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# Test Report

Report Number:

**E220202E3 3<sup>rd</sup> Version**

Equipment under Test (EUT):

15.6" Touchscreen Display  
Order-No.: MS-DSP15-100

Applicant:

Motion Metrics International Corp.

Manufacturer:

DELTA COMPONENTS GmbH



Deutsche  
Akkreditierungsstelle  
D-PL-17186-01-01  
D-PL-17186-01-02  
D-PL-17186-01-03

## References

### Family standards / generic standards:

- [1] **ANSI C63.4:2014** American National Standard for Methods of Measuring of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz.
- [2] **FCC 47 CFR Part 2:** General Rules and Regulations
- [3] **FCC 47 CFR Part 15:** Radio Frequency Devices (Subpart B)
- [4] **ICES-003 Issue 7: (October 2020)** Spectrum Management and Telecommunications. Interference-Causing Equipment Standard. Information Technology Equipment (Including Digital Apparatus) —Limits and Methods of Measurement

The tests were requested by the customer.

### Note on the release status

The officially published CFR version, which is updated annually, may not reflect recent CFR changes. For this reason, the version of the eCFR valid at the start of the test period is taken into account. For more information see: [eCFR :: Title 47 of the CFR -- Telecommunication](#)

## Test Result

The requirements of the standards listed under the section "product (-family) standard(s) / generic standard(s)" on page 2 of this test report were fulfilled by the EUT. Restrictions for the use of the EUT in certain environments and / or under special conditions of use are defined in chapter 3, if applicable. Details are shown in the following pages.

tested, written and  
approved by:

\_\_\_\_\_  
Signature

reviewed by:

\_\_\_\_\_  
Signature

The measurement uncertainty for all measurement and test procedures of the laboratory have been determined and can be viewed if required. With regard to the emission measurement method according to CISPR 16-4-2 (EN 55016-4-2), the measurement uncertainty of the test laboratory ( $U_{\text{Lab}}$ ) is less than the CISPR-defined measurement uncertainty ( $U_{\text{CISPR}}$ ). This means that if the measured values for emitted interference fall below the limit value, the requirements of the relevant standard are met. For disturbance immunity, the decision rule of "simple acceptance" is applied with respect to the disturbance level.

If the customer requires an individual decision rule for conformity to the standard or the standard does not specify a decision rule, the measurement uncertainty and the decision rule are explicitly stated in the test report.

**This test report is only valid in its original form.**

Any reproduction of its contents in extracts without written permission of the accredited test laboratory PHOENIX TESTLAB GmbH is prohibited.

The test results herein refer only to the tested sample. PHOENIX TESTLAB GmbH is not responsible for any generalisations or conclusions drawn from these test results concerning further samples. Any modification of the tested samples is prohibited and leads to the invalidity of this test report. Each page necessarily contains the PHOENIX TESTLAB Logo and the TEST REPORT NUMBER.

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## 1 Identification

### 1.1 Applicant

Name:	Motion Metrics International Corp.
Address:	101-2389 Health Sciences Mall V6T1Z3 Vancouver British Columbia
Country:	Canada
Applicant represented during the test by the following person:	

### 1.2 Manufacturer

Name:	DELTA COMPONENTS GmbH
Address:	Auweg 27 79761 Waldshut-Tiengen
Country:	Germany
Applicant represented during the test by the following person:	

### 1.3 Test Laboratory

The tests were carried out by: **PHOENIX TESTLAB GmbH**  
**Königswinkel 10**  
**32825 Blomberg**  
**Germany**

Accredited by Deutsche Akkreditierungsstelle GmbH (DAkkS) in compliance with DIN EN ISO/IEC 17025 under Reg. No. D-PL-17186-01-06 and D-PL-17186-01-05, FCC Test Firm Designation Number DE0004, FCC Test Firm Registration Number 469623, CAB Identifier DE0003 and ISED# 3469A.

## 1.4 EUT (Equipment under Test)

Test object:	Surveillance monitor for mining application
Type:	15.6" Touchscreen Display
Order number:	MS-DSP15-100
Serial number:	606222101458
PCB identifier:	---
Hardware version:	A
Software version:	DMXC1240_V10

\* Note: Phoenix Testlab GmbH does not take samples. The samples used for tests are provided exclusively by the applicant.

## 1.5 Technical Data of Equipment

Power supply:	$U_{\text{nom}} = 28 \text{ V DC}$
highest internal frequency: *	< 1GHz

\* Declared by the applicant

## 1.6 Dates

Date of receipt of test sample:	15.03.2022
Test period:	15.03.2022 - 17.03.2022

## 2 Operational States and Test Setup

Description of function of the EUT:

- Surveillance monitor for mining application
- 15.6" Touchscreen Display MS-DSP15-100 with Projected Capacitive Touchscreen, LCD TFT Monitor with Alu-Housing
- Customized Mil Type Input Connector with Power, DVI and USB 2.0 Input
- Screen resolution: Full HD 1920x1080 Pixel, 60Hz horizontal frequency
- Stereo USB to Audio Interface
- Isolated Main Power Supply

The following states were defined as the operating conditions:

- rated voltage for all tests and measurements:

$$U_B = 28 \text{ V DC}$$

Definition of the functions to be monitored and corresponding tolerance limits:

Screen content: reference image



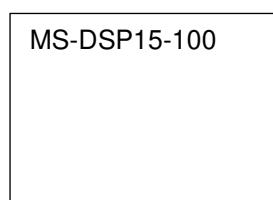
**Photo 1: Test Setup/Reference image**

USB function: Audio playback through the speakers of the screen

Rated voltage for all tests and measurements: 28 V DC

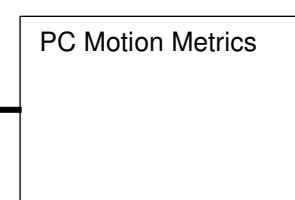
The system was setup as follows:

Equipment under Test (EUT)



Shielded Monitor  
Cable 10 m

Auxiliary equipment.



PSU  
Motion Metrics

DC in

AC in

Ancillary equipment

PC Motion Metrics:		<b>Identification</b> 
PSU Motion Metrics:		<b>Identification</b> 

### 3 Additional Information

General information:

- none

Classification of cables:

- special custom cable

Maximum length of cables, declared by the manufacturer:

- special custom cable

Type of cables, declared by the manufacturer:

- special custom cable

Deviation of the standard or test plan:

- none

Special EMC measures, as a result of the tests:

Radiated Emission Test

Improvement (Ferrite Würth 74270044) of the internal LVDS Interface

## 4 Overview

Conducted emissions FCC 47 CFR Part 15 section 15.107 (a),(b) [3] ICES-003 Issue 7 section 3.2.1[4]					
Application	Frequency range	Limits	Reference standard	Tested EUT	Status
AC supply line Class A	0.15 to 0.5 MHz 0.5 to 30 MHz	79 dB(µV) QP 66 dB(µV) AV 73 dB(µV) QP 60 dB(µV) AV	ANSI C63.4		1
AC supply line Class B	0.15 to 0.5 MHz 0.5 to 5 MHz 5 to 30 MHz	66 to 56 dB(µV) QP* 56 to 46 dB(µV) AV* 56 dB(µV) QP 46 dB(µV) AV 60 dB(µV) QP 50 dB(µV) AV	ANSI C63.4		1
*: Decreases with the logarithm of the frequency					

<sup>1</sup>Not requested by the customer, EUT is DC powered, not operated on the public supply network

Radiated emissions FCC 47 CFR Part 15 section 15.109 (a),(b) [3]					
Application	Frequency range	Limits	Reference standard	Tested EUT	Status
Radiated Emission Class A	30 to 88 MHz 88 to 216 MHz 216 to 960 MHz 960 to 1000 MHz  above 1000 MHz	39.0 dB( $\mu$ V/m) QP at 10 m 43.5 dB( $\mu$ V/m) QP at 10 m 46.5 dB( $\mu$ V/m) QP at 10 m 49.5 dB( $\mu$ V/m) QP at 10 m  49.5 dB( $\mu$ V/m) AV at 10 m and 69.5 dB( $\mu$ V/m) PK at 10 m	ANSI C63.4		--- ---
Radiated Emission Class A	30 to 88 MHz 88 to 216 MHz 216 to 960 MHz 960 to 1000 MHz  above 1000 MHz	50.0 dB( $\mu$ V/m) QP at 3 m 53.5 dB( $\mu$ V/m) QP at 3 m 56.0 dB( $\mu$ V/m) QP at 3 m 64.0 dB( $\mu$ V/m) QP at 3 m  64.0 dB( $\mu$ V/m) AV at 3 m and 84.0 dB( $\mu$ V/m) PK at 3 m	ANSI C63.4	1	Passed  Passed
Radiated Emission Class B	30 to 88 MHz 88 to 216 MHz 216 to 960 MHz 960 to 1000 MHz  above 1000 MHz	40.0 dB( $\mu$ V/m) QP at 3 m 43.5 dB( $\mu$ V/m) QP at 3 m 46.0 dB( $\mu$ V/m) QP at 3 m 54.0 dB( $\mu$ V/m) QP at 3 m  54.0 dB( $\mu$ V/m) AV at 3 m and 74.0 dB( $\mu$ V/m) PK at 3 m	ANSI C63.4		--- ---

Radiated emissions ICES-003 Issue 7 section 3.2.2 [4]					
Application	Frequency range	Limits	Reference standard	Tested EUT	Status
Radiated Emission Class A	30 to 88 MHz 88 to 216 MHz 216 to 230 MHz 230 to 960 MHz 960 to 1000 MHz above 1000 MHz	40.0 dB( $\mu$ V/m) QP at 10 m 43.5 dB( $\mu$ V/m) QP at 10 m 46.4 dB( $\mu$ V/m) QP at 10 m 47.0 dB( $\mu$ V/m) QP at 10 m 49.5 dB( $\mu$ V/m) QP at 10 m No limit available for 10 m	ANSI C63.4	-	---
Radiated Emission Class A	30 to 88 MHz 88 to 216 MHz 216 to 230 MHz 230 to 960 MHz 960 to 1000 MHz above 1000 MHz	50.0 dB( $\mu$ V/m) QP at 3 m 54.0 dB( $\mu$ V/m) QP at 3 m 56.9 dB( $\mu$ V/m) QP at 3 m 57.0 dB( $\mu$ V/m) QP at 3 m 60.0 dB( $\mu$ V/m) QP at 3 m 60 dB( $\mu$ V/m) AV at 3 m 80 dB( $\mu$ V/m) PK at 3 m	ANSI C63.4	1	Passed Passed
Radiated Emission Class B	30 to 88 MHz 88 to 216 MHz 216 to 230 MHz 230 to 960 MHz 960 to 1000 MHz above 1000 MHz	30.0 dB( $\mu$ V/m) QP at 10 m 33.1 dB( $\mu$ V/m) QP at 10 m 35.6 dB( $\mu$ V/m) QP at 10 m 37.0 dB( $\mu$ V/m) QP at 10 m 43.5 dB( $\mu$ V/m) QP at 10 m No limit available for 10 m	ANSI C63.4	-	---
Radiated Emission Class B	30 to 88 MHz 88 to 216 MHz 216 to 230 MHz 230 to 960 MHz 960 to 1000 MHz above 1000 MHz	40.0 dB( $\mu$ V/m) QP at 3 m 43.5 dB( $\mu$ V/m) QP at 3 m 46.0 dB( $\mu$ V/m) QP at 3 m 47.0 dB( $\mu$ V/m) QP at 3 m 54.0 dB( $\mu$ V/m) QP at 3 m 54 dB( $\mu$ V/m) AV at 3 m 74 dB( $\mu$ V/m) PK at 3 m	ANSI C63.4	-	--- ---

Remark: As declared by the applicant the highest internal clock frequency is < 1 GHz.  
 Therefore, the radiated emission measurement must be carried out up to 5 GHz.

The EUT was classified by the applicant as CLASS A equipment.

## 5 Results

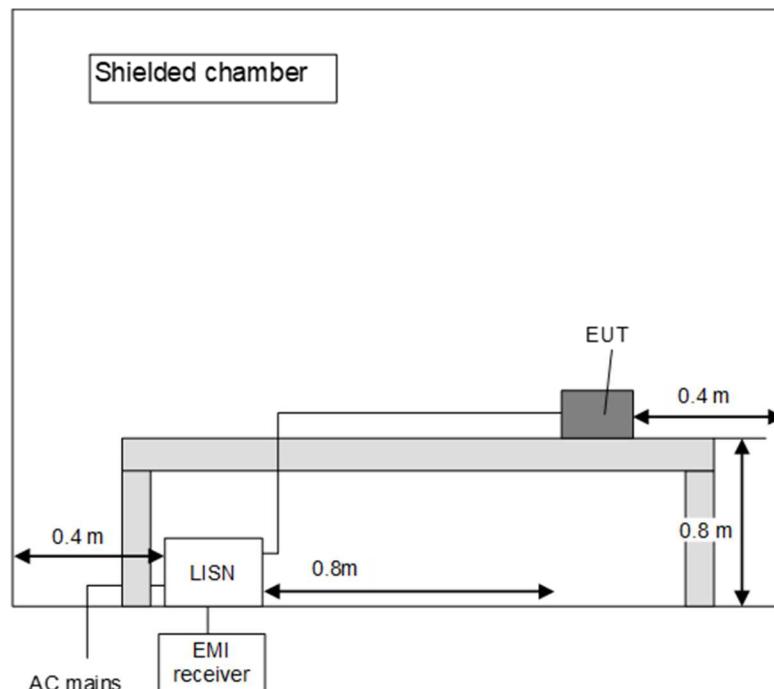
### 5.1 Conducted emissions on power supply lines

#### 5.1.1 Test method

The test is carried out in a shielded chamber. Table-top devices are set up on a non-conducting support with a size of 1 m by 1.5 m and a height of 80 cm above the ground plane. Floor-standing devices are placed directly on the ground plane. In case of DC powered equipment, which is not exclusively powered by a battery, it is connected to the LISN via a suitable AC/DC adaptor. The setup of the equipment under test is in accordance to [1].

The frequency range 150 kHz to 30 MHz is measured with an EMI receiver set to MAX hold mode with Peak and Average detectors and a resolution bandwidth of 9 kHz. A scan is carried out on the phase and neutral line of the AC mains network. If emissions less than 10 dB below the appropriate limit are detected, these emissions are measured with an Average and Quasi-Peak detector on all lines.

Frequency range	Resolution bandwidth
150 kHz to 30 MHz	9 kHz



### 5.2 Conducted emission measurement on AC mains

Not requested, EUT is DC powered, not operated on the public supply network

## 5.3 Radiated emissions

### 5.3.1 Test method

The radiated emission measurement is subdivided into two stages.

- A measurement carried out in a semi anechoic chamber with reflecting ground plane and various antenna heights in the frequency range 30 MHz to 1 GHz.
- A measurement carried out in a fully anechoic chamber and various antenna heights of 100 to 400 cm at a distance of 3 m to the EUT position in the frequency range 1 GHz to 40 GHz.

#### Preliminary and final measurement 30 MHz to 1 GHz

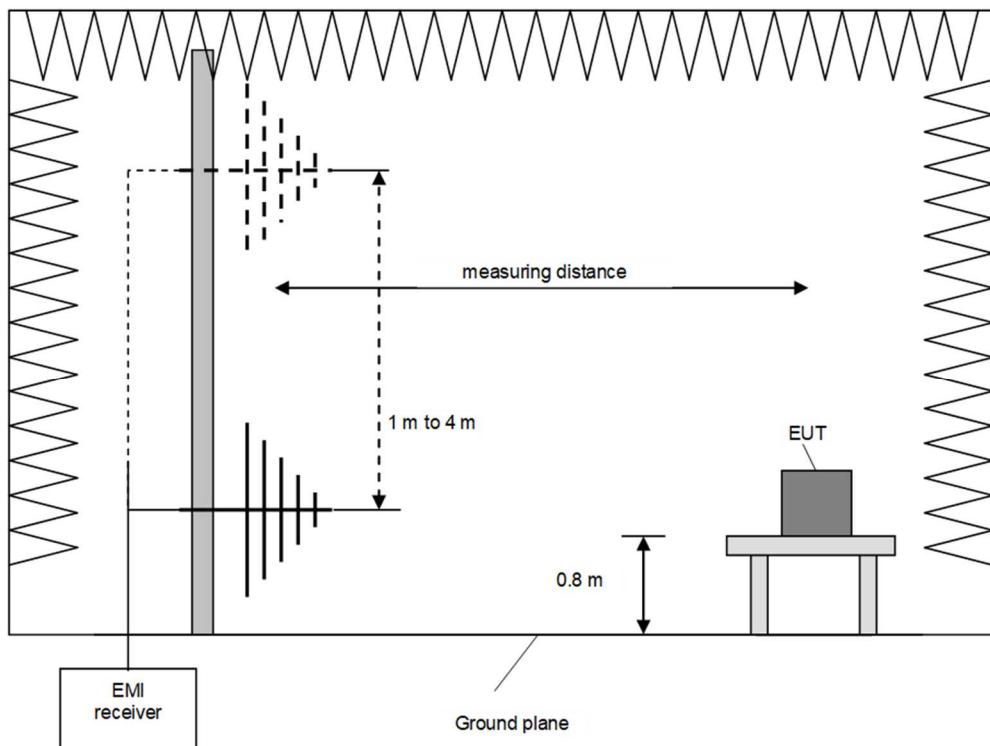
The preliminary and final measurements are performed in a semi-anechoic chamber with a metal ground plane in a 3 m distance.

Tabletop devices will set up on a non-conducting support with a height of 80 cm

During the tests the EUT is rotated in the range of 0 ° to 360 °, the measuring antenna is set to horizontal and vertical polarization and raised and lowered in the range from 1 m to 4 m to find the maximum level of emissions.

The resolution bandwidth of the EMI Receiver is set to the following values:

Test	Frequency range	Resolution bandwidth
Preliminary measurement	30 MHz to 1 GHz	100 kHz
Frequency peak search	+ / - 1 MHz	10 kHz
Final measurement	30 MHz to 1 GHz	120 kHz



#### Procedure preliminary measurement:

The following procedure is used:

- 1) Set the measuring antenna to 1 m height.
- 2) Monitor the frequency range at horizontal polarisation of the measuring antenna and an EUT / turntable azimuth of 0 °.
- 3) Rotate the EUT by 360° to maximize the detected signals.
- 4) Repeat steps 2 to 3 with the vertical polarisation of the measuring antenna.
- 5) Increase the height of the measuring antenna for 0.5 m and repeat steps 2 to 4 until the final height of 4 m is reached.
- 6) The highest values for each frequency are saved by the software, including the measuring antenna height and polarization and the turntable azimuth for that value.

#### Procedure final measurement:

The following procedure is used:

- 1) Select the highest frequency peaks (lowest margin to the limit) for the final measurement.
- 2) The software determines the exact peak frequencies by doing a partial scan with reduced RBW with +/- 10 times the RBW of the pre-scan of the selected peaks.
- 3) If the EUT is portable or ceiling mounted, find the worst-case EUT orientation (x,y,z) for the final test.
- 4) The worst-case measuring antenna height is found via varying the height by +/- 0.5 m from the value obtained in the preliminary measurement while monitoring the emission level.
- 5) The worst-case turntable position is found via varying the turntable azimuth by +/- 30° from the value obtained in the preliminary measurement while monitoring the emission level.
- 6) The final measurement is performed at the worst-case measuring antenna height and the worst-case turntable azimuth.
- 7) Steps 2 to 6 are repeated for each frequency peak selected in step 1.

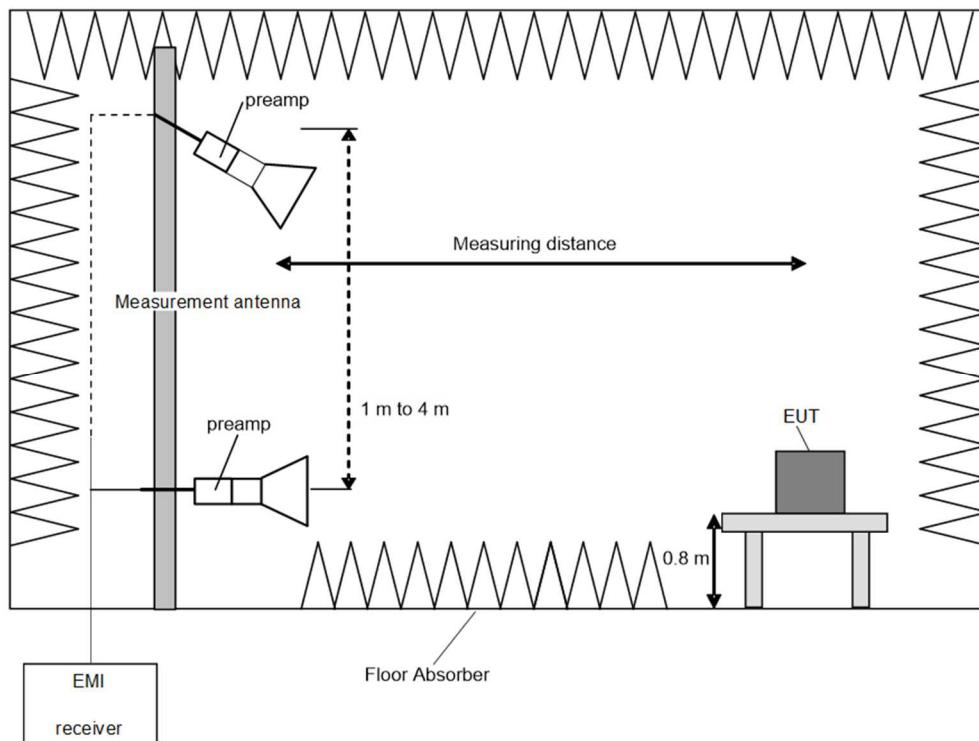
### Preliminary and final measurement > 1 GHz

The preliminary and final measurements are performed in a semi-anechoic chamber with floor absorbers between EUT and measuring antenna. The measuring distance is 3 m.

During the tests the EUT is rotated in the range of 0 ° to 360 °, the measuring antenna is set to horizontal and vertical polarisation and raised and lowered in the range from 1 m to 4 m to find the maximum level of emissions. While changing the height, the measuring antenna gets tilted so that it is always aiming at the EUT.

The resolution bandwidth of the EMI Receiver is set to the following values:

Test	Frequency range	Resolution bandwidth
Preliminary measurement	1 - 40 GHz	1 MHz
Frequency peak search	+ / - 10 MHz	100 kHz
Final measurement	1 - 40 GHz	1 MHz



#### Procedure preliminary measurement:

The following procedure is used:

- 1) Set the measuring antenna to 1 m height.
- 2) Monitor the frequency range at horizontal polarisation of the measuring antenna and an EUT / turntable azimuth of 0 °.
- 3) Rotate the EUT by 360° to maximize the detected signals.
- 4) Repeat steps 2 to 3 with the vertical polarisation of the measuring antenna.
- 5) Increase the height of the measuring antenna for 0.5 m and repeat steps 2 to 4 until the final height of 4 m is reached.
- 6) The highest values for each frequency are saved by the software, including the measuring antenna height and polarization and the turntable azimuth for that value.

#### Procedure final measurement:

The following procedure is used:

- 1) Select the highest frequency peaks (lowest margin to the limit) for the final measurement.
- 2) The software determines the exact peak frequencies by doing a partial scan with reduced RBW with +/- 10 times the RBW of the pre-scan of the selected peaks.
- 3) If the EUT is portable or ceiling mounted, find the worst-case EUT orientation (x,y,z) for the final test.
- 4) The worst-case measuring antenna height is found via varying the height by +/- 0.5 m from the value obtained in the preliminary measurement while monitoring the emission level.
- 5) The worst-case turntable position is found via varying the turntable azimuth by +/- 30° from the value obtained in the preliminary measurement while monitoring the emission level.
- 6) The final measurement is performed at the worst-case measuring antenna height and the worst-case turntable azimuth.
- 7) Steps 2 to 6 are repeated for each frequency peak selected in step 1.

## 5.4 Radiated radio disturbance Frequency range 30 MHz to 1 GHz according to FCC 47 CFR Part 15 section 15.109 and ICES-003 Issue 7 section 3.2.2

Measuring setup: -Table setup  
-Photo(s) of the test setup is shown below



**Test setup 1: Radiated Emission/Turntable position 0**

Measuring procedure SAC: The interfering field strength is measured in a semi anechoic chamber. Here the equipment under test is measured from various sides in normal fitted position. The antenna is adjusting in height whether the test object is emitting interference at certain frequencies. This procedure makes it possible to ascertain without the effect of external interference sources. If measuring above 1 GHz, the ground of the SAC shall be covered with ground absorber. The measuring procedure above 1 GHz is performed according to the above mentioned standard.

Measuring record: The measuring records are presented on the following pages.

Measuring result: The requirements Class A made in the test documents were passed.

### Measurement result 30MHz-1GHz

#### Test Time

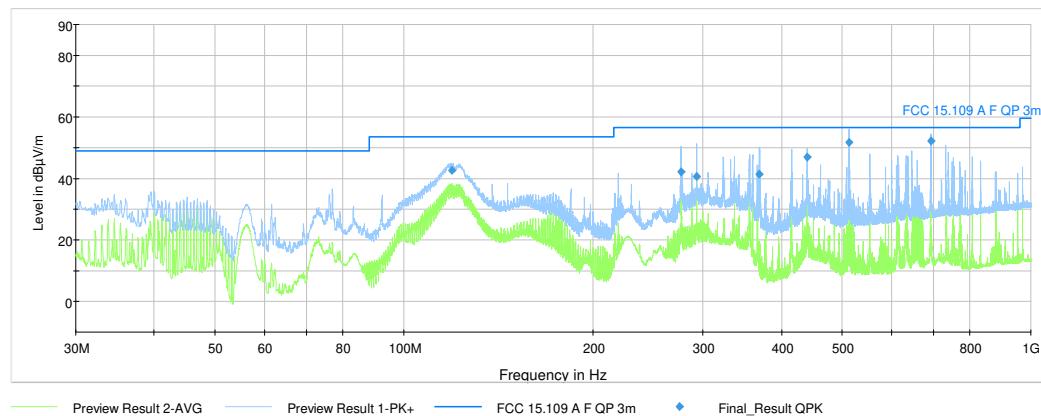
Time	17.03.2022 11:52:29
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#### EUT Info

##### EUT Info

Test facility:	M276 (SAC5-2) - SAC
Setup:	Table setup
Operator:	U. Kracht
EUT:	15.6" Touchscreen Display MS-DSP15-100
Manufacturer:	DELTA COMPONENTS GmbH
Operating conditions:	Ub=28V dc
Comment:	

The interfering field strength of the EUT is measured from various sides and different antenna heights. The curves in the diagram represent the maximum measured value for each frequency. The top measured curve represents the peak measurement, the bottom measured curve represents average values, which are only required for control purposes. The measured points marked with "♦" are frequency points which were carried out with a quasi-peak detector. The results of the standard subsequent are indicated in the table below. The limits as well as the measured results refer to the above mentioned standard while taking account of the specified requirements for a 3 m measuring distance.



Graphic 1: 30MHz\_1GHz\_Graphics\_Full Spectrum

Frequency [MHz]	QuasiPeak [dB $\mu$ V/m]	Limit [dB $\mu$ V/m]	Margin [dB]	Meas. Time [ms]	Band width [kHz]	Height [cm]	Pol []	Azimuth [deg]	Corr. [dBV/m]
119,2300	42,70	53,50	10,80	1000,0	120,0	200,00	H	270,00	17,70
277,0000	42,10	56,40	14,30	1000,0	120,0	250,00	V	0,00	18,60
292,9800	40,50	56,40	15,90	1000,0	120,0	250,00	V	0,00	19,00
369,3400	41,30	56,40	15,10	1000,0	120,0	150,00	V	45,00	21,20
439,4700	47,00	56,40	9,40	1000,0	120,0	100,00	V	0,00	23,00
512,7200	51,70	56,40	4,70	1000,0	120,0	100,00	V	45,00	24,80
692,5000	52,30	56,40	4,10	1000,0	120,0	150,00	V	45,00	27,50

Table 1: 30MHz\_1GHz\_Final\_Result

Calculations:

$$\text{Result [dB}\mu\text{V/m]} = \text{Reading [dB}\mu\text{V]} + \text{Correction [dB}\mu\text{V/m]}$$

$$\text{Correction [dBV/m]} = \text{AF [dB/m]} + \text{Cable attenuation [dB]} + \text{optional preamp gain [dB]}$$

$$\text{Margin [dB]} = \text{Limit [dB}\mu\text{V/m]} - \text{Result [dB}\mu\text{V/m]}$$

Measuring equipment:

Test site and Type		Manufacturer	Serial No.	PM. No.	Val. Date	Val Due
M276 Semi Anechoic Chamber		Albatross Projects	C62128- A540- A138-10- 0006	483227	-	-
Type of validation: NSA according to: ANSI C63.4a-2017 CISPR 16-1-4 + Cor1:2010 + A1:2012 +A2:2017				09.2020	09.2022	
Test equipment	Type	Manufacturer	Serial No.	PM. No.	Cal. Date	Cal Due
Ultralog Antenna	HL562E	Rohde & Schwarz	101079	482978	18.03.2021	03.2024
Attenuator 6 dB	WA2-6	Weinschel		482794	*	*
Systemsoftware EMC32 M276	EMC32	Rohde & Schwarz	100622	483150	*	*
RF Switch Matrix	OSP220	Rohde & Schwarz		482976	*	*
EMI Testreceiver ESW	ESW44	Rohde & Schwarz	101828	482979	08.12.2021	12.2023

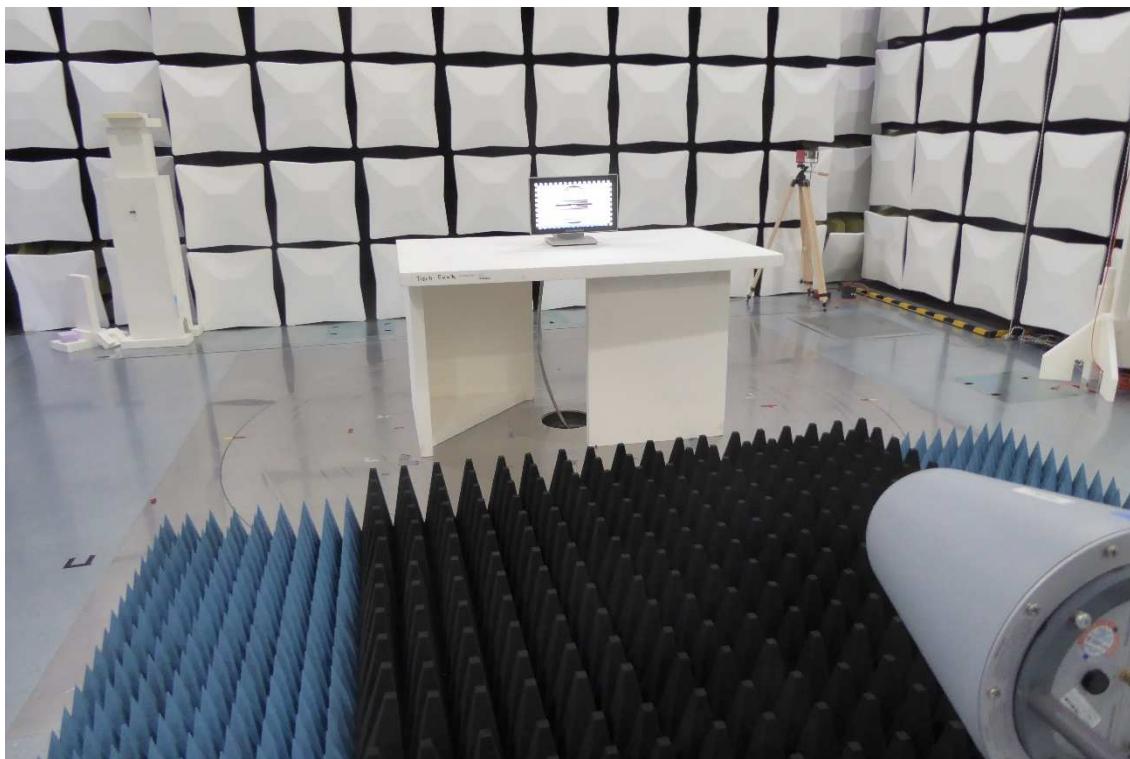
(\*) Calibration not necessary

time stamp: 17.11.2021 used: 10.03.2022

## 5.5 Radiated radio disturbance according to FCC 47 CFR Part 15 section 15.109 and ICES-003 Issue 7 section 3.2.2 Frequency range 1 GHz up to 40 GHz

Measuring setup:

- Table setup
- Photo(s) of the test setup is shown below



**Test setup 2: Radiated Emission/1 GHz - 12 GHz Turntable position 0**

Measuring procedure SAC: The interfering field strength is measured in a semi anechoic chamber. The ground of the SAC is covered with floor absorber. Here the equipment under test is measured from various sides in normal fitted position. This procedure makes it possible to ascertain without the effect of external interference sources and without adjusting the antenna in height whether the test object is emitting interference at certain frequencies. The measuring procedure above 1 GHz is performed according to the above mentioned standard.

Measuring record:

The measuring records are presented on the following pages.

Measuring result:

The requirements Class A made in the test documents were passed.

### Measurement result 1GHz-12GHz

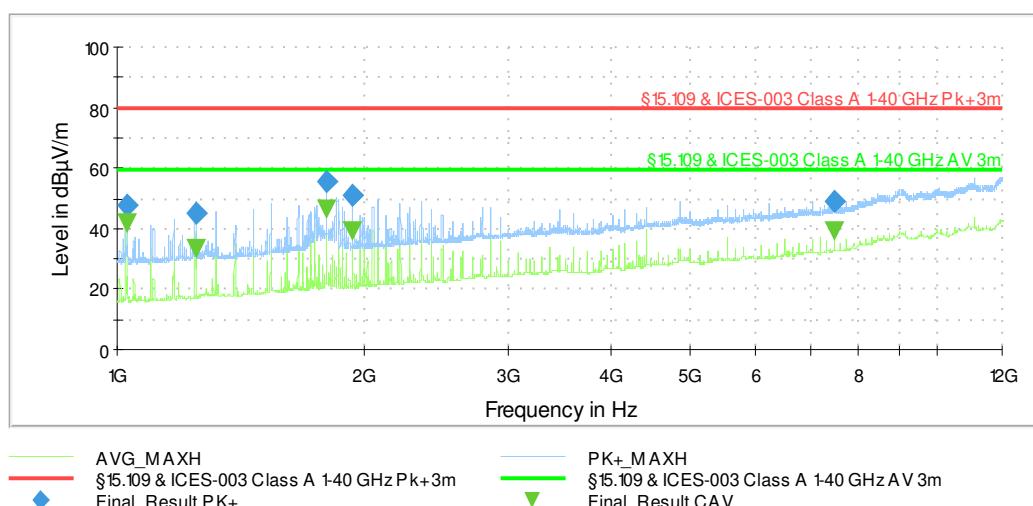
#### Test Time

Time	17.03.2022 09:47:21
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#### EUT Info

Test facility:	M276 (SAC5-2) - SAC / FAR @3m convenience pack / FCC pack...
Setup:	Table setup
Operator:	U. Kracht
EUT:	15.6" Touchscreen Display MS-DSP15-100
Manufacturer:	DELTA COMPONENTS GmbH
Operating conditions:	Ub=28V dc
Comment:	

The interfering field strength of the EUT is measured from various sides and different antenna heights. The top measured curve represents the peak measurement, the bottom measured curve represents average values. The peak measured points are marked by “♦” and the average measured points by “▼”. The results of the standard subsequent measurement above 1 GHz are indicated in the table below. The limits as well as the measured results refer to the above mentioned standard while taking account of the specified requirements for a 3 m measuring distance.



Graphic 2: 1GHz\_12GHz\_Graphics\_Full Spectrum

Frequency [MHz]	MaxPeak [dB $\mu$ V/m]	CAverage [dB $\mu$ V/m]	Limit [dB $\mu$ V/m]	Margin [dB]	Meas. Time [ms]	Band width [kHz]	Height [cm]	Pol []	Azimuth [deg]	Corr. [dBV/m]
1025,4000	---	41,70	59,50	17,80	100,00	1000,	254,00	V	356,00	-11,10
1025,4000	47,90	---	79,50	31,60	100,00	1000,	254,00	V	356,00	-11,10
1245,2000	45,00	---	79,50	34,50	100,00	1000,	330,00	V	3,00	-9,40
1245,2000	---	33,10	59,50	26,40	100,00	1000,	330,00	V	3,00	-9,40
1800,5000	---	46,10	59,50	13,40	100,00	1000,	300,00	H	157,00	-5,00
1800,5000	55,50	---	79,50	24,00	100,00	1000,	300,00	H	157,00	-5,00
1939,0000	---	39,30	59,50	20,20	100,00	1000,	203,00	H	205,00	-4,30
1939,0000	50,90	---	79,50	28,60	100,00	1000,	203,00	H	205,00	-4,30
7478,9500	---	39,20	59,50	20,30	100,00	1000,	304,00	V	11,00	14,00
7478,9500	48,80	---	79,50	30,70	100,00	1000,	304,00	V	11,00	14,00

Table 2: 1GHz\_12GHz\_Final\_Result

Calculation:

Max Peak [dB $\mu$ V/m] = Reading [dB $\mu$ V] + Correction [dB $\mu$ V/m]  
 Average [dB $\mu$ V/m] = Reading [dB $\mu$ V] + Correction [dB $\mu$ V/m]  
 Correction [dB $\mu$ V/m] = AF [dB/m] + Cable attenuation [dB] + optional preamp gain [dB]+DCCF\* [dB]  
 \* (if applicable – only for Average values, that are fundamental related)  
 Margin [dB] = Limit [dB $\mu$ V/m] – Max Peak | Average [dB $\mu$ V/m]

Measuring equipment:

Test site and Type		Manufacturer	Serial No.	PM. No.	Val. Date	Val Due
M276 Semi Anechoic Chamber with floor absorber		Albatross Projects	C62128- A540- A138-10- 0006	483227	-	-
Type of validation: SVSWR according to: ANSI C63.4a-2017 CISPR 16-1-4 + Cor1:2010 + A1:2012 + A2:2017					09.2021	09.2022
Test equipment	Type	Manufacturer	Serial No.	PM. No.	Cal. Date	Cal Due
Antenna (Log.Per.)	HL050	Rohde & Schwarz	100438	481170	*	*
Preamplifier 1 GHz -18 GHz	LNA-30- 00101800-25- 10P	Narda-Miteq	2110917	482967	18.02.2022	02.2024
EMI Receiver / Spectrum Analyser	ESW44	Rohde & Schwarz	101828	482979	08.12.2021	12.2023
Systemsoftware EMC32 M276	EMC32	Rohde & Schwarz	100622	483150	*	*

(\*) Calibration not necessary

time stamp: 17.11.2021 used: 10.03.2022

## 6 Report History

Report Number	Date	Comment
E220202E3	18.10.2022	Initial Test Report
E220202E3 2 <sup>nd</sup> Version	27.10.2022	Editorial changes
E220202E3 3 <sup>rd</sup> Version	14.11.2021	Page 13, fixed errors in the drawing

## 7 List of Annexes

Annex A	Test Setup Photos	3 pages
Annex B	EUT External Photos	4 pages
Annex C	EUT Internal Photos	9 pages