

CERTIFICATION TEST REPORT

Report Number. : S-4792232056-E3V2

Applicant : SAMSUNG ELECTRONICS CO., LTD.
129 SAMSUNG-RO, YEONGTONG-GU, SUWON-SI,
GYEONGGI-DO, 16677, KOREA

Model : SM-X940

FCC ID : A3LSMX940

EUT Description : BT/BLE Tablet + DTS/UNII a/b/g/n/ac/ax/be and digitizer

Test Standard(s) : FCC 47 CFR PART 15 SUBPART C

Date Of Issue:
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Revision History

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1. ATTESTATION OF TEST RESULTS

COMPANY NAME: SAMSUNG ELECTRONICS CO., LTD.

EUT DESCRIPTION: BT/BLE Tablet + DTS/UNII a/b/g/n/ac/ax/be and digitizer

MODEL NUMBER: SM-X940

SERIAL NUMBER: R37L301JY5Y, R37L301JY3P (CONDUCTED);
R37L301JYKN, R37L301JXAM (RADIATED)

DATE TESTED: 2026-05-18 ~ 2026-06-19

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
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UL KOREA LTD.

Tested By:



Myeongjun Kwon
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 Multiple Transmitter Output v02r01
5. ANSI C63.10-2020+Cor. 1-2023+C63.10a-2024 + Errata to C63.10a-2024

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:

$$\begin{aligned} \text{Field Strength (dBuV/m)} &= \text{Measured Voltage (dBuV)} + \text{Antenna Factor (dB/m)} + \\ &\text{Cable Loss (dB)} - \text{Preamp Gain (dB)} \\ 36.5 \text{ dBuV} + 18.7 \text{ dB/m} + 0.6 \text{ dB} - 26.9 \text{ dB} &= 28.9 \text{ dBuV/m} \end{aligned}$$

$$\begin{aligned} \text{AC Corrected Reading (dBuV)} &= \text{Measured Voltage (dBuV)} + \text{Extension Cord} \\ &\text{Loss (dB)} + \text{Cable Loss (dB)} \\ 44.72 \text{ dBuV} &= 34.72 \text{ dBuV} + 9.9 \text{ dB} + 0.1 \text{ dB} \end{aligned}$$

4.3. MEASUREMENT UNCERTAINTY

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

PARAMETER	UNCERTAINTY
RF Output Power	0.70 dB
Time	0.62 %
Occupied Bandwidth	0.04 %
Hopping Frequency Separation	2.8×10^3 Hz
Frequency Range	6.6×10^3 Hz
Conducted Spurious Emissions	2.00 dB
Conducted Disturbance, 9 kHz to 30 MHz	1.84 dB
Radiated Disturbance, 9 kHz to 30 MHz	2.41 dB
Radiated Disturbance, 30 MHz to 1 GHz	3.78 dB
Radiated Disturbance, 1 GHz to 18 GHz	5.25 dB
Radiated Disturbance, 18 GHz to 40 GHz	5.07 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 BT/BLE Tablet + DTS/UNII a/b/g/n/ac/ax/be and digitizer. This test report addresses the DSS (Bluetooth) operational mode.

5.2. MAXIMUM OUTPUT POWER

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

Antenna 1

Frequency Range [MHz]	Mode	Power Mode	Output Power [dBm]	Output Power [mW]
2 402 ~ 2 480	Basic GFSK	Peak	19.07	80.72
		Average	18.83	76.33
	Enhanced Pi/4-DQPSK	Peak	18.83	76.38
		Average	15.80	37.99
	Enhanced 8DPSK	Peak	19.21	83.37
		Average	15.86	38.54

Antenna 2

Frequency Range [MHz]	Mode	Power Mode	Output Power [dBm]	Output Power [mW]
2 402 ~ 2 480	Basic GFSK	Peak	18.00	63.10
		Average	17.69	58.78
	Enhanced Pi/4-DQPSK	Peak	17.75	59.57
		Average	14.74	29.75
	Enhanced 8DPSK	Peak	18.26	66.99
		Average	14.84	30.49

Antenna Dual mode

Frequency Range [MHz]	Mode	Power Mode	Output Power [dBm]	Output Power [mW]
2 402 ~ 2 480	Basic GFSK	Peak	16.12	40.88
		Average	14.99	31.53
	Enhanced Pi/4-DQPSK	Peak	15.78	37.83
		Average	12.85	19.27
	Enhanced 8DPSK	Peak	16.16	41.26
		Average	12.91	19.56

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]
DSS 2400 – 2483.5	-4.70	-5.60	-2.13

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 = $10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2 / N_{ANT}]$ dBi.

Sample calculation for this device with $N_{ANT} = 2$

Directional gain = $10 \log[(10^{-4.70/20} + 10^{-5.60/20})^2 / 2] = -2.13$ dBi

“WIFI0” and “WIFI1” 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 radiated tests 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.

ANT	BE	RSE
	EUT axis	EUT axis
ANT1	X	Z
ANT2	X	Y
Dual	Y	Z

For conducted power test, both Diversity and DUAL mode were tested and reported. Only Conducted power was reported for Dual mode because no noticeable emissions were detected in other test items.

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

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

5.5. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

Support Equipment List				
Description	Manufacturer	Model	Serial Number	FCC ID
Charger	SAMSUNG	EP-T2510	N/A	N/A
Data Cable	SAMSUNG	EP-DN980	N/A	N/A

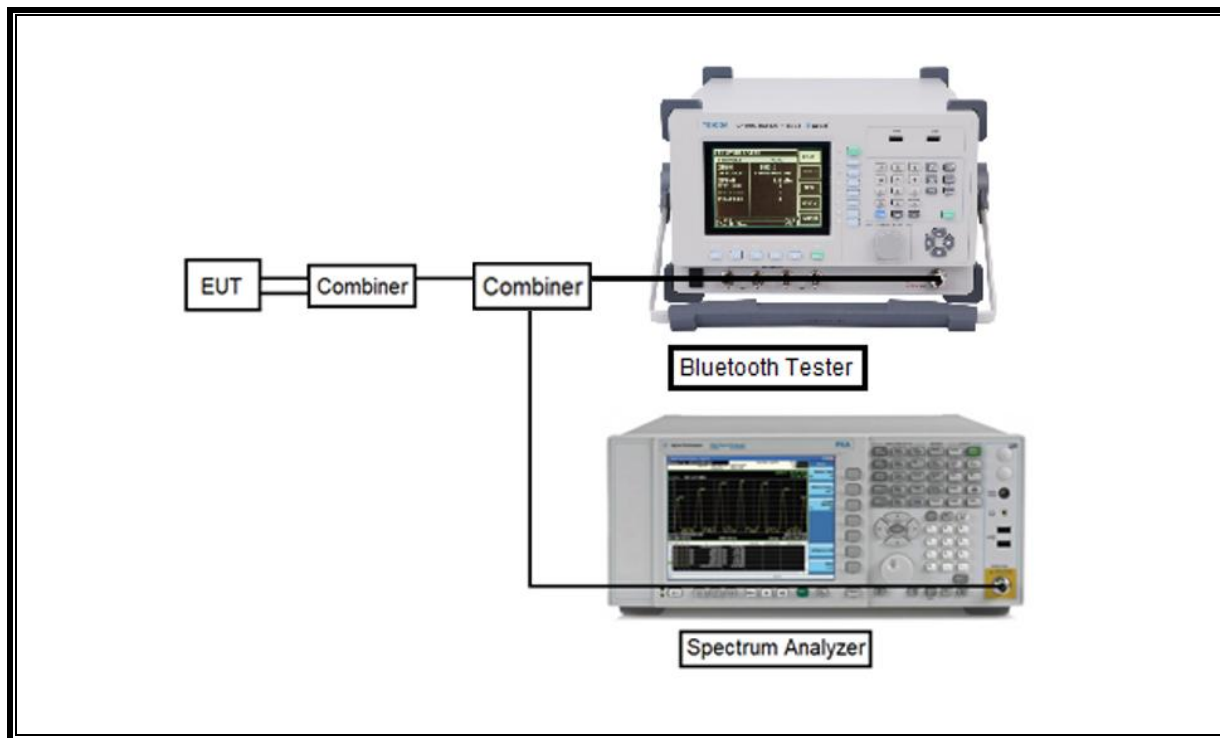
I/O CABLE

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

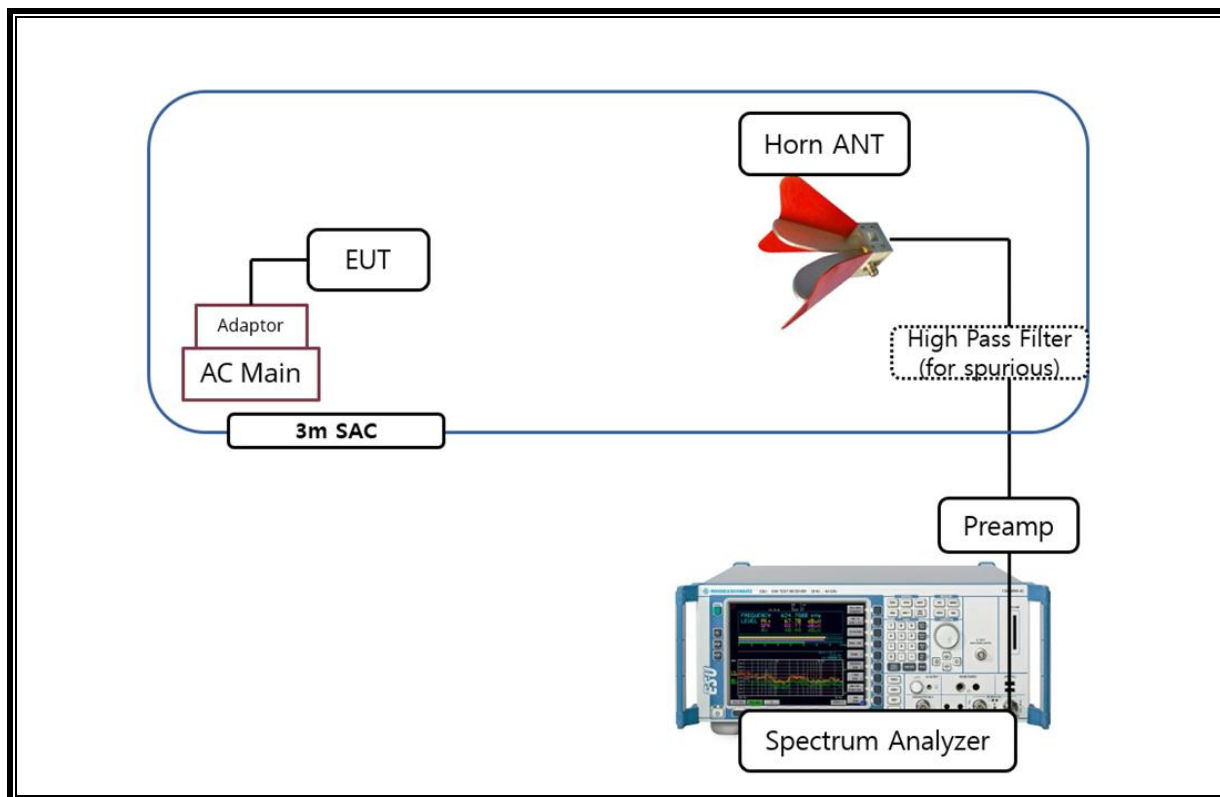
TEST SETUP

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

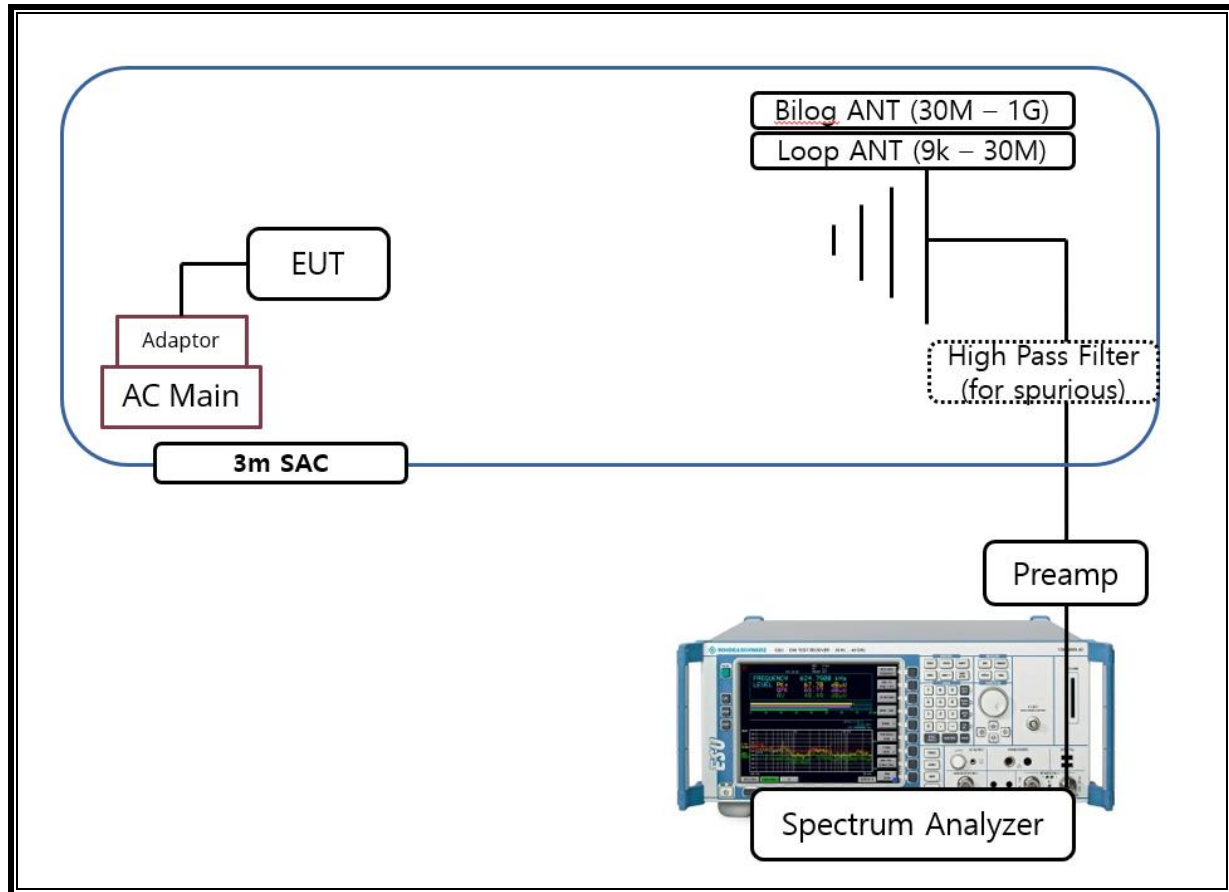
SETUP DIAGRAM FOR TESTS (CONDUCTED TEST SETUP)



SETUP DIAGRAM FOR TESTS (RADIATED TEST SETUP)



SETUP DIAGRAM FOR TESTS (RADIATED TEST SETUP) Below 1GHz



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	VULB 9163	750	2026-07-30
Antenna, Loop, 9kHz-30MHz	R&S	HFH2-Z2E	101308	2027-10-27
Antenna, Horn, 18 GHz	ETS	3117	00168724	2026-07-17
Antenna, Horn, 18 GHz	ETS	3117	00168717	2026-07-17
Antenna, Horn, 40 GHz	ETS	3116C	00166155	2026-07-23
Antenna, Horn, 40 GHz	ETS	3116C	00168645	2027-07-23
Preamplifier	ETS	3116C-PA	00168841	2026-07-28
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	2026-07-21
Preamplifier, 18 GHz	Miteq	AFS42-00101800-25-S-42	2029169	2026-07-21
Preamplifier, 18 GHz	B&Z Technologies, LLC	BZR-01001800-231040-182020	28451	2026-07-21
Preamplifier, 18 GHz	B&Z Technologies, LLC	BZR-01001800-231040-181515	23576	2026-07-22
Spectrum Analyzer, 44 GHz	Agilent / HP	N9030A	MY54170614	2026-07-21
Spectrum Analyzer, 44 GHz	KEYSIGHT	N9030B	MY60070693	2027-01-07
RF Switching Unit	TA Engineering	TA-018S-16	SW-1	N/A
Average Power Sensor	Agilent / HP	U2000A	MY54270007	2026-07-22
Average Power Sensor	Agilent / HP	U2000A	MY54260010	2026-07-22
Bluetooth Tester	TESCOM	MTP300A	MTP300A010266	2026-07-22
Bluetooth Tester	TESCOM	TC-3000C	3000C000546	2026-07-22
Power Splitter	MINI-CIRCUITS	WA1534	UL003	2026-12-29
Power Splitter	MINI-CIRCUITS	WA1534	UL004	2027-01-06
Attenuator	PASTERNAK	PE7087-10	A009	2026-07-22
Attenuator	PASTERNAK	PE7087-10	A001	2026-07-22
EMI Test Receive, 40 GHz	R&S	ESU40	100439	2026-07-21
EMI Test Receive, 40 GHz	R&S	ESU40	100457	2026-07-21
EMI Test Receive, 3 GHz	R&S	ESR 3	101832	2026-11-11
Low Pass Filter 5GHz	Micro-Tronics	LPS17541	009	2026-07-21
High Pass Filter 3GHz	Micro-Tronics	HPM17543	010	2026-07-21
High Pass Filter 6GHz	Micro-Tronics	HPS17542	009	2026-07-21
LISN	R&S	ENV216	101836	2026-07-22
Termination	WEINSCHEL	M1406A	T08	2026-07-22
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	< 0.4 s		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 7.8.7

Out-of-band EMISSIONS IN NON-RESTRICTED BANDS: ANSI C63.10, Section 7.8.8

Out-of-band EMISSIONS IN RESTRICTED BANDS: ANSI C63.10, Section 7.8.8

AC Power Line Conducted Emission: ANSI C63.10-2020, Section 6.2.

9. ANTENNA PORT TEST RESULTS

9.1. ON TIME AND DUTY CYCLE

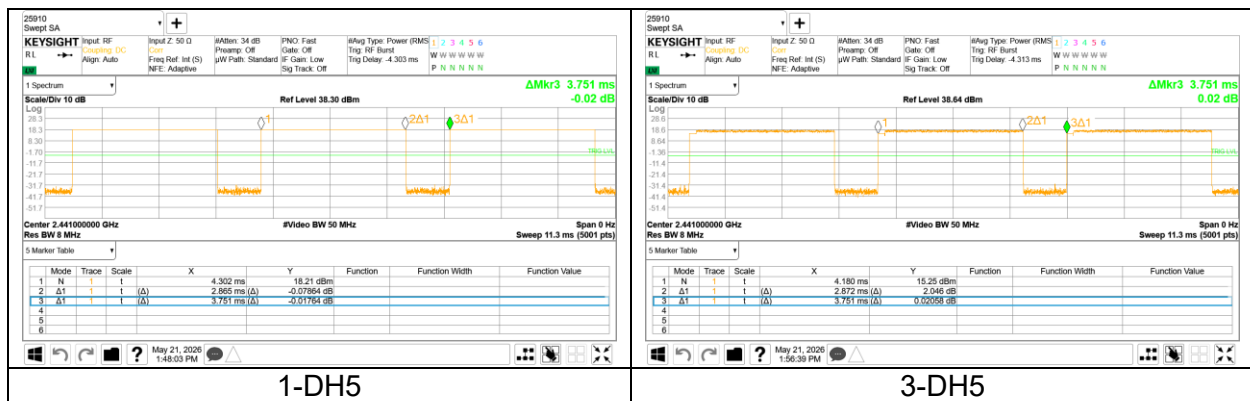
LIMITS

None; for reporting purposes only.

PROCEDURE

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

ON TIME AND DUTY CYCLE RESULTS



Mode	On time [msec]	Period [msec]	Duty Cycle [%]	1/T Minimum VBW [kHz]
2 400 ~ 2 483.5 MHz Band				
BDR	2.865	3.751	76.37	0.35
EDR	2.872	3.751	76.57	0.35

Note: Due to All diversity and Dual mode have the same duty cycle, the duty cycle of ANT1 is reported in the table above.

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.

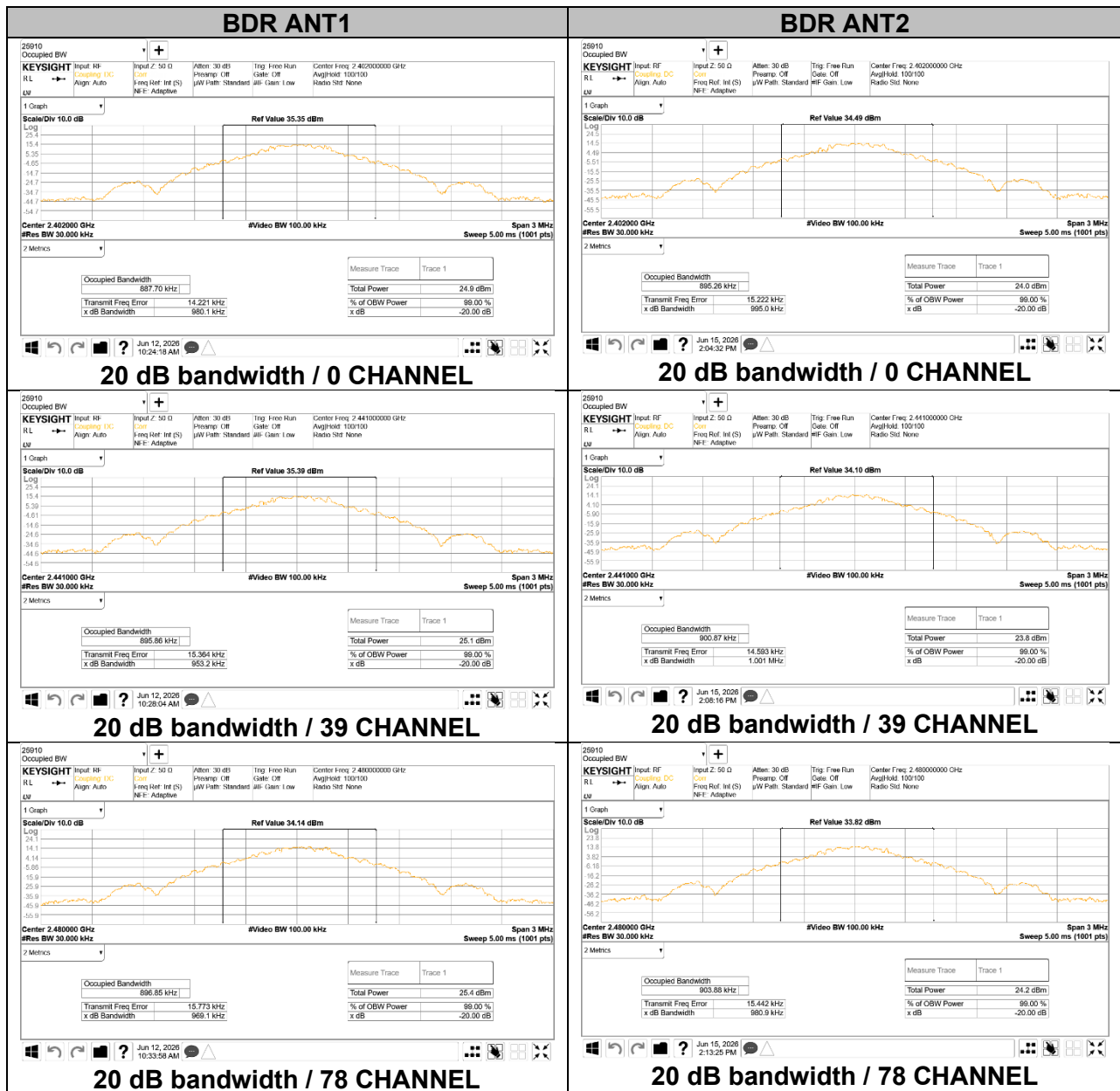
RESULTS

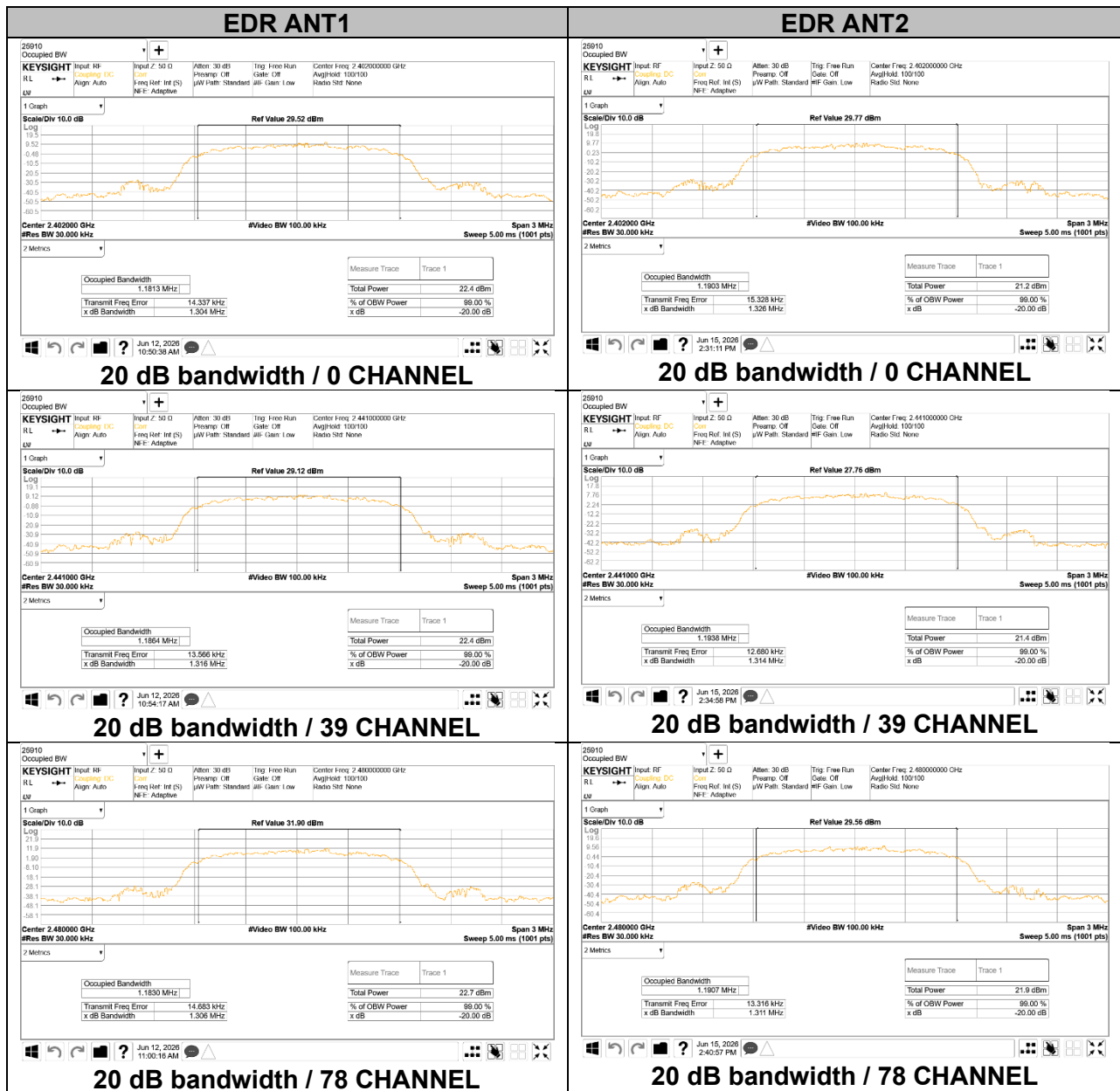
9.2.1. BLUETOOTH BASIC DATA RATE GFSK MODULATION

Antenna	Channel	Frequency [MHz]	20 dB Bandwidth [kHz]
ANT1	0	2 402	980.1
	39	2 441	953.2
	78	2 480	969.1
ANT2	0	2 402	995.0
	39	2 441	1 001.0
	78	2 480	980.9
Worst			953.2

9.2.2. BLUETOOTH ENHANCED DATA RATE 8DPSK MODULATION

Antenna	Channel	Frequency [MHz]	20 dB Bandwidth [kHz]
ANT1	0	2 402	1 304.0
	39	2 441	1 316.0
	78	2 480	1 306.0
ANT2	0	2 402	1 326.0
	39	2 441	1 314.0
	78	2 480	1 311.0
Worst			1 304.0





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 hopping channel, whichever is greater.

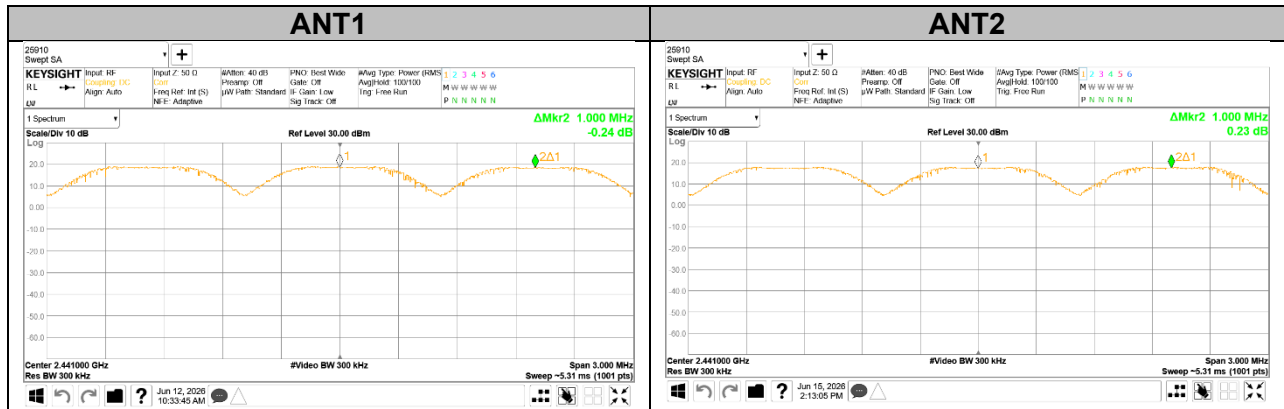
Alternatively, frequency hopping systems operating in the 2400-2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater, provided the systems operate with an output power no greater than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

TEST PROCEDURE

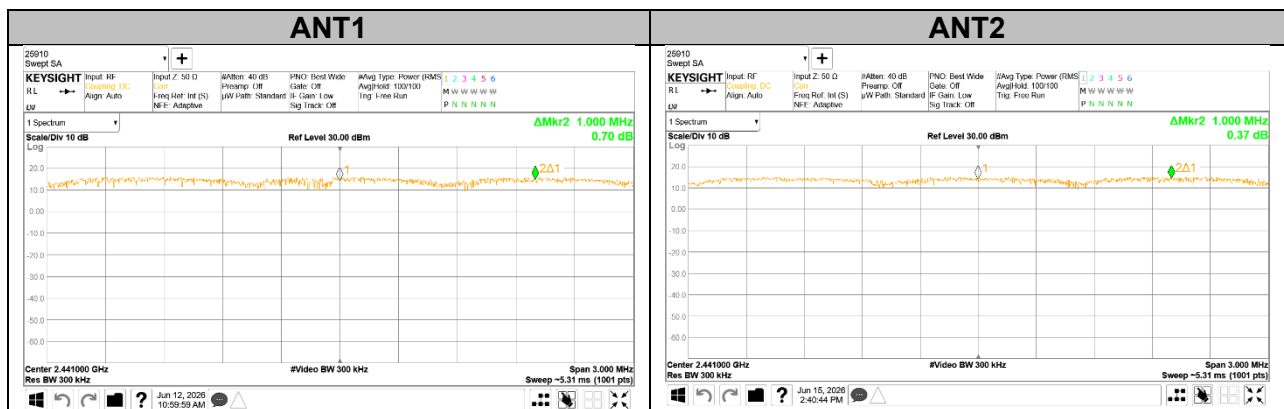
The transmitter output is connected to a spectrum analyzer. Start with the RBW set to approximately 30% of the channel spacing; adjust as necessary to best identify the center of each individual channel. The VBW is set to $\text{VBW} \geq \text{RBW}$. The sweep time is coupled.

RESULTS

9.3.1. BLUETOOTH BASIC DATA RATE GFSK MODULATION



9.3.1. BLUETOOTH ENHANCED DATA RATE 8DPSK MODULATION



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.

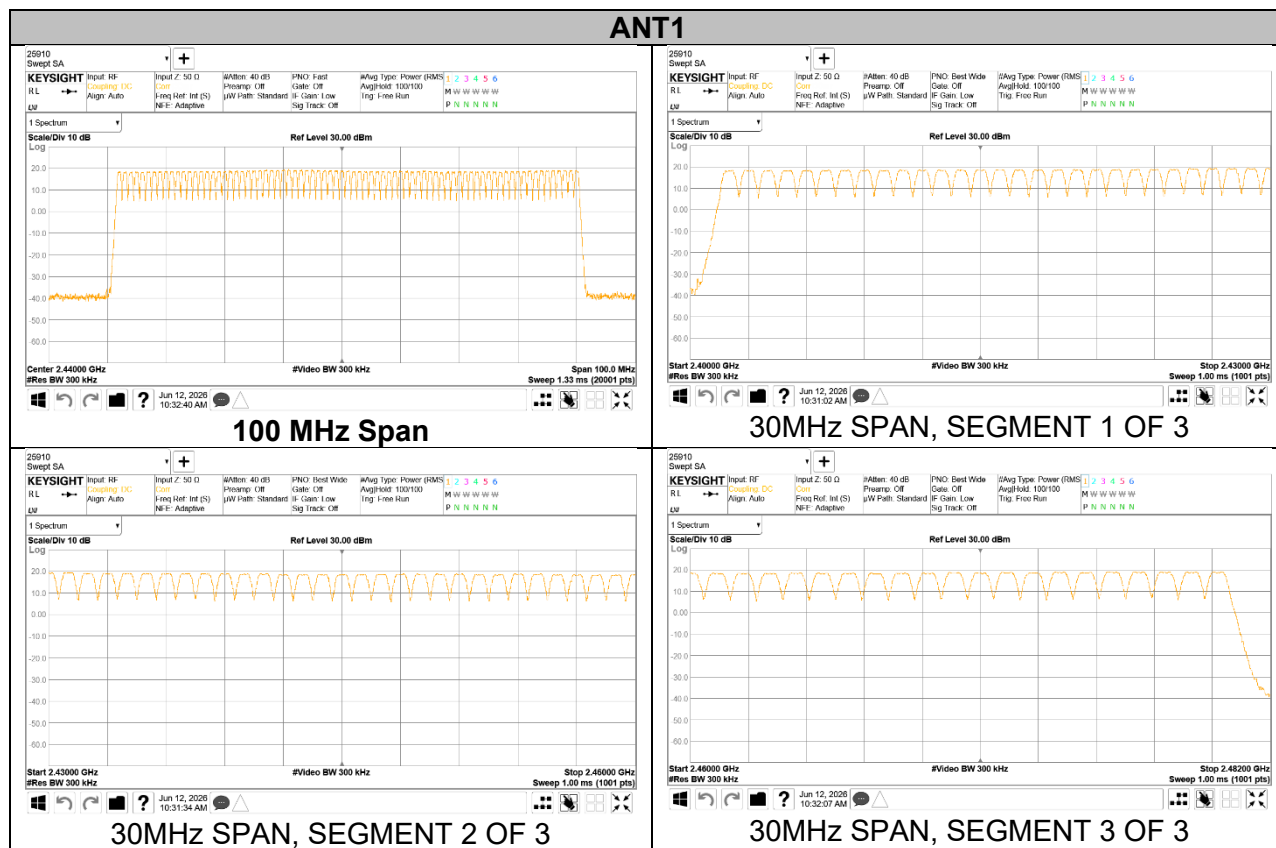
TEST PROCEDURE

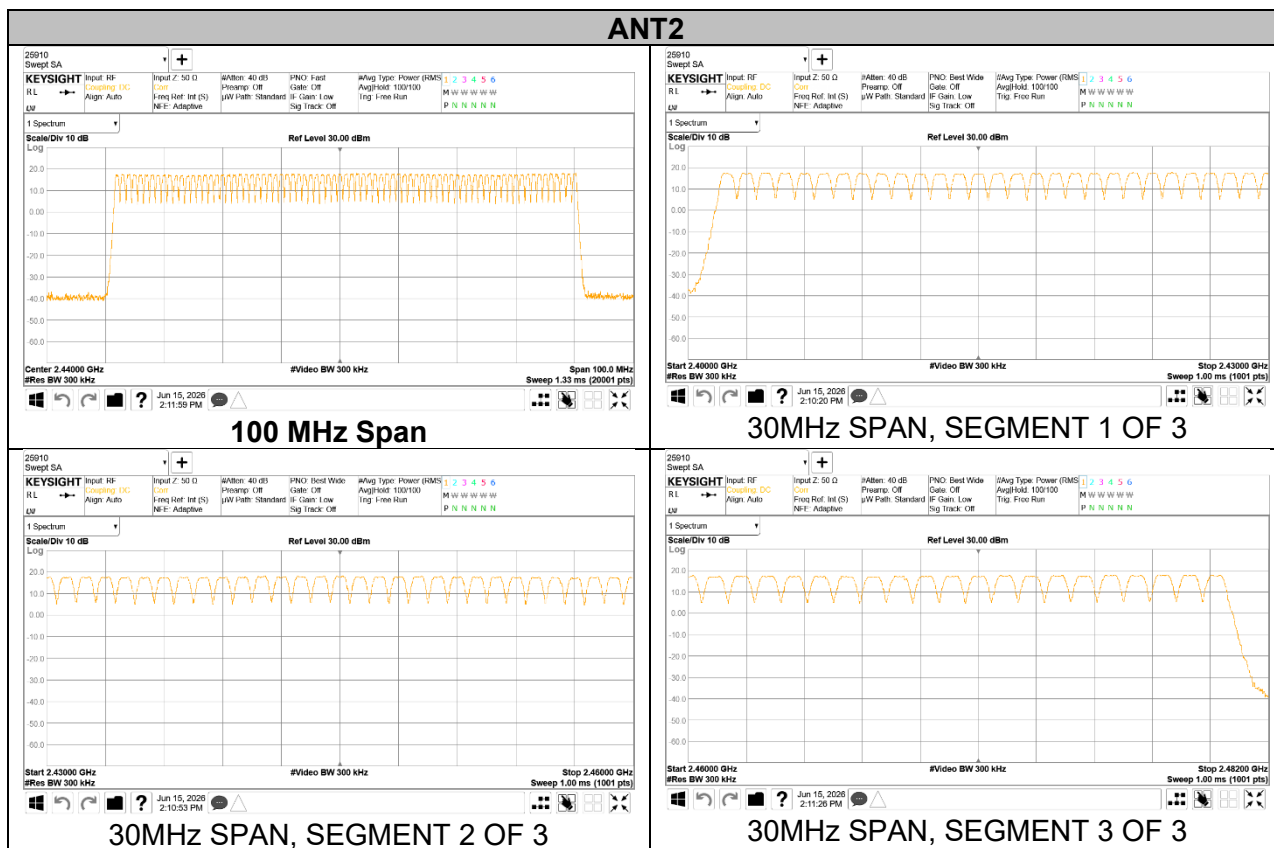
The transmitter output is connected to a spectrum analyzer. The span is set to cover the entire authorized band, in either a single sweep or in multiple contiguous sweeps. To identify clearly the individual channels, set the RBW to less than 30% of the channel spacing or the 20 dB bandwidth, whichever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

RESULTS

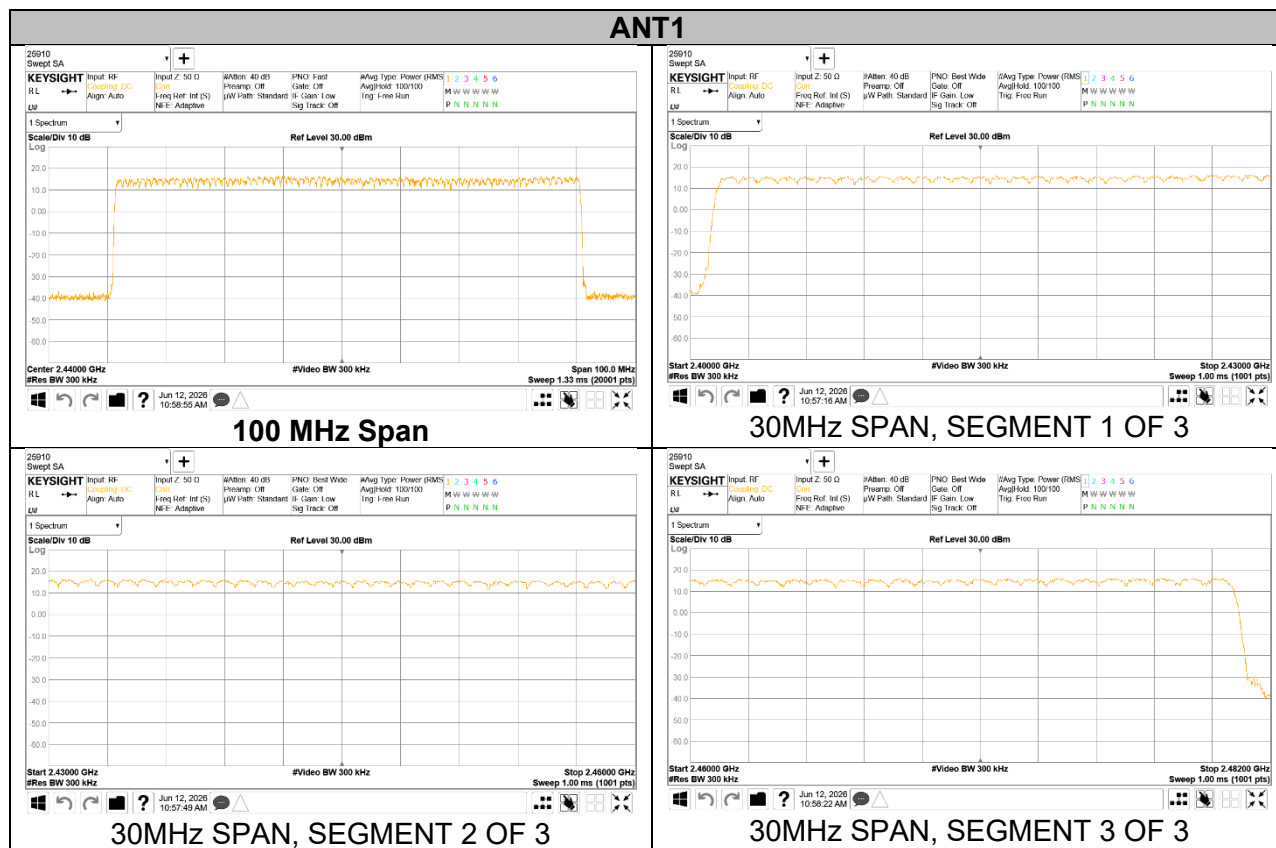
Normal Mode: 79 channels are observed

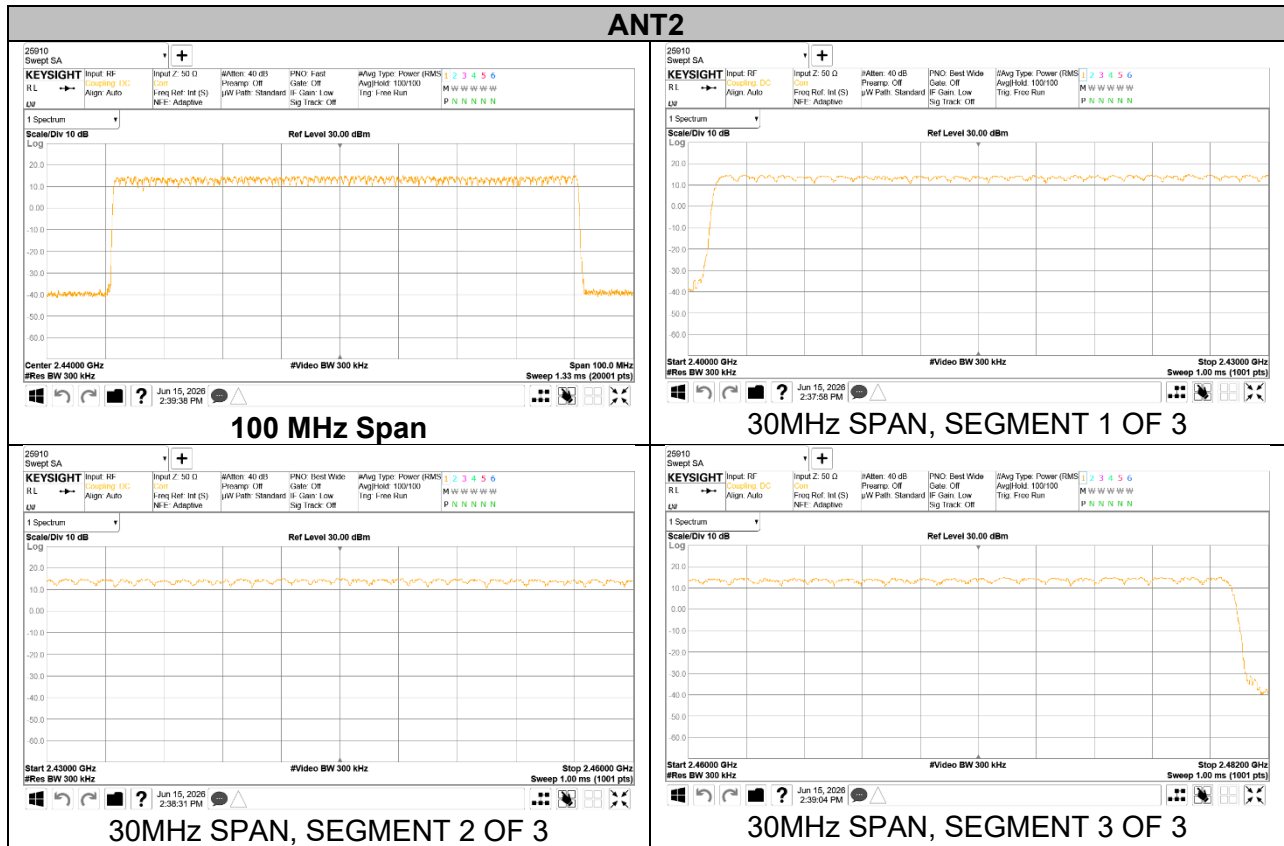
9.4.1. BLUETOOTH BASIC DATA RATE GFSK MODULATION





9.4.2. BLUETOOTH ENHANCED DATA RATE 8DPSK MODULATION





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.

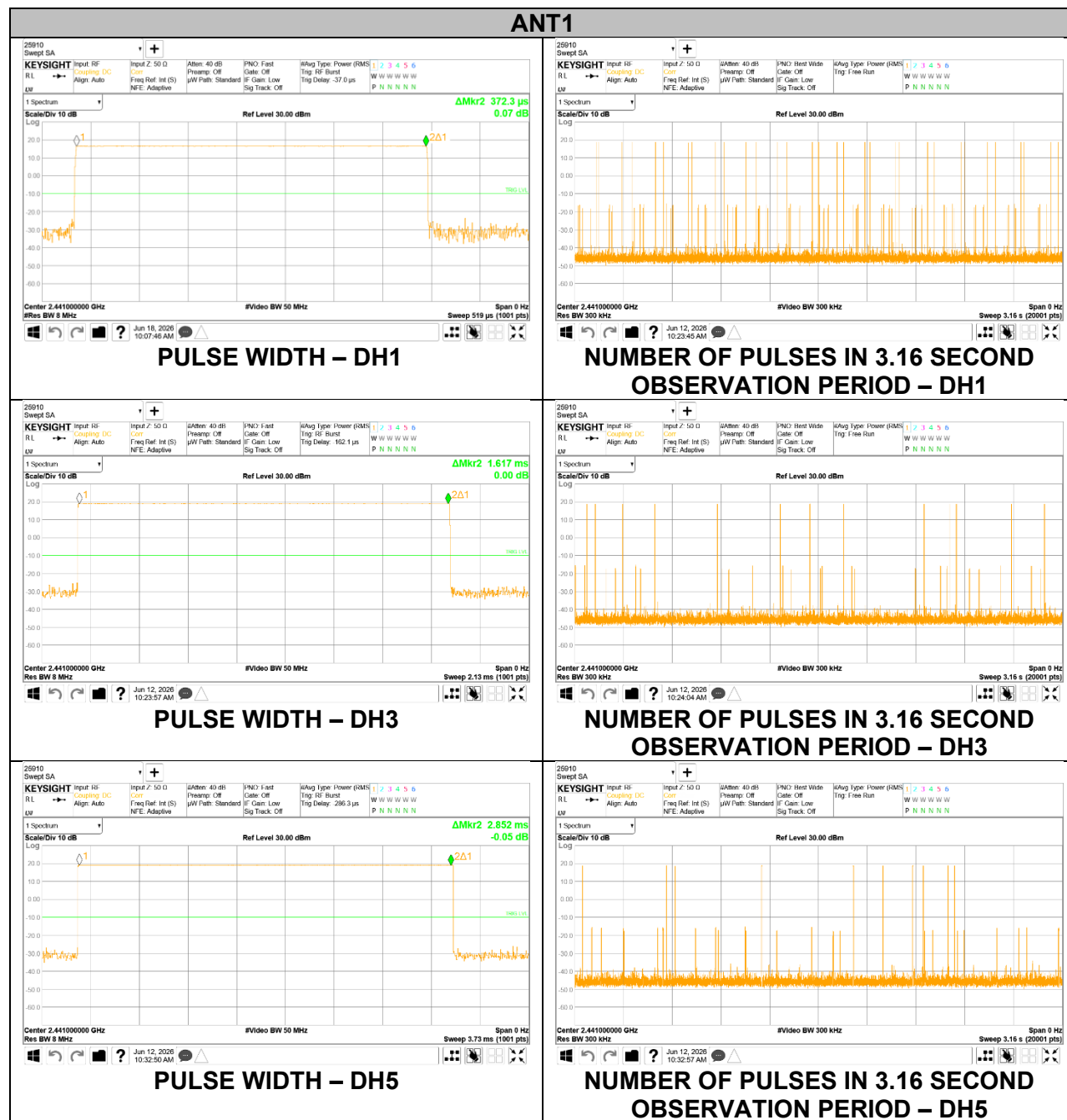
The average time of occupancy in the specified 31.6 second period (79 channels * 0.4 s) is equal to $10 * (\# \text{ of pulses in } 3.16 \text{ s}) * \text{pulse width}$.

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

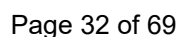
RESULTS

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	0.372	32	0.119	0.4	-0.281
DH3	1.617	13	0.210	0.4	-0.190
DH5	2.852	10	0.285	0.4	-0.115
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	0.372	8	0.030	0.4	-0.370
DH3	1.617	3	0.049	0.4	-0.351
DH5	2.852	3	0.086	0.4	-0.314

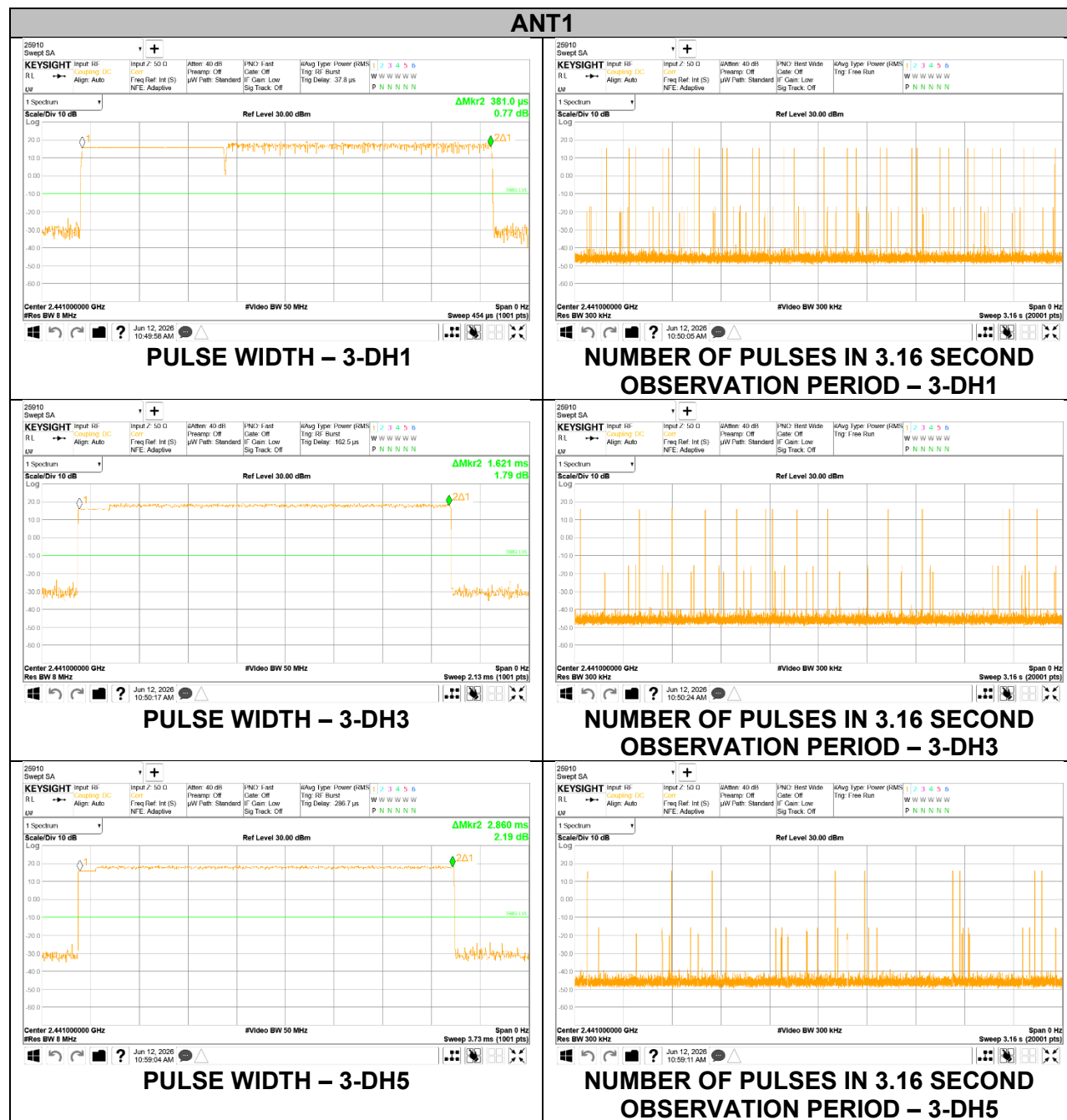


DH Packet	Pulse Width [msec]	Number of Pulses in 3.16 seconds	Average Time of Occupancy [sec]	Limit [sec]	Margin [sec]
GFSK Normal ANT2					
DH1	0.371	30	0.111	0.4	-0.289
DH3	1.615	19	0.307	0.4	-0.093
DH5	2.852	10	0.285	0.4	-0.115
DH Packet	Pulse Width [msec]	Number of Pulses in 0.8 seconds	Average Time of Occupancy [sec]	Limit [sec]	Margin [sec]
GFSK AFH ANT2					
DH1	0.371	8	0.030	0.4	-0.370
DH3	1.615	5	0.081	0.4	-0.319
DH5	2.852	3	0.086	0.4	-0.314

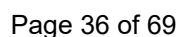


9.5.2. BLUETOOTH ENHANCED DATA RATE 8DPSK MODULATION

DH Packet	Pulse Width [msec]	Number of Pulses in 3.16 seconds	Average Time of Occupancy [sec]	Limit [sec]	Margin [sec]
8DPSK Normal ANT1					
DH1	0.381	31	0.118	0.4	-0.282
DH3	1.621	15	0.243	0.4	-0.157
DH5	2.860	9	0.257	0.4	-0.143
DH Packet	Pulse Width [msec]	Number of Pulses in 0.8 seconds	Average Time of Occupancy [sec]	Limit [sec]	Margin [sec]
8DPSK AFH ANT1					
DH1	0.381	8	0.030	0.4	-0.370
DH3	1.621	4	0.065	0.4	-0.335
DH5	2.860	2	0.057	0.4	-0.343



DH Packet	Pulse Width [msec]	Number of Pulses in 3.16 seconds	Average Time of Occupancy [sec]	Limit [sec]	Margin [sec]
8DPSK Normal ANT2					
DH1	0.380	30	0.114	0.4	-0.286
DH3	1.619	17	0.275	0.4	-0.125
DH5	2.860	15	0.429	0.4	0.029
DH Packet	Pulse Width [msec]	Number of Pulses in 0.8 seconds	Average Time of Occupancy [sec]	Limit [sec]	Margin [sec]
8DPSK AFH ANT2					
DH1	0.380	8	0.030	0.4	-0.370
DH3	1.619	4	0.065	0.4	-0.335
DH5	2.860	4	0.114	0.4	-0.286



9.6. OUTPUT POWER

LIMITS

§15.247 (b) (1)

The peak conducted output power limit is 0.125 W (21 dBm) since Bluetooth AFH mode can be used at least 20 non-overlapping hopping channels.

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	18.43	21.00	-2.57
	39	2 441	18.86		-2.14
	78	2 480	19.07		-1.93
ANT2	0	2 402	17.75		-3.25
	39	2 441	18.00		-3.00
	78	2 480	17.86		-3.14
Worst			19.07		-1.93

9.6.2. ENHANCED DATA RATE Pi/4-DQPSK MODULATION

Antenna	Channel	Frequency [MHz]	Peak Output Power [dBm]	Limit [dBm]	Margin [dB]
ANT1	0	2 402	18.19	21.00	-2.81
	39	2 441	18.59		-2.41
	78	2 480	18.83		-2.17
ANT2	0	2 402	17.34		-3.66
	39	2 441	17.75		-3.25
	78	2 480	17.60		-3.40
Worst			18.83		-2.17

9.6.3. ENHANCED DATA RATE 8DPSK MODULATION

Antenna	Channel	Frequency [MHz]	Peak Output Power [dBm]	Limit [dBm]	Margin [dB]
ANT1	0	2 402	18.56	21.00	-2.44
	39	2 441	18.99		-2.01
	78	2 480	19.21		-1.79
ANT2	0	2 402	17.82		-3.18
	39	2 441	18.26		-2.74
	78	2 480	18.07		-2.93
Worst			19.21		-1.79

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	12.41	21.00	
	39	2 441	13.87		
	78	2 480	13.50		
DUAL ANT2	0	2 402	12.33		
	39	2 441	9.38		
	78	2 480	12.67		
DUAL ANT1+2	0	2 402	15.38		-5.62
	39	2 441	15.19		-5.81
	78	2 480	16.12		-4.88
Worst			16.12		-4.88

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

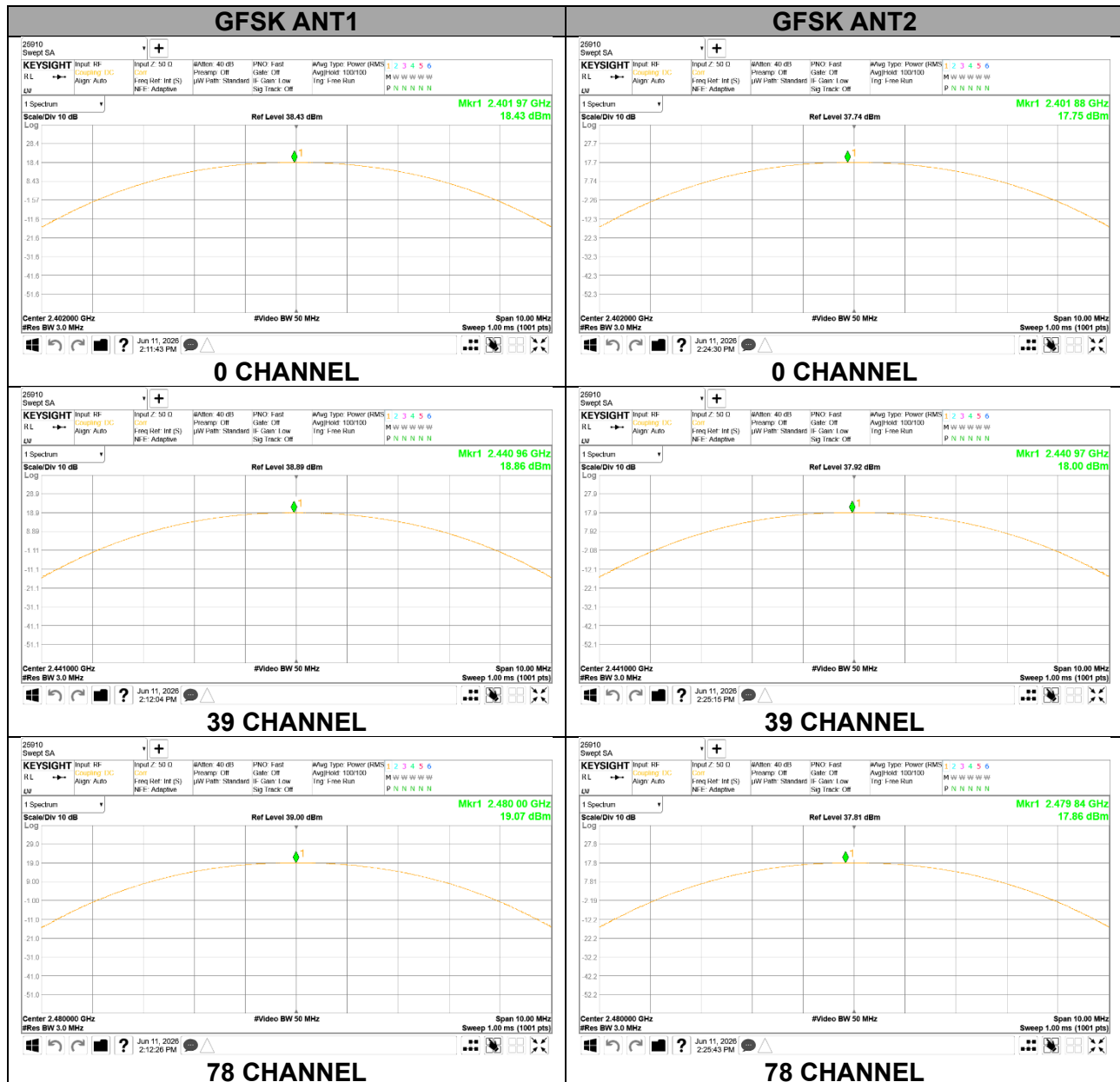
Antenna	Channel	Frequency [MHz]	Peak Output Power [dBm]	Limit [dBm]	Margin [dB]
DUAL ANT1	0	2 402	12.06	21.00	
	39	2 441	13.63		
	78	2 480	13.15		
DUAL ANT2	0	2 402	11.96		
	39	2 441	9.15		
	78	2 480	12.35		
DUAL ANT1+2	0	2 402	15.02		-5.98
	39	2 441	14.95		-6.05
	78	2 480	15.78		-5.22
Worst			15.78		-5.22

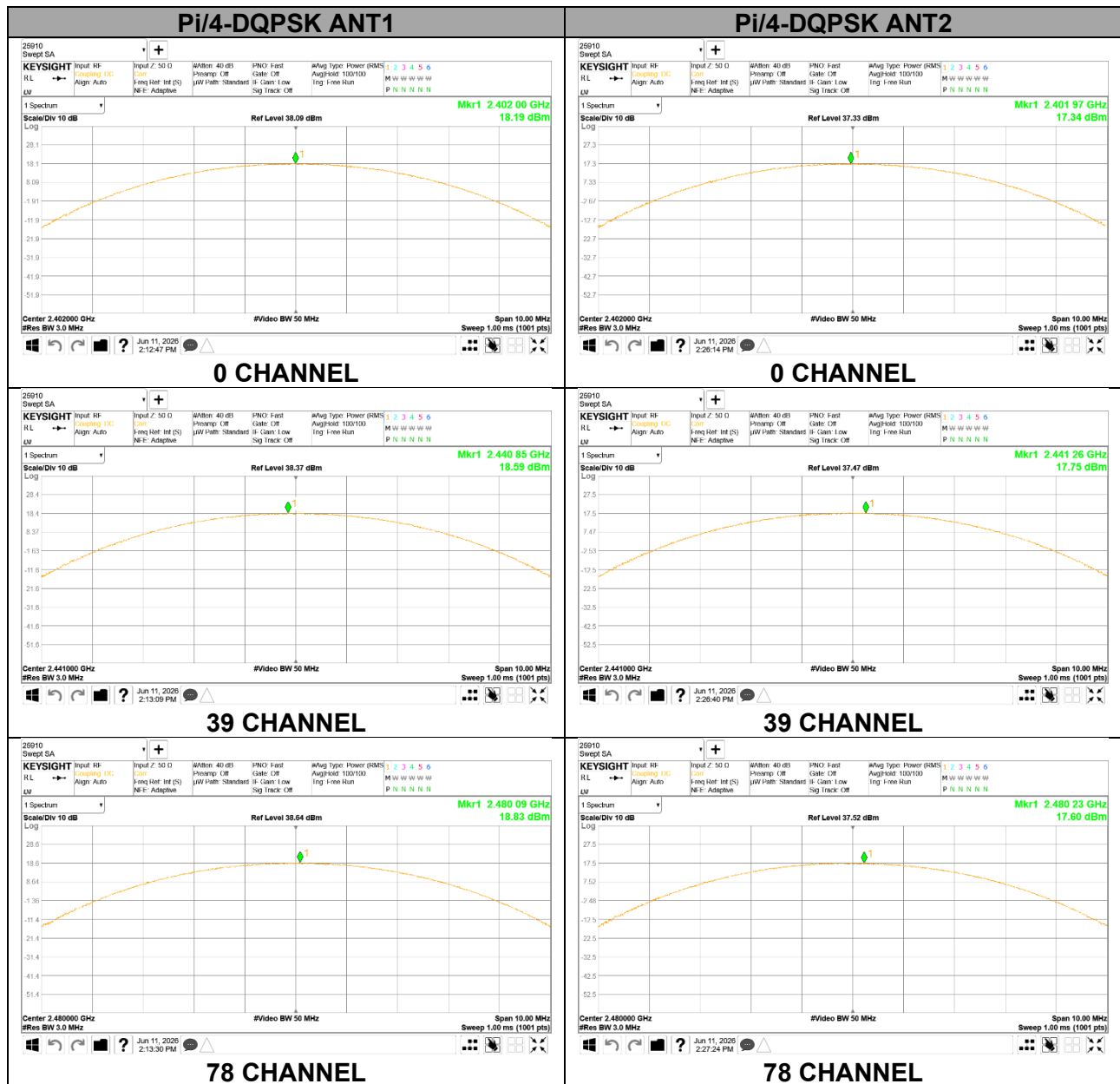
9.6.2. ENHANCED DATA RATE 8DPSK MODULATION (DUAL)

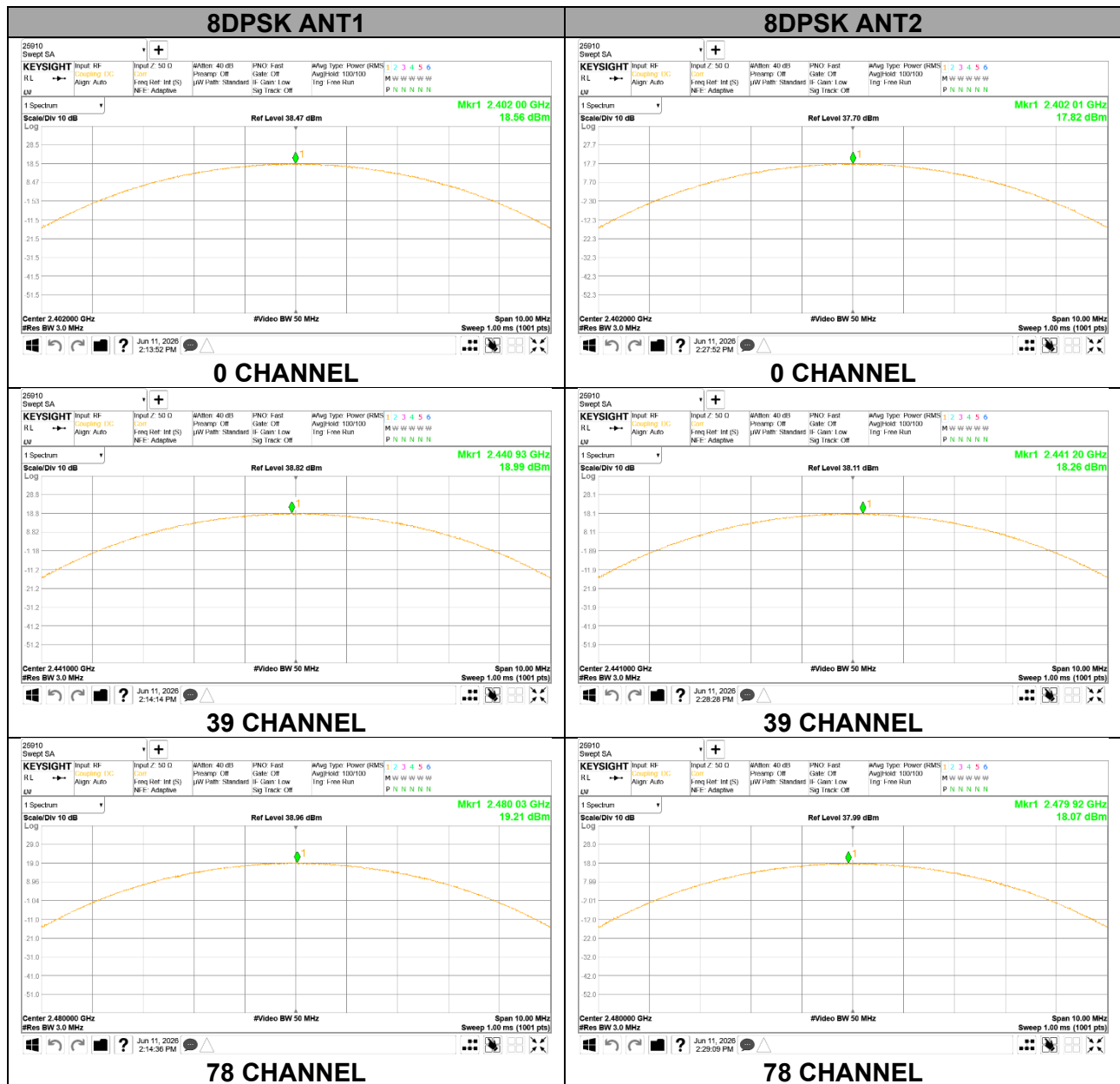
Antenna	Channel	Frequency [MHz]	Peak Output Power [dBm]	Limit [dBm]	Margin [dB]
DUAL ANT1	0	2 402	12.44	21.00	
	39	2 441	13.93		
	78	2 480	13.49		
DUAL ANT2	0	2 402	12.30		
	39	2 441	9.60		
	78	2 480	12.77		
DUAL ANT1+2	0	2 402	15.38		-5.62
	39	2 441	15.29		-5.71
	78	2 480	16.16		-4.84
Worst			16.16		-4.84

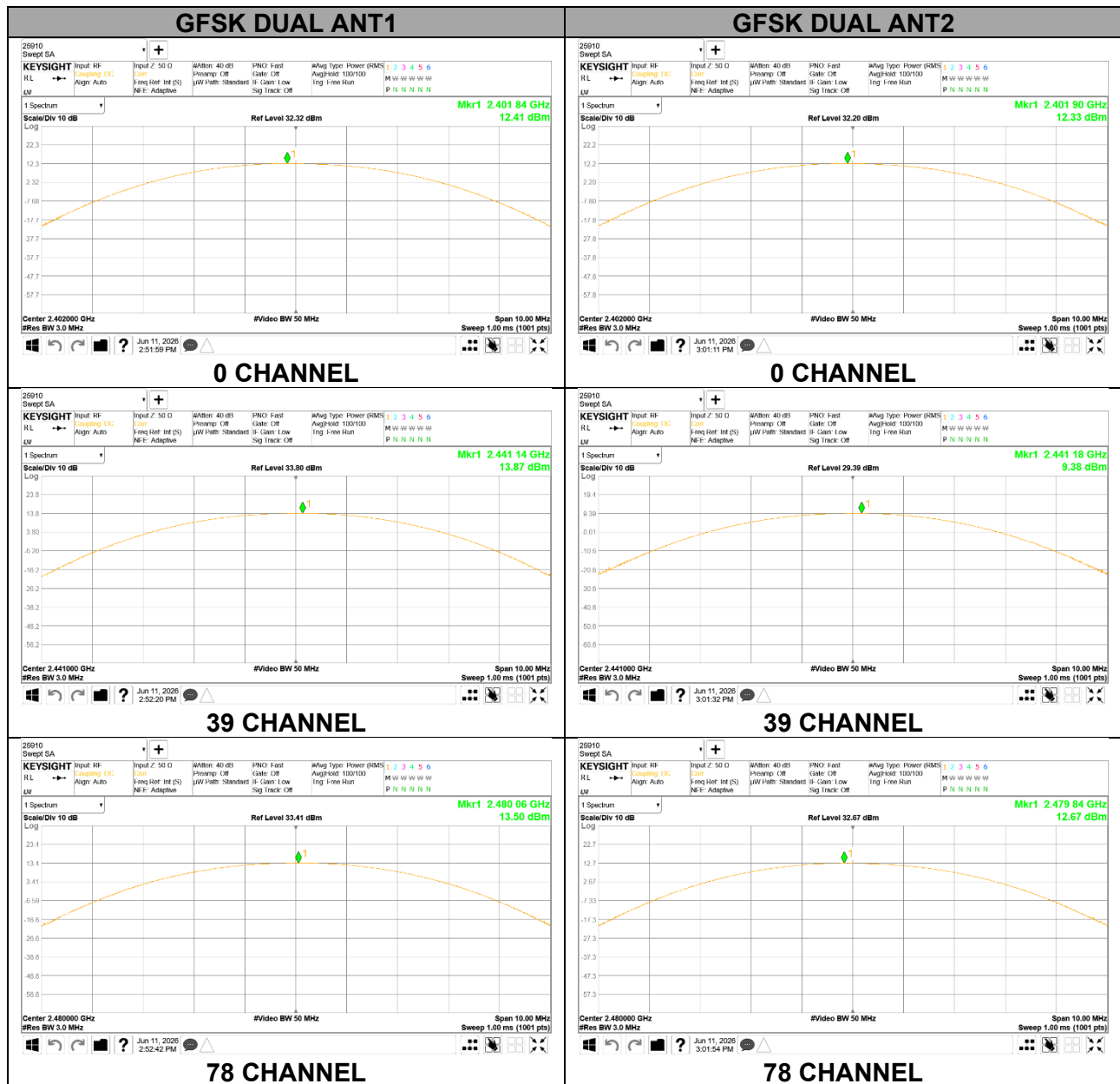
9.6.3. OUTPUT POWER PLOTS

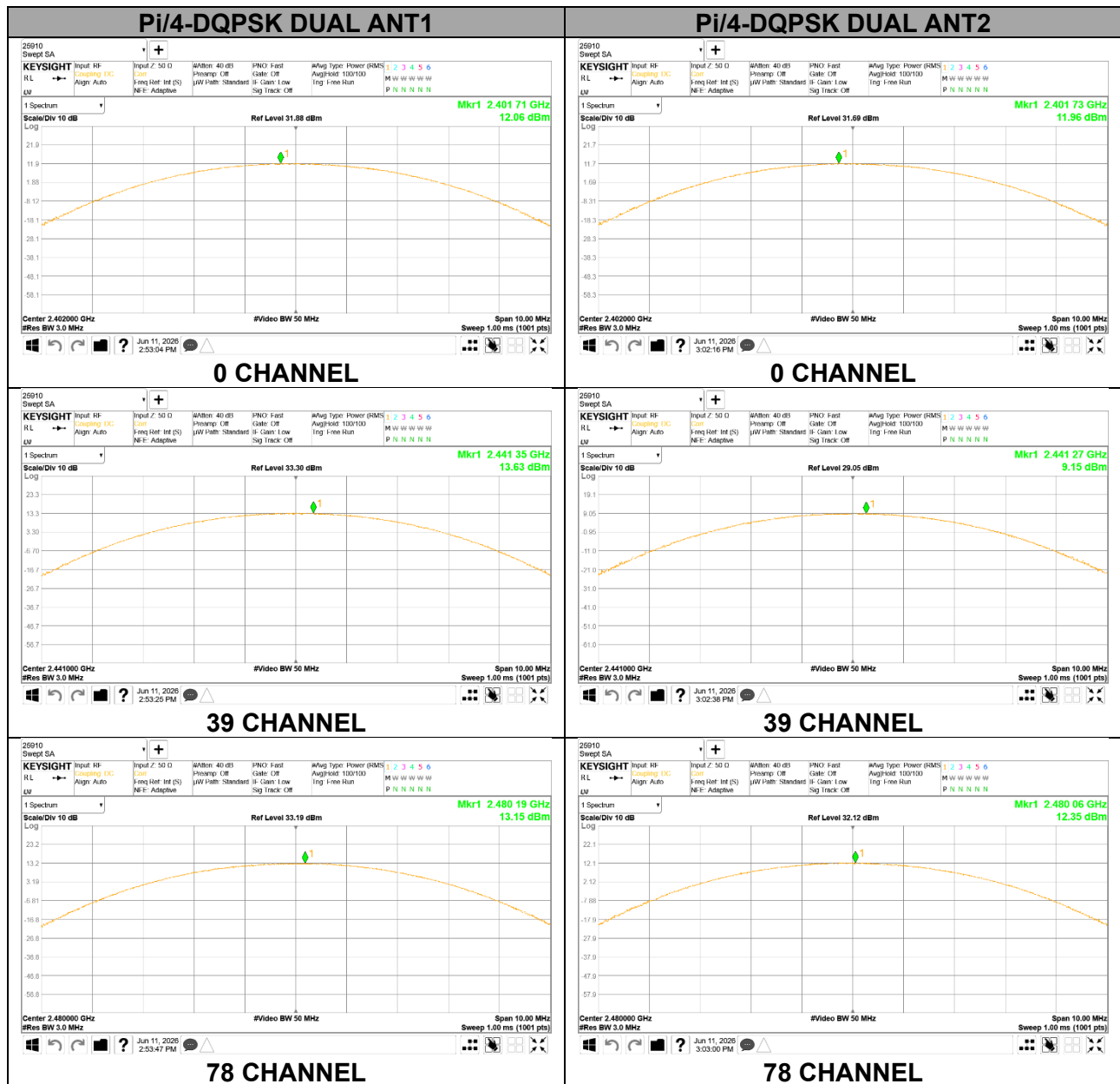
PEAK OUTPUT POWER

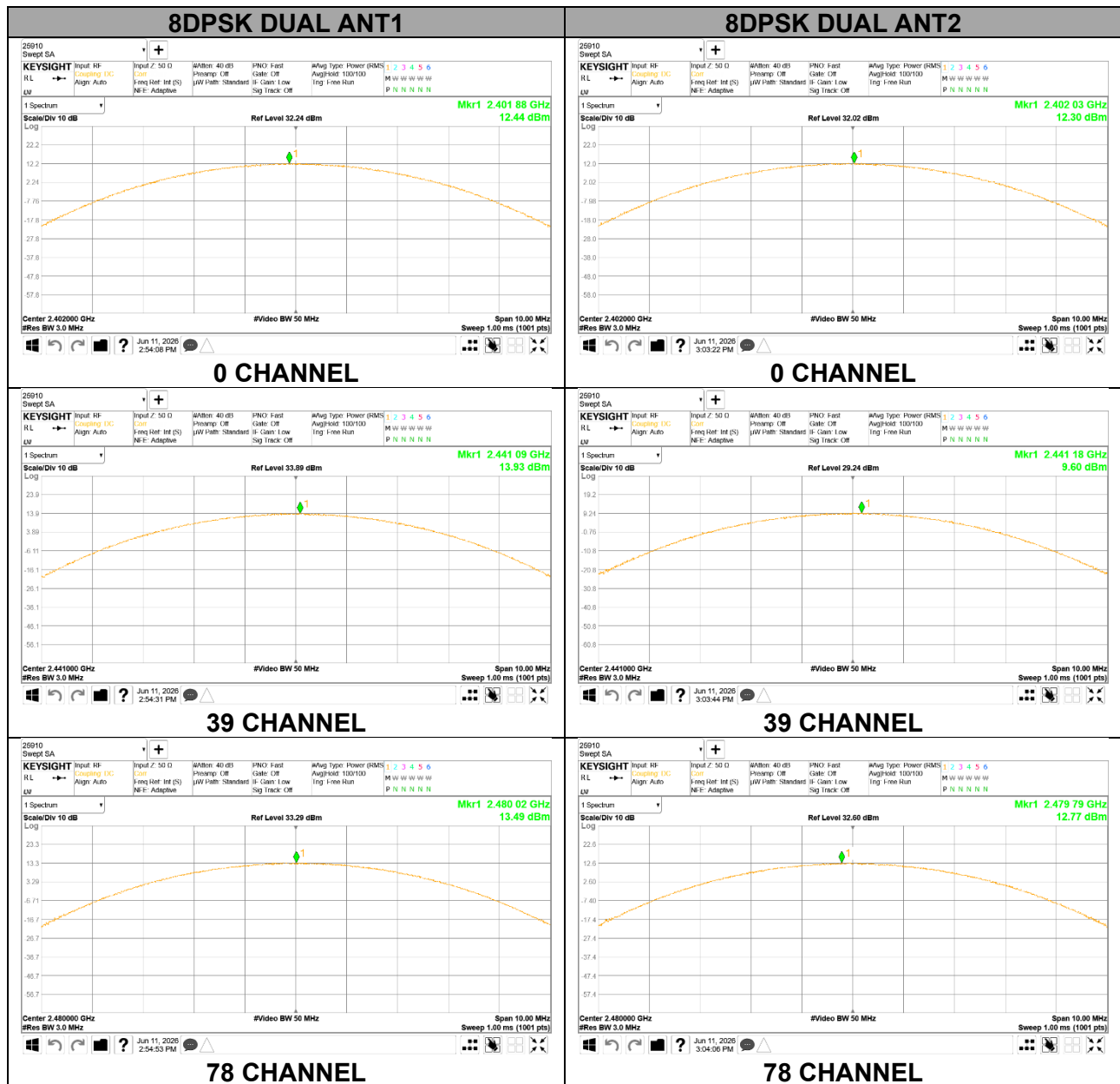












9.7. AVERAGE POWER

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	18.196	66.009
	39	2 441	18.597	72.394
	78	2 480	18.827	76.331
ANT2	0	2 402	17.513	56.403
	39	2 441	17.692	58.776
	78	2 480	17.632	57.970

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	15.212	33.205
	39	2 441	15.567	36.033
	78	2 480	15.797	37.993
ANT2	0	2 402	14.461	27.932
	39	2 441	14.723	29.669
	78	2 480	14.735	29.751

9.7.3. ENHANCED DATA RATE 8DPSK MODULATION

Antenna	Channel	Frequency [MHz]	Average Output Power [dBm]	Average Output Power [mW]
ANT1	0	2 402	15.259	33.566
	39	2 441	15.641	36.652
	78	2 480	15.859	38.539
ANT2	0	2 402	14.472	28.003
	39	2 441	14.841	30.486
	78	2 480	14.775	30.026

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	12.062	
	39	2 441	13.567	
	78	2 480	11.515	
DUAL ANT2	0	2 402	11.889	
	39	2 441	9.072	
	78	2 480	12.301	
DUAL ANT1+2	0	2 402	14.987	31.526
	39	2 441	14.887	30.811
	78	2 480	14.936	31.161

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	9.053	
	39	2 441	10.561	
	78	2 480	10.295	
DUAL ANT2	0	2 402	8.827	
	39	2 441	6.104	
	78	2 480	9.327	
DUAL ANT1+2	0	2 402	11.952	15.674
	39	2 441	11.891	15.456
	78	2 480	12.848	19.267

9.7.6. ENHANCED DATA RATE 8DPSK MODULATION(DUAL)

Antenna	Channel	Frequency [MHz]	Average Output Power [dBm]	Average Output Power [mW]
DUAL ANT1	0	2 402	9.130	
	39	2 441	10.630	
	78	2 480	10.361	
DUAL ANT2	0	2 402	8.905	
	39	2 441	6.170	
	78	2 480	9.391	
DUAL ANT1+2	0	2 402	12.029	15.955
	39	2 441	11.959	15.701
	78	2 480	12.913	19.557

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.

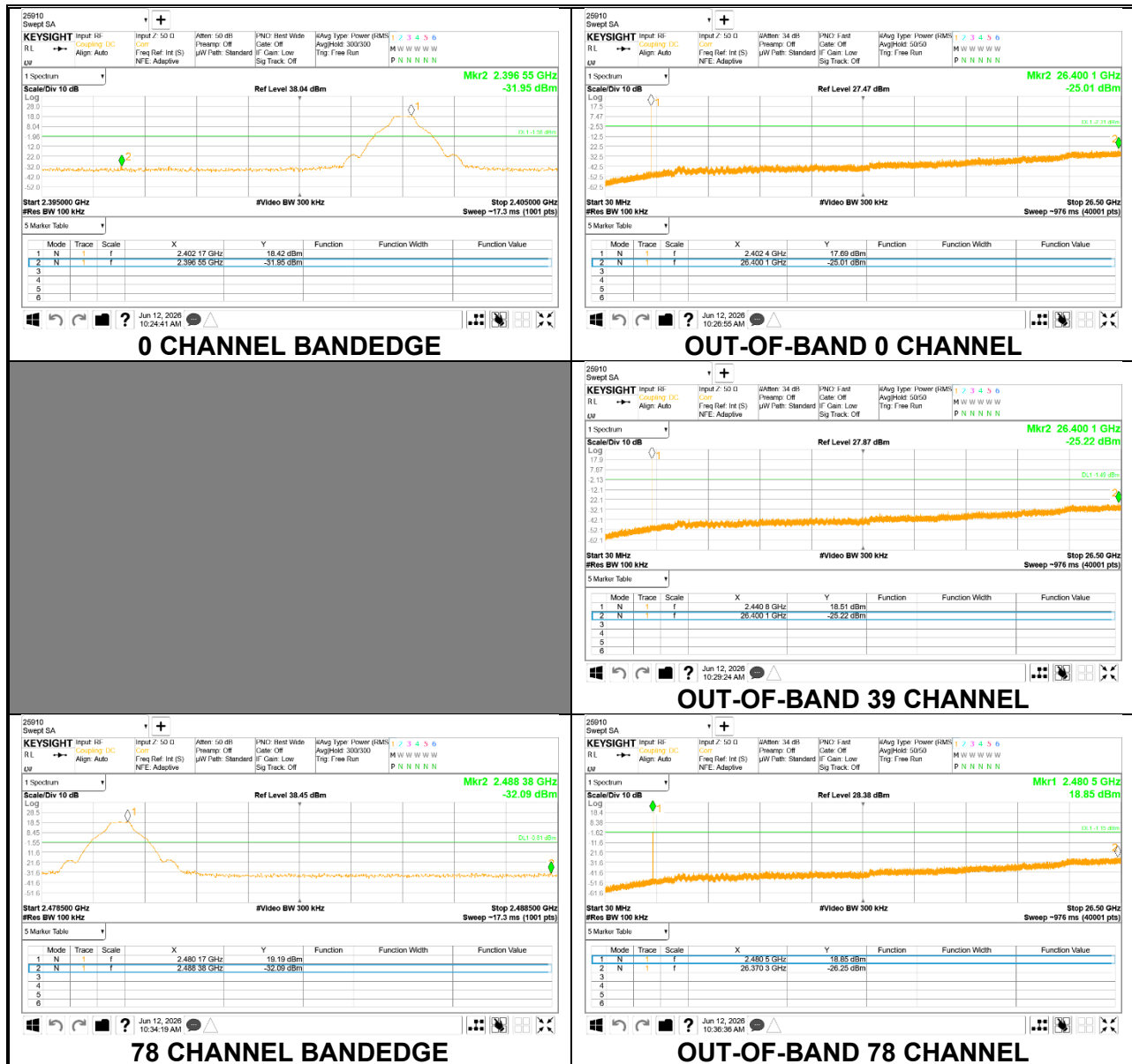
The spectrum from 30 MHz to 26 GHz is investigated with the transmitter set to the lowest, middle, and highest channels.

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

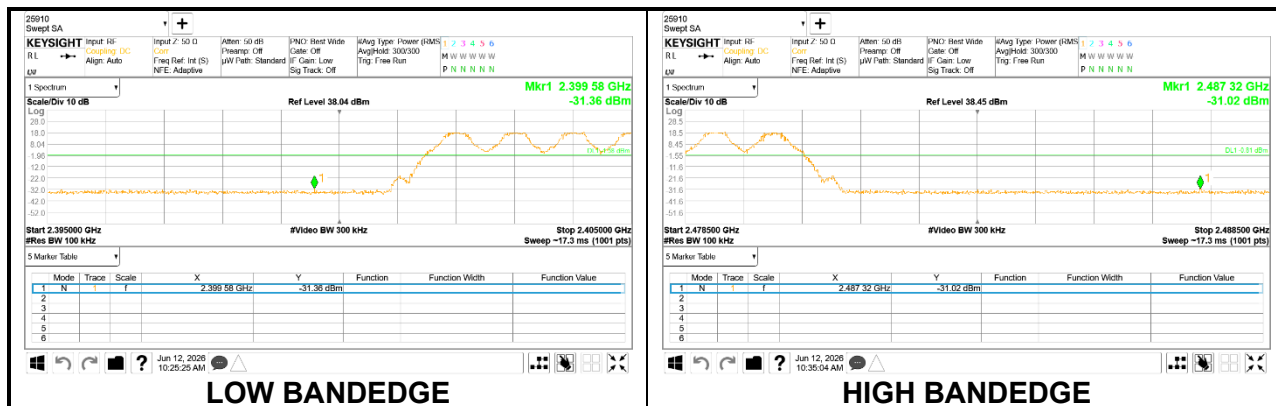
RESULTS

9.8.1. BLUETOOTH BASIC DATA RATE GFSK MODULATION

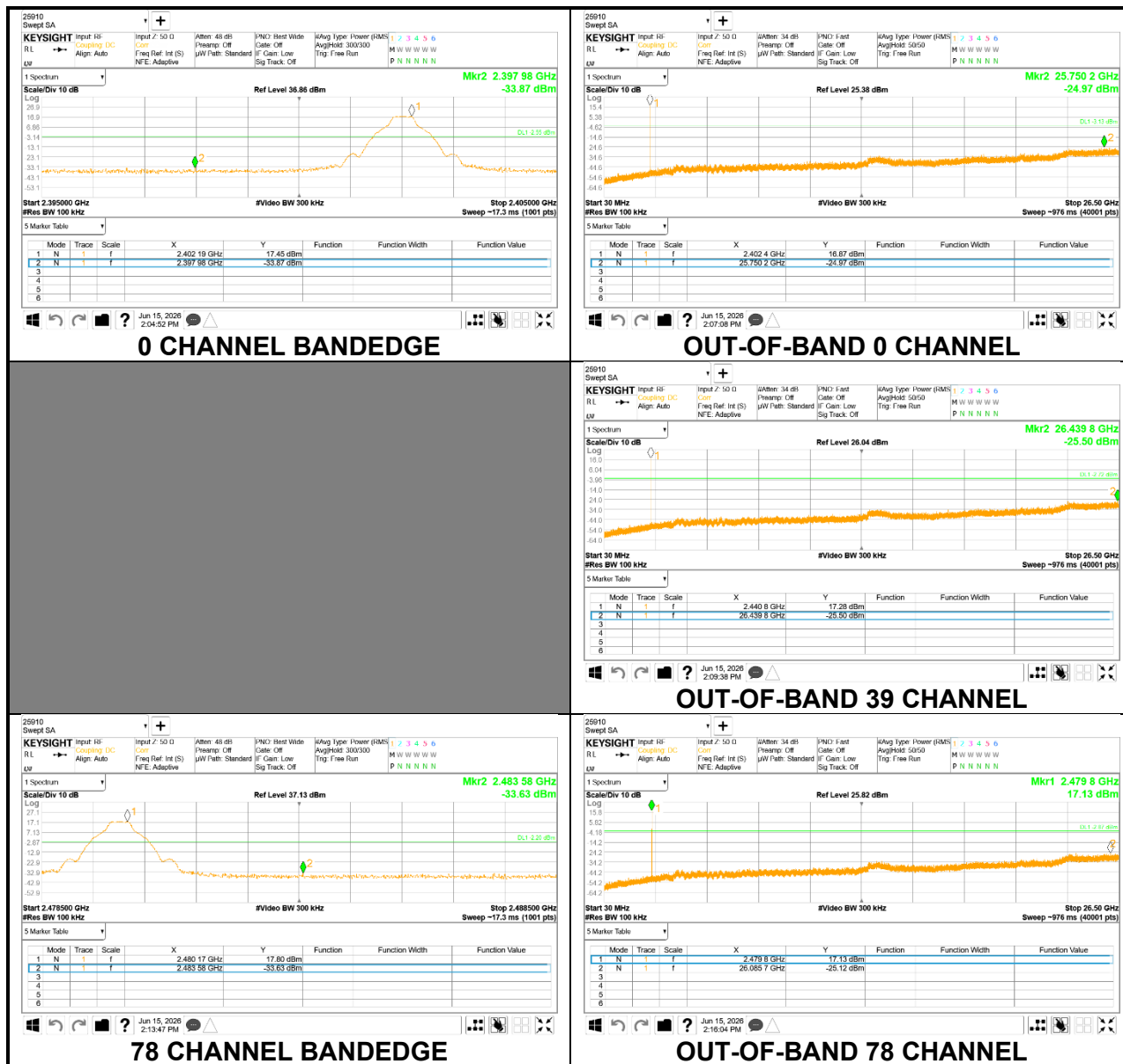
SPURIOUS EMISSIONS, NON-HOPPING – ANT1



SPURIOUS BANDEDGE EMISSIONS WITH HOPPING ON – ANT1



SPURIOUS EMISSIONS, NON-HOPPING – ANT2



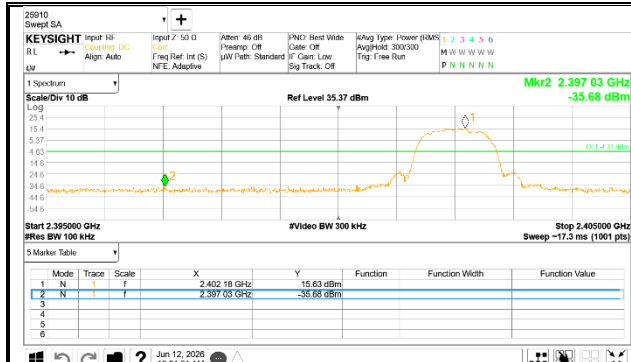
The figure displays two side-by-side screenshots of a spectrum analyzer interface, likely from a Keysight software package, showing the results of a signal analysis. Both screenshots show a frequency range from 2.3910 GHz to 2.4050 GHz, with a resolution bandwidth (RBW) of 300 kHz and a video bandwidth (VBW) of 300 kHz. The vertical axis represents power in dBm, ranging from -53.1 dBm to 20.9 dBm. The horizontal axis represents frequency in GHz, ranging from 2.3910 GHz to 2.4050 GHz. The left screenshot shows a low bandedge signal with a peak at 2.39963 GHz and a power level of -33.63 dBm. The right screenshot shows a high bandedge signal with a peak at 2.48476 GHz and a power level of -33.65 dBm. Both signals are characterized by a sharp rise in power at the band edge, followed by a relatively flat region. The interface includes various control elements such as input/output ports, alignment options, and a marker table at the bottom of each plot.

Left Screenshot (Low Bandedge):

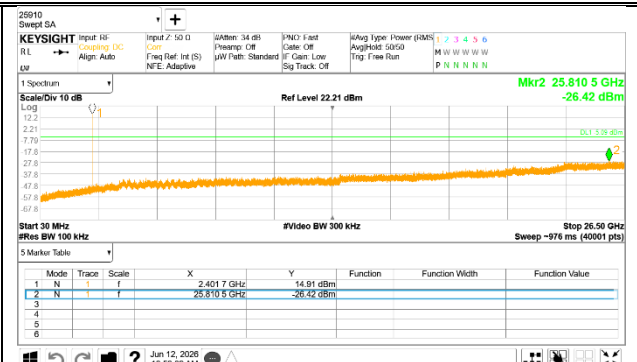
- Input: I/Q, Output: I/Q, Align: Auto
- Input 2: 50.0 GHz, Output: 50.0 GHz, Align: Auto
- Input 3: 50.0 GHz, Output: 50.0 GHz, Align: Auto
- Input 4: 50.0 GHz, Output: 50.0 GHz, Align: Auto
- Input 5: 50.0 GHz, Output: 50.0 GHz, Align: Auto
- Input 6: 50.0 GHz, Output: 50.0 GHz, Align: Auto
- Input 7: 50.0 GHz, Output: 50.0 GHz, Align: Auto
- Input 8: 50.0 GHz, Output: 50.0 GHz, Align: Auto
- Input 9: 50.0 GHz, Output: 50.0 GHz, Align: Auto
- Input 10: 50.0 GHz, Output: 50.0 GHz, Align: Auto
- Input 11: 50.0 GHz, Output: 50.0 GHz, Align: Auto
- Input 12: 50.0 GHz, Output: 50.0 GHz, Align: Auto
- Input 13: 50.0 GHz, Output: 50.0 GHz, Align: Auto
- Input 14: 50.0 GHz, Output: 50.0 GHz, Align: Auto
- Input 15: 50.0 GHz, Output: 50.0 GHz, Align: Auto
- Input 16: 50.0 GHz, Output: 50.0 GHz, Align: Auto
- Input 17: 50.0 GHz, Output: 50.0 GHz, Align: Auto
- Input 18: 50.0 GHz, Output: 50.0 GHz, Align: Auto
- Input 19: 50.0 GHz, Output: 50.0 GHz, Align: Auto
- Input 20: 50.0 GHz, Output: 50.0 GHz, Align: Auto
- Input 21: 50.0 GHz, Output: 50.0 GHz, Align: Auto
- Input 22: 50.0 GHz, Output: 50.0 GHz, Align: Auto
- Input 23: 50.0 GHz, Output: 50.0 GHz, Align: Auto
- Input 24: 50.0 GHz, Output: 50.0 GHz, Align: Auto
- Input 25: 50.0 GHz, Output: 50.0 GHz, Align: Auto
- Input 26: 50.0 GHz, Output: 50.0 GHz, Align: Auto
- Input 27: 50.0 GHz, Output: 50.0 GHz, Align: Auto
- Input 28: 50.0 GHz, Output: 50.0 GHz, Align: Auto
- Input 29: 50.0 GHz, Output: 50.0 GHz, Align: Auto
- Input 30: 50.0 GHz, Output: 50.0 GHz, Align: Auto
- Input 31: 50.0 GHz, Output: 50.0 GHz, Align: Auto
- Input 32: 50.0 GHz, Output: 50.0 GHz, Align: Auto
- Input 33: 50.0 GHz, Output: 50.0 GHz, Align: Auto
- Input 34: 50.0 GHz, Output: 50.0 GHz, Align: Auto
- Input 35: 50.0 GHz, Output: 50.0 GHz, Align: Auto
- Input 36: 50.0 GHz, Output: 50.0 GHz, Align: Auto
- Input 37: 50.0 GHz, Output: 50.0 GHz, Align: Auto
- Input 38: 50.0 GHz, Output: 50.0 GHz, Align: Auto
- Input 39: 50.0 GHz, Output: 50.0 GHz, Align: Auto
- Input 40: 50.0 GHz, Output: 50.0 GHz, Align: Auto
- Input 41: 50.0 GHz, Output: 50.0 GHz, Align: Auto
- Input 42: 50.0 GHz, Output: 50.0 GHz, Align: Auto
- Input 43: 50.0 GHz, Output: 50.0 GHz, Align: Auto
- Input 44: 50.0 GHz, Output: 50.0 GHz, Align: Auto
- Input 45: 50.0 GHz, Output: 50.0 GHz, Align: Auto
- Input 46: 50.0 GHz, Output: 50.0 GHz, Align: Auto
- Input 47: 50.0 GHz, Output: 50.0 GHz, Align: Auto
- Input 48: 50.0 GHz, Output: 50.0 GHz, Align: Auto
- Input 49: 50.0 GHz, Output: 50.0 GHz, Align: Auto
- Input 50: 50.0 GHz, Output: 50.0 GHz, Align: Auto
- Input 51: 50.0 GHz, Output: 50.0 GHz, Align: Auto
- Input 52: 50.0 GHz, Output: 50.0 GHz, Align: Auto
- Input 53: 50.0 GHz, Output: 50.0 GHz, Align: Auto
- Input 54: 50.0 GHz, Output: 50.0 GHz, Align: Auto
- Input 55: 50.0 GHz, Output: 50.0 GHz, Align: Auto
- Input 56: 50.0 GHz, Output: 50.0 GHz, Align: Auto
- Input 57: 50.0 GHz, Output: 50.0 GHz, Align: Auto
- Input 58: 50.0 GHz, Output: 50.0 GHz, Align: Auto
- Input 59: 50.0 GHz, Output: 50.0 GHz, Align: Auto
- Input 60: 50.0 GHz, Output: 50.0 GHz, Align: Auto
- Input 61: 50.0 GHz, Output: 50.0 GHz, Align: Auto
- Input 62: 50.0 GHz, Output: 50.0 GHz, Align: Auto
- Input 63: 50.0 GHz, Output: 50.0 GHz, Align: Auto
- Input 64: 50.0 GHz, Output: 50.0 GHz, Align: Auto
- Input 65: 50.0 GHz, Output: 50.0 GHz, Align: Auto
- Input 66: 50.0 GHz, Output: 50.0 GHz, Align: Auto
- Input 67: 50.0 GHz, Output: 50.0 GHz, Align: Auto
- Input 68: 50.0 GHz, Output: 50.0 GHz, Align: Auto
- Input 69: 50.0 GHz, Output: 50.0 GHz, Align: Auto
- Input 70: 50.0 GHz, Output: 50.0 GHz, Align: Auto
- Input 71: 50.0 GHz, Output: 50.0 GHz, Align: Auto
- Input 72: 50.0 GHz, Output: 50.0 GHz, Align: Auto
- Input 73: 50.0 GHz, Output: 50.0 GHz, Align: Auto
- Input 74: 50.0 GHz, Output: 50.0 GHz, Align: Auto
- Input 75: 50.0 GHz, Output: 50.0 GHz, Align: Auto
- Input 76: 50.0 GHz, Output: 50.0 GHz, Align: Auto
- Input 77: 50.0 GHz, Output: 50.0 GHz, Align: Auto
- Input 78: 50.0 GHz, Output: 50.0 GHz, Align: Auto
- Input 79: 50.0 GHz, Output: 50.0 GHz, Align: Auto
- Input 80: 50.0 GHz, Output: 50.0 GHz, Align: Auto
- Input 81: 50.0 GHz, Output: 50.0 GHz, Align: Auto
- Input 82: 50.0 GHz, Output: 50.0 GHz, Align: Auto
- Input 83: 50.0 GHz, Output: 50.0 GHz, Align: Auto
- Input 84: 50.0 GHz, Output: 50.0 GHz, Align: Auto
- Input 85: 50.0 GHz, Output: 50.0 GHz, Align: Auto
- Input 86: 50.0 GHz, Output: 50.0 GHz, Align: Auto
- Input 87: 50.0 GHz, Output: 50.0 GHz, Align: Auto
- Input 88: 50.0 GHz, Output: 50.0 GHz, Align: Auto
- Input 89: 50.0 GHz, Output: 50.0 GHz, Align: Auto
- Input 90: 50.0 GHz, Output: 50.0 GHz, Align: Auto
- Input 91: 50.0 GHz, Output: 50.0 GHz, Align: Auto
- Input 92: 50.0 GHz, Output: 50.0 GHz, Align: Auto
- Input 93: 50.0 GHz, Output: 50.0 GHz, Align: Auto
- Input 94: 50.0 GHz, Output: 50.0 GHz, Align: Auto
- Input 95: 50.0 GHz, Output: 50.0 GHz, Align: Auto
- Input 96: 50.0 GHz, Output: 50.0 GHz, Align: Auto
- Input 97: 50.0 GHz, Output: 50.0 GHz, Align: Auto
- Input 98: 50.0 GHz, Output: 50.0 GHz, Align: Auto
- Input 99: 50.0 GHz, Output: 50.0 GHz, Align: Auto
- Input 100: 50.0 GHz, Output: 50.0 GHz, Align: Auto
- Input 101: 50.0 GHz, Output: 50.0 GHz, Align: Auto
- Input 102: 50.0 GHz, Output: 50.0 GHz, Align: Auto
- Input 103: 50.0 GHz, Output: 50.0 GHz, Align: Auto
- Input 104: 50.0 GHz, Output: 50.0 GHz, Align: Auto
- Input 105: 50.0 GHz, Output: 50.0 GHz, Align: Auto
- Input 106: 50.0 GHz, Output: 50.0 GHz, Align: Auto
- Input 107: 50.0 GHz, Output: 50.0 GHz, Align: Auto
- Input 108: 50.0 GHz, Output: 50.0 GHz, Align: Auto
- Input 109: 50.0 GHz, Output: 50.0 GHz, Align: Auto
- Input 110: 50.0 GHz, Output: 50.0 GHz, Align: Auto
- Input 111: 50.0 GHz, Output: 50.0 GHz, Align: Auto
- Input 112: 50.0 GHz, Output: 50.0 GHz, Align: Auto
- Input 113: 50.0 GHz, Output: 50.0 GHz, Align: Auto
- Input 114: 50.0 GHz, Output: 50.0 GHz, Align: Auto
- Input 115: 50.0 GHz, Output: 50.0 GHz, Align: Auto
- Input 116: 50.0 GHz, Output: 50.0 GHz, Align: Auto
- Input 117: 50.0 GHz, Output: 50.0 GHz, Align: Auto
- Input 118: 50.0 GHz, Output: 50.0 GHz, Align: Auto
- Input 119: 50.0 GHz, Output: 50.0 GHz, Align: Auto
- Input 120: 50.0 GHz, Output: 50.0 GHz, Align: Auto
- Input 121: 50.0 GHz, Output: 50.0 GHz, Align: Auto
- Input 122: 50.0 GHz, Output: 50.0 GHz, Align: Auto
- Input 123: 50.0 GHz, Output: 50.0 GHz, Align: Auto
- Input 124: 50.0 GHz, Output: 50.0 GHz, Align: Auto
- Input 125: 50.0 GHz, Output: 50.0 GHz, Align: Auto
- Input 126

9.8.2. BLUETOOTH ENHANCED DATA RATE 8DPSK MODULATION

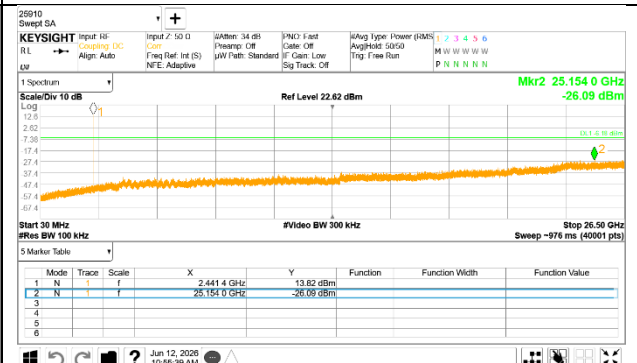
SPURIOUS EMISSIONS, NON-HOPPING – ANT1



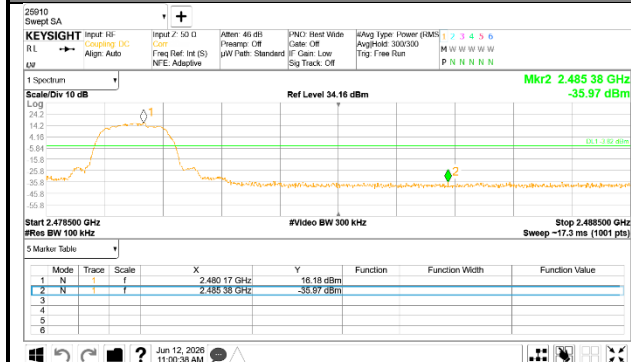
0 CHANNEL BANDEDGE



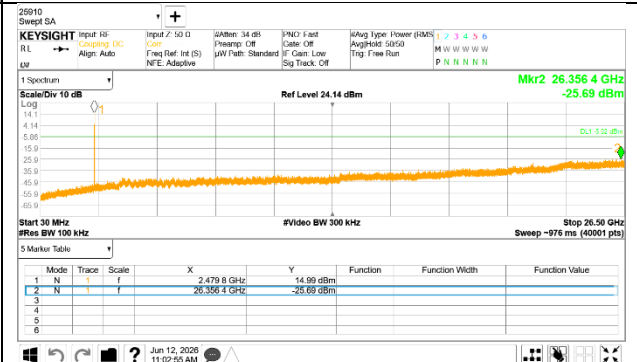
OUT-OF-BAND 0 CHANNEL



OUT-OF-BAND 39 CHANNEL



78 CHANNEL BANDEDGE



OUT-OF-BAND 78 CHANNEL

SPURIOUS BANDEDGE EMISSIONS WITH HOPPING ON – ANT1

