





TEST REPORT N°: XZI-ESH-P21110324B

## 1 TESTING PROGRAM

The tests have been carried out according to the requirements of the following standards :

### **Emission standard EN IEC 55015:2019+A11:2020 / BS EN IEC 55015:2019+A11:2020**

- Measurement of the continuous conducted emission levels.
- Measurement of the radiated emission levels.

### **Immunity standard EN 61547:2009 / BS EN 61547:2009**

- Immunity to electrostatic discharges - publication IEC 61000-4-2.
- Immunity to fast transients/bursts - publication IEC 61000-4-4.
- Immunity to conducted disturbances induced by radio-frequency fields - publication IEC 61000-4-6.
- Immunity to radiated radio-frequency electromagnetic field with amplitude modulation - publication IEC 61000-4-3.
- Immunity to surges - publication IEC 61000-4-5.
- Immunity to voltage dips -publication IEC 61000-4-11.
- Immunity to voltage interruptions - publication IEC 61000-4-11.

Special Comment : All the samples were the same except for the model name and appearance. We chose model HSL086S as the representative model for comprehensive testing.

## 2 HISTORY OF FAILURE

None.

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### 3 EQUIPMENT CHARACTERISTICS

#### 3.1 Pictures of the samples

<p>HSL086S</p> 	<p>HPL010</p> 
<p>HSS013</p> 	<p>HPL013</p> 
<p>HSL044</p> 	<p>HSN007</p> 
<p>HX029</p> 	<p>HSS079</p> 
<p>HSS078</p> 	<p>HPL066</p> 

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<p>HST058</p> 	<p>HSL049S</p> 
<p>HSL012</p> 	<p>HSL049</p> 
<p>SS0089-1</p> 	<p>None</p>

**3.2 Model list**

BBG001 BBG002 BBG003 BBG004 BBG005 BBG006 BBG007 BBG008 BBG009 BBG010  
 BBG011 BBG012 BBG013 BBG014 BBG015 BBG016 BBG017 BBG018 BBG019 BBG020  
 BBG021 BBG022 BBG023 BBG024 BBG025 BBG026 BBG027 BBG028 BBG029 BBG030  
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 BSD031 BSD032 BSD033 BSD034 BSD035 BSD036 BSD037 BSD038 BSD039 BSD040  
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BSD071 BSD072 BSD073 BSD074 BSD075 BSD076 BSD077 BSD078 BSD079 BSD080  
BSD081 BSD082 BSD083 BSD084 BSD085 BSD086 BSD087 BSD088 BSD089 BSD090  
BSD091 BSD092 BSD093 BSD094 BSD095 BSD096 BSD097 BSD098 BSD099 BSD100  
BSD101 BSD102 BSD103 BSD104 BSD105 BSD106 BSD107 BSD108 BSD109 BSD110  
BSD111 BSD112 BSD113 BSD114 BSD115 BSD116 BSD117 BSD118 BSD119 BSD120  
BSD121 BSD122 BSD123 BSD124 BSD125 BSD126 BSD127 BSD128 BSD129 BSD130  
BSD131 BSD132 BSD133 BSD134 BSD135 BSD136 BSD137 BSD138 BSD139 BSD140  
BSD141 BSD142 BSD143 BSD144 BSD145 BSD146 BSD147 BSD148 BSD149 BSD150  
BSD151 BSD152 BSD153 BSD154 BSD155 BSD156 BSD157 BSD158 BSD159 BSD160  
BSD161 BSD162 BSD163 BSD164 BSD165 BSD166 BSD167 BSD168 BSD169 BSD170  
BSD171 BSD172 BSD173 BSD174 BSD175 BSD176 BSD177 BSD178 BSD179 BSD180

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BP031 BP032 BP033 BP034 BP035 BP036 BP037 BP038 BP039 BP040  
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BXM126 BXM127 BXM128 BXM129 BXM130 BXM131 BXM132 BXM133 BXM134 BXM135

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BXM136 BXM137 BXM138 BXM139 BXM140 BXM141 BXM142 BXM143 BXM144 BXM145  
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BXM155 BXM156 BXM157 BXM158 BXM159 BXM160 BXM161 BXM162 BXM163 BXM164  
BXM165

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HPL520S HPL626

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HSI044 HSI045 HSI046 HSI047 HSI048 HSI049 HSI050 HSI050-1 HSI051

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HX048 HX049 HX050 HX051 HX052 HX052-15CM HX052-20CM HX052-25CM  
HX052-30CM HX052-15 HX052-20 HX052-25 HX052-30 HX053 HX054  
HX054-NEW HX055 HX056 HX057 HX058 HX059 HX060 HX061 HX062  
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HX256

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HSD065B HSD065D HSD065T HSD065L HSD066

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HSL004-2 HSL004-3 HSL005 HSL006 HSL006A HSL006B HSL006-plug  
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HSL140 HSL162 HSL098F HSL524 HSL201 HSL100 HSL101

HSG001 HSG002 HSG003 HSG004 HSG005 HSG006 HSG007 HSG008

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HSG009 HSG010 HSG011 HSG012 HSG013 HSG014 HSG015 HSG016  
HSG017 HSG018 HSG019 HSG020

HSP001 HSP002 HSP003 NEW144-HSP003 HSP004 HSP005 HSP006 HSP007  
HSP008 HSP009 HSP010 HSP011 HSP012 HSP013 HSP014 HSP015 HSP016  
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HSP026 HSP027 HSP028 HSP029 HSP030

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HST032 HST033 HST034 HST035 HST036 HST037 HST038 HST039 HST040  
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HST244 HST058

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HPE054 HPE055 HPE056 HPE057 HPE058 HPE059 HPE060

HSW001 HSW002 HSF002 HSB001 HSB001M HSN005 HSN006 HSN007  
HSN008-001 20LX058 HY202003C HM017 HML109 HWL437F HMW001  
HMW002 HSM002 HML100 HML101 HML102 HML103 HML104 HML105  
HML106 HML107 HML108 HML109 HML110

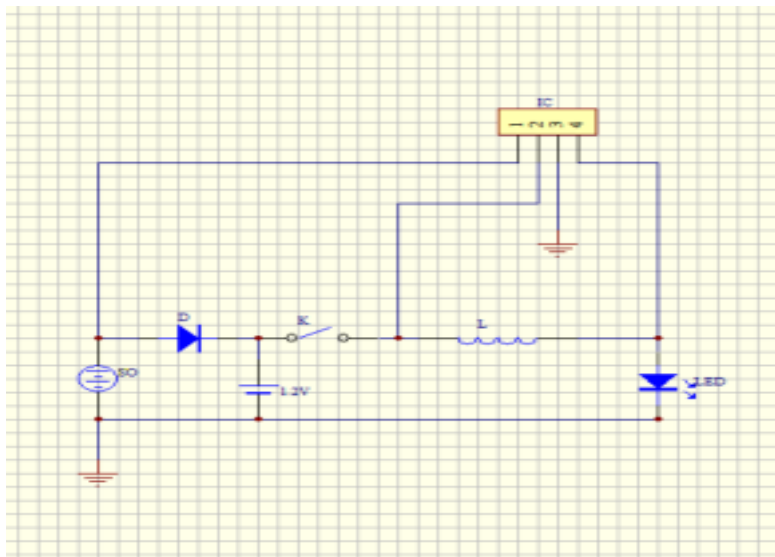
SL001 SL002 SL003 SL004 SL005 SL006 SL007 SL008 SL009 SL010  
SL011 SL-010B SL-010A SL-010B SL012 SL013 SL014 SL015 SL016 SL017  
SL018 SL019 SL020 SL021 SL022 SL023 SL024 SL025 SL026 SL058  
SL099 SL104 SSL110 LXS0033

SS0010 SS0030 SS0031-2 SS0042 SS0124 SS031-1 SS0015 SS070 SS072  
SS073 SS074 SS075 SS076 SS0089 SS0089-1 SS0089-2 SS0120 SS0123  
SS0124 SS0122 SS0127  
LV-221BIRGB LV-0015C GA-SL0068-01 GA1516 NX6515

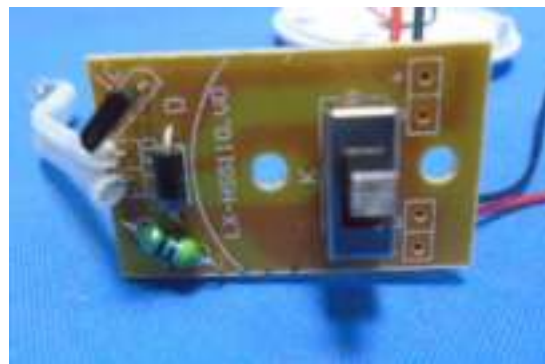
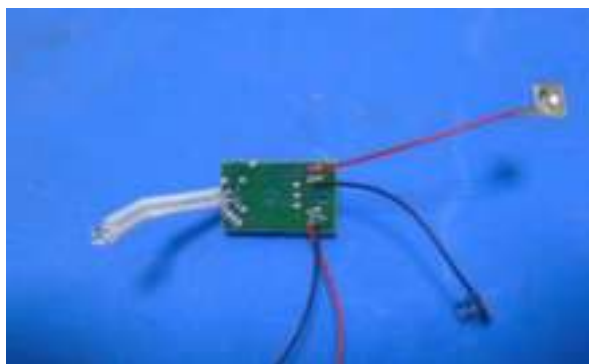
<b>LCIE China Company Limited</b> 必维欧亚电气技术咨询服务(上海)有限公司	<b>Building 4, No. 518, Xin Zhuan Road, CaoHejing Songjiang High-Tech Park, Shanghai, CHINA</b>	Tel: +86 21 6195 7000 Fax: +86 21 6195 7001 Email: <a href="mailto:contact@cn.bureauveritas.com">contact@cn.bureauveritas.com</a>
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### 3.3 Circuit diagram and PCB layout

Circuit diagram :



PCB layout :





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## 4 OPERATING CONDITIONS

The apparatuses were placed in a shielded room, full or semi anechoic chamber, and were powered with an alternative current source through filters mounted on the shielded room wall. The apparatuses were worked continuously.

Ambient conditions :

Temperature	:	20-23 °C
Relative humidity	:	52-53 %
Atmospheric pressure	:	101.1-101.3 kPa

## 5 PERFORMANCE CRITERIA

- Criterion A : During the test no change of the luminous intensity shall be observed, if any, shall operate during the test as intended.
- Criterion B : During the test the luminous intensity may change to any value. After the test the luminous intensity shall be restored to its initial value within 1 min.
- Criterion C : During and after the test any change of the luminous intensity is allowed and the lamp may be extinguished. After the test, within 30 min, all functions shall return to normal if necessary by temporary interruption of the mains supply.

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## 6 TEST RESULTS

### 6.1 EMISSION STANDARD EN IEC 55015:2019+A11:2020 / BS EN IEC 55015:2019+A11:2020

Article	TEST	TEST SPECIFICATION	RESULTS			
			P	F	NA	Rem
4.3	<b><u>Disturbance Voltage of wired network ports</u></b>	Operating conditions : according to the article 7				
4.3.1	Mains terminals Frequency range: 0,009 to 30 MHz	Port(s) : • AC mains port  Diagram(s) No. < >	[ ]	[ ]	[X]	[1]
4.4	<b><u>Disturbance Voltage of local wired ports</u></b>	• Load and control terminals  Diagram(s) No. < >	[ ]	[ ]	[X]	[1]
4.4	Frequency range : 0,009 to 30 MHz					
4.5	<b><u>Radiated Electromagnetic Disturbance</u></b>	Operating conditions : according to the article 7				
4.5.2	Frequency range : 0,009 to 30 MHz	• 2 m Loop antenna  Diagram (s) No. <1>	[X]	[ ]	[ ]	[ ]
4.5.3	<b><u>Radiated disturbance limit</u></b>	Operating conditions : according to the article 7				
	Frequency range: 30 to 1000 MHz	Port(s) : Enclosure  Measurement distance: 3 m Antenna Position • Vertical • Horizontal  Diagram(s) No. <2>	[X] [X]	[ ] [ ]	[ ] [ ]	[ ] [ ]

P : pass - F : Fail - NA : not applicable - Rem : remark



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**6.2 IMMUNITY STANDARD EN 61547:2009 / BS EN 61547:2009**

- For lighting equipment containing active electronic components which e.g. convert or regulate the operating voltage and/or the frequency of the light source.

Article	TEST	TEST SPECIFICATION	RESULTS			
			P	F	NA	Rem
5.2	<b><u>Electrostatic discharges</u></b>  Table 1 Enclosure  Performance criteria B	Contact discharges Level : $\pm 4$ kV Application points : • horizontal coupling plane • vertical coupling plane • screw and metal part	[X]	[ ]	[ ]	[2]
			[X]	[ ]	[ ]	[2]
			[X]	[ ]	[ ]	[2]
	Performance criteria B	Air discharges Level : $\pm 8$ kV Application points : • plastic enclosure • gap	[X]	[ ]	[ ]	[2]
			[X]	[ ]	[ ]	[2]
5.3	<b><u>Radio-frequency electromagnetic fields 80 to 1000 MHz</u></b>  Table 2 Enclosure  Performance criteria A	Test field strength : 3 V/m (unmodulated signal) Modulation frequency : 1 kHz Modulation depth : 80 % Frequency Step : 1% Dwell Time : 2 s Logperiodic antenna : - horizontal position - vertical position	[X]	[ ]	[ ]	[2]
			[X]	[ ]	[ ]	[2]
5.4	<b><u>Power Frequency Magnetic Field</u></b>  Table 1 Enclosure  Performance criteria A	Field frequency : 50/60 Hz Level : 3 A/m	[ ]	[ ]	[X]	[ ]
5.5	<b><u>Fast transients/bursts</u></b>  Table 6 Alternative current power input and output ports  Performance criteria B	Level : $\pm 1$ kV Rise time/hold time : 5/50 ns Repetition rate : 5 kHz Testing time : 2 min Port(s) : • AC mains	[ ]	[ ]	[X]	[1]

P : pass - F : Fail - NA : not applicable - Rem : remark



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Article	TEST	TEST SPECIFICATION	RESULTS			
			P	F	NA	Rem
5.6	<b><u>Injected current 0,15 to 80 MHz</u></b> <u>Table 9</u> Alternative current power input and output ports  Performance criterion A	Voltage level : 3 V (unmodulated signal) Modulation frequency : 1 kHz Modulation depth : 80 % Frequency Step : 1% Dwell Time: 2 s Application with CND-M2/M3 Port(s) : • AC mains	[ ]	[ ]	[X]	[1]
5.7	<b><u>Surges</u></b> <u>Table 10</u> Alternative current power input and output ports  Performance criterion C	Tr/Th(μs) : 1.2/50 (8/20) Number of surges : 5 positive and 5 negative Phase angles : 90° and 270° Level : ± 0.5 kV Port(s) : • power input, between lines and neutral	[ ]	[ ]	[X]	[1]
	Performance criterion C	Level : ± 1 kV Port(s) : • power input, between lines and earth • power input, between neutral and earth	[ ]	[ ]	[X]	[1]
			[ ]	[ ]	[X]	[1]
5.8	<b><u>Voltage dips and voltage interruptions</u></b> <u>Table 12</u> Alternative current power input and output port(s)  Performance criterion B	<u>Voltage interruptions</u> Test level : 0 % Ut-> 0 V Duration : 10 ms Phase angles : 0° and 180° Port(s) : • AC mains	[ ]	[ ]	[X]	[1]
	<u>Table 11</u> Alternative current power input and output port (s)  Performance criterion C	<u>Voltage dips</u> Test level : 70 % Ut-> 161 V Duration : 200 ms Phase angles : 0° Port(s) : • AC mains	[ ]	[ ]	[X]	[1]

P : pass - F : Fail - NA : not applicable - Rem : remark



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**Remark(s) :**

- 1 : The EUT is powered by battery.
- 2 : During and after the test, there are no loss of function and no change of motor speed, power consumption and operating state.

**7 CONCLUSION**

The apparatuses solar light and models Refer to model list are in compliance with the requirements of the standards EN IEC 55015:2019+A11:2020 / BS EN IEC 55015:2019+A11:2020 and EN 61547:2009 / BS EN 61547:2009.

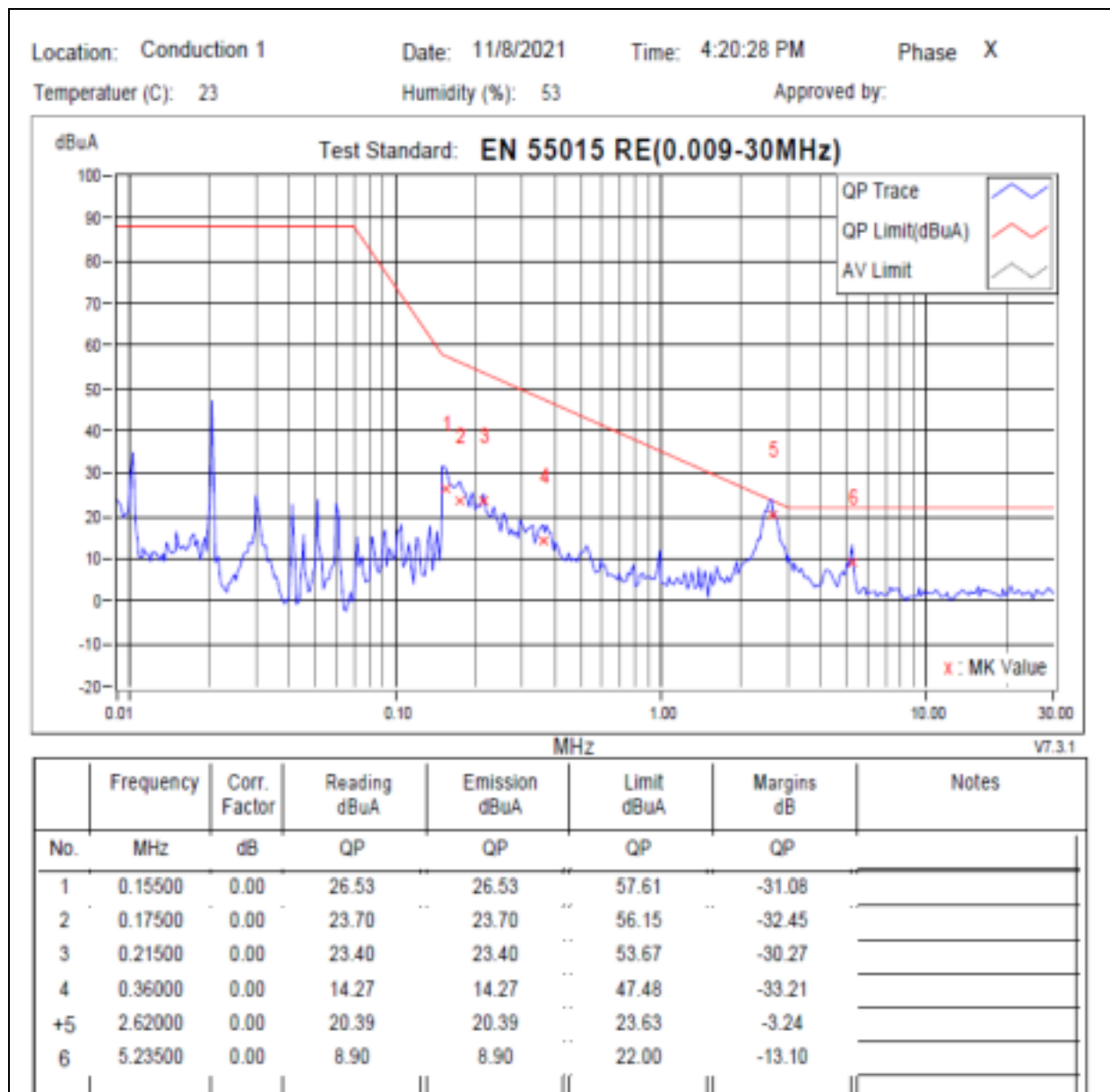


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Diagram No. 1

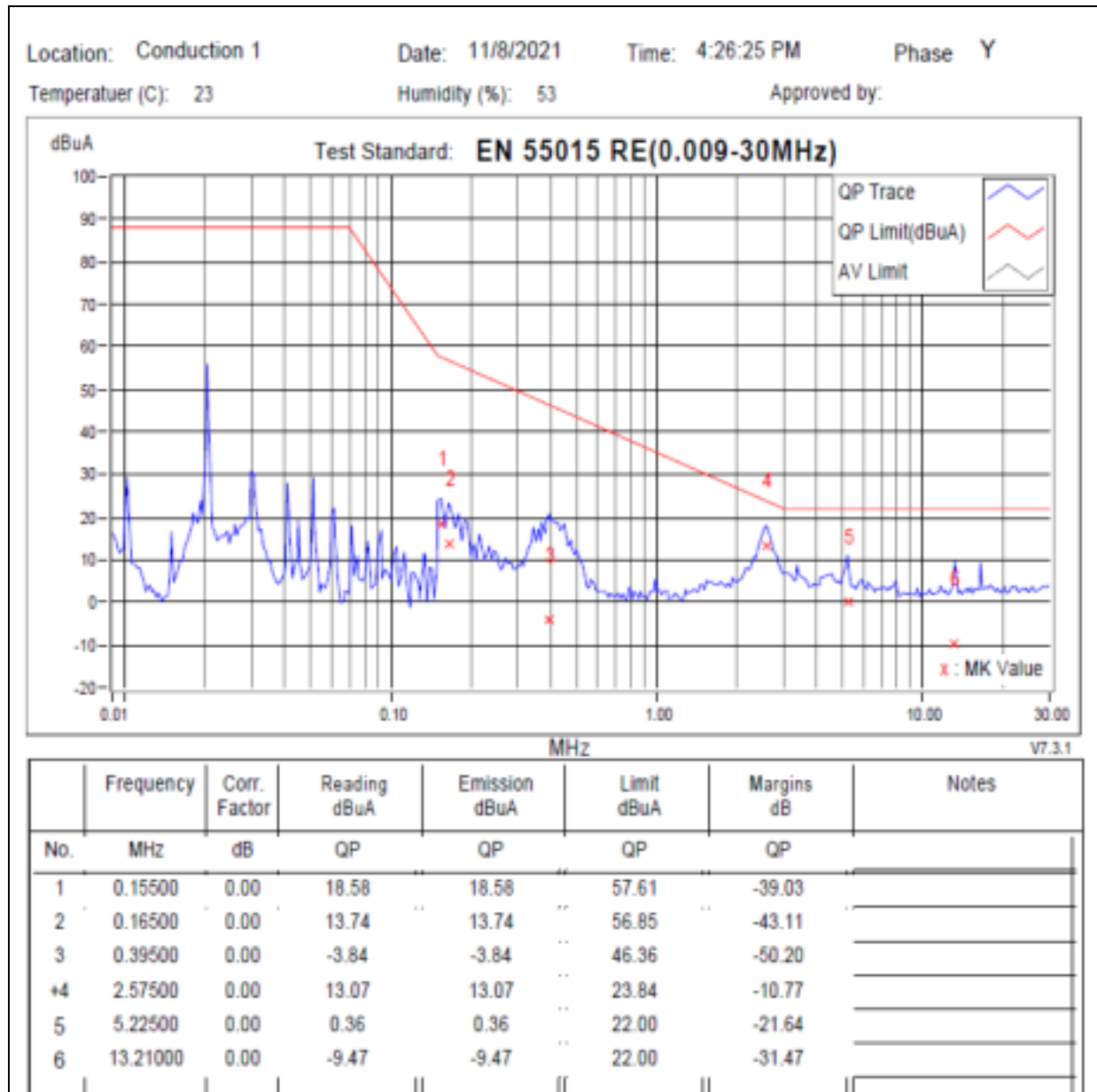






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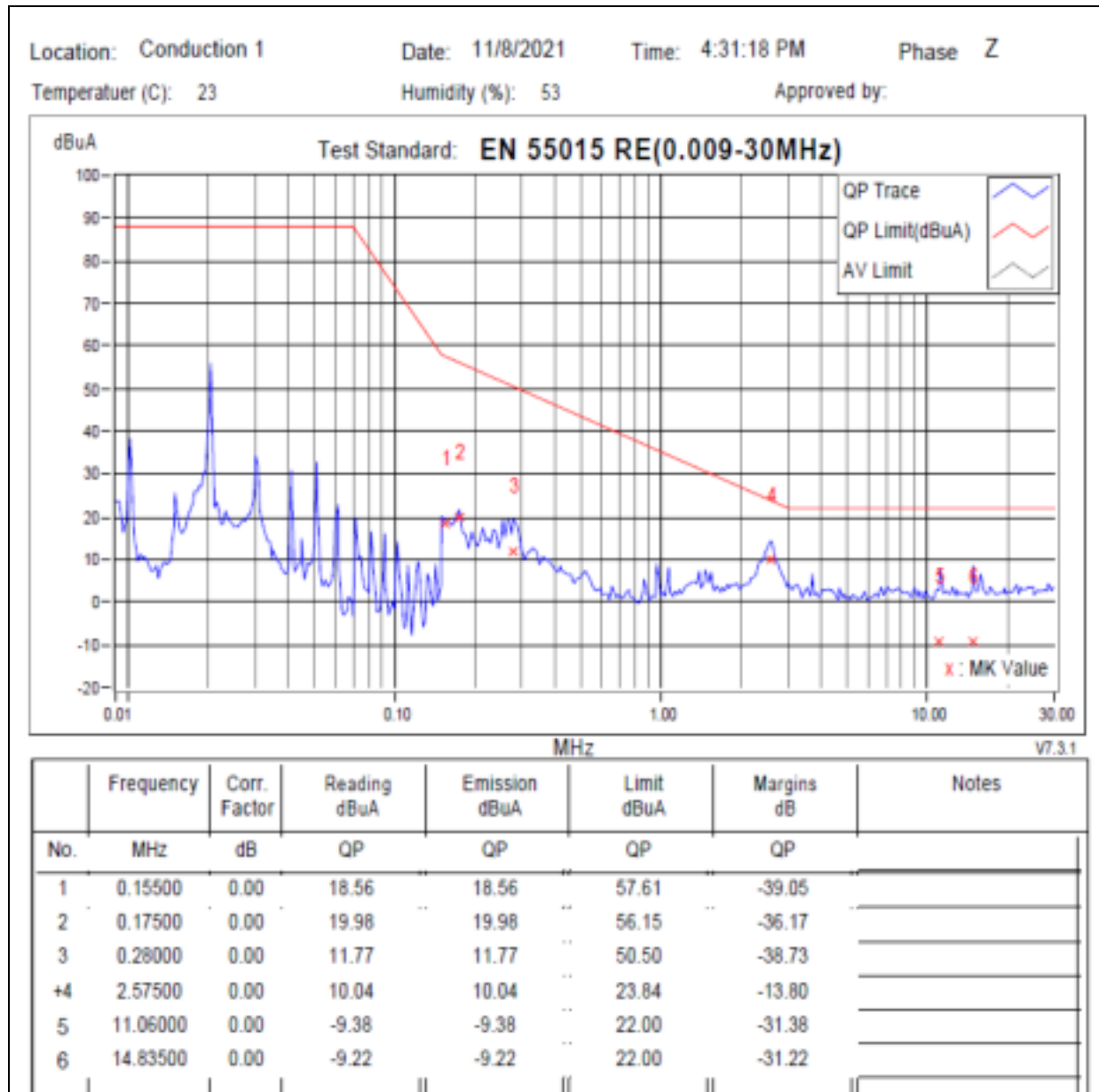
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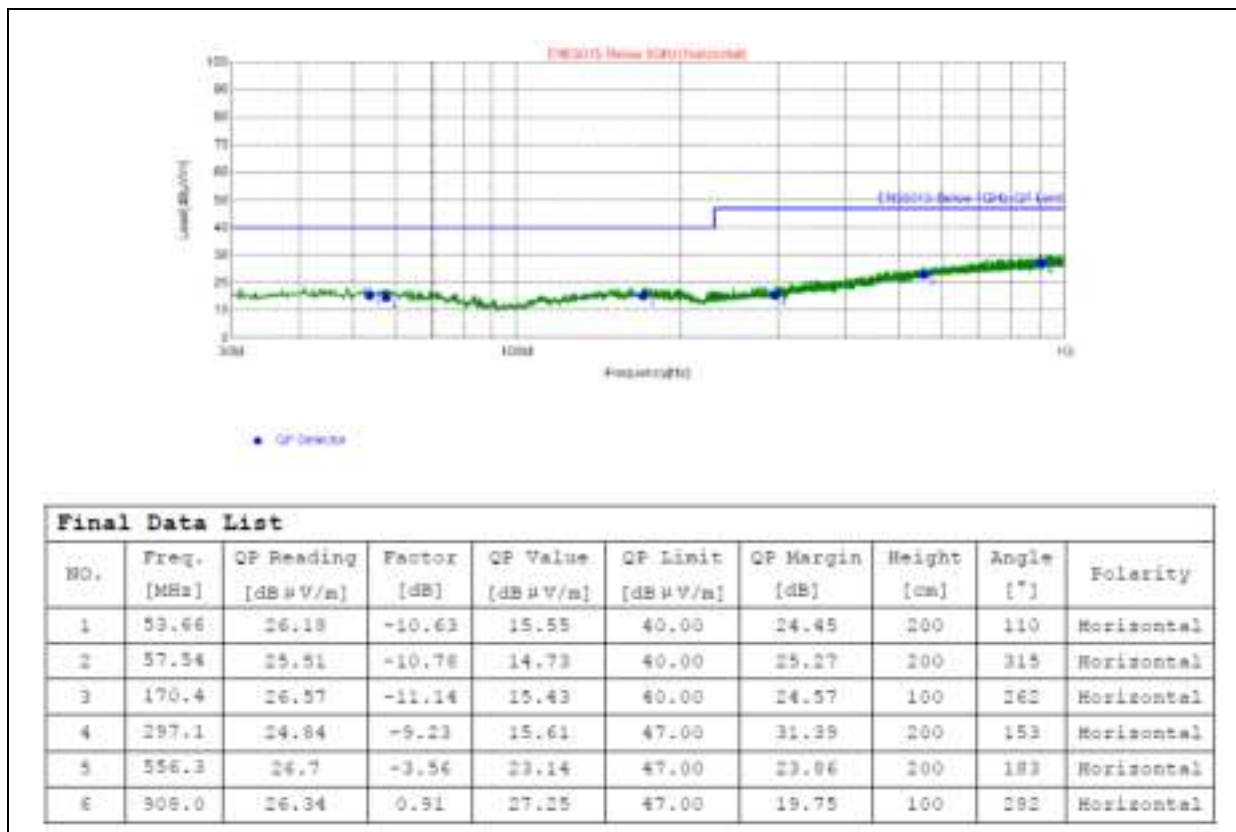
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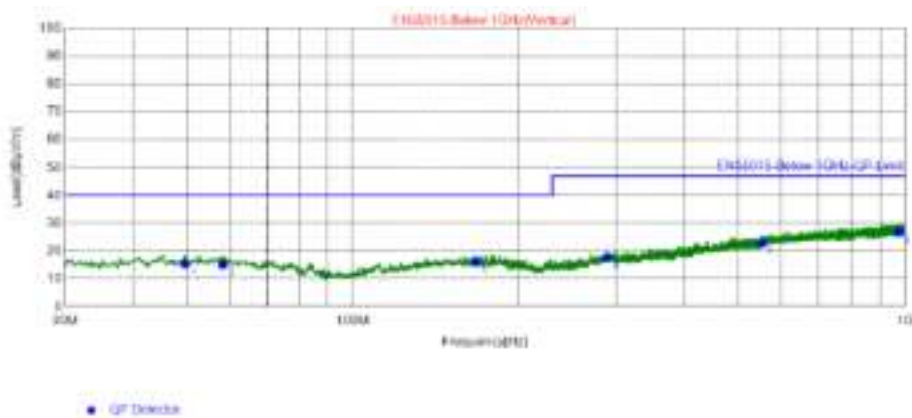
Diagram No. 2





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Continued



Final Data List									
NO.	Freq. [MHz]	QP Reading [dB μV/m]	Factor [dB]	QP Value [dB μV/m]	QP Limit [dB μV/m]	QP Margin [dB]	Height [cm]	Angle [°]	Polarity
1	49.59	25.98	-10.51	15.47	40.00	24.53	100	216	Vertical
2	59.13	25.97	-10.80	15.17	40.00	24.83	100	220	Vertical
3	166.9	27.07	-10.95	16.12	40.00	23.88	100	42	Vertical
4	289.9	27.17	-9.44	17.73	47.00	29.27	200	22	Vertical
5	552.0	26.51	-3.65	22.86	47.00	24.14	200	84	Vertical
6	972.0	24.72	1.98	26.70	47.00	20.30	200	245	Vertical

◆◆◆◆◆