AT4 wireless, S.A.U.
Parque Tecnológico de Andalucía,
c/ Severo Ochoa nº 2 · 29590 Campanillas · Málaga · España
www.at4wireless.com · C.I.F. A29 507 456

Informe de ensayo nº:
Test report No:

NIE: 48081RRF.001

Test report
ETSI EN 300 328 v 1.9.1 (2015-02)

Identificación del objeto ensayado.....: Identification of item tested	ISM band radio transceiver
Marca .....: Trademark	N52 Series
Modelo y/o referencia tipo .....: Model and /or type reference	N52832
Other identification of the product .....:	S/N: nRF52FP1_CC06
Final HW version .....:	N52832 QFAA, PCA 70028 r2.2.0
Final SW version .....:	nDTM_r15008
Características .....: Features	DTM 2-wire UART
Fabricante .....: Manufacturer	Nordic Semiconductor ASA Otto Nielsens veg 12, N-7052 Trondheim, Norway
Método de ensayo solicitado, norma.....: Test method requested, standard	ETSI EN 300 328 v1.9.1 (2015-02): Electromagnetic compatibility and Radio spectrum Matters (ERM); Wideband transmission systems; Data transmission equipment operating in the 2,4 GHz ISM band and using wide band modulation techniques; Harmonized EN covering the essential requirements of article 3.2 of the R&TTE Directive.
Resultado.....: Summary	IN COMPLIANCE
Aprobado por (nombre / cargo y firma) .....: Approved by (name / position & signature)	A. Llamas RF Lab. Manager  Firmado digitalmente por ALEJANDRO LLAMAS RODRIGUEZ Fecha: 2016.01.18 15:08:01 +01'00'
Fecha de realización .....: Date of issue	2016-01-18
Formato de informe No. .....: Report template No	FDT08_17

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Competences and guarantees

AT4 wireless is a testing laboratory competent to carry out the tests described in this report.

In order to assure the traceability to other national and international laboratories, AT4 wireless has a calibration and maintenance program for its measurement equipment.

AT4 wireless guarantees the reliability of the data presented in this report, which is the result of the measurements and the tests performed to the item under test on the date and under the conditions stated on the report and, it is based on the knowledge and technical facilities available at AT4 wireless at the time of performance of the test.

AT4 wireless is liable to the client for the maintenance of the confidentiality of all information related to the item under test and the results of the test.

The results presented in this Test Report apply only to the particular item under test established in this document.

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General conditions

1. This report is only referred to the item that has undergone the test.
2. This report does not constitute or imply on its own an approval of the product by the Certification Bodies or competent Authorities.
3. This document is only valid if complete; no partial reproduction can be made without previous written permission of AT4 wireless.
4. This test report cannot be used partially or in full for publicity and/or promotional purposes without previous written permission of AT4 wireless and the Accreditation Bodies.

Uncertainty

Uncertainty (factor k=2) was calculated according to the AT4 wireless internal document PODT000.

Usage of samples

Samples undergoing test have been selected by: **the client**

Sample S/01 is composed of the following elements:

Control Nº	Description	Model	Serial Nº	Date of reception
48081/001	Test Board (Bluetooth low energy transceiver) with antenna connector	N52832	nRF52FP1_CC06	2015-12-02
48081/002	Antenna	ANT-2.4-CW-RAH	---	2015-12-02
48081/003	USB cable	---	---	2015-12-02

1. Sample S/01 has undergone following test(s).

   All radiated tests indicated in appendix A.

Sample S/02 is composed of the following elements:

Control Nº	Description	Model	Serial Nº	Date of reception
48081/001	Test Board (Bluetooth low energy transceiver) with antenna connector	N52832	nRF52FP1_CC06	2015-12-02
48081/003	USB cable	---	---	2015-12-02

1. Sample S/02 has undergone following test(s).

   All conducted tests indicated in appendix A.

Test sample description

The test sample consists of a Bluetooth low energy transceiver

Identification of the client

NORDIC SEMICONDUCTOR ASA

Otto Nielsens veg 12, N-7052 Trondheim, Norway

Testing period

The performed test started on 2015-12-18 and finished on 2015-12-23.

The tests have been performed at AT4 wireless.

Environmental conditions

In the control chamber, the following limits were not exceeded during the test:

Temperature	Min. = 15 ºC Max. = 35 ºC
Relative humidity	Min. = 20 % Max. = 75 %
Shielding effectiveness	> 100 dB
Electric insulation	> 10 kΩ
Reference resistance to earth	< 1 Ω

In the semianechoic chamber, the following limits were not exceeded during the test.

Temperature	Min. = 15 ºC Max. = 35 ºC
Relative humidity	Min. = 20 % Max. = 75 %
Air pressure	Min. = 860 mbar Max. = 1060 mbar
Shielding effectiveness	> 100 dB
Electric insulation	> 10 kΩ
Reference resistance to earth	< 1 Ω
Normal site attenuation (NSA)	< ±4 dB at 10 m distance between item under test and receiver antenna, (30 MHz to 1000 MHz)
Field homogeneity	More than 75% of illuminated surface is between 0 and 6 dB (26 MHz to 1000 MHz).

In the chamber for conducted measurements, the following limits were not exceeded during the test:

Temperature	Min. = 15 ºC Max. = 35 ºC
Relative humidity	Min. = 20 % Max. = 75 %
Air pressure	Min. = 860 mbar Max. = 1060 mbar
Shielding effectiveness	> 100 dB
Electric insulation	> 10 kΩ
Reference resistance to earth	< 1 Ω

Remarks and comments

1: The equipment is declared as non-adaptive equipment using other forms of modulation than FHSS. The maximum declared RF Output power level is less than 10 dBm e.i.r.p.

2: Test not requested.

3: Used instrumentation:

Conducted Measurements

1. Test system Rohde & Schwarz TS 8997:

		Last Cal. date	Cal. due date
1.	Spectrum analyser Rohde & Schwarz FSL6	2014/06	2016/06
2.	Switch unit Rohde & Schwarz with power detector OSP120 / OSP-B157	2015/11	2017/11
3.	RF generator Rohde & Schwarz SMB100A	2015/07	2017/07
4.	RF generator Rohde & Schwarz SMU200A	2014/05	2016/05
5.	DC power supply R&S NGPE 40/40	2014/11	2017/11
6.	Climatic chamber HERAEUS VM 04/35	2014/03	2016/03

Radiated Measurements

		Last Cal. date	Cal. due date
1.	Semianechoic Absorber Lined Chamber ETS FACT3 200STP	N.A.	N.A.
2.	BiconicalLog antenna ETS LINDGREN 3142E	2014/03	2017/03
3.	Multi Device Controller EMCO 2090	N.A.	N.A.
4.	Double-ridge Guide Horn antenna 1-18 GHz SCHWARZBECK BBHA 9120 D	2013/11	2016/11
5.	Broadband Horn antenna 18-40 GHz SCHWARZBECK BBHA 9170	2014/03	2017/03
6.	EMI Test Receiver R&S ESU 40	2014/02	2016/02
7.	EMI Test Receiver R&S ESU 26	2015/11	2017/11
8.	RF pre-amplifier 10 MHz-6 GHz SCHWARZBECK BBV9743	2015/03	2016/03
9.	RF pre-amplifier 1-18 GHz Bonn Elektronik BLMA 0118-3A	2015/05	2016/05

Testing verdicts

Not applicable ..... :	N/A
Pass ..... :	P
Fail ..... :	F
Not measured ..... :	N/M

1. Bluetooth Low Energy

EN 300 328 PARAGRAPH		VERDICT			
		NA	**P**	**F**	**NM**
4.3.2.2	**Transmitter. RF Output Power**		P		
4.3.2.3	**Transmitter. Power Spectral Density**		P		
4.3.2.4	**Transmitter. Duty cycle, Tx-Sequence, Tx-gap**	NA[1]			
4.3.1.4	**Accumulated Transmit Time, Frequency Occupation & Hopping Sequence**	NA			
4.3.1.5	**Hopping Frequency Separation**	NA			
4.3.2.5	**Medium Utilisation**	NA[1]			
4.3.2.6	**Adaptivity**	NA[1]			
4.3.2.7	**Occupied Channel Bandwidth**		P		
4.3.2.8	**Transmitter unwanted emissions in the out-of-band domain**		P		
4.3.2.9	**Transmitter unwanted emissions in the spurious domain (conducted)**	NA			
4.3.2.9	**Transmitter unwanted emissions in the spurious domain (radiated)**		P		
4.3.2.10	**Receiver spurious emissions (conducted)**	NA			
4.3.2.10	**Receiver spurious emissions (radiated)**		P		
4.3.2.11	**Receiver blocking**	NA[1]			
4.3.2.12	**Geo-location capability**				NM[2]

1, 2: See section “Remarks and comments”.

Appendix A – Application form

Information as required by EN 300 328 V1.9.1, clause 5.3.1

In accordance with EN 300 328, clause 5.3.1, the following information is provided by the supplier.

a) The type of modulation used by the equipment:

☐ FHSS

☐ Medical Device reverse compatibility mode

☒ other forms of modulation

☐ Medical Device reverse compatibility mode

b) In case of FHSS modulation:

In case of non-Adaptive Frequency Hopping equipment:

The number of Hopping Frequencies: ……..

In case of Adaptive Frequency Hopping Equipment:

The maximum number of Hopping Frequencies: ……..

The minimum number of Hopping Frequencies: ……..

The Dwell Time: ……..

The minimum Channel Occupation Time: ……..

c) Adaptive / non-adaptive equipment:

☒ non-adaptive Equipment

☐ adaptive Equipment without the possibility to switch to a non-adaptive mode

☐ adaptive Equipment which can also operate in a non-adaptive mode

d) In case of adaptive equipment:

The maximum Channel Occupancy Time implemented by the equipment: ..... ms

☐ The equipment has implemented an LBT based DAA mechanism

- In case of equipment using modulation different from FHSS:

☐ The equipment is Frame Based equipment

☐ The equipment is Load Based equipment

☐ The equipment can switch dynamically between Frame Based and Load Based equipment

The CCA time implemented by the equipment: ..... µs

The value q as referred to in clause 4.3.2.5.2.2.2. ……..

☐ The equipment has implemented a non-LBT based DAA mechanism

☐ The equipment can operate in more than one adaptive mode

☐ The equipment has implemented Short Control Signalling Transmissions

e) In case of non-adaptive Equipment:

The maximum RF Output Power: <5.4 dBm

The maximum RF Output Power (e.i.r.p.): <7 dBm

The maximum (corresponding) Duty Cycle: 100 %

Equipment with dynamic behaviour, that behaviour is described here. (e.g. the different combinations of duty cycle and corresponding power levels to be declared):

.....

f) The worst case operational mode for each of the following tests:

RF Output Power

+4 dBm, 0 dBm –See Operating_Instructions_Qualification_Boards_nDTM_FCC_ETSI_r2.0.docx .

Power Spectral Density

.....

Duty cycle, Tx-Sequence, Tx-gap

.....100%.....

Accumulated Transmit time, Frequency Occupation & Hopping Sequence (only for FHSS equipment)

.....

Hopping Frequency Separation (only for FHSS equipment)

.....

Medium Utilization

.....

Adaptivity & Receiver Blocking

See: Operating_Instructions_Qualification_Boards_nDTM_FCC_ETSI_r2.0.docx

Nominal Channel Bandwidth

See: Operating_Instructions_Qualification_Boards_nDTM_FCC_ETSI_r2.0.docx

Transmitter unwanted emissions in the OOB domain

See: Operating_Instructions_Qualification_Boards_nDTM_FCC_ETSI_r2.0.docx

Transmitter unwanted emissions in the spurious domain

.....

Receiver spurious emissions

See: Operating_Instructions_Qualification_Boards_nDTM_FCC_ETSI_r2.0.docx

g) The different transmit operating modes (tick all that apply):

☐ Operating mode 1: Single Antenna Equipment

☐ Equipment with only one antenna

☐ Equipment with two diversity antennas but only one antenna active at any moment in time

☐ Smart Antenna Systems with two or more antennas, but operating in a (legacy) mode where only one antenna is used. (e.g. IEEE 802.11™ legacy mode in smart antenna systems)

☐ Operating mode 2: Smart Antenna Systems - Multiple Antennas without beam forming

☐ Single spatial stream / Standard throughput / (e.g. IEEE 802.11™ legacy mode)

☐ High Throughput (> 1 spatial stream) using Nominal Channel Bandwidth 1

☐ High Throughput (> 1 spatial stream) using Nominal Channel Bandwidth 2

NOTE: Add more lines if more channel bandwidths are supported.

☐ Operating mode 3: Smart Antenna Systems - Multiple Antennas with beam forming

☐ Single spatial stream / Standard throughput (e.g. IEEE 802.11™ legacy mode)

☐ High Throughput (> 1 spatial stream) using Nominal Channel Bandwidth 1

☐ High Throughput (> 1 spatial stream) using Nominal Channel Bandwidth 2

NOTE: Add more lines if more channel bandwidths are supported.

h) In case of Smart Antenna Systems:

The number of Receive chains: .....

The number of Transmit chains: .....

☐ symmetrical power distribution

☐ asymmetrical power distribution

In case of beam forming, the maximum (additional) beam forming gain: ..... dB

NOTE: The additional beam forming gain does not include the basic gain of a single antenna.

i) Operating Frequency Range(s) of the equipment:

Operating Frequency Range 1: 2402 MHz to 2480 MHz

Operating Frequency Range 2: ..... MHz to ..... MHz

NOTE: Add more lines if more Frequency Ranges are supported.

j) Nominal Channel Bandwidth(s):

Nominal Channel Bandwidth 1:..... MHz

Nominal Channel Bandwidth 2:..... MHz

NOTE: Add more lines if more channel bandwidths are supported.

k) Type of Equipment (stand-alone, combined, plug-in radio device, etc.):

☐ Stand-alone

☐ Combined Equipment (Equipment where the radio part is fully integrated within another type of equipment)

☐ Plug-in radio device (Equipment intended for a variety of host systems)

☐ Other .....

l) The extreme operating conditions that apply to the equipment:

Operating temperature range: -40 ° C to +85 C

Operating voltage range: 1.7 V to 3.6 V ☐ AC ☒ DC

Details provided are for the:

☐ stand-alone equipment

☐ combined (or host) equipment

☐ test jig

m) The intended combination(s) of the radio equipment power settings and one or more antenna assemblies and their corresponding e.i.r.p levels:

- Antenna Type:

☐ Integral Antenna

Antenna Gain: 1.6 dBi

If applicable, additional beamforming gain (excluding basic antenna gain): ..... dB

☐ Temporary RF connector provided

☐ No temporary RF connector provided

☐ Dedicated Antennas (equipment with antenna connector)

☐ Single power level with corresponding antenna(s)

☐ Multiple power settings and corresponding antenna(s)

Number of different Power Levels: .....

Power Level 1: ..... dBm

Power Level 2: ..... dBm

Power Level 3: ..... dBm

NOTE 1: Add more lines in case the equipment has more power levels.

NOTE 2: These power levels are conducted power levels (at antenna connector).

For each of the Power Levels, provide the intended antenna assemblies, their corresponding gains (G) and the resulting e.i.r.p. levels also taking into account the beamforming gain (Y) if applicable

Power Level 1: ..... dBm

Number of antenna assemblies provided for this power level: .....

Assembly #	Gain (dBi)	e.i.r.p. (dBm)	Part number or model name
1			
2			
3			
4			

NOTE: Add more rows in case more antenna assemblies are supported for this power level.

Power Level 2: ..... dBm

Number of antenna assemblies provided for this power level: .....

Assembly #	Gain (dBi)	e.i.r.p. (dBm)	Part number or model name
1			
2			
3			
4			

NOTE: Add more rows in case more antenna assemblies are supported for this power level.

Power Level 3: ..... dBm

Number of antenna assemblies provided for this power level: .....

Assembly #	Gain (dBi)	e.i.r.p. (dBm)	Part number or model name
1			
2			
3			
4			

NOTE: Add more rows in case more antenna assemblies are supported for this power level.

n) The nominal voltages of the stand-alone radio equipment or the nominal voltages of the combined (host) equipment or test jig in case of plug-in devices:

Details provided are for the: ☐ stand-alone equipment

☐ combined (or host) equipment

☐ test jig

Supply Voltage ☐ AC mains State AC voltage …….. V

☐ DC State DC voltage …….. V

In case of DC, indicate the type of power source

☐ Internal Power Supply

☐ External Power Supply or AC/DC adapter

☐ Battery

☐ Other: .....

o) Describe the test modes available which can facilitate testing:

See: Operating_Instructions_Qualification_Boards_nDTM_FCC_ETSI_r2.0.docx

p) The equipment type (e.g. Bluetooth®, IEEE 802.11™, proprietary, etc.):

See: Operating_Instructions_Qualification_Boards_nDTM_FCC_ETSI_r2.0.docx

q) If applicable, the statistical analysis referred to in clause 5.3.1 q)

(to be provided as separate attachment)

r) If applicable, the statistical analysis referred to in clause 5.3.1 r)

(to be provided as separate attachment)

s) Geo-location capability supported by the equipment:

☐ Yes

☐ The geographical location determined by the equipment as defined in clause 4.3.1.13.2 or clause 4.3.2.12.2 is not accessible to the user.

☐ No

Appendix B – Test results. Bluetooth Low Energy

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TEST CONDITIONS

Power supply (V):

V_n = 3.0 Vdc

Temperature (ºC):

T_n = +15 to +35

T_{min} = -40 (*)

T_{max} = +85 (*)

The subscript n indicates normal test conditions.

The subscripts min and max indicates extreme test conditions (minimum and maximum respectively).

N/A: Not applicable.

(*): Declared by applicant.

TEST FREQUENCIES:

Lowest channel: 2402 MHz

Middle channel: 2440 MHz

Highest channel: 2480 MHz

PRODUCT INFORMATION

The following information is provided by the supplier, in accordance with clause 5.3.1:

Information	Description
Modulation	Other than FHSS
Adaptive	Non-adaptive equipment
Maximum RF Output Power (e.i.r.p.)	7.0 dBm
Operation mode 1: Single Antenna Equipment	Equipment with only one antenna
- Operating Frequency Range	2402 – 2480 MHz
- Nominal Channel Bandwidth	1 MHz
Extreme operating conditions	
- Temperature range	-40 ºC to +85 ºC
Antenna type	External attachable antenna
Antenna gain	1.6 dBi
Nominal Voltage	
- Supply Voltage	DC: 3.0 V
- Type of power source	External power supply
Equipment type	Bluetooth Low Energy

Test modes available:

- Continuous modulated carrier at 2402 MHz, 2440 MHz and 2480 MHz
- Continuous reception at 2402 MHz, 2440 MHz and 2480 MHz

TEST 4.3.2.2: Transmitter. RF Output Power.

LIMITS

For adaptive equipment using wide band modulations other than FHSS, the maximum RF output power shall be 20 dBm.

The maximum RF output power for non-adaptive equipment shall be declared by the supplier and shall not exceed 20 dBm. For non-adaptive equipment using wide band modulations other than FHSS, the maximum RF output power shall be equal to or less than the value declared by the supplier.

This limit shall apply for any combination of power level and intended antenna assembly.

RESULTS

Type of equipment: Non-adaptive equipment

Antenna assembly declared gain (dBi) = 1.6 dBi.

Power target: 4 dBm (BLE BitRate:1Mbs DCC:OFF)

Maximum RF output power (e.i.r.p.) declared by the supplier = 7.0 dBm.

		Transmitter power e.i.r.p. (dBm)		
TEST CONDITIONS		Lowest frequency	Middle frequency	Highest frequency
T_n	V_n	P= 5.550	P= 5.510	P= 5.890
T_{min}	V_n	P= 6.480	P= 6.490	P= 6.960
T_{max}	V_n	P= 4.340	P= 4.380	P= 4.570
Measurement uncertainty		<±0.66 dB		

Note: P is the e.i.r.p. as defined in clause 5.3.2.2.1.2 step 6

Verdict: PASS

TEST 4.3.2.3: Transmitter. Power Spectral Density.

LIMITS

For equipment using wide band modulations other than FHSS, the maximum Power Spectral Density is limited to 10 dBm per MHz.

RESULTS

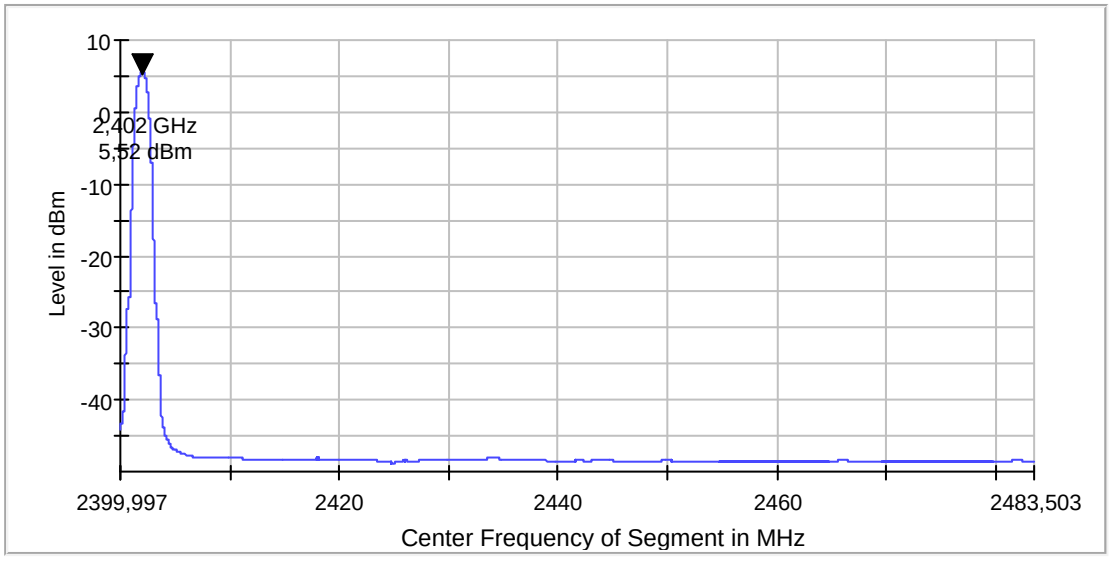
Antenna assembly declared maximum gain (dBi) = 1.6 dBi.
See next plots.

Power target: 4 dBm (BLE BitRate: 1Mbs DCC:ON)

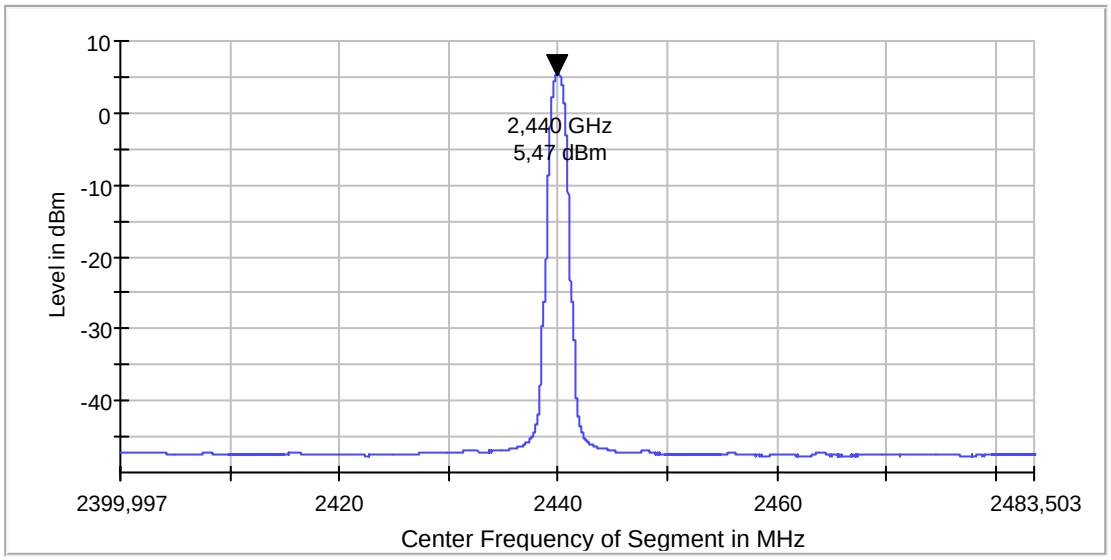
	Lowest frequency 2401.9824 MHz	Middle frequency 2439.9851 MHz	Highest frequency 2479.9877 MHz
Measured power density	5.52 dBm/1 MHz	5.47 dBm/1 MHz	5.87 dBm/1 MHz
Measurement uncertainty	<±0.95 dB		

Verdict: PASS

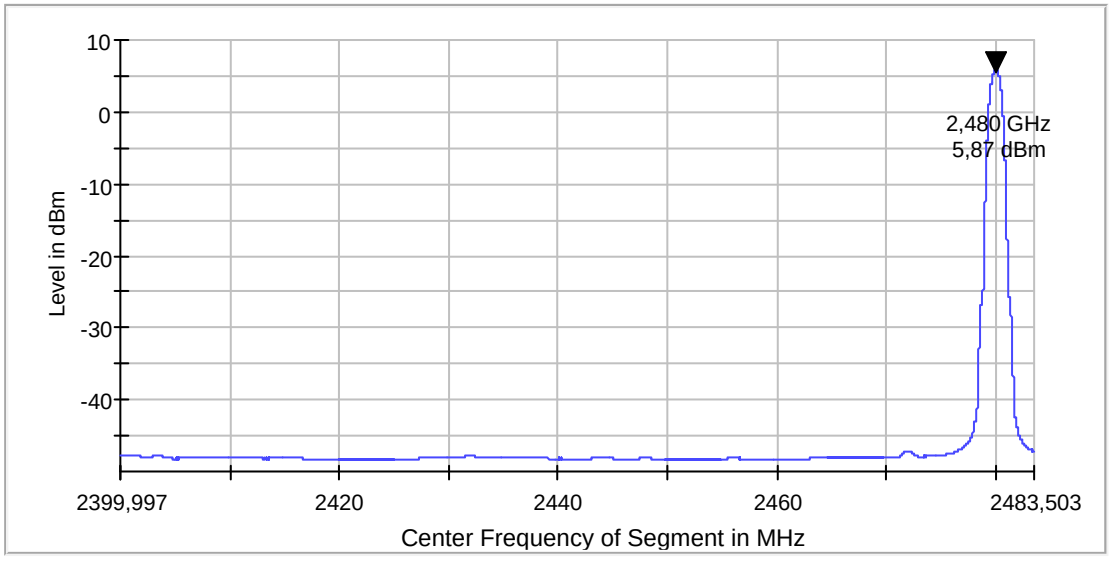
Channel Low



Channel Middle



Channel High



TEST 4.3.2.7: Occupied Channel Bandwidth.

LIMITS

The Occupied Channel Bandwidth shall fall completely within the 2400 – 2483.5 MHz band.

In addition, for non-adaptive systems using wide band modulations other than FHSS and with e.i.r.p greater than 10 dBm, the occupied channel bandwidth shall be less than 20 MHz.

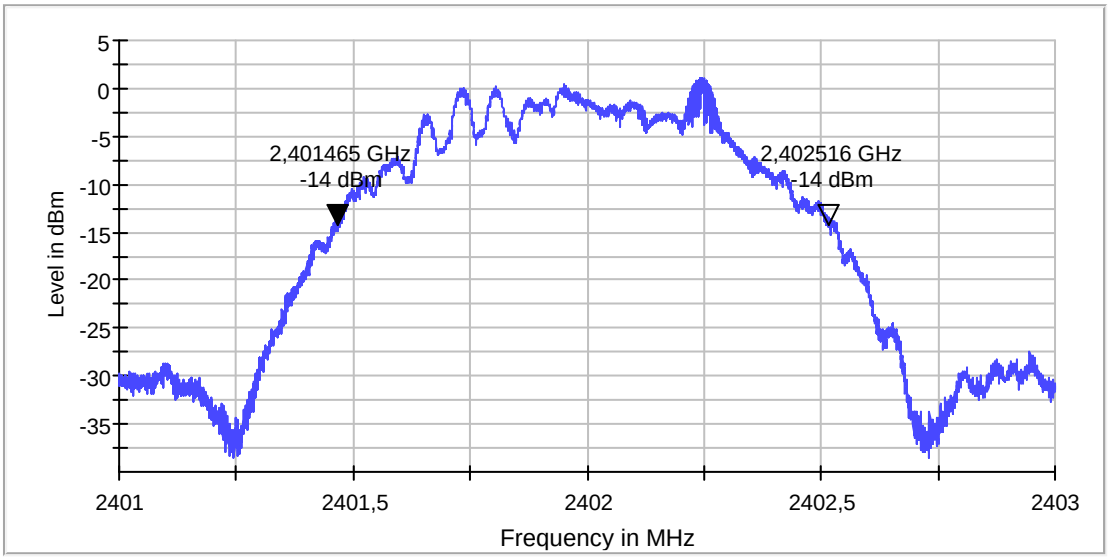
RESULTS:

Type of equipment: Non-adaptive equipment.
e.i.r.p. < 10 dBm

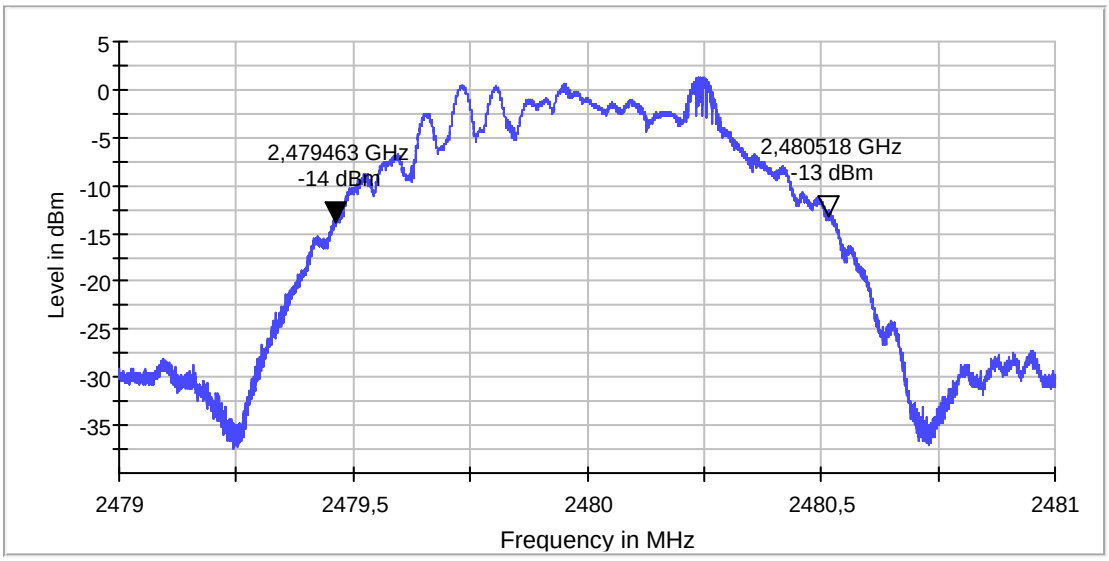
Power target: 4 dBm (BLE BitRate: 1Mbs DCC:ON)

Channel	Channel Center Frequency (MHz)	Occupied Channel Bandwidth (MHz)	Band Edge (MHz)
Lowest	2401.99050	1.0509	2401.46507
Highest	2479.99062	1.0551	2480.51819
Measurement uncertainty		< ± 1.31 kHz	

Channel Low



Channel High

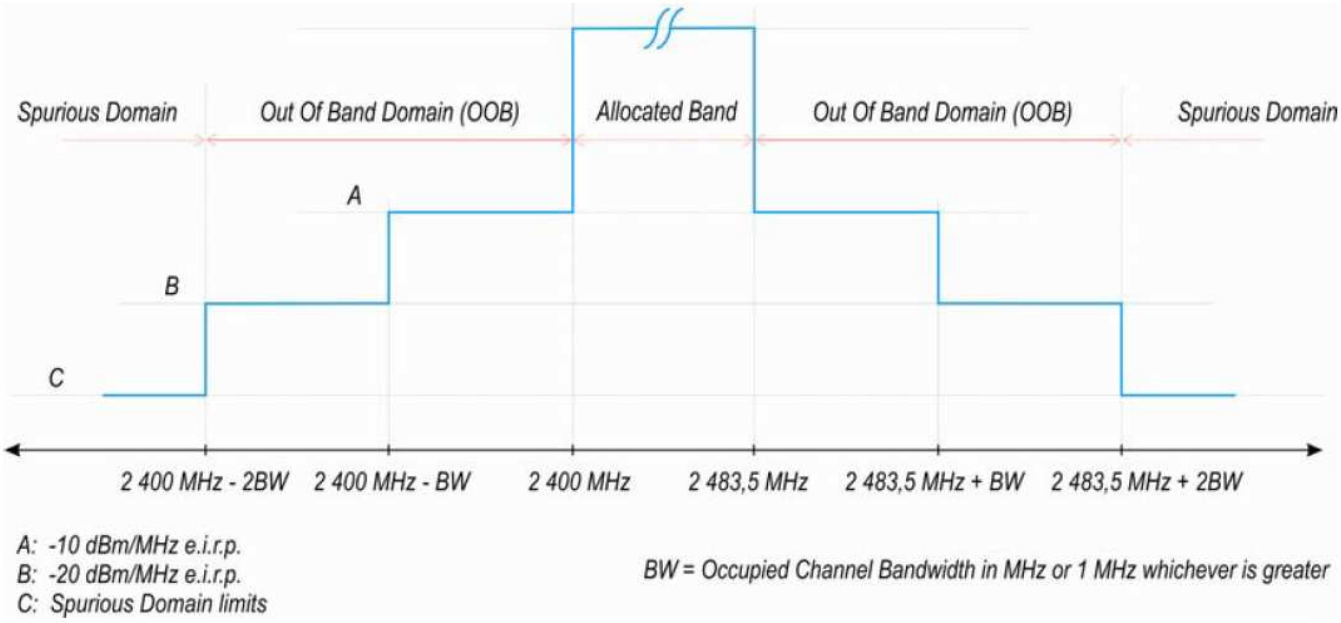


Verdict: PASS

TEST 4.3.2.8: Transmitter unwanted emissions in the out-of-band (OOB) domain.

LIMITS

The transmitter unwanted emissions in the out-of-band domain but outside the allocated band, shall not exceed the values provided in the next figure:



RESULTS:

Spurious levels operating (conducted).

Power target: 0 dBm (BLE BitRate: 1Mbs DCC:ON)

Channel	Frequency (MHz)	Level (dBm)	Limit (dBm)
Low	2398.500000	-46.91	-20.00
Low	2399.500000	-46.01	-10.00
Low	2484.000000	-47.62	-10.00
Low	2485.000000	-47.65	-20.00
High	2398.500000	-47.83	-20.00
High	2399.500000	-47.67	-10.00
High	2484.000000	-46.91	-10.00
High	2485.000000	-47.22	-20.00

Measurement uncertainty	<±0.95 dB

Power target: 4 dBm (BLE BitRate: 1Mbs DCC:ON)

Channel	Frequency (MHz)	Level (dBm)	Limit (dBm)
Low	2398.500000	-46.76	-20.00
Low	2399.500000	-45.59	-10.00
Low	2484.000000	-47.65	-10.00
Low	2485.000000	-47.66	-20.00
High	2398.500000	-47.83	-20.00
High	2399.500000	-47.64	-10.00
High	2484.000000	-46.81	-10.00
High	2485.000000	-47.12	-20.00

Measurement uncertainty	<±0.95 dB

Power target: 0 dBm (nRF BitRate: 2Mbs DCC:ON)

Channel	Frequency (MHz)	Level (dBm)	Limit (dBm)
Low	2398.500000	-45.93	-20.00
Low	2399.500000	-37.77	-10.00
Low	2484.000000	-47.56	-10.00
Low	2485.000000	-47.60	-20.00
High	2398.500000	-47.77	-20.00
High	2399.500000	-46.82	-10.00
High	2484.000000	-46.07	-10.00
High	2485.000000	-46.56	-20.00

Measurement uncertainty	<±0.95 dB

Power target: 4 dBm (nRF BitRate: 2Mbs DCC:ON)

Channel	Frequency (MHz)	Level (dBm)	Limit (dBm)
Low	2398.500000	-45.56	-20.00
Low	2399.500000	-36.83	-10.00
Low	2484.000000	-47.49	-10.00
Low	2485.000000	-47.58	-20.00
High	2398.500000	-47.72	-20.00
High	2399.500000	-46.57	-10.00
High	2484.000000	-45.81	-10.00
High	2485.000000	-46.27	-20.00

Measurement uncertainty	<±0.95 dB

Verdict: PASS

TEST 4.3.2.9: Transmitter unwanted emissions in the spurious domain (radiated).

LIMITS

The transmitter unwanted emissions in the spurious domain shall not exceed the values given in the next table:

Frequency range	Maximum power	Bandwidth
30 MHz to 47 MHz	-36 dBm	100 kHz
47 MHz to 74 MHz	-54 dBm	100 kHz
74 MHz to 87,5 MHz	-36 dBm	100 kHz
87,5 MHz to 118 MHz	-54 dBm	100 kHz
118 MHz to 174 MHz	-36 dBm	100 kHz
174 MHz to 230 MHz	-54 dBm	100 kHz
230 MHz to 470 MHz	-36 dBm	100 kHz
470 MHz to 862 MHz	-54 dBm	100 kHz
862 MHz to 1 GHz	-36 dBm	100 kHz
1 GHz to 12,75 GHz	-30 dBm	1 MHz

RESULTS:

The level of spurious emissions was measured as their effective radiated power when radiated by cabinet and antenna.

Spurious levels operating (radiated).

Power target: 4 dBm (BLE BitRate: 1Mbs DCC:ON)

Frequency range 30 MHz – 1000 MHz

The spurious signals detected do not depend on the operating channel.

No radiated spurious signals were detected at less than 6 dB respect to the limit for all the lowest, middle and highest operating channels.

Frequency range 1 GHz – 12.75 GHz

No radiated spurious signals were detected at less than 6 dB respect to the limit for all the lowest, middle and highest operating channels.

Power target: 0 dBm (BLE BitRate: 1Mbs DCC:ON)

Frequency range 30 MHz – 1000 MHz

The spurious signals detected do not depend on the operating channel.

No radiated spurious signals were detected at less than 6 dB respect to the limit for all the lowest, middle and highest operating channels.

Frequency range 1 GHz – 12.75 GHz

No radiated spurious signals were detected at less than 6 dB respect to the limit for all the lowest, middle and highest operating channels.

Verdict: PASS

TEST 4.3.2.10: Receiver spurious emissions (radiated).

LIMITS

The spurious emissions of the receiver shall not exceed the values given in the next table:

Frequency Range	Maximum power	Measurement bandwidth
30 MHz - 1 GHz	-57 dBm	100 kHz
above 1 GHz - 12.75 GHz	-47 dBm	1 MHz

RESULTS:

The level of spurious emissions was measured as their effective radiated power when radiated by cabinet and antenna.

Spurious levels (radiated).

Power target: 4 dBm (BLE BitRate: 1Mbs DCC:ON)

Frequency range 30 MHz – 1000 MHz

The spurious signals detected do not depend on the operating channel.

No radiated spurious signals were detected at less than 6 dB respect to the limit for all the lowest, middle and highest operating channels.

Frequency range 1 GHz – 12.75 GHz

No radiated spurious signals were detected at less than 6 dB respect to the limit for all the lowest, middle and highest operating channels.

Verdict: PASS

Appendix C - Photographs

EQUIPMENT VIEW