

# Ericsson AB

## RF TEST REPORT

**Report Type:**  
FCC Part 27 RF report

**PRODUCT NAME:**  
Radio 4455 B2/B25 B66A

**REPORT NUMBER:**  
230800731SHA-001

**ISSUE DATE:**  
September 5, 2023

**DOCUMENT CONTROL NUMBER:**  
TTRFFCC Part 27\_V1 © 2018 Intertek



**Applicant:** Ericsson AB  
Isafjordsgatan 10 SE-164 80 Stockholm 16480 Sweden

**Manufacturer:** Ericsson AB  
Isafjordsgatan 10 SE-164 80 Stockholm 16480 Sweden

**FCC ID:** TA8AKRC161823-1

**IC:** 287AB-AS1618231

**SUMMARY:**

The equipment is tested according to the following standard(s) or Specification:

**FCC CFR 47 Part 27:** MISCELLANEOUS WIRELESS COMMUNICATIONS SERVICES

**ISED RSS-139 Issue 4:** Advanced Wireless Services Equipment Operating in the Bands 1710-1780 MHz and 2110-2200 MHz

**PREPARED BY:**

**REVIEWED BY:**



Project Engineer  
Victor Yang

Reviewer  
Jackson Huang

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**TEST REPORT**

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## Revision History

Report No.	Version	Description	Issued Date
230800731SHA-001	Rev. 01	Initial issue of report	August 20, 2023
230800731SHA-001	Rev. 02	Hardware Version is modified to R1B	September 5, 2023

## Measurement result summary

TEST ITEM	FCC REFERANCE	IC REFERANCE	RESULT
Max Output Power and Peak to Average Power Ratio and EIRP	27.50(d)	RSS-139 5.5	Pass
Occupied Bandwidth	27.53(h) 2.1049	RSS-GEN 6.7	Pass
Unwanted Emissions at Band Edge	27.53(h)	RSS-139 5.6	Pass
Conducted Unwanted Emission	27.53(h)	RSS-139 5.6	Pass
Frequency Stability	27.54	RSS-139 5.4	Pass

## 1 GENERAL INFORMATION

### 1.1 Description of Equipment Under Test (EUT)

Description:	Remote Radio Unit
Product name:	Radio 4455 B2/B25 B66A
Product number:	KRC 161 823/1
HVIN	AS1618231
Serial Number(s)	D829071307
Rating:	100-250V AC 50/60Hz
Software Version:	PIS: CXP9013268/15_R95CJ, UP: CXP9024418/15_R80A81
Hardware Version:	R1B
Sample received date:	August 1, 2023
Date of test:	August 1, 2023 ~ August 8, 2023

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**1.2 Technical Specification**

Frequency Range:	B2: TX: 1930-1990 MHz, RX: 1850-1910 MHz B25: TX: 1930-1995 MHz, RX: 1850-1915 MHz B66A: TX: 2110-2180 MHz, RX: 1710-1780 MHz
Number of Antenna ports:	4 TX/RX
Supported RAT:	SR/MR: WCDMA, LTE, NR
Max RF bandwidth (IBW):	B2: 60MHz, B25: 65MHz, B66A: 70MHz
Supported Number of Carriers:	Maximum 6 carriers per port
Supported modulation:	WCDMA: QPSK, 16QAM, 64QAM NR/LTE: QPSK, 16QAM, 64QAM, 256QAM
Supported Channel Bandwidth:	WCDMA: 5MHz LTE: 5, 10, 15, 20 MHz NR: 5, 10, 15, 20, 25, 30, 35, 40 MHz
Declaration output power per port:	44.8 dBm (30W) for single band 46.0 dBm (40W) for multi band

**TEST REPORT****1.3 Description of Test Facility**

<b>Name:</b>	Intertek Testing Services Shanghai
<b>Address 1:</b>	Building 86, No. 1198 Qinzhou Road(North), Shanghai 200233, P.R. China
<b>Address 2:</b>	No. 5 Lize East Street, Ericsson Tower, Chaoyang District, Beijing 100102 P.R.C.
<b>Telephone:</b>	+86 21 61278200
<b>Telefax:</b>	+86 21 54262353
<b>The test facility is recognized, certified, or accredited by these organizations:</b>	FCC Accredited Lab Designation Number: CN0175
	IC Registration Lab CAB identifier.: CN0014
	A2LA Accreditation Lab Certificate Number: 3309.02



## 2 TEST SPECIFICATIONS

### 2.1 Related documents

FCC Part 27 (2021)

FCC Part 2 (2021)

ISED RSS-139 issue 4 September 29, 2022

ISED RSS-Gen issue 5 March 2019 Amendment 1

ANSI C63.26:2015

KDB 971168 D01 v03r01

KDB 662911 D01 v02r01

### 2.2 Product Information

The Equipment Under Test (EUT) is an Ericsson Radio Unit working in the wireless communications services 2100MHz band which provides communication connections to network in WCDMA/LTE/NR modes and MSR modes. Radio 4455 B2/B25 B66A operates from a 120VAC 60Hz.

The EUT includes 4 TX/RX ports and it can be configured to transmit in MIMO mode, and MIMO mode was used for measurements as the worst configuration. The complete testing was performed with the EUT transmitting at maximum RF power unless otherwise stated.

A full technical description can be found in the Manufacturer's documentation.

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**2.3 Configuration Description**

The following settings were used to represent all traffic scenarios. The output power was measured on the bottom, middle and top channel of all applicable antenna ports. By measuring the output power of QPSK, 16QAM, 64QAM, 256QAM on one of the antenna ports, it was determined that QPSK for NR was the worst-case modulation schemes and were used for all testing.

Complete testing was carried out on the worst-case antenna port which was established as being the highest output power from the 4 measured ports on worst case modulation scheme. This antenna port was Port B for all modes.

The settings below were used for all measurements unless otherwise noted:

NR

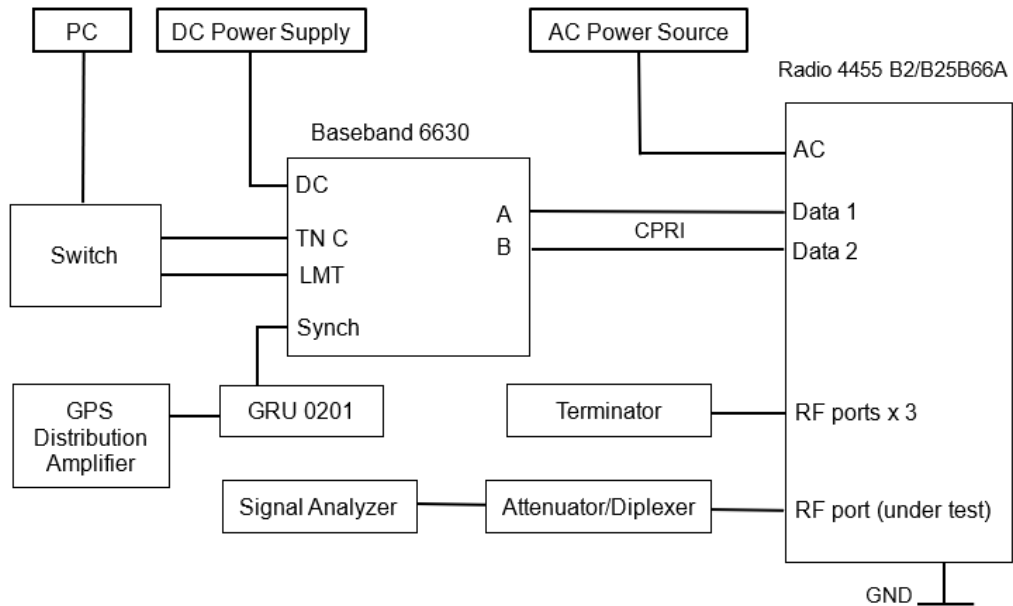
Configuration	No. of Carriers	NR Carrier Bandwidth (MHz)	Carrier Frequency Configuration (MHz)		
			Bottom	Middle	Top
NR-1C	1NR	25	2122.5	2145	2167.5
		30	2125	2145	2165
		35	2127.5	2145	2162.5
		40	2130	2145	2160
NR-2C	2NR	25	-	2122.5+2167.5	-
		30	-	2125+2165	-
		35	-	2127.5+2162.5	-

NR

Configuration	No. of Carriers	NR Carrier Bandwidth (MHz)	Carrier Frequency Configuration (MHz)		
			Bottom	Middle	Top
NR-1C-BE	1NR	25	2122.5	-	2167.5
		30	2125	-	2165
		35	2127.5	-	2162.5
		40	2130	-	2160
NR-2C-BE	2NR	25	2122.5+2147.5	-	2142.5+2167.5
		30	2125+2155	-	2135+2165
		35	-	2127.5+2162.5	-

## 2.4 Test Setup

Conducted Measurement:



No.	Auxiliary Equipment	Product Number / Model Type	Version
1	PC	PowerEdge R230	-
2	Baseband 6630	KDU 137 848/1	R2H
3	GRU 02 01	NCD 901 41/1	R1D
4	GPS Distribution Amplifier	58536A	-
5	Switch	LS-S5024E-CN	-
6	Terminator	60Z150/01020605006	-
7	Terminator	TF150/11081908	-
8	Terminator	TF150/06081408	-
9	DC Power Supply	N8737A	-

Proper Attenuator/Diplexer will be chosen to use in relative test case. And the cable loss of specified Attenuator/Diplexer with connect cable will be calibrated before test for relative frequency range and the worst reading will be used as offset in the relative test case.

**2.5 Test environment condition:**

Test items	Temperature	Humidity
Max Output Power and Peak to Average Power Ratio and EIRP	23°C	54% RH
Occupied Bandwidth		
Unwanted Emissions at Band Edge		
Conducted Unwanted Emission		
Frequency Stability	Please refer to clause 7	

## 2.6 Instrument list

RF test					
Used	Equipment	Manufacturer	Type	Internal no.	Due date
<input checked="" type="checkbox"/>	PXA Signal Analyzer	Keysight	N9030A	EC1046	2024.4.7
<input type="checkbox"/>	Signal Generator	R&S	SMU200A	EC1050	2024.4.2
<input checked="" type="checkbox"/>	Climatic Chamber	赛宝	117	EC1052	2023.9.19
<input checked="" type="checkbox"/>	Humiture meter	托普	CEEC-WR16H-50W	EC1053	2024.2.21
<input type="checkbox"/>	Power sensor	R&S	TPJ-20	EC1111	2023.7.14
<input type="checkbox"/>	Power sensor	R&S	NRP-Z11	EC1112	2023.7.14
<input type="checkbox"/>	Power meter	R&S	NRP-Z21	EC1113	2023.8.9
<input checked="" type="checkbox"/>	AC Power Source	ITECH	IT7326	6010706730002	N/A
<input checked="" type="checkbox"/>	40dB Attenuator	SHX	DTS200	17070716	N/A
<input checked="" type="checkbox"/>	20dB Attenuator	SHX	DTS50G	15092511	N/A
<input checked="" type="checkbox"/>	Diplexer	K&L	WSD-00747-1	35	N/A
<input checked="" type="checkbox"/>	40dB Attenuator	SHX	2.92TS50	21041401	N/A
<input checked="" type="checkbox"/>	Network Analyzer	Keysight	E5071C	MY46631193	2023.10.17
<input checked="" type="checkbox"/>	Network Analyzer	R&S	ZNA43	100948	2024.3.15

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**2.7 Measurement uncertainty**

The measurement uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

Test item	Measurement uncertainty
Maximum output power	0.73dB
Occupied Bandwidth	0.88%
Unwanted Emissions at Band Edge	3.03dB
Conducted Unwanted Emission	3.03dB
Frequency stability	0.77 x 10 <sup>-7</sup>

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### 3 Maximum Output Power and Peak to Average Power Ratio and EIRP

**Test result:** Pass

#### 3.1 Limit

Output Power:

FCC (EIRP) 1640 W(62.15dBm) or 3280W(65.16dBm) for emission bandwidth  $\leq$  1MHz

1640 W/MHz(62.15dBm/MHz) or 3280W/MHz(65.16dBm/MHz) for emission bandwidth  $>$  1MHz

IC 65 dBm e.i.r.p./MHz

Peak to Average Ratio:  $\leq$ 13 dB

Note: Stricter limit is applied.

#### 3.2 Measurement Procedure

The EUT was configured to transmit on maximum power and proper modulation. The transmitter power shall be measured in terms of a root-mean-square (RMS) average value. In case of the EUT was configured to MIMO mode, since the EUT transmits on all antennas simultaneously in the same frequency range, using the Measure-and-Sum approach, the output power at all antennas were tested, and the total output power were then summed mathematically in linear power units according to FCC KDB 662911 D01.

A peak to average ratio measurement is performed at the conducted ports of the EUT for single carrier for single RAT mode. The spectrum analyzers Complementary Cumulative Distribution Function (CCDF) was used and 0.1% probability value recorded.

## TEST REPORT

### 3.3 Measurement result

NR mode:

NR-1C

Antenna Port	NR Modulation	NR Carrier Bandwidth (MHz)	Output power / Peak-to-Average Ratio (PAR)								
			Channel position B			Channel position M			Channel position T		
			Power (dBm)	Power (dBm /MHz)	PAR (dB)	Power (dBm)	Power (dBm /MHz)	PAR (dB)	Power (dBm)	Power (dBm /MHz)	PAR (dB)
A	QPSK	25	44.58	31.35	7.47	44.71	31.30	7.43	44.63	31.30	7.49
B	QPSK	25	44.87	31.43	7.47	44.78	31.38	7.43	44.76	31.43	7.49
C	QPSK	25	44.42	31.11	7.46	44.46	31.02	7.42	44.40	31.14	7.48
D	QPSK	25	44.55	31.28	7.46	44.39	31.08	7.43	44.45	31.16	7.49
Total conducted power			50.63	37.31	-	50.61	37.22	-	50.58	37.28	-
EIRP limit			-	62.15	13.00	-	62.15	13.00	-	62.15	13.00
Max antenna gain			-	24.84	-	-	24.93	-	-	24.87	-

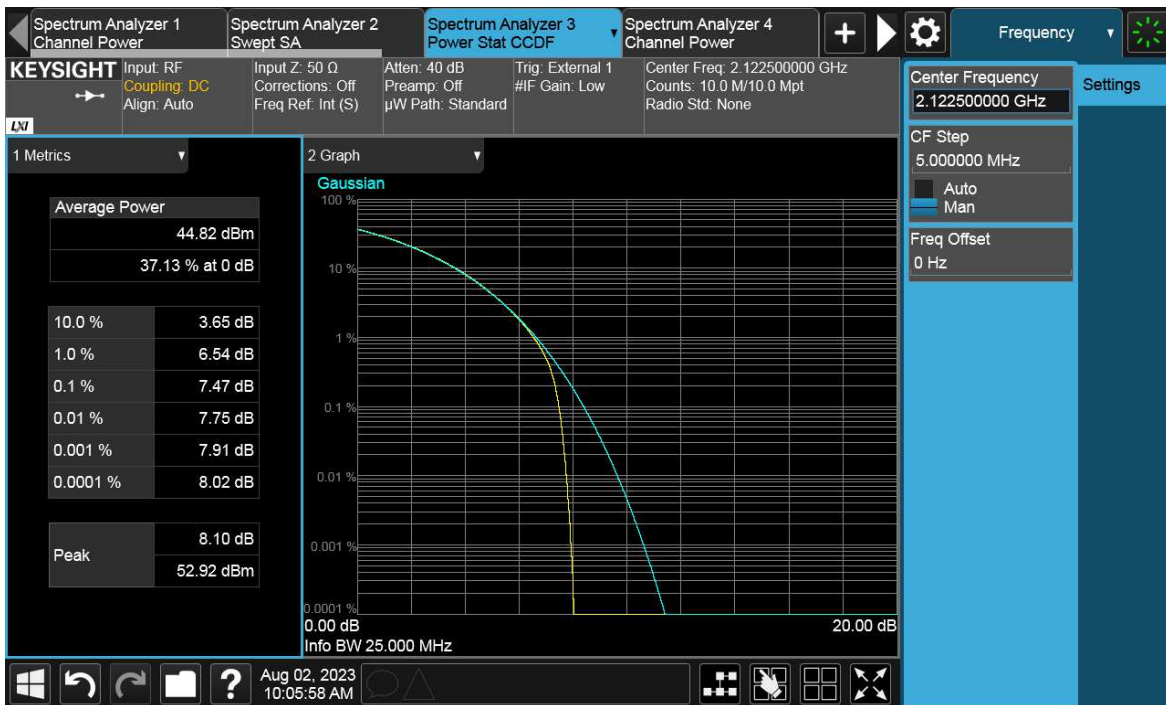
Channel position B



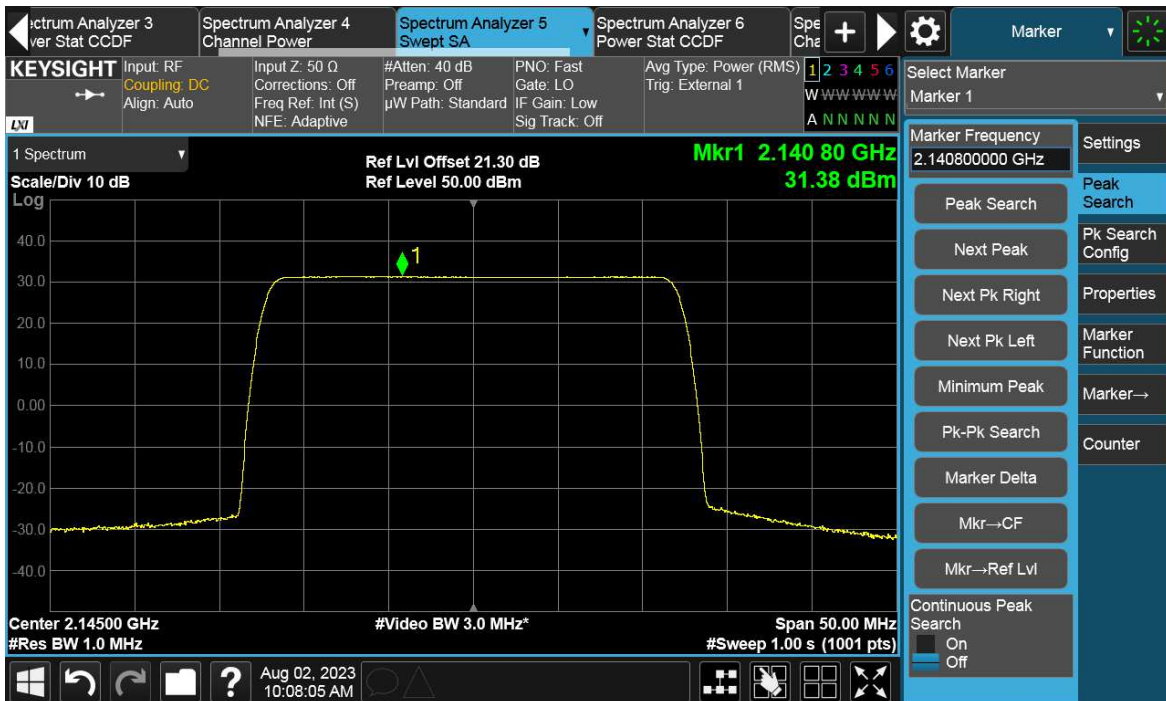
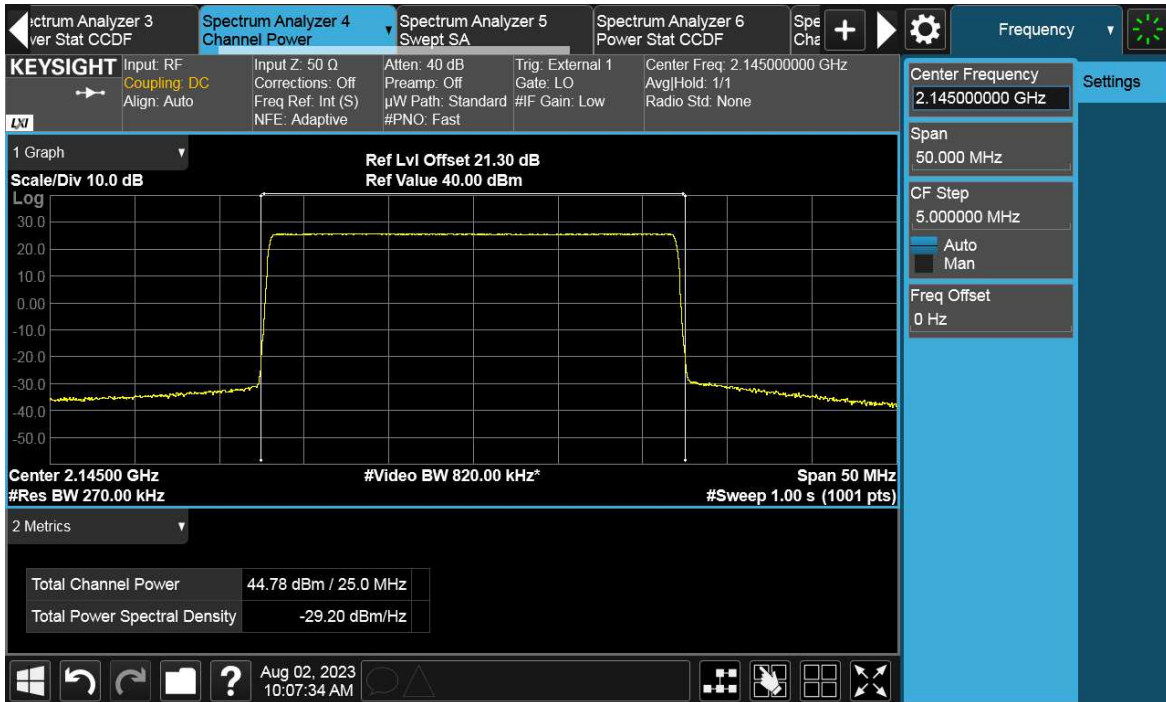


Total Quality. Assured.

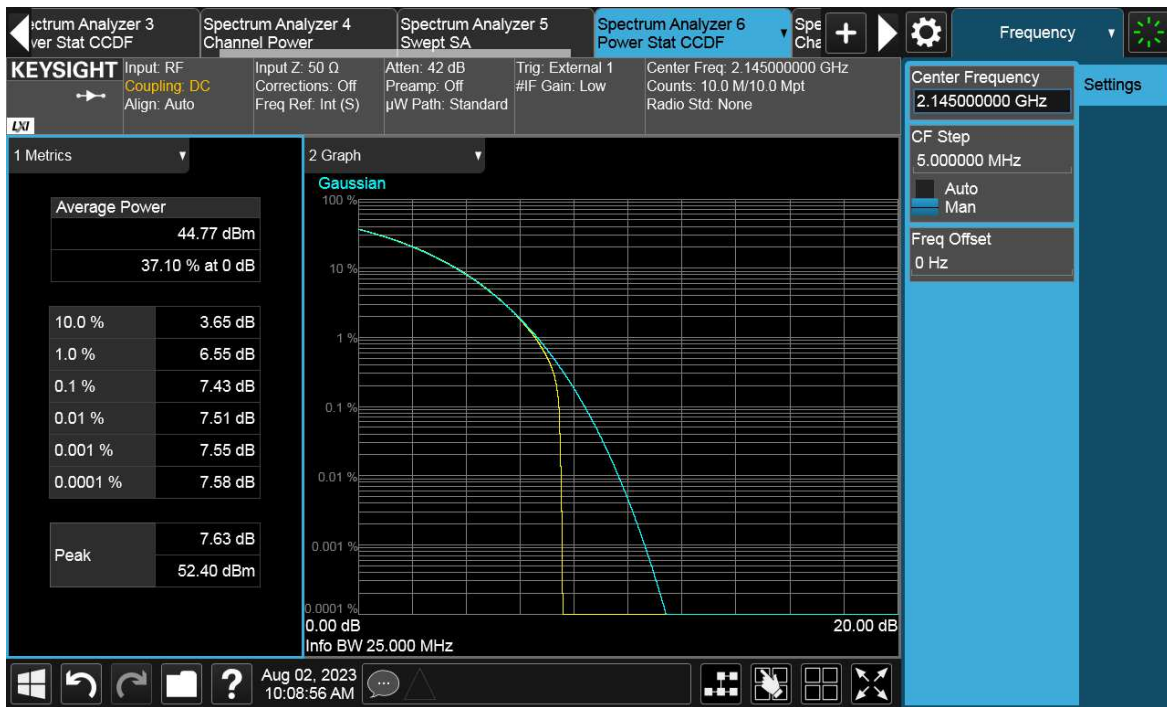
## TEST REPORT



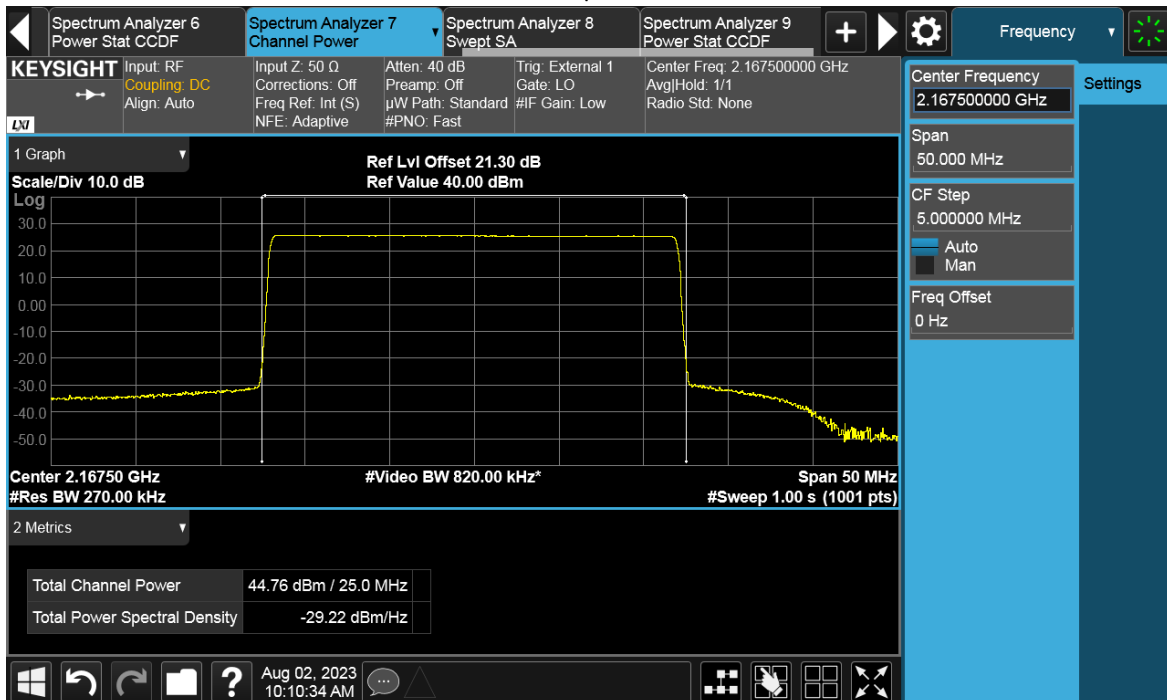
## Channel position M



## TEST REPORT

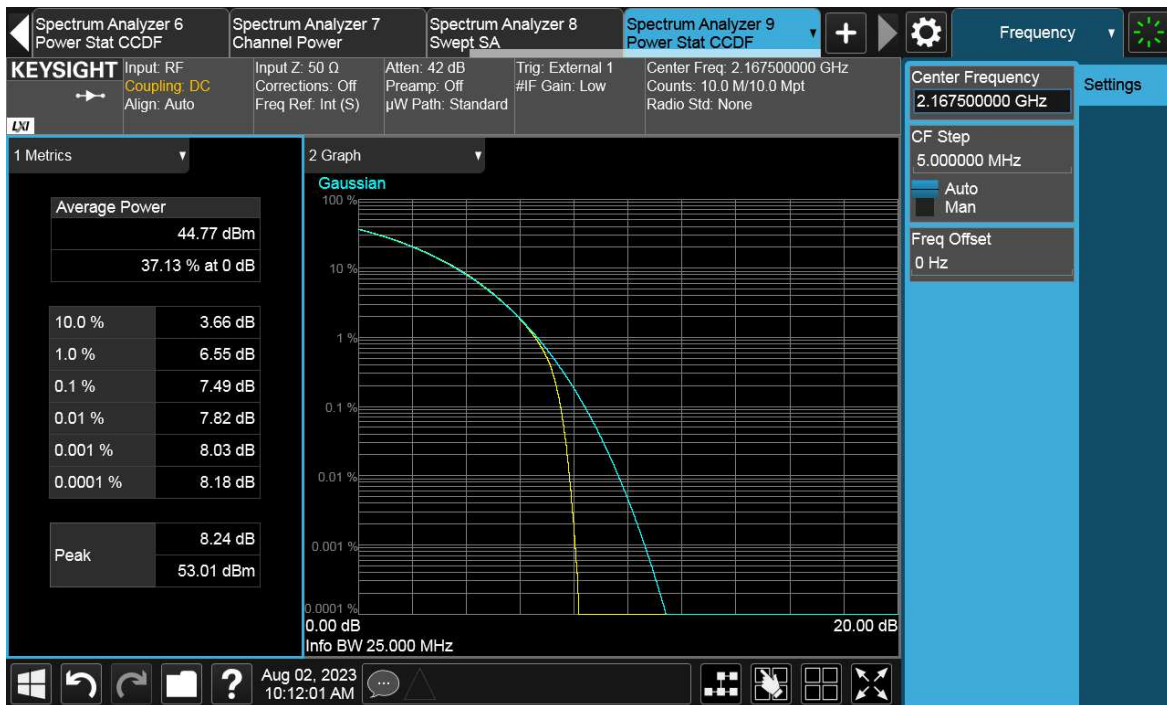
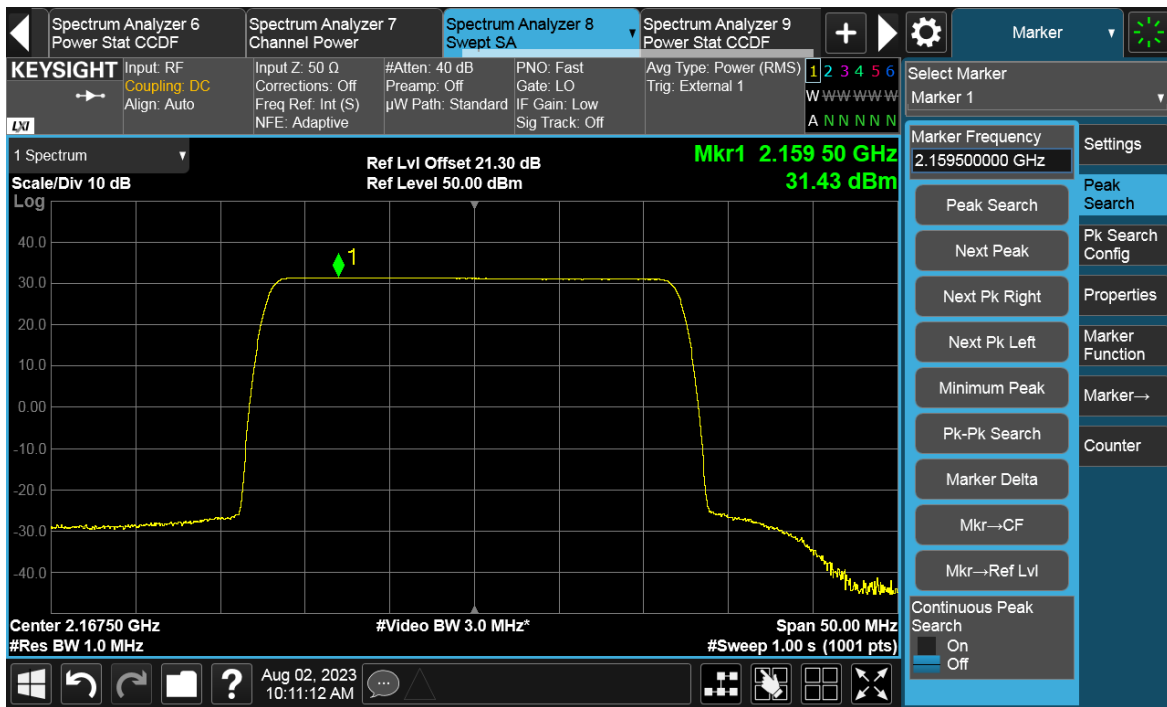


### Channel position T



Total Quality. Assured.

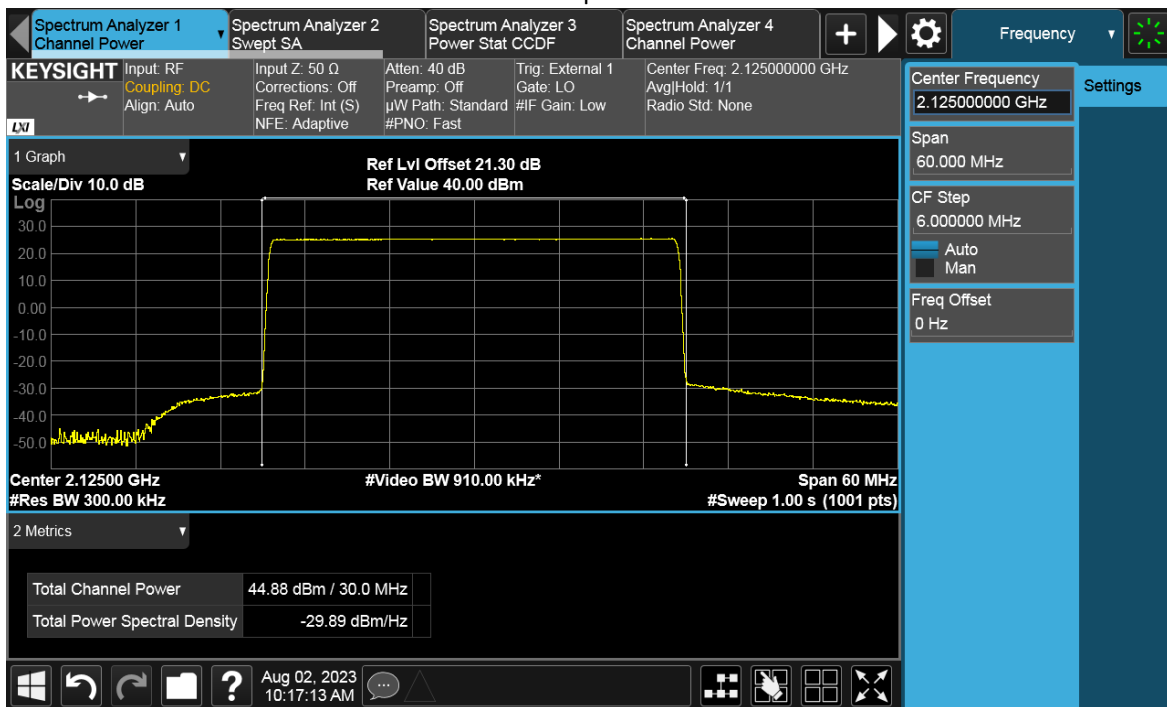
## TEST REPORT



## TEST REPORT

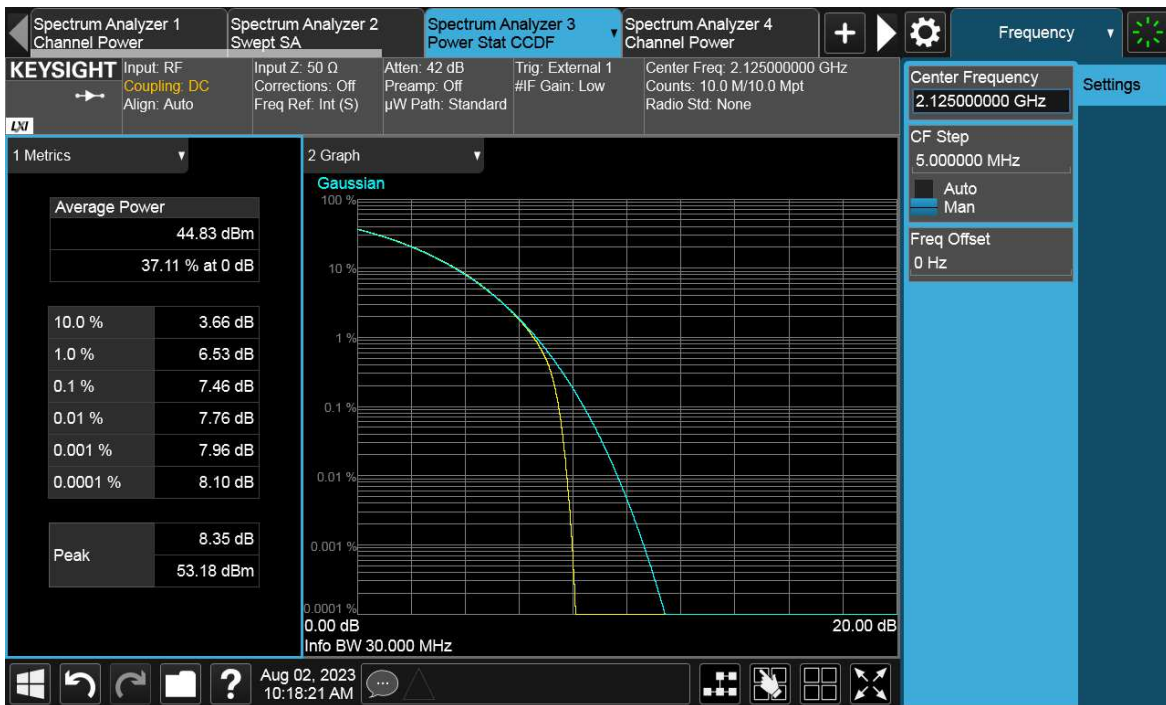
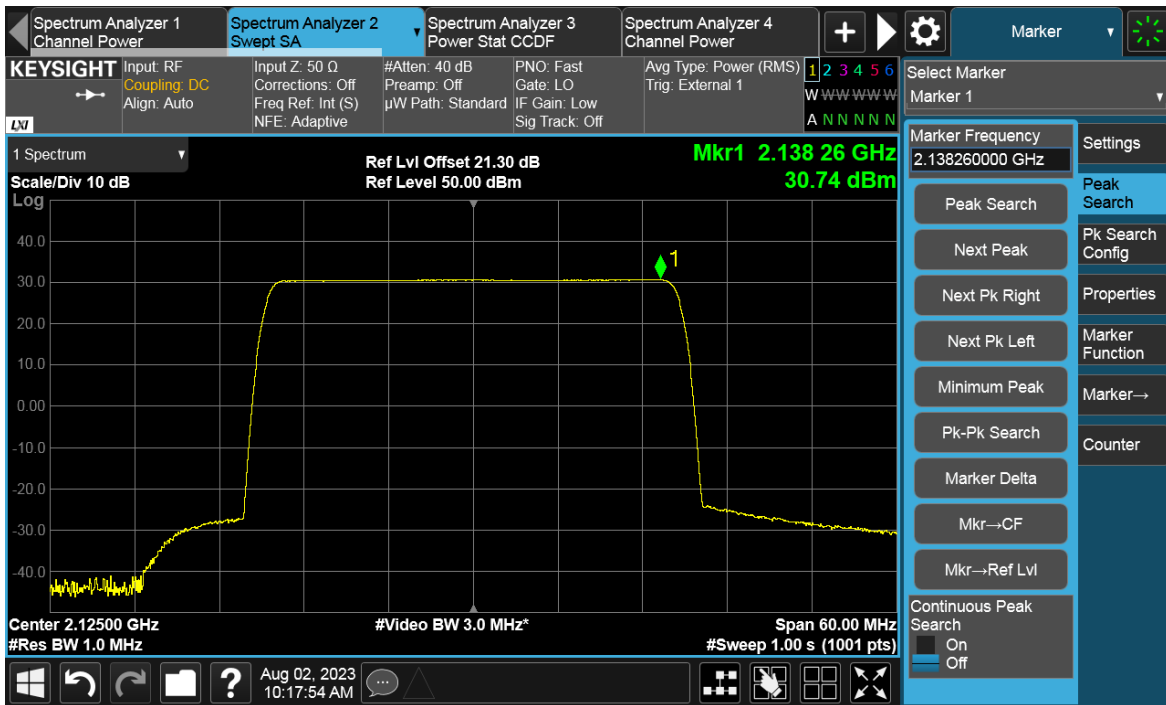
Antenna Port	NR Modulation	NR Carrier Bandwidth (MHz)	Output power / Peak-to-Average Ratio (PAR)								
			Channel position B			Channel position M			Channel position T		
			Power (dBm)	Power (dBm /MHz)	PAR (dB)	Power (dBm)	Power (dBm /MHz)	PAR (dB)	Power (dBm)	Power (dBm /MHz)	PAR (dB)
A	QPSK	30	44.65	30.58	7.45	44.61	30.54	7.39	44.60	30.50	7.49
B	QPSK	30	44.88	30.74	7.46	44.88	30.68	7.39	44.85	30.70	7.49
C	QPSK	30	44.47	30.30	7.45	44.42	30.28	7.39	44.46	30.37	7.49
D	QPSK	30	44.43	30.38	7.45	44.43	30.30	7.39	44.41	30.26	7.49
Total conducted power			50.63	36.52	-	50.61	36.47	-	50.60	36.48	-
EIRP limit			-	62.15	13.00	-	62.15	13.00	-	62.15	13.00
Max antenna gain			-	25.63	-	-	25.68	-	-	25.67	-

### Channel position B



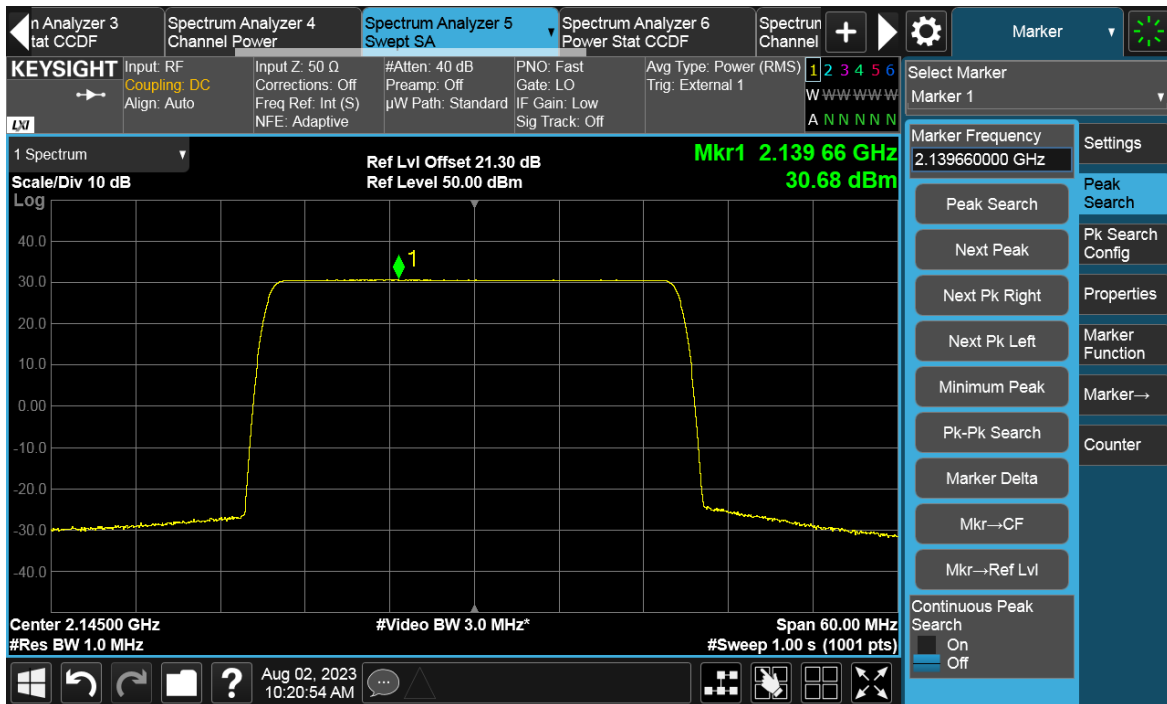
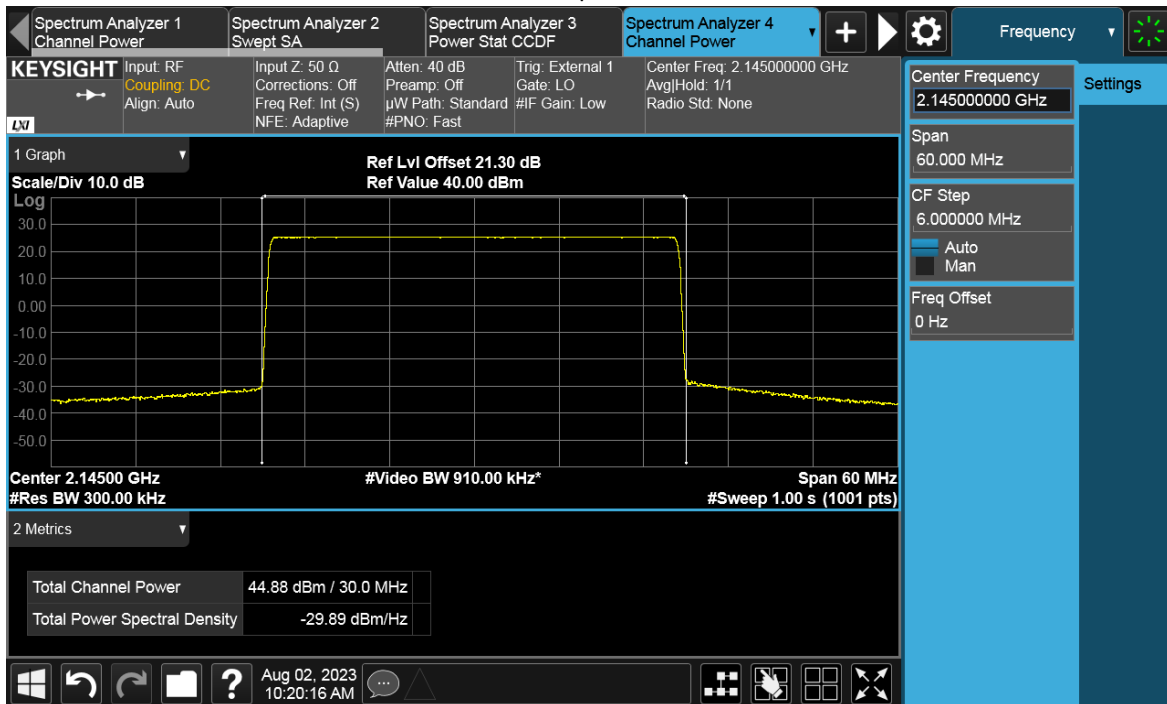
Total Quality. Assured.

## TEST REPORT



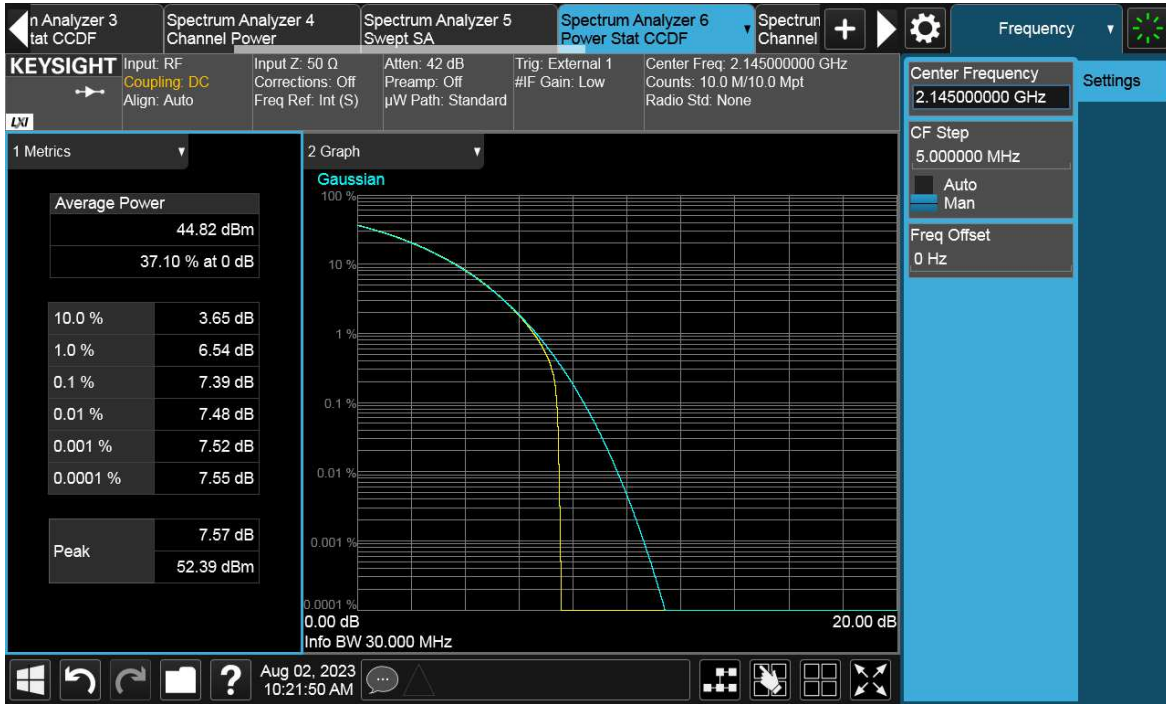


### Channel position M

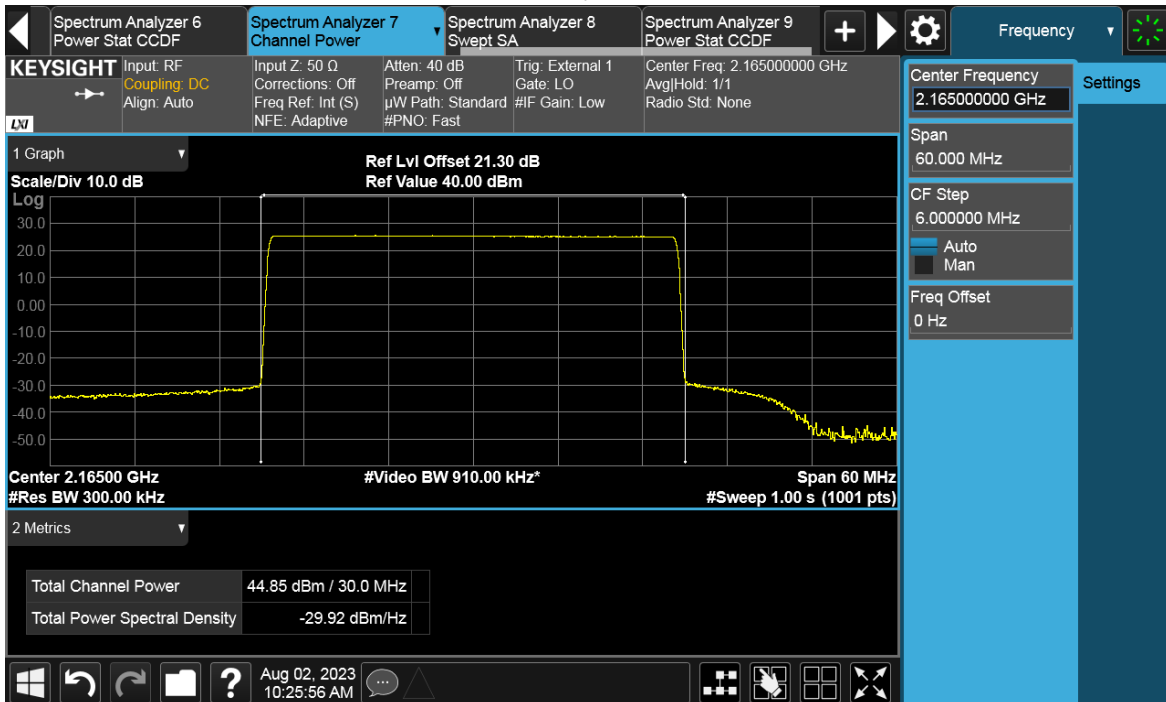


Total Quality. Assured.

## TEST REPORT



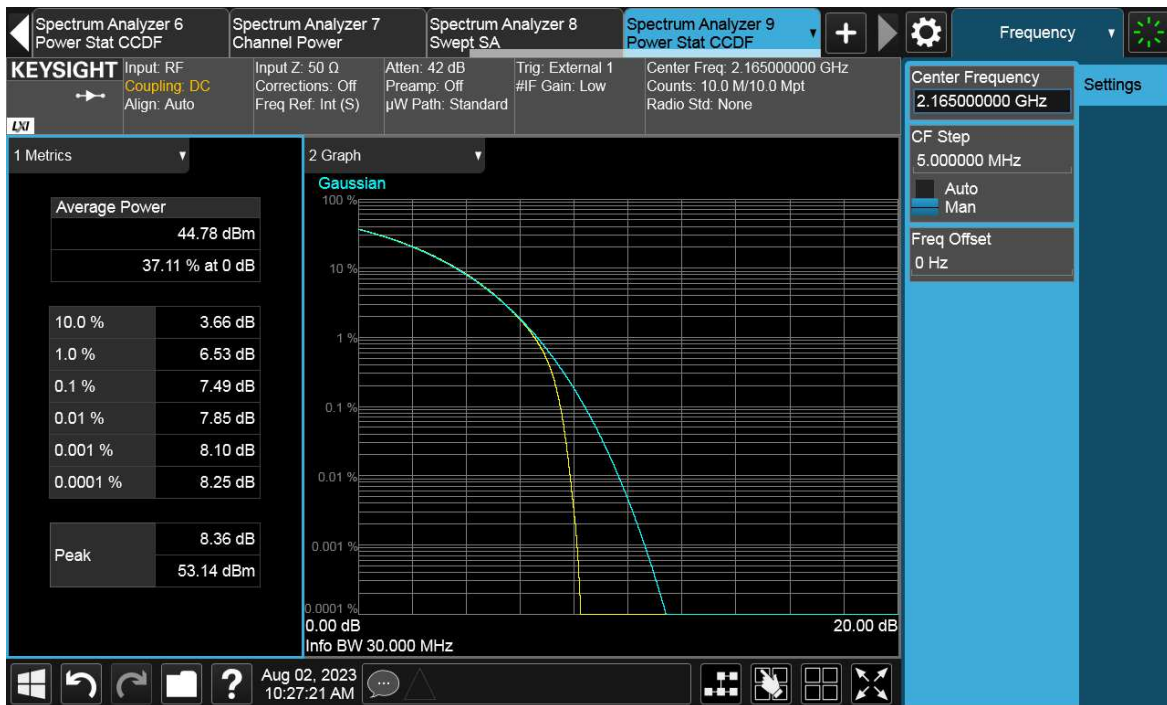
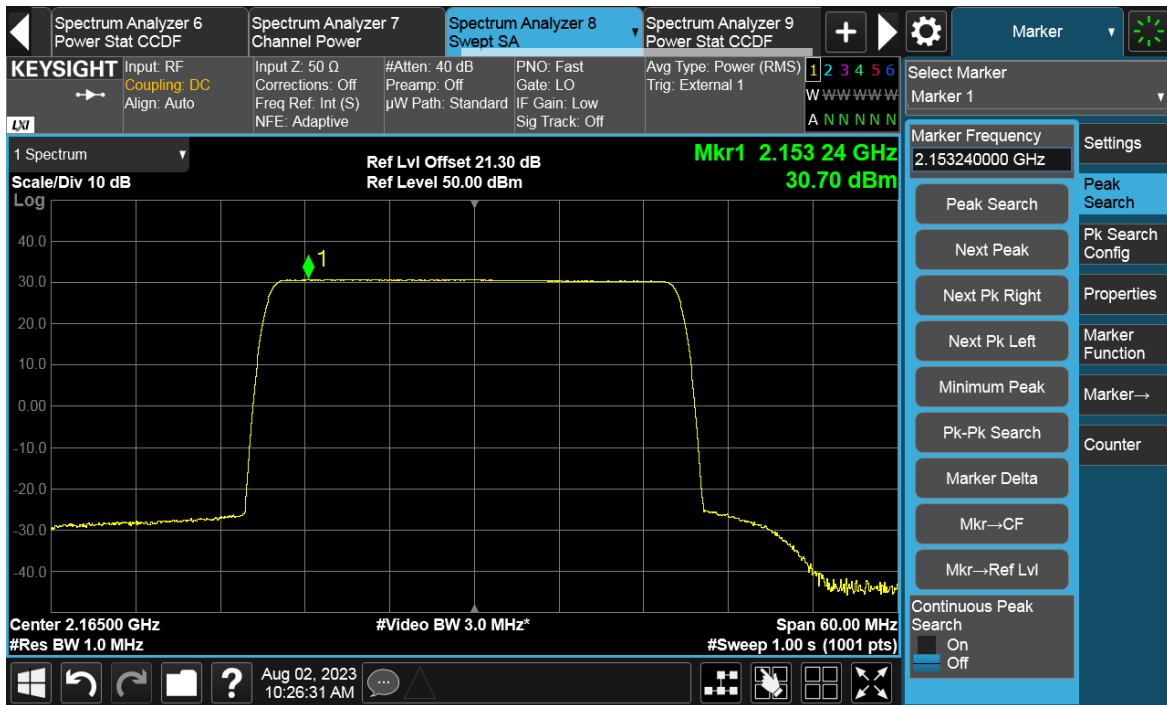
### Channel position T





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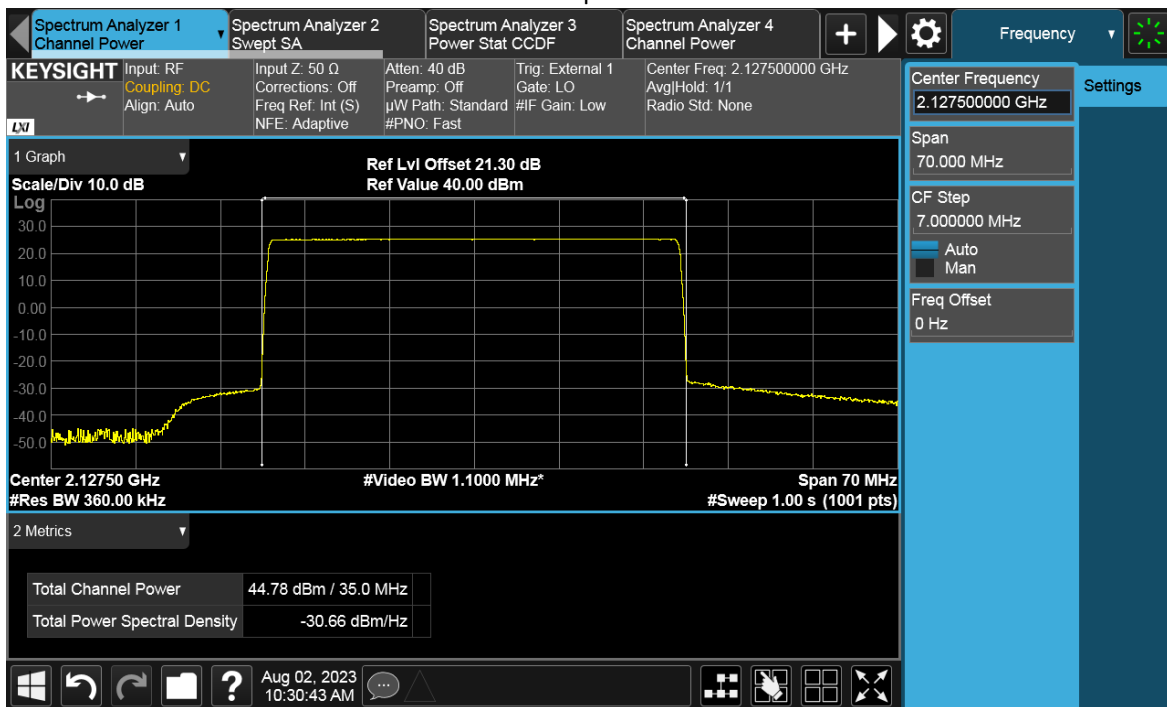
## TEST REPORT



## TEST REPORT

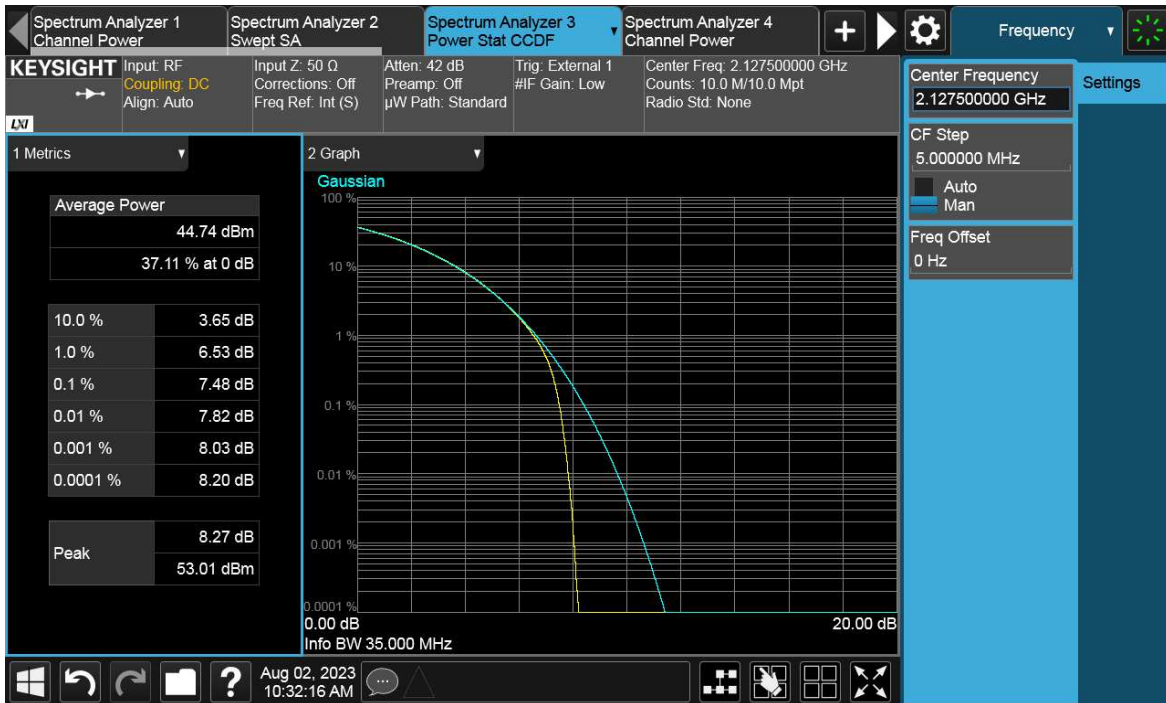
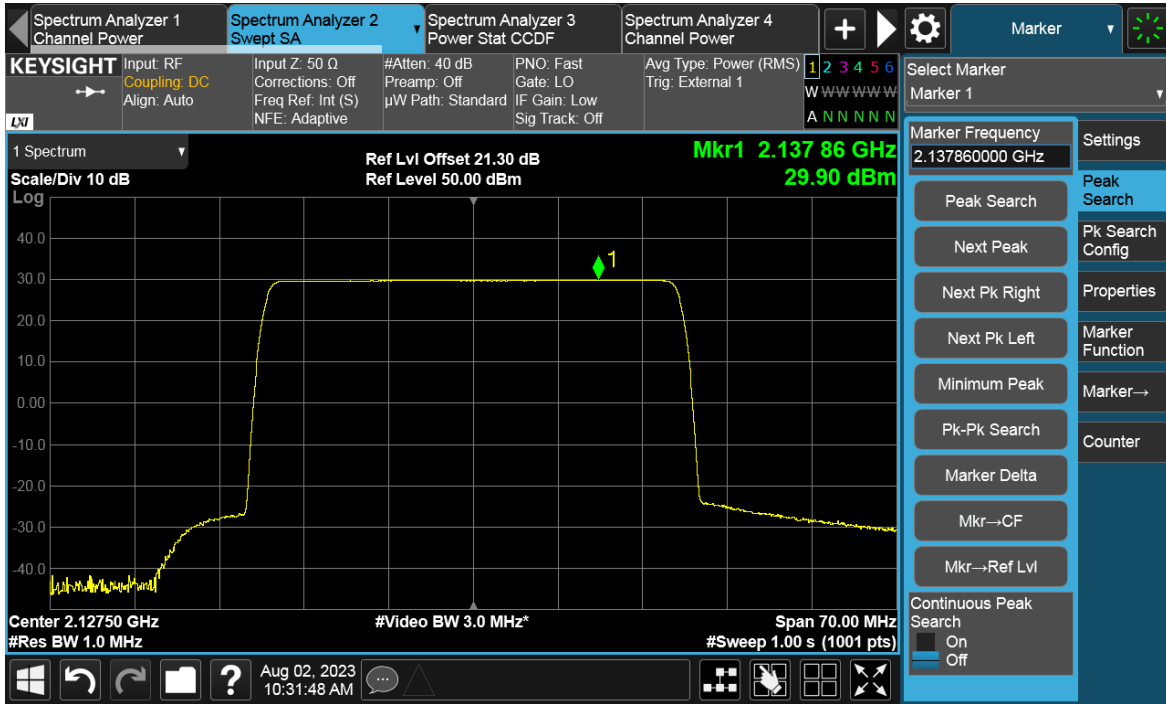
Antenna Port	NR Modulation	NR Carrier Bandwidth (MHz)	Output power / Peak-to-Average Ratio (PAR)								
			Channel position B			Channel position M			Channel position T		
			Power (dBm)	Power (dBm /MHz)	PAR (dB)	Power (dBm)	Power (dBm /MHz)	PAR (dB)	Power (dBm)	Power (dBm /MHz)	PAR (dB)
A	QPSK	35	44.62	29.80	7.47	44.71	29.79	7.41	44.59	29.72	7.53
B	QPSK	35	44.78	29.90	7.48	44.72	29.83	7.41	44.75	29.91	7.53
C	QPSK	35	44.27	29.53	7.47	44.30	29.43	7.41	44.51	29.72	7.52
D	QPSK	35	44.39	29.64	7.48	44.51	29.66	7.41	44.38	29.58	7.52
Total conducted power			50.54	35.74	-	50.58	35.70	-	50.58	35.75	-
EIRP limit			-	62.15	13.00	-	62.15	13.00	-	62.15	13.00
Max antenna gain			-	26.41	-	-	26.45	-	-	26.40	-

### Channel position B

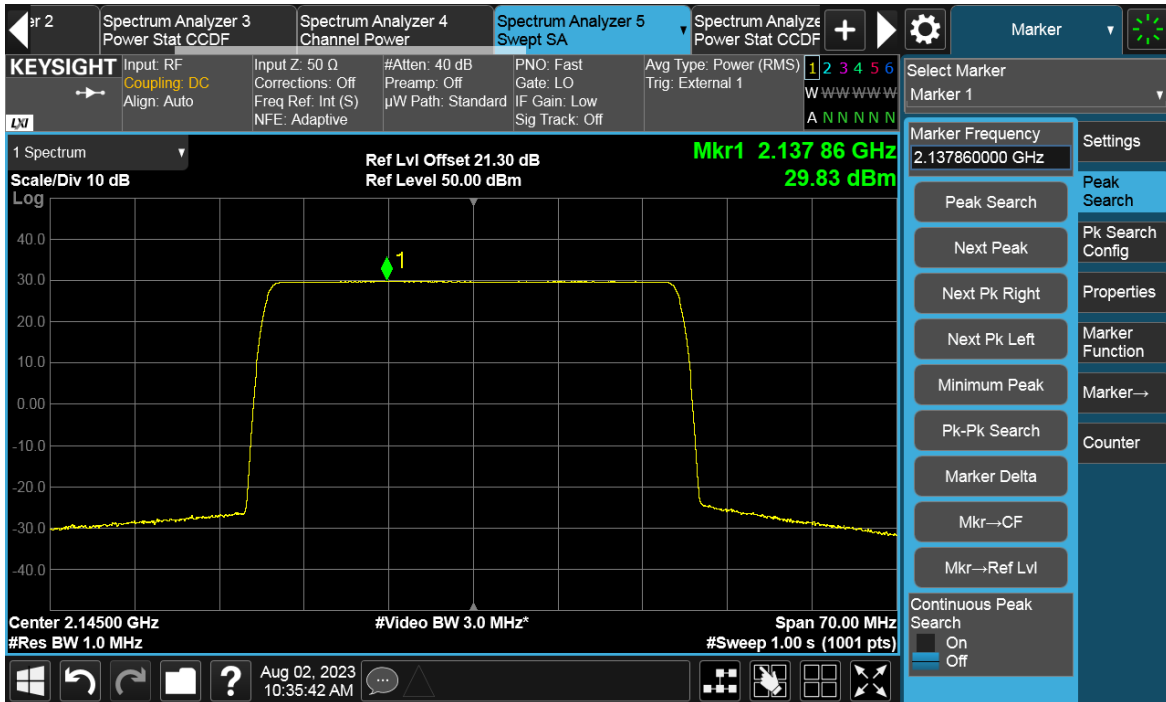
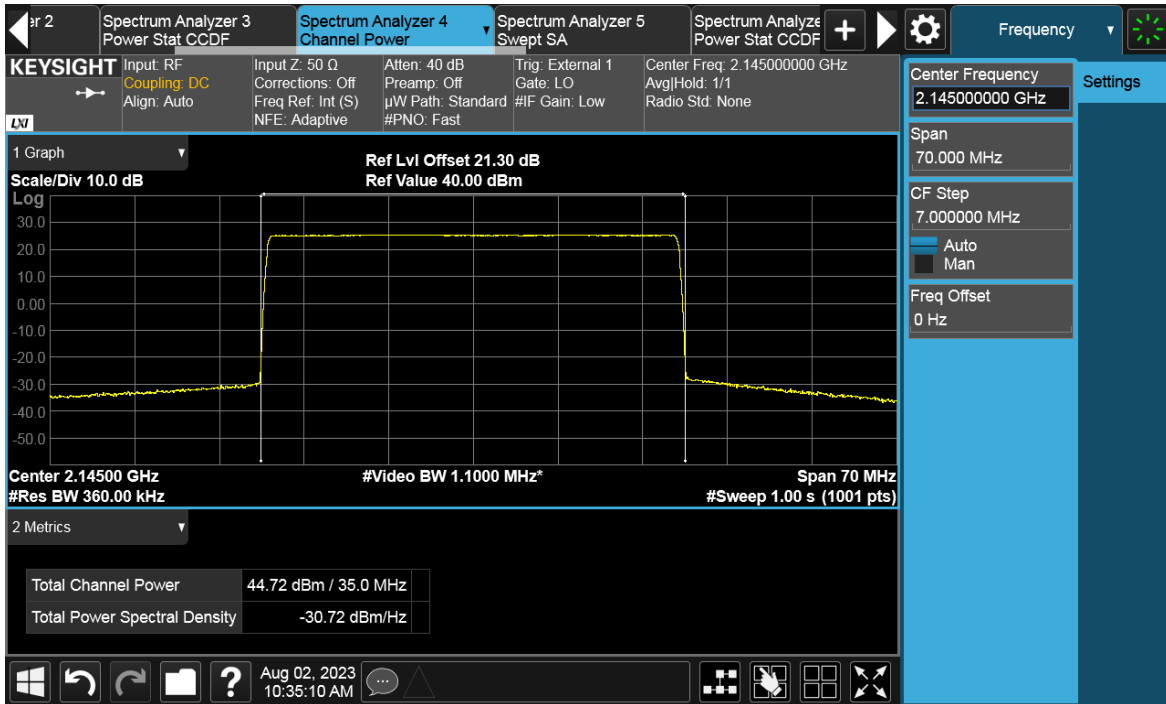


Total Quality. Assured.

## TEST REPORT

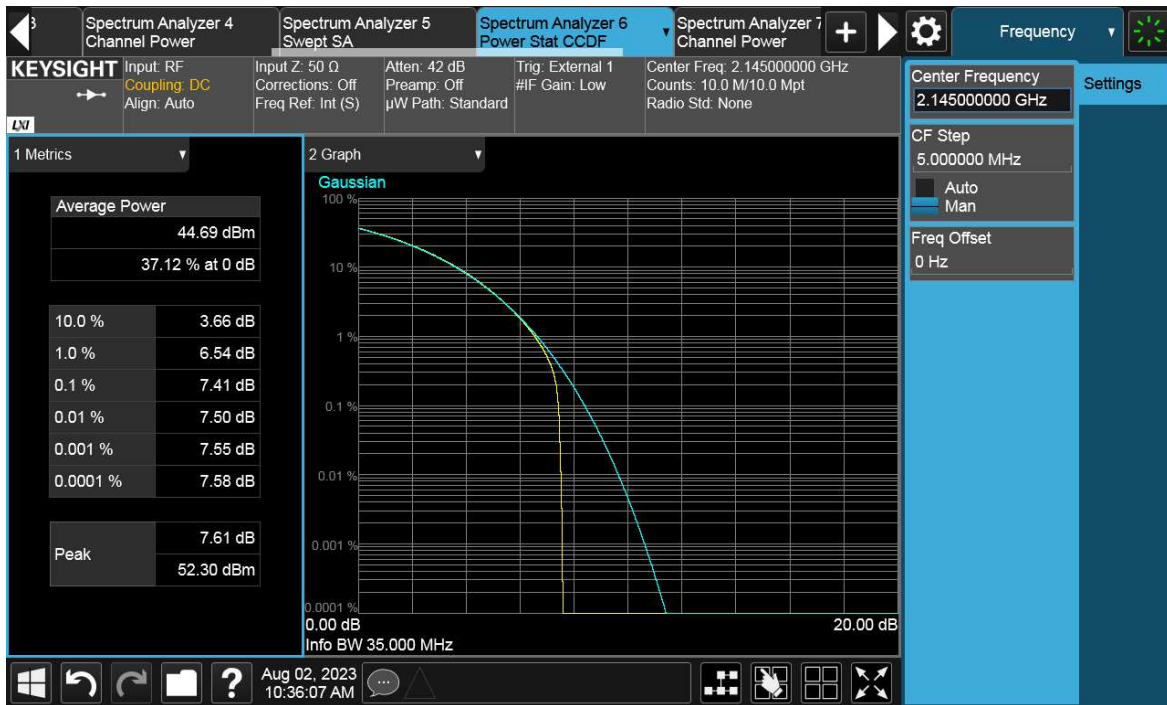


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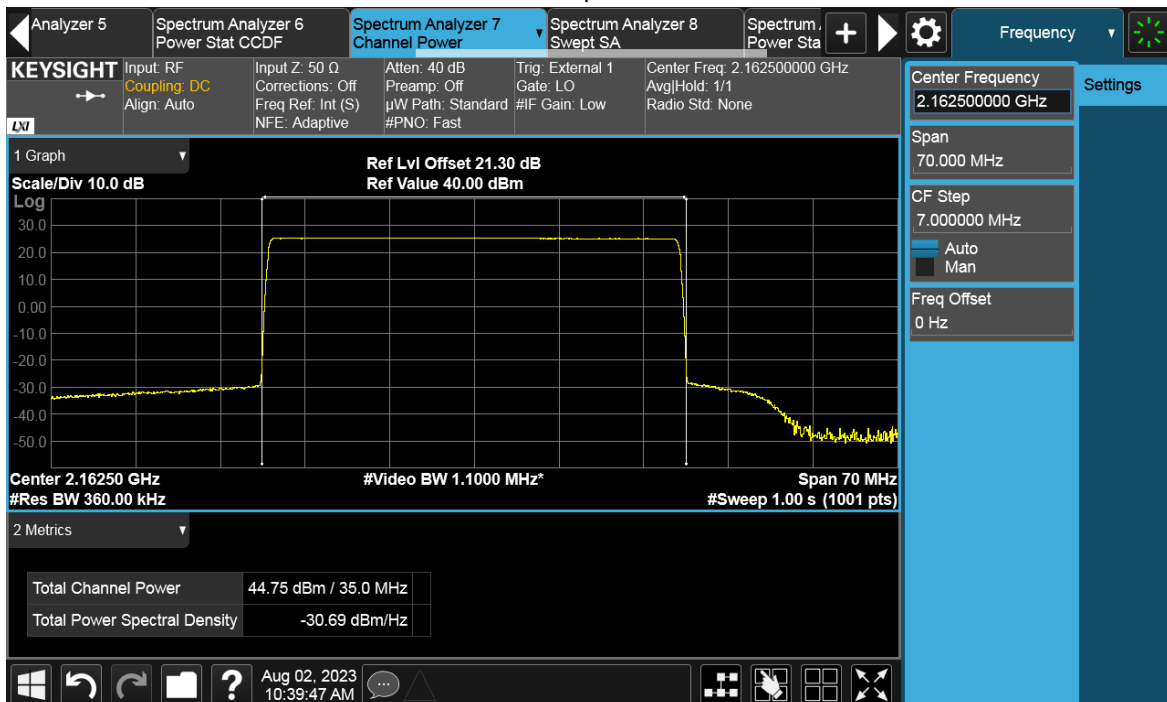


Total Quality. Assured.

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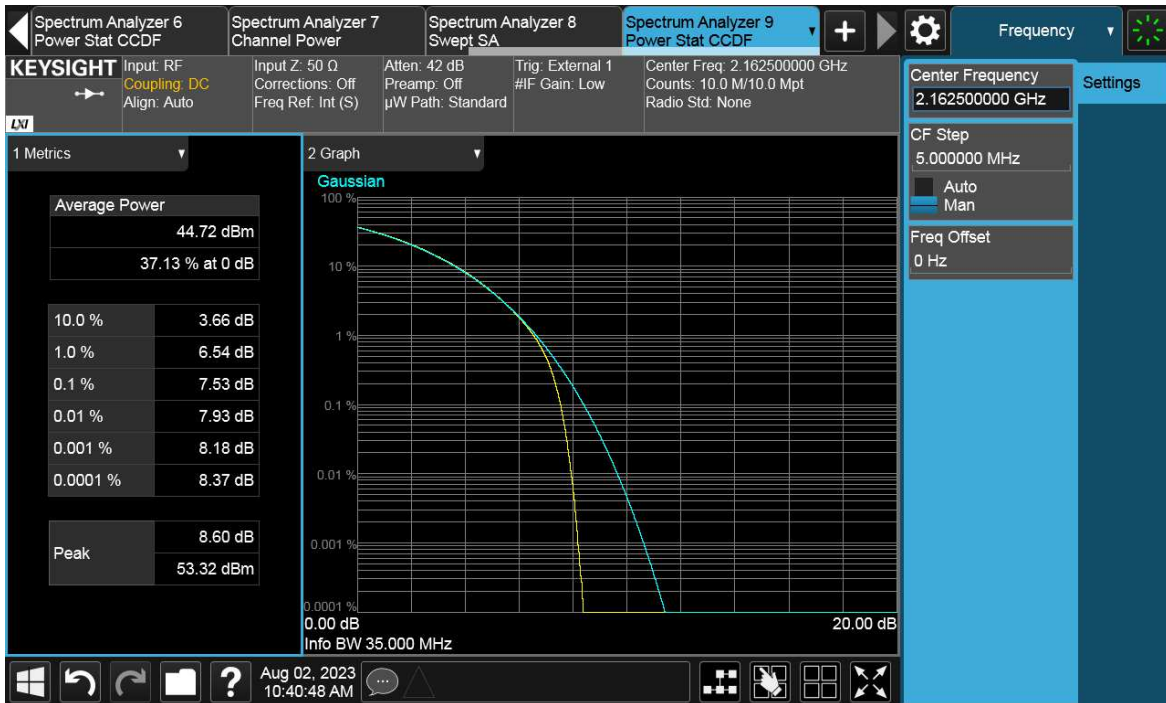
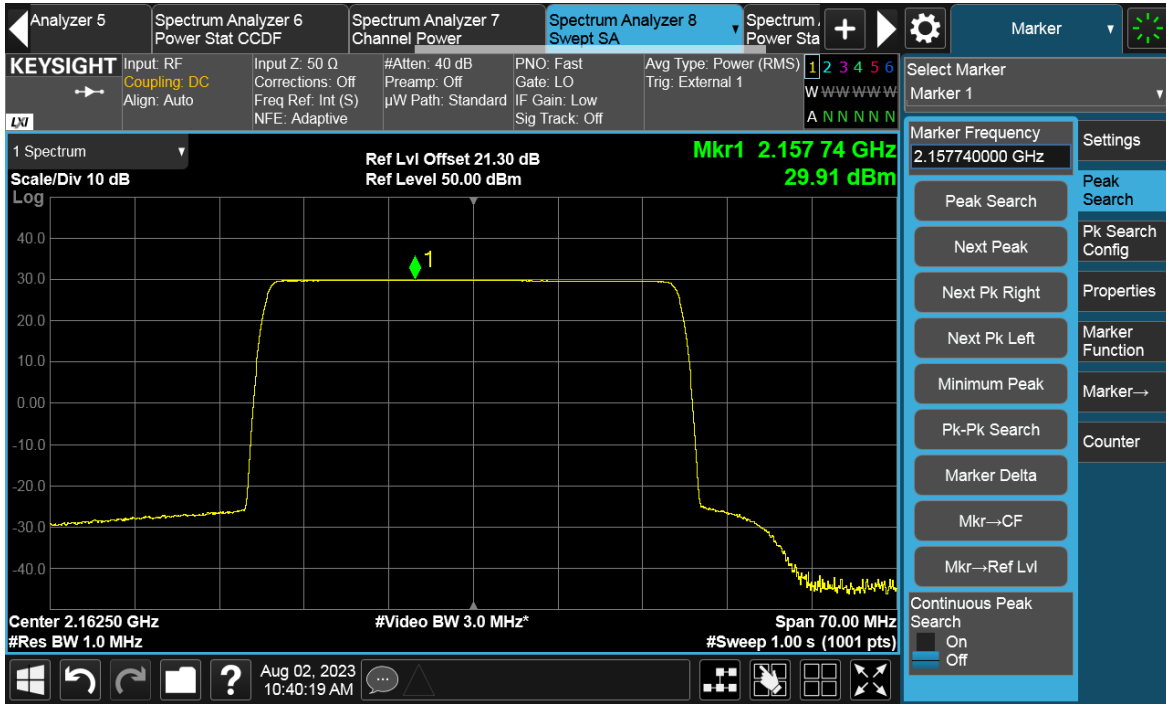


Channel position T



Total Quality. Assured.

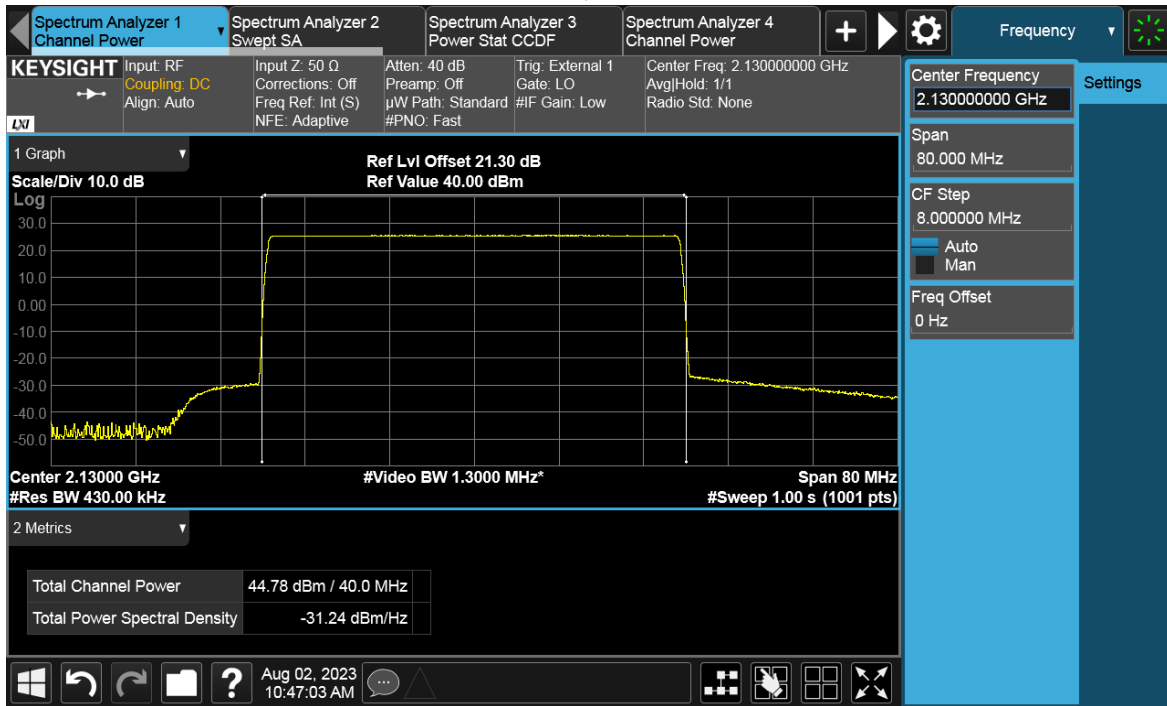
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Antenna Port	NR Modulation	NR Carrier Bandwidth (MHz)	Output power / Peak-to-Average Ratio (PAR)								
			Channel position B			Channel position M			Channel position T		
			Power (dBm)	Power (dBm /MHz)	PAR (dB)	Power (dBm)	Power (dBm /MHz)	PAR (dB)	Power (dBm)	Power (dBm /MHz)	PAR (dB)
A	QPSK	40	44.58	29.18	7.49	44.57	29.14	7.42	44.52	29.12	7.55
B	QPSK	40	44.78	29.33	7.50	44.72	29.26	7.42	44.69	29.31	7.55
C	QPSK	40	44.35	28.96	7.50	44.36	28.91	7.42	44.47	29.03	7.55
D	QPSK	40	44.38	29.02	7.50	44.40	29.00	7.43	44.47	29.06	7.55
Total conducted power			50.55	35.15	-	50.54	35.10	-	50.56	35.15	-
EIRP limit			-	62.15	13.00	-	62.15	13.00	-	62.15	13.00
Max antenna gain			-	27.00	-	-	27.05	-	-	27.00	-

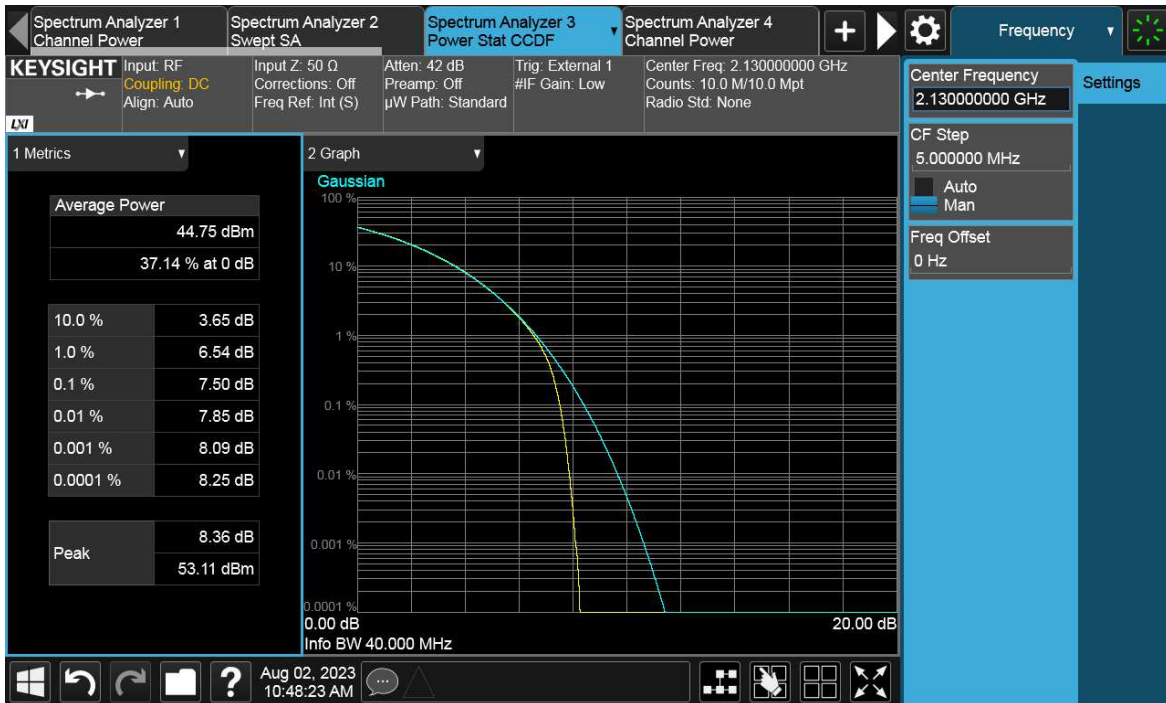
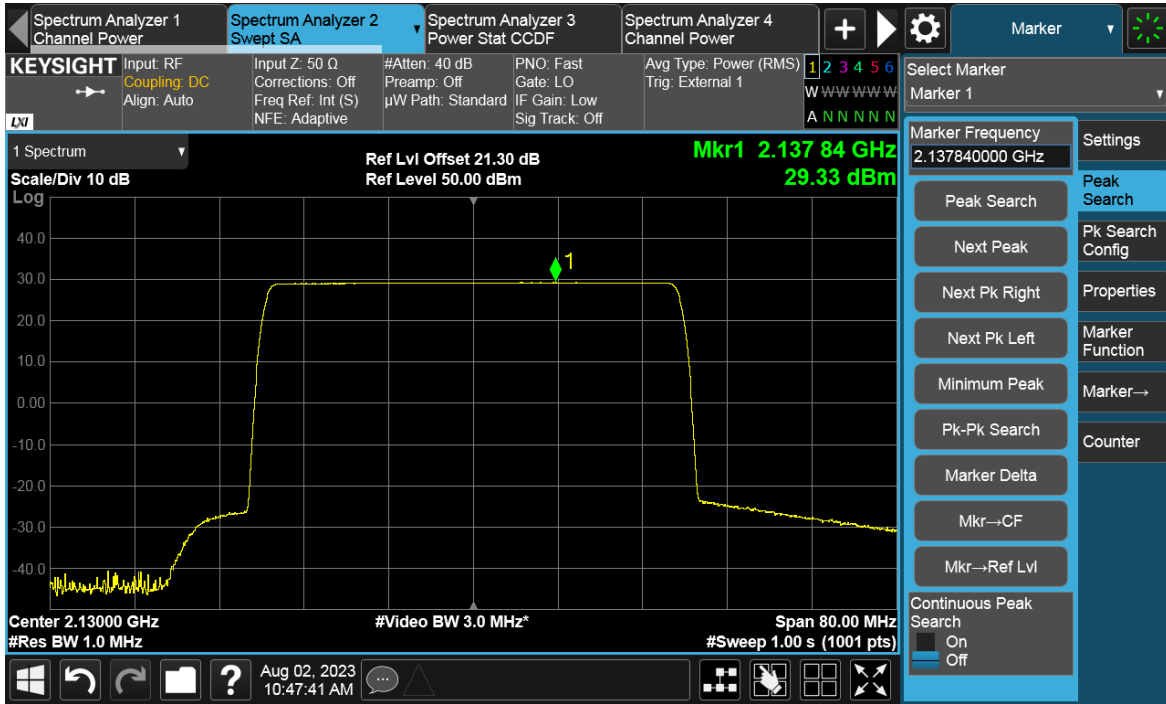
Channel position B





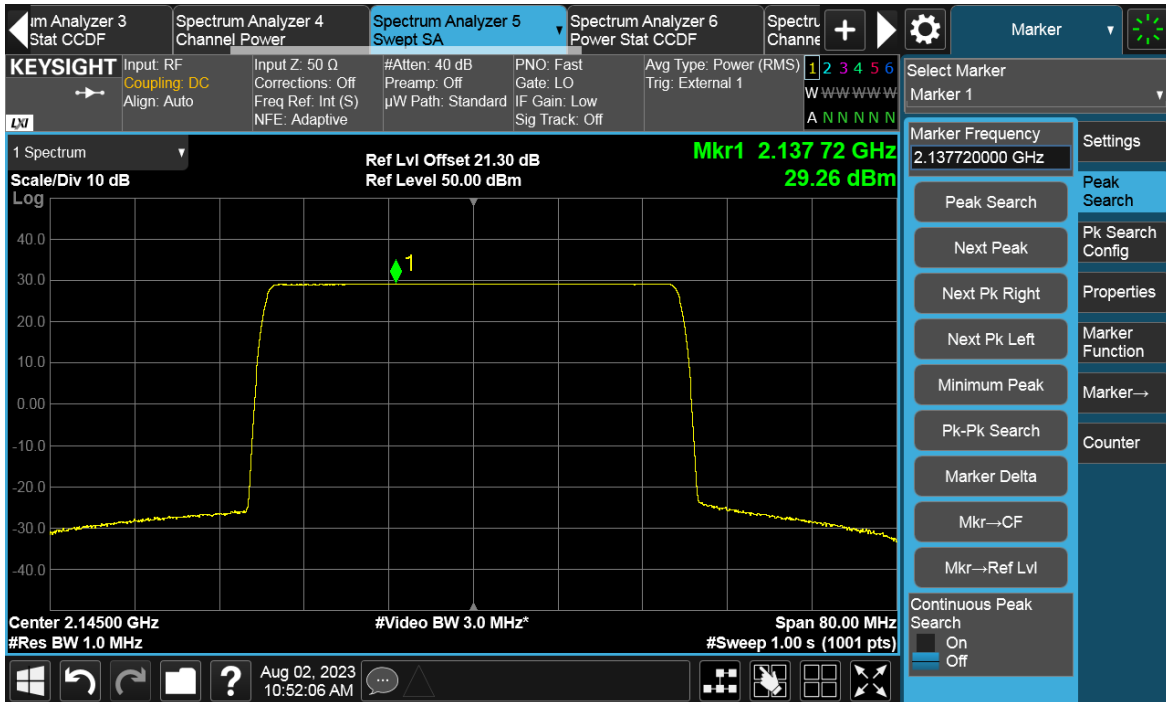
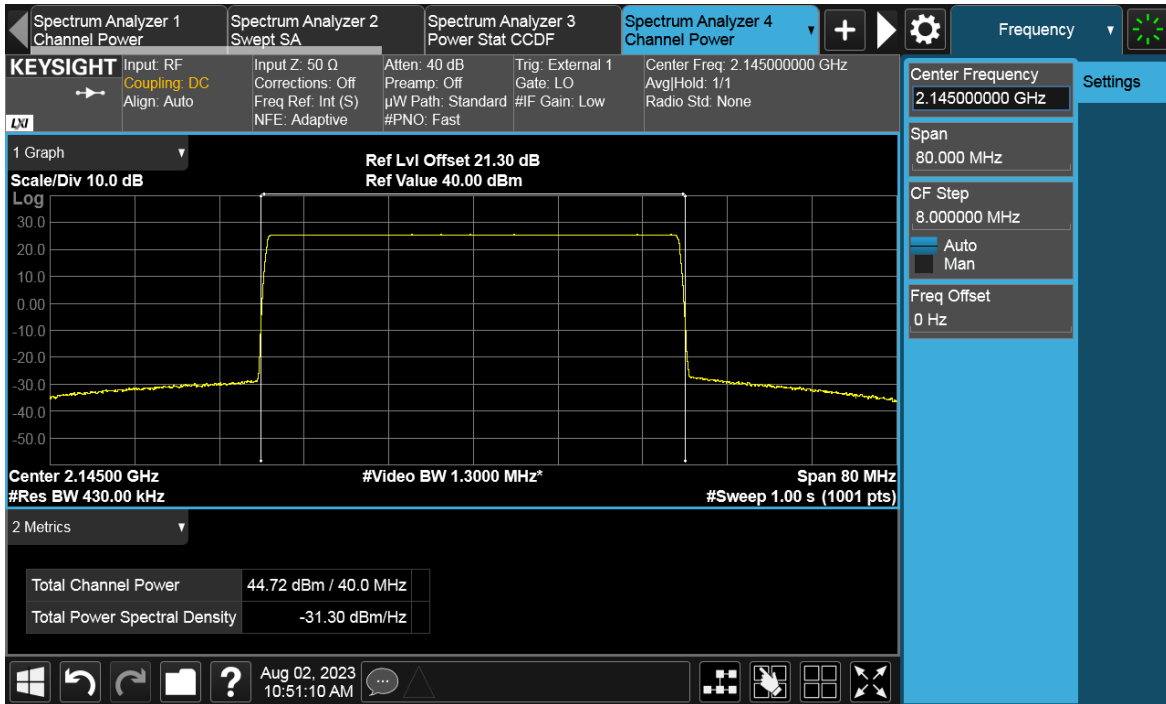
Total Quality. Assured.

## TEST REPORT



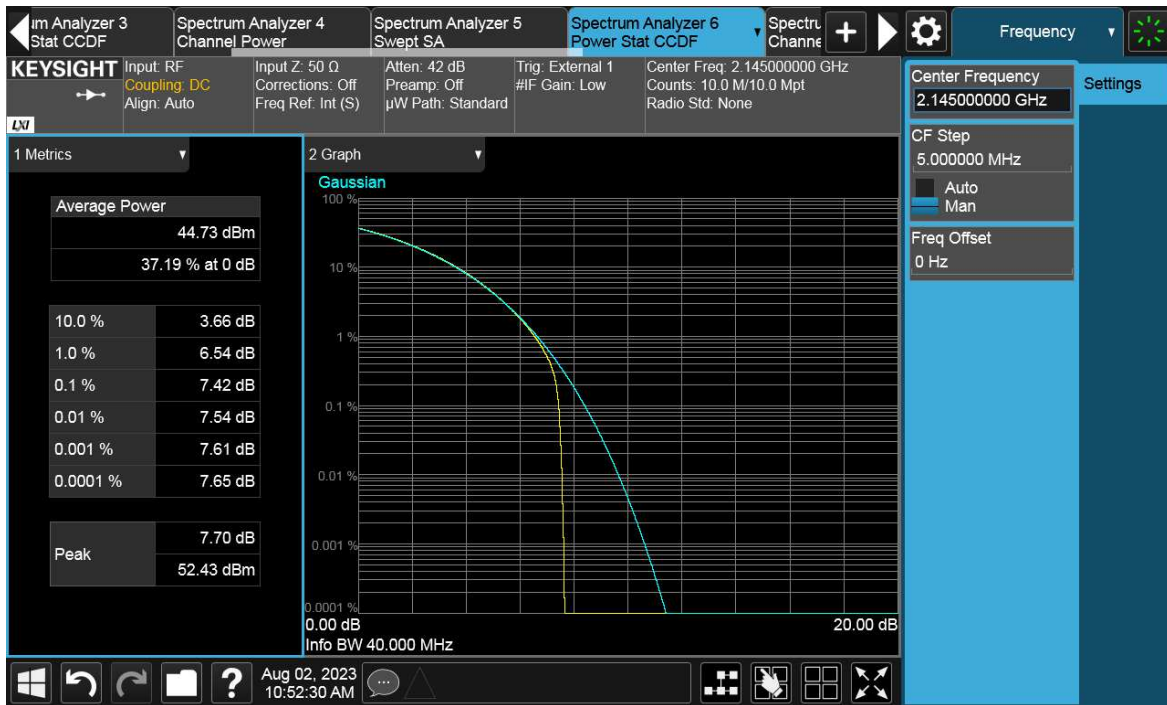


### Channel position M

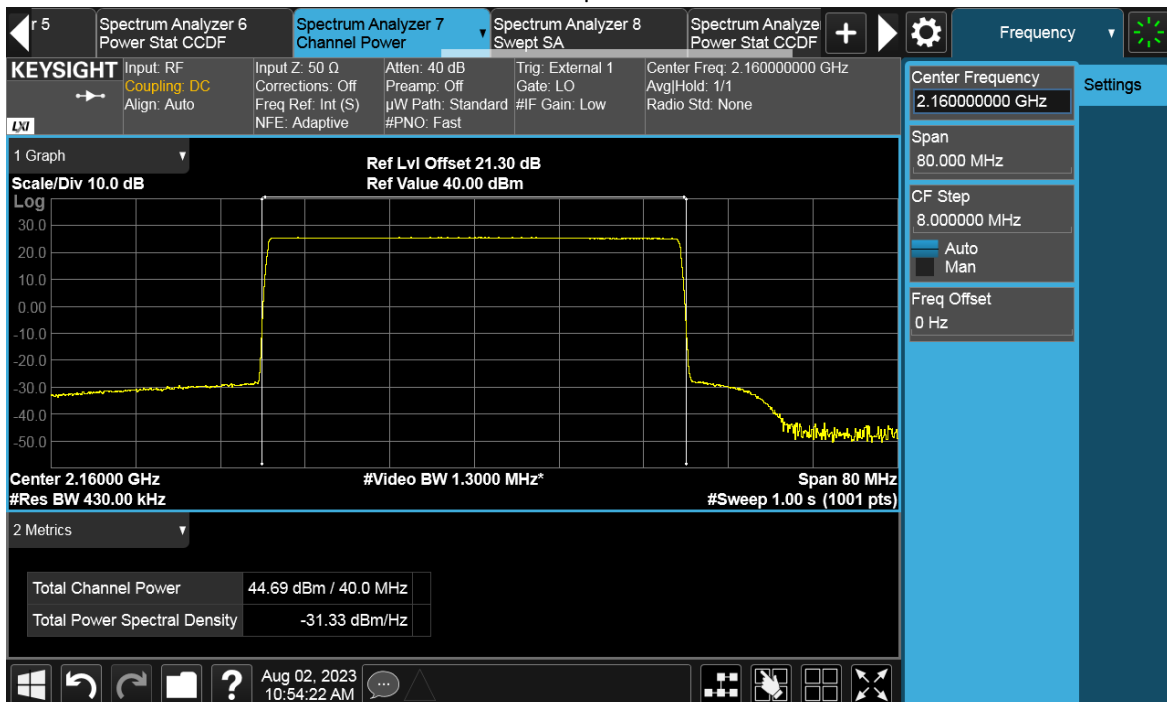


Total Quality. Assured.

## TEST REPORT

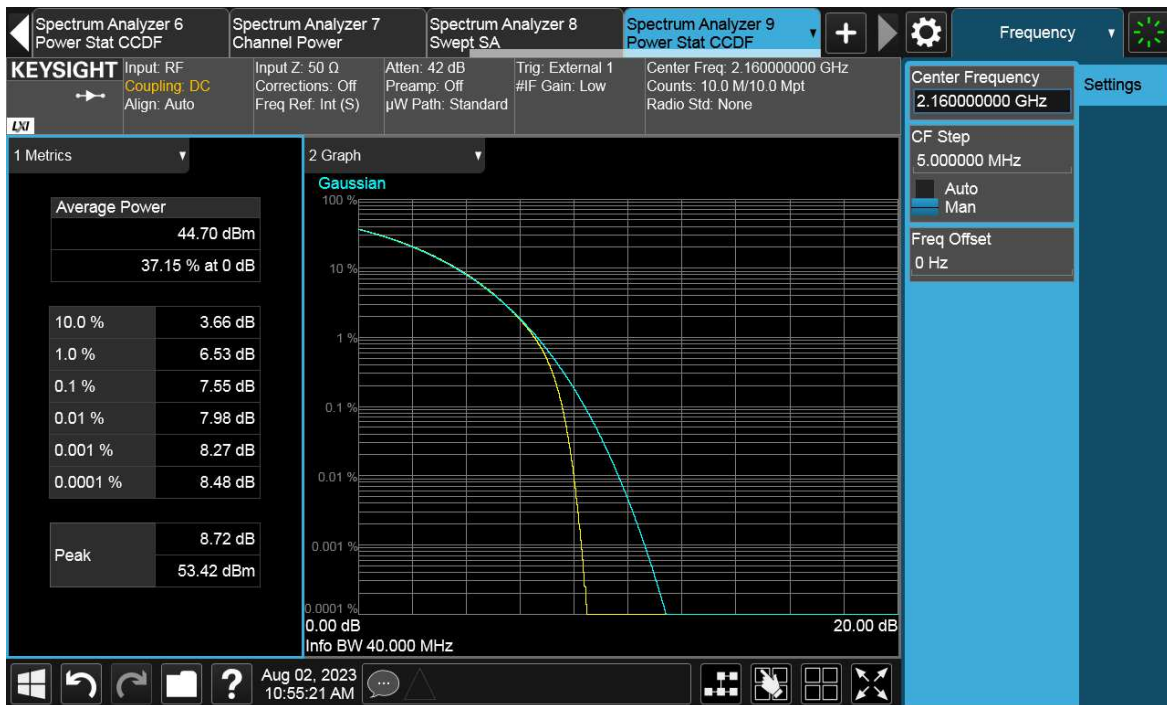
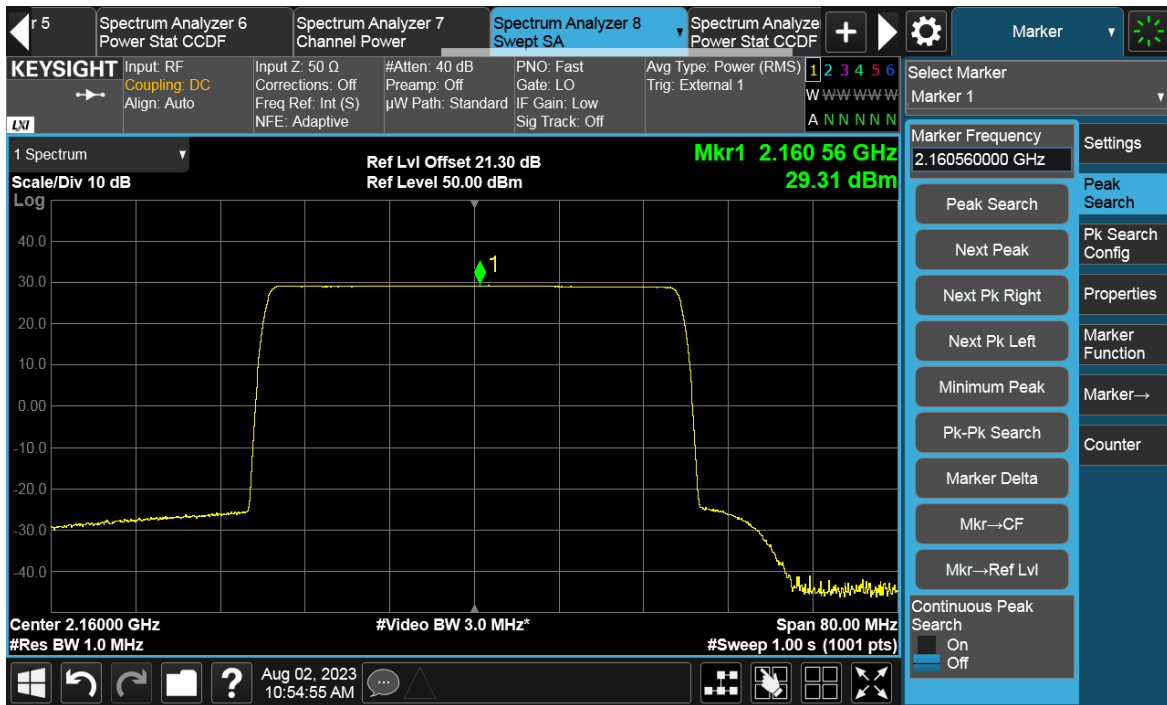


Channel position T



Total Quality. Assured.

## TEST REPORT



NR-2C

Antenna Port	NR Modulation	NR Carrier Bandwidth (MHz)	Output power / Peak-to-Average Ratio (PAR)								
			Channel position B			Channel position M			Channel position T		
			Power (dBm)	Power (dBm /MHz)	PAR (dB)	Power (dBm)	Power (dBm /MHz)	PAR (dB)	Power (dBm)	Power (dBm /MHz)	PAR (dB)
A	QPSK	25	-	-	-	43.91	27.61	-	-	-	-
B	QPSK	25	-	-	-	44.05	27.65	-	-	-	-
C	QPSK	25	-	-	-	43.64	27.29	-	-	-	-
D	QPSK	25	-	-	-	43.78	27.43	-	-	-	-
Total conducted power			-	-	-	49.87	33.52	-	-	-	-
EIRP limit			-	-	-	-	62.15	-	-	-	-
Max antenna gain			-	-	-	-	28.63	-	-	-	-

Antenna Port	NR Modulation	NR Carrier Bandwidth (MHz)	Output power / Peak-to-Average Ratio (PAR)								
			Channel position B			Channel position M			Channel position T		
			Power (dBm)	Power (dBm /MHz)	PAR (dB)	Power (dBm)	Power (dBm /MHz)	PAR (dB)	Power (dBm)	Power (dBm /MHz)	PAR (dB)
A	QPSK	30	-	-	-	44.03	26.93	-	-	-	-
B	QPSK	30	-	-	-	44.17	26.95	-	-	-	-
C	QPSK	30	-	-	-	43.70	26.61	-	-	-	-
D	QPSK	30	-	-	-	43.84	26.72	-	-	-	-
Total conducted power			-	-	-	49.96	32.83	-	-	-	-
EIRP limit			-	-	-	-	62.15	-	-	-	-
Max antenna gain			-	-	-	-	29.32	-	-	-	-

Antenna Port	NR Modulation	NR Carrier Bandwidth (MHz)	Output power / Peak-to-Average Ratio (PAR)								
			Channel position B			Channel position M			Channel position T		
			Power (dBm)	Power (dBm /MHz)	PAR (dB)	Power (dBm)	Power (dBm /MHz)	PAR (dB)	Power (dBm)	Power (dBm /MHz)	PAR (dB)
A	QPSK	35	-	-	-	43.91	26.07	-	-	-	-
B	QPSK	35	-	-	-	44.10	26.23	-	-	-	-
C	QPSK	35	-	-	-	43.67	25.91	-	-	-	-
D	QPSK	35	-	-	-	43.81	26.01	-	-	-	-
Total conducted power			-	-	-	49.90	32.08	-	-	-	-
EIRP limit			-	-	-	-	62.15	-	-	-	-
Max antenna gain			-	-	-	-	30.07	-	-	-	-