

TEST REPORT

Secondo i seguenti Standard / *According to following Standards*

| | | |
|--|--|--|
| Test specification | FCC Part 15: Subpart C Section 15.247: 2015 | |
| | Test plan: TP-15LA00198/01_151008_REGATE-10-11-16 | |
| Maximum Conducted Output Power, Section 15.247 (b) (3) for BLE | Conforme/ Compliant | |
| Maximum Power Spectral Density, Section FCC 15.247(e) for BLE | Conforme/ Compliant | |
| 6 dB Bandwidth, Section 15.247 (a) (2) for BLE | Conforme/ Compliant | |
| Band-edge Compliance, Section 15.247(d) for BLE | Conforme/ Compliant | |
| Conducted Spurious Emissions, Section 15.247(d) for BLE | Conforme/ Compliant | |
| Richiedente/ Applicant's name : | Eurotech Spa | |
| Indirizzo / Address | Via F.lli Solari 3/A – 33020 Amaro (UD) - Italy | |
| Produttore / Manufacturer : | Eurotech Spa | |
| Indirizzo / Address | Via F.lli Solari 3/A – 33020 Amaro (UD) - Italy | |
| Dispositivo sottoposto ai test/ Device Under Test : | ReliaGATE 10-11-16 | |
| Data di emissione/ Date of issue | 23 rd February 2016 | |
| Validità/ Validity | Vedi sezione 1.1 / <i>See section 1.1</i> | |
| Test report redatto da/ Author of Test report | Loris Fruch | |
| Tecnico/i di prova Engineer/s | Loris Fruch | |
| | Responsabile di prova/ <i>Test manager</i> : Giovanni Solari | |
| Approvato da (+ firma) Approved by (+ signature) | Silvano Chialina | |
| | Responsabile del laboratorio/ <i>Head of the Laboratory</i> | |
| Laboratorio / Testing Laboratory . : | EmilabSrl | |
| Indirizzo / Address | Via F.lli Solari 5/A – 33020 Amaro (UD) - Italy | |

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1. Informazioni Generali / *General Information*

1.0 Laboratorio / *Testing Laboratory*

| | |
|--|---|
| Luogo di Prova e partecipanti / <i>Testing location and participants:</i> | |
| Testing Laboratory: | |
| Testing location/ address.....: | EmilabSrl Via F.lli Solari 5/A – 33020 Amaro (UD) – Italy Tel +39 0433 468625 Fax +39 0433 494739 Email: info@emilab.it |
| Partecipanti / <i>Participants:</i> | Loris Fruch, Pierluigi Pollano (Eurotech Spa), Pierluigi Driusso (Eurotech Spa) |

1.1 Campionamento e Documentazione / *Sampling and Documentation*

I campioni sono stati consegnati dal Cliente. I risultati dei test contenuti in questo documento si riferiscono esclusivamente al modello e numero di serie provato. E' responsabilità del costruttore assicurare che la produzione dei modelli in serie rispetti i requisiti del presente documento. Questo documento non può essere riprodotto in parte senza il consenso scritto del responsabile del laboratorio EMILAB.

EMILAB non si assume nessuna responsabilità per danni derivanti da interpretazioni che esulano dal contesto e dall'applicazione del presente documento.

The samples was delivered by customer. The results contained in this report reflect the results for this particular model and serial number. It is the responsibility of the manufacturer to ensure that all production models meet the intent of the requirements detailed within this report. This report shall not be reproduced, except in full, without the written approval of the Issuing testing Emilab laboratory.

EMILAB takes no responsibility for and will not assume liability for damages resulting from the reader's interpretation of the reproduced material due to its placement and context.

1.2 Specifiche del test / *Test specifications*

| | |
|-------------------------------------|---|
| Test performed according to: | |
| Test plan | TP-15LA00198/01_151008_REGATE-10-11-16 Date:08/10/2015 Author: Stefano Zanolin - Eurotech S.p.A. |
| Test specification | FCC CFR 47 - Part 2 and Part 15:2015 (Subpart B e C) |
| Basic Specifications | ANSI C63.10: 2009-09 American National Standard for Testing Unlicensed Wireless Devices. <i>Frequency Range of accreditation scope of the Lab. (ACCREDIA): up to 18GHz.</i> |

1.3 Svolgimento dei test e condizioni generali / Test scheduling and general condition

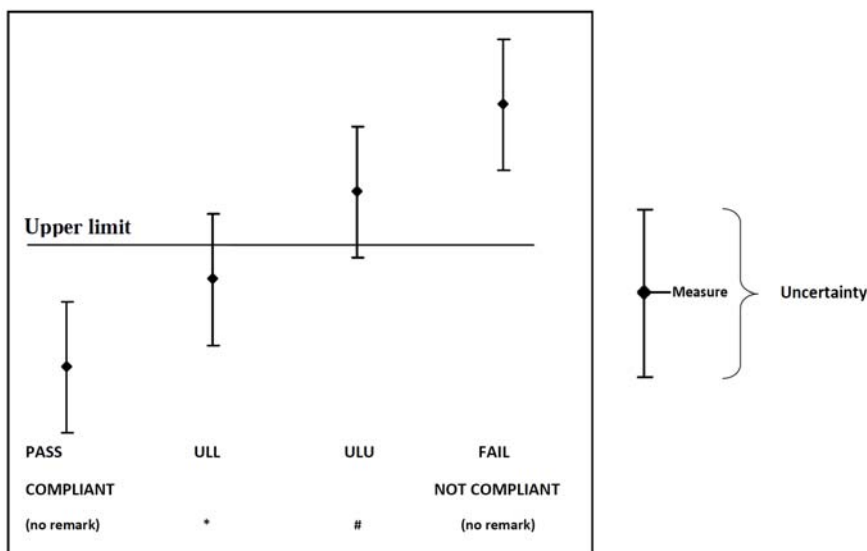
| | |
|--|---|
| Svolgimento dei test/ Scheduling | |
| Data ricezione EUT | |
| <i>Date of receipt of EUT</i> | 29/10/2015 |
| Data esecuzione test | |
| <i>Date (s) of performance of tests</i> | 04/11/2015 – 23/02/2016 |
| Condizioni ambientali <i>/ Environment Conditions</i> | Se non diversamente specificato / <i>If not otherwise specified:</i> Temperature: 18-28°C Humidity: 20-90% Pressure: 87-108.56 kPa |
| Intervallo delle tarature/ <i>Calibration Interval</i> | Minimum 1 year |

1.4 Espressione dei risultati finali / Test case of final verdicts

I GIUDIZI NON SONO SOGGETTI AD ACCREDITAMENTO

/ VERDICTS ARE NOT SUBJECT TO ACCREDITATION

- test case does not apply to the test object..... : N/A
- test object does meet the requirement..... : Compliant or PASS
- test object does not meet the requirement : Not Compliant or FAIL



Results marked with a NOT COMPLIANT or FAIL do not meet specifications with a probability of >95%, the total uncertainty interval is located outside the specified limits.

Measurement results are marked with an "*" or "#" (uncertain) if the uncertainty interval is partly within and partly out of the specified limits. A clear compliance statement is not possible.

All results not marked are located within the specified limits even when extended by the uncertainty interval

1.5 Incertezza / Uncertainty

L'incertezza estesa riportata è espressa come l'incertezza tipo moltiplicata per il fattore di copertura $k = 2$, che per una distribuzione normale corrisponde ad una probabilità di copertura di circa il 95 %.

The reported expanded uncertainty of measurements is stated as the standard uncertainty of measurement, multiplied by the coverage factor $k=2$, which for a normal distribution corresponding to a coverage probability of approximately 95%.

1.6 Termini, Definizioni e Acronimi/ Terms, definitions and abbreviations

| | |
|-----------|---|
| AC | Alternating Current |
| ACK | Acknowledgement |
| AFH | Adaptive Frequency Hopping |
| AM | Amplitude modulation |
| AVE det | Average Detector |
| BIT | Burst Interval Time |
| CAC | Channel Availability Check |
| BW | BandWidth |
| CCA | Clear Channel Assessment |
| CW | Continuous Wave |
| DAA | Detect And Avoid |
| DC | Duty CycleDFS |
| DFS | Dynamic Frequency Selection |
| DSSS | Direct Sequence Spread Spectrum |
| DUT | Device Under Test |
| e.i.r.p. | equivalent isotropically radiated power |
| e.r.p. | effective radiated power |
| EMC | ElectroMagnetic Compatibility |
| EUT | Equipment Under test |
| FAR | Fully Anechoic Room |
| FHSS | Frequency Hopping Spread Spectrum |
| HT20 High | Throughput in a 20 MHz channel |
| HT40 High | Throughput in a 40 MHz channel |
| ISM | Industrial, Scientific and Medical |
| LBT | Listen Before Talk |
| LPDA | Logarithmic Periodic Dipole Antenna |
| MCS | Modulation Coding Scheme |
| MIMO | Multiple Input, Multiple Output |
| MU | Medium Utilisation |
| MS/s | Mega-Samples per second |
| NACK | Not Acknowledged |
| OATS | Open Air Test Site |
| OFDM | Orthogonal Frequency Division Multiplexing |
| OM | Operating Modes |
| OOB | Out Of Band |
| PK det | Peak Detector |
| PM | pulse modulation |
| Ppm | parts per million |
| PPS | Pulses Per Second |
| PRF | Pulse Repetition Frequency |
| RBW | Resolution BandWidth |
| RE | Radiated Emission |
| RLAN | Radio Local Area Network |
| RMS | Root Mean Square |
| R&TTE | Radio and Telecommunications Terminal Equipment |
| RF | Radio Frequency |
| Rx | Receiver |
| SAC | Semi Anechoic Chamber |
| TEM | transverse electromagnetic |
| TL | Threshold Level |
| TPC | Transmit Power Control |
| Tx | Transmitter |
| VBW | Video BandWidth |
| VSWR | voltage standing wave ratio |
| WLAN | Wireless Local Area Network |
| BT | Bluetooth |
| BLE | Bluetooth Low Energy |

2.0 Apparecchiatura sottoposta a test/ *Device Under Test*

| | |
|---|--|
| Descrizione/ <i>Description</i>: | The ReliaGATE 10-11-16 is a compact and lightweight IoT gateway based on the powerful TI AM 335X microprocessor. It integrates 4 GB of eMMC storage that can be expanded using the MicroSD card slot available behind the Service panel. |
| Marchio commercial / <i>Trade Mark</i>: |  |
| Produttore / <i>Manufacturer</i>: | Eurotech Spa |
| Modello / <i>Model/Type reference</i>: | REGATE-10-11-16 |
| Voltage/Current.....: | 9±36Vdc (nominal 24Vdc) / 0.1A |
| Frequency.....: | / |
| Power.....: | 2.5W |
| Numero EUT / <i>EUT Number</i>: | 15LA00198/01 |
| Serial Number.....: | R1YYMDL0000 |
| Numero di campioni testati / <i>Number of samples tested</i>: | 1 |
| Hardware stage/level.....: | 1.0 |
| Software stage/level.....: | 1.0 |
| Modification stage.....: | / |
| Operating Mode.....: | <p>Mode 1 (conducted measurements): the EUT is connected only to power supply line and WLAN/Bluetooth antenna output (50ohm, SMA) is connected to the Spectrum Analyser. Bluetooth was set using the test routine ".fccbluetooth.sh" provided by the applicant .</p> <p>During all tests the DUT BT transmitter was set at it maximum Tx-power, as per control software setting.</p> |
| Wiring harness.....: | Power supply Harness (2mt length); |
| Monitoring.....: | / |

Info:

Other Emilab reports related to the same product: (WLAN:15-02125, BT: 16-02234, RF Exposure:16-02236)

The test results collected in this report are confirmed in all the voltage range of EUT power supply (9÷36V dc).

DUT Hardware features

Processor: TI AM335X, 800 MHz, 1 core, RAM: 512MB DDR3, Embedded storage: 4GB eMMC, Additional storage Micro SD card slot available behind the Service panel

Wired Interfaces:

- Ethernet: 1 x Fast Ethernet port (external)
- CAN: 2 x CAN ports (Version 2 Parts A and B)
- USB: 2 x USB 2.0 host port, 1x USB 2.0 client port
- Serial: 1x TTL for OS console (available behind the Service panel) 2x RS232/485 configurable
- Digital I/O: 2 x insulated digital inputs and 2x insulated digital outputs

Wireless Interfaces:

- Cellular: 3G global, Telit HE910 DG
- Wi-Fi: 802.11 b/g/n
- Bluetooth: 4.0
- GPS: 28-channel GPS integrated in Cellular
- RF output connectors: 1 x SMA for Cellular, 1x SMA for GPS, 1x SMA for Wi-Fi/Bluetooth

Antenna:

- Multi band antenna Mobile Mark, model SMW-UMB-3C3C3C with integral RF coaxial cables L=4mt;

ESA modifications at manufacturer's care:

- Before of the tests a ferrite model "Fair-rite 0431164281" was placed with one turn on the EUT power supply cable near to its case;

Auxiliary equipment for tests supplied by the applicant:

- Personal Computer Acer, model Travelmate C300;

GSM dotation Telit HE910 FCC ID: RI7HE910

2.1 Channel List

Bluetooth

| Frequency band [MHz]: 2400 – 2483.5 | | | | | | | |
|-------------------------------------|-----------------|---------|-----------------|---------|-----------------|---------|-----------------|
| Channel | Frequency [MHz] | Channel | Frequency [MHz] | Channel | Frequency [MHz] | Channel | Frequency [MHz] |
| 0 | 2402 | 20 | 2422 | 40 | 2442 | 60 | 2462 |
| 1 | 2403 | 21 | 2423 | 41 | 2443 | 61 | 2463 |
| 2 | 2404 | 22 | 2424 | 42 | 2444 | 62 | 2464 |
| 3 | 2405 | 23 | 2425 | 43 | 2445 | 63 | 2465 |
| 4 | 2406 | 24 | 2426 | 44 | 2446 | 64 | 2466 |
| 5 | 2407 | 25 | 2427 | 45 | 2447 | 65 | 2467 |
| 6 | 2408 | 26 | 2428 | 46 | 2448 | 66 | 2468 |
| 7 | 2409 | 27 | 2429 | 47 | 2449 | 67 | 2469 |
| 8 | 2410 | 28 | 2430 | 48 | 2450 | 68 | 2470 |
| 9 | 2411 | 29 | 2431 | 49 | 2451 | 69 | 2471 |
| 10 | 2412 | 30 | 2432 | 50 | 2452 | 70 | 2472 |
| 11 | 2413 | 31 | 2433 | 51 | 2453 | 71 | 2473 |
| 12 | 2414 | 32 | 2434 | 52 | 2454 | 72 | 2474 |
| 13 | 2415 | 33 | 2435 | 53 | 2455 | 73 | 2475 |
| 14 | 2416 | 34 | 2436 | 54 | 2456 | 74 | 2476 |
| 15 | 2417 | 35 | 2437 | 55 | 2457 | 75 | 2477 |
| 16 | 2418 | 36 | 2438 | 56 | 2458 | 76 | 2478 |
| 17 | 2419 | 37 | 2439 | 57 | 2459 | 77 | 2479 |
| 18 | 2420 | 38 | 2440 | 58 | 2460 | 78 | 2480 |
| 19 | 2421 | 39 | 2441 | 59 | 2461 | - | - |

2.3 Selected Modulation Modes and Channel Details

Bluetooth

| Test Item | Mode | Test Frequency [MHz] | Data Rate |
|--------------------------------|----------|-------------------------------|------------|
| Maximum Conducted Output Power | BLE GFSK | 2402 / 2440 / 2480 | 1Mbps (BR) |
| Power Spectral Density | BLE GFSK | 2402 / 2440 / 2480 | 1Mbps (BR) |
| Conducted Spurious Emissions | BLE GFSK | Hopping OFF&ON 2402 / 2480 | 1Mbps (BR) |
| Band-edge Compliance | BLE GFSK | Hopping OFF&ON 2402 / 2480 | 1Mbps (BR) |
| 6dB Spectrum Bandwidth | BLE GFSK | 2402 / 2440 / 2480 | 1Mbps (BR) |

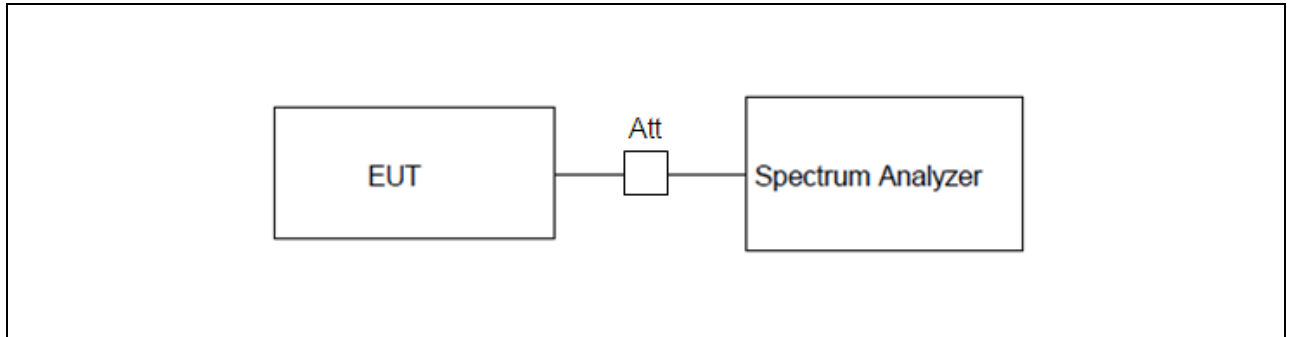
3.0 Maximum Conducted Output Power-Condizioni di prova / Test Conditions

| | | |
|--|--|-------------|
| Technician / Tecnico: Loris Fruch | | |
| Table No. | TEST: Maximum Conducted Output Power, Section 15.247 (b) (3) | \ |
| Method | FCC KDB 558074 sect. 9.1 | \ |
| Parameters required prior to the test | Laboratory Ambient Temperature | 18 to 28 °C |
| | Relative Humidity | 20 to 90% |
| Parameters recorded during the test | Laboratory Ambient Temperature | 21 °C |
| | Relative Humidity | 52 - 54 % |
| Supplementary information: | | |
| <ul style="list-style-type: none"> - Conducted Test, executed at WLAN/Bluetooth antenna output (50ohm, SMA) connected to the Spectrum Analyser through an attenuator (30 dB); - EUT powered at 24Vdc; - EUT Operating Mode: Mode1 (see par. 2.0); - Spectrum analyser settings setup according to FCC KDB 558074 sect. 9.1.1: <ul style="list-style-type: none"> • Detector: Peak • RBW: 3MHz and VBW=3MHz • Instrument mode: Max Hold - Test executed with the following BT settings: <ul style="list-style-type: none"> • BLE mode with modulation GFSK on channel 0, 38 and 78 with data rate at 1Mbps | | |

3.1 Apparecchiature utilizzate / Test Equipment Used – Maximum Conducted Output Power

| <i>Apparecchiature usate/Equipment Used</i> | <i>Modello/Model</i> | <i>Costruttore/Manufacturer</i> | <i>Numero di serie/Serial Number</i> | <i>Data calibrazione / Calibration date</i> | <i>Intervallo / Interval</i> |
|---|----------------------|---------------------------------|--------------------------------------|---|------------------------------|
| EMI Receiver MXE | N9038A | Agilent Technologies | MY51210230 | 05/2015 | 1 year |
| 30dB Attenuator | PE7087-30 | Pasternack | EL082315 | 09/2015 | 1 year |

3.2 Fotografie del setup / *Photo of the test setup* –Maximum Conducted Output Power



3.3 Risultati / *Results* - Maximum Conducted Output Power

The result of the test is: **PASS**. See the details in the charts/tables of the following paragraphs (see the worst case in bold text).

3.3.1 Tabelle e grafici dei risultati / *Tables and graphical representation of data* – Maximum Conducted Output Power

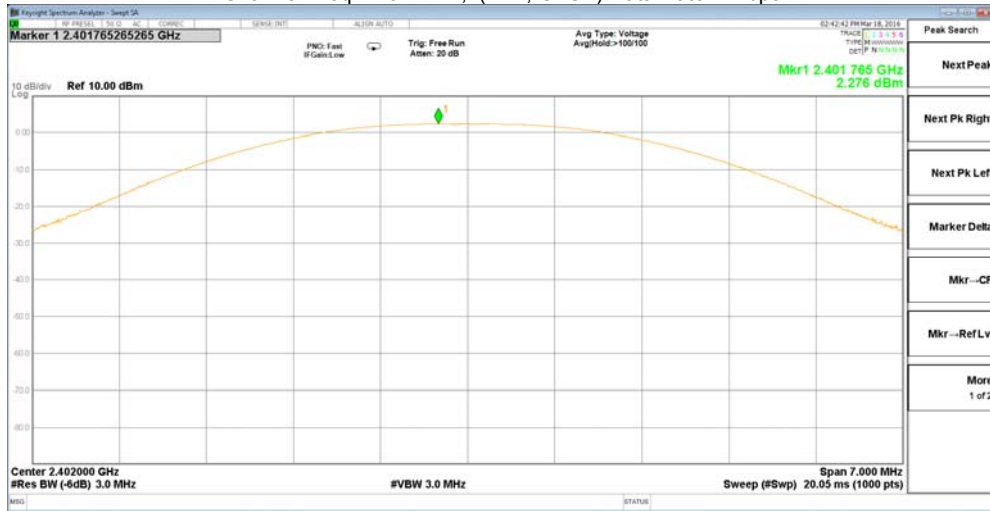
Measures executed on BLE

Note: all the traces reported in this section have been obtained with Peak detector, Max Hold.

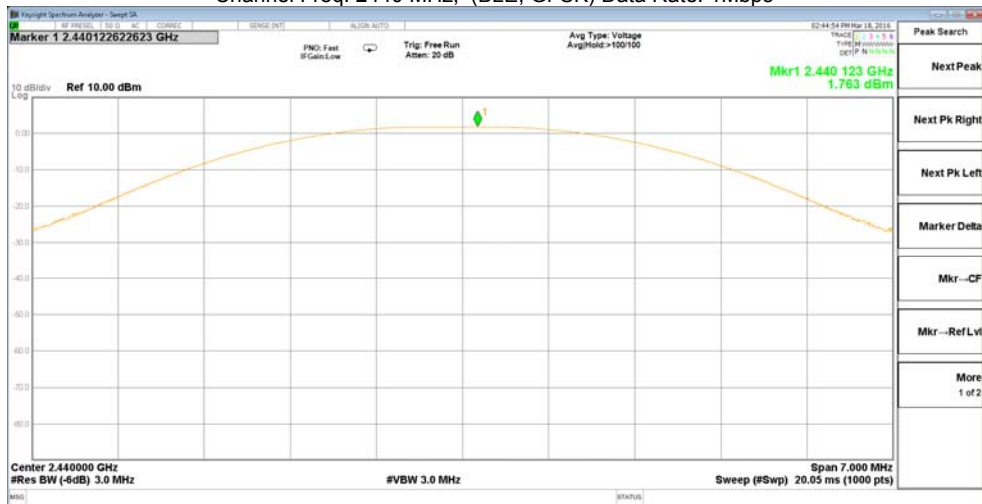
| Modulation mode | Data Rate (Mbps) | Channel Frequency (MHz) | Peak Output Power (dBm) | Limit (dBm) | Margin (dB) |
|-----------------|------------------|-------------------------|-------------------------|-------------|-------------|
| BLE, GFSK | 1 | 2402.0 | 2.28 | 30.0 | 27.7 |
| | | 2440.0 | 1.76 | 30.0 | 28.2 |
| | | 2480.0 | 1.41 | 30.0 | 28.6 |

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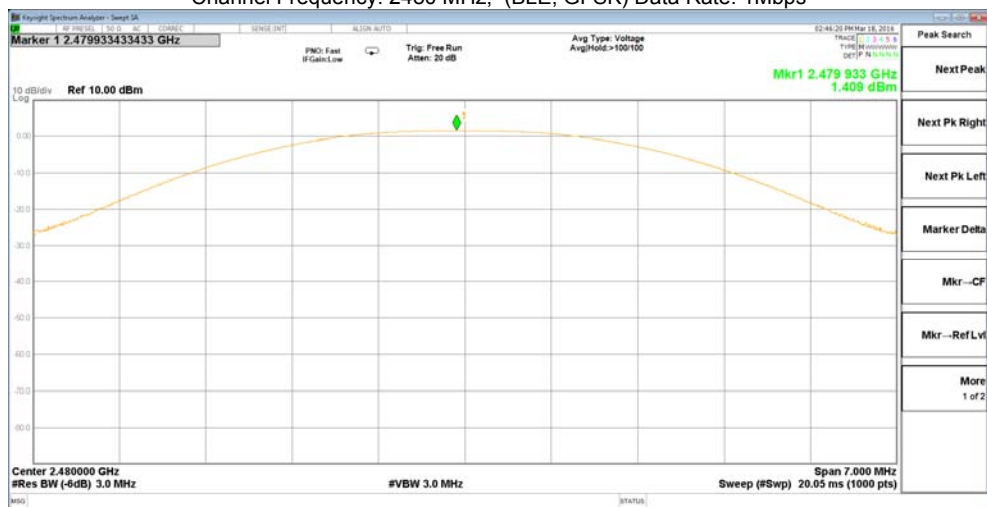
Channel Freq: 2402 MHz, (BLE, GFSK) Data Rate: 1Mbps



Channel Freq: 2440 MHz, (BLE, GFSK) Data Rate: 1Mbps



Channel Frequency: 2480 MHz, (BLE, GFSK) Data Rate: 1Mbps



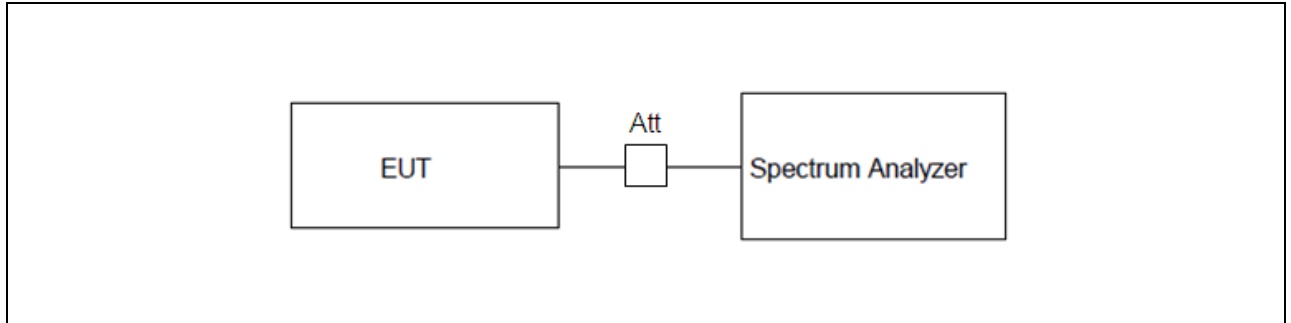
4.0 Maximum Power Spectral Density-Condizioni di prova / Test Conditions

| | | |
|---|---|-------------|
| Technician / Tecnico: Loris Fruch | | |
| Table No. | TEST: Maximum Power Spectral Density, Section FCC 15.247(e) | \ |
| Method | FCC KDB 558074par.10.2 (peak PSD) | \ |
| Parameters required prior to the test | Laboratory Ambient Temperature | 18 to 28 °C |
| | Relative Humidity | 20 to 90 % |
| Parameters recorded during the test | Laboratory Ambient Temperature | 21 °C |
| | Relative Humidity | 54 % |
| Supplementary information: | | |
| <ul style="list-style-type: none"> - Conducted Test, executed at WLAN/BT antenna output (50ohm,SMA) connected to the Spectrum Analyser through an attenuator (30 dB). - EUT powered at 24Vdc; - EUT Operating Mode: Mode1 (see par. 2.0); - Spectrum analyser settings setup according to FCC KDB 558074 sect. 10.2 (peak PSD) Detector: Peak, Trace: max hold (over last 30 sweeps), RBW: 3 kHz, VBW=30 kHz, Sweep Control: auto couple (SR=stimulus/response). - Test executed with the following Bluetooth settings: <ul style="list-style-type: none"> • BLE mode with modulation GFSK on channel 0, 38 and 78 with data rate at 1Mbps | | |

4.1 Apparecchiature utilizzate / Test Equipment Used – Maximum Peak Conducted Output Power

| <i>Apparecchiature usate/Equipment Used</i> | <i>Modello/Model</i> | <i>Costruttore/Manufacturer</i> | <i>Numero di serie/Serial Number</i> | <i>Data calibrazione / Calibration date</i> | <i>Intervallo / Interval</i> |
|---|----------------------|---------------------------------|--------------------------------------|---|------------------------------|
| EMI Receiver MXE | N9038A | Agilent Technologies | MY51210230 | 05/2015 | 1 year |
| 30dB Attenuator | PE7087-30 | Pasternack | EL082315 | 09/2015 | 1 year |

4.2 Fotografie del setup / *Photo of the test setup* –Maximum Power Spectral Density



4.3 Risultati / *Results* - Maximum Power Spectral Density

The result of the test is: **PASS**. See the details in the charts/tables of the following paragraphs (see the worst case in bold text).

4.3.1 Tabelle e grafici dei risultati / *Tables and graphical representation of data* – Maximum Power Spectral Density

Note: all the traces reported in this section have been obtained with Peak detector, max hold (over last 100 sweeps); RBW= 10kHz:

Measures executed on Bluetooth

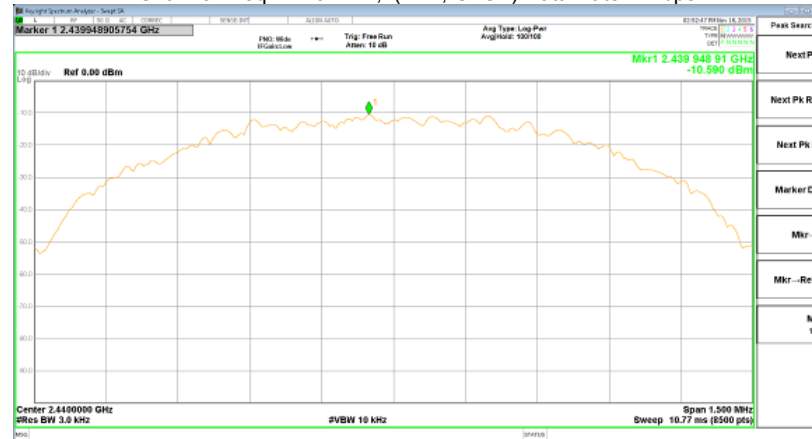
| Modulation mode | Data Rate (Mbps) | Channel Frequency (MHz) | Total PSD (dBm/3KHz) | Limit (dBm/3KHz) | Margin (dB) |
|-----------------|------------------|-------------------------|----------------------|------------------|-------------|
| BLE GFSK | 1 | 2402.0 | -9.93 | 8.0 | 17.9 |
| | | 2440.0 | -10.59 | 8.0 | 18.6 |
| | | 2480.0 | -10.94 | 8.0 | 18.9 |

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Channel Freq: 2402 MHz, (BLE, GFSK) Data Rate: 1Mbps



Channel Freq: 2440 MHz, (BLE, GFSK) Data Rate: 1Mbps



Channel Frequency: 2480 MHz, (BLE, GFSK) Data Rate: 1Mbps



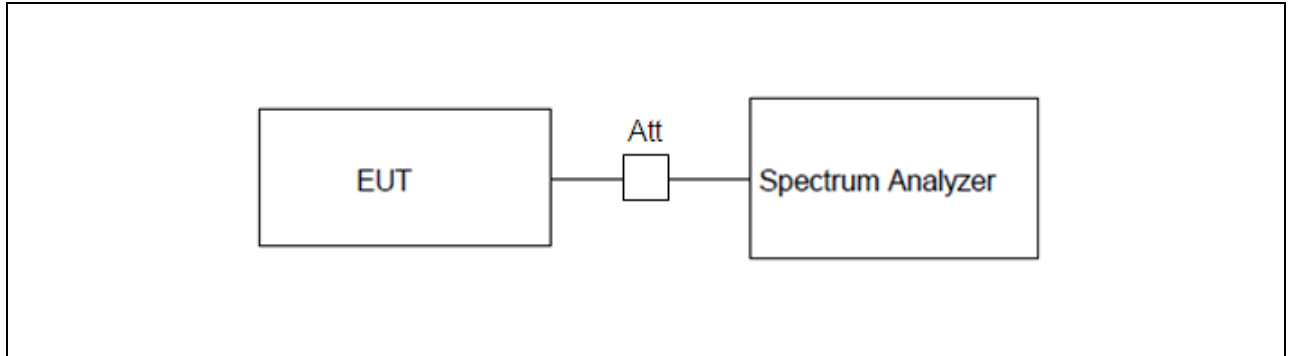
5.0 Bandwidth - Condizioni di prova / Test Conditions

| | | |
|--|--|-------------|
| Technician / Tecnico: Loris Fruch | | |
| Table No. | TEST: 6 dB Bandwidth, Section 15.247 (a) (2) for BLE | \ |
| Method | FCC KDB 558074, par. 8.2 | \ |
| Parameters required prior to the test | Laboratory Ambient Temperature | 18 to 28 °C |
| | Relative Humidity | 20 to 90 % |
| Parameters recorded during the test | Laboratory Ambient Temperature | 20 °C |
| | Relative Humidity | 51 % |
| Supplementary information: | | |
| <ul style="list-style-type: none"> - Conducted Test, executed at WLAN/Bluetooth antenna output (50ohm,SMA) connected to the Spectrum Analyser through an attenuator (30 dB); - EUT powered at 24Vdc; - EUT Operating Mode: Mode1 (see par. 2.0); - Spectrum analyser settings setup according to FCC KDB 558074 sect. 8.2 (automatic bandwidth measurement) Detector: Peak, Trace: max hold (over last 10 sweeps), - RBW: 30 kHz; - VBW=3xRBW; - Test executed with the following BT settings: <ul style="list-style-type: none"> • BLE mode with modulation GFSK on channel 0, 38 and 78 with data rate at 1Mbps | | |

5.1 Apparecchiature utilizzate / Test Equipment Used – Maximum Peak Conducted Output Power

| <i>Apparecchiature usate/Equipment Used</i> | <i>Modello/Model</i> | <i>Costruttore/Manufacturer</i> | <i>Numero di serie/Serial Number</i> | <i>Data calibrazione / Calibration date</i> | <i>Intervallo / Interval</i> |
|---|----------------------|---------------------------------|--------------------------------------|---|------------------------------|
| EMI Receiver MXE | N9038A | Agilent Technologies | MY51210230 | 05/2015 | 1 year |
| 30dB Attenuator | PE7087-30 | Pasternack | EL082315 | 09/2015 | 1 year |

5.2 Fotografie del setup / *Photo of the test setup* –Bandwidth



5.3 Risultati / *Results* - Bandwidth

BLE (Bluetooth Low Energy):

Section 15.247 (a) (2) The minimum specified 6dB bandwidth for digital modulated is 500 kHz, thus the result of the test is: **PASS**. See the details in the charts/tables of the following paragraphs.

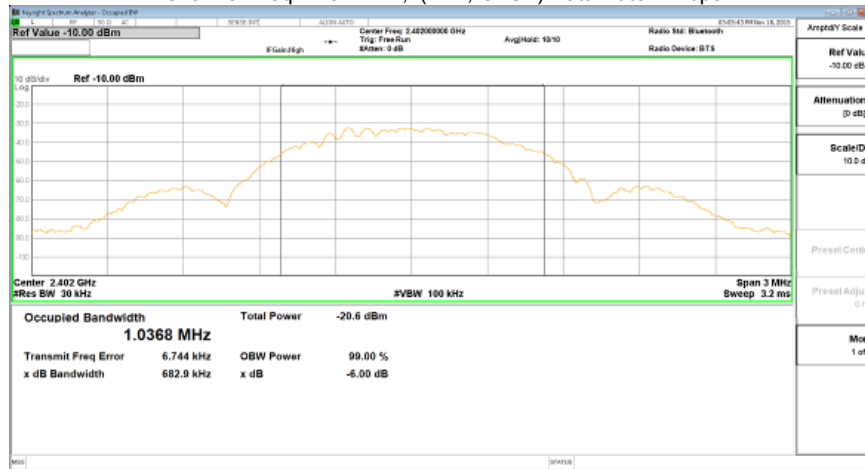
5.3.1 Tabelle e grafici dei risultati / *Tables and graphical representation data* – Bandwidth

Measures executed on Bluetooth

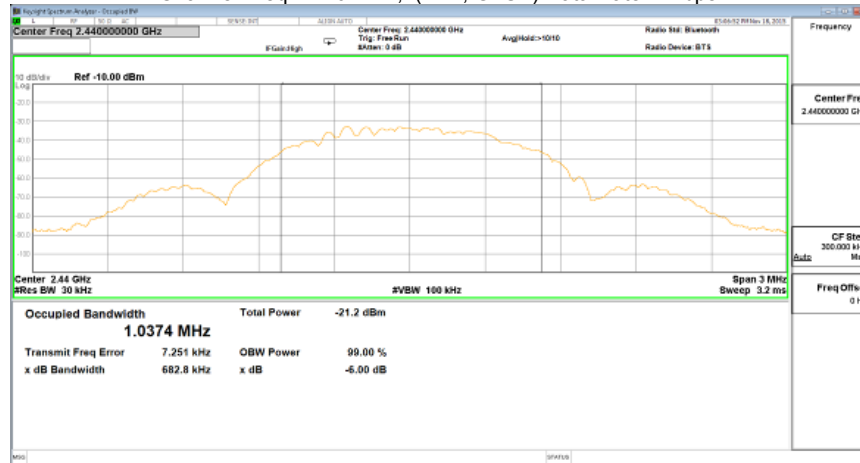
| Modulation mode | Data Rate (Mbps) | Channel Frequency (MHz) | 6dB Bandwidth (MHz) | 99% Bandwidth (MHz) |
|-----------------|------------------|-------------------------|---------------------|---------------------|
| BLE GFSK | 1 | 2402.0 | 0.683 | 1.037 |
| | | 2440.0 | 0.683 | 1.038 |
| | | 2480.0 | 0.684 | 1.042 |

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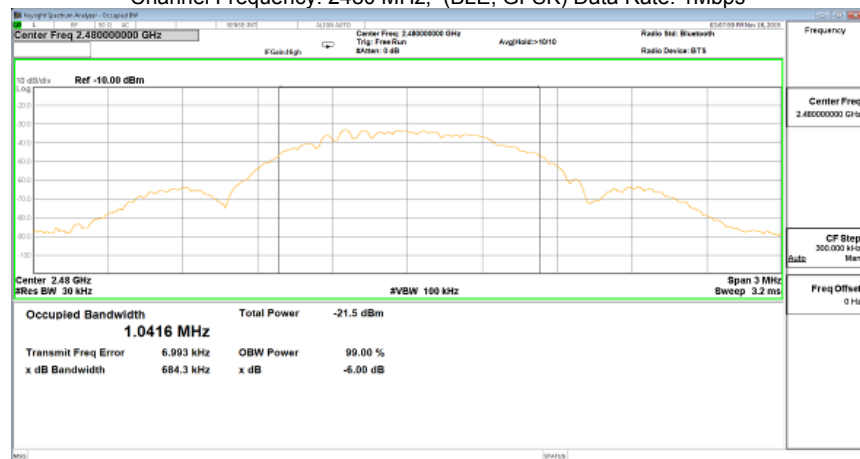
Channel Freq: 2402 MHz, (BLE, GFSK) Data Rate: 1Mbps



Channel Freq: 2440 MHz, (BLE, GFSK) Data Rate: 1Mbps



Channel Frequency: 2480 MHz, (BLE, GFSK) Data Rate: 1Mbps



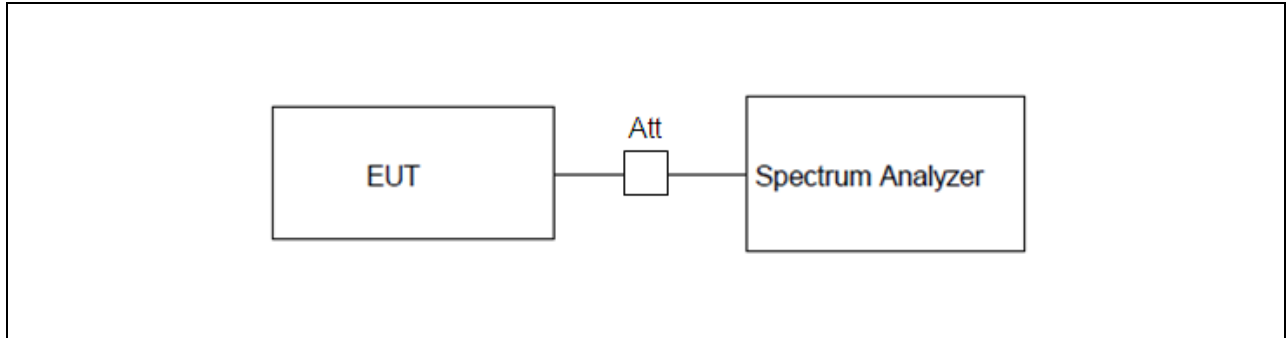
6.0 Band-edge Compliance - Condizioni di prova / Test Conditions

| | | |
|---|---|-------------|
| Technician / Tecnico: Loris Fruch | | |
| Table No. | TEST: Band-edge Compliance, Section 15.247(d) | \ |
| Method | FCC KDB 558074 par.13.2 (marker delta method) | \ |
| Parameters required prior to the test | Laboratory Ambient Temperature | 18 to 28 °C |
| | Relative Humidity | 20 to 90 % |
| Parameters recorded during the test | Laboratory Ambient Temperature | 20 °C |
| | Relative Humidity | 58 % |
| Supplementary information: | | |
| <ul style="list-style-type: none"> - Conducted Test, executed at WLAN/Bluetooth antenna output (50ohm, SMA) connected to the Spectrum Analyser through an attenuator (30 dB); - EUT powered at 24Vdc; - EUT Operating Mode: Mode1 (see par. 2.0); - Spectrum analyser settings setup according to FCC KDB 558074 sect. 13.2 (marker delta method) Detector: Peak, Trace: max hold (over last 100 sweeps), RBW: 100 kHz, VBW=300 kHz; - Applicable limit: 20dBc (output power conformity assessed using Peak detector); - Test executed with the following BT settings: <ul style="list-style-type: none"> • BLE mode with modulation GFSK on channel 0 and 78 with data rate at 1Mbps | | |

6.1 Apparecchiature utilizzate / Test Equipment Used – Maximum Peak Conducted Output Power

| <i>Apparecchiature usate/Equipment Used</i> | <i>Modello/Model</i> | <i>Costruttore/Manufacturer</i> | <i>Numero di serie/Serial Number</i> | <i>Data calibrazione / Calibration date</i> | <i>Intervallo / Interval</i> |
|---|----------------------|---------------------------------|--------------------------------------|---|------------------------------|
| EMI Receiver MXE | N9038A | Agilent Technologies | MY51210230 | 05/2015 | 1 year |
| 30dB Attenuator | PE7087-30 | Pasternack | EL082315 | 09/2015 | 1 year |

6.2 Fotografie del setup / Photo of the test setup –Band-edge Compliance



6.3 Risultati / Results - Band-edge Compliance

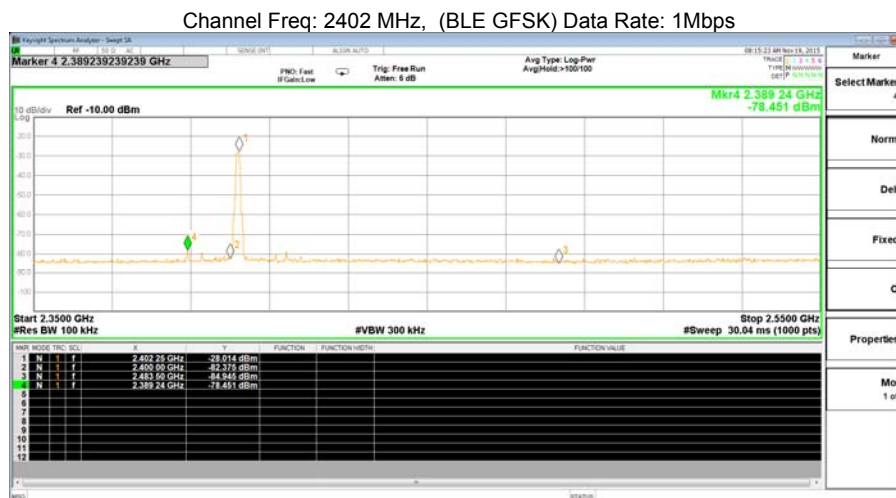
The result of the test is: **PASS**. See the details in the charts/tables of the following paragraphs (see the worst case in bold text).

6.3.1 Tabelle e grafici dei risultati / Tables and graphical representation of data – Band-edge Compliance

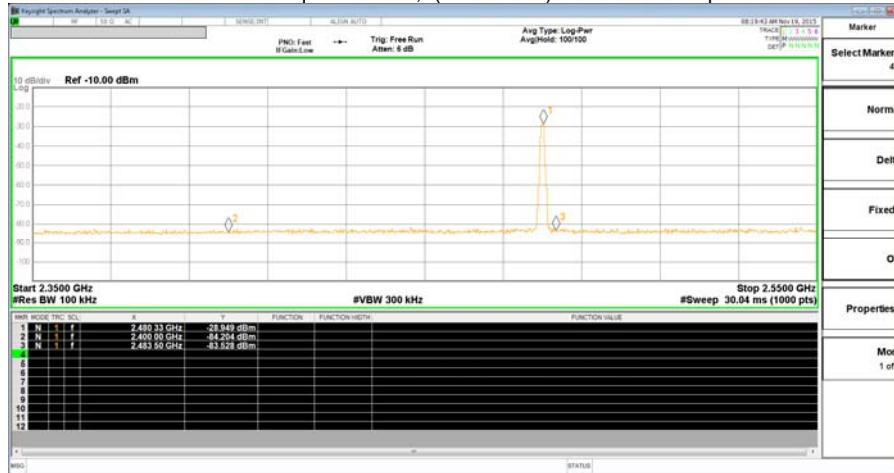
Measures executed on Bluetooth

Hopping OFF

| Modulation mode | Data Rate (Mbps) | Max Signal Frequency (MHz) | Max Signal (dBm) | Frequency of Max OOB signal (MHz) | Max OOB Signal (dBm) | Value (dBc) | Limit (dBc) |
|-----------------|------------------|----------------------------|------------------|-----------------------------------|----------------------|-------------|-------------|
| BLE | 1 | 2402,1 | -28,0 | 2402,3 | -78,02 | 50,0 | 20,0 |
| | | 2479,9 | -28,9 | 2480,3 | -83,53 | 54,6 | 20,0 |



Channel Freq: 2480 MHz, (BLE GFSK) Data Rate: 1Mbps



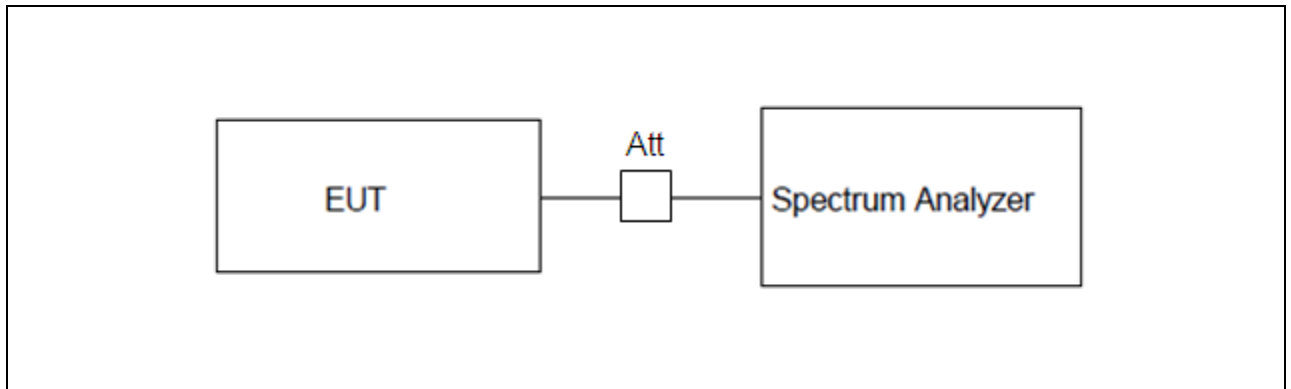
7.0 Conducted Spurious Emissions -Condizioni di prova / Test Conditions

| | | |
|--|--|-------------|
| Technician / Tecnico: Loris Fruch | | |
| Table No. | TEST: Conducted Spurious Emissions, Section 15.247 (d) | \ |
| Method | KDB_558074 sect. 11.0 | \ |
| Parameters required prior to the test | Laboratory Ambient Temperature | 18 to 28 °C |
| | Relative Humidity | 20 to 90 % |
| Parameters recorded during the test | Laboratory Ambient Temperature | 21°C |
| | Relative Humidity | 56 % |
| Supplementary information: | | |
| <ul style="list-style-type: none"> - Conducted Test, executed at WLAN/Bluetooth antenna output (50ohm, SMA) connected to the Spectrum Analyser through an attenuator (30 dB); - Frequency range of the measurements: up to 26GHz. - EUT powered at 24Vdc; - EUT Operating Mode: Mode1(see par. 2.0); - Spectrum analyser settings setup according to FCC KDB 558074 sect. 11.0 (peak detection): Detector= Peak, Trace= max hold (over last 20 sweeps), RBW= 100 kHz, VBW=300 kHz, - Test aim is to verify that in any 100 kHz bandwidth outside the frequency band in which the digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator is at least 20dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power. - Test executed with the following BT settings: <ul style="list-style-type: none"> • LE mode with modulation BLE GFSK on channel 0 and 78 with data rate at 1Mbps | | |

7.1 Apparecchiature utilizzate / Test Equipment Used – Maximum Peak Conducted Output Power

| <i>Apparecchiature usate/Equipment Used</i> | <i>Modello/Model</i> | <i>Costruttore/Manufacturer</i> | <i>Numero di serie/Serial Number</i> | <i>Data calibrazione / Calibration date</i> | <i>Intervallo / Interval</i> |
|---|----------------------|---------------------------------|--------------------------------------|---|------------------------------|
| EMI Receiver MXE | N9038A | Agilent Technologies | MY51210230 | 05/2015 | 1 year |
| 30dB Attenuator | PE7087-30 | Pasternack | EL082315 | 09/2015 | 1 year |

7.2 Fotografie del setup / Photo of the test setup –Conducted Spurious Emissions



7.3 Risultati / Results - Conducted Spurious Emissions

The amplitude of spurious emissions is lower than 20 dBc, thus the result of the test is: **PASS**. See the details in the charts of the following paragraphs.

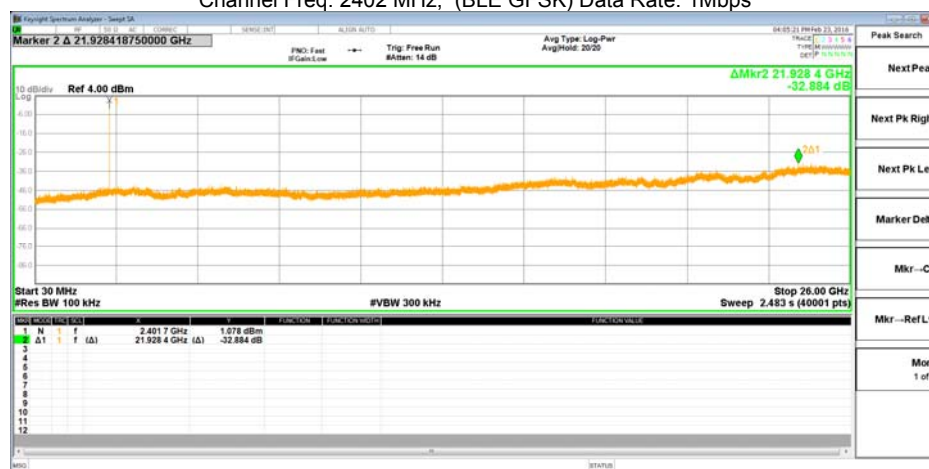
7.3.1 Grafici dei risultati / Graphical representation data – Conducted Spurious Emissions

Note: all the traces reported in this section have been obtained with detector Peak, max hold (over last 20 sweeps); RBW: 100kHz, VBW:300kHz

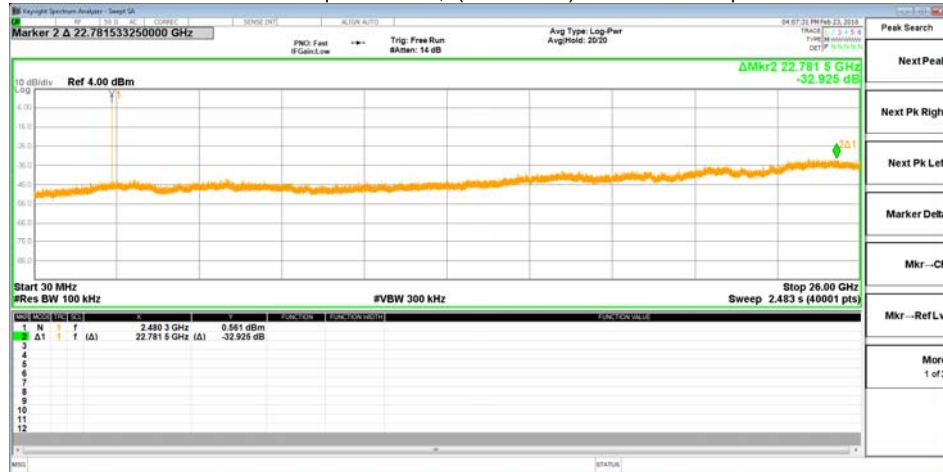
Measures executed on Bluetooth

Hopping OFF

Channel Freq: 2402 MHz, (BLE GFSK) Data Rate: 1Mbps



Channel Freq: 2480 MHz, (BLE GFSK) Data Rate: 1Mbps



Allegato 2 / Annex 2: Incertezza / Uncertainty

A.2.1 Radio test

| | |
|----------------------------------|--|
| Conducted output power | : ± 2.1 dB |
| Conducted adjacent channel power | : ± 1.6 dB |
| Conducted Bandwidth | : ± 9.1 KHz (Span=40MHz, RBW=430KHz, 1000pts) : ± 7.7 KHz (Span=40MHz, RBW=100KHz, 1000pts) : ± 10.6 KHz (Span=80MHz, RBW=100KHz, 1000pts) |
| Conducted spurious emission | : ± 3.7 dB |