CERTIFICATION TEST REPORT

Report Number. : 4791196575-E9V2

Applicant	:	SAMSUNG ELECTRONICS CO., LTD. 129 SAMSUNG-RO, YEONGTONG-GU, SUWON-SI, GYEONGGI-DO, 16677, KOREA
Model	:	SM-F956U, SM-F956U1
FCC ID	:	A3LSMF956U
EUT Description	:	GSM/WCDMA/LTE/5G NR Phone + BT/BLE, DTS/UNII a/b/g/n/ac/ax, NFC, WPT and UWB
Test Standard(s)	:	FCC 47 CFR PART 15 SUBPART C

Date Of Issue:
2024-05-04

Prepared by:
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IAS ACCREDITED
Testing Laboratory
TL-637

Revision History

Rev.	Issue Date	Revisions	Revised By
V1	2024-04-22	Initial issue	Dexter(Hyunsik) Yun
V2	2024-05-04	Updated to address TCB's question	Dexter(Hyunsik) Yun

TABLE OF CONTENTS

1. ATTESTATION OF TEST RESULTS

COMPANY NAME:	SAMSUNG ELECTRONICS CO., LTD.
EUT DESCRIPTION:	GSM/WCDMA/LTE/5G NR Phone + BT/BLE, DTS/UNII a/b/g/n/ac/ax, NFC, WPT and UWB
MODEL:	SM-F956U, SM-F956U1
SERIAL NUMBER:	7b456b5547507ece, 7b456b5517507ece (CONDUCTED); R3CX10W6K4M, R3CX309QRBH (RADIATED);
DATE TESTED:	2024-02-20 ~ 2024-04-22

APPLICABLE STANDARDS	
STANDARD	**TEST RESULTS**
47 CFR Part 15 Subpart C	Complies

UL KOREA LTD. tested the above equipment in accordance with the requirements set forth in the above standards. All indications of Pass/Fail in this report are opinions expressed by UL KOREA LTD. based on interpretations and/or observations of test results. Measurement Uncertainties were not taken into account and are published for informational purposes only. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

Note: The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. This document may not be altered or revised in any way unless done so by UL KOREA LTD. and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by UL KOREA LTD. will constitute fraud and shall nullify the document. This report must not be used by the client to claim product certification, approval, or endorsement by IAS, any agency of the Federal Government, or any agency of any government.

Approved & Released For
UL KOREA LTD. By:

Seokhwan Hong
Suwon Lab Engineer
UL KOREA LTD.

Tested By:

Dexter(Hyunsik) Yun
Suwon Lab Engineer
UL KOREA LTD.

2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with following methods.

1. FCC 47 CFR Part 2.
2. FCC 47 CFR Part 15.
3. KDB 558074 D01 15.247 Meas Guidance v05r02.
4. KDB 662911 D01 v02r01
5. ANSI C63.10-2013.

3. FACILITIES AND ACCREDITATION

The test sites and measurement facilities used to collect data are located at 218 Maeyeong-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16675, Korea. Line conducted emissions are measured only at the 218 address. The following table identifies which facilities were utilized for radiated emission measurements documented in this report. Specific facilities are also identified in the test results sections.

218 Maeyeong-ro
☒ Chamber 1(3m semi-anechoic chamber)
☒ Chamber 2(3m semi-anechoic chamber)
☒ Chamber 3(3m semi-anechoic chamber)
☐ Chamber 4(3m Full-anechoic chamber)
☐ Chamber 5(3m Full-anechoic chamber)

UL KOREA LTD. is accredited by IAS, Laboratory Code TL-637. The full scope of accreditation can be viewed at https://www.iasonline.org/wp-content/uploads/2017/05/TL-637-cert-New.pdf.

4. DECISION RULES AND MEASUREMENT UNCERTAINTY

4.1. METROLOGICAL TRACEABILITY

The measuring equipment utilized to perform the tests documented in this report has been calibrated in accordance with the manufacturer's recommendations, and is traceable to recognized national standards.

4.2. SAMPLE CALCULATION

Where relevant, the following sample calculation is provided:

Field Strength (dBuV/m) = Measured Voltage (dBuV) + Antenna Factor (dB/m) + Cable Loss (dB) – Preamp Gain (dB)
36.5 dBuV + 18.7 dB/m + 0.6 dB – 26.9 dB = 28.9 dBuV/m

AC Corrected Reading (dBuV) = Measured Voltage (dBuV) + Extension Cord Loss (dB) + Cable Loss (dB)
44.72 dBuV = 34.72 dBuV + 9.9 dB + 0.1 dB

4.3. MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus:

PARAMETER	UNCERTAINTY
Conducted Disturbance, 0.15 to 30 MHz	2.79 dB
Radiated Disturbance, 9 kHz to 30 MHz	1.69 dB
Radiated Disturbance, 30 MHz to 1 GHz	4.07 dB
Radiated Disturbance, 1 GHz to 18 GHz	4.99 dB
Radiated Disturbance, Above 18 GHz	5.96 dB

Uncertainty figures are valid to a confidence level of 95%.

4.4. DECISION RULES

Decision rule for statement(s) of conformity is based on Clause 4.4.3 in IEC Guide 115:2023.

5. EQUIPMENT UNDER TEST

5.1. EUT DESCRIPTION

The EUT is a GSM/WCDMA/LTE/5G NR Phone + BT/BLE, DTS/UNII a/b/g/n/ac/ax, NFC, WPT and UWB. This test report addresses the DSS(Bluetooth) operational mode.

Representative model	Difference	Derivative model
		SM-F956U1
SM-F956U	Hardware	Same
	Software	The UI has changed according to Service Provider

The model SM-F956U was used for final testing and is representative of the test results in this report.

5.2. MAXIMUM OUTPUT POWER

The transmitter has a maximum peak conducted output power as follows:

Frequency Range [MHz]	Mode	Power Mode	Output Power [dBm]	Output Power [mW]
2 402 ~ 2 480	Basic GFSK	Peak	20.490	111.944
		Average	19.272	84.567
	Enhanced Pi/4-DPSK	Peak	20.000	100.000
		Average	16.038	40.161
	Enhanced 8PSK	Peak	20.720	118.032
		Average	16.073	40.486

5.3. DESCRIPTION OF AVAILABLE ANTENNAS

An intentional radiator antenna shall be designed to ensure that no antenna other than that furnished by the responsible party can 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 internal antenna was Permanently attached.
Therefore this E.U.T Complies with the requirement of §15.203.

The radio utilizes a internal antenna, with a maximum gain of:

Frequency Band[MHz]	ANT1 Gain [dBi]	ANT2 Gain [dBi]	Correlated Chains Directional Gain[dBi]
DTS 2400 – 2483.5	-2.22	-1.78	1.01

Directional gain for the MIMO operations is determined using KDB 662911 D01 Multiple Transmitter Output section F (2)(d)(1) for *Unequal antenna gains, with equal transmit powers*. The gain is calculated using the formula for correlated transmissions across the two transmit antennas.

Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20} + \ldots + 10^{GN/20})^2 / N_{ANT}$] dBi.
Sample calculation for this device with $N_{ANT} = 2$
Directional gain = 10 log[$(10^{-2.22/20} + 10^{-1.78/20})^2 / 2$] =1.01 dBi

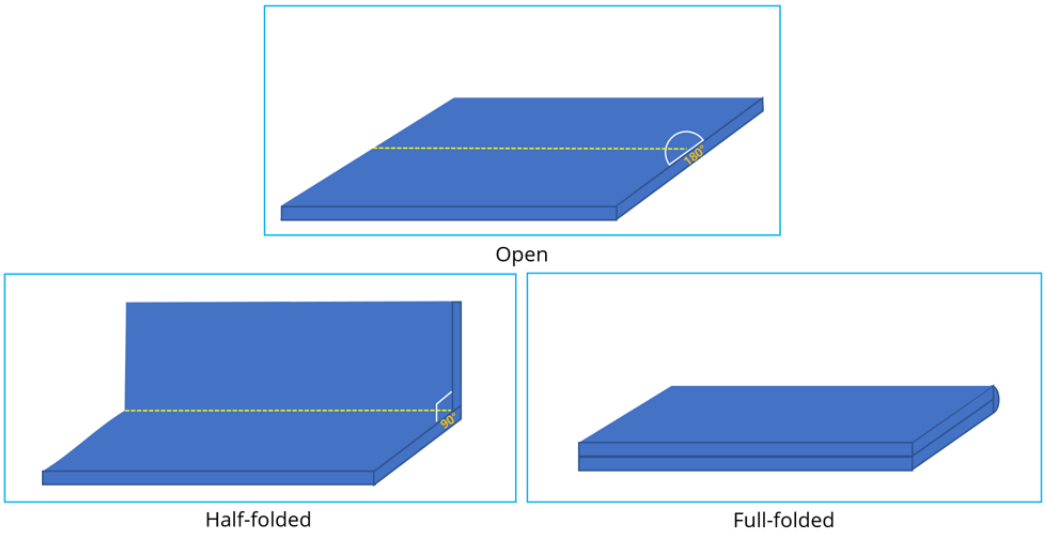
“SUB4” and “SUB3” as indicated in antenna specification are written as ANT1 and ANT2 in this report.

5.4. WORST-CASE CONFIGURATION AND MODE

Both Bluetooth Diversity mode and DUAL mode have been investigated and confirmed.

The fundamentals of the EUT were investigated in three orthogonal orientations X, Y and Z.
It was determined that below table's orientation was the worst-case orientation.

Worst-case	ANT1	ANT2	DUAL
Axis	X	Y	Y
Foldable condition	Half-folded	Open	Open



For conducted power test, both Diversity and DUAL mode were verified and reported.
In DUAL mode, except power test, no noticeable data was found. Tests was performed on Diversity mode.

Radiated and power line conducted tests were performed with EUT connected to AC power adapter as the worst-case configuration. Radiated harmonics spurious 1~18 GHz Low/Mid/High channels,18-26GHz were performed with the EUT set at the Diversity and DUAL mode. Radiated emission below 1GHz and power line conducted emission were performed with the EUT set to transmit at the channel with highest output power as worst-case scenario.

For Radiated band-edge and spurious test, tests were performed on Diversity mode and DUAL mode.

All radiated and power line conducted tests were performed attached with travel adapter for the worst-case condition mode.

GFSK, Pi/4-DQPSK, 8PSK average Power are all investigated, The GFSK & 8PSK Power are the worst case. Testing is based on this mode to showing compliance.

5.5. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

Support Equipment List				
Description	**Manufacturer**	**Model**	**Serial Number**	**FCC ID**
Charger	SAMSUNG	EP-TA800	R37N9QP6H39DK3	N/A
Data Cable	SAMSUNG	EP-DN980	GH39-02111A	N/A

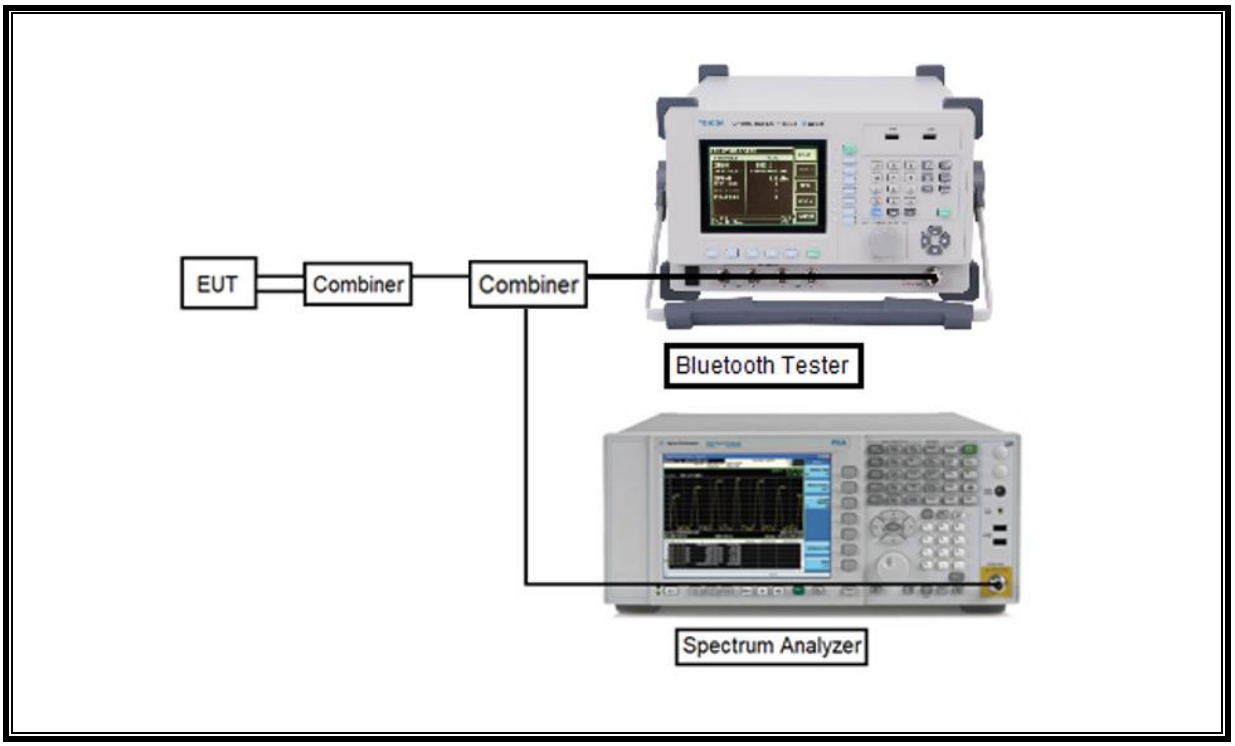
I/O CABLE

I/O Cable List						
Cable No.	**Port**	**# of identical ports**	**Connector Type**	**Cable Type**	**Cable Length (m)**	**Remarks**
1	DC Power	1	C Type	Shielded	1.0 m	N/A

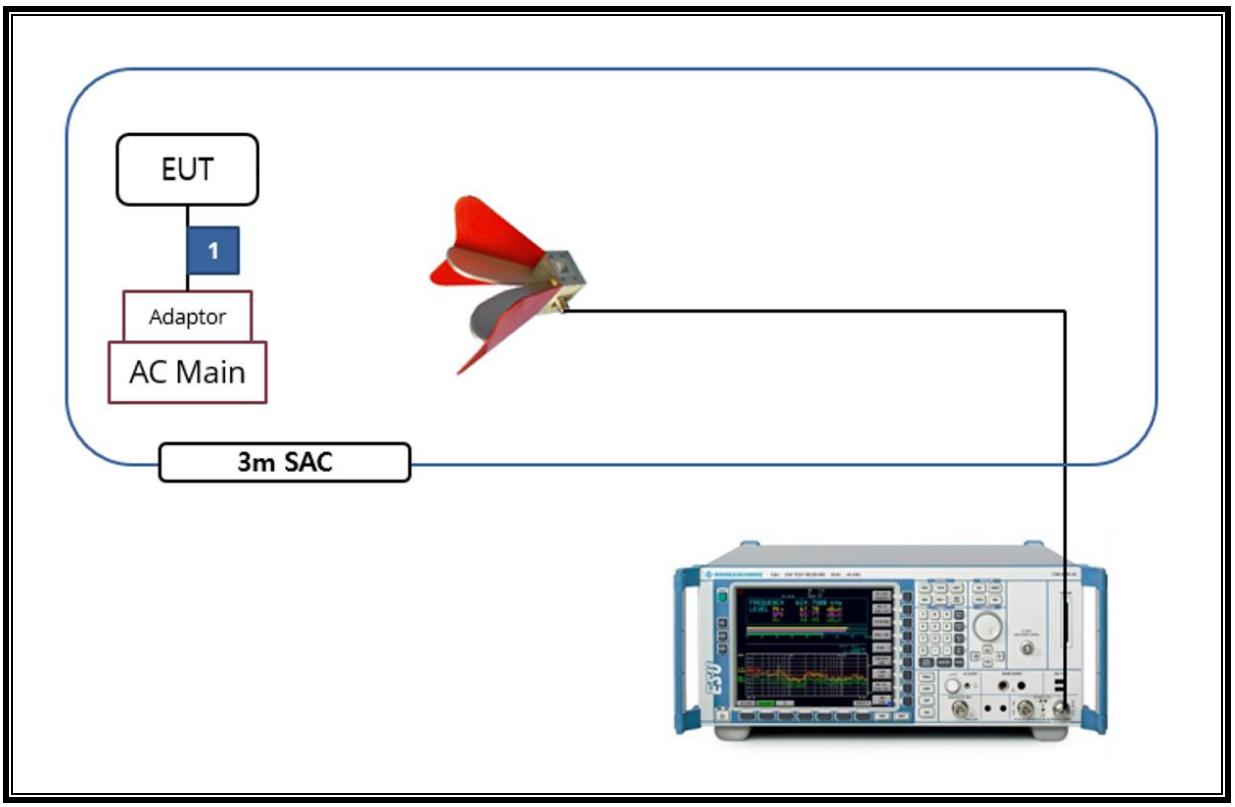
TEST SETUP

The EUT is continuously communicating to the Bluetooth tester during the tests.
Test software enable BT communications.

SETUP DIAGRAM FOR TESTS (CONDUCTED TEST SETUP)



SETUP DIAGRAM FOR TESTS (RADIATED TEST SETUP)



6. TEST AND MEASUREMENT EQUIPMENT

The following test and measurement equipment was utilized for the tests documented in this report:

Test Equipment List				
Description	**Manufacturer**	**Model**	**S/N**	**Cal Due**
Antenna, Bilog, 30MHz-1GHz	SCHWARZBECK	VULB9163	750	2024-08-15
Antenna, Loop, 9kHz-30MHz	R&S	HFH2-Z2	100418	2025-09-06
Antenna, Horn, 18 GHz	ETS	3117	00168724	2024-08-04
Antenna, Horn, 18 GHz	ETS	3117	00168717	2024-08-21
Antenna, Horn, 40 GHz	ETS	3116C	00166155	2024-08-02
Preamplifier	ETS	3115-PA	00167475	2024-07-25
Preamplifier	ETS	3116C-PA	00168841	2024-07-25
Directional Antenna	Cobham	FPA3-0.8-6.0R/1329	80108-0004	N/A
Directional Antenna	Cobham	FPA3-0.8-6.0R/1329	110367-0003	N/A
Preamplifier, 1000 MHz	Sonoma	310N	341282	2024-07-24
Preamplifier, 18 GHz	Miteq	AFS42-00101800-25-S-42	1896138	2024-07-25
Preamplifier, 18 GHz	Miteq	AFS42-00101800-25-S-42	2029169	2024-07-24
Spectrum Analyzer, 44 GHz	Agilent / HP	N9030A	MY54170614	2024-07-25
Spectrum Analyzer, 44 GHz	KEYSIGHT	N9040B	MY60080268	2025-01-03
Average Power Sensor	Agilent / HP	U2000	MY54270007	2024-07-23
Average Power Sensor	Agilent / HP	U2000	MY54260010	2024-07-24
Bluetooth Tester	TESCOM	TC-3000C	3000C000546	2024-07-24
Power Splitter	MINI-CIRCUITS	WA1534	UL003	2025-01-03
Power Splitter	MINI-CIRCUITS	WA1534	UL004	2025-01-03
Attenuator	PASTERNACK	PE7087-10	A009	2024-07-24
Attenuator	PASTERNACK	PE7087-10	A001	2024-07-23
EMI Test Receive, 40 GHz	R&S	ESU40	100439	2024-07-23
EMI Test Receive, 40 GHz	R&S	ESU40	100457	2024-07-24
Low Pass Filter 5GHz	Micro-Tronics	LPS17541	009	2024-07-23
High Pass Filter 3GHz	Micro-Tronics	HPM17543	010	2024-07-23
High Pass Filter 6GHz	Micro-Tronics	HPS17542	009	2024-07-23
LISN	R&S	ENV-216	101836	2024-07-23
Termination	WEINSCHEL	M1406A	T09	2024-07-23

UL Software			
Description	**Manufacturer**	**Model**	**Version**
Radiated software	UL	UL EMC	Ver 9.5
AC Line Conducted software	UL	UL EMC	Ver 9.5

7. TEST RESULTS SUMMARY

FCC Part Section	Test Description	Test Limit	Test Condition	Test Result
2.1051, 15.247(d)	Band Edge / Conducted Spurious Emission	-20 dBc	Conducted	Complies
15.247 (b)(1)	TX conducted output power	< 21 dBm		Complies
15.247 (a)(1)	Hopping frequency separation	> two-thirds of the 20 dB bandwidth		Complies
15.247 (a)(1)(iii)	Number of Hopping channels	More than 15 non-overlapping channels		Complies
15.247 (a)(1)(iii)	Avg Time of Occupancy	< 8 dBm		Complies
15.207(a)	AC Power Line conducted emissions	Section 11	Power Line conducted	Complies
15.205, 15.209	Radiated Spurious Emission	< 54dBuV/m(Av)	Radiated	Complies

8. MEASUREMENT METHODS

20dB BW : ANSI C63.10, Section 6.9.2

99% BW : ANSI C63.10, Section 6.9.3

HOPPING FREQUENCY SEPARATION : ANSI C63.10, Section 7.8.2

NUMBER OF HOPPING CHANNELS : ANSI C63.10, Section 7.8.3

AVERAGE TIME OF OCCUPANCY : ANSI C63.10, Section 7.8.4

OUTPUT POWER : ANSI C63.10, Section 7.8.5.

Out-of-band EMISSIONS (Conducted) : ANSI C63.10, Section 7.8.6, 7.8.8

Out-of-band EMISSIONS IN NON-RESTRICTED BANDS: ANSI C63.10, Section 6.

Out-of-band EMISSIONS IN RESTRICTED BANDS : ANSI C63.10, Section 6.

AC Power Line Conducted Emission : ANSI C63.10-2013, Section 6.2.

9. ANTENNA PORT TEST RESULTS

9.1. ON TIME AND DUTY CYCLE

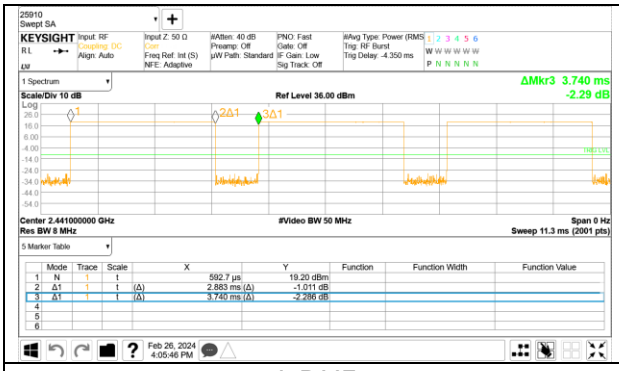
LIMITS

None; for reporting purposes only.

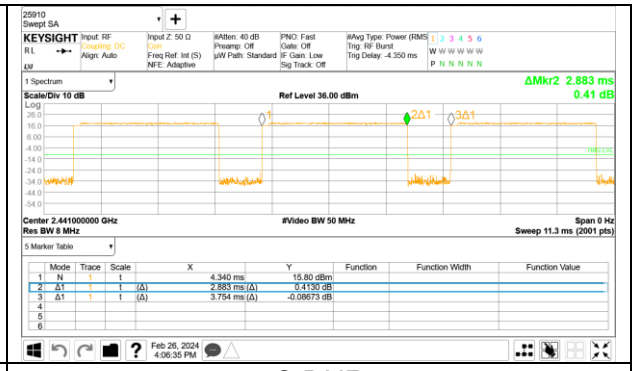
PROCEDURE

ANSI C63.10, Section 11.6 : Zero-Span Spectrum Analyzer Method.

ON TIME AND DUTY CYCLE RESULTS



1-DH5



3-DH5

Mode	On time [msec]	Period [msec]	Duty Cycle [%]	1/T Minimum VBW [kHz]
2 400 ~ 2 483.5 MHz Band				
BDR	2.883	3.740	77.086	0.35
EDR	2.883	3.754	76.798	0.35

9.2. 20 dB BANDWIDTH

LIMITS

None; for reporting purposes only.

TEST PROCEDURE

The transmitter output is connected to a spectrum analyzer. 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 approximately three times RBW, unless otherwise specified by the applicable requirement. The sweep time is coupled.

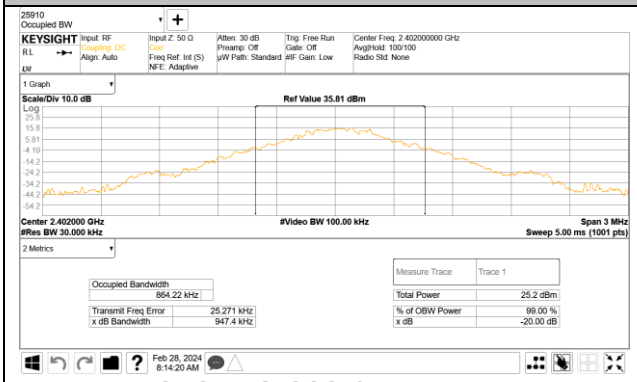
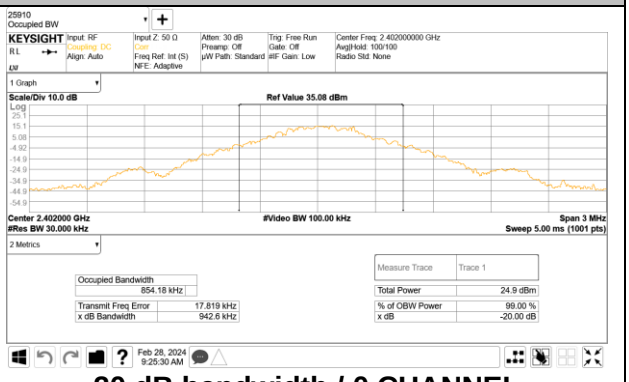
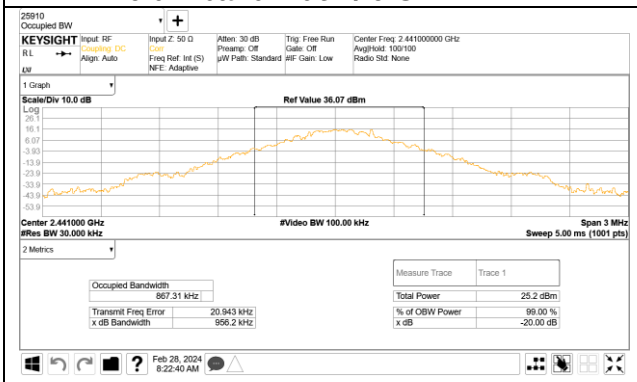
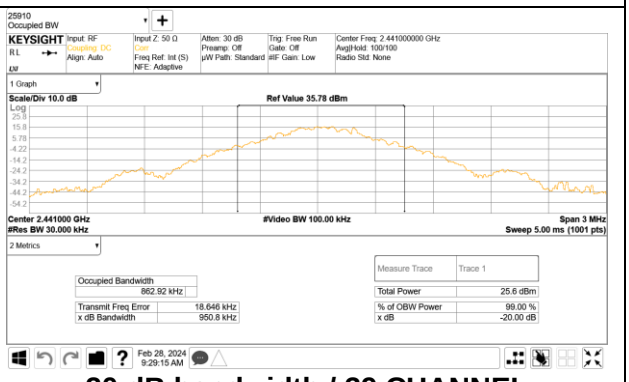
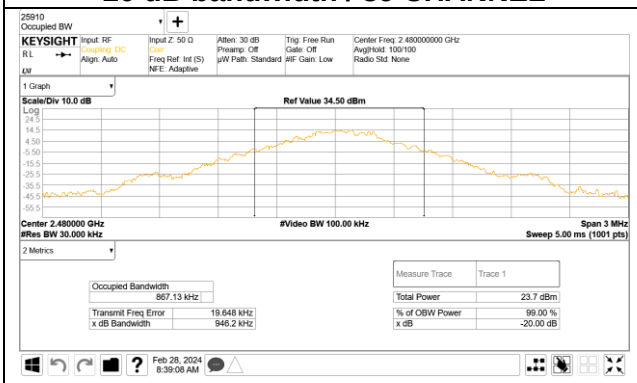
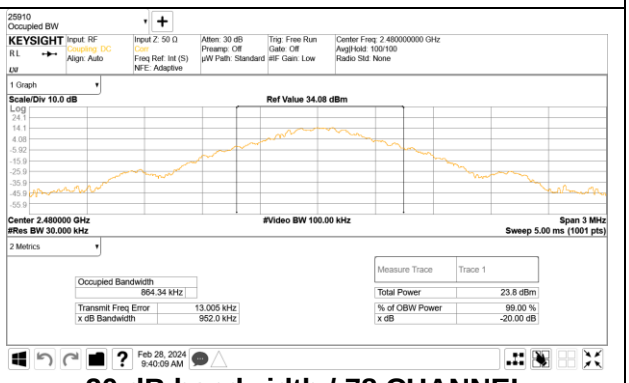
RESULTS

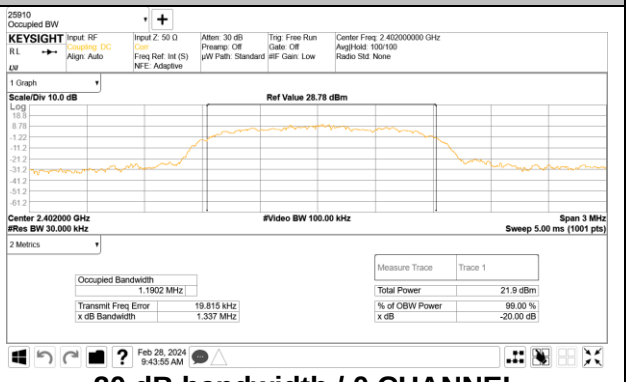
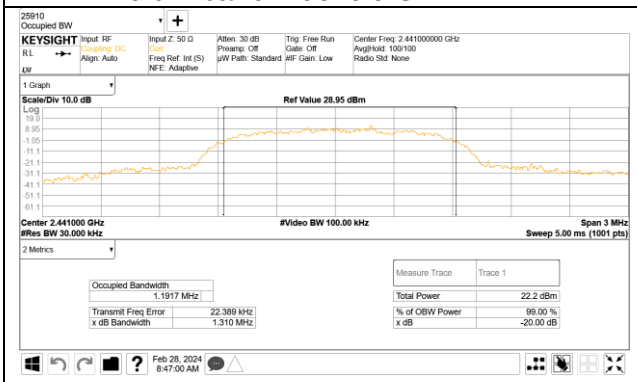
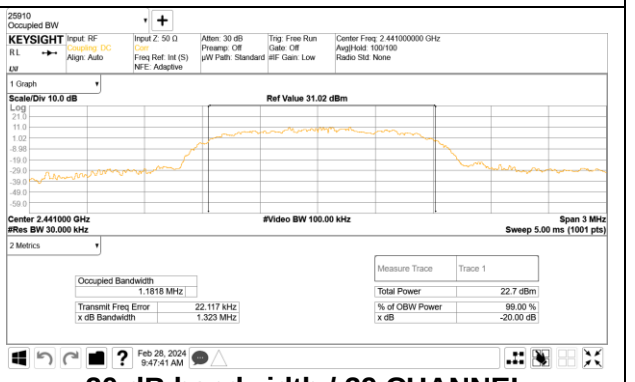
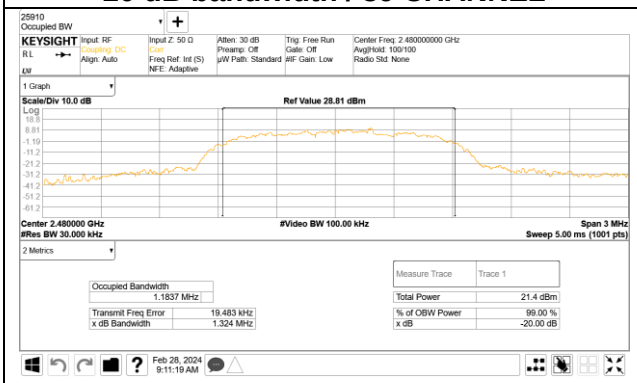
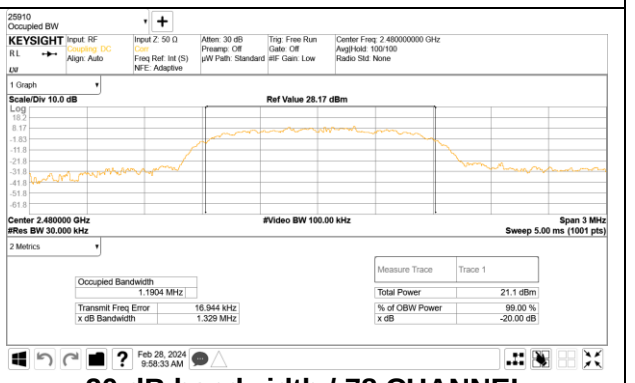
9.2.1. BLUETOOTH BASIC DATA RATE GFSK MODULATION

Antenna	Channel	Frequency [MHz]	20 dB Bandwidth [kHz]
ANT1	0	2 402	947.4
	39	2 441	956.2
	78	2 480	946.2
ANT2	0	2 402	942.6
	39	2 441	950.8
	78	2 480	952.0
Worst			**956.2**

9.2.2. BLUETOOTH ENHANCED DATA RATE 8PSK MODULATION

Antenna	Channel	Frequency [MHz]	20 dB Bandwidth [kHz]
ANT1	0	2 402	1 324.0
	39	2 441	1 310.0
	78	2 480	1 324.0
ANT2	0	2 402	1 337.0
	39	2 441	1 323.0
	78	2 480	1 329.0
Worst			**1 337.0**

BDR ANT1	BDR ANT2
	
20 dB bandwidth / 0 CHANNEL	**20 dB bandwidth / 0 CHANNEL**
	
20 dB bandwidth / 39 CHANNEL	**20 dB bandwidth / 39 CHANNEL**
	
20 dB bandwidth / 78 CHANNEL	**20 dB bandwidth / 78 CHANNEL**

EDR ANT1	EDR ANT2
	
20 dB bandwidth / 0 CHANNEL	**20 dB bandwidth / 0 CHANNEL**
	
20 dB bandwidth / 39 CHANNEL	**20 dB bandwidth / 39 CHANNEL**
	
20 dB bandwidth / 78 CHANNEL	**20 dB bandwidth / 78 CHANNEL**

9.3. HOPPING FREQUENCY SEPARATION

LIMITS

FCC §15.247 (a) (1)

Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hoping channel, whichever is greater.

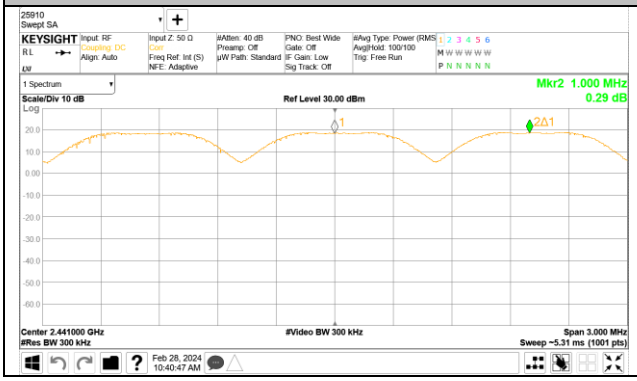
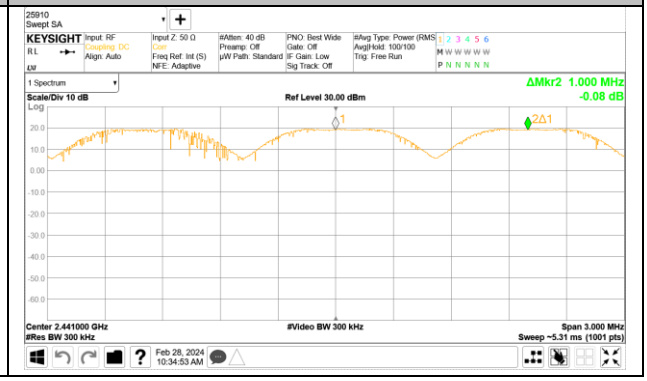
Alternatively, frequency hopping systems operating in the 2400-2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater, provided the systems operate with an output power no greater than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

TEST PROCEDURE

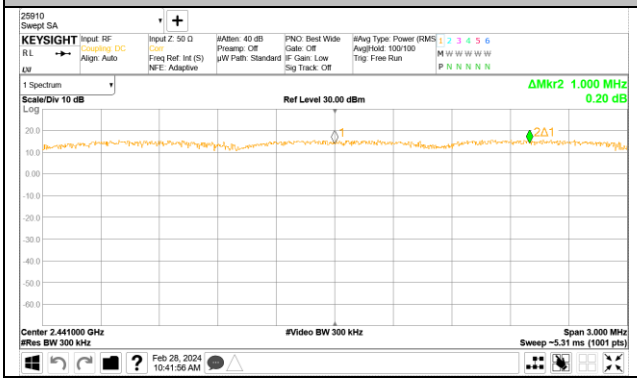
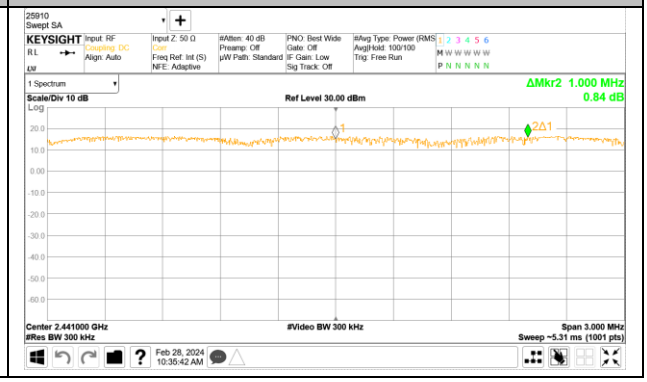
The transmitter output is connected to a spectrum analyzer. Start with the RBW set to approximately 30% of the channel spacing; adjust as necessary to best identify the center of each individual channel. The VBW is set to VBW >= RBW. The sweep time is coupled.

RESULTS

9.3.1. BLUETOOTH BASIC DATA RATE GFSK MODULATION

ANT1	ANT2
	

9.3.2. BLUETOOTH ENHANCED DATA RATE 8PSK MODULATION

ANT1	ANT2
	

9.4. NUMBER OF HOPPING CHANNELS

LIMITS

FCC §15.247 (a) (1) (iii)

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

TEST PROCEDURE

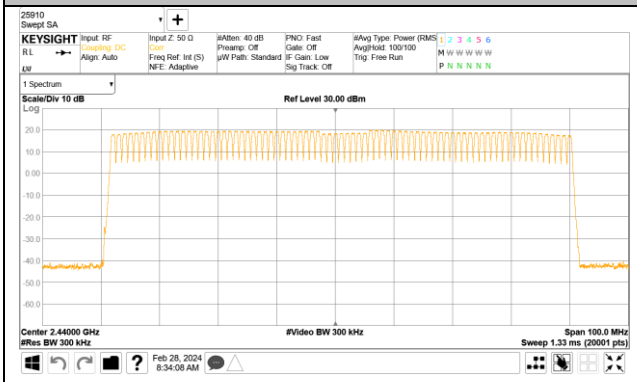
The transmitter output is connected to a spectrum analyzer. The span is set to cover the entire authorized band, in either a single sweep or in multiple contiguous sweeps. To identify clearly the individual channels, set the RBW to less than 30% of the channel spacing or the 20 dB bandwidth, whichever is smaller. The analyzer is set to Max Hold.

RESULTS

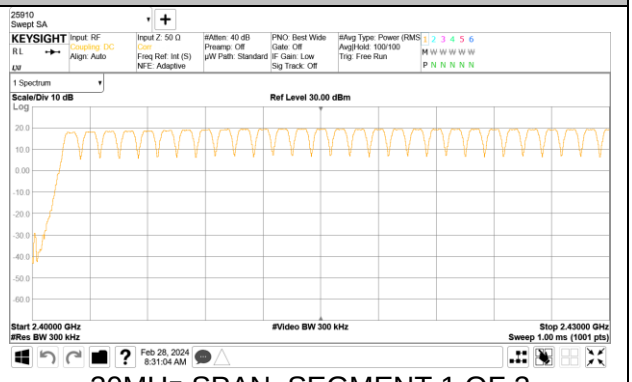
Normal Mode: All Channels Observed

9.4.1. BLUETOOTH BASIC DATA RATE GFSK MODULATION

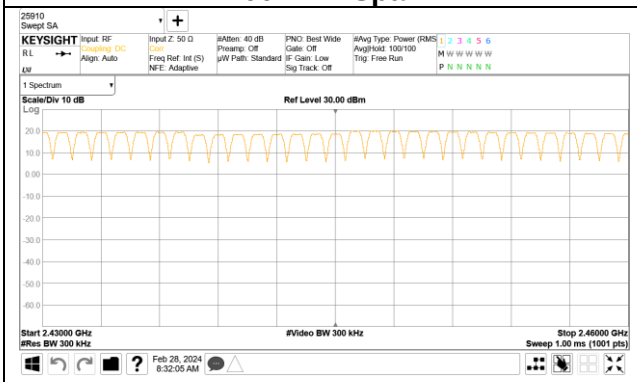
ANT1



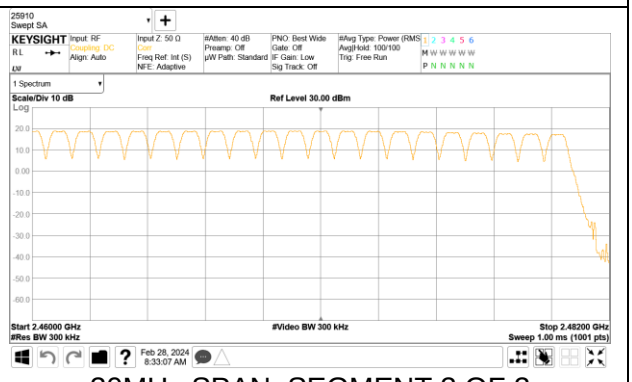
100 MHz Span



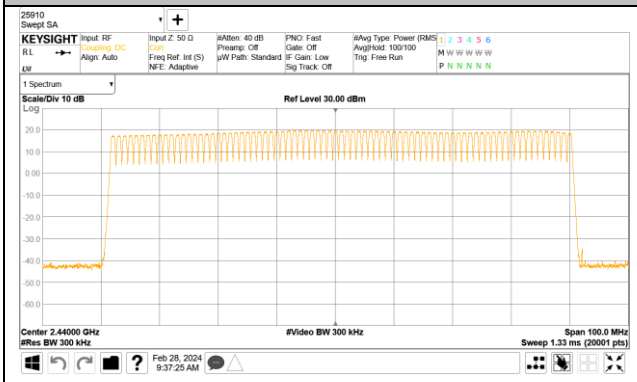
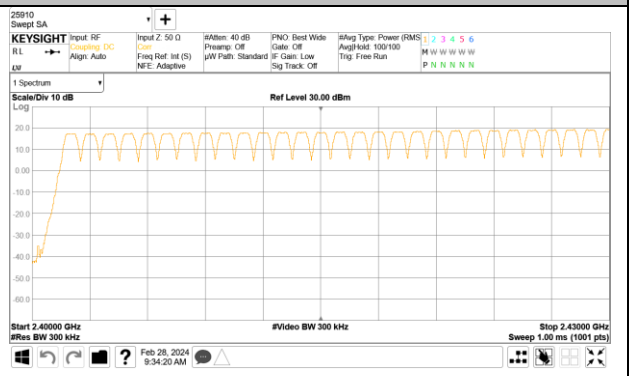
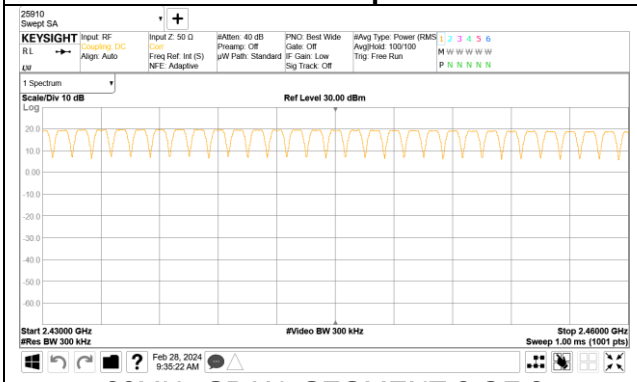
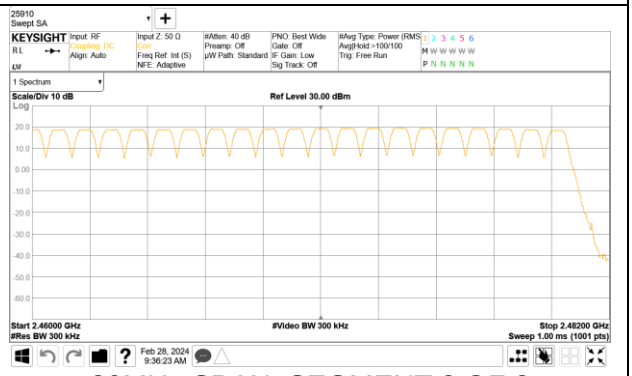
30MHz SPAN, SEGMENT 1 OF 3



30MHz SPAN, SEGMENT 2 OF 3

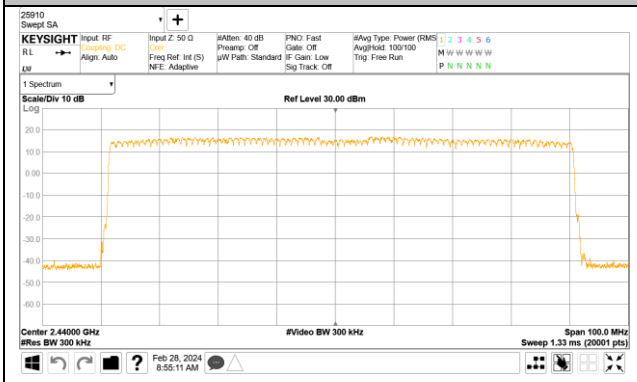


30MHz SPAN, SEGMENT 3 OF 3

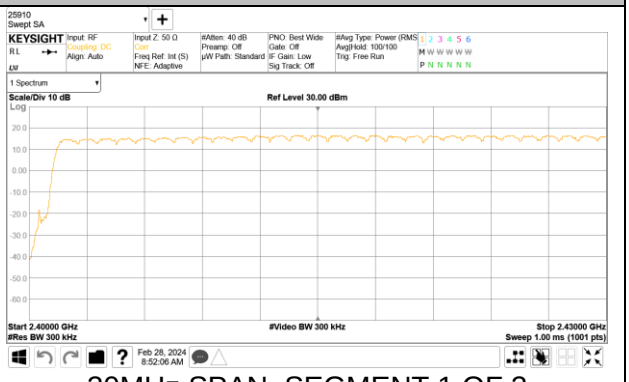
ANT2	
 **100 MHz Span**	 30MHz SPAN, SEGMENT 1 OF 3
 30MHz SPAN, SEGMENT 2 OF 3	 30MHz SPAN, SEGMENT 3 OF 3

9.4.2. BLUETOOTH ENHANCED DATA RATE 8PSK MODULATION

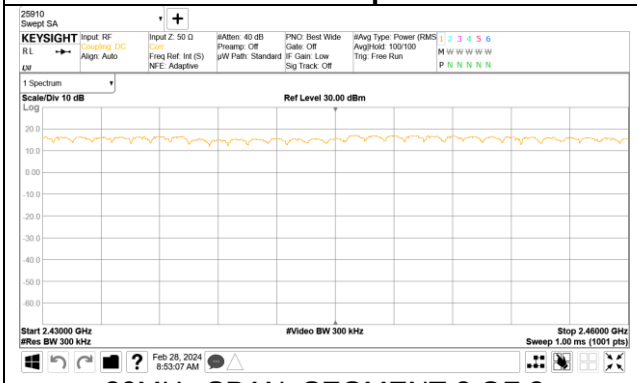
ANT1



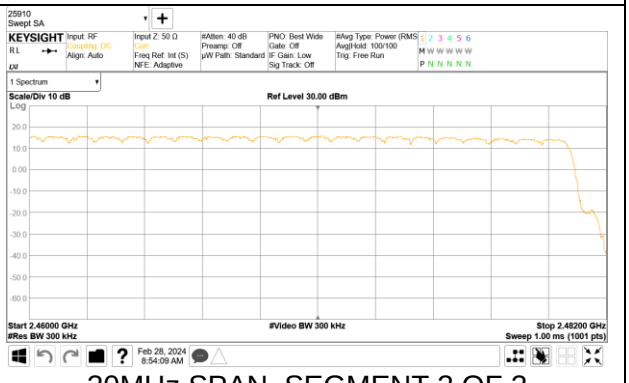
100 MHz Span



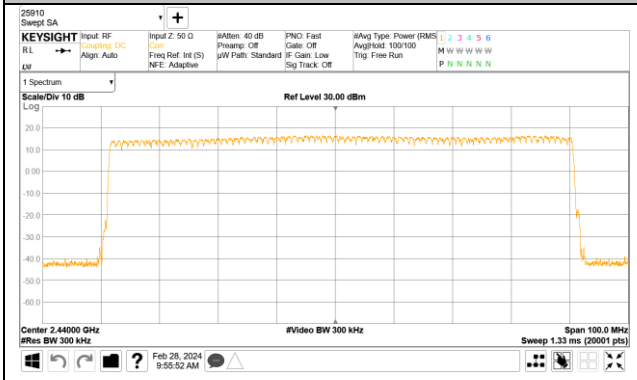
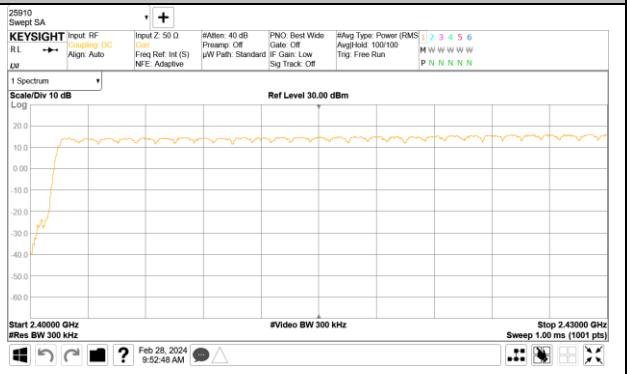
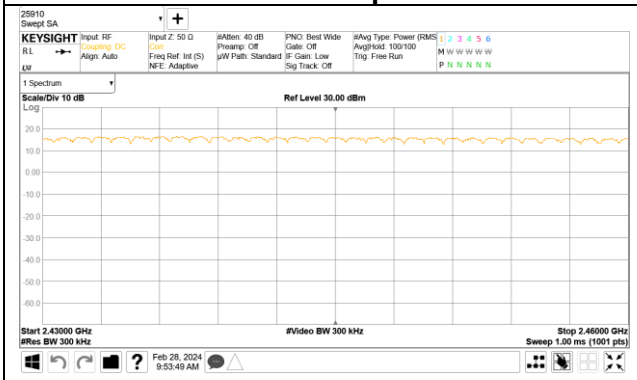
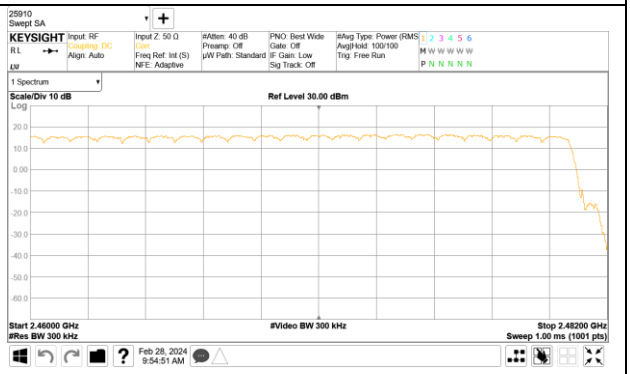
30MHz SPAN, SEGMENT 1 OF 3



30MHz SPAN, SEGMENT 2 OF 3



30MHz SPAN, SEGMENT 3 OF 3

ANT2	
 **100 MHz Span**	 30MHz SPAN, SEGMENT 1 OF 3
 30MHz SPAN, SEGMENT 2 OF 3	 30MHz SPAN, SEGMENT 3 OF 3

9.5. AVERAGE TIME OF OCCUPANCY

LIMITS

FCC §15.247 (a) (1) (iii)

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.

TEST PROCEDURE

The transmitter output is connected to a spectrum analyzer. The span is set to 0 Hz, centered on a single, selected hopping channel. The width of a single pulse is measured in a fast scan. The number of pulses is measured in a 3.16 second scan, to enable resolution of each occurrence.

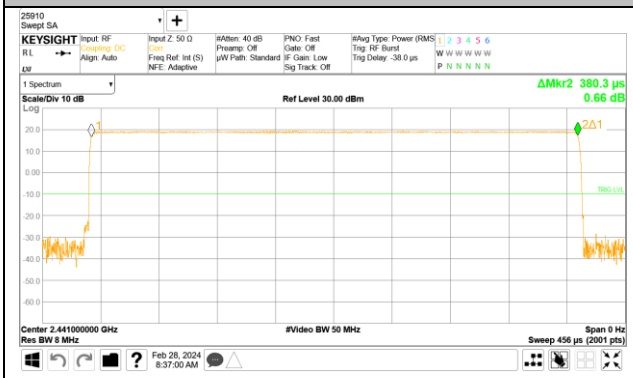
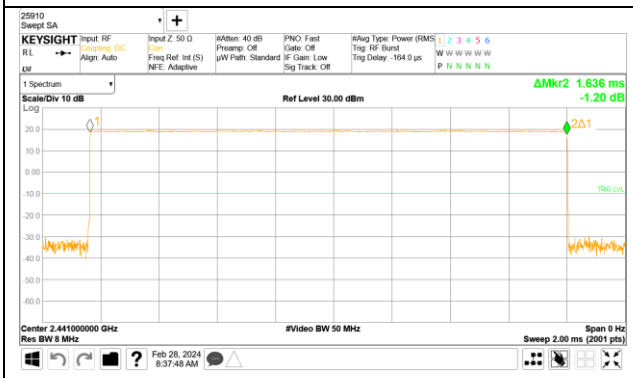
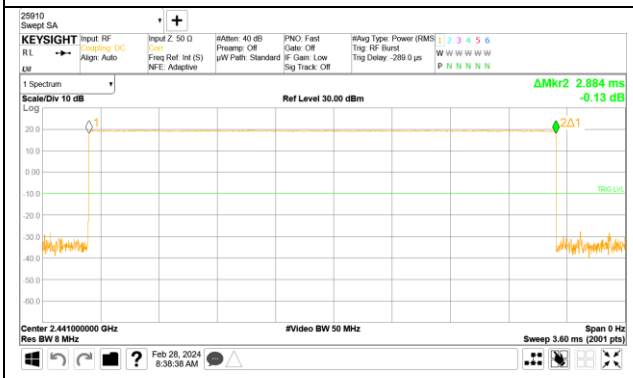
The average time of occupancy in the specified 3.16 second period (79 channels * 0.4 s) is equal to 10 * (# of pulses in 3.16 s) * pulse width.

For AFH mode, the average time of occupancy in the specified 8 second period (20 channels * 0.4 seconds) is equal to 10 * (# of pulses in 0.8 s) * pulse width.

RESULTS

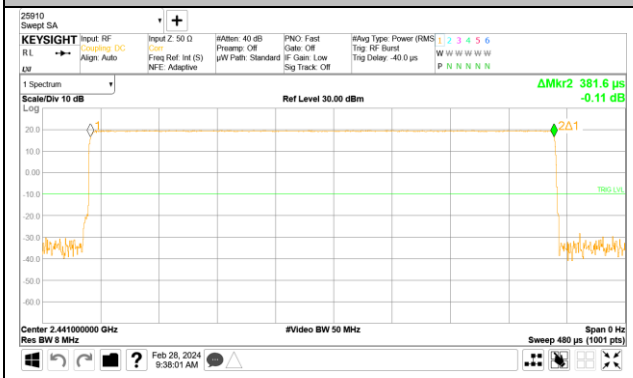
9.5.1. BLUETOOTH BASIC DATA RATE GFSK MODULATION

DH Packet	Pulse Width [msec]	Number of Pulses in 3.16 seconds	Average Time of Occupancy [sec]	Limit [sec]	Margin [sec]
GFSK Normal ANT1					
DH1	0.380	31	0.118	0.400	-0.282
DH3	1.636	16	0.262	0.400	-0.138
DH5	2.884	8	0.231	0.400	-0.169
DH Packet	**Pulse Width [msec]**	**Number of Pulses in 0.8 seconds**	**Average Time of Occupancy [sec]**	**Limit [sec]**	**Margin [sec]**
GFSK AFH ANT1					
DH1	0.380	7.75	0.029	0.400	-0.371
DH3	1.636	4	0.065	0.400	-0.335
DH5	2.884	2	0.058	0.400	-0.342

ANT1	
	
PULSE WIDTH – DH1	**NUMBER OF PULSES IN 3.16 SECOND OBSERVATION PERIOD – DH1**
	
PULSE WIDTH – DH3	**NUMBER OF PULSES IN 3.16 SECOND OBSERVATION PERIOD – DH3**
	
PULSE WIDTH – DH5	**NUMBER OF PULSES IN 3.16 SECOND OBSERVATION PERIOD – DH5**

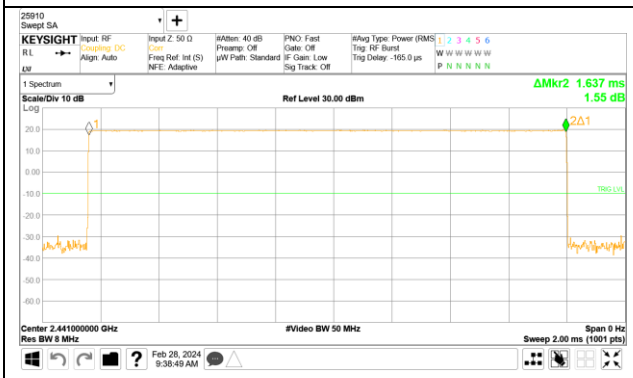
DH Packet	Pulse Width [msec]	Number of Pulses in 3.16 seconds	Average Time of Occupancy [sec]	Limit [sec]	Margin [sec]
GFSK Normal ANT2					
DH1	0.382	32	0.122	0.400	-0.278
DH3	1.637	16	0.262	0.400	-0.138
DH5	2.883	12	0.346	0.400	-0.054
DH Packet	**Pulse Width [msec]**	**Number of Pulses in 0.8 seconds**	**Average Time of Occupancy [sec]**	**Limit [sec]**	**Margin [sec]**
GFSK AFH ANT2					
DH1	0.382	8	0.031	0.400	-0.369
DH3	1.637	4	0.065	0.400	-0.335
DH5	2.883	3	0.086	0.400	-0.314

ANT2



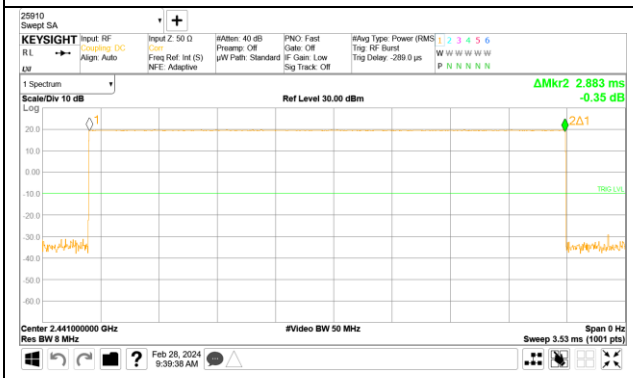
PULSE WIDTH – DH1

NUMBER OF PULSES IN 3.16 SECOND OBSERVATION PERIOD – DH1



PULSE WIDTH – DH3

NUMBER OF PULSES IN 3.16 SECOND OBSERVATION PERIOD – DH3



PULSE WIDTH – DH5

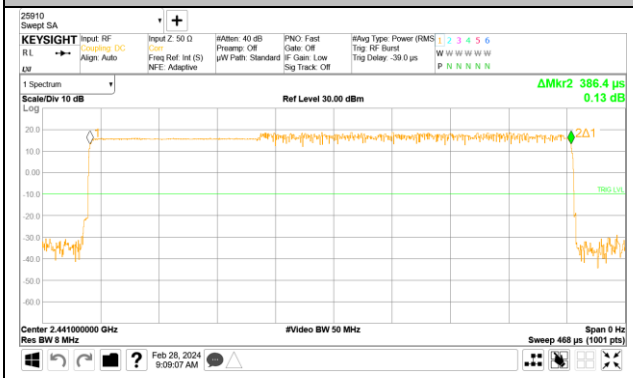
NUMBER OF PULSES IN 3.16 SECOND OBSERVATION PERIOD – DH5

9.5.2. BLUETOOTH ENHANCED DATA RATE 8PSK MODULATION

DH Packet	Pulse Width [msec]	Number of Pulses in 3.16 seconds	Average Time of Occupancy [sec]	Limit [sec]	Margin [sec]
8PSK Normal ANT1					
DH1	0.386	32	0.124	0.400	-0.276
DH3	1.637	14	0.229	0.400	-0.171
DH5	2.892	12	0.347	0.400	-0.053
DH Packet	**Pulse Width [msec]**	**Number of Pulses in 0.8 seconds**	**Average Time of Occupancy [sec]**	**Limit [sec]**	**Margin [sec]**
8PSK AFH ANT1					
DH1	0.386	8	0.031	0.400	-0.369
DH3	1.637	3.5	0.057	0.400	-0.343
DH5	2.892	3	0.087	0.400	-0.313

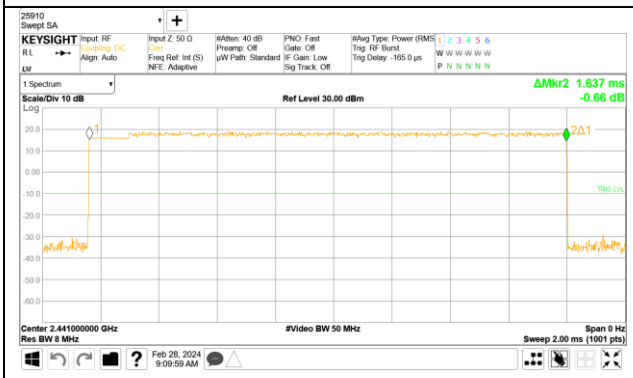
.

ANT1



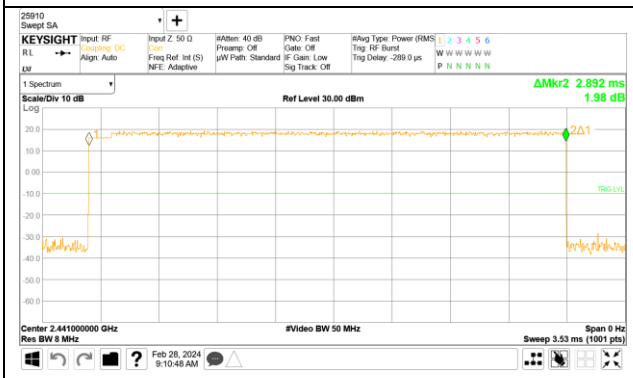
PULSE WIDTH – 3-DH1

NUMBER OF PULSES IN 3.16 SECOND OBSERVATION PERIOD – 3-DH1



PULSE WIDTH – 3-DH3

NUMBER OF PULSES IN 3.16 SECOND OBSERVATION PERIOD – 3-DH3



PULSE WIDTH – 3-DH5

NUMBER OF PULSES IN 3.16 SECOND OBSERVATION PERIOD – 3-DH5

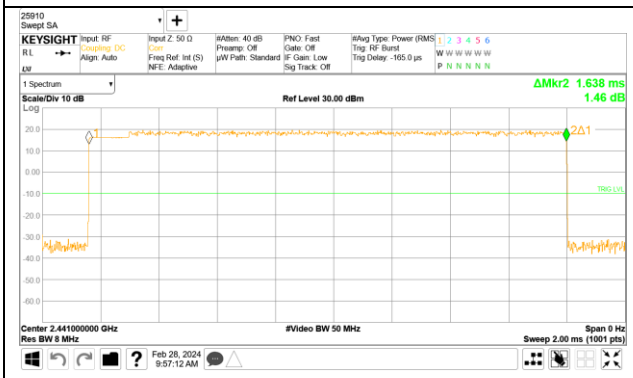
DH Packet	Pulse Width [msec]	Number of Pulses in 3.16 seconds	Average Time of Occupancy [sec]	Limit [sec]	Margin [sec]
8PSK Normal ANT2					
DH1	0.387	32	0.124	0.400	-0.276
DH3	1.638	20	0.328	0.400	-0.072
DH5	2.892	8	0.231	0.400	-0.169
DH Packet	**Pulse Width [msec]**	**Number of Pulses in 0.8 seconds**	**Average Time of Occupancy [sec]**	**Limit [sec]**	**Margin [sec]**
8PSK AFH ANT2					
DH1	0.387	8	0.031	0.400	-0.369
DH3	1.638	5	0.082	0.400	-0.318
DH5	2.892	2	0.058	0.400	-0.342

.

ANT2

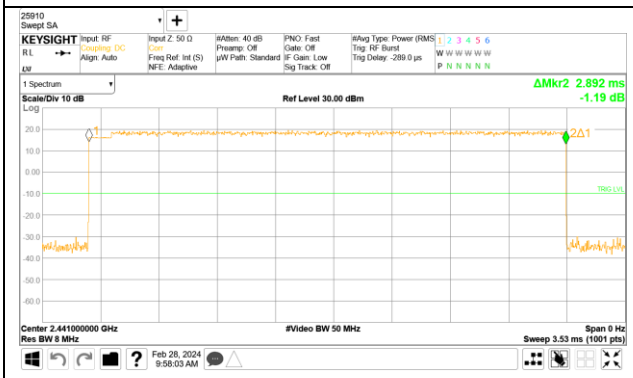
PULSE WIDTH – 3-DH1

NUMBER OF PULSES IN 3.16 SECOND OBSERVATION PERIOD – 3-DH1



PULSE WIDTH – 3-DH3

NUMBER OF PULSES IN 3.16 SECOND OBSERVATION PERIOD – 3-DH3



PULSE WIDTH – 3-DH5

NUMBER OF PULSES IN 3.16 SECOND OBSERVATION PERIOD – 3-DH5

UL KOREA LTD. Suwon Laboratory FORM ID: FCC_15C(05)
218 Maeyeong-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16675, Korea TEL: (031) 337-9902 FAX: (031) 213-5433

9.6. OUTPUT POWER

LIMITS

§15.247 (b) (1)
The correlated maximum antenna gain + Beamforming gain is less than 6 dBi, therefore the limit is 21 dBm.

TEST PROCEDURE
The transmitter output is connected to a spectrum analyzer the analyzer bandwidth is set to a value greater than the 20 dB bandwidth of the EUT.

RESULTS

9.6.1. BASIC DATA RATE GFSK MODULATION

Antenna	Channel	Frequency [MHz]	Peak Output Power [dBm]	Limit [dBm]	Margin [dB]
ANT1	0	2 402	19.60	21.00	-1.40
	39	2 441	19.59		-1.41
	78	2 480	18.17		-2.83
ANT2	0	2 402	18.82		-2.18
	39	2 441	20.49		-0.51
	78	2 480	18.11		-2.89
Worst			**20.490**		**-0.51**

9.6.2. ENHANCED DATA RATE Pi/4-DPSK MODULATION

Antenna	Channel	Frequency [MHz]	Peak Output Power [dBm]	Limit [dBm]	Margin [dB]
ANT1	0	2 402	18.20	21.00	-2.80
	39	2 441	18.61		-2.39
	78	2 480	17.30		-3.70
ANT2	0	2 402	17.04		-3.96
	39	2 441	20.00		-1.00
	78	2 480	17.86		-3.14
Worst			**20.00**		**-1.00**

9.6.3. ENHANCED DATA RATE 8PSK MODULATION

Antenna	Channel	Frequency [MHz]	Peak Output Power [dBm]	Limit [dBm]	Margin [dB]
ANT1	0	2 402	18.85	21.00	-2.15
	39	2 441	19.32		-1.68
	78	2 480	17.70		-3.30
ANT2	0	2 402	17.84		-3.16
	39	2 441	20.72		-0.28
	78	2 480	18.39		-2.61
Worst			**20.72**		**-0.28**

9.6.4. BASIC DATA RATE GFSK MODULATION(DUAL)

Antenna	Channel	Frequency [MHz]	Peak Output Power [dBm]	Limit [dBm]	Margin [dB]
DUAL ANT1	0	2 402	14.11	21.00	
	39	2 441	15.03		
	78	2 480	12.25		
DUAL ANT2	0	2 402	14.45		
	39	2 441	15.36		
	78	2 480	13.41		
DUAL ANT1+2	0	2 402	17.29		-3.71
	39	2 441	18.21		-2.79
	78	2 480	15.88		-5.12
Worst			**18.21**		**-2.79**

9.6.1. ENHANCED DATA RATE Pi/4-DPSK MODULATION(DUAL)

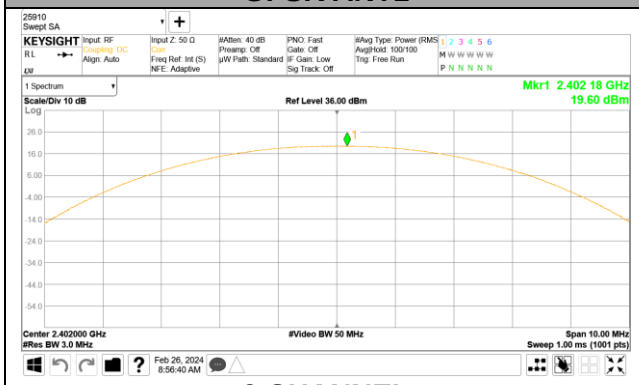
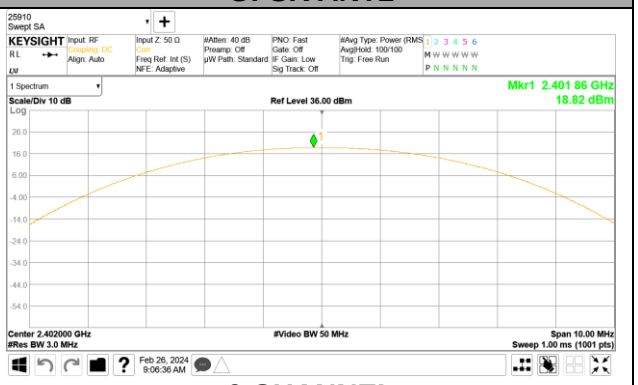
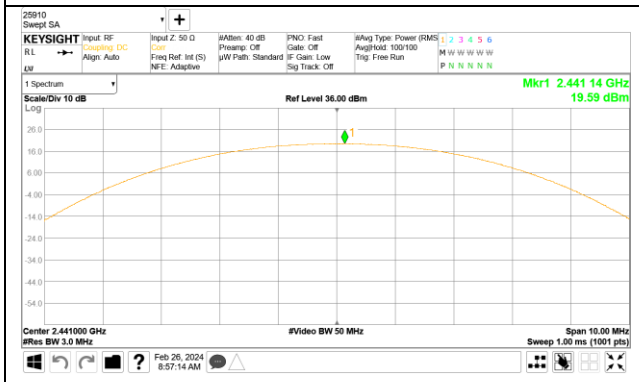
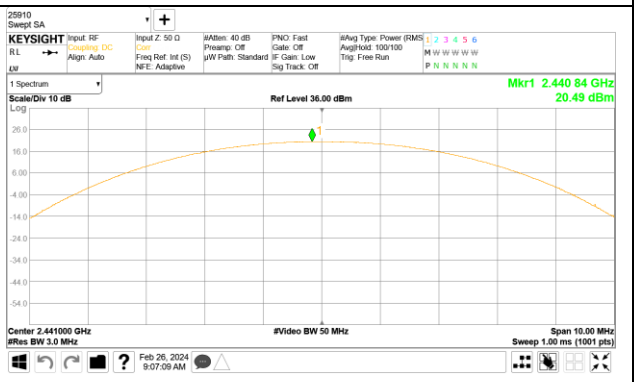
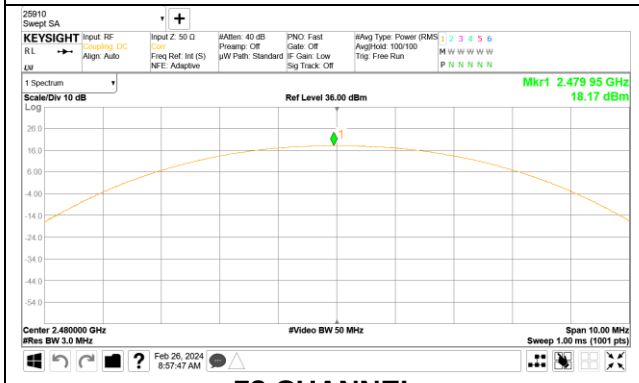
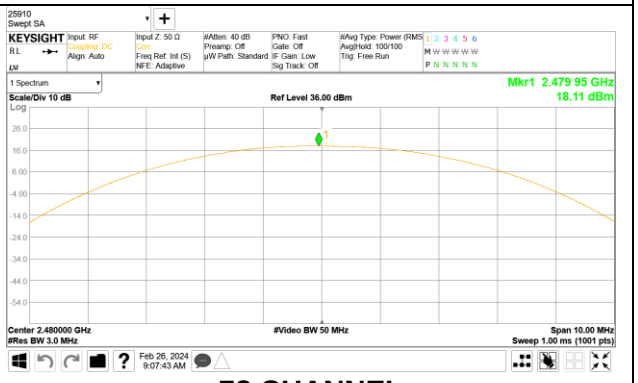
Antenna	Channel	Frequency [MHz]	Peak Output Power [dBm]	Limit [dBm]	Margin [dB]
DUAL ANT1	0	2 402	14.13	21.00	
	39	2 441	15.35		
	78	2 480	12.32		
DUAL ANT2	0	2 402	14.22		
	39	2 441	14.91		
	78	2 480	12.99		
DUAL ANT1+2	0	2 402	17.19		-3.81
	39	2 441	18.15		-2.85
	78	2 480	15.68		-5.32
Worst			**18.15**		**-2.85**

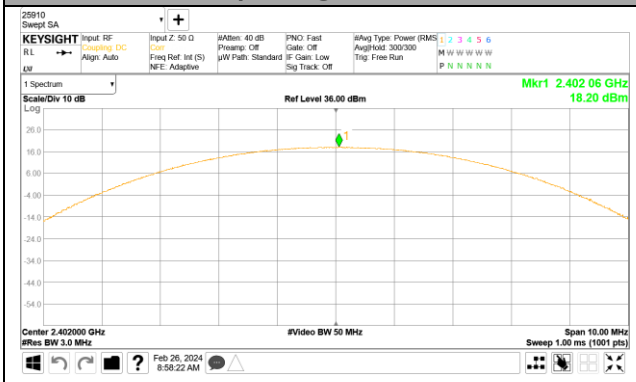
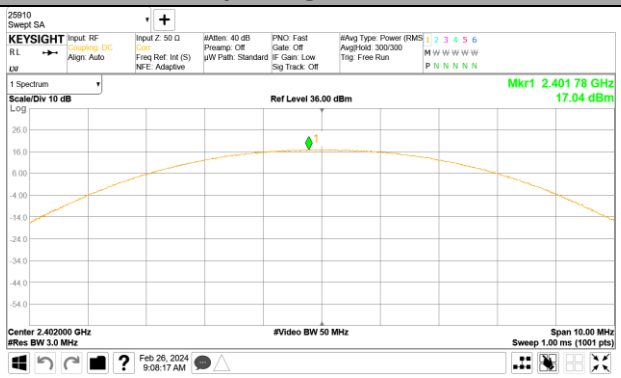
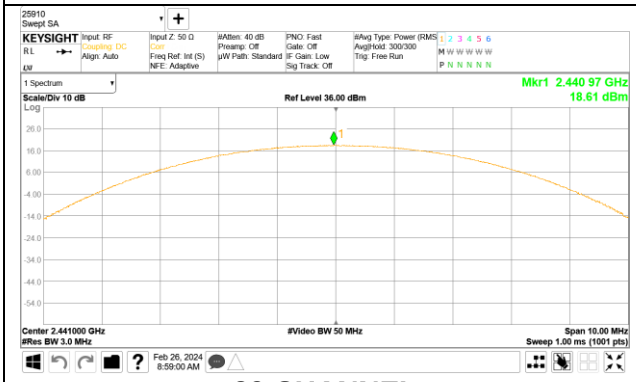
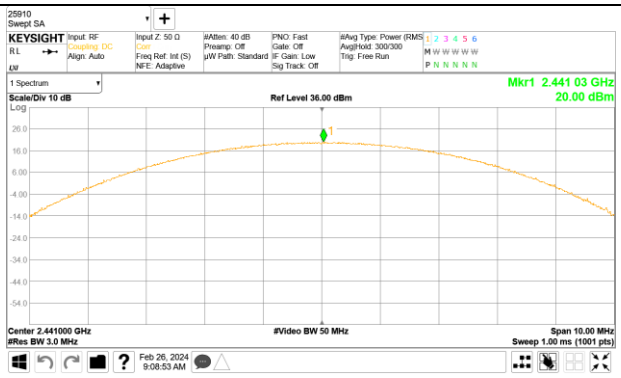
9.6.2. ENHANCED DATA RATE 8PSK MODULATION(DUAL)

Antenna	Channel	Frequency [MHz]	Peak Output Power [dBm]	Limit [dBm]	Margin [dB]
DUAL ANT1	0	2 402	14.29	21.00	
	39	2 441	15.63		
	78	2 480	12.52		
DUAL ANT2	0	2 402	14.23		
	39	2 441	15.05		
	78	2 480	13.00		
DUAL ANT1+2	0	2 402	17.27		-3.73
	39	2 441	18.36		-2.64
	78	2 480	15.78		-5.22
Worst			**18.36**		**-2.64**

9.6.3. OUTPUT POWER PLOTS

PEAK OUTPUT POWER

GFSK ANT1	GFSK ANT2
	
0 CHANNEL	**0 CHANNEL**
	
39 CHANNEL	**39 CHANNEL**
	
78 CHANNEL	**78 CHANNEL**

Pi/4-DPSK ANT1	Pi/4-DPSK ANT2
	
0 CHANNEL	**0 CHANNEL**
	
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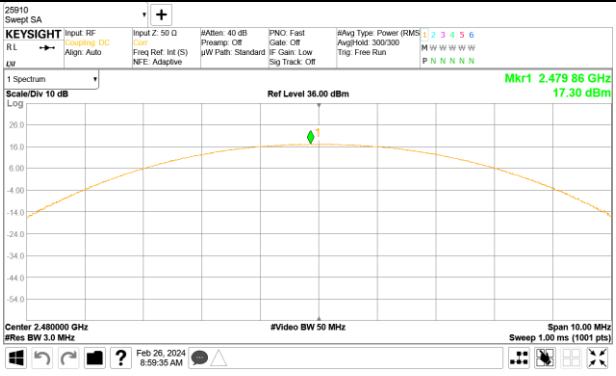
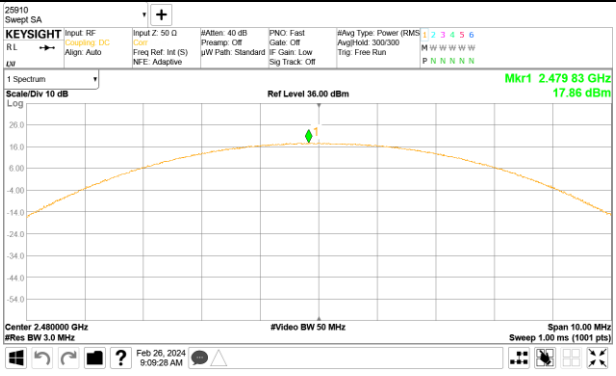
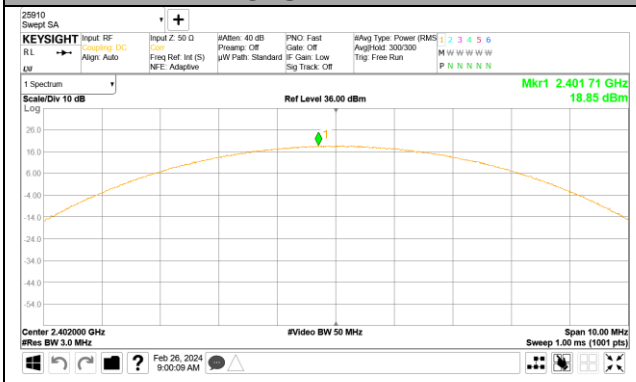
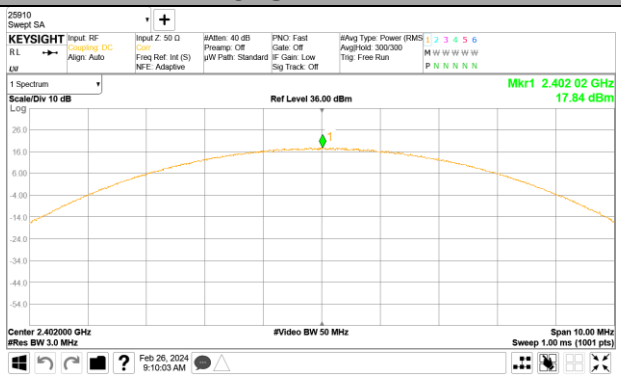
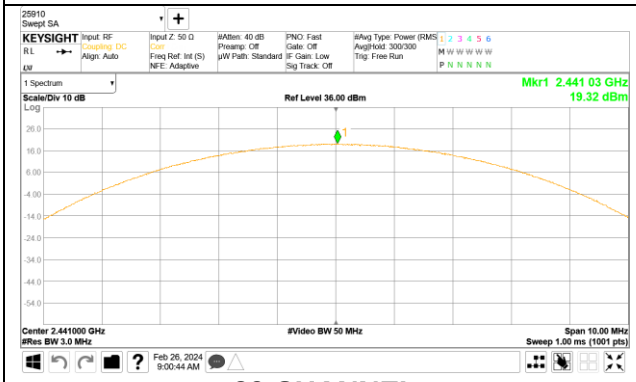
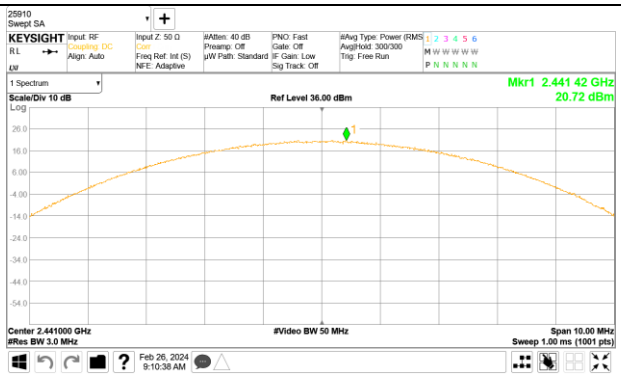
	
78 CHANNEL	**78 CHANNEL**

8PSK ANT1	8PSK ANT2
	
0 CHANNEL	**0 CHANNEL**
	
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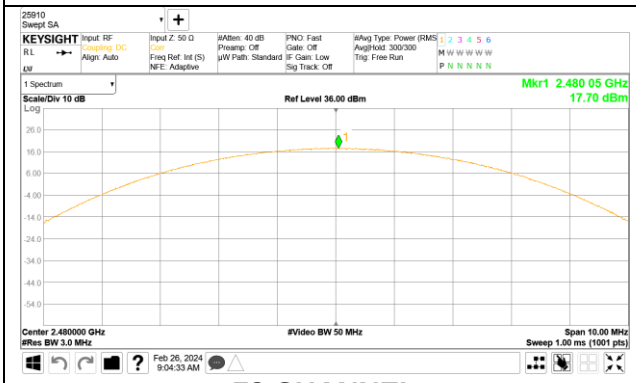
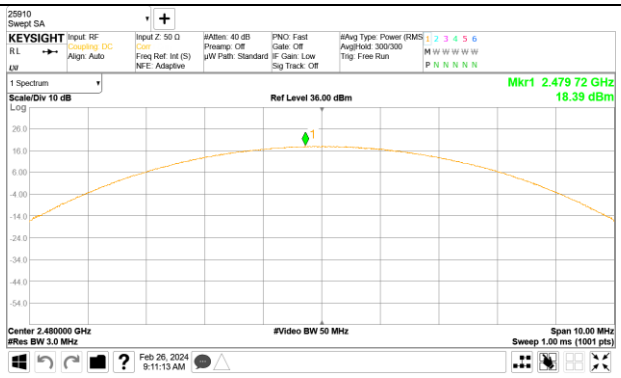
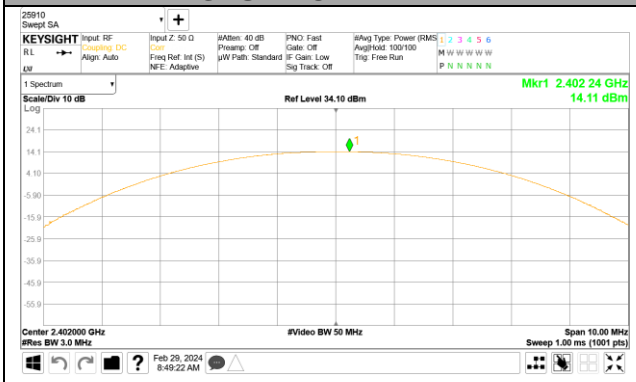
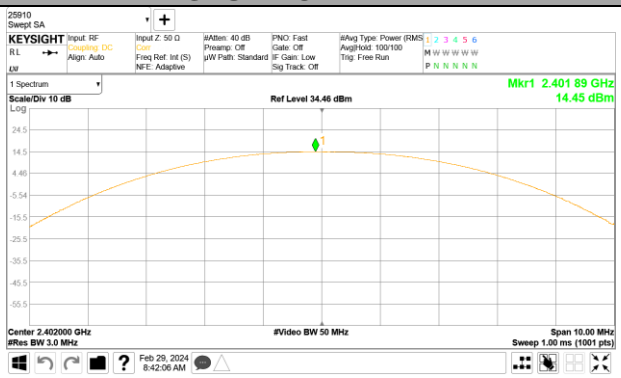
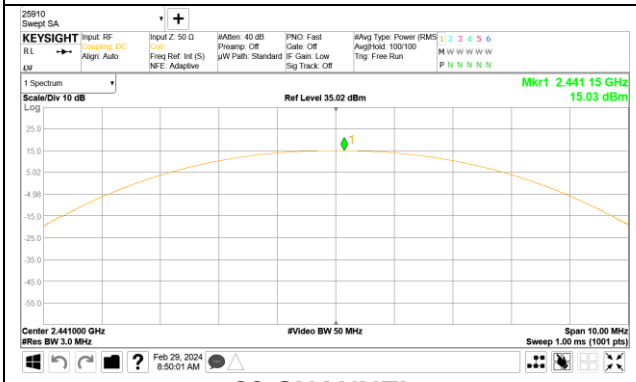
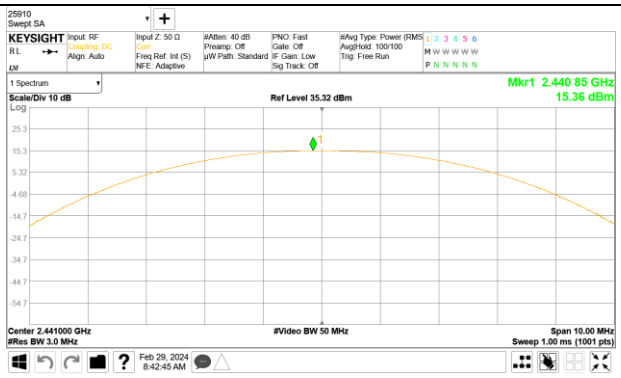
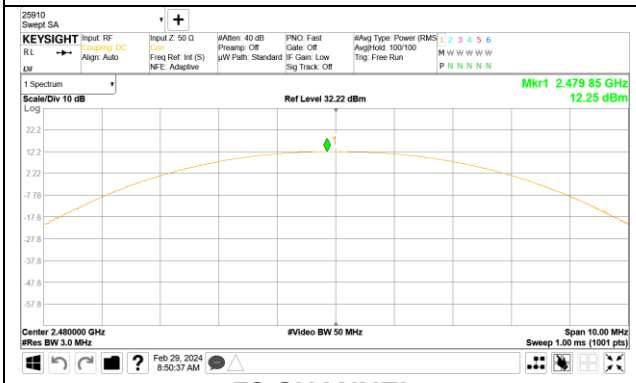
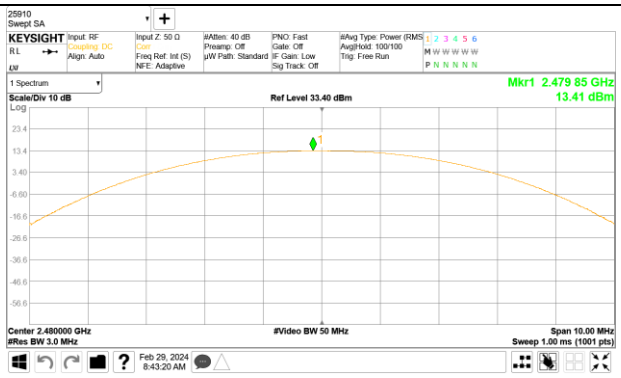
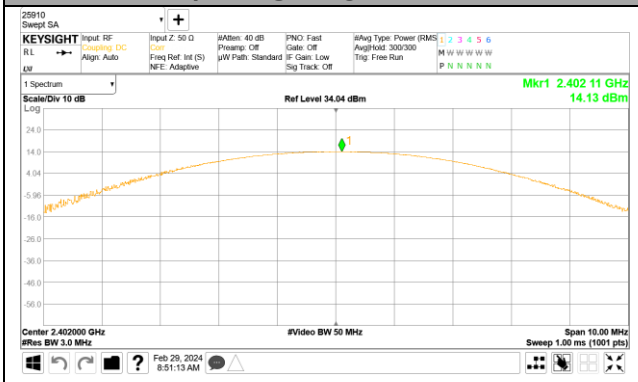
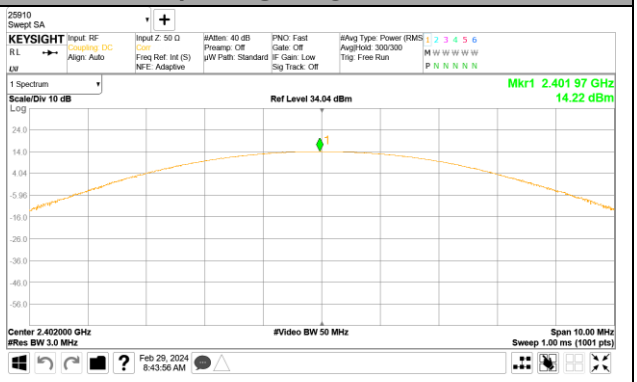
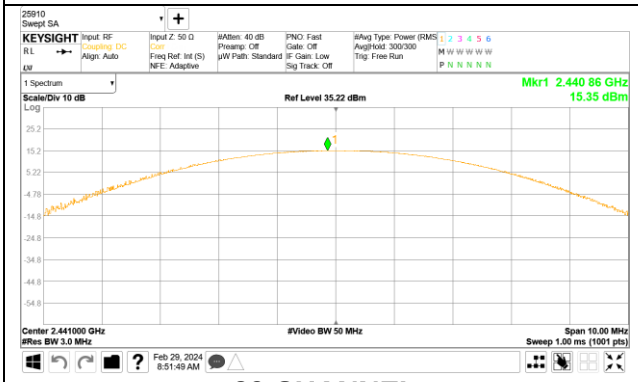
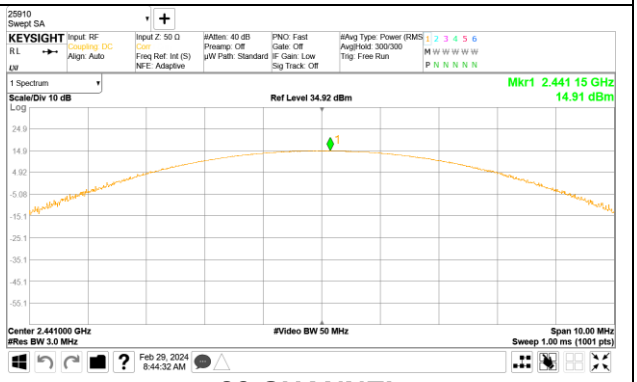
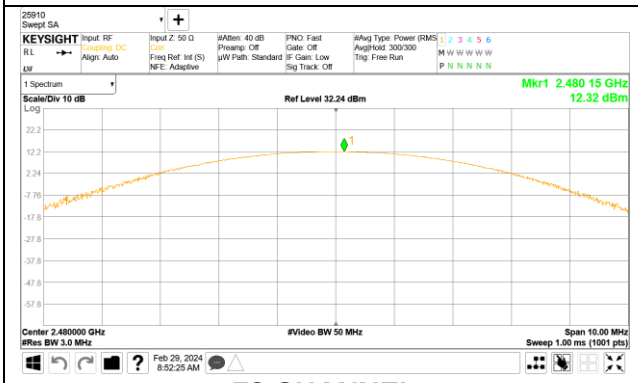
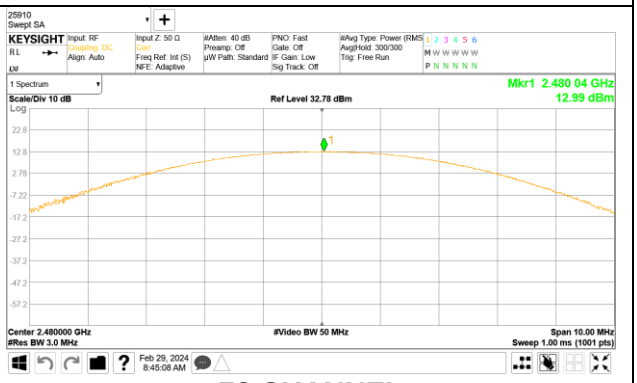
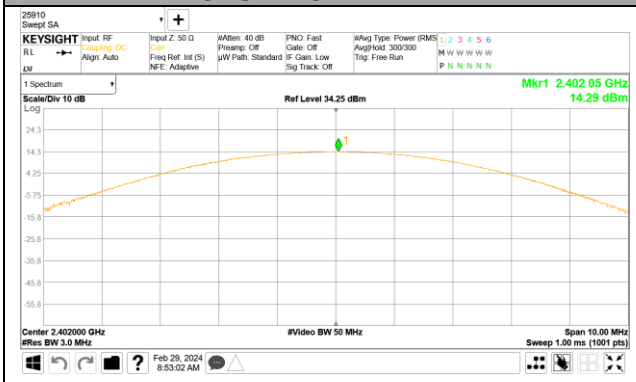
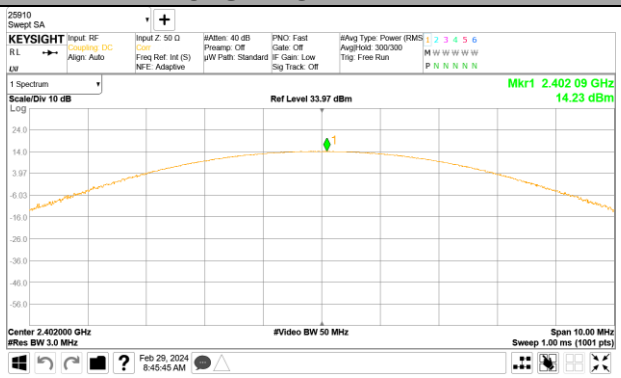
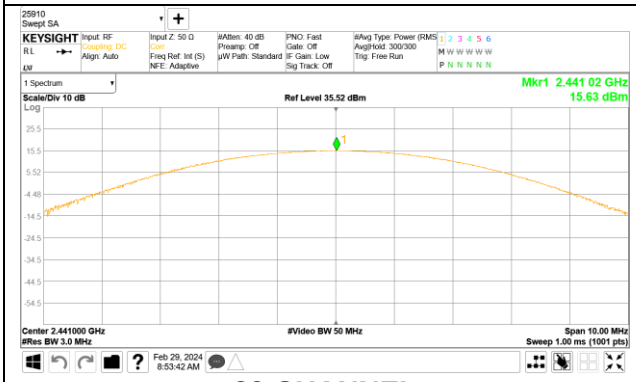
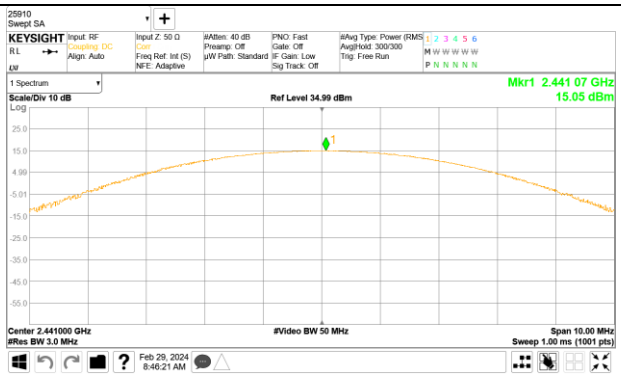
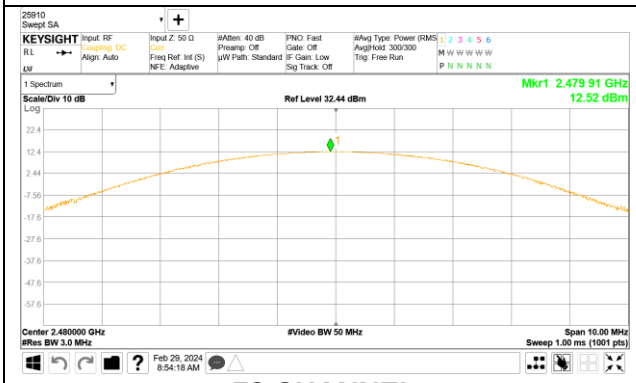
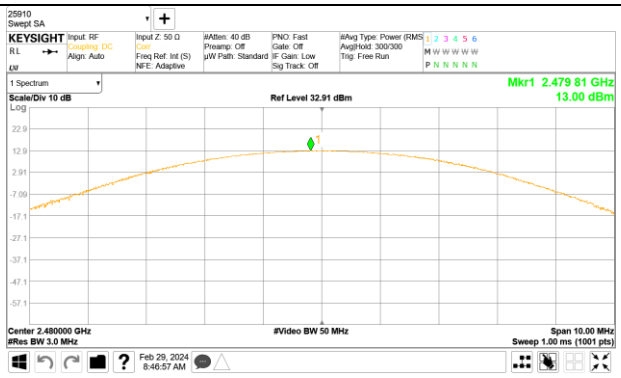
	
78 CHANNEL	**78 CHANNEL**

GFSK DUAL ANT1	GFSK DUAL ANT2
	
0 CHANNEL	**0 CHANNEL**
	
39 CHANNEL	**39 CHANNEL**
	
78 CHANNEL	**78 CHANNEL**

Pi/4-DPSK DUAL ANT1	Pi/4-DPSK DUAL ANT2
	
0 CHANNEL	**0 CHANNEL**
	
39 CHANNEL	**39 CHANNEL**
	
78 CHANNEL	**78 CHANNEL**

8PSK DUAL ANT1	8PSK DUAL ANT2
	
0 CHANNEL	**0 CHANNEL**
	
39 CHANNEL	**39 CHANNEL**
	
78 CHANNEL	**78 CHANNEL**

9.7. AVERAGE POWER

LIMITS

None; for reporting purposes only

TEST PROCEDURE

Measurements perform using a wideband gated RF power meter.
The cable assembly insertion loss was entered as an offset in the power meter to allow for direct reading of power.

RESULTS

9.7.1. BASIC DATA RATE GFSK MODULATION

Antenna	Channel	Frequency [MHz]	Average Output Power [dBm]	Average Output Power [mW]
ANT1	0	2 402	19.084	80.984
	39	2 441	18.931	78.181
	78	2 480	17.697	58.844
ANT2	0	2 402	18.399	69.167
	39	2 441	19.272	84.567
	78	2 480	17.471	55.860

9.7.2. ENHANCED DATA RATE PI/4-DQPSK MODULATION

Antenna	Channel	Frequency [MHz]	Average Output Power [dBm]	Average Output Power [mW]
ANT1	0	2 402	15.599	36.299
	39	2 441	15.664	36.847
	78	2 480	14.308	26.965
ANT2	0	2 402	15.174	32.915
	39	2 441	16.038	40.161
	78	2 480	14.222	26.436

9.7.3. ENHANCED DATA RATE 8PSK MODULATION

Antenna	Channel	Frequency [MHz]	Average Output Power [dBm]	Average Output Power [mW]
ANT1	0	2 402	15.687	37.042
	39	2 441	15.783	37.870
	78	2 480	14.458	27.913
ANT2	0	2 402	15.223	33.289
	39	2 441	16.073	40.486
	78	2 480	14.250	26.607

9.7.4. BASIC DATA RATE GFSK MODULATION(DUAL)

Antenna	Channel	Frequency [MHz]	Average Output Power [dBm]	Average Output Power [mW]
DUAL ANT1	0	2 402	13.925	
	39	2 441	14.901	
	78	2 480	11.988	
DUAL ANT2	0	2 402	14.362	
	39	2 441	15.165	
	78	2 480	13.110	
DUAL ANT1+2	0	2 402	17.160	52.000
	39	2 441	18.050	63.826
	78	2 480	15.600	36.308

9.7.5. ENHANCED DATA RATE PI/4-DQPSK MODULATION(DUAL)

Antenna	Channel	Frequency [MHz]	Average Output Power [dBm]	Average Output Power [mW]
DUAL ANT1	0	2 402	11.691	
	39	2 441	12.243	
	78	2 480	9.768	
DUAL ANT2	0	2 402	11.568	
	39	2 441	12.342	
	78	2 480	10.188	
DUAL ANT1+2	0	2 402	14.640	29.107
	39	2 441	15.300	33.884
	78	2 480	12.990	19.907

9.7.6. ENHANCED DATA RATE 8PSK MODULATION(DUAL)

Antenna	Channel	Frequency [MHz]	Average Output Power [dBm]	Average Output Power [mW]
DUAL ANT1	0	2 402	11.699	
	39	2 441	12.253	
	78	2 480	9.763	
DUAL ANT2	0	2 402	11.577	
	39	2 441	12.369	
	78	2 480	10.206	
DUAL ANT1+2	0	2 402	14.650	29.174
	39	2 441	15.320	34.041
	78	2 480	13.000	19.953

9.8. CONDUCTED SPURIOUS EMISSIONS

LIMITS

FCC §15.247 (d)

Limit = -20 dBc

TEST PROCEDURE

The transmitter output is connected to a spectrum analyzer. The resolution bandwidth is set to 100 kHz. The video bandwidth is set to 300 kHz.

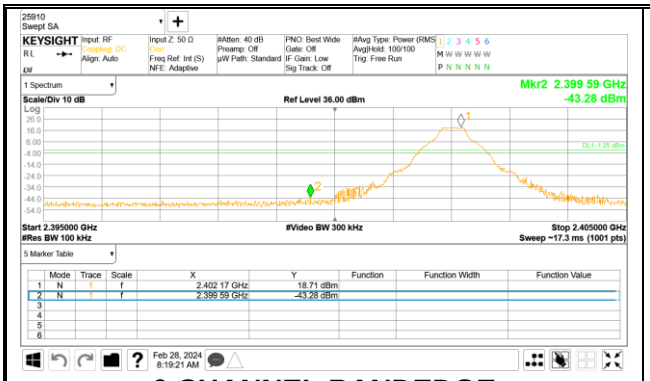
The spectrum from 30 MHz to 26 GHz is investigated with the transmitter set to the lowest, middle, and highest channels.

The band-edges at 2.4 and 2.4835 GHz are investigated with the transmitter set to the normal hopping mode.

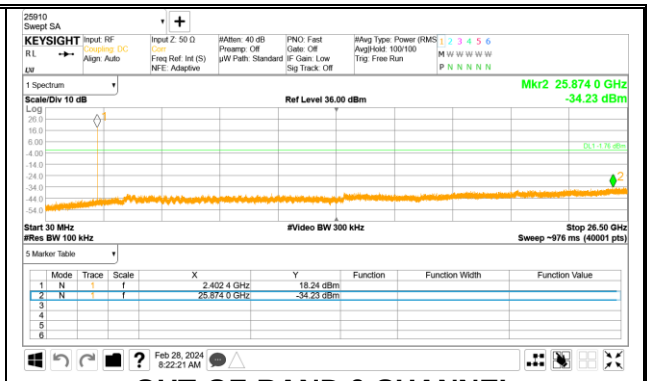
RESULTS

9.8.1. BLUETOOTH BASIC DATA RATE GFSK MODULATION

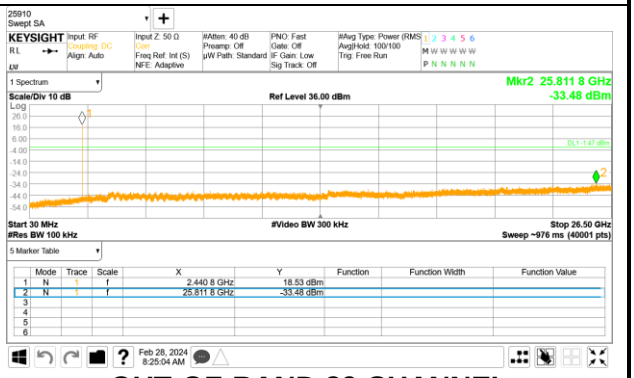
SPURIOUS EMISSIONS, NON-HOPPING – ANT1



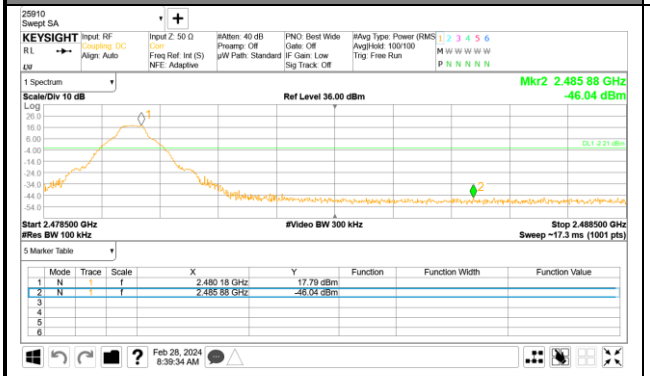
0 CHANNEL BANDEDGE



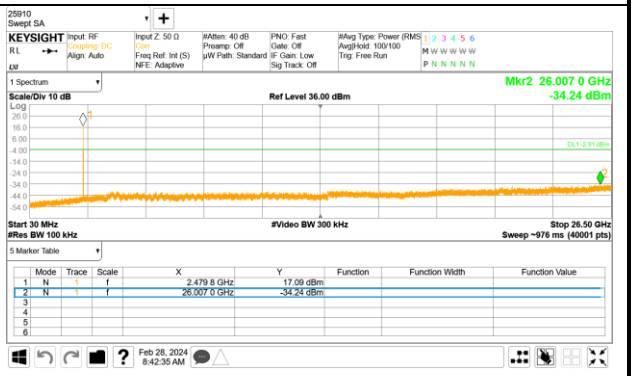
OUT-OF-BAND 0 CHANNEL



OUT-OF-BAND 39 CHANNEL

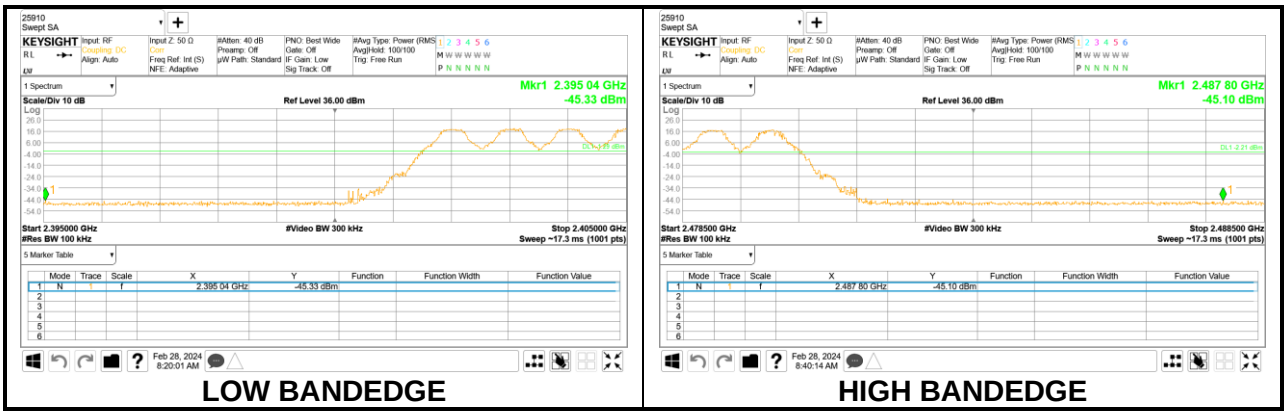


78 CHANNEL BANDEDGE



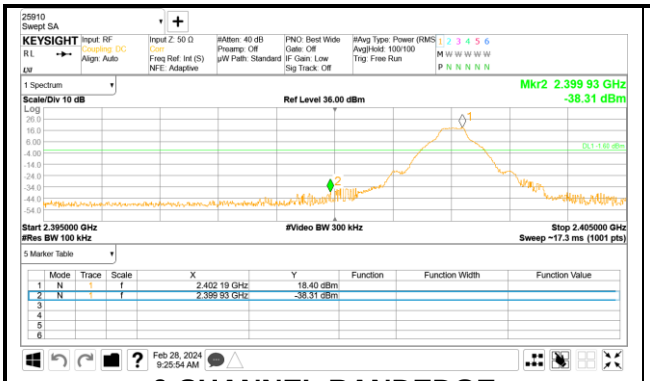
OUT-OF-BAND 78 CHANNEL

SPURIOUS BANDEDGE EMISSIONS WITH HOPPING ON – ANT1

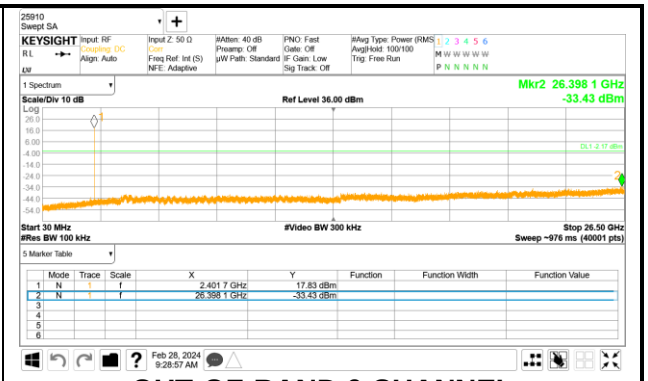


LOW BANDEDGE **HIGH BANDEDGE**

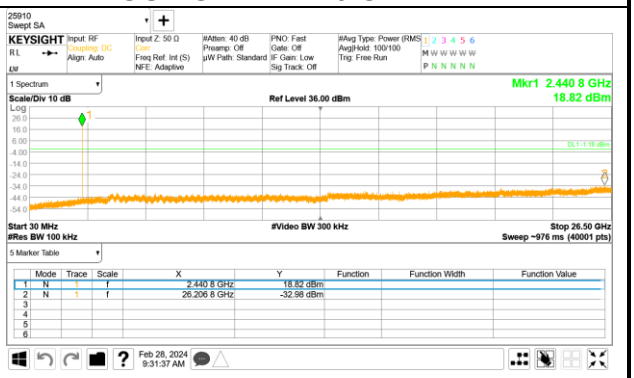
SPURIOUS EMISSIONS, NON-HOPPING – ANT2



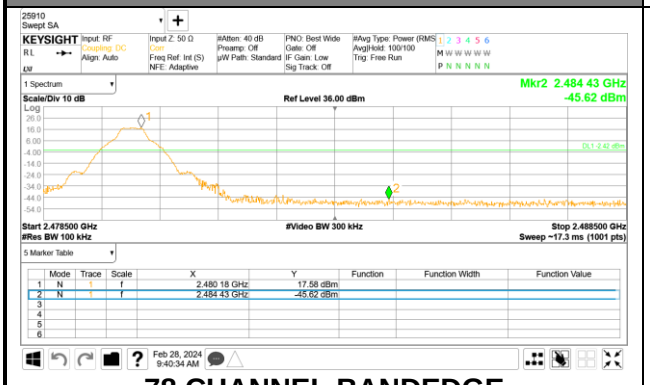
0 CHANNEL BANDEDGE



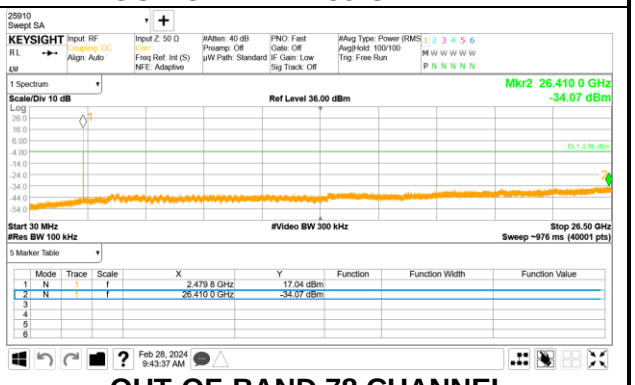
OUT-OF-BAND 0 CHANNEL



OUT-OF-BAND 39 CHANNEL

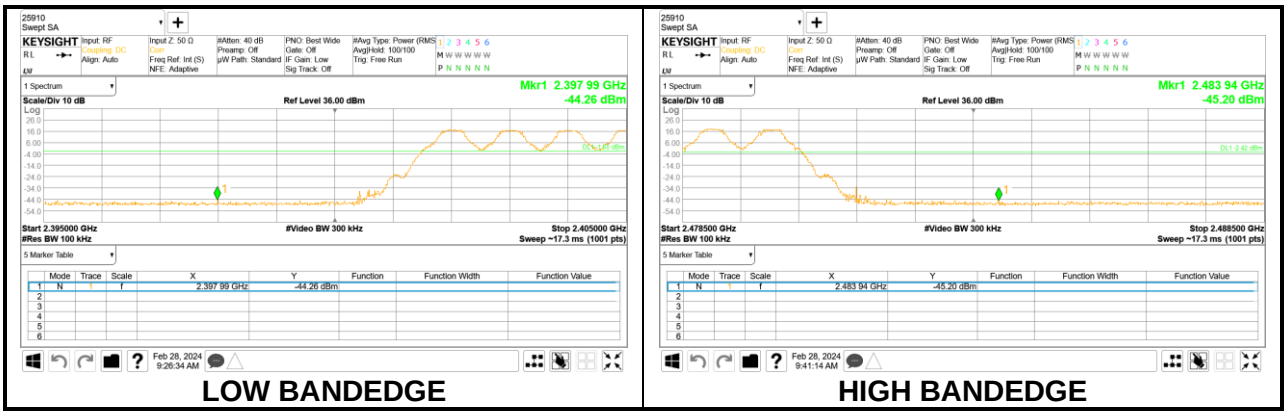


78 CHANNEL BANDEDGE



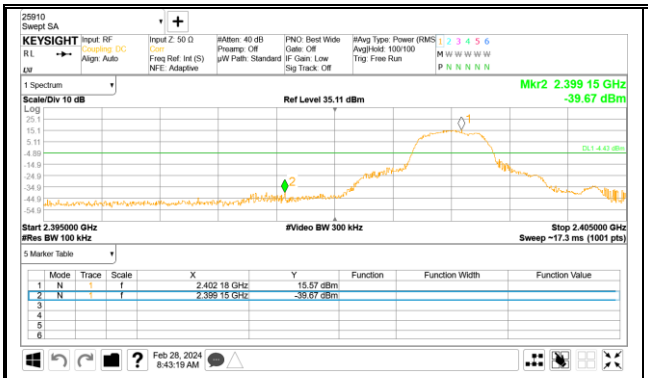
OUT-OF-BAND 78 CHANNEL

SPURIOUS BANDEDGE EMISSIONS WITH HOPPING ON – ANT2

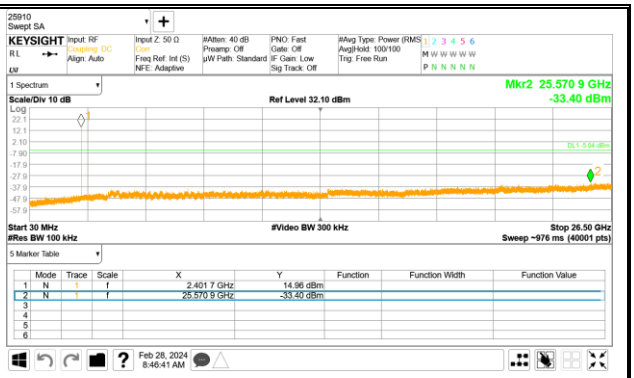


9.8.2. BLUETOOTH ENHANCED DATA RATE 8PSK MODULATION

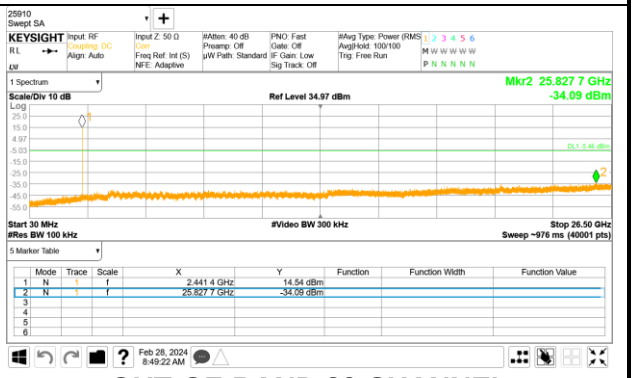
SPURIOUS EMISSIONS, NON-HOPPING – ANT1



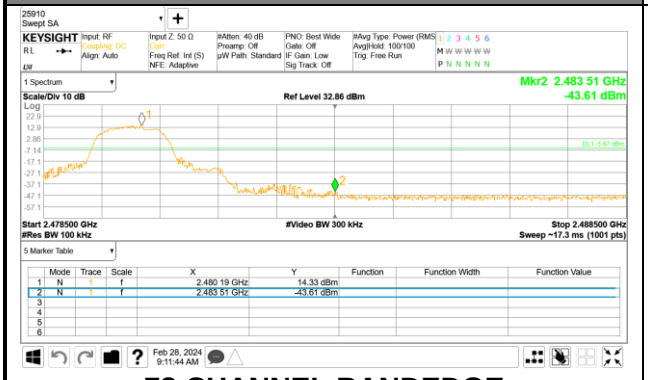
0 CHANNEL BANDEDGE



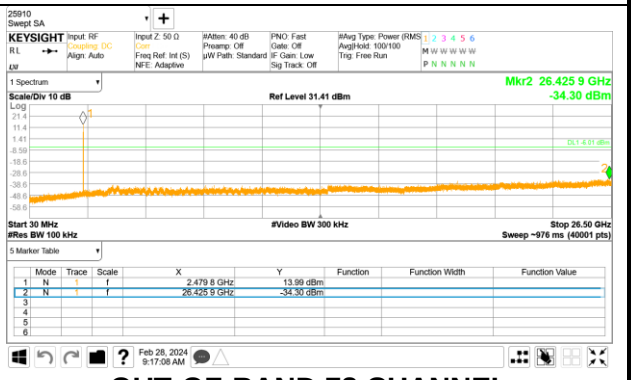
OUT-OF-BAND 0 CHANNEL



OUT-OF-BAND 39 CHANNEL

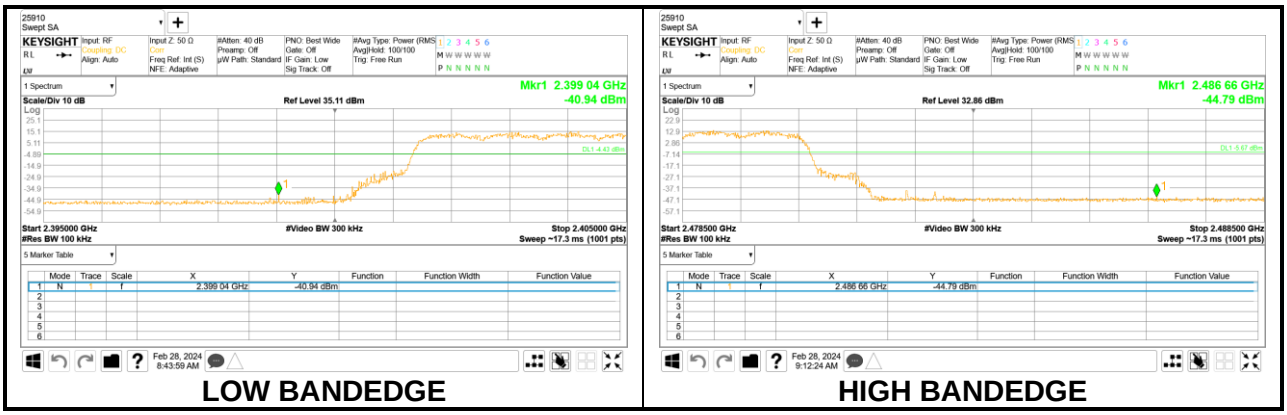


78 CHANNEL BANDEDGE

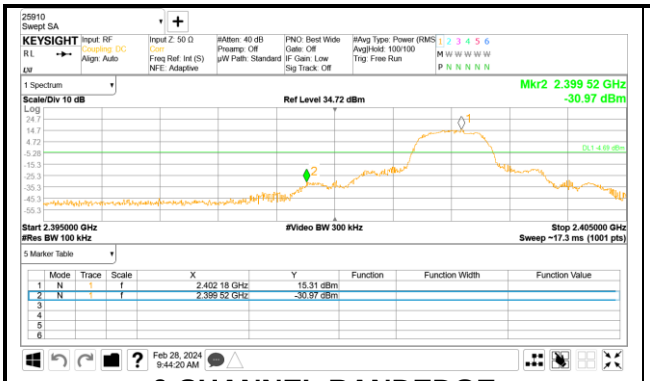


OUT-OF-BAND 78 CHANNEL

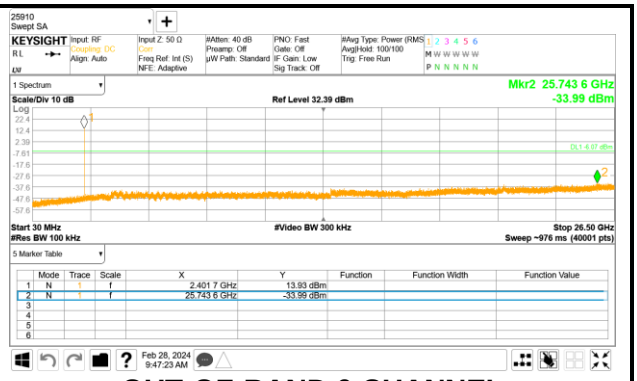
SPURIOUS BANDEDGE EMISSIONS WITH HOPPING ON – ANT1



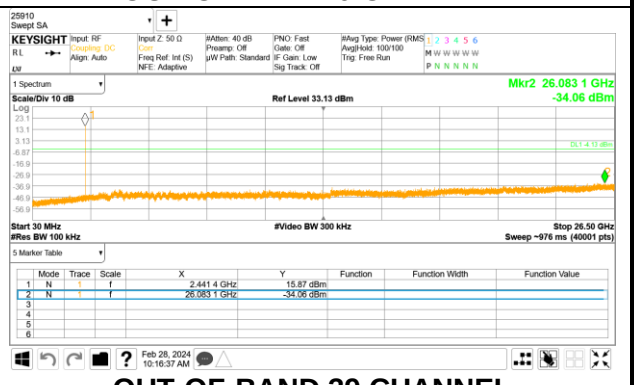
SPURIOUS EMISSIONS, NON-HOPPING – ANT2



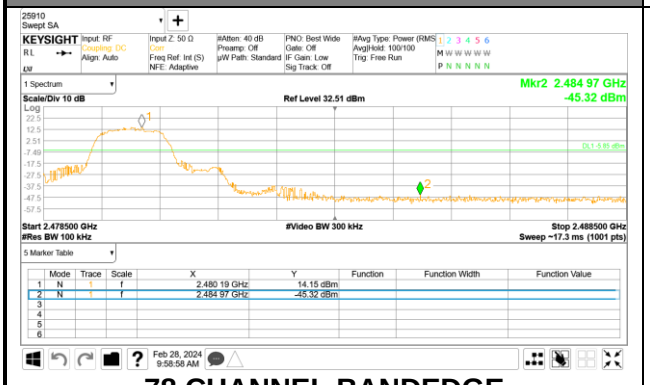
0 CHANNEL BANDEDGE



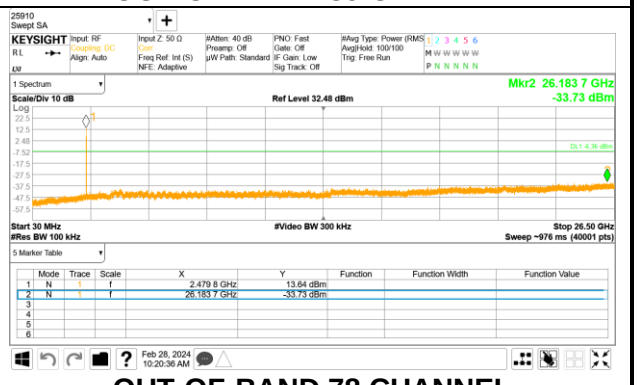
OUT-OF-BAND 0 CHANNEL



OUT-OF-BAND 39 CHANNEL

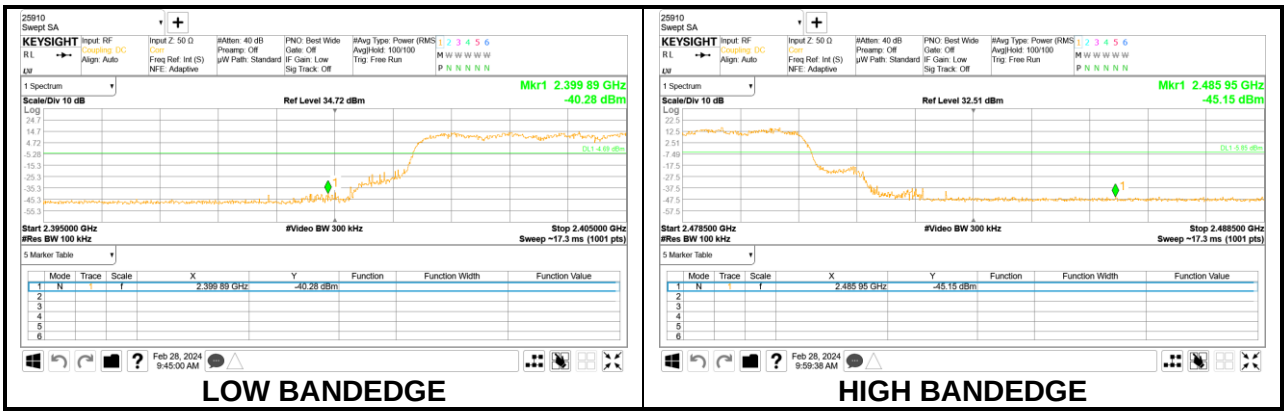


78 CHANNEL BANDEDGE



OUT-OF-BAND 78 CHANNEL

SPURIOUS BANDEDGE EMISSIONS WITH HOPPING ON – ANT2



10. RADIATED TEST RESULTS

LIMITS

FCC §15.205 and §15.209

Limits for radiated disturbance of an intentional radiator		
Frequency range (MHz)	Limits (μV/m)	Measurement Distance (m)
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

** Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this part, e.g. §§ 15.231 and 15.241.

FCC Part 15.205 (a) : Only spurious emissions are permitted in any of the frequency bands listed below :

MHz	MHz	MHz	MHz	GHz	GHz
0.009 ~ 0.110	8.41425 ~ 8.41475	108 ~ 121.94	1300 ~ 1427	4.5 ~ 5.15	14.47 ~ 14.5
0.495 ~ 0.505	12.29 ~ 12.293	123 ~ 138	1435 ~ 1626.5	5.35 ~ 5.46	15.35 ~ 16.2
2.1735 ~ 2.1905	12.51975 ~ 12.52025	149.9 ~ 150.05	1645.5 ~ 1646.5	7.25 ~ 7.75	17.7 ~ 21.4
4.125 ~ 4.128	12.57675 ~ 12.57725	156.52475 ~	1660 ~ 1710	8.025 ~ 8.5	22.01 ~ 23.12
4.17725 ~ 4.17775	13.36 ~ 13.41	156.52525	1718.8 ~ 1722.2	9.0 ~ 9.2	23.6 ~ 24.0
4.20725 ~ 4.20775	16.42 ~ 16.423	156.7 ~ 156.9	2200 ~ 2300	9.3 ~ 9.5	31.2 ~ 31.8
6.215 ~ 6.218	16.69475 ~ 16.69525	162.0125 ~	2310 ~ 2390	10.6 ~ 12.7	36.43 ~ 36.5
6.26775 ~ 6.26825	16.80425 ~ 16.80475	167.17	2483.5 ~ 2500	13.25 ~ 13.4	Above 38.6
6.31175 ~ 6.31225	25.5 ~ 25.67	167.72 ~ 173.2	2655 ~ 2900		
8.291 ~ 8.294	37.5 ~ 38.25	240 ~ 285	3260 ~ 3267		
8.362 ~ 8.366	73 ~ 74.6	322 ~ 335.4	3332 ~ 3339		
8.37625 ~ 8.38675	74.8 ~ 75.2	399.90 ~ 410	3345.8 ~ 3358		
		608 ~ 614	3600 ~ 4400		
		960 ~ 1240			

▪ FCC Part 15.205(b) : The field strength of emissions appearing within these frequency bands shall not exceed the limits shown in §15.209. At frequencies equal to or less than 1000 MHz, compliance with the limits in §15.209 shall be demonstrated using measurement instrumentation employing a CISPR quasi-peak detector. Above 1000 MHz, compliance with the emission limits in §15.209 shall be demonstrated based on the average value of the measured emissions. The provisions in §15.35 apply to these measurements.

TEST PROCEDURE

The EUT is placed on a non-conducting table 80 cm above the ground plane for below 1GHz and 150 cm for above 1GHz. The EUT is configured in accordance with ANSI C63.10. The EUT is set to transmit in a continuous mode.

For measurements below 1 GHz the resolution bandwidth is set to 100 kHz for peak detection measurements or 120 kHz for quasi-peak detection measurements. Peak detection is used unless otherwise noted as quasi-peak.

For measurements above 1 GHz the resolution bandwidth is set to 1 MHz; the video bandwidth is set to 3 MHz for peak measurements. (Pre-scans to detect harmonic and spurious emissions, the resolution bandwidth is set to 1 MHz; the video bandwidth is set to 30 kHz for peak measurements.)

For band edge measurements above 1 GHz the resolution bandwidth is set to 1 MHz, then the video bandwidth is set to 3 MHz for peak measurements and 1/T (on time) for average measurement.

GFSK = 1/T = 1 / 0.00288s = 347Hz.

The minimum VBW was 347Hz, but test receiver(ESU40) couldn’t set value 347Hz. Due to this reason, testing VBW was set to 500Hz(Worst cases).

The spectrum from 1GHz to 26 GHz is investigated with the transmitter set to the lowest, middle, and highest channels in the 2.4 GHz band.
(From 30MHz to 1GHz, test was performed with the EUT set to transmit at the channel with highest output power)

The frequency range of interest is monitored at a fixed antenna height and EUT azimuth. The EUT is rotated through 360 degrees to maximize emissions received. The antenna is scanned from 1 to 4 meters above the ground plane to further maximize the emission. Measurements are made with the antenna polarized in both the vertical and the horizontal positions.

Note : Emission was pre-scanned from 9kHz to 30MHz; No emissions were detected which was at least 20dB below the specification limit (consider distance correction factor).
Per FCC part 15.31(o), test results were not reported.

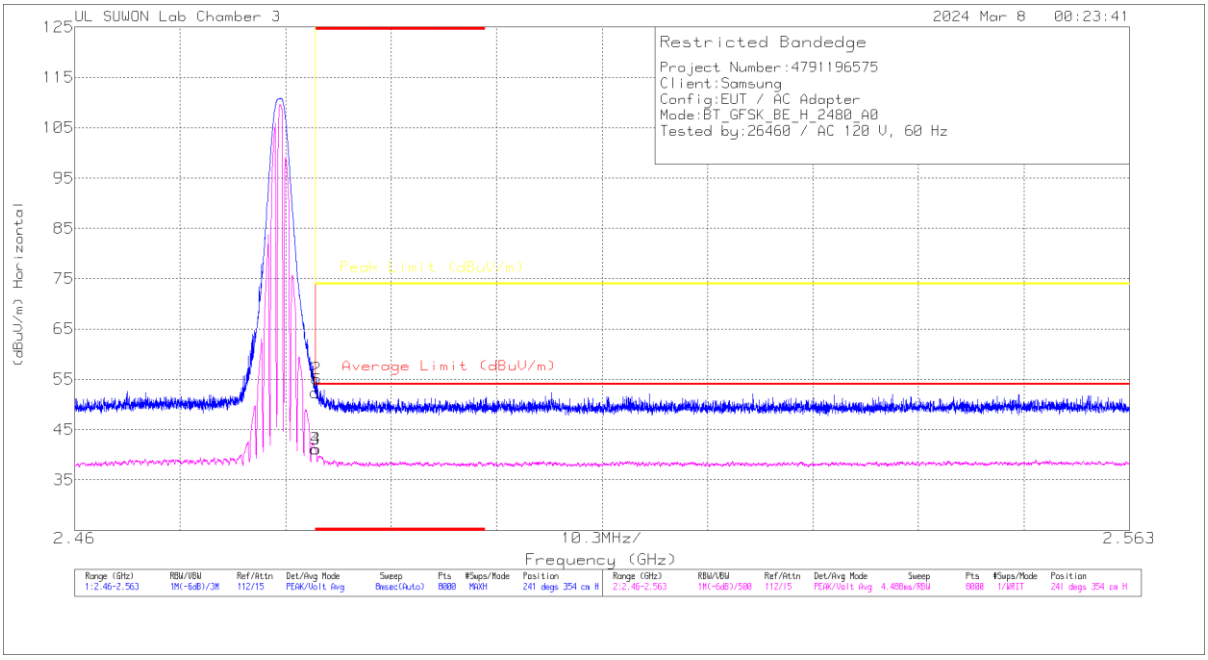
Although these tests were performed other than open field test site, adequate comparison measurements were confirmed against 30 m open are test site.
Therefore sufficient tests were made to demonstrate that the alternative site produces results that correlate with the one of tests made in an open field based on KDB 414788.

10.1. TRANSMITTER ABOVE 1 GHz

10.1.1. BLUETOOTH BASIC DATA RATE GFSK MODULATION

BANDEDGE (WORST CASE: 78 CHANNEL, ANT1)

HORIZONTAL RESULT



Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	Antenna_957_Factor(dB/m)	10dB_Path Loss(dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.4835	44.78	Pk	32.4	-24.8	52.38	-	-	74	-21.62	241	354	H
2	* 2.48364	47.54	Pk	32.4	-24.8	55.14	-	-	74	-18.86	241	354	H
3	* 2.4835	33.6	VA1T	32.4	-24.8	41.2	54	-12.8	-	-	241	354	H
4	* 2.48354	33.51	VA1T	32.4	-24.8	41.11	54	-12.89	-	-	241	354	H

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
VA1T - FHSS: Linear Voltage Average VB=1/Ton where: Ton is transmit duration

BANDEDGE TEST DATA

Freq. [MHz]	Antenna	Frequency [GHz]	Reading [dBuV]	Detector Mode	ANT Factor [dB/m]	Loss [dB]	Result [dBuV/m]	AV Limit [dBuV/m]	AV Margin [dB]	PK Limit [dBuV/m]	PK Margin [dB]	Azimuth [Degs]	Height [cm]	Polarity
2402	ANT1	* 2.39	41.87	Pk	32.10	-24.80	49.17	-	-	74.00	-24.83	243	333	H
		* 2.3262	44.60	Pk	31.90	-24.80	51.70	-	-	74.00	-22.30	243	333	H
		* 2.39	29.76	VA1T	32.10	-24.80	37.06	54.00	-16.94	-	-	243	333	H
		* 2.38652	30.54	VA1T	32.10	-24.80	37.84	54.00	-16.16	-	-	243	333	H
		* 2.39	41.24	Pk	32.10	-24.80	48.54	-	-	74.00	-25.46	157	347	V
		* 2.36236	44.76	Pk	32.00	-24.90	51.86	-	-	74.00	-22.14	157	347	V
		* 2.39	29.68	VA1T	32.10	-24.80	36.98	54.00	-17.02	-	-	157	347	V
		* 2.37835	30.39	VA1T	32.10	-24.80	37.69	54.00	-16.31	-	-	157	347	V
2480	ANT1	* 2.4835	44.78	Pk	32.40	-24.80	52.38	-	-	74.00	-21.62	241	354	H
		* 2.48364	47.54	Pk	32.40	-24.80	55.14	-	-	74.00	**-18.86**	241	354	H
		* 2.4835	33.60	VA1T	32.40	-24.80	41.20	54.00	**-12.80**	-	-	241	354	H
		* 2.48354	33.51	VA1T	32.40	-24.80	41.11	54.00	-12.89	-	-	241	354	H
		* 2.4835	43.70	Pk	32.40	-24.80	51.30	-	-	74.00	-22.70	199	318	V
		* 2.48353	45.18	Pk	32.40	-24.80	52.78	-	-	74.00	-21.22	199	318	V
		* 2.4835	32.30	VA1T	32.40	-24.80	39.90	54.00	-14.10	-	-	199	318	V
		* 2.48371	31.78	VA1T	32.40	-24.80	39.38	54.00	-14.62	-	-	199	318	V

Freq. [MHz]	Antenna	Frequency [GHz]	Reading [dBuV]	Detector Mode	ANT Factor [dB/m]	Loss [dB]	Result [dBuV/m]	AV Limit [dBuV/m]	AV Margin [dB]	PK Limit [dBuV/m]	PK Margin [dB]	Azimuth [Degs]	Height [cm]	Polarity
2402	ANT2	* 2.39	41.23	Pk	32.10	-24.80	48.53	-	-	74.00	-25.47	138	360	H
		* 2.37116	44.86	Pk	32.00	-24.90	51.96	-	-	74.00	-22.04	138	360	H
		* 2.39	29.92	VA1T	32.10	-24.80	37.22	54.00	-16.78	-	-	138	360	H
		* 2.38733	30.33	VA1T	32.10	-24.80	37.63	54.00	-16.37	-	-	138	360	H
		* 2.39	41.67	Pk	32.10	-24.80	48.97	-	-	74.00	-25.03	242	308	V
		* 2.3729	44.61	Pk	32.00	-24.90	51.71	-	-	74.00	-22.29	242	308	V
		* 2.39	30.03	VA1T	32.10	-24.80	37.33	54.00	-16.67	-	-	242	308	V
		* 2.38993	30.25	VA1T	32.10	-24.80	37.55	54.00	-16.45	-	-	242	308	V
2480	ANT2	* 2.4835	42.72	Pk	32.40	-24.80	50.32	-	-	74.00	-23.68	140	374	H
		* 2.484	46.86	Pk	32.40	-24.80	54.46	-	-	74.00	-19.54	140	374	H
		* 2.4835	31.04	VA1T	32.40	-24.80	38.64	54.00	-15.36	-	-	140	374	H
		2.561	31.21	VA1T	32.40	-24.70	38.91	54.00	-15.09	-	-	140	374	H
		* 2.4835	51.02	Pk	32.40	-24.80	58.62	-	-	74.00	**-15.38**	239	287	V
		* 2.48431	50.17	Pk	32.40	-24.80	57.77	-	-	74.00	-16.23	239	287	V
		* 2.4835	30.69	VA1T	32.40	-24.80	38.29	54.00	-15.71	-	-	239	287	V
		* 2.48367	31.77	VA1T	32.40	-24.80	39.37	54.00	**-14.63**	-	-	239	287	V

Freq. [MHz]	Antenna	Frequency [GHz]	Reading [dBuV]	Detector Mode	ANT Factor [dB/m]	Loss [dB]	Result [dBuV/m]	AV Limit [dBuV/m]	AV Margin [dB]	PK Limit [dBuV/m]	PK Margin [dB]	Azimuth [Degs]	Height [cm]	Polarity
2402	DUAL	* 2.39	42.46	Pk	32.10	-24.80	49.76	-	-	74.00	-24.24	218	132	H
		* 2.36057	44.58	Pk	32.00	-24.90	51.68	-	-	74.00	-22.32	218	132	H
		* 2.39	29.98	VA1T	32.10	-24.80	37.28	54.00	-16.72	-	-	218	132	H
		* 2.38762	30.48	VA1T	32.10	-24.80	37.78	54.00	-16.22	-	-	218	132	H
		* 2.39	41.02	Pk	32.10	-24.80	48.32	-	-	74.00	-25.68	281	278	V
		* 2.38417	44.87	Pk	32.10	-24.90	52.07	-	-	74.00	-21.93	281	278	V
		* 2.39	29.71	VA1T	32.10	-24.80	37.01	54.00	-16.99	-	-	281	278	V
		* 2.37032	30.47	VA1T	32.00	-24.80	37.67	54.00	-16.33	-	-	281	278	V
2480	DUAL	* 2.4835	43.47	Pk	32.40	-24.80	51.07	-	-	74.00	-22.93	154	378	H
		* 2.48402	45.13	Pk	32.40	-24.80	52.73	-	-	74.00	-21.27	154	378	H
		* 2.4835	31.15	VA1T	32.40	-24.80	38.75	54.00	-15.25	-	-	154	378	H
		2.554	31.31	VA1T	32.40	-24.60	39.11	54.00	-14.89	-	-	154	378	H
		* 2.4835	48.08	Pk	32.40	-24.80	55.68	-	-	74.00	-18.32	263	231	V
		* 2.48353	49.35	Pk	32.40	-24.80	56.95	-	-	74.00	**-17.05**	263	231	V
		* 2.4835	31.72	VA1T	32.40	-24.80	39.32	54.00	-14.68	-	-	263	231	V
		* 2.48356	31.83	VA1T	32.40	-24.80	39.43	54.00	**-14.57**	-	-	263	231	V

Note1. Pk - Peak detector, VA1T - FHSS: Linear Voltage Average VB=1/Ton where: Ton is transmit duration
Note2. * - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band