

## Annex 1: Measurement diagrams to Test Report 19-1-0097801T03a-A1



|                                                        |                                                                                                                                           |                 |                   |
|--------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------|-----------------|-------------------|
| Number of pages:                                       | 20                                                                                                                                        | Date of Report: | 2020-Mai-12       |
| Testing company:                                       | CETECOM GmbH<br>Im Teelbruch 116<br>45219 Essen Germany<br>Tel. + 49 (0) 20 54 / 95 19-0<br>Fax: + 49 (0) 20 54 / 95 19-150               | Applicant:      | Robert Bosch GmbH |
| Test Object /<br>Tested Device(s):                     | BUI350                                                                                                                                    |                 |                   |
| Listing FCC ID:                                        | 2AUXS-NYON350                                                                                                                             | ISED:           | 25847-NYON350     |
| Testing has been<br>carried out in<br>accordance with: | Title 47 CFR, Chapter I<br>FCC Regulations, Subchapter A<br>Subpart C: §15.247 (DTS) ,<br><br>RSS-247, Issue 2 (DTS)<br>RSS-Gen., Issue 5 |                 |                   |



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## 1 Measurement diagrams

### 1.1 Conducted

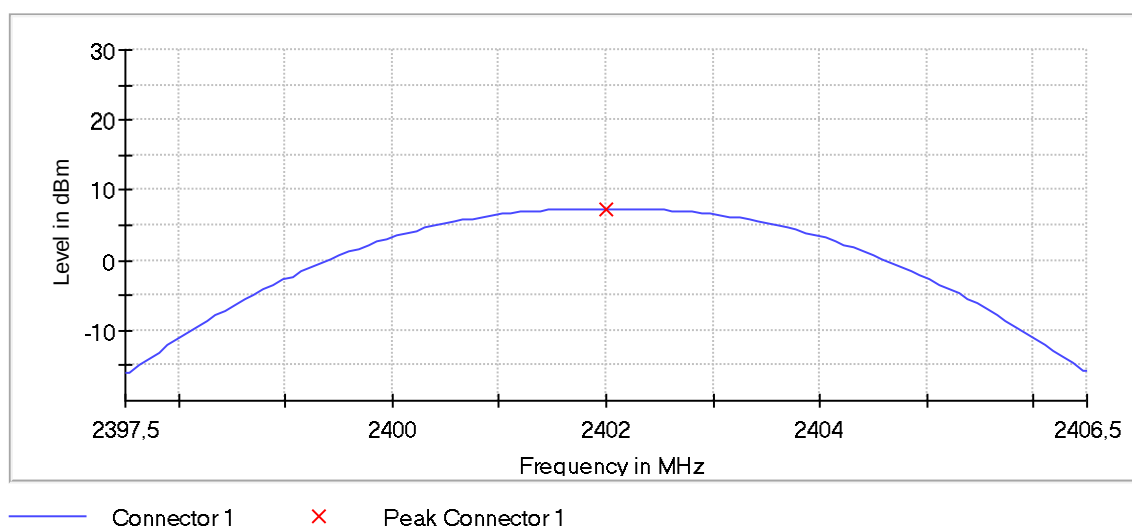
#### Peak output power (Sweep)

| Mode        | DUT Frequency (MHz) | Peak Power (dBm) | Limit Max (dBm) | Result |
|-------------|---------------------|------------------|-----------------|--------|
| 10,000 2MHz | 2402.000000         | 7.3              | 30.0            | PASS   |
| 10,000 2MHz | 2440.000000         | 8.3              | 30.0            | PASS   |
| 10,000 2MHz | 2480.000000         | 7.8              | 30.0            | PASS   |

## Peak output power (Sweep) (2402 MHz; 10,000 dBm; 2 MHz)

### Result

| DUT Frequency (MHz) | Peak Power (dBm) | Limit Max (dBm) | Result |
|---------------------|------------------|-----------------|--------|
| 2402.000000         | 7.3              | 30.0            | PASS   |



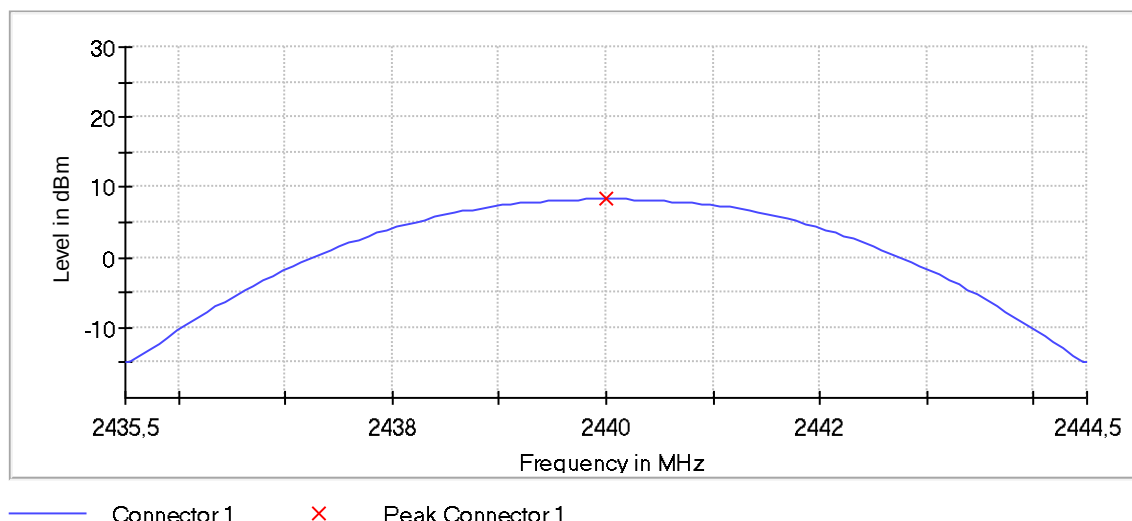
### Measurement

| Setting               | Instrument Value | Target Value     |
|-----------------------|------------------|------------------|
| Start Frequency       | 2.39750 GHz      | 2.39750 GHz      |
| Stop Frequency        | 2.40650 GHz      | 2.40650 GHz      |
| Span                  | 9.000 MHz        | 9.000 MHz        |
| RBW                   | 3.000 MHz        | $\geq 2.000$ MHz |
| VBW                   | 10.000 MHz       | $\geq 9.000$ MHz |
| SweepPoints           | 101              | ~ 101            |
| SweepTime             | 1.000 ms         | AUTO             |
| Reference Level       | 10.000 dBm       | 10.000 dBm       |
| Attenuation           | 20.000 dB        | AUTO             |
| Detector              | MaxPeak          | MaxPeak          |
| SweepCount            | 100              | 100              |
| Filter                | 3 dB             | 3 dB             |
| Trace Mode            | Max Hold         | Max Hold         |
| SweepType             | Sweep            | AUTO             |
| Preamp                | off              | off              |
| Stablemode            | Trace            | Trace            |
| Stablevalue           | 0.50 dB          | 0.50 dB          |
| Run                   | 4 / max. 150     | max. 150         |
| Stable                | 3 / 3            | 3                |
| Max Stable Difference | 0.04 dB          | 0.50 dB          |

## Peak output power (Sweep) (2440 MHz; 10,000 dBm; 2 MHz)

### Result

| DUT Frequency (MHz) | Peak Power (dBm) | Limit Max (dBm) | Result |
|---------------------|------------------|-----------------|--------|
| 2440.000000         | 8.3              | 30.0            | PASS   |



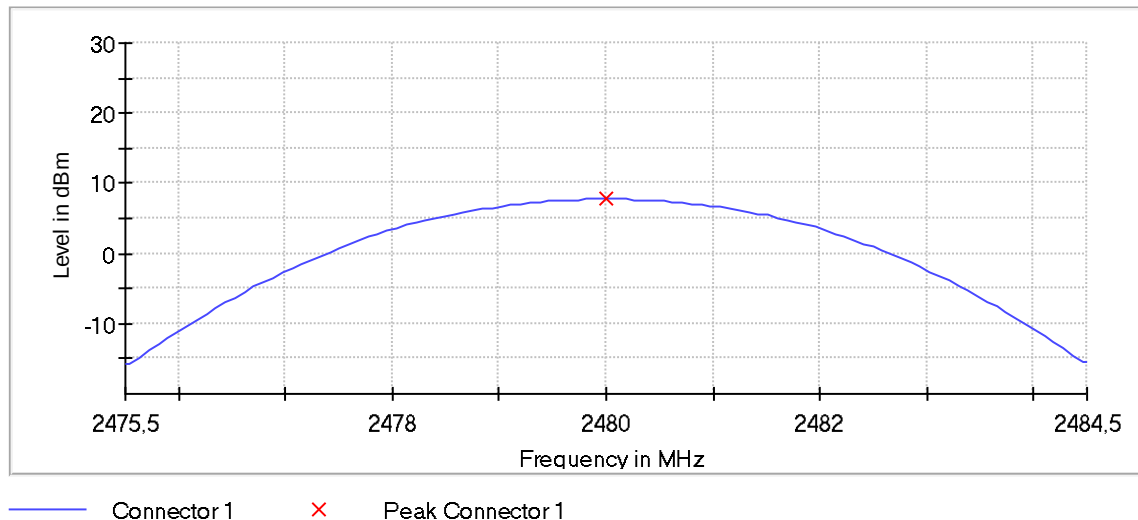
### Measurement

| Setting               | Instrument Value | Target Value |
|-----------------------|------------------|--------------|
| Start Frequency       | 2.43550 GHz      | 2.43550 GHz  |
| Stop Frequency        | 2.44450 GHz      | 2.44450 GHz  |
| Span                  | 9.000 MHz        | 9.000 MHz    |
| RBW                   | 3.000 MHz        | >= 2.000 MHz |
| VBW                   | 10.000 MHz       | >= 9.000 MHz |
| SweepPoints           | 101              | ~ 101        |
| SweepTime             | 1.000 ms         | AUTO         |
| Reference Level       | 10.000 dBm       | 10.000 dBm   |
| Attenuation           | 20.000 dB        | AUTO         |
| Detector              | MaxPeak          | MaxPeak      |
| SweepCount            | 100              | 100          |
| Filter                | 3 dB             | 3 dB         |
| Trace Mode            | Max Hold         | Max Hold     |
| SweepType             | Sweep            | AUTO         |
| Preamplifier          | off              | off          |
| Stablemode            | Trace            | Trace        |
| Stablevalue           | 0.50 dB          | 0.50 dB      |
| Run                   | 4 / max. 150     | max. 150     |
| Stable                | 3 / 3            | 3            |
| Max Stable Difference | 0.05 dB          | 0.50 dB      |

## Peak output power (Sweep) (2480 MHz; 10,000 dBm; 2 MHz)

### Result

| DUT Frequency (MHz) | Peak Power (dBm) | Limit Max (dBm) | Result |
|---------------------|------------------|-----------------|--------|
| 2480.000000         | 7.8              | 30.0            | PASS   |



### Measurement

| Setting               | Instrument Value | Target Value |
|-----------------------|------------------|--------------|
| Start Frequency       | 2.47550 GHz      | 2.47550 GHz  |
| Stop Frequency        | 2.48450 GHz      | 2.48450 GHz  |
| Span                  | 9.000 MHz        | 9.000 MHz    |
| RBW                   | 3.000 MHz        | >= 2.000 MHz |
| VBW                   | 10.000 MHz       | >= 9.000 MHz |
| SweepPoints           | 101              | ~ 101        |
| SweepTime             | 1.000 ms         | AUTO         |
| Reference Level       | 10.000 dBm       | 10.000 dBm   |
| Attenuation           | 20.000 dB        | AUTO         |
| Detector              | MaxPeak          | MaxPeak      |
| SweepCount            | 100              | 100          |
| Filter                | 3 dB             | 3 dB         |
| Trace Mode            | Max Hold         | Max Hold     |
| SweepType             | Sweep            | AUTO         |
| Preamplifier          | off              | off          |
| Stablemode            | Trace            | Trace        |
| Stablevalue           | 0.50 dB          | 0.50 dB      |
| Run                   | 4 / max. 150     | max. 150     |
| Stable                | 3 / 3            | 3            |
| Max Stable Difference | 0.04 dB          | 0.50 dB      |

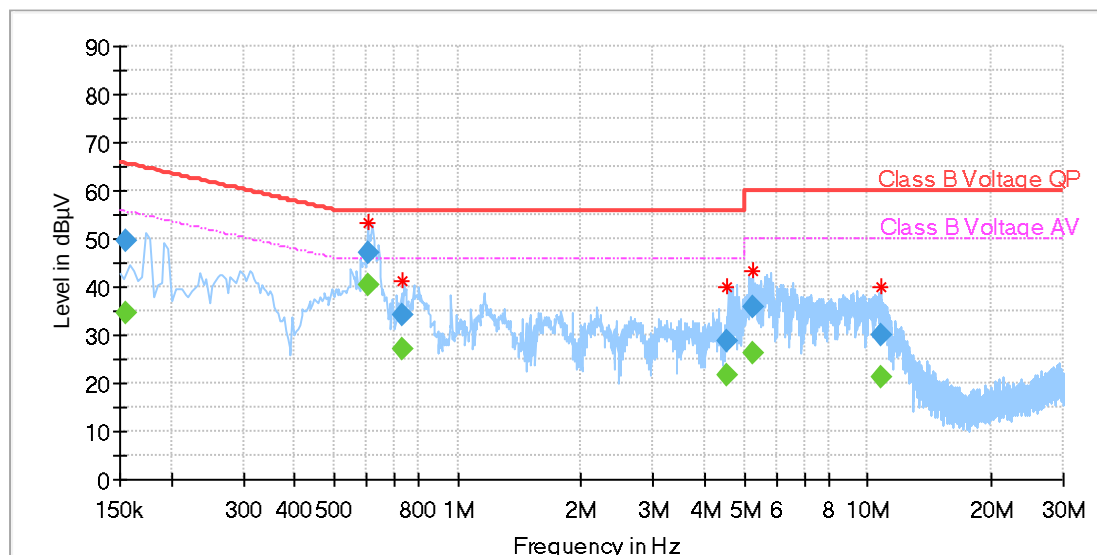
## 1.3 EMI AC

### 1.02\_BLE

#### Common Information

|                           |                                                                  |
|---------------------------|------------------------------------------------------------------|
| Test Description:         | Conducted Voltage Measurement Class B                            |
| Test Site Location:       | Conducted Emission, CETECOM GmbH Essen                           |
| Test Software:            | R&S EMC32 v9.15                                                  |
| Test Standard:            | FCC 15.207 / RSS-Gen, Issue 5                                    |
| Operating Mode:           | BT-LE mid channel                                                |
| Measured on line:         | N/L1                                                             |
| Diagram details:          | Shows the peak values as a sum of measured ports in maxhold mode |
| Environmental Conditions: | Humidity : 52%rH; Temperature: 20°C                              |
| Operator:                 | Mah                                                              |
| Comments:                 |                                                                  |
| EUT Setup:                | 120V AC via USB Charger AE5                                      |
| Verdict:                  | Passed                                                           |

Full Spectrum



#### Final Result

| Frequency (MHz) | QuasiPeak (dBμV) | Average (dBμV) | Limit (dBμV) | Margin (dB) | Meas. Time (ms) | Bandwidth (kHz) | Line | PE  | Corr. (dB) |
|-----------------|------------------|----------------|--------------|-------------|-----------------|-----------------|------|-----|------------|
| 0.154844        | ---              | 34.54          | 55.74        | 21.20       | 1000.0          | 9.000           | L1   | GND | 0.1        |
| 0.154844        | 49.69            | ---            | 65.74        | 16.05       | 1000.0          | 9.000           | L1   | GND | 0.1        |
| 0.605625        | ---              | 40.46          | 46.00        | 5.54        | 1000.0          | 9.000           | L1   | GND | 0.2        |
| 0.605625        | 47.29            | ---            | 56.00        | 8.71        | 1000.0          | 9.000           | L1   | GND | 0.2        |
| 0.732344        | ---              | 26.90          | 46.00        | 19.10       | 1000.0          | 9.000           | L1   | GND | 0.2        |
| 0.732344        | 34.27            | ---            | 56.00        | 21.73       | 1000.0          | 9.000           | L1   | GND | 0.2        |
| 4.552656        | ---              | 21.85          | 46.00        | 24.15       | 1000.0          | 9.000           | L1   | GND | 0.4        |
| 4.552656        | 28.95            | ---            | 56.00        | 27.05       | 1000.0          | 9.000           | L1   | GND | 0.4        |
| 5.256875        | ---              | 26.37          | 50.00        | 23.63       | 1000.0          | 9.000           | N    | GND | 0.4        |
| 5.256875        | 35.73            | ---            | 60.00        | 24.27       | 1000.0          | 9.000           | N    | GND | 0.4        |
| 10.754063       | ---              | 21.43          | 50.00        | 28.57       | 1000.0          | 9.000           | N    | GND | 0.4        |
| 10.754063       | 30.09            | ---            | 60.00        | 29.91       | 1000.0          | 9.000           | N    | GND | 0.4        |

## 1.4 Radiated

### 2.01a\_BT\_LE\_mid\_standing

#### Common Information

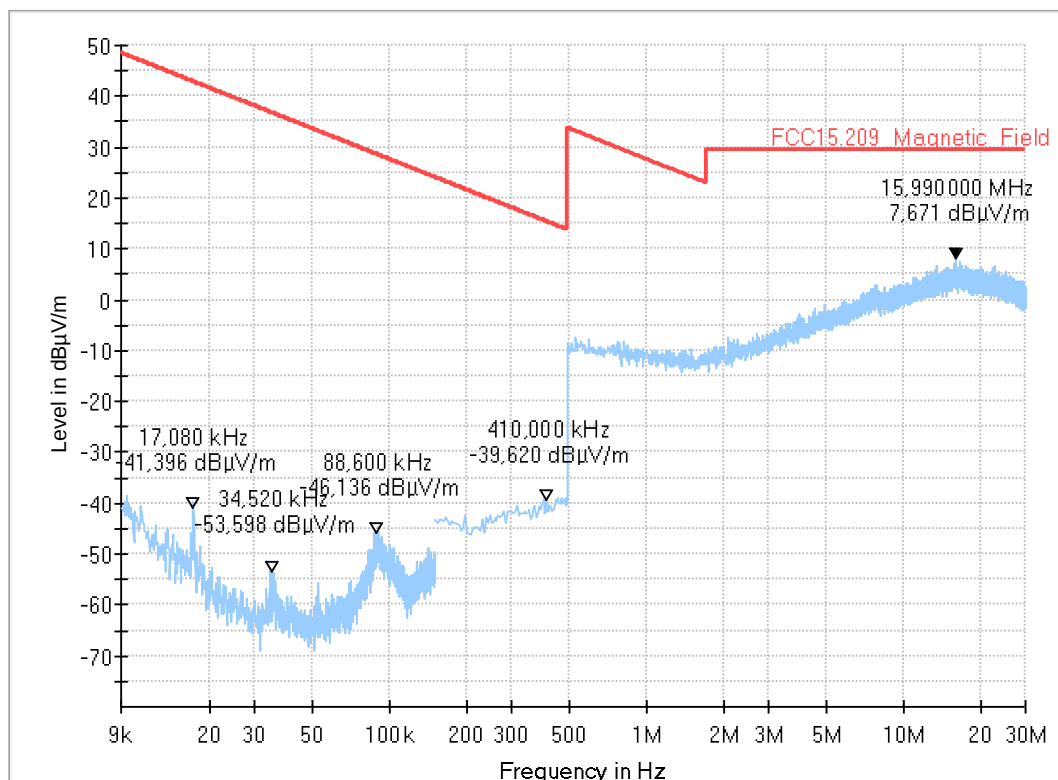
|                          |                                                                         |
|--------------------------|-------------------------------------------------------------------------|
| Test Description:        | Magnetic Field Strength Measurement related to 30/300 m distance        |
| Test Site Location:      | Ref.-Nr. 441 Semi Anechoic Chamber (SAC1) with 3 m measurement distance |
| Version of Testsoftware: | EMC32 V10.50.0                                                          |
| Distance correction:     | used accord. table, pls. see test report                                |
| Technical Data:          | Please see page 2 for detailed data of measurement setup                |
| Rec. antenna (pre-scan): | height 1.00 m, parallel and 90° to EUT polarisation                     |
| Used Filter:             | bypass                                                                  |
| Test Standard:           | FCC 15.205 § 15.209; RSS-Gen: Issue 5                                   |

|                            |                                     |
|----------------------------|-------------------------------------|
| Operator:                  | FKA                                 |
| Operating Mode:            | Channel 2440 MHz  standing          |
| Power during tests:        | 12V DC, full loaded batteries       |
| Comment 1:                 | Channel low/middle/high             |
| Comment 2:                 |                                     |
| Environmental Conditions:: | Humidity : 40%rH; Temperature: 20°C |
| EUT Setup:                 | Standing                            |
| Verdict:                   | passed                              |
| Comment:                   |                                     |

#### EUT Information

|               |                   |
|---------------|-------------------|
| PMT number:   | 19-1-00978S08     |
| Manufacturer: | Robert Bosch GmbH |

Full Spectrum



## 2.01b\_BT\_LE\_mid\_laying

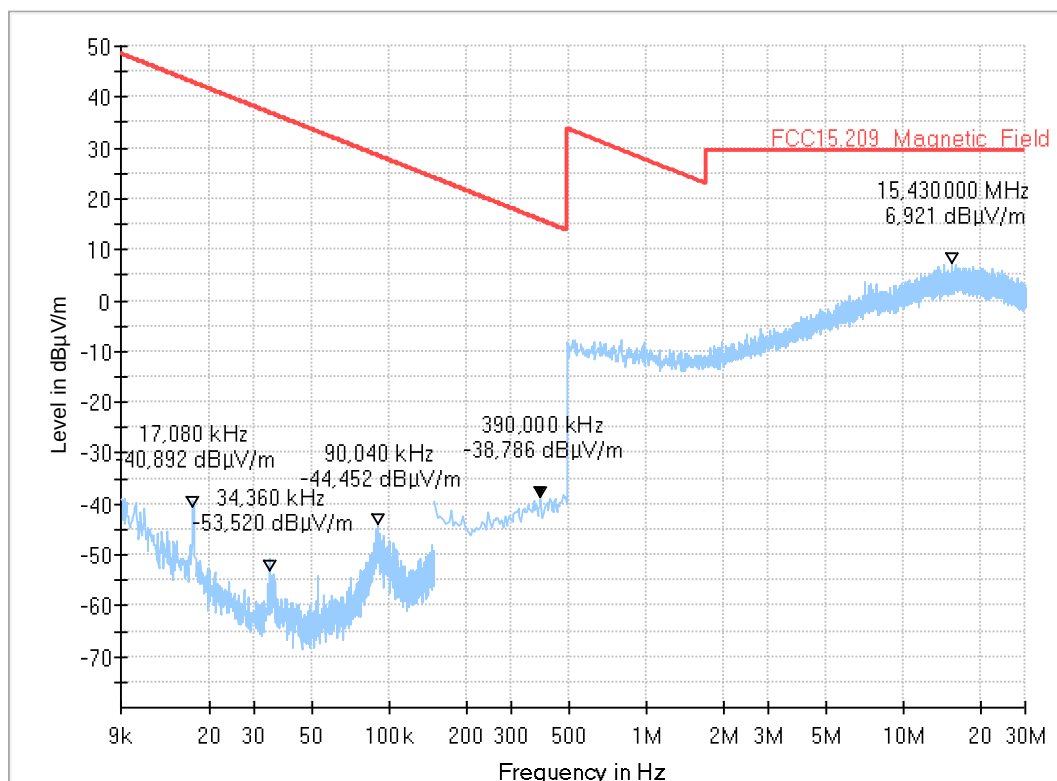
### Common Information

|                           |                                                                         |
|---------------------------|-------------------------------------------------------------------------|
| Test Description:         | Magnetic Field Strength Measurement related to 30/300 m distance        |
| Test Site Location:       | Ref.-Nr. 441 Semi Anechoic Chamber (SAC1) with 3 m measurement distance |
| Version of Testsoftware:  | EMC32 V10.50.0                                                          |
| Distance correction:      | used accord. table, pls. see test report                                |
| Technical Data:           | Please see page 2 for detailed data of measurement setup                |
| Rec. antenna (pre-scan):  | height 1.00 m, parallel and 90° to EUT polarisation                     |
| Used Filter:              | bypass                                                                  |
| Test Standard:            | FCC 15.205 § 15.209; RSS-Gen: Issue 5                                   |
| Operator:                 | FKA                                                                     |
| Operating Mode:           | Channel I 2440 MHz   laying                                             |
| Power during tests:       | 12V DC, full loaded batteries                                           |
| Comment 1:                | Channel low/middle/high                                                 |
| Comment 2:                |                                                                         |
| Environmental Conditions: | Humidity : 40%rH; Temperature: 20°C                                     |
| EUT Setup:                | laying                                                                  |
| Verdict:                  | Passed                                                                  |
| Comment:                  |                                                                         |

### EUT Information

|               |                   |
|---------------|-------------------|
| PMT number:   | 19-1-00978S08     |
| Manufacturer: | Robert Bosch GmbH |

Full Spectrum



## 3.01a\_BT\_LE\_mid\_standing

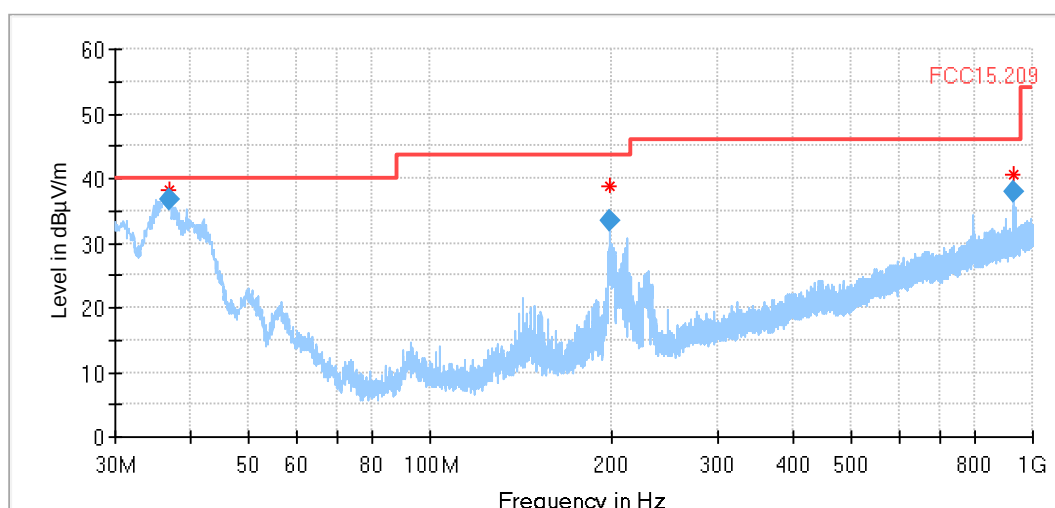
### Common Information

Test Description: Electric Fieldstrength Measurement  
 Test Spec.: FCC 15.205 § 15.209; RSS-Gen: Issue 5  
 Antenna: receiving antenna is directed to all sides  
 Operating Mode: BLE | GFSK | 2440 MHz  
 Environmental Conditions: Humidity : 40%rH; Temperature: 21°C  
 Operator: npe  
 Verdict: PassedComment:

### EUT Information

PMT number: 19-1-00978S08  
 Manufacturer: Robert Bosch GmbH

Full Spectrum



### Final Result

| Frequency (MHz) | QuasiPeak (dBµV/m) | Limit (dBµV/m) | Margin (dB) | Meas. Time (ms) | Bandwidth (kHz) | Height (cm) | Pol | Azimuth (deg) | Corr. (dB/m) |
|-----------------|--------------------|----------------|-------------|-----------------|-----------------|-------------|-----|---------------|--------------|
| 36.828000       | 36.59              | 40.00          | 3.41        | 1000.0          | 120.000         | 105.0       | V   | 211.0         | 18.5         |
| 197.982000      | 33.52              | 43.50          | 9.98        | 1000.0          | 120.000         | 219.0       | H   | 275.0         | 11.4         |
| 928.382000      | 37.96              | 46.00          | 8.04        | 1000.0          | 120.000         | 310.0       | H   | 159.0         | 27.0         |

The peak @ 928.382 MHz is known external disturbances and do not come from the EUT.

## 3.01b\_BT\_LE\_mid\_laying

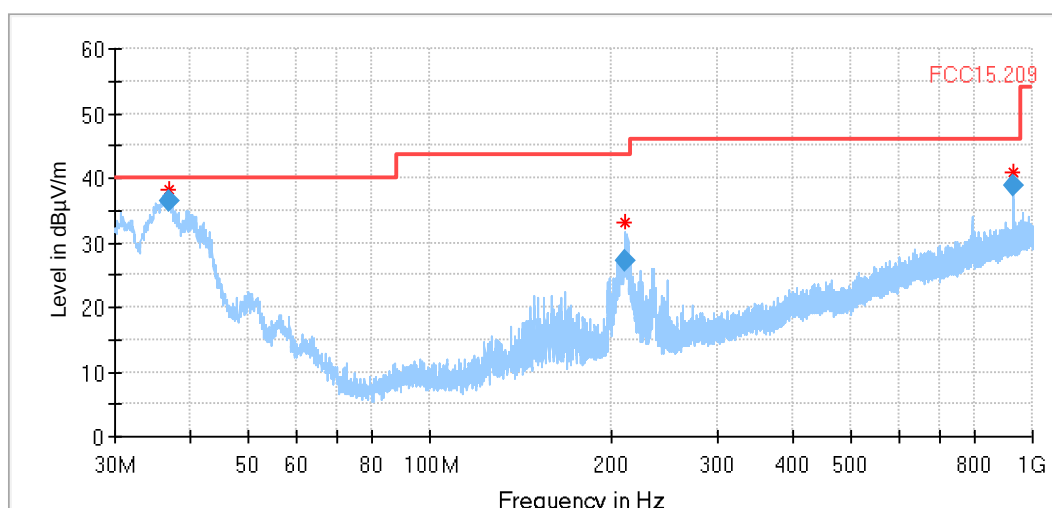
### Common Information

Test Description: Electric Fieldstrength Measurement  
Test Spec.: FCC 15.205 § 15.209; RSS-Gen: Issue 5  
Antenna: receiving antenna is directed to all sides  
Operating Mode: BLE | GFSK | 2440 MHz  
Environmental Conditions: Humidity : 40%rH; Temperature: 21°C  
Operator: npe  
Verdict: PassedComment:

### EUT Information

PMT number: 19-1-00978S08  
Manufacturer: Robert Bosch GmbH

Full Spectrum



### Final Result

| Frequency (MHz) | QuasiPeak (dBµV/m) | Limit (dBµV/m) | Margin | Meas. Time (ms) | Bandwidth (Hz) | Height | Pol | Azimuth | Corr. (dB/m) |
|-----------------|--------------------|----------------|--------|-----------------|----------------|--------|-----|---------|--------------|
| 36.824000       | 36.42              | 40.00          | 3.58   | 1000.0          | 120.000        | 105.0  | V   | 222.0   | 18.5         |
| 210.010000      | 27.14              | 43.50          | 16.36  | 1000.0          | 120.000        | 211.0  | H   | 235.0   | 11.6         |
| 928.458000      | 38.68              | 46.00          | 7.32   | 1000.0          | 120.000        | 195.0  | H   | 47.0    | 27.0         |

The peak @ 928.458 MHz is known external disturbances and do not come from the EUT.

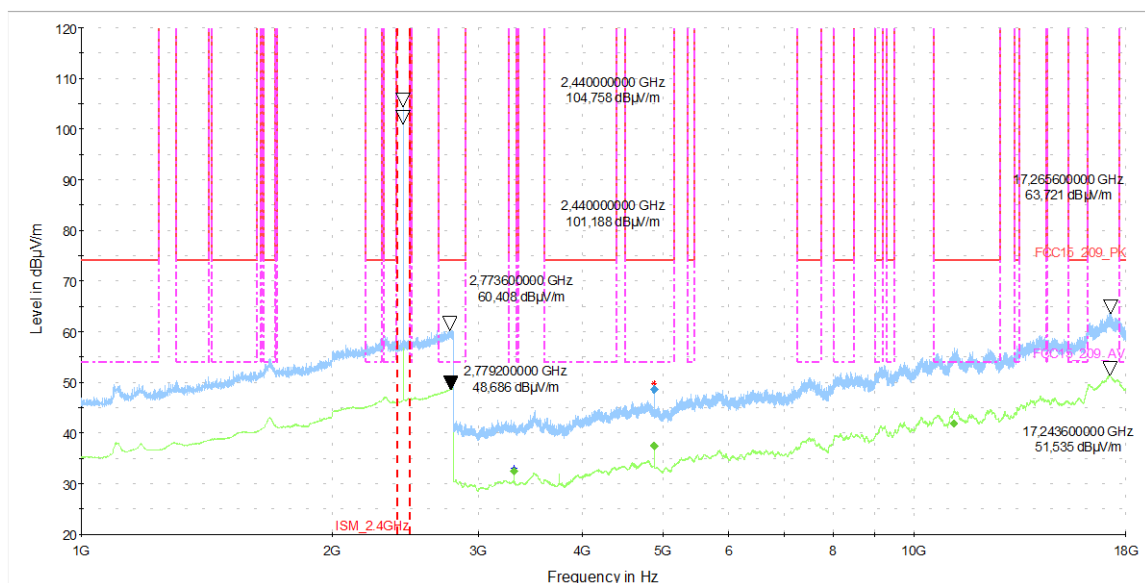
## 4.01a\_BT\_LE\_mid

### Common Information

Test Description: Radiated field strength emission in 3m distance  
 Test Site: Fully Anechoic Chamber (FAC1) - EMC32 V10.50.0  
 Test Standard: FCC 15.209 Intentional Radiator / RSS-Gen, Issue 5  
 Antenna polarisation: horizontal/vertical  
  
 Operating Mode: Channel 2440 MHz  
 Operator: TFra  
 Environmental Conditions: Humidity : 40%rH; Temperature: 20°C  
 Verdict: Passed

### EUT Information

PMT number: 19-1-00978S08  
 Manufacturer: Robert Bosch GmbH



Remark:

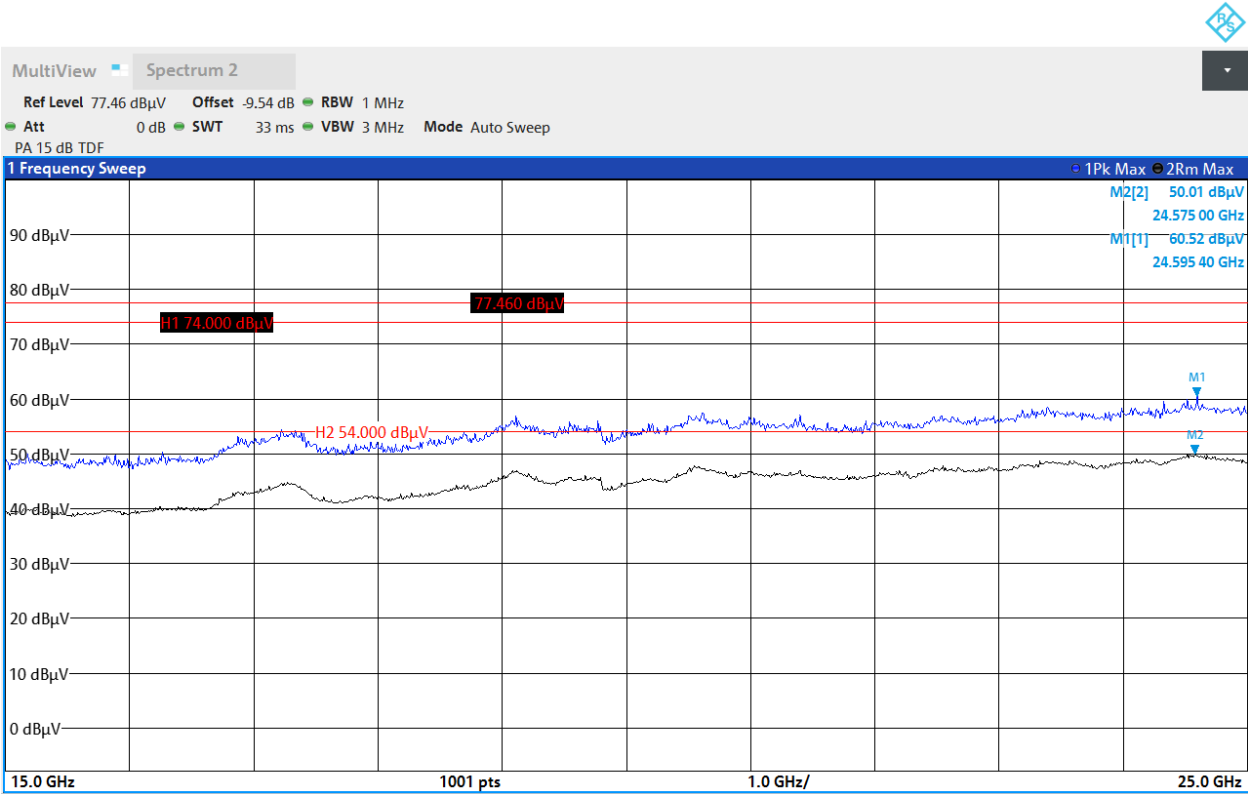
Marker were set at system noise level

### Final Result

| Frequency (MHz) | MaxPeak (dBµV/m) | Average (dBµV/m) | Limit (dBµV/m) | Margin (dB) | Meas. Time (ms) | Bandwidth (kHz) | Height (cm) | Pol | Azimuth (deg) | Elevation (deg) | Corr. (dB/m) |
|-----------------|------------------|------------------|----------------|-------------|-----------------|-----------------|-------------|-----|---------------|-----------------|--------------|
| 3312.400000     | ---              | 36.527           | 150.00         | 113.48      | 100.0           | 1000.000        | 155.0       | V   | 0.0           | 90.0            | 2            |
| 4879.600000     | ---              | 41.57            | 54.00          | 12.43       | 100.0           | 1000.000        | 155.0       | V   | 180.0         | 0.0             | 6            |
| 4880.400000     | 48.66            | ---              | 74.00          | 25.34       | 100.0           | 1000.000        | 155.0       | V   | 194.0         | 0.0             | 6            |
| 11203.600000    | ---              | 45.99            | 54.00          | 8.01        | 100.0           | 1000.000        | 155.0       | V   | -6.0          | 90.0            | 20           |

\*average values are corrected with Duty Cycle Factor.

4.01b\_BT\_LE\_mid



## 9.01\_BE\_BT\_LE\_low

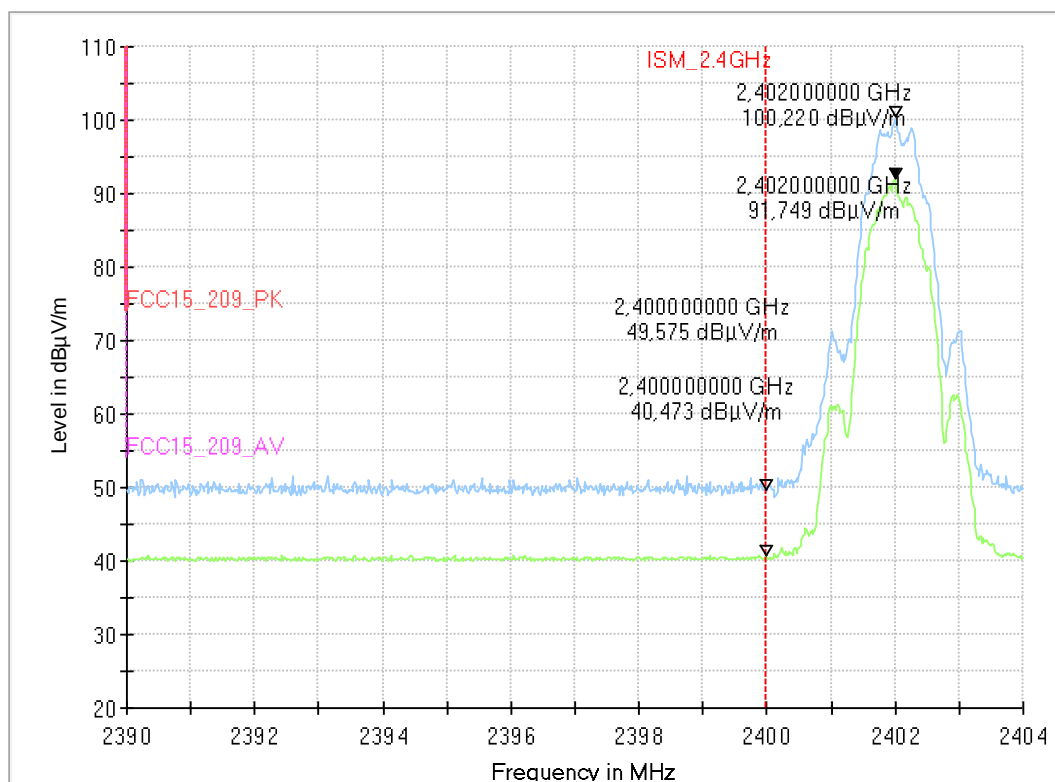
### Common Information

|                       |                                                                       |
|-----------------------|-----------------------------------------------------------------------|
| Test Description:     | Band-Edge: Radiated Field Strength Emissions Emissions in 3m distance |
| Test Site:            | Fully Anechoic Chamber (FAC1) - EMC32 V10.50.0                        |
| Test Standard:        | FCC 15.247&15.209 Intentional Radiator / RSS-Gen, Issue 5             |
| Antenna polarisation: | horizontal/vertical                                                   |
| Operating Mode:       | BT LE - Channel 0 - 2402 MHz                                          |
| Operator:             | FKa                                                                   |
| EUT Setup:            | new seup                                                              |
| Verdict:              | Passed                                                                |

### EUT Information

|               |                   |
|---------------|-------------------|
| PMT number:   | 19-1-00978S08     |
| Manufacturer: | Robert Bosch GmbH |

Full Spectrum



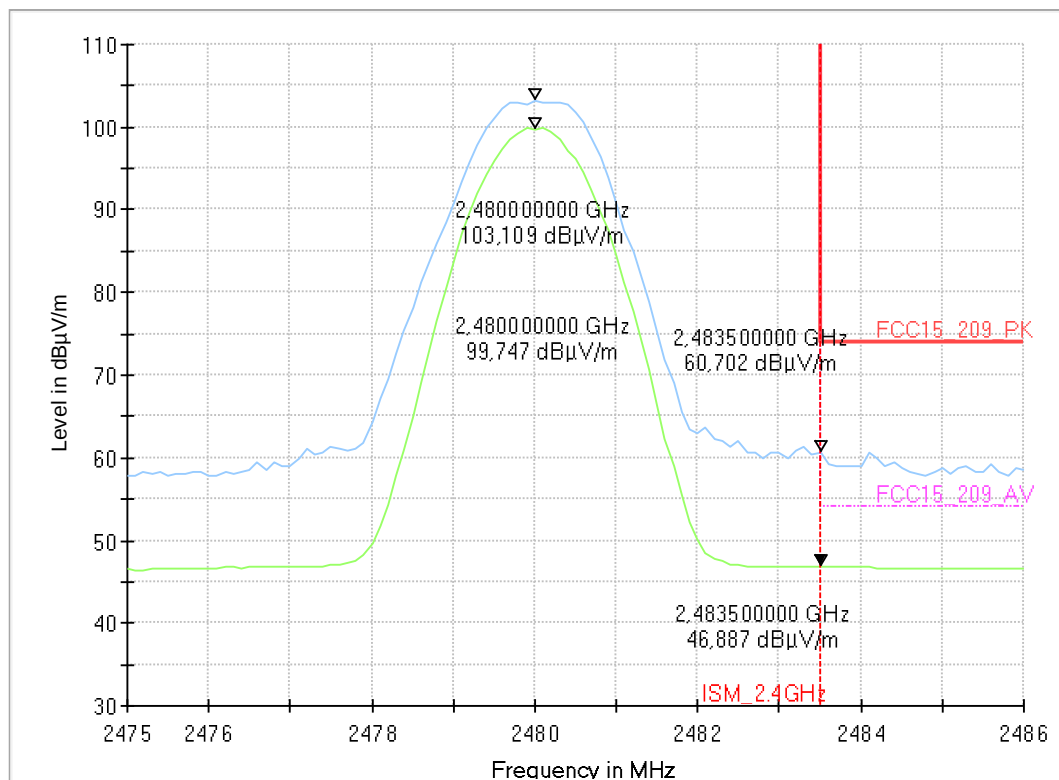
## 9.02\_BE\_BT\_LE\_high

### Common Information

|                       |                                                                       |
|-----------------------|-----------------------------------------------------------------------|
| Test Description:     | Band-Edge: Radiated Field Strength Emissions Emissions in 3m distance |
| Test Site:            | Fully Anechoic Chamber (FAC1) - EMC32 V10.50.0                        |
| Test Standard:        | FCC 15.247&15.209 Intentional Radiator / RSS-Gen, Issue 5             |
| Antenna polarisation: | horizontal/vertical                                                   |
| Operating Mode:       | BT LE - Channel 39 - 2480 MHz                                         |
| Operator:             | FKa                                                                   |
| EUT Setup:            | new setup                                                             |
| Verdict:              | Passed                                                                |

### EUT Information

|               |                   |
|---------------|-------------------|
| PMT number:   | 19-1-00978S08     |
| Manufacturer: | Robert Bosch GmbH |
| Full Spectrum |                   |



# End Of Annex 1