

CHOIR RECORDING SESSION

Complete Signal Chain & Technical Reference

Prepared for Conductor Reference

Session Overview

This document outlines the complete recording chain for a 40-voice choir session in a large church sanctuary. The signal chain has been designed to capture the natural acoustics of the space with minimal processing, preserving the choir's authentic sound.

Parameter	Specification
Ensemble Size	Approximately 40 singers
Recording Environment	Large church sanctuary
Primary Mic Configuration	ORTF stereo pair (main)
Ambient Capture	Room mic (secondary)
Artificial Reverb	None — natural room acoustics used
Recording Format	24-bit / 48kHz

Microphone Setup

Main Stereo Pair — Neumann KM 184 (ORTF)

- Microphones: 2x Neumann KM 184 small diaphragm condenser
- Formation: ORTF — capsules 17cm apart, angled at 110 degrees total (55 degrees each side)
- Stand: Shure S15A telescoping stand
- Height: 10-12 feet, angled slightly downward toward back row
- Distance: 8-15 feet in front of choir to capture natural room blend
- Phantom Power: 48V engaged on both inputs

Ambient Room Mic — Zoom H4N

- Formation: Built-in XY stereo capsules at 120 degrees
- Position: 30-50 feet behind main ORTF pair
- Height: 5-6 feet, pointed toward choir
- Running independently as standalone recorder throughout session
- Low cut filter engaged on H4N
- Format: 24-bit / 48kHz to match Luna session

Signal Flow — Main Pair

Stage	Left Channel	Right Channel
Microphone	KM 184 (L)	KM 184 (R)
Interface Input	Apollo Solo Input 1	Apollo Solo Input 2
Unison Preamp	Neve 1073	Neve 1073
DAW Track	Luna Track 1	Luna Track 2
Pan Position	75-80% Left	75-80% Right

Apollo Console — Neve 1073 Unison Settings

The Neve 1073 operates at the hardware level via Unison technology. These settings apply to both channels identically.

Control	Setting	Notes
Input Sensitivity	-50dB starting point	Adjust by ear during choir warmup
High Pass Filter	80Hz — engaged	Removes sanctuary rumble and HVAC noise
Low EQ	110Hz, +2dB	Adds warmth and body
Mid EQ	OFF	Engage only if choir sounds boxy
High EQ	10kHz, +2dB gentle boost	Adds air and presence to upper voices
EQL Button	Engaged and lit	Critical — EQ is bypassed without this
48V Phantom	ON	Required for KM 184 condenser mics
PAD	0	Leave at default
MIC Z	LO	Leave at default
PHASE	Off	Leave at default

Luna Insert Chain — LA-2A Tube Compressor

The LA-2A Tube Compressor is inserted on both the L and R tracks. Both instances must be set identically to preserve the ORTF stereo image.

Control	Setting	Notes
Mode Switch	Compress	Not Limit — gentler response for choir
Peak Reduction	40-50 on dial	Watch VU meter — aim for 2-4dB gain reduction
Gain	40-50 on dial	Adjust to match uncompressed output level
Target GR	2-4dB on VU meter	Both channels should track identically
Power	ON	Confirm before session begins

Important: The goal is transparency. The LA-2A should be essentially invisible in the mix — making the choir feel more consistent and controlled without sounding squashed or processed.

Gain Staging Targets

Stage	Target Level	Notes
Apollo Input Average	-18dBFS	Nominal recording level
Apollo Input Peaks	-6dBFS maximum	Never exceed this during choir fortissimo
LA-2A Gain Reduction	2-4dB	Gentle, transparent compression
Luna Track Level	Healthy with headroom	Do not clip the DAW track
H4N Input Level	-18dBFS average	Conservative — peaks not exceeding -6dBFS

Monitoring

- Headphones: Sennheiser IE 80 in-ear monitors
- Bass port: Set to minimum for flattest possible response
- Connection: Wired directly to Apollo Solo headphone output
- Primary monitoring focus: Clean signal, balanced stereo image, no clipping

Note: The IE 80s may exaggerate low-end slightly. Do not boost bass based on headphone monitoring. Trust the gain staging and the room.

H4N Ambient Recorder — Independent Operation

- Start H4N recording before the session begins
- Let it run continuously — do not stop between takes

- Fresh batteries or USB power confirmed before session
- Low cut filter engaged
- XY angle set to 120 degrees
- Input level conservative — peaks at -6dBFS maximum

Sync Protocol

Since the H4N runs independently it must be synced with the Luna session in post-production:

- Perform one loud single hand clap at the start of each major take
- Both the Apollo recording and H4N will capture the clap transient simultaneously
- In Luna, import the H4N stereo file and align the clap transients on all tracks
- This locks the ambient track to the main recording accurately

Reverb — Natural Room Only

No artificial reverb is applied at any stage of this recording chain. The large church sanctuary provides exceptional natural acoustics that serve as the reverb environment.

- Pulling the main mics 8-15 feet back captures natural room blend and reverb tail
- H4N ambient mic at 30-50 feet captures full room bloom and decay
- Reverb may be added in post-mix if needed — never printed to the recorded tracks
- Recording dry with natural room gives maximum flexibility in post-production

Post-Session Mixing Plan

Three-track mix assembled in Luna after the session:

Track	Source	Pan	Level
Track 1	KM 184 Left	75-80% Left	Primary
Track 2	KM 184 Right	75-80% Right	Primary
Track 3	H4N Ambient	Center	10-20% blend underneath

H4N Ambient Track Treatment

- High pass filter at 120Hz — keeps low end clean
- Blend subtly underneath the main ORTF pair
- Should feel like the room breathing — present but invisible
- Do not allow ambient track to overpower the main pair

Pre-Session Checklist

Before the Choir Arrives

- 48V phantom power confirmed on both Apollo inputs
- ORTF spacing verified on stereo bar — 17cm capsule to capsule, 110 degrees
- Stand height confirmed at 10-12 feet
- Test recording run — both channels clean and balanced
- H4N placed and positioned — fresh batteries confirmed
- Luna session open — both tracks armed for recording
- L and R panning confirmed in Luna
- IE 80 bass port set to minimum

Gain Staging Check

- Have someone clap or speak loudly at choir position
- Confirm signal hitting both channels evenly
- Peaks not exceeding -6dBFS
- Average level sitting around -18dBFS
- LA-2A showing 2-4dB gain reduction on VU meters

During Recording

- Do not touch gain or plugin settings once session begins
- Perform hand clap sync at the start of each major take
- Record everything including warmups
- Monitor for clipping and signal cleanliness only
- Let the LA-2A work transparently — resist adjusting in the moment

Recording Philosophy

Great mic placement will always outperform great plugins on a poor placement. Trust the room, trust the setup, and trust the performance.