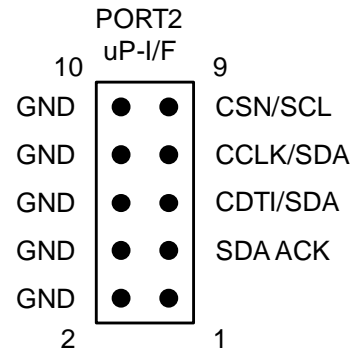


Figure 2. Control port pin layout

■ **Interface with AC3 decoder**

PORT3(AC3) is used for interface with an AC3 decoder. MCLK, BICK, LRCK and 4-line serial data can be input from the decoder via PORT3. Pin layout of PORT3 is shown in Figure3.

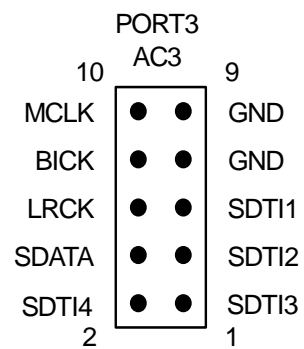


Figure 3. AC3 port pin layout

■ **EXT Interface**

PORT4(EXT) is used for interface with external device. MCLK, BICK, LRCK and SDATA can be input from DSP or decoder via PORT4. Pin layout of PORT4 is shown in Figure4.

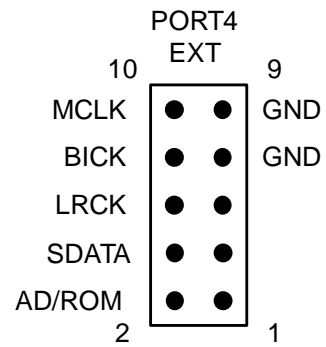


Figure 4. EXT port pin layout

■ **Interface with DSD decoder**

PORT5(DSD\_port) is used for interface with DSD decoder. Pin layout of PORT5 is shown in Figure5.

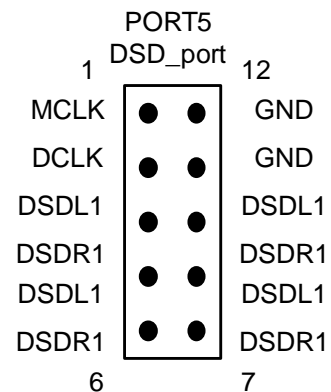
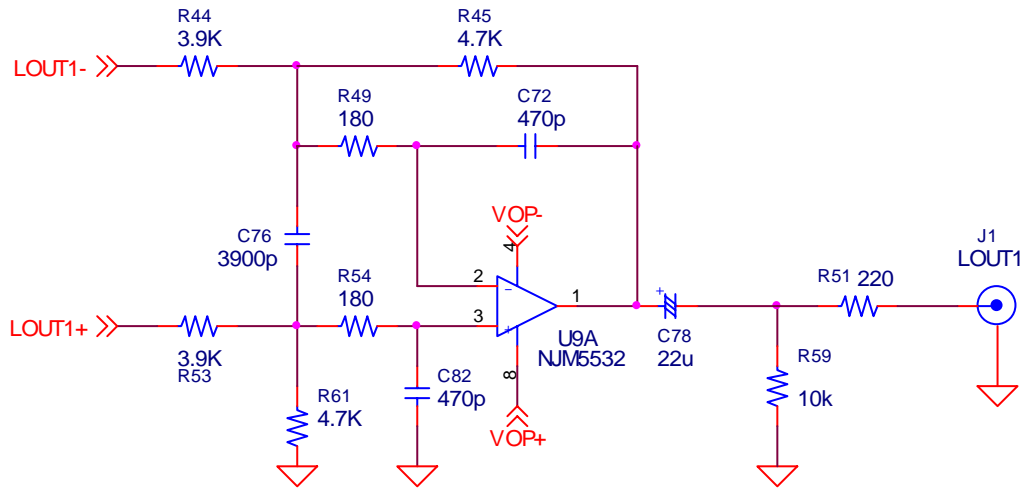


Figure 5. DSD port pin layout

■ External analog circuit

The 2nd order LPF is implemented on the board in order to sum the differential outputs of the AK4358 and attenuate out of band noise.



<b>Control Software Manual</b>
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### ■ Set-up of evaluation board and control software

1. Set up the AKD4358-B according to previous term.
2. Connect IBM-AT compatible PC with AKD4358-B by 10-line type flat cable (packed with AKD4358-B ). Take care of the direction of 10pin header. (Please install the driver in the CD-ROM when this control software is used on Windows 2000/XP. Please refer “Installation Manual of Control Software Driver by AKM device control software”. In case of Windows95/98/ME, this installation is not needed. This control software does not operate on Windows NT.)
3. Insert the CD-ROM labeled “AKD4358-B Evaluation Kit” into the CD-ROM drive.
4. Access the CD-ROM drive and double-click the icon of “akd4358-b.exe” to set up the control program.
5. Then please evaluate according to the follows.

### ■ Operation flow

Keep the following flow.

1. Set up the control program according to explanation above.
2. Click “Port Reset” button.

### ■ Explanation of each buttons

1. [Port Reset] : Set up the USB interface board (AKDUSBIF-A) .
2. [Write default] : Initialize the register of AKD4358-B.
3. [All Write] : Write all registers that is currently displayed.
4. [Function1] : Dialog to write data by keyboard operation.
5. [Function2] : Dialog to write data by keyboard operation.
6. [Function3] : The sequence of register setting can be set and executed.
7. [Function4] : The sequence that is created on [Function3] can be assigned to buttons and executed.
8. [Function5]: The register setting that is created by [SAVE] function on main window can be assigned to buttons and executed.
9. [SAVE] : Save the current register setting.
10. [OPEN] : Write the saved values to all register.
11. [Write] : Dialog to write data by mouse operation.

### ■ Indication of data

Input data is indicated on the register map. Red letter indicates “H” or “1” and blue one indicates “L” or “0”. Blank is the part that is not defined in the datasheet.



## ■ Explanation of each dialog

### 1. [Write Dialog]: Dialog to write data by mouse operation

There are dialogs corresponding to each register.

Click the [Write] button corresponding to each register to set up the dialog. If you check the check box, data becomes "H" or "1". If not, "L" or "0".

If you want to write the input data to AK4359, click [OK] button. If not, click [Cancel] button.

### 2. [Function1 Dialog] : Dialog to write data by keyboard operation

Address Box: Input registers address in 2 figures of hexadecimal.

Data Box: Input registers data in 2 figures of hexadecimal.

If you want to write the input data to AK4358-B, click [OK] button. If not, click [Cancel] button.

### 3. [Function2 Dialog] : Dialog to evaluate ATT

Address Box: Input registers address in 2 figures of hexadecimal.

Start Data Box: Input starts data in 2 figures of hexadecimal.

End Data Box: Input end data in 2 figures of hexadecimal.

Interval Box: Data is written to AK4642 by this interval.

Step Box: Data changes by this step.

Mode Select Box:

If you check this check box, data reaches end data, and returns to start data.

[Example] Start Data = 00, End Data = 09

Data flow: 00 01 02 03 04 05 06 07 08 09 09 08 07 06 05 04 03 02 01 00

If you do not check this check box, data reaches end data, but does not return to start data.

[Example] Start Data = 00, End Data = 09

Data flow: 00 01 02 03 04 05 06 07 08 09

If you want to write the input data to AK4359, click [OK] button. If not, click [Cancel] button.

#### 4. [Save] and [Open]

##### 4-1. [Save]

Save the current register setting data. The extension of file name is “akr”.

(Operation flow)

- (1) Click [Save] Button.
- (2) Set the file name and push [Save] Button. The extension of file name is “akr”.

##### 4-2. [Open]

The register setting data saved by [Save] is written to AK4359. The file type is the same as [Save].

(Operation flow)

- (1) Click [Open] Button.
- (3) Select the file (\*.akr) and Click [Open] Button.

**(4) 5. [Function3 Dialog]**

The sequence of register setting can be set and executed.

(1) Click [F3] Button.

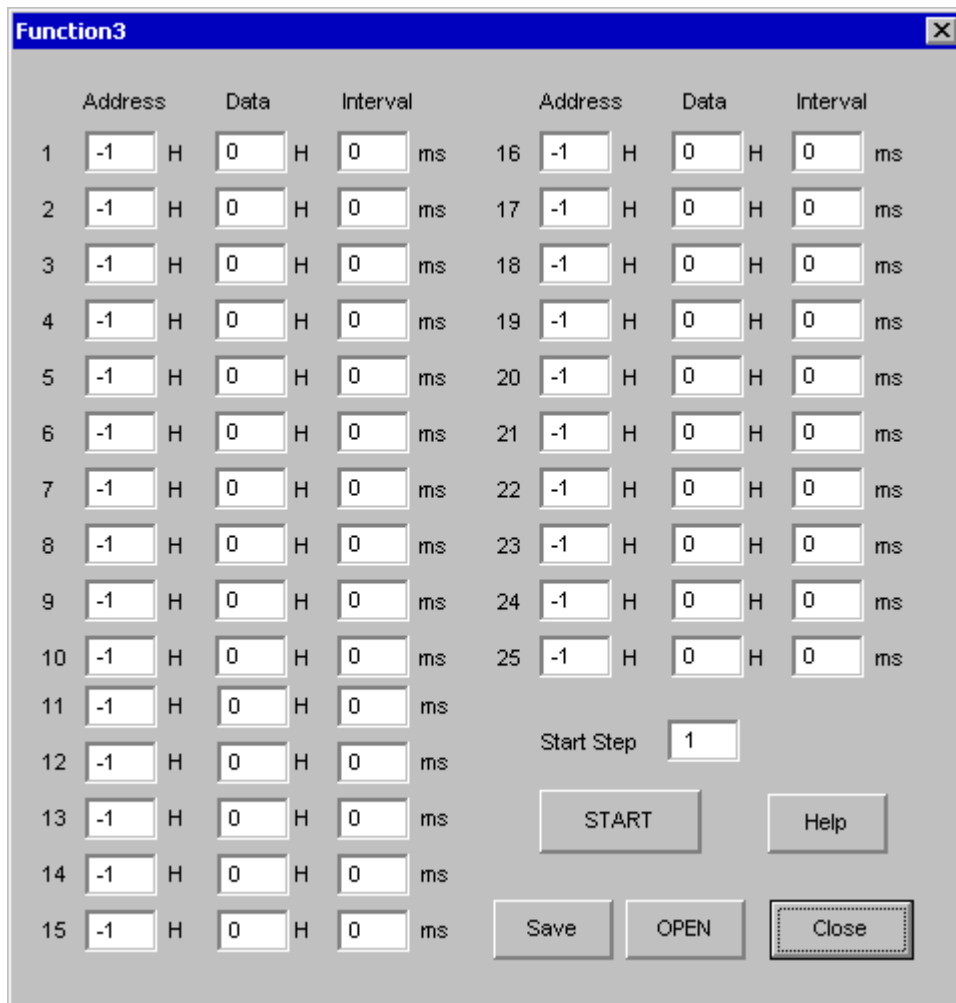
(2) Set the control sequence.

Set the address, Data and Interval time. Set "-1" to the address of the step where the sequence should be paused.

(3) Click [Start] button. Then this sequence is executed.

The sequence is paused at the step of Interval="-1". Click [START] button, the sequence restarts from the paused step.

This sequence can be saved and opened by [Save] and [Open] button on the Function3 window. The extension of file name is "aks".



**Figure 1. Window of [F3]**

6. [Function4 Dialog]

The sequence that is created on [Function3] can be assigned to buttons and executed. When [F4] button is clicked, the window as shown in Figure 2 opens.

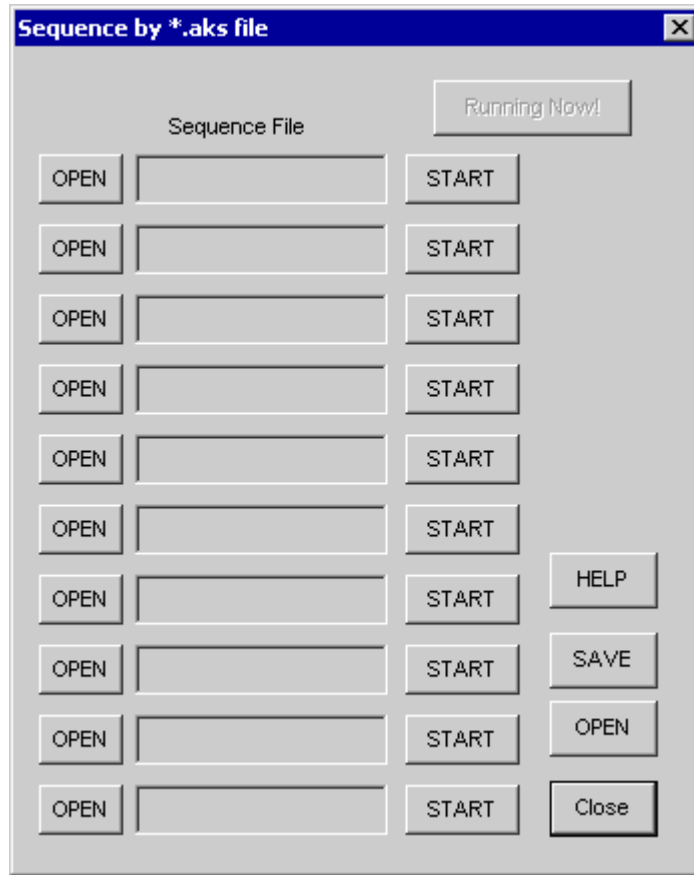
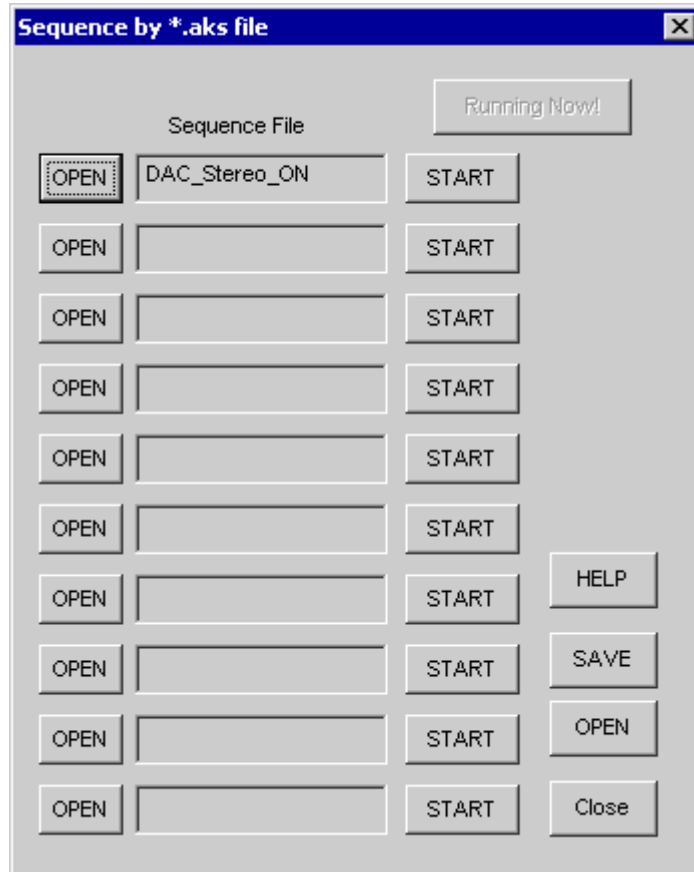


Figure 2. [F4] window

**6-1. [OPEN] buttons on left side and [START] buttons**

(1) Click [OPEN] button and select the sequence file (\*.aks).

The sequence file name is displayed as shown in Figure 3.



**Figure 3. [F4] window(2)**

(2) Click [START] button, then the sequence is executed.

**3-2. [SAVE] and [OPEN] buttons on right side**

[SAVE] : The sequence file names can assign be saved. The file name is \*.ak4.

[OPEN] : The sequence file names assign that are saved in \*.ak4 are loaded.

**3-3. Note**

(1) This function doesn't support the pause function of sequence function.

(2) All files need to be in same folder used by [SAVE] and [OPEN] function on right side.

(3) When the sequence is changed in [Function3], the file should be loaded again in order to reflect the change.

## 7. [Function5 Dialog]

The register setting that is created by [SAVE] function on main window can be assigned to buttons and executed. When [F5] button is clicked, the following window as shown in Figure 4 opens.

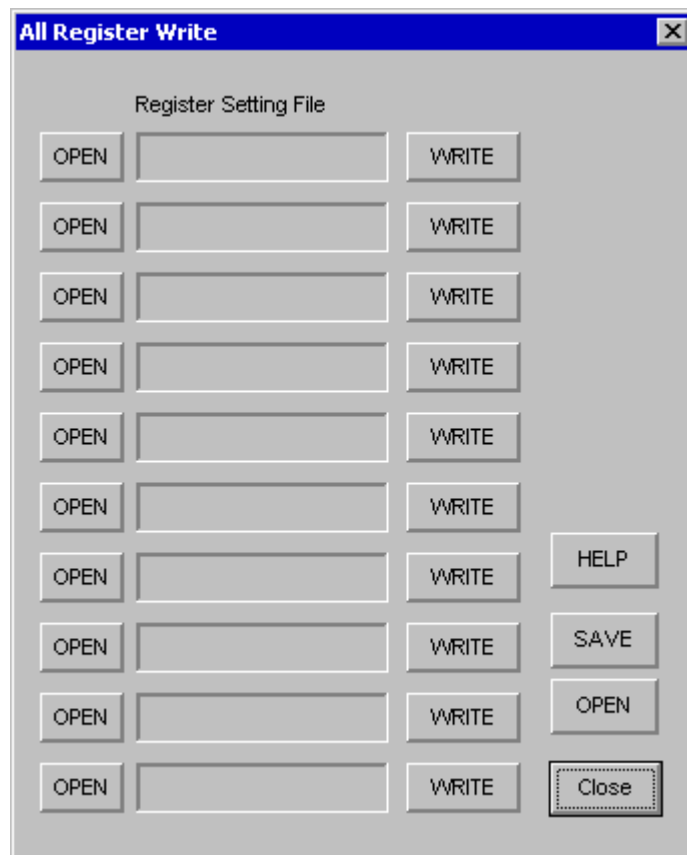


Figure 4. [F5] window

### 7-1. [OPEN] buttons on left side and [WRITE] button

- (1) Click [OPEN] button and select the register setting file (\*.akr).
- (2) Click [WRITE] button, then the register setting is executed.

### 7-2. [SAVE] and [OPEN] buttons on right side

[SAVE] : The register setting file names assign can be saved. The file name is \*.ak5.

[OPEN] : The register setting file names assign that are saved in \*.ak5 are loaded.

### 7-3. Note

- (1) All files need to be in same folder used by [SAVE] and [OPEN] function on right side.
- (2) When the register setting is changed by [Save] Button in main window, the file should be loaded again in order to reflect the change.

**MEASUREMENT RESULTS**

[Measurement condition]

- Measurement unit : Audio Precision System two Cascade
- MCLK : 512fs(44.1kHz),256fs(96kHz),128fs(192kHz)
- BICK : 64fs
- fs : 44.1kHz,96kHz,192kHz
- BW : 20Hz~20kHz(fs=44.1kHz),40Hz~40kHz(fs=96kHz,192kHz)
- Bit : 24bit
- Power Supply : VDD=5V
- Interface : DIR(44.1kHz,96kHz), Cascade Dual BNC(fs=192kHz)
- Temperature : Room
- Board : AKD4358-B Rev.B
- DIR : AK4114

PCM mode

fs=44.1kHz DIR AK4114

Parameter	Input signal	Measurement filter	Lch	Rch
S/(N+D)	1kHz, 0dB	20kLPF	93.5dB	93.8dB
S/(N+D)	1kHz, 0dB	20kLPF	98.0dB	98.1dB
DR	1kHz, -60dB	22kLPF, A-weighted	110.4dB	110.4dB
S/N	“0”data	22kLPF, A-weighted	110.7dB	110.7dB

Only 2ch operation

fs=96kHz

Parameter	Input signal	Measurement filter	Lch	Rch
S/(N+D)	1kHz, -0dB	40kLPF	93.4dB	93.7dB
DR	1kHz, -60dB	40kLPF	103.6dB	103.6dB
		22kLPF, A-weighted	109.6dB	109.7dB
S/N	“0”data	22kLPF, A-weighted	110.7dB	110.6dB

fs=192kHz

Parameter	Input signal	Measurement filter	Lch	Rch
S/(N+D)	1kHz, -0dB	40kLPF	91.8dB	92.0dB
DR	1kHz, -60dB	40kLPF	103.4dB	103.6dB
		22kLPF, A-weighted	109.6dB	109.7dB
S/N	“0”data	22kLPF, A-weighted	110.3dB	110.4dB

DSD mode

fs=44.1kHz DIR AK4114

Parameter	Input signal	Measurement filter	Lch	Rch
S/(N+D)	1kHz, 0dB	20kLPF	93.0dB	93.6dB
S/(N+D)	1kHz, 0dB	20kLPF	97.1dB	97.4dB
DR	1kHz, -60dB	22kLPF, A-weighted	110.4dB	110.6dB
S/N	“0”data	22kLPF, A-weighted	110.6dB	110.8dB

Only 2ch operation

## ■ Plot

[Measurement condition]

- Measurement unit : Audio Precision, System two, Cascade (fs=44.1kHz, 96kHz)
- MCLK : 512fs(44.1kHz), 256fs(96kHz), 128fs(192kHz)
- BICK : 64fs
- fs : 44.1kHz, 96kHz, 192kHz
- BW : 20Hz~20kHz(fs=44.1kHz), 40Hz~40kHz(fs=96kHz, 192kHz)
- Bit : 24bit
- Power Supply : VDD=5V
- Interface : DIR (44.1kHz, 96kHz), Cascade Double wire(fs=192kHz)
- temperature : room

### 1. PCM mode

fs=44.1kHz

- Figure 1. FFT (1kHz, 0dBFS input)
- Figure 2. FFT (1kHz, -60dBFS input)
- Figure 3. FFT (Noise floor)
- Figure 4. FFT (Out-of-band noise)
- Figure 5. THD+N vs Input Level (fin=1kHz)
- Figure 6. THD+N vs fin (Input Level=0dBFS)
- Figure 7. Linearity (fin=1kHz)
- Figure 8. Cross-talk (Input Level=0dBFS)
- Figure 9. Frequency Response (Input Level=0dBFS)

fs=96kHz

- Figure 10. FFT (1kHz, 0dBFS input)
- Figure 11. FFT (1kHz, -60dBFS input)
- Figure 12. FFT (Noise floor)
- Figure 13. FFT (Out-of-band noise)
- Figure 14. THD+N vs Input Level (fin=1kHz)
- Figure 15. THD+N vs fin (Input Level=0dBFS)
- Figure 16. Linearity (fin=1kHz)
- Figure 17. Cross-talk (Input Level=0dBFS)
- Figure 18. Frequency Response (Input Level=0dBFS)



fs=192kHz

Figure 19. FFT (1kHz, 0dBFS input)

Figure 20. FFT (1kHz, -60dBFS input)

Figure 21. FFT (Noise floor)

Figure 22. FFT (Out-of-band noise)

Figure 23. THD+N vs Input Level (fin=1kHz)

Figure 24. THD+N vs fin (Input Level=0dBFS)

Figure 25. Linearity (fin=1kHz)

Figure 26. Cross-talk (Input Level=0dBFS)

Figure 27. Frequency Response (Input Level=0dBFS)

## 2. DSD mode

Figure 28. FFT (1kHz, 0dBFS input)

Figure 29. FFT (1kHz, -60dBFS input)

Figure 30. FFT (Noise floor)

1 PCM mode

fs=44.1kHz

AKM

AK4358 FFT

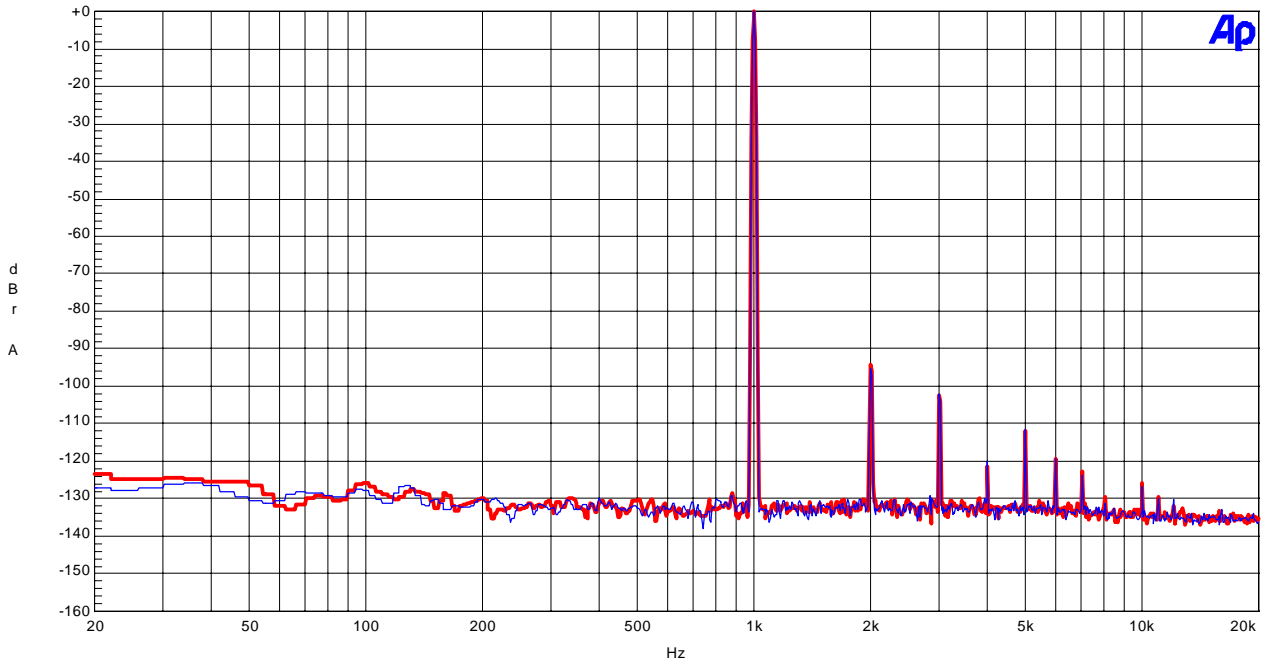


Figure 1. FFT (1kHz, 0dBFS input)

AKM

AK4358 FFT

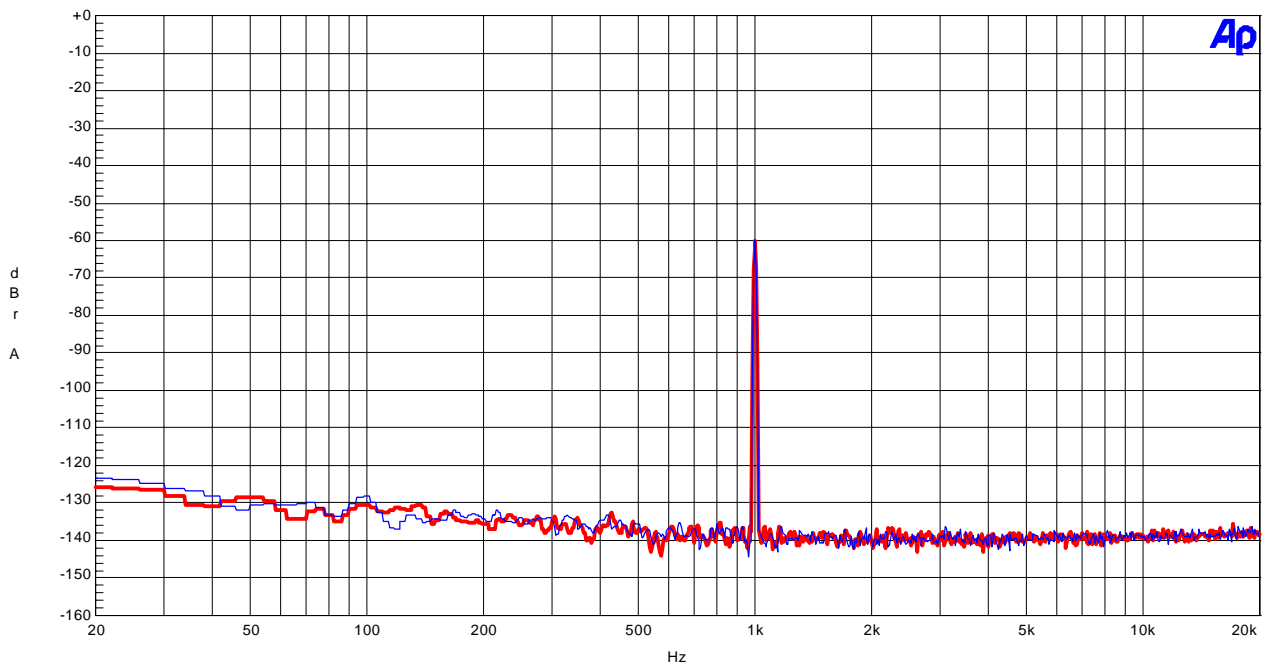


Figure 2. FFT (1kHz, -60dBFS input)

AKM

AK4358 FFT

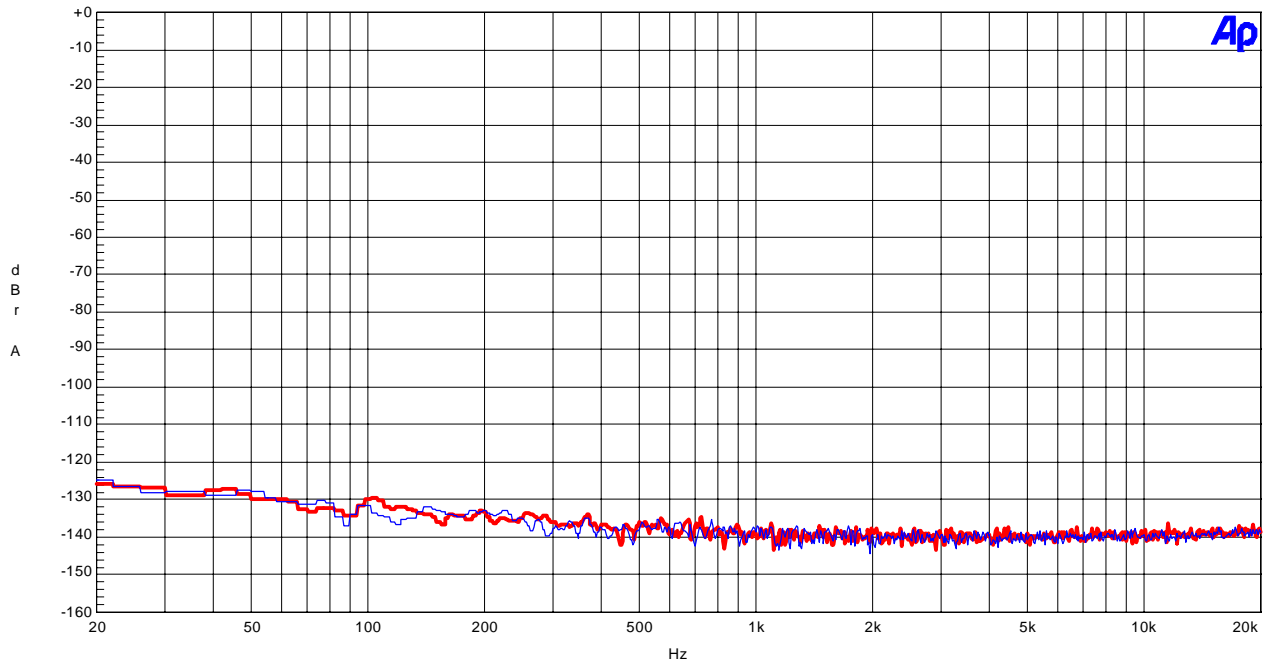


Figure 3. FFT (Noise floor)

AKM

AK4358 FFT

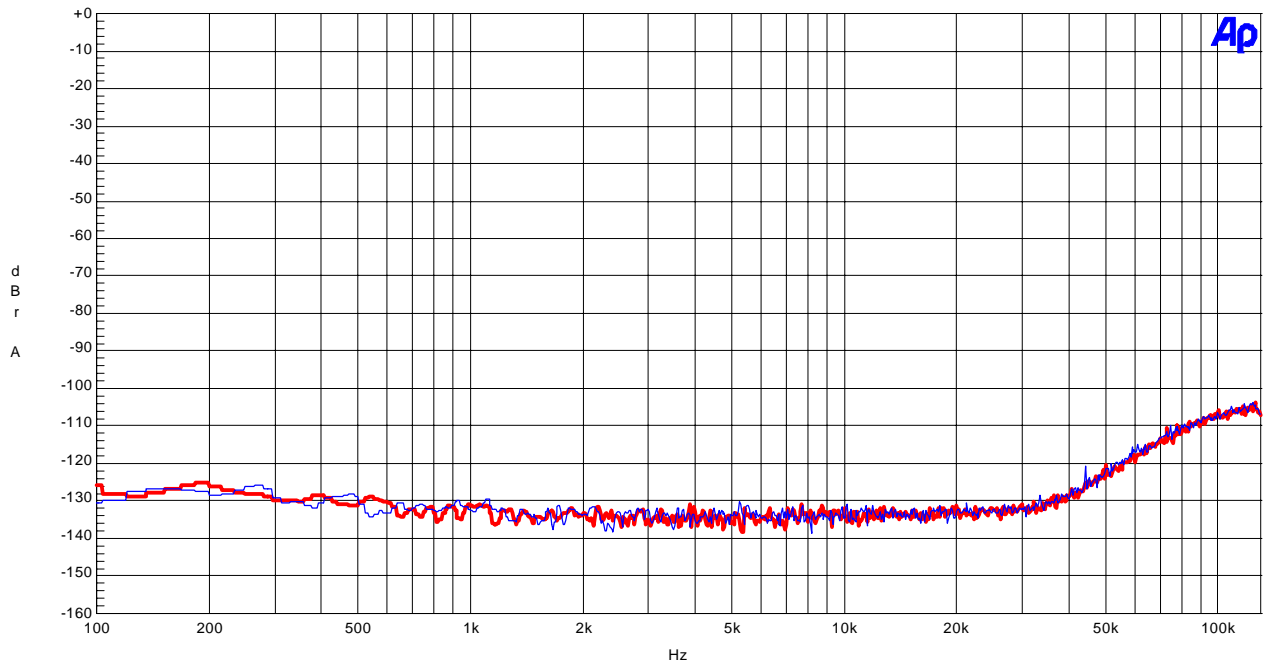


Figure 4. FFT (Out-of-band noise)

AKM

AK4358 THD+N vs Amplitude

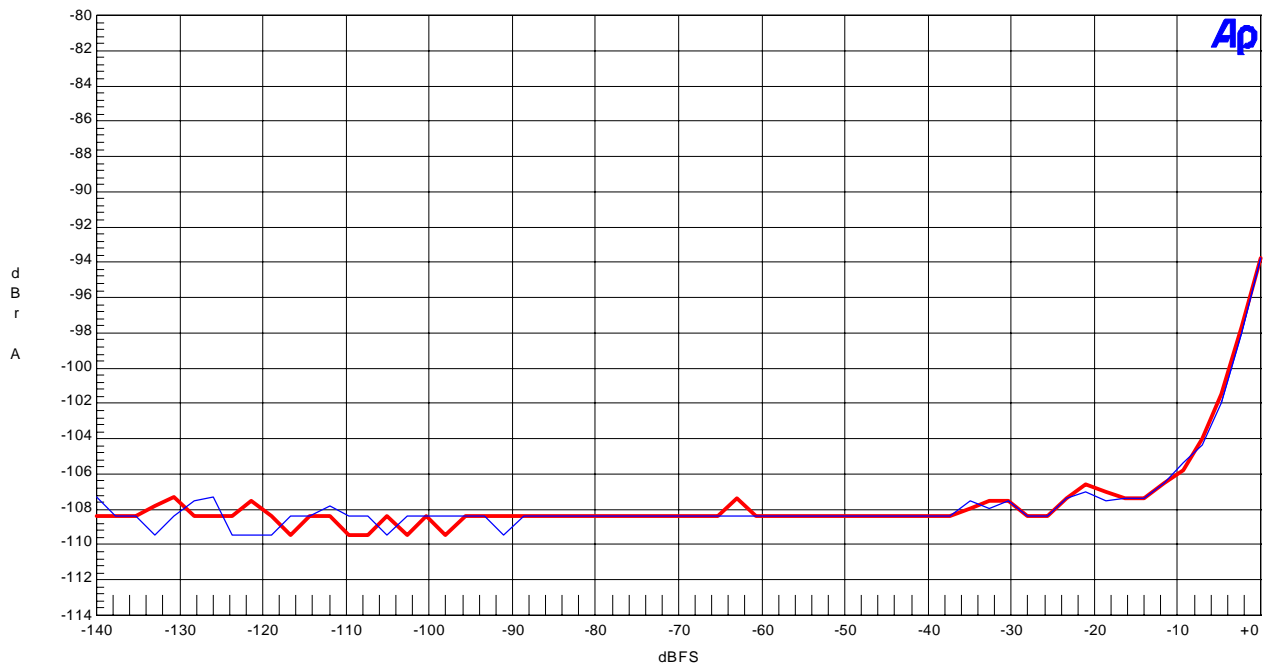


Figure 5. THD+N vs Input Level (f<sub>in</sub>=1kHz)

AKM

AK4358 THD+N vs Frequency

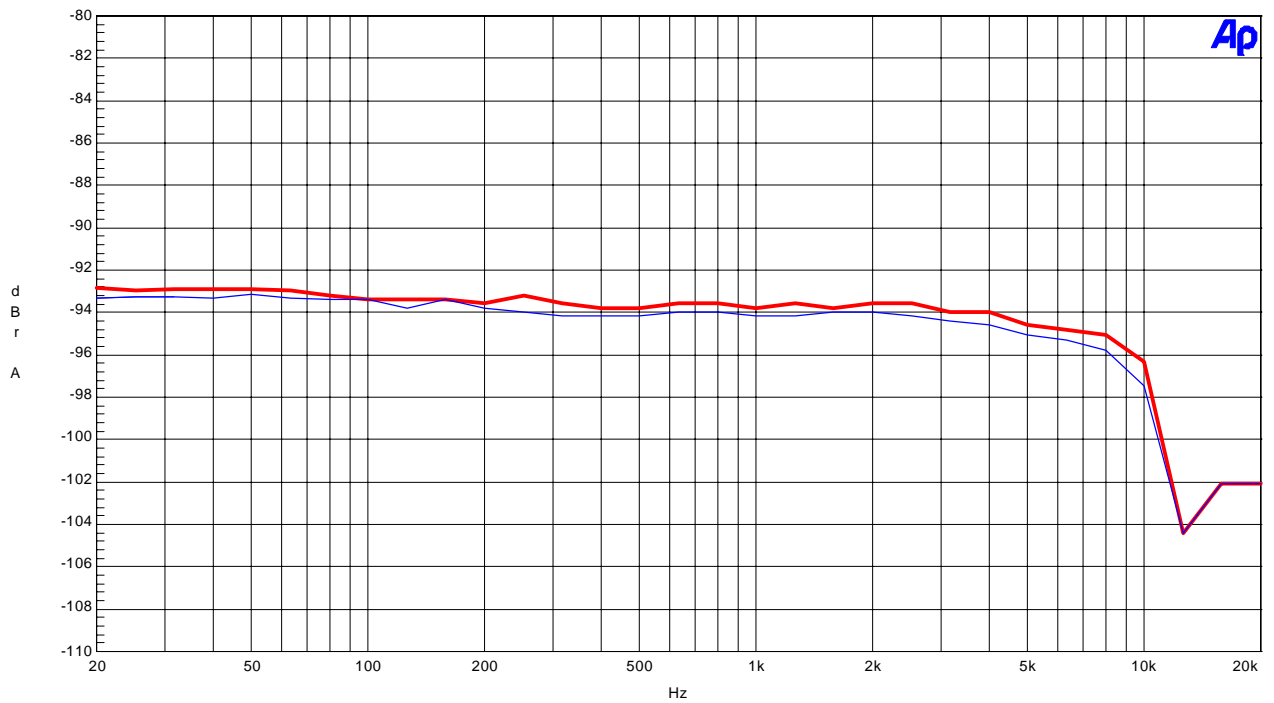


Figure 6. THD+N vs f<sub>in</sub> (Input Level=0dBFS)

AKM

AK4358 Linearity

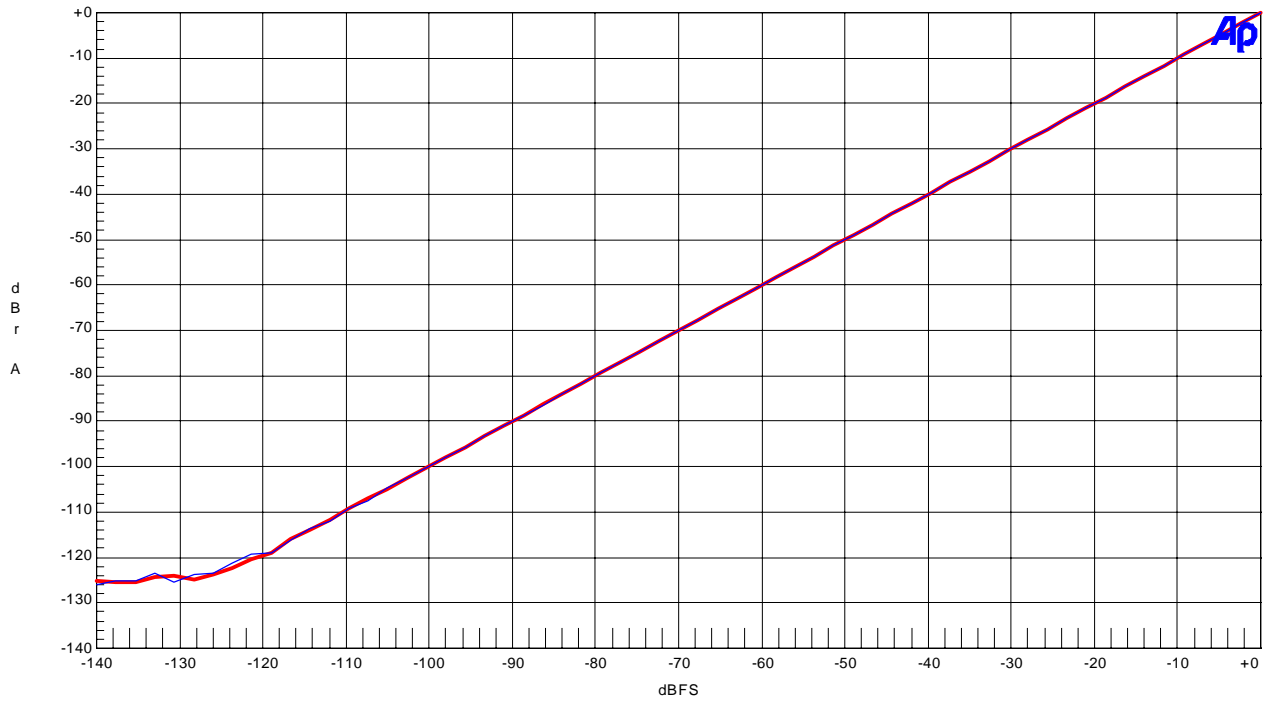


Figure 7. Linearity (fin=1kHz)

AKM

AK4358 crosstalk  
upper@1kHz Rch->Lch, lower@1kHz Lch->Rch

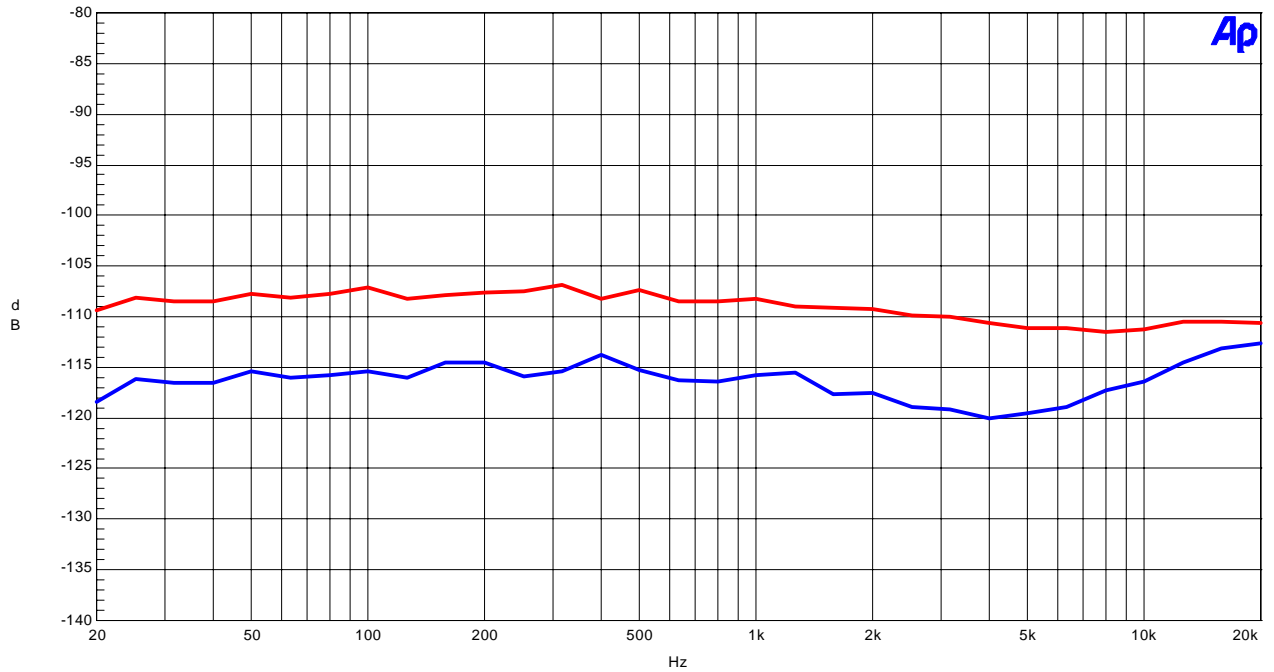


Figure 8. Cross-talk (Input Level=0dBFS)

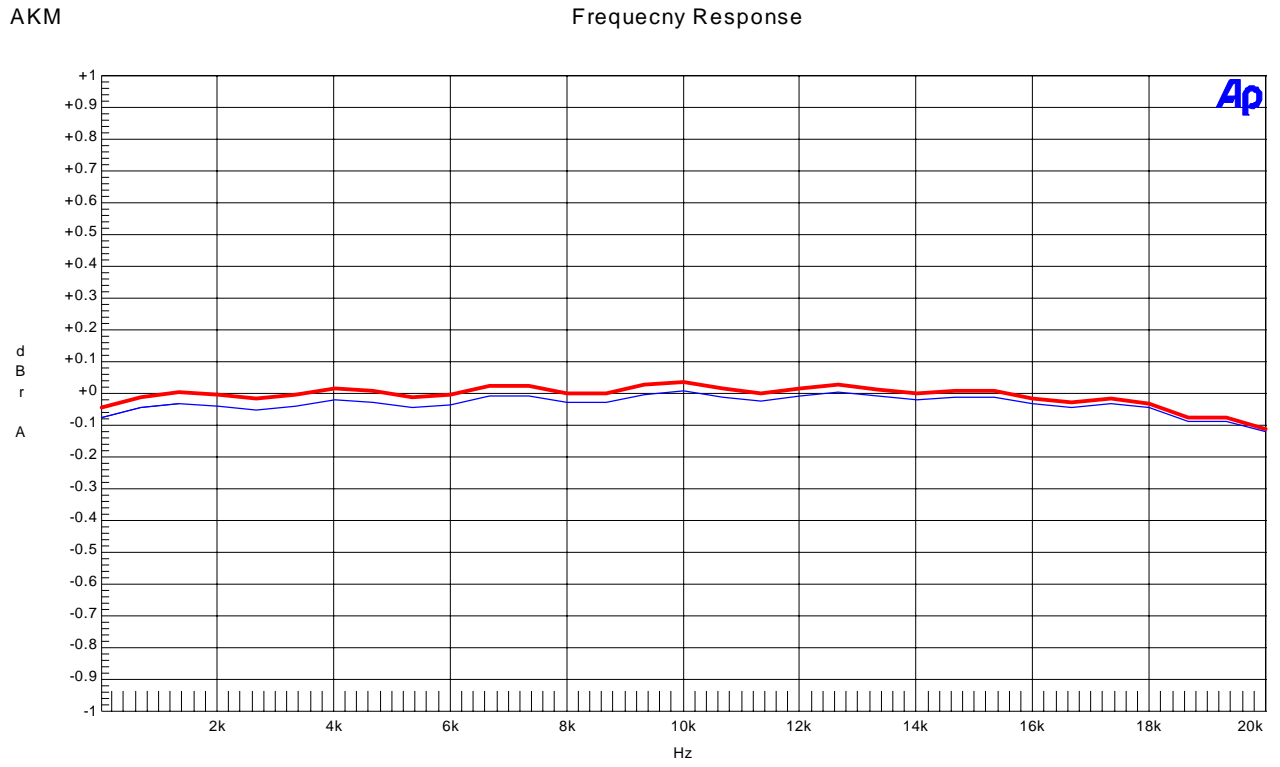


Figure 9. Frequency Response (Input Level=0dBFS)

fs=96kHz

AKM

AK4358 FFT

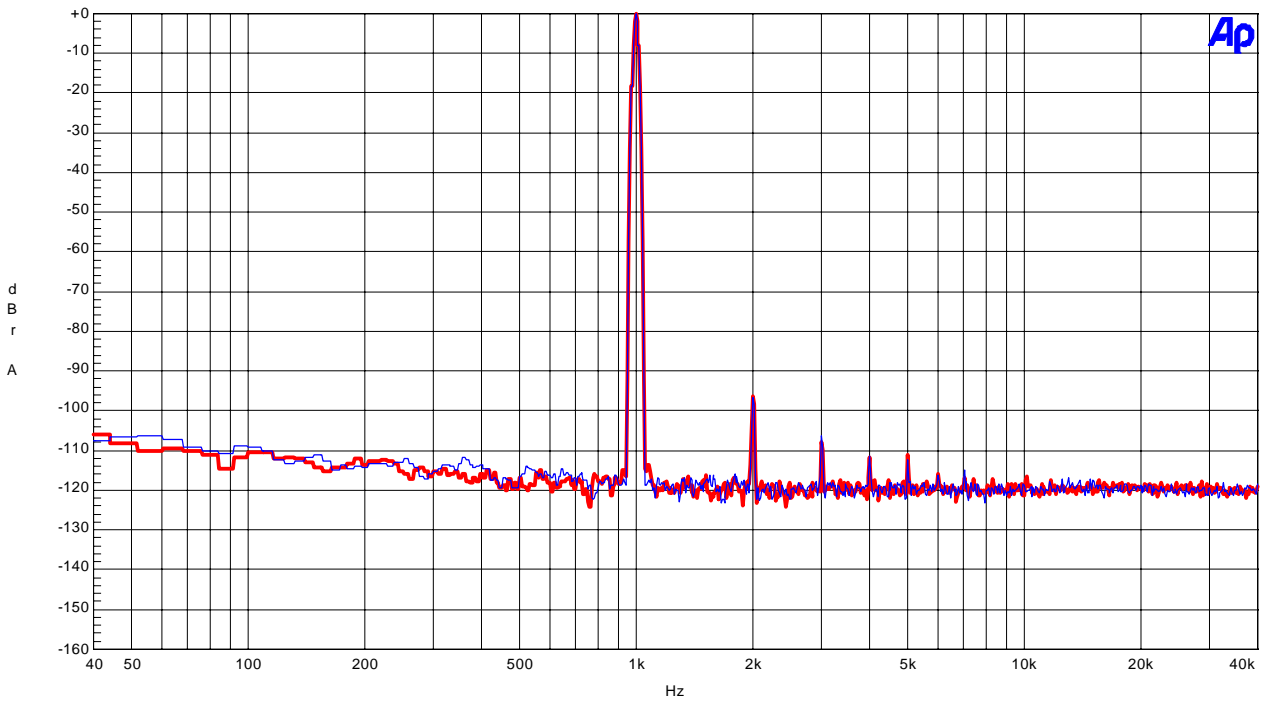


Figure 10. FFT (1kHz, 0dBFS input)

AKM

AK4358 FFT

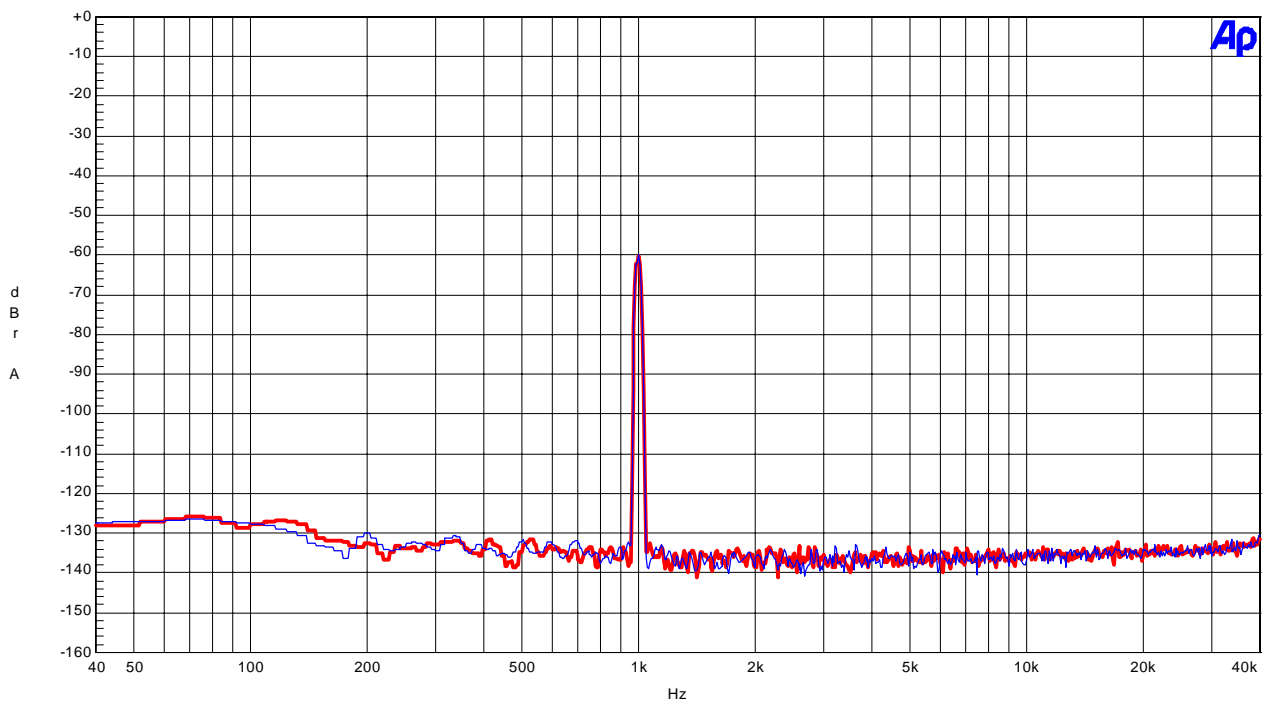


Figure 11. FFT (1kHz, -60dBFS input)

AKM

AK4358 FFT

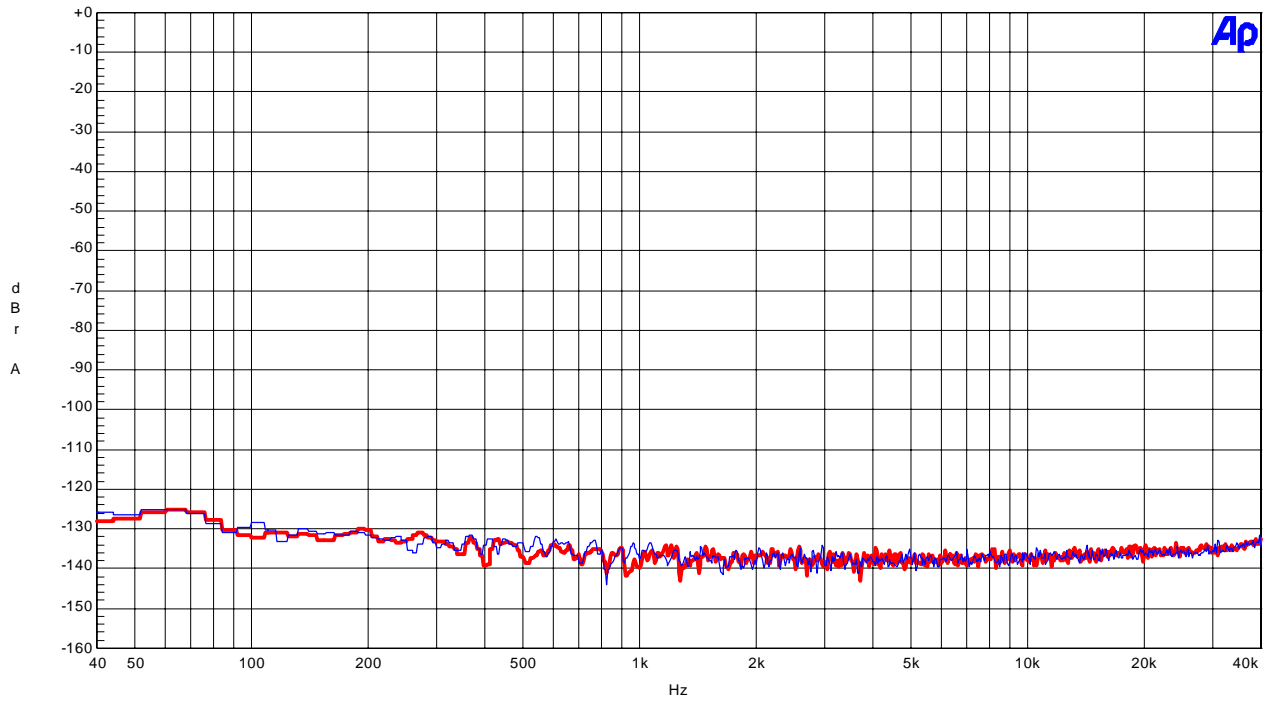


Figure 12. FFT (Noise floor)

AKM

AK4358 FFT

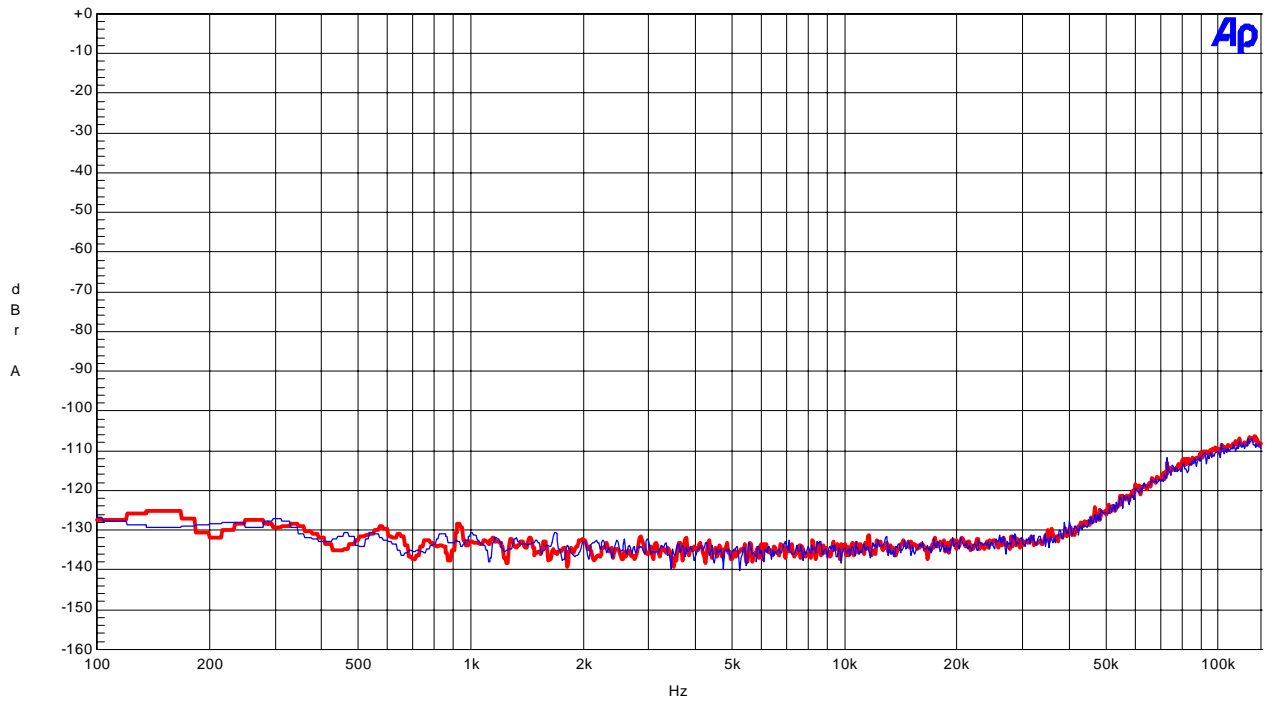


Figure 13. FFT (Out-of-band noise)



AKM

AK4358 THD+N vs Amplitude

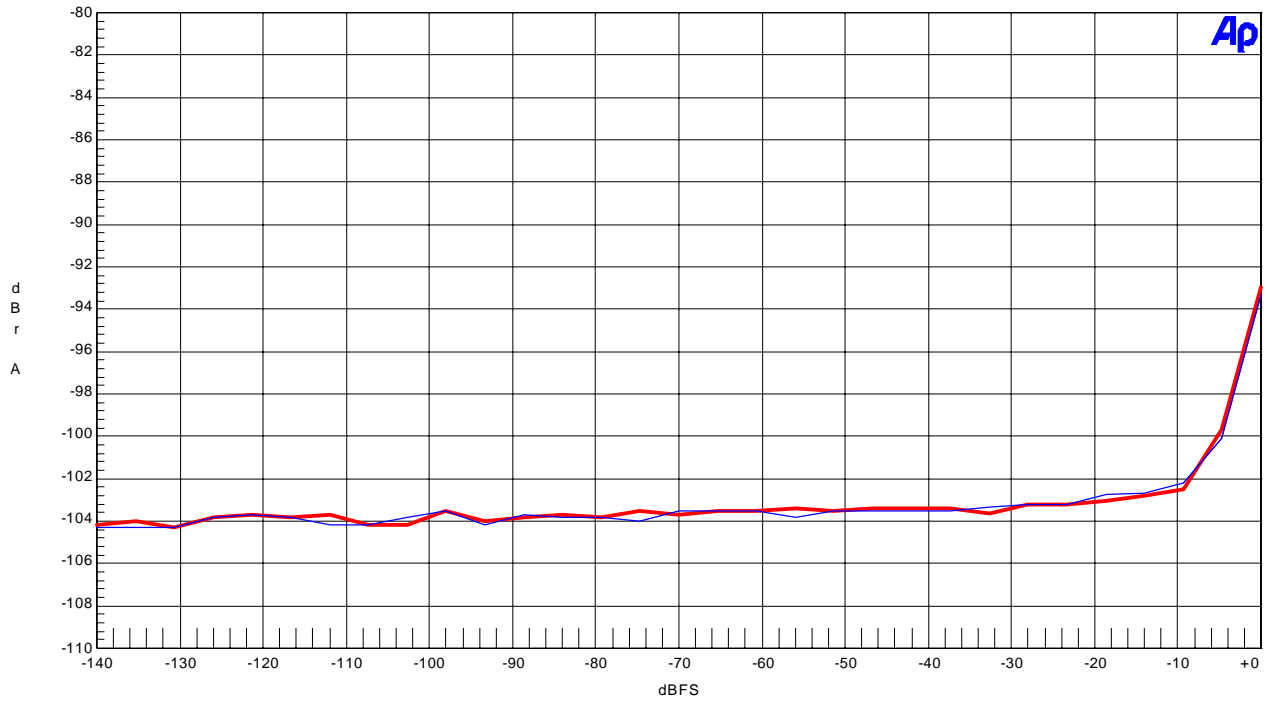


Figure 14. THD+N vs Input Level (fin=1kHz)

AKM

AK4358 THD+N vs Amplitude

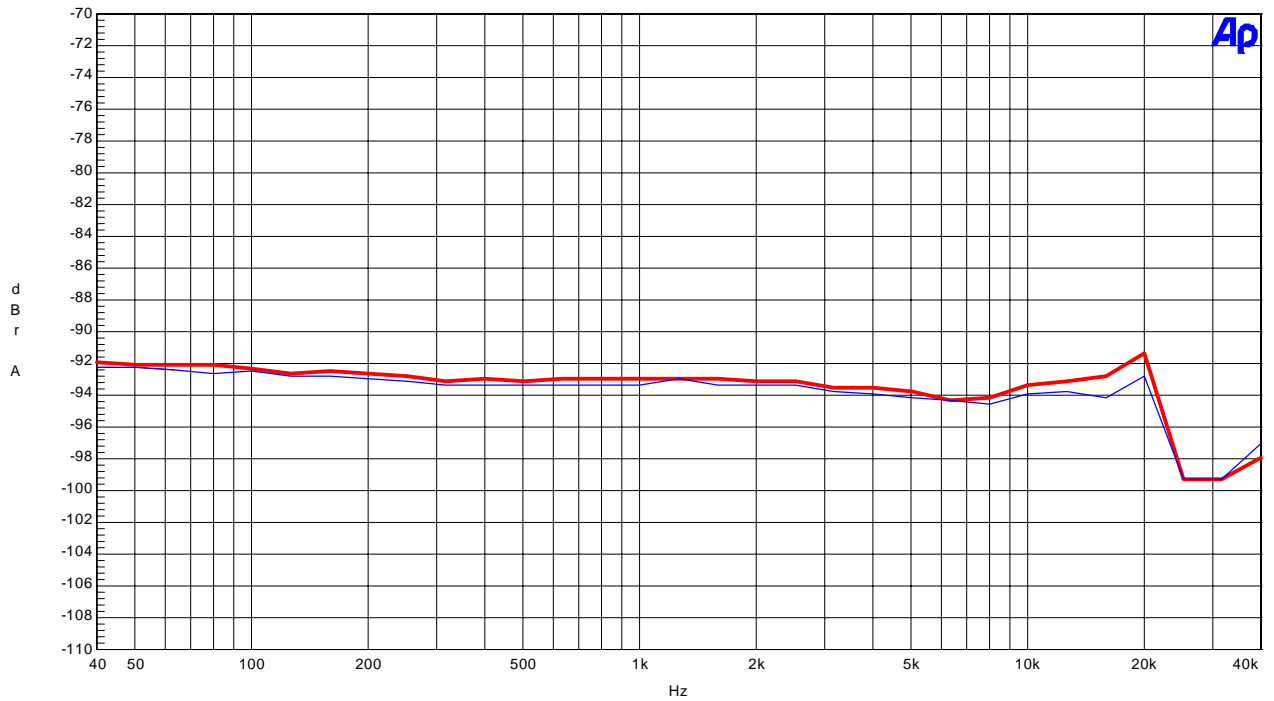


Figure 15. THD+N vs fin (Input Level=0dBFS)

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AK4358 Linearity

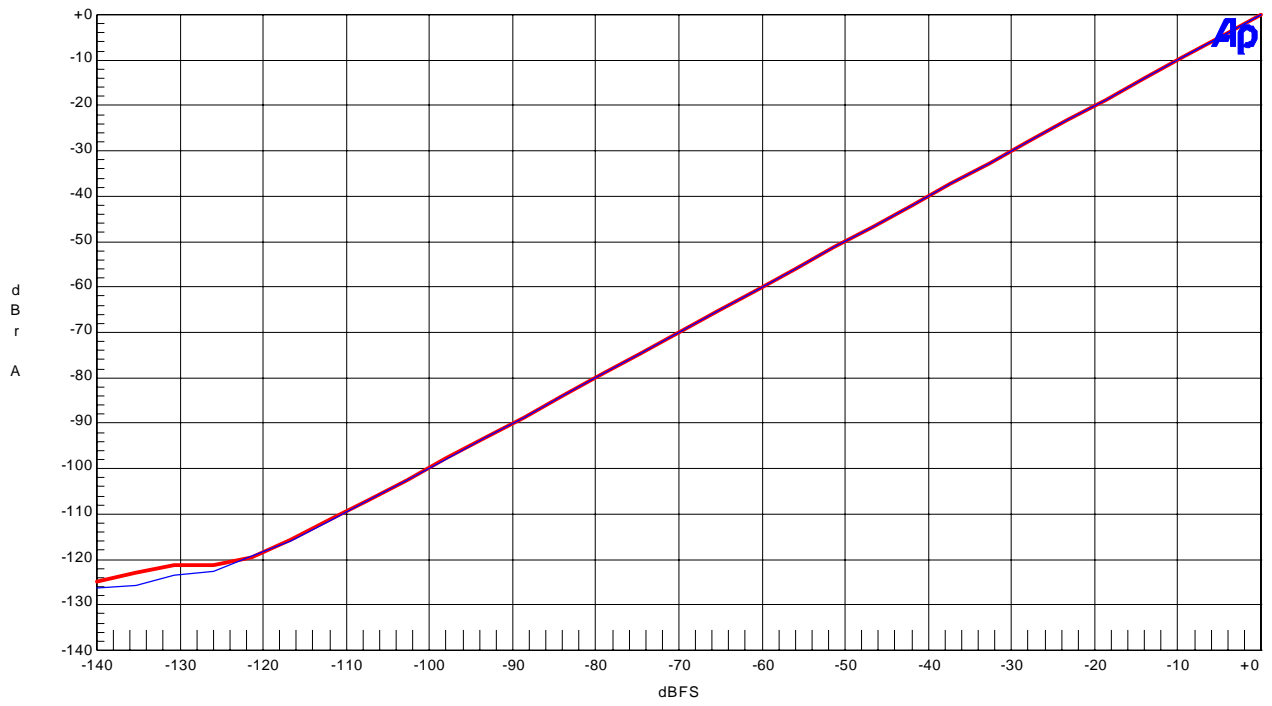


Figure 16. Linearity (fin=1kHz)

AKM

AK4358 Crosstalk  
upper@1kHz Rch->Lch, lower@1kHz Lch->Rch

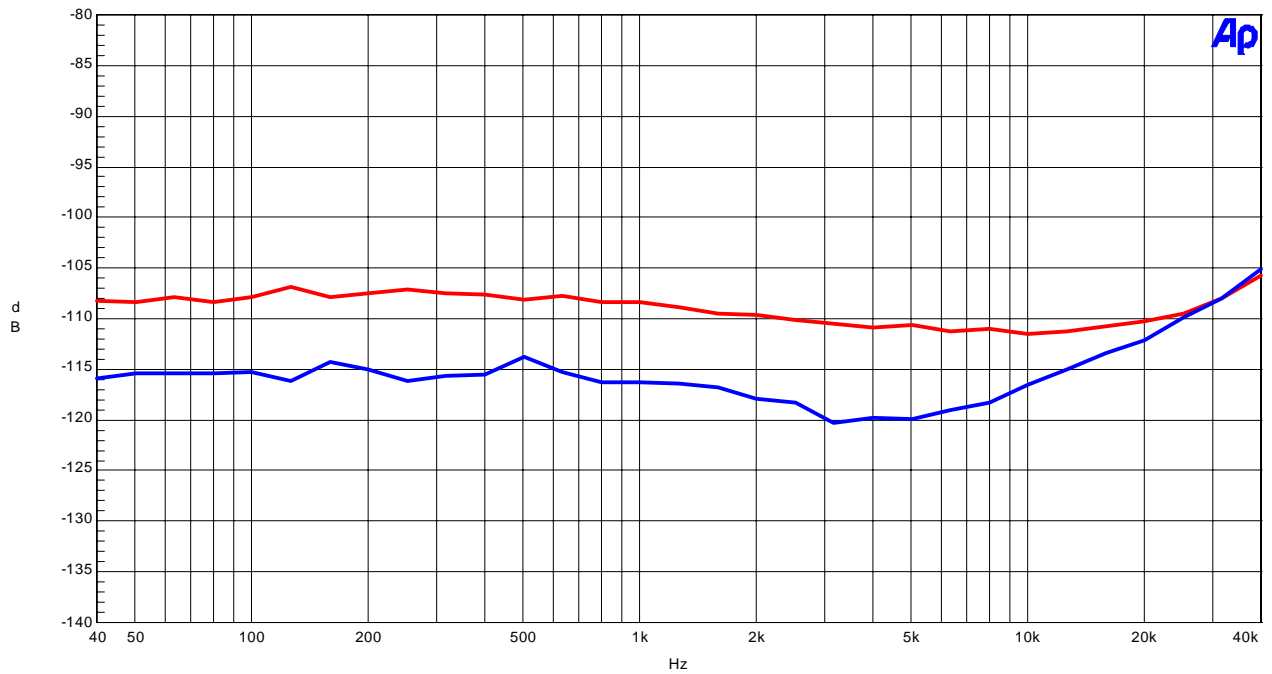


Figure 17. Cross-talk (Input Level=0dBFS)

AKM

AK4358 Frequency Response

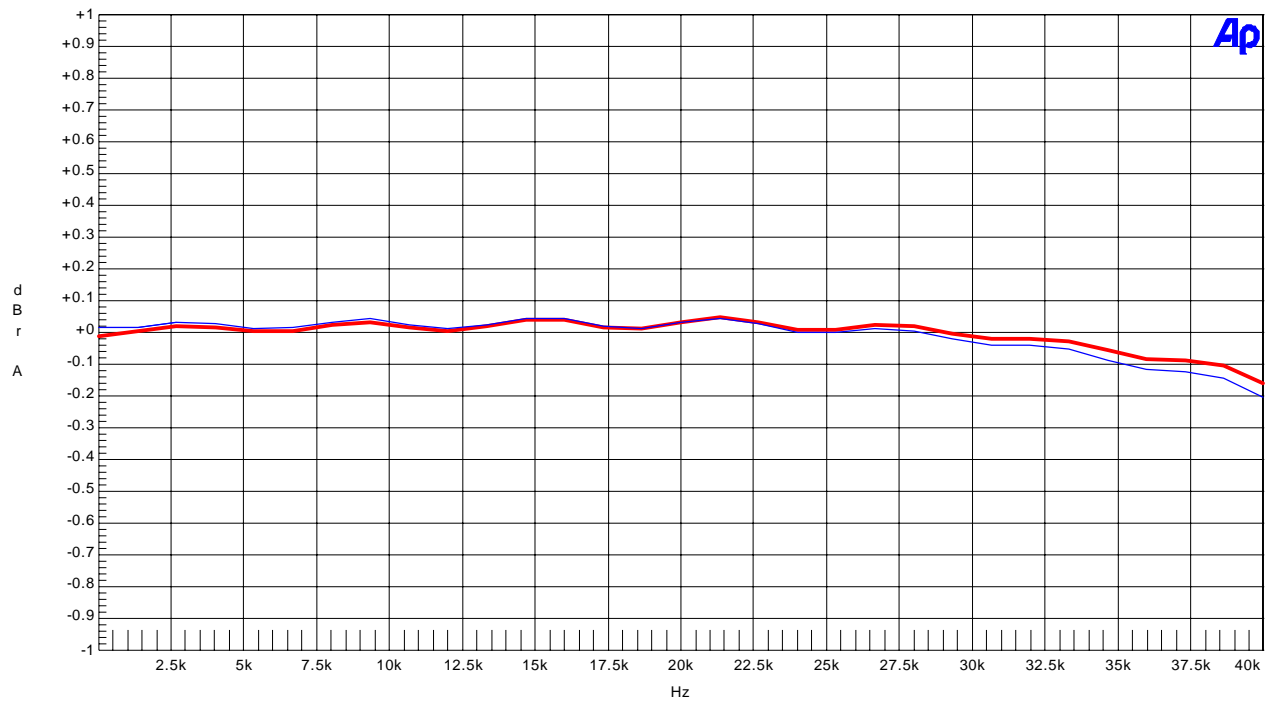


Figure 18. Frequency Response (Input Level=0dBFS)

fs=192kHz

AKM

AK4358 FFT

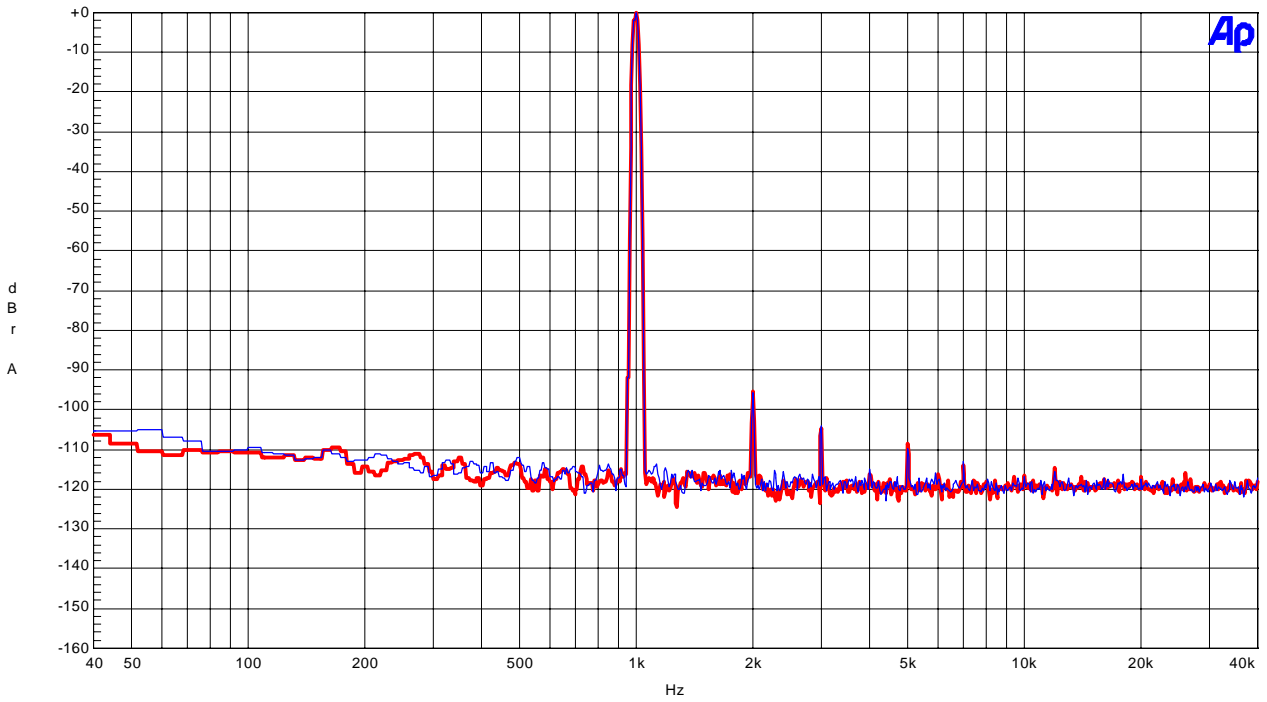


Figure 19. FFT (1kHz, 0dBFS input)

AKM

AK4358 FFT

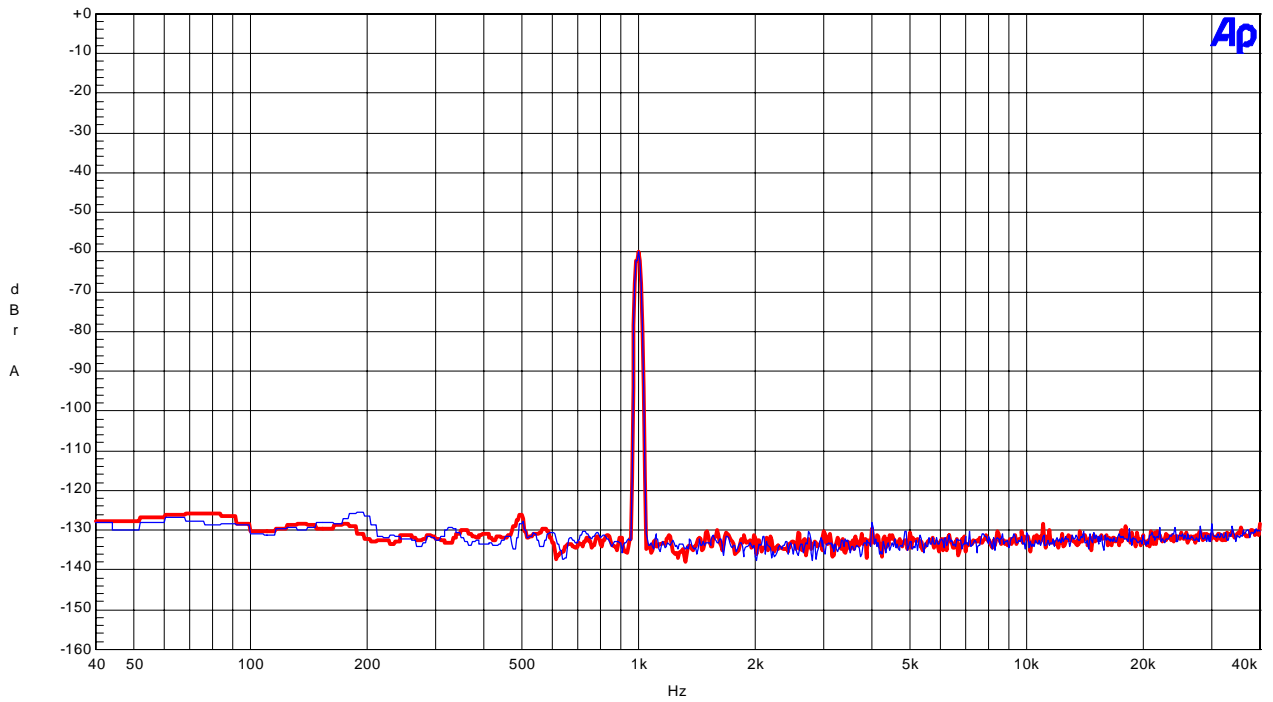


Figure 20. FFT (1kHz, -60dBFS input)

AKM

AK4358 FFT

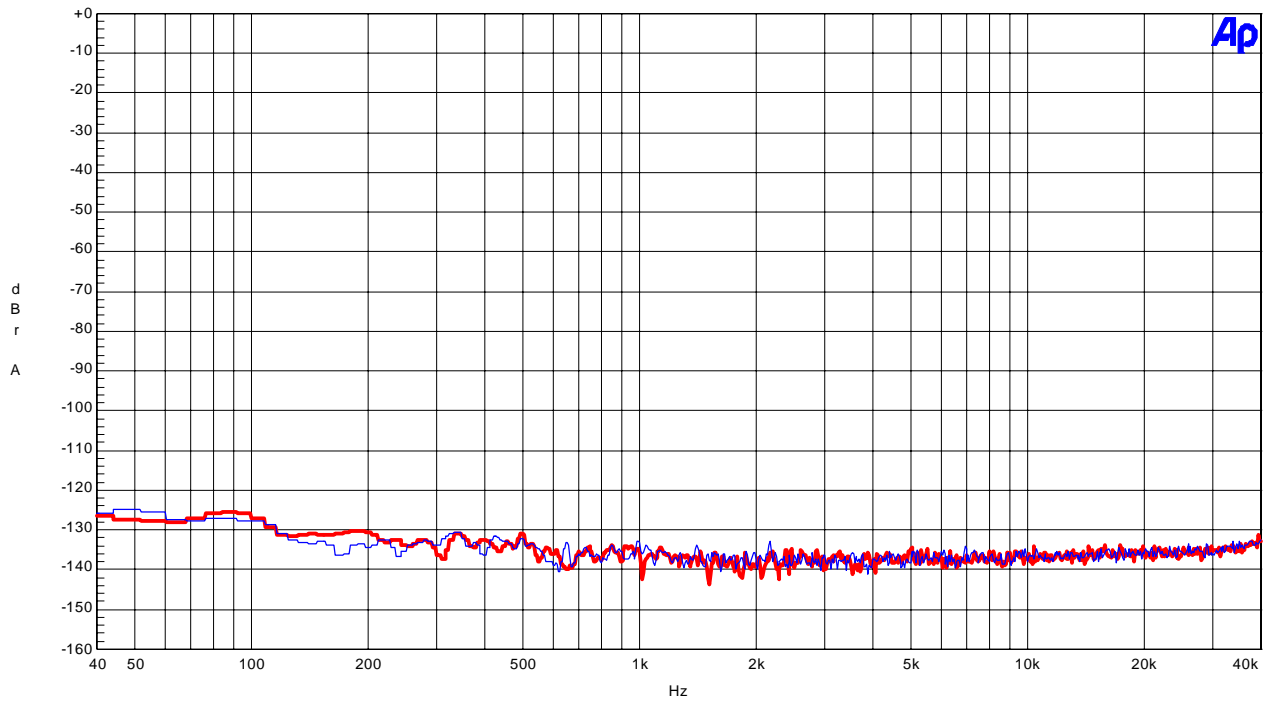


Figure 21. FFT (Noise floor)

AKM

AK4358 out of band noise

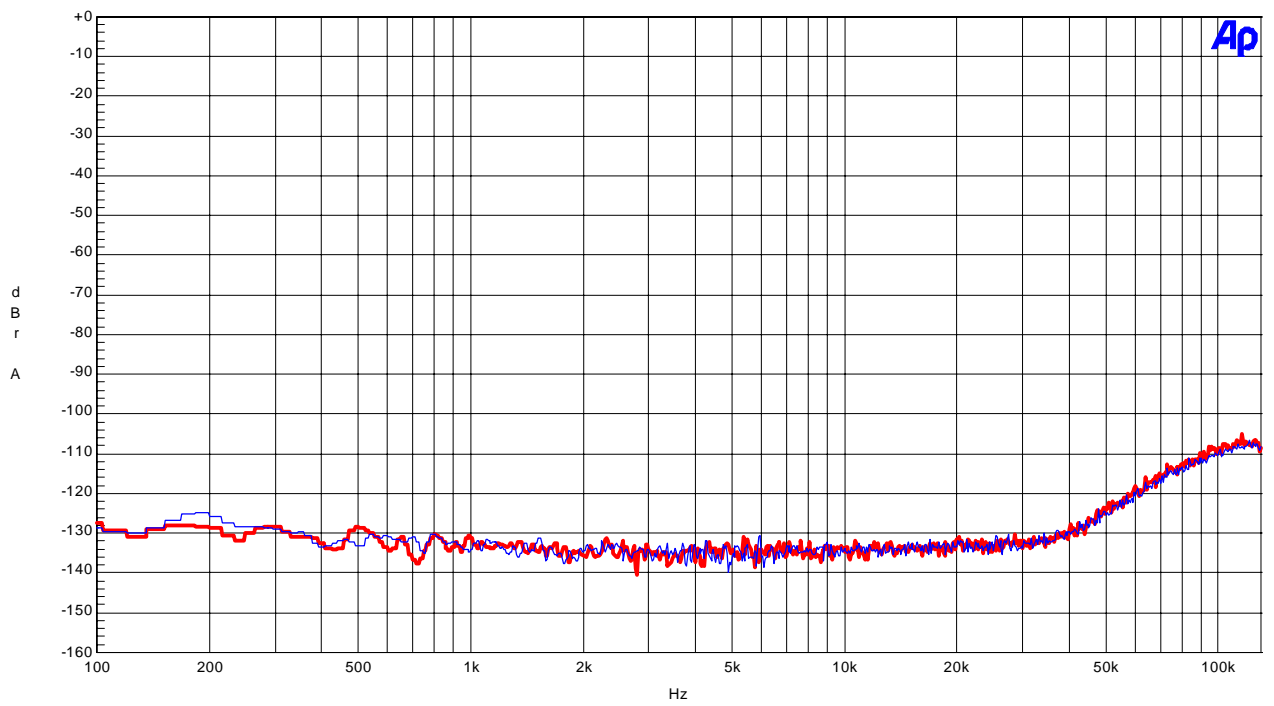


Figure 22. FFT (Out-of-band noise)

AKM

AK4358 THD+N vs Amplitude

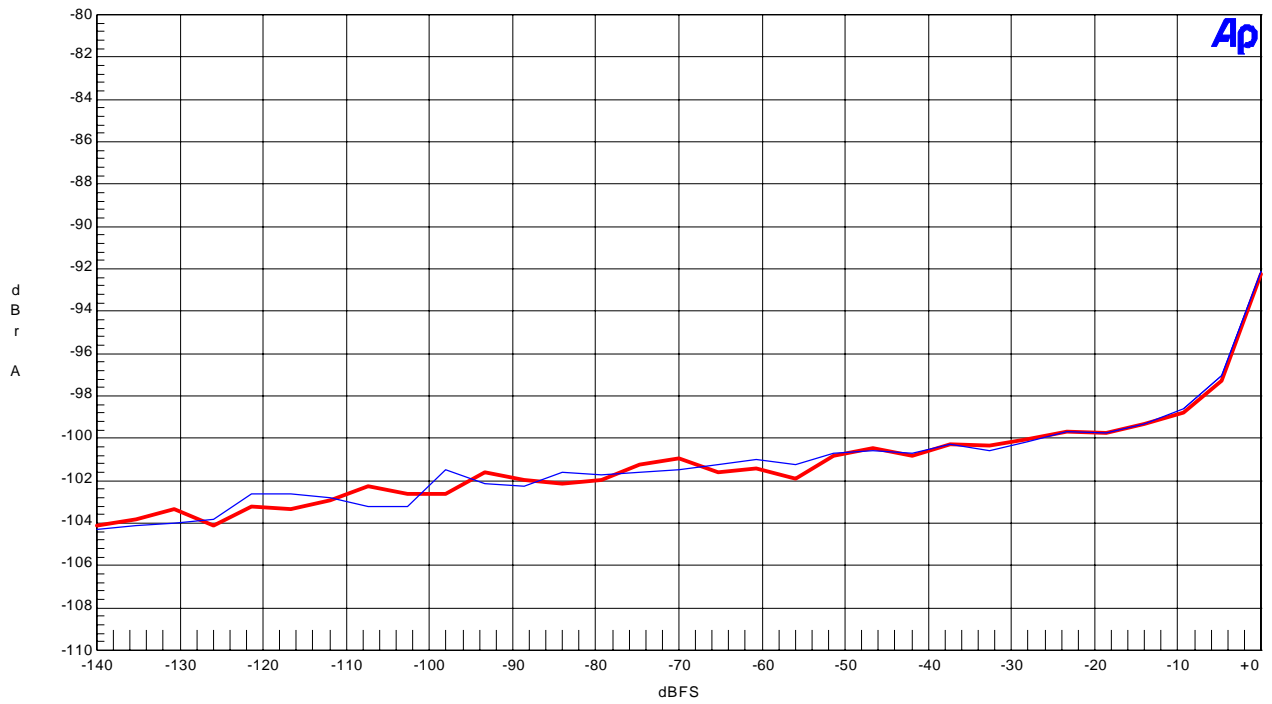


Figure 23. THD+N vs Input Level (fin=1kHz)

AKM

AK4358 THD+N vs Frequency

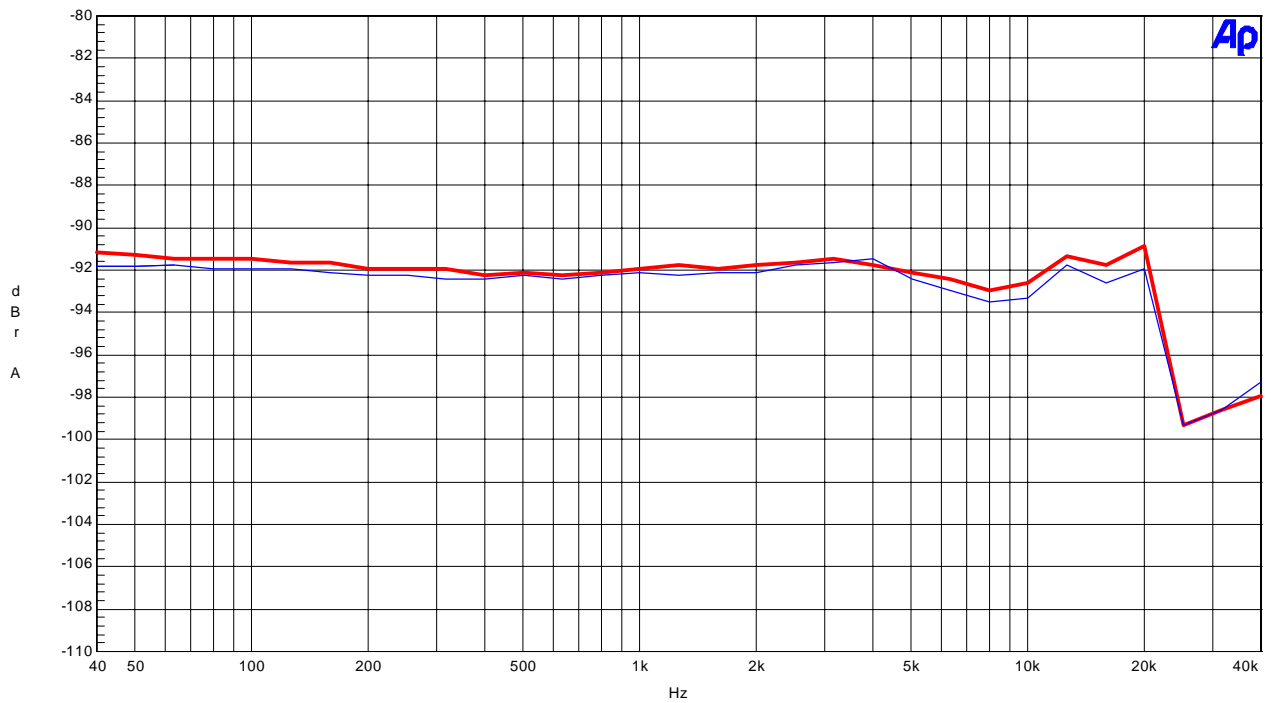


Figure 24. THD+N vs fin (Input Level=0dBFS)

AKM

AK4358 Linearity

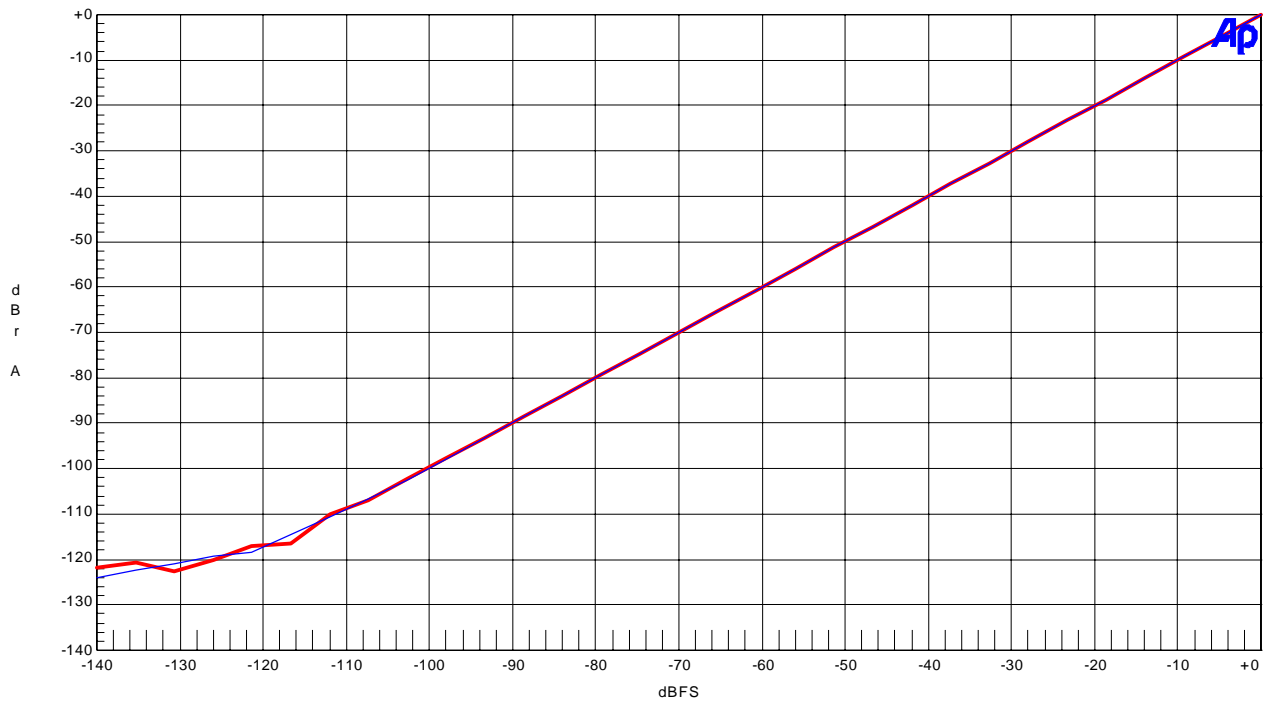


Figure 25. Linearity (fin=1kHz)

AKM

AK4358 Crosstalk  
upper@1kHz Rch->Lch, lower@1kHz Lch->Rch

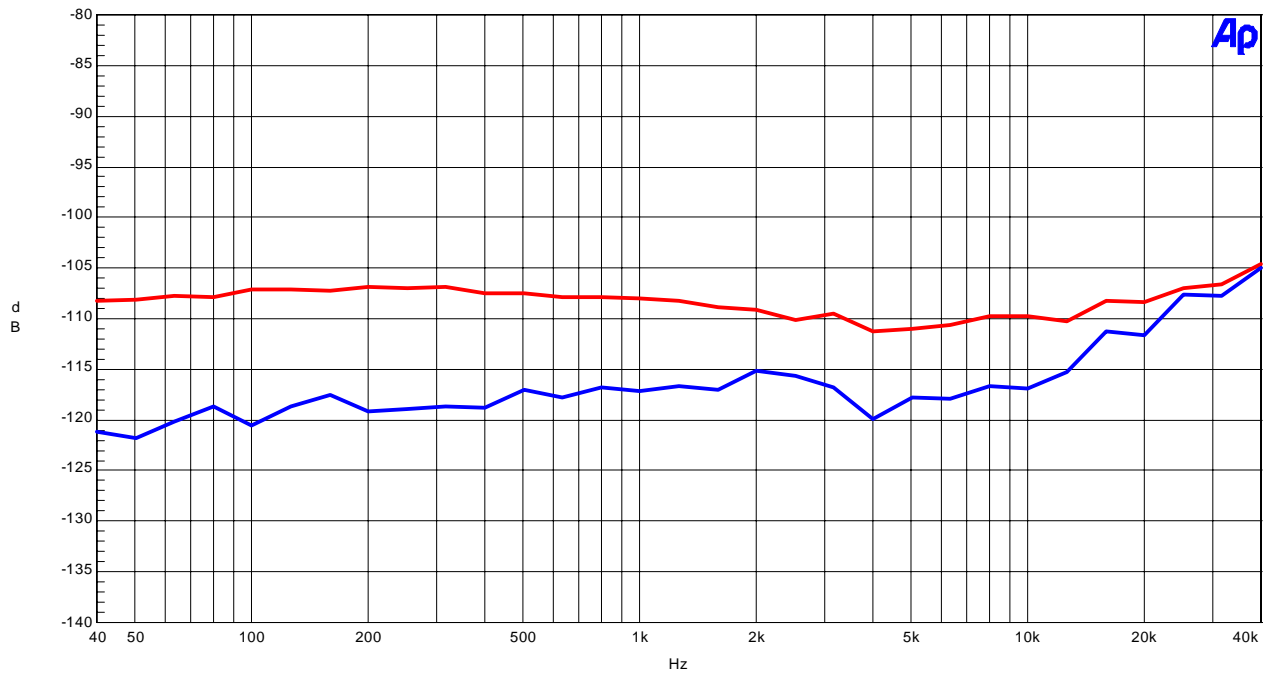


Figure 26. Cross-talk (Input Level=0dBFS)

AKM

AK4358 Frequency Response

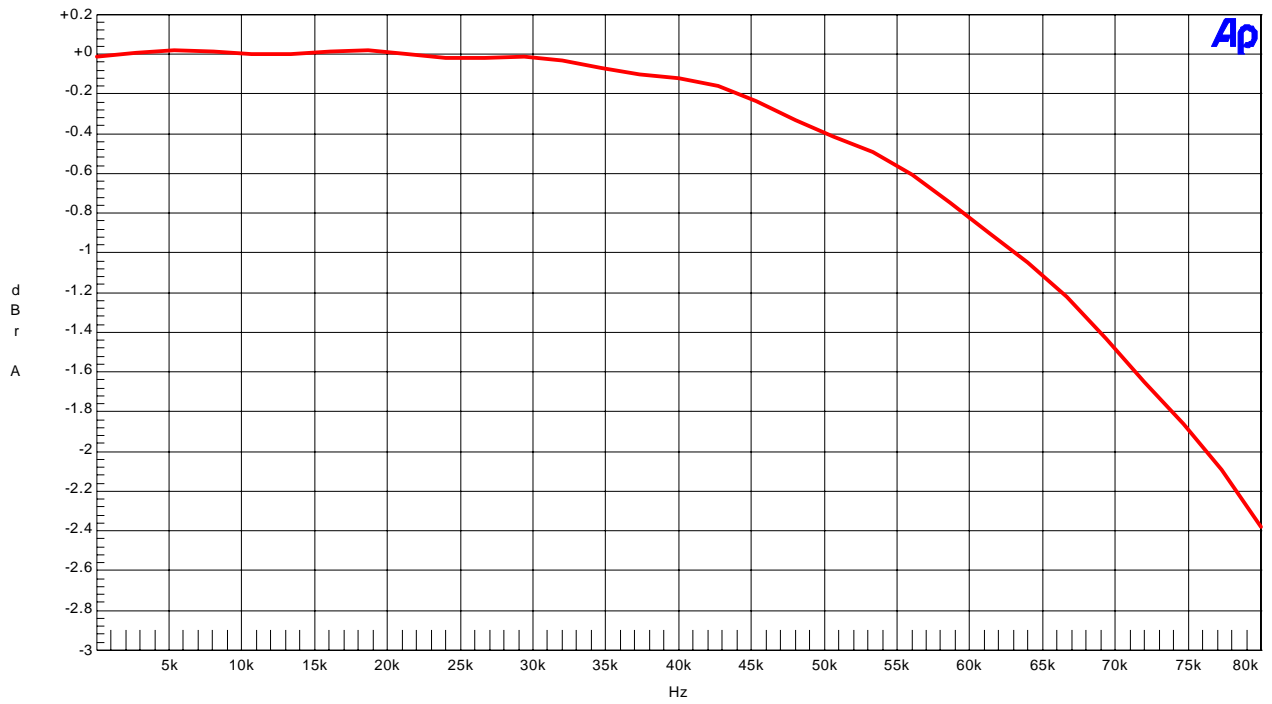


Figure 27. Frequency Response (Input Level=0dBFS)

2. DSD mode

AKM

AK4358 FFT

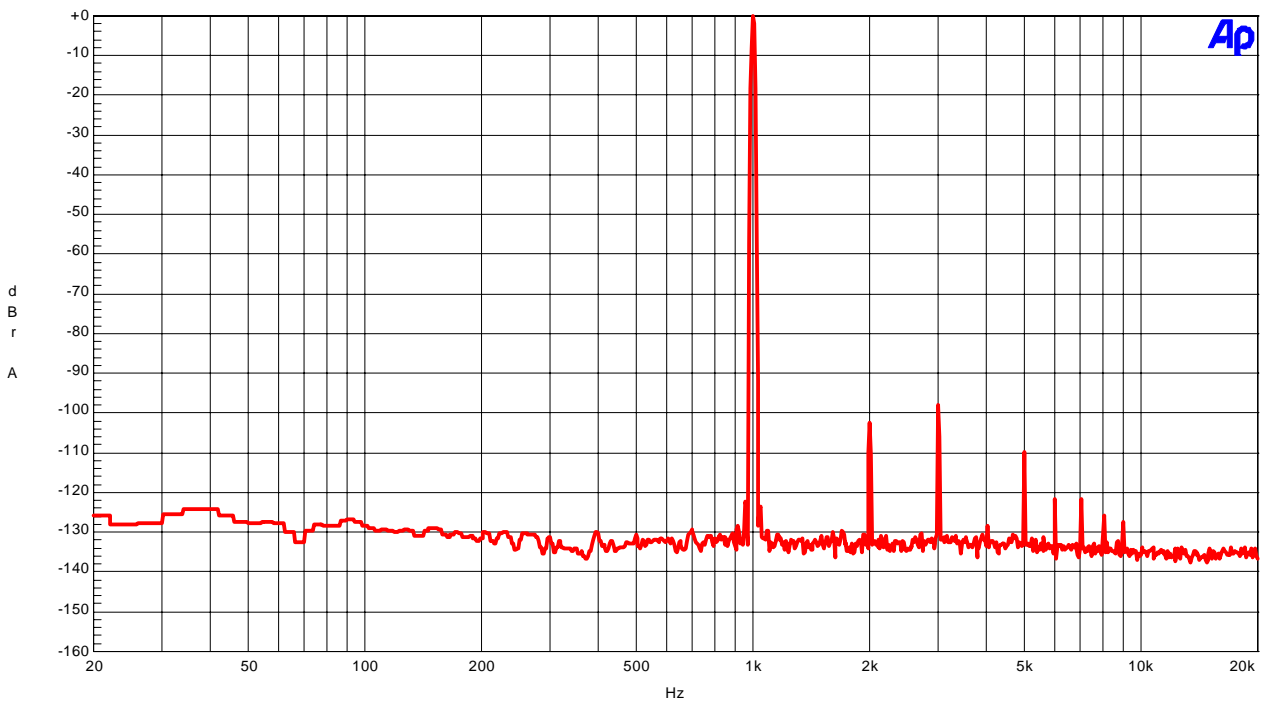


Figure 28. FFT (1kHz, 0dBFS input)



AKM

AK4358 FFT

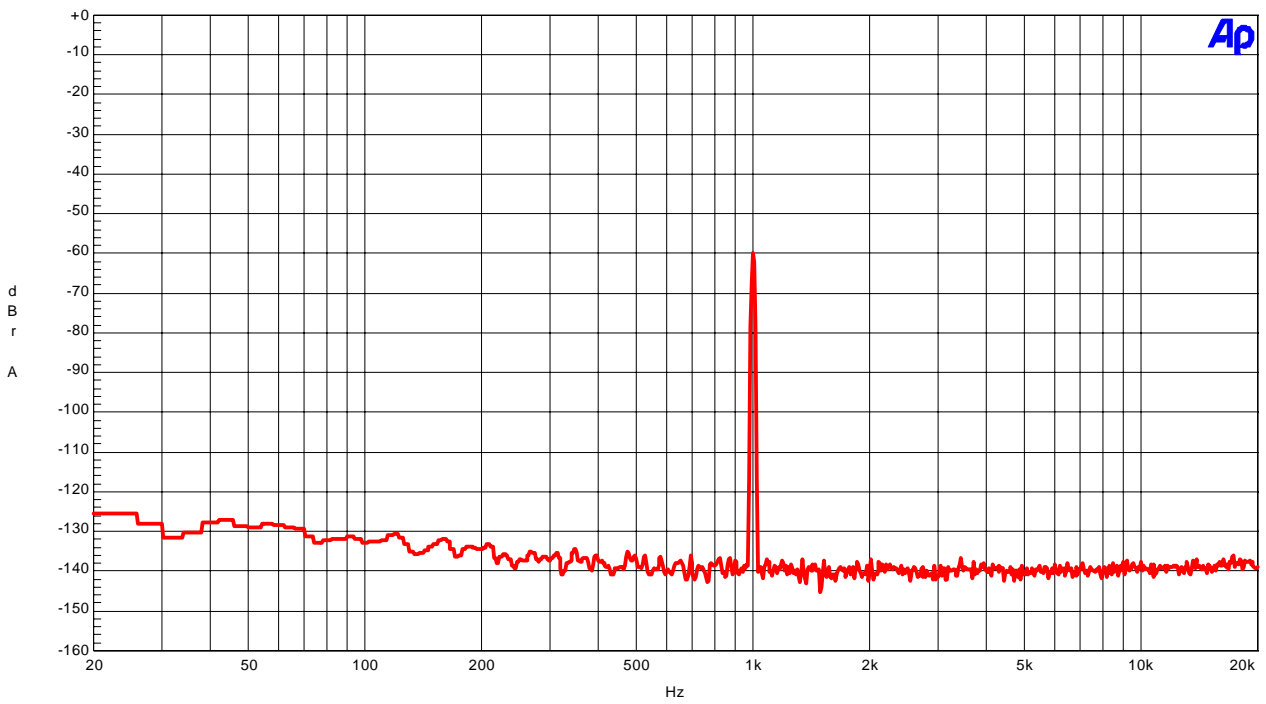


Figure 29. FFT (1kHz, -60dBFS input)

AKM

AK4358 FFT

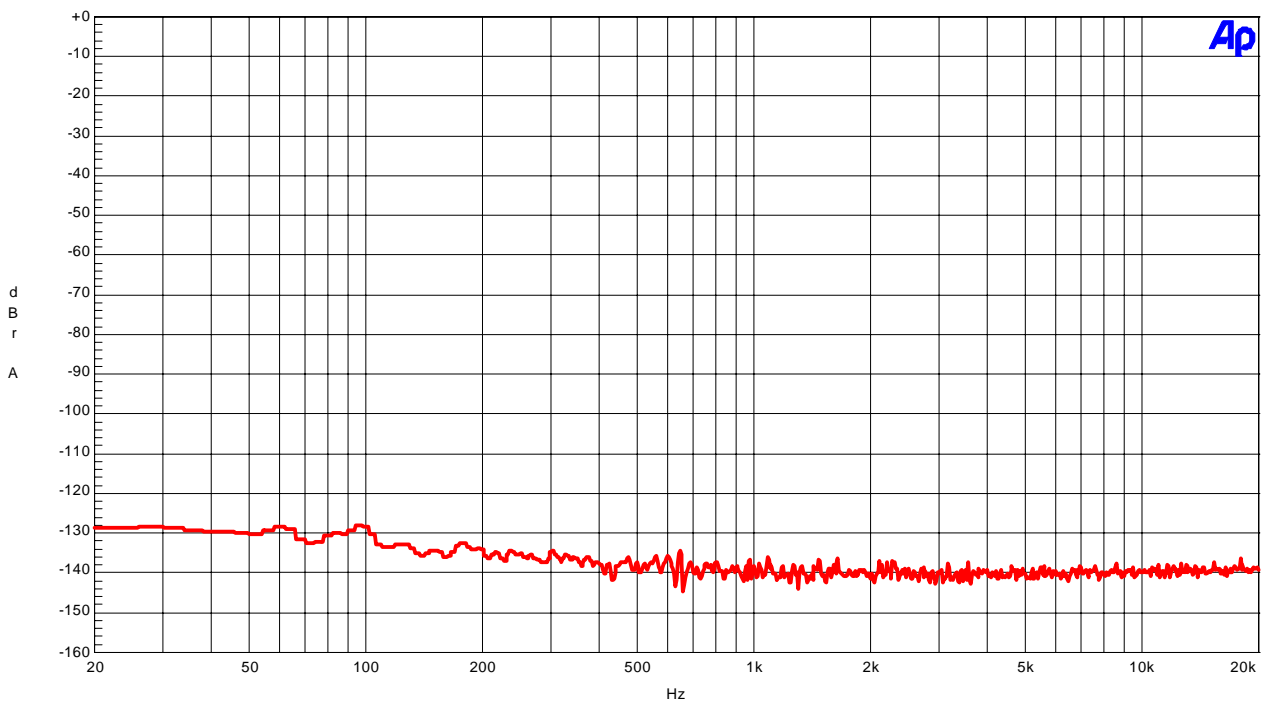


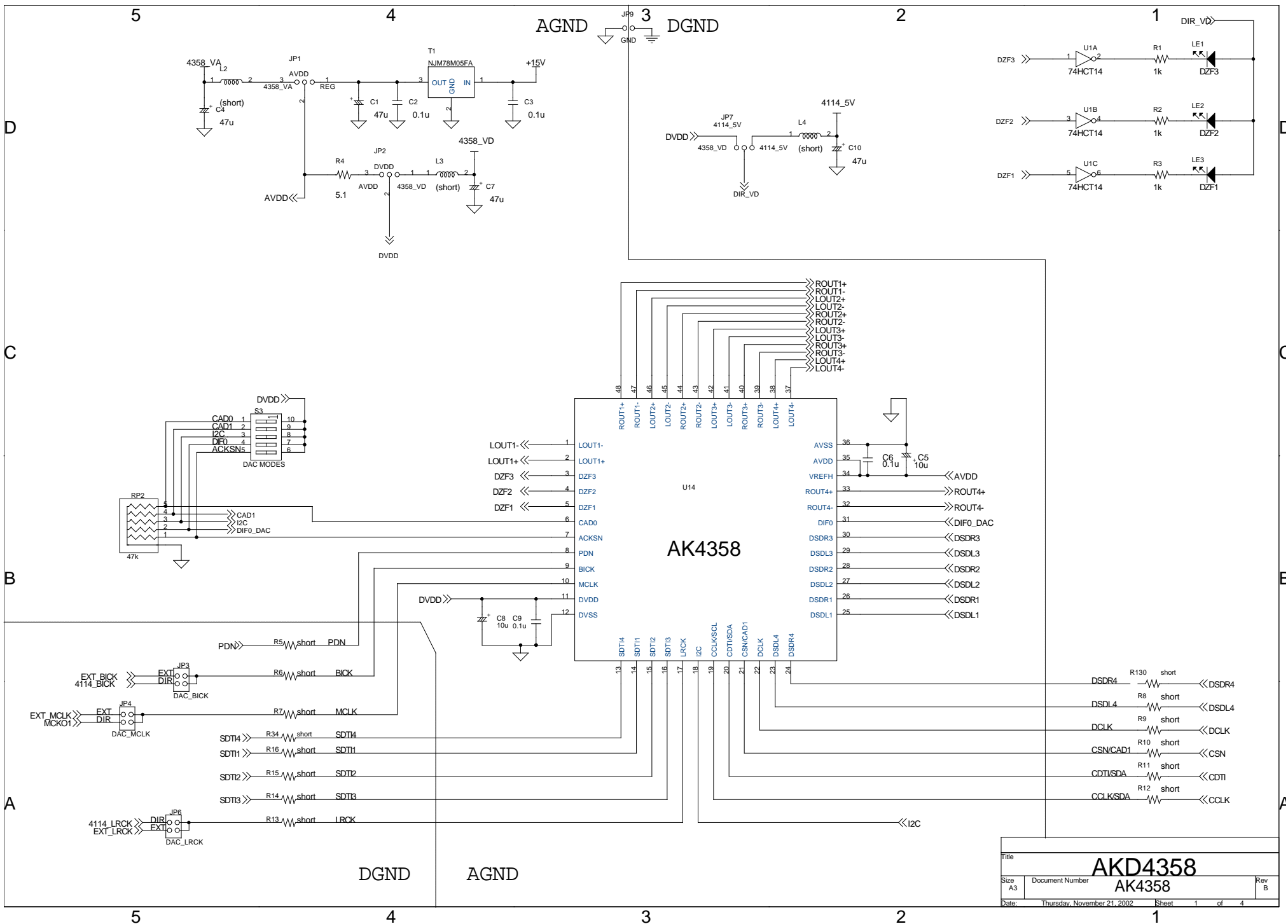
Figure 30. FFT (Noise floor)

**Revision History**

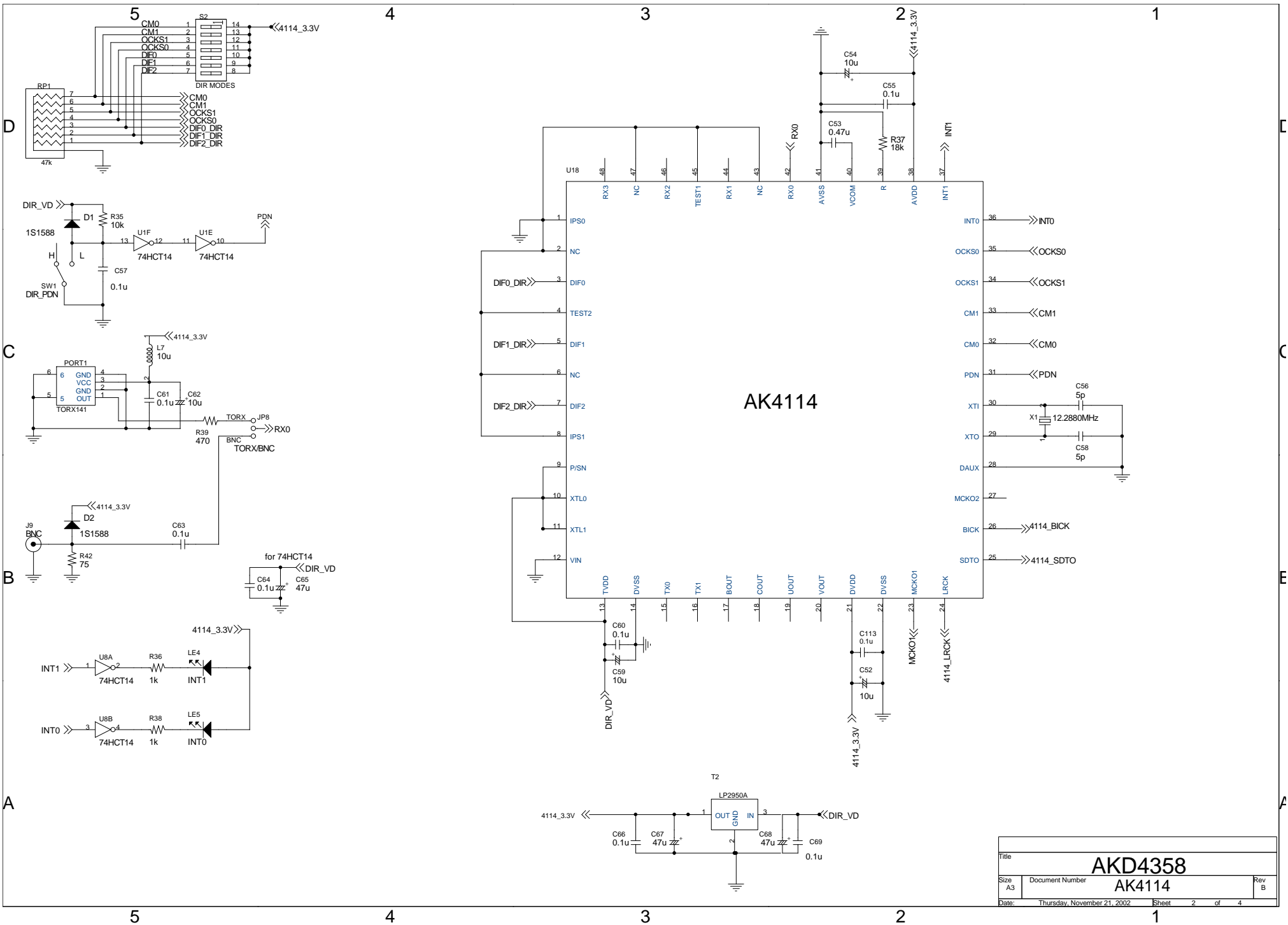
Date (YY/MM/DD)	Manual Revision	Board Revision	Reason	Contents
02/11/26	KM070900		First Edition	
03/01/10	KM070901	0	Parts Change	
05/09/02	KM070902	0	Revision History Addition  Board Name Change  Control soft manual Change	Revision History addition P34  Board Name Change It changes into AKD4358-B Rev.0 from AKD4358 Rev.B  Control soft manual Change It changes into P8-14 from P8-9.

**IMPORTANT NOTICE**

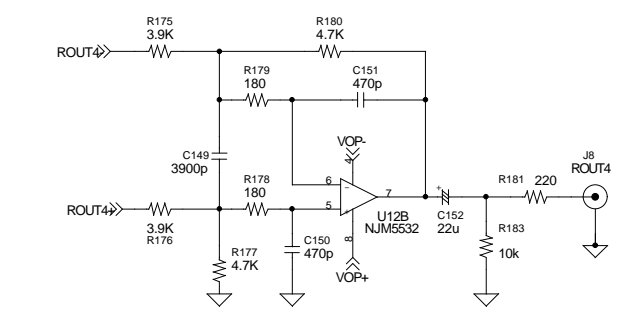
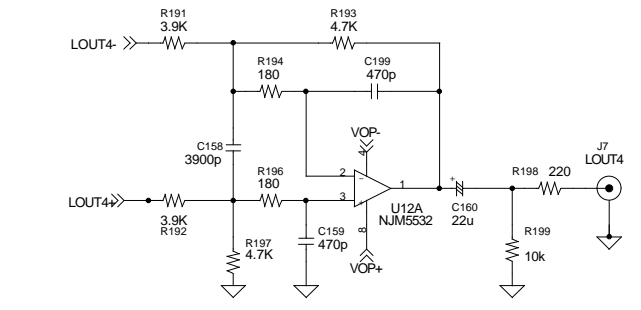
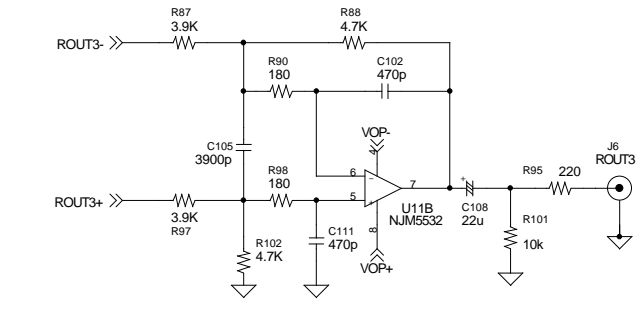
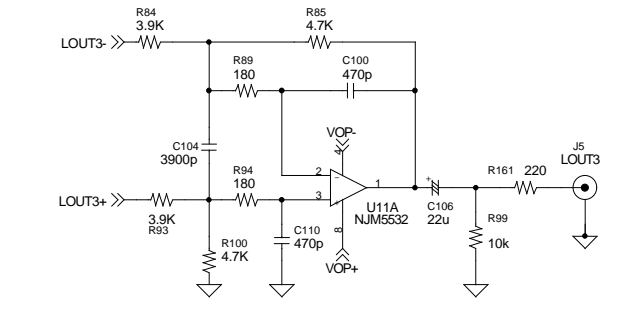
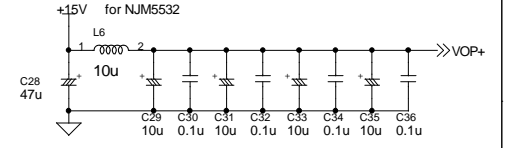
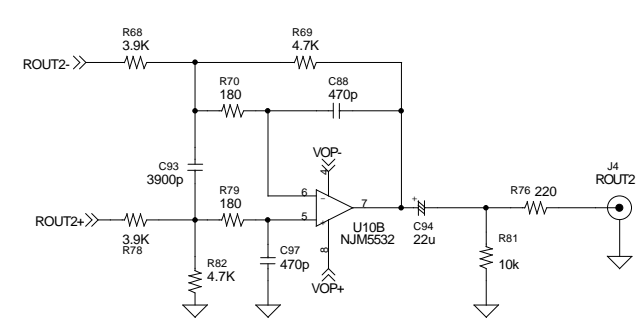
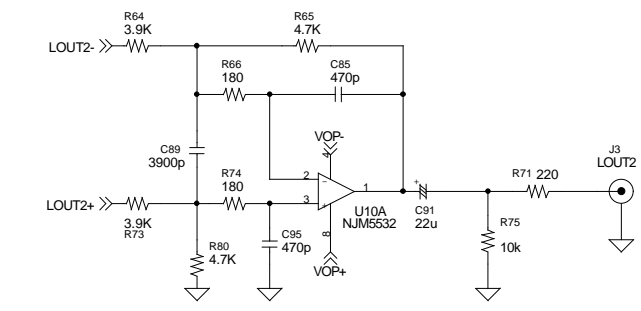
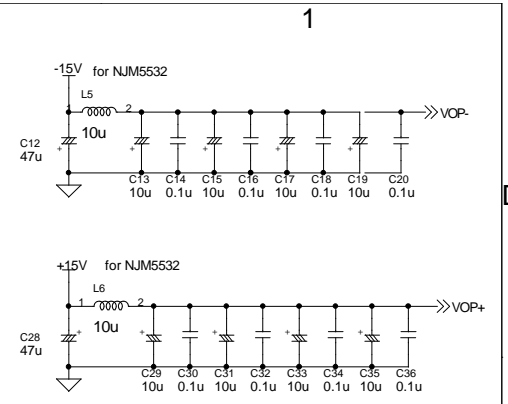
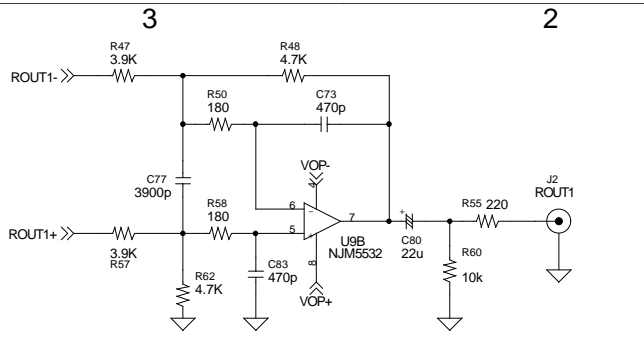
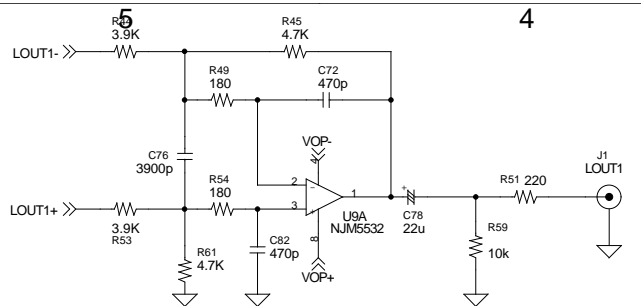
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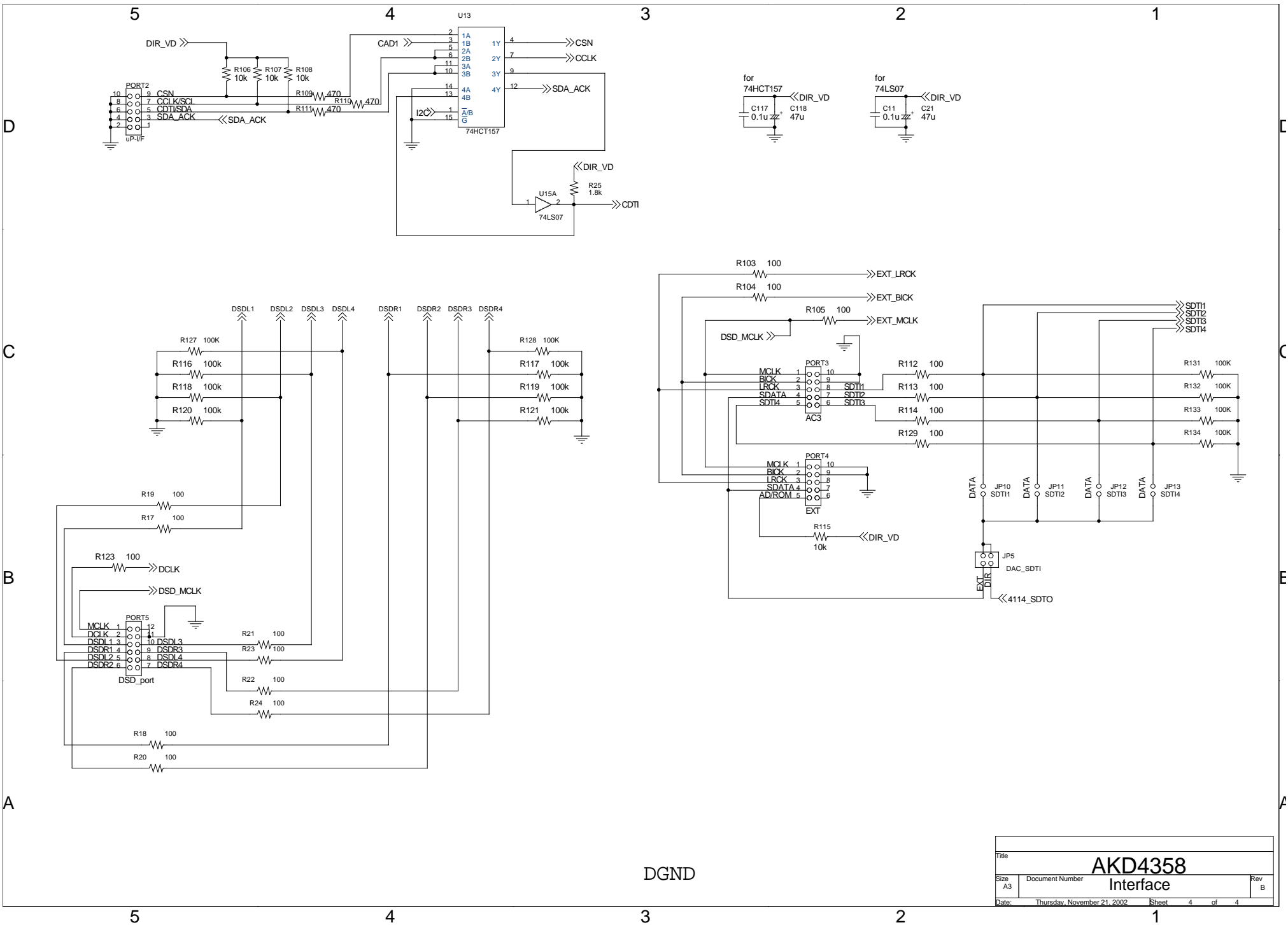
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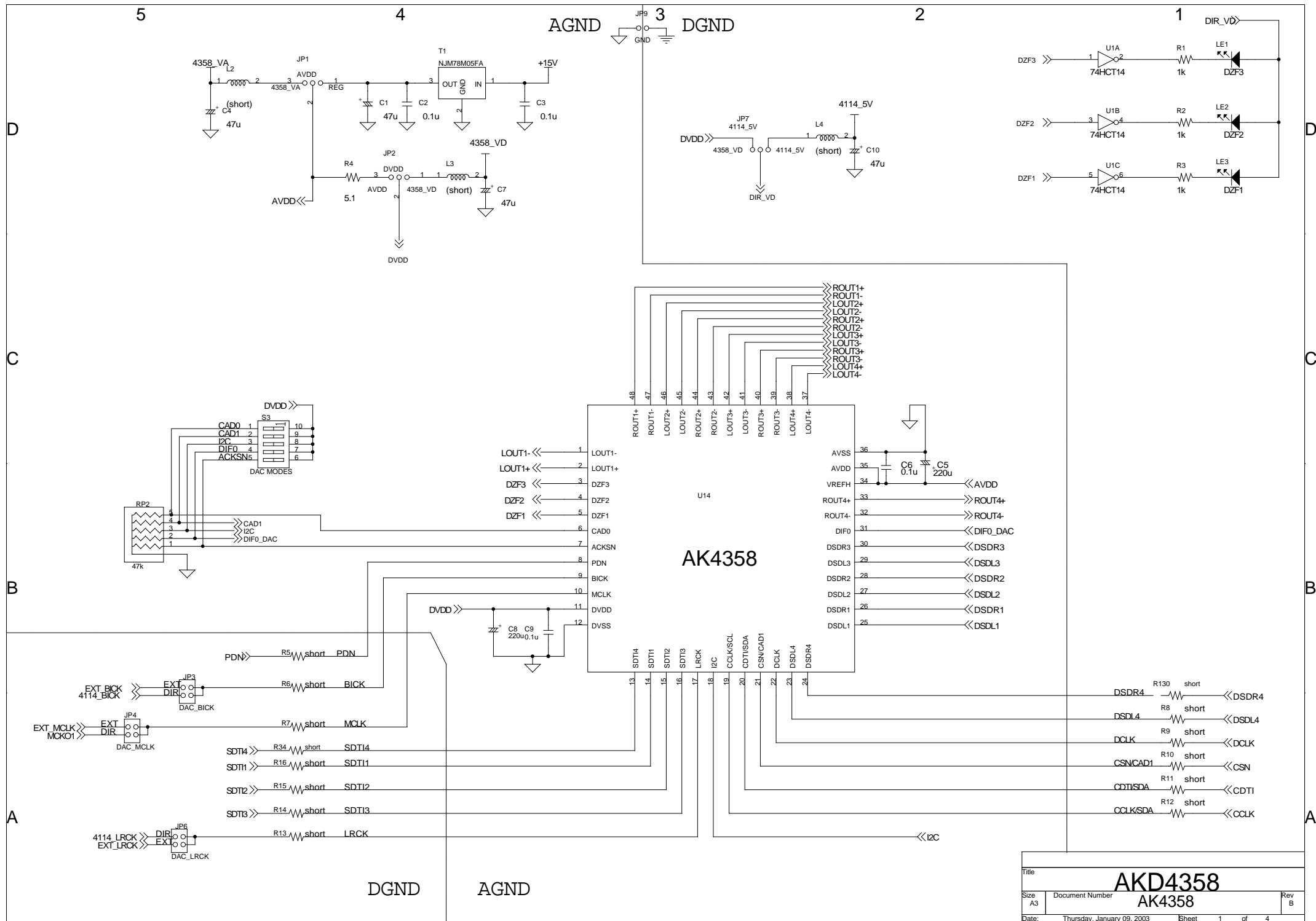
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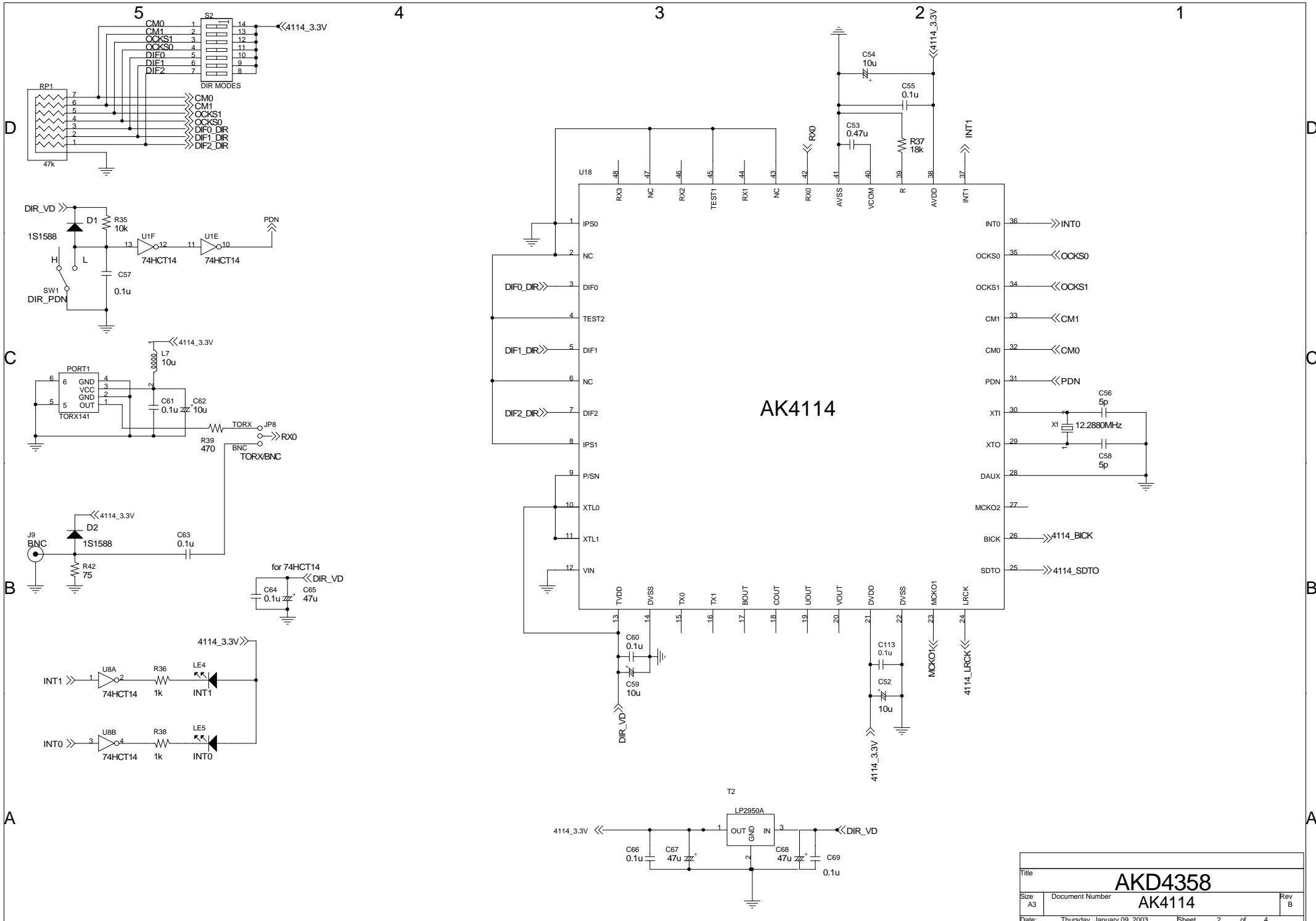


DGND

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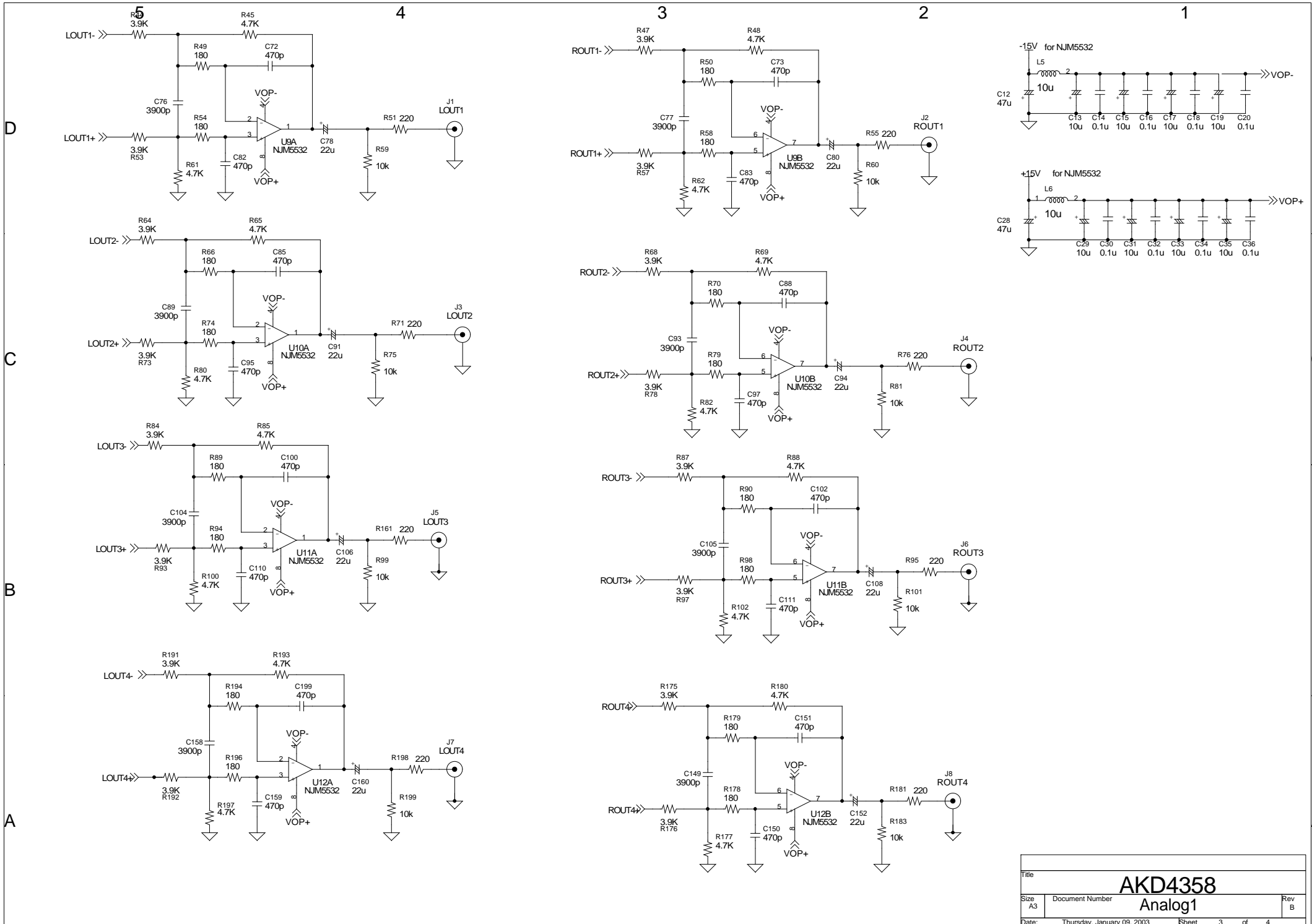


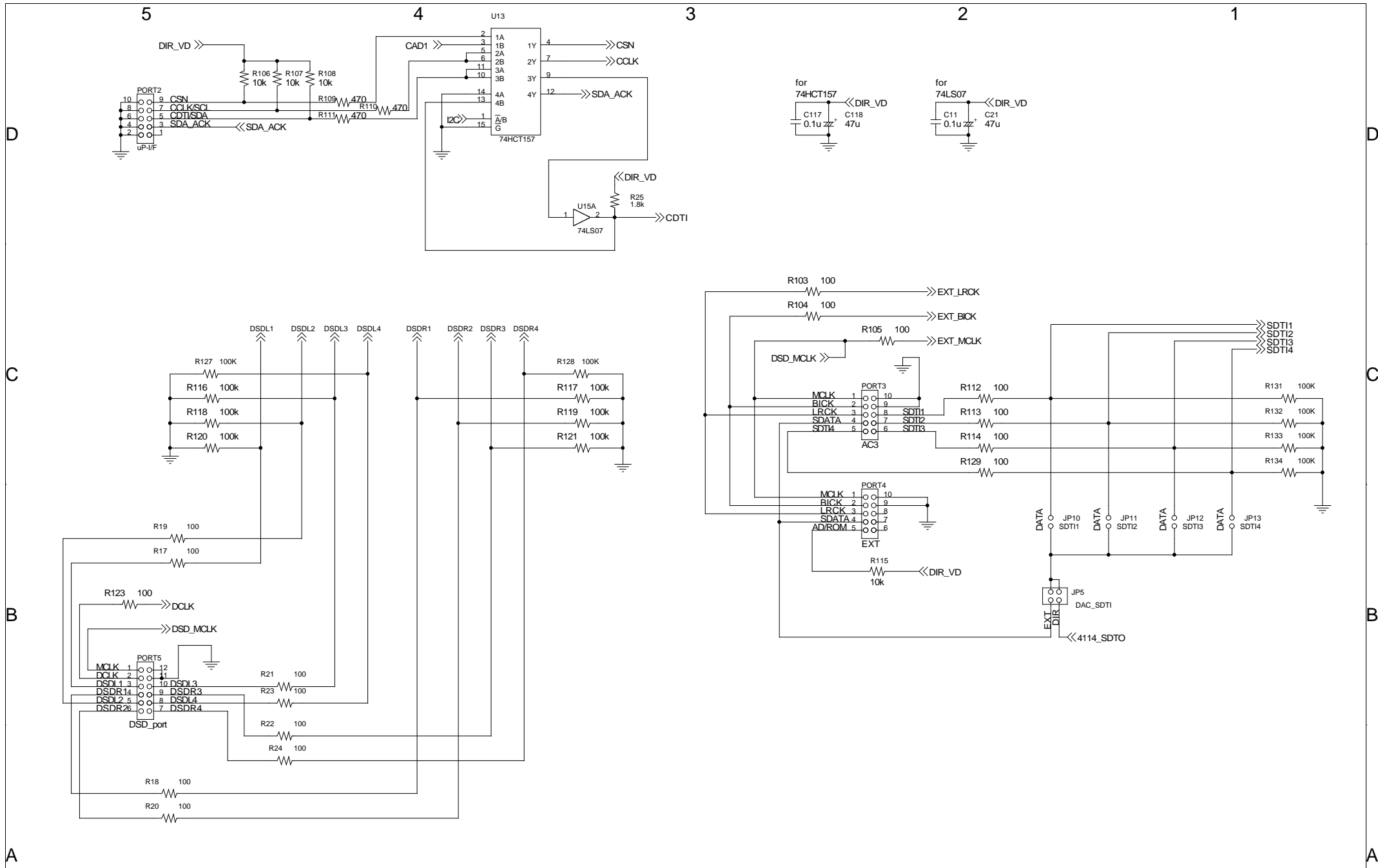
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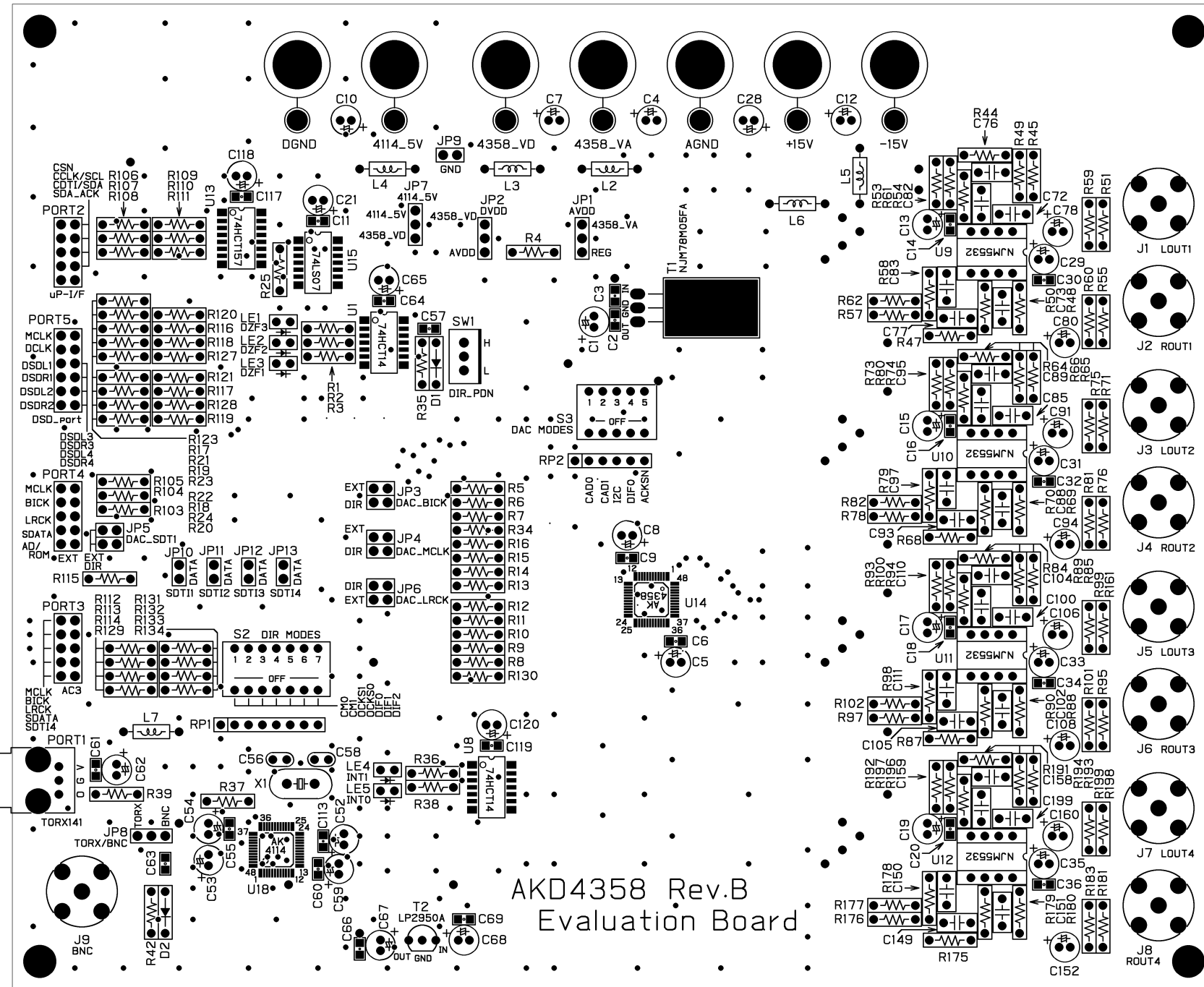




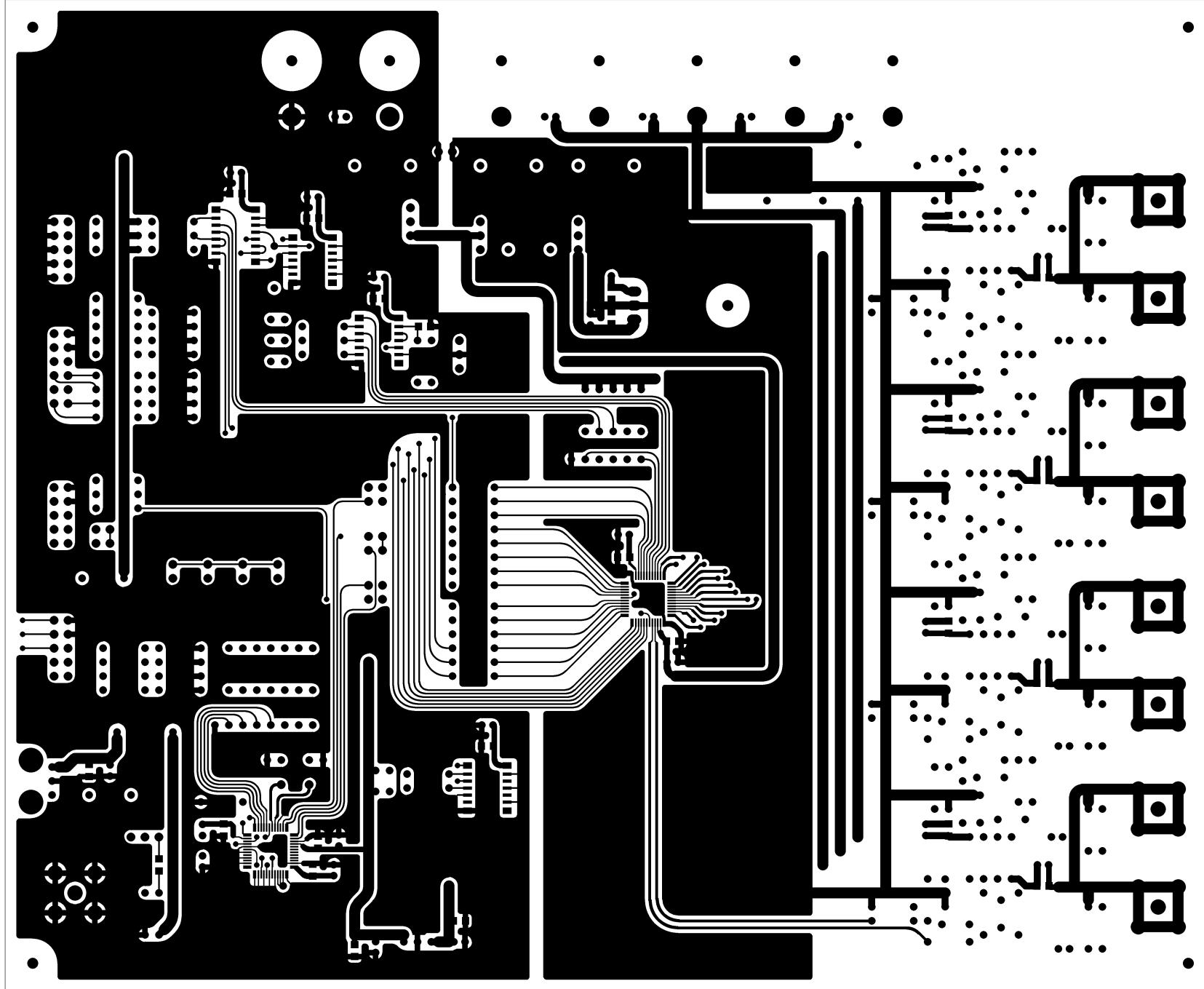


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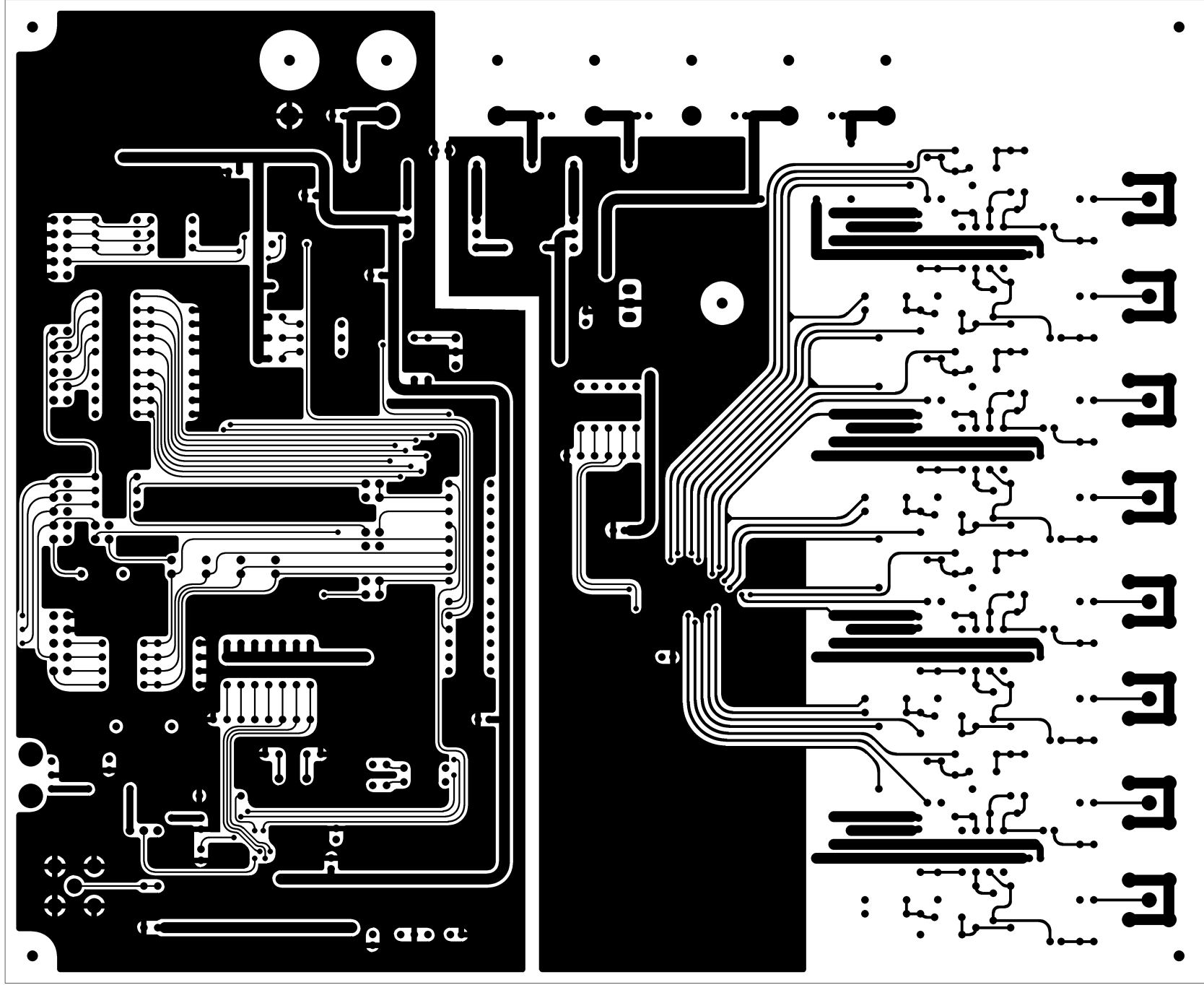
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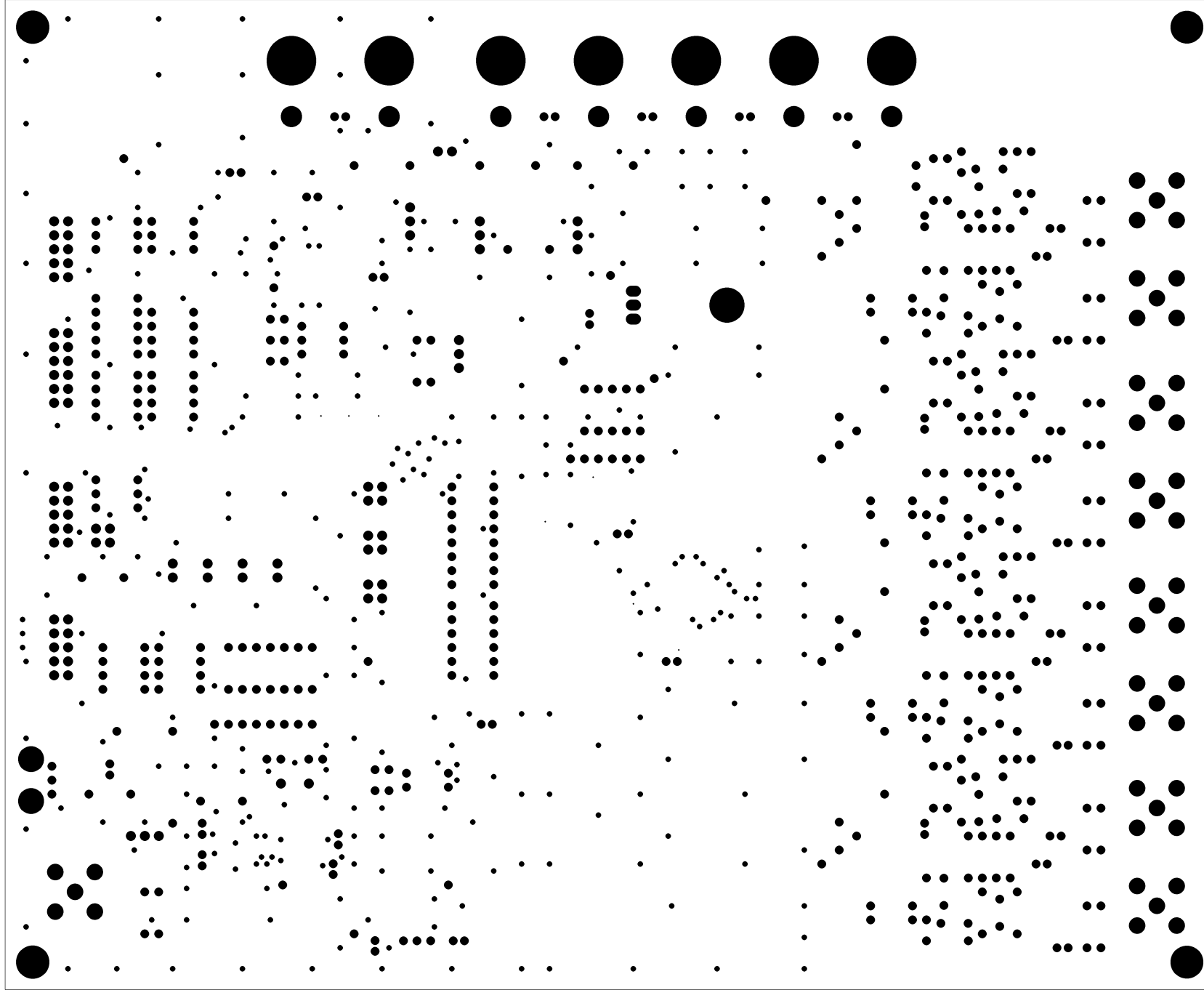
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AKD4358 Rev.B L1



AKD4328 Rev.B LS



AKD4358 Rev.B LS 2R