

INSTAMIC AB

JAPAN TEST REPORT

SCOPE OF WORK:
JAPAN RADIO REPORT

Model:
Pro Plus C

REPORT NUMBER:
2512B0907SHA-001

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Summary:

The equipment complies with the requirements according to the following standard(s) or Specification:

The equipment complies with the requirements according to the following standard(s):
Article 49-20 and the relevant articles of the Ordinance Regulating Radio Equipment

The measurement was implemented in according with the following procedure(s):
MIC Notice No.88 Appendix No.43

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Revision History

Report No.	Version	Description	Issued Date
2512B0907SHA-001	Rev. 01	Initial issue of report	April 10, 2026

Measurement result summary

TEST ITEM	TEST RESULT	NOTE
Frequency Error	Pass	-
Occupied Bandwidth and Spreading Bandwidth / Spreading Factor	Pass	-
Antenna Power and Tolerance	Pass	-
Spurious Emission	Pass	-
Limitation of Collateral Radio Emission of Receiver	Pass	-
Hopping Frequency Dwell Time	Pass	-
Interference Prevention Function	Pass	-
Transmitting Antenna Gain (EIRP Antenna Power)	NA	-
Transmission Radiation Angle Width (3dB Beam width)	NA	-
Construction Protection Confirmation	Pass	-

Notes: 1: NA =Not Applicable

2: Determination of the test conclusion is based on IEC Guide 115 in consideration of measurement uncertainty.

3: Additions, Deviations and Exclusions from Standards: None.

TEST REPORT

1 GENERAL INFORMATION

1.1 Description of Equipment Under Test (EUT)

Product name	: Microphone Recorder
Type/Model	: Pro Plus C
Brand name	: Instamic
Description of EUT	: The EUT is a Microphone Recorder with Bluetooth and BLE function.
Rating	: DC 5V from Type C port DC3.7V by battery
Hardware version	: Production files v1.6
Software version	: Firmware version 2.3
Sample received date	: December 4, 2025
Date of test	: December 4, 2025 to January 30, 2026

1.2 RF Technical Information

Assigned Frequency Band:	2400MHz to 2483.5MHz
Operating Frequency:	2402MHz to 2480MHz
Protocol:	BT 5.0 (BR+EDR)
Type of Modulation:	GFSK, $\pi/4$ DQPSK, 8DPSK
Number of Channels:	79 channels
Channel Separation:	1MHz
Antenna Type:	Chip antenna
Antenna Gain:	1.6dBi
Declaration Antenna Power:	1mW/MHz

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1.3 Description of Test Facility

Name:	Intertek Testing Services (Shanghai FTZ) Co., Ltd.
Address:	Building 86, No. 1198 Qinzhou Road(North), Shanghai 200233, P.R. China
Telephone:	86 21 61278200
Telefax:	86 21 54262353

The test facility is recognized, certified, or accredited by these organizations:	CNAS Accreditation Lab Registration No. CNAS L21189
	FCC Accredited Lab Designation Number: CN0175
	IC Registration Lab CAB identifier.: CN0014
	VCCI Registration Lab Member No: 3598 (Registration No.: R-14243, G-10845, C-14723, T-12252)
	A2LA Accreditation Lab Certificate Number: 3309.02

TEST REPORT

2 TEST SPECIFICATIONS

2.1 Standards or specification

The equipment complies with the requirements according to the following standard(s):

Article 49-20 and the relevant articles of the Ordinance Regulating Radio Equipment

The measurement was implemented in according with the following procedure(s):

MIC Notice No.88 Appendix No.43

2.2 Mode of operation during the test

While testing transmitting mode of EUT, the continuously and hopping transmission was applied by following software.

Software name	Manufacturer	Version	Supplied by
PAN13XX_Test	/	V1.5	Manufacturer

The lowest, middle and highest channel were tested as representatives.

Frequency Band (MHz)	Modulation	Lowest (L) (MHz)	Middle (M) (MHz)	Highest (H) (MHz)
2400-2483.5	GFSK	2402	2441	2480
	$\pi/4$ -DQPSK	2402	2441	2480
	8DPSK	2402	2441	2480

2.3 Test environment condition:

Temperature	Humidity	Atmospheric Pressure
22 °C	47%RH	100.6 kPa

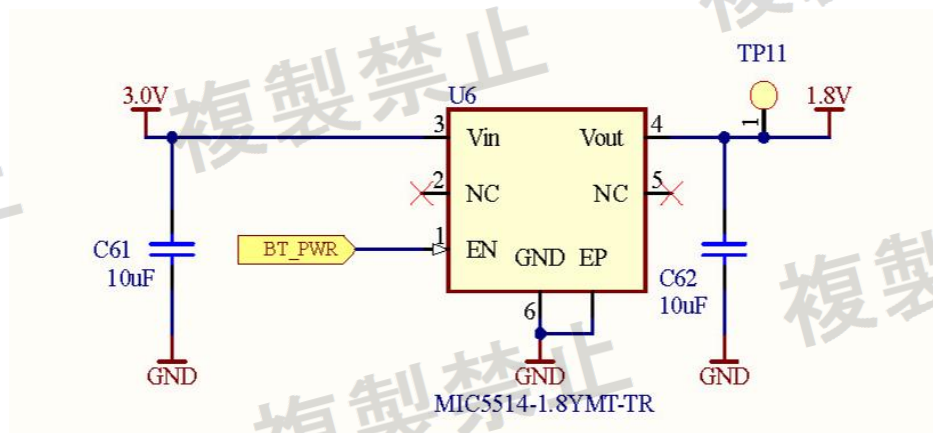
TEST REPORT

2.4 Power supply condition:

The EUT can be charged by Type C port, and the battery is 3.7VDC. The fluctuation of input voltage to the circuit of RF unit of test equipment is under $\pm 1\%$, when input voltage from 3.7VDC to the test equipment is fluctuated by $\pm 10\%$, so all measurement was conducted on the rated voltage (3.7VDC). The measurement result of the voltage fluctuation at RF circuit when input voltage is fluctuated by $\pm 10\%$:

Power supply	Measured value
3.7V DC	1.81V DC
4.07V DC	1.80V DC
3.33V DC	1.81V DC

3V to 1.8V



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2.5 Test peripherals used

Item No	Description	Band and Model	S/No
1	Laptop computer	DELL, 5480	NA
2	DC power supply	62024P-100-50	NA

2.6 Instrument list

Used	Equipment	Manufacturer	Type	Internal no.	Calibration date	Due date	Calibration Body	
☒	PXA Signal Analyzer	Keysight	N9030A	EC 5338	2025-03-14	2026-03-13	CEPREI	(c)
☐	Spectrum Analyzer	Keysight	N9030B	EC 6078	2025-06-05	2026-06-04	CEPREI	(c)
☐	Power sensor	Agilent	U2021XA	EC 5338-1	2025-03-14	2026-03-13	CEPREI	(c)
☐	MXG Analog Signal Generator	Agilent	N5181A	EC 5338-2	2025-03-14	2026-03-13	CEPREI	(c)
☐	Vector Signal Generator	Agilent	N5182B	EC 5175	2025-03-14	2026-03-13	CEPREI	(c)
☒	Multi-meter	FLUKE	187	EC 2560	2025-03-14	2026-03-13	ITS	(c)

Note: The calibration interval is one year and the calibrations are traceable to the National Institute of Metrology (NIM)

Remark:

- (a) Calibration conducted by the National Institute of Information and Communications Technology (NICT) in Japan (hereinafter referred to as "NICT") or a designated calibration agency under Article 102-18 paragraph (1) in JRL.
- (b) Correction conducted pursuant to the provisions of Article 135 or Article 144 of the Measurement Act (Act No. 51 of 1992).
- (c) Calibration conducted in countries except Japan, which shall be equivalent to the calibration conducted by the NICT or a designated calibration agency under Article 102-18 paragraph (1).
- (d) Calibration, etc. conducted by using measuring instruments and other equipment listed in the right column of appended table No. 3, which shall have been given any type of calibration, etc. listed above from (a) to (c).

From JRL Article 24-2, paragraph 4, Item 2

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2.7 Measurement Uncertainty

Item No.	Test Items	Expanded Uncertainty (k=2) (±)
1	Frequency error	0.84×10^{-7}
2	Antenna Power	0.74 dB
3	Occupied Bandwidth	0.88 %
4	Spurious emissions of transmitter	2.89 dB
5	Spurious emissions of receiver	2.80 dB
6	Temperature	1 °C
7	Humidity	5 %
8	Time	1.15 %

TEST REPORT

3 Frequency Error

Test result: Pass

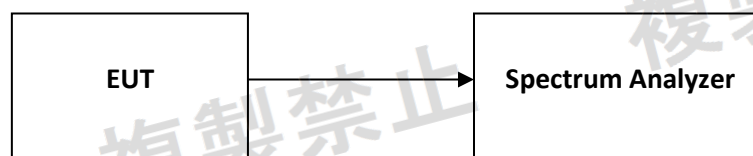
3.1 Limit

Item	Limits
Frequency Error	$\leq 50\text{ppm}$

3.2 Measurement Procedure

- (1) Frequency accuracy of instrument shall be less than 10% of the limit.
- (2) Two methods for the item:
 - a. CW Tone method
 - i. Set the spectrum analyzer RBW=10kHz, VBW=10kHz, Span=1MHz.
 - ii. Use peak search function to find the max peak value and record the measuring frequency as f.
 - b. 10dB down method
 - i. Set the spectrum analyzer RBW=100kHz, VBW=100kHz, Trace: Max Hold.
 - ii. Display line Level = Max. level - 10dB to place two markers, highest(fH) and lowest(fL) frequency
 - iii. Determine measuring frequency $f = (fH - fL)/2$
- (3) Calculate frequency tolerance by the formula $(f - f_c)/f_c \times 10^6$

3.3 Test Configuration



3.4 Test Results of Frequency Error

Please refer to Appendix

TEST REPORT

4 Occupied Bandwidth and Spreading Bandwidth / Spreading Factor

Test result: Pass

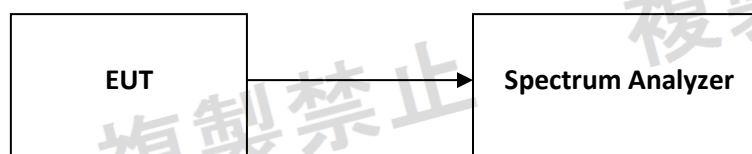
4.1 Limit

Item	Limits
Occupied Bandwidth	FH: 83.5MHz FH+DS: 83.5MHz FH+OFDM: 83.5MHz OFDM: 40MHz Others: 26MHz
Spreading Bandwidth	DS, FH, FH+DS, FH+OFDM: 500kHz or more

4.2 Measurement Procedure

- (1) Set the Spectrum Analyzer as: RBW: 300kHz, VBW: 300kHz, Sweep mode: Continuous sweep, Detect mode: Positive peak, Trace mode: Max hold.
- (2) Set the EUT as transmitting on fix channel with modulation (For DSSS or OFDM Device), or continuous maximum power of hopping mode (For FHSS Device)
- (3) Enable OBW function of Spectrum Analyzer to measure 99% bandwidth and 90% bandwidth.
- (4) Spreading Factor = Spreading Bandwidth / modulation rate of EUT (For DSSS system)
- (5) Spreading Factor should be greater than 5.

4.3 Test Configuration



4.4 Test Results of Occupied Bandwidth and Spreading Bandwidth / Spreading Factor

Please refer to Appendix

TEST REPORT

5 Antenna Power and Tolerance

Test result: Pass

5.1 Limit

Item	Limits
Antenna Power	(1) FH, FH+DS, FH+OFDM: 3mW/MHz (used in the range of 2427 - 2470.75MHz) (2) Other than (1) of DS: 10mW/MHz (3) Other than (1) of OFDM Occupied bandwidth $\leq$ 26MHz: 10mW/MHz 26MHz < Occupied bandwidth $\leq$ 40MHz: 5mW/MHz (4) Other than (1), (2) & (3): 10mW
Tolerance	+20%, -80%

5.2 Measurement Procedure

- EUT have transmitted continuous maximum power on hopping mode for single channel (For FHSS Device).
- Frequency hopping system or combined systems of direct spread and frequency hopping:
 - Connect the high frequency power meter to the output of the IF output of Spectrum Analyzer and measure the total power (without bandwidth limitation)
 - Divide the total power by the spread bandwidth to find the power per MHz. Conducted of output power density=Conducted output power/Spread-Spectrum.
 - Confirm that frequency distribution of the hopping frequencies is homogeneous according to the supporting data.
If frequency distribution of the frequencies is not homogeneous, consider other measurement or correction methods based on the supporting data.
 - Set the antenna power as follows:
 - Continuous waves: value in ii.
 -
- Antenna RF Output Power Tolerance is definition that actual measure antenna power tolerance between + 20% to - 80% power range that manufacturer declare the conducted power density.

5.3 Test Configuration



5.4 Test Results of Antenna Power and Tolerance

Please refer to Appendix

TEST REPORT

6 Spurious Emission

Test result: Pass

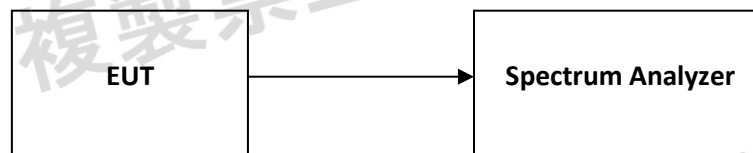
6.1 Limit

Item	Limits
TX Spurious Emission	(1) Below 2387MHz: 2.5μW/MHz (2) 2387 to 2400MHz: 25μW/MHz (3) 2483.5 to 2496.5MHz: 25μW/MHz (4) Over 2496.5MHz: 2.5μW/MHz

6.2 Measurement Procedure

- (1) Set the EUT as transmitting the maximum power and fixed channel.
- (2) Set the Spectrum Analyzer as: RBW: 1MHz, VBW: 1MHz, Sweep time: Auto, Detect mode: Positive peak.
- (3) Follow above setting to measure spurious emission from 30MHz to 12500MHz.

6.3 Test Configuration



6.4 Test Results of Spurious Emission

Please refer to Appendix

7 Limitation of Collateral Radio Emission of Receiver

Test result: Pass

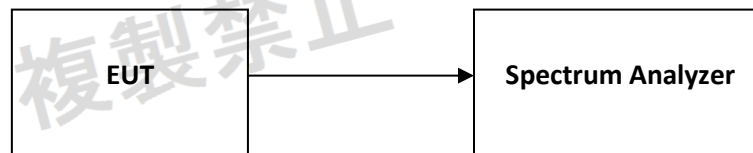
7.1 Limit

Item	Limits
Collateral Emissions	(1) Below 1GHz: 4nW (2) 1GHz or higher: 20nW

7.2 Measurement Procedure

- (1) Set the EUT as continuous reception mode and fixed channel.
- (2) Set the Spectrum Analyzer as: RBW: 100kHz, VBW: 100kHz, Sweep time: Auto, Detect mode: Positive peak to measure the spurious emission below 1GHz.
- (3) Set the Spectrum Analyzer as: RBW: 1MHz, VBW: 1MHz, Sweep time: Auto, Detect mode: Positive peak to measure the spurious emission above 1GHz.

7.3 Test Configuration



7.4 Test Results of Collateral Radio Emission of Receiver

Please refer to Appendix

8 Hopping Frequency Dwell Time Measurement

Test result: Pass

8.1 Limit

Item	Limits
Hopping Freq. Dwell Time	≤ 0.4 seconds

8.2 Measurement Procedure

- (1) The transmitter output (antenna port) was connected to the spectrum analyzer.
- (2) Set RBW of spectrum analyzer to 300KHz and VBW to 300KHz.
- (3) Use a video trigger with the trigger level set to enable triggering only on full pulses.
- (4) Sweep Time is more than once pulse time.
- (5) Set the center frequency on any frequency would be measured and set the frequency span to zero span.
- (6) Measure the maximum time duration of one single pulse.
- (7) Set the EUT in continuous transmitting for each supported maximum packet format.
- (8) Measure the maximum time duration of one single pulse.
- (9) Use the marker-delta function to calculate the dwell time.
- (10) (Normal mode) dwell time = $[\text{Spreading rate}/79] \times \text{duty ratio} \times 0.4 \text{ seconds}$

8.3 Test Configuration



8.4 Test Results of Collateral Radio Emission of Receiver

Please refer to Appendix

9 Interference Prevention Function

Test result: Pass

9.1 Limit

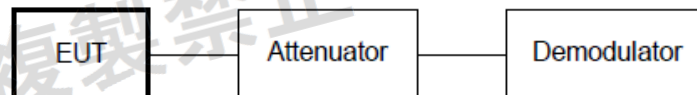
Item	Limits
Identification code	≥ 48 bits

9.2 Measurement Procedure

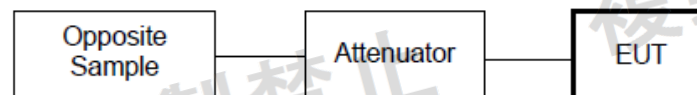
- (1) In case the EUT possesses function to transmit identification code automatically:
 - a. Predetermined identification code is transmitted by the EUT.
 - b. Verify the transmitted identification code.
- (2) In case the EUT possesses function to receive identification code automatically.
 - a. Predetermined identification code is transmitted by the opposite sample.
 - b. Verify the working of the normal communication.
 - c. Other code than the predetermined identification code is transmitted by the opposite sample.
 - d. Verify the EUT to stop transmitting or to display that the ID code is different.

9.3 Test Configuration

(1) In case identification code is transmitted



(2) In case identification code is received



TEST REPORT

9.4 Test Results of Interference prevention function

MAC address	:	40:F3:B0:BC:29:AD
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Test Plot:



TEST REPORT

10 Transmission Antenna Gain (EIRP Antenna Power) Measurement

Test result: NA

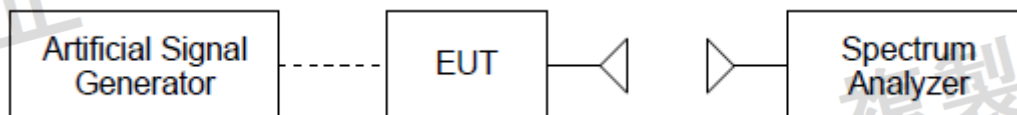
10.1 Limit

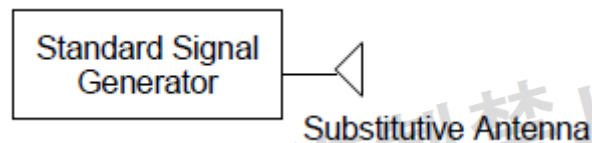
Item	Limits
EIRP Antenna Power	$\leq 12.14\text{dBm/MHz}$ (OFDM, DSSS from 2400MHz to 2483.5MHz) $\leq 12.14\text{dBm}$ (Other from 2400MHz to 2483.5MHz)
Remark: This test item is not applied to EUT with EIRP Antenna power lower than 12.14dBm/MHz	

10.2 Measurement Procedure

- (1) Set EUT and measuring antenna at the same height and roughly facing each other.
- (2) Move the measuring antenna height up and down within $\pm 50\text{cm}$ of EUT height and swing it to find the maximum output of the measuring antenna. The output level at the spectrum analyzer is read as "E".
- (3) Remove the EUT from the turn table and put the replacing antenna facing to measuring antenna at same height. Set the standard signal generator (SSG) at same frequency and transmit on then receive the signal.
- (4) Swing the replacing antenna give a maximum receiving level.
- (5) Move the measuring antenna height up and down within $\pm 50\text{cm}$ of replacing antenna height and swing it to find the maximum receiving level.
- (6) Set SSG output power at P_t to give the equivalent output level of "E" or calculate P_t with SSG output which gives the nearest of "E" and difference ($\pm 1\text{dB}$). Record the P_t .
- (7) Calculate EIRP by the formula below $\text{EIRP} = G_t - L + P_t$.
 G_t : gain of replacing antenna (dBi),
 L : feeder loss between SSG and replacing antenna
 P_t : Output power of the SSG
- (8) If the antenna for the EUT has circular polarization, sum of V-field and H-field will be result if measuring antenna is linear polarization.

10.3 Test Configuration





10.4 Test Results of Transmission Antenna Gain

For the antenna gain, please refer to antenna test report.

This test item is not applied to EUT with EIRP Antenna power lower than 12.14dBm/MHz

11 Transmission Radiation Angle Width (3dB Beamwidth) Measurement

Test result: NA

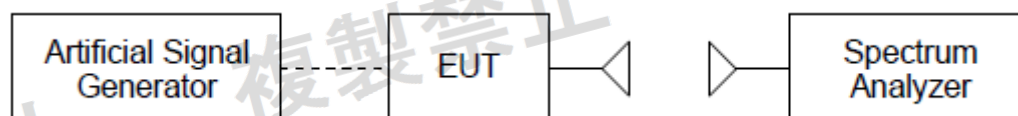
11.1 Limit

Item	Limits
3dB antenna beamwidth	$360/A$ (If $A < 1$; then $A = 1$) $A = \{ \text{EIRP Power [dBm/MHz]} - 12.14 \text{ [dBm/MHz]} \text{ for DS, OFDM} \}$ or $\{ \text{E.I.R.P Power [dBm/MHz]} - 6.91 \text{ [dBm/MHz]} \text{ for FH} \}$
Remark: This test item is not applied to EIRP power of EUT is lower than 12.14dBm/MHz	

11.2 Measurement Procedure

- (1) Set EUT and measuring antenna at the same height and roughly facing each other.
- (2) Set spectrum analyzer with condition in section 3.7.2 and tune reference level to observe receiving signal position.
- (3) Rotate directions of the EUT horizontally and vertically to find the maximum receiving power.
- (4) Move the measuring antenna height up and down within $\pm 50\text{cm}$ of EUT height and swing it to find the maximum output of measuring antenna. The output level at the spectrum analyzer is read as "E".
- (5) Calculate permitted radiation angle in horizontal and vertical using EIRP measured in another test method.
- (6) Calculate 3dB antenna beam width by the formula below $360/A$ (If $A < 1$; then $A = 1$).
 $A = \{ \text{EIRP Power [dBm/MHz]} - 12.14 \text{ [dBm/MHz]} \text{ for DS, OFDM} \}$ or
 $A = \{ \text{E.I.R.P Power [dBm/MHz]} - 6.91 \text{ [dBm/MHz]} \text{ for FH} \}$

11.3 Test Configuration



11.4 Test Results of Transmission Radiation Angle Width

For the antenna gain, please refer to antenna test report.

This test item is not applied to EUT with EIRP Antenna power lower than 12.14dBm/MHz

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12 Construction Protection Confirmation Method

Test result: Pass

12.1 Limit

The high-frequency section and modulation section of the radio equipment except for the antenna system shall not be capable of being opened easily.

12.2 Confirmation Method

☐	Sealed with special screws.
☐	Plastic chassis is being welded using ultrasonic waves.
☐	Chassis is glued using a special adhesive.
☐	Metal covers are spot-fused.
☐	Cover is specially interlocked.
☒	RF and Modulation components are covered with shielding case and this shielding case is soldered.
☐	RF and Modulation parts are mounted on PCB with surface mount technology, and there is no any adjustable parts on PCB or adjustable parts are not exposed.
☐	Shield case is welded at RF and modulation parts, and ID-ROM is welded using the BGA Method.
☐	Shield case is welded at RF and modulation parts, and ID-ROM is glued at its lead with a special adhesive.
☐	Shield case is welded at RF and modulation parts, and ID-ROM is glued with a non-transparent laminating agent.
☐	Other:

12.3 The Photos of Construction Protection

Please refer to the EUT's photos

Appendix I: Test results

Refer to Appendix A for test result.

***** END *****