



## Appendix A for Emission and Immunity test results

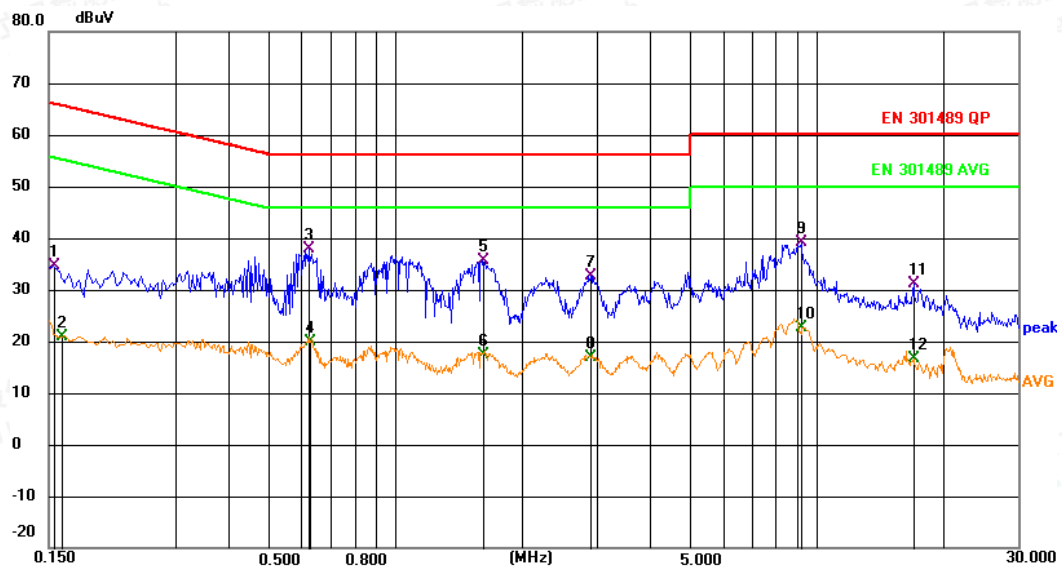
Product Name: Bluetooth headset

Test Model: X6

### A.1 Line Conducted Emission

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

Test Model	X6	Test Mode	TM1
Environmental Conditions	23.5℃, 53.6% RH	Test Engineer	Mening Su
Pol.	Line	Test Voltage	AC 230V/50Hz



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Margin	
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector
1		0.1546	14.95	19.63	34.58	65.75	-31.17	QP
2		0.1615	1.32	19.63	20.95	55.39	-34.44	AVG
3	*	0.6226	18.11	19.66	37.77	56.00	-18.23	QP
4		0.6271	0.18	19.66	19.84	46.00	-26.16	AVG
5		1.6036	15.84	19.67	35.51	56.00	-20.49	QP
6		1.6036	-2.17	19.67	17.50	46.00	-28.50	AVG
7		2.9131	12.95	19.73	32.68	56.00	-23.32	QP
8		2.9131	-2.80	19.73	16.93	46.00	-29.07	AVG
9		9.1906	19.30	19.85	39.15	60.00	-20.85	QP
10		9.2266	2.73	19.85	22.58	50.00	-27.42	AVG
11		16.9486	11.10	20.02	31.12	60.00	-28.88	QP
12		16.9486	-3.39	20.02	16.63	50.00	-33.37	AVG



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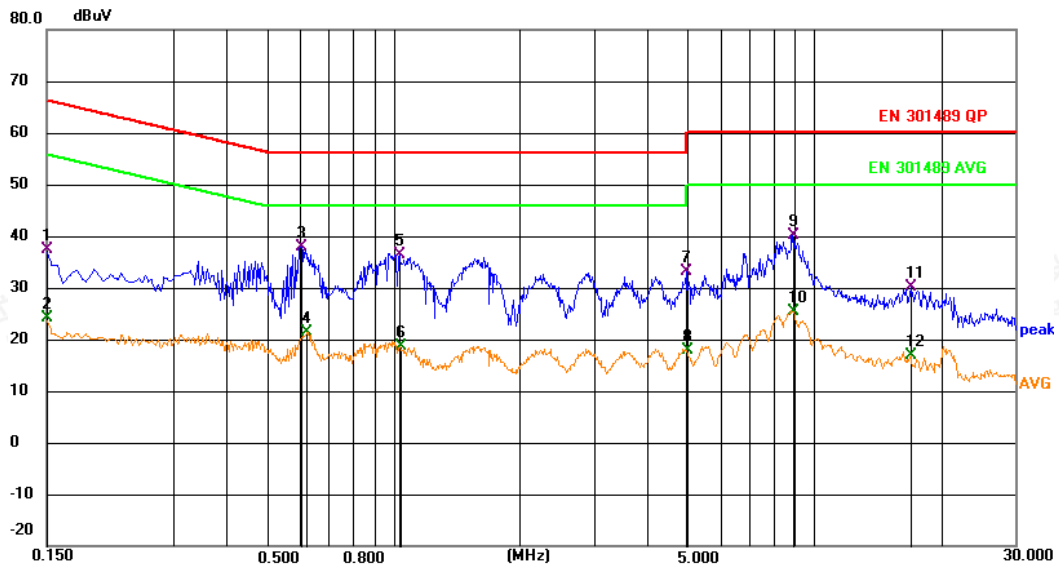
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Test Model	X6	Test Mode	TM1
Environmental Conditions	23.5℃, 53.6% RH	Test Engineer	Mening Su
Pol.	Neutral	Test Voltage	AC 230V/50Hz



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Margin	
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector
1		0.1500	17.74	19.63	37.37	66.00	-28.63	QP
2		0.1500	4.40	19.63	24.03	56.00	-31.97	AVG
3	*	0.6043	18.14	19.66	37.80	56.00	-18.20	QP
4		0.6238	1.64	19.66	21.30	46.00	-24.70	AVG
5		1.0320	16.70	19.65	36.35	56.00	-19.65	QP
6		1.0375	-0.90	19.65	18.75	46.00	-27.25	AVG
7		4.9519	13.30	19.80	33.10	56.00	-22.90	QP
8		4.9782	-1.97	19.80	17.83	46.00	-28.17	AVG
9		8.8692	20.38	19.85	40.23	60.00	-19.77	QP
10		8.9163	5.48	19.85	25.33	50.00	-24.67	AVG
11		16.9282	10.01	20.02	30.03	60.00	-29.97	QP
12		16.9282	-3.07	20.02	16.95	50.00	-33.05	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.

Margin= Reading level + Correct factor – Limit

Correct Factor= Lisen Factor+Cable Factor



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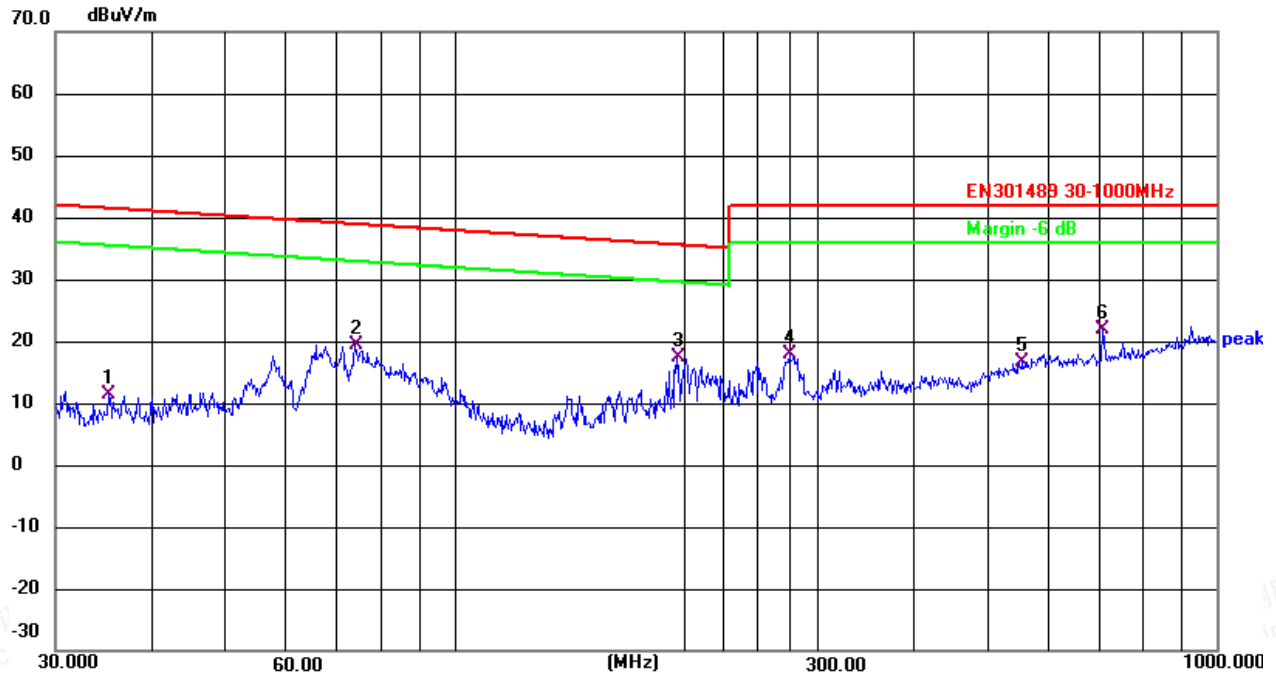
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### A.3 Radiated Disturbance

Test Model	X6	Test Mode	TM1
Environmental Conditions	23.8°C, 52.1% RH	Test Engineer	Mening Su
Pol.	Horizontal	Detector Function	Quasi-peak
Distance	3m	Test Voltage	AC 230V/50Hz



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	35.2511	29.22	-17.79	11.43	41.45	-30.02	QP
2	74.1351	39.12	-19.64	19.48	38.89	-19.41	QP
3	195.8219	34.76	-17.37	17.39	35.55	-18.16	QP
4	275.1570	33.28	-15.36	17.92	42.00	-24.08	QP
5	556.7743	28.16	-11.55	16.61	42.00	-25.39	QP
6	709.1821	32.75	-10.77	21.98	42.00	-20.02	QP



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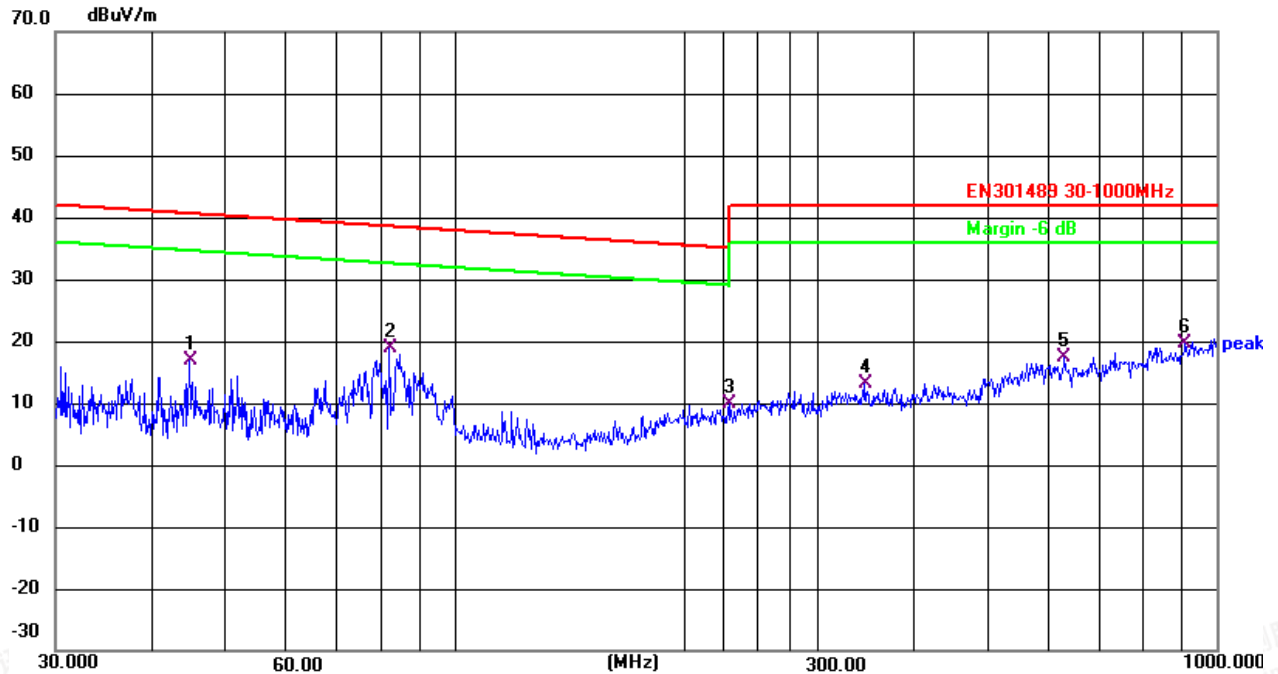
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Test Model	X6	Test Mode	TM1
Environmental Conditions	23.8°C, 52.1% RH	Test Engineer	Mening Su
Pol.	Vertical	Detector Function	Quasi-peak
Distance	3m	Test Voltage	AC 230V/50Hz



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	44.9006	33.83	-16.90	16.93	40.61	-23.68	QP
2	82.0705	38.47	-19.67	18.80	38.54	-19.74	QP
3	229.2930	26.38	-16.55	9.83	35.01	-25.18	QP
4	345.5952	27.99	-14.75	13.24	42.00	-28.76	QP
5	631.6883	28.37	-11.06	17.31	42.00	-24.69	QP
6	909.6666	27.90	-8.15	19.75	42.00	-22.25	QP

Note: Margin= Reading level + Correct factor – Limit

Correct Factor=Antenna Factor+Cable Factor- Pre-amplifier Factor



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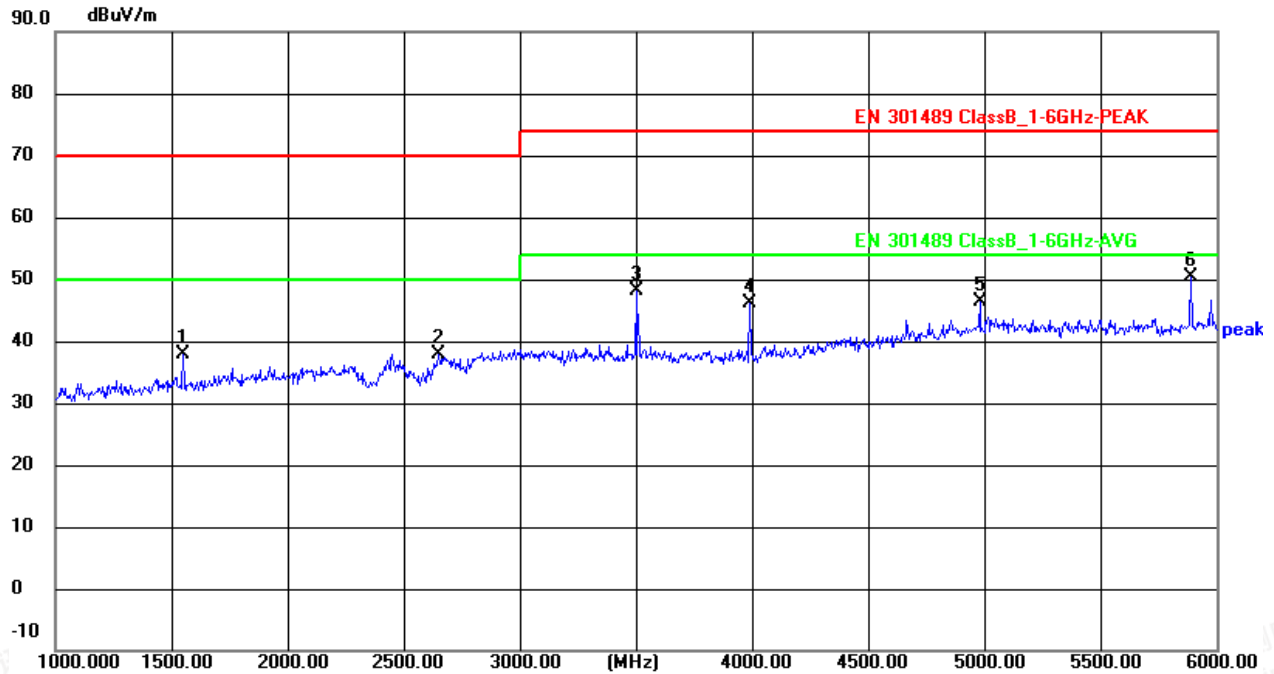
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Test Model	X6	Test Mode	TM1 (Above 1GHz)
Environmental Conditions	23.9℃, 52.1% RH	Test Engineer	Mening Su
Pol.	Horizontal	Detector Function	Peak + AV
Distance	3m	Test Voltage	AC 230V/50Hz



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	1550.000	52.61	-14.76	37.85	70.00	-32.15	peak
2	2650.000	48.73	-10.82	37.91	70.00	-32.09	peak
3	3500.000	57.48	-9.42	48.06	74.00	-25.94	peak
4	3990.000	54.58	-8.57	46.01	74.00	-27.99	peak
5	4980.000	50.55	-4.22	46.33	74.00	-27.67	peak
6	5890.000	53.91	-3.59	50.32	74.00	-23.68	peak



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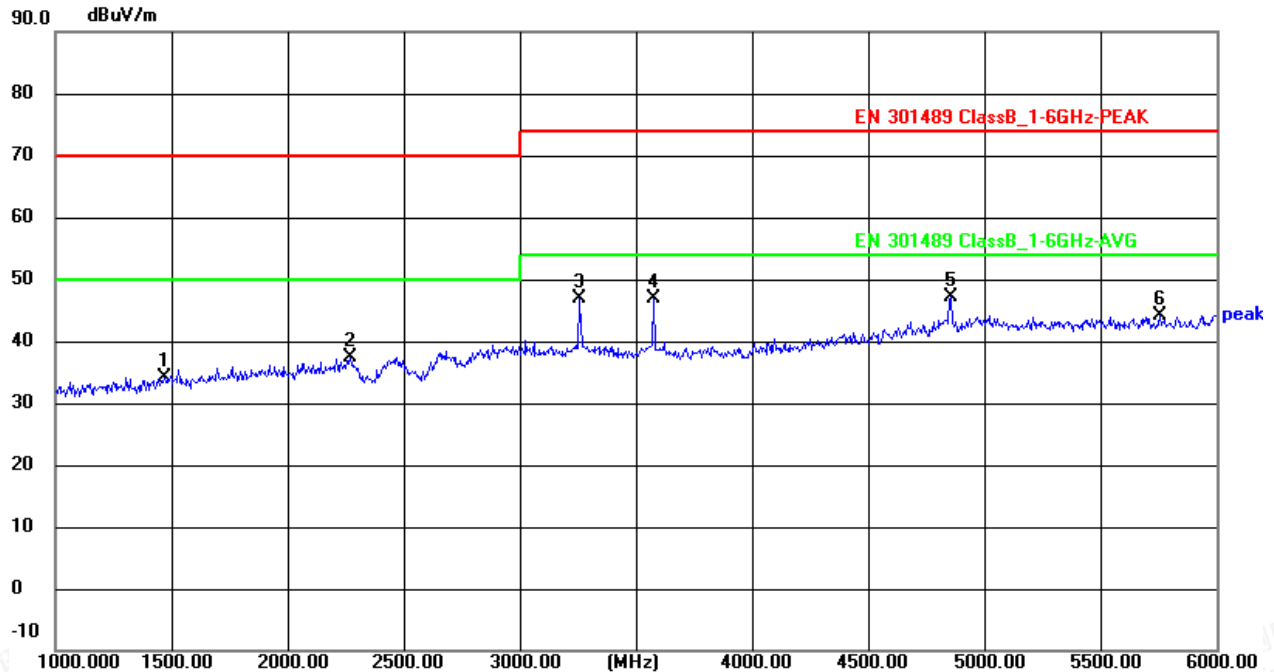
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Test Model	X6	Test Mode	TM1 (Above 1GHz)
Environmental Conditions	23.9°C, 52.1% RH	Test Engineer	Mening Su
Pol.	Vertical	Detector Function	Peak + AV
Distance	3m	Test Voltage	AC 230V/50Hz



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	1470.000	49.17	-15.03	34.14	70.00	-35.86	peak
2	2270.000	49.44	-12.16	37.28	70.00	-32.72	peak
3	3255.000	56.44	-9.50	46.94	74.00	-27.06	peak
4	3575.000	56.15	-9.28	46.87	74.00	-27.13	peak
5	4855.000	51.86	-4.83	47.03	74.00	-26.97	peak
6	5755.000	47.66	-3.45	44.21	74.00	-29.79	peak

Note: Margin= Reading level + Correct factor - Limit

Note:

1. 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.
2. Measurements above show only up to 6 maximum emissions noted.
3. 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.
4. Factor = Antenna Factor + Cable Loss - Amplifier Factor  
Emission Level = Reading level + Factor  
Margin = Emission Level - Limit



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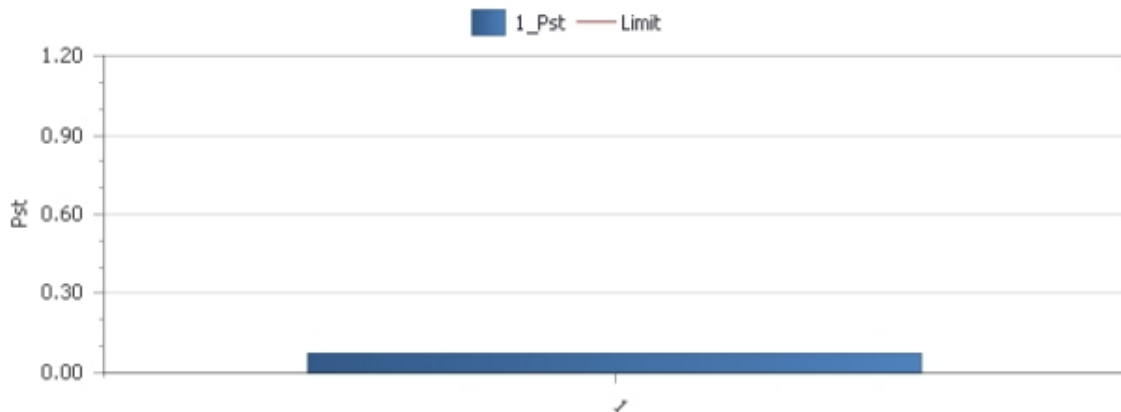
## A.4 Harmonic Current Emissions

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

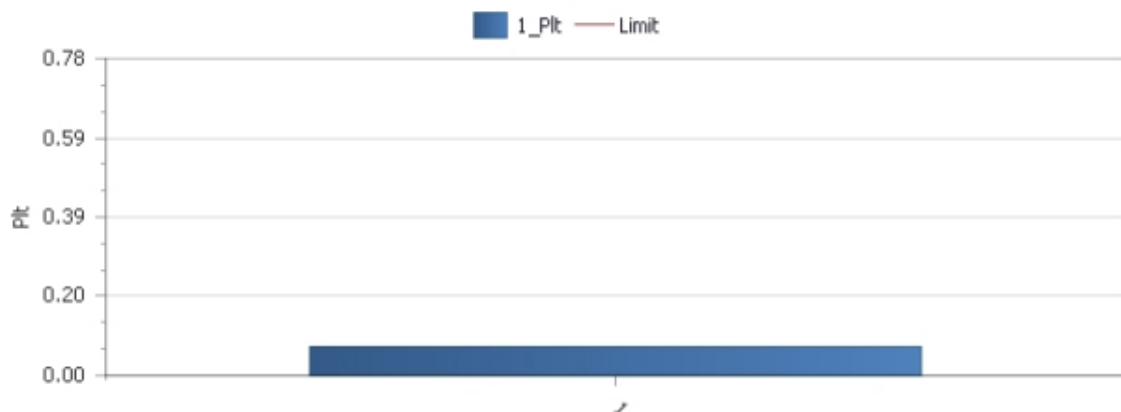
## A.5 Voltage Fluctuation and Flicker

Test Model	X6	Test Engineer	Mening Su
Environmental Conditions	25.0℃, 55.0% RH	Test Voltage	AC 230V/50Hz

Pst and Limit



Plt and Limit



Relevant Parameter and Judgement During Test Period

Vrms at the end of test (V)	219.91			
Error Max (%)		Test Limit (%)		
T-max (ms)	0.00	Test Limit (ms)	500	Pass
dc (%)	0.07	Test Limit (%)	3.30	Pass
dmax (%)	0.34	Test Limit (%)	4.00	Pass
Pst	0.071	Test Limit	1.000	Pass
Plt	0.071	Test Limit	0.650	Pass



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

Test Model	X6	Test Engineer	Mening Su
Environmental Conditions	23.2°C, 53.2% 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

### TM2 Test Result:

EUT Working Mode	Antenna Polarity	Frequency (MHz)	Fielded Strength (V/m)	Observation	Position	Conclusion
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.



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## 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	DongGuan Kemi Electronics Technology Co., Ltd		
EUT	Bluetooth headset	Temperature	22.5℃
M/N	X6	Humidity	52.2%
Criterion	B	Pressure	1021mbar
Test Mode	TM1-TM2	Test Engineer	Mening Su
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			
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	DongGuan Kemi Electronics Technology Co., Ltd		
EUT	Bluetooth headset	Temperature	22.7℃
M/N	X6	Humidity	52.4%
Test Mode	TM1-TM2	Criterion	B
Test Engineer	Mening Su		

#### 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

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	DongGuan Kemi Electronics Technology Co., Ltd		
EUT	Bluetooth headset	Temperature	21.2℃
M/N	X6	Humidity	53.5%
Test Mode	TM1-TM2	Criterion	A
Test Engineer	Mening Su		

## TEST RESULT OF TM1

Frequency Range (MHz)	Strength (Unmodulated)	Injected Position	Observation	Result (Pass/Fail)
0.15 ~ 80	3V	AC Mains	CT, CR	Pass

## TEST RESULT OF TM2

Frequency Range (MHz)	Strength (Unmodulated)	Injected Position	Result (Pass/Fail)
0.15 ~ 80	3V	AC Mains	Pass

Remark:

1. Modulation Signal:1kHz 80% AM

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	DongGuan Kemi Electronics Technology Co., Ltd		
EUT	Bluetooth headset	Temperature	23.2℃
M/N	X6	Humidity	52.1%
Test Mode	TM1-TM2	Criterion	B
Test Engineer	Mening Su		

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					
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	DongGuan Kemi Electronics Technology Co., Ltd		
EUT	Bluetooth headset	Temperature	23.2℃
M/N	X6	Humidity	54.1%
Test Mode	TM1-TM2	Criterion	B&C
Test Engineer	Mening Su		

TEST RESULT OF TM1				
Test Level % U <sub>T</sub>	Voltage Dips & Short Interruptions % U <sub>T</sub>	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				
Test Level % U <sub>T</sub>	Voltage Dips & Short Interruptions % U <sub>T</sub>	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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