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No.: DM118383

Applicant: Sonic Technology Products, Inc.

P.O. Box 539 Grass Valley, CA95945

Manufacturer: ATR (Dongguan) Electronics Manufactory

38, Xian Feng Rd Pingshan 188 Industrial Zone Tangxia

Town Dongguan Guangdong China

Description of Sample(s): Submitted samples(s) said to be

Product: Loud and Clear Wireless Auditory

Assistance System

Brand Name: SuperEar® Model Number: LCT100

FCCID: 2AECBLCT100

Date Sample(s) Received: 2015-01-20

Date Tested: 2015-01-22, 2015-08-22

Investigation Requested: Perform ElectroMagnetic Interference measurement in

accordance with FCC 47CFR [Codes of Federal Regulations] Part 15: 2014 and ANSI C63.4: 2009 for FCC Certification.

Conclusion(s): The submitted product <u>COMPLIED</u> with the requirements of

Federal Communications Commission [FCC] Rules and Regulations Part 15. The tests were performed in accordance with the standards described above and on Section 2.2 in this

Test Report.

Remark(s):

LONG Yun Jian, Along Authorized Signatory

Authorized Signatory
ElectroMagnetic Compatibility Department
For and on behalf of
STC (Dongguan) Company Limited



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1.0 General Details

1.1 Equipment Under Test [EUT] Description of Sample(s)

Product: Loud and Clear Wireless Auditory Assistance System

Manufacturer: ATR (Dongguan) Electronics Manufactory

Brand Name: SuperEar® Model Number: LCT100

Rating: Input: 100-240Va.c. 50/60Hz 0.3A,

Output: 5Vd.c. 2.1A.

The AC/DC adaptor was provided by the manufacturer with following details:-

Brand name: Shun Shing; Model no.: SP10Q-NA

1.1.1 Description of EUT Operation

The Equipment Under Test (EUT) is a SuperEar Auditory Assistance System. The transmitter broadcasts the speaker's voice or any other audio wireless to the audience. Either a speaker's microphone or any sound system can be connected via the 3.5 mm audio socket.

1.2 Date of Order

2015-01-20

1.3 Submitted Sample(s):

1 Sample

1.4 Test Duration

2015-01-22, 2015-08-22

1.5 Country of Origin

China



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2.0 Technical Details

2.1 Investigations Requested

Perform ElectroMagnetic Interference measurement in accordance with FCC 47CFR [Codes of Federal Regulations] Part 15: 2014 and ANSI C63.4:2009 for FCC Certification.

The device was realized by test software.

2.2 Test Standards and Results Summary Tables

EMISSION Results Summary							
Test Condition	Test Requirement	Test Method	Class /	Т	est Result		
			Severity	Pass	Failed	N/A	
Field Strength of Fundamental Emissions & Spurious Emissions	FCC 47CFR 15.237	ANSI C63.4:2009	N/A	\boxtimes			
AC Mains Conducted Emissions	FCC 47CFR 15.207	ANSI C63.4:2009	N/A	\boxtimes			
Radiated Emissions	FCC 47CFR 15.209	ANSI C63.4:2009	N/A				

Note: N/A - Not Applicable



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3.0 Test Results

3.1 Emission

3.1.1 Radiated Emissions (30 – 1000MHz)

Test Requirement: FCC 47CFR 15.237
Test Method: ANSI C63.4:2009
Test Date: 2015-08-19
Mode of Operation: Tx mode

Test Method:

The sample was placed 0.8m above the ground plane on a standard radiated emission test site. Measurements in both horizontal and vertical polarities were performed. During the test, each emission was maximized by: having the EUT continuously working, investigated all operating modes, rotated about all 3 axis (X, Y & Z) and considered typical configuration to obtain worst position, manipulating interconnecting cables, rotating turntable, varying antenna height from 1m to 4m in both horizontal and vertical polarizations. In the frequency range of 9kHz to 30MHz, The center of the loop antenna shall be 1 meter above the ground and rotated loop axis for maximum reading. The emissions worst-case are shown in Test Results of the following pages.

Remark: 3 orthogonal axis apply to hand-held device only.

*: Semi-anechoic chamber located on the STC (Dongguan) Company Ltd. 68 Fumin Nan Road, Dalang, Dongguan, Guangdong, PRC with a metal ground plane filed with the FCC pursuant to section 2.948 of the FCC rules, with Registration Number: 629686.



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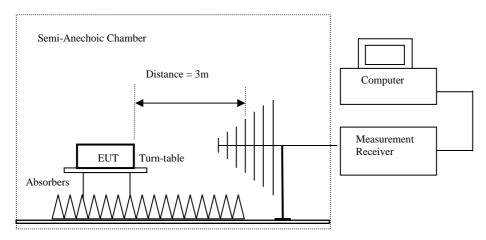
Spectrum Analyzer Setting:

9kHz – 150kHz (QP) RBW: 200Hz 150kHz - 30MHz (QP) RBW: 9kHz 30MHz – 1GHz (QP) RBW: 120kHz Sweep: Auto

Span: Fully capture the emissions being measured

Trace: Max. hold

Test Setup:



Ground Plane

Absorbers placed on top of the ground plane are for measurements above 1000MHz only.



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Limits for Field Strength of Fundamental Emissions [FCC 47CFR 15.227]:

Frequency Range of	Field Strength of	Field Strength of
Fundamental	Fundamental Emission	Fundamental Emission
	[Peak]	[Average]
[MHz]	$[\mu V/m]$	$[\mu V/m]$
72.0-73.0	800,000	80,000
74.6-74.8	800,000	80,000
75.2-76.0	800,000	80,000

Results of Tx mode: PASS

Field Strength of Fundamental Emissions							
			Peak Value				
Frequency	Measured	Correction	Field	Field	Limit @3m	E-Field	
	Level @3m	Factor	Strength	Strength		Polarity	
MHz	dΒμV	dB/m	$dB\mu V/m$	$\mu V/m$	$\mu V/m$		
72.200	77.60	6.2	83.8	15,488.2	800,000	Horizontal	
72.800	79.50	6.2	85.7	19,275.2	800,000	Horizontal	
75.800	80.60	6.2	86.8	21,877.6	800,000	Horizontal	

Field Strength of Fundamental Emissions Average Value						
Frequency	Frequency Measured Correction Field Field Limit @3m E-Field					
	Level @3m Factor Strength Strength Polarity					Polarity
MHz	dΒμV	dB/m	$dB\mu V/m$	$\mu V/m$	$\mu V/m$	
72.200	77.30	6.2	83.5	14,962.4	80,000	Horizontal
72.800	78.90	6.2	85.1	17,988.7	80,000	Horizontal
75.800	80.10	6.2	86.3	20,653.8	80,000	Horizontal

According to FCC 47CFR15.35, the limit on the radio frequency emissions as measured using instrumentation with a peak detector function, corresponding to 20dB above the maximum permitted average limit for the frequency being investigated unless a different peak emission limit is otherwise specified in the rules.



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Limits for Radiated Emissions [FCC 47 CFR 15.209]:

Frequency Range	Quasi-Peak Limits
[MHz]	$[\mu V/m]$
30-88	100
88-216	150
216-960	200
Above960	500

The emission limits shown in the above table are based on measurement employing a CISPR quasi-peak detector and above 1000MHz are based on measurements employing an average detector.

Results of Tx mode (72.2 MHz) (30MHz - 1000MHz): PASS

	Radiated Emissions							
			Quasi-Peak					
Frequency	Measured	Correction	Field	Field	Limit @3m	E-Field		
	Level @3m	Factor	Strength	Strength		Polarity		
MHz	dΒμV	dB/m	dBμV/m	$\mu V/m$	$\mu V/m$			
80.38	32.9	6.8	39.7	96.6	100	Horizontal		
94.35	32.4	8.1	40.5	105.9	150	Horizontal		
216.63	31.0	11.0	42.0	125.9	200	Horizontal		
80.38	23.9	7.1	31.0	35.5	100	Vertical		
94.44	23.4	8.7	32.1	40.3	150	Vertical		

Results of Tx mode (72.8 MHz) (30MHz - 1000MHz): PASS

Radiated Emissions Quasi-Peak						
Frequency	Measured	Correction	Field	Field	Limit @3m	E-Field
1 ,	Level @3m	Factor	Strength	Strength		Polarity
MHz	dΒμV	dB/m	dBμV/m	μV/m	$\mu V/m$	·
79.88	29.2	6.8	36.0	63.1	100	Horizontal
94.44	32.4	8.1	40.5	105.9	150	Horizontal
218.44	31.0	11.0	42.0	125.9	200	Horizontal
200.38	23.5	11.5	35.0	56.2	150	Vertical



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Results of Tx mode (75.8 MHz) (30MHz - 1000MHz): PASS

Radiated Emissions Quasi-Peak						
Frequency	Measured	Correction	Field	Field	Limit @3m	E-Field
	Level @3m	Factor	Strength	Strength		Polarity
MHz	dBμV	dB/m	$dB\mu V/m$	$\mu V/m$	$\mu V/m$	
78.94	32.9	6.8	39.7	96.6	100	Horizontal
94.69	31.4	8.1	39.5	94.4	150	Horizontal
201.75	26.6	10.6	37.2	72.4	150	Horizontal
78.94	25.7	7.1	32.8	43.7	100	Vertical

Remarks:

No further spurious emissions found between lowest internal frequency and 30MHz.

Correction Factor includes Antenna Factor and Cable Attenuation.

Calculated measurement uncertainty (30MHz -1GHz): 4.6dB

Emissions in the vertical and horizontal polarizations have been investigated and the worst-case test results are recorded in this report.



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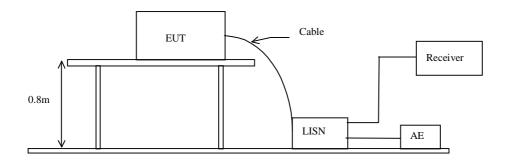
3.1.2 AC Mains Conducted Emissions (0.15MHz to 30MHz)

Test Requirement: FCC 47CFR 15.207
Test Method: ANSI C63.4:2009
Test Date: 2015-01-22
Mode of Operation: Charging mode
Test Voltage: 120Va.c., 60Hz

Test Method:

The test was performed in accordance with ANSI C63.4: 2009, with the following: an initial measurement was performed in peak and average detection mode on the live line, any emissions recorded within 30dB of the relevant limit line were re-measured using quasi-peak and average detection on the live and neutral lines with the worst case recorded in the table of results.

Test Setup:





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Limit for Conducted Emissions (FCC 47 CFR 15.207):

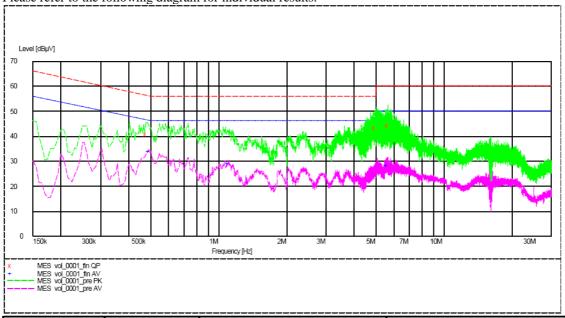
Frequency Range	Quasi-Peak Limits	Average
[MHz]	[dBµV]	[dBµV]
0.15-0.5	66 to 56*	56 to 46*
0.5-5.0	56	46
5.0-30.0	60	50

^{*} Decreases with the logarithm of the frequency.

Limits for Conducted Emissions Test, please refer to limit lines (Quasi-Peak and Average) in the following diagram.

Result of Charging mode (L): PASS

Please refer to the following diagram for individual results.



		Quasi	Quasi-peak		rage
Conductor	Frequency	Level	Limit	Level	Limit
Live or Neutral	MHz	dΒμV	dΒμV	dΒμV	dΒμV
Live	0.480	40.7	56.0	_*_	_*_
Live	4.950	43.2	56.0	_*_	_*_
Live	5.665	44.4	60.0	_*_	_*_
Live	0.490	_*_	_*_	33.9	46.0
Live	1.110	_*_	_*_	29.1	46.0
Live	5.630	_*_	_*_	28.3	50.0



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Limit for Conducted Emissions (FCC 47 CFR 15.207):

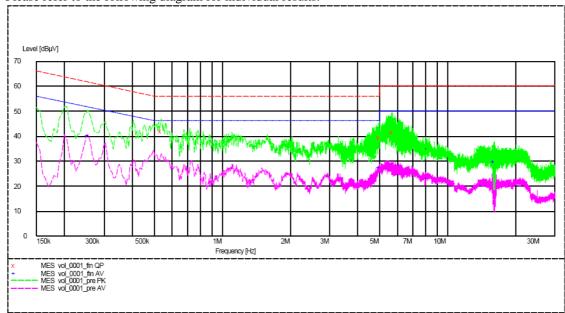
Frequency Range	Quasi-Peak Limits	Average
[MHz]	[dBµV]	[dBµV]
0.15-0.5	66 to 56*	56 to 46*
0.5-5.0	56	46
5.0-30.0	60	50

^{*} Decreases with the logarithm of the frequency.

Limits for Conducted Emissions Test, please refer to limit lines (Quasi-Peak and Average) in the following diagram.

Result of Charging mode (N): PASS

Please refer to the following diagram for individual results.



		Quasi-peak		Average	
Conductor	Frequency	Level	Limit	Level	Limit
Live or Neutral	MHz	dΒμV	dBμV	dΒμV	dBμV
Neutral	0.535	42.0	56.0	_*_	_*_
Neutral	5.000	39.4	56.0	_*_	_*_
Neutral	5.685	41.6	60.0	_*_	_*_
Neutral	0.255	_*_	_*_	40.2	52.0
Neutral	5.000	_*_	_*_	27.2	46.0
Neutral	16.145	_*_	_*_	29.6	50.0

Remarks:

Calculated measurement uncertainty (0.15MHz - 30MHz): 3.25dB

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^{-*-} Emission(s) that is far below the corresponding limit line.



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3.2 20dB Bandwidth of Fundamental Emission

Test Requirement: FCC 47 CFR 15.237
Test Method: ANSI C63.4:2009
Test Date: 2015-08-22
Mode of Operation: Tx mode

Test Method:

The bandwidth is measured at an amplitude level reduced from the reference level by a specified ratio. The reference level is the level of the highest amplitude signal observed from the transmitter at the fundamental frequency. Once the reference level is established, the equipment is conditioned with typical modulating signal to produce the worst-case (i.e. the widest) bandwidth.

Test Setup:

As Test Setup of clause 3.1.1 in this test report.

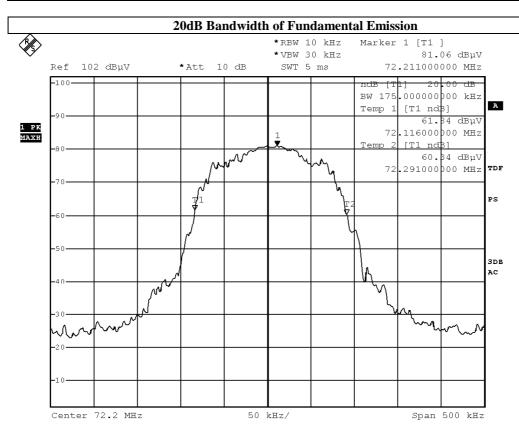


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Limits for 20dB Bandwidth of Fundamental Emission:

Frequency Range	20dB Bandwidth	FCC Limits	
[MHz]	[kHz]	[kHz]	
72.2	175.0	200	



BMP

Date: 22.AUG.2015 14:06:36

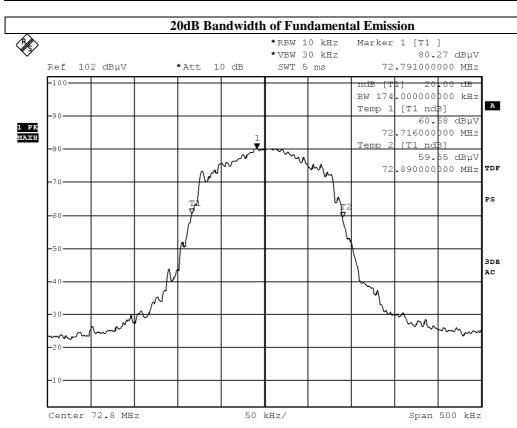


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Limits for 20dB Bandwidth of Fundamental Emission:

Frequency Range	20dB Bandwidth	FCC Limits		
[MHz]	[kHz]	[kHz]		
72.8	174.0	200		



BMP

Date: 22.AUG.2015 14:03:34

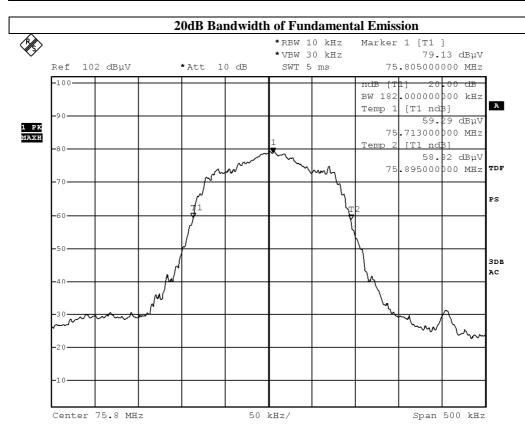


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Limits for 20dB Bandwidth of Fundamental Emission:

Frequency Range	20dB Bandwidth	FCC Limits	
[MHz]	[kHz]	[kHz]	
75.8	182.0	200	



BMP

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Appendix A

List of Measurement Equipment

EQP NO.	DESCRIPTION	MANUFACTURER	MODEL NO.	SERIAL NO.	LAST CAL	DUE CAL
EMD004	LISN	ROHDE & SCHWARZ	ESH3-Z5	100102	2015.3.24	2016.3.24
EMD022	EMI Test Receiver	ROHDE & SCHWARZ	ESCS30	100314	2015.3.24	2016.3.24
EMD035	EMI Test Receiver	ROHDE & SCHWARZ	ESCI	100441	2014.06.10	2015.06.10
EMD036	EMI Test Receiver	ROHDE & SCHWARZ	ESIB 26	100388	2014.06.10	2015.06.10
EMD041	TWO-LINE V- NETWORK	ROHDE & SCHWARZ	ENV216	100261	2015.3.24	2016.3.24
EMD061	Biconilog Antenna	ETS.LINDGREN	3142C	00060439	2014.11.29	2016.11.29
EMD084	MULTI-DVICE CONTROLLER	ETS.LINDGREN	2090	00060107	N/A	N/A
EMD088	Video Contol Unit	ETS.LINDGREN	Y21953A	2601073	N/A	N/A
EMD093	Monitor	ViewSonic	VA9036	Q8X064201876	N/A	N/A
EMD102	Intelligent Frequency	Ainuo Instrument Co., Ltd	AN97005SS	79707454	N/A	N/A
EMD103	Intelligent Frequency	Ainuo Instrument Co., Ltd	AN97005SS	79707455	N/A	N/A
EMD105	FACT-3 EMC Chamber	ETS.LINDGREN	FACT-3	3803	N/A	N/A
EMD106	Shielding Room #1	ETS.LINDGREN	RFD-100	3802	N/A	N/A
	100V Insertion Unit	ROHDE & SCHWARZ	URV5-Z4	100464	2015.3.24	2016.3.24
EMD113	Pre-Amplifier	ROHDE & SCHWARZ	N/A	1129588	2015.3.24	2016.3.24
EMD124	Loop Antenna	ETS-Lindgren	6502	00104905	2014.04.28	2016.04.28
RE01	RF cable	N/A	N/A	N/A	2014-9-28	2015-9-27
RE02	RF cable	N/A	N/A	N/A	2014-9-28	2015-9-27

Remarks:-

N/A Not Applicable or Not Available



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Appendix B

Photographs of EUT

Front View of the product



Inside View of the product



Inner Circuit Bottom View



Rear View of the product



Inner Circuit Top View



Inner Circuit Top View



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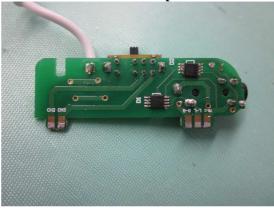
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Photographs of EUT

Inner Circuit Bottom View



Inner Circuit Top View



Inner Circuit Bottom View

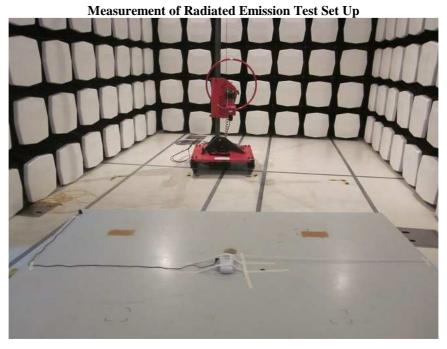




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Photographs of EUT





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Photographs of EUT

Measurement of Conducted Emission Test Set Up



***** End of Test Report *****