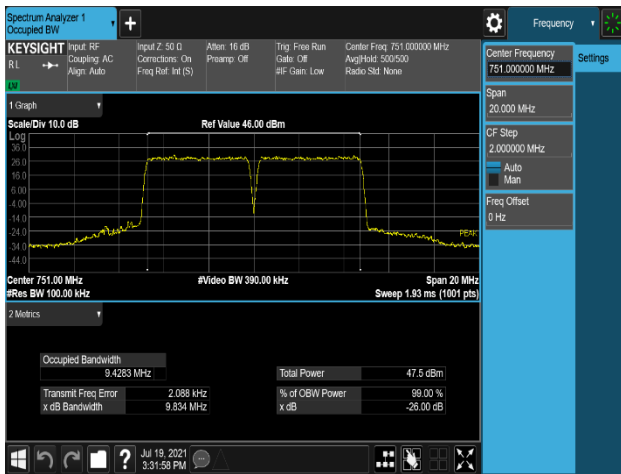
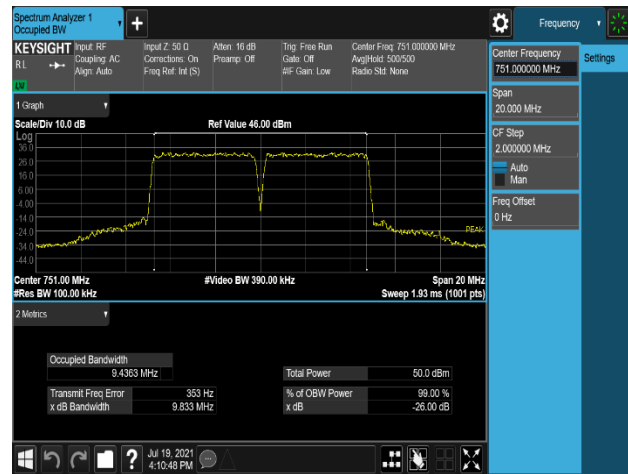


Channel	Port	OBW (MHz)			
		QPSK	16QAM	64QAM	256QAM
Middle	0	<b>9.43</b>	9.43	<b>9.43</b>	9.43
	1	9.43	9.43	9.42	<b>9.44</b>
	2	9.42	9.42	9.42	9.44
	3	9.43	<b>9.44</b>	9.43	9.44

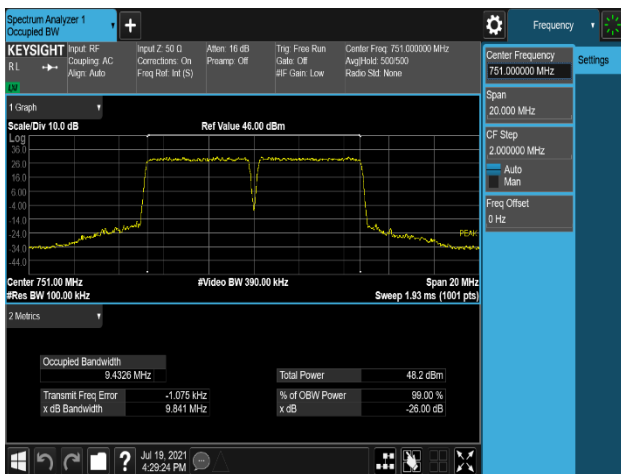
Table 7-9. Occupied Bandwidth Summary Data (LTE\_B13\_5M+5M\_2C)



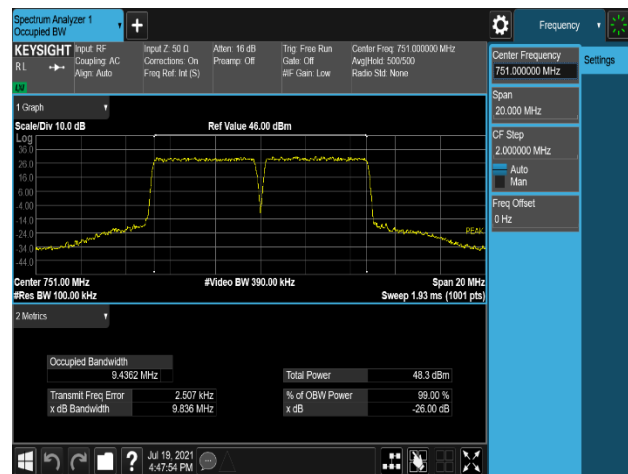
Plot 7-69. Occupied Bandwidth Plot (LTE\_B13\_5M+5M\_2C\_QPSK - Port 0)




Plot 7-70. Occupied Bandwidth Plot (LTE\_B13\_5M+5M\_2C\_16QAM - Port 3)



Plot 7-71. Occupied Bandwidth Plot (LTE\_B13\_5M+5M\_2C\_64QAM - Port 0)



Plot 7-72. Occupied Bandwidth Plot (LTE\_B13\_5M+5M\_2C\_256QAM - Port 1)


FCC ID: A3LRF4442D-13A		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 8K21070502R3.A3L	Test Dates: 07/09/2021 - 08/26/2021	EUT Type: RRU (RF4442d)		Page 30 of 225

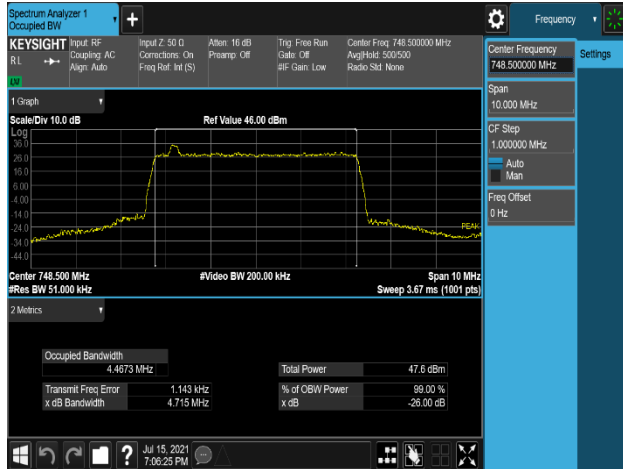
Channel	Port	OBW (MHz)
Low	0	<b>4.47</b>
	1	4.47
	2	4.47
	3	4.47
Middle	0	<b>4.47</b>
	1	4.47
	2	4.47
	3	4.47
High	0	<b>4.47</b>
	1	4.47
	2	4.47
	3	4.47

**Table 7-10. Occupied Bandwidth Summary Data (LTE\_B13\_5M+NB-lot(IB)\_1C)**

Configuration	Port	OBW (MHz)
B13_10M+Low_NB-lot(IB)+High_NB-lot(IB)_3C	0	8.95
	1	<b>8.97</b>
	2	8.95
	3	8.95
B13_10M+Low_NB-lot(IB)+Low_NB-lot(IB)_3C	0	8.95
	1	8.94
	2	<b>8.96</b>
	3	8.95
B13_10M+High_NB-lot(IB)+High_NB-lot(IB)_3C	0	8.96
	1	<b>8.97</b>
	2	8.97
	3	8.97

**Table 7-11. Occupied Bandwidth Summary Data (LTE\_B13\_10M+NB-lot(IB)+NB-lot(IB)\_1C)**

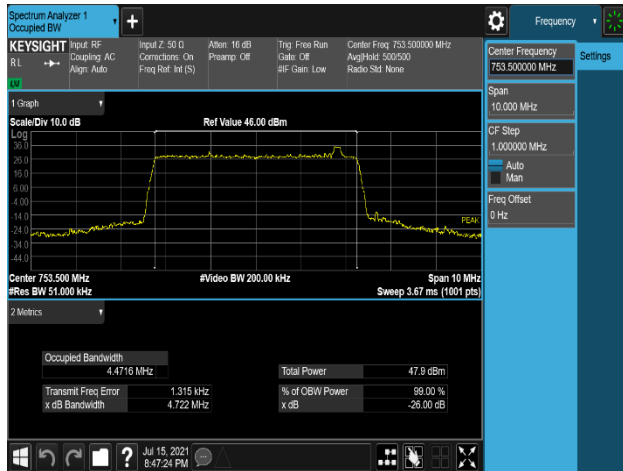
FCC ID: A3LRF4442D-13A		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 8K21070502R3.A3L	Test Dates: 07/09/2021 - 08/26/2021	EUT Type: RRU (RF4442d)		Page 31 of 225



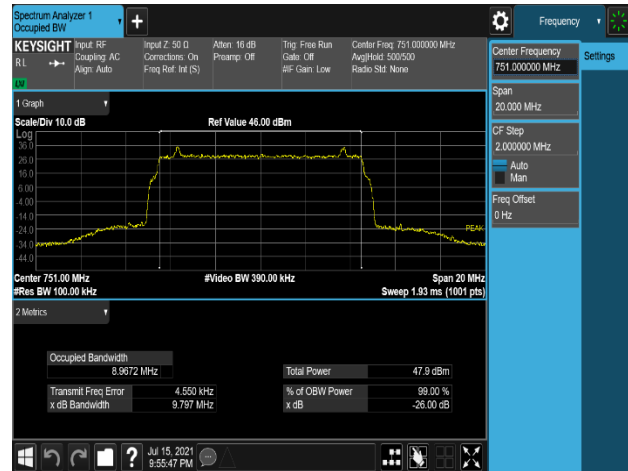
Plot 7-73. Occupied Bandwidth Plot (LTE\_B13\_5M+NB-lot(IB)\_1C\_QPSK - Low Channel, Port 0)



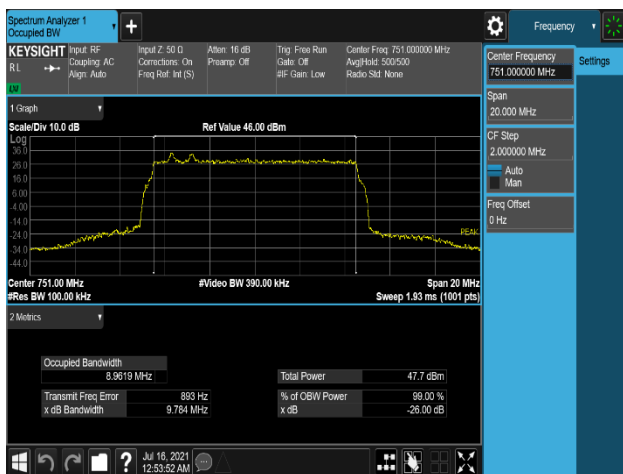
Plot 7-74. Occupied Bandwidth Plot (LTE\_B13\_5M+NB-lot(IB)\_1C\_QPSK - Mid Channel, Port 0)



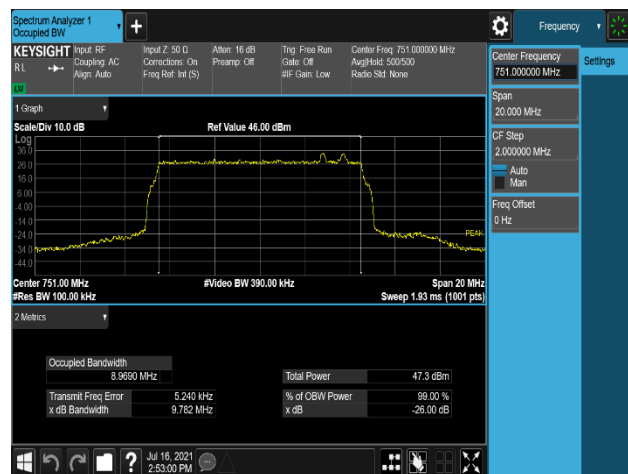
Plot 7-75. Occupied Bandwidth Plot (LTE\_B13\_5M+NB-lot(IB)\_1C\_QPSK - High Channel, Port 0)



Plot 7-76. Occupied Bandwidth Plot (LTE\_B13\_10M+Low\_NB-lot(IB)+High\_NB-lot(IB)\_1C\_QPSK - Port 1)



Plot 7-77. Occupied Bandwidth Plot (LTE\_B13\_10M+Low\_NB-lot(IB)+Low\_NB-lot(IB)\_1C\_QPSK-Port 0)



Plot 7-78. Occupied Bandwidth Plot (LTE\_B13\_10M+High\_NB-lot(IB)+High\_NB-lot(IB)\_3C\_QPSK-Port 0)



FCC ID: A3LRF4442D-13A		<b>MEASUREMENT REPORT (CERTIFICATION)</b>		<b>Approved by:</b> Technical Manager
Test Report S/N: 8K21070502R3.A3L	Test Dates: 07/09/2021 - 08/26/2021	EUT Type: RRU (RF4442d)		Page 32 of 225

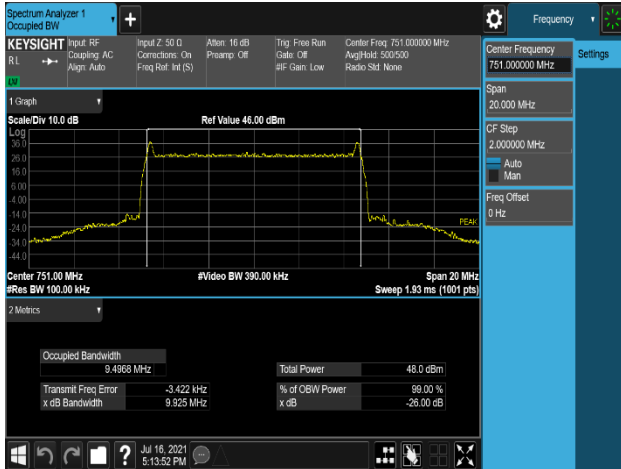
Channel	Port	OBW (MHz)
Middle	0	9.49
	1	<b>9.50</b>
	2	9.49
	3	9.49

**Table 7-12. Occupied Bandwidth Summary Data (LTE\_B13\_10M+NB-IoT(GB)+ NB-IoT(GB)\_3C)**

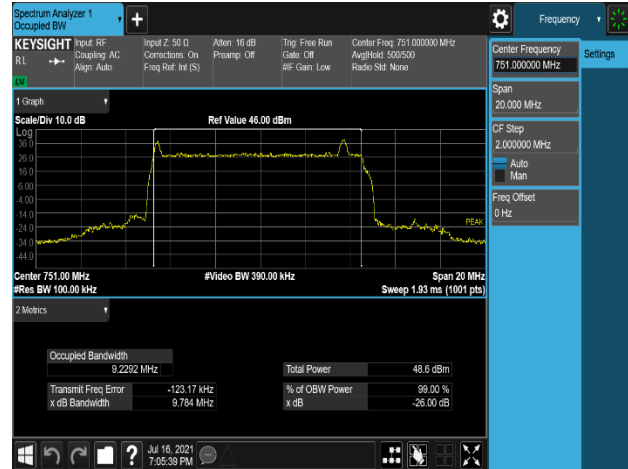
Configuration	Port	OBW (MHz)
B13_10M+Low_NB-IoT(GB)+High_NB-IoT(IB)_2C	0	<b>9.23</b>
	1	9.22
	2	9.22
	3	9.21
B13_10M+High_NB-IoT(GB)+Low_NB-IoT(IB)_2C	0	<b>9.22</b>
	1	9.21
	2	9.22
	3	9.22

**Table 7-13. Occupied Bandwidth Summary Data (LTE\_B13\_10M+NB-IoT(IB)+ NB-IoT(GB)\_2C)**

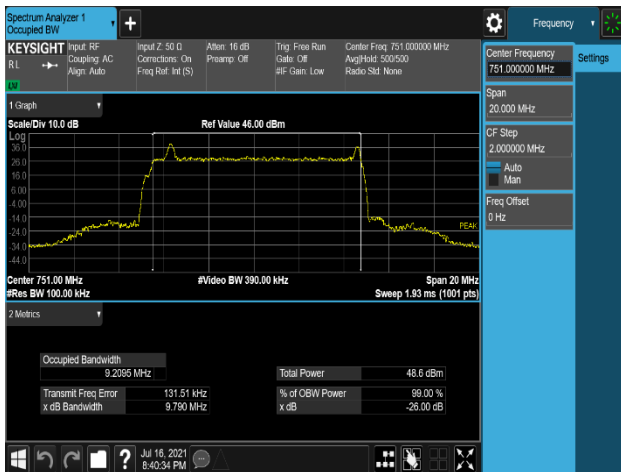
FCC ID: A3LRF4442D-13A		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 8K21070502R3.A3L	Test Dates: 07/09/2021 - 08/26/2021	EUT Type: RRU (RF4442d)	Page 33 of 225	





Plot 7-79. Occupied Bandwidth Plot  
(LTE\_B13\_10M+NB-lot(GB)+ NB-lot(GB)\_3C\_QPSK - Port 0)





Plot 7-80. Occupied Bandwidth Plot  
(LTE\_B13\_10M+NB-lot(IB)+ NB-lot(GB)\_2C\_QPSK - Port 0)



Plot 7-81. Occupied Bandwidth Plot  
(LTE\_B13\_10M+NB-lot(IB)+ NB-lot(GB)\_2C\_QPSK - Port 0)

FCC ID: A3LRF4442D-13A		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 8K21070502R3.A3L	Test Dates: 07/09/2021 - 08/26/2021	EUT Type: RRU (RF4442d)		Page 34 of 225



DSS Ratio	Channel	Port	OBW (MHz)			
			QPSK	16QAM	64QAM	256QAM
LTE 9: NR 1	Low	0	9.21	9.16	9.21	9.18
		1	9.19	9.15	9.16	9.18
		2	9.20	9.15	9.14	9.16
		3	9.23	9.19	9.19	9.14
	Middle	0	9.22	9.16	9.18	9.16
		1	9.22	9.18	9.21	9.15
		2	9.24	9.17	9.20	9.17
		3	9.23	9.18	9.19	9.19
	High	0	9.19	9.19	9.20	9.15
		1	9.22	9.17	9.20	9.17
		2	9.22	9.21	9.21	9.18
		3	9.22	9.17	9.13	9.18
LTE 8: NR 2	Low	0	9.24	9.18	9.20	9.18
		1	9.24	9.19	9.20	9.18
		2	9.25	9.20	9.22	9.20
		3	9.26	9.19	9.21	9.19
	Middle	0	9.25	9.18	9.20	9.21
		1	9.25	9.17	9.22	9.19
		2	9.26	9.19	9.22	9.20
		3	9.26	9.17	9.23	9.21
	High	0	9.26	9.18	9.22	9.21
		1	9.22	9.18	9.22	9.20
		2	9.25	9.21	9.20	9.19
		3	9.26	9.19	9.23	9.19
LTE 7: NR 3	Low	0	9.26	9.18	9.23	9.20
		1	9.25	9.19	9.23	9.19
		2	9.27	9.17	9.23	9.19
		3	9.27	9.18	9.24	9.22
	Middle	0	9.27	9.20	9.26	9.20
		1	9.26	9.19	9.24	9.22
		2	9.27	9.19	9.22	9.22
		3	9.26	9.20	9.23	9.22
	High	0	9.26	9.19	9.21	9.22
		1	9.26	9.18	9.23	9.21
		2	9.26	9.19	9.22	9.21
		3	9.26	9.19	9.22	9.22
LTE 6: NR 4	Low	0	9.26	9.19	9.25	9.22
		1	9.27	9.18	9.23	9.22
		2	9.25	9.19	9.25	9.22
		3	9.27	9.19	9.22	9.22
	Middle	0	9.27	9.19	9.25	9.22
		1	9.27	9.19	9.24	9.21
		2	9.27	9.20	9.26	9.23
		3	9.28	9.18	9.23	9.21
	High	0	9.27	9.21	9.23	9.21
		1	9.27	9.20	9.21	9.23
		2	9.26	9.18	9.22	9.23
		3	9.27	9.19	9.21	9.22

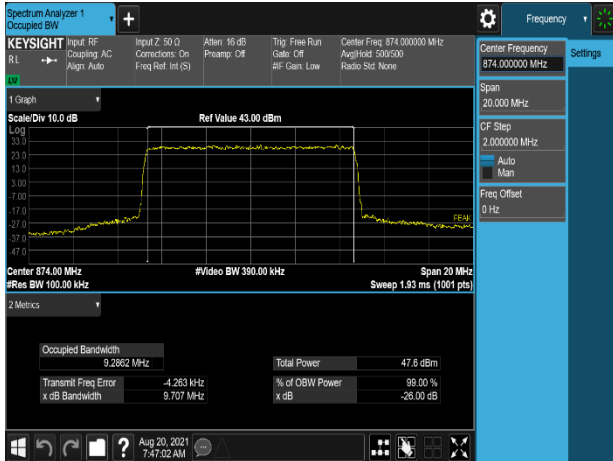
FCC ID: A3LRF4442D-13A		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 8K21070502R3.A3L	Test Dates: 07/09/2021 - 08/26/2021	EUT Type: RRU (RF4442d)		Page 35 of 225

LTE 5: NR 5	Low	0	9.27	9.19	9.25	9.22
		1	9.28	9.20	9.23	9.22
		2	9.27	9.20	9.24	9.24
		3	9.27	9.19	9.23	9.24
	Middle	0	9.28	9.20	9.23	9.24
		1	9.28	9.22	9.24	9.23
		2	9.28	9.20	9.24	9.24
		3	9.28	9.18	9.25	9.24
	High	0	9.27	9.21	9.24	9.23
		1	9.27	9.21	9.25	9.23
		2	9.27	9.19	9.23	9.22
		3	9.28	9.20	9.23	9.20
LTE 4: NR 6	Low	0	9.28	9.19	9.26	9.24
		1	9.28	9.19	9.25	9.24
		2	9.28	9.19	9.25	9.24
		3	9.28	9.19	9.25	9.23
	Middle	0	9.28	9.20	9.26	9.24
		1	9.28	9.20	9.25	9.24
		2	9.28	9.20	9.25	9.24
		3	9.29	9.20	9.26	9.24
	High	0	9.28	9.19	9.25	9.25
		1	9.28	9.19	9.25	9.24
		2	9.27	9.19	9.24	9.24
		3	9.27	9.22	9.23	9.25
LTE 3: NR 7	Low	0	9.28	9.20	9.26	9.24
		1	9.28	9.21	9.26	9.26
		2	9.28	9.20	9.24	9.24
		3	9.28	9.20	9.26	9.25
	Middle	0	9.28	9.21	9.25	9.25
		1	9.28	9.22	9.27	9.24
		2	9.28	9.19	9.26	9.25
		3	9.28	9.21	9.25	9.25
	High	0	9.28	9.20	9.25	9.25
		1	9.28	9.21	9.26	9.24
		2	9.29	9.22	9.25	9.24
		3	9.29	9.21	9.25	9.24
LTE 2: NR 8	Low	0	<b>9.29</b>	9.21	9.25	9.25
		1	9.28	9.19	9.25	9.25
		2	9.28	9.19	9.26	9.25
		3	9.28	9.22	9.26	9.26
	Middle	0	9.29	9.20	<b>9.28</b>	9.26
		1	9.29	9.23	9.27	9.26
		2	9.29	9.22	9.27	9.25
		3	9.29	9.20	9.27	9.26
	High	0	9.29	9.22	9.26	<b>9.27</b>
		1	9.28	9.21	9.25	9.27
		2	9.28	<b>9.23</b>	9.25	9.26
		3	9.28	9.21	9.26	9.26

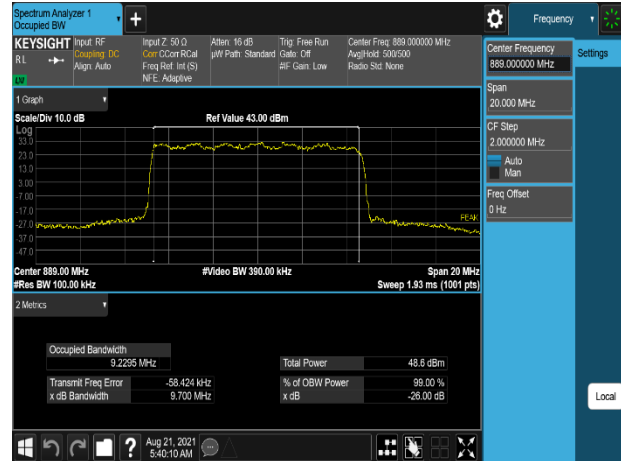
**Table 7-14. Occupied Bandwidth Summary Data (DSS\_B5\_10M\_1C)**

**Note: Test result is no big difference depending on DSS Ratio. So, the only worst-ratio plots are included in this report.**

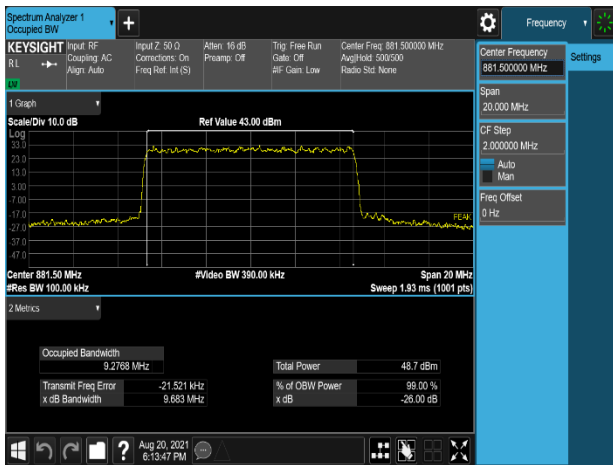
FCC ID: A3LRF4442D-13A		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 8K21070502R3.A3L	Test Dates: 07/09/2021 - 08/26/2021	EUT Type: RRU (RF4442d)		Page 36 of 225



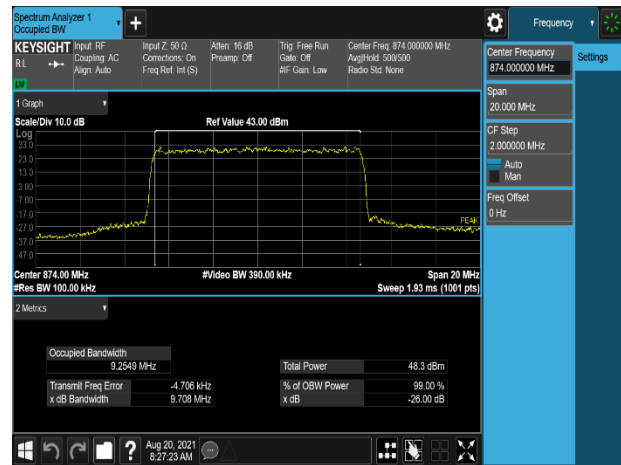
Plot 7-82. Occupied Bandwidth Plot  
(DSS\_B5\_10M\_2:8\_1C\_QPSK - Low Channel, Port 0)




Plot 7-83. Occupied Bandwidth Plot  
(DSS\_B5\_10M\_2:8\_1C\_16QAM - High Channel, Port 2)



Plot 7-84. Occupied Bandwidth Plot  
(DSS\_B5\_10M\_2:8\_1C\_64QAM - Mid Channel, Port 0)



Plot 7-85. Occupied Bandwidth Plot  
(DSS\_B5\_10M\_2:8\_1C\_256QAM - High Channel, Port 0)

FCC ID: A3LRF4442D-13A		<b>MEASUREMENT REPORT (CERTIFICATION)</b>		<b>Approved by:</b> Technical Manager
Test Report S/N: 8K21070502R3.A3L	Test Dates: 07/09/2021 - 08/26/2021	EUT Type: RRU (RF4442d)		Page 37 of 225





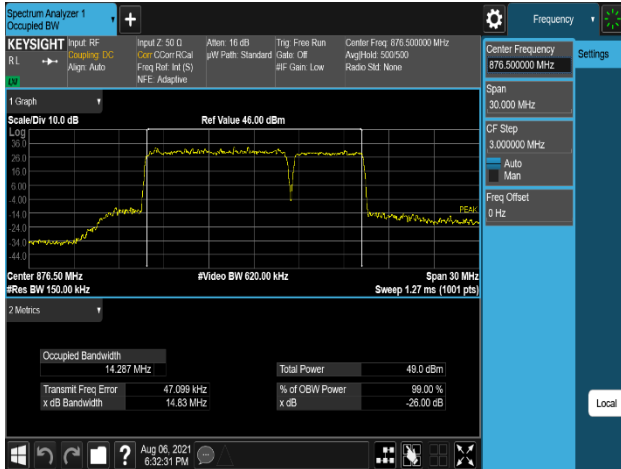
DSS Ratio	Channel	Port	OBW (MHz)			
			QPSK	16QAM	64QAM	256QAM
LTE 5: NR 5	Low	0	<b>14.29</b>	14.29	14.26	14.27
		1	14.28	<b>14.32</b>	14.26	<b>14.29</b>
		2	14.27	14.28	<b>14.28</b>	14.28
		3	14.26	14.27	14.23	14.26
	Middle	0	14.26	14.31	14.25	14.28
		1	<b>14.29</b>	<b>14.36</b>	<b>14.27</b>	<b>14.30</b>
		2	14.27	14.30	14.26	14.27
		3	14.29	14.31	14.25	14.28
	High	0	14.25	<b>14.18</b>	<b>14.27</b>	<b>14.27</b>
		1	<b>14.28</b>	14.17	14.27	14.24
		2	14.27	14.18	14.25	14.27
		3	14.26	14.16	14.26	14.26

**Table 7-15. Occupied Bandwidth Summary Data (DSS\_B5\_10M+5M\_2C)**

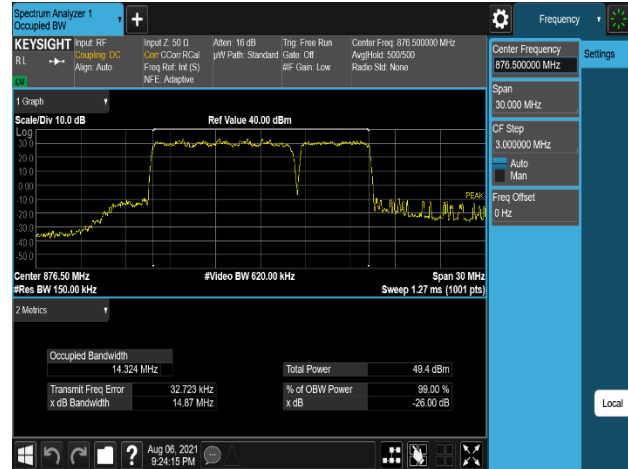
DSS Ratio	Channel	Port	OBW (MHz)			
			QPSK	16QAM	64QAM	256QAM
LTE 5: NR 5	Low	0	19.01	19.03	18.99	<b>18.99</b>
		1	19.01	19.04	<b>19.02</b>	18.98
		2	19.01	<b>19.05</b>	19.01	18.99
		3	<b>19.02</b>	19.01	19.00	18.92
	Middle	0	<b>19.02</b>	19.05	<b>18.99</b>	19.00
		1	19.00	<b>19.10</b>	18.94	18.97
		2	18.99	19.04	18.98	18.98
		3	18.94	19.05	18.97	<b>19.02</b>
	High	0	18.97	18.90	<b>19.01</b>	18.95
		1	<b>18.98</b>	<b>18.91</b>	19.01	<b>18.98</b>
		2	18.98	18.91	19.00	18.98
		3	18.95	18.88	19.00	18.96

**Table 7-16. Occupied Bandwidth Summary Data (DSS\_B5\_10M+10M\_2C)**

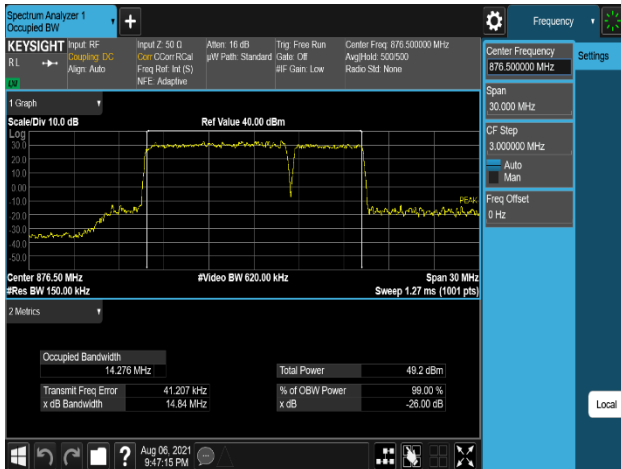
FCC ID: A3LRF4442D-13A		<b>MEASUREMENT REPORT (CERTIFICATION)</b>		<b>Approved by:</b> Technical Manager
<b>Test Report S/N:</b> 8K21070502R3.A3L	<b>Test Dates:</b> 07/09/2021 - 08/26/2021	<b>EUT Type:</b> RRU (RF4442d)	Page 38 of 225	



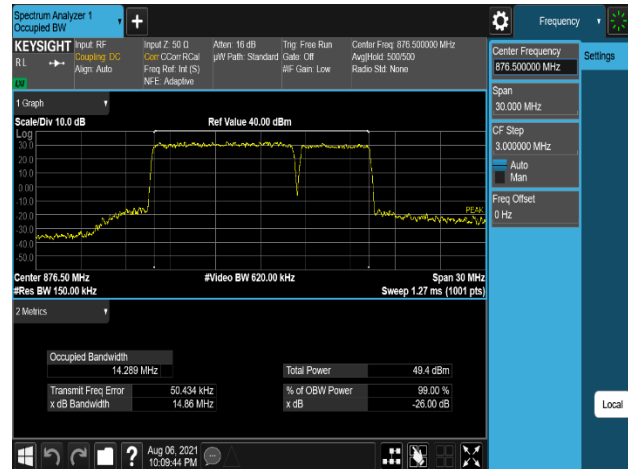
Plot 7-86. Occupied Bandwidth Plot  
(DSS\_B5\_10M+5M\_2C\_QPSK - Low Channel, Port 0)



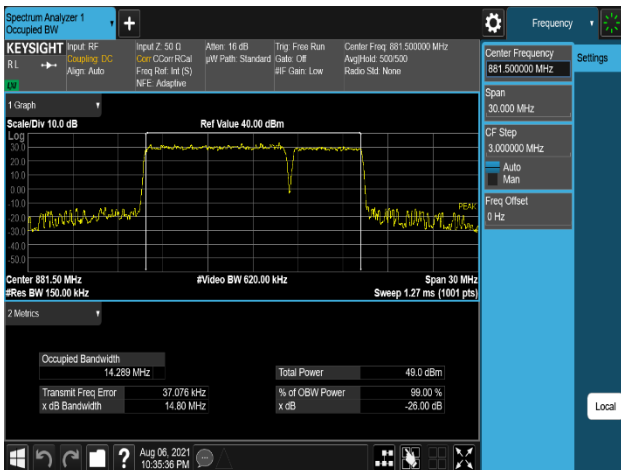
Plot 7-87. Occupied Bandwidth Plot  
(DSS\_B5\_10M+5M\_2C\_16QAM - Low Channel, Port 1)



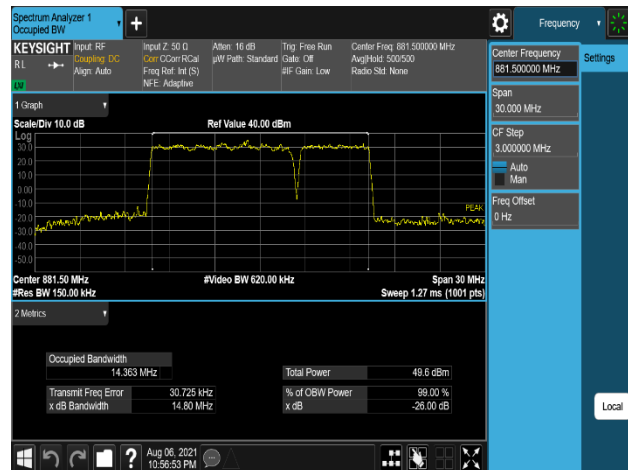
Plot 7-88. Occupied Bandwidth Plot  
(DSS\_B5\_10M+5M\_2C\_64QAM - Low Channel, Port 2)



Plot 7-89. Occupied Bandwidth Plot  
(DSS\_B5\_10M+5M\_2C\_256QAM - Low Channel, Port 1)

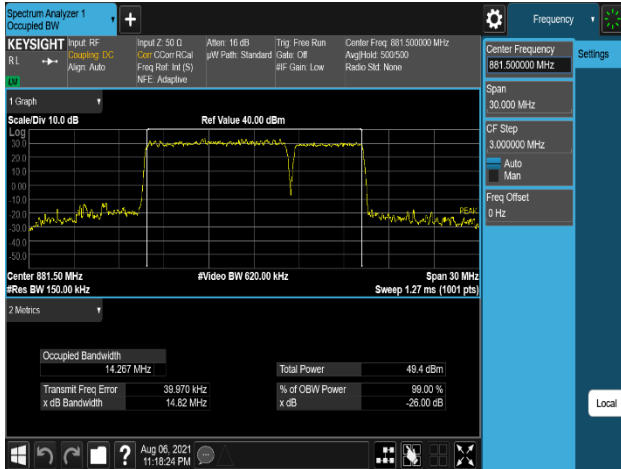


Plot 7-90. Occupied Bandwidth Plot  
(DSS\_B5\_10M+5M\_2C\_QPSK - Mid Channel, Port 1)

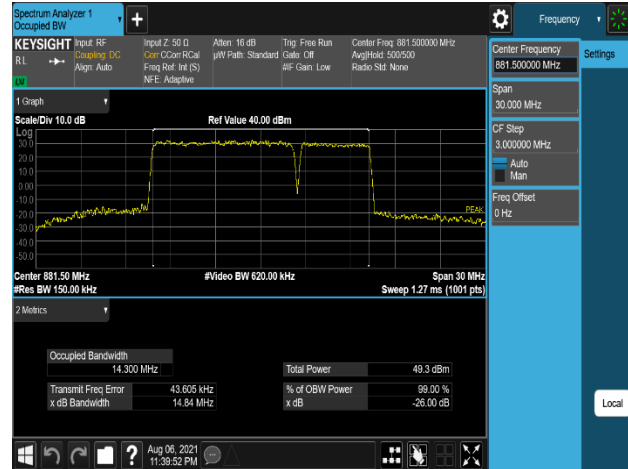


Plot 7-91. Occupied Bandwidth Plot  
(DSS\_B5\_10M+5M\_2C\_16QAM - Mid Channel, Port 1)

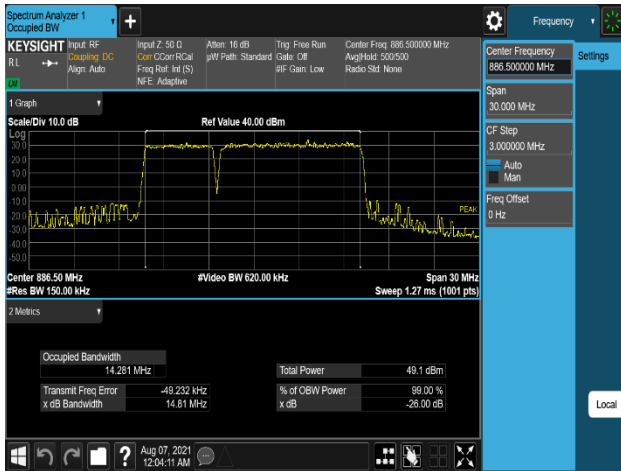
FCC ID: A3LRF4442D-13A		<b>MEASUREMENT REPORT (CERTIFICATION)</b>		<b>Approved by:</b> Technical Manager
<b>Test Report S/N:</b> 8K21070502R3.A3L	<b>Test Dates:</b> 07/09/2021 - 08/26/2021	<b>EUT Type:</b> RRU (RF4442d)		Page 39 of 225



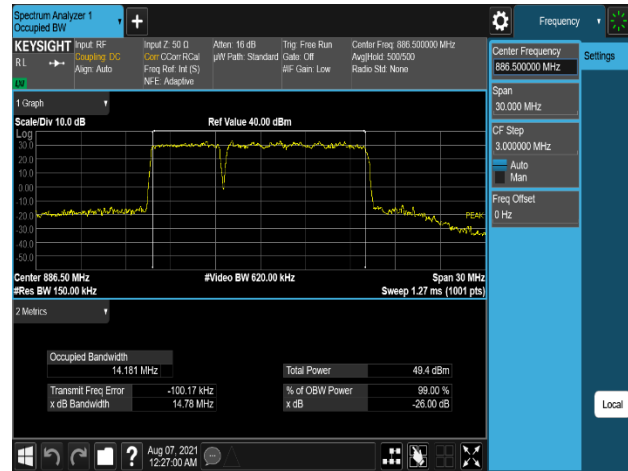
Plot 7-92. Occupied Bandwidth Plot  
(DSS\_B5\_10M+5M\_2C\_64QAM - Mid Channel, Port 1)



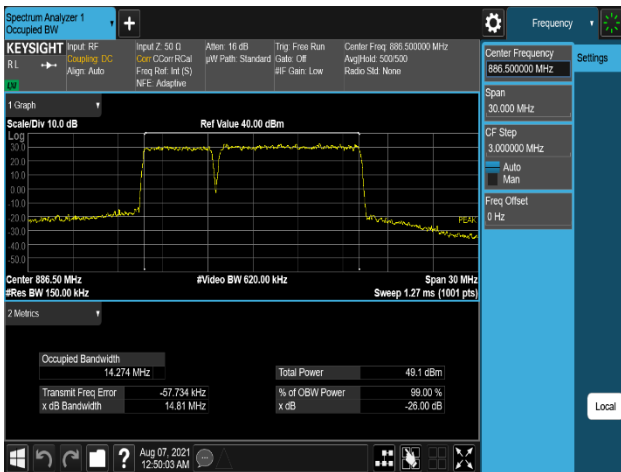
Plot 7-93. Occupied Bandwidth Plot  
(DSS\_B5\_10M+5M\_2C\_256QAM - Mid Channel, Port 1)



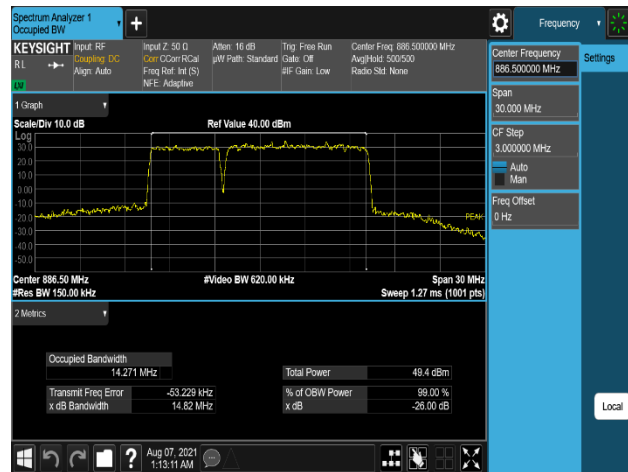
Plot 7-94. Occupied Bandwidth Plot  
(DSS\_B5\_10M+5M\_2C\_QPSK - High Channel, Port 1)



Plot 7-95. Occupied Bandwidth Plot  
(DSS\_B5\_10M+5M\_2C\_16QAM - High Channel, Port 0)

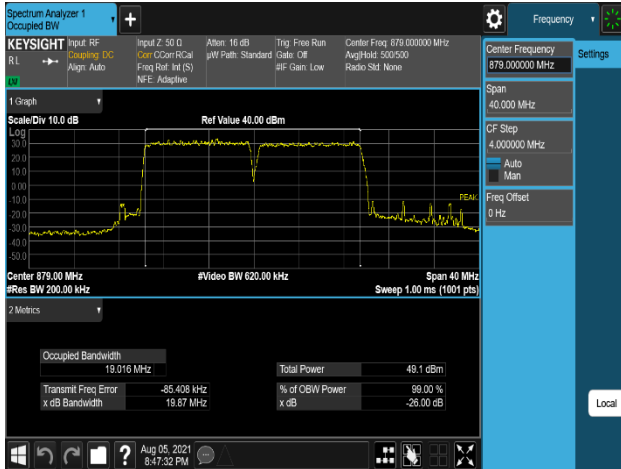


Plot 7-96. Occupied Bandwidth Plot  
(DSS\_B5\_10M+5M\_2C\_64QAM - High Channel, Port 0)

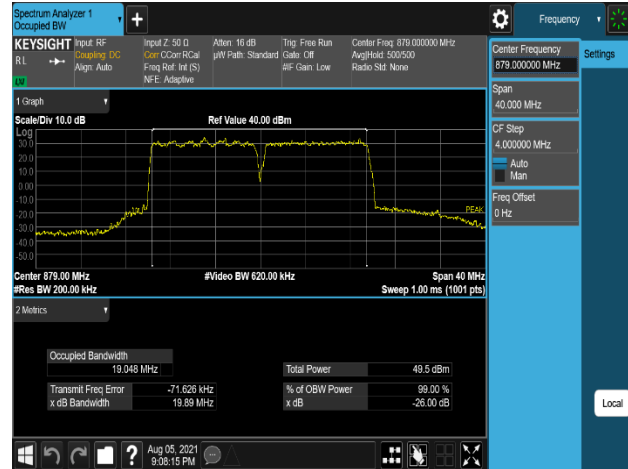


Plot 7-97. Occupied Bandwidth Plot  
(DSS\_B5\_10M+5M\_2C\_256QAM - High Channel, Port 0)

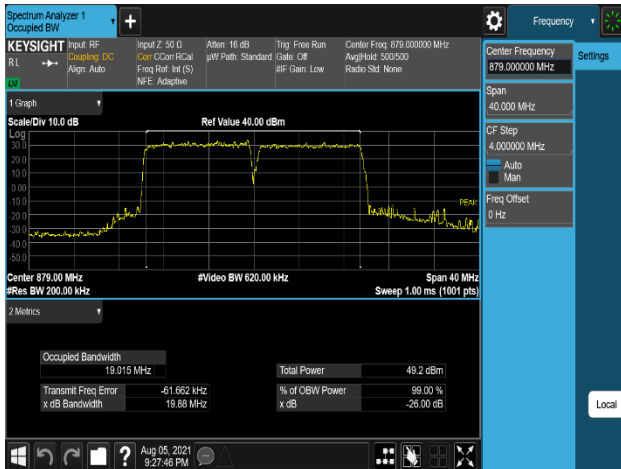
FCC ID: A3LRF4442D-13A		<b>MEASUREMENT REPORT (CERTIFICATION)</b>		<b>Approved by:</b> Technical Manager
Test Report S/N: 8K21070502R3.A3L	Test Dates: 07/09/2021 - 08/26/2021	EUT Type: RRU (RF4442d)		Page 40 of 225



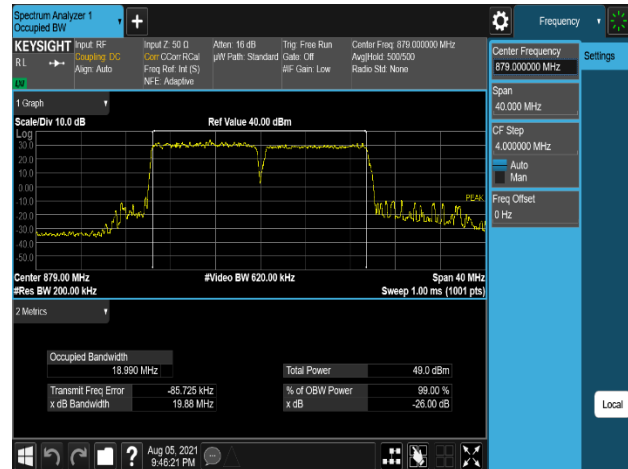
Plot 7-98. Occupied Bandwidth Plot  
(DSS\_B5\_10M+10M\_2C\_QPSK - Low Channel, Port 3)



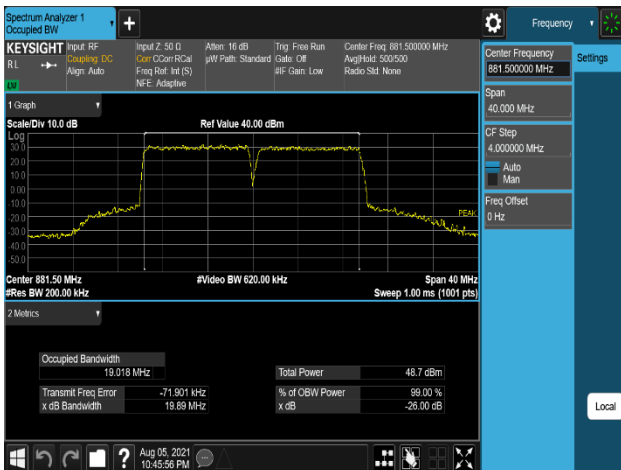
Plot 7-99. Occupied Bandwidth Plot  
(DSS\_B5\_10M+10M\_2C\_16QAM - Low Channel, Port 2)



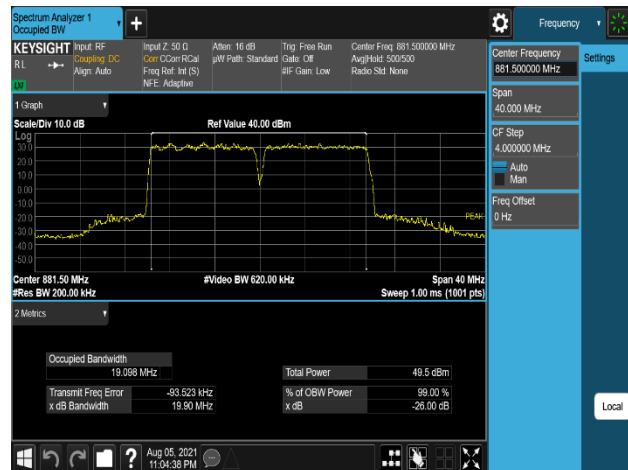
Plot 7-100. Occupied Bandwidth Plot  
(DSS\_B5\_10M+10M\_2C\_64QAM - Low Channel, Port 1)



Plot 7-101. Occupied Bandwidth Plot  
(DSS\_B5\_10M+10M\_2C\_256QAM - Low Channel, Port 0)

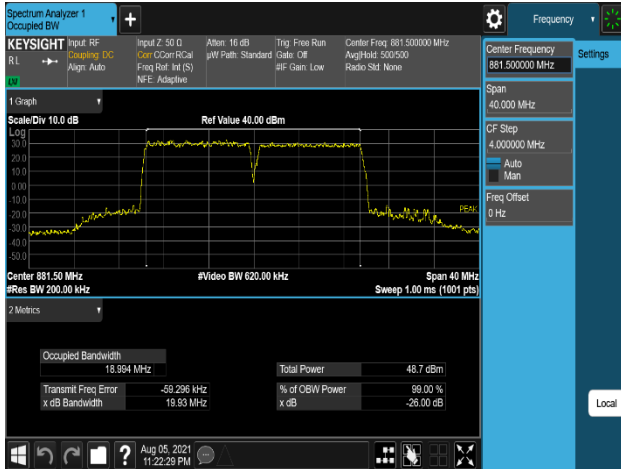


Plot 7-102. Occupied Bandwidth Plot  
(DSS\_B5\_10M+10M\_2C\_QPSK - Mid Channel, Port 0)

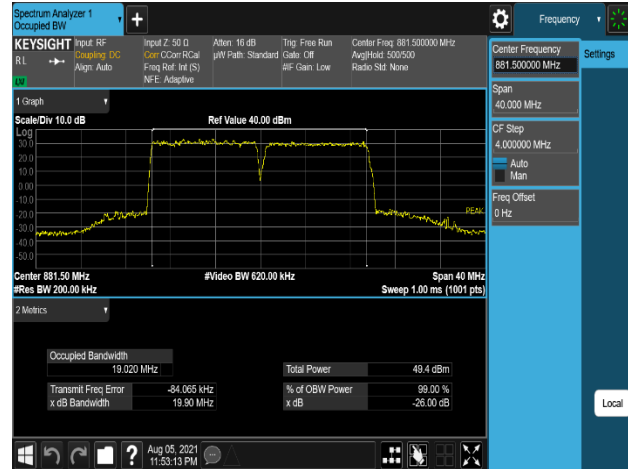


Plot 7-103. Occupied Bandwidth Plot  
(DSS\_B5\_10M+10M\_2C\_16QAM - Mid Channel, Port 1)

FCC ID: A3LRF4442D-13A		<b>MEASUREMENT REPORT (CERTIFICATION)</b>		<b>Approved by:</b> Technical Manager
<b>Test Report S/N:</b> 8K21070502R3.A3L	<b>Test Dates:</b> 07/09/2021 - 08/26/2021	<b>EUT Type:</b> RRU (RF4442d)		Page 41 of 225



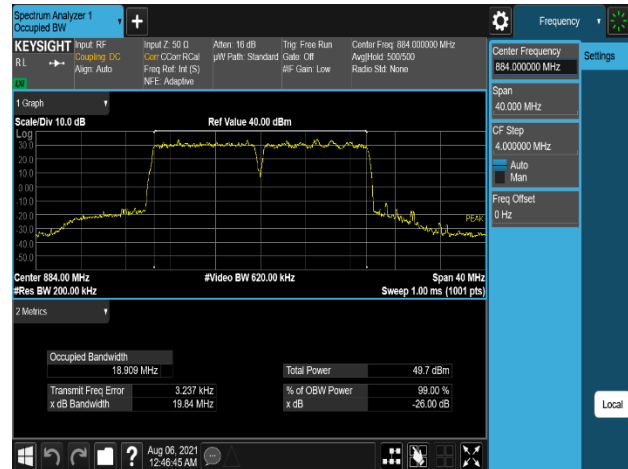
Plot 7-104. Occupied Bandwidth Plot  
(DSS\_B5\_10M+10M\_2C\_64QAM - Mid Channel, Port 0)



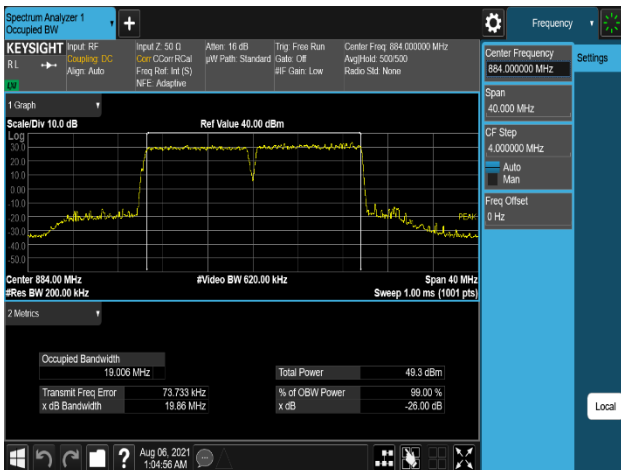
Plot 7-105. Occupied Bandwidth Plot  
(DSS\_B5\_10M+10M\_2C\_256QAM - Mid Channel, Port 3)



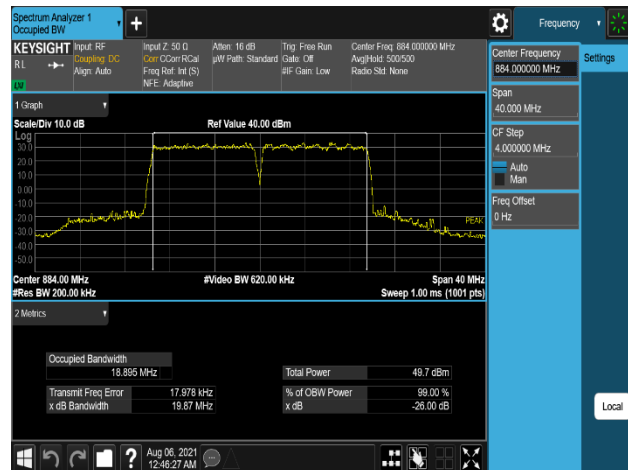
Plot 7-106. Occupied Bandwidth Plot  
(DSS\_B5\_10M+10M\_2C\_QPSK - High Channel, Port 1)



Plot 7-107. Occupied Bandwidth Plot  
(DSS\_B5\_10M+10M\_2C\_16QAM - High Channel, Port 1)



Plot 7-108. Occupied Bandwidth Plot  
(DSS\_B5\_10M+10M\_2C\_64QAM - High Channel, Port 0)

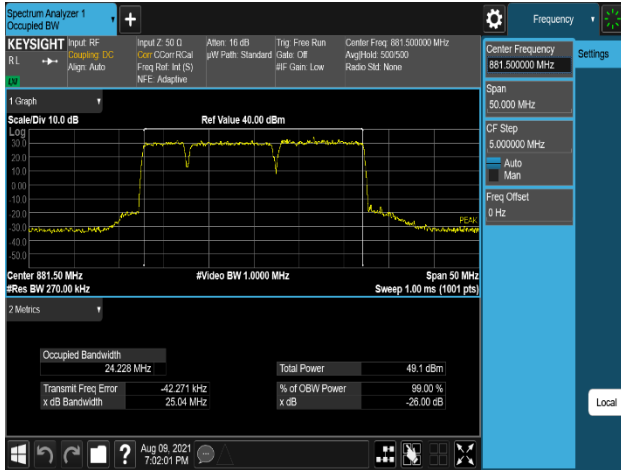


Plot 7-109. Occupied Bandwidth Plot  
(DSS\_B5\_10M+10M\_2C\_256QAM - High Channel, Port 1)

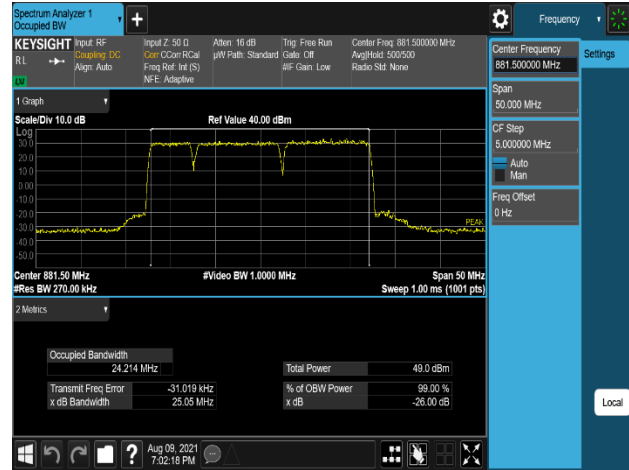
FCC ID: A3LRF4442D-13A		<b>MEASUREMENT REPORT (CERTIFICATION)</b>		<b>Approved by:</b> Technical Manager
Test Report S/N: 8K21070502R3.A3L	Test Dates: 07/09/2021 - 08/26/2021	EUT Type: RRU (RF4442d)		Page 42 of 225

DSS Ratio	Channel	Port	OBW (MHz)			
			QPSK	16QAM	64QAM	256QAM
LTE 5: NR 5	Middle	0	24.20	24.05	<b>24.23</b>	24.17
		1	24.17	24.01	<b>24.21</b>	24.19
		2	24.20	24.11	<b>24.21</b>	24.15
		3	24.18	24.08	<b>24.21</b>	24.13

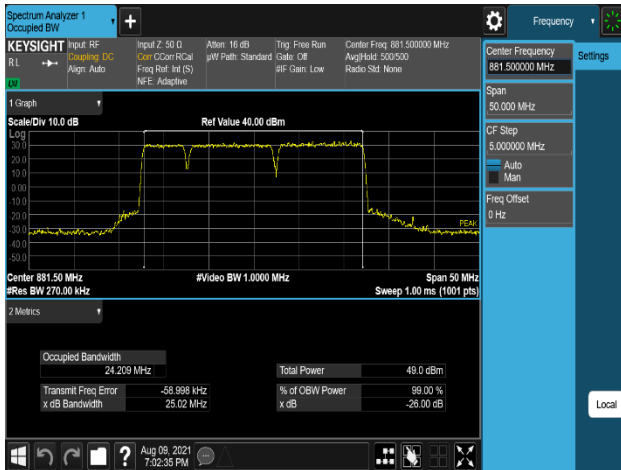
Table 7-17. Occupied Bandwidth Summary Data (DSS\_B5\_10M+10M+5M\_3C)



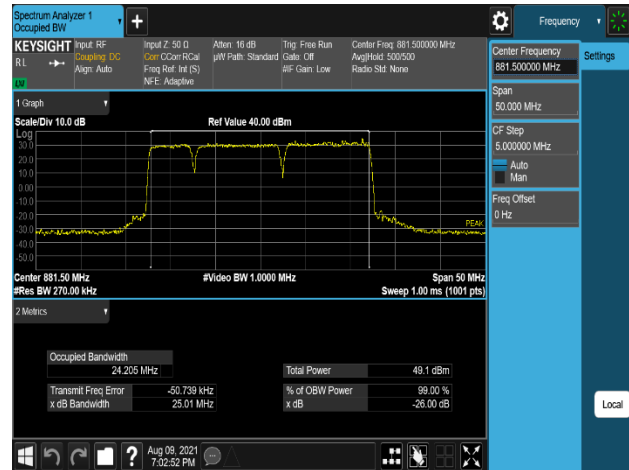
Plot 7-110. Occupied Bandwidth Plot (DSS\_B5\_10M+10M+5M\_3C\_64QAM - Port 0)



Plot 7-111. Occupied Bandwidth Plot (DSS\_B5\_10M+10M+5M\_3C\_64QAM - Port 1)



Plot 7-112. Occupied Bandwidth Plot (DSS\_B5\_10M+10M+5M\_3C\_64QAM - Port 2)



Plot 7-113. Occupied Bandwidth Plot (DSS\_B5\_10M+10M+5M\_3C\_64QAM - Port 3)

FCC ID: A3LRF4442D-13A		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 8K21070502R3.A3L	Test Dates: 07/09/2021 - 08/26/2021	EUT Type: RRU (RF4442d)		Page 43 of 225

## 7.3 Conducted Average Output Power

### §2.1046

#### Test Overview

A transmitter port of EUT is connected to the input of a signal analyzer. All measurements are performed as RMS average measurements while the EUT is operating at its maximum duty cycle, at maximum power, and at the appropriate frequencies.

#### Test Procedure Used

KDB 971168 D01 v03r01 – Section 5


KDB 662911 D01 v02r01 – Section E)1) In-Band Power Measurements

ANSI C63.26-2015 – Section 5.2.4.4.1

#### Test Setting

The measurement was made using a direct connection between the RF output of the EUT and the spectrum analyzer. The spectrum analyzer settings were as follows:

1. Conducted average output power measurements are performed using the signal analyzer's "channel power mode" measurement capability for signals with continuous operation.
2. Set span to 2 × to 3 × the OBW.
3. Set RBW = 1 – 5% of the expected OBW
4. Set VBW ≥ 3 × RBW.
5. Set number of measurement points in sweep ≥ 2 × span / RBW.
6. Sweep time:
  - a) Set ≥ auto-couple, and enable trace averaging, or
  - b) Set ≥ [10 × (number of points in sweep) × (transmission symbol period)] and enable a single sweep (automation-compatible) measurement. The sweep time should never be faster than the auto-coupled sweep time.
7. Detector = power averaging (rms).
8. Set sweep trigger to "free run."
9. Trace average at least 100 traces in power averaging (rms) mode if sweep is set to auto-couple. To accurately determine the average power over the on and off time of the transmitter, it can be necessary to increase the number of traces to be averaged above 100, or if using a manually configured sweep time, increase the sweep time.
10. Compute the power by integrating the spectrum across the OBW of the signal using the instrument's band or channel power measurement function, with the band/channel limits set equal to the OBW band edges.

FCC ID: A3LRF4442D-13A		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 8K21070502R3.A3L	Test Dates: 07/09/2021 - 08/26/2021	EUT Type: RRU (RF4442d)	Page 44 of 225	

## Test Setup

The EUT and measurement equipment were set up as shown in the diagram below.

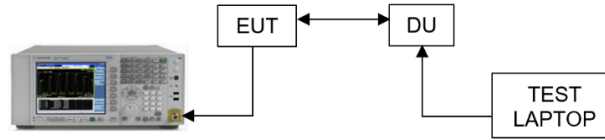


Figure 7-2. Test Instrument & Measurement Setup

## Limit

N/A

## Test Notes

1. The highest values are highlighted in the following tables. The plots are presented only for the highlighted values.
2. Consider the following factors for MIMO Output Power:
  - a) Conducted power for each port is measured in dBm.
  - b) Powers are summed up in linear using the measure-and-sum technique defined in KDB 971168 D01 v03r01-Section D.
  - c) Conducted power per port (dBm) is converted to a linear value (mW). A summation of linear powers for all ports gives us the total MIMO conducted power in milliWatts (mW). We convert this back to logarithmic scale (dBm).
3. MIMO calculations are done considering output channel power for all ports and respective are calculated.
4. Consider the following factors for MIMO Output Power:
  - d) Conducted power for each port is measured in dBm.
  - e) Powers are summed up in linear using the measure-and-sum technique defined in KDB 662911 D01 v02r01-Section D.
  - f) Conducted power per port (dBm) is converted to a linear value (mW). A summation of linear powers for all ports gives us the total MIMO conducted power in milliWatts (mW). We convert this back to logarithmic scale (dBm).
5. Antenna Gains (dBi) are provided by the client.
6. Sample MIMO Calculation:

Let us assume the following numbers:

	Factors	Value	Unit
Total MIMO Conducted Power (linear sum)		114263.52	mW
Total MIMO Conducted Power (dBm)	$= 10 * \log (114263.52) =$	50.58	dBm
Antenna Gain	Max. 27.2 dBi (25.0 dBi $\pm$ 2.2dB)	27.2	dBi
MIMO EIRP =	Total MIMO Conducted Power + Antenna Gain	77.78	dBm
FCC EIRP Limit		87.10	dBm
Margin = MIMO EIRP - FCC EIRP Limit	$= 77.78 - 87.10 =$	-9.32	dB

FCC ID: A3LRF4442D-13A		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 8K21070502R3.A3L	Test Dates: 07/09/2021 - 08/26/2021	EUT Type: RRU (RF4442d)		Page 45 of 225



Low Channel	Port	QPSK	16QAM	64QAM	256QAM
Conducted Average Power (dBm)	0	40.15	40.12	<b>40.30</b>	40.15
	1	40.03	40.13	<b>40.29</b>	40.22
	2	40.04	40.07	<b>40.12</b>	40.01
	3	40.02	40.20	<b>40.34</b>	40.35
Total MIMO Conducted Power (mW)		40559.43	41217.80	<b>42500.24</b>	41733.36
Total MIMO Conducted Power (dBm)		46.08	46.15	<b>46.28</b>	46.20

**Table 7-18. Conducted Average Output Power Table (LTE\_B5\_5M\_1C - Low Channel)**

Middle Channel	Port	QPSK	16QAM	64QAM	256QAM
Conducted Average Power (dBm)	0	<b>40.15</b>	40.06	40.09	40.08
	1	<b>40.22</b>	40.28	40.26	40.20
	2	<b>40.13</b>	40.12	40.13	40.11
	3	<b>40.34</b>	40.36	40.23	40.27
Total MIMO Conducted Power (mW)		<b>41989.24</b>	41949.49	41674.08	41555.15
Total MIMO Conducted Power (dBm)		<b>46.23</b>	46.23	46.20	46.19

**Table 7-19. Conducted Average Output Power Table (LTE\_B5\_5M\_1C - Middle Channel)**

High Channel	Port	QPSK	16QAM	64QAM	256QAM
Conducted Average Power (dBm)	0	<b>40.19</b>	40.10	40.11	40.12
	1	<b>40.27</b>	40.28	40.16	40.21
	2	<b>40.27</b>	40.17	40.23	40.14
	3	<b>40.33</b>	40.31	40.20	40.35
Total MIMO Conducted Power (mW)		<b>42519.53</b>	42037.99	41646.96	41942.47
Total MIMO Conducted Power (dBm)		<b>46.29</b>	46.24	46.20	46.23

**Table 7-20. Conducted Average Output Power Table (LTE\_B5\_5M\_1C - High Channel)**

FCC ID: A3LRF4442D-13A		MEASUREMENT REPORT (CERTIFICATION)			Approved by: Technical Manager
Test Report S/N: 8K21070502R3.A3L	Test Dates: 07/09/2021 - 08/26/2021	EUT Type: RRU (RF4442d)		Page 46 of 225	

Low Channel	Port	QPSK	16QAM	64QAM	256QAM
Conducted Average Power (dBm)	0	<b>39.93</b>	39.85	39.85	39.81
	1	<b>40.07</b>	40.00	40.00	39.99
	2	<b>40.11</b>	40.03	40.03	40.01
	3	<b>40.01</b>	40.03	39.96	39.97
Total MIMO Conducted Power (mW)		<b>40282.17</b>	39799.14	39638.14	39503.15
Total MIMO Conducted Power (dBm)		<b>46.05</b>	46.00	45.98	45.97



**Table 7-21. Conducted Average Output Power Table (LTE\_B5\_10M\_1C - Low Channel)**

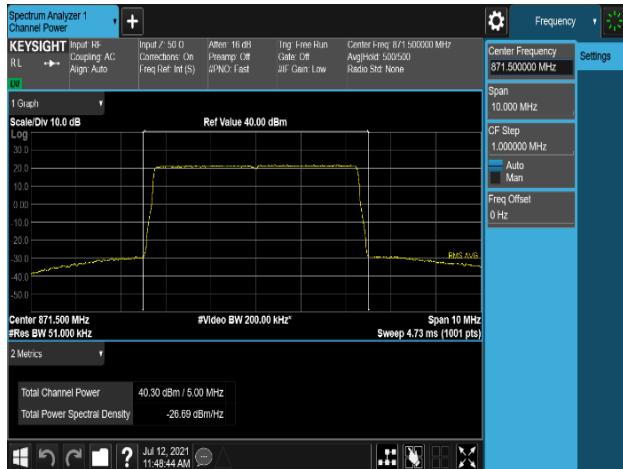
Middle Channel	Port	QPSK	16QAM	64QAM	256QAM
Conducted Average Power (dBm)	0	39.81	<b>40.09</b>	40.00	39.97
	1	40.16	<b>40.26</b>	40.09	40.16
	2	40.09	<b>40.16</b>	40.09	40.16
	3	40.09	<b>40.39</b>	40.03	40.05
Total MIMO Conducted Power (mW)		40366.01	<b>42141.20</b>	40488.11	40797.52
Total MIMO Conducted Power (dBm)		46.06	<b>46.25</b>	46.07	46.11

**Table 7-22. Conducted Average Output Power Table (LTE\_B5\_10M\_1C - Middle Channel)**

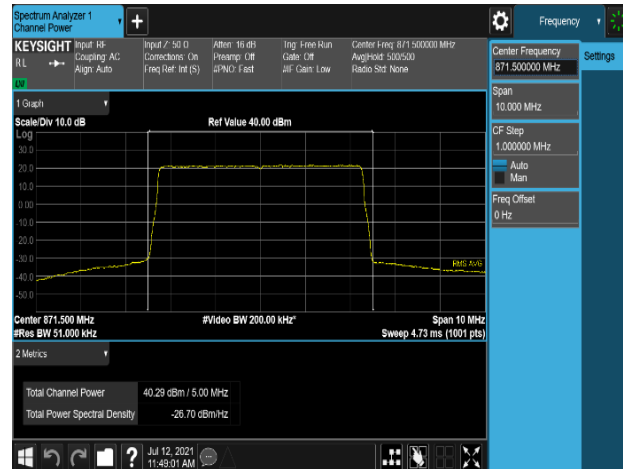
High Channel	Port	QPSK	16QAM	64QAM	256QAM
Conducted Average Power (dBm)	0	39.98	<b>40.00</b>	39.97	39.98
	1	40.12	<b>40.20</b>	40.13	40.12
	2	40.15	<b>40.15</b>	40.16	40.15
	3	40.02	<b>40.05</b>	40.03	40.06
Total MIMO Conducted Power (mW)		40631.80	<b>40938.50</b>	40679.62	40724.75
Total MIMO Conducted Power (dBm)		46.09	<b>46.12</b>	46.09	46.10

**Table 7-23. Conducted Average Output Power Table (LTE\_B5\_10M\_1C - High Channel)**

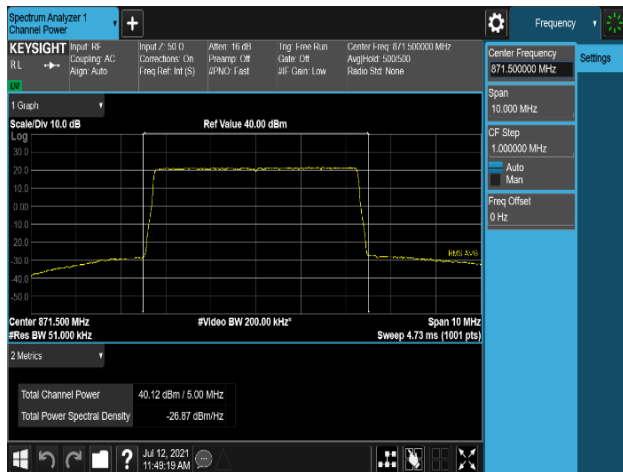
FCC ID: A3LRF4442D-13A		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 8K21070502R3.A3L	Test Dates: 07/09/2021 - 08/26/2021	EUT Type: RRU (RF4442d)		Page 47 of 225



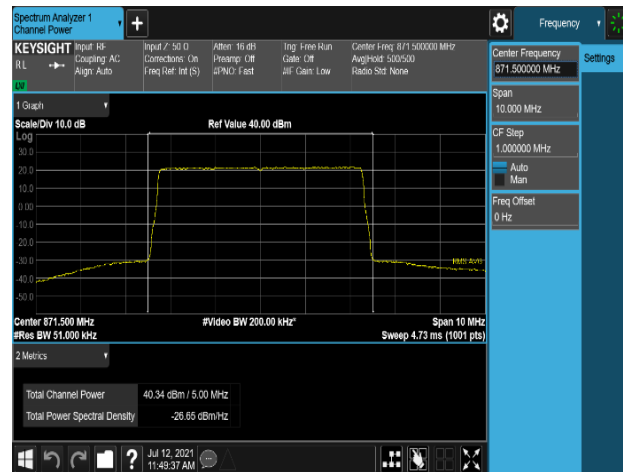
Plot 7-114. Conducted Average Output Power Plot (LTE\_B5\_5M\_1C\_64QAM - Low Channel, Port 0)



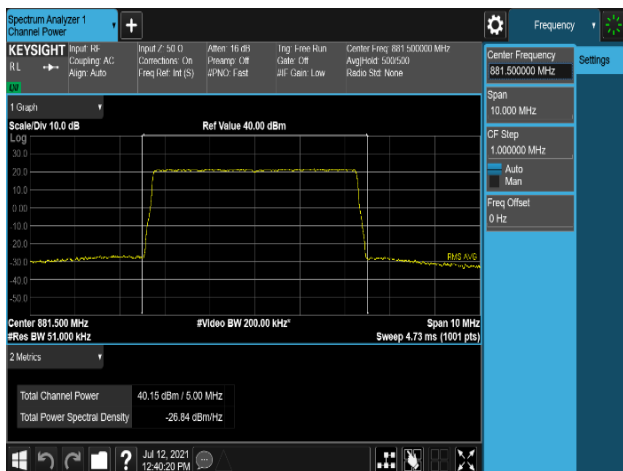
Plot 7-115. Conducted Average Output Power Plot (LTE\_B5\_5M\_1C\_64QAM - Low Channel, Port 1)



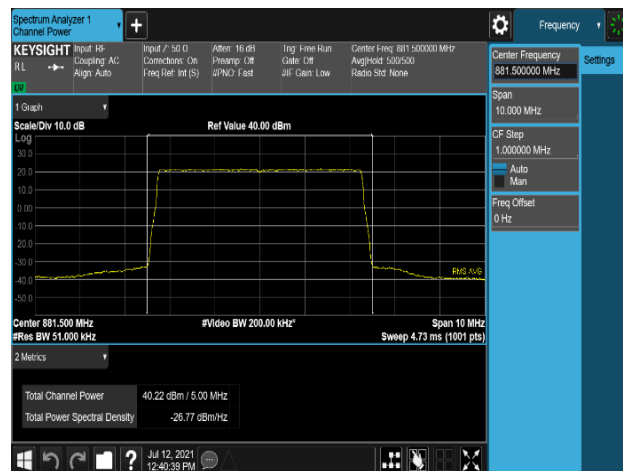
Plot 7-116. Conducted Average Output Power Plot (LTE\_B5\_5M\_1C\_64QAM - Low Channel, Port 2)



Plot 7-117. Conducted Average Output Power Plot (LTE\_B5\_5M\_1C\_64QAM - Low Channel, Port 3)

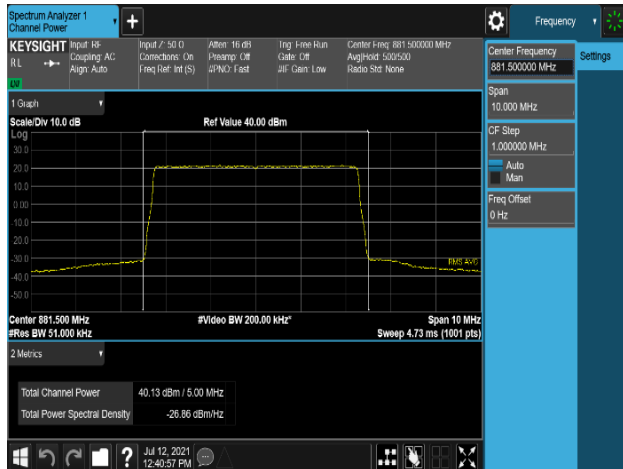


Plot 7-118. Conducted Average Output Power Plot (LTE\_B5\_5M\_1C\_QPSK - Mid Channel, Port 0)

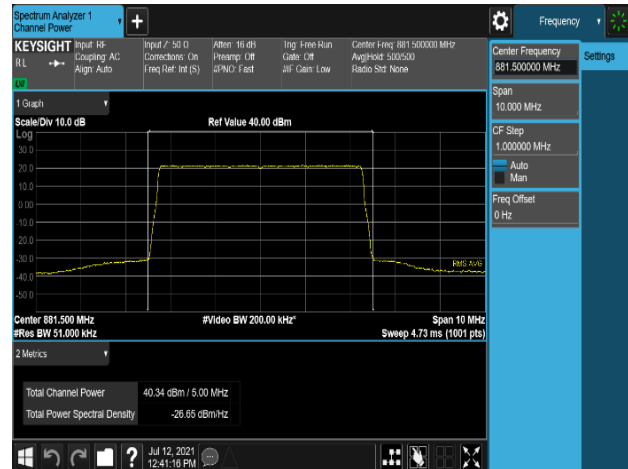


Plot 7-119. Conducted Average Output Power Plot (LTE\_B5\_5M\_1C\_QPSK - Mid Channel, Port 1)

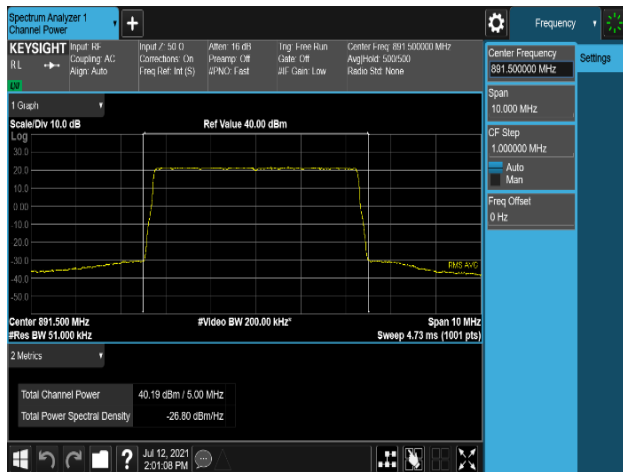
FCC ID: A3LRF4442D-13A		<b>MEASUREMENT REPORT (CERTIFICATION)</b>		<b>Approved by:</b> Technical Manager
Test Report S/N: 8K21070502R3.A3L	Test Dates: 07/09/2021 - 08/26/2021	EUT Type: RRU (RF4442d)		Page 48 of 225



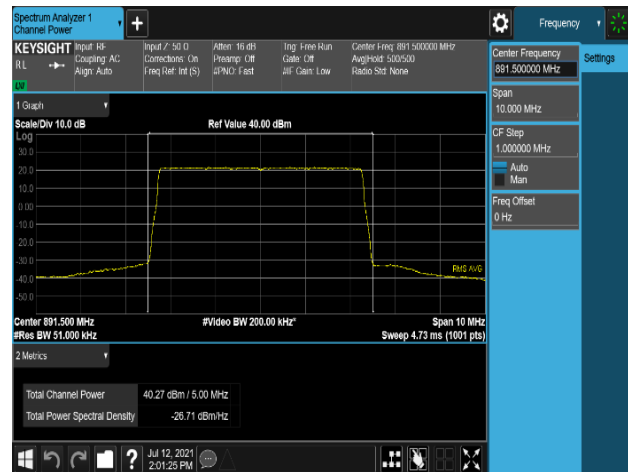
Plot 7-120. Conducted Average Output Power Plot (LTE\_B5\_5M\_1C\_QPSK - Mid Channel, Port 2)



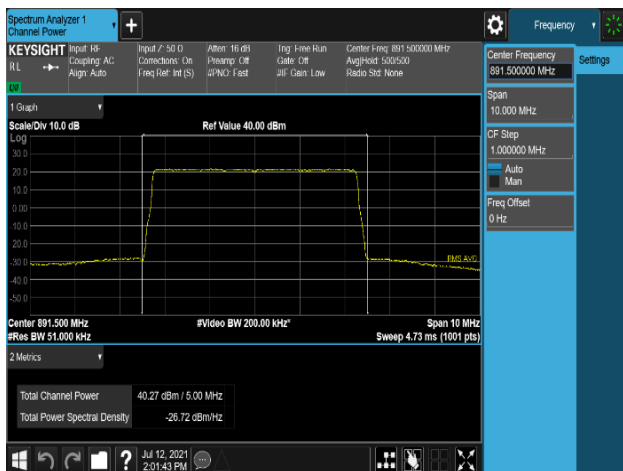
Plot 7-121. Conducted Average Output Power Plot (LTE\_B5\_5M\_1C\_QPSK - Mid Channel, Port 3)



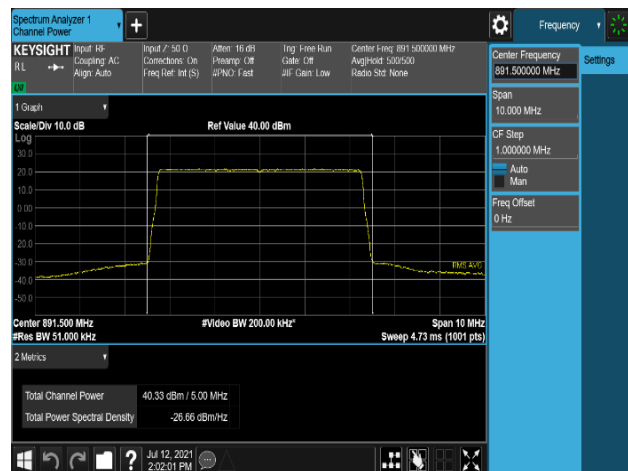
Plot 7-122. Conducted Average Output Power Plot (LTE\_B5\_5M\_1C\_QPSK - High Channel, Port 0)



Plot 7-123. Conducted Average Output Power Plot (LTE\_B5\_5M\_1C\_QPSK - High Channel, Port 1)

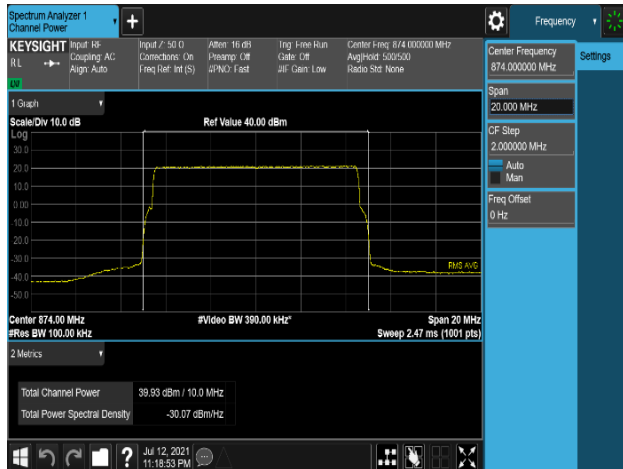


Plot 7-124. Conducted Average Output Power Plot (LTE\_B5\_5M\_1C\_QPSK - High Channel, Port 2)

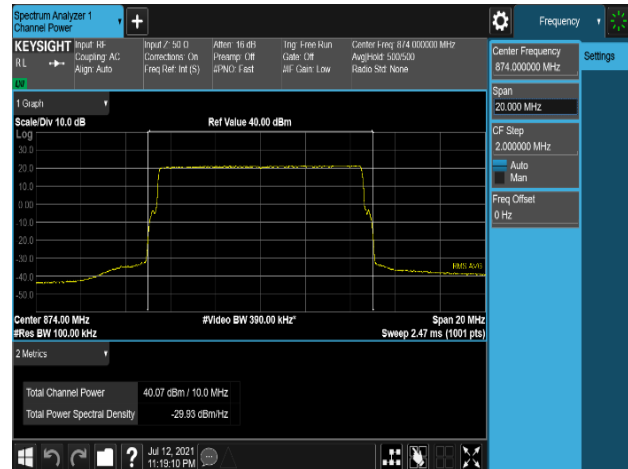


Plot 7-125. Conducted Average Output Power Plot (LTE\_B5\_5M\_1C\_QPSK - High Channel, Port 3)

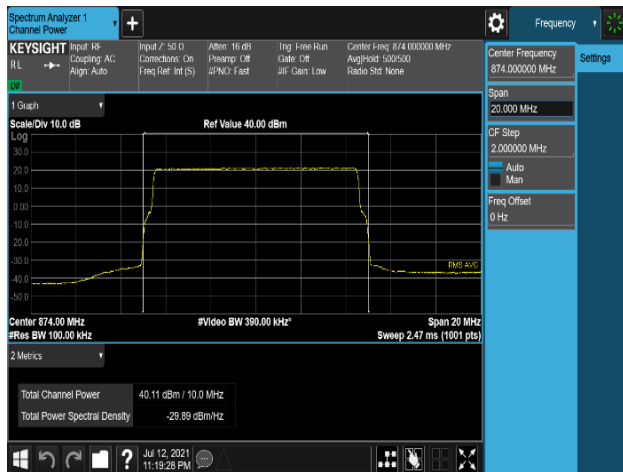
FCC ID: A3LRF4442D-13A		<b>MEASUREMENT REPORT (CERTIFICATION)</b>		<b>Approved by:</b> Technical Manager
Test Report S/N: 8K21070502R3.A3L	Test Dates: 07/09/2021 - 08/26/2021	EUT Type: RRU (RF4442d)		Page 49 of 225



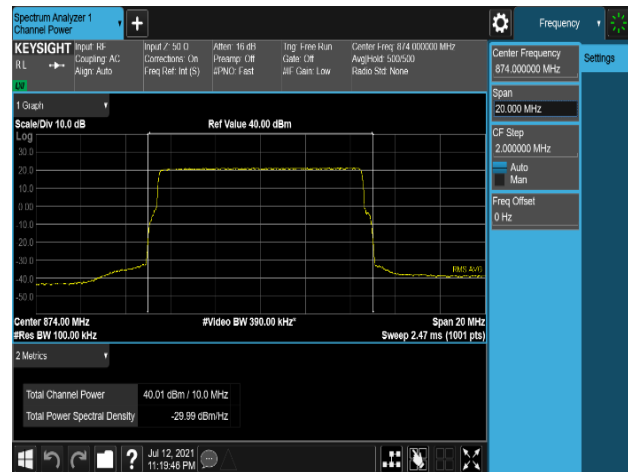
Plot 7-126. Conducted Average Output Power Plot (LTE\_B5\_10M\_1C\_QPSK - Low Channel, Port 0)



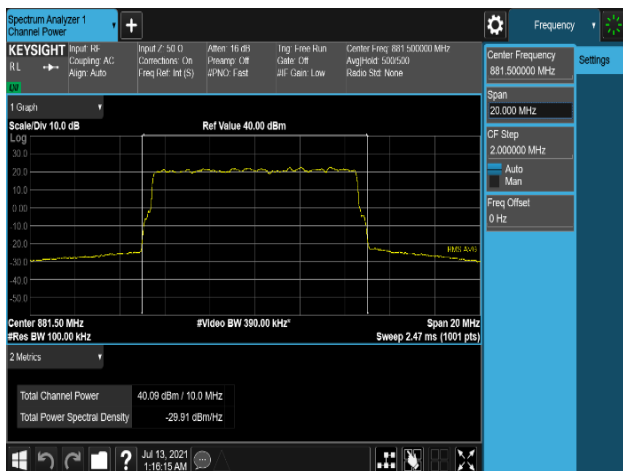
Plot 7-127. Conducted Average Output Power Plot (LTE\_B5\_10M\_1C\_QPSK - Low Channel, Port 1)



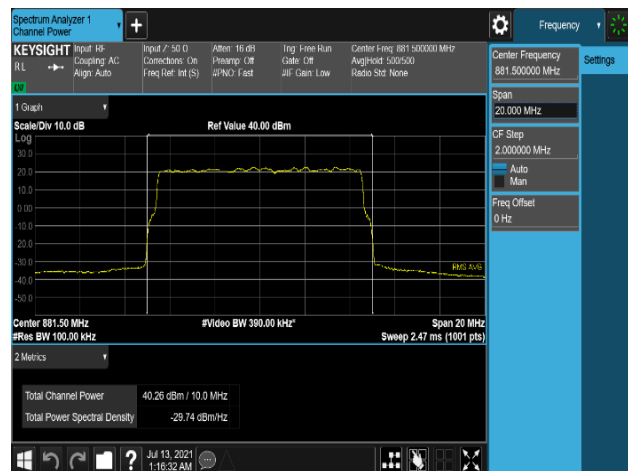
Plot 7-128. Conducted Average Output Power Plot (LTE\_B5\_10M\_1C\_QPSK - Low Channel, Port 2)



Plot 7-129. Conducted Average Output Power Plot (LTE\_B5\_10M\_1C\_QPSK - Low Channel, Port 3)

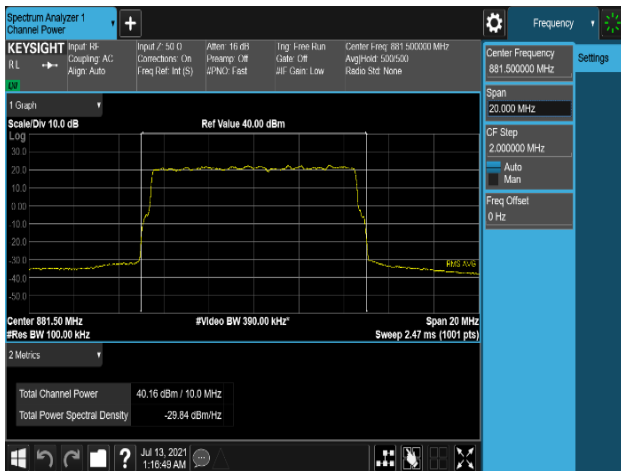


Plot 7-130. Conducted Average Output Power Plot (LTE\_B5\_10M\_1C\_16QAM - Mid Channel, Port 0)



Plot 7-131. Conducted Average Output Power Plot (LTE\_B5\_10M\_1C\_16QAM - Mid Channel, Port 1)

FCC ID: A3LRF4442D-13A		<b>MEASUREMENT REPORT (CERTIFICATION)</b>		<b>Approved by:</b> Technical Manager
Test Report S/N: 8K21070502R3.A3L	Test Dates: 07/09/2021 - 08/26/2021	EUT Type: RRU (RF4442d)		Page 50 of 225



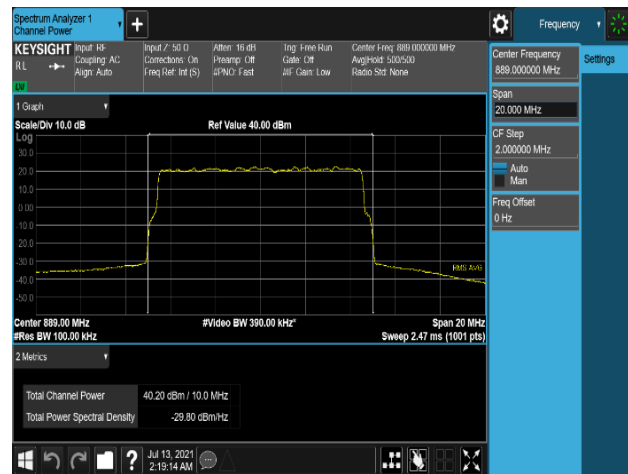
Plot 7-132. Conducted Average Output Power Plot (LTE\_B5\_10M\_1C\_16QAM – Mid Channel, Port 2)



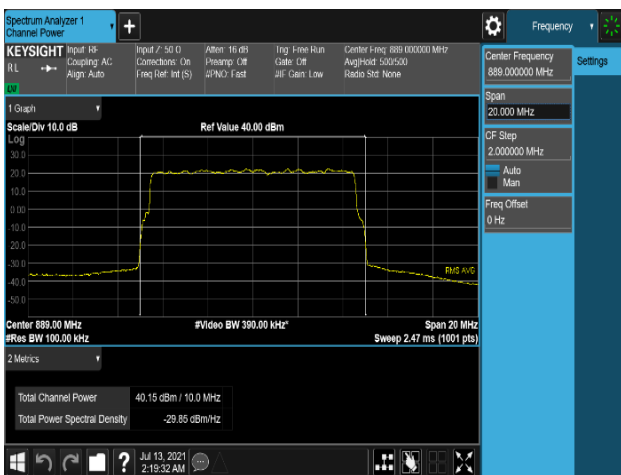
Plot 7-133. Conducted Average Output Power Plot (LTE\_B5\_10M\_1C\_16QAM – Mid Channel, Port 3)



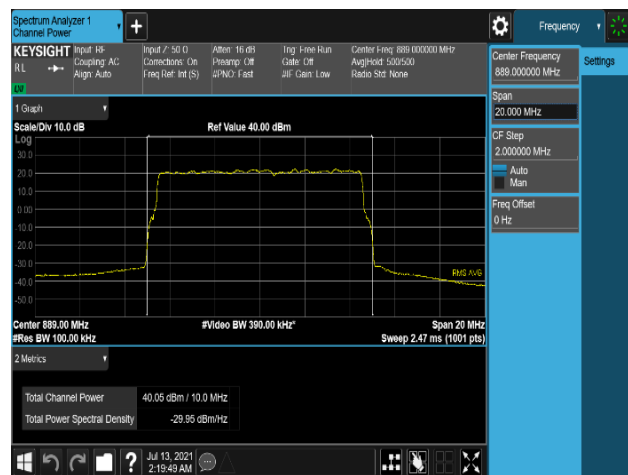
Plot 7-134. Conducted Average Output Power Plot (LTE\_B5\_10M\_1C\_16QAM – High Channel, Port 0)




Plot 7-135. Conducted Average Output Power Plot (LTE\_B5\_10M\_1C\_16QAM – High Channel, Port 1)



Plot 7-136. Conducted Average Output Power Plot (LTE\_B5\_10M\_1C\_16QAM – High Channel, Port 2)



Plot 7-137. Conducted Average Output Power Plot (LTE\_B5\_10M\_1C\_16QAM – High Channel, Port 3)

FCC ID: A3LRF4442D-13A		<b>MEASUREMENT REPORT (CERTIFICATION)</b>		<b>Approved by:</b> Technical Manager
<b>Test Report S/N:</b> 8K21070502R3.A3L	<b>Test Dates:</b> 07/09/2021 - 08/26/2021	<b>EUT Type:</b> RRU (RF4442d)		Page 51 of 225

Low Channel	Port	QPSK	16QAM	64QAM	256QAM
Conducted Average Power (dBm)	0	<b>40.03</b>	39.95	39.93	39.94
	1	<b>39.94</b>	39.94	39.95	40.02
	2	<b>40.18</b>	40.12	40.17	40.14
	3	<b>39.76</b>	39.74	39.74	39.78
Total MIMO Conducted Power (mW)		<b>39817.66</b>	39447.38	39543.74	39742.61
Total MIMO Conducted Power (dBm)		<b>46.00</b>	45.96	45.97	45.99



**Table 7-24. Conducted Average Output Power Table (LTE\_B5\_5M+5M\_2C - Low Channel)**

Middle Channel	Port	QPSK	16QAM	64QAM	256QAM
Conducted Average Power (dBm)	0	<b>39.88</b>	39.86	39.82	39.90
	1	<b>40.08</b>	40.12	40.14	40.07
	2	<b>40.26</b>	40.22	40.24	40.23
	3	<b>39.91</b>	39.81	39.82	39.90
Total MIMO Conducted Power (mW)		<b>40325.24</b>	40054.50	40083.80	40251.10
Total MIMO Conducted Power (dBm)		<b>46.06</b>	46.03	46.03	46.05

**Table 7-25. Conducted Average Output Power Table (LTE\_B5\_5M+5M\_2C - Middle Channel)**

High Channel	Port	QPSK	16QAM	64QAM	256QAM
Conducted Average Power (dBm)	0	39.98	39.91	<b>40.00</b>	39.96
	1	40.14	40.14	<b>40.19</b>	40.10
	2	40.29	40.31	<b>40.27</b>	40.21
	3	39.92	39.92	<b>39.98</b>	39.88
Total MIMO Conducted Power (mW)		40789.70	40679.89	<b>41042.69</b>	40364.15
Total MIMO Conducted Power (dBm)		46.11	46.09	<b>46.13</b>	46.06

**Table 7-26. Conducted Average Output Power Table (LTE\_B5\_5M+5M\_2C - High Channel)**

FCC ID: A3LRF4442D-13A		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 8K21070502R3.A3L	Test Dates: 07/09/2021 - 08/26/2021	EUT Type: RRU (RF4442d)		Page 52 of 225

Low Channel	Port	QPSK	16QAM	64QAM	256QAM
Conducted Average Power (dBm)	0	39.99	39.94	40.01	<b>39.99</b>
	1	40.07	40.02	40.02	<b>40.12</b>
	2	40.25	40.20	40.22	<b>40.22</b>
	3	39.79	39.83	39.80	<b>39.85</b>
Total MIMO Conducted Power (mW)		40259.99	39996.36	40138.75	<b>40437.29</b>
Total MIMO Conducted Power (dBm)		46.05	46.02	46.04	<b>46.07</b>



**Table 7-27. Conducted Average Output Power Table (LTE\_B5\_10M+10M\_2C - Low Channel)**

Middle Channel	Port	QPSK	16QAM	64QAM	256QAM
Conducted Average Power (dBm)	0	39.79	39.77	<b>39.86</b>	39.84
	1	40.14	40.06	<b>40.16</b>	40.10
	2	40.23	40.26	<b>40.34</b>	40.24
	3	39.89	39.85	<b>39.90</b>	39.83
Total MIMO Conducted Power (mW)		40149.34	39900.76	<b>40644.77</b>	40055.52
Total MIMO Conducted Power (dBm)		46.04	46.01	<b>46.09</b>	46.03

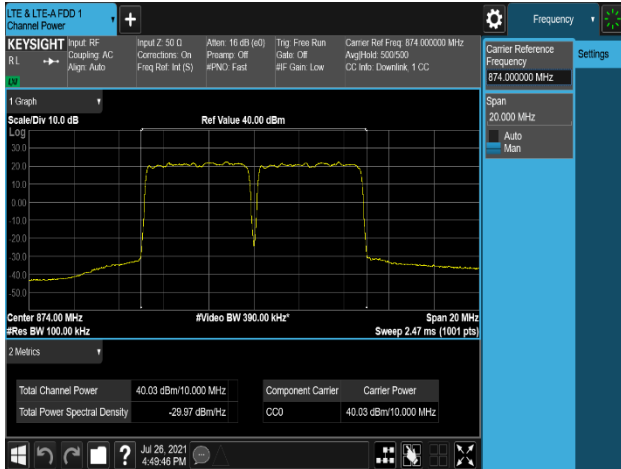
**Table 7-28. Conducted Average Output Power Table (LTE\_B5\_10M+10M\_2C - Middle Channel)**

High Channel	Port	QPSK	16QAM	64QAM	256QAM
Conducted Average Power (dBm)	0	39.85	39.85	39.90	<b>39.84</b>
	1	40.17	40.14	40.14	<b>40.22</b>
	2	40.28	40.25	40.25	<b>40.29</b>
	3	39.88	39.94	39.91	<b>39.91</b>
Total MIMO Conducted Power (mW)		40453.14	40443.45	40487.42	<b>40643.36</b>
Total MIMO Conducted Power (dBm)		46.07	46.07	46.07	<b>46.09</b>

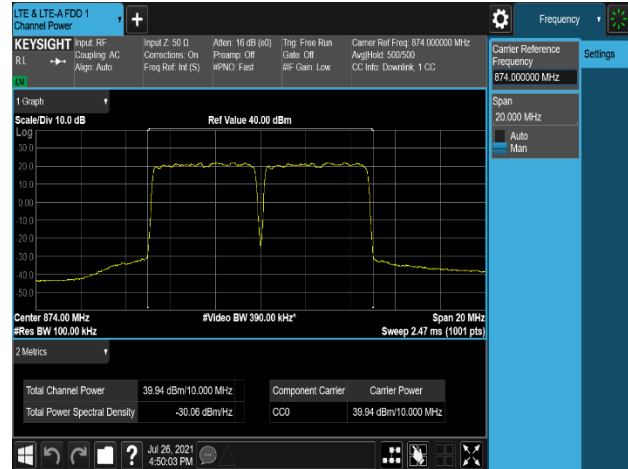
**Table 7-29. Conducted Average Output Power Table (LTE\_B5\_10M+10M\_2C - High Channel)**

FCC ID: A3LRF4442D-13A		<b>MEASUREMENT REPORT (CERTIFICATION)</b>			Approved by: Technical Manager
Test Report S/N: 8K21070502R3.A3L	Test Dates: 07/09/2021 - 08/26/2021	EUT Type: RRU (RF4442d)		Page 53 of 225	

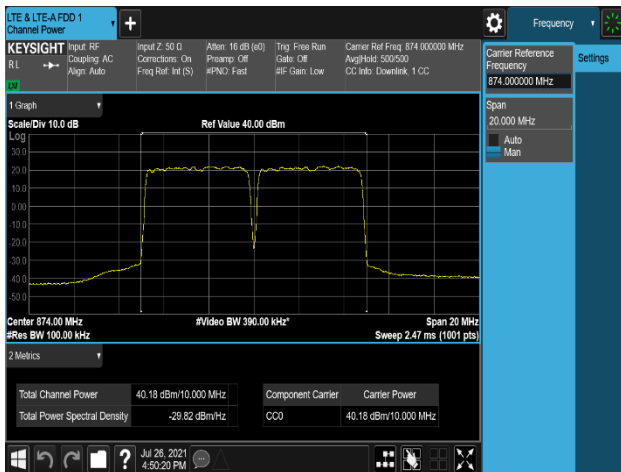




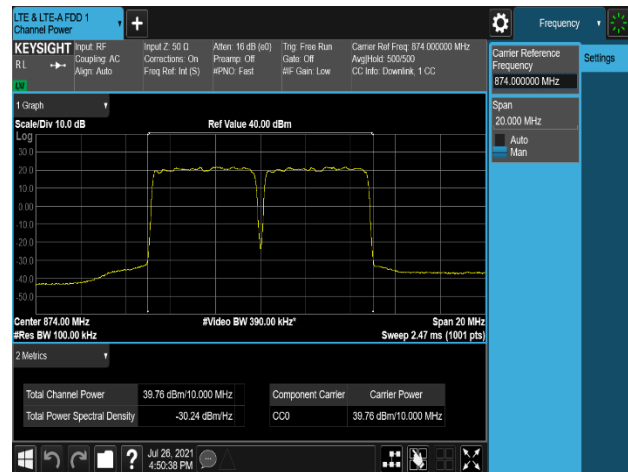
Plot 7-138. Conducted Average Output Power Plot (LTE\_B5\_5M+5M\_2C\_QPSK - Low Channel, Port 0)



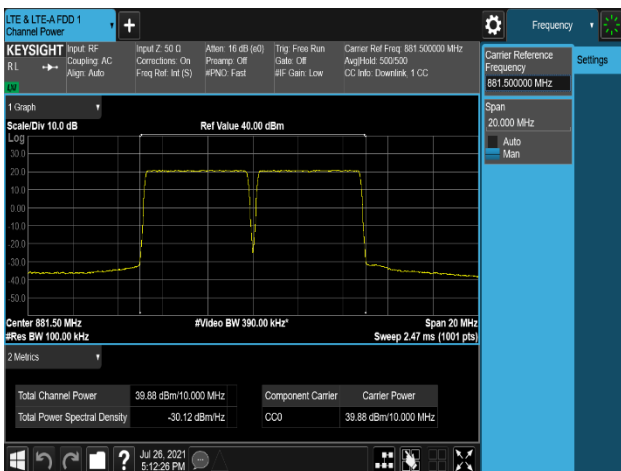
Plot 7-139. Conducted Average Output Power Plot (LTE\_B5\_5M+5M\_2C\_QPSK - Low Channel, Port 1)



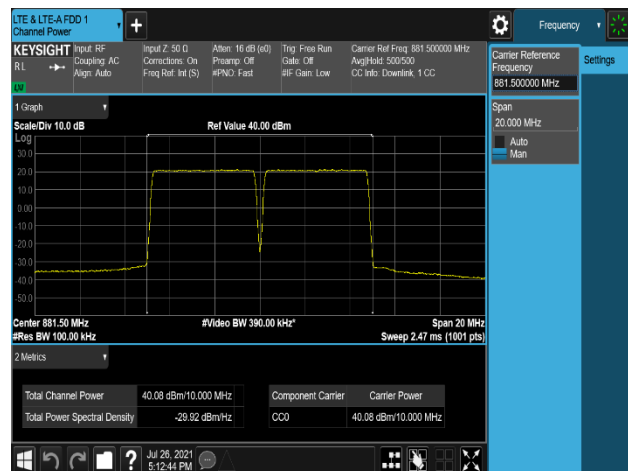
Plot 7-140. Conducted Average Output Power Plot (LTE\_B5\_5M+5M\_2C\_QPSK - Low Channel, Port 2)



Plot 7-141. Conducted Average Output Power Plot (LTE\_B5\_5M+5M\_2C\_QPSK - Low Channel, Port 3)



Plot 7-142. Conducted Average Output Power Plot (LTE\_B5\_5M+5M\_2C\_QPSK - Mid Channel, Port 0)



Plot 7-143. Conducted Average Output Power Plot (LTE\_B5\_5M+5M\_2C\_QPSK - Mid Channel, Port 1)

FCC ID: A3LRF4442D-13A		<b>MEASUREMENT REPORT (CERTIFICATION)</b>		<b>Approved by:</b> Technical Manager
Test Report S/N: 8K21070502R3.A3L	Test Dates: 07/09/2021 - 08/26/2021	EUT Type: RRU (RF4442d)		Page 54 of 225