



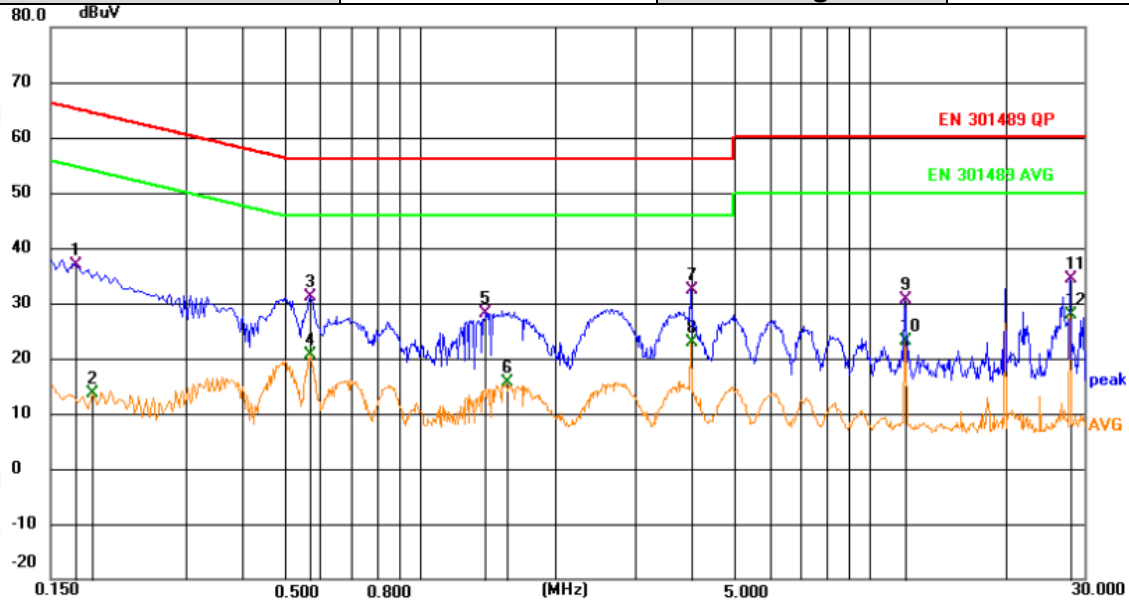
Appendix A for Emission and Immunity test results

Product Name: RFID reader

Test Model: MR7805

A.1 Line Conducted Emission

Test Model	MR7805	Test Mode	TM1
Environmental Conditions	24.4°C, 53.0% RH	Test Engineer	Eason Zhou
Pol.	Line	Test Voltage	AC 230V/50Hz



No.	Mk.	Freq.	Reading	Correct	Measure-	Limit	Margin		
		MHz	Level	Factor	ment			Detector	Comment
			dBuV	dB	dBuV	dBuV	dB		
1		0.1694	17.29	19.63	36.92	64.99	-28.07	QP	
2		0.1861	-6.03	19.63	13.60	54.21	-40.61	AVG	
3		0.5685	11.41	19.66	31.07	56.00	-24.93	QP	
4		0.5685	0.93	19.66	20.59	46.00	-25.41	AVG	
5		1.4010	8.50	19.66	28.16	56.00	-27.84	QP	
6		1.5585	-3.96	19.67	15.71	46.00	-30.29	AVG	
7		3.9976	12.61	19.70	32.31	56.00	-23.69	QP	
8		3.9976	3.19	19.70	22.89	46.00	-23.11	AVG	
9		11.9941	10.73	19.84	30.57	60.00	-29.43	QP	
10		11.9941	3.30	19.84	23.14	50.00	-26.86	AVG	
11		27.9961	14.20	20.06	34.26	60.00	-25.74	QP	
12	*	27.9961	7.78	20.06	27.84	50.00	-22.16	AVG	



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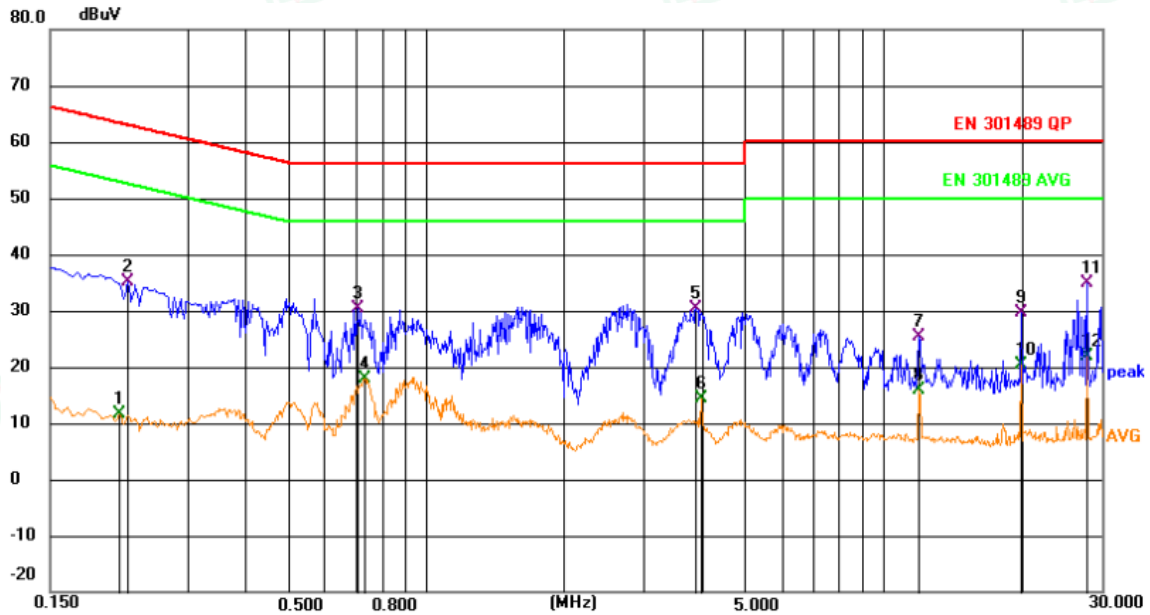
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Test Model	MR7805	Test Mode	TM1
Environmental Conditions	24.4℃, 53.0% RH	Test Engineer	Eason Zhou
Pol.	Neutral	Test Voltage	AC 230V/50Hz



No.	Mk.	Freq.	Reading	Correct	Measure-	Limit	Margin		
		MHz	Level	Factor	ment			Detector	Comment
			dBuV	dB	dBuV	dBuV	dB		
1		0.2131	-8.05	19.63	11.58	53.08	-41.50	AVG	
2		0.2221	15.49	19.63	35.12	62.74	-27.62	QP	
3		0.7081	10.79	19.65	30.44	56.00	-25.56	QP	
4		0.7306	-1.81	19.65	17.84	46.00	-28.16	AVG	
5		3.8986	10.71	19.79	30.50	56.00	-25.50	QP	
6		3.9976	-5.47	19.80	14.33	46.00	-31.67	AVG	
7		11.9941	5.61	19.84	25.45	60.00	-34.55	QP	
8		11.9941	-3.89	19.84	15.95	50.00	-34.05	AVG	
9		19.9951	9.54	20.21	29.75	60.00	-30.25	QP	
10		19.9951	0.22	20.21	20.43	50.00	-29.57	AVG	
11	*	27.9961	14.73	20.06	34.79	60.00	-25.21	QP	
12		27.9961	1.83	20.06	21.89	50.00	-28.11	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=Lisn Factor+Cable Factor+Insertion loss of Pulse Limiter



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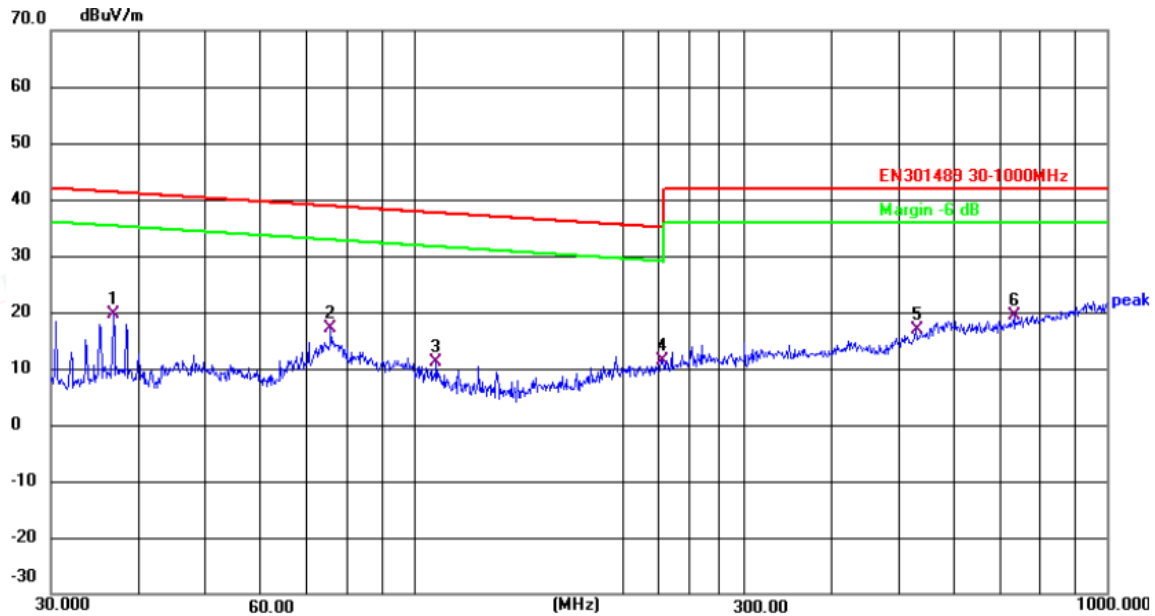
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A.3 Radiated Disturbance

Test Model	MR7805	Test Mode	TM1
Environmental Conditions	23.8℃, 52.1% RH	Test Engineer	Eason Zhou
Pol.	Horizontal	Detector Function	Quasi-peak
Distance	3m	Test Voltage	AC 230V/50Hz

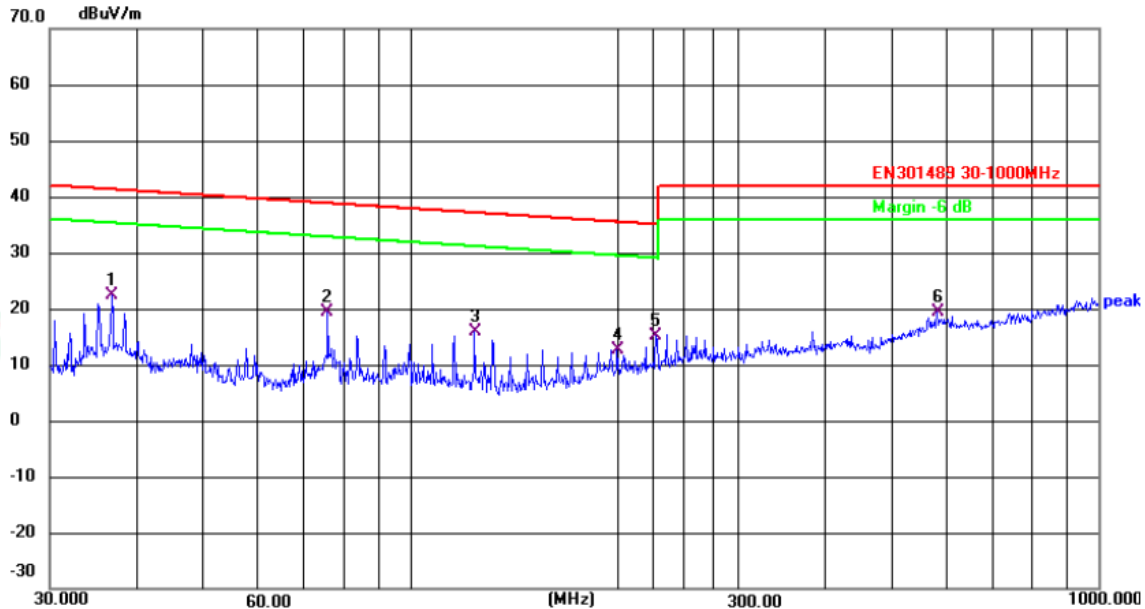


No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	36.8953	37.24	-17.69	19.55	41.29	-21.74	QP
2	75.9773	36.87	-19.72	17.15	38.81	-21.66	QP
3	107.8877	30.04	-18.87	11.17	37.60	-26.43	QP
4	228.4904	28.08	-16.59	11.49	35.02	-23.53	QP
5	530.1014	29.39	-12.54	16.85	42.00	-25.15	QP
6	734.4913	29.74	-10.38	19.36	42.00	-22.64	QP





Test Model	MR7805	Test Mode	TM1
Environmental Conditions	23.8°C, 52.1% RH	Test Engineer	Eason Zhou
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	36.8953	40.17	-17.69	22.48	41.29	-18.81	QP
2	75.9773	39.07	-19.72	19.35	38.81	-19.46	QP
3	124.1330	35.97	-20.21	15.76	37.12	-21.36	QP
4	199.9856	29.99	-17.39	12.60	35.48	-22.88	QP
5	227.6906	31.67	-16.62	15.05	35.03	-19.98	QP
6	582.7425	30.08	-10.73	19.35	42.00	-22.65	QP

Note: Margin= Reading level + Correct factor – Limit

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



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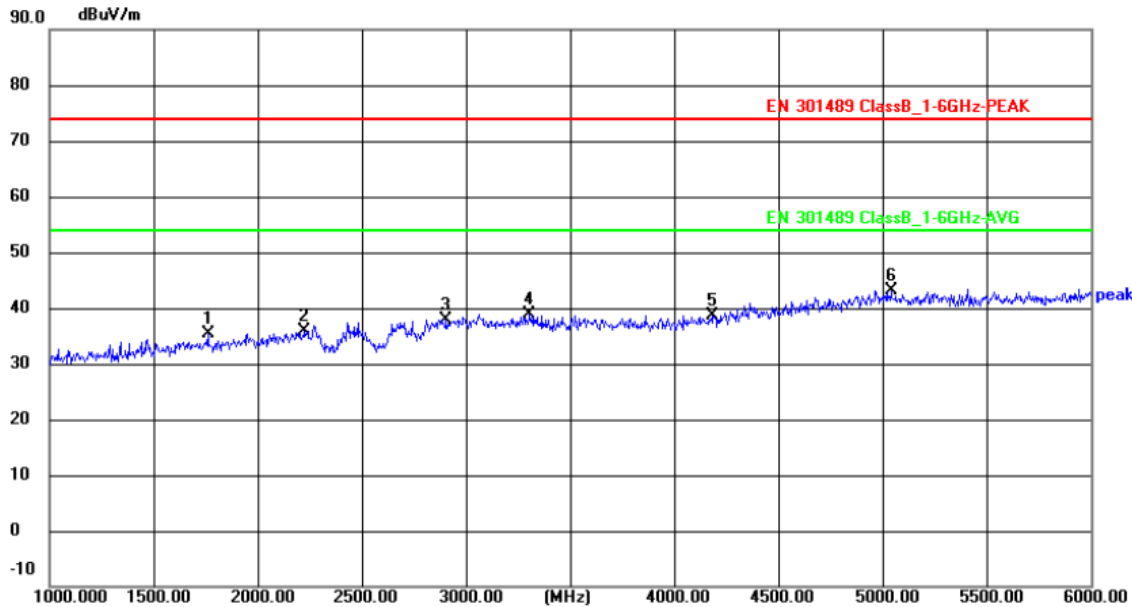
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Test Model	MR7805	Test Mode	TM1 (Above 1GHz)
Environmental Conditions	23.5℃, 52.1% RH	Test Engineer	Eason Zhou
Pol.	Horizontal	Detector Function	Peak+Average
Distance	3m	Test Voltage	AC 230V/50Hz

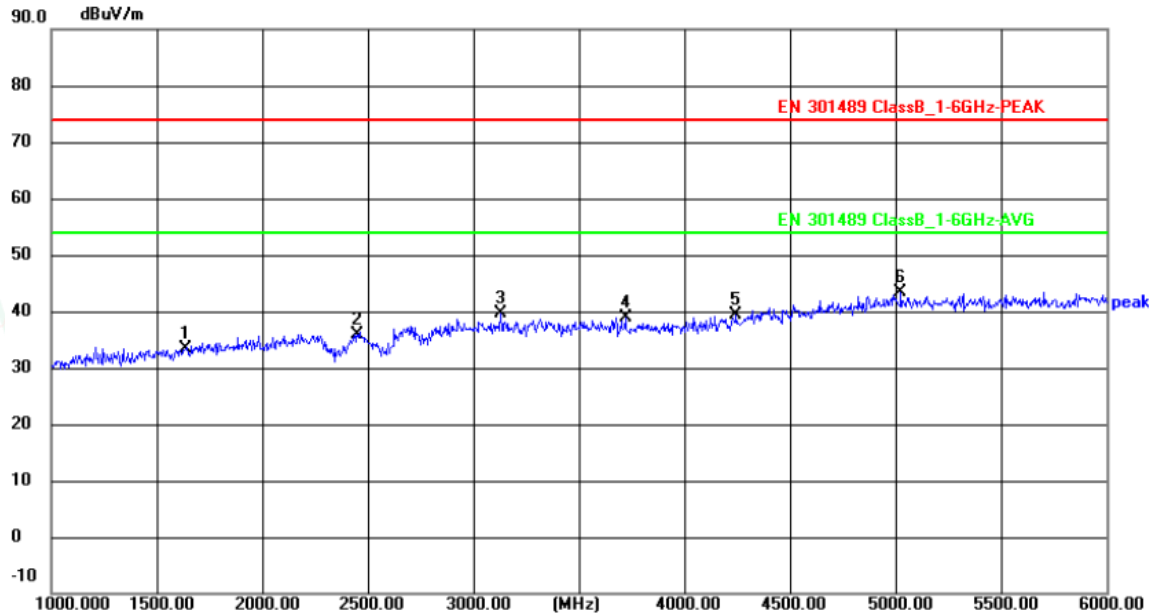


No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	1760.000	49.57	-14.24	35.33	74.00	-38.67	peak
2	2225.000	48.30	-12.31	35.99	74.00	-38.01	peak
3	2905.000	47.91	-9.92	37.99	74.00	-36.01	peak
4	3305.000	48.45	-9.49	38.96	74.00	-35.04	peak
5	4185.000	46.44	-7.81	38.63	74.00	-35.37	peak
6	5040.000	47.21	-4.05	43.16	74.00	-30.84	peak





Test Model	MR7805	Test Mode	TM1 (Above 1GHz)
Environmental Conditions	23.5°C, 52.1% RH	Test Engineer	Eason Zhou
Pol.	Vertical	Detector Function	Peak+Average
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	1635.000	47.90	-14.53	33.37	74.00	-40.63	peak
2	2450.000	47.48	-11.53	35.95	74.00	-38.05	peak
3	3130.000	49.23	-9.54	39.69	74.00	-34.31	peak
4	3720.000	48.02	-9.03	38.99	74.00	-35.01	peak
5	4245.000	47.02	-7.59	39.43	74.00	-34.57	peak
6	5025.000	47.35	-4.08	43.27	74.00	-30.73	peak

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



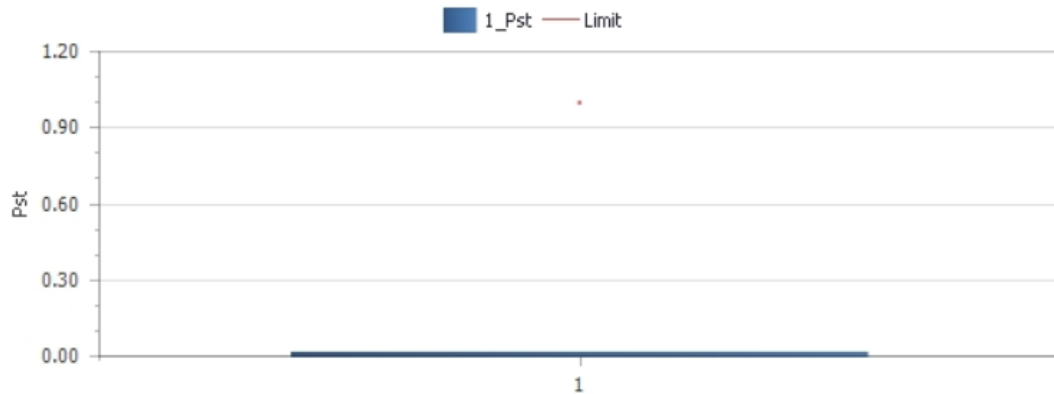


A.4 Harmonic Current Emissions

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	MR7805	Test Engineer	Eason Zhou
Environmental Conditions	25.0°C, 55.0% RH	Test Voltage	AC 230V/50Hz



Elem1 Test Parameters

Num	dc (%)	dmax (%)	Tmax (ms)	Pst
1	0.00	0.00	0.00	0.013





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

Test Model	MR7805	Test Engineer	Eason Zhou
Environmental Conditions	23.4°C, 52.5% 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, Top, Bottom	Pass
	Horizontal	80-6000	3	CT, CR	Front, Right, Left, Back, Top, Bottom	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, Top, Bottom	Pass
	Horizontal	80-6000	3	See Note	Front, Right, Left, Back, Top, Bottom	Pass

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

During the test, the Maximum Bit Error Ratio was less than 0.001

During the test, the Maximum Block Error Ratio was less than 0.01



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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	Beijing Jinmuyu Electronics Co., Ltd		
EUT	RFID reader	Temperature	24.0℃
M/N	MR7805	Humidity	53.6%
Criterion	B	Pressure	1021mbar
Test Mode	TM1-TM2	Test Engineer	Eason Zhou
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	Observation	Result (Pass/Fail)
±2KV, ±4kV	Contact Discharge	TR	Pass
±2KV, ±4kV, ±8kV	Air Discharge	TR	Pass
±2KV, ±4kV	Indirect Discharge HCP	TR	Pass
±2KV, ±4kV	Indirect Discharge VCP	TR	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	Beijing Jinmuyu Electronics Co., Ltd		
EUT	RFID reader	Temperature	22.6°C
M/N	MR7805	Humidity	52.5%
Test Mode	TM1-TM2	Criterion	B
Test Engineer	Eason Zhou		

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	Beijing Jinmuyu Electronics Co., Ltd		
EUT	RFID reader	Temperature	21.9℃
M/N	MR7805	Humidity	53.5%
Test Mode	TM1-TM2	Criterion	A
Test Engineer	Eason Zhou		

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	
<div>Remark:</div> <div>1. Modulation Signal:1kHz 80% AM</div>				

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



**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	Beijing Jinmuyu Electronics Co., Ltd		
EUT	RFID reader	Temperature	23.2°C
M/N	MR7805	Humidity	52.5%
Test Mode	TM1-TM2	Criterion	B
Test Engineer	Eason Zhou		

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	Beijing Jinmuyu Electronics Co., Ltd		
EUT	RFID reader	Temperature	23.4℃
M/N	MR7805	Humidity	54.1%
Test Mode	TM1-TM2	Criterion	B&C
Test Engineer	Eason Zhou		

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	

