



FCC RADIO TEST REPORT

FCC ID	:	2AGOZ-P97
Equipment	:	VR Headset
Brand Name	:	🔿 Meta
Model Name	:	P97
Applicant	:	Meta Platforms Technologies, LLC. 1 Hacker Way, Menlo Park, CA 94025, USA
Manufacturer	:	Meta Platforms Technologies, LLC. 1 Hacker Way, Menlo Park, CA 94025, USA
Standard	:	FCC Part 15 Subpart C §15.247

The product was received on Apr. 03, 2024 and testing was performed from Apr. 11, 2024 to May 18, 2024. We, Sporton International Inc. Wensan Laboratory, would like to declare that the tested sample has been evaluated in accordance with the test procedures and has been in compliance with the applicable technical standards.

The test results in this report apply exclusively to the tested model / sample. Without written approval from Sporton International Inc. Wensan Laboratory, the test report shall not be reproduced except in full.

Louis Wu

Approved by: Louis Wu

Sporton International Inc. Wensan Laboratory No.58, Aly. 75, Ln. 564, Wenhua 3rd, Rd., Guishan Dist., Taoyuan City 333010, Taiwan (R.O.C.)



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History of this test report

Report No.	Version	Description	Issue Date
FR413013-01A	01	Initial issue of report	May 28, 2024



Summary of Test Result

Report Clause	Ref Std. Clause	Test Items	Result (PASS/FAIL)	Remark
3.1	15.247(a)(1)	Number of Channels	Pass	-
3.2	15.247(a)(1)	Hopping Channel Separation	Pass	-
3.3	15.247(a)(1)	Dwell Time of Each Channel	Pass	-
3.4	15.247(a)(1)	20dB Bandwidth	Pass	-
3.4	2.1049	99% Occupied Bandwidth	Reporting only	-
3.5	15.247(b)(1) 15.247(b)(4)	Peak Output Power	Pass	-
3.6	15.247(d)	Conducted Band Edges	Pass	-
3.7	15.247(d)	Conducted Spurious Emission	Pass	-
3.8	15.247(d)	Radiated Band Edges and Radiated Spurious Emission	Pass	6.03 dB under the limit at 901.30 MHz
3.9	15.207	AC Conducted Emission	Pass	3.50 dB under the limit at 0.16 MHz
3.10	15.203	Antenna Requirement	Pass	-

Conformity Assessment Condition:

 The test results (PASS/FAIL) with all measurement uncertainty excluded are presented against the regulation limits or in accordance with the requirements stipulated by the applicant/manufacturer who shall bear all the risks of non-compliance that may potentially occur if measurement uncertainty is taken into account.

2. The measurement uncertainty please refer to each test result in the section "Measurement Uncertainty".

Disclaimer:

The product specifications of the EUT presented in the test report that may affect the test assessments are declared by the manufacturer who shall take full responsibility for the authenticity.

Reviewed by: Yun Huang

Report Producer: Wilda Wei

1 General Description

1.1 Product Feature of Equipment Under Test

Product Feature			
Conoral Space	Bluetooth, Wi-Fi 2.4GHz 802.11b/g/n/ac/ax, Wi-Fi 5GHz 802.11a/n/ac/ax,		
General Specs	Wi-Fi 6GHz 802.11ax and nRF.		
Sample 1	E2-C1		
Sample 2	E2-C2		
Sample 3	E2-C3		
Sample 4	E2-C4		
Antenna Type	Bluetooth: <ant. 0="">: Hybrid Slot Monopole Antenna <ant. 1="">: Hybrid Slot Monopole Antenna WLAN: <ant. 0="">: Hybrid Slot Monopole Antenna <ant. 1="">: Hybrid Slot Monopole Antenna nRF: Folded Dipole Antenna</ant.></ant.></ant.></ant.>		
Antenna information			

Antenna information				
2400 MHz ~ 2483.5 MHz F	Peak Gain (dBi)	<ant. 0="">: 4.0 <ant. 1="">: 4.1</ant.></ant.>		

Remark: The EUT's information above is declared by manufacturer. Please refer to Disclaimer in report summary.



1.2 Modification of EUT

No modifications made to the EUT during the testing.

1.3 Testing Location

Test Site	Sporton International Inc. Wensan Laboratory	
Test Site Location	No.58, Aly. 75, Ln. 564, Wenhua 3rd, Rd., Guishan Dist., Taoyuan City 333010, Taiwan (R.O.C.) TEL: +886-3-327-0868 FAX: +886-3-327-0855	
Test Site No.	Sporton Site No.	
	TH05-HY, CO07-HY, 03CH13-HY	

Note: The test site complies with ANSI C63.4 2014 requirement.

FCC designation No.: TW3786

1.4 Applicable Standards

According to the specifications declared by the manufacturer, the EUT must comply with the requirements of the following standards:

- FCC Part 15 Subpart C §15.247
- FCC KDB Publication No. 558074 D01 15.247 Meas Guidance v05r02
- FCC KDB 414788 D01 Radiated Test Site v01r01
- ANSI C63.10-2013

Remark:

- 1. All the test items were validated and recorded in accordance with the standards without any modification during the testing.
- 2. The TAF code is not including all the FCC KDB listed without accreditation.
- 3. This EUT has also been tested and complied with the requirements of FCC Part 15, Subpart B, recorded in a separate test report.

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Report Template No.: BU5-FR15CBT Version 2.4	Report Version	: 01

2 Test Configuration of Equipment Under Test

2.1 Carrier Frequency Channel

Frequency Band	Channel	Freq. (MHz)	Channel	Freq. (MHz)	Channel	Freq. (MHz)
	0	2402	27	2429	54	2456
	1	2403	28	2430	55	2457
	2	2404	29	2431	56	2458
	3	2405	30	2432	57	2459
	4	2406	31	2433	58	2460
	5	2407	32	2434	59	2461
	6	2408	33	2435	60	2462
	7	2409	34	2436	61	2463
	8	2410	35	2437	62	2464
	9	2411	36	2438	63	2465
	10	2412	37	2439	64	2466
	11	2413	38	2440	65	2467
	12	2414	39	2441	66	2468
2400-2483.5 MHz	13	2415	40	2442	67	2469
	14	2416	41	2443	68	2470
	15	2417	42	2444	69	2471
	16	2418	43	2445	70	2472
	17	2419	44	2446	71	2473
	18	2420	45	2447	72	2474
	19	2421	46	2448	73	2475
	20	2422	47	2449	74	2476
	21	2423	48	2450	75	2477
	22	2424	49	2451	76	2478
	23	2425	50	2452	77	2479
	24	2426	51	2453	78	2480
	25	2427	52	2454	-	-
	26	2428	53	2455	-	-

2.2 Test Mode

- a. The EUT has been associated with peripherals and configuration operated in a manner tended to maximize its emission characteristics in a typical application. Frequency range investigated: conduction emission (150 kHz to 30 MHz), radiation emission (9 kHz to the 10th harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower). For radiated measurement, the measured emission level of the EUT was maximized by rotating the EUT on a turntable, adjusting the orientation of the EUT and EUT antenna in three orthogonal axis (X: flat, Y: portrait, Z: landscape), and adjusting the measurement antenna orientation, following C63.10 exploratory test procedures and only the worst plane, and the worst mode of radiated spurious emissions is Bluetooth 1Mbps mode, and recorded in this report.
- b. AC power line Conducted Emission was tested under maximum output power.

	Summary table of Test Cases					
Test Item		Data Rate / Modulation				
	Bluetooth BR 1Mbps GFSK	Bluetooth EDR 2Mbps π /4-DQPSK	Bluetooth EDR 3Mbps 8-DPSK			
Conducted	Mode 1: CH00_2402 MHz	Mode 4: CH00_2402 MHz	Mode 7: CH00_2402 MHz			
Test Cases	Mode 2: CH39_2441 MHz	Mode 5: CH39_2441 MHz	Mode 8: CH39_2441 MHz			
	Mode 3: CH78_2480 MHz	Mode 6: CH78_2480 MHz	Mode 9: CH78_2480 MHz			
	E	Bluetooth BR 1Mbps GFSK				
Radiated	Mode 1: CH00_2402 MHz					
Test Cases	Mode 2: CH39_2441 MHz					
		Mode 3: CH78_2480 MHz				
	Mode 1 : Bluetooth Link	+ WLAN (2.4GHz) Link +	nRF Link + USB Cable			
	(Charging from Adap	ter) for Sample 1				
AC Conducted	Mode 2 : Bluetooth Link	+ WLAN (2.4GHz) Link +	nRF Link + USB Cable			
Emission	(Charging from Adap	ter) for Sample 2				
	Mode 3 : Bluetooth Link	+ WLAN (2.4GHz) Link +	nRF Link + USB Cable			
	(Charging from Adap	ter) for Sample 3				
Remark:						
1. For Radiated Test Cases, the worst mode data rate 1Mbps was reported only since the highest						

The following summary table is showing all test modes to demonstrate in compliance with the standard.

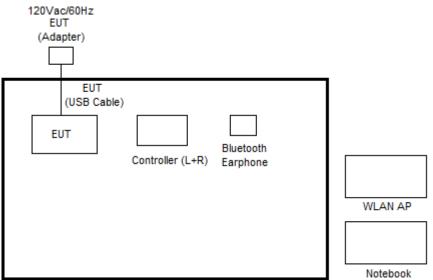
 For Radiated Test Cases, the worst mode data rate 1Mbps was reported only since the highest RF output power in the preliminary tests. The conducted spurious emissions and conducted band edge measurement for other data rates were not worse than 1Mbps, and no other significantly frequencies found in conducted spurious emission.

2. The worst case of Conducted Emission is mode 1; only the test data of it was reported.

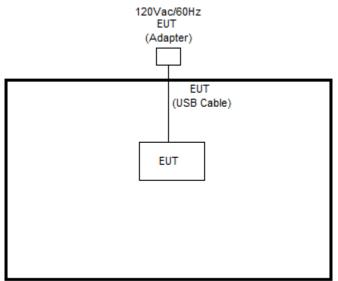


2.3 Connection Diagram of Test System





<Bluetooth Tx Mode>





2.4 Support Unit used in test configuration and sys	tem
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ltem	Equipment	Brand Name	Model Name	FCC ID	Data Cable	Power Cord
1.	Bluetooth Earphone	Sony	SBH20	PY7-RD0010	N/A	N/A
2.	WLAN AP	Netgear	RAXE500	PY320300508	N/A	Unshielded, 1.8 m
3.	Controller	Meta	Rubby	N/A	N/A	N/A
4.	Notebook	Dell	Latitude 3420	N/A	N/A	AC I/P: Unshielded, 1.2 m DC O/P: Shielded, 1.8 m

2.5 EUT Operation Test Setup

The RF test items, utility "QRCT Version 4.0.211.0" was installed in Notebook which was programmed in order to make the EUT get into the engineering modes to provide channel selection, power level, data rate and the application type and for continuous transmitting signals.

2.6 Measurement Results Explanation Example

For all conducted test items:

The offset level is set in the spectrum analyzer to compensate the RF cable loss and attenuator factor between EUT conducted output port and spectrum analyzer. With the offset compensation, the spectrum analyzer reading level is exactly the EUT RF output level.

Example:

The spectrum analyzer offset is derived from RF cable loss and attenuator factor.

Offset = RF cable loss + attenuator factor.

Following shows an offset computation example with cable loss 4.2 dB and 10 dB attenuator.

 $Offset(dB) = RF \ cable \ loss(dB) + attenuator \ factor(dB).$ = 4.2 + 10 = 14.2 (dB)



3 Test Result

3.1 Number of Channel Measurement

3.1.1 Limits of Number of Hopping Frequency

Frequency hopping systems in the 2400-2483.5 MHz band shall use at least 15 channels.

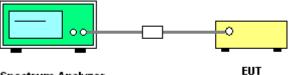
3.1.2 Measuring Instruments

Please refer to the measuring equipment list in this test report.

3.1.3 Test Procedure

- 1. The testing follows ANSI C63.10-2013 clause 7.8.3.
- 2. The RF output of EUT is connected to the spectrum analyzer by RF cable and attenuator. The path loss is compensated to the results for each measurement.
- 3. Set the maximum power setting and enable the EUT to transmit continuously.
- 4. Enable the EUT hopping function.
- Use the following spectrum analyzer settings: Span = the frequency band of operation;
 RBW = 300 kHz; VBW ≥ RBW; Sweep = auto; Detector function = peak; Trace = max hold.
- 6. The number of hopping frequency used is defined as the number of total channel.
- 7. Record the measurement data derived from spectrum analyzer.

3.1.4 Test Setup



Spectrum Analyzer

3.1.5 Test Result of Number of Hopping Frequency

3.2 Hopping Channel Separation Measurement

3.2.1 Limit of Hopping Channel Separation

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.

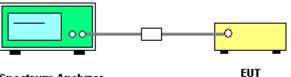
3.2.2 Measuring Instruments

Please refer to the measuring equipment list in this test report.

3.2.3 Test Procedures

- 1. The testing follows ANSI C63.10-2013 clause 7.8.2.
- 2. The RF output of EUT is connected to the spectrum analyzer by RF cable and attenuator. The path loss is compensated to the results for each measurement.
- 3. Set the maximum power setting and enable the EUT to transmit continuously.
- 4. Enable the EUT hopping function.
- Use the following spectrum analyzer settings:
 Span = wide enough to capture the peaks of two adjacent channels;
 RBW = 300 kHz; VBW ≥ RBW; Sweep = auto; Detector function = peak; Trace = max hold.
- 6. Measure and record the results in the test report.

3.2.4 Test Setup



Spectrum Analyzer

3.2.5 Test Result of Hopping Channel Separation



3.3 Dwell Time Measurement

3.3.1 Limit of Dwell Time

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.

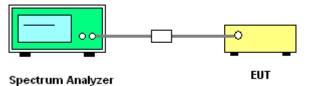
3.3.2 Measuring Instruments

Please refer to the measuring equipment list in this test report.

3.3.3 Test Procedures

- 1. The testing follows ANSI C63.10-2013 clause 7.8.4.
- 2. The RF output of EUT is connected to the spectrum analyzer by RF cable and attenuator. The path loss is compensated to the results for each measurement.
- 3. Set the maximum power setting and enable the EUT to transmit continuously.
- 4. Enable the EUT hopping function.
- 5. Use the following spectrum analyzer settings: Span = zero span, centered on a hopping channel; RBW = 1 MHz; VBW ≥ RBW; Sweep = as necessary to capture the entire dwell time per hopping channel; Detector function = peak; Trace = max hold.
- 6. Measure and record the results in the test report.

3.3.4 Test Setup



3.3.5 Test Result of Dwell Time



3.4 20dB and 99% Bandwidth Measurement

3.4.1 Limit of 20dB and 99% Bandwidth

Reporting only

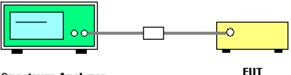
3.4.2 Measuring Instruments

Please refer to the measuring equipment list in this test report.

3.4.3 Test Procedures

- 1. The testing follows ANSI C63.10-2013 clause 6.9.2 and 6.9.3.
- 2. The RF output of EUT is connected to the spectrum analyzer by RF cable and attenuator. The path loss is compensated to the results for each measurement.
- 3. Set the maximum power setting and enable the EUT to transmit continuously.
- Use the following spectrum analyzer settings for 20 dB Bandwidth measurement.
 Span = approximately 2 to 5 times the 20 dB bandwidth, centered on a hopping channel;
 RBW ≥ 1% of the 20 dB bandwidth; VBW ≥ RBW; Sweep = auto; Detector function = peak;
 Trace = max hold.
- Use the following spectrum analyzer settings for 99 % Bandwidth measurement.
 Span = approximately 1.5 to 5 times the 99% bandwidth, centered on a hopping channel;
 RBW ≥ 1-5% of the 99% bandwidth; VBW ≥ 3 * RBW; Sweep = auto; Detector function = peak;
 Trace = max hold.
- 6. Measure and record the results in the test report.

3.4.4 Test Setup



Spectrum Analyzer

3.4.5 Test Result of 20dB Bandwidth

Please refer to Appendix A.

3.4.6 Test Result of 99% Occupied Bandwidth



3.5 Output Power Measurement

3.5.1 Limit of Output Power

The maximum peak conducted output power of the intentional radiator shall not exceed the following: For frequency hopping systems operating in the 2400-2483.5 MHz band employing at least 75 non-overlapping hopping channels, and all frequency hopping systems in the 5725-5850 MHz band: 1 watt. For all other frequency hopping systems in the 2400-2483.5 MHz band 0.125 watts. If directional gain of transmitting antennas is greater than 6 dBi, the power shall be reduced by the

same level in dB comparing to gain minus 6 dBi.

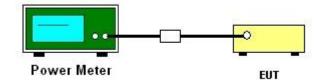
3.5.2 Measuring Instruments

Please refer to the measuring equipment list in this test report.

3.5.3 Test Procedures

- 1. The testing follows ANSI C63.10-2013 clause 7.8.5.
- 2. The RF output of EUT is connected to the power meter by RF cable and attenuator. The path loss is compensated to the results for each measurement.
- 3. Set the maximum power setting and enable the EUT to transmit continuously.
- 4. Measure the conducted output power with cable loss and record the results in the test report.
- 5. Measure and record the results in the test report.

3.5.4 Test Setup



3.5.5 Test Result of Peak Output Power

Please refer to Appendix A.

3.5.6 Test Result of Average Output Power (Reporting Only)



3.6 Conducted Band Edges Measurement

3.6.1 Limit of Band Edges

In any 100 kHz bandwidth outside the intentional radiation frequency band, the radio frequency power shall be at least 20 dB below the highest level of the radiated power. In addition, radiated emissions which fall in the restricted bands must also comply with the radiated emission limits.

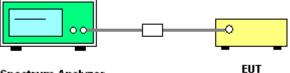
3.6.2 Measuring Instruments

Please refer to the measuring equipment list in this test report.

3.6.3 Test Procedures

- 1. The testing follows ANSI C63.10-2013 clause 7.8.6.
- 2. Set the maximum power setting and enable the EUT to transmit continuously.
- 3. Set RBW = 100 kHz, VBW = 300 kHz. Band edge emissions must be at least 20 dB down from the highest emission level within the authorized band as measured with a 100 kHz RBW. The attenuation shall be 30 dB instead of 20 dB when RMS conducted output power procedure is used.
- 4. Enable hopping function of the EUT and then repeat step 2 and 3.
- 5. Measure and record the results in the test report.

3.6.4 Test Setup



Spectrum Analyzer

3.6.5 Test Result of Conducted Band Edges

Please refer to Appendix A.

3.6.6 Test Result of Conducted Hopping Mode Band Edges

3.7 Conducted Spurious Emission Measurement

3.7.1 Limit of Spurious Emission Measurement

In any 100 kHz bandwidth outside the intentional radiation frequency band, the radio frequency power shall be at least 20 dB below the highest level of the radiated power. In addition, radiated emissions which fall in the restricted bands must also comply with the radiated emission limits.

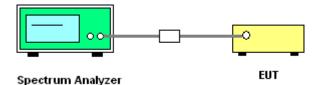
3.7.2 Measuring Instruments

Please refer to the measuring equipment list in this test report.

3.7.3 Test Procedure

- 1. The testing follows ANSI C63.10-2013 clause 7.8.8.
- 2. The RF output of EUT is connected to the spectrum analyzer by RF cable and attenuator. The path loss is compensated to the results for each measurement.
- 3. Set the maximum power setting and enable the EUT to transmit continuously.
- Set RBW = 100 kHz, VBW = 300 kHz, scan up through 10th harmonic. All harmonics / spurious must be at least 20 dB down from the highest emission level within the authorized band as measured with a 100 kHz RBW.
- 5. Measure and record the results in the test report.
- 6. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.

3.7.4 Test Setup



3.7.5 Test Result of Conducted Spurious Emission

3.8 Radiated Band Edges and Spurious Emission Measurement

3.8.1 Limit of Radiated Band Edges and Spurious Emission

In any 100 kHz bandwidth outside the intentional radiator frequency band, all harmonics / spurious must be at least 20 dB below the highest emission level within the authorized band. In addition, radiated emissions which fall in the restricted bands must also comply with the limits as below.

Frequency	Field Strength	Measurement Distance
(MHz)	(microvolts/meter)	(meters)
0.009 - 0.490	2400/F(kHz)	300
0.490 – 1.705	24000/F(kHz)	30
1.705 – 30.0	30	30
30 - 88	100	3
88 – 216	150	3
216 - 960	200	3
Above 960	500	3

3.8.2 Measuring Instruments

Please refer to the measuring equipment list in this test report.

3.8.3 Test Procedures

- 1. The EUT is placed on a turntable with 0.8 meter for frequency below 1 GHz and 1.5 meter for frequency above 1 GHz respectively above ground.
- 2. The EUT is set 3 meters away from the receiving antenna, which is mounted on the top of a variable height antenna tower.
- 3. For each suspected emission, the EUT is arranged to its worst case and then tune the Antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter are used for the test in order to get better signal level to comply with the guidelines.
- 4. Set the maximum power setting and enable the EUT to transmit continuously.
- 5. Use the following spectrum analyzer settings:
 - (1) Span shall wide enough to fully capture the emission being measured;
 - (2) Set RBW = 100 kHz for f < 1 GHz, RBW = 1 MHz for f>1 GHz ; VBW ≥ RBW; Sweep = auto; Detector function = peak; Trace = max hold for peak
 - $\begin{array}{ll} \mbox{(3)} & \mbox{For average measurement: use duty cycle correction factor method per 15.35(c).} \\ & \mbox{Duty cycle = On time/100 milliseconds} \\ & \mbox{On time = $N_1^*L_1 + N_2^*L_2 + ... + N_{n-1}^*LN_{n-1} + N_n^*L_n} \\ & \mbox{Where N_1 is number of type 1 pulses, L_1 is length of type 1 pulses, etc.} \end{array}$

Average Emission Level = Peak Emission Level + 20*log (Duty cycle)

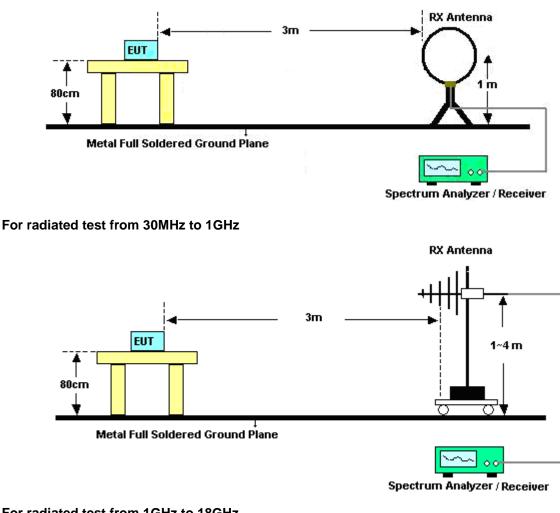
- 6. Corrected Reading: Antenna Factor + Cable Loss + Read Level Preamp Factor = Level
- 7. Radiated testing below 1 GHz is performed by adjusting the antenna tower from 1 m to 4 m and by rotating the turn table from 0 degree to 360 degrees to find the peak maximum hold reading. When there is no suspected emission found and the emission level is with at least 6 dB margin against QP limit line, the position is marked as "-".
- 8. Radiated testing above 1 GHz is performed by adjusting the antenna tower from 1 m to 4 m and by rotating the turn table from 0 degree to 360 degrees to find the peak maximum hold reading for scanning all frequencies. When there is no suspected emission found and the harmonic emission level is with at least 6 dB margin against average limit line, the position is marked as "-".

Note: The average levels are calculated from the peak level corrected with duty cycle correction factor (-24.79dB) derived from 20log (dwell time/100ms). This correction is only for signals that hop with the fundamental signal, such as band-edge and harmonic. Other spurious signals that are independent of the hopping signal would not use this correction.

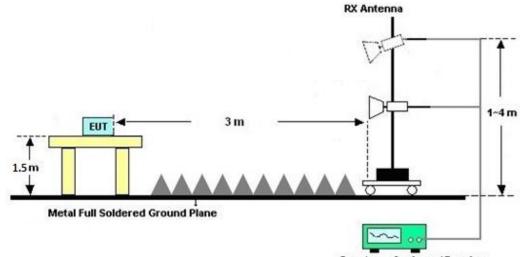


3.8.4 Test Setup

For radiated test below 30MHz



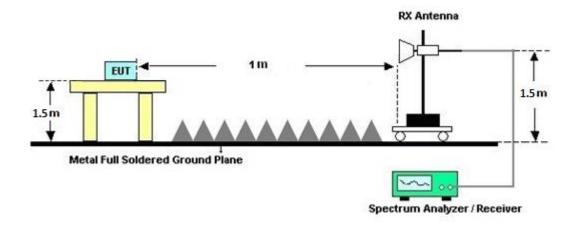




Spectrum Analyzer / Receiver



For radiated test above 18GHz



3.8.5 Test Results of Radiated Spurious Emissions (9 kHz ~ 30 MHz)

The low frequency, which starts from 9 kHz to 30 MHz, is pre-scanned and the result which is 20 dB lower than the limit line is not reported.

There is adequate comparison measurement of both open-field test site and alternative test site - semi-Anechoic chamber according to 414788 D01 Radiated Test Site v01r01, and the result comes out very similar.

3.8.6 Test Result of Radiated Spurious at Band Edges

Please refer to Appendix C and D.

3.8.7 Duty Cycle

Please refer to Appendix E.

3.8.8 Test Result of Radiated Spurious Emission (30MHz ~ 10th Harmonic)

Please refer to Appendix C and D.



3.9 AC Conducted Emission Measurement

3.9.1 Limit of AC Conducted Emission

For equipment that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits in the following table.

Frequency of omission (MHz)	Conducted	limit (dBµV)
Frequency of emission (MHz)	Quasi-peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50

*Decreases with the logarithm of the frequency.

3.9.2 Measuring Instruments

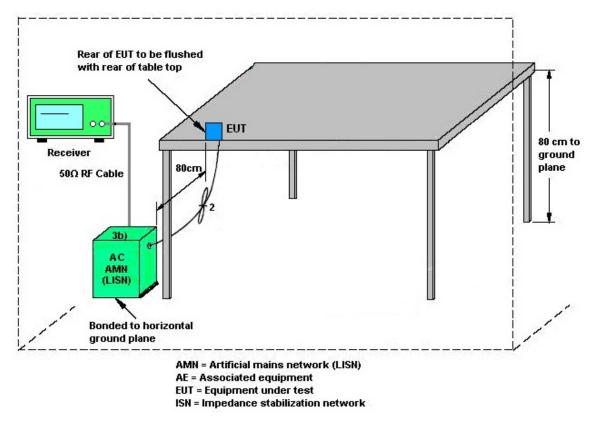
Please refer to the measuring equipment list in this test report.

3.9.3 Test Procedures

- 1. The EUT is placed 0.4 meter away from the conducting wall of the shielding room, and is kept at least 80 centimeters from any other grounded conducting surface.
- 2. Connect EUT to the power mains through a line impedance stabilization network (LISN).
- 3. All the support units are connecting to the other LISN.
- 4. The LISN provides 50 ohm coupling impedance for the measuring instrument.
- 5. The FCC states that a 50 ohm, 50 microhenry LISN shall be used.
- 6. Both Line and Neutral shall be tested in order to find out the maximum conducted emission.
- 7. The frequency range from 150 kHz to 30 MHz is scanned.
- Set the test-receiver system to Peak Detect Function and specified bandwidth (IF Bandwidth = 9 kHz) with Maximum Hold Mode. Then measurement is also conducted by Average Detector and Quasi-Peak Detector Function respectively.



3.9.4 Test Setup



3.9.5 Test Result of AC Conducted Emission



3.10 Antenna Requirements

3.10.1 Standard Applicable

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 rule.

3.10.2 Antenna Anti-Replacement Construction

An embedded-in antenna design is used.



4 List of Measuring Equipment

Instrument	Brand Name	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Loop Antenna	Rohde & Schwarz	HFH2-Z2	100315	9 kHz~30 MHz	Feb. 23, 2024	Apr. 11, 2024~ May 09, 2024	Feb. 22, 2025	Radiation (03CH13-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 102	803951/2	9k~30M	Mar. 06, 2024	Apr. 11, 2024~ May 09, 2024	Mar. 05, 2025	Radiation (03CH13-HY)
Amplifier	SONOMA	310N	187282	9kHz~1GHz	Dec. 13, 2023	Apr. 11, 2024~ May 09, 2024	Dec. 12, 2024	Radiation (03CH13-HY)
Bilog Antenna	TESEQ	CBL 6111D & 00800N1D01N -06	40103 & 07	30MHz~1GHz	Apr. 23, 2023	Apr. 11, 2024	Apr. 22, 2024	Radiation (03CH13-HY)
Bilog Antenna	TESEQ	CBL 6111D & 00800N1D01N -06	40103 & 07	30MHz~1GHz	Apr. 12, 2024	Apr. 12, 2024~ May 09, 2024	Apr. 11, 2025	Radiation (03CH13-HY)
EMI Test Receiver	Agilent	N9038A(MXE)	MY53290045	20MHz~8.4GHz	Apr. 25, 2023	Apr. 11, 2024~ Apr. 16, 2024	Apr. 24, 2024	Radiation (03CH13-HY)
EMI Test Receiver	Agilent	N9038A(MXE)	MY53290045	20MHz~8.4GHz	Apr. 17, 2024	Apr. 17, 2024~ May 09, 2024	Apr. 16, 2025	Radiation (03CH13-HY)
Horn Antenna	SCHWARZBE CK	BBHA 9120 D	9120D-1326	1GHz~18GHz	Aug. 17, 2023	Apr. 11, 2024~ May 09, 2024	Aug. 16, 2024	Radiation (03CH13-HY)
Preamplifier	MITEQ	AMF-7D-0010 1800-30-10P	1590074	1GHz~18GHz	May 16, 2023	Apr. 11, 2024~ May 09, 2024	May 15, 2024	Radiation (03CH13-HY)
Preamplifier	EM Electronics	EM01G18G 060803		1GHz~18GHz	Jan. 09, 2024	Apr. 11, 2024~ May 09, 2024	Jan. 08, 2025	Radiation (03CH13-HY)
Preamplifier	EMEC	EM18G40G	060801	18GHz~40GHz	Jun. 27, 2023	Apr. 11, 2024~ May 09, 2024	Jun. 26, 2024	Radiation (03CH13-HY)
SHF-EHF Horn Antenna	SCHWARZBE CK	BBHA9170	00993	18GHz-40GHz	Nov. 24, 2023	Apr. 11, 2024~ May 09, 2024	Nov. 23, 2024	Radiation (03CH13-HY)
Spectrum Analyzer	Keysight	N9010B	MY62170337	10Hz~44GHz	Aug. 17, 2023	Apr. 11, 2024~ May 09, 2024	Aug. 16, 2024	Radiation (03CH13-HY)
Filter	Wainwright	WLK10-4630-5 093-11000-40 SS	SN1	4.5GHz Low Pass Filter	Sep.11, 2023	Apr. 11, 2024~ May 09, 2024	Sep. 10, 2024	Radiation (03CH13-HY)
Filter	Wainwright	WHKX8-5872. 5-6750-18000- 40ST	SN5	6.75GHz High Pass Filter	Mar. 08, 2024	Apr. 11, 2024~ May 09, 2024	Mar. 07, 2025	Radiation (03CH13-HY)
Filter	Filter Wainwright		SN4	9GHz High Pass Filter	May 23, 2023	Apr. 11, 2024~ May 09, 2024	May 22, 2024	Radiation (03CH13-HY)
Filter	Wainwright	CD WLK4-1000-15 30-8000-40SS	SN4	1.53GHz Low Pass Filter	Jun. 14, 2023	Apr. 11, 2024~ May 09, 2024	Jun. 13, 2024	Radiation (03CH13-HY)
Filter	Wainwright	WHKX12-2700 -3000-18000-6 0SS	SN2	3GHz High Pass Filter	Jul. 10, 2023	Apr. 11, 2024~ May 09, 2024	Jul. 09, 2024	Radiation (03CH13-HY)
Notch Filter	Wainwright	WRCQV14-60 25-6425-7125- 7525-60SS	SN2	N/A	Jan. 05, 2024	Apr. 11, 2024~ May 09, 2024	Jan. 04, 2025	Radiation (03CH13-HY)
Notch Filter	Wainwright	WRCQV14-54 25-5825-6525- 6925-60SS	SN1	N/A	Jan. 05, 2024	Apr. 11, 2024~ May 09, 2024	Jan. 04, 2025	Radiation (03CH13-HY)

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: 01



Instrument	Brand Name	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
RF Cable	HUBER + SUHNER	SUCOFLEX 126E	0030/126E	30MHz~18GHz	Feb. 07, 2024	Apr. 11, 2024~ May 09, 2024	Feb. 06, 2025	Radiation (03CH13-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 102	804011/2, 804012/2	18GHz ~40GHz	Jan. 02, 2024	Apr. 11, 2024~ May 09, 2024	Jan. 01, 2025	Radiation (03CH13-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 104	804793/4	30MHz~18GHz	Feb. 07, 2024	Apr. 11, 2024~ May 09, 2024	Feb. 06, 2025	Radiation (03CH13-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 104	MY24961/4	30MHz~18GHz	Feb. 07, 2024	Apr. 11, 2024~ May 09, 2024	Feb. 06, 2025	Radiation (03CH13-HY)
Hygrometer	TECPEL	DTM-303A	TP215159	N/A	Sep. 13, 2023	Apr. 11, 2024~ May 09, 2024	Sep. 12, 2024	Radiation (03CH13-HY)
Controller	EMEC	EM1000	N/A	Control Turn table & Ant Mast	N/A	Apr. 11, 2024~ May 09, 2024	N/A	Radiation (03CH13-HY)
Antenna Mast	EMEC	AM-BS-4500-B	N/A	1m~4m	N/A	Apr. 11, 2024~ May 09, 2024	N/A	Radiation (03CH13-HY)
Turn Table	EMEC	TT2000	N/A	0~360 Degree	N/A	Apr. 11, 2024~ May 09, 2024	N/A	Radiation (03CH13-HY)
Software	Audix	N/A	RK-001124	N/A	N/A	Apr. 11, 2024~ May 09, 2024	N/A	Radiation (03CH13-HY)
AC Power Source	ACPOWER	AFC-11003G	F317040033	N/A	N/A	Apr. 25, 2024	N/A	Conduction (CO07-HY)
Software	Rohde & Schwarz	EMC32 V10.30	N/A	N/A	N/A	Apr. 25, 2024	N/A	Conduction (CO07-HY)
Pulse Limiter	SCHWARZBE CK	VTSD 9561-F N	9561-F N00373	9kHz-200MHz	Oct. 20, 2023	Apr. 25, 2024	Oct. 19, 2024	Conduction (CO07-HY)
RF Cable	HUBER + SUHNER	RG 214/U	1358175	9kHz~30MHz	Mar. 14, 2024	Apr. 25, 2024 Ma	Mar. 13, 2025	Conduction (CO07-HY)
Two-Line V-Network	TESEQ	NNB 51	45051	N/A	Mar. 10, 2024	Apr. 25, 2024	Mar. 09, 2025	Conduction (CO07-HY)
Four-Line V-Network	TESEQ	NNB 52	36122	N/A	Mar. 07, 2024	Apr. 25, 2024	Mar. 06, 2025	Conduction (CO07-HY)
EMI Test Receiver	Rohde & Schwarz	ESR3	102317	9kHz~3.6GHz	Sep. 20, 2023	Apr. 25, 2024	Sep. 19, 2024	Conduction (CO07-HY)
Hygrometer	TECPEL	DTM-303A	TP201996	N/A	Nov. 07, 2023	Apr. 12. 2024~ May 18, 2024	Nov. 06, 2024	Conducted (TH05-HY)
Power Meter	Agilent	E4416A	GB41292344	N/A	Jul. 12, 2023	Apr. 12. 2024~ May 18, 2024	Jul. 11, 2024	Conducted (TH05-HY)
Power Sensor	Agilent	E9327A	US40441548	50MHz~18GHz	Jul. 12, 2023	Apr. 12. 2024~ May 18, 2024	Jul. 11, 2024	Conducted (TH05-HY)
Signal Analyzer	Rohde & Schwarz	FSV40	101566	10Hz~40GHz	Aug. 23, 2023	Apr. 12. 2024~ May 18, 2024	Aug. 22, 2024	Conducted (TH05-HY)



5 Measurement Uncertainty

Uncertainty of Conducted Emission Measurement (150 kHz ~ 30 MHz)

Measuring Uncertainty for a Level of Confidence	3.44 dB
of 95% (U = 2Uc(y))	5.44 UB

Uncertainty of Radiated Emission Measurement (30 MHz ~ 1000 MHz)

Measuring Uncertainty for a Level of Confidence	6.50 dB
of 95% (U = 2Uc(y))	0.50 GB

Uncertainty of Radiated Emission Measurement (1000 MHz ~ 6000 MHz)

Measuring Uncertainty for a Level of Confidence	4 20 48
of 95% (U = 2Uc(y))	4.20 dB

Uncertainty of Radiated Emission Measurement (6000 MHz ~ 18000 MHz)

Measuring Uncertainty for a Level of Confidence	4.60 dB
of 95% (U = 2Uc(y))	4.00 aB

Uncertainty of Radiated Emission Measurement (18000 MHz ~ 40000 MHz)

Measuring Uncertainty for a Level of Confidence	5.30 dB
of 95% (U = 2Uc(y))	5.30 GB

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Appendix A. Test Result of Conducted Test Items

Test Engineer:	Hank Hsu	I emperature:	21~25	-C
Test Date:	2024/04/12~2024/05/18	Relative Humidity:	51~54	%

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			20dB a	and 99	<u>% Оссир</u>		<u>SULTS DATA</u> Ith and Hopping	Channel Separ	ration
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	20db BW (MHz)	99% Bandwidth (MHz)	Hopping Channel Separation Measurement (MHz)	Hopping Channel Separation Measurement Limit (MHz)	Pass/Fail
DH	1Mbps	1	0	2402	0.861	0.803	0.998	0.5740	Pass
DH	1Mbps	1	39	2441	0.869	0.819	1.002	0.5793	Pass
DH	1Mbps	1	78	2480	0.872	0.799	0.998	0.5813	Pass
2DH	2Mbps	1	0	2402	1.288	1.192	0.994	0.8587	Pass
2DH	2Mbps	1	39	2441	1.284	1.178	0.998	0.8560	Pass
2DH	2Mbps	1	78	2480	1.284	1.176	1.002	0.8560	Pass
3DH	3Mbps	1	0	2402	1.236	1.166	0.998	0.8240	Pass
3DH	3Mbps	1	39	2441	1.224	1.158	0.985	0.8160	Pass
3DH	3Mbps	1	78	2480	1.236	1.158	0.994	0.8240	Pass

	<u>TEST RESULTS DATA</u> Dwell Time							
Mod.	Hopping Channel Number Rate	Hops Over Occupanc y Time (hops)		Dwell Time (sec)	Limits (sec)	Pass/Fail		
DH5	79 106.67		2.90	0.31	0.4	Pass		
DH5 (AFH)	20	53.330	2.90	0.15	0.4	Pass		

	<u>TEST RESULTS DATA</u> Peak Power Table									
DH	CH.	NTX	Peak Power (dBm)	Power Limit (dBm)	Test Result					
	0	1	3.11	20.97	Pass					
DH1	39	1	3.25	20.97	Pass					
	78	1	3.55	20.97	Pass					
	0	1	2.33	20.97	Pass					
2DH1	39	1	2.18	20.97	Pass					
	78	1	2.55	20.97	Pass					
	0	1	2.58	20.97	Pass					
3DH1	39	1	2.55	20.97	Pass					
	78	1	2.79	20.97	Pass					

	<u>TEST RESULTS DATA</u> <u>Average Power Table</u> (Reporting Only)							
DH	CH.	NTX	Average Power (dBm)	Duty Factor (dB)				
	0	1	2.74	5.23				
DH1	39	1	2.87	5.23				
	78	1	3.16	5.23				
	0	1	0.65	5.11				
2DH1	39	1	0.09	5.11				
	78	1	0.48	5.11				
	0	1	0.74	5.23				
3DH1	39	1	0.21	5.23				
	78	1	0.62	5.23				

		<u>TEST RE</u> Number of He	SULTS DA		
Number of Hopping (Channel)	Adaptive Frequency Hopping (Channel)	Limits (Channel)	Pass/Fail		
79	20	> 15	Pass		

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Report Number : FR413013-01A

	<u>TEST RESULTS DATA</u> 20dB and 99% Occupied Bandwidth and Hopping Channel Separation										
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	20db BW (MHz)	99% Bandwidth (MHz)	Hopping Channel Separation Measurement (MHz)	Hopping Channel Separation Measurement Limit (MHz)	Pass/Fail		
DH	1Mbps	1	0	2402	0.869	0.805	1.007	0.5793	Pass		
DH	1Mbps	1	39	2441	0.871	0.831	1.002	0.5807	Pass		
DH	1Mbps	1	78	2480	0.867	0.799	1.002	0.5780	Pass		
2DH	2Mbps	1	0	2402	1.287	1.190	0.989	0.8580	Pass		
2DH	2Mbps	1	39	2441	1.284	1.178	1.015	0.8560	Pass		
2DH	2Mbps	1	78	2480	1.282	1.176	0.994	0.8547	Pass		
3DH	3Mbps	1	0	2402	1.226	1.167	0.998	0.8173	Pass		
3DH	3Mbps	1	39	2441	1.241	1.157	1.002	0.8273	Pass		
3DH	3Mbps	1	78	2480	1.221	1.159	1.007	0.8140	Pass		

				RESULTS Well Time		
Mod.	Hopping Channel Number Rate	Hops Over Occupanc y Time (hops)	0	Dwell Time (sec)	Limits (sec)	Pass/Fail
3DH5	79	106.670	2.90	0.31	0.4	Pass
3DH5 (AFH)	20	53.330	2.90	0.15	0.4	Pass

	<u>TEST RESULTS DATA</u> Peak Power Table									
DH	CH.	NTX	Peak Power	Power Limit	Test					
	0	1	(dBm) 3.45	(dBm) 20.97	Result Pass					
DH1	39	1	3.73	20.97	Pass					
	78	1	3.46	20.97	Pass					
_	0	1	2.79	20.97	Pass					
2DH1	39	1	2.73	20.97	Pass					
	78	1	2.48	20.97	Pass					
	0	1	2.95	20.97	Pass					
3DH1	39	1	3.03	20.97	Pass					
	78	1	2.75	20.97	Pass					

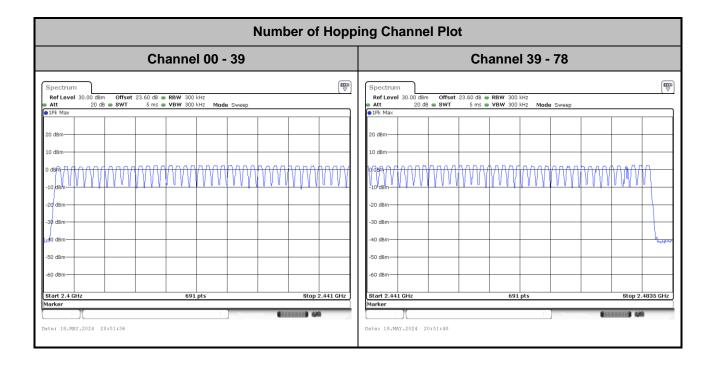
<u>TEST RESULTS DATA</u> <u>Average Power Table</u> (Reporting Only)							
DH	CH.	NTX	Average Power (dBm)	Duty Factor (dB)			
	0	1	3.15	5.23			
DH1	39	1	3.45	5.23			
	78	1	3.10	5.23			
	0	1	1.07	5.11			
2DH1	39	1	0.73	5.11			
	78	1	0.43	5.11			
	0	1	1.08	5.13			
3DH1	39	1	0.74	5.13			
	78	1	0.49	5.13			

		<u>TEST RE</u> Number of He	SULTS DA	
Number of Hopping (Channel)	Adaptive Frequency Hopping (Channel)	Limits (Channel)	Pass/Fail	
79	20	> 15	Pass	



<Ant. 0>

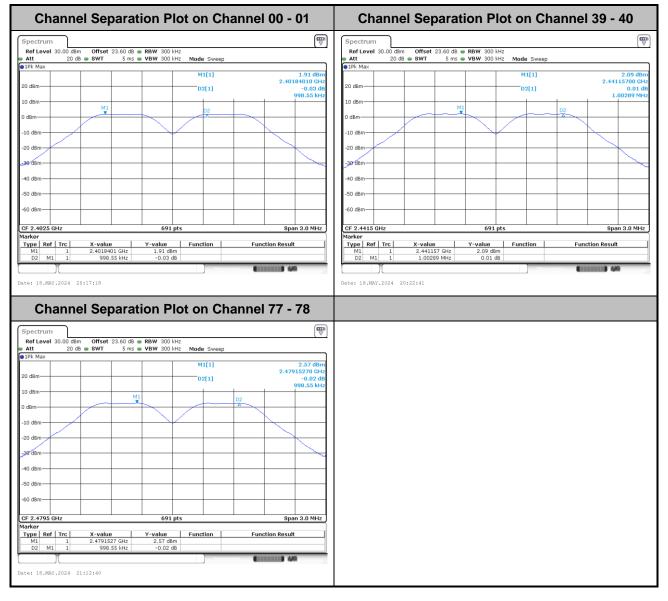
Number of Hopping Frequency





Hopping Channel Separation

<1Mbps>





<2Mbps>

Channel Sepa	ration Plot on Cha	annel 00 - 01	Channel Se	paradon i		innel 39 - 40
pectrum			Spectrum			Ę
Ref Level 30.00 dBm Offset 23.6	50 dB 🖷 RBW 300 kHz 5 ms 🖷 VBW 300 kHz 🛛 Mode Sweep	(*)		et 23.60 dB 👄 RBW 300 ki 5 ms 👄 VBW 300 ki	Hz Mode Swoon	()
LPk Max			1Pk Max	3 HIS 🖕 VBW 300 KI		
	M1[1]	0.25 dBm 2.40184880 GHz			M1[1]	-0.15 dB 2.44084880 GF
) dBm	D2[1]	-0.02 dB 994.21 kHz	20 dBm		D2[1]	0.01 (998.55 ki
I dBm			10 dBm			
iBm M1		~	0 dBm	M1	D2	
I dBm			-10 dBm			
dBm			-20,dBm			
dBm			-30 dBm			
dBm			-40 dBm			
dBm-			-50 dBm			
dBm			-60 dBm			
			-oo dalii			
2.4025 GHz	691 pts	Span 3.0 MHz	CF 2.4415 GHz	691 p	its	Span 3.0 MH
ker pe Ref Trc X-value	Y-value Function	Function Result	Marker _Type Ref Trc X-va		Function	Function Result
M1 1 2.4018488 G D2 M1 1 994.21 k	Hz 0.25 dBm Hz -0.02 dB		M1 1 2.440	18488 GHz -0.15 dBm 98.55 kHz 0.01 dB	1	
, and the state of						
	ration Plot on Cha	annel 77 - 78	Date: 18.MAY.2024 20:33:09		Neasone	WEIGHTEN 44 0
Channel Sepa	ration Plot on Cha					
Channel Sepa	50 dB 🗑 RBW 300 kHz	annel 77 - 78				W
Channel Sepa	50 dB ● RBW 300 kHz 5 ms ● VBW 300 kHz Mode Sweep	() ()				
Channel Sepa	50 dB ● RBW 300 kHz 5 ms ● VBW 300 kHz Mode Sweep M1[1]	(₩) 0.32 dBm 2.47884880 GHz				
Channel Sepa	50 dB ● RBW 300 kHz 5 ms ● VBW 300 kHz Mode Sweep	0.32 dBm 2.47884880 GHz -0.02 dB				
Channel Sepa	50 dB • RBW 300 kHz 5 ms • VBW 300 kHz Mode Sweep M1[1] D2[1]	(₩) 0.32 dBm 2.47884880 GHz				
Channel Sepa	50 dB ● RBW 300 kHz 5 ms ● VBW 300 kHz Mode Sweep M1[1]	0.32 dBm 2.47884880 GHz -0.02 dB				
Channel Sepa	50 dB • RBW 300 kHz 5 ms • VBW 300 kHz Mode Sweep M1[1] D2[1]	0.32 dBm 2.47884880 GHz -0.02 dB				
Channel Sepa	50 dB • RBW 300 kHz 5 ms • VBW 300 kHz Mode Sweep M1[1] D2[1]	0.32 dBm 2.47884880 GHz -0.02 dB				
Channel Sepa	50 dB • RBW 300 kHz 5 ms • VBW 300 kHz Mode Sweep M1[1] D2[1]	0.32 dBm 2.47884880 GHz -0.02 dB				
Channel Sepa	50 dB • RBW 300 kHz 5 ms • VBW 300 kHz Mode Sweep M1[1] D2[1]	0.32 dBm 2.47884880 GHz -0.02 dB				
Channel Sepa	50 dB • RBW 300 kHz 5 ms • VBW 300 kHz Mode Sweep M1[1] D2[1]	0.32 dBm 2.47884880 GHz -0.02 dB				
Channel Sepa	50 dB • RBW 300 kHz 5 ms • VBW 300 kHz Mode Sweep M1[1] D2[1]	0.32 dBm 2.47884880 GHz -0.02 dB				
Channel Sepa	50 dB • RBW 300 kHz 5 ms • VBW 300 kHz Mode Sweep M1[1] D2[1]	0.32 dBm 2.47884880 GHz -0.02 dB				
Channel Sepa	50 dB • RBW 300 kHz 5 ms • VBW 300 kHz Mode Sweep M1[1] D2[1]	0.32 dBm 2.47884880 GHz -0.02 dB				
Channel Sepa	50 dB • RBW 300 kHz 5 ms • VBW 300 kHz Mode Sweep M1[1] D2[1]	0.32 dBm 2.47884880 GHz -0.02 dB				
Channel Sepa	50 db e RBW 300 kHz 5 ms e VBW 300 kHz 0 m1[1] 0 2[1] 0 2 2 2 0 2 0 2 0 2 0 2 0 2 0 2	0.32 dBm 2.47884890 042 1.00289 MHz				
Channel Sepa pectrum Offset 23.6 Xet Lavel 30.00 dBm Offset 23.6 20 dB * SWT SWT Pk Max IdBm idBm Mil idBm Mil idBm Mil idBm Mil idBm Mil idBm Mil	50 db @ RBW 300 kHz 5 ms @ VBW 300 kHz 5 ms @ VBW 300 kHz Mode Sweep M1[1] D2 21 D2 22 1 <	0.32 dBm 2.47884802 dB 1.00289 MHz				
pectrum Offset 23.6 Ref Level 30.00 dBm Offset 23.6 1 20 dB • SWT SWT) dBm J) dBm J 0 dBm M1 0 dBm M1 0 dBm M1 0 dBm 0 dBm 0 dBm 0 dBm 0 dBm 0 dBm 0 dBm D D dBm	50 db @ RBW 300 kHz 5 ms @ VBW 300 kHz 5 ms @ VBW 300 kHz Mode Sweep M1[1] D2 21 D2 22 1 <	0.32 dBm 2.47884890 042 1.00289 MHz				



<3Mbps>

	ation Plot on Cha	nnel 00 - 01	Channel	Separation	Plot on Cha	annel 39 - 40
pectrum			Spectrum			[⊞ ⊽
Ref Level 30.00 dBm Offset 23.60 (dB 🖷 RBW 300 kHz ms 🖶 VBW 300 kHz 🛛 Mode Sweep	(*)	RefLevel 30.00 dBm Att 20 dB	Offset 23.60 dB RBW	300 kHz 300 kHz Mode Sweep	(*
1Pk Max			1Pk Max	3115 754		
) dBm	M1[1]	0.29 dBm 2.40184440 GHz	20 dBm		M1[1]	-0.15 dBr 2.44085310 GH
	D2[1]	-0.03 dB 998.55 kHz			D2[1]	0.04 c 985.53 ki
dBm M1			10 dBm	M1		
Bm V ····			0 dBm			
dBm			-10 dBm			
dBm			-20 dBm			
dBm			-30 dBm			
dBm			-40 dBm			
dBm			-50 dBm			
dBm			-60 dBm			
2.4025 GHz	691 pts	Span 3.0 MHz	CF 2.4415 GHz		691 pts	Span 3.0 MH
ker De Ref Trc X-value	Y-value Function	Function Result	Marker Type Ref Trc	X-value Y-va	lue Function	Function Result
M1 1 2.4018444 GHz D2 M1 1 998.55 kHz	0.29 dBm	- anecton Result	M1 1 D2 M1 1	2.4408531 GHz -0.	15 dBm 0.04 dB	Tunction Result
D2 M1 1 998.55 KH2	-0.03 08	68 4M	D2 MI I	905.53 KH2 U	5.04 UB	49
	ation Plot on Cha	innel 77 - 78	Date: 18.MAY.2024 20:4	ŧ7:55		
Channel Separa	ation Plot on Cha		Date: 18.MAY.2024 20:4	47:55		
Channel Separa	dB 🖷 RBW 300 kHz	nnel 77 - 78	Date: 18.MAY.2024 20:4	47:55		
Channel Separa ectrum off Level 30.00 dBm Offset 23.60 et a 20 dB @ SWT 5 r	d8 ● RBW 300 kHz ms ● VBW 300 kHz Mode Sweep	(The second seco	Date: 18.MAY.2024 20:4	47:55		
Channel Separa ectrum of Level 30.00 dBm Offset 23.60 0 tt 20 dB B WT 5 r	dB 🖷 RBW 300 kHz	(m) ▼ 0.32 dBm 2.47884440 GHz	Date: 18.MAY.2024 20:4	47:55		
Channel Separa ectrum of Level 30.00 dBm Offset 23.60 of tt 20 dB BWT 5 r	d8 ● RBW 300 kHz ms ● VBW 300 kHz Mode Sweep	0.32 dBm 2.47884440 GHz -0.01 dB	Date: 18.MAY.2024 20:4	47:55		
Channel Separa ectrum t Level 30.00 dBm Offset 23.60 t Level 30.00 dBm Offset 35.60 t Level 30.60 t Level 30.00 dBm Offset 35.60 t Level 30.60 t L	dB • RBW 300 kHz ms • VBW 300 kHz Mode Sweep M1[1]	(m) ▼ 0.32 dBm 2.47884440 GHz	Date: 18.MAY.2024 20:4	47:55		
Channel Separa ectrum of Level 30.00 dBm Offset 23.60 0 20 dB SWT S r k Max dBm M1	dB • RBW 300 kHz ms • VBW 300 kHz Mode Sweep M1[1]	0.32 dBm 2.47884440 GHz -0.01 dB	Date: 18.MAY.2024 20:4	47:55		
Channel Separa ectrum of Level 30.00 dBm Offset 23.60 20 dB SWT 5 m k Max dBm M1 am M1	dB • RBW 300 kHz ms • VBW 300 kHz Mode Sweep M1[1]	0.32 dBm 2.47884440 GHz -0.01 dB	Date: 18.MAY.2024 20:4	47:55		
Channel Separa ectrum of Level 30.00 dBm Offset 23.60 20 dB SWT Sr k Max dBm M1 dBm M1 dBm	dB • RBW 300 kHz ms • VBW 300 kHz Mode Sweep M1[1]	0.32 dBm 2.47884440 GHz -0.01 dB	Date: 18.MAY.2024 20:4	47:55		
Channel Separ tevel 30.00 dBm Offset 23.60 of 20 dB SWT 5 r Max Bm M1 Bm M1 dBm M1 dBm M1	dB • RBW 300 kHz ms • VBW 300 kHz Mode Sweep M1[1]	0.32 dBm 2.47884440 GHz -0.01 dB	Date: 18.MAY.2024 2014	47:55		
Channel Separa	dB • RBW 300 kHz ms • VBW 300 kHz Mode Sweep M1[1]	0.32 dBm 2.47884440 GHz -0.01 dB	Date: 18.MAY.2024 2014	47:55		
Channel Separa	dB • RBW 300 kHz ms • VBW 300 kHz Mode Sweep M1[1]	0.32 dBm 2.47884440 GHz -0.01 dB	Dete: 18.MAY.2024 20:4	47:55		
Channel Separa	dB • RBW 300 kHz ms • VBW 300 kHz Mode Sweep M1[1]	0.32 dBm 2.47884440 GHz -0.01 dB	Date: 18.MAY.2024 20:4	47:55		
Channel Separa	dB • RBW 300 kHz ms • VBW 300 kHz Mode Sweep M1[1]	0.32 dBm 2.47884440 GHz -0.01 dB	Dete: 18.MAY.2024 20:4	47:55		
Channel Separa	dB	0.32 dBm 2.47884440 (Hz) -0.01 dB 994.21 kHz	Deto: 10.MAY.2024 20:4	47:55		
Channel Separa	dB • RBW 300 kHz ms • VBW 300 kHz Mode Sweep M1[1]	0.32 dBm 2.47884440 GHz -0.01 dB	Dato: 10.MAY.2024 20:4	47:55		
Channel Separa	dB • RBW 300 kHz ms • VBW 300 kHz Mode Sweep M1[1] D2[1] D2[1] D2 T D2 T D2 T D2 T D2 T D2 T D2 T D2 T D2 T D2 T D2 T D2 T D2 T D2 T T T D2 T T T D2 T T T T D2 T T T T T D2 T T T T T T T T T T T T T	0.32 dBm 2.47884440 (Hz) -0.01 dB 994.21 kHz	Date: 18.MAY.2024 20:4	47:55		
Pectrum Offset 23.60 Ref Level 30.00 dBm Offset 23.60 10 dB • SWT 5 r dBm Max dBm M1	dB RBW 300 kHz Mode Sweep ms VBW 300 kHz Mode Sweep M1[1] D2[1] D2 D2 D3 D2 D4 D2 D5 D2 D4 D2 D5 D2 D2 D2 D3 D4 D4 D4 D5 D4 D4 D4 D5 D4 D4 D4 D4 D4 D5 D4 D5 D4	0.32 dBm 2.47884400 -0.01 dB 994.21 kHz	Date: 18.MAY.2024 20:4	47:55		



Dwell Time

Spectrum Total Offset 23.60 dB RBW 1 MHz SGL 91Pk Max 91Pk Max 16.35 dBm 9.2,900 ms 10 dBm 10			Packag	ge Transf	ier Time	Plot	
Att 20 dB SWT 20 ms VBW 1 MHz SGL IPk Max IIIII 16.35 dBm 20 dBm M1 D2 02 (1) 7.4800 ms 20 dBm M1 D2 02 (1) 7.4800 ms 10 dBm IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII	Spectrum						
SGL 1Pk Max 20 dBm M1 20 dBm M1 10 dBm 1 10 dBm 1 -10 dBm 1 -20 dBm 1 -30 dBm 1 -30 dBm 1 -50 dBm 1 -50 dBm 1 -60 dBm 1 11 7.48 ms 12 1001 pts 2.0 ms/	Ref Level 30).00 dBm 0	ffset 23.60 dB	RBW 1 MHz			(- ,
1Pk Max M1[1] 16.35 dBm 20 dBm M1 02 03 n2[1] 0.10 dB 10 dBm 0 0 0.10 dB 2.9000 ms 0 dBm 0 0 0 0 0 -10 dBm 0 0 0 0 0 0 -20 dBm 0 0 0 0 0 0 0 -30 dBm 0		20 dB 😑 S	WT 20 ms 🖷	VBW 1 MHz			
20 dBm M1 16.35 dBm 20 dBm 02 03 02[1] 7.4800 ms 10 dBm 2.9000 ms 2.9000 ms 0 dBm 0 0 -10 dBm 0 0 -20 dBm 0 0 -30 dBm 0 0 -30 dBm 0 0 -20 dBm 0 0 -20 dBm 0 0 -30 dBm 0 0 -40 dBm 0 0 -50 dBm 0 0 -60 dBm 0 0 -70 dHz 1001 pts 2.0 ms/ -70 dBm 0.10 dB 0.10 dB -70 dH1 2.9 ms 0.10 dB -70 dH1 1 3.76 ms 0.30 dB 0.30 dB 0.30 dB							
20 dBm M1 02 03 02[1] 7.4800 ms 10 dBm 10 dBm 2.900 0 ms 2.900 0 ms 2.900 0 ms 0 dBm 10 dBm 10 dBm 10 dBm 10 dBm 10 dBm -10 dBm 10 dBm 10 dBm 10 dBm 10 dBm 10 dBm -20 dBm 10 dBm 10 dBm 10 dBm 10 dBm 10 dBm -20 dBm 10 dBm 10 dBm 10 dBm 10 dBm 10 dBm -30 dBm 10 dBm 10 dBm 10 dBm 10 dBm 10 dBm -60 dBm 10 dBm 10 dBm 10 dBm 10 dBm 10 dBm -60 dBm 10 dBm 10 dBm 10 dBm 10 dBm -70 dBm 100 tpts 2.0 ms/ -70 dBm 100 tpts 2.0 ms/					M1[1]		16.35 dBm
10 dBm 10 dBm 2.900 ms 0 dBm 2.900 ms 10 dBm 10 dBm -10 dBm 10 dBm -20 dBm 10 dBm -30 dBm 10 dBm -30 dBm 10 dBm -20 dBm 10 dBm -20 dBm 10 dBm -20 dBm 10 dBm -20 dBm 10 dBm -30 dBm 10 dBm -30 dBm 10 dBm -40 dBm 10 dBm -50 dBm 10 dBm -50 dBm 10 dBm -50 dBm 10 dBm -50 dBm 2.0 ms/ -60 dBm 10 dBm -70 dBm 10 dBm	20 d9m		M1				7.4800 ms
10 dBm 0 dBm -10 dBm -10 dBm -20 dBm -20 dBm -20 dBm -30 dBm -30 dBm -40 dBm -40 dBm -40 dBm -50 dBm -50 dBm -50 dBm -50 dBm -50 dBm -10 dBm -10 dBm -10 dBm -20 dB	20 UBIII	- r		4			
-10 dBm -20 dBm -30 dBm -30 dBm -40 dBm -40 dBm -50 dBm -50 dBm -50 dBm -60 dBm -7,48 ms -7,48 ms -16,35 dBm -7,48 ms -16,35 dBm -7,48 ms -7,48 ms	10 dBm			+			2.9000 ms
-10 dBm -20 dBm -30 dBm -30 dBm -40 dBm -40 dBm -50 dBm -50 dBm -50 dBm -60 dBm -7,48 ms -7,48 ms -16,35 dBm -7,48 ms -16,35 dBm -7,48 ms -7,48 ms	0 dBm						
-20 dBm -20 dBm -30 dBm -40 dBm -40 dBm -40 dBm -50 dBm -50 dBm -50 dBm -60 dBm -7.48 ms -7.48	o ubiii						
-30 dBm -30 dBm -40 dBm	-10 dBm						
.40 dBm .40 dBm <t< td=""><td>-20 dBm</td><td></td><td></td><td></td><td></td><td></td><td></td></t<>	-20 dBm						
.40 dBm .40 dBm <t< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td></t<>							
40 dbm 1000 1000 1000 1000 -50 dBm -60 dBm	-30 dBm						
-60 dBm Image: CF 2.402 GHz 1001 pts 2.0 ms/ GF 2.402 GHz 1001 pts 2.0 ms/ Marker Type Ref Trc X-value Y-value Function Function Result M1 1 7.48 ms 16.35 dBm Image: Colspan="2">Image: Colspan="2">Image: Colspan="2">Colspan="2">Colspan="2">Colspan="2">Colspan="2">Colspan="2">Colspan="2">Colspan="2">Colspan="2">Colspan="2">Colspan="2"Colspa="2"Colspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan=	-40 dBm	yener	- Uplicent		halikant	- Walker	Laura La
-60 dBm Image: CF 2.402 GHz 1001 pts 2.0 ms/ GF 2.402 GHz 1001 pts 2.0 ms/ Marker Type Ref Trc X-value Y-value Function Function Result M1 1 7.48 ms 16.35 dBm Image: Colspan="2">Image: Colspan="2">Image: Colspan="2">Colspan="2">Colspan="2">Colspan="2">Colspan="2">Colspan="2">Colspan="2">Colspan="2">Colspan="2">Colspan="2">Colspan="2"Colspa="2"Colspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan=	Fo day						
CF 2.402 GHz 1001 pts 2.0 ms/ Marker Type Ref Trc X-value Y-value Function Function Result M1 1 7.48 ms 16.35 dBm D2 M1 1 2.9 ms 0.10 dB D3 M1 1 3.76 ms 0.30 dB	-50 dBm						
Marker Type Ref Trc X-value Y-value Function Function Result M1 1 7.48 ms 16.35 dBm	-60 dBm						
Marker Type Ref Trc X-value Y-value Function Function Result M1 1 7.48 ms 16.35 dBm	CE 2 402 CHz			1001 pt			2.0 ms/
Type Ref Trc X-value Y-value Function Function Result M1 1 7.48 ms 16.35 dBm D2 M1 1 2.9 ms 0.10 dB D3 M1 1 3.76 ms 0.30 dB	Marker			1001 pt			2.0 1137
D2 M1 1 2.9 ms 0.10 dB D3 M1 1 3.76 ms 0.30 dB		Trc X-			Function	Function	n Result
D3 M1 1 3.76 ms 0.30 dB Peodly (
ate: 12.APR.2024 20:32:55						Peady	436
ate: 12.APR.2024 20:32:55		L					
	Date: 12.APR.2	2024 20:32:	55				

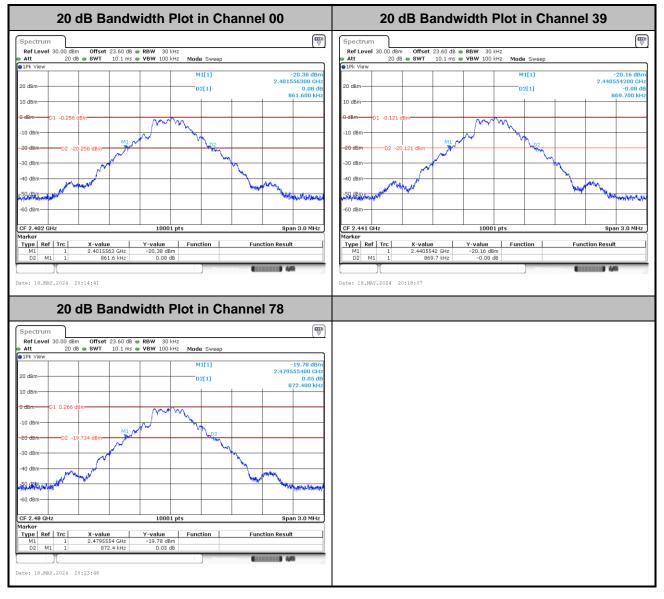
Remark:

- In normal mode, hopping rate is 1600 hops/s with 6 slots in 79 hopping channels. With channel hopping rate (1600 / 6 / 79) in Occupancy Time Limit (0.4 x 79) (s),Hops Over Occupancy Time comes to (1600 / 6 / 79) x (0.4 x 79) = 106.67 hops.
- In AFH mode, hopping rate is 800 hops/s with 6 slots in 20 hopping channels. With channel hopping rate (800 / 6 / 20) in Occupancy Time Limit (0.4 x 20) (s), Hops Over Occupancy Time comes to (800 / 6 / 20) x (0.4 x 20) = 53.33 hops.
- Dwell Time(s) = Hops Over Occupancy Time (hops) x Package Transfer Time.



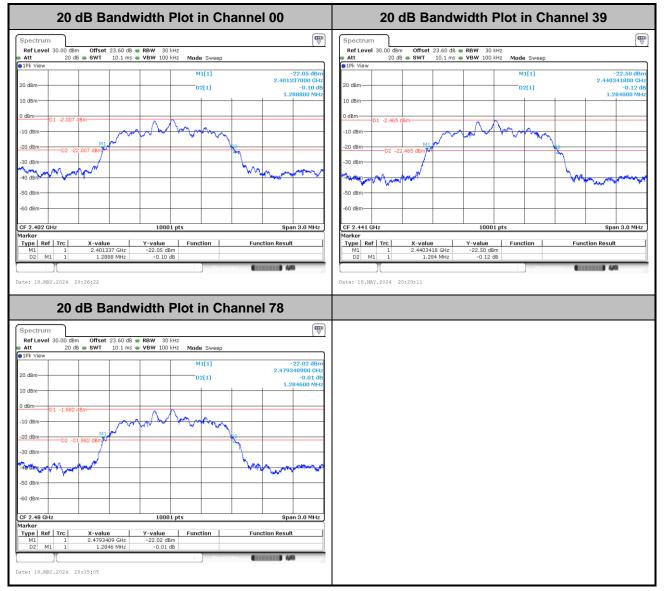
20dB Bandwidth

<1Mbps>

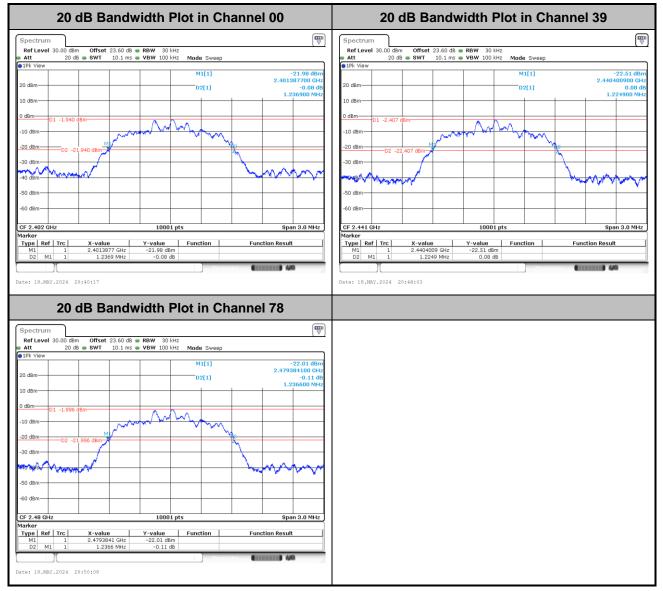




<2Mbps>





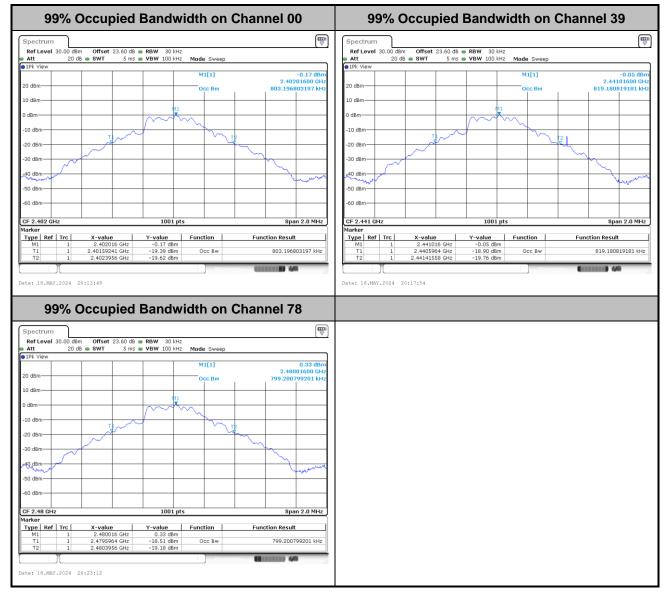




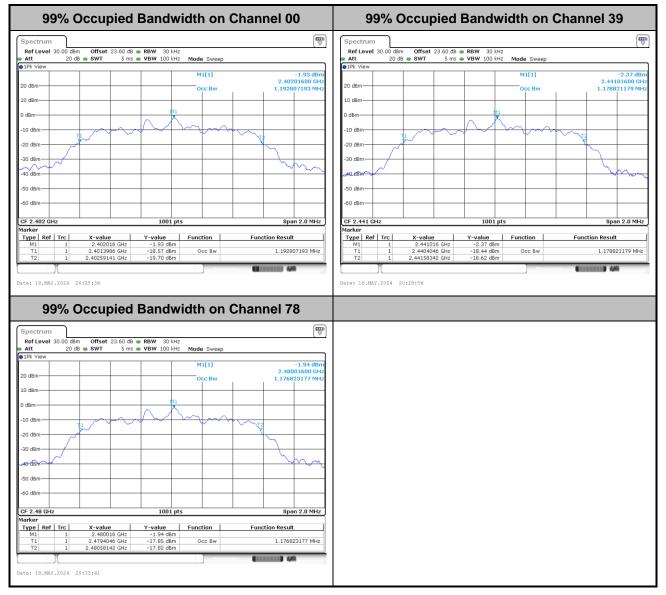


99% Occupied Bandwidth

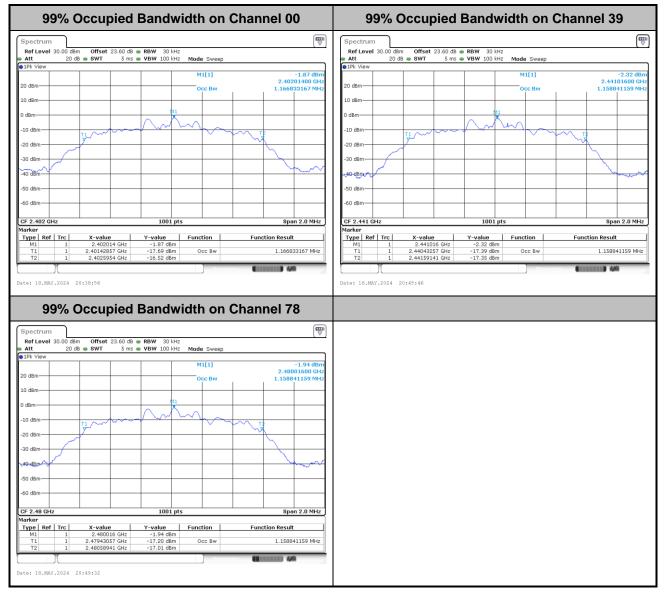
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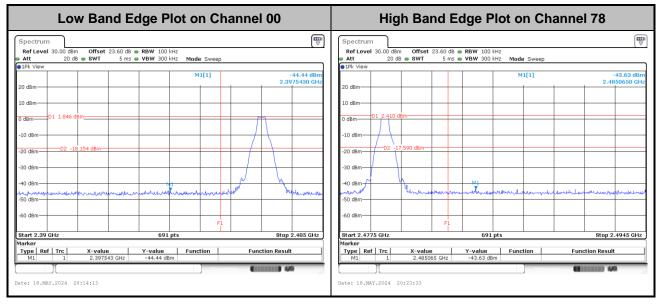


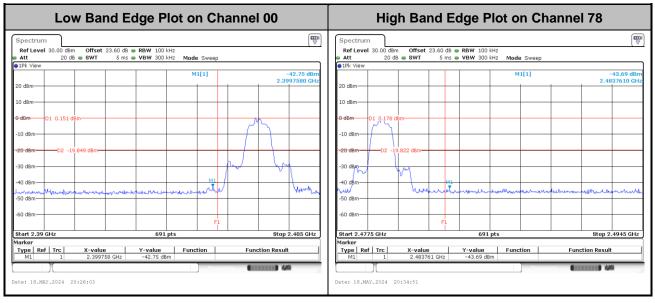




Band Edges

<1Mbps>







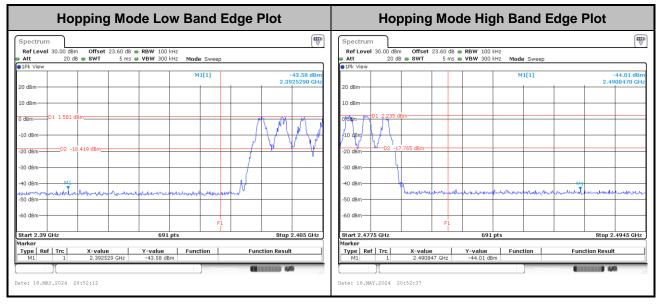
Low Band Ec	lge Plot on Channe	I 00	High Bai	nd Edge Plot on Ch	nannel 78
Spectrum Ref Level 30.00 dBm Offset 23.60 dB •				23.60 dB 👄 RBW 100 kHz	
	VBW 300 kHz Mode Sweep		Att 20 dB SWT	5 ms 🖶 VBW 300 kHz 🛛 Mode Sweep	
1Pk View 20 dBm	M1[1]	-42.12 dBm 2.3996060 GHz	● 1Pk View	M1[1]	-44.09 dBm 2.4872300 GHz
10 dBm			10 dBm		
0 dBm-01 0.226 dBm-	<u>لي الم الم الم الم الم الم الم الم الم الم</u>	n	0 dBm 01_0.200 dBm		
-10 dBm			-10 dBm -20 dBm D2 -19.800 dBm		
-30 dBm	MI MI	lung	-30 dBm		
-40 dBm	X J	human	-40 dβm	ma Ma	and the second sec
-60 dBm	F1		-60 dBm	F1	
Start 2.39 GHz	691 pts	Stop 2.405 GHz	Start 2.4775 GHz	691 pts	Stop 2.4945 GHz
Marker Type Ref Trc X-value M1 1 2.399606 GHz	Y-value Function Fun -42.12 dBm	ction Result	Marker Type Ref Trc X-value M1 1 2.4872		Function Result
Date: 18.MAY.2024 20:39:43	Measuring.	449	Date: 18.MAY.2024 20:49:53	Menter	

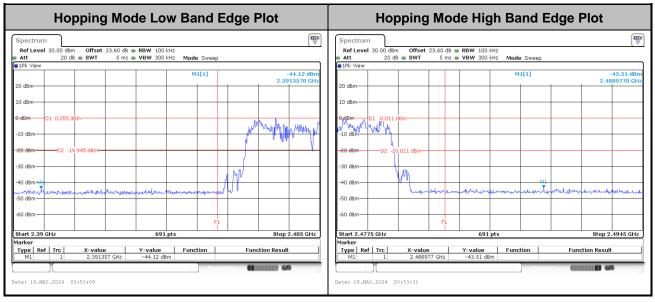




Hopping Mode Band Edges

<1Mbps>





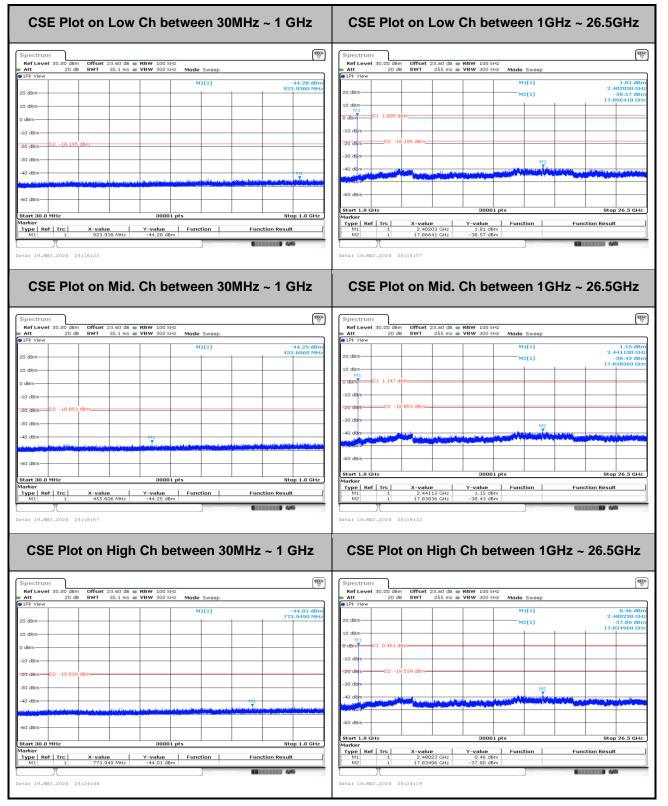


Hopping	g Mode Low Ba	Plot	He	opping	Mode Hi	igh Band E	Edge Plot	
Spectrum Ref Level 30.00 dBm Offset	23.60 dB 🖷 RBW 100 kHz			Spectrum Ref Level 30.00	dBm Offset 2	3.60 dB 👄 RBW 10	0 kHz	
Att 20 dB SWT	5 ms 🖷 VBW 300 kHz Mod	e Sweep		Att 2	0 dB 👄 SWT	5 ms 👄 VBW 30	0 kHz Mode Sweep	
1Pk View				1Pk View				
20 dBm	M	1[1]	-44.31 dBm 2.3946130 GHz	20 dBm-			M1[1]	-42.92 dBn 2.4843020 GH
20 UBM				20 0Bm				
10 dBm				10 dBm				
-D-dBm D1 0.158 dBm		الد	Madan What with mand of	Mr. maple	.45 dBm			
-10 dBmD2 -19.842 dBm				-10 BBM	N			
-30 dBm				-20 dbm02	-20.145 dBm			
-40 dBm	11	J. W		-40 dBm	wh .	м		
-50 dBm	Louisenstranticesturistic	hundrent		-50 dBm	heim	unnund	weatherhouse	rober monte manufacture and
-60 dBm				-60 dBm				
		F1				F1		
Start 2.39 GHz Marker	691 pts		Stop 2.405 GHz	Start 2.4775 GHz Marker		69	91 pts	Stop 2.4945 GHz
Type Ref Trc X-value M1 1 2.3946		tion Fun	ction Result	Type Ref Trc M1 1	X-value 2.484302	GHz -42.92		Function Result
		Measuring	44				Measu	44
Date: 18.MAY.2024 20:53:58				Date: 18.MAY.2024	20:54:20			

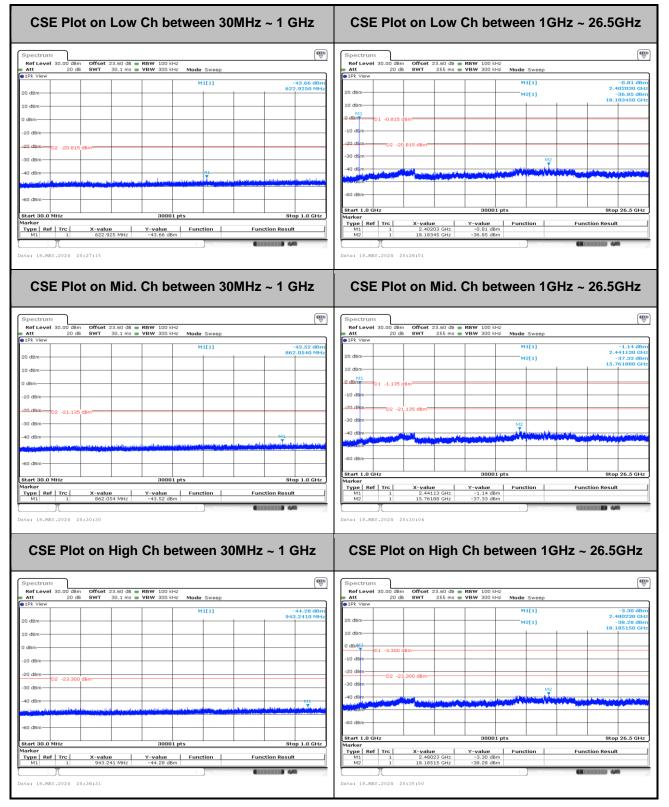


Conducted Spurious Emission

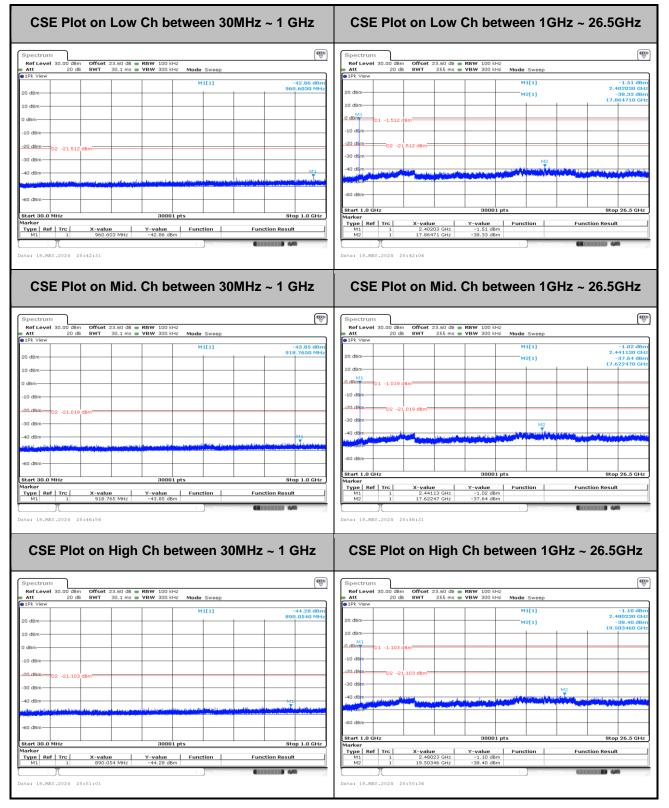
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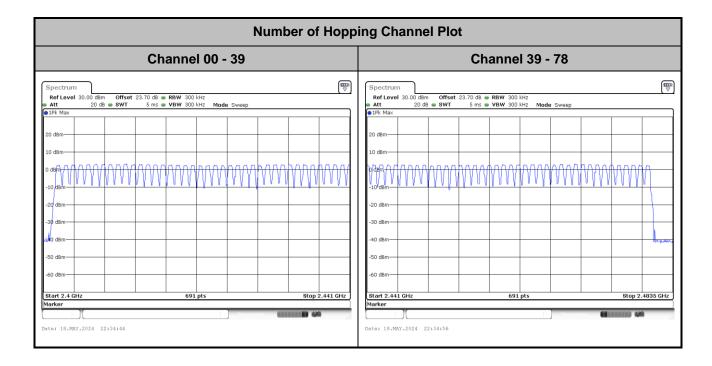






<Ant. 1>

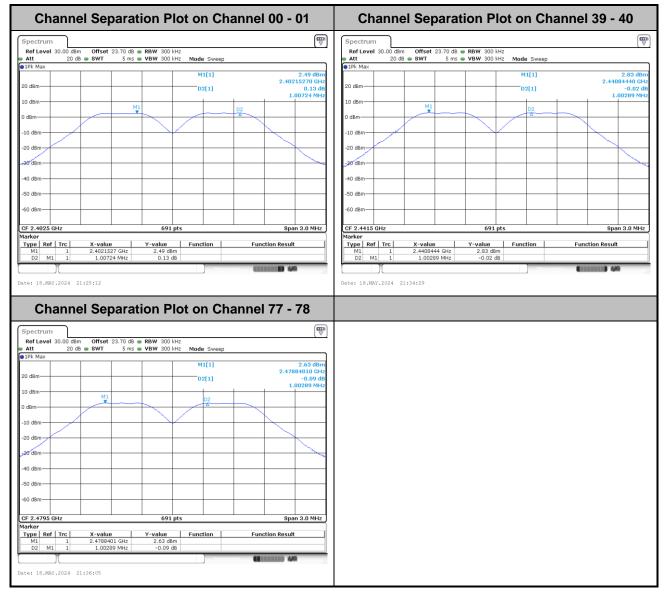
Number of Hopping Frequency





Hopping Channel Separation

<1Mbps>





Channel Sepa	ration Plot on Cha	innel 00 - 01	Channe	I Separat	ion Plot	on Cha	nnel 39 - 40
pectrum			Spectrum				
Ref Level 30.00 dBm Offset 23.70	0 dB ● RBW 300 kHz 5 ms ● VBW 300 kHz Mode Sweep		Ref Level 30.00 dBm		 RBW 300 kHz VBW 300 kHz 	Mode Sween	
IPk Max		0.00.10	• 1Pk Max				0.53
dBm	M1[1]	0.80 dBm 2.40185750 GHz	20 dBm			M1[1]	0.57 2.4408401
	D2[1]	0.13 dB 989.87 kHz				D2[1]	-0. 1.01592
dBm M1	D2		10 dBm	M1		D2	
Bm			0 dBm				
dBm-			-10 dBm				
dBm-			-20-dBm-				
dBm			-30 dBm				
dBm			-40 dBm				
dBm			-50 dBm-				
dBm			-60 dBm				
2.4025 GHz	691 pts	Span 3.0 MHz	CF 2.4415 GHz		691 pts		Span 3.0
er be Ref Trc X-value	Y-value Function	Function Result	Marker Type Ref Trc	X-value	Y-value F	unction	Function Result
11 1 2.4018575 GH	Iz 0.80 dBm	Function Result	M1 1	2.4408401 GHz	0.57 dBm	unction	Function Result
D2 M1 1 989.87 kH	iz 0.13 dB	E	D2 M1 1	1.01592 MHz	-0.03 dB		
	ration Plot on Cha	innel 77 - 78	Date: 18.MAY.2024 21	:53:27			
Channel Sepa	ration Plot on Cha		Date: 18.MAY.2024 21	:53:27			
Channel Sepa Dectrum Lef Level 30.00 dBm Offset 23.70	0 dB 🖷 RBW 300 kHz	nnel 77 - 78	Date: 18.MAY.2024 21	:53:27			
Channel Separ ectrum of Level 30.00 dBm Offset 23.70 tt 20 dB SWT S			Date: 18.MAY.2024 21	:53:27			
Channel Sepai	0 dB 🖷 RBW 300 kHz		Date: 18.MAY.2024 21	:53:27			
Channel Sepai	0 dB ● RBW 300 kHz fms ● VBW 300 kHz Mode Sweep	0.42 dBm 2.47884010 GHz -0.09 dB	Date: 18.MAY.2024 21	:53127			
Channel Separ	0 dB • RBW 300 kHz ms • VBW 300 kHz Mode Sweep M1[1]	0.42 dBm 2.47884010 GHz	Date: 18.MAY.2024 21	:53:27			
Channel Sepal	0 dB • RBW 300 kHz ms • VBW 300 kHz Mode Sweep M1[1]	0.42 dBm 2.47884010 GHz -0.09 dB	Date: 18.MAY.2024 21	:53:27			
Channel Separ ectrum of Level 30.00 dBm Offset 23.7(t t 20 dB SWT 5 k Max lBm MI am MI	0 dB • RBW 300 kHz ms • VBW 300 kHz Mode Sweep M1[1]	0.42 dBm 2.47884010 GHz -0.09 dB	Date: 18.MAY.2024 21	:53:27			
Channel Separ	0 dB • RBW 300 kHz ms • VBW 300 kHz Mode Sweep M1[1]	0.42 dBm 2.47884010 GHz -0.09 dB	Date: 18.MAY.2024 21	:53:27			
Channel Separ	0 dB • RBW 300 kHz ms • VBW 300 kHz Mode Sweep M1[1]	0.42 dBm 2.47884010 GHz -0.09 dB	Date: 18.MAY.2024 21	153127			
Channel Separ	0 dB • RBW 300 kHz ms • VBW 300 kHz Mode Sweep M1[1]	0.42 dBm 2.47884010 GHz -0.09 dB	Date: 18.MAY.2024 21	153127			
Channel Separ ectrum of Level 30.00 dBm Offset 23.70 tt 20 dB SWT k Max SWT dBm M1 dBm M1 dBm M1 dBm M1	0 dB • RBW 300 kHz ms • VBW 300 kHz Mode Sweep M1[1]	0.42 dBm 2.47884010 GHz -0.09 dB	Date: 18.MAY.2024 21	153127			
Channel Separ	0 dB • RBW 300 kHz ms • VBW 300 kHz Mode Sweep M1[1]	0.42 dBm 2.47884010 GHz -0.09 dB	Date: 18.MAY.2024 21	153127			
Channel Sepal	0 dB • RBW 300 kHz ms • VBW 300 kHz Mode Sweep M1[1]	0.42 dBm 2.47884010 GHz -0.09 dB	Date: 18.MAY.2024 21	153127			
Channel Sepai	D dB	0.42 dBm 2.47084010 GHz -0.09 dB 994.21 kHz	Date: 18.MAY.2024 21	153127			
Channel Separ	0 dB • RBW 300 kHz ms • VBW 300 kHz Mode Sweep M1[1]	0.42 dBm 2.47884010 GHz -0.09 dB	Date: 18.MAY.2024 21	:53:27			
Channel Separ	D dB = RBW 300 HHz ims = VBW 300 HHz M1[1] D2[1] D2[1] D2 D2 D2 D2 D2 D2 D2 D2 D2 D2	0.42 dBm 2.47084010 GHz -0.09 dB 994.21 kHz	Date: 18.MAY.2024 21	:53:27			
Channel Separ	0 B RBW 300 kHz Mode Sweep M1[1] D2[1] D2[1] D2[1] D2[1] D2[1] D2[1] D2[1] D2[1] D2[1] D2[1] D2[1] D2[1] D2[1] D2[1] D2[1] D2[1] D2[1] D2[1] D2[1] D2[1] D2[1] D2[1] D2[1] D2[1] D2[1] D2[1] D2[1] D2[1] D2[1] D2[1] D2[1] D2[1] D2[1]	0.42 dBm 2.47884010 GHz -0.09 dB 994.21 kHz	Date: 18.MAY.2024 21	:53:27			
Pectrum Ref Level 30.00 dBm Offset 23.70 Att 20 dB SWT 5 J dBm J J Max J dBm M1 M1 M1 J dBm M1 M1 M1 M1 J dBm M1 M2 M2 <thm2< th=""> M2 M2 <thm2< th=""></thm2<></thm2<>	0 B RBW 300 kHz Mode Sweep M1[1] D2[1] D2[1] D2[1] D2[1] D2[1] D2[1] D2[1] D2[1] D2[1] D2[1] D2[1] D2[1] D2[1] D2[1] D2[1] D2[1] D2[1] D2[1] D2[1] D2[1] D2[1] D2[1] D2[1] D2[1] D2[1] D2[1] D2[1] D2[1] D2[1] D2[1] D2[1] D2[1] D2[1]	0.42 dBm 2.47884010 GHz -0.09 dB 994.21 kHz	Date: 18.MAY.2024 21	:53:27			



Channel	Channel Separation Plot on Channel 00 - 01						nnel Se	parati	ion P	ot or	n Cha	innel 3	39 - 40
Spectrum					E	Spectrum)						Ē
-	Offset 23.70 dB =	RBW 300 kHz VBW 300 kHz Mod	de Sween		(-)	RefLevel 30.0	0 dBm Offset 20 dB e SWT	23.70 dB 👄	RBW 300 k	Hz Hz Mode	Sween		(•
1Pk Max	3 m 3 m 5					1Pk Max	20 00 - 011	3 115	10 1 300 1				
0 dBm			M1[1]		0.82 dBm 5270 GHz	20 dBm					1[1]		0.62 dBr 2.44084440 GH
		c.	D2[1]	9	0.16 dB 98.55 kHz					D	2[1]		-0.04 d 1.00289 MH
0 dBm	M1		D2			10 dBm-	M1						
dBm						0 dBm					<u>A</u>		\leq
0 dBm						-10 dBm							
D fBm					\rightarrow	-20 dBm							\rightarrow
I dBm						-30 dBm							
dBm						-40 dBm							
I dBm-						-50 dBm							
dBm						-60 dBm							
2.4025 GHz		691 pts		Span	3.0 MHz	CF 2.4415 GHz			691	pts			Span 3.0 MH
ker pe Ref Trc	X-value	Y-value Fun	nction	Function Result		Marker Type Ref Tr	c X-valu	e	Y-value	Fund	tion	Eunctio	n Result
M1 1 2	2.4021527 GHz	0.82 dBm 0.16 dB		Function Result		M1	1 2.44084		0.62 dBr -0.04 d	n		Functio	II Kesuit
D2 M1 1	998.55 KHZ	0.16 dB		1		D2 MI	1 1.002	89 MHZ	-0.04 0	8	1		
)	-	
		on Plot o	on Chan	nel 77 - 7	78	Date: 18.MAY.20	24 22:30:18						
Channel		on Plot o	on Chan	nel 77 - 7		Date: 18.MAY.20	24 22:30:18						
Channel	Separati	RBW 300 kHz		nel 77 - 7	78	Date: 18.MAY.20	24 22:30:18						
Channel	Separati	RBW 300 kHz VBW 300 kHz Mod	de Sweep		(The second seco	Date: 18.MAY.20	24 22:30:18						
Channel	Separati	RBW 300 kHz VBW 300 kHz Moo	de Sweep M1[1]		0.45 dBm 3570 GHz	Date: 18.MAY.20	24 22:30:18						
Channel	Separati	RBW 300 kHz VBW 300 kHz Moo	de Sweep	2.4788	(♥) 0.45 dBm	Date: 18.MAY.20	24 22:30:18						
Channel	Separati	RBW 300 kHz VBW 300 kHz Moo	de Sweep M1[1] D2[1]	2.4788	0.45 dBm 3570 GHz -0.08 dB	Date: 18.MAY.20	24 22:30:18						
Channel	Separati offset 23.70 dB swr 5 ms	RBW 300 kHz VBW 300 kHz Moo	de Sweep M1[1]	2.4788	0.45 dBm 3570 GHz -0.08 dB	Date: 18.MAY.20	24 22:30:18						
Channel Dectrum of Level 30.00 dBm 20 dB Pt Max dBm dBm Bm	Separati offset 23.70 dB swr 5 ms	RBW 300 kHz VBW 300 kHz Moo	de Sweep M1[1] D2[1]	2.4788	0.45 dBm 3570 GHz -0.08 dB	Date: 16.MAY.20	24 22:30:18						
Channel ectrum of Level 30.00 dBm 20 dB % Max dBm dBm dBm dBm dBm	Separati offset 23.70 dB swr 5 ms	RBW 300 kHz VBW 300 kHz Moo	de Sweep M1[1] D2[1]	2.4788	0.45 dBm 3570 GHz -0.08 dB	Date: 16.MAY.20	24 22:30:18						
Channel	Separati offset 23.70 dB swr 5 ms	RBW 300 kHz VBW 300 kHz Moo	de Sweep M1[1] D2[1]	2.4788	0.45 dBm 3570 GHz -0.08 dB	Date: 18.MAY.20	24 22:30:18						
Channel	Separati offset 23.70 dB swr 5 ms	RBW 300 kHz VBW 300 kHz Moo	de Sweep M1[1] D2[1]	2.4788	0.45 dBm 3570 GHz -0.08 dB	Date: 18.MAY.20	24 22:30:18						
Channel	Separati offset 23.70 dB swr 5 ms	RBW 300 kHz VBW 300 kHz Moo	de Sweep M1[1] D2[1]	2.4788	0.45 dBm 3570 GHz -0.08 dB	Date: 18.MAY.20	24 22:30:18						
Channel	Separati offset 23.70 dB swr 5 ms	RBW 300 kHz VBW 300 kHz Moo	de Sweep M1[1] D2[1]	2.4788	0.45 dBm 3570 GHz -0.08 dB	Date: 18.MAY.20	24 22:30:18						
Channel	Separati offset 23.70 dB swr 5 ms	RBW 300 kHz VBW 300 kHz Moo	de Sweep M1[1] D2[1]	2.4788	0.45 dBm 3570 GHz -0.08 dB	Date: 18.MAY.20	24 22:30:18						
Channel Dectrum 20 d8 Pk Max d8m	Separati offset 23.70 dB swr 5 ms	RBW 300 kHz VBW 300 kHz Moc	de Sweep M1[1] D2[1]	2.4788	0.45 dBm 3570 0H2 -0.08 dB 0724 MH2	Date: 18.MAY.20	24 22:30:18						
Channel Dectrum Certue S0.00 dBm Control Contr	Separati Swr 23.70 dB Swr 5 ms	RBW 300 kHz VBW 300 kHz Moc	de Sweep M1[1] D2[1]	2.4789	0.45 dBm 3570 GHz -0.08 dB	Date: 18.MAY.20	24 22:30:18						
Channel Pectrum Ref Lovel 30.00 dBm 20 dB PF Max dBm	Separati offset 23.70 dB swr 5 ms	RBW 300 kHz VBW 300 kHz Moc	de Sweep M1[1] D2[1]	2.4788	0.45 dBm 3570 0H2 -0.08 dB 0724 MH2	Date: 18.MAY.20	24 22:30:18						
Channel pectrum Ret tovel 30.00 dBm 20 dB 0 dBm	Separati	RBW 300 kHz Moc VBW 300 kHz Moc Image: State Stat	de Sweep M1[1] D2[1]	2.4789	0.45 dBm 3570 0H2 -0.08 dB 0724 MH2	Date: 18.MAY.20	24 22:30:18						
Spectrum Ref Level 30.00 dBm Att 20 dB • 1Pk Max 0 dBm 0 dBm 0 dBm 50 dBm 50 dBm	Separati Offset 23.70 dB SWT S ms M1	RBW 300 kHz Moc VBW 300 kHz Moc VBW 300 kHz Moc Image: State of the stat	de Sweep M1[1] D2[1]	2.4789	0.45 dBm 3570 0H2 -0.08 dB 0724 MH2	Date: 18.MAY.20	24 22:30:18						



Dwell Time

Package Transfer Time Plot							
Spectrum							
	set 23.70 dB 👄 RBW						
Att 20 dB	T 20 ms 👄 VBW	1 MHz					
1Pk Max							
		M1[1]		1.54 dBm			
20 dBm		D2[1]		7.8800 ms 0.16 dB			
10 dBm		52[1]		2.9000 ms			
	M	D2 D3					
0 dBm							
-10 dBm							
-20 dBm							
-30 dBm							
N40 dBm	- Hannel	landya	- HARMA	man			
-50 dBm							
-60 dBm							
CF 2.402 GHz Marker		1001 pts		2.0 ms/			
	alue Y-val	ue Function	Function R	esult			
M1 1	7.88 ms 1.5	4 dBm					
D2 M1 1 D3 M1 1		.16 dB .00 dB					
			Ready College				
Date: 12.APR.2024 21:29:01							
aco. 12.mm.2024 21.25.01							

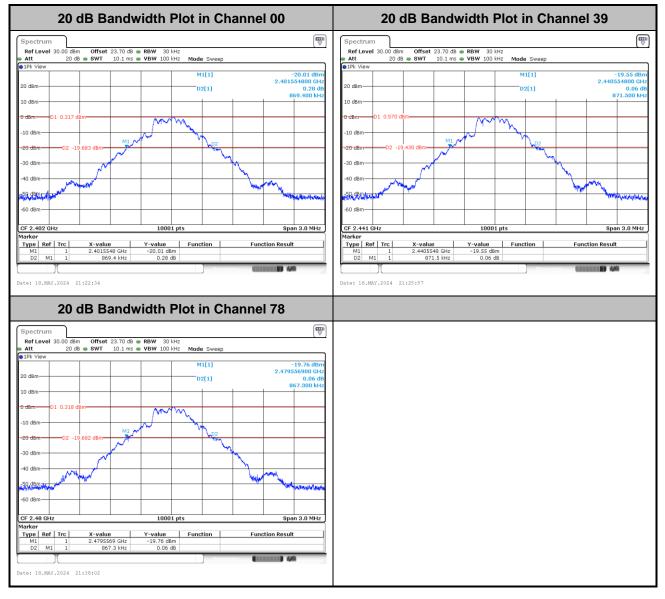
Remark:

- In normal mode, hopping rate is 1600 hops/s with 6 slots in 79 hopping channels. With channel hopping rate (1600 / 6 / 79) in Occupancy Time Limit (0.4 x 79) (s),Hops Over Occupancy Time comes to (1600 / 6 / 79) x (0.4 x 79) = 106.67 hops.
- In AFH mode, hopping rate is 800 hops/s with 6 slots in 20 hopping channels. With channel hopping rate (800 / 6 / 20) in Occupancy Time Limit (0.4 x 20) (s), Hops Over Occupancy Time comes to (800 / 6 / 20) x (0.4 x 20) = 53.33 hops.
- Dwell Time(s) = Hops Over Occupancy Time (hops) x Package Transfer Time.

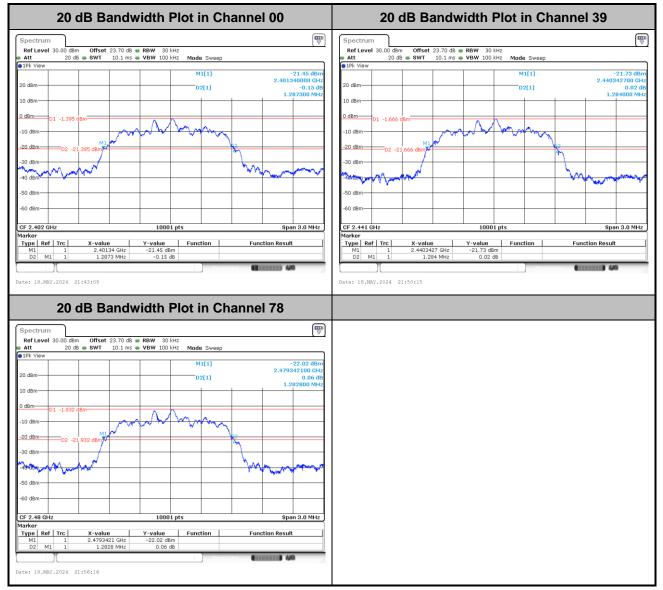


20dB Bandwidth

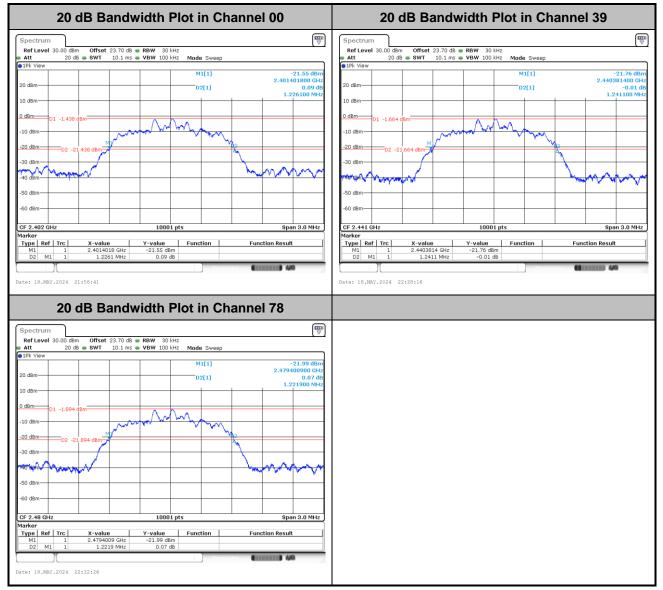
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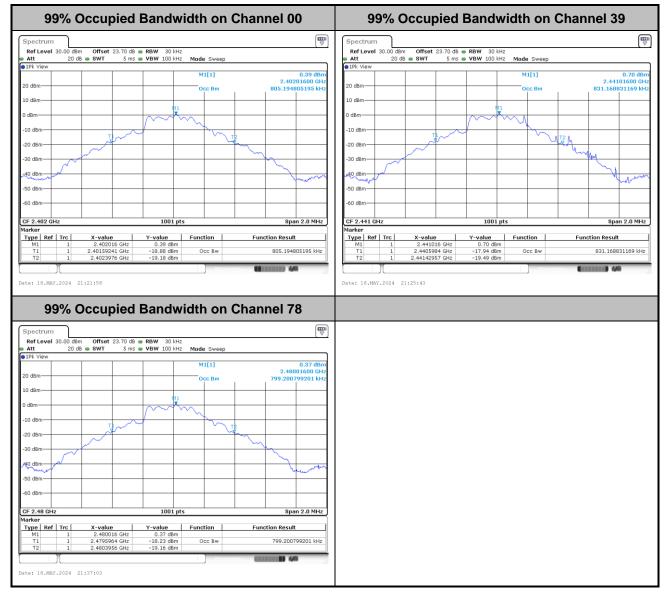




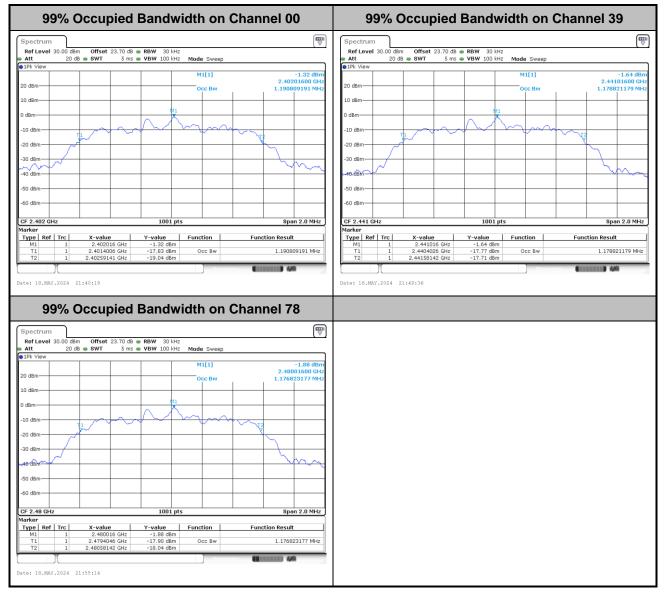


99% Occupied Bandwidth

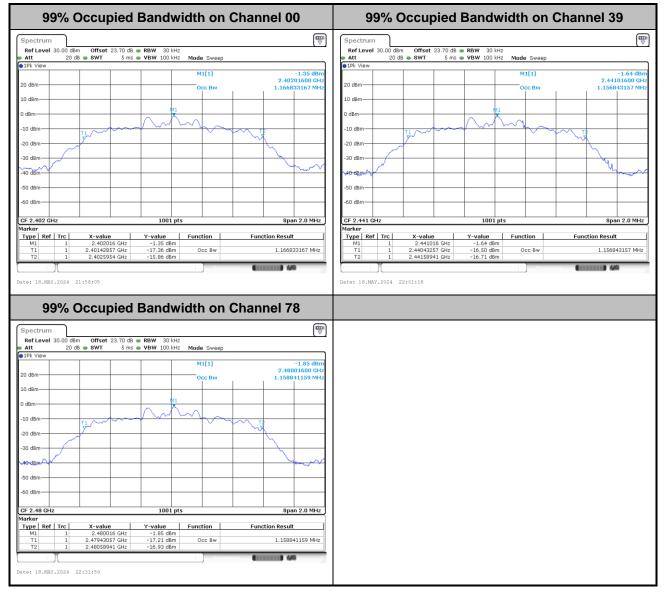
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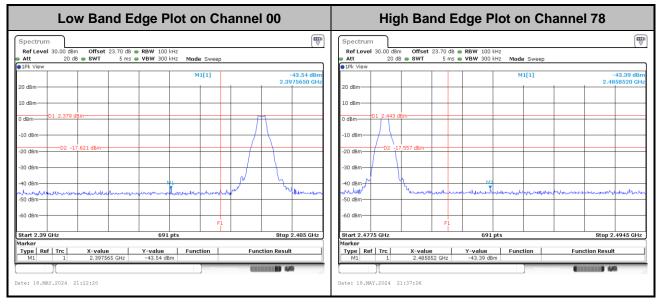


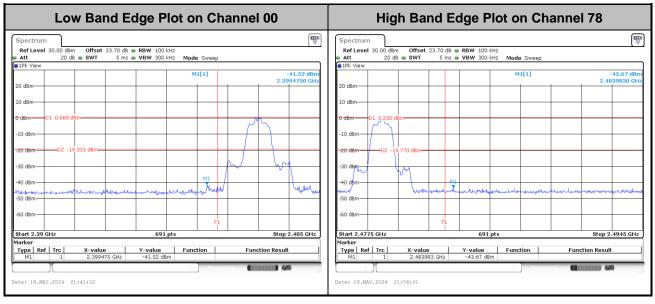




Band Edges

<1Mbps>







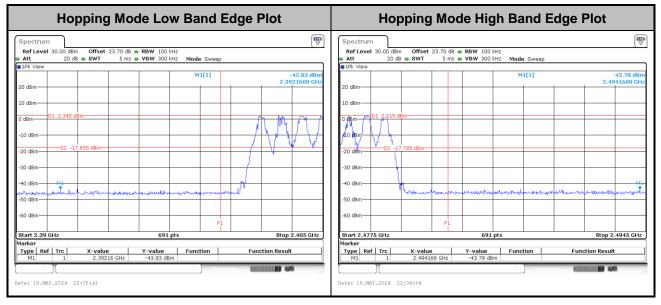
Low Band	d Edge Plot on Channe	el 00	High Band Edge Plot on Channel 78
Spectrum Ref Level 30.00 dBm Offset 23.	70 dB 🖷 RBW 100 kHz		Spectrum mm Ref Level 30.00 dBm Offset 23.70 dB ● RBW 100 kHz Att 20 dB ● SWT 5 ms ● VBW 300 kHz
Att 20 dB - SWI IPk View	5 ms e VBW 300 kHz Mode Sweep		Att 20 dB SWT 5 ms VBW 300 kHz Mode Sweep
20 dBm	M1[1]	-42.20 dBm 2.3995410 GHz	M1[1] -43.06 dBm 20 dBm
10 dBm			10 dBm
0 dBm 01 0.697 dBm	<u>س</u>	Mr.	0 dBm 01 0.276 dBm
-10 dBm			-10 dbm
-30 dBm	prod	hund	-30 date
-40 dBm-	MI /	hurry	-40 dbm
-60 dBm			-60 dBm
Start 2.39 GHz	691 pts	Stop 2.405 GHz	Start 2.4775 GHz 691 pts Stop 2.4945 GHz
Marker Type Ref Trc X-value M1 1 2.399541		nction Result	Marker Type Ref Trc X-value Y-value Function Function Result M1 1 2.489854 GHz -43.06 dBm
	Measuring		Messador Utilitati 🖬 🚧
Date: 18.MAY.2024 21:58:27			Date: 18.MAY.2024 22:32:12

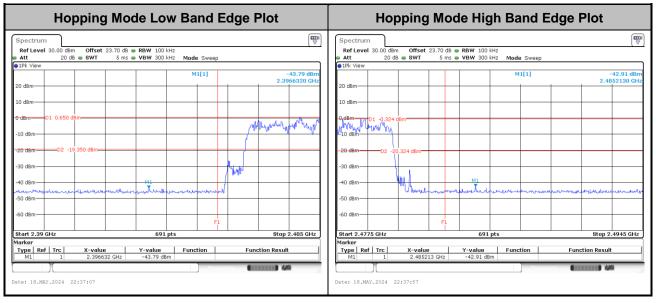




Hopping Mode Band Edges

<1Mbps>







Hopping N	lode Low Band E	dge Plot	Hopping Mode High Band Edge Plot					
	0 dB ● RBW 100 kHz		Spectrum Ref Level 30.00 dBm					
	5 ms 🖶 VBW 300 kHz 🛛 Mode Sweep			seswT 5msesvBw	300 kHz Mode Sweep			
1Pk View 20 dBm	M1[1]	-43.67 dBm 2.3959590 GHz	1Pk View 20 dBm		M1[1]	-43.43 dBm 2.4848190 GHz		
10 dBm			10 dBm-					
-10 dBm D1 0.187 dBm		Munthenyor	D1 0.246 di	Bm				
-20 dBm D2 -19.813 dBm			- 20 dBm D 2 -19	.754 dBm				
-40 dBm	- sop		-40 dBm	with works we wante	malumanum	an and the states of the second se		
-60 dBm	F1		-60 dBm	F1				
Start 2.39 GHz	691 pts	Stop 2.405 GHz	Start 2.4775 GHz		691 pts	Stop 2.4945 GHz		
Marker Type Ref Trc X-value M1 1 2.395959 Gł 1	Hz -43.67 dBm	Function Result	Marker Type Ref Trc M1 1	X-value Y-value 2.484819 GHz -43	alue Function .43 dBm	Function Result		
Date: 18.MAY.2024 22:39:15			Date: 18.MAY.2024 2	2:39:42				