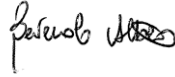





| TEST REPORT nr. R15154101 | |
|---|---|
| Federal Communication Commission (FCC) | |
| Test item | |
| Description | BLUETOOTH DONGLE FOR CANBUS DIAGNOSTIC |
| Trademark | VOLKSWAGEN |
| Model/Type | DataPlug |
| FCC ID | T8RDP15 |
| Test Specification | |
| Standard | FCC Rules & Regulations, Title 47:2014 Part 15 paragraph(s): 203, 204, 207, 209 and 247 |
| Client's name | TEXA S.p.A. |
| Address | Via 1° Maggio, 9 – 31050 Monastier di Treviso (TV) – ITALY |
| Manufacturer's name : | TEXA S.p.A. |
| Address | Via 1° Maggio, 9 – 31050 Monastier di Treviso (TV) – ITALY |
| Report | |
| Tested by | A. Bertezolo – Technician  |
| Approved by | R. Beghetto – Laboratory Manager  |
| Date of issue | 09.09.15 |
| Contents | 63 pages |

This test report shall not be reproduced except in full without the written approval of CMC.
 The test results presented in this report relate only to the item tested.



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1. Summary

Standard:

FCC Rules & Regulations, Title 47:2014
Part 15 paragraph(s): 203, 204, 207, 209 and 247

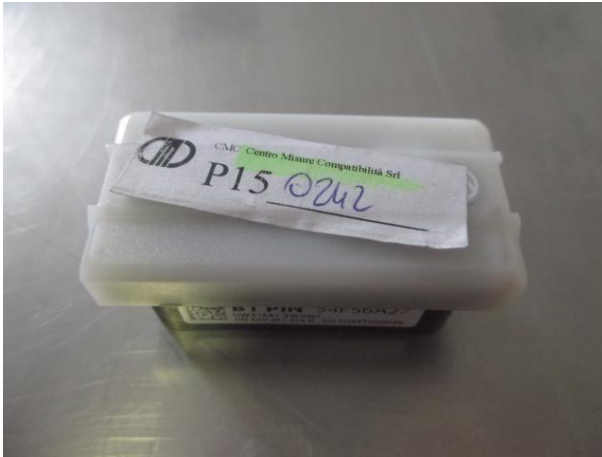
| Test specifications | Environmental Phenomena | Tests sequence | Result |
|------------------------|---|----------------|----------|
| Part 15.203 | Antenna requirements | 1 | Complies |
| Part 15.207 | Conducted emissions | 2 | Complies |
| Part 15.209 | Emissions in restricted frequency bands and in unrestricted frequency bands | 3 | Complies |
| Part 15.209 | DTS bandwidth | 4 | Complies |
| Part 15.247 (d) | Band edge | 5 | Complies |
| Part 15.209 and 15.247 | Fundamental emission output power | 6 | Complies |
| Part 15.209 and 15.247 | Maximum power spectral density level in the fundamental emission | 7 | Complies |
| Part 15.209 | Spurious emission | 8 | Complies |

The Test Report was given to the Client representatives for necessary documentation of ratification of the tested equipment and it is valid for the FCC certification



5. Photograph(s) of EUT

5.1 Photograph(s) of EUT



CMC Centro Misure Compatibilità S.r.l.



6. Equipment list

| <i>Id. number</i> | <i>Manufacturer</i> | <i>Model</i> | <i>Description</i> | <i>Serial number</i> | <i>Last calibration</i> | <i>Due date calibration</i> |
|-------------------|---------------------|--------------|---------------------------|----------------------|-------------------------|-----------------------------|
| CMC S010 | Rohde & Schwarz | ESH3-Z2 | Impulses Limiting Device | --- | January '15 | January '16 |
| CMC S108 | EMCO | 3115 | Horn Antenna | 9811-5622 | May '13 | May '16 |
| CMC S127 | Schaffner | HLA6120 | Loop Antenna | 1191 | January '13 | January '16 |
| CMC S129 | Rohde & Schwarz | ESPI7 | Receiver | 836.914/004 | January '15 | January '16 |
| CMC S136 | Schwarzbeck | VULB 9163 | Broadband Antenna | 9136-205 | May '13 | May '16 |
| CMC S164 | Rohde & Schwarz | ESU26 | EMC interference receiver | 100052 | January '15 | January '16 |
| CMC S200 | Schwarzbeck | NSLK 8128 | V-LISN | 8128-273 | January '15 | January '16 |
| CMC S227 | Rohde & Schwarz | ESR7 | EMI Test Receiver 7GHz | 101121 | January '15 | January '16 |



7. Measurement uncertainty

| Test | Expanded Uncertainty | note |
|---|----------------------|------|
| Conducted Emission | | |
| (50Ω/50μH AMN) - (9 kHz – 150 kHz) | ±3.6 dB | 1 |
| (50Ω/50μH AMN) - (150 kHz – 30 MHz) | ±3.0 dB | 1 |
| (Voltage probe) - (150 kHz – 30 MHz) | ±2.8 dB | 1 |
| (50Ω/5μH AMN) - (150 kHz – 108 MHz) | ±2.6 dB | 1 |
| Discontinuous Conducted Emission | | |
| Conducted Emission (50Ω/50μH AMN) - (150 kHz – 30 MHz) | ±3.0 dB | 1 |
| Disturbance Power (30 MHz – 300 MHz) | | |
| | ±3.7 dB | 1 |
| Radiated Emission | | |
| (0,150 MHz – 30 MHz) | ±4.0 dB | 1 |
| (30 MHz – 1000 MHz) | ±4.3 dB | 1 |
| (1 GHz – 6 GHz) | ±4.5 dB | 1 |
| Electromagnetic field EMF | | |
| | ±10.5 % | 1 |
| Harmonic current emissions test | | |
| | ±1.8 % | 1 |
| Voltage fluctuation and flicker test | | |
| | ±2.6 % | 1 |
| Insertion loss test | | |
| | ±2.0 dB | 1 |
| Radiated electromagnetic disturbance test (loop antenna) | | |
| | ±2.1 dB | 1 |
| Radiated electromagnetic field immunity test | | |
| | 0.81 V/m at 3V/m | 1 |
| Pulse modulated radiated electromagnetic field immunity test | | |
| | 0.81 V/m at 3V/m | 1 |
| Injected currents immunity test | | |
| | 0.45 V at 3V | 1 |
| Bulk current | | |
| | 3.7 mA at 60 mA | 1 |
| Power frequency magnetic field immunity test | | |
| | 0.1 A/m at 10 A/m | 1 |
| Effective radiated power (F < 1GHz) | | |
| | ±4.3 dB | 1 |
| Effective radiated power (F > 1GHz) | | |
| | ±3.7 dB | 1 |
| Frequency error | | |
| | < 1x10 ⁻⁷ | 1 |
| Modulation bandwidth | | |
| | < 1x10 ⁻⁷ | 1 |
| Conducted RF power and spurious emission | | |
| | ±0.7 dB | 1 |
| Adjacent channel power | | |
| | ±1.2 dB | 1 |
| Blocking | | |
| | ±1.2 dB | 1 |
| Electrostatic discharge immunity test | | |
| | | 2 |
| Electrical fast transients / burst immunity test | | |
| | | 2 |
| Surge immunity test | | |
| | | 2 |
| Pulse magnetic field immunity test | | |
| | | 2 |
| Damped oscillatory magnetic field immunity test | | |
| | | 2 |
| Short interruption immunity test | | |
| | | 2 |
| Voltage transient emission test | | |
| | ±2.2 % | 1 |
| Transient immunity test | | |
| | | 2 |

Notes

Note 1:

The expanded uncertainty reported according to EN55016-4-2:2011 is based on a standard uncertainty multiplied by a coverage factor of k=2, providing a level of confidence of p = 95%

Note 2:

It has been demonstrated that the used test equipment meets the specified requirements in the standard with at least a 95% confidence, covering factor k = 2.



8. Reference documents

| Reference no. | Description |
|--|--|
| FCC Rules and Regulation Title 47 part 15:2014 | -- |
| ANSI C63.4:2009 | American National Standard for Methods of Measuring of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz – 40 GHz |
| KDB 558074 D01 DTS Meas Guidance v03r03 | Guidance for Performing Compliance Measurements on Digital Transmission Systems (DTS) Operating Under § 15.247 |
| Internal Procedure PM001 rev. 2.0 (Quality Manual) | Measure Procedure |
| Internal procedure INC_M rev. 8.2 (Quality Manual) | Measurement uncertainty calculation |



9. Deviation from test specification

In agreement with the client, emission tests were performed with peak detector.

At the frequencies where the measures exceed the limit or within 6 dB from it, the test was repeated with quasi-peak detector and/or average detector.

10. Test case verdicts

Test case does not apply to the test object..... : N.A.

Test item does meet the requirement..... : Complies

Test item does not meet the requirement..... : Does not comply

Test not performed : N.E.

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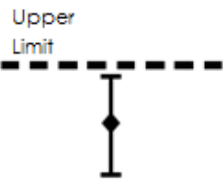
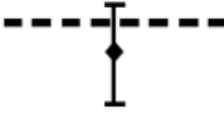
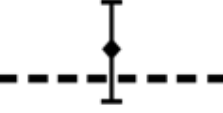



11. Results

In this clause tests results are reported.

Measurement uncertainty is in accordance with document CMC INC_M rev. 8.2.

Judgement of compliance:

| Case 1 | Case 2 | Case 3 | Case 4 |
|---|--|--|---|
|  <p>The sample complies with the requirement.</p> <p>The measurement results is within the specification limit when the measurement uncertainty is taken into account.</p> |  <p>The sample complies with the requirement.</p> <p>It is not possible to state compliance using a 95% coverage probability for the expanded uncertainty although the measurement result is below the limit.</p> |  <p>The sample does not comply with the requirement.</p> <p>It is not possible to state compliance using a 95% coverage probability for the expanded uncertainty also the measurement result is upper the limit.</p> |  <p>The sample does not comply with the requirement.</p> <p>The measurement results is outside the specification limit when the measurement uncertainty is taken into account.</p> |

In agreement with ILAC-G8: 03/2009 Guidelines on the Reporting of Compliance with Specification.



11.1 Antenna requirements

Test set-up and execution

- FCC Rules and Regulation; Titles 47 Part 15.203 and 15.204
- Internal procedure PM001
- See clause 4 of this test report

Test configuration

Test site:
Laboratory

Auxiliary equipment:
See clause 4 of this test report

EUT exercising

See clause 4 of this test report

Test equipment used

--
Measurement uncertainty: See clause 7 of this test report

Test specification

An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited. This requirement does not apply to carrier current devices or to devices operated under the provisions of § 15.211, § 15.213, § 15.217, § 15.219, or § 15.221. Further, this requirement does not apply to intentional radiators that must be professionally installed, such as perimeter protection systems and some field disturbance sensors, or to other intentional radiators which, in accordance with § 15.31 (d), must be measured at the installation site. However, the installer shall be responsible for ensuring that the proper antenna is employed so that the limits in this part are not exceeded

Environmental conditions

| Temperature (°C) | Atmospheric pressure (kPa) | Relative humidity (%) |
|---------------------|-------------------------------|--------------------------|
| 23 | 100 | 42 |

Result

| Antenna Type | External R.F. power amplifier | Gain | Remarks | Results |
|------------------|----------------------------------|----------|---------|----------|
| Integral antenna | Not Present | -1,3 dBi | -- | Complies |

Result: The requirements are met



11.2 Conducted emissions

Test set-up and execution

- FCC Rules and Regulation; Titles 47 Part 15.207
- Internal procedure PM001
- See clause 4 of this test report

Test configuration and test method

Test site:
 Shielded chamber

Auxiliary equipment:
 See clause 4 of this test report

EUT exercising

See clause 4 of this test report

Test equipment used

CMC S010, CMC S200, CMC S227
 Measurement uncertainty: See clause 7 of this test report

Test specification

Port: Main port
 Frequency range: 150 kHz – 30 MHz

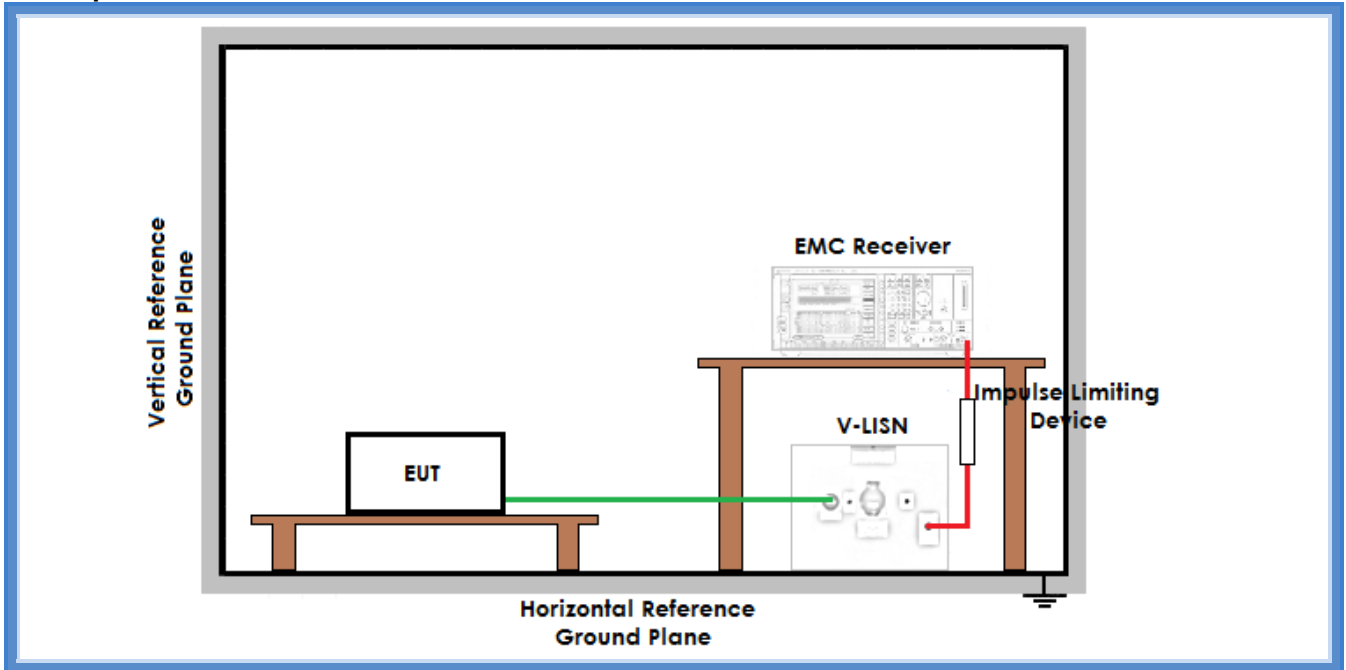
Environmental conditions

| Temperature (°C) | Atmospheric pressure (kPa) | Relative humidity (%) |
|------------------|----------------------------|-----------------------|
| 21 | 98 | 46 |

Acceptance limits

| Frequency range (MHz) | dB(μV) Quasi-peak | dB(μV) Average |
|-----------------------|-------------------|----------------|
| 0,15 to 0,50 | 66 to 56 | 56 to 46 |
| 0,50 to 5 | 56 | 46 |
| 5 to 30 | 60 | 50 |

Setup



Result

| Line | Graphs | Remarks | Result |
|--------------------|-----------|---------|----------|
| -12 Vdc | G15059548 | -- | Complies |
| +12 Vdc | G15059549 | -- | Complies |
| Remarks: -- | | | |

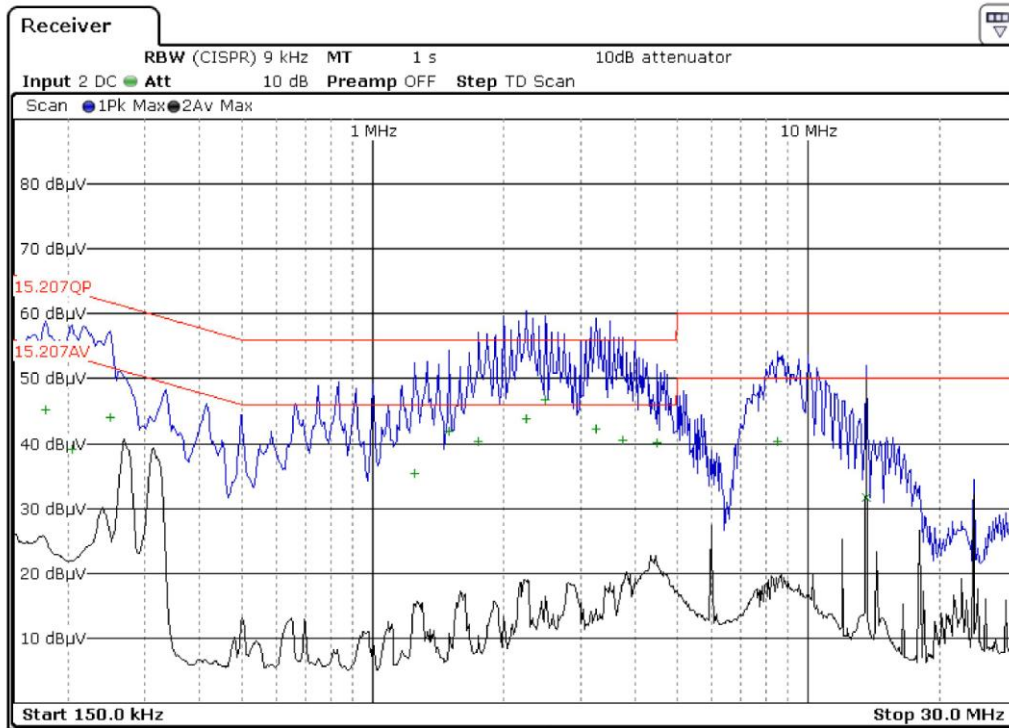
Graphs Legend

PK: Peak; QP [1s] (quasi-peak at 1 second) values are marked with a +
AV: Average; AV [1s] (average at 1 second) values are marked with a X



Graphs

G15059548

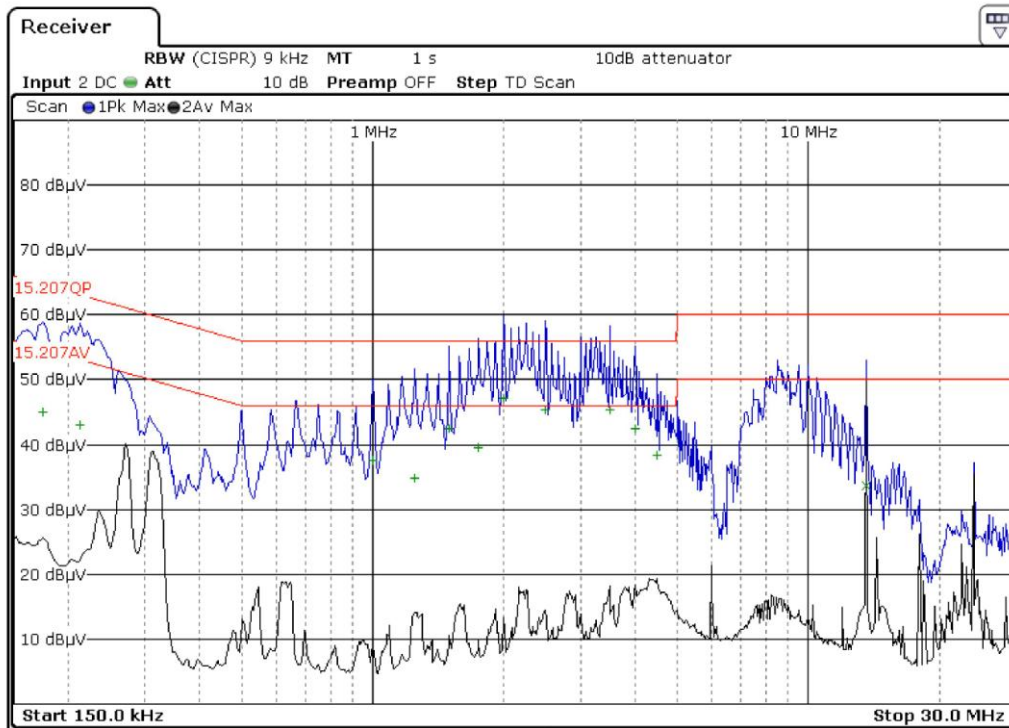


Gandini 15059548-Line (-)-Tx-RX BT

| Trace/Detector | Frequency | Level dBµV | DeltaLimit |
|----------------|--------------|------------|------------|
| 1 Quasi Peak | 177.0000 kHz | 45.22 | -19.41 dB |
| 1 Quasi Peak | 204.0000 kHz | 39.15 | -24.30 dB |
| 1 Quasi Peak | 249.0000 kHz | 44.04 | -17.75 dB |
| 1 Quasi Peak | 1.2480 MHz | 35.51 | -20.49 dB |
| 1 Quasi Peak | 1.5000 MHz | 41.78 | -14.22 dB |
| 1 Quasi Peak | 1.7498 MHz | 40.39 | -15.61 dB |
| 1 Quasi Peak | 2.2493 MHz | 43.82 | -12.18 dB |
| 1 Quasi Peak | 2.4990 MHz | 46.74 | -9.26 dB |
| 1 Quasi Peak | 3.2505 MHz | 42.34 | -13.66 dB |
| 1 Quasi Peak | 3.7500 MHz | 40.49 | -15.51 dB |
| 1 Quasi Peak | 4.4993 MHz | 40.03 | -15.97 dB |
| 1 Quasi Peak | 8.4998 MHz | 40.34 | -19.66 dB |
| 2 Average | 13.5600 MHz | 31.60 | -18.40 dB |



G15059549



Gandini 15059549-Line (+)-Tx-RX BT

| Trace/Detector | Frequency | Level dBµV | DeltaLimit |
|----------------|--------------|------------|------------|
| 1 Quasi Peak | 174.7500 kHz | 45.03 | -19.70 dB |
| 1 Quasi Peak | 213.0000 kHz | 42.98 | -20.11 dB |
| 1 Quasi Peak | 1.0005 MHz | 37.63 | -18.37 dB |
| 1 Quasi Peak | 1.2480 MHz | 34.84 | -21.16 dB |
| 1 Quasi Peak | 1.5000 MHz | 42.44 | -13.56 dB |
| 1 Quasi Peak | 1.7498 MHz | 39.57 | -16.43 dB |
| 1 Quasi Peak | 1.9995 MHz | 47.12 | -8.88 dB |
| 1 Quasi Peak | 2.4990 MHz | 45.36 | -10.64 dB |
| 1 Quasi Peak | 3.5003 MHz | 45.39 | -10.61 dB |
| 1 Quasi Peak | 3.9998 MHz | 42.53 | -13.47 dB |
| 1 Quasi Peak | 4.4993 MHz | 38.28 | -17.72 dB |
| 2 Average | 13.5600 MHz | 33.71 | -16.29 dB |

Result: The requirements are met

CMC Centro Misure Compatibilità S.r.l.



11.3 Emissions in restricted frequency bands and in unrestricted frequency bands

Test set-up and execution

- FCC Rules and Regulation; Titles 47 Part. 15.209
- Internal procedure PM001
- See clause 4 of this test report

Test configuration

Test site:
Semi-anechoic chamber

Auxiliary equipment:
See clause 4 of this test report

EUT exercising

See clause 4 of this test report

Test equipment used

CMC S108, CMC S127, CMC S136, CMC S164
Measurement uncertainty: See clause 7 of this test report

Test specification

Port: Enclosure
Frequency range: 0,009 MHz – 1000 MHz
Antenna polarization: Horizontal (H) – Vertical (V)
EUT – Antenna distance: 3 m

Environmental conditions

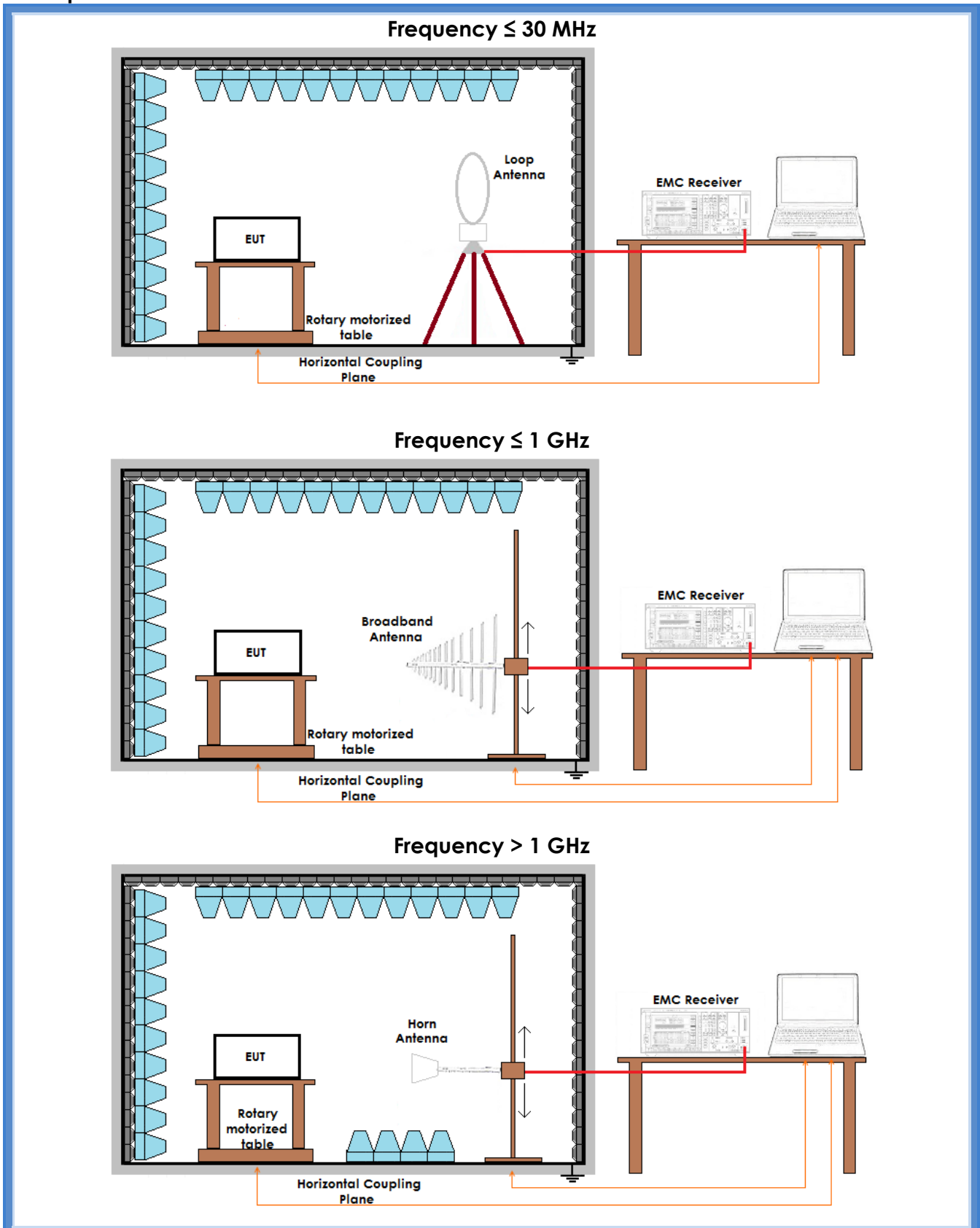
| Temperature (°C) | Atmospheric pressure (kPa) | Relative humidity (%) |
|------------------|----------------------------|-----------------------|
| 22 | 100 | 42 |

Acceptance limits

| Frequency range (MHz) | Limits [dB(μV/m)] |
|-----------------------|-------------------|
| 0,009 to 0,490 | 128,51 to 93,80 |
| 0,490 to 1,705 | 73,80 to 62,97 |
| 1,705 to 30 | 69,54 |
| 30 to 88 | 40 |
| 88 to 216 | 43,52 |
| 216 to 960 | 46,02 |
| Above 960 | 53,98 |

Remarks: The emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9–90 kHz, 110–490 kHz and above 1000 MHz. Radiated emission limits in these three bands are based on measurements employing an average detector.

Setup





Result

| Polarization | Frequency Range (MHz) | Graphs | Remarks | Result |
|--------------|-----------------------|-----------|-----------------|----------|
| Loop | 0,009 – 30 | G15154103 | Worst case | Complies |
| V | 30 – 1000 | G15154101 | Worst case | Complies |
| H | 30 – 1000 | G15154102 | Worst case | Complies |
| V | 1000 – 18000 | G15154104 | Lowest channel | Complies |
| H | 1000 – 18000 | G15154105 | Lowest channel | Complies |
| V | 1000 – 18000 | G15154118 | Medium channel | Complies |
| H | 1000 – 18000 | G15154117 | Medium channel | Complies |
| V | 1000 – 18000 | G15154119 | Highest channel | Complies |
| H | 1000 – 18000 | G15154120 | Highest channel | Complies |
| V | 18000 – 26000 | G15154122 | Worst case | Complies |
| H | 18000 – 26000 | G15154121 | Worst case | Complies |

Remarks: --

Graphs Legend

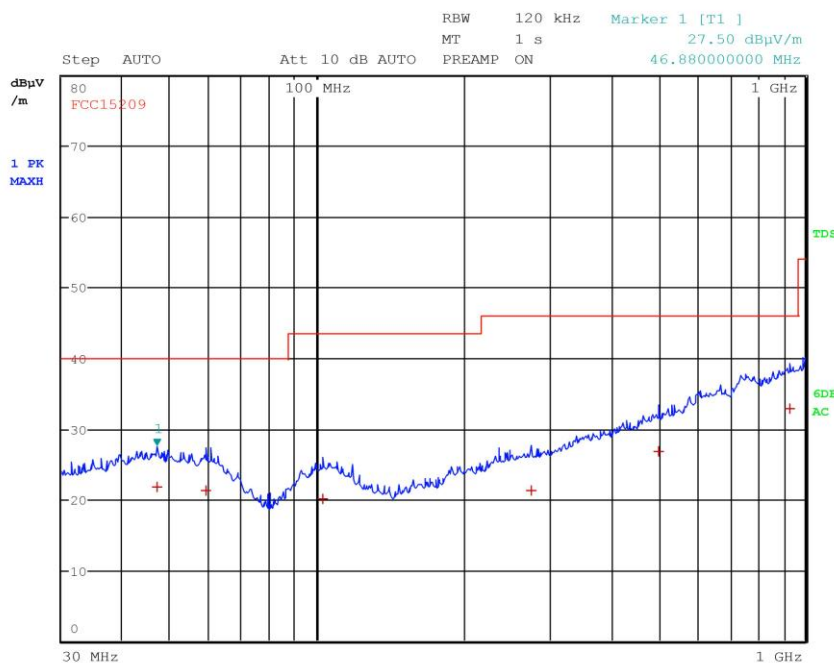
PK: Peak; QP [1s] (quasi-peak at 1 second) values are marked with a +
 AV: Average; AV [1s] (average at 1 second) values are marked with a x



Graphs

G15154101

Meas Type Emission
 Equipment under Test
 Manufacturer
 OP Condition
 Operator Bertezolo 15154101
 Test Spec



Final Measurement

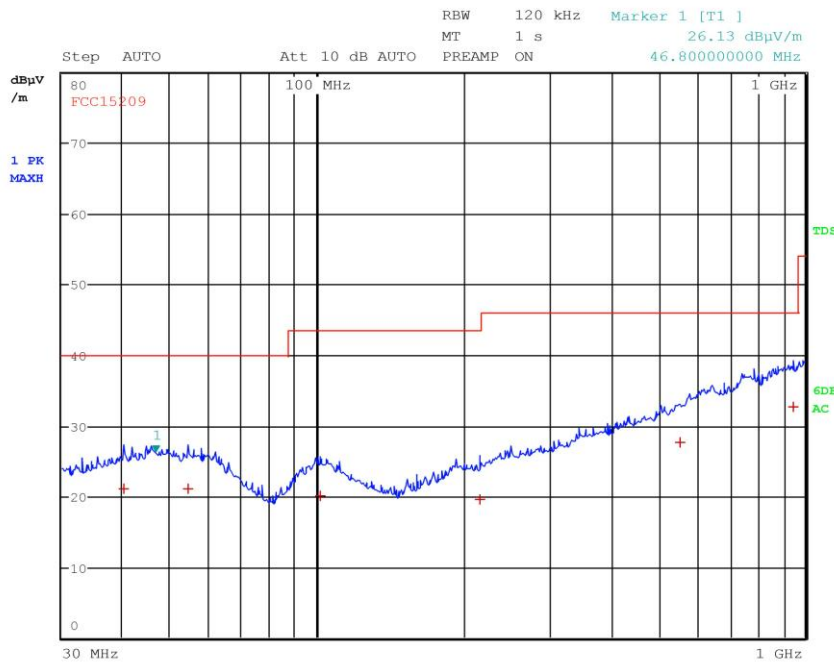
Meas Time: 1 s
 Margin: 20 dB
 Subranges: 6

| Trace | Frequency | Level (dBµV/m) | Detector | Delta Limit/dB |
|-------|-------------------|----------------|------------|----------------|
| 1 | 46.880000000 MHz | 21.69 | Quasi Peak | -18.31 |
| 1 | 59.120000000 MHz | 21.20 | Quasi Peak | -18.80 |
| 1 | 102.560000000 MHz | 20.04 | Quasi Peak | -23.48 |
| 1 | 273.840000000 MHz | 21.30 | Quasi Peak | -24.72 |
| 1 | 499.800000000 MHz | 26.75 | Quasi Peak | -19.27 |
| 1 | 928.920000000 MHz | 32.81 | Quasi Peak | -13.21 |



G15154102

Meas Type Emission
Equipment under Test
Manufacturer
OP Condition
Operator Bertezolo 15154102
Test Spec



Final Measurement

Meas Time: 1 s
Margin: 20 dB
Subranges: 6

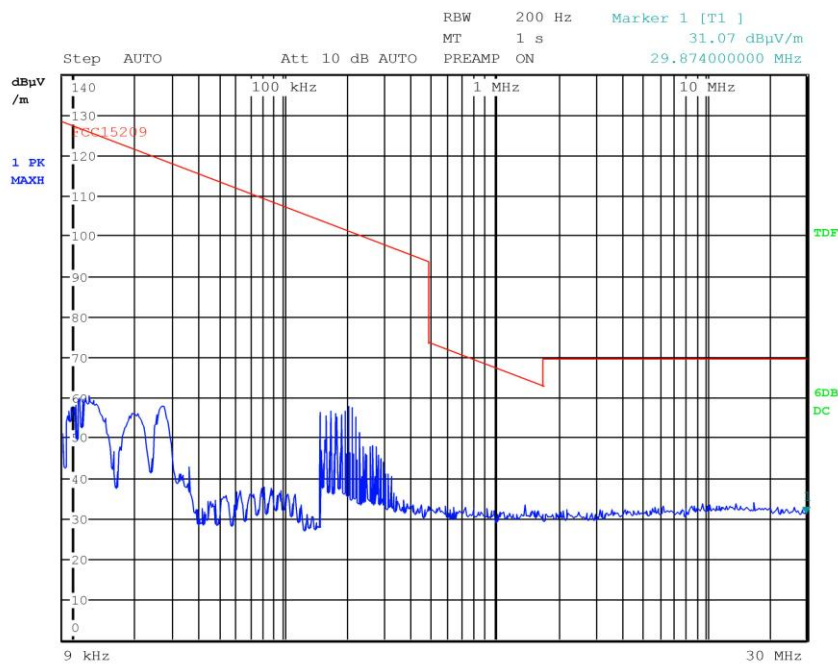
| Trace | Frequency | Level (dBµV/m) | Detector | Delta Limit/dB |
|-------|-------------------|----------------|------------|----------------|
| 1 | 40.120000000 MHz | 21.07 | Quasi Peak | -18.93 |
| 1 | 54.480000000 MHz | 21.15 | Quasi Peak | -18.85 |
| 1 | 101.560000000 MHz | 20.00 | Quasi Peak | -23.52 |
| 1 | 215.960000000 MHz | 19.63 | Quasi Peak | -23.89 |
| 1 | 552.880000000 MHz | 27.64 | Quasi Peak | -18.38 |
| 1 | 946.800000000 MHz | 32.77 | Quasi Peak | -13.25 |

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G15154103

Meas Type Emission
Equipment under Test
Manufacturer
OP Condition
Operator Bertezolo 15154103
Test Spec



Final Measurement

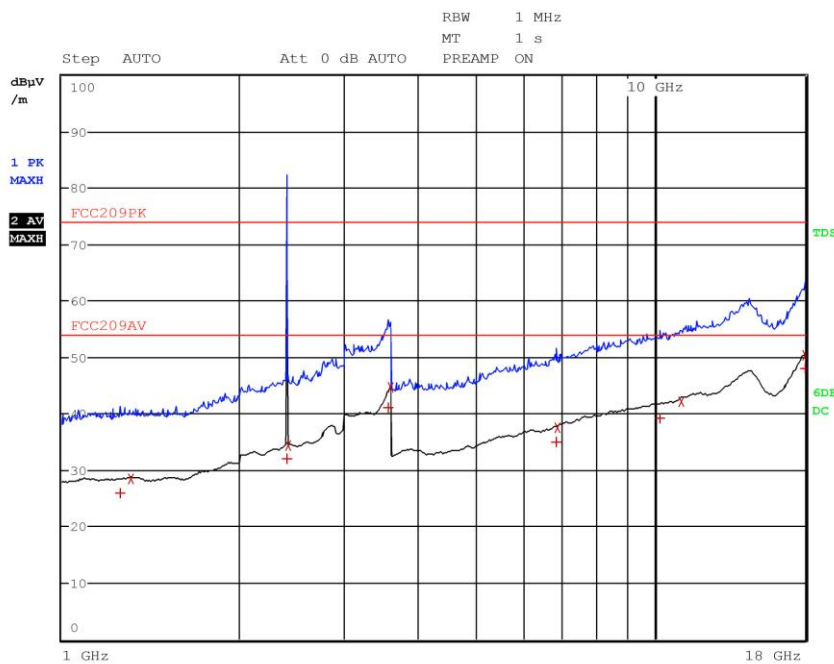
Meas Time: 1 s
 Margin: 20 dB
 Subranges: 0

CMC Centro Misure Compatibilità S.r.l.



G15154104

Meas Type Emission
Equipment under Test
Manufacturer
OP Condition
Operator Bertezolo 15154104
Test Spec





Meas Type Emission
Equipment under Test
Manufacturer
OP Condition
Operator Bertezolo 15154104
Test Spec

Final Measurement

Meas Time: 1 s
 Margin: 20 dB
 Subranges: 12

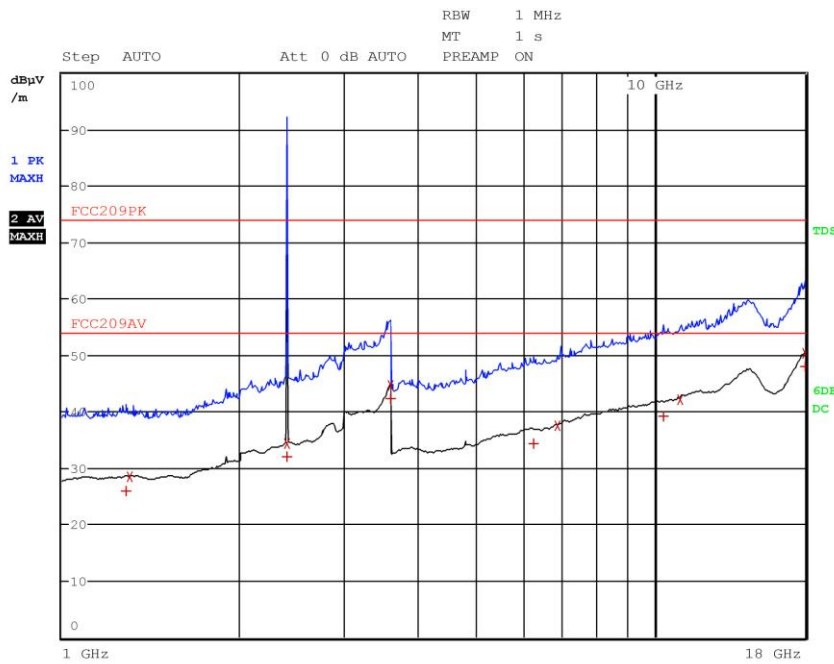
| Trace | Frequency | Level (dBµV/m) | Detector | Delta Limit/dB |
|-------|------------------|----------------|------------|----------------|
| 1 | 1.253800000 GHz | 26.03 | Quasi Peak | -27.97 |
| 2 | 1.310400000 GHz | 28.47 | Average | |
| 1 | 2.406000000 GHz | 31.99 | Quasi Peak | -22.01 |
| 2 | 2.406000000 GHz | 34.29 | Average | |
| 1 | 3.553200000 GHz | 41.11 | Quasi Peak | -12.89 |
| 2 | 3.599600000 GHz | 44.70 | Average | |
| 1 | 6.846000000 GHz | 35.05 | Quasi Peak | -18.95 |
| 2 | 6.860000000 GHz | 37.46 | Average | |
| 1 | 10.223200000 GHz | 39.17 | Quasi Peak | -14.83 |
| 2 | 11.106000000 GHz | 42.12 | Average | |
| 1 | 17.968000000 GHz | 48.01 | Quasi Peak | -5.99 |
| 2 | 17.977200000 GHz | 50.39 | Average | |

CMC Centro Misure Compatibilità S.r.l.



G15154105

Meas Type Emission
Equipment under Test
Manufacturer
OP Condition
Operator Bertezolo 15154105
Test Spec



CMC Centro Misure Compatibilità S.r.l.



Meas Type Emission
Equipment under Test
Manufacturer
OP Condition
Operator Bertezolo 15154105
Test Spec

Final Measurement

Meas Time: 1 s
 Margin: 20 dB
 Subranges: 12

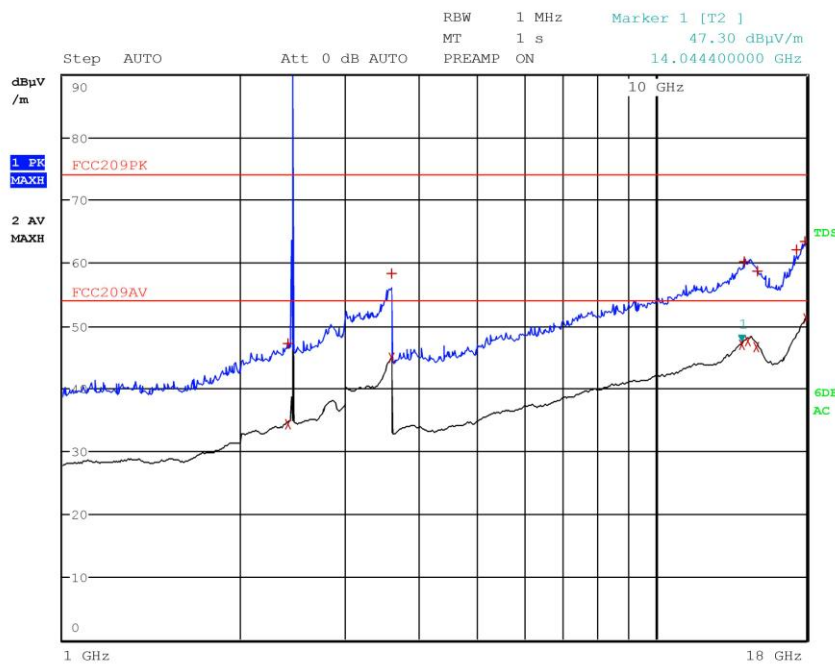
| Trace | Frequency | Level (dBµV/m) | Detector | Delta Limit/dB |
|-------|------------------|----------------|------------|----------------|
| 1 | 1.285200000 GHz | 26.03 | Quasi Peak | -27.97 |
| 2 | 1.298800000 GHz | 28.42 | Average | |
| 2 | 2.406000000 GHz | 34.30 | Average | |
| 1 | 2.406000000 GHz | 32.07 | Quasi Peak | -21.93 |
| 1 | 3.596400000 GHz | 42.35 | Quasi Peak | -11.65 |
| 2 | 3.599200000 GHz | 44.69 | Average | |
| 1 | 6.246000000 GHz | 34.41 | Quasi Peak | -19.59 |
| 2 | 6.859200000 GHz | 37.49 | Average | |
| 1 | 10.380400000 GHz | 39.11 | Quasi Peak | -14.89 |
| 2 | 11.104400000 GHz | 42.11 | Average | |
| 1 | 17.966000000 GHz | 47.92 | Quasi Peak | -6.08 |
| 2 | 17.977200000 GHz | 50.37 | Average | |

CMC Centro Misure Compatibilità S.r.l.



G15154117

Meas Type Emission
Equipment under Test
Manufacturer
OP Condition
Operator Bertezolo 15154117
Test Spec



CMC Centro Misure Compatibilità S.r.l.



Meas Type Emission
Equipment under Test
Manufacturer
OP Condition
Operator Bertezolo 15154117
Test Spec

Final Measurement

Meas Time: 1 s
 Margin: 20 dB
 Peaks: 12

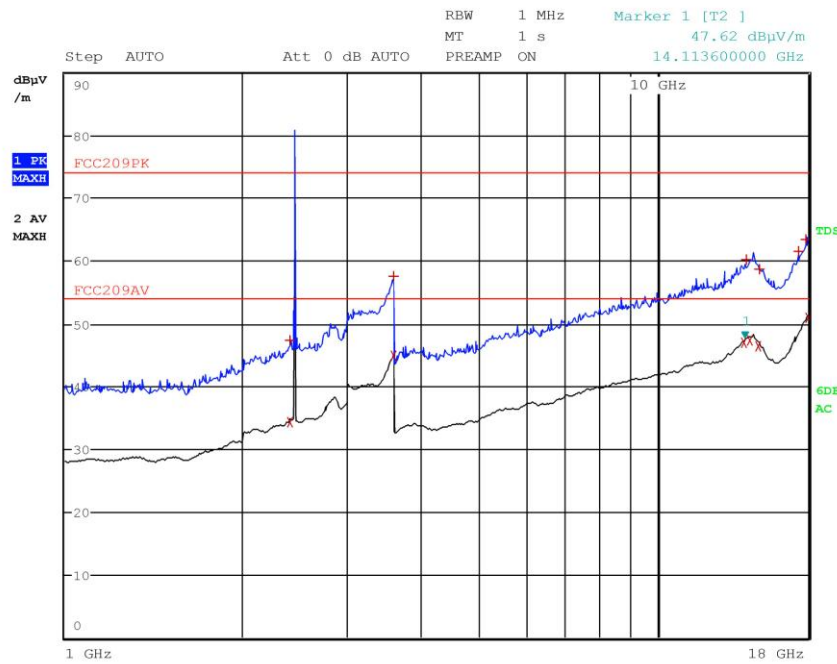
| Trace | Frequency | Level (dBµV/m) | Detector | Delta Limit/dB |
|-------|------------------|----------------|----------|----------------|
| 1 | 2.400000000 GHz | 47.08 | Max Peak | -26.92 |
| 2 | 2.400000000 GHz | 34.34 | Average | -19.66 |
| 1 | 3.597200000 GHz | 58.34 | Max Peak | -15.66 |
| 2 | 3.598000000 GHz | 44.84 | Average | -9.16 |
| 2 | 14.044400000 GHz | 47.00 | Average | -7.00 |
| 1 | 14.172800000 GHz | 60.18 | Max Peak | -13.82 |
| 2 | 14.349200000 GHz | 47.47 | Average | -6.53 |
| 2 | 14.849600000 GHz | 46.54 | Average | -7.46 |
| 1 | 14.912400000 GHz | 58.68 | Max Peak | -15.32 |
| 1 | 17.341200000 GHz | 62.02 | Max Peak | -11.98 |
| 1 | 17.885600000 GHz | 63.42 | Max Peak | -10.58 |
| 2 | 17.970400000 GHz | 51.07 | Average | -2.93 |

CMC Centro Misure Compatibilità S.r.l.



G15154118

Meas Type Emission
Equipment under Test
Manufacturer
OP Condition
Operator Bertezolo 15154118
Test Spec



CMC Centro Misure Compatibilità S.r.l.



Meas Type Emission
Equipment under Test
Manufacturer
OP Condition
Operator Bertezolo 15154118
Test Spec

Final Measurement

Meas Time: 1 s
 Margin: 20 dB
 Peaks: 12

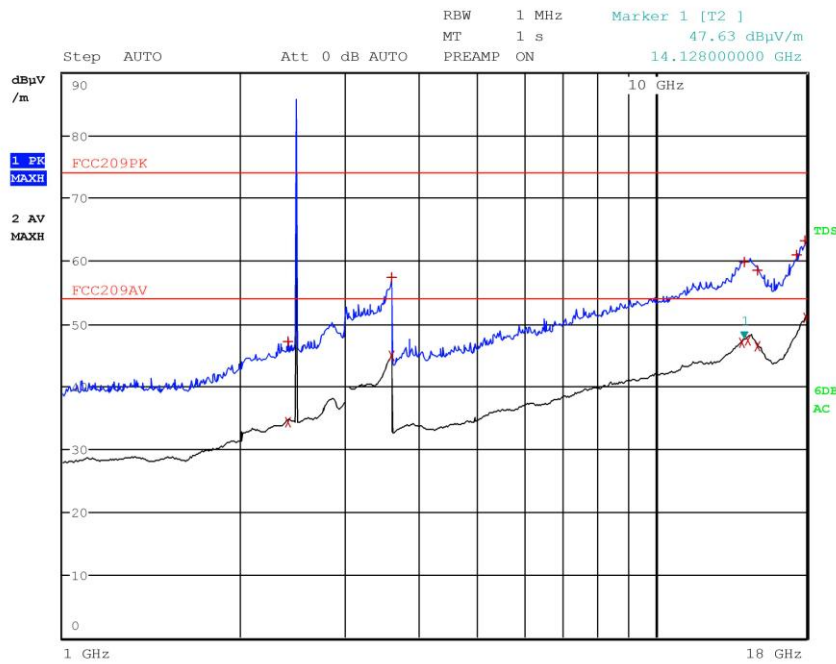
| Trace | Frequency | Level (dBµV/m) | Detector | Delta Limit/dB |
|-------|------------------|----------------|----------|----------------|
| 1 | 2.400000000 GHz | 47.27 | Max Peak | -26.73 |
| 2 | 2.400000000 GHz | 34.32 | Average | -19.68 |
| 1 | 3.597200000 GHz | 57.62 | Max Peak | -16.38 |
| 2 | 3.598000000 GHz | 44.84 | Average | -9.16 |
| 2 | 14.044400000 GHz | 46.98 | Average | -7.02 |
| 1 | 14.172800000 GHz | 60.21 | Max Peak | -13.79 |
| 2 | 14.349200000 GHz | 47.44 | Average | -6.56 |
| 2 | 14.849600000 GHz | 46.50 | Average | -7.50 |
| 1 | 14.912400000 GHz | 58.70 | Max Peak | -15.30 |
| 1 | 17.341200000 GHz | 61.56 | Max Peak | -12.44 |
| 1 | 17.885600000 GHz | 63.39 | Max Peak | -10.61 |
| 2 | 17.970400000 GHz | 51.03 | Average | -2.97 |

CMC Centro Misure Compatibilità S.r.l.



G15154119

Meas Type Emission
Equipment under Test
Manufacturer
OP Condition
Operator Bertezolo 15154119
Test Spec



CMC Centro Misure Compatibilità S.r.l.



Meas Type Emission
Equipment under Test
Manufacturer
OP Condition
Operator Bertezolo 15154119
Test Spec

Final Measurement

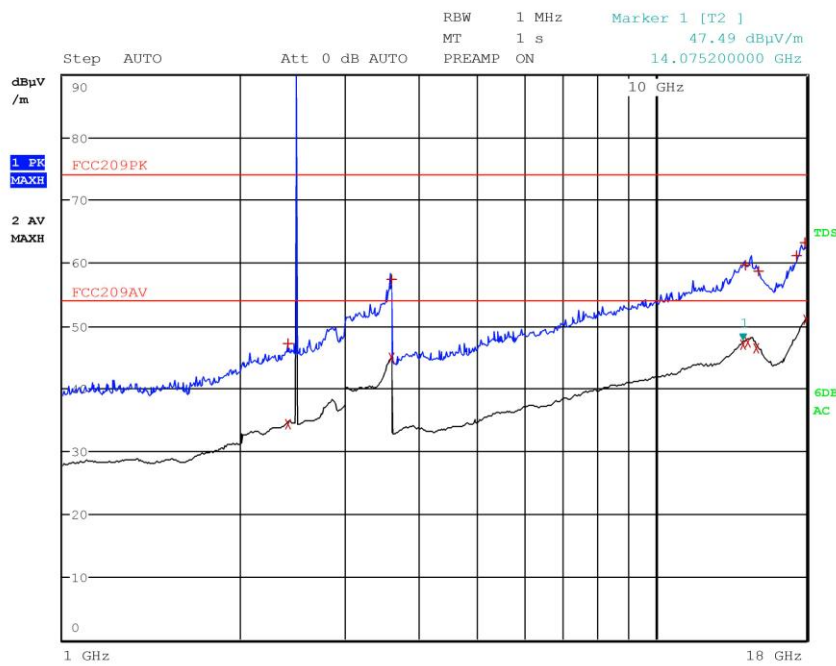
Meas Time: 1 s
 Margin: 20 dB
 Peaks: 12

| Trace | Frequency | Level (dBµV/m) | Detector | Delta Limit/dB |
|-------|------------------|----------------|----------|----------------|
| 1 | 2.400000000 GHz | 47.24 | Max Peak | -26.76 |
| 2 | 2.400000000 GHz | 34.34 | Average | -19.66 |
| 1 | 3.597200000 GHz | 57.33 | Max Peak | -16.67 |
| 2 | 3.598000000 GHz | 44.85 | Average | -9.15 |
| 2 | 14.044400000 GHz | 46.95 | Average | -7.05 |
| 1 | 14.172800000 GHz | 59.92 | Max Peak | -14.08 |
| 2 | 14.349200000 GHz | 47.44 | Average | -6.56 |
| 2 | 14.849600000 GHz | 46.46 | Average | -7.54 |
| 1 | 14.912400000 GHz | 58.55 | Max Peak | -15.45 |
| 1 | 17.341200000 GHz | 60.89 | Max Peak | -13.11 |
| 1 | 17.885600000 GHz | 63.22 | Max Peak | -10.78 |
| 2 | 17.970400000 GHz | 50.98 | Average | -3.02 |



G15154120

Meas Type Emission
Equipment under Test
Manufacturer
OP Condition
Operator Bertezolo 15154120
Test Spec



CMC Centro Misure Compatibilità S.r.l.



Meas Type Emission
Equipment under Test
Manufacturer
OP Condition
Operator Bertezolo 15154120
Test Spec

Final Measurement

Meas Time: 1 s
 Margin: 20 dB
 Peaks: 12

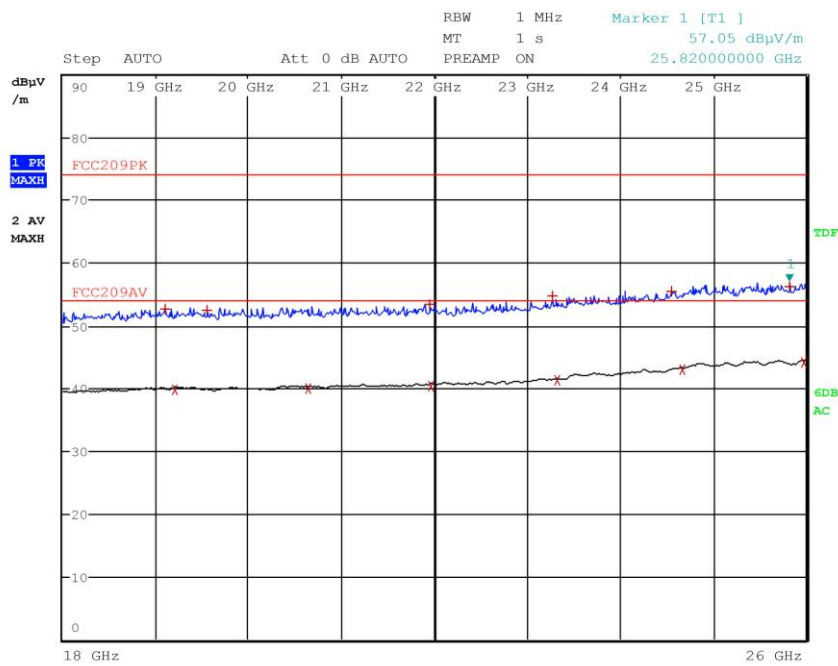
| Trace | Frequency | Level (dBµV/m) | Detector | Delta Limit/dB |
|-------|------------------|----------------|----------|----------------|
| 1 | 2.400000000 GHz | 47.20 | Max Peak | -26.80 |
| 2 | 2.400000000 GHz | 34.36 | Average | -19.64 |
| 1 | 3.597200000 GHz | 57.43 | Max Peak | -16.57 |
| 2 | 3.598000000 GHz | 44.85 | Average | -9.15 |
| 2 | 14.044400000 GHz | 46.94 | Average | -7.06 |
| 1 | 14.172800000 GHz | 59.60 | Max Peak | -14.40 |
| 2 | 14.349200000 GHz | 47.43 | Average | -6.57 |
| 2 | 14.849600000 GHz | 46.45 | Average | -7.55 |
| 1 | 14.912400000 GHz | 58.63 | Max Peak | -15.37 |
| 1 | 17.341200000 GHz | 61.11 | Max Peak | -12.89 |
| 1 | 17.885600000 GHz | 63.22 | Max Peak | -10.78 |
| 2 | 17.970400000 GHz | 50.96 | Average | -3.04 |

CMC Centro Misure Compatibilità S.r.l.



G15154121

Meas Type Emission
Equipment under Test
Manufacturer
OP Condition
Operator Bertezolo 15154121
Test Spec



CMC Centro Misure Compatibilità S.r.l.



Meas Type Emission
Equipment under Test
Manufacturer
OP Condition
Operator Bertezolo 15154121
Test Spec

Final Measurement

Meas Time: 1 s
 Margin: 25 dB
 Subranges: 12

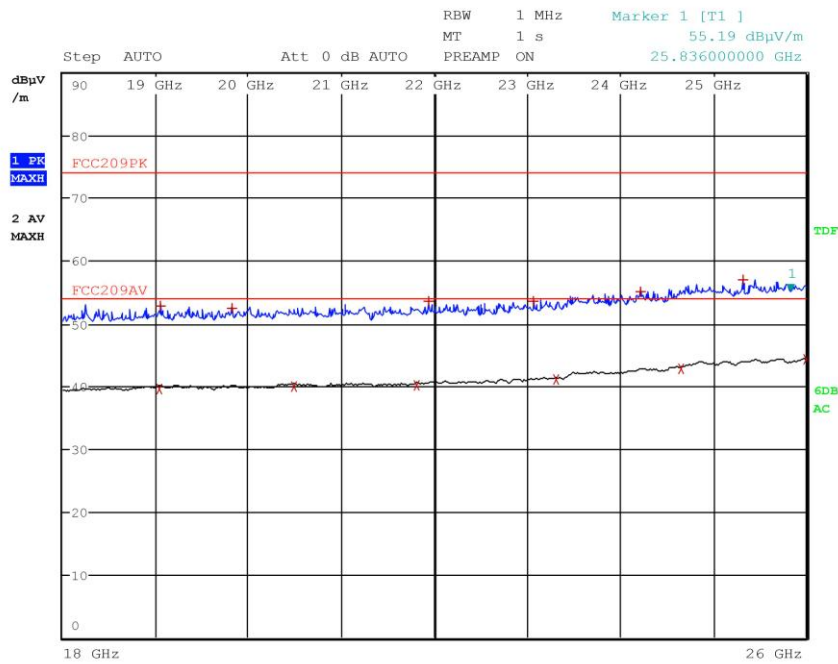
| Trace | Frequency | Level (dBµV/m) | Detector | Delta Limit/dB |
|-------|------------------|----------------|----------|----------------|
| 1 | 19.104800000 GHz | 52.65 | Max Peak | -21.35 |
| 2 | 19.208800000 GHz | 39.73 | Average | -14.27 |
| 1 | 19.545200000 GHz | 52.56 | Max Peak | -21.44 |
| 2 | 20.643600000 GHz | 39.97 | Average | -14.03 |
| 1 | 21.949200000 GHz | 53.47 | Max Peak | -20.53 |
| 2 | 21.967200000 GHz | 40.40 | Average | -13.60 |
| 1 | 23.266800000 GHz | 54.69 | Max Peak | -19.31 |
| 2 | 23.317200000 GHz | 41.23 | Average | -12.77 |
| 1 | 24.553600000 GHz | 55.56 | Max Peak | -18.44 |
| 2 | 24.661200000 GHz | 42.92 | Average | -11.08 |
| 1 | 25.820000000 GHz | 56.24 | Max Peak | -17.76 |
| 2 | 25.973200000 GHz | 44.20 | Average | -9.80 |

CMC Centro Misure Compatibilità S.r.l.



G15154122

Meas Type Emission
Equipment under Test
Manufacturer
OP Condition
Operator Bertezolo 15154122
Test Spec



CMC Centro Misure Compatibilità S.r.l.



Meas Type Emission
Equipment under Test
Manufacturer
OP Condition
Operator Bertezolo 15154122
Test Spec

Final Measurement

Meas Time: 1 s
 Margin: 25 dB
 Subranges: 12

| Trace | Frequency | Level (dBµV/m) | Detector | Delta Limit/dB |
|-------|------------------|----------------|----------|----------------|
| 2 | 19.036000000 GHz | 39.67 | Average | -14.33 |
| 1 | 19.045200000 GHz | 52.92 | Max Peak | -21.08 |
| 1 | 19.818000000 GHz | 52.46 | Max Peak | -21.54 |
| 2 | 20.482800000 GHz | 40.03 | Average | -13.97 |
| 2 | 21.801200000 GHz | 40.25 | Average | -13.75 |
| 1 | 21.934400000 GHz | 53.53 | Max Peak | -20.47 |
| 1 | 23.058400000 GHz | 53.51 | Max Peak | -20.49 |
| 2 | 23.301600000 GHz | 41.17 | Average | -12.83 |
| 1 | 24.216000000 GHz | 55.19 | Max Peak | -18.81 |
| 2 | 24.650000000 GHz | 42.87 | Average | -11.13 |
| 1 | 25.321600000 GHz | 56.97 | Max Peak | -17.03 |
| 2 | 25.993200000 GHz | 44.29 | Average | -9.71 |

CMC Centro Misure Compatibilità S.r.l.

Result: The requirements are met



11.4 DTS bandwidth

Test set-up and execution

- FCC Rules and Regulation; Titles 47 Part 15.247
- KDB 558074 D01 DTS Meas Guidance v03r03 cl. 8.1
- Internal procedure PM001
- See clause 4 of this test report

EUT exercising

See clause 4 of this test report

Test specification

Systems using digital modulation techniques may operate in the 902–928 MHz, 2400–2483.5 MHz, and 5725–5850 MHz bands. The minimum 6 dB bandwidth shall be at least 500 kHz

Environmental conditions

| Temperature (°C) | Atmospheric pressure (kPa) | Relative humidity (%) |
|------------------|----------------------------|-----------------------|
| 22 | 100 | 45 |

Test configuration

Test site:
 Semi-anechoic chamber

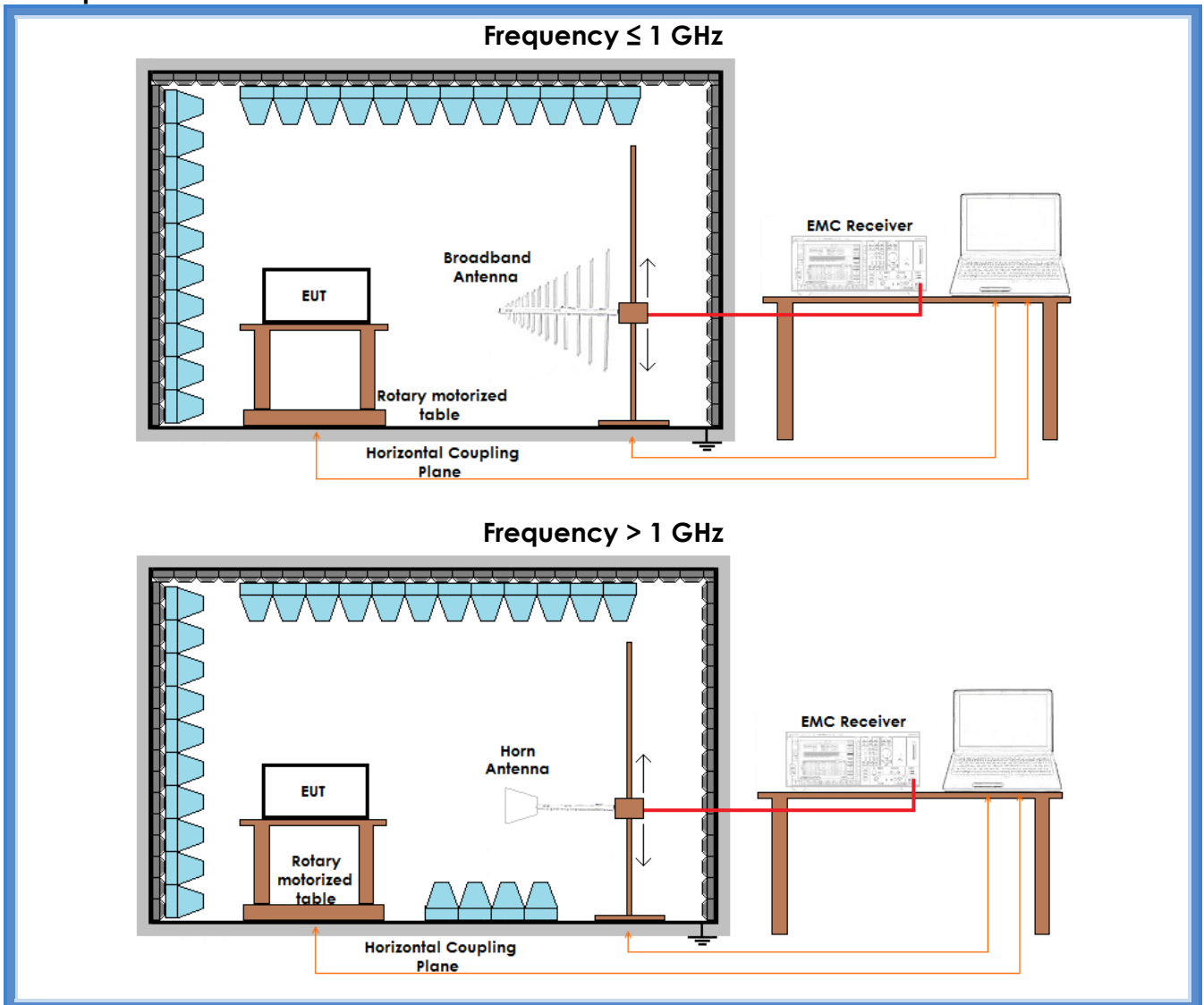
Auxiliary equipment:
 See clause 4 of this test report

Test equipment used

CMC S108, CMC S136, CMC S164
 Measurement uncertainty: See clause 7 of this test report

CMC Centro Misure Compatibilità S.r.l.

Setup



Result

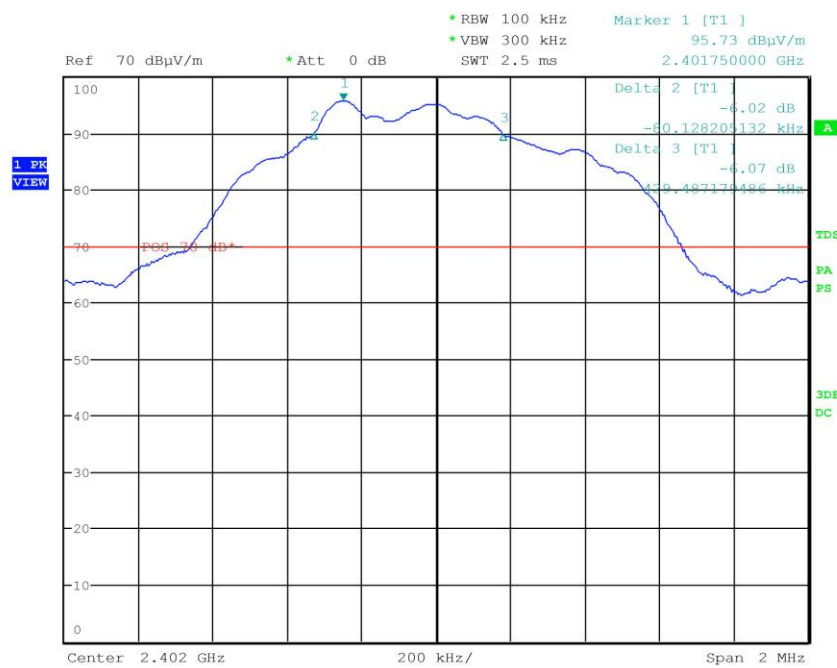
| Channel | Graphs | 6 dB bandwidth (kHz) | Limits (kHz) | Results |
|---------|-----------|----------------------|--------------|----------|
| Lowest | G15154106 | 509,615 | At least 500 | Complies |
| Medium | G15154111 | 516,025 | At least 500 | Complies |
| Highest | G15154114 | 516,025 | At least 500 | Complies |



Graphs

G15154106

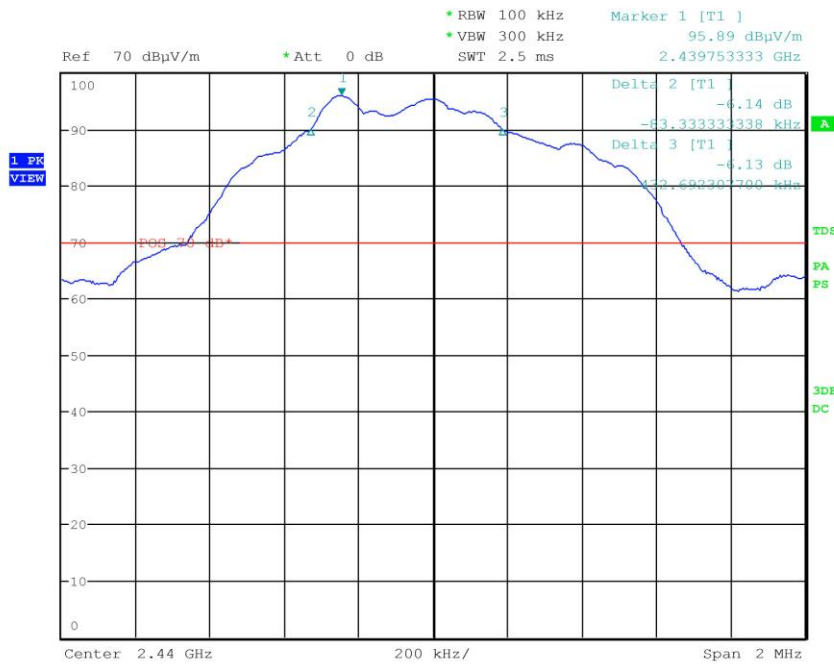
Meas Type Emission
 Equipment under Test
 Manufacturer
 OP Condition
 Operator Bertezolo 15154106
 Test Spec





G15154111

Meas Type Emission
Equipment under Test
Manufacturer
OP Condition
Operator Bertezolo 15154111
Test Spec

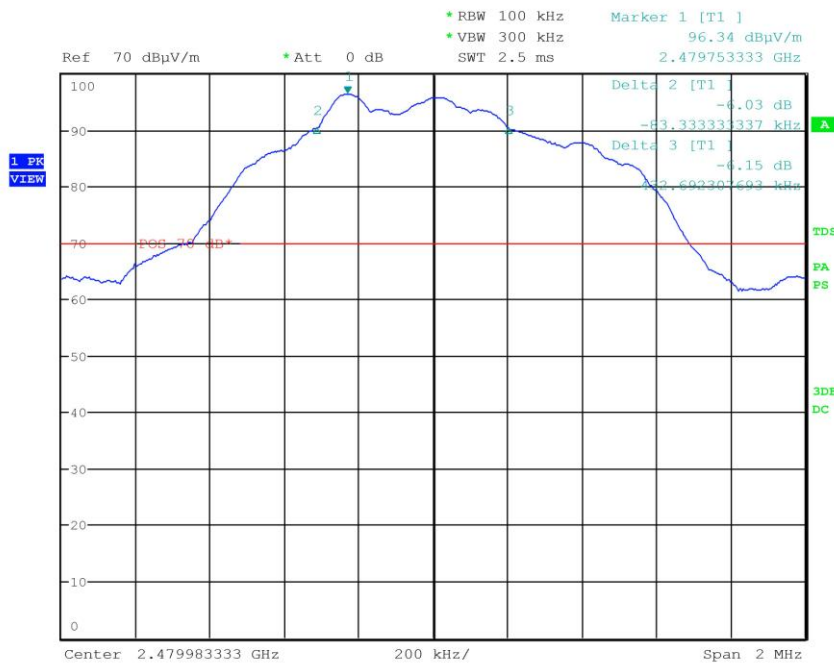


CMC Centro Misure Compatibilità S.r.l.



G15154114

Meas Type Emission
Equipment under Test
Manufacturer
OP Condition
Operator Bertezolo 15154114
Test Spec



Result: The requirements are met

CMC Centro Misure Compatibilità S.r.l.



11.5 Band edge

Test set-up and execution

- FCC Rules and Regulation; Titles 47 Part 15.247 (d)
- KDB 558074 D01 DTS Meas Guidance v03r03 cl. 11.1(a) and 12.1
- Internal procedure PM001
- See clause 4 of this test report

EUT exercising

See clause 4 of this test report

Test specification

See FCC Part 15.247

Environmental conditions

| Temperature (°C) | Atmospheric pressure (kPa) | Relative humidity (%) |
|------------------|----------------------------|-----------------------|
| 21 | 100 | 45 |

Acceptance limits: operation within the band 2400 – 2483,5 MHz

Test configuration

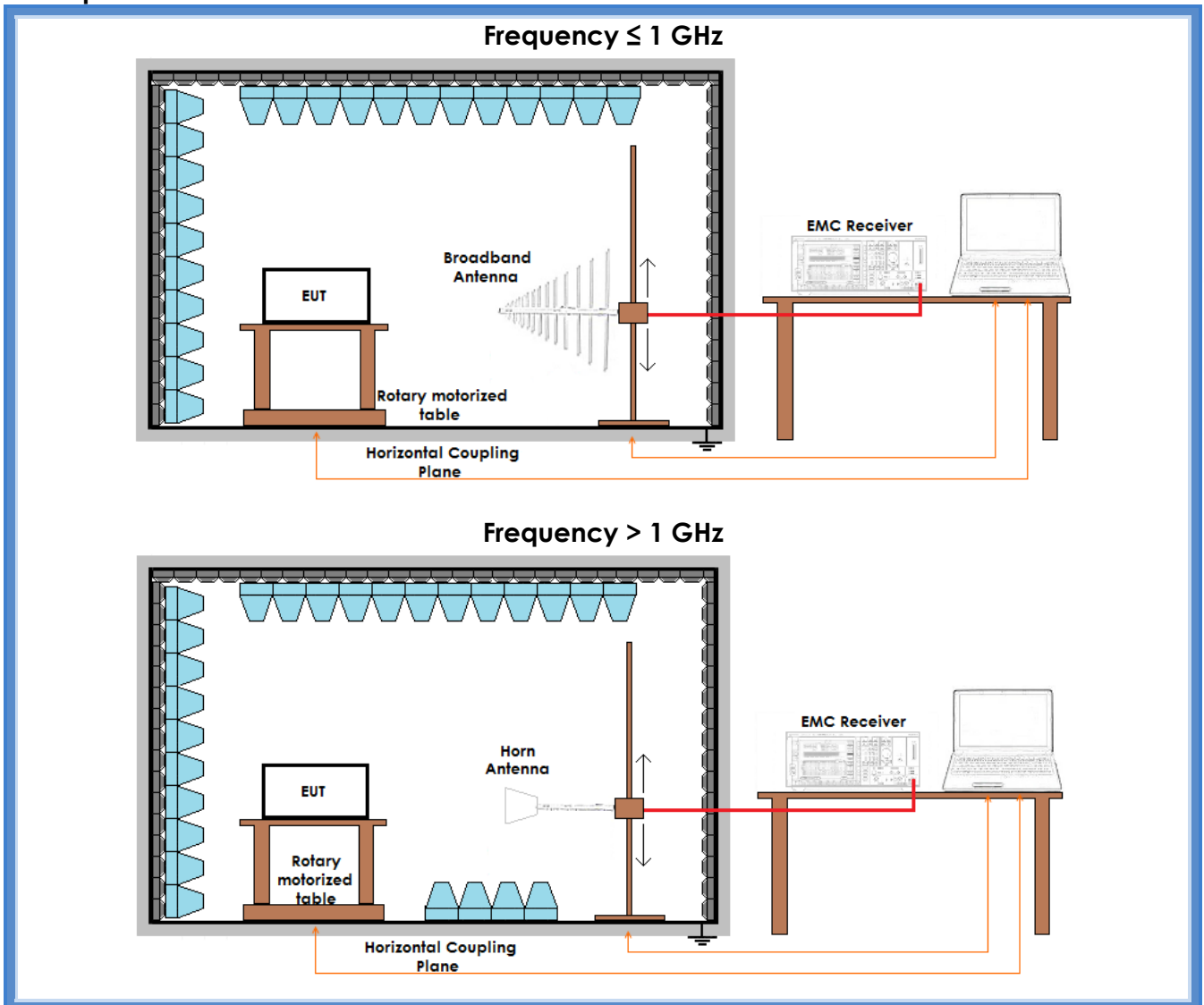
Test site:
 Semi-anechoic chamber

Auxiliary equipment:
 See clause 4 of this test report

Test equipment used

CMC S108, CMC S136, CMC S164
 Measurement uncertainty: See clause 7 of this test report

Setup



Result

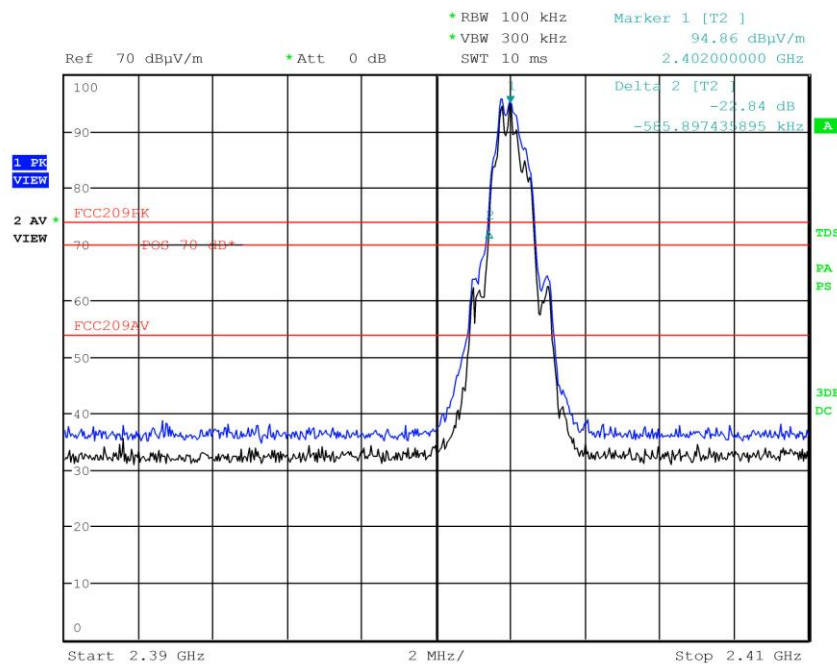
| Channel | Bandwidth | Graph(s) | Results | |
|---------|-----------|-----------|---------------|----------|
| Lowest | 100 kHz | G15154109 | 2401,4141 MHz | Complies |
| | 1 MHz | G15154110 | | |
| Highest | 1 MHz | G15154123 | 2483,2756 MHz | Complies |



Graphs

G15154109

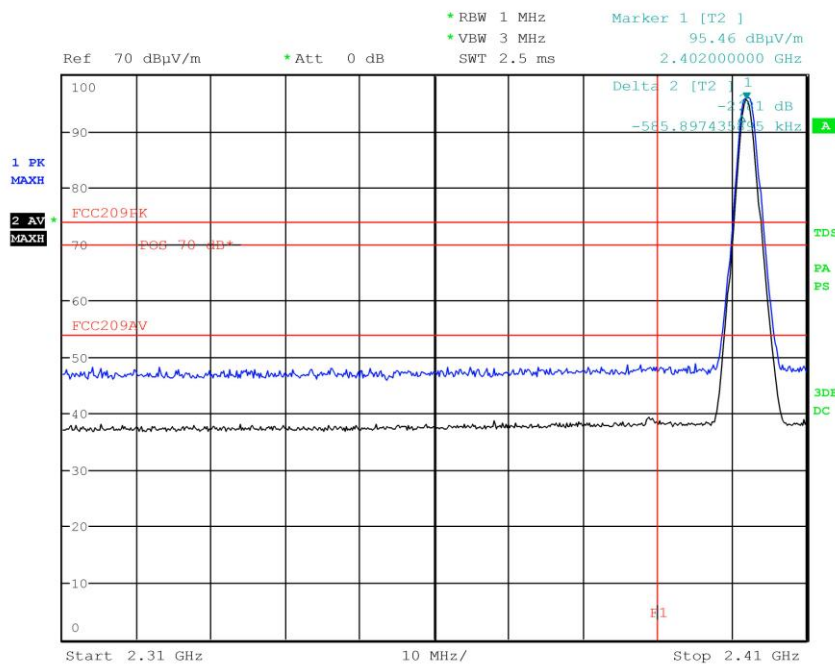
Meas Type Emission
 Equipment under Test
 Manufacturer
 OP Condition
 Operator Bertezzolo 15154109
 Test Spec





G15154110

Meas Type Emission
Equipment under Test
Manufacturer
OP Condition
Operator Bertezolo 15154110
Test Spec

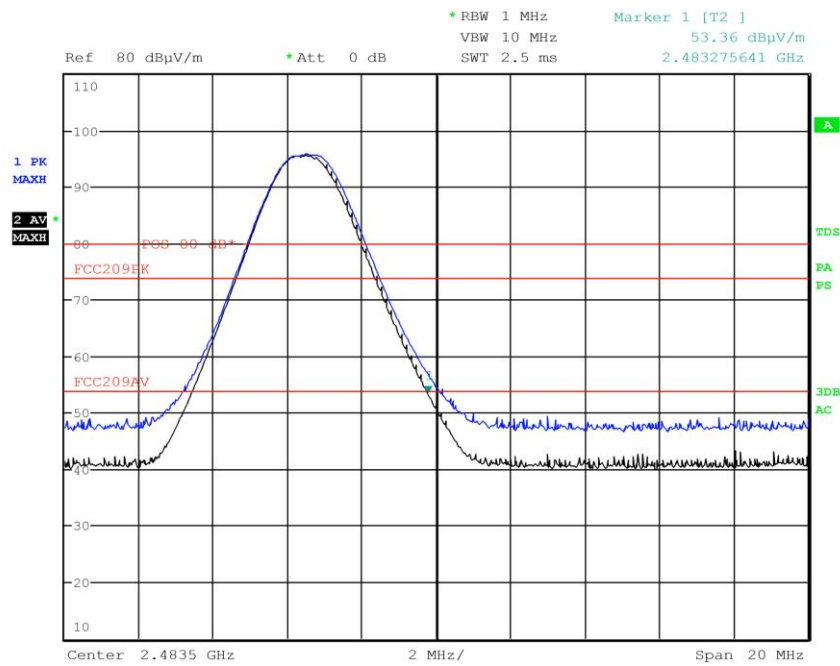


CMC Centro Misure Compatibilità S.r.l.



G15154123

Meas Type Emission
Equipment under Test
Manufacturer
OP Condition
Operator Bertezolo 15154123
Test Spec



Result: The requirements are met



11.6 Fundamental emission output power

Test set-up and execution

- FCC Rules and Regulation; Titles 47 Part 15.247
- KDB 558074 D01 DTS Meas Guidance v03r03 cl. 3.0 and 9
- Internal procedure PM001
- See clause 4 of this test report

Test configuration

Test site:
 Semi-anechoic chamber

Auxiliary equipment:
 See clause 4 of this test report

EUT exercising

See clause 4 of this test report

Test equipment used

CMC S108, CMC S136, CMC S164
 Measurement uncertainty: See clause 7 of this test report

Test specification

Port: Enclosure (conducted measurements are not applicable because the antenna connector is not available, see also cl. 3.0 of KDB 558074 D01 DTS Meas Guidance v03r02)
 Antenna polarization: Horizontal (H) – Vertical (V)
 EUT – Antenna distance: 3 m
 EUT height about the floor: 80 cm

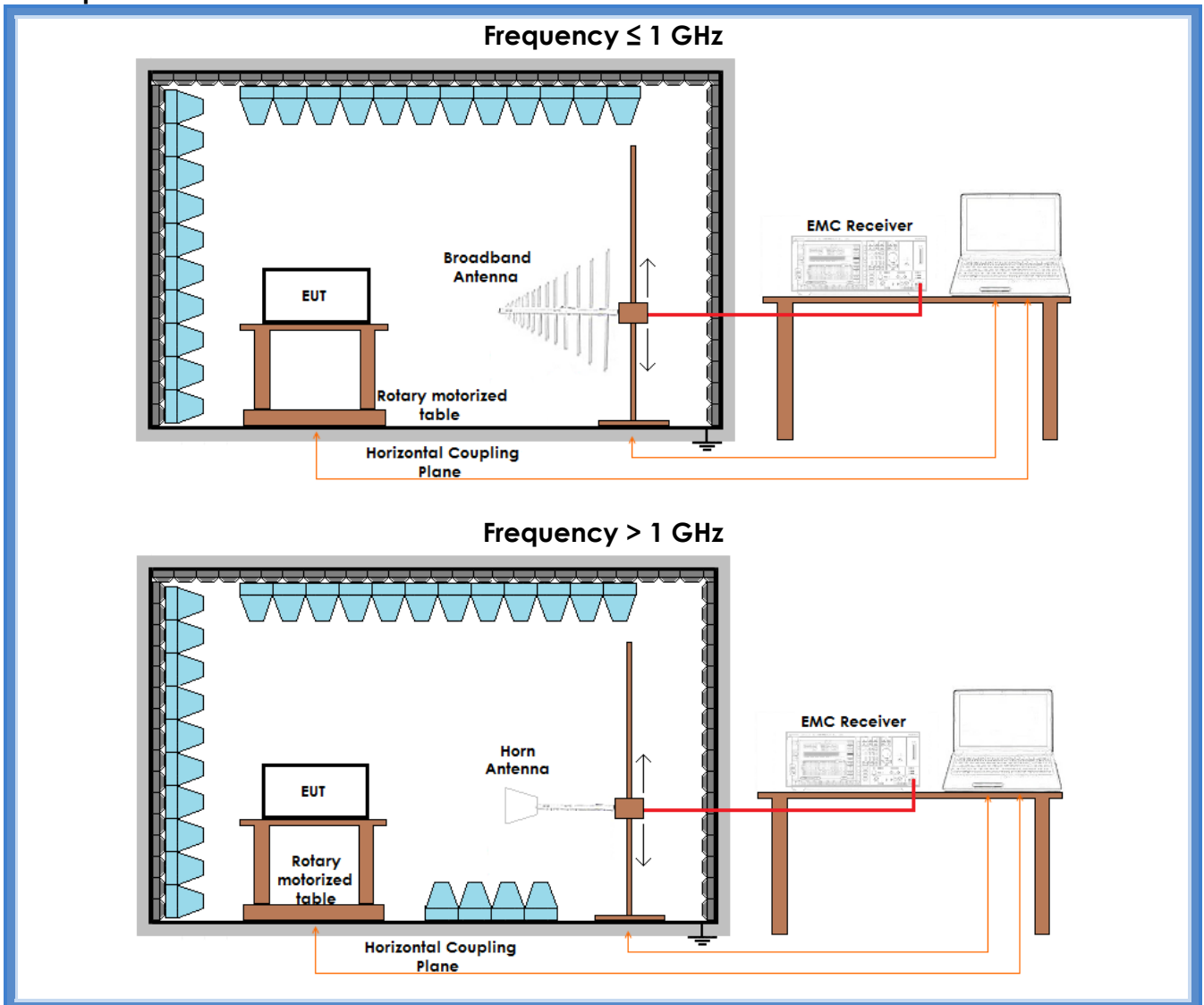
Environmental conditions

| Temperature (°C) | Atmospheric pressure (kPa) | Relative humidity (%) |
|------------------|----------------------------|-----------------------|
| 22 | 100 | 42 |

Acceptance limits:

For systems using digital modulation in the 902–928 MHz, 2400–2483.5 MHz, and 5725–5850 MHz bands: 1 Watt

Setup





Result

| Channel | Polarization | Graphs | Measured PK level (dBµV/m) | Peak Output Conducted Power (mW) | Remarks |
|---------|--------------|-----------|----------------------------|----------------------------------|---------|
| Lowest | Worst case | G15154107 | 96,07 | 1,637 | -- |
| Medium | Worst case | G15154112 | 97,65 | 2,356 | -- |
| Highest | Worst case | G15154115 | 96,70 | 1,893 | -- |

Remarks: the above table shows the results of radiated measurements, in agreement with cl. 3.0 of KDB 558074 D01 DTS Meas Guidance v03r03.
 Conducted measurements are not applicable because the antenna connector is not available.
 The following formula, provided in document DA 00-705, has been used for the conversion between radiated to conducted values:

$$\text{Conducted value} = (E \times d)^2 / (30 \times G)$$

Where:

E = $(10^{(\text{dB}\mu\text{V}/\text{m})/20})/1000000$, the maximum measured fundamental field strength in V/m

G = $10^{\text{dBi}/10}$, the numeric gain of the transmitting antenna: 0,74 (-1,3 dBi)

d = the distance in meters from which the field strength was measured (3 m)

P = the power in watts

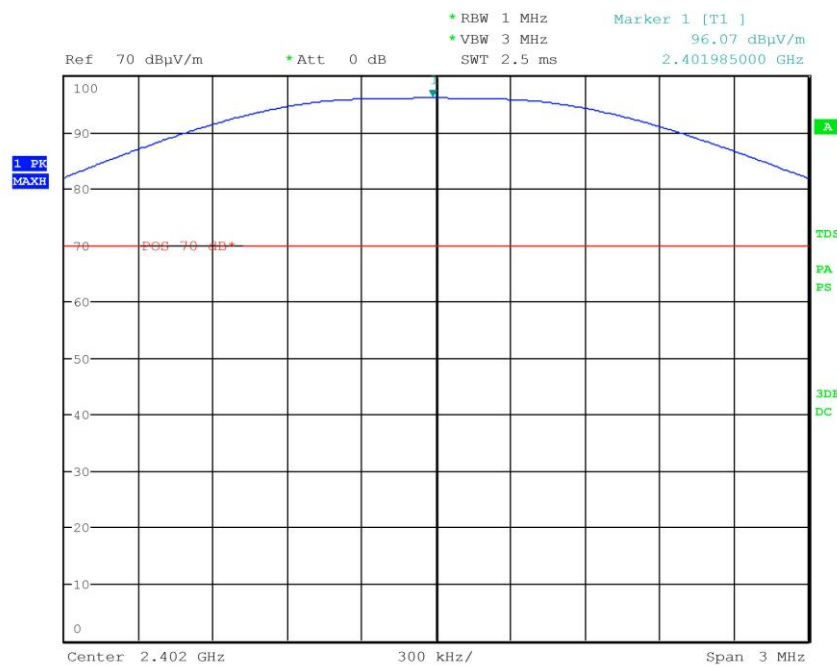
CMC Centro Misure Compatibilità S.r.l.



Graphs

G15154107

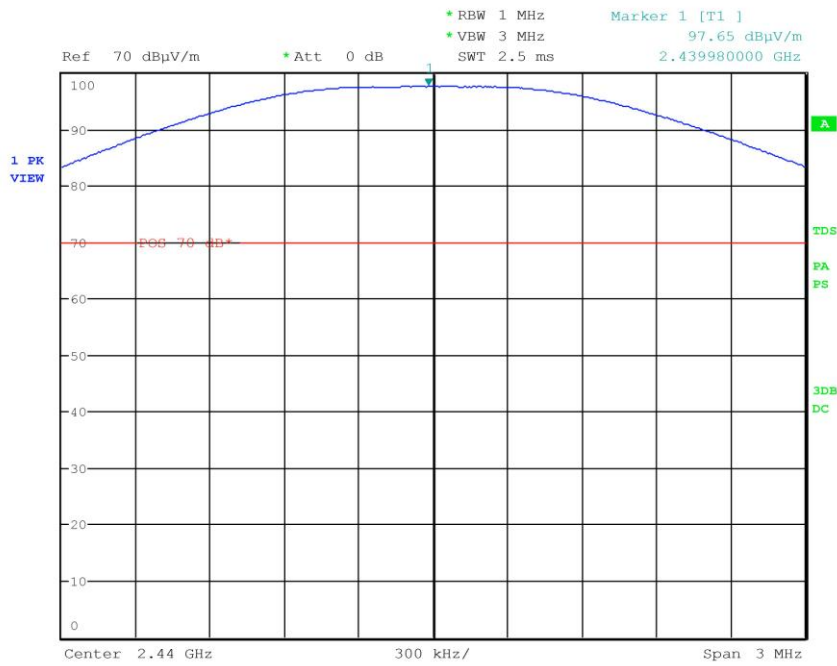
Meas Type Emission
Equipment under Test
Manufacturer
OP Condition
Operator Bertezolo 15154107
Test Spec





G15154112

Meas Type Emission
Equipment under Test
Manufacturer
OP Condition
Operator Bertezolo 15154112
Test Spec

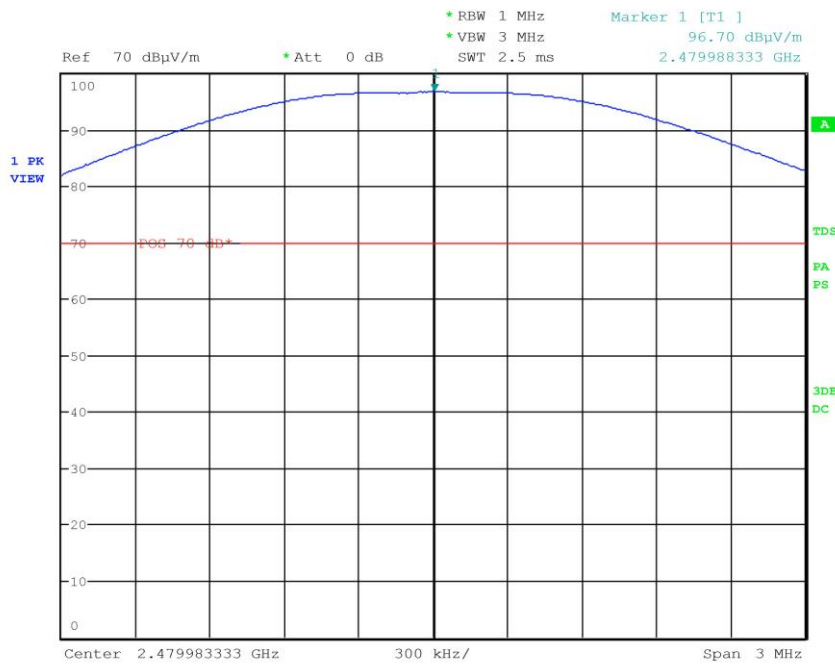


CMC Centro Misure Compatibilità S.r.l.



G15154115

Meas Type Emission
Equipment under Test
Manufacturer
OP Condition
Operator Bertezolo 15154115
Test Spec



Result: The requirements are met

CMC Centro Misure Compatibilità S.r.l.



11.7 Maximum power spectral density level in the fundamental emission

Test set-up and execution

- FCC Rules and Regulation; Titles 47 Part 15.247
- KDB 558074 D01 DTS Meas Guidance v03r03 cl. 10.2
- Internal procedure PM001
- See clause 4 of this test report

Test configuration

Test site:
 Semi-anechoic chamber

Auxiliary equipment:
 See clause 4 of this test report

EUT exercising

See clause 4 of this test report

Test equipment used

CMC S108, CMC S136, CMC S164
 Measurement uncertainty: See clause 7 of this test report

Test specification

Port: Enclosure
 Antenna polarization: Horizontal (H) – Vertical (V)
 EUT – Antenna distance: 3 m

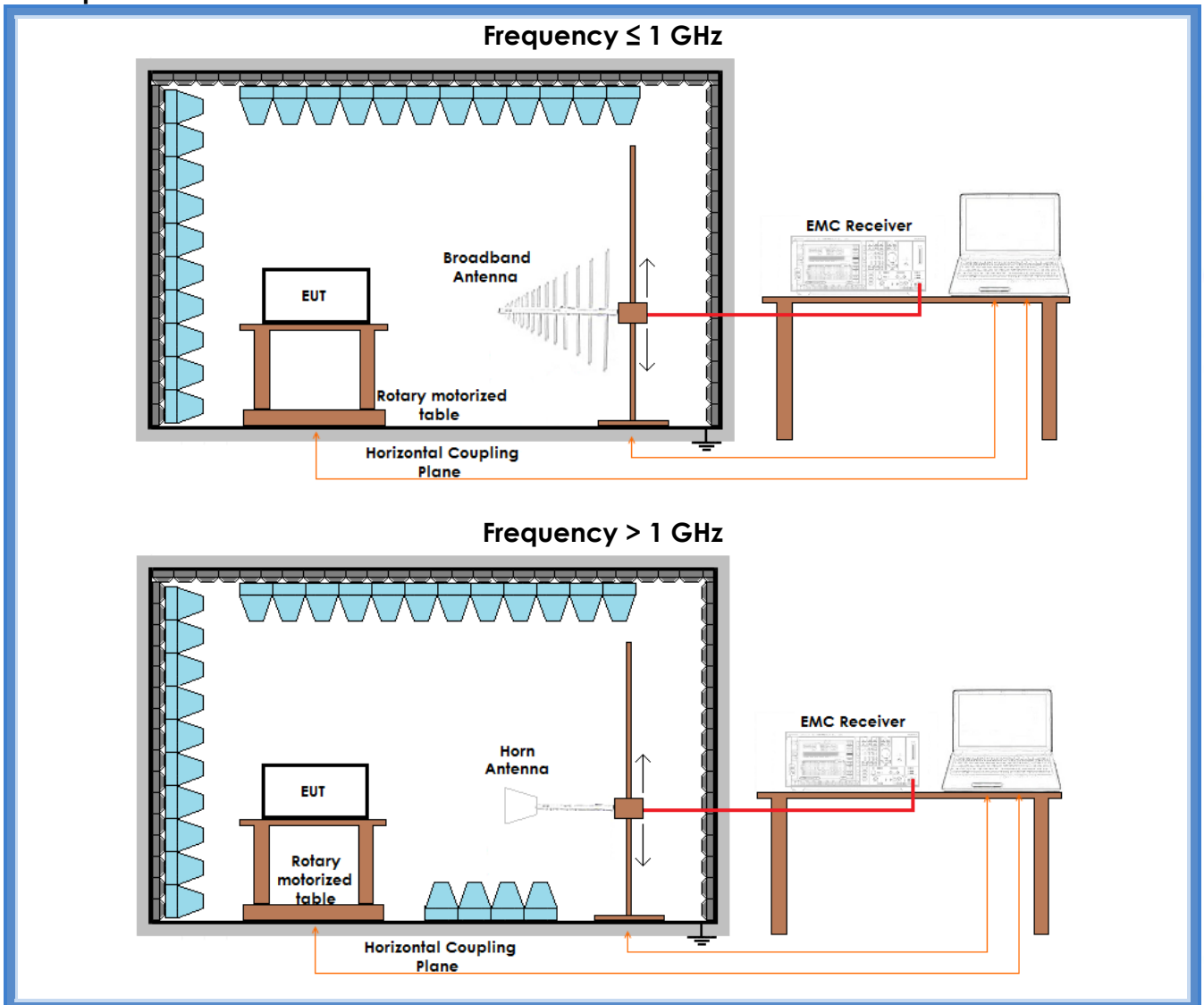
Environmental conditions

| Temperature (°C) | Atmospheric pressure (kPa) | Relative humidity (%) |
|------------------|----------------------------|-----------------------|
| 22 | 100 | 42 |

Acceptance limits:

| Frequency Range | Power Spectral Density |
|-------------------|------------------------|
| 2400 – 2483,5 MHz | 8 dBm / 6,31 mW |

Setup





Result

| Channel | Polarization | Graphs | Measured PK level (dB μ V/m) | Power Spectral Density (mW) | Remarks |
|---------|--------------|-----------|----------------------------------|-----------------------------|---------|
| Lowest | Worst case | G15154108 | 95,71 | 1,507 | -- |
| Medium | Worst case | G15154113 | 97,32 | 2,183 | -- |
| Highest | Worst case | G15154116 | 96,34 | 1,742 | -- |

Remarks: the above table shows the results of radiated measurements, in agreement with cl. 3.0 of KDB 558074 D01 DTS Meas Guidance v03r03.

Conducted measurements are not applicable because the antenna connector is not available. The following formula, provided in document DA 00-705, has been used for the conversion between radiated to conducted values:

$$\text{Conducted value} = (E \times d)^2 / (30 \times G)$$

Where:

E = $(10^{(\text{dB}\mu\text{V}/\text{m})/20})/1000000$, the maximum measured fundamental field strength in V/m

G = $10^{\text{dBi}/10}$, the numeric gain of the transmitting antenna: 0,74 (-1,3 dBi)

d = the distance in meters from which the field strength was measured (3 m)

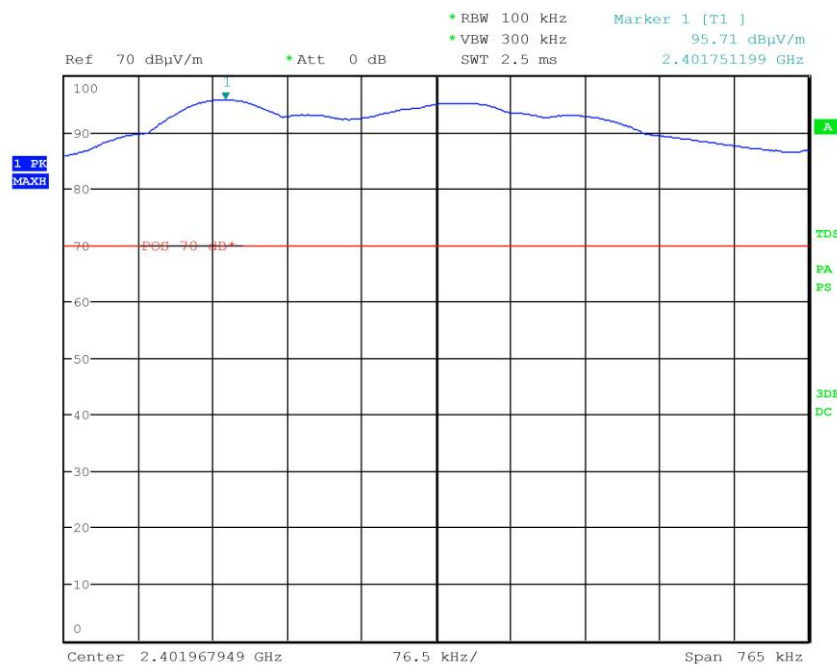
P = the power in watts



Graphs

G15154108

Meas Type Emission
Equipment under Test
Manufacturer
OP Condition
Operator Bertezolo 15154108
Test Spec

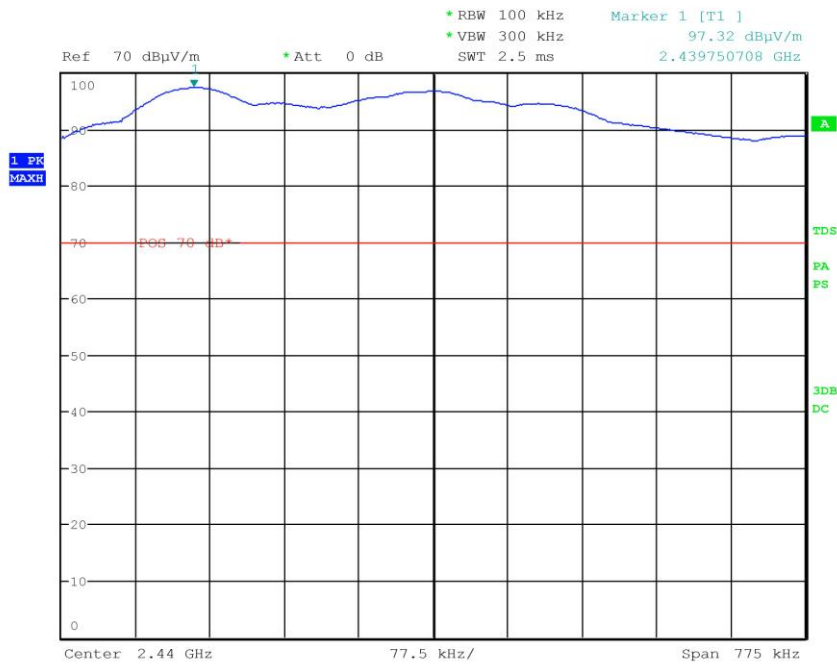


CMC Centro Misure Compatibilità S.r.l.



G15154113

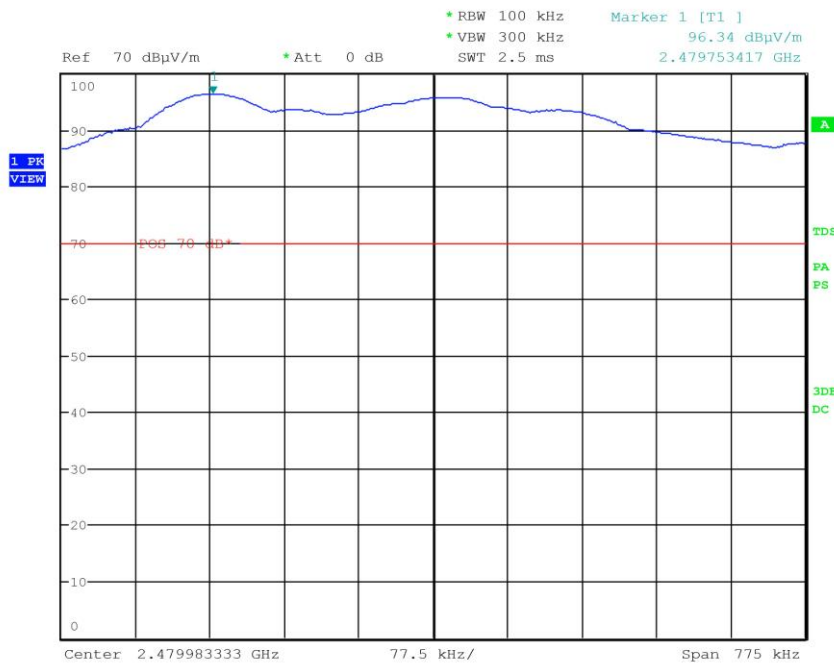
Meas Type Emission
Equipment under Test
Manufacturer
OP Condition
Operator Bertezolo 15154113
Test Spec





G15154116

Meas Type Emission
Equipment under Test
Manufacturer
OP Condition
Operator Bertezolo 15154116
Test Spec



Result: The requirements are met



11.8 Spurious Emission

Test set-up and execution

- FCC Rules and Regulation; Titles 47 Part 15.209
- Internal procedure PM001
- See clause 4 of this test report

Test configuration

Test site:
Semi-anechoic chamber

Auxiliary equipment:
See clause 4 of this test report

EUT exercising

See clause 4 of this test report

Test equipment used

CMC S108, CMC S136, CMC S164
Measurement uncertainty: See clause 7 of this test report

Test specification

Port: Enclosure
Antenna polarization: Horizontal (H) – Vertical (V)
EUT – Antenna distance: 3 m
EUT height about the floor: 80 cm
Detector AV + Peak

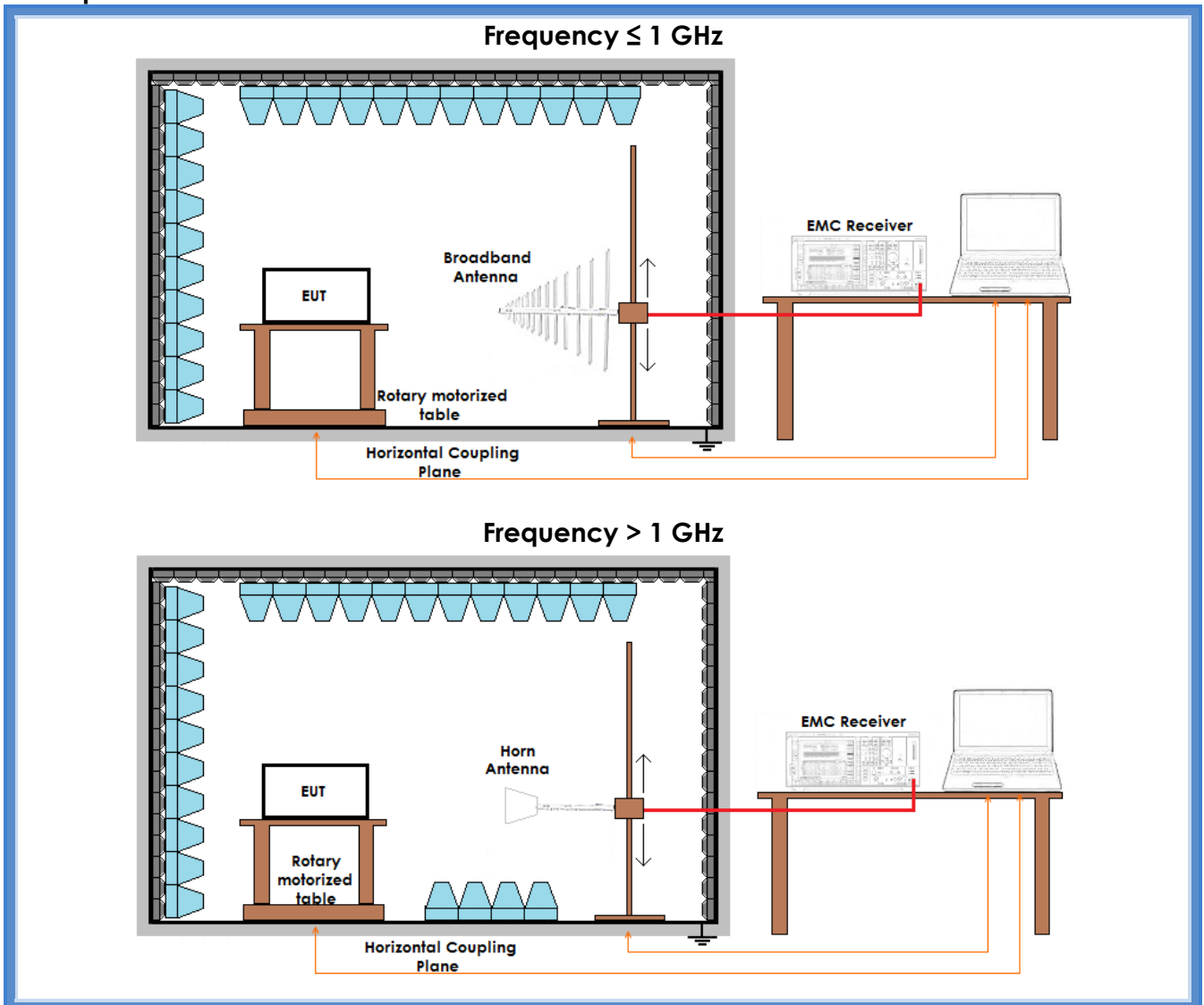
Environmental conditions

| Temperature (°C) | Atmospheric pressure (kPa) | Relative humidity (%) |
|------------------|----------------------------|-----------------------|
| 22 | 100 | 45 |

Acceptance limits

| Frequency (MHz) | AV limits [dB(μV/m)] | Peak limits [dB(μV/m)] |
|-----------------|----------------------|------------------------|
| > 1000 | 54 | 74 |

Setup





Result – AV detector

| Harmonic | Limits (dB μ V/m) | Level (dB μ V/m) | | | Results |
|----------|--------------------------|--------------------------------|--------------------------------|--------------------------------|----------|
| | | Lowest channel | Medium channel | Highest channel | |
| II | 54 | More than 20 dB below limit | More than 20 dB below limit | More than 20 dB below limit | Complies |
| III | 54 | More than 20 dB below limit | More than 20 dB below limit | More than 20 dB below limit | Complies |
| IV | 54 | More than 20 dB below limit | More than 20 dB below limit | More than 20 dB below limit | Complies |
| V | 54 | More than 20 dB below limit | More than 20 dB below limit | More than 20 dB below limit | Complies |
| VI | 54 | More than 20 dB below limit | More than 20 dB below limit | More than 20 dB below limit | Complies |
| VII | 54 | More than 20 dB below limit | More than 20 dB below limit | More than 20 dB below limit | Complies |
| VIII | 54 | More than 20 dB below limit | More than 20 dB below limit | More than 20 dB below limit | Complies |
| IX | 54 | More than 20 dB below limit | More than 20 dB below limit | More than 20 dB below limit | Complies |
| X | 54 | More than 20 dB below limit | More than 20 dB below limit | More than 20 dB below limit | Complies |

Remarks: EUT was tested in 3 orthogonal planes. The results in this table show the highest values



Result – Peak detector

| Harmonic | Limits (dB μ V/m) | Level (dB μ V/m) | | | Results |
|----------|-----------------------|-----------------------------|-----------------------------|-----------------------------|----------|
| | | Lowest channel | Medium channel | Highest channel | |
| II | 74 | More than 20 dB below limit | More than 20 dB below limit | More than 20 dB below limit | Complies |
| III | 74 | More than 20 dB below limit | More than 20 dB below limit | More than 20 dB below limit | Complies |
| IV | 74 | More than 20 dB below limit | More than 20 dB below limit | More than 20 dB below limit | Complies |
| V | 74 | More than 20 dB below limit | More than 20 dB below limit | More than 20 dB below limit | Complies |
| VI | 74 | More than 20 dB below limit | More than 20 dB below limit | More than 20 dB below limit | Complies |
| VII | 74 | More than 20 dB below limit | More than 20 dB below limit | More than 20 dB below limit | Complies |
| VIII | 74 | More than 20 dB below limit | More than 20 dB below limit | More than 20 dB below limit | Complies |
| IX | 74 | More than 20 dB below limit | More than 20 dB below limit | More than 20 dB below limit | Complies |
| X | 74 | More than 20 dB below limit | More than 20 dB below limit | More than 20 dB below limit | Complies |

Remarks: EUT was tested in 3 orthogonal planes. The results in this table show the highest values

Result: The requirements are met