TUV SUD
Digitally signed by TUV SUD
Date: 2026.05.11 09:42:32 +01'00'

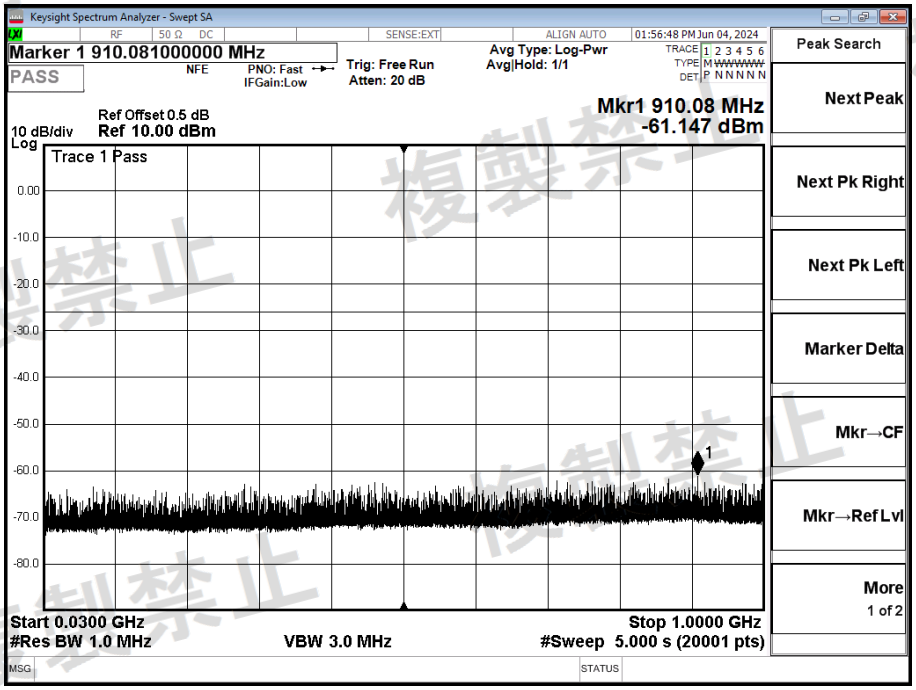


Figure 46 - 2480 MHz - 30 MHz to 1000 MHz

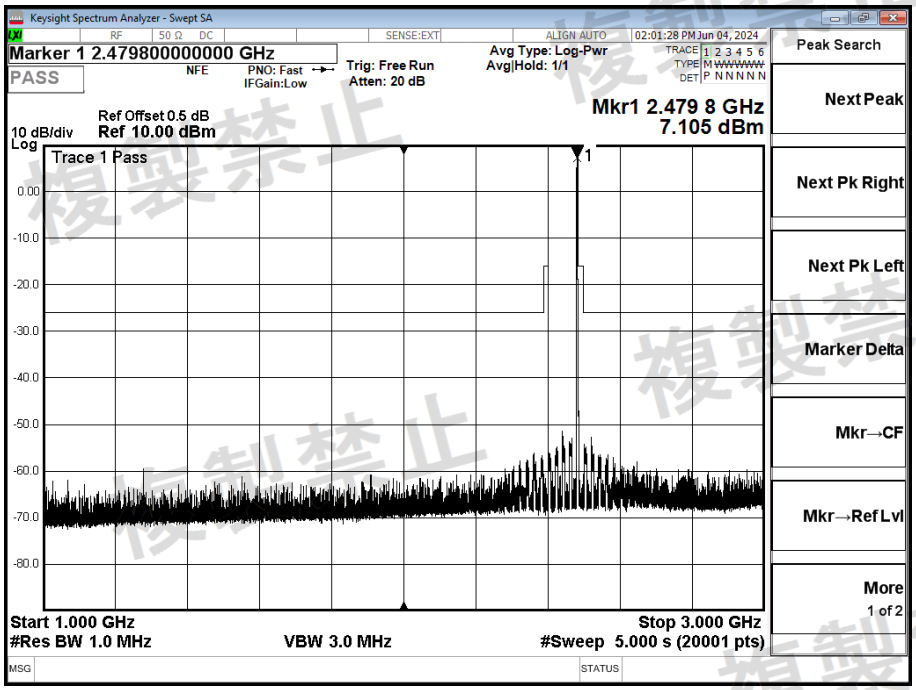


Figure 47 - 2480 MHz - 1000 MHz to 3000 MHz

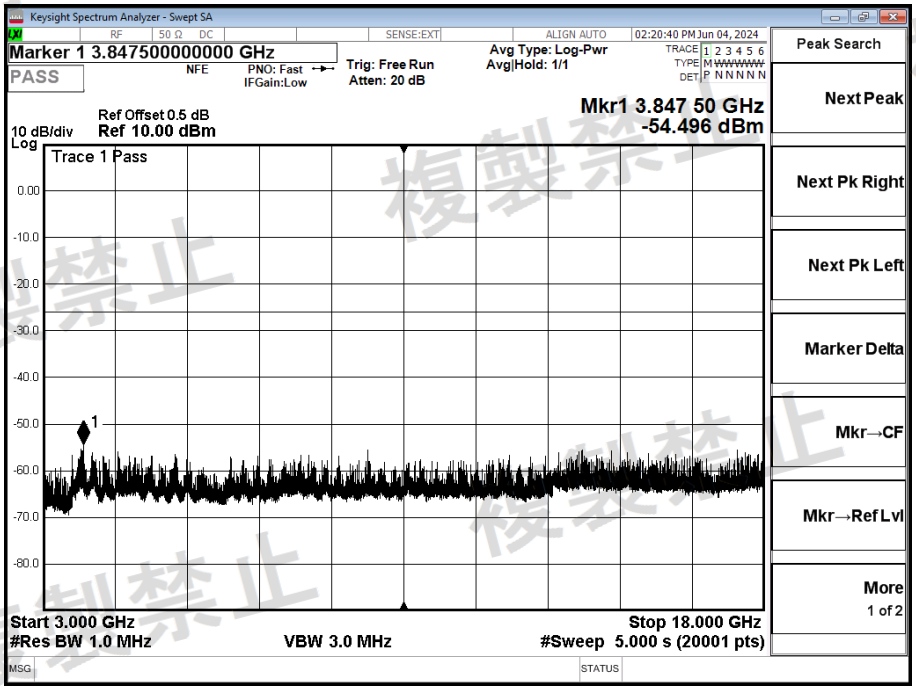


Figure 48 - 2480 MHz - 3000 MHz to 18000 MHz

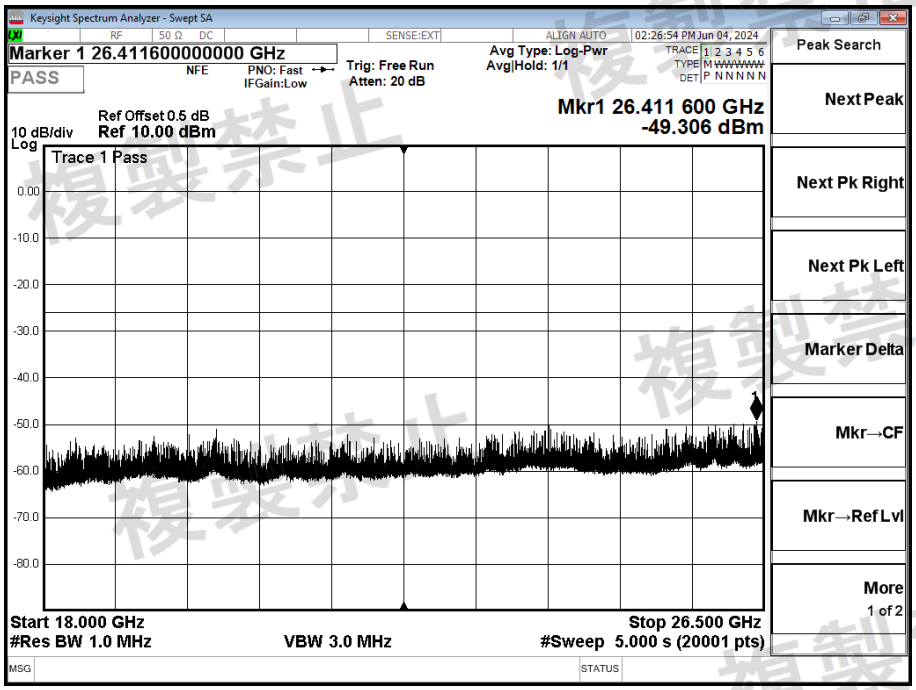


Figure 49 - 2480 MHz - 18000 MHz to 26500 MHz

ARIB STD-T66, Limit Clause 3.2 (6)

Frequency Range	Limit
2387 MHz to 2400 MHz and 2483.5 MHz to 2496.5 MHz	25 µW or -16 dBm
< 2387 MHz and > 2496.5 MHz	2.5 µW or -26 dBm

Table 32

2.3.7 Test Location and Test Equipment Used

This test was carried out in RF Laboratory 1.

Instrument	Manufacturer	Type No	TE No	Calibration Period (months)	Calibration Expires
True RMS Multimeter	Fluke	79 Series III	411	12	12-Jan-2025
Hygrometer	Rotronic	I-1000	3220	12	28-Nov-2024
GPSDR Frequency Standard	Spectracom	SecureSync 1200-0408-0601	4393	6	14-Sep-2024
PXA Signal Analyser	Agilent Technologies	N9030A	4409	12	09-Jun-2024
EXA Signal Analyser	Keysight Technologies	N9010B	4969	24	07-Feb-2026
Modular Power System Mainframe	Keysight Technologies	N6701C	5835	-	TU
DC Power Module 60V 20A 300W	Keysight Technologies	N6754A	5836	-	O/P Mon

Table 33

TU - Traceability Unscheduled
O/P Mon – Output Monitored using calibrated equipment

2.4 Allowable Value for Occupied Bandwidth

2.4.1 Specification Reference

ARIB STD-T66, Clause 3.2 (7)

2.4.2 Equipment Under Test and Modification State

SiW917Y1GN, S/N: BLE MAC address: D4:48:67:DD:D7:30 - Modification State 0

2.4.3 Date of Test

22-May-2024

2.4.4 Test Method

The spectrum analyser was tuned to the test frequency with a span to incorporate the entire bandwidth of the modulated signal. Allowing for the trace to stabilize, the bandwidth whereby 99% power of the power resides was recorded.

The EUT was supplied with 3.3 VDC directly with a DC PSU.

2.4.5 Environmental Conditions

Ambient Temperature	22.7 °C
Relative Humidity	52.5 %

2.4.6 Test Results

2.4 GHz Bluetooth Low Energy - Conducted Tests

Test Configuration			
Frequency Range:	2400-2483.5 MHz	Band:	2.4 GHz
Limit Clause(s):	3.2 (7)	Test Method(s):	Refer to test method
Additional Reference(s):	-		

DUT Configuration			
Mode:	ARIB BLE GFSK (LE 1M)	Duty Cycle (%):	-
Antenna Configuration:	SISO	DCCF (dB):	-
Active Port(s):	-	Peak Antenna Gain (dBi):	-
Supply Voltage:	3.30V	TX Mode:	Continuous Modulated Packet Bursts

Test Frequency (MHz)	Power Index	99% Bandwidth (MHz)	Limit (MHz)
2402	7.00	1.404	≤26.0
2404	7.00	1.395	≤26.0
2440	7.00	1.393	≤26.0
2478	7.00	1.395	≤26.0
2480	7.00	1.395	≤26.0

Table 34 - 99% Bandwidth Results

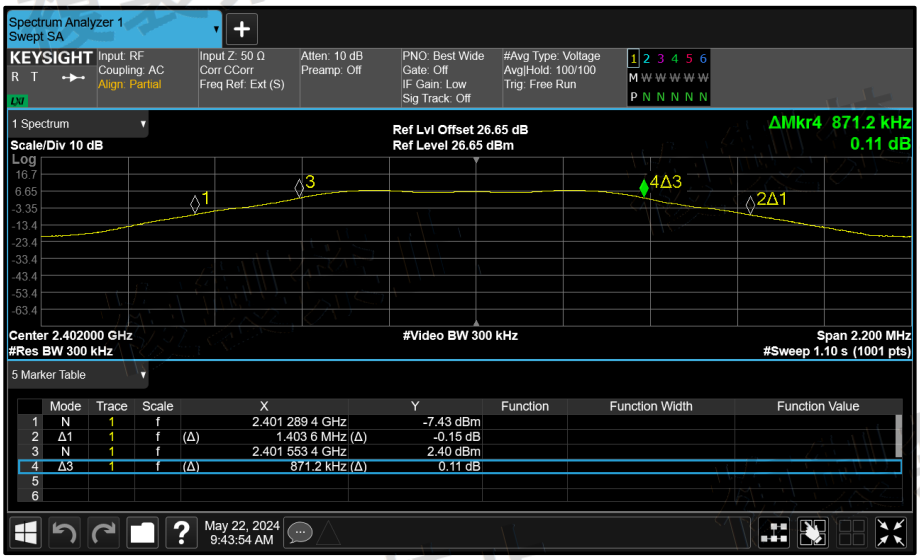


Figure 50 – 2402 MHz

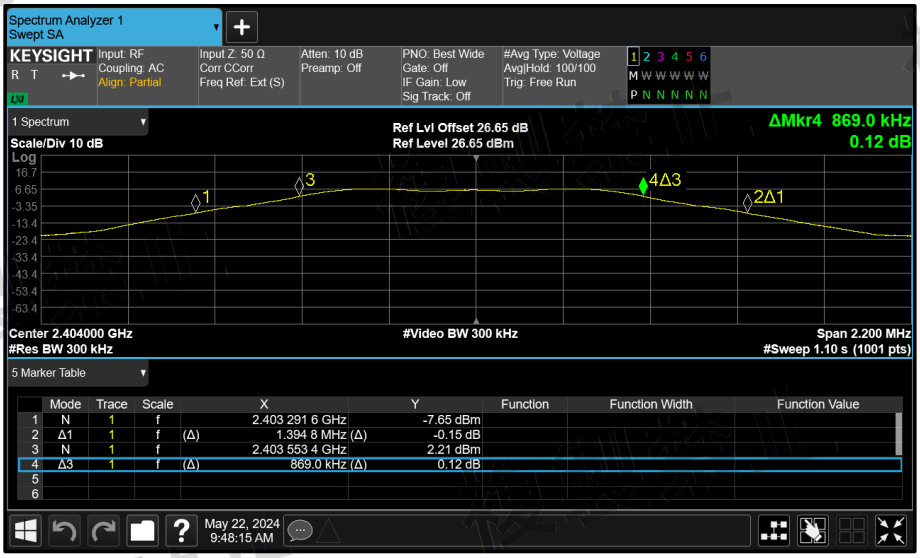


Figure 51– 2404 MHz

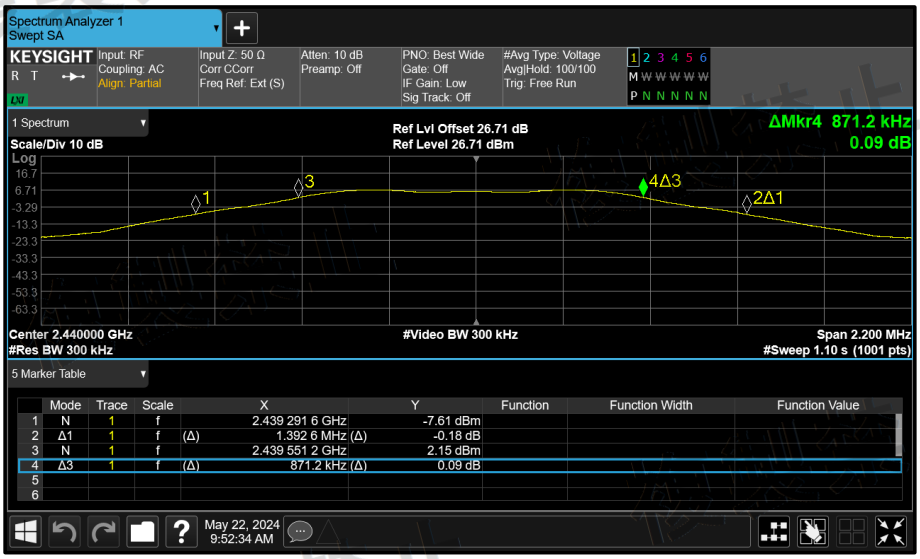


Figure 52– 2440 MHz

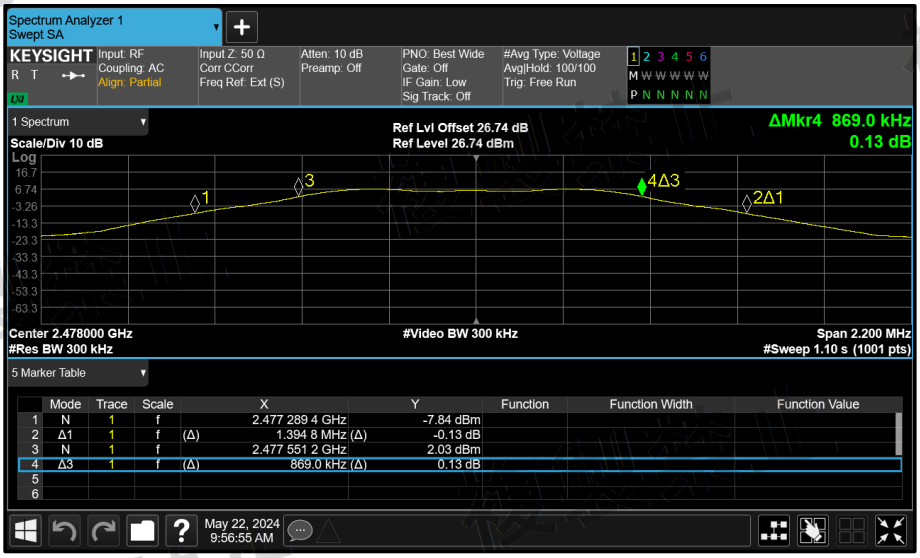


Figure 53– 2478 MHz

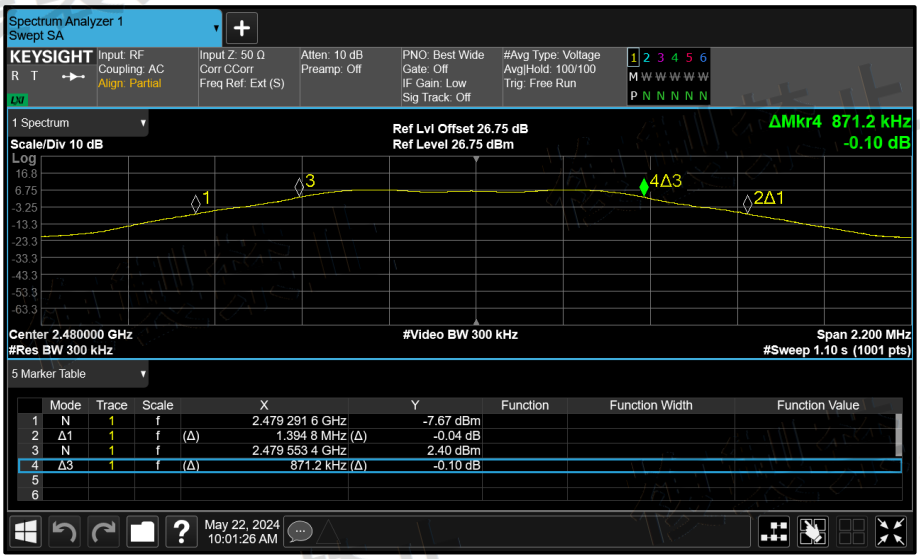


Figure 54– 2480 MHz

Test Configuration			
Frequency Range:	2400-2483.5 MHz	Band:	2.4 GHz
Limit Clause(s):	3.2 (7)	Test Method(s):	Refer to test method
Additional Reference(s):	-		

DUT Configuration			
Mode:	ARIB BLE GFSK (LE 2M)	Duty Cycle (%):	-
Antenna Configuration:	SISO	DCCF (dB):	-
Active Port(s):	-	Peak Antenna Gain (dBi):	-
Supply Voltage:	3.30V	TX Mode:	Continuous Modulated Packet Bursts

Test Frequency (MHz)	Power Index	99% Bandwidth (MHz)	Limit (MHz)
2404	7.00	2.478	≤26.0
2440	7.00	2.474	≤26.0
2478	7.00	2.478	≤26.0

Table 35 - 99% Bandwidth Results

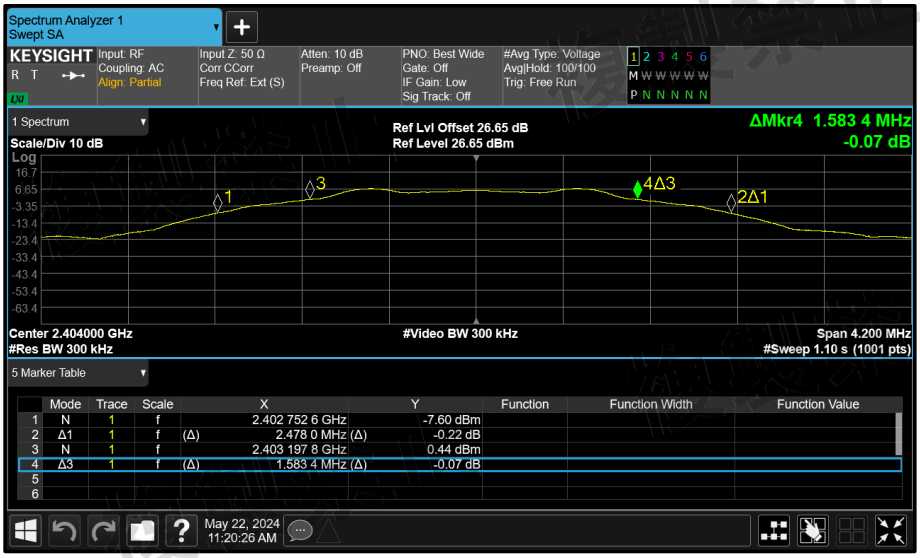


Figure 55– 2404 MHz

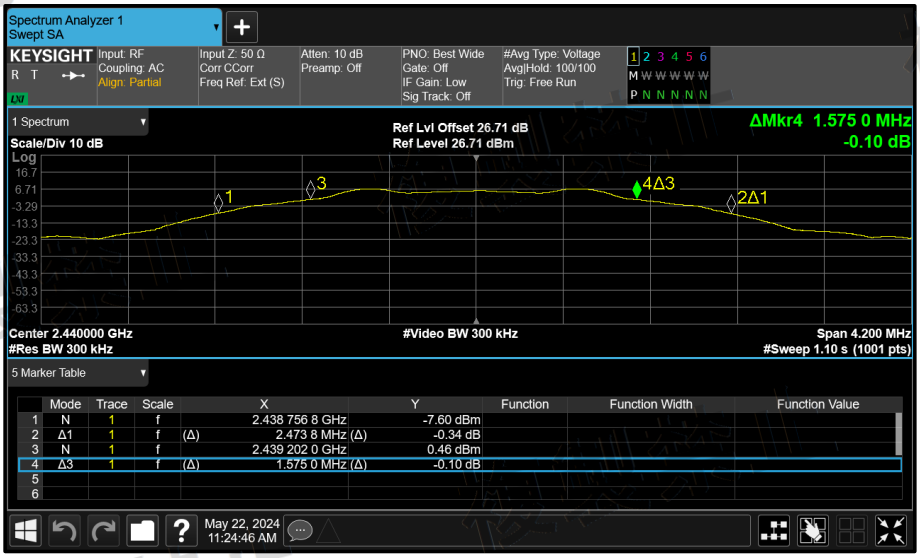


Figure 56– 2440 MHz

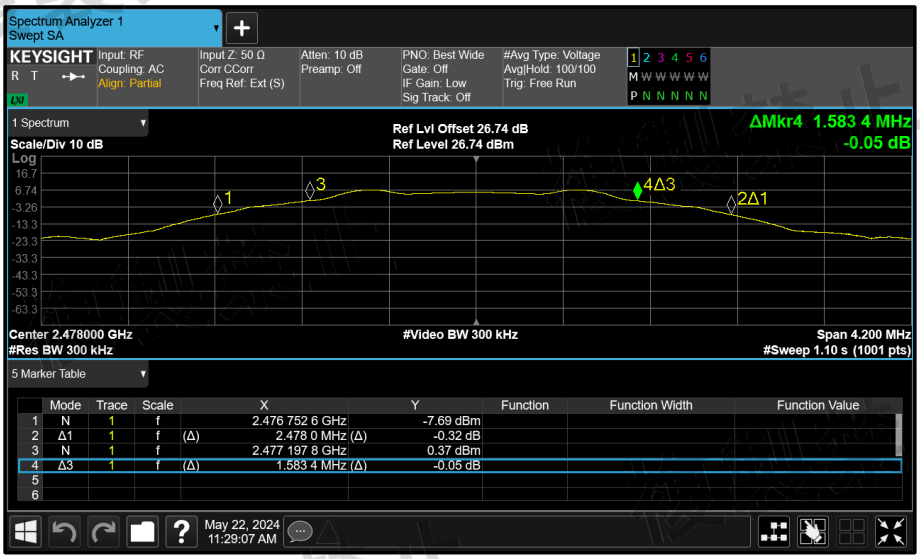


Figure 57– 2478 MHz

Test Configuration			
Frequency Range:	2400-2483.5 MHz	Band:	2.4 GHz
Limit Clause(s):	3.2 (7)	Test Method(s):	Refer to test method
Additional Reference(s):	-		

DUT Configuration			
Mode:	ARIB BLE GFSK (LE 125k)	Duty Cycle (%):	-
Antenna Configuration:	SISO	DCCF (dB):	-
Active Port(s):	-	Peak Antenna Gain (dBi):	-
Supply Voltage:	3.30V	TX Mode:	Continuous Modulated Packet Bursts

Test Frequency (MHz)	Power Index	99% Bandwidth (MHz)	Limit (MHz)
2402	7.00	1.322	≤26.0
2404	7.00	1.324	≤26.0
2440	7.00	1.327	≤26.0
2478	7.00	1.324	≤26.0
2480	7.00	1.313	≤26.0

Table 36 - 99% Bandwidth Results

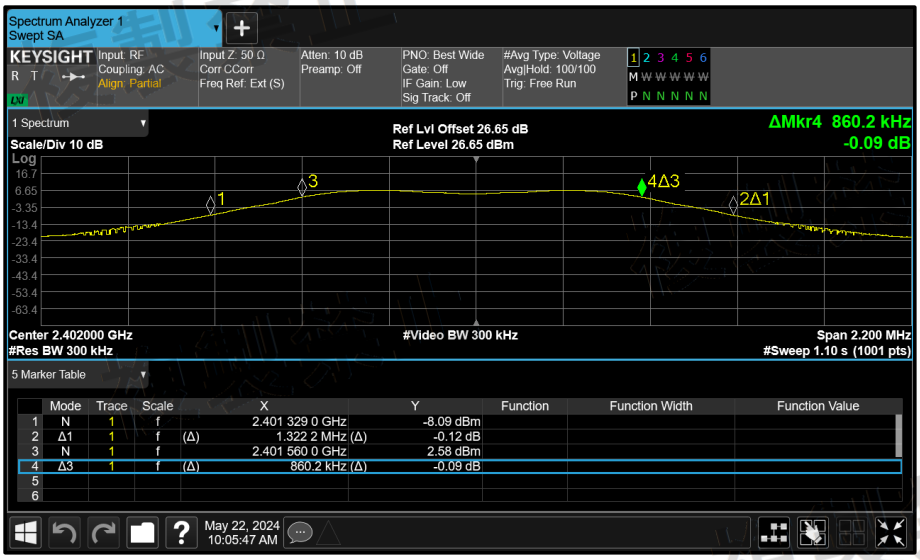


Figure 58– 2402 MHz

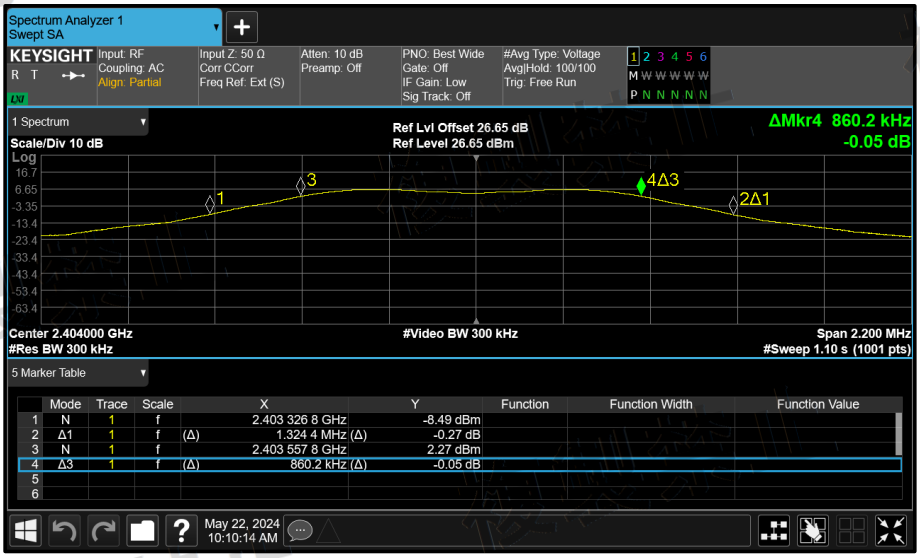


Figure 59– 2404 MHz

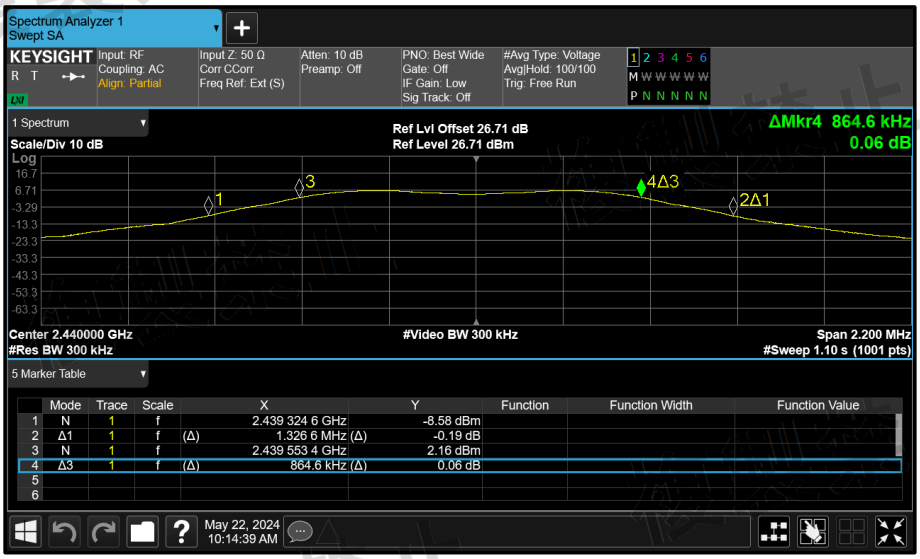


Figure 60– 2440 MHz

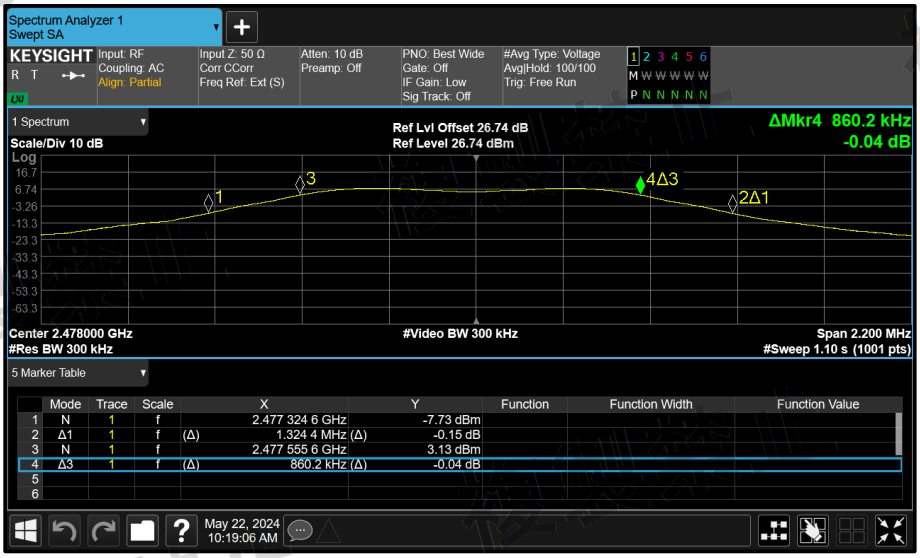


Figure 61– 2478 MHz

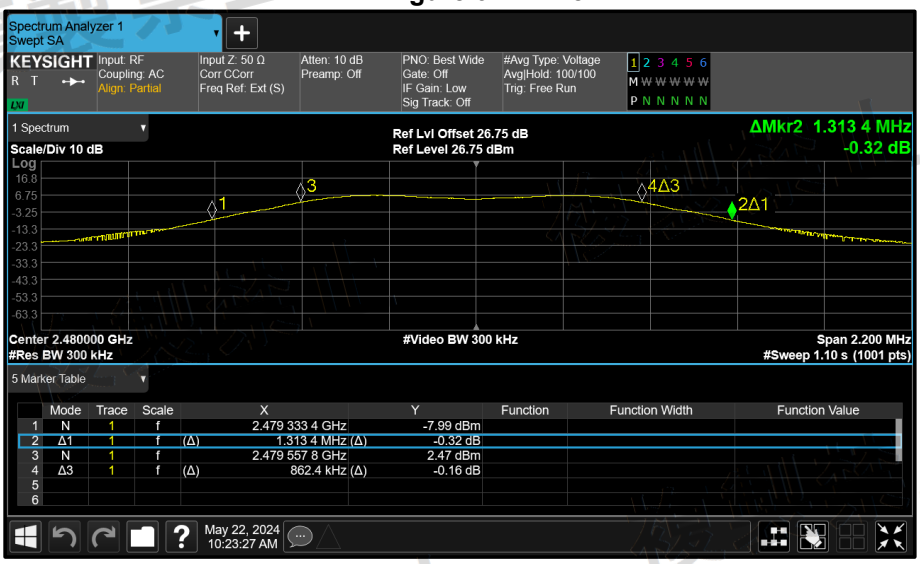


Figure 62– 2480 MHz

ARIB STD T-66, Limit Clause 3.2 (7)

Permissible value of occupied frequency bandwidth for transmission devices using a FH system, a DS-FH hybrid system, or a FH-OFDM hybrid system is at most 83.5MHz; for transmission devices using an OFDM system is at most 38MHz; and for transmission devices using any other system the necessary frequency bandwidth is at most 26MHz.

2.4.7 Test Location and Test Equipment Used

This test was carried out in RF Laboratory 1.

Instrument	Manufacturer	Type No	TE No	Calibration Period (months)	Calibration Expires
True RMS Multimeter	Fluke	79 Series III	411	12	12-Jan-2025
Hygrometer	Rotronic	I-1000	3220	12	28-Nov-2024
GPSDR Frequency Standard	Spectracom	SecureSync 1200-0408-0601	4393	6	14-Sep-2024
MXA Signal Analyser	Keysight Technologies	N9020B	5528	24	18-Sep-2025
Modular Power System Mainframe	Keysight Technologies	N6701C	5835	-	TU
DC Power Module 60V 20A 300W	Keysight Technologies	N6754A	5836	-	O/P Mon
Signal Conditioning Unit	TUV SUD	SPECTRUM_SCU001	6350	-	26-Jul-2024
SCU Cable Assembly SCU	TUV SUD	SPECTRUM_SCU_CA	6638	12	26-Jul-2024

Table 37

TU - Traceability Unscheduled
O/P Mon – Output Monitored using calibrated equipment

2.5 Limit on Secondary Radiation

2.5.1 Specification Reference

ARIB STD-T66, Clause 3.3 (1)

2.5.2 Equipment Under Test and Modification State

SiW917Y1GN, S/N: BLE MAC address: D4:48:67:DD:D7:30 - Modification State 0

2.5.3 Date of Test

29-May-2024 to 04-Jun-2024

2.5.4 Test Method

The EUT was connected directly to a spectrum analyser.

The spectrum analyser was configured with a peak detector and max hold trace and any observed emissions were confirmed as less than the appropriate limit.

Tests were carried out with the DUT set to receive on each of the Bottom, Middle and Top Channels.

For measurements below 1 GHz, a 100 kHz resolution bandwidth was used.

For measurements above 1 GHz, a 1 MHz resolution bandwidth was used.

The EUT was supplied with 3.3 VDC directly with a DC PSU.

2.5.5 Environmental Conditions

Ambient Temperature	21.4 – 21.9 °C
Relative Humidity	55.5 – 58.0 %

2.5.6 Test Results

2.4 GHz Bluetooth Low Energy

3.30 V Supply

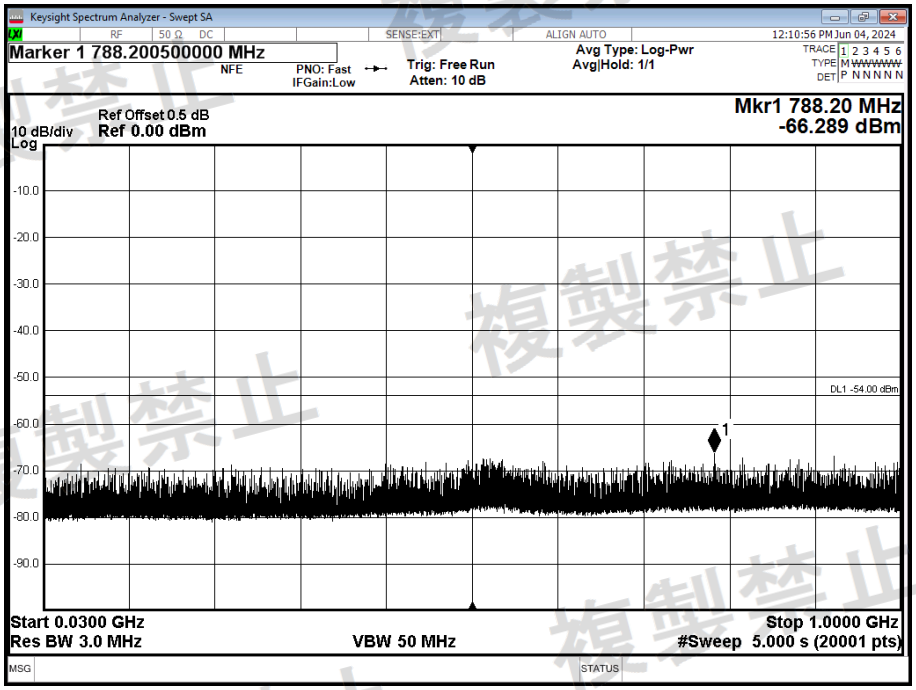


Figure 63 - 2402 MHz - 30 MHz to 1000 MHz

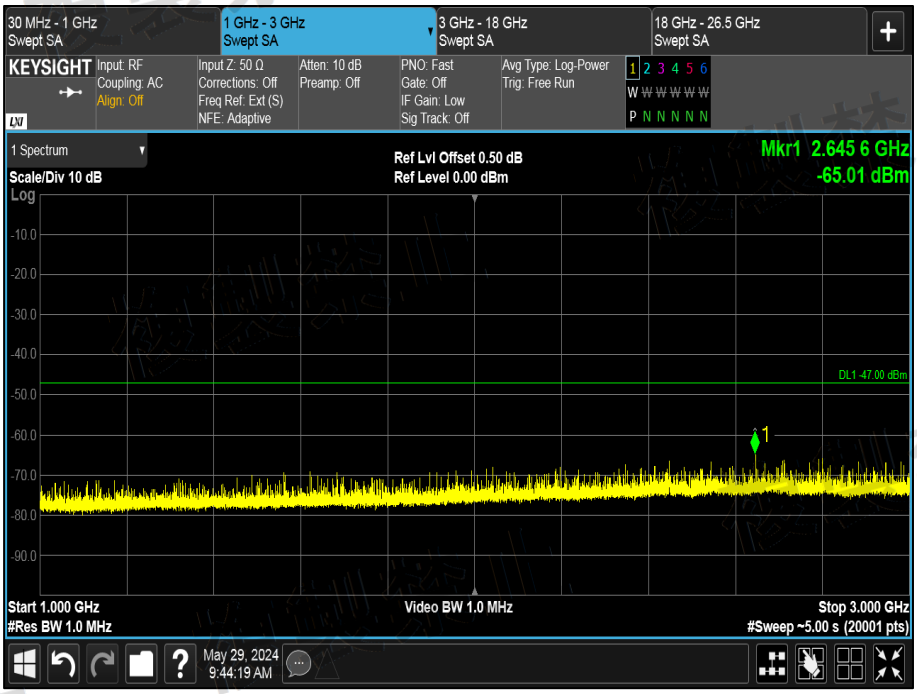


Figure 64 - 2402 MHz - 1000 MHz to 3000 MHz

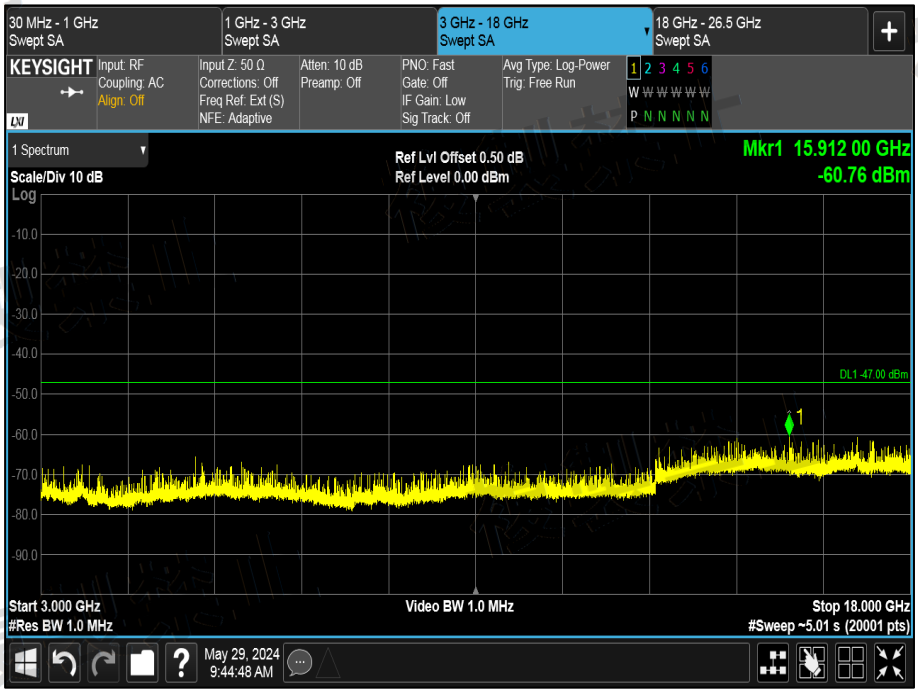


Figure 65 - 2402 MHz - 3000 MHz to 18000 MHz

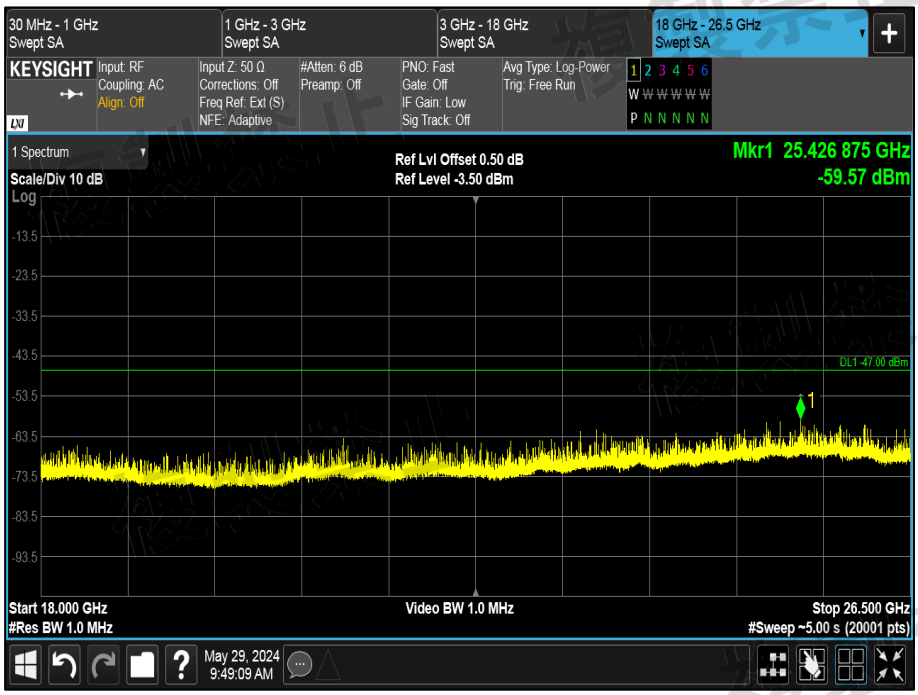


Figure 66 - 2402 MHz - 18000 MHz to 26500 MHz

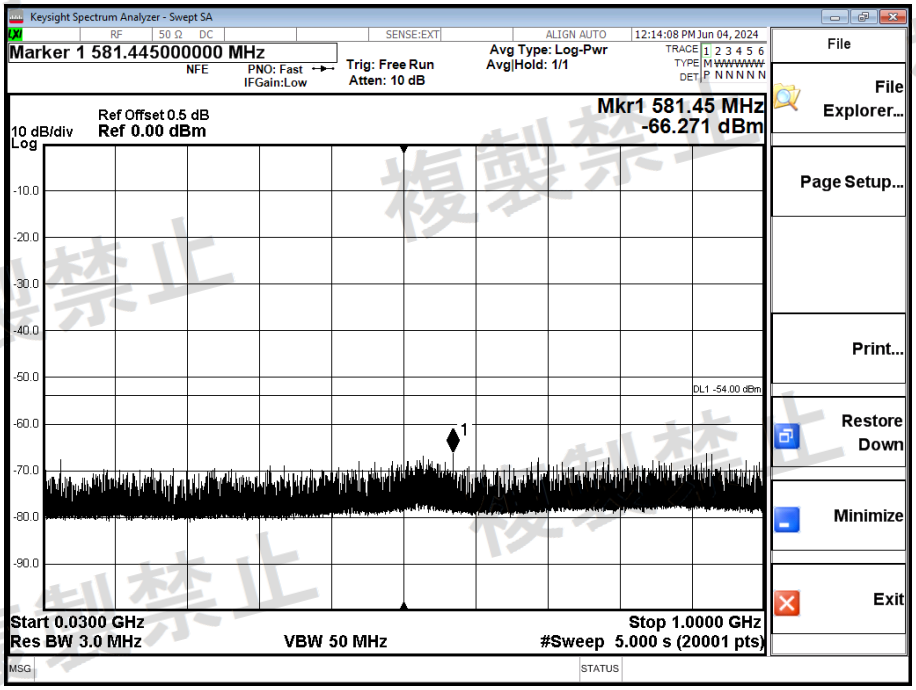


Figure 67 - 2442 MHz - 30 MHz to 1000 MHz

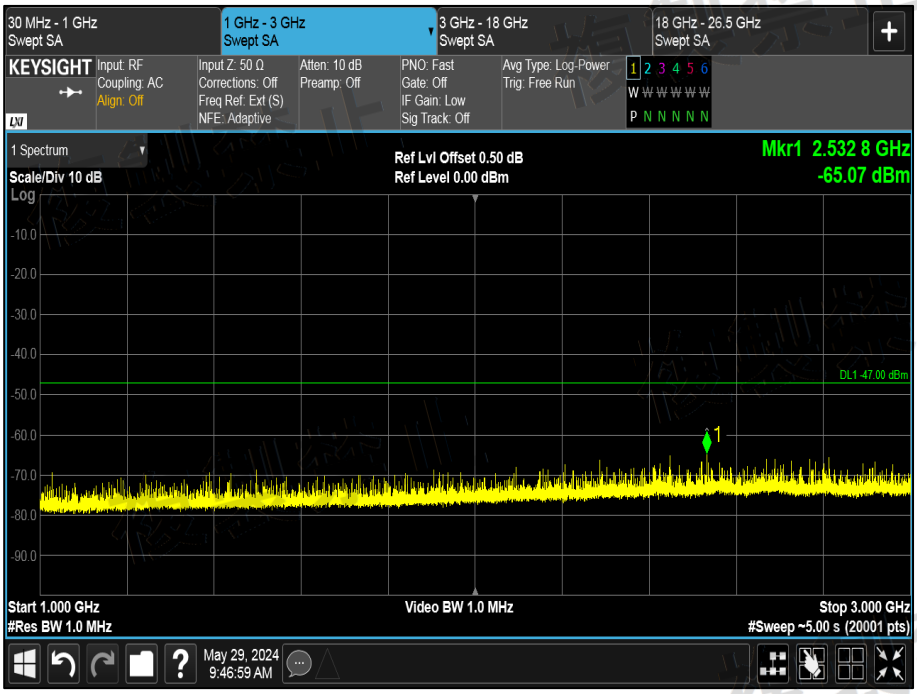


Figure 68 - 2442 MHz - 1000 MHz to 3000 MHz

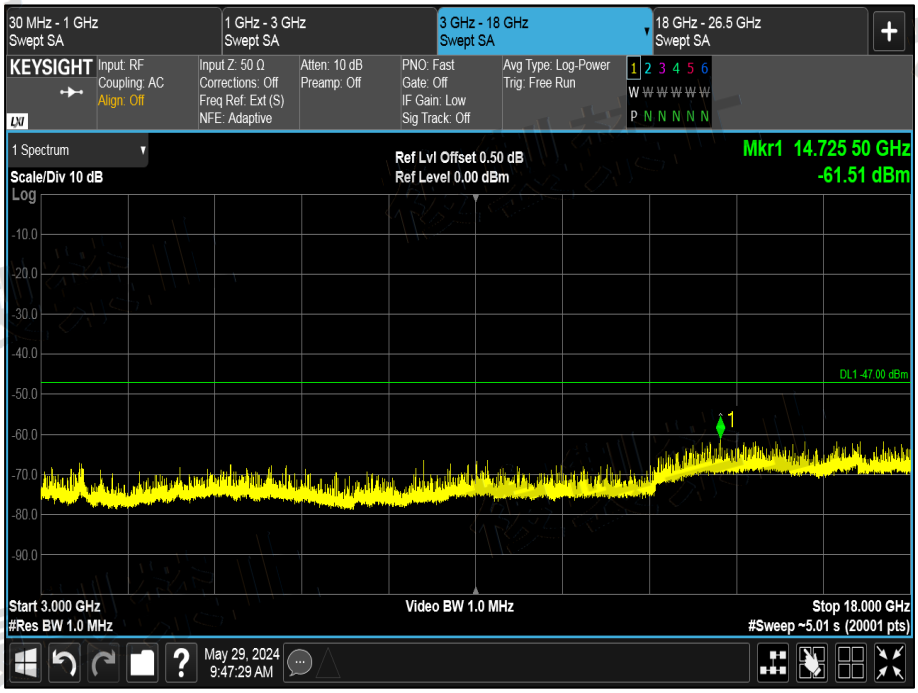


Figure 69 - 2442 MHz - 3000 MHz to 18000 MHz

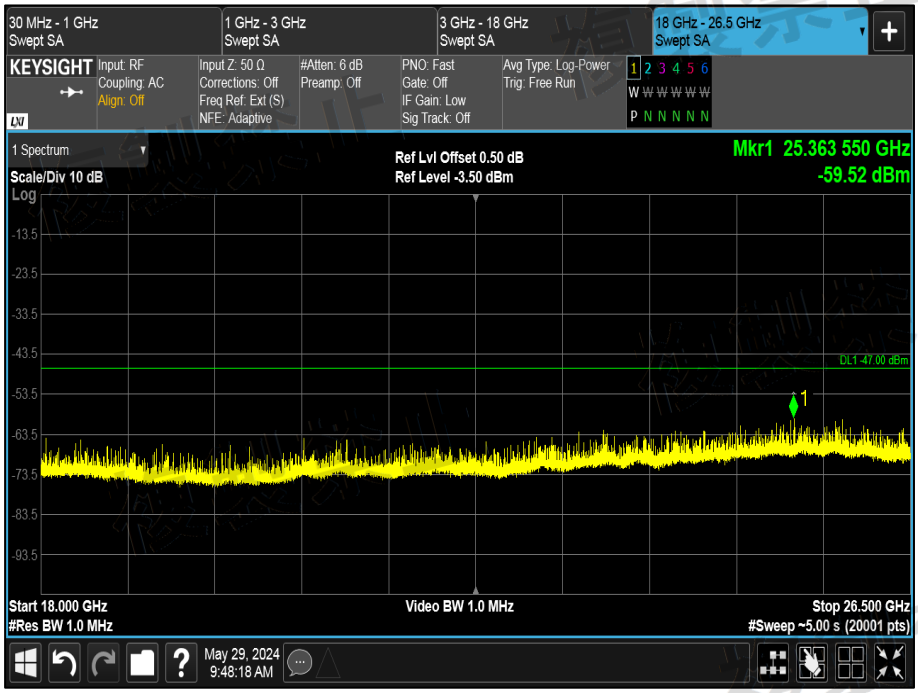


Figure 70 - 2442 MHz - 18000 MHz to 26500 MHz

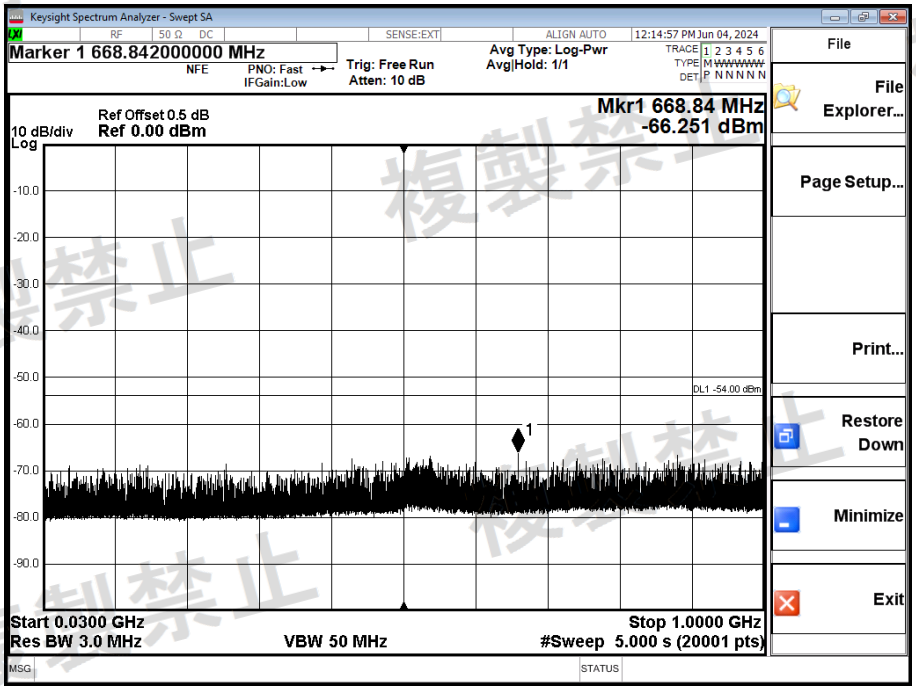


Figure 71 - 2480 MHz - 30 MHz to 1000 MHz

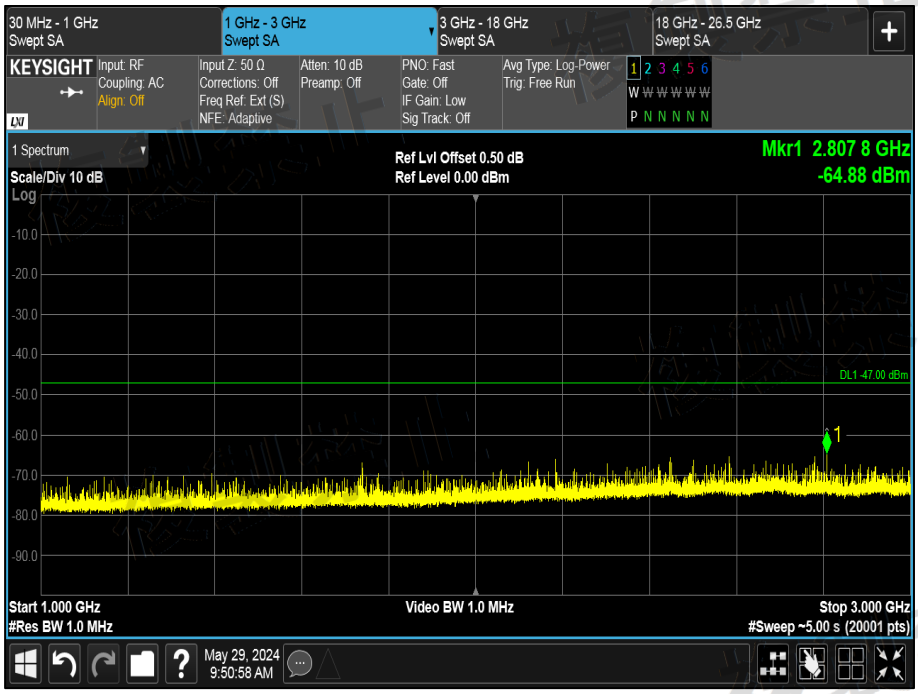


Figure 72 - 2480 MHz - 1000 MHz to 3000 MHz

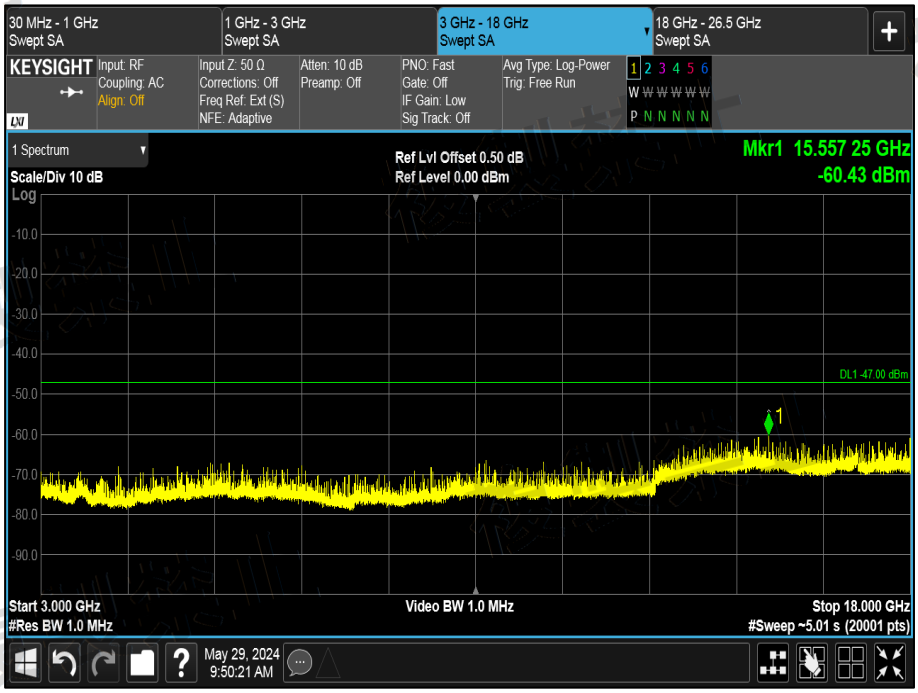


Figure 73 - 2480 MHz - 3000 MHz to 18000 MHz

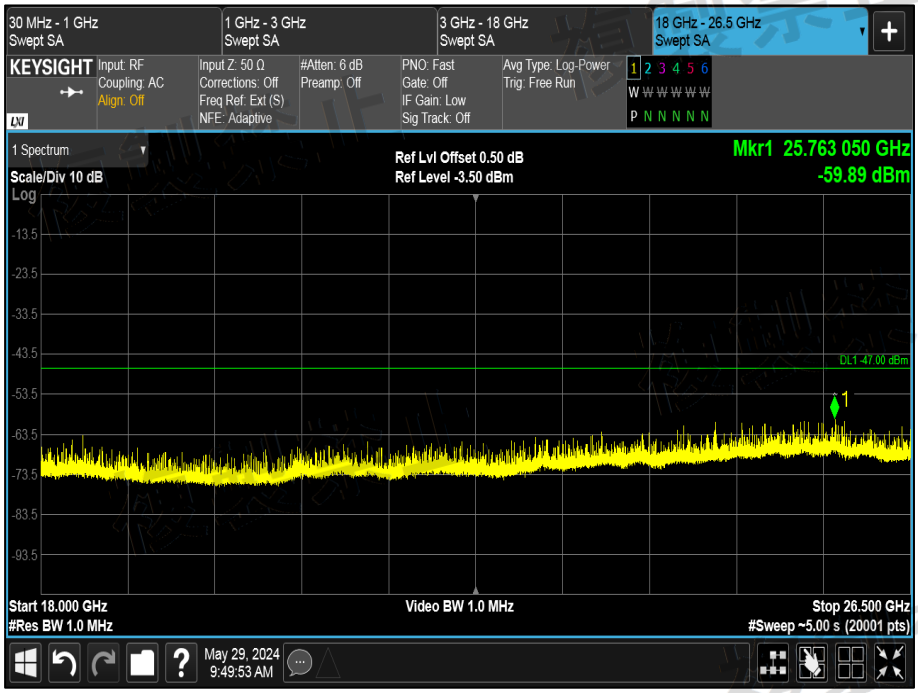


Figure 74 - 2480 MHz - 18000 MHz to 26500 MHz

ARIB STD-T66, Limit Clause 3.3 (1)

The limit at which secondary radiation will not hinder the function of other radio equipment is, if a fictional antenna circuit with the same electrical constant as the receiving antenna were to be used in calculations, at most 4nW if using a frequency below 1GHz and at most 20nW if using a frequency above or equal to 1GHz.

2.5.7 Test Location and Test Equipment Used

This test was carried out in RF Laboratory 1.

Instrument	Manufacturer	Type No	TE No	Calibration Period (months)	Calibration Expires
True RMS Multimeter	Fluke	79 Series III	411	12	12-Jan-2025
Hygrometer	Rotronic	I-1000	3220	12	28-Nov-2024
GPSDR Frequency Standard	Spectracom	SecureSync 1200-0408-0601	4393	6	14-Sep-2024
PXA Signal Analyser	Agilent Technologies	N9030A	4409	12	09-Jun-2024
EXA Signal Analyser	Keysight Technologies	N9010B	4969	24	07-Feb-2026
Modular Power System Mainframe	Keysight Technologies	N6701C	5835	-	TU
DC Power Module 60V 20A 300W	Keysight Technologies	N6754A	5836	-	O/P Mon

Table 38

TU - Traceability Unscheduled
O/P Mon – Output Monitored using calibrated equipment

2.6 Interference Protection Function

2.6.1 Specification Reference

ARIB STD-T66, Clause 3.4 (1)

2.6.2 Equipment Under Test and Modification State

SiW917Y1GN, S/N: BLE MAC address: D4:48:67:DD:D7:30 - Modification State 0

2.6.3 Date of Test

30-May-2024

2.6.4 Test Method

This test was performed in accordance with Notification 88, Annex 45, clause 9.

Evidence of the device transmitting a MAC address was captured by a smartphone app that was able to pick up the MAC address that the DUT was transmitting.

A screenshot of the DUT Tera Term window to identify the MAC address along with a screenshot of the smartphone app have been provided.

The EUT was supplied with 3.3 VDC directly with a DC PSU.

2.6.5 Environmental Conditions

Ambient Temperature	21.3 °C
Relative Humidity	55.2 %

2.6.6 Test Results

2.4 GHz Bluetooth Low Energy - Conducted Tests

Result: The client device under test transmitted an identification code to the master device to identify itself as a valid/authorised client.

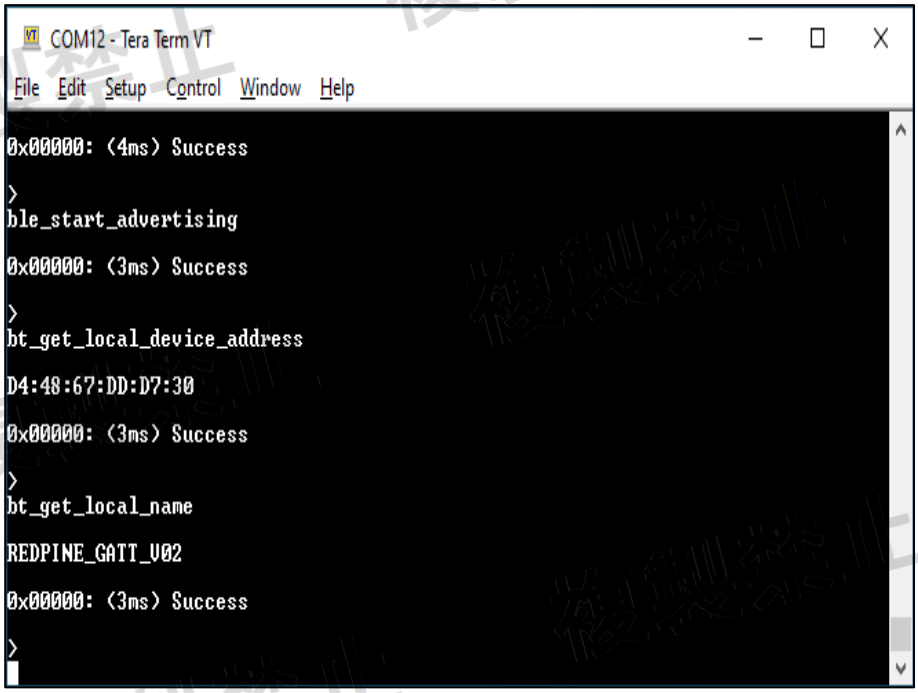


Figure 75 – Evidence

Figure 76 – Evidence

Radio Equipment Regulations Article 9-4, paragraph 1, item 8

Client devices should send an identification code to the master device in order to identify itself as a valid/authorized client.

2.6.7 Test Location and Test Equipment Used

This test was carried out in RF Laboratory 1.

Instrument	Manufacturer	Type No	TE No	Calibration Period (months)	Calibration Expires
Cable 2.92m	Junkosha	MWX241-01000KMS	5413	12	21-May-2024
Cable (K Type 2m)	Junkosha	MWX241-02000KMS	5421	12	07-Mar-2025
Humidity & Temperature meter	R.S Components	1364	6148	12	21-Jul-2024
Test Coupling Network	TUV SUD	TUV_RxTest_001	6387	12	04-Sep-2024
Wireless Connectivity Test Set	Anritsu	MT8862A-002	6524	12	21-Jul-2024

Table 39

2.7 Antenna Gain

2.7.1 Specification Reference

ARIB STD-T66, Clause 3.6 (2)

2.7.2 Equipment Under Test and Modification State

SiW917Y1GN, S/N: BLE MAC address: D4:48:67:DD:D7:30 - Modification State 0

2.7.3 Date of Test

29-May-2024

2.7.4 Test Method

The following information was provided by the manufacturer. (See Annex B for Details).

The maximum half power beamwidth was calculated by determining the EIRP relative to an antenna with a transmitting power of 12.14 dBm/MHz (16.37 mW/MHz).

A = EIRP (mW/MHz) / 16.37

Maximum Half-Power Beamwidth = 360 degrees / A.

2.7.5 Environmental Conditions

Ambient Temperature	21.4 °C
Relative Humidity	58.0 %

2.7.6 Test Results

2.4 GHz Bluetooth Low Energy - Conducted Tests

Parameter	Results
Frequency Range (MHz)	2400 MHz -2484 MHz
Antenna Gain (dBi)	4.75 dBi #
Half-Power Beamwidth	360 degrees
EIRP (mW/MHz)	12.14 dBm EIRP (16.37 mW)
A	1
Calculated Maximum Half-Power Beamwidth	360 degrees

Table 40

ARIB STD-T66, Limit Clause 3.6 (2)

The absolute gain of transmitting antennas must be at most 12.14 dB.

Any antenna with a peak gain less than or equal to 4.75 dBi may be used based on the measured max power of 5.48 mW/MHz. Antennas with a higher gain may be permitted so long as the half-power beamwidth passes the criteria laid out in ARIB STD-T66 Limit Clause 3.2 (2) b, for example: An antenna with a max gain of 12.14 dBi must have a max half-power beamwidth of 65.67 degrees.

The integral antenna in the main model (SiW917Y1GA) is compliant with this requirement as it uses a gain of 2.26 dBi which is less than the maximum gain of 4.75 dBi to be compliant with a 360 degree half power beamwidth.

2.7.7 Test Location and Test Equipment Used

This test was carried out in RF Laboratory 1.

Instrument	Manufacturer	Type No	TE No	Calibration Period (months)	Calibration Expires
True RMS Multimeter	Fluke	79 Series III	411	12	12-Jan-2025
Hygrometer	Rotronic	I-1000	3220	12	28-Nov-2024
USB Power Sensor	Boonton	RTP5008	5833	12	12-Jul-2024
Modular Power System Mainframe	Keysight Technologies	N6701C	5835	-	TU
DC Power Module 60V 20A 300W	Keysight Technologies	N6754A	5836	-	O/P Mon
Signal Conditioning Unit	TUV SUD	SPECTRUM_SCU001	6350	-	26-Jul-2024
SCU Cable Assembly SCU	TUV SUD	SPECTRUM_SCU_CA	6638	12	26-Jul-2024

Table 41

O/P Mon – Output Monitored using calibrated equipment
TU - Traceability Unscheduled

3 Photographs

3.1 Equipment Under Test (EUT)

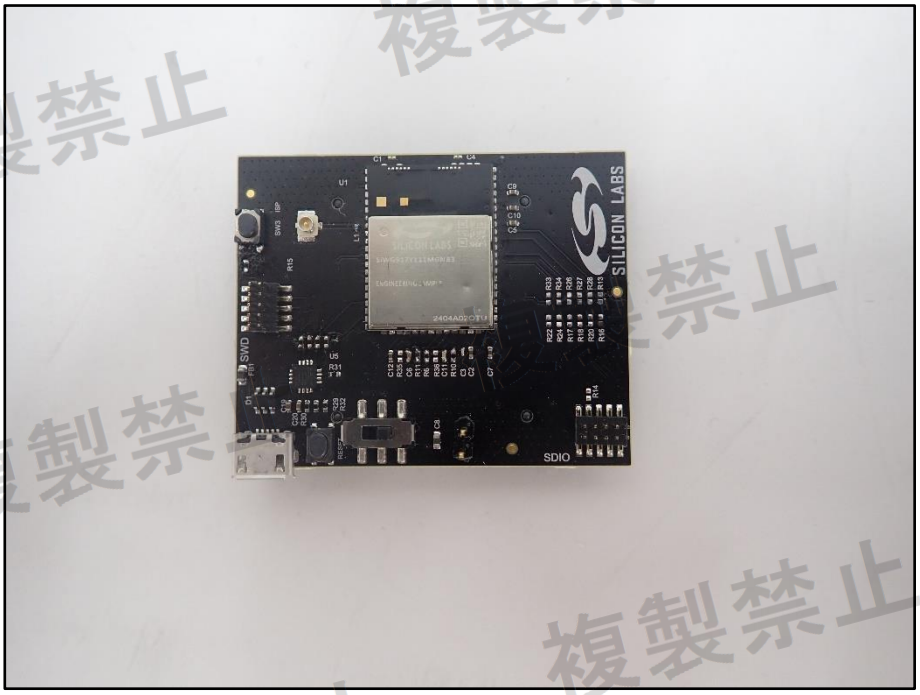


Figure 77 – EUT mounted on host certification board without integral antenna (SiW917Y1GN)

4 Measurement Uncertainty

For a 95% confidence level, the measurement uncertainties for defined systems are:

Test Name	Measurement Uncertainty
Antenna Power	± 0.64 dB
Frequency Deviation	± 25.32 kHz
Permissible Value of Spurious or Unnecessary Radiation Intensity	± 3.454 dB
Allowable Value for Occupied Bandwidth	± 42.21 kHz
Limit on Secondary Radiation	±3.45 dB
Interference Protection Function	-
Antenna Gain	-

Table 42

Measurement Uncertainty Decision Rule – Accuracy Method

Determination of conformity with the specification limits is based on the decision rule according to IEC Guide 115:2021, Clause 4.4.3 (Procedure 2). The measurement results are directly compared with the test limit to determine conformance with the requirements of the standard.

Risk: The uncertainty of measurement about the measured result is negligible with regard to the final pass/fail decision. The measurement result can be directly compared with the test limit to determine conformance with the requirement (compare IEC Guide 115). The level of risk to falsely accept and falsely reject items is further described in ILAC-G8.

ANNEX A

Antenna Power at Extreme Voltages

Measurements in this section were performed at the request of the manufacturer to show that the RF Output power remained compliant when subjected to the extreme voltage conditions stated by the manufacturer for the requirements of Japan MIC Radio Law.

Antenna Power

Specification Reference

ARIB STD-T66, Clause 3.2 (2)

Equipment Under Test and Modification State

SiW917Y1GN, S/N: BLE MAC address: D4:48:67:DD:D7:30 - Modification State 0

Date of Test

22-May-2024

Test Method

This test has been performed using Power meter and spectrum analyser. A spectrum analyser was tuned to the test frequency with the relevant RBW to match the EIRP limit. The max hold function on the analyser was used to obtain EIRP output power. A percentage deviation from the measured power to the declared power was calculated and assessed against the tolerance limits.

A power meter was used to obtain the conducted output power that was compared against the customers declared power.

The EUT was supplied with a DC PSU.

Environmental Conditions

Ambient Temperature	22.7 °C
Relative Humidity	52.5 %

Test Results

2.4 GHz BLE - Extreme Voltages

Test Configuration			
Frequency Range:	2400-2483.5 MHz	Band:	2.4 GHz
Limit Clause(s):	3.2 (2) 3.2 (3)	Test Method(s):	Refer to Test Method
Additional Reference(s):	-		
Note(s):	3.6		

DUT Configuration			
Mode:	ARIB BLE GFSK (LE 1M)	Duty Cycle (%):	84.5 (Data) 33.9 (Adv)
Antenna Configuration:	SISO	DCCF (dB):	0.73 (Data) 4.70 (Adv)
Active Port(s):	-	Peak Antenna Gain (dBi):	4.75#
Supply Voltage:	3.00V	TX Mode:	Continuous Modulated Packet Bursts

Test Frequency (MHz)	Power Index	Conducted Output Power (mW/MHz)					Declared (mW/MHz)	Tolerance (%)	Limit (mW/MHz)	Limit (%)*
		A	B	C	D	∑				
2402	7	4.79					6.1	-21.54	10.00	-80 ≤ n ≤ +20
2404	7	4.80					6.1	-21.36	10.00	-80 ≤ n ≤ +20
2440	7	4.60					6.1	-24.55	10.00	-80 ≤ n ≤ +20
2478	7	4.54					6.1	-25.58	10.00	-80 ≤ n ≤ +20
2480	7	4.55					6.1	-25.41	10.00	-80 ≤ n ≤ +20

Table 43 - PSD Results

Test Frequency (MHz)	Power Index	Conducted Output Power (dBm)
2402	7.00	6.97
2404	7.00	6.98
2440	7.00	6.80
2478	7.00	6.74
2480	7.00	6.74

Table 44 - Output Power Results

Test Configuration			
Frequency Range:	2400-2483.5 MHz	Band:	2.4 GHz
Limit Clause(s):	3.2 (2) 3.2 (3)	Test Method(s):	Refer to Test Method
Additional Reference(s):	-		
Note(s):	3.6		

DUT Configuration			
Mode:	ARIB BLE GFSK (LE 1M)	Duty Cycle (%):	84.5 (Data) 33.9 (Adv)
Antenna Configuration:	SISO	DCCF (dB):	0.73 (Data) 4.70 (Adv)
Active Port(s):	-	Peak Antenna Gain (dBi):	4.75#
Supply Voltage:	3.63V	TX Mode:	Continuous Modulated Packet Bursts

Test Frequency (MHz)	Power Index	Conducted Output Power (mW/MHz)					Declared (mW/MHz)	Tolerance (%)	Limit (mW/MHz)	Limit (%)*
		A	B	C	D	∑				
2402	7	5.15					6.1	-15.54	10.00	-80 ≤ n ≤ +20
2404	7	5.09					6.1	-16.50	10.00	-80 ≤ n ≤ +20
2440	7	4.92					6.1	-19.34	10.00	-80 ≤ n ≤ +20
2478	7	4.83					6.1	-20.81	10.00	-80 ≤ n ≤ +20
2480	7	4.86					6.1	-20.26	10.00	-80 ≤ n ≤ +20

Table 45 - PSD Results

Test Frequency (MHz)	Power Index	Conducted Output Power (dBm)
2402	7.00	7.29
2404	7.00	7.24
2440	7.00	7.09
2478	7.00	7.01
2480	7.00	7.03

Table 46 - Output Power Results

Test Configuration			
Frequency Range:	2400-2483.5 MHz	Band:	2.4 GHz
Limit Clause(s):	3.2 (2) 3.2 (3)	Test Method(s):	Refer to Test Method
Additional Reference(s):	-		
Note(s):	3.6		

DUT Configuration			
Mode:	ARIB BLE GFSK (LE 2M)	Duty Cycle (%):	33.9
Antenna Configuration:	SISO	DCCF (dB):	4.70
Active Port(s):	-	Peak Antenna Gain (dBi):	4.75#
Supply Voltage:	3.00V	TX Mode:	Continuous Modulated Packet Bursts

Test Frequency (MHz)	Power Index	Conducted Output Power (dBm/MHz)	Limit (dBm/MHz)
2404	7.00	4.35	10.00
2440	7.00	4.22	10.00
2478	7.00	5.18	10.00

Test Frequency (MHz)	Power Index	Conducted Output Power (mW/MHz)					Declared (mW/MHz)	Tolerance (%)	Limit (mW/MHz)	Limit (%)*
		A	B	C	D	∑				
2404	7	2.72					4.3	-36.68	10.00	-80 ≤ n ≤ +20
2440	7	2.64					4.3	-38.55	10.00	-80 ≤ n ≤ +20
2478	7	3.30					4.3	-23.35	10.00	-80 ≤ n ≤ +20

Table 47 - PSD Results

Test Frequency (MHz)	Power Index	Conducted Output Power (dBm)
2404	7.00	6.02
2440	7.00	5.88
2478	7.00	6.85

Table 48 - Output Power Results

Test Configuration			
Frequency Range:	2400-2483.5 MHz	Band:	2.4 GHz
Limit Clause(s):	3.2 (2) 3.2 (3)	Test Method(s):	Refer to Test Method
Additional Reference(s):	-		
Note(s):	3.6		

DUT Configuration			
Mode:	ARIB BLE GFSK (LE 2M)	Duty Cycle (%):	33.9
Antenna Configuration:	SISO	DCCF (dB):	4.70
Active Port(s):	-	Peak Antenna Gain (dBi):	4.75#
Supply Voltage:	3.63V	TX Mode:	Continuous Modulated Packet Bursts

Test Frequency (MHz)	Power Index	Conducted Output Power (mW/MHz)					Declared (mW/MHz)	Tolerance (%)	Limit (mW/MHz)	Limit (%)*
		A	B	C	D	∑				
2404	7	3.71					4.3	-13.80	10.00	-80 ≤ n ≤ +20
2440	7	3.62					4.3	-15.76	10.00	-80 ≤ n ≤ +20
2478	7	3.56					4.3	-17.30	10.00	-80 ≤ n ≤ +20

Table 49 - PSD Results

Test Frequency (MHz)	Power Index	Conducted Output Power (dBm)
2404	7.00	7.35
2440	7.00	7.25
2478	7.00	7.18

Table 50 - Output Power Results

Test Configuration			
Frequency Range:	2400-2483.5 MHz	Band:	2.4 GHz
Limit Clause(s):	3.2 (2) 3.2 (3)	Test Method(s):	Refer to Test Method
Additional Reference(s):	-		
Note(s):	3.6		

DUT Configuration			
Mode:	ARIB BLE GFSK (LE 125k)	Duty Cycle (%):	96.7 (Data) 34.1 (Adv)
Antenna Configuration:	SISO	DCCF (dB):	0.14 (Data) 4.68 (Adv)
Active Port(s):	-	Peak Antenna Gain (dBi):	4.75#
Supply Voltage:	3.00V	TX Mode:	Continuous Modulated Packet Bursts

Test Frequency (MHz)	Power Index	Conducted Output Power (mW/MHz)					Declared (mW/MHz)	Tolerance (%)	Limit (mW/MHz)	Limit (%)*
		A	B	C	D	∑				
2402	7	4.89					6.2	-21.19	10.00	-80 ≤ n ≤ +20
2404	7	4.80					6.2	-22.62	10.00	-80 ≤ n ≤ +20
2440	7	4.65					6.2	-25.08	10.00	-80 ≤ n ≤ +20
2478	7	4.54					6.2	-26.78	10.00	-80 ≤ n ≤ +20
2480	7	4.58					6.2	-26.11	10.00	-80 ≤ n ≤ +20

Table 51 - PSD Results

Test Frequency (MHz)	Power Index	Conducted Output Power (dBm)
2402	7.00	7.01
2404	7.00	6.95
2440	7.00	6.80
2478	7.00	6.72
2480	7.00	6.72

Table 52 - Output Power Results

Test Configuration			
Frequency Range:	2400-2483.5 MHz	Band:	2.4 GHz
Limit Clause(s):	3.2 (2) 3.2 (3)	Test Method(s):	Refer to Test Method
Additional Reference(s):	-		
Note(s):	3.6		

DUT Configuration			
Mode:	ARIB BLE GFSK (LE 125k)	Duty Cycle (%):	96.7 (Data) 34.1 (Adv)
Antenna Configuration:	SISO	DCCF (dB):	0.14 (Data) 4.68 (Adv)
Active Port(s):	-	Peak Antenna Gain (dBi):	4.75#
Supply Voltage:	3.63V	TX Mode:	Continuous Modulated Packet Bursts

Test Frequency (MHz)	Power Index	Conducted Output Power (mW/MHz)					Declared (mW/MHz)	Tolerance (%)	Limit (mW/MHz)	Limit (%)*
		A	B	C	D	∑				
2402	7	5.21					6.2	-15.94	10.00	-80 ≤ n ≤ +20
2404	7	5.09					6.2	-17.85	10.00	-80 ≤ n ≤ +20
2440	7	4.92					6.2	-20.64	10.00	-80 ≤ n ≤ +20
2478	7	4.84					6.2	-21.91	10.00	-80 ≤ n ≤ +20
2480	7	4.91					6.2	-20.82	10.00	-80 ≤ n ≤ +20

Table 53 - Output Power Results

Test Frequency (MHz)	Power Index	Conducted Output Power (dBm)
2402	7.00	7.28
2404	7.00	7.21
2440	7.00	7.06
2478	7.00	6.98
2480	7.00	7.00

Table 54 - Output Power Tolerance Results

ARIB STD T-66, Limit Clause 3.2 (3)

PSD:
≤ 10 mW/1MHz

Total Power:
The upper and lower allowable deviations in antenna power are 20% and 80%, respectively. However, these limits are for maximum rate antenna power. If the antenna power is reduced for communication reasons, there are no regulated upper or lower allowable deviations.

* Only the upper antenna tolerance of +20% applies to the Radio Equipment Regulations Article 14(8)(3) for radio stations of low-power data communications systems using radio waves with frequencies exceeding 2400 MHz and up to 2483.5 MHz.

The maximum antenna gain for this unit to pass the requirements has been found to be 4.75 dBi for antennas with a maximum half power beamwidth of 360 degrees. This is due to the max measurement of 5.48 mW/MHz. Higher gain antennas may be used so long as the half power beamwidth passes the requirements in ARIB STD-T66 3.6(2).

Test Location and Test Equipment Used

This test was carried out in RF Laboratory 1.

Instrument	Manufacturer	Type No	TE No	Calibration Period (months)	Calibration Expires
Multimeter	Fluke	75 Mk3	455	12	15-Dec-2024
Hygrometer	Rotronic	I-1000	3220	12	28-Nov-2024
MXA Signal Analyser	Keysight Technologies	N9020B	5528	24	18-Sep-2025
USB Power Sensor	Boonton	RTP5008	5833	12	12-Jul-2024
Modular Power System Mainframe	Keysight Technologies	N6701C	5835	-	TU
DC Power Module 60V 20A 300W	Keysight Technologies	N6754A	5836	-	O/P Mon
Signal Conditioning Unit	TUV SUD	SPECTRUM_SCU001	6350	-	26-Jul-2024
SCU Cable Assembly SCU	TUV SUD	SPECTRUM_SCU_CA	6638	12	26-Jul-2024

Table 55

TU - Traceability Unscheduled
O/P Mon – Output Monitored using calibrated equipment

ANNEX B – Integral Antenna (SiW917YGA)

Antenna Data

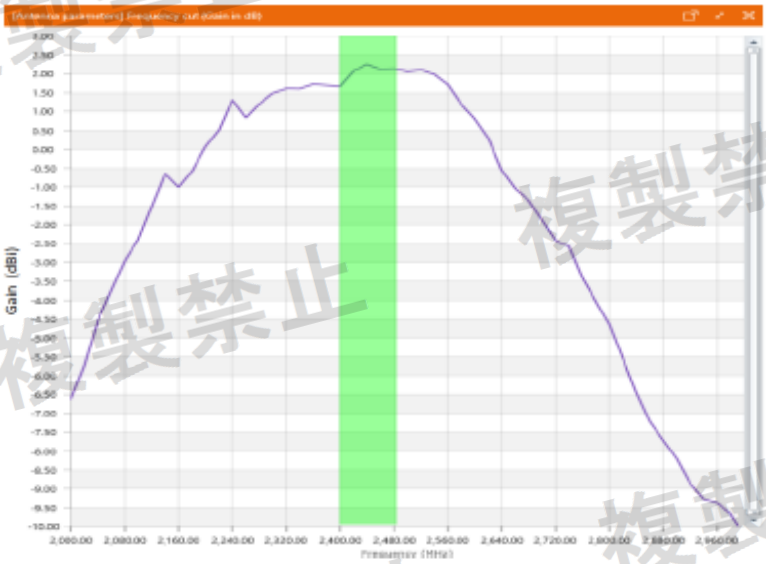
2. Antenna specification

Parameter	Min	Typ	Max	Unit
Frequency Range of Operation	2400	-	2484	MHz
Peak Gain (Relative to Isotropic)	-	-	+2.26	dBi
Efficiency	-1.06	-	-0.73	dB
VSWR	-	-	2:1	-
Reference Impedance	-	50	-	Ω
Half-power Beamwidth	73.4	-	274.0	Deg
Trace Thickness	-	35	-	µm
Trace Length	-	14	-	mm
Trace Width	-	0.5	-	mm

Table 1: Antenna Specification

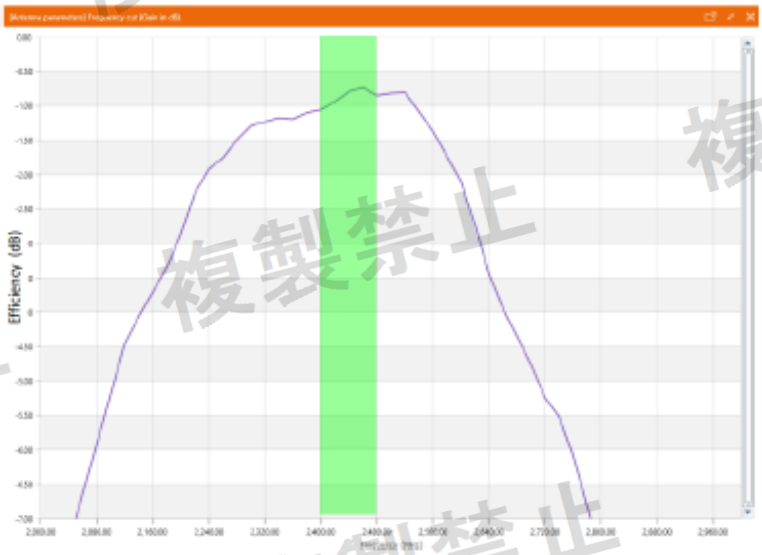
Note: This integral antenna meets the specifications in the table above if the host board is designed so that it takes into account the design guidelines and the integration constraints stipulated in the module's user manual / datasheet.

3. Gain, Efficiency and Radiation patterns



Frequency (MHz)	Gain (dB)	
2300	1.49	
2320	1.62	
2340	1.61	
2360	1.73	
2380	1.72	
2400	1.67	
2420	2.08	
2440	2.26	PEAK
2460	2.12	
2480	2.15	
2500	2.06	
2520	2.1	
2540	1.99	
2560	1.72	
2580	1.19	
2600	0.8	
2620	0.29	
2640	-0.54	
2660	-1.04	
2680	-1.34	
2700	-1.92	

Figure 1: Integral Antenna Gain



Frequency (MHz)	Efficiency (dB)	
2300	-1.29	
2320	-1.23	
2340	-1.18	
2360	-1.2	
2380	-1.1	
2400	-1.06	MIN
2420	-0.94	
2440	-0.79	
2460	-0.73	MAX
2480	-0.85	
2500	-0.82	
2520	-0.8	
2540	-1.07	
2560	-1.37	
2580	-1.72	
2600	-2.1	
2620	-2.72	
2640	-3.44	
2660	-3.94	
2680	-4.35	
2700	-4.76	

Figure 2: Integral Antenna Efficiency

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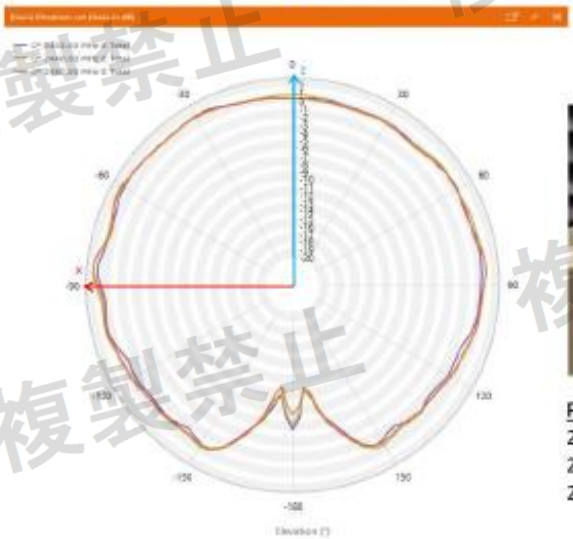
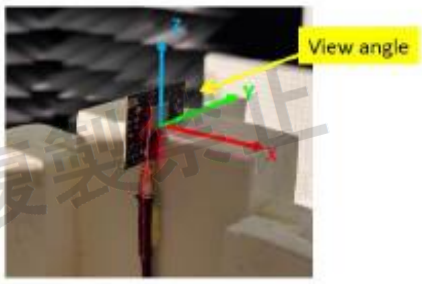
Phi0 Gain cut (dBi)

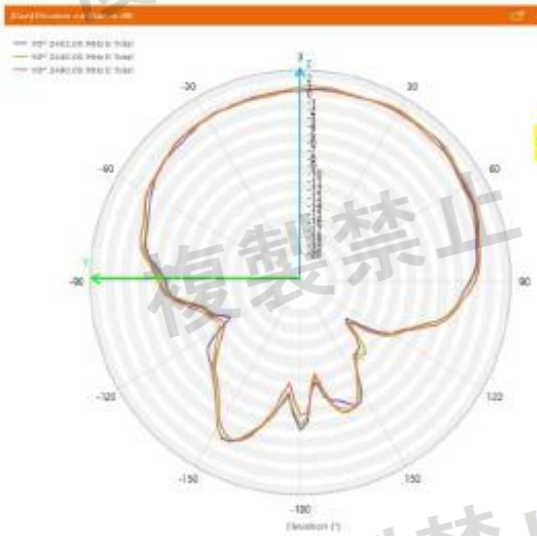


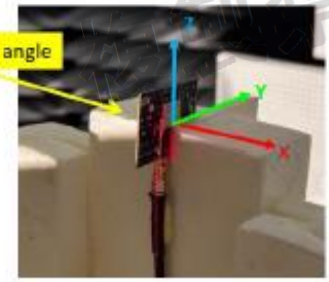


Frequency	3dB beam width
2402MHz	269.6 deg
2440MHz	227.4 deg
2480MHz	274.0 deg

Figure 3: Integral Antenna Radiation Pattern Phi 0°

Phi90 Gain cut





Frequency	3dB beam width
2402MHz	140.9 deg
2440MHz	133.7 deg
2480MHz	150.0 deg

Figure 4: Integral Antenna Radiation Pattern Phi 90°

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