ANSI/CTA Standard

Definitions and Characteristics for Wearable Sleep Monitors

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(Formulated under the cognizance of the CTA **R6.4 Health & Fitness Technology Subcommittee**.)

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FOREWORD

This standard was developed by the Consumer Technology Association's R6.4 Health & Fitness Technology Subcommittee.

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Definitions and Characteristics for Wearable Sleep Monitors

1. Scope and Disclaimer

This voluntary standard defines terms used to describe sleep and indicates, where appropriate, the functionality necessary in a consumer sleep measuring device to measure those characteristics. This standard provides definitions of sleep features terminology recommended for wearable sleep monitoring consumer products. This standard does not provide operational definitions for terminology used for medical devices. Furthermore, it is acknowledged that not all compliant products will include features to meet every sleep feature, but the ones that it does claim such will meet the respective requirements.

Terminology covered in this document falls into six general categories (A-F) as shown on the Table 1.

Table 1 - Sleep Terminology Categorization

	Terminology Category	Elemental Measure	Derived Measures
A	General terms describing the temporal surround of a sleep episode	**T**ime when individual began **A**ttempting/Intending **T**o **S**leep (TATS): 1. TATS Start Time 2. TATS End Time **T**ime **I**n **B**ed (TIB): 3. TIB Start Time 4. TIB End Time	5. Total TATS Duration 6. Total TIB Duration
B	General terms describing basic features of wakefulness and sleep	1. Awake 2. Asleep 3. Awakening from sleep 4. Brief awakening 5. Brief moment of sleep (dozing)	6. Total sleep period duration (TSPD) 7. Total sleep time (TST) 8. Sleep maintenance % 9. Total wakefulness duration 10. Wakefulness duration after initial sleep onset 11. Number of awakenings 12. Number of brief awakenings 13. Awakening rate per hour 14. Sleep fragmentation rate 15. Number of dozing episodes
C	Terms derived from basic features of wakefulness, sleep as they relate to the sleep episode and its surround	1. Initial sleep onset time 2. Final awakening time	3. Latency to sleep onset 4. Latency to arising 5. Sleep efficiency %
D	Specific terms describing processes occurring during sleep based on polysomnography	1. REM Sleep 2. N1 3. N2 4. N3 5. CNS Arousal	6. Number of CNS arousals 7. CNS arousal rate per hour Duration, percentage (of TST), and latency from sleep onset for each of the following: 8. REM 9. N1 10. N2 11. N3
E	Alternate terms for subdividing sleep into different processes	1. Dream sleep 2. Core Sleep 3. Sound Sleep 4. Restless Sleep	Duration and percentage for each of the following: 5. Dream sleep 6. Core sleep 7. Sound Sleep 8. Restless sleep % of TST