



# **47 CFR Part 15 Subpart B**

## **Electromagnetic Compatibility Test Report**

**For**

### **von-U61**

**ORDER NO.:** 200610K007  
**REPORT NO.:** FC200610K007 R1  
**ISSUED DATE:** 10, September, 2020  
**MODEL NO.:** JTLC-5000

**JASTECH CO.,LTD.**  
C-402, Pangyo-ro 242, Boondang-Gu, Seongnam-Si, Gyeonggi-Do, 13487, Korea



Certificate #4068.03

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## Test Report Details

Test Report No. FC200610K007 R1

Tests Performed By: Bureau Veritas CPS ADT Korea Ltd.  
Innoplex No.2 106, Sinwon-ro 306, Yeongtong-gu, Suwon-si,  
Gyeonggi-do, 16675, Republic of Korea

Test site: Bureau Veritas CPS ADT Korea Ltd.  
HeungAn-daero 49, DongAn-gu, Anyang-si, Gyeonggi-do, 11419  
Republic of Korea

Applicant: JASTECH CO.,LTD.  
C-402, Pangyo-ro 242, Boondang-Gu, Seongnam-Si, Gyeonggi-Do,  
13487, Republic of Korea

Product Type: von-U61

Model Number: JTLC-5000

Product standards: 47 CFR Part 15 Subpart B / ANSI C63.4-2014

FCC Classification Class B

FCC ID 2ASMR-JTLC-5000

HW Version v0.31

SW Version v0.01

Sample Receive Date: 01, September, 2020

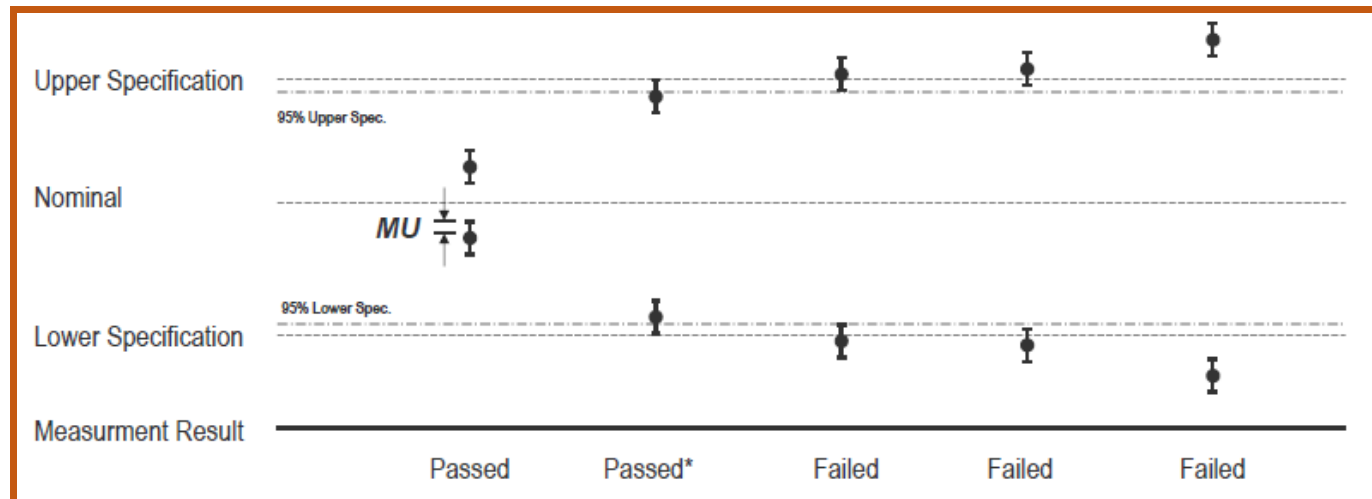
Testing Start Date: 04, September, 2020

Date Testing Complete: 06, September, 2020

This test report apply only to the specific samples tested under stated test conditions. All samples tested were in good operating condition throughout the entire test program. It is the manufacturer's responsibility to assure that additional production units of this model are manufactured with identical electrical and mechanical components Bureau Veritas CPS ADT Korea Ltd. shall have no liability for any deductions, inferences or generalizations drawn by the client or others from Bureau Veritas CPS ADT Korea Ltd. issued reports.

## Overall Results

### I. DECISION RULE FOR STATEMENT OF CONFORMITY



$MU = 95\%$  expanded measurement uncertainty

QUA-52 Decision Rule Applied

Step 1: Reference Check, Daily Check, Peripheral device Check

Step 2: Retest Procedure (Maximum 3, Different Test Engineer)

1) If the result of the first retest is the same as the initial test, the judgment is made based on the value.

2) If the results of the first retest differ from the initial test result, the second retest is carried out.

After completion of the second retest, the average of the three test results is determined as the final result.

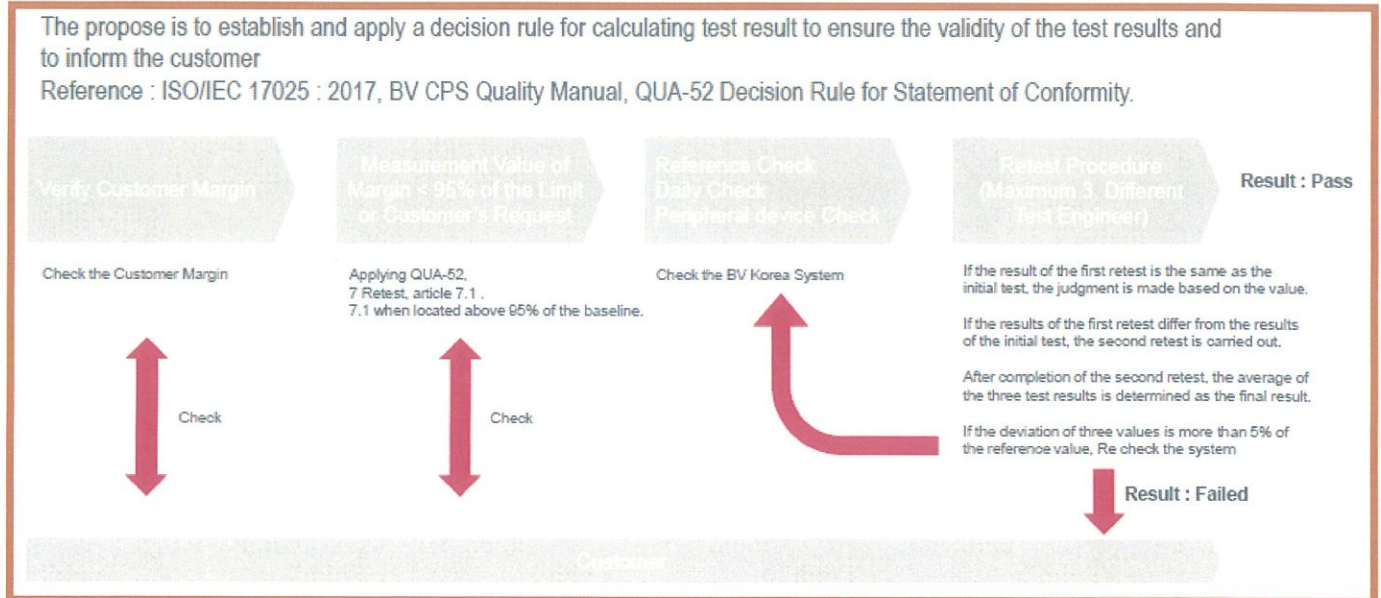
If the deviation of three values is more than 5% of the reference value, Re check the system

### II. Measurement uncertainty

| Test Item                                                                                                                                                                                           | Measurement uncertainty |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|
| Conducted emission                                                                                                                                                                                  | 2.62 dB                 |
| Radiated emission (1GHz Below)                                                                                                                                                                      | 4.04 dB                 |
| Radiated emission (1GHz Over)                                                                                                                                                                       | 5.10 dB                 |
| Note 1: Measurement uncertainty is calculated in according with CISPR 16-4-2: 2011+A1:2014+A2:2018<br>The measurement uncertainty is given with a confidence of 95 % with the coverage factor, k=2. |                         |



### III. FLOW CHART FOR DECISION RULE



### IV. FINAL DECISION

#### RELEASE CONTROL RECORD

| REPORT NO.      | REASON FOR CHANGE                                 | DATE ISSUED         |
|-----------------|---------------------------------------------------|---------------------|
| FC200610K007    | Original release                                  | 10, September, 2020 |
| FC200610K007 R1 | Re-arrangement of photo and added the board photo | 14, September, 2020 |
|                 |                                                   |                     |

This project has been tested and verified to comply with the requirements of **Bureau Veritas CPS ADT Korea Ltd.** Therefore, this certificate is issued.

PREPARED BY :

Bob Kim / Senior Engineer

, DATE : 14. September. 2020

APPROVED BY :

Wan Kim / Senior Manger

, DATE : 14. September. 2020

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## 1. EMC Result Conclusion (With Justification)

| The following tests were performed on a sample submitted for evaluation of compliance with 47 CFR Part 15.109 (b) Class B                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |            |         |          |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|---------|----------|
| Test requirements                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Standard   | Results | Verdict  |
| <b>Emissions</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |            |         |          |
| Radiated RF Emissions                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | ANSI C63.4 | Pass    | Complied |
| <p>We tested the von-U61, Model: JTLC-5000, to determine if it was in compliance with the relevant standards as marked on the EMC Verification Summary. We found that the unit met the requirement of 47 CFR Part 15 Subpart B / ANSI C63.4-2014 standards when tested as received.</p> <p>The production units are required to conform to the initial sample as received when the units are placed on the market.</p> <p>Note) Applied Regulation<br/>§ 15.101<br/>(b) Only those receivers that operate (tune) within the frequency range of 30-960 MHz, CB receivers and radar detectors are subject to the authorizations shown in paragraph (a) of this section. Receivers operating above 960 MHz or below 30 MHz, except for radar detectors and CB receivers, are exempt from complying with the technical provisions of this part but are subject to §15.5.</p> <p>The device contains receivers which tune and operating between 30 MHz ~ 960 MHz in the following bands:<br/>UMTS Band5, LTE Band5, LTE Band 12, LTE Band 13, LTE Band 14, LTE Band 71</p> |            |         |          |

## 2. Test Condition

### 2.1 Ancillary Equipment

| Use*                                                                                                                    | Product Type  | Manufacturer                  | Model                   | FCC ID          |
|-------------------------------------------------------------------------------------------------------------------------|---------------|-------------------------------|-------------------------|-----------------|
| EUT                                                                                                                     | von-U61       | JASTECH CO.,LTD.              | JTLC-5000               | 2ASMR-JTLC-5000 |
| SIM                                                                                                                     | CAN Simulator | JASTECH CO.,LTD.              | ECUsim 2000             | -               |
| AE                                                                                                                      | Notebook      | Samsung Electronics Co., LTD. | NT950XBV                | DoC             |
| AE                                                                                                                      | AC/DC Adaptor | Loadus                        | GQ-3012 (CAN Simulator) | -               |
| AE                                                                                                                      | Mobile        | Samsung Electronics Co., LTD. | SHV-E210S               | DoC             |
| * <b>Note:</b> EUT – Equipment Under Test, AE – Auxiliary/Associated Equipment, SIM – Simulator (Not Subjected to Test) |               |                               |                         |                 |

### 2.2 Input/Output Ports

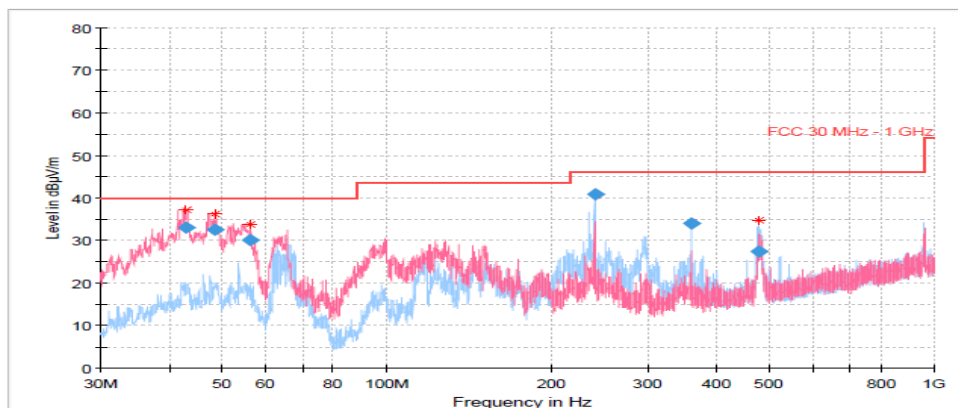
| Port #                                                                                                                                                                    | Name  | Type* | Cable (m)<br>Max. >3 m | Cable Shielded | Comments |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|-------|------------------------|----------------|----------|
| 1                                                                                                                                                                         | Power | DC    | 1.2                    | None-Shielded  | -        |
| 2                                                                                                                                                                         | CAN   | I/O   | 1.0                    | None-Shielded  | -        |
| * Note: * AC = AC Power Port, DC = DC Power Port, N/E = Non-Electrical, I/O = Signal Input or Output Port (Not Involved in Process Control), TP = Telecommunication Ports |       |       |                        |                |          |

## 2.3 Power Interface

| Mode # | Voltage (V) | Current (A) | Power (W) | Frequency (DC/AC-Hz) | Comments                     |
|--------|-------------|-------------|-----------|----------------------|------------------------------|
| Rated  | 12 ~ 24     | -           | -         | DC                   | -                            |
| 1      | 12          | -           | -         | DC                   | Worst Case <sup>Note1)</sup> |
| 2      | 24          | -           | -         | DC                   | -                            |

Note1) EUT was investigated in two case DC 12 V and DC 24 V it was determined that DC 12 V was worst-case. Tested with the worst case DC 12 V.

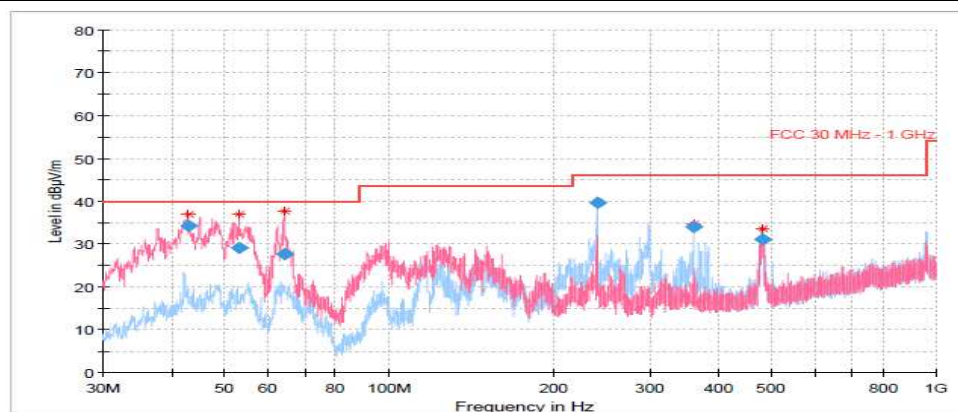
### Power Interface Mode 1: DC 12 V – Margin 5.19 dB



#### Final Result

| Frequency (MHz) | QuasiPeak (dBµV/m) | Limit (dBµV/m) | Margin (dB) | Height (cm) | Pol | Azimuth (deg) | Corr. (dB/m) |
|-----------------|--------------------|----------------|-------------|-------------|-----|---------------|--------------|
| 43.192000       | 33.12              | 40.00          | 6.88        | 100.0       | V   | 239.0         | -20.0        |
| 48.624000       | 32.51              | 40.00          | 7.49        | 100.0       | V   | 56.0          | -19.7        |
| 56.384000       | 30.06              | 40.00          | 9.94        | 100.0       | V   | 355.0         | -20.6        |
| 240.005000      | 40.81              | 46.00          | 5.19        | 100.0       | H   | 312.0         | -20.7        |
| 359.994000      | 34.04              | 46.00          | 11.96       | 100.0       | H   | 326.0         | -18.0        |
| 478.237000      | 27.40              | 46.00          | 18.60       | 100.0       | H   | 0.0           | -15.3        |

### Power Interface Mode 2: DC 24 V – Margin 6.32 dB



#### Final Result

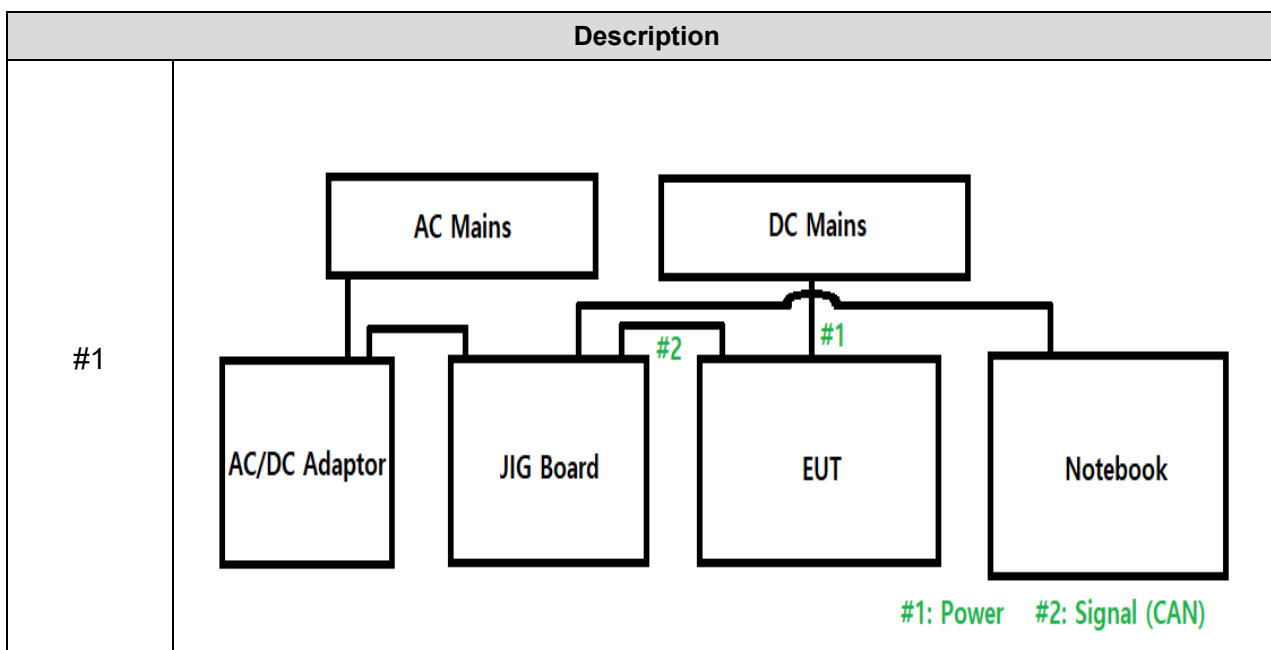
| Frequency (MHz) | QuasiPeak (dBµV/m) | Limit (dBµV/m) | Margin (dB) | Height (cm) | Pol | Azimuth (deg) | Corr. (dB/m) |
|-----------------|--------------------|----------------|-------------|-------------|-----|---------------|--------------|
| 42.998000       | 34.26              | 40.00          | 5.74        | 100.0       | V   | 252.0         | -20.0        |
| 53.183000       | 29.19              | 40.00          | 10.81       | 100.0       | V   | 229.0         | -20.1        |
| 64.386500       | 27.66              | 40.00          | 12.34       | 100.0       | V   | 97.0          | -22.5        |
| 240.005000      | 39.68              | 46.00          | 6.32        | 100.0       | H   | 308.0         | -20.7        |
| 359.994000      | 33.94              | 46.00          | 12.06       | 100.0       | H   | 317.0         | -18.0        |
| 481.098500      | 30.97              | 46.00          | 15.03       | 100.0       | H   | 255.0         | -15.2        |

## 2.4 Modes of Description

| Mode # | Mode                          | Comments                             |
|--------|-------------------------------|--------------------------------------|
| 1      | UMTS Band 5 <sup>Note1)</sup> | Rx Frequency range: (869 to 894) MHz |
| 2      | LTE Band 5 <sup>Note1)</sup>  | Rx Frequency range: (869 to 894) MHz |
| 3      | LTE Band 12 <sup>Note1)</sup> | Rx Frequency range: (729 to 746) MHz |
| 4      | LTE Band 13 <sup>Note1)</sup> | Rx Frequency range: (746 to 756) MHz |
| 5      | LTE Band 14 <sup>Note1)</sup> | Rx Frequency range: (758 to 768) MHz |
| 6      | LTE Band 71 <sup>Note1)</sup> | Rx Frequency range: (617 to 652) MHz |

Note1) The EUT Tested while operating in licensed band (Receiver Mode)

## 2.5 Configuration



### 3. Test Condition and Results

#### 3.1 Radiated Emissions

| TEST: Limits for radiated disturbance                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |      |                                                |      |
|--------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|------------------------------------------------|------|
| Method                                                             | Measurements were made in a 10-meter semi-anechoic chamber that complies to ANSI C63.4. Preliminary (peak) measurements were performed at an antenna to EUT separation distance of 10-meter. The EUT was rotated 360° about its azimuth with the receive antenna located at 1, 2, 3 and 4 meter heights in both horizontal and vertical polarities. Final measurements (quasi-peak or average as noted) were then performed by rotating the EUT 360° and adjusting the receive antenna height from 1 to 4 meters. All frequencies were investigated in both horizontal and vertical antenna polarity, where applicable. |      |                                                |      |
| Parameters recorded during the test                                | Laboratory Ambient Temperature                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |      | (20.7 - 21.1) °C                               |      |
|                                                                    | Relative Humidity                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |      | (45.4 - 47.3) %                                |      |
|                                                                    | Frequency range                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |      | Measurement Point                              |      |
| Fully configured sample scanned over the following frequency range | 30 MHz – 1 000 MHz                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |      | 3 meter measurement distance                   |      |
|                                                                    | 1 000 MHz – 6 000 MHz                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |      | 3 meter measurement distance                   |      |
| Limits – Class B                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |      |                                                |      |
| Frequency (MHz)                                                    | Limit (dBµV/m)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |      |                                                |      |
| Below 1 GHz                                                        | Quasi-Peak                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |      | Results                                        |      |
| 30 to 88                                                           | 40                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |      | Pass                                           |      |
| 88 to 216                                                          | 43.5                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |      | Pass                                           |      |
| 216 to 960                                                         | 46                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |      | Pass                                           |      |
| 960 to 1 000                                                       | 54                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |      | Pass                                           |      |
| Above 1 GHz                                                        | Average                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Peak | Result                                         |      |
| 1 000 to 6 000                                                     | 54                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 74   | Pass                                           | Pass |
| EUT Configuration Settings:                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |      |                                                |      |
| Power Interface Mode #<br>(See Section 3.3)                        | EUT Operation Mode #<br>(See Section 3.4)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |      | EUT Configurations Mode #<br>(See Section 3.5) |      |
| 1                                                                  | 1, 2, 3, 4, 5, 6                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |      | 1                                              |      |

Note1) Formula

Final Value (PK and/or QP and/or CAV) = Reading Value (PK and/or QP and/or CAV) + Corr. (Antenna Factor + Cable Loss + Distance Correction - Amplifier Gain)

Margin (PK and/or QP and/or CAV) = Limit – Final Value (PK and/or QP and/or CAV)

PK = Peak, QP = Quasi-Peak, CAV = CISPR-Average, Corr. = Correction Factor

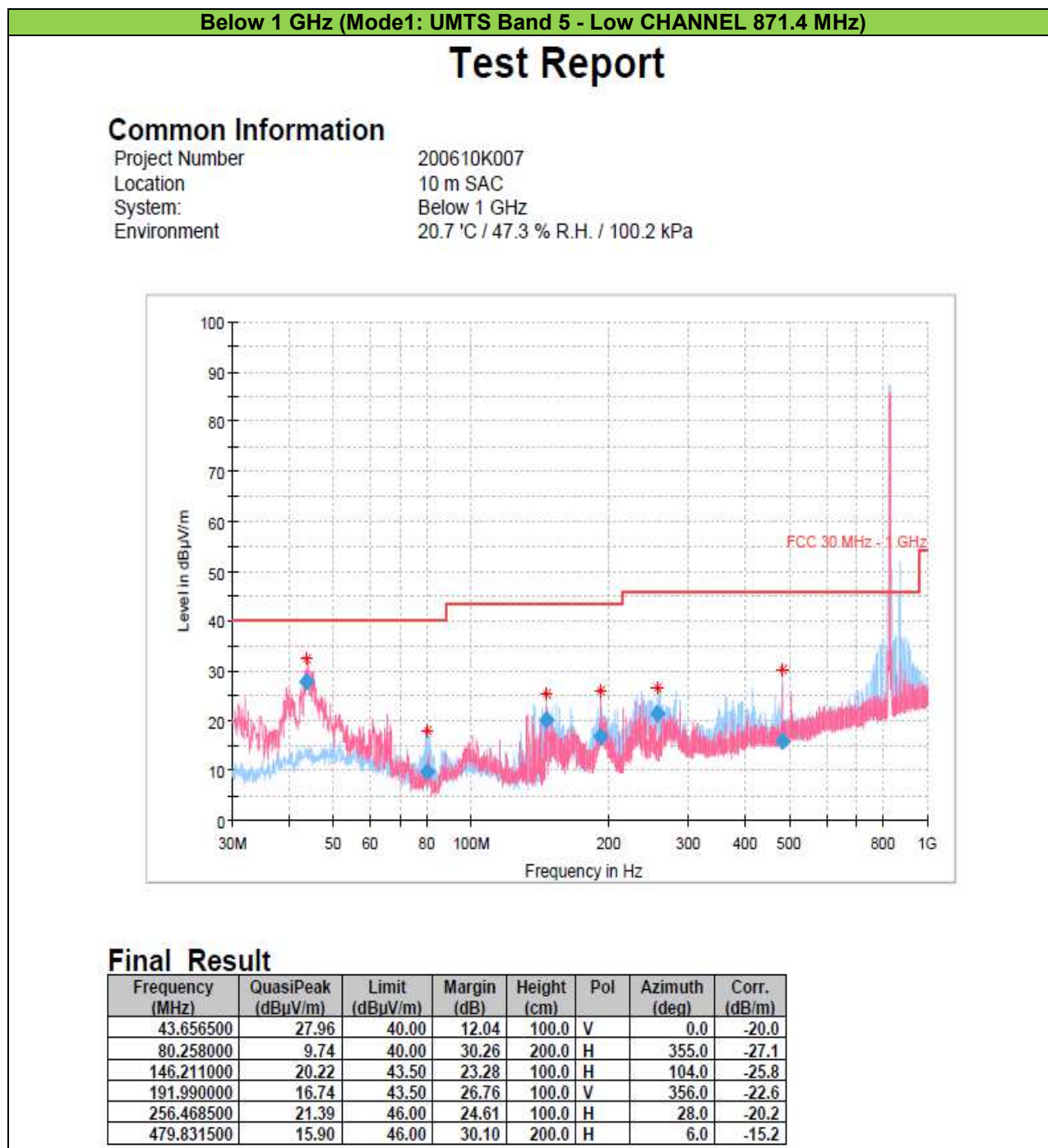
Note2) Distance (Antenna to Centre of Turntable), Antenna Height

Below 1 GHz, Distance = 3 m, Antenna Height = (1 to 4) m

Above 1 GHz, Distance = 4.5 m, Antenna Height (Considering size of EUT) = (1 to 4) m

Distance Correction =  $20 \log (d2 \text{ (m)} / d1 \text{ (m)}) = 20 \log (4.5 / 3) = \underline{\underline{3.5}}$

**Table 1. Radiated emission Test data**



Note1) Two graphs measured for both Vertical and Horizontal of the Antenna are combined into one graph.

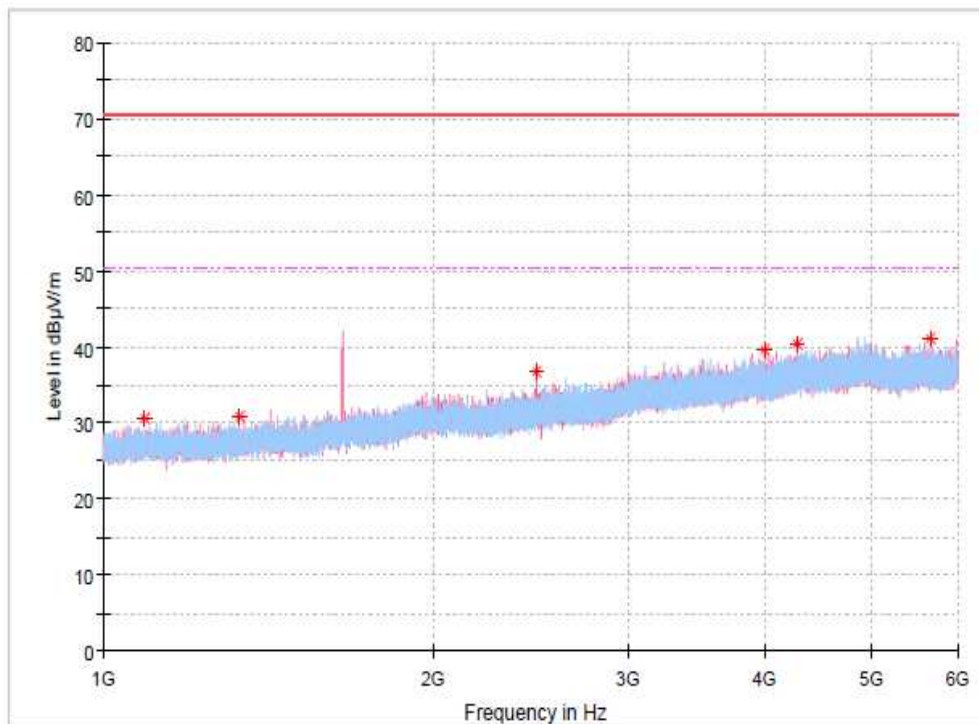
Note2) Unwanted emissions captured from 824 MHz to 849 MHz and from 869 MHz to 894 MHz and Harmonics were the TX and RX signals generated from the call-simulator.

Above 1 GHz (Mode1: UMTS Band 5 - Low CHANNEL 871.4 MHz)

# Test Report

## Common Information

Project Number 200610K007  
Location 10 m SAC  
System: Above 1 GHz  
Environment 20.7 °C / 47.3 % R.H. / 100.2 kPa



## Critical Freqs

| Frequency (MHz) | MaxPeak (dBµV/m) | Limit (dBµV/m) | Margin (dB) | Height (cm) | Pol | Azimuth (deg) | Corr. (dB/m) |
|-----------------|------------------|----------------|-------------|-------------|-----|---------------|--------------|
| 1091.875000     | 30.48            | 70.50          | 40.02       | 100.0       | H   | 237.0         | -11.6        |
| 1332.875000     | 30.87            | 70.50          | 39.63       | 100.0       | V   | 167.0         | -10.3        |
| 2477.000000     | 36.68            | 70.50          | 33.82       | 100.0       | V   | 226.0         | -4.6         |
| 3997.500000     | 39.73            | 70.50          | 30.77       | 100.0       | V   | 135.0         | 0.8          |
| 4278.250000     | 40.40            | 70.50          | 30.10       | 100.0       | V   | 0.0           | 2.1          |
| 5668.875000     | 41.08            | 70.50          | 29.42       | 100.0       | H   | 248.0         | 4.1          |

Note1) Two graphs measured for both Vertical and Horizontal of the Antenna are combined into one graph.

Note2) Unwanted emissions captured from 824 MHz to 849 MHz and from 869 MHz to 894 MHz and Harmonics were the TX and RX signals generated from the call-simulator.

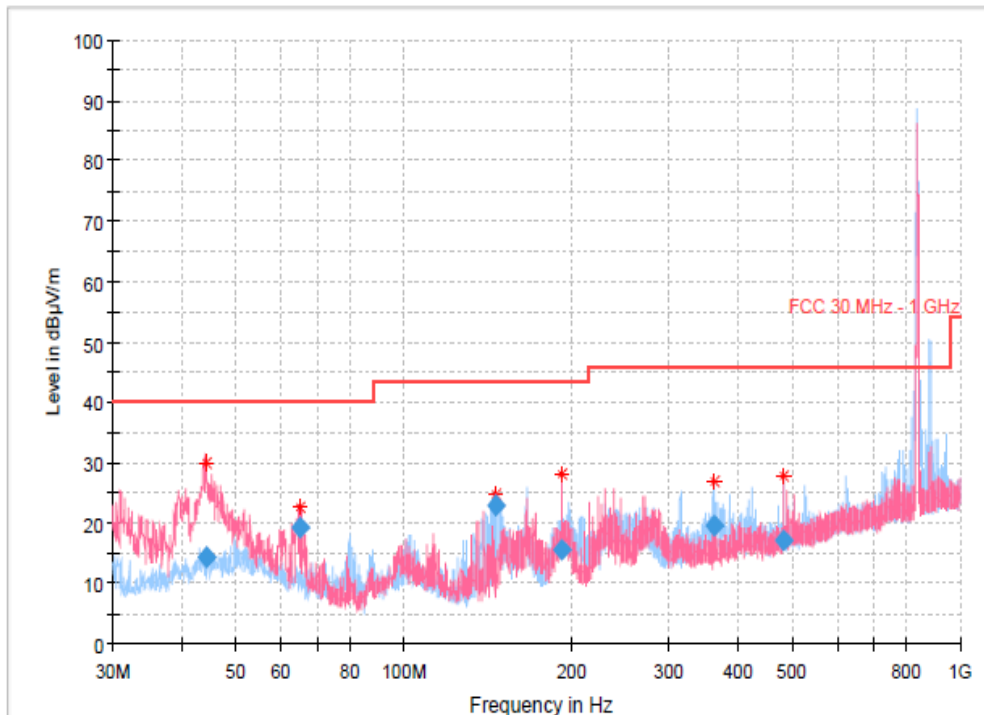
Note3) Emission was scanned 1 GHz to 6 GHz; No emissions were detected above the noise floor which was at least 20 dB below the specification limit.

Below 1 GHz (Mode1: UMTS Band 5 - Middle CHANNEL 881.6 MHz)

## Test Report

### Common Information

Project Number 200610K007  
Location 10 m SAC  
System: Below 1 GHz  
Environment 20.7 °C / 47.3 % R.H. / 100.2 kPa



### Final Result

| Frequency (MHz) | QuasiPeak (dBµV/m) | Limit (dBµV/m) | Margin (dB) | Height (cm) | Pol | Azimuth (deg) | Corr. (dB/m) |
|-----------------|--------------------|----------------|-------------|-------------|-----|---------------|--------------|
| 44.254000       | 14.41              | 40.00          | 25.59       | 100.0       | V   | 63.0          | -19.9        |
| 65.214500       | 19.17              | 40.00          | 20.83       | 100.0       | V   | 6.0           | -22.8        |
| 146.034000      | 23.05              | 43.50          | 20.45       | 200.0       | H   | 123.0         | -25.8        |
| 192.510000      | 15.57              | 43.50          | 27.93       | 200.0       | H   | 203.0         | -22.5        |
| 360.274000      | 19.50              | 46.00          | 26.50       | 100.0       | H   | 209.0         | -18.0        |
| 479.943000      | 17.15              | 46.00          | 28.85       | 200.0       | V   | 0.0           | -15.2        |

Note1) Two graphs measured for both Vertical and Horizontal of the Antenna are combined into one graph.

Note2) Unwanted emissions captured from 824 MHz to 849 MHz and from 869 MHz to 894 MHz and Harmonics were the TX and RX signals generated from the call-simulator.

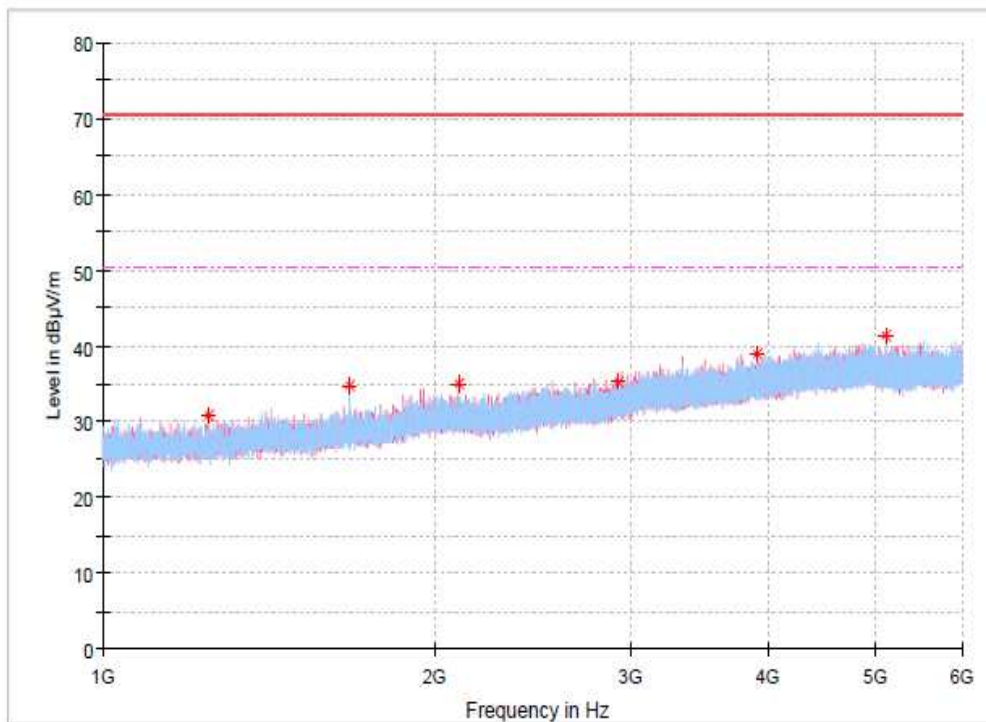


Above 1 GHz (Mode1: UMTS Band 5 - Middle CHANNEL 881.6 MHz)

# Test Report

## Common Information

Project Number 200610K007  
Location 10 m SAC  
System: Above 1 GHz  
Environment 20.7 °C / 47.3 % R.H. / 100.2 kPa



## Critical Freqs

| Frequency (MHz) | MaxPeak (dBµV/m) | Limit (dBµV/m) | Margin (dB) | Height (cm) | Pol | Azimuth (deg) | Corr. (dB/m) |
|-----------------|------------------|----------------|-------------|-------------|-----|---------------|--------------|
| 1246.625000     | 30.87            | 70.50          | 39.63       | 100.0       | H   | 73.0          | -11.1        |
| 1671.000000     | 34.76            | 70.50          | 35.74       | 100.0       | H   | 1.0           | -8.2         |
| 2098.375000     | 35.04            | 70.50          | 35.46       | 100.0       | V   | 190.0         | -6.1         |
| 2933.000000     | 35.33            | 70.50          | 35.17       | 100.0       | V   | 333.0         | -3.3         |
| 3917.375000     | 38.96            | 70.50          | 31.54       | 100.0       | V   | 249.0         | 0.7          |
| 5112.250000     | 41.44            | 70.50          | 29.06       | 100.0       | H   | 228.0         | 3.4          |

Note1) Two graphs measured for both Vertical and Horizontal of the Antenna are combined into one graph.

Note2) Unwanted emissions captured from 824 MHz to 849 MHz and from 869 MHz to 894 MHz and Harmonics were the TX and RX signals generated from the call-simulator.

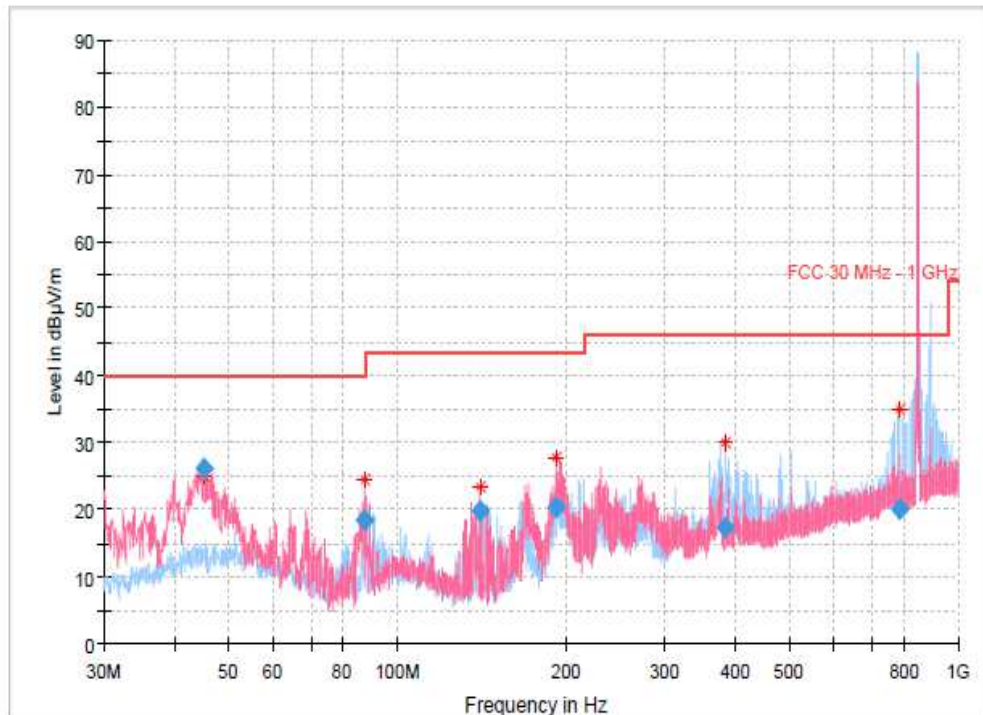
Note3) Emission was scanned 1 GHz to 6 GHz; No emissions were detected above the noise floor which was at least 20 dB below the specification limit.

Below 1 GHz (Mode1: UMTS Band 5 - High CHANNEL 891.6 MHz)

## Test Report

### Common Information

Project Number 200610K007  
Location 10 m SAC  
System: Below 1 GHz  
Environment 20.7 °C / 47.3 % R.H. / 100.2 kPa



### Final Result

| Frequency (MHz) | QuasiPeak (dBµV/m) | Limit (dBµV/m) | Margin (dB) | Height (cm) | Pol | Azimuth (deg) | Corr. (dB/m) |
|-----------------|--------------------|----------------|-------------|-------------|-----|---------------|--------------|
| 45.274000       | 26.23              | 40.00          | 13.77       | 100.0       | V   | 181.0         | -19.8        |
| 87.218000       | 18.45              | 40.00          | 21.55       | 100.0       | V   | 14.0          | -25.0        |
| 140.591000      | 19.84              | 43.50          | 23.66       | 100.0       | V   | 282.0         | -25.8        |
| 192.390000      | 20.34              | 43.50          | 23.16       | 100.0       | V   | 204.0         | -22.5        |
| 384.041500      | 17.35              | 46.00          | 28.65       | 100.0       | H   | 289.0         | -17.1        |
| 787.190500      | 20.16              | 46.00          | 25.84       | 100.0       | H   | 198.0         | -10.7        |

Note1) Two graphs measured for both Vertical and Horizontal of the Antenna are combined into one graph.

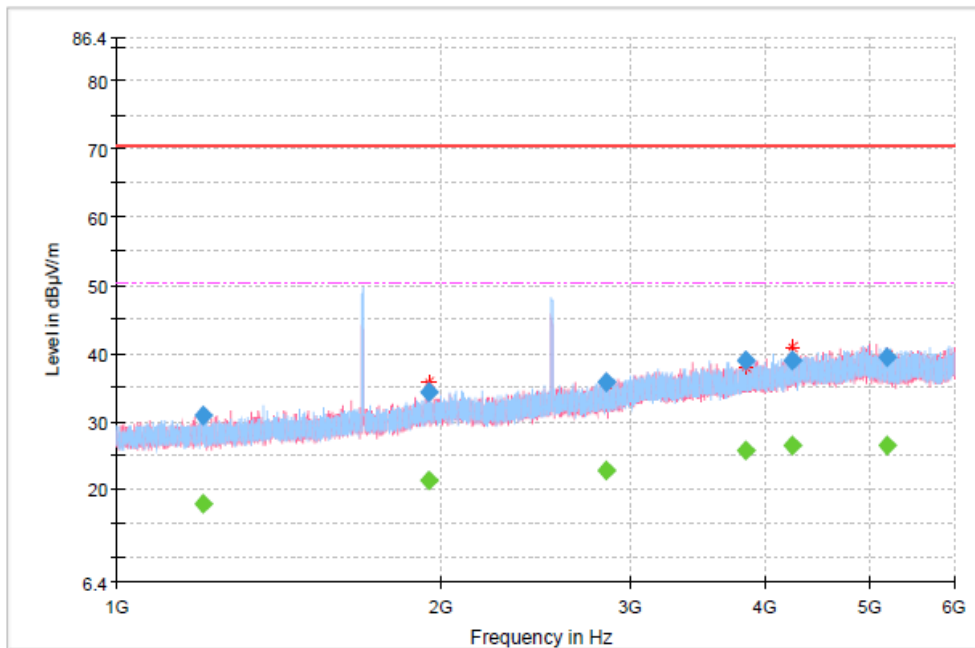
Note2) Unwanted emissions captured from 824 MHz to 849 MHz and from 869 MHz to 894 MHz and Harmonics were the TX and RX signals generated from the call-simulator.

Above 1 GHz (Mode1: UMTS Band 5 - High CHANNEL 891.6 MHz)

## Test Report

### Common Information

Project Number 200610K007  
Location 10 m SAC  
System: Above 1 GHz  
Environment 20.7 °C / 47.3 % R.H. / 100.2 kPa



### Final Result

| Frequency (MHz) | MaxPeak (dBμV/m) | CAverage (dBμV/m) | Limit (dBμV/m) | Margin (dB) | Height (cm) | Pol | Azimuth (deg) | Corr. (dB/m) |
|-----------------|------------------|-------------------|----------------|-------------|-------------|-----|---------------|--------------|
| 1203.925000     | 30.82            | ---               | 70.50          | 39.68       | 200.0       | H   | 286.0         | -11.3        |
| 1203.925000     | ---              | 17.99             | 50.50          | 32.51       | 200.0       | H   | 286.0         | -11.3        |
| 1952.450000     | ---              | 21.26             | 50.50          | 29.24       | 100.0       | V   | 118.0         | -6.6         |
| 1952.450000     | 34.23            | ---               | 70.50          | 36.27       | 100.0       | V   | 118.0         | -6.6         |
| 2848.000000     | 35.86            | ---               | 70.50          | 34.64       | 300.0       | H   | 66.0          | -3.8         |
| 2848.000000     | ---              | 22.74             | 50.50          | 27.76       | 300.0       | H   | 66.0          | -3.8         |
| 3846.425000     | ---              | 25.64             | 50.50          | 24.86       | 100.0       | V   | 358.0         | 0.5          |
| 3846.425000     | 39.03            | ---               | 70.50          | 31.47       | 100.0       | V   | 358.0         | 0.5          |
| 4247.800000     | 38.98            | ---               | 70.50          | 31.52       | 300.0       | H   | 245.0         | 1.9          |
| 4247.800000     | ---              | 26.39             | 50.50          | 24.11       | 300.0       | H   | 245.0         | 1.9          |
| 5201.575000     | 39.42            | ---               | 70.50          | 31.08       | 300.0       | H   | 13.0          | 3.3          |
| 5201.575000     | ---              | 26.53             | 50.50          | 23.97       | 300.0       | H   | 13.0          | 3.3          |

Note1) Two graphs measured for both Vertical and Horizontal of the Antenna are combined into one graph.

Note2) Unwanted emissions captured from 824 MHz to 849 MHz and from 869 MHz to 894 MHz and Harmonics were the TX and RX signals generated from the call-simulator.

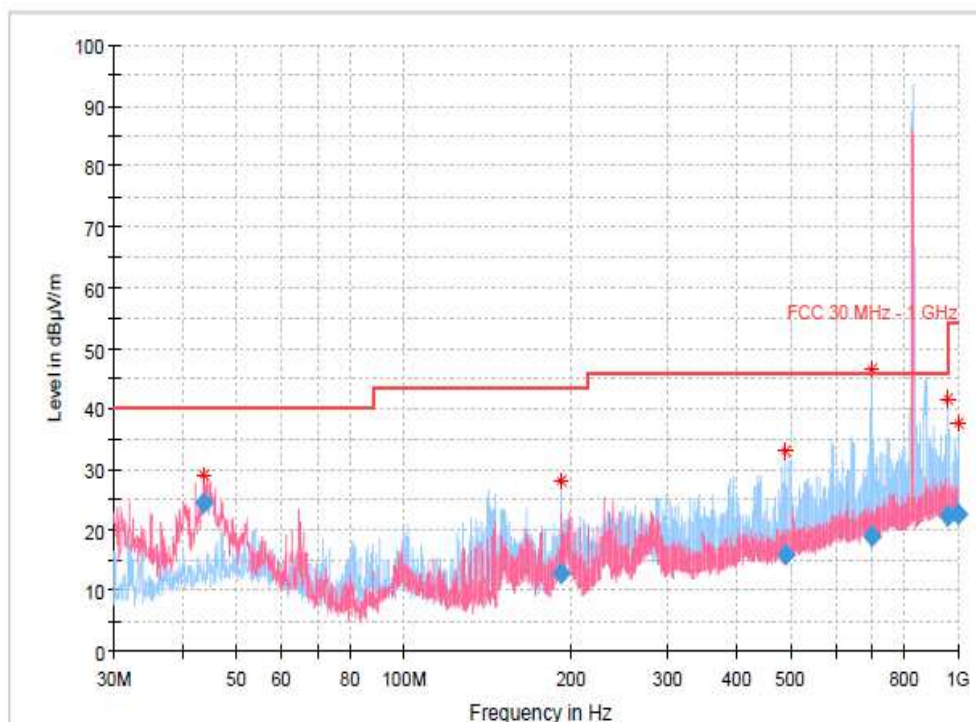
Note3) Emission was scanned 1 GHz to 6 GHz; No emissions were detected above the noise floor which was at least 20 dB below the specification limit.

Below 1 GHz (Mode2: LTE Band 5 - Low CHANNEL 874 MHz)

# Test Report

## Common Information

Project Number 200610K007  
Location 10 m SAC  
System: Below 1 GHz  
Environment 21.1 'C / 45.4 % R.H. / 100.3 kPa



## Final Result

| Frequency (MHz) | QuasiPeak (dBµV/m) | Limit (dBµV/m) | Margin (dB) | Height (cm) | Pol | Azimuth (deg) | Corr. (dB/m) |
|-----------------|--------------------|----------------|-------------|-------------|-----|---------------|--------------|
| 43.610500       | 24.44              | 40.00          | 15.56       | 100.0       | V   | 77.0          | -20.0        |
| 191.910000      | 12.83              | 43.50          | 30.67       | 100.0       | H   | 222.0         | -22.6        |
| 487.344000      | 16.03              | 46.00          | 29.97       | 100.0       | H   | 60.0          | -14.9        |
| 697.606000      | 18.83              | 46.00          | 27.17       | 100.0       | H   | 60.0          | -11.9        |
| 956.218000      | 22.22              | 46.00          | 23.78       | 100.0       | H   | 60.0          | -9.5         |
| 997.637000      | 22.70              | 54.00          | 31.30       | 100.0       | H   | 60.0          | -9.1         |

Note1) Two graphs measured for both Vertical and Horizontal of the Antenna are combined into one graph.

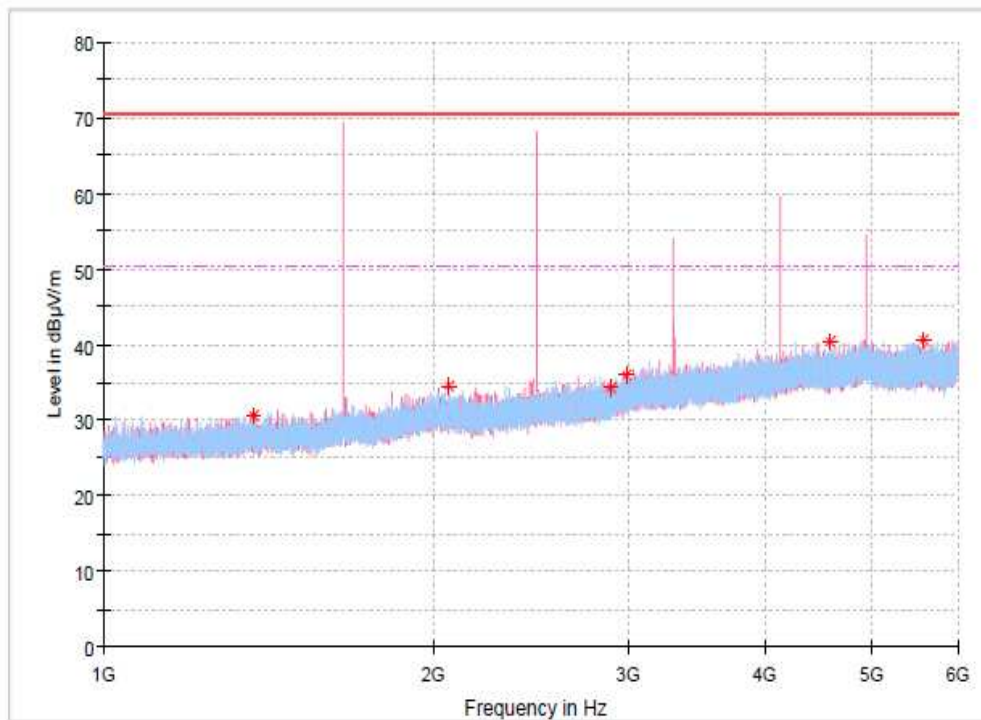
Note2) Unwanted emissions captured from 824 MHz to 849 MHz and from 869 MHz to 894 MHz and Harmonics were the TX and RX signals generated from the call-simulator.

Above 1 GHz (Mode2: LTE Band 5 - Low CHANNEL 874 MHz)

## Test Report

### Common Information

Project Number 200610K007  
Location 10 m SAC  
System: Above 1 GHz  
Environment 20.7 °C / 47.3 % R.H. / 100.2 kPa



### Critical Freqs

| Frequency (MHz) | MaxPeak (dBμV/m) | Limit (dBμV/m) | Margin (dB) | Height (cm) | Pol | Azimuth (deg) | Corr. (dB/m) |
|-----------------|------------------|----------------|-------------|-------------|-----|---------------|--------------|
| 1371.750000     | 30.54            | 70.50          | 39.96       | 100.0       | V   | 101.0         | -9.9         |
| 2065.875000     | 34.48            | 70.50          | 36.02       | 100.0       | H   | 189.0         | -6.1         |
| 2903.125000     | 34.24            | 70.50          | 36.26       | 100.0       | V   | 339.0         | -3.5         |
| 2992.625000     | 35.97            | 70.50          | 34.53       | 100.0       | H   | 305.0         | -2.8         |
| 4589.750000     | 40.28            | 70.50          | 30.22       | 100.0       | H   | 126.0         | 2.3          |
| 5586.750000     | 40.51            | 70.50          | 29.99       | 100.0       | V   | 0.0           | 4.2          |

Note1) Two graphs measured for both Vertical and Horizontal of the Antenna are combined into one graph.

Note2) Unwanted emissions captured from 824 MHz to 849 MHz and from 869 MHz to 894 MHz and Harmonics were the TX and RX signals generated from the call-simulator.

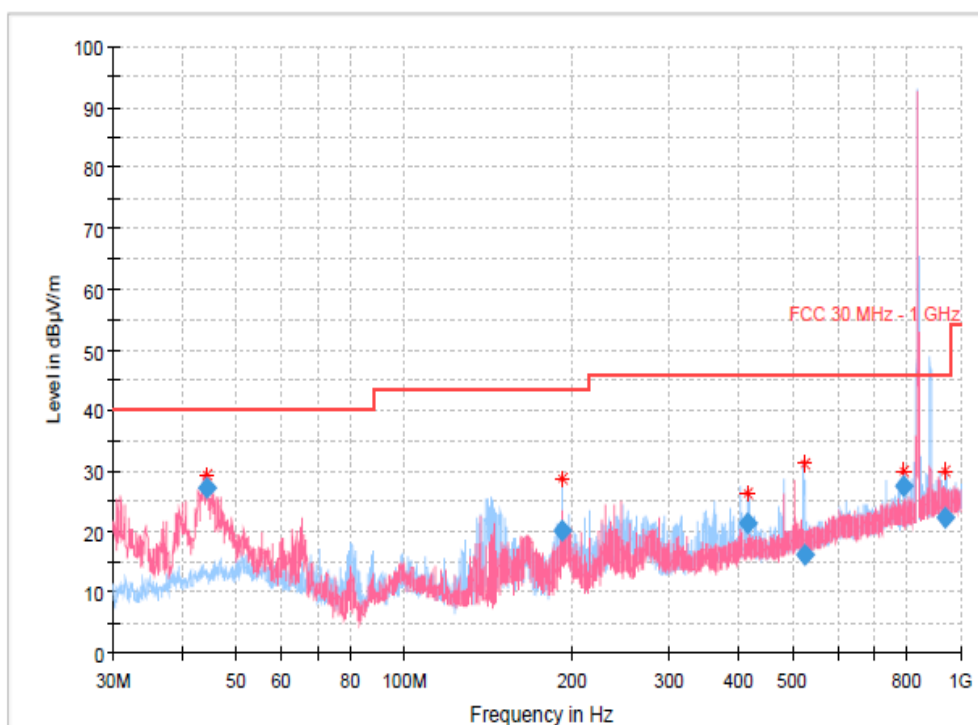
Note3) Emission was scanned 1 GHz to 6 GHz; No emissions were detected above the noise floor which was at least 20 dB below the specification limit.

Below 1 GHz (Mode2: LTE Band 5 - Middle CHANNEL 881.5 MHz)

## Test Report

### Common Information

Project Number: 200610K007  
Location: 10 m SAC  
System: Below 1 GHz  
Environment: 21.1 °C / 45.4 % R.H. / 100.3 kPa



### Final Result

| Frequency (MHz) | QuasiPeak (dBµV/m) | Limit (dBµV/m) | Margin (dB) | Height (cm) | Pol | Azimuth (deg) | Corr. (dB/m) |
|-----------------|--------------------|----------------|-------------|-------------|-----|---------------|--------------|
| 44.277000       | 27.17              | 40.00          | 12.83       | 100.0       | V   | 113.0         | -19.9        |
| 192.350000      | 20.07              | 43.50          | 23.43       | 100.0       | H   | 231.0         | -22.6        |
| 414.921500      | 21.41              | 46.00          | 24.59       | 100.0       | H   | 0.0           | -16.2        |
| 522.589000      | 16.10              | 46.00          | 29.90       | 100.0       | H   | 78.0          | -14.4        |
| 787.150500      | 27.43              | 46.00          | 18.57       | 100.0       | H   | 145.0         | -10.7        |
| 940.470000      | 22.38              | 46.00          | 23.62       | 100.0       | H   | 115.0         | -9.3         |

Note1) Two graphs measured for both Vertical and Horizontal of the Antenna are combined into one graph.

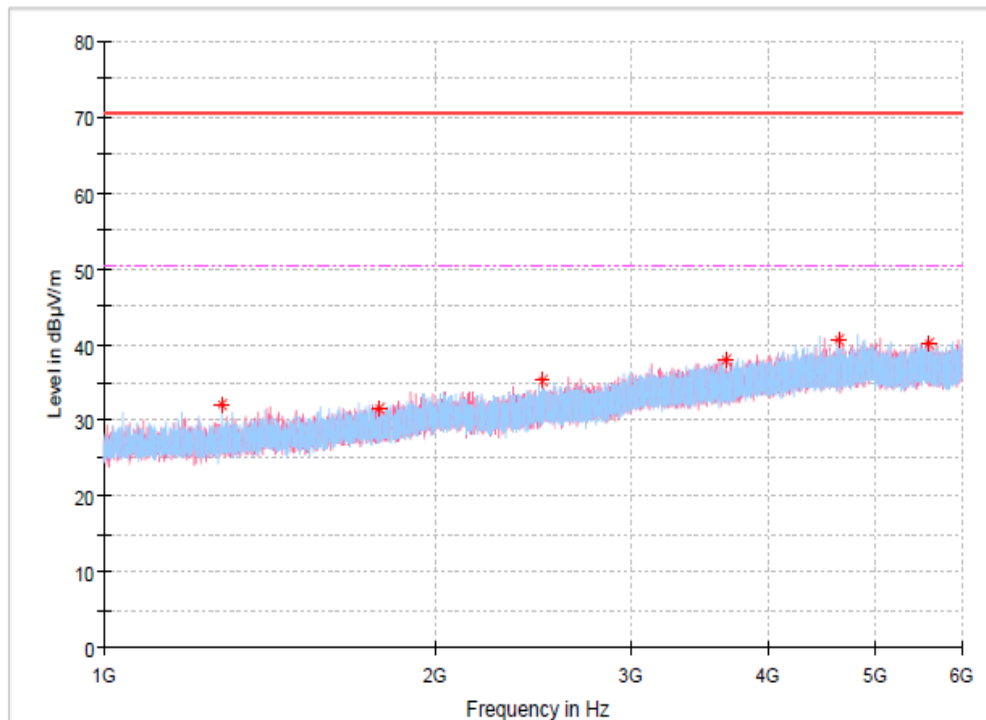
Note2) Unwanted emissions captured from 824 MHz to 849 MHz and from 869 MHz to 894 MHz and Harmonics were the TX and RX signals generated from the call-simulator.

Above 1 GHz (Mode2: LTE Band 5 - Middle CHANNEL 881.5 MHz)

## Test Report

### Common Information

Project Number 200610K007  
Location 10 m SAC  
System: Above 1 GHz  
Environment 20.7 °C / 47.3 % R.H. / 100.2 kPa



### Critical Freqs

| Frequency (MHz) | MaxPeak (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Height (cm) | Pol | Azimuth (deg) | Corr. (dB/m) |
|-----------------|------------------|----------------|-------------|-------------|-----|---------------|--------------|
| 1278.500000     | 32.10            | 70.50          | 38.40       | 100.0       | H   | 156.0         | -10.9        |
| 1777.375000     | 31.47            | 70.50          | 39.03       | 100.0       | V   | 1.0           | -8.0         |
| 2500.750000     | 35.31            | 70.50          | 35.19       | 100.0       | H   | 319.0         | -4.5         |
| 3666.875000     | 37.86            | 70.50          | 32.64       | 100.0       | V   | 0.0           | -0.3         |
| 4645.625000     | 40.50            | 70.50          | 30.00       | 100.0       | H   | 50.0          | 2.4          |
| 5596.500000     | 40.24            | 70.50          | 30.26       | 100.0       | H   | 85.0          | 4.2          |

Note1) Two graphs measured for both Vertical and Horizontal of the Antenna are combined into one graph.

Note2) Unwanted emissions captured from 824 MHz to 849 MHz and from 869 MHz to 894 MHz and Harmonics were the TX and RX signals generated from the call-simulator.

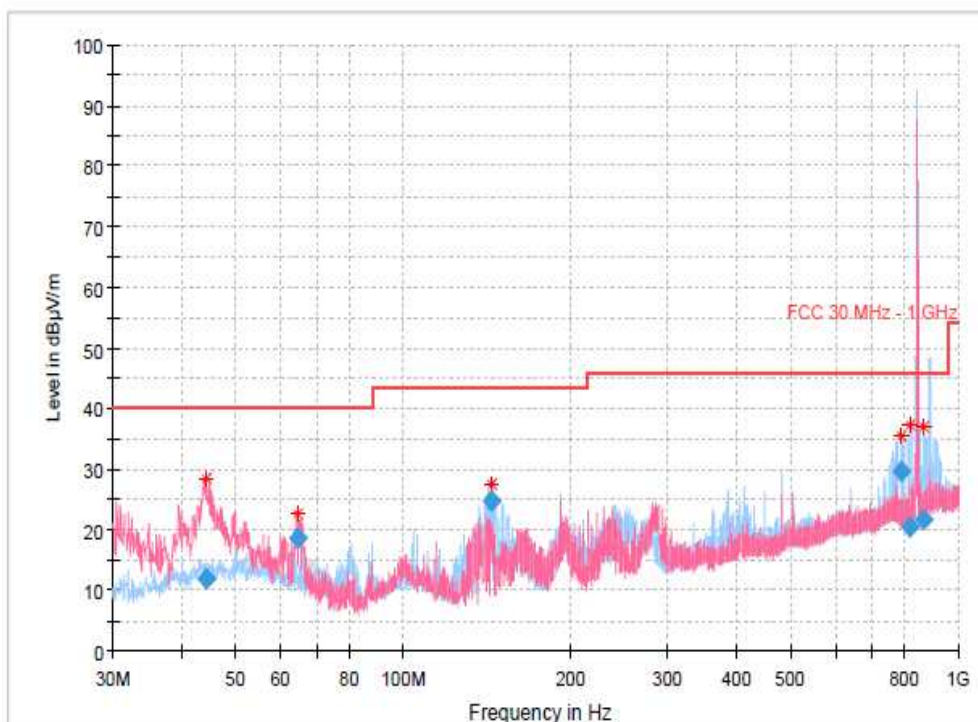
Note3) Emission was scanned 1 GHz to 6 GHz; No emissions were detected above the noise floor which was at least 20 dB below the specification limit.

Below 1 GHz (Mode2: LTE Band 5 - High CHANNEL 889 MHz)

## Test Report

### Common Information

Project Number 200414K003  
Location 10 m SAC  
System: Below 30 MHz  
Environment 21.1 °C / 45.4 % R.H. / 100.3 kPa



### Final Result

| Frequency (MHz) | QuasiPeak (dBµV/m) | Limit (dBµV/m) | Margin (dB) | Height (cm) | Pol | Azimuth (deg) | Corr. (dB/m) |
|-----------------|--------------------|----------------|-------------|-------------|-----|---------------|--------------|
| 44.259000       | 11.93              | 40.00          | 28.07       | 200.0       | V   | 0.0           | -19.9        |
| 64.435000       | 18.73              | 40.00          | 21.27       | 100.0       | V   | 42.0          | -22.6        |
| 144.217500      | 24.87              | 43.50          | 18.63       | 200.0       | H   | 126.0         | -25.8        |
| 787.230500      | 29.55              | 46.00          | 16.45       | 100.0       | H   | 204.0         | -10.7        |
| 817.931000      | 20.41              | 46.00          | 25.59       | 100.0       | H   | 204.0         | -10.4        |
| 864.006000      | 21.61              | 46.00          | 24.39       | 100.0       | H   | 204.0         | -9.8         |

Note1) Two graphs measured for both Vertical and Horizontal of the Antenna are combined into one graph.

Note2) Unwanted emissions captured from 824 MHz to 849 MHz and from 869 MHz to 894 MHz and Harmonics were the TX and RX signals generated from the call-simulator.

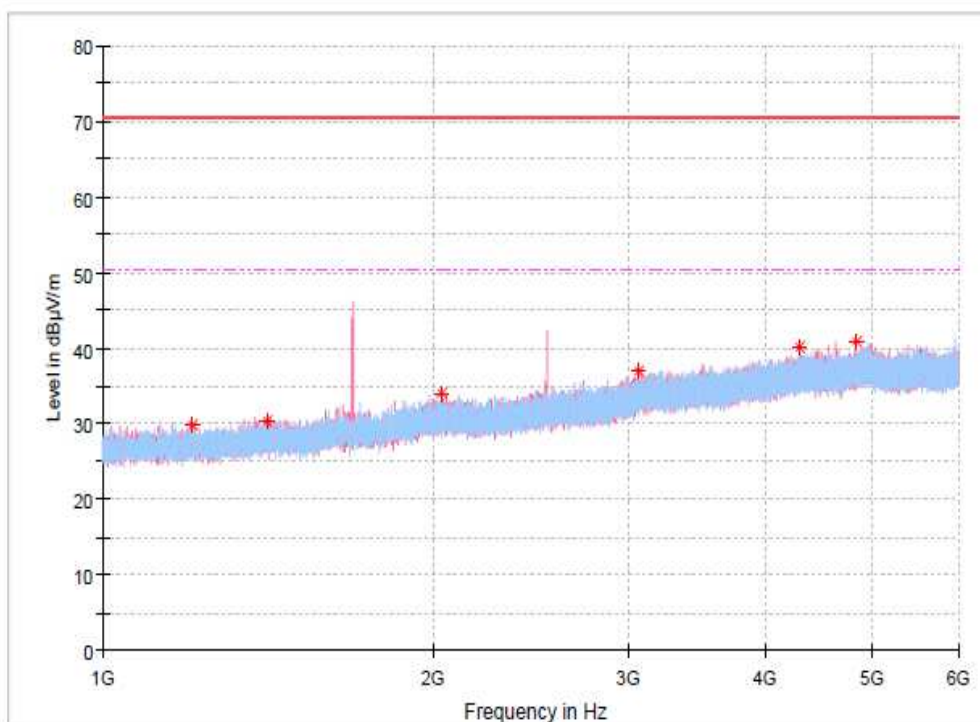


Above 1 GHz (Mode2: LTE Band 5 - High CHANNEL 889 MHz)

# Test Report

## Common Information

Project Number 200610K007  
Location 10 m SAC  
System: Above 1 GHz  
Environment 20.7 °C / 47.3 % R.H. / 100.2 kPa



## Critical Freqs

| Frequency (MHz) | MaxPeak (dBµV/m) | Limit (dBµV/m) | Margin (dB) | Height (cm) | Pol | Azimuth (deg) | Corr. (dB/m) |
|-----------------|------------------|----------------|-------------|-------------|-----|---------------|--------------|
| 1207.500000     | 29.74            | 70.50          | 40.76       | 100.0       | V   | 298.0         | -11.3        |
| 1409.125000     | 30.35            | 70.50          | 40.15       | 100.0       | H   | 172.0         | -9.6         |
| 2030.750000     | 33.93            | 70.50          | 36.57       | 100.0       | V   | 204.0         | -6.2         |
| 3068.625000     | 36.97            | 70.50          | 33.53       | 100.0       | V   | 159.0         | -2.0         |
| 4294.375000     | 40.11            | 70.50          | 30.39       | 100.0       | H   | 151.0         | 2.1          |
| 4840.750000     | 40.74            | 70.50          | 29.76       | 100.0       | V   | 222.0         | 3.1          |

Note1) Two graphs measured for both Vertical and Horizontal of the Antenna are combined into one graph.

Note2) Unwanted emissions captured from 824 MHz to 849 MHz and from 869 MHz to 894 MHz and Harmonics were the TX and RX signals generated from the call-simulator.

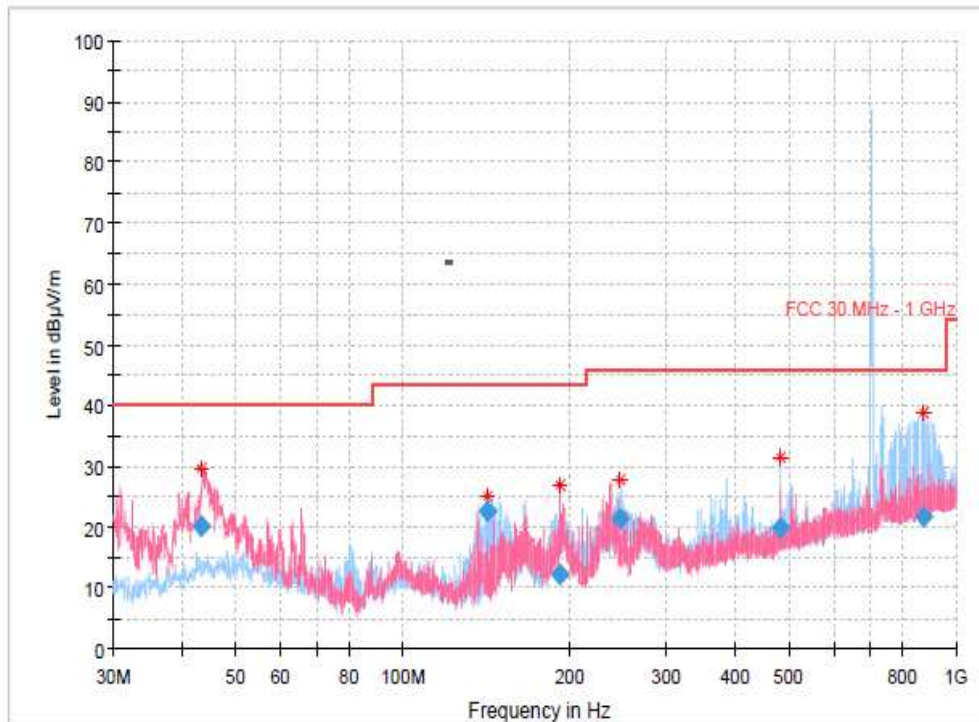
Note3) Emission was scanned 1 GHz to 6 GHz; No emissions were detected above the noise floor which was at least 20 dB below the specification limit.

Below 1 GHz (Mode3: LTE Band 12 - Low CHANNEL 733 MHz)

# Test Report

## Common Information

Project Number 200610K007  
Location 10 m SAC  
System: Below 1 GHz  
Environment 20.7 °C / 47.3 % R.H. / 100.2 kPa



## Final Result

| Frequency (MHz) | QuasiPeak (dBµV/m) | Limit (dBµV/m) | Margin (dB) | Height (cm) | Pol | Azimuth (deg) | Corr. (dB/m) |
|-----------------|--------------------|----------------|-------------|-------------|-----|---------------|--------------|
| 43.325500       | 20.07              | 40.00          | 19.93       | 100.0       | V   | 171.0         | -20.0        |
| 142.700500      | 22.52              | 43.50          | 20.98       | 200.0       | H   | 125.0         | -25.8        |
| 191.990000      | 12.36              | 43.50          | 31.14       | 100.0       | V   | 208.0         | -22.6        |
| 247.439000      | 21.34              | 46.00          | 24.66       | 100.0       | H   | 2.0           | -20.3        |
| 479.991500      | 20.02              | 46.00          | 25.98       | 200.0       | H   | 250.0         | -15.2        |
| 871.677500      | 21.82              | 46.00          | 24.18       | 100.0       | H   | 46.0          | -9.7         |

Note1) Two graphs measured for both Vertical and Horizontal of the Antenna are combined into one graph.

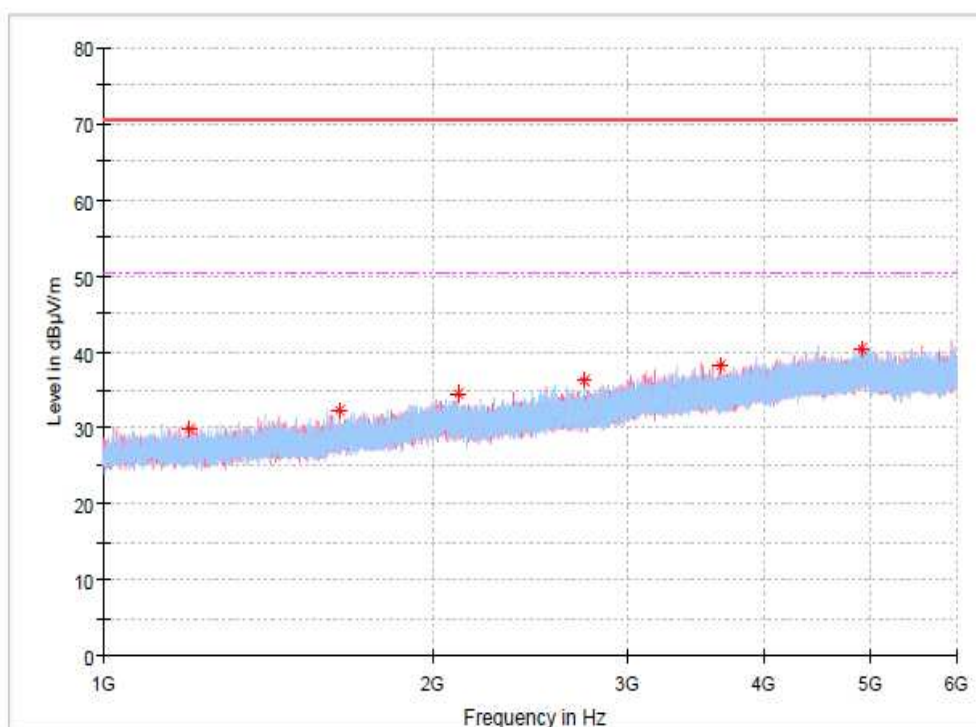
Note2) Unwanted emissions captured from 689 MHz to 716 MHz and from 728 MHz to 746 MHz and Harmonics were the TX and RX signals generated from the call-simulator.

Above 1 GHz (Mode3: LTE Band 12 - Low CHANNEL 733 MHz)

## Test Report

### Common Information

Project Number 200610K007  
Location 10 m SAC  
System: Above 1 GHz  
Environment 20.7 °C / 47.3 % R.H. / 100.2 kPa



### Critical Freqs

| Frequency (MHz) | MaxPeak (dBμV/m) | Limit (dBμV/m) | Margin (dB) | Height (cm) | Pol | Azimuth (deg) | Corr. (dB/m) |
|-----------------|------------------|----------------|-------------|-------------|-----|---------------|--------------|
| 1198.500000     | 29.90            | 70.50          | 40.60       | 100.0       | H   | 253.0         | -11.3        |
| 1640.750000     | 32.23            | 70.50          | 38.27       | 100.0       | V   | 19.0          | -8.3         |
| 2110.500000     | 34.41            | 70.50          | 36.09       | 100.0       | H   | 82.0          | -6.1         |
| 2746.125000     | 36.29            | 70.50          | 34.21       | 100.0       | H   | 180.0         | -4.1         |
| 3659.625000     | 38.18            | 70.50          | 32.32       | 100.0       | H   | 352.0         | -0.4         |
| 4925.250000     | 40.36            | 70.50          | 30.14       | 100.0       | V   | 80.0          | 3.4          |

Note1) Two graphs measured for both Vertical and Horizontal of the Antenna are combined into one graph.

Note2) Unwanted emissions captured from 689 MHz to 716 MHz and from 728 MHz to 746 MHz and Harmonics were the TX and RX signals generated from the call-simulator.

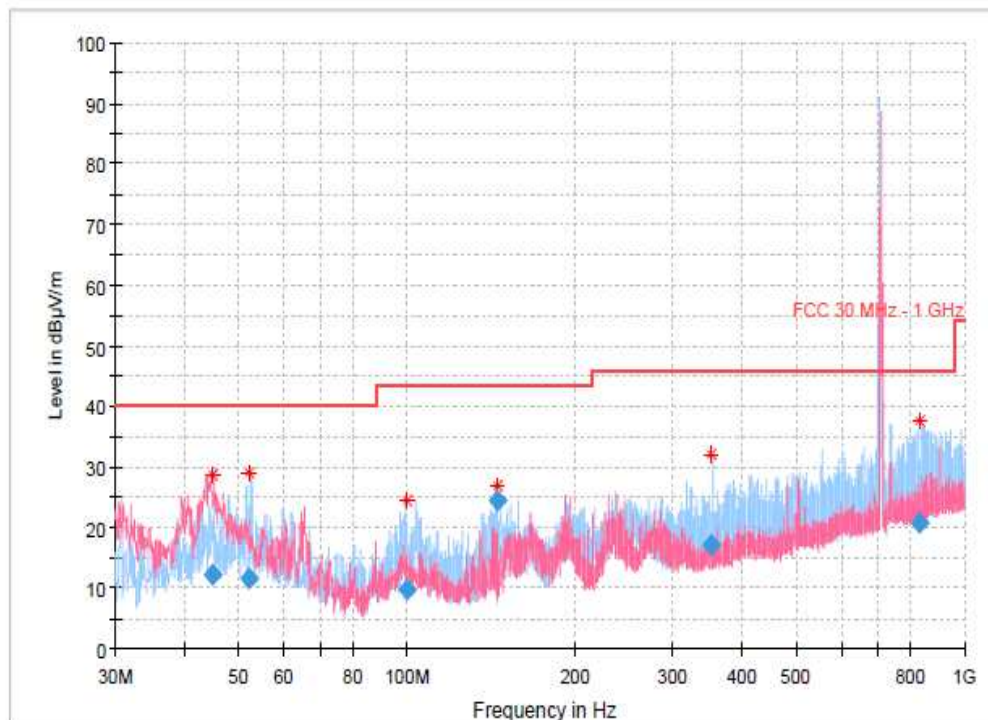
Note3) Emission was scanned 1 GHz to 6 GHz; No emissions were detected above the noise floor which was at least 20 dB below the specification limit.

Below 1 GHz (Mode3: LTE Band 12 - Middle CHANNEL 737 MHz)

## Test Report

### Common Information

Project Number 200610K007  
Location 10 m SAC  
System: Below 1 GHz  
Environment 20.7 °C / 47.3 % R.H. / 100.2 kPa



### Final Result

| Frequency (MHz) | QuasiPeak (dBµV/m) | Limit (dBµV/m) | Margin (dB) | Height (cm) | Pol | Azimuth (deg) | Corr. (dB/m) |
|-----------------|--------------------|----------------|-------------|-------------|-----|---------------|--------------|
| 44.740500       | 12.32              | 40.00          | 27.68       | 100.0       | V   | 0.0           | -19.8        |
| 52.161000       | 11.58              | 40.00          | 28.42       | 100.0       | H   | 183.0         | -20.0        |
| 99.778000       | 9.91               | 43.50          | 33.59       | 100.0       | H   | 183.0         | -22.2        |
| 145.085500      | 24.61              | 43.50          | 18.89       | 200.0       | H   | 99.0          | -25.8        |
| 352.262000      | 16.98              | 46.00          | 29.02       | 100.0       | H   | 183.0         | -17.5        |
| 832.785500      | 20.93              | 46.00          | 25.07       | 200.0       | H   | 183.0         | -10.3        |

Note1) Two graphs measured for both Vertical and Horizontal of the Antenna are combined into one graph.

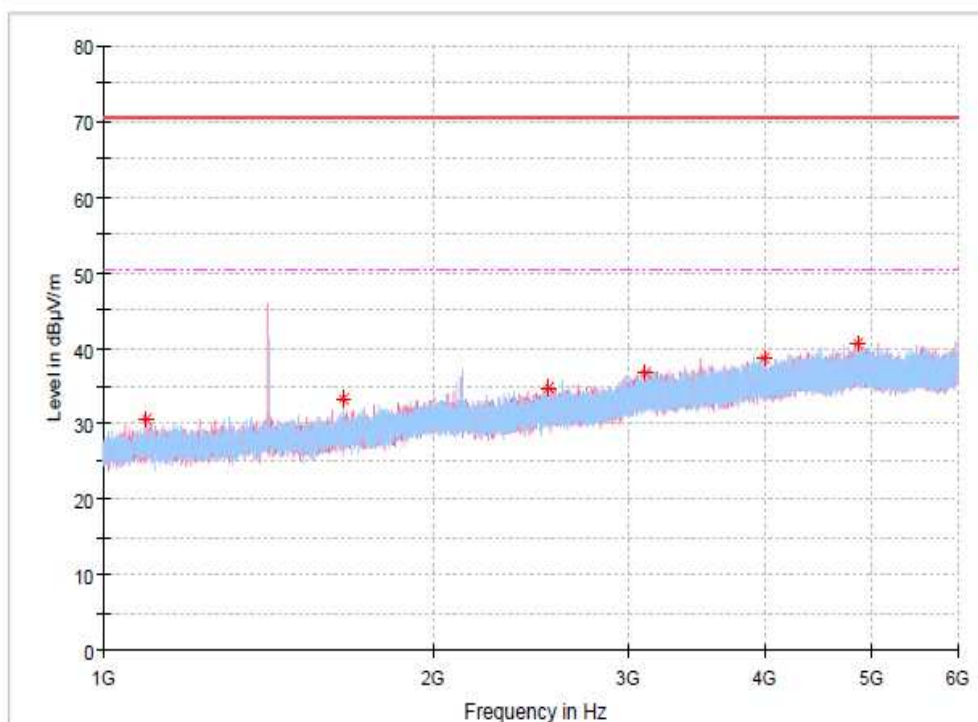
Note2) Unwanted emissions captured from 689 MHz to 716 MHz and from 728 MHz to 746 MHz and Harmonics were the TX and RX signals generated from the call-simulator.

Above 1 GHz (Mode3: LTE Band 12 - Middle CHANNEL 737 MHz)

## Test Report

### Common Information

Project Number 200610K007  
Location 10 m SAC  
System: Above 1 GHz  
Environment 20.7 °C / 47.3 % R.H. / 100.2 kPa



### Critical Freqs

| Frequency (MHz) | MaxPeak (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Height (cm) | Pol | Azimuth (deg) | Corr. (dB/m) |
|-----------------|------------------|----------------|-------------|-------------|-----|---------------|--------------|
| 1093.625000     | 30.50            | 70.50          | 40.00       | 100.0       | V   | 208.0         | -11.6        |
| 1651.750000     | 33.25            | 70.50          | 37.25       | 100.0       | H   | 354.0         | -8.2         |
| 2541.000000     | 34.76            | 70.50          | 35.74       | 100.0       | H   | 28.0          | -4.3         |
| 3114.875000     | 36.65            | 70.50          | 33.85       | 100.0       | H   | 329.0         | -1.7         |
| 3995.625000     | 38.61            | 70.50          | 31.89       | 100.0       | H   | 145.0         | 0.8          |
| 4870.375000     | 40.55            | 70.50          | 29.95       | 100.0       | H   | 285.0         | 3.3          |

Note1) Two graphs measured for both Vertical and Horizontal of the Antenna are combined into one graph.

Note2) Unwanted emissions captured from 689 MHz to 716 MHz and from 728 MHz to 746 MHz and Harmonics were the TX and RX signals generated from the call-simulator.

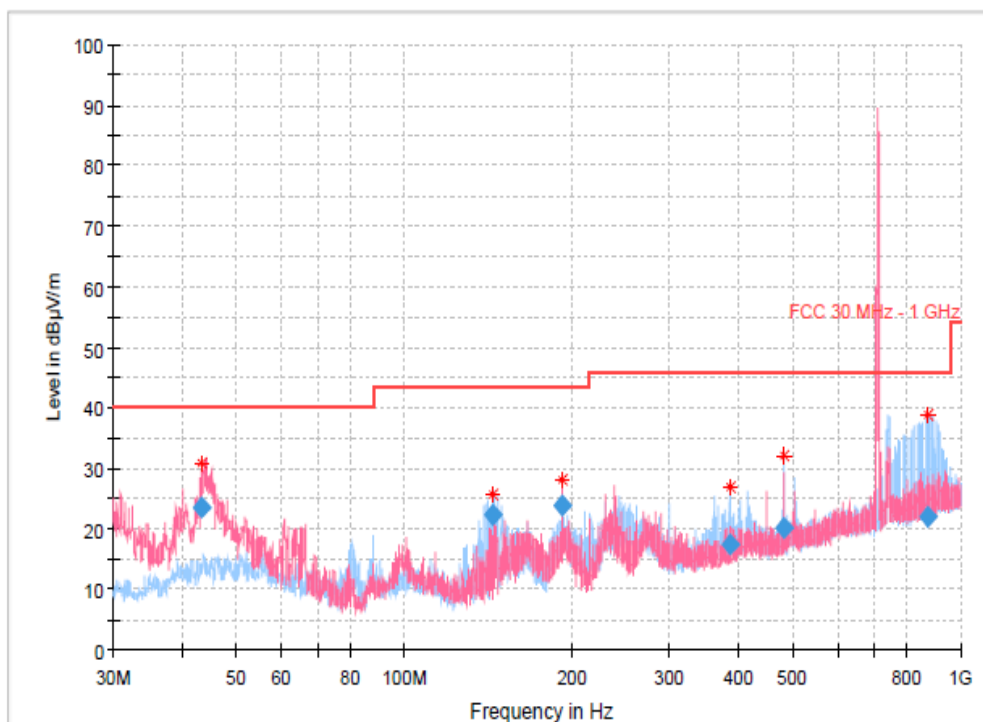
Note3) Emission was scanned 1 GHz to 6 GHz; No emissions were detected above the noise floor which was at least 20 dB below the specification limit.

Below 1 GHz (Mode3: LTE Band 12 - High CHANNEL 741 MHz)

## Test Report

### Common Information

Project Number 200610K007  
Location 10 m SAC  
System: Below 1 GHz  
Environment 20.7 °C / 47.3 % R.H. / 100.2 kPa



### Final Result

| Frequency (MHz) | QuasiPeak (dBµV/m) | Limit (dBµV/m) | Margin (dB) | Height (cm) | Pol | Azimuth (deg) | Corr. (dB/m) |
|-----------------|--------------------|----------------|-------------|-------------|-----|---------------|--------------|
| 43.285500       | 23.55              | 40.00          | 16.45       | 100.0       | V   | 120.0         | -20.0        |
| 144.565500      | 22.22              | 43.50          | 21.28       | 200.0       | H   | 292.0         | -25.8        |
| 191.950000      | 23.98              | 43.50          | 19.52       | 100.0       | V   | 214.0         | -22.6        |
| 384.650000      | 17.30              | 46.00          | 28.70       | 100.0       | H   | 14.0          | -17.1        |
| 479.991500      | 20.07              | 46.00          | 25.93       | 200.0       | H   | 238.0         | -15.2        |
| 871.357500      | 22.10              | 46.00          | 23.90       | 100.0       | H   | 48.0          | -9.7         |

Note1) Two graphs measured for both Vertical and Horizontal of the Antenna are combined into one graph.

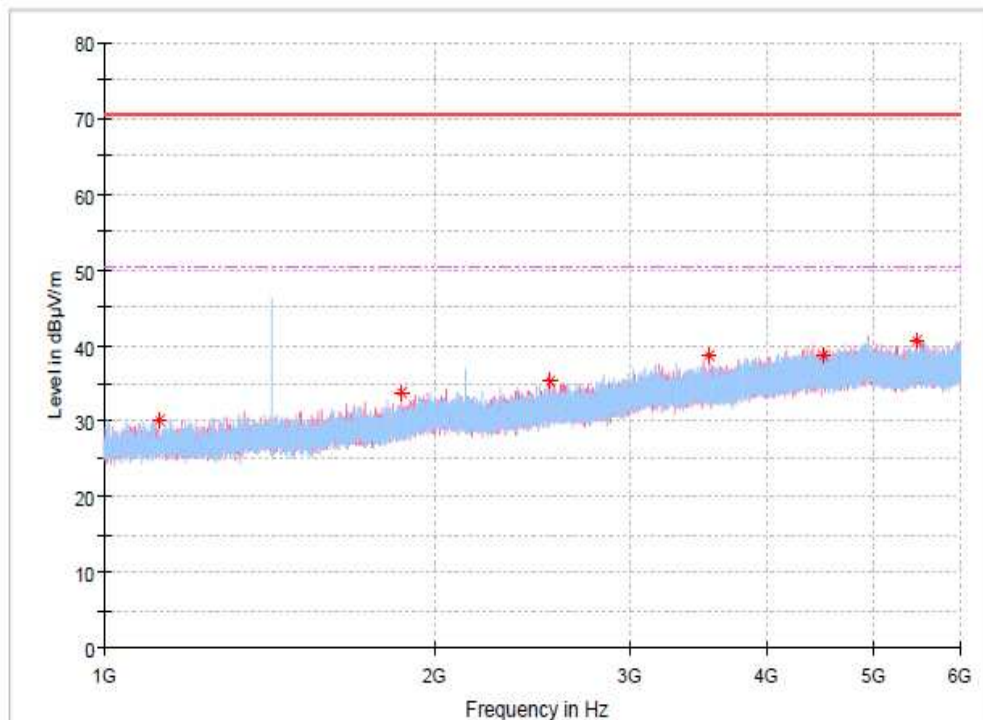
Note2) Unwanted emissions captured from 689 MHz to 716 MHz and from 728 MHz to 746 MHz and Harmonics were the TX and RX signals generated from the call-simulator.

Above 1 GHz (Mode3: LTE Band 12 - High CHANNEL 741 MHz)

## Test Report

### Common Information

Project Number 200610K007  
Location 10 m SAC  
System: Above 1 GHz  
Environment 20.7 °C / 47.3 % R.H. / 100.2 kPa



### Critical Freqs

| Frequency (MHz) | MaxPeak (dBµV/m) | Limit (dBµV/m) | Margin (dB) | Height (cm) | Pol | Azimuth (deg) | Corr. (dB/m) |
|-----------------|------------------|----------------|-------------|-------------|-----|---------------|--------------|
| 1121.625000     | 30.15            | 70.50          | 40.35       | 100.0       | H   | 207.0         | -11.6        |
| 1861.500000     | 33.72            | 70.50          | 36.78       | 100.0       | V   | 211.0         | -7.4         |
| 2547.875000     | 35.17            | 70.50          | 35.33       | 100.0       | V   | 105.0         | -4.4         |
| 3553.875000     | 38.71            | 70.50          | 31.79       | 100.0       | H   | 192.0         | -0.4         |
| 4506.500000     | 38.61            | 70.50          | 31.89       | 100.0       | H   | 270.0         | 2.3          |
| 5483.875000     | 40.49            | 70.50          | 30.01       | 100.0       | V   | 109.0         | 4.0          |

Note1) Two graphs measured for both Vertical and Horizontal of the Antenna are combined into one graph.

Note2) Unwanted emissions captured from 689 MHz to 716 MHz and from 728 MHz to 746 MHz and Harmonics were the TX and RX signals generated from the call-simulator.

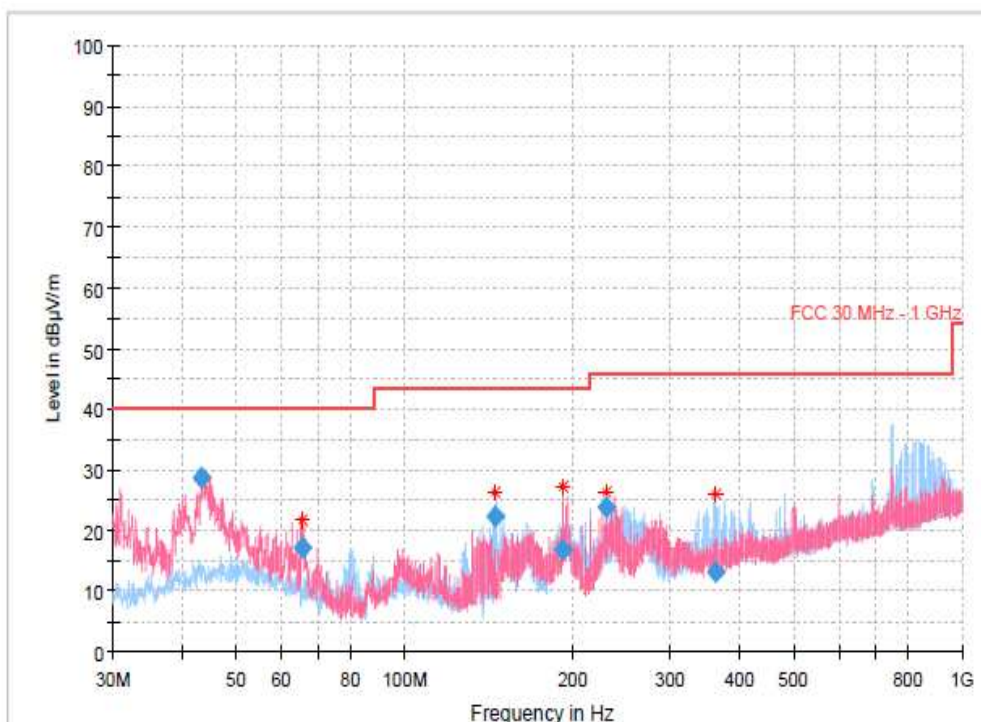
Note3) Emission was scanned 1 GHz to 6 GHz; No emissions were detected above the noise floor which was at least 20 dB below the specification limit.

Below 1 GHz (Mode4: LTE Band 13 - Low CHANNEL 743.5 MHz)

## Test Report

### Common Information

Project Number 200610K007  
Location 10 m SAC  
System: Below 1 GHz  
Environment 20.7 °C / 47.3 % R.H. / 100.2 kPa



### Final Result

| Frequency (MHz) | QuasiPeak (dBμV/m) | Limit (dBμV/m) | Margin (dB) | Height (cm) | Pol | Azimuth (deg) | Corr. (dB/m) |
|-----------------|--------------------|----------------|-------------|-------------|-----|---------------|--------------|
| 43.240500       | 28.87              | 40.00          | 11.13       | 100.0       | V   | 14.0          | -20.0        |
| 65.442500       | 17.26              | 40.00          | 22.74       | 100.0       | V   | 344.0         | -22.9        |
| 145.606000      | 22.19              | 43.50          | 21.31       | 200.0       | H   | 124.0         | -25.8        |
| 191.870000      | 16.93              | 43.50          | 26.57       | 100.0       | H   | 254.0         | -22.7        |
| 230.402000      | 23.79              | 46.00          | 22.21       | 100.0       | V   | 23.0          | -21.3        |
| 360.042500      | 13.03              | 46.00          | 32.97       | 100.0       | H   | 273.0         | -18.0        |

Note1) Two graphs measured for both Vertical and Horizontal of the Antenna are combined into one graph.

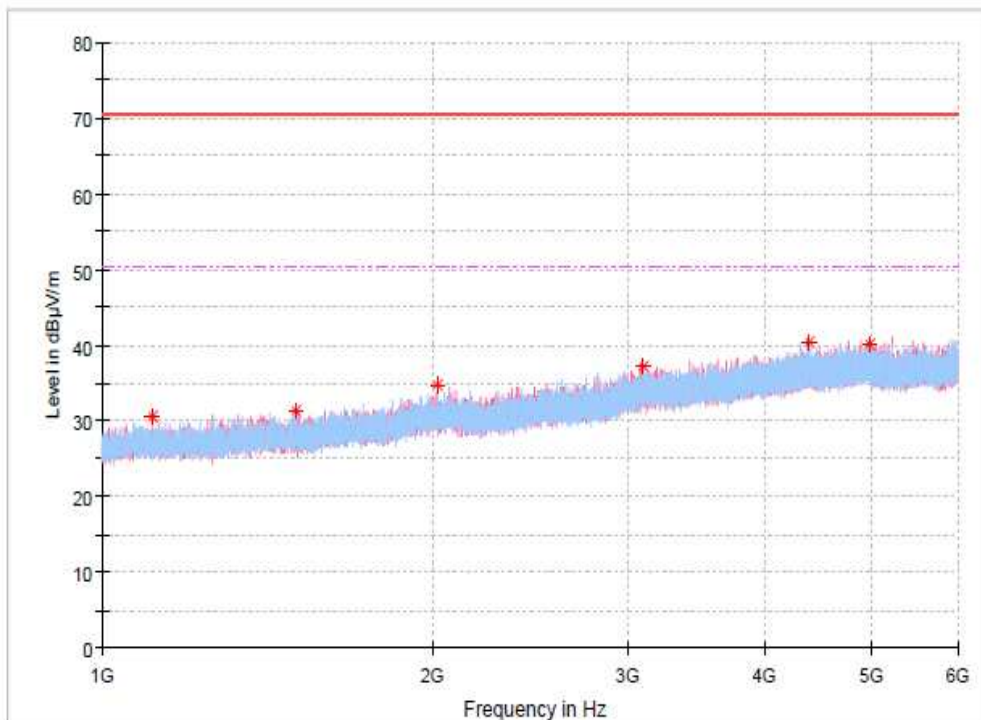
Note2) Unwanted emissions captured from 777 MHz to 787 MHz and from 746 MHz to 756 MHz and Harmonics were the TX and RX signals generated from the call-simulator.

Above 1 GHz (Mode4: LTE Band 13 - Low CHANNEL 743.5 MHz)

## Test Report

### Common Information

Project Number 200610K007  
Location 10 m SAC  
System: Above 1 GHz  
Environment 20.7 °C / 47.3 % R.H. / 100.2 kPa



### Critical Freqs

| Frequency (MHz) | MaxPeak (dBµV/m) | Limit (dBµV/m) | Margin (dB) | Height (cm) | Pol | Azimuth (deg) | Corr. (dB/m) |
|-----------------|------------------|----------------|-------------|-------------|-----|---------------|--------------|
| 1109.750000     | 30.54            | 70.50          | 39.96       | 100.0       | V   | 171.0         | -11.6        |
| 1500.500000     | 31.40            | 70.50          | 39.10       | 100.0       | H   | 274.0         | -9.0         |
| 2016.875000     | 34.83            | 70.50          | 35.67       | 100.0       | H   | 323.0         | -6.2         |
| 3105.500000     | 37.18            | 70.50          | 33.32       | 100.0       | V   | 224.0         | -1.7         |
| 4390.375000     | 40.36            | 70.50          | 30.14       | 100.0       | H   | 313.0         | 2.3          |
| 4989.375000     | 40.02            | 70.50          | 30.48       | 100.0       | V   | 218.0         | 3.5          |

Note1) Two graphs measured for both Vertical and Horizontal of the Antenna are combined into one graph.

Note2) Unwanted emissions captured from 777 MHz to 787 MHz and from 746 MHz to 756 MHz and Harmonics were the TX and RX signals generated from the call-simulator.

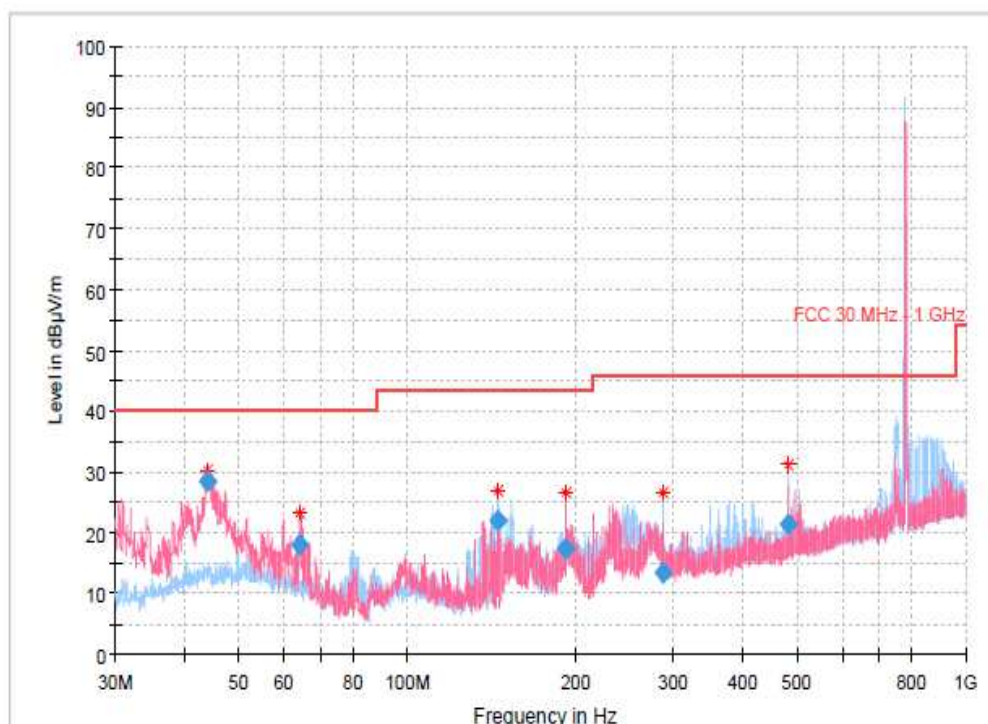
Note3) Emission was scanned 1 GHz to 6 GHz; No emissions were detected above the noise floor which was at least 20 dB below the specification limit.

Below 1 GHz (Mode4: LTE Band 13 - Middle CHANNEL 751 MHz)

## Test Report

### Common Information

Project Number 200610K007  
Location 10 m SAC  
System: Below 1 GHz  
Environment 20.7 °C / 47.3 % R.H. / 100.2 kPa



### Final Result

| Frequency (MHz) | QuasiPeak (dBµV/m) | Limit (dBµV/m) | Margin (dB) | Height (cm) | Pol | Azimuth (deg) | Corr. (dB/m) |
|-----------------|--------------------|----------------|-------------|-------------|-----|---------------|--------------|
| 43.779000       | 28.31              | 40.00          | 11.69       | 100.0       | V   | 78.0          | -20.0        |
| 63.986500       | 18.08              | 40.00          | 21.92       | 100.0       | V   | 41.0          | -22.4        |
| 145.521000      | 22.07              | 43.50          | 21.43       | 200.0       | H   | 301.0         | -25.8        |
| 192.390000      | 17.47              | 43.50          | 26.03       | 100.0       | V   | 0.0           | -22.5        |
| 288.131500      | 13.45              | 46.00          | 32.56       | 100.0       | H   | 71.0          | -19.7        |
| 479.991500      | 21.44              | 46.00          | 24.56       | 200.0       | H   | 28.0          | -15.2        |

Note1) Two graphs measured for both Vertical and Horizontal of the Antenna are combined into one graph.

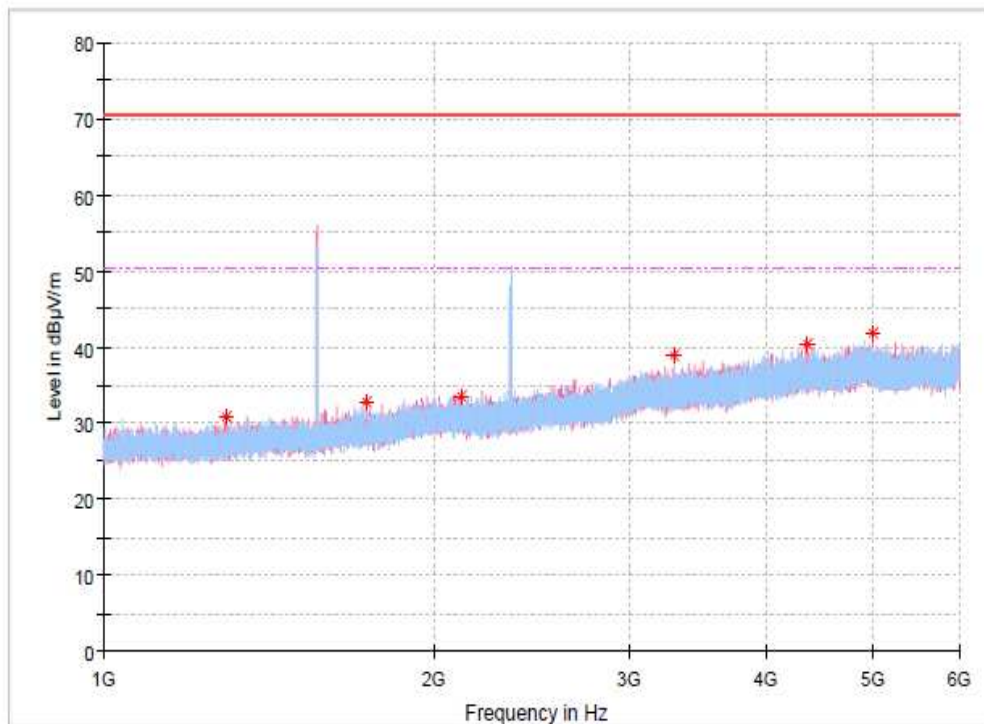
Note2) Unwanted emissions captured from 777 MHz to 787 MHz and from 746 MHz to 756 MHz and Harmonics were the TX and RX signals generated from the call-simulator.

Above 1 GHz (Mode4: LTE Band 13 - Middle CHANNEL 751 MHz)

## Test Report

### Common Information

Project Number: 200610K007  
Location: 10 m SAC  
System: Above 1 GHz  
Environment: 20.7 °C / 47.3 % R.H. / 100.2 kPa



### Critical Freqs

| Frequency (MHz) | MaxPeak (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Height (cm) | Pol | Azimuth (deg) | Corr. (dB/m) |
|-----------------|------------------|----------------|-------------|-------------|-----|---------------|--------------|
| 1294.000000     | 30.72            | 70.50          | 39.78       | 100.0       | V   | 62.0          | -10.8        |
| 1732.000000     | 32.90            | 70.50          | 37.60       | 100.0       | V   | 279.0         | -8.1         |
| 2113.375000     | 33.41            | 70.50          | 37.09       | 100.0       | V   | 291.0         | -6.1         |
| 3299.750000     | 38.84            | 70.50          | 31.66       | 100.0       | H   | 159.0         | -1.4         |
| 4370.375000     | 40.35            | 70.50          | 30.15       | 100.0       | V   | 180.0         | 2.3          |
| 5007.375000     | 41.79            | 70.50          | 28.71       | 100.0       | V   | 208.0         | 3.5          |

Note1) Two graphs measured for both Vertical and Horizontal of the Antenna are combined into one graph.

Note2) Unwanted emissions captured from 777 MHz to 787 MHz and from 746 MHz to 756 MHz and Harmonics were the TX and RX signals generated from the call-simulator.

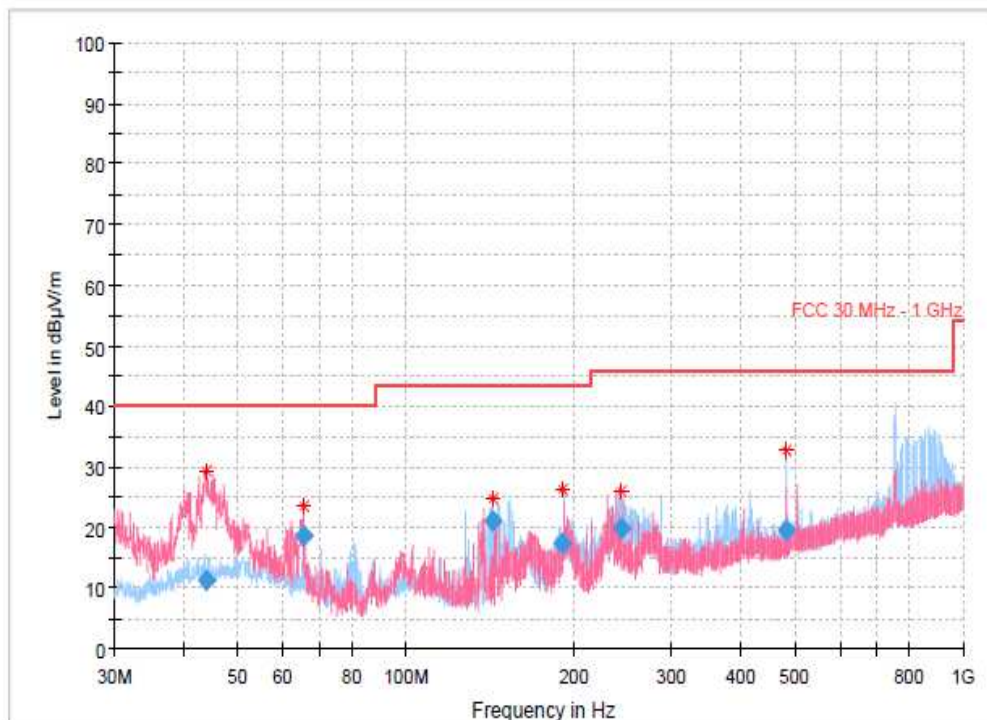
Note3) Emission was scanned 1 GHz to 6 GHz; No emissions were detected above the noise floor which was at least 20 dB below the specification limit.

Below 1 GHz (Mode4: LTE Band 13 - High CHANNEL 753.5 MHz)

## Test Report

### Common Information

Project Number 200610K007  
Location 10 m SAC  
System: Below 1 GHz  
Environment 20.7 °C / 47.3 % R.H. / 100.2 kPa



### Final Result

| Frequency (MHz) | QuasiPeak (dBµV/m) | Limit (dBµV/m) | Margin (dB) | Height (cm) | Pol | Azimuth (deg) | Corr. (dB/m) |
|-----------------|--------------------|----------------|-------------|-------------|-----|---------------|--------------|
| 43.725500       | 11.21              | 40.00          | 28.79       | 200.0       | H   | 97.0          | -20.0        |
| 65.502000       | 18.67              | 40.00          | 21.33       | 100.0       | V   | 192.0         | -22.9        |
| 143.468000      | 21.08              | 43.50          | 22.42       | 200.0       | H   | 97.0          | -25.8        |
| 191.390000      | 17.36              | 43.50          | 26.14       | 200.0       | H   | 30.0          | -22.8        |
| 244.262000      | 19.92              | 46.00          | 26.08       | 100.0       | H   | 67.0          | -20.5        |
| 479.991500      | 19.58              | 46.00          | 26.43       | 200.0       | H   | 26.0          | -15.2        |

Note1) Two graphs measured for both Vertical and Horizontal of the Antenna are combined into one graph.

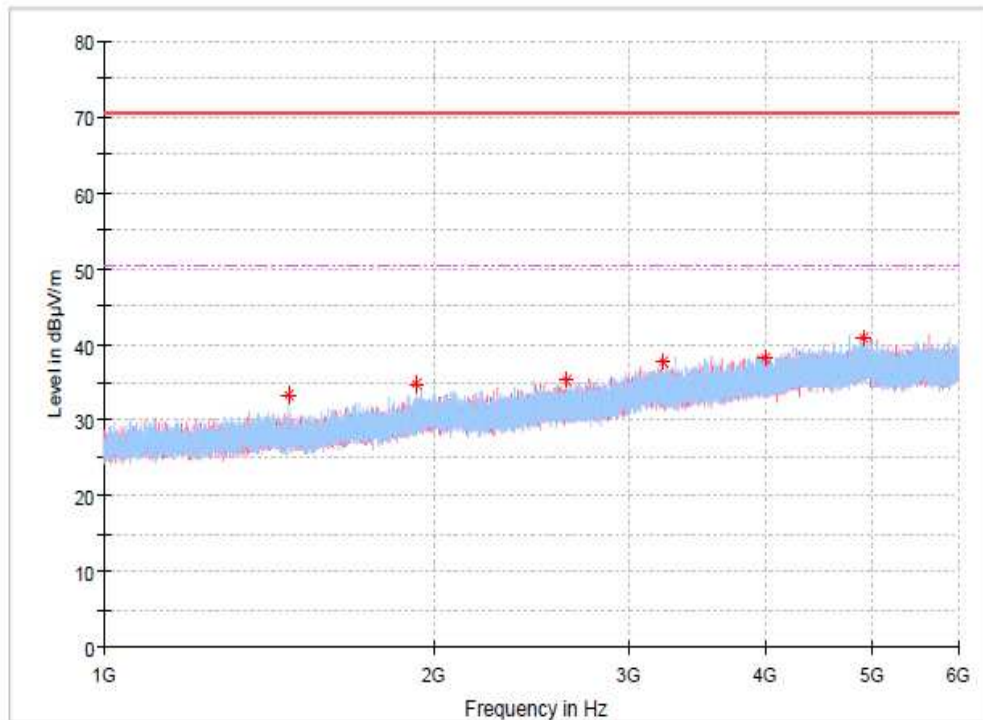
Note2) Unwanted emissions captured from 777 MHz to 787 MHz and from 746 MHz to 756 MHz and Harmonics were the TX and RX signals generated from the call-simulator.

Above 1 GHz (Mode4: LTE Band 13 - High CHANNEL 753.5 MHz)

## Test Report

### Common Information

Project Number 200610K007  
Location 10 m SAC  
System: Above 1 GHz  
Environment 20.7 °C / 47.3 % R.H. / 100.2 kPa



### Critical Freqs

| Frequency (MHz) | MaxPeak (dBµV/m) | Limit (dBµV/m) | Margin (dB) | Height (cm) | Pol | Azimuth (deg) | Corr. (dB/m) |
|-----------------|------------------|----------------|-------------|-------------|-----|---------------|--------------|
| 1471.875000     | 33.34            | 70.50          | 37.16       | 100.0       | H   | 42.0          | -9.3         |
| 1927.625000     | 34.63            | 70.50          | 35.87       | 100.0       | H   | 242.0         | -6.8         |
| 2634.625000     | 35.29            | 70.50          | 35.21       | 100.0       | V   | 28.0          | -4.0         |
| 3234.500000     | 37.68            | 70.50          | 32.82       | 100.0       | H   | 188.0         | -1.5         |
| 4001.125000     | 38.16            | 70.50          | 32.34       | 100.0       | H   | 209.0         | 0.8          |
| 4910.750000     | 40.74            | 70.50          | 29.76       | 100.0       | V   | 305.0         | 3.4          |

Note1) Two graphs measured for both Vertical and Horizontal of the Antenna are combined into one graph.

Note2) Unwanted emissions captured from 777 MHz to 787 MHz and from 746 MHz to 756 MHz and Harmonics were the TX and RX signals generated from the call-simulator.

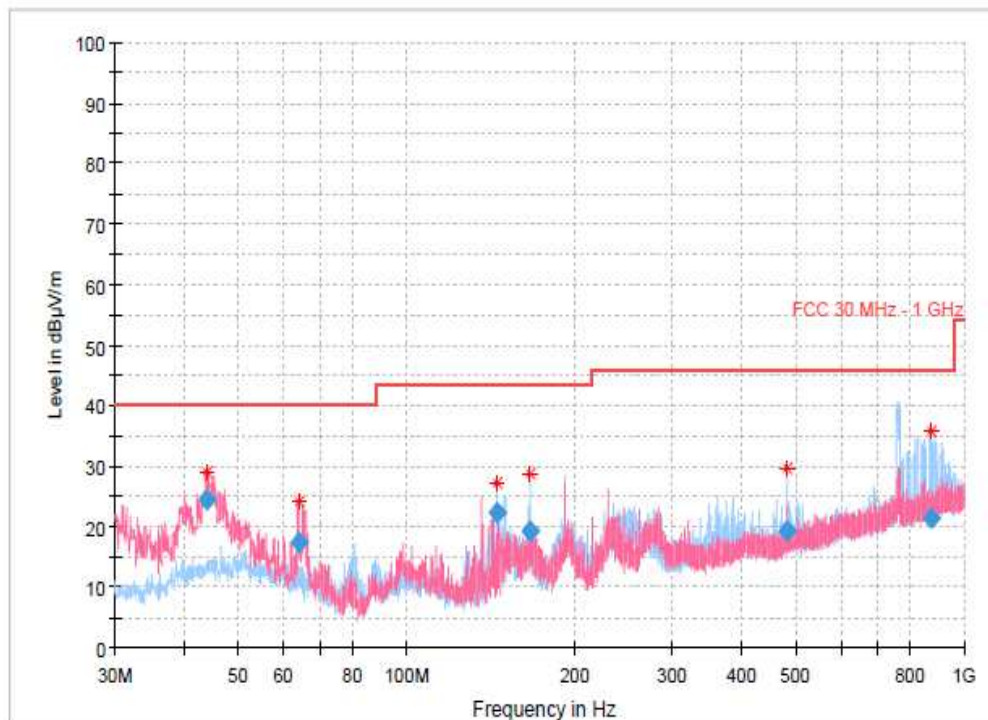
Note3) Emission was scanned 1 GHz to 6 GHz; No emissions were detected above the noise floor which was at least 20 dB below the specification limit.

Below 1 GHz (Mode5: LTE Band 14 - Low CHANNEL 760.5 MHz)

## Test Report

### Common Information

Project Number 200610K007  
Location 10 m SAC  
System: Below 1 GHz  
Environment 20.7 °C / 47.3 % R.H. / 100.2 kPa



### Final Result

| Frequency (MHz) | QuasiPeak (dBμV/m) | Limit (dBμV/m) | Margin (dB) | Height (cm) | Pol | Azimuth (deg) | Corr. (dB/m) |
|-----------------|--------------------|----------------|-------------|-------------|-----|---------------|--------------|
| 43.762000       | 24.57              | 40.00          | 15.43       | 100.0       | V   | 106.0         | -20.0        |
| 64.030000       | 17.28              | 40.00          | 22.72       | 100.0       | V   | 0.0           | -22.4        |
| 145.367000      | 22.31              | 43.50          | 21.19       | 200.0       | H   | 96.0          | -25.8        |
| 166.442500      | 19.23              | 43.50          | 24.27       | 200.0       | H   | 230.0         | -24.8        |
| 479.991500      | 19.19              | 46.00          | 26.81       | 200.0       | H   | 217.0         | -15.2        |
| 871.669000      | 21.50              | 46.00          | 24.50       | 100.0       | H   | 0.0           | -9.7         |

Note1) Two graphs measured for both Vertical and Horizontal of the Antenna are combined into one graph.

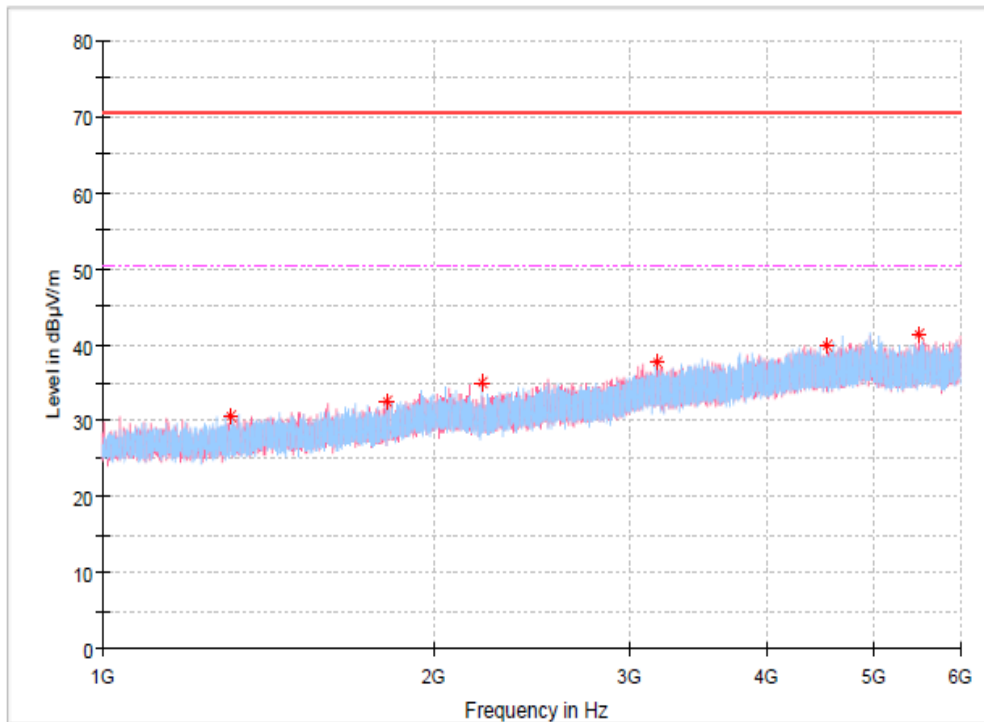
Note2) Unwanted emissions captured from 788 MHz to 798 MHz and from 758 MHz to 768 MHz and Harmonics were the TX and RX signals generated from the call-simulator.

Above 1 GHz (Mode5: LTE Band 14 - Low CHANNEL 760.5 MHz)

## Test Report

### Common Information

Project Number 200610K007  
Location 10 m SAC  
System: Above 1 GHz  
Environment 20.7 °C / 47.3 % R.H. / 100.2 kPa



### Critical Freqs

| Frequency (MHz) | MaxPeak (dBµV/m) | Limit (dBµV/m) | Margin (dB) | Height (cm) | Pol | Azimuth (deg) | Corr. (dB/m) |
|-----------------|------------------|----------------|-------------|-------------|-----|---------------|--------------|
| 1305.750000     | 30.52            | 70.50          | 39.98       | 100.0       | H   | 202.0         | -10.7        |
| 1811.125000     | 32.53            | 70.50          | 37.97       | 100.0       | H   | 324.0         | -7.8         |
| 2209.125000     | 35.01            | 70.50          | 35.49       | 100.0       | H   | 2.0           | -6.4         |
| 3182.000000     | 37.65            | 70.50          | 32.85       | 100.0       | V   | 245.0         | -1.5         |
| 4546.625000     | 39.77            | 70.50          | 30.73       | 100.0       | H   | 52.0          | 2.4          |
| 5509.750000     | 41.24            | 70.50          | 29.26       | 100.0       | V   | 137.0         | 4.1          |

Note1) Two graphs measured for both Vertical and Horizontal of the Antenna are combined into one graph.

Note2) Unwanted emissions captured from 788 MHz to 798 MHz and from 758 MHz to 768 MHz and Harmonics were the TX and RX signals generated from the call-simulator.

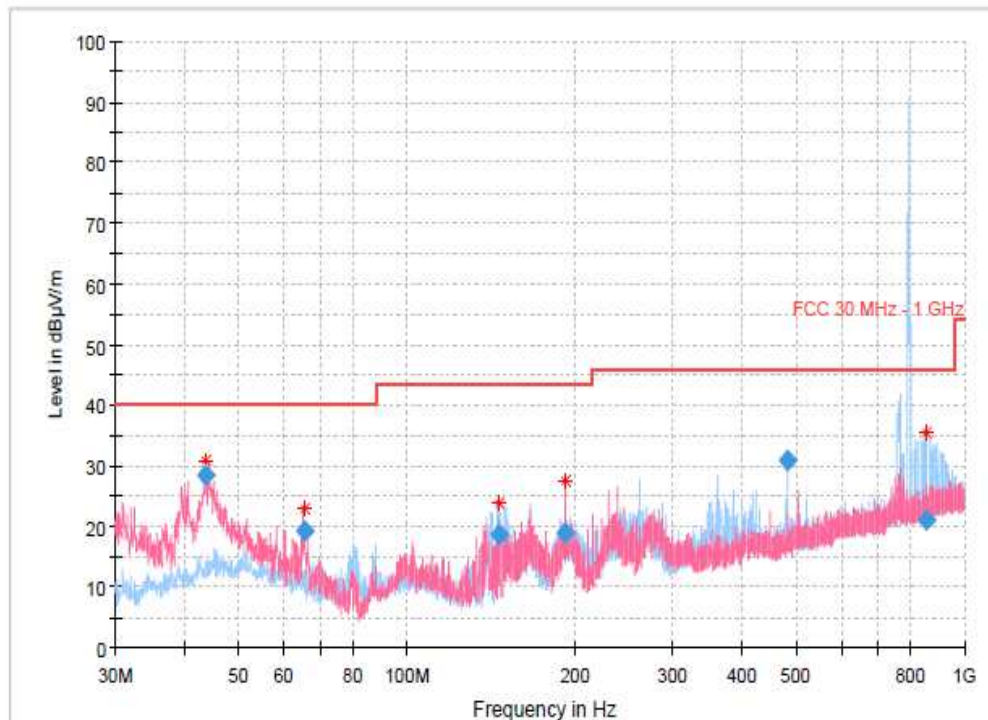
Note3) Emission was scanned 1 GHz to 6 GHz; No emissions were detected above the noise floor which was at least 20 dB below the specification limit.

Below 1 GHz (Mode5: LTE Band 14 - Middle CHANNEL 763 MHz)

# Test Report

## Common Information

Project Number 200610K007  
Location 10 m SAC  
System: Below 1 GHz  
Environment 20.7 °C / 47.3 % R.H. / 100.2 kPa



## Final Result

| Frequency (MHz) | QuasiPeak (dBμV/m) | Limit (dBμV/m) | Margin (dB) | Height (cm) | Pol | Azimuth (deg) | Corr. (dB/m) |
|-----------------|--------------------|----------------|-------------|-------------|-----|---------------|--------------|
| 43.690500       | 28.38              | 40.00          | 11.62       | 100.0       | V   | 0.0           | -20.0        |
| 65.345500       | 19.18              | 40.00          | 20.82       | 100.0       | V   | 12.0          | -22.8        |
| 146.018000      | 18.74              | 43.50          | 24.76       | 200.0       | H   | 273.0         | -25.8        |
| 192.350000      | 19.05              | 43.50          | 24.45       | 200.0       | H   | 208.0         | -22.6        |
| 479.991500      | 30.87              | 46.00          | 15.13       | 200.0       | H   | 233.0         | -15.2        |
| 856.703000      | 21.20              | 46.00          | 24.80       | 100.0       | H   | 0.0           | -10.0        |

Note1) Two graphs measured for both Vertical and Horizontal of the Antenna are combined into one graph.

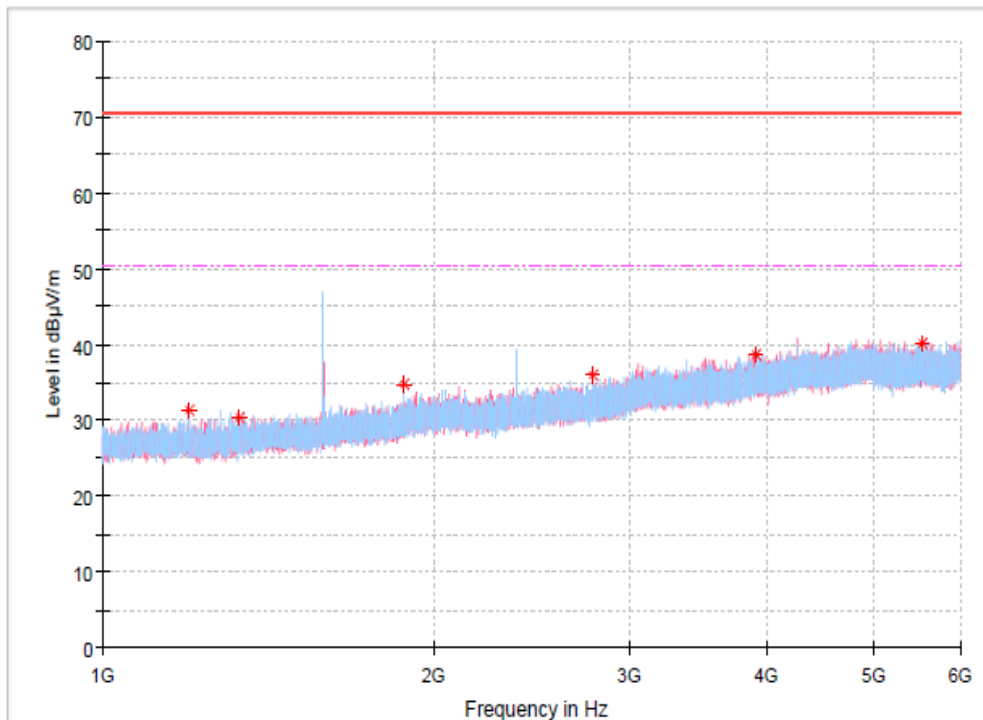
Note2) Unwanted emissions captured from 788 MHz to 798 MHz and from 758 MHz to 768 MHz and Harmonics were the TX and RX signals generated from the call-simulator.

Above 1 GHz (Mode5: LTE Band 14 - Middle CHANNEL 763 MHz)

## Test Report

### Common Information

Project Number 200610K007  
Location 10 m SAC  
System: Above 1 GHz  
Environment 20.7 °C / 47.3 % R.H. / 100.2 kPa



### Critical Freqs

| Frequency (MHz) | MaxPeak (dBµV/m) | Limit (dBµV/m) | Margin (dB) | Height (cm) | Pol | Azimuth (deg) | Corr. (dB/m) |
|-----------------|------------------|----------------|-------------|-------------|-----|---------------|--------------|
| 1199.125000     | 31.38            | 70.50          | 39.12       | 100.0       | H   | 0.0           | -11.3        |
| 1328.875000     | 30.39            | 70.50          | 40.11       | 100.0       | V   | 196.0         | -10.4        |
| 1877.000000     | 34.67            | 70.50          | 35.83       | 100.0       | H   | 236.0         | -7.2         |
| 2787.750000     | 36.02            | 70.50          | 34.48       | 100.0       | H   | 0.0           | -4.0         |
| 3918.875000     | 38.71            | 70.50          | 31.79       | 100.0       | V   | 112.0         | 0.7          |
| 5546.875000     | 40.20            | 70.50          | 30.30       | 100.0       | V   | 96.0          | 4.2          |

Note1) Two graphs measured for both Vertical and Horizontal of the Antenna are combined into one graph.

Note2) Unwanted emissions captured from 788 MHz to 798 MHz and from 758 MHz to 768 MHz and Harmonics were the TX and RX signals generated from the call-simulator.

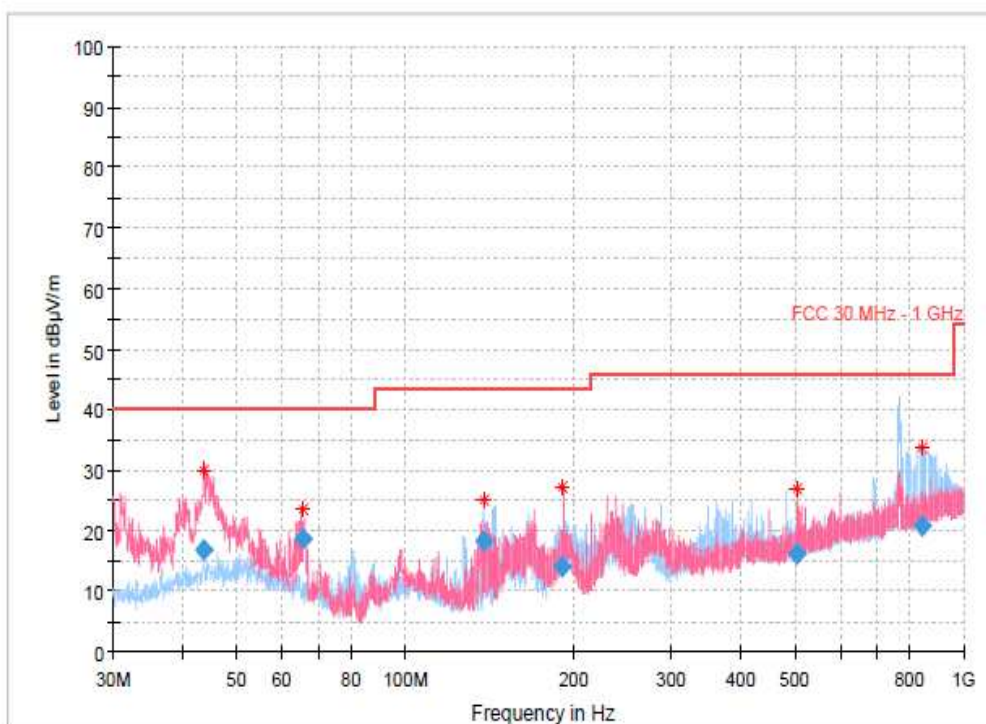
Note3) Emission was scanned 1 GHz to 6 GHz; No emissions were detected above the noise floor which was at least 20 dB below the specification limit.

Below 1 GHz (Mode5: LTE Band 14 - High CHANNEL 765.5 MHz)

## Test Report

### Common Information

Project Number 200610K007  
Location 10 m SAC  
System: Below 1 GHz  
Environment 20.7 °C / 47.3 % R.H. / 100.2 kPa



### Final Result

| Frequency (MHz) | QuasiPeak (dBµV/m) | Limit (dBµV/m) | Margin (dB) | Height (cm) | Pol | Azimuth (deg) | Corr. (dB/m) |
|-----------------|--------------------|----------------|-------------|-------------|-----|---------------|--------------|
| 43.659000       | 16.97              | 40.00          | 23.03       | 100.0       | V   | 29.0          | -20.0        |
| 65.497000       | 18.77              | 40.00          | 21.23       | 100.0       | V   | 67.0          | -22.9        |
| 137.740500      | 18.26              | 43.50          | 25.24       | 200.0       | H   | 103.0         | -25.6        |
| 191.430000      | 14.05              | 43.50          | 29.45       | 100.0       | H   | 239.0         | -22.7        |
| 502.059000      | 16.32              | 46.00          | 29.68       | 100.0       | V   | 177.0         | -14.6        |
| 840.528500      | 20.89              | 46.00          | 25.11       | 100.0       | H   | 170.0         | -10.2        |

Note1) Two graphs measured for both Vertical and Horizontal of the Antenna are combined into one graph.

Note2) Unwanted emissions captured from 788 MHz to 798 MHz and from 758 MHz to 768 MHz and Harmonics were the TX and RX signals generated from the call-simulator.

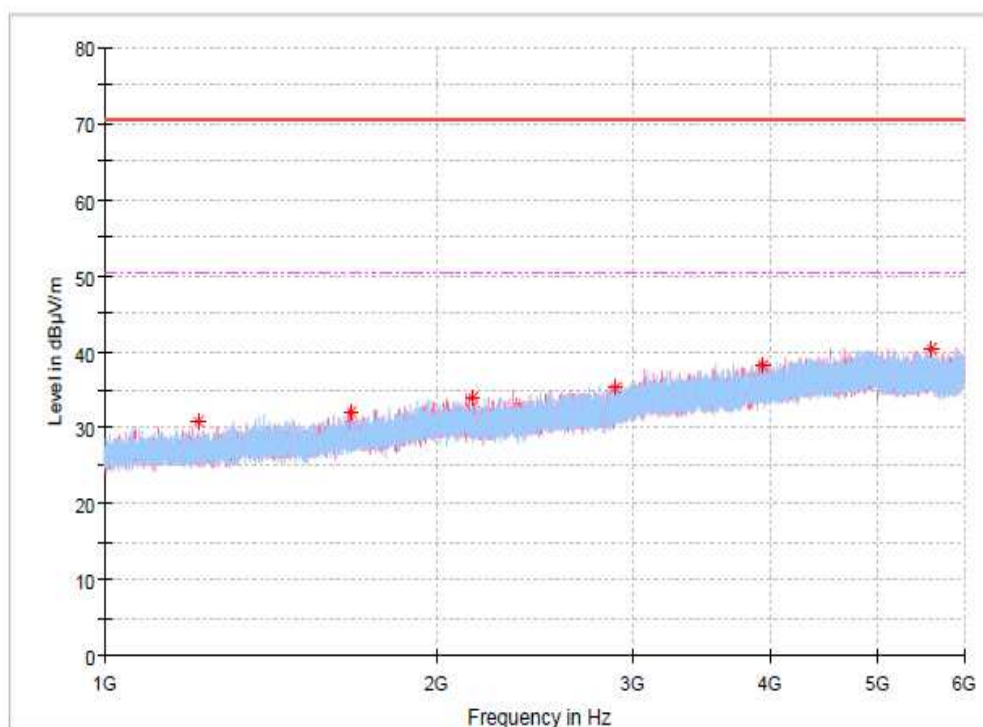


Above 1 GHz (Mode5: LTE Band 14 - High CHANNEL 765.5 MHz)

# Test Report

## Common Information

Project Number 200610K007  
Location 10 m SAC  
System: Above 1 GHz  
Environment 20.7 °C / 47.3 % R.H. / 100.2 kPa



## Critical Freqs

| Frequency (MHz) | MaxPeak (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Height (cm) | Pol | Azimuth (deg) | Corr. (dB/m) |
|-----------------|------------------|----------------|-------------|-------------|-----|---------------|--------------|
| 1215.875000     | 30.86            | 70.50          | 39.64       | 100.0       | H   | 271.0         | -11.3        |
| 1674.750000     | 31.99            | 70.50          | 38.51       | 100.0       | H   | 35.0          | -8.2         |
| 2155.125000     | 34.12            | 70.50          | 36.38       | 100.0       | H   | 65.0          | -6.3         |
| 2893.500000     | 35.35            | 70.50          | 35.15       | 100.0       | V   | 40.0          | -3.6         |
| 3946.250000     | 38.06            | 70.50          | 32.44       | 100.0       | V   | 346.0         | 0.8          |
| 5604.125000     | 40.36            | 70.50          | 30.14       | 100.0       | V   | 260.0         | 4.2          |

Note1) Two graphs measured for both Vertical and Horizontal of the Antenna are combined into one graph.

Note2) Unwanted emissions captured from 788 MHz to 798 MHz and from 758 MHz to 768 MHz and Harmonics were the TX and RX signals generated from the call-simulator.

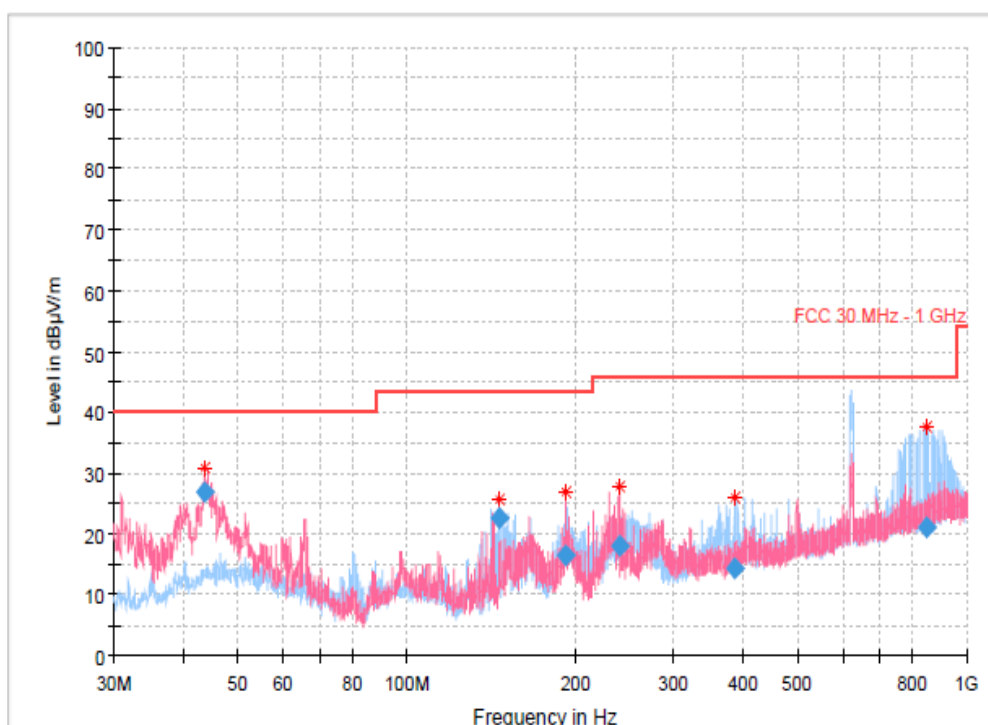
Note3) Emission was scanned 1 GHz to 6 GHz; No emissions were detected above the noise floor which was at least 20 dB below the specification limit.

Below 1 GHz (Mode6: LTE Band 71 - Low CHANNEL 623 MHz)

# Test Report

## Common Information

Project Number 200610K007  
Location 10 m SAC  
System: Below 1 GHz  
Environment 20.7 °C / 47.3 % R.H. / 100.2 kPa



## Final Result

| Frequency (MHz) | QuasiPeak (dBμV/m) | Limit (dBμV/m) | Margin (dB) | Height (cm) | Pol | Azimuth (deg) | Corr. (dB/m) |
|-----------------|--------------------|----------------|-------------|-------------|-----|---------------|--------------|
| 43.610500       | 26.88              | 40.00          | 13.12       | 100.0       | V   | 22.0          | -20.0        |
| 146.034000      | 22.48              | 43.50          | 21.02       | 200.0       | H   | 114.0         | -25.8        |
| 192.030000      | 16.60              | 43.50          | 26.90       | 100.0       | V   | 255.0         | -22.6        |
| 240.045000      | 18.12              | 46.00          | 27.88       | 100.0       | V   | 278.0         | -20.7        |
| 385.620000      | 14.35              | 46.00          | 31.65       | 100.0       | H   | 8.0           | -17.0        |
| 848.431500      | 20.97              | 46.00          | 25.03       | 100.0       | H   | 196.0         | -10.1        |

Note1) Two graphs measured for both Vertical and Horizontal of the Antenna are combined into one graph.

Note2) Unwanted emissions captured from 663 MHz to 698 MHz and from 617 MHz to 652 MHz and Harmonics were the TX and RX signals generated from the call-simulator.

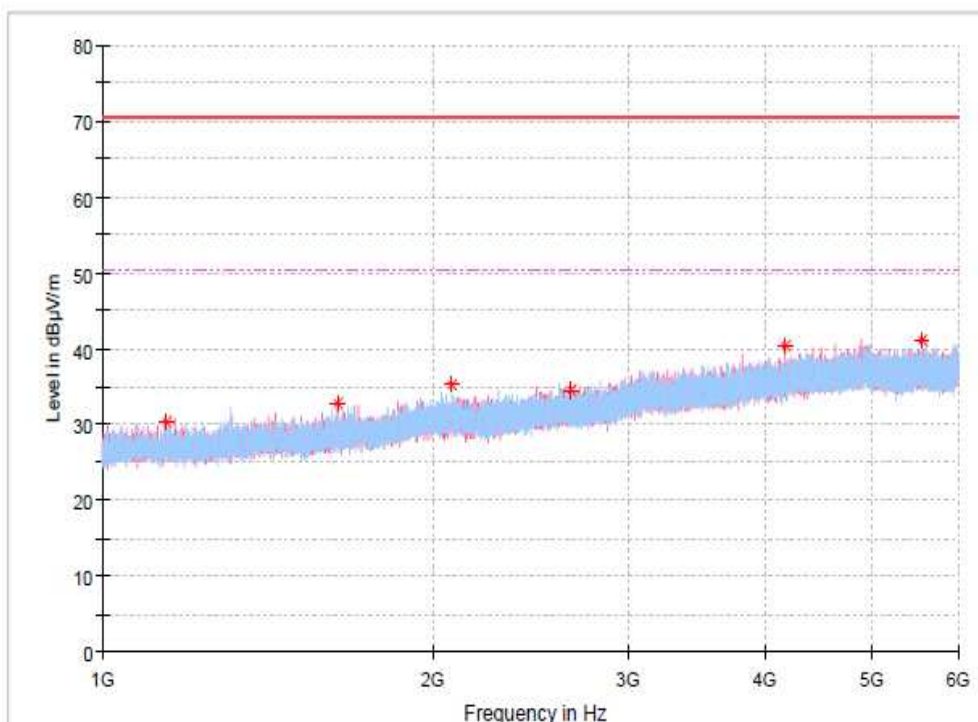


Above 1 GHz (Mode6: LTE Band 71 - Low CHANNEL 623 MHz)

# Test Report

## Common Information

Project Number 200610K007  
Location 10 m SAC  
System: Above 1 GHz  
Environment 20.7 °C / 47.3 % R.H. / 100.2 kPa



## Critical Freqs

| Frequency (MHz) | MaxPeak (dBμV/m) | Limit (dBμV/m) | Margin (dB) | Height (cm) | Pol | Azimuth (deg) | Corr. (dB/m) |
|-----------------|------------------|----------------|-------------|-------------|-----|---------------|--------------|
| 1143.875000     | 30.30            | 70.50          | 40.20       | 100.0       | H   | 3.0           | -11.6        |
| 1634.250000     | 32.83            | 70.50          | 37.67       | 100.0       | V   | 275.0         | -8.3         |
| 2074.625000     | 35.22            | 70.50          | 35.28       | 100.0       | H   | 150.0         | -6.1         |
| 2663.250000     | 34.47            | 70.50          | 36.03       | 100.0       | V   | 74.0          | -4.1         |
| 4181.625000     | 40.47            | 70.50          | 30.03       | 100.0       | V   | 182.0         | 1.5          |
| 5552.125000     | 41.05            | 70.50          | 29.45       | 100.0       | H   | 0.0           | 4.2          |

Note1) Two graphs measured for both Vertical and Horizontal of the Antenna are combined into one graph.

Note2) Unwanted emissions captured from 663 MHz to 698 MHz and from 617 MHz to 652 MHz and Harmonics were the TX and RX signals generated from the call-simulator.

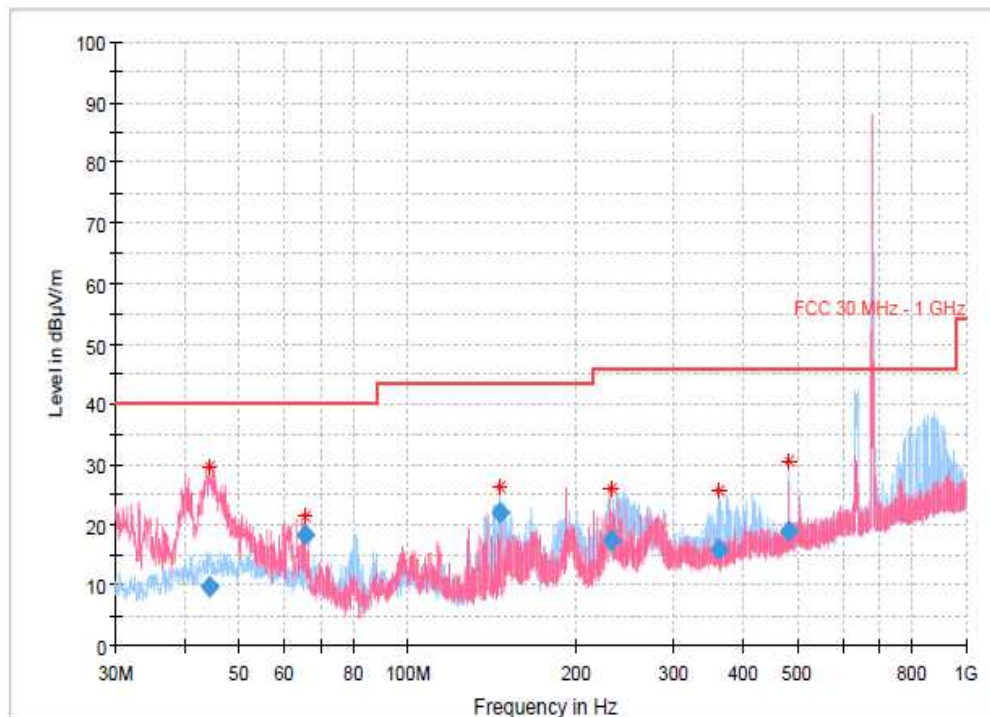
Note3) Emission was scanned 1 GHz to 6 GHz; No emissions were detected above the noise floor which was at least 20 dB below the specification limit.

Below 1 GHz (Mode6: LTE Band 71 - Middle CHANNEL 634.5 MHz)

## Test Report

### Common Information

Project Number 200610K007  
Location 10 m SAC  
System: Below 1 GHz  
Environment 20.7 °C / 47.3 % R.H. / 100.2 kPa



### Final Result

| Frequency (MHz) | QuasiPeak (dBµV/m) | Limit (dBµV/m) | Margin (dB) | Height (cm) | Pol | Azimuth (deg) | Corr. (dB/m) |
|-----------------|--------------------|----------------|-------------|-------------|-----|---------------|--------------|
| 44.259000       | 9.86               | 40.00          | 30.14       | 200.0       | H   | 103.0         | -19.9        |
| 65.445000       | 18.22              | 40.00          | 21.78       | 100.0       | V   | 315.0         | -22.9        |
| 146.040000      | 22.09              | 43.50          | 21.41       | 200.0       | H   | 103.0         | -25.8        |
| 230.922000      | 17.39              | 46.00          | 28.61       | 100.0       | V   | 192.0         | -21.2        |
| 360.114000      | 16.02              | 46.00          | 29.98       | 100.0       | H   | 128.0         | -18.0        |
| 479.991500      | 18.84              | 46.00          | 27.16       | 200.0       | H   | 3.0           | -15.2        |

Note1) Two graphs measured for both Vertical and Horizontal of the Antenna are combined into one graph.

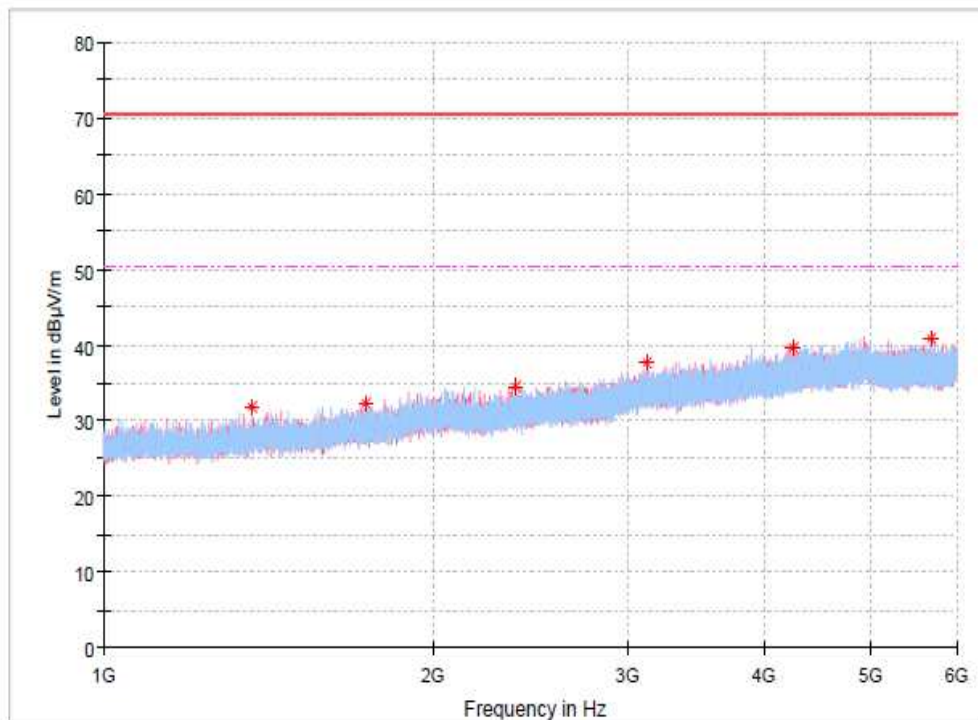
Note2) Unwanted emissions captured from 663 MHz to 698 MHz and from 617 MHz to 652 MHz and Harmonics were the TX and RX signals generated from the call-simulator.

Above 1 GHz (Mode6: LTE Band 71 - Middle CHANNEL 634.5 MHz)

## Test Report

### Common Information

Project Number 200610K007  
Location 10 m SAC  
System: Above 1 GHz  
Environment 20.7 °C / 47.3 % R.H. / 100.2 kPa



### Critical Freqs

| Frequency (MHz) | MaxPeak (dBµV/m) | Limit (dBµV/m) | Margin (dB) | Height (cm) | Pol | Azimuth (deg) | Corr. (dB/m) |
|-----------------|------------------|----------------|-------------|-------------|-----|---------------|--------------|
| 1363.000000     | 31.85            | 70.50          | 38.65       | 100.0       | H   | 194.0         | -10.0        |
| 1735.875000     | 32.40            | 70.50          | 38.10       | 100.0       | V   | 39.0          | -8.1         |
| 2376.125000     | 34.45            | 70.50          | 36.05       | 100.0       | V   | 297.0         | -5.3         |
| 3126.125000     | 37.74            | 70.50          | 32.76       | 100.0       | H   | 210.0         | -1.6         |
| 4251.500000     | 39.52            | 70.50          | 30.98       | 100.0       | H   | 216.0         | 1.9          |
| 5690.875000     | 40.74            | 70.50          | 29.76       | 100.0       | H   | 272.0         | 4.1          |

Note1) Two graphs measured for both Vertical and Horizontal of the Antenna are combined into one graph.

Note2) Unwanted emissions captured from 663 MHz to 698 MHz and from 617 MHz to 652 MHz and Harmonics were the TX and RX signals generated from the call-simulator.

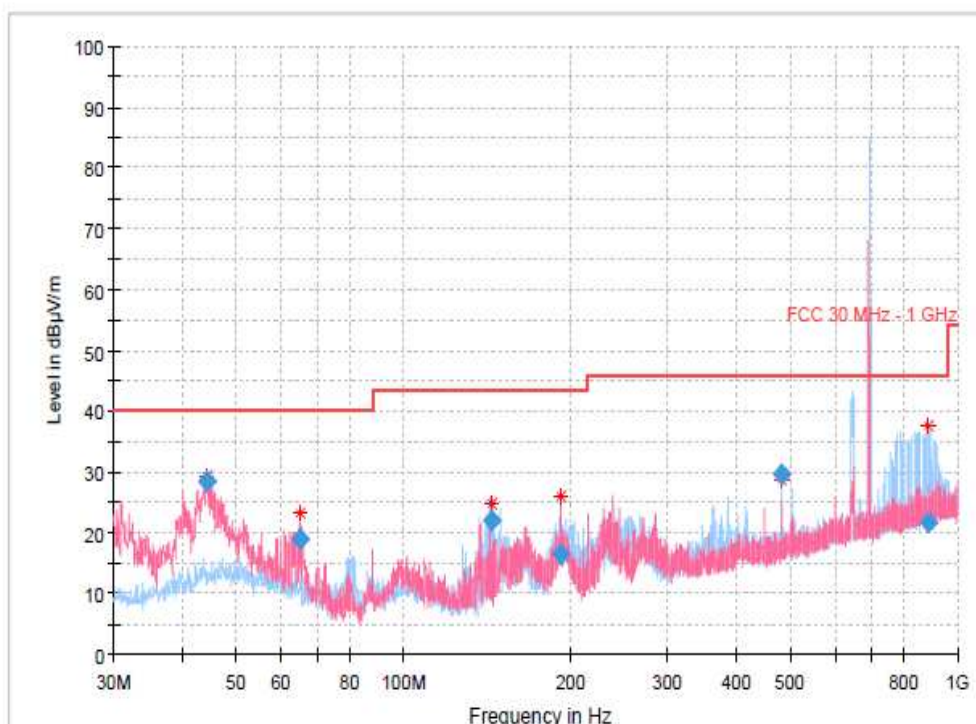
Note3) Emission was scanned 1 GHz to 6 GHz; No emissions were detected above the noise floor which was at least 20 dB below the specification limit.

Below 1 GHz (Mode6: LTE Band 71 - High CHANNEL 647 MHz)

## Test Report

### Common Information

Project Number 200610K007  
Location 10 m SAC  
System: Below 1 GHz  
Environment 20.7 °C / 47.3 % R.H. / 100.2 kPa



### Final Result

| Frequency (MHz) | QuasiPeak (dBµV/m) | Limit (dBµV/m) | Margin (dB) | Height (cm) | Pol | Azimuth (deg) | Corr. (dB/m) |
|-----------------|--------------------|----------------|-------------|-------------|-----|---------------|--------------|
| 44.239500       | 28.38              | 40.00          | 11.62       | 100.0       | V   | 112.0         | -19.9        |
| 64.968500       | 18.93              | 40.00          | 21.07       | 100.0       | V   | 24.0          | -22.7        |
| 144.513500      | 22.01              | 43.50          | 21.49       | 200.0       | H   | 86.0          | -25.8        |
| 191.990000      | 16.66              | 43.50          | 26.84       | 100.0       | V   | 192.0         | -22.6        |
| 479.983000      | 29.71              | 46.00          | 16.29       | 200.0       | H   | 0.0           | -15.2        |
| 887.052000      | 21.69              | 46.00          | 24.31       | 100.0       | H   | 189.0         | -9.7         |

Note1) Two graphs measured for both Vertical and Horizontal of the Antenna are combined into one graph.

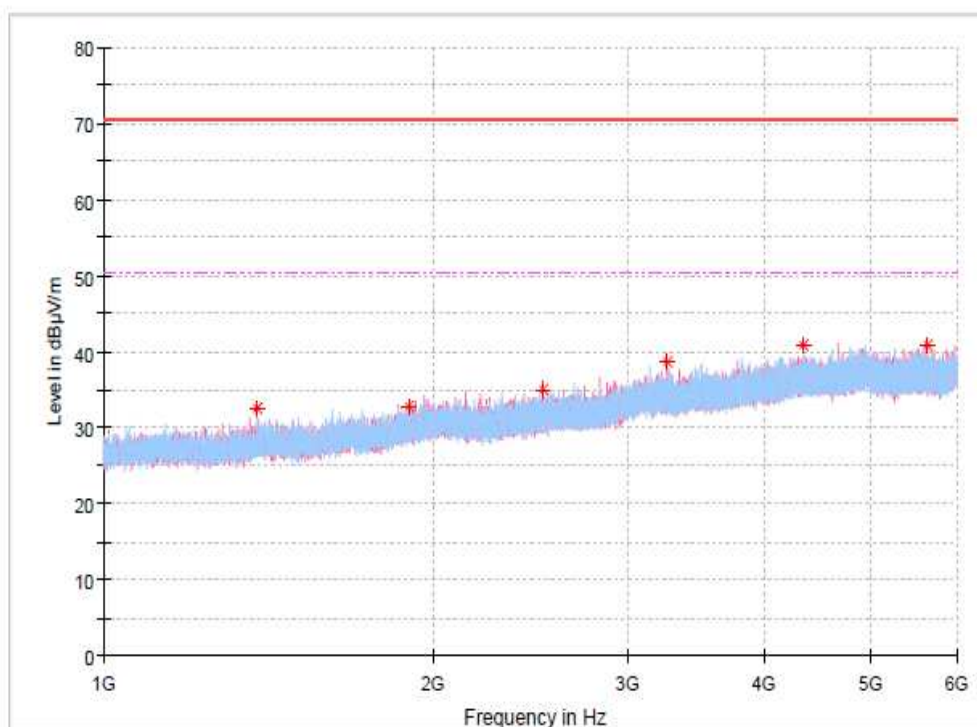
Note2) Unwanted emissions captured from 663 MHz to 698 MHz and from 617 MHz to 652 MHz and Harmonics were the TX and RX signals generated from the call-simulator.

Above 1 GHz (Mode6: LTE Band 71 - High CHANNEL 647 MHz)

## Test Report

### Common Information

Project Number 200610K007  
Location 10 m SAC  
System: Above 1 GHz  
Environment 20.7 °C / 47.3 % R.H. / 100.2 kPa



### Critical Freqs

| Frequency (MHz) | MaxPeak (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Height (cm) | Pol | Azimuth (deg) | Corr. (dB/m) |
|-----------------|------------------|----------------|-------------|-------------|-----|---------------|--------------|
| 1381.250000     | 32.65            | 70.50          | 37.85       | 100.0       | H   | 46.0          | -9.8         |
| 1899.250000     | 32.83            | 70.50          | 37.67       | 100.0       | V   | 192.0         | -7.0         |
| 2515.125000     | 35.01            | 70.50          | 35.49       | 100.0       | V   | 216.0         | -4.3         |
| 3268.250000     | 38.60            | 70.50          | 31.90       | 100.0       | V   | 31.0          | -1.5         |
| 4345.875000     | 40.95            | 70.50          | 29.55       | 100.0       | H   | 180.0         | 2.2          |
| 5646.000000     | 40.97            | 70.50          | 29.53       | 100.0       | V   | 216.0         | 4.1          |

Note1) Two graphs measured for both Vertical and Horizontal of the Antenna are combined into one graph.

Note2) Unwanted emissions captured from 663 MHz to 698 MHz and from 617 MHz to 652 MHz and Harmonics were the TX and RX signals generated from the call-simulator.

Note3) Emission was scanned 1 GHz to 6 GHz; No emissions were detected above the noise floor which was at least 20 dB below the specification limit.

## **Appendix A. Test site accreditations**

| Certificate   | Nation      | Agency | Code           | Remark            |
|---------------|-------------|--------|----------------|-------------------|
| Accreditation | USA         | A2LA   | 4068.03        | 31 July, 2019     |
| Accreditation | KOREA       | RRA    | KR0158         | 10 January, 2020  |
| Registration  | Japan       | VCCI   | 4013           | 17 February, 2020 |
| Accreditation | USA MRA     | FCC    | KR0158, 666061 | 17 March, 2020    |
| Accreditation | CANADA MRA  | ISED   | KR0158, 25944  | 17 March, 2020    |
| Accreditation | Vietnam MRA | MIC    | KR0158         | 20 April, 2020    |

Quality control in the testing laboratory is implemented as per ISO/IEC 17025 which is the "General requirements for the competent of calibration and testing laboratory".

## **Appendix B. Test Equipment**

| Radiated emission                       |              |           |               |            |            |
|-----------------------------------------|--------------|-----------|---------------|------------|------------|
| Description                             | Manufacturer | Model     | Identifier    | Cal. Date  | Cal. Due   |
| EMI Test Receiver                       | R&S          | ESW44     | 101812        | 2019.03.20 | 2020.03.20 |
| Trilog Antenna<br>(with 6 dB ATT.)      | Schwarzbeck  | VULB 9163 | 01199         | 2019.04.03 | 2021.04.03 |
| Horn Antenna                            | R&S          | HF907     | 102773        | 2020.02.10 | 2021.02.10 |
| Signal Conditioning Unit                | R&S          | SCU08F2   | 08400016      | 2019.12.30 | 2020.12.30 |
| Signal Conditioning Unit                | R&S          | SCU-18F   | 180111        | 2019.12.30 | 2020.12.30 |
| Signalling Tester                       | Anritsu      | MT8000A   | 6261949673    | 2019.12.02 | 2020.12.02 |
| Signalling Tester                       | Anritsu      | MT8821C   | 6262025356    | 2019.11.04 | 2020.11.04 |
| Wide Band Radio<br>Communication Tester | R&S          | CMW500    | 127578        | 2020.06.08 | 2021.06.08 |
| Software                                | R&S          | EMC 32    | Ver. 10.35.10 | -          | -          |