

## Test Report

|                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Product</b>                                                                                                                                                                                                                                                                                                           | Door Lock with radio Module                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Name and address of the applicant</b>                                                                                                                                                                                                                                                                                 | ASSA ABLOY Global Solutions Norway AS<br>Anolitveien 1-3,<br>1400 Ski, Norway                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Name and address of the manufacturer</b>                                                                                                                                                                                                                                                                              | ASSA ABLOY Global Solutions Norway AS<br>Anolitveien 1-3,<br>1400 Ski, Norway                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Model</b>                                                                                                                                                                                                                                                                                                             | LCX7302C1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Rating</b>                                                                                                                                                                                                                                                                                                            | 3.2Vdc                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Trademark</b>                                                                                                                                                                                                                                                                                                         | ASSA ABLOY                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Serial number</b>                                                                                                                                                                                                                                                                                                     | /                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Additional information</b>                                                                                                                                                                                                                                                                                            | Door lock with 906MHz Radio Module                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Tested according to</b>                                                                                                                                                                                                                                                                                               | <b>FCC Part 15.249</b><br>Low Power Transmitter. 902 – 928MHz<br><b>Industry Canada RSS-210, Issue 9</b><br>Licence-Exempt Radio Apparatus, Category I Equipment                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Order number</b>                                                                                                                                                                                                                                                                                                      | 357461                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Tested in period</b>                                                                                                                                                                                                                                                                                                  | 2019.09.16 - 2019.10.03                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Issue date</b>                                                                                                                                                                                                                                                                                                        | 2019.10.22                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Name and address of the testing laboratory</b>                                                                                                                                                                                                                                                                        | <div style="display: flex; justify-content: space-between; align-items: center;"> <div style="text-align: center;"> <br/> Instituttveien 6<br/>Kjeller, Norway </div> <div style="text-align: center;"> CAB Number:<br/> FCC: NO0001<br/> ISED: NO0470 </div> <div style="text-align: center;"> <br/>  </div> </div> <p style="text-align: center; color: red; font-weight: bold;">An accredited technical test executed under the Norwegian accreditation scheme</p> |
|                                                                                                                                                                                                                                                                                                                          | <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;"> <br/> Prepared by [G. Suhanthakumar] </div> <div style="text-align: center;"> <br/> Approved by [Frode Sveinsen] </div> </div>                                                                                                                                                                                                                                                                                                           |
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## 1 INFORMATION

### 1.1 Test Item

|                                    |                        |
|------------------------------------|------------------------|
| Name :                             | ASSA ABLOY             |
| FCC ID :                           | Y7V-LCX7302C1          |
| Industry Canada ID :               | 9514A-LCX7302C1        |
| Model/version :                    | LCX7302C1              |
| Serial number :                    | /                      |
| Hardware identity and/or version:  | C1                     |
| Software identity and/or version : | V1.00                  |
| Frequency Range :                  | 906MHz                 |
| Tunable Bands :                    | None                   |
| Number of Channels :               | 1                      |
| Operating Modes :                  | Transceiver            |
| Type of Modulation :               | GFSK                   |
| User Frequency Adjustment :        | None                   |
| Rated Output Power :               | 0.51 mW                |
| Type of Power Supply :             | 3.2Vdc, Li-Ion Battery |
| Antenna Connector :                | None, PCB antenna      |
| Antenna Diversity Supported :      | No                     |
| Desktop Charger :                  | No                     |

#### Description of Test Item

LCX or LCU (Lock Case Unit) (door lock – LCX7302) and proximity:

- I. LCX/LCU sends data over RF (906MHz) only in case when a person who has access to the cabin is in proximity of it (probably around 1.5m).
- II. Proximity function works all the time and it turns on GREEN LED if s person has access to the cabin and touched a door handle or RED if a person do not have access to the cabin and also touch a door handle.
- III. It is important to know that LCX must receive 'permission' to active RF and this permission comes from Master. In our system Master is a Panel which hangs on the wall. The distance between Panel and door is approximately 1 meter.

#### Theory of Operation

When a person comes into the proximity of the Master/Panel then it sends command to the LCX to be ready to open a door. When that person touches the door handle then LCX opens the door and then sends preamble which is 10ms long plus some data (data contains information about lock case status, dead bolt, door switch etc.).

If a person comes out from the 'proximity' of the Master/Panel then the LCX does not send any data and goes into sleep mode. It is just listening for 'permission' signal from the Master/Panel.

## 1.2 Normal test condition

Temperature: 20 - 24 °C  
Relative humidity: 20 - 50 %  
Normal test voltage: 3.2 V DC

The values are the limit registered during the test period.

## 1.3 Test Engineer(s)

G.Suhanthakumar

## 1.4 Description of modification for Modification Filing

Not applicable.

## 1.5 Family List Rational

Not Applicable.

## 1.6 Antenna Requirement

Is the antenna detachable?

☐ Yes ☒ No

If detachable, is the antenna connector non-standard?

☐ Yes ☐ No

Type of antenna connector: N/A

Ref. FCC §15.203

## 1.7 Worst-Case Configuration and Mode

Radiated Emissions was performed with the EUT set to transmit at the channel with the highest output power as worst-case scenario.

## 1.8 Comments

All measurements were done with the EUT powered by a fully charged battery.

All ports were populated during spurious emission measurements, i.e. with host device.

## 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 15.249 and Industry Canada RSS-210 Issue 9.

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 the FCC and Industry Canada.

☒ New Submission

☒ Production Unit

☐ Class II Permissive Change

☐ Pre-production Unit

**DXT** 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-210 Issue 9, RSS-GEN Issue 5 reference        | Result                |
|-------------------------------|-----------------------------------|---------------------------------------------------|-----------------------|
| Supply Voltage Variations     | 15.31(e)                          | F.2.2 (RSS-210)<br>6.11, 8.11 (RSS-Gen)           | N/A <sup>1</sup>      |
| Antenna Requirement           | 15.203                            | 6.8 (RSS-GEN)                                     | Complies <sup>2</sup> |
| Power Line Conducted Emission | 15.107(a)<br>15.207(a)            | 8.8 (RSS-GEN)                                     | N/A <sup>1</sup>      |
| 99% Occupied Bandwidth        | N/A                               | 6.7 (RSS-GEN)                                     | -                     |
| Peak Power Output             | 15.249(a),(c),(e )                | B.10 (RSS-210)                                    | Complies              |
| Band edge emissions           | 15.249(d)                         | B.10 (RSS-210)                                    | Complies              |
| Spurious Emissions (Radiated) | 15.249(d),<br>15.209<br>15.35 (b) | B.10 (RSS-210)<br>6.13 (RSS-GEN)<br>8.9 (RSS-GEN) | Complies              |

1 EUT is battery powered

2 The EUT has only integrated antenna.

RSS-Gen Issue 5 covers section 6 & 8

RSS-210 issue 9 covers Annex B

### 3 TEST RESULTS

#### 3.1 99% Occupied Bandwidth

Para. No.: 6.6 RSS-Gen

Test Results: -

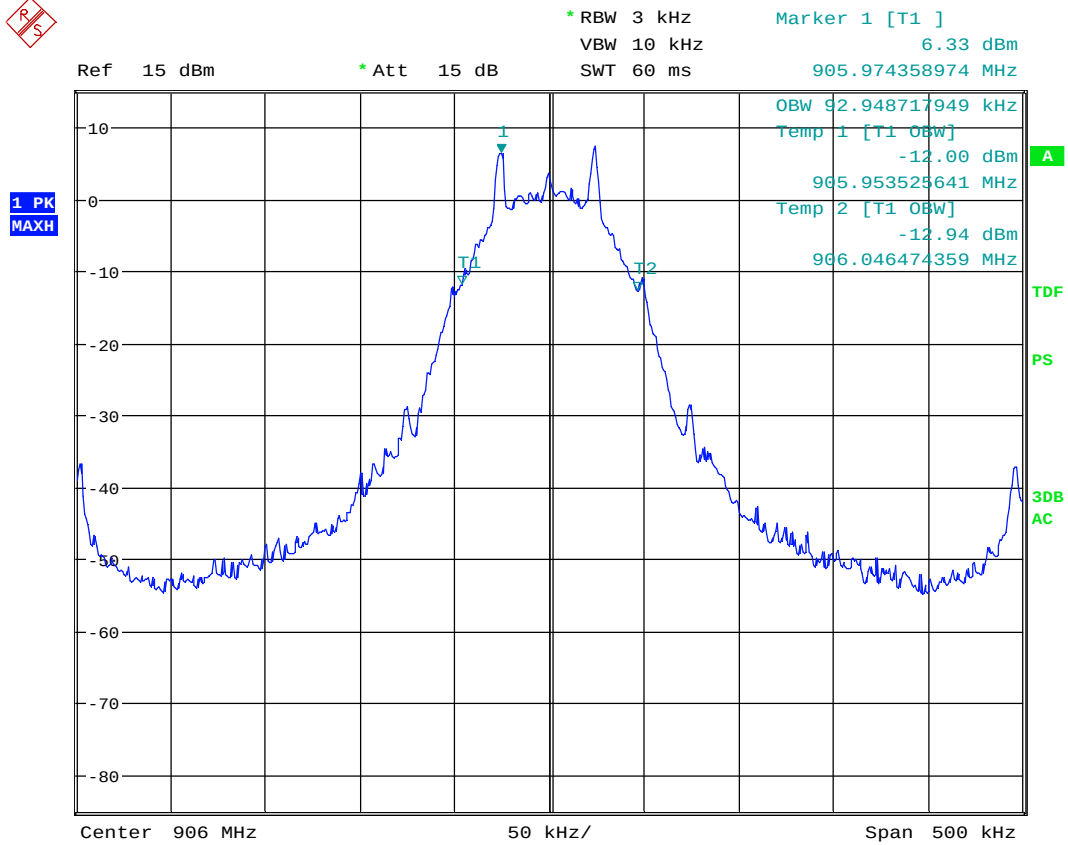
Measurement Data:

| Measured 99% Bandwidth (kHz) |         |   |
|------------------------------|---------|---|
| -                            | 906 MHz | - |
| -                            | 92.95   | - |

See attached plots.

**Requirements:**

No requirement for 99% BW, reported for information only.



Date: 3.OCT.2019 09:23:41

99% Bandwidth

## 3.2 Peak Power Output

FCC part 15.249 (a),(c),(e)

ISED Canada RSS-210 Issue 9, B.10

Measurement procedure: ANSI C63.10-2013 Clause 11.9.1.2

**Test Results: Complies**

**Measurement Data:**

**PK detector**

|                           | 906 MHz |
|---------------------------|---------|
| Conducted Power (dBm)     | 8.33    |
| Conducted Power (mWatts)  | 6.81    |
| Field Strength (dBμV/m)   | 92.33   |
| EIRP, Calculated (mWatts) | 0.51    |
| Antenna gain (dBd)        | -13.4   |

**Duty Cycle Correction Factor Calculation:**

Duty Cycle = ON time / ON + OFF time = (9.8 ms / 100 ms) \* 100 = 9.8%

Duty Cycle Correction factor = -20 x log (0.098) = -20.18 dB

**Maximum Duty Cycle Correction Factor according to Para 15.35 (b): 20 dB**

Measured with 100%.

Antenna gain = 10 \* log(EIRP / Conducted power) dBi

EIRP is calculated from measured field strength by the formulas in KDB 412172 D01 Determining ERP and EIRP v01r01.

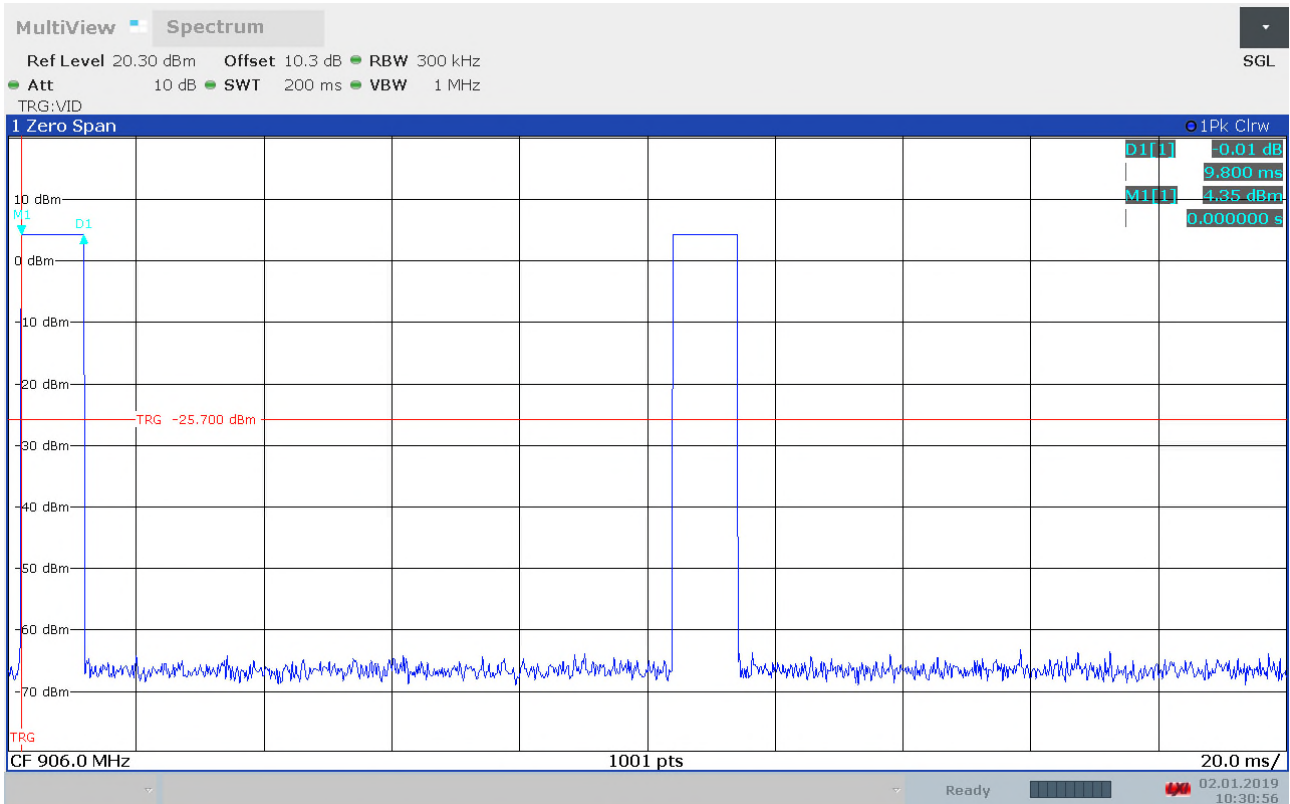
**See attached plots.**

**Requirements:**

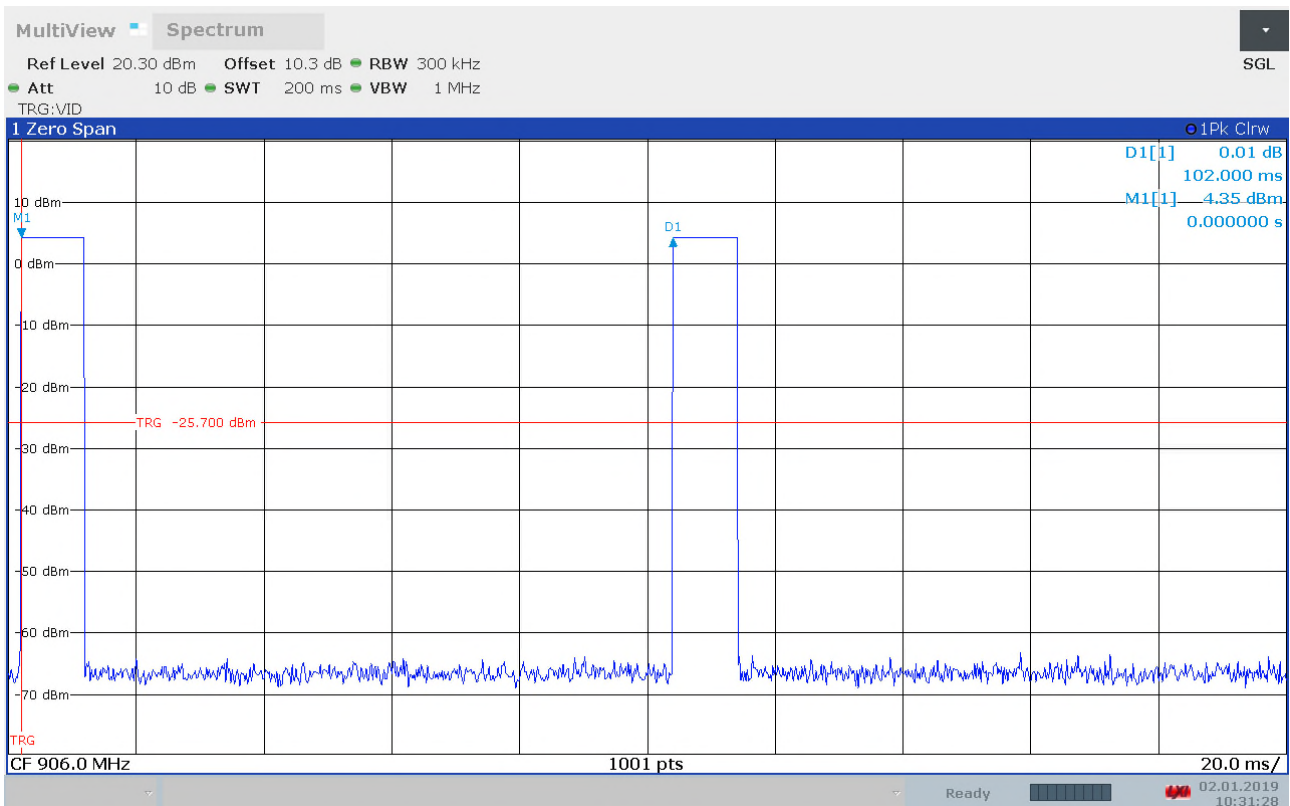
(e) As shown in §15.35(b), for frequencies above 1000 MHz, the field strength limits in paragraphs (a)

The maximum output power shall be ≤ 94 dBμV/m

and (b) of this section are based on average limits. However, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation.



#### ON time



#### ON+OFF time



**MARKER 1**

906.0320513 MHz

Ref 15 dBm

\* Att 15 dB

\* RBW 300 kHz

VBW 1 MHz

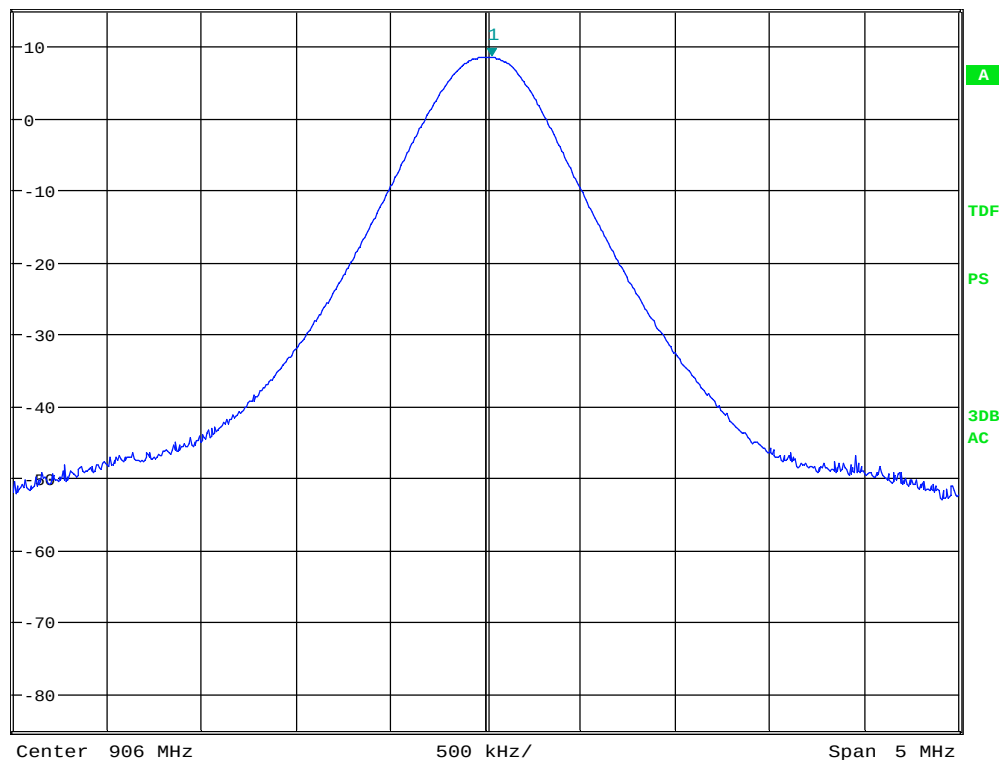
SWT 2.5 ms

Marker 1 [T1]

8.33 dBm

906.032051282 MHz

1 PK  
MAXH



Date: 3.OCT.2019 09:20:18

Conducted power, 906MHz



**MARKER 1**

905.9759615 MHz

Ref 110 dBμV/m

\* Att 10 dB

\* RBW 300 kHz

VBW 1 MHz

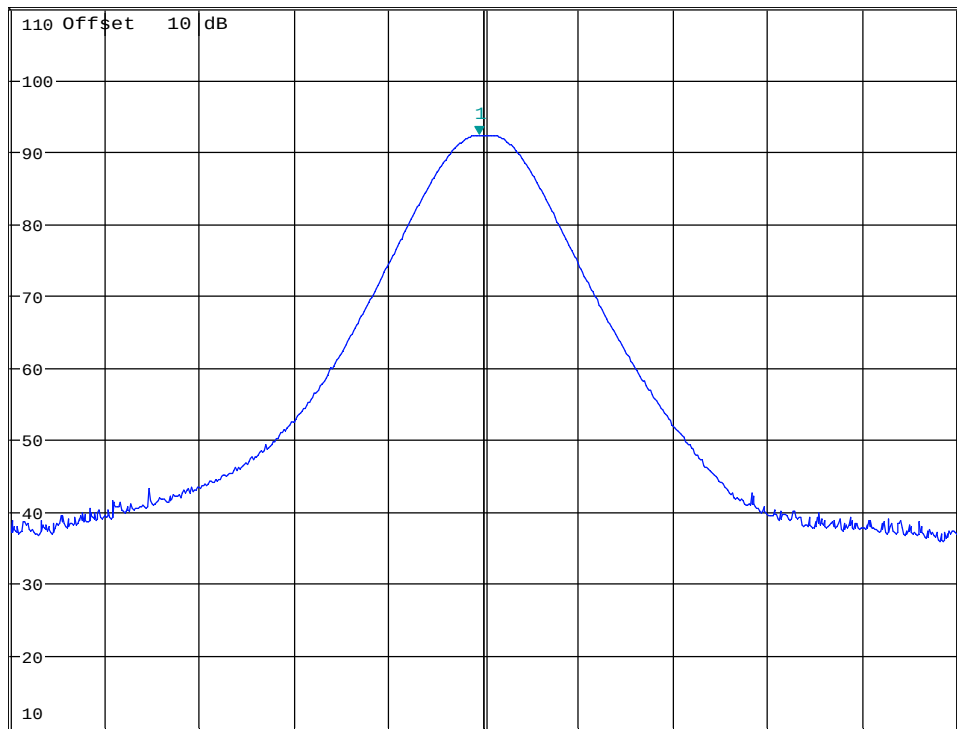
SWT 2.5 ms

Marker 1 [T1]

92.33 dBμV/m

905.975961538 MHz

1 PK  
MAXH



Center 906 MHz

500 kHz/

Span 5 MHz

Date: 3.OCT.2019 08:19:00

Field strength @ Horizontal Polarization-906MHz



**MARKER 1**

906 MHz

Ref 100 dBμV/m

\* Att 10 dB

\* RBW 300 kHz

VBW 1 MHz

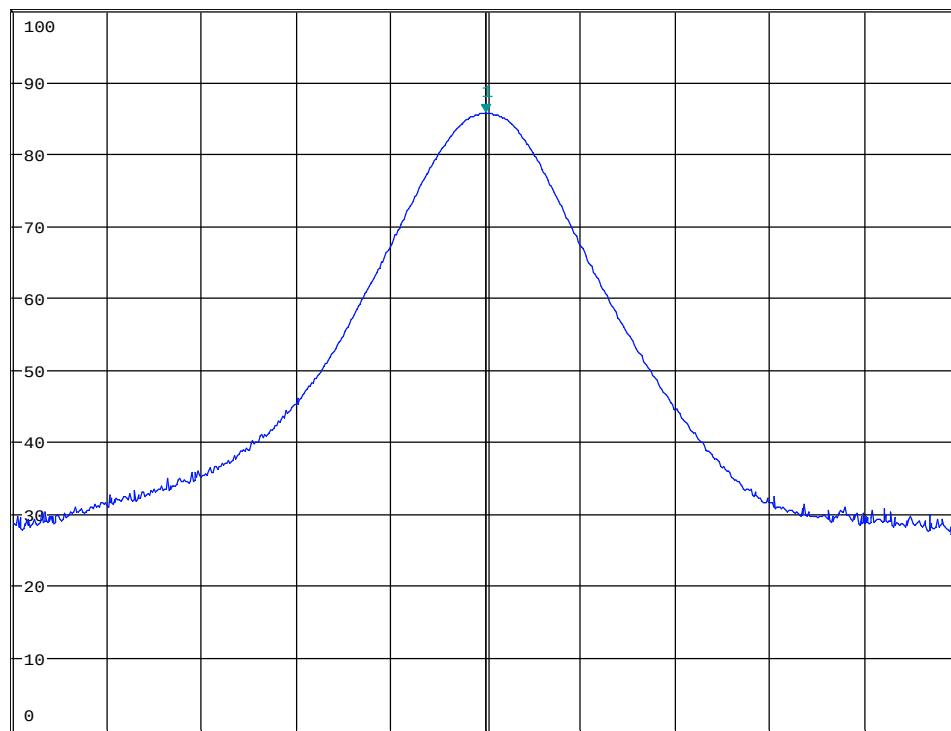
SWT 2.5 ms

Marker 1 [T1]

85.54 dBμV/m

906.000000000 MHz

1 PK  
MAXH



Center 906 MHz

500 kHz/

Span 5 MHz

Date: 3.OCT.2019 08:09:55

Field strength @ Vertical Polarization-906MHz

### 3.3 Restricted Bands of operation

Restricted Bands of operation for FCC and ISSED are defined in FCC Part 15.205 and ISSED RSS-GEN, Issue 4 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)                           | ISED (MHz)         | FCC (GHz)                            | ISED (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> | <b>2.4835-2.5</b>                    |                   |
| 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.

### 3.4 Spurious Emissions (Radiated)

FCC Part 15.209, 249 (d)

ISED Canada RSS-210 Issue 9, B.10 , ISED Canada RSS-Gen Issue 5, clause 6.13.1 and 8.9,8.10

Measurement procedure: ANSI C63.10-2013 Clause 11.9.1.2

**Test Results: Complies**

See attached plots.

**Duty Cycle Correction Factor Calculation:**

Duty Cycle = ON time / ON +OFF time= (9.8 ms/ 100 ms)\*100= 9.8%

Duty Cycle Correction factor =  $-20 \times \log(0.098) = -20.18\text{dB}$

**Maximum Duty Cycle Correction Factor according to Para 15.35 (b): 20 dB**

## Radiated emission 30 – 1000 MHz.

Measuring distance 3 m.

Tested in speech mode with active connection.

| Frequency | Operational condition | Field strength | Measuring distance | Limit<br>FCC15.209 | Margin |
|-----------|-----------------------|----------------|--------------------|--------------------|--------|
| MHz       |                       | dB $\mu$ V/m   | metres             | dB $\mu$ V/m       | dB     |
| 34.6      | TX on                 | 17.29          | 3                  | 40                 | 22.7   |
| 902       | TX on                 | 36.4           | 3                  | 46                 | 9.6    |

See attached graphs.

## Requirements/Limit

|                        |                                                                  |                                           |
|------------------------|------------------------------------------------------------------|-------------------------------------------|
| <b>FCC</b>             | Part 15.209 @ frequencies defined in §15.205                     |                                           |
| <b>ISED</b>            | RSS-GEN Issue 5, Clause 8.9 @ frequencies defined in clause 8.10 |                                           |
|                        | <b>Radiated emission limit @3 meters</b>                         |                                           |
| <b>Frequency (MHz)</b> | <b>Quasi Peak (<math>\mu</math>V/m)</b>                          | <b>Quasi Peak (dB<math>\mu</math>V/m)</b> |
| <b>30 – 88</b>         | 100                                                              | 40.0                                      |
| <b>88 – 216</b>        | 150                                                              | 43.5                                      |
| <b>216 – 960</b>       | 200                                                              | 46.0                                      |
| <b>Above 960</b>       | 500                                                              | 54.0                                      |

(d) Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in §15.209, whichever is the lesser attenuation.



**MARKER 1**

895.0128205 MHz

Ref 90 dB $\mu$ V/m

\* Att 10 dB

\* RBW 100 kHz

VBW 300 kHz

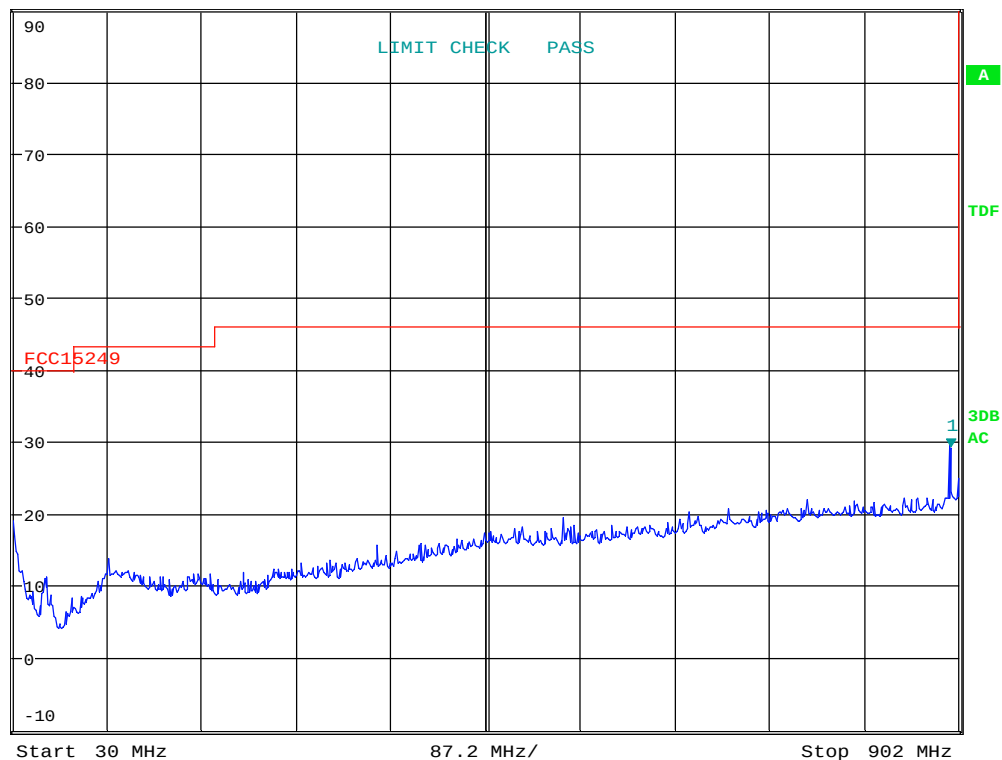
SWT 90 ms

Marker 1 [T1]

29.25 dB $\mu$ V/m

895.012820513 MHz

1 PK  
MAXH



Date: 3.OCT.2019 08:28:51

VP: 30 - 902MHz, PKscan



**MARKER 1**

902 MHz

Ref 90 dBμV/m

\* Att 10 dB

\* RBW 100 kHz

VBW 300 kHz

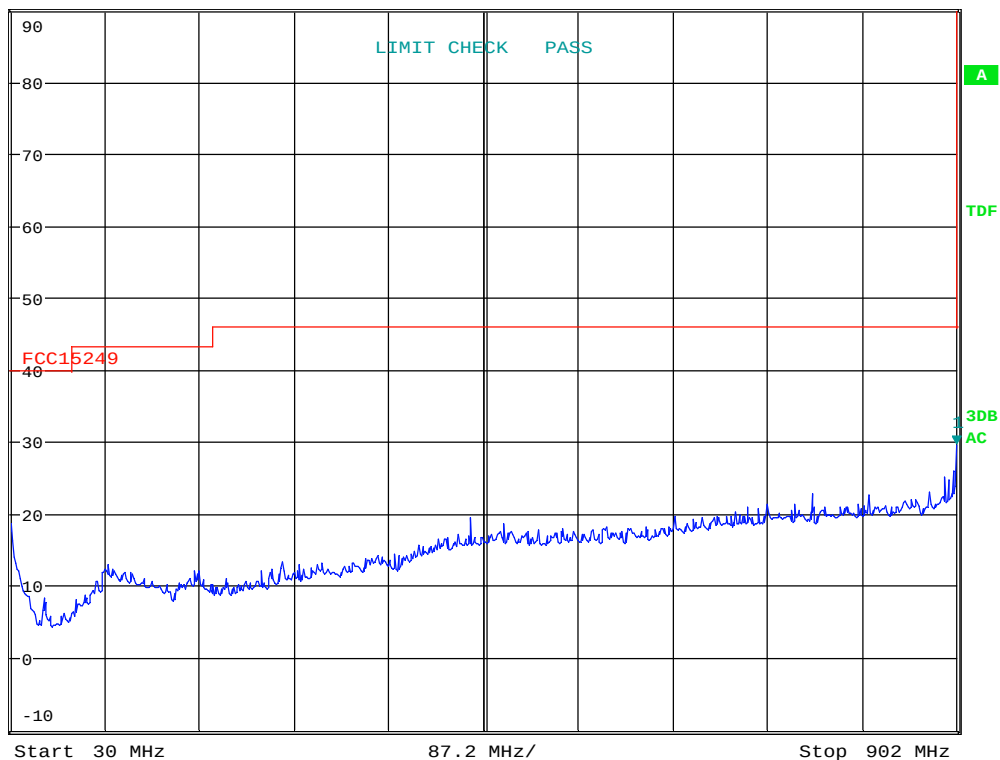
SWT 90 ms

Marker 1 [T1]

29.51 dBμV/m

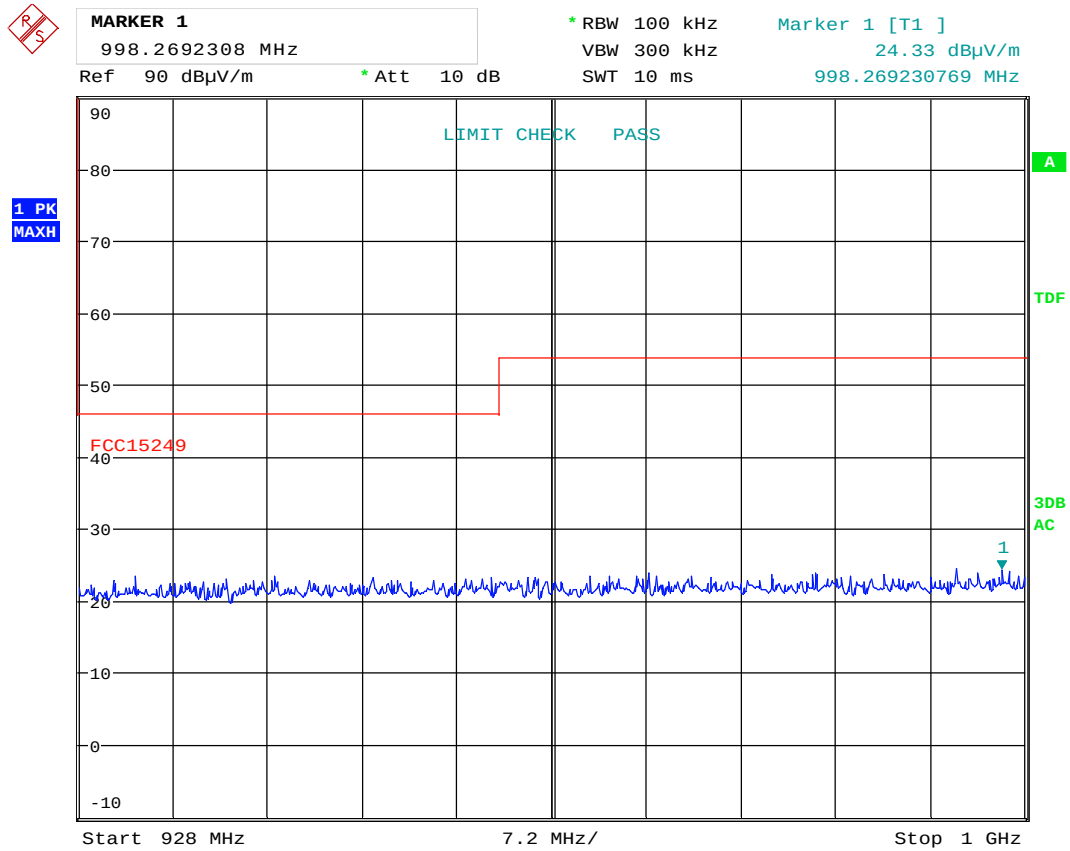
902.000000000 MHz

1 PK  
MAXH



Date: 3.OCT.2019 08:26:22

HP: 30 - 902MHz, PKscan



Date: 3.OCT.2019 08:28:02

VP: 928 - 1000MHz, PKscan



**MARKER 1**

987.5384615 MHz

Ref 90 dBμV/m

\* Att 10 dB

\* RBW 100 kHz

VBW 300 kHz

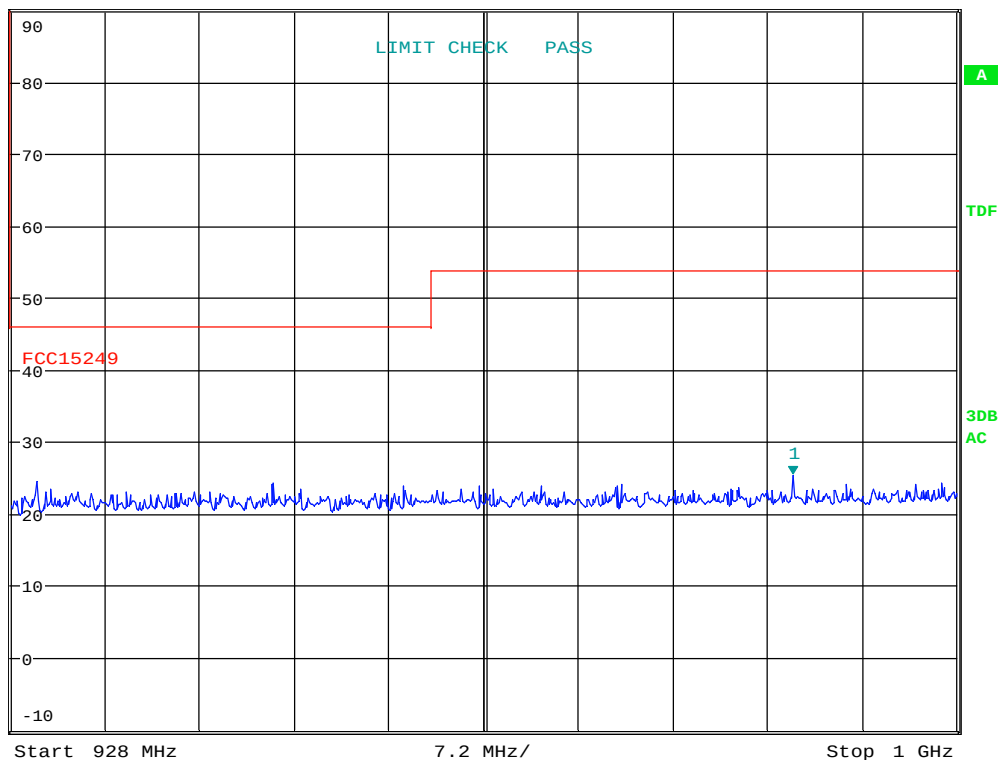
SWT 10 ms

Marker 1 [T1]

25.43 dBμV/m

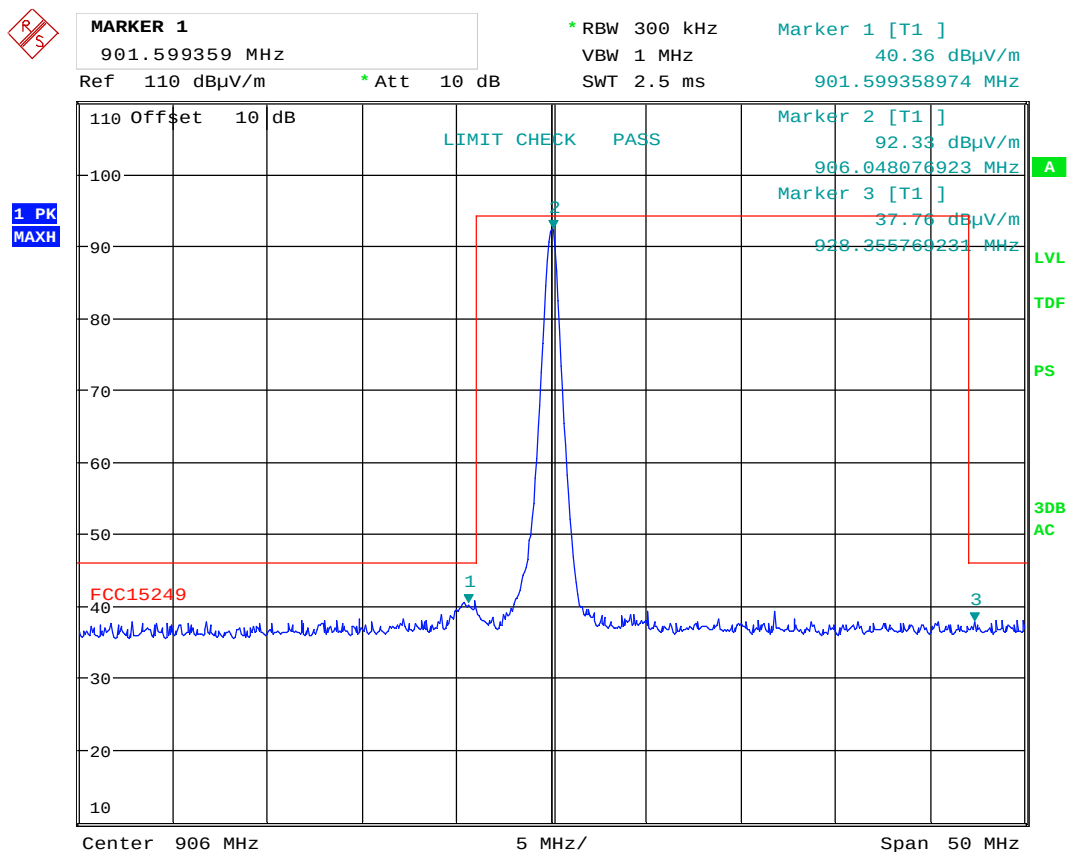
987.538461538 MHz

1 PK  
MAXH



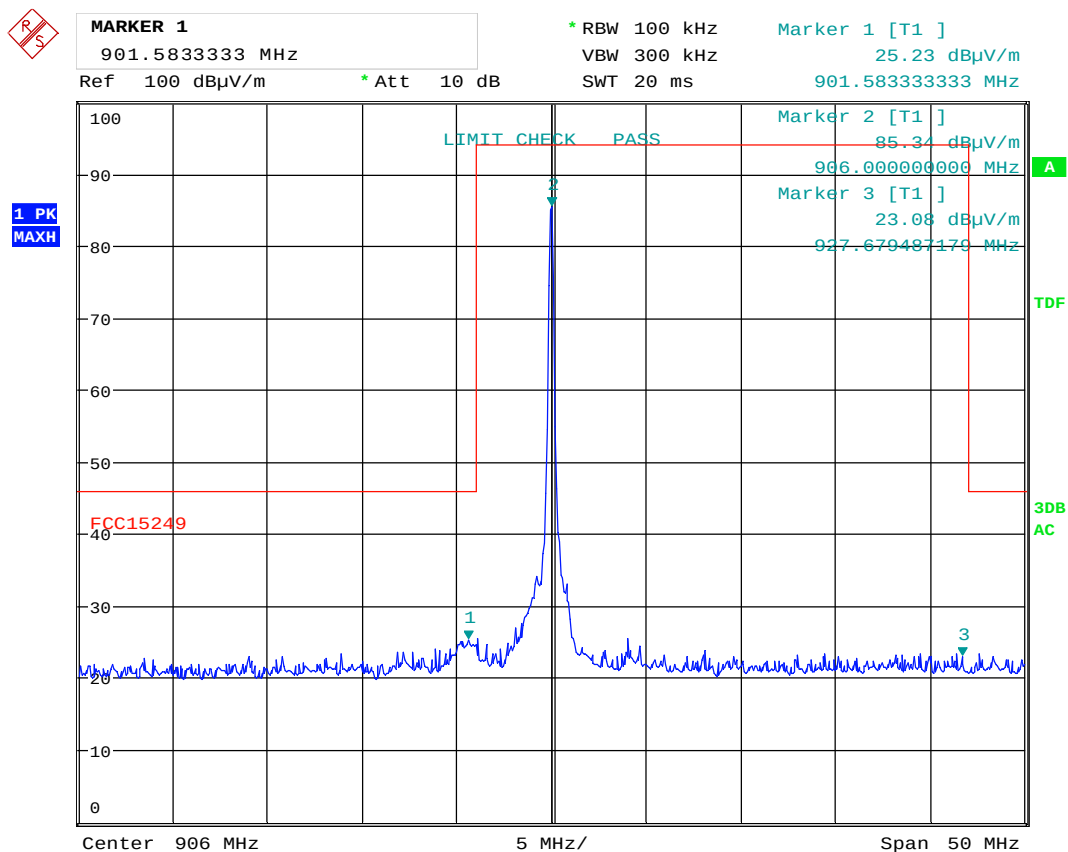
Date: 3.OCT.2019 08:27:13

HP: 928 - 1000MHz, PKscan



Date: 3.OCT.2019 08:22:38

HP : In band



Date: 3.OCT.2019 08:31:26

VP: In band

## Radiated Emissions, 1-10 GHz

Measuring distance: 3m (1 – 10 GHz)  
1m (8.5 – 18 GHz)

### Peak Detector:

| Frequency   | RF channel | Dist. corr. factor | Field strength, Peak Detector, 3m | Duty cycle corr. factor | Limit        | Margin |
|-------------|------------|--------------------|-----------------------------------|-------------------------|--------------|--------|
| MHz         | L,M,H      | dB                 | dB $\mu$ V/m                      | dB                      | dB $\mu$ V/m | dB     |
| 1807.69     | 906MHz     | 0                  | /                                 | 20                      | 74           | /      |
| 2718.0      | 906MHz     | 0                  | 57.97                             | 20                      | 74           | 16.03  |
| 3625.0      | 906MHz     | 0                  | /                                 | 20                      | 74           | /      |
| 4533.65     | 906MHz     | 0                  | /                                 | 20                      | 74           | /      |
| Other freqs | 906MHz     | 0                  | None detected                     | 20                      | 74           | -      |

### Average Detector:

| Frequency   | RF channel | Dist. corr. factor | Field strength, Peak Detector, 3m | Duty cycle corr. factor | Limit        | Margin |
|-------------|------------|--------------------|-----------------------------------|-------------------------|--------------|--------|
| GHz         | L,M,H      | dB                 | dB $\mu$ V/m                      | dB                      | dB $\mu$ V/m | dB     |
| 1807.69     | 906MHz     | 0                  | /                                 | 20                      | 54           | /      |
| 2718.0      | 906MHz     | 0                  | 46.45                             | 20                      | 54           | 7.55   |
| 3625.0      | 906MHz     | 0                  | /                                 | 20                      | 54           | /      |
| 4533.65     | 906MHz     | 0                  | /                                 | 20                      | 54           | /      |
| Other freqs | L,M,H      | /                  | None detected                     | 20                      | 54           | -      |

Average Detector values are measured.

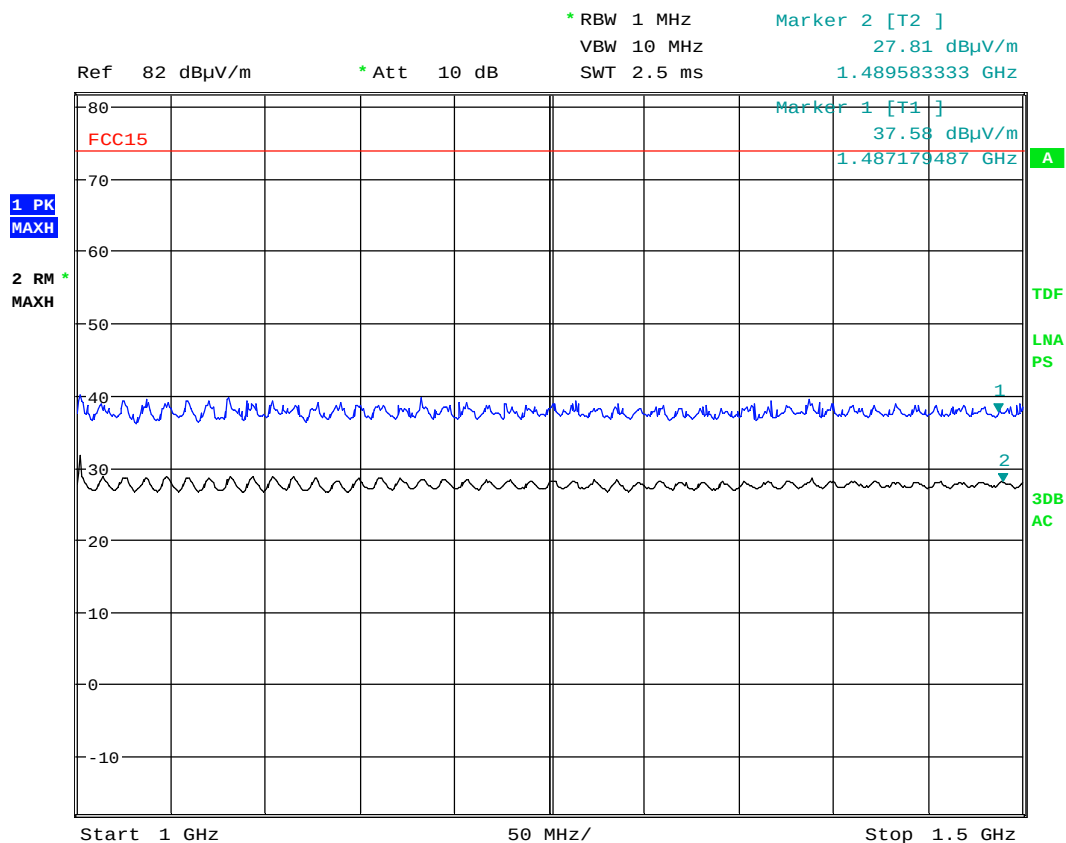
Antenna factor, amplifier gain and cable loss are included in spectrum analyzer "Transducer factor".

See plots.

### Requirements/Limit

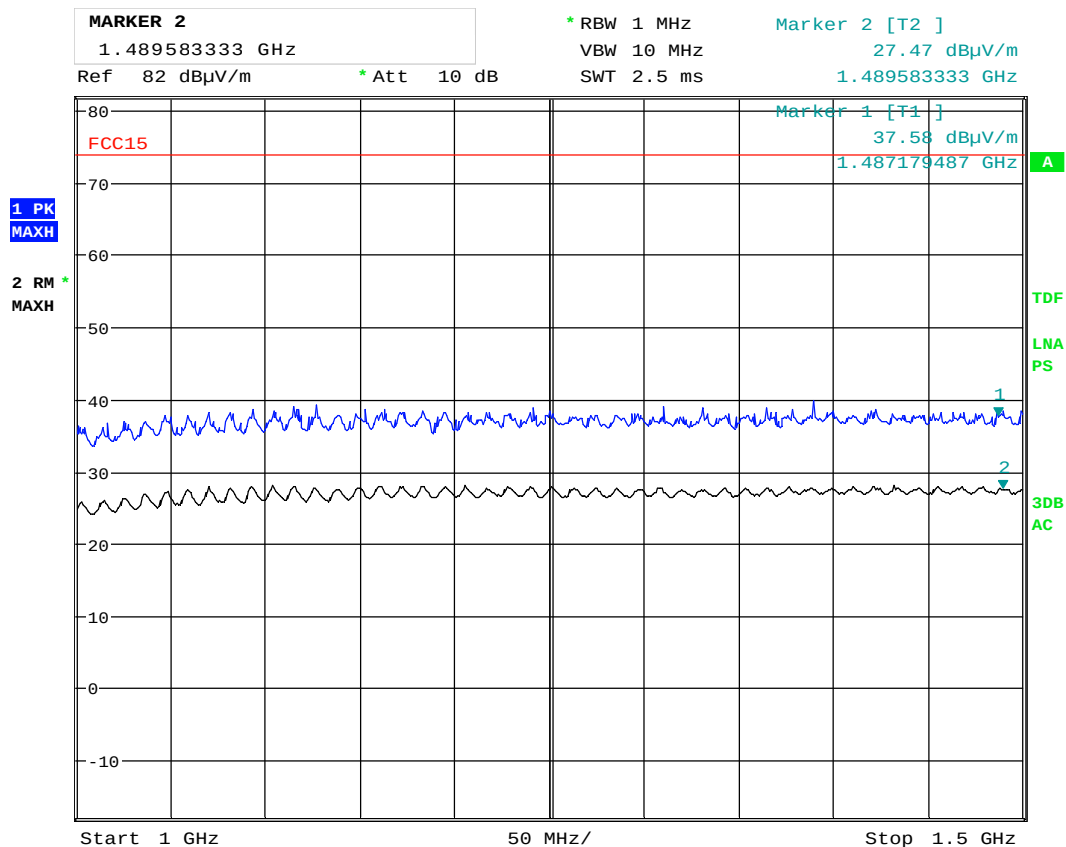
|                        |                                                                  |                                     |
|------------------------|------------------------------------------------------------------|-------------------------------------|
| <b>FCC</b>             | Part 15.209 @ frequencies defined in §15.205                     |                                     |
| <b>ISED</b>            | RSS-GEN Issue 5, Clause 8.9 @ frequencies defined in clause 8.10 |                                     |
|                        | <b>Radiated emission limit @3 meters</b>                         |                                     |
| <b>Frequency (MHz)</b> | <b>AV (dB<math>\mu</math>V/m)</b>                                | <b>Peak (dB<math>\mu</math>V/m)</b> |
| <b>Above 1 GHz</b>     | 54.0                                                             | 74.0                                |

(d) Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in §15.209, whichever is the lesser attenuation.



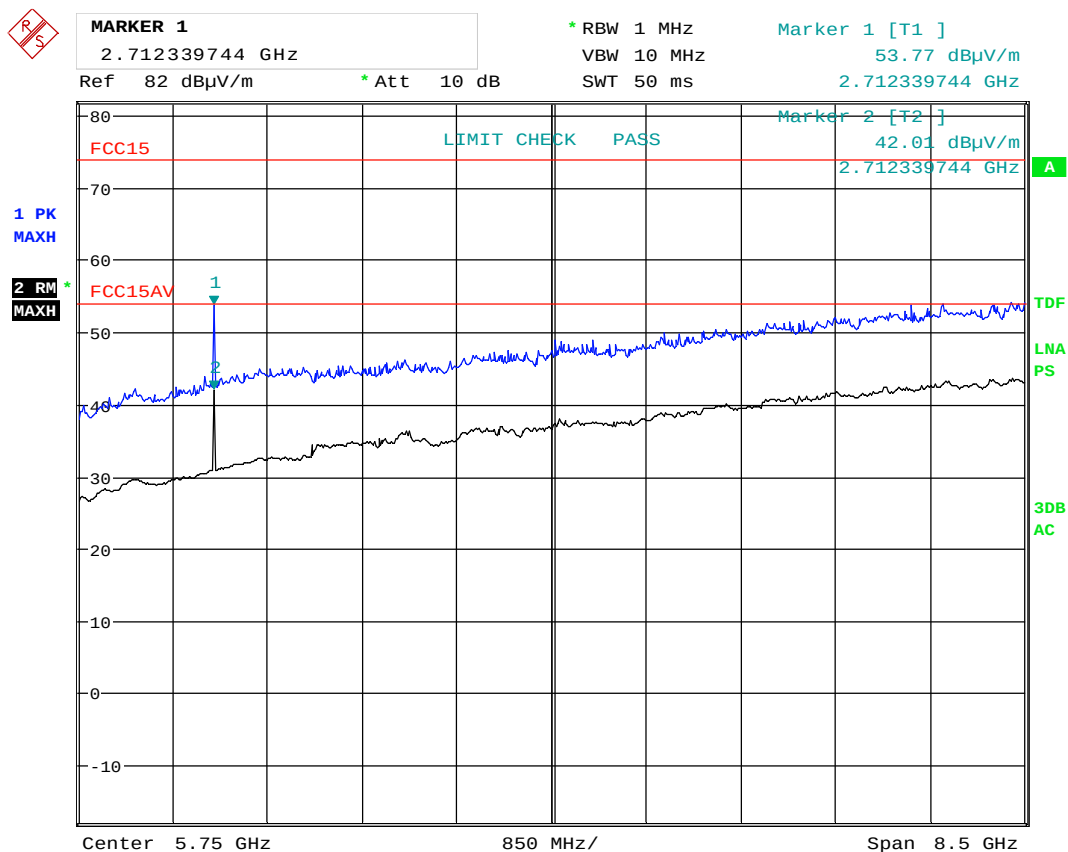
Date: 16.SEP.2019 10:58:45

VP: 1 - 1.5GHz , PK scan



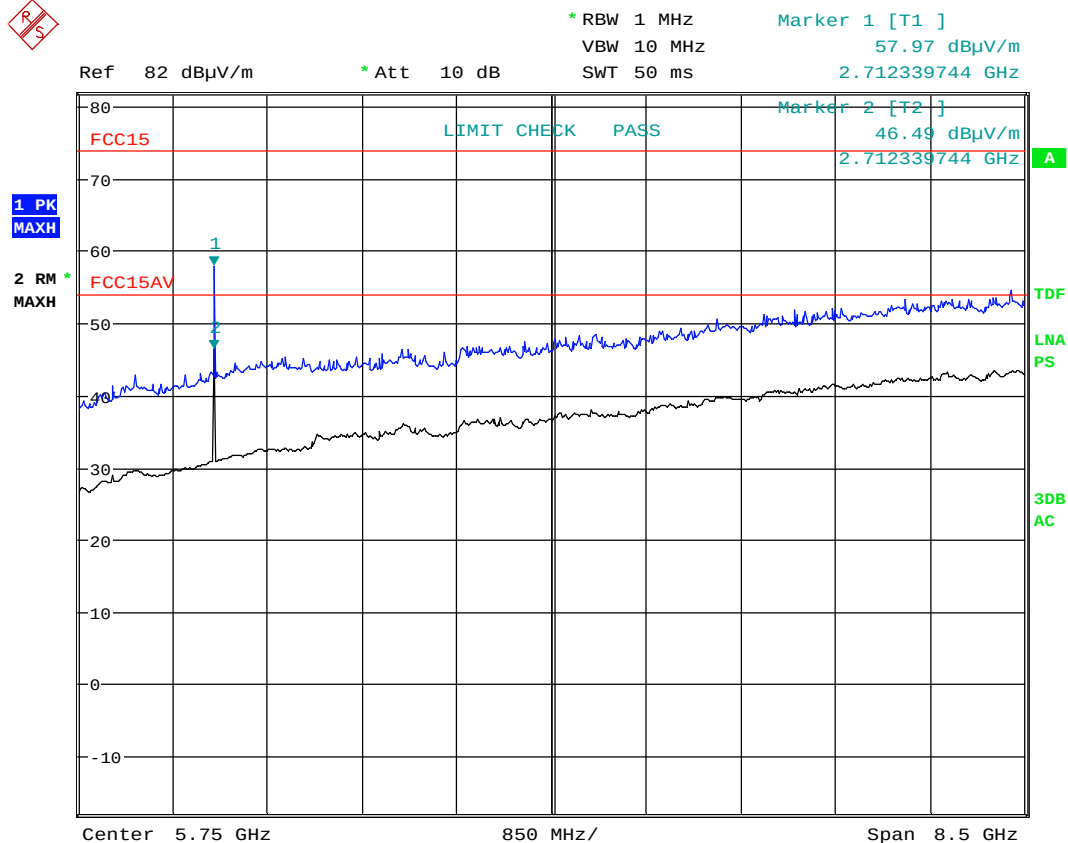
Date: 16.SEP.2019 10:58:00

HP: 1 – 1.5GHz , PK scan



Date: 3.OCT.2019 09:03:58

VP: 1.5 - 10GHz , PK scan



Date: 3.OCT.2019 09:06:41

HP: 1.5 – 10GHz , PK scan

## 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

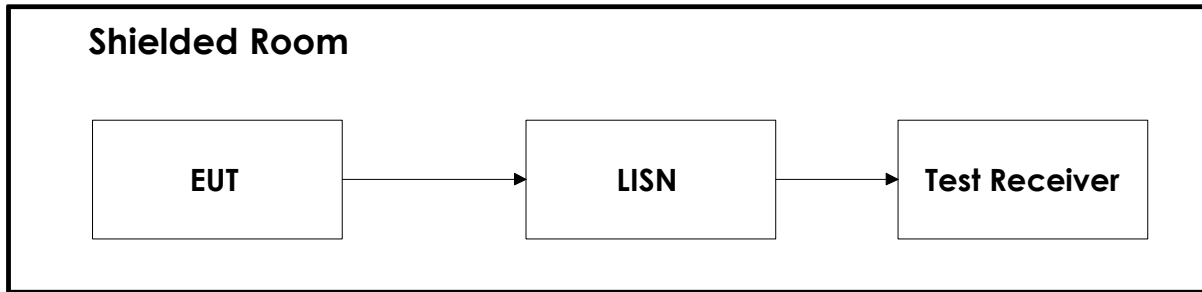
## 5 LIST OF TEST EQUIPMENT

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.

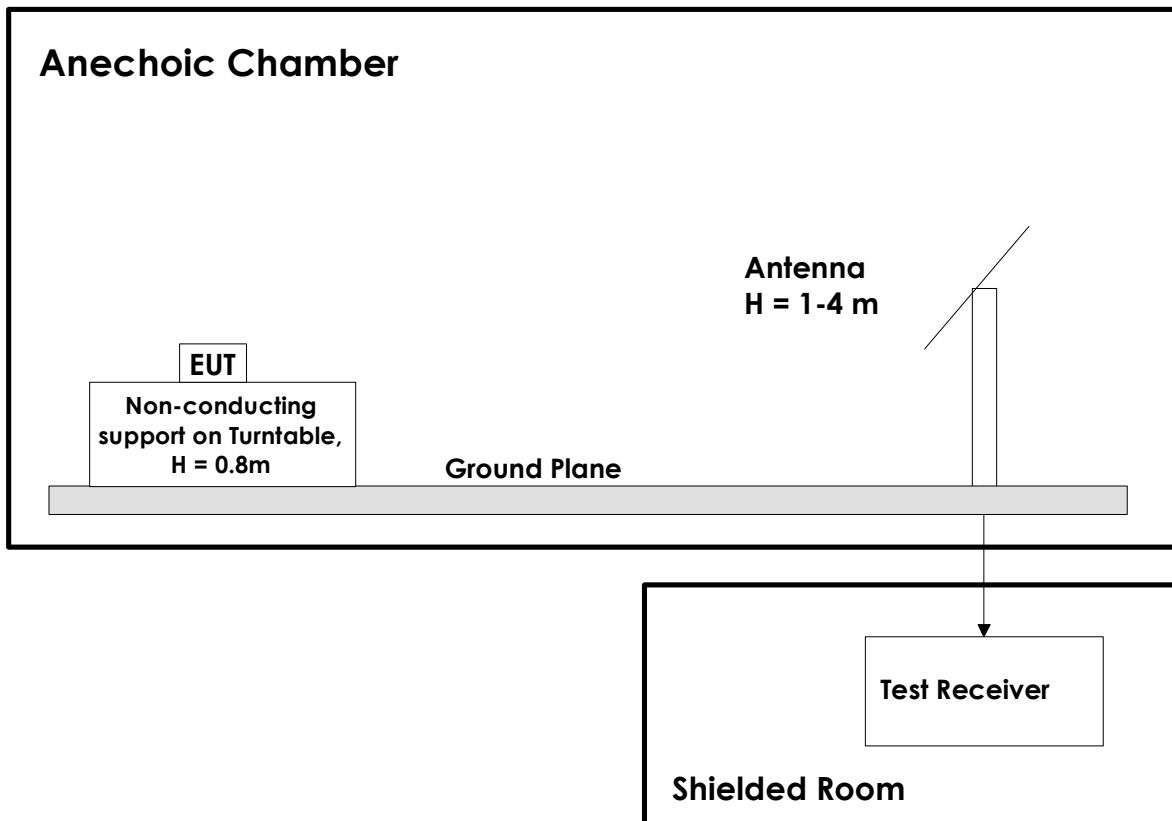
| No. | Model number  | Description         | Manufacturer    | Ref. no. | Cal. date          | Cal. Due           |
|-----|---------------|---------------------|-----------------|----------|--------------------|--------------------|
| 1   | ESU40         | Measuring Receiver  | Rohde & Schwarz | LR 1639  | 2018.03<br>2019.01 | 2019.03<br>2020.01 |
| 2   | 317           | Preamplifier        | Sonoma          | LR 1687  | 2019.07            | 2020.07            |
| 3   | HK116         | Biconical Antenna   | Rohde & Schwarz | LR 1260  | 2013.12            | 2019.12            |
| 4   | HL223         | Log Periodic Dipole | Rohde & Schwarz | LR 1261  | 2013.12            | 2019.12            |
| 5   | 3115          | Horn Antenna        | EMCO            | LR 1330  | 2016.10            | 2020.10            |
| 6   | 8449A         | Pre-amplifier       | Hewlett Packard | LR 1322  | 2019.07            | 2020.07            |
| 7   | 6HC1500/10000 | Highpass Filter     | Trilithic       | LR 1614  | Cal b4 use         |                    |
| 8   | Model 87V     | Multimeter          | Fluke           | LR 1599  | 2018.10            | 2020.10            |

## 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.

## Revision history

| Version | Date       | Comment                 | Sign |
|---------|------------|-------------------------|------|
| 00      | 2019-07-24 | First version           | gns  |
| 01      | 2019-10-03 | Retested all parameters | gns  |
| 02      | 2019-10-22 | Model name corrected    | gns  |