



Test report No:  
NIE:81351RBT.001

# Test report

## Bluetooth Low Energy RF-PHY Test Specification

(*) Identification of item tested	Multiprotocol wireless 32-bit MCU
(*) Trademark	STM32WBA
(*) Model and /or type reference tested	STM32WBA5Mxx
Other identification of the product	Not provided
(*) Features	BLE RF-PHY 6.0 SW version: V1.5.0 HW version: 2.x
(*) Manufacturer	ST Microelectronics 776 rue Albert Caquot Sophia Antipolis 06410 BIOT France
Test method requested, standard	Full RF-PHY testing according to Bluetooth RF-PHY Test Specification, Document Number RF-PHY.TS.p22
Standard .....	RF-PHY.TS.p22
Test Spec Errata(s) .....	N/A
(*)ICS .....	RF-PHY.ICS.p10
TCRL version .....	TCRL.2024-2
Test procedure(s) .....	PEBT006_08 BluetoothRFConductedTesting
Summary	IN COMPLIANCE
Approved by (name / position & signature)	Juan Manuel Gómez BQTF Technical Responsible
Date of issue	2024-11-29
Report template No	FBT039_20 (*) "Data provided by the client"

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## Competences and guarantees

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DEKRA Testing and Certification, S.A.U is a BQTF competent to carry out the tests described in this report.

DEKRA Testing and Certification, S.A.U is a testing laboratory accredited by A2LA (The American Association for Laboratory Accreditation) to perform the test indicated in the Certificate 3350.01.

In order to assure the traceability to other national and international laboratories, DEKRA Testing and Certification, S.A.U has a calibration and maintenance program for its measurement equipment.

DEKRA Testing and Certification, S.A.U 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 DEKRA Testing and Certification, S.A.U at the time of performance of the test.

DEKRA Testing and Certification, S.A.U 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

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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 DEKRA Testing and Certification, S.A.U.
4. This test report cannot be used partially or in full for publicity and/or promotional purposes without previous written permission of DEKRA Testing and Certification, S.A.U and the Accreditation Bodies

## Uncertainty

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Uncertainty (factor  $k=2$ ) was calculated according to the DEKRA Testing and Certification internal document PODT000.

## Data provided by the client

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The following data has been provided by the client:

1. Information relating to the description of the sample ("Identification of the item tested", "Trademark", "Model and/or type reference tested", "Features" and "Manufacturer")
2. The ICS and IXIT provided by the customer and used for testing are indicated in Annex B and C.

DEKRA declines any responsibility with respect to the information provided by the client and that may affect the validity of results.

## Usage of samples

Samples undergoing test have been selected by: ST Microelectronics

Id	Control Number	Description	Model	HW Version	SW Version	Serial N°	Date of reception
S/01	81351_1.1	Evaluation Board	STM32WB A5Mxx	2.x	V1.5.0	-	2024-11-27
S02	81351_1.3	Antenna array	-	-	-	-	2024-11-27

The sample used for each test case is specified in the "Test Sample" field of the results annex

## Test sample description

The STM32WBA5Mxx is an ultra-low-power and small form factor module which addresses 2.4 GHz solutions with Bluetooth® Low Energy SIG specification v6.0. Based on the STM32WBA5 MCU and packaged in UFBGA59, this module is ready-to-use and embeds the full reference design up to the antenna for faster market introduction. It offers performance, multi-protocol flexibility (Bluetooth® Low Energy SIG specification v6.0, IEEE 802.15.4-2015 PHY and MAC, supporting Thread, Zigbee® and matter), security features, the same ultra-low power features as STM32WBA wireless MCUs, and its certifications ensure wide geographical coverage. Fully part of the STM32WBA portfolio, the STM32WBA5Mxx is included in ST's longevity program, ensuring continuous supply for 10 years.

## Identification of the client

ST Microelectronics  
776 rue Albert Caquot Sophia Antipolis 06410 BIOT France

## Testing period and place

Test Location	DEKRA Testing and Certification S.A.U.
Date (start)	2024-11-28
Date (finish)	2024-11-28

## Document history

Report number	Date	Description
81351RBT.001	2024-11-29	First release

## Environmental conditions

The following limits were not exceeded during the test:

Temperature	Min= 18 °C
	Max= 28 °C
Relative humidity	Min= 20 %
	Max= 75 %

## Remarks and comments

The tests have been realized by the technical personnel: Oscar San José Calvo

For the setup with 4 antennas board an attenuation of 3 dBm has been taken into account. And an UFL-SMA cable with losses of 1.2 dBm.

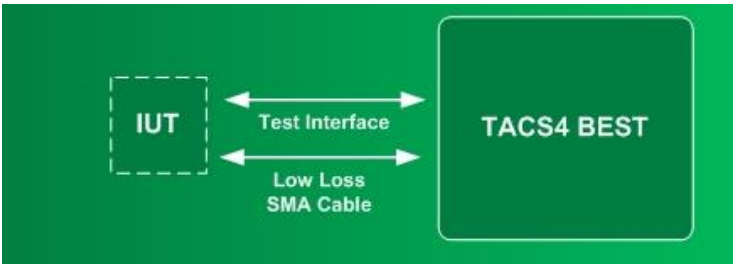
## Means of testing identification

Control No.	Name	Technology Package	User Interface
05852	TACS4 BEST Bluetooth RF Test System	v4.15.0_R1	GUI (TACS4_TSM_v1.5.0)

Control No.	Equipment	Serial No	Latest Calibration	Next Calibration
08426	CMW270 WIRELESS CONN. TESTER	102175	2024-07-30	2025-07-30
05767	LAN/GPIB/USB E5810B	MY56030024	--	--
02624	PICO TECHNOLOGY	IFY97/067	2024-04-15	2025-04-15
05399	PSG Signal Generators, 250KHZ-20GHZ	MY53401729	2024-11-19	2025-11-19
05398	Power Supply Agilent 66311B	MY52002833	2024-10-28	2025-10-28
03379	SIEPEL SHIELDED CHAMBER	06 825	--	--
08731	SIGNAL AND SPECTRUM ANALYZER 10Hz-7.5GHz	100965	2024-04-29	2025-04-29
05853	T4BCU100A	000001	--	--
04762	TEMPERATURE AND RELATIVE HUMIDITY MONITORING SOFTWARE	-	--	--
09042	ZTRC-8SPDT-A18 SWITCHING RF 8-PORT. RACK MOUNTED TEST EQUIPMENT	02106300143	--	--

## Test setup

The configuration used for Test Cases in nominal temperature conditions was the following one:



## Measurement uncertainty

TACS4 BEST Bluetooth RF Test System uncertainty values<sup>1</sup>, 2 and the corresponding limits, according to the RF-PHY Bluetooth Test Specification, can be found below:

Test Cases	Measurement uncertainty	Test System uncertainty	Test Specifications Limit
RFPHY/TRM/BV-01-C RFPHY/TRM/BV-18-C RFPHY/TRM/BV-19-C RFPHY/TRM/BV-20-C RFPHY/TRM/BV-21-C RFPHY/TRM/BV-22-C RFPHY/TRM/BV-23-C	Absolute RF power (wanted channel)	±0.98 dB	±1.2 dB
RFPHY/TRM/BV-03-C	Absolute RF power (unwanted emissions in the BT band)	±2.46 dB	±3 dB
RFPHY/TRM/BV-05-C	Absolute radio frequency	±4.70 kHz	±5 kHz
	Frequency deviation	±3.96 kHz	±4 kHz
RFPHY/TRM/BV-06-C	Absolute radio frequency	±4.70 kHz	±5 kHz
	Relative drift radio frequency	±1.00 kHz	±1 kHz
RFPHY/TRM/BV-08-C	Absolute RF power (unwanted emissions in the BT band)	±2.46 dB	±3 dB
RFPHY/TRM/BV-09-C	Absolute radio frequency	±4.70 kHz	±5 kHz
	Frequency deviation	±3.96 kHz	±4 kHz
RFPHY/TRM/BV-10-C	Absolute radio frequency	±4.70 kHz	±5 kHz
	Frequency deviation	±3.90 kHz	±4 kHz
RFPHY/TRM/BV-11-C	Absolute radio frequency	±4.70 kHz	±5 kHz
	Frequency deviation	±3.90 kHz	±4 kHz
RFPHY/TRM/BV-12-C	Absolute radio frequency	±4.70 kHz	±5 kHz
	Relative drift radio frequency	±1.00 kHz	±1 kHz
RFPHY/TRM/BV-13-C	Absolute radio frequency	±4.70 kHz	±5 kHz
	Frequency deviation	±3.96 kHz	±4 kHz
RFPHY/TRM/BV-14-C	Absolute radio frequency	±4.70 kHz	±5 kHz
	Relative drift radio frequency	±1.00 kHz	±1 kHz
RFPHY/TRM/BV-15-C	Absolute RF power (wanted channel)	±0.98 dB	±1.2 dB
RFPHY/TRM/BV-16-C	Absolute radio frequency	±4.70 kHz	±5 kHz
	Relative drift radio frequency	±1.00 kHz	±1 kHz
RFPHY/TRM/BV-17-C	Absolute radio frequency	±4.70 kHz	±5 kHz
	Relative drift radio frequency	±1.00 kHz	±1 kHz
RFPHY/TRM/PS/BV-xx-C	Absolute RF power (wanted channel)	±0.98 dB	±1.2 dB
RFPHY/TRM/ASI/BV-xx-C	Absolute RF power (wanted channel)	±0.98 dB	±1.2 dB

Note 1: All values reflect a 95% confidence level.

Note 2: All values are valid for a temperature range of 23±5°C

## Testing verdicts

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

# Appendix A: Test results



## Test campaign report

TC Code	Description	Date	Test Sample	Result
RFPHY/RCV/BV-01-C	Receiver sensitivity, uncoded data at 1 Ms/s	2024-11-28	S/01	P
RFPHY/RCV/BV-03-C	C/I and Receiver Selectivity Performance, uncoded data at 1 Ms/s	2024-11-28	S/01	P
RFPHY/RCV/BV-04-C	Blocking Performance, uncoded data at 1 Ms/s	2024-11-28	S/01	P
RFPHY/RCV/BV-05-C	Intermodulation Performance, uncoded data at 1 Ms/s	2024-11-28	S/01	P
RFPHY/RCV/BV-06-C	Maximum input signal level, uncoded data at 1 Ms/s	2024-11-28	S/01	P
RFPHY/RCV/BV-07-C	PER Report Integrity, uncoded data at 1 Ms/s	2024-11-28	S/01	P
RFPHY/RCV/BV-08-C	Receiver sensitivity at 2 Ms/s	2024-11-28	S/01	P
RFPHY/RCV/BV-09-C	C/I and Receiver Selectivity Performance at 2 Ms/s	2024-11-28	S/01	P
RFPHY/RCV/BV-10-C	Blocking performance at 2 Ms/s	2024-11-28	S/01	P
RFPHY/RCV/BV-11-C	Intermodulation performance at 2 Ms/s	2024-11-28	S/01	P
RFPHY/RCV/BV-12-C	Maximum input signal level at 2 Ms/s	2024-11-28	S/01	P
RFPHY/RCV/BV-13-C	PER Report Integrity at 2 Ms/s	2024-11-28	S/01	P
RFPHY/RCV/BV-26-C	Receiver sensitivity, LE Coded (S=2)	2024-11-28	S/01	P
RFPHY/RCV/BV-27-C	Receiver sensitivity, LE Coded (S=8)	2024-11-28	S/01	P
RFPHY/RCV/BV-28-C	C/I and Receiver Selectivity Performance, LE Coded (S=2)	2024-11-28	S/01	P
RFPHY/RCV/BV-29-C	C/I and Receiver Selectivity Performance, LE Coded (S=8)	2024-11-28	S/01	P
RFPHY/RCV/BV-30-C	PER Report Integrity, LE Coded (S=2)	2024-11-28	S/01	P
RFPHY/RCV/BV-31-C	PER Report Integrity, LE Coded (S=8)	2024-11-28	S/01	P
RFPHY/RCV/IQC/BV-05-C	IQ Samples Coherency, AoA Receiver at 1 Ms/s with 2 $\mu$ s Slot	2024-11-28	S/01	P
RFPHY/RCV/IQC/BV-06-C	IQ Samples Coherency, AoA Receiver at 2 Ms/s with 2 $\mu$ s Slot	2024-11-28	S/01	P
RFPHY/RCV/IQDR/BV-11-C	IQ Samples Dynamic Range, AoA Receiver at 1 Ms/s with 2 $\mu$ s Slot	2024-11-28	S/01	P
RFPHY/RCV/IQDR/BV-12-C	IQ Samples Dynamic Range, AoA Receiver at 2 Ms/s with 2 $\mu$ s Slot	2024-11-28	S/01	P
RFPHY/TRM/BV-01-C	Output power, 1 Ms/s	2024-11-28	S/01	P
RFPHY/TRM/BV-03-C	In-band emissions, uncoded data at 1 Ms/s	2024-11-28	S/01	P
RFPHY/TRM/BV-05-C	Modulation Characteristics, uncoded data at 1 Ms/s	2024-11-28	S/01	P
RFPHY/TRM/BV-06-C	Carrier frequency offset and drift, uncoded data at 1 Ms/s	2024-11-28	S/01	P
RFPHY/TRM/BV-08-C	In-band emissions at 2 Ms/s	2024-11-28	S/01	P
RFPHY/TRM/BV-10-C	Modulation Characteristics at 2 Ms/s	2024-11-28	S/01	P
RFPHY/TRM/BV-12-C	Carrier frequency offset and drift at 2 Ms/s	2024-11-28	S/01	P
RFPHY/TRM/BV-13-C	Modulation Characteristics, LE Coded (S=8)	2024-11-28	S/01	P
RFPHY/TRM/BV-14-C	Carrier frequency offset and drift, LE Coded (S=8)	2024-11-28	S/01	P
RFPHY/TRM/BV-15-C	Output power, With Constant Tone Extension, 1 Ms/s	2024-11-28	S/01	P
RFPHY/TRM/BV-16-C	Carrier frequency offset and drift, uncoded data at 1 Ms/s, Constant Tone Extension	2024-11-28	S/01	P
RFPHY/TRM/BV-17-C	Carrier frequency offset and drift at 2 Ms/s, Constant Tone Extension	2024-11-28	S/01	P
RFPHY/TRM/BV-19-C	Output power, 2 Ms/s	2024-11-28	S/01	P
RFPHY/TRM/BV-22-C	Output power, With Constant Tone Extension, 2 Ms/s	2024-11-28	S/01	P
RFPHY/TRM/PS/BV-01-C	Tx Power Stability, AoD Transmitter at 1 Ms/s with 2 $\mu$ s Switching Slot	2024-11-28	S/01	P

TC Code	Description	Date	Test Sample	Result
RFPHY/TRM/PS/BV-02-C	Tx Power Stability, AoD Transmitter at 1 Ms/s with 1 $\mu$ s Switching Slot	2024-11-28	S/01	P
RFPHY/TRM/PS/BV-03-C	Tx Power Stability, AoD Transmitter at 2 Ms/s with 2 $\mu$ s Switching Slot	2024-11-28	S/01	P
RFPHY/TRM/PS/BV-04-C	Tx Power Stability, AoD Transmitter at 2 Ms/s with 1 $\mu$ s Switching Slot	2024-11-28	S/01	P
RFPHY/TRM/ASI/BV-05-C	Antenna switching integrity, AoD Transmitter at 1 Ms/s with 2 $\mu$ s Switching Slot	2024-11-28	S/01	P
RFPHY/TRM/ASI/BV-06-C	Antenna switching integrity, AoD Transmitter at 1 Ms/s with 1 $\mu$ s Switching Slot	2024-11-28	S/01	P
RFPHY/TRM/ASI/BV-07-C	Antenna switching integrity, AoD Transmitter at 2 Ms/s with 2 $\mu$ s Switching Slot	2024-11-28	S/01	P
RFPHY/TRM/ASI/BV-08-C	Antenna switching integrity, AoD Transmitter at 2 Ms/s with 1 $\mu$ s Switching Slot	2024-11-28	S/01	P

## Relevant numerical results

### Bluetooth® RF-PHY TS

#### RFPHY/TRM/BV-01-C Output power, 1 Ms/s

##### Results

Measurements								
Max Output Power [f=2402] (dBm)	Max Output Power [f=2440] (dBm)	Max Output Power [f=2480] (dBm)	Average Output Power [f=2402] (dBm)	Average Output Power [f=2440] (dBm)	Average Output Power [f=2480] (dBm)	Average Output Power [EIRP] [f=2402] (dBm)	Average Output Power [EIRP] [f=2440] (dBm)	Average Output Power [EIRP] [f=2480] (dBm)
8.530	8.58	8.46	8.510	8.560	8.440	10.460	10.510	10.390

#### RFPHY/TRM/BV-19-C Output power, 2 Ms/s

##### Results

Measurements								
Max Output Power [f=2440] (dBm)	Max Output Power [f=2478] (dBm)	Max Output Power [f=2404] (dBm)	Average Output Power [f=2440] (dBm)	Average Output Power [f=2478] (dBm)	Average Output Power [f=2404] (dBm)	Average Output Power [EIRP] [f=2440] (dBm)	Average Output Power [EIRP] [f=2478] (dBm)	Average Output Power [EIRP] [f=2404] (dBm)
8.60	8.450	8.580	8.490	8.340	8.470	10.440	10.290	10.420

## Appendix B: ICS

### Implementation Conformance Statement (ICS)

The ICS set for this IUT is consistent with the static conformance requirements in the referenced base specification.

The qualified ICS and IXIT menus of the test system were defined in accordance with the client.

#### Bluetooth LE RF Capabilities

Item	Capability	Reference	Status	Support: Yes or No
1	LE Transmitter (Non-connectable, Broadcaster)	[1] 3	C.1	Yes
2	LE Receiver (Non-connectable, Observer)	[1] 4	C.1	Yes
3	LE Transceiver (Connectable, Peripheral/Central)	[1] 3, 4	C.1	Yes
4	LE 2M PHY	[2] 3, 4	C.2	Yes
5	Stable Modulation Index - Transmitter	[2] 3.1.1	C.3	No
6	Stable Modulation Index - Receiver	[2] 3.1.1	C.4	No
7	LE Coded PHY	[2] 3, 4	C.2	Yes
8	Transmitting Constant Tone Extensions	[3] 5	C.10	Yes
9	2 $\mu$ s Antenna Switching During Constant Tone Extension Transmission (AoD)	[3] 5	C.5	Yes
10	1 $\mu$ s Antenna Switching During Constant Tone Extension Transmission (AoD)	[3] 5	C.6	Yes
11	2 $\mu$ s Antenna Sampling During Constant Tone Extension Reception (AoD)	[3] 5	C.11	Yes
12	2 $\mu$ s Antenna Switching and Sampling During Constant Tone Extension Reception (AoA)	[3] 5	C.7	Yes
13	1 $\mu$ s Antenna Sampling During Constant Tone Extension Reception (AoD)	[3] 5	C.7	Yes
14	1 $\mu$ s Antenna Switching and Sampling During Constant Tone Extension Reception (AoA)	[3] 5	C.8	Yes
15	Power Class 1	[4] 4.6	C.9	No
16	Channel Sounding	[5] 1	C.12	No

- C.1: Mandatory to support at least one. Note: Selecting both RFPHY 1/1 "LE Transmitter" and RFPHY 1/2 "LE Receiver" is equivalent to selecting RFPHY 1/3 "LE Transceiver" and vice versa.
- C.2: Optional IF CORE 1a/50 "Controller Core v5.0 or later", otherwise Excluded.
- C.3: Optional IF CORE 1a/50 "Controller Core v5.0 or later" AND (RFPHY 1/1 "LE Transmitter" OR RFPHY 1/3 "LE Transceiver"), otherwise Excluded.
- C.4: Optional IF CORE 1a/50 "Controller Core v5.0 or later" AND (RFPHY 1/2 "LE Receiver" OR RFPHY 1/3 "LE Transceiver"), otherwise Excluded.
- C.5: Optional IF RFPHY 1/8 "Transmitting Constant Tone Extensions", otherwise Excluded.
- C.6: Optional IF RFPHY 1/9 "2  $\mu$ s Antenna Switching During Constant Tone Extension Transmission (AoD)", otherwise Excluded.
- C.7: Optional IF RFPHY 1/11 "2  $\mu$ s Antenna Sampling During Constant Tone Extension Reception (AoD)", otherwise Excluded.
- C.8: Mandatory IF RFPHY 1/12 "2  $\mu$ s Antenna Switching and Sampling During Constant Tone Extension Reception (AoA)" AND RFPHY 1/13 "1  $\mu$ s Antenna Sampling During Constant Tone Extension Reception (AoD)", otherwise Excluded.
- C.9: Optional IF (CORE 1a/50 "Controller Core v5.0 or later" OR CORE 1c/1 "Core Specification Addendum 5") AND (RFPHY 1/1 "LE Transmitter" OR RFPHY 1/3 "LE Transceiver"), otherwise Excluded.
- C.10: Optional IF CORE 1a/51 "Controller Core v5.1 or later" AND (RFPHY 1/1 "LE Transmitter" OR RFPHY 1/3 "LE Transceiver"), otherwise Excluded.
- C.11: Optional IF CORE 1a/51 "Controller Core v5.1 or later" AND (RFPHY 1/2 "LE Receiver" OR RFPHY 1/3 "LE Transceiver"), otherwise Excluded.
- C.12: Optional IF CORE 1a/60 "Controller Core v6.0 or later", otherwise Excluded

#### References:

- [1] Specification of the Bluetooth System, Physical Layer Specification (PHY) Volume 6, Part A, Version 4.0 or later
- [2] Specification of the Bluetooth System, Physical Layer Specification (PHY) Volume 6, Part A, Version 5.0 or later
- [3] Specification of the Bluetooth System, Physical Layer Specification (PHY) Volume 6, Part A, Version 5.1 or later
- [4] Specification of the Bluetooth System, Link Layer Specification (PHY) Volume 6, Part B, Version 4.2 or later

## Appendix C: IXIT

### Implementation eXtra Information for Test, IXIT

The IXIT set for this IUT is consistent with the static conformance requirements in the referenced base specification. The qualified ICS and IXIT menus of the test system were defined in accordance with the client

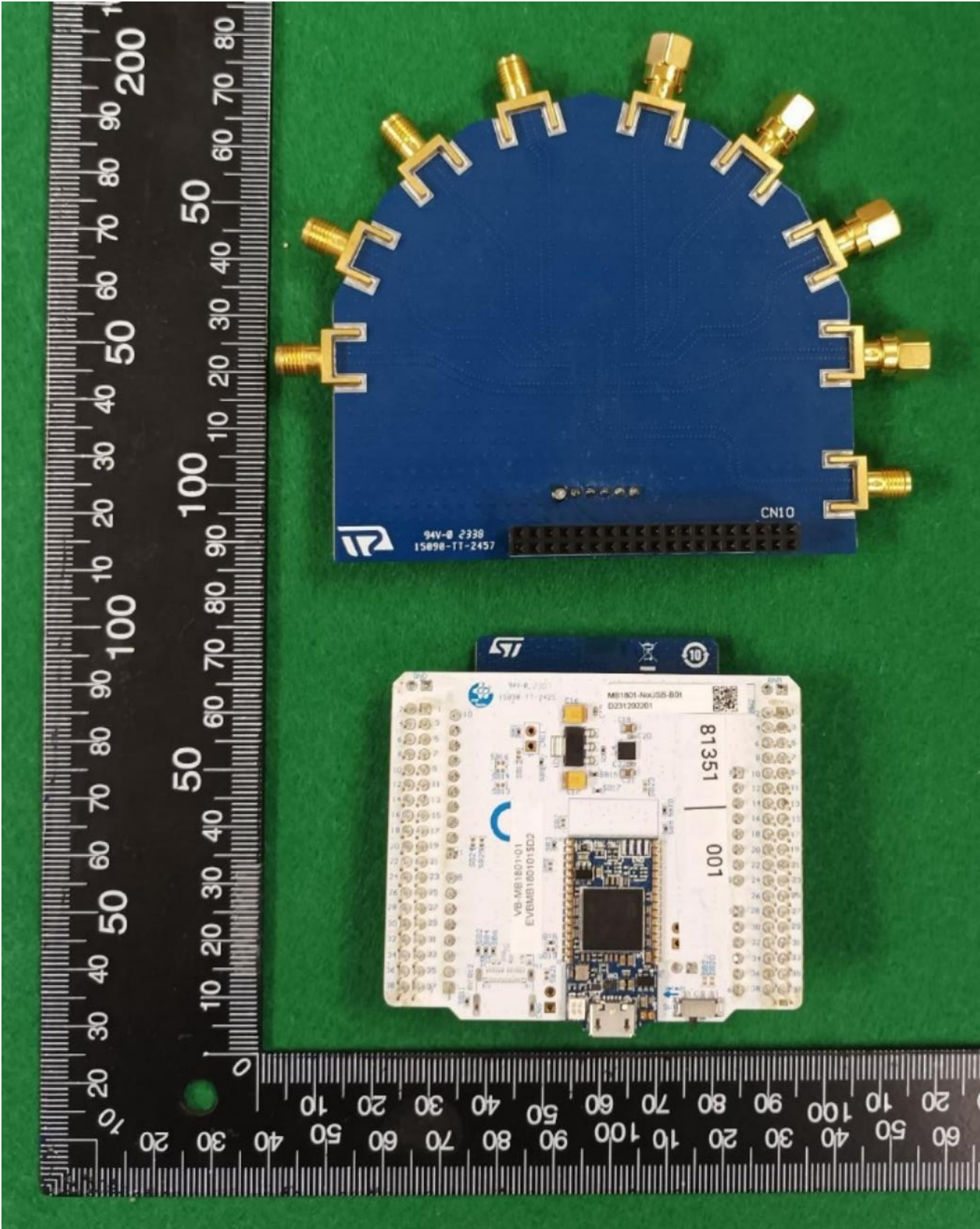
Description	Value	Units
Test frequency for Inband Image test, Low	-2	MHz
Test frequency for Inband Image test, Middle	-2	MHz
Test frequency for Inband Image test, High	-2	MHz
Test frequency for Intermodulation test, Low	3	N/A
Test frequency for Intermodulation test, Middle	3	N/A
Test frequency for Intermodulation test, High	3	N/A
Power source voltage	3,3	V
Normal operating temperature	25	°C
Air humidity level for NOC tests	N/A	%
Test interface implementation	HCI	N/A
Maximum TX packet length (MAX_TX_LENGTH)	255	Bytes
Maximum RX packet length (MAX_RX_LENGTH)	255	Bytes
Maximum TX packet length (MAX_TX_LENGTH_2M)	255	Bytes
Maximum TX packet length (MAX_TX_LENGTH_CODED_S2)	255	Bytes
Maximum TX packet length (MAX_TX_LENGTH_CODED_S8)	255	Bytes
Maximum RX packet length (MAX_RX_LENGTH_2M)	255	Bytes
Maximum RX packet length (MAX_RX_LENGTH_CODED_S2)	255	Bytes
Maximum RX packet length (MAX_RX_LENGTH_CODED_S8)	255	Bytes
Maximum TX mode output power	10	dBm
Inband Image Frequency (2Ms/s), Low	-4	MHz
Inband Image Frequency (2Ms/s), Middle	-4	MHz
Inband Image Frequency (2Ms/s), High	-4	MHz
Value n for Intermodulation test (2Ms/s), Low	3	N/A
Value n for Intermodulation test (2Ms/s), Middle	3	N/A
Value n for Intermodulation test (2Ms/s), high	3	N/A
Inband Image Frequency (Stable Modulation Receiver), Low	N/A	MHz
Inband Image Frequency (Stable Modulation Receiver), Middle	N/A	MHz
Inband Image Frequency (Stable Modulation Receiver), High	N/A	MHz

Value n for Intermodulation test (Stable Modulation Receiver), Low	N/A	N/A
Value n for Intermodulation test (Stable Modulation Receiver), Middle	N/A	N/A
Value n for Intermodulation test (Stable Modulation Receiver), Hgh	N/A	N/A
Inband Image Frequency (Stable Modulation Receiver, 2Ms/s), Low	N/A	MHz
Inband Image Frequency (Stable Modulation Receiver, 2Ms/s), Middle	N/A	MHz
Inband Image Frequency (Stable Modulation Receiver, 2Ms/s), High	N/A	MHz
Value n for Intermodulation test (Stable Modulation Receiver, 2Ms/s), Low	N/A	N/A
Value n for Intermodulation test (Stable Modulation Receiver, 2Ms/s), Middle	N/A	N/A
Value n for Intermodulation test (Stable Modulation Receiver, 2Ms/s), High	N/A	N/A
IQ Report Rate	7	N/A
The length of the Constant Tone Extension(1Ms/s)	160	bits
The length of the Constant Tone Extension(2Ms/s)	320	bits
The number of antennae	4	N/A
Antenna Gain	1,95	dBi

# Appendix D: Photographs



Front view – Sample S/01 & S/02





Rear view – Sample S/01 & S/02

