



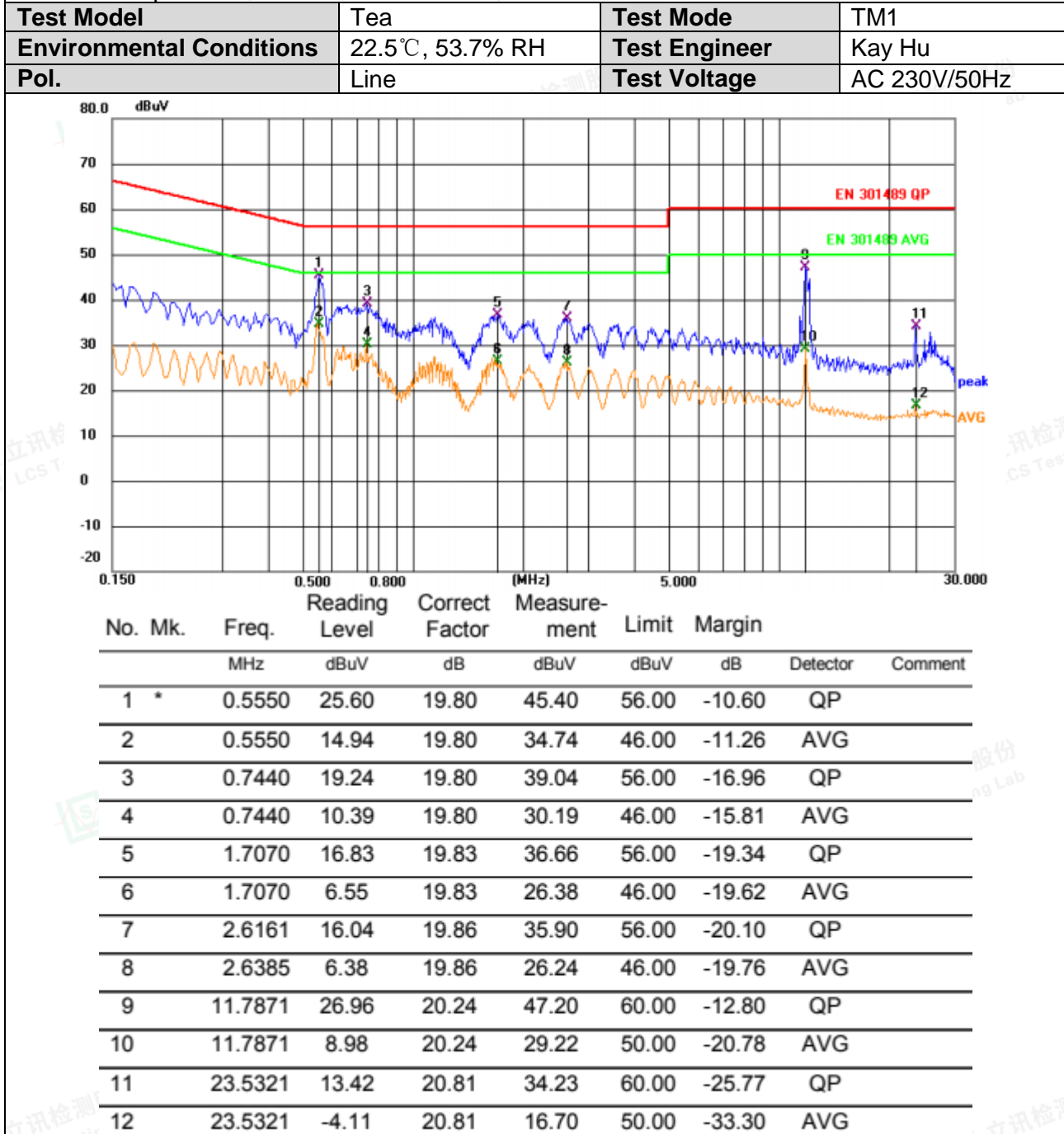
Appendix A for Emission and Immunity test results

Product Name: Magnetic Bluetooth headphone amplifier

Test Model: Tea

A.1 Line Conducted Emission

***Note: For pre-scan, the worst case is TM1, and the test data was shown as follow:



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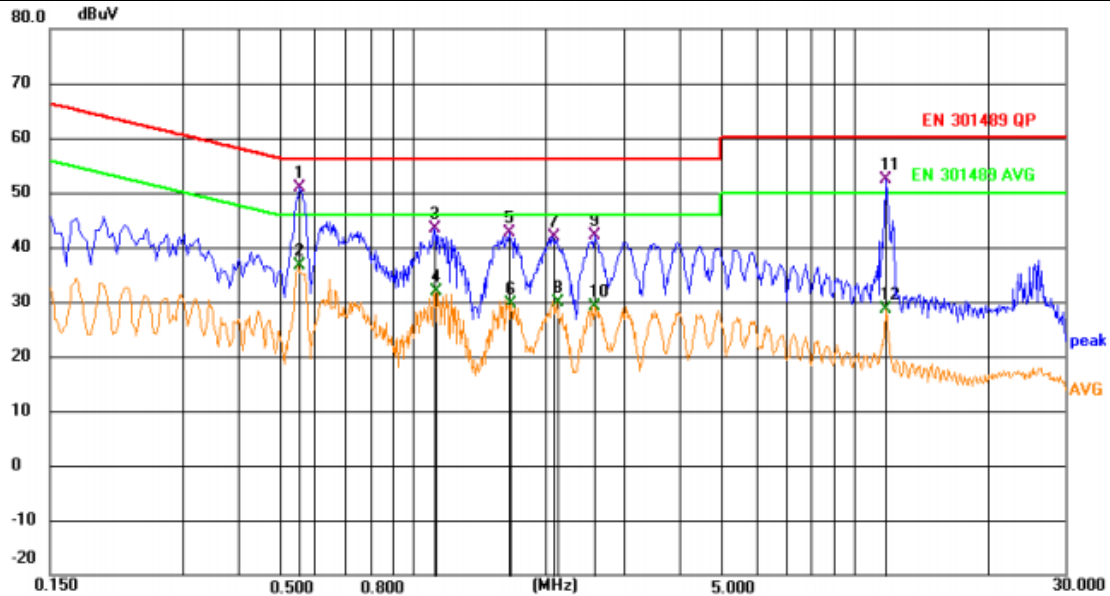
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Test Model	Tea	Test Mode	TM1
Environmental Conditions	22.5°C, 53.7% RH	Test Engineer	Kay Hu
Pol.	Neutral	Test Voltage	AC 230V/50Hz



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Margin dB	Detector	Comment
1	*	0.5550	31.13	19.78	50.91	56.00	-5.09	QP	
2		0.5550	16.76	19.78	36.54	46.00	-9.46	AVG	
3		1.1130	23.52	19.78	43.30	56.00	-12.70	QP	
4		1.1174	12.14	19.78	31.92	46.00	-14.08	AVG	
5		1.6485	22.72	19.82	42.54	56.00	-13.46	QP	
6		1.6710	9.75	19.82	29.57	46.00	-16.43	AVG	
7		2.0715	22.00	19.83	41.83	56.00	-14.17	QP	
8		2.1210	10.04	19.83	29.87	46.00	-16.13	AVG	
9		2.5711	22.18	19.84	42.02	56.00	-13.98	QP	
10		2.5711	9.30	19.84	29.14	46.00	-16.86	AVG	
11		11.7916	32.11	20.24	52.35	60.00	-7.65	QP	
12		11.7916	8.31	20.24	28.55	50.00	-21.45	AVG	

Note: For conducted emission and radiated emission test, a power supply of 230VAC and 120VAC was used for testing respectively, and only recorded the worst case of 230VAC.



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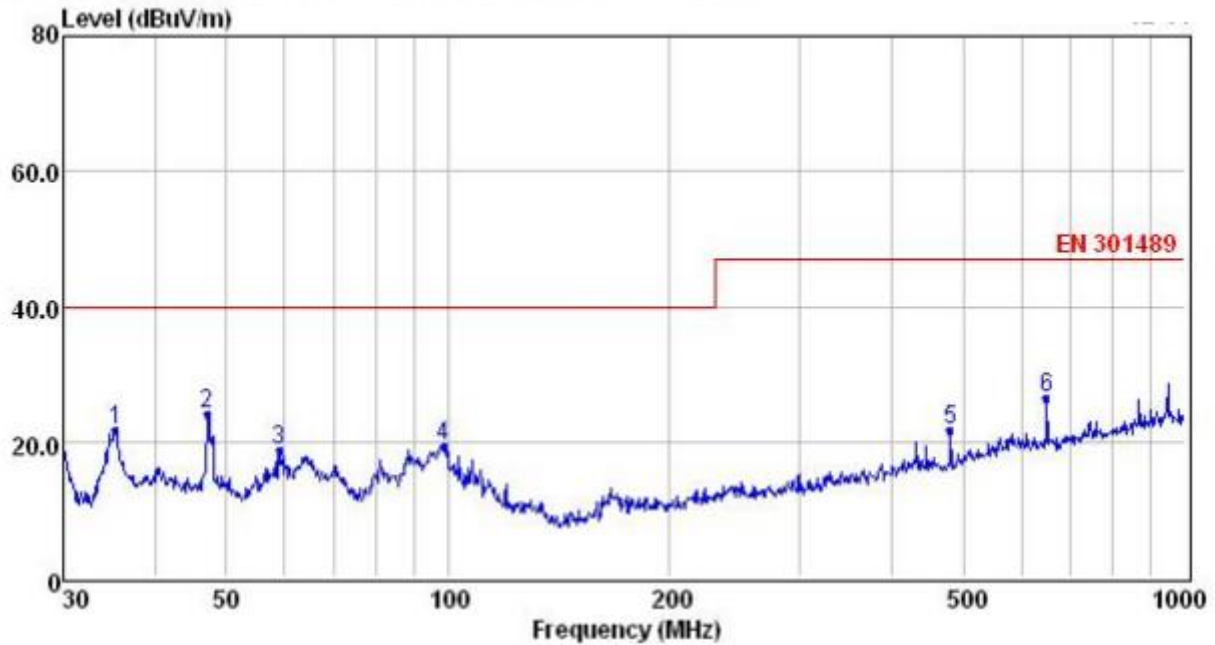
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A.3 Radiated Disturbance

Test Model	Tea	Test Mode	TM1
Environmental Conditions	22.3°C, 53.2% RH	Test Engineer	Kay Hu
Pol.	Vertical	Detector Function	Quasi-peak
Distance	3m	Test Voltage	AC 230V/50Hz



	Freq	Reading	CabLos	Antfac	Measured	Limit	Over	Remark
	MHz	dBuV	dB	dB/m	dBuV/m	dBuV/m	dB	
1	35.38	8.78	0.41	12.40	21.59	40.00	-18.41	QP
2	46.99	10.39	0.35	13.43	24.17	40.00	-15.83	QP
3	59.03	5.47	0.49	12.75	18.71	40.00	-21.29	QP
4	98.49	5.78	0.61	13.06	19.45	40.00	-20.55	QP
5	480.53	4.26	1.31	16.08	21.65	47.00	-25.35	QP
6	649.66	6.40	1.58	18.63	26.61	47.00	-20.39	QP

Note: 1. All readings are Quasi-peak values.

2. Measured= Reading + Antenna Factor + Cable Loss

3. The emission that are 20db below the official limit are not reported



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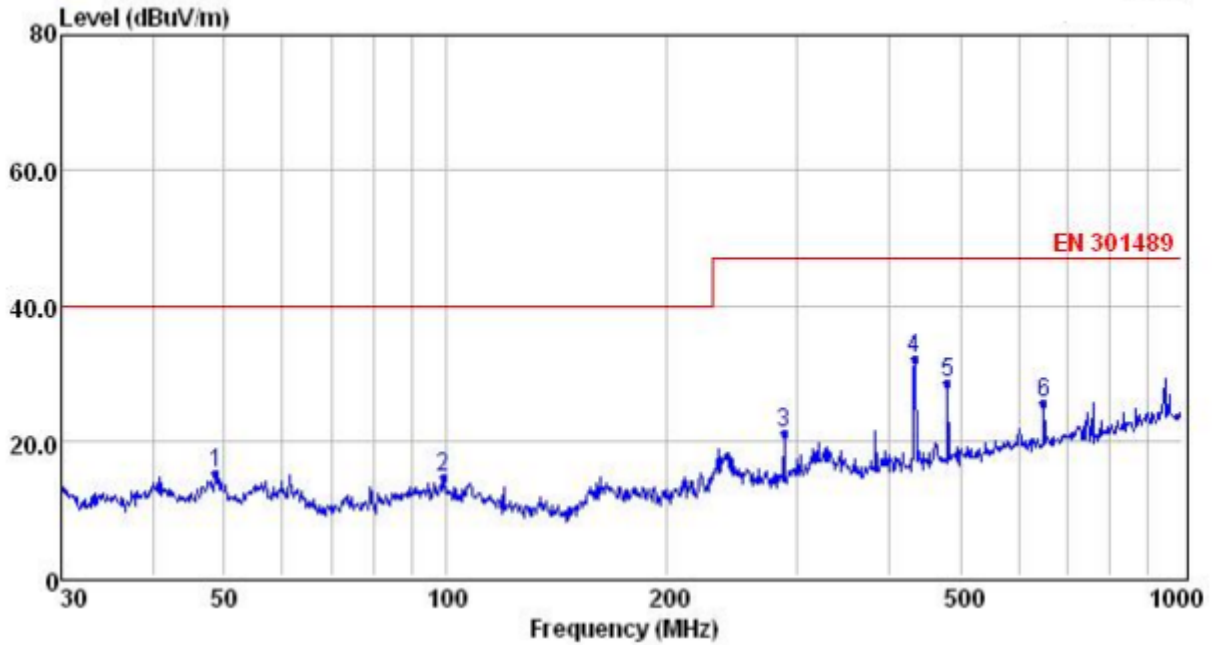
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Test Model	Tea	Test Mode	TM1
Environmental Conditions	22.3℃, 53.2% RH	Test Engineer	Kay Hu
Pol.	Horizontal	Detector Function	Quasi-peak
Distance	3m	Test Voltage	AC 230V/50Hz



	Freq	Reading	CabLos	Antfac	Measured	Limit	Over	Remark
	MHz	dBuV	dB	dB/m	dBuV/m	dBuV/m	dB	
1	48.67	1.34	0.35	13.33	15.02	40.00	-24.98	QP
2	99.18	0.90	0.61	13.11	14.62	40.00	-25.38	QP
3	287.99	7.30	1.05	12.83	21.18	47.00	-25.82	QP
4	434.07	15.41	1.18	15.53	32.12	47.00	-14.88	QP
5	480.53	11.06	1.31	16.08	28.45	47.00	-18.55	QP
6	649.66	5.22	1.58	18.63	25.43	47.00	-21.57	QP

Note: 1. All readings are Quasi-peak values.
2. Measured= Reading + Antenna Factor + Cable Loss
3. The emission that are 20db below the official limit are not reported





Test Mode: TM1 (Above 1GHz)	Tested by: Kay Hu
Test Voltage: AC 230V/50Hz	Test Distance: 3m
Detector Function: Peak + AV	Test Results: Passed

Freq. MHz	Reading dBuV	Factor dB/m	Level dBuV/m	Limit dBuV/m	Margin dB	Remark	Pol.
1126.02	50.54	1.14	51.68	70.00	-18.32	Peak	Horizontal
1126.02	31.46	1.14	32.60	50.00	-17.40	Average	Horizontal
1693.24	50.38	2.67	53.05	70.00	-16.95	Peak	Horizontal
1693.24	30.95	2.67	33.62	50.00	-16.38	Average	Horizontal
2396.19	48.66	5.75	54.41	70.00	-15.59	Peak	Horizontal
2396.19	29.49	5.75	35.24	50.00	-14.76	Average	Horizontal
3383.18	48.12	1.83	49.95	74.00	-24.05	Peak	Horizontal
3383.18	30.38	1.83	32.21	54.00	-21.79	Average	Horizontal
4189.36	50.02	3.17	53.19	74.00	-20.81	Peak	Horizontal
4189.36	31.22	3.17	34.39	54.00	-19.61	Average	Horizontal
5925.54	50.43	6.13	56.56	74.00	-17.44	Peak	Horizontal
5925.54	28.40	6.13	34.53	54.00	-19.47	Average	Horizontal

Freq. MHz	Reading dBuV	Factor dB/m	Level dBuV/m	Limit dBuV/m	Margin dB	Remark	Pol.
1126.20	48.62	1.14	49.76	70.00	-20.24	Peak	Vertical
1126.20	31.34	1.14	32.48	50.00	-17.52	Average	Vertical
1558.39	51.93	2.67	54.60	70.00	-15.40	Peak	Vertical
1558.39	31.94	2.67	34.61	50.00	-15.39	Average	Vertical
2918.34	51.44	5.75	57.19	70.00	-12.81	Peak	Vertical
2918.34	30.56	5.75	36.31	50.00	-13.69	Average	Vertical
3734.54	49.37	1.83	51.20	74.00	-22.80	Peak	Vertical
3734.54	31.54	1.83	33.37	54.00	-20.63	Average	Vertical
4597.11	51.86	3.17	55.03	74.00	-18.97	Peak	Vertical
4597.11	30.49	3.17	33.66	54.00	-20.34	Average	Vertical
5978.96	48.33	6.13	54.46	74.00	-19.54	Peak	Vertical
5978.96	30.42	6.13	36.55	54.00	-17.45	Average	Vertical

Note:

- Field strength limits for frequency above 1000MHz are based on average limits. However, Peak mode field strength shall not exceed the average limits specified plus 20dB.
- Measurements above show only up to 6 maximum emissions noted.
- Data of measurement within this frequency range shown "--" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- Factor = Antenna Factor + Cable Loss + Amplifier Factor
Emission Level = Reading level + Factor
Margin = Emission Level - Limit



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A.4 Harmonic Current Emissions

Because power of EUT less than 75W, According standard EN 61000-3-2, Harmonic current unnecessary to test.

A.5 Voltage Fluctuation and Flicker

Test Model	Tea	Test Engineer	Kay Hu
Environmental Conditions	22.1℃, 53.3% RH	Test Voltage	AC 230V/50Hz
Type of Test:	Flickermeter Test - Table		
Power Analyzer:	Voltech PM6000 SN: 200006700523 Firmware Version: v1.21.07RC2		
	Channel(s):		
	1. SN: 090015502053, 28 Adjusted Date: 22 JUN 2011. 2. SN:None Adjusted Date:None		
	3. SN:None Adjusted Date:None 4. SN:None Adjusted Date:None		
	5. SN:None Adjusted Date:None 6. SN:None Adjusted Date:None		
	Shunt(s):		
	1. SN: 091024301916, 4 Adjusted Date: 23 JUN 2011. 2. SN:None Adjusted Date:None		
	3. SN:None Adjusted Date:None 4. SN:None Adjusted Date:None		
	5. SN:None Adjusted Date:None 6. SN:None Adjusted Date:None		
AC Source:	Test AC Source		
Overall Result:	Notes:		
PASS	Measurement method - Voltage		



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A.6 RF Electromagnetic Field (80 MHz - 6000 MHz)

Test Model	Tea	Test Engineer	Kay Hu
Environmental Conditions	23.2°C, 52.3% RH	Test Voltage	AC 230V/50Hz

TM1 Test Result:

EUT Working Mode	Antenna Polarity	Frequency (MHz)	Fielded Strength (V/m)	Observation	Position	Conclusion
Operating Mode	Vertical	80-6000	3	CT, CR	Front, Right, Left, Back	Pass
	Horizontal	80-6000	3	CT, CR	Front, Right, Left, Back	Pass
Idle	Vertical	80-6000	3	See Note	Front, Right, Left, Back	Pass
	Horizontal	80-6000	3	See Note	Front, Right, Left, Back	Pass

TM2-TM4 Test Result:

EUT Working Mode	Antenna Polarity	Frequency (MHz)	Fielded Strength (V/m)	Observation	Position	Conclusion
Operating Mode	Vertical	80-6000	3	See Note	Front, Right, Left, Back	Pass
	Horizontal	80-6000	3	See Note	Front, Right, Left, Back	Pass
Idle	Vertical	80-6000	3	See Note	Front, Right, Left, Back	Pass
	Horizontal	80-6000	3	See Note	Front, Right, Left, Back	Pass

Note: The EUT performance complied with performance criteria for CT&CR to Function and there is no any degradation of performance and function.





A.7 Electrostatic Discharge

Electrostatic Discharge Test Results

Standard	<input type="checkbox"/> IEC 61000-4-2 <input checked="" type="checkbox"/> EN 61000-4-2		
Applicant	Khadas Technology Co., Ltd		
EUT	Magnetic Bluetooth headphone amplifier	Temperature	22.5℃
M/N	Tea	Humidity	52.2%
Criterion	B	Pressure	1021mbar
Test Mode	TM1-TM4	Test Engineer	Kay Hu

TEST RESULT OF TM1

Test Voltage	Coupling	Observation	Result (Pass/Fail)
±2KV, ±4kV	Contact Discharge	TT, TR	Pass
±2KV, ±4kV, ±8kV	Air Discharge	TT, TR	Pass
±2KV, ±4kV	Indirect Discharge HCP	TT, TR	Pass
±2KV, ±4kV	Indirect Discharge VCP	TT, TR	Pass

TEST RESULT OF TM2-TM4

Test Voltage	Coupling	Result (Pass/Fail)
±2KV, ±4kV	Contact Discharge	Pass
±2KV, ±4kV, ±8kV	Air Discharge	Pass
±2KV, ±4kV	Indirect Discharge HCP	Pass
±2KV, ±4kV	Indirect Discharge VCP	Pass

Note: The EUT performance complied with performance criteria for TT&TR Function and there is no any degradation of performance and function.





A.8 Electrical Fast Transient Immunity

Electrical Fast Transient/Burst Test Results

Standard	<input type="checkbox"/> IEC 61000-4-4 <input checked="" type="checkbox"/> EN 61000-4-4		
Applicant	Khadas Technology Co., Ltd		
EUT	Magnetic Bluetooth headphone amplifier	Temperature	22.7°C
M/N	Tea	Humidity	52.4%
Test Mode	TM1-TM4	Criterion	B
Test Engineer	Kay Hu		

TEST RESULT OF TM1

Line	Test Voltage	Polarity	Observation	Result (Pass/Fail)
L	1KV	+/-	TT, TR	Pass
N	1KV	+/-	TT, TR	Pass
L-N	1KV	+/-	TT, TR	Pass

TEST RESULT OF TM2-TM4

Line	Test Voltage	Polarity	Result (Pass/Fail)
L	1KV	+/-	Pass
N	1KV	+/-	Pass
L-N	1KV	+/-	Pass



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A.9 RF Common Mode

Injected Currents Susceptibility Test Results			
Standard	<input type="checkbox"/> IEC 61000-4-6 <input checked="" type="checkbox"/> EN 61000-4-6		
Applicant	Khadass Technology Co., Ltd		
EUT	Magnetic Bluetooth headphone amplifier	Temperature	21.2°C
M/N	Tea	Humidity	53.5%
Test Mode	TM1-TM4	Criterion	A
Test Engineer	Kay Hu		

TEST RESULT OF TM1				
Frequency Range (MHz)	Strength (Unmodulated)	Injected Position	Observation	Result (Pass/Fail)
0.15 ~ 10	3V	AC Mains	CT, CR	Pass
10 ~ 30	3V to 1V			
30 ~ 80	1V			
TEST RESULT OF TM2-TM4				
Frequency Range (MHz)	Strength (Unmodulated)	Injected Position	Result (Pass/Fail)	
0.15 ~ 10	3V	AC Mains	Pass	
10 ~ 30	3V to 1V			
30 ~ 80	1V			
Remark:				
1. Modulation Signal:1kHz 80% AM				
2. Measurement Equipment :				
Simulator: CIT-10 (FRANKONIA)				
CDN : <input checked="" type="checkbox"/> CDN-M2 (FRANKONIA)				
<input type="checkbox"/> CDN-M3 (FRANKONIA)				

Note: The EUT performance complied with performance criteria for CT&CR Function and there is no any degradation of performance and function.



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**A.10 Surges, Line to Line and Line to Ground**

Surge Immunity Test Result			
Standard	<input type="checkbox"/> IEC 61000-4-5 <input checked="" type="checkbox"/> EN 61000-4-5		
Applicant	Khadas Technology Co., Ltd		
EUT	Magnetic Bluetooth headphone amplifier	Temperature	23.2°C
M/N	Tea	Humidity	52.1%
Test Mode	TM1-TM4	Criterion	B
Test Engineer	Kay Hu		

TEST RESULT OF TM1						
Location	Polarity	Phase Angle	Number of Pulse	Pulse Voltage (KV)	Observation	Result (Pass/Fail)
L-N	+	0°, 90°, 180°, 270°	5	1.0	TT, TR	Pass
	-	0°, 90°, 180°, 270°	5	1.0	TT, TR	Pass
TEST RESULT OF TM2-TM4						
Location	Polarity	Phase Angle	Number of Pulse	Pulse Voltage (KV)		Result (Pass/Fail)
L-N	+	0°, 90°, 180°, 270°	5	1.0		Pass
	-	0°, 90°, 180°, 270°	5	1.0		Pass



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**A.11 Voltage Dips/Interruptions Immunity Test**

Voltage Dips And Interruptions Test Results			
Standard	<input type="checkbox"/> IEC 61000-4-11 <input checked="" type="checkbox"/> EN 61000-4-11		
Applicant	Khadas Technology Co., Ltd		
EUT	Magnetic Bluetooth headphone amplifier	Temperature	23.2℃
M/N	Tea	Humidity	54.1%
Test Mode	TM1-TM4	Criterion	B&C
Test Engineer	Kay Hu		

TEST RESULT OF TM1				
Test Level % U _T	Voltage Dips & Short Interruptions % U _T	Duration (in periods)	Observation	Result (Pass/Fail)
0	100	0.5P	TT, TR	Pass
0	100	1P	TT, TR	Pass
70	30	25P	TT, TR	Pass
0	100	250P	TT, TR	Pass

TEST RESULT OF TM2-TM4			
Test Level % U _T	Voltage Dips & Short Interruptions % U _T	Duration (in periods)	Result (Pass/Fail)
0	100	0.5P	Pass
0	100	1P	Pass
70	30	25P	Pass
0	100	250P	Pass



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