TEST REPORT

Report Number : 15107843-E4V1

Applicant	:	Google LLC 1600 Amphitheatre Parkway Mountain View, CA 94043 U.S.A.
Model	:	G2YBB
FCC ID	:	A4RG2YBB
EUT Description	:	PHONE
Test Standard(s)	:	FCC 47 CFR Part 2 and 25

Date Of Issue:
2024-05-01

Prepared by:
UL VEIFICATION SERVICES INC.
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ACCREDITED
CERT #0751.05

Revision History

Rev.	Issue Date	Revisions	Revised By
V1	2024-05-01	Initial Review	--

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1. ATTESTATION OF TEST RESULTS

Applicant Name and Address	GOOGLE LLC 1600 AMPHITHEATRE PARKWAY MOUNTAIN VIEW, CA 94043 U.S.A.
Model	G2YBB
FCC ID	A4RG2YBB
EUT Description	PHONE
Serial Number	Conducted: 41151FDAQ00075, 3B231FDAQ0004A Radiated: 41061FDAQ0002T
2024-01-08	2024-01-08
2024-01-08 to 2024-03-25	2024-02-27 to 2024-04-16
Applicable Standards	FCC 47 CFR PART 2 AND 25
Test Results	COMPLIES

UL Verification Services Inc. tested the above equipment in accordance with the requirements set forth in the above standards. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. It is the manufacturer's responsibility to assure that additional production units of this model are manufactured with identical electrical and mechanical components. All samples tested were in good operating condition throughout the entire test program. Measurement Uncertainties are published for informational purposes only and were not taken into account unless noted otherwise.

This document may not be altered or revised in any way unless done so by UL Verification Services Inc and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by UL Verification Services Inc will constitute fraud and shall nullify the document.

Approved & Released By:	Prepared By:
	
Dan Coronia Operations Leader UL Verification Services Inc.	Kiya Kedida Senior Project Engineer UL Verification Services Inc

2. SUMMARY OF TEST RESULTS

This report contains data provided by the customer, which can impact the validity of results. UL Verification Services Inc. is only responsible for correctly integrating customer-provided data with measurements performed by UL Verification Services Inc.

Requirement Description	Requirement Clause Number (FCC)	Result	Remarks
RF Output Power	§2.1046	Report only	N/A
RF Output Power Verification	§25.204 (a)	Complies	N/A
Occupied Bandwidth	§2.1049	Reporting purposes only	N/A
Emissions Mask - within 250% of Authorized Bandwidth	§2.1049 §25.202 (f)(1)&(2)	Complies	N/A
Out of Band Emissions	§2.1051 §25.202 (f)(3)	Complies	N/A
Additional Unwanted Emission (1559-1610MHz)	§25.216 (c)(e)(h) & (i) FCC 03-283	Complies	N/A
Carrier-Off State Emissions (1559-1610MHz)	§25.216 (i) FCC 03-283	Complies	N/A
Frequency Stability	§25.202 (d)	Complies	N/A

3. TEST METHODOLOGY

The tests documented in this report were performed in accordance with the following:

- ANSI C63.26:2015
- FCC 47 CFR Part 2 and Part 25
- FCC KDB 971168 D01 v03r01: Power Meas License Digital Systems
- FCC KDB 971168 D02 v02r02: Misc Rev Approv License Devices
- FCC KDB 412172 D01 v01r01. Determining ERP and EIRP

4. FACILITIES AND ACCREDITATION

UL Verification Services Inc. is accredited by A2LA, certification #0751.05, for all testing performed within the scope of this report. Testing was performed at the locations noted below.

	Address	ISED CABID	ISED Company Number	FCC Registration
☐	Building 1: 47173 Benicia Street, Fremont, CA 94538 USA	US0104	2324A	550739
☒	Building 2: 47266 Benicia Street, Fremont, CA 94538 USA			
☐	Building 3: 843 Auburn Court, Fremont, CA 94538 USA			
☒	Building 4: 47658 Kato Rd, Fremont, CA 94538 USA			
☒	Building 5: 47670 Kato Rd, Fremont, CA 94538 USA			

5. DECISION RULES AND MEASUREMENT UNCERTAINTY

5.1. METROLOGICAL TRACEABILITY

All test and measuring equipment utilized to perform the tests documented in this report are calibrated on a regular basis, with a maximum time between calibrations of one year or the manufacturers' recommendation, whichever is less, and where applicable is traceable to recognized national standards.

5.2. DECISION RULES

The Decision Rule is based on Simple Acceptance in accordance with ISO Guide 98-4:2012 Clause 8.2. (Measurement uncertainty is not taken into account when stating conformity with a specified requirement.)

5.3. MEASUREMENT UNCERTAINTY

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

PARAMETER	U_{Lab}
Conducted Antenna Port Emission Measurement	1.940 db
Power Spectral Density	2.466 db
Time Domain Measurements Using SA	3.39 %
RF Power Measurement Direct Method Using Power Meter	0.450 db Peak 1.300 db Ave.
Radio Frequency (Spectrum Analyzer)	141.16 Hz
Occupied Bandwidth	1.22%
Worst Case Conducted Disturbance, 9KHz to 0.15 MHz	3.78 db
Worst Case Conducted Disturbance, 0.15 to 30 MHz	3.40 db
Worst Case Radiated Disturbance, 9KHz to 30 MHz	2.87 db
Worst Case Radiated Disturbance, 30 to 1000 MHz	6.01 db
Worst Case Radiated Disturbance, 1000 to 18000 MHz	4.73 db
Worst Case Radiated Disturbance, 18000 to 26000 MHz	4.51 db
Worst Case Radiated Disturbance, 26000 to 40000 MHz	5.29 db

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

5.4. SAMPLE CALCULATION

RADIATED EMISSIONS

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

6. EQUIPMENT UNDER TEST

6.1. DESCRIPTION OF EUT

The EUT is a Phone.

6.2. MAXIMUM OUTPUT POWER

EIRP/ERP TEST PROCEDURE

ANSI C63.26:2015
KDB 971168 D01 Section 5.6

EIRP = PMeas + GT − LC
where: EIRP = effective isotropic radiated power, respectively (expressed in the same units as PMeas, typically dBW or dBm);
PMeas = measured transmitter output power or PSD, in dBm or dBW;
GT = gain of the transmitting antenna, in dBi (EIRP);
LC = signal attenuation in the connecting cable between the transmitter and antenna, in dB.

For devices utilizing multiple antennas, KDB 662911 provides guidance for determining the effective array transmit antenna gain term to be used in the above equation.

The transmitter has a maximum average conducted and EIRP output powers as follows:

FCC Part 25 (2000.1 – 2019.9MHz)

Frequency (MHz)	Modulation	Conducted (Average) (dBm)	Antenna Gain (dBi)	Limit (W)	EIRP		99% BW (kHz)	Emission Designator
					(dBm)	(W)		
2000.1	BPSK	22.45	-3.9	10000	18.55	0.072	61.12	61K1G1D
	QPSK	22.44		10000	18.54	0.071	181.83	182KG1D
2010.0	BPSK	22.55		10000	18.65	0.073	60.38	60K4G1D
	QPSK	22.55		10000	18.65	0.073	183.60	184KG1D
2019.9	BPSK	22.74		10000	18.84	0.077	59.02	59K0G1D
	QPSK	22.64		10000	18.74	0.075	183.47	183KG1D

FCC Part 25 (1626.6 – 1660.4MHz)

Frequency (MHz)	Modulation	Conducted (Average) (dBm)	Antenna Gain (dBi)	Limit (W)	EIRP		99% BW (kHz)	Emission Designator
					(dBm)	(W)		
1626.6	BPSK	23.76	-1.7	10000	22.06	0.161	62.48	62K5G1D
	QPSK	23.75		10000	22.05	0.160	182.80	183KG1D
1643.5	BPSK	23.60		10000	21.90	0.155	63.07	63K1G1D
	QPSK	23.62		10000	21.92	0.156	183.68	184KG1D
1660.4	BPSK	23.21		10000	21.51	0.142	63.28	63K3G1D
	QPSK	23.22		10000	21.52	0.142	184.61	185KG1D

NOTE: All modulations have been tested, and only the worst test results are shown in the report

6.3. MAXIMUM ANTENNA GAIN

The antenna(s) gain as provided by the manufacturer are as follow:

Frequency Range (MHz)	ANT 1 Antenna Gain (dBi)	ANT 5 Antenna Gain (dBi)
2000.1 - 2019.9	-3.9	N/A
1626.5 - 1660.4	N/A	-1.7

6.4. WORST-CASE CONFIGURATION AND MODE

The EUT was investigated in three orthogonal orientations X/Y/Z on both ANT 1 and ANT 5 antennas. It was determined that X (Flatbed) orientation was the worst-case orientation.

The emissions mask tests were performed based on declared authorized bandwidths of 230kHz.

Conducted spurious emissions tests were performed on the worst-case antenna port because it has the highest conducted power.

Radiated spurious emissions below 1GHz were performed with the highest output power on both ANT 1 and ANT 5 as worst-case scenario.

Radiated spurious emissions below 30MHz were investigated and there were no emissions found with less than 20dB of margin below the specified emissions limits.

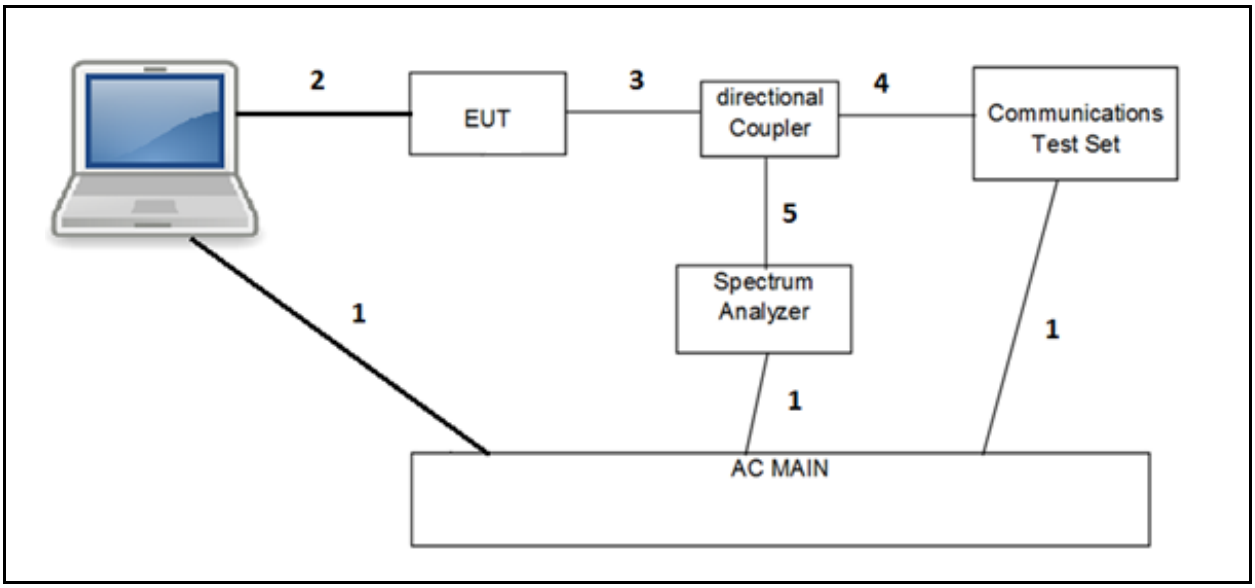
6.5. DESCRIPTION OF TEST SETUP

SUPPORT TEST EQUIPMENT				
Description	**Manufacturer**	**Model**	**Serial Number**	**FCC ID/ DoC**
Laptop	Dell	Latitude 7300	876819127	DoC
AC/DC adapter	Dell	DA130PE1-00	CN-0M55GJ-DES00-066-5THK-A02	DoC
Power Adapter	Google	GW8L7	1HV003B901000B9DE	DoC

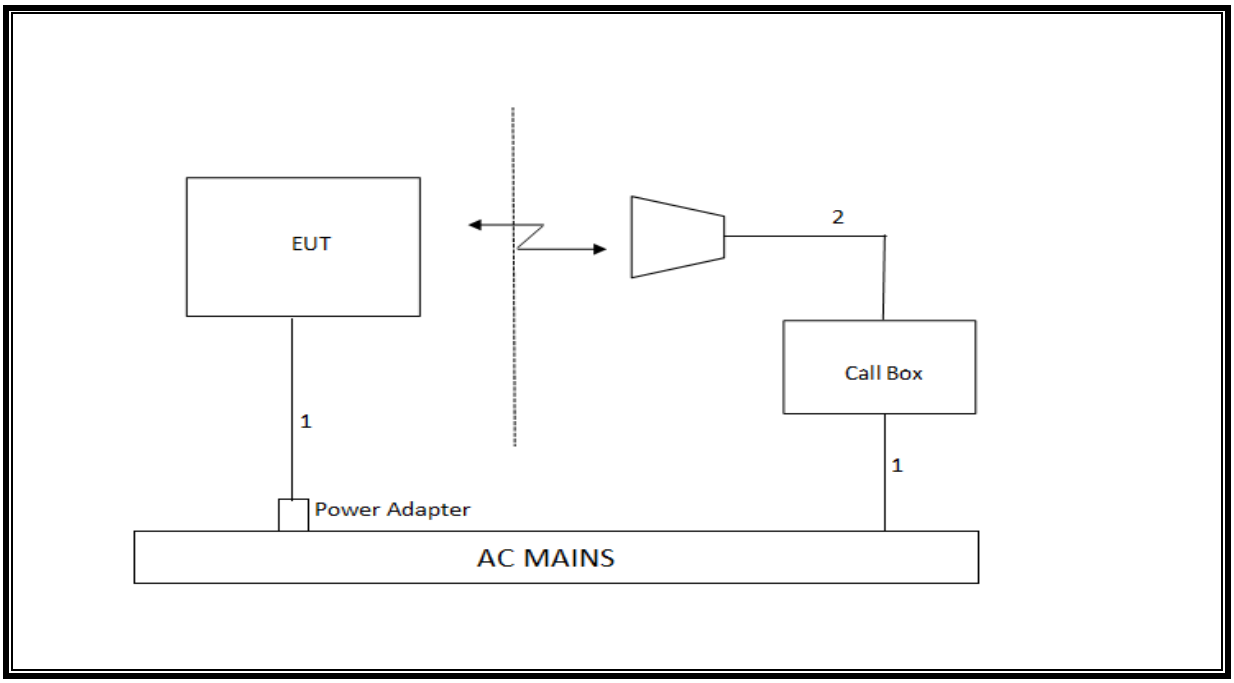
I/O CABLES (RF CONDUCTED TEST)						
Cable No.	**Port**	**# of Identical Ports**	**Connector Type**	**Cable Type**	**Cable Length (m)**	**Remarks**
1	AC	3	US 115V	Un-shielded	2.0	N/A
2	USB	1	USB-C	Un-shielded	1.0	N/A
3	RF In/Out	1	EUT	Un-shielded	0.6	N/A
4	RF In/Out	1	Communication Test Set	Un-shielded	1.2	N/A
5	RF In/Out	1	Barrel	N/A	N/A	N/A

I/O CABLES (RF RADIATED TEST)						
Cable No.	**Port**	**# of Identical Ports**	**Connector Type**	**Cable Type**	**Cable Length (m)**	**Remarks**
1	AC	1	US 115V	Un-shielded	2.0	N/A
1	USB	1	USB-C	Un-shielded	1	N/A
2	RF In/Out	1	Antenna	Un-shielded	5.0	N/A

CONDUCTED SETUP



RADIATED SETUP



7. 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**	**Asset**	**Cal Due**
Antenna, Horn 1-18GHz	ETS-Lindgren	3117	80430	2024-08-31
Antenna, Broadband Hybrid, 30MHz to 3000MHz	SUNAR	JB3	222009	2024-10-31
RF Filter Box, 1-18GHz	UL-FR1	NA	217255	2024-10-31
Amplifier, 10KHz to 1GHz, 32dB	Sonoma	310N	430250	2024-09-30
EMI TEST RECEIVER	Rohde & Schwarz	ESW44	169936	2025-02-28
EMI TEST RECEIVER	Rohde & Schwarz	ESW44	169935	2025-02-28
Wideband Communication Test Set, Call Box	R&S GmbH & Co. KG	CMW500	85943	2025-02-28
Directional Coupler	KRYTAR	152610	198816	2024-10-31
Power Meter, P-series single channel	Keysight	N1912A	90719	2025-01-31
Power Sensor, P - series, 50MHz to 18GHz, Wideband	Keysight	N1921A	81319	2025-01-31
Filter, HPF 1.2GHz	Wainwright Instruments GmbH	WHKX6-948-1.2/15G-40ST	99	2024-10-31
Spectrum Analyzer, PXA, 2Hz to 44GHz	Keysight	N9030B	231739	2025-01-31
Spectrum Analyzer, PXA, 2Hz to 44GHz	Keysight	N9030B	245120	2025-02-28
Spectrum Analyzer, PXA, 3Hz to 44GHz	Keysight	N9030A	85212	2025-02-28
Wideband Communication Test Set, Call Box	R&S GmbH & Co. KG	CMW500	222793	2025-02-28
Wideband Communication Test Set, Call Box	R&S GmbH & Co. KG	CMW500	222797	2025-02-28
Chamber, Environmental	Thermotron Corp.	SM-16C Mini-Max	179936	2024-06-30
Transmitting Antenna, Horn Antenna	TEKBOX Digital Solutions	TBMA4	226709	C.N.R.
Antenna, Horn 18 to 26.5GHz	A.R.A.	MWH-1826/B	199659	2024-12-31
Amplifier 18-26.5GHz, +5Vdc, -54dBm P1dB	AMPLICAL	AMP18G26.5-60	234683	2024-03-29
DC Power Supply	GWINSTEK	GPS18500	N/A	C.N.R.
UL AUTOMATION SOFTWARE				
CLT Software	UL	UL RF	V2023.11.21.0	
Power Measurement Software	UL	UL RF	V2023.08.14.0	
Radiated test software	UL	UL RF	Ver 9.5 2023-05-01	

8. RF OUTPUT POWER VERIFICATION

LIMITS

FCC: §25.204
(a) In bands shared coequally with terrestrial radio communication services, the equivalent isotropically radiated power transmitted in any direction towards the horizon by an earth station, other than an ESV, operating in frequency bands between 1 and 15 GHz, shall not exceed the following limits except as provided for in paragraph (c) of this section:

+ 40 dBW in any 4 kHz band for $\theta \leq 0°$

+ 40 + 3θ dBW in any 4 kHz band for $0° < \theta \leq 5°$

where θ is the angle of elevation of the horizon viewed from the center of radiation of the antenna of the earth station and measured in degrees as positive above the horizontal plane and negative below it.

TEST PROCEDURE

The transmitter output is connected to a wideband power meter/sensor which is greater than the occupied bandwidth as worst-case scenario, also the total power readings still comply with the required limit.

The cable assembly insertion loss was entered as an offset in the power meter to allow for a gated average reading of power.

RESULTS

8.1.1. Band 23 ANT 1

Test Engineer ID:	CK	Test Date:	2024-03-11

Band 23 SCS 3.75kHz

Test Frequency (MHz)	SC Size	Conducted Average Power (dBm)		Antenna Gain (dBi)	EIRP Average Power (dBm)	
		BPSK	QPSK		BPSK	QPSK
2000.1	1SC0	22.45	22.44	-3.9	18.55	18.54
	1SC47	22.4	22.44		18.5	18.54
2010	1SC0	22.55	22.55		18.65	18.65
	1SC47	22.55	22.45		18.65	18.55
2019.9	1SC0	22.62	22.6		18.72	18.7
	1SC47	22.63	22.64		18.73	18.74

Band 23 SCS 15kHz

Test Frequency (MHz)	SC Size	Conducted Average Power (dBm)		Antenna Gain (dBi)	EIRP Average Power (dBm)	
		BPSK	QPSK		BPSK	QPSK
2000.1	1SC0	22.13	22.11	-3.9	18.23	18.21
	1SC11	22.2	22.27		18.3	18.37
	3SC0	N/A	22.28		N/A	18.38
	3SC9	N/A	22.35		N/A	18.45
	6SC0	N/A	21.85		N/A	17.95
	6SC6	N/A	21.79		N/A	17.89
	12SC0	N/A	20.94		N/A	17.04
2010	1SC0	22.34	22.35		18.44	18.45
	1SC11	22.23	22.23		18.33	18.33
	3SC0	N/A	22.41		N/A	18.51
	3SC9	N/A	22.4		N/A	18.5
	6SC0	N/A	22.2		N/A	18.3
	6SC6	N/A	22.33		N/A	18.43
	12SC0	N/A	21.05		N/A	17.15
2019.9	1SC0	22.74	22.59		18.84	18.69
	1SC11	22.73	22.58		18.83	18.68
	3SC0	N/A	22.56		N/A	18.66
	3SC9	N/A	22.35		N/A	18.45
	6SC0	N/A	22.32		N/A	18.42
	6SC6	N/A	22.25		N/A	18.35
	12SC0	N/A	21.25		N/A	17.35

8.1.2. Band 255 ANT 5

Test Engineer ID:	CK	Test Date:	2024-03-11

Band 255 SCS 3.75kHz

Frequency (MHz)	SC Size	Power (dBm)		Antenna Gain (dBi)	(dBm)	
		BPSK	QPSK		BPSK	QPSK
1626.6	1SC0	23.65	23.64	-1.7	21.95	21.94
	1SC47	23.63	23.63		21.93	21.93
1643.5	1SC0	23.37	23.38		21.67	21.68
	1SC47	23.38	23.39		21.68	21.69
1660.5	1SC0	23.21	23.17		21.51	21.47
	1SC47	23.21	23.22		21.51	21.52

Band 255 SCS 15kHz

Frequency (MHz)	SC Size	Power (dBm)		Antenna Gain (dBi)	(dBm)	
		BPSK	QPSK		BPSK	QPSK
1626.6	1SC0	23.74	23.68	-1.7	22.04	21.98
	1SC11	23.76	23.75		22.06	22.05
	3SC0	N/A	23.24		N/A	21.54
	3SC9	N/A	22.94		N/A	21.24
	6SC0	N/A	22.6		N/A	20.9
	6SC6	N/A	22.74		N/A	21.04
	12SC0	N/A	22.07		N/A	20.37
1643.5	1SC0	23.56	23.58		21.86	21.88
	1SC11	23.6	23.62		21.9	21.92
	3SC0	N/A	23		N/A	21.3
	3SC9	N/A	22.94		N/A	21.24
	6SC0	N/A	22.68		N/A	20.98
	6SC6	N/A	22.65		N/A	20.95
	12SC0	N/A	21.83		N/A	20.13
1660.4	1SC0	22.94	22.98		21.24	21.28
	1SC11	22.96	22.97		21.26	21.27
	3SC0	N/A	22.93		N/A	21.23
	3SC9	N/A	22.91		N/A	21.21
	6SC0	N/A	22.61		N/A	20.91
	6SC6	N/A	22.6		N/A	20.9
	12SC0	N/A	21.57		N/A	19.87

9. CONDUCTED TEST RESULTS

9.1. OCCUPIED BANDWIDTH

RULE PART(S)

FCC: §2.1049

LIMITS

For reporting purposes only.

TEST PROCEDURE

The transmitter output was connected to a calibrated coaxial cable and coupler, the other end of which was connected to a spectrum analyzer. The occupied bandwidth was measured with the spectrum analyzer at the middle channel in each band. The nominal RBW shall be in the range of 1% to 5% of the anticipated OBW, and the VBW shall be set ≥ 3 × RBW. The 99% bandwidths were measured and recorded.

RESULTS

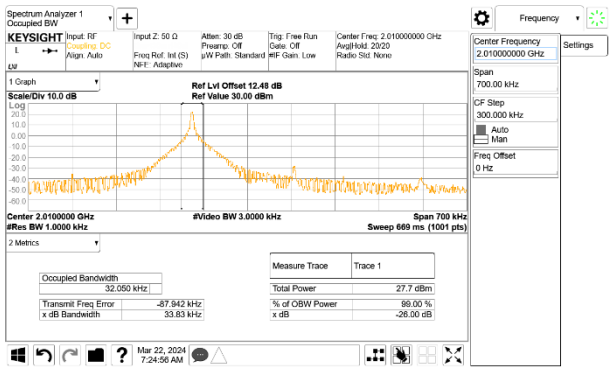
Plots are provided for the mid channel. Tabular data for all channels is presented.

9.1.1. Band 23 ANT 1

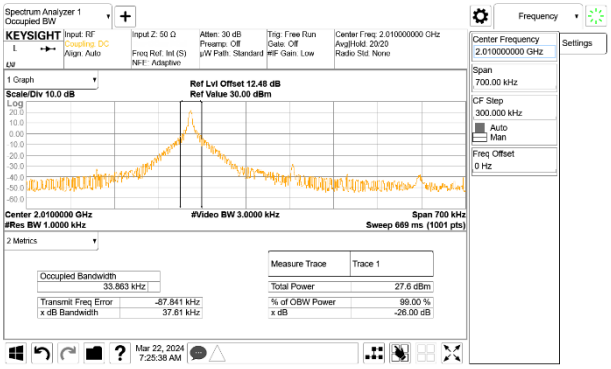
Band 23 SCS 3.75kHz – Ant1			
Test Frequency (MHz)	**Modulation**	**SC Size**	**99% BW (kHz)**
2000.1	BPSK	1SC0	32.328
	QPSK	1SC0	36.381
2010.0	BPSK	1SC0	32.050
	QPSK	1SC0	33.863
2019.9	BPSK	1SC0	31.948
	QPSK	1SC0	35.873

Band 23 SCS 15kHz – Ant1			
Test Frequency (MHz)	**Modulation**	**SC Size**	**99% BW (kHz)**
2000.1	BPSK	1SC0	61.196
	QPSK	1SC0	62.053
	QPSK	3SC0	71.343
	QPSK	6SC0	105.23
	QPSK	12SC0	181.83
2010.0	BPSK	1SC0	60.377
	QPSK	1SC0	58.343
	QPSK	3SC0	71.088
	QPSK	6SC0	108.50
	QPSK	12SC0	183.60
2019.9	BPSK	1SC0	59.017
	QPSK	1SC0	59.843
	QPSK	3SC0	71.218
	QPSK	6SC0	113.22
	QPSK	12SC0	183.47

Band 23 SCS 3.75kHz – Ant 1

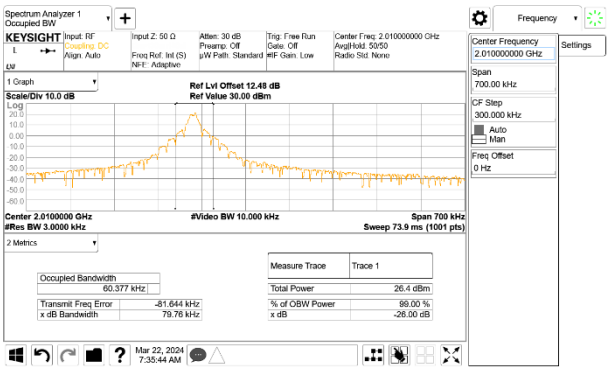


Middle Channel BPSK 1SC0

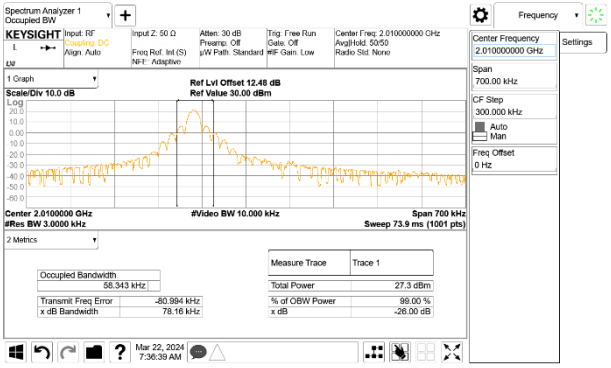


Middle Channel QPSK 1SC0

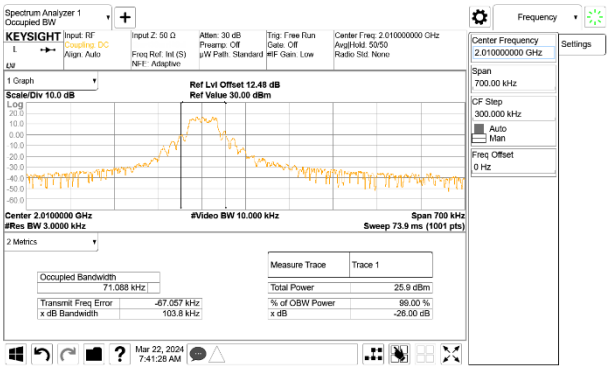
Band 23 SCS 15kHz – Ant 1



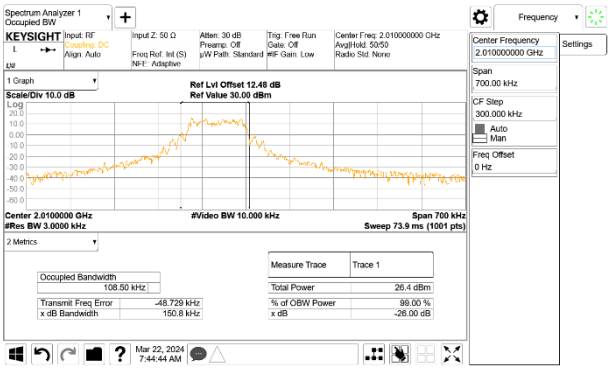
Middle Channel BPSK 1SC0



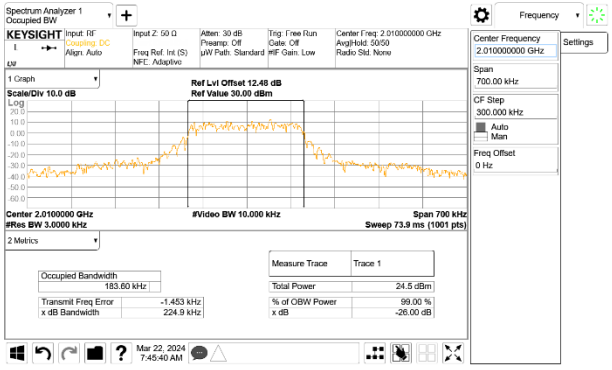
Middle Channel QPSK 1SC0



Middle Channel QPSK 3SC0



Middle Channel QPSK 6SC0

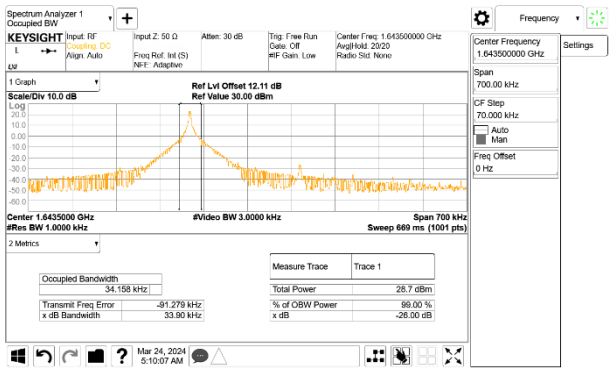
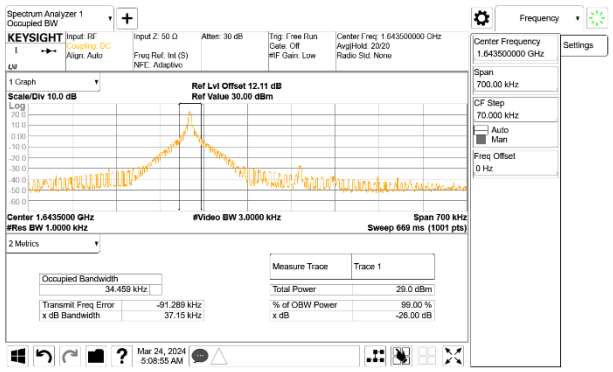


Middle Channel QPSK 12SC0

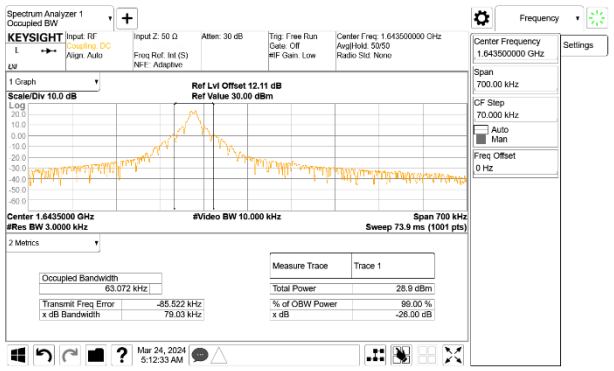
9.1.2. Band 255 ANT 5

Band 255 SCS 3.75kHz – Ant 5			
Test Frequency (MHz)	**Modulation**	**SC Size**	**99% BW (kHz)**
1626.6	BPSK	1SC0	32.050
	QPSK	1SC0	35.877
1643.5	BPSK	1SC0	34.158
	QPSK	1SC0	34.459
1660.4	BPSK	1SC0	32.758
	QPSK	1SC0	35.075

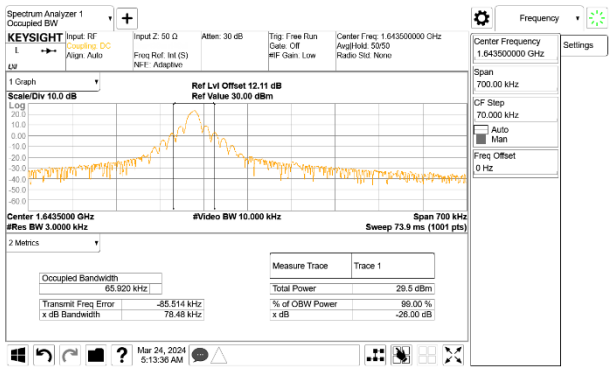
Band 255 SCS 15kHz – Ant 5			
Test Frequency (MHz)	**Modulation**	**SC Size**	**99% BW (kHz)**
1626.6	BPSK	1SC0	62.479
	QPSK	1SC0	65.072
	QPSK	3SC0	72.458
	QPSK	6SC0	113.15
	QPSK	12SC0	182.80
1643.5	BPSK	1SC0	63.072
	QPSK	1SC0	65.920
	QPSK	3SC0	73.935
	QPSK	6SC0	112.07
	QPSK	12SC0	183.68
1660.4	BPSK	1SC0	63.280
	QPSK	1SC0	65.216
	QPSK	3SC0	73.728
	QPSK	6SC0	107.74
	QPSK	12SC0	184.61

Band 255 SCS 3.75kHz – Ant 5	
	
Middle Channel BPSK 1SC0	Middle Channel QPSK 1SC0

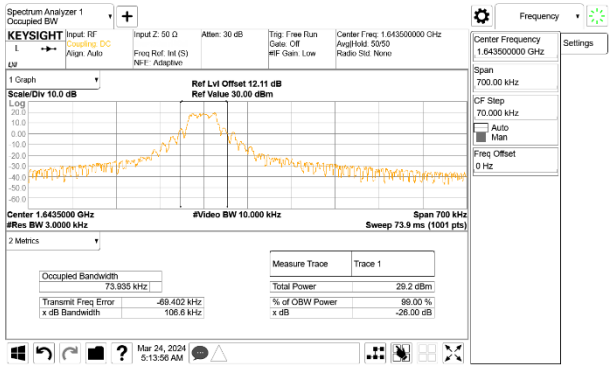
Band 255 SCS 15kHz – Ant 5



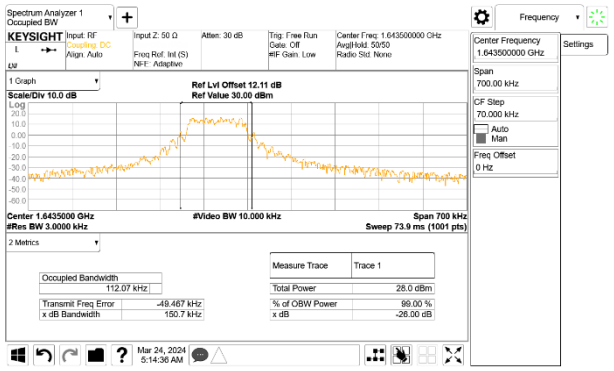
Middle Channel BPSK 1SC0



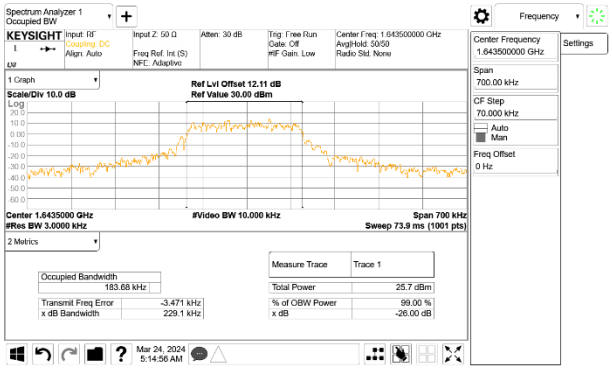
Middle Channel QPSK 1SC0



Middle Channel QPSK 3SC0



Middle Channe QPSK 6SC0



Middle Channe QPSK 12SC0

9.2. EMISSIONS MASK WITHIN 250% OF AUTHORIZED BANDWIDTH

LIMITS

FCC §25.202
(f) Emission limitations. Except for SDARS terrestrial repeaters and as provided for in paragraph (i), the mean power of emissions shall be attenuated below the mean output power of the transmitter in accordance with the schedule set forth in paragraphs (f)(1) through (f)(4) of this section. The out-of-band emissions of SDARS terrestrial repeaters shall be attenuated in accordance with the schedule set forth in paragraph (h) of this section.

(1) In any 4 kHz band, the center frequency of which is removed from the assigned frequency by more than 50 percent up to and including 100 percent of the authorized bandwidth: 25 dB;

(2) In any 4 kHz band, the center frequency of which is removed from the assigned frequency by more than 100 percent up to and including 250 percent of the authorized bandwidth: 35 dB;

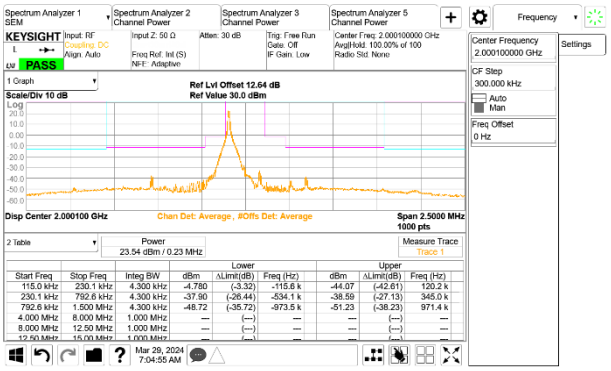
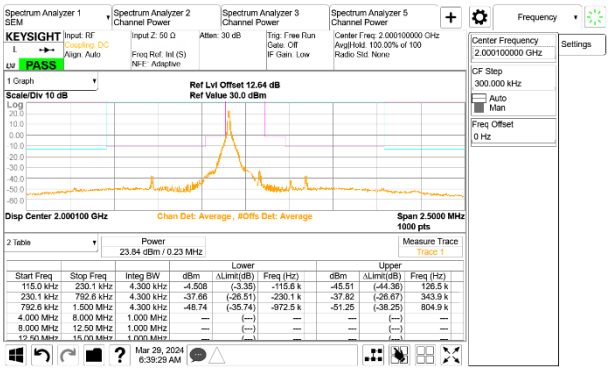
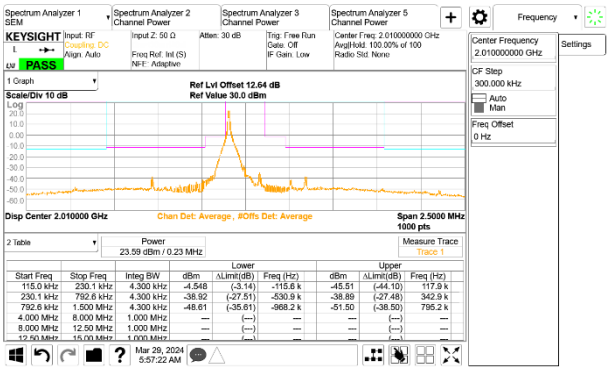
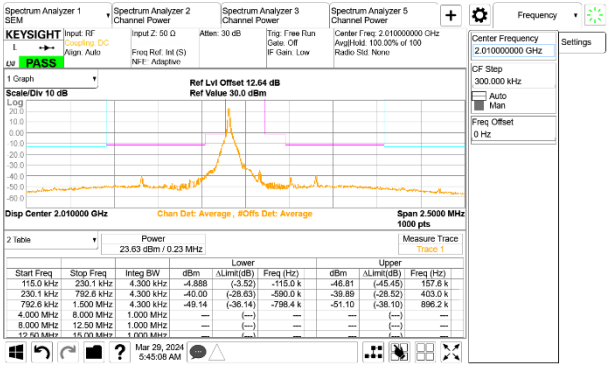
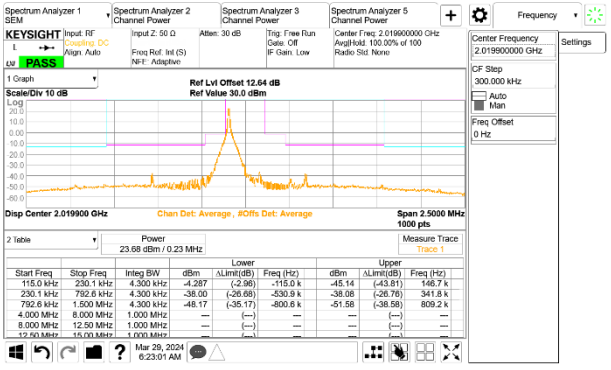
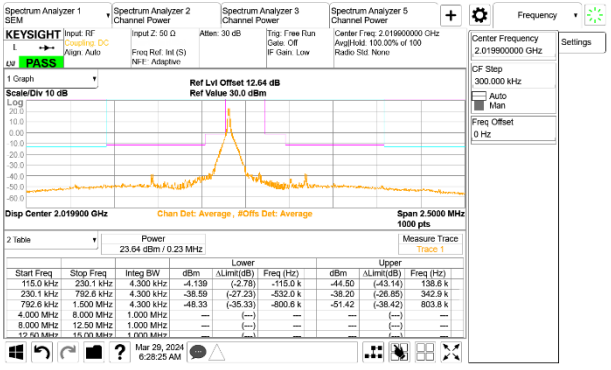
TEST PROCEDURE

The transmitter output was connected to a calibrated coaxial cable and coupler, the other end of which was connected to a spectrum analyzer. The channel edge emissions were measured on the low, mid and high channels. The limits within 250% of the authorized bandwidth are relative to the total in-band (channel) power. The measurement bandwidth (RBW) is set to >= 4kHz and VBW set to at least 3 times the RBW. To measure the average value of the emissions the detector is set to rms while observing the minimum required number of points as detailed in ANSI C63.26 for average rms measurements. The sweep time is set to 2ms multiplied by the number of points to obtain the average over 2ms. Multiple sweeps with max hold enabled are made to capture the maximum average value.

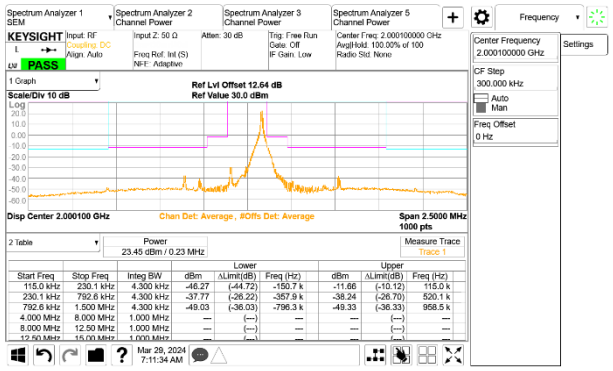
RESULTS

The tests were performed based on declared authorized bandwidths of 230kHz. Both ANT 1 and ANT 5 were performed on low, mid, high channels for SCS 3.75kHz on SC 1SC0 and 1SC47 and SCS 15kHz SC 1SC0 and 1SC11, 12SC0 as worst case.

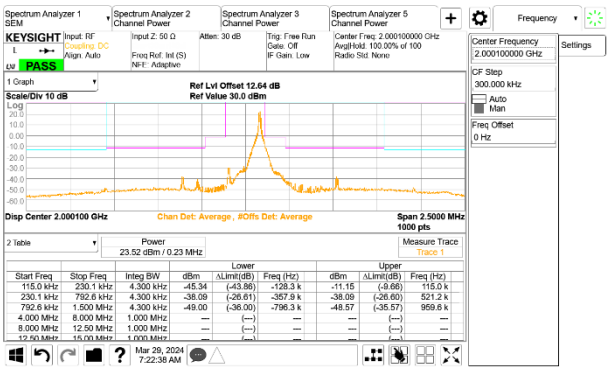
9.2.1. Band 23 ANT 1

Band 23 SCS 3.75kHz – Ant 1	
	
Low Channel BPSK 1SC0	Low Channel QPSK 1SC0
	
Middle Channel BPSK 1SC0	Middle Channel QPSK 1SC0
	
High Channel BPSK 1SC0	High Channel QPSK 1SC0

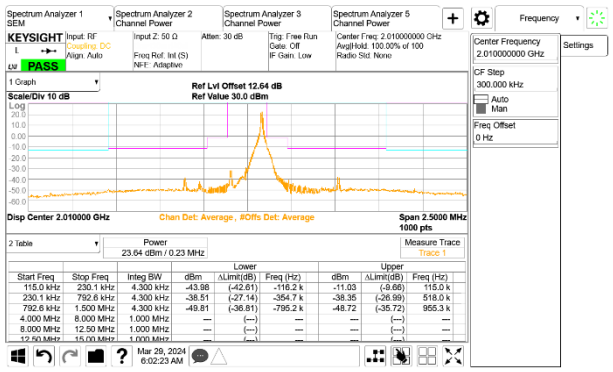
Band 23 SCS 3.75kHz – Ant 1



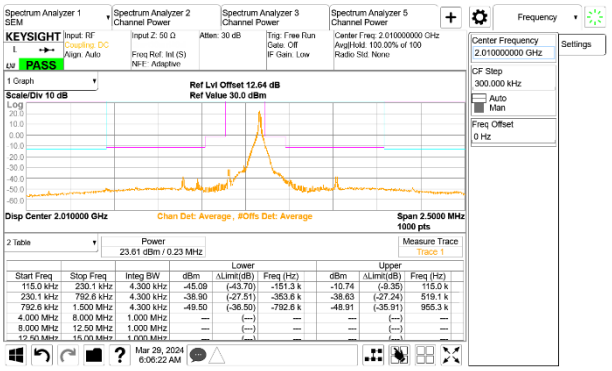
Low Channel BPSK 1SC47



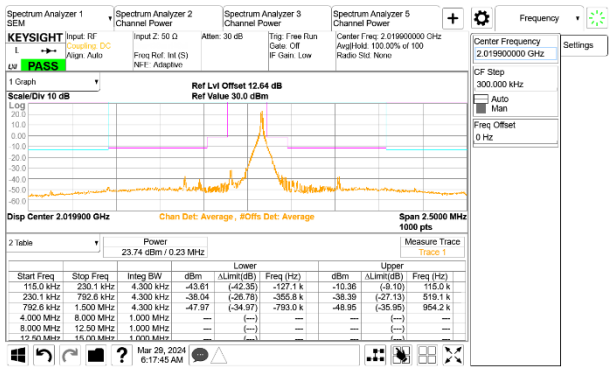
Low Channel QPSK 1SC47



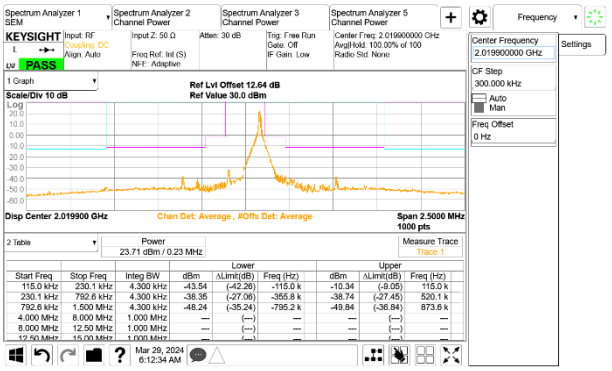
Middle Channel BPSK 1SC47



Middle Channel QPSK 1SC47

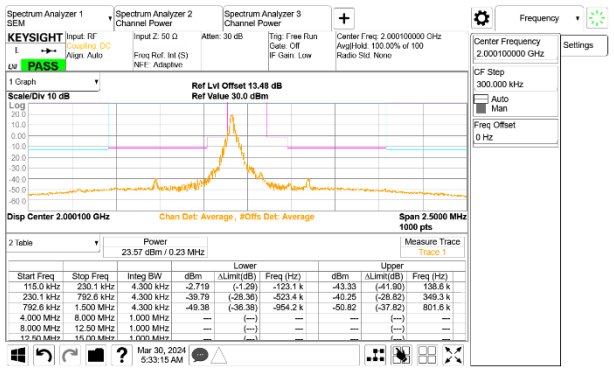


High Channel BPSK 1SC47

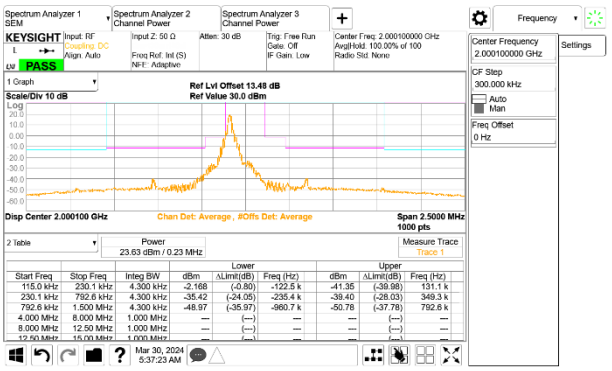


High Channel QPSK 1SC47

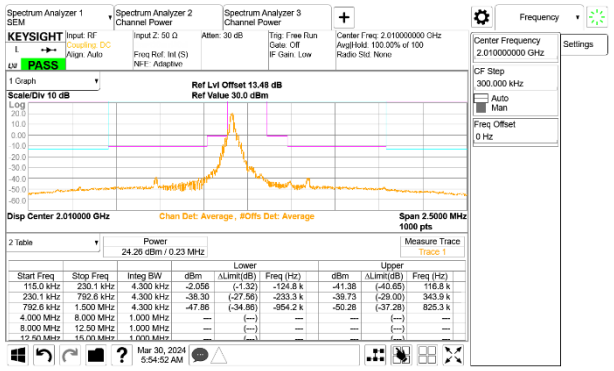
Band 23 SCS 15kHz – Ant 1



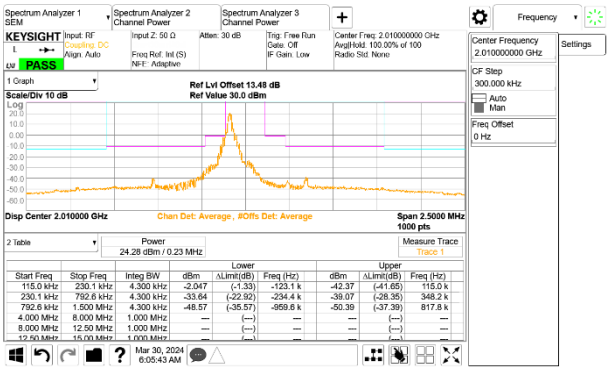
Low Channel BPSK 1SC0



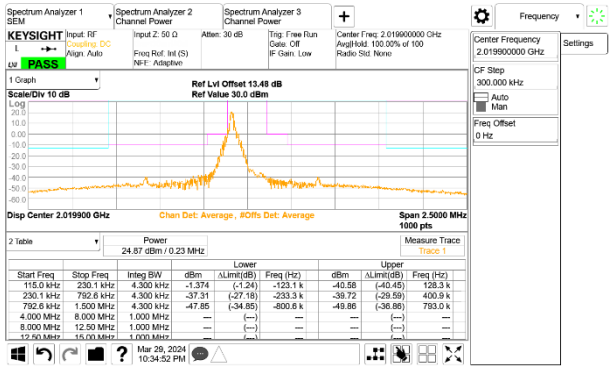
Low Channel QPSK 1SC0



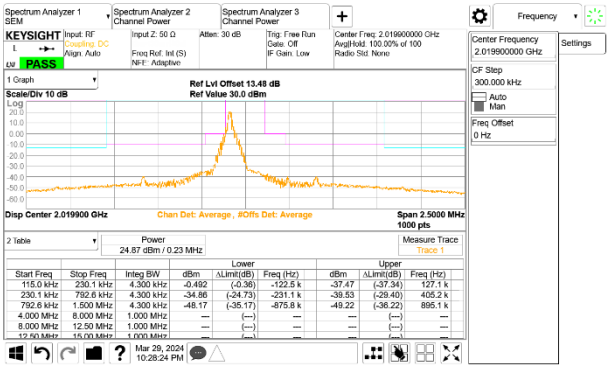
Middle Channel BPSK 1SC0



Middle Channel QPSK 1SC0

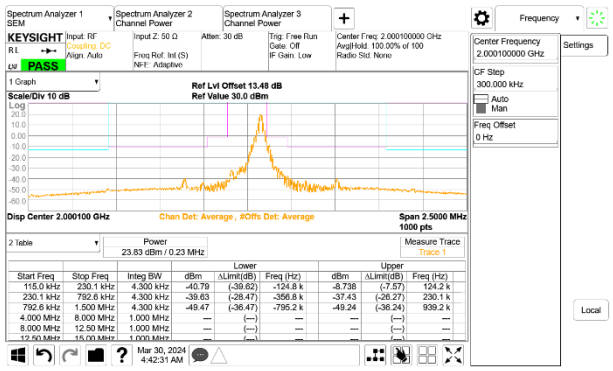


High Channel BPSK 1SC0

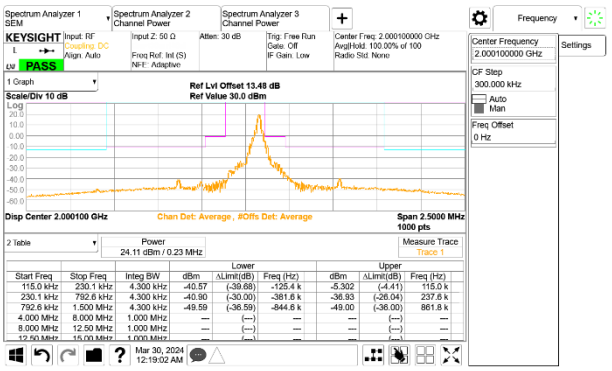


High Channel QPSK 1SC0

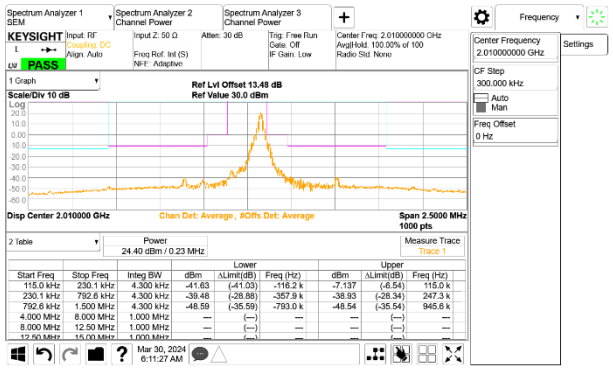
Band 23 SCS 15kHz – Ant 1



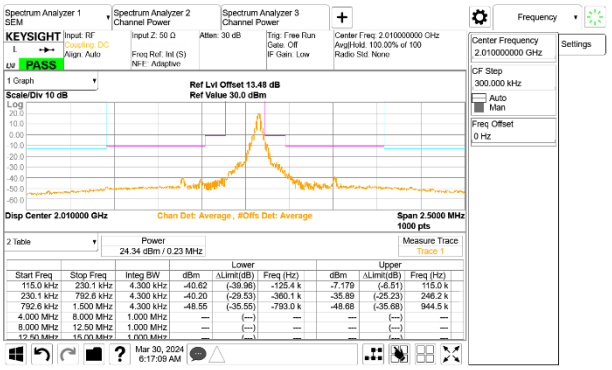
Low Channel BPSK 1SC11



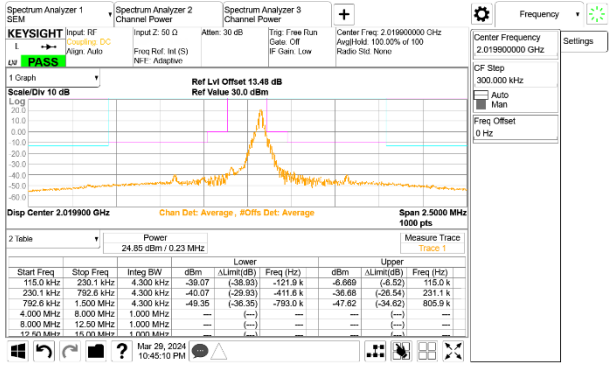
Low Channel QPSK 1SC11



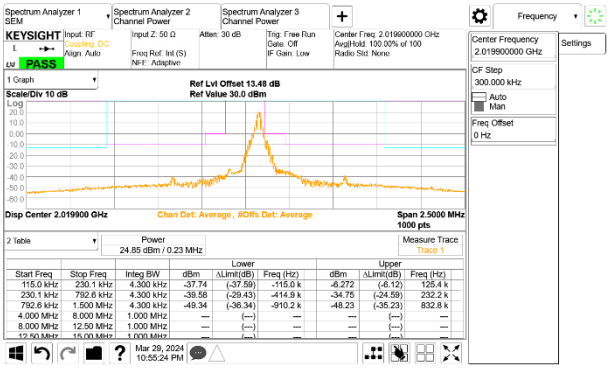
Middle Channel BPSK 1SC11



Middle Channel QPSK 1SC11

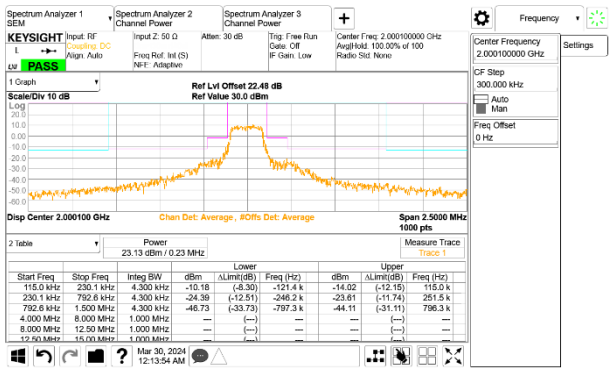


High Channel BPSK 1SC11

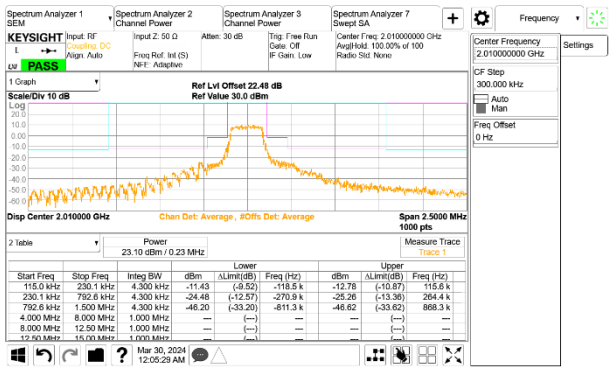


High Channel QPSK 1SC11

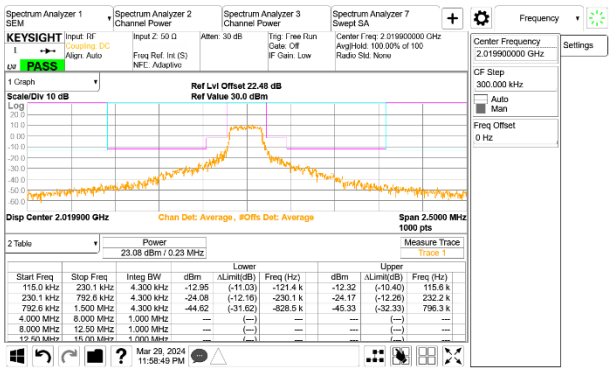
Band 23 SCS 15kHz – Ant 1



Low Channel QPSK 12SC0

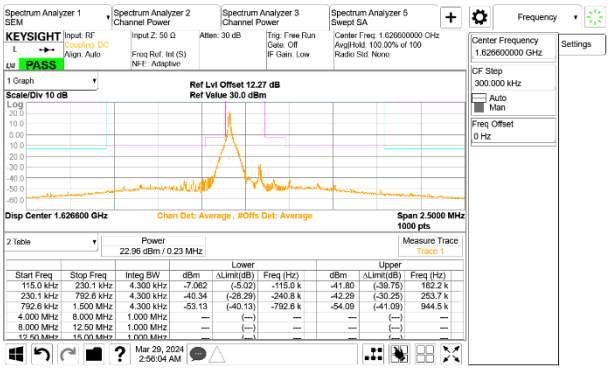
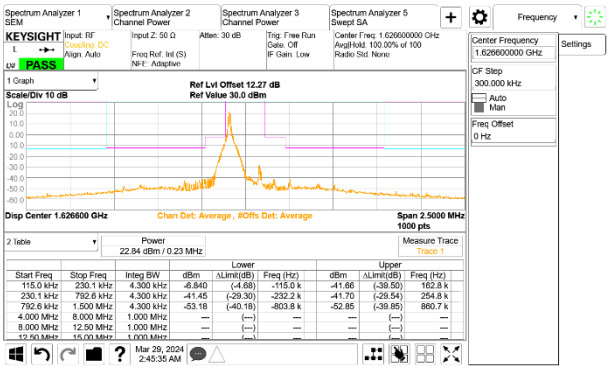
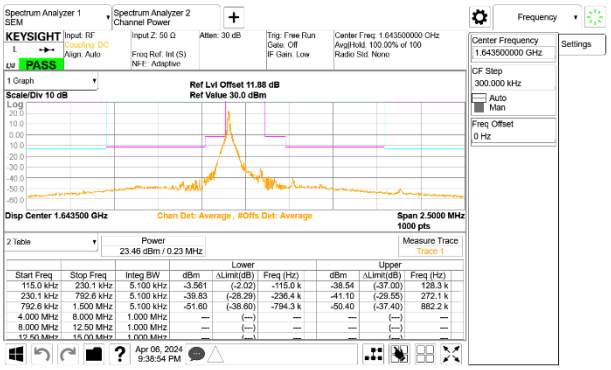
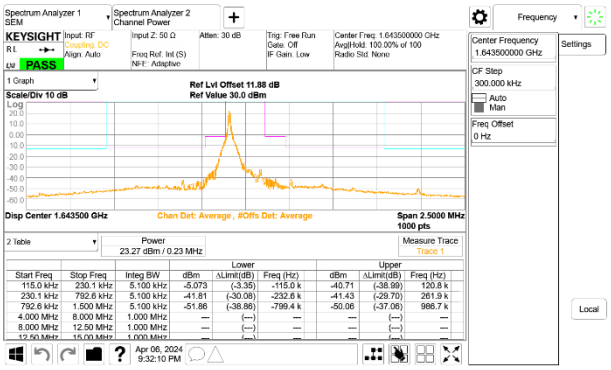
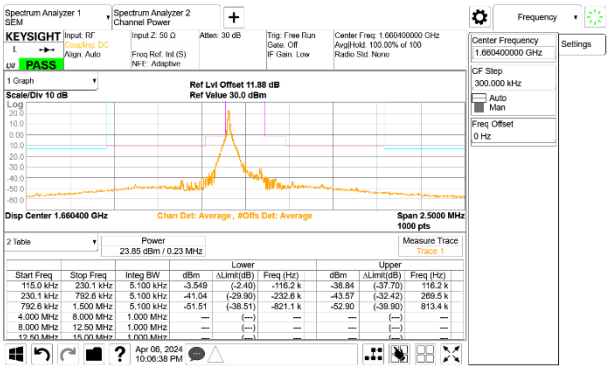
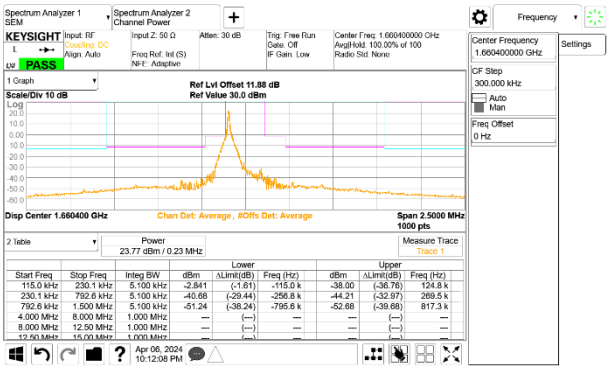


Middle Channel QPSK 12SC0

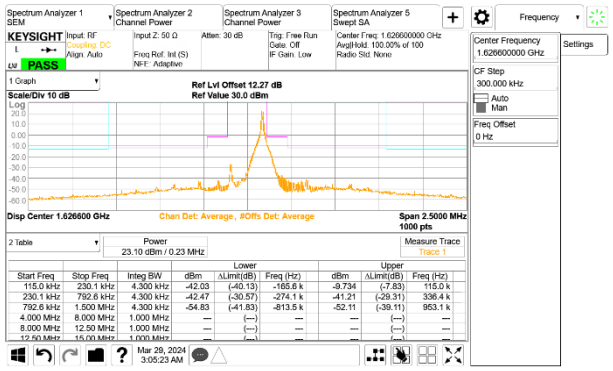


High Channel QPSK 12SC0

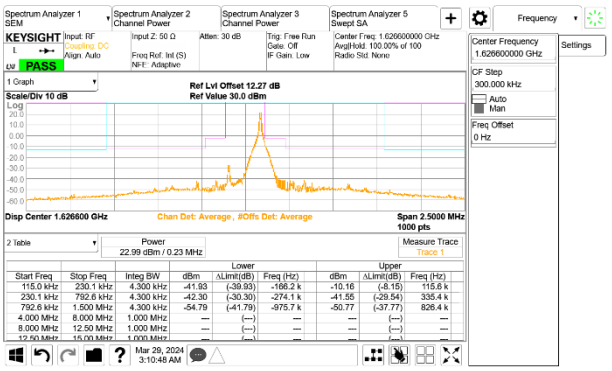
9.2.2. Band 255 ANT 5

Band 255 SCS 3.75kHz – Ant 5	
	
Low Channel BPSK 1SC1	Low Channel QPSK 1SC1
	
Middle Channel BPSK 1SC1	Middle Channel QPSK 1SC1
	
High Channel BPSK 1SC1	High Channel QPSK 1SC1

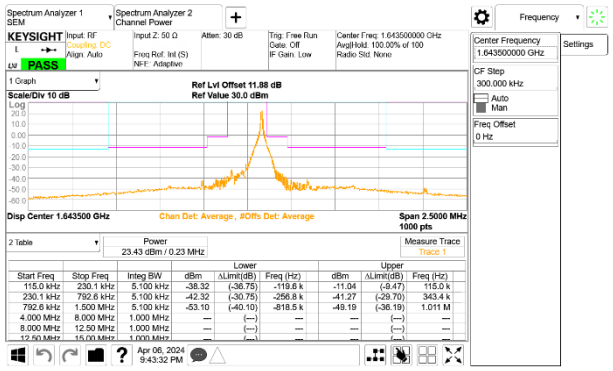
Band 255 SCS 3.75kHz – Ant 5



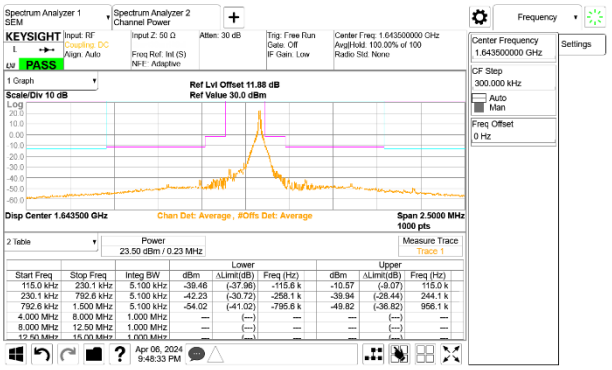
Low Channel BPSK 1SC47



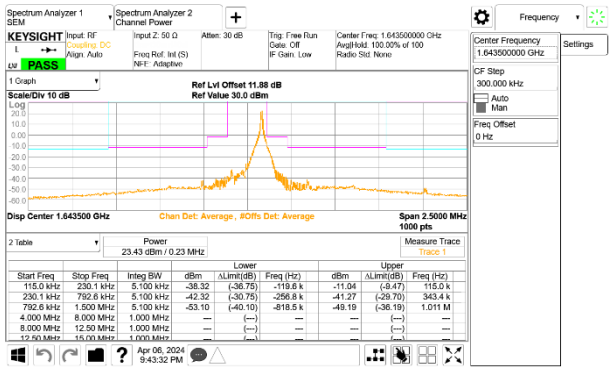
Low Channel QPSK 1SC47



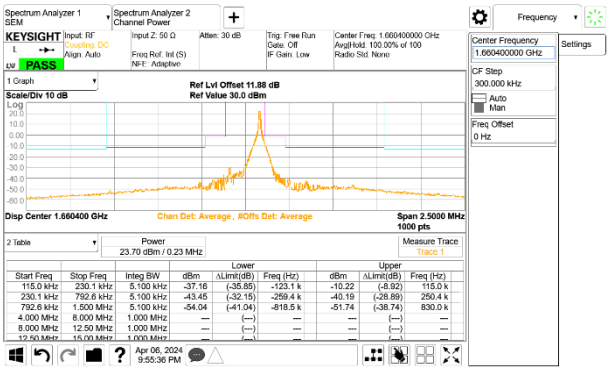
Middle Channel BPSK 1SC47



Middle Channel QPSK 1SC47

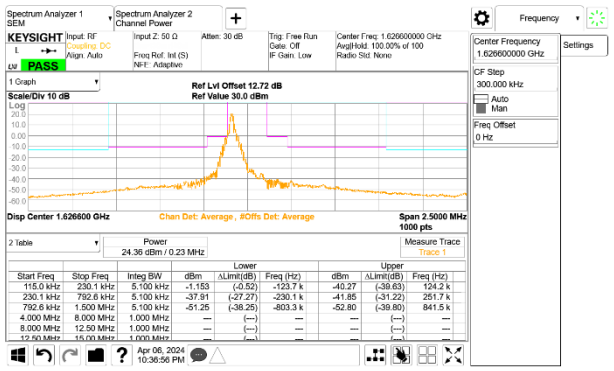


High Channel BPSK 1SC47

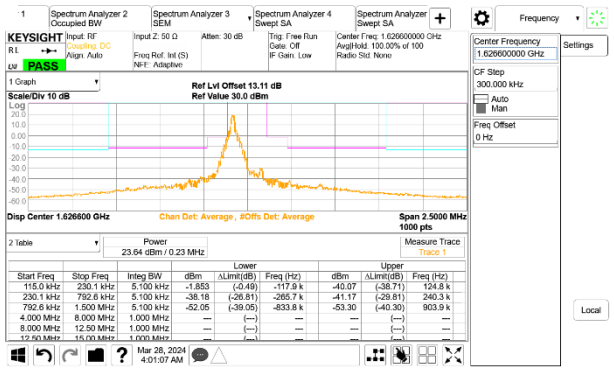


High Channel QPSK 1SC47

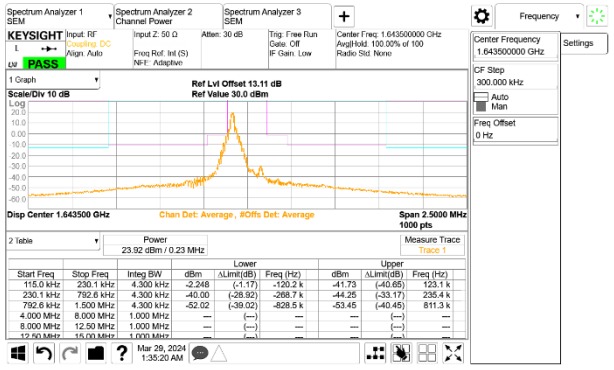
Band 255 SCS 15kHz – Ant 5



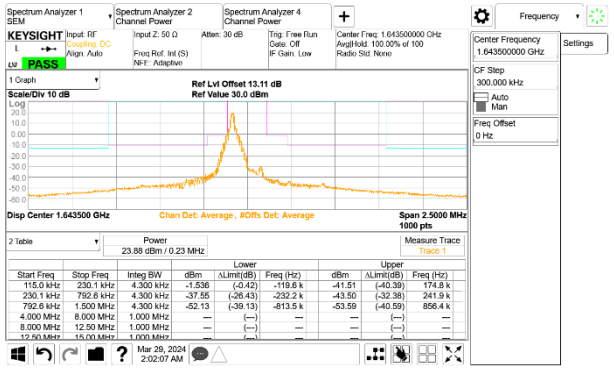
Low Channel BPSK 1SC1



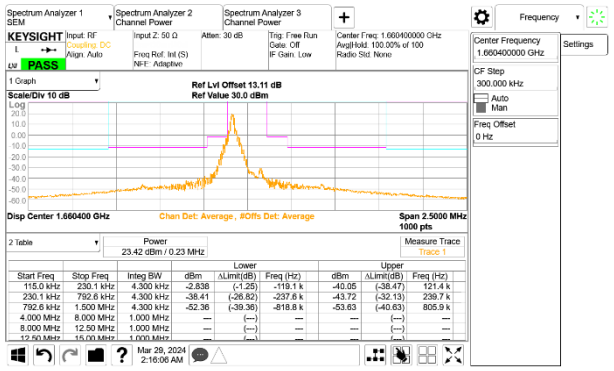
Low Channel QPSK 1SC1



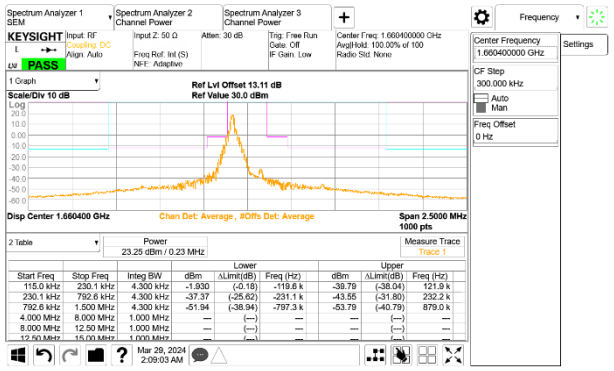
Middle Channel BPSK 1SC1



Middle Channel QPSK 1SC1

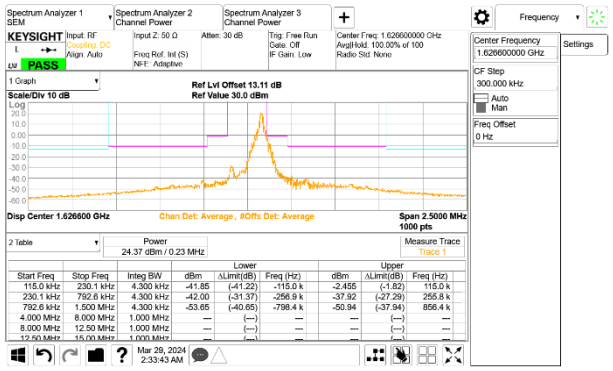


High Channel BPSK 1SC1

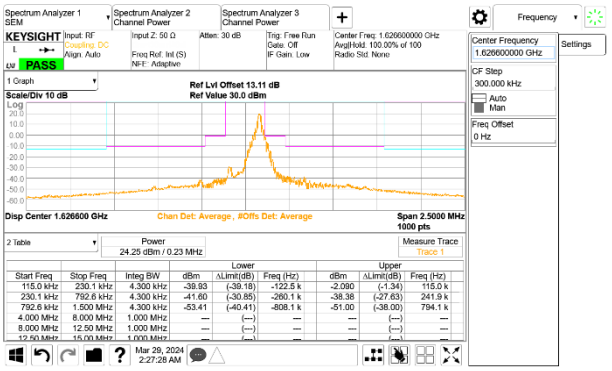


High Channel QPSK 1SC1

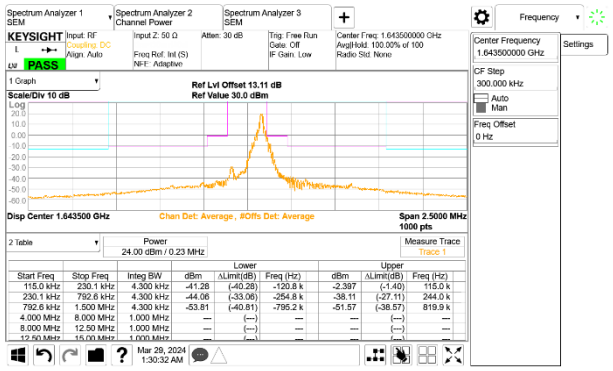
Band 255 SCS 3.75kHz – Ant 5



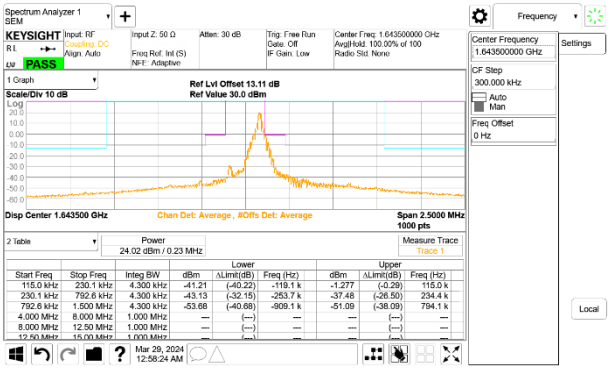
Low Channel BPSK 1SC11



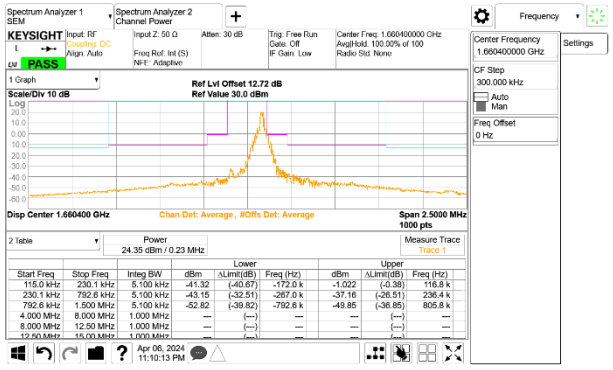
Low Channel QPSK 1SC11



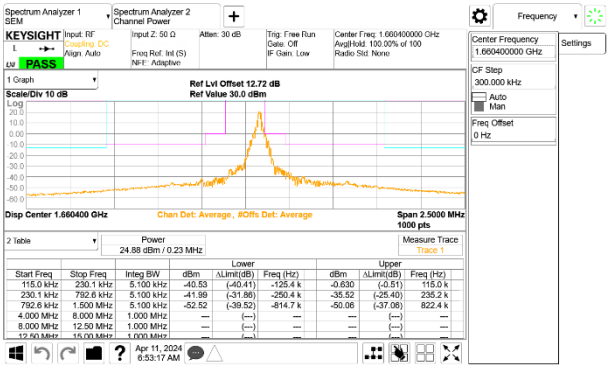
Middle Channel BPSK 1SC11



Middle Channel QPSK 1SC11

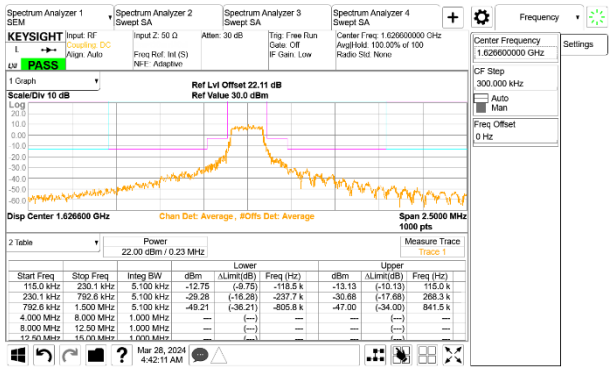


High Channel BPSK 1SC11

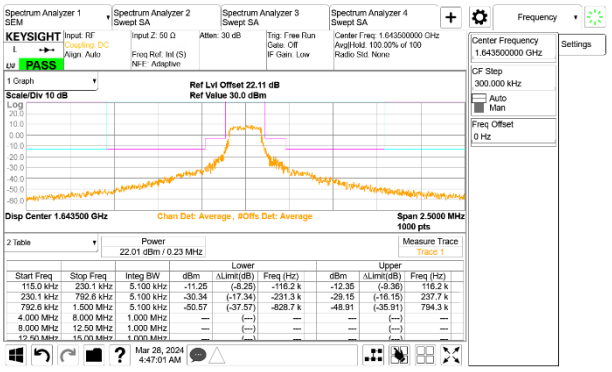


High Channel QPSK 1SC11

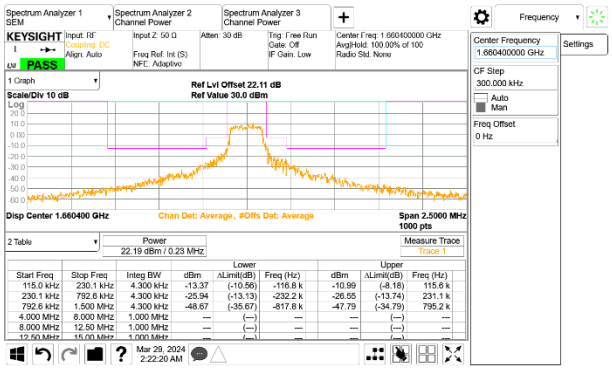
Band 23 SCS 15kHz – Ant 1



Low Channel QPSK 12SC0



Middle Channel QPSK 12SC0



High Channel QPSK 12SC0

9.3. OUT OF BAND EMISSIONS

LIMITS

FCC §25.202
(f) Emission limitations. Except for SDARS terrestrial repeaters and as provided for in paragraph (i), the mean power of emissions shall be attenuated below the mean output power of the transmitter in accordance with the schedule set forth in paragraphs (f)(1) through (f)(4) of this section. The out-of-band emissions of SDARS terrestrial repeaters shall be attenuated in accordance with the schedule set forth in paragraph (h) of this section.

(3) In any 4 kHz band, the center frequency of which is removed from the assigned frequency by more than 250 percent of the authorized bandwidth: An amount equal to 43 dB plus 10 times the logarithm (to the base 10) of the transmitter power in watts.

TEST PROCEDURE

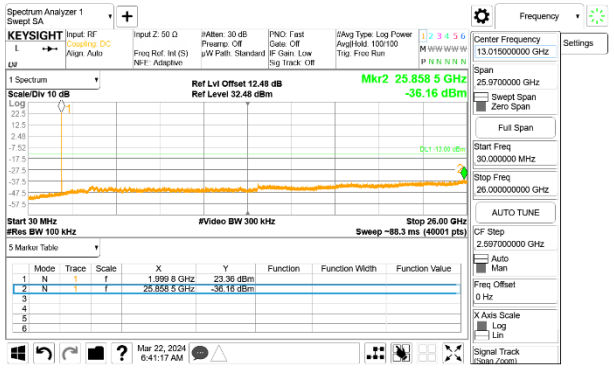
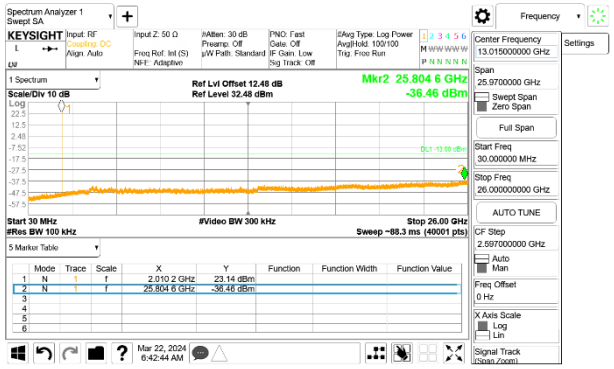
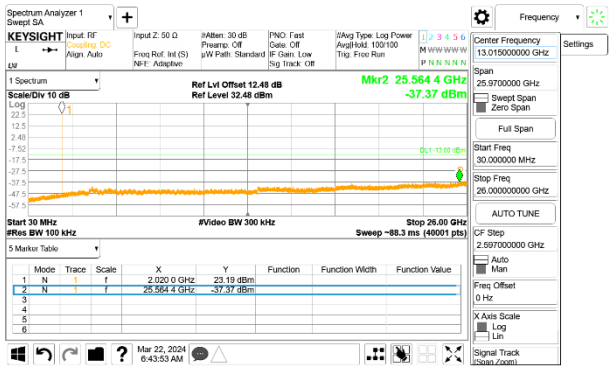
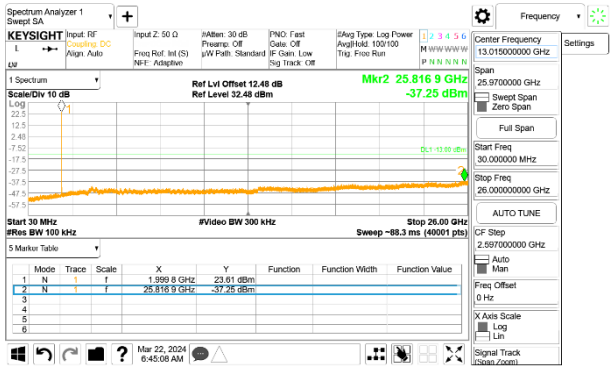
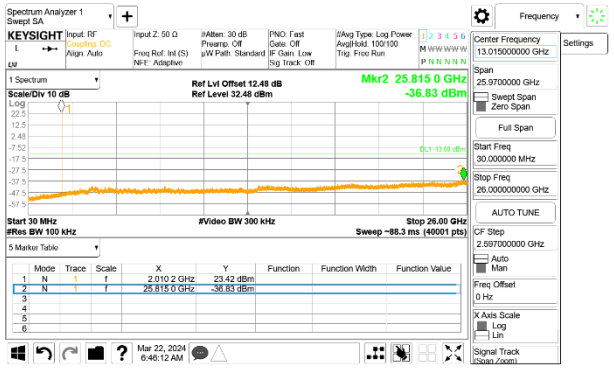
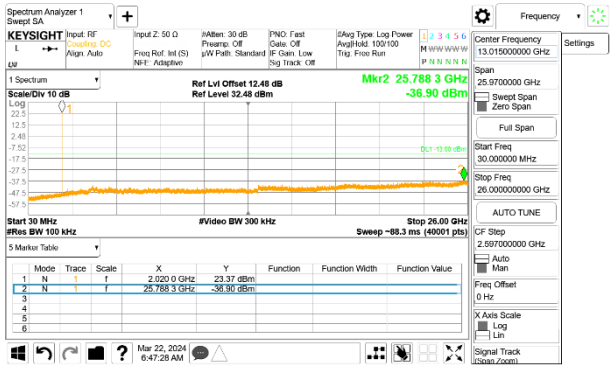
KDB 971168 D01 v03r01/D02 v02r02

For each out of band emissions measurement:
- Set display line at -13 dBm (the limit of 43 + 10Log(P))
- Set RWB >= 4kHz and VBW >= 3 x RBW with peak detector for all measurements. The limit is an average limit so any emissions that exceed the limit using the peak detector are measured using rms detection with an averaging time of 2ms.

RESULTS

Both ANT 1 and ANT 5 were performed on low, mid, high channels.

9.3.1. Band 23 ANT 1

Band 23 SCS 3.75kHz and 15kHz – Ant 1	
	
Low Channel 3.75kHz BPSK 1SC0	Middle Channel 3.75kHz BPSK 1SC0
	
High Channel 3.75kHz BPSK 1SC0	Low Channel 15kHz BPSK 1SC0
	
Middle Channel 15kHz BPSK 1SC0	High Channel 15kHz BPSK 1SC0