

# Supplementary information

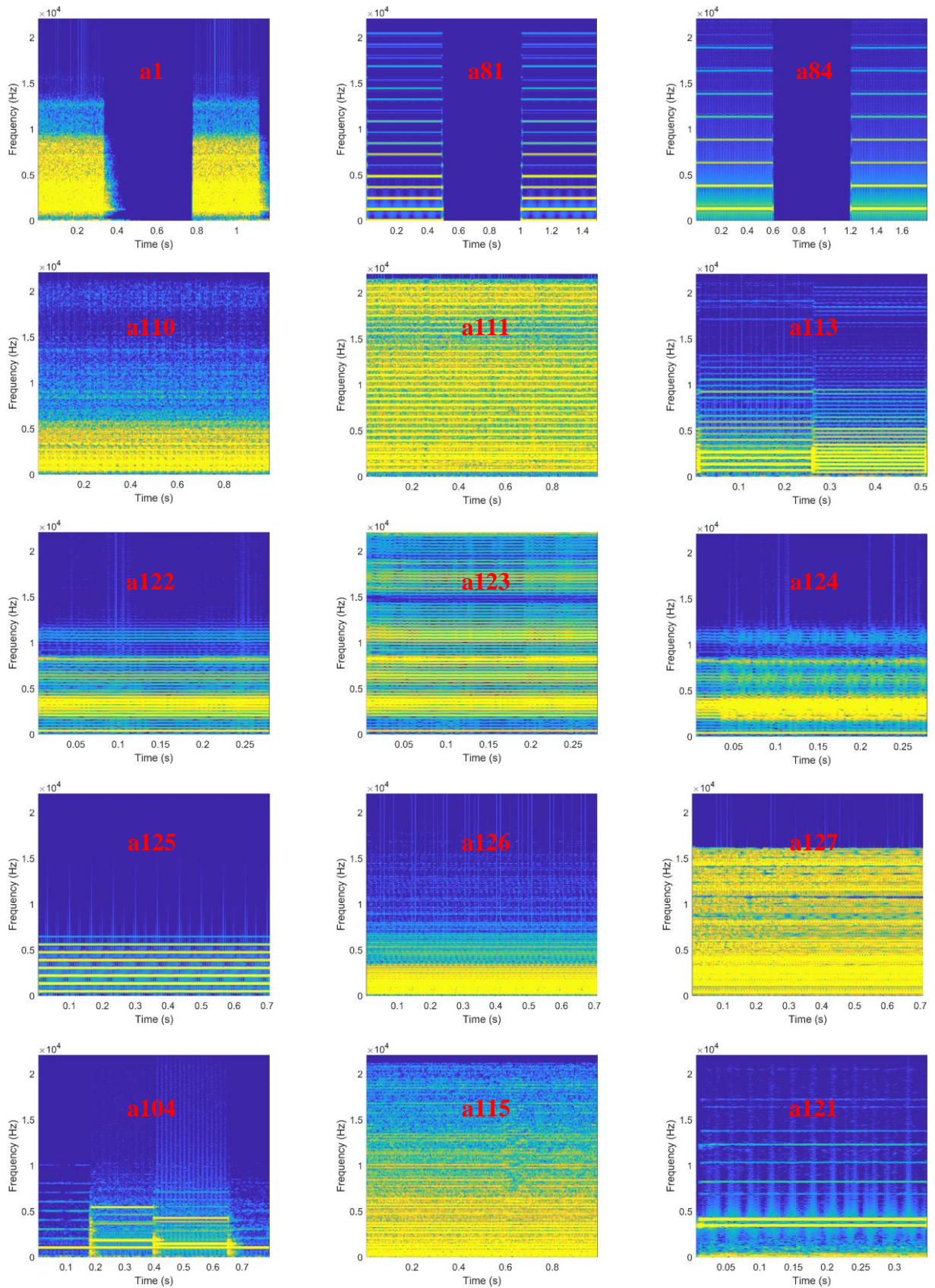
Supplementary Table 1: Contextual categories of the acoustic stimuli used in the psychoacoustical experiment.

Category	Background type	Alarm type
1	Construction noise	Reverse alarms
2	Railway and construction noise	Warning signals for track workers
3	Urban traffic noise	Car horns
4	Factory noise	Misc. buzzers and indoor warning signals
5	Locomotive cab noise	Warning signals for train drivers

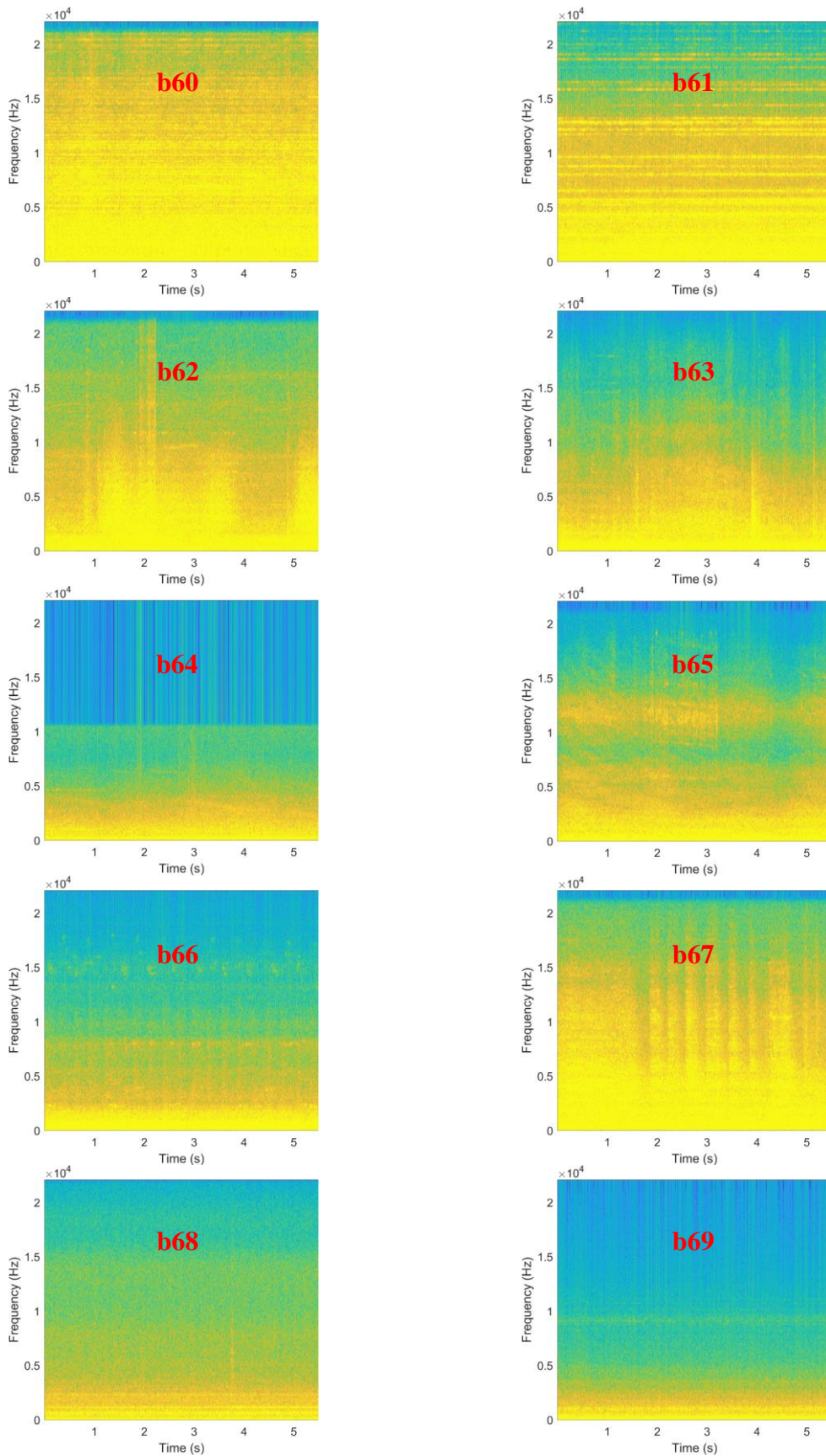
**Supplementary Table 2: Detail of the alarm-background pairs from the psychoacoustical experiment.** The alarms and backgrounds are referenced by their respective dataset IDs.

Category	Pair number	Background ID	Alarm ID
1	1	b60	a1
	2	b60	a81
	3	b60	a84
	4	b61	a1
	5	b61	a81
	6	b61	a84
2	7	b62	a110
	8	b62	a111
	9	b62	a113
	10	b63	a110
	11	b63	a111
	12	b63	a113
3	13	b64	a122
	14	b64	a123
	15	b64	a124
	16	b65	a122
	17	b65	a123
	18	b65	a124
4	19	b66	a125
	20	b66	a126
	21	b66	a127
	22	b67	a125
	23	b67	a126
	24	b67	a127
5	25	b68	a104
	26	b68	a115
	27	b68	a121
	28	b69	a104
	29	b69	a115
	30	b69	a121

**Supplementary Figure 1: Spectrograms of the alarms from the psychoacoustic experiment and evaluation subset of the dataset.** They are displayed by order of appearance in Supplementary Material Table 2, from left to right.



**Supplementary Figure 2: Spectrograms of the background noises from the psychoacoustic experiment and evaluation subset of the dataset.** They are displayed by order of appearance in Supplementary Material Table 2, from left to right.



**Supplementary Material 1: Categorization of alarms in the development subset of the dataset.** In Supplementary Table 3, we categorize the alarms according to two dimensions: temporal and spectral. The categories describe the predominant characteristics of the alarms. Some alarms within a given category may exhibit some other noticeable features, but the aim of the categories is to facilitate the grouping of alarms according to their shared general attributes. In this section of the Supplementary Material, we define the different categories.

Temporal dimension: Categories within this dimension reflect the global temporal structure of the alarms.

- **One-shot:** Alarms within the “One-shot” category are characterized by a single activation without interruptions and do not repeat over time.
- **Continuous periodic:** Alarms categorized as “Continuous periodic” follow a recurring pattern that repeats once or multiple times without any interruption.
- **Intermittent:** “Intermittent” alarms exhibit a cyclical activation, characterized by periodic on-and-off cycles. The duration and number of cycles vary across different alarms.

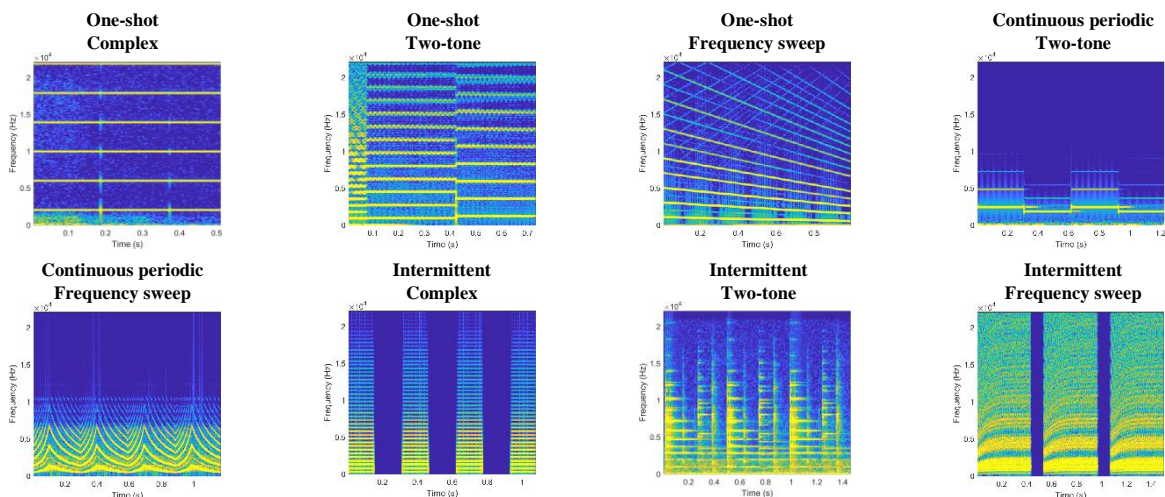
Spectral dimension: Categories within this dimension reflect the main aspects of the frequency content of the alarms.

- **Complex:** Alarms falling into the "Complex" category feature multiple emerging frequency components or groups of frequency components, generally harmonic. This category contains a few instances of bells.
- **Two-tone:** Alarms in the "Two-tone" category are characterized by two distinct fundamental frequencies that may be accompanied by harmonics. As the two tones generally appear in a successive order, this category is not properly spectral but rather spectro-temporal.
- **Frequency sweep:** Alarms in the "Frequency sweep" category have a fundamental frequency that continuously varies over time, either ascending or descending. The range and speed of variation differ among alarms.

**Supplementary Table 3: Global overview of the different alarms contained in the development subset of the dataset.** We provide the number of alarms within each of the temporal and spectral categories defined in Supplementary Material 1.

Temporal structure	Spectral content	Count
One-shot	Complex	15
	Two-tone	3
	Frequency sweep	1
Continuous periodic	Two-tone	7
	Frequency sweep	9
	Complex	28
Intermittent	Two-tone	2
	Frequency sweep	5

**Supplementary Figure 3: Examples of spectrograms of the alarms from the development subset of the dataset.** We provide an example for each association of temporal and spectral categories.



**Supplementary Figure 4: Examples of spectrograms of the backgrounds from the development subset of the dataset.** We provide a number of representative examples of the different types of backgrounds.

