## Speaker Quality and Psychological Stress Test Report

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Test Venue: United Counseling Center

10F, No. 41, Sec. 1, ZhongXiao E. Rd, Taipei City,

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### 1. Summary:

Ten volunteers (5 male, 5 female, please refer Note 1) participated in the test, which required listening to different music played from four speaker systems. Two of the speaker systems were modified with the ETL-Module and the other two were not modified. The participants were subjected to the Heart Rate Variability (HRV) test which measures psychological stress.

The results indicate that the two types of speaker systems (speaker systems and earphones) containing the ETL-Module (as modified by Formosa Prosonic) significantly lessened the psychological stress levels of the participants. (See Note 2)

The ETL modified earphones dramatically reduced the stress levels of the participants by 14.32%. The ETL modified speaker systems reflected a significant stress reduction of 7.33%.

The sound testing involved the playing of four different styles of music (please see Note 3). However the musical style had no effect on the resulting measurements.

#### 2. Test Environment:

Environment description of the Test Lab:

- I. The test was conducted in an isolated room (Length 4.50m / Width 3.80m / Height 2.25m)
- ii. The distance between the speakers and the volunteers was 3.90m.
- iii. The music was played at a normal volume

#### 3. Conclusion:

- 1. The speaker systems and earphones that contained the ETL-Module significantly reduced the psychological stress levels of the participants in the study.
- 2. Statistically, any stress reduction level that exceeds 5% is a noticeable and meaningful test result.
- 3. The stress reduction by ETL modified earphones and speaker systems of 14.32% and 7.33% respectively, demonstrate a clear and resounding superiority for reducing listeners' psychological stress when this technology is applied to loudspeakers or small speaker (ear-phone)

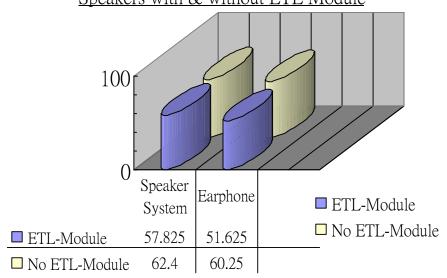




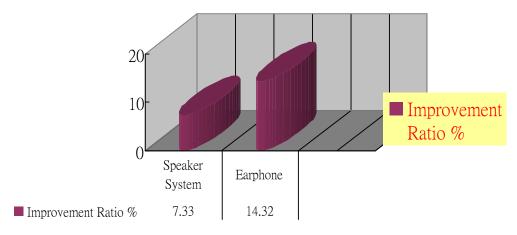
Note 1: Volunteer's Basic Bio-Data

	s1	s2	s3	s4	s5	s6	s7	s8	s9	s10
Name	Ms. Yeoh	Mr. Lin	Ms.Chan	Mr.Chen	Mr.Chao	Mr.Hsu	Ms.Chin	Mr.Lee	Ms.Wong	Ms.Chen
Sex	Female	Male	Female	Male	Male	Male	Female	Male	Female	Female
Age	43	36	29	29	30	36	33	32	36	32
Height	162	168	163	178	165	175	163	167	150	162
(cm)										
Weight	68	69	68	80	65	70	52	72	47.5	55
(Kg)										
Marital	Married	Married	Single	Single	Single	Single	Single	Single	Single	Married
Status										

Note 2 : Relation of Psychological Stress vs Speakers with & without ETL Module



Test Result: (ETL module)Speaker System & Earphone improve Psycology Stress Percentage Ratio



# <u>Note 3</u>:

Music used:

Track 3, Classic: Dvorak "From the new world" No. 9 in E minor OP95

Track 12, Female vocal: Mariah Carey "So Blessed"

Track 14, Female vocal: Gloria Estefan "Oye"

Track 24: Assorted sound for movie



(1) ETL module Speaker System 3inch driver (2) ETL module-Earphone speaker size: 3 inches

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