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# Report On

FCC Testing of the  
Ericsson Dot 41Kr B48, KRY 901 516/4, Dot 44Kr B48, KRY 901 516/3,  
LTE, NR, NR + LTE (3550-3700 MHz) Base Station in accordance with  
FCC CFR 47 Part 2, FCC CFR 47 Part 96

COMMERCIAL-IN-CONFIDENCE

FCC: TA8AKRY901516-4

PREPARED BY

A handwritten signature in black ink on a light grey rectangular background.

Steve McFarlane  
Test Engineer

APPROVED BY

A handwritten signature in black ink on a light grey rectangular background.

Glen Westwell  
Authorised Signatory

DATED

25-April-2022

Document 7169010768.3 Report 02 Issue 1

19-April-2022



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## **SECTION 1**

### **REPORT INFORMATION**



## 1.1 REPORT DETAILS

Manufacturer	Ericsson
Address	Torshamnsgatan 23 Kista SE-16480 Stockholm Sweden
Product Name & Product Number	Dot 41Kr B48 - KRY 901 516/4
Serial Number(s)	On file
Software Version	CXP2030045/26 Revision R12A08
Hardware Version	R1A
Non-Tested Variant (See Section 1.10 Additional Information)	Dot 44Kr B48 - KRY 901 516/3
Test Specification/Issue/Date	FCC CFR 47 Part 2: 2021 FCC CFR 47 Part 96: 2021
Test Plan	Dot 4469 B48_RA-FCC_testplan_LTE_NR_(TUV SUD) - 2022-2-25
Start of Test	15-March-2022
Finish of Test	13-April-2022
Name of Engineer(s)	Steve McFarlane Glen Westwell
Related Document(s)	KDB 971168 D01 v02r02 KDB 662911 D01 v02r01 ANSI C63.26-2015

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### ENGINEERING STATEMENT

The measurements shown in this report were made in accordance with the procedures described on test pages. All reported testing was carried out on a sample equipment to demonstrate compliance with and FCC CFR 47 Part 2: 2021, FCC CFR 47 Part 96: 2021. The sample tested was found to comply with the requirements defined in the applied rules.

Test Engineer(s);

---

Steve McFarlane



## 1.2 BRIEF SUMMARY OF RESULTS

A brief summary of results for each configuration, in accordance with FCC CFR 47 Part 2, FCC CFR 47 Part 96, and is shown below.

Section	Specification Clause		Test Description	Result
	FCC CFR 47 Part 2	FCC CFR 47 Part 96		
2.1	2.1046	96.41 (b)(c)(g)	Peak Output Power and Peak to Average Ratio - Conducted	Pass
2.2	2.1049	96.41 (e)(3)	Occupied Bandwidth	Pass
2.3	2.1051	96.41 (e)(3)	Band Edge	Pass
2.4	2.1051	96.41 (e)(1)	Transmitter Spurious Emissions	Pass
2.5	2.1055	--	Frequency Stability	Pass



### **1.3 TEST RATIONALE**

The tests that have been selected are detailed in the customer Test Plan as defined in section 1.1 of this report. The Test Plan is based on the TÜV SÜD FCC Test Plan Rationale, available on request.



#### 1.4 CONFIGURATION DESCRIPTION

Configuration A					
RAT	No. of Carriers	Carrier Bandwidth	Carrier Frequency Configuration (MHz)		
			Bottom	Middle	Top
LTE	1	5 MHz	3552.5	3625.0	3697.5
		10 MHz	3555.0	3625.0	3695.0
		20 MHz	3560.0	3625.0	3690.0
NR	1	20 MHz	3560.0	3625.0	3690.0
		30 MHz	3565.0	3625.0	3685.0
		40 MHz	3570.0	3625.0	3680.0
		50 MHz	3575.0	3625.0	3675.0
		60 MHz	3580.0	3625.0	3670.0
		70 MHz	3585.0	3625.0	3665.0
		80 MHz	3590.0	3625.0	3660.0
		90 MHz	3595.0	3625.0	3655.0
100 MHz	3600.0	3625.0	3650.0		

Configuration B					
RAT	No. of Carriers	Carrier Bandwidth	Carrier Frequency Configuration (MHz)		
			Bottom	Middle	Top
LTE	2	10+10 MHz	3555.0+3565.0	3620.0+3630.0	3685.0+3695.0
		20+20 MHz	3560.0+3580.0	3615.0+3635.0	3670.0+3690.0
*LTE	2	10+10 MHz	-	3555.0 + 3695.0	-
		20+20 MHz	-	3560.0 + 3690.0	-
NR	2	20+20 MHz	3560.0+3580.0	3615.0+3635.0	3670.0+3690.0
		70+70 MHz	3585.0+3655.0	3590.0+3660.0	3595.0+3665.0
*NR	2	20+20 MHz	-	3560.0 + 3690.0	-
		70+70 MHz	-	3585.0 + 3665.0	-
NR+LTE	2	20+10 MHz	3560.0+3575.0	3620.0+3635.0	3680.0+3695.0
*NR+LTE	2	20+10 MHz	-	3560.0+3695.0	-



Configuration C					
RAT	No. of Carriers	Carrier BW	Carrier Frequency Configuration (MHz)		
			Bottom	Middle	Top
NR	7	20 MHz	3560.0+3580.0+3600.0+3620.0+3640.0+3660.0+3680.0	3565.0+3585.0+3605.0+3625.0+3645.0+3665.0+3685.0	3570.0+3590.0+3610.0+3630.0+3650.0+3670.0+3690.0
			3560.0+3580.0+3600.0+3620.0+3640.0+3660.0+3680.0	3565.0+3585.0+3605.0+3625.0+3645.0+3665.0+3685.0	3570.0+3590.0+3610.0+3630.0+3650.0+3670.0+3690.0
*NR	7	20 MHz	-	3560.0+3580.0+3600.0+3620.0+3650.0+3670.0+3690.0	-
			-	3560.0+3580.0+3600.0+3620.0+3650.0+3670.0+3690.0	-

Configuration D					
RAT	No. of Carriers	Carrier BW	Carrier Frequency Configuration (MHz)		
			Bottom	Middle	Top
LTE	12	10 MHz	3555.0+3565.0+3575.0+3585.0+3595.0+3605.0+3615.0+3625.0+3635.0+3645.0+3655.0+3665.0	3570.0+3580.0+3590.0+3600.0+3610.0+3620.0+3630.0+3640.0+3650.0+3660.0+3670.0+3680.0	3585.0+3595.0+3605.0+3615.0+3625.0+3635.0+3645.0+3655.0+3665.0+3675.0+3685.0+3695.0
3NR+9LTE	12	20+10 MHz	3560.0+3580.0+3600.0+3615.0+3625.0+3635.0+3645.0+3655.0+3665.0+3675.0+3685.0+3695.0		
*LTE	12	10 MHz	3555.0+3565.0+3575.0+3585.0+3595.0+3605.0+3645.0+3655.0+3665.0+3675.0+3685.0+3695.0		
*2NR+10LTE	12	20+10 MHz	3560.0+3580.0+3605.0+3615.0+3625.0+3635.0+3645.0+3655.0+3665.0+3675.0+3685.0+3695.0		

Note: \* indicates Non-contiguous configurations.





**1.5 DECLARATION OF BUILD STATUS**

<b>MAIN EUT</b>	
<b>MANUFACTURING DESCRIPTION</b>	Radio Dot
<b>MANUFACTURER</b>	Ericsson
<b>TYPE</b>	Remote Radio Base Station
<b>PART NUMBER</b>	KRY 901 516/3 and KRY 901 516/4
<b>HARDWARE VERSION</b>	R1A
<b>SOFTWARE VERSION</b>	CXP 203 0045/26 - R12A108
<b>TRANSMITTER OPERATING RANGE</b>	3550 – 3700 MHz
<b>RECEIVER OPERATING RANGE</b>	3550 – 3700 MHz
<b>COUNTRY OF ORIGIN</b>	China
<b>INTERMEDIATE FREQUENCIES</b>	None
<b>EMISSION DESIGNATOR(S): (i.e. G1D, GXW)</b>	LTE: 5M00W7D, 10M0W7D, 20M0W7D NR: 20M0F9W, 30M0F9W, 40M0F9W, 50M0F9W, 60M0F9W, 70M0F9W, 80M0F9W, 90M0F9W ,100MF9W
<b>MODULATION TYPES: (i.e. GMSK, QPSK)</b>	LTE: QPSK, 16QAM, 64QAM, 256QAM NR: QPSK, 16QAM, 64QAM, 256QAM
<b>HIGHEST INTERNALLY GENERATED FREQUENCY</b>	3.7 GHz
<b>OUTPUT POWER (W or dBm)</b>	4 x 0.4W (26dBm)
<b>Antenna gain (dBi)</b>	5.29 dBi
<b>FCC ID</b>	TA8AKRY901516-3 & TA8AKRY901516-4
<b>INDUSTRY CANADA ID</b>	NA
<b>TECHNICAL DESCRIPTION (a brief description of the intended use and operation)</b>	The Dot 44Kr B48 (KRY 901 516/3) and the Dot 41Kr B48 (KRY 901 516/4) are Remote Radio Units forming part of the Ericsson Radio Base Station (RBS) equipment. The Dot provides radio access for mobile and fixed devices and is intended for the indoor environment. The radio operates over 4 Transmit ports in MRO (NR); Single, Multi-Carrier, and MIMO transmission with a maximum rated RF Output of 0.4W per port over an operational temperature of 5°C to +40°C. The unit is designed to be ceiling or wall mounted. The 44Kr and 41Kr radios are identical except that Dot 44Kr has internal antennas and Dot 41Kr has external ports.

Signature:

.....

**Denis Lalonde**

**Date: 16 June 2022**

**Declaration of Build Status R-state: R1A**

## 1.6 PRODUCT INFORMATION

### 1.6.1 Technical Description

The Equipment Under Test (EUT) Dot 41Kr B48 - KRY 901 516/4 is an Ericsson AB Radio Unit working in the Citizens Broadband Radio Service which provides communication connections to Band 48 network. The EUT operates from a -48V DC supply.

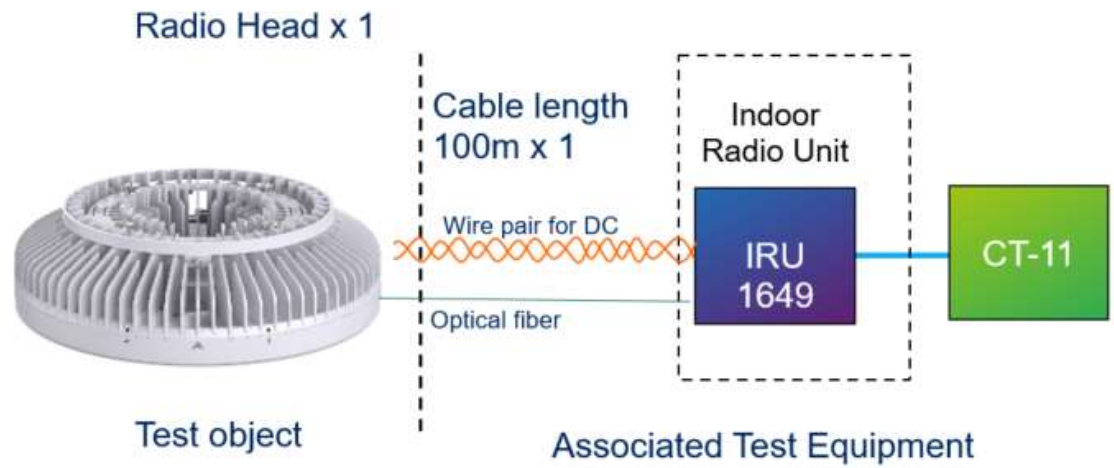
The Equipment Under Test (EUT) is shown in the photograph below. A full technical description can be found in the Manufacturer's documentation.



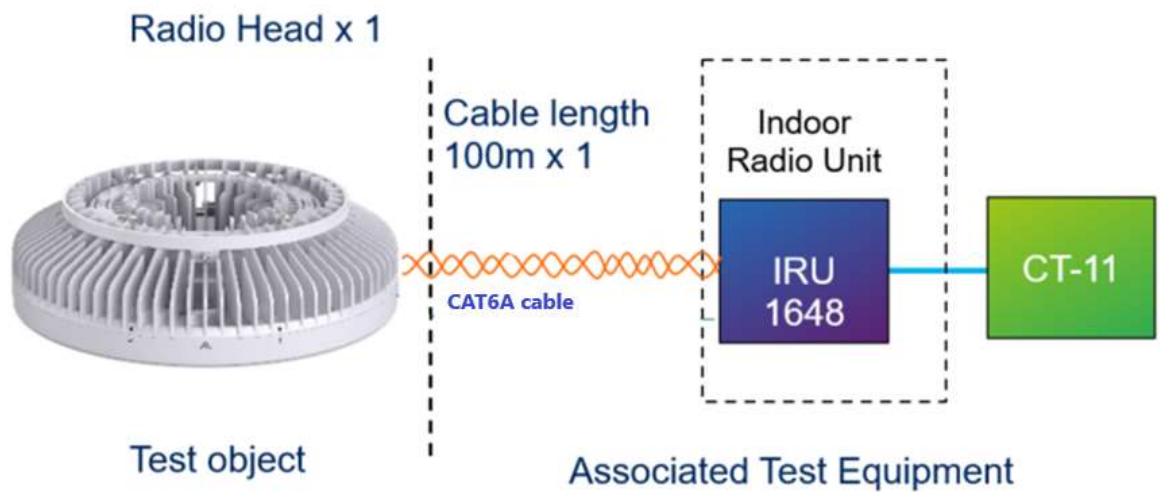
Equipment Under Test

## 1.7 TEST SETUP

Conducted Test Set Up – Non Contiguous



Conducted Test Set Up – Contiguous





## 1.8 TEST CONDITIONS

For all tests the EUT was set up in accordance with the relevant test standard and to represent typical operating conditions. Tests were applied with the EUT situated as described in the Test Method for each Test.

The EUT was powered from a -48V DC supply.

FCC Measurement Facility Registration Number  
CA4810 TUV SUD Canada, 1280 Teron Rd., Kanata On.

Under our A2LA Accreditation, TÜV SÜD Canada conducted the following tests Ericsson, Ottawa Laboratory: 349 Terry Fox Dr, Kanata, ON.

Test Name	Name of Engineer(s)
Maximum Peak Output Power and Peak to Average Ratio - Conducted	Steve McFarlane
Occupied Bandwidth	Steve McFarlane
Band Edge	Steve McFarlane
Transceiver Spurious Emissions	Steve McFarlane
Freq. Stab.	Steve McFarlane

## 1.9 DEVIATION FROM THE STANDARD

No deviations from the applicable test standards or test plan were made during testing.

## 1.10 MODIFICATION RECORD

No modifications were made to the EUT during testing.

## 1.11 ADDITIONAL INFORMATION

1. This filing is for a Radio Certification for use in the USA under the following ID's:

FCC ID: TA8AKRY901516-1 & TA8AKRY901516-2

2. Transmitter performance was measured for top, mid & bottom channels for contiguous and non-contiguous (NC) operation, where applicable, across all antenna ports as presented in the power measurement tables. Typical performance is presented. All configuration data is on file and available upon request.

3. Initial pre-testing was carried out to determine the worst case modulation scheme by measuring the output power from QPSK, 16QAM, 64QAM and 256QAM on the middle channel of one antenna port. From these tests, it was determined that QPSK was equivalent or the worst case modulation scheme and was used for all final testing.



## **SECTION 2**

### **TEST DETAILS**



## **2.1 OUTPUT POWER, PEAK TO AVERAGE RATIO & PSD - CONDUCTED**

### **2.1.1 Specification Reference**

FCC CFR 47 Part 96, Clause 96.41 (b)(c)(g)  
FCC CFR 47 Part 2, Clause 2.1046

### **2.1.2 Date of Test and Modification State**

15 March and 13-April-2022 - Modification State 0

### **2.1.3 Test Equipment Used**

The major items of test equipment used for the above tests are identified in Section 3.1.

### **2.1.4 Environmental Conditions**

Ambient Temperature	24.6°C
Relative Humidity	30.8%

### **2.1.5 Test Method**

All measurements were made in accordance with FCC KDB 971168 D01, clause 5.2.1 and summed in accordance with FCC KDB 662911 D01.

### **2.1.6 Test Results**

Configuration A

Maximum Output Power (EIRP): 30dBm/10 MHz



Antenna Gain (dBi) 5.29	Modulation	Carrier Bandwidth	Peak to Average Ratio (PAR) / PSD / Output Power Channel Position B				
			CCDF	PSD	Average Power		
					PAR (dB)	dBm/MHz	dBm
Antenna Port							
A	LTE: QPSK	5.0 MHz	-	-	17.69	17.69	22.98
B	LTE: QPSK	5.0 MHz	9.92	12.05	18.19	18.19	23.48
C	LTE: QPSK	5.0 MHz	-	-	18.15	18.15	23.44
D	LTE: QPSK	5.0 MHz	-	-	18.10	18.10	23.39
Total			-	-	24.06	24.06	29.35
A	LTE: QPSK	10.0 MHz	-	-	17.98	17.98	23.27
B	LTE: QPSK	10.0 MHz	-	-	18.25	18.25	23.54
C	LTE: QPSK	10.0 MHz	9.77	10.09	18.38	18.38	23.67
D	LTE: QPSK	10.0 MHz	-	-	18.31	18.31	23.60
Total			-	-	24.25	24.25	29.54
A	LTE: QPSK	20.0 MHz	-	-	20.88	17.87	23.16
B	LTE: QPSK	20.0 MHz	-	-	21.06	18.05	23.34
C	LTE: QPSK	20.0 MHz	-	-	21.04	18.03	23.32
D	LTE: QPSK	20.0 MHz	10.07	10.14	21.07	18.06	23.35
Total			-	-	27.03	24.02	29.31
A	NR: QPSK	20.0 MHz	9.52	9.37	20.75	17.74	23.03
B	NR: QPSK	20.0 MHz	-	-	21.04	18.03	23.32
C	NR: QPSK	20.0 MHz	-	-	21.25	18.24	23.53
D	NR: QPSK	20.0 MHz	-	-	21.22	18.21	23.50
Total			-	-	27.09	24.08	29.37
A	NR: QPSK	30.0 MHz	-	-	22.70	17.93	23.22
B	NR: QPSK	30.0 MHz	-	-	22.90	18.13	23.42
C	NR: QPSK	30.0 MHz	9.56	9.25	23.09	18.32	23.61
D	NR: QPSK	30.0 MHz	-	-	22.90	18.13	23.42
Total			-	-	28.92	24.15	29.44
A	NR: QPSK	40.0 MHz	-	-	24.05	18.03	23.32
B	NR: QPSK	40.0 MHz	9.71	8.22	24.34	18.32	23.61
C	NR: QPSK	40.0 MHz	-	-	24.25	18.23	23.52
D	NR: QPSK	40.0 MHz	-	-	24.33	18.31	23.60
Total			-	-	30.26	24.24	29.53
A	NR: QPSK	50.0 MHz	-	-	24.40	17.41	22.70
B	NR: QPSK	50.0 MHz	-	-	24.81	17.82	23.11
C	NR: QPSK	50.0 MHz	9.44	7.94	24.91	17.92	23.21
D	NR: QPSK	50.0 MHz	-	-	24.49	17.50	22.79
Total			-	-	30.68	23.69	28.98
A	NR: QPSK	60.0 MHz	-	-	23.72	15.94	21.23
B	NR: QPSK	60.0 MHz	-	-	23.96	16.18	21.47
C	NR: QPSK	60.0 MHz	-	-	24.04	16.26	21.55
D	NR: QPSK	60.0 MHz	9.57	6.13	24.14	16.36	21.65
Total			-	-	29.99	22.21	27.50
A	NR: QPSK	70.0 MHz	-	-	23.71	15.26	20.55
B	NR: QPSK	70.0 MHz	-	-	23.70	15.25	20.54
C	NR: QPSK	70.0 MHz	-	-	23.69	15.24	20.53
D	NR: QPSK	70.0 MHz	9.60	5.62	24.15	15.70	20.99
Total			-	-	29.84	21.39	26.68
A	NR: QPSK	80.0 MHz	-	-	23.47	14.44	19.73
B	NR: QPSK	80.0 MHz	-	-	23.68	14.65	19.94
C	NR: QPSK	80.0 MHz	-	-	23.39	14.36	19.65
D	NR: QPSK	80.0 MHz	9.50	4.85	24.13	15.10	20.39
Total			-	-	29.70	20.67	25.96
A	NR: QPSK	90.0 MHz	-	-	23.54	14.00	19.29
B	NR: QPSK	90.0 MHz	-	-	23.81	14.27	19.56
C	NR: QPSK	90.0 MHz	9.38	4.25	24.07	14.53	19.82
D	NR: QPSK	90.0 MHz	-	-	23.82	14.28	19.57
Total			-	-	29.83	20.29	25.58
A	NR: QPSK	100.0 MHz	-	-	23.80	13.80	19.09
B	NR: QPSK	100.0 MHz	-	-	24.11	14.11	19.40
C	NR: QPSK	100.0 MHz	-	-	24.24	14.24	19.53
D	NR: QPSK	100.0 MHz	9.44	4.05	24.28	14.28	19.57
Total			-	-	30.13	20.13	25.42



Antenna Gain (dBi) 5.29	Modulation	Carrier Bandwidth	Peak to Average Ratio (PAR) / PSD / Output Power Channel Position M				
			CCDF	PSD	Average Power		
					PAR (dB)	dBm/MHz	dBm
A	LTE: QPSK	5.0 MHz	-	-	17.81	17.81	23.10
B	LTE: QPSK	5.0 MHz	-	-	17.87	17.87	23.16
C	LTE: QPSK	5.0 MHz	9.83	12.11	18.01	18.01	23.30
D	LTE: QPSK	5.0 MHz	-	-	17.91	17.91	23.20
Total			-	-	23.92	23.92	29.21
A	LTE: QPSK	10.0 MHz	-	-	17.70	17.70	22.99
B	LTE: QPSK	10.0 MHz	-	-	17.88	17.88	23.17
C	LTE: QPSK	10.0 MHz	10.16	9.17	18.01	18.01	23.30
D	LTE: QPSK	10.0 MHz	-	-	18.12	18.12	23.41
Total			-	-	23.95	23.95	29.24
A	LTE: QPSK	20.0 MHz	-	-	20.65	17.64	22.93
B	LTE: QPSK	20.0 MHz	-	-	20.44	17.43	22.72
C	LTE: QPSK	20.0 MHz	9.81	9.00	20.84	17.83	23.12
D	LTE: QPSK	20.0 MHz	-	-	20.85	17.84	23.13
Total			-	-	26.72	23.71	29.00
A	NR: QPSK	20.0 MHz	-	-	20.60	17.59	22.88
B	NR: QPSK	20.0 MHz	-	-	20.69	17.68	22.97
C	NR: QPSK	20.0 MHz	9.30	8.85	20.94	17.93	23.22
D	NR: QPSK	20.0 MHz	-	-	20.84	17.83	23.12
Total			-	-	26.79	23.78	29.07
A	NR: QPSK	30.0 MHz	-	-	22.47	17.70	22.99
B	NR: QPSK	30.0 MHz	-	-	22.68	17.91	23.20
C	NR: QPSK	30.0 MHz	9.89	8.87	22.83	18.06	23.35
D	NR: QPSK	30.0 MHz	-	-	22.72	17.95	23.24
Total			-	-	28.70	23.93	29.22
A	NR: QPSK	40.0 MHz	-	-	23.04	17.02	22.31
B	NR: QPSK	40.0 MHz	-	-	23.43	17.41	22.70
C	NR: QPSK	40.0 MHz	9.12	8.28	23.54	17.52	22.81
D	NR: QPSK	40.0 MHz	-	-	23.41	17.39	22.68
Total			-	-	29.38	23.36	28.65
A	NR: QPSK	50.0 MHz	-	-	24.07	17.08	22.37
B	NR: QPSK	50.0 MHz	-	-	24.30	17.31	22.60
C	NR: QPSK	50.0 MHz	9.01	8.16	24.48	17.49	22.78
D	NR: QPSK	50.0 MHz	-	-	24.48	17.49	22.78
Total			-	-	30.36	23.37	28.66
A	NR: QPSK	60.0 MHz	-	-	24.92	17.14	22.43
B	NR: QPSK	60.0 MHz	-	-	25.22	17.44	22.73
C	NR: QPSK	60.0 MHz	9.43	8.25	25.34	17.56	22.85
D	NR: QPSK	60.0 MHz	-	-	25.27	17.49	22.78
Total			-	-	31.21	23.43	28.72
A	NR: QPSK	70.0 MHz	-	-	25.10	16.65	21.94
B	NR: QPSK	70.0 MHz	-	-	25.62	17.17	22.46
C	NR: QPSK	70.0 MHz	9.60	7.90	25.51	17.06	22.35
D	NR: QPSK	70.0 MHz	-	-	25.61	17.16	22.45
Total			-	-	31.49	23.03	28.32
A	NR: QPSK	80.0 MHz	-	-	25.37	16.34	21.63
B	NR: QPSK	80.0 MHz	-	-	25.52	16.49	21.78
C	NR: QPSK	80.0 MHz	9.51	7.68	25.75	16.72	22.01
D	NR: QPSK	80.0 MHz	-	-	25.59	16.56	21.85
Total			-	-	31.58	22.55	27.84
A	NR: QPSK	90.0 MHz	-	-	25.37	15.83	21.12
B	NR: QPSK	90.0 MHz	-	-	25.69	16.15	21.44
C	NR: QPSK	90.0 MHz	9.49	7.20	25.85	16.31	21.60
D	NR: QPSK	90.0 MHz	-	-	25.69	16.15	21.44
Total			-	-	31.67	22.13	27.42
A	NR: QPSK	100.0 MHz	-	-	25.44	15.44	20.73
B	NR: QPSK	100.0 MHz	-	-	25.86	15.86	21.15
C	NR: QPSK	100.0 MHz	9.47	6.88	25.93	15.93	21.22
D	NR: QPSK	100.0 MHz	-	-	25.92	15.92	21.21
Total			-	-	31.81	21.81	27.10





Antenna Gain (dBi)	Modulation	Carrier Bandwidth	Peak to Average Ratio (PAR) / PSD / Output Power				
			Channel Position T				
			CCDF	PSD	Average Power		
Antenna Port			PAR (dB)	dBm/MHz	dBm	dBm / 10 MHz	EIRP dBm/10 MHz
5.29							
A	LTE: QPSK	5.0 MHz	-	-	17.56	17.56	22.85
B	LTE: QPSK	5.0 MHz	-	-	17.89	17.89	23.18
C	LTE: QPSK	5.0 MHz	9.81	12.30	18.03	18.03	23.32
D	LTE: QPSK	5.0 MHz	-	-	17.78	17.78	23.07
Total			-	-	23.84	23.84	29.13
A	LTE: QPSK	10.0 MHz	-	-	17.65	17.65	22.94
B	LTE: QPSK	10.0 MHz	-	-	17.99	17.99	23.28
C	LTE: QPSK	10.0 MHz	9.98	9.71	18.20	18.20	23.49
D	LTE: QPSK	10.0 MHz	-	-	17.80	17.80	23.09
Total			-	-	23.94	23.94	29.23
A	LTE: QPSK	20.0 MHz	-	-	20.66	17.65	22.94
B	LTE: QPSK	20.0 MHz	-	-	20.63	17.62	22.91
C	LTE: QPSK	20.0 MHz	9.72	8.99	20.94	17.93	23.22
D	LTE: QPSK	20.0 MHz	-	-	20.43	17.42	22.71
Total			-	-	26.69	23.68	28.97
A	NR: QPSK	20.0 MHz	-	-	20.54	17.53	22.82
B	NR: QPSK	20.0 MHz	-	-	20.89	17.88	23.17
C	NR: QPSK	20.0 MHz	9.77	8.86	20.95	17.94	23.23
D	NR: QPSK	20.0 MHz	-	-	20.77	17.76	23.05
Total			-	-	26.81	23.80	29.09
A	NR: QPSK	30.0 MHz	-	-	22.40	17.63	22.92
B	NR: QPSK	30.0 MHz	-	-	22.88	18.11	23.40
C	NR: QPSK	30.0 MHz	9.75	9.10	22.72	17.95	23.24
D	NR: QPSK	30.0 MHz	-	-	22.81	18.04	23.33
Total			-	-	28.73	23.96	29.25
A	NR: QPSK	40.0 MHz	-	-	23.05	17.03	22.32
B	NR: QPSK	40.0 MHz	-	-	23.58	17.56	22.85
C	NR: QPSK	40.0 MHz	9.73	9.03	23.39	17.37	22.66
D	NR: QPSK	40.0 MHz	-	-	23.42	17.40	22.69
Total			-	-	29.38	23.36	28.65
A	NR: QPSK	50.0 MHz	-	-	24.32	17.33	22.62
B	NR: QPSK	50.0 MHz	-	-	24.62	17.63	22.92
C	NR: QPSK	50.0 MHz	9.27	9.01	24.67	17.68	22.97
D	NR: QPSK	50.0 MHz	-	-	24.56	17.57	22.86
Total			-	-	30.57	23.58	28.87
A	NR: QPSK	60.0 MHz	-	-	25.19	17.41	22.70
B	NR: QPSK	60.0 MHz	-	-	25.41	17.63	22.92
C	NR: QPSK	60.0 MHz	9.46	8.59	25.59	17.81	23.10
D	NR: QPSK	60.0 MHz	-	-	25.56	17.78	23.07
Total			-	-	31.46	23.68	28.97
A	NR: QPSK	70.0 MHz	-	-	24.81	16.36	21.65
B	NR: QPSK	70.0 MHz	-	-	25.23	16.78	22.07
C	NR: QPSK	70.0 MHz	9.67	7.94	25.31	16.86	22.15
D	NR: QPSK	70.0 MHz	-	-	25.13	16.68	21.97
Total			-	-	31.14	22.69	27.98
A	NR: QPSK	80.0 MHz	-	-	24.76	15.73	21.02
B	NR: QPSK	80.0 MHz	-	-	25.13	16.10	21.39
C	NR: QPSK	80.0 MHz	9.11	7.62	25.21	16.18	21.47
D	NR: QPSK	80.0 MHz	-	-	25.10	16.07	21.36
Total			-	-	31.07	22.04	27.33
A	NR: QPSK	90.0 MHz	-	-	24.86	15.32	20.61
B	NR: QPSK	90.0 MHz	-	-	24.92	15.38	20.67
C	NR: QPSK	90.0 MHz	9.33	6.83	25.14	15.60	20.89
D	NR: QPSK	90.0 MHz	-	-	25.20	15.66	20.95
Total			-	-	31.05	21.51	26.80
A	NR: QPSK	100.0 MHz	-	-	24.96	14.96	20.25
B	NR: QPSK	100.0 MHz	-	-	24.94	14.94	20.23
C	NR: QPSK	100.0 MHz	9.58	6.30	25.24	15.24	20.53
D	NR: QPSK	100.0 MHz	-	-	25.19	15.19	20.48
Total			-	-	31.11	21.11	26.40



Conducted Transmit Power & EIRP Results

Gain (dBi)	Ant Port	Modulation	Ch. BW	Bottom Ch.		Mid Ch.		Top Ch.	
				dBm	EIRP	dBm	EIRP	dBm	EIRP
5.29	A	LTE: QPSK	5.0 MHz	17.69	22.98	17.81	23.1	17.56	22.85
5.29	B	LTE: QPSK	5.0 MHz	18.19	23.48	17.87	23.16	17.89	23.18
5.29	C	LTE: QPSK	5.0 MHz	18.15	23.44	18.01	23.3	18.03	23.32
5.29	D	LTE: QPSK	5.0 MHz	18.1	23.39	17.91	23.2	17.78	23.07
5.29			Total	24.06	29.35	23.92	29.21	23.84	29.13
5.29	A	LTE: QPSK	10.0 MHz	17.98	23.27	17.7	22.99	17.65	22.94
5.29	B	LTE: QPSK	10.0 MHz	18.25	23.54	17.88	23.17	17.99	23.28
5.29	C	LTE: QPSK	10.0 MHz	18.38	23.67	18.01	23.3	18.2	23.49
5.29	D	LTE: QPSK	10.0 MHz	18.31	23.6	18.12	23.41	17.8	23.09
5.29			Total	24.25	29.54	23.95	29.24	23.94	29.23
5.29	A	LTE: QPSK	20.0 MHz	20.88	26.17	20.65	25.94	20.66	25.95
5.29	B	LTE: QPSK	20.0 MHz	21.06	26.35	20.44	25.73	20.63	25.92
5.29	C	LTE: QPSK	20.0 MHz	21.04	26.33	20.84	26.13	20.94	26.23
5.29	D	LTE: QPSK	20.0 MHz	21.07	26.36	20.85	26.14	20.43	25.72
5.29			Total	27.03	32.32	26.72	32.01	26.69	31.98
5.29	A	NR: QPSK	20.0 MHz	20.75	26.04	20.6	25.89	20.54	25.83
5.29	B	NR: QPSK	20.0 MHz	21.04	26.33	20.69	25.98	20.89	26.18
5.29	C	NR: QPSK	20.0 MHz	21.25	26.54	20.94	26.23	20.95	26.24
5.29	D	NR: QPSK	20.0 MHz	21.22	26.51	20.84	26.13	20.77	26.06
5.29			Total	27.09	32.38	26.79	32.08	26.81	32.1
5.29	A	NR: QPSK	30.0 MHz	22.7	27.99	22.47	27.76	22.4	27.69
5.29	B	NR: QPSK	30.0 MHz	22.9	28.19	22.68	27.97	22.88	28.17
5.29	C	NR: QPSK	30.0 MHz	23.09	28.38	22.83	28.12	22.72	28.01
5.29	D	NR:	30.0	22.9	28.19	22.72	28.01	22.81	28.1



		QPSK	MHz							
5.29			Total	28.92	34.21		28.7	33.99		28.73 34.02
5.29	A	NR: QPSK	40.0 MHz	24.05	29.34		23.04	28.33		23.05 28.34
5.29	B	NR: QPSK	40.0 MHz	24.34	29.63		23.43	28.72		23.58 28.87
5.29	C	NR: QPSK	40.0 MHz	24.25	29.54		23.54	28.83		23.39 28.68
5.29	D	NR: QPSK	40.0 MHz	24.33	29.62		23.41	28.7		23.42 28.71
5.29			Total	30.26	35.55		29.38	34.67		29.38 34.67
5.29	A	NR: QPSK	50.0 MHz	24.4	29.69		24.07	29.36		24.32 29.61
5.29	B	NR: QPSK	50.0 MHz	24.81	30.1		24.3	29.59		24.62 29.91
5.29	C	NR: QPSK	50.0 MHz	24.91	30.2		24.48	29.77		24.67 29.96
5.29	D	NR: QPSK	50.0 MHz	24.49	29.78		24.48	29.77		24.56 29.85
5.29			Total	30.68	35.97		30.36	35.65		30.57 35.86
5.29	A	NR: QPSK	60.0 MHz	23.72	29.01		24.92	30.21		25.19 30.48
5.29	B	NR: QPSK	60.0 MHz	23.96	29.25		25.22	30.51		25.41 30.7
5.29	C	NR: QPSK	60.0 MHz	24.04	29.33		25.34	30.63		25.59 30.88
5.29	D	NR: QPSK	60.0 MHz	24.14	29.43		25.27	30.56		25.56 30.85
5.29			Total	29.99	35.28		31.21	36.5		31.46 36.75
5.29	A	NR: QPSK	70.0 MHz	23.71	29		25.1	30.39		24.81 30.1
5.29	B	NR: QPSK	70.0 MHz	23.7	28.99		25.62	30.91		25.23 30.52
5.29	C	NR: QPSK	70.0 MHz	23.69	28.98		25.51	30.8		25.31 30.6
5.29	D	NR: QPSK	70.0 MHz	24.15	29.44		25.61	30.9		25.13 30.42
5.29			Total	29.84	35.13		31.49	36.78		31.14 36.43
5.29	A	NR: QPSK	80.0 MHz	23.47	28.76		25.37	30.66		24.76 30.05
5.29	B	NR: QPSK	80.0 MHz	23.68	28.97		25.52	30.81		25.13 30.42
5.29	C	NR: QPSK	80.0 MHz	23.39	28.68		25.75	31.04		25.21 30.5
5.29	D	NR: QPSK	80.0 MHz	24.13	29.42		25.59	30.88		25.1 30.39
5.29			Total	29.7	34.99		31.58	36.87		31.07 36.36



5.29	A	NR: QPSK	90.0 MHz	23.54	28.83		25.37	30.66		24.86	30.15
5.29	B	NR: QPSK	90.0 MHz	23.81	29.1		25.69	30.98		24.92	30.21
5.29	C	NR: QPSK	90.0 MHz	24.07	29.36		25.85	31.14		25.14	30.43
5.29	D	NR: QPSK	90.0 MHz	23.82	29.11		25.69	30.98		25.2	30.49
5.29			Total	29.83	35.12		31.67	36.96		31.05	36.34
5.29	A	NR: QPSK	100.0 MHz	23.8	29.09		25.44	30.73		24.96	30.25
5.29	B	NR: QPSK	100.0 MHz	24.11	29.4		25.86	31.15		24.94	30.23
5.29	C	NR: QPSK	100.0 MHz	24.24	29.53		25.93	31.22		25.24	30.53
5.29	D	NR: QPSK	100.0 MHz	24.28	29.57		25.92	31.21		25.19	30.48
5.29			Total	30.13	35.42		31.81	37.1		31.11	36.4



### Remarks

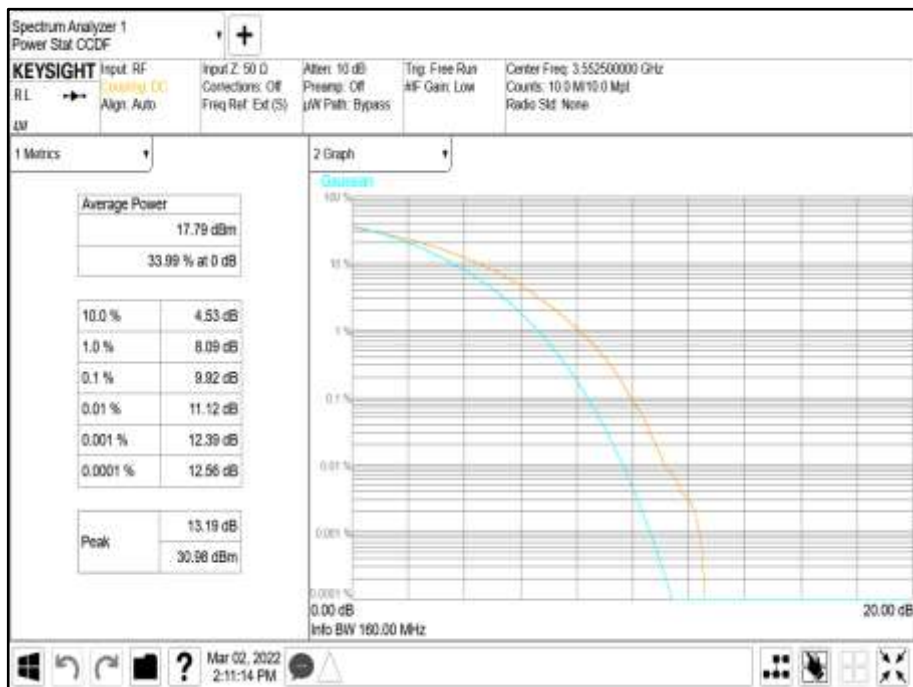
1. Transmitter performance has been presented for top, mid, bottom channels across all antenna ports as represented in the following tables.
2. Typical performance and measurement plot data has been presented for reference.
3. All contiguous and non-contiguous (NC) plot data is on file and available upon request.
4. The worst-case result for the peak-to-average ratio (CCDF) & the power spectral density (PSD) has been presented for comparison to the limits.



Antenna Port A Carrier Power - Modulation LTE: QPSK - Carrier Bandwidth 5.0 MHz - Channel Position B



Antenna Port A Pk-Av Ratio - Modulation LTE: QPSK - Carrier Bandwidth 5.0 MHz - Channel Position B

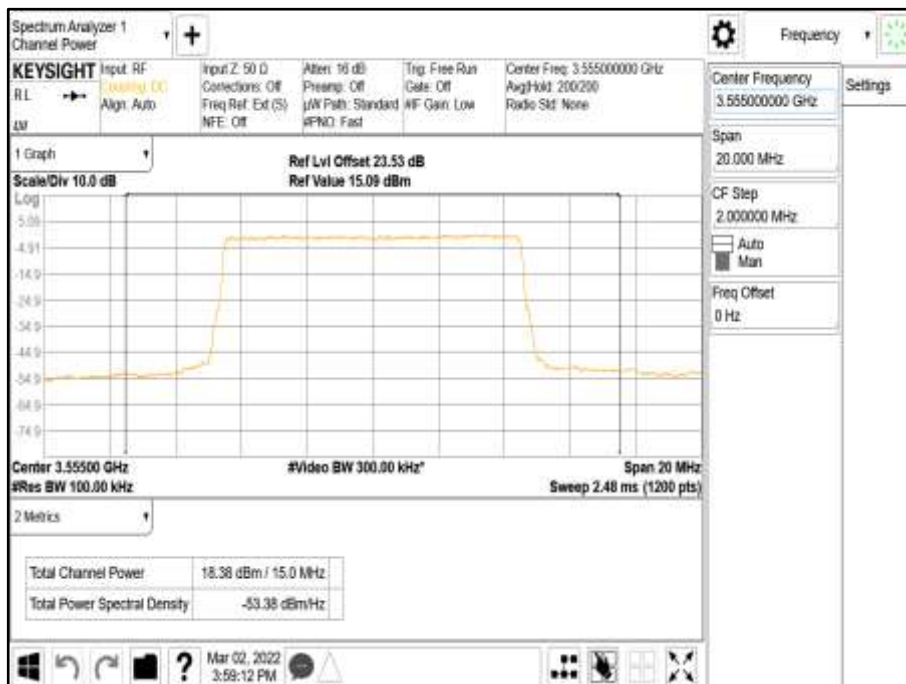




Antenna Port A PSD - Modulation LTE: QPSK - Carrier Bandwidth 5.0 MHz - Channel Position B

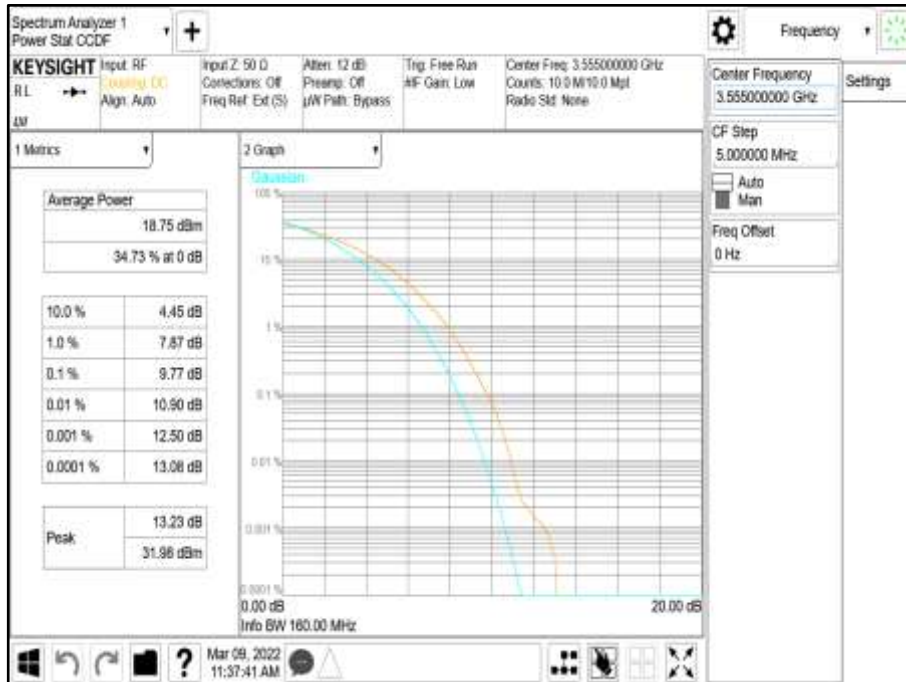


Antenna Port A Carrier Power - Modulation LTE: QPSK - Carrier Bandwidth 10.0 MHz - Channel Position B





Antenna Port A Pk-Av Ratio - Modulation LTE: QPSK - Carrier Bandwidth 10.0 MHz - Channel Position B



Antenna Port A PSD - Modulation LTE: QPSK - Carrier Bandwidth 10.0 MHz - Channel Position B



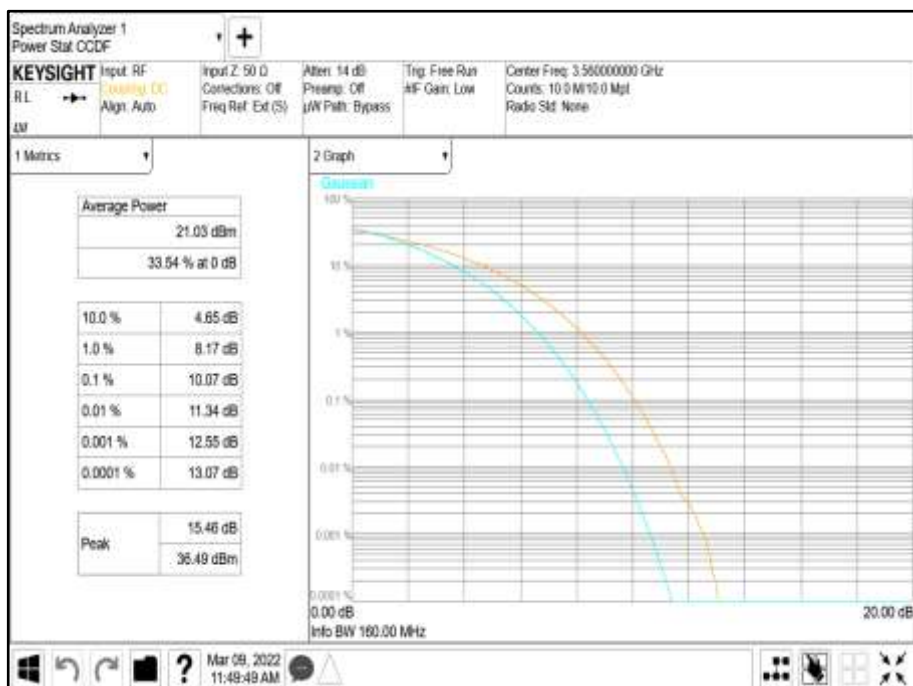




Antenna Port A Carrier Power - Modulation LTE: QPSK - Carrier Bandwidth 20.0 MHz - Channel Position B



Antenna Port A Pk-Av Ratio - Modulation LTE: QPSK - Carrier Bandwidth 20.0 MHz - Channel Position B





Antenna Port A PSD - Modulation LTE: QPSK - Carrier Bandwidth 20.0 MHz - Channel Position B

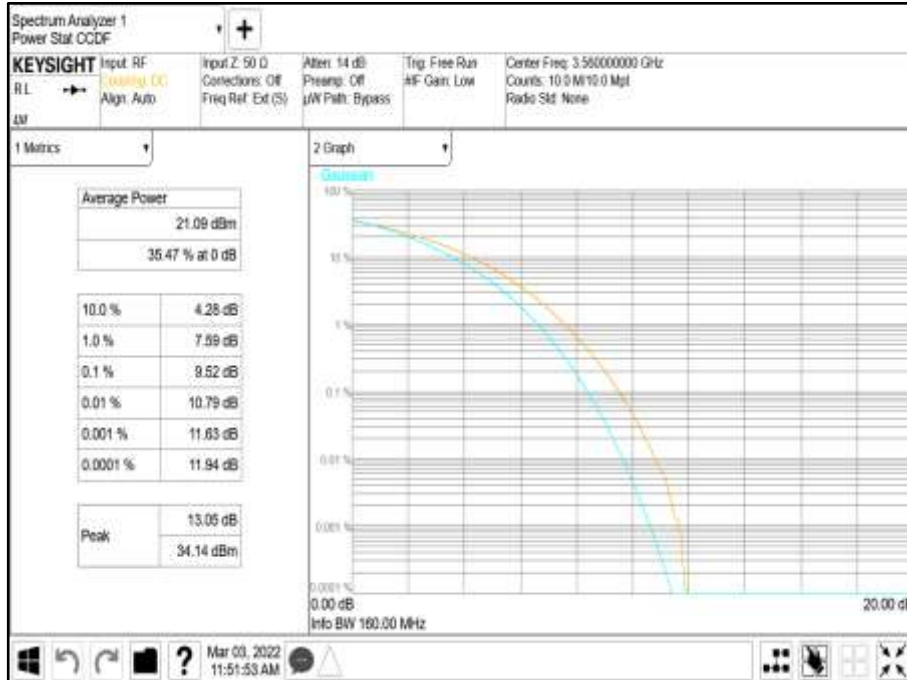


Antenna Port A Carrier Power - Modulation NR: QPSK - Carrier Bandwidth 20.0 MHz - Channel Position B





Antenna Port A Pk-Av Ratio - Modulation NR: QPSK - Carrier Bandwidth 20.0 MHz - Channel Position B



Antenna Port A PSD - Modulation NR: QPSK - Carrier Bandwidth 20.0 MHz - Channel Position B

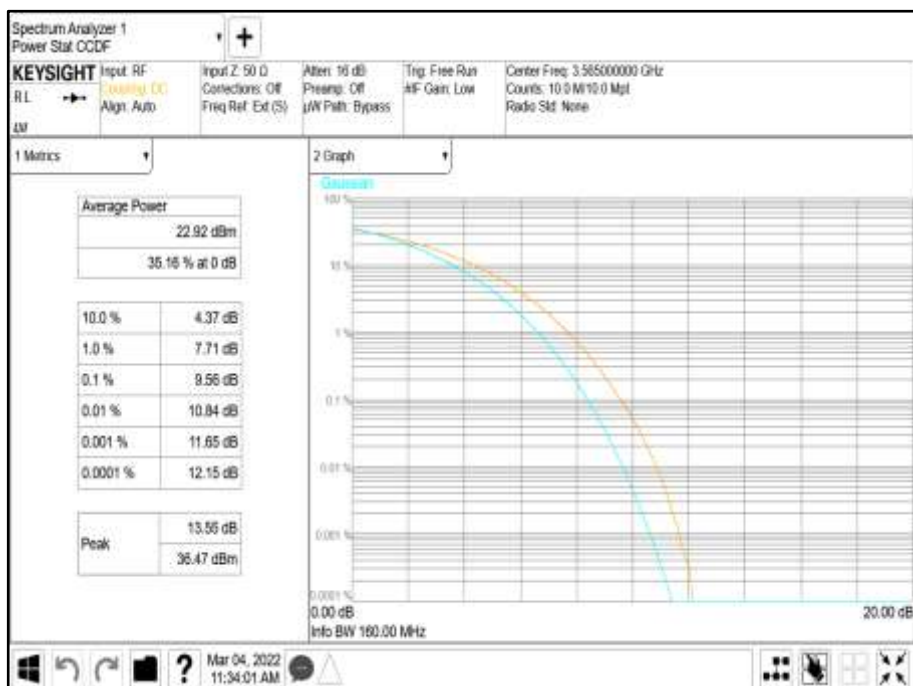




Antenna Port A Carrier Power - Modulation NR: QPSK - Carrier Bandwidth 30.0 MHz - Channel Position B



Antenna Port A Pk-Av Ratio - Modulation NR: QPSK - Carrier Bandwidth 30.0 MHz - Channel Position B





Antenna Port A PSD - Modulation NR: QPSK - Carrier Bandwidth 30.0 MHz - Channel Position B

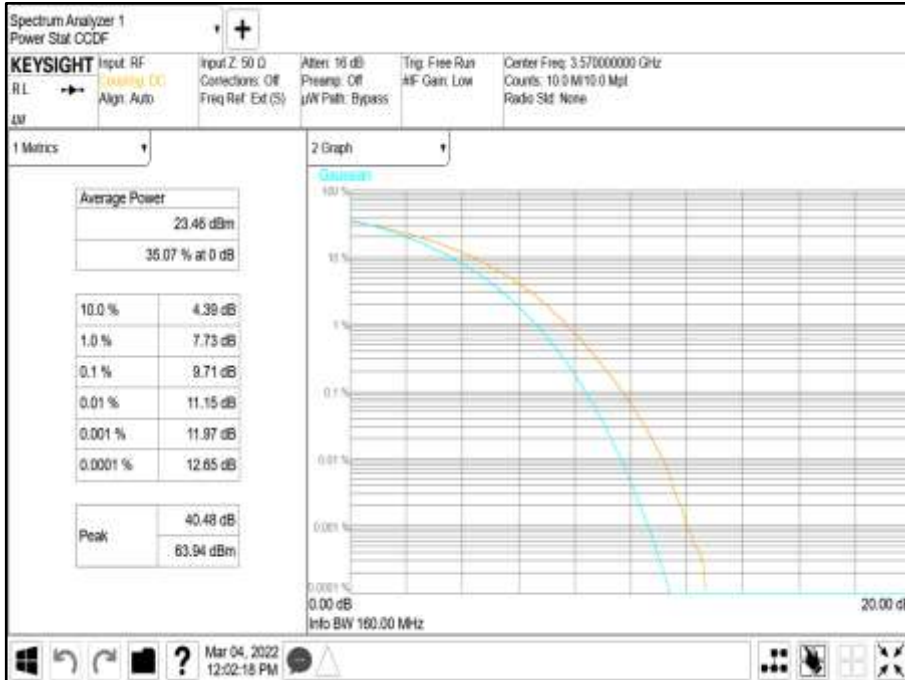


Antenna Port A Carrier Power - Modulation NR: QPSK - Carrier Bandwidth 40.0 MHz - Channel Position B





Antenna Port A Pk-Av Ratio - Modulation NR: QPSK - Carrier Bandwidth 40.0 MHz - Channel Position B



Antenna Port A PSD - Modulation NR: QPSK - Carrier Bandwidth 40.0 MHz - Channel Position B



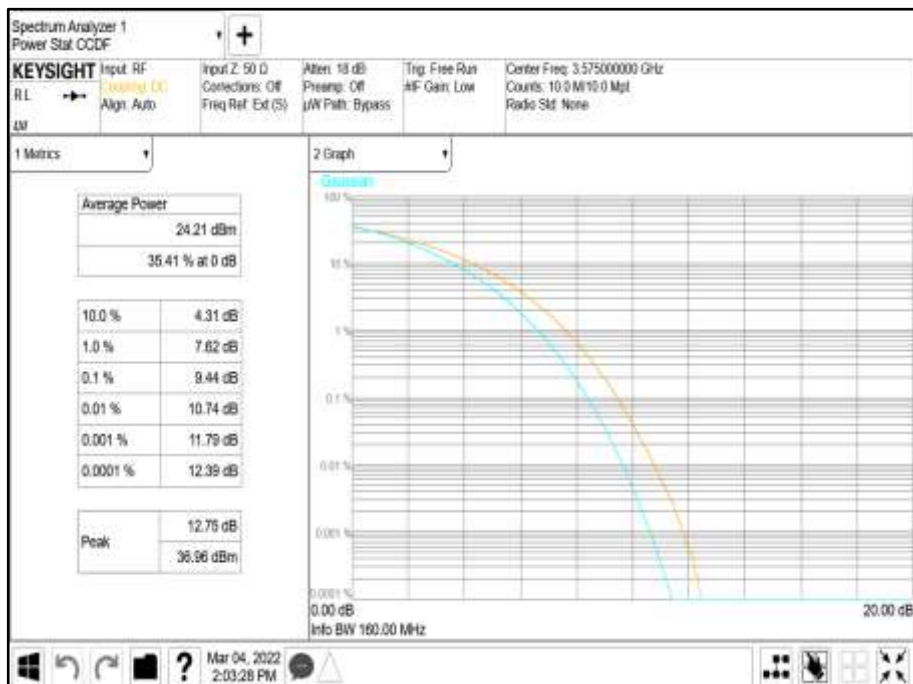




Antenna Port A Carrier Power - Modulation NR: QPSK - Carrier Bandwidth 50.0 MHz - Channel Position B



Antenna Port A Pk-Av Ratio - Modulation NR: QPSK - Carrier Bandwidth 50.0 MHz - Channel Position B





Antenna Port A PSD - Modulation NR: QPSK - Carrier Bandwidth 50.0 MHz - Channel Position B



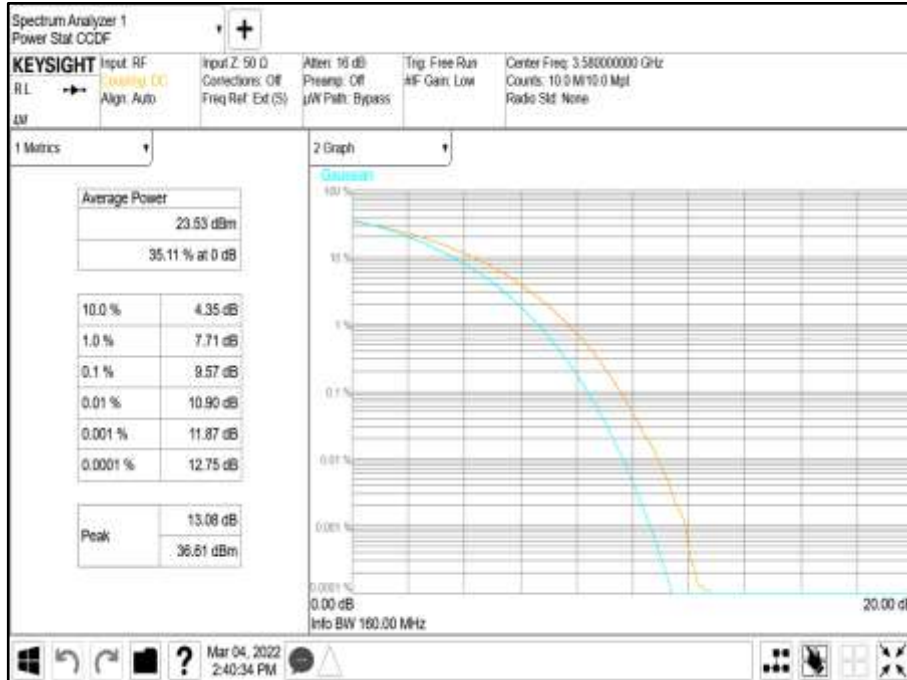
Antenna Port A Carrier Power - Modulation NR: QPSK - Carrier Bandwidth 60.0 MHz - Channel Position B







Antenna Port A Pk-Av Ratio - Modulation NR: QPSK - Carrier Bandwidth 60.0 MHz - Channel Position B



Antenna Port A PSD - Modulation NR: QPSK - Carrier Bandwidth 60.0 MHz - Channel Position B

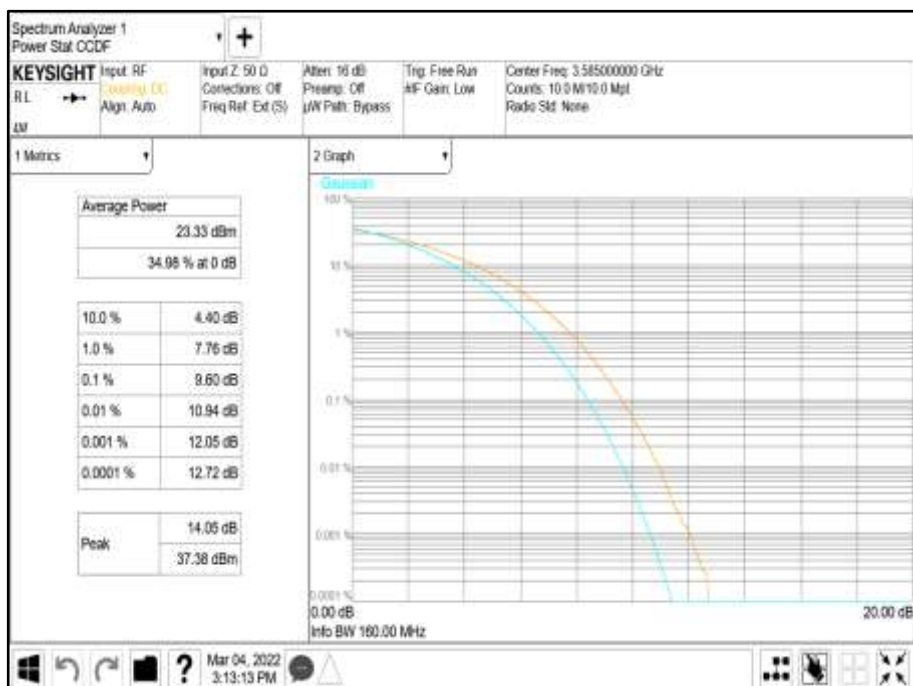




Antenna Port A Carrier Power - Modulation NR: QPSK - Carrier Bandwidth 70.0 MHz - Channel Position B



Antenna Port A Pk-Av Ratio - Modulation NR: QPSK - Carrier Bandwidth 70.0 MHz - Channel Position B

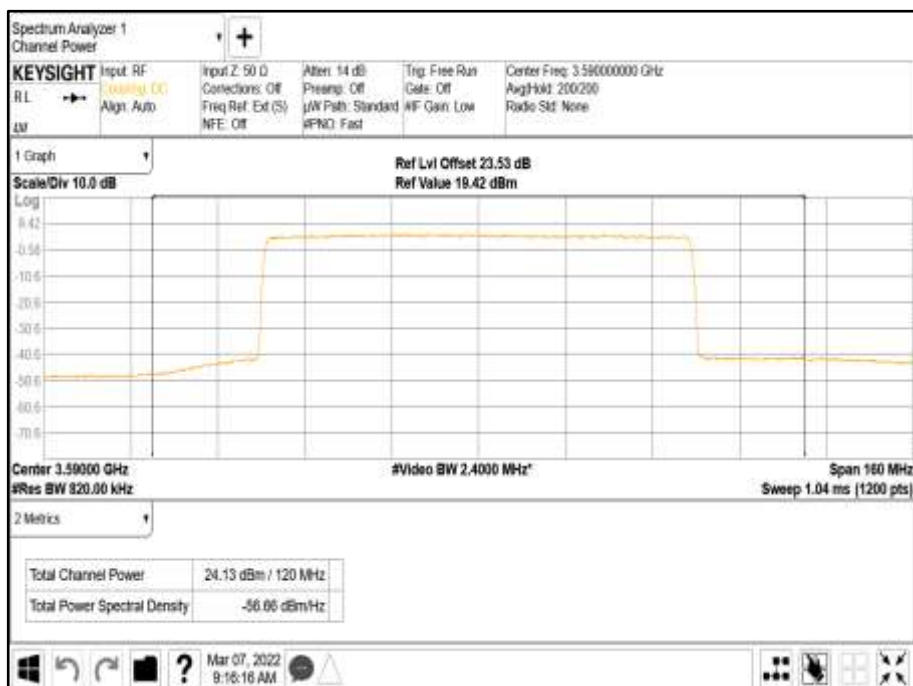




Antenna Port A PSD - Modulation NR: QPSK - Carrier Bandwidth 70.0 MHz - Channel Position B

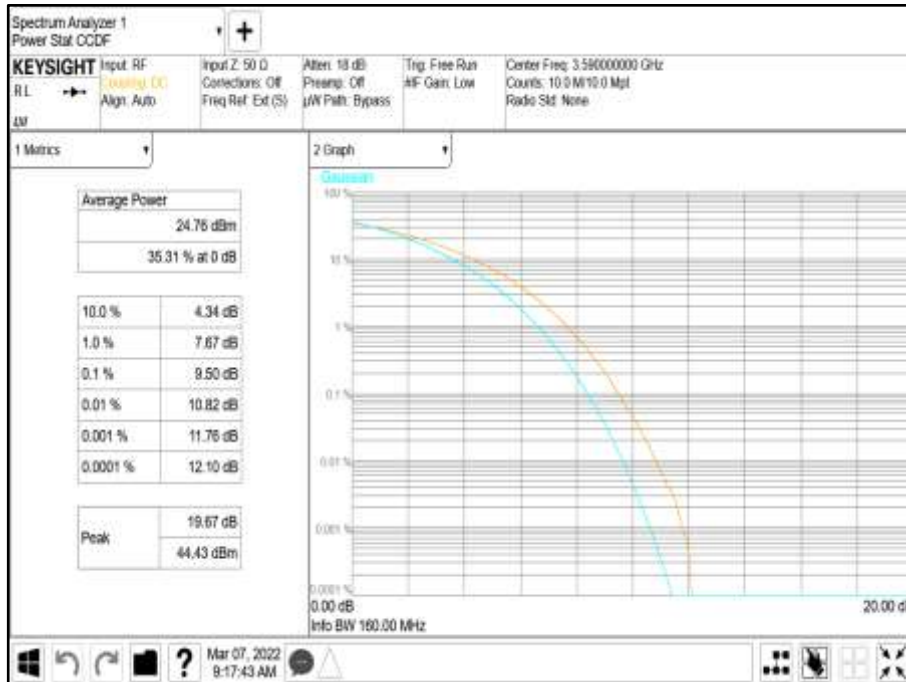


Antenna Port A Carrier Power - Modulation NR: QPSK - Carrier Bandwidth 80.0 MHz - Channel Position B





Antenna Port A Pk-Av Ratio - Modulation NR: QPSK - Carrier Bandwidth 80.0 MHz - Channel Position B



Antenna Port A PSD - Modulation NR: QPSK - Carrier Bandwidth 80.0 MHz - Channel Position B

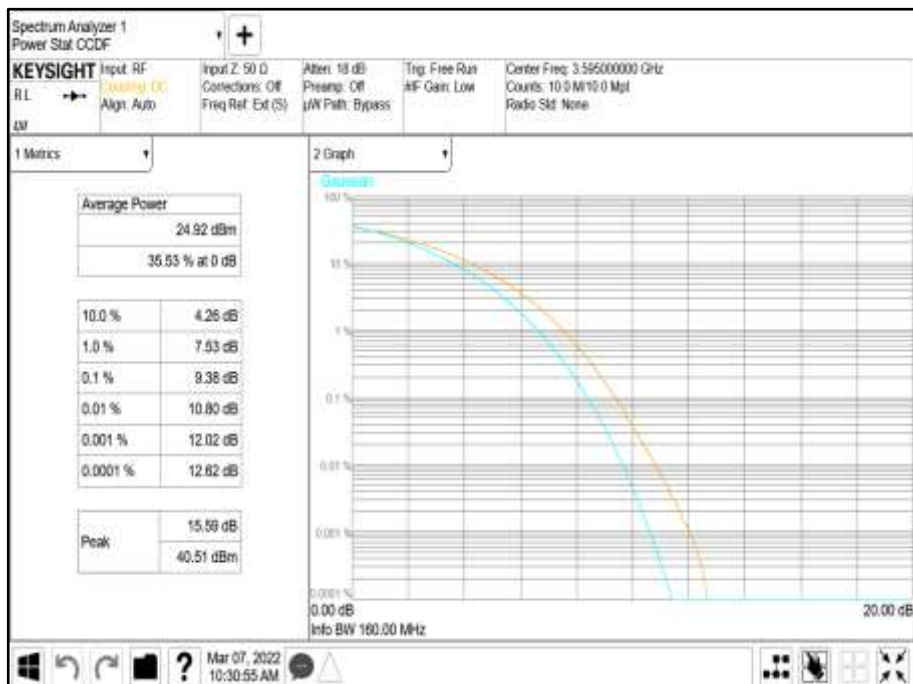




Antenna Port A Carrier Power - Modulation NR: QPSK - Carrier Bandwidth 90.0 MHz - Channel Position B



Antenna Port A Pk-Av Ratio - Modulation NR: QPSK - Carrier Bandwidth 90.0 MHz - Channel Position B





Antenna Port A PSD - Modulation NR: QPSK - Carrier Bandwidth 90.0 MHz - Channel Position B



Antenna Port A Carrier Power - Modulation NR: QPSK - Carrier Bandwidth 100.0 MHz - Channel Position B







Antenna Port A Pk-Av Ratio - Modulation NR: QPSK - Carrier Bandwidth 100.0 MHz - Channel Position B



Antenna Port A PSD - Modulation NR: QPSK - Carrier Bandwidth 100.0 MHz - Channel Position B





Configuration B

Maximum Output Power (EIRP): 30dBm/10 MHz

Antenna Gain (dBi)	Modulation	Carrier Bandwidth	PSD / Output Power		
			Channel Position M		
			M		
Antenna Port			dBm	dBm / 10 MHz	EIRP dBm/10 MHz
5.29					
A	LTE: QPSK	10.0+10.0 MHz	19.73	16.72	22.01
B	LTE: QPSK	10.0+10.0 MHz	19.93	16.92	22.21
C	LTE: QPSK	10.0+10.0 MHz	20.12	17.11	22.40
D	LTE: QPSK	10.0+10.0 MHz	20.21	17.20	22.49
Total			26.02	23.01	28.30
A	LTE: QPSK	20.0+20.0 MHz	23.39	17.37	22.66
B	LTE: QPSK	20.0+20.0 MHz	23.98	17.96	23.25
C	LTE: QPSK	20.0+20.0 MHz	23.94	17.92	23.21
D	LTE: QPSK	20.0+20.0 MHz	24.02	18.00	23.29
Total			29.86	23.84	29.13
A	*LTE: QPSK	10.0+10.0 MHz	20.09	17.08	22.37
B	*LTE: QPSK	10.0+10.0 MHz	20.36	17.35	22.64
C	*LTE: QPSK	10.0+10.0 MHz	20.51	17.50	22.79
D	*LTE: QPSK	10.0+10.0 MHz	20.54	17.53	22.82
Total			26.40	23.39	28.68
A	*LTE: QPSK	20.0+20.0 MHz	23.88	17.86	23.15
B	*LTE: QPSK	20.0+20.0 MHz	24.23	18.21	23.50
C	*LTE: QPSK	20.0+20.0 MHz	24.14	18.12	23.41
D	*LTE: QPSK	20.0+20.0 MHz	24.28	18.26	23.55
Total			30.16	24.14	29.43
A	NR: QPSK	20.0+20.0 MHz	23.07	17.05	22.34
B	NR: QPSK	20.0+20.0 MHz	23.04	17.02	22.31
C	NR: QPSK	20.0+20.0 MHz	23.27	17.25	22.54
D	NR: QPSK	20.0+20.0 MHz	23.35	17.33	22.62
Total			29.21	23.18	28.47
A	NR: QPSK	70.0+70.0 MHz	25.25	13.79	19.08
B	NR: QPSK	70.0+70.0 MHz	25.37	13.91	19.20
C	NR: QPSK	70.0+70.0 MHz	25.63	14.17	19.46
D	NR: QPSK	70.0+70.0 MHz	25.57	14.11	19.40
Total			31.48	20.02	25.31
A	*NR: QPSK	20.0+20.0 MHz	23.39	17.37	22.66
B	*NR: QPSK	20.0+20.0 MHz	23.38	17.36	22.65
C	*NR: QPSK	20.0+20.0 MHz	23.53	17.51	22.80
D	*NR: QPSK	20.0+20.0 MHz	23.41	17.39	22.68
Total			29.45	23.43	28.72
A	*NR: QPSK	70.0+70.0 MHz	25.39	13.93	19.22
B	*NR: QPSK	70.0+70.0 MHz	25.39	13.93	19.22
C	*NR: QPSK	70.0+70.0 MHz	25.66	14.20	19.49
D	*NR: QPSK	70.0+70.0 MHz	25.74	14.28	19.57
Total			31.57	20.11	25.40
A	NR+LTE: QPSK	20.0+10.0 MHz	22.14	17.37	22.66
B	NR+LTE: QPSK	20.0+10.0 MHz	21.78	17.01	22.30
C	NR+LTE: QPSK	20.0+10.0 MHz	21.96	17.19	22.48
D	NR+LTE: QPSK	20.0+10.0 MHz	22.25	17.48	22.77
Total			28.06	23.29	28.58
A	*NR+LTE: QPSK	20.0+10.0 MHz	21.85	17.08	22.37
B	*NR+LTE: QPSK	20.0+10.0 MHz	22.32	17.55	22.84
C	*NR+LTE: QPSK	20.0+10.0 MHz	22.54	17.77	23.06
D	*NR+LTE: QPSK	20.0+10.0 MHz	22.27	17.50	22.79
Total			28.27	23.50	28.79



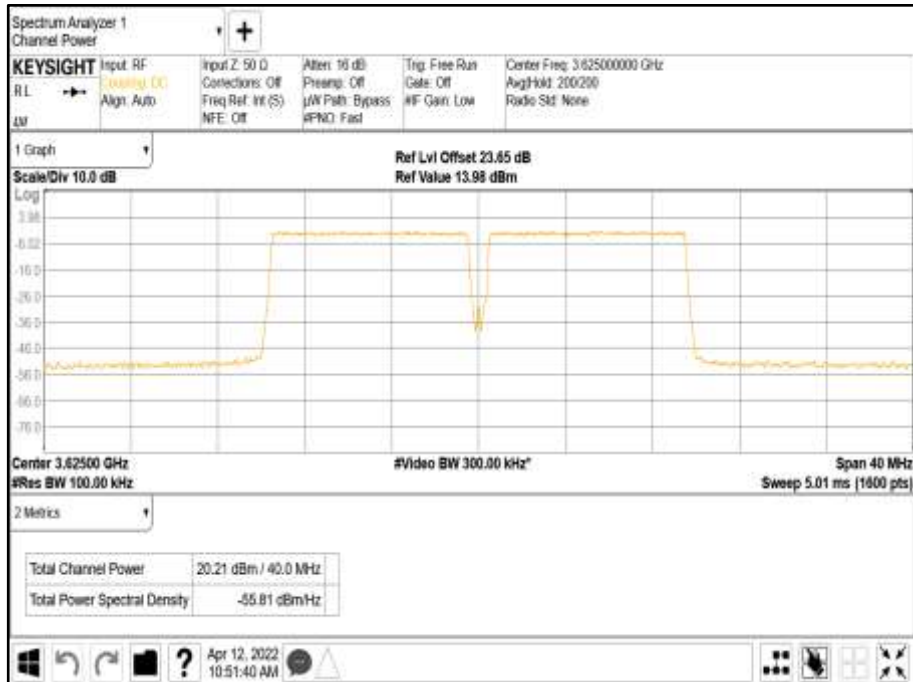


### Remarks

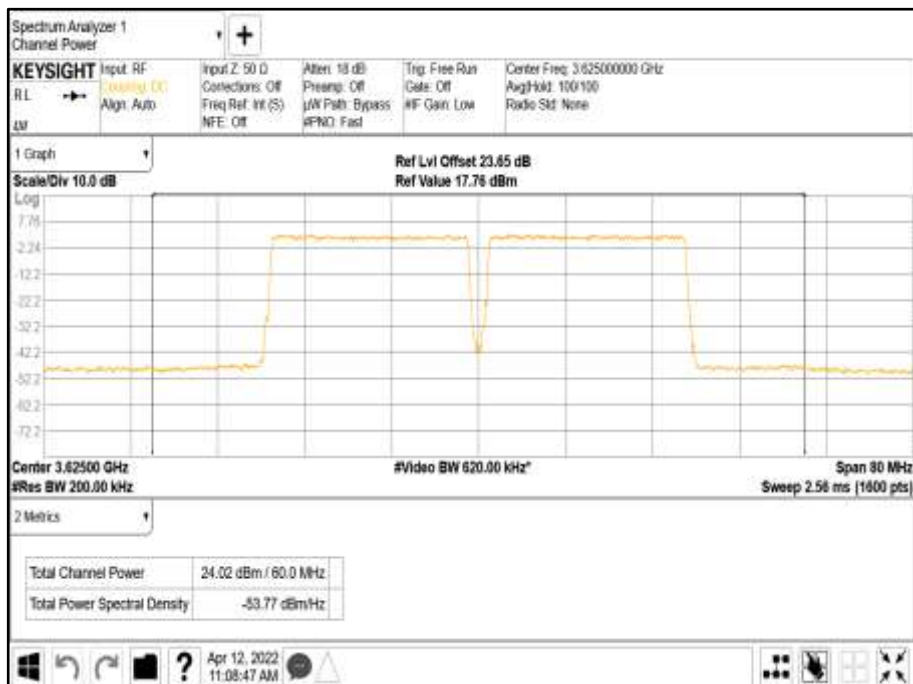
1. The table results are measured at all antenna ports.
2. The plot results represent typical radio performance across all channels.
3. Plot data performance for all transmitter ports and channels for both contiguous and non-contiguous (NC) operation are available on request.
4. \* = non-contiguous configuration.



Antenna Port D Carrier Power - Modulation LTE: QPSK - Carrier Bandwidth 10.0+10.0 MHz - Channel Position M

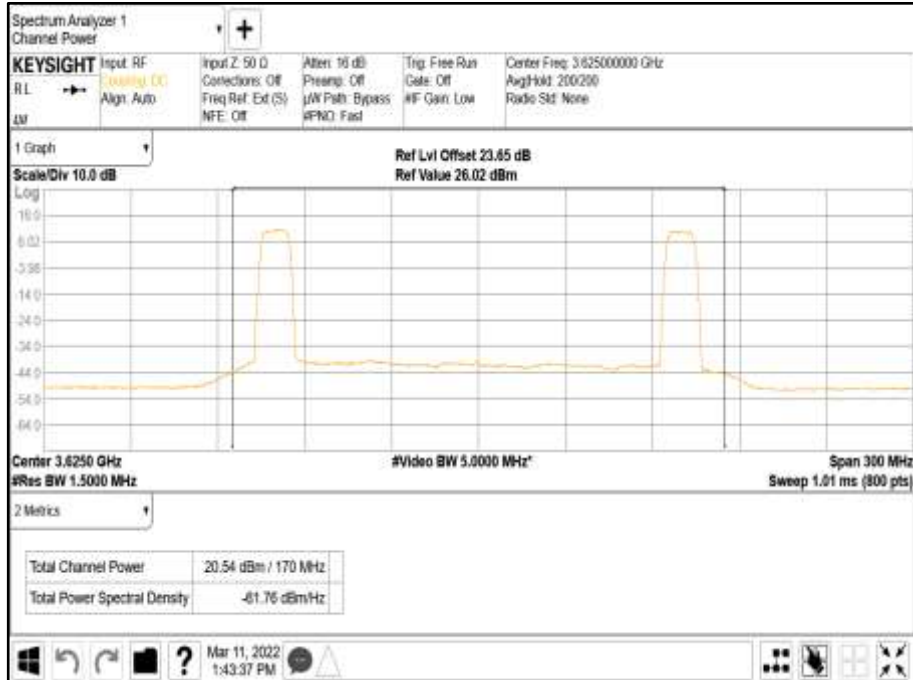


Antenna Port D Carrier Power - Modulation LTE: QPSK - Carrier Bandwidth 20.0+20.0 MHz - Channel Position M

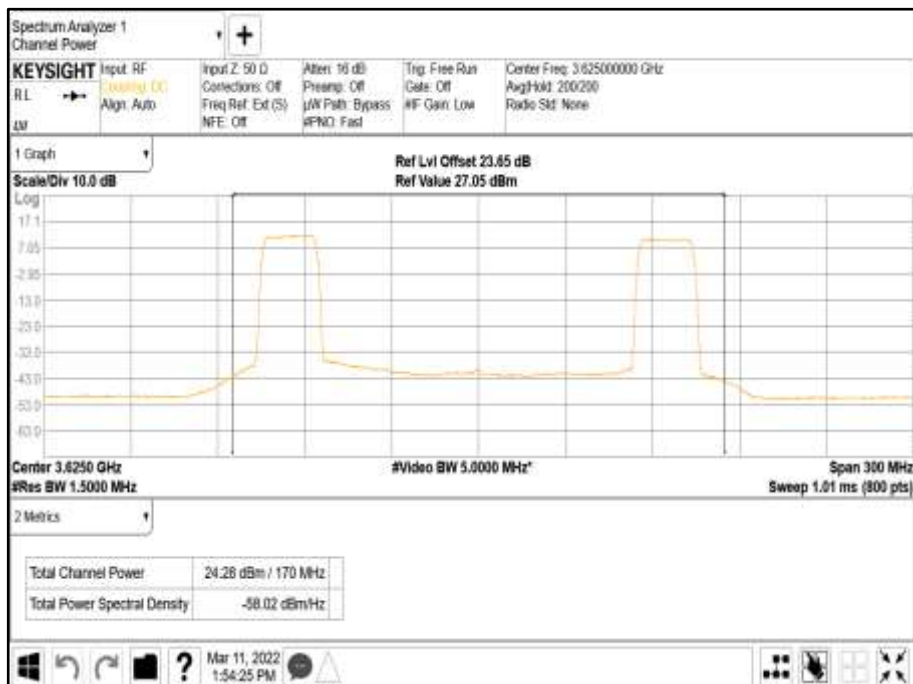




Antenna Port D Carrier Power - Modulation \*LTE: QPSK - Carrier Bandwidth 10.0+10.0 MHz - Channel Position M

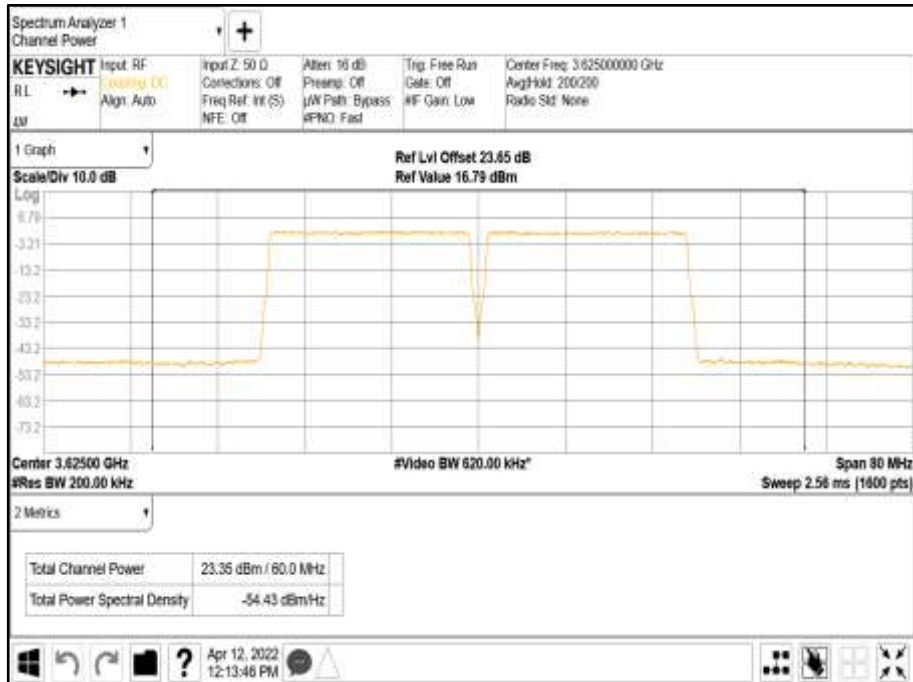


Antenna Port D Carrier Power - Modulation \*LTE: QPSK - Carrier Bandwidth 20.0+20.0 MHz - Channel Position M

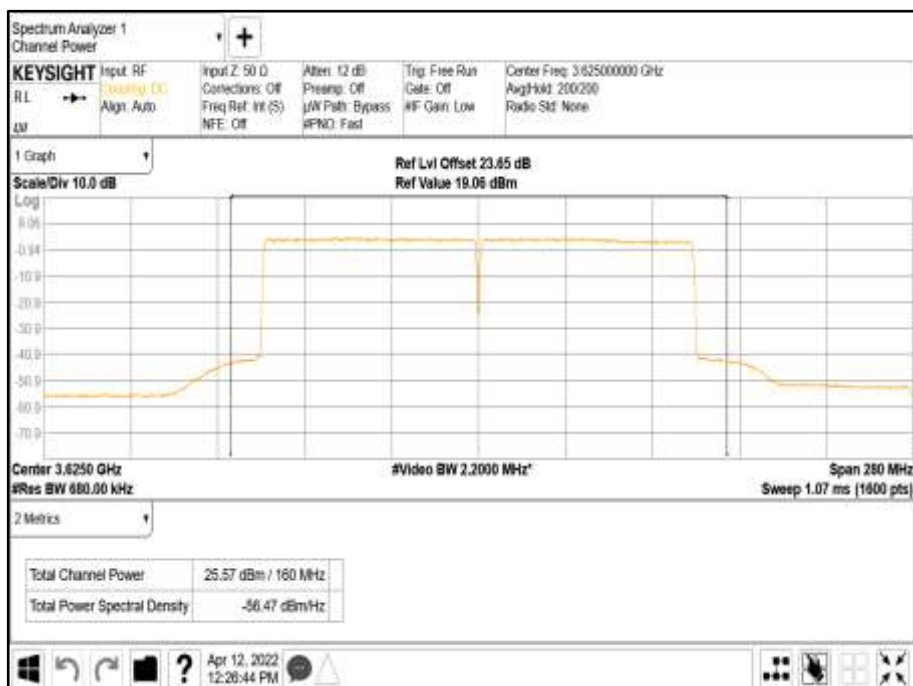




Antenna Port D Carrier Power - Modulation NR: QPSK - Carrier Bandwidth 20.0+20.0 MHz - Channel Position M

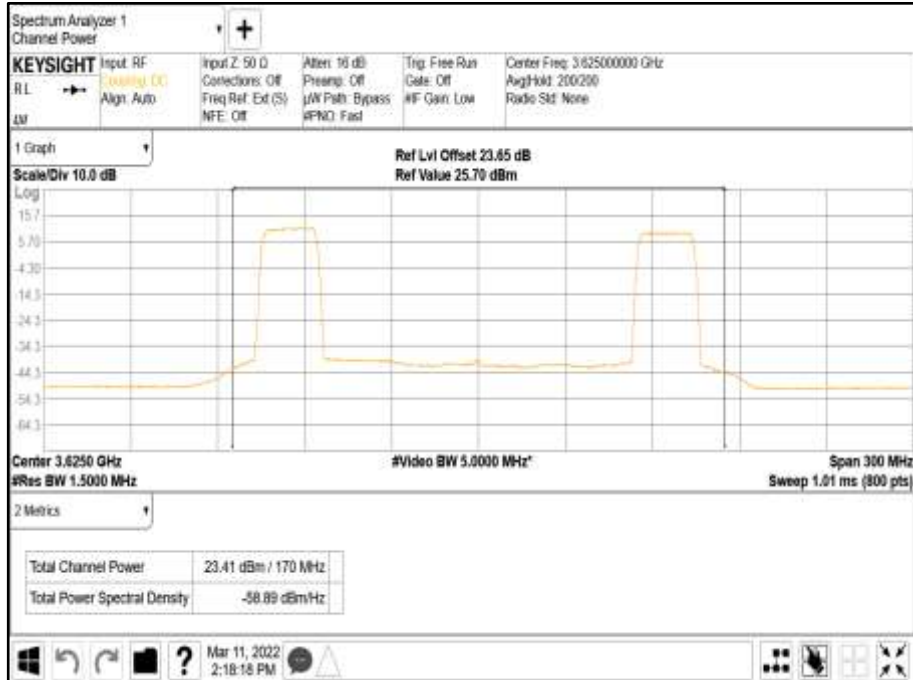


Antenna Port D Carrier Power - Modulation NR: QPSK - Carrier Bandwidth 70.0+70.0 MHz - Channel Position M

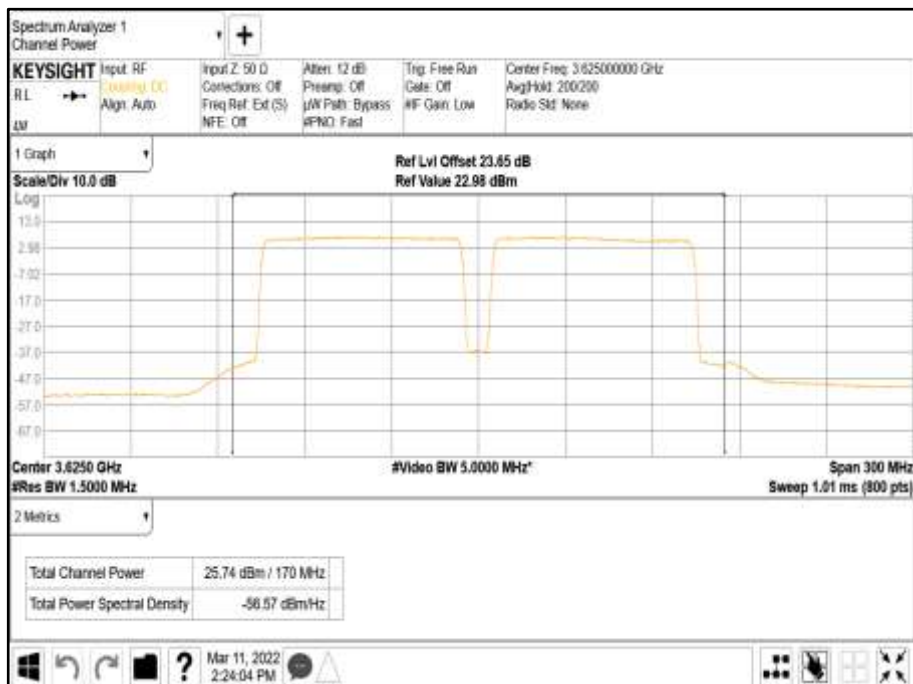




Antenna Port D Carrier Power - Modulation \*NR: QPSK - Carrier Bandwidth 20.0+20.0 MHz - Channel Position M

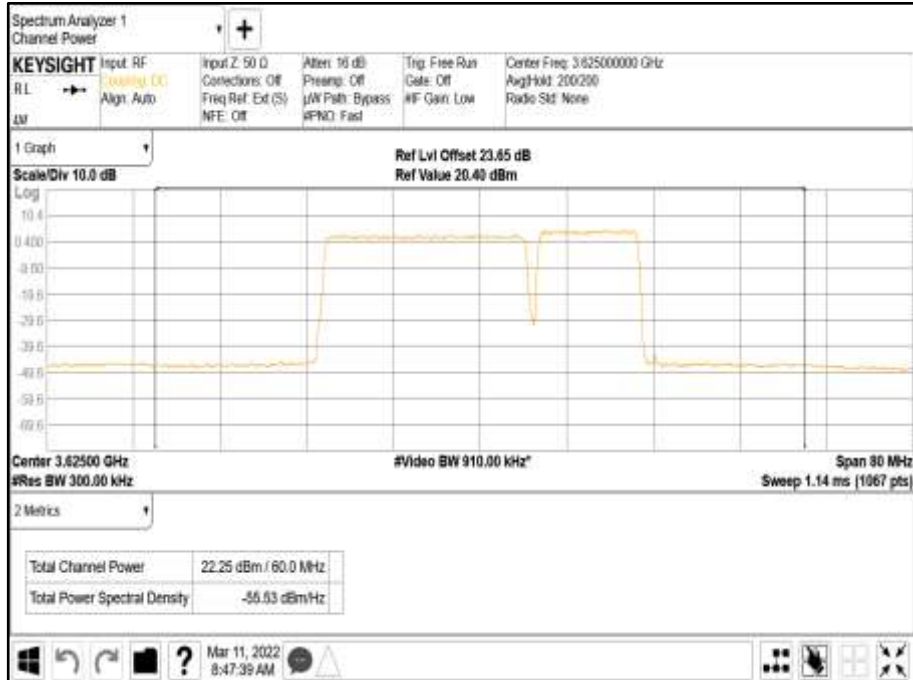


Antenna Port D Carrier Power - Modulation \*NR: QPSK - Carrier Bandwidth 70.0+70.0 MHz - Channel Position M

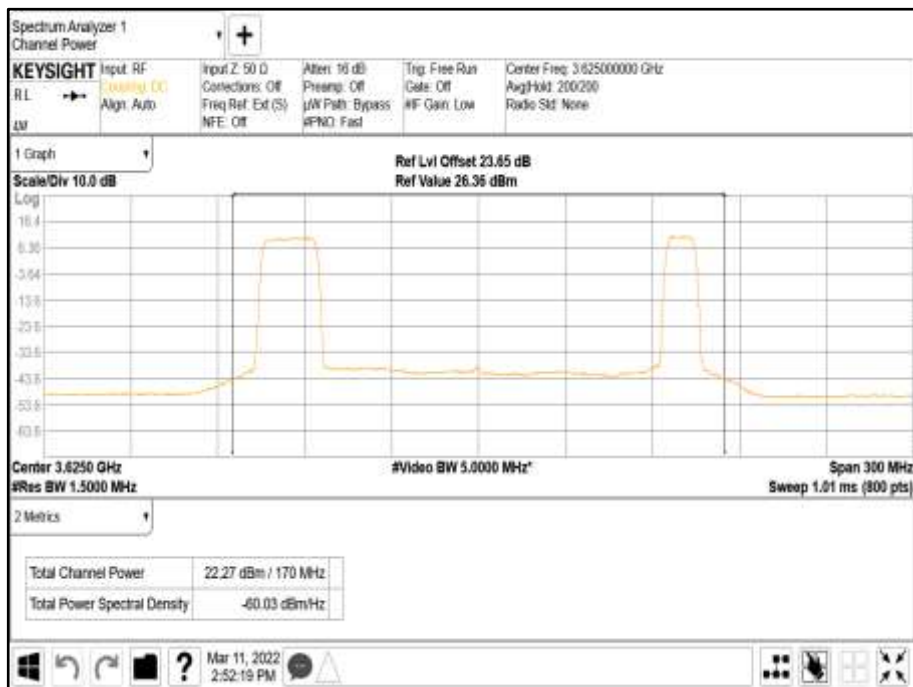




Antenna Port D Carrier Power - Modulation NR+LTE: QPSK - Carrier Bandwidth 20.0+10.0 MHz - Channel Position M



Antenna Port D Carrier Power - Modulation \*NR+LTE: QPSK - Carrier Bandwidth 20.0+10.0 MHz - Channel Position M





Configuration C

Maximum Output Power (EIRP): 30dBm/10 MHz

Antenna Gain (dBi)	Modulation	Carrier Bandwidth	PSD / Output Power		
			Channel Position M		
Antenna Port			Average Power		
			dBm	dBm / 10 MHz	EIRP dBm/10 MHz
5.29					
A	NR: QPSK	20+20+20+20+20+20+20 MHz	25.20	13.74	19.03
B	NR: QPSK	20+20+20+20+20+20+20 MHz	25.46	14.00	19.29
C	NR: QPSK	20+20+20+20+20+20+20 MHz	25.63	14.17	19.46
D	NR: QPSK	20+20+20+20+20+20+20 MHz	25.57	14.11	19.40
Total			31.49	20.03	25.32
A	*NR: QPSK	20+20+20+20+20+20+20 MHz	25.45	13.99	19.28
B	*NR: QPSK	20+20+20+20+20+20+20 MHz	25.62	14.16	19.45
C	*NR: QPSK	20+20+20+20+20+20+20 MHz	25.77	14.31	19.60
D	*NR: QPSK	20+20+20+20+20+20+20 MHz	25.45	13.99	19.28
Total			31.60	20.13	25.42

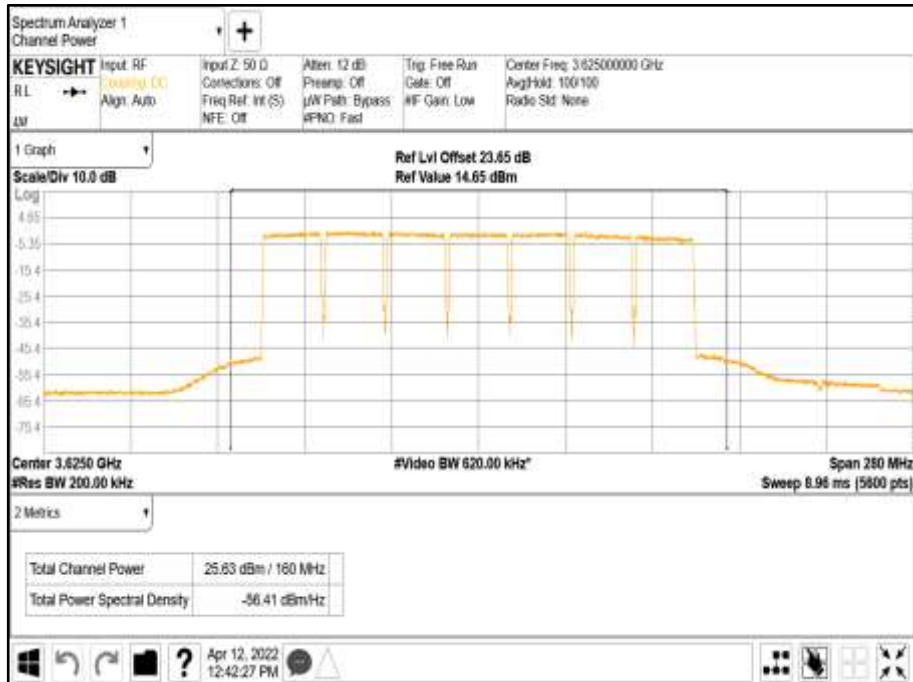
Remarks

1. The table results are measured at all antenna ports.
2. The plot results represent typical radio performance across all channels.
3. Plot data performance for all transmitter ports and channels for both contiguous and non-contiguous (\*NC) operation are available on request.

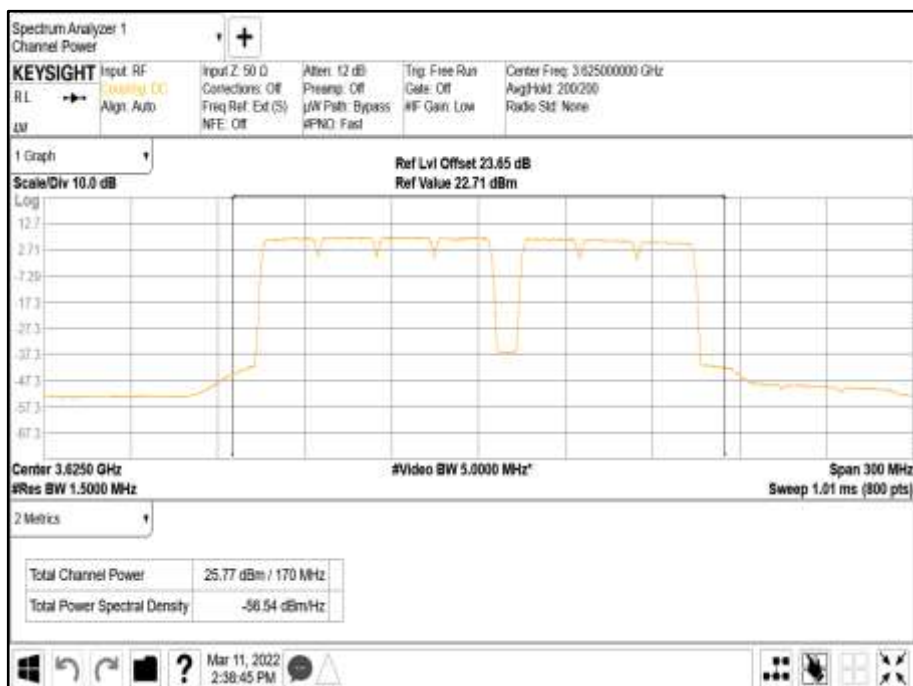




Antenna Port D Carrier Power - Modulation NR: QPSK - Carrier Bandwidth 20+20+20+20+20+20+20 MHz - Channel Position M



Antenna Port D Carrier Power - Modulation \*NR: QPSK - Carrier Bandwidth 20+20+20+20+20+20+20 MHz - Channel Position M

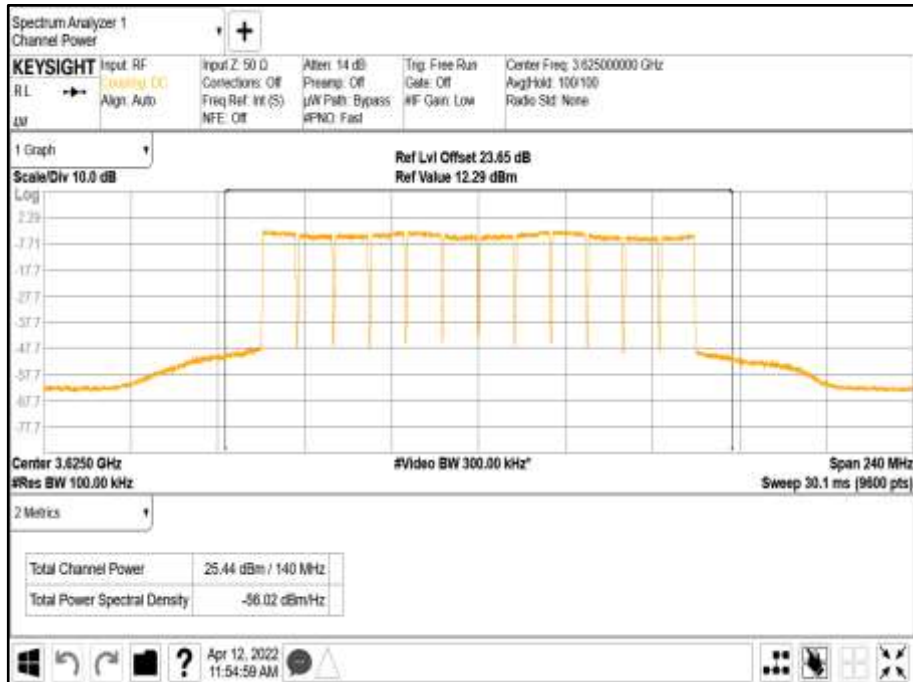




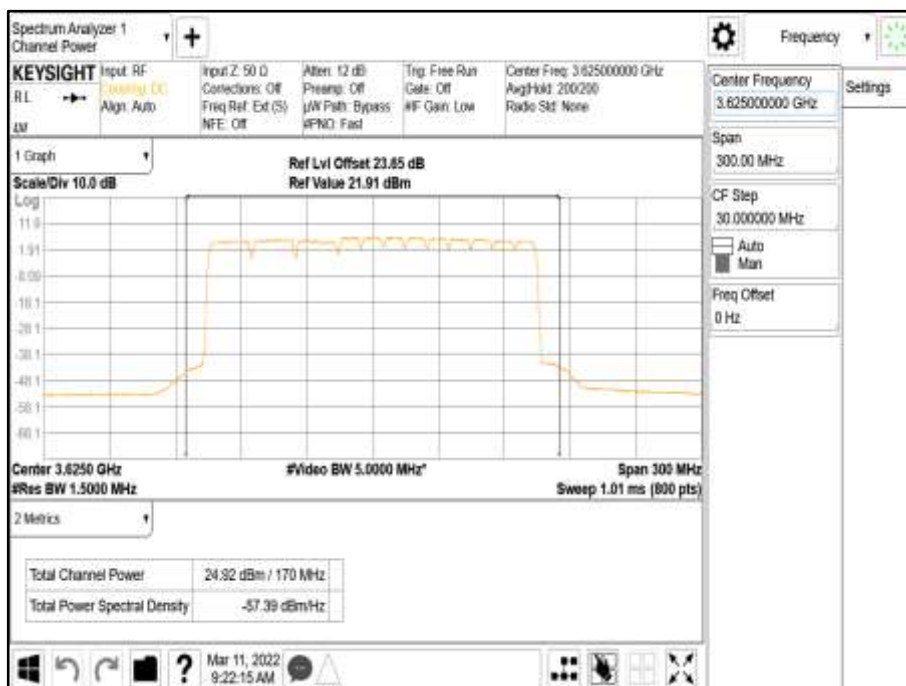




Antenna Port D Carrier Power - Modulation LTE: QPSK - Carrier Bandwidth 10+10+10+10+10+10+10+10+10+10+10+10+10+10+10+10+10 MHz - Channel Position M



Antenna Port D Carrier Power - Modulation NR(3)+LTE(9): QPSK - Carrier Bandwidth 20+20+20+10+10+10+10+10+10+10+10+10+10+10+10+10+10 MHz - Channel Position M







## **2.2 OCCUPIED BANDWIDTH**

### **2.2.1 Specification Reference**

FCC CFR 47 Part 96, Clause 96.41 (e)(3)  
FCC CFR 47 Part 2, Clause 2.1049

### **2.2.2 Date of Test and Modification State**

17-March-2021 - Modification State 0

### **2.2.3 Test Equipment Used**

The major items of test equipment used for the above tests are identified in Section 3.1.

### **2.2.4 Environmental Conditions**

Ambient Temperature	24.6°C
Relative Humidity	30.8%

### **2.2.5 Test Method**

All measurements were made in accordance with FCC KDB 971168 D01, Clause 4.2 and 4.3. The Spectrum Analyser RBW was configured to be at least 1% of the channel bandwidth of the carrier to be measured.



**2.2.6 Test Results**

Configuration A

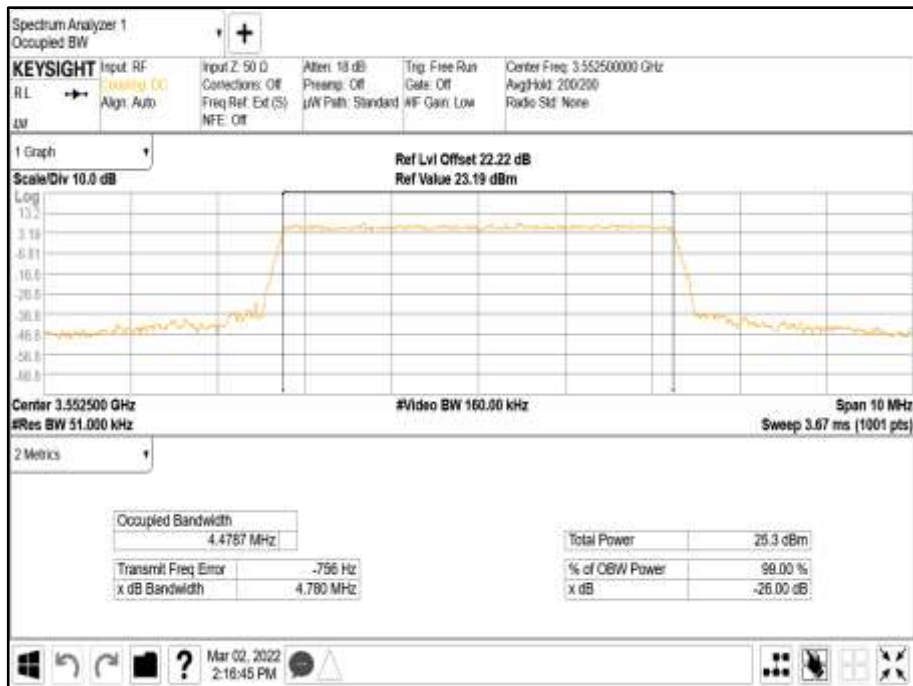
Modulation	Carrier Bandwidth	Result (MHz)	
		Channel Bandwidth	
		Occupied Bandwidth	-26 dB Bandwidth
LTE: QPSK	LTE: 5.0 MHz	4.48	4.78
LTE: QPSK	LTE: 10.0 MHz	8.95	9.62
LTE: QPSK	LTE: 20.0 MHz	17.86	18.88
NR: QPSK	NR: 20.0 MHz	18.25	19.49
NR: QPSK	NR: 30.0 MHz	27.89	29.53
NR: QPSK	NR: 40.0 MHz	37.80	39.68
NR: QPSK	NR: 50.0 MHz	47.36	49.49
NR: QPSK	NR: 60.0 MHz	57.68	59.74
NR: QPSK	NR: 70.0 MHz	67.22	69.61
NR: QPSK	NR: 80.0 MHz	77.32	79.95
NR: QPSK	NR: 90.0 MHz	87.28	90.17
NR: QPSK	NR: 100.0 MHz	97.19	100.60

Remarks

Representative occupied bandwidth performance results presented. Plot data performance for all transmitter ports and channel positions are on file and available on request.



Antenna A - Modulation LTE: QPSK - Carrier Bandwidth LTE: 5.0 MHz - Channel Position B

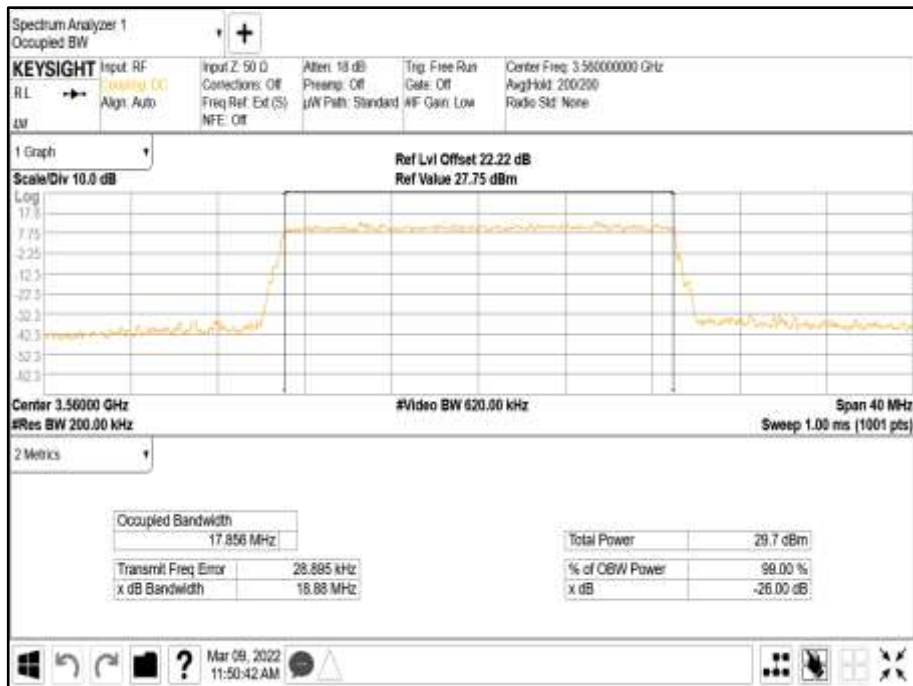


Antenna A - Modulation LTE: QPSK - Carrier Bandwidth LTE: 10.0 MHz - Channel Position B

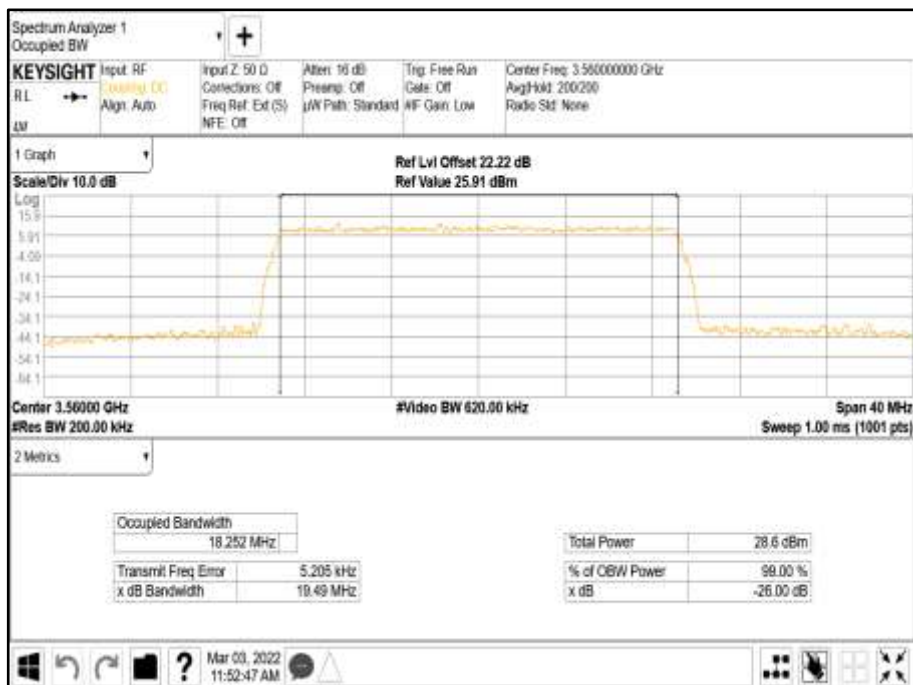




Antenna A - Modulation LTE: QPSK - Carrier Bandwidth LTE: 20.0 MHz - Channel Position B

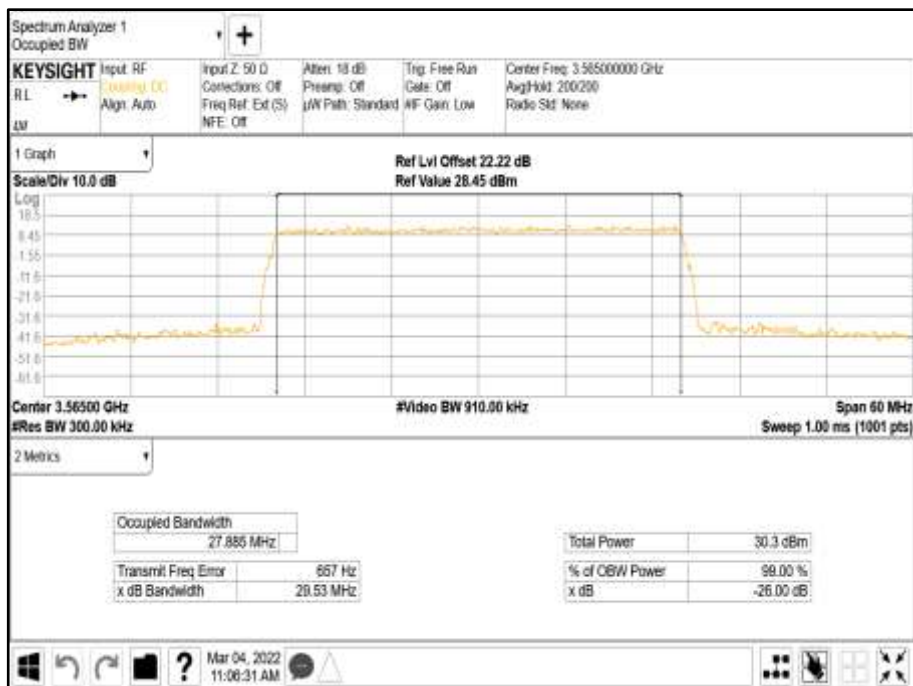


Antenna A - Modulation NR: QPSK - Carrier Bandwidth NR: 20.0 MHz - Channel Position B

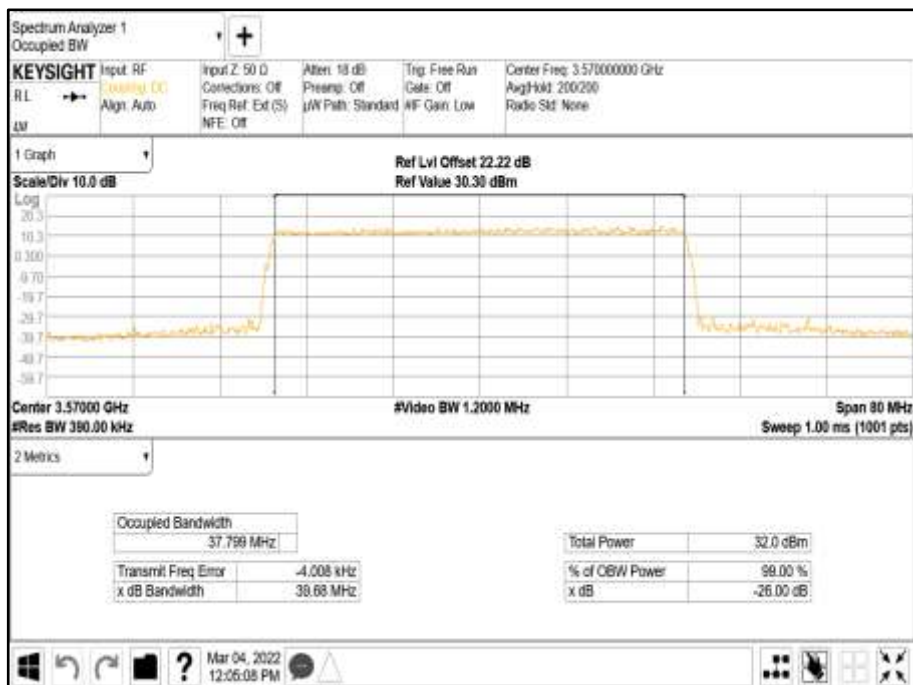




Antenna A - Modulation NR: QPSK - Carrier Bandwidth NR: 30.0 MHz - Channel Position B



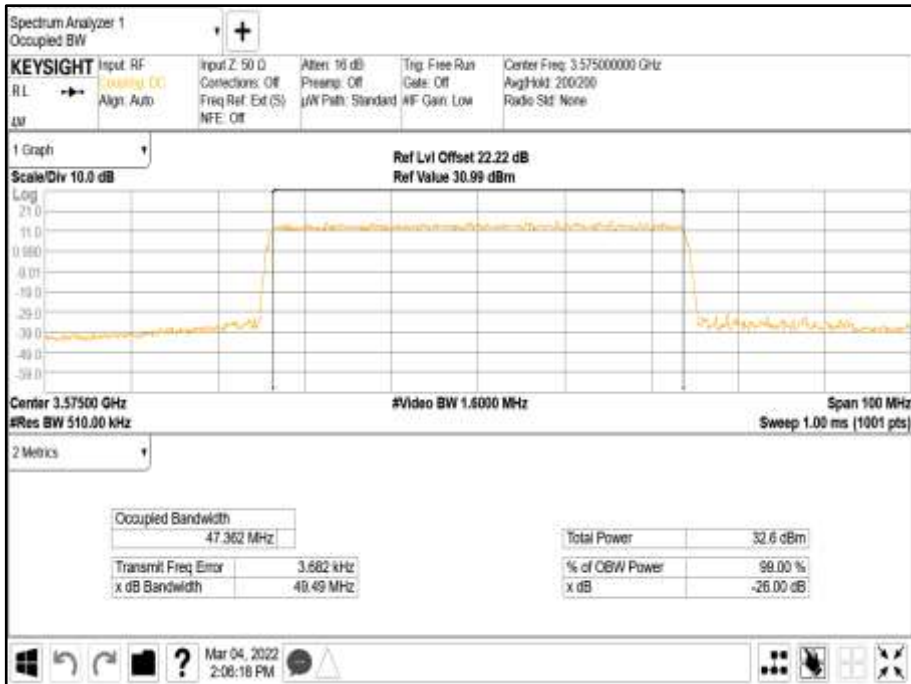
Antenna A - Modulation NR: QPSK - Carrier Bandwidth NR: 40.0 MHz - Channel Position B



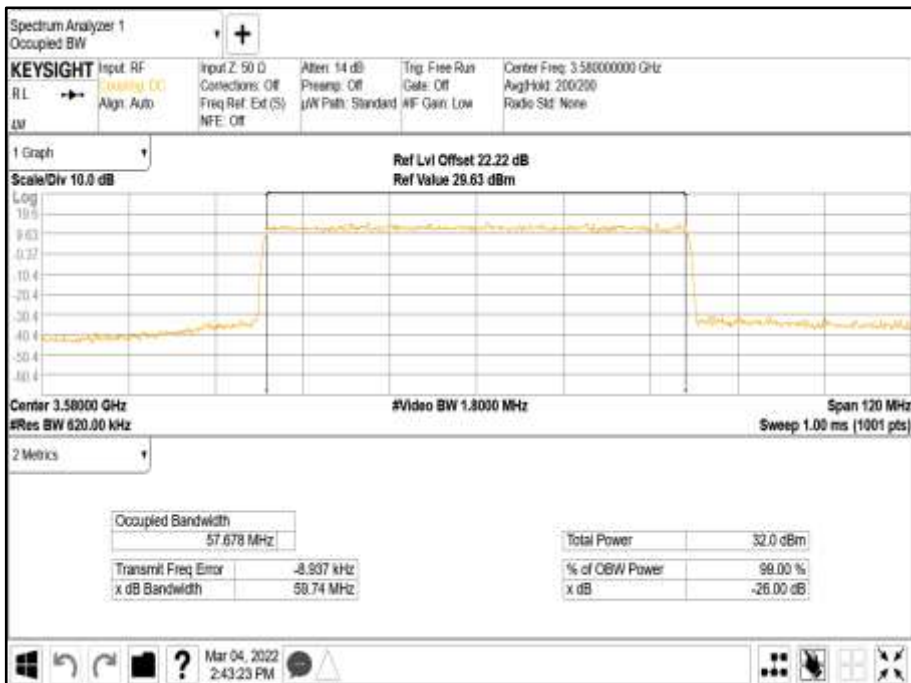




Antenna A - Modulation NR: QPSK - Carrier Bandwidth NR: 50.0 MHz - Channel Position B



Antenna A - Modulation NR: QPSK - Carrier Bandwidth NR: 60.0 MHz - Channel Position B

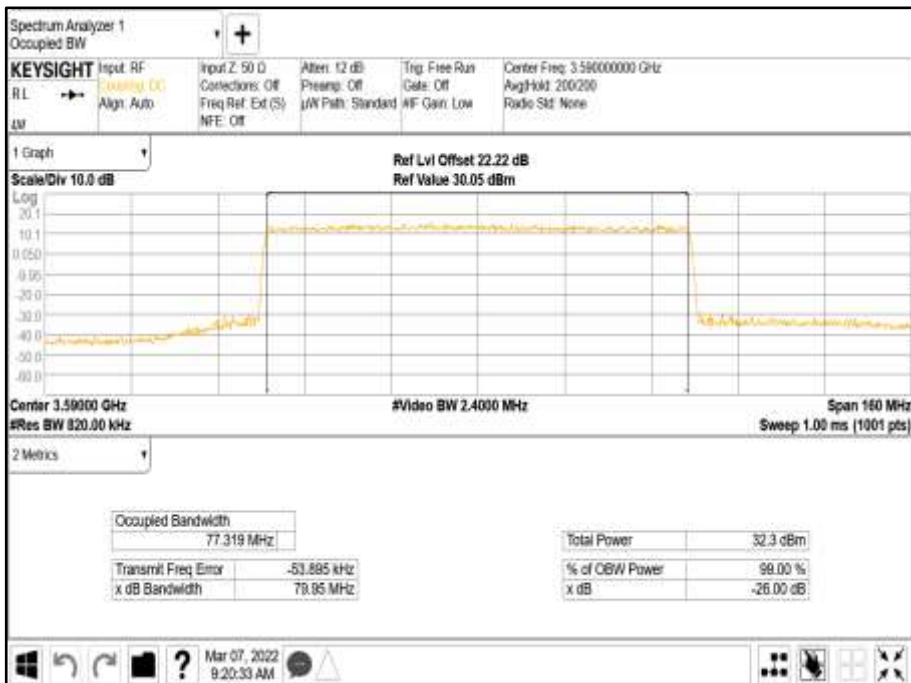




Antenna A - Modulation NR: QPSK - Carrier Bandwidth NR: 70.0 MHz - Channel Position B

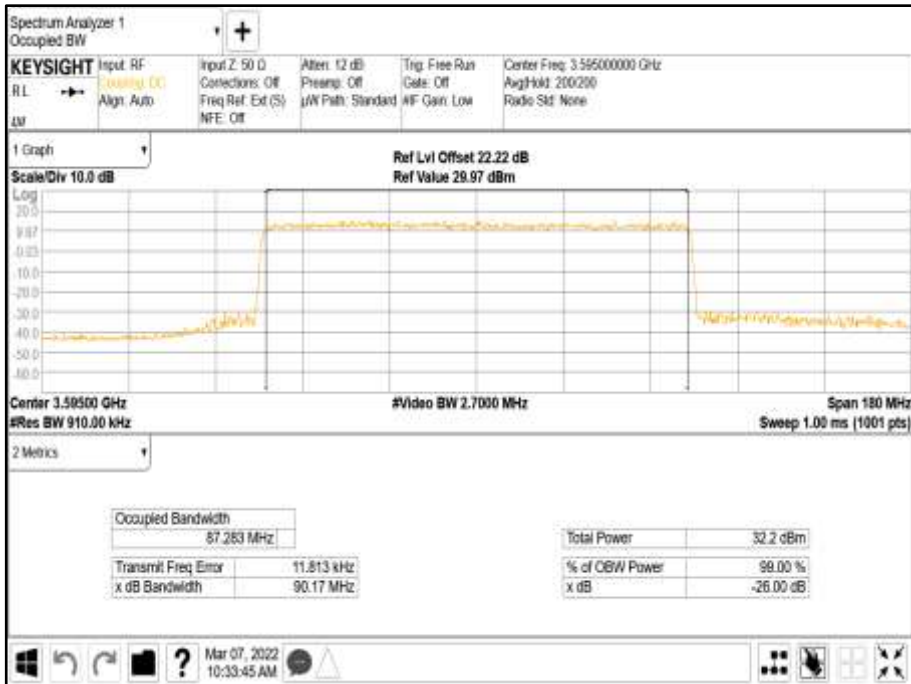


Antenna A - Modulation NR: QPSK - Carrier Bandwidth NR: 80.0 MHz - Channel Position B

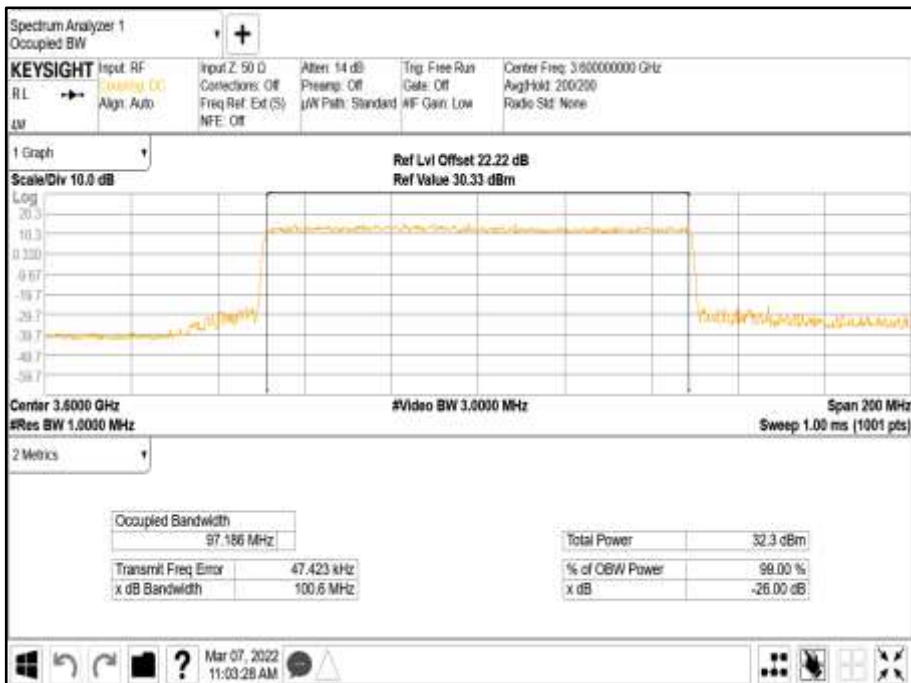




Antenna A - Modulation NR: QPSK - Carrier Bandwidth NR: 90.0 MHz - Channel Position B



Antenna A - Modulation NR: QPSK - Carrier Bandwidth NR: 100.0 MHz - Channel Position B





## 2.3 BAND EDGE & ADDITIONAL PROTECTION LEVELS

### 2.3.1 Specification Reference

FCC CFR 47 Part 96, Clause 96.41 (e)(3)  
FCC CFR 47 Part 2, Clause 2.1051

### 2.3.2 Date of Test and Modification State

17-March-2022 - Modification State 0

### 2.3.3 Test Equipment Used

The major items of test equipment used for the above tests are identified in Section 3.1.

### 2.3.4 Environmental Conditions

Ambient Temperature	24.6°C
Relative Humidity	30.8%

### 2.3.5 Test Method

All measurements were made in accordance with FCC KDB 971168 D01, Clause 6.0.

Band Edge measurements were used an Integration Bandwidth of at least 1% of the measured 26dB Bandwidth.

Each antenna port has been declared as being equivalent, therefore measurements were made on one antenna port only. To account for this, the limit was tightened by  $10 * \text{Log}(N)$ , where N is equal to the number of MIMO antenna ports.

For single port, the limit was calculated as being  $-13 \text{ dBm} - 10 * \text{Log}(4) = -19 \text{ dBm}$ .

#### Remarks

1. Bandedge data was captured from the transmit port with maximum measured power.
2. Worst case bandedge data presented.
3. The limit lines and frequency lines are adjusted / integrated to allow for verification of the unwanted emission requirement of -13 dBm/MHz from 0-10 MHz of the Band edge and -25 dBm/MHz from 10-20 MHz of the Band Edge as per the requirement of CFR Part 96, Subpart E, 96.41(e) considering a 4-port transmitter.



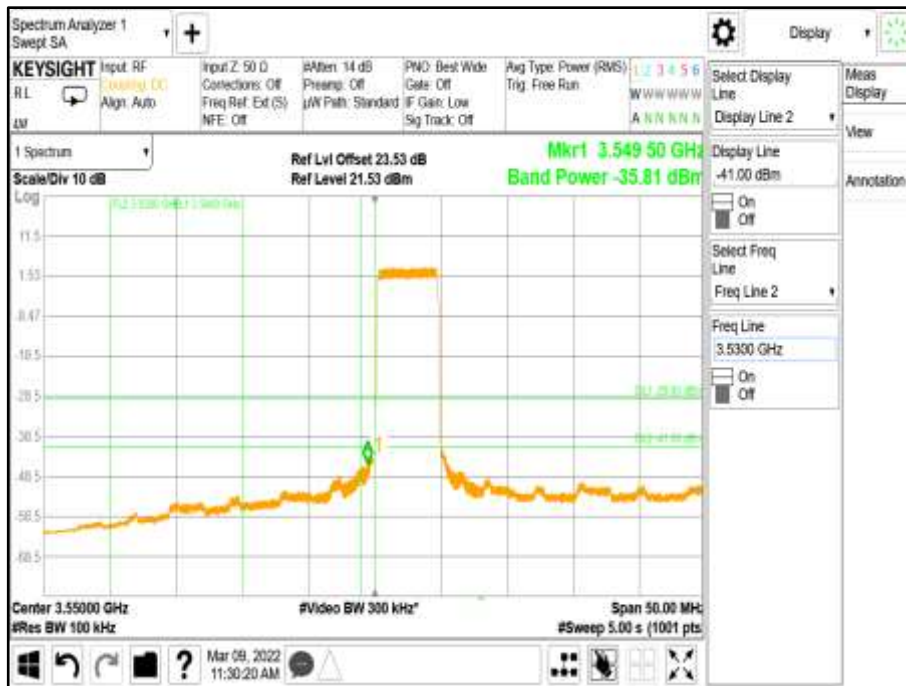
### 2.3.6 Test Results

#### Configuration A

Antenna Port A	Modulation	Carrier Bandwidth	Band Edge (MHz)	
			Channel Position B	Channel Position T
A	LTE: QPSK	LTE: 5.0 MHz	3,555.0	3,695.0
A	LTE: QPSK	LTE: 10.0 MHz	3,557.5	3,692.5
A	LTE: QPSK	LTE: 20.0 MHz	3,560.0	3,690.0
A	NR: QPSK	NR: 20.0 MHz	3,560.0	3,690.0
A	NR: QPSK	NR: 30.0 MHz	3,565.0	3,685.0
A	NR: QPSK	NR: 40.0 MHz	3,570.0	3,680.0
A	NR: QPSK	NR: 50.0 MHz	3,575.0	3,675.0
A	NR: QPSK	NR: 60.0 MHz	3,580.0	3,670.0
A	NR: QPSK	NR: 70.0 MHz	3,585.0	3,665.0
A	NR: QPSK	NR: 80.0 MHz	3,590.0	3,660.0
A	NR: QPSK	NR: 90.0 MHz	3,595.0	3,655.0
A	NR: QPSK	NR: 100.0 MHz	3,600.0	3,650.0



Antenna Port A A - Modulation LTE: QPSK - Carrier Bandwidth LTE: 5.0 MHz - Channel Position B



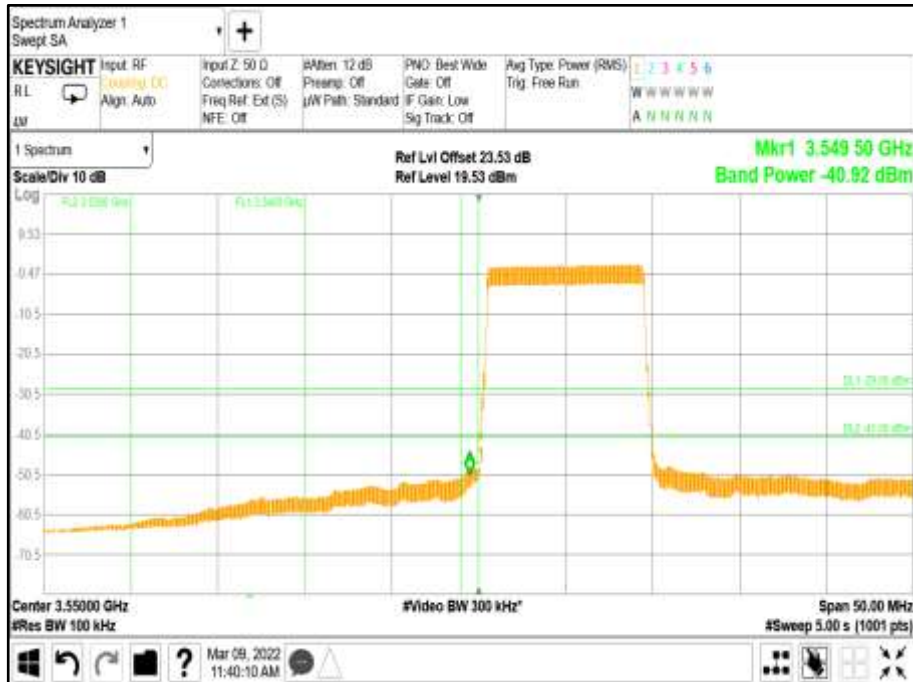
Antenna Port A A - Modulation LTE: QPSK - Carrier Bandwidth LTE: 5.0 MHz - Channel Position T







Antenna Port A A - Modulation LTE: QPSK - Carrier Bandwidth LTE: 10.0 MHz - Channel Position B



Antenna Port A A - Modulation LTE: QPSK - Carrier Bandwidth LTE: 10.0 MHz - Channel Position T





Antenna Port A A - Modulation LTE: QPSK - Carrier Bandwidth LTE: 20.0 MHz - Channel Position B



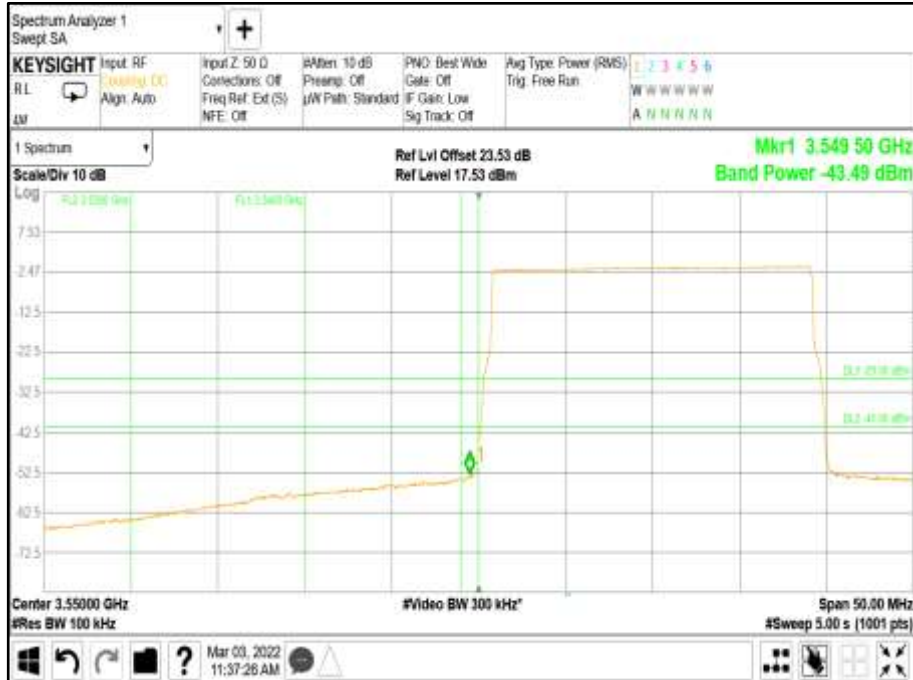
Antenna Port A A - Modulation LTE: QPSK - Carrier Bandwidth LTE: 20.0 MHz - Channel Position T







Antenna Port A A - Modulation NR: QPSK - Carrier Bandwidth NR: 20.0 MHz - Channel Position B



Antenna Port A A - Modulation NR: QPSK - Carrier Bandwidth NR: 20.0 MHz - Channel Position T





Antenna Port A A - Modulation NR: QPSK - Carrier Bandwidth NR: 30.0 MHz - Channel Position B

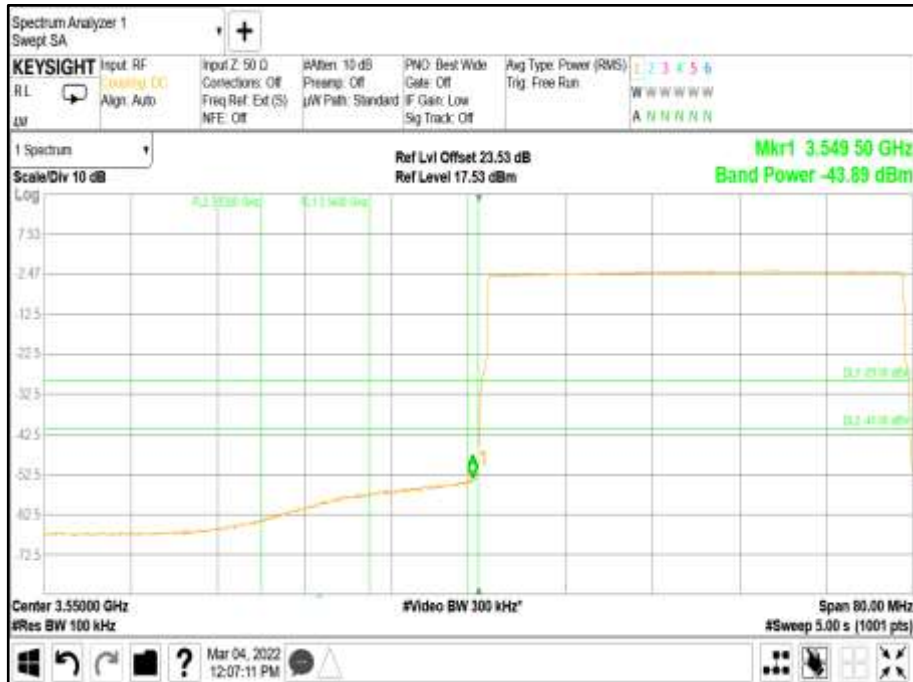


Antenna Port A A - Modulation NR: QPSK - Carrier Bandwidth NR: 30.0 MHz - Channel Position T





Antenna Port A A - Modulation NR: QPSK - Carrier Bandwidth NR: 40.0 MHz - Channel Position B



Antenna Port A A - Modulation NR: QPSK - Carrier Bandwidth NR: 40.0 MHz - Channel Position T

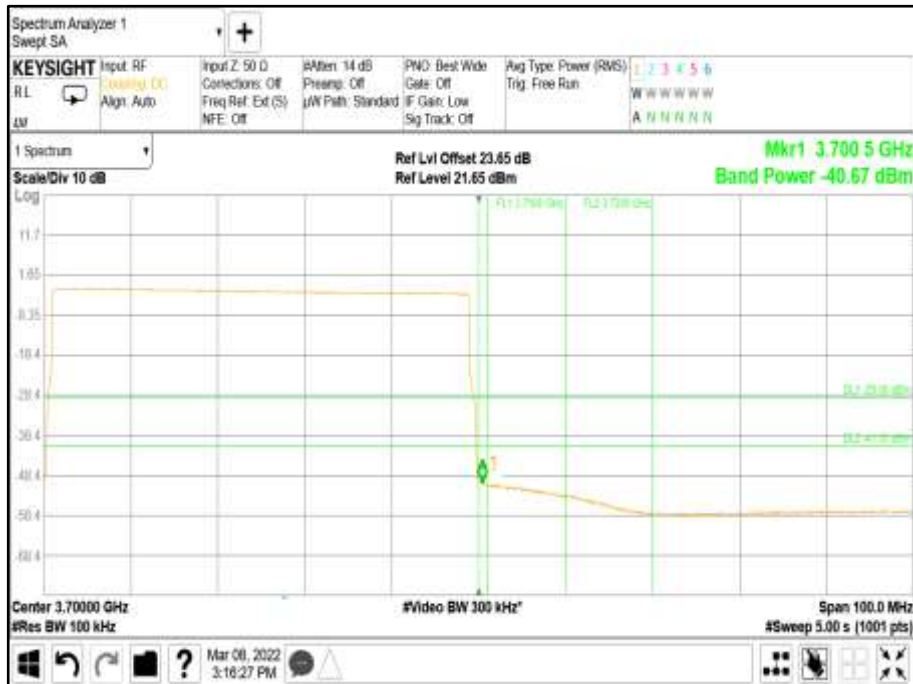




Antenna Port A A - Modulation NR: QPSK - Carrier Bandwidth NR: 50.0 MHz - Channel Position B

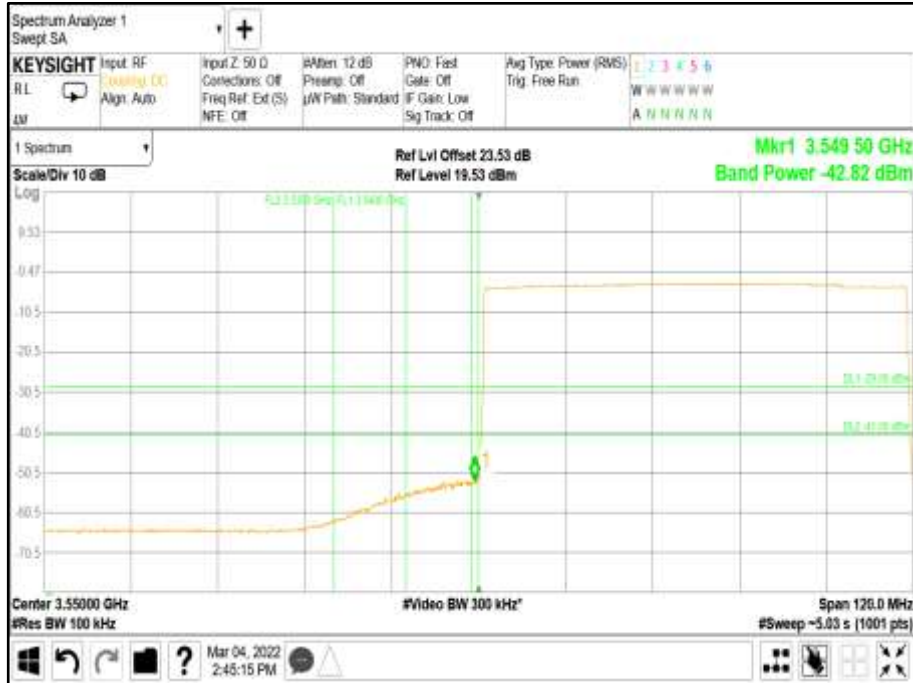


Antenna Port A A - Modulation NR: QPSK - Carrier Bandwidth NR: 50.0 MHz - Channel Position T





Antenna Port A A - Modulation NR: QPSK - Carrier Bandwidth NR: 60.0 MHz - Channel Position B



Antenna Port A A - Modulation NR: QPSK - Carrier Bandwidth NR: 60.0 MHz - Channel Position T





Antenna Port A A - Modulation NR: QPSK - Carrier Bandwidth NR: 70.0 MHz - Channel Position B



Antenna Port A A - Modulation NR: QPSK - Carrier Bandwidth NR: 70.0 MHz - Channel Position T



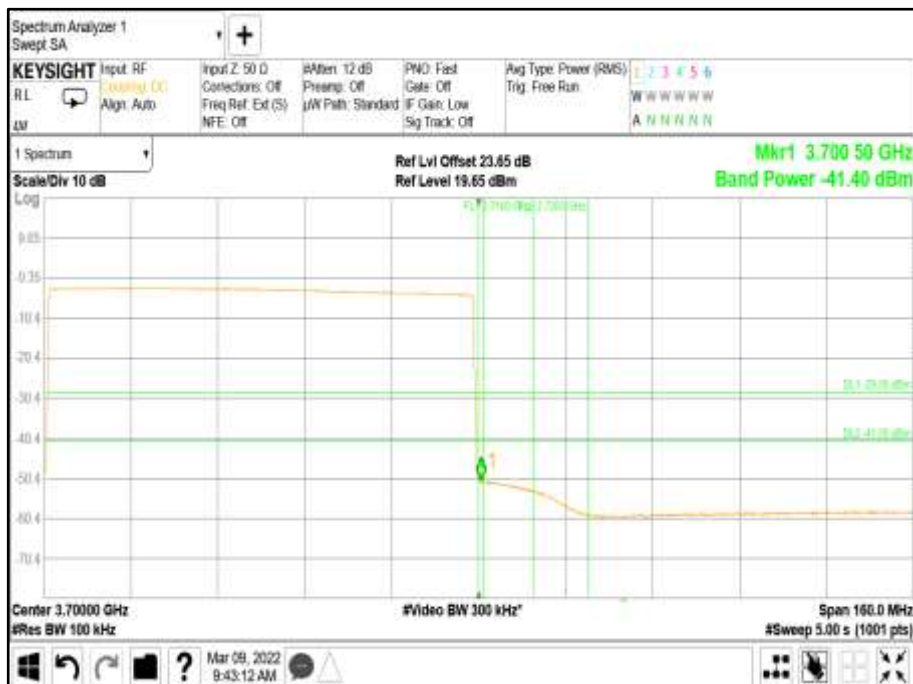




Antenna Port A A - Modulation NR: QPSK - Carrier Bandwidth NR: 80.0 MHz - Channel Position B

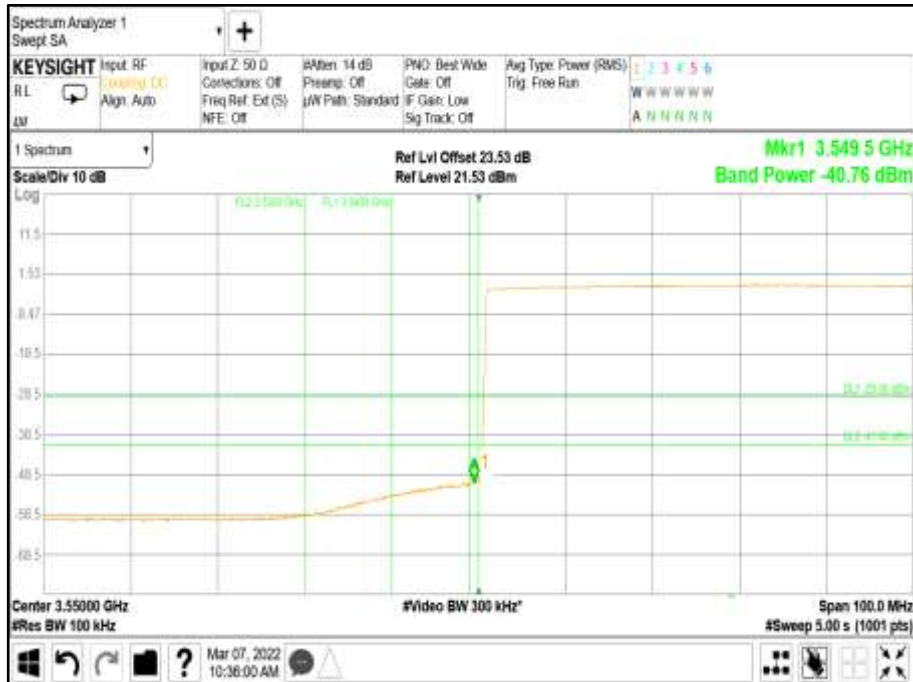


Antenna Port A A - Modulation NR: QPSK - Carrier Bandwidth NR: 80.0 MHz - Channel Position T

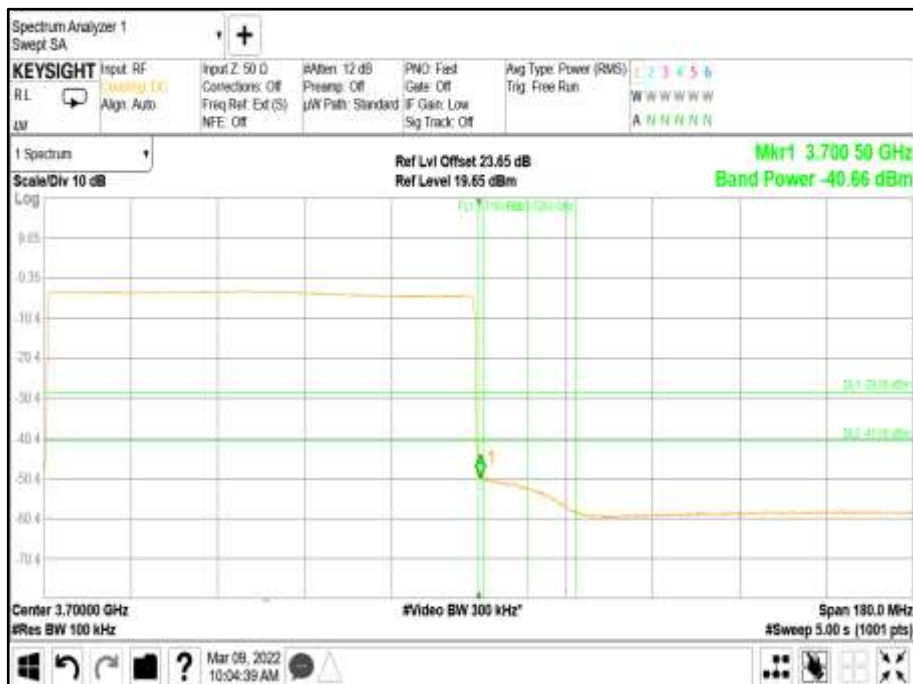




Antenna Port A A - Modulation NR: QPSK - Carrier Bandwidth NR: 90.0 MHz - Channel Position B



Antenna Port A A - Modulation NR: QPSK - Carrier Bandwidth NR: 90.0 MHz - Channel Position T



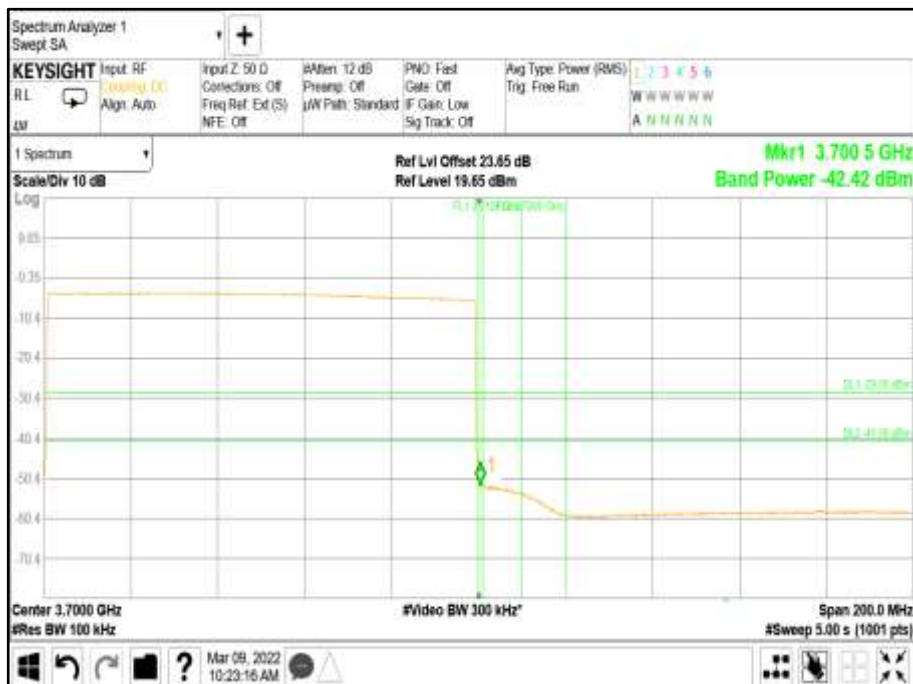




Antenna Port A A - Modulation NR: QPSK - Carrier Bandwidth NR: 100.0 MHz - Channel Position B



Antenna Port A A - Modulation NR: QPSK - Carrier Bandwidth NR: 100.0 MHz - Channel Position T





## Configuration B

Antenna	Modulation	Carrier Bandwidth	Band Edge (MHz)	
			Channel Position B	Channel Position T
A	LTE: QPSK	10.0+10.0 MHz	3555.0+3565.0	3685.0+3695.0
A	LTE: QPSK	20.0+20.0 MHz	3560.0+3580.0	3670.0+3690.0
A	NR: QPSK	20.0+20.0 MHz	3560.0+3580.0	3670.0+3690.0
A	NR: QPSK	70.0+70.0 MHz	3585.0+3655.0	3595.0+3665.0
A	NR+LTE: QPSK	20.0+10.0 MHz	3560.0+3575.0	3680.0+3695.0

## Remarks

The plots results represent typical radio performance.



Antenna Port A A - Modulation LTE: QPSK - Carrier Bandwidth 10.0+10.0 MHz - Channel Position B



Antenna Port A A - Modulation LTE: QPSK - Carrier Bandwidth 10.0+10.0 MHz - Channel Position T

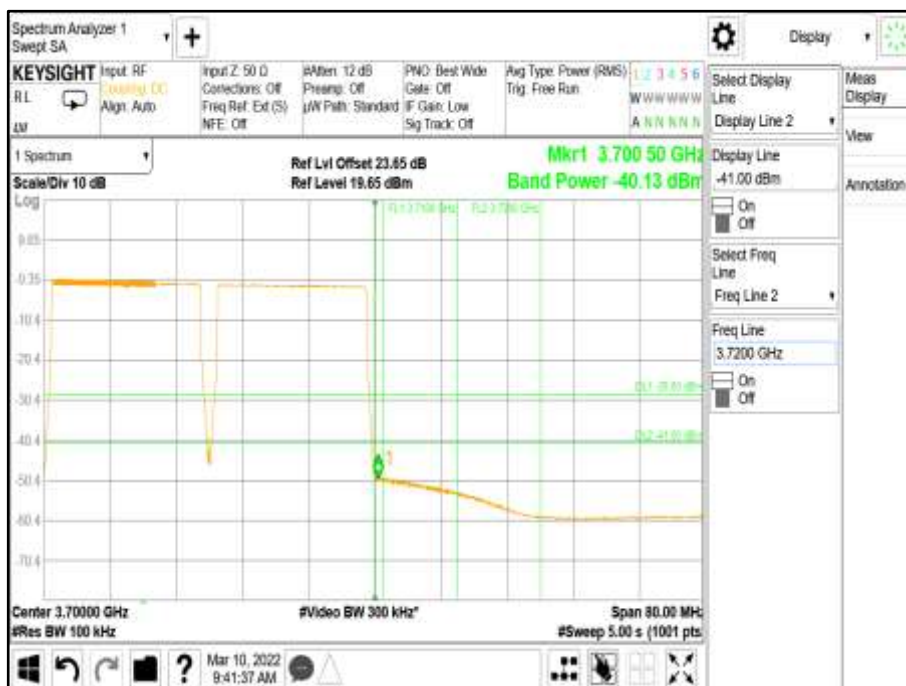




Antenna Port A A - Modulation LTE: QPSK - Carrier Bandwidth 20.0+20.0 MHz - Channel Position B



Antenna Port A A - Modulation LTE: QPSK - Carrier Bandwidth 20.0+20.0 MHz - Channel Position T





Antenna Port A A - Modulation NR: QPSK - Carrier Bandwidth 20.0+20.0 MHz - Channel Position B

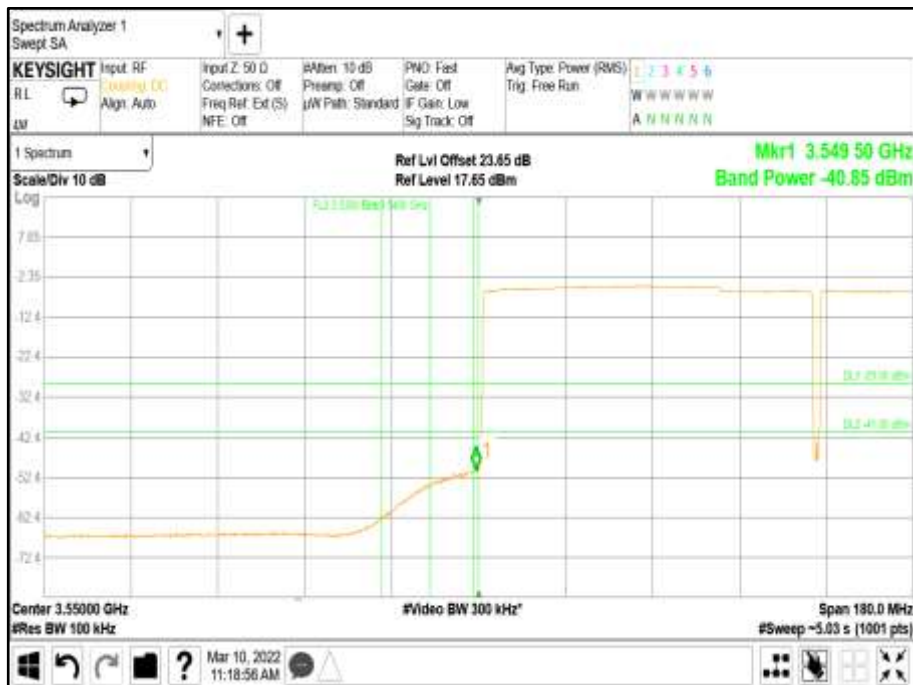


Antenna Port A A - Modulation NR: QPSK - Carrier Bandwidth 20.0+20.0 MHz - Channel Position T





Antenna Port A A - Modulation NR: QPSK - Carrier Bandwidth 70.0+70.0 MHz - Channel Position B



Antenna Port A A - Modulation NR: QPSK - Carrier Bandwidth 70.0+70.0 MHz - Channel Position T



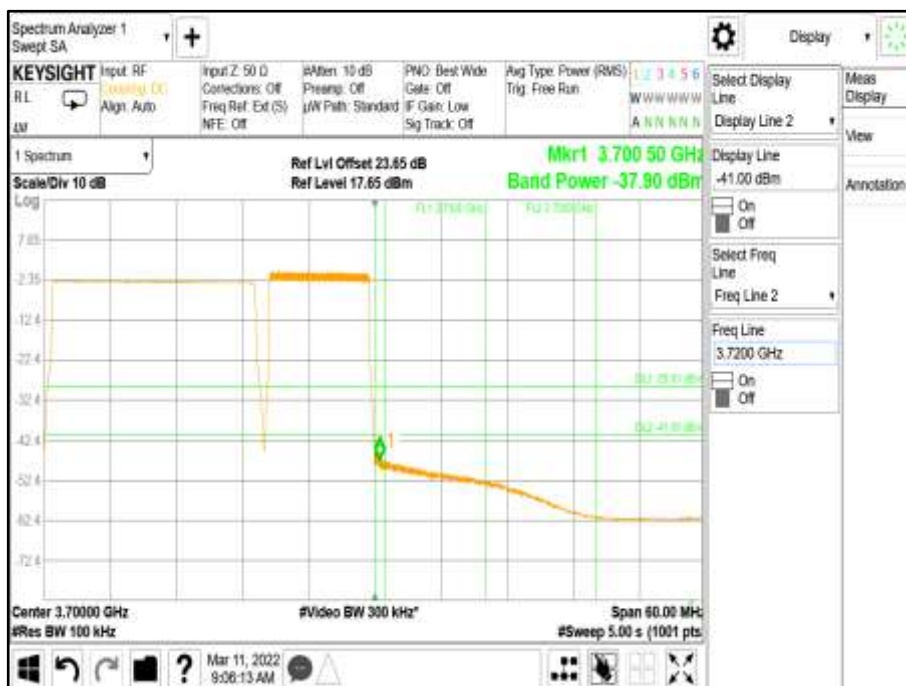




Antenna Port A A - Modulation NR+LTE: QPSK - Carrier Bandwidth 20.0+10.0 MHz - Channel Position B



Antenna Port A A - Modulation NR+LTE: QPSK - Carrier Bandwidth 20.0+10.0 MHz - Channel Position T





### Configuration C

Antenna	Modulation	Carrier Bandwidth	Band Edge (MHz)	
			Channel Position B	Channel Position T
A	NR20: QPSK	20+20+20+20+20+20+20 MHz	3560.0+3580.0+3600.0+ 3620.0+3640.0+3660.0+ 3680.0	3570.0+3590.0+3610.0+ 3630.0+3650.0+3670.0+ 3690.0

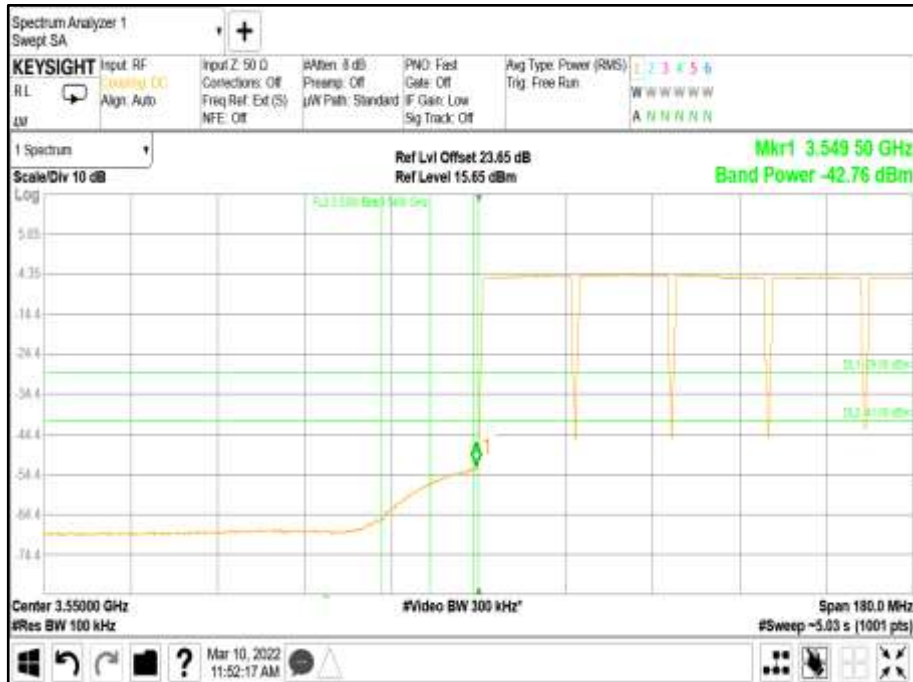
### Remarks

The plots results represent typical radio performace.





Antenna Port A A - Modulation NR20: QPSK - Carrier Bandwidth 20+20+20+20+20+20+20 MHz - Channel Position B



Antenna Port A A - Modulation NR20: QPSK - Carrier Bandwidth 20+20+20+20+20+20+20 MHz - Channel Position T





Configuration D

Antenna	Modulation	Carrier Bandwidth	Band Edge (MHz)	
			Channel Position B	Channel Position T
A	LTE: QPSK	10+10+10+10+10+10+10+10+10 MHz	3555.0+3565.0+3575.0+3585.0+3595.0+3605.0+3615.0+3625.0+3635.0+3645.0+3655.0+3665.0	3585.0+3595.0+3605.0+3615.0+3625.0+3635.0+3645.0+3655.0+3665.0+3675.0+3685.0+3695.0
A	NR(3)+LTE(9): QPSK	20+20+20+10+10+10+10+10+10 MHz	3560.0+3580.0+3600.0+3615.0+3625.0+3635.0+3645.0+3655.0+3665.0+3675.0+3685.0+3695.0	3560.0+3580.0+3600.0+3615.0+3625.0+3635.0+3645.0+3655.0+3665.0+3675.0+3685.0+3695.0



Antenna Port A A - Modulation LTE: QPSK - Carrier Bandwidth  
10+10+10+10+10+10+10+10+10+10+10+10 MHz - Channel Position B



Antenna Port A A - Modulation LTE: QPSK - Carrier Bandwidth  
10+10+10+10+10+10+10+10+10+10+10+10 MHz - Channel Position T





Antenna Port A A - Modulation NR(3)+LTE(9): QPSK - Carrier Bandwidth  
20+20+20+10+10+10+10+10+10+10+10+10+10+10+10+10 MHz - Channel Position B



Antenna Port A A - Modulation NR(3)+LTE(9): QPSK - Carrier Bandwidth  
20+20+20+10+10+10+10+10+10+10+10+10+10+10+10+10 MHz - Channel Position T



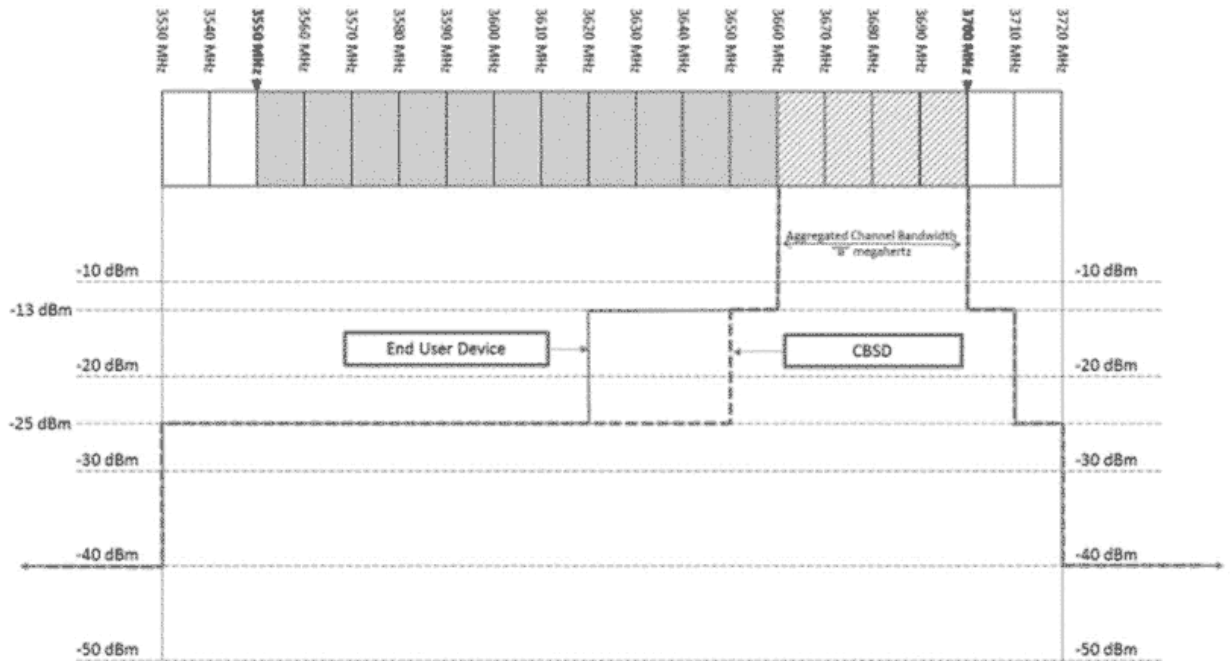
Limit	-13 dBm/MHz -10log(4) = -19 dBm/MHz (4 port MIMO)
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FCC 96.41 (e) 3.5 GHz Emissions and Interference Limits -

(1) General protection levels.

Figure 1 to paragraph (e) – Protection levels



(i) Except as otherwise specified in paragraph (e)(2) of this section, for channel and frequency assignments made by the SAS to CBSDs, the conducted power of any CBSD emission outside the fundamental emission bandwidth as specified in paragraph (e)(3) of this section (whether the emission is inside or outside of the authorized band) shall not exceed  $-13$  dBm/MHz within 0-10 megahertz above the upper SAS-assigned channel edge and within 0-10 megahertz below the lower SAS-assigned channel edge. At all frequencies greater than 10 megahertz above the upper SAS assigned channel edge and less than 10 MHz below the lower SAS assigned channel edge, the conducted power of any CBSD emission shall not exceed  $-25$  dBm/MHz. The upper and lower SAS assigned channel edges are the upper and lower limits of any channel assigned to a CBSD by an SAS, or in the case of multiple contiguous channels, the upper and lower limits of the combined contiguous channels. (ii) Except as otherwise specified in paragraph (e)(2) of this section, for channel and frequency assignments made by a CBSD to End User Devices, the conducted power of any End User Device emission outside the fundamental emission (whether in or outside of the authorized band) shall not exceed  $-13$  dBm/MHz within 0 to B megahertz (where B is the bandwidth in megahertz of the assigned channel or multiple contiguous channels of the End User Device) above the upper CBSD-assigned channel edge and within 0 to B megahertz below the lower CBSD-assigned channel edge. At all frequencies greater than B megahertz above the upper CBSD assigned channel edge and less than B megahertz below the lower CBSD-assigned channel edge, the conducted power of any End User Device emission shall not exceed  $-25$  dBm/MHz. Notwithstanding the emission limits in this paragraph, the Adjacent Channel Leakage Ratio for End User Devices shall be at least 30 dB.

(2) Additional protection levels. Notwithstanding paragraph (e)(1) of this section, for CBSDs and End User Devices, the conducted power of emissions below 3540 MHz or above 3710 MHz shall not exceed  $-25$  dBm/MHz, and the conducted power of emissions below 3530 MHz or above 3720 MHz shall not exceed  $-40$  dBm/MHz.



## 2.4 TRANSMITTER SPURIOUS EMISSIONS

### 2.4.1 Specification Reference

FCC CFR 47 Part 96, Clause 96.41 (e)(1)  
FCC CFR 47 Part 2, Clause 2.1051

### 2.4.2 Date of Test and Modification State

17 and 22-March-2022 - Modification State 0

### 2.4.3 Test Equipment Used

The major items of test equipment used for the above tests are identified in Section 3.1.

### 2.4.4 Environmental Conditions

Ambient Temperature	24.6°C
Relative Humidity	30.8%

### 2.4.5 Test Method

All measurements were made in accordance with FCC KDB 971168 D01, Clause 6.1.

#### Remarks:

1. Transceiver spurious emissions have been searched for all channel bandwidths and antenna ports.
2. Worst-case spurious emissions performance has been presented for all modulations.
3. Plot data performance for all channel bandwidths, and channel positions for both contiguous and non-contiguous (\*NC) operation are on file and available on request.
4. Where applicable, the plot limit lines have been adjusted to reflect the integrated spurious level requirement of the defined rule part to the receiver measurement band width used.

#### Notes:

A 7 GHz spurious emission has been detected as significant on antenna port B.  
All 4 antenna ports have been re-measured for comparison against the -40dBm / MHz limit.  
The worst-case detected results have been entered in the tables below as well as presented in the plots.



**Spurious Emission Table (worst-case)**

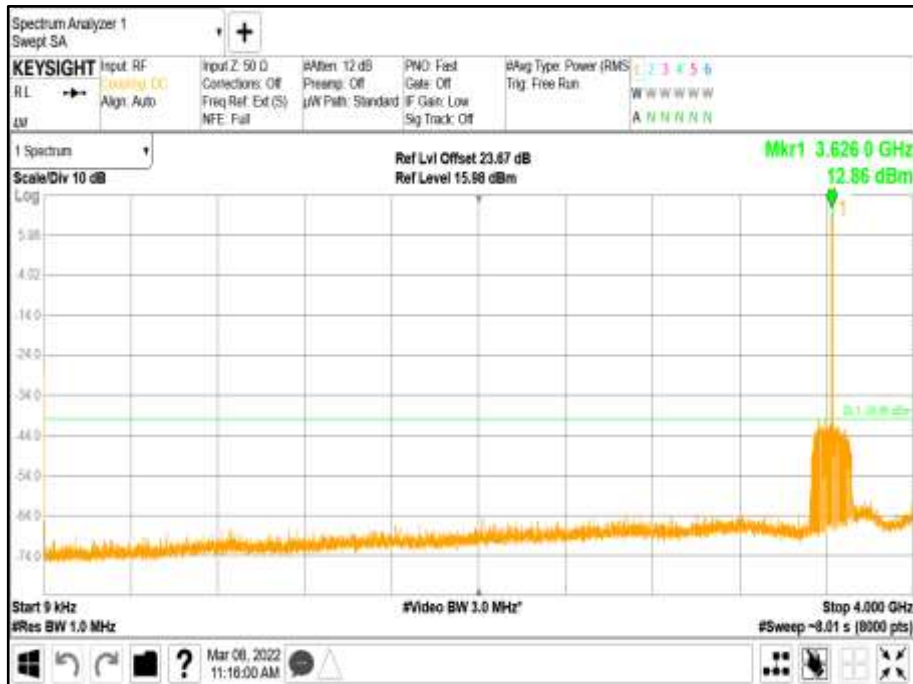
Carrier Config.	RAT	Antenna Port Emission Level (dBm)				Total Combined Carrier Power (dBm)	Limit dBm/MHz	Margin of compliance (dB)
		A	B	C	D			
1 Carrier	LTE 5	-51.52	-43.68	-56.02	-50.13	-42.06857	-40	-2.068578
	NR 50	-55.1	-40.99	-54.13	-49.86	-40.13687	-40	-0.136873
2 Carrier	LTE20+LTE20	-57.53	-41.02	-55.73	-50.32	-40.32468	-40	-0.324680
	*LTE20+LTE20	-48.19	-42.26	-56.02	-47.52	-40.23186	-40	-0.231863
	NR20+NR20	-58.47	-42.27	-58.08	-51.88	-41.62681	-40	-1.626819
	*NR20+NR20	-48.19	-42.26	-56.02	-47.52	-40.23186	-40	-0.231863
	NR20+LTE10	-55.12	-41.84	-54.77	-50.57	-40.93428	-40	-0.934280
	*NR20+LTE10	-48.03	-44.46	-60.55	-49.99	-42.04442	-40	-2.044427
7 Carrier	NR20	-54.4	-44.16	-55.73	-50.29	-42.67376	-40	-2.673765
12 Carrier	LTE10	-55.45	-40.94	-57.43	-50.57	-40.27029	-40	-0.270290
	3xNR20+9xLTE10	-52.68	-45.14	-54.77	-49.92	-43.05088	-40	-3.050885
Note: * Non-Contiguous Configuration								



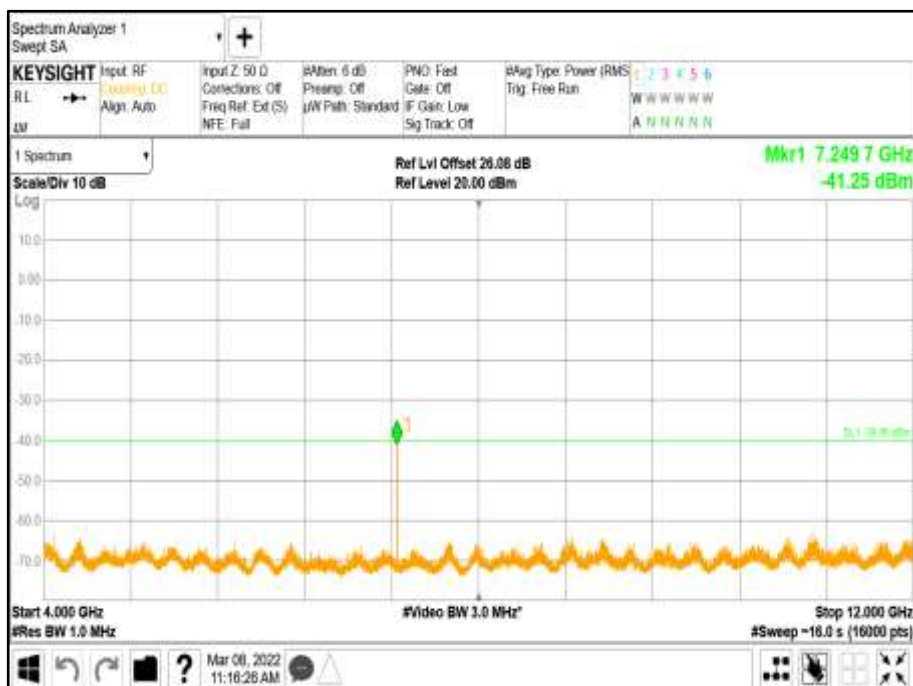
## 2.4.6 Test Results

### Configuration A

Antenna B - Modulation LTE: QPSK - Carrier Bandwidth LTE: 5 MHz - Channel Position M - Band 1.00 - Range 0.009 to 4000 MHz



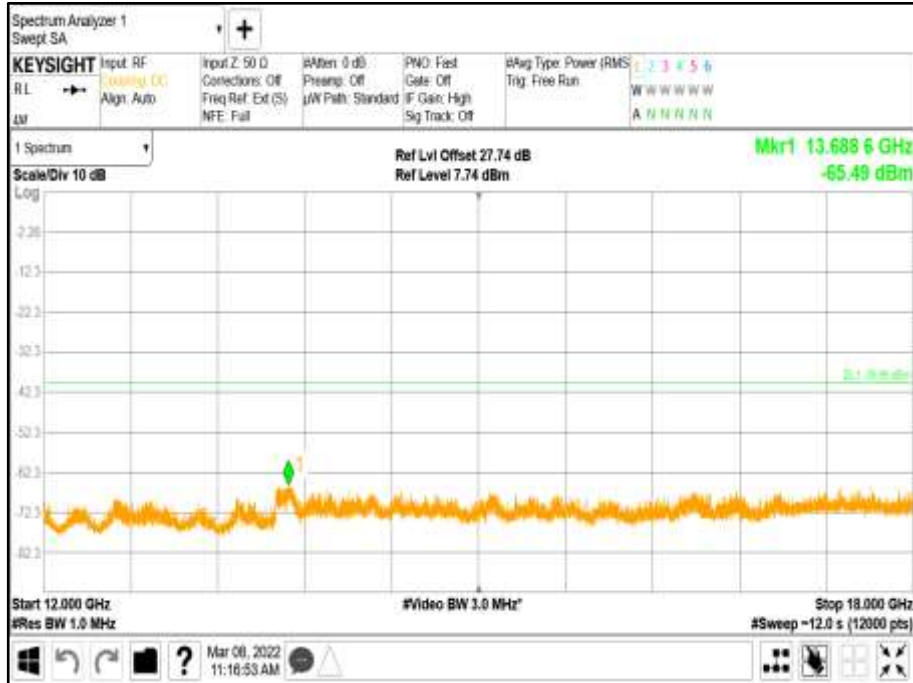
Antenna B - Modulation LTE: QPSK - Carrier Bandwidth LTE: 5 MHz - Channel Position M - Band 2 - Range 4000 to 12000 MHz



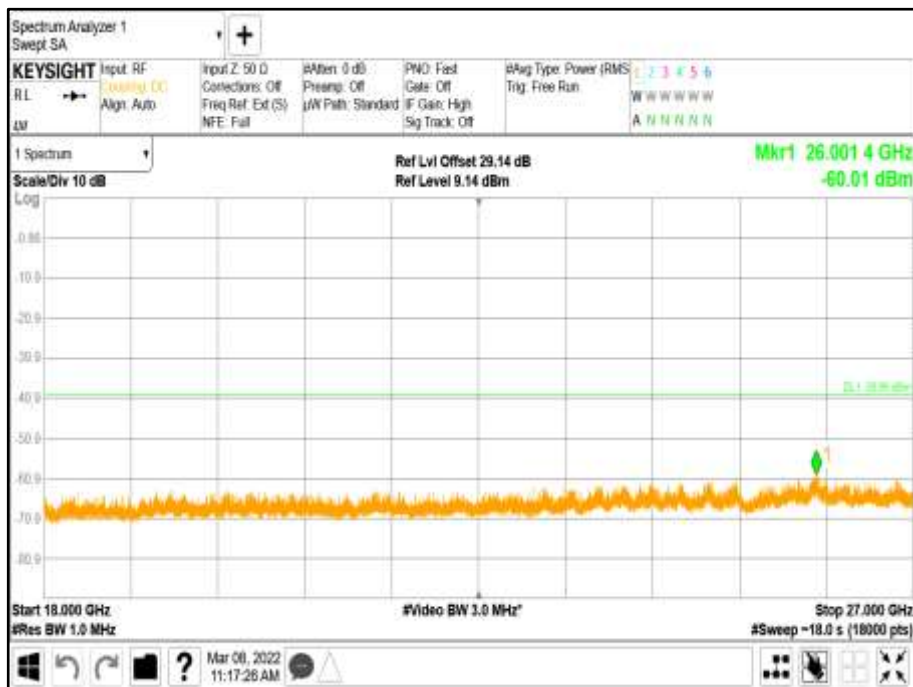




Antenna B - Modulation LTE: QPSK - Carrier Bandwidth LTE: 5 MHz - Channel Position M - Band 3 - Range 12000 to 18000 MHz

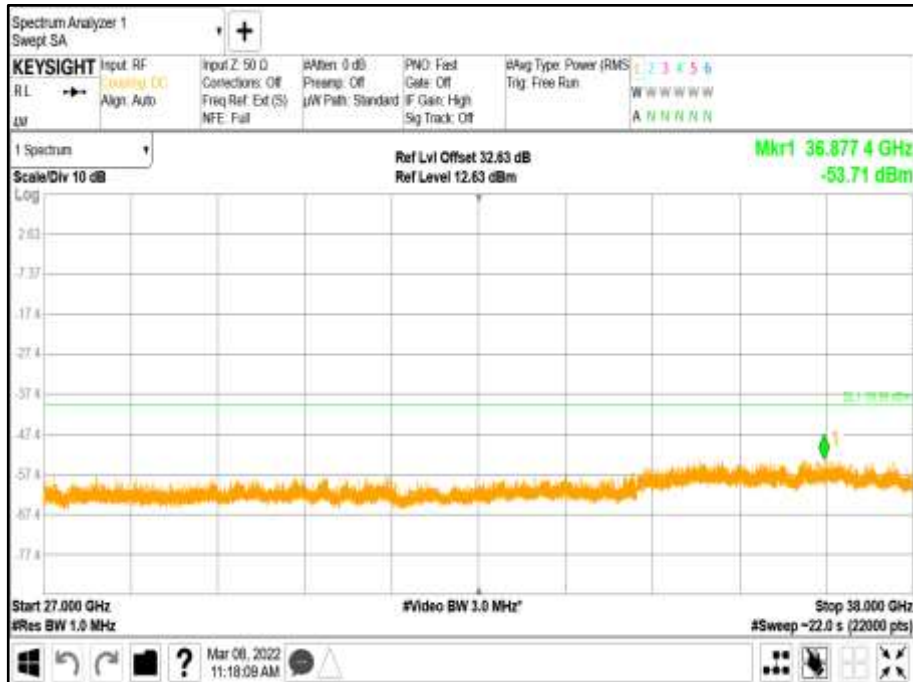


Antenna B - Modulation LTE: QPSK - Carrier Bandwidth LTE: 5 MHz - Channel Position M - Band 4 - Range 18000 to 27000 MHz





Antenna B - Modulation LTE: QPSK - Carrier Bandwidth LTE: 5 MHz - Channel Position M - Band 5 - Range 27000 to 38000 MHz



Antenna A - Modulation LTE: QPSK - Carrier Bandwidth LTE: 5 MHz - Channel Position M - Band 2 - Range 7 GHz Spurious Port A





Antenna B - Modulation LTE: QPSK - Carrier Bandwidth LTE: 5 MHz - Channel Position M - Band 2 - Range 7 GHz Spurious Port B



Antenna C - Modulation LTE: QPSK - Carrier Bandwidth LTE: 5 MHz - Channel Position M - Band 2 - Range 7 GHz Spurious Port C

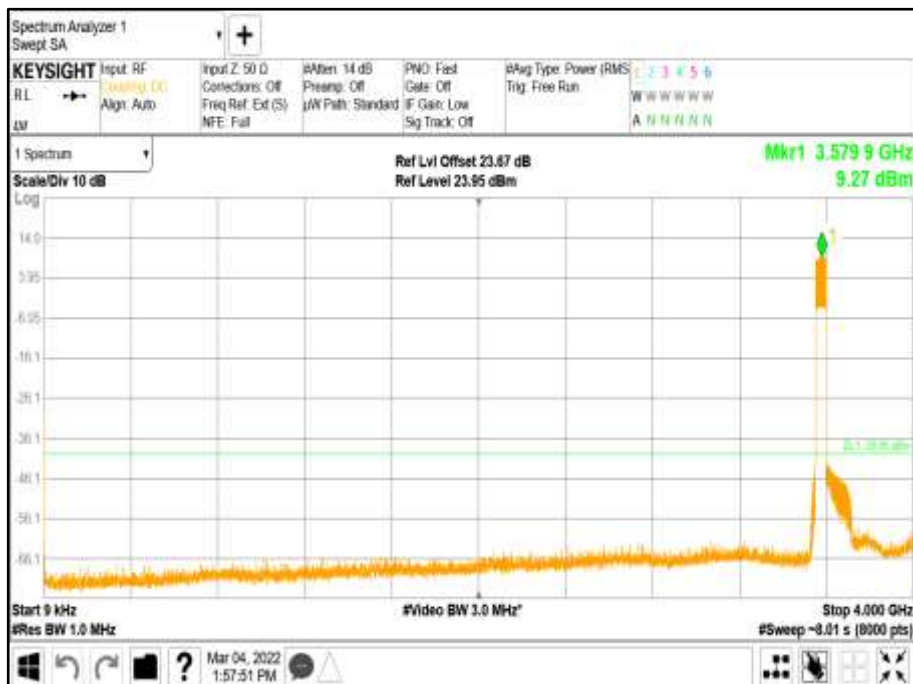




Antenna D - Modulation LTE: QPSK - Carrier Bandwidth LTE: 5 MHz - Channel Position M - Band 2 - Range 7 GHz Spurious Port D

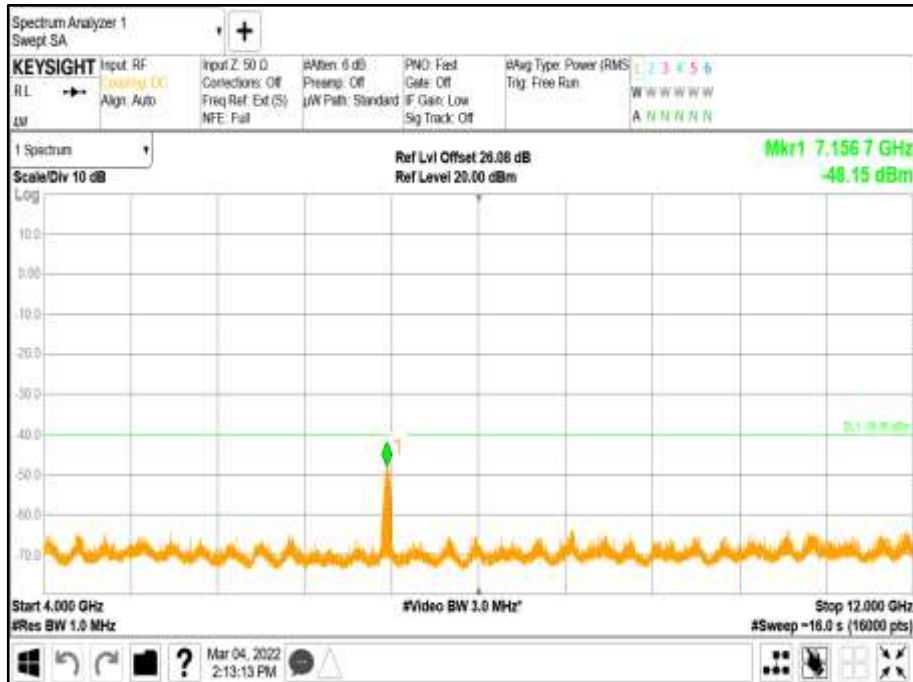


Antenna B - Modulation NR: QPSK - Carrier Bandwidth NR: 50.0 MHz - Channel Position B - Band 1.00 - Range 0.009 to 4000 MHz

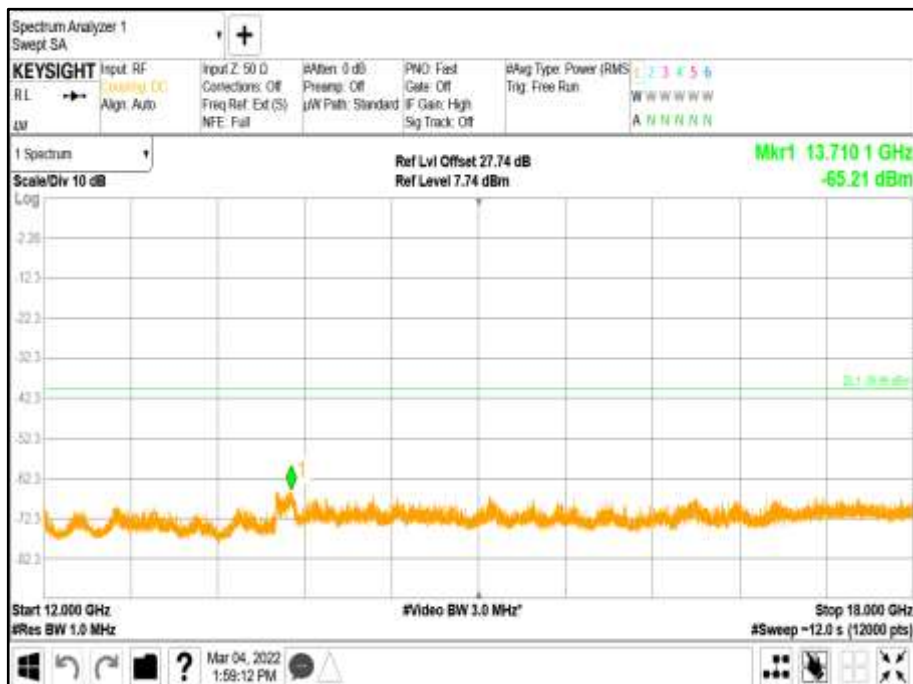




Antenna B - Modulation NR: QPSK - Carrier Bandwidth NR: 50.0 MHz - Channel Position B - Band 2 - Range 4000 to 12000 MHz

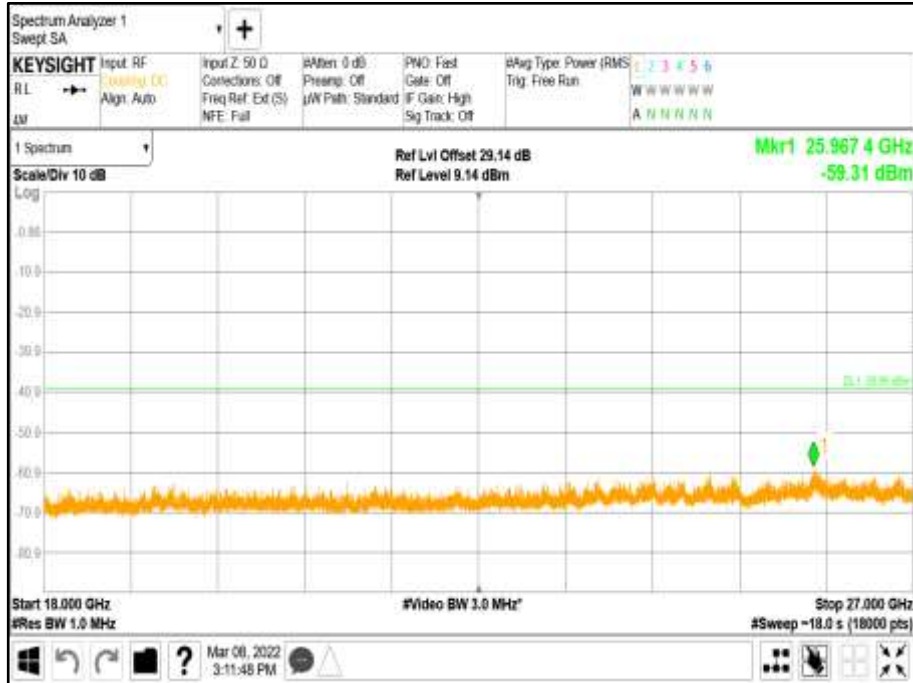


Antenna B - Modulation NR: QPSK - Carrier Bandwidth NR: 50.0 MHz - Channel Position B - Band 3 - Range 12000 to 18000 MHz

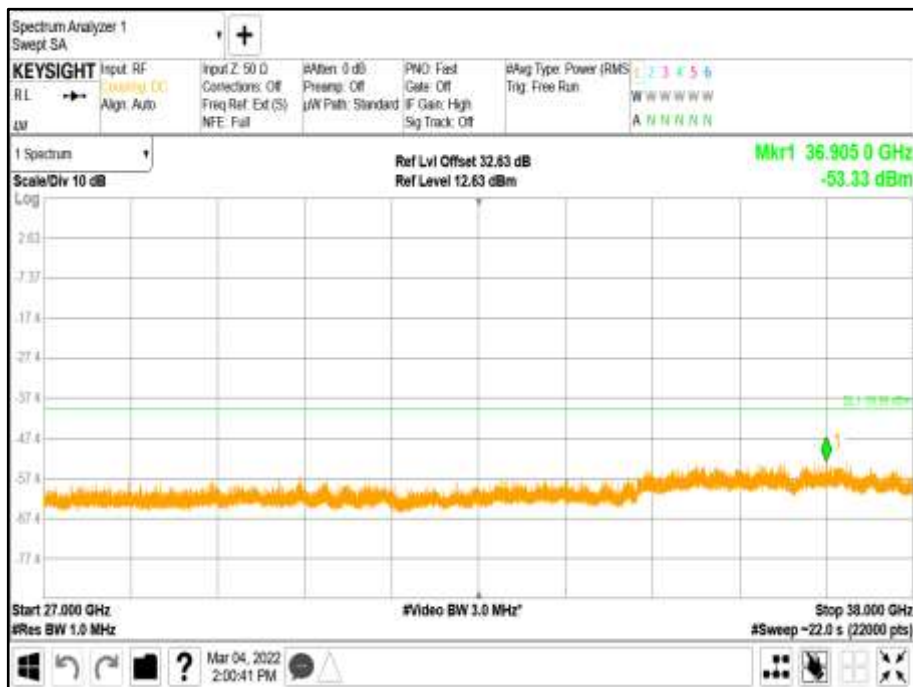




Antenna B - Modulation NR: QPSK - Carrier Bandwidth NR: 50.0 MHz - Channel Position B - Band 4 - Range 18000 to 27000 MHz



Antenna B - Modulation NR: QPSK - Carrier Bandwidth NR: 50.0 MHz - Channel Position B - Band 5 - Range 27000 to 38000 MHz







Antenna A - Modulation NR: QPSK - Carrier Bandwidth NR: 50.0 MHz - Channel Position B - Band 2 - Range 7 GHz Spurious Port A



Antenna B - Modulation NR: QPSK - Carrier Bandwidth NR: 50.0 MHz - Channel Position B - Band 2 - Range 7 GHz Spurious Port B





Antenna C - Modulation NR: QPSK - Carrier Bandwidth NR: 50.0 MHz - Channel Position B - Band 2 - Range 7 GHz Spurious Port C



Antenna D - Modulation NR: QPSK - Carrier Bandwidth NR: 50.0 MHz - Channel Position B - Band 2 - Range 7 GHz Spurious Port D

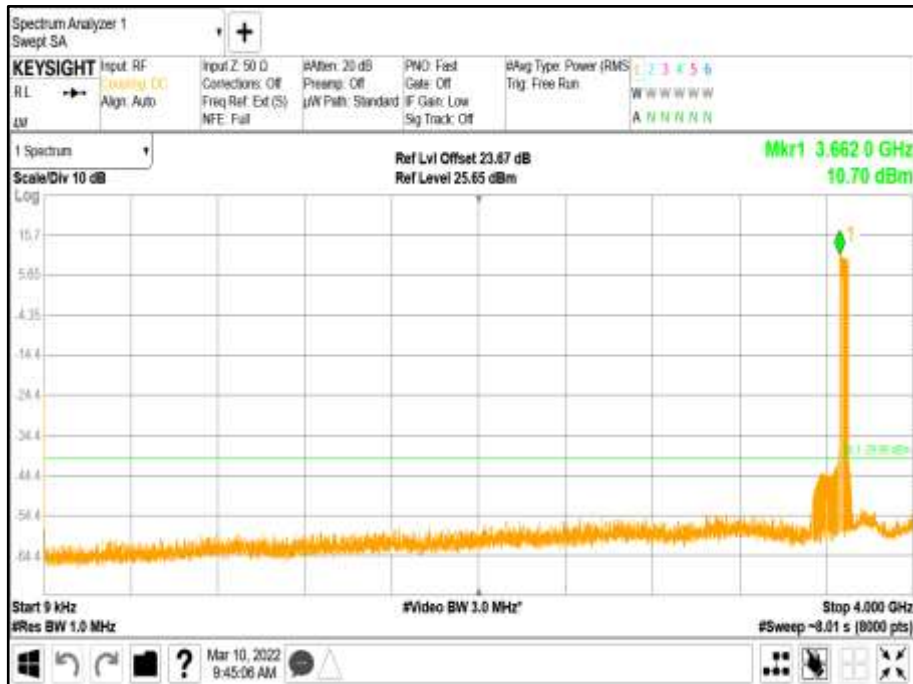




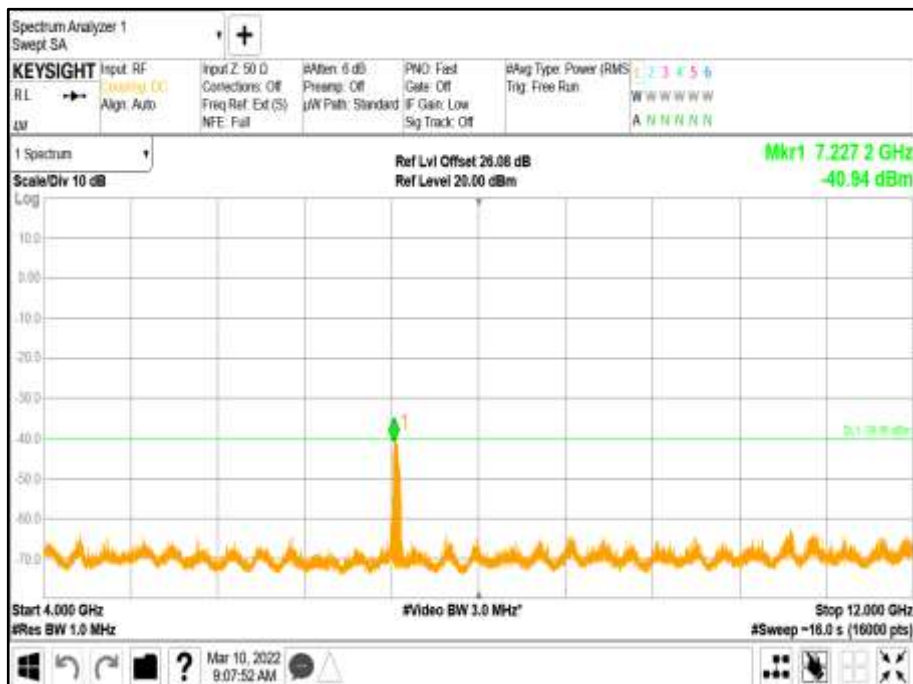


Configuration B

Antenna B - Modulation LTE: QPSK - Carrier Bandwidth 20.0+20.0 MHz - Channel Position M - Band 1.00 - Range 0.009 to 4000 MHz

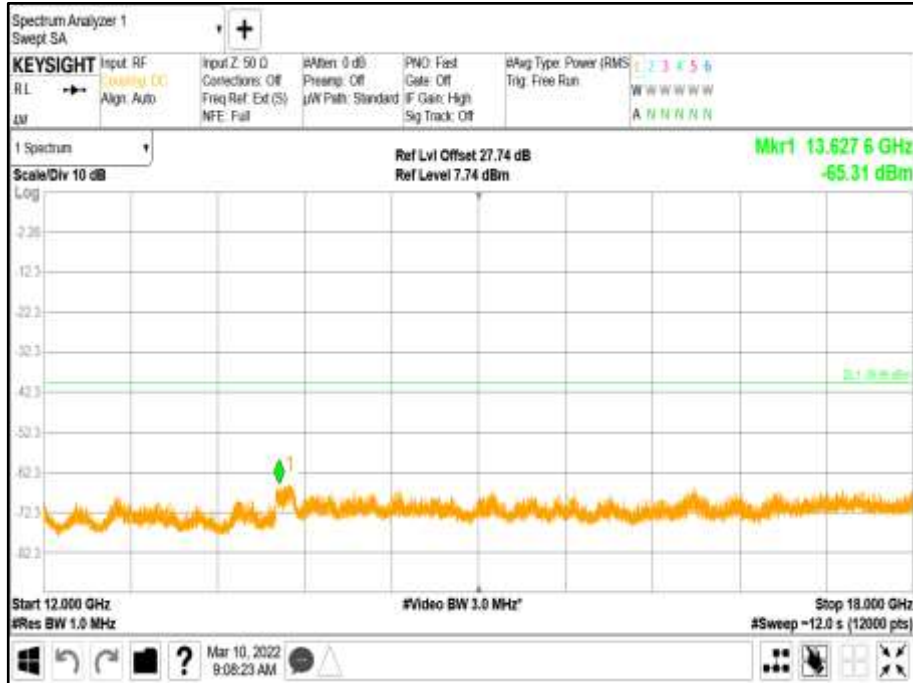


Antenna B - Modulation LTE: QPSK - Carrier Bandwidth 20.0+20.0 MHz - Channel Position M - Band 2 - Range 4000 to 12000 MHz

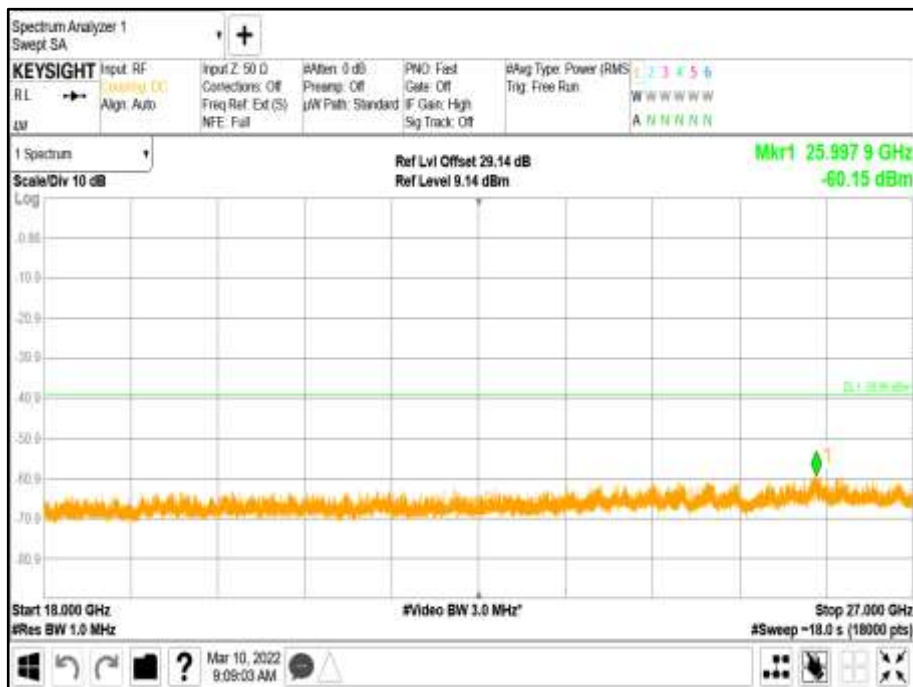




Antenna B - Modulation LTE: QPSK - Carrier Bandwidth 20.0+20.0 MHz - Channel Position M - Band 3 - Range 12000 to 18000 MHz

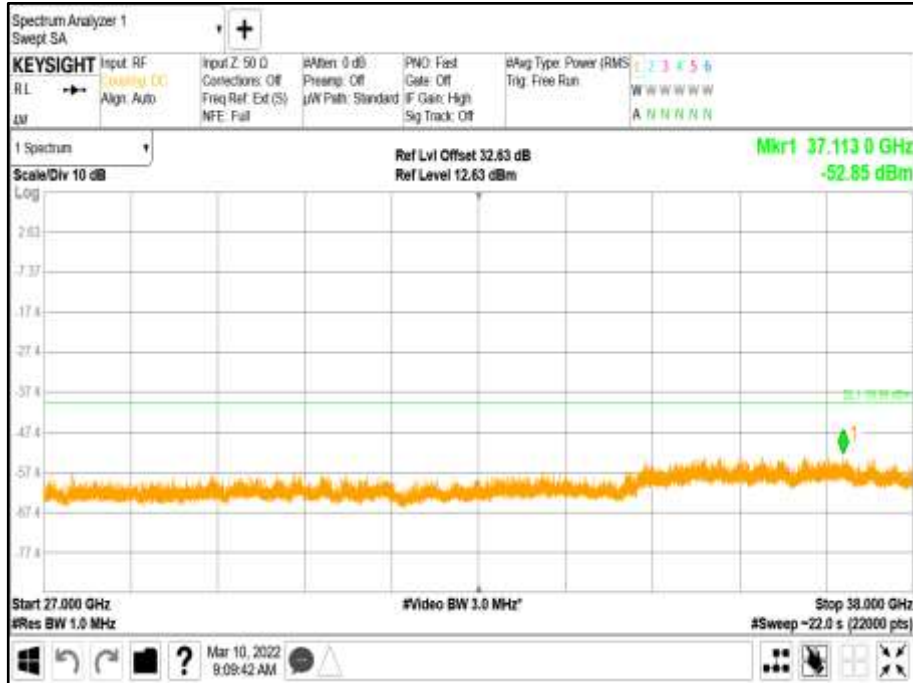


Antenna B - Modulation LTE: QPSK - Carrier Bandwidth 20.0+20.0 MHz - Channel Position M - Band 4 - Range 18000 to 27000 MHz

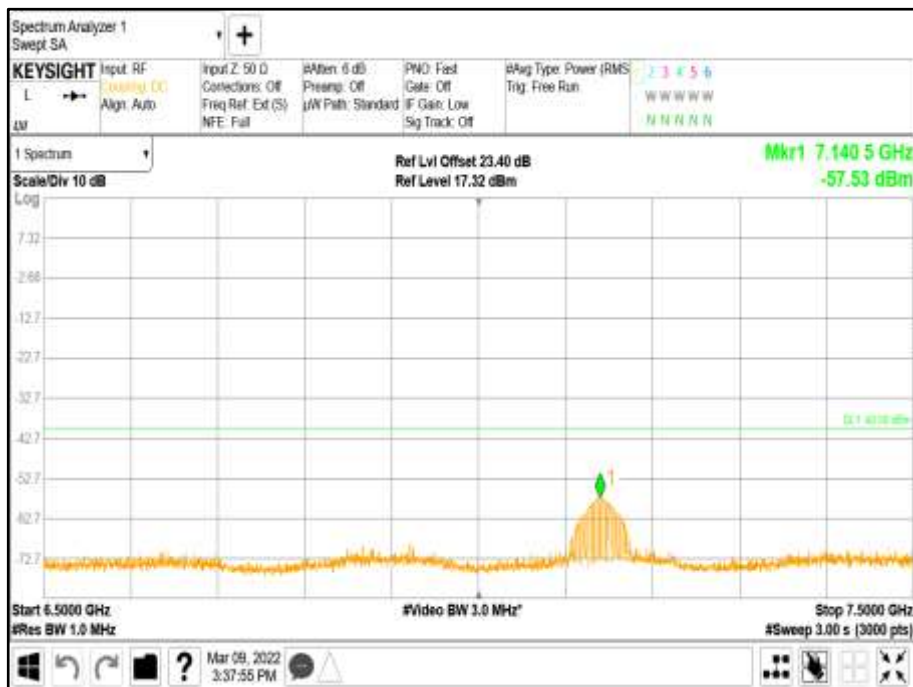




Antenna B - Modulation LTE: QPSK - Carrier Bandwidth 20.0+20.0 MHz - Channel Position M - Band 5 - Range 27000 to 38000 MHz

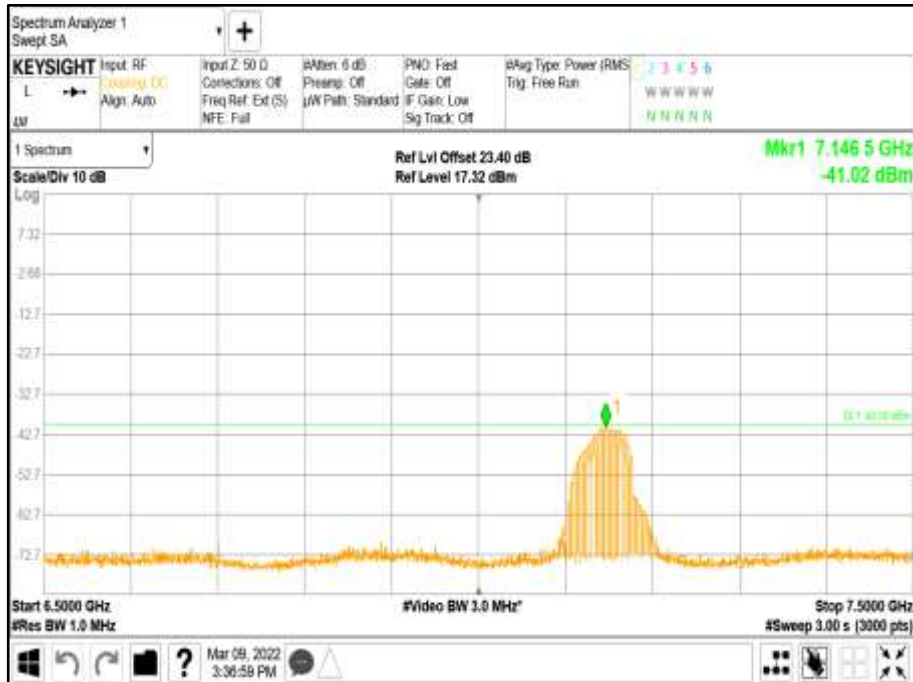


Antenna A - Modulation LTE: QPSK - Carrier Bandwidth 20.0+20.0 MHz - Channel Position M - Band 2 - Range 7 GHz Spurious Port A

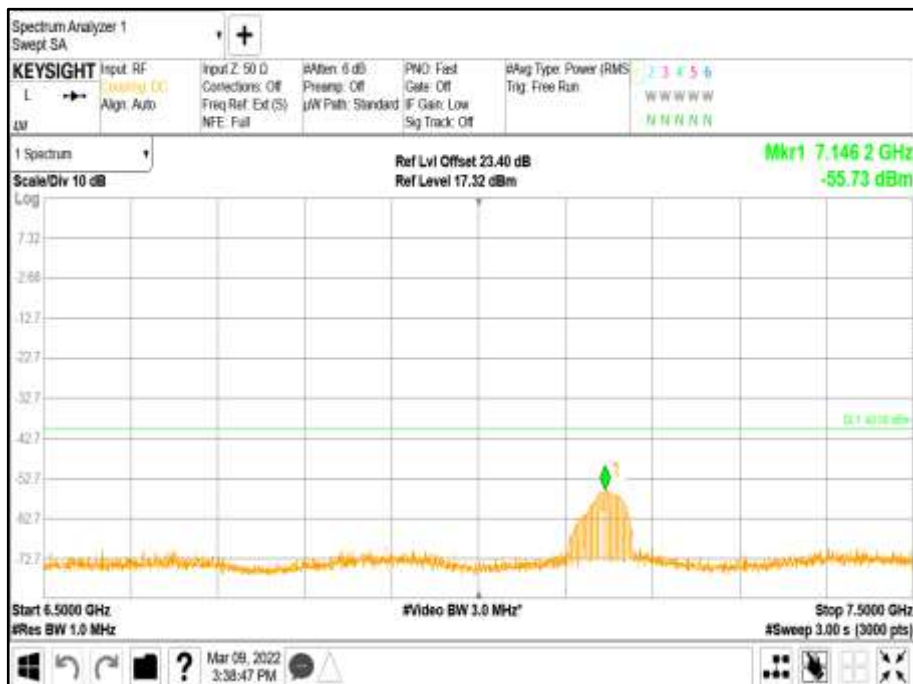




Antenna B - Modulation LTE: QPSK - Carrier Bandwidth 20.0+20.0 MHz - Channel Position M - Band 2 - Range 7 GHz Spurious Port B

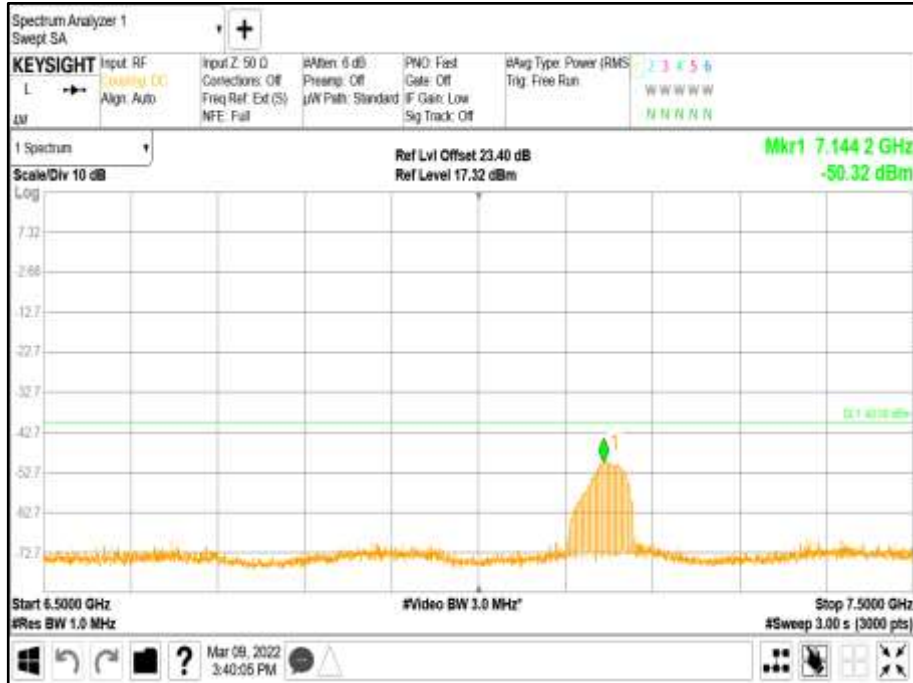


Antenna C - Modulation LTE: QPSK - Carrier Bandwidth 20.0+20.0 MHz - Channel Position M - Band 2 - Range 7 GHz Spurious Port C

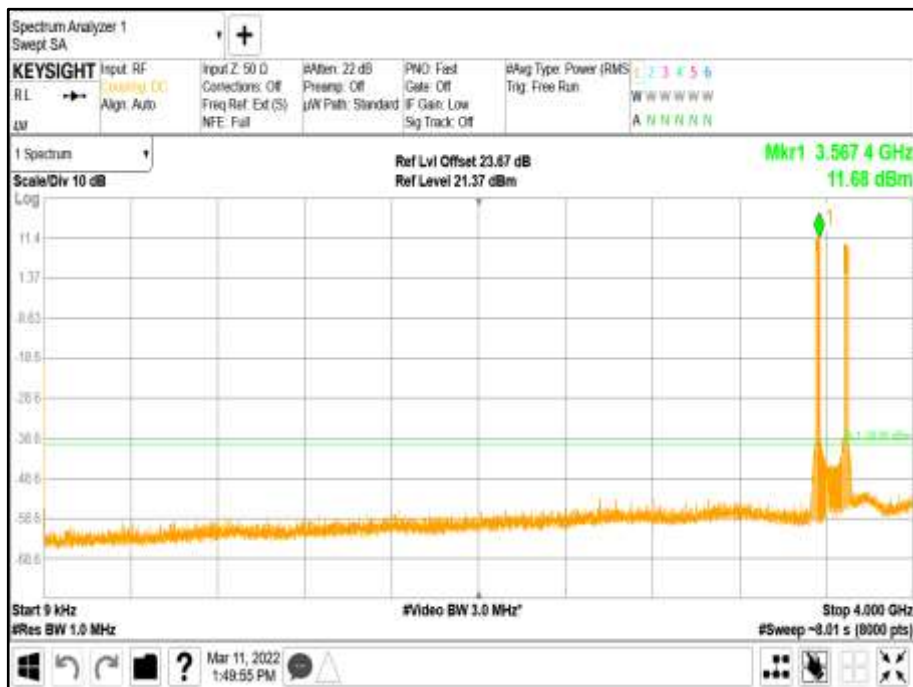




Antenna D - Modulation LTE: QPSK - Carrier Bandwidth 20.0+20.0 MHz - Channel Position M - Band 2 - Range 7 GHz Spurious Port D



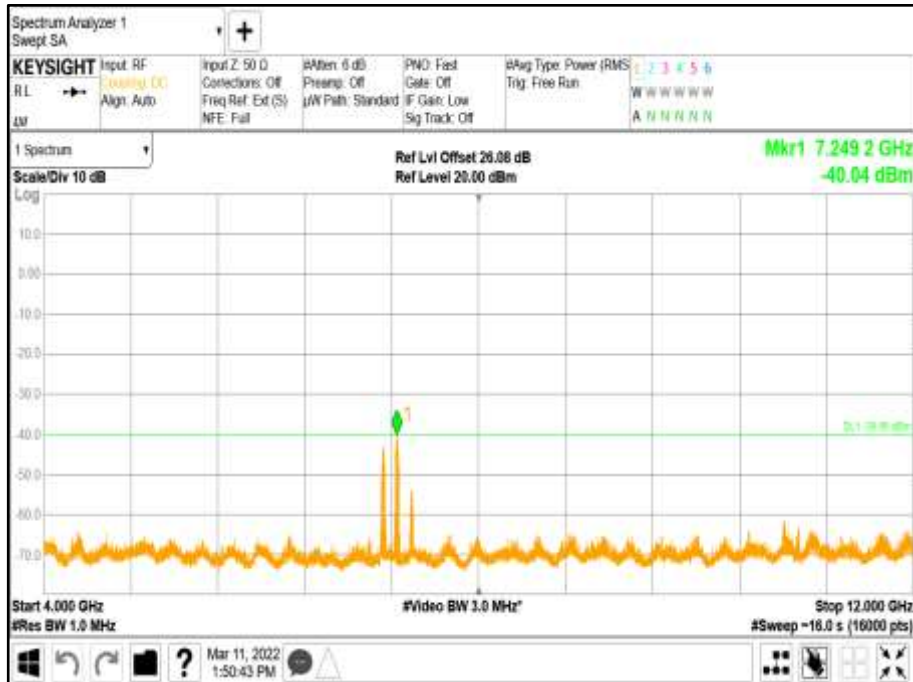
Antenna B - Modulation \*LTE: QPSK - Carrier Bandwidth 20.0+20.0 MHz - Channel Position M - Band 1.00 - Range 0.009 to 4000 MHz



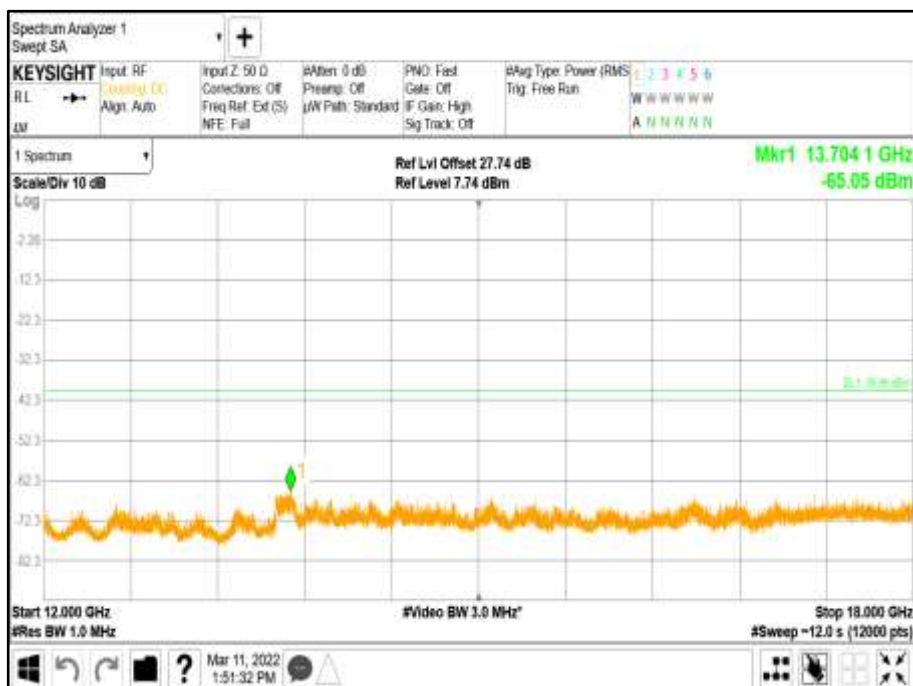




Antenna B - Modulation \*LTE: QPSK - Carrier Bandwidth 20.0+20.0 MHz - Channel Position M - Band 2 - Range 4000 to 12000 MHz

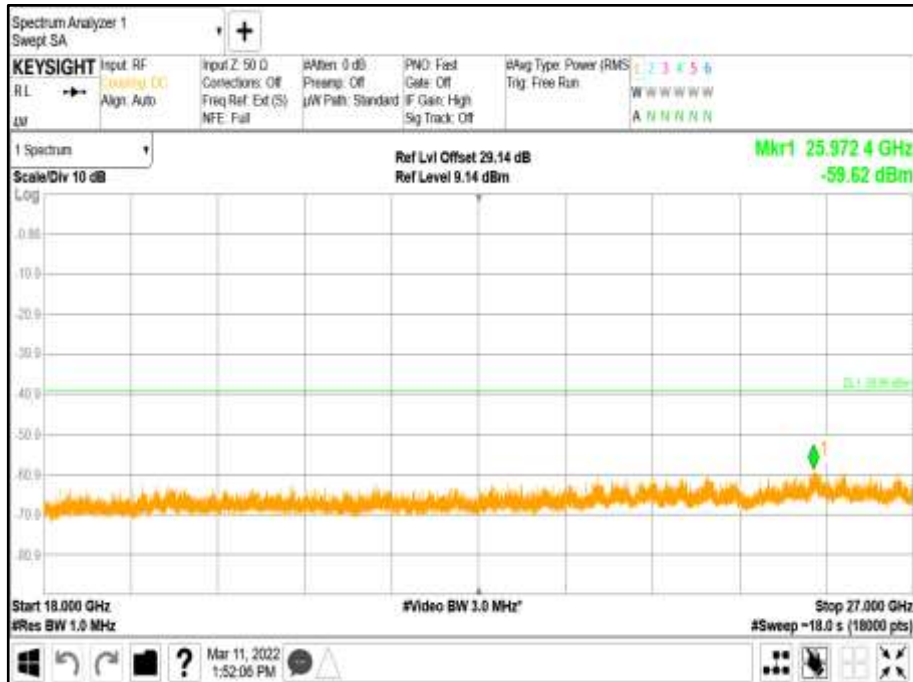


Antenna B - Modulation \*LTE: QPSK - Carrier Bandwidth 20.0+20.0 MHz - Channel Position M - Band 3 - Range 12000 to 18000 MHz

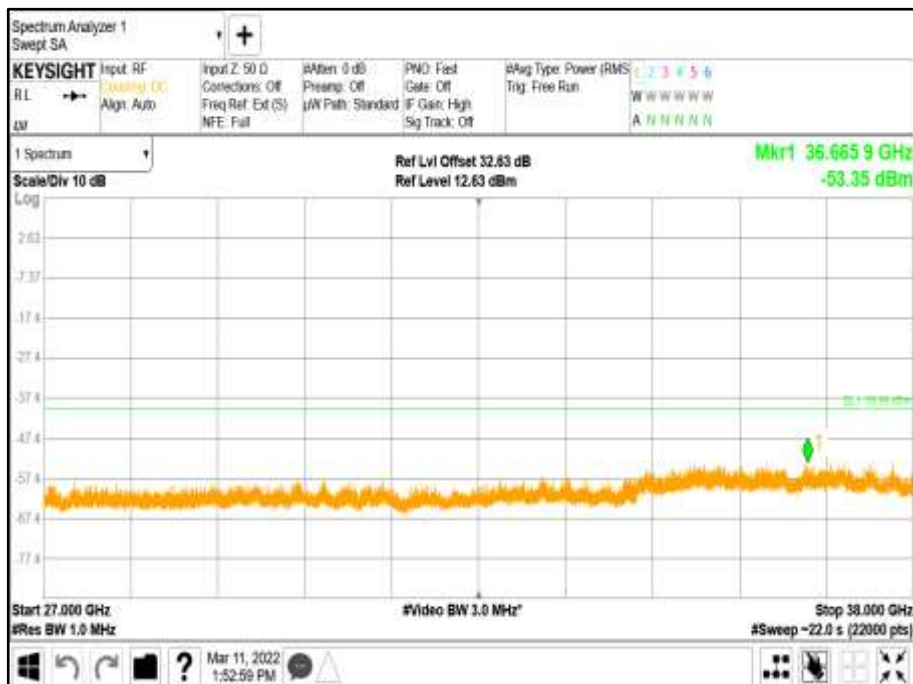




Antenna B - Modulation \*LTE: QPSK - Carrier Bandwidth 20.0+20.0 MHz - Channel Position M - Band 4 - Range 18000 to 27000 MHz



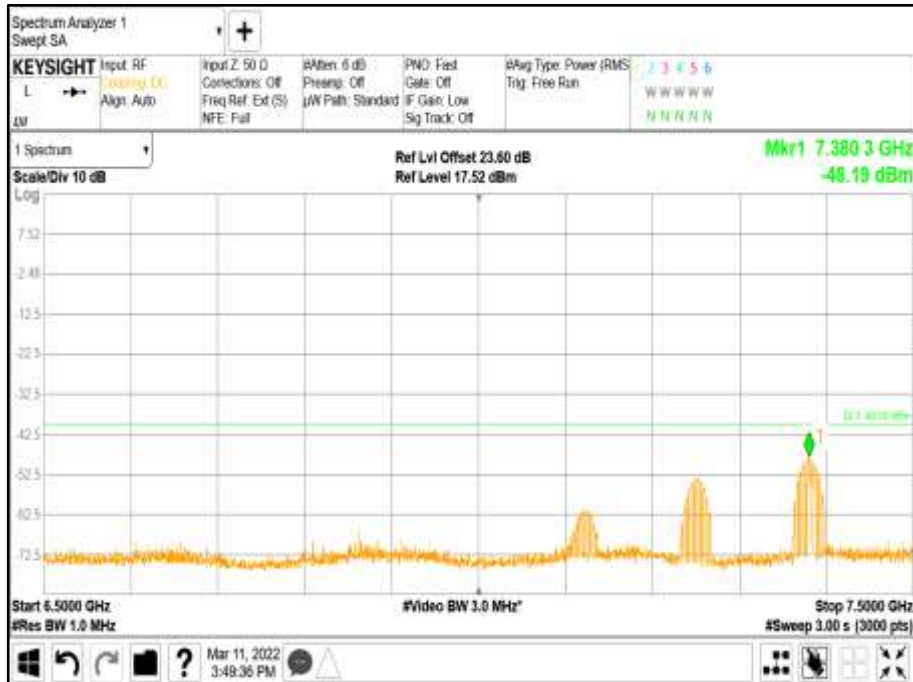
Antenna B - Modulation \*LTE: QPSK - Carrier Bandwidth 20.0+20.0 MHz - Channel Position M - Band 5 - Range 27000 to 38000 MHz



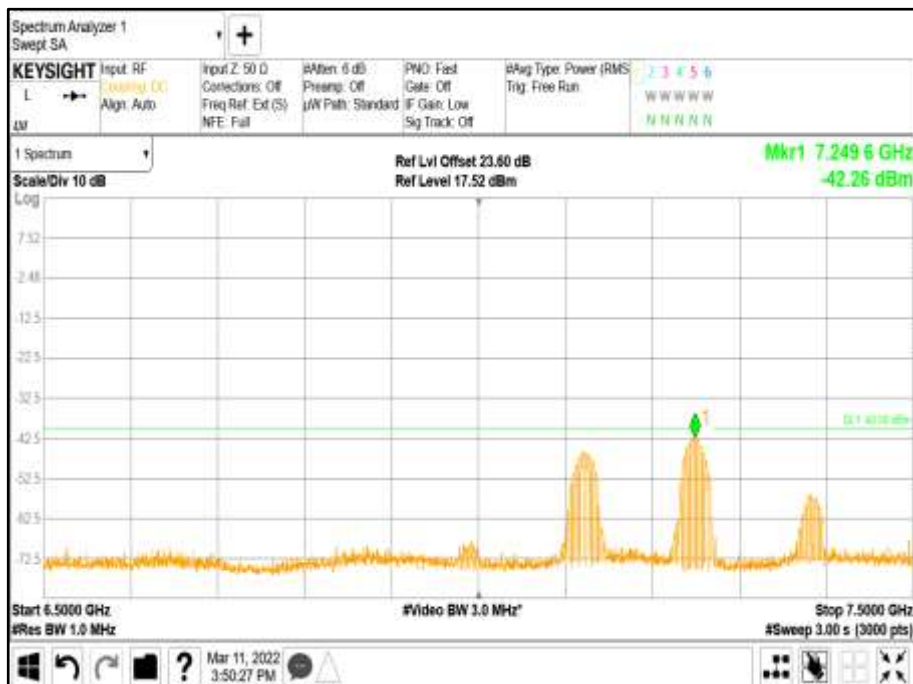




Antenna A - Modulation \*LTE: QPSK - Carrier Bandwidth 20.0+20.0 MHz - Channel Position M - Band 2 - Range 7 GHz Spurious Port A

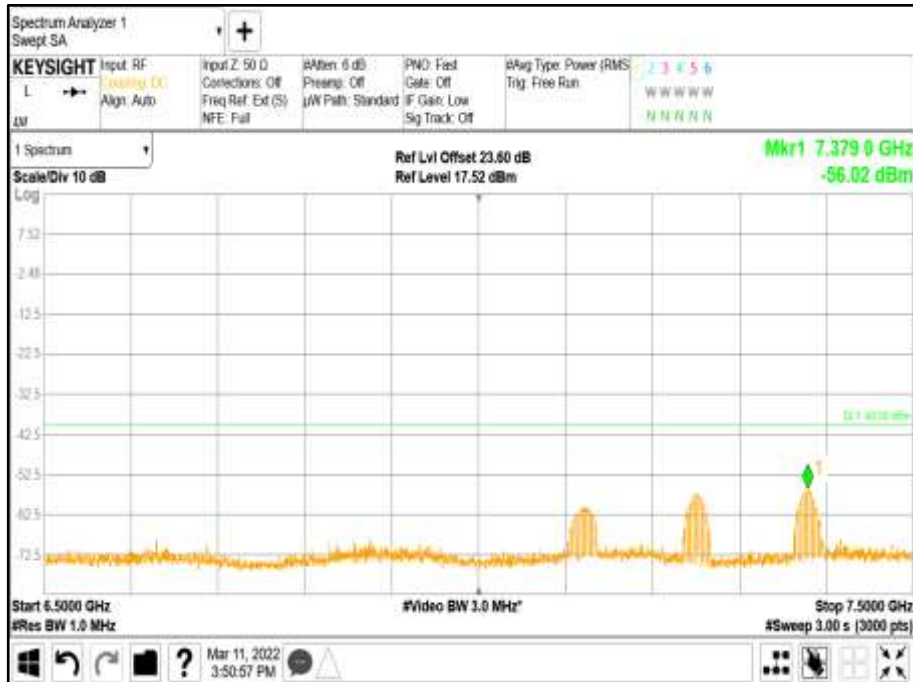


Antenna B - Modulation \*LTE: QPSK - Carrier Bandwidth 20.0+20.0 MHz - Channel Position M - Band 2 - Range 7 GHz Spurious Port B

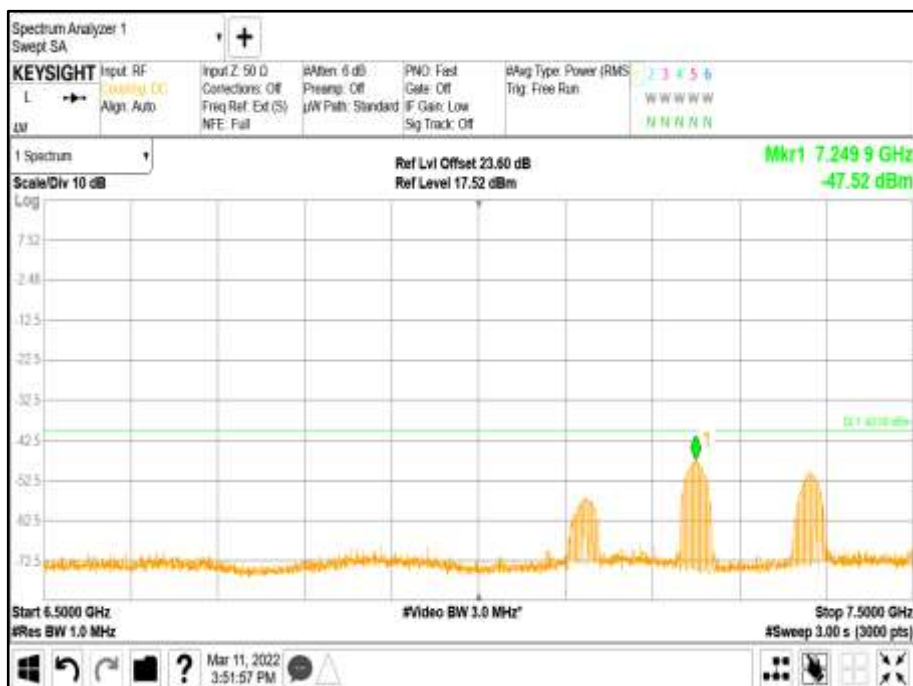




Antenna C - Modulation \*LTE: QPSK - Carrier Bandwidth 20.0+20.0 MHz - Channel Position M - Band 2 - Range 7 GHz Spurious Port C

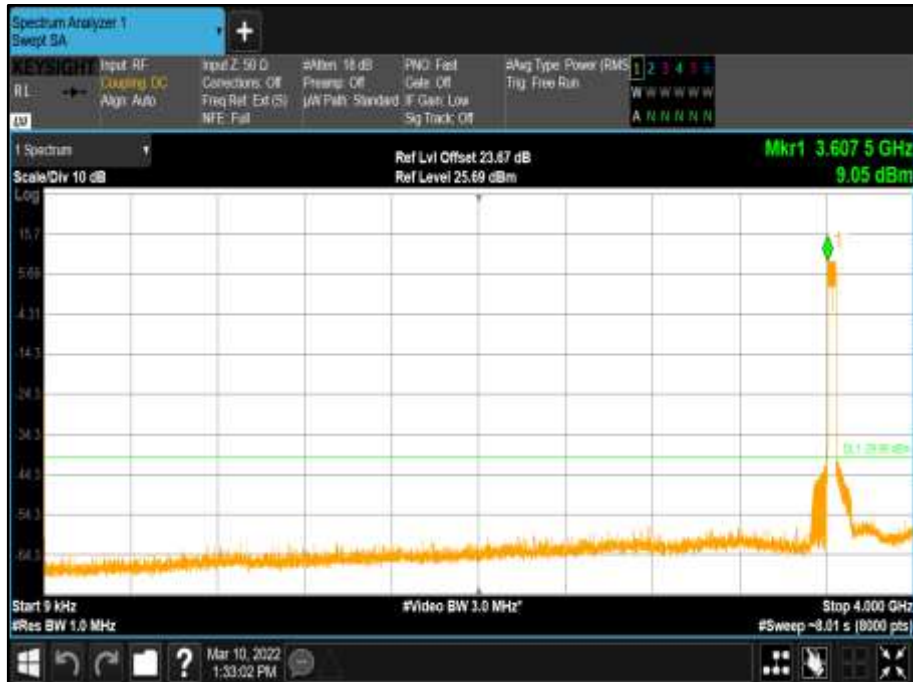


Antenna D - Modulation \*LTE: QPSK - Carrier Bandwidth 20.0+20.0 MHz - Channel Position M - Band 2 - Range 7 GHz Spurious Port D

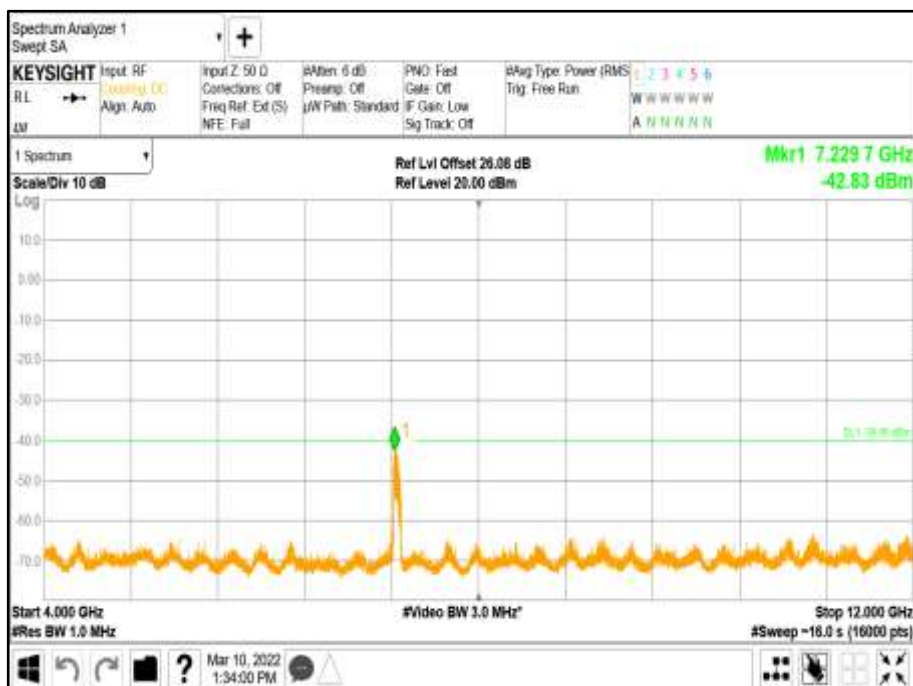




Antenna B - Modulation NR: QPSK - Carrier Bandwidth 20.0+20.0 MHz - Channel Position B - Band 1.00 - Range 0.009 to 4000 MHz

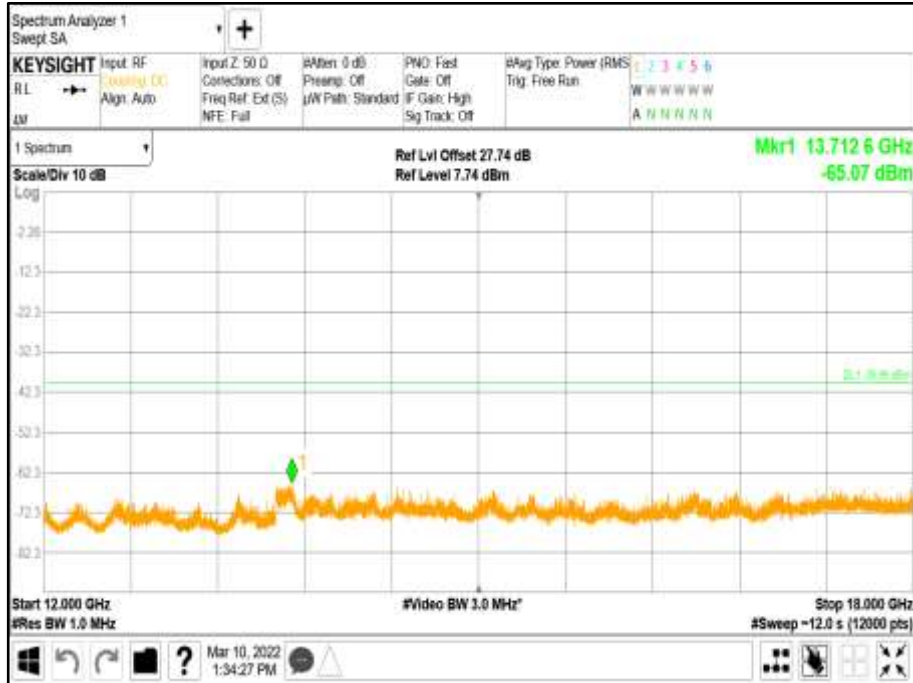


Antenna B - Modulation NR: QPSK - Carrier Bandwidth 20.0+20.0 MHz - Channel Position B - Band 2 - Range 4000 to 12000 MHz

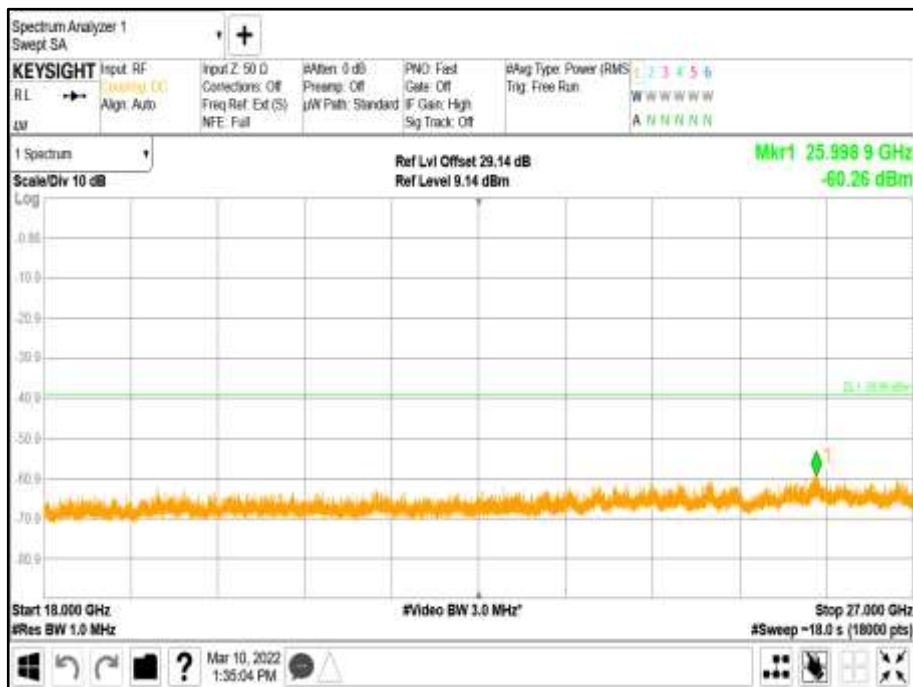




Antenna B - Modulation NR: QPSK - Carrier Bandwidth 20.0+20.0 MHz - Channel Position B - Band 3 - Range 12000 to 18000 MHz

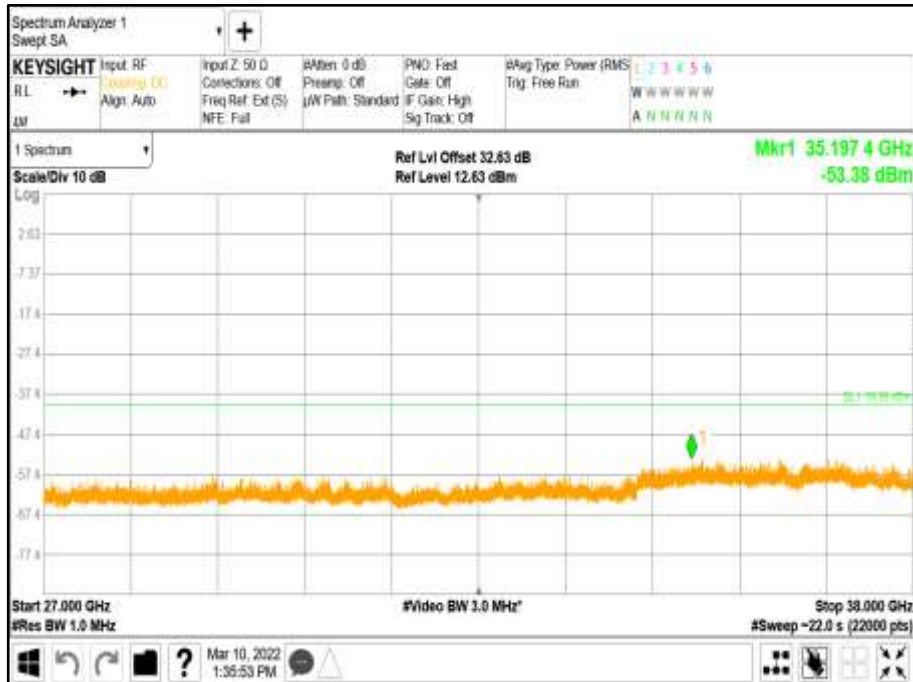


Antenna B - Modulation NR: QPSK - Carrier Bandwidth 20.0+20.0 MHz - Channel Position B - Band 4 - Range 18000 to 27000 MHz

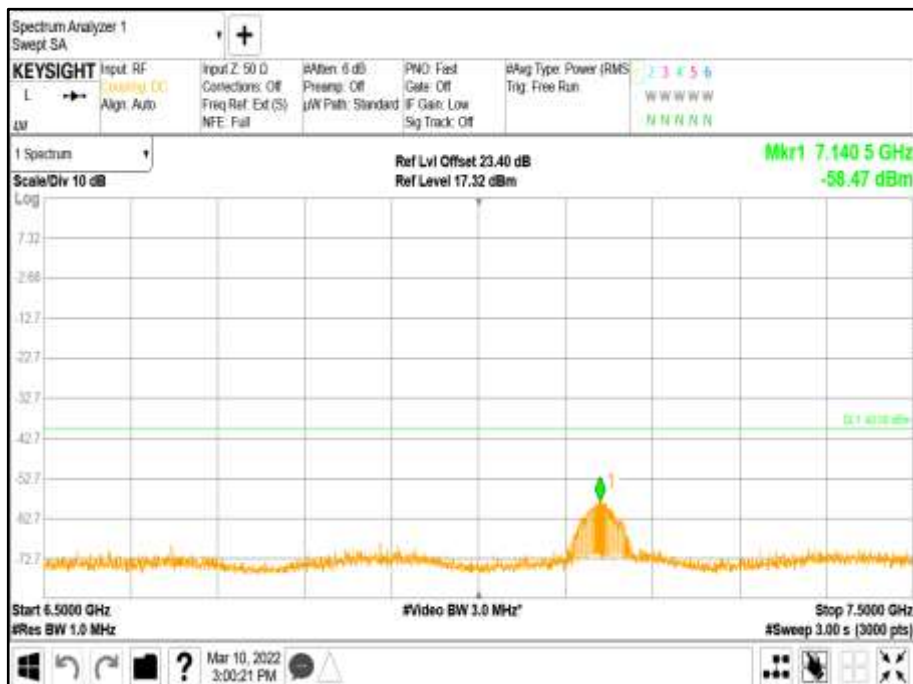




Antenna B - Modulation NR: QPSK - Carrier Bandwidth 20.0+20.0 MHz - Channel Position B - Band 5 - Range 27000 to 38000 MHz



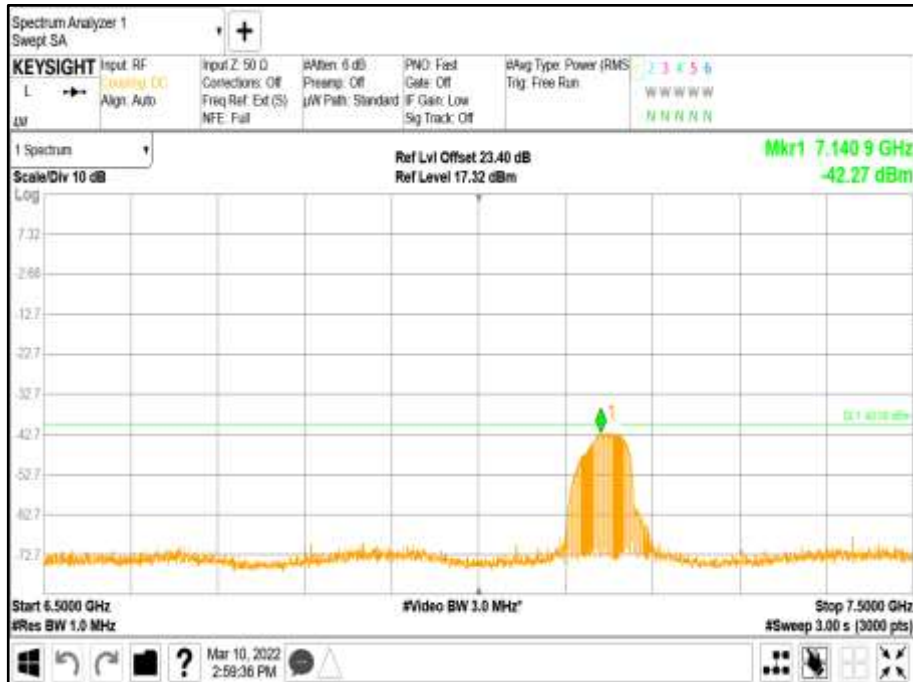
Antenna A - Modulation NR: QPSK - Carrier Bandwidth 20.0+20.0 MHz - Channel Position B - Band 2 - Range 7 GHz Spurious Port A



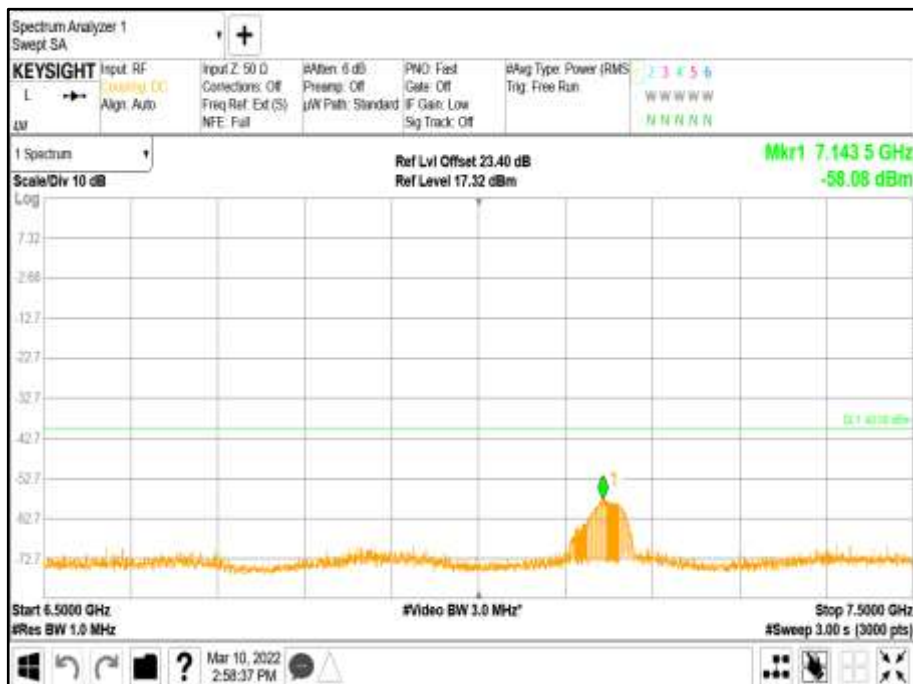




Antenna B - Modulation NR: QPSK - Carrier Bandwidth 20.0+20.0 MHz - Channel Position B - Band 2 - Range 7 GHz Spurious Port B

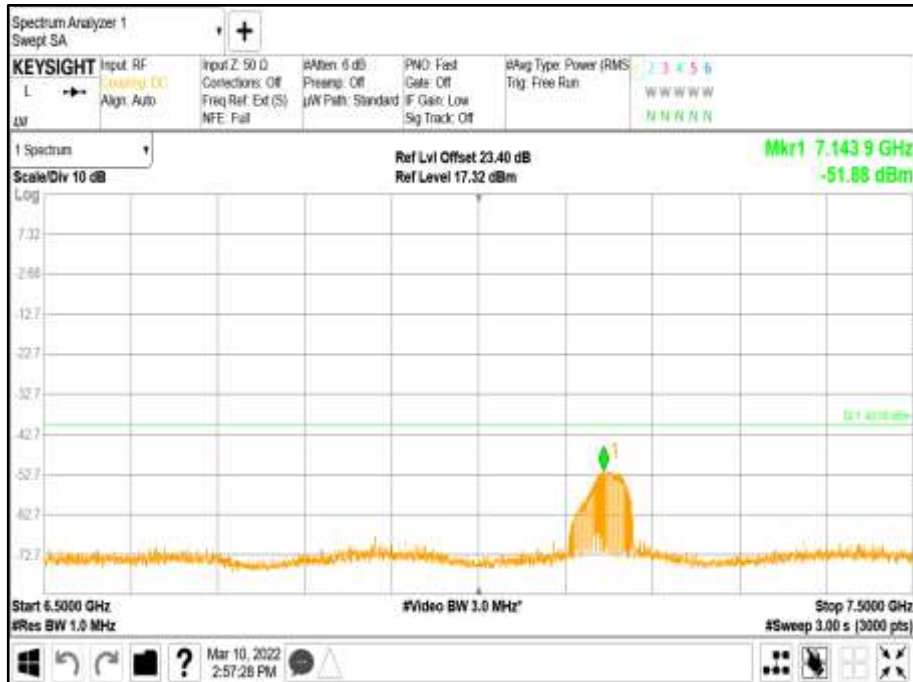


Antenna C - Modulation NR: QPSK - Carrier Bandwidth 20.0+20.0 MHz - Channel Position B - Band 2 - Range 7 GHz Spurious Port C

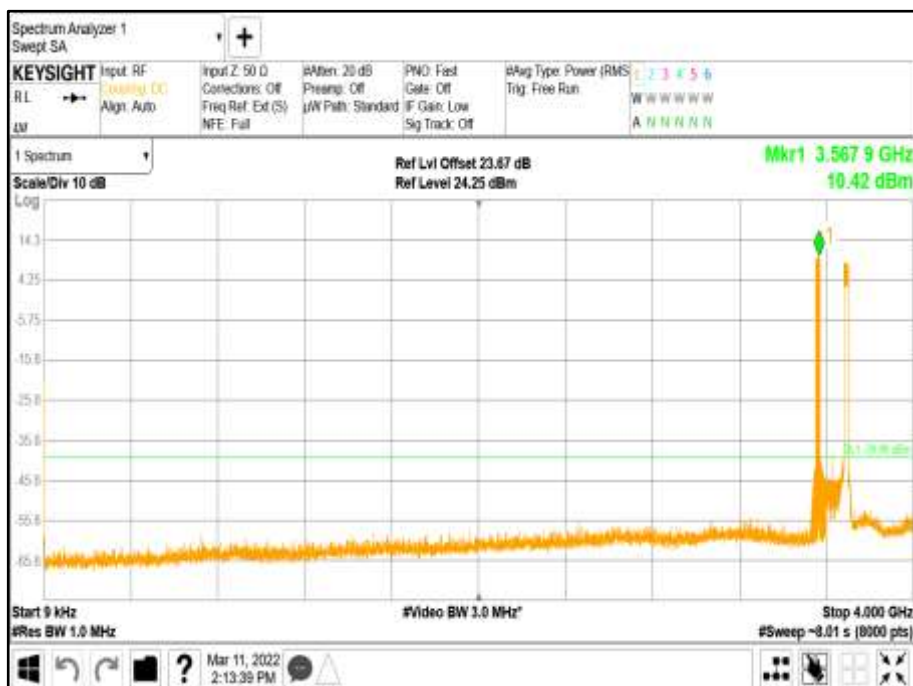




Antenna D - Modulation NR: QPSK - Carrier Bandwidth 20.0+20.0 MHz - Channel Position B - Band 2 - Range 7 GHz Spurious Port D



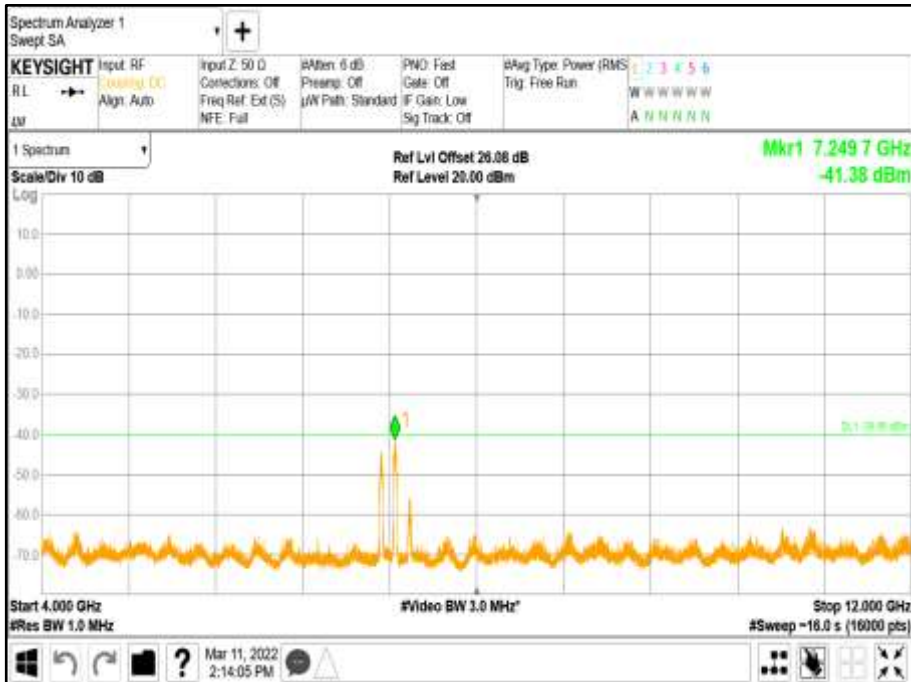
Antenna B - Modulation \*NR: QPSK - Carrier Bandwidth 20.0+20.0 MHz - Channel Position B - Band 1.00 - Range 0.009 to 4000 MHz



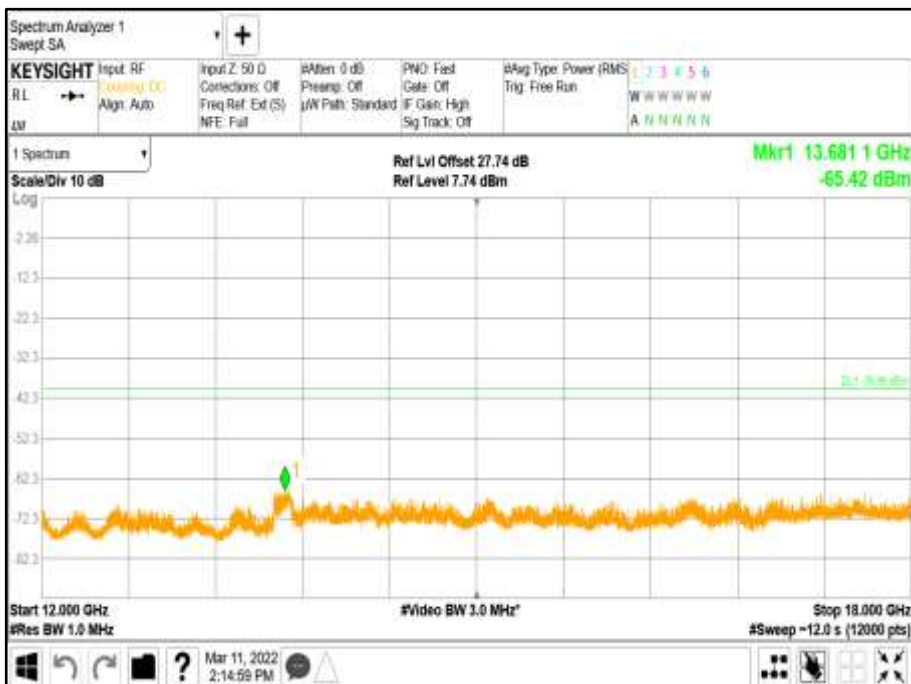




Antenna B - Modulation \*NR: QPSK - Carrier Bandwidth 20.0+20.0 MHz - Channel Position B - Band 2 - Range 4000 to 12000 MHz

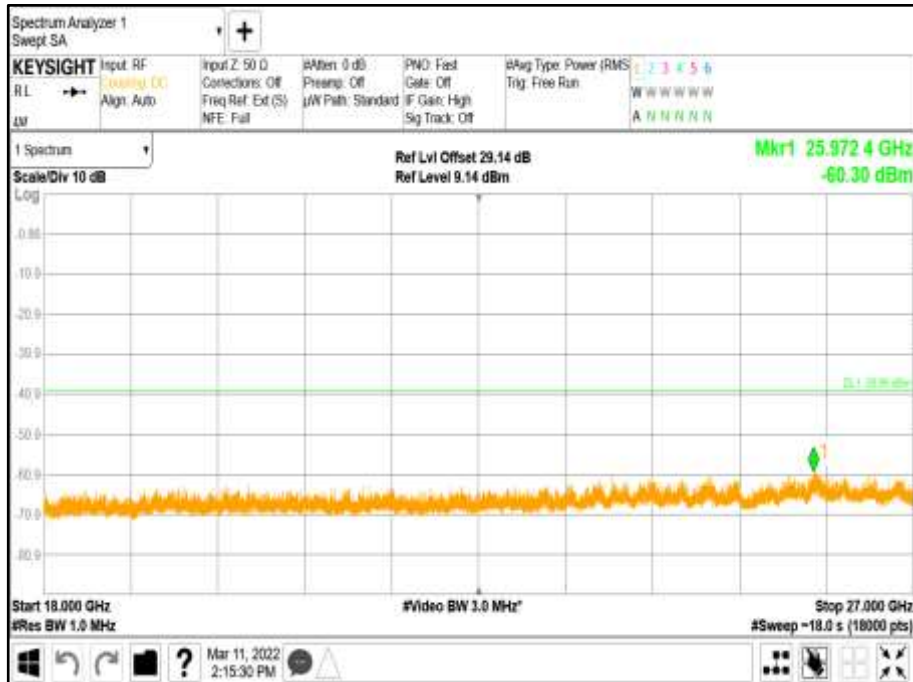


Antenna B - Modulation \*NR: QPSK - Carrier Bandwidth 20.0+20.0 MHz - Channel Position B - Band 3 - Range 12000 to 18000 MHz

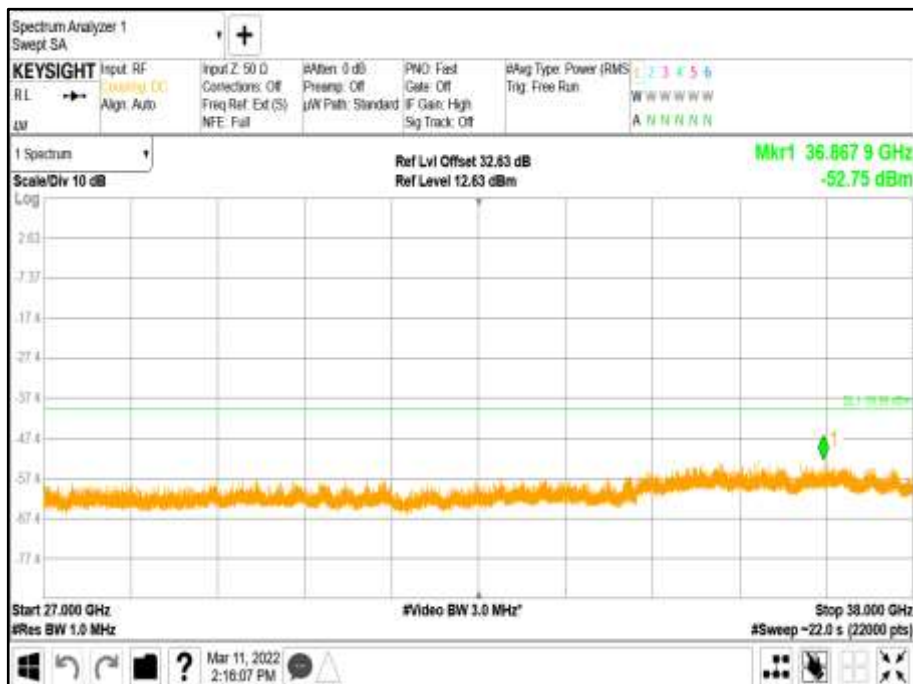




Antenna B - Modulation \*NR: QPSK - Carrier Bandwidth 20.0+20.0 MHz - Channel Position B - Band 4 - Range 18000 to 27000 MHz

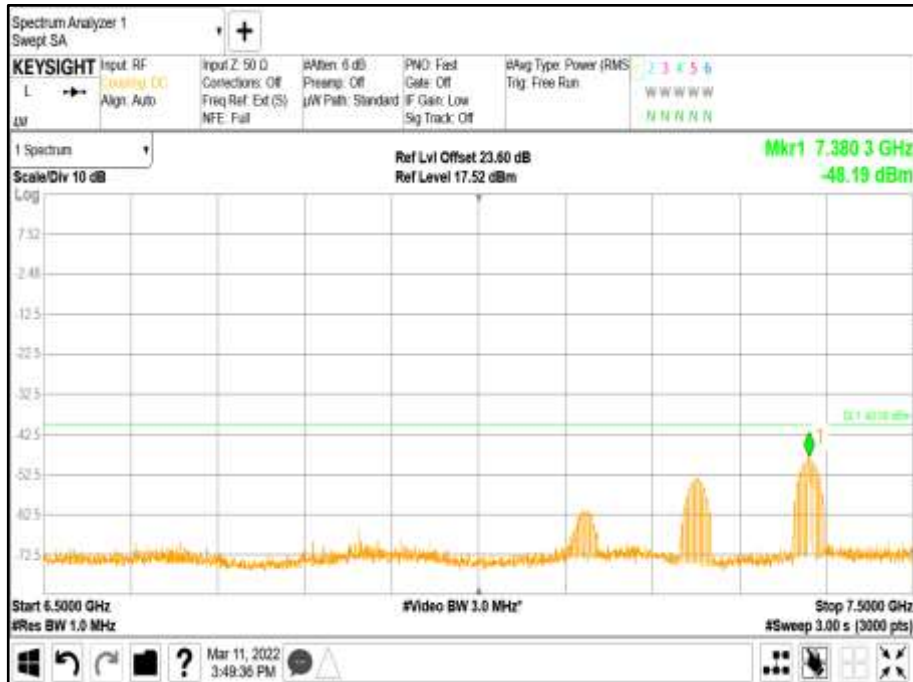


Antenna B - Modulation \*NR: QPSK - Carrier Bandwidth 20.0+20.0 MHz - Channel Position B - Band 5 - Range 27000 to 38000 MHz

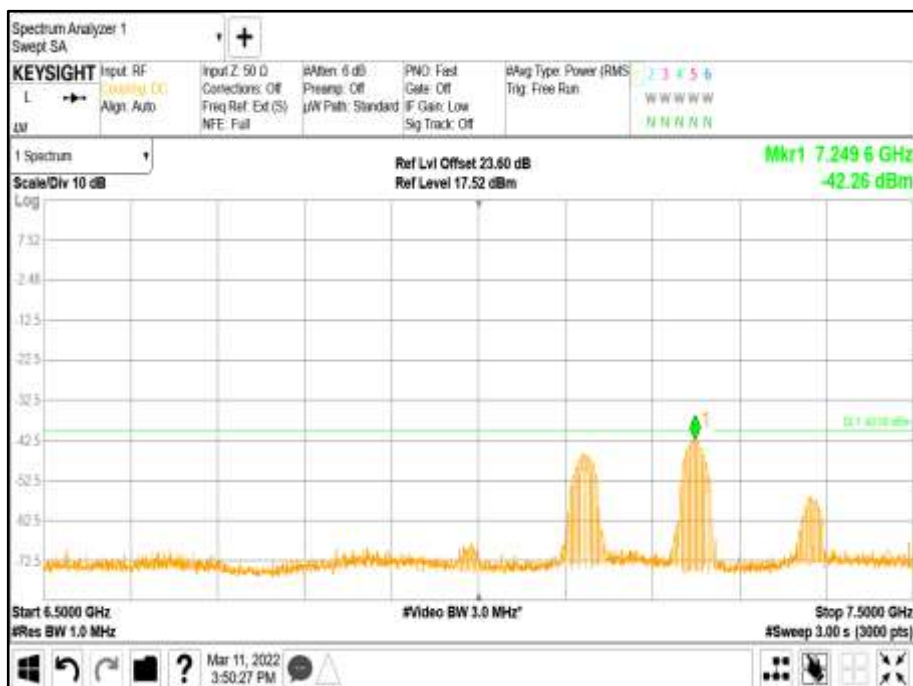




Antenna A - Modulation \*NR: QPSK - Carrier Bandwidth 20.0+20.0 MHz - Channel Position B - Band 2 - Range 7 GHz Spurious Port A

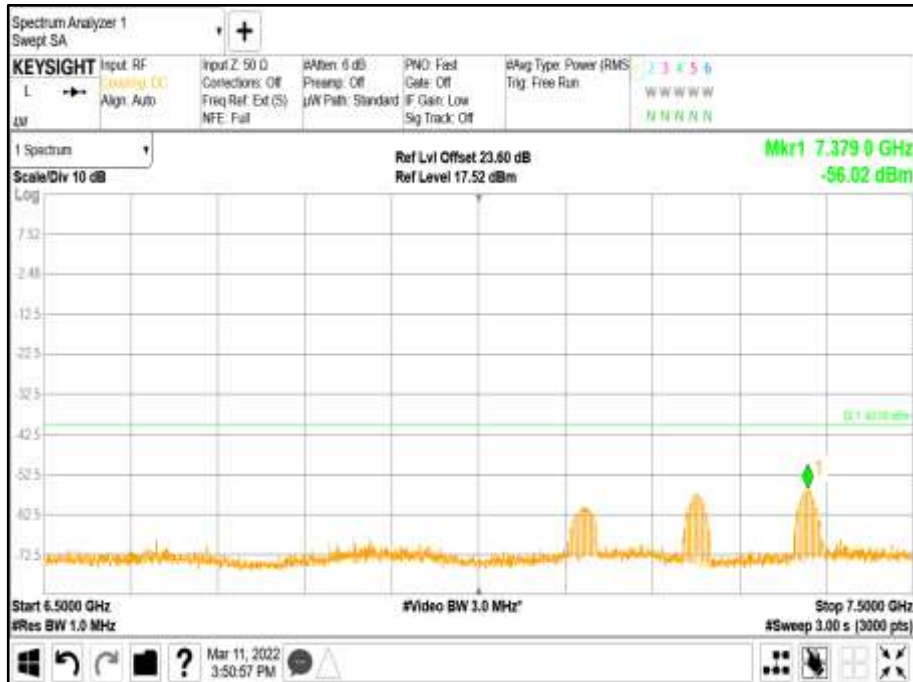


Antenna B - Modulation \*NR: QPSK - Carrier Bandwidth 20.0+20.0 MHz - Channel Position B - Band 2 - Range 7 GHz Spurious Port B

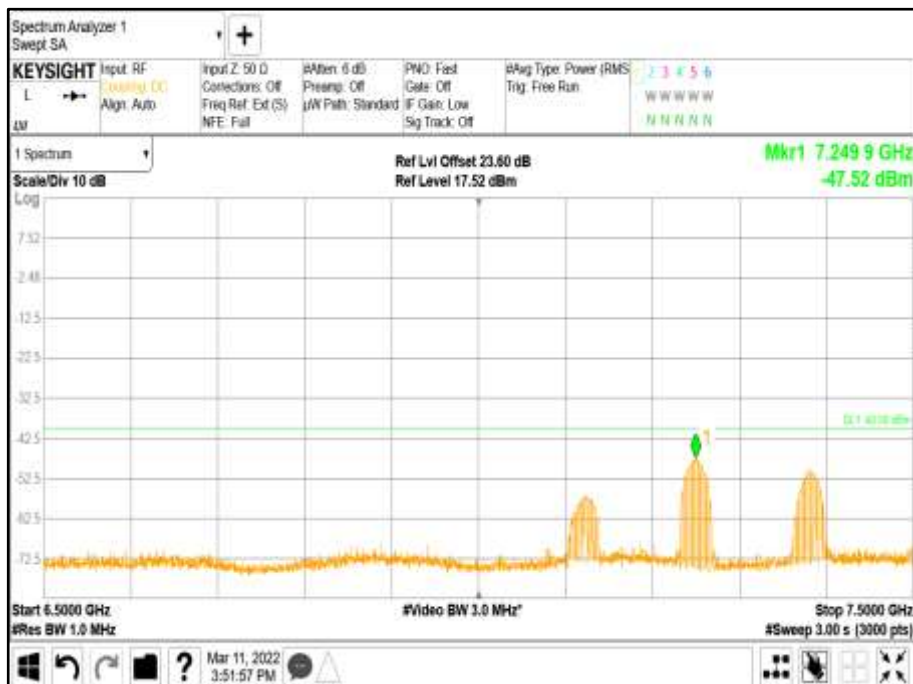




Antenna C - Modulation \*NR: QPSK - Carrier Bandwidth 20.0+20.0 MHz - Channel Position B - Band 2 - Range 7 GHz Spurious Port C

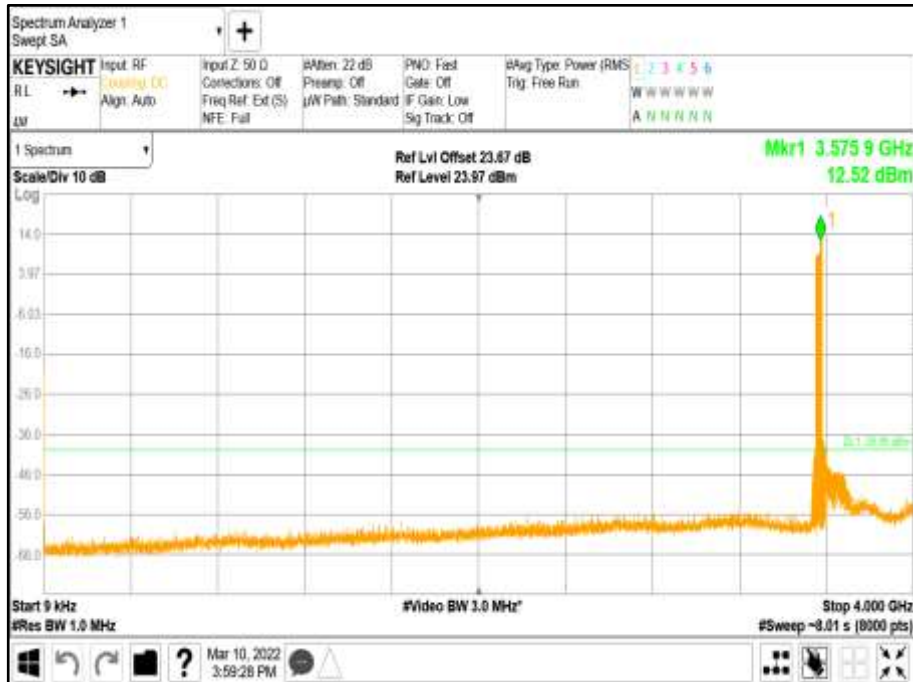


Antenna D - Modulation \*NR: QPSK - Carrier Bandwidth 20.0+20.0 MHz - Channel Position B - Band 2 - Range 7 GHz Spurious Port D

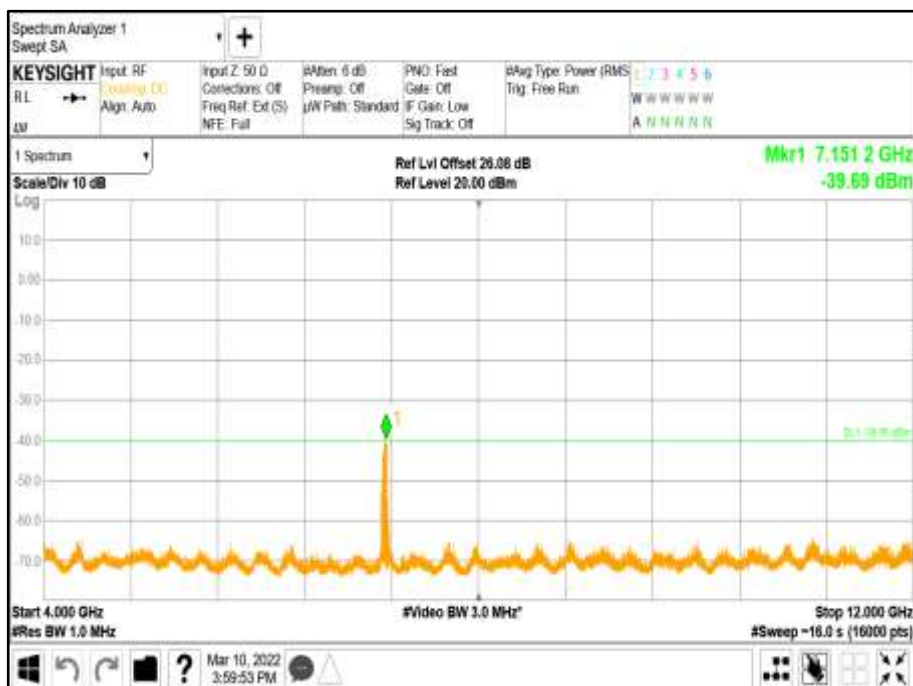




Antenna B - Modulation NR+LTE: QPSK - Carrier Bandwidth 20.0+10.0 MHz - Channel Position B - Band 1.00 - Range 0.009 to 4000 MHz



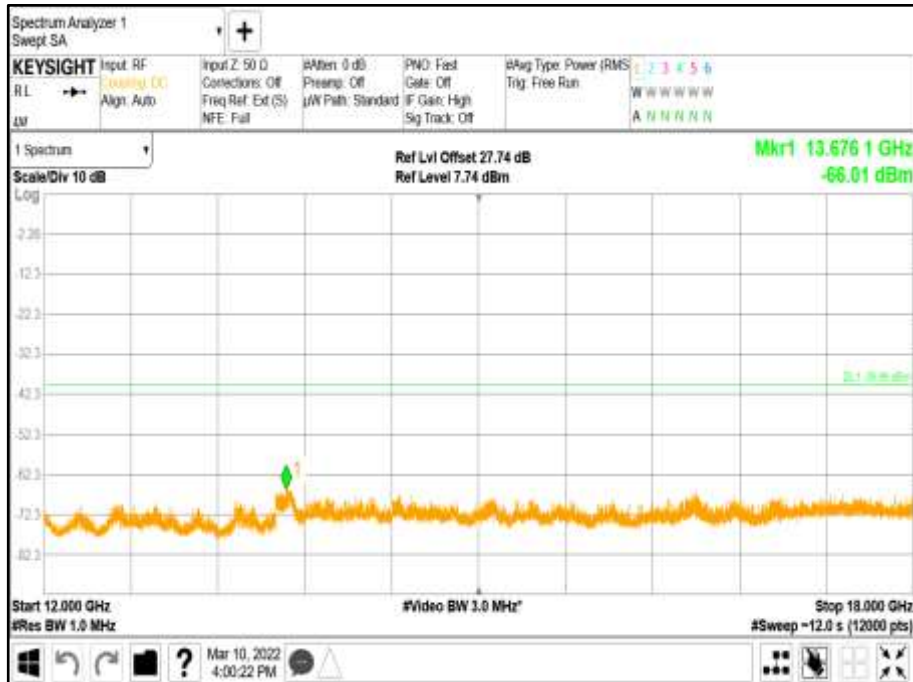
Antenna B - Modulation NR+LTE: QPSK - Carrier Bandwidth 20.0+10.0 MHz - Channel Position B - Band 2 - Range 4000 to 12000 MHz



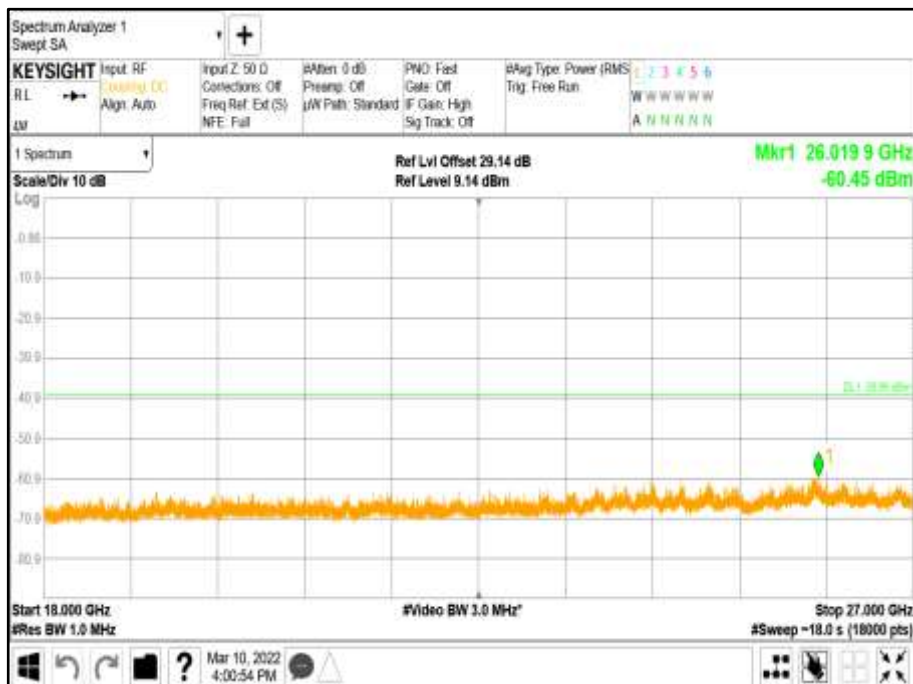




Antenna B - Modulation NR+LTE: QPSK - Carrier Bandwidth 20.0+10.0 MHz - Channel Position B - Band 3 - Range 12000 to 18000 MHz

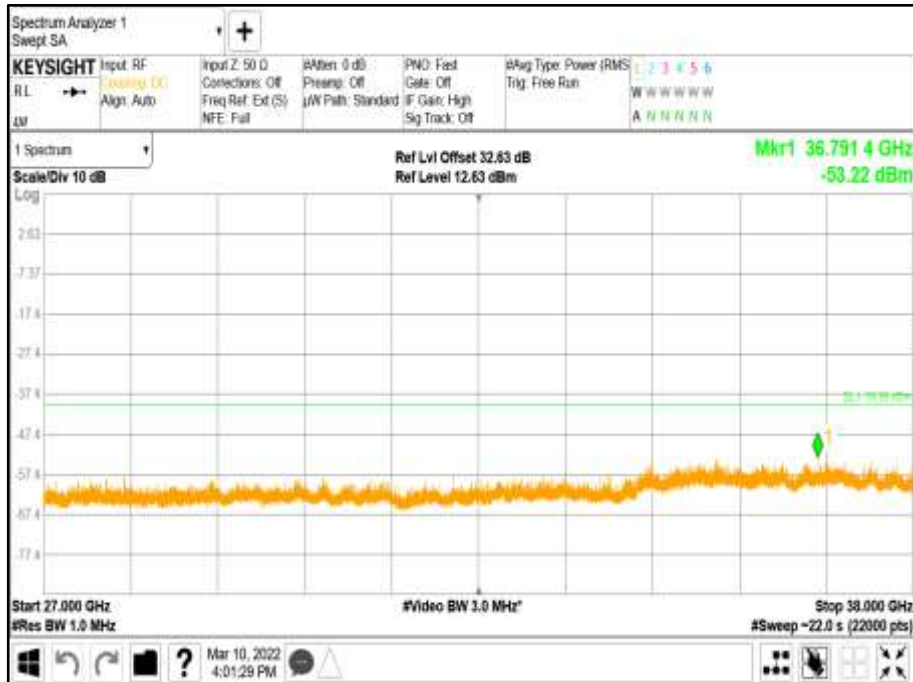


Antenna B - Modulation NR+LTE: QPSK - Carrier Bandwidth 20.0+10.0 MHz - Channel Position B - Band 4 - Range 18000 to 27000 MHz





Antenna B - Modulation NR+LTE: QPSK - Carrier Bandwidth 20.0+10.0 MHz - Channel Position B - Band 5 - Range 27000 to 38000 MHz



Antenna A - Modulation NR+LTE: QPSK - Carrier Bandwidth 20.0+10.0 MHz - Channel Position B - Band 2 - Range 7 GHz Spurious Port A







Antenna B - Modulation NR+LTE: QPSK - Carrier Bandwidth 20.0+10.0 MHz - Channel Position B - Band 2 - Range 7 GHz Spurious Port B



Antenna C - Modulation NR+LTE: QPSK - Carrier Bandwidth 20.0+10.0 MHz - Channel Position B - Band 2 - Range 7 GHz Spurious Port C

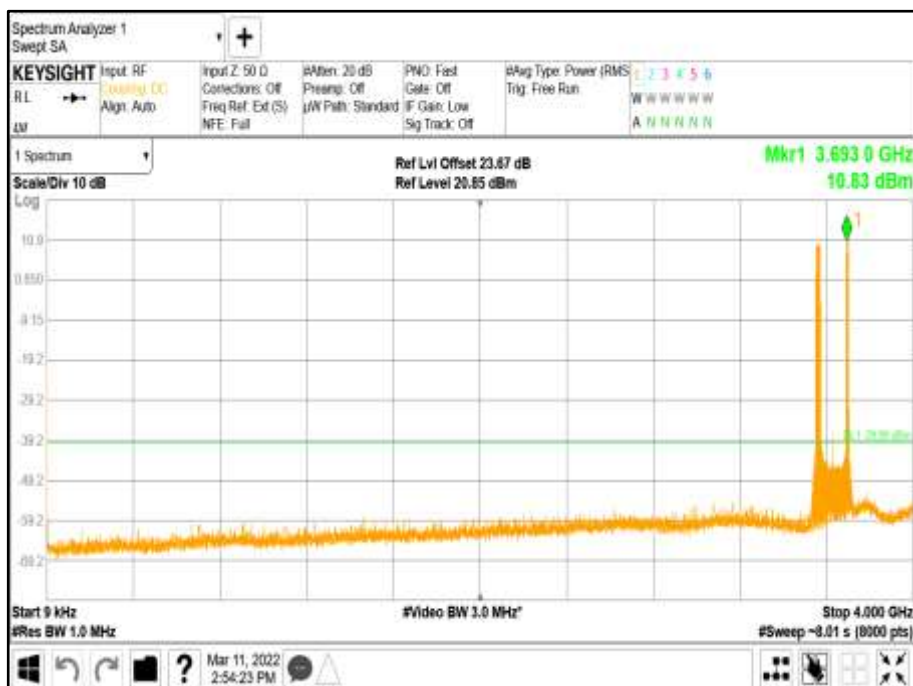




Antenna D - Modulation NR+LTE: QPSK - Carrier Bandwidth 20.0+10.0 MHz - Channel Position B - Band 2 - Range 7 GHz Spurious Port D

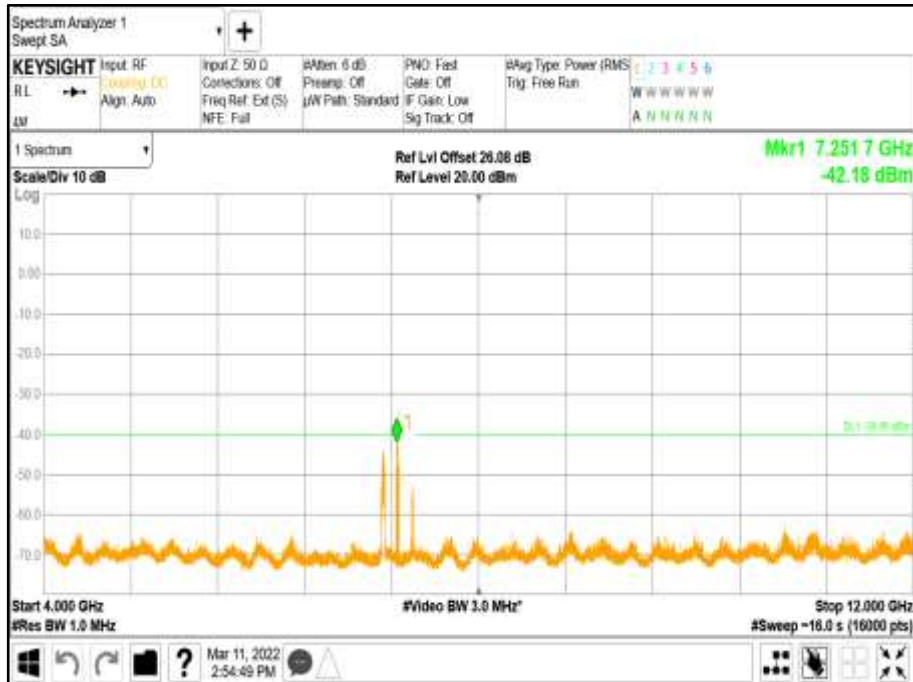


Antenna B - Modulation \*NR+LTE: QPSK - Carrier Bandwidth 20.0+10.0 MHz - Channel Position B - Band 1.00 - Range 0.009 to 4000 MHz

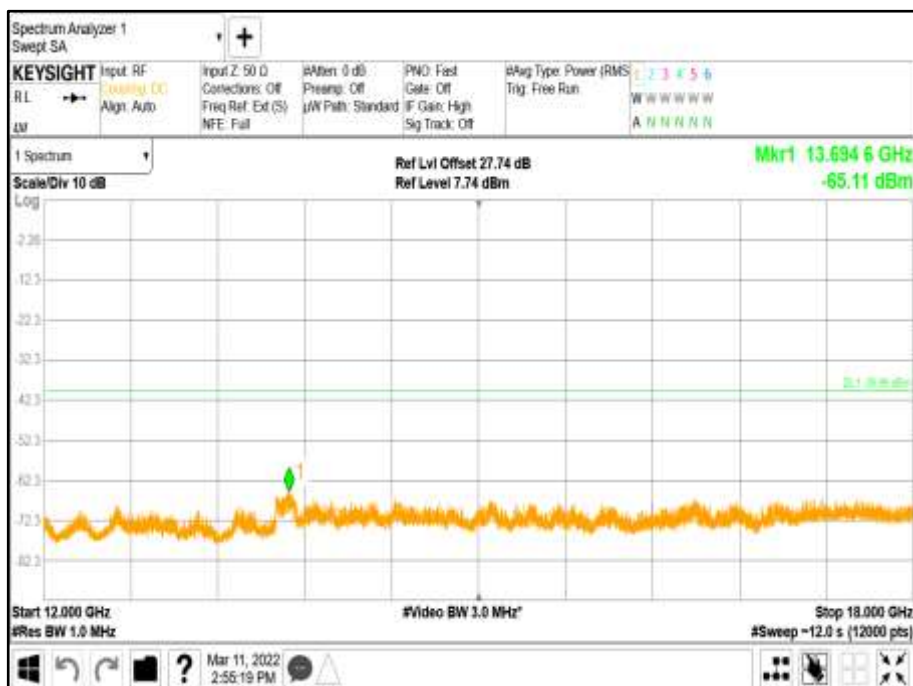




Antenna B - Modulation \*NR+LTE: QPSK - Carrier Bandwidth 20.0+10.0 MHz - Channel Position B - Band 2 - Range 4000 to 12000 MHz

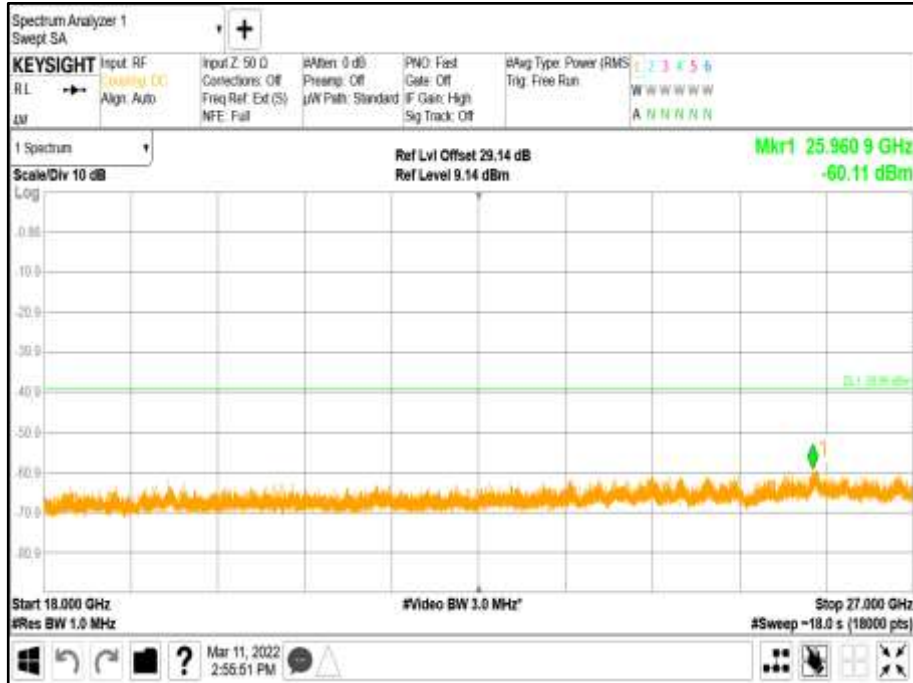


Antenna B - Modulation \*NR+LTE: QPSK - Carrier Bandwidth 20.0+10.0 MHz - Channel Position B - Band 3 - Range 12000 to 18000 MHz

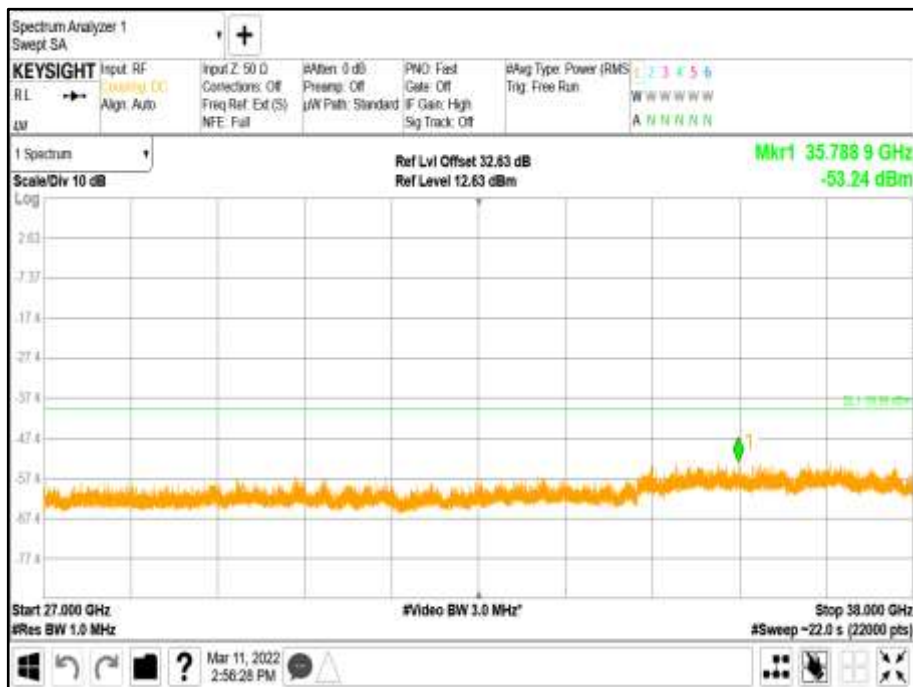




Antenna B - Modulation \*NR+LTE: QPSK - Carrier Bandwidth 20.0+10.0 MHz - Channel Position B - Band 4 - Range 18000 to 27000 MHz

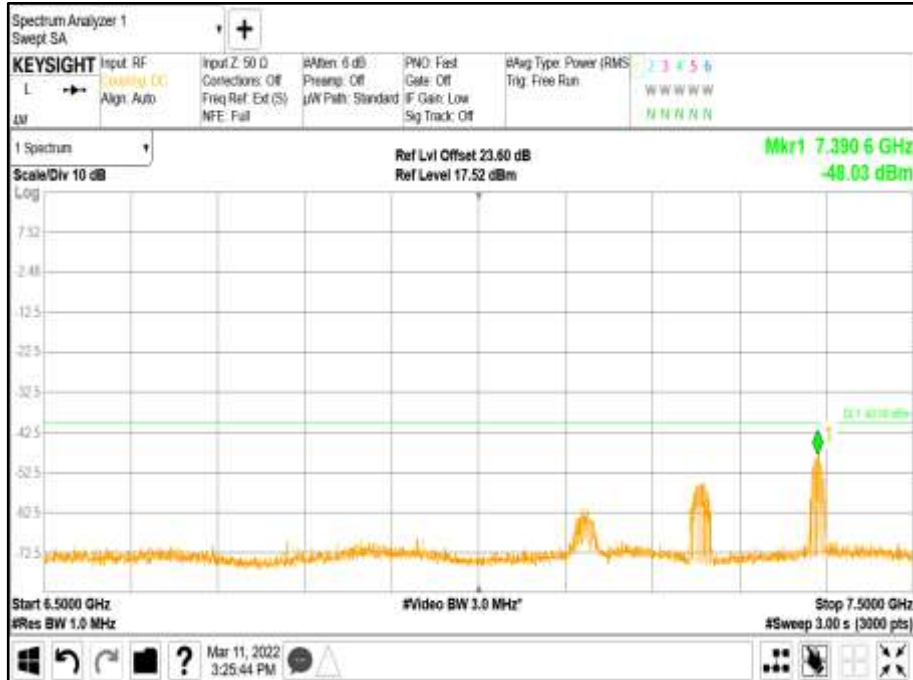


Antenna B - Modulation \*NR+LTE: QPSK - Carrier Bandwidth 20.0+10.0 MHz - Channel Position B - Band 5 - Range 27000 to 38000 MHz

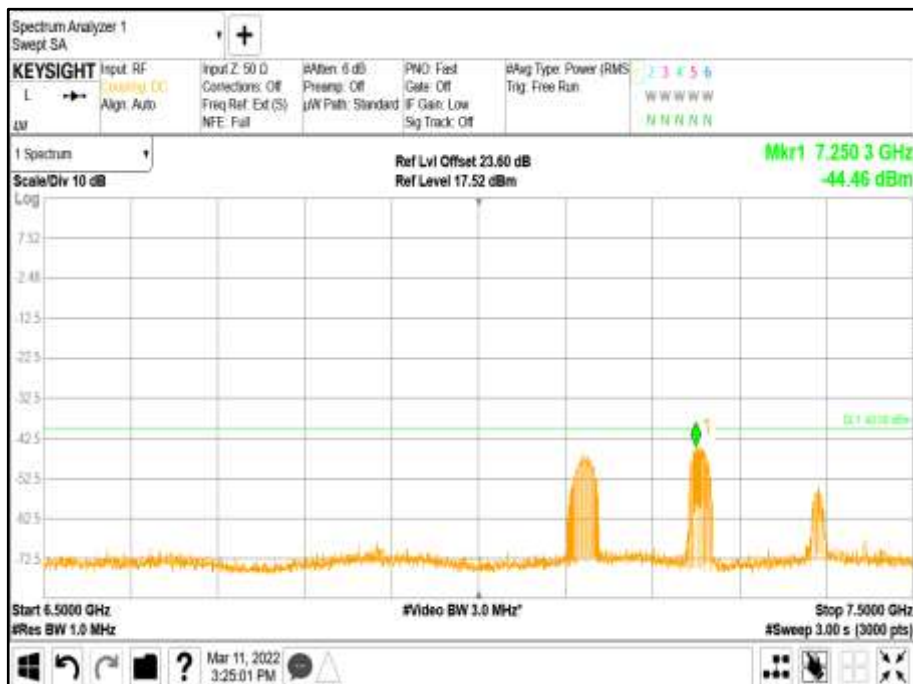




Antenna A - Modulation \*NR+LTE: QPSK - Carrier Bandwidth 20.0+10.0 MHz - Channel Position B - Band 2 - Range 7 GHz Spurious Port A

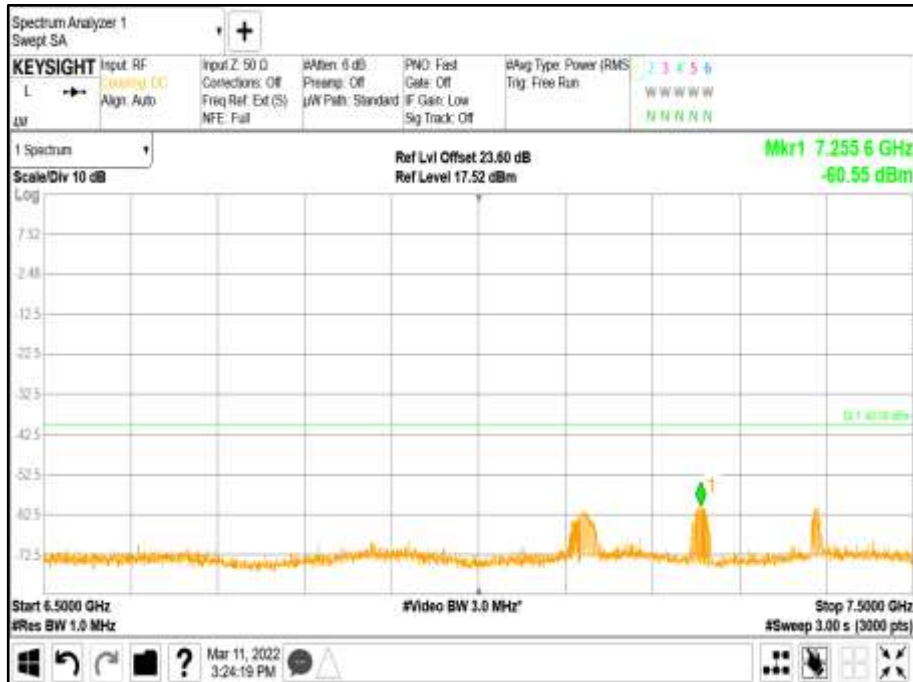


Antenna B - Modulation \*NR+LTE: QPSK - Carrier Bandwidth 20.0+10.0 MHz - Channel Position B - Band 2 - Range 7 GHz Spurious Port B

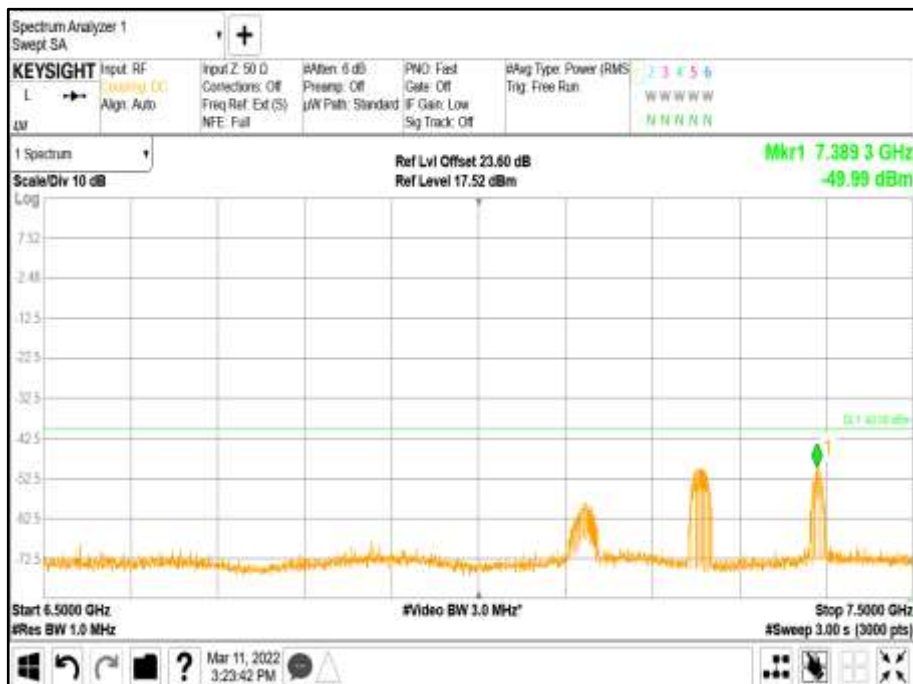




Antenna C - Modulation \*NR+LTE: QPSK - Carrier Bandwidth 20.0+10.0 MHz - Channel Position B - Band 2 - Range 7 GHz Spurious Port C



Antenna D - Modulation \*NR+LTE: QPSK - Carrier Bandwidth 20.0+10.0 MHz - Channel Position B - Band 2 - Range 7 GHz Spurious Port D



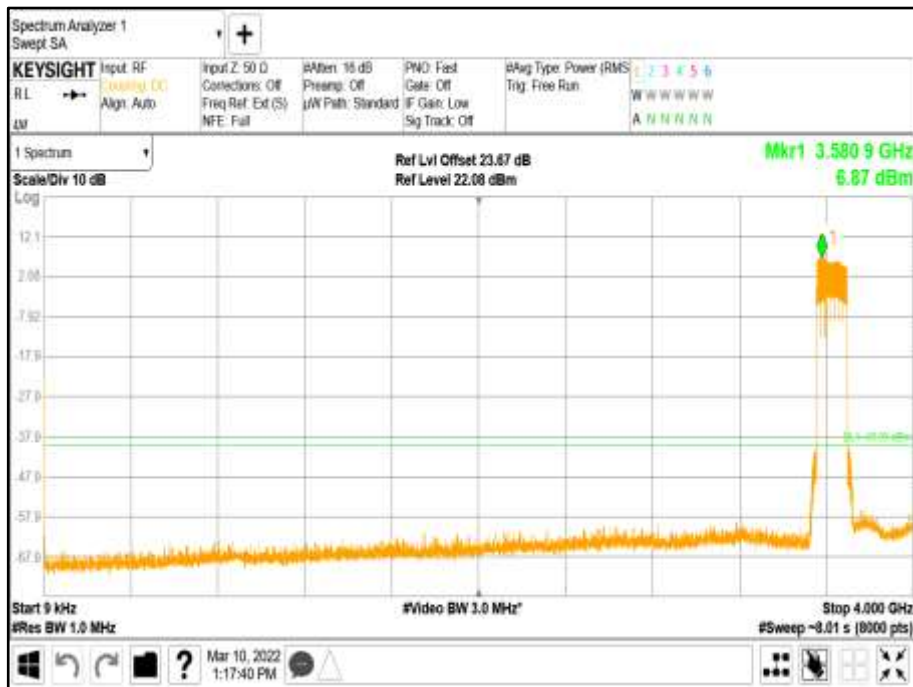




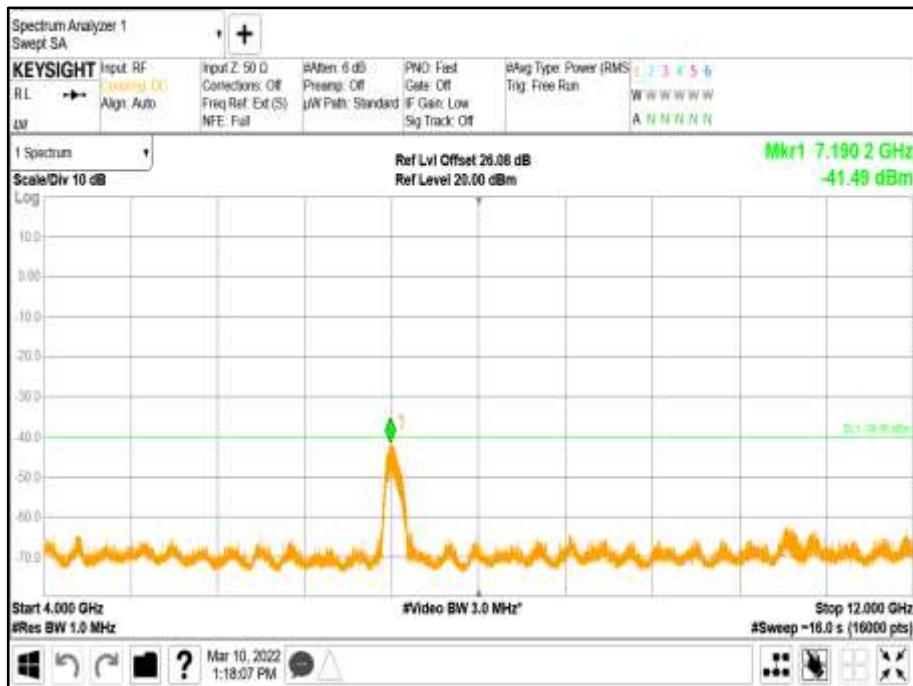
Configuration C

Maximum Output Power dBm

Antenna B - Modulation NR20: QPSK - Carrier Bandwidth 20+20+20+20+20+20+20 MHz - Channel Position M - Band 1.00 - Range 0.009 to 4000 MHz



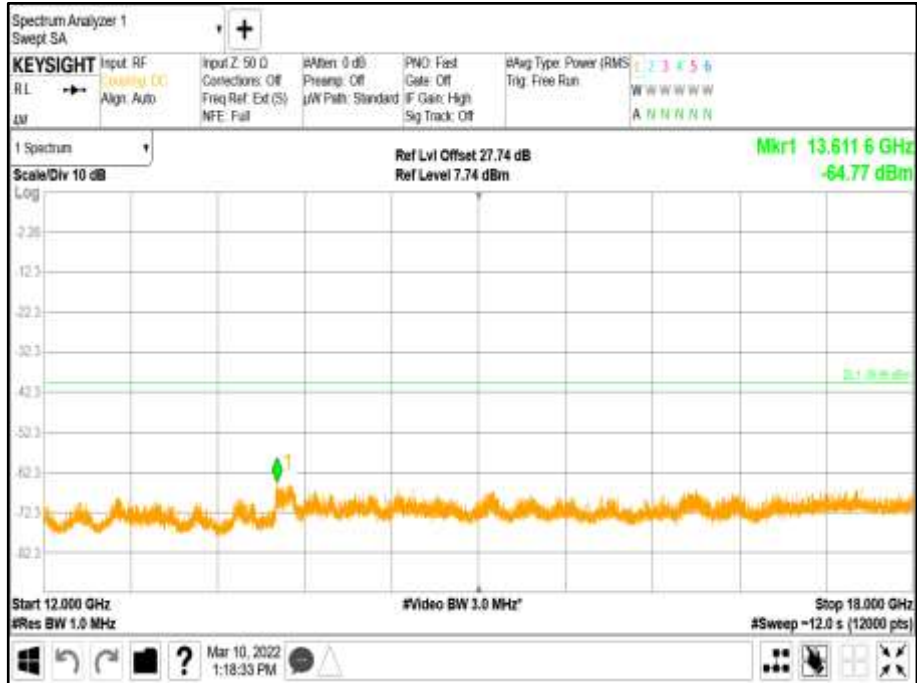
Antenna B - Modulation NR20: QPSK - Carrier Bandwidth 20+20+20+20+20+20+20 MHz - Channel Position M - Band 2 - Range 4000 to 12000 MHz



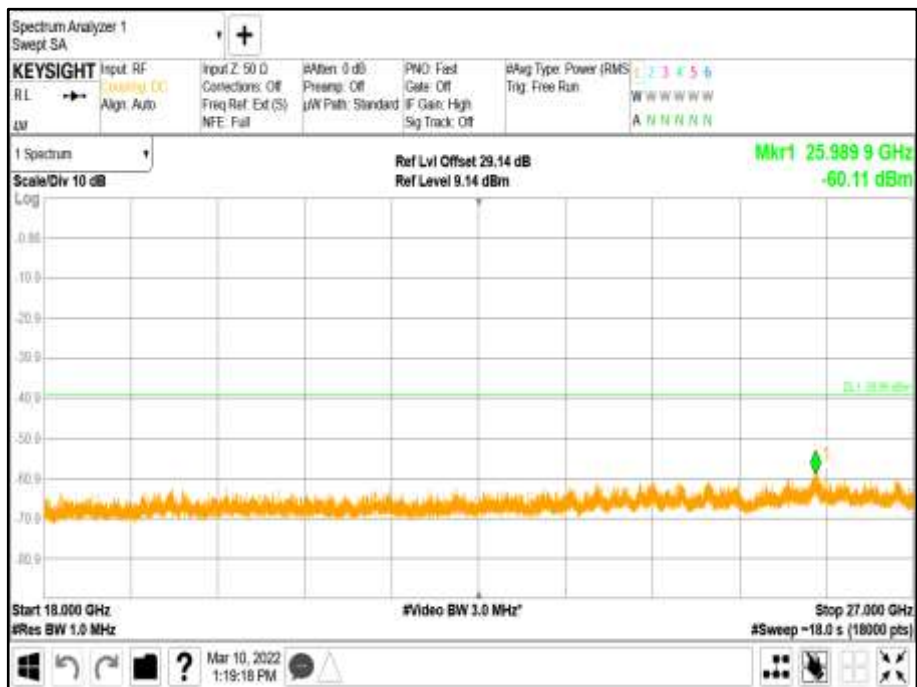




Antenna B - Modulation NR20: QPSK - Carrier Bandwidth 20+20+20+20+20+20+20 MHz - Channel Position M - Band 3 - Range 12000 to 18000 MHz

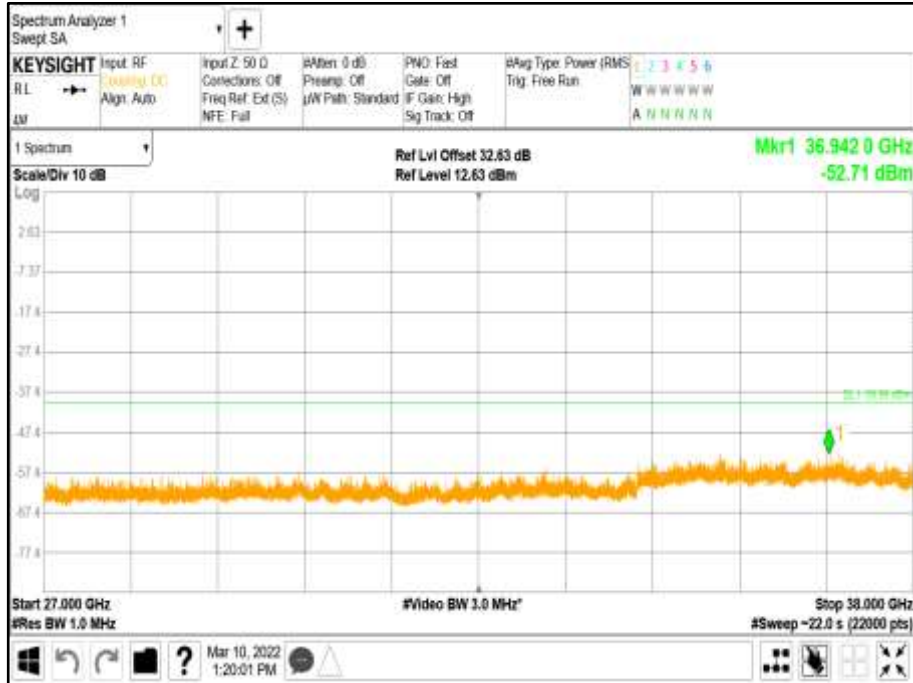


Antenna B - Modulation NR20: QPSK - Carrier Bandwidth 20+20+20+20+20+20+20 MHz - Channel Position M - Band 4 - Range 18000 to 27000 MHz





Antenna B - Modulation NR20: QPSK - Carrier Bandwidth 20+20+20+20+20+20+20 MHz - Channel Position M - Band 5 - Range 27000 to 38000 MHz



Antenna A - Modulation NR20: QPSK - Carrier Bandwidth 20+20+20+20+20+20+20 MHz - Channel Position M - Band 2 - Range 7 GHz Spurious Port A

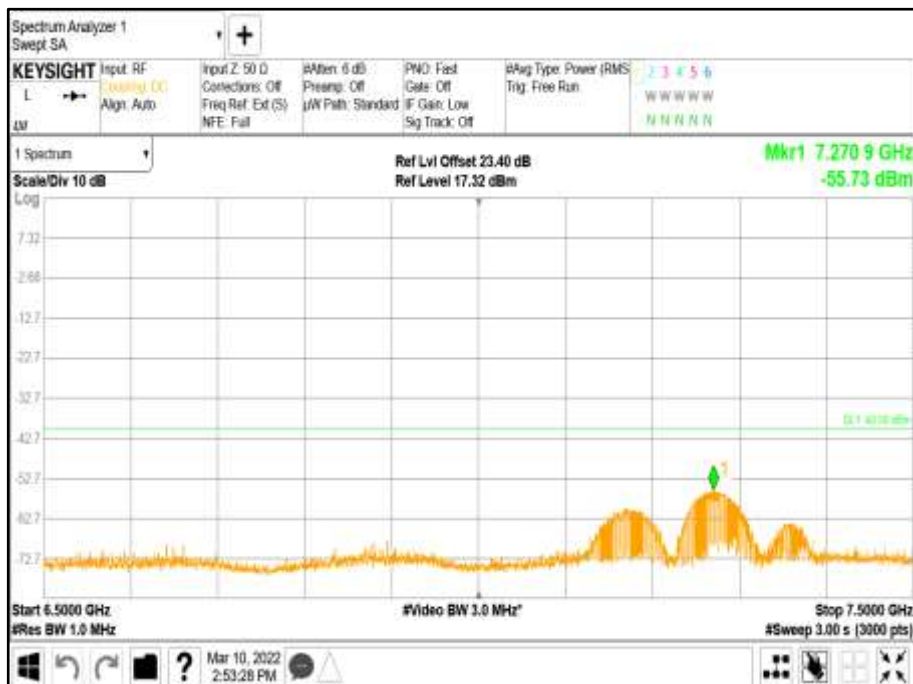




Antenna B - Modulation NR20: QPSK - Carrier Bandwidth 20+20+20+20+20+20+20 MHz - Channel Position M - Band 2 - Range 7 GHz Spurious Port B



Antenna C - Modulation NR20: QPSK - Carrier Bandwidth 20+20+20+20+20+20+20 MHz - Channel Position M - Band 2 - Range 7 GHz Spurious Port C





Antenna D - Modulation NR20: QPSK - Carrier Bandwidth 20+20+20+20+20+20 MHz - Channel Position M - Band 2 - Range 7 GHz Spurious Port D







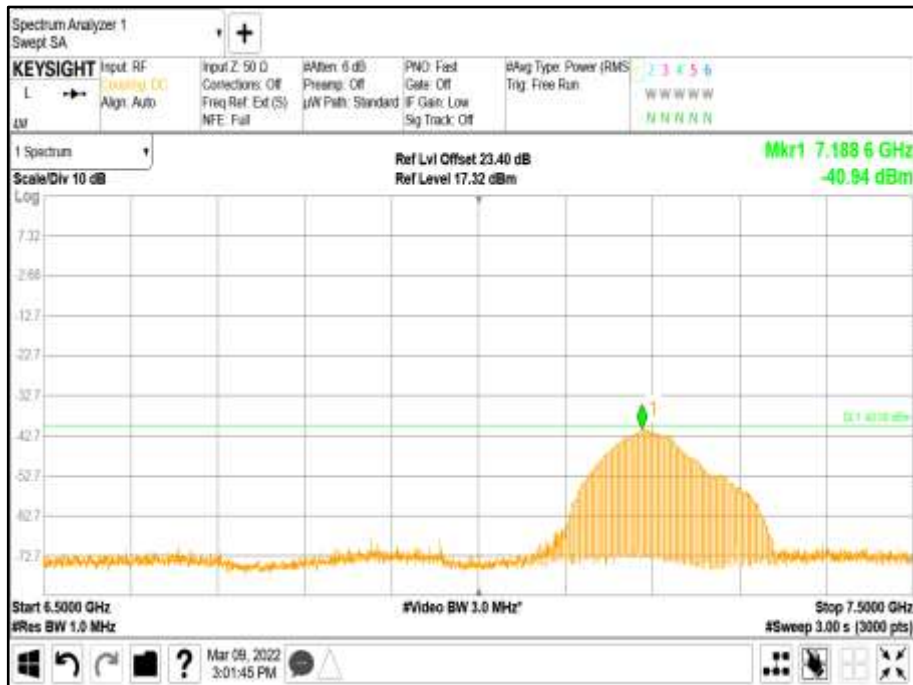








Antenna B - Modulation LTE: QPSK - Carrier Bandwidth  
10+10+10+10+10+10+10+10+10+10+10+10+10+10+10+10 MHz - Channel Position B - Band 2 - Range 7  
GHz Spurious Port B



Antenna C - Modulation LTE: QPSK - Carrier Bandwidth  
10+10+10+10+10+10+10+10+10+10+10+10+10+10+10+10 MHz - Channel Position B - Band 2 - Range 7 GHz  
Spurious Port C

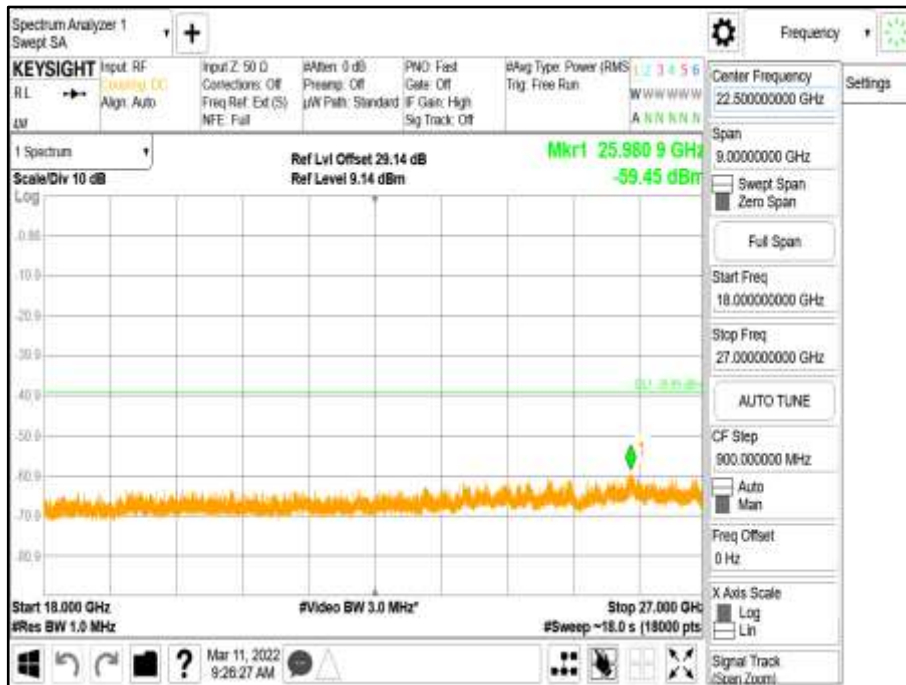




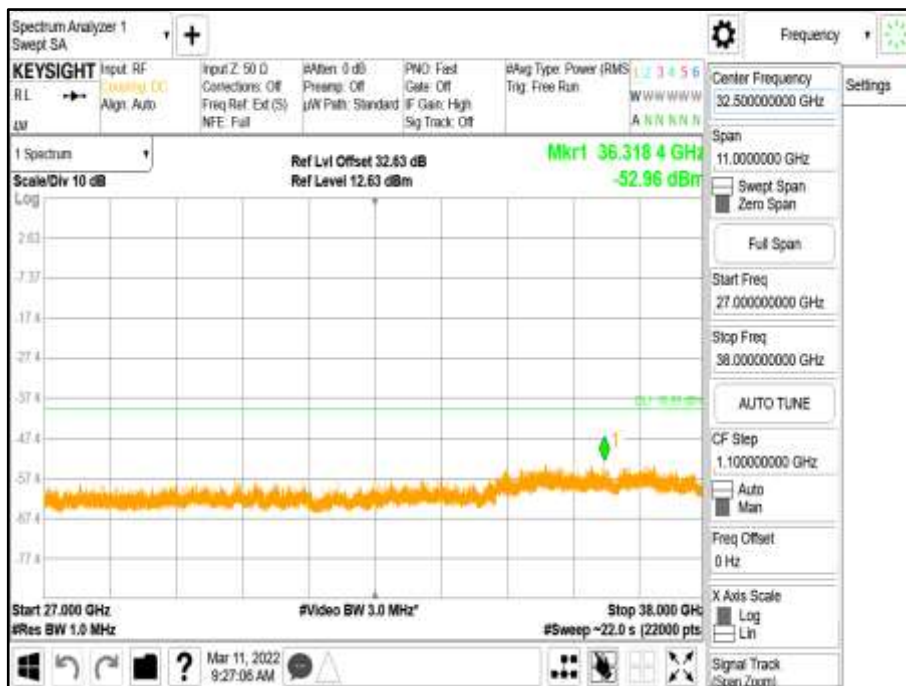




Antenna B - Modulation NR(3)+LTE(9): QPSK - Carrier Bandwidth  
20+20+20+10+10+10+10+10+10+10+10+10+10+10+10 MHz - Channel Position M - Band 4 - Range  
18000 to 27000 MHz



Antenna B - Modulation NR(3)+LTE(9): QPSK - Carrier Bandwidth  
20+20+20+10+10+10+10+10+10+10+10+10+10+10+10 MHz - Channel Position M - Band 5 - Range  
27000 to 38000 MHz





Antenna A - Modulation NR(3)+LTE(9): QPSK - Carrier Bandwidth  
20+20+20+10+10+10+10+10+10+10+10+10+10+10+10 MHz - Channel Position M - Band 2 - Range 7  
GHz Spurious Port A



Antenna B - Modulation NR(3)+LTE(9): QPSK - Carrier Bandwidth  
20+20+20+10+10+10+10+10+10+10+10+10+10+10+10 MHz - Channel Position M - Band 2 - Range 7  
GHz Spurious Port B







Antenna C - Modulation NR(3)+LTE(9): QPSK - Carrier Bandwidth  
20+20+20+10+10+10+10+10+10+10+10+10+10+10+10 MHz - Channel Position M - Band 2 - Range 7  
GHz Spurious Port C



Antenna D - Modulation NR(3)+LTE(9): QPSK - Carrier Bandwidth  
20+20+20+10+10+10+10+10+10+10+10+10+10+10+10 MHz - Channel Position M - Band 2 - Range 7  
GHz Spurious Port D



Limit	-40 dBm/MHz
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**2.5 FREQUENCY STABILITY**

**2.5.1 Specification Reference**

FCC CFR 47 Part 2, Clause 2.1055

**2.5.2 Date of Test and Modification State**

09-Apr-2022 - Modification State 0

**2.5.3 Test Equipment Used**

The major items of test equipment used for the above tests are identified in Section 3.1.

**2.5.4 Environmental Conditions**

Ambient Temperature 25.0°C  
Relative Humidity 25.9%

**2.5.5 Test Method**

All measurements were made in accordance with FCC KDB 971168 D01, Clause 9 and ANSI C63.26 Clause 5.6

**2.5.6 Test Results**

Configuration A

Temperature	Voltage	B48 Frequency Error (Hz)
		Channel Position M (3 625 000 000 Hz)
-30°C	-48.0 V DC	Shuts down
-20°C	-48.0 V DC	Shuts down
-10°C	-48.0 V DC	1.3279
0°C	-48.0 V DC	-2.0187
+10°C	-48.0 V DC	2.2672
+20°C	-40.5 V DC	-2.6609
+20°C	-48.0 V DC	1.8689
+20°C	-57.5 V DC	-1.8604
+30°C	-48.0 V DC	2.0827
+40°C	-48.0 V DC	-2.5835
+50°C	-48.0 V DC	2.9518
		Worst case deviation = 0.000814 ppm





Limit	The frequency stability shall be sufficient to ensure that the fundamental emissions stay within the authorized bands of operation.
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### **SECTION 3**

#### **TEST EQUIPMENT USED**



### 3.1 TEST EQUIPMENT USED

List of absolute measuring and other principal items of test equipment.

Instrument	Manufacturer	Type No.	TE No.	Calibration Period (months)	Calibration Due
Spectrum Analyzer	Keysight	PXA N9030B	MY57144347	24	24-Apr-2022
Thermometer / Refrigeration	VWR	89094-746	210697579	24	13-Aug-2023
Digital Multimeter	Fluke	23	SSG012027	12	22-Oct-2022
PSU	Xantrex	XKW60-50	E00109862	-	O/P Mon
Attenuator (20dB)	Mini-Circuits	BW-K10-2W44+	-	-	O/P Mon
Climate Chamber	Burnsco	RTC-37P-3-3	-07-07	-	O/P Mon

N/A – Not Applicable

O/P Mon – Output Monitored with Calibrated Equipment



### 3.2 MEASUREMENT UNCERTAINTY

For a 95% confidence level, the measurement uncertainties for defined systems are:-

Test Discipline	Frequency / Parameter	MU	
Conducted Maximum Peak Output Power	30 MHz to 20 GHz Amplitude	± 0.7 dB	
Conducted Emissions	30 MHz to 20 GHz Amplitude	± 2.1 dB	
Frequency Stability	30 MHz to 2 GHz	± 5.0 Hz	
Occupied Bandwidth	Up to 20 MHz Bandwidth	5 MHz Bandwidth	± 11547 Hz
		10 MHz Bandwidth	± 23094 Hz
		15 MHz Bandwidth	± 34641 Hz
		20 MHz Bandwidth	± 46188 Hz
Band Edge	30 MHz to 20 GHz Amplitude	±0.8 dB	
Radiated Spurious Emissions	30 MHz to 1 GHz	± 5.2 dB	
	1 GHz to 40GHz	± 6.3 dB	

#### Measurement Uncertainty Decision Rule

Determination of conformity with the specification limits is based on the decision rule according to IEC Guide 115:2007, Clause 4.4.3 and 4.5.1. (Procedure 2). The measurement results are directly compared with the test limit to determine conformance with the requirements of the standard.

Risk: The uncertainty of measurement about the measured result is negligible with regard to the final pass/fail decision. The measurement result can be directly compared with the test limit to determine conformance with the requirement (compare IEC Guide 115). The level of risk to falsely accept and falsely reject items is further described in ILAC-G8



### 3.3 MEASUREMENT SOFTWARE USED

List of measurement software versions used for testing.

Instrument	Manufacturer	Type No.	TE No.	Software Version
PXA Signal Analyser	Keysight	N9030B	MY57144347	A 24.56
HP-VEE Software	TUV SUD	HP_VEE	N/A	V3.28



## **SECTION 5**

### **ACCREDITATION, DISCLAIMERS AND COPYRIGHT**



#### 4.1 ACCREDITATION, DISCLAIMERS AND COPYRIGHT



This report relates only to the actual item/items tested.

Our A2LA Accreditation does not cover opinions and interpretations and any expressed are outside the scope of our A2LA Accreditation.

Results of tests not covered by our A2LA Accreditation Schedule are marked NUA (Not A2LA Accredited).

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TÜV SÜD

TUV SUD Canada, 1280 Teron Rd., Kanata On. K2K 2C1



**ANNEX A**

**MODULE LIST**

Configuration A/B/C/D – Contiguous			
Product	Product No	R-State	Serial No
Dot 41Kr B48 (EUT)	KRY 901 516/4	R1A	On file
CT11	LPC 102 494/1	R2A	T01G495060
IRU 16Fr	KRC 161 842/7	R1A	On file
Software:	CXP2030045/26	Revision:	R12A108
Configuration B/C/D – Non-contiguous			
Product	Product No	R-State	Serial No
Dot 41Kr B48 (EUT)	KRY 901 516/4	R1A	On file
CT11	LPC 102 494/1	R2A	T01G495060
IRU 1649	KRC 161 842/2	R1E	TD3F109016
Software:	CXP2030045/26	Revision:	R12A108