


# Test Report

|  |   |
|--|---|
| <b>Product</b>   | Collaboration end-point   |
| <b>Name and address of the applicant</b>   | Cisco Systems Norway AS<br>Philip Pedersens vei 1<br>1366 Lysaker, Norway   |
| <b>Name and address of the manufacturer</b>  | Cisco Systems, Inc.<br>170 West Tasman Drive San Jose<br>CA 95134, USA  |
| <b>Model Number</b>  | TTC60-31<br>TTC60-32  |
| <b>Rating</b>  | 3.5 - 2.5A 100-240V AC 50/60Hz<br>4.5 - 3.5A 100-240V AC 50/60Hz  |
| <b>Trademark</b>   | Cisco   |
| <b>Serial number</b>   | WZS2442J006 (for TTC60-31)  |
| <b>Additional information</b>  | WiFi, Bluetooth   |
| <b>Tested according to</b>   | <b>Parts of FCC Part 15.247</b><br>Frequency Hopping Transmitters / Digital Transmission Systems<br><b>Parts of ISED Canada RSS-247, Issue 2</b><br>Digital Transmission Systems (DTSS), Frequency Hopping Systems (FHSs) and<br>Licence-Exempt Local Area Network (LE-LAN) Devices   |
| <b>Order number</b>  | 406072  |
| <b>Tested in period</b>  | 2020-11-23 to 2020-11-25  |
| <b>Issue date</b>  | 2021-09-06  |
| <b>Name and address of the testing laboratory</b>  | <div style="display: flex; justify-content: space-between; align-items: flex-start;"> <div style="text-align: center;"> <br/> Instituttveien 6<br/>Kjeller, Norway<br/>www.nemko.com </div> <div style="text-align: center;"> CAB Number:<br/>FCC: NO0001<br/>ISED: NO0470<br/><br/> TEL: +47 22 96 03 30<br/>FAX: +47 22 96 05 50 </div> <div style="text-align: center;"> <br/>  </div> </div> <p style="text-align: center; color: red;">An accredited technical test executed under the Norwegian accreditation scheme</p> |
| <div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> <br/> Prepared by [Frode Sveinsen] </div> <div style="text-align: center;"> <br/> Approved by [G.Suhanthakumar] </div> </div> |   |
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# 1 INFORMATION

## 1.1 Test Item

|                                  |  |
|----------------------------------|--|
| Name                             | Cisco                                    |
| Marketing Name                   | Webex Board Pro 55<br>Webex Board Pro 75 |
| Model Number                     | TTC60-31<br>TTC60-32                     |
| FCC ID                           | LDKNVTX21737                             |
| ISED ID                          | 2461N-NVTX21737                          |
| Serial number                    | WZS2442J006                              |
| Hardware identity and/or version | DV1                                      |
| Software identity and/or version | S01845-1.23.0                            |
| Frequency Range                  | 2402–2480 MHz, 2MHz Channel Separation   |
| Number of Channels               | 40                                       |
| Operating Modes                  | Bluetooth Low Energy, 1Mb Mode           |
| Type of Modulation               | GFSK                                     |
| Conducted Output Power           | 3.4 mW (Peak)                            |
| Antenna Connector                | None                                     |
| Number of Antennas               | 1  |
| Diversity or Smart Antennas      | No                                       |
| Power Supply                     | Mains Powered                            |

### Description of Test Item

The EUT is a radio module with WiFi and BT/BLE module in a collaboration end-point system.

This Bluetooth Low Energy part has been tested as a DTS system and fulfils all requirements for DTS systems.

The radio is a certified module NVIDIA P3310 (Cisco FCC ID: LDKNVTX21737, Nvidia FCC ID: VOB-P3310).

The module is identical, but the antennas are changed, and power levels are reduced for some channels.

All tests were performed on a TTC60-31.

## 1.2 Normal test condition

|                      |            |
|----------------------|------------|
| Temperature:         | 20 - 24 °C |
| Relative humidity:   | 20 - 50 %  |
| Normal test voltage: | 120V 60Hz  |

The EUT was powered from a regulated Power Source during all tests.

The values are the limit registered during the test period.

## 1.3 Test Engineer(s)

Frode Sveinsen

## 1.4 Antenna Requirement

|   |                              |  |
|---|------------------------------|--|
| Does the EUT have detachable antenna(s)?  | <input type="checkbox"/> YES | <input checked="" type="checkbox"/> NO |
| If detachable, is the antenna connector(s) non-standard?  | <input type="checkbox"/> YES | <input type="checkbox"/> NO            |
| The tested equipment has only integral antennas. Conducted tests were performed with a temporary antenna connector. |                              |  |

Requirement: FCC 15.203, 15.204

## 1.5 EUT Operating Modes

|                                |   |
|--------------------------------|---|
| Description of operating modes | Continuous TX   |
| Additional information         | The following settings were used for all tests:<br>Power Setting: Default<br>Bit Pattern: PSRB<br>Frame Type: Default<br>Bit rate: 1 Mbit |

## 1.6 Comments

The EUT uses the Bluetooth Low Energy protocol.

The measurements were done with the EUT powered by 115 V AC. It was checked that power variations between 85% and 115% did not have any influence on the measurements.

All ports were populated during spurious emission measurements.

This test report covers only radiated emissions tests. All other tests are covered by UL report no: 11526345-E2V2.

## 2 TEST REPORT SUMMARY

### 2.1 General

All measurements are traceable to national standards.

The tests were conducted for demonstrating compliance with FCC CFR 47 Part 15, paragraph 15.247 and Industry Canada RSS-247 Issue 2 and RSS-GEN Issue 5.

Tests were performed in accordance with ANSI C63.4-2014 and ANSI C63.10-2013.

Radiated tests were made in a semi-anechoic chamber at measuring distances of 1m, 3m and 10m.

A description of the test facility is on file with FCC and ISED.

☐ New Submission

☒ Production Unit

☒ Class II Permissive Change

☐ Pre-production Unit

**DTS** Equipment Code

☐ Family Listing



#### THIS TEST REPORT APPLIES ONLY TO THE ITEM(S) AND CONFIGURATIONS TESTED.

Deviations from, additions to, or exclusions from the test specifications are described in "Summary of Test Data".

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## 2.2 Test Summary

| Name of test                           | FCC Part 15 reference               | RSS-247 Issue 2, RSS-GEN Issue 5 reference      | ANSI C63.10-2013 Reference                | Result   |
|--|-------------------------------------|---|---|----------|
| Supply Voltage Variations              | 15.31(e)                            | 6.11 (RSS-GEN)                                  | 5.13                                      | Complies |
| Antenna Requirement                    | 15.203                              | 6.8 (RSS-GEN)                                   | 5.8                                       | Complies |
| Power Line Conducted Emission          | 15.107(a)<br>15.207(a)              | 7.2 / 8.8 (RSS-GEN)                             | 6.2                                       | N/T      |
| Occupied Bandwidth (99% BW)            | N/A                                 | 6.7 (RSS-GEN)                                   | 6.9.3                                     | N/T      |
| DTS Bandwidth                          | 15.247(a)(2)                        | 5.2 (1) (RSS-247)                               | 11.8 Option 2                             | N/T      |
| Peak Power Output                      | 15.247(b)                           | 5.4 (RSS-247)                                   | 11.9.1.1                                  | Complies |
| Power Spectral Density                 | 15.247(d)                           | 5.2 (2) (RSS-247)                               | 11.10.2 PKPSD (DTS)                       | N/T      |
| Spurious Emissions (Antenna Conducted) | 15.247(c)                           | 5.5 (RSS-247)                                   | 6.7<br>11.11 (DTS)                        | N/T      |
| Spurious Emissions (Radiated)          | 15.247(c)<br>15.109(a)<br>15.209(a) | 5.5 (RSS-247)<br>7.3 (RSS-GEN)<br>8.9 (RSS-GEN) | 6.3, 6.5, 6.6, 6.10<br>11.12, 11.13 (DTS) | Complies |

## Revision history

| Revision | Date       | Comment               | Sign |
|----------|------------|-----------------------|------|
| 00       | 2021-03-26 | First edition         | FS   |
| 01       | 2021-09-03 | Updated model numbers | FS   |
|          |            |                       |      |

### 3 TEST RESULTS

#### 3.1 Peak Power Output

FCC Part 15.247 (b)

ISED Canada RSS-247 Issue 2, Clause 5.4

Measurement procedure: ANSI C63.10-2013 Clause 11.9.1.2

Test Results: Complies

**Measurement Data:**

| Carrier Frequency (MHz) | Bit rate | Field Strength (dBμV/m) | EIRP (dBm) | EIRP (mW) |
|-------------------------|----------|-------------------------|------------|-----------|
| 2402                    | 1 Mb     | 99.1                    | 3.9        | 2.4       |
| 2480                    | 1 Mb     | 99.9                    | 4.7        | 2.9       |

Output Power reported is Maximum Peak Power.

Radiated Power was calculated from measured Field Strength using the method described in FCC KDB 412172 D01.

See attached plots.

**Requirements:**

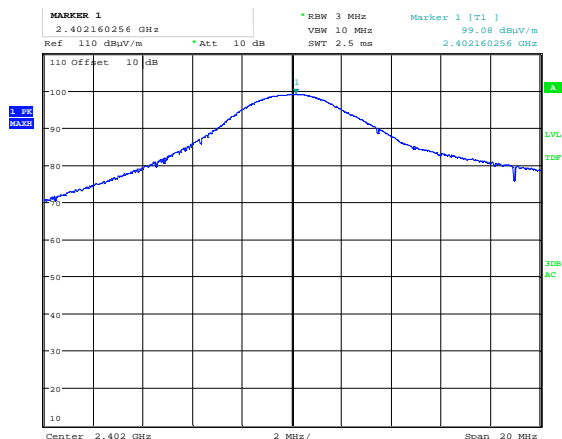
The maximum peak output power shall not exceed the following limits:

For frequency hopping systems employing at least 75 hopping channels: 1 Watt

For all other frequency hopping systems in the 2400 - 2483.5 MHz band: 0.125 Watts

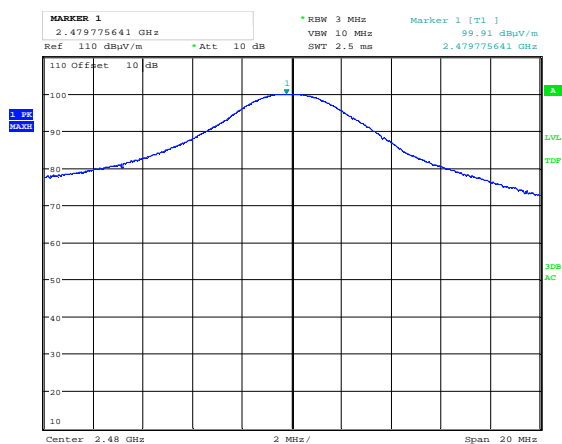
For Digital Transmission Systems in the 2400 - 2483.5 MHz band: 1 Watt

If transmitting antennas of directional gain greater than 6 dBi are used, the peak output power from the intentional radiator shall be reduced below the stated value above by the amount in dB that the directional gain of the antenna exceeds 6 dBi.



Date: 23.NOV.2020 16:35:39

#### Maximum Field Strength, 2402 MHz, GFSK



Date: 23.NOV.2020 16:42:33

#### Maximum Field Strength, 2480 MHz, GFSK



## 3.2 Restricted Bands of operation

Restricted Bands of operation for FCC and ISSED are defined in FCC Part 15.205 and ISSED RSS-GEN, Issue 5 clause 8.10.

Generally, no fundamentals are allowed in the restricted bands and all emissions must comply with the limits in FCC 15.209 or RSS-GEN, Issue 5, clause 8.9.

| FCC (MHz)                           | ISSED Canada (MHz) | FCC (GHz)                            | ISSED Canada (GHz) |
|-------------------------------------|--------------------|--------------------------------------|--------------------|
| 0.090-0.110                         |                    | <b>0.96-1.24</b><br><b>1.3-1.427</b> | <b>0.96-1.427</b>  |
| 0.495-0.505                         |                    | 1.435-1.6265                         |                    |
| 2.1735-2.1905                       |                    | 1.6455-1.6465                        |                    |
|                                     | <b>3.020-3.026</b> | 1.660-1.710                          |                    |
| 4.125-4.128                         |                    | 1.7188-1.7222                        |                    |
| 4.17725-4.17775                     |                    | 2.2-2.3                              |                    |
| 4.20725-4.20775                     |                    | 2.31-2.39                            |                    |
|                                     | <b>5.677-5.683</b> | 2.4835-2.5                           |                    |
| 6.215-6.218                         |                    | <b>2.69-2.9</b>                      | <b>2.655-2.9</b>   |
| 6.26775-6.26825                     |                    | 3.26-3.267                           |                    |
| 6.31175-6.31225                     |                    | 3.332-3.339                          |                    |
| 8.291-8.294                         |                    | 3.3458-3.358                         |                    |
| 8.362-8.366                         |                    | <b>3.6-4.4</b>                       | <b>3.5-4.4</b>     |
| 8.37625-8.38675                     |                    | 4.5-5.15                             |                    |
| 8.41425-8.41475                     |                    | 5.35-5.46                            |                    |
| 12.29-12.293                        |                    | 7.25-7.75                            |                    |
| 12.51975-12.52025                   |                    | 8.025-8.5                            |                    |
| 12.57675-12.57725                   |                    | 9.0-9.2                              |                    |
| 13.36-13.41                         |                    | 9.3-9.5                              |                    |
| 16.42-16.423                        |                    | 10.6-12.7                            |                    |
| 16.69475-16.69525                   |                    | 13.25-13.4                           |                    |
| 16.80425-16.80475                   |                    | 14.47-14.5                           |                    |
| 25.5-25.67                          |                    | 15.35-16.2                           |                    |
| 37.5-38.25                          |                    | 17.7-21.4                            |                    |
| 73-74.6                             |                    | 22.01-23.12                          |                    |
| 74.8-75.2                           |                    | 23.6-24.0                            |                    |
| <b>108-121.94</b><br><b>123-138</b> | <b>108-138</b>     | 31.2-31.8                            |                    |
| 149.9-150.05                        |                    | 36.43-36.5                           |                    |
| 156.52475-156.52525                 |                    | Above 38.6                           |                    |
| 156.7-156.9                         |                    |                                      |                    |
| 162.0125-167.17                     |                    |                                      |                    |
| 167.72-173.2                        |                    |                                      |                    |
| 240-285                             |                    |                                      |                    |
| 322-335.4                           |                    |                                      |                    |
| 399.9-410                           |                    |                                      |                    |
| 608-614                             |                    |                                      |                    |

Frequencies in **Bold** text are specific for FCC or ISSED, all other frequencies are common.

### 3.3 Radiated Emissions, Band Edge

FCC Part 15.209 (a)

ISED Canada RSS-GEN Issue 5, Clause 7.3 / 8.9

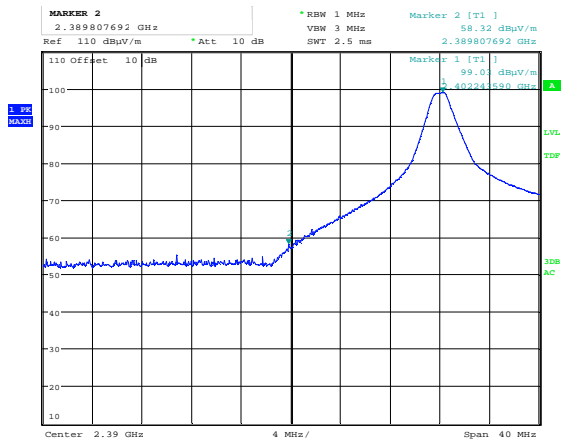
Measurement procedure: ANSI C63.10-2013 Clause 11.12

Test Results: Complies

#### Measurement Data:

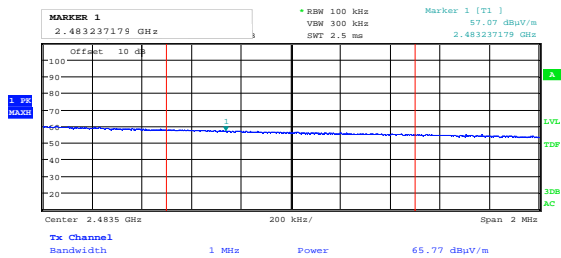
| Carrier Frequency and Data Rate | Band Edge Frequency | Measured Field Strength (dB $\mu$ V/m) |    | Limit (dB $\mu$ V/m) |    | Margin (dB) |    |
|---------------------------------|---------------------|--|----|----------------------|----|-------------|----|
|                                 |                     | Peak                                   | Av | Peak                 | Av | Pk          | Av |
| 2402 MHz 1Mb                    | 2390 MHz            | 58.3                                   | /  | 74                   | 54 | 15.7        | /  |
| 2480 MHz 1Mb                    | 2483.5 MHz          | 65.8                                   | /  |                      |    | 8.2         | /  |

See attached plots.



Date: 23.NOV.2020 16:34:48

#### Lower Band Edge 2402 MHz, GFSK, Peak



Date: 23.NOV.2020 16:50:50

#### Upper Band Edge 2480 MHz, GFSK, Peak

### 3.4 Radiated Emission, 30 -1000 MHz

FCC Part 15.209 (a)

ISED Canada RSS-GEN Issue 5, Clause 7.3/8.9

Measurement procedure: ANSI C63.10-2013 Clause 11.12

Test Results: Complies

#### Measurement Data:

Detector: Peak (found frequencies were measured with Quasi-Peak Detector)

Measuring distance 3 m

Tested in with BLE Active in Burst Mode

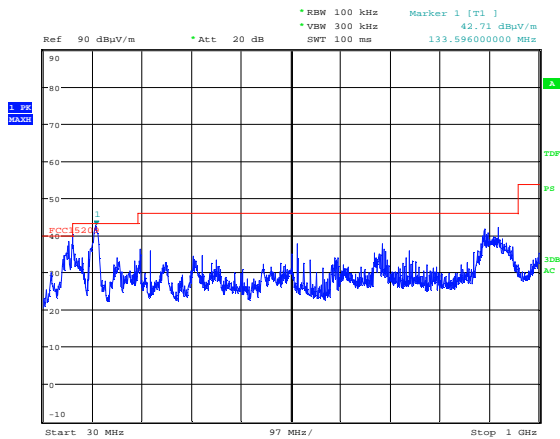
| Measured Frequency (MHz) | Carrier Frequency (MHz) | Modulation | Measured Emission (dB $\mu$ V/m) | Limit (dB $\mu$ V/m) | Margin (dB) |
|--------------------------|-------------------------|------------|----------------------------------|----------------------|-------------|
| 30 – 88                  | 2440                    | Any        | < 40.0                           | 40.0                 | >0          |
| 88 – 216                 | 2440                    | Any        | < 43.5                           | 43.5                 | >10         |
| 216 – 960                | 2440                    | Any        | < 46.0                           | 46.0                 | >10         |
| 960 – 1000               | 2440                    | Any        | < 54.0                           | 54.0                 | >10         |
| 47.46                    | Any                     | Any        | 36.2*                            | 40.0                 | 3.8         |
| 88.80                    | Any                     | Any        | 42.0*                            | 43.5                 | 1.5         |
| 135.50                   | Any                     | Any        | 41.8*                            | 43.5                 | 1.7         |
| 528.00                   | Any                     | Any        | 39.2*                            | 46.0                 | 6.8         |
| 694.27                   | Any                     | Any        | 38.7*                            | 46.0                 | 7.3         |
| 893.17                   | Any                     | Any        | 38.8*                            | 46.0                 | 7.2         |

\* This is a Class A Device, and the measured spurious emissions are not from the radio part.

See attached plots

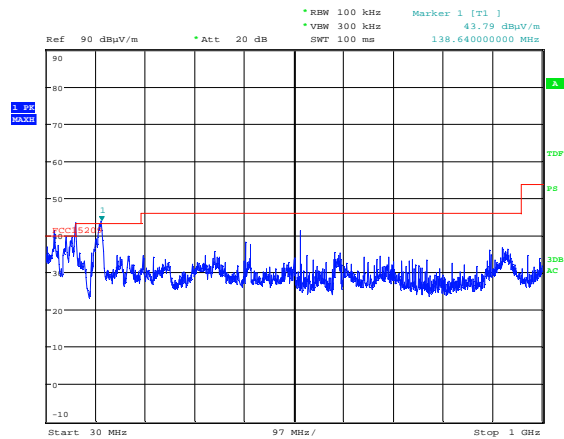
#### Requirements/Limit

| FCC            | Part 15.209 @ frequencies defined in §15.205                     |                   |
|----------------|--|-------------------|
| ISED           | RSS-GEN Issue 5, Clause 8.9 @ frequencies defined in clause 8.10 |                   |
| Frequency      | Radiated emission limit @3 meters                                |                   |
| 30 – 88 MHz    | 100 $\mu$ V/m  | 40.0 dB $\mu$ V/m |
| 88 – 216 MHz   | 150 $\mu$ V/m  | 43.5 dB $\mu$ V/m |
| 216 – 960 MHz  | 200 $\mu$ V/m  | 46.0 dB $\mu$ V/m |
| 960 – 1000 MHz | 500 $\mu$ V/m  | 54.0 dB $\mu$ V/m |
|                | Limits above are with Quasi Peak Detector                        |                   |



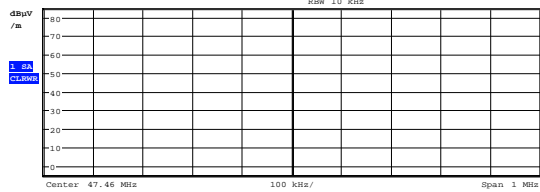
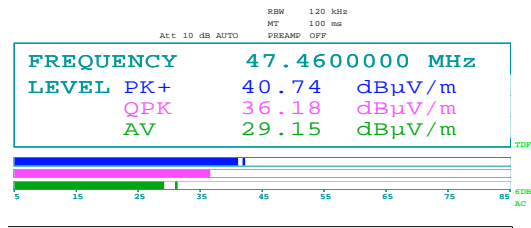
Date: 24.NOV.2020 17:05:15

Radiated Emissions 30 - 1000 MHz, GFSK, HP



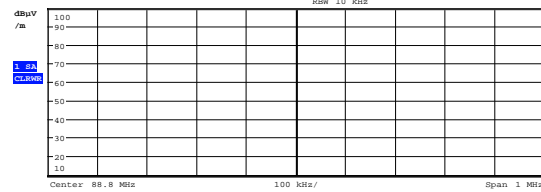
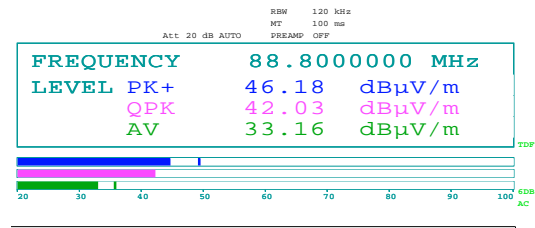
Date: 24.NOV.2020 17:03:15

Radiated Emissions 30 - 1000 MHz, GFSK, VP



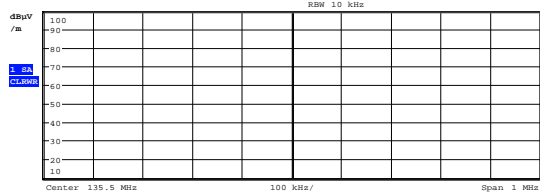
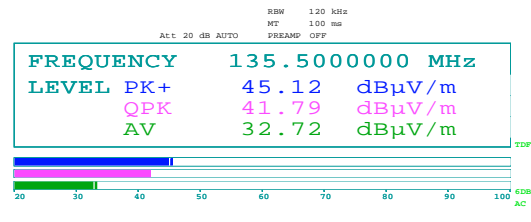
Date: 24.NOV.2020 15:32:50

### Radiated Emissions 47.46 MHz (Max: VP)



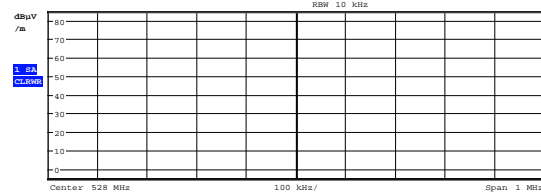
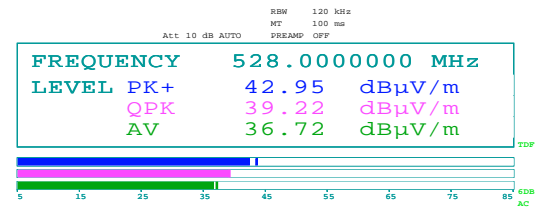
Date: 24.NOV.2020 15:47:57

### Radiated Emissions 88.80 MHz (Max: VP)



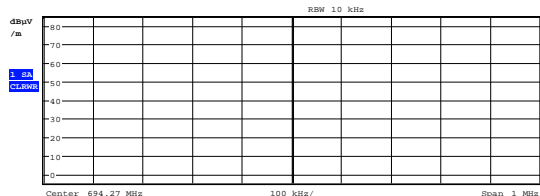
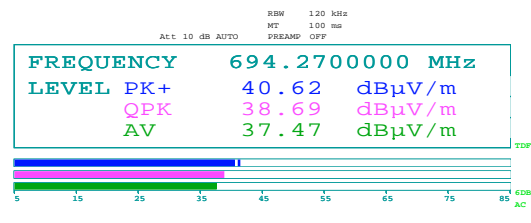
Date: 24.NOV.2020 16:03:44

### Radiated Emissions 135.50 MHz (Max: HP)



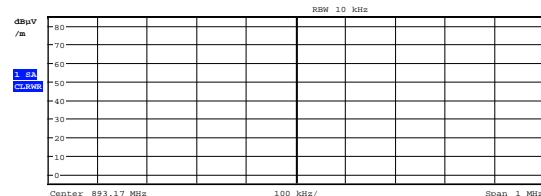
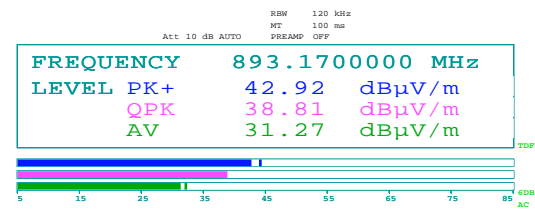
Date: 24.NOV.2020 16:18:37

### Radiated Emissions 528.00 MHz (Max: HP)



Date: 24.NOV.2020 16:29:39

### Radiated Emissions 694.27 MHz (Max: HP)



Date: 24.NOV.2020 16:47:02

### Radiated Emissions 893.17 MHz (Max: HP)

### 3.5 Radiated Emissions, 1-26 GHz

FCC Part 15.209 (a)

ISED Canada RSS-GEN Issue 5, Clause 7.3/8.9

Measurement procedure: ANSI C63.10-2013 Clause 11.12

Test Results: Complies

Measurement Data:

Measuring distance: 3m (1 – 18 GHz)  
1m (18 – 26 GHz)

RBW/VBW = 1MHz/3MHz

| Carrier freq.<br>(MHz) | Measured<br>Frequency<br>(GHz) | Measured Emissions<br>(dBμV/m) |              | Limit<br>(dBμV/m) |         | Margin<br>(dB) |         |
|------------------------|--------------------------------|--------------------------------|--------------|-------------------|---------|----------------|---------|
|                        |                                | Peak Det.                      | Average Det. | Peak              | Average | Peak           | Average |
| Any                    | 1.350                          | 59.4*                          | 56.3*        | 74                | 54      | 14.6           | -2.3*   |
| Any                    | 2.971                          | 65.8*                          | 45.1*        | 74                | 54      | 8.2            | 8.9     |
| Any                    | 4.050                          | 59.0*                          | 56.8*        | 74                | 54      | 15.0           | -2.8*   |
| Any                    | 5.942                          | 66.9*                          | 52.6*        | 74                | 54      | 7.1            | 1.4     |
| Any                    | 1 - 26                         | < 64                           | < 54         | 74                | 54      | >10            | >0      |

\* This is a Class A Device, and the Measured Emissions are not from the radio transmitter.

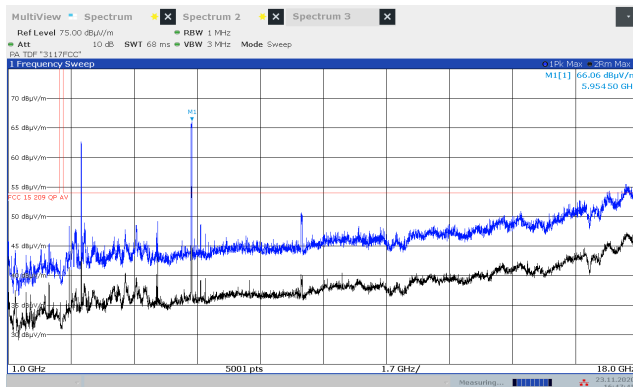
A Band Reject Filter was used for measurements from 1 GHz to 18 GHz.

Antenna factor, amplifier gain and cable loss are included in spectrum analyzer "Transducer factor".

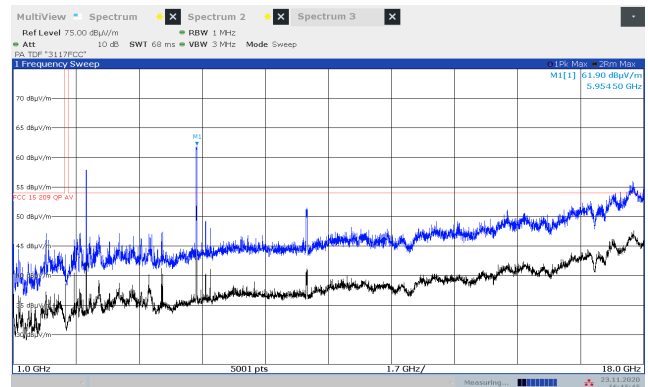
See plots.

#### Requirements/Limit

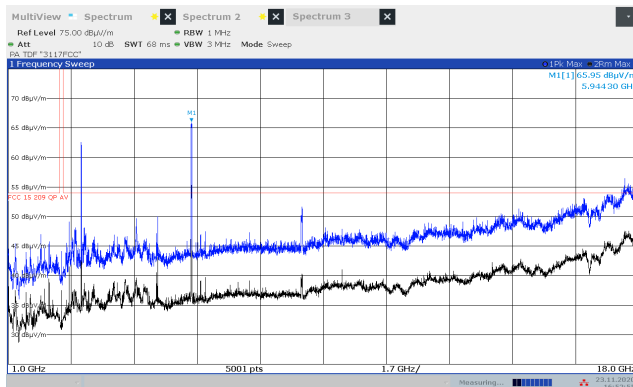
|            |  |               |
|------------|--|---------------|
| FCC        | Part 15.209 @ frequencies defined in §15.205                     |               |
| ISED       | RSS-GEN Issue 5, clause 8.9 @ frequencies defined in clause 8.10 |               |
|            | Radiated emission limit @3 meters                                |               |
| Frequency  | Average Detector   | Peak Detector |
| 1 – 26 GHz | 54.0 dBμV/m  | 74.0 dBμV/m   |



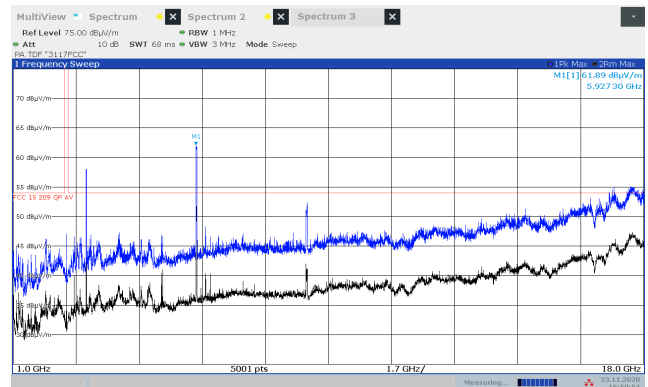
Radiated Emissions 1 - 18 GHz, 2402 MHz, GFSK, HP



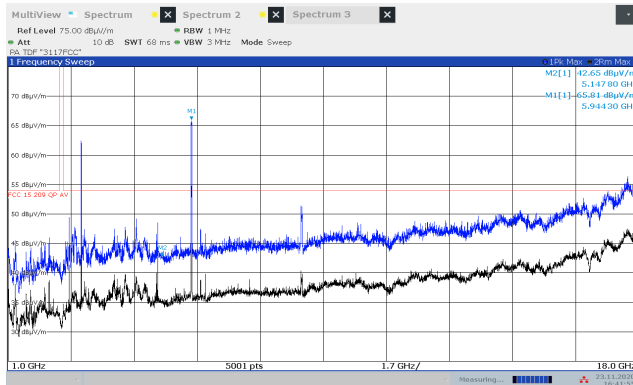
Radiated Emissions 1 - 18 GHz, 2402 MHz, GFSK, VP



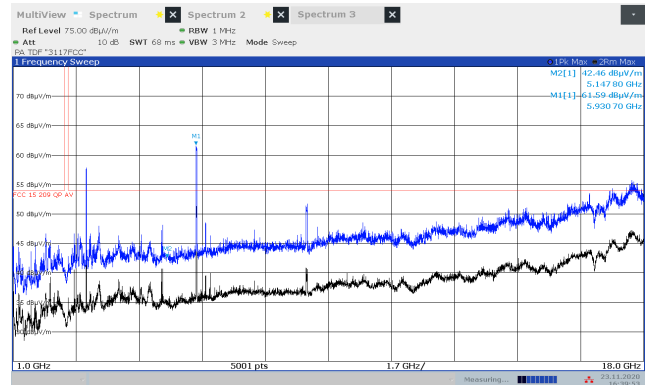
Radiated Emissions 1 - 18 GHz, 2440 MHz, GFSK, HP



Radiated Emissions 1 - 18 GHz, 2440 MHz, GFSK, VP

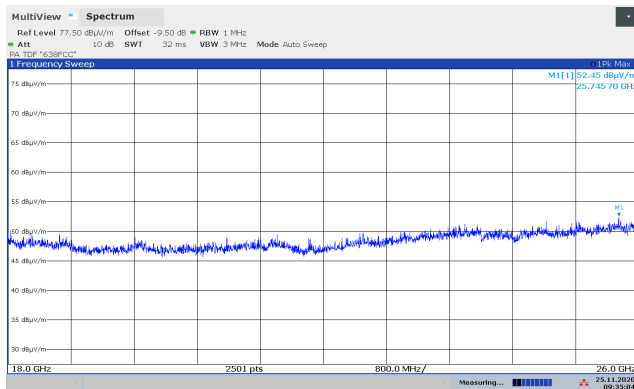


Radiated Emissions 1 - 18 GHz, 2480 MHz, GFSK, HP

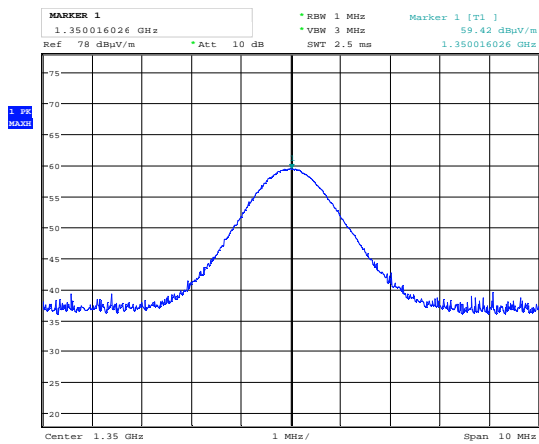


Radiated Emissions 1 - 18 GHz, 2480 MHz, GFSK, VP

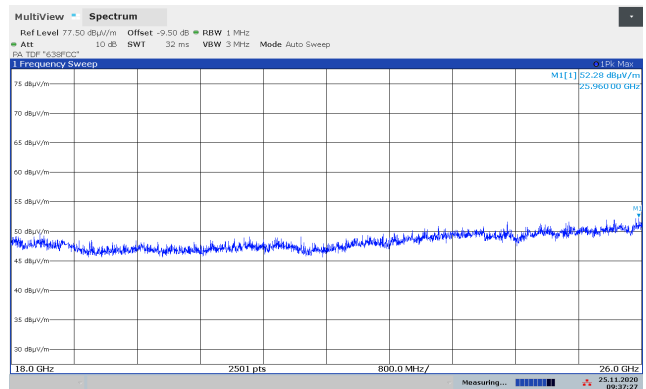




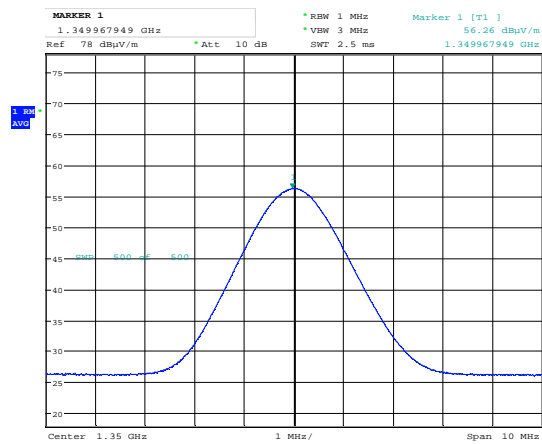
Radiated Emissions 18 - 26 GHz, 2440 MHz, GFSK, HP, @1m



Date: 20.NOV.2020 10:26:54

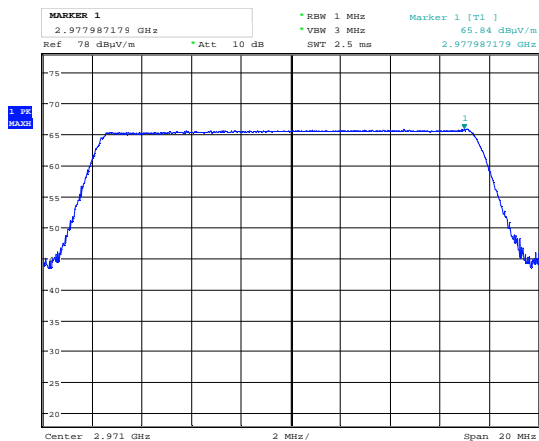


Radiated Emissions 18 - 26 GHz, 2440 MHz, GFSK, VP, @1m



Date: 20.NOV.2020 10:26:24

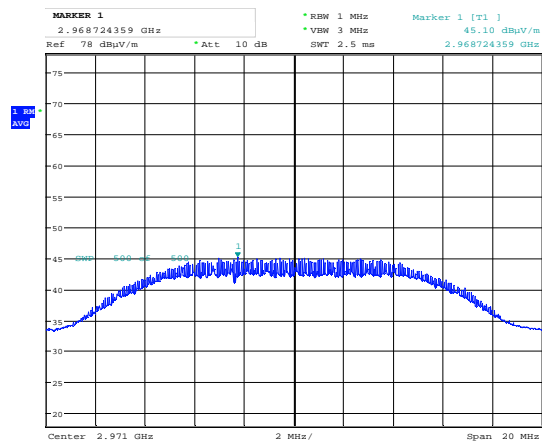
Radiated Emissions 1350 MHz, Peak (Max: VP)



Date: 20.NOV.2020 10:42:02

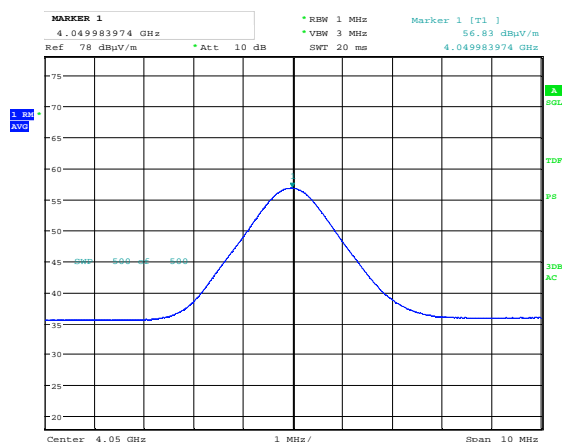
Radiated Emissions 2971 MHz, Peak (Max: HP)

Radiated Emissions 1350 MHz, Average (Max: VP)



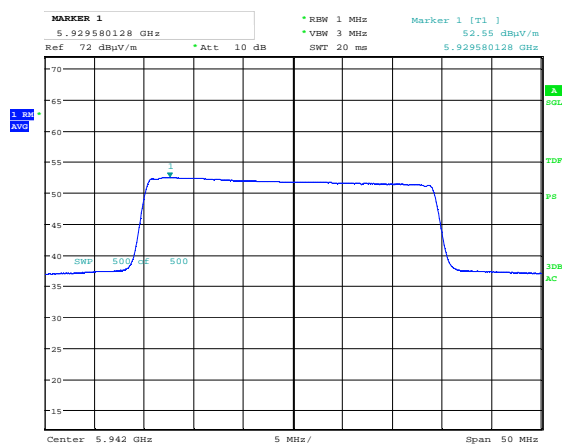
Date: 20.NOV.2020 10:43:12

Radiated Emissions 2971 MHz, Average (Max: HP)



Date: 20.NOV.2020 10:59:22

### Radiated Emissions 4050 MHz, Average (Max: HP)



Date: 20.NOV.2020 11:14:29

### Radiated Emissions 5942 MHz, Average (Max: HP)

## 4 Measurement Uncertainty

| Measurement Uncertainty Values   |           |                |
|----------------------------------|-----------|----------------|
| Test Item                        |           | Uncertainty    |
| Output Power                     |           | ±0.5 dB        |
| Power Spectral Density           |           | ±0.5 dB        |
| Out of Band Emissions, Conducted | < 3.6 GHz | ±0.6 dB        |
|                                  | > 3.6 GHz | ±0.9 dB        |
| Spurious Emissions, Radiated     | < 1 GHz   | ±2.5 dB        |
|                                  | > 1 GHz   | ±2.2 dB        |
| Emission Bandwidth               |           | ±4 %           |
| Power Line Conducted Emissions   |           | +2.9 / -4.1 dB |
| Spectrum Mask Measurements       | Frequency | ±5 %           |
|                                  | Amplitude | ±1.0 dB        |
| Frequency Error                  |           | ±0.6 ppm       |
| Temperature Uncertainty          |           | ±1 °C          |

All uncertainty values are expanded standard uncertainty to give a confidence level of 95%, based on coverage factor k=2

## 5 LIST OF TEST EQUIPMENT

To facilitate inclusion on each page of the test equipment used for related tests, each item of test equipment and ancillaries are identified (numbered) by the Test Laboratory.

| No. | Model number             | Description          | Manufacturer       | Ref. no.    | Cal. date | Cal. Due |
|-----|--------------------------|----------------------|--------------------|-------------|-----------|----------|
| 1   | FSW43                    | Spectrum Analyzer    | Rohde & Schwarz    | LR 1690     | 2020-10   | 2021-10  |
| 2   | ESU40                    | Measuring Receiver   | Rohde & Schwarz    | LR 1639     | 2020-03   | 2021-03  |
| 3   | 6810-17B                 | Attenuator           | Suhner             | LR 1669     | 2020-08   | 2021-08  |
| 4   | N0324415                 | BandStop Filter      | Microwave Circuits | LR 1760     | COU       |          |
| 5   | WLK5-1100-1485-7000-40SS | Low Pass Filter      | Wainwright Inst.   | LR 1761     | COU       |          |
| 6   | VULB 9163                | BiLog Antenna        | Schwarzbeck        | LR 1616     | 2020-01   | 2023-01  |
| 7   | 317                      | Preamplifier         | Sonoma Inst.       | LR 1687     | 2020-08   | 2021-08  |
| 8   | 8449A                    | Pre-amplifier        | Hewlett Packard    | LR 1322     | 2020-08   | 2021-08  |
| 9   | 3115                     | Horn Antenna         | EMCO               | LR 1330     | 2016-10   | 2021-10  |
| 10  | 3117-PA                  | Horn Antenna +PreAmp | EMCO               | LR 1717     | 2020-08   | 2021-08  |
| 11  | Model 638                | Antenna Horn         | Narda              | LR 1480     | N/A       |          |
| 12  | Model 87 V               | Multimeter           | Fluke              | LR 1599     | 2019-02   | 2021-02  |
| 14  | 6812B                    | AC Power Source      | Agilent            | LR 1515     | COU       |          |
| 15  | ENV216                   | Two Line V-Network   | Rohde & Schwarz    | LR 1665     | 2019-11   | 2021-11  |
| 16  | ESCI3                    | Measuring Receiver   | Rohde & Schwarz    | N-4259      | 2019-10   | 2021-10  |
| 19  | ST18/SMA/N/36            | RF Cable             | Suhner             | LR 1627     | COU       |          |
| 20  | SF102/1000MM             | RF Cable             | Suhner             | SN 50113/2  | COU       |          |
| 21  | SF102/2000MM             | RF Cable             | Suhner             | SN 500100/2 | COU       |          |

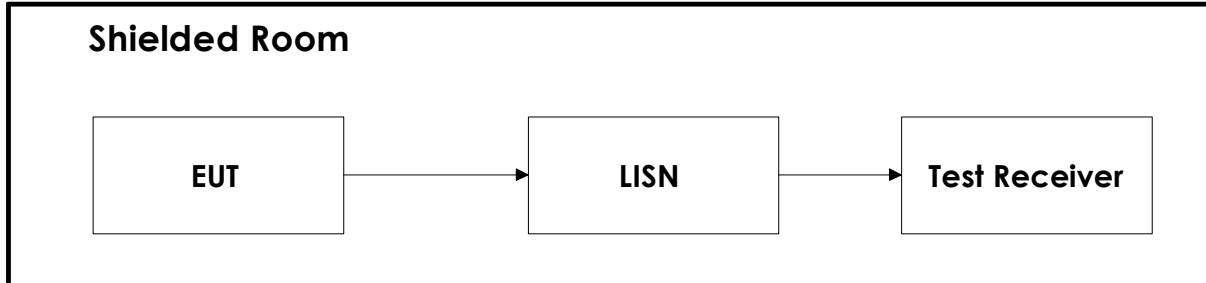
Note: COU – calibrate on use; N/A – Not Applicable

The software listed below has been used for one or more tests.

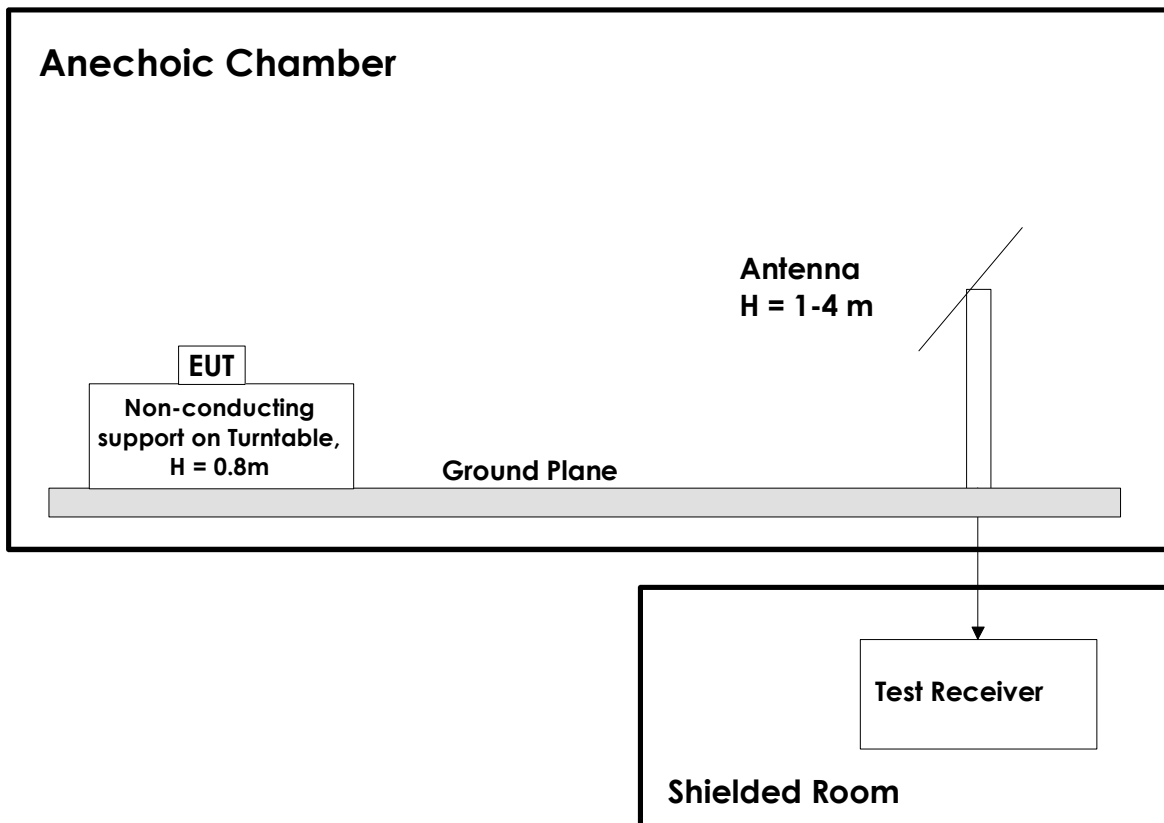
| No. | Manufacturer    | Name   | Version  | Comment                                 |
|-----|-----------------|--------|----------|---|
| 1   | Rohde & Schwarz | EMC32  | 10.40.10 | Power Line Conducted test software      |
| 2   | Nemko AS        | RSPlot | 1.0.8.0  | Screenshots from R&S Spectrum Analyzers |
|     |                 |        |          |   |

## 6 BLOCK DIAGRAM

### 6.1 Power Line Conducted Emission



### 6.2 Test Site Radiated Emission



This test setup is used for all radiated emissions tests. For frequencies below 30 MHz the measuring distance is 10m, for all other frequencies it is 3m or 1m. Emissions above 1 GHz are measured with a Spectrum Analyzer and Horn Antenna. For measurements above 18 GHz the test receiver is moved inside the anechoic chamber and located next to the antenna to minimize the cable loss. All measurements at 1GHz and above were performed with turntable height 1.5m and with the ground plane covered by absorbers. A pre-amplifier is used for all measurements above 30 MHz, and High-Pass or Band-Pass filter is used for all harmonics.