

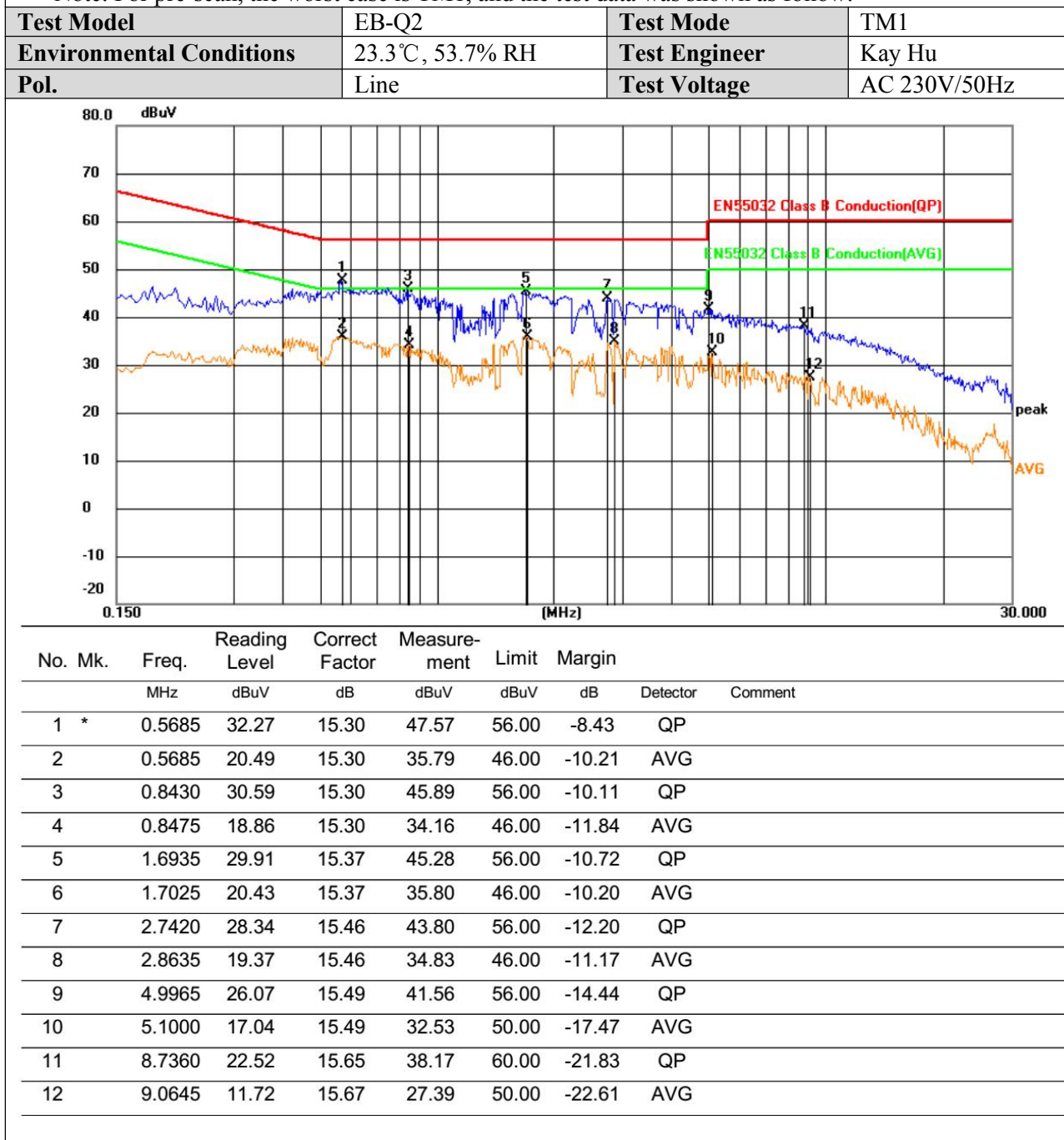
Appendix A for Emission and Immunity test results

Product Name: Self-powered wireless doorbell

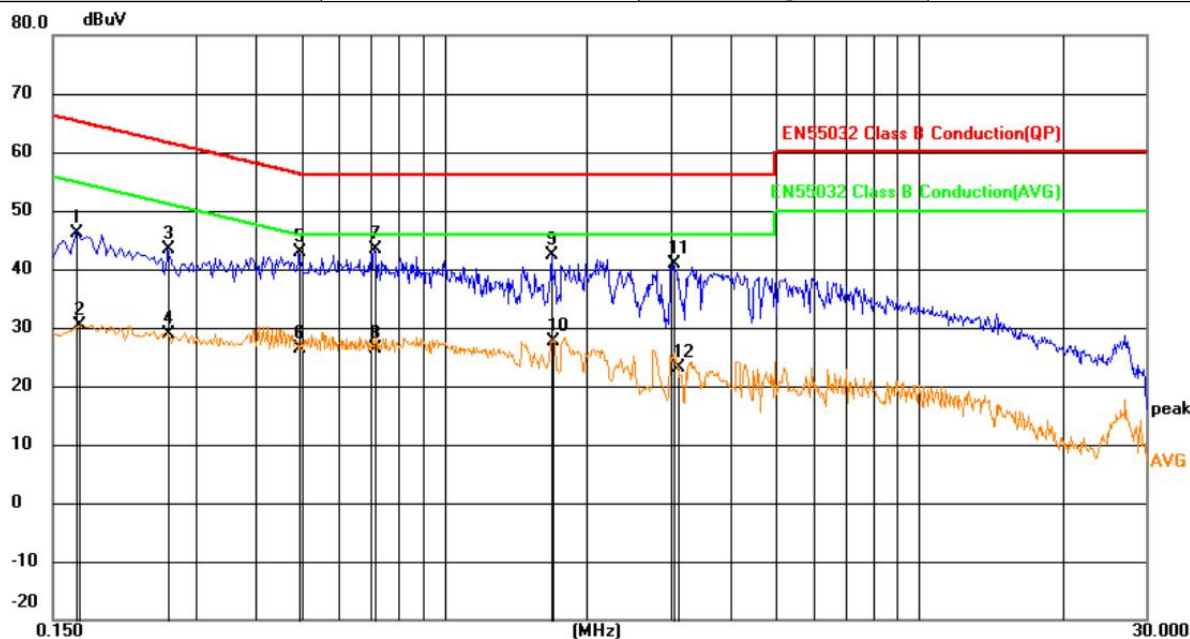
Test Model: EB-Q2

A.1 Line Conducted Emission

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



Test Model	EB-Q2	Test Mode	TM1
Environmental Conditions	23.3°C, 53.7% RH	Test Engineer	Kay Hu
Pol.	Neutral	Test Voltage	AC 230V/50Hz

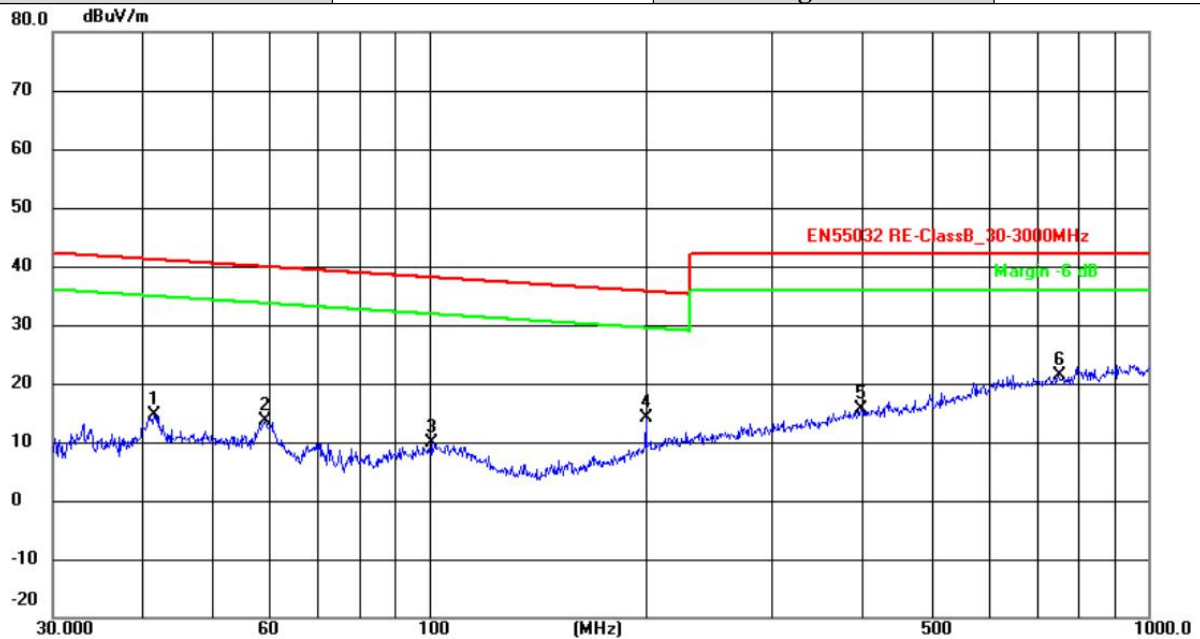


No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Margin dB	Detector	Comment
1		0.1685	30.90	15.16	46.06	65.03	-18.97	QP	
2		0.1703	15.20	15.16	30.36	54.95	-24.59	AVG	
3		0.2625	28.11	15.24	43.35	61.35	-18.00	QP	
4		0.2630	13.70	15.24	28.94	51.34	-22.40	AVG	
5		0.4965	27.48	15.31	42.79	56.06	-13.27	QP	
6		0.4967	11.10	15.31	26.41	46.06	-19.65	AVG	
7	*	0.7125	28.19	15.28	43.47	56.00	-12.53	QP	
8		0.7125	11.12	15.28	26.40	46.00	-19.60	AVG	
9		1.6890	27.09	15.36	42.45	56.00	-13.55	QP	
10		1.6980	12.32	15.36	27.68	46.00	-18.32	AVG	
11		3.0390	25.46	15.46	40.92	56.00	-15.08	QP	
12		3.0930	7.79	15.46	23.25	46.00	-22.75	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.

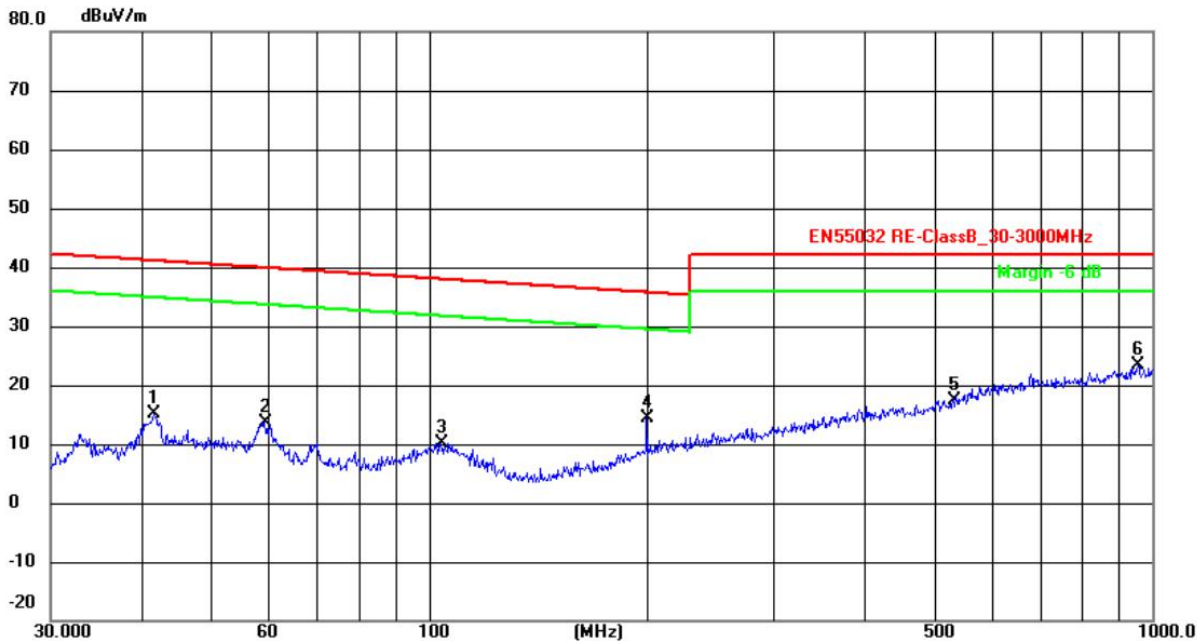
A.3 Radiated Disturbance

Test Model	EB-Q2	Test Mode	TM1
Environmental Conditions	24.6°C, 54.1% RH	Test Engineer	Kay Hu
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	41.4348	30.43	-15.74	14.69	40.89	-26.20	QP
2	59.2728	30.39	-16.68	13.71	39.66	-25.95	QP
3	101.0566	27.25	-17.29	9.96	37.83	-27.87	QP
4	200.3657	31.44	-17.19	14.25	35.47	-21.22	QP
5	398.6634	27.77	-12.23	15.54	42.00	-26.46	QP
6	749.8924	28.58	-7.24	21.34	42.00	-20.66	QP

Test Model	EB-Q2	Test Mode	TM1
Environmental Conditions	24.6℃, 54.1% RH	Test Engineer	Kay Hu
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	41.7129	30.79	-15.69	15.10	40.87	-25.77	QP
2	59.2325	30.29	-16.68	13.61	39.66	-26.05	QP
3	103.8055	27.46	-17.26	10.20	37.73	-27.53	QP
4	199.9856	31.48	-17.20	14.28	35.48	-21.20	QP
5	530.1014	27.69	-10.19	17.50	42.00	-24.50	QP
6	955.4381	28.96	-5.50	23.46	42.00	-18.54	QP

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.
1126.60	49.68	1.14	50.82	70.00	-19.18	Peak	Horizontal
1126.60	31.10	1.14	32.24	50.00	-17.76	Average	Horizontal
1557.02	49.09	2.67	51.76	70.00	-18.24	Peak	Horizontal
1557.02	28.88	2.67	31.55	50.00	-18.45	Average	Horizontal
2918.00	46.17	5.75	51.92	70.00	-18.08	Peak	Horizontal
2918.00	26.54	5.75	32.29	50.00	-17.71	Average	Horizontal
3732.39	58.28	1.83	60.11	74.00	-13.89	Peak	Horizontal
3732.39	30.43	1.83	32.26	54.00	-21.74	Average	Horizontal
4597.25	57.11	3.17	60.28	74.00	-13.72	Peak	Horizontal
4597.25	35.16	3.17	38.33	54.00	-15.67	Average	Horizontal
5980.32	53.58	6.13	59.71	74.00	-14.29	Peak	Horizontal
5980.32	32.43	6.13	38.56	54.00	-15.44	Average	Horizontal

Freq. MHz	Reading dBuV	Factor dB/m	Level dBuV/m	Limit dBuV/m	Margin dB	Remark	Pol.
1124.63	49.61	1.14	50.75	70.00	-19.25	Peak	Vertical
1124.63	31.40	1.14	32.54	50.00	-17.46	Average	Vertical
1557.54	48.82	2.67	51.49	70.00	-18.51	Peak	Vertical
1557.54	28.68	2.67	31.35	50.00	-18.65	Average	Vertical
2918.63	46.30	5.75	52.05	70.00	-17.95	Peak	Vertical
2918.63	26.78	5.75	32.53	50.00	-17.47	Average	Vertical
3734.13	58.44	1.83	60.27	74.00	-13.73	Peak	Vertical
3734.13	30.78	1.83	32.61	54.00	-21.39	Average	Vertical
4598.43	57.05	3.17	60.22	74.00	-13.78	Peak	Vertical
4598.43	35.32	3.17	38.49	54.00	-15.51	Average	Vertical
5980.50	53.44	6.13	59.57	74.00	-14.43	Peak	Vertical
5980.50	32.38	6.13	38.51	54.00	-15.49	Average	Vertical

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

A.4 Harmonic Current Emissions

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

A.5 Voltage Fluctuation and Flicker

Test Model	EB-Q2	Test Engineer	Kay Hu	
Environmental Conditions	23.1℃, 52.3% 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: Mains / Manual Source				
Overall Result:	Notes:			
PASS	Measurement method - Voltage			

	Pst	dc (%)	dmax (%)	d(t) > 3.3%(ms)
Limit	1.000	3.300	4.000	500
Reading 1	0.089	0.006	0.139	0

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

Test Model	EB-Q2	Test Engineer	Kay Hu
Environmental Conditions	22.4°C, 52.7% 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	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
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	CT, CR	Front, Right, Left, Back	Pass
	Horizontal	80-6000	3	CT, CR	Front, Right, Left, Back	Pass

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	Shenzhen EBELONG Technology Co., Ltd		
EUT	Self-powered wireless doorbell	Temperature	22.5℃
M/N	EB-Q2	Humidity	53.1%
Criterion	B	Pressure	1021mbar
Test Mode	TM1	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			
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	Shenzhen EBELONG Technology Co., Ltd		
EUT	Self-powered wireless doorbell	Temperature	22.7℃
M/N	EB-Q2	Humidity	53.4%
Test Mode	TM1	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				
Line	Test Voltage	Polarity	Result (Pass/Fail)	
L	1KV	+/-	Pass	
N	1KV	+/-	Pass	
L-N	1KV	+/-	Pass	

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	Shenzhen EBELONG Technology Co., Ltd		
EUT	Self-powered wireless doorbell	Temperature	23.5℃
M/N	EB-Q2	Humidity	53.7%
Test Mode	TM1	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				
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)				

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	Shenzhen EBELONG Technology Co., Ltd		
EUT	Self-powered wireless doorbell	Temperature	23.4℃
M/N	EB-Q2	Humidity	53.6%
Test Mode	TM1	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						
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

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	Shenzhen EBELONG Technology Co., Ltd		
EUT	Self-powered wireless doorbell	Temperature	23.1 °C
M/N	EB-Q2	Humidity	53.5 %
Test Mode	TM1	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				
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	