



ACCREDITED TESTING LABORATORY (NR. 312)
for Electromagnetic Compatibility
FCC Recognition as accredited EMC Test Laboratory No: 784661

TEST REPORT No. EMV-E 172/25

Test procedure: Title 47 - Telecommunication
Chapter I - FEDERAL COMMUNICATIONS COMMISSION
Subchapter A - GENERAL
Part 15 - RADIO FREQUENCY DEVICES
October 1, 2020

The summary of the results can be found on page 2.

Ordered by: TTControl GmbH

Address: Schönbrunner Straße 7
1040 Wien
Austria

On: TTC 2785 and TTC 2740

FCC-ID: 2AUIVTTC2700

This report contains the pages 1 to 17.

Authorized person:

Ing. Markus Winkler, MSC

Test performed by:

Ing. Michael Szobel

Date: 2025-12-11
Internal Order Number: EMC/E-3791

Comments:

The test results refers exclusively to the tested subject.

The production or transmission of extracts of the present report is subject to authorization by the testing laboratory.

Akkreditierung Austria is a full member of the International Laboratory Accreditation Cooperation ILAC and a signatory of the MRA for "Testing, Calibration and Inspection".

1. Summary of all measurements and tests

Measurements according to FCC 47 CFR Part 15 Subpart B - Unintentional Radiators			
Chapter / Norm. Reference	Term	Details see chapter	Result
§15.107 ANSI C63.4-2014	Conducted limits - (AC power line)	---	n.a. ^a
§15.109 ANSI C63.4-2014	Radiated emission limits	4.1	PASS

Table 1: Summary Emission measurements

PASS	The DUT meets the requirements of the standard
FAIL	The DUT does not meet the requirements of the standard
n.a.	The Test is not applicable
n.p.	The Test was not performed

Table 2: General definitions for the report

^a Device under tests has no AC mains only DC supply.

2. Contents

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3. General information

3.1 Device under test (DUT)

DUT:	TTC 2785 TTC 2740
FCC-ID:	2AUIVTTC2700
Classification EU / USA / CANADA:	ITE Class A
Serial number (S/N):	TTC 2785: 10254140000022 TTC 2740: 10254240000001
Year of manufacturing:	2025
Manufacturer:	TTControl GmbH
Address:	Schönbrunner Straße 7 1040 Wien Austria
DUT Description:	The TTC 2000 series is a generic ECU family which can be used for different applications where sensor values must be captured and evaluated. Furthermore hydraulic and electric actuators can be controlled with several high-side or low-side outputs. The interaction with other ECUs in the overall system is done via different communication interfaces like 100Base-T1 (BroadR-Reach), CAN or LIN.
Dimensions:	317 x 220.5 x 41.2 mm
Weight:	2.7 kg

The device under test and all relevant information regarding the device under test were supplied by the customer.

3.2 Test Configuration

The DUT was mounted by Mr. Ignatyuk, TTTech Computertechnik AG and Mr. Szobel, Seibersdorf Labor GmbH, in the anechoic chamber of the EMC-Test Laboratory Seibersdorf.

The power supply voltage of the loadbox was: 29 VDC.

3.3 Standards / Documents

[1] **Code of Federal Regulations**

Title 47 - Telecommunication
Chapter I - FEDERAL COMMUNICATIONS COMMISSION
Subchapter A - GENERAL
Part 15 - RADIO FREQUENCY DEVICES
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[2] **ANSI C63.4-2014**

American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz

[3] **CISPR 16-1-1:2010-11**

Specification for Radio Disturbance and Immunity Measuring Apparatus and Methods - Part 1-1: Radio Disturbance and Immunity Measuring Apparatus - Measuring Apparatus, Ed. 3.1

[4] **CISPR 16-1-2:2006-08**

Specification for Radio Disturbance and Immunity Measuring Apparatus and Methods - Part 1-2: Radio Disturbance and Immunity Measuring Apparatus - Ancillary equipment - Conducted disturbances, Ed. 1.2

[5] **CISPR 16-1-4:2010-04**

Specification for Radio Disturbance and Immunity Measuring Apparatus and Methods - Part 1-4: Radio Disturbance and Immunity Measuring Apparatus - Ancillary equipment - Radiated disturbances, Ed. 3

[6] **CISPR 16-2-1:2008 + A1:2010 + A2:2013**

Specification for radio disturbance and immunity measuring apparatus and methods Part 2-1: Methods of measurement of disturbances and immunity - Conducted disturbance measurements

[7] **CISPR 16-2-3:2010 + A1:2010 + A2:2014**

Specification for radio disturbance and immunity measuring apparatus and methods Part 2-3: Methods of measurement of disturbances and immunity - Radiated disturbance measurements

3.4 Date and location of the measurements and tests

Date: 17 November 2025

Location: Semi Anechoic chamber (SAC)
EMC-Test Laboratory
2444 Seibersdorf
Austria

Temperature: 21°C – 25°C

Humidity: 35% - 50 % rel.

4. Measurements and tests – parameters and results

4.1 Radiated emissions measurement

4.1.1 Equipment

Used from 30 to 1000 MHz

ID-No.	Identification	Type	SNo	Calibration Date	Calibration Interval	Manufacturer
E0915	EMC Measurement Software EMC32	V 10.40.10	100280/101333	---	---	Rohde & Schwarz
E1142	Thermo-Hygrometer SAC	608-H1	34803704	17 June 2025	3 years	testo
LE0116	Semi Anechoic Chamber with Control Room, Test room 1 and Amplifier Room	SAC3+CR, TR1, AR	P28090	03 Feb. 2022	5 years	Albatross Projects
LE0139	EMI Test Receiver	ESW44	101676	14 May 2025	2 years	Rohde & Schwarz
LE0373	TRILOG Broadband antenna	VULB 9162	489	17 April 2025	1 year	Schwarzbeck

Table 3: Equipment

Used from 1000 to 18000 MHz

ID-No.	Identification	Type	SNo	Calibration Date	Calibration Interval	Manufacturer
E0567	Doppelsteg-Hornantenne	3115	9808-5569	18 Mar. 2025	2 years	EMCO
E0736	Pre-Amplifier	DBL-0218N308	018 0217	10 Dec. 2024	1 year	Narda DBS Microwave
E0915	EMC Measurement Software EMC32	V 10.40.10	100280/101333	---	---	Rohde & Schwarz
E1142	Thermo-Hygrometer SAC	608-H1	34803704	17 June 2025	3 years	testo
LE0116	Semi Anechoic Chamber with Control Room, Test room 1 and Amplifier Room	SAC3+CR, TR1, AR	P28090	03 Feb. 2022	5 years	Albatross Projects
LE0139	EMI Test Receiver	ESW44	101676	14 May 2025	2 years	Rohde & Schwarz

Table 4: Equipment

4.1.2 Procedure and setup

The measurement was done inside the Semi anechoic chamber (SAC3) of the EMC-Test Laboratory Seibersdorf.

Measurement procedure and setup were according to the standard ANSI C63.4.

Frequency range	30 to 1000 MHz
Bandwidth	120 kHz
Step size	40 kHz
Measurement detector	PK
Measurement time	50 ms
Antenna height scan	1 – 4 m
Tilt Antenna	no
Frequency range	1000 to 18000 MHz
Bandwidth	1 MHz
Step size	400 kHz
Measurement detector	AVG
Measurement time	50 ms
Antenna height scan	1 m – 4 m
Tilt Antenna	yes
Scan method	Fast Fourier Transformation (FFT)
Maximum hold scans	10
Measurement distance	3 m
Orientations	0° - 360°

Table 5: Parameters

Frequency range (MHz)	Measurement uncertainty (dB)
30 – 200	+4.03 / -4.03
200 – 1000	+3.31 / -3.35
1000 – 18000	+4.59 / -4.75

Table 6: Extended measurement uncertainty

4.1.3 Results

DUT: TTC 2785

Orientation [°]	Polarization	Frequency range [MHz]	Measurement plot	Result
0 - 360	Horizontal	30 - 1000	Chart 1; Table 9	PASS
0 - 360	Vertical	30 - 1000	Chart 2; Table 10	PASS
0 - 360	Horizontal	1000 - 18000	Chart 3; Table 11	PASS
0 - 360	Vertical	1000 - 18000	Chart 4; Table 12	PASS

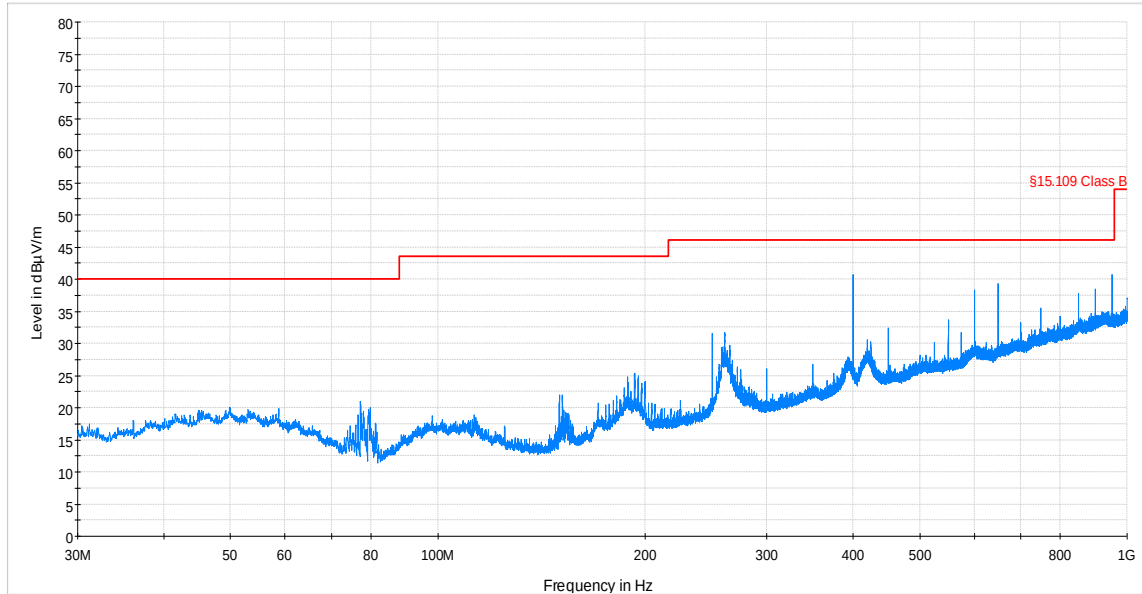
Table 7: Results

DUT: TTC 2740

Orientation [°]	Polarization	Frequency range [MHz]	Measurement plot	Result
0 - 360	Horizontal	30 - 1000	Chart 5; Table 13	PASS
0 - 360	Vertical	30 - 1000	Chart 6; Table 14	PASS
0 - 360	Horizontal	1000 - 18000	Chart 7; Table 15	PASS
0 - 360	Vertical	1000 - 18000	Chart 8; Table 16	PASS

Table 8: Results

4.1.4 Charts



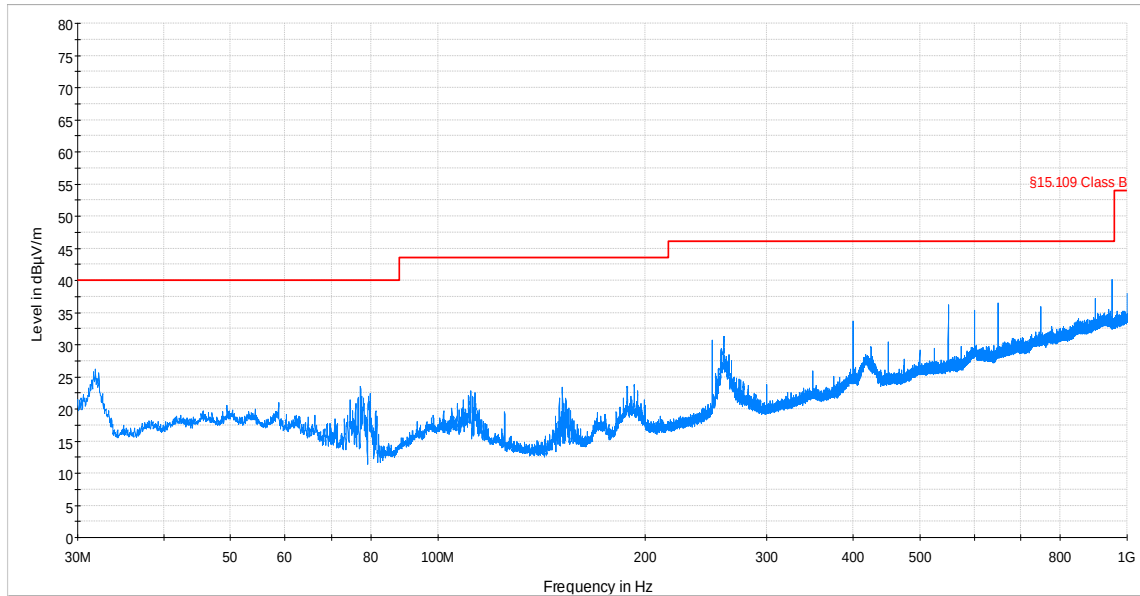
E-3791 TTTech 17.11.2025 MS
TTC 2785-CP-00-FS5-000
Active Mode
04 0°-360° 1m-4m H

— Preview Result 1H-PK+
— §15.109 Class B

Chart 1: Radiated emissions, 30 - 1000 MHz, horizontal

Frequency [MHz]	PK [dBµV/m]	Meas. Time [ms]	Bandwidth [kHz]	Azimuth [deg]	Height [cm]	Margin – PK [dB]	Limit – QPK [dBµV/m]
399.990	40.80	50	120	90.0	100.0	5.20	46.0
400.020	40.60	50	120	90.0	100.0	5.40	46.0
600.000	38.30	50	120	90.0	200.0	7.70	46.0
649.980	38.80	50	120	90.0	150.0	7.20	46.0
650.010	39.40	50	120	90.0	150.0	6.60	46.0
849.990	37.70	50	120	90.0	100.0	8.30	46.0
900.000	38.50	50	120	270.0	100.0	7.50	46.0
949.980	40.20	50	120	270.0	100.0	5.80	46.0
950.010	40.60	50	120	270.0	100.0	5.40	46.0
950.040	39.20	50	120	270.0	100.0	6.80	46.0

Table 9: Peak result. 30-1000 MHz. horizontal



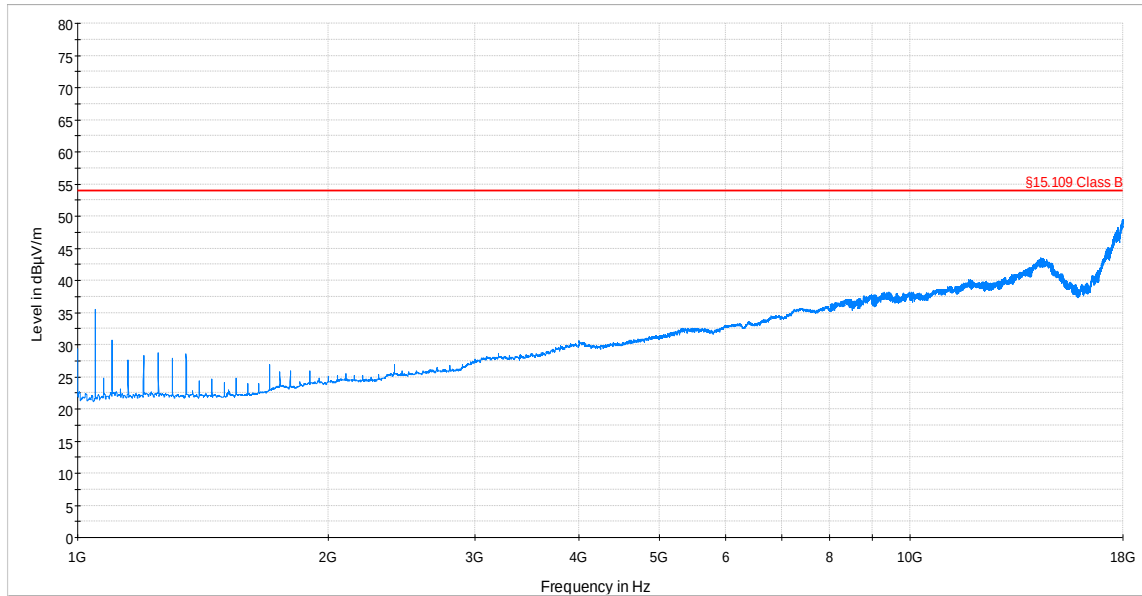
E-3791 TTTech 17.11.2025 MS
TTC 2785-CP-00-FS5-000
Active Mode
03 0°-360° 1m-4m V

Preview Result 1V-PK+
S15.109 Class B

Chart 2: Radiated emissions. 30 - 1000 MHz. vertical

Frequency [MHz]	PK [dBµV/m]	Meas. Time [ms]	Bandwidth [kHz]	Azimuth [deg]	Height [cm]	Margin – PK [dB]	Limit – QPK [dBµV/m]
549.990	36.20	50	120	90.0	100.0	9.80	46.0
550.020	36.20	50	120	90.0	100.0	9.80	46.0
650.010	36.50	50	120	270.0	100.0	9.50	46.0
899.970	36.20	50	120	180.0	200.0	9.80	46.0
900.000	37.20	50	120	180.0	200.0	8.80	46.0
900.030	36.60	50	120	180.0	200.0	9.40	46.0
949.950	37.60	50	120	180.0	100.0	8.40	46.0
949.980	39.30	50	120	180.0	100.0	6.70	46.0
950.010	40.10	50	120	180.0	100.0	5.90	46.0
950.040	39.20	50	120	180.0	100.0	6.80	46.0

Table 10: Peak result. 30-1000 MHz. vertical



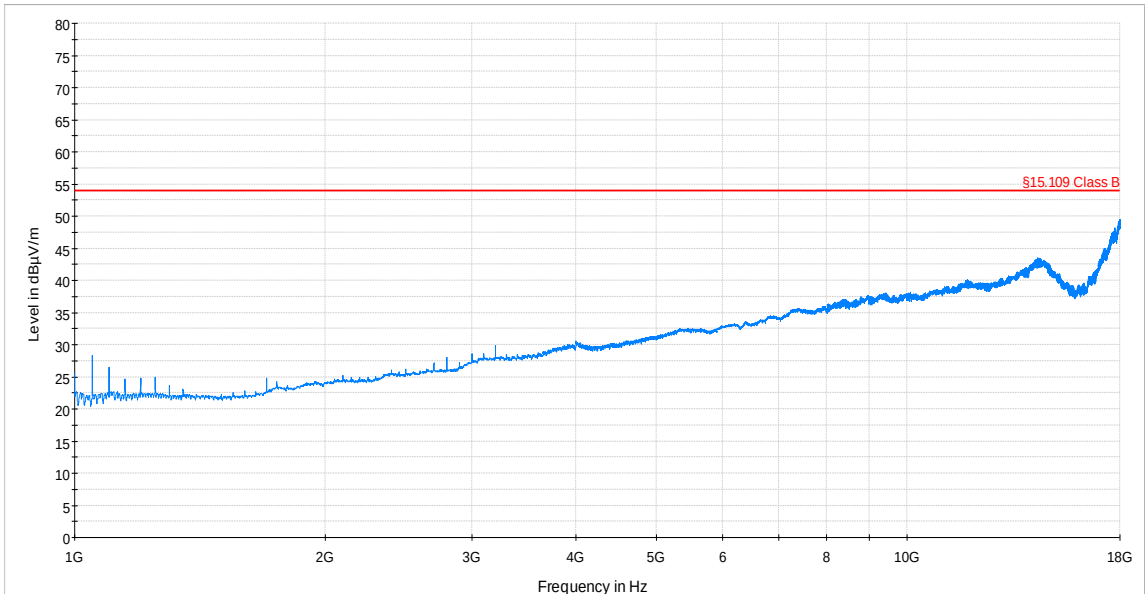
— Preview Result 1-AVG
— \$15.109 Class B

E-3791 TTTech 17.11.2025 MS
TTC 2785-CP-00-FS5-000
Active Mode
05 0°-360° 1m-4m H (tilted)

Chart 3: Radiated emissions. 1000 - 18000 MHz. horizontal

Frequency [MHz]	AVG [dBµV/m]	Meas. Time [ms]	Bandwidth [MHz]	Azimuth [deg]	Height [cm]	Margin –AVG [dB]	Limit – AVG [dBµV/m]
no emissions with margin < 10dB to the limit or noise level							

Table 11: Average result. 1000 - 18000 MHz. horizontal

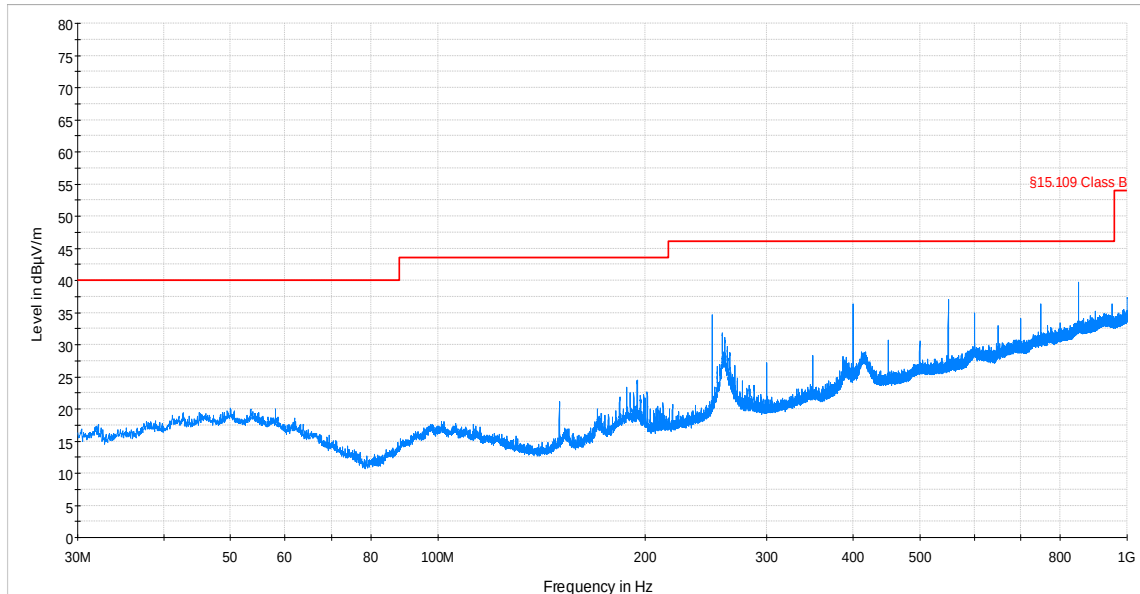


E-3791 TTTech 17.11.2025 MS
TTC 2785-CP-00-FS5-000
Active Mode
06 0°-360° 1m-4m V (tilted)

Chart 4: Radiated emissions. 1000 - 18000 MHz. vertical

Frequency [MHz]	AVG [dBµV/m]	Meas. Time [ms]	Bandwidth [MHz]	Azimuth [deg]	Height [cm]	Margin –AVG [dB]	Limit – AVG [dBµV/m]
no emissions with margin < 10dB to the limit or noise level							

Table 12: Average result. 1000 - 18000 MHz. vertical



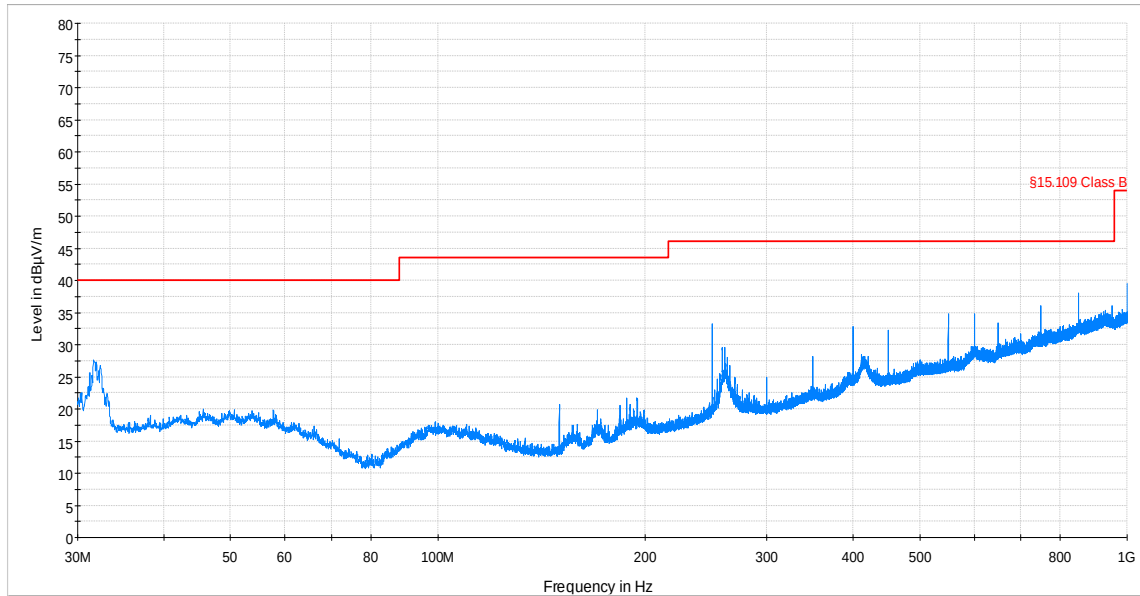
E-3791 TTTech 17.11.2025 MS
TTC 2740-CP-00-FS5-000
Active Mode
01 0°-360° 1m-4m H

Preview Result 1H-PK+
§15.109 Class B

Chart 5: Radiated emissions, 30 - 1000 MHz, horizontal

Frequency [MHz]	PK [dBµV/m]	Meas. Time [ms]	Bandwidth [kHz]	Azimuth [deg]	Height [cm]	Margin – PK [dB]	Limit – QPK [dBµV/m]
399.990	36.30	50	120	90.0	100.0	9.70	46.0
549.990	37.00	50	120	90.0	200.0	9.00	46.0
550.020	36.70	50	120	270.0	200.0	9.30	46.0
750.000	36.30	50	120	270.0	150.0	9.70	46.0
849.960	37.80	50	120	90.0	100.0	8.20	46.0
849.990	39.20	50	120	0.0	100.0	6.80	46.0
850.020	39.70	50	120	0.0	100.0	6.30	46.0
850.050	38.10	50	120	0.0	100.0	7.90	46.0
850.080	36.20	50	120	90.0	100.0	9.80	46.0
950.010	36.40	50	120	270.0	100.0	9.60	46.0

Table 13: Peak result. 30-1000 MHz. horizontal



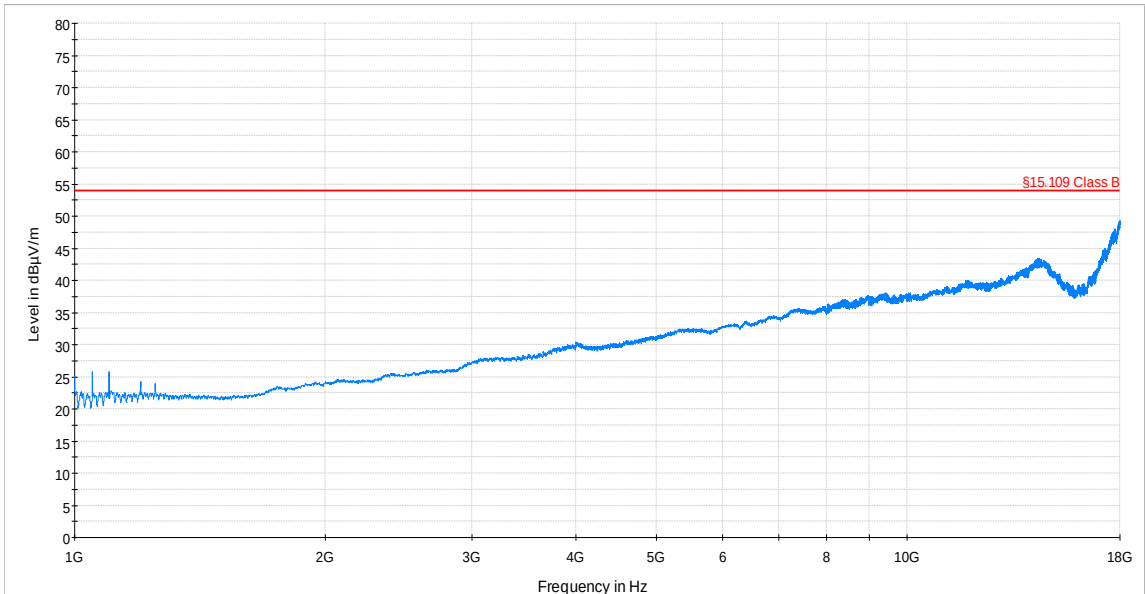
E-3791 TTTech 17.11.2025 MS
TTC 2740-CP-00-FS5-000
Active Mode
02 0°-360° 1m-4m V

— Preview Result 1V-PK+
— §15.109 Class B

Chart 6: Radiated emissions. 30 - 1000 MHz. vertical

Frequency [MHz]	PK [dBµV/m]	Meas. Time [ms]	Bandwidth [kHz]	Azimuth [deg]	Height [cm]	Margin – PK [dB]	Limit – QPK [dBµV/m]
750.000	36.10	50	120	270.0	100.0	9.90	46.0
849.960	36.60	50	120	180.0	200.0	9.40	46.0
849.990	38.00	50	120	180.0	200.0	8.00	46.0
850.020	37.20	50	120	180.0	200.0	8.80	46.0
949.980	36.10	50	120	180.0	200.0	9.90	46.0

Table 14: Peak result. 30-1000 MHz. vertical



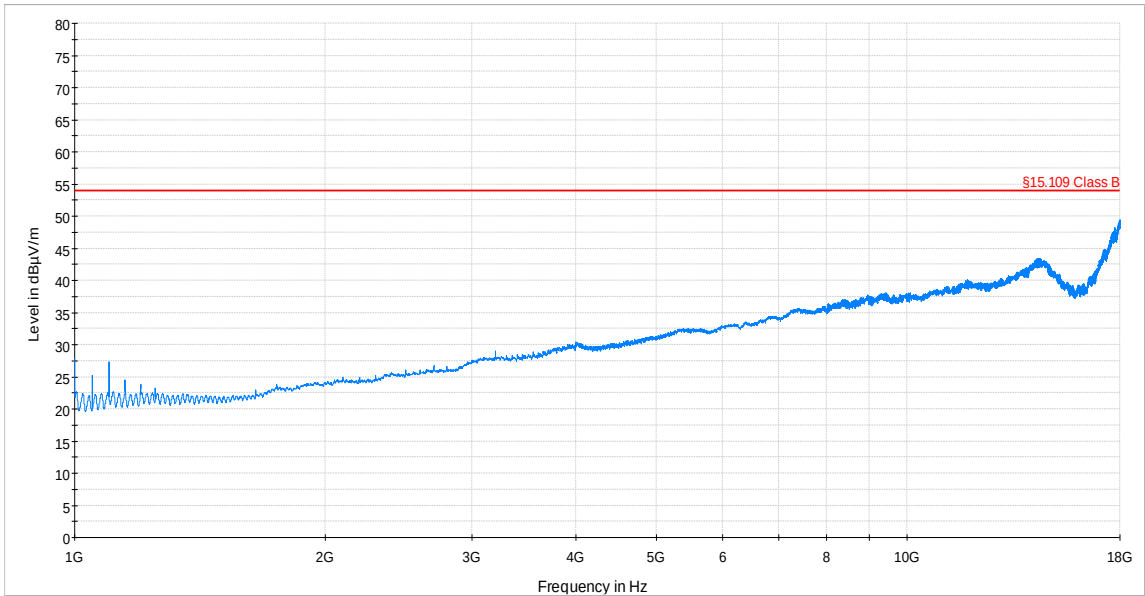
E-3791 TTTech 17.11.2025 MS
TTC 2740-CP-00-FS5-000
Active Mode
08 0°-360° 1m-4m H (tilted)

Preview Result 1-AVG
§15.109 Class B

Chart 7: Radiated emissions. 1000 - 18000 MHz. horizontal

Frequency [MHz]	AVG [dBµV/m]	Meas. Time [ms]	Bandwidth [MHz]	Azimuth [deg]	Height [cm]	Margin –AVG [dB]	Limit – AVG [dBµV/m]
no emissions with margin < 10dB to the limit or noise level							

Table 15: Average result. 1000 - 18000 MHz. horizontal



E-3791 TTTech 17.11.2025 MS
TTC 2740-CP-00-FS5-000
Active Mode
07 0°-360° 1m-4m V (tilted)

— Preview Result 1-AVG
— \$15.109 Class B

Chart 8: Radiated emissions. 1000 - 18000 MHz. vertical

Frequency [MHz]	AVG [dBµV/m]	Meas. Time [ms]	Bandwidth [MHz]	Azimuth [deg]	Height [cm]	Margin –AVG [dB]	Limit – AVG [dBµV/m]
no emissions with margin < 10dB to the limit or noise level							

Table 16: Average result. 1000 - 18000 MHz. vertical