

Annex 1: DIAGRAMS OF TESTING
TEST REPORT
No.: 18-1-0006201T01

According to:
FCC Regulations
Part 15.107 & Part 15.109

for

Prodrive Technologies B.V.

Carrier Controller
CCS, UL + CCM-IO-ETH

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1. Measurement diagrams

1.1. MEASUREMENT DIAGRAMS

1.1. Conducted emissions on AC-mains (230V/50Hz)

1.1.1. Part 15B

1.01

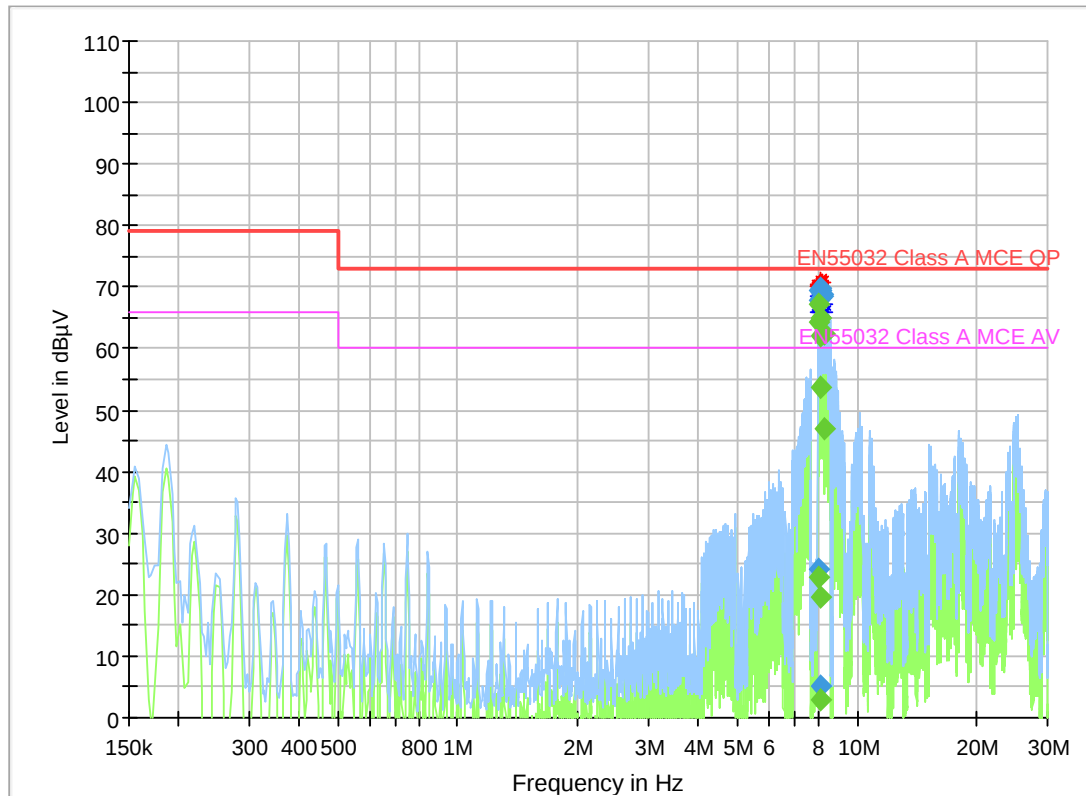
Common Information

Test Description:	Date: 21.07.2017
Test Site & Location:	Conducted Voltage Measurement Class B
Test Specification:	Conducted Emission, CETECOM GmbH Düsseldorf
Operating Mode:	FCC 15.107
Measured on line:	Continuous Operation
Diagram details:	N, L1
Environmental Conditions:	Shows the peak and average values as a sum of measured ports in max hold mode
Operator:	Humidity: 40%rH; Temperature: 24.8°C; Pressure: 1014mbar
	A. Ueberbach

EUT Information

Manufacturer:	Prodrive Technologies
EuT:	CCS-10; CCM-10-ETH-UL
HW Version:	6752-1601-4100; 6752-1500-0102
SW Version:	R07
Serial Number:	17-13-1601-4100; 17-16-008-103
Power Supply:	230 V 50Hz
Comments:	External power supply used for supply of DC 100 V Voltage of EUT

Full Spectrum



Remark: Upper limit line is QPeak, lower limit line shows Average limit. The Scan was performed with Peak & Average Detector of the receiver. Peak result is below Average Limit. No counter measurement necessary. – Diagram shows maximum result of Phase N & L1 measurement.

Final_Result

Frequency (MHz)	QuasiPeak (dBμV)	Average (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	PE	Corr. (dB)
7.971000	---	22.97	60.00	37.03	1000.0	9.000	L1	GND	0.4
7.971000	24.27	---	73.00	48.73	1000.0	9.000	L1	GND	0.4
7.989000	---	64.24	60.00	-4.24	1000.0	9.000	L1	GND	0.4
7.992000	67.78	---	73.00	5.22	1000.0	9.000	L1	GND	0.4
8.028000	69.37	---	73.00	3.63	1000.0	9.000	L1	GND	0.4
8.031000	---	67.12	60.00	-7.12	1000.0	9.000	L1	GND	0.4
8.049000	---	19.52	60.00	40.48	1000.0	9.000	L1	GND	0.4
8.052000	69.33	---	73.00	3.67	1000.0	9.000	L1	GND	0.4
8.073000	---	65.04	60.00	-5.04	1000.0	9.000	L1	GND	0.4
8.073000	68.18	---	73.00	4.82	1000.0	9.000	L1	GND	0.4
8.091000	5.17	---	73.00	67.83	1000.0	9.000	L1	GND	0.4
8.091000	---	62.07	60.00	-2.07	1000.0	9.000	L1	GND	0.4
8.109000	69.50	---	73.00	3.50	1000.0	9.000	L1	GND	0.4
8.109000	---	2.76	60.00	57.24	1000.0	9.000	L1	GND	0.4
8.130000	69.82	---	73.00	3.18	1000.0	9.000	L1	GND	0.4
8.130000	---	53.77	60.00	6.23	1000.0	9.000	L1	GND	0.4
8.151000	68.64	---	73.00	4.36	1000.0	9.000	L1	GND	0.4
8.172000	68.91	---	73.00	4.09	1000.0	9.000	L1	GND	0.4
8.232000	---	46.85	60.00	13.15	1000.0	9.000	L1	GND	0.4
8.253000	---	62.31	60.00	-2.31	1000.0	9.000	L1	GND	0.4

No further conspicuous frequency found – margin to limit > 10 dB (Peak)

1.2. Radiated emissions in the frequency range 30 to 1000 MHz

1.2.1. Part 15B

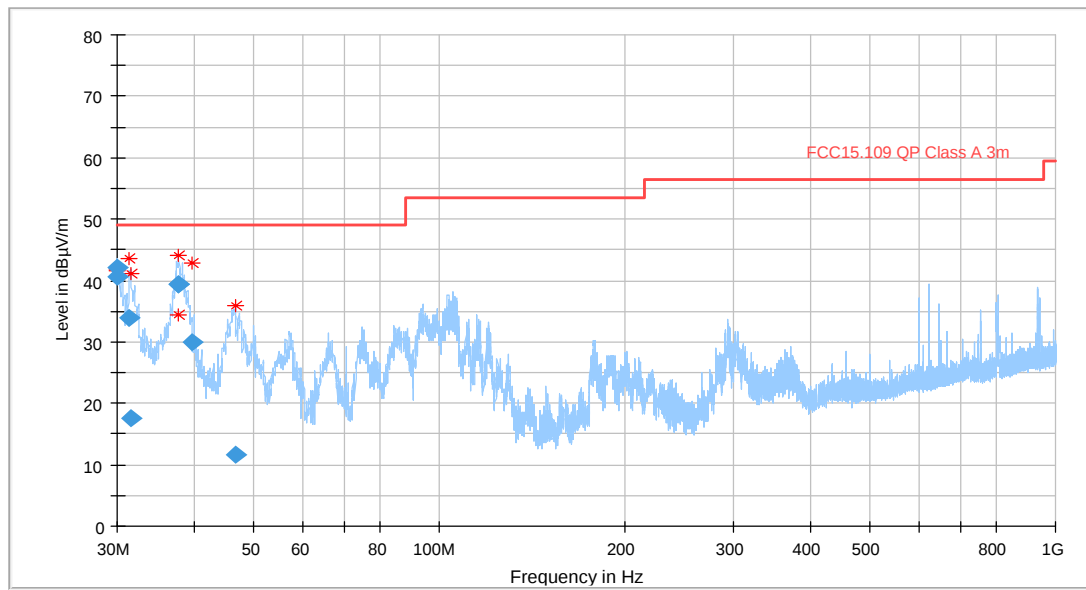
Diagram No. 3.01

Date:	01.08.2018
Test description:	Electric Field Strength Measurement
Test site and distance:	Semi Anechoic Chamber 2 (SAC5) with 3m measurement distance
Test location:	CETECOM GmbH Düsseldorf
Version of Testsoftware:	EMC32 V10.0.0
Test specification:	FCC15.109, class B; RSS-Gen.: Issue 4
Distance correction:	not used
Used filter:	none
Operating Mode:	Continuous Operation
Measured sides of EUT:	front, right, rear, left
Environmental conditions:	Humidity: 43%rH; Temperature: 22°C
Operator:	AUe

EUT Information

Manufacturer:	Prodrive Technologies B.V.
Model:	Carrier Control Master + Carrier Control Slave
Type:	CCM-IO-ETH + CCL, UL
HW version:	6752-1500-0103 + 6752-1600-1500
SW version:	CPU: 6752-1400-2608, uC: 6752-1400-2912
Serial number:	18-08-858-611 + 18-10-A02-FW3
Connected Interfaces:	Motor, Antenna, LAN cable
Power Supply:	100VDC
Comments:	with SEW Antenna

Full Spectrum



Remark: Red marker = Peak result, Blue marker = QPeak result – Diagram shows maximum result of horizontal and vertical antenna polarisation

Final_Result

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
30.000000	42.03	49.00	6.97	120.000	104.0	V	222.0	19.9
30.056000	40.65	49.00	8.35	120.000	104.0	V	192.0	19.9
31.372000	33.89	49.00	15.11	120.000	100.0	V	-8.0	19.1
31.680000	17.65	49.00	31.35	120.000	151.0	V	206.0	19.0
37.748000	39.35	49.00	9.65	120.000	157.0	V	205.0	15.6
37.764000	39.32	49.00	9.68	120.000	136.0	V	168.0	15.6
39.676000	29.89	49.00	19.11	120.000	119.0	V	151.0	14.5
46.552000	11.71	49.00	37.29	120.000	151.0	V	22.0	10.2

No further conspicuous frequency found – margin to limit > 10 dB (Peak)

1.2.2. Part 15B

Diagram No. 3.02

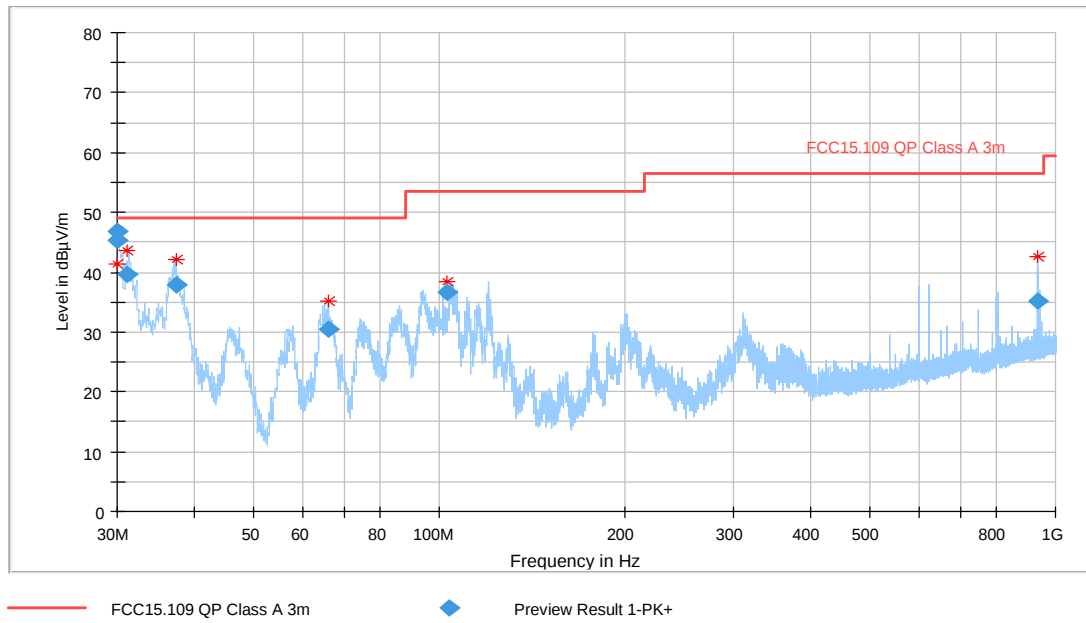
Test description:	Date: 01.08.2018 Electric Field Strength Measurement
Test site and distance:	Semi Anechoic Chamber 2 (SAC5) with 3m measurement distance
Test location:	CETECOM GmbH Düsseldorf
Version of Testsoftware:	EMC32 V10.0.0
Test specification:	FCC15.109, class B; RSS-Gen.: Issue 4
Distance correction:	not used
Used filter:	none
Operating Mode:	Continuous Operation
Measured sides of EUT:	front, right, rear, left
Environmental conditions:	Humidity: 43%rH; Temperature: 22°C
Operator:	AUe

EUT Information

Manufacturer:	Prodrive Technologies B.V.
Model:	Carrier Control Master + Carrier Control Slave
Type:	CCM-IO-ETH + CCL, UL

HW version:	6752-1500-0103 + 6752-1600-1500
SW version:	CPU: 6752-1400-2608, uC: 6752-1400-2912
Serial number:	18-08-858-611 + 18-10-A02-FW3
Connected Interfaces:	Motor, Antenna, LAN cable
Power Supply:	100VDC
Comments:	with Eupen ROD Antenna

Full Spectrum



Remark: Red marker = Peak result, Blue marker = QPeak result – Diagram shows maximum result of horizontal and vertical antenna polarisation

Final_Result

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
30.020000	46.81	49.00	2.19	120.000	104.0	V	269.0	19.9
30.056000	45.25	49.00	3.75	120.000	100.0	V	200.0	19.9
31.216000	39.63	49.00	9.37	120.000	111.0	V	262.0	19.2
37.420000	37.87	49.00	11.13	120.000	100.0	V	178.0	15.8
65.992000	30.51	49.00	18.49	120.000	136.0	V	162.0	8.2
103.296000	36.57	53.50	16.93	120.000	115.0	V	138.0	11.5
937.032000	35.11	56.50	21.39	120.000	100.0	V	241.0	23.0

No further conspicuous frequency found – margin to limit > 10 dB (Peak)

1.3. Radiated emissions in the frequency range 1000 to 6000 MHz

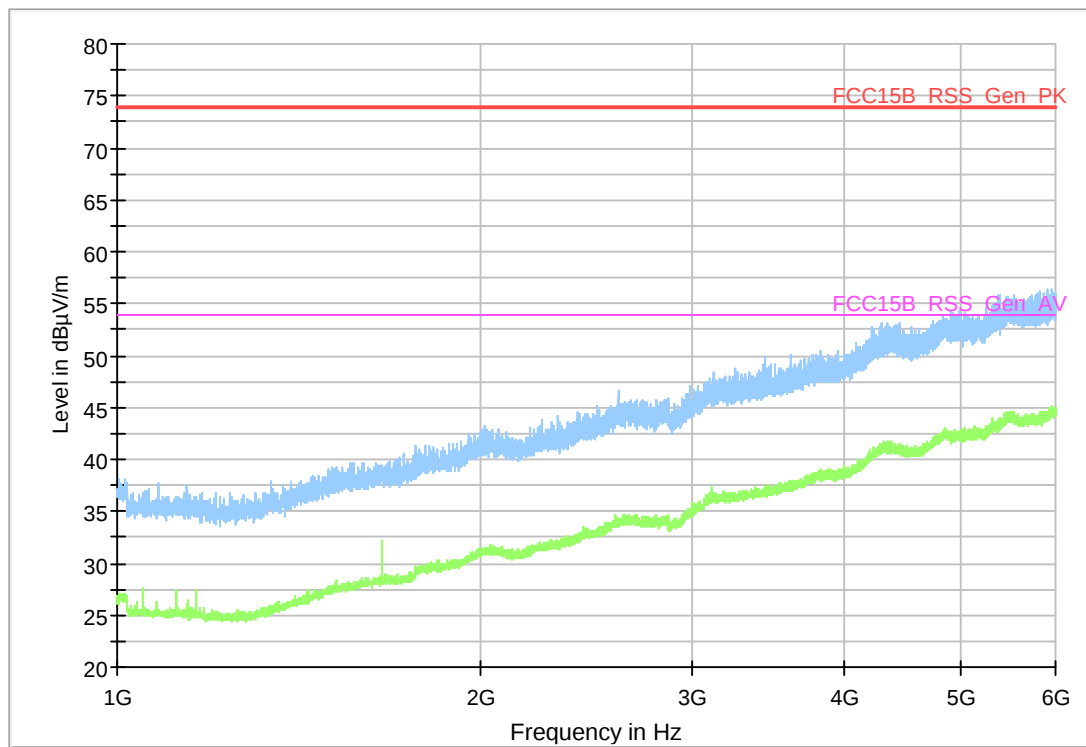
1.3.1. Part 15B

Diagram No. 4.01

Date:	14.09.2018
Test description:	Electric Field Strength Measurement
Test site and distance:	Ref.-Nr. 25358 Semi Anechoic Chamber 2 (SAC5) with 3m measurement distance
Test location:	CETECOM GmbH Düsseldorf
Version of Testsoftware:	EMC32 V10.40.0
Test specification:	FCC15.109, class B; RSS-Gen.: Issue 4
Distance correction:	not used
Technical Data:	Please see page 2 for detailed data of measurement setup
Used filter:	none
Operating mode:	Continuous Operation
Measured sides of EUT:	front, right, rear, left
Environmental conditions:	Humidity: 38%rH; Temperature: 25.6°C; Pressure: 1014hPa
Operator:	GWe / ACh

EUT Information

Manufacturer:	Prodrive Technologies B.V.
Model:	Carrier Control Master + Carrier Control Slave
Type:	CCM-IO-ETH + CCL, UL
HW version:	6752-1500-0103 + 6752-1600-1500
SW version:	CPU: 6752-1400-2608, uC: 6752-1400-2912
Serial number:	18-08-858-611 + 18-10-A02-FW3
Connected Interfaces:	Motor, Antenna, LAN cable
Power Supply:	100VDC
Comments:	with Eupen ROD Antenna



— Preview Result 2-AVG — Preview Result 1-PK+ * Critical_Freqs AVG
* Critical_Freqs PK+ — FCC15B_RSS_Gen_PK — FCC15B_RSS_Gen_AV
◆ Final_Result PK+ ◆ Final_Result AVG

Remark: Red marker = Peak result, Blue marker = QPeak result – Diagram shows maximum result of horizontal and vertical antenna polarisation

Final_Result

Frequency (MHz)	MaxPeak (dBμV/m)	Average (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)
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No conspicuous frequency found – margin to limit > 10 dB (Peak)

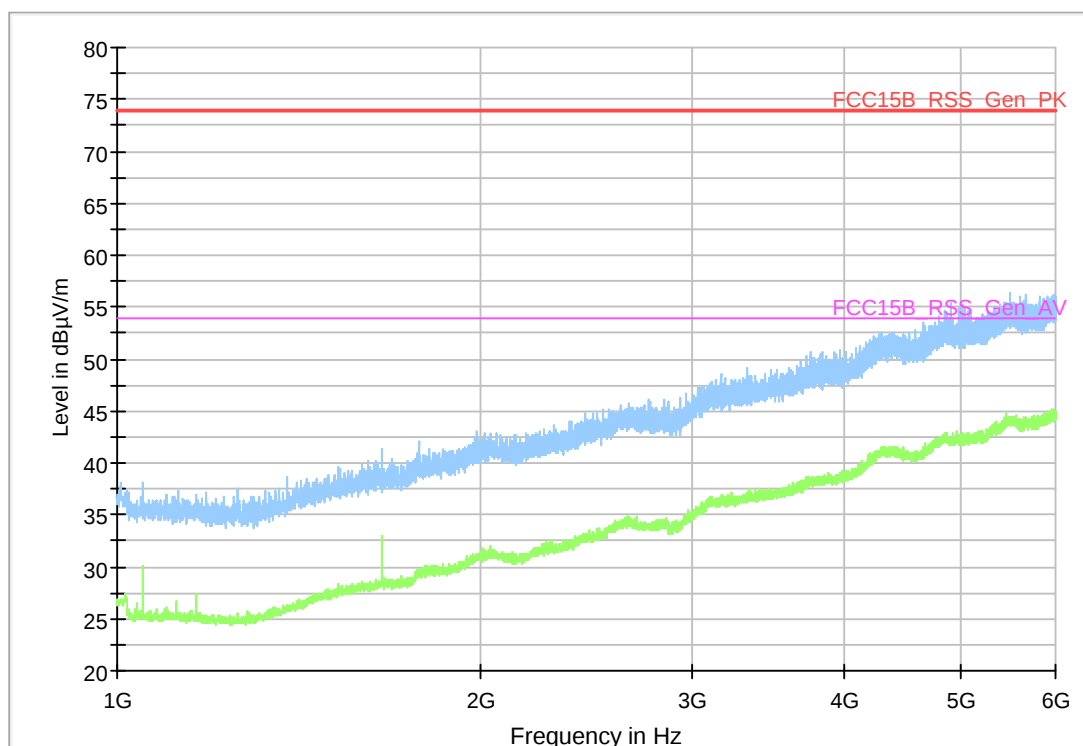
1.3.2. Part 15B

Diagram No. 4.02

Date:	14.09.2018
Test description:	Electric Field Strength Measurement
Test site and distance:	Semi Anechoic Chamber 2 (SAC5) with 3m measurement distance
Test location:	CETECOM GmbH Düsseldorf
Version of Testsoftware:	EMC32 V10.40.0
Test specification:	FCC15.109, class B; RSS-Gen.: Issue 4
Distance correction:	not used
Technical Data:	Please see page 2 for detailed data of measurement setup
Used filter:	none
Operating mode:	Continuous Operation
Measured sides of EUT:	front, right, rear, left
Environmental conditions:	Humidity: 39%rH; Temperature: 25.6°C; Pressure: 1014hPa
Operator:	GWe / Ach

EUT Information

Manufacturer:	Prodrive Technologies B.V.
Model:	Carrier Control Master + Carrier Control Slave
Type:	CCM-IO-ETH + CCL, UL
HW version:	6752-1500-0103 + 6752-1600-1500
SW version:	CPU: 6752-1400-2608, uC: 6752-1400-2912
Serial number:	18-08-858-611 + 18-10-A02-FW3
Connected Interfaces:	Motor, Antenna, LAN cable
Power Supply:	100VDC
Comments:	with SEW Antenna



— Preview Result 2-AVG — Preview Result 1-PK+ * Critical_Freqs AVG
* Critical_Freqs PK+ — FCC15B_RSS_Gen_PK — FCC15B_RSS_Gen_AV
◆ Final_Result PK+ ◆ Final_Result AVG

Remark: Red marker = Peak result, Blue marker = QPeak result – Diagram shows maximum result of horizontal and vertical antenna polarisation

Final_Result

Frequency (MHz)	QuasiPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
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No conspicuous frequency found – margin to limit > 10 dB (Peak)