

Psychotherapeutic Quality Certificate

for

align.mp3

Series PG No. 000001

Analysis date: 24 August 2026, 21:26:54, Bucharest, Romania
created at the request of Melodii pentru SYNQ - Pozitron Grup

General Information

Duration	243.5 seconds
Sample rate	22050 Hz
Total segments	48
Segment duration	5.0 seconds

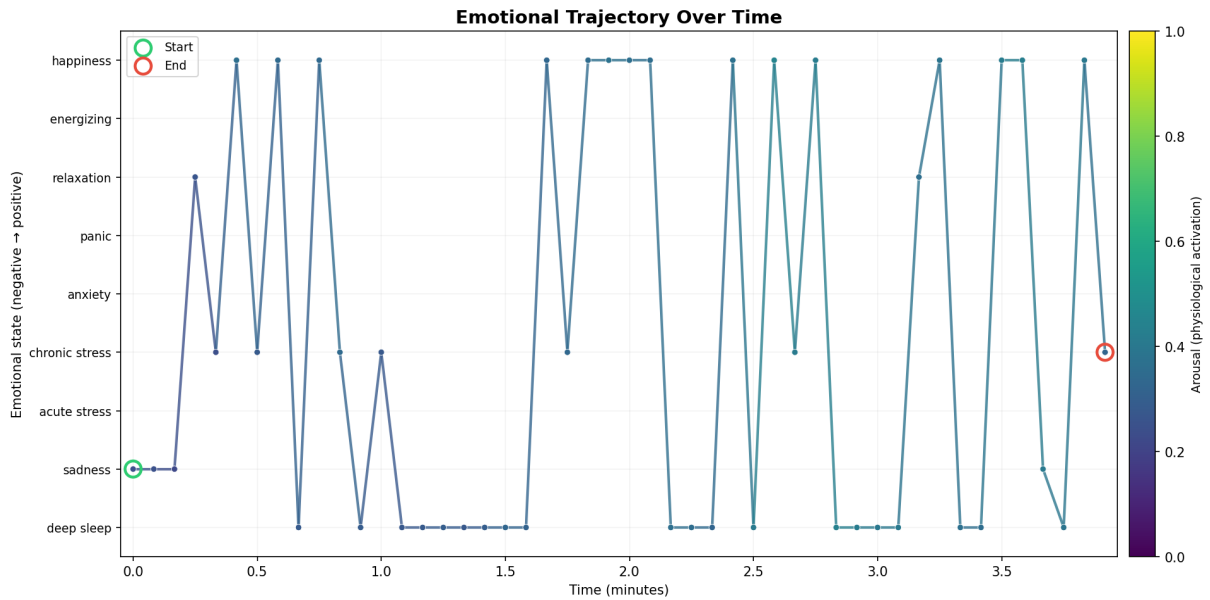
General Parameters

Average BPM	93.70
Key	D minor (confidence 88%)
Average energy	2/10
Emotional state	deep sleep
Conformity score	91.6/100
State distribution	sadness: 4 relaxation: 2 chronic stress: 7 happiness: 15 deep sleep: 20

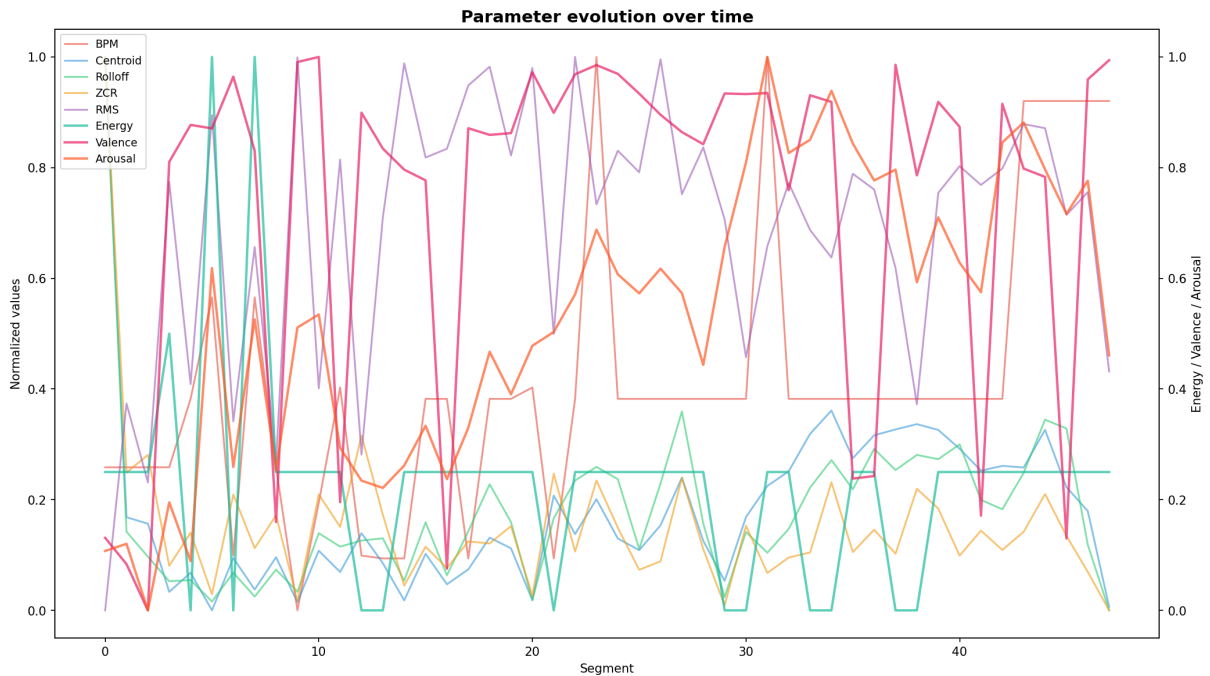
Value Ranges

Valence	0.4125 - 0.8078
Arousal	0.2197 - 0.4506
Energy	2 - 6
BPM	30.05 - 184.57

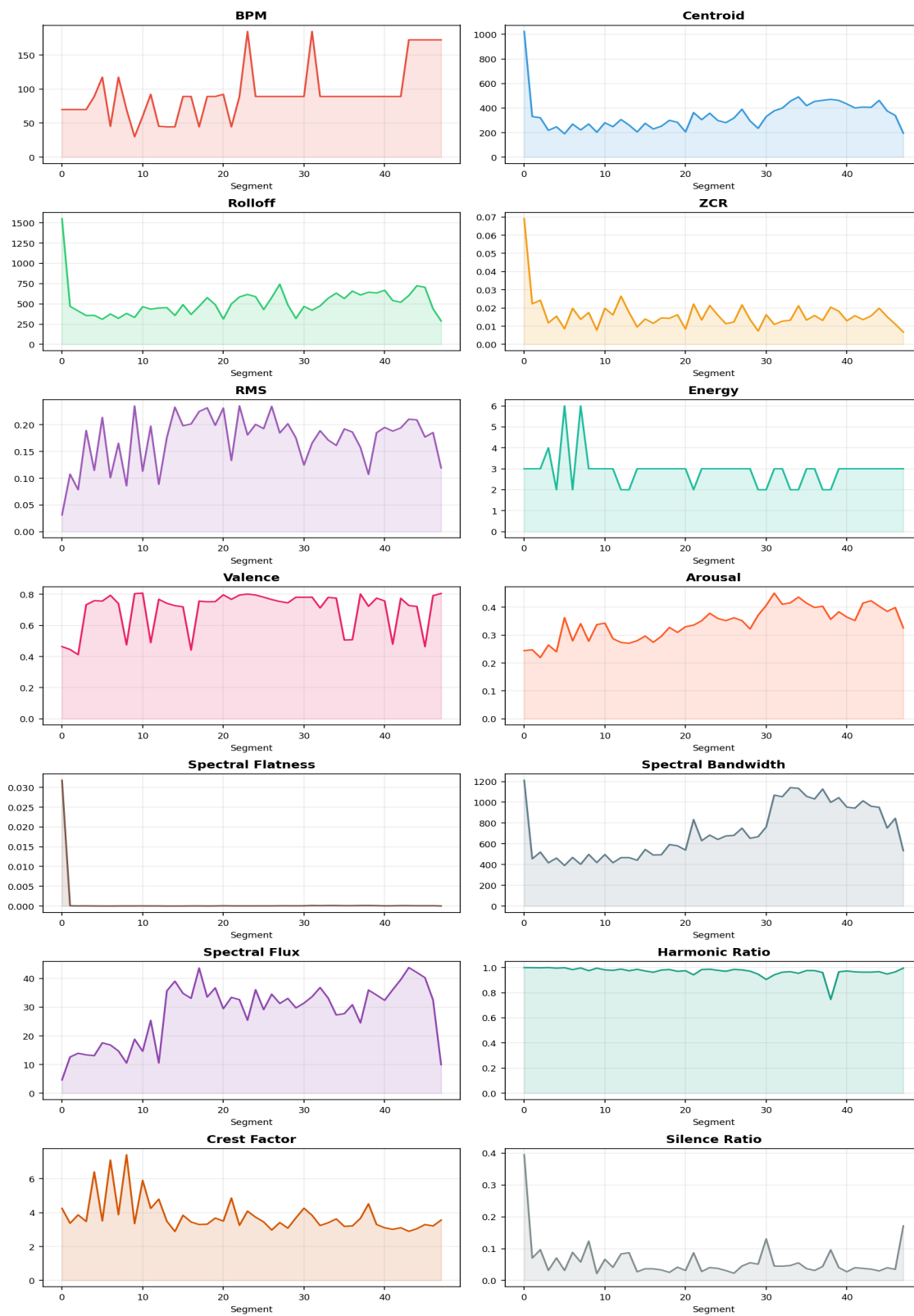
Emotional Trajectory Over Time



Parameter Evolution



Evolution of each parameter over time



Definitions

BPM

BPM (Beats Per Minute) - Measures the speed of the rhythmic pulse. In music therapy, BPM influences heart rate and physiological arousal.

References: Russell, J. A. (1980). A circumplex model of affect. Journal of Personality and Social Psychology.

Spectral centroid

Spectral Centroid - Indicates the 'center of gravity' of the frequency spectrum. Low values (<1500 Hz) indicate bass sounds, high values (>3000 Hz) indicate treble.

References: Russell, J. A. (1980). A circumplex model of affect. Journal of Personality and Social Psychology.

Spectral rolloff

Spectral Rolloff - The frequency below which 85% of the spectral energy is contained. Indicates the brightness or darkness of the sound.

References: Russell, J. A. (1980). A circumplex model of affect. Journal of Personality and Social Psychology.

Zero crossing rate (ZCR)

Zero Crossing Rate (ZCR) - Measures the degree of noise vs. tonality. Low values (<0.05) indicate pure sounds, high values (>0.1) indicate noise or percussion.

References: Russell, J. A. (1980). A circumplex model of affect. Journal of Personality and Social Psychology.

RMS energy

RMS Energy (Root Mean Square) - Indicates the perceived volume/loudness of the sound. Correlates with perceived emotional intensity.

References: Russell, J. A. (1980). A circumplex model of affect. Journal of Personality and Social Psychology.

Energy level

Energy Level - A score from 0 to 10 that synthesizes the perceived energy of the piece.

References: Russell, J. A. (1980). A circumplex model of affect. Journal of Personality and Social Psychology.

Emotional valence

Emotional Valence - Measures the degree of positivity (0-1) of the conveyed emotion.

References: Russell, J. A. (1980). A circumplex model of affect. Journal of Personality and Social Psychology.

Arousal

Arousal - Measures the degree of physiological excitation (0-1).

References: Russell, J. A. (1980). A circumplex model of affect. Journal of Personality and Social Psychology.

Emotional state

Emotional State - The dominant emotional state identified based on the combination of valence and arousal.

References: Russell, J. A. (1980). A circumplex model of affect. Journal of Personality and Social Psychology.

Musical key

Key - The tonal center of the piece. Each key has specific emotional significance.

References: Russell, J. A. (1980). A circumplex model of affect. Journal of Personality and Social Psychology.

Tonal strength

Tonal Strength - Measures how clearly defined the tonality is.

References: Russell, J. A. (1980). A circumplex model of affect. Journal of Personality and Social Psychology.

Rhythm complexity

Rhythm Complexity - Measures the degree of variability and syncopation in rhythm.

References: Russell, J. A. (1980). A circumplex model of affect. Journal of Personality and Social Psychology.

MFCC (Mel Cepstral Coefficients)

MFCC (Mel-Frequency Cepstral Coefficients) - Standard timbral fingerprint used in MIR (Music Information Retrieval) and speech recognition. 13 coefficients (mean and standard deviation) are computed, describing the overall shape of the sound spectrum on a scale adapted to human perception (the Mel scale).

References: Davis, S. & Mermelstein, P. (1980). Comparison of parametric representations for monosyllabic word recognition. IEEE Trans. ASSP.

Spectral Flatness

Spectral Flatness - Measures how 'noisy' (white-noise-like) versus 'tonal' (dominated by clear frequencies) the sound is. Values near 1 indicate noise, values near 0 indicate a pure tone.

References: Peeters, G. (2004). A large set of audio features for sound description. IRCAM.

Spectral Bandwidth

Spectral Bandwidth - Measures how spread out the sound's energy is around the spectral centroid. High values indicate a rich/complex timbre, low values a focused/pure timbre.

References: Peeters, G. (2004). A large set of audio features for sound description. IRCAM.

Spectral Flux

Spectral Flux - Measures how quickly the frequency spectrum changes from one audio frame to the next. High values indicate abrupt timbral changes (transitions, attacks), low values indicate a stable, sustained sound.

References: Peeters, G. (2004). A large set of audio features for sound description. IRCAM.

Chroma Vector

Chroma Vector - The full 12-value vector, one for each musical pitch class (C, C#, D...B), representing the distribution of harmonic energy across all 12 notes. Underlies key detection.

References: Peeters, G. (2004). A large set of audio features for sound description. IRCAM.

Harmonic/Percussive Ratio (HPSS)

Harmonic/Percussive Ratio (HPSS - Harmonic-Percussive Source Separation) - The proportion of harmonic energy (sustained, tonal sounds) out of the total signal energy (harmonic + percussive). Values near 1 = predominantly harmonic (e.g. pads, sustained voice); values near 0 = predominantly percussive (e.g. drums, rhythm).

References: Fitzgerald, D. (2010). Harmonic/percussive separation using median filtering. DAFx.

Crest Factor

Crest Factor - The ratio between the signal peak and its RMS energy. High values indicate wide, uncompressed dynamics; low values (close to 1) indicate a heavily compressed signal with reduced dynamic range.

References: AES17 - Standard method for digital audio equipment measurement (Audio Engineering Society).

Silence Ratio

Silence Ratio - The percentage of the segment's duration below a -40 dB threshold, considered silence.

References: internal definition of the analysis system (-40 dB threshold).

Integrated LUFS

LUFS (Loudness Units relative to Full Scale) Integrated - The standard measure of perceived loudness across the whole piece, computed per the ITU-R BS.1770-4 / EBU R128 algorithm. Unlike simple RMS, it models human auditory perception (K-weighting).

References: ITU-R BS.1770-4; EBU R128 (European Broadcasting Union).

LRA (Loudness Range)

LRA (Loudness Range) - The range of loudness variation throughout the piece, expressed in LU (Loudness Units), per EBU R128. High values indicate varied dynamics, low values indicate constant loudness.

References: EBU R128 - Loudness Range (LRA) specification (European Broadcasting Union).

True Peak (dBTP)

True Peak (dBTP - decibels True Peak) - The true maximum signal level, measured with 4x oversampling to detect inter-sample peaks that could occur during digital-to-analog conversion, per ITU-R BS.1770-4.

References: ITU-R BS.1770-4 - Algorithms to measure audio programme loudness and true-peak audio level.

Key (Krumhansl-Schmuckler)

Key (Krumhansl-Schmuckler) - The key and mode (major/minor) determined by correlating the piece's average chroma vector with the standard Krumhansl-Kessler (1982) tonal profiles, more robust than the simple per-5-second-segment detection.

References: Krumhansl, C. L., & Kessler, E. J. (1982). Tracing the dynamic changes in perceived tonal organization. Psychological Review, 89(4).

Emotional State Definitions

The system classifies each analyzed piece into one of the 9 emotional states below, based on its position in the two-dimensional valence-arousal space:

Sadness (Valence 0.38-0.67, Arousal 0.29-0.40)

Low valence, low arousal - melancholic, introspective sadness, without active tension.

Anxiety (Valence 0.42-0.78, Arousal 0.42-0.60)

Low valence, high arousal - tension, restlessness, an unpleasant state of alertness.

Acute stress (Valence 0.40-0.72, Arousal 0.55-0.70)

Low valence, very high arousal - sudden alarm, hypervigilance, a startle-reflex response to an acute stressor.

Chronic stress (Valence 0.38-0.78, Arousal 0.30-0.52)

Low-to-moderate valence, medium arousal - sustained background tension, exhaustion with irritability, without an acute activation peak.

Panic (Valence 0.40-0.80, Arousal 0.40-0.60)

Very low valence, maximum arousal - acute crisis, disorientation, extreme physiological activation.

Energizing (Valence 0.65-0.82, Arousal 0.65-0.82)

High valence, high arousal - energy, motivation, intense positive activation.

Happiness (Valence 0.70-0.88, Arousal 0.40-0.60)

Very high valence, moderately high arousal - warm joy, contentment, a sustained positive state.

Relaxation (Valence 0.55-0.75, Arousal 0.20-0.40)

Moderately high valence, low-to-moderate arousal - composed calm, quiet mental clarity, stability and centeredness, without strong polarization.

Deep sleep (Valence 0.35-0.70, Arousal 0.15-0.50)

Moderately high valence, very low arousal - deep exhaustion, a strong pull toward rest, activation gradually winding down.

Segment Details (Sample: first 15 and last 15 segments)

Note: Only the first 15 and last 15 segments are shown.

Start	End	BPM	Centroid	Rolloff	ZCR	RMS	Energy	Valence	Arousal	Emotion	Key	Tonal	Rhythm	Flat	BW	Flux	Harm	Crest	Sil
0.00	5.00	70.0	1023.97491551.0386	0.0691	0.0313	3	0.4643	0.2444	0.2444	sadness	D	0.2461	0.2384	0.032	1212	4.7	1.00	4.2	0.39
5.00	10.00	70.0	330.8048	469.0948	0.0223	0.1076	3	0.4455	0.2474	sadness	D	0.2759	0.1682	0.000	455	12.6	1.00	3.4	0.07
10.00	15.00	70.0	321.0737	412.2213	0.0243	0.0785	3	0.4125	0.2197	sadness	F	0.2231	0.1442	0.000	520	13.9	1.00	3.9	0.10
15.00	20.00	70.0	218.4076	356.0455	0.0118	0.1893	4	0.7329	0.2647	relaxation	C	0.2677	0.1550	0.000	417	13.4	1.00	3.5	0.03
20.00	25.00	89.1	247.2900	358.8867	0.0155	0.1148	2	0.7593	0.2402	chronic stress	C	0.2077	0.4104	0.000	462	13.1	1.00	6.4	0.07
25.00	30.00	117.5	190.5217	309.8887	0.0086	0.2139	6	0.7568	0.3625	happiness	A#	0.2664	0.2500	0.000	391	17.6	1.00	3.5	0.03
30.00	35.00	45.3	269.3735	375.6348	0.0198	0.1010	2	0.7937	0.2795	chronic stress	A#	0.2375	0.7417	0.000	468	16.8	0.98	7.1	0.09
35.00	40.00	117.5	221.8903	321.3033	0.0138	0.1653	6	0.7408	0.3411	happiness	D	0.2691	0.1859	0.000	402	14.7	1.00	3.9	0.06

Start	End	BPM	Centroid	Rolloff	ZCR	RMS	Energy	Valence	Arousal	Emotion	Key	Tonal	Rhythm	Flat	BW	Flux	Harm	Crest	Sil
40.00	45.00	70.0	270.5126	382.5134	0.0175	0.0858	3	0.4756	0.2781	deep sleep	D	0.2010	0.4527	0.000	498	10.6	0.97	7.4	0.12
45.00	50.00	30.0	202.8724	332.3690	0.0079	0.2353	3	0.8041	0.3377	happiness	A#	0.2555	0.7806	0.000	419	18.8	1.00	3.4	0.02
50.00	55.00	60.1	280.4012	465.5558	0.0198	0.1132	3	0.8078	0.3431	chronic stress	A#	0.2603	1.0838	0.000	496	14.6	0.98	5.9	0.07
55.00	60.00	92.3	248.2172	435.0505	0.0162	0.1976	3	0.4898	0.2875	deep sleep	D	0.2187	0.5925	0.000	418	25.4	0.98	4.2	0.04
60.00	65.00	45.3	306.7115	448.8576	0.0265	0.0887	2	0.7680	0.2738	chronic stress	C	0.2056	0.8341	0.000	467	10.6	0.99	4.8	0.08
65.00	70.00	44.6	261.5332	453.9419	0.0176	0.1763	2	0.7423	0.2708	deep sleep	A#	0.1701	0.6557	0.000	467	35.7	0.97	3.5	0.09
70.00	75.00	44.6	205.5280	357.1920	0.0096	0.2331	3	0.7273	0.2801	deep sleep	C	0.1643	0.7214	0.000	441	39.1	0.99	2.9	0.03
165.00	170.00	89.1	456.3448	569.5831	0.0133	0.1716	2	0.7804	0.4160	happiness	C	0.2130	2.1565	0.000	1141	33.2	0.97	3.4	0.05
170.00	175.00	89.1	491.4426	632.2388	0.0212	0.1614	2	0.7757	0.4364	deep sleep	C	0.2041	2.4378	0.000	1135	27.3	0.95	3.6	0.06
175.00	180.00	89.1	419.6526	565.8946	0.0133	0.1923	3	0.5066	0.4145	deep sleep	G	0.2314	2.0349	0.000	1058	27.8	0.98	3.2	0.04
180.00	185.00	89.1	454.2045	657.7596	0.0159	0.1866	3	0.5084	0.3990	deep sleep	G	0.2347	1.8428	0.000	1032	30.9	0.98	3.2	0.03
185.00	190.00	89.1	462.9716	609.5591	0.0132	0.1576	2	0.8022	0.4036	deep sleep	D	0.2540	1.9041	0.000	1128	24.5	0.96	3.7	0.04
190.00	195.00	89.1	470.9938	644.0521	0.0205	0.1073	2	0.7232	0.3565	relaxation	D	0.1888	1.7440	0.000	999	36.0	0.75	4.5	0.10
195.00	200.00	89.1	462.2997	634.2824	0.0183	0.1853	3	0.7757	0.3836	happiness	A#	0.2216	1.7094	0.000	1045	34.2	0.97	3.3	0.04
200.00	205.00	89.1	433.9395	668.0278	0.0130	0.1952	3	0.7579	0.3647	deep sleep	C	0.1965	1.5650	0.000	953	32.4	0.97	3.1	0.03
205.00	210.00	89.1	401.0137	541.5700	0.0158	0.1882	3	0.4802	0.3524	deep sleep	D	0.1821	1.5066	0.000	944	36.1	0.97	3.0	0.04
210.00	215.00	89.1	408.1282	520.0867	0.0136	0.1943	3	0.7743	0.4149	happiness	D	0.2184	2.0857	0.000	1014	39.6	0.96	3.1	0.04
215.00	220.00	172.3	405.7024	603.1789	0.0156	0.2107	3	0.7281	0.4232	happiness	A#	0.1688	2.1043	0.000	962	43.8	0.96	2.9	0.04
220.00	225.00	172.3	462.4055	724.2533	0.0199	0.2092	3	0.7221	0.4036	sadness	A#	0.1631	1.8701	0.000	952	42.1	0.97	3.1	0.03
225.00	230.00	172.3	376.1874	704.4647	0.0152	0.1772	3	0.4639	0.3851	deep sleep	C	0.1666	1.7438	0.000	752	40.3	0.95	3.3	0.04
230.00	235.00	172.3	340.1126	439.3372	0.0111	0.1856	3	0.7918	0.3989	happiness	D	0.2443	1.6195	0.000	845	32.5	0.97	3.2	0.03
235.00	240.00	172.3	195.8451	289.7512	0.0068	0.1194	3	0.8055	0.3261	chronic stress	D	0.2639	0.9010	0.000	534	10.0	1.00	3.6	0.17

Conclusions and Therapeutic Recommendations

Dominant emotional state: deep sleep

Spectral and rhythmic analysis: Moderately high valence, very low arousal - deep exhaustion, a strong pull toward rest, activation gradually winding down. The values measured across the whole track were valence 0.427, arousal 0.316. The final classification (deep sleep) is based on a k-NN model over the full acoustic feature set, not just this two-dimensional valence-arousal projection.

Physiological effects:

The reduced or moderate tempo, stable harmonies, and absence of sudden intensity changes support activation of the parasympathetic nervous system (the "rest and digest" response), lowering heart rate, blood pressure, and cortisol levels. Depending on the piece's activation level, this sonic backdrop can support either the transition toward sleep or deep relaxation, or a state of calm alertness and cortical synchronization (beta/alpha) favorable to concentration, without inducing fatigue or over-stimulation.

Psychological effects:

Psychologically, exposure supports a reduction in rumination and anxious thoughts, fostering a state of presence and acceptance, and can help improve sleep quality when used as part of an evening routine. At the same time, the predictable structure reduces the cognitive load associated with filtering unexpected stimuli, supporting concentration and a sustained "flow" state over extended periods of work or study.

Therapeutic recommendations:

- The piece is ideal for deep relaxation sessions, meditation, sleep induction, or maintaining mental clarity and emotional balance. Useful both for decompression and stress reduction, and for work, study, or active meditation sessions.

Reference Standards

The loudness parameters (LUFS, LRA, True Peak) computed in this analysis are measured according to internationally recognized technical methodologies and standards used in the professional audio industry:

ITU-R BS.1770-4

Algorithms to measure audio programme loudness and true-peak audio level (International Telecommunication Union). The base standard behind LUFS/LKFS — used across virtually the entire industry (streaming, broadcast) for integrated loudness, loudness range (LRA) and true peak.

EBU R128

(European Broadcasting Union, latest version 5.0, November 2023) — loudness normalization at -23 LUFS, LRA, maximum true peak; EBU Tech 3341/3342/3343 — related measurement/production specifications.

AES17

(Audio Engineering Society) — standard methods for measuring THD+N, dynamic range, SNR for digital audio equipment/signals.

Clarification Regarding ISO Certification of Therapeutic Content

Currently, there is no official ISO certification through which a specific music track can be certified as “therapeutic,” “healing,” or as having a specific physiological or psychological effect.

1. What ISO standards exist for music?

ISO has standards for identifying and characterizing music, not for certifying its therapeutic or psychological effect.

- ISO 15707:2022 (ISWC) uniquely identifies a musical work. It does not evaluate its effect on health or emotions.
- ISO 3901:2019 (ISRC) identifies an audio or video music recording. It is an identification code, not a medical or therapeutic certification.
- ISO 10957:2021 (ISMN) identifies music score editions and other music publications. It does not evaluate therapeutic character.

Therefore, an “ISO certified for the psychological or therapeutic content of a song” does not exist within the ISO system.

2. What is professionally certified in music therapy?

Here there is a very important distinction. In the US, for example, there is the professional certification MT-BC — Music Therapist-Board Certified. The certification is granted to the person practicing music therapy, not to a song. AMTA states that music therapy is the clinical, evidence-based use of music interventions, delivered by a qualified professional. Professional standards also establish competencies, clinical training, and how the therapist uses musical interventions.

3. Can a song be scientifically classified as having a therapeutic or psychological effect?

Yes, but that is different from an ISO certification. A specific piece or type of music can demonstrate, in a clinical study, effects such as:

- reduced anxiety
- reduced stress

- improved pain perception
- relaxation
- improved sleep
- mood changes
- certain effects on physiological parameters



This analysis was carried out with the help of software built using AI - Claude, DeepSeek, Kimi, Perplexity, Grok, Owen.



Pozitron Grup SRL - all rights reserved



SC  Pozitron
Grup SRL