



FCC PART 15.247

TEST REPORT

For

Austar Hearing Science and Technology (Xiamen) Co., Ltd.

B8, Biomedical Industrial Park, No.2064 Wengjiao West Road, Haicang Dist. Xiamen, Fujian, China

FCC ID: 2A445-FHL9SP-DW

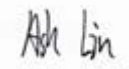
Report Type: Original Report	Product Name: BTE Hearing-aid
Report Number:	2507R12690E-RF-01
Report Date:	2025-05-22
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REPORT REVISION HISTORY

Number of Revisions	Report No.	Version	Issue Date	Description
0	2507R12690E-RF-01	R1V1	2025-05-22	Initial Release

GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

Product Name:	BTE Hearing-aid
Tested Model:	FHL9SP-DW
Multiple Model(s):	N/A
Trade mark:	AUSTAR®
Power Supply:	DC 1.3V from battery
Maximum Conducted Peak Output Power:	-0.16dBm
Frequency Range:	2402-2480MHz
Modulation Technique:	GFSK
Antenna Type:	LDS Antenna
★Maximum Antenna Gain:	-3.2dBi
EUT Received Status:	Good
<i>Note:</i> 1. The Maximum Antenna Gain was declared by manufacturer. 2. All measurement and test data in this report was gathered from production sample serial number: 30FQ-3(RF Conducted), 30FQ-4(Radiated Spurious Emission) (Assigned by the BACL(Xiamen). The EUT supplied by the applicant was received on 2025-03-26)	

Objective

This report is prepared on behalf of *Austar Hearing Science and Technology (Xiamen) Co., Ltd.* in accordance with Part 2-Subpart J, Part 15-Subparts A and C of the Federal Communication Commission's rules.

The tests were performed in order to determine compliance with FCC Part 15, Subpart C, and section 15.203, 15.205, 15.209 and 15.247 rules.

Test Methodology

All measurements contained in this report were conducted with ANSI C63.10-2020, American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices and KDB 558074 D01 15.247 Meas Guidance v05r02.

Test Facility

The test site used by Bay Area Compliance Laboratories Corp. (Xiamen) to collect test data is located on the Unit 102, No. 902 Meifeng South Road, Binhai West Avenue, Science and Technology Innovation Park, Torch High tech Zone XiaMen.

Bay Area Compliance Laboratories Corp. (Xiamen) Lab is accredited to ISO/IEC 17025 by A2LA (Certificate Number: 7134.01) and the lab has been recognized as the FCC accredited lab under the KDB 974614 D01, the FCC Designation No. : CN1384.

Measurement Uncertainty

Item		U_{lab}
Radiated Spurious Emission	9kHz-150kHz	2.82dB
	150kHz-30MHz	2.74dB
	30MHz~200MHz	3.47dB
	200MHz~1GHz	4.86dB
	1GHz~6GHz	4.88dB
	6GHz~18GHz	4.95dB
	18GHz~40GHz	4.45dB
Occupied Channel Bandwidth		2%
Transmitter Conducted Power(Conducted RF power)		± 1.49 dB
Conducted Spurious Emission		± 2.92 dB
Power Spectral Density		2.52dB
Duty Cycle		1%
Temperature		$\pm 1^{\circ}\text{C}$
Humidity		$\pm 5\%$
Supply voltages		$\pm 0.4\%$

Note: The extended uncertainty given in this report is obtained by combining the standard uncertainty times the coverage factor K with the 95% confidence interval. Otherwise required by the applicant or Product Regulations, Decision Rule in this report did not consider the uncertainty.

SYSTEM TEST CONFIGURATION

Test Mode and Voltage

The system was configured for testing in a typical mode (as normally used by a typical user).	
Test mode:	Transmitting
Test voltage:	DC 1.3V from battery
Remark:	During all emission tests, the EUT was configured to measure its highest possible emission level and the worst case's test data was presented in this test report.

Description of Test Configuration

For BLE mode, 40 channels are provided to testing:

Channel	Frequency (MHz)	Channel	Frequency (MHz)
0	2402	20	2442
1	2404	21	2444
2	2406	22	2446
3	2408	23	2448
4	2410	24	2450
5	2412	25	2452
6	2414	26	2454
7	2416	27	2456
8	2418	28	2458
9	2420	29	2460
10	2422	30	2462
11	2424	31	2464
12	2426	32	2466
13	2428	33	2468
14	2430	34	2470
15	2432	35	2472
16	2434	36	2474
17	2436	37	2476
18	2438	38	2478
19	2440	39	2480

EUT was tested with Channel 0, 19 and 39.

Equipment Modifications

No modification was made to the EUT tested.

★EUT Exercise Software

RF Test Tool: RSL10 RF TEST-V1.0

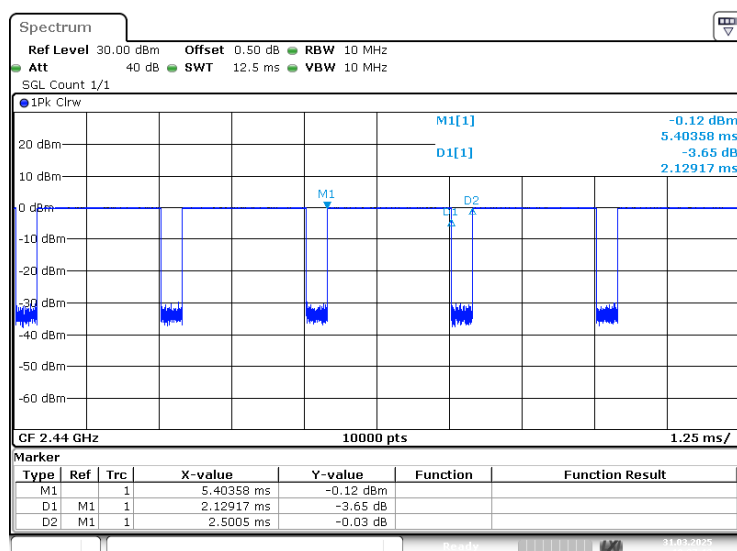
The device was tested with the worst case was performed as below:

Mode	Data rate	Power level		
		Low channel	Middle channel	High channel
BLE	1 Mbps	default	default	default
	2 Mbps	default	default	default

Duty cycle

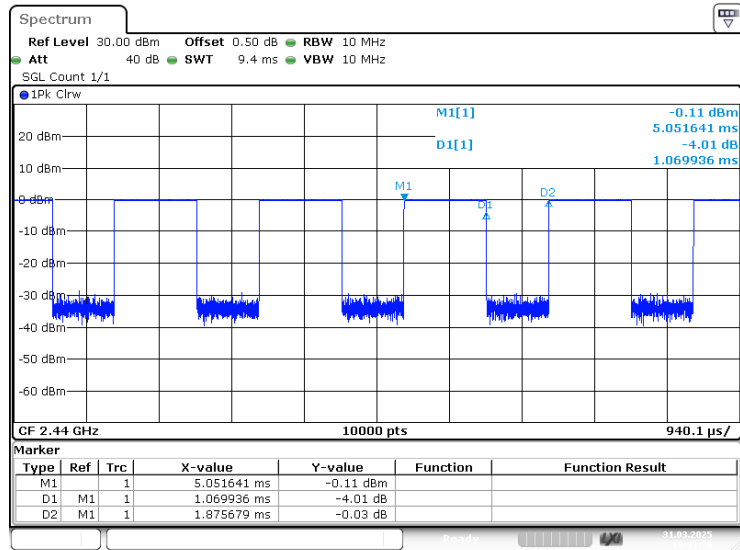
Test Mode:		Transmitting		Test Engineer:		Braylon Ma	
Test Date:		2025-03-31		Test Voltage:		DC 1.3V	
Environment:		Temp.: 23.1°C Humi.: 51% Atm.: 100.2kPa					
Test Modes	Test Frequency (MHz)	Ton (ms)	Ton+off (ms)	Duty cycle (%)	1/T (Hz)	VBW Setting (kHz)	
BLE 1Mbps	2440	2.129	2.501	85.13	470	0.50	
BLE 2Mbps	2440	1.07	1.876	57.04	935	1.00	

BLE 1Mbps Middle Channel



ProjectNo.:2507R12690E-RF Tester:Braylon Ma
Date: 31.MAR.2025 19:27:14

BLE 2Mbps Middle Channel



ProjectNo.:2507R12690E-RF Tester:Braylon Ma
Date: 31.MAR.2025 19:41:26

Support Equipment List and Details

Manufacturer	Description	Model	Serial Number
Lenovo	Laptop	T480	PF1P5K4F
Unknown	Debug board	Unknown	Unknown

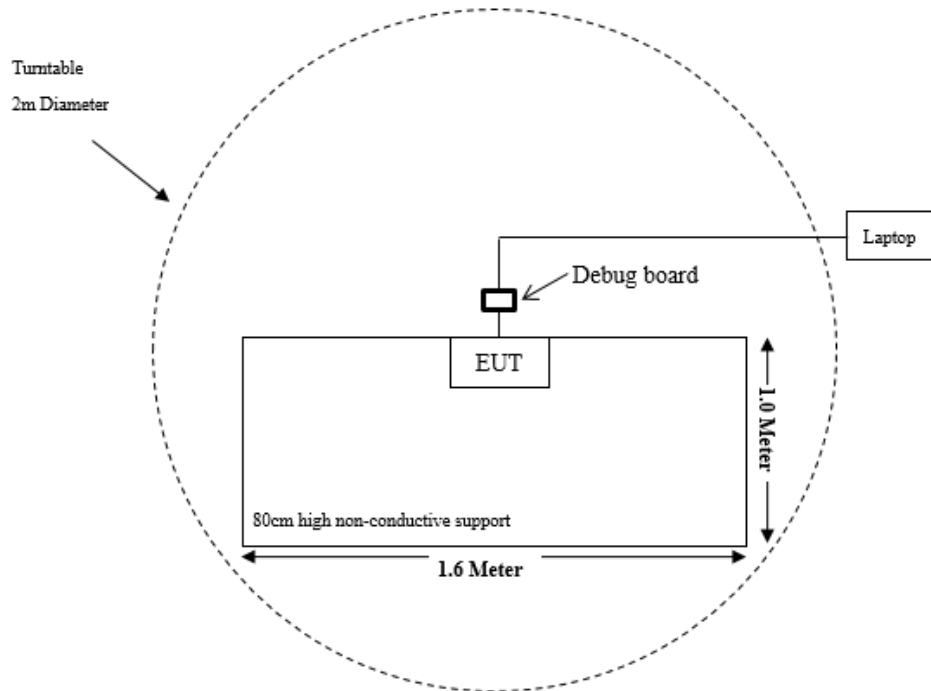
External I/O Cable

Cable Description	Length (m)	From Port	To
Jumper Wire	0.1	EUT	Debug board
USB Cable	10	Debug board	Laptop
RF Cable	0.1	EUT antenna port	Spectrum Analyzer

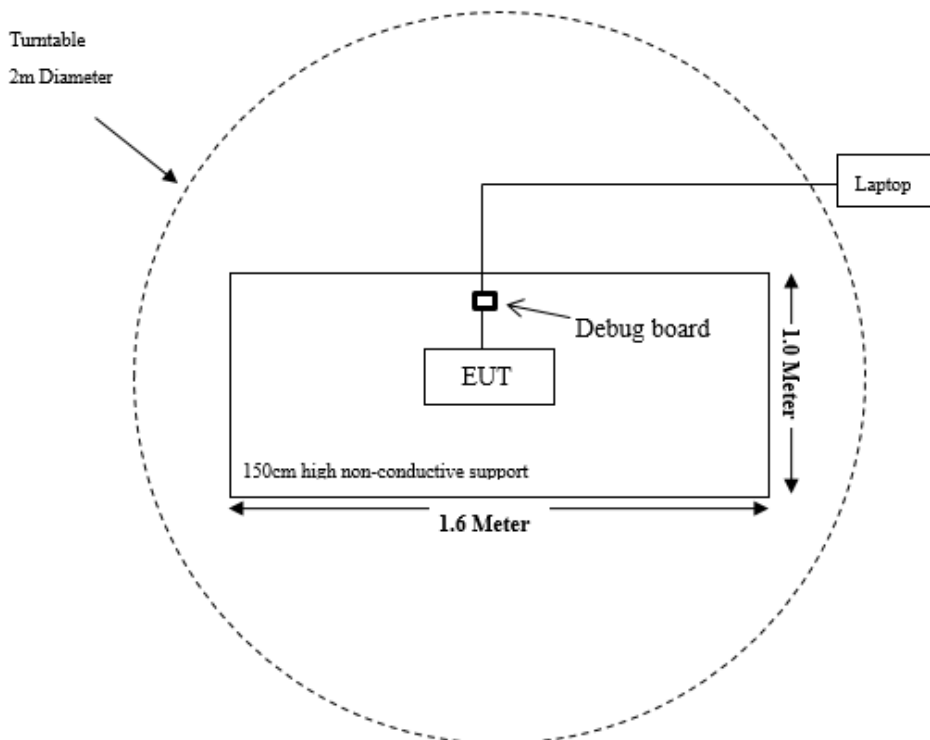
Block Diagram of Test Setup

Radiated Spurious Emission:

Below 1GHz:



Above 1GHz:



SUMMARY OF TEST RESULTS

FCC Rules	Description of Test	Result
§15.203	Antenna Requirement	Compliance
§15.207 (a)	AC Line Conducted Emissions	Not Applicable (See note 1)
§15.205, §15.209, §15.247 (d)	Spurious Emissions	Compliance
§15.247 (a)(2)	6 dB Emission Bandwidth	Compliance
§15.247 (b)(3)	Maximum Conducted Output Power	Compliance
§15.247 (d)	100 kHz Bandwidth of Frequency Band Edge	Compliance
§15.247 (e)	Power Spectral Density	Compliance

Note:

1. The EUT is powered by battery.

TEST EQUIPMENT LIST

Test Equipment	Manufacturer	Model	Serial Number	Calibration Date	Calibration Due Date
Radiated Emissions Below 1GHz					
EMI Test Receiver	Rohde & Schwarz	ESR	103103	2025/2/20	2026/2/19
Loop Antenna	Rohde & Schwarz	HFH2-Z2	830749/001	2023/7/27	2026/7/26
Antenna	Sunol Sciences	JB6	A122022-5	2023/7/27	2026/7/26
Amplifier	Sonoma	310B	120903	2025/2/20	2026/2/19
Coaxial Cable	XINHANGWEIBO	XH400T-N-4M	CC002	2025/2/20	2026/2/19
Coaxial Cable	XINHANGWEIBO	XH460B-N-2M	CC006	2025/2/20	2026/2/19
Coaxial Cable	XINHANGWEIBO	XH460B-N-12M	CC007	2025/2/20	2026/2/19
Coaxial Cable	XINHANGWEIBO	HFH2-CC	335.3609	2023/9/20	2026/9/19
Test Software	Audix	E3	18621a	N/A	N/A
Radiated Emissions Above 1 GHz					
Spectrum Analyzer	Rohde & Schwarz	FSV40-N	102051	2025/2/20	2026/2/19
Filter Switch Unit	Decentest	DT7220FSU	DS79904	2025/2/21	2026/2/20
Multiplex Switch Test Control Set	Decentest	DT7220SCU	DS79901	2025/2/21	2026/2/20
Horn Antenna	EMCO	3115	9002-3355	2024/11/19	2027/11/18
Preamplifier	GLOBAL	1313-A100M18G	4121301	2025/1/16	2026/1/15
Coaxial Cable	XINHANGWEIBO	XH800A-N-6M	CC003	2025/2/20	2026/2/19
Coaxial Cable	XINHANGWEIBO	XH800A-N-1M	CC005	2025/2/20	2026/2/19
Horn Antenna	EMCO	3116	9407-2232	2023/7/31	2026/7/30
Preamplifier	A.H.Systems	PAM-1840	200	2025/2/20	2026/2/19
Coaxial Cable	XINHANGWEIBO	XH360A-2.92-3M	CC008	2025/2/20	2026/2/19
Coaxial Cable	XINHANGWEIBO	XH360A-2.92-1M	CC009	2025/2/20	2026/2/19
Test Software	Audix	E3	18621a	N/A	N/A
RF Conducted Test					
Spectrum Analyzer	Rohde & Schwarz	FSV40-N	102051	2025/2/20	2026/2/19
Test Software	JD	JDAutoTestSystem	1.0.0.3813	N/A	N/A

Statement of Traceability: Bay Area Compliance Laboratories Corp. (Xiamen) attests that all calibrations have been performed in accordance to requirements that traceable to National Primary Standards and International System of Units (SI).

FCC §15.203 - ANTENNA REQUIREMENT

Applicable Standard

According to § 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the user of a standard antenna jack or electrical connector is prohibited. The structure and application of the EUT were analyzed to determine compliance with section §15.203 of the rules. §15.203 state that the subject device must meet the following criteria:

- a. Antenna must be permanently attached to the unit.
- b. Antenna must use a unique type of connector to attach to the EUT.
- c. Unit must be professionally installed, and installer shall be responsible for verifying that the correct antenna is employed with the unit.

And according to FCC 47 CFR section 15.247 (b), if the transmitting antennas of directional gain greater than 6dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

Antenna Connector Construction

The EUT has one LDS antenna arrangement for BLE, which was permanently attached and the antenna gain is -3.2 dBi, fulfill the requirement of this section. Please refer to the EUT photos.

Result: Compliance

FCC §15.209, §15.205 & §15.247(d) - SPURIOUS EMISSIONS

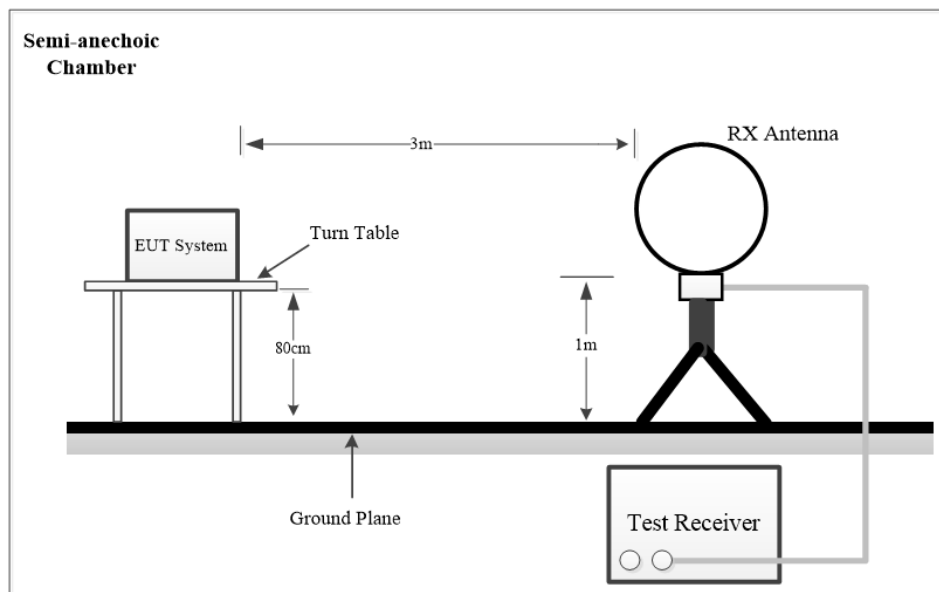
Applicable Standard

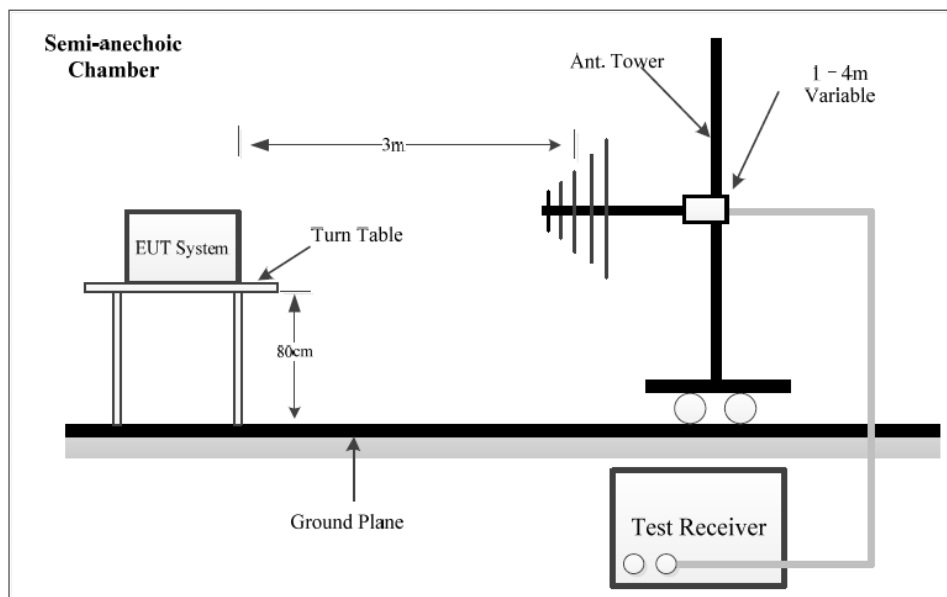
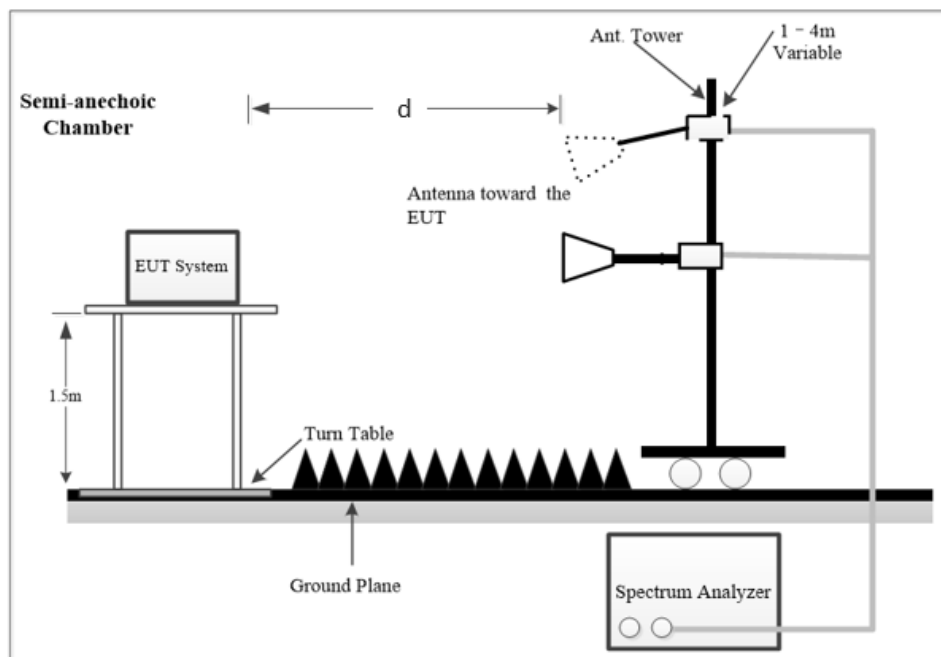
FCC §15.247 (d); §15.209; §15.205;

(d) In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in §15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c)).

EUT Setup

9 kHz-30MHz:



30MHz -1 GHz:**Above 1GHz:**

The radiated emission tests using the setup accordance with the ANSI C63.10-2020. The specification used was the FCC 15.209, and FCC 15.247 limits.

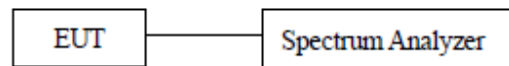
NOTE: d is testing distance;

For Radiated Emission test (1GHz-18GHz) and Bandedge Emission test, which was performed at 3 m distance.

For Radiated Emission test (18GHz-25GHz), which was performed at 1.5 m distance, according to ANSI C63.10-2020, the test result shall be extrapolated to the specified distance using an extrapolation Factor of 20dB/decade from 3m to 1.5m.

Distance extrapolation Factor = $20 \log (\text{specific distance [3m]}/\text{test distance [1.5m]})$ dB = 6 dB

Antenna-port conducted emission:



Note: A short RF cable with low cable loss connected to the EUT antenna port. The insert loss of this RF cable was TDF into the setting of test equipment:

TDF = Insert loss of RF cable

★ The Insert loss was declared by manufacturer.

EMI Test Receiver & Spectrum Analyzer Setup

The system was investigated from 9 kHz to 25 GHz.

During the radiated emission test, the EMI test receiver & spectrum analyzer setup were set with the following configurations:

Below 1GHz:

Frequency Range	RBW	Video B/W	Measurement
9 kHz – 150 kHz	300Hz	1 kHz	PK
	200Hz	/	QP
150 kHz – 30 MHz	10 kHz	30 kHz	PK
	9 kHz	/	QP
30 MHz – 1000 MHz	100 kHz	300 kHz	PK
	120 kHz	/	QP

Above 1GHz:

Pre-scan:

Measurement	Duty Cycle	RBW	Video B/W	Detector
PK	Any	1MHz	3MHz	PK
Ave.	>98%	1MHz	5kHz	PK
	<98%	1MHz	1/T, not less than 5kHz	PK

Final measurement for emission identified during the pre-scan:

Measurement	Duty Cycle	RBW	Video B/W	Detector
PK	Any	1MHz	3MHz	PK
Ave.	>98%	1MHz	10Hz	PK
	<98%	1MHz	1/T	PK

Note: T is minimum transmission duration

Test Procedure

Maximizing procedure was performed on the highest emissions to ensure that the EUT complied with all installation combinations.

For each measurement antenna alignment, the EUT shall be rotated through 0° to 360° on a turntable. The report shall list the six emissions with the smallest margin relative to the limit, for each of the three antenna orientations (parallel, perpendicular, and ground parallel) unless the margin is greater than 20 dB, then the following statement shall be made: "all emissions were greater than 20 dB below the limit."

Below 1GHz, if the measured peak level of the emissions that the measuring receiver reading level plus corrected factor is at least 6 dB below the QP emission limit, there's no need to record the measured QP level of the emissions in the report.

Above 1GHz, if the measured peak level of the emissions that the measuring receiver reading level plus corrected factor is below the AV emission limit, there's no need to record the measured AV level of the emissions in the report.

Antenna-port conducted emission:

Connect the primary antenna port through an attenuator to the spectrum analyzer input; in the results, account for all losses between the unlicensed wireless device output and the spectrum analyzer. The frequency range of testing shall span 30 MHz to 10 times the operating frequency and this may be done in a single sweep or, to aid resolution, across a number of sweeps. The resolution bandwidth shall be 100 kHz, video bandwidth 300 kHz, and a coupled sweep time with a peak detector.

The limit is based on the highest in-band level across all channels measured using the same instrument settings (resolution bandwidth of 100 kHz, video bandwidth of 300 kHz, and a coupled sweep time with a peak detector). To help clearly demonstrate compliance a display line may be set at the required offset (typically 20 dB) below the highest in-band level. Where the highest in-band level is not clearly identified in the out-of-band measurements a separate spectral plot showing the in-band level shall be provided.

When conducted measurements cannot be made (for example a device with integrated, non-removable antenna) radiated measurements shall be used. The reference level for determining the limit shall be established by maximizing the field strength from the highest power channel and measuring using the resolution and video bandwidth settings and peak detector as described above. The field strength limit for spurious emissions outside of restricted-bands shall then be set at the required offset (typically 20 dB) below the highest in-band level. Radiated measurements will follow the standards measurement procedures described in Clause 6 with the exception that the resolution bandwidth shall be 100 kHz, video bandwidth 300 kHz, and a coupled sweep time with a peak detector. Note that use of wider measurement bandwidths are acceptable for measuring the spurious emissions provided that the peak detector is used and that the measured value of spurious emissions are compared to the highest in-band level measured with the 100 kHz / 300 kHz bandwidth settings to determine compliance.

Result & Margin Calculation

The Result is calculated by adding the Antenna Factor and Cable Loss, and subtracting the Amplifier Gain from the Meter Reading. The basic equation is as follows:

For 9 kHz to 18GHz Radiated emission test and Bandedge emissions test
Factor (dB/m) = Antenna Factor (dB/m) + Cable Loss (dB) - Amplifier Gain (dB)

For 18GHz to 25GHz Radiated emission test

Factor (dB/m) = Antenna Factor (dB/m) + Cable Loss (dB) - Amplifier Gain (dB) - Extrapolation factor (dB)

Extrapolation factor = 6dB (distance = 1.5m)

Result (dB μ V/m) = Reading (dB μ V) + Factor (dB/m)

The “**Margin**” column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of 7dB means the emission is 7dB below the limit. The equation for margin calculation is as follows:

Margin (dB) = Limit (dB μ V/m) – Result (dB μ V/m)

Test Data

Please refer to the below table and plots.

Frequency Range:	Below 1 GHz	Above 1 GHz	Antenna-port conducted emission
Temperature:	23.1°C	23.1°C	23.1°C
Relative Humidity:	50 %	50 %	51 %
ATM Pressure:	100.1kPa	100.1kPa	100.2kPa
Test Date:	2025-04-24	2025-04-24	2025-03-31
Test Engineer:	Wlif Wu	Wlif Wu	Braylon Ma

Pre-scan in the X, Y and Z axes of orientation, the worst case X-axis of orientation was recorded.

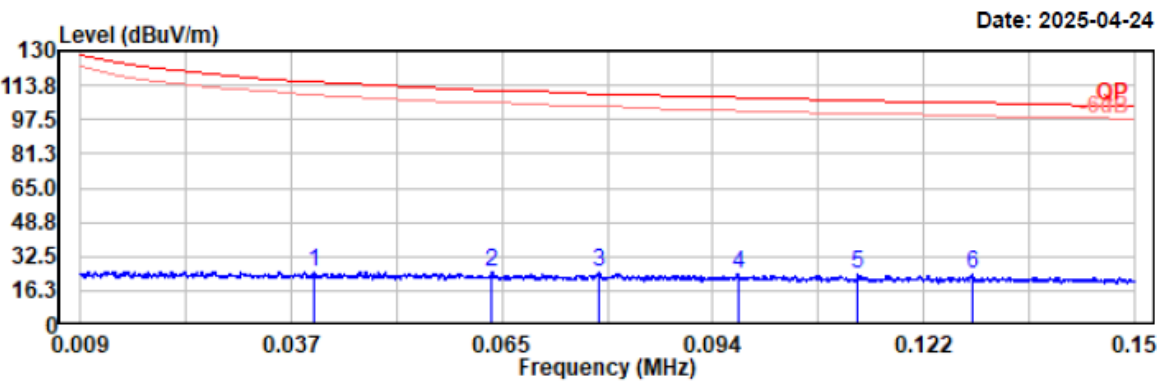
1) 9 kHz~30MHz

Pre-scan in parallel, ground-parallel and perpendicular of orientation of loop antenna, parallel is worst case.

Note: The maximum output power mode: BLE 2Mbps low channel was tested.

Project No.: 2507R12690E-RF
Test Mode: BLE 2M 2402MHz
EUT Model: FHL9SP-DW
Test distance: 3m

Temp/Humi/ATM: 23.1℃/50%/100.1kPa
Tested by: Wlif Wu
Power Source: DC 1.3V

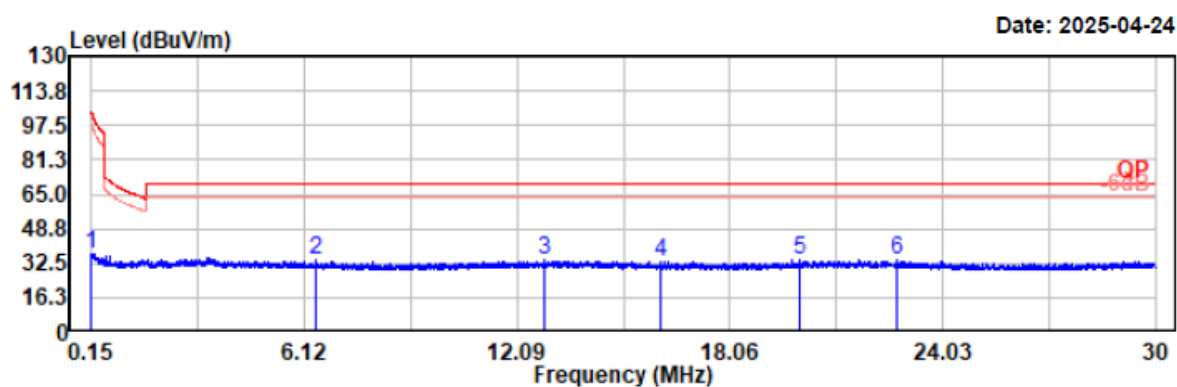


Condition: PK RBW:300Hz VBW:1kHz SWT:auto

Freq MHz	Reading dBuV	Factor dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Remark
0.040	5.61	19.91	25.52	115.52	90.00	Peak
0.064	5.61	19.87	25.48	111.47	85.99	Peak
0.078	5.24	19.73	24.97	109.73	84.76	Peak
0.097	4.29	19.75	24.04	107.88	83.84	Peak
0.113	4.49	19.73	24.22	106.55	82.33	Peak
0.128	4.23	19.73	23.96	105.44	81.48	Peak

Project No.: 2507R12690E-RF
Test Mode: BLE 2M 2402MHz
EUT Model: FHL9SP-DW
Test distance: 3m

Temp/Humi/ATM: 23.1°C/50%/100.1kPa
Tested by: Wlif Wu
Power Source: DC 1.3V



Condition: PK RBW:10kHz VBW:30kHz SWT:auto

Freq MHz	Reading dBuV	Factor dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Remark
0.156	17.24	19.72	36.96	103.74	66.78	Peak
6.430	13.94	19.76	33.70	69.54	35.84	Peak
12.881	14.21	19.73	33.94	69.54	35.60	Peak
16.111	13.56	19.84	33.40	69.54	36.14	Peak
20.000	13.86	20.09	33.95	69.54	35.59	Peak
22.758	14.28	20.17	34.45	69.54	35.09	Peak

2) 30 MHz-1GHz

Note: The maximum output power mode: BLE 2Mbps low channel was tested.

Project No.: 2507R12690E-RF

Temp/Humi/ATM: 23.1°C/50%/100.1kPa

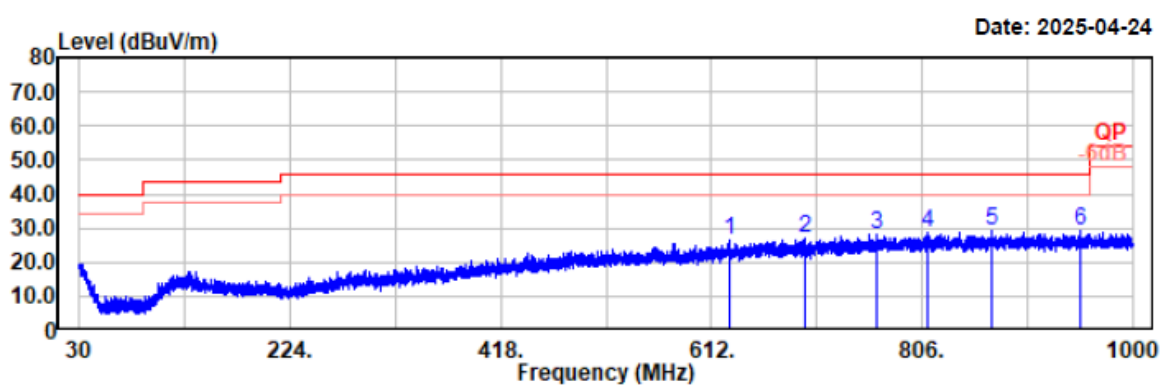
Test Mode: BLE 2M 2402MHz

Tested by: Wlif Wu

EUT Model: FHL9SP-DW

Power Source: DC 1.3V

Test distance: 3m

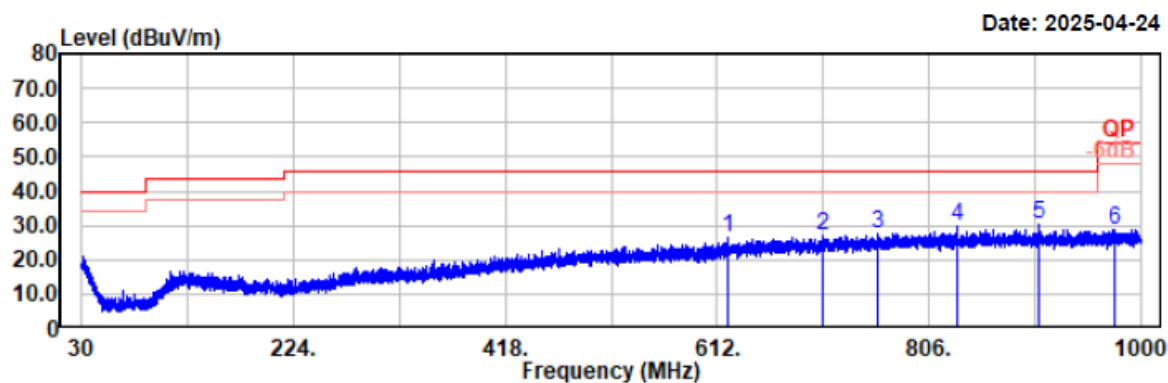


Condition: PK RBW:100kHz VBW:300kHz SWT:auto

Freq MHz	Reading dBuV	Factor dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Polarity	Remark
629.07	27.67	-1.38	26.29	46.00	19.71	Horizontal	Peak
698.52	27.44	-0.42	27.02	46.00	18.98	Horizontal	Peak
764.10	27.39	0.69	28.08	46.00	17.92	Horizontal	Peak
810.85	27.46	1.39	28.85	46.00	17.15	Horizontal	Peak
869.63	26.86	2.13	28.99	46.00	17.01	Horizontal	Peak
951.99	26.10	3.19	29.29	46.00	16.71	Horizontal	Peak

Project No.: 2507R12690E-RF
Test Mode: BLE 2M 2402MHz
EUT Model: FHL9SP-DW
Test distance: 3m

Temp/Humi/ATM: 23.1°C/50%/100.1kPa
Tested by: Wlif Wu
Power Source: DC 1.3V



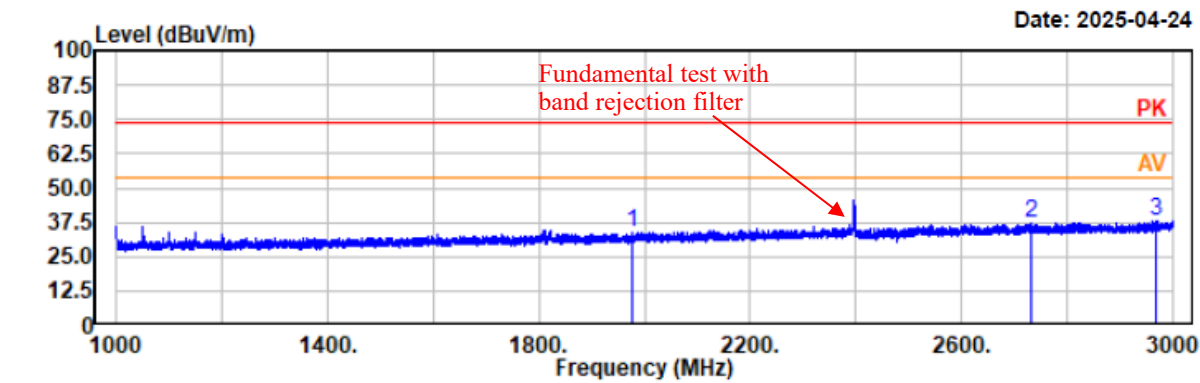
Condition: PK RBW:100kHz VBW:300kHz SWT:auto

Freq MHz	Reading dBuV	Factor dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Polarity	Remark
621.31	27.82	-1.56	26.26	46.00	19.74	Vertical	Peak
708.22	27.23	-0.13	27.10	46.00	18.90	Vertical	Peak
758.76	27.17	0.57	27.74	46.00	18.26	Vertical	Peak
832.29	27.84	1.78	29.62	46.00	16.38	Vertical	Peak
906.49	27.52	2.59	30.11	46.00	15.89	Vertical	Peak
975.65	25.06	3.64	28.70	54.00	25.30	Vertical	Peak

3) 1GHz~3GHz

Project No.: 2507R12690E-RF
Test Mode: BLE 1M 2402MHz
EUT Model: FHL9SP-DW
Test distance: 3m

Temp/Humi/ATM: 23.1°C/50%/100.1kPa
Tested by: Wlif Wu
Power Source: DC 1.3V

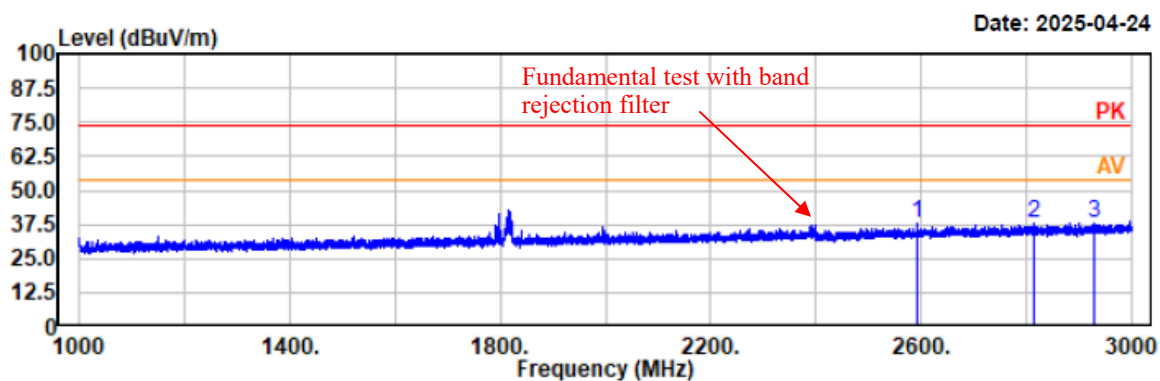


Condition: PK RBW:1MHz VBW:3MHz SWT:auto

Freq MHz	Reading dBuV	Factor dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Polarity	Remark
1975.80	46.73	-12.65	34.08	74.00	39.92	horizontal	Peak
2731.60	47.11	-9.97	37.14	74.00	36.86	horizontal	Peak
2967.80	47.38	-9.11	38.27	74.00	35.73	horizontal	Peak

Project No.: 2507R12690E-RF
Test Mode: BLE 1M 2402MHz
EUT Model: FHL9SP-DW
Test distance: 3m

Temp/Humi/ATM: 23.1°C/50%/100.1kPa
Tested by: Wlif Wu
Power Source: DC 1.3V

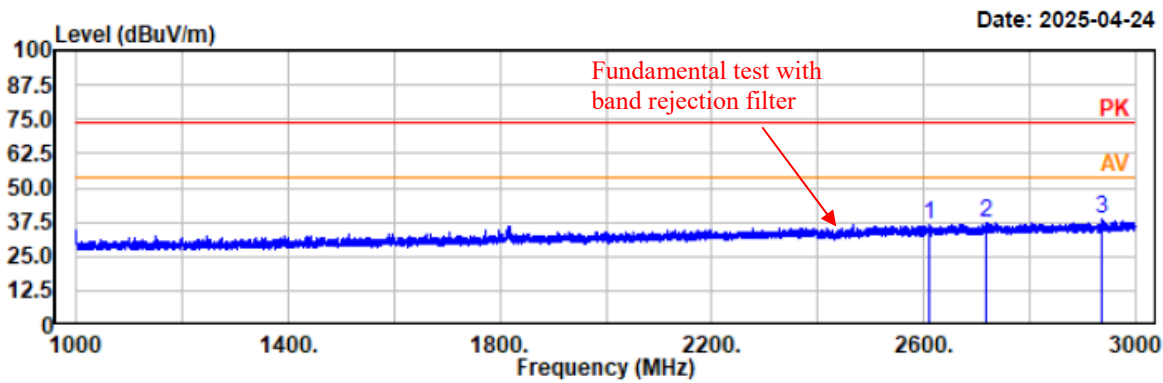


Condition: PK RBW:1MHz VBW:3MHz SWT:auto

Freq MHz	Reading dBuV	Factor dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Polarity	Remark
2591.20	48.15	-10.44	37.71	74.00	36.29	vertical	Peak
2815.00	47.50	-9.74	37.76	74.00	36.24	vertical	Peak
2930.40	47.06	-9.34	37.72	74.00	36.28	vertical	Peak

Project No.: 2507R12690E-RF
Test Mode: BLE 1M 2440MHz
EUT Model: FHL9SP-DW
Test distance: 3m

Temp/Humi/ATM: 23.1°C/50%/100.1kPa
Tested by: Wlif Wu
Power Source: DC 1.3V

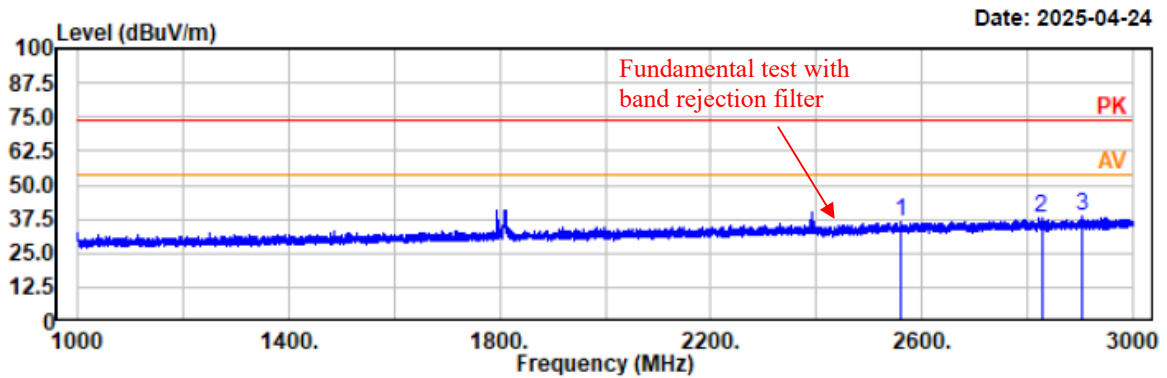


Condition: PK RBW:1MHz VBW:3MHz SWT:auto

Freq MHz	Reading dBuV	Factor dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Polarity	Remark
2612.00	47.10	-10.34	36.76	74.00	37.24	horizontal	Peak
2719.20	47.44	-9.98	37.46	74.00	36.54	horizontal	Peak
2935.80	47.90	-9.31	38.59	74.00	35.41	horizontal	Peak

Project No.: 2507R12690E-RF
Test Mode: BLE 1M 2440MHz
EUT Model: FHL9SP-DW
Test distance: 3m

Temp/Humi/ATM: 23.1°C/50%/100.1kPa
Tested by: Wlif Wu
Power Source: DC 1.3V

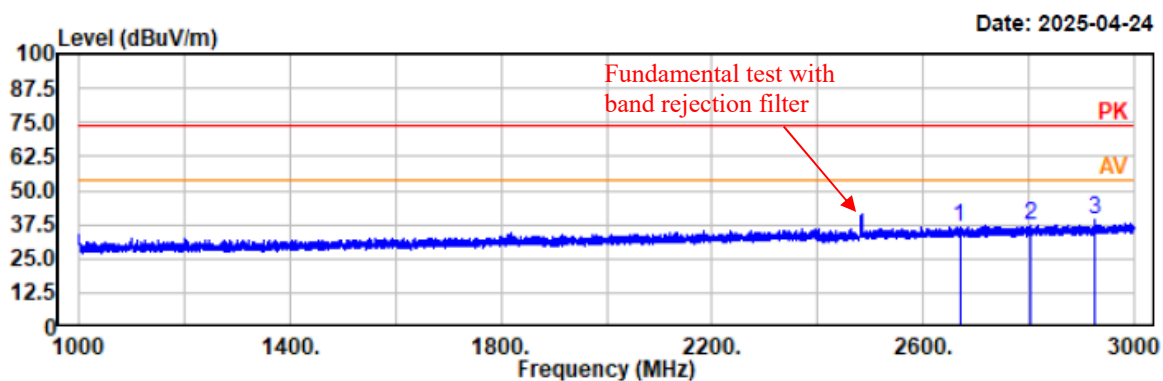


Condition: PK RBW:1MHz VBW:3MHz SWT:auto

Freq MHz	Reading dBuV	Factor dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Polarity	Remark
2561.00	47.05	-10.56	36.49	74.00	37.51	vertical	Peak
2827.00	47.71	-9.69	38.02	74.00	35.98	vertical	Peak
2904.40	48.26	-9.52	38.74	74.00	35.26	vertical	Peak

Project No.: 2507R12690E-RF
Test Mode: BLE 1M 2480MHz
EUT Model: FHL9SP-DW
Test distance: 3m

Temp/Humi/ATM: 23.1°C/50%/100.1kPa
Tested by: Wlif Wu
Power Source: DC 1.3V

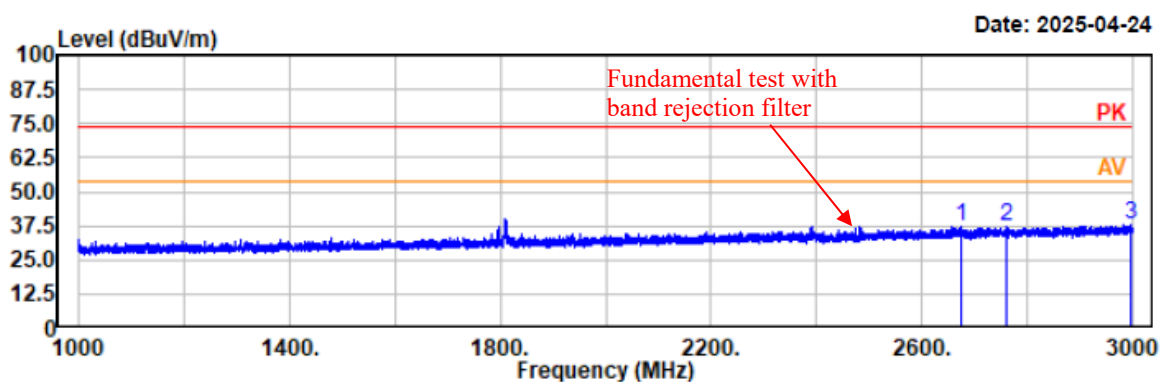


Condition: PK RBW:1MHz VBW:3MHz SWT:auto

Freq MHz	Reading dBuV	Factor dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Polarity	Remark
2669.60	46.94	-10.12	36.82	74.00	37.18	horizontal	Peak
2804.20	47.16	-9.77	37.39	74.00	36.61	horizontal	Peak
2925.80	48.65	-9.38	39.27	74.00	34.73	horizontal	Peak

Project No.: 2507R12690E-RF
Test Mode: BLE 1M 2480MHz
EUT Model: FHL9SP-DW
Test distance: 3m

Temp/Humi/ATM: 23.1°C/50%/100.1kPa
Tested by: Wlif Wu
Power Source: DC 1.3V

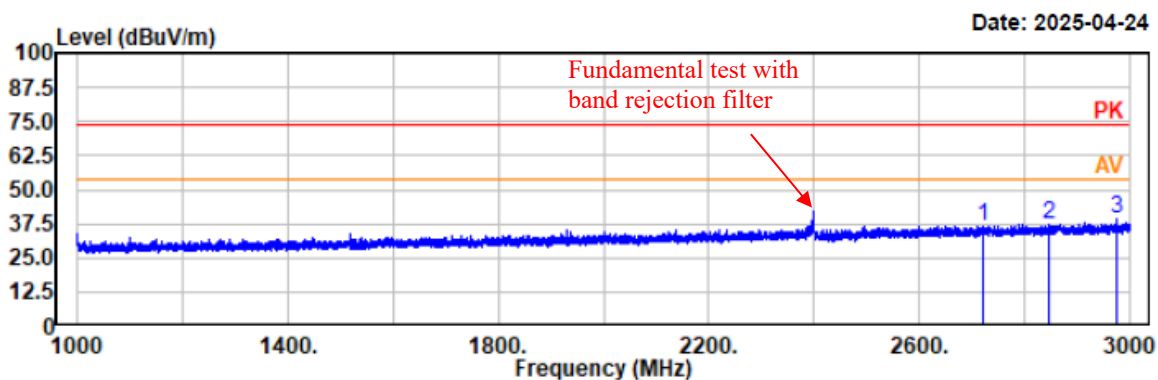


Condition: PK RBW:1MHz VBW:3MHz SWT:auto

Freq MHz	Reading dBuV	Factor dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Polarity	Remark
2675.60	47.15	-10.11	37.04	74.00	36.96	vertical	Peak
2761.80	47.30	-9.90	37.40	74.00	36.60	vertical	Peak
2996.80	46.71	-8.96	37.75	74.00	36.25	vertical	Peak

Project No.: 2507R12690E-RF
Test Mode: BLE 2M 2402MHz
EUT Model: FHL9SP-DW
Test distance: 3m

Temp/Humi/ATM: 23.1°C/50%/100.1kPa
Tested by: Wlif Wu
Power Source: DC 1.3V

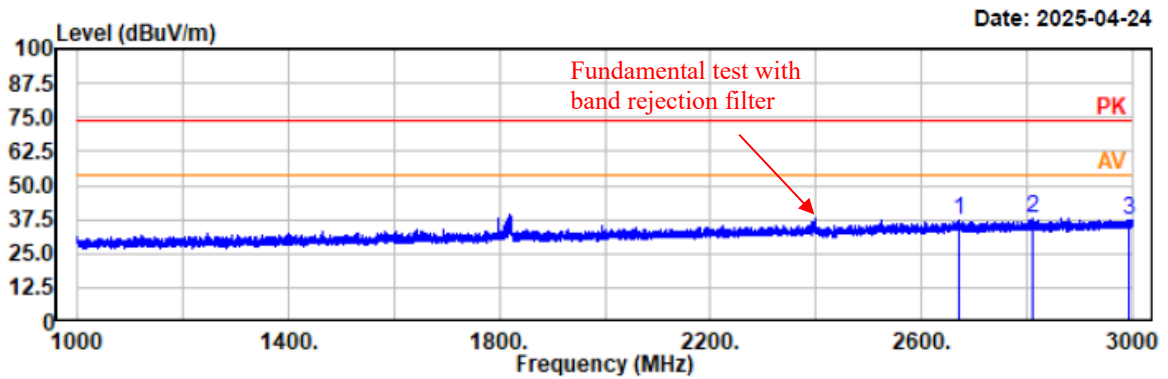


Condition: PK RBW:1MHz VBW:3MHz SWT:auto

Freq MHz	Reading dBuV	Factor dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Polarity	Remark
2723.00	46.83	-9.97	36.86	74.00	37.14	horizontal	Peak
2845.20	46.96	-9.64	37.32	74.00	36.68	horizontal	Peak
2975.40	48.18	-9.07	39.11	74.00	34.89	horizontal	Peak

Project No.: 2507R12690E-RF
Test Mode: BLE 2M 2402MHz
EUT Model: FHL9SP-DW
Test distance: 3m

Temp/Humi/ATM: 23.1°C/50%/100.1kPa
Tested by: Wlif Wu
Power Source: DC 1.3V

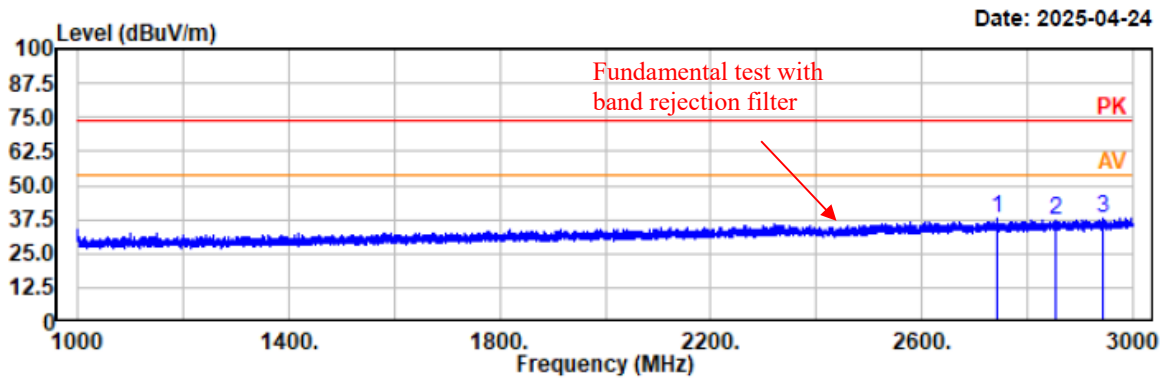


Condition: PK RBW:1MHz VBW:3MHz SWT:auto

Freq MHz	Reading dBuV	Factor dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Polarity	Remark
2670.80	47.18	-10.12	37.06	74.00	36.94	vertical	Peak
2811.60	47.49	-9.75	37.74	74.00	36.26	vertical	Peak
2994.20	46.43	-8.98	37.45	74.00	36.55	vertical	Peak

Project No.: 2507R12690E-RF
Test Mode: BLE 2M 2440MHz
EUT Model: FHL9SP-DW
Test distance: 3m

Temp/Humi/ATM: 23.1°C/50%/100.1kPa
Tested by: Wlif Wu
Power Source: DC 1.3V

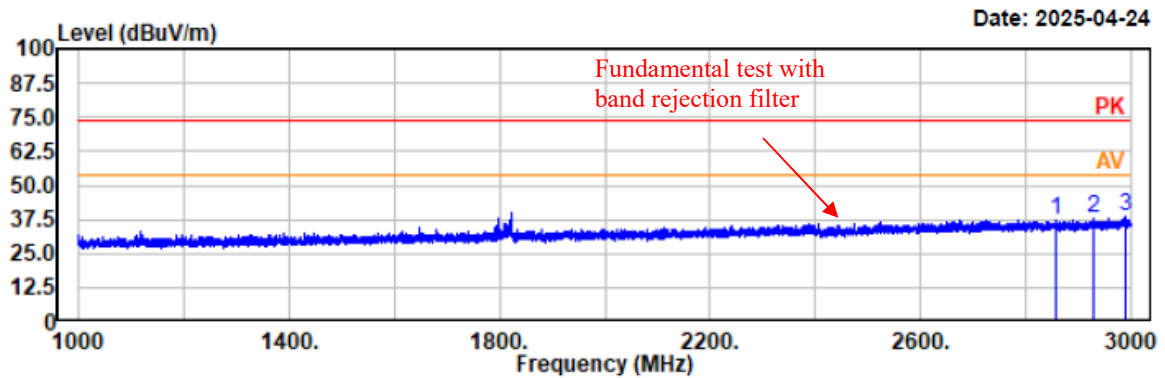


Condition: PK RBW:1MHz VBW:3MHz SWT:auto

Freq MHz	Reading dBuV	Factor dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Polarity	Remark
2742.60	48.13	-9.95	38.18	74.00	35.82	horizontal	Peak
2855.20	47.15	-9.61	37.54	74.00	36.46	horizontal	Peak
2943.20	47.01	-9.25	37.76	74.00	36.24	horizontal	Peak

Project No.: 2507R12690E-RF
Test Mode: BLE 2M 2440MHz
EUT Model: FHL9SP-DW
Test distance: 3m

Temp/Humi/ATM: 23.1°C/50%/100.1kPa
Tested by: Wlif Wu
Power Source: DC 1.3V

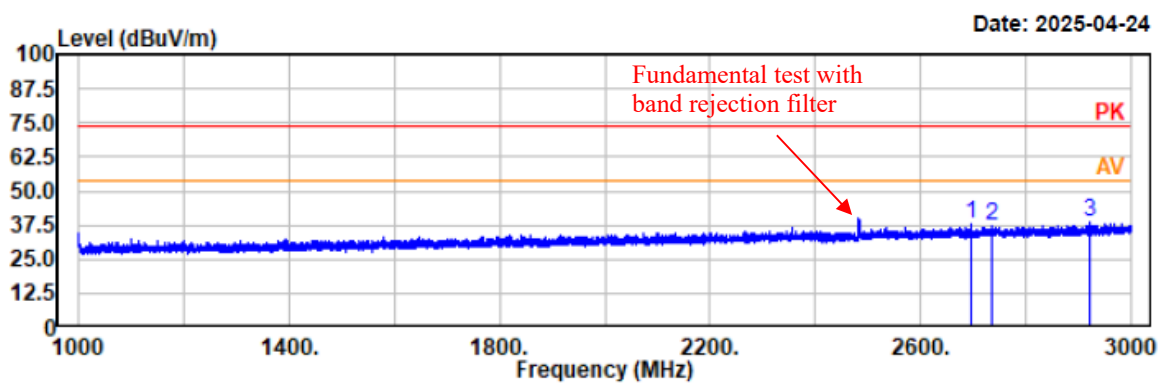


Condition: PK RBW:1MHz VBW:3MHz SWT:auto

Freq MHz	Reading dBuV	Factor dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Polarity	Remark
2855.80	46.61	-9.61	37.00	74.00	37.00	vertical	Peak
2929.80	47.05	-9.34	37.71	74.00	36.29	vertical	Peak
2990.40	47.83	-9.00	38.83	74.00	35.17	vertical	Peak

Project No.: 2507R12690E-RF
Test Mode: BLE 2M 2480MHz
EUT Model: FHL9SP-DW
Test distance: 3m

Temp/Humi/ATM: 23.1°C/50%/100.1kPa
Tested by: Wlif Wu
Power Source: DC 1.3V

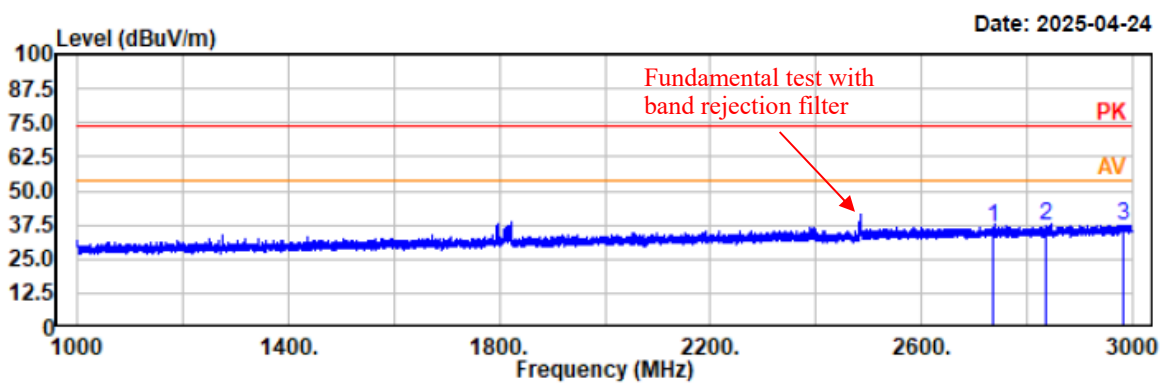


Condition: PK RBW:1MHz VBW:3MHz SWT:auto

Freq MHz	Reading dBuV	Factor dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Polarity	Remark
2696.80	47.93	-10.01	37.92	74.00	36.08	horizontal	Peak
2736.80	47.37	-9.97	37.40	74.00	36.60	horizontal	Peak
2921.60	47.95	-9.40	38.55	74.00	35.45	horizontal	Peak

Project No.: 2507R12690E-RF
Test Mode: BLE 2M 2480MHz
EUT Model: FHL9SP-DW
Test distance: 3m

Temp/Humi/ATM: 23.1°C/50%/100.1kPa
Tested by: Wlif Wu
Power Source: DC 1.3V



Condition: PK RBW:1MHz VBW:3MHz SWT:auto

Freq MHz	Reading dBuV	Factor dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Polarity	Remark
2736.00	46.25	-9.97	36.28	74.00	37.72	vertical	Peak
2836.60	47.02	-9.66	37.36	74.00	36.64	vertical	Peak
2982.40	46.38	-9.04	37.34	74.00	36.66	vertical	Peak

5) 3GHz~18GHz

Project No.: 2507R12690E-RF

Test Mode: BLE 1M 2402MHz

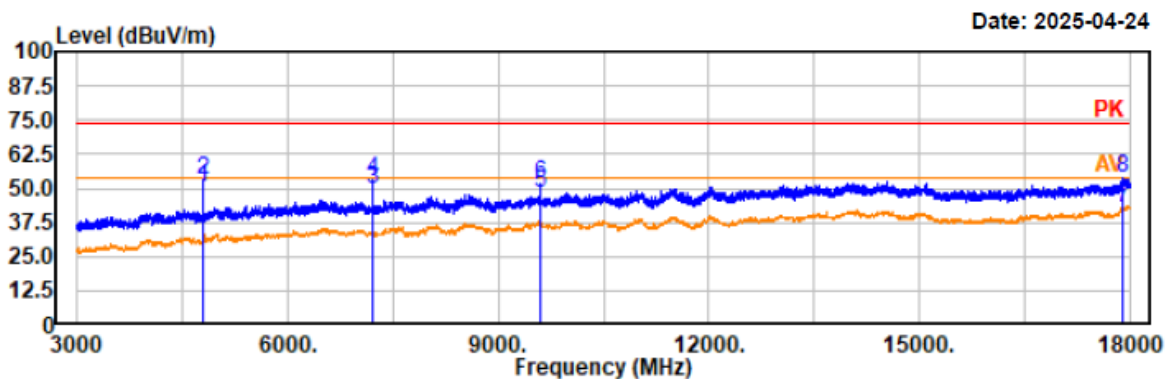
EUT Model: FHL9SP-DW

Test distance: 3m

Temp/Humi/ATM: 23.1°C/52%/100.1kPa

Tested by: Wlif Wu

Power Source: DC 1.3V



Trace: 1

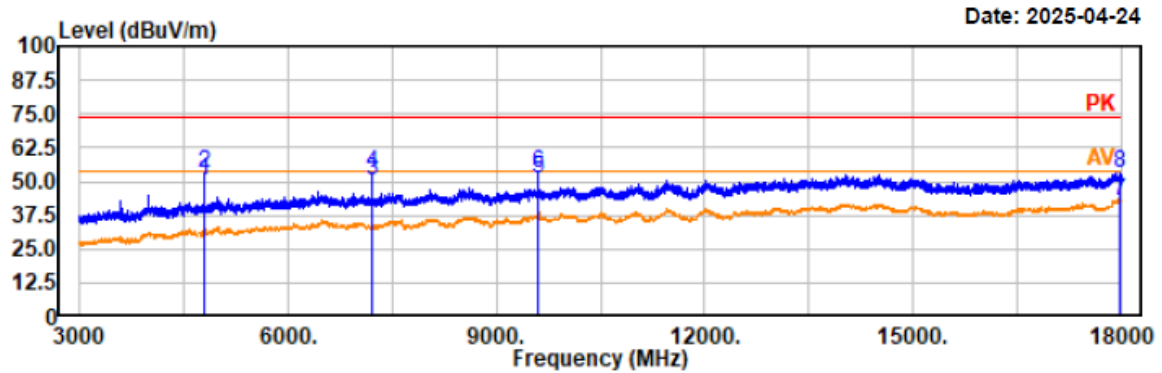
Condition: PK RBW:1MHz VBW:3MHz SWT:auto

AV RBW:1MHz VBW:5kHz SWT:auto

Freq MHz	Reading dBuV	Factor dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Polarity	Remark
4803.00	55.90	-5.24	50.66	54.00	3.34	horizontal	Average
4803.00	58.29	-5.24	53.05	74.00	20.95	horizontal	Peak
7206.00	52.52	-2.55	49.97	54.00	4.03	horizontal	Average
7206.00	55.46	-2.55	52.91	74.00	21.09	horizontal	Peak
9609.00	47.41	1.01	48.42	54.00	5.58	horizontal	Average
9609.00	50.55	1.01	51.56	74.00	22.44	horizontal	Peak
17901.00	35.97	6.81	42.78	54.00	11.22	horizontal	Average
17901.00	46.81	6.81	53.62	74.00	20.38	horizontal	Peak

Project No.: 2507R12690E-RF
Test Mode: BLE 1M 2402MHz
EUT Model: FHL9SP-DW
Test distance: 3m

Temp/Humi/ATM: 23.1°C/52%/100.1kPa
Tested by: Wlif Wu
Power Source: DC 1.3V



Trace: 1

Condition: PK RBW:1MHz VBW:3MHz SWT:auto

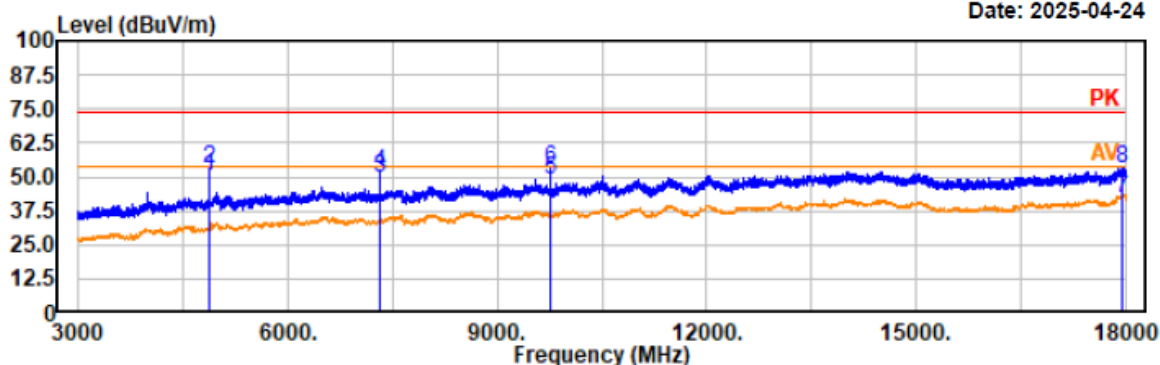
AV RBW:1MHz VBW:5kHz SWT:auto

Freq MHz	Reading dBuV	Factor dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Polarity	Remark
4804.50	55.78	-5.24	50.54	54.00	3.46	vertical	Average
4804.50	58.07	-5.24	52.83	74.00	21.17	vertical	Peak
7206.00	52.72	-2.55	50.17	54.00	3.83	vertical	Average
7206.00	55.98	-2.55	53.43	74.00	20.57	vertical	Peak
9607.50	49.91	1.01	50.92	54.00	3.08	vertical	Average
9607.50	52.40	1.01	53.41	74.00	20.59	vertical	Peak
17976.00	36.18	6.89	43.07	54.00	10.93	vertical	Average
17976.00	46.18	6.89	53.07	74.00	20.93	vertical	Peak

Project No.: 2507R12690E-RF
Test Mode: BLE 1M 2440MHz
EUT Model: FHL9SP-DW
Test distance: 3m

Temp/Humi/ATM: 23.1°C/52%/100.1kPa
Tested by: Wlif Wu
Power Source: DC 1.3V

Date: 2025-04-24



Trace: 1

Condition: PK RBW:1MHz VBW:3MHz SWT:auto

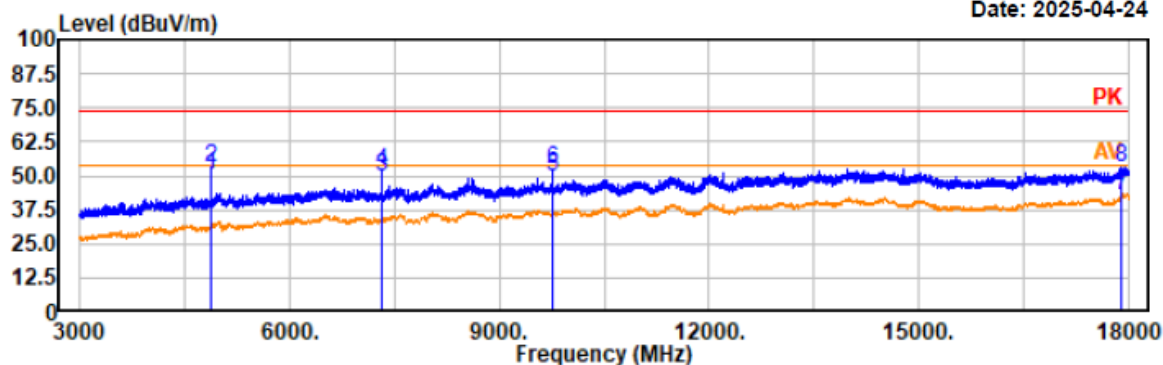
AV RBW:1MHz VBW:5kHz SWT:auto

Freq MHz	Reading dBuV	Factor dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Polarity	Remark
4881.00	55.35	-5.31	50.04	54.00	3.96	horizontal	Average
4881.00	58.14	-5.31	52.83	74.00	21.17	horizontal	Peak
7320.00	51.90	-2.25	49.65	54.00	4.35	horizontal	Average
7320.00	54.29	-2.25	52.04	74.00	21.96	horizontal	Peak
9759.00	48.07	1.18	49.25	54.00	4.75	horizontal	Average
9759.00	51.61	1.18	52.79	74.00	21.21	horizontal	Peak
17941.50	35.55	6.84	42.39	54.00	11.61	horizontal	Average
17941.50	46.55	6.84	53.39	74.00	20.61	horizontal	Peak

Project No.: 2507R12690E-RF
Test Mode: BLE 1M 2440MHz
EUT Model: FHL9SP-DW
Test distance: 3m

Temp/Humi/ATM: 23.1°C/52%/100.1kPa
Tested by: Wlif Wu
Power Source: DC 1.3V

Date: 2025-04-24



Trace: 1

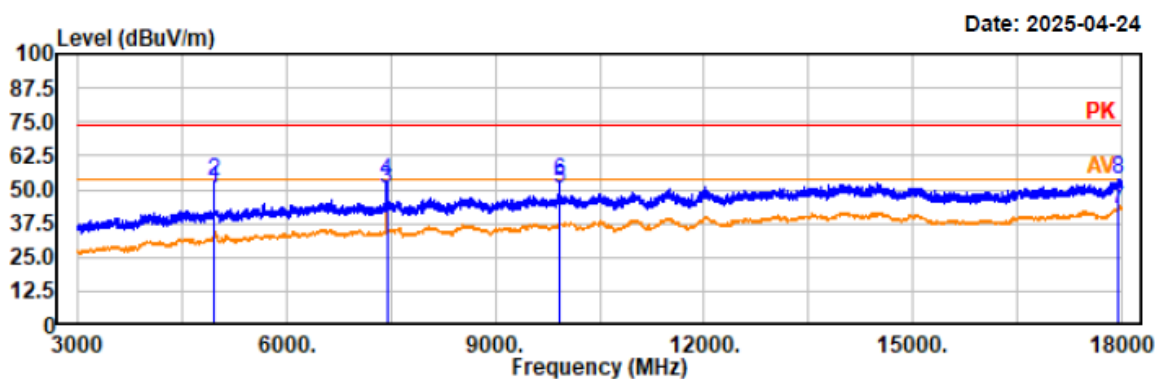
Condition: PK RBW:1MHz VBW:3MHz SWT:auto

AV RBW:1MHz VBW:5kHz SWT:auto

Freq MHz	Reading dBuV	Factor dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Polarity	Remark
4881.00	55.39	-5.31	50.08	54.00	3.92	vertical	Average
4881.00	58.65	-5.31	53.34	74.00	20.66	vertical	Peak
7318.50	51.98	-2.25	49.73	54.00	4.27	vertical	Average
7318.50	54.30	-2.25	52.05	74.00	21.95	vertical	Peak
9760.50	48.68	1.18	49.86	54.00	4.14	vertical	Average
9760.50	51.37	1.18	52.55	74.00	21.45	vertical	Peak
17896.50	35.88	6.79	42.67	54.00	11.33	vertical	Average
17896.50	46.45	6.79	53.24	74.00	20.76	vertical	Peak

Project No.: 2507R12690E-RF
Test Mode: BLE 1M 2480MHz
EUT Model: FHL9SP-DW
Test distance: 3m

Temp/Humi/ATM: 23.1°C/52%/100.1kPa
Tested by: Wlif Wu
Power Source: DC 1.3V



Trace: 1

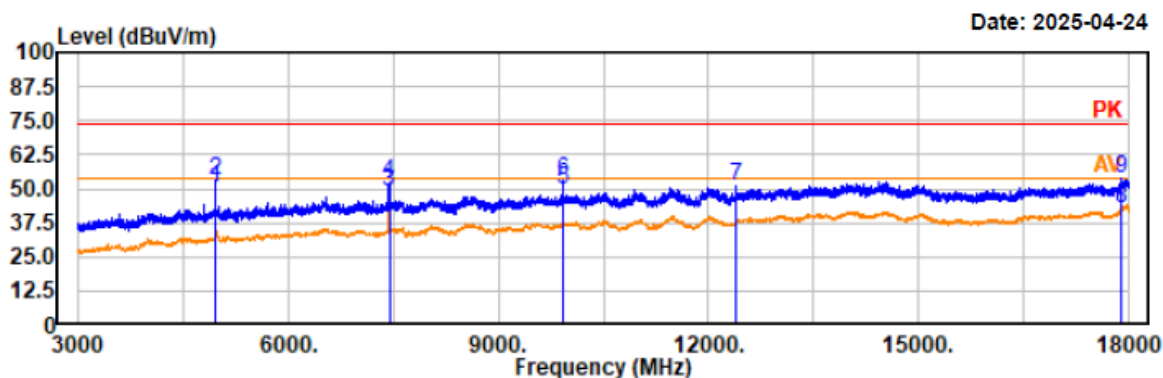
Condition: PK RBW:1MHz VBW:3MHz SWT:auto

AV RBW:1MHz VBW:5kHz SWT:auto

Freq MHz	Reading dBuV	Factor dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Polarity	Remark
4960.50	55.13	-5.11	50.02	54.00	3.98	horizontal	Average
4960.50	58.11	-5.11	53.00	74.00	21.00	horizontal	Peak
7440.00	52.12	-2.03	50.09	54.00	3.91	horizontal	Average
7440.00	55.01	-2.03	52.98	74.00	21.02	horizontal	Peak
9919.50	49.03	1.36	50.39	54.00	3.61	horizontal	Average
9919.50	51.90	1.36	53.26	74.00	20.74	horizontal	Peak
17953.50	36.01	6.86	42.87	54.00	11.13	horizontal	Average
17953.50	47.00	6.86	53.86	74.00	20.14	horizontal	Peak

Project No.: 2507R12690E-RF
Test Mode: BLE 1M 2480MHz
EUT Model: FHL9SP-DW
Test distance: 3m

Temp/Humi/ATM: 23.1°C/52%/100.1kPa
Tested by: Wlif Wu
Power Source: DC 1.3V



Trace: 1

Condition: PK RBW:1MHz VBW:3MHz SWT:auto

AV RBW:1MHz VBW:5kHz SWT:auto

Freq MHz	Reading dBuV	Factor dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Polarity	Remark
4959.00	55.77	-5.11	50.66	54.00	3.34	vertical	Average
4959.00	58.17	-5.11	53.06	74.00	20.94	vertical	Peak
7440.00	51.19	-2.03	49.16	54.00	4.84	vertical	Average
7440.00	54.71	-2.03	52.68	74.00	21.32	vertical	Peak
9919.50	48.53	1.36	49.89	54.00	4.11	vertical	Average
9919.50	51.77	1.36	53.13	74.00	20.87	vertical	Peak
12399.00	48.09	3.24	51.33	74.00	22.67	vertical	Peak
17895.00	35.87	6.79	42.66	54.00	11.34	vertical	Average
17895.00	46.98	6.79	53.77	74.00	20.23	vertical	Peak

Project No.: 2507R12690E-RF

Test Mode: BLE 2M 2402MHz

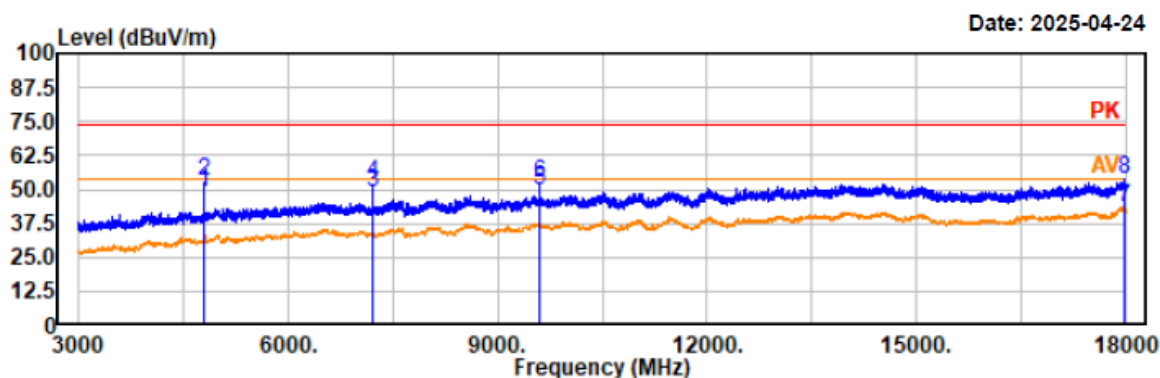
EUT Model: FHL9SP-DW

Test distance: 3m

Temp/Humi/ATM: 23.1°C/52%/100.1kPa

Tested by: Wlif Wu

Power Source: DC 1.3V



Trace: 1

Condition: PK RBW:1MHz VBW:3MHz SWT:auto

AV RBW:1MHz VBW:5kHz SWT:auto

Freq MHz	Reading dBuV	Factor dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Polarity	Remark
4804.50	54.31	-5.24	49.07	54.00	4.93	horizontal	Average
4804.50	58.03	-5.24	52.79	74.00	21.21	horizontal	Peak
7204.50	51.32	-2.55	48.77	54.00	5.23	horizontal	Average
7204.50	55.13	-2.55	52.58	74.00	21.42	horizontal	Peak
9606.00	48.93	1.01	49.94	54.00	4.06	horizontal	Average
9606.00	51.30	1.01	52.31	74.00	21.69	horizontal	Peak
17986.50	36.74	6.89	43.63	54.00	10.37	horizontal	Average
17986.50	46.85	6.89	53.74	74.00	20.26	horizontal	Peak

Project No.: 2507R12690E-RF

Test Mode: BLE 2M 2402MHz

EUT Model: FHL9SP-DW

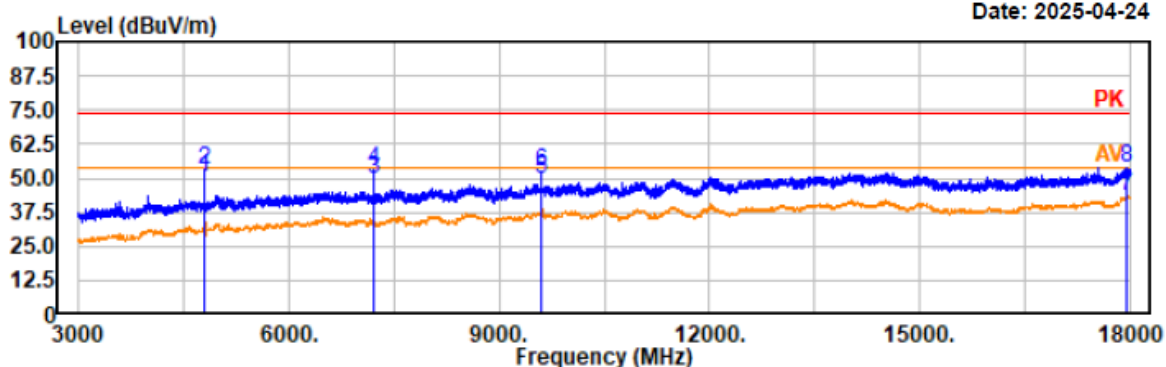
Test distance: 3m

Temp/Humi/ATM: 23.1°C/52%/100.1kPa

Tested by: Wlif Wu

Power Source: DC 1.3V

Date: 2025-04-24



Trace: 1

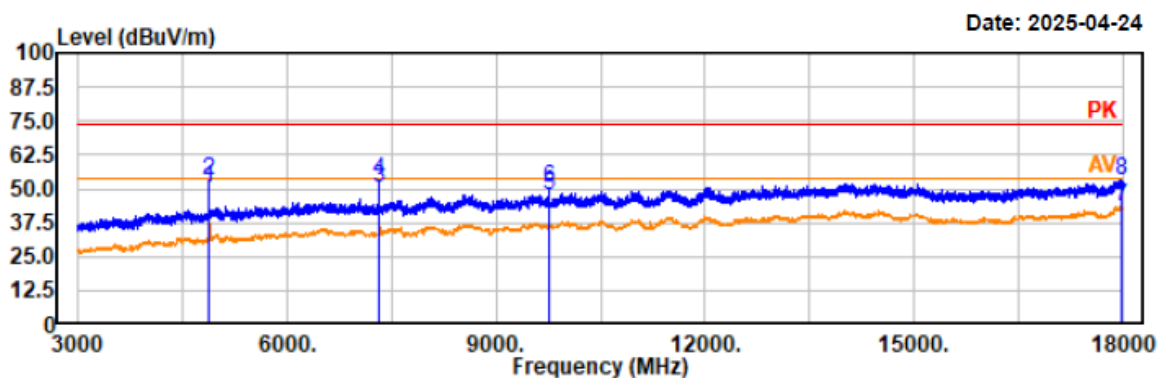
Condition: PK RBW:1MHz VBW:3MHz SWT:auto

AV RBW:1MHz VBW:5kHz SWT:auto

Freq MHz	Reading dBuV	Factor dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Polarity	Remark
4803.00	55.82	-5.24	50.58	54.00	3.42	vertical	Average
4803.00	58.55	-5.24	53.31	74.00	20.69	vertical	Peak
7207.50	52.03	-2.54	49.49	54.00	4.51	vertical	Average
7207.50	55.78	-2.55	53.23	74.00	20.77	vertical	Peak
9606.00	48.69	1.01	49.70	54.00	4.30	vertical	Average
9606.00	51.17	1.01	52.18	74.00	21.82	vertical	Peak
17961.00	36.47	6.86	43.33	54.00	10.67	vertical	Average
17961.00	46.69	6.86	53.55	74.00	20.45	vertical	Peak

Project No.: 2507R12690E-RF
Test Mode: BLE 2M 2440MHz
EUT Model: FHL9SP-DW
Test distance: 3m

Temp/Humi/ATM: 23.1°C/52%/100.1kPa
Tested by: Wlif Wu
Power Source: DC 1.3V



Trace: 1

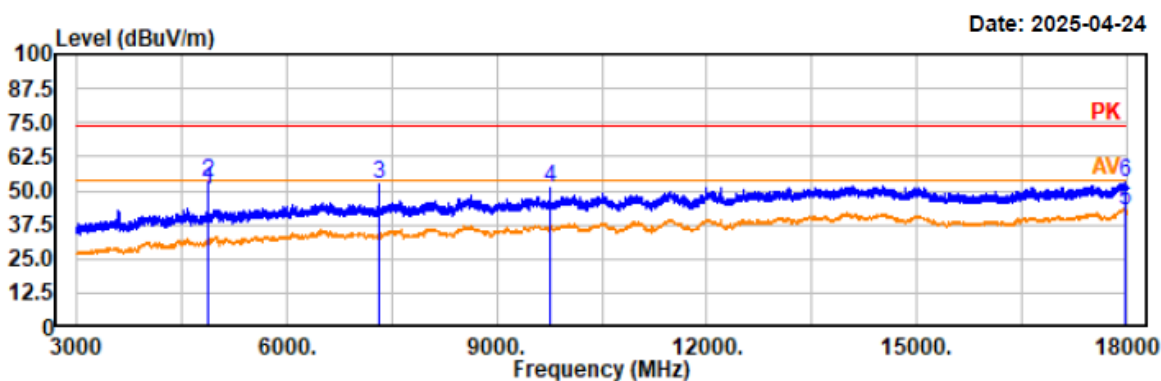
Condition: PK RBW:1MHz VBW:3MHz SWT:auto

AV RBW:1MHz VBW:5kHz SWT:auto

Freq MHz	Reading dBuV	Factor dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Polarity	Remark
4885.50	55.74	-5.31	50.43	54.00	3.57	horizontal	Average
4885.50	58.58	-5.31	53.27	74.00	20.73	horizontal	Peak
7327.50	52.24	-2.23	50.01	54.00	3.99	horizontal	Average
7327.50	55.13	-2.23	52.90	74.00	21.10	horizontal	Peak
9766.50	46.52	1.19	47.71	54.00	6.29	horizontal	Average
9766.50	49.35	1.19	50.54	74.00	23.46	horizontal	Peak
17977.50	36.66	6.89	43.55	54.00	10.45	horizontal	Average
17977.50	46.36	6.89	53.25	74.00	20.75	horizontal	Peak

Project No.: 2507R12690E-RF
Test Mode: BLE 2M 2440MHz
EUT Model: FHL9SP-DW
Test distance: 3m

Temp/Humi/ATM: 23.1°C/52%/100.1kPa
Tested by: Wlif Wu
Power Source: DC 1.3V



Trace: 1

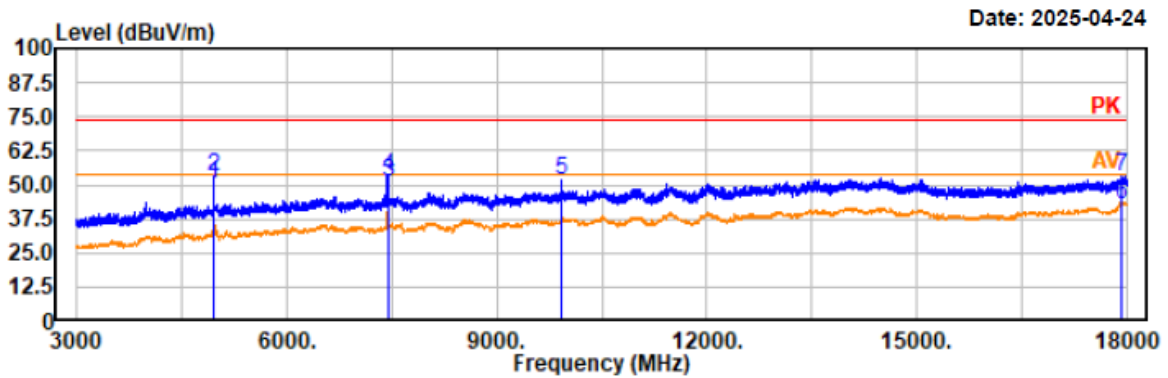
Condition: PK RBW:1MHz VBW:3MHz SWT:auto

AV RBW:1MHz VBW:5kHz SWT:auto

Freq MHz	Reading dBuV	Factor dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Polarity	Remark
4882.50	55.94	-5.30	50.64	54.00	3.36	vertical	Average
4882.50	58.49	-5.30	53.19	74.00	20.81	vertical	Peak
7327.50	54.66	-2.23	52.43	74.00	21.57	vertical	Peak
9766.50	50.12	1.19	51.31	74.00	22.69	vertical	Peak
17986.50	35.99	6.89	42.88	54.00	11.12	vertical	Average
17986.50	46.30	6.89	53.19	74.00	20.81	vertical	Peak

Project No.: 2507R12690E-RF
Test Mode: BLE 2M 2480MHz
EUT Model: FHL9SP-DW
Test distance: 3m

Temp/Humi/ATM: 23.1°C/52%/100.1kPa
Tested by: Wlif Wu
Power Source: DC 1.3V



Trace: 1

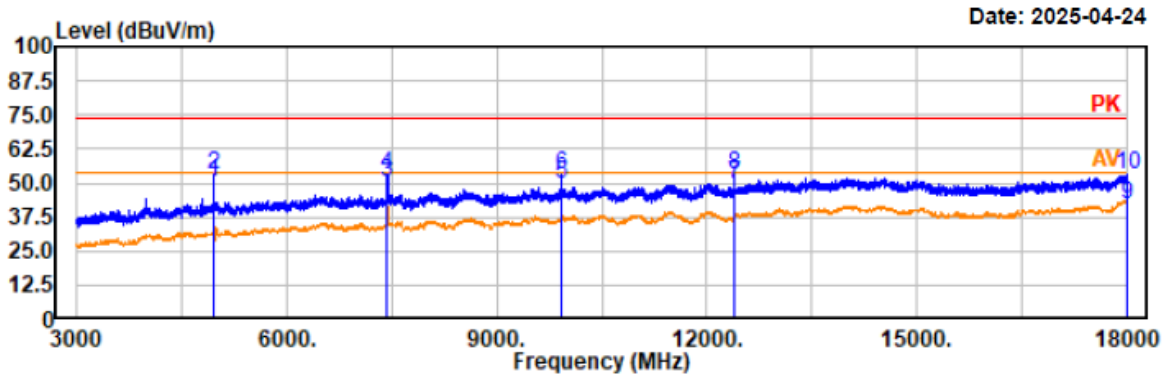
Condition: PK RBW:1MHz VBW:3MHz SWT:auto

AV RBW:1MHz VBW:5kHz SWT:auto

Freq MHz	Reading dBuV	Factor dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Polarity	Remark
4959.00	55.77	-5.11	50.66	54.00	3.34	horizontal	Average
4959.00	58.07	-5.11	52.96	74.00	21.04	horizontal	Peak
7441.50	52.78	-2.03	50.75	54.00	3.25	horizontal	Average
7441.50	55.28	-2.03	53.25	74.00	20.75	horizontal	Peak
9922.50	50.17	1.36	51.53	74.00	22.47	horizontal	Peak
17916.00	35.70	6.82	42.52	54.00	11.48	horizontal	Average
17916.00	46.35	6.82	53.17	74.00	20.83	horizontal	Peak

Project No.: 2507R12690E-RF
Test Mode: BLE 2M 2480MHz
EUT Model: FHL9SP-DW
Test distance: 3m

Temp/Humi/ATM: 23.1°C/52%/100.1kPa
Tested by: Wlif Wu
Power Source: DC 1.3V



Trace: 1

Condition: PK RBW:1MHz VBW:3MHz SWT:auto
AV RBW:1MHz VBW:5kHz SWT:auto

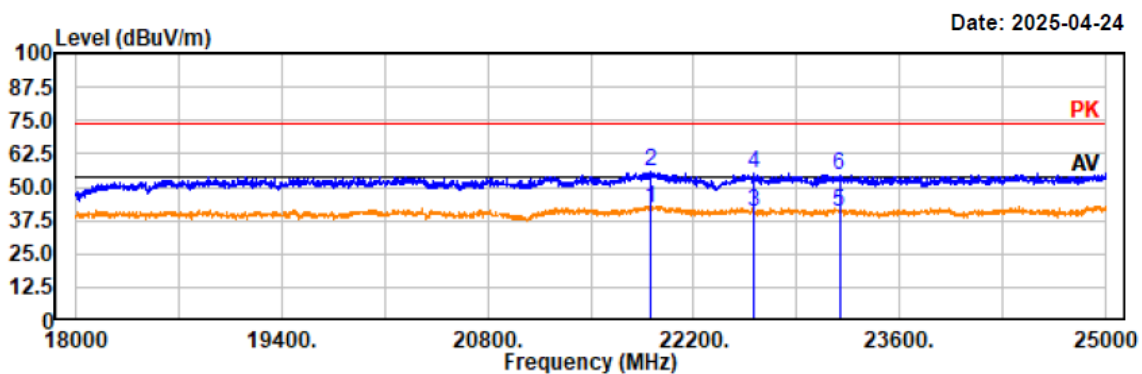
Freq MHz	Reading dBuV	Factor dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Polarity	Remark
4960.50	55.41	-5.11	50.30	54.00	3.70	vertical	Average
4960.50	58.24	-5.11	53.13	74.00	20.87	vertical	Peak
7438.50	52.34	-2.03	50.31	54.00	3.69	vertical	Average
7438.50	55.03	-2.03	53.00	74.00	21.00	vertical	Peak
9922.50	48.04	1.36	49.40	54.00	4.60	vertical	Average
9922.50	51.40	1.36	52.76	74.00	21.24	vertical	Peak
12403.50	46.12	3.24	49.36	54.00	4.64	vertical	Average
12403.50	49.81	3.24	53.05	74.00	20.95	vertical	Peak
17998.50	35.06	6.91	41.97	54.00	12.03	vertical	Average
17998.50	45.92	6.91	52.83	74.00	21.17	vertical	Peak

5) 18GHz~25GHz

Note: The maximum output power mode: BLE 2Mbps low channel was tested.

Project No.: 2507R12690E-RF
Test Mode: BLE 2M 2402MHz
EUT Model: FHL9SP-DW
Test distance: 1.5m

Temp/Humi/ATM: 23.1°C/50%/100.1kPa
Tested by: Wlif Wu
Power Source: DC 1.3V



Trace: 1

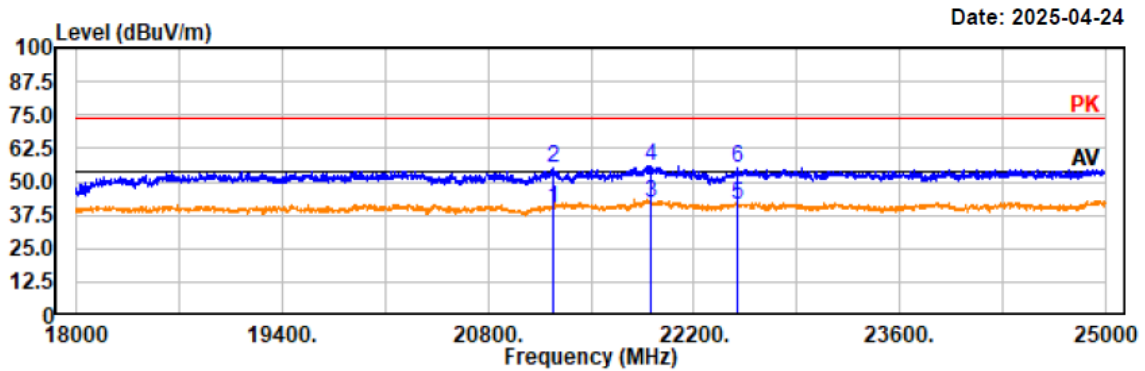
Condition: PK RBW:1MHz VBW:3MHz SWT:auto

AV RBW:1MHz VBW:5kHz SWT:auto

Freq MHz	Reading dBuV	Factor dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Polarity	Remark
21907.20	37.13	5.18	42.31	54.00	11.69	horizontal	Average
21907.20	50.73	5.18	55.91	74.00	18.09	horizontal	Peak
22613.40	35.56	5.06	40.62	54.00	13.38	horizontal	Average
22613.40	49.85	5.06	54.91	74.00	19.09	horizontal	Peak
23192.00	35.92	4.91	40.83	54.00	13.17	horizontal	Average
23192.00	49.76	4.91	54.67	74.00	19.33	horizontal	Peak

Project No.: 2507R12690E-RF
Test Mode: BLE 2M 2402MHz
EUT Model: FHL9SP-DW
Test distance: 1.5m

Temp/Humi/ATM: 23.1°C/50%/100.1kPa
Tested by: Wlif Wu
Power Source: DC 1.3V



Trace: 1

Condition: PK RBW:1MHz VBW:3MHz SWT:auto

AV RBW:1MHz VBW:5kHz SWT:auto

Freq MHz	Reading dBuV	Factor dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Polarity	Remark
21240.60	35.91	4.22	40.13	54.00	13.87	vertical	Average
21240.60	50.82	4.22	55.04	74.00	18.96	vertical	Peak
21911.60	36.65	5.18	41.83	54.00	12.17	vertical	Average
21911.60	50.89	5.18	56.07	74.00	17.93	vertical	Peak
22499.00	36.04	5.09	41.13	54.00	12.87	vertical	Average
22499.00	50.30	5.09	55.39	74.00	18.61	vertical	Peak

Restricted Bands Emissions:

Project No.: 2507R12690E-RF

Test Mode: BLE 1M 2402MHz

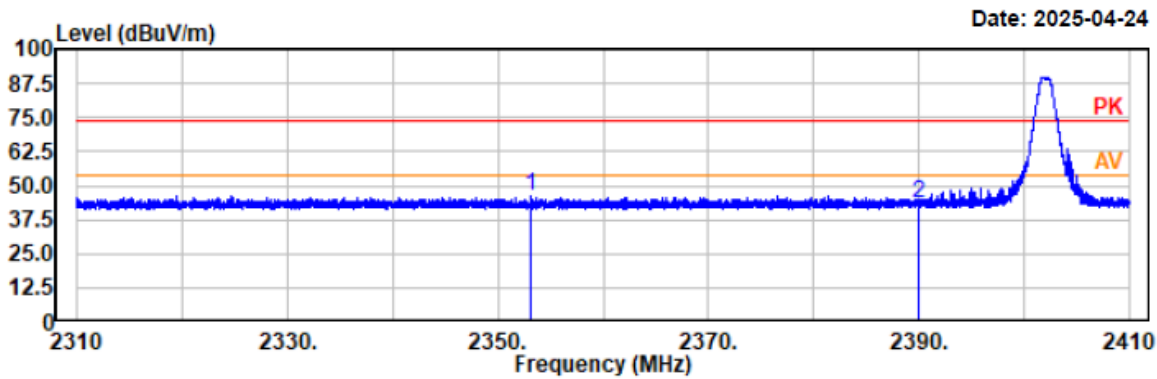
EUT Model: FHL9SP-DW

Test distance: 3m

Temp/Humi/ATM: 23.1°C/50%/100.1kPa

Tested by: Wlif Wu

Power Source: DC 1.3V

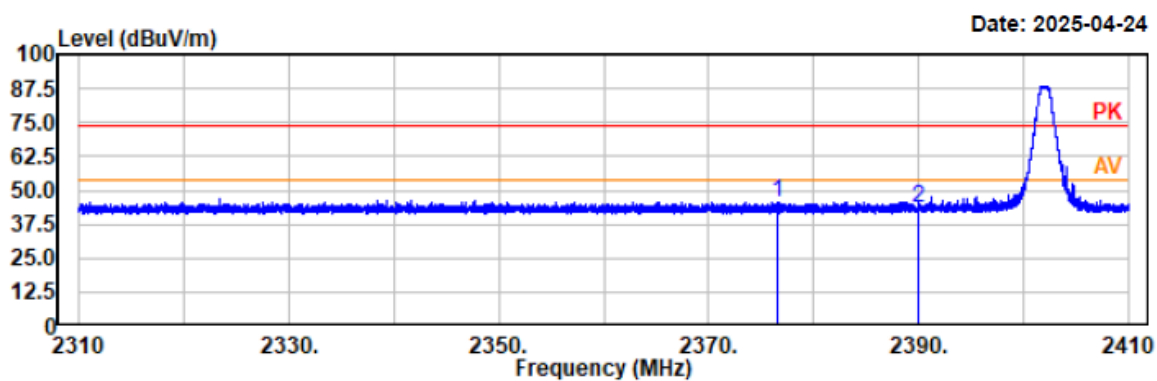


Condition: PK RBW:1MHz VBW:3MHz SWT:auto

Freq MHz	Reading dBuV	Factor dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Polarity	Remark
2353.04	47.78	-1.31	46.47	74.00	27.53	horizontal	Peak
2390.00	44.51	-1.15	43.36	74.00	30.64	horizontal	Peak

Project No.: 2507R12690E-RF
Test Mode: BLE 1M 2402MHz
EUT Model: FHL9SP-DW
Test distance: 3m

Temp/Humi/ATM: 23.1°C/50%/100.1kPa
Tested by: Wlif Wu
Power Source: DC 1.3V

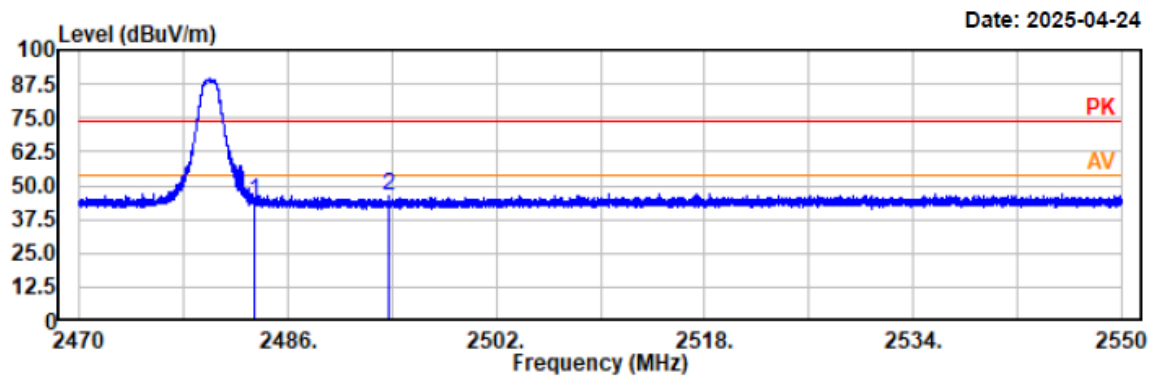


Condition: PK RBW:1MHz VBW:3MHz SWT:auto

Freq MHz	Reading dBuV	Factor dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Polarity	Remark
2376.51	46.90	-1.21	45.69	74.00	28.31	vertical	Peak
2390.00	44.78	-1.15	43.63	74.00	30.37	vertical	Peak

Project No.: 2507R12690E-RF
Test Mode: BLE 1M 2480MHz
EUT Model: FHL9SP-DW
Test distance: 3m

Temp/Humi/ATM: 23.1°C/50%/100.1kPa
Tested by: Wlif Wu
Power Source: DC 1.3V

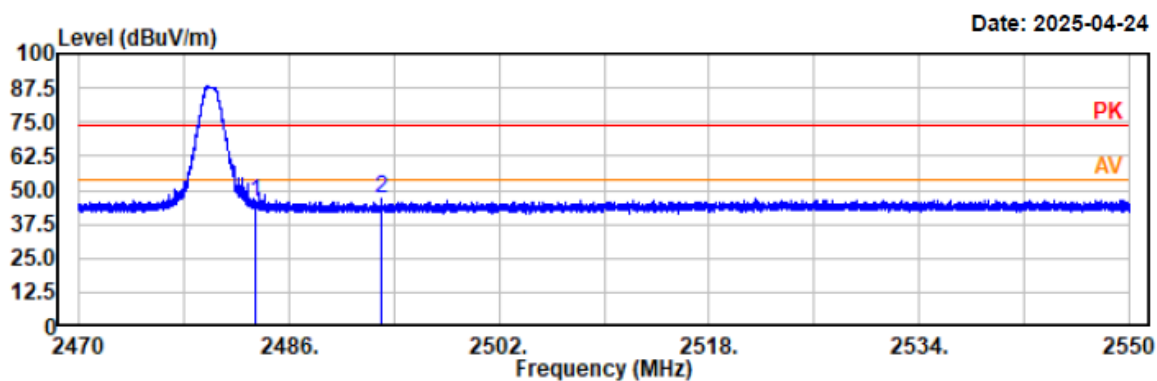


Condition: PK RBW:1MHz VBW:3MHz SWT:auto

Freq MHz	Reading dBuV	Factor dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Polarity	Remark
2483.50	45.24	-0.77	44.47	74.00	29.53	horizontal	Peak
2493.76	46.69	-0.72	45.97	74.00	28.03	horizontal	Peak

Project No.: 2507R12690E-RF
Test Mode: BLE 1M 2480MHz
EUT Model: FHL9SP-DW
Test distance: 3m

Temp/Humi/ATM: 23.1°C/50%/100.1kPa
Tested by: Wlif Wu
Power Source: DC 1.3V



Condition: PK RBW:1MHz VBW:3MHz SWT:auto

Freq MHz	Reading dBuV	Factor dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Polarity	Remark
2483.50	46.00	-0.77	45.23	74.00	28.77	vertical	Peak
2493.01	47.31	-0.73	46.58	74.00	27.42	vertical	Peak

Project No.: 2507R12690E-RF

Test Mode: BLE 2M 2402MHz

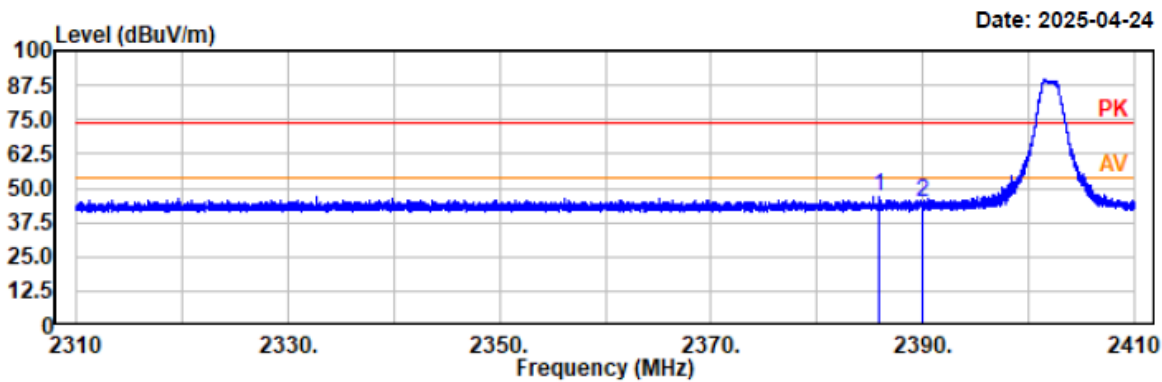
EUT Model: FHL9SP-DW

Test distance: 3m

Temp/Humi/ATM: 23.1°C/50%/100.1kPa

Tested by: Wlif Wu

Power Source: DC 1.3V

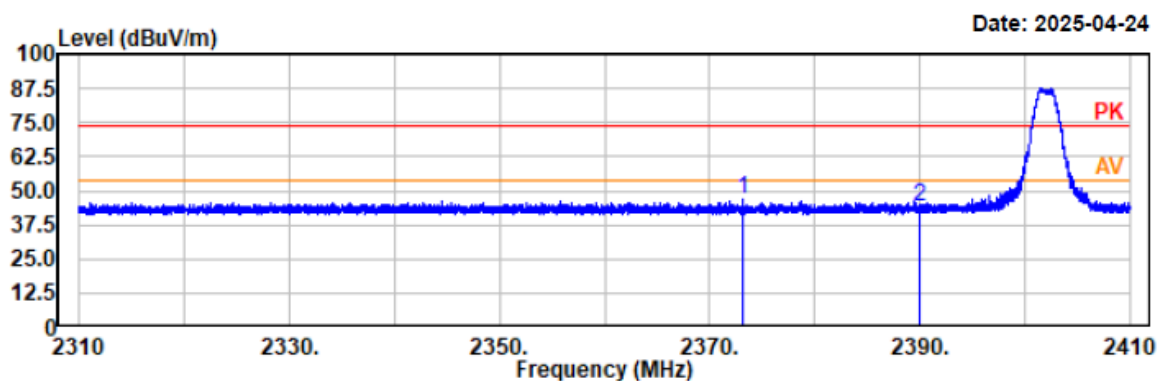


Condition: PK RBW:1MHz VBW:3MHz SWT:auto

Freq MHz	Reading dBuV	Factor dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Polarity	Remark
2385.85	48.15	-1.17	46.98	74.00	27.02	horizontal	Peak
2390.00	46.08	-1.15	44.93	74.00	29.07	horizontal	Peak

Project No.: 2507R12690E-RF
Test Mode: BLE 2M 2402MHz
EUT Model: FHL9SP-DW
Test distance: 3m

Temp/Humi/ATM: 23.1°C/50%/100.1kPa
Tested by: Wlif Wu
Power Source: DC 1.3V

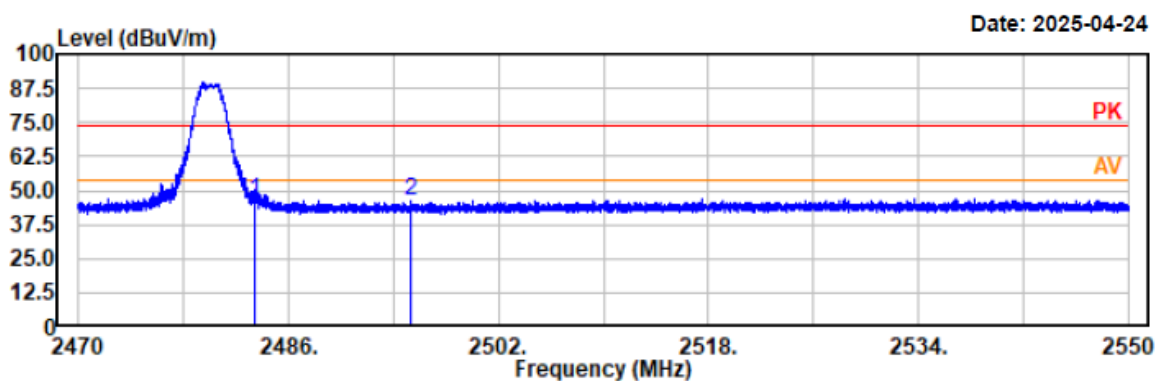


Condition: PK RBW:1MHz VBW:3MHz SWT:auto

Freq MHz	Reading dBuV	Factor dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Polarity	Remark
2373.19	48.12	-1.23	46.89	74.00	27.11	vertical	Peak
2390.00	45.02	-1.15	43.87	74.00	30.13	vertical	Peak

Project No.: 2507R12690E-RF
Test Mode: BLE 2M 2480MHz
EUT Model: FHL9SP-DW
Test distance: 3m

Temp/Humi/ATM: 23.1°C/50%/100.1kPa
Tested by: Wlif Wu
Power Source: DC 1.3V

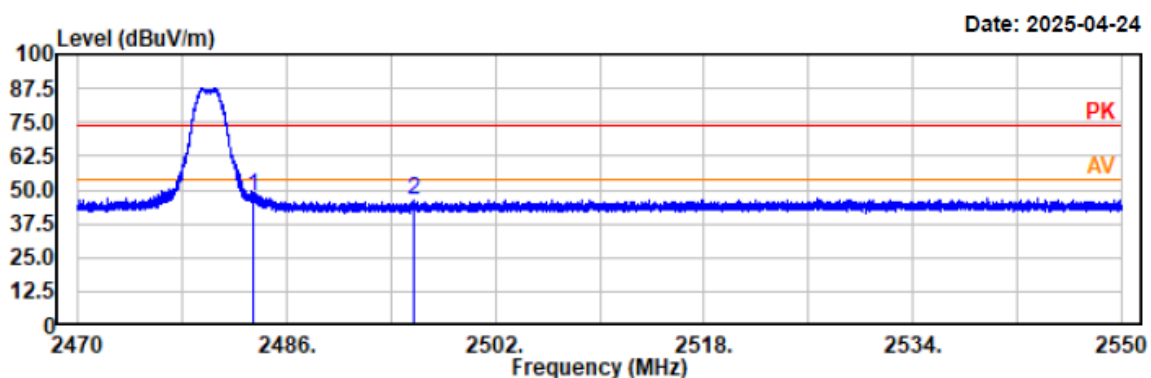


Condition: PK RBW:1MHz VBW:3MHz SWT:auto

Freq MHz	Reading dBuV	Factor dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Polarity	Remark
2483.50	46.64	-0.77	45.87	74.00	28.13	horizontal	Peak
2495.31	46.81	-0.72	46.09	74.00	27.91	horizontal	Peak

Project No.: 2507R12690E-RF
Test Mode: BLE 2M 2480MHz
EUT Model: FHL9SP-DW
Test distance: 3m

Temp/Humi/ATM: 23.1°C/50%/100.1kPa
Tested by: Wlif Wu
Power Source: DC 1.3V

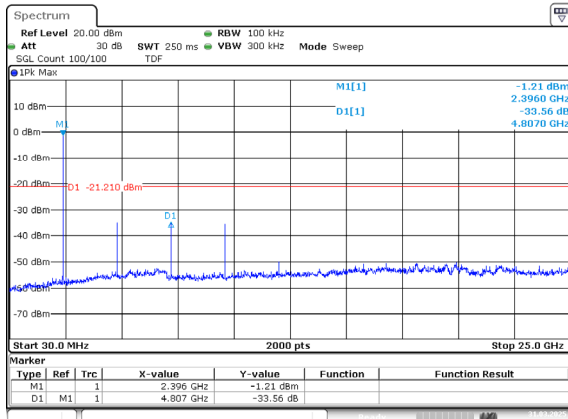


Condition: PK RBW:1MHz VBW:3MHz SWT:auto

Freq MHz	Reading dBuV	Factor dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Polarity	Remark
2483.50	48.39	-0.77	47.62	74.00	26.38	vertical	Peak
2495.73	46.67	-0.72	45.95	74.00	28.05	vertical	Peak

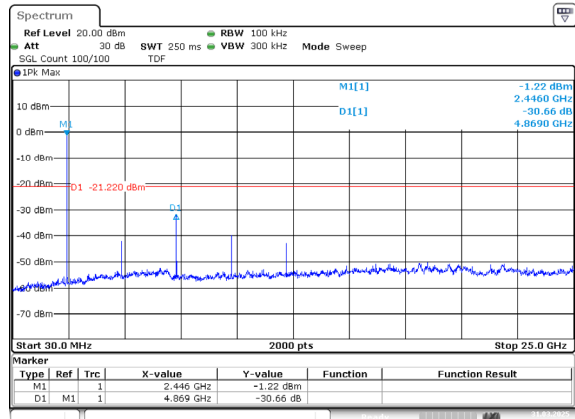
**Antenna-port conducted emission
BLE 1M**

BLE_1M_Low_Channel



ProjectNo.: 2507R12690E-RF Tester: Baylon Ma
Date: 31-MAR-2025 20:04:19

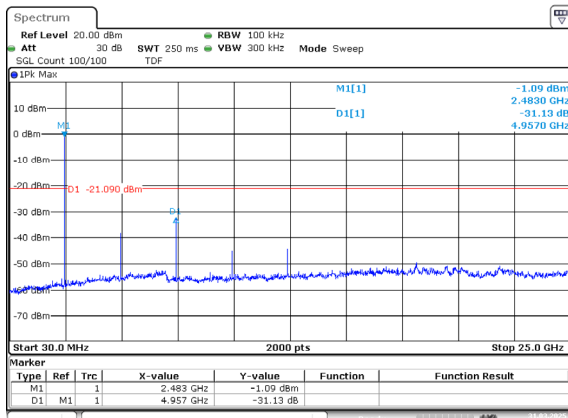
BLE_1M_Middle_Channel



ProjectNo.: 2507R12690E-RF Tester: Baylon Ma
Date: 31-MAR-2025 20:07:11

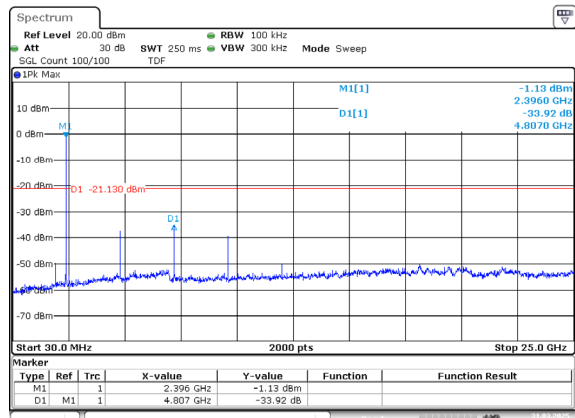
BLE 2M

BLE_1M_High_Channel



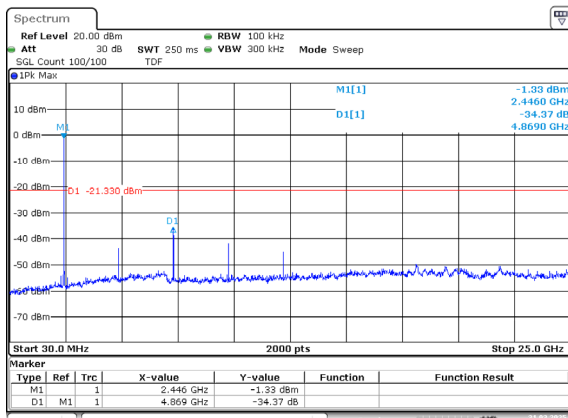
ProjectNo.: 2507R12690E-RF Tester: Baylon Ma
Date: 31-MAR-2025 20:10:03

BLE_2M_Low_Channel



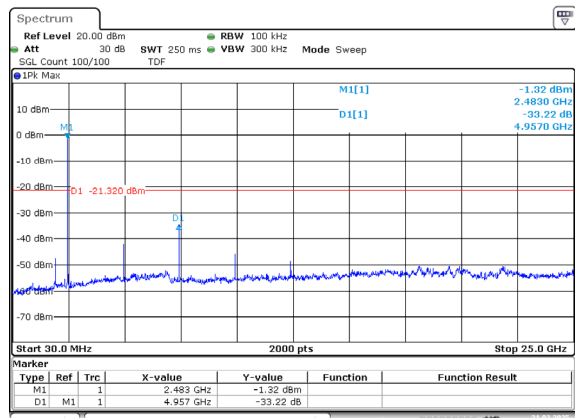
ProjectNo.: 2507R12690E-RF Tester: Baylon Ma
Date: 31-MAR-2025 20:12:53

BLE_2M_Middle_Channel



ProjectNo.: 2507R12690E-RF Tester: Baylon Ma
Date: 31-MAR-2025 20:15:45

BLE_2M_High_Channel



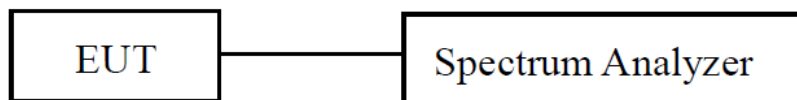
ProjectNo.: 2507R12690E-RF Tester: Baylon Ma
Date: 31-MAR-2025 20:19:35

FCC §15.247(a) (2) – 6 dB EMISSION BANDWIDTH

Applicable Standard

Systems using digital modulation techniques may operate in the 902–928 MHz, 2400–2483.5 MHz, and 5725–5850 MHz bands. The minimum 6 dB bandwidth shall be at least 500 kHz.

EUT Setup



Note: A short RF cable with low cable loss connected to the EUT antenna port. The insert loss of this RF cable was Offset into the setting of test equipment:

Offset = Insert loss of RF cable

★The Insert loss was declared by manufacturer.

Test Procedure

According to ANSI C63.10-2020 Section 11.8

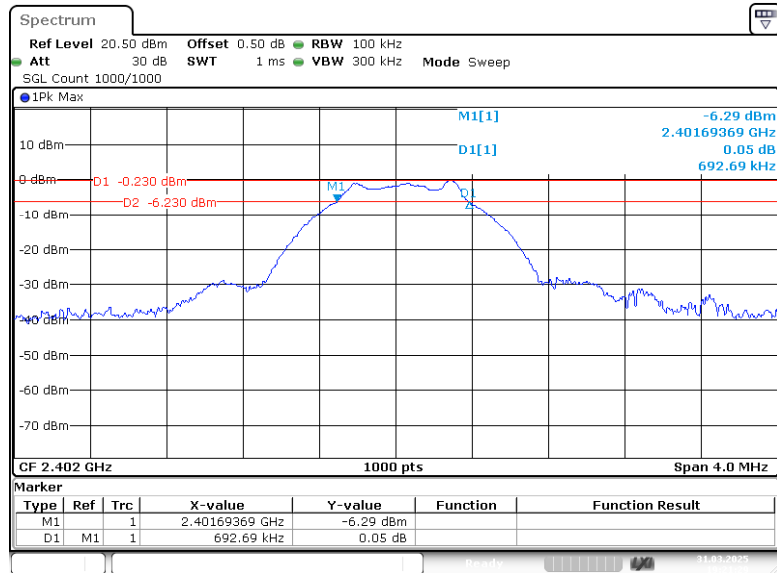
- Set RBW = shall be in the range of 1% to 5% of the OBW but not less than 100 kHz.
- Set the VBW $\geq [3 \times \text{RBW}]$.
- Detector = peak.
- Trace mode = max-hold.
- Sweep = No faster than coupled (auto) time.
- Allow the trace to stabilize.
- Measure the maximum width of the emission by placing two markers, one at the lowest frequency and the other at the highest frequency of the envelope of the spectral display, such that each marker is at or slightly below the “–6 dB down amplitude”. If a marker is below this “–6 dB down amplitude” value, then it shall be as close as possible to this value.

Test Data

Test Mode:	Transmitting	Test Engineer:	Braylon Ma
Test Date:	2025-03-31	Test Voltage:	DC 1.3V
Test Result:	Compliance	Environment:	Temp.: 23.1°C Humi.: 51% Atm.: 100.2kPa
Test Modes	Test Frequency (MHz)	6 dB Bandwidth (MHz)	Limit (MHz)
BLE 1Mbps	2402	0.693	≥ 0.5
	2440	0.693	≥ 0.5
	2480	0.705	≥ 0.5
BLE 2Mbps	2402	1.285	≥ 0.5
	2440	1.285	≥ 0.5
	2480	1.285	≥ 0.5

Please refer to below plots:

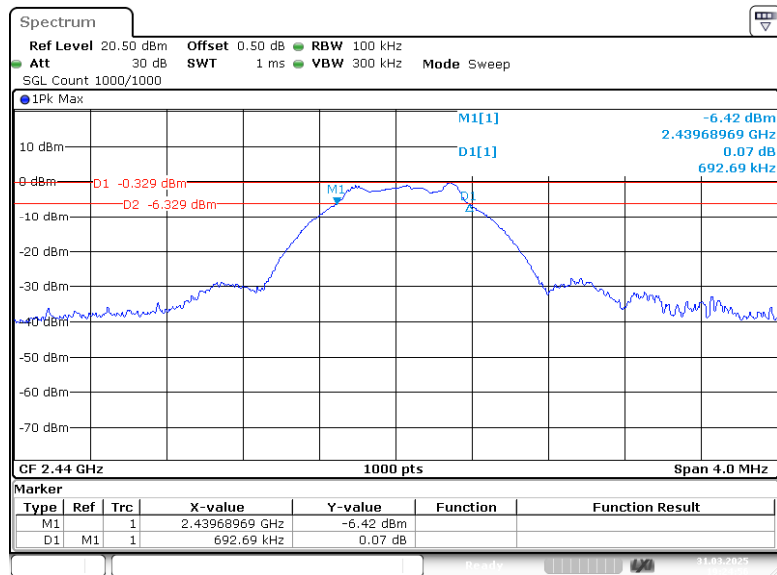
BLE 1Mbps Low Channel



ProjectNo.:2507R12690E-RF Tester:Braylon Ma

Date: 31.MAR.2025 19:21:28

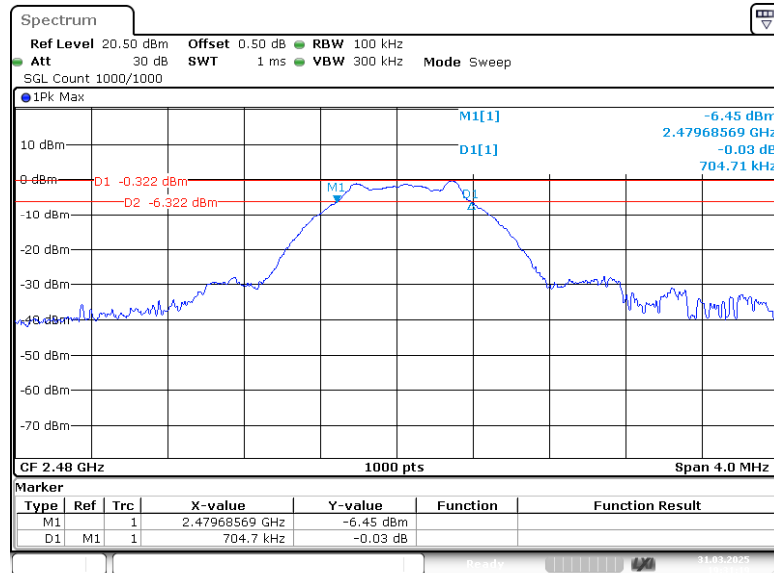
BLE 1Mbps Middle Channel



ProjectNo.:2507R12690E-RF Tester:Braylon Ma

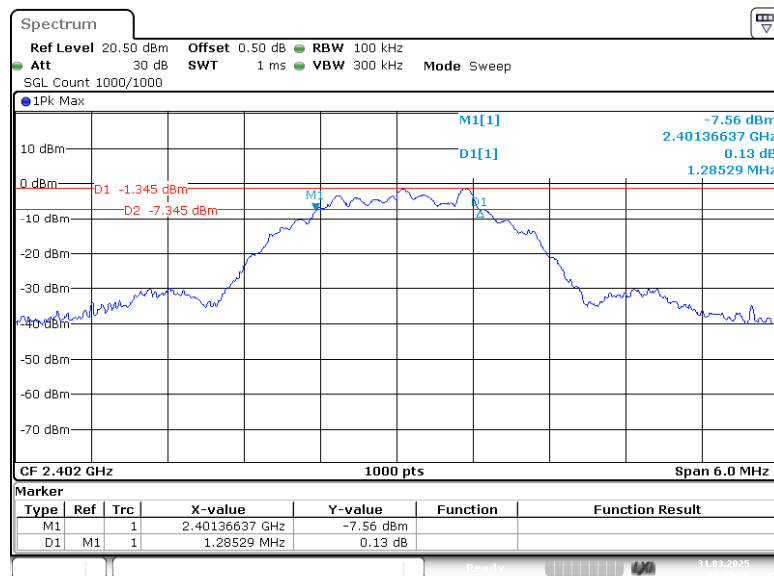
Date: 31.MAR.2025 19:24:56

BLE 1Mbps High Channel



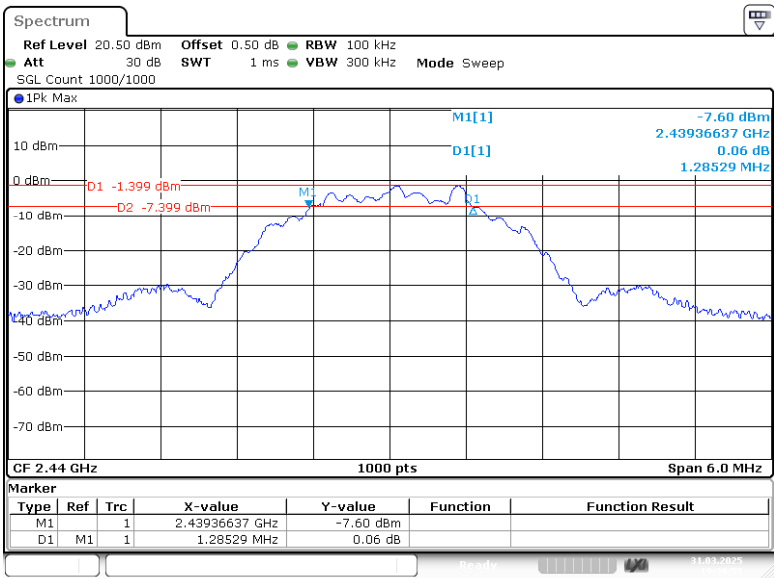
ProjectNo.:2507R12690E-RF Tester:Braylon Ma
Date: 31.MAR.2025 19:31:19

BLE 2Mbps Low Channel



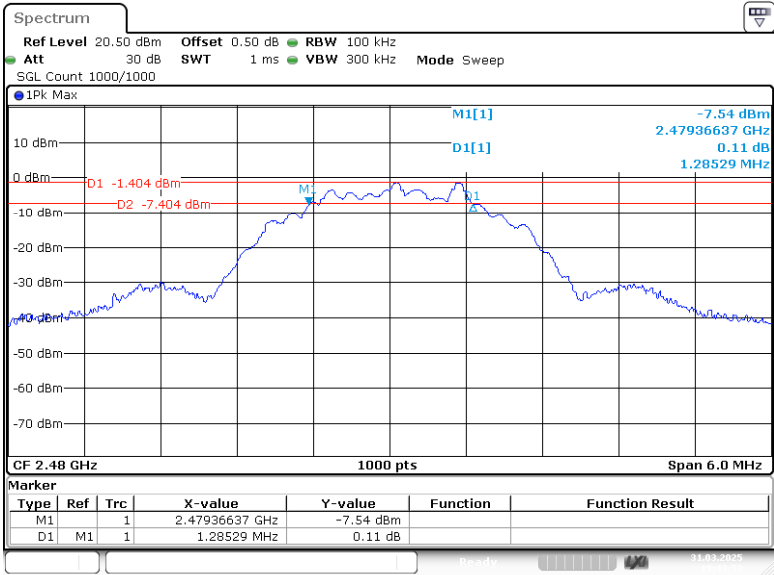
ProjectNo.:2507R12690E-RF Tester:Braylon Ma
Date: 31.MAR.2025 19:35:36

BLE 2Mbps Middle Channel



ProjectNo.:2507R12690E-RF Tester:Braylon Ma
Date: 31.MAR.2025 19:39:54

BLE 2Mbps High Channel



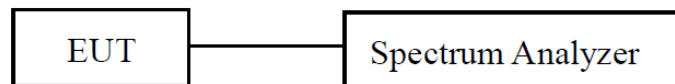
ProjectNo.:2507R12690E-RF Tester:Braylon Ma
Date: 31.MAR.2025 19:43:52

FCC §15.247(b) (3) - MAXIMUM CONDUCTED OUTPUT POWER

Applicable Standard

According to FCC §15.247(b) (3), for systems using digital modulation in the 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz bands: 1 Watt. As an alternative to a peak power measurement, compliance with the one Watt limit can be based on a measurement of the maximum conducted output power. Maximum Conducted Output Power is defined as the total transmit power delivered to all antennas and antenna elements averaged across all symbols in the signaling alphabet when the transmitter is operating at its maximum power control level. Power must be summed across all antennas and antenna elements. The average must not include any time intervals during which the transmitter is off or is transmitting at a reduced power level. If multiple modes of operation are possible (e.g., alternative modulation methods), the maximum conducted output power is the highest total transmit power occurring in any mode.

EUT Setup



Note: A short RF cable with low cable loss connected to the EUT antenna port. The insert loss of this RF cable was Offset into the setting of test equipment:

Offset = Insert loss of RF cable

★The Insert loss was declared by manufacturer.

Test Procedure

According to ANSI C63.10-2020 11.9.1.1

the DTS bandwidth is available to perform the measurement:

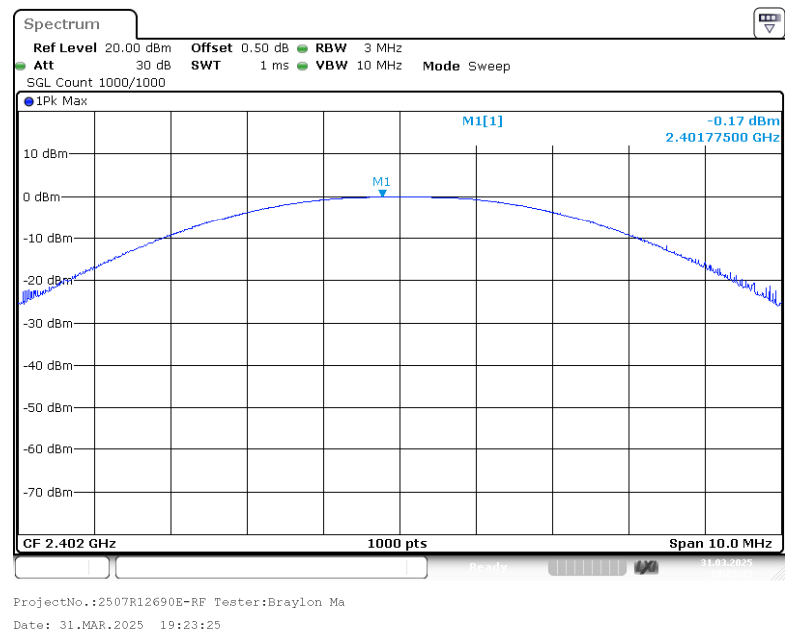
- a) Set the RBW $\geq$ DTS bandwidth.
- b) Set VBW $\geq [3 \times \text{RBW}]$.
- c) Set span $\geq [3 \times \text{RBW}]$.
- d) Sweep time = No faster than coupled (auto) time.
- e) Detector = peak.
- f) Trace mode = max-hold.
- g) Allow trace to fully stabilize.
- h) Use peak marker function to determine the peak amplitude level.

Test Data

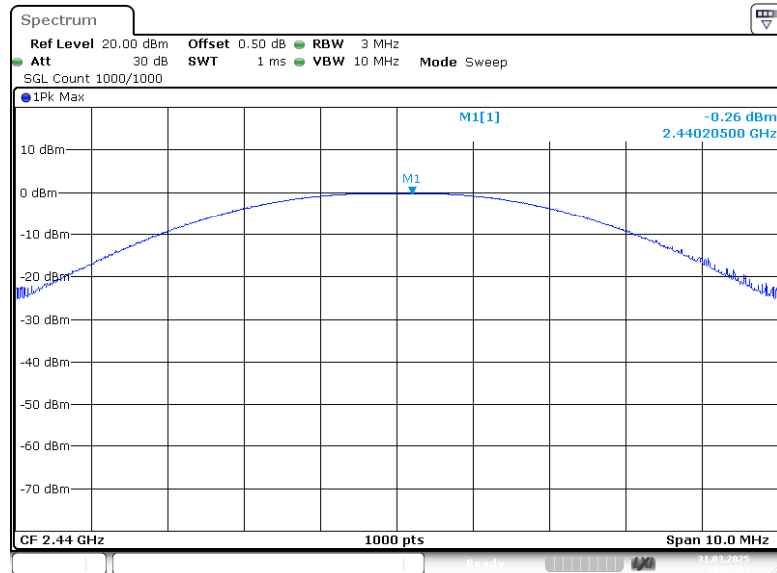
Test Mode:	Transmitting	Test Engineer:	Braylon Ma
Test Date:	2025-03-31	Test Voltage:	DC 1.3V
Test Result:	Compliance	Environment:	Temp.: 23.1°C Humi.: 51% Atm.: 100.2kPa
Test Modes	Test Frequency (MHz)	Maximum Peak Conducted Output Power(dBm)	Limit (dBm)
BLE 1Mbps	2402	-0.17	≤30
	2440	-0.26	≤30
	2480	-0.26	≤30
BLE 2Mbps	2402	-0.16	≤30
	2440	-0.24	≤30
	2480	-0.24	≤30

Please refer to below plots:

BLE 1Mbps Low Channel

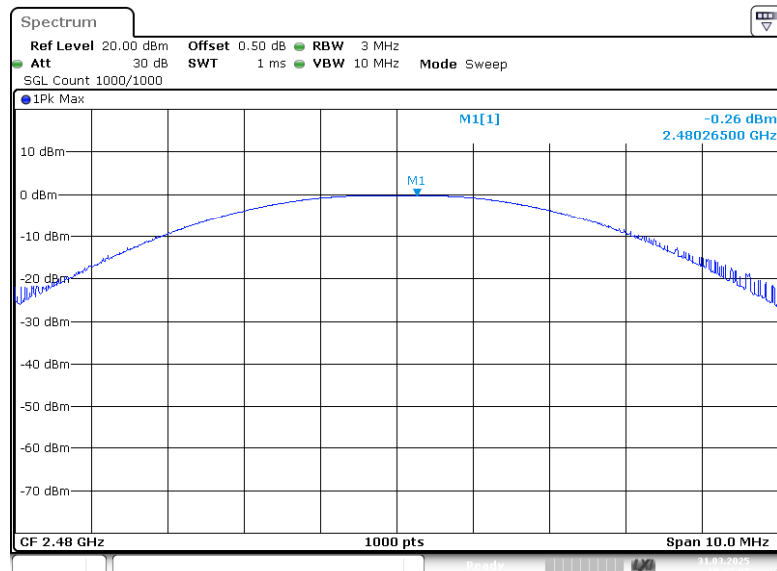


BLE 1Mbps Middle Channel



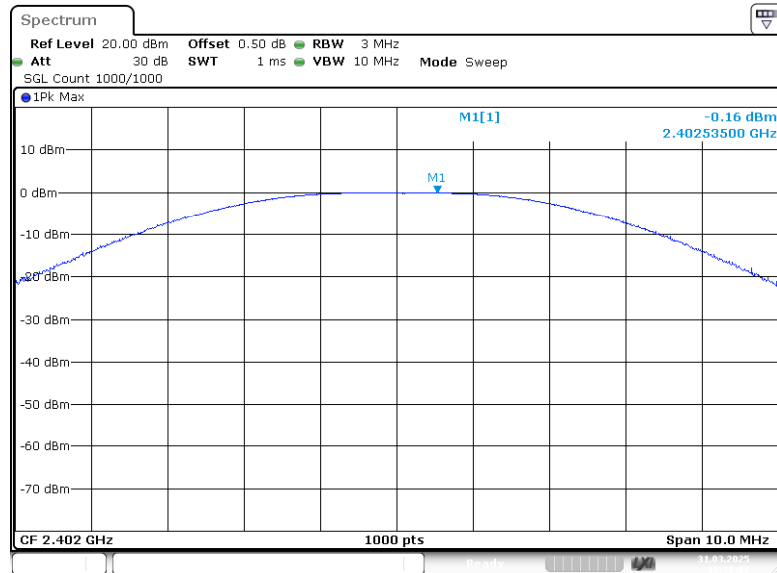
ProjectNo.:2507R12690E-RF Tester:Braylon Ma
Date: 31.MAR.2025 19:27:25

BLE 1Mbps High Channel



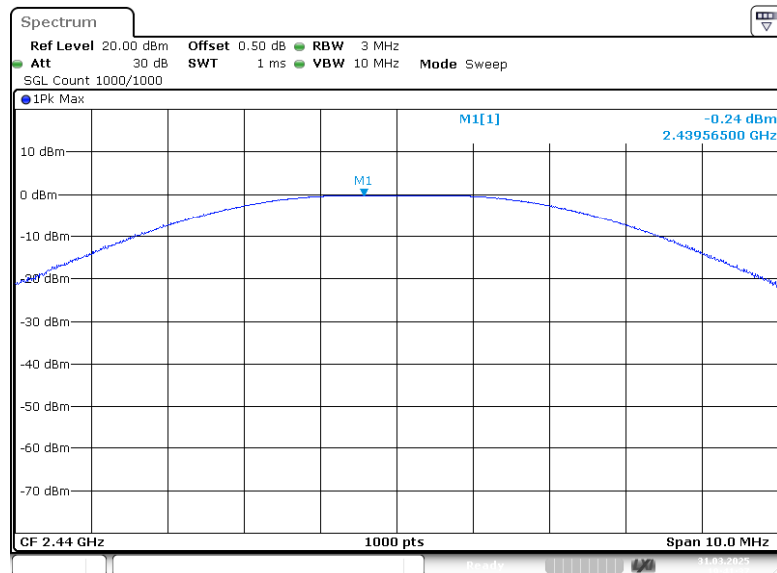
ProjectNo.:2507R12690E-RF Tester:Braylon Ma
Date: 31.MAR.2025 19:33:08

BLE 2Mbps Low Channel



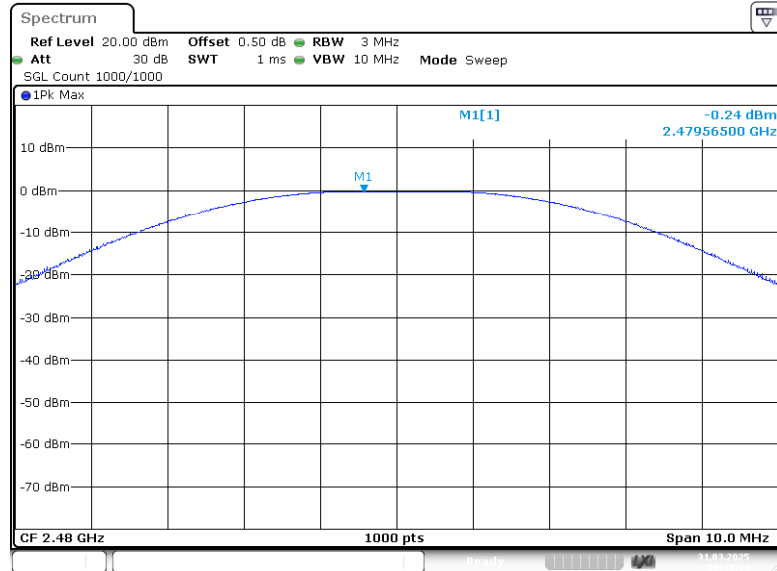
ProjectNo.:2507R12690E-RF Tester:Braylon Ma
 Date: 31.MAR.2025 19:38:08

BLE 2Mbps Middle Channel



ProjectNo.:2507R12690E-RF Tester:Braylon Ma
 Date: 31.MAR.2025 19:41:37

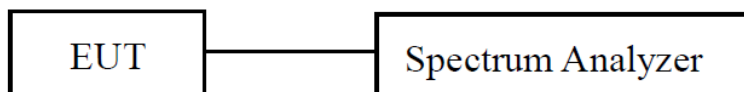
BLE 2Mbps High Channel



ProjectNo.:2507R12690E-RF Tester:Braylon Ma
Date: 31.MAR.2025 19:45:34

FCC §15.247(d) – 100 kHz BANDWIDTH OF FREQUENCY BAND EDGE**Applicable Standard**

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in §15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c)).

EUT Setup

Note: A short RF cable with low cable loss connected to the EUT antenna port. The insert loss of this RF cable was Offset into the setting of test equipment:

Offset = Insert loss of RF cable

★The Insert loss was declared by manufacturer.

Test Procedure

According to ANSI C63.10-2020 Section 11.11

a) Set the center frequency and span to encompass frequency range to be measured. Note that the frequency range might need to be divided into multiple frequency ranges to retain frequency resolution.

NOTE—the number of points can also be increased for large spans to retain frequency resolution

b) Set the RBW = 100 kHz.

c) Set the VBW $\geq [3 \times \text{RBW}]$.

d) Detector = peak.

e) Sweep time = No faster than coupled (auto) time.

f) Trace mode = max-hold.

g) Allow trace to fully stabilize.

h) Use the peak marker function to determine the maximum amplitude level.

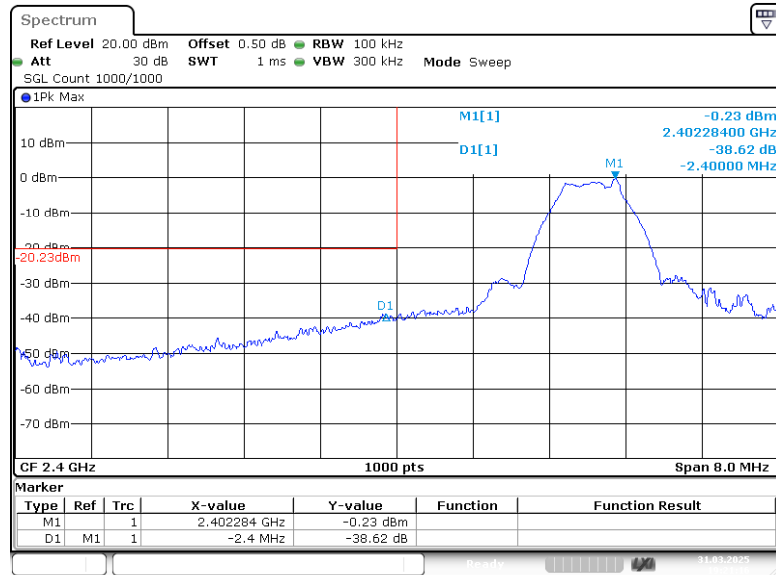
Ensure that the amplitude of all unwanted emissions outside of the authorized frequency band (excluding restricted frequency bands) is attenuated by at least the minimum requirements specified in 11.11. Report the three highest emissions relative to the limit.

Test Data

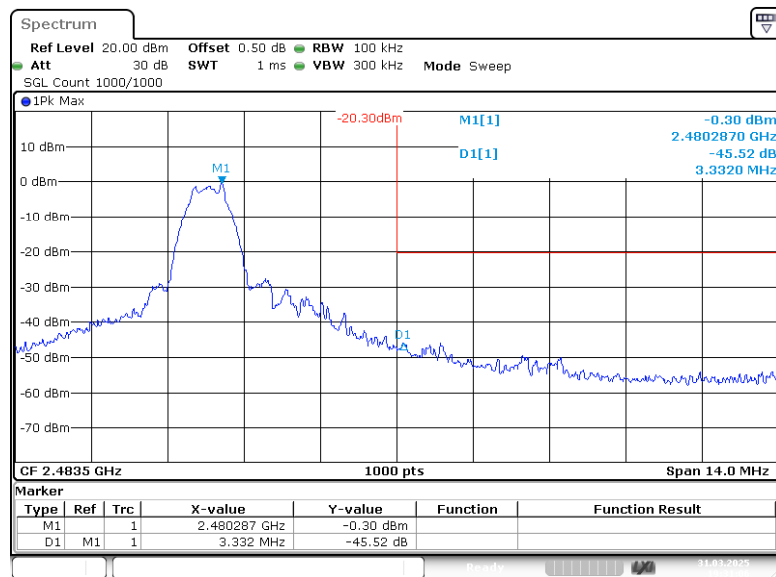
Test Mode:	Transmitting	Test Engineer:	Braylon Ma
Test Date:	2025-03-31	Test Voltage:	DC 1.3V
Test Result:	Compliance	Environment:	Temp.: 23.1°C Humi.: 51% Atm.: 100.2kPa

Please refer to below plots:

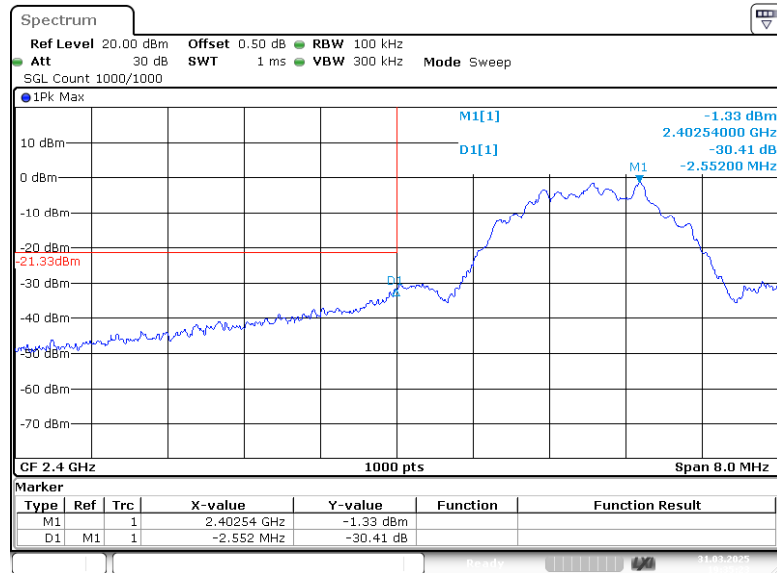
BLE 1Mbps Low Channel



BLE 1Mbps High Channel



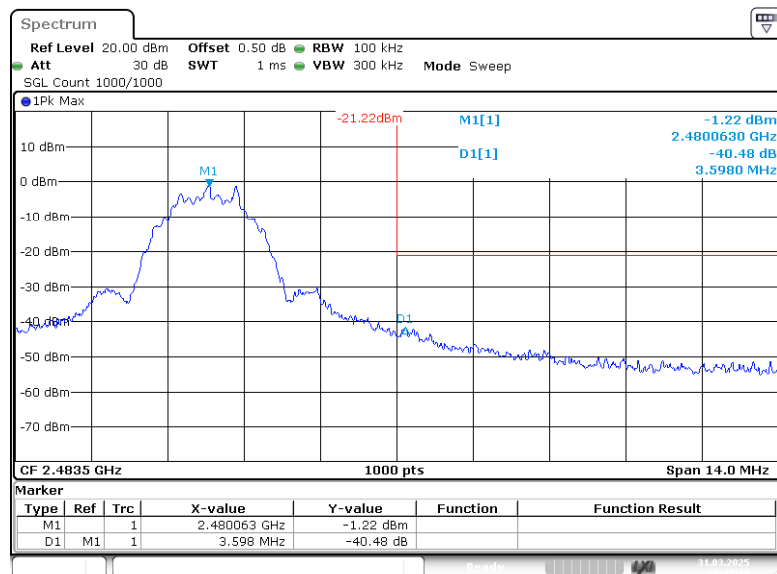
BLE 2Mbps Low Channel



ProjectNo.:2507R12690E-RF Tester:Braylon Ma

Date: 31.MAR.2025 19:35:22

BLE 2Mbps High Channel



ProjectNo.:2507R12690E-RF Tester:Braylon Ma

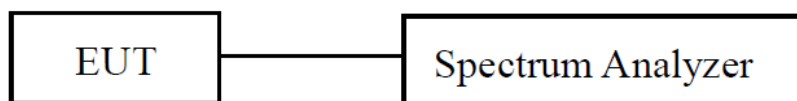
Date: 31.MAR.2025 19:43:39

FCC §15.247(e) - POWER SPECTRAL DENSITY

Applicable Standard

For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission. This power spectral density shall be determined in accordance with the provisions of paragraph (b) of this section. The same method of determining the conducted output power shall be used to determine the power spectral density.

EUT Setup



Note: A short RF cable with low cable loss connected to the EUT antenna port. The insert loss of this RF cable was Offset into the setting of test equipment:

Offset = Insert loss of RF cable

★The Insert loss was declared by manufacturer.

Test Procedure

According to ANSI C63.10-2020 Section 11.10.2

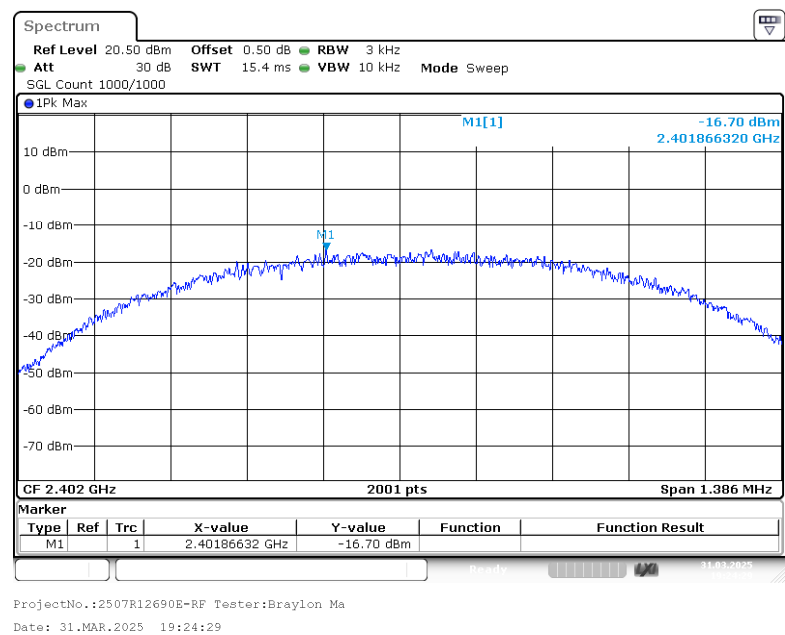
- a) Set analyzer center frequency to DTS channel center frequency.
- b) Set the span >1.5 times the DTS bandwidth.
- c) Set the RBW to $3 \text{ kHz} \leq \text{RBW} \leq 100 \text{ kHz}$.
- d) Set the VBW $\geq [3 \times \text{RBW}]$.
- e) Detector = peak.
- f) Sweep time = No faster than coupled (auto) time.
- g) Trace mode = max-hold.
- h) Allow trace to fully stabilize.
- i) Use the peak marker function to determine the maximum amplitude level within the RBW.
- j) If measured value exceeds requirement, then reduce RBW (but no less than 3 kHz) and repeat.

Test Data

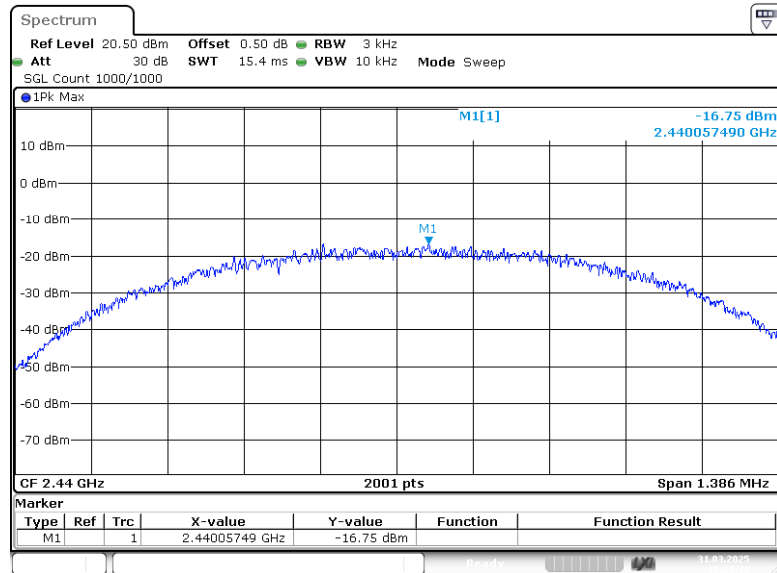
Test Mode:	Transmitting	Test Engineer:	Braylon Ma
Test Date:	2025-03-31	Test Voltage:	DC 1.3V
Test Result:	Compliance	Environment:	Temp.: 23.1°C Humi.: 51% Atm.: 100.2kPa
Test Modes	Test Frequency (MHz)	Power Spectral Density (dBm/3kHz)	Limit (dBm/3kHz)
BLE 1Mbps	2402	-16.7	≤8.00
	2440	-16.75	≤8.00
	2480	-16.7	≤8.00
BLE 2Mbps	2402	-19.93	≤8.00
	2440	-19.91	≤8.00
	2480	-19.77	≤8.00

Please refer to below plots:

BLE 1Mbps Low Channel

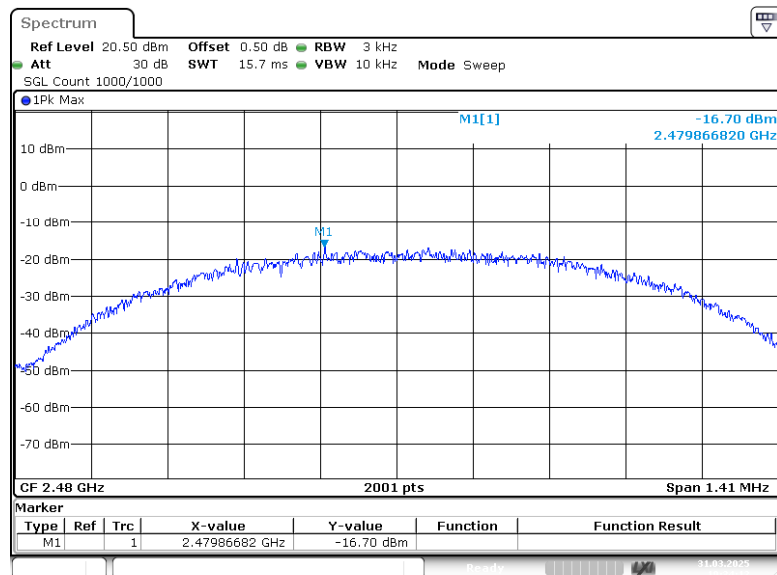


BLE 1Mbps Middle Channel



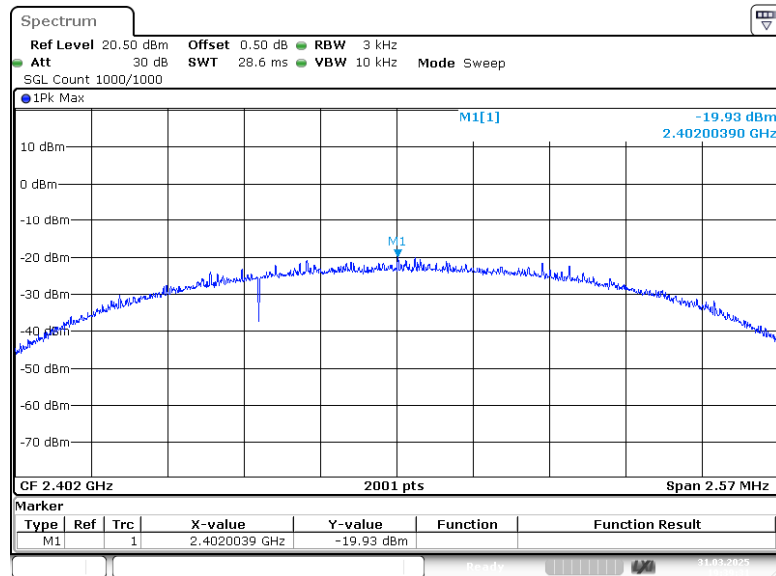
ProjectNo.:2507R12690E-RF Tester:Braylon Ma
 Date: 31.MAR.2025 19:28:29

BLE 1Mbps High Channel



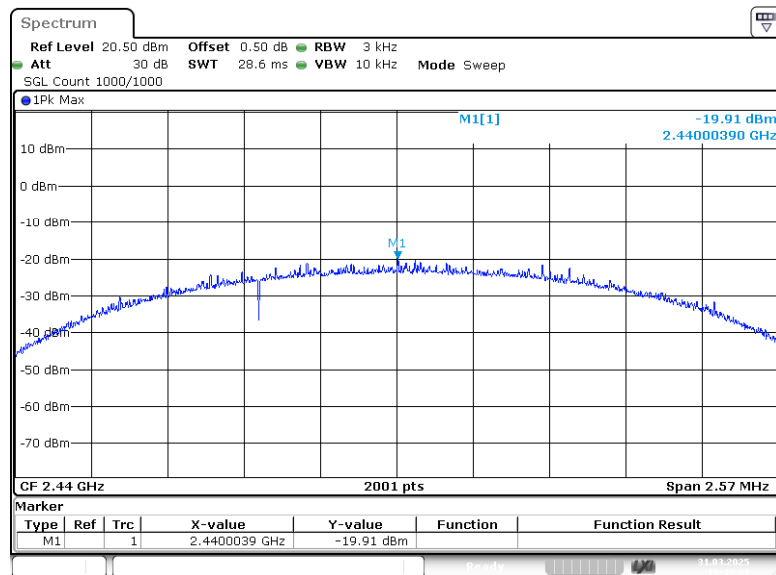
ProjectNo.:2507R12690E-RF Tester:Braylon Ma
 Date: 31.MAR.2025 19:34:12

BLE 2Mbps Low Channel



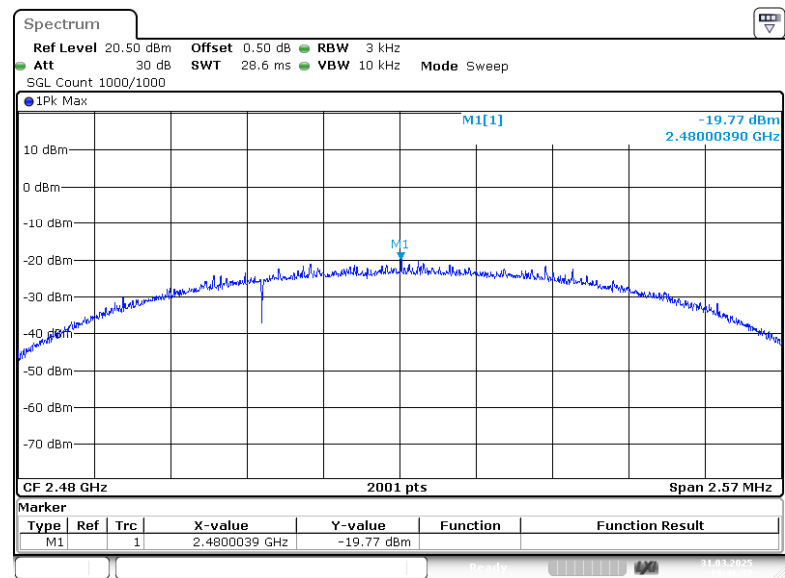
ProjectNo.:2507R12690E-RF Tester:Braylon Ma
 Date: 31.MAR.2025 19:39:31

BLE 2Mbps Middle Channel



ProjectNo.:2507R12690E-RF Tester:Braylon Ma
 Date: 31.MAR.2025 19:43:01

BLE 2Mbps High Channel



ProjectNo.:2507R12690E-RF Tester:Braylon Ma
Date: 31.MAR.2025 19:46:57

EUT PHOTOGRAPHS

Please refer to the attachment 2507R12690E-RF-EXP EUT EXTERNAL PHOTOGRAPHS and 2507R12690E-RF-INP EUT INTERNAL PHOTOGRAPHS.

TEST SETUP PHOTOGRAPHS

Please refer to the attachment 2507R12690E-RF-TSP EUT SETUP PHOTOGRAPHS.

Declarations

1. Bay Area Compliance Laboratories Corp. (Xiamen) is not responsible for authenticity of any information provided by the applicant. Information from the applicant that may affect test results are marked with an asterisk “★”.
2. Unless otherwise stated, the results shown in this test report refer only to the sample(s) tested.
3. Unless required by the rule provided by the applicant or product regulations, then decision rule in this report did not consider the uncertainty.
4. The extended uncertainty given in this report is obtained by combining the standard uncertainty times the coverage factor $k=2$ with the 95% confidence interval.
5. This report cannot be reproduced except in full, without prior written approval of Bay Area Compliance Laboratories Corp. (Xiamen).
6. This report is valid only with a valid digital signature. The digital signature may be available only under the adobe software above version 7.0.

******* END OF REPORT *******