

TEST REPORT

Applicant Name : Shenzhen Mike Morgan Technology Co.,Ltd.
Address : Room 302, Building 5, Zone C, Jinxiu Huacheng Park, Bantian Street, Longgang District, ShenZhen, China
Report Number : 2504U21956E-RF-00B
FCC ID: 2A88F-NJ10-R

Test Standard (s)

FCC PART 15.247

Sample Description

Product Type: WIZARD 2
Model No.: NJ10
Trade Mark: NYXI
Date Received: 2025-06-24
Date of Test: 2025-07-03 to 2025-08-01
Report Date: 2025-08-05

Test Result:	The EUT complied with the standards above.
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Prepared and Checked By:

Roger Ling

Roger Ling
EMC Engineer

Approved By:

Bob Liao

Bob Liao
EMC Engineer

Note: This report must not be used by the customer to claim product certification, approval, or endorsement by A2LA, or any agency of the Federal Government. The information marked “#” is provided by the applicant, the laboratory is not responsible for its authenticity and this information can affect the validity of the result in the test report. Customer model name, addresses, names, trademarks etc. are included but no need marked.

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DOCUMENT REVISION HISTORY

Revision Number	Report Number	Description of Revision	Date of Revision
Rev.00	2504U21956E-RF-00B	Original Report	2025-08-05

GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

Product	WIZARD 2
Tested Model	NJ10
Voltage Range [#]	DC 3.7V from rechargeable battery or DC 5V USB Port

Frequency Range	Bluetooth: 2402-2480MHz
Maximum Conducted Peak Output Power	0.91dBm
Modulation Technique	BDR(GFSK)&EDR(π /4-DQPSK)/EDR(8DPSK)
Antenna Specification [#]	Internal Antenna: 2.05 dBi (It is provided by the applicant.)
Sample Serial Number	357T-11 (CE&RSE), 357T-3 (RF Conducted Test) (Assigned by ATC, Shenzhen)
Sample/EUT Status	Good condition

Note 1: The product (WIZARD 2) consists of three parts, as below:
a middle bridge, a left controller(FCC ID: 2A88F-NJ10-L), a right controller(FCC ID: 2A88F-NJ10-R).
Only the left/right controller have wireless functionality.
Note 2: The right controller was tested and recorded in this report.

Objective

This test report is in accordance with Part 2-Subpart J, Part 15-Subparts A and C of the Federal Communication Commission rules.

The tests were performed in order to determine compliance with FCC Part 15, Subpart C, section 15.203, 15.205, 15.207, 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.

Unless otherwise stated there are no any additions to, deviations, or exclusions from the method.

Test Facility

The test site used by Shenzhen Accurate Technology Co., Ltd. to collect test data is located on the Floor 1, KuMaKe Building, Dongzhou Community, Guangming Street, Guangming District, Shenzhen, Guangdong, China.

Accredited by American Association for Laboratory Accreditation (A2LA).The Certificate Number is 4297.01.

Measurement Uncertainty

Parameter		Uncertainty
Occupied Channel Bandwidth		5 %
RF Frequency		0.064×10^{-7}
RF output power, conducted		0.3 dB
Unwanted Emission, conducted		1.2 dB
AC Power Lines Conducted Emissions		2.7 dB
Emissions, Radiated	9kHz - 30MHz	2.1 dB
	30MHz - 1GHz	4.3 dB
	1GHz - 18GHz	4.9 dB
	18GHz - 26.5GHz	5.2 dB
Temperature		1 °C
Humidity		7 %
Supply voltages		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

Description of Test Configuration

For Bluetooth BDR&EDR mode, 79 channels are provided to testing:

Channel	Freq. (MHz)	Channel	Freq. (MHz)	Channel	Freq. (MHz)	Channel	Freq. (MHz)
0	2402	20	2422	40	2442	60	2462
1	2403	21	2423	41	2443	61	2463
2	2404	22	2424	42	2444	62	2464
...	...	...	...	...	...	...	...
...	...	...	...	...	...	...	...
17	2419	37	2439	57	2459	77	2479
18	2420	38	2440	58	2460	78	2480
19	2421	39	2441	59	2461	/	/

EUT was tested with Channel 0, 39 and 78.

EUT Exercise Software and Power Level[#]

Exercise Software:	Testing in the engineering mode.
Power Level:	7

Special Accessories

No special accessory.

Equipment Modifications

No modification was made to the EUT tested.

Support Equipment List and Details

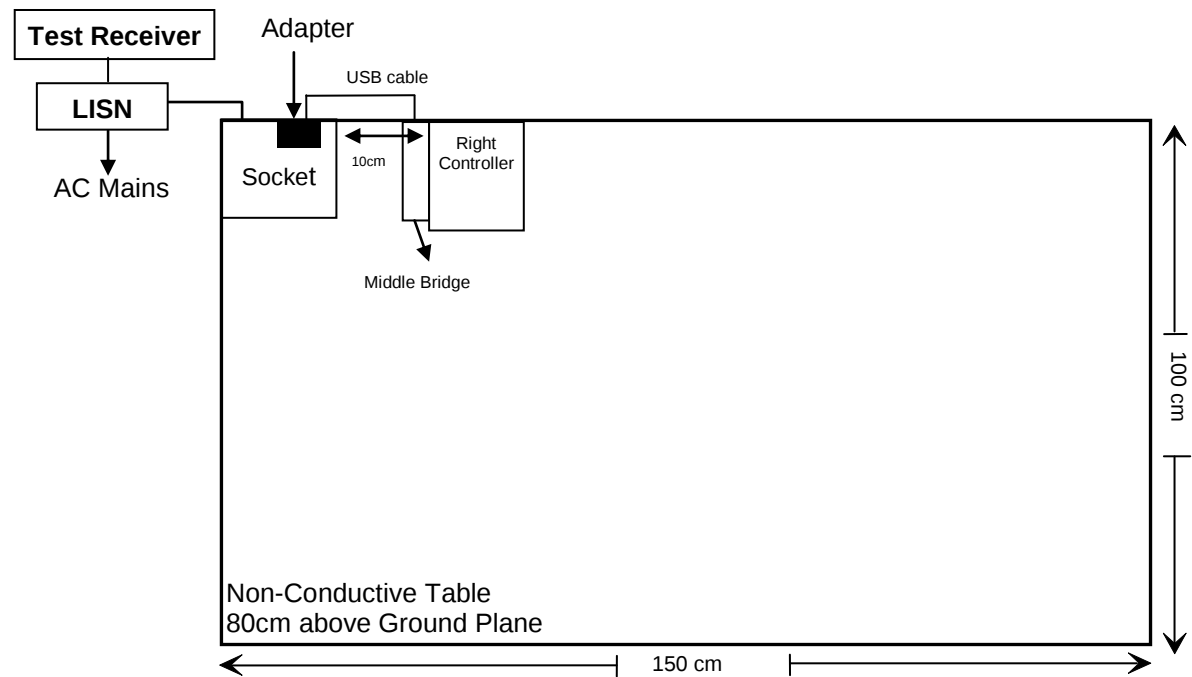
Manufacturer	Description	Model	Serial Number
Xiaomi	Adapter	MDY-08-ES	Unknown

External I/O Cable

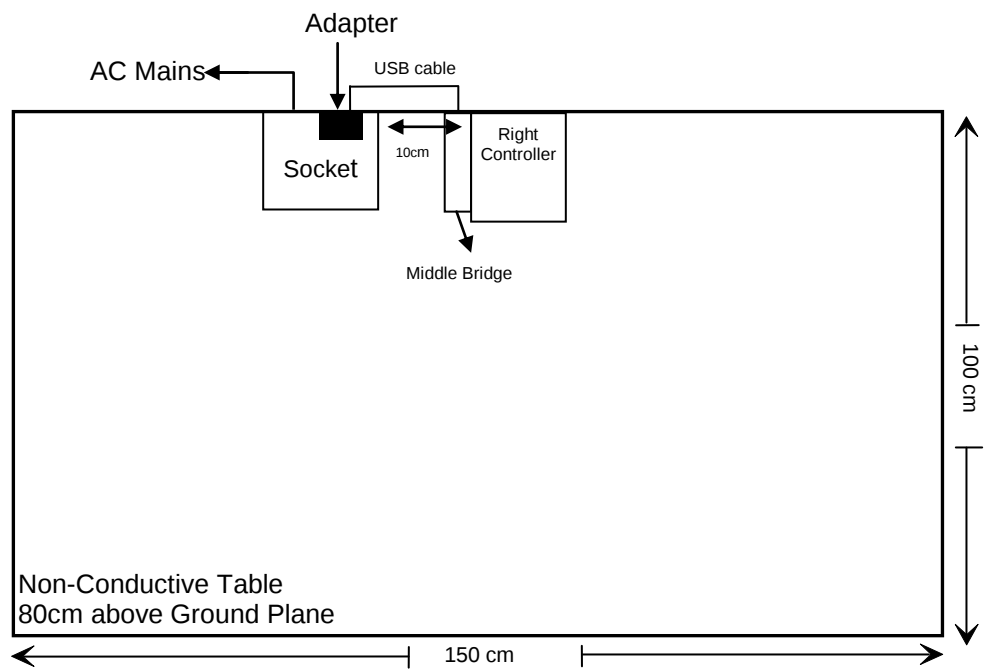
Cable Description	Shielding Type	Length (m)	From Port	To
USB Cable	NO	1.53	Adapter	EUT

Block Diagram of Test Setup

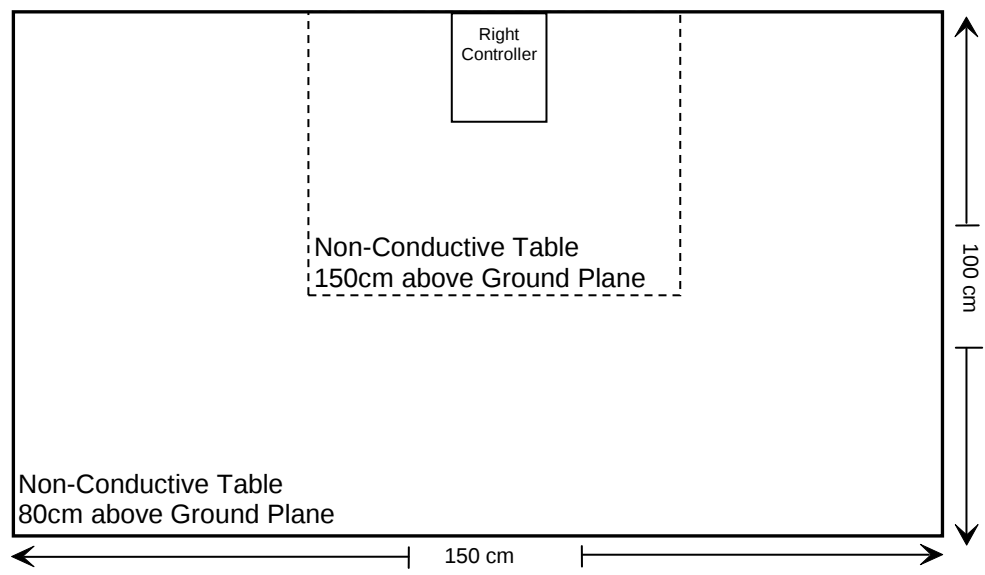
For Conducted Emission:



For Radiated Emission Below 1GHz:



For Radiated Emission Above 1GHz:



SUMMARY OF TEST RESULTS

FCC Rules	Description of Test	Result
§15.203	Antenna Requirement	Compliance
§15.207(a)	AC Line Conducted Emissions	Compliance
§15.205, §15.209 & §15.247(d)	Radiated Emissions	Compliance
§15.247(a)(1)	20 dB Emission Bandwidth & 99% Occupied Bandwidth	Compliance
§15.247(a)(1)	Channel Separation Test	Compliance
§15.247(a)(1)(iii)	Time of Occupancy (Dwell Time)	Compliance
§15.247(a)(1)(iii)	Quantity of hopping channel Test	Compliance
§15.247(b)(1)	Peak Output Power Measurement	Compliance
§15.247(d)	Band edges	Compliance

Note 1: For AC line conducted emissions, the maximum output power mode and channel was tested.

Note 2: For Radiated Spurious Emissions 9kHz~1GHz/18GHz~25GHz, the maximum output power mode and channel was tested.

Note 3: For Radiated Spurious Emissions, after pre-scan in the X, Y and Z axes of orientation, the worst case as setup photos was recorded.

Note 4: The cable loss is 0.5dB, which was added into the all RF test results.

TEST EQUIPMENT LIST

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Conducted Emissions Test					
Rohde & Schwarz	EMI Test Receiver	ESCI	100784	2024/11/08	2025/11/07
Rohde & Schwarz	L.I.S.N.	ENV216	101314	2024/11/08	2025/11/07
Anritsu Corp	50 Coaxial Switch	MP59B	6100237248	2024/10/08	2025/10/07
Rohde & Schwarz	Pulse Limiter	ESH3-Z2	100312	2024/10/08	2025/10/07
Unknown	RF Coaxial Cable	No.17	N0350	2024/10/08	2025/10/07
Test Software: e3 191218 (V9)					
Radiated Spurious Emission Test(Below 1GHz)					
Rohde & Schwarz	Test Receiver	ESR	102725	2024/11/08	2025/11/07
SONOMA INSTRUMENT	Amplifier	310N	186131	2025/03/26	2026/03/25
Schwarzbeck	Bilog Antenna	VULB9163	9163-323	2024/08/08	2027/08/07
Unknown	RF Coaxial Cable	No.12	N040	2024/10/08	2025/10/07
Unknown	RF Coaxial Cable	No.13	N300	2024/10/08	2025/10/07
Unknown	RF Coaxial Cable	No.14	N800	2024/10/08	2025/10/07
BACL	LOOP ANTENNA	1313-1A	3110711	2024/01/16	2027/01/15
Test Software: e3 191218 (V9)					
Radiated Spurious Emission Test(Above 1GHz)					
Rohde & Schwarz	Spectrum Analyzer	FSV40	101949	2024/10/08	2025/10/07
Decentest	Filter Switch Unit	DT7220FSU	DQ77927	2024/10/08	2025/10/07
Decentest	Multiplex Switch Test Control Set	DT7220CSU	DQ77924	2024/10/08	2025/10/07
A.H. Systems, inc.	Preamplifier	PAM-0118	226	2025/03/20	2026/03/19
Schwarzbeck	Horn Antenna	BBHA9120D	837	2023/02/22	2026/02/21
Unknown	RF Coaxial Cable	No.10	N050	2024/10/08	2025/10/07
Unknown	RF Coaxial Cable	No.11	N1000	2024/10/08	2025/10/07
Unknown	RF Coaxial Cable	No.19	N500	2024/10/08	2025/10/07
Schwarzbeck	HORN ANTENNA	BBHA9170	9170-359	2023/12/12	2026/12/11
BACL	Amplifier	BACL-1313-A1840	4012521	2025/05/30	2026/05/29
Unknown	RF Coaxial Cable	No.15	N600	2024/10/08	2025/10/07
Unknown	RF Coaxial Cable	No.16	N650	2024/10/08	2025/10/07
Test Software: e3 191218 (V9)					

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
RF Conducted test					
Rohde & Schwarz	Spectrum Analyzer	FSV-40	101948	2024/10/08	2025/10/07
WEINSCHEL	10dB Attenuator	5324	AU 3842	2024/10/08	2025/10/07
Test Software: JDAutoTestSystem V1.0.0					

*** Statement of Traceability:** Shenzhen Accurate Technology Co., Ltd. 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 internal antenna arrangement, which were permanently attached to the EUT, fulfill the requirement of this section. Please refer to the EUT photos.

Frequency Range	Antenna gain
2402-2480MHz	2.05dBi

Result: Compliance.

Calculation

The factor is calculated by adding LISN VDF (Voltage Division Factor) and Cable Loss. The basic equation is as follows:

$$\text{Factor} = \text{LISN VDF} + \text{Cable Loss} + 10\text{dB Attenuation(Limiter)}$$

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

$$\text{Over Limit} = \text{Level} - \text{Limit}$$

$$\text{Level} = \text{Read Level} + \text{Factor}$$

Test Data

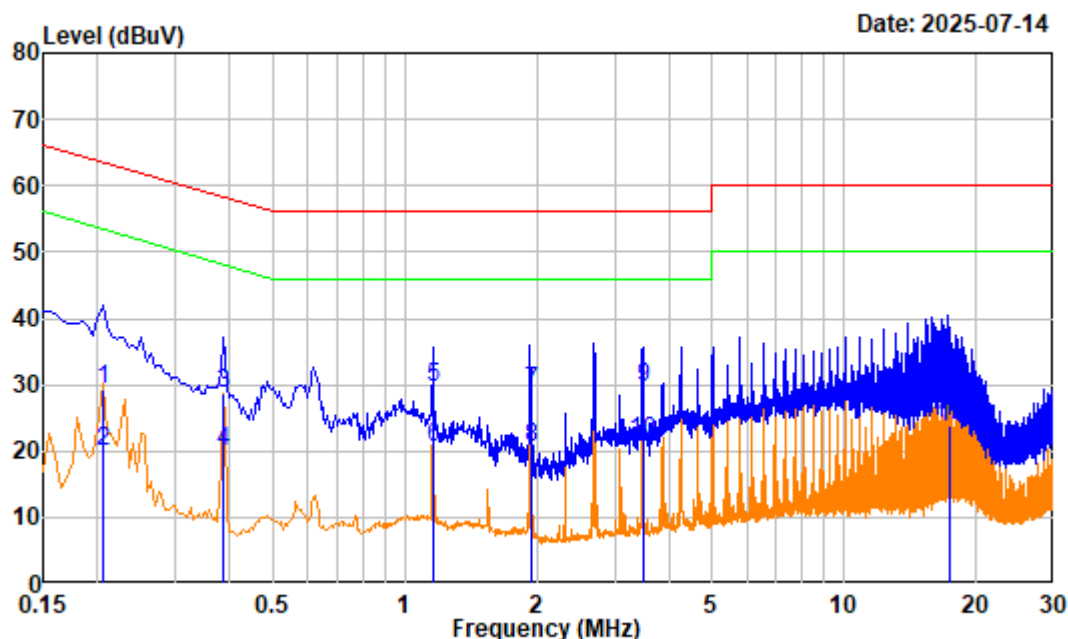
Environmental Conditions

Temperature:	23.8 °C
Relative Humidity:	42 %
ATM Pressure:	100.1 kPa
Test Engineer:	Jason Fan
Test Date:	2025-07-14
EUT Operation Mode:	BT Transmitting

Test Result: Compliance, please refer to the below data.

Note: The maximum output power mode and channel: BT 3DH5 Low Channel was tested.

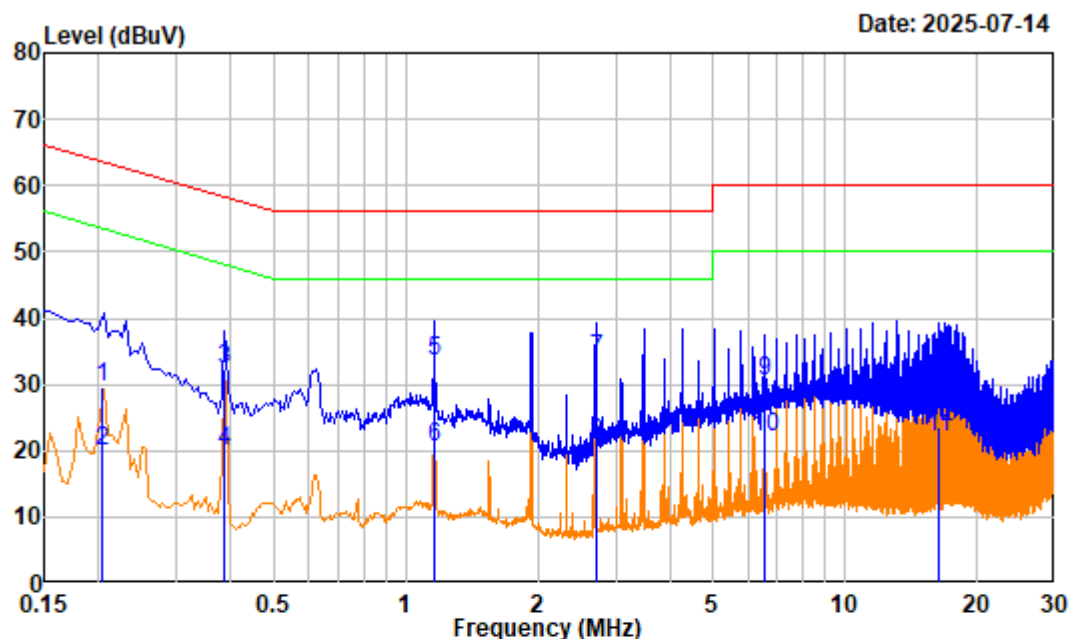
AC 120V/60Hz, Line:



Site : Shielding Room
 Condition: Line
 Job No. : 2504U21956E-RF-R
 Test Mode: BT transmitting
 Tester : Jason Fan
 Setting : IF B/W 9kHz PK/AV

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dBuV	dBuV	dBuV	dB	
1	0.205	19.99	9.32	29.31	53.41	-24.10	Average
2	0.205	19.99	-0.01	19.98	63.41	-43.43	QP
3	0.387	20.03	8.58	28.61	48.13	-19.52	Average
4	0.387	20.03	0.01	20.04	58.13	-38.09	QP
5	1.158	20.38	9.14	29.52	46.00	-16.48	Average
6	1.158	20.38	0.00	20.38	56.00	-35.62	QP
7	1.933	20.50	8.51	29.01	46.00	-16.99	Average
8	1.933	20.50	0.00	20.50	56.00	-35.50	QP
9	3.476	21.29	8.21	29.50	46.00	-16.50	Average
10	3.476	21.29	0.00	21.29	56.00	-34.71	QP
11	17.311	23.70	-0.06	23.64	50.00	-26.36	Average
12	17.311	23.70	0.01	23.71	60.00	-36.29	QP

AC 120V/60Hz, Neutral:



Site : Shielding Room
 Condition: neutral
 Job No. : 2504U21956E-RF-R
 Test Mode: BT transmitting
 Tester : Jason Fan
 Setting : IF B/W 9kHz PK/AV

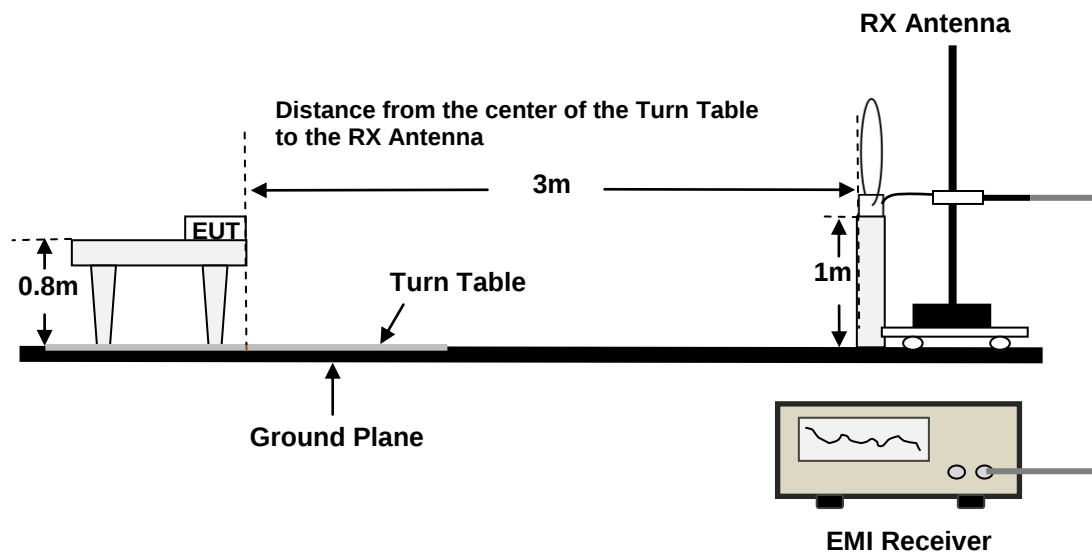
	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dBuV	dBuV	dBuV	dB	
1	0.204	19.92	9.76	29.68	53.44	-23.76	Average
2	0.204	19.92	0.00	19.92	63.44	-43.52	QP
3	0.387	19.96	12.47	32.43	48.12	-15.69	Average
4	0.387	19.96	0.00	19.96	58.12	-38.16	QP
5	1.160	20.55	13.11	33.66	46.00	-12.34	Average
6	1.160	20.55	0.00	20.55	56.00	-35.45	QP
7	2.705	21.11	12.63	33.74	46.00	-12.26	Average
8	2.705	21.11	0.00	21.11	56.00	-34.89	QP
9	6.569	22.11	8.34	30.45	50.00	-19.55	Average
10	6.569	22.11	0.01	22.12	60.00	-37.88	QP
11	16.268	23.69	-1.69	22.00	50.00	-28.00	Average
12	16.268	23.69	0.00	23.69	60.00	-36.31	QP

FCC §15.205, §15.209 & §15.247(D)-RADIATED EMISSIONS**Applicable Standard**

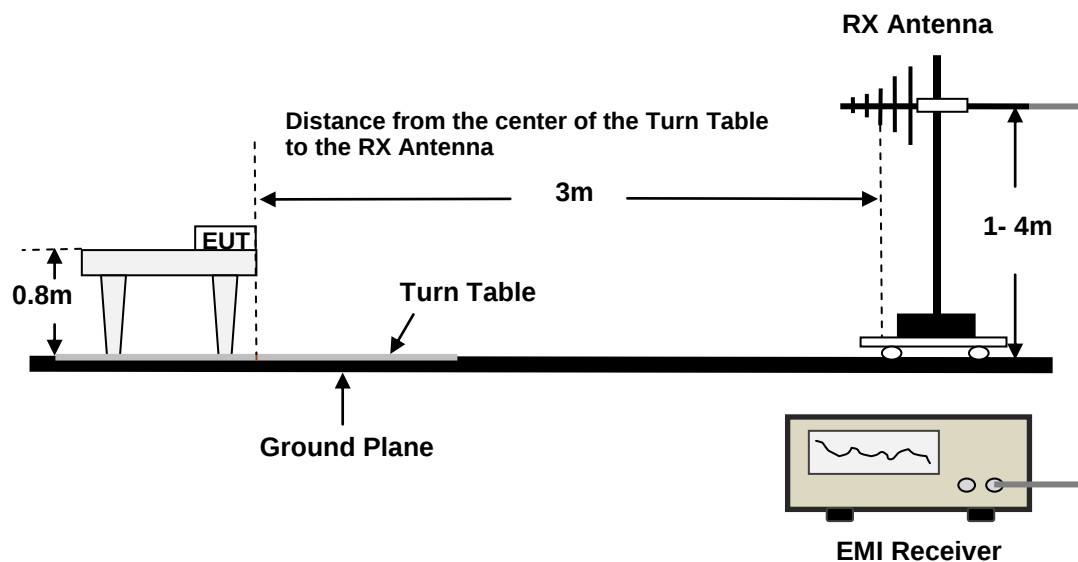
FCC §15.205; §15.209; §15.247(d)

EUT Setup

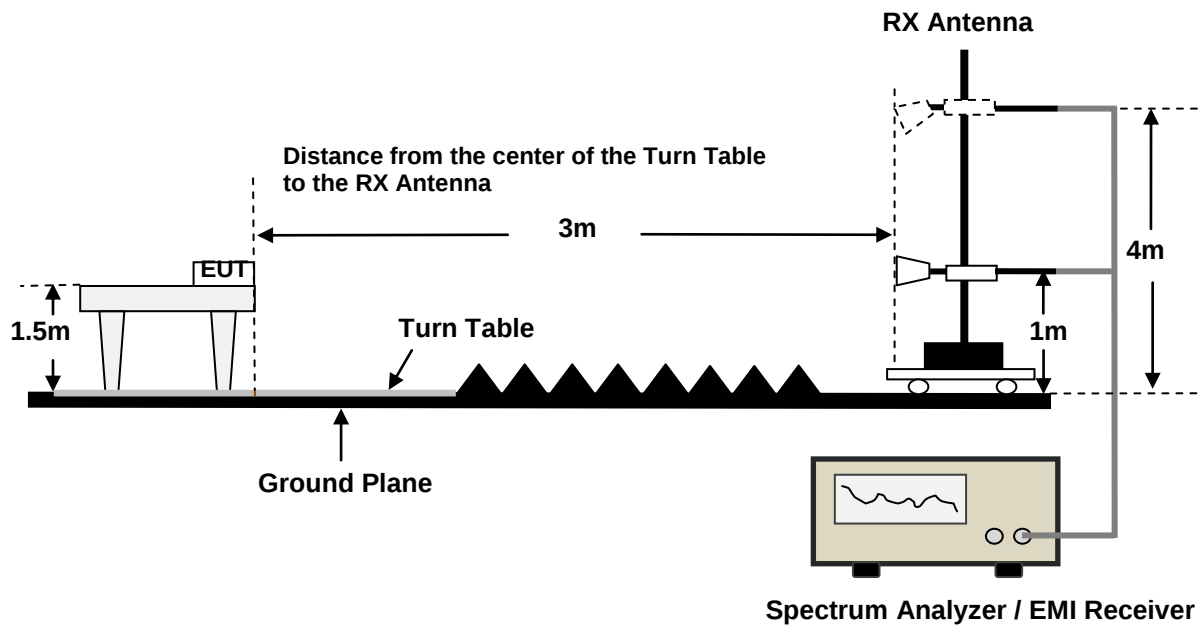
9kHz - 30MHz:



30MHz - 1GHz:



Above 1GHz:



The radiated emission performed in the 3 meters, using the setup accordance with the ANSI C63.10-2020. The specification used was the FCC 15.209, FCC 15.247 limits.

EMI Test Receiver & Spectrum Analyzer Setup

The system was investigated from 9kHz to 25GHz.

During the radiated emission test, the EMI test receiver & Spectrum Analyzer Setup were set with the following configurations:

9kHz - 1000MHz:

Frequency Range	Measurement	RBW	Video B/W	IF B/W	Detector
9kHz - 150kHz	PK	0.3kHz	1kHz	/	PK
	QP/AV	/	/	200Hz	QP/AV
150kHz - 30MHz	PK	10kHz	30kHz	/	PK
	QP/AV	/	/	9kHz	QP/AV
30MHz - 1000MHz	PK	100kHz	300kHz	/	PK
	QP	/	/	120kHz	QP

1GHz - 25GHz:

Pre-scan:

Measurement	Detector	RBW	Video B/W
PK	Peak	1MHz	3MHz
Ave.	Peak	1MHz	5kHz

Final measurement for emission identified during the pre-scan:

Measurement	Detector	RBW	Video B/W
PK	Peak	1MHz	3MHz
Ave.	Peak	1MHz	10Hz

Note 1: The 1GHz-4GHz testing use the notch filter and the 4GHz-18GHz testing use high-pass filter.

Note 2: The band edge testing use 10dB attenuator.

Note 3: The filters and attenuators are all integrated within the filter switch unit.

Test Procedure

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

The emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9–90 kHz, 110–490 kHz and above 1000 MHz. Radiated emission limits in these three bands are based on measurements employing an average detector.

According to ANSI C63.10-2020, 9.2: For field strength measurements made at other than the distance specified by the limit, extrapolate the measured field strength to the field strength at the distance specified by the limit using an inverse distance correction factor (20 dB/decade of distance).

$$E_{SpecLimit} = E_{Meas} + 20 \log \left(\frac{D_{Meas}}{D_{SpecLimit}} \right)$$

where

$E_{SpecLimit}$	is the field strength of the emission at the distance specified by the limit, in dBuV/m
E_{Meas}	is the field strength of the emission at the measurement distance, in dBuV/m
D_{Meas}	is the measurement distance, in m
$D_{SpecLimit}$	is the distance specified by the limit, in m

Note 1: If the maximized peak measured value is under the QP/Average limit by more than 6dB, then it is unnecessary to perform an QP/Average measurement.

Note 2: For above 1GHz, the test result of peak was 20dB below to the limit of peak, which can be compliant to the average limit, so just peak value was recorded.

Calculation

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

$$\text{Factor} = \text{Antenna Factor} + \text{Cable Loss} - \text{Amplifier Gain}$$

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

$$\begin{aligned} \text{Over Limit/Margin} &= \text{Level / Corrected Amplitude} - \text{Limit} \\ \text{Level / Corrected Amplitude} &= \text{Read Level} + \text{Factor} \end{aligned}$$

Test Data

9kHz-1GHz

Environmental Conditions

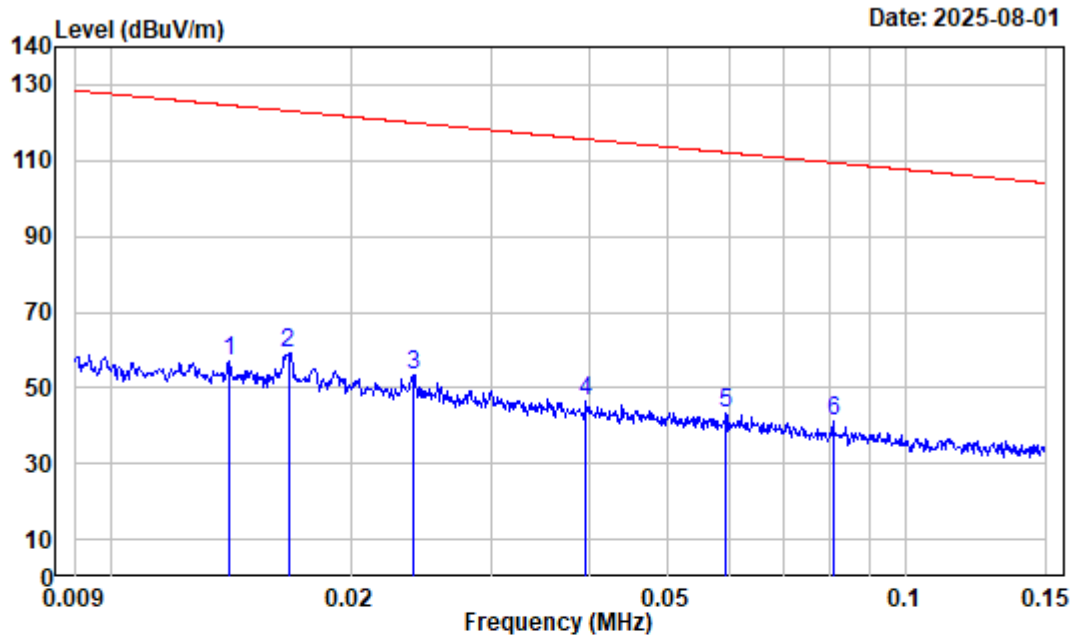
Temperature:	23.6 °C
Relative Humidity:	56 %
ATM Pressure:	99.3 kPa
Test Engineer:	Colin Lin
Test Date:	2025-08-01
EUT Operation Mode:	BT Transmitting

Test Result: Compliance, please refer to the below data.

Note 1: The Loop Antenna were tested in parallel, perpendicular, and ground-parallel. The worst orientation was parallel and the data was recorded in report.

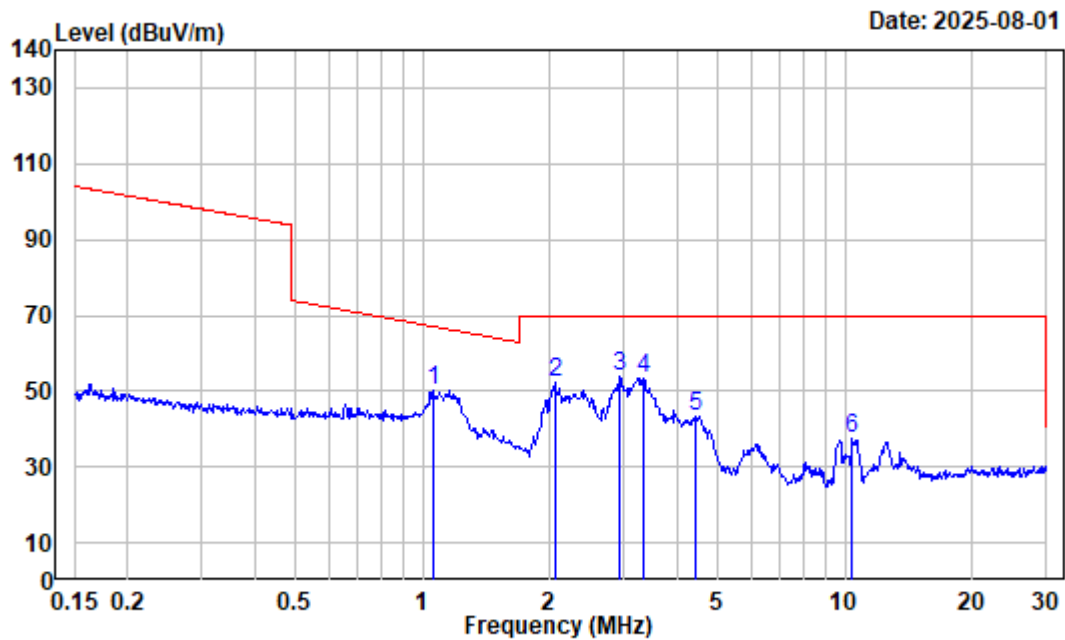
Note 2: The maximum output power mode and channel: BT 3DH5 Low Channel was tested.

9kHz~30MHz:



Site : Chamber
Condition : 3m
Job No. : 2504U21956E-RF
Polarization : Parallel Tester: Colin Lin
Test Mode : BT Transmitting
Note : Right
Receiver Setting: RBW:300Hz VBW:1kHz

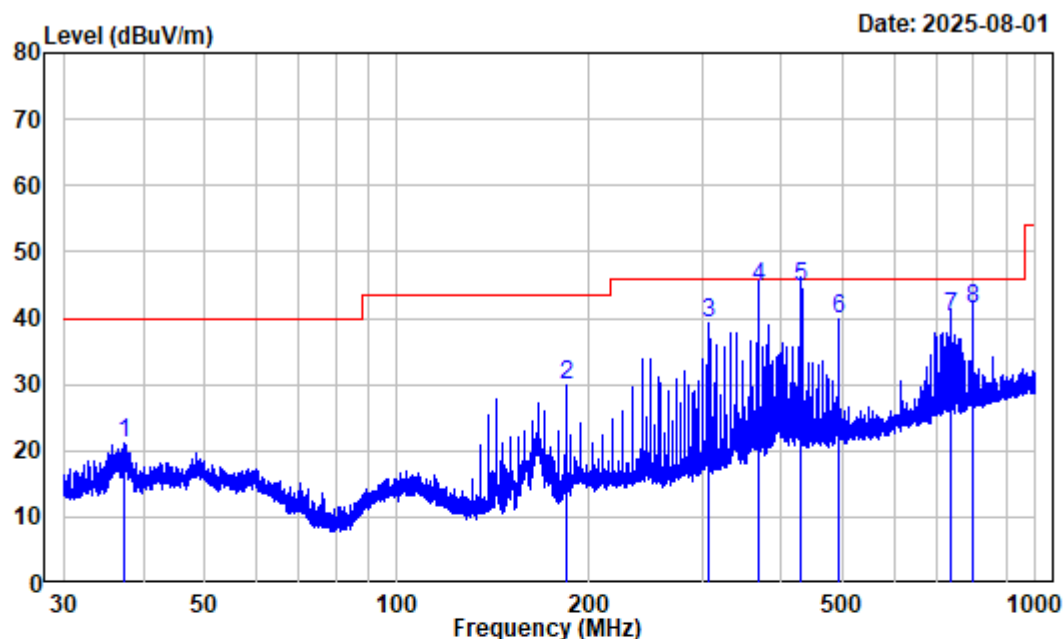
	Freq Factor		Read Level		Limit	Over	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	0.014	34.02	23.30	57.32	124.63	-67.31	Peak
2	0.017	32.85	26.52	59.37	123.14	-63.77	Peak
3	0.024	29.60	23.59	53.19	119.99	-66.80	Peak
4	0.040	24.98	21.51	46.49	115.67	-69.18	Peak
5	0.059	21.49	21.59	43.08	112.15	-69.07	Peak
6	0.081	18.42	22.56	40.98	109.43	-68.45	Peak



Site : Chamber
Condition : 3m
Job No. : 2504U21956E-RF
Polarization : Parallel Tester: Colin Lin
Test Mode : BT Transmitting
Note : Right
Receiver Setting: RBW:10kHz VBW:30kHz

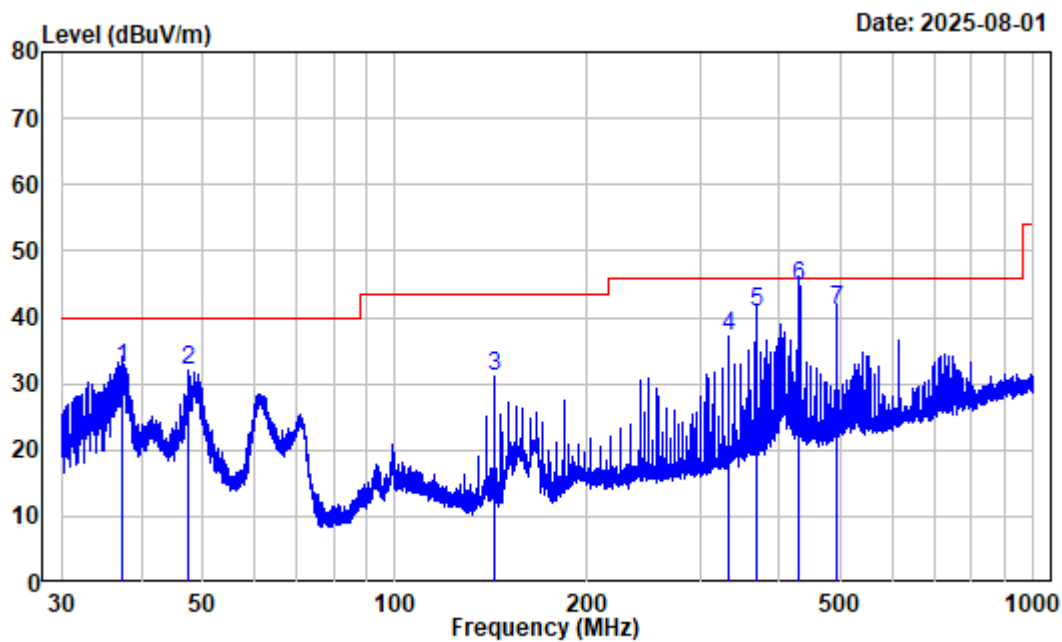
Freq Factor		Read Level	Level	Limit Line	Over Limit	Remark
MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	1.065	-2.07	52.15	50.08	66.91	-16.83 Peak
2	2.055	-5.41	57.74	52.33	69.54	-17.21 Peak
3	2.931	-5.80	59.86	54.06	69.54	-15.48 Peak
4	3.328	-5.98	59.47	53.49	69.54	-16.05 Peak
5	4.454	-6.30	49.55	43.25	69.54	-26.29 Peak
6	10.397	-5.25	43.00	37.75	69.54	-31.79 Peak

30MHz~1GHz:



Site : Chamber
Condition : 3m HORIZONTAL
Job No. : 2504U21956E-RF Tester: Colin Lin
Test Mode : BT Transmitting
Note : Right
Receiver Setting: RBW:100kHz VBW:300kHz

	Freq Factor		Read	Limit	Over	Remark
	MHz	dB/m	Level	Level	Limit	
			dBuV	dBuV/m	dBuV/m	dB
1	37.416	-11.13	32.13	21.00	40.00	-19.00 Peak
2	184.328	-11.73	41.74	30.01	43.50	-13.49 Peak
3	307.292	-8.84	48.15	39.31	46.00	-6.69 Peak
4	368.758	-6.95	51.60	44.65	46.00	-1.35 QP
5	430.088	-4.89	49.70	44.81	46.00	-1.19 QP
6	491.606	-3.96	43.81	39.85	46.00	-6.15 Peak
7	737.395	-0.39	40.59	40.20	46.00	-5.80 QP
8	798.980	0.22	41.10	41.32	46.00	-4.68 QP



Site : Chamber
Condition : 3m VERTICAL
Job No. : 2504U21956E-RF Tester: Colin Lin
Test Mode : BT Transmitting
Note : Right
Receiver Setting: RBW:100kHz VBW:300kHz

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	37.400	-11.13	43.30	32.17	40.00	-7.83	QP
2	47.533	-9.86	41.88	32.02	40.00	-7.98	Peak
3	142.699	-14.97	46.20	31.23	43.50	-12.27	Peak
4	332.956	-7.54	44.77	37.23	46.00	-8.77	Peak
5	368.758	-6.95	47.60	40.65	46.00	-5.35	QP
6	430.088	-4.89	49.70	44.81	46.00	-1.19	QP
7	491.606	-3.96	44.90	40.94	46.00	-5.06	QP

1GHz-25GHz

Environmental Conditions

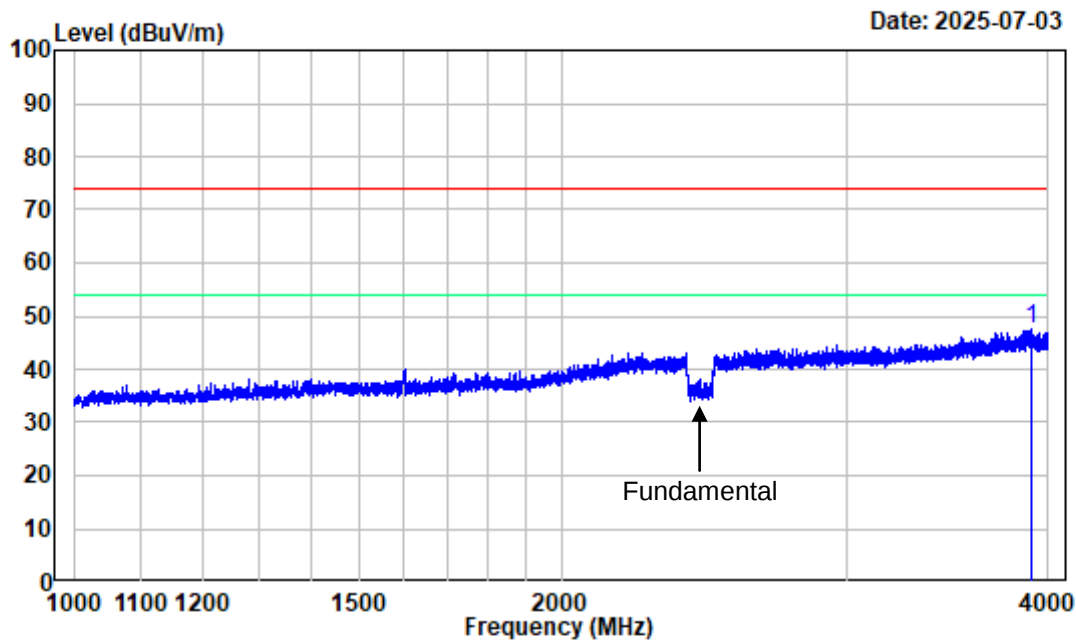
Temperature:	24 to 26 °C
Relative Humidity:	53 to 56 %
ATM Pressure:	100.1 kPa
Test Engineer:	Kevin Lv
Test Date:	2025-07-03 to 2025-07-14
EUT Operation Mode:	Transmitting

Test Result: Compliance, please refer to the below data.

Note 1: For 1GHz-4GHz, the fundamental with band reject filter.

Note 2: For 18GHz-25GHz, the maximum output power mode and channel: BT 3DH5 Low Channel was tested.

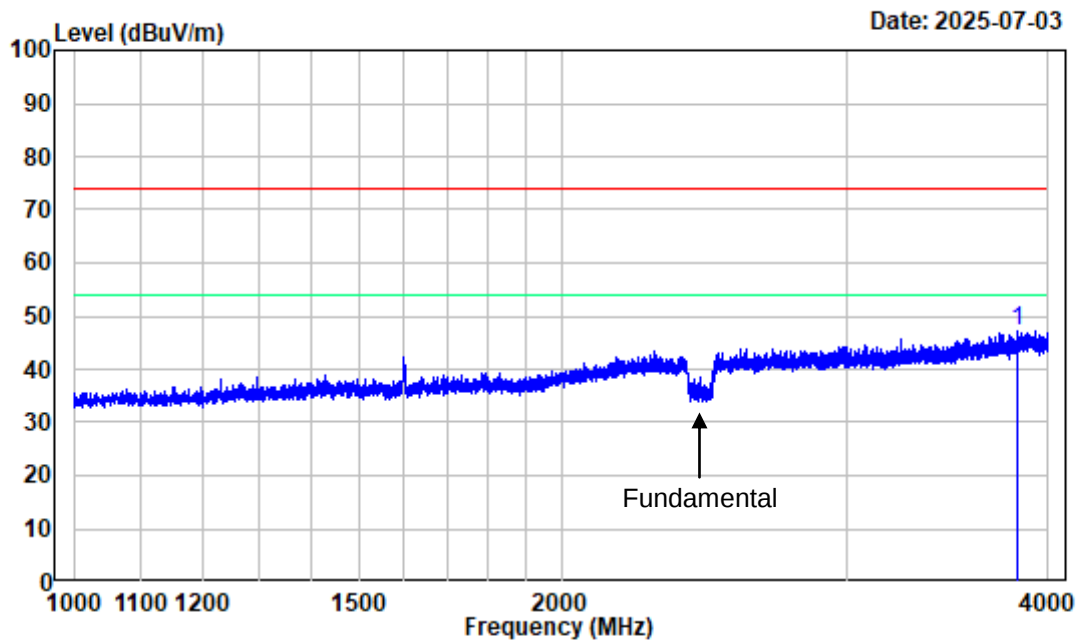
BT 3DH5 Low Channel 1GHz-4GHz_HORIZONTAL



Site : chamber
Condition : 3m HORIZONTAL
Project No.: 2504U21956E-RF-R
Test Mode : Transmitting Tester:Kevin Lv
Note : BT 3DH5 Low Channel 2402MHz 1GHz-4GHz
SA setting : Peak:RBW:1MHz,VBW:3MHz Ave:RBW:1MHz,VBW:5kHz:

Freq Factor		Read Level		Limit	Over	Remark
MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	3904.750	-7.96	55.53	47.57	74.00	-26.43 Peak

BT 3DH5 Low Channel 1GHz-4GHz_VERTICAL



Site : chamber

Condition : 3m VERTICAL

Project No.: 2504U21956E-RF-R

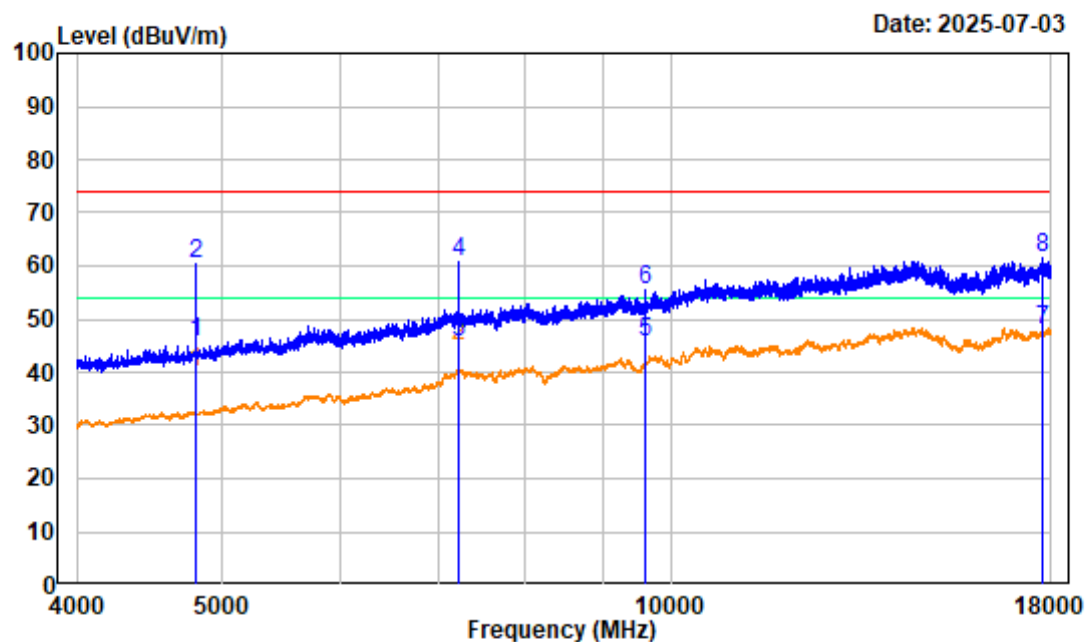
Test Mode : TransmittingTester:Kevin Lv

Note : BT 3DH5 Low Channel 2402MHz 1GHz-4GHz

SA setting : Peak:RBW:1MHz,VBW:3MHz Ave:RBW:1MHz,VBW:5kHz:

Freq Factor		Read Level		Limit	Over	Remark
MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	3828.250	-8.42	55.64	47.22	74.00	-26.78 Peak

BT 3DH5 Low Channel 4GHz-18GHz_HORIZONTAL



Site : chamber

Condition : 3m HORIZONTAL

Project No.: 2504U21956E-RF-R

Test Mode : Transmitting

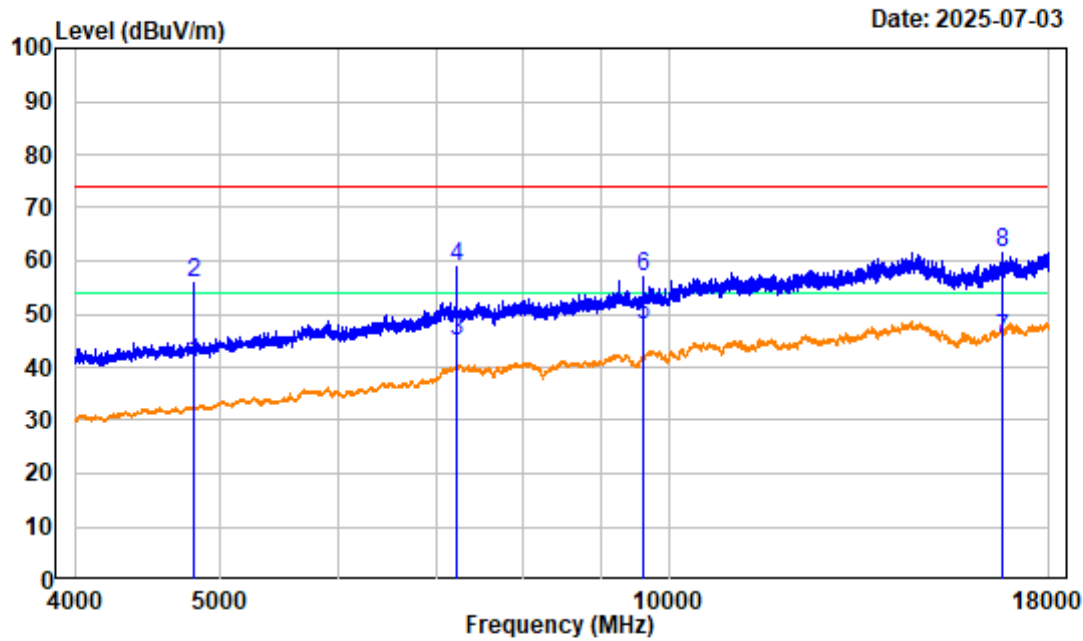
Tester:Kevin Lv

Note : BT 3DH5 Low Channel 2402MHz 4GHz-18GHz

SA setting : Peak:RBW:1MHz,VBW:3MHz Ave:RBW:1MHz,VBW:5kHz:

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	4803.250	-6.59	52.13	45.54	54.00	-8.46	Average
2	4803.250	-6.59	67.11	60.52	74.00	-13.48	Peak
3	7206.000	-1.33	47.11	45.78	54.00	-8.22	Average
4	7206.000	-1.33	62.09	60.76	74.00	-13.24	Peak
5	9608.750	1.57	44.00	45.57	54.00	-8.43	Average
6	9608.750	1.57	53.97	55.54	74.00	-18.46	Peak
7	17783.000	7.62	40.18	47.80	54.00	-6.20	Average
8	17783.000	7.62	53.95	61.57	74.00	-12.43	Peak

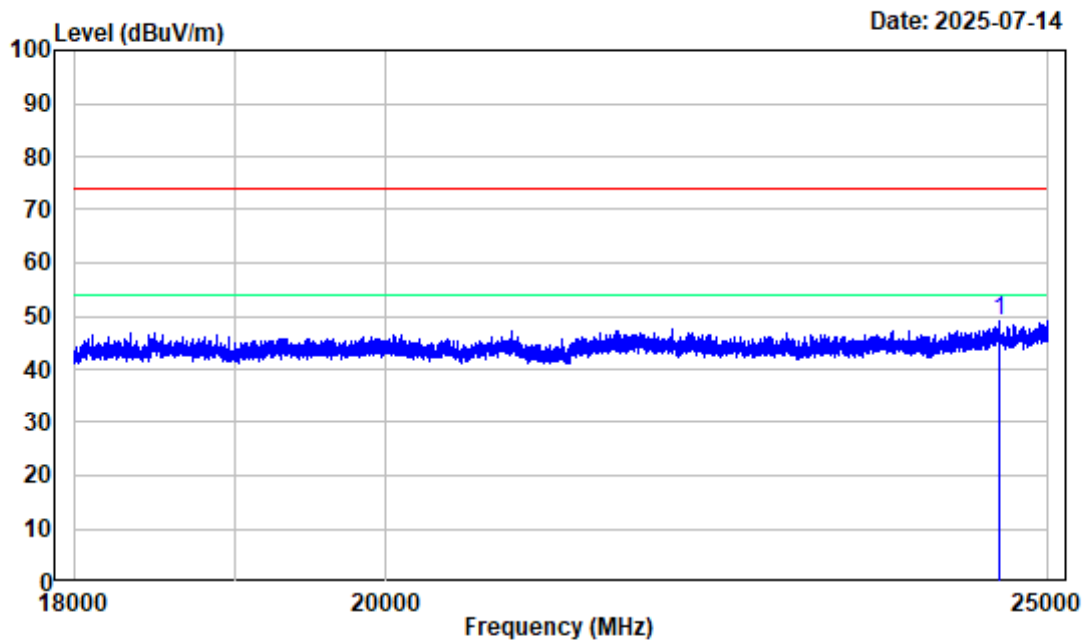
BT 3DH5 Low Channel 4GHz-18GHz_VERTICAL



Site : chamber
Condition : 3m VERTICAL
Project No.: 2504U21956E-RF-R
Test Mode : Transmitting Tester:Kevin Lv
Note : BT 3DH5 Low Channel 2402MHz 4GHz-18GHz
SA setting : Peak:RBW:1MHz,VBW:3MHz Ave:RBW:1MHz,VBW:5kHz:

Freq Factor		Read Level	Level	Limit Line	Over Limit	Remark
MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1 4803.250	-6.59	47.51	40.92	54.00	-13.08	Average
2 4803.250	-6.59	62.55	55.96	74.00	-18.04	Peak
3 7206.000	-1.33	46.16	44.83	54.00	-9.17	Average
4 7206.000	-1.33	60.18	58.85	74.00	-15.15	Peak
5 9608.750	1.57	46.30	47.87	54.00	-6.13	Average
6 9608.750	1.57	55.28	56.85	74.00	-17.15	Peak
7 16733.000	7.49	37.87	45.36	54.00	-8.64	Average
8 16733.000	7.49	53.84	61.33	74.00	-12.67	Peak

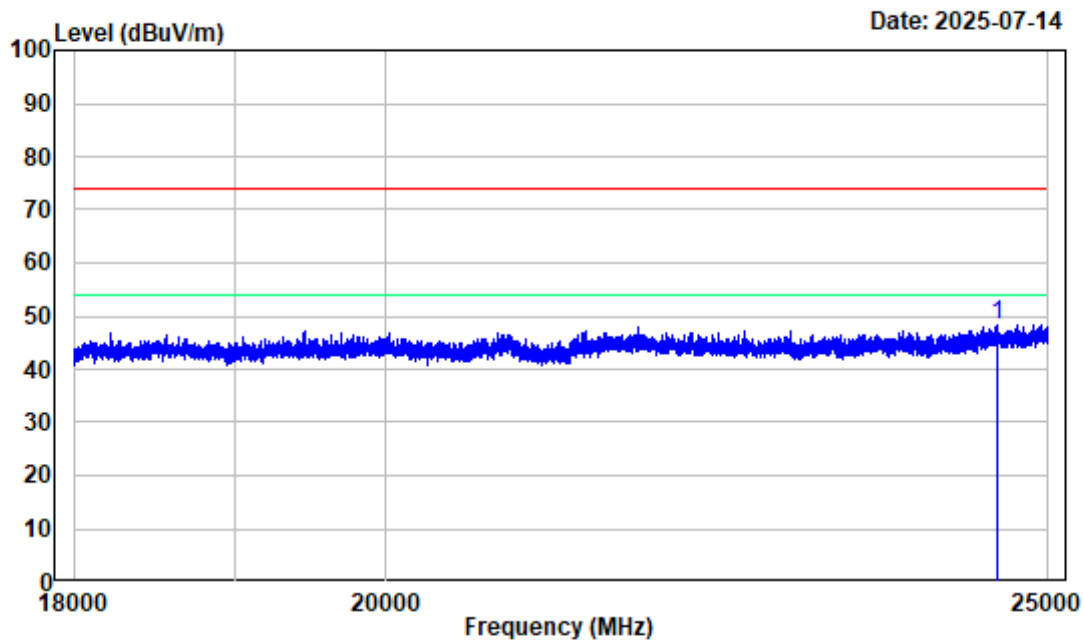
BT 3DH5 Low Channel 18GHz-25GHz_HORIZONTAL



Site : chamber
Condition : 3m HORIZONTAL
Project No.: 2504U21956E-RF-R
Test Mode : Transmitting Tester:Kevin Lv
Note : BT 3DH5 Low Channel 2402MHz 18GHz-25GHz
SA setting : Peak:RBW:1MHz,VBW:3MHz

Freq Factor		Read Level	Level	Limit Line	Over Limit	Remark
MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1 24595.750	2.57	46.33	48.90	74.00	-25.10	Peak

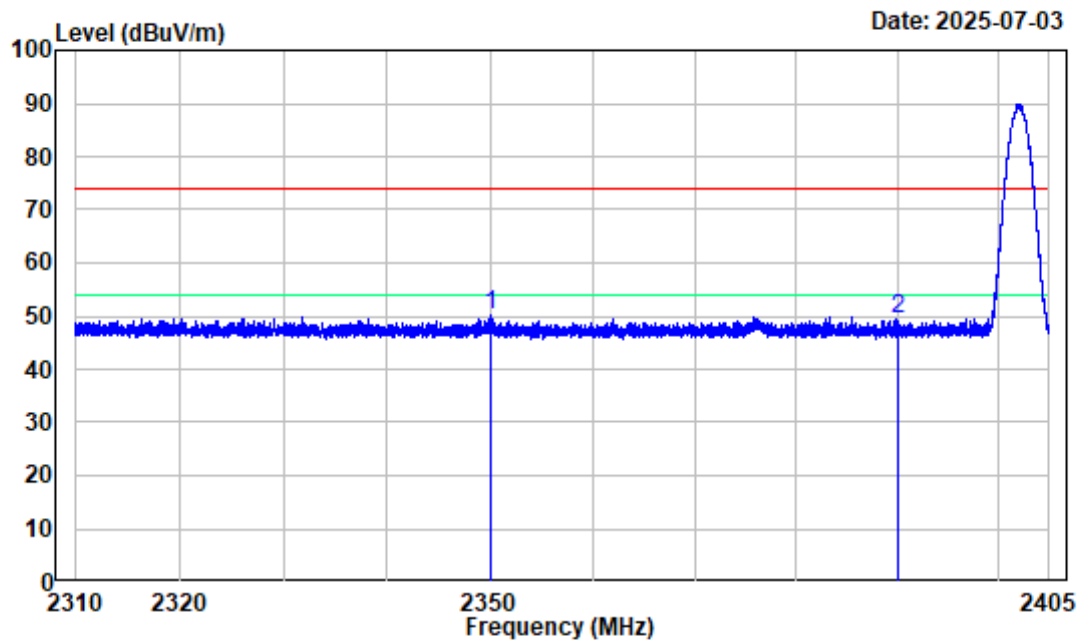
BT 3DH5 Low Channel 18GHz-25GHz_VERTICAL



Site : chamber
Condition : 3m VERTICAL
Project No.: 2504U21956E-RF-R
Test Mode : Transmitting Tester:Kevin Lv
Note : BT 3DH5 Low Channel 2402MHz 18GHz-25GHz
SA setting : Peak:RBW:1MHz,VBW:3MHz

Freq Factor		Read Level	Level	Limit Line	Over Limit	Remark
MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1 24569.500	-0.38	48.85	48.47	74.00	-25.53	Peak

BT 3DH5 Low Channel Bandedge_HORIZONTAL



Site : chamber

Condition : 3m HORIZONTAL

Project No.: 2504U21956E-RF-R

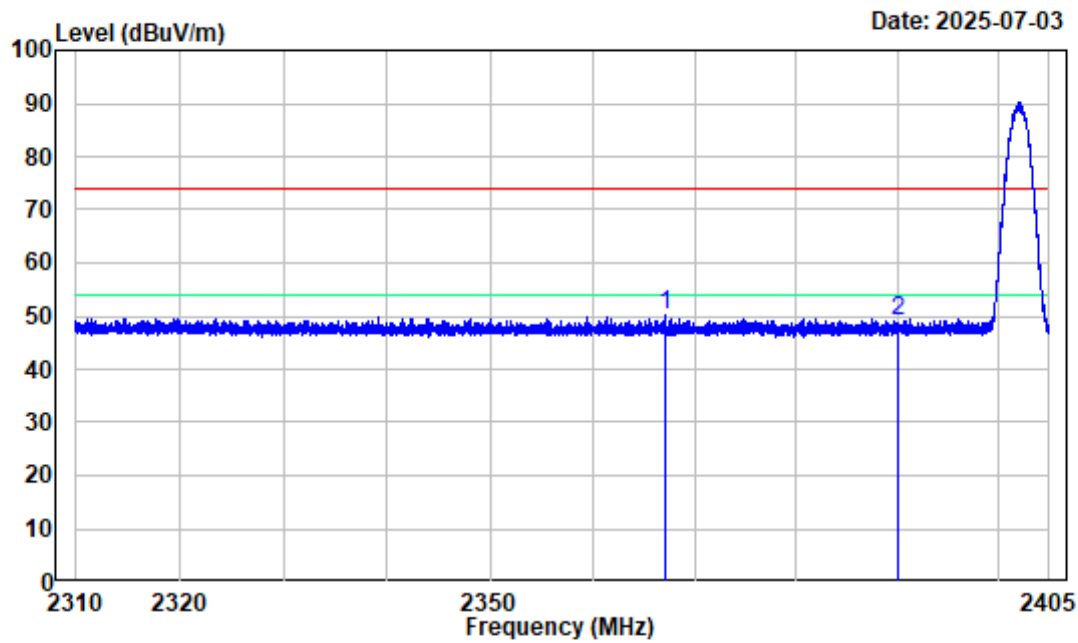
Test Mode : TransmittingTester:Kevin Lv

Note : BT 3DH5 Low Channel 2402MHz Bandedge

SA setting : Peak:RBW:1MHz,VBW:3MHz Ave:RBW:1MHz,VBW:5kHz:

Freq Factor		Read Level	Level	Limit Line	Over Limit	Remark
MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	2350.019	-10.27	60.29	50.02	74.00	-23.98 Peak
2	2390.000	-10.24	59.85	49.61	74.00	-24.39 peak

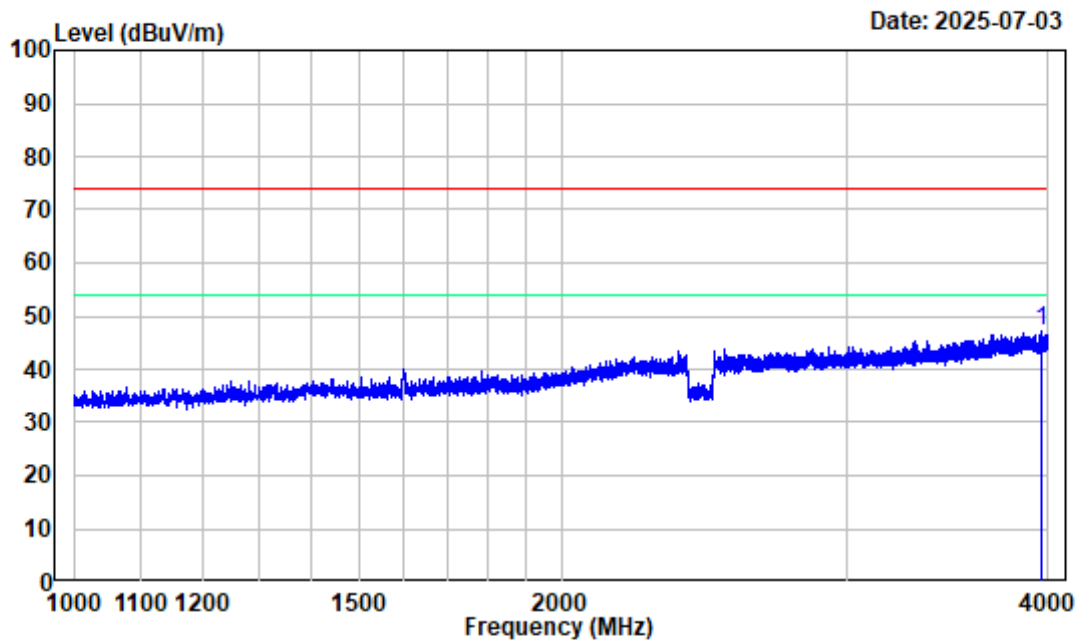
BT 3DH5 Low Channel Bandedge_VERTICAL



Site : chamber
Condition : 3m VERTICAL
Project No.: 2504U21956E-RF-R
Test Mode : Transmitting Tester:Kevin Lv
Note : BT 3DH5 Low Channel 2402MHz Bandedge
SA setting : Peak:RBW:1MHz,VBW:3MHz Ave:RBW:1MHz,VBW:5kHz:

Freq Factor		Read Level	Level	Limit Line	Over Limit	Remark
MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	2367.059	-10.26	60.30	50.04	74.00	-23.96 Peak
2	2390.000	-10.24	59.37	49.13	74.00	-24.87 peak

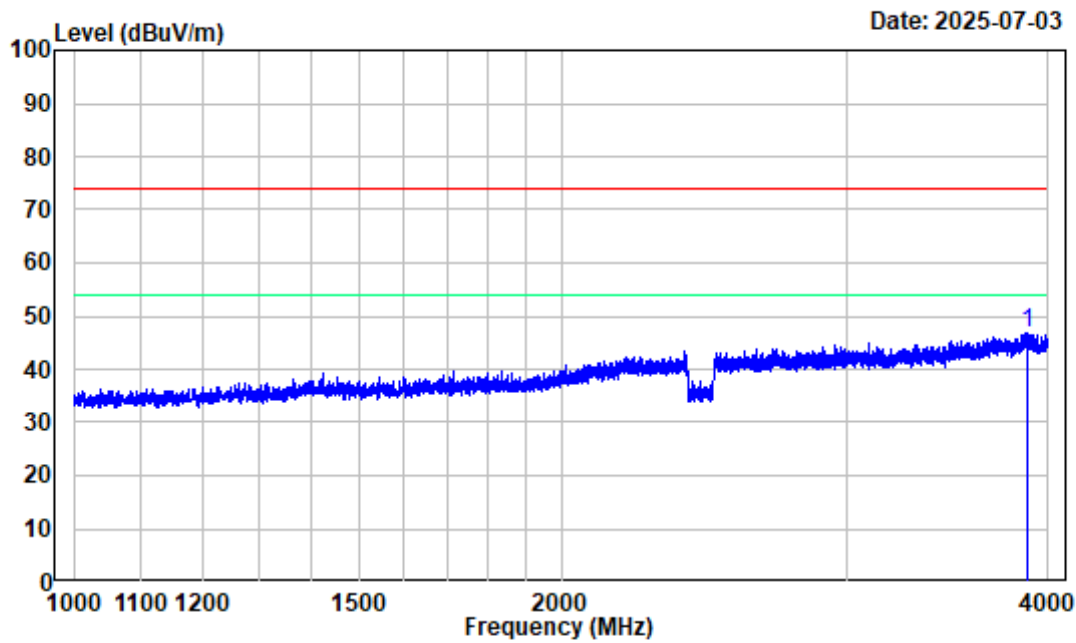
BT 3DH5 Middle Channel 1GHz-4GHz_HORIZONTAL



Site : chamber
Condition : 3m HORIZONTAL
Project No.: 2504U21956E-RF-R
Test Mode : Transmitting Tester:Kevin Lv
Note : BT 3DH5 Middle Channel 2441MHz 1GHz-4GHz
SA setting : Peak:RBW:1MHz,VBW:3MHz Ave:RBW:1MHz,VBW:5kHz:

Freq Factor		Read Level	Level	Limit Line	Over Limit	Remark
MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1 3966.250	-8.30	55.62	47.32	74.00	-26.68	Peak

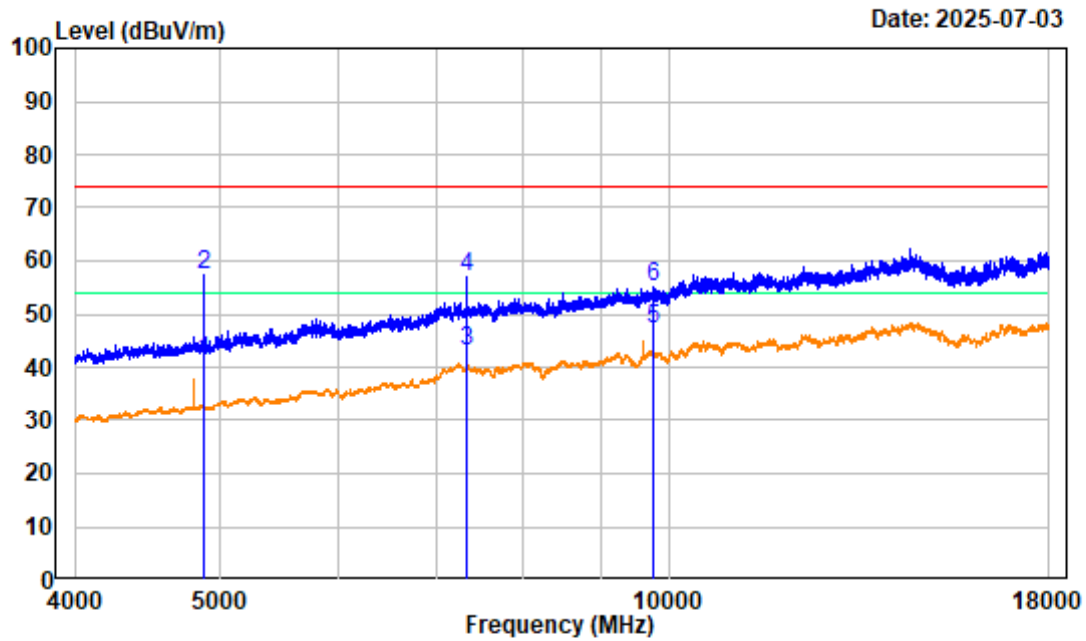
BT 3DH5 Middle Channel 1GHz-4GHz_VERTICAL



Site : chamber
Condition : 3m VERTICAL
Project No.: 2504U21956E-RF-R
Test Mode : Transmitting Tester:Kevin Lv
Note : BT 3DH5 Middle Channel 2441MHz 1GHz-4GHz
SA setting : Peak:RBW:1MHz,VBW:3MHz Ave:RBW:1MHz,VBW:5kHz:

Freq Factor		Read	Limit	Over	Remark	
MHz	dB/m	Level	Level	Line		
		dBuV	dBuV/m	dBuV/m	dB	
1	3882.625	-8.06	54.85	46.79	74.00	-27.21 Peak

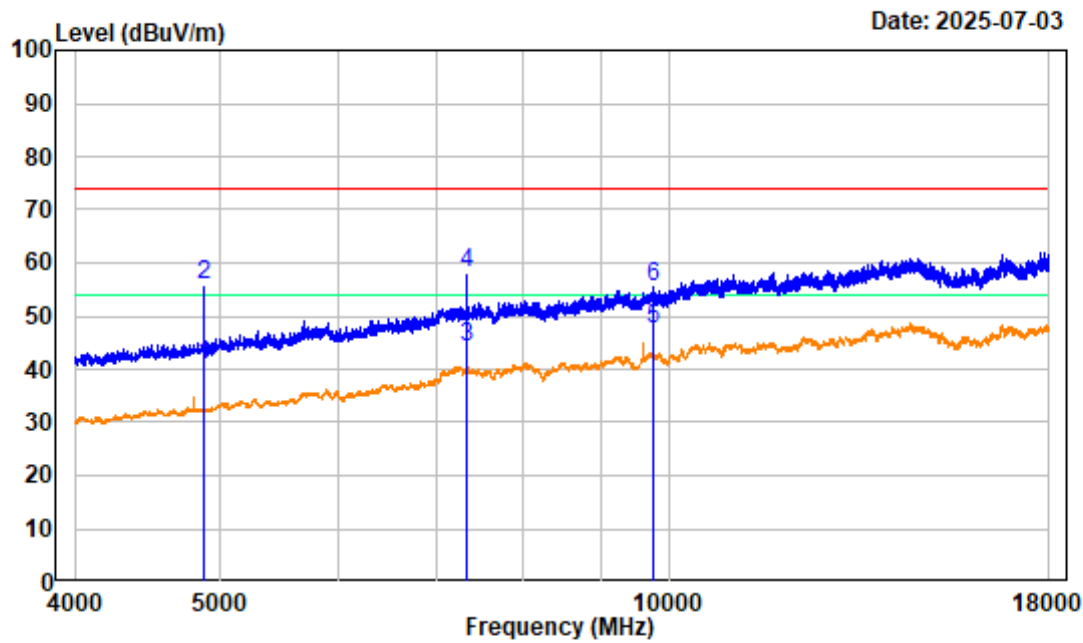
BT 3DH5 Middle Channel 4GHz-18GHz_HORIZONTAL



Site : chamber
Condition : 3m HORIZONTAL
Project No.: 2504U21956E-RF-R
Test Mode : Transmitting Tester:Kevin Lv
Note : BT 3DH5 Middle Channel 2441MHz 4GHz-18GHz
SA setting : Peak:RBW:1MHz,VBW:3MHz Ave:RBW:1MHz,VBW:5kHz:

	Freq	Factor	Read		Limit	Over	Remark
			Level	Level	Line	Limit	
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	4882.000	-6.63	47.90	41.27	54.00	-12.73	Average
2	4882.000	-6.63	63.87	57.24	74.00	-16.76	Peak
3	7321.500	-1.23	44.28	43.05	54.00	-10.95	Average
4	7321.500	-1.23	58.27	57.04	74.00	-16.96	Peak
5	9764.500	1.88	45.28	47.16	54.00	-6.84	Average
6	9764.500	1.88	53.23	55.11	74.00	-18.89	Peak

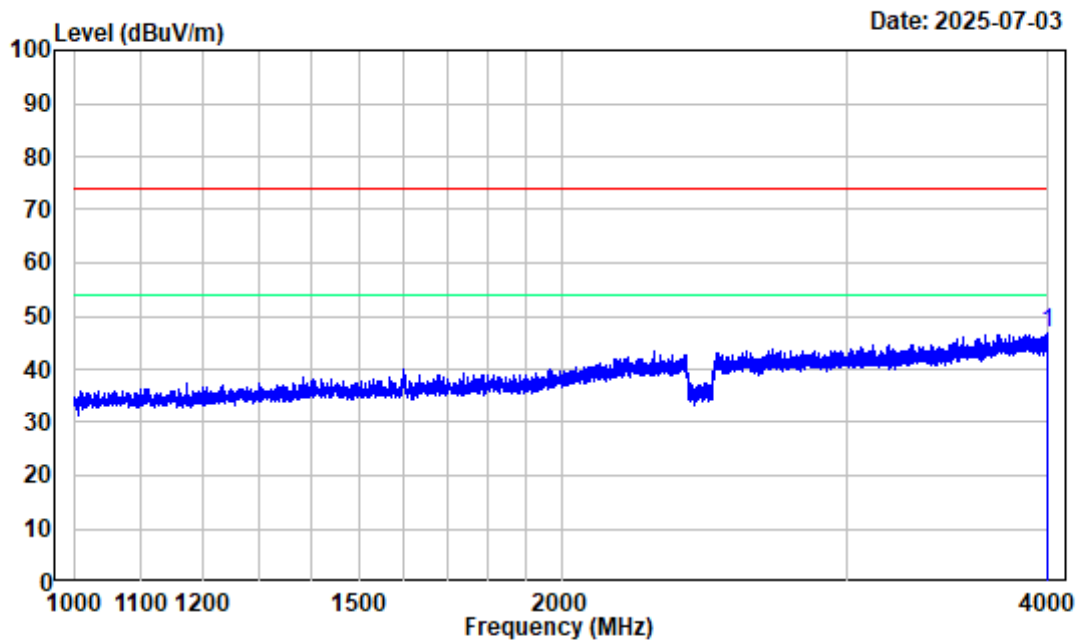
BT 3DH5 Middle Channel 4GHz-18GHz_VERTICAL



Site : chamber
Condition : 3m VERTICAL
Project No.: 2504U21956E-RF-R
Test Mode : Transmitting Tester:Kevin Lv
Note : BT 3DH5 Middle Channel 2441MHz 4GHz-18GHz
SA setting : Peak:RBW:1MHz,VBW:3MHz Ave:RBW:1MHz,VBW:5kHz:

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	4882.000	-6.63	47.42	40.79	54.00	-13.21	Average
2	4882.000	-6.63	62.37	55.74	74.00	-18.26	Peak
3	7323.250	-1.22	45.20	43.98	54.00	-10.02	Average
4	7323.250	-1.22	59.16	57.94	74.00	-16.06	Peak
5	9764.500	1.88	45.50	47.38	54.00	-6.62	Average
6	9764.500	1.88	53.43	55.31	74.00	-18.69	Peak

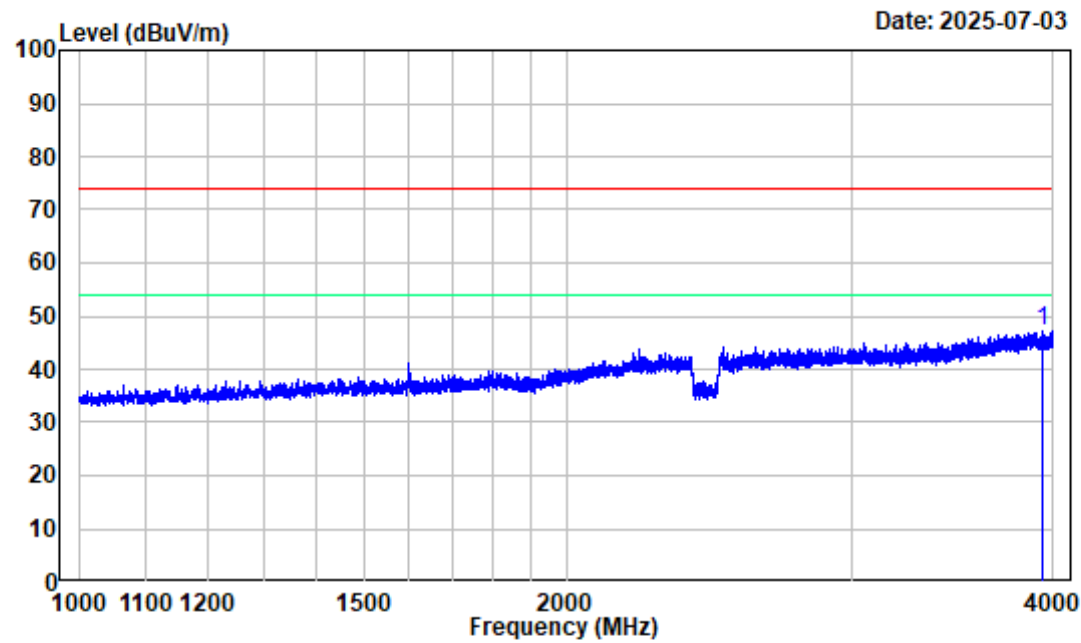
BT 3DH5 High Channel 1GHz-4GHz_HORIZONTAL



Site : chamber
Condition : 3m HORIZONTAL
Project No.: 2504U21956E-RF-R
Test Mode : Transmitting Tester:Kevin Lv
Note : BT 3DH5 High Channel 2480MHz 1GHz-4GHz
SA setting : Peak:RBW:1MHz,VBW:3MHz Ave:RBW:1MHz,VBW:5kHz:

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	3992.875	-8.15	54.81	46.66	74.00	-27.34	Peak

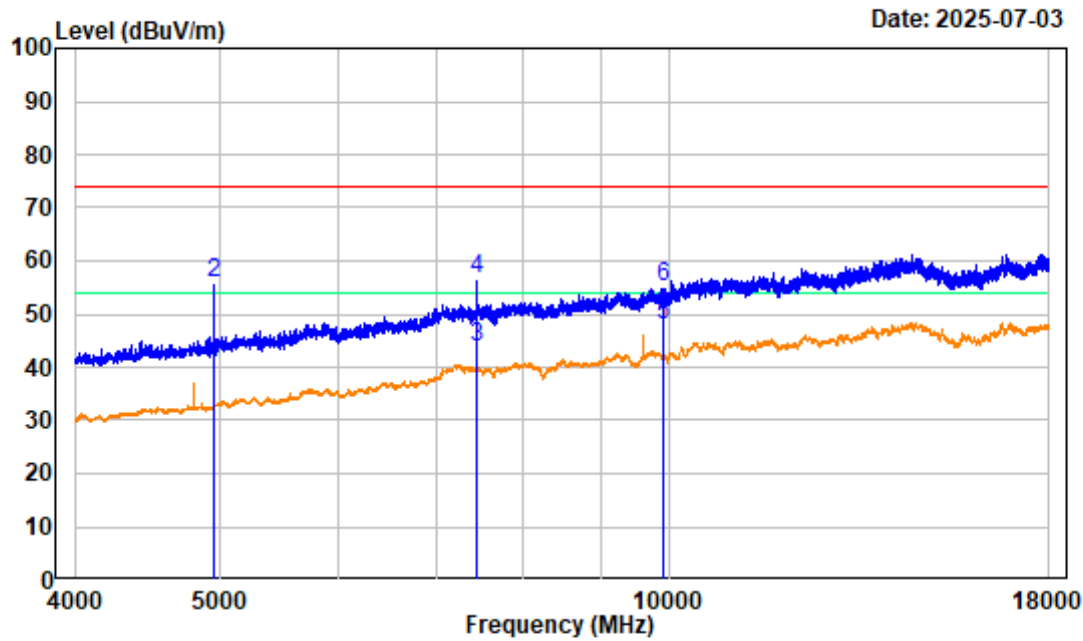
BT 3DH5 High Channel 1GHz-4GHz_VERTICAL



Site : chamber
Condition : 3m VERTICAL
Project No.: 2504U21956E-RF-R
Test Mode : Transmitting Tester:Kevin Lv
Note : BT 3DH5 High Channel 2480MHz 1GHz-4GHz
SA setting : Peak:RBW:1MHz,VBW:3MHz Ave:RBW:1MHz,VBW:5kHz:

Freq Factor		Read	Limit	Over	Remark
		Level	Level	Line	
MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB
1 3935.875	-8.25	55.38	47.13	74.00	-26.87 Peak

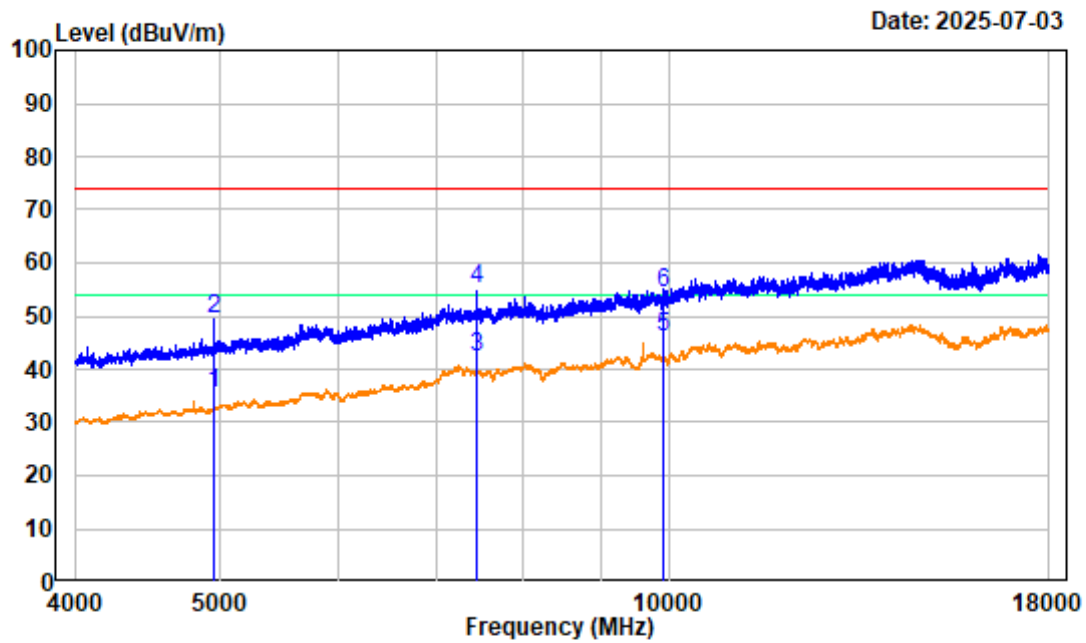
BT 3DH5 High Channel 4GHz-18GHz_HORIZONTAL



Site : chamber
Condition : 3m HORIZONTAL
Project No.: 2504U21956E-RF-R
Test Mode : Transmitting Tester:Kevin Lv
Note : BT 3DH5 High Channel 2480MHz 4GHz-18GHz
SA setting : Peak:RBW:1MHz,VBW:3MHz Ave:RBW:1MHz,VBW:5kHz:

Freq Factor		Read Level	Level	Limit Line	Over Limit	Remark
MHz	dB/m	dBuV	dBUV/m	dBuV/m	dB	
1	4959.000	-6.46	47.29	40.83	54.00	-13.17 Average
2	4959.000	-6.46	62.35	55.89	74.00	-18.11 Peak
3	7440.000	-1.07	44.80	43.73	54.00	-10.27 Average
4	7440.000	-1.07	57.81	56.74	74.00	-17.26 Peak
5	9920.000	2.11	45.63	47.74	54.00	-6.26 Average
6	9920.000	2.11	53.11	55.22	74.00	-18.78 Peak

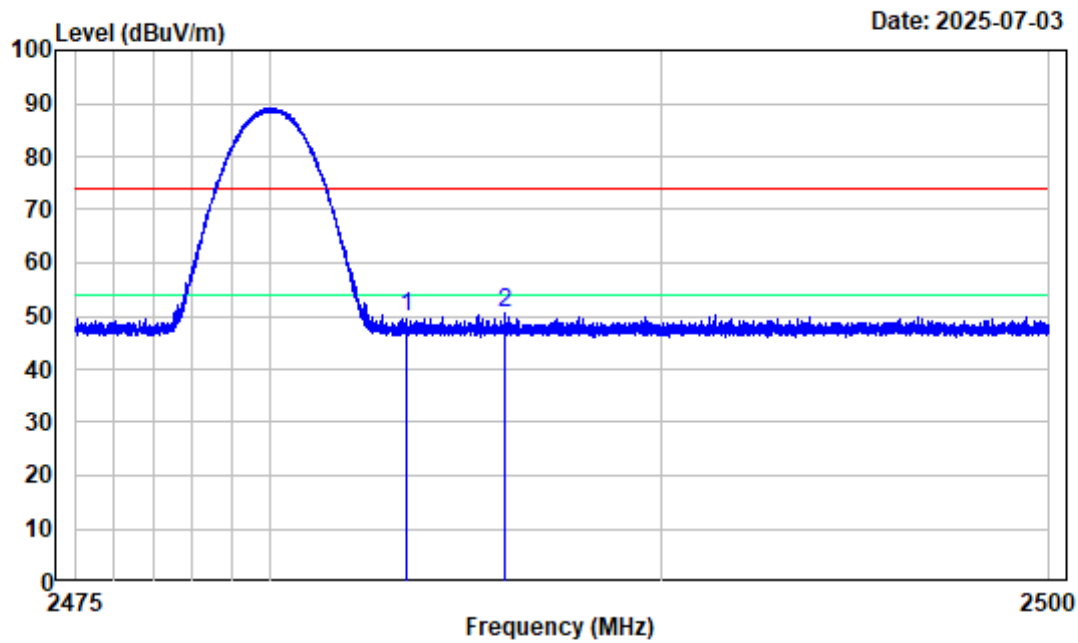
BT 3DH5 High Channel 4GHz-18GHz_VERTICAL



Site : chamber
Condition : 3m VERTICAL
Project No.: 2504U21956E-RF-R
Test Mode : Transmitting Tester:Kevin Lv
Note : BT 3DH5 High Channel 2480MHz 4GHz-18GHz
SA setting : Peak:RBW:1MHz,VBW:3MHz Ave:RBW:1MHz,VBW:5kHz:

	Freq Factor		Read Level		Limit	Over	Remark
	MHz	dB/m	dBuV	dBuV/m	Line	Limit	
1	4959.000	-6.46	42.02	35.56	54.00	-18.44	Average
2	4959.000	-6.46	56.01	49.55	74.00	-24.45	Peak
3	7440.500	-1.07	43.37	42.30	54.00	-11.70	Average
4	7440.500	-1.07	56.34	55.27	74.00	-18.73	Peak
5	9920.000	2.11	43.88	45.99	54.00	-8.01	Average
6	9920.000	2.11	52.19	54.30	74.00	-19.70	Peak

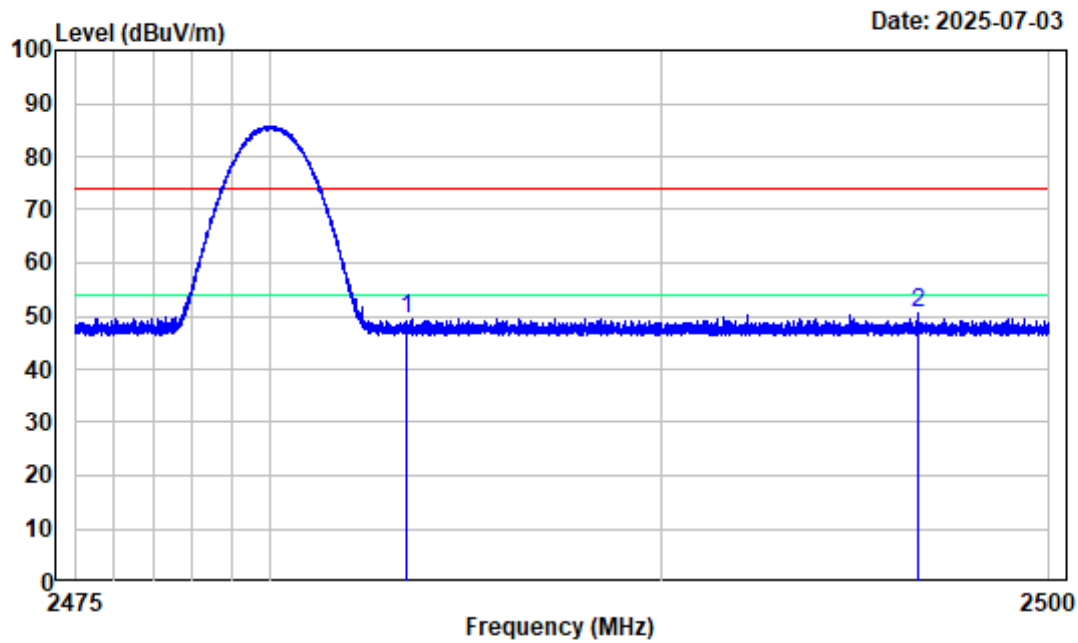
BT 3DH5 High Channel Bandedge_HORIZONTAL



Site : chamber
Condition : 3m HORIZONTAL
Project No.: 2504U21956E-RF-R
Test Mode : Transmitting Tester:Kevin Lv
Note : BT 3DH5 High Channel 2480MHz Bandedge
SA setting : Peak:RBW:1MHz,VBW:3MHz Ave:RBW:1MHz,VBW:5kHz:

	Freq Factor		Read Level		Limit	Over	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	2483.500	-10.22	60.14	49.92	74.00	-24.08	peak
2	2486.000	-10.23	60.77	50.54	74.00	-23.46	Peak

BT 3DH5 High Channel Bandedge_VERTICAL



Site : chamber
Condition : 3m VERTICAL
Project No.: 2504U21956E-RF-R
Test Mode : Transmitting Tester:Kevin Lv
Note : BT 3DH5 High Channel 2480MHz Bandedge
SA setting : Peak:RBW:1MHz,VBW:3MHz Ave:RBW:1MHz,VBW:5kHz:

Freq Factor		Read Level	Level	Limit Line	Over Limit	Remark
MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	2483.500	-10.22	59.61	49.39	74.00	-24.61 peak
2	2496.644	-10.24	60.90	50.66	74.00	-23.34 Peak

FCC §15.247(a) (1)-CHANNEL SEPARATION TEST

Applicable Standard

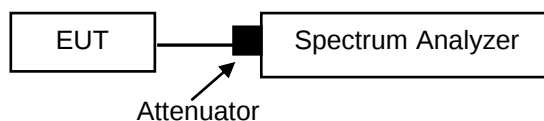
Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater. Alternatively, frequency hopping systems operating in the 2400-2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater provided the systems operate with an output power no greater than 125 mW. The system shall hop to channel frequencies that are selected at the system hopping rate from a pseudo randomly ordered list of hopping frequencies. Each frequency must be used equally on the average by each transmitter. The system receivers shall have input bandwidths that match the hopping channel bandwidths of their corresponding transmitters and shall shift frequencies in synchronization with the transmitted signals.

Test Procedure

According to ANSI C63.10-2020, section 7.8.2

The EUT shall have its hopping function enabled. Use the following spectrum analyzer settings:

- Span: Wide enough to capture the peaks of two adjacent channels.
- RBW: Start with the RBW set to approximately 30% of the channel spacing; adjust as necessary to best identify the center of each individual channel.
- Video (or average) bandwidth (VBW) $\geq$ RBW.
- Sweep: No faster than coupled (auto) time.
- Detector function: Peak.
- Trace: Max-hold.
- Allow the trace to stabilize.



Test Data

Test Result: Compliance. Please refer to the Appendix.

FCC §15.247(a) (1)-20 DB EMISSION BANDWIDTH & 99% OCCUPIED BANDWIDTH

Applicable Standard

Alternatively, frequency hopping systems operating in the 2400–2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater, provided the systems operate with an output power no greater than 125 mW.

Test Procedure

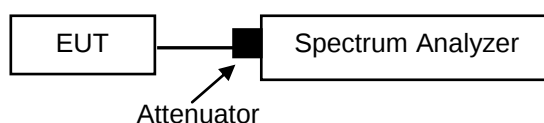
According to ANSI C63.10-2020, section 6.9.2

- a) The spectrum analyzer center frequency is set to the nominal EUT channel center frequency. The span range for the EMI receiver or spectrum analyzer shall be between two times and five times the OBW.
- b) The nominal IF filter bandwidth (3 dB RBW) shall be in the range of 1% to 5% of the OBW and video bandwidth (VBW) shall be at least three times RBW, unless otherwise specified by the applicable requirement.
- c) Set the reference level of the instrument as required, keeping the signal from exceeding the maximum input mixer level for linear operation. In general, the peak of the spectral envelope shall be more than $[10 \log (OBW/RBW)]$ below the reference level. Specific guidance is given in 4.1.6.2.
- d) Steps a) through c) might require iteration to adjust within the specified tolerances.
- e) The dynamic range of the instrument at the selected RBW shall be more than 10 dB below the target “-xx dB down” requirement; that is, if the requirement calls for measuring the -20 dB OBW, the instrument noise floor at the selected RBW shall be at least 30 dB below the reference value.
- f) Set detection mode to peak and trace mode to max-hold.
- g) Determine the reference value: Set the EUT to transmit an unmodulated carrier or modulated signal, as applicable. Allow the trace to stabilize. Set the spectrum analyzer marker to the highest level of the displayed trace (this is the reference value).
- h) Determine the “-xx dB down amplitude” using $[(\text{reference value}) - xx]$. Alternatively, this calculation may be made by using the marker-delta function of the instrument.
- i) If the reference value is determined by an unmodulated carrier, then turn the EUT modulation ON, and either clear the existing trace or start a new trace on the spectrum analyzer and allow the new trace to stabilize. Otherwise, the trace from step g) shall be used for step j).
- j) Place 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 “-xx dB down amplitude” determined in step h). If a marker is below this “-xx dB down amplitude” value, then it shall be as close as possible to this value. The dBc bandwidth is the frequency difference between the two markers. Alternatively, set a marker at the lowest frequency of the envelope of the spectral display, such that the marker is at or slightly below the “-xx dB down amplitude” determined in step h). Reset the marker-delta function and move the marker to the other side of the emission until the delta marker amplitude is at the same level as the reference marker amplitude. The marker-delta frequency reading at this point is the specified emission bandwidth.
- k) The dBc bandwidth shall be reported by providing spectral plot(s) of the measuring instrument display; the plot axes and the scale units per division shall be clearly labeled. Tabular data may be reported in addition to the plot(s).

According to ANSI C63.10-2020, section 7.8.6 and section 6.9.3

The occupied bandwidth is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers are each equal to 0.5% of the total mean power of the given emission. The following procedure shall be used for measuring 99% power bandwidth:

- a) The instrument center frequency is set to the nominal EUT channel center frequency. The frequency span for the spectrum analyzer shall be between 1.5 times and 5.0 times the OBW.
- b) The nominal IF filter bandwidth (3 dB RBW) shall be in the range of 1% to 5% of the OBW, and VBW shall be at least three times the RBW, unless otherwise specified by the applicable requirement.
- c) Set the reference level of the instrument as required, keeping the signal from exceeding the maximum input mixer level for linear operation. In general, the peak of the spectral envelope shall be more than $[10 \log (OBW/RBW)]$ below the reference level. Specific guidance is given in 4.1.6.2.
- d) Step a) through step c) might require iteration to adjust within the specified range.
- e) Video averaging is not permitted. Where practical, a sample detection and single sweep mode shall be used. Otherwise, peak detection and max-hold mode (until the trace stabilizes) shall be used.
- f) Use the 99% power bandwidth function of the instrument (if available) and report the measured bandwidth.
- g) If the instrument does not have a 99% power bandwidth function, then the trace data points are recovered and directly summed in linear power terms. The recovered amplitude data points, beginning at the lowest frequency, are placed in a running sum until 0.5% of the total is reached; that frequency is recorded as the lower frequency. The process is repeated until 99.5% of the total is reached; that frequency is recorded as the upper frequency. The 99% power bandwidth is the difference between these two frequencies.
- h) The occupied bandwidth shall be reported by providing spectral plot(s) of the measuring instrument display; the plot axes and the scale units per division shall be clearly labeled. Tabular data may be reported in addition to the plot(s).



Test Data

Test Result: Compliance. Please refer to the Appendix.

FCC §15.247(a) (1) (III)-QUANTITY OF HOPPING CHANNEL TEST

Applicable Standard

Frequency hopping systems in the 2400–2483.5 MHz band shall use at least 15 channels. The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed. Frequency hopping systems may avoid or suppress transmissions on a particular hopping frequency provided that a minimum of 15 channels are used.

Test Procedure

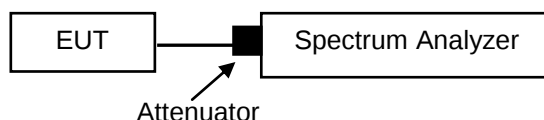
According to ANSI C63.10-2020, section 7.8.3

The EUT shall have its hopping function enabled. Use the following spectrum analyzer settings:

- Span: The frequency band of operation. Depending on the number of channels the device supports, it could be necessary to divide the frequency range of operation across multiple spans, to allow the individual channels to be clearly seen.
- RBW: To identify clearly the individual channels, set the RBW to less than 30% of the channel spacing or the 20 dB bandwidth, whichever is smaller.
- VBW $\geq$ RBW.
- Sweep: No faster than coupled (auto) time.
- Detector function: Peak.
- Trace: Max-hold.
- Allow the trace to stabilize.

It might prove necessary to break the span up into subranges to show clearly all of the hopping frequencies. Compliance of an EUT with the appropriate regulatory limit shall be determined for the number of hopping channels. A spectral plot of the data shall be included in the test report.

Where the device shares the same channel plan (carrier frequencies and number of channels) across multiple data rates or modulation schemes then the number of channels need only be measured for one of those modulation schemes or data rates.



Test Data

Test Result: Compliance. Please refer to the Appendix.

FCC §15.247(a) (1) (III)-TIME OF OCCUPANCY (DWELL TIME)

Applicable Standard

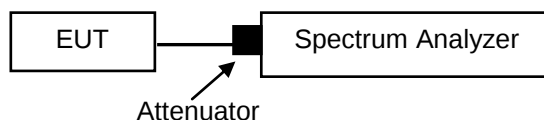
Frequency hopping systems in the 2400-2483.5 MHz shall use at least 15 channels. The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed. Frequency hopping systems may avoid or suppress transmissions on a particular hopping frequency provided that a minimum of 15 channels are used.

Test Procedure

According to ANSI C63.10-2020, section 7.8.4

Use the following spectrum analyzer settings to determine the dwell time per hop:

- Span: Zero span, centered on a hopping channel.
- RBW shall be $\leq$ channel spacing and where possible RBW should be set $\gg 1 / T$, where T is the expected transmission time per hop.
- Sweep time: Set so that the start of the first transmission and end of the last transmission for the hop are clearly captured. Setting the sweep time to be slightly longer than the hopping period per channel (hopping period = $1/\text{hopping rate}$) should achieve this.
- Use a video trigger, where possible with a trigger delay, so that the start of the transmission is clearly observed. The trigger level might need adjustment to reduce the chance of triggering when the system hops on an adjacent channel.
- Detector function: Peak.
- Trace: Clear-write, single sweep.
- Place markers at the start of the first transmission on the channel and at the end of the last transmission. The dwell time per hop is the time between these two markers.



Test Data

Test Result: Compliance. Please refer to the Appendix.

FCC §15.247(b) (1)-PEAK OUTPUT POWER MEASUREMENT

Applicable Standard

According to §15.247(b) (1), for frequency hopping systems operating in the 2400–2483.5 MHz band employing at least 75 on-overlapping hopping channels, and all frequency hopping systems in the 5725–5850 MHz band: 1 watt. And for all other frequency hopping systems in the 2400–2483.5 MHz band: 0.125 watts.

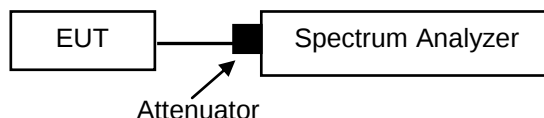
Test Procedure

According to ANSI C63.10-2020, section 7.8.5

Use the following spectrum analyzer settings:

- Span: Approximately five times the 20 dB bandwidth, centered on a hopping channel.
- RBW > 20 dB bandwidth of the emission being measured.
- VBW $\geq$ RBW.
- Sweep: No faster than coupled (auto) time.
- Detector function: Peak.
- Trace: Max-hold.
- Allow trace to stabilize.
- Use the marker-to-peak function to set the marker to the peak of the emission.
- The indicated level is the peak output power, after any corrections for external attenuators and cables.

NOTE—A peak responding power meter may be used, where the power meter and sensor system video bandwidth is greater than the occupied bandwidth of the unlicensed wireless device, rather than a spectrum analyzer.



Test Data

Test Result: Compliance. Please refer to the Appendix.

FCC §15.247(d)-BAND EDGES TESTING

Applicable Standard

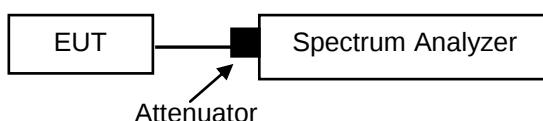
In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the 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)).

Test Procedure

According to ANSI C63.10-2020, section 7.8.7.2 and section 6.10

- Set the center frequency and span to encompass frequency range to be measured.
- Set the RBW = 100 kHz.
- Set the VBW $\geq [3 \times \text{RBW}]$.
- Detector = peak.
- Sweep time = auto couple.
- Trace mode = max hold.
- Allow trace to fully stabilize.
- 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. Report the three highest emissions relative to the limit.



Test Data

Test Result: Compliance. Please refer to the Appendix.

APPENDIX

Test Information:

Sample No.:	357T-3	Test Date:	2025/07/10
Test Site:	RF	Test Mode:	Transmitting
Tester:	Cayde Hou	Test Result:	Pass

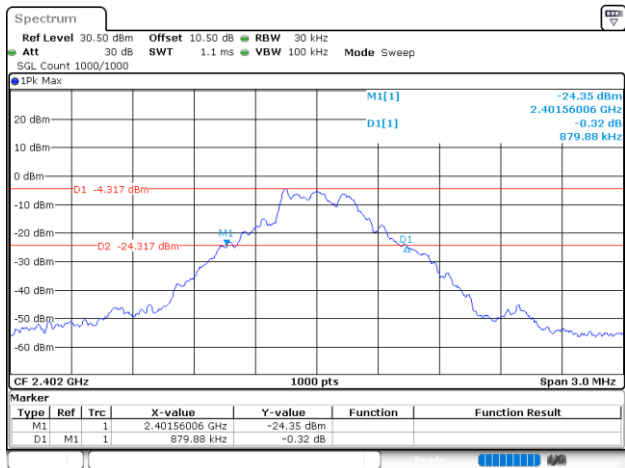
Environmental Conditions:

Temperature: (°C)	26.5	Relative Humidity: (%)	49	ATM Pressure: (kPa)	100.1
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20 dB Emission Bandwidth

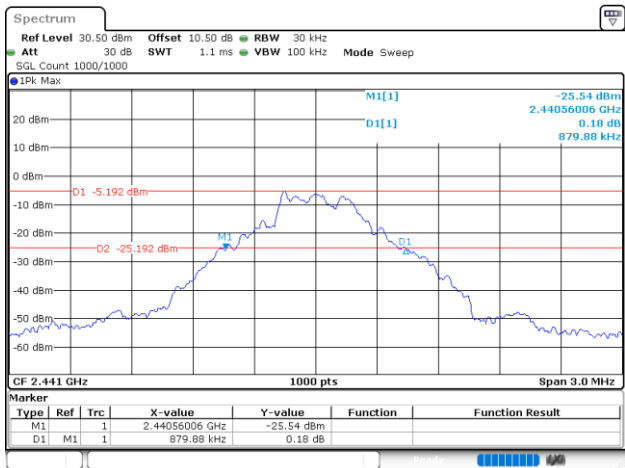
Mode	Channel	Result (MHz)
DH5	Low	0.880
	Middle	0.880
	High	0.880
2DH5	Low	1.261
	Middle	1.261
	High	1.264
3DH5	Low	1.258
	Middle	1.258
	High	1.255

DH5_Low



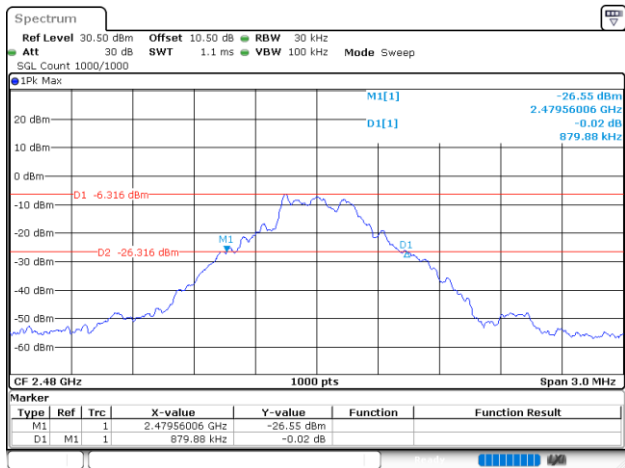
ProjectNo.:2504U21956E-RFB Tester:Cayde Hou
Date: 10.JUL.2025 15:43:35

DH5_Middle



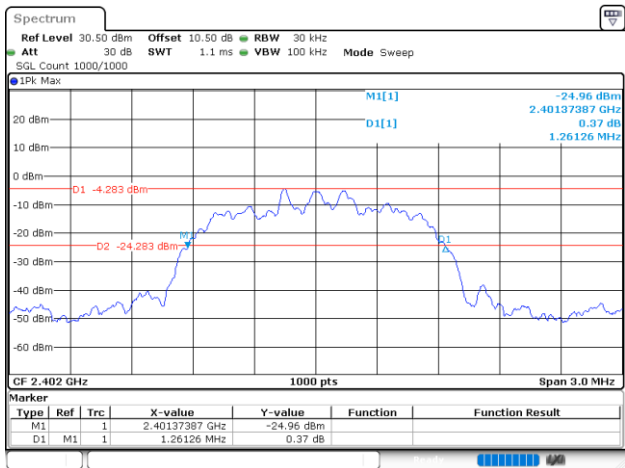
ProjectNo.:2504U21956E-RFB Tester:Cayde Hou
Date: 10.JUL.2025 15:46:05

DH5_High



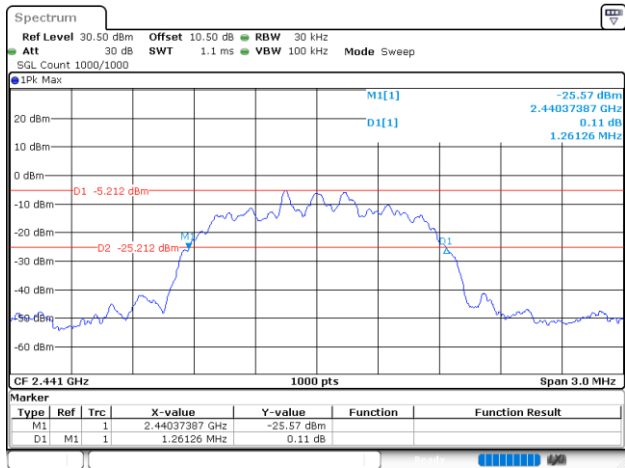
ProjectNo.:2504U21956E-RFB Tester:Cayde Hou
Date: 10.JUL.2025 15:46:59

2DH5_Low



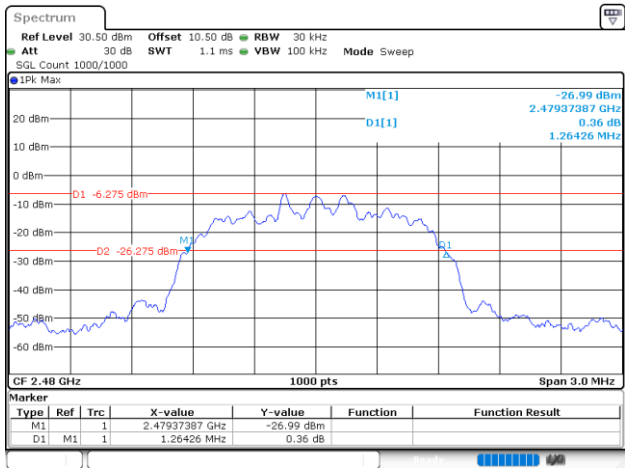
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Date: 10.JUL.2025 15:49:16

2DH5_Middle



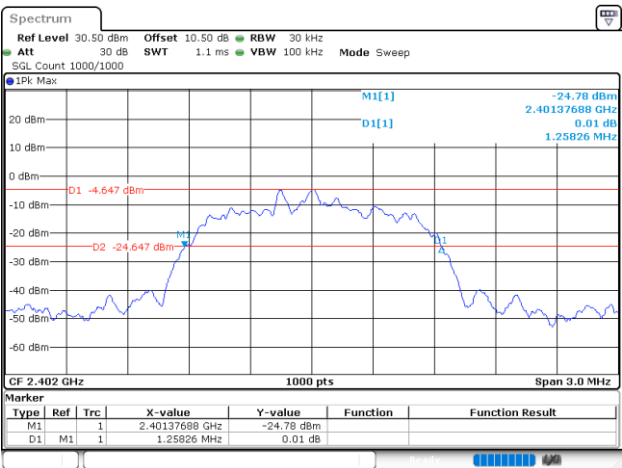
ProjectNo.:2504U21956E-RFB Tester:Cayde Hou
Date: 10.JUL.2025 15:51:55

2DH5_High



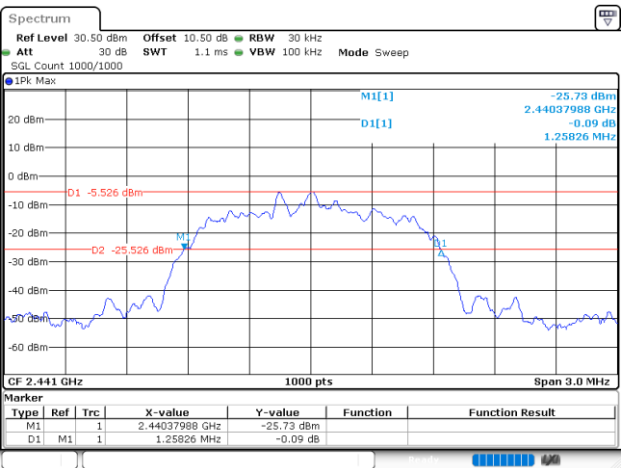
ProjectNo.:2504U21956E-RFB Tester:Cayde Hou
Date: 10.JUL.2025 15:52:24

3DH5_Low



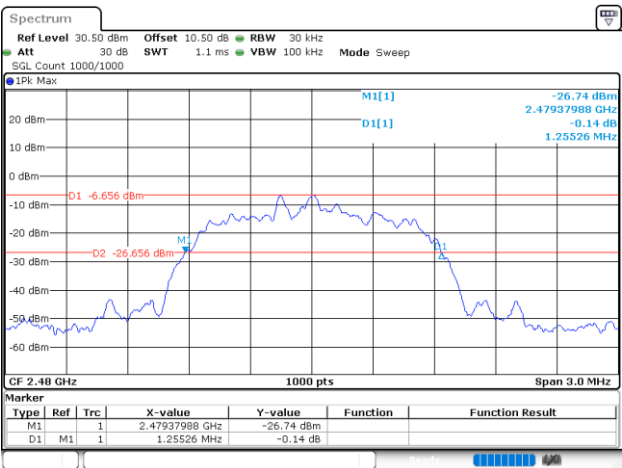
ProjectNo.:2504U21956E-RFB Tester:Cayde Hou
Date: 10.JUL.2025 15:53:43

3DH5_Middle



ProjectNo.:2504U21956E-RFB Tester:Cayde Hou
Date: 10.JUL.2025 15:55:43

3DH5_High

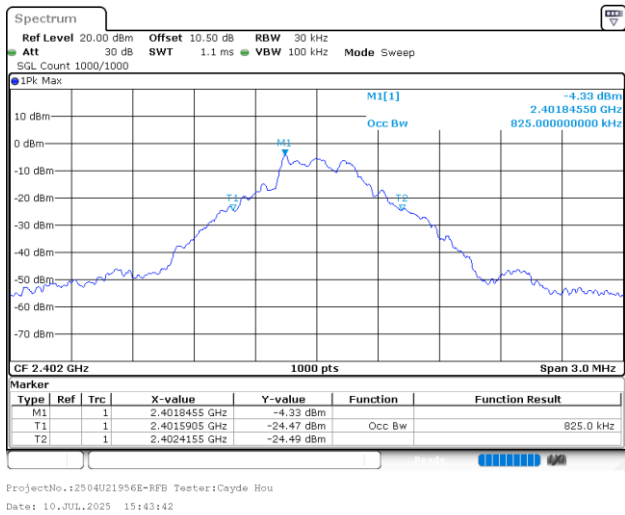


ProjectNo.:2504U21956E-RFB Tester:Cayde Hou
Date: 10.JUL.2025 15:56:13

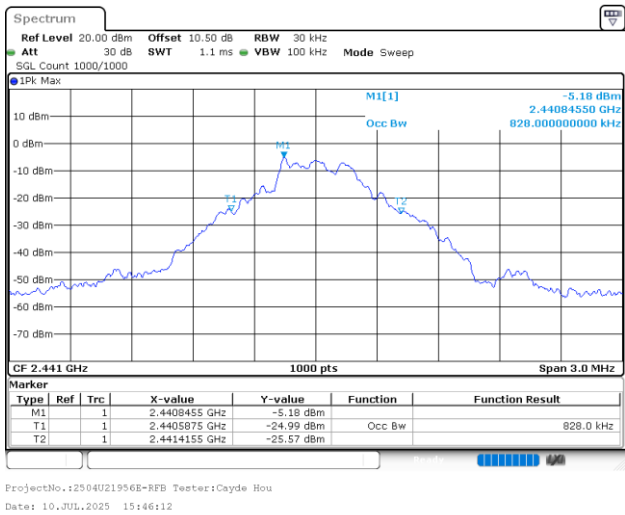
99% Occupied Bandwidth

Mode	Channel	99% OBW (MHz)
DH5	Low	0.825
	Middle	0.828
	High	0.825
2DH5	Low	1.155
	Middle	1.152
	High	1.155
3DH5	Low	1.152
	Middle	1.152
	High	1.152

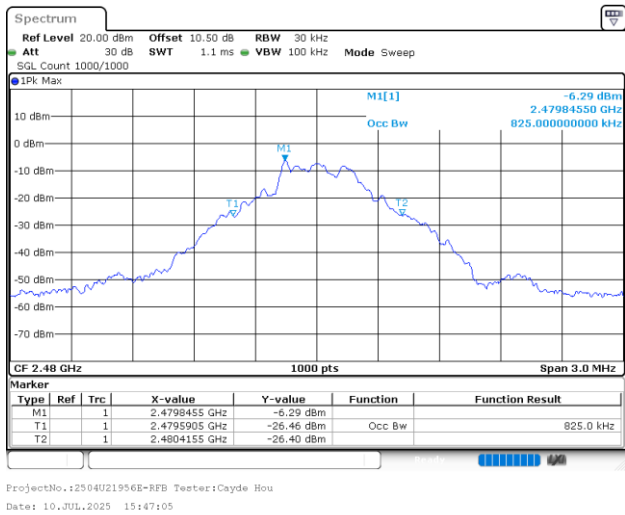
DH5_Low



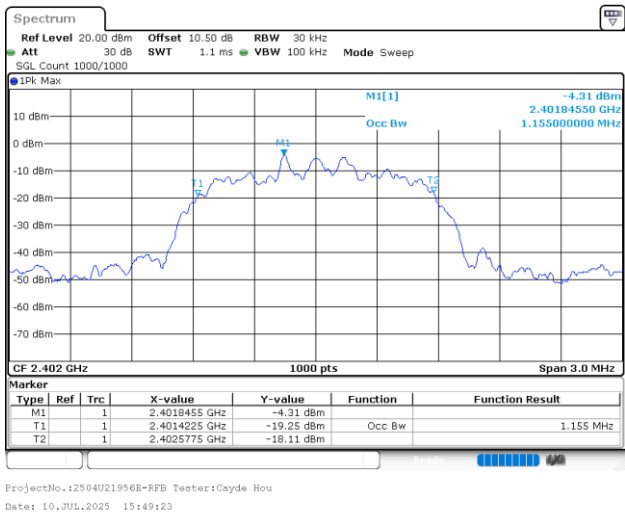
DH5_Middle



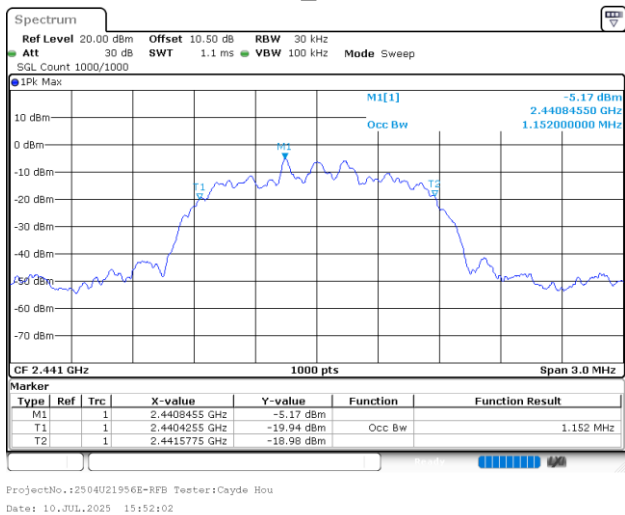
DH5_High



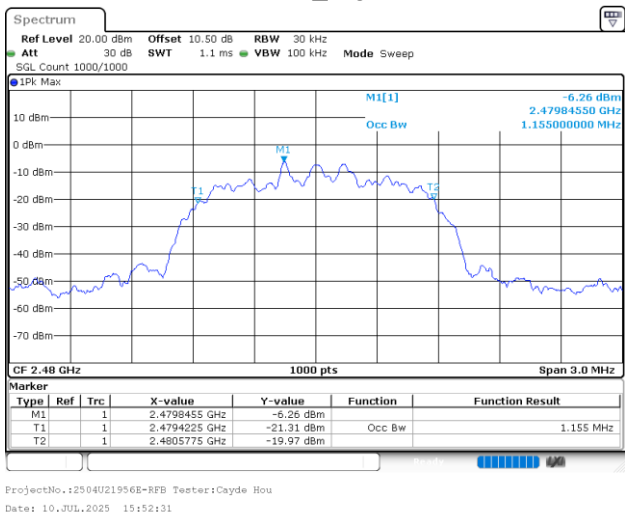
2DH5_Low



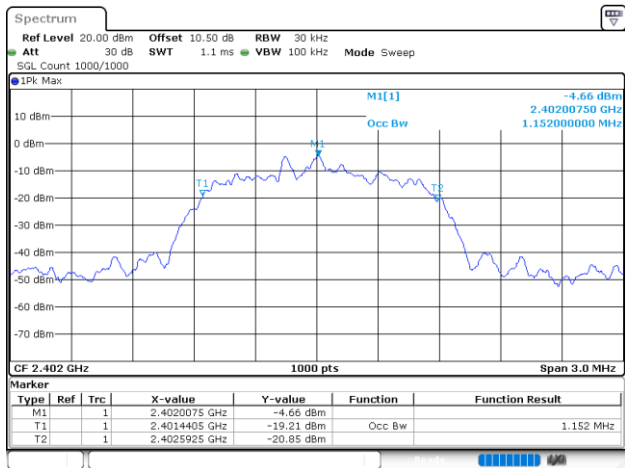
2DH5_Middle



2DH5_High

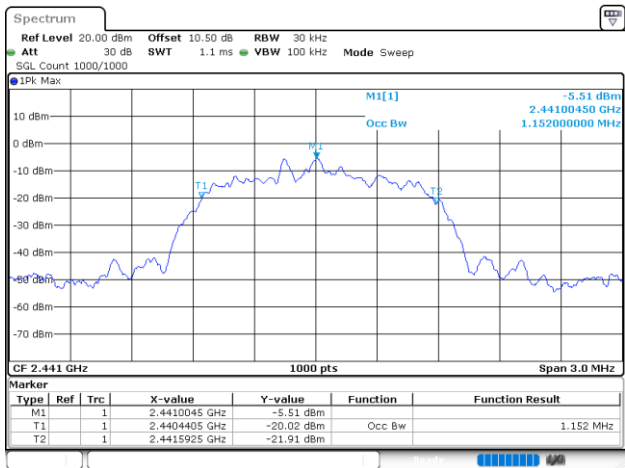


3DH5_Low



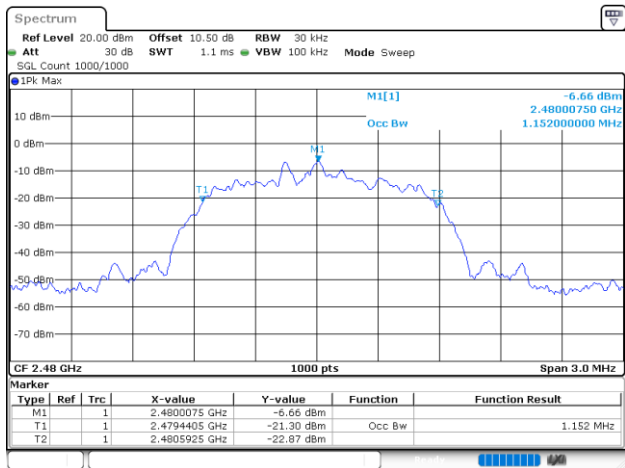
ProjectNo.:2504U21956E-RFB Tester:Cayde Hou
Date: 10.JUL.2025 15:53:50

3DH5_Middle



ProjectNo.:2504U21956E-RFB Tester:Cayde Hou
Date: 10.JUL.2025 15:55:51

3DH5_High



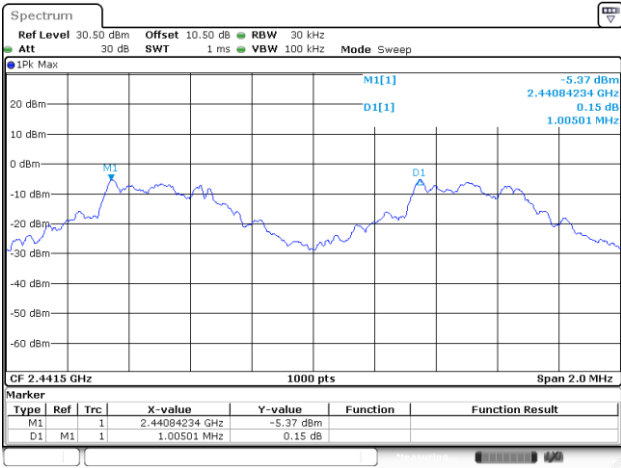
ProjectNo.:2504U21956E-RFB Tester:Cayde Hou
Date: 10.JUL.2025 15:56:19

Channel Separation

Mode	Channel	Result (MHz)	Limit (MHz)	Verdict
DH5	Middle	1.005	0.843	Pass

Note: Only the BDR (GFSK) mode result is reported since EDR ($\pi/4$ -DQPSK) and EDR (8DPSK) modes have the exact same channel plan, and the limit is the maximum 20dB bandwidth *2/3.

DH5_Middle

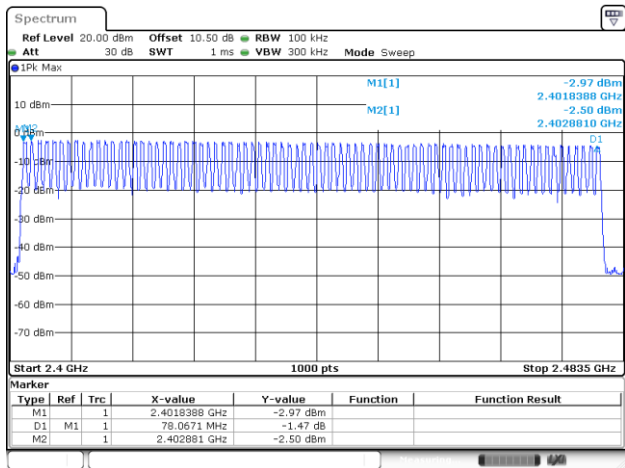


ProjectNo.:2504U21956E-RFB Tester:Cayde Hou
Date: 10.JUL.2025 15:58:38

Number of Hopping Frequency

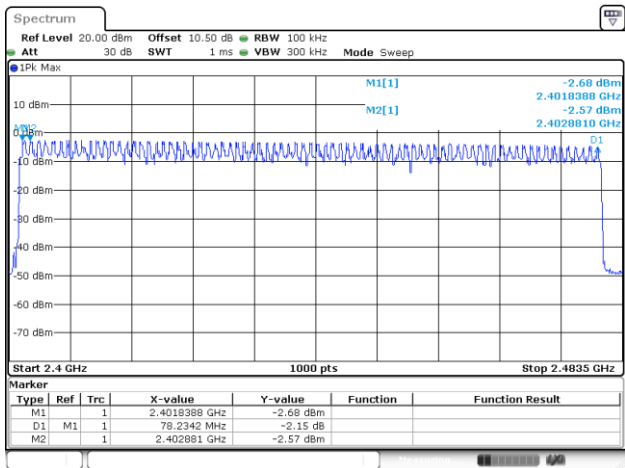
Mode	Channel	Result	Limit	Verdict
DH5	Hopping	79	15	Pass
2DH5	Hopping	79	15	Pass
3DH5	Hopping	79	15	Pass

DH5_Hopping



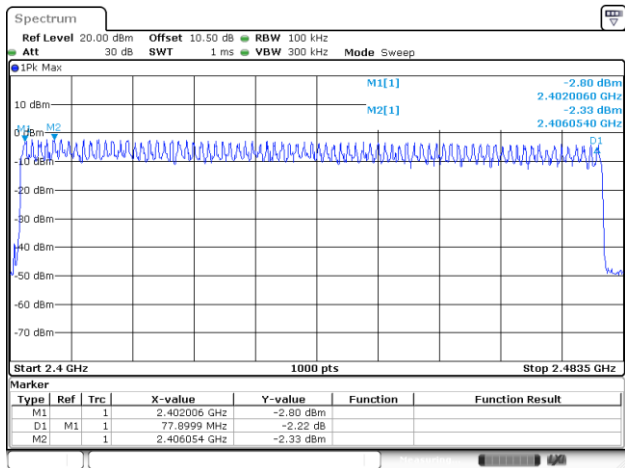
ProjectNo.:2504U21956E-RFB Tester:Cayde Hou
Date: 10.JUL.2025 15:59:29

2DH5_Hopping



ProjectNo.:2504U21956E-RFB Tester:Cayde Hou
Date: 10.JUL.2025 15:59:54

3DH5_Hopping

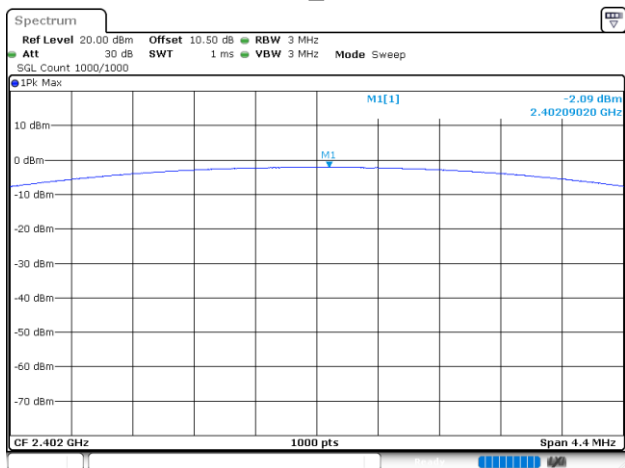


ProjectNo.:2504U21956E-RFB Tester:Cayde Hou
Date: 10.JUL.2025 16:00:21

Maximum Conducted Output Power

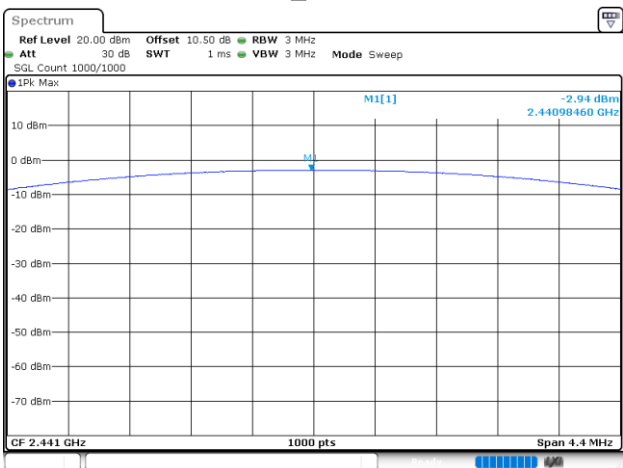
Mode	Test Frequency (MHz)	Peak Output Power (dBm)	Limit (dBm)	Verdict
DH5	2402	-2.09	21.00	Pass
	2441	-2.94	21.00	Pass
	2480	-4.03	21.00	Pass
2DH5	2402	0.43	21.00	Pass
	2441	-0.59	21.00	Pass
	2480	-1.81	21.00	Pass
3DH5	2402	0.91	21.00	Pass
	2441	-0.10	21.00	Pass
	2480	-1.34	21.00	Pass

DH5_Low



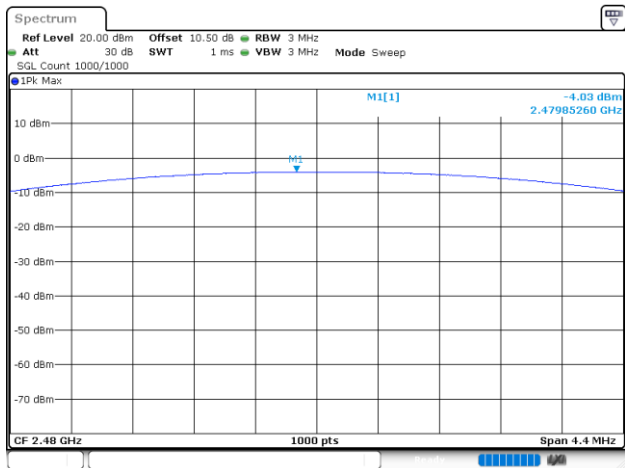
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Date: 10.JUL.2025 15:44:00

DH5_Middle



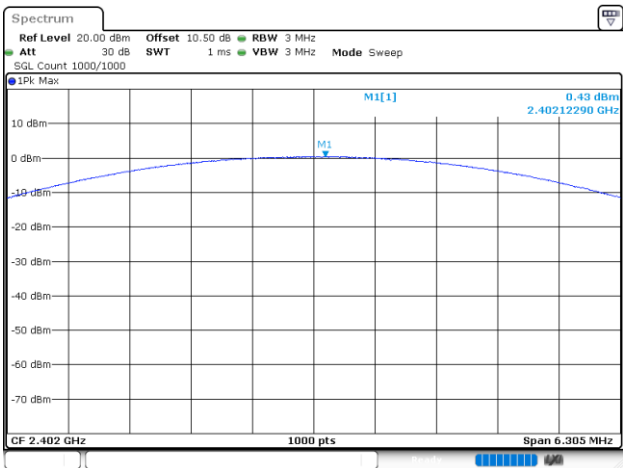
ProjectNo.:2504U21956E-RFB Tester:Cayde Hou
Date: 10.JUL.2025 15:46:22

DH5_High



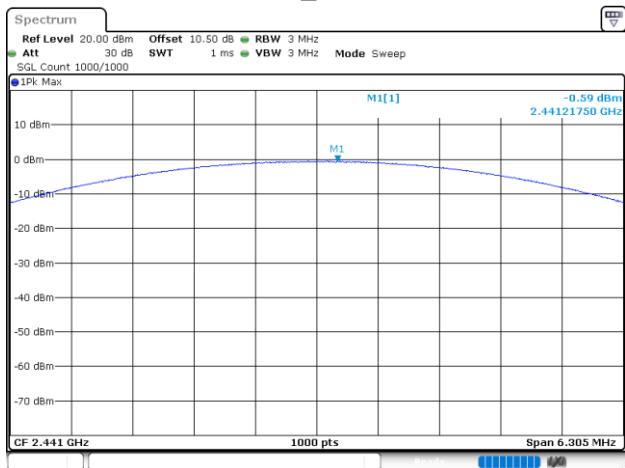
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Date: 10.JUL.2025 15:48:02

2DH5_Low



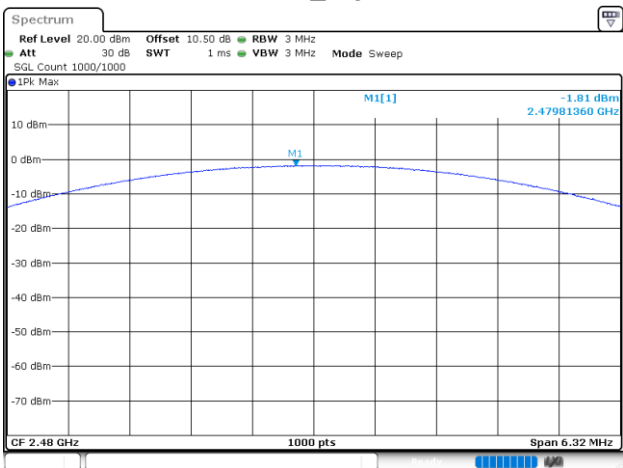
ProjectNo.:2504U21956E-RFB Tester:Cayde Hou
Date: 10.JUL.2025 15:50:29

2DH5_Middle



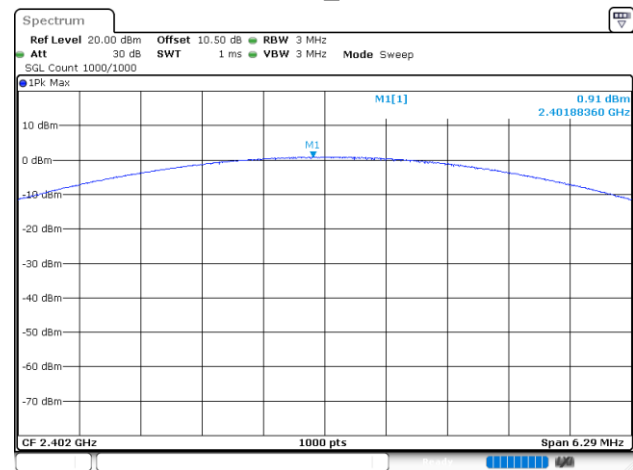
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Date: 10.JUL.2025 15:52:09

2DH5_High



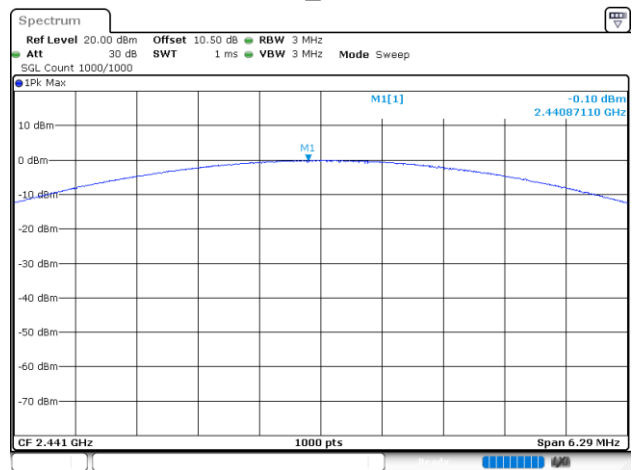
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Date: 10.JUL.2025 15:52:42

3DH5_Low



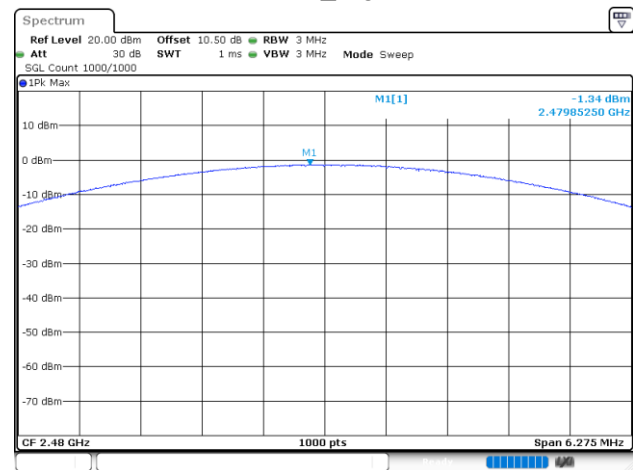
ProjectNo.:2504U21956E-RFB Tester:Cayde Hou
Date: 10.JUL.2025 15:54:15

3DH5_Middle



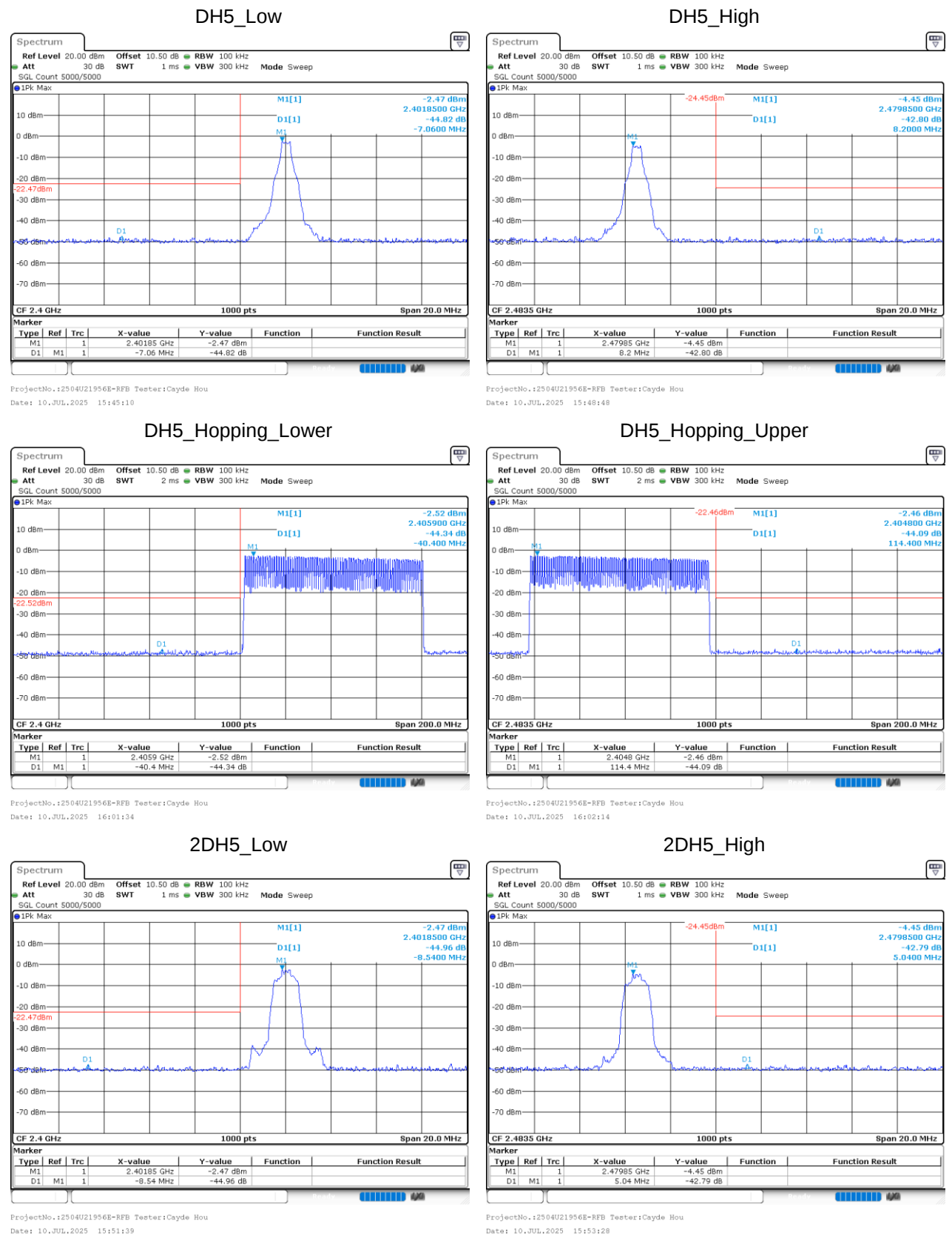
ProjectNo.:2504U21956E-RFB Tester:Cayde Hou
Date: 10.JUL.2025 15:55:58

3DH5_High

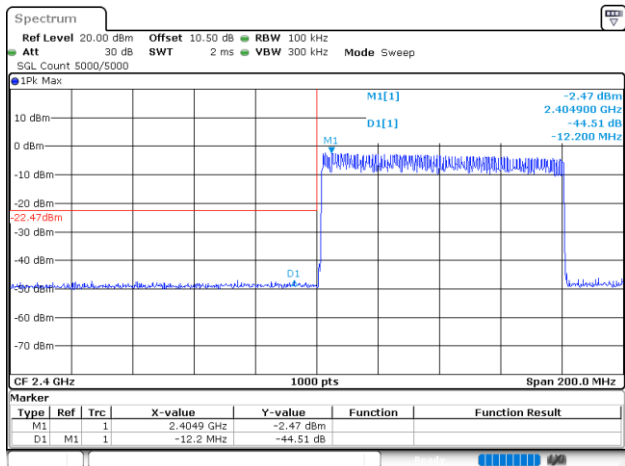


ProjectNo.:2504U21956E-RFB Tester:Cayde Hou
Date: 10.JUL.2025 15:56:27

100 kHz Bandwidth of Frequency Band Edge

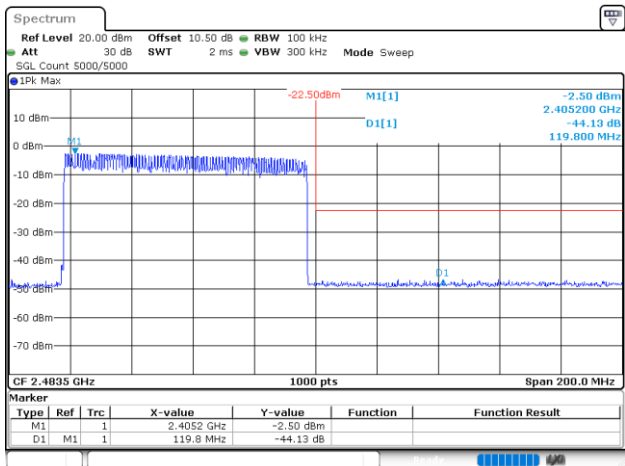


2DH5_Hopping_Lower



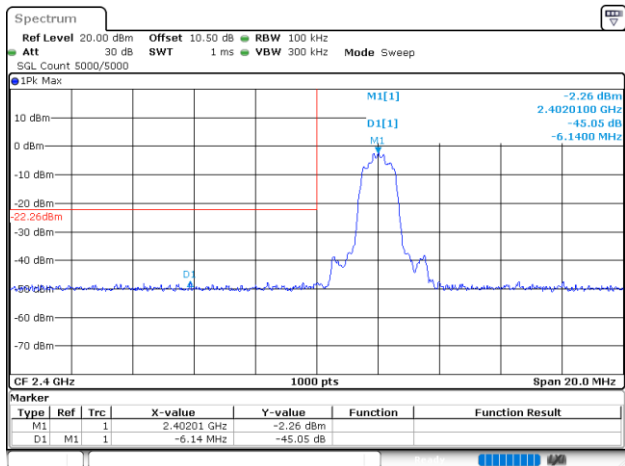
ProjectNo.:2504U21956E-RFB Tester:Cayde Hou
Date: 10.JUL.2025 16:03:13

2DH5_Hopping_Upper



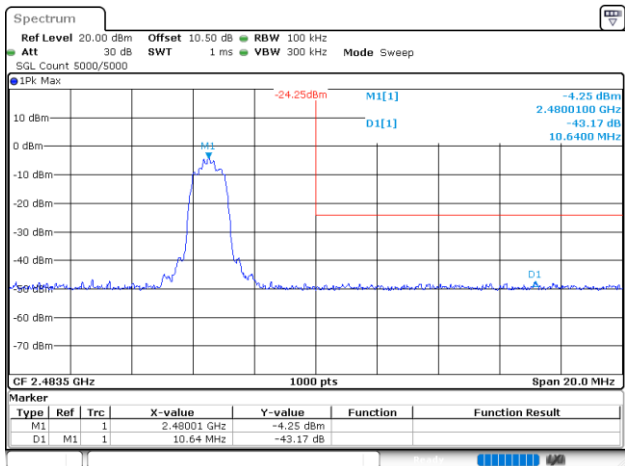
ProjectNo.:2504U21956E-RFB Tester:Cayde Hou
Date: 10.JUL.2025 16:03:58

3DH5_Low



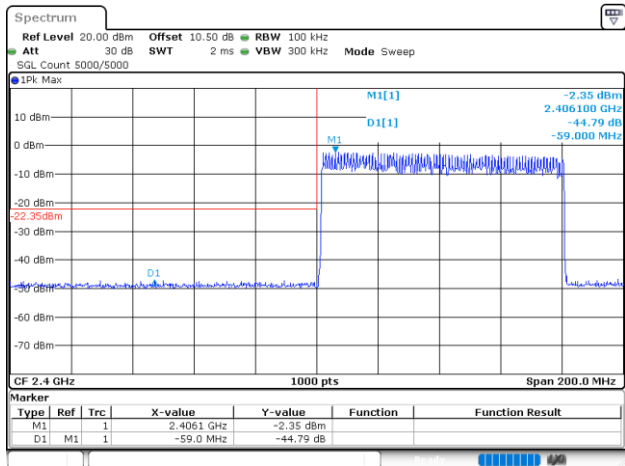
ProjectNo.:2504U21956E-RFB Tester:Cayde Hou
Date: 10.JUL.2025 15:55:26

3DH5_High



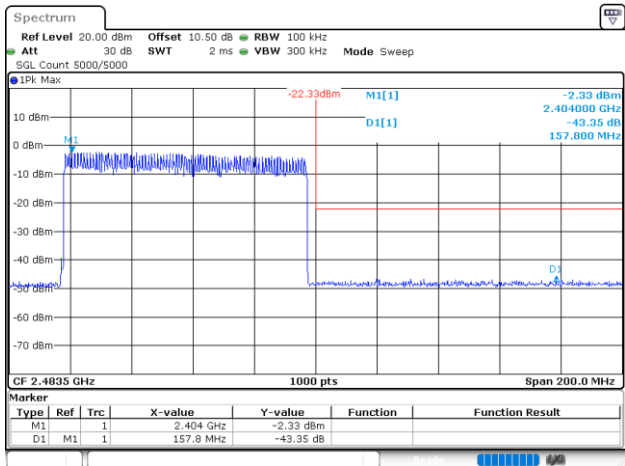
ProjectNo.:2504U21956E-RFB Tester:Cayde Hou
Date: 10.JUL.2025 15:57:13

3DH5_Hopping_Lower



ProjectNo.:2504U21956E-RFB Tester:Cayde Hou
Date: 10.JUL.2025 16:05:11

3DH5_Hopping_Upper



ProjectNo.:2504U21956E-RFB Tester:Cayde Hou
Date: 10.JUL.2025 16:06:14

Time of Occupancy (dwell time)

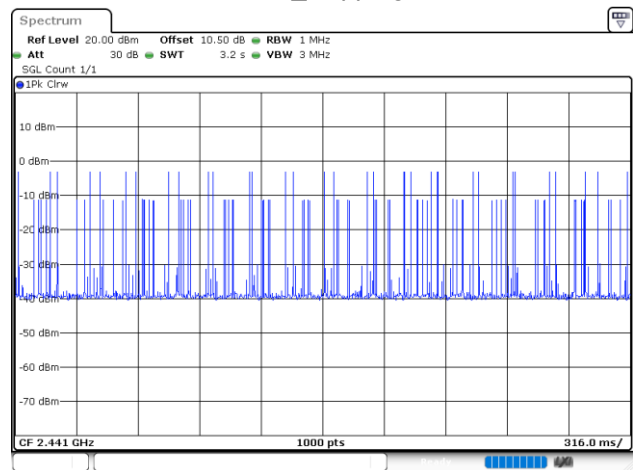
Test Mode	Channel	BurstWidth (ms)	TotalHops (Num)	Result (s)	Limit (s)	Verdict
DH1	Hopping	0.403	320	0.129	≤ 0.4	Pass
DH3	Hopping	1.664	180	0.300	≤ 0.4	Pass
DH5	Hopping	2.918	110	0.321	≤ 0.4	Pass
2DH1	Hopping	0.412	320	0.132	≤ 0.4	Pass
2DH3	Hopping	1.667	180	0.300	≤ 0.4	Pass
2DH5	Hopping	2.923	110	0.322	≤ 0.4	Pass
3DH1	Hopping	0.413	320	0.132	≤ 0.4	Pass
3DH3	Hopping	1.667	110	0.183	≤ 0.4	Pass
3DH5	Hopping	2.923	70	0.205	≤ 0.4	Pass

Note 1: A period time = $0.4 \times 79 = 31.6(S)$, Result = BurstWidth * Totalhops

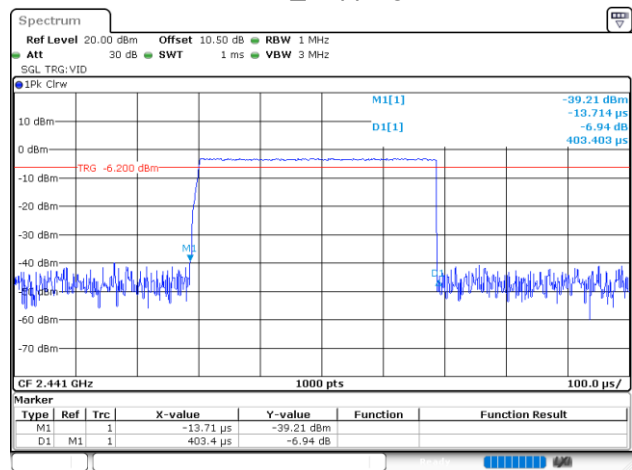
Note 2: Totalhops = Hopping Number in $3.16s \times 10$

Note 3: Hopping Number in $3.16s$ = Total of highest signals in $3.16s$ (Second high signals were other channel)

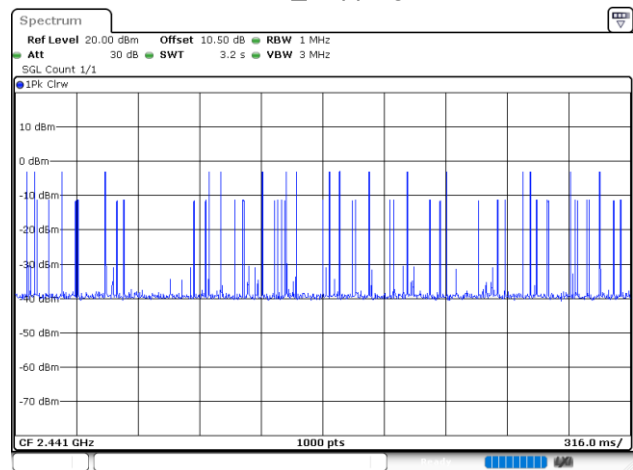
DH1_Hopping



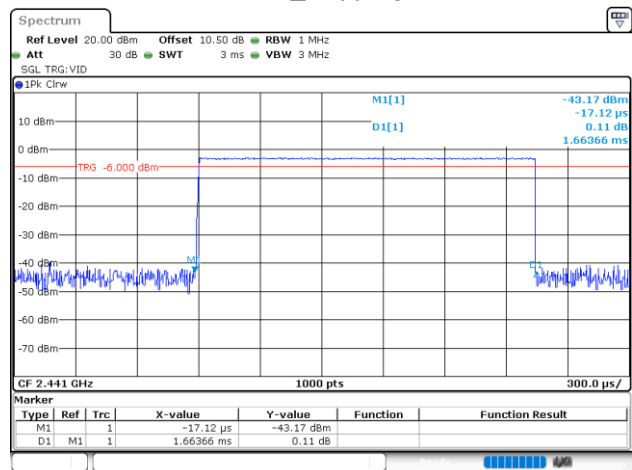
DH1_Hopping



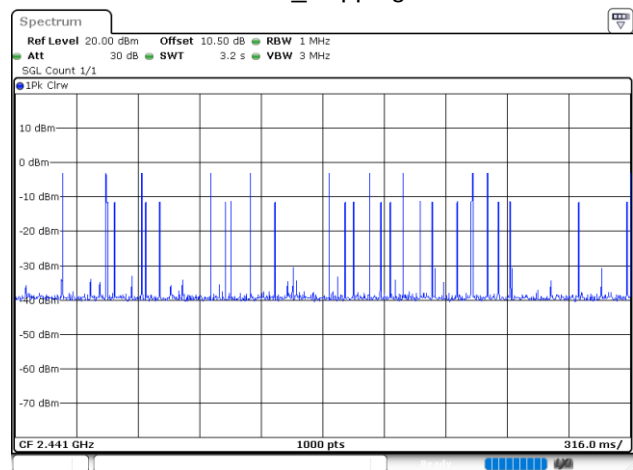
DH3_Hopping



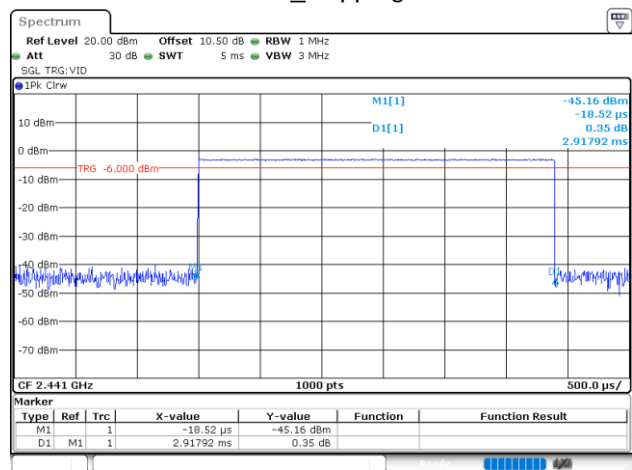
DH3_Hopping



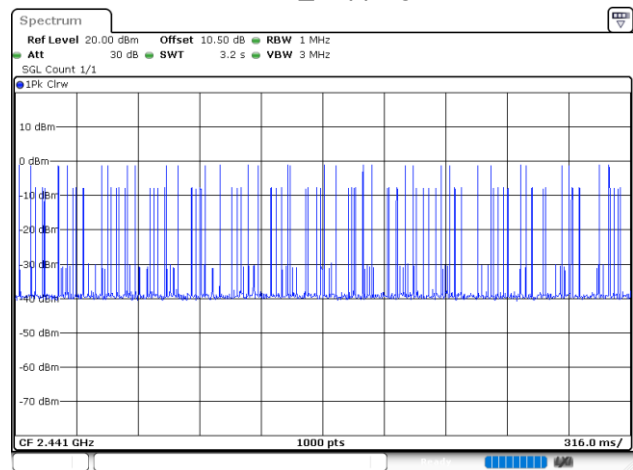
DH5_Hopping



DH5_Hopping

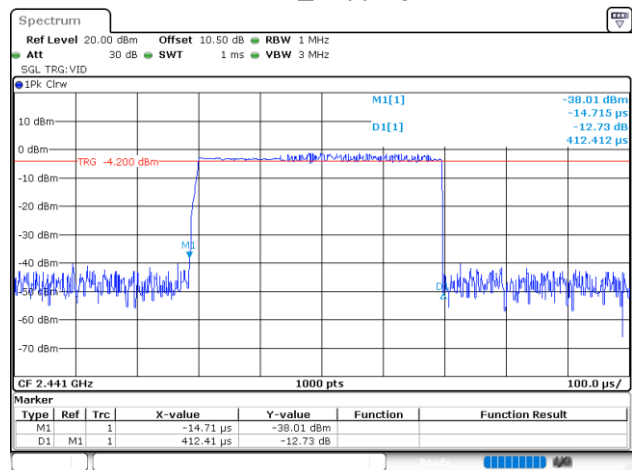


2DH1_Hopping



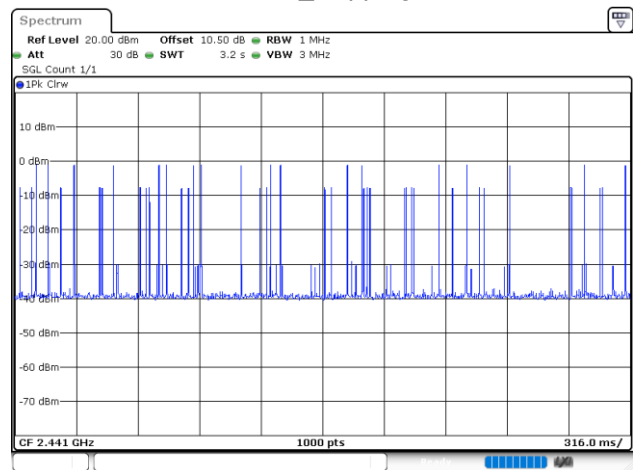
ProjectNo.:2504U21956E-RFB Tester:Cayde Hou
Date: 10.JUL.2025 16:24:09

2DH1_Hopping



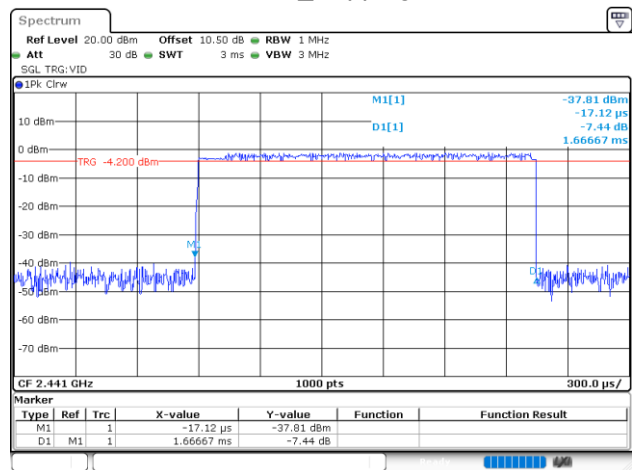
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Date: 10.JUL.2025 16:24:45

2DH3_Hopping



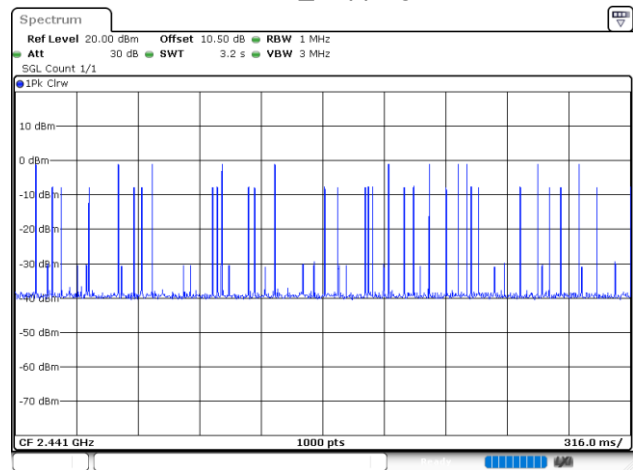
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Date: 10.JUL.2025 16:25:02

2DH3_Hopping



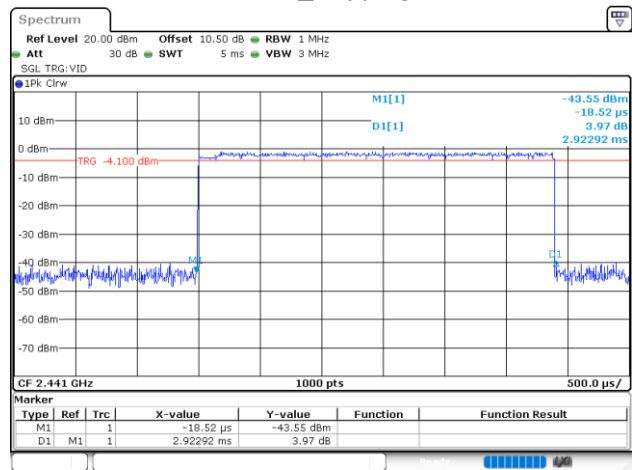
ProjectNo.:2504U21956E-RFB Tester:Cayde Hou
Date: 10.JUL.2025 16:25:35

2DH5_Hopping



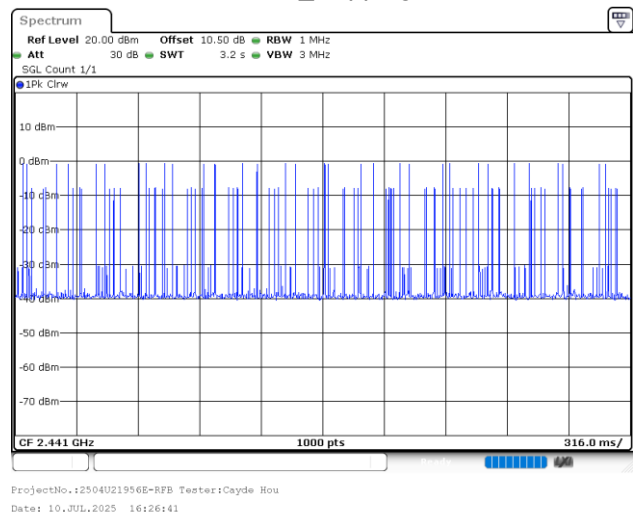
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Date: 10.JUL.2025 16:26:00

2DH5_Hopping

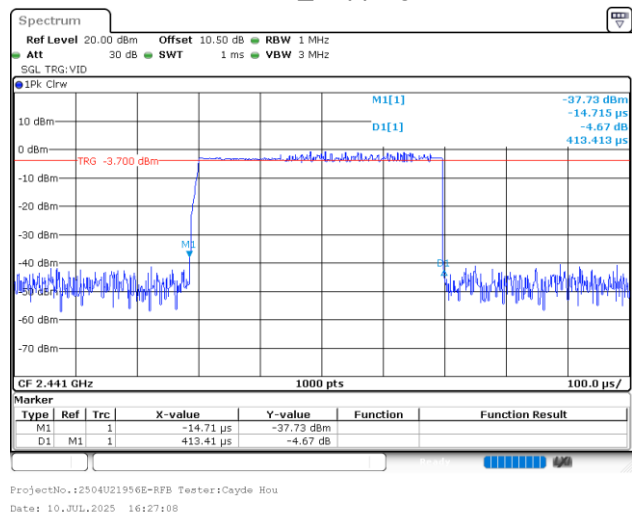


ProjectNo.:2504U21956E-RFB Tester:Cayde Hou
Date: 10.JUL.2025 16:26:29

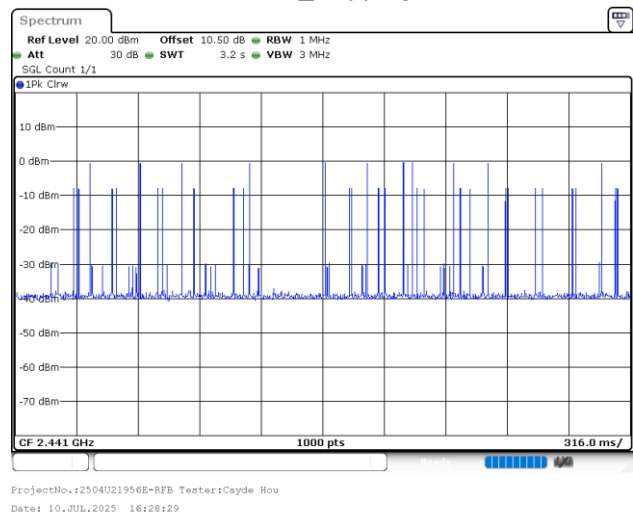
3DH1_Hopping



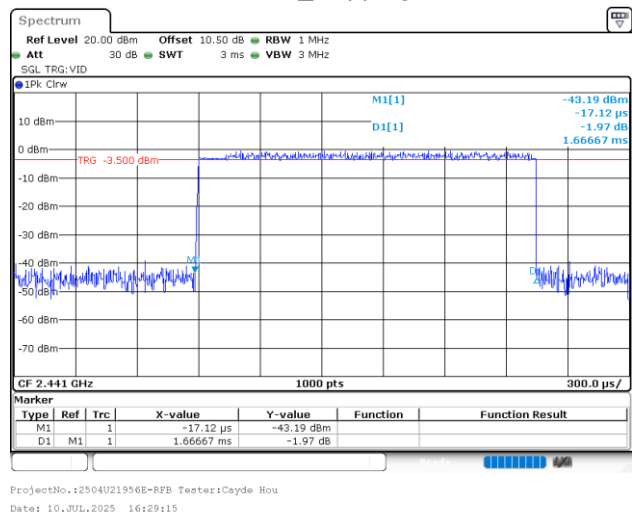
3DH1_Hopping



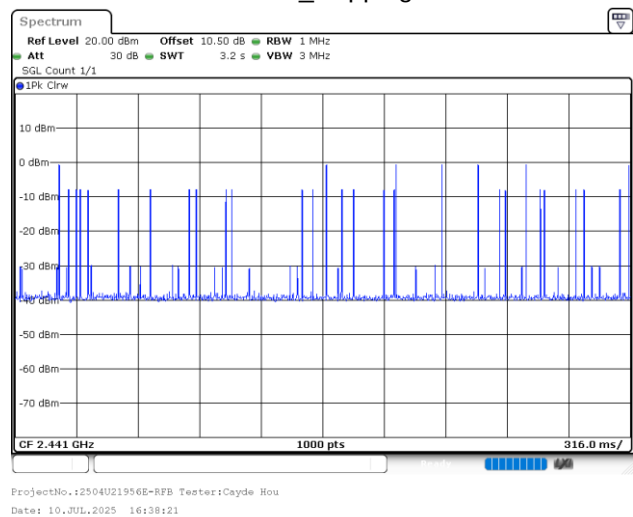
3DH3_Hopping



3DH3_Hopping



3DH5_Hopping



3DH5_Hopping

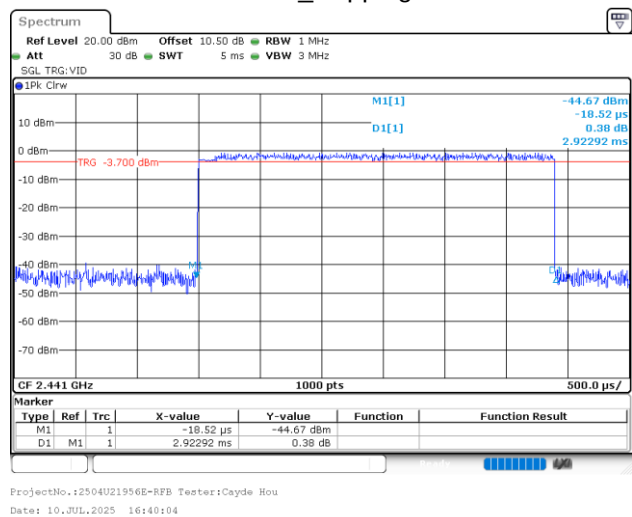


EXHIBIT A-EUT PHOTOGRAPHS

Please refer to the Attachment No.4 2504U21956E-RF-00B EUT External Photos and Attachment No.5 2504U21956E-RF-00B EUT Internal Photos.

EXHIBIT B-TEST SETUP PHOTOGRAPHS

Please refer to the Attachment No.6 2504U21956E-RF-00B Test Photos.

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