



Test laboratory accredited according to ISO 17025

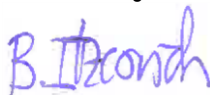
| | | | | |
|---------------|---|---------------|---------------------------------|-----------------------|
| Report: | Electromagnetic compatibility and Radio spectrum Matters | | Report no: | 20CH-00664.R02 |
| Product name: | Invia Ease | | Mandate no: | 20CH-00664 |
| Applicant: | Medela AG Lättichstrasse 4b 6340 Baar SWITZERLAND | Model number: | 101042297 | |
| | | Serial no: | 00000002008 | |
| Manufacturer: | Medela AG Lättichstrasse 4b 6340 Baar SWITZERLAND | Date of test: | 2021-04-12 to 2021-04-14 | |

| Standards | | Result |
|------------------------|---|-------------|
| 47 CFR, Part 15 | (Subpart C, Intentional radiators: §§ 15.207/209/225) | Pass |
| | (Subpart B, Class B digital devices: § 15.107/109) | Pass |

These results were achieved without modification of EUT

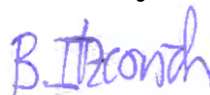
Test performed by

B. Itzcovich
EMC Test Engineer



Report prepared by

B. Itzcovich
EMC Test Engineer



Report controlled and approved by

J. Ding
EMC Test Engineer



Rossens, 2021-08-05

(Issue Date)

Main language : English

The present document results from tests on one specimen and does not prejudice to the conformity of all the manufactured products. This report must not be used to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the U.S. Government.

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Foreword

According to Medela AG, the “Medela NINA-B302” BLE module (2.4 GHz) which is included in the EUT (FCC ID 2ATCR608284), has been tested by its manufacturer in accordance with the relevant rules and standards. Therefore, specific tests for the Bluetooth Radio Module have not been repeated. According to Medela AG, the BLE radio module is installed in accordance with the instructions of its manufacturer. Additional tests of the EUT performed according to 47 CFR, Part 15, Subpart C are made to document the joint effect where both transmitters are active (multi-transmitters coexistence of RFID with BLE).

1. Summary of test results

| § | Test Type | Result |
|----------|---|-----------------------|
| 6 | Emission | 47 CFR Part 15 |
| 6.1 | Field strength within the band 13.110-14.010 MHz (Carrier) 47 CFR § 15.225 (a) (b) (c) | Pass |
| 6.1 | Band-edge emission (radiated) 47 CFR § 15.225 (d) 47 CFR § 15.205 | Pass |
| 6.2 | Spurious emissions – radiated (transmitter) 47 CFR § 15.225 (d) 47 CFR § 15.209 (a) 47 CFR § 15.205 | Pass |
| 6.3 | Radiated emission – unintentional radiator 47 CFR § 15.109 | Pass |
| 6.4 | Conducted emission 47 CFR § 15.207 47 CFR § 15.107 | Pass |
| 6.5 | Frequency stability 47 CFR § 15.225 (e) | Pass |
| 6 | Emission | 47 CFR Part 2 |
| 6.6 | Designation of emission 47 CFR §2.201 47 CFR §2.202 | 3K09A1D |

2. Applied standards

| | |
|--------------------------|---|
| 47 CFR Part 15 Subpart C | Code of Federal Regulations - Title 47 - Telecommunication, Part 15, Subpart C: "Intentional Radiators" |
| 47 CFR Part 15 Subpart B | Code of Federal Regulations - Title 47 - Telecommunication, Part 15, Subpart B: "Unintentional Radiators" |

3. Applicant

| | |
|----------------------------|--|
| Applicant name and address | Medela AG Lättichstrasse 4b 6340 Baar SWITZERLAND |
| Contact Person | Mr Ivo Gärtner |
| Telephone | +41 41 562 10 80 |
| E-mail | ivo.gaertner@medela.com |
| Mandate no | 20CH-00664 |

4. Equipment under test

4.1 Identification

| | |
|-------------------------------|---|
| Manufacturer name and address | Medela AG Lättichstrasse 4b 6340 Baar SWITZERLAND Charger produced by: MOSO Power Supply Technology Co., Ltd |
| Production country | Switzerland (Pump unit) China (Charger) |
| Trade mark | Invia Ease |
| Product name | Invia Ease |
| Product description | Negative Pressure Wound Therapy (NPWT) Pump with RFID and BLE |
| Model number | 101042297 |
| Serial no | 00000002008 |
| Software/Firmware version | 0.1.1.65 |
| FCC ID | 2ATCR608283 |
| Lowest Frequency | 32.768 kHz (RTC clock) |
| Highest frequency | 216 MHz (internal MCU clock) / 2.48 GHz (BLE Carrier) |
| Supply | AC Supply (charger): U = 100 – 240 VAC / P = 192 W / f = 50/60 Hz Pump unit DC in: U = 12 VDC, P = 30 W |
| Dimension | ~20 x 10 x 12 cm (L x W x H, pump unit without canister) |
| Technical | None. The equipment is completely identified by the above-mentioned information. Medela AG assures the traceability of the documentation and is responsible for the product identification. |

4.2 Pictures of the EUT



Pump unit (front-top view)



Pump unit (rear-top view)



Pump unit (display example)

Invia Ease



Medela AG
Lättichstrasse 4b
6340 Baar, Switzerland
www.medelahealthcare.com

101042297
SN 00000002008
[VDC] 12
[W] 30
FCC ID: 2ATCR608283



GTIN: (01) 0123456789123
MFG: (11) 210507
SNR: (21) 00000002008



200.8988/A

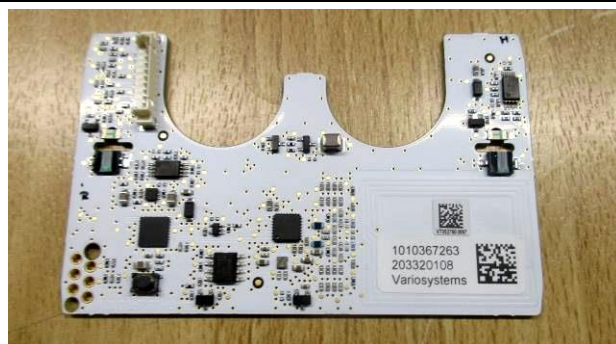
Marking on Pump unit (example)



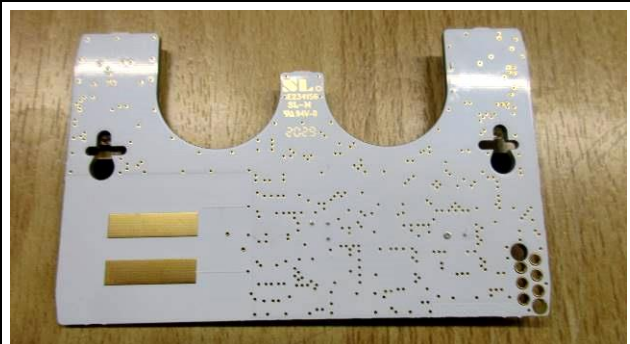
Charger



Marking on charger



RFID PCB (top) incl. PCB antenna (on bottom-right)



RFID PCB (bottom)

4.3 Classification

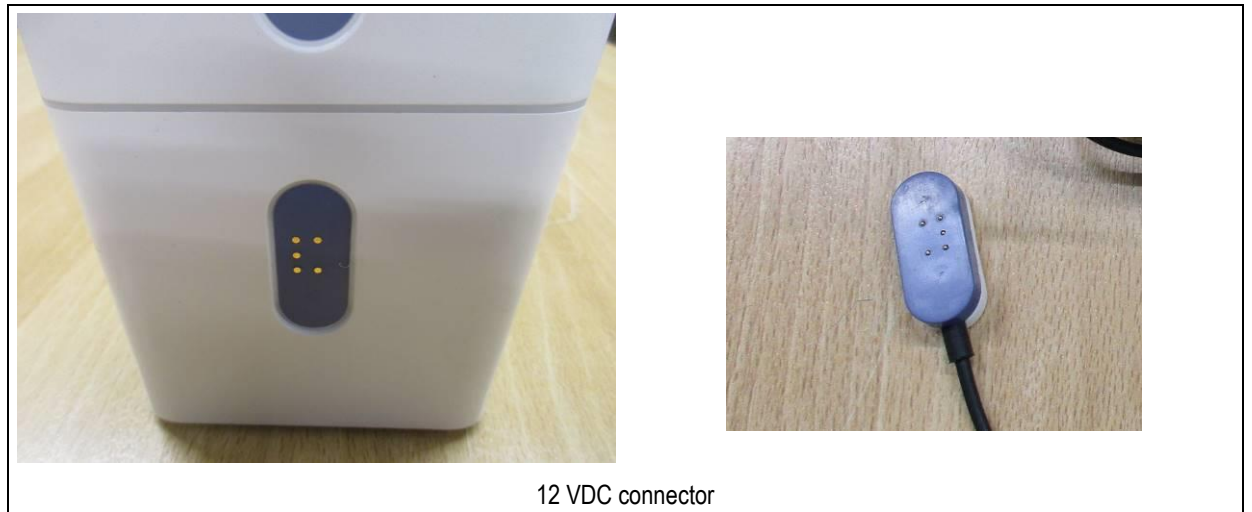
| | |
|----------------|---|
| 47 CFR Part 15 | <ul style="list-style-type: none"> <input checked="" type="checkbox"/> Intentional radiator (Subpart C), coexistence of RFID and BLE modules in TX mode <ul style="list-style-type: none"> <input checked="" type="checkbox"/> The highest fundamental frequency of the EUT is less than 10 GHz (measurement shall be made up to the tenth harmonic or 40 GHz, whichever is lower). <input type="checkbox"/> The highest fundamental frequency of the EUT is between 10 GHz and 30 GHz (measurement shall be made up to the fifth harmonic or 100 GHz, whichever is lower). <input type="checkbox"/> The highest fundamental frequency of the EUT is above 30 GHz (measurement shall be made up to the fifth harmonic or 200 GHz, whichever is lower). <input checked="" type="checkbox"/> Intentional radiator (Subpart C), RFID in TX mode (Read / Write), with BLE in idle mode <ul style="list-style-type: none"> <input checked="" type="checkbox"/> The highest fundamental frequency of the EUT is less than 10 GHz (measurement shall be made up to the tenth harmonic or 40 GHz, whichever is lower). <input type="checkbox"/> The highest fundamental frequency of the EUT is between 10 GHz and 30 GHz (measurement shall be made up to the fifth harmonic or 100 GHz, whichever is lower). <input type="checkbox"/> The highest fundamental frequency of the EUT is above 30 GHz (measurement shall be made up to the fifth harmonic or 200 GHz, whichever is lower). <input checked="" type="checkbox"/> Unintentional radiator (Subpart B), Radio modules in Idle mode <ul style="list-style-type: none"> <input type="checkbox"/> Class A digital device <input checked="" type="checkbox"/> Class B digital device <input type="checkbox"/> The highest frequency of the internal sources of the EUT is less than 108 MHz (measurement shall be made up to 1 GHz). <input type="checkbox"/> The highest frequency of the internal sources of the EUT is between 108 MHz and 500 MHz (measurement shall be made up to 2 GHz). <input type="checkbox"/> The highest frequency of the internal sources of the EUT is between 500 MHz and 1 GHz (measurement shall be made up to 5 GHz). <input checked="" type="checkbox"/> The highest frequency of the internal sources of the EUT is above 1 GHz (measurement shall be made up to 5 times the highest frequency or 40 GHz, whichever is lower). |
|----------------|---|

4.4 Transmitter characteristics (according to Medela AG)

| | |
|------------------------------------|--|
| Radio technology | Near magnetic field communication 13.56 MHz |
| Type of equipment | NPWT Pump with RFID and BLE |
| Supply voltage | 12 VDC (EUT) / 3.3 VDC (regulated supply to RFID module) |
| Data rate | 426 kbit/sec ISO 15693 |
| Temperature range | 0 °C to +40 °C (ambient) |
| TX operating frequency range | 13.56 MHz |
| Number of channels | 1 |
| Channel separation (if applicable) | N/A |
| Maximum rated output power | 20 mW (conducted on 50 Ω) |
| Type of modulation | ASK/PSK (no FHSS) |
| RFID Electronic Board | 1010367263 |
| RFID chip | ST25R3911B |
| Antenna / Coil used | PCB, 4 windings, 30 mm x 22 mm |
| Tag used | 101037656 |

4.5 Ports

| Port | Cable | | | Remark |
|-------------------|-------------|-------|---------|------------------------------|
| | Max. length | Type | Screen | |
| Mains of Charger | Not defined | L, N | None | None |
| 12 VDC input | 3 m | 5-pin | Coaxial | None |
| Temporary antenna | Not defined | SMA | Coaxial | Only for conducted EMC tests |



5. Test conditions

5.1 Climatic conditions, location and date

| Location | Date | Temp. | Pressure | Rel. humidity |
|--|--------------------------|---------|----------|---------------|
| Eurofins Electric & Electronic Product Testing AG 1728 Rossens SWITZERLAND | 2021-04-12 to 2021-04-14 | See § 6 | | |

5.2 Test facility and methodology

The test site is accepted by FCC:
 - Test Firm Registration Number: 683197
 - Designation Number: CH5001

Conducted and radiated measurements are performed according to the ANSI C63.4-2014 and C63.10-2013 procedures.

5.3 Attendant persons

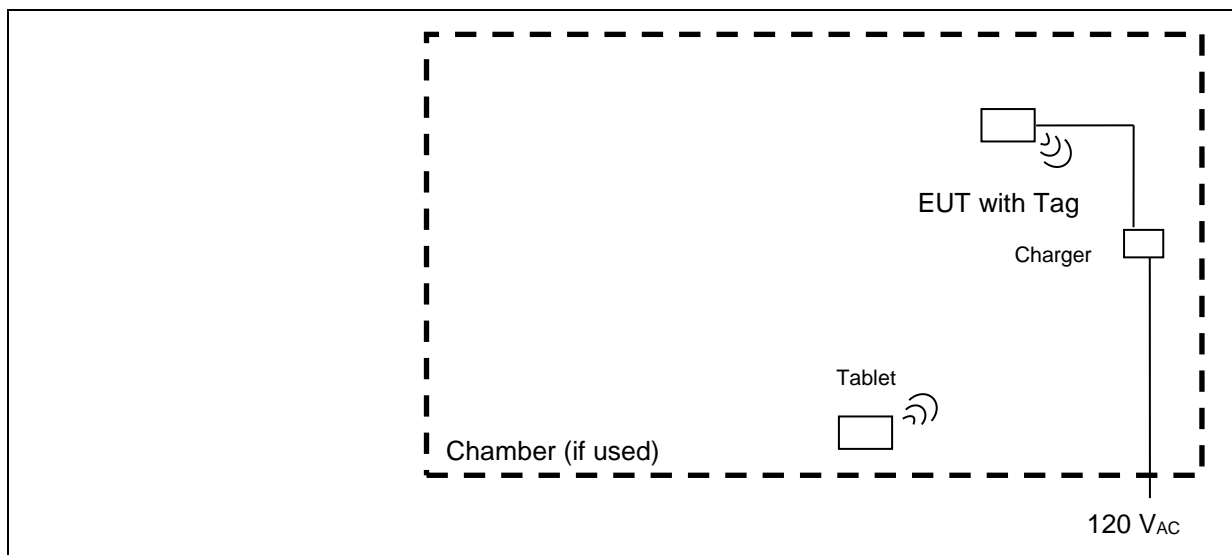
Test Engineer(s):

B. Itzcovich
 EMC Test Engineer

Other(s):

| Name | Company |
|----------------|-----------|
| Mr Ivo Gärtner | Medela AG |

5.4 Test configuration



5.5 Operating conditions

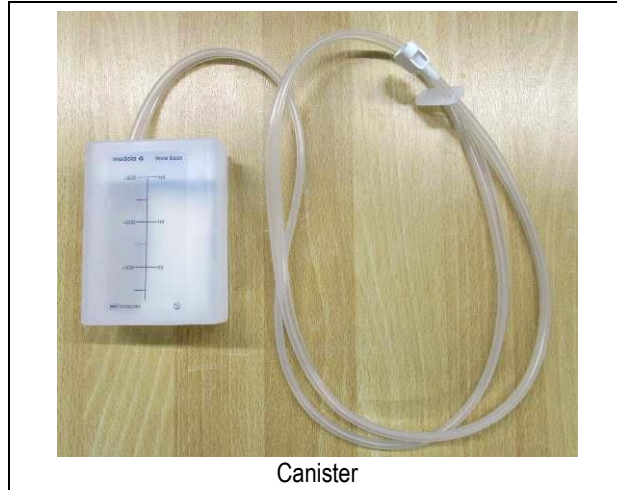
Power supply during tests if not stated otherwise in § 6 : 12 VDC at Pump unit input (120 V_{AC} / 50 Hz on Charger Mains)

- RFID TX: Alternatively reading and writing at maximum power, with modulation, T = 0.5 s (pump running, charging)
- RFID TX: Alternatively reading and writing at maximum power, with modulation, T = 0.5 s, and BLE TX: paired with tablet (pump running, charging)
- All Radio modules idle (pump running, charging)

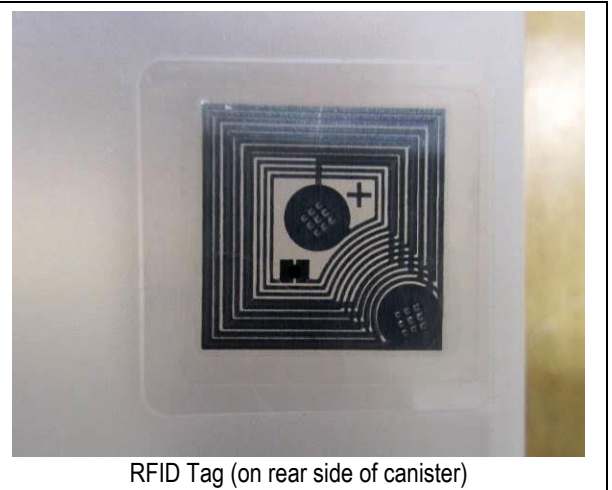
5.6 Auxiliary equipment

The following equipment is used for the monitoring of the EUT or is necessary for the EUT but is not part of the EUT:

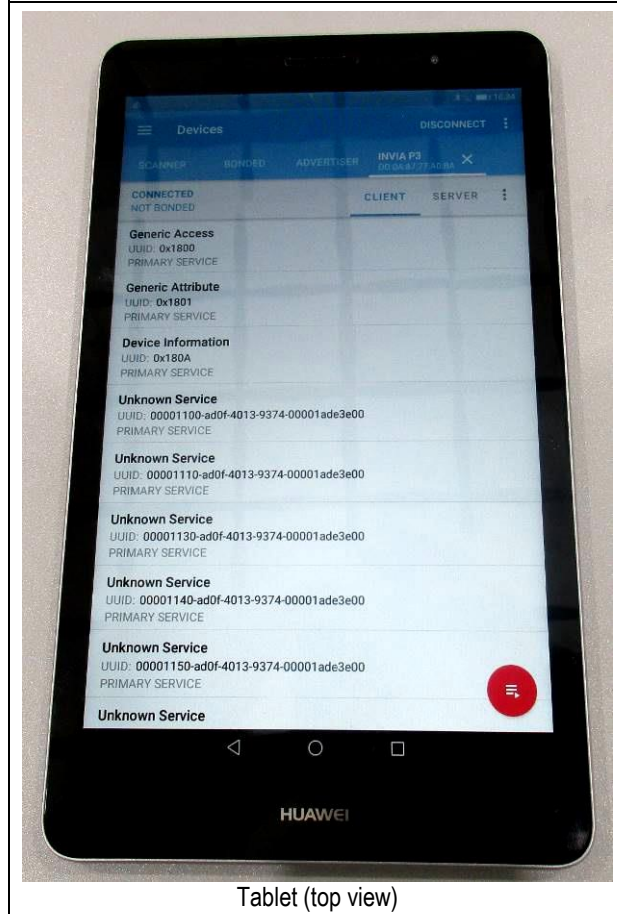
| Product | Brand | Model No. | ID | Remark |
|----------|--------|-----------|---------------|-----------------------------|
| Canister | Medela | 101036896 | --- | With RFID Tag |
| Tablet | Huawei | KOB-W09 | G0M-1904-8185 | To activate BLE transmitter |



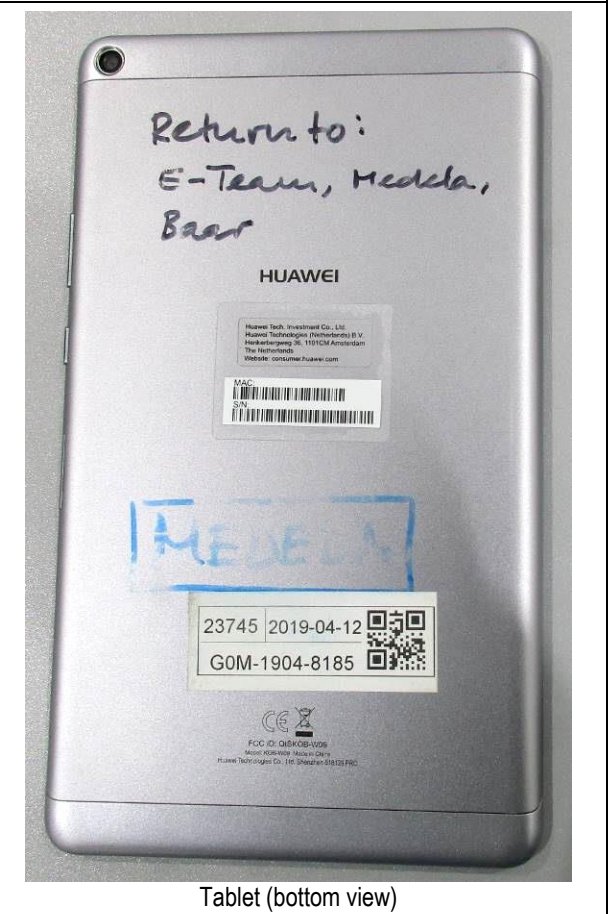
Canister



RFID Tag (on rear side of canister)



Tablet (top view)



Tablet (bottom view)

6. Test results

6.1 Field strength within and outside the band 13.110-14.010 MHz (Carrier and Band Edge)

Test site: semi-anechoic chamber (ferrites) semi-anechoic chamber (foam)

Distance: 1 m 3 m 10 m 30 m

Position of EUT: 0.8 m (height of the equipment under test above floor)

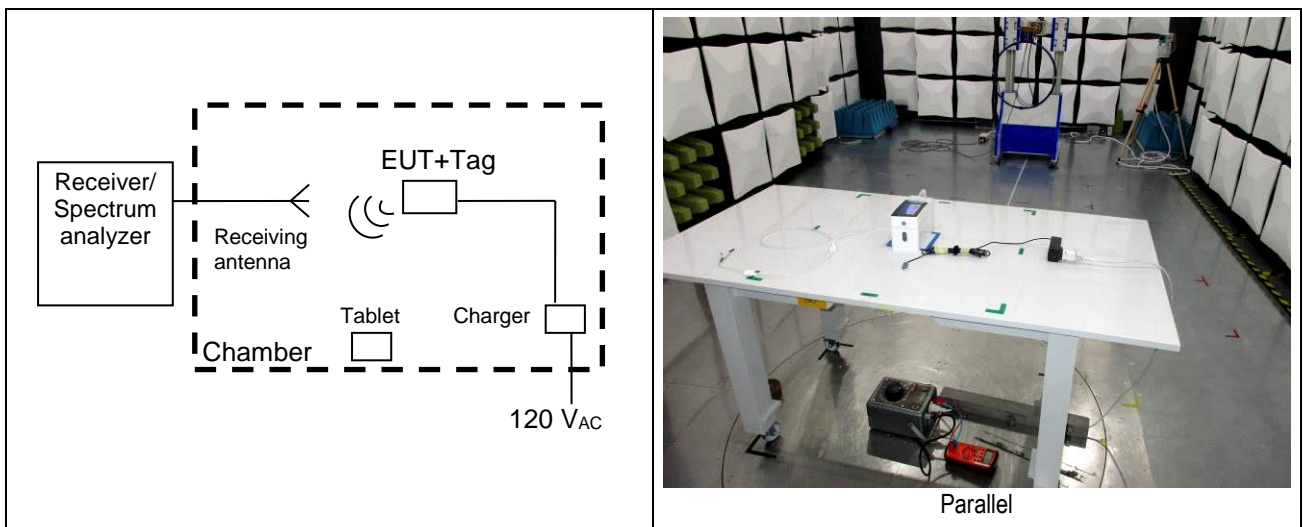
Meas. uncertainty: ± 2.8 dB (10 m)

Test method: The magnetic disturbance radiated by the equipment under test is measured using a spectrum analyzer and a wide band magnetic antenna. The center of the antenna is placed at 1 m of height, first in the direction of the apparatus under test, then at 90° to the apparatus and if required also horizontally. If possible the turning table is operated through 360° during the measurement. The recording is carried out taking into account the maximum value of the disturbance appearing during the functioning of the apparatus under test. The peak values are recorded continuously on a graph. The values exceeding the limits are re-measured using a measuring receiver.

Modifications: None 1 2 3 4 5

Climatic conditions: Temperature: 22 – 25 °C Humidity: 30 – 45 % Pressure QFE: 930 – 950 hPa

Test set-up:



Remarks: Measurement performed at 3 m distance because carrier level is very low.
 Limit values expressed in dBµV/m and transformed to the measuring distance, if different from the distance of the limit (factor used = 40 dB/decade). e.g.: for f = 13.56 MHz the limit is 15'848 µV/m at 30 m;

$$20 \log \left(\frac{15'848 \frac{\mu V}{m}}{1 \frac{\mu V}{m}} \right) + 40 \log \left(\frac{30 m}{3 m} \right) = 124.0 \frac{dB\mu V}{m} \text{ at } 3 m$$

Test equipment:

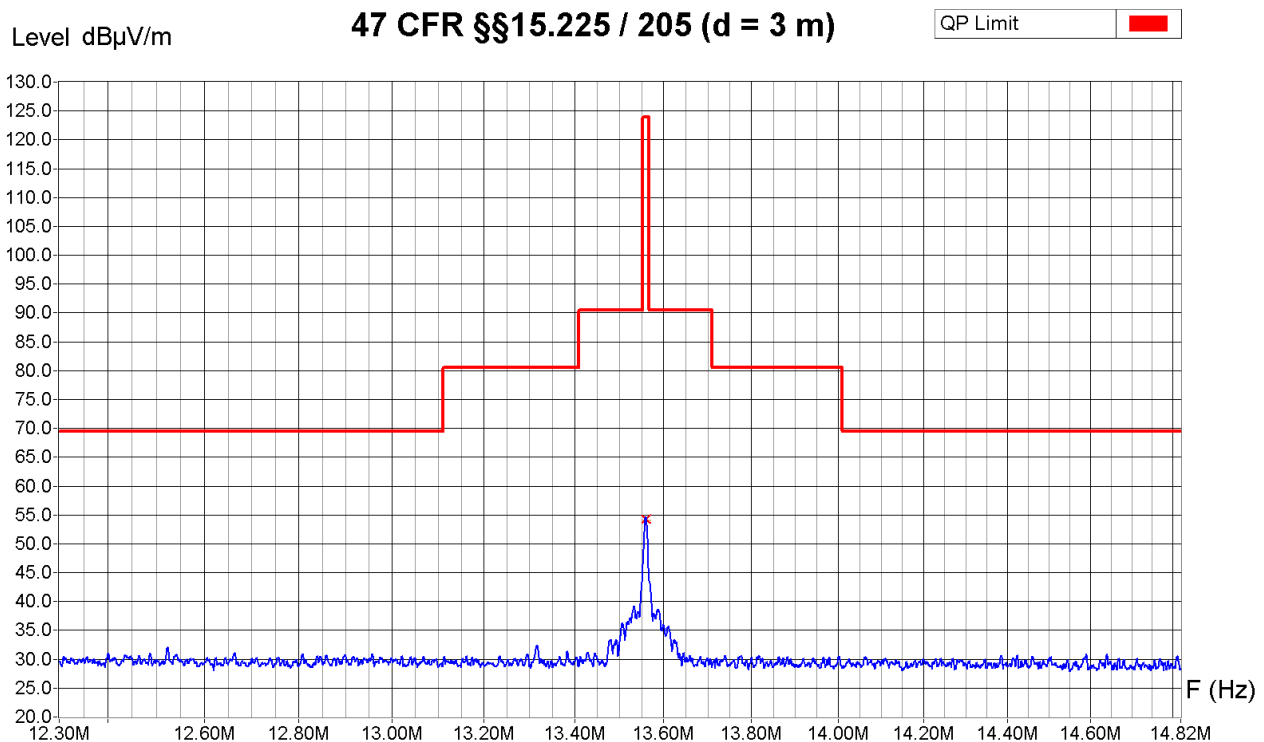
| | | | | | | |
|--------------------------|--|--------------------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|
| Spectrum analyzer | <input checked="" type="checkbox"/> 21-07 | <input type="checkbox"/> 94-24 | <input type="checkbox"/> 02-06 | <input type="checkbox"/> 03-45 | <input type="checkbox"/> 05-39 | <input type="checkbox"/> 10-70 |
| Receiver | <input checked="" type="checkbox"/> 21-07 | <input type="checkbox"/> 90-43 | <input type="checkbox"/> 94-35 | <input type="checkbox"/> 04-29 | <input type="checkbox"/> 10-70 | |
| Preamplifier | <input checked="" type="checkbox"/> 90-25 internal | <input type="checkbox"/> 95-86 | <input type="checkbox"/> 05-56 | <input type="checkbox"/> 05-59 | <input type="checkbox"/> 05-62 | |
| Antenna (type: magnetic) | <input checked="" type="checkbox"/> 90-25 | <input type="checkbox"/> 90-28 | <input type="checkbox"/> 99-32 | <input type="checkbox"/> 04-79 | | |
| Cable set | <input checked="" type="checkbox"/> SAC3_RE | | | | | |

Result: pass fail not applicable not tested



Measurement Type : Radiated Field
 Polarisation : Parallel
 Table Angle : 0 - 360°
 Antenna Height : 1 m

Equipment Under Test : Invia Ease 101042297 with Charger 101037004
 Set-Up : Chamber SAC3, See photos
 Operating Conditions : RFID TX (R+W 13.56 MHz), display on, pump running, charging, BLE TX
 Remarks : BLE paired with tablet (inside chamber)
 "Parallel" means "Loop antenna axis towards EUT"



| | |
|-----------------|-------------------|
| Zone | 12.30 MHz - 14.82 |
| Video Bandwidth | 30 KHz |
| Resol Bandwidth | 9 KHz |

| Receiver Measures | | | | |
|-------------------|-------------|---------------|-------------|-----------|
| Frequency | Peak | QuasiPeak (x) | Average (+) | QP Margin |
| 13.56 MHz | 54.9 dBµV/m | 54.3 dBµV/m | 54.1 dBµV/m | 69.7 dB |

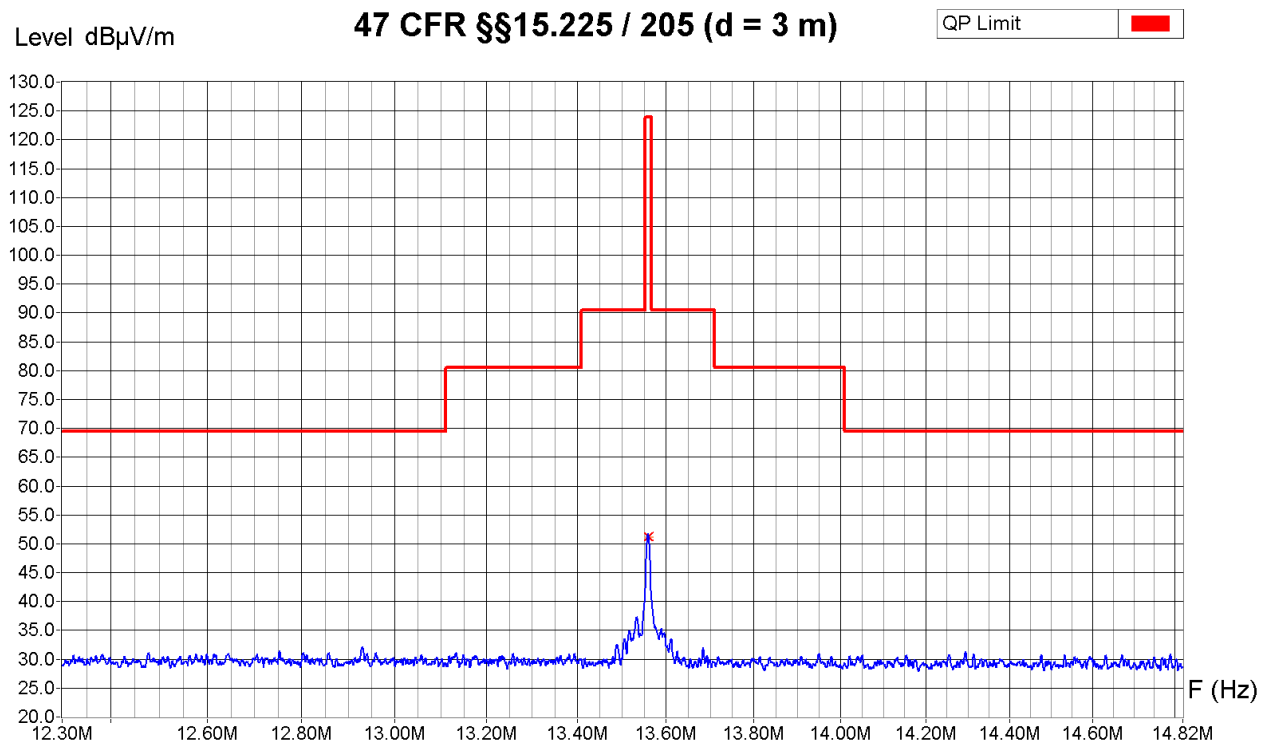
| Sample calculation with all conversion and correction factors used | | | | |
|--|--------------------------|-----------------------|---------------------------|-------------------|
| Frequency [MHz] | Receiver QP value [dBµV] | Cable att. corr. [dB] | Antenna factor corr. [dB] | QP field [dBµV/m] |
| 13.56 | 33.4 | +0.3 | +20.6 | = 54.3 |

Operator: B. Itzcovich
 Date/Time: 12.04.2021 14:19
 Filename:
 05_RE_13M56_TX_Par.png/.txt

Measurement Type : Radiated Field
 Polarisation : Perpendicular
 Table Angle : 0 - 360°
 Antenna Height : 1 m



Equipment Under Test : Invia Ease 101042297 with Charger 101037004
 Set-Up : Chamber SAC3, See photos
 Operating Conditions : RFID TX (R+W 13.56 MHz), display on, pump running, charging, BLE TX
 Remarks : BLE paired with tablet (inside chamber)



| | |
|-----------------|-------------------|
| Zone | 12.30 MHz - 14.82 |
| Video Bandwidth | 30 KHz |
| Resol Bandwidth | 9 KHz |

Receiver Measures

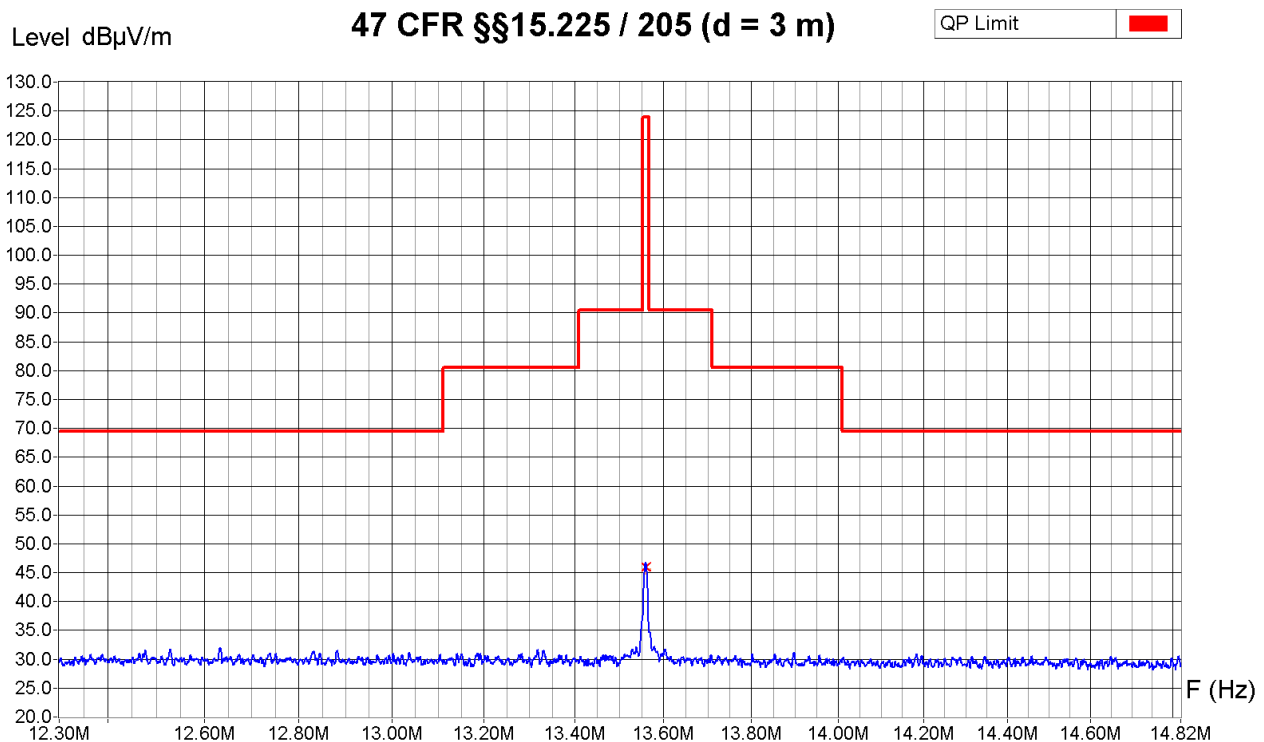
| Frequency | Peak | QuasiPeak (x) | Average (+) | QP Margin |
|-----------|-------------|---------------|-------------|-----------|
| 13.56 MHz | 52.0 dBµV/m | 51.3 dBµV/m | 51.0 dBµV/m | 72.7 dB |

Operator: B. Itzcovich
 Date/Time: 12.04.2021 14:33
 Filename:
 06_RE_13M56_TX_Per.png/.txt



Measurement Type : Radiated Field
 Polarisation : Horizontal
 Table Angle : 0 - 360°
 Antenna Height : 1 m

Equipment Under Test : Invia Ease 101042297 with Charger 101037004
 Set-Up : Chamber SAC3, See photos
 Operating Conditions : RFID TX (R+W 13.56 MHz), display on, pump running, charging, BLE TX
 Remarks : BLE paired with tablet (inside chamber)



| | |
|-----------------|-------------------|
| Zone | 12.30 MHz - 14.82 |
| Video Bandwidth | 30 KHz |
| Resol Bandwidth | 9 KHz |

| Receiver Measures | | | | |
|-------------------|-------------|---------------|-------------|-----------|
| Frequency | Peak | QuasiPeak (x) | Average (+) | QP Margin |
| 13.56 MHz | 47.0 dBµV/m | 45.9 dBµV/m | 45.6 dBµV/m | 78.0 dB |

Operator: B. Itzcovich
 Date/Time: 12.04.2021 14:42
 Filename:
 07_RE_13M56_TX_Hor.png/.txt

6.2 Spurious emissions, transmit mode – radiated

6.2.1 9 kHz to 30 MHz

Test site: SAC5 open test site
 SAC3

Distance: 3 m 10 m 30 m

Position of EUT: 0.8 m (height of the equipment under test above floor)

Meas. Uncertainty: ± 2.8 dB

Test method: The magnetic disturbance radiated by the equipment under test is measured using a spectrum analyzer and a wide band magnetic antenna. The antenna is placed at 1 m height, first in the direction of the apparatus under test, then at 90° to the apparatus and if required also horizontally. If possible the turning table is operated through 360° during the measurement. The recording is carried out taking into account the maximum value of the disturbance appearing during the functioning of the apparatus under test. The peak values are recorded continuously on a graph. The values exceeding the limits are re-measured using a measuring receiver.

Modifications: None 1 2 3 4 5

Climatic conditions: Temperature: 22 – 25 °C Humidity: 30 – 45 % Pressure QFE: 930 – 950 hPa

Test set-up:

Parallel

Remarks: Limit values expressed in dBµV/m and transformed to a measuring distance of 3 m (factor used = 40 dB/decade) if necessary
 e.g.: for f = 10 MHz the limit is 30 µV/m at 30 m;

$$20 \log \left(\frac{30 \frac{\mu V}{m}}{1 \frac{\mu V}{m}} \right) + 40 \log \left(\frac{30 m}{10 m} \right) = 69.5 \frac{dB\mu V}{m} \text{ at } 3m$$

Test equipment:

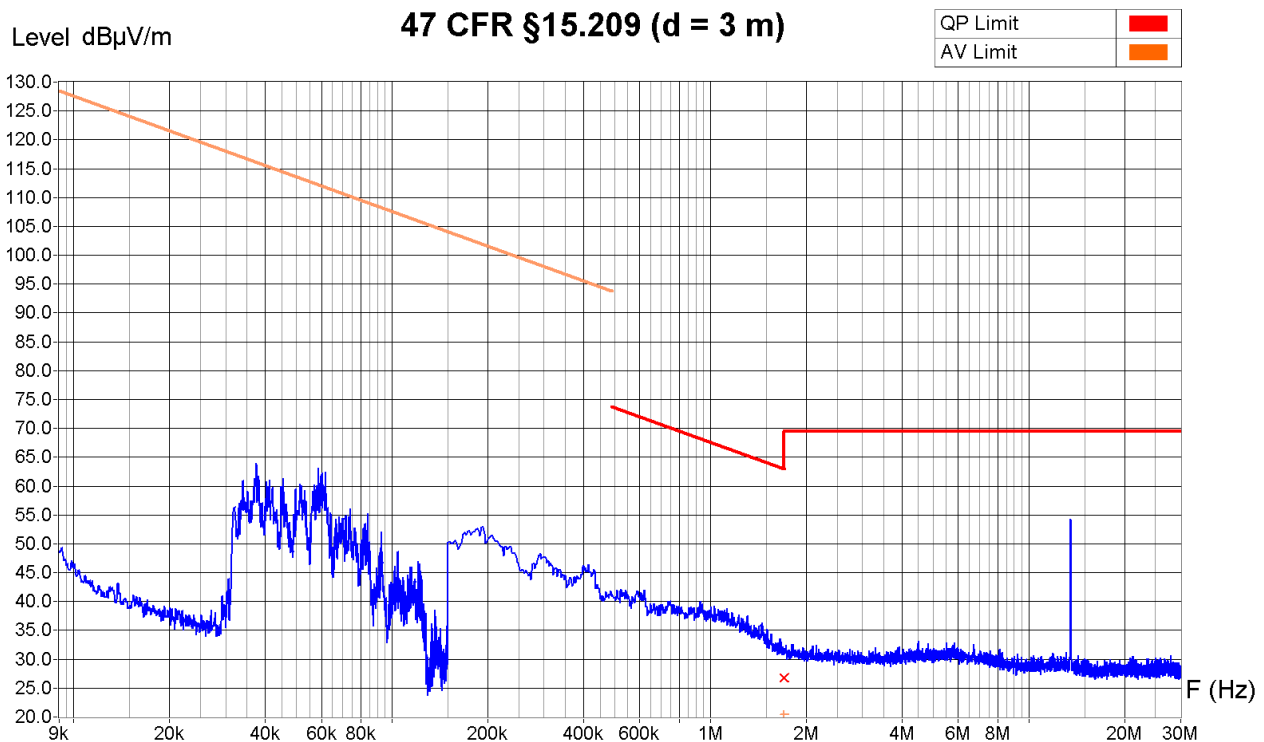
| | | | | | | |
|--------------------------|--|--------------------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|
| Spectrum analyzer | <input checked="" type="checkbox"/> 21-07 | <input type="checkbox"/> 94-24 | <input type="checkbox"/> 02-06 | <input type="checkbox"/> 03-45 | <input type="checkbox"/> 05-39 | <input type="checkbox"/> 10-70 |
| Receiver | <input checked="" type="checkbox"/> 21-07 | <input type="checkbox"/> 90-43 | <input type="checkbox"/> 94-35 | <input type="checkbox"/> 04-29 | <input type="checkbox"/> 10-70 | |
| Preamplifier | <input checked="" type="checkbox"/> 90-25 internal | <input type="checkbox"/> 95-86 | <input type="checkbox"/> 05-56 | <input type="checkbox"/> 05-59 | <input type="checkbox"/> 05-62 | |
| Antenna (type: magnetic) | <input checked="" type="checkbox"/> 90-25 | <input type="checkbox"/> 90-28 | <input type="checkbox"/> 99-32 | <input type="checkbox"/> 04-79 | | |
| Cable set | <input checked="" type="checkbox"/> SAC3_RE | | | | | |
| Variable transformer | <input checked="" type="checkbox"/> 75-04 | | | | | |
| Multimeter | <input checked="" type="checkbox"/> 04-105 | | | | | |

Result: pass fail not applicable not tested



Measurement Type : Radiated Field
 Polarisation : Parallel
 Table Angle : 0 - 360°
 Antenna Height : 1 m

Equipment Under Test : Invia Ease 101042297 with Charger 101037004
 Set-Up : Chamber SAC3, See photos
 Operating Conditions : RFID TX (R+W 13.56 MHz), display on, pump running, charging, BLE TX
 Remarks : BLE paired with tablet (inside chamber)
 "Parallel" means "Loop antenna axis towards EUT"



| | | | |
|-----------------|-----------------|-----------------|----------------|
| Zone | 9 KHz - 150 KHz | 150 KHz - 6 MHz | 6 MHz - 30 MHz |
| Video Bandwidth | 30 KHz | 30 KHz | 30 KHz |
| Resol Bandwidth | 200 Hz | 9 KHz | 9 KHz |

Receiver Measures

| Frequency | Peak | QuasiPeak (x) | Average (+) |
|-----------|-------------|---------------|-------------|
| 1.70 MHz | 33.8 dBµV/m | 26.8 dBµV/m | 20.4 dBµV/m |

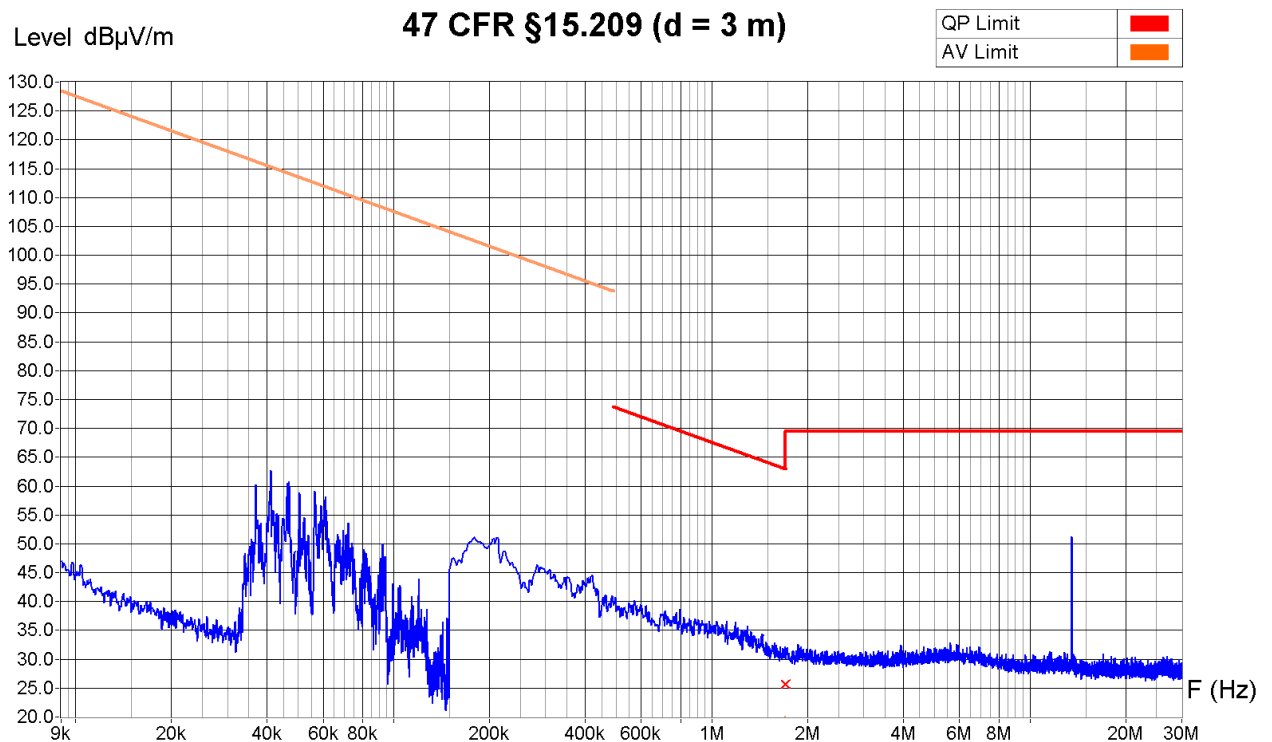
| Sample calculation with all conversion and correction factors used | | | | |
|--|--------------------------|-----------------------|---------------------------|-------------------|
| Frequency [MHz] | Receiver QP value [dBµV] | Cable att. corr. [dB] | Antenna factor corr. [dB] | QP field [dBµV/m] |
| 1.70 | 6.3 | +0.2 | +20.3 | = 26.8 |

Operator: B. Itzcovich
 Date/Time: 12.04.2021 15:35
 Filename:
 08_RE_9k-30M_TX(RFID+BLE)_Par.png/.txt

Measurement Type : Radiated Field
 Polarisation : Perpendicular
 Table Angle : 0 - 360°
 Antenna Height : 1 m



Equipment Under Test : Invia Ease 101042297 with Charger 101037004
 Set-Up : Chamber SAC3, See photos
 Operating Conditions : RFID TX (R+W 13.56 MHz), display on, pump running, charging, BLE TX
 Remarks : BLE paired with tablet (inside chamber)



| | | | |
|-----------------|-----------------|-----------------|----------------|
| Zone | 9 KHz - 150 KHz | 150 KHz - 6 MHz | 6 MHz - 30 MHz |
| Video Bandwidth | 30 KHz | 30 KHz | 30 KHz |
| Resol Bandwidth | 200 Hz | 9 KHz | 9 KHz |

Receiver Measures

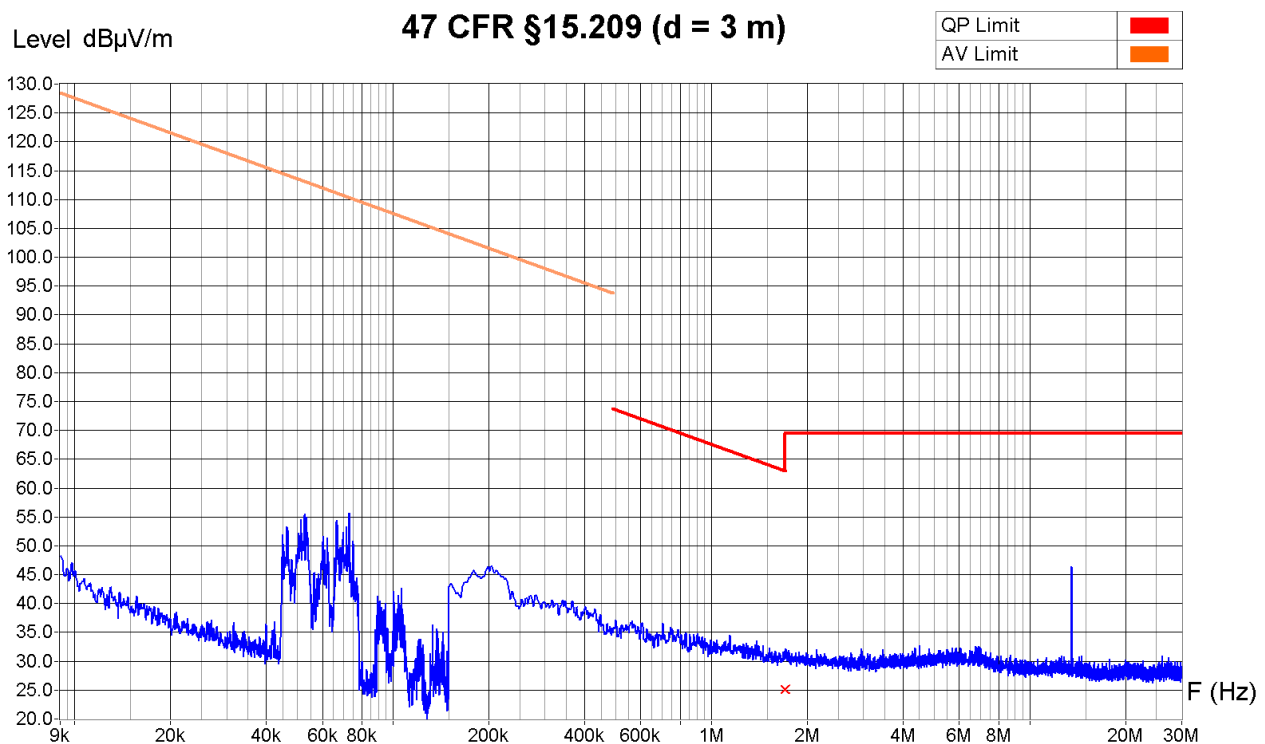
| Frequency | Peak | QuasiPeak (x) | Average (+) |
|-----------|-------------|---------------|-------------|
| 1.70 MHz | 33.2 dBµV/m | 25.6 dBµV/m | 19.4 dBµV/m |

Operator: B. Itzcovich
 Date/Time: 12.04.2021 15:28
 Filename:
 09_RE_9k-30M_TX(RFID+BLE)_Per.png/.txt



Measurement Type : Radiated Field
 Polarisation : Horizontal
 Table Angle : 0 - 360°
 Antenna Height : 1 m

Equipment Under Test : Invia Ease 101042297 with Charger 101037004
 Set-Up : Chamber SAC3, See photos
 Operating Conditions : RFID TX (R+W 13.56 MHz), display on, pump running, charging, BLE TX
 Remarks : BLE paired with tablet (inside chamber)



| | | | |
|-----------------|-----------------|-----------------|----------------|
| Zone | 9 KHz - 150 KHz | 150 KHz - 6 MHz | 6 MHz - 30 MHz |
| Video Bandwidth | 30 KHz | 30 KHz | 30 KHz |
| Resol Bandwidth | 200 Hz | 9 KHz | 9 KHz |

Receiver Measures

| Frequency | Peak | QuasiPeak (x) | Average (+) |
|-----------|-------------|---------------|-------------|
| 1.70 MHz | 33.0 dBµV/m | 25.1 dBµV/m | 19.0 dBµV/m |

Operator: B. Itzcovich
 Date/Time: 12.04.2021 15:12
 Filename:
 10_RE_9k-30M_TX(RFID+
 BLE)_Hor.png/.txt

6.2.2 30 MHz to 1 GHz

Test site: semi-anechoic chamber (foam) open test site
 SAC3

Distance: 3 m 10 m 30 m

Position of EUT: 0.8 m (height of the equipment under test above floor)

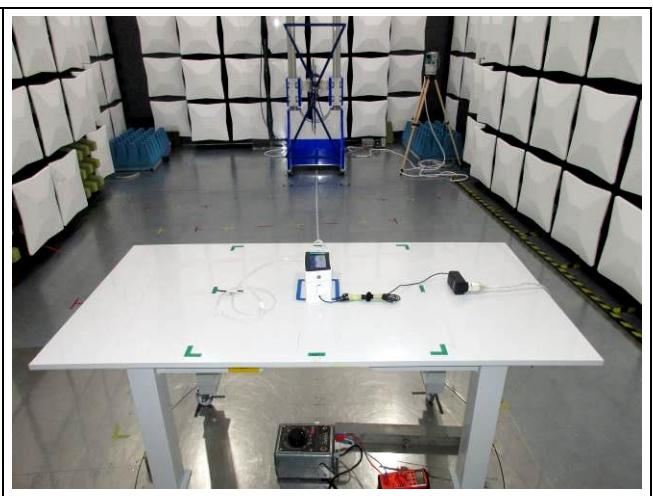
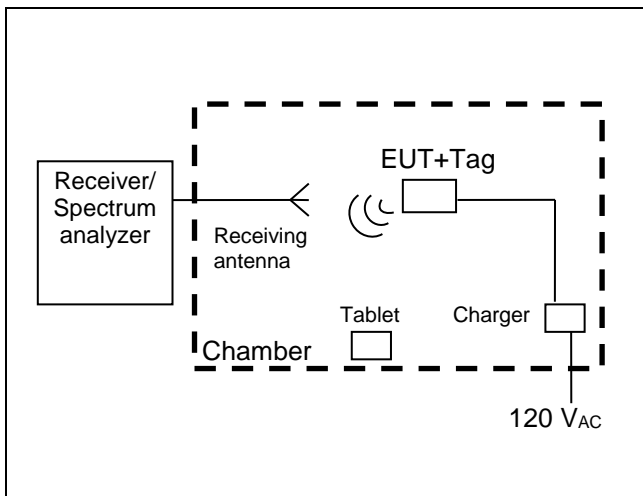
Meas. Uncertainty: ± 4.6 dB (30 – 300 MHz) / ± 3.7 dB (300 – 1000 MHz)

Test method: The electromagnetic disturbance radiated by the equipment is measured using a spectrum analyzer and a wide band antenna. The antenna is moved from 1 to 4 m in height successively with horizontal and vertical polarizations. The turning table is operated through 360° during the measurements. The recordings are carried out taking into account the maximum value of all the disturbances appearing while the apparatus is under test. The peak values are recorded continuously on the graph. The values exceeding a limit are re-measured manually using a receiver.

Modifications: None 1 2 3 4 5

Climatic conditions: Temperature: 22 – 25 °C Humidity: 30 – 45 % Pressure QFE: 930 – 950 hPa

Test set-up:



Remarks: - Limit values expressed in dBµV/m and transformed to a measuring distance of 10 m (factor used = 20 dB/decade) if necessary
 e.g.: for f = 40 MHz the limit is 100 µV/m at 3 m corresp. $20 \text{ Log} (100 \text{ µV/m}) = 40 \text{ dB µV/m}$

Test equipment:

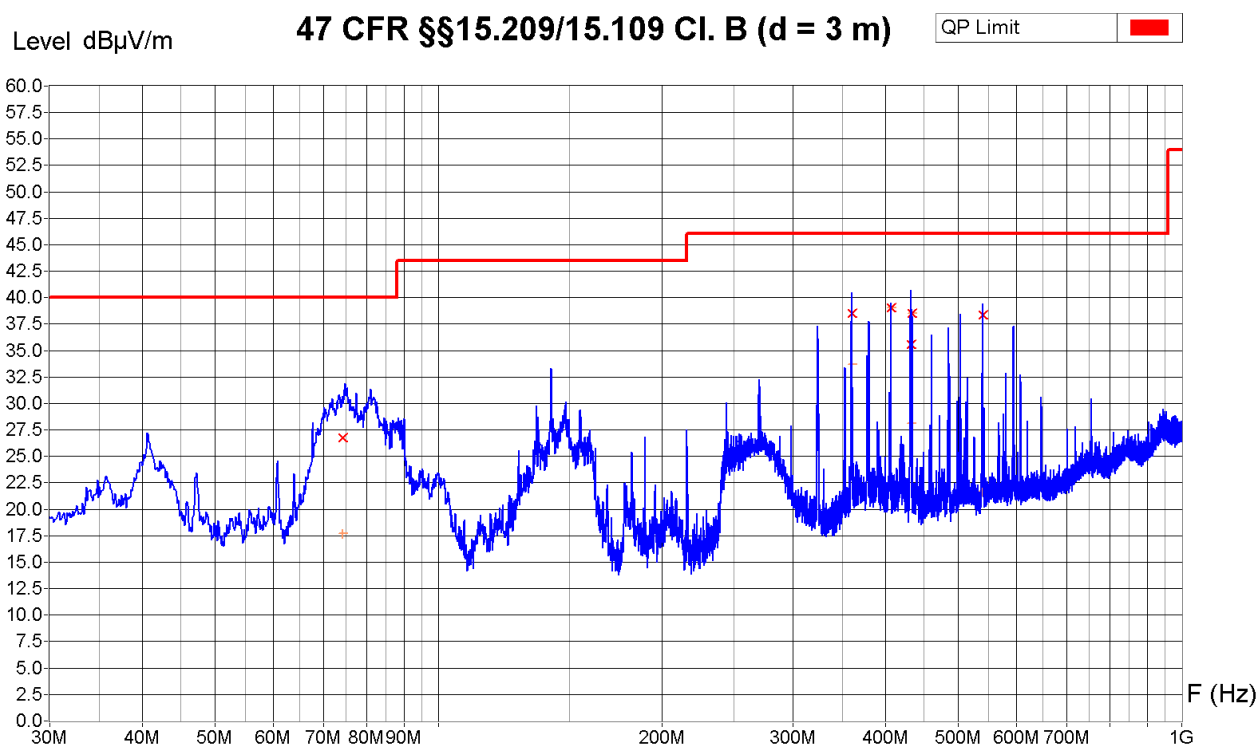
| | | | | | | |
|----------------------|--|---|--------------------------------|--------------------------------|--------------------------------|--------------------------------|
| Spectrum analyzer | <input checked="" type="checkbox"/> 21-07 | <input type="checkbox"/> 94-24 | <input type="checkbox"/> 02-06 | <input type="checkbox"/> 03-45 | <input type="checkbox"/> 05-39 | <input type="checkbox"/> 10-70 |
| Receiver | <input checked="" type="checkbox"/> 21-07 | <input type="checkbox"/> 90-43 | <input type="checkbox"/> 94-35 | <input type="checkbox"/> 04-29 | <input type="checkbox"/> 10-70 | |
| Preamplifier | <input checked="" type="checkbox"/> 21-07 internal | <input type="checkbox"/> 95-86 | <input type="checkbox"/> 05-56 | <input type="checkbox"/> 05-59 | <input type="checkbox"/> 05-62 | <input type="checkbox"/> 05-87 |
| Antenna (bilog) | <input type="checkbox"/> 94-03 | <input checked="" type="checkbox"/> 05-38 | | | | |
| Cable set | <input checked="" type="checkbox"/> SAC3_RE | | | | | |
| Variable transformer | <input checked="" type="checkbox"/> 75-04 | | | | | |
| Multimeter | <input checked="" type="checkbox"/> 04-105 | | | | | |

Result: pass fail not applicable not tested



Measurement Type : Radiated Field
 Polarisation : Vertical
 Table Angle : 0 - 360°
 Antenna Height : 1 - 4m

Equipment Under Test : Invia Ease 101042297 with Charger 101037004
 Set-Up : Chamber SAC3, See photos
 Operating Conditions : RFID TX (R+W 13.56 MHz), display on, pump running, charging, BLE TX
 Remarks : BLE paired with tablet (inside chamber)



| | |
|-----------------|----------------|
| Zone | 30 MHz - 1 GHz |
| Video Bandwidth | 500 KHz |
| Resol Bandwidth | 120 KHz |

Receiver Measures

| Frequency | Peak | QuasiPeak (x) | Average (+) | QP Margin |
|------------|-------------|---------------|-------------|-----------|
| 74.35 MHz | 31.9 dBµV/m | 26.7 dBµV/m | 17.7 dBµV/m | 13.3 dB |
| 360 MHz | 40.8 dBµV/m | 38.5 dBµV/m | 33.7 dBµV/m | 7.5 dB |
| 406.80 MHz | 40.2 dBµV/m | 39.0 dBµV/m | 39.0 dBµV/m | 7.0 dB |
| 432 MHz | 42.4 dBµV/m | 35.6 dBµV/m | 28.1 dBµV/m | 10.4 dB |
| 433.93 MHz | 39.8 dBµV/m | 38.5 dBµV/m | 38.5 dBµV/m | 7.5 dB |
| 539.95 MHz | 44.0 dBµV/m | 38.4 dBµV/m | 21.7 dBµV/m | 7.6 dB |

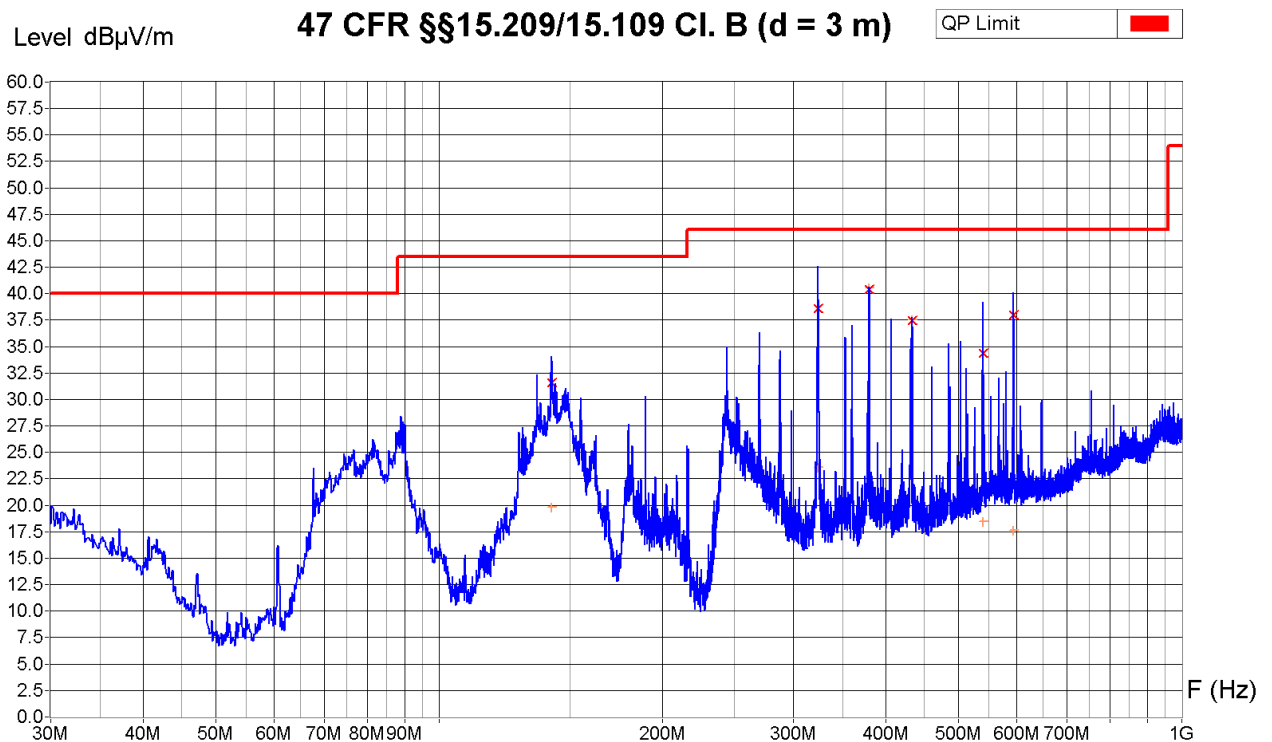
| Sample calculation with all conversion and correction factors used | | | | | |
|--|--------------------------|-----------------------|-------------------------|---------------------------|-------------------|
| Frequency [MHz] | Receiver QP value [dBµV] | Cable att. corr. [dB] | Preamp. gain corr. [dB] | Antenna factor corr. [dB] | QP field [dBµV/m] |
| 406.80 | 22.0 | +1.6 | 0.0 | +15.4 | = 39.0 |

Operator: B. Itzcovich
 Date/Time: 12.04.2021 10:07
 Filename:
 01_RE_30M-1G_TX(RFID+BLE)_V.png/.txt

Measurement Type : Radiated Field
 Polarisation : Horizontal
 Table Angle : 0 - 360°
 Antenna Height : 1 - 4m



Equipment Under Test : Invia Ease 101042297 with Charger 101037004
 Set-Up : Chamber SAC3, See photos
 Operating Conditions : RFID TX (R+W 13.56 MHz), display on, pump running, charging, BLE TX
 Remarks : BLE paired with tablet (inside chamber)



| | |
|-----------------|----------------|
| Zone | 30 MHz - 1 GHz |
| Video Bandwidth | 500 KHz |
| Resol Bandwidth | 120 KHz |

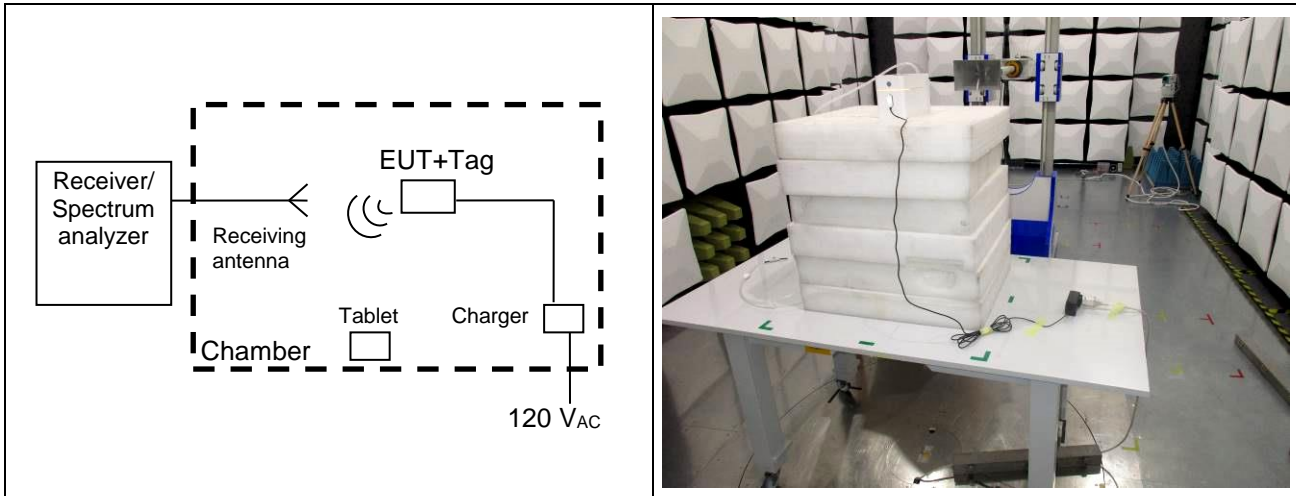
Receiver Measures

| Frequency | Peak | QuasiPeak (x) | Average (+) | QP Margin |
|------------|-------------|---------------|-------------|-----------|
| 141.85 MHz | 36.8 dBµV/m | 31.6 dBµV/m | 19.8 dBµV/m | 11.9 dB |
| 324 MHz | 45.3 dBµV/m | 38.6 dBµV/m | 23.6 dBµV/m | 7.4 dB |
| 379.69 MHz | 41.1 dBµV/m | 40.4 dBµV/m | 40.6 dBµV/m | 5.6 dB |
| 433.93 MHz | 38.4 dBµV/m | 37.5 dBµV/m | 37.6 dBµV/m | 8.6 dB |
| 540 MHz | 44.1 dBµV/m | 34.4 dBµV/m | 18.5 dBµV/m | 11.6 dB |
| 594 MHz | 52.1 dBµV/m | 38.0 dBµV/m | 17.6 dBµV/m | 8.1 dB |

Operator: B. Itzcovich
 Date/Time: 12.04.2021 11:02
 Filename:
 02_RE_30M-1G_TX(RFID+
 BLE)_H.png/.txt

6.2.3 1 GHz to 18 GHz

Test site: SAC3 SAC5
 Distance: 1 m 3 m 10 m 30 m
 Position of EUT: 1.5 m (height of the equipment under test above floor)
 Meas. Uncertainty: ± 4.7 dB
 Test method: The electromagnetic disturbance radiated by the equipment is measured using a spectrum analyzer and a wide band antenna. The antenna is moved from 1 to 3 m in height successively with horizontal and vertical polarizations, and aimed at the source by tilting. The turning table is operated through 360° during the measurements. The recordings are carried out taking into account the maximum value (peak) of all the disturbances appearing while the apparatus is under test.
 Modifications: None 1 2 3 4 5
 Climatic conditions: Temperature: 22 – 25 °C Humidity: 30 – 45 % Pressure QFE: 930 – 950 hPa
 Test set-up:



Remarks: - Limit values expressed in dBµV/m and transformed to a measuring distance of 1m (factor used = 20 dB/decade) if necessary. E.g.: for f = 1 GHz the limit is 500 µV/m at 3 m;

$$20 \log \left(\frac{500 \frac{\mu V}{m}}{1 \frac{\mu V}{m}} \right) + 20 \log \left(\frac{3m}{1m} \right) = 63.5 \frac{dB\mu V}{m} \text{ at } 1m$$

 - On the last two plots hereafter, only shown to document the multi-transmitters coexistence, the emissions over limits (f = 2.40 – 2.48 GHz) are due to the transmission bursts of the BLE module, as no filter has been used.

Test equipment:

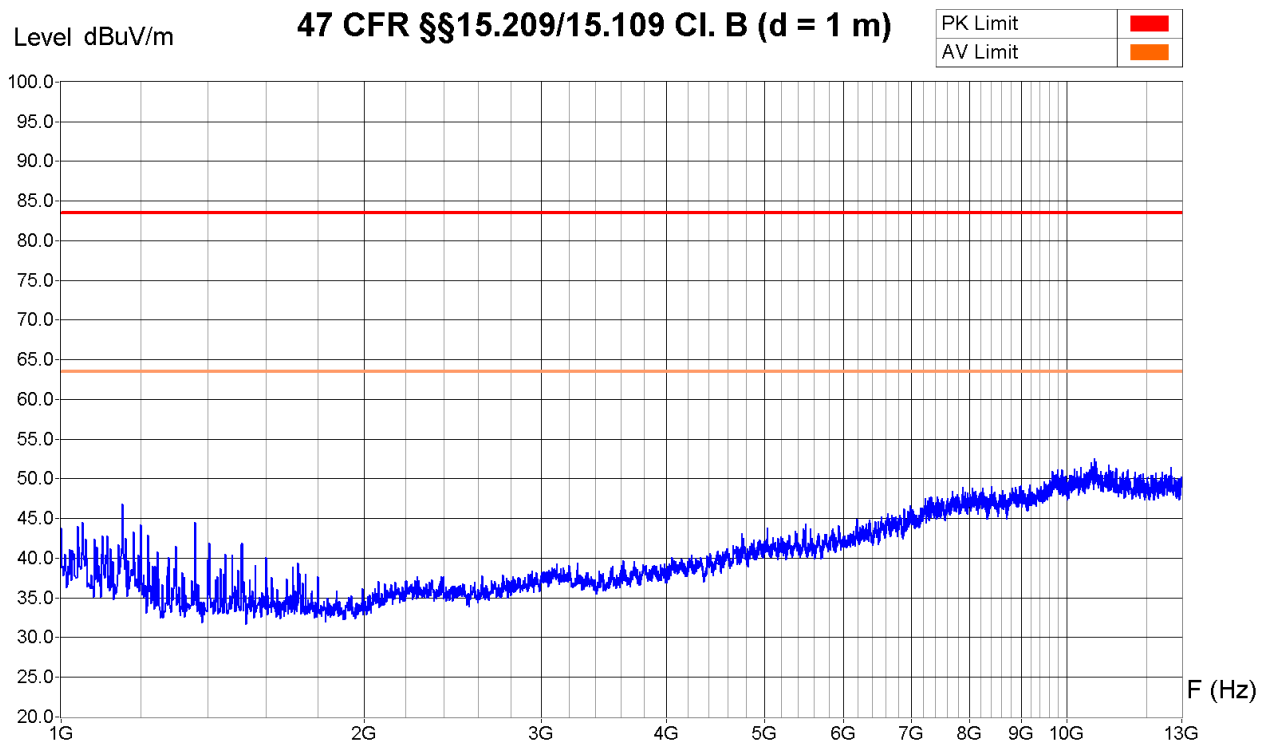
| | | | | | | |
|-------------------|---|--|---|--------------------------------|--------------------------------|--------------------------------|
| Spectrum analyzer | <input type="checkbox"/> 88-14 | <input type="checkbox"/> 94-24 | <input checked="" type="checkbox"/> 02-06 | <input type="checkbox"/> 03-45 | <input type="checkbox"/> 05-39 | <input type="checkbox"/> 07-53 |
| Preamplifier | <input type="checkbox"/> 05-56 | <input type="checkbox"/> 05-87 | <input checked="" type="checkbox"/> 14-27 | | | |
| Antenna (horn) | <input type="checkbox"/> 90-24 | <input checked="" type="checkbox"/> 07-31 | | | | |
| Cables | <input checked="" type="checkbox"/> 10-75 | <input checked="" type="checkbox"/> 06-00C | | | | |
| Filters | <input type="checkbox"/> 13-14 | <input type="checkbox"/> 12-06 | <input type="checkbox"/> 13-05 | | | |
| Attenuator 10dB | <input type="checkbox"/> 11-36 | | | | | |

Result: pass fail not applicable not tested

Measurement Type : Radiated Field
 Polarisation : Vertical
 Table Angle : 0 - 360°
 Antenna Height : 1 - 3m



Equipment Under Test : Invia Ease 101042297 with Charger 101037004
 Set-Up : Chamber SAC3, See photos
 Operating Conditions : RFID TX (R+W 13.56 MHz), display on, pump running, charging, BLE idle
 Remarks : BLE carrier (2.4 GHz) off



| | | |
|-----------------|---------------|----------------|
| Zone | 1 GHz - 7 GHz | 7 GHz - 13 GHz |
| Video Bandwidth | 3 MHz | 3 MHz |
| Resol Bandwidth | 1 MHz | 1 MHz |

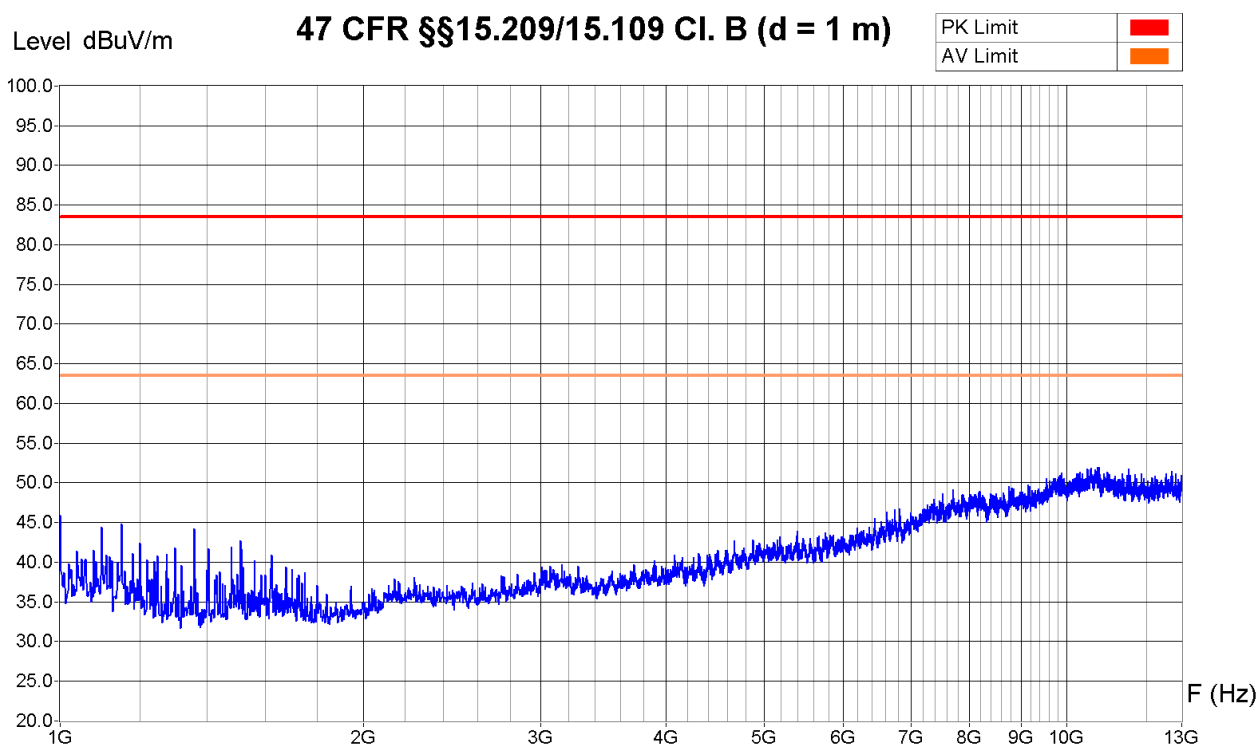
| Sample calculation with all conversion and correction factors used | | | | | | |
|--|----------------------------|-----------------------|-------------------------|---------------------------|-----------------------|---------------------|
| Frequency [GHz] | Analyzer Peak value [dBuV] | Cable att. corr. [dB] | Preamp. gain corr. [dB] | Antenna factor corr. [dB] | Attenuator corr. [dB] | Peak field [dBuV/m] |
| 1.150 | 60.2 | +0.5 | -38.6 | +24.7 | 0.0 | = 46.8 |

Operator: B. Itzcovich
 Date/Time: 13.04.2021 13:33
 Filename: 17_RE_1-13G_TX(RFID)_V.png/.txt



Measurement Type : Radiated Field
 Polarisation : Horizontal
 Table Angle : 0 - 360°
 Antenna Height : 1 - 3m

Equipment Under Test : Invia Ease 101042297 with Charger 101037004
 Set-Up : Chamber SAC3, See photos
 Operating Conditions : RFID TX (R+W 13.56 MHz), display on, pump running, charging, BLE idle
 Remarks : BLE carrier (2.4 GHz) off



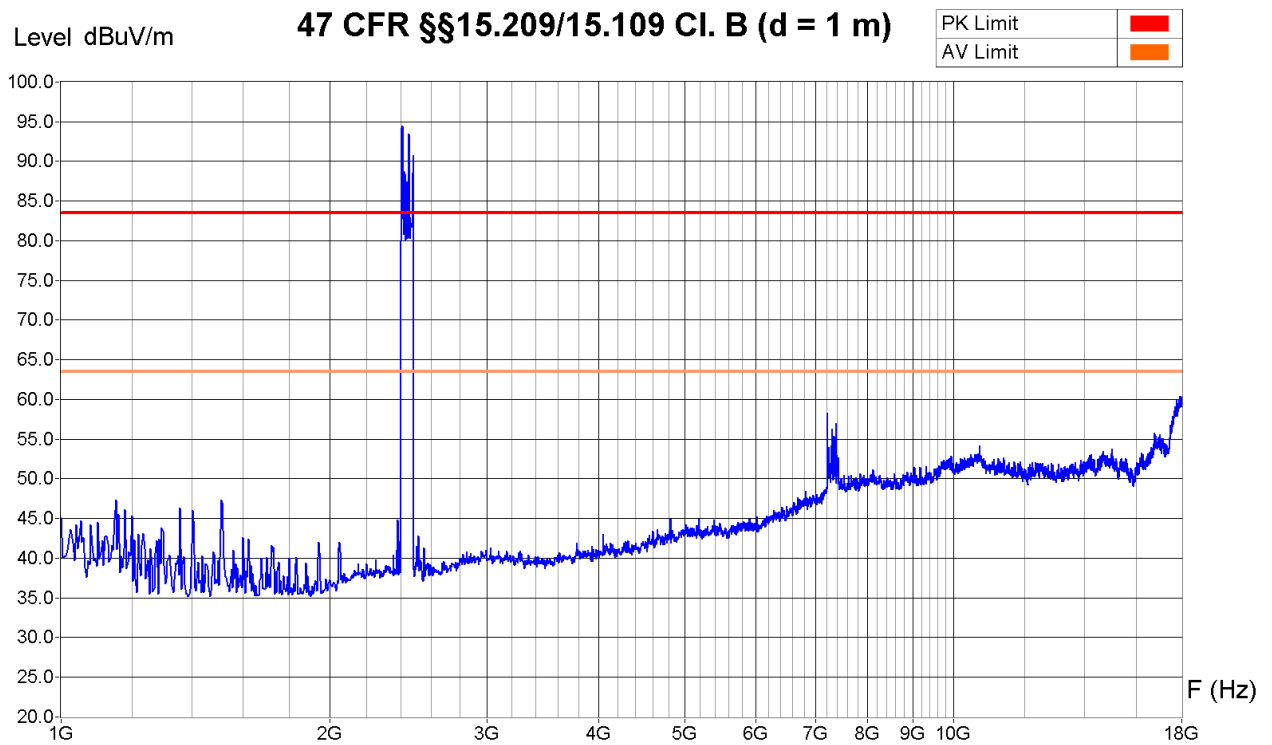
| | | |
|-----------------|---------------|----------------|
| Zone | 1 GHz - 7 GHz | 7 GHz - 13 GHz |
| Video Bandwidth | 3 MHz | 3 MHz |
| Resol Bandwidth | 1 MHz | 1 MHz |

| | |
|------------|-------------------------------------|
| Operator: | B. Itzcovich |
| Date/Time: | 13.04.2021 13:41 |
| Filename: | 18_RE_1-13G_TX(RFID)_H.png/ .txt |

Measurement Type : Radiated Field
 Polarisation : Vertical
 Table Angle : 0 - 360°
 Antenna Height : 1 - 3m



Equipment Under Test : Invia Ease 101042297 with Charger 101037004
 Set-Up : Chamber SAC3, See photos
 Operating Conditions : RFID TX (R+W 13.56 MHz), display on, pump running, charging, BLE TX
 Remarks : BLE paired with tablet (inside chamber)



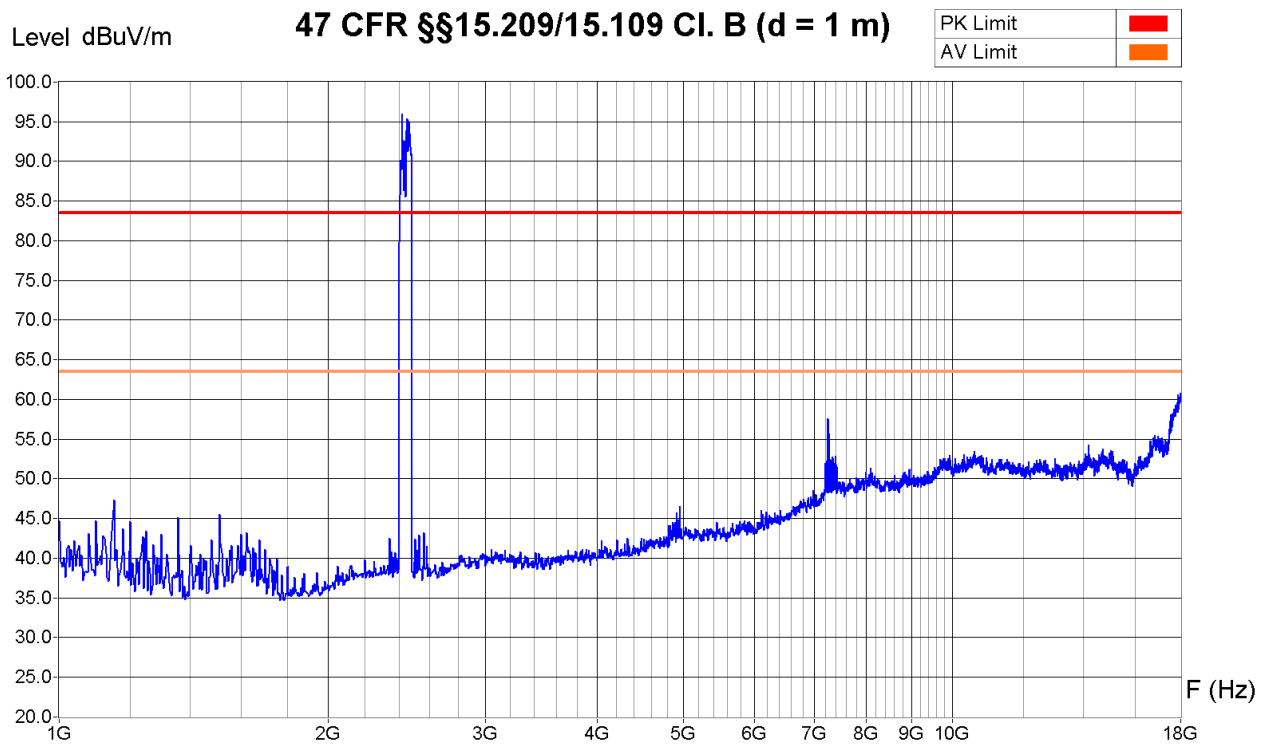
| Zone | 1 GHz - 4.40 GHz | 4.40 GHz - 7.80 | 7.80 GHz - 11.20 | 11.20 GHz - 14.60 | 14.60 GHz - 18 GHz |
|-----------------|------------------|-----------------|------------------|-------------------|--------------------|
| Video Bandwidth | 3 MHz | 3 MHz | 3 MHz | 3 MHz | 3 MHz |
| Resol Bandwidth | 1 MHz | 1 MHz | 1 MHz | 1 MHz | 1 MHz |

Operator: B. Itzcovich
 Date/Time: 13.04.2021 11:00
 Filename:
 15_RE_1-18G_TX(RFID+BLE)_V.png/.txt



Measurement Type : Radiated Field
 Polarisation : Horizontal
 Table Angle : 0 - 360°
 Antenna Height : 1 - 3m

Equipment Under Test : Invia Ease 101042297 with Charger 101037004
 Set-Up : Chamber SAC3, See photos
 Operating Conditions : RFID TX (R+W 13.56 MHz), display on, pump running, charging, BLE TX
 Remarks : BLE paired with tablet (inside chamber)

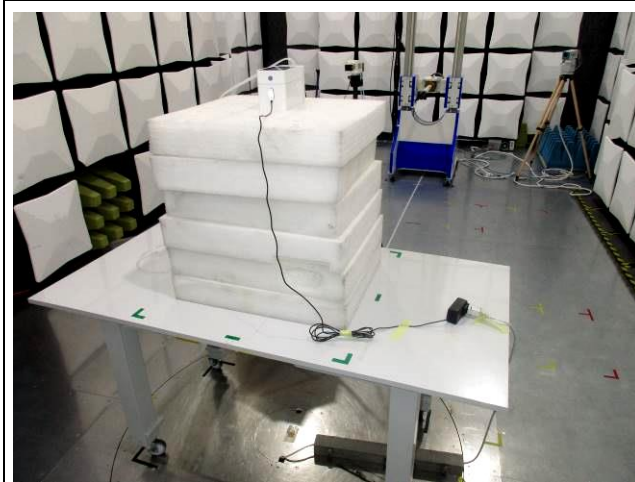
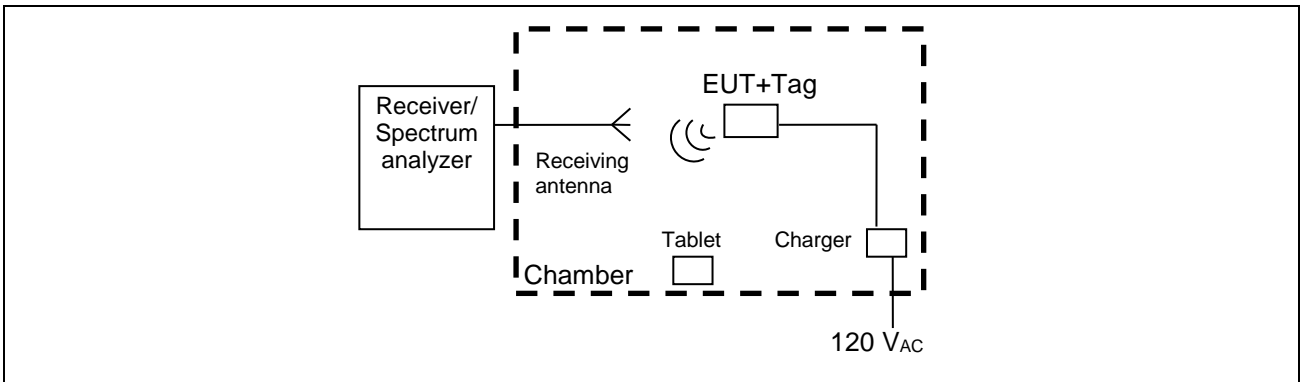


| Zone | 1 GHz - 4.40 GHz | 4.40 GHz - 7.80 | 7.80 GHz - 11.20 | 11.20 GHz - 14.60 | 14.60 GHz - 18 GHz |
|-----------------|------------------|-----------------|------------------|-------------------|--------------------|
| Video Bandwidth | 3 MHz | 3 MHz | 3 MHz | 3 MHz | 3 MHz |
| Resol Bandwidth | 1 MHz | 1 MHz | 1 MHz | 1 MHz | 1 MHz |

Operator: B. Itzcovich
 Date/Time: 13.04.2021 12:11
 Filename:
 16_RE_1-18G_TX(RFID+BLE)_H.png/.txt

6.2.4 18 GHz to 26 GHz

Test site: SAC3 SAC5
 Distance: 1 m 3 m 10 m 30 m
 Position of EUT: 1.5 m (height of the equipment under test above floor)
 Meas. Uncertainty: ± 4.7 dB
 Test method: The electromagnetic disturbance radiated by the equipment is measured using a spectrum analyzer and a wide band antenna. The antenna is placed at the same height as the EUT successively with horizontal and vertical polarizations. The EUT is placed successively in standing and lying positions. The turning table is operated through 360° during the measurements. The recordings are carried out taking into account the maximum value (peak) of all the disturbances appearing while the apparatus is under test.
 Modifications: None 1 2 3 4 5
 Climatic conditions: Temperature: 22 – 25 °C Humidity: 30 – 45 % Pressure QFE: 930 – 950 hPa
 Test set-up:



EUT standing



EUT lying

Remarks: Limit values expressed in dBµV/m and transformed to a measuring distance of 1m (factor used = 20 dB/decade) if necessary
 e.g.: for f = 18 GHz the limit is 500 µV/m at 3 m;

$$20 \log\left(\frac{500 \frac{\mu V}{m}}{1 \frac{\mu V}{m}}\right) + 20 \log\left(\frac{3 m}{1 m}\right) = 63.5 \frac{dB\mu V}{m} \text{ at } 1 m$$

Test equipment:

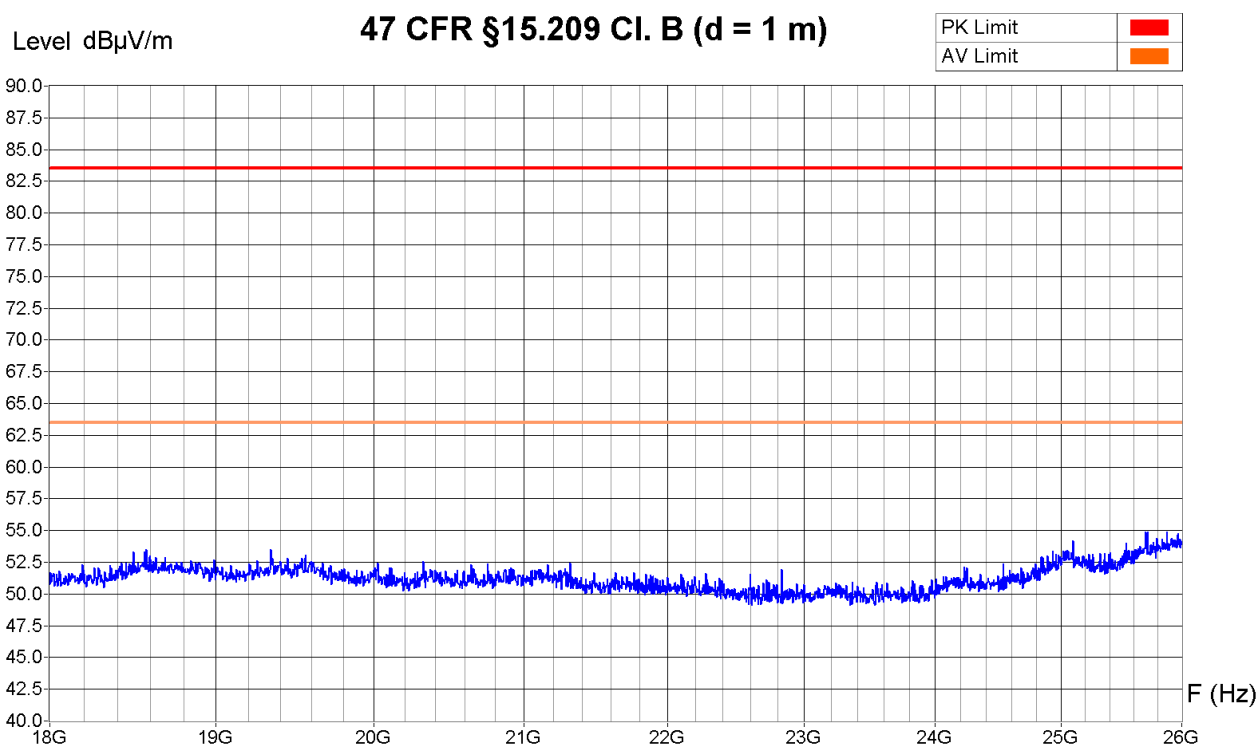
| | | | | | | |
|------------------------------|--|---|---|--------------------------------|--------------------------------|--------------------------------|
| Spectrum analyzer | <input type="checkbox"/> 88-14 | <input type="checkbox"/> 94-24 | <input checked="" type="checkbox"/> 02-06 | <input type="checkbox"/> 03-45 | <input type="checkbox"/> 05-39 | <input type="checkbox"/> 07-53 |
| Antenna with mixer & preamp. | <input checked="" type="checkbox"/> 98-12 | | | | | |
| Cables | <input checked="" type="checkbox"/> 11-62 | <input checked="" type="checkbox"/> 10-81 | | | | |
| Power supply | <input checked="" type="checkbox"/> 06-62 | | | | | |
| Multimeter | <input checked="" type="checkbox"/> 04-105 | | | | | |

Result: pass fail not applicable not tested



Measurement Type : Radiated Field
 Polarisation : Vertical
 Table Angle : 0 - 360°
 Antenna Height : 1.5 m

Equipment Under Test : Invia Ease 101042297 with Charger 101037004
 Set-Up : Chamber SAC3, EUT standing, see photos
 Operating Conditions : RFID TX (R+W 13.56 MHz), display on, pump running, charging, BLE TX
 Remarks : BLE paired with tablet (inside chamber)



| Zone | 18 GHz - 20 GHz | 20 GHz - 22 GHz | 22 GHz - 24 GHz | 24 GHz - 26 GHz |
|-----------------|-----------------|-----------------|-----------------|-----------------|
| Video Bandwidth | 3 MHz | 3 MHz | 3 MHz | 3 MHz |
| Resol Bandwidth | 1 MHz | 1 MHz | 1 MHz | 1 MHz |

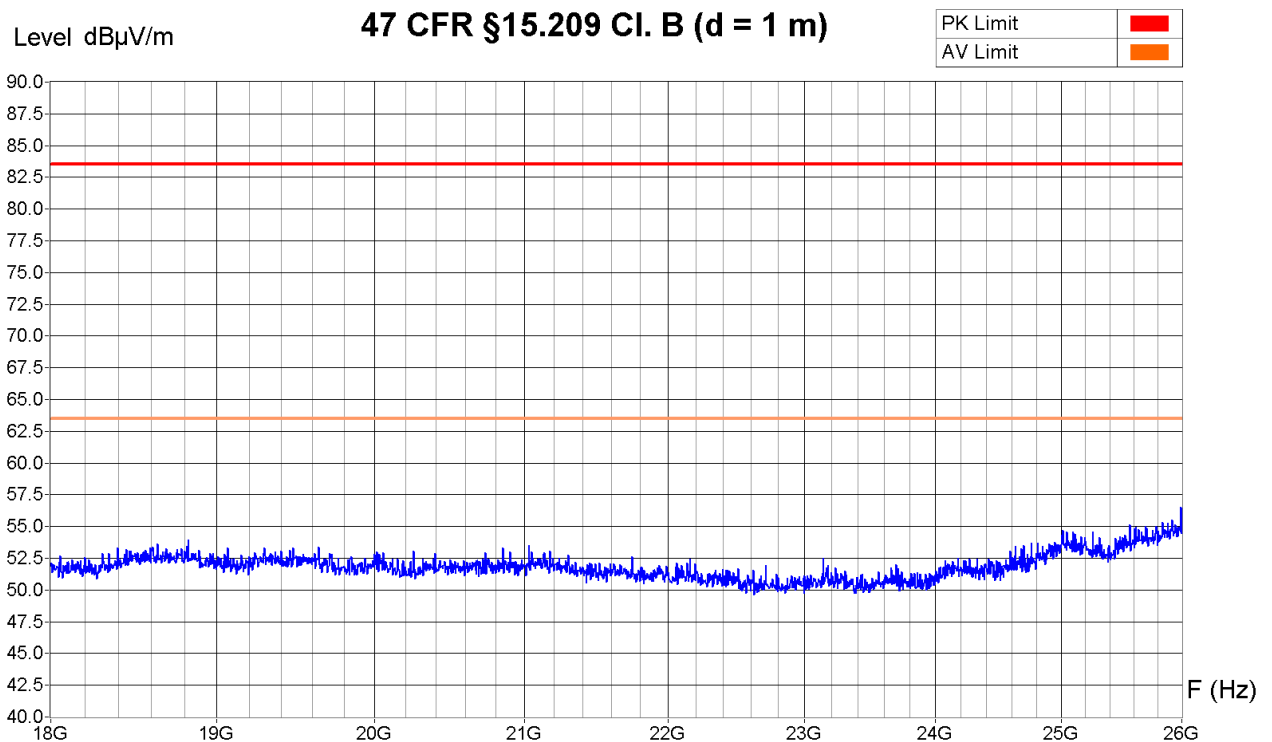
| Sample calculation with all conversion and correction factors used | | | |
|--|----------------------------|---------------------------|---------------------|
| Frequency [GHz] | Analyzer Peak value [dBµV] | Antenna factor corr. [dB] | Peak field [dBµV/m] |
| 25.716 | 30.1 | +24.8 | = 54.9 |

Operator: B. Itzcovich
 Date/Time: 13.04.2021 16:41
 Filename:
 21_RE_18-26G_TX(RFID+BLE)_Standing_V.png/.txt

Measurement Type : Radiated Field
 Polarisation : Horizontal
 Table Angle : 0 - 360°
 Antenna Height : 1.5 m



Equipment Under Test : Invia Ease 101042297 with Charger 101037004
 Set-Up : Chamber SAC3, EUT standing, see photos
 Operating Conditions : RFID TX (R+W 13.56 MHz), display on, pump running, charging, BLE TX
 Remarks : BLE paired with tablet (inside chamber)



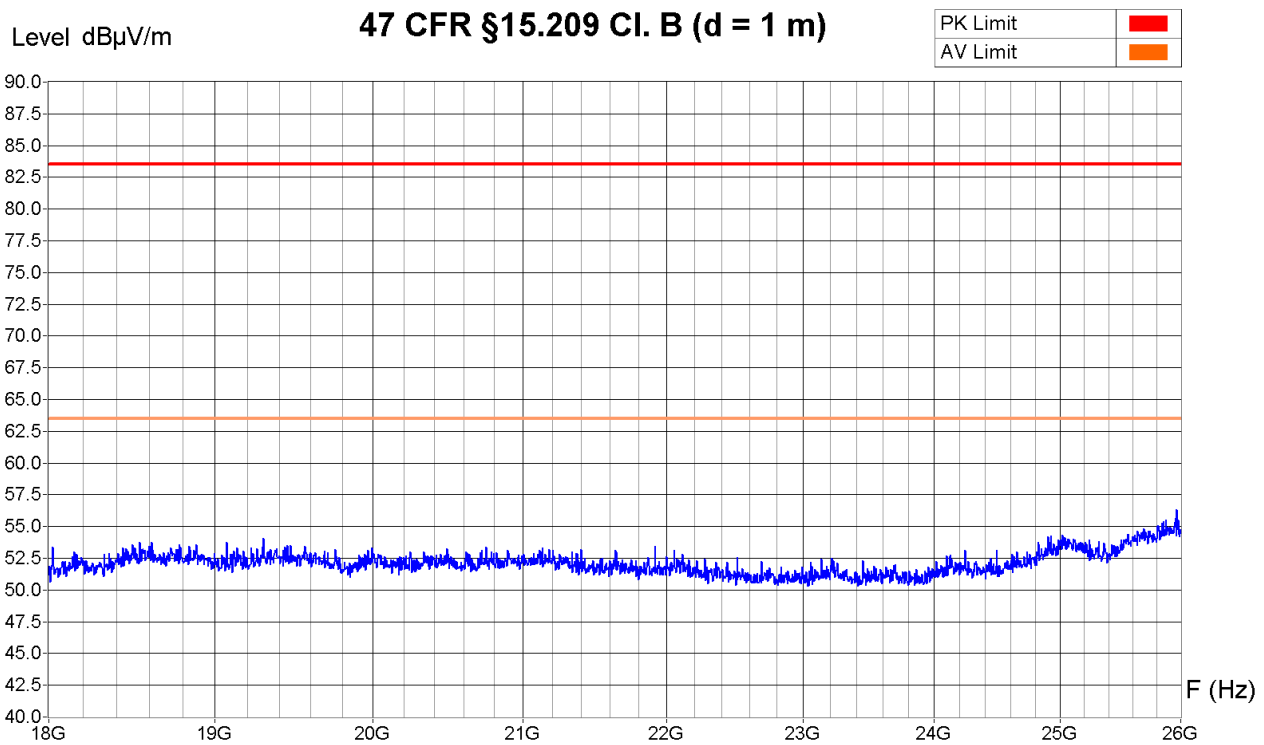
| Zone | 18 GHz - 20 GHz | 20 GHz - 22 GHz | 22 GHz - 24 GHz | 24 GHz - 26 GHz |
|-----------------|-----------------|-----------------|-----------------|-----------------|
| Video Bandwidth | 3 MHz | 3 MHz | 3 MHz | 3 MHz |
| Resol Bandwidth | 1 MHz | 1 MHz | 1 MHz | 1 MHz |

Operator: B. Itzcovich
 Date/Time: 13.04.2021 17:12
 Filename:
 22_RE_18-26G_TX(RFID+BLE)_Standing_H.png/.txt



Measurement Type : Radiated Field
 Polarisation : Vertical
 Table Angle : 0 - 360°
 Antenna Height : 1.5 m

Equipment Under Test : Invia Ease 101042297 with Charger 101037004
 Set-Up : Chamber SAC3, EUT lying, see photos
 Operating Conditions : RFID TX (R+W 13.56 MHz), display on, pump running, charging, BLE TX
 Remarks : BLE paired with tablet (inside chamber)



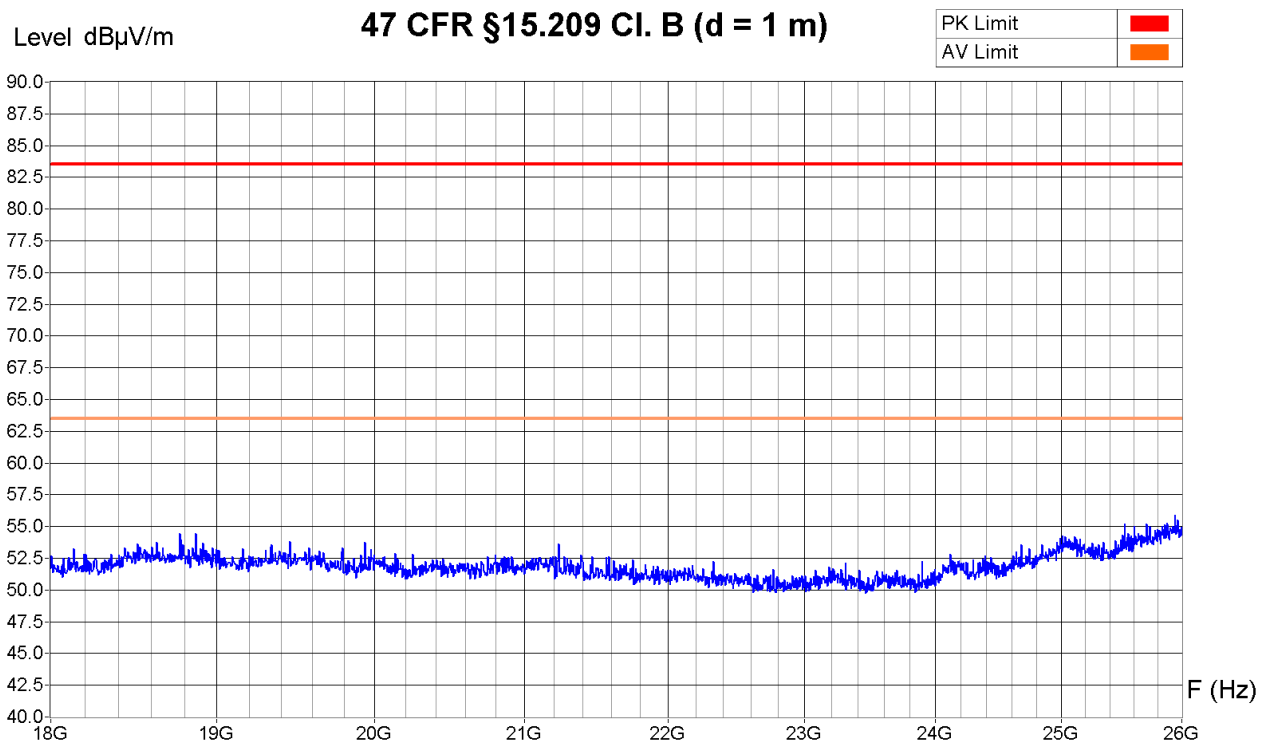
| Zone | 18 GHz - 20 GHz | 20 GHz - 22 GHz | 22 GHz - 24 GHz | 24 GHz - 26 GHz |
|-----------------|-----------------|-----------------|-----------------|-----------------|
| Video Bandwidth | 3 MHz | 3 MHz | 3 MHz | 3 MHz |
| Resol Bandwidth | 1 MHz | 1 MHz | 1 MHz | 1 MHz |

Operator: B. Itzcovich
 Date/Time: 13.04.2021 16:56
 Filename:
 23_RE_18-26G_TX(RFID+
 BLE)_Lying_V.png.txt

Measurement Type : Radiated Field
 Polarisation : Horizontal
 Table Angle : 0 - 360°
 Antenna Height : 1.5 m



Equipment Under Test : Invia Ease 101042297 with Charger 101037004
 Set-Up : Chamber SAC3, EUT lying, see photos
 Operating Conditions : RFID TX (R+W 13.56 MHz), display on, pump running, charging, BLE TX
 Remarks : BLE paired with tablet (inside chamber)



| Zone | 18 GHz - 20 GHz | 20 GHz - 22 GHz | 22 GHz - 24 GHz | 24 GHz - 26 GHz |
|-----------------|-----------------|-----------------|-----------------|-----------------|
| Video Bandwidth | 3 MHz | 3 MHz | 3 MHz | 3 MHz |
| Resol Bandwidth | 1 MHz | 1 MHz | 1 MHz | 1 MHz |

Operator: B. Itzcovich
 Date/Time: 13.04.2021 17:08
 Filename:
 24_RE_18-26G_TX(RFID+BLE)_Lying_H.png/.txt

6.3 Radiated emissions, RF modules in idle mode

6.3.1 30 MHz to 1 GHz

Test site: semi-anechoic chamber (foam) open test site
 SAC3

Distance: 3 m 10 m 30 m

Position of EUT: 0.8 m (height of the equipment under test above floor)

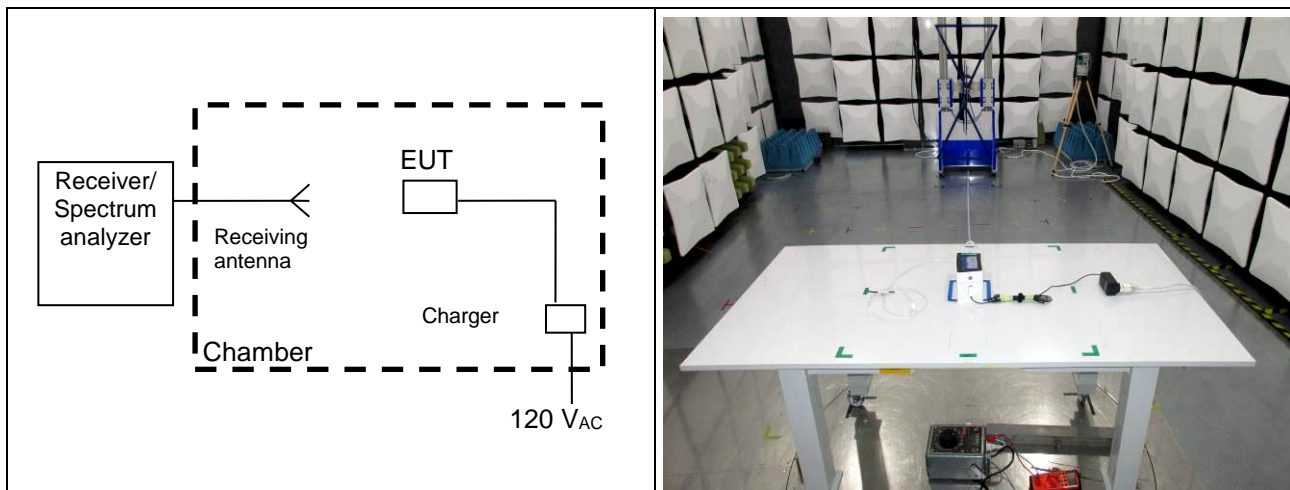
Meas. Uncertainty: ± 4.6 dB (30 – 300 MHz) / ± 3.7 dB (300 – 1000 MHz)

Test method: The electromagnetic disturbance radiated by the equipment is measured using a spectrum analyzer and a wide band antenna. The antenna is moved from 1 to 4 m in height successively with horizontal and vertical polarizations. The turning table is operated through 360° during the measurements. The recordings are carried out taking into account the maximum value of all the disturbances appearing while the apparatus is under test. The peak values are recorded continuously on the graph. The values exceeding a limit are re-measured manually using a receiver.

Modifications: None 1 2 3 4 5

Climatic conditions: Temperature: 22 – 25 °C Humidity: 30 – 45 % Pressure QFE: 930 – 950 hPa

Test set-up:



Remarks: - Limit values expressed in dBµV/m and transformed to a measuring distance of 10 m (factor used = 20 dB/decade) if necessary
 e.g.: for f = 40 MHz the limit is 100 µV/m at 3 m corresp. $20 \text{ Log} (100 \mu\text{V/m}) = 40 \text{ dB}\mu\text{V/m}$

Test equipment:

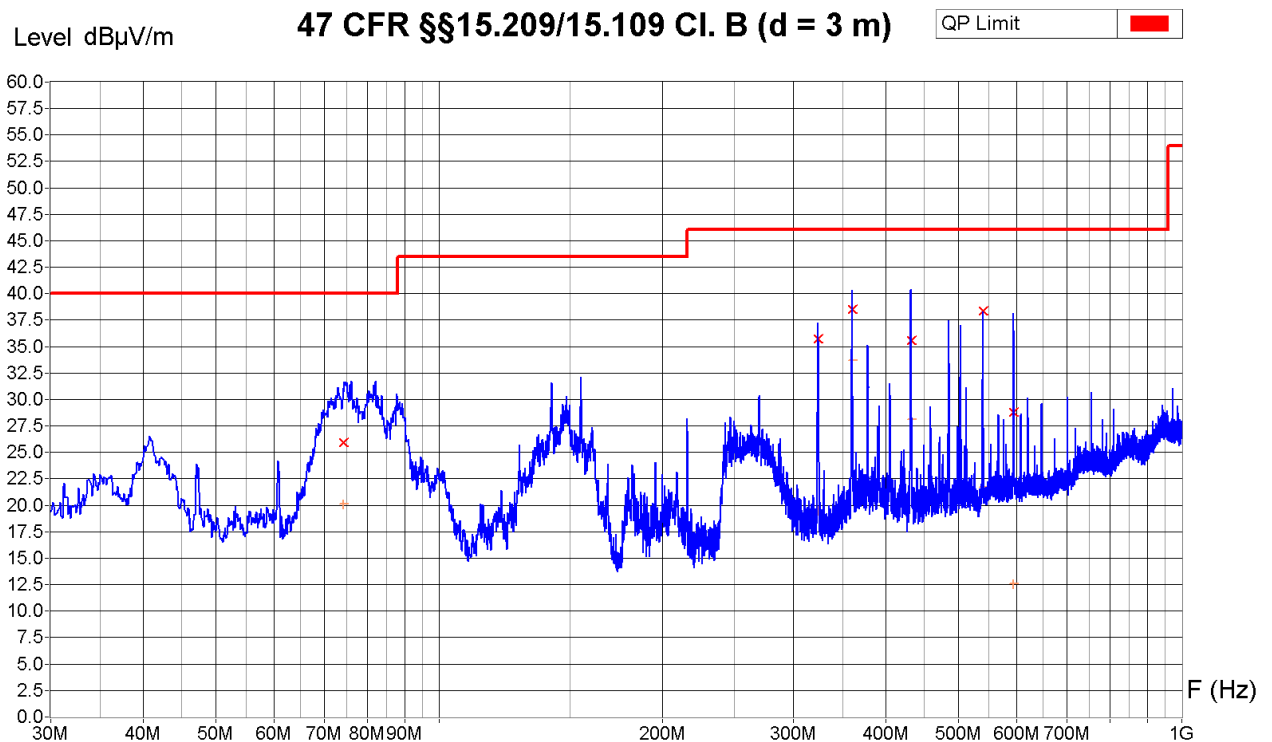
| | | | | | | |
|----------------------|--|---|--------------------------------|--------------------------------|--------------------------------|--------------------------------|
| Spectrum analyzer | <input checked="" type="checkbox"/> 21-07 | <input type="checkbox"/> 94-24 | <input type="checkbox"/> 02-06 | <input type="checkbox"/> 03-45 | <input type="checkbox"/> 05-39 | <input type="checkbox"/> 10-70 |
| Receiver | <input checked="" type="checkbox"/> 21-07 | <input type="checkbox"/> 90-43 | <input type="checkbox"/> 94-35 | <input type="checkbox"/> 04-29 | <input type="checkbox"/> 10-70 | |
| Preamplifier | <input checked="" type="checkbox"/> 21-07 internal | <input type="checkbox"/> 95-86 | <input type="checkbox"/> 05-56 | <input type="checkbox"/> 05-59 | <input type="checkbox"/> 05-62 | <input type="checkbox"/> 05-87 |
| Antenna (bilog) | <input type="checkbox"/> 94-03 | <input checked="" type="checkbox"/> 05-38 | | | | |
| Cable set | <input checked="" type="checkbox"/> SAC3_RE | | | | | |
| Variable transformer | <input checked="" type="checkbox"/> 75-04 | | | | | |
| Multimeter | <input checked="" type="checkbox"/> 04-105 | | | | | |

Result: pass fail not applicable not tested

Measurement Type : Radiated Field
 Polarisation : Vertical
 Table Angle : 0 - 360°
 Antenna Height : 1 - 4m



Equipment Under Test : Invia Ease 101042297 with Charger 101037004
 Set-Up : Chamber SAC3, See photos
 Operating Conditions : RFID Idle, display on, pump running, charging, BLE Idle
 Remarks : All RF transmitter carriers are Off



| | |
|-----------------|----------------|
| Zone | 30 MHz - 1 GHz |
| Video Bandwidth | 500 KHz |
| Resol Bandwidth | 120 KHz |

Receiver Measures

| Frequency | Peak | QuasiPeak (x) | Average (+) | QP Margin |
|------------|-------------|---------------|-------------|-----------|
| 74.40 MHz | 32.0 dBµV/m | 25.9 dBµV/m | 20.1 dBµV/m | 14.1 dB |
| 324 MHz | 40.1 dBµV/m | 35.7 dBµV/m | 19.5 dBµV/m | 10.3 dB |
| 360 MHz | 40.8 dBµV/m | 38.5 dBµV/m | 33.7 dBµV/m | 7.5 dB |
| 432 MHz | 42.4 dBµV/m | 35.6 dBµV/m | 28.1 dBµV/m | 10.4 dB |
| 539.95 MHz | 44.0 dBµV/m | 38.4 dBµV/m | 21.7 dBµV/m | 7.6 dB |
| 593.95 MHz | 38.5 dBµV/m | 28.8 dBµV/m | 12.6 dBµV/m | 17.3 dB |

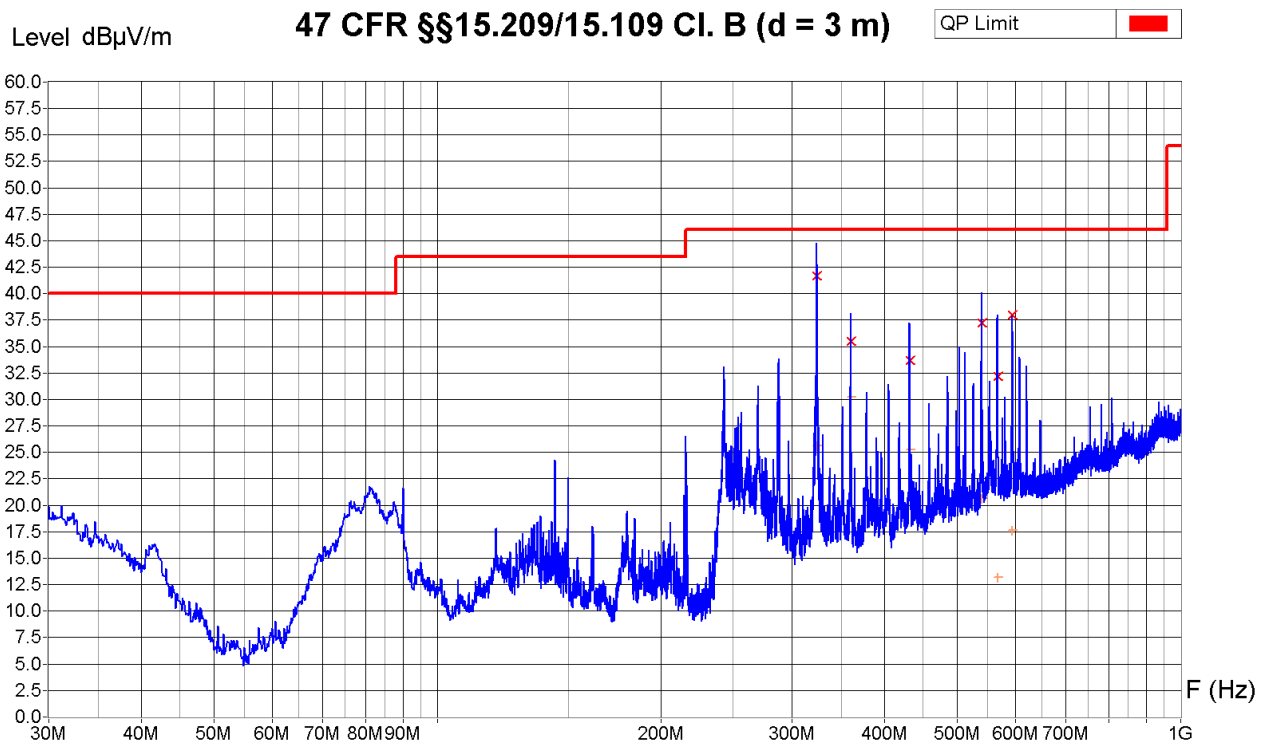
| Sample calculation with all conversion and correction factors used | | | | | |
|--|--------------------------|-----------------------|-------------------------|---------------------------|-------------------|
| Frequency [MHz] | Receiver QP value [dBµV] | Cable att. corr. [dB] | Preamp. gain corr. [dB] | Antenna factor corr. [dB] | QP field [dBµV/m] |
| 360.0 | 22.8 | +1.5 | 0.0 | +14.2 | = 38.5 |

Operator: B. Itzcovich
 Date/Time: 12.04.2021 12:58
 Filename:
 03_RE_30M-1G_idle_V.png/.txt



Measurement Type : Radiated Field
 Polarisation : Horizontal
 Table Angle : 0 - 360°
 Antenna Height : 1 - 4m

Equipment Under Test : Invia Ease 101042297 with Charger 101037004
 Set-Up : Chamber SAC3, See photos
 Operating Conditions : RFID Idle, display on, pump running, charging, BLE Idle
 Remarks : All RF transmitter carriers are Off



| | |
|-----------------|----------------|
| Zone | 30 MHz - 1 GHz |
| Video Bandwidth | 500 KHz |
| Resol Bandwidth | 120 KHz |

Receiver Measures

| Frequency | Peak | QuasiPeak (x) | Average (+) | QP Margin |
|------------|-------------|---------------|-------------|-----------|
| 324 MHz | 46.0 dBµV/m | 41.7 dBµV/m | 25.7 dBµV/m | 4.3 dB |
| 360 MHz | 38.8 dBµV/m | 35.5 dBµV/m | 30.3 dBµV/m | 10.6 dB |
| 432 MHz | 39.1 dBµV/m | 33.7 dBµV/m | 25.3 dBµV/m | 12.4 dB |
| 540 MHz | 43.7 dBµV/m | 37.3 dBµV/m | 20.7 dBµV/m | 8.8 dB |
| 567.15 MHz | 39.8 dBµV/m | 32.2 dBµV/m | 13.2 dBµV/m | 13.8 dB |
| 594 MHz | 52.1 dBµV/m | 38.0 dBµV/m | 17.6 dBµV/m | 8.1 dB |

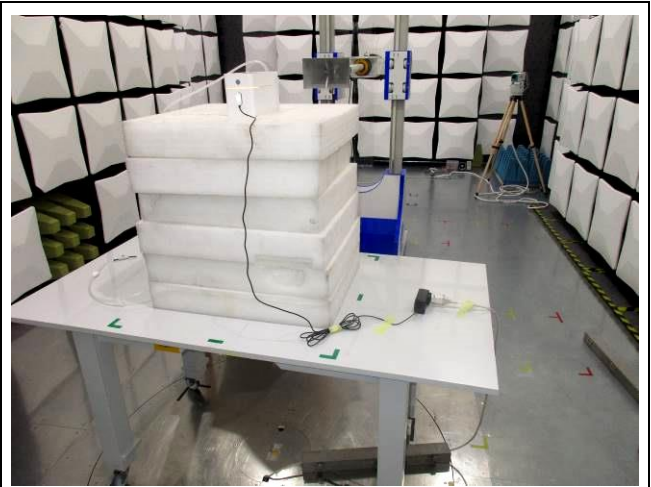
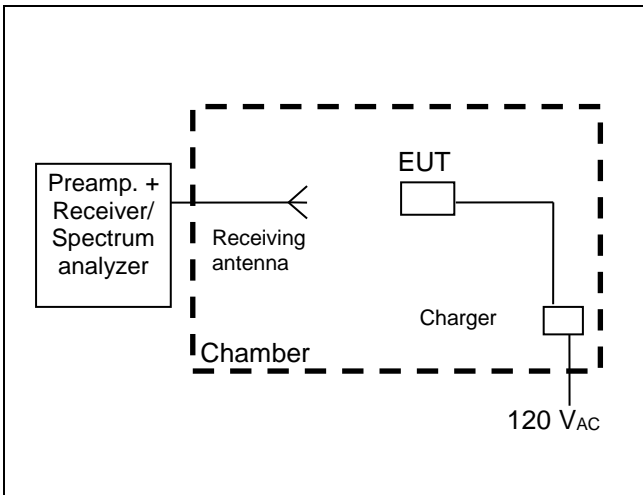
Operator: B. Itzcovich
 Date/Time: 12.04.2021 13:17
 Filename:
 04_RE_30M-1G_Idle_H.png/.txt

6.3.2 1 GHz to 13 GHz

Test site: SAC3 SAC5
 Distance: 1 m 3 m 10 m 30 m
 Position of EUT: 1.5 m (height of the equipment under test above floor)
 Meas. Uncertainty: ± 4.7 dB

Test method: The electromagnetic disturbance radiated by the equipment is measured using a spectrum analyzer and a wide band antenna. The antenna is moved from 1 to 4 m in height successively with horizontal and vertical polarizations, and aimed at the source by tilting. The turning table is operated through 360° during the measurements. The recordings are carried out taking into account the maximum value (peak) of all the disturbances appearing while the apparatus is under test.

Modifications: None 1 2 3 4 5
 Climatic conditions: Temperature: 22 – 25 °C Humidity: 30 – 45 % Pressure QFE: 930 – 950 hPa
 Test set-up:



Remarks: Limit values expressed in dBµV/m and transformed to a measuring distance of 1m (factor used = 20 dB/decade) if necessary
 e.g.: for f = 1 GHz the limit is 500 µV/m at 3 m;

$$20 \log \left(\frac{500 \frac{\mu V}{m}}{1 \frac{\mu V}{m}} \right) + 20 \log \left(\frac{3 m}{1 m} \right) = 63.5 \frac{dB\mu V}{m} \text{ at } 1 m$$

Test equipment:

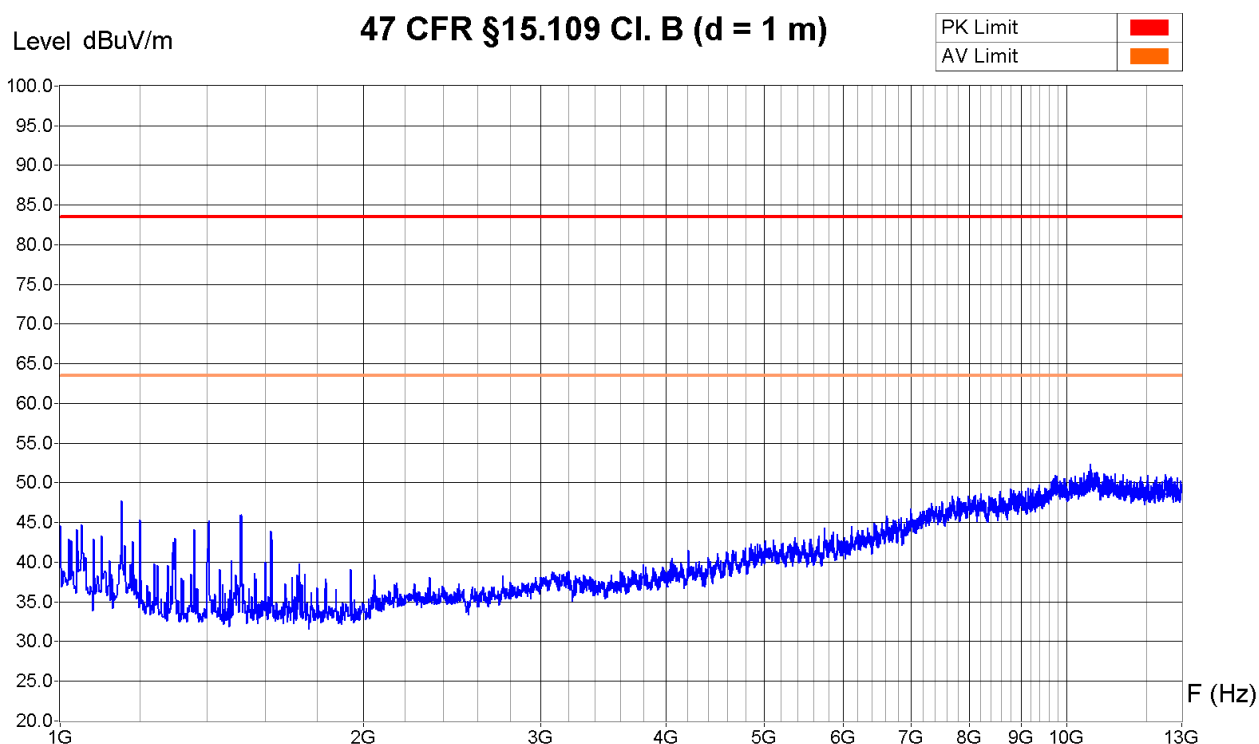
| | | | | | | |
|-------------------|---|--|---|--------------------------------|--------------------------------|--------------------------------|
| Spectrum analyzer | <input type="checkbox"/> 88-14 | <input type="checkbox"/> 94-24 | <input checked="" type="checkbox"/> 02-06 | <input type="checkbox"/> 03-45 | <input type="checkbox"/> 05-39 | <input type="checkbox"/> 07-53 |
| Preamplifier | <input type="checkbox"/> 05-56 | <input type="checkbox"/> 05-87 | <input checked="" type="checkbox"/> 14-27 | | | |
| Antenna (horn) | <input type="checkbox"/> 90-24 | <input checked="" type="checkbox"/> 07-31 | | | | |
| Cables | <input checked="" type="checkbox"/> 10-75 | <input checked="" type="checkbox"/> 06-00C | | | | |
| Filters | <input type="checkbox"/> 13-14 | <input type="checkbox"/> 12-06 | <input type="checkbox"/> 13-05 | | | |

Result: pass fail not applicable not tested



Measurement Type : Radiated Field
 Polarisation : Vertical
 Table Angle : 0 - 360°
 Antenna Height : 1 - 3m

Equipment Under Test : Invia Ease 101042297 with Charger 101037004
 Set-Up : Chamber SAC3, See photos
 Operating Conditions : RFID Idle, display on, pump running, charging, BLE Idle
 Remarks : All RF transmitter carriers are Off



| | | |
|-----------------|---------------|----------------|
| Zone | 1 GHz - 7 GHz | 7 GHz - 13 GHz |
| Video Bandwidth | 3 MHz | 3 MHz |
| Resol Bandwidth | 1 MHz | 1 MHz |

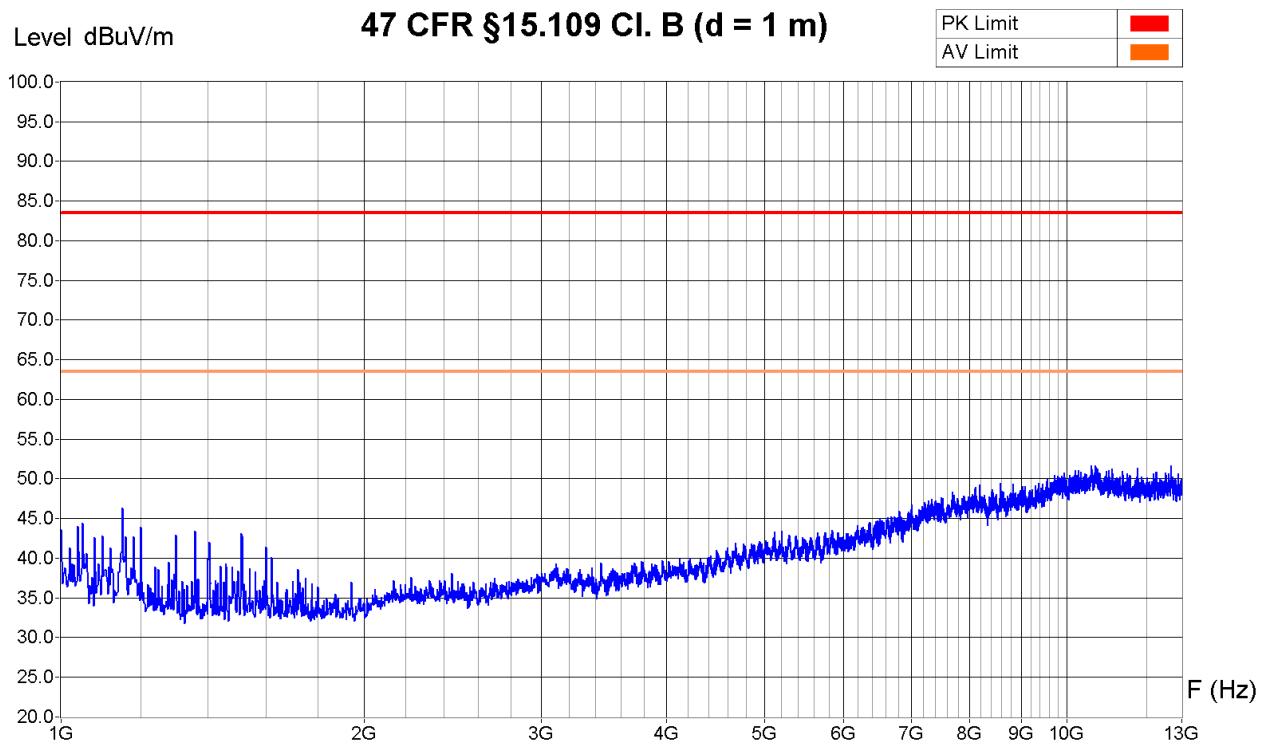
| Sample calculation with all conversion and correction factors used | | | | | | |
|--|----------------------------|-----------------------|-------------------------|---------------------------|-----------------------|---------------------|
| Frequency [GHz] | Analyzer Peak value [dBµV] | Cable att. corr. [dB] | Preamp. gain corr. [dB] | Antenna factor corr. [dB] | Attenuator corr. [dB] | Peak field [dBµV/m] |
| 1.512 | 59.4 | +0.6 | -39.0 | +24.9 | 0.0 | = 45.9 |

Operator: B. Itzcovich
 Date/Time: 13.04.2021 15:15
 Filename:
 19_RE_1-13G_Idle_V.png/.txt

Measurement Type : Radiated Field
 Polarisation : Horizontal
 Table Angle : 0 - 360°
 Antenna Height : 1 - 3m



Equipment Under Test : Invia Ease 101042297 with Charger 101037004
 Set-Up : Chamber SAC3, See photos
 Operating Conditions : RFID Idle, display on, pump running, charging, BLE Idle
 Remarks : All RF transmitter carriers are Off



| | | |
|-----------------|---------------|----------------|
| Zone | 1 GHz - 7 GHz | 7 GHz - 13 GHz |
| Video Bandwidth | 3 MHz | 3 MHz |
| Resol Bandwidth | 1 MHz | 1 MHz |

Operator: B. Itzcovich
 Date/Time: 13.04.2021 15:23
 Filename:
 20_RE_1-13G_Idle_H.png/.txt

6.4 Conducted emission – Interference voltage

Test site: SAC5 shielded room
 SAC3 laboratory

Meas. Uncertainty: ± 3.6 dB

Measuring method: The conducted disturbance is measured using a spectrum analyzer and a line impedance substitution network (LISN). The measurement of the voltage against the earth is carried out successively. The peak values are recorded continuously on the graph. The values that exceed the limit are re-measured with a measuring receiver.

Modifications: None 1 2 3 4 5

Climatic conditions: Temperature: 22 – 25 °C Humidity: 30 – 45 % Pressure QFE: 930 – 950 hPa

Test set-up:

Remarks: None

Test equipment:

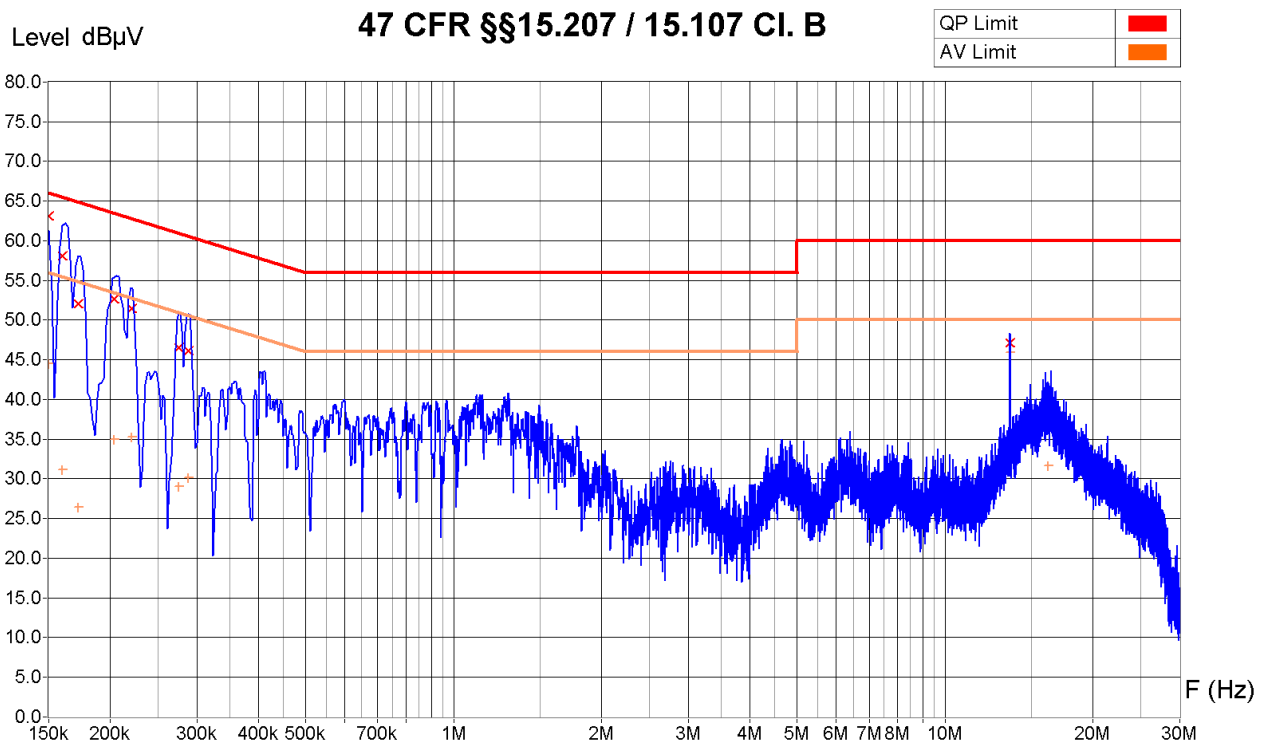
| | | | | | | |
|----------------------|---|--------------------------------|---|---|---|---|
| Spectrum analyzer | <input type="checkbox"/> 21-07 | <input type="checkbox"/> 94-24 | <input type="checkbox"/> 02-06 | <input type="checkbox"/> 03-45 | <input type="checkbox"/> 05-39 | <input checked="" type="checkbox"/> 10-70 |
| Receiver | <input type="checkbox"/> 21-07 | <input type="checkbox"/> 90-43 | <input type="checkbox"/> 94-35 | <input type="checkbox"/> 04-29 | <input checked="" type="checkbox"/> 10-70 | |
| LISN | <input type="checkbox"/> 85-13 | <input type="checkbox"/> 90-08 | <input type="checkbox"/> 94-36 | <input type="checkbox"/> 94-40 | <input type="checkbox"/> 95-12 | <input checked="" type="checkbox"/> 00-43 |
| Protection 10 dB | <input type="checkbox"/> 95-33 | <input type="checkbox"/> 95-35 | <input checked="" type="checkbox"/> 91-44 | <input type="checkbox"/> 96-38 | <input type="checkbox"/> included in LISN | |
| Protection 20 dB | <input type="checkbox"/> 91-46 | <input type="checkbox"/> 95-33 | <input type="checkbox"/> 95-38 | <input type="checkbox"/> included in LISN | | |
| Cable set | <input checked="" type="checkbox"/> SAC3_CE | | | | | |
| Variable transformer | <input checked="" type="checkbox"/> 75-04 | | | | | |
| Multimeter | <input checked="" type="checkbox"/> 04-105 | | | | | |

Result: pass fail not applicable not tested

Measurement Type : Voltage Interference
 Supply : Line 1
 Other : Charger Mains 120 VAC / 50 Hz



Equipment Under Test : Invia Ease 101042297 with Charger 101037004
 Set-Up : Chamber SAC3, See photos
 Operating Conditions : RFID TX (R+W 13.56 MHz), display on, pump running, charging, BLE TX
 Remarks : BLE paired with tablet (inside chamber)



| | |
|-----------------|------------------|
| Zone | 150 KHz - 30 MHz |
| Video Bandwidth | 30 KHz |
| Resol Bandwidth | 9 KHz |

Receiver Measures

| Frequency | Peak | QuasiPeak (x) | Average (+) | QP Margin |
|-----------|-----------|---------------|-------------|-----------|
| 150 KHz | 65.6 dBµV | 63.1 dBµV | 44.5 dBµV | 2.9 dB |
| 160 KHz | 63.0 dBµV | 58.1 dBµV | 31.2 dBµV | 7.4 dB |
| 172 KHz | 61.3 dBµV | 52.1 dBµV | 26.4 dBµV | 12.8 dB |
| 204 KHz | 59.5 dBµV | 52.7 dBµV | 35.0 dBµV | 10.8 dB |
| 221 KHz | 55.8 dBµV | 51.4 dBµV | 35.3 dBµV | 11.3 dB |
| 276 KHz | 52.2 dBµV | 46.5 dBµV | 29.0 dBµV | 14.4 dB |
| 288 KHz | 50.3 dBµV | 46.2 dBµV | 30.2 dBµV | 14.4 dB |
| 13.56 MHz | 49.6 dBµV | 47.1 dBµV | 45.9 dBµV | 12.9 dB |
| 16.17 MHz | 44.4 dBµV | 37.9 dBµV | 31.6 dBµV | 22.1 dB |

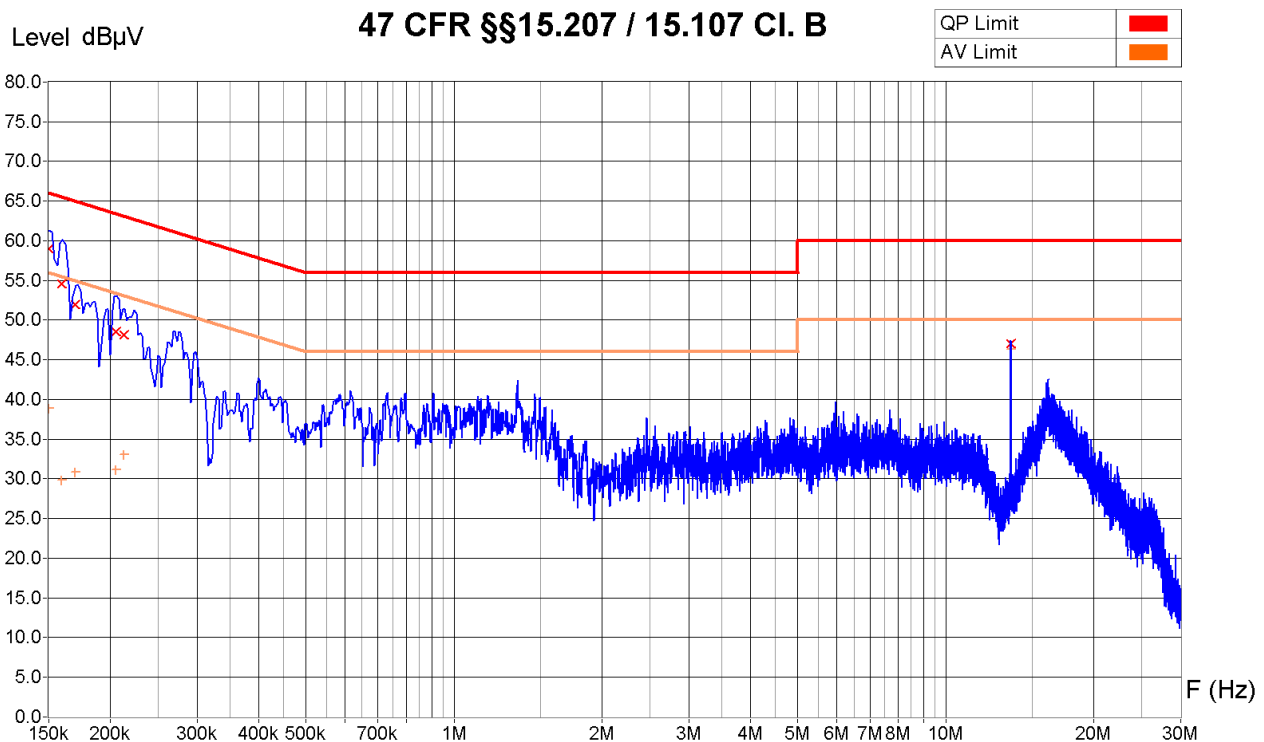
| Sample calculation with all conversion and correction factors used | | | | |
|--|--------------------------|-----------------------|-----------------------|-------------------|
| Frequency [kHz] | Receiver QP value [dBµV] | Cable att. corr. [dB] | Attenuator corr. [dB] | QP voltage [dBµV] |
| 150 | 53.0 | +0.1 | + 10.0 | = 63.1 |

Operator: B. Itzcovich
 Date/Time: 12.04.2021 16:57
 Filename:
 11_CV_150k-30M_TX(RFID+BLE)_120V_L.png/.txt



Measurement Type : Voltage Interference
 Supply : Neutral
 Other : Charger Mains 120 VAC / 50 Hz

Equipment Under Test : Invia Ease 101042297 with Charger 101037004
 Set-Up : Chamber SAC3, See photos
 Operating Conditions : RFID TX (R+W 13.56 MHz), display on, pump running, charging, BLE TX
 Remarks : BLE paired with tablet (inside chamber)



| | |
|-----------------|------------------|
| Zone | 150 KHz - 30 MHz |
| Video Bandwidth | 30 KHz |
| Resol Bandwidth | 9 KHz |

Receiver Measures

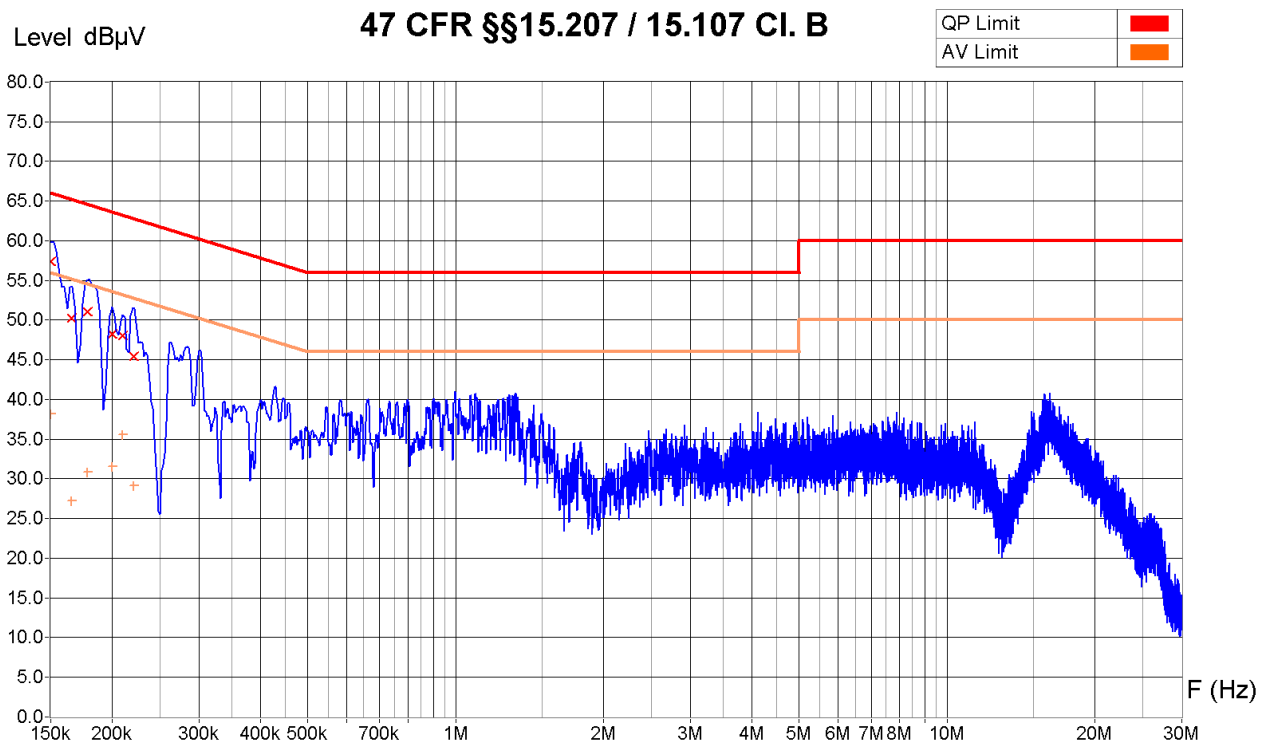
| Frequency | Peak | QuasiPeak (x) | Average (+) | QP Margin |
|-----------|-----------|---------------|-------------|-----------|
| 150 KHz | 63.9 dBµV | 59.0 dBµV | 38.9 dBµV | 7.0 dB |
| 159 KHz | 60.4 dBµV | 54.6 dBµV | 29.9 dBµV | 11.0 dB |
| 170 KHz | 58.1 dBµV | 52.0 dBµV | 30.8 dBµV | 13.0 dB |
| 205 KHz | 54.1 dBµV | 48.6 dBµV | 31.1 dBµV | 14.8 dB |
| 213 KHz | 53.8 dBµV | 48.1 dBµV | 33.0 dBµV | 14.9 dB |
| 13.56 MHz | 48.5 dBµV | 47.1 dBµV | 46.3 dBµV | 12.9 dB |

Operator: B. Itzcovich
 Date/Time: 12.04.2021 17:07
 Filename:
 12_CV_150k-30M_TX(RFID+
 BLE)_120V_N.png/.txt

Measurement Type : Voltage Interference
 Supply : Line 1
 Other : Charger Mains 120 VAC / 50 Hz



Equipment Under Test : Invia Ease 101042297 with Charger 101037004
 Set-Up : Chamber SAC3, See photos
 Operating Conditions : RFID Idle, display on, pump running, charging, BLE Idle
 Remarks : All RF transmitter carriers are Off



| | |
|-----------------|------------------|
| Zone | 150 KHz - 30 MHz |
| Video Bandwidth | 30 KHz |
| Resol Bandwidth | 9 KHz |

Receiver Measures

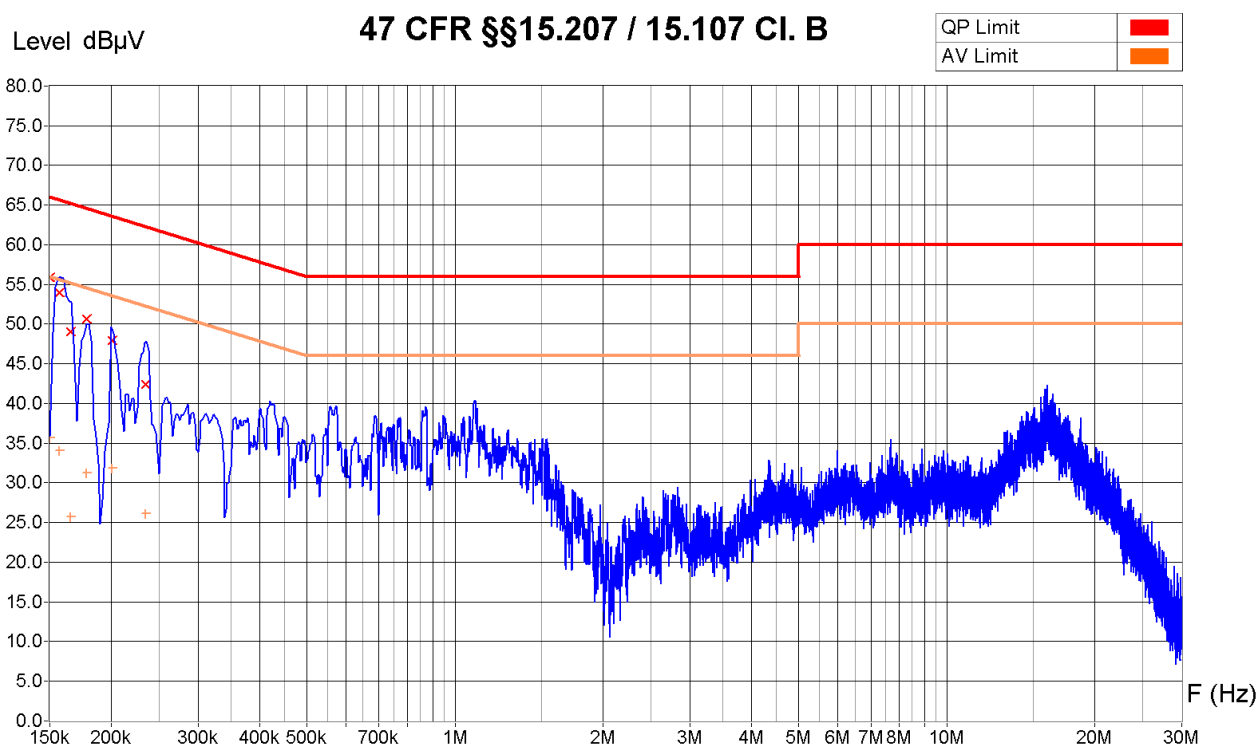
| Frequency | Peak | QuasiPeak (x) | Average (+) | QP Margin |
|-----------|-----------|---------------|-------------|-----------|
| 150 KHz | 62.0 dBµV | 57.4 dBµV | 38.2 dBµV | 8.6 dB |
| 165 KHz | 56.9 dBµV | 50.2 dBµV | 27.2 dBµV | 15.0 dB |
| 178 KHz | 55.9 dBµV | 51.1 dBµV | 30.9 dBµV | 13.5 dB |
| 200 KHz | 55.2 dBµV | 48.2 dBµV | 31.6 dBµV | 15.4 dB |
| 210 KHz | 53.4 dBµV | 48.0 dBµV | 35.5 dBµV | 15.2 dB |
| 221 KHz | 51.5 dBµV | 45.5 dBµV | 29.1 dBµV | 17.3 dB |

Operator: B. Itzcovich
 Date/Time: 12.04.2021 17:23
 Filename:
 13_CV_150k-
 30M_idle_120V_L.png/.txt



Measurement Type : Voltage Interference
 Supply : Neutral
 Other : Charger Mains 120 VAC / 50 Hz

Equipment Under Test : Invia Ease 101042297 with Charger 101037004
 Set-Up : Chamber SAC3, See photos
 Operating Conditions : RFID Idle, display on, pump running, charging, BLE Idle
 Remarks : All RF transmitter carriers are Off



| | |
|-----------------|------------------|
| Zone | 150 KHz - 30 MHz |
| Video Bandwidth | 30 KHz |
| Resol Bandwidth | 9 KHz |

Receiver Measures

| Frequency | Peak | QuasiPeak (x) | Average (+) | QP Margin |
|-----------|-----------|---------------|-------------|-----------|
| 150 KHz | 60.9 dBµV | 55.9 dBµV | 35.7 dBµV | 10.1 dB |
| 157 KHz | 57.7 dBµV | 54.0 dBµV | 34.0 dBµV | 11.7 dB |
| 165 KHz | 56.1 dBµV | 49.1 dBµV | 25.7 dBµV | 16.1 dB |
| 178 KHz | 56.5 dBµV | 50.6 dBµV | 31.3 dBµV | 14.0 dB |
| 201 KHz | 54.1 dBµV | 48.0 dBµV | 31.8 dBµV | 15.6 dB |
| 235 KHz | 49.7 dBµV | 42.4 dBµV | 26.2 dBµV | 19.9 dB |

Operator: B. Itzcovich
 Date/Time: 12.04.2021 17:29
 Filename:
 14_CV_150k-
 30M_Idle_120V_N.png/.txt

6.5 Frequency stability

Introduction: The frequency error, known as frequency drift, is the difference between the frequency of the EUT measured under normal test conditions and the frequency measured under extreme conditions.

Limit: 47 CFR §15.225 (e) The frequency tolerance of the carrier signal shall be maintained within $\pm 0.01\%$ of the operating frequency over a temperature variation of -20°C to $+50^{\circ}\text{C}$ at normal supply voltage, and for a variation in the primary supply voltage from 85% to 115% of the rated supply voltage at a temperature of 20°C . For battery operated equipment, the equipment tests shall be performed using a new battery.

Test site: anechoic chamber (foam) shielded room
 anechoic chamber (ferrites) laboratory

Meas. uncertainty: $\pm 2.6 \mu\text{Hz/Hz}$

Test method: Measurement of the frequency and the power level at the antenna connector or at the test fixture.

Test set-up:

Remarks: ---

Test equipment:

| | | | | | | |
|----------------------|--|--------------------------------|---|--------------------------------|---|--------------------------------|
| Spectrum analyzer | <input type="checkbox"/> 88-14 | <input type="checkbox"/> 94-24 | <input checked="" type="checkbox"/> 02-06 | <input type="checkbox"/> 03-45 | <input type="checkbox"/> 05-39 | <input type="checkbox"/> 10-70 |
| Attenuator 20dB | <input checked="" type="checkbox"/> 96-37 | | | | | |
| Powermeter | <input checked="" type="checkbox"/> 05-73 | | | | | |
| Power sensor | <input checked="" type="checkbox"/> 09-04 | | | | | |
| Temperature chamber | <input checked="" type="checkbox"/> 06-66 | | | | | |
| Temperature probe | <input type="checkbox"/> 08-03 | <input type="checkbox"/> 03-05 | <input type="checkbox"/> 05-34 | <input type="checkbox"/> 08-32 | <input checked="" type="checkbox"/> 09-11 | |
| Power supply | <input checked="" type="checkbox"/> 99-07 | <input type="checkbox"/> 04-31 | | | | |
| Variable transformer | <input type="checkbox"/> 75-04 | | | | | |
| Multimeter | <input checked="" type="checkbox"/> 14-105 | | | | | |
| Cables | <input checked="" type="checkbox"/> 11-13 | | | | | |

Result: pass fail not applicable partly tested

Results of the test

Client: Medela AG
 Equipment: Invia Ease
 Operating mode: TX (f = 13.56 MHz), max. power
 Remarks: Measured on temporary antenna connector
 RBW 10 Hz, VBW = 30 Hz; Span = 1 kHz; ST = 478 ms; RefLev = 30 dBm; RefLev Offset = 20 dB;
 Detector = Peak; Trace mode = Clear Write; Nb points = 1001
 Modifications: None 1 2 3 4 5
 Climatic conditions: Temperature: 22 – 25 °C Humidity: 30 – 45 % Pressure QFE: 930 – 950 hPa

Variation of the temperature (measured at nominal supply voltage)

Reference value:

| Temp [C] | Frequency [MHz] | Error [ppm] | Limit [ppm] | P* [dBm] | P ERP [dbm] | Limit [dBm] | Remarks |
|----------|-----------------|-------------|-------------|----------|-------------|-------------|----------|
| 20 | 13.560308 | --- | --- | 12.9 | -28.3 | 26.6 | See §6.1 |

| Temp [C] | Frequency [MHz] | Error [ppm] | Limit [ppm] | P [dBm] | P ERP [dbm] | Limit [dBm] | Remarks | Pass | |
|----------|-----------------|-------------|-------------|---------|-------------|-------------|---------|-------------------------------------|--------------------------|
| | | | | | | | | Yes | No |
| -20 | 13.560596 | -21.2 | 100 | -13.0 | -54.2 | 26.6 | --- | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| -10 | 13.560540 | -17.1 | 100 | 13.0 | -28.2 | 26.6 | --- | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 0 | 13.560446 | -10.2 | 100 | 12.9 | -28.3 | 26.6 | --- | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 10 | 13.560375 | -4.9 | 100 | 13.0 | -28.1 | 26.6 | --- | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 30 | 13.560232 | 5.6 | 100 | 13.1 | -28.1 | 26.6 | --- | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 40 | 13.560186 | 9.0 | 100 | 13.1 | -28.1 | 26.6 | --- | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 50 | 13.560108 | 14.7 | 100 | 12.8 | -28.4 | 26.6 | --- | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

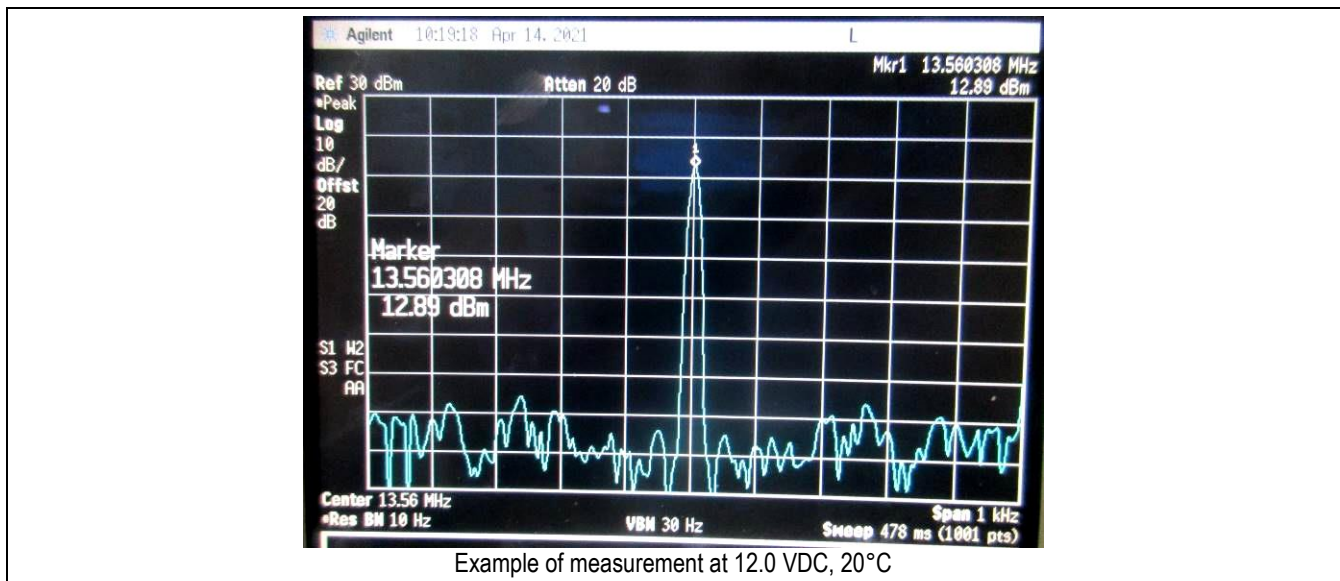
Variation of the voltage (measured at nominal temperature)

Reference value:

| Voltage [V] | Frequency [MHz] | Error [ppm] | Limit [ppm] | P* [dBm] | P ERP [dbm] | Limit [dBm] | Remarks |
|-------------|-----------------|-------------|-------------|----------|-------------|-------------|----------|
| 12.0 | 13.560308 | --- | --- | 12.9 | -28.3 | 26.6 | See §6.1 |

| Voltage [V] | Frequency [MHz] | Error [ppm] | Limit [ppm] | P [dBm] | P ERP [dbm] | Limit [dBm] | Remarks | Pass | |
|-------------|-----------------|-------------|-------------|---------|-------------|-------------|---------|-------------------------------------|--------------------------|
| | | | | | | | | Yes | No |
| 12.2 | 13.560308 | 0.0 | 100 | 12.9 | -28.3 | 26.6 | --- | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 13.8 | 13.560308 | 0.0 | 100 | 12.9 | -28.3 | 26.6 | --- | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

* Additional conducted power measurement with powermeter (50 Ω) on temp. RFID antenna connector, 20°C, 12VDC: 12.6 dBm



Place and date of test: Rossens, 2021-04-14
 Operator: B. Itzcovich

6.6 Designation of emission

Standard: United States: 47 CFR "Code of Federal Regulations" – Telecommunication
 FCC Part 2, Subpart C: Emission: §2.201 and §2.202

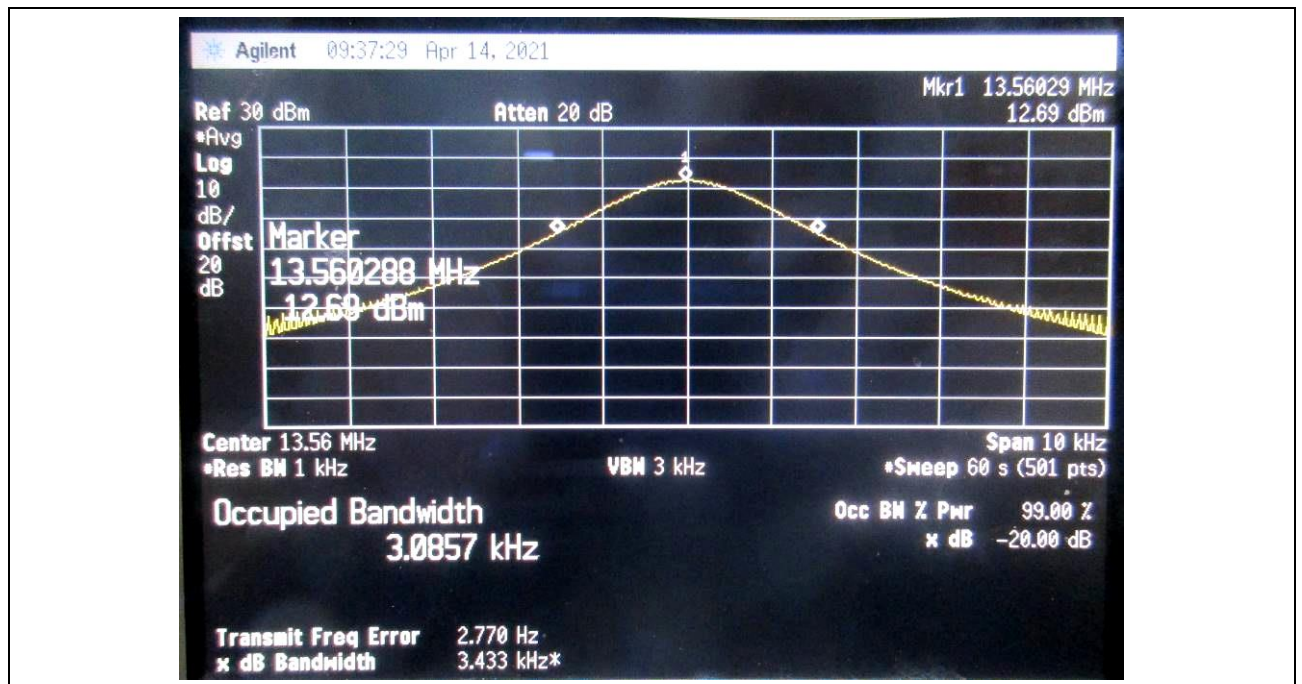
Introduction: A system of designating emission, modulation and transmission characteristics shall be employed.
 (a) Emissions are designated according to their classification and their necessary bandwidth.
 (b) A minimum of three symbols are used to describe the basic characteristics of radio waves.
 © Four symbols are used to describe the necessary bandwidth.

Modifications: None 1 2 3 4 5

Necessary bandwidth: For a given class of emission, the minimum value of the occupied bandwidth sufficient to ensure the transmission of information at the rate and with the quality required for the system employed, under specified conditions.
 $B_n = 3.086 \text{ kHz}$ (occupied bandwidth)

Basic characteristics: A1D A : Double-sideband
 1 : A single channel containing quantized or digital information without the use of a modulating sub-carrier, excluding time-division multiplex
 D : data transmission

Designation of emission: 3K09A1D



Place and date of test: Rossens, 2021-04-14
 Operator: B. Itzcovich

7. Appendix

7.1 Test equipment

| Inventory No. | Designation | Manufacturer | Type | Cal. Date | Next calibr. | Cal. Period [year] |
|---------------|-----------------------------------|--------------------------------|--|-------------|--------------|--------------------|
| 90-25 | Loop antenna | Chase | HLA6120 | 16 Feb 2021 | 16 Feb 2024 | 3 |
| 05-38 | Bi-Log antenna | Schaffner | CBL 6111C | 01 Nov 2018 | 01 Nov 2021 | 3 |
| 07-31 | Horn antenna | Schwarzbeck | BBHA 9120 D | 10 Sep 2018 | 10 Sep 2021 | 3 |
| 98-12 | Horn Antenna + Preamp + Mixer | Emco + Miteq + Hewlett Packard | 3160-09 + JDM2W-18002650-27-10P-R + 11970K | 12 Feb 2021 | 12 Feb 2024 | 3 |
| SAC3_RE | Cable set (11 m) | Huber&Suhner | SF104A (5.0m x2) + SF106PA (1.0m) | 30 Sep 2019 | 30 Sep 2021 | 2 |
| SAC3_CE | Cable set (18 m) | Huber&Suhner W.L. Gore | RG 58 C/U (2.0 m) GSC-10-80344-00 (8m x2) | 30 Sep 2019 | 30 Sep 2021 | 2 |
| 11-13 | Cable | Huber&Suhner | SF104 | 17 Dec 2018 | 17 Dec 2021 | 3 |
| 10-75 | Cable | Huber&Suhner | ST18A (1.5m) | 6 Aug 2018 | 6 Aug 2021 | 3 |
| 06-00C | Cable | Huber&Suhner | SF106PA (0.6m) | 25 Sep 2020 | 25 Sep 2022 | 2 |
| 10-81 | Cable | Huber&Suhner | SF 104P (1.0m) | 25 Sep 2020 | 25 Sep 2022 | 2 |
| 11-62 | Cable | Huber&Suhner | SF 104P (1.0m) | 25 Sep 2020 | 25 Sep 2022 | 2 |
| 91-44 | Attenuator | Montena EMC | 10 dB | 18 Sep 2020 | 18 Sep 2022 | 2 |
| 96-37 | Attenuator | EMC Fribourg | 20dB | 18 Sep 2021 | 18 Sep 2022 | 2 |
| 00-43 | LISN | Rohde&Schwarz | ESH3-Z5 | 17 Sep 2019 | 17 Sep 2021 | 2 |
| 14-27 | Preamplifier | Montena EMC | AFS42-00101800-25-S-42 | 1 Aug 2020 | 1 Aug 2022 | 2 |
| 02-06 | Spectr. Analyzer | Hewlett Packard | E4407B | 22 Jan 2019 | 22 Jan 2022 | 3 |
| 10-70 | Receiver + Spectr. Analyzer | Rohde&Schwarz | ESU8 1302.6005K08 | 21 Dec 2020 | 21 Dec 2022 | 2 |
| 21-07 | Receiver + Spectr. Analyzer | Rohde&Schwarz | ESW26 1328.4100K26 | 19 Aug 2020 | 19 Aug 2022 | 2 |
| 05-73 | Powermeter | Hewlett Packard | E4418B | 25 Sep 2020 | 25 Sep 2022 | 2 |
| 09-04 | Power sensor | Agilent | E9304A H19 | 06 Jan 2020 | 06 Jan 2022 | 2 |
| 04-105 | Multimeter | Meterman | 37XR | 23 Dec 2020 | 23 Dec 2022 | 2 |
| 09-11 | Multimeter with temperature probe | Fluke | 87 V | 08 Jul 2019 | 08 Jul 2021 | 2 |
| 99-07 | Power supply | Coutant | LA200.2 | - | - | - |
| 06-62 | Power supply | Elektro-Automatik | PS 2016-050 | - | - | - |
| 75-04 | Variable Transformer | Variac | 230 V / 4 A | - | - | - |
| 06-66 | Temperature chamber | Ernst Vötsch | VTK 04 / 125 | 30 Mar 2010 | - | - |

Remark: The test equipment, for which no calibration date is defined, is controlled during the test by calibrated equipment. E.g. the output of a power supply is verified by a calibrated Multimeter.