EMC TEST REPORT

Report Number	:	**68.760.16.590.01**	Date of Issue:	10 February 2017

Model No.	:	**GD20-0R4G-S2, GD20-0R7G-S2 (refer to other models on page 8)**
Product Type	:	Frequency Inverter
Applicant	:	Shenzhen INVT Electric Co., Ltd.
Address	:	No. 4 Building, Gaofa Industrial Park Longjing, Nanshan district, 518055 Shenzhen, People's Republic Of China
Production Facility	:	INVT POWER ELECTRONICS (SUZHOU) CO., LTD.
Address	:	No.1, KunLunShan Road Suzhou Science & Technology Tower Hi-Tech Area 215153 Suzhou City, Jiangsu Province, People's Republic Of China
Test Result	:	■ **Positive** ☐ **Negative**
Total pages including Appendices	:	125

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1 General Information

1.1 Notes

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Prepared By EMC Project Engineer	**2017-02-09** **Date**	**Dawi Xu** **Name**	**Signature**
Approved by EMC Manager	**2017-02-10** **Date**	**Laurent Yuan** **Name**	**Signature**

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1.2 Testing Laboratory

TÜV SÜD Certification and Testing (China) Co., Ltd. Shenzhen Branch
Building 12&13, Zhiheng Wisdomland Business Park, Nantou Checkpoint Road 2, Nanshan District 518052, Shenzhen, CHINA

Tel: 86 755 8828 6998
Fax: 86 755 8828 5299

Shenzhen INVT Electric Co., Ltd. EMC lab

No. 4 Building, Gaofa Industrial Park Longjing, Nanshan district, 518055 Shenzhen, People's Republic Of China

Tel: 86-755-86312809
Fax: 86-755-86312937

1.3 Details of Applicant

CLIENT: Shenzhen INVT Electric Co., Ltd.

ADDRESS: No. 4 Building, Gaofa Industrial Park Longjing, Nanshan district, 518055 Shenzhen, People's Republic Of China

PRODUCT DESCRIPTION: Frequency Inverter

Application Details

Date of test: December 03, 2016—20 January, 2017

1.4 Test Item

Refer to table 1.

1.5 Applied Standard

APPLIED PRODUCT STANDARD: EN 61800-3 : 2004+A1:2012

1.6 Test environment condition

Ambient temperature	20~25°C
Relative humidity	40%~52%
Atmospheric pressure	101kPa

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2 Summary of Results

Table 1 below shows a brief summary of the results obtained.

Table 1 Summary of results

Test Items	Test Configuration	Required Performance Criteria	Result
Emission			
Radiated Emissions Enclosure Port	TC1, TC2, TC3, TC4, TC5, TC6, TC7, TC8, TC9	N/A	Pass
Conducted Emissions ☒Power port ☐Power interfaces ☐Ports for process measurement control lines and signal interfaces	TC1, TC2, TC3, TC4, TC5, TC6, TC7, TC8, TC9	N/A	Pass
Harmonics ☒Power ports	TC1, TC2, TC3	N/A	Pass
Voltage fluctuations ☒Power ports	TC1, TC2, TC3	N/A	Pass
Communication Notches ☐Power ports	N/A	N/A	N/A (Refer clause 6.5)
Basic immunity requirements-High-frequency disturbances			
Immunity To Radiated Electromagnetic Fields Enclosure Port	TC1, TC2, TC3	A	(Refer clause 7.2)
Immunity To Electrostatic Discharge Enclosure Port	TC1, TC2, TC3	B	Pass
Immunity To Electrical Fast Transient Bursts ☒Power ports ☒Power interfaces ☒Ports for process measurement control lines and signal interfaces	TC1, TC2, TC3	B	Pass
Immunity To Surges ☒Power ports ☐Ports for process measurement control lines and signal interfaces[4]	TC1, TC2, TC3	B	Pass
Immunity To Continuous Conducted Interference ☒Power ports ☒Ports for process measurement control lines and signal interfaces	TC1, TC2, TC3	A	Pass

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Basic immunity requirements-Low-frequency disturbances				
Harmonics and commutation notches/voltage distortion	Harmonics(THD and individual harmonics orders)	TC1, TC2, TC3	A	Pass
	Harmonic short term(<15s)		B	
	Commutation notches		A	

Voltage deviations (Variations, changes, fluctuations), dips and short interruptions	Voltage deviations	TC1, TC2, TC3	A	Pass
	Voltage dips and short interruptions		C	
Voltage unbalance and frequency variations	Voltage unbalance	TC1, TC3	A	Pass
	Frequency variations		A	
	Frequency rate of change		A	
Supply influences-Magnetic fields		N/A	N/A	N/A

Note:
1, Measurement taken is within the measurement uncertainty of measurement system.
2, TC = Test configuration
3, ☒ The item has been tested; ☐ The item has not been tested.
4. Applicable only to ports or interfaces with cables whose total length according to the manufacturer's functional specification may exceed 30m.

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3 Equipment Specification

3.1 General Description

GD20 series are open type Power Conversion Equipment with single or three phase input and three phase output. They are intended to be used in an enclosure directly and used to provide both an adjustable voltage and adjustable frequency to the ac motor.
G models: applicable to constant torque load. Eg: lift and so on.
GD20 series with suffix –B means: be able to brake immediately after the stop command.
GD20 series with suffix –S2 means: single phase 264Vmax input and three phase 264Vmax output.
GD20 series with suffix –2 means: three phase 264Vmax input and three phase 264Vmax output.
GD20 series with suffix –4 means: three phase 480Vmax input and three phase 480Vmax output.
GD20 series with suffix –EU means: with safe torque off (STO) function.

Each frame size models are similar except for IGBT/rectifier modules and some power components, details of which refer to the below TABLE and List of materials and components separately evaluated.

Input, output and size of each model were listed as following:

Table 1 Model list

Model No.	Rated Input	Rated Output	Frame Size
GD20-0R4G-S2	1PH, 220V(-15%)-240V(+10%), 47-63Hz, 6.5A	3PH, 0V-Uinput, 0-400Hz, 2.5A, 0.4kW	Size A: 80*160*123.5
GD20-0R4G-S2-EU			
GD20-0R7G-S2	1PH, 220V(-15%)-240V(+10%), 47-63Hz, 9.3A	3PH, 0V-Uinput, 0-400Hz, 4.2A, 0.7kW	
GD20-0R7G-S2-EU			
GD20-1R5G-S2	1PH, 220V(-15%)-240V(+10%), 47-63Hz, 15.7A	3PH, 0V-Uinput, 0-400Hz, 7.5A, 1.5kW	Size B: 80*185*140.5
GD20-1R5G-S2-EU			
GD20-2R2G-S2	1PH, 220V(-15%)-240V(+10%), 47-63Hz, 24A	3PH, 0V-Uinput, 0-400Hz, 10A, 2.2kW	
GD20-2R2G-S2-EU			
GD20-0R4G-2	3PH, 220V(-15%)-240V(+10%), 47-63Hz, 3.7A	3PH, 0V-Uinput, 0-400Hz, 2.5A, 4kW	Size C: 80*185*140.5
GD20-0R4G-2-EU			
GD20-0R7G-2	3PH,220V(-15%)-240V(+10%), 47-63Hz, 5A	3PH, 0V-Uinput, 0-400Hz, 4.2A, 0.75kW	
GD20-0R7G-2-EU			
GD20-0R7G-4	3PH, 380V(-15%)-440V(+10%), 47-63Hz, 3.4A	3PH, 0V-Uinput, 0-400Hz, 2.5A, 0.75kW	
GD20-0R7G-4-EU			
GD20-1R5G-4	3PH, 380V(-15%)-440V(+10%), 47-63Hz, 5.0A	3PH, 0V-Uinput, 0-400Hz, 4.2A, 1.5kW	
GD20-1R5G-4-EU			
GD20-2R2G-4	3PH, 380V(-15%)-440V(+10%), 47-63Hz, 5.8A	3PH, 0V-Uinput, 0-400Hz, 5.5A, 2.2kW	
GD20-2R2G-4-EU			

Continue

GD20-1R5G-2	3PH, 220V(-15%)-240V(+10%), 47-63Hz, 7.7A	3PH, 0V-Uinput, 0-400Hz, 7.5A, 1.5kW	Size D: 146*256*167
GD20-1R5G-2-EU			
GD20-2R2G-2	3PH, 220V(-15%)-240V(+10%), 47-63Hz, 11A	3PH, 0V-Uinput, 0-400Hz, 10A, 2.2kW	
GD20-2R2G-2-EU			
GD20-004G-2	3PH, 220V(-15%)-240V(+10%), 47-63Hz,17A	3PH, 0V-Uinput, 0-400Hz, 16A, 4kW	
GD20-004G-2-EU			
GD20-004G-4	3PH, 380V(-15%)-440V(+10%), 47-63Hz,13.5A	3PH, 0V-Uinput, 0-400Hz, 9.5A, 4kW	
GD20-004G-4-EU			
GD20-5R5G-4	3PH, 380V(-15%)-440V(+10%), 47-63Hz, 19.5A	3PH, 0V-Uinput, 0-400Hz, 14A,5.5kW	
GD20-5R5G-4-EU			
GD20-5R5G-2	3PH, 220V(-15%)-240V(+10%), 47-63Hz, 21A	3PH, 0V-Uinput, 0-400Hz, 20A, 5.5kW	Size E: 170*320*196.3
GD20-5R5G-2-EU			
GD20-7R5G-2	3PH, 220V(-15%)-240V(+10%), 47-63Hz, 31A	3PH, 0V-Uinput, 0-400Hz, 30A, 7.5kW	
GD20-7R5G-2-EU			
GD20-7R5G-4	3PH, 380V(-15%)-440V(+10%), 47-63Hz, 25A	3PH, 0V-Uinput, 0-400Hz, 18.5A, 7.5kW	
GD20-7R5G-4-EU			
GD20-011G-4	3PH, 380V(-15%)-440V(+10%), 47-63Hz, 32A	3PH, 0V-Uinput, 0-400Hz, 25A, 11kW	
GD20-011G-4-EU			
GD20-015G-4	3PH, 380V(-15%)-440V(+10%), 47-63Hz, 40A	3PH, 0V-Uinput, 0-400Hz, 32A, 15kW	
GD20-015G-4-EU			

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GD20-018G-4	3PH, 380V(-15%)-440V(+10%), 47-63Hz, 47A	3PH, 0V-Uinput, 0-400Hz, 38A, 18.5kW	Size F: 200*340.6*184.3
GD20-018G-4-EU			
GD20-022G-4	3PH, 380V(-15%)-440V(+10%), 47-63Hz, 51A	3PH, 0V-Uinput, 0-400Hz, 45A, 22kW	
GD20-022G-4-EU			
GD20-030G-4	3PH, 380V(-15%)-440V(+10%), 47-63Hz, 70A	3PH, 0V-Uinput, 0-400Hz, 60A, 30kW	Size G: 250*400*202
GD20-030G-4-EU			
GD20-037G-4	3PH, 380V(-15%)-440V(+10%), 47-63Hz, 80A	3PH, 0V-Uinput, 0-400Hz, 75A, 37kW	
GD20-037G-4-EU			
GD20-045G-4	3PH, 380V(-15%)-440V(+10%), 47-63Hz, 98A	3PH, 0V-Uinput, 0-400Hz, 92A, 45kW	Size H: 282*560*238
GD20-045G-4-EU			
GD20-045G-4-B	3PH, 380V(-15%)-440V(+10%), 47-63Hz, 98A	3PH, 0V-Uinput, 0-400Hz, 92A, 45kW	
GD20-045G-4-B-EU			
GD20-055G-4	3PH, 380V(-15%)-440V(+10%), 47-63Hz, 128A	3PH, 0V-Uinput, 0-400Hz, 115A, 55kW	
GD20-055G-4-EU			
GD20-055G-4-B	3PH, 380V(-15%)-440V(+10%), 47-63Hz, 128A	3PH, 0V-Uinput, 0-400Hz, 115A, 55kW	
GD20-055G-4-B-EU			
GD20-075G-4	3PH, 380V(-15%)-440V(+10%), 47-63Hz, 139A	3PH, 0V-Uinput, 0-400Hz, 150A, 75kW	
GD20-075G-4-EU			
GD20-075G-4-B	3PH, 380V(-15%)-440V(+10%), 47-63Hz, 139A	3PH, 0V-Uinput, 0-400Hz, 150A, 75kW	
GD20-075G-4-B-EU			
GD20-090G-4	3PH, 380V(-15%)-440V(+10%), 47-63Hz, 168A	3PH, 0V-Uinput, 0-400Hz, 180A, 90kW	Size I: 338*554*329.2
GD20-090G-4-EU			
GD20-090G-4-B	3PH, 380V(-15%)-440V(+10%), 47-63Hz, 168A	3PH, 0V-Uinput, 0-400Hz, 180A, 90kW	
GD20-090G-4-B-EU			
GD20-110G-4	3PH, 380V(-15%)-440V(+10%), 47-63Hz, 201A	3PH, 0V-Uinput, 0-400Hz, 215A, 110kW	
GD20-110G-4-EU			
GD20-110G-4-B	3PH, 380V(-15%)-440V(+10%), 47-63Hz, 201A	3PH, 0V-Uinput, 0-400Hz, 215A, 110kW	
GD20-110G-4-B-EU			

Therefore all the EMC test requirements were applied on GD20-2R2G-4, GD20-2R2G-S2 and GD20-110G-4-B; Conducted emission Test and Radiated Electromagnetic Disturbance 30MHz - 1000MHz were applied on GD20-0R7G-S2, GD20-5R5G-4, GD20-015G-4, GD20-022G-4, GD20-037G-4 and GD20-075G-4 for verify the difference, other models are deemed to fulfill relevant EMC requirement without further testing.

4 System Configuration and test environment during EMC Test

The Equipment under Test (EUT) was functioning correctly during all tests. The EUT was installed within the test site and was configured to simulate a typical user installation.

4.1 Cables Used during Test

Table 2 Cable Used during Test

Port	Length	Type of Cable
Power cable for Inverter	10m	Unshielded cable
Output cable for Inverter	4m	Unshielded cable
Control line for Inverter	3m	Unshielded cable

4.2 Auxiliary Equipment Used during Test

Table 3 Associated Equipment Used during Test

Test model	Power line EMI Filter(Input)	Power line EMI Filter(Output)	Input Reactor (for Harmonics test only)	Electromotor
GD20-2R2G-S2	FLT-PS2025L-B	FLT-L04016L-B	ACL2-2R2-4	Y100L_1-4
GD20-2R2G-4	FLT-P04006L-B	FLT-L04006L-B	ACL2-2R2-4	Y100L_1-4
GD20-110G-4-B	FLT-P04240L-B	FLT-L04240L-B	ACL2-110-4	Y132S1-2&Y160M-4
GD20-0R7G-S2	FLT-PS2010H-B	FLT-L04006L-B	N/A	Y3 6322
GD20-5R5G-4	FLT-P04016L-B	FLT-L04016L-B	N/A	Y100L_1-4
GD20-015G-4	FLT-P04045L-B	FLT-L04045L-B	N/A	Y100L_1-4
GD20-022G-4	FLT-P04065L-B	FLT-L04065L-B	N/A	Y132S1-2
GD20-037G-4	FLT-P04100L-B	FLT-L04100L-B	N/A	Y132S1-2
GD20-075G-4	FLT-P04150L-B	FLT-L04150L-B	N/A	Y132S1-2

4.3 Test Configurations and Test Connections

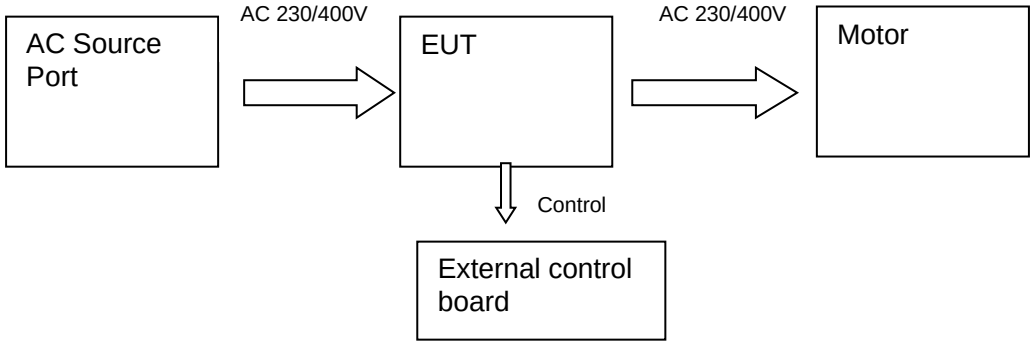
4.3.1 Test Configurations

The Electronic frequency converter was only connected to AC power supply in order to simulate normal operating conditions (with reference to the guidance given in the standard for this type of equipment).

Table 4 Configuration table

Configuration	Configuration Describe
TC1	GD20-2R2G-S2 is configured in 1ph 230V AC Power
TC2	GD20-2R2G-4 is configured in 3ph 400V AC Power
TC3	GD20-110G-4-B is configured in 3ph 400V AC Power
TC4	GD20-0R7G-S2 is configured in 1ph 230V AC Power
TC5	GD20-5R5G-4 is configured in 3ph 400V AC Power
TC6	GD20-015G-4 is configured in 3ph 400V AC Power
TC7	GD20-022G-4 is configured in 3ph 400V AC Power
TC8	GD20-037G-4 is configured in 3ph 400V AC Power
TC9	GD20-075G-4 is configured in 3ph 400V AC Power

4.3.2 Test Connections



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5 Immunity Performance Criteria

During immunity test, the Electronic frequency converter is to be monitored for compliance against the performance criteria as appropriate for the particular test applied. The "pass/fail" performance criterion to be used during test is detailed below:

Table 5 Criteria to prove the acceptance of a PDS against electromagnetic disturbances

Item	Acceptance(Performance) Criterion		
	A	B	C
General system performance	No noticeable changes of the operating characteristic Operating as intended, within specified tolerance	Noticeable changes(Visible or audible) of the operating characteristic Self-recoverable	Shutdown, changes in operating characteristics Triggering of protective devices Not self-recoverable
Special system performance Torque generating behaviour	Torque deviation within specified tolerances	Temporary torque deviation outside specified tolerances Self-recoverable	Loss of torque Not self-recoverable
Sub-component performance Operation of power electronics and driving circuits	No malfunction of a power semiconductor	Temporary malfunction which cannot cause unintended shut-down of the PDS	Shut-down, triggering of protective devices No loss of stored program No loss of user program No loss of settings No self-recoverable
Sub-component performance Information processing and sensing functions	Undisturbed communication and data exchange to external devices	Temporarily disturbed communication, but no error reports of the internal or external devices which could cause shut-down	Errors in communication, loss of data and information No loss of stored program No loss of user program No loss of settings No self-recoverable

6 Emission

6.1 Radiated Disturbance 30MHz to 1000MHz

6.1.1 Test Procedure

The test site semi-anechoic chamber has met the requirement of NSA tolerance 4dB according to the standards: ANSI C63.4 (2003).The test distance was 3m. The set-up and test methods were according to EN 55022

A preliminary scan and a final scan of the emissions shall be made from 30 MHz to 1GHz by using a Quasi-Peak Detector. The maximal emission value was acquired by adjusting the antenna height, polarisation and turntable azimuth in accordance with the software setup. Normally, the height range of antenna was 1m to 4m, the azimuth range of turntable was 0°to 360°, The receive antenna has two polarizations V and H.

6.1.2 Test Results

The EUT has met the requirements of Radiated Emission of enclosure port.
The test data see section10.1 of this report.

Table 6 Test Limits

Frequency range	30 ~ 1000MHz	
Measuring distance	3m	
Limits(Category C3)	30MHz~230MHz	60dBμV/m
	230MHz~1GHz	70dBμV/m

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6.2 Conducted Disturbance 0.15 MHz to 30MHz

6.2.1 Test Procedure

The EUT was configured as described in section 4 for this test. The mains cable of the EUT being measured shall be connected to LISN, The LISN shall be placed 0.8 m from the boundary of EUT and bonded to a ground reference plane for LISN mounted on top of the ground reference plane. This distance is between the closest points of the LISN and the EUT. All other units of the EUT and associated equipment shall be at least 0.8 m from the LISN.

All telecommunication and signal ports must be correctly terminated using either appropriate associated equipment or a representative termination during the measurement of the conducted disturbances at the mains.

Ground connections, where required for safety purposes, shall be connected to the reference ground point of the LISN and, where not otherwise provided or specified by the manufacturer, shall be of same length as the mains cable and run parallel to the mains connection at a separation distance of not more than 0.1 m.

6.2.2 Test Results

The EUT has met requirements of Conducted disturbance.
The process measurement and control port of the EUT is not intended for connection to the public telecommunication network, so this port no need consider the conducted emission requirements.

The test data see section 10.2 of this report.

Table 7 Test Limit of AC power port

Frequency range	150kHz~ 30MHz	
Classification	Category C3, I<100A	
Limit	Voltage limits	
	QP	AV
0.15MHz~0.5MHz	100dBµV	90dBµV
0.5MHz~5.0MHz	86dBµV	76dBµV
5.0MHz~30MHz	90dBµV Decreases with log of frequency down to 70 dBµV	80dBµV Decreases with log of frequency down to 60 dBµV
Classification	Category C3, I>100A	
Limit	Voltage limits	
	QP	AV
0.15MHz~0.5MHz	130dBµV	120dBµV
0.5MHz~5.0MHz	125dBµV	115dBµV
5.0MHz~30MHz	115dBµV	105dBµV

6.3 Current Harmonics Emissions

6.3.1 Test Procedure

The EUT is to be powered from a clean (low distortion) 230V 50Hz or 400V 50Hz ac power source. The EUT was configured as described in section 4 for this test. The set-up and test methods were according to
EN 61000-3-2/IEC 61000-3-2.

6.3.2 Test Results

The EUT has met the requirements (class A) of EN 61000-3-2 for harmonics of AC power ports.
The test data see section 10.3 of this report.

6.4 Voltage Fluctuations (Flicker)

6.4.1 Test Procedure

The EUT is to be powered from a clean (low distortion) 230V 50Hz or 400V 50Hz ac power source. The EUT was configured as described in section 4 for this test. The formal test ran 10mins and over a 2 hour period . the values of P_{lt}, P_{st}, d(t), d_{max} and d_c is measured. Power's source impedence is 0.4+j0.25ohm. The set-up and test methods were according to EN 61000-3-3/IEC 61000-3-3.

6.4.2 Test Results

The EUT has met the requirements of EN 61000-3-3 for voltage fluctuations of AC power ports.
The test data see section 10.4 of this report.

6.5 Commutation notches

6.5.1 Test Procedure

The EUT is to be powered from a clean (low distortion) 380V 50Hz ac power source. The EUT was configured as described in section 4 for this test. The set-up and test methods were according to EN 61800-3, Clause B.1.1.

6.5.2 Test Results

The input circuit of the EUT does not produce notches, so emission of notches need not be considered.
The EUT has met the requirements of EN 61800-3 Commutation notches of AC power ports.

7 Immunity requirements

7.1 Immunity to Electrostatic Discharge

7.1.1 Test Procedure

The EUT was configured as described in section 4 for this test. The set-up and test methods were according to IEC 61000-4-2.

The test environment conditions recorded were:

Table 8 Test Environment Condition during ESD Test

Ambient temperature	26°C
Relative humidity	45%
Atmospheric pressure	101kPa

7.1.2 Test Results

The EUT has met the requirements of Performance Criterion A for Immunity to Electrostatic Discharge of enclosure port.

Table 9 Test Results

Test Points	Specification Level				Conclusion
	±4kV Contact Discharges		±8kV Air Discharges		
	Positive	Negative	Positive	Negative	
Vertical Coupling Plane-front	A	A	N/A	N/A	Pass
Vertical Coupling Plane-rear	A	A	N/A	N/A	Pass
Vertical Coupling Plane-left	A	A	N/A	N/A	Pass
Vertical Coupling Plane-right	A	A	N/A	N/A	Pass
Metallic cover	A	A	N/A	N/A	Pass
Buttons	N/A	N/A	A	A	Pass
LED display	N/A	N/A	A	A	Pass
Enclosure	N/A	N/A	A	A	Pass

7.2 Immunity to Radiated Electric Fields 80MHz to 2700MHz

7.2.1 Test Procedure

The EUT was configured as described in section 4 for this test. The set-up and test methods were according to IEC 61000-4-3. All sides of the EUT (front, rear, left and right) were tested by antenna with vertical and horizontal polarization.

7.2.2 Test Results

The EUT has met the requirements of Performance Criterion A for Immunity to Radiated Electric Fields of enclosure port.

Table 10 Test Results

Ports of EUT	Power ports, Power interfaces, Ports for process measurement and control port
Frequency range & Test Level	80MHz –1000MHz test level：10 V/m(Un-modulated, rms) 1.4GHz –2.0GHz test level：3 V/m(Un-modulated, rms) 2.0GHz –2.7GHz test level：1 V/m(Un-modulated, rms)
Modulation	80% AM, 1kHz
Conclusion	Pass

7.3 Immunity to Electrical Fast Transient Bursts

7.3.1 Test Procedure

The EUT was configured as described in section 4 for this test. A series of Fast Transient Bursts meeting the specification were applied for a period of 120 seconds. The Transient Bursts were applied for both Positive and Negative Burst Trains to each type of Signal and Telecommunication Line in turn via a Capacitive Coupling Plate. The set-up and test methods were according to IEC 61000-4-4.

7.3.2 Test Results

The EUT has met the requirements of Performance Criterion B for Immunity to Electrical Fast Transient Bursts.

Table 11 Test Results

Ports	Measuring condition	Couple mode	Description	Conclusion
AC Power Port	Level: ±4.0kV, 5kHz, during 2 minute	L1, L2, L3, PE, L1+L2, L1+L3, L2+L3, L1+PE, L2+PE, L3+PE, L1+L2+PE, L1+L3+PE, L2+L3+PE, L1+L2+L3+PE	No fail detected	Pass
Port for process measurement and control port	Level: ±2.0kV, 5kHz, during 2 minute	Capacitive clamp	No fail detected	Pass
Output Power Interfaces	Level: ±2.0kV, 5kHz, during 2 minute	Capacitive clamp	No fail detected	Pass

7.4 Immunity to Surges

7.4.1 Test Procedure

The EUT was configured as described in section 4 for this test. A series of High Energy Surges were applied to each type of signal and telecommunication line and AC power port. The set-up and test methods were according to IEC 61000-4-5.

7.4.2 Test Results

The EUT has met the requirements of Performance Criterion A for Immunity to Surges.

Table 12 Test Results

Ports	Measuring condition	Description	Conclusion
AC Power Port	Line to Line, Level:±1kV, Tr/Th:1.2/50μs Interval: 60 seconds Line to Ground, Level:±2kV, Tr/Th:1.2/50μs Interval: 60 seconds	No fail detected	Pass

7.5 Immunity to Continuous Conducted Interference 0.15MHz to 80MHz

7.5.1 Test Procedure

The EUT was configured as described in section 4 for this test. The applied level was Amplitude Modulated by a 1 kHz sinusoidal signal to a modulation depth of 80%. The set-up and test methods were according to IEC 61000-4-6.

7.5.2 Test Results

The EUT has met the requirements of Performance Criterion A for Immunity to Continuous Conducted Interference.

Table 13 Test Results

Ports	Measuring condition	Inject method	Description	Conclusion
AC Power Port	Frequency range: 0.15 MHz to 80 MHz Induced voltage :10V (rms), 80% AM(1kHz)	current clamp	No fail detected	Pass
Output Power Interfaces	Frequency range: 0.15 MHz to 80 MHz Induced voltage :10V (rms), 80% AM(1kHz)	Current clamp	No fail detected	Pass
Port for process measurement and control port	Frequency range: 0.15 MHz to 80 MHz Induced voltage :10V (rms), 80% AM(1kHz)	EM clamp	No fail detected	Pass

7.6 Immunity to Harmonics and commutation notches/voltage distortion

7.6.1 Test Procedure

The EUT was configured as described in section 4 for this test. The applied level was presented in the below table 15. The set-up and test methods were according to IEC 61000-2-4, IEC 60146-1-1.

7.6.2 Test Results

The EUT has met the requirements of Performance Criterion A for Immunity to harmonics and commutation notches/voltage distortion.

Table 14 Test Results

Ports	Phenomenon	Reference document	Level	Performance (acceptance) criterion	Conclusion
AC Power Port	Harmonics-THD	IEC 61000-2-4 Class 3	12%	A	Pass
	Individual harmonic orders	IEC 61000-4-13	Class 3	A	Pass
	Commutation notches	IEC 60146-1-1 Class B	Depth=40% Total area = 250 in per cent degrees	A	Pass

7.7 Immunity to voltage deviation (variations, changes, fluctuations), dips and short interruptions

7.7.1 Test Procedure

The EUT was configured as described in section 4 for this test. The applied level was presented in the below table 16. The set-up and test methods were according to IEC 61000-2-4, IEC 61000-2-1.

7.7.2 Test Results

The EUT has met the requirements of Performance Criterion A&C for Immunity to voltage deviation (variations, changes, fluctuations), dips and short interruptions.

Table 15 Test Results

Ports	Phenomenon	Reference document	Level	Performance (acceptance) criterion	Conclusion
AC Power Port	Voltage deviations	IEC 61000-2-4 Class 2	+/- 10%	A	Pass
	Voltage dips	IEC 61000-4-11 Class 3	0%, 40%,70%, 80%	C	Pass*
	short interruptions	IEC 61000-4-11 Class 3	0%	C	Pass*

***:** The EUT needed manual operation to recover normal operation, within voltage dips and short interruptions test.

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7.8 Immunity to Voltage unbalance and frequency variations

7.8.1 Test Procedure

The EUT was configured as described in section 4 for this test. The applied level was presented in the below table 17. The set-up and test methods were according to IEC 61000-2-4.

7.8.2 Test Results

The EUT has met the requirements of Performance Criterion A for Immunity to voltage unbalance and frequency variations.

Table 16 Test Results

Ports	Phenomenon	Reference document	Level	Performance (acceptance) criterion	Conclusion
AC Power Port	Voltage unbalance	IEC 61000-2-4 Class 3	3% negative sequence component	A	Pass
	Frequency variations	IEC 61000-2-4	+/- 2% +/- 4% where the supply is separated from public supply networks	A	Pass
	Frequency rate of change		1%/second 2%/second where the supply is separated from public supply network	A	Pass

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8 Main Test Instruments

Table 17 Main Test Equipments

Test item	Test Instrument	Model	Manufacturer	Due-Date	Cal Interval (month)
RE	EMI Test Receiver	ESR 26	Rohde & Schwarz	2017-7-15	12
	Trilog Super Broadband Test Antenna	VULB 9163	Schwarzbeck	2017-8-3	12
	Horn Antenna	HF907	Rohde & Schwarz	2017-7-24	12
	Pre-amplifier	SCU 18	Rohde & Schwarz	2017-7-15	12
	3m Semi-anechoic chamber	9X6X6	TDK	2019-5-29	12
CE	EMI Receiver	ESPI3	ROHDE&SCHWARZ	2017-07-20	12
	V-LISN	NNLK 8121	SCHWARZBECK	2017-07-20	12
	Three Phase Harmonic flicker test system	PACS-3	CI	2017-10-26	12
	Power	5001ix-CTS-400-NO	CI	2017-07-20	12
	Power	5001ix-CTS-400-NO	CI	2017-07-20	12
Harmonics & Flicker	Three Phase Harmonic flicker test system	MX45-3PI-400-413-CTSHL-LF-SNK	CI	2017-7-15	12
RS	Signal Generator	SMB100A	Rohde & Schwarz	2017-7-15	12
	Power Amplifier	BBA100	Rohde & Schwarz	2017-7-15	12
	Power Amplifier	BBA150	Rohde & Schwarz	2017-7-15	12
	Log-Periodic Antenna	HL046E	Rohde & Schwarz	N/A	12
	Power Meter	NRP2	Rohde & Schwarz	2017-7-15	12
	Fully Anechoic Chamber	8X4X4	TDK	2019-5-29	12
CS	Signal sources	CZT-10	ROHDE&SCHWARZ	2017-06-22	12
	75W amplifier	75A250AM1	ROHDE&SCHWARZ	2017-01-13	12

EFT	EFT/SURGE Generator	ECOMPACT4	HAEFELY	2017-01-18	12
ESD	ESD Generator	ESD20G	HAEFELY	2017-10-19	12
SURGE	EFT/SURGE Generator	SG-5010G	HAEFELY	2017-01-13	12
Harmonics and commutation notches/voltage distortion	AC source	61705	Chroma	2017-01-13	12
Voltage deviations(variations, changes, fluctuations), dips and short interruptions	AC source	61705	Chroma	2017-01-13	12
Voltage unbalance and frequency variations	AC source	61705	Chroma	2017-01-13	12

9 System Measurement Uncertainty

For a 95% confidence level, the measurement expanded uncertainties for defined systems, in accordance with the recommendations of ISO 17025 were:

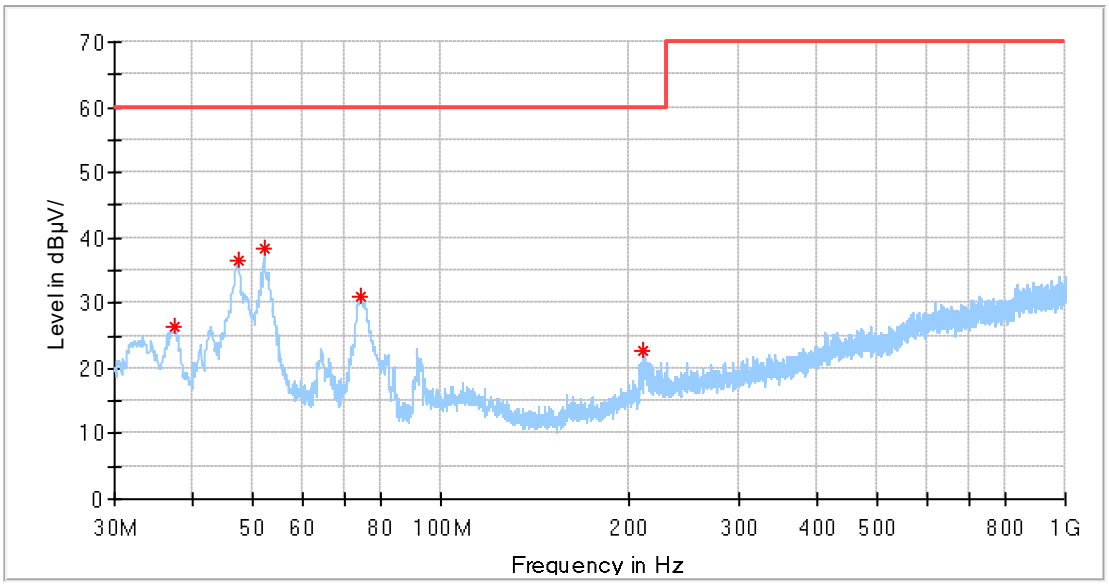
Table 18 System Measurement Uncertainty

Items		Extended Uncertainty
RE	Field strength (dBμV/m)	4.5dB
CE	Disturbance Voltage(dBμV)	3.5dB
Harmonics	Voltage(mA)	0.2 % Reading+ 6 mA
Flicker	Voltage(V)	5 % Reading
DIP	Voltage dips U(V)	The immunity measurement system uncertainty is within standard requirement and is based on a standard uncertainty multiplied by a coverage factor k = 2, providing a level of confidence of approximately 95%.
	Short interruption U(V)	
RS	Field strength(V/m)	
CS	Voltage(V)	
EFT	Voltage(V)	
ESD	Voltage(V)	
SURGE	Voltage(V)	

10 Graph and Data of Emission Test

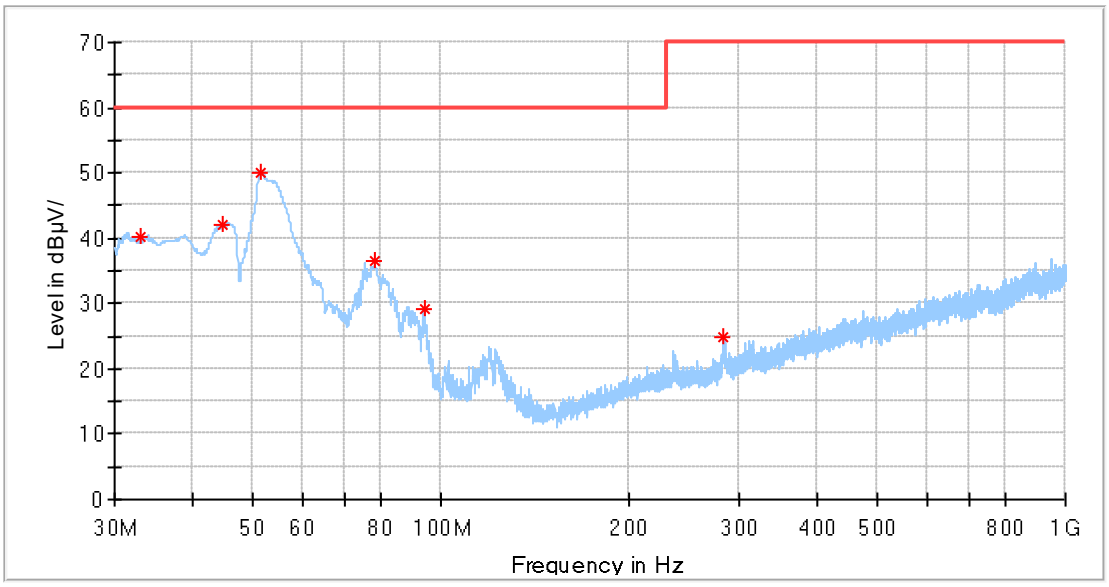
10.1 Radiated Disturbance

EUT: GD20-2R2G-4
Operating Condition: Power on with motor
Test Site: TÜV SÜD
Test Specification: EN 61800-3 Category C3
Comment: Horizontal
Temperature (°C): 22.4 Relative Humidity (%): 54.5 Atmospheric Pressure(mbar) : 1020



Frequency (MHz)	MaxPeak (dB¦ìV/m)	Limit (dB¦ìV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
37.396250	26.49	60.00	33.51	100.0	H	191.0	16.0
47.338750	36.47	60.00	23.53	100.0	H	200.0	17.4
52.128125	38.30	60.00	21.70	200.0	H	314.0	17.5
74.195625	31.03	60.00	28.97	200.0	H	0.0	12.4
211.086875	22.86	60.00	37.14	200.0	H	0.0	15.6

EUT: GD20-2R2G-4
Operating Condition: Power on with motor
Test Site: TÜV SÜD
Test Specification: EN 61800-3 Category C3
Comment: Vertical
Temperature (°C): 22.4 Relative Humidity (%): 54.5 Atmospheric Pressure(mbar) : 1020



Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
32.910000	40.11	60.00	19.89	100.0	V	302.0	17.5
44.731875	41.99	60.00	18.01	100.0	V	0.0	18.6
51.400625	49.98	60.00	10.02	100.0	V	0.0	18.3
78.257500	36.62	60.00	23.38	100.0	V	238.0	14.3
93.898750	29.16	60.00	30.84	200.0	V	126.0	15.1
283.594375	24.79	70.00	45.21	100.0	V	302.0	19.7

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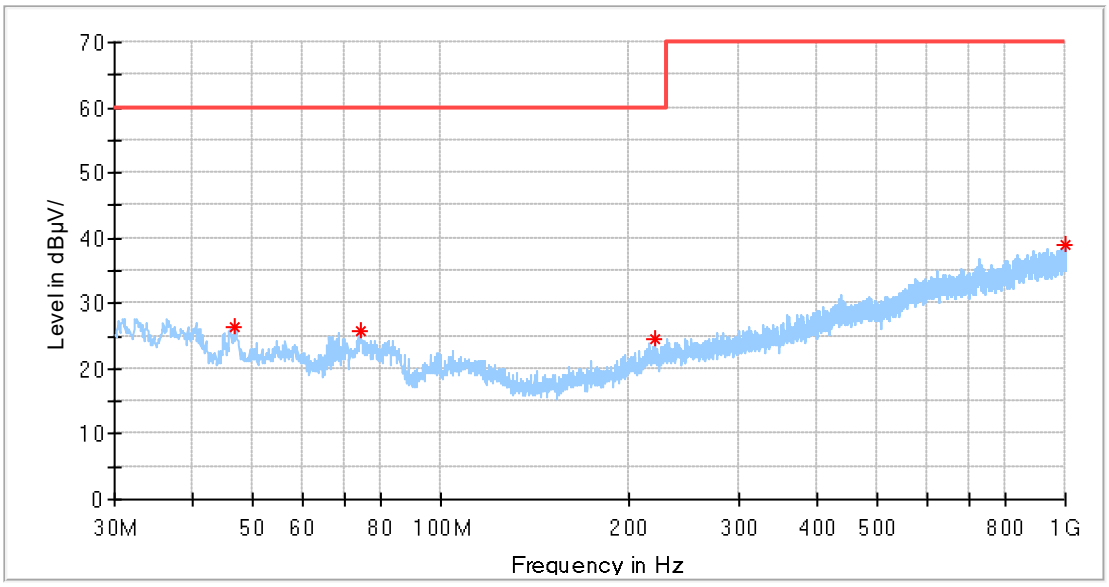
EUT: GD20-2R2G-S2
Operating Condition: Power on with motor
Test Site: TÜV SÜD
Test Specification: EN 61800-3 Category C3
Comment: Horizontal
Temperature (°C): 22.4 Relative Humidity (%): 54.5 Atmospheric Pressure(mbar) : 1020



Frequency (MHz)	MaxPeak (dB¦ìV/m)	Limit (dB¦ìV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
46.671875	26.45	60.00	33.55	100.0	H	51.0	17.4
74.195625	25.75	60.00	34.25	200.0	H	49.0	12.4
219.816875	24.41	60.00	35.59	100.0	H	255.0	16.4
998.666250	38.96	70.00	31.04	200.0	H	95.0	29.8

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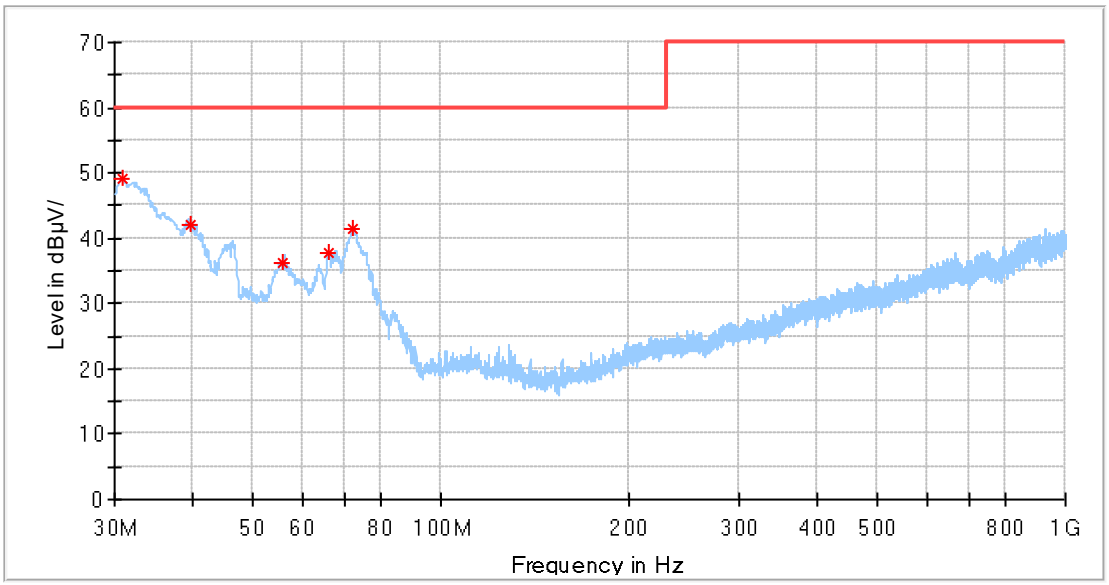
EUT: GD20-2R2G-S2
Operating Condition: Power on with motor
Test Site: TÜV SÜD
Test Specification: EN 61800-3 Category C3
Comment: Vertical
Temperature (°C): 22.4 Relative Humidity (%): 54.5 Atmospheric Pressure(mbar) : 1020



Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
30.788125	49.06	60.00	10.94	100.0	V	338.0	16.4
39.700000	42.00	60.00	18.00	100.0	V	0.0	17.3
55.886875	36.27	60.00	23.73	100.0	V	183.0	17.6
66.071875	37.75	60.00	22.25	100.0	V	155.0	16.3
72.134375	41.35	60.00	18.65	200.0	V	150.0	15.3

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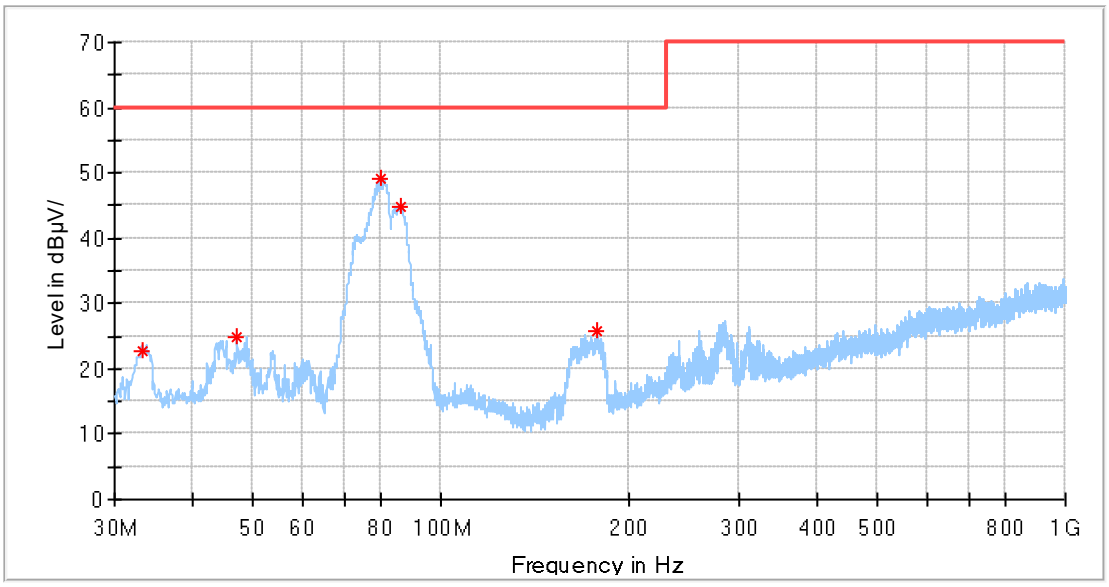
EUT: GD20-110G-4-B
Operating Condition: Power on with motor
Test Site: TÜV SÜD
Test Specification: EN 61800-3 Category C3
Comment: Horizontal
Temperature (°C): 22.4 Relative Humidity (%): 54.5 Atmospheric Pressure(mbar) : 1020



Frequency (MHz)	MaxPeak (dB¦ìV/m)	Limit (dB¦ìV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
33.273750	22.75	60.00	37.25	100.0	H	0.0	15.0
47.096250	25.00	60.00	35.00	100.0	H	283.0	17.4
80.076250	49.25	60.00	10.75	200.0	H	0.0	12.1
86.260000	44.72	60.00	15.28	200.0	H	0.0	13.2
178.228125	25.69	60.00	34.31	100.0	H	328.0	13.4

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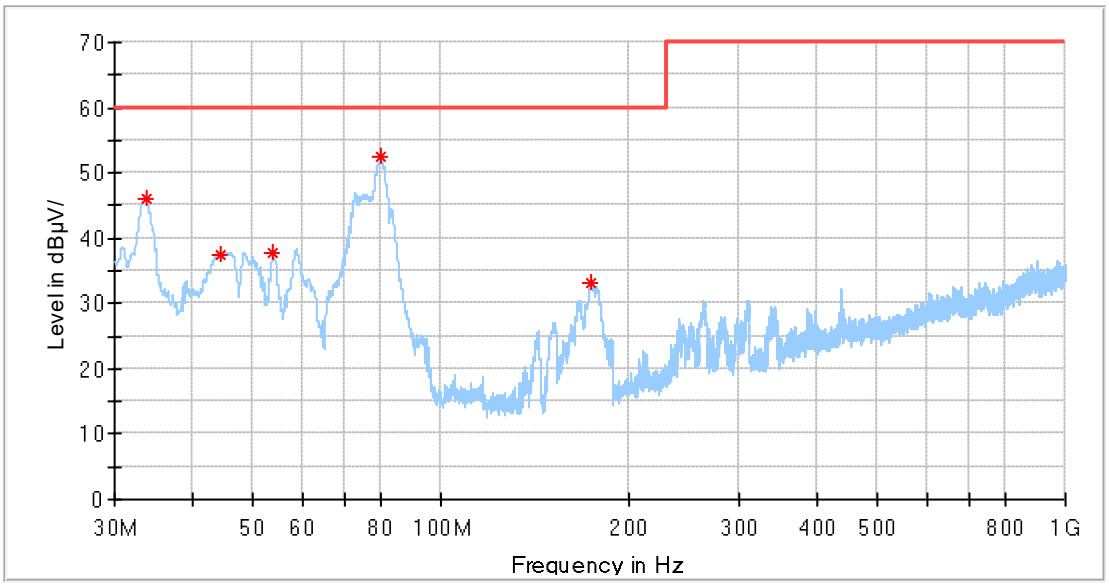
EUT: GD20-110G-4-B
Operating Condition: Power on with motor
Test Site: TÜV SÜD
Test Specification: EN 61800-3 Category C3
Comment: Vertical
Temperature (°C): 22.4 Relative Humidity (%): 54.5 Atmospheric Pressure(mbar) : 1020



Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
33.819375	46.06	60.00	13.94	100.0	V	198.0	17.6
44.368125	37.58	60.00	22.42	100.0	V	162.0	18.7
53.825625	37.75	60.00	22.25	100.0	V	116.0	17.8
80.015625	52.42	60.00	7.58	100.0	V	107.0	14.1
173.499375	33.15	60.00	26.85	100.0	V	290.0	14.5

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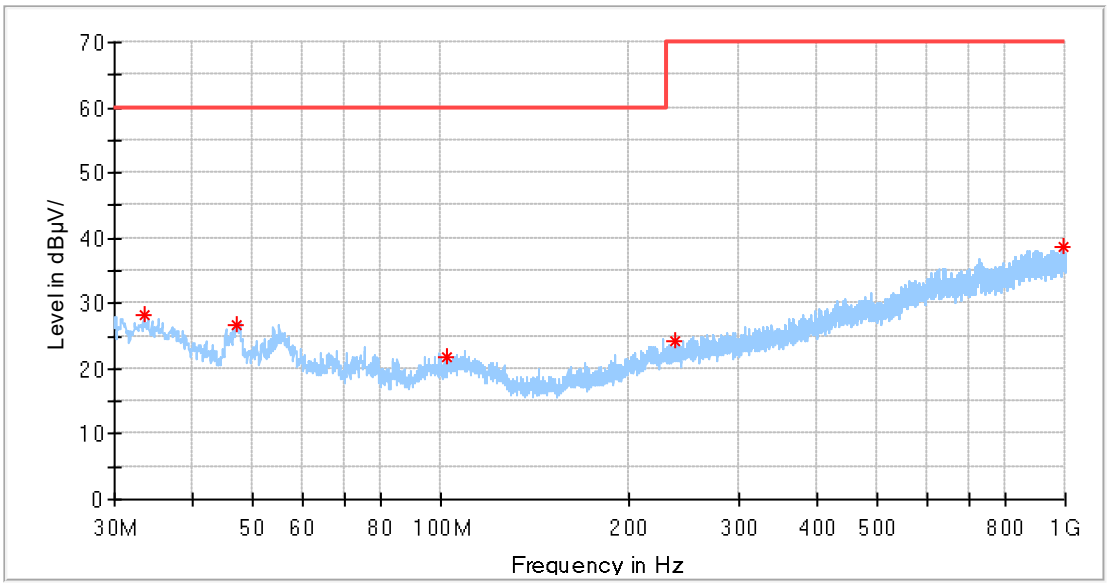
EUT: GD20-0R7G-S2
Operating Condition: Power on with motor
Test Site: TÜV SÜD
Test Specification: EN 61800-3 Category C3
Comment: Horizontal
Temperature (°C): 22.4 Relative Humidity (%): 54.5 Atmospheric Pressure(mbar) : 1020



Frequency (MHz)	MaxPeak (dB¦ìV/m)	Limit (dB¦ìV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
33.455625	28.18	60.00	31.82	200.0	H	0.0	15.0
46.975000	26.86	60.00	33.14	100.0	H	0.0	17.4
102.507500	21.93	60.00	38.07	200.0	H	122.0	15.8
236.913125	24.38	70.00	45.62	100.0	H	101.0	16.7
993.634375	38.53	70.00	31.47	100.0	H	62.0	29.8

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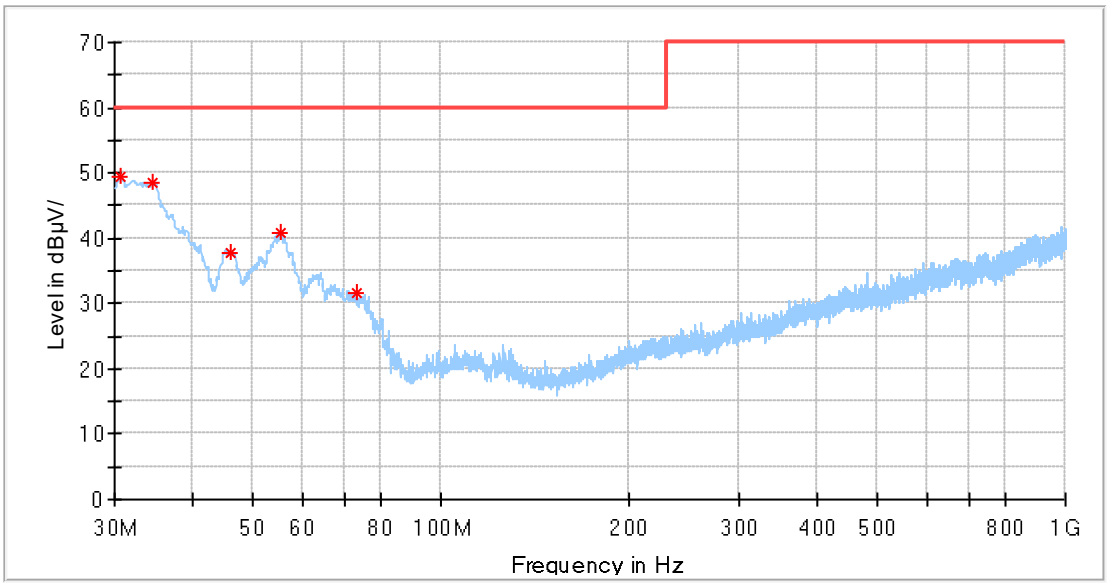
Operating Condition: Power on with motor
Test Site: TÜV SÜD
Test Specification: EN 61800-3 Category C3
Comment: Vertical
Temperature (°C): 22.4 Relative Humidity (%): 54.5 Atmospheric Pressure(mbar) : 1020



Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
30.606250	49.29	60.00	10.71	100.0	V	216.0	16.3
34.486250	48.53	60.00	11.47	100.0	V	207.0	17.6
46.065625	37.82	60.00	22.18	100.0	V	271.0	18.5
55.280625	40.88	60.00	19.12	100.0	V	0.0	17.6
73.407500	31.75	60.00	28.25	200.0	V	0.0	15.0

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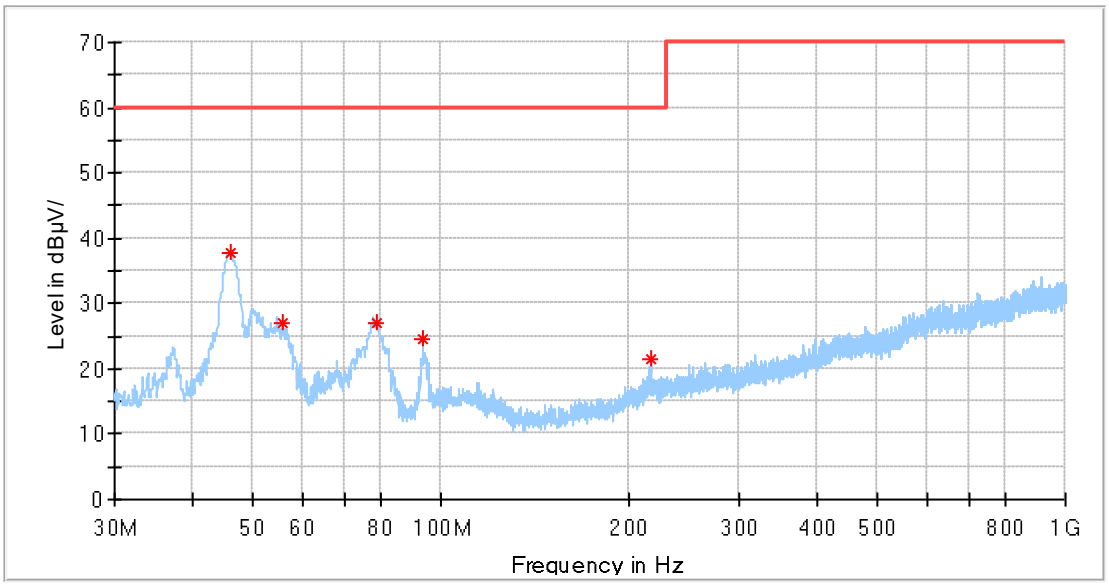
Operating Condition: Power on with motor
Test Site: TÜV SÜD
Test Specification: EN 61800-3 Category C3
Comment: Horizontal
Temperature (°C): 22.4 Relative Humidity (%): 54.5 Atmospheric Pressure(mbar) : 1020



Frequency (MHz)	MaxPeak (dB¦ìV/m)	Limit (dB¦ìV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
45.883750	37.87	60.00	22.13	100.0	H	73.0	17.3
55.826250	26.88	60.00	33.12	100.0	H	0.0	16.9
78.742500	27.06	60.00	32.94	100.0	H	0.0	12.1
93.474375	24.70	60.00	35.30	200.0	H	31.0	14.9
216.421875	21.48	60.00	38.52	100.0	H	283.0	16.6

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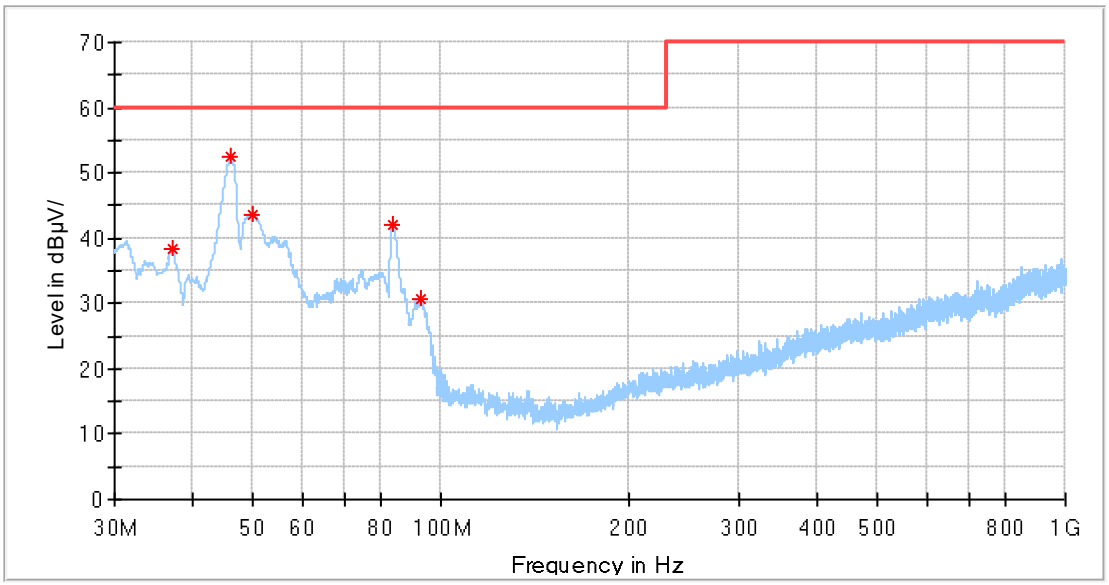
EUT: GD20-5R5G-4
Operating Condition: Power on with motor
Test Site: TÜV SÜD
Test Specification: EN 61800-3 Category C3
Comment: Vertical
Temperature (°C): 22.4 Relative Humidity (%): 54.5 Atmospheric Pressure(mbar) : 1020



Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
37.214375	38.49	60.00	21.51	200.0	V	122.0	17.0
46.005000	52.47	60.00	7.53	100.0	V	125.0	18.5
49.824375	43.72	60.00	16.28	100.0	V	189.0	18.7
83.410625	42.19	60.00	17.81	200.0	V	186.0	14.0
92.868125	30.59	60.00	29.41	200.0	V	186.0	14.8

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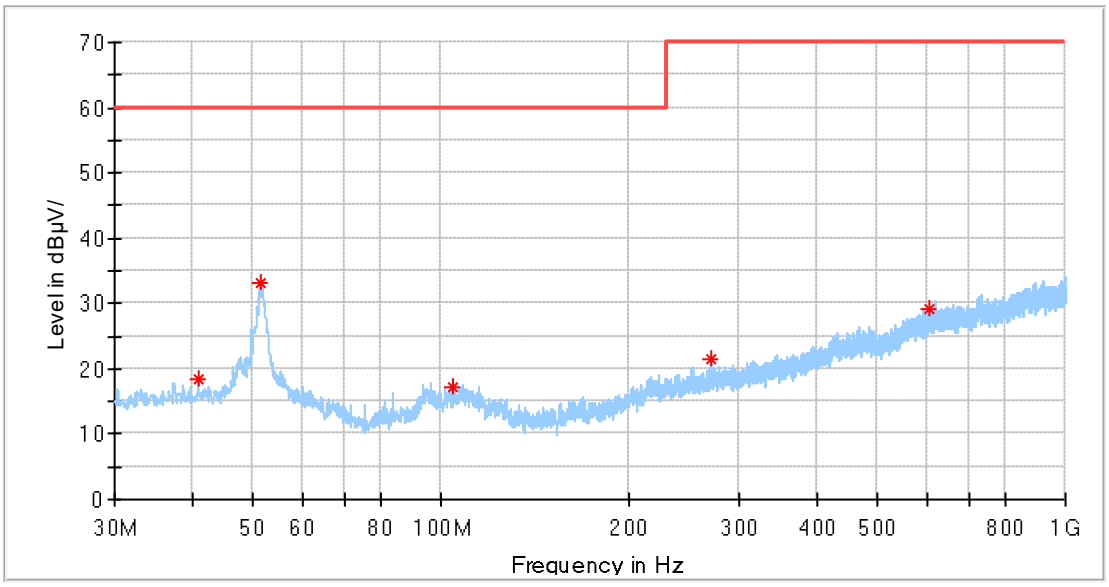
EUT: GD20-015G-4
Operating Condition: Power on with motor
Test Site: TÜV SÜD
Test Specification: EN 61800-3 Category C3
Comment: Horizontal
Temperature (°C): 22.4 Relative Humidity (%): 54.5 Atmospheric Pressure(mbar) : 1020



Frequency (MHz)	MaxPeak (dB¦ìV/m)	Limit (dB¦ìV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
40.851875	18.29	60.00	41.71	100.0	H	2.0	16.5
51.582500	33.09	60.00	26.91	200.0	H	4.0	17.6
104.568750	17.17	60.00	42.83	100.0	H	33.0	15.9
271.469375	21.36	70.00	48.64	100.0	H	125.0	18.0
604.906875	29.30	70.00	40.70	100.0	H	316.0	25.7

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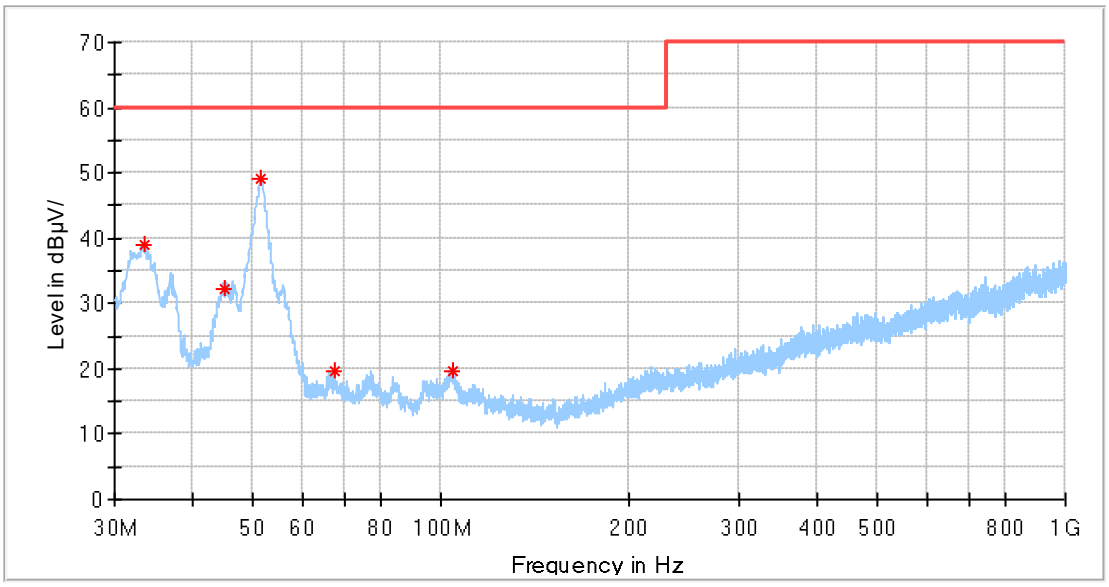
Building 12&13, Zhiheng Wisdomland Business Park, Nantou Checkpoint Road 2, Nanshan District 518052, Shenzhen, CHINA

EUT: GD20-015G-4
Operating Condition: Power on with motor
Test Site: TÜV SÜD
Test Specification: EN 61800-3 Category C3
Comment: Vertical
Temperature (°C): 22.4 Relative Humidity (%): 54.5 Atmospheric Pressure(mbar) : 1020



Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
33.395000	38.92	60.00	21.08	100.0	V	300.0	17.6
45.035000	32.26	60.00	27.74	100.0	V	0.0	18.6
51.582500	49.00	60.00	11.00	100.0	V	0.0	18.3
67.345000	19.56	60.00	40.44	100.0	V	18.0	16.1
104.386875	19.56	60.00	40.44	100.0	V	245.0	16.2

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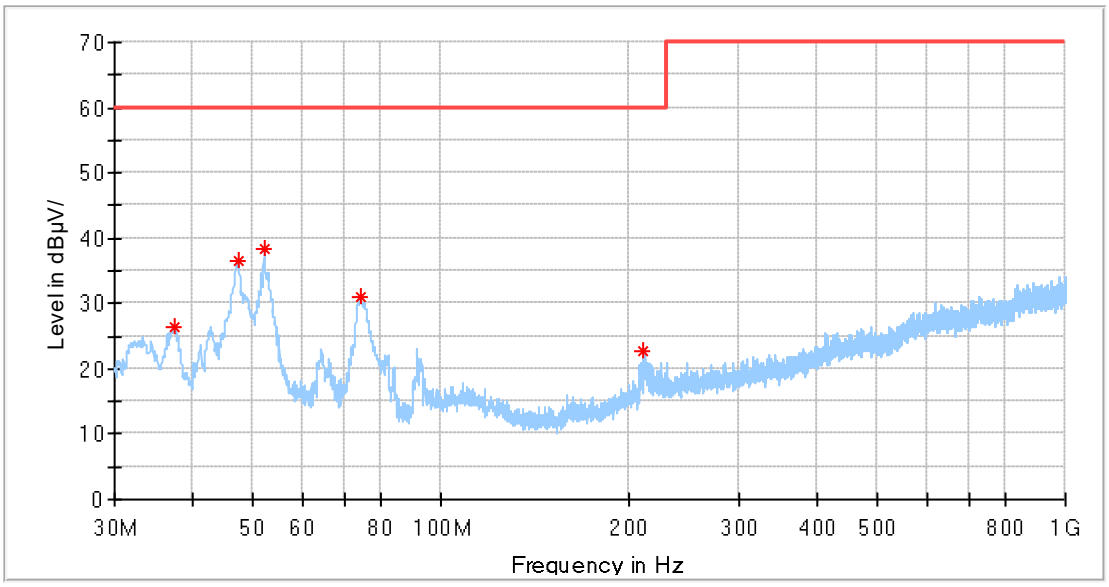
Building 12&13, Zhiheng Wisdomland Business Park, Nantou Checkpoint Road 2, Nanshan District 518052, Shenzhen, CHINA

EUT: GD20-022G-4
Operating Condition: Power on with motor
Test Site: TÜV SÜD
Test Specification: EN 61800-3 Category C3
Comment: Horizontal
Temperature (°C): 22.4 Relative Humidity (%): 54.5 Atmospheric Pressure(mbar) : 1020



Frequency (MHz)	MaxPeak (dB¦ìV/m)	Limit (dB¦ìV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
37.396250	26.49	60.00	33.51	100.0	H	191.0	16.0
47.338750	36.47	60.00	23.53	100.0	H	200.0	17.4
52.128125	38.30	60.00	21.70	200.0	H	314.0	17.5
74.195625	31.03	60.00	28.97	200.0	H	0.0	12.4
211.086875	22.86	60.00	37.14	200.0	H	0.0	15.6

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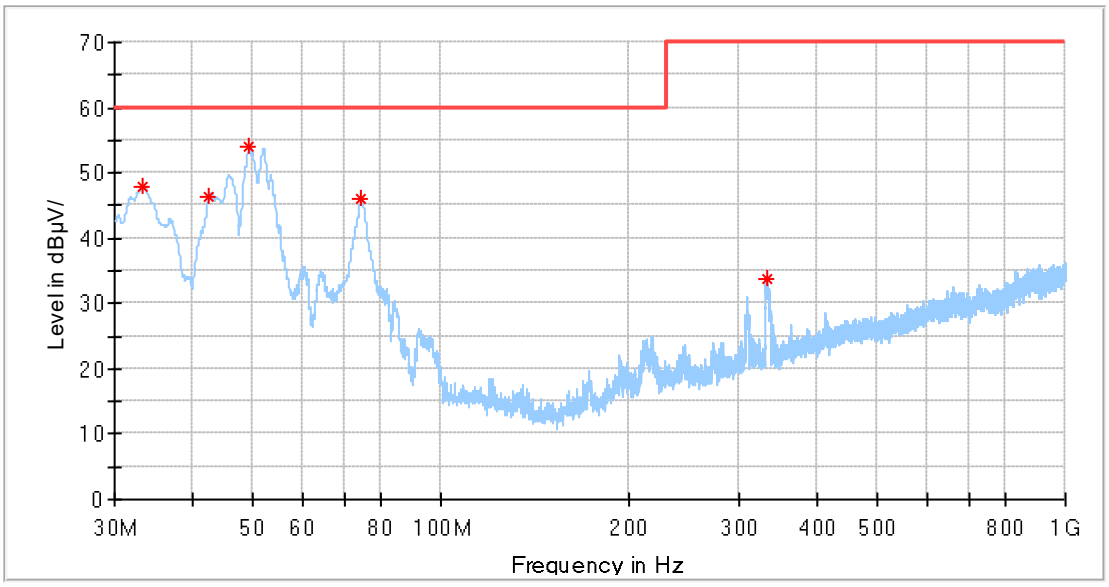
EUT: GD20-022G-4
Operating Condition: Power on with motor
Test Site: TÜV SÜD
Test Specification: EN 61800-3 Category C3
Comment: Vertical
Temperature (°C): 22.4 Relative Humidity (%): 54.5 Atmospheric Pressure(mbar) : 1020



Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
33.213125	47.94	60.00	12.06	200.0	V	0.0	17.5
42.367500	46.23	60.00	13.77	100.0	V	155.0	17.8
49.218125	54.12	60.00	5.88	100.0	V	3.0	18.5
74.438125	46.04	60.00	13.96	200.0	V	204.0	14.9
331.670000	33.70	70.00	36.30	100.0	V	0.0	20.7

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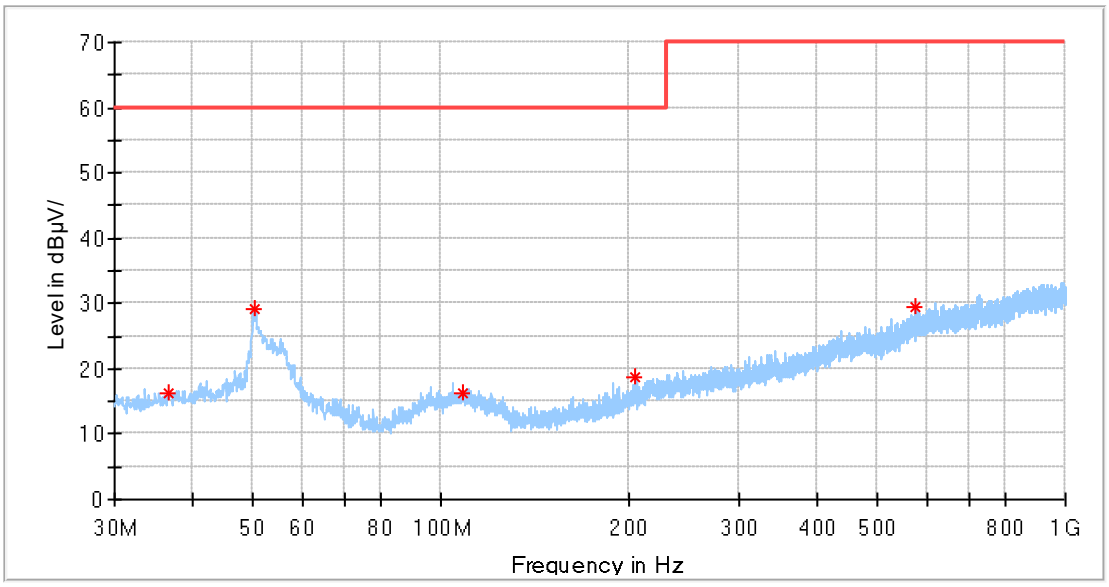
EUT: GD20-037G-4
Operating Condition: Power on with motor
Test Site: TÜV SÜD
Test Specification: EN 61800-3 Category C3
Comment: Horizontal
Temperature (°C): 22.4 Relative Humidity (%): 54.5 Atmospheric Pressure(mbar) : 1020



Frequency (MHz)	MaxPeak (dB¦ìV/m)	Limit (dB¦ìV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
36.668750	16.38	60.00	43.62	200.0	H	278.0	15.9
50.430625	29.03	60.00	30.97	200.0	H	315.0	17.7
108.751875	16.36	60.00	43.64	200.0	H	0.0	16.2
204.539375	18.77	60.00	41.23	200.0	H	269.0	15.4
575.928125	29.46	70.00	40.54	200.0	H	5.0	25.1

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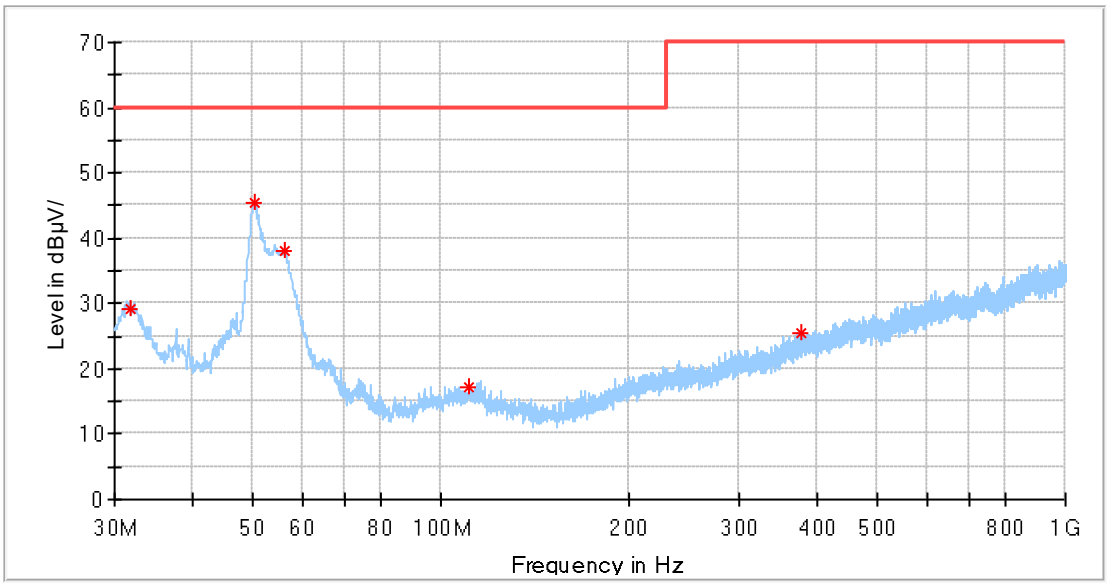
EUT: GD20-037G-4
Operating Condition: Power on with motor
Test Site: TÜV SÜD
Test Specification: EN 61800-3 Category C3
Comment: Vertical
Temperature (°C): 22.4 Relative Humidity (%): 54.5 Atmospheric Pressure(mbar) : 1020



Frequency (MHz)	MaxPeak (dB¦ìV/m)	Limit (dB¦ìV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
31.818750	29.23	60.00	30.77	100.0	V	0.0	17.3
50.248750	45.37	60.00	14.63	100.0	V	191.0	18.7
56.008125	38.20	60.00	21.80	100.0	V	0.0	17.6
110.691875	17.31	60.00	42.69	100.0	V	210.0	16.2
378.230000	25.42	70.00	44.58	200.0	V	0.0	23.2

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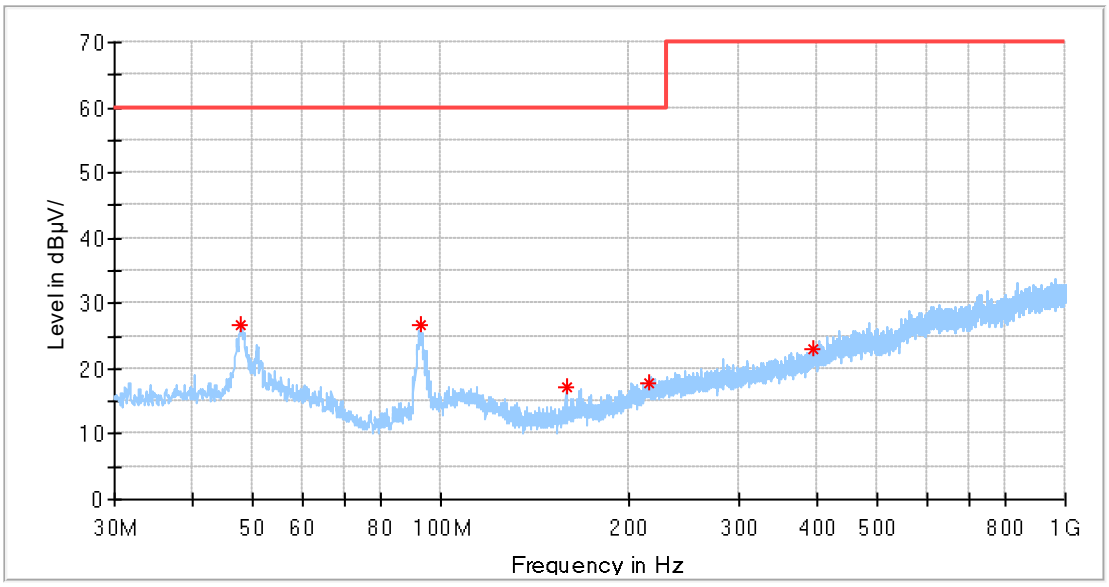
EUT: GD20-075G-4
Operating Condition: Power on with motor
Test Site: TÜV SÜD
Test Specification: EN 61800-3 Category C3
Comment: Horizontal
Temperature (°C): 22.4 Relative Humidity (%): 54.5 Atmospheric Pressure(mbar) : 1020



Frequency (MHz)	MaxPeak (dB¦ìV/m)	Limit (dB¦ìV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
47.884375	26.57	60.00	33.43	200.0	H	0.0	17.3
92.928750	26.78	60.00	33.22	200.0	H	357.0	14.7
158.525000	17.19	60.00	42.81	100.0	H	0.0	13.1
215.270000	17.80	60.00	42.20	100.0	H	237.0	16.6
394.174375	22.98	70.00	47.02	100.0	H	0.0	21.2

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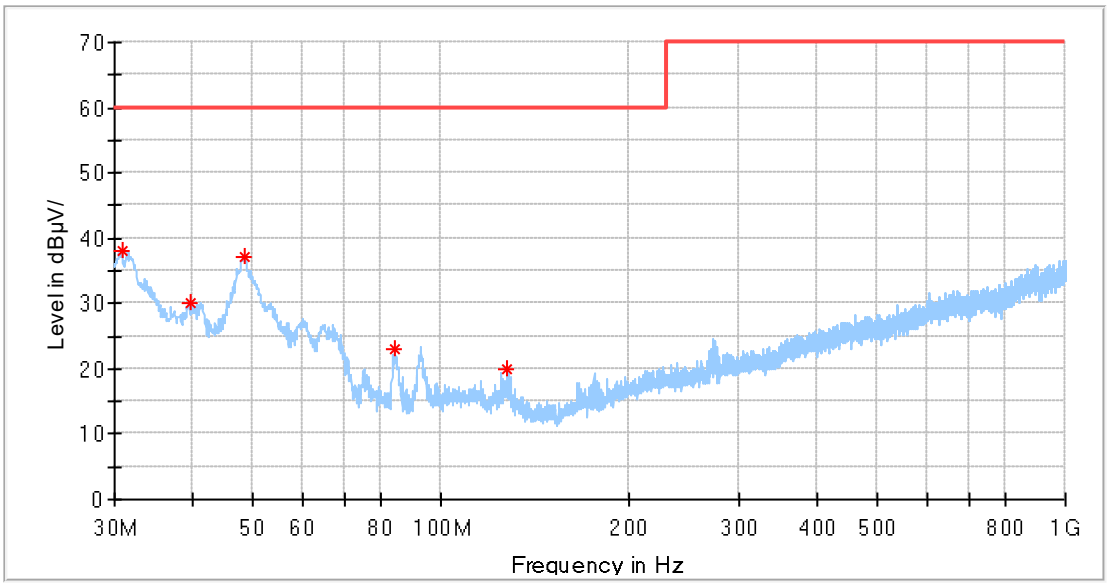
EUT: GD20-075G-4
Operating Condition: Power on with motor
Test Site: TÜV SÜD
Test Specification: EN 61800-3 Category C3
Comment: Vertical
Temperature (°C): 22.4 Relative Humidity (%): 54.5 Atmospheric Pressure(mbar) : 1020



Frequency (MHz)	MaxPeak (dB¦ìV/m)	Limit (dB¦ìV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
30.848750	38.04	60.00	21.96	100.0	V	319.0	16.5
39.821250	29.99	60.00	30.01	200.0	V	280.0	17.3
48.308750	37.12	60.00	22.88	200.0	V	243.0	18.3
84.198750	23.00	60.00	37.00	200.0	V	271.0	14.0
127.242500	19.94	60.00	40.06	100.0	V	274.0	14.4

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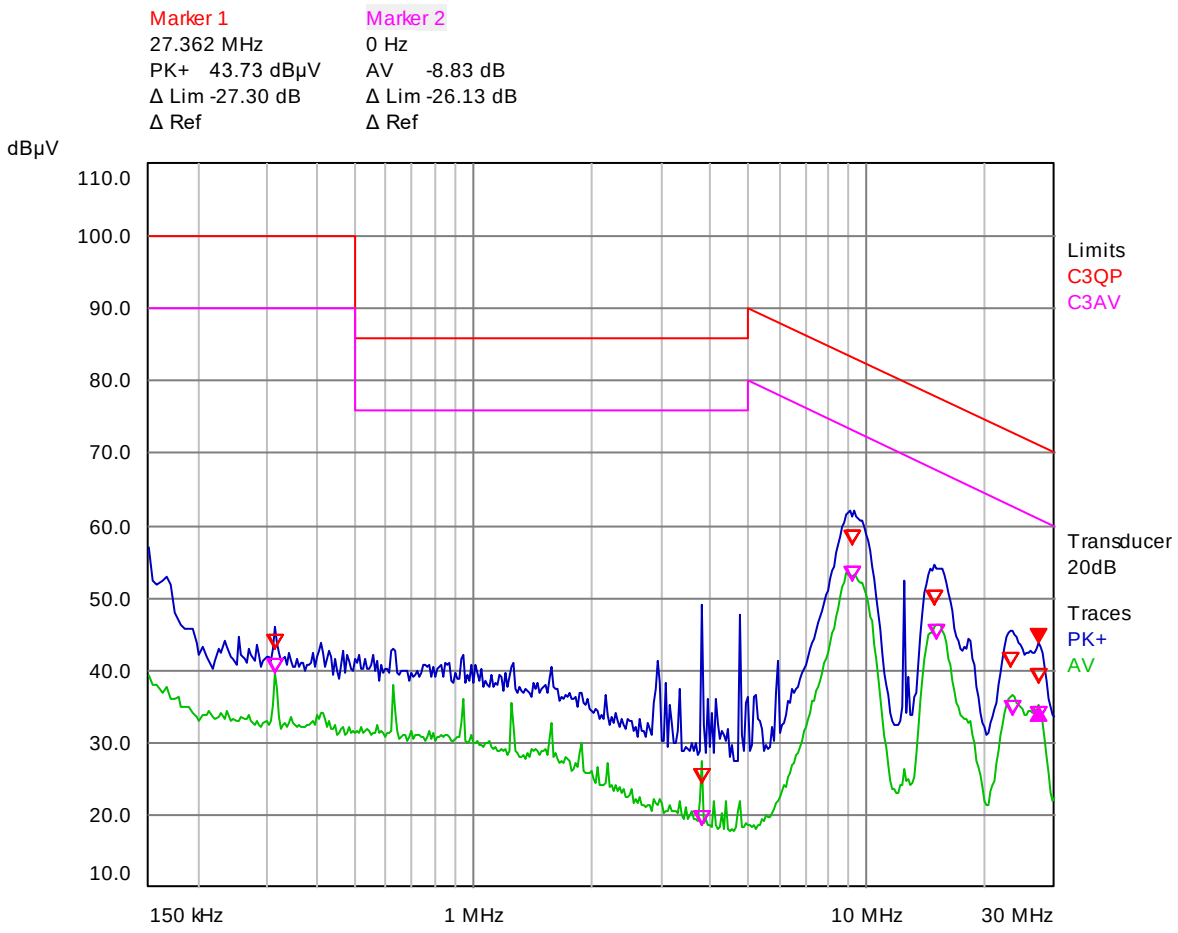
10.2 Conducted Disturbance

10.2.1 AC Power Port Test Data

EUT: GD20-2R2G-4
Operating Condition: Power on with motor
Test Specification: EN61800-3, C3
Comment: L1



Trace	Frequency (MHz)	Level (dBµV)	Limit (dBµV)	Delta Limit (dB)	Delta Ref (dB)	Comment
1 QP	0.314	42.94	100.00	-57.06		
2 AV	0.314	39.59	90.00	-50.41		
1 QP	3.814	24.44	86.00	-61.56		
2 AV	3.814	18.53	76.00	-57.47		
1 QP	9.202	57.37	83.19	-25.82		
2 AV	9.226	52.52	73.16	-20.64		
1 QP	14.89	49.01	77.82	-28.81		
2 AV	14.938	44.40	67.78	-23.38		
1 QP	23.226	40.56	72.86	-32.30		
2 AV	23.41	33.90	62.77	-28.87		
2 AV	27.162	33.04	61.11	-28.07		
1 QP	27.362	38.37	71.03	-32.66		

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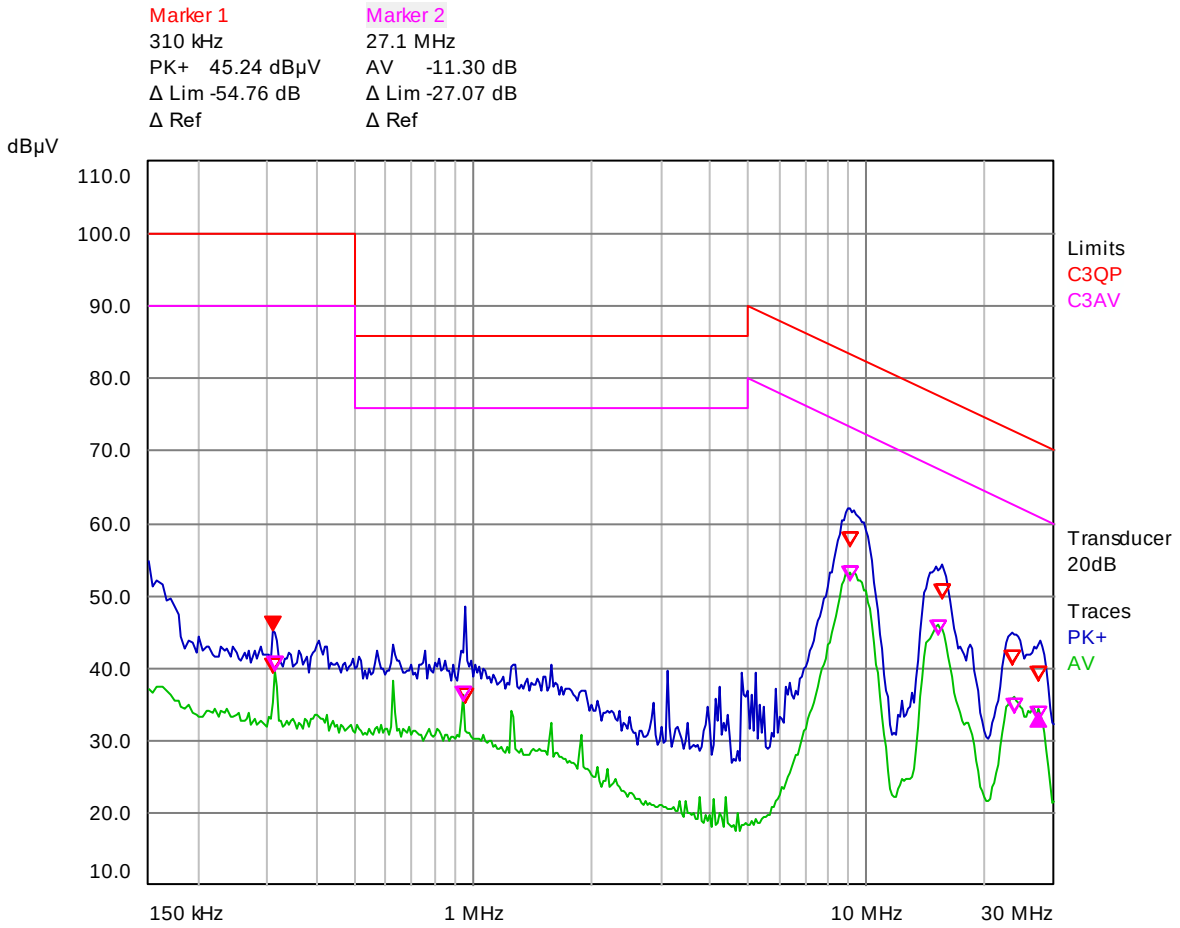
EUT: GD20-2R2G-4
Operating Condition: Power on with motor
Test Specification: EN61800-3, C3
Comment: L2



Trace	Frequency (MHz)	Level (dBµV)	Limit (dBµV)	Delta Limit (dB)	Delta Ref (dB)	Comment
1 QP	0.31	39.26	100.00	-60.74		
2 AV	0.314	39.54	90.00	-50.46		
2 AV	0.942	35.37	76.00	-40.63		
1 QP	0.954	35.24	86.00	-50.76		
1 QP	9.034	56.93	83.40	-26.47		
2 AV	9.058	52.09	73.37	-21.28		
2 AV	15.258	44.70	67.55	-22.85		
1 QP	15.498	49.70	77.37	-27.67		
1 QP	23.378	40.34	72.78	-32.44		
2 AV	23.762	33.78	62.60	-28.82		
2 AV	27.354	32.73	61.03	-28.30		
1 QP	27.41	38.22	71.01	-32.79		

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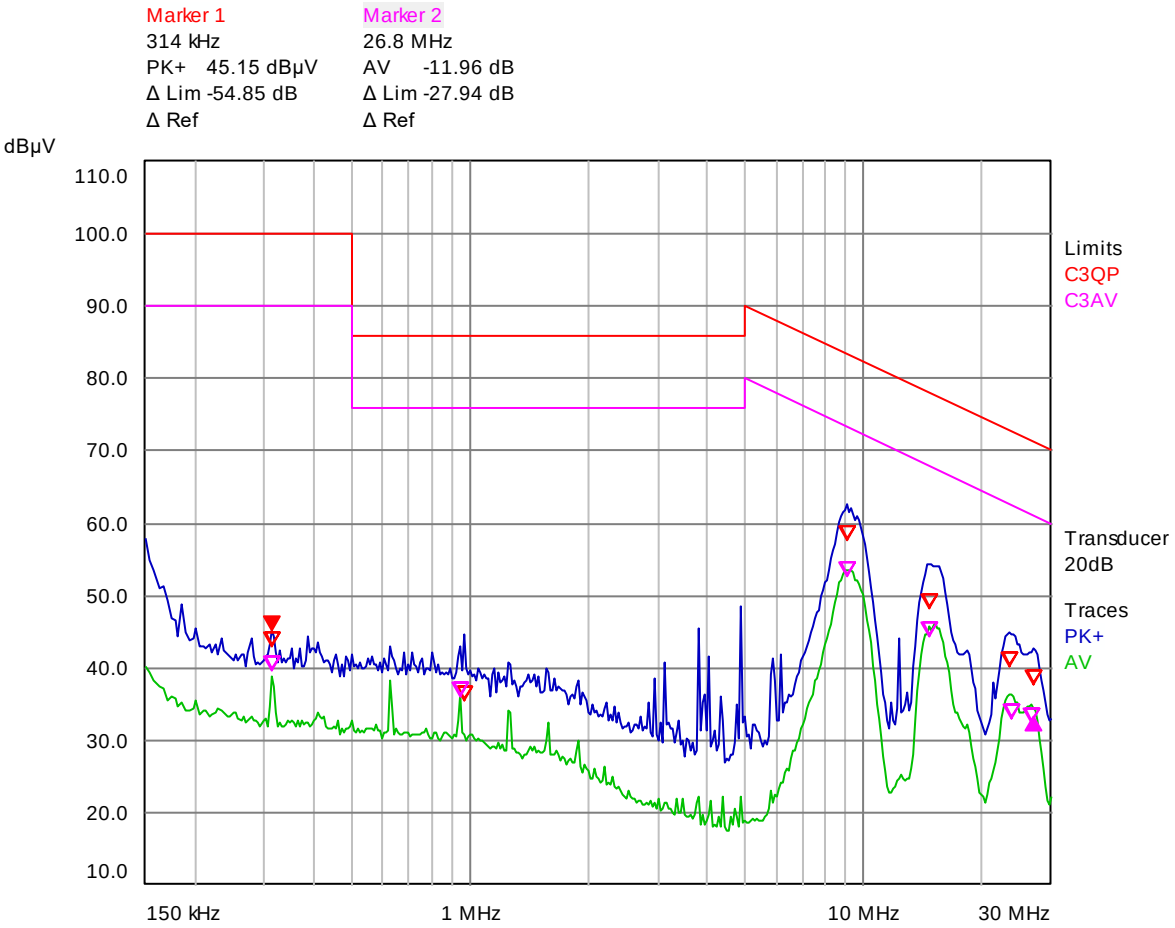
EUT: GD20-2R2G-4
Operating Condition: Power on with motor
Test Specification: EN61800-3, C3
Comment: L3



Trace	Frequency (MHz)	Level (dBµV)	Limit (dBµV)	Delta Limit (dB)	Delta Ref (dB)	Comment
1 QP	0.314	42.97	100.00	-57.03		
2 AV	0.314	39.50	90.00	-50.50		
2 AV	0.946	36.18	76.00	-39.82		
1 QP	0.966	35.37	86.00	-50.63		
1 QP	9.034	57.54	83.40	-25.86		
2 AV	9.066	52.57	73.36	-20.79		
1 QP	14.702	48.26	77.96	-29.70		
2 AV	14.746	44.23	67.93	-23.70		
1 QP	23.402	40.08	72.77	-32.69		
2 AV	23.626	33.10	62.67	-29.57		
2 AV	26.618	32.41	61.34	-28.93		
1 QP	27.114	37.68	71.13	-33.45		

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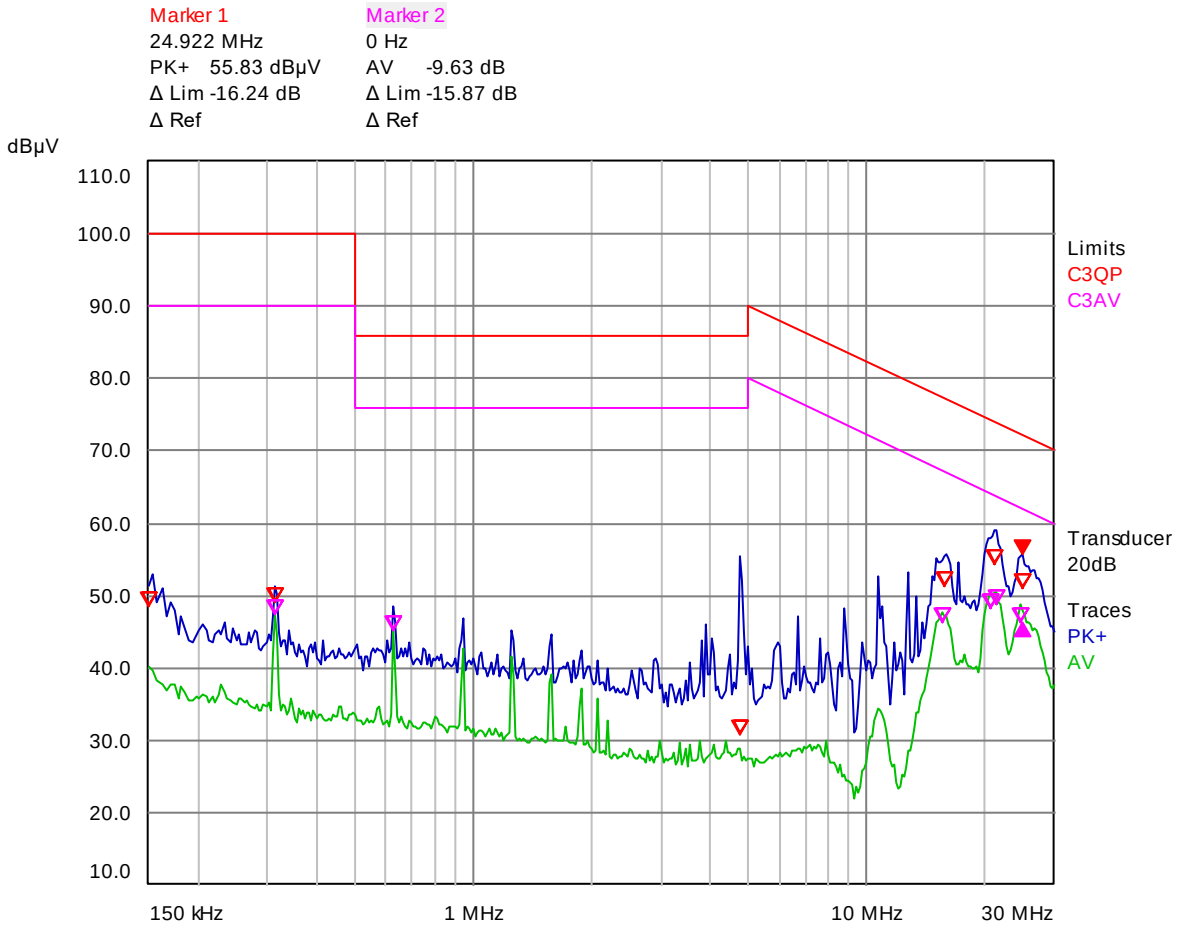
EUT: GD20-2R2G-S2
Operating Condition: Power on with motor
Test Specification: EN61800-3, C3
Comment: L



Trace	Frequency (MHz)	Level (dBµV)	Limit (dBµV)	Delta Limit (dB)	Delta Ref (dB)	Comment
1 QP	0.15	48.51	100.00	-51.49		
1 QP	0.314	49.12	100.00	-50.88		
2 AV	0.314	47.27	90.00	-42.73		
2 AV	0.63	45.27	76.00	-30.73		
1 QP	4.766	30.81	86.00	-55.19		
2 AV	15.53	46.40	67.35	-20.95		
1 QP	15.674	51.26	77.25	-25.99		
2 AV	20.698	48.24	64.14	-15.90		
1 QP	21.122	54.30	73.92	-19.62		
2 AV	21.442	48.77	63.75	-14.98		
2 AV	24.682	46.19	62.18	-15.99		
1 QP	24.922	50.92	72.07	-21.15		

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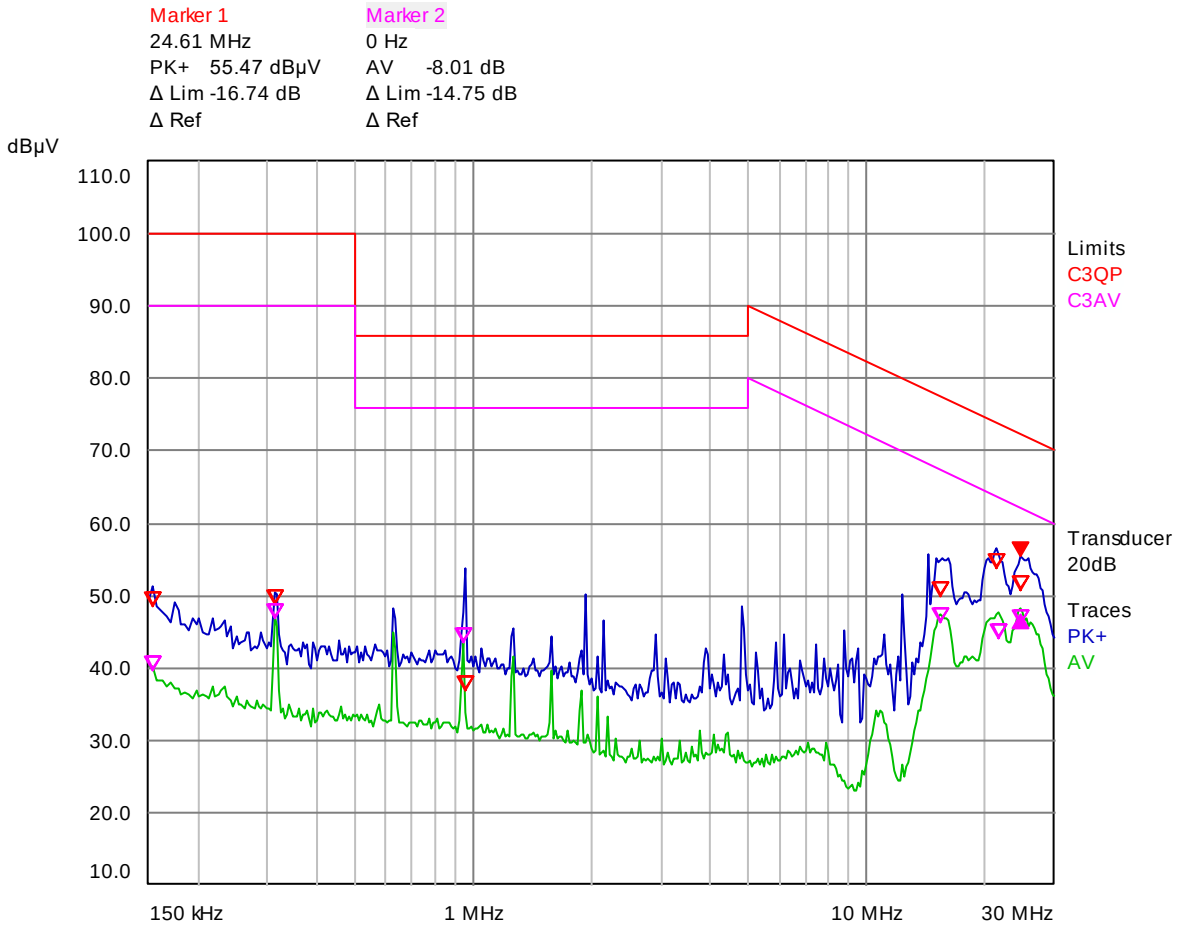
EUT: GD20-2R2G-S2
Operating Condition: Power on with motor
Test Specification: EN61800-3, C3
Comment: N



Trace	Frequency (MHz)	Level (dBµV)	Limit (dBµV)	Delta Limit (dB)	Delta Ref (dB)	Comment
1 QP	0.154	48.64	100.00	-51.36		
2 AV	0.154	39.69	90.00	-50.31		
1 QP	0.314	48.83	100.00	-51.17		
2 AV	0.314	46.85	90.00	-43.15		
2 AV	0.946	43.46	76.00	-32.54		
1 QP	0.954	36.76	86.00	-49.24		
1 QP	15.294	49.92	77.52	-27.60		
2 AV	15.45	46.43	67.41	-20.98		
1 QP	21.378	53.64	73.78	-20.14		
2 AV	21.722	44.13	63.60	-19.47		
2 AV	24.602	45.91	62.21	-16.30		
1 QP	24.61	50.78	72.21	-21.43		

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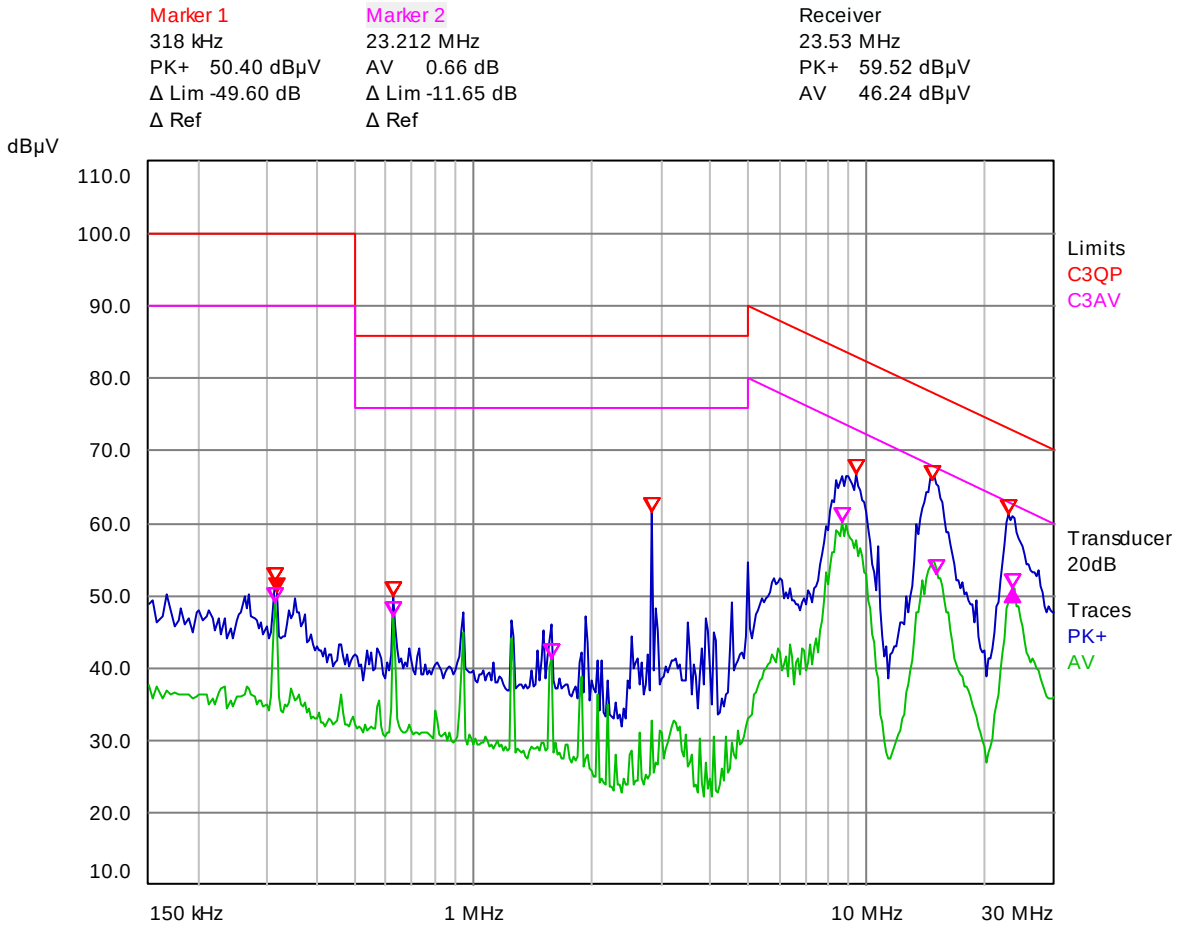
EUT: GD20-110G-4-B
Operating Condition: Power on with motor
Test Specification: EN61800-3, C3
Comment: L1



Trace	Frequency (MHz)	Level (dBµV)	Limit (dBµV)	Delta Limit (dB)	Delta Ref (dB)	Comment
1 PK+	0.314	51.82	100.00	-48.18		
2 AV	0.314	48.93	90.00	-41.07		
1 PK+	0.63	49.95	86.00	-36.05		
2 AV	0.63	47.20	76.00	-28.80		
2 AV	1.574	41.40	76.00	-34.60		
1 PK+	2.854	61.60	86.00	-24.40		
2 AV	8.63	60.21	73.91	-13.70		
1 PK+	9.438	66.78	82.91	-16.13		
1 PK+	14.606	66.02	78.03	-12.01		
2 AV	14.946	52.86	67.78	-14.92		
1 PK+	23.038	61.25	72.95	-11.70		
2 AV	23.53	51.06	62.71	-11.65		

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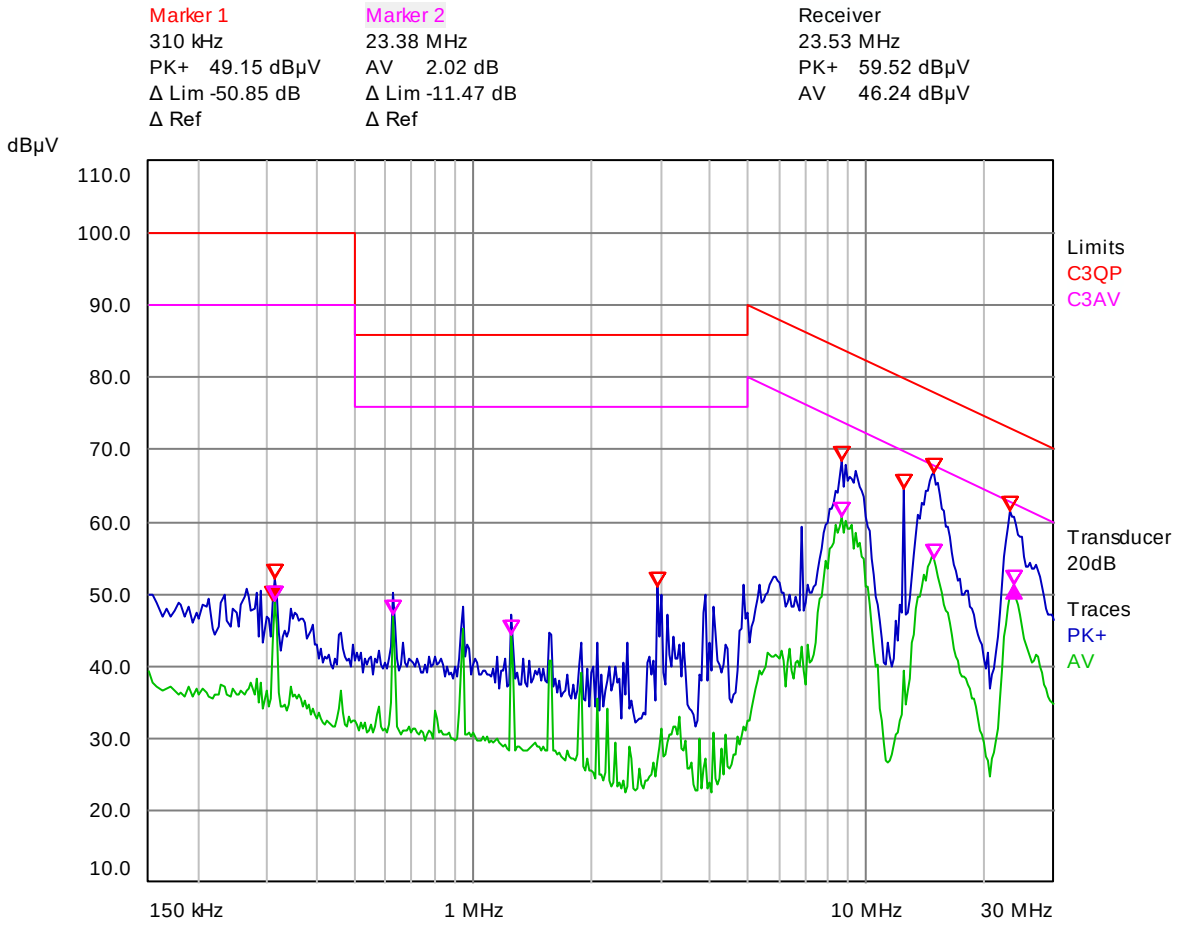
EUT: GD20-110G-4-B
Operating Condition: Power on with motor
Test Specification: EN61800-3, C3
Comment: L2



Trace	Frequency (MHz)	Level (dBµV)	Limit (dBµV)	Delta Limit (dB)	Delta Ref (dB)	Comment
1 PK+	0.314	52.04	100.00	-47.96		
2 AV	0.314	49.00	90.00	-41.00		
2 AV	0.63	47.04	76.00	-28.96		
2 AV	1.258	44.26	76.00	-31.74		
1 PK+	2.946	51.00	86.00	-35.00		
2 AV	8.614	60.83	73.93	-13.10		
1 PK+	8.682	68.42	83.84	-15.42		
1 PK+	12.382	64.58	79.88	-15.30		
1 PK+	14.79	66.67	77.89	-11.22		
2 AV	14.806	54.85	67.88	-13.03		
1 PK+	23.222	61.58	72.86	-11.28		
2 AV	23.69	51.17	62.64	-11.47		

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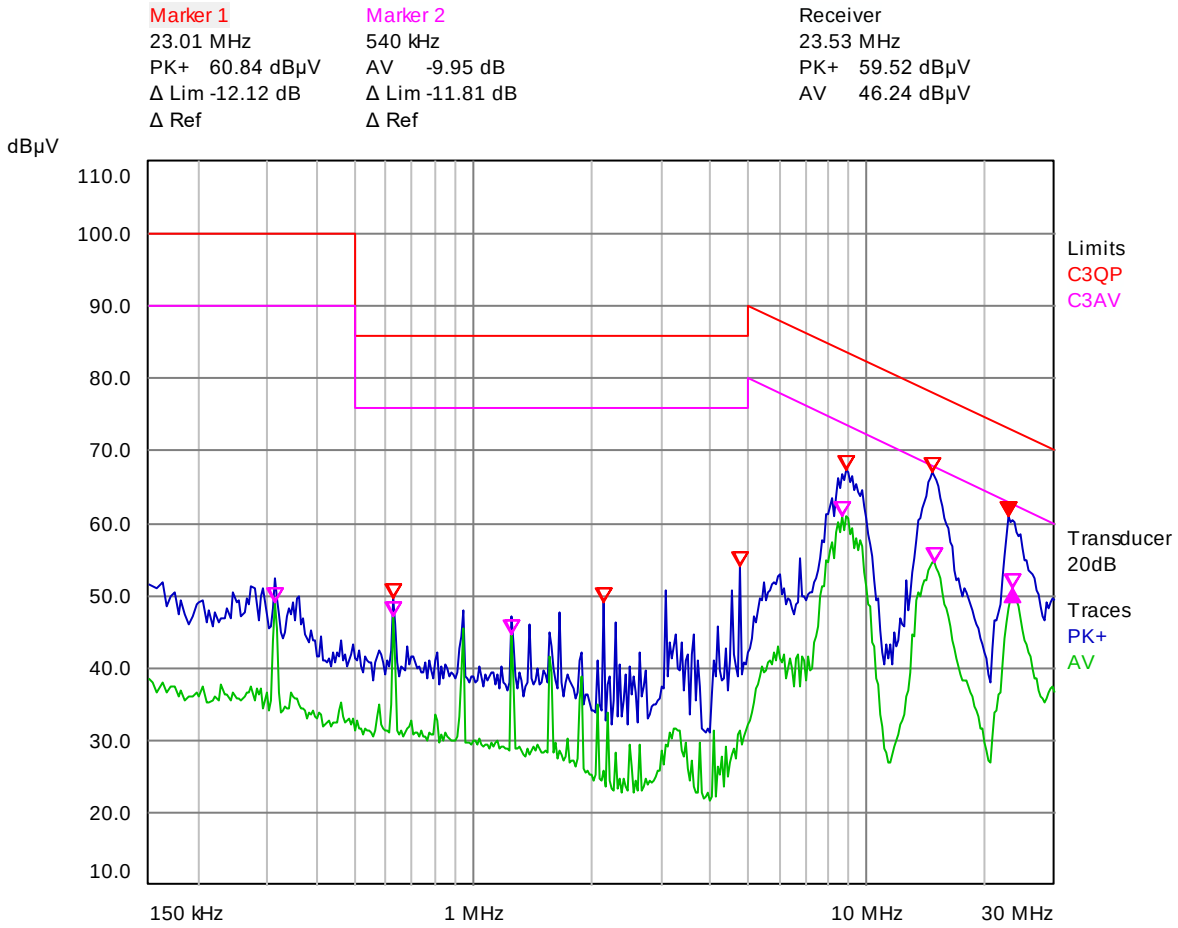
EUT: GD20-110G-4-B
Operating Condition: Power on with motor
Test Specification: EN61800-3, C3
Comment: L3



Trace	Frequency (MHz)	Level (dBµV)	Limit (dBµV)	Delta Limit (dB)	Delta Ref (dB)	Comment
2 AV	0.314	49.18	90.00	-40.82		
1 PK+	0.63	49.50	86.00	-36.50		
2 AV	0.63	47.15	76.00	-28.85		
2 AV	1.258	44.49	76.00	-31.51		
1 PK+	2.154	49.15	86.00	-36.85		
1 PK+	4.754	53.98	86.00	-32.02		
2 AV	8.614	60.91	73.93	-13.02		
1 PK+	8.814	67.25	83.67	-16.42		
1 PK+	14.666	66.94	77.99	-11.05		
2 AV	14.802	54.73	67.89	-13.16		
1 PK+	23.01	60.84	72.96	-12.12		
2 AV	23.55	50.89	62.70	-11.81		

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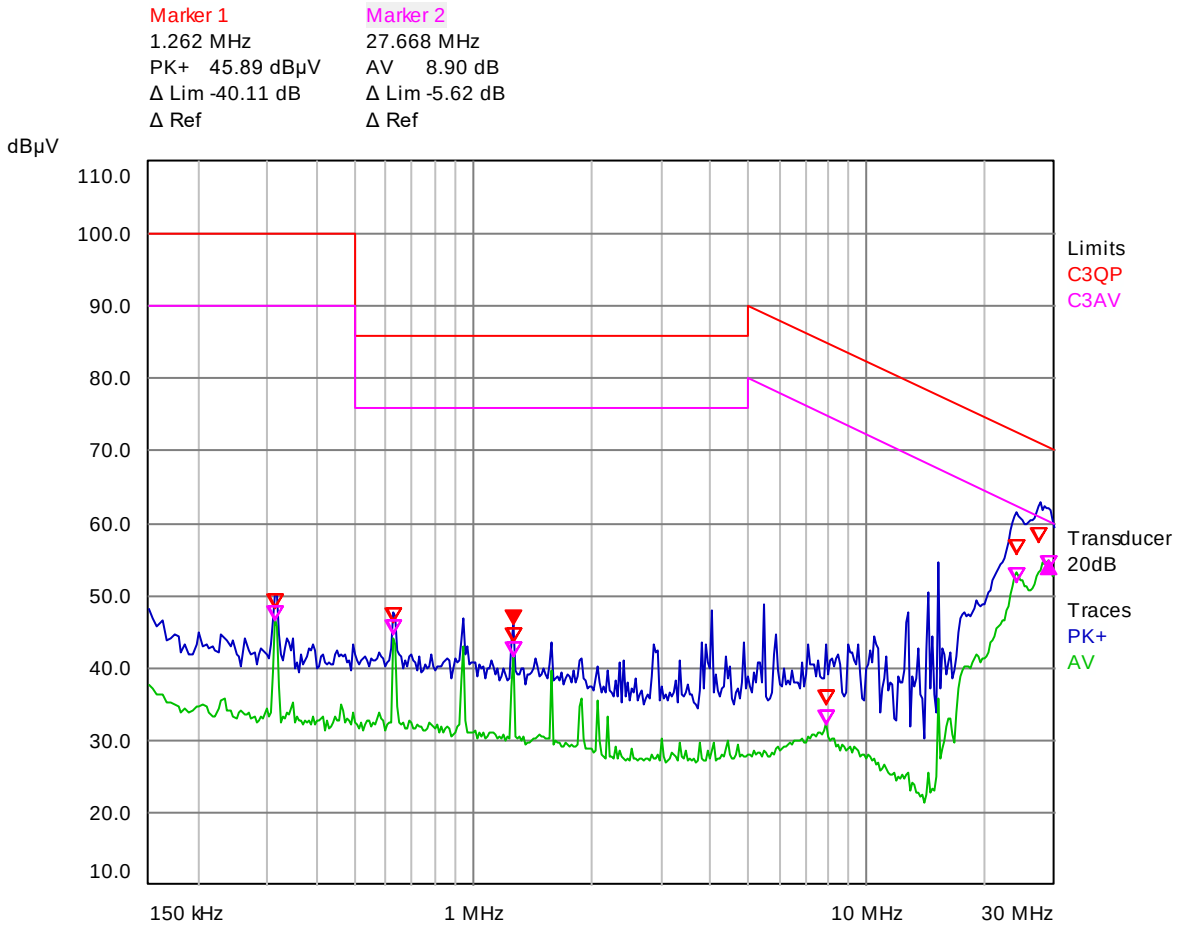
EUT: GD20-0R7G-S2
Operating Condition: Power on with motor
Test Specification: EN61800-3, C3
Comment: L



Trace	Frequency (MHz)	Level (dBµV)	Limit (dBµV)	Delta Limit (dB)	Delta Ref (dB)	Comment
1 QP	0.314	48.24	100.00	-51.76		
2 AV	0.314	46.65	90.00	-43.35		
1 QP	0.63	46.28	86.00	-39.72		
2 AV	0.63	44.70	76.00	-31.30		
1 QP	1.262	43.56	86.00	-42.44		
2 AV	1.262	41.69	76.00	-34.31		
1 QP	7.854	34.93	84.96	-50.03		
2 AV	7.922	32.02	74.86	-42.84		
1 QP	23.958	55.59	72.51	-16.92		
2 AV	24.122	51.83	62.43	-10.60		
1 QP	27.266	57.25	71.07	-13.82		
2 AV	28.93	53.50	60.41	-6.91		

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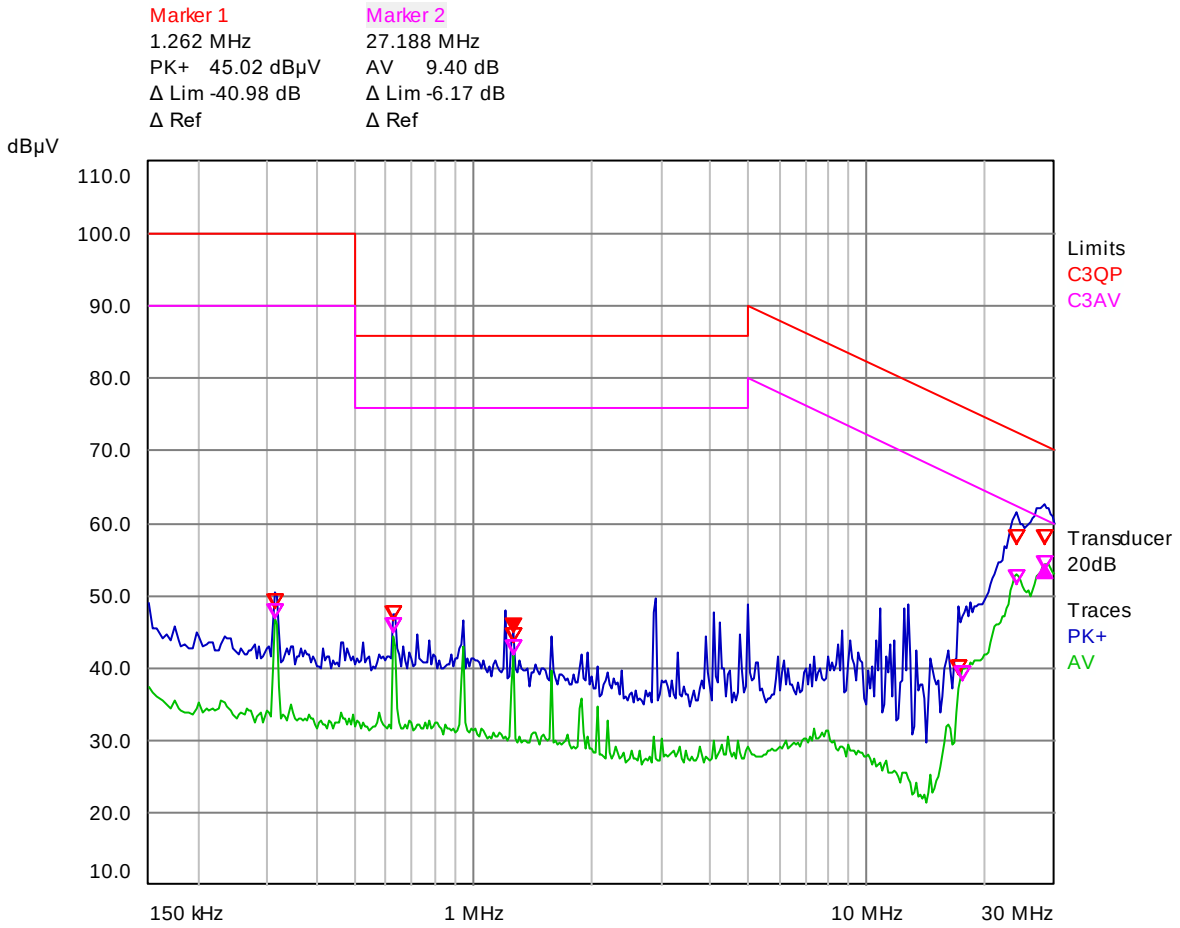
Building 12&13, Zhiheng Wisdomland Business Park, Nantou Checkpoint Road 2, Nanshan District 518052, Shenzhen, CHINA

EUT: GD20-0R7G-S2
Operating Condition: Power on with motor
Test Specification: EN61800-3, C3
Comment: N



Trace	Frequency (MHz)	Level (dBµV)	Limit (dBµV)	Delta Limit (dB)	Delta Ref (dB)	Comment
1 QP	0.314	48.29	100.00	-51.71		
2 AV	0.314	46.74	90.00	-43.26		
1 QP	0.63	46.46	86.00	-39.54		
2 AV	0.63	44.88	76.00	-31.12		
1 QP	1.262	43.54	86.00	-42.46		
2 AV	1.262	41.73	76.00	-34.27		
1 QP	17.126	39.14	76.26	-37.12		
2 AV	17.45	38.36	66.05	-27.69		
1 QP	23.97	57.16	72.50	-15.34		
2 AV	24.066	51.59	62.46	-10.87		
1 QP	28.334	57.07	70.64	-13.57		
2 AV	28.45	53.52	60.59	-7.07		

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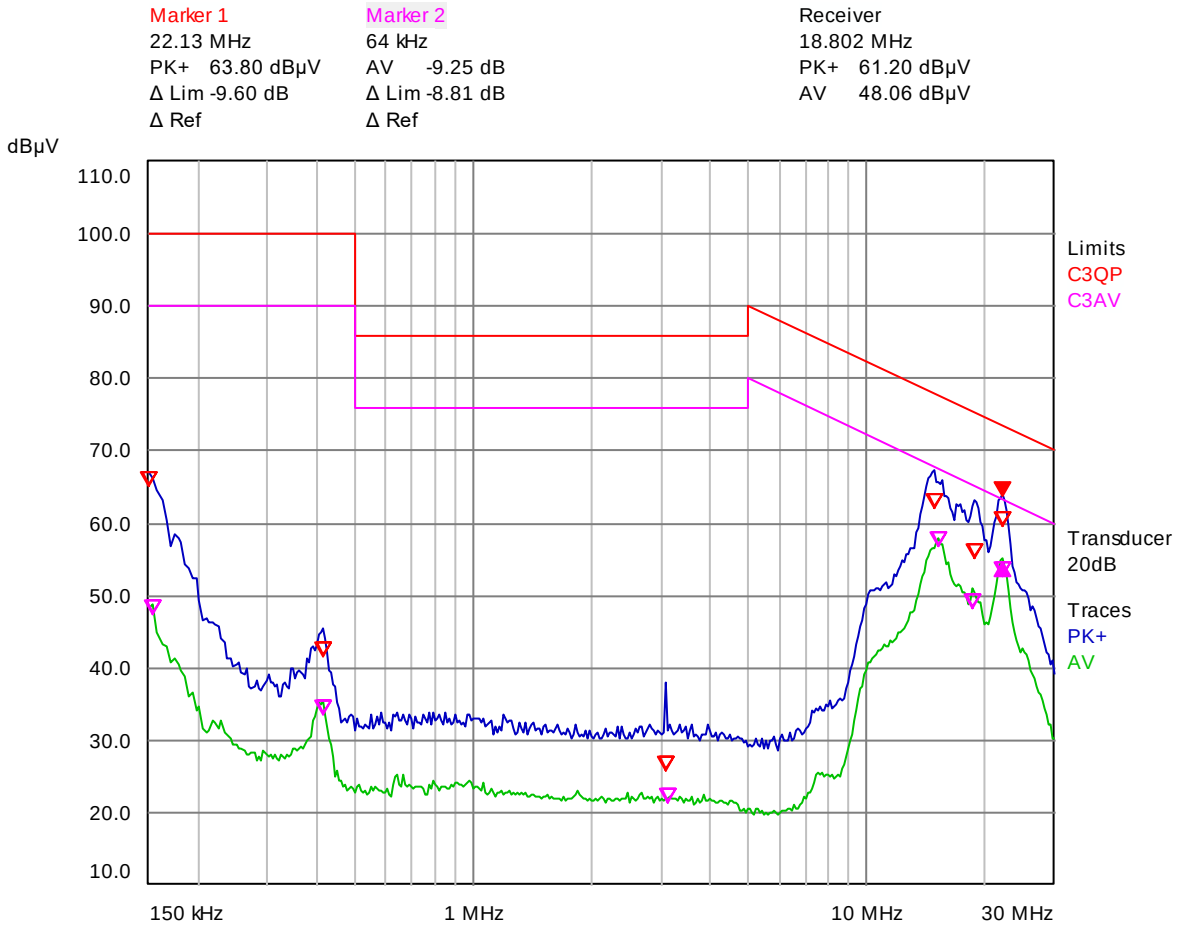
Building 12&13, Zhiheng Wisdomland Business Park, Nantou Checkpoint Road 2, Nanshan District 518052, Shenzhen, CHINA

EUT: GD20-5R5G-4
Operating Condition: Power on with motor
Test Specification: EN61800-3, C3
Comment: L1



Trace	Frequency (MHz)	Level (dBµV)	Limit (dBµV)	Delta Limit (dB)	Delta Ref (dB)	Comment
1 QP	0.15	65.19	100.00	-34.81		
2 AV	0.154	47.39	90.00	-42.61		
1 QP	0.414	41.55	100.00	-58.45		
2 AV	0.414	33.46	90.00	-56.54		
1 QP	3.082	25.77	86.00	-60.23		
2 AV	3.11	21.36	76.00	-54.64		
1 QP	14.846	61.95	77.85	-15.90		
2 AV	15.122	56.70	67.65	-10.95		
2 AV	18.65	48.27	65.31	-17.04		
1 QP	18.806	55.27	75.21	-19.94		
2 AV	22.034	52.56	63.44	-10.88		
1 QP	22.194	59.56	73.36	-13.80		

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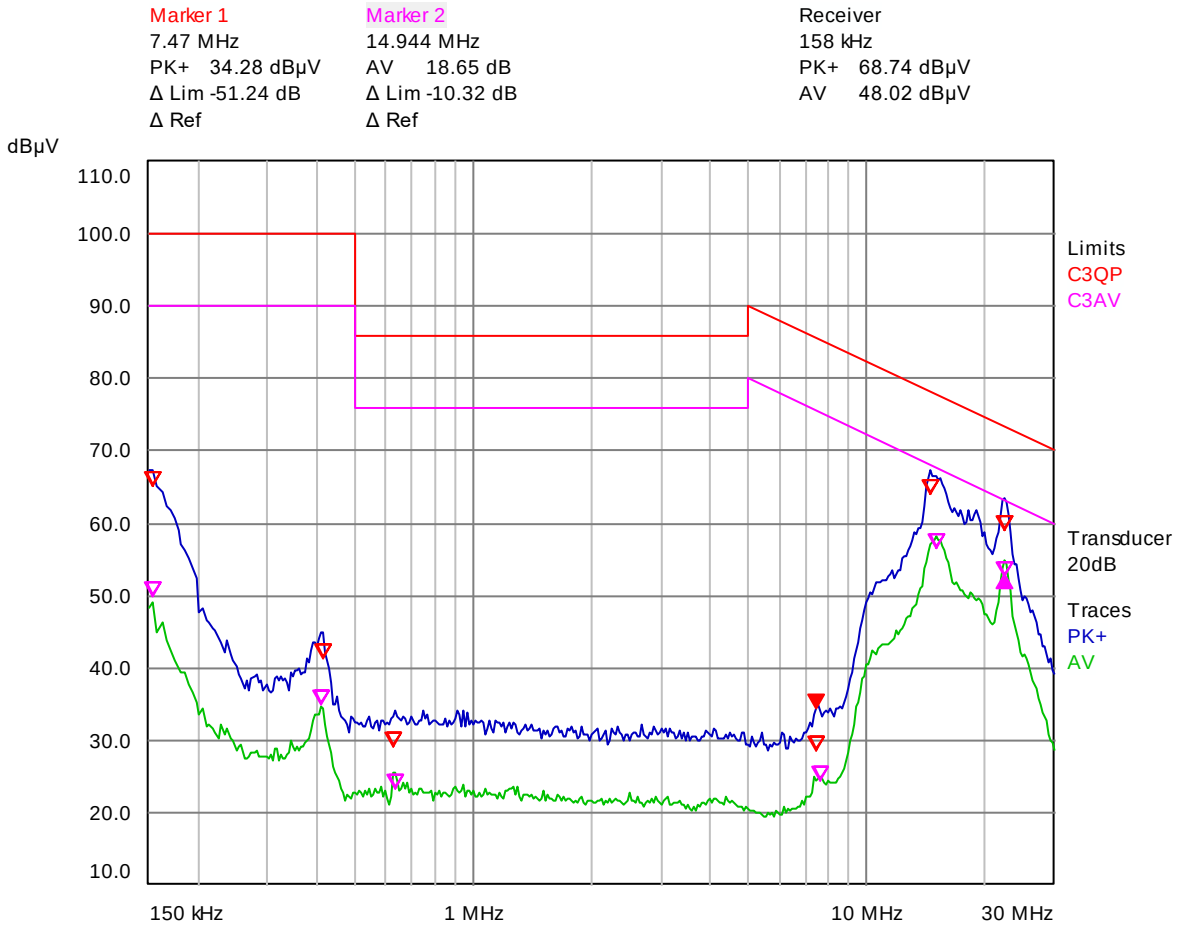
Building 12&13, Zhiheng Wisdomland Business Park, Nantou Checkpoint Road 2, Nanshan District 518052, Shenzhen, CHINA

EUT: GD20-5R5G-4
Operating Condition: Power on with motor
Test Specification: EN61800-3, C3
Comment: L2



Trace	Frequency (MHz)	Level (dBµV)	Limit (dBµV)	Delta Limit (dB)	Delta Ref (dB)	Comment
1 QP	0.154	65.03	100.00	-34.97		
2 AV	0.154	49.90	90.00	-40.10		
2 AV	0.41	34.84	90.00	-55.16		
1 QP	0.414	41.38	100.00	-58.62		
1 QP	0.63	28.98	86.00	-57.02		
2 AV	0.634	23.29	76.00	-52.71		
1 QP	7.47	28.62	85.52	-56.90		
2 AV	7.602	24.43	75.32	-50.89		
1 QP	14.466	64.01	78.14	-14.13		
2 AV	15.05	56.59	67.70	-11.11		
2 AV	22.354	52.53	63.28	-10.75		
1 QP	22.414	59.14	73.25	-14.11		

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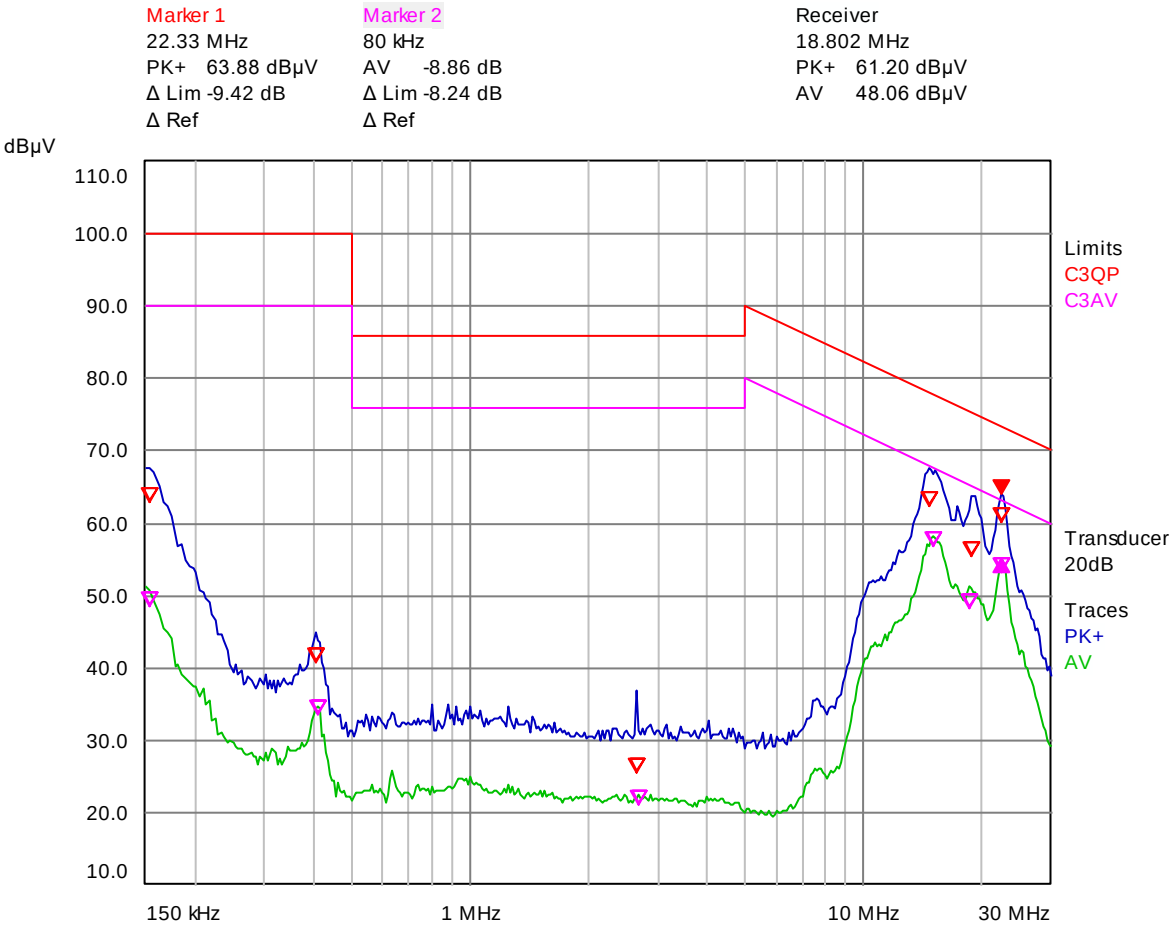
EUT: GD20-5R5G-4
Operating Condition: Power on with motor
Test Specification: EN61800-3, C3
Comment: L3



Trace	Frequency (MHz)	Level (dBµV)	Limit (dBµV)	Delta Limit (dB)	Delta Ref (dB)	Comment
1 QP	0.154	62.92	100.00	-37.08		
2 AV	0.154	48.61	90.00	-41.39		
1 QP	0.406	40.76	100.00	-59.24		
2 AV	0.41	33.60	90.00	-56.40		
1 QP	2.662	25.38	86.00	-60.62		
2 AV	2.678	21.02	76.00	-54.98		
1 QP	14.622	62.26	78.02	-15.76		
2 AV	15.106	56.83	67.66	-10.83		
2 AV	18.538	48.23	65.37	-17.14		
1 QP	18.802	55.41	75.22	-19.81		
1 QP	22.33	60.03	73.30	-13.27		
2 AV	22.41	53.23	63.26	-10.03		

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Building 12&13, Zhiheng Wisdomland Business Park, Nantou Checkpoint Road 2, Nanshan District 518052, Shenzhen, CHINA

EUT: GD20-015G-4
Operating Condition: Power on with motor
Test Specification: EN61800-3, C3
Comment: L1

Trace	Frequency (MHz)	Level (dBµV)	Limit (dBµV)	Delta Limit (dB)	Delta Ref (dB)	Comment
1 QP	0.154	61.13	100.00	-38.87		
2 AV	0.154	46.95	90.00	-43.05		
1 QP	0.314	50.09	100.00	-49.91		
2 AV	0.314	48.77	90.00	-41.23		
1 QP	0.946	45.62	86.00	-40.38		
2 AV	0.946	44.32	76.00	-31.68		
1 QP	9.65	55.57	82.66	-27.09		
2 AV	9.73	46.13	72.57	-26.44		
1 QP	15.614	57.77	77.29	-19.52		
2 AV	15.694	57.30	67.23	-9.93		
1 QP	24.738	48.94	72.15	-23.21		
2 AV	24.862	40.88	62.10	-21.22		

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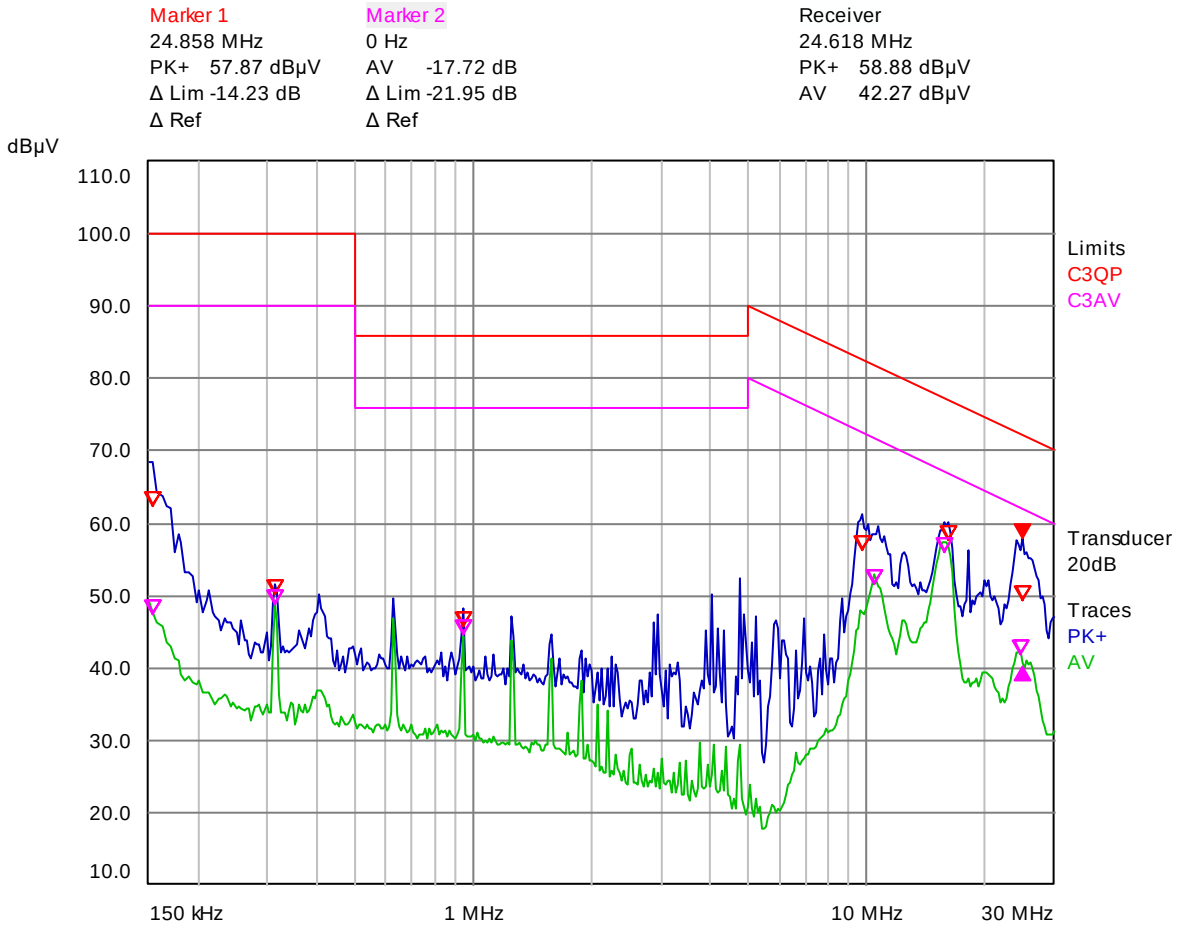
Building 12&13, Zhiheng Wisdomland Business Park, Nantou Checkpoint Road 2, Nanshan District 518052, Shenzhen, CHINA

EUT: GD20-015G-4
Operating Condition: Power on with motor
Test Specification: EN61800-3, C3
Comment: L2



Trace	Frequency (MHz)	Level (dBµV)	Limit (dBµV)	Delta Limit (dB)	Delta Ref (dB)	Comment
1 QP	0.154	62.28	100.00	-37.72		
2 AV	0.154	47.40	90.00	-42.60		
1 QP	0.314	50.06	100.00	-49.94		
2 AV	0.314	48.76	90.00	-41.24		
1 QP	0.946	45.71	86.00	-40.29		
2 AV	0.946	44.56	76.00	-31.44		
1 QP	9.73	56.24	82.57	-26.33		
2 AV	10.49	51.46	71.73	-20.27		
2 AV	15.774	56.03	67.18	-11.15		
1 QP	16.094	57.53	76.95	-19.42		
2 AV	24.618	41.86	62.21	-20.35		
1 QP	24.858	49.46	72.10	-22.64		

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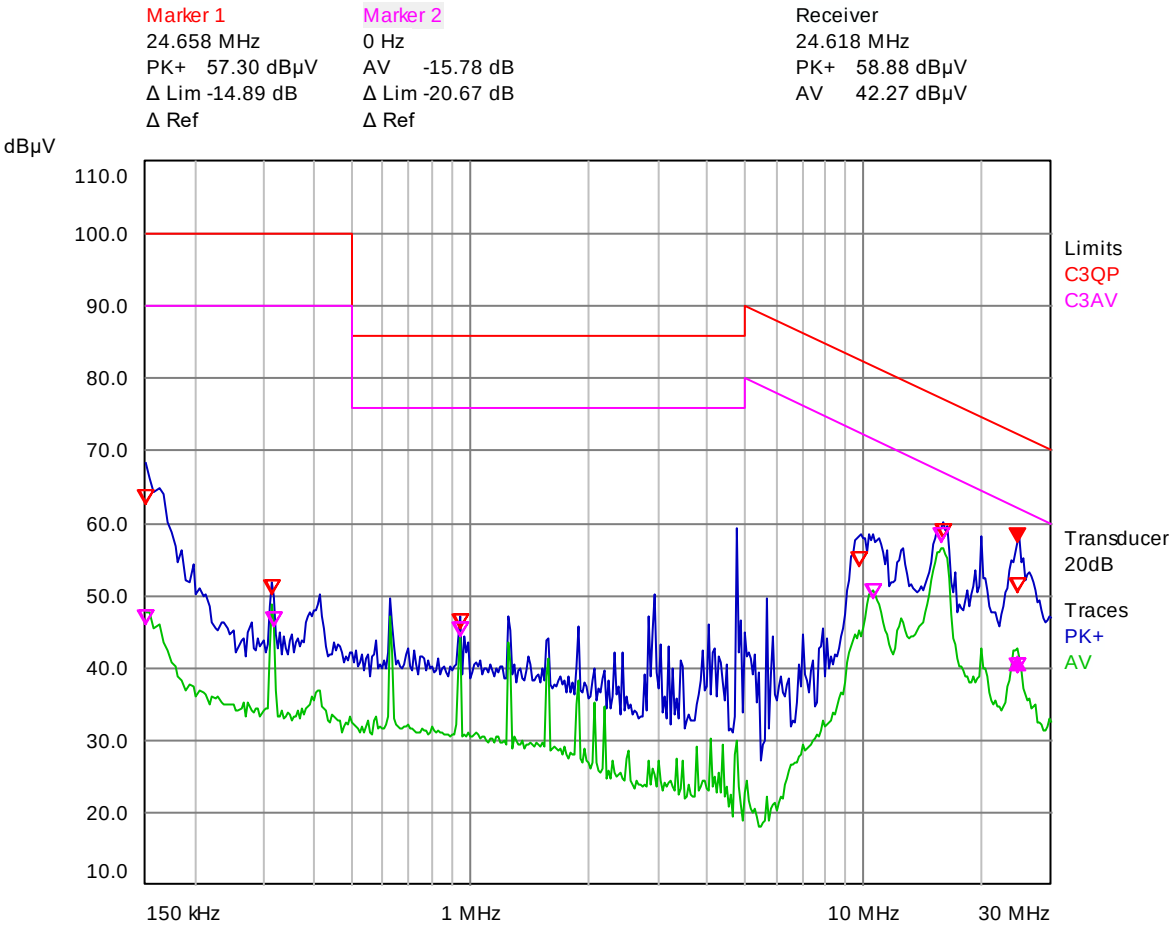
EUT: GD20-015G-4
Operating Condition: Power on with motor
Test Specification: EN61800-3, C3
Comment: L3



Trace	Frequency (MHz)	Level (dBµV)	Limit (dBµV)	Delta Limit (dB)	Delta Ref (dB)	Comment
1 QP	0.15	62.53	100.00	-37.47		
2 AV	0.15	46.14	90.00	-43.86		
1 QP	0.314	50.03	100.00	-49.97		
2 AV	0.318	45.71	90.00	-44.29		
1 QP	0.942	45.58	86.00	-40.42		
2 AV	0.946	44.38	76.00	-31.62		
1 QP	9.77	53.99	82.52	-28.53		
2 AV	10.53	49.74	71.69	-21.95		
2 AV	15.81	57.24	67.15	-9.91		
1 QP	15.85	57.91	77.12	-19.21		
2 AV	24.538	39.50	62.24	-22.74		
1 QP	24.658	50.45	72.19	-21.74		

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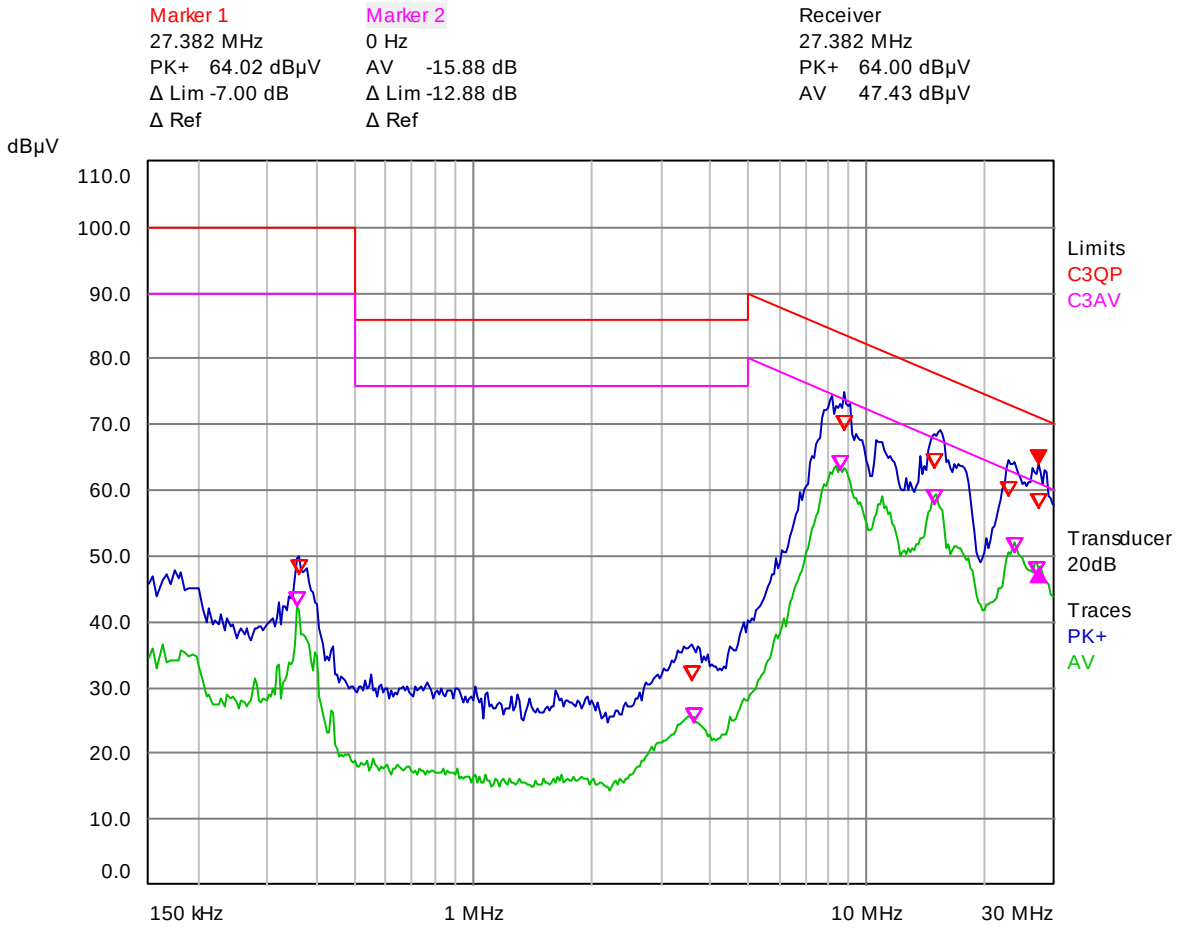
EUT: GD20-022G-4
Operating Condition: Power on with motor
Test Specification: EN61800-3, C3
Comment: L1



Trace	Frequency (MHz)	Level (dBµV)	Limit (dBµV)	Delta Limit (dB)	Delta Ref (dB)	Comment
2 AV	0.358	42.24	90.00	-47.76		
1 QP	0.362	47.15	100.00	-52.85		
1 QP	3.59	30.94	86.00	-55.06		
2 AV	3.618	24.56	76.00	-51.44		
2 AV	8.554	63.08	74.01	-10.93		
1 QP	8.714	69.13	83.80	-14.67		
1 QP	14.794	63.44	77.89	-14.45		
2 AV	14.91	57.81	67.80	-9.99		
1 QP	23.022	59.06	72.96	-13.90		
2 AV	23.782	50.57	62.59	-12.02		
2 AV	27.062	46.92	61.15	-14.23		
1 QP	27.382	57.16	71.02	-13.86		

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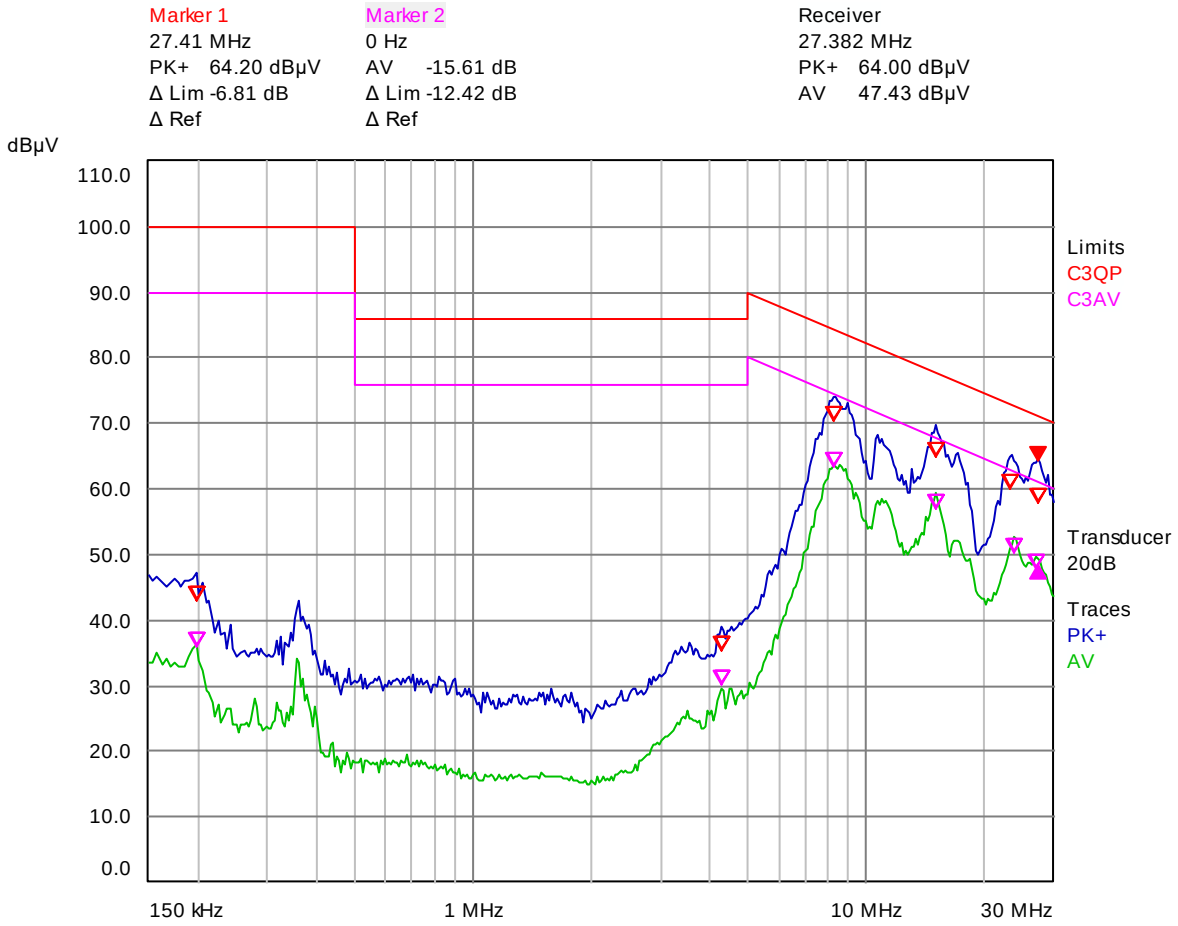
EUT: GD20-022G-4
Operating Condition: Power on with motor
Test Specification: EN61800-3, C3
Comment: L2



Trace	Frequency (MHz)	Level (dBµV)	Limit (dBµV)	Delta Limit (dB)	Delta Ref (dB)	Comment
1 QP	0.198	43.11	100.00	-56.89		
2 AV	0.198	35.98	90.00	-54.02		
1 QP	4.274	35.48	86.00	-50.52		
2 AV	4.274	30.03	76.00	-45.97		
1 QP	8.31	70.25	84.33	-14.08		
2 AV	8.31	63.49	74.33	-10.84		
2 AV	14.946	56.97	67.78	-10.81		
1 QP	15.066	64.88	77.69	-12.81		
1 QP	23.086	60.10	72.92	-12.82		
2 AV	23.654	50.31	62.65	-12.34		
2 AV	26.89	47.82	61.22	-13.40		
1 QP	27.41	58.03	71.01	-12.98		

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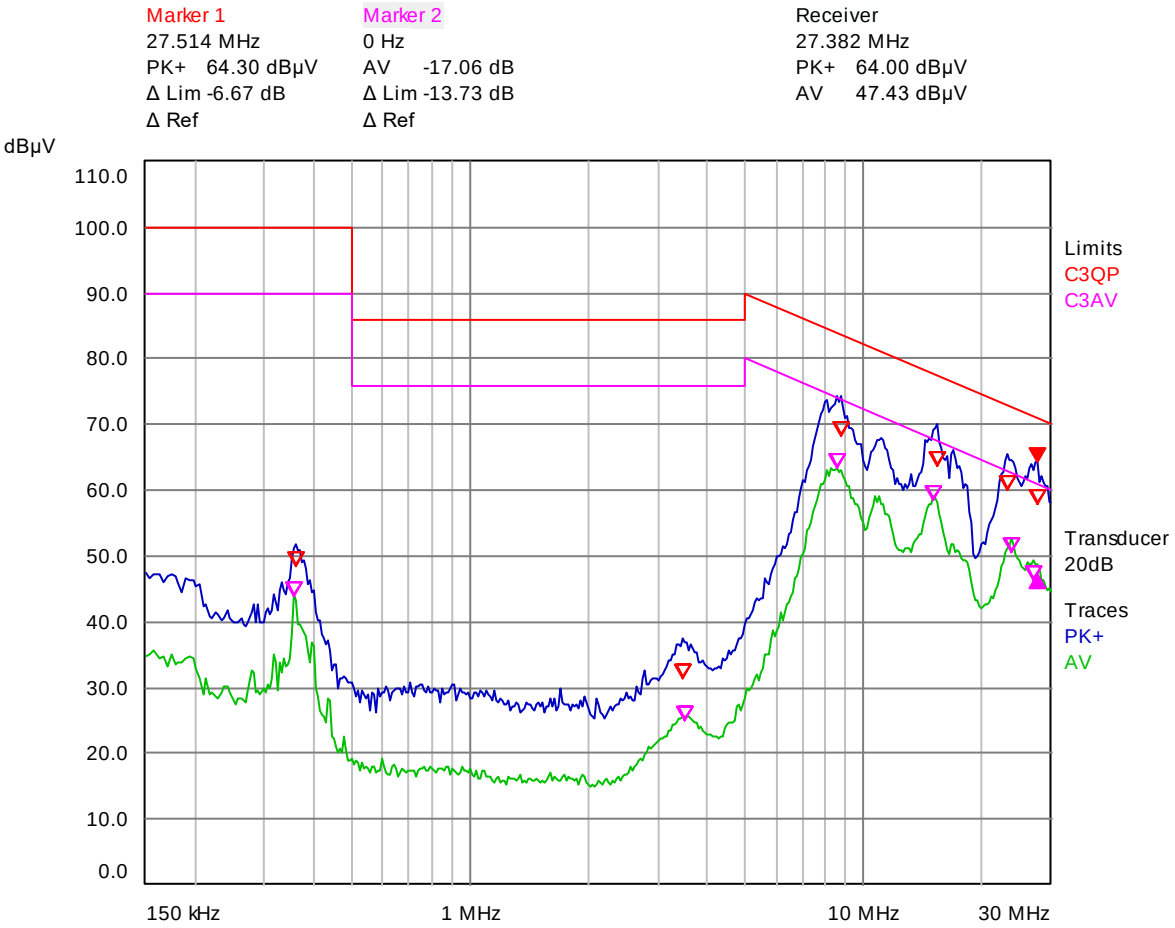
EUT: GD20-022G-4
Operating Condition: Power on with motor
Test Specification: EN61800-3, C3
Comment: L3



Trace	Frequency (MHz)	Level (dBµV)	Limit (dBµV)	Delta Limit (dB)	Delta Ref (dB)	Comment
2 AV	0.358	44.03	90.00	-45.97		
1 QP	0.362	48.49	100.00	-51.51		
1 QP	3.49	31.38	86.00	-54.62		
2 AV	3.498	24.93	76.00	-51.07		
2 AV	8.586	63.49	73.96	-10.47		
1 QP	8.75	68.25	83.75	-15.50		
2 AV	15.098	58.36	67.66	-9.30		
1 QP	15.302	63.76	77.51	-13.75		
1 QP	23.086	59.92	72.92	-13.00		
2 AV	23.806	50.47	62.58	-12.11		
2 AV	27.046	46.36	61.16	-14.80		
1 QP	27.514	57.92	70.97	-13.05		

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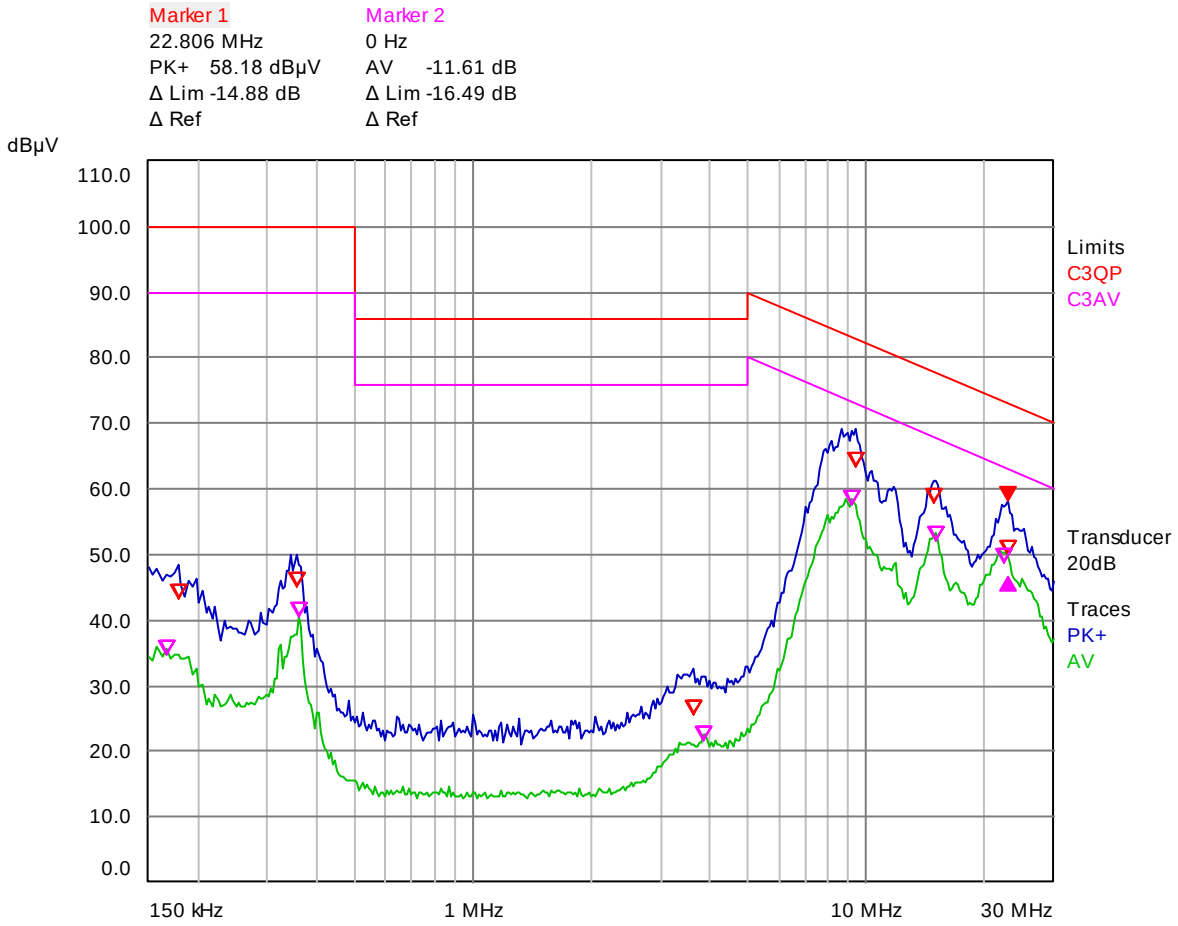
EUT: GD20-037G-4
Operating Condition: Power on with motor
Test Specification: EN61800-3, C3
Comment: L1



Trace	Frequency (MHz)	Level (dBµV)	Limit (dBµV)	Delta Limit (dB)	Delta Ref (dB)	Comment
2 AV	0.166	34.80	90.00	-55.20		
1 QP	0.178	43.41	100.00	-56.59		
1 QP	0.358	45.16	100.00	-54.84		
2 AV	0.362	40.60	90.00	-49.40		
1 QP	3.63	25.66	86.00	-60.34		
2 AV	3.842	21.69	76.00	-54.31		
2 AV	9.178	57.64	73.22	-15.58		
1 QP	9.382	63.48	82.98	-19.50		
1 QP	14.838	57.84	77.86	-20.02		
2 AV	15.038	52.11	67.71	-15.60		
2 AV	22.398	48.66	63.26	-14.60		
1 QP	22.806	50.07	73.06	-22.99		

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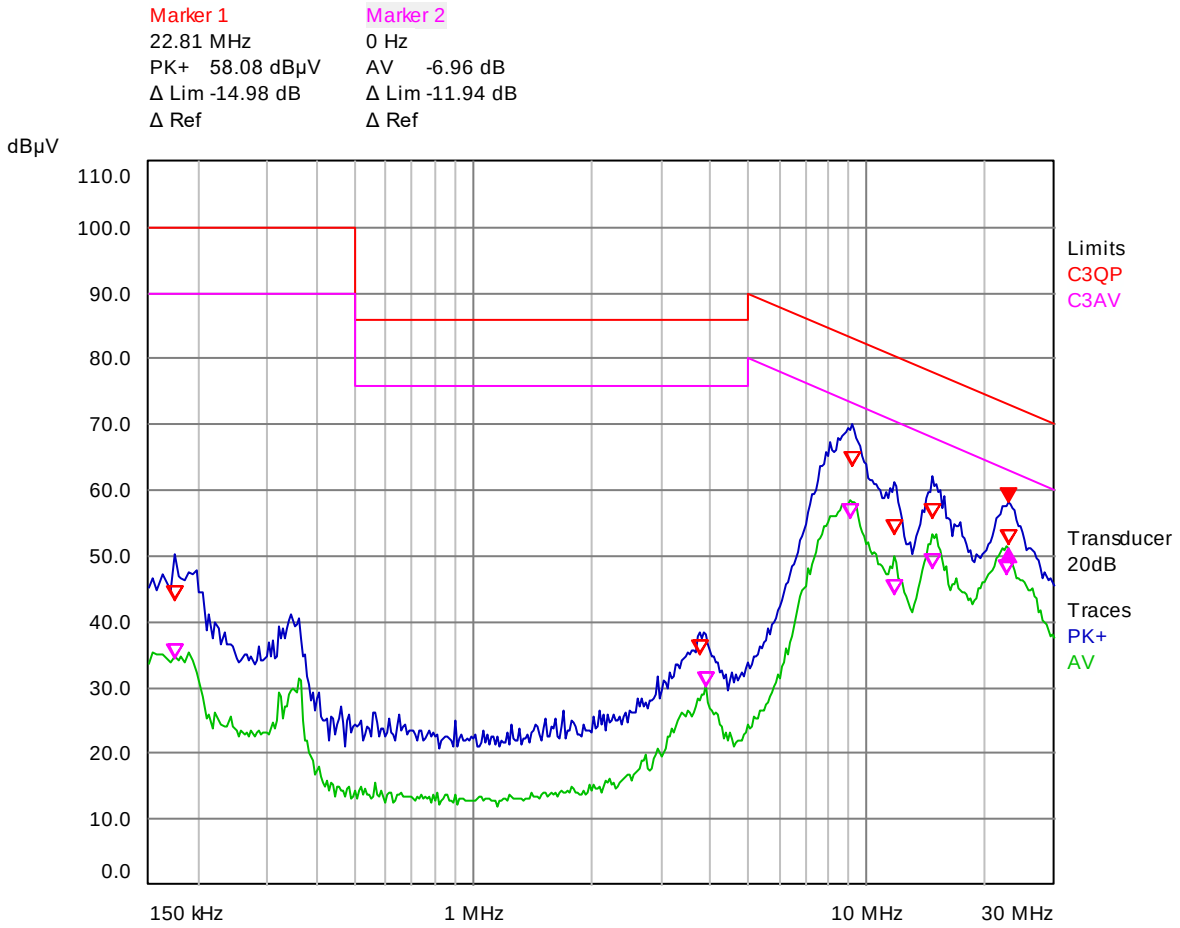
EUT: GD20-037G-4
Operating Condition: Power on with motor
Test Specification: EN61800-3, C3
Comment: L2



Trace	Frequency (MHz)	Level (dBµV)	Limit (dBµV)	Delta Limit (dB)	Delta Ref (dB)	Comment
1 QP	0.174	43.38	100.00	-56.62		
2 AV	0.174	34.46	90.00	-55.54		
1 QP	3.762	34.98	86.00	-51.02		
2 AV	3.882	30.31	76.00	-45.69		
2 AV	9.062	55.89	73.36	-17.47		
1 QP	9.142	63.71	83.26	-19.55		
1 QP	11.69	53.39	80.52	-27.13		
2 AV	11.77	44.27	70.44	-26.17		
2 AV	14.602	48.05	68.04	-19.99		
1 QP	14.722	55.88	77.95	-22.07		
2 AV	22.526	47.27	63.20	-15.93		
1 QP	22.81	51.95	73.06	-21.11		

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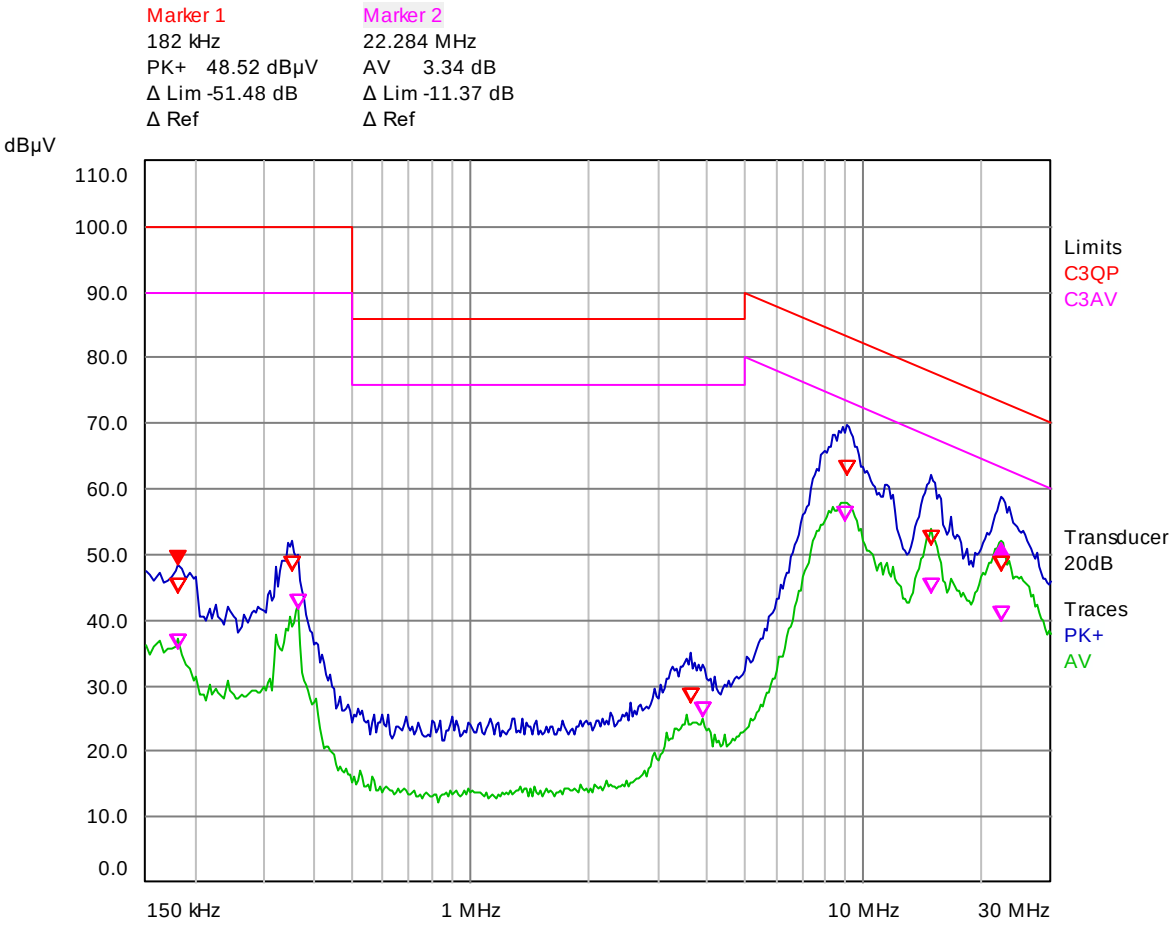
EUT: GD20-037G-4
Operating Condition: Power on with motor
Test Specification: EN61800-3, C3
Comment: L3



Trace	Frequency (MHz)	Level (dBµV)	Limit (dBµV)	Delta Limit (dB)	Delta Ref (dB)	Comment
1 QP	0.182	44.23	100.00	-55.77		
2 AV	0.182	35.77	90.00	-54.23		
1 QP	0.354	47.50	100.00	-52.50		
2 AV	0.366	41.82	90.00	-48.18		
1 QP	3.646	27.37	86.00	-58.63		
2 AV	3.886	25.27	76.00	-50.73		
2 AV	8.99	55.01	73.45	-18.44		
1 QP	9.11	62.24	83.30	-21.06		
1 QP	14.818	51.58	77.87	-26.29		
2 AV	14.818	44.18	67.87	-23.69		
2 AV	22.386	40.03	63.27	-23.24		
1 QP	22.466	47.42	73.23	-25.81		

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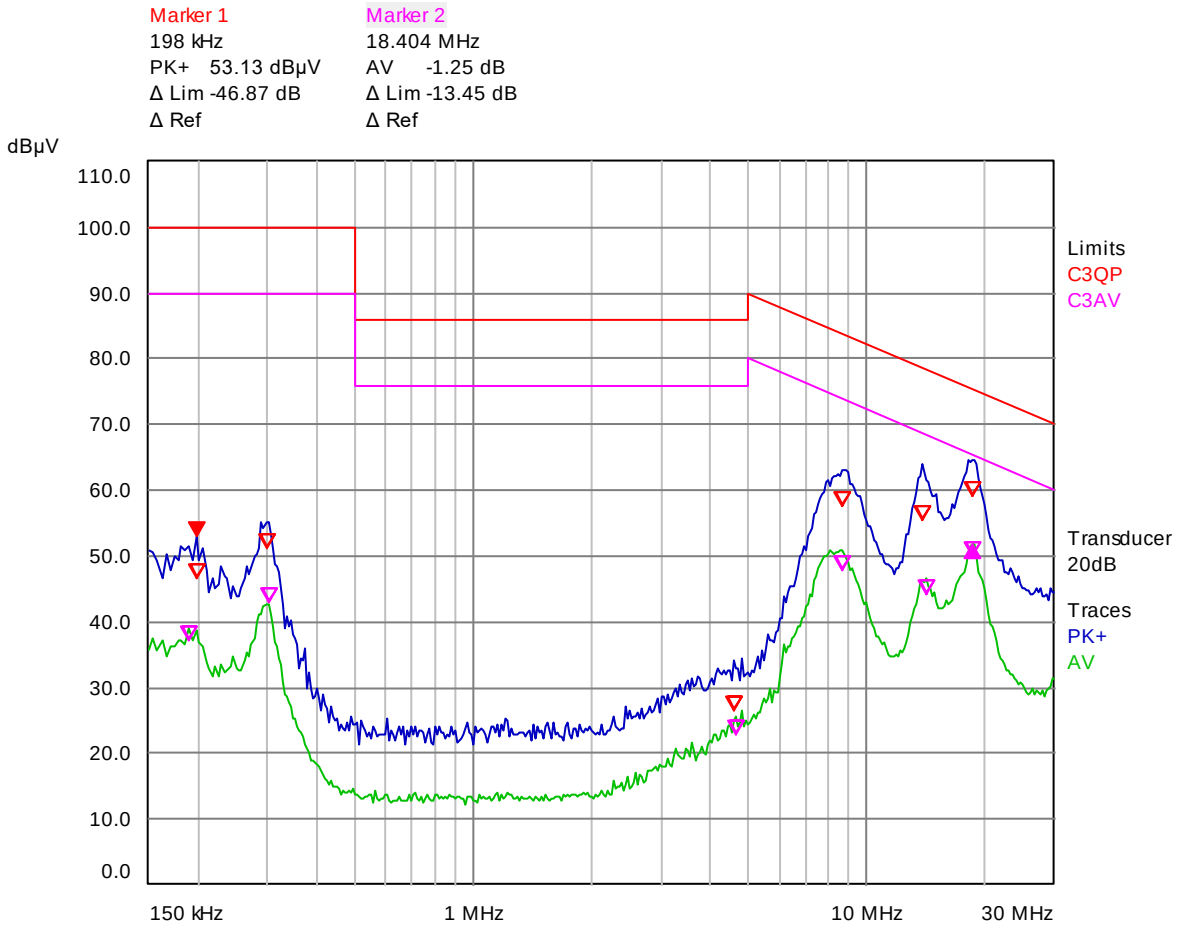
EUT: GD20-075G-4
Operating Condition: Power on with motor
Test Specification: EN61800-3, C3
Comment: L1



Trace	Frequency (MHz)	Level (dBµV)	Limit (dBµV)	Delta Limit (dB)	Delta Ref (dB)	Comment
2 AV	0.19	37.06	90.00	-52.94		
1 QP	0.198	46.68	100.00	-53.32		
1 QP	0.298	51.32	100.00	-48.68		
2 AV	0.302	42.95	90.00	-47.05		
1 QP	4.59	26.55	86.00	-59.45		
2 AV	4.67	22.93	76.00	-53.07		
2 AV	8.69	47.93	73.83	-25.90		
1 QP	8.694	57.71	83.83	-26.12		
1 QP	13.83	55.38	78.64	-23.26		
2 AV	14.13	44.09	68.40	-24.31		
1 QP	18.598	59.23	75.34	-16.11		
2 AV	18.602	49.95	65.33	-15.38		

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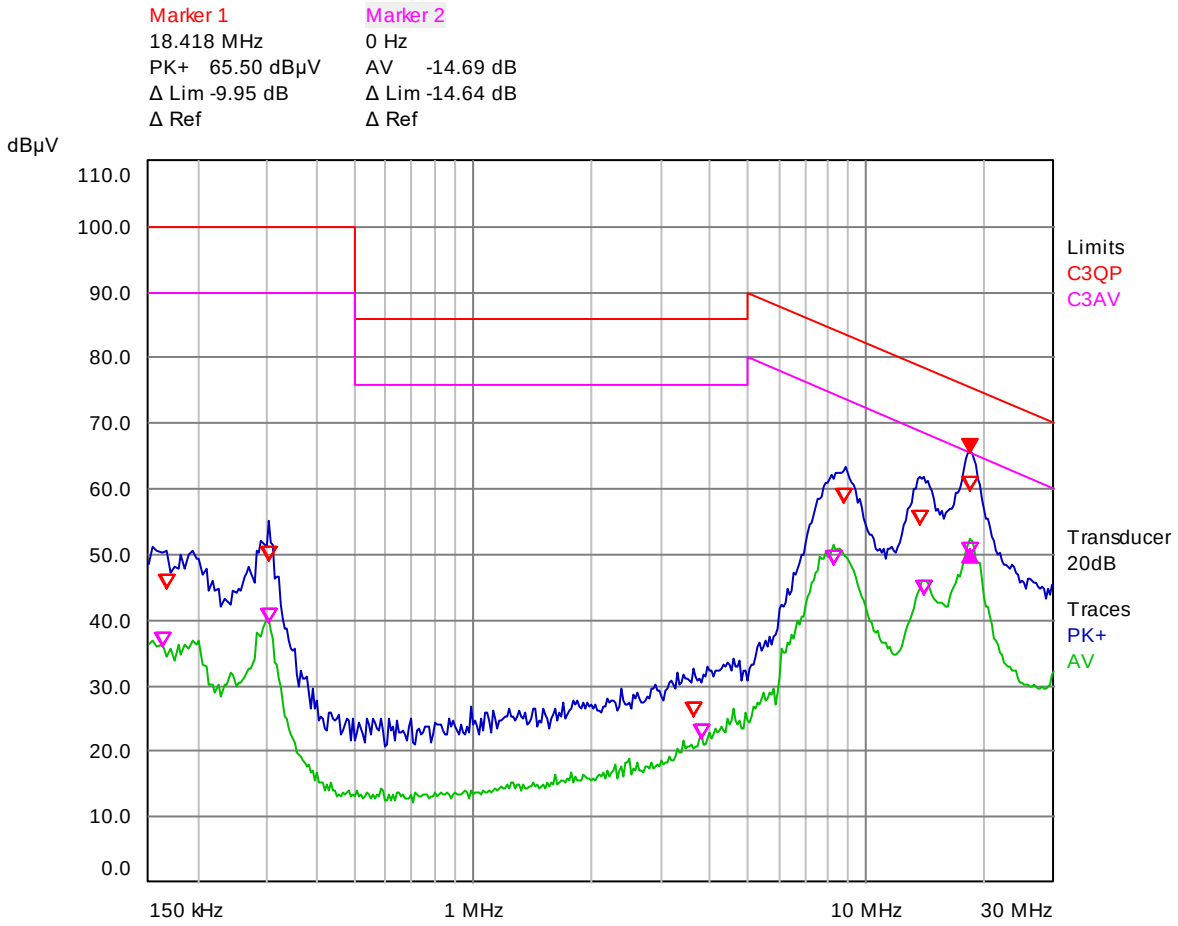
Building 12&13, Zhiheng Wisdomland Business Park, Nantou Checkpoint Road 2, Nanshan District 518052, Shenzhen, CHINA

EUT: GD20-075G-4
Operating Condition: Power on with motor
Test Specification: EN61800-3, C3
Comment: L2



Trace	Frequency (MHz)	Level (dBµV)	Limit (dBµV)	Delta Limit (dB)	Delta Ref (dB)	Comment
2 AV	0.162	36.00	90.00	-54.00		
1 QP	0.166	44.88	100.00	-55.12		
1 QP	0.302	48.95	100.00	-51.05		
2 AV	0.302	39.70	90.00	-50.30		
1 QP	3.65	25.21	86.00	-60.79		
2 AV	3.81	22.03	76.00	-53.97		
2 AV	8.27	48.50	74.38	-25.88		
1 QP	8.794	58.01	83.70	-25.69		
1 QP	13.694	54.51	78.75	-24.24		
2 AV	14.03	43.83	68.48	-24.65		
2 AV	18.402	49.71	65.46	-15.75		
1 QP	18.418	59.87	75.45	-15.58		

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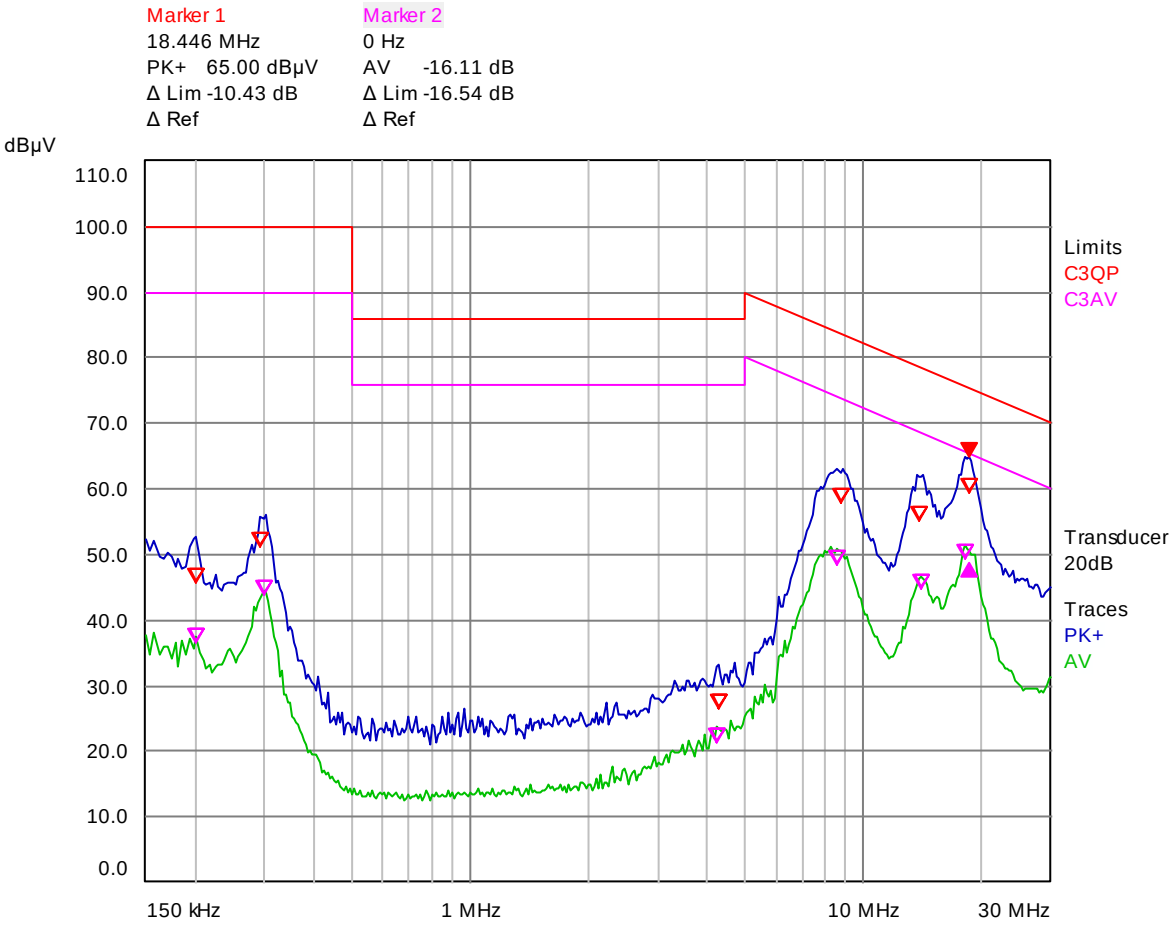
EUT: GD20-075G-4
Operating Condition: Power on with motor
Test Specification: EN61800-3, C3
Comment: L3



Trace	Frequency (MHz)	Level (dBµV)	Limit (dBµV)	Delta Limit (dB)	Delta Ref (dB)	Comment
1 QP	0.202	45.64	100.00	-54.36		
2 AV	0.202	36.64	90.00	-53.36		
1 QP	0.294	51.32	100.00	-48.68		
2 AV	0.298	43.84	90.00	-46.16		
2 AV	4.254	21.18	76.00	-54.82		
1 QP	4.294	26.49	86.00	-59.51		
2 AV	8.586	48.56	73.96	-25.40		
1 QP	8.722	57.83	83.79	-25.96		
1 QP	13.878	55.20	78.60	-23.40		
2 AV	13.974	44.76	68.53	-23.77		
2 AV	18.102	49.28	65.64	-16.36		
1 QP	18.446	59.53	75.43	-15.90		

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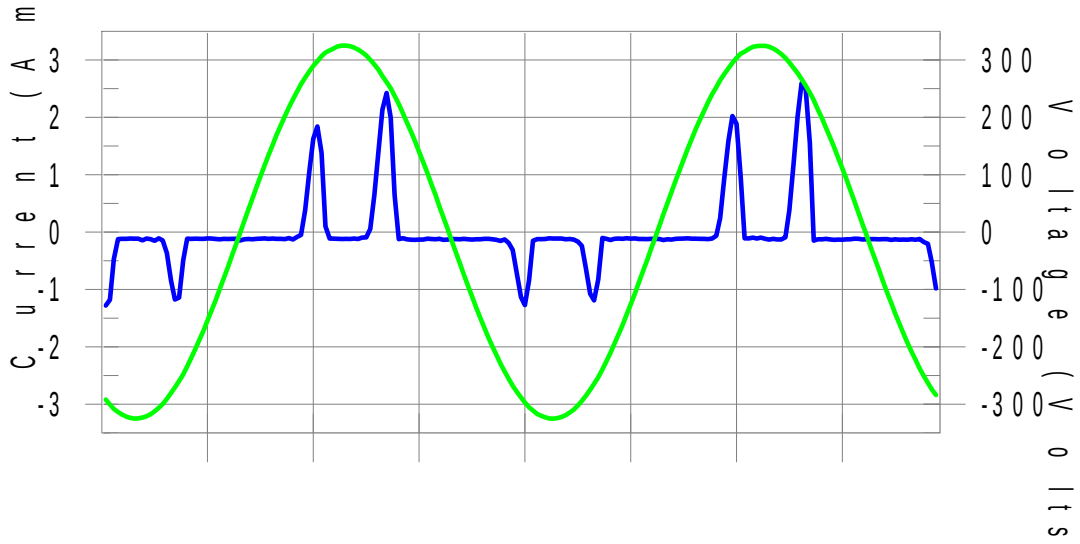
10.3 Harmonics

Phase L1:

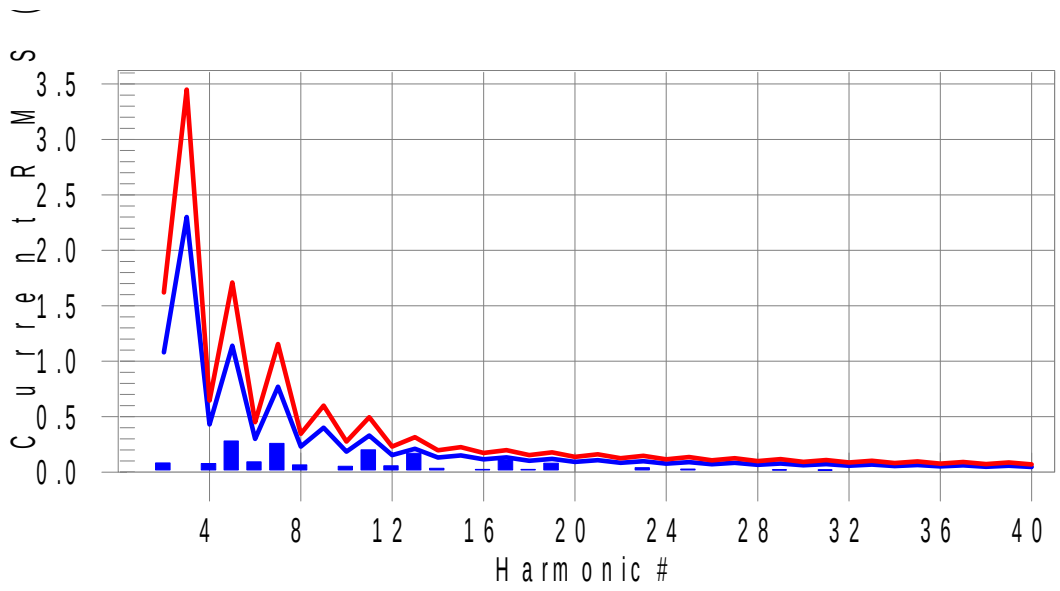
EUT: GD20-2R2G-4 **Tested by: Tree**
Test category: Class-A per Ed. 4.0 (2014) (European limits) **Test Margin: 100**
Test date: 2017/1/7 **Start time: 16:24:37** **End time: 16:27:29**
Test duration (min): 2.5 **Data file name: CTSMXL_H-000718.cts_data**
Comment: Power on with motor
Customer: Shenzhen INVT Electric Co., Ltd.

Test Result: Pass **Source qualification: Normal**

Current & voltage waveforms



Harmonics and Class A limit line **European Limits**



Test result: Pass **Worst harmonic was #17 with 55.9% of the limit.**

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Maximum Harmonic Current Results

Harm#	Harms(avg)	100%Limit	%of Limit	Harms(max)	150%Limit	%of Limit	Status
2	0.083	1.080	7.7	0.096	1.620	5.9	Pass
3	0.016	2.300	0.7	0.025	3.450	0.7	Pass
4	0.077	0.430	17.9	0.089	0.645	13.8	Pass
5	0.281	1.140	24.7	0.286	1.710	16.7	Pass
6	0.093	0.300	30.9	0.129	0.450	28.7	Pass
7	0.259	0.770	33.6	0.265	1.155	22.9	Pass
8	0.065	0.230	28.1	0.074	0.345	21.6	Pass
9	0.013	0.400	3.1	0.018	0.600	3.0	Pass
10	0.052	0.184	28.2	0.059	0.276	21.5	Pass
11	0.201	0.330	61.0	0.205	0.495	41.4	Pass
12	0.056	0.153	36.9	0.079	0.230	34.3	Pass
13	0.170	0.210	80.8	0.174	0.315	55.2	Pass
14	0.035	0.131	26.8	0.040	0.197	20.5	Pass
15	0.008	0.150	5.3	0.010	0.225	4.6	Pass
16	0.024	0.115	20.6	0.027	0.173	15.6	Pass
17	0.108	0.132	81.9	0.111	0.198	55.9	Pass
18	0.023	0.102	23.0	0.033	0.153	21.4	Pass
19	0.081	0.118	68.2	0.084	0.178	47.3	Pass
20	0.014	0.092	15.2	0.016	0.138	11.7	Pass
21	0.005	0.107	N/A	0.006	0.161	N/A	Pass
22	0.013	0.084	15.4	0.015	0.125	11.7	Pass
23	0.040	0.098	41.1	0.042	0.147	28.7	Pass
24	0.016	0.077	21.4	0.023	0.115	19.9	Pass
25	0.027	0.090	30.2	0.030	0.135	21.9	Pass
26	0.013	0.071	17.6	0.015	0.107	13.7	Pass
27	0.004	0.083	N/A	0.005	0.125	N/A	Pass
28	0.013	0.066	19.3	0.014	0.099	14.6	Pass
29	0.020	0.078	25.7	0.022	0.116	18.6	Pass
30	0.015	0.061	24.3	0.021	0.092	22.5	Pass
31	0.019	0.073	26.3	0.021	0.109	19.3	Pass
32	0.010	0.058	17.3	0.012	0.086	13.4	Pass
33	0.004	0.068	N/A	0.005	0.102	N/A	Pass
34	0.009	0.054	16.2	0.010	0.081	12.1	Pass
35	0.016	0.064	25.6	0.018	0.096	19.1	Pass
36	0.010	0.051	18.6	0.013	0.077	17.2	Pass
37	0.014	0.061	22.7	0.016	0.091	17.4	Pass
38	0.006	0.048	12.8	0.007	0.073	10.3	Pass
39	0.003	0.058	N/A	0.004	0.087	N/A	Pass
40	0.007	0.046	15.3	0.008	0.069	11.4	Pass

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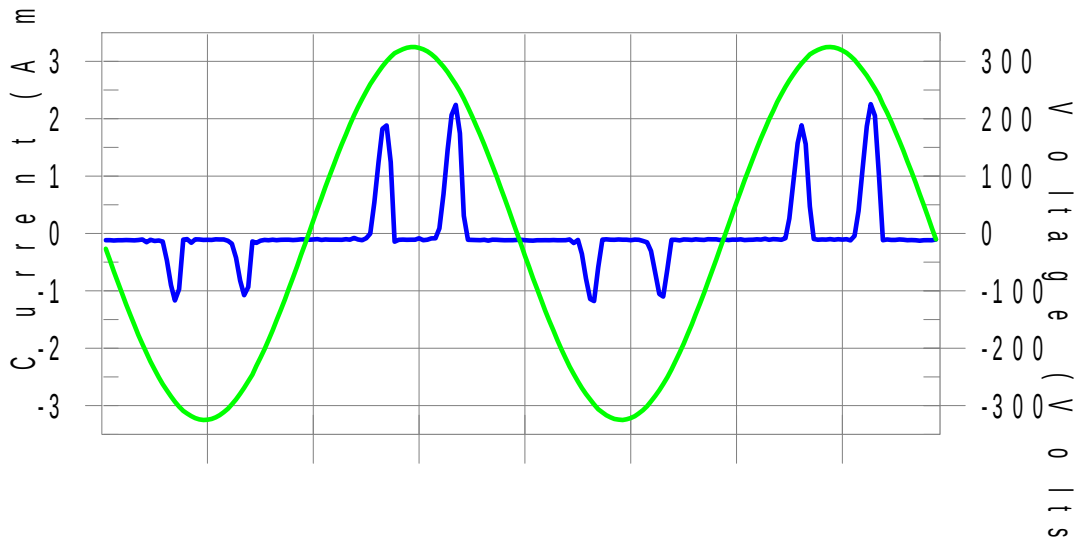
Phase L2:

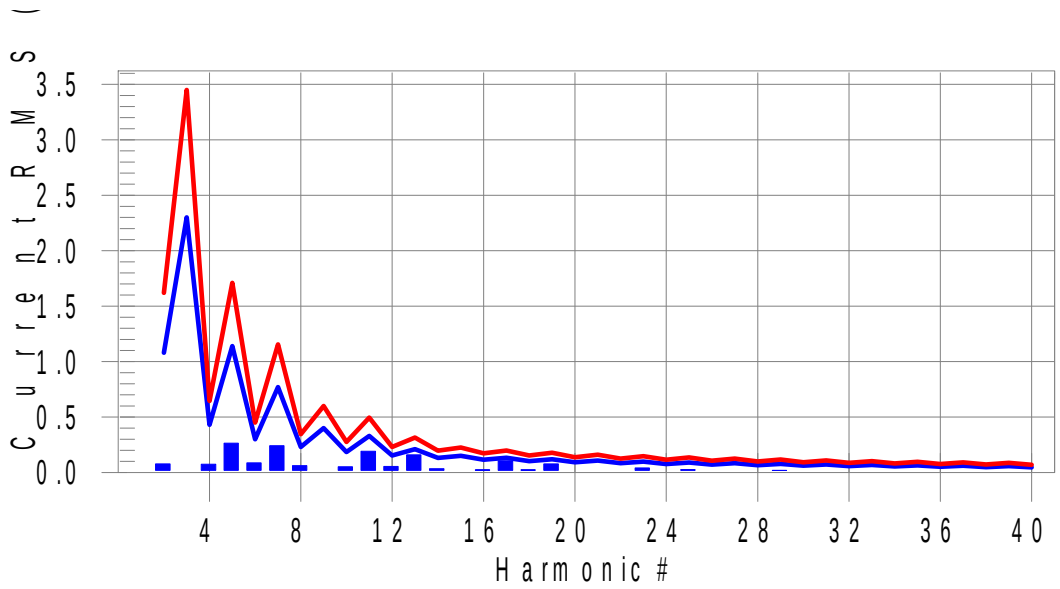
EUT: GD20-2R2G-4 **Tested by: Tree**
Test category: Class-A per Ed. 4.0 (2014) (European limits) **Test Margin: 100**
Test date: 2017/1/7 **Start time: 16:24:37** **End time: 16:27:29**
Test duration (min): 2.5 **Data file name: CTSMXL_H-000718.cts_data**
Comment: Power on with motor
Customer: Shenzhen INVT Electric Co., Ltd.

Test Result: Pass **Source qualification: Normal**

Current & voltage waveforms



Harmonics and Class A limit line **European Limits**



Test result: Pass **Worst harmonic was #17 with 54.7% of the limit.**

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Maximum Harmonic Current Results

Harm#	Harms(avg)	100%Limit	%of Limit	Harms(max)	150%Limit	%of Limit	Status
2	0.079	1.080	7.3	0.088	1.620	5.4	Pass
3	0.012	2.300	0.5	0.020	3.450	0.6	Pass
4	0.074	0.430	17.2	0.083	0.645	12.8	Pass
5	0.264	1.140	23.1	0.269	1.710	15.7	Pass
6	0.087	0.300	29.1	0.121	0.450	26.8	Pass
7	0.241	0.770	31.3	0.247	1.155	21.4	Pass
8	0.062	0.230	26.8	0.069	0.345	20.1	Pass
9	0.010	0.400	2.5	0.013	0.600	2.2	Pass
10	0.051	0.184	27.7	0.056	0.276	20.3	Pass
11	0.192	0.330	58.0	0.195	0.495	39.4	Pass
12	0.054	0.153	35.4	0.075	0.230	32.5	Pass
13	0.160	0.210	76.0	0.165	0.315	52.4	Pass
14	0.034	0.131	25.9	0.038	0.197	19.5	Pass
15	0.007	0.150	4.7	0.010	0.225	4.3	Pass
16	0.024	0.115	21.1	0.027	0.173	15.4	Pass
17	0.106	0.132	80.1	0.108	0.198	54.7	Pass
18	0.023	0.102	22.8	0.032	0.153	20.9	Pass
19	0.077	0.118	65.4	0.082	0.178	46.2	Pass
20	0.014	0.092	14.7	0.015	0.138	11.1	Pass
21	0.005	0.107	4.8	0.007	0.161	4.4	Pass
22	0.013	0.084	15.4	0.014	0.125	11.3	Pass
23	0.041	0.098	42.0	0.043	0.147	29.3	Pass
24	0.015	0.077	20.0	0.021	0.115	18.5	Pass
25	0.026	0.090	29.0	0.029	0.135	21.5	Pass
26	0.012	0.071	16.4	0.013	0.107	12.5	Pass
27	0.004	0.083	N/A	0.005	0.125	N/A	Pass
28	0.013	0.066	19.4	0.014	0.099	13.9	Pass
29	0.019	0.078	24.8	0.021	0.116	18.0	Pass
30	0.014	0.061	23.4	0.020	0.092	21.5	Pass
31	0.017	0.073	23.4	0.020	0.109	18.1	Pass
32	0.010	0.058	16.6	0.011	0.086	12.7	Pass
33	0.004	0.068	N/A	0.005	0.102	N/A	Pass
34	0.009	0.054	17.0	0.010	0.081	12.5	Pass
35	0.016	0.064	25.3	0.018	0.096	19.1	Pass
36	0.009	0.051	18.2	0.013	0.077	16.6	Pass
37	0.013	0.061	21.1	0.016	0.091	17.4	Pass
38	0.006	0.048	12.0	0.008	0.073	10.5	Pass
39	0.003	0.058	N/A	0.005	0.087	N/A	Pass
40	0.007	0.046	15.3	0.008	0.069	11.2	Pass

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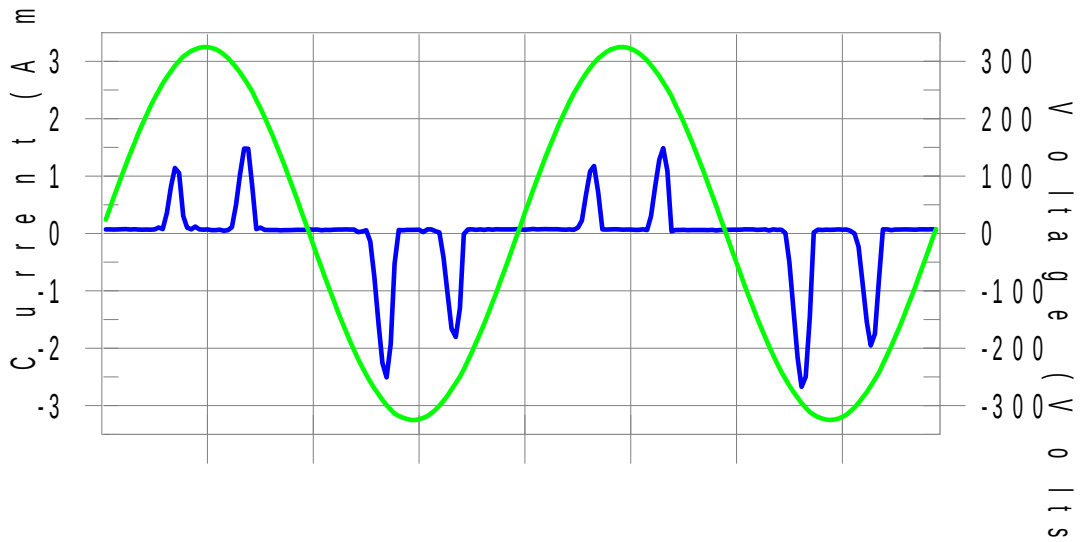
Phase L3:

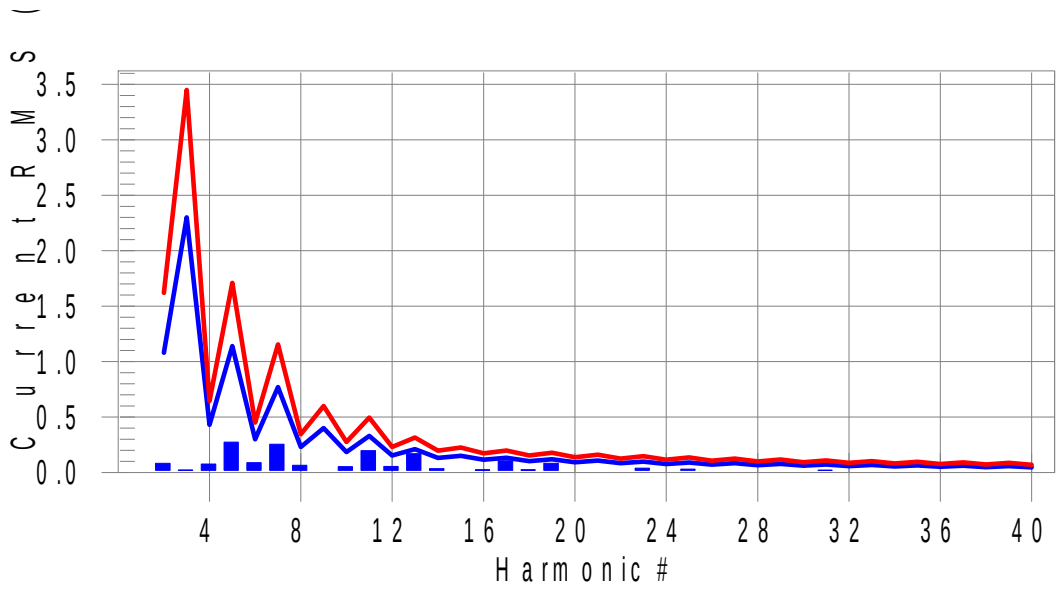
EUT: GD20-2R2G-4 **Tested by: Tree**
Test category: Class-A per Ed. 4.0 (2014) (European limits) **Test Margin: 100**
Test date: 2017/1/7 **Start time: 16:24:37** **End time: 16:27:29**
Test duration (min): 2.5 **Data file name: CTSMXL_H-000718.cts_data**
Comment: Power on with motor
Customer: Shenzhen INVT Electric Co., Ltd.

Test Result: Pass **Source qualification: Normal**

Current & voltage waveforms



Harmonics and Class A limit line **European Limits**



Test result: Pass **Worst harmonic was #13 with 54.8% of the limit.**

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Building 12&13, Zhiheng Wisdomland Business Park, Nantou Checkpoint Road 2, Nanshan District 518052, Shenzhen, CHINA

Maximum Harmonic Current Results

Harm#	Harms(avg)	100%Limit	%of Limit	Harms(max)	150%Limit	%of Limit	Status
2	0.082	1.080	7.6	0.093	1.620	5.7	Pass
3	0.023	2.300	1.0	0.033	3.450	1.0	Pass
4	0.077	0.430	17.9	0.086	0.645	13.3	Pass
5	0.274	1.140	24.0	0.278	1.710	16.3	Pass
6	0.089	0.300	29.6	0.128	0.450	28.4	Pass
7	0.254	0.770	33.0	0.259	1.155	22.4	Pass
8	0.065	0.230	28.1	0.071	0.345	20.6	Pass
9	0.016	0.400	4.1	0.024	0.600	4.0	Pass
10	0.052	0.184	28.3	0.058	0.276	21.1	Pass
11	0.196	0.330	59.5	0.199	0.495	40.3	Pass
12	0.055	0.153	35.7	0.078	0.230	34.1	Pass
13	0.169	0.210	80.5	0.173	0.315	54.8	Pass
14	0.036	0.131	27.3	0.039	0.197	20.0	Pass
15	0.009	0.150	5.8	0.013	0.225	6.0	Pass
16	0.024	0.115	20.6	0.027	0.173	15.9	Pass
17	0.106	0.132	80.1	0.108	0.198	54.6	Pass
18	0.023	0.102	22.6	0.032	0.153	21.2	Pass
19	0.083	0.118	70.1	0.086	0.178	48.2	Pass
20	0.015	0.092	16.3	0.016	0.138	11.9	Pass
21	0.006	0.107	5.4	0.007	0.161	4.4	Pass
22	0.012	0.084	14.2	0.014	0.125	11.2	Pass
23	0.039	0.098	39.5	0.040	0.147	27.5	Pass
24	0.016	0.077	20.5	0.022	0.115	19.5	Pass
25	0.030	0.090	33.1	0.032	0.135	23.6	Pass
26	0.013	0.071	18.5	0.014	0.107	13.4	Pass
27	0.005	0.083	N/A	0.006	0.125	N/A	Pass
28	0.012	0.066	18.2	0.014	0.099	14.2	Pass
29	0.018	0.078	22.9	0.019	0.116	16.4	Pass
30	0.015	0.061	23.7	0.021	0.092	22.7	Pass
31	0.020	0.073	27.4	0.022	0.109	19.9	Pass
32	0.011	0.058	18.7	0.012	0.086	13.5	Pass
33	0.004	0.068	N/A	0.005	0.102	N/A	Pass
34	0.008	0.054	15.0	0.010	0.081	12.3	Pass
35	0.015	0.064	23.9	0.017	0.096	17.4	Pass
36	0.009	0.051	18.5	0.014	0.077	17.6	Pass
37	0.015	0.061	24.2	0.017	0.091	18.1	Pass
38	0.007	0.048	14.7	0.008	0.073	10.9	Pass
39	0.004	0.058	N/A	0.005	0.087	N/A	Pass
40	0.006	0.046	13.3	0.008	0.069	11.2	Pass

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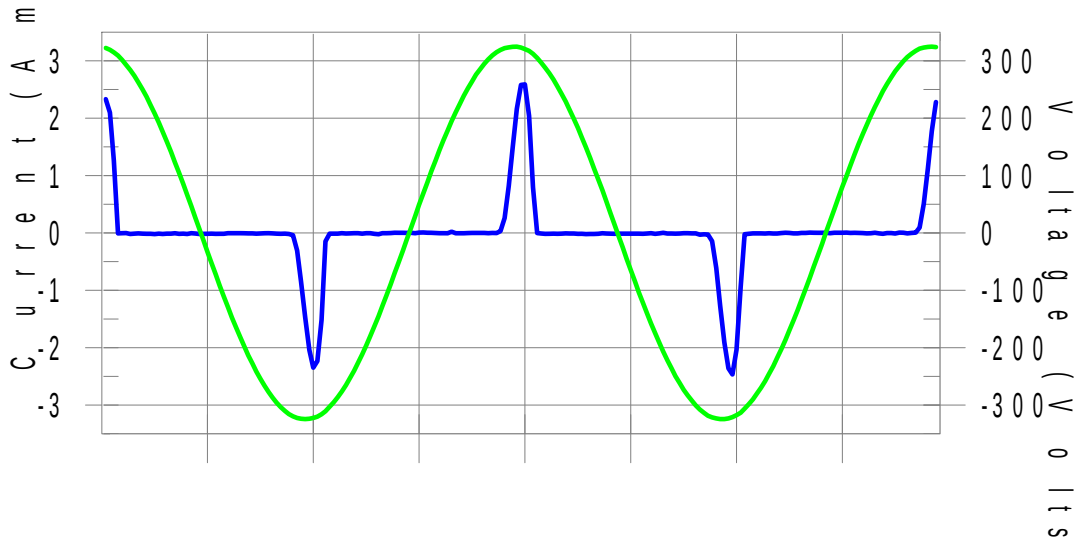
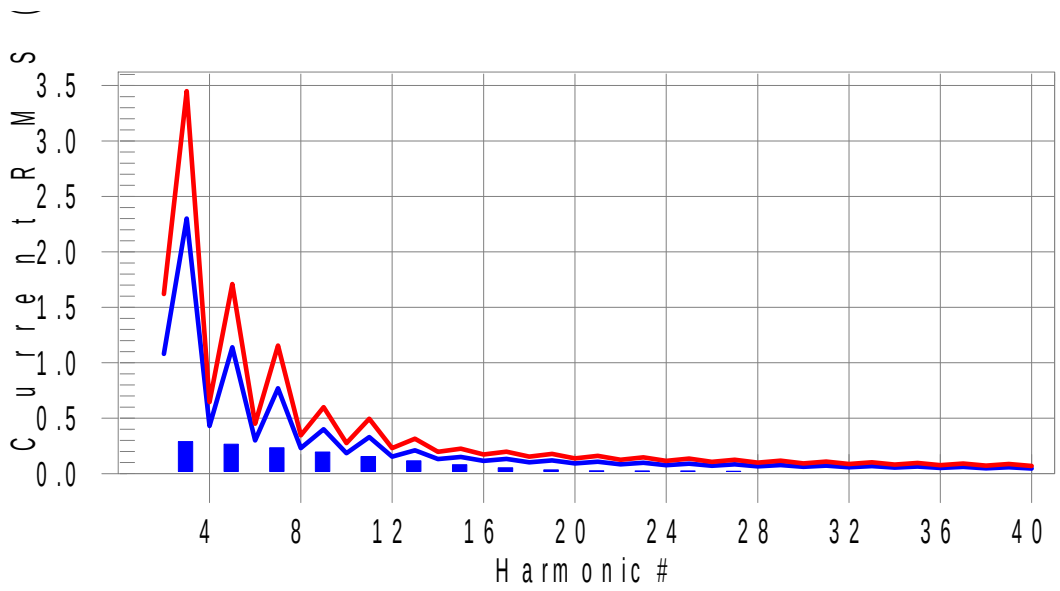
EUT: GD20-2R2G-S2 **Tested by: Tree**
Test category: Class-A per Ed. 4.0 (2014) (European limits) **Test Margin: 100**
Test date: 2017/1/7 **Start time: 15:18:41** **End time: 15:21:33**
Test duration (min): 2.5 **Data file name: CTSMXL_H-000713.cts_data**
Comment: Power on with motor
Customer: Shenzhen INVT Electric Co., Ltd.

Test Result: Pass **Source qualification: Normal**

Current & voltage waveforms



Harmonics and Class A limit line **European Limits**



Test result: Pass Worst harmonic was #13 with 36.8% of the limit.

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Maximum Harmonic Current Results

Harm#	Harms(avg)	100%Limit	%of Limit	Harms(max)	150%Limit	%of Limit	Status
2	0.006	1.080	0.6	0.011	1.620	0.7	Pass
3	0.289	2.300	12.6	0.293	3.450	8.5	Pass
4	0.006	0.430	1.3	0.011	0.645	1.7	Pass
5	0.266	1.140	23.3	0.268	1.710	15.7	Pass
6	0.005	0.300	N/A	0.009	0.450	N/A	Pass
7	0.233	0.770	30.3	0.235	1.155	20.3	Pass
8	0.004	0.230	N/A	0.007	0.345	N/A	Pass
9	0.195	0.400	48.8	0.196	0.600	32.7	Pass
10	0.003	0.184	N/A	0.005	0.276	N/A	Pass
11	0.155	0.330	46.8	0.156	0.495	31.5	Pass
12	0.002	0.153	N/A	0.003	0.230	N/A	Pass
13	0.115	0.210	54.9	0.116	0.315	36.8	Pass
14	0.001	0.131	N/A	0.002	0.197	N/A	Pass
15	0.080	0.150	53.5	0.081	0.225	35.9	Pass
16	0.001	0.115	N/A	0.002	0.173	N/A	Pass
17	0.052	0.132	39.4	0.052	0.198	26.5	Pass
18	0.001	0.102	N/A	0.002	0.153	N/A	Pass
19	0.033	0.118	28.2	0.034	0.178	18.9	Pass
20	0.001	0.092	N/A	0.002	0.138	N/A	Pass
21	0.026	0.107	23.9	0.026	0.161	16.1	Pass
22	0.001	0.084	N/A	0.002	0.125	N/A	Pass
23	0.025	0.098	25.2	0.025	0.147	17.0	Pass
24	0.001	0.077	N/A	0.002	0.115	N/A	Pass
25	0.024	0.090	26.7	0.024	0.135	18.0	Pass
26	0.001	0.071	N/A	0.001	0.107	N/A	Pass
27	0.022	0.083	26.0	0.022	0.125	17.6	Pass
28	0.001	0.066	N/A	0.001	0.099	N/A	Pass
29	0.018	0.078	23.0	0.018	0.116	15.7	Pass
30	0.001	0.061	N/A	0.001	0.092	N/A	Pass
31	0.014	0.073	19.2	0.014	0.109	12.9	Pass
32	0.001	0.058	N/A	0.001	0.086	N/A	Pass
33	0.011	0.068	16.5	0.011	0.102	11.1	Pass
34	0.001	0.054	N/A	0.001	0.081	N/A	Pass
35	0.010	0.064	15.9	0.010	0.096	10.7	Pass
36	0.001	0.051	N/A	0.001	0.077	N/A	Pass
37	0.010	0.061	16.6	0.010	0.091	11.2	Pass
38	0.001	0.048	N/A	0.001	0.073	N/A	Pass
39	0.010	0.058	16.8	0.010	0.087	11.5	Pass
40	0.000	0.046	N/A	0.001	0.069	N/A	Pass

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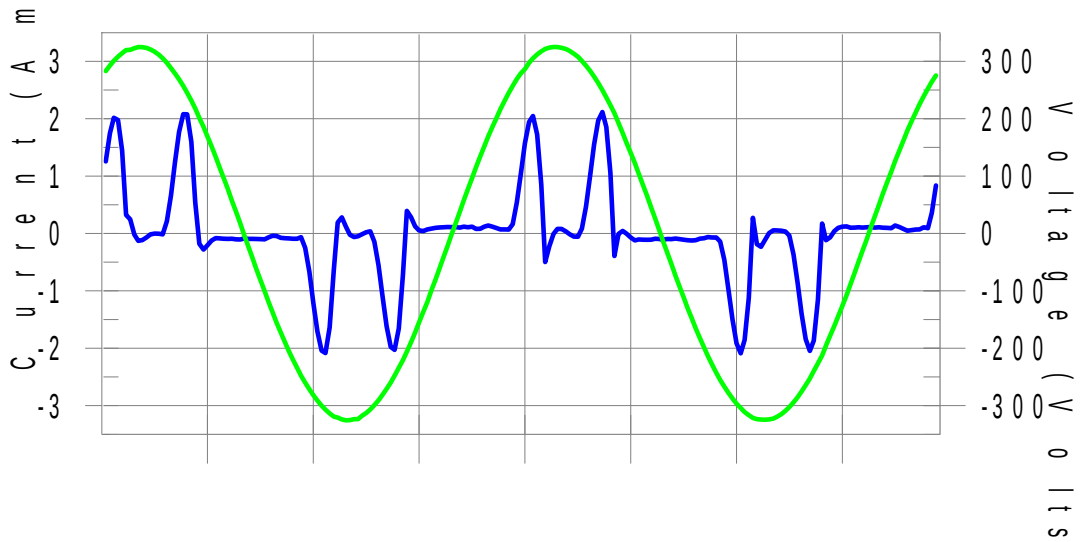
Phase L1:

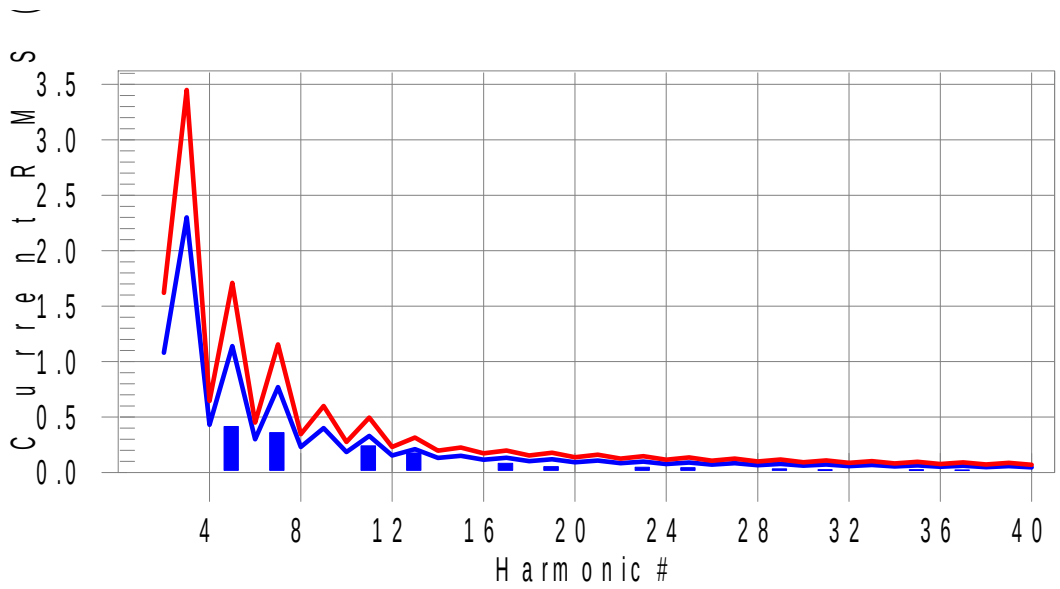
EUT: GD20-110G-4-B **Tested by: Tree**
Test category: Class-A per Ed. 4.0 (2014) (European limits) **Test Margin: 100**
Test date: 2017/1/7 **Start time: 17:24:09** **End time: 17:27:02**
Test duration (min): 2.5 **Data file name: CTSMXL_H-000721.cts_data**
Comment: Power on with motor
Customer: Shenzhen INVT Electric Co., Ltd.

Test Result: Pass **Source qualification: Normal**

Current & voltage waveforms



Harmonics and Class A limit line **European Limits**



Test result: Pass **Worst harmonic was #13 with 55.8% of the limit.**

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Building 12&13, Zhiheng Wisdomland Business Park, Nantou Checkpoint Road 2, Nanshan District 518052, Shenzhen, CHINA

Maximum Harmonic Current Results

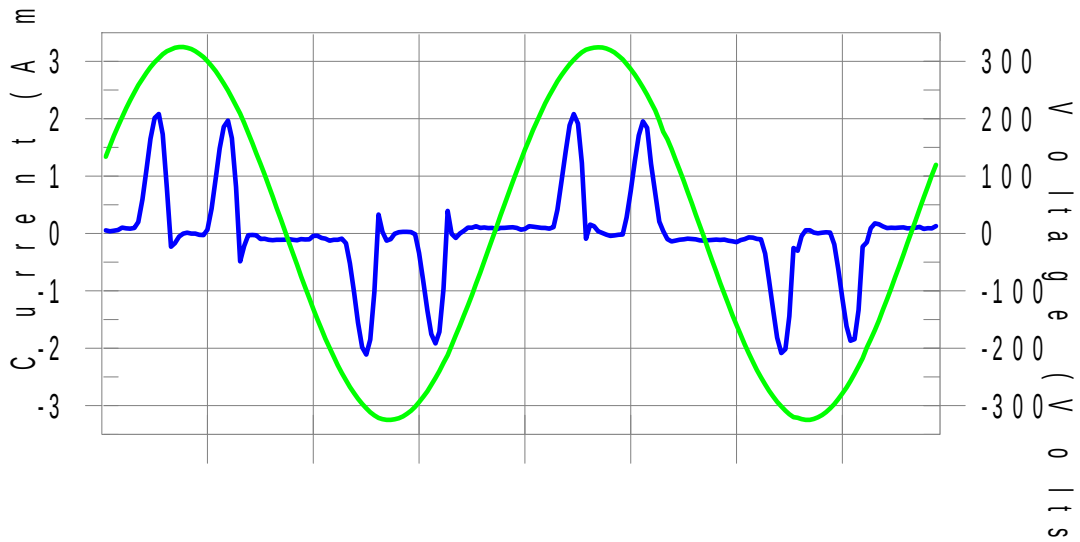
Harm#	Harms(avg)	100%Limit	%of Limit	Harms(max)	150%Limit	%of Limit	Status
2	0.009	1.080	0.8	0.012	1.620	0.7	Pass
3	0.015	2.300	0.7	0.019	3.450	0.6	Pass
4	0.008	0.430	1.8	0.009	0.645	1.4	Pass
5	0.415	1.140	36.4	0.416	1.710	24.3	Pass
6	0.001	0.300	N/A	0.002	0.450	N/A	Pass
7	0.360	0.770	46.7	0.361	1.155	31.3	Pass
8	0.006	0.230	2.4	0.006	0.345	1.8	Pass
9	0.010	0.400	2.5	0.011	0.600	1.8	Pass
10	0.004	0.184	N/A	0.004	0.276	N/A	Pass
11	0.240	0.330	72.8	0.241	0.495	48.7	Pass
12	0.001	0.153	N/A	0.001	0.230	N/A	Pass
13	0.175	0.210	83.4	0.176	0.315	55.8	Pass
14	0.002	0.131	N/A	0.003	0.197	N/A	Pass
15	0.003	0.150	N/A	0.004	0.225	N/A	Pass
16	0.002	0.115	N/A	0.002	0.173	N/A	Pass
17	0.082	0.132	62.2	0.082	0.198	41.7	Pass
18	0.001	0.102	N/A	0.001	0.153	N/A	Pass
19	0.053	0.118	44.5	0.053	0.178	29.8	Pass
20	0.002	0.092	N/A	0.002	0.138	N/A	Pass
21	0.004	0.107	N/A	0.005	0.161	N/A	Pass
22	0.002	0.084	N/A	0.002	0.125	N/A	Pass
23	0.048	0.098	48.7	0.048	0.147	32.6	Pass
24	0.000	0.077	N/A	0.001	0.115	N/A	Pass
25	0.043	0.090	47.8	0.043	0.135	32.1	Pass
26	0.001	0.071	N/A	0.001	0.107	N/A	Pass
27	0.002	0.083	N/A	0.003	0.125	N/A	Pass
28	0.001	0.066	N/A	0.001	0.099	N/A	Pass
29	0.033	0.078	42.8	0.033	0.116	28.7	Pass
30	0.000	0.061	N/A	0.001	0.092	N/A	Pass
31	0.024	0.073	33.4	0.024	0.109	22.5	Pass
32	0.001	0.058	N/A	0.002	0.086	N/A	Pass
33	0.003	0.068	N/A	0.003	0.102	N/A	Pass
34	0.001	0.054	N/A	0.001	0.081	N/A	Pass
35	0.024	0.064	37.4	0.024	0.096	25.1	Pass
36	0.001	0.051	N/A	0.001	0.077	N/A	Pass
37	0.022	0.061	36.1	0.022	0.091	24.4	Pass
38	0.001	0.048	N/A	0.001	0.073	N/A	Pass
39	0.002	0.058	N/A	0.002	0.087	N/A	Pass
40	0.001	0.046	N/A	0.002	0.069	N/A	Pass

Phase L2:

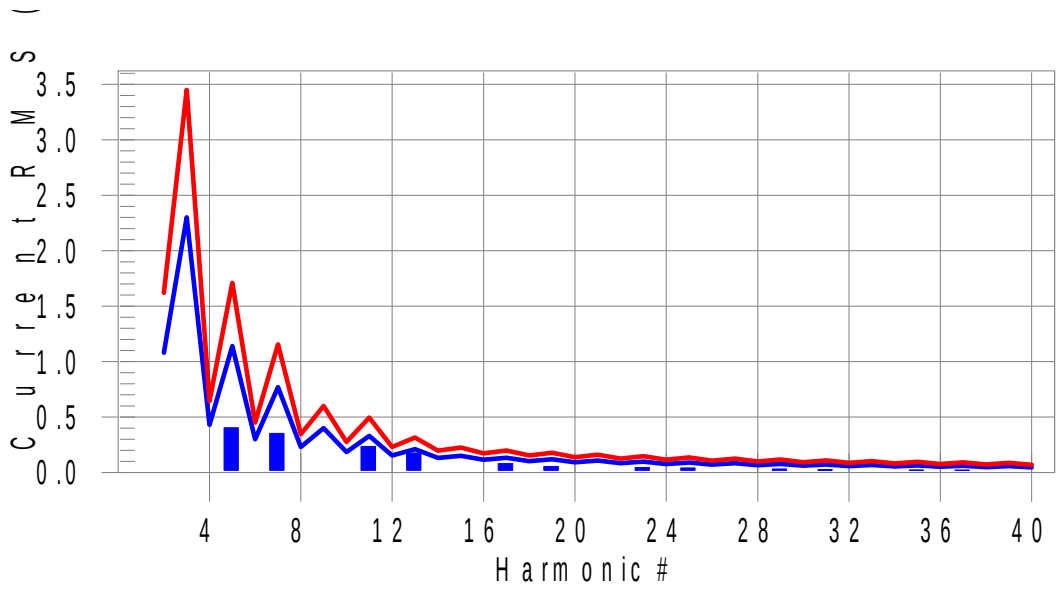
EUT: GD20-110G-4-B **Tested by: Tree**
Test category: Class-A per Ed. 4.0 (2014) (European limits) **Test Margin: 100**
Test date: 2017/1/7 **Start time: 17:24:09** **End time: 17:27:02**
Test duration (min): 2.5 **Data file name: CTSMXL_H-000721.cts_data**
Comment: Power on with motor
Customer: Shenzhen INVT Electric Co., Ltd.

Test Result: Pass **Source qualification: Normal**

Current & voltage waveforms



Harmonics and Class A limit line **European Limits**



Test result: Pass **Worst harmonic was #13 with 55.9% of the limit.**

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Building 12&13, Zhiheng Wisdomland Business Park, Nantou Checkpoint Road 2, Nanshan District 518052, Shenzhen, CHINA

Maximum Harmonic Current Results

Harm#	Harms(avg)	100%Limit	%of Limit	Harms(max)	150%Limit	%of Limit	Status
2	0.006	1.080	0.5	0.009	1.620	0.5	Pass
3	0.008	2.300	0.4	0.011	3.450	0.3	Pass
4	0.005	0.430	1.2	0.007	0.645	1.0	Pass
5	0.404	1.140	35.4	0.405	1.710	23.7	Pass
6	0.004	0.300	N/A	0.005	0.450	N/A	Pass
7	0.352	0.770	45.7	0.354	1.155	30.6	Pass
8	0.003	0.230	N/A	0.004	0.345	N/A	Pass
9	0.003	0.400	N/A	0.003	0.600	N/A	Pass
10	0.002	0.184	N/A	0.002	0.276	N/A	Pass
11	0.235	0.330	71.3	0.236	0.495	47.7	Pass
12	0.001	0.153	N/A	0.002	0.230	N/A	Pass
13	0.175	0.210	83.5	0.176	0.315	55.9	Pass
14	0.001	0.131	N/A	0.002	0.197	N/A	Pass
15	0.002	0.150	N/A	0.002	0.225	N/A	Pass
16	0.001	0.115	N/A	0.001	0.173	N/A	Pass
17	0.081	0.132	61.2	0.081	0.198	40.9	Pass
18	0.001	0.102	N/A	0.002	0.153	N/A	Pass
19	0.053	0.118	45.0	0.054	0.178	30.2	Pass
20	0.001	0.092	N/A	0.001	0.138	N/A	Pass
21	0.001	0.107	N/A	0.001	0.161	N/A	Pass
22	0.001	0.084	N/A	0.001	0.125	N/A	Pass
23	0.046	0.098	46.6	0.046	0.147	31.2	Pass
24	0.001	0.077	N/A	0.001	0.115	N/A	Pass
25	0.043	0.090	47.2	0.043	0.135	31.7	Pass
26	0.001	0.071	N/A	0.001	0.107	N/A	Pass
27	0.001	0.083	N/A	0.002	0.125	N/A	Pass
28	0.001	0.066	N/A	0.001	0.099	N/A	Pass
29	0.032	0.078	41.2	0.032	0.116	27.6	Pass
30	0.001	0.061	N/A	0.001	0.092	N/A	Pass
31	0.025	0.073	34.6	0.025	0.109	23.3	Pass
32	0.001	0.058	N/A	0.001	0.086	N/A	Pass
33	0.001	0.068	N/A	0.002	0.102	N/A	Pass
34	0.001	0.054	N/A	0.001	0.081	N/A	Pass
35	0.022	0.064	34.8	0.023	0.096	23.4	Pass
36	0.001	0.051	N/A	0.001	0.077	N/A	Pass
37	0.021	0.061	35.2	0.022	0.091	23.7	Pass
38	0.001	0.048	N/A	0.001	0.073	N/A	Pass
39	0.001	0.058	N/A	0.001	0.087	N/A	Pass
40	0.001	0.046	N/A	0.001	0.069	N/A	Pass

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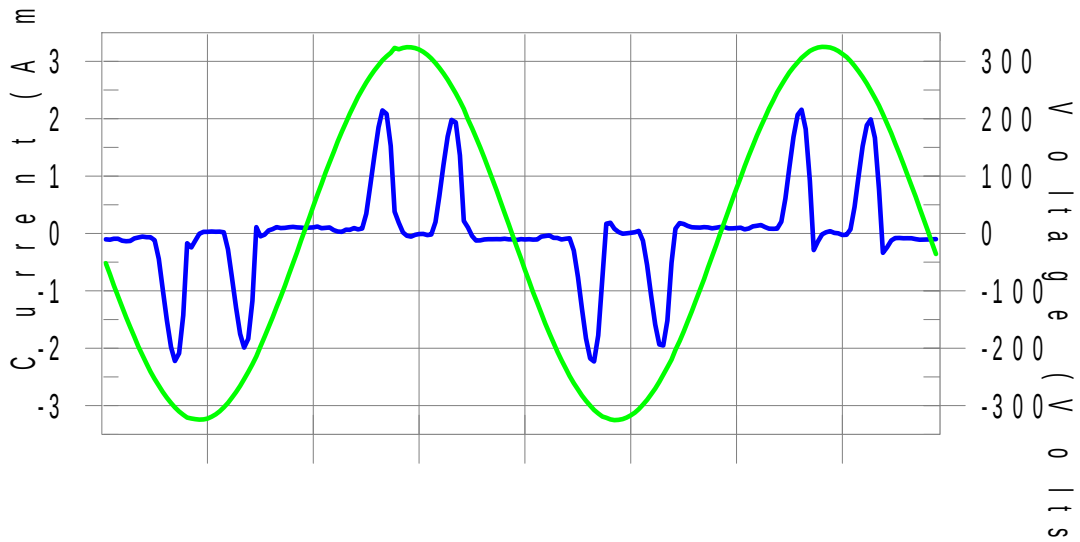
Phase L3:

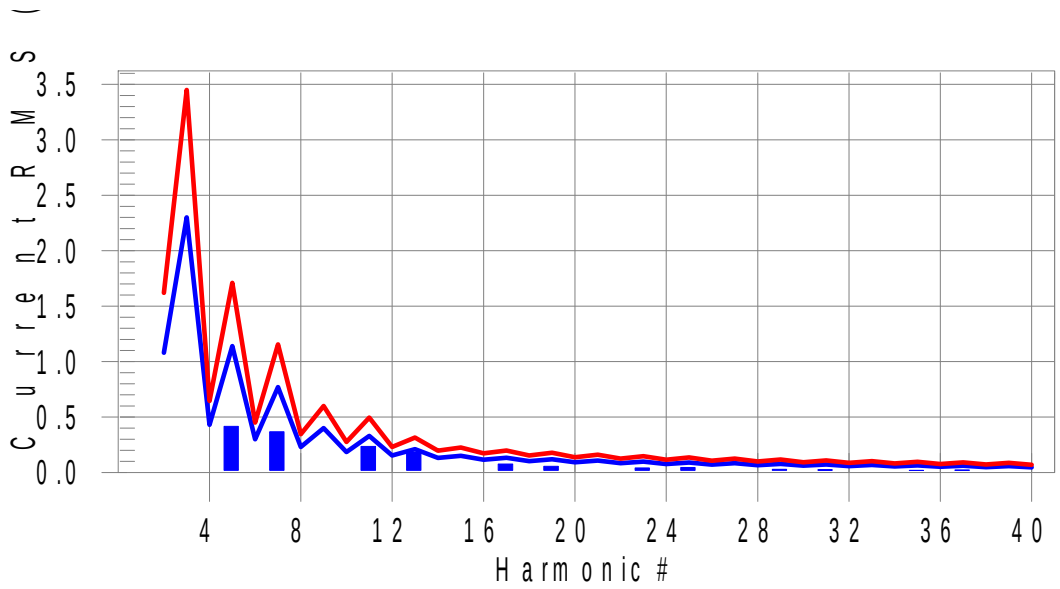
EUT: GD20-110G-4-B **Tested by: Tree**
Test category: Class-A per Ed. 4.0 (2014) (European limits) **Test Margin: 100**
Test date: 2017/1/7 **Start time: 17:24:09** **End time: 17:27:02**
Test duration (min): 2.5 **Data file name: CTSMXL_H-000721.cts_data**
Comment: Power on with motor
Customer: Shenzhen INVT Electric Co., Ltd.

Test Result: Pass **Source qualification: Normal**

Current & voltage waveforms



Harmonics and Class A limit line **European Limits**



Test result: Pass **Worst harmonic was #13 with 57.4% of the limit.**

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Maximum Harmonic Current Results

Harm#	Harms(avg)	100%Limit	%of Limit	Harms(max)	150%Limit	%of Limit	Status
2	0.005	1.080	0.5	0.007	1.620	0.4	Pass
3	0.016	2.300	0.7	0.018	3.450	0.5	Pass
4	0.005	0.430	N/A	0.006	0.645	N/A	Pass
5	0.415	1.140	36.4	0.417	1.710	24.4	Pass
6	0.004	0.300	N/A	0.005	0.450	N/A	Pass
7	0.367	0.770	47.6	0.368	1.155	31.9	Pass
8	0.003	0.230	N/A	0.004	0.345	N/A	Pass
9	0.008	0.400	2.0	0.010	0.600	1.7	Pass
10	0.003	0.184	N/A	0.003	0.276	N/A	Pass
11	0.236	0.330	71.5	0.236	0.495	47.8	Pass
12	0.002	0.153	N/A	0.003	0.230	N/A	Pass
13	0.180	0.210	85.8	0.181	0.315	57.4	Pass
14	0.001	0.131	N/A	0.002	0.197	N/A	Pass
15	0.006	0.150	4.0	0.007	0.225	3.0	Pass
16	0.001	0.115	N/A	0.002	0.173	N/A	Pass
17	0.076	0.132	57.9	0.077	0.198	38.8	Pass
18	0.001	0.102	N/A	0.002	0.153	N/A	Pass
19	0.056	0.118	46.9	0.056	0.178	31.6	Pass
20	0.001	0.092	N/A	0.002	0.138	N/A	Pass
21	0.005	0.107	N/A	0.005	0.161	N/A	Pass
22	0.001	0.084	N/A	0.001	0.125	N/A	Pass
23	0.043	0.098	43.5	0.043	0.147	29.3	Pass
24	0.001	0.077	N/A	0.001	0.115	N/A	Pass
25	0.045	0.090	49.6	0.045	0.135	33.3	Pass
26	0.001	0.071	N/A	0.001	0.107	N/A	Pass
27	0.003	0.083	N/A	0.004	0.125	N/A	Pass
28	0.001	0.066	N/A	0.001	0.099	N/A	Pass
29	0.028	0.078	36.6	0.029	0.116	24.6	Pass
30	0.001	0.061	N/A	0.001	0.092	N/A	Pass
31	0.025	0.073	35.1	0.026	0.109	23.8	Pass
32	0.001	0.058	N/A	0.001	0.086	N/A	Pass
33	0.004	0.068	N/A	0.004	0.102	N/A	Pass
34	0.001	0.054	N/A	0.001	0.081	N/A	Pass
35	0.019	0.064	30.2	0.020	0.096	20.4	Pass
36	0.001	0.051	N/A	0.001	0.077	N/A	Pass
37	0.022	0.061	36.6	0.022	0.091	24.6	Pass
38	0.001	0.048	N/A	0.001	0.073	N/A	Pass
39	0.003	0.058	N/A	0.003	0.087	N/A	Pass
40	0.001	0.046	N/A	0.001	0.069	N/A	Pass

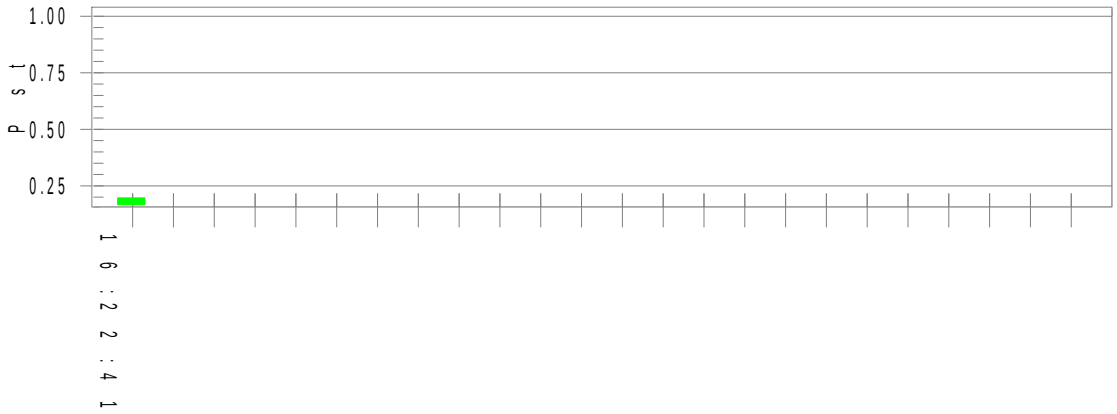
10.4 Flicker

Phase L1:

EUT: GD20-2R2G-4 **Tested by: Tree**
Test category: All parameters (European limits) **Test Margin: 100**
Test date: 2017/1/7 **Start time: 16:12:09** **End time: 16:22:42**
Test duration (min): 10 **Data file name: CTSMXL_F-000717.cts_data**
Comment: Power on with motor
Customer: Shenzhen INVT Electric Co., Ltd.

Test Result: Pass **Status: Test Completed**

Pst and limit line **European Limits**



Plt and limit line

Parameter values recorded during the test:

Vrms at the end of test (Volt):	**229.80**			
Highest dt (%):	**-0.30**	**Test limit (%):**	**N/A**	**N/A**
T-max (mS):	**0.0**	**Test limit (mS):**	**500.0**	**Pass**
Highest dc (%):	**0.00**	**Test limit (%):**	**3.30**	**Pass**
Highest dmax (%):	**-0.16**	**Test limit (%):**	**4.00**	**Pass**
Highest Pst (10 min. period):	**0.197**	**Test limit:**	**1.000**	**Pass**
Highest Plt (2 hr. period):	**0.086**	**Test limit:**	**0.650**	**Pass**

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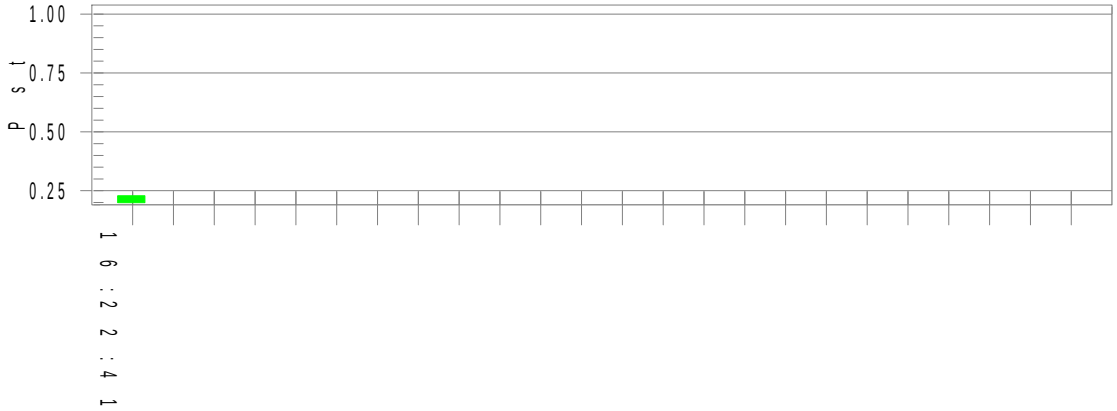
Phase L2:

EUT: GD20-2R2G-4 **Tested by: Tree**
Test category: All parameters (European limits) **Test Margin: 100**
Test date: 2017/1/7 **Start time: 16:12:09** **End time: 16:22:42**
Test duration (min): 10 **Data file name: CTSMXL_F-000717.cts_data**
Comment: Power on with motor
Customer: Shenzhen INVT Electric Co., Ltd.

Test Result: Pass **Status: Test Completed**

Pst$_i$ and limit line **European Limits**



Plt and limit line

Parameter values recorded during the test:

Vrms at the end of test (Volt):	**229.83**			
Highest dt (%):	**-0.30**	**Test limit (%):**	**N/A**	**N/A**
Tmax(mS) > dt:	**0.0**	**Test limit (mS):**	**500.0**	**Pass**
Highest dc (%):	**0.00**	**Test limit (%):**	**3.30**	**Pass**
Highest dmax (%):	**-0.18**	**Test limit (%):**	**4.00**	**Pass**
Highest Pst (10 min. period):	**0.229**	**Test limit:**	**1.000**	**Pass**
Highest Plt (2 hr. period):	**0.100**	**Test limit:**	**0.650**	**Pass**

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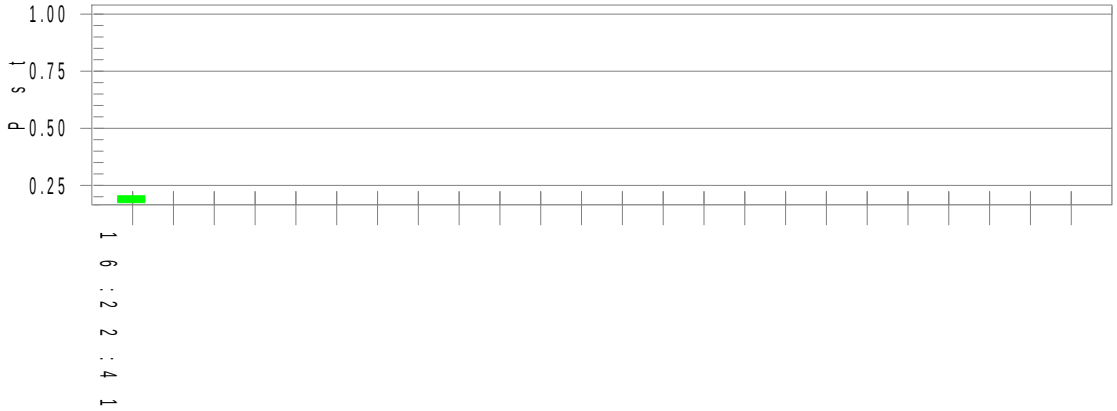
Phase L3:

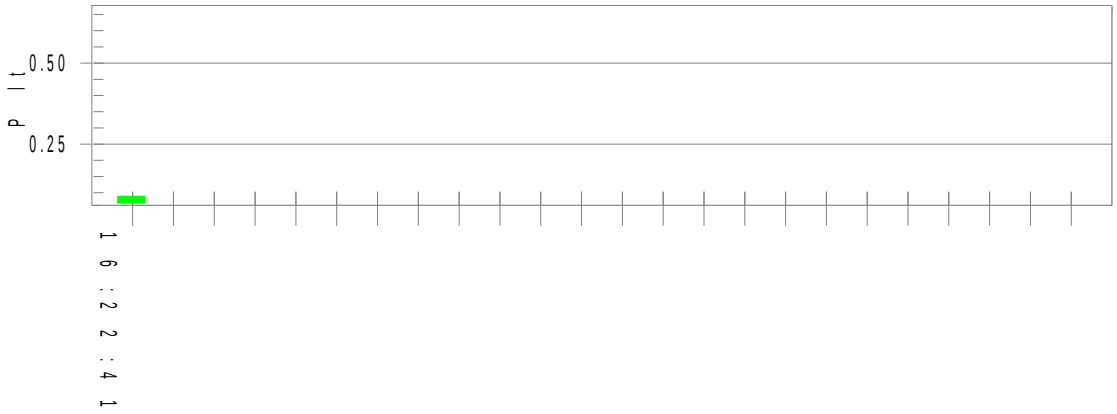
EUT: GD20-2R2G-4 **Tested by: Tree**
Test category: All parameters (European limits) **Test Margin: 100**
Test date: 2017/1/7 **Start time: 16:12:09** **End time: 16:22:42**
Test duration (min): 10 **Data file name: CTSMXL_F-000717.cts_data**
Comment: Power on with motor
Customer: Shenzhen INVT Electric Co., Ltd.

Test Result: Pass **Status: Test Completed**

Pst$_i$ and limit line **European Limits**



Plt and limit line



Parameter values recorded during the test:

Vrms at the end of test (Volt):	**229.75**			
Highest dt (%):	**-0.29**	**Test limit (%):**	**N/A**	**N/A**
Tmax(mS) > dt:	**0.0**	**Test limit (mS):**	**500.0**	**Pass**
Highest dc (%):	**0.00**	**Test limit (%):**	**3.30**	**Pass**
Highest dmax (%):	**-0.17**	**Test limit (%):**	**4.00**	**Pass**
Highest Pst (10 min. period):	**0.204**	**Test limit:**	**1.000**	**Pass**
Highest Plt (2 hr. period):	**0.089**	**Test limit:**	**0.650**	**Pass**

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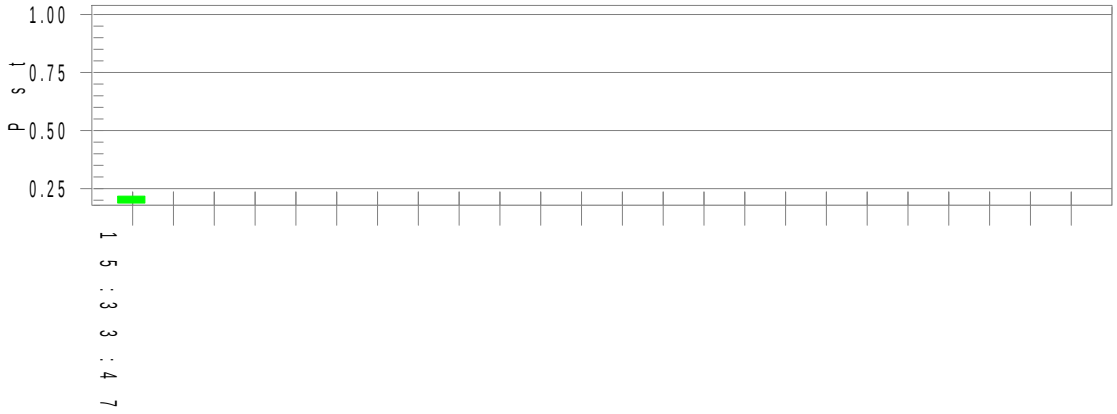
EUT: GD20-2R2G-S2 **Tested by: Tree**
Test category: All parameters (European limits) **Test Margin: 100**
Test date: 2017/1/7 **Start time: 15:23:17** **End time: 15:33:49**
Test duration (min): 10 **Data file name: CTSMXL_F-000714.cts_data**
Comment: Power on with motor
Customer: Shenzhen INVT Electric Co., Ltd.

Test Result: Pass **Status: Test Completed**

Pst_i and limit line **European Limits**



Plt and limit line

Parameter values recorded during the test:

Vrms at the end of test (Volt):	**229.68**			
Highest dt (%):	**0.00**	**Test limit (%):**	**N/A**	**N/A**
T-max (mS):	**0.0**	**Test limit (mS):**	**500.0**	**Pass**
Highest dc (%):	**0.00**	**Test limit (%):**	**3.30**	**Pass**
Highest dmax (%):	**-0.09**	**Test limit (%):**	**4.00**	**Pass**
Highest Pst (10 min. period):	**0.217**	**Test limit:**	**1.000**	**Pass**
Highest Plt (2 hr. period):	**0.095**	**Test limit:**	**0.650**	**Pass**

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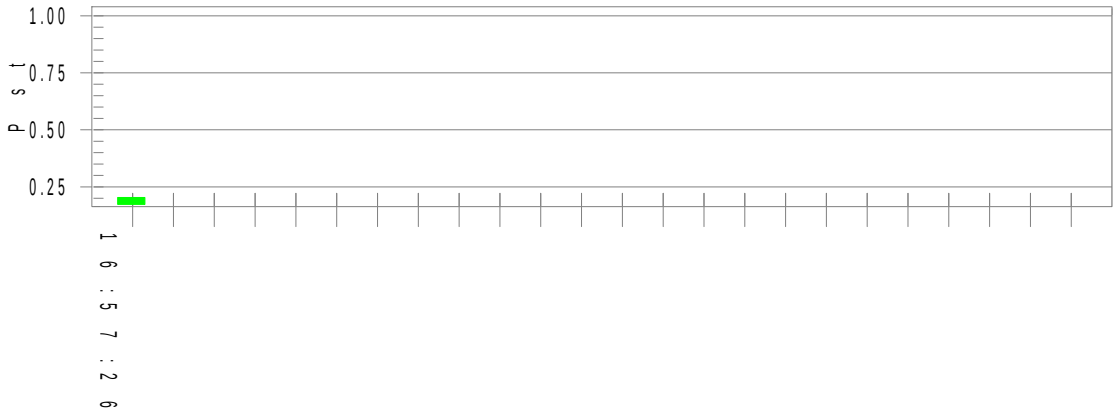
Phase L1:

EUT: GD20-110G-4-B **Tested by: Tree**
Test category: All parameters (European limits) **Test Margin: 100**
Test date: 2017/1/7 **Start time: 16:46:54** **End time: 16:57:27**
Test duration (min): 10 **Data file name: CTSMXL_F-000720.cts_data**
Comment: Power on with motor
Customer: Shenzhen INVT Electric Co., Ltd.

Test Result: Pass **Status: Test Completed**

Pst_i and limit line **European Limits**



Plt and limit line

Parameter values recorded during the test:

Vrms at the end of test (Volt):	**229.79**			
Highest dt (%):	**0.00**	**Test limit (%):**	**N/A**	**N/A**
T-max (mS):	**0.0**	**Test limit (mS):**	**500.0**	**Pass**
Highest dc (%):	**0.00**	**Test limit (%):**	**3.30**	**Pass**
Highest dmax (%):	**0.08**	**Test limit (%):**	**4.00**	**Pass**
Highest Pst (10 min. period):	**0.203**	**Test limit:**	**1.000**	**Pass**
Highest Plt (2 hr. period):	**0.089**	**Test limit:**	**0.650**	**Pass**

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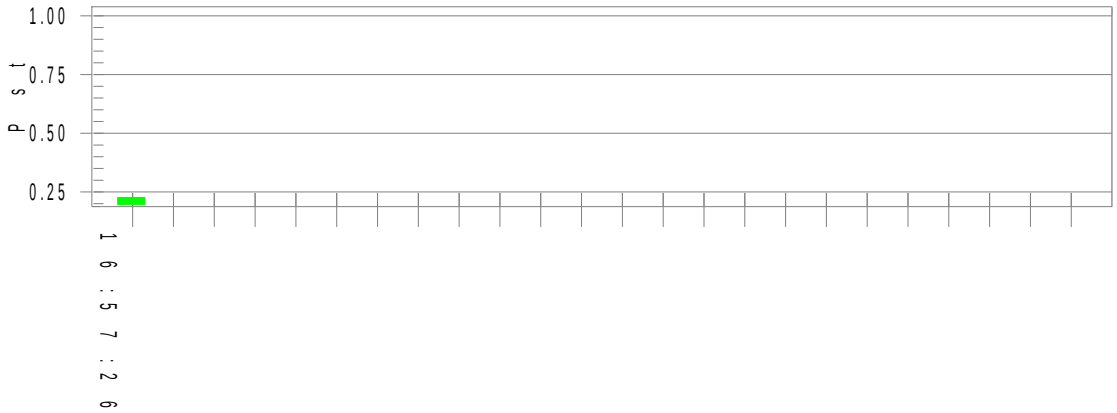
Phase L2:

EUT: GD20-110G-4-B **Tested by: Tree**
Test category: All parameters (European limits) **Test Margin: 100**
Test date: 2017/1/7 **Start time: 16:46:54** **End time: 16:57:27**
Test duration (min): 10 **Data file name: CTSMXL_F-000720.cts_data**
Comment: Power on with motor
Customer: Shenzhen INVT Electric Co., Ltd.

Test Result: Pass **Status: Test Completed**

Pst_i and limit line **European Limits**



Plt and limit line

Parameter values recorded during the test:

Vrms at the end of test (Volt):	**229.81**			
Highest dt (%):	**0.00**	**Test limit (%):**	**N/A**	**N/A**
Tmax(mS) > dt:	**0.0**	**Test limit (mS):**	**500.0**	**Pass**
Highest dc (%):	**0.00**	**Test limit (%):**	**3.30**	**Pass**
Highest dmax (%):	**0.09**	**Test limit (%):**	**4.00**	**Pass**
Highest Pst (10 min. period):	**0.226**	**Test limit:**	**1.000**	**Pass**
Highest Plt (2 hr. period):	**0.099**	**Test limit:**	**0.650**	**Pass**

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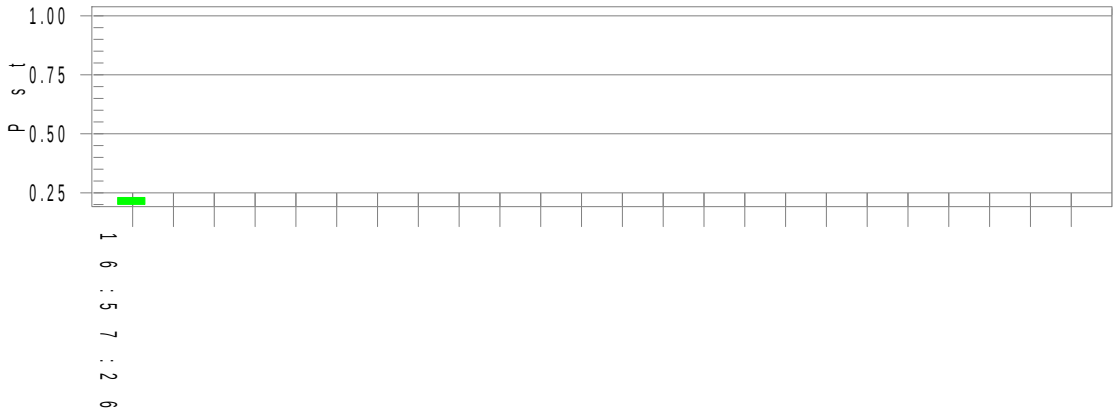
Phase L3:

EUT: GD20-110G-4-B **Tested by: Tree**
Test category: All parameters (European limits) **Test Margin: 100**
Test date: 2017/1/7 **Start time: 16:46:54** **End time: 16:57:27**
Test duration (min): 10 **Data file name: CTSMXL_F-000720.cts_data**
Comment: Power on with motor
Customer: Shenzhen INVT Electric Co., Ltd.

Test Result: Pass **Status: Test Completed**

Pst_i and limit line **European Limits**



Plt and limit line

Parameter values recorded during the test:

Vrms at the end of test (Volt):	**229.75**			
Highest dt (%):	**0.00**	**Test limit (%):**	**N/A**	**N/A**
Tmax(mS) > dt:	**0.0**	**Test limit (mS):**	**500.0**	**Pass**
Highest dc (%):	**0.00**	**Test limit (%):**	**3.30**	**Pass**
Highest dmax (%):	**-0.07**	**Test limit (%):**	**4.00**	**Pass**
Highest Pst (10 min. period):	**0.230**	**Test limit:**	**1.000**	**Pass**
Highest Plt (2 hr. period):	**0.100**	**Test limit:**	**0.650**	**Pass**

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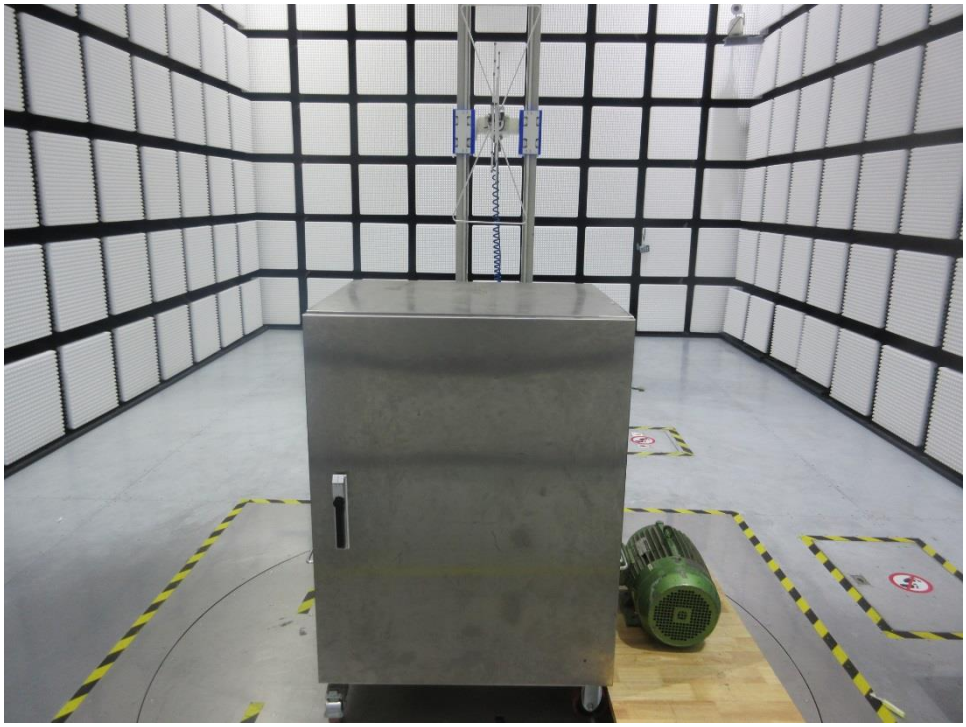
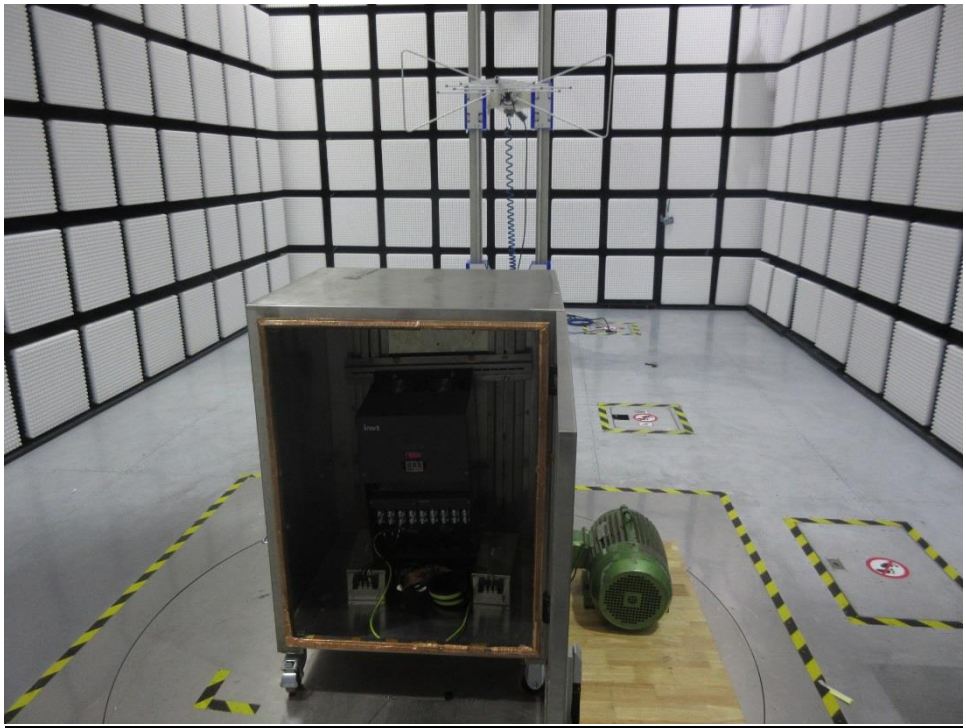
11 Photographs of Test Set-ups

11.1 Radiated Emissions



Radiated Emission (30MHz~1GHz)



Radiated Emission (30MHz~1GHz)

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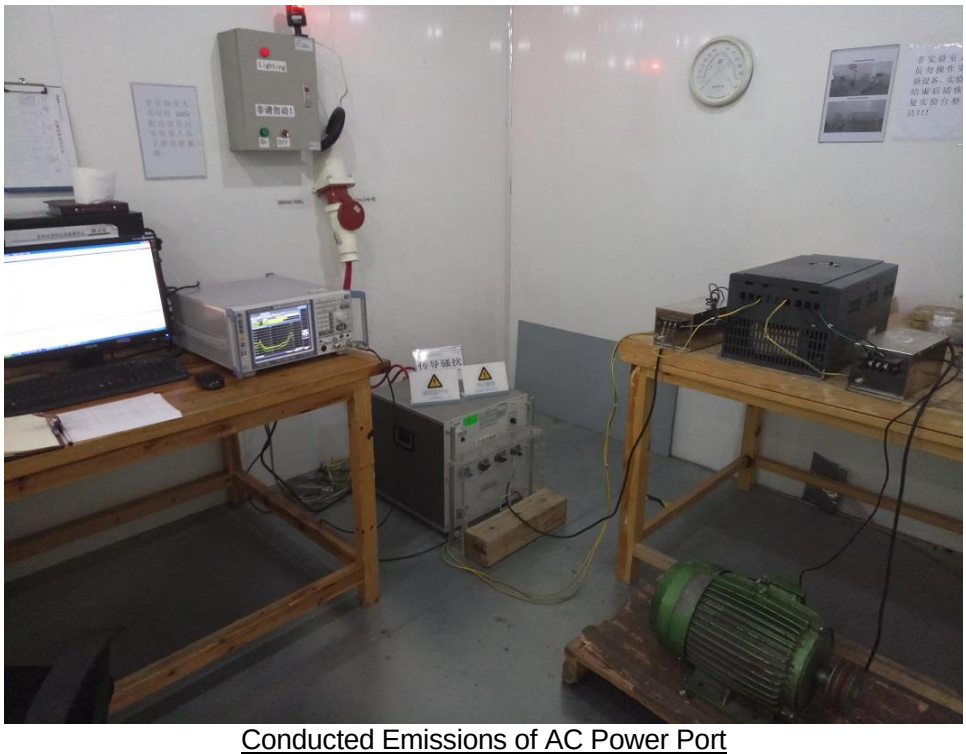

Conducted Emissions of AC Power Port

Harmonics and Voltage fluctuations

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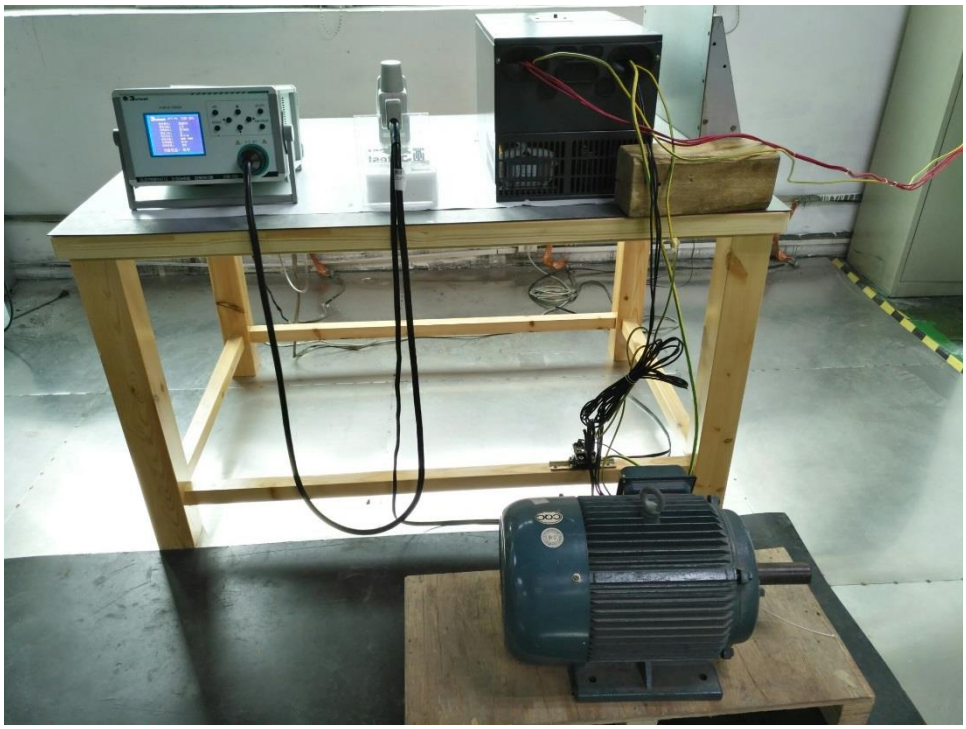
11.2 Immunity



Immunity to Electrostatic Discharge

Immunity to Radiated Electric Fields

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Immunity to Continuous Conducted Interference of AC Power Port

Immunity to Electrical Fast Transient Bursts of AC Power Port

Immunity to Surge of AC Power Port

Immunity to low-frequency disturbances

12 Photographs of Product

Details of: General view

Details of: General view

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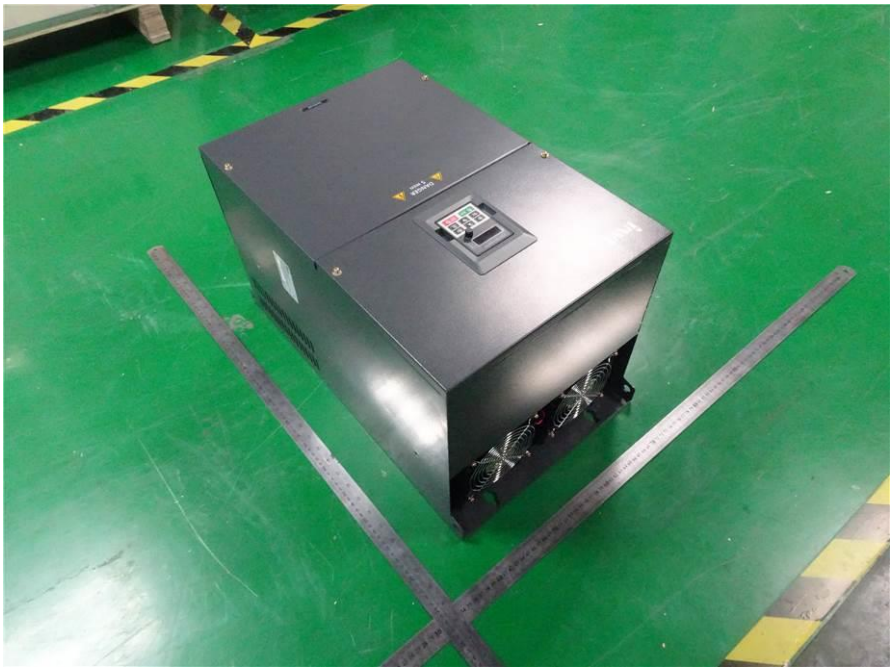
Details of: General view (Model GD20-075G-4)

Details of: General view (Model GD20-110G-4)



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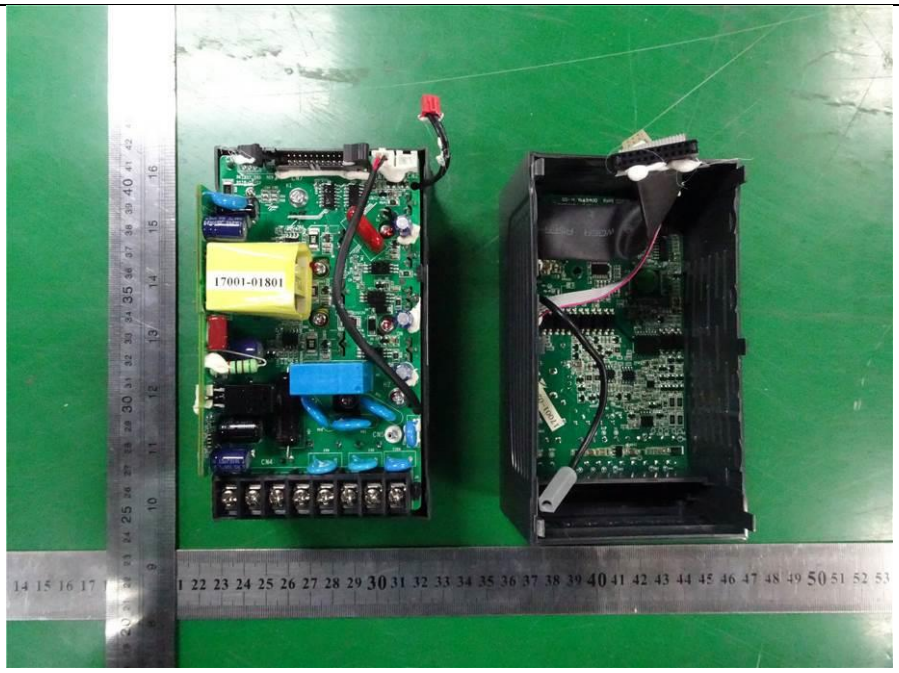
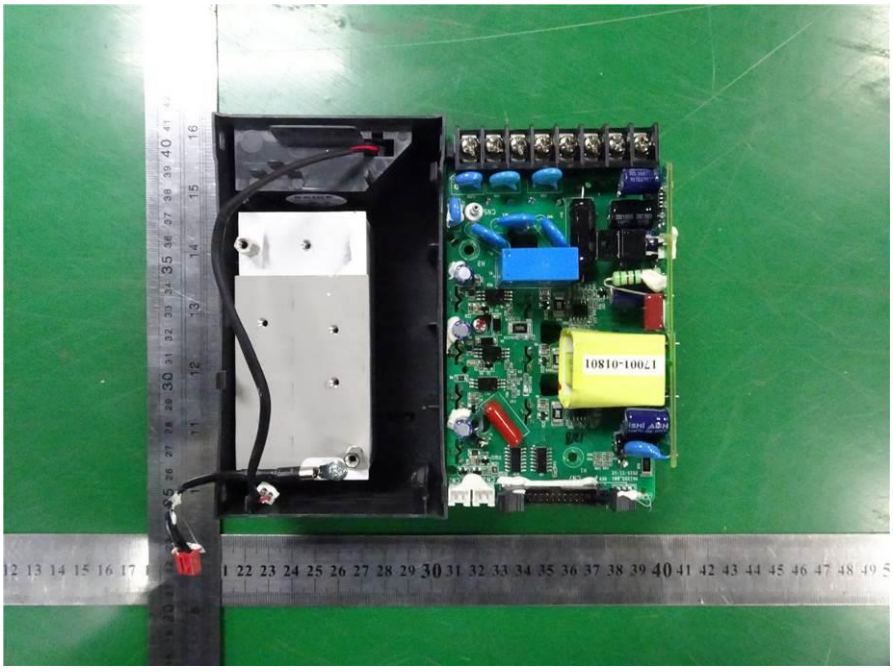
Details of: Internal view (Model GD20-0R7G-S2)



Details of: Internal view (Model GD20-0R7G-S2)



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Details of: Internal view (Model GD20-2R2G-S2)

Details of: Internal view (Model GD20-2R2G-S2)

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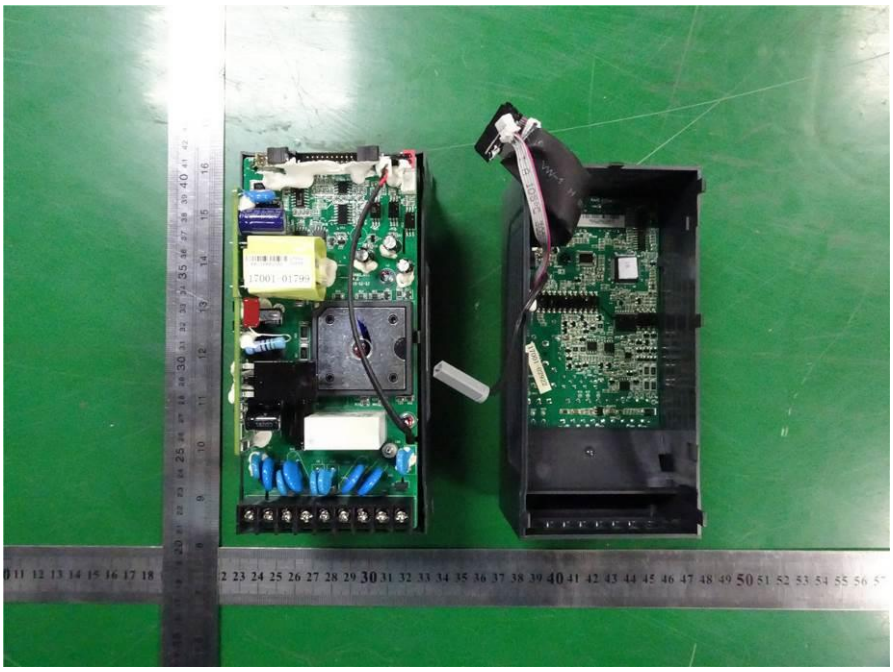
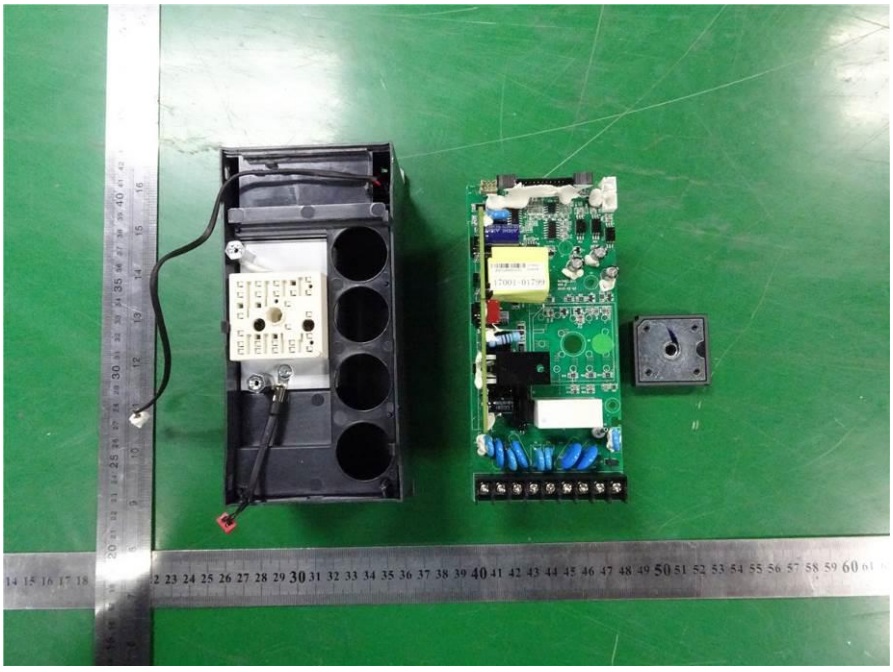
Details of: Internal view (Model GD20-2R2G-4)



Details of: Internal view (Model GD20-2R2G-4)



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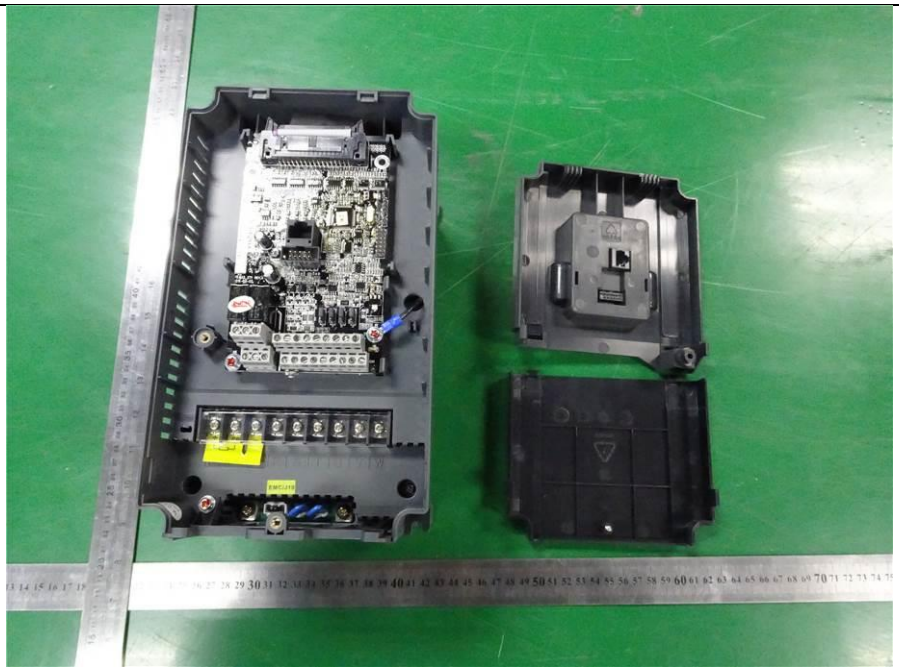
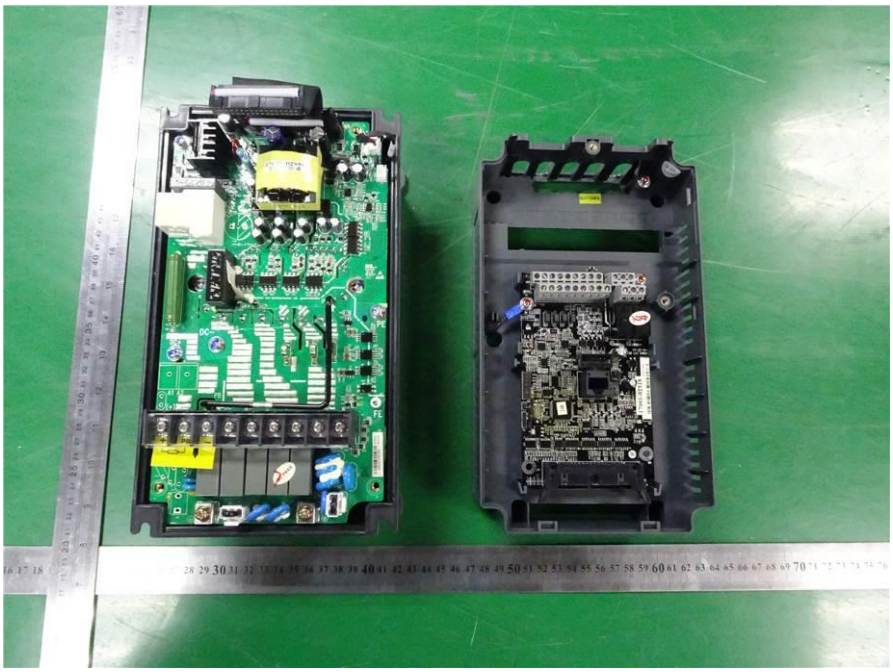
Details of: Internal view (Model GD20-5R5G-4)



Details of: Internal view (Model GD20-5R5G-4)



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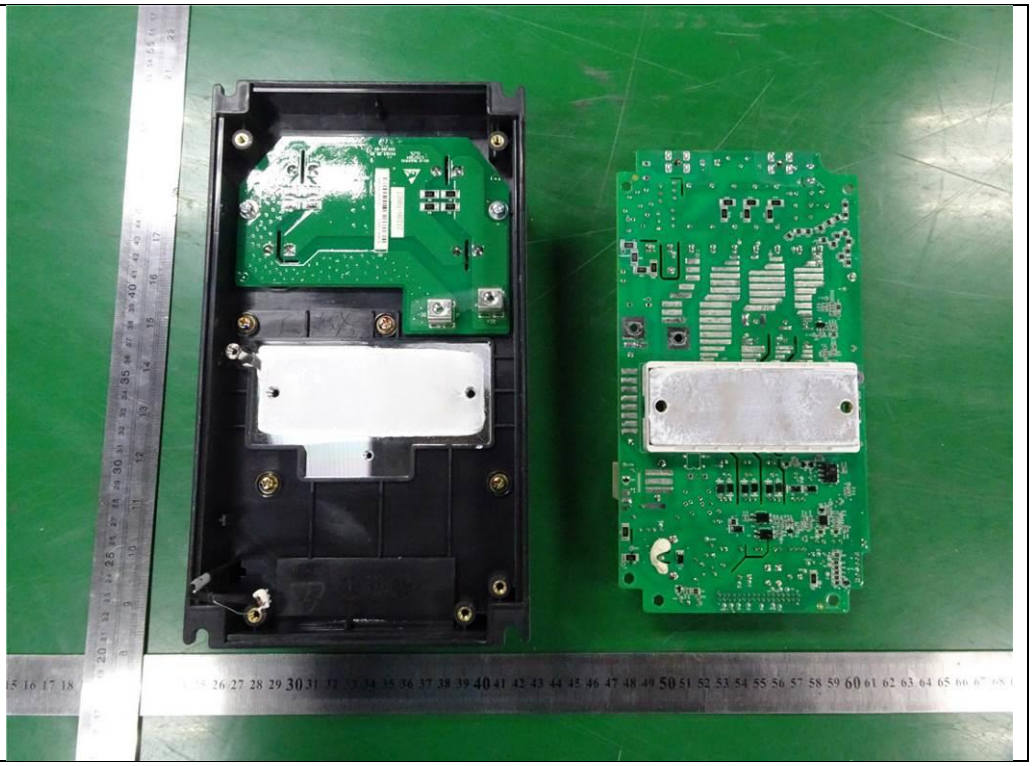
Details of: Internal view (Model GD20-5R5G-4)



Details of: Internal view (Model GD20-015G-4)

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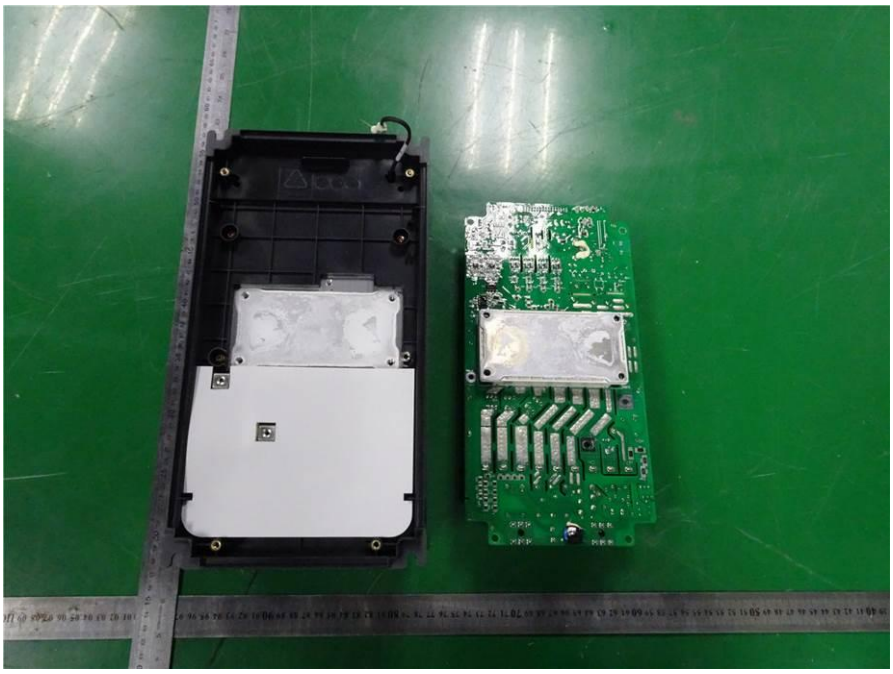
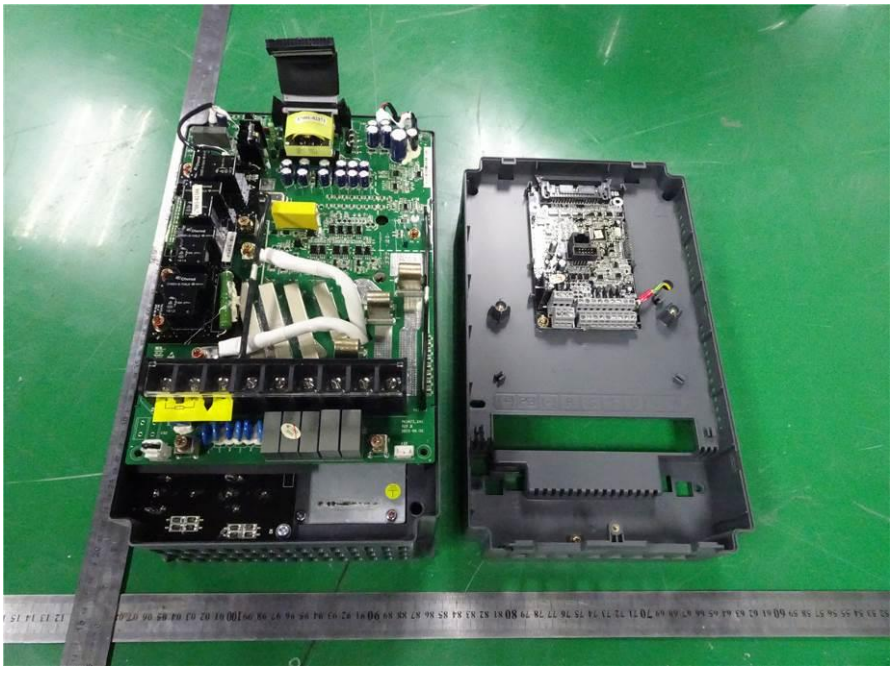
Details of: Internal view (Model GD20-015G-4)



Details of: Internal view (Model GD20-022G-4)



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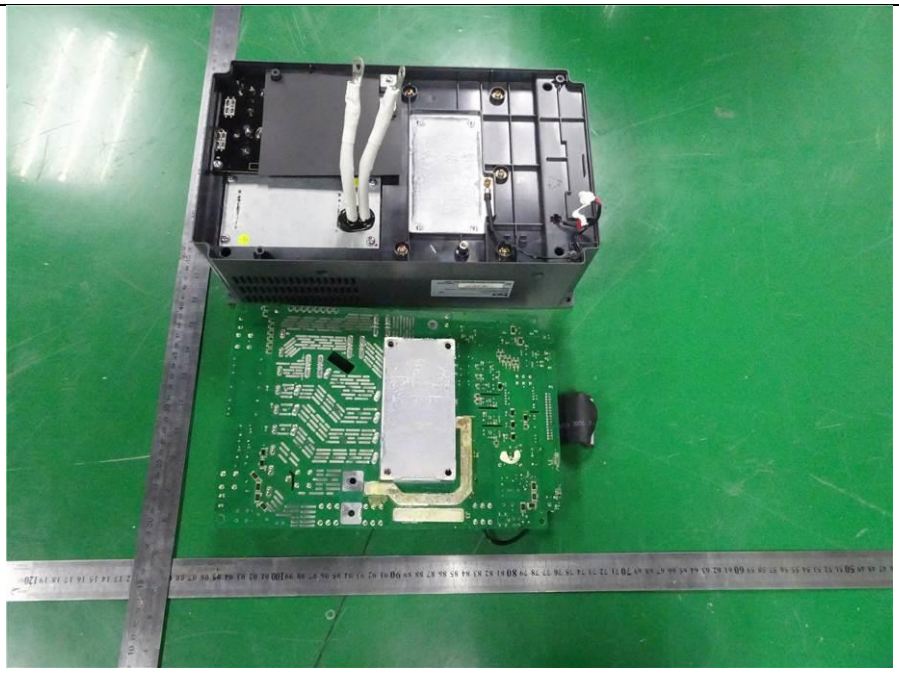
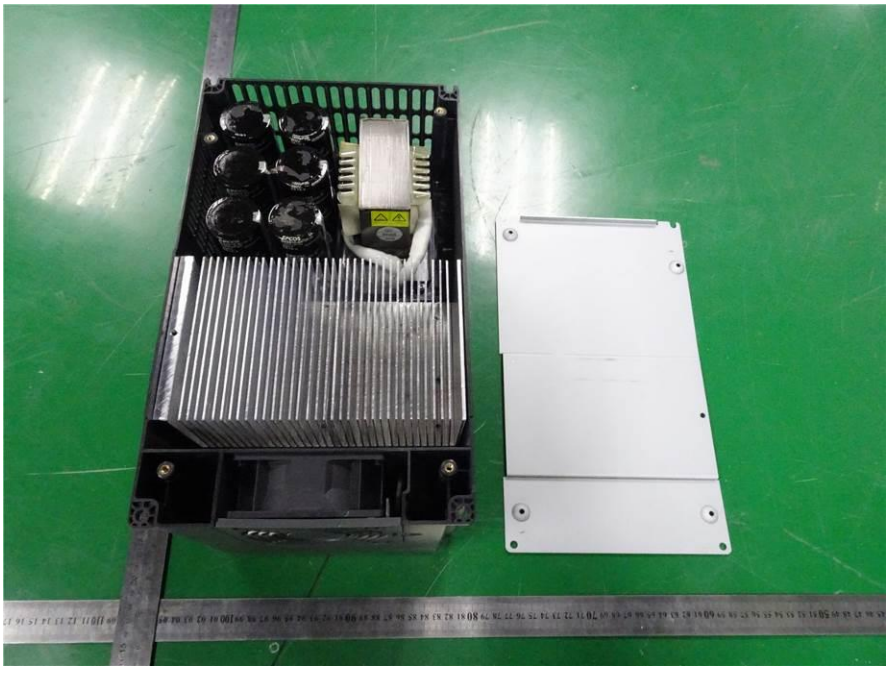
Details of: Internal view (Model GD20-022G-4)



Details of: Internal view (Model GD20-022G-4)



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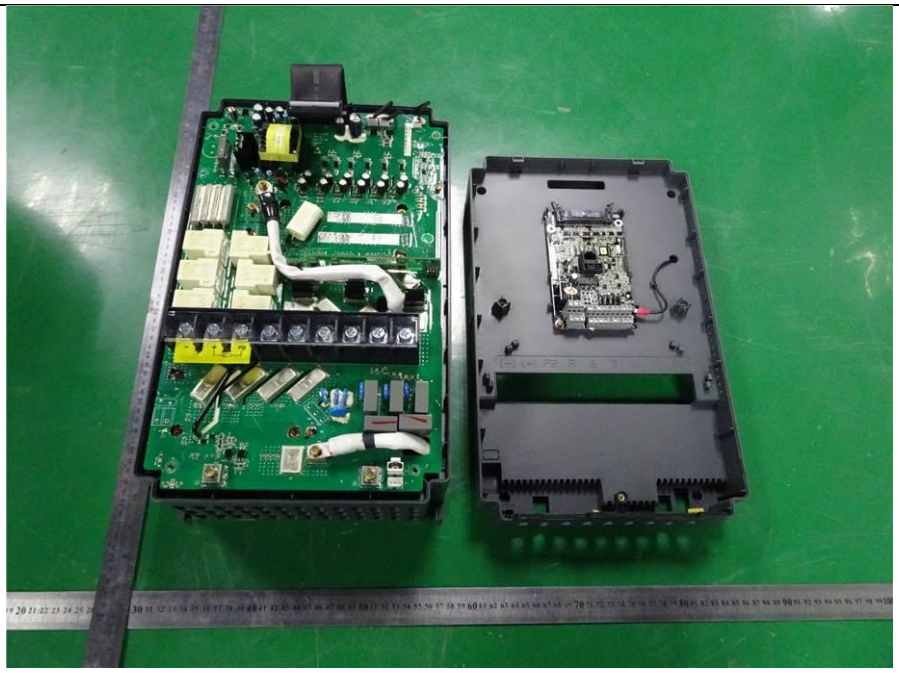
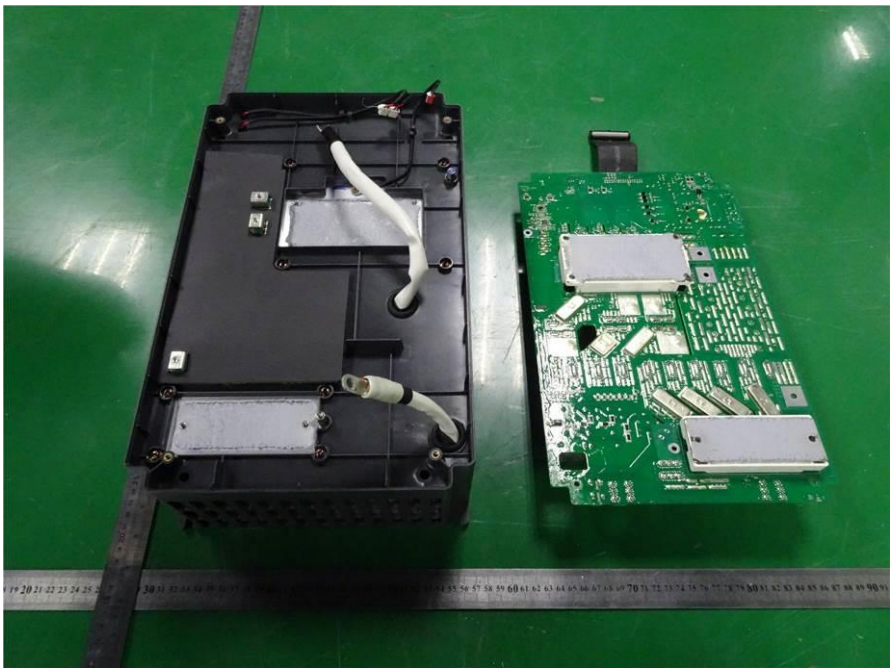
Details of: Internal view (Model GD20-037G-4)



Details of: Internal view (Model GD20-037G-4)



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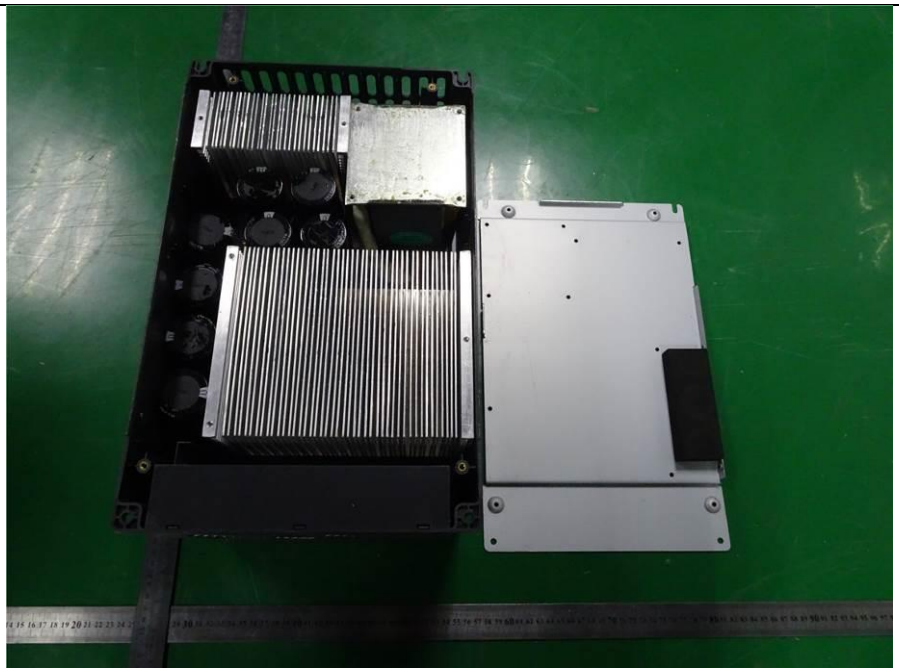
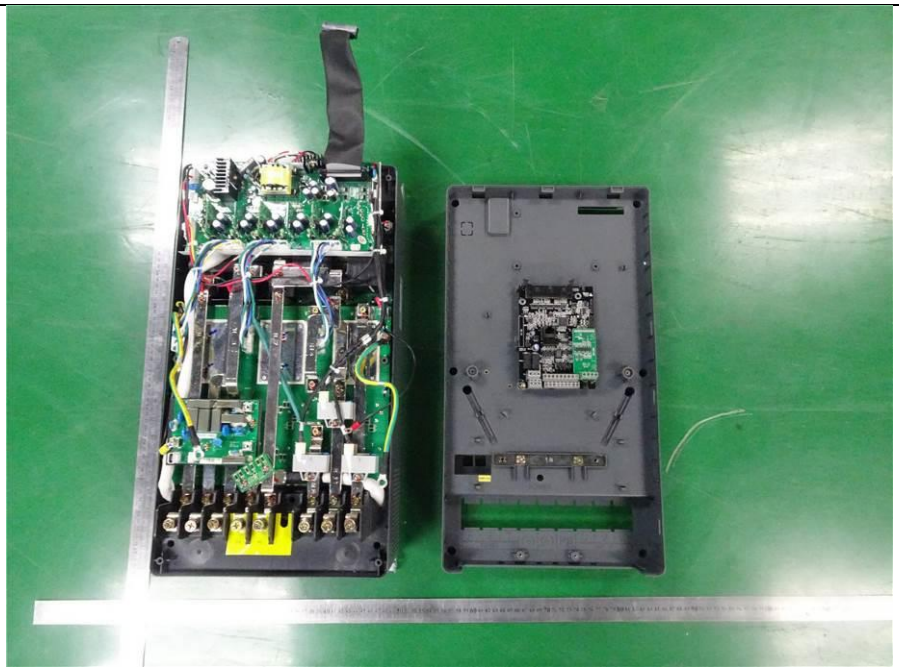
Details of: Internal view (Model GD20-037G-4)



Details of: Internal view (Model GD20-075G-4)



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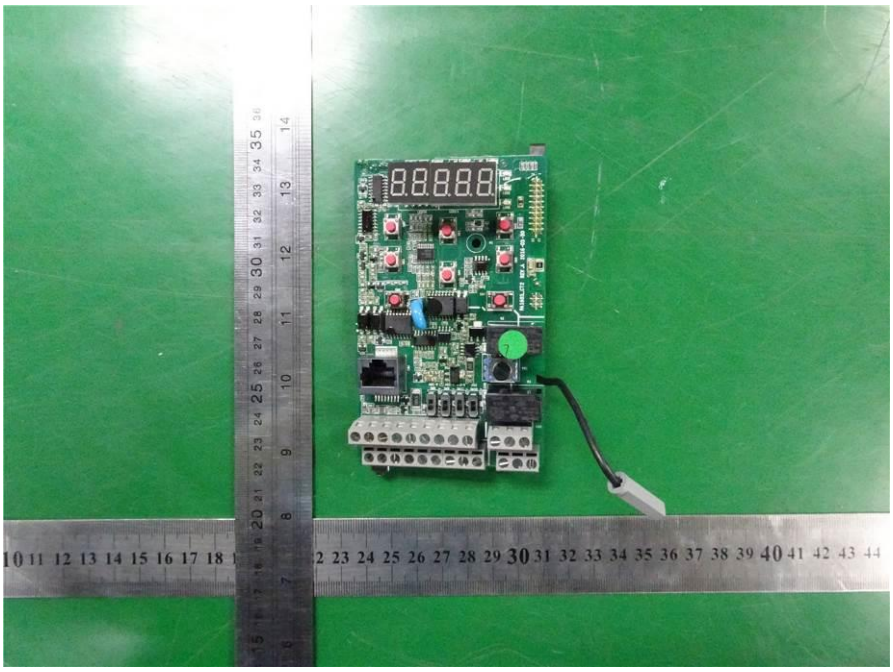
Details of: Internal view (Model GD20-110G-4)

Details of: Components side view of control board (the capacitor <4kW)



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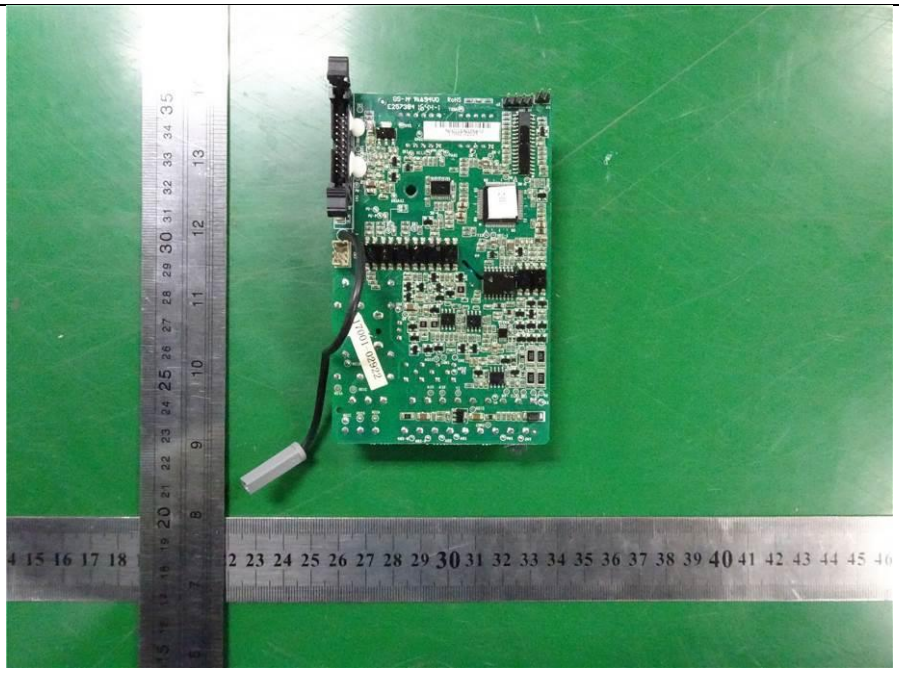
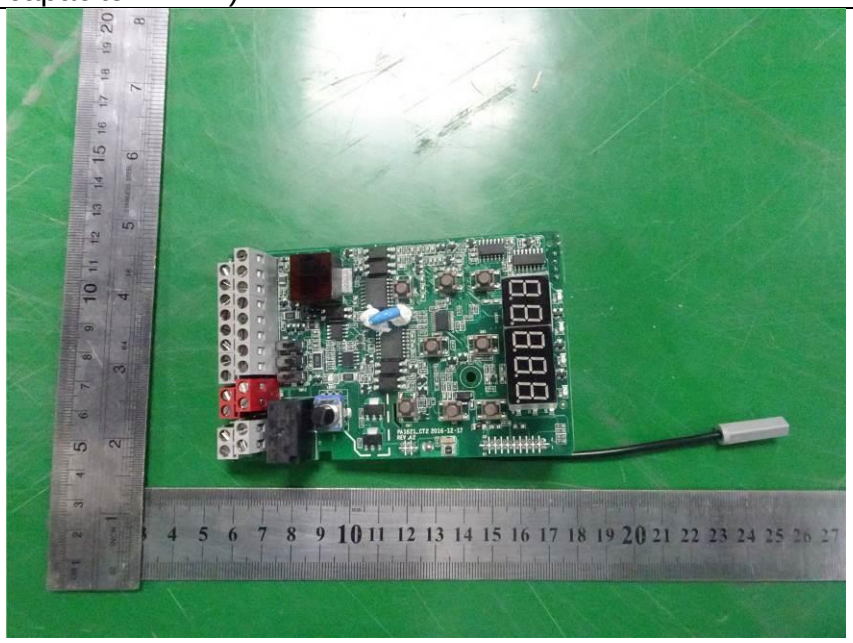
Details of: Tracking side view of control board (the capacitor <4kW)



Details of: Components side view of control board with STO function (the capacitor <4kW)



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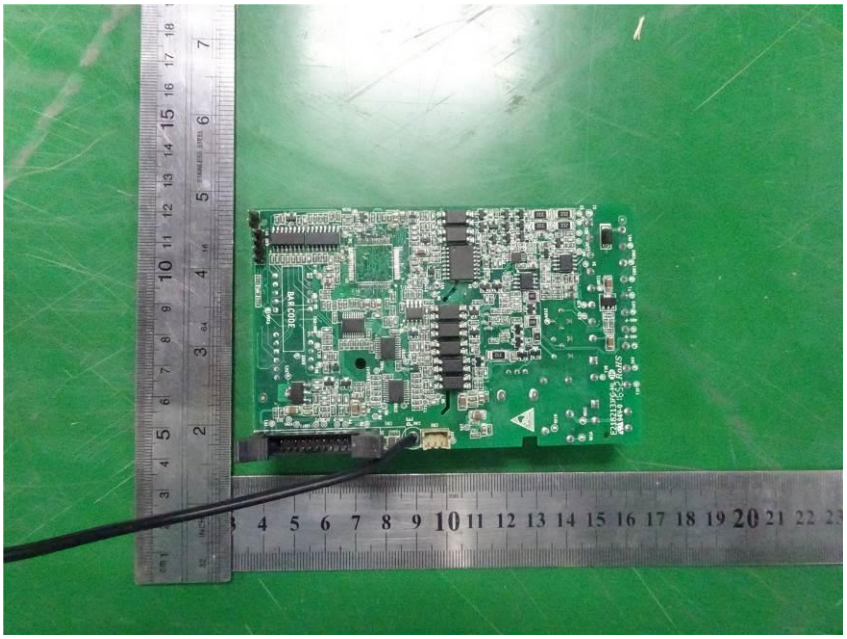
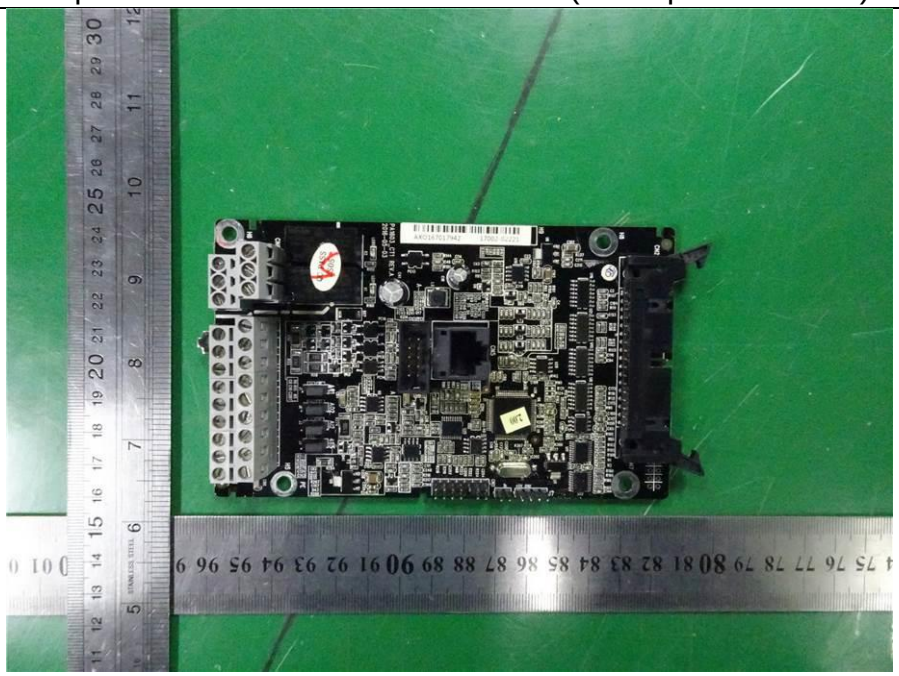
Details of: Tracking side view of control board with STO function (the capacitor <4kW)



Details of: Components side view of control board (the capacitor≥4kW)



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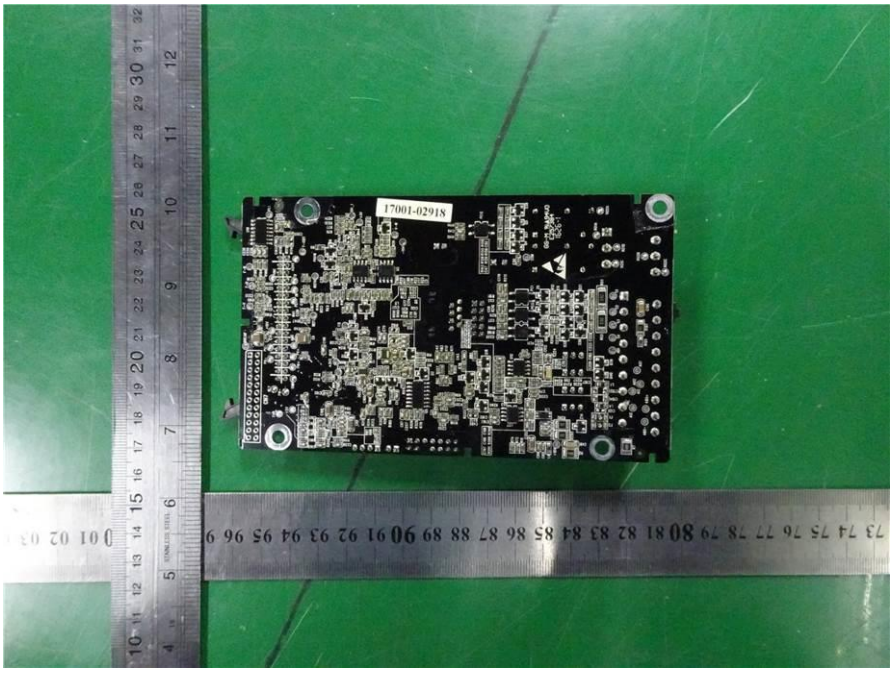
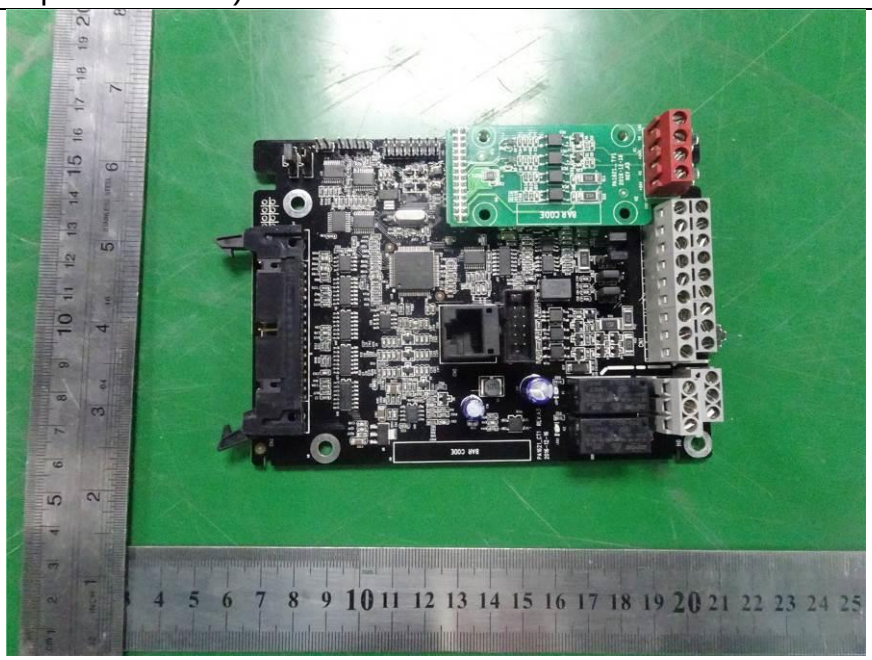
Details of: Tracking side view of control board (the capacitor≥4kW)



Details of: Components side view of control board with STO function (the capacitor≥4kW)



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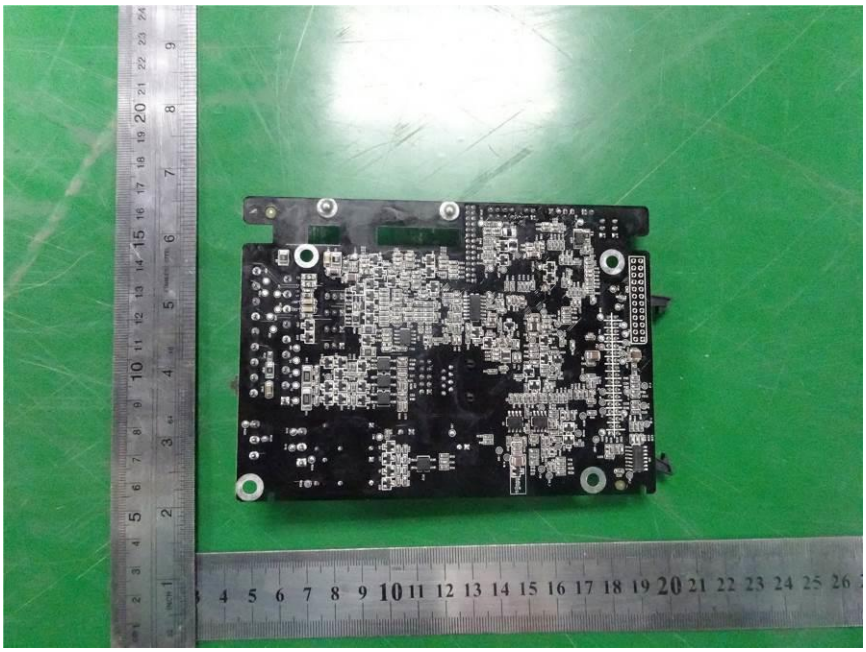
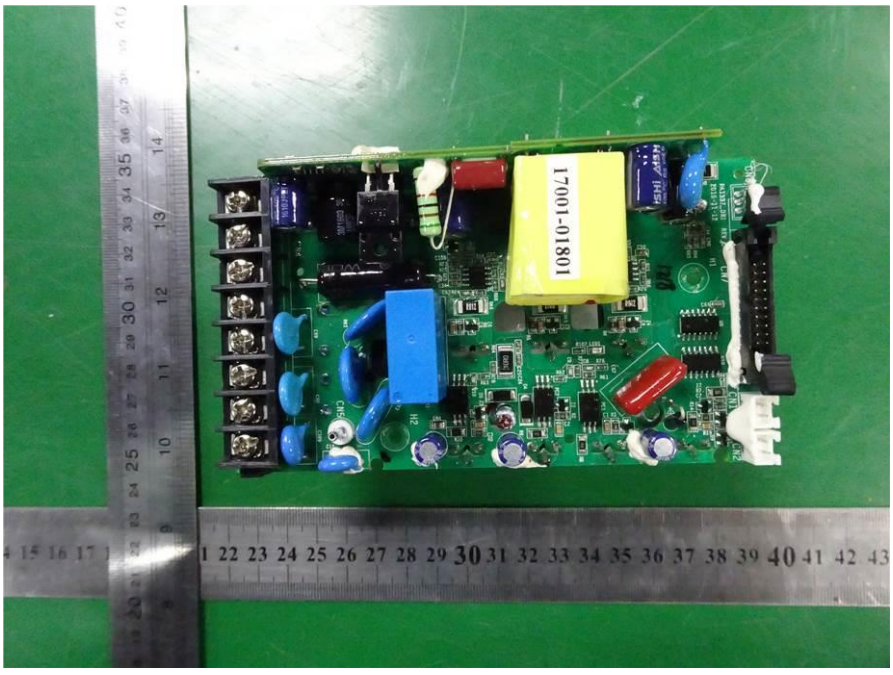
Details of: Tracking side view of control board with STO function (the capacitor≥ 4kW)



Details of: Components side view of Drive board (Model GD20-0R7G-S2)



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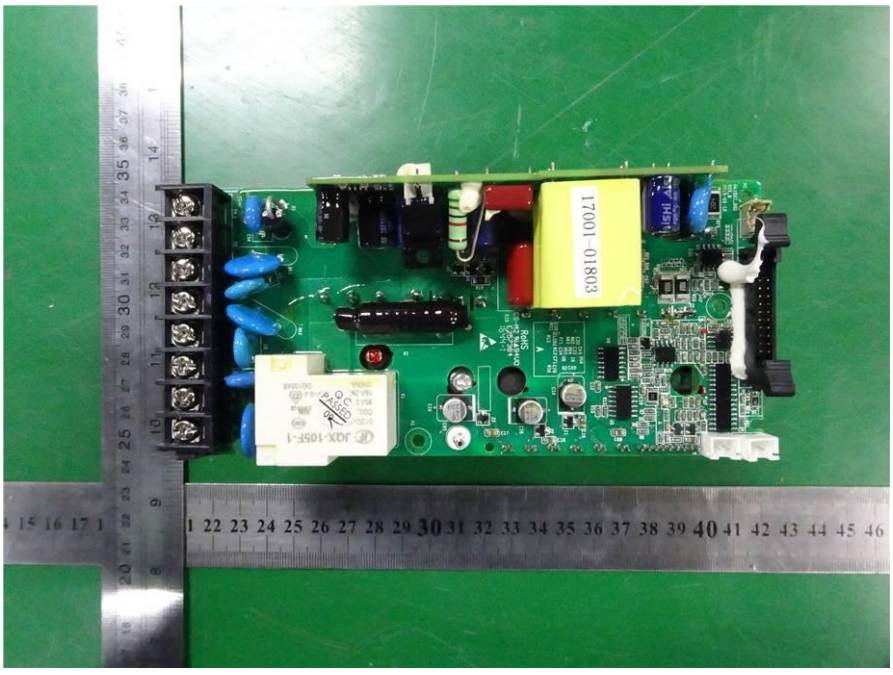
Details of: Tracking side view of Drive board (Model GD20-0R7G-S2)

Details of: Components side view of Drive board (Model GD20-2R2G-S2)



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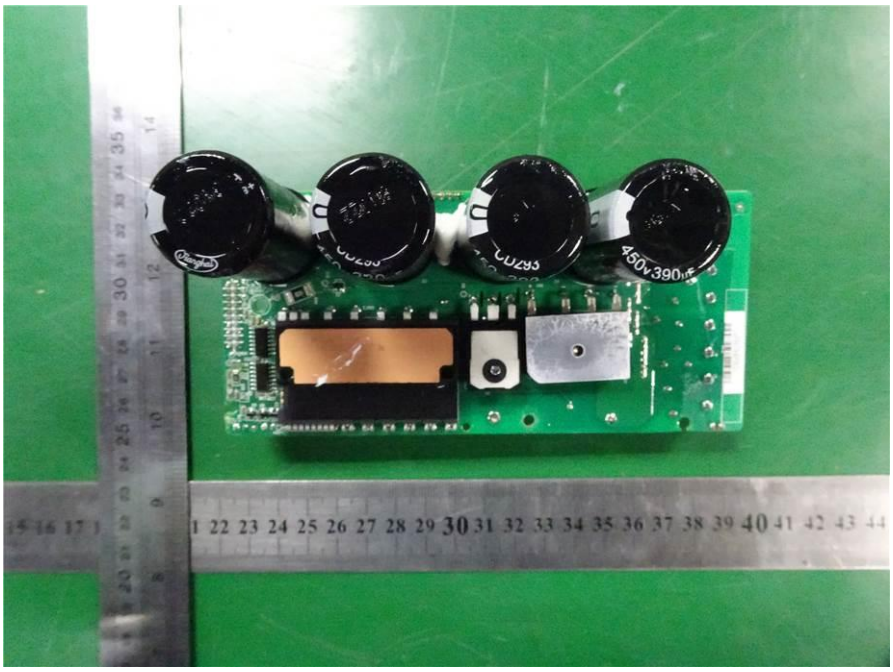
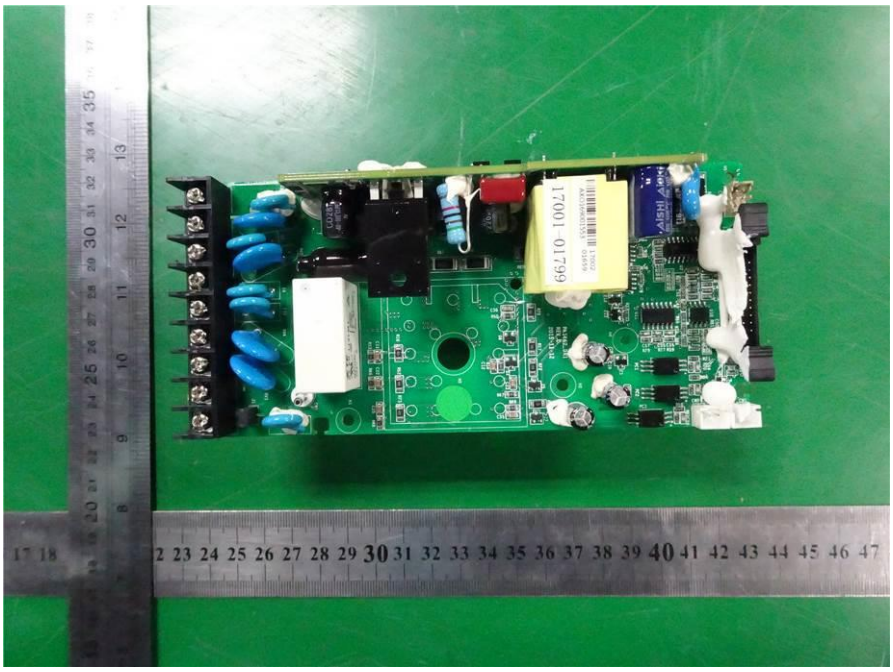
Details of: Tracking side view of Drive board (Model GD20-2R2G-S2)



Details of: Components side view of Drive board (Model GD20-2R2G-4)



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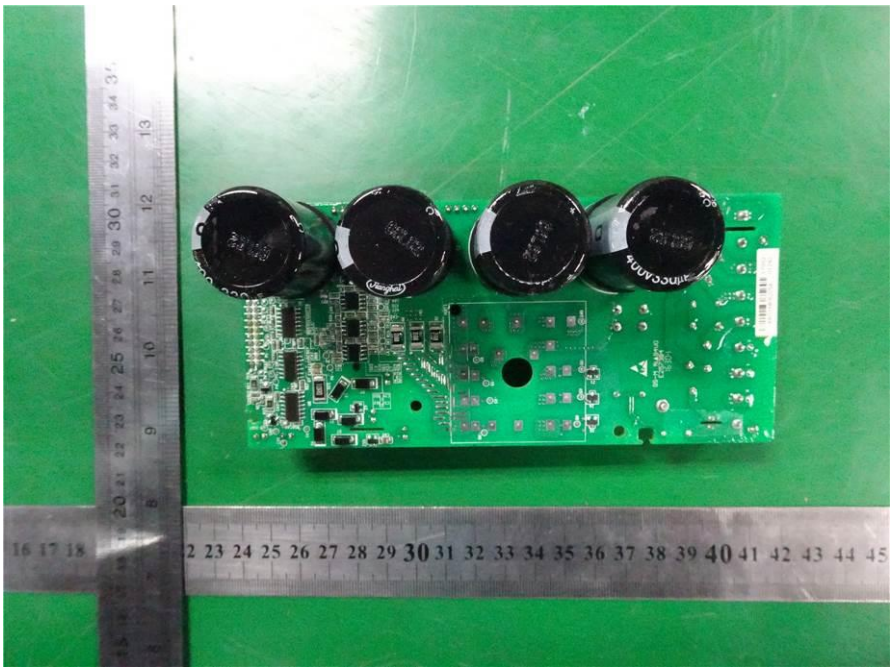
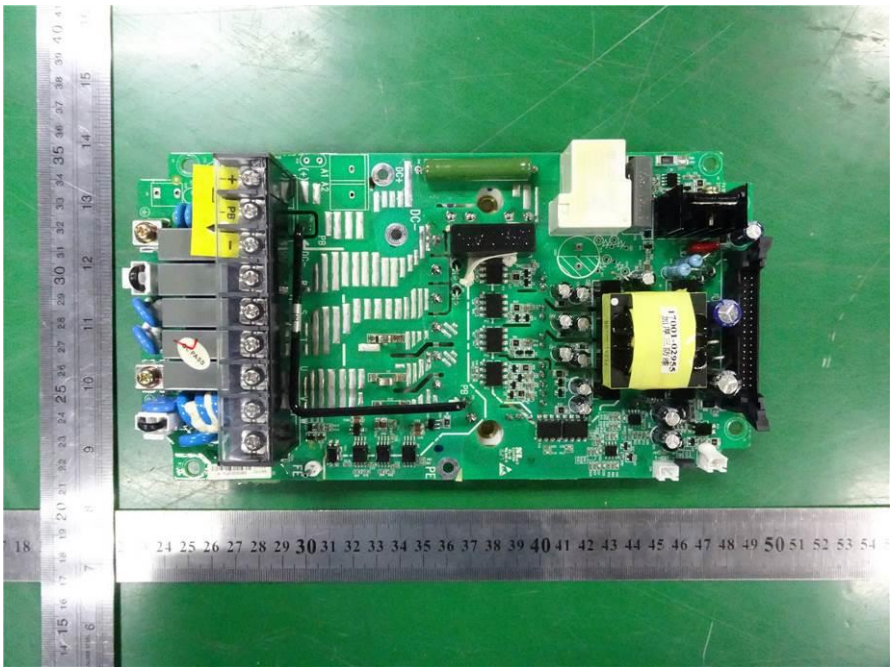
Details of: Tracking side view of Drive board (Model GD20-2R2G-4)



Details of: Components side view of Drive board (Model GD20-5R5G-4)



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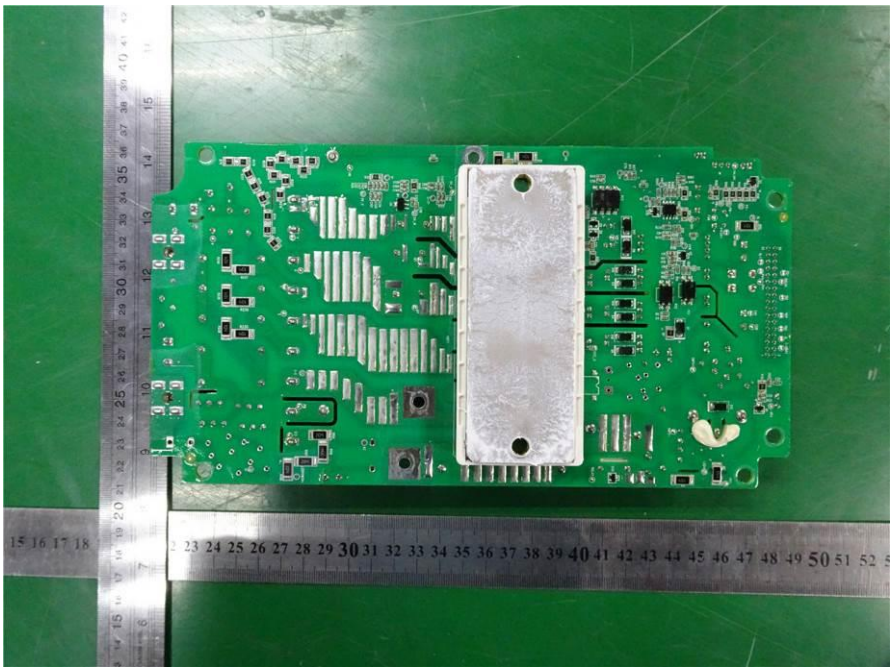
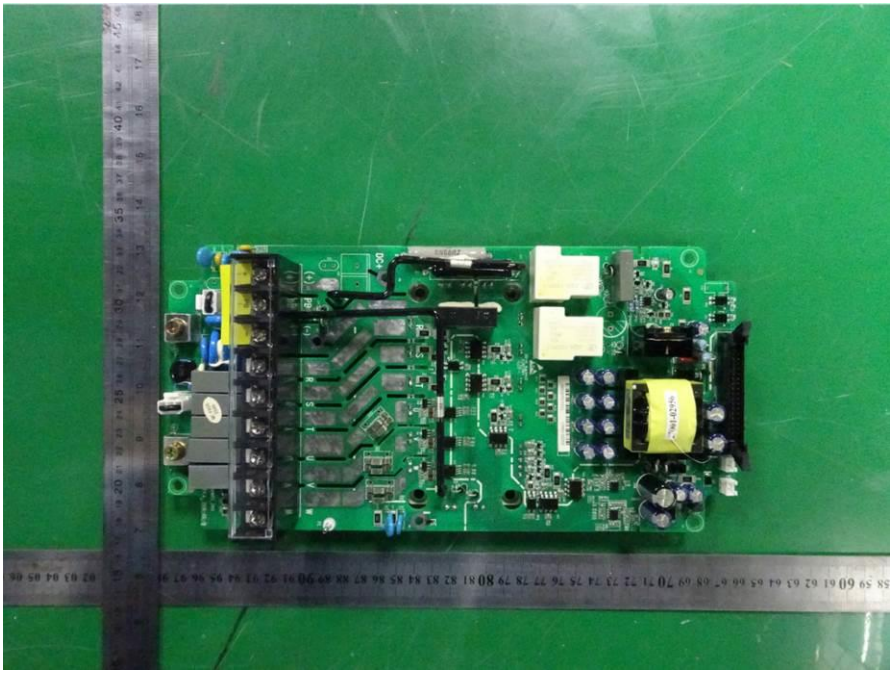
Details of: Tracking side view of Drive board (Model GD20-5R5G-4)



Details of: Components side view of Drive board (Model GD20-015G-4)



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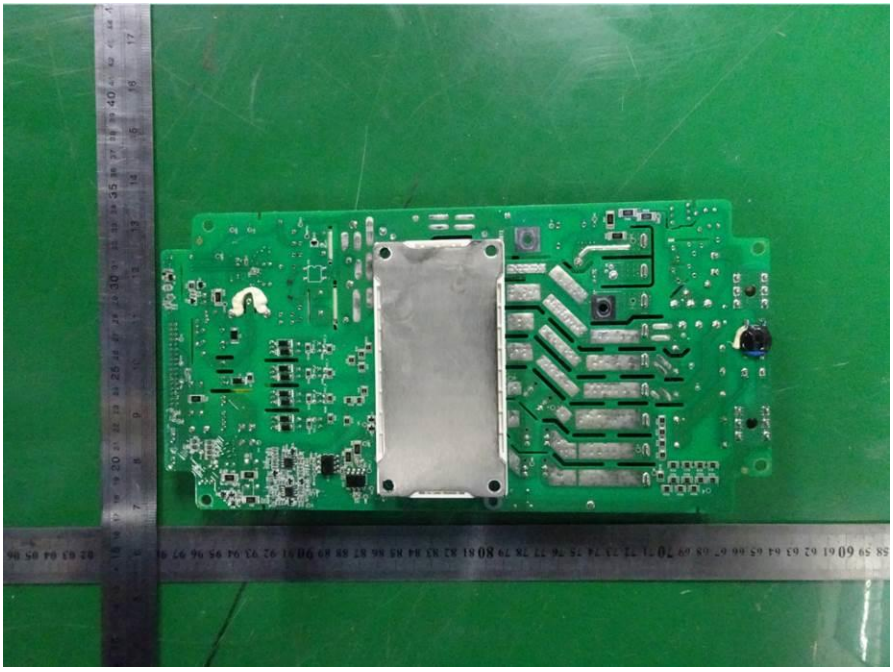
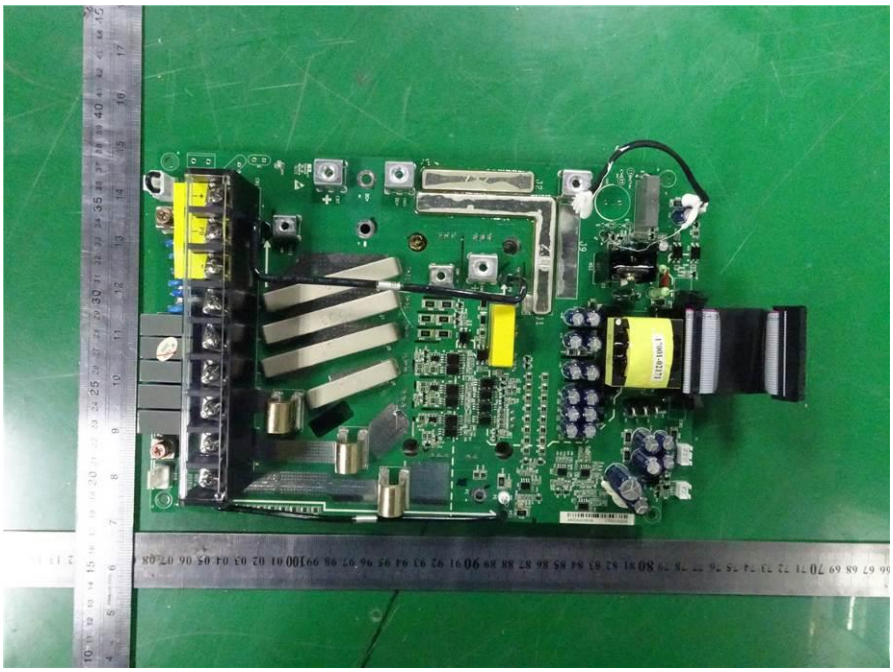
Details of: Tracking side view of Drive board (Model GD20-015G-4)



Details of: Components side view of Drive board (Model GD20-022G-4)



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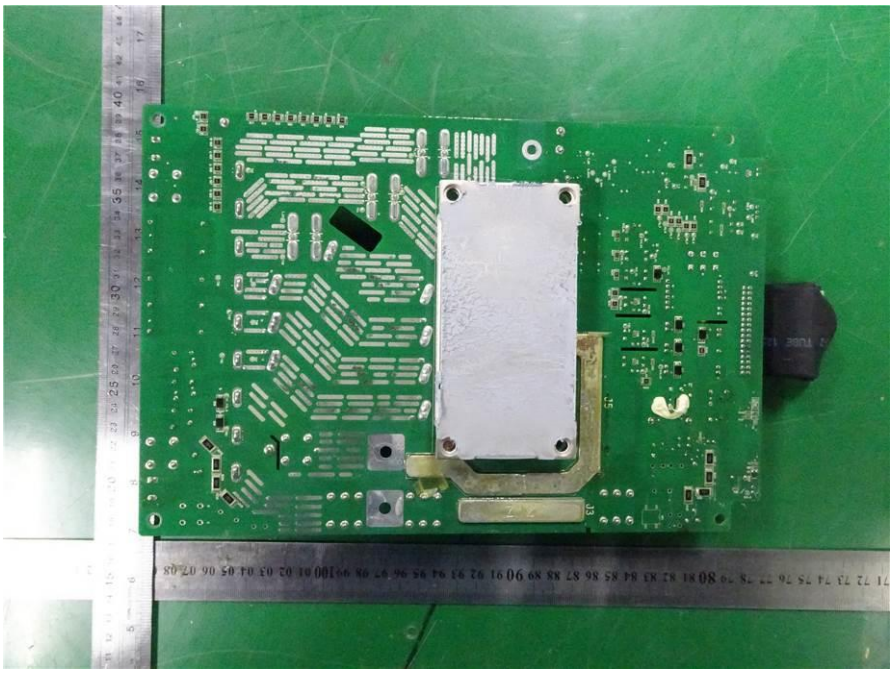
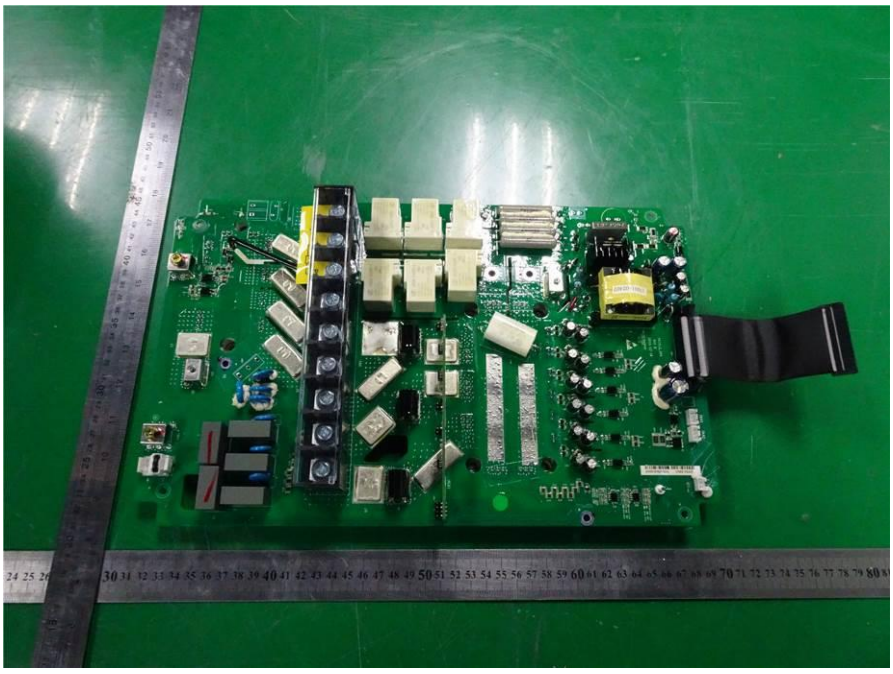
Details of: Tracking side view of Drive board (Model GD20-022G-4)



Details of: Components side view of Drive board (Model GD20-037G-4)



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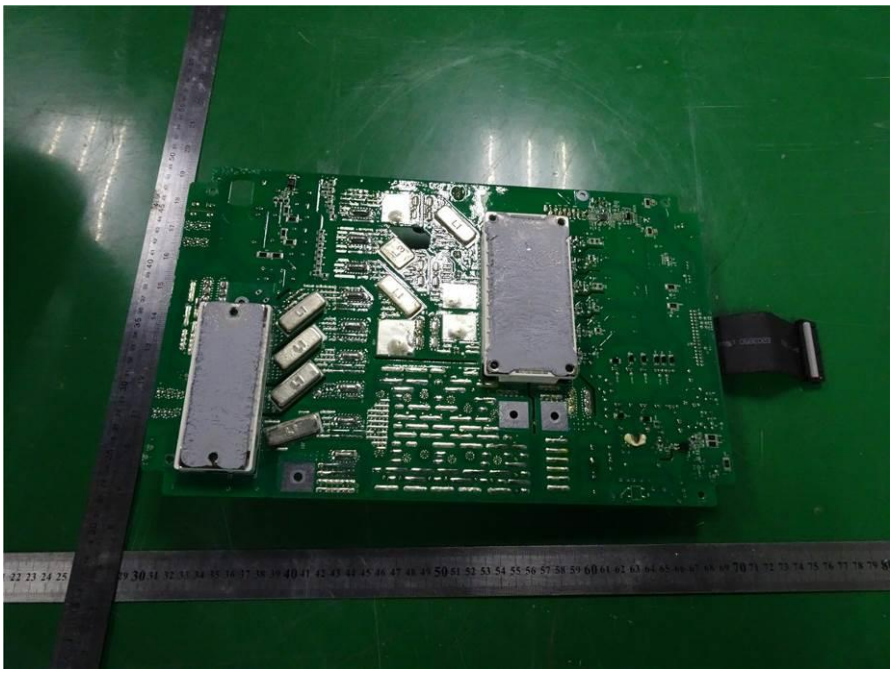
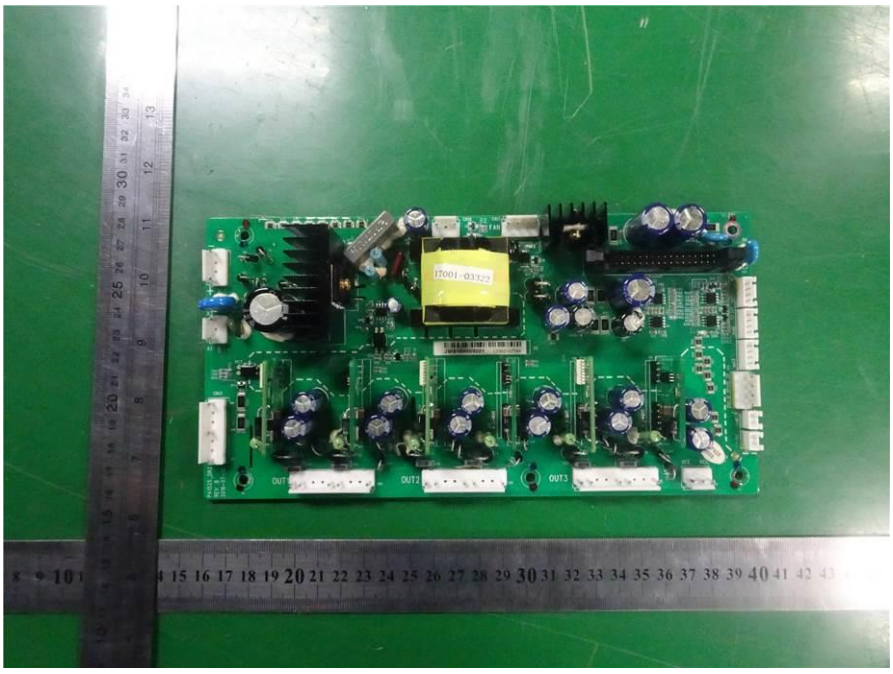
Details of: Tracking side view of Drive board (Model GD20-037G-4)



Details of: Components side view of Drive board (Model GD20-075G-4)



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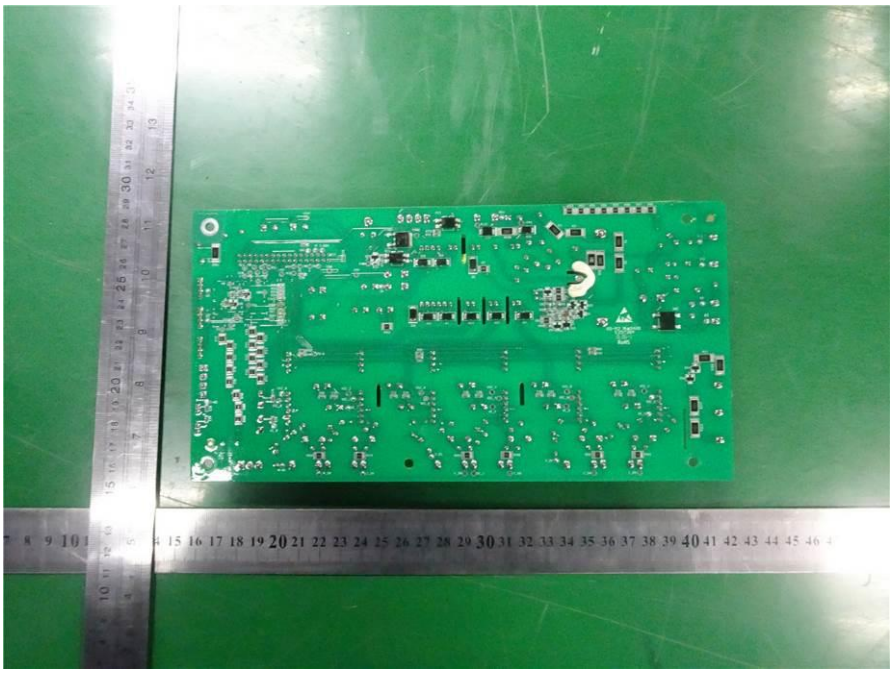
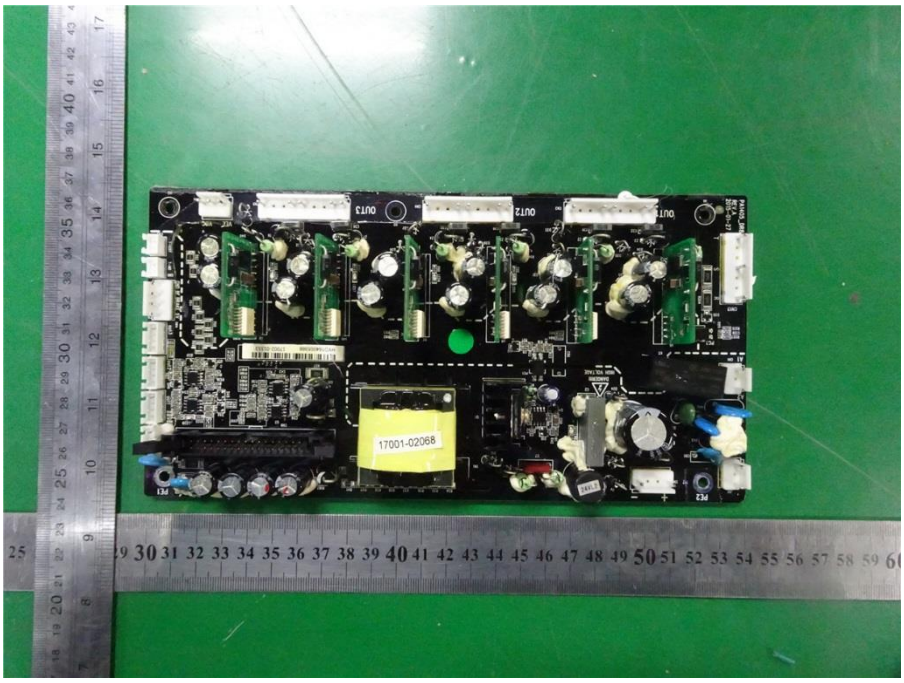
Details of: Tracking side view of Drive board (Model GD20-075G-4)



Details of: Components side view of Drive board (Model GD20-110G-4)



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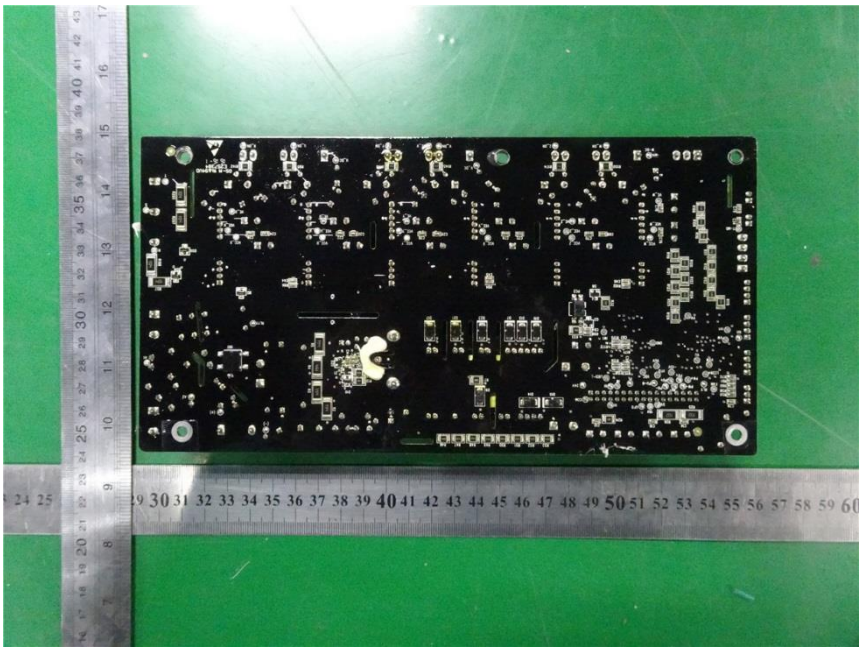
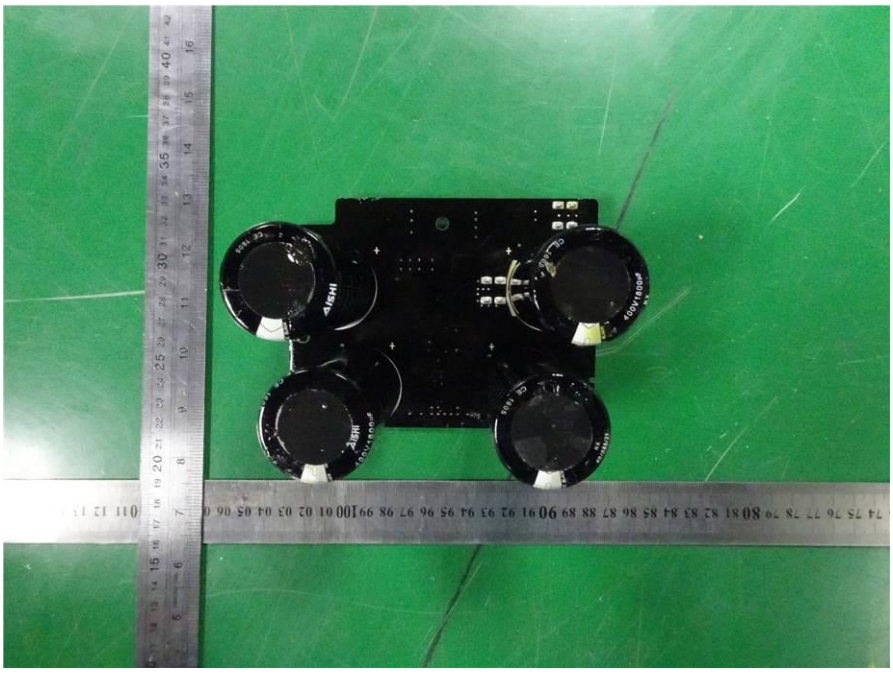
Details of: Tracking side view of Drive board (Model GD20-110G-4)



Details of: Components side view of Bus cap. board (Model GD20-015G-4)



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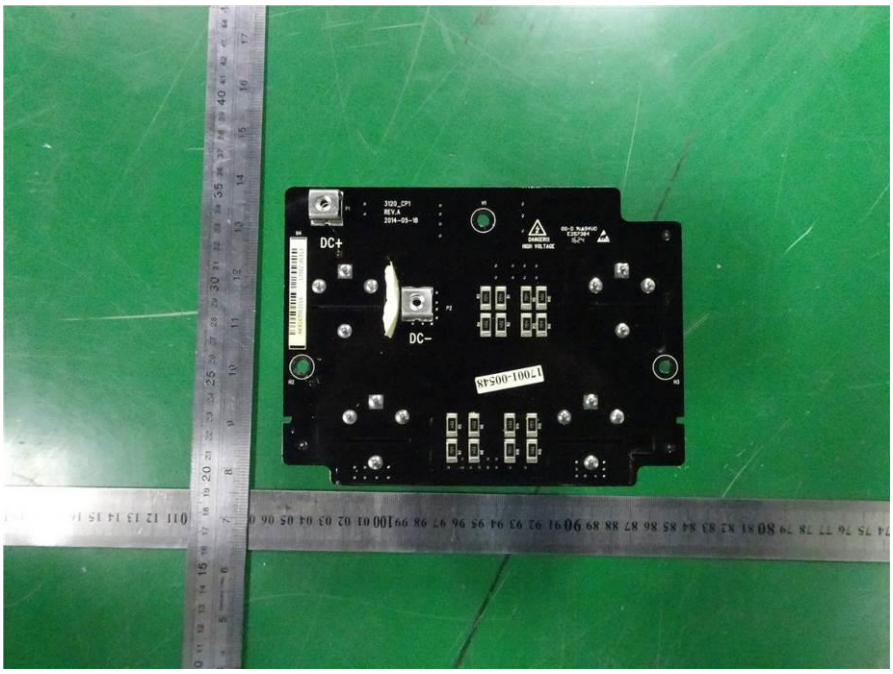
Details of: Tracking side view of Bus cap. board (Model GD20-015G-4)



Details of: Components side view of Bus cap. board (Model GD20-022G-4)

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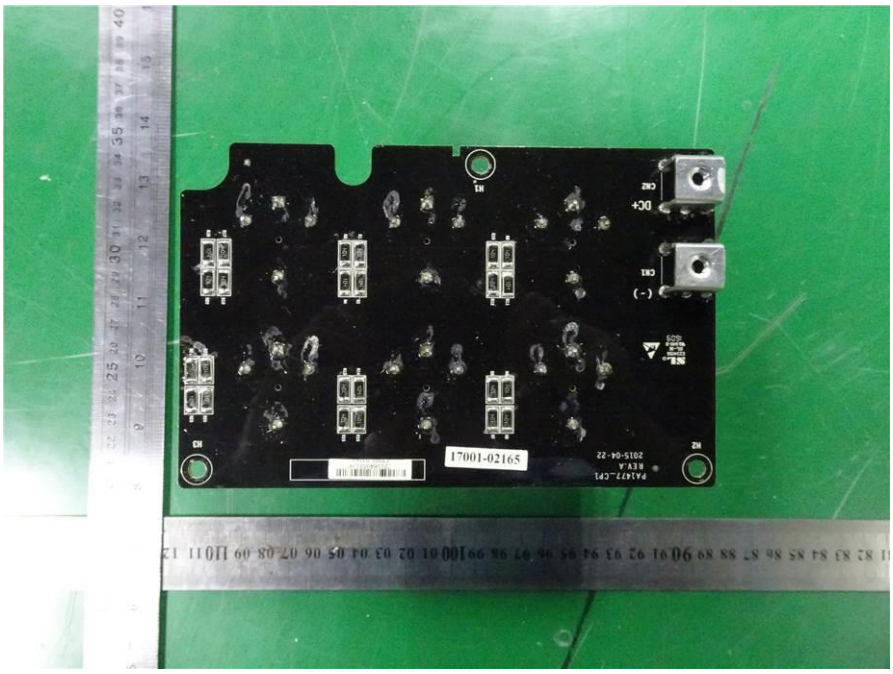
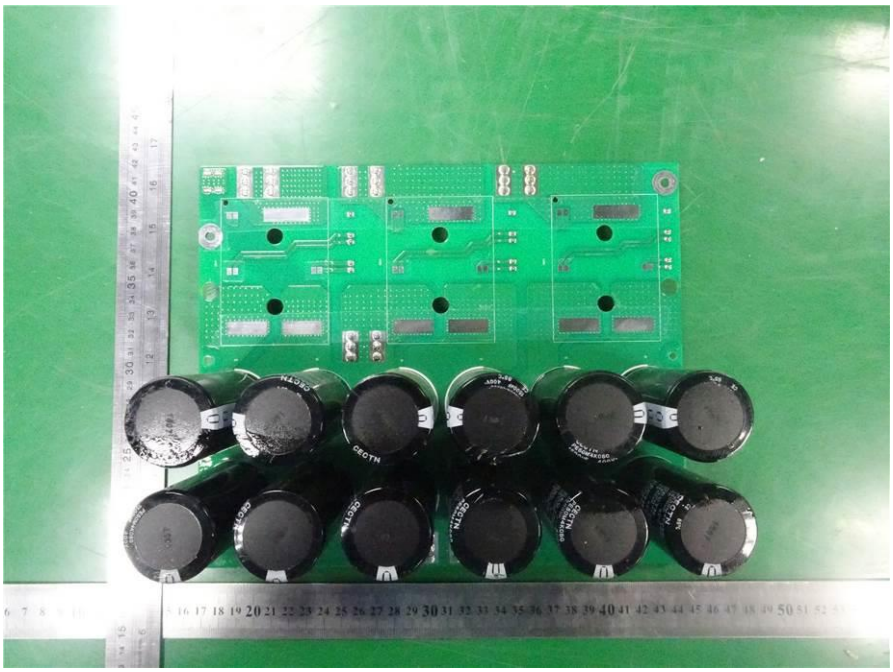
Details of: Tracking side view of Bus cap. board (Model GD20-022G-4)



Details of: Components side view of Bus cap. board (Model GD20-075G-4)



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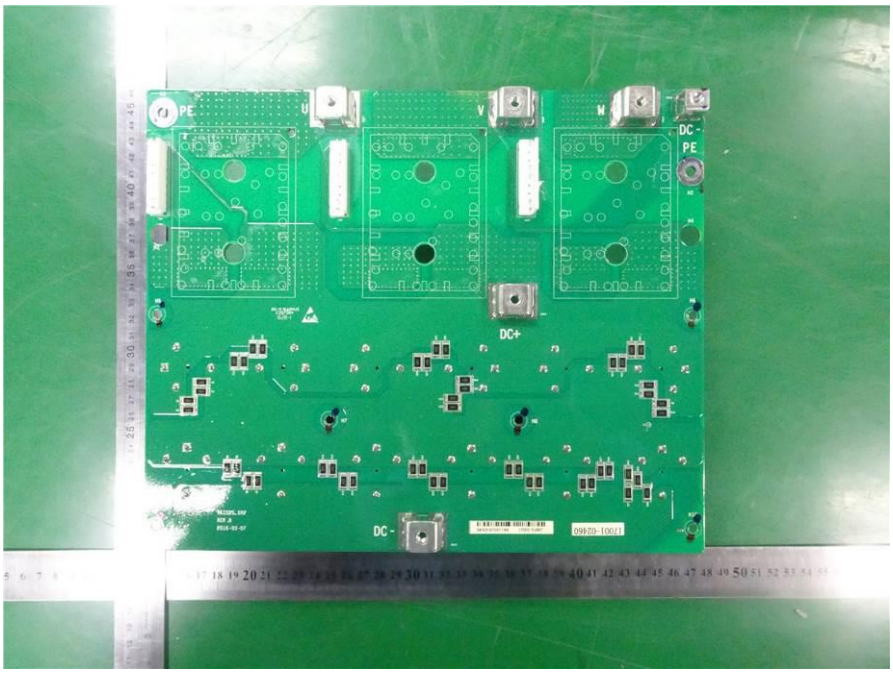
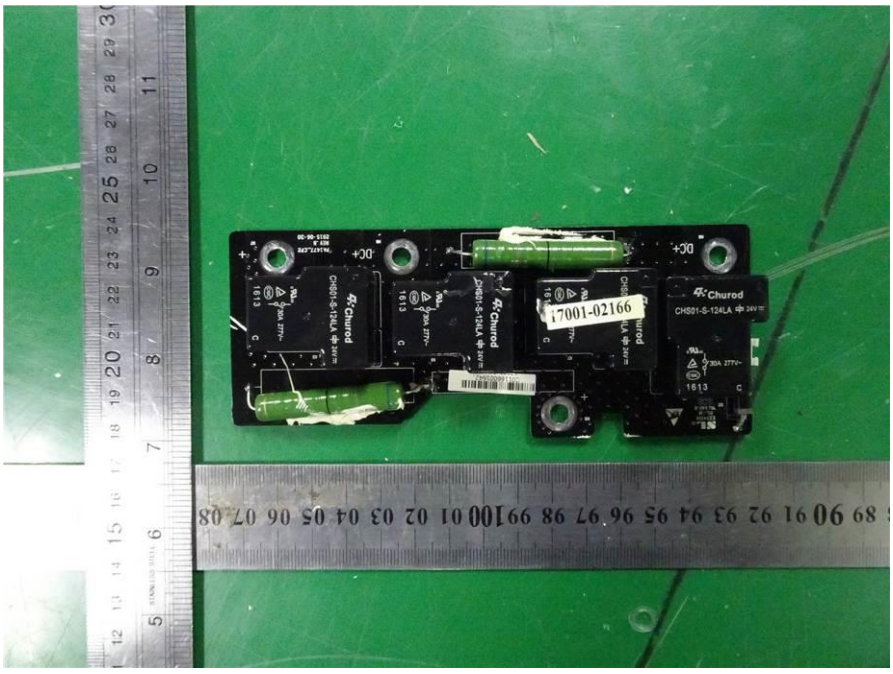
Details of: Tracking side view of Bus cap. board (Model GD20-075G-4)



Details of: Components side view of Relay board (Model GD20-022G-4)



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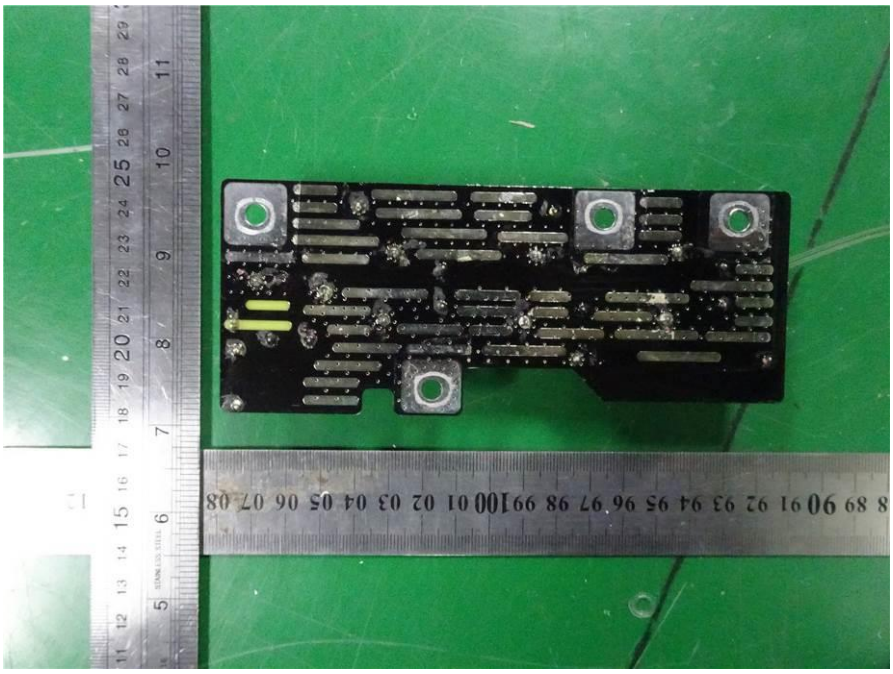
Details of: Tracking side view of Relay board (Model GD20-022G-4)



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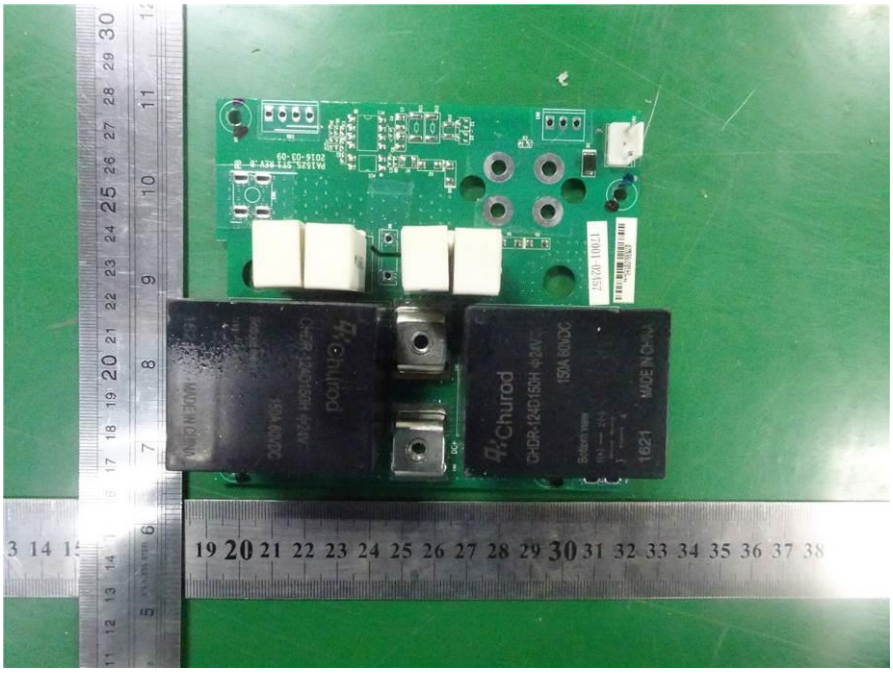

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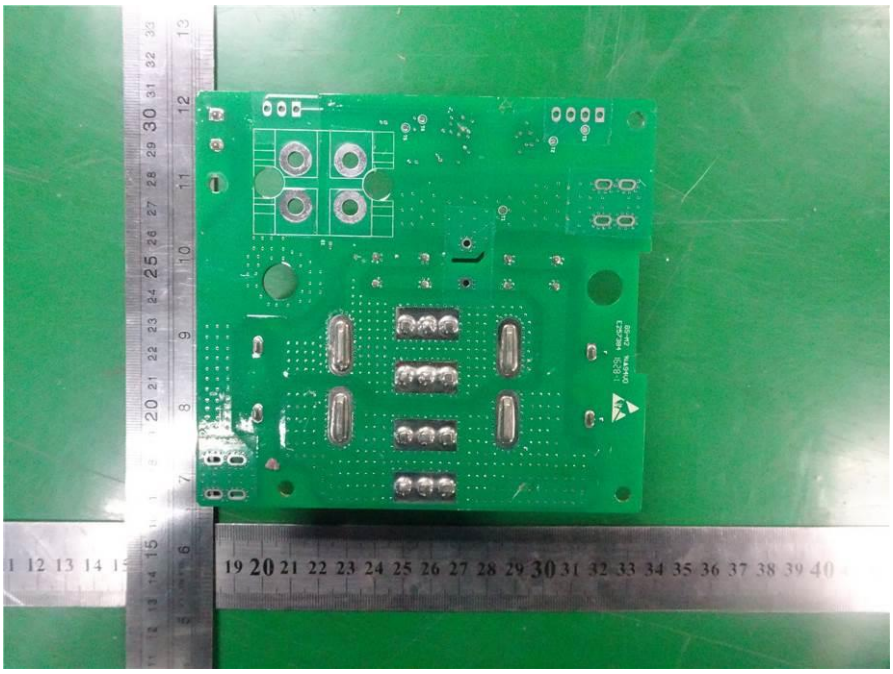
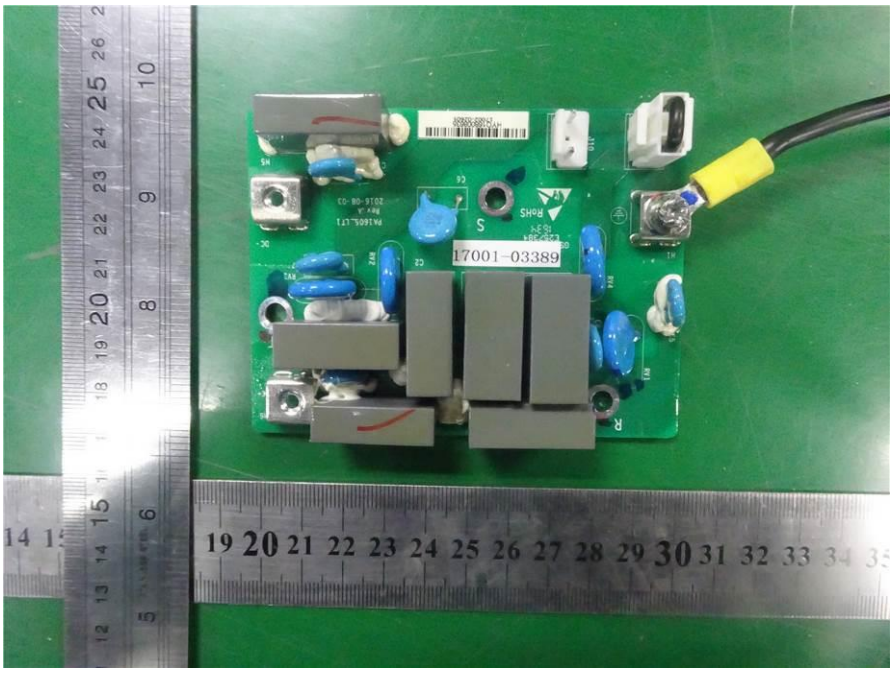
Details of: Tracking side view of Relay board (Model GD20-075G-4)



Details of: Components side view of EMI board (Model GD20-075G-4)



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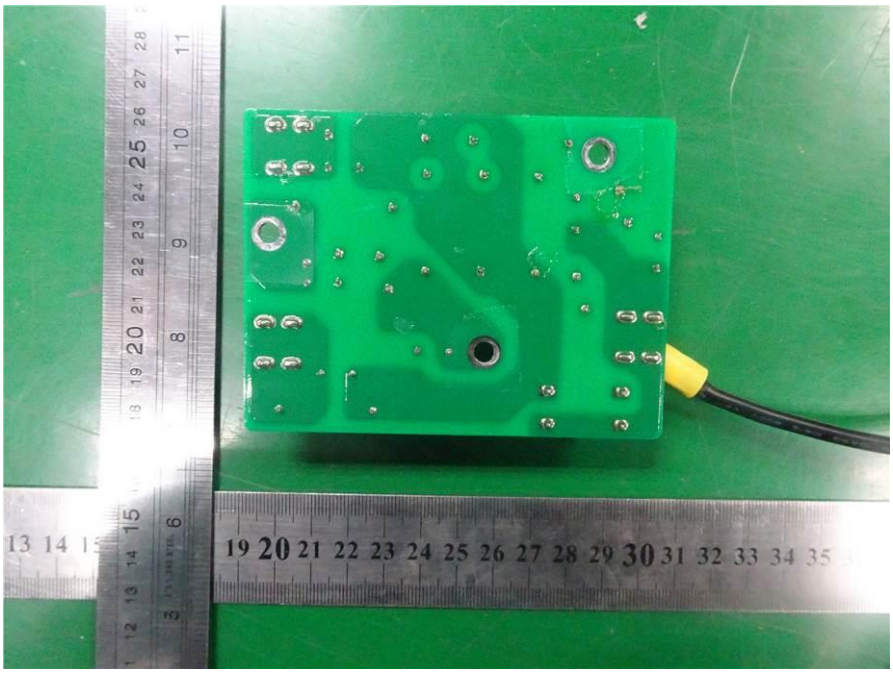
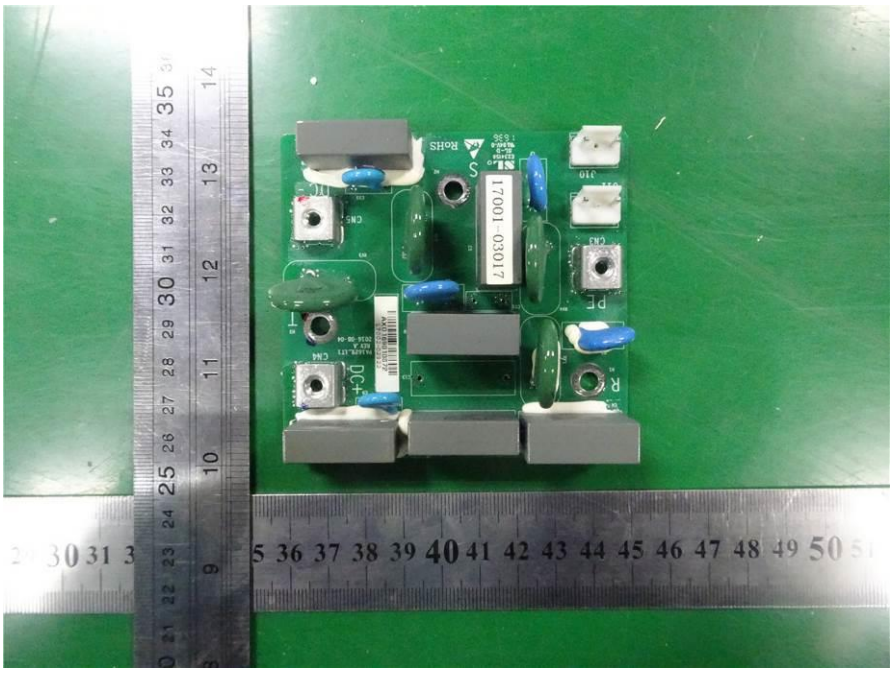
Details of: Tracking side view of EMI board (Model GD20-075G-4)



Details of: Components side view of EMI board (Model GD20-110G-4)



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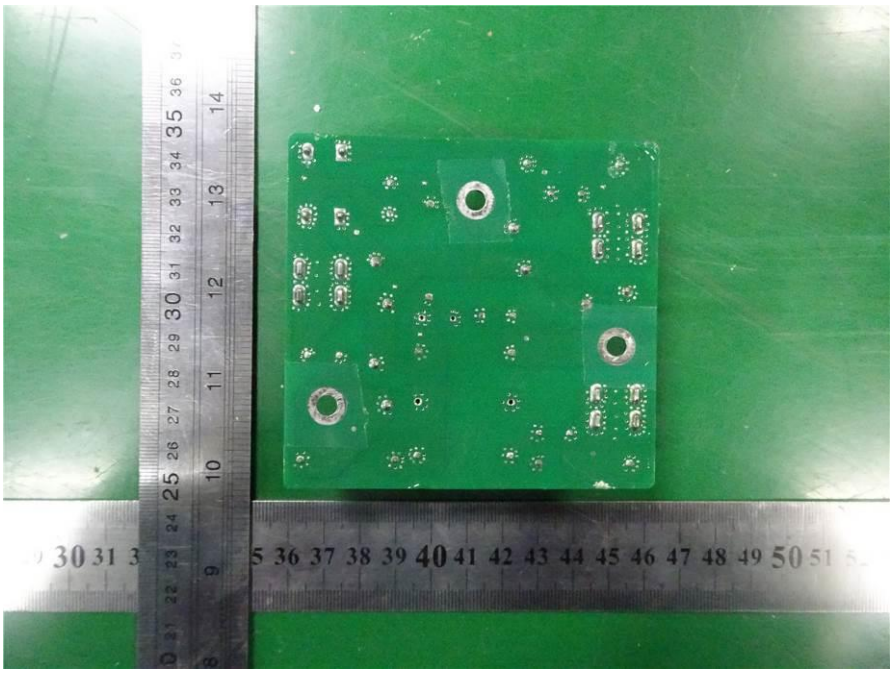
Details of: Tracking side view of EMI board (Model GD20-110G-4)



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