



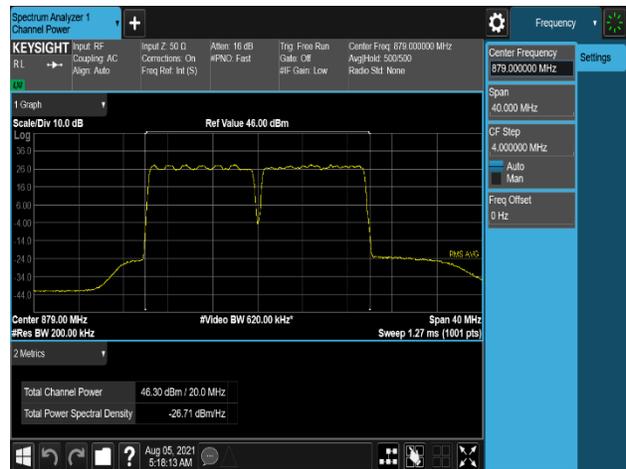
Plot 7-433. Conducted Average Output Power Plot (B5_10M(DSS)+10M_2C_16QAM - Low Channel, Port 0)



Plot 7-434. Conducted Average Output Power Plot (B5_10M(DSS)+10M_2C_16QAM - Low Channel, Port 1)



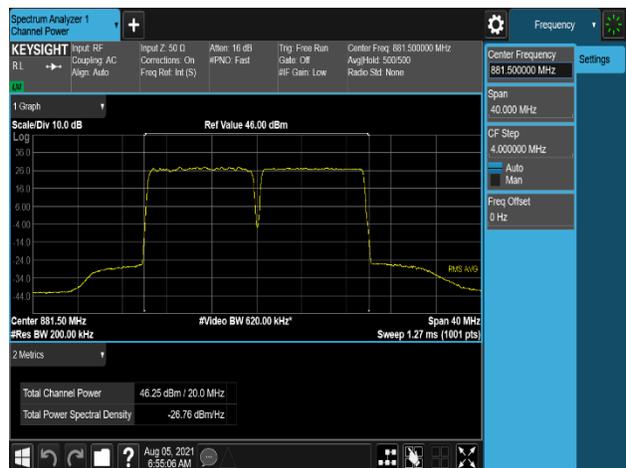
Plot 7-435. Conducted Average Output Power Plot (B5_10M(DSS)+10M_2C_16QAM - Low Channel, Port 2)



Plot 7-436. Conducted Average Output Power Plot (B5_10M(DSS)+10M_2C_16QAM - Low Channel, Port 3)

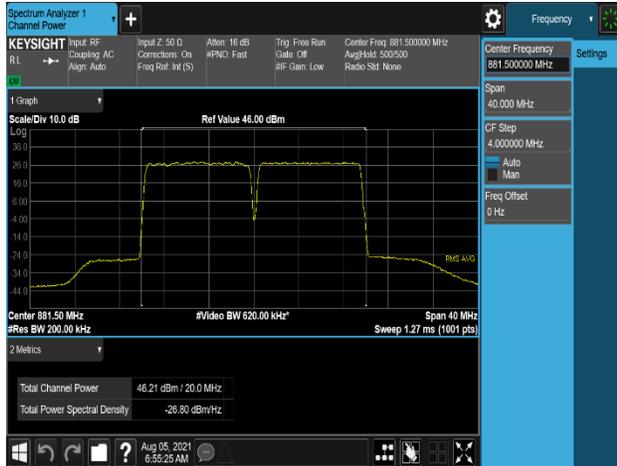


Plot 7-437. Conducted Average Output Power Plot (B5_10M(DSS)+10M_2C_256QAM - Mid Channel, Port 0)

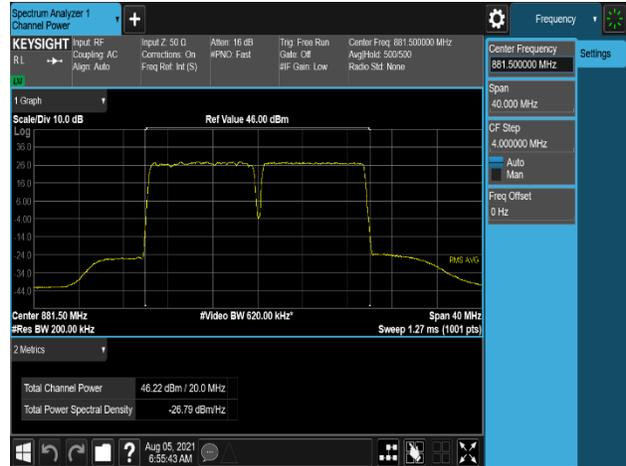


Plot 7-438. Conducted Average Output Power Plot (B5_10M(DSS)+10M_2C_256QAM - Mid Channel, Port 1)

| | | | | |
|--|---|---|---|--|
| FCC ID: A3LRF4440D-13A |  | MEASUREMENT REPORT (CERTIFICATION) |  | Approved by: Technical Manager |
| Test Report S/N: 8K21070501R2-R1 | Test Dates: 07/09/2021 - 08/25/2021 | EUT Type: RRU (RF4440d) | | Page 141 of 367 |



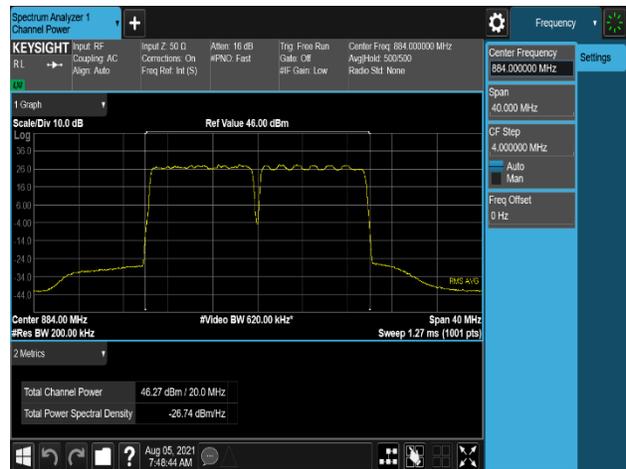
Plot 7-439. Conducted Average Output Power Plot (B5_10M(DSS)+10M_2C_256QAM - Mid Channel, Port 2)



Plot 7-440. Conducted Average Output Power Plot (B5_10M(DSS)+10M_2C_256QAM - Mid Channel, Port 3)



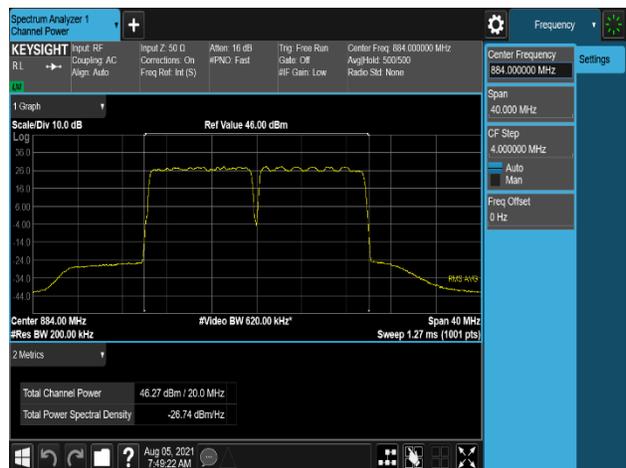
Plot 7-441. Conducted Average Output Power Plot (B5_10M(DSS)+10M_2C_16QAM - High Channel, Port 0)



Plot 7-442. Conducted Average Output Power Plot (B5_10M(DSS)+10M_2C_16QAM - High Channel, Port 1)



Plot 7-443. Conducted Average Output Power Plot (B5_10M(DSS)+10M_2C_16QAM - High Channel, Port 2)



Plot 7-444. Conducted Average Output Power Plot (B5_10M(DSS)+10M_2C_16QAM - High Channel, Port 3)

| | | | | |
|--|---|---|---|--|
| FCC ID: A3LRF4440D-13A |  | MEASUREMENT REPORT (CERTIFICATION) |  | Approved by: Technical Manager |
| Test Report S/N: 8K21070501R2-R1 | Test Dates: 07/09/2021 - 08/25/2021 | EUT Type: RRU (RF4440d) | | Page 142 of 367 |

| DSS Ratio | Channel | Port | QPSK | 16QAM | 64QAM | 256QAM |
|-----------------|---------|---------------------------------|--------------|-----------|--------------|-----------|
| LTE 5 : NR 5 | Low | 0 | 48.06 | 48.04 | 48.02 | 47.99 |
| | | 1 | 48.17 | 48.17 | 48.16 | 48.14 |
| | | Total MIMO Conducted Power (mW) | 129588.01 | 129294.08 | 128850.59 | 128113.46 |
| | | Total MIMO Conducted Power(dBm) | 51.13 | 51.12 | 51.10 | 51.08 |
| | Mid | 0 | 47.90 | 47.98 | 47.99 | 47.95 |
| | | 1 | 48.06 | 48.12 | 48.14 | 48.09 |
| | | Total MIMO Conducted Power (mW) | 125632.98 | 127669.28 | 128113.46 | 126790.41 |
| | | Total MIMO Conducted Power(dBm) | 50.99 | 51.06 | 51.08 | 51.03 |
| | High | 0 | 47.91 | 47.95 | 47.93 | 47.93 |
| | | 1 | 47.98 | 48.03 | 48.06 | 48.02 |
| | | Total MIMO Conducted Power (mW) | 124607.48 | 125906.58 | 126060.39 | 125473.87 |
| | | Total MIMO Conducted Power(dBm) | 50.96 | 51.00 | 51.01 | 50.99 |

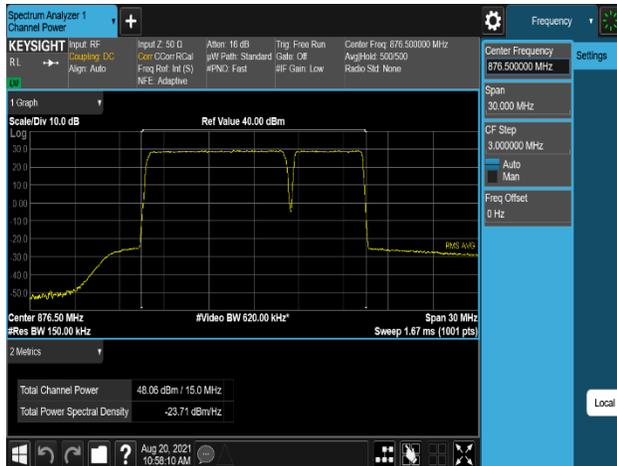
Table 7-99. Conducted Average Output Power Table (B5_10M(DSS)+5M_2C_2T)

| | | | | | |
|-------------------------------------|---|---------------------------------------|--|---|-----------------------------------|
| FCC ID: A3LRF4440D-13A |  | MEASUREMENT REPORT (CERTIFICATION) | |  | Approved by: Technical Manager |
| Test Report S/N: 8K21070501R2-R1 | Test Dates: 07/09/2021 - 08/25/2021 | EUT Type: RRU (RF4440d) | | Page 143 of 367 | |

| DSS Ratio | Channel | Port | QPSK | 16QAM | 64QAM | 256QAM |
|-----------------|---------|---------------------------------|-----------|------------------|-----------|-----------|
| LTE 5 : NR 5 | Low | 0 | 47.69 | 47.81 | 47.79 | 47.80 |
| | | 1 | 47.83 | 47.90 | 47.90 | 47.92 |
| | | Total MIMO Conducted Power (mW) | 119422.57 | 122054.36 | 121776.87 | 122200.07 |
| | | Total MIMO Conducted Power(dBm) | 50.77 | 50.87 | 50.86 | 50.87 |
| | Mid | 0 | 47.78 | 47.92 | 47.83 | 47.79 |
| | | 1 | 47.91 | 48.01 | 47.93 | 47.91 |
| | | Total MIMO Conducted Power (mW) | 121780.75 | 125185.29 | 122760.54 | 121919.01 |
| | | Total MIMO Conducted Power(dBm) | 50.86 | 50.98 | 50.89 | 50.86 |
| | High | 0 | 47.75 | 47.84 | 47.85 | 47.84 |
| | | 1 | 47.86 | 47.98 | 47.93 | 47.98 |
| | | Total MIMO Conducted Power (mW) | 120660.42 | 123619.34 | 123040.59 | 123619.34 |
| | | Total MIMO Conducted Power(dBm) | 50.82 | 50.92 | 50.90 | 50.92 |

Table 7-100. Conducted Average Output Power Table (B5_10M(DSS)+10M_2C_2T)

| | | | | | |
|-------------------------------------|---|---------------------------------------|--|---|-----------------------------------|
| FCC ID: A3LRF4440D-13A |  | MEASUREMENT REPORT (CERTIFICATION) | |  | Approved by: Technical Manager |
| Test Report S/N: 8K21070501R2-R1 | Test Dates: 07/09/2021 - 08/25/2021 | EUT Type: RRU (RF4440d) | | Page 144 of 367 | |



Plot 7-445. Conducted Average Output Power Plot (B5_10M(DSS)+5M_2C_QPSK - Low Channel, Port 0)



Plot 7-446. Conducted Average Output Power Plot (B5_10M(DSS)+5M_2C_QPSK - Low Channel, Port 1)



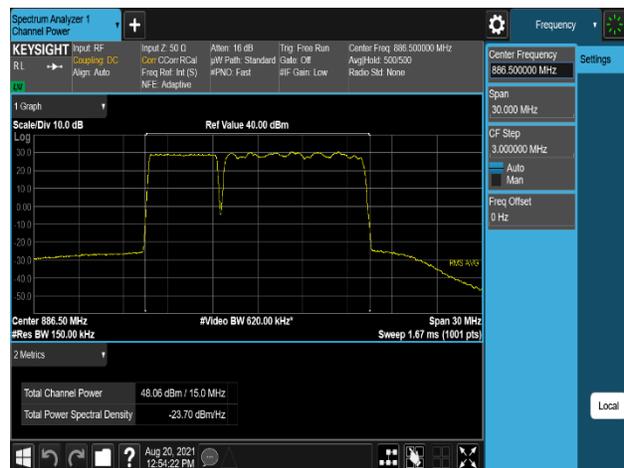
Plot 7-447. Conducted Average Output Power Plot (B5_10M(DSS)+5M_2C_64QAM - Mid Channel, Port 0)



Plot 7-448. Conducted Average Output Power Plot (B5_10M(DSS)+5M_2C_64QAM - Mid Channel, Port 1)



Plot 7-449. Conducted Average Output Power Plot (B5_10M(DSS)+5M_2C_64QAM - High Channel, Port 0)



Plot 7-450. Conducted Average Output Power Plot (B5_10M(DSS)+5M_2C_64QAM - High Channel, Port 1)

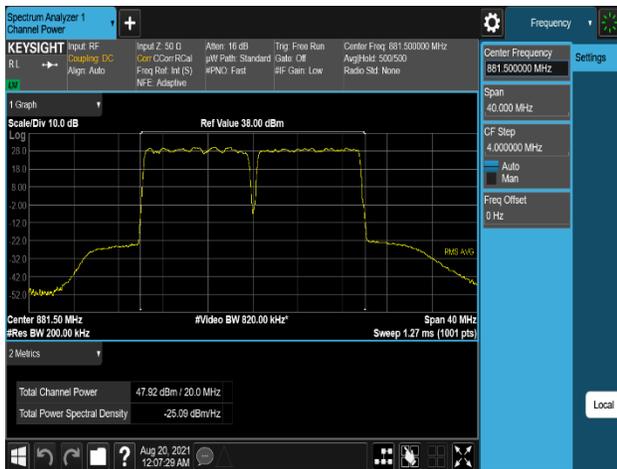
| | | | | |
|--|---|---|---|--|
| FCC ID: A3LRF4440D-13A |  | MEASUREMENT REPORT (CERTIFICATION) |  | Approved by: Technical Manager |
| Test Report S/N: 8K21070501R2-R1 | Test Dates: 07/09/2021 - 08/25/2021 | EUT Type: RRU (RF4440d) | | Page 145 of 367 |



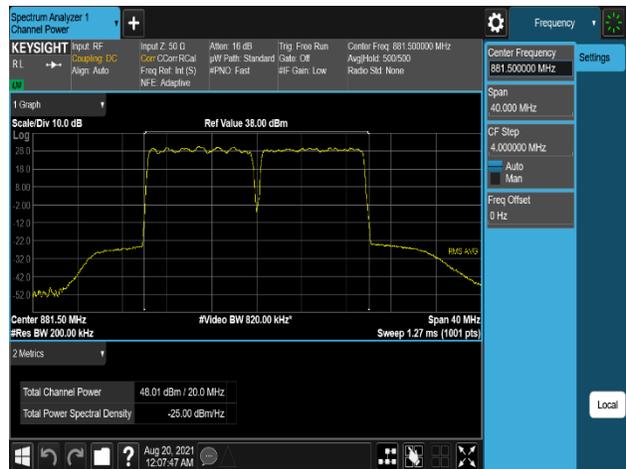
Plot 7-451. Conducted Average Output Power Plot (B5_10M(DSS)+10M_2C_16QAM - Low Channel, Port 0)



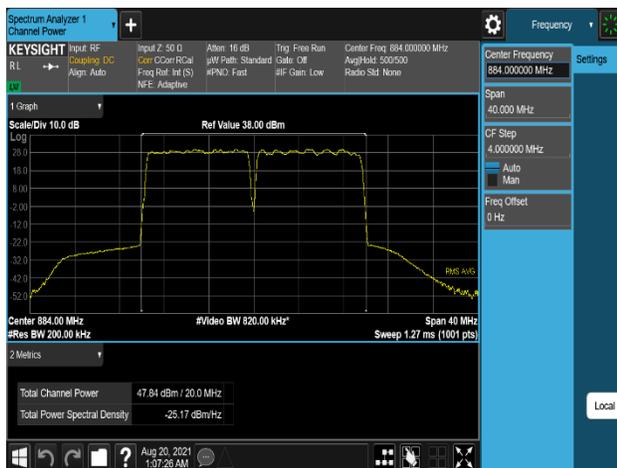
Plot 7-452. Conducted Average Output Power Plot (B5_10M(DSS)+10M_2C_16QAM - Low Channel, Port 1)



Plot 7-453. Conducted Average Output Power Plot (B5_10M(DSS)+10M_2C_16QAM - Mid Channel, Port 0)



Plot 7-454. Conducted Average Output Power Plot (B5_10M(DSS)+10M_2C_16QAM - Mid Channel, Port 1)



Plot 7-455. Conducted Average Output Power Plot (B5_10M(DSS)+10M_2C_16QAM - High Channel, Port 0)



Plot 7-456. Conducted Average Output Power Plot (B5_10M(DSS)+10M_2C_16QAM - High Channel, Port 1)

| | | | | |
|--|---|---|--|--|
| FCC ID: A3LRF4440D-13A | | MEASUREMENT REPORT (CERTIFICATION) | | Approved by: Technical Manager |
| Test Report S/N: 8K21070501R2-R1 | Test Dates: 07/09/2021 - 08/25/2021 | EUT Type: RRU (RF4440d) | | Page 146 of 367 |

| DSS Ratio | Channel | Port | QPSK | 16QAM | 64QAM | 256QAM |
|--------------|----------------|---------------------------------|-----------|------------------|-----------|-----------|
| LTE 5 : NR 5 | Single Channel | 0 | 45.95 | 46.13 | 45.78 | 45.90 |
| | | 1 | 46.04 | 46.17 | 45.89 | 46.01 |
| | | 2 | 45.95 | 46.15 | 45.64 | 46.04 |
| | | 3 | 46.10 | 46.28 | 45.86 | 46.20 |
| | | Total MIMO Conducted Power (mW) | 159627.12 | 166092.09 | 151850.89 | 160673.02 |
| | | Total MIMO Conducted Power(dBm) | 52.03 | 52.20 | 51.81 | 52.06 |

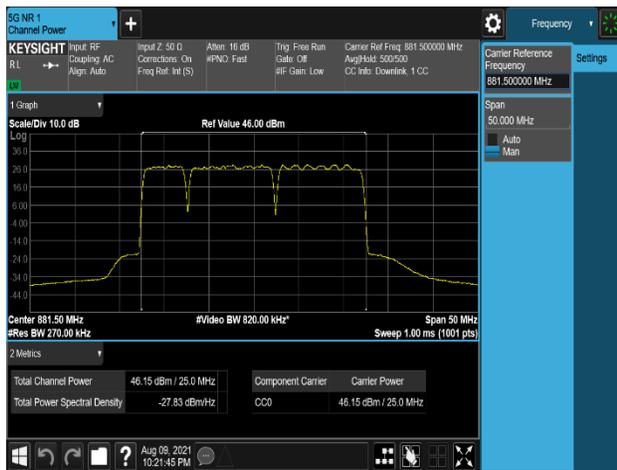
Table 7-101. Conducted Average Output Power Table (B5_10M(DSS)+10M+5M_3C_4T)



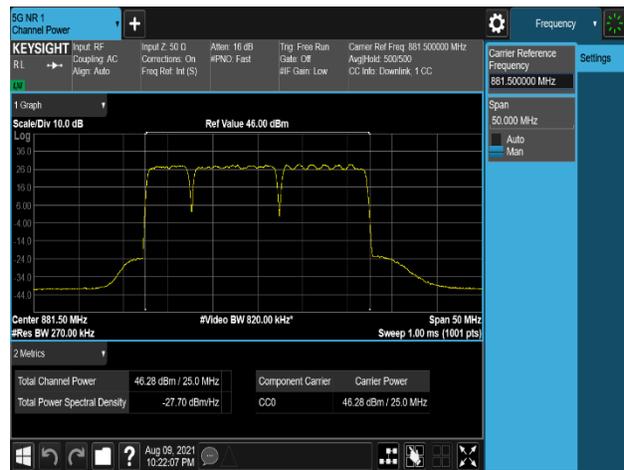
Plot 7-457. Conducted Average Output Power Plot (B5_10M(DSS)+10M+5M_3C_16QAM - Port 0)



Plot 7-458. Conducted Average Output Power Plot (B5_10M(DSS)+10M+5M_3C_16QAM - Port 1)



Plot 7-459. Conducted Average Output Power Plot (B5_10M(DSS)+10M+5M_3C_16QAM - Port 2)

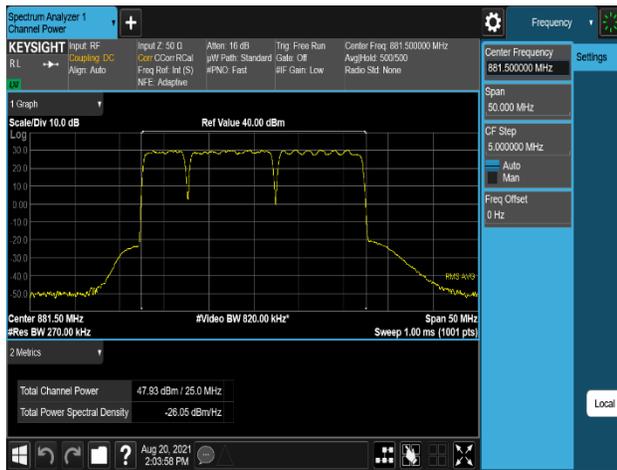


Plot 7-460. Conducted Average Output Power Plot (B5_10M(DSS)+10M+5M_3C_16QAM - Port 3)

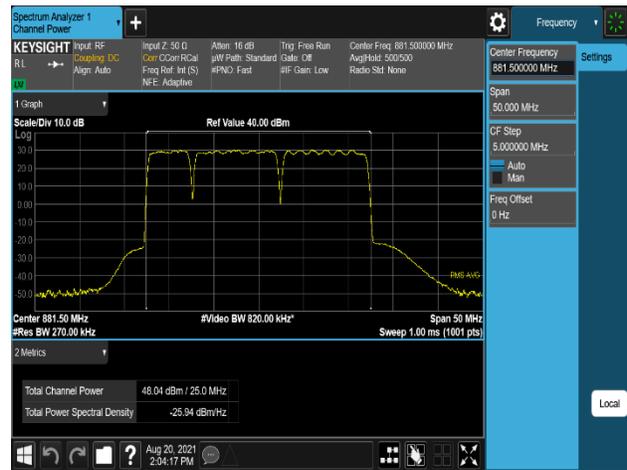
| | | | | |
|--|---|---|--|--|
| FCC ID: A3LRF4440D-13A | | MEASUREMENT REPORT (CERTIFICATION) | | Approved by: Technical Manager |
| Test Report S/N: 8K21070501R2-R1 | Test Dates: 07/09/2021 - 08/25/2021 | EUT Type: RRU (RF4440d) | | Page 147 of 367 |

| DSS Ratio | Channel | Port | QPSK | 16QAM | 64QAM | 256QAM |
|--------------|----------------|---------------------------------|-----------|--------------|-----------|-----------|
| LTE 5 : NR 5 | Single Channel | 0 | 47.93 | 47.93 | 47.89 | 47.85 |
| | | 1 | 48.02 | 48.04 | 47.99 | 47.93 |
| | | Total MIMO Conducted Power (mW) | 125473.87 | 125766.46 | 124468.31 | 123040.59 |
| | | Total MIMO Conducted Power(dBm) | 50.99 | 51.00 | 50.95 | 50.90 |

Table 7-102. Conducted Average Output Power Table (B5_10M(DSS)+10M+5M_3C_2T)



Plot 7-461. Conducted Average Output Power Plot (B5_10M(DSS)+10M+5M_3C_16QAM - Port 0)



Plot 7-462. Conducted Average Output Power Plot (B5_10M(DSS)+10M+5M_3C_16QAM - Port 1)

| | | | | |
|-------------------------------------|---|------------------------------------|---|-----------------------------------|
| FCC ID: A3LRF4440D-13A |  | MEASUREMENT REPORT (CERTIFICATION) |  | Approved by: Technical Manager |
| Test Report S/N: 8K21070501R2-R1 | Test Dates: 07/09/2021 - 08/25/2021 | EUT Type: RRU (RF4440d) | | Page 148 of 367 |

7.4 Peak To Average Power Ratio (PAPR)

Test Overview

A peak to average ratio measurement is performed at the conducted port of the EUT. The spectrum analyzers Complementary Cumulative Distribution Function (CCDF) measurement profile is used to determine the largest deviation between the average and the peak power of the EUT in a given bandwidth. The CCDF curve shows how much time the peak waveform spends at or above a given average power level. The percent of time the signal spends at or above the level defines the probability for that particular power level.

Test Procedure Used

KDB 971168 D01 v03r01 – Section 5.7

ANSI C63.26-2015 – Section 5.2.3.4

Test Setting

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

1. The signal analyzer's CCDF function is enabled.
2. Frequency = carrier center frequency
3. Measurement BW \geq OBW or specified reference bandwidth
4. The signal analyzer was set to collect one million samples to generate the CCDF curve
5. The measurement interval was set depending on the type of signal analyzed. For continuous signals (>98% duty cycle), the measurement interval was set to 1ms.

Test Setup

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

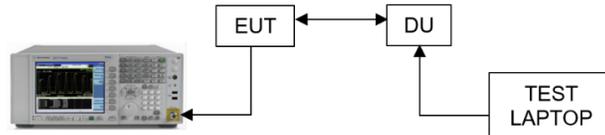


Figure 7-4. Test Instrument & Measurement Setup

Limit

The peak-to-average power ratio (PAPR) limit shall not exceed 13 dB for more than 0.1% of the time.

Test Notes

1. All ports and test channels were tested and only the worst case data were reported.
2. The port with highest PAPR i.e. worst case port per modulation has been highlighted in the following PAPR tables.
3. The peak to average ratio measurement is performed at the conducted ports of the EUT for single RAT mode.

| | | | | |
|-------------------------------------|---|---------------------------------------|---|-----------------------------------|
| FCC ID: A3LRF4440D-13A |  | MEASUREMENT REPORT (CERTIFICATION) |  | Approved by: Technical Manager |
| Test Report S/N: 8K21070501R2-R1 | Test Dates: 07/09/2021 - 08/25/2021 | EUT Type: RRU (RF4440d) | | Page 149 of 367 |

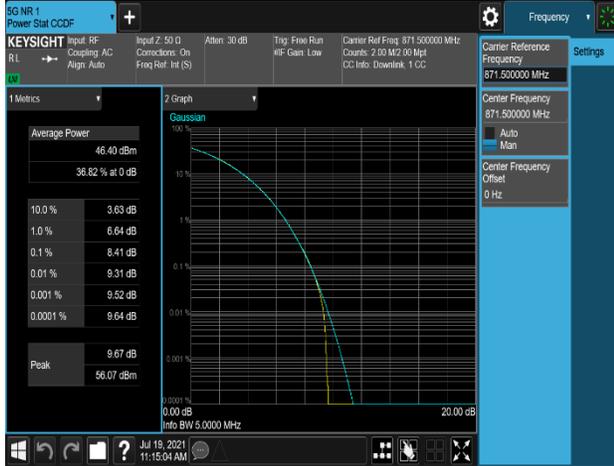
| Channel | Port | PAPR (dB) | | | | Limit (dB) |
|---------|------|-------------|-------|-------|--------|------------|
| | | QPSK | 16QAM | 64QAM | 256QAM | |
| Low | 0 | 8.41 | 8.35 | 8.30 | 8.35 | < 13 |
| | 1 | 8.39 | 8.33 | 8.31 | 8.32 | < 13 |
| Middle | 0 | 8.40 | 8.34 | 8.29 | 8.35 | < 13 |
| | 1 | 8.39 | 8.33 | 8.29 | 8.34 | < 13 |
| High | 0 | 8.38 | 8.32 | 8.32 | 8.32 | < 13 |
| | 1 | 8.39 | 8.32 | 8.31 | 8.32 | < 13 |

Table 7-103. Peak To Average Power Ratio Summary Data (B5_5M_1C_2T)

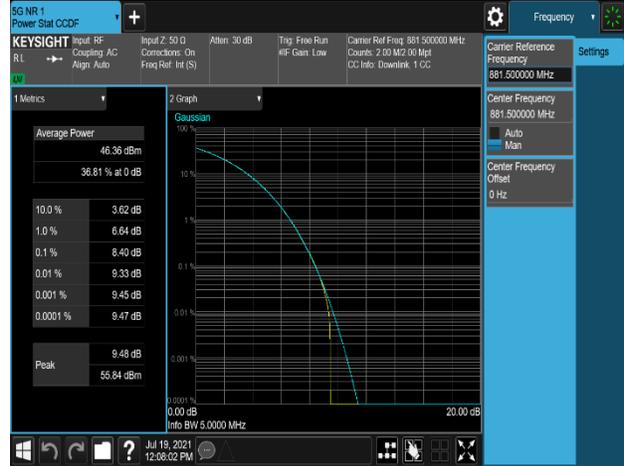
| Channel | Port | PAPR (dB) | | | | Limit (dB) |
|---------|------|-----------|-------|-------|-------------|------------|
| | | QPSK | 16QAM | 64QAM | 256QAM | |
| Low | 0 | 7.62 | 7.65 | 7.64 | 7.65 | < 13 |
| | 1 | 7.62 | 7.64 | 7.63 | 7.64 | < 13 |
| Middle | 0 | 7.61 | 7.61 | 7.61 | 7.62 | < 13 |
| | 1 | 7.60 | 7.62 | 7.60 | 7.61 | < 13 |
| High | 0 | 7.61 | 7.60 | 7.61 | 7.62 | < 13 |
| | 1 | 7.60 | 7.59 | 7.61 | 7.60 | < 13 |

Table 7-104. Peak To Average Power Ratio Summary Data (B5_10M_1C_2T)

| | | | | |
|-------------------------------------|---|---------------------------------------|---|-----------------------------------|
| FCC ID: A3LRF4440D-13A |  | MEASUREMENT REPORT (CERTIFICATION) |  | Approved by: Technical Manager |
| Test Report S/N: 8K21070501R2-R1 | Test Dates: 07/09/2021 - 08/25/2021 | EUT Type: RRU (RF4440d) | | Page 150 of 367 |



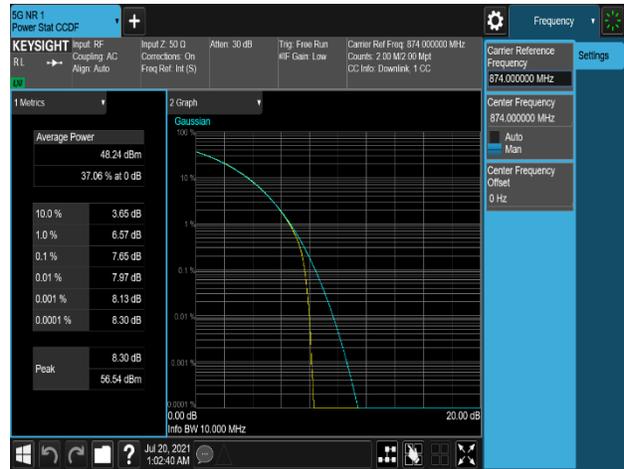
Plot 7-463. Peak To Average Power Ratio Plot (B5_5M_1C_QPSK - Low Channel, Port 0)



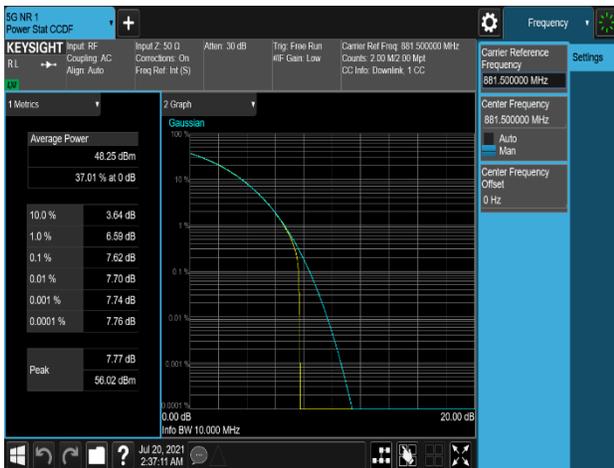
Plot 7-464. Peak To Average Power Ratio Plot (B5_5M_1C_QPSK - Mid Channel, Port 0)



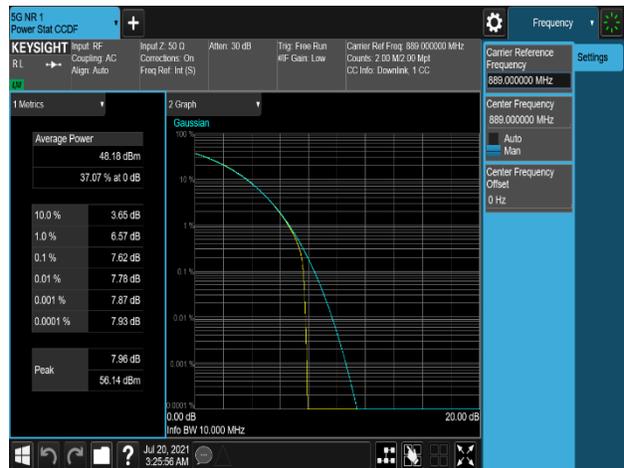
Plot 7-465. Peak To Average Power Ratio Plot (B5_5M_1C_QPSK - High Channel, Port 1)



Plot 7-466. Peak To Average Power Ratio Plot (B5_10M_1C_256QAM - Low Channel, Port 0)



Plot 7-467. Peak To Average Power Ratio Plot (B5_10M_1C_256QAM - Mid Channel, Port 0)



Plot 7-468. Peak To Average Power Ratio Plot (B5_10M_1C_256QAM - High Channel, Port 0)

| | | | | |
|-------------------------------------|--|---|--|-----------------------------------|
| FCC ID: A3LRF4440D-13A | | MEASUREMENT REPORT (CERTIFICATION) | | Approved by: Technical Manager |
| Test Report S/N: 8K21070501R2-R1 | Test Dates: 07/09/2021 - 08/25/2021 | EUT Type: RRU (RF4440d) | | Page 151 of 367 |

| Channel | Port | PAPR (dB) | | | | Limit (dB) |
|---------|------|-------------|-------|-------|--------|------------|
| | | QPSK | 16QAM | 64QAM | 256QAM | |
| Low | 0 | 8.42 | 8.35 | 8.33 | 8.35 | < 13 |
| | 1 | 8.47 | 8.31 | 8.35 | 8.39 | < 13 |
| | 2 | 8.40 | 8.36 | 8.22 | 8.34 | < 13 |
| | 3 | 8.39 | 8.36 | 8.33 | 8.34 | < 13 |
| Middle | 0 | 8.45 | 8.37 | 8.31 | 8.30 | < 13 |
| | 1 | 8.44 | 8.32 | 8.32 | 8.37 | < 13 |
| | 2 | 8.43 | 8.34 | 8.29 | 8.34 | < 13 |
| | 3 | 8.44 | 8.34 | 8.30 | 8.34 | < 13 |
| High | 0 | 8.43 | 8.32 | 8.28 | 8.30 | < 13 |
| | 1 | 8.44 | 8.33 | 8.36 | 8.36 | < 13 |
| | 2 | 8.37 | 8.32 | 8.28 | 8.32 | < 13 |
| | 3 | 8.41 | 8.30 | 8.26 | 8.33 | < 13 |

Table 7-105. Peak To Average Power Ratio Summary Data (B5_5M_1C_4T)

| Channel | Port | PAPR (dB) | | | | Limit (dB) |
|---------|------|-----------|-------|-------|-------------|------------|
| | | QPSK | 16QAM | 64QAM | 256QAM | |
| Low | 0 | 8.35 | 8.37 | 8.34 | 8.40 | < 13 |
| | 1 | 8.36 | 8.39 | 8.37 | 8.40 | < 13 |
| | 2 | 7.63 | 7.63 | 7.64 | 7.64 | < 13 |
| | 3 | 7.63 | 7.64 | 7.63 | 7.64 | < 13 |
| Middle | 0 | 8.39 | 8.33 | 8.35 | 8.42 | < 13 |
| | 1 | 8.37 | 8.36 | 8.36 | 8.40 | < 13 |
| | 2 | 7.61 | 7.63 | 7.62 | 7.62 | < 13 |
| | 3 | 7.60 | 7.63 | 7.62 | 7.63 | < 13 |
| High | 0 | 8.37 | 8.33 | 8.36 | 8.38 | < 13 |
| | 1 | 8.36 | 8.34 | 8.36 | 8.41 | < 13 |
| | 2 | 7.61 | 7.61 | 7.62 | 7.61 | < 13 |
| | 3 | 7.62 | 7.62 | 7.62 | 7.63 | < 13 |

Table 7-106. Peak To Average Power Ratio Summary Data (B5_10M_1C_4T)

| | | | | |
|-------------------------------------|---|---------------------------------------|---|-----------------------------------|
| FCC ID: A3LRF4440D-13A |  | MEASUREMENT REPORT (CERTIFICATION) |  | Approved by: Technical Manager |
| Test Report S/N: 8K21070501R2-R1 | Test Dates: 07/09/2021 - 08/25/2021 | EUT Type: RRU (RF4440d) | | Page 152 of 367 |



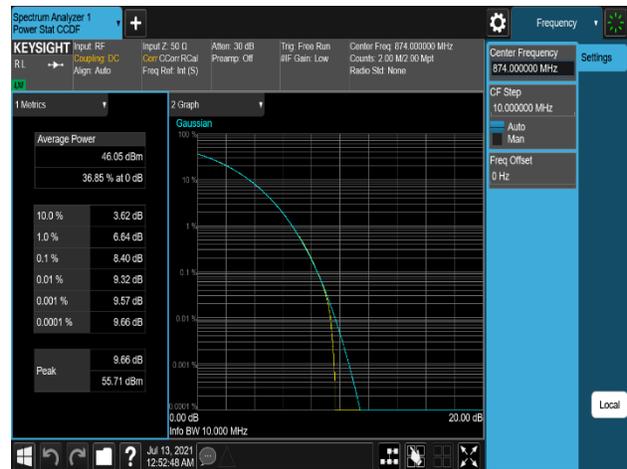
Plot 7-469. Peak To Average Power Ratio Plot (B5_5M_1C_QPSK - Low Channel, Port 1)



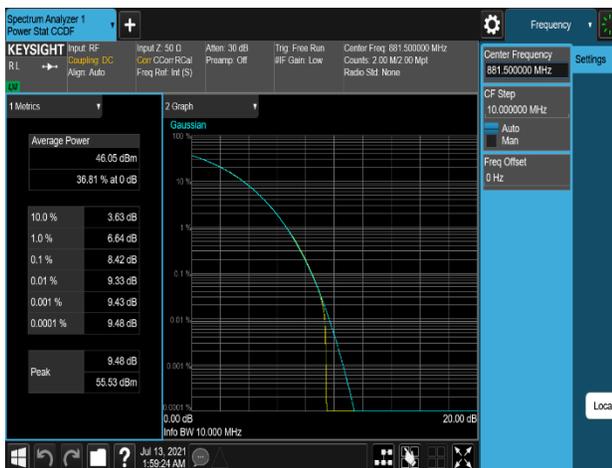
Plot 7-470. Peak To Average Power Ratio Plot (B5_5M_1C_QPSK - Mid Channel, Port 0)



Plot 7-471. Peak To Average Power Ratio Plot (B5_5M_1C_QPSK - High Channel, Port 1)



Plot 7-472. Peak To Average Power Ratio Plot (B5_10M_1C_256QAM - Low Channel, Port 0)



Plot 7-473. Peak To Average Power Ratio Plot (B5_10M_1C_256QAM - Mid Channel, Port 0)



Plot 7-474. Peak To Average Power Ratio Plot (B5_10M_1C_256QAM - High Channel, Port 1)

| | | | | |
|-------------------------------------|---|---|---|--|
| FCC ID: A3LRF4440D-13A |  | MEASUREMENT REPORT (CERTIFICATION) |  | Approved by: Technical Manager |
| Test Report S/N: 8K21070501R2-R1 | Test Dates: 07/09/2021 - 08/25/2021 | EUT Type: RRU (RF4440d) | | Page 153 of 367 |

| Channel | Port | PAPR (dB) | | | | Limit (dB) |
|---------|------|-------------|-------------|-------|--------|------------|
| | | QPSK | 16QAM | 64QAM | 256QAM | |
| Low | 0 | 8.01 | 8.01 | 7.99 | 7.97 | < 13 |
| | 1 | 8.02 | 8.01 | 8.01 | 7.99 | < 13 |
| Middle | 0 | 8.03 | 8.01 | 7.62 | 8.01 | < 13 |
| | 1 | 8.02 | 8.03 | 7.61 | 7.99 | < 13 |
| High | 0 | 8.02 | 7.63 | 7.97 | 7.95 | < 13 |
| | 1 | 7.99 | 7.64 | 7.99 | 7.98 | < 13 |

Table 7-107. Peak To Average Power Ratio Summary Data (B5_5M+5M_2C_2T)

| Channel | Port | PAPR (dB) | | | | Limit (dB) |
|---------|------|-----------|-------------|-------------|--------|------------|
| | | QPSK | 16QAM | 64QAM | 256QAM | |
| Low | 0 | 7.71 | 8.00 | 8.00 | 8.01 | < 13 |
| | 1 | 7.72 | 7.99 | 8.02 | 8.00 | < 13 |
| Middle | 0 | 7.94 | 7.99 | 7.62 | 7.96 | < 13 |
| | 1 | 7.98 | 7.98 | 7.64 | 7.97 | < 13 |
| High | 0 | 7.95 | 7.99 | 7.59 | 7.98 | < 13 |
| | 1 | 7.98 | 7.99 | 7.59 | 7.97 | < 13 |

Table 7-108. Peak To Average Power Ratio Summary Data (B5_10M+10M_2C_2T)

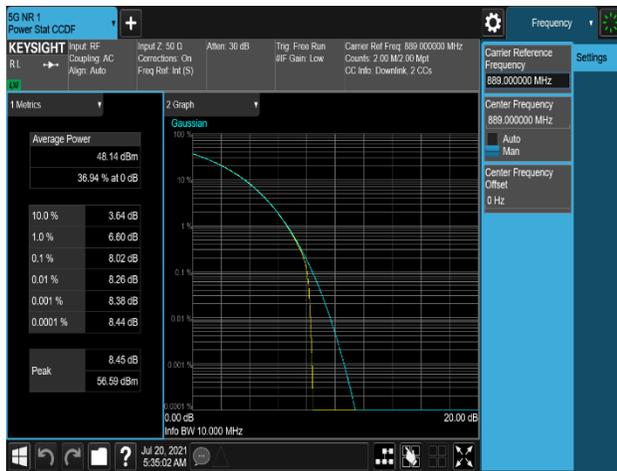
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|-------------------------------------|---|---|---|--|
| FCC ID: A3LRF4440D-13A |  | MEASUREMENT REPORT (CERTIFICATION) |  | Approved by: Technical Manager |
| Test Report S/N: 8K21070501R2-R1 | Test Dates: 07/09/2021 - 08/25/2021 | EUT Type: RRU (RF4440d) | Page 154 of 367 | |



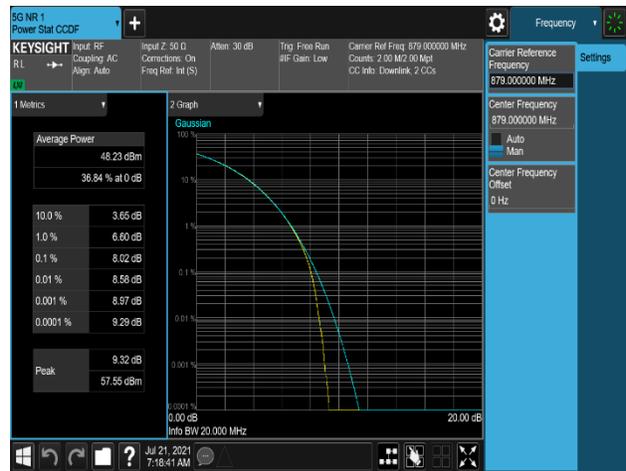
Plot 7-475. Peak To Average Power Ratio Plot (B5_5M+5M_2C_QPSK - Low Channel, Port 1)



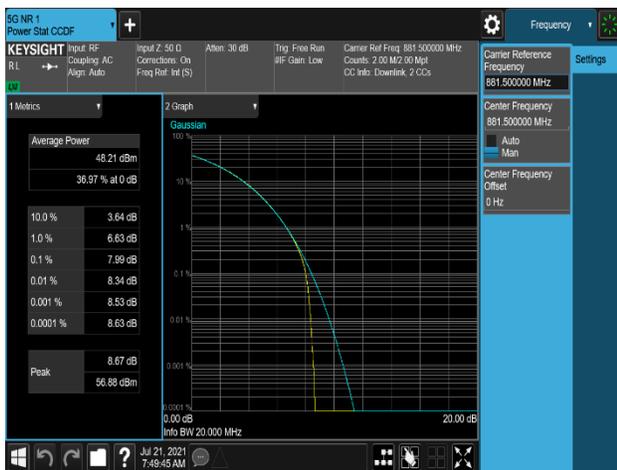
Plot 7-476. Peak To Average Power Ratio Plot (B5_5M+5M_2C_QPSK - Mid Channel, Port 0)



Plot 7-477. Peak To Average Power Ratio Plot (B5_5M+5M_2C_QPSK - High Channel, Port 0)



Plot 7-478. Peak To Average Power Ratio Plot (B5_10M+10M_2C_64QAM - Low Channel, Port 1)



Plot 7-479. Peak To Average Power Ratio Plot (B5_10M+10M_2C_16QAM - Mid Channel, Port 0)



Plot 7-480. Peak To Average Power Ratio Plot (B5_10M+10M_2C_16QAM - High Channel, Port 0)

| | | | | |
|-------------------------------------|---|---|---|--|
| FCC ID: A3LRF4440D-13A |  | MEASUREMENT REPORT (CERTIFICATION) |  | Approved by: Technical Manager |
| Test Report S/N: 8K21070501R2-R1 | Test Dates: 07/09/2021 - 08/25/2021 | EUT Type: RRU (RF4440d) | | Page 155 of 367 |

| Channel | Port | PAPR (dB) | | | | Limit (dB) |
|---------|------|-------------|-------------|-------------|--------|------------|
| | | QPSK | 16QAM | 64QAM | 256QAM | |
| Low | 0 | 8.40 | 8.35 | 8.38 | 8.32 | < 13 |
| | 1 | 8.39 | 8.36 | 8.41 | 8.35 | < 13 |
| | 2 | 8.03 | 7.69 | 7.69 | 8.00 | < 13 |
| | 3 | 8.02 | 7.72 | 7.70 | 7.96 | < 13 |
| Middle | 0 | 8.46 | 8.41 | 8.39 | 8.33 | < 13 |
| | 1 | 8.41 | 8.43 | 8.41 | 8.34 | < 13 |
| | 2 | 8.03 | 8.03 | 8.04 | 7.99 | < 13 |
| | 3 | 8.04 | 8.04 | 8.05 | 7.99 | < 13 |
| High | 0 | 8.43 | 8.45 | 8.39 | 8.35 | < 13 |
| | 1 | 8.44 | 8.43 | 8.37 | 8.34 | < 13 |
| | 2 | 7.66 | 8.03 | 7.65 | 7.98 | < 13 |
| | 3 | 7.65 | 8.03 | 7.64 | 7.99 | < 13 |

Table 7-109. Peak To Average Power Ratio Summary Data (B5_5M+5M_2C_4T)

| Channel | Port | PAPR (dB) | | | | Limit (dB) |
|---------|------|-----------|-------------|-------|--------|------------|
| | | QPSK | 16QAM | 64QAM | 256QAM | |
| Low | 0 | 8.42 | 8.45 | 8.38 | 8.35 | < 13 |
| | 1 | 8.37 | 8.39 | 8.37 | 8.39 | < 13 |
| | 2 | 8.00 | 8.04 | 7.74 | 7.76 | < 13 |
| | 3 | 8.02 | 8.02 | 7.75 | 7.75 | < 13 |
| Middle | 0 | 8.40 | 8.44 | 8.37 | 8.40 | < 13 |
| | 1 | 8.37 | 8.42 | 8.37 | 8.41 | < 13 |
| | 2 | 8.00 | 7.68 | 8.03 | 8.02 | < 13 |
| | 3 | 8.01 | 7.66 | 8.00 | 8.01 | < 13 |
| High | 0 | 8.41 | 8.43 | 8.32 | 8.37 | < 13 |
| | 1 | 8.36 | 8.41 | 8.38 | 8.39 | < 13 |
| | 2 | 7.63 | 7.65 | 7.63 | 7.63 | < 13 |
| | 3 | 7.64 | 7.64 | 7.63 | 7.64 | < 13 |

Table 7-110. Peak To Average Power Ratio Summary Data (B5_10M+10M_2C_4T)

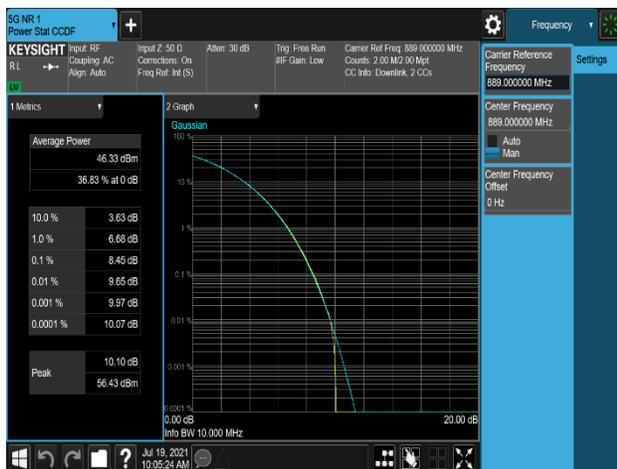
| | | | | |
|-------------------------------------|---|---------------------------------------|---|-----------------------------------|
| FCC ID: A3LRF4440D-13A |  | MEASUREMENT REPORT (CERTIFICATION) |  | Approved by: Technical Manager |
| Test Report S/N: 8K21070501R2-R1 | Test Dates: 07/09/2021 - 08/25/2021 | EUT Type: RRU (RF4440d) | | Page 156 of 367 |



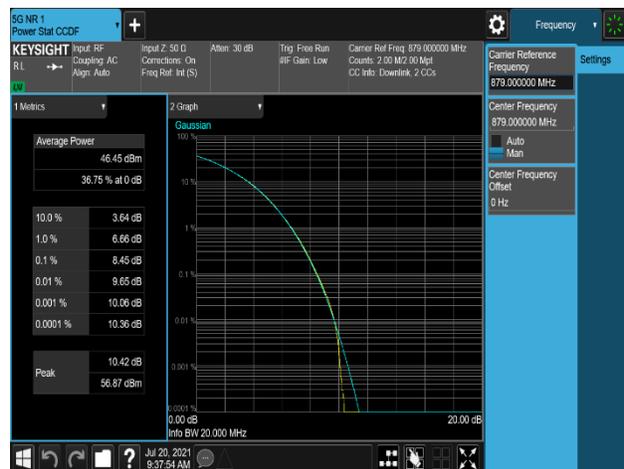
Plot 7-481. Peak To Average Power Ratio Plot (B5_5M+5M_2C_64QAM - Low Channel, Port 1)



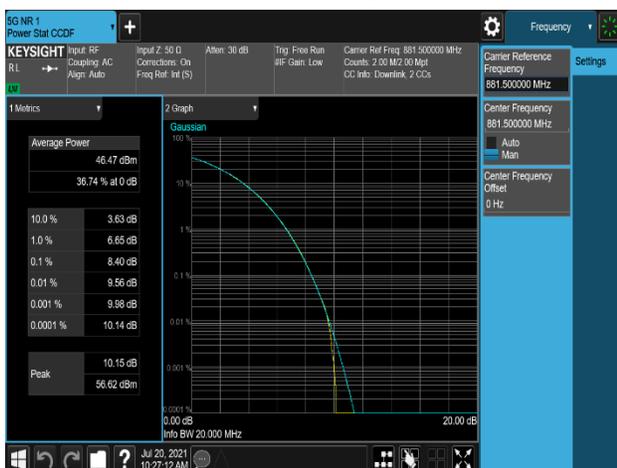
Plot 7-482. Peak To Average Power Ratio Plot (B5_5M+5M_2C_QPSK - Mid Channel, Port 0)



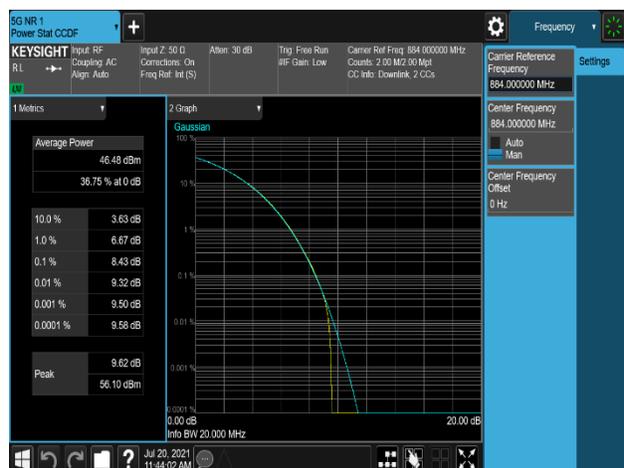
Plot 7-483. Peak To Average Power Ratio Plot (B5_5M+5M_2C_16QAM - High Channel, Port 0)



Plot 7-484. Peak To Average Power Ratio Plot (B5_10M+10M_2C_16QAM - Low Channel, Port 0)



Plot 7-485. Peak To Average Power Ratio Plot (B5_10M+10M_2C_16QAM - Mid Channel, Port 0)



Plot 7-486. Peak To Average Power Ratio Plot (B5_10M+10M_2C_16QAM - High Channel, Port 0)

| | | | | |
|-------------------------------------|---|---|---|--|
| FCC ID: A3LRF4440D-13A |  | MEASUREMENT REPORT (CERTIFICATION) |  | Approved by: Technical Manager |
| Test Report S/N: 8K21070501R2-R1 | Test Dates: 07/09/2021 - 08/25/2021 | EUT Type: RRU (RF4440d) | | Page 157 of 367 |

| Channel | Port | PAPR (dB) | | | | Limit (dB) |
|---------|------|-----------|-------------|-------|--------|------------|
| | | QPSK | 16QAM | 64QAM | 256QAM | |
| Middle | 0 | 7.77 | 8.07 | 7.79 | 7.78 | < 13 |
| | 1 | 7.83 | 8.06 | 7.81 | 7.78 | < 13 |

Table 7-111. Peak To Average Power Ratio Summary Data (B5_5M+10M+10M_3C_2T)



Plot 7-487. Peak To Average Power Ratio Plot (B5_5M+10M+10M_3C_16QAM - Low Channel, Port 0)

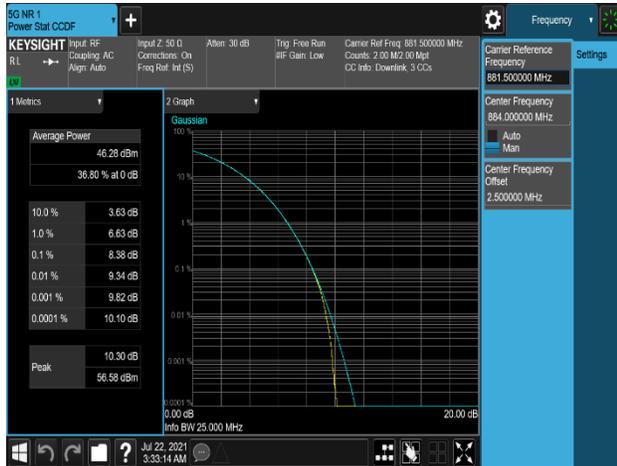


Plot 7-488. Peak To Average Power Ratio Plot (B5_5M+10M+10M_3C_16QAM - Low Channel, Port 1)

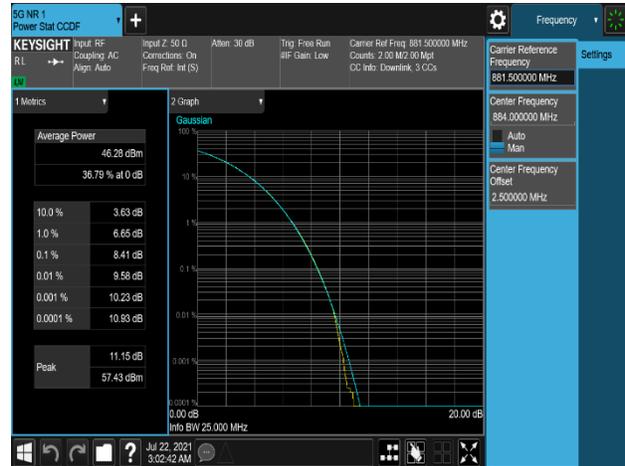
| | | | | |
|-------------------------------------|---|---------------------------------------|---|-----------------------------------|
| FCC ID: A3LRF4440D-13A |  | MEASUREMENT REPORT (CERTIFICATION) |  | Approved by: Technical Manager |
| Test Report S/N: 8K21070501R2-R1 | Test Dates: 07/09/2021 - 08/25/2021 | EUT Type: RRU (RF4440d) | | Page 158 of 367 |

| Channel | Port | PAPR (dB) | | | | Limit (dB) |
|---------|------|-------------|-------------|-------------|--------|------------|
| | | QPSK | 16QAM | 64QAM | 256QAM | |
| Middle | 0 | 8.33 | 8.37 | 8.38 | 8.36 | < 13 |
| | 1 | 8.36 | 8.41 | 8.39 | 8.28 | < 13 |
| | 2 | 8.06 | 8.04 | 7.81 | 7.79 | < 13 |
| | 3 | 8.09 | 8.07 | 7.80 | 7.82 | < 13 |

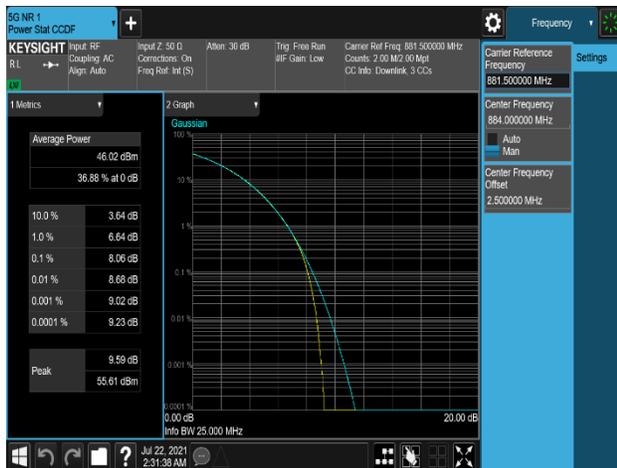
Table 7-112. Peak To Average Power Ratio Summary Data (B5_5M+10M+10M_3C_4T)



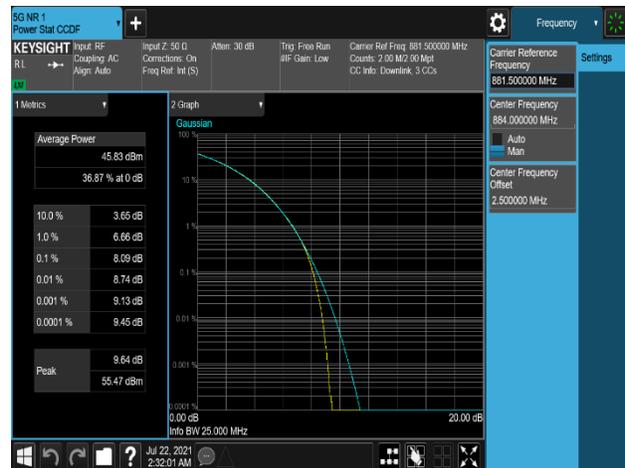
Plot 7-489. Peak To Average Power Ratio Plot (B5_5M+10M+10M_3C_64QAM - Low Channel, Port 0)



Plot 7-490. Peak To Average Power Ratio Plot (B5_5M+10M+10M_3C_16QAM - Low Channel, Port 1)



Plot 7-491. Peak To Average Power Ratio Plot (B5_5M+10M+10M_3C_QPSK - Low Channel, Port 2)



Plot 7-492. Peak To Average Power Ratio Plot (B5_5M+10M+10M_3C_QPSK - Low Channel, Port 3)

| | | | | |
|-------------------------------------|--|---------------------------------------|--|-----------------------------------|
| FCC ID: A3LRF4440D-13A | | MEASUREMENT REPORT (CERTIFICATION) | | Approved by: Technical Manager |
| Test Report S/N: 8K21070501R2-R1 | Test Dates: 07/09/2021 - 08/25/2021 | EUT Type: RRU (RF4440d) | | Page 159 of 367 |

| DSS Ratio | Channel | Port | PAPR (dB) | | | | Limit (dB) |
|--------------|---------|------|-----------|-------|-------|--------|------------|
| | | | QPSK | 16QAM | 64QAM | 256QAM | |
| LTE 9 : NR 1 | Low | 0 | 8.42 | 8.46 | 8.30 | 8.35 | < 13 |
| | | 1 | 8.41 | 8.49 | 8.32 | 8.33 | < 13 |
| | | 2 | 7.98 | 8.02 | 7.99 | 8.00 | < 13 |
| | | 3 | 7.97 | 8.00 | 7.96 | 7.98 | < 13 |
| | Middle | 0 | 8.43 | 8.45 | 8.30 | 8.37 | < 13 |
| | | 1 | 8.42 | 8.44 | 8.28 | 8.36 | < 13 |
| | | 2 | 7.99 | 8.01 | 7.98 | 8.02 | < 13 |
| | | 3 | 8.00 | 8.02 | 7.98 | 8.00 | < 13 |
| | High | 0 | 8.45 | 8.51 | 8.34 | 8.40 | < 13 |
| | | 1 | 8.43 | 8.46 | 8.30 | 8.36 | < 13 |
| | | 2 | 8.00 | 7.99 | 7.97 | 7.99 | < 13 |
| | | 3 | 7.99 | 7.99 | 7.96 | 7.98 | < 13 |
| LTE 8 : NR 2 | Low | 0 | 8.42 | 8.47 | 8.32 | 8.36 | < 13 |
| | | 1 | 8.41 | 8.51 | 8.33 | 8.35 | < 13 |
| | | 2 | 8.04 | 8.04 | 8.00 | 8.01 | < 13 |
| | | 3 | 8.00 | 8.04 | 7.97 | 8.06 | < 13 |
| | Middle | 0 | 8.43 | 8.51 | 8.31 | 8.42 | < 13 |
| | | 1 | 8.42 | 8.49 | 8.27 | 8.40 | < 13 |
| | | 2 | 8.04 | 7.99 | 8.01 | 8.02 | < 13 |
| | | 3 | 8.05 | 8.00 | 8.01 | 8.02 | < 13 |
| | High | 0 | 8.44 | 8.52 | 8.28 | 8.39 | < 13 |
| | | 1 | 8.44 | 8.53 | 8.31 | 8.40 | < 13 |
| | | 2 | 8.02 | 8.03 | 8.00 | 8.03 | < 13 |
| | | 3 | 8.01 | 8.05 | 8.00 | 8.03 | < 13 |
| LTE 7 : NR 3 | Low | 0 | 8.37 | 8.49 | 8.31 | 8.39 | < 13 |
| | | 1 | 8.42 | 8.50 | 8.32 | 8.46 | < 13 |
| | | 2 | 8.03 | 8.07 | 8.06 | 8.01 | < 13 |
| | | 3 | 8.00 | 8.05 | 8.05 | 8.06 | < 13 |
| | Middle | 0 | 8.39 | 8.54 | 9.01 | 8.42 | < 13 |
| | | 1 | 8.43 | 8.48 | 8.98 | 8.47 | < 13 |
| | | 2 | 8.03 | 8.03 | 8.23 | 8.06 | < 13 |
| | | 3 | 8.04 | 8.06 | 8.20 | 8.03 | < 13 |
| | High | 0 | 8.35 | 8.52 | 8.35 | 8.46 | < 13 |
| | | 1 | 8.40 | 8.54 | 8.35 | 8.44 | < 13 |
| | | 2 | 8.01 | 8.06 | 8.04 | 8.05 | < 13 |
| | | 3 | 8.05 | 8.05 | 8.02 | 8.04 | < 13 |
| LTE 6 : NR 4 | Low | 0 | 8.39 | 8.48 | 8.37 | 8.43 | < 13 |
| | | 1 | 8.41 | 8.50 | 8.38 | 8.39 | < 13 |
| | | 2 | 8.05 | 8.07 | 8.02 | 8.02 | < 13 |
| | | 3 | 8.06 | 8.08 | 8.01 | 8.06 | < 13 |
| | Middle | 0 | 8.41 | 8.52 | 8.37 | 8.46 | < 13 |
| | | 1 | 8.38 | 8.52 | 8.32 | 8.42 | < 13 |
| | | 2 | 8.07 | 8.09 | 8.02 | 8.07 | < 13 |
| | | 3 | 8.06 | 8.05 | 8.03 | 8.06 | < 13 |
| | High | 0 | 8.44 | 8.53 | 8.31 | 8.48 | < 13 |
| | | 1 | 8.42 | 8.50 | 8.37 | 8.44 | < 13 |
| | | 2 | 8.05 | 8.05 | 8.07 | 8.05 | < 13 |
| | | 3 | 8.08 | 8.03 | 8.06 | 8.04 | < 13 |

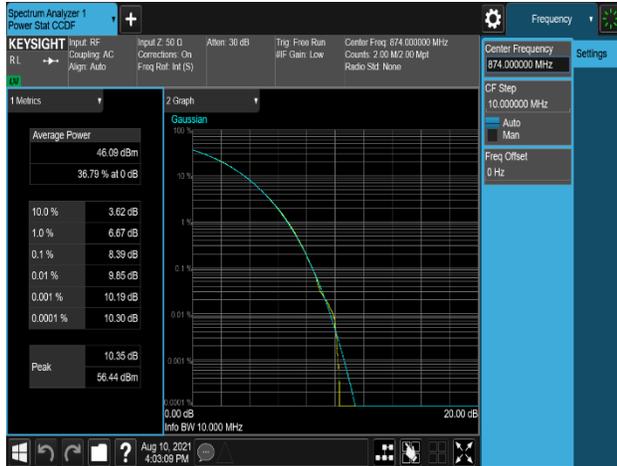
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| FCC ID: A3LRF4440D-13A |  | MEASUREMENT REPORT (CERTIFICATION) |  | Approved by: Technical Manager |
| Test Report S/N: 8K21070501R2-R1 | Test Dates: 07/09/2021 - 08/25/2021 | EUT Type: RRU (RF4440d) | | Page 160 of 367 |

| | | | | | | | |
|-----------------|--------|---|-------------|-------------|-------------|-------------|------|
| LTE 5 : NR 5 | Low | 0 | 8.83 | 8.56 | 8.35 | 8.43 | < 13 |
| | | 1 | 8.84 | 8.56 | 8.27 | 8.49 | < 13 |
| | | 2 | 8.49 | 8.05 | 8.10 | 8.05 | < 13 |
| | | 3 | 8.42 | 8.01 | 8.09 | 8.06 | < 13 |
| | Middle | 0 | 8.37 | 8.53 | 8.37 | 8.46 | < 13 |
| | | 1 | 8.40 | 8.57 | 8.36 | 8.44 | < 13 |
| | | 2 | 8.05 | 8.05 | 8.03 | 8.08 | < 13 |
| | | 3 | 8.07 | 8.03 | 8.03 | 8.09 | < 13 |
| | High | 0 | 8.86 | 8.55 | 8.40 | 8.51 | < 13 |
| | | 1 | 8.76 | 8.52 | 8.38 | 8.44 | < 13 |
| | | 2 | 8.51 | 8.04 | 8.09 | 8.08 | < 13 |
| | | 3 | 8.55 | 8.08 | 8.05 | 8.08 | < 13 |
| LTE 4 : NR 6 | Low | 0 | 8.38 | 8.56 | 8.32 | 8.48 | < 13 |
| | | 1 | 8.39 | 8.56 | 8.31 | 8.40 | < 13 |
| | | 2 | 8.09 | 8.04 | 8.10 | 8.08 | < 13 |
| | | 3 | 8.00 | 8.07 | 8.07 | 8.13 | < 13 |
| | Middle | 0 | 8.39 | 8.57 | 8.38 | 8.57 | < 13 |
| | | 1 | 8.39 | 8.58 | 8.38 | 8.44 | < 13 |
| | | 2 | 8.06 | 8.07 | 8.06 | 8.10 | < 13 |
| | | 3 | 8.11 | 8.03 | 8.01 | 8.08 | < 13 |
| | High | 0 | 8.41 | 8.60 | 8.34 | 8.46 | < 13 |
| | | 1 | 8.36 | 8.56 | 8.35 | 8.50 | < 13 |
| | | 2 | 8.09 | 8.07 | 8.10 | 8.10 | < 13 |
| | | 3 | 8.09 | 8.06 | 8.05 | 8.13 | < 13 |
| LTE 3 : NR 7 | Low | 0 | 8.38 | 8.59 | 8.31 | 8.44 | < 13 |
| | | 1 | 8.35 | 8.59 | 8.34 | 8.52 | < 13 |
| | | 2 | 8.11 | 8.10 | 8.04 | 8.14 | < 13 |
| | | 3 | 8.10 | 8.16 | 7.98 | 8.14 | < 13 |
| | Middle | 0 | 8.40 | 8.55 | 8.31 | 8.49 | < 13 |
| | | 1 | 8.37 | 8.56 | 8.25 | 8.53 | < 13 |
| | | 2 | 8.07 | 8.10 | 8.06 | 8.16 | < 13 |
| | | 3 | 8.06 | 8.15 | 8.10 | 8.16 | < 13 |
| | High | 0 | 8.37 | 8.57 | 8.34 | 9.35 | < 13 |
| | | 1 | 8.37 | 8.53 | 8.38 | 9.37 | < 13 |
| | | 2 | 8.15 | 8.09 | 8.08 | 8.29 | < 13 |
| | | 3 | 8.08 | 8.06 | 8.09 | 8.35 | < 13 |
| LTE 2 : NR 8 | Low | 0 | 8.39 | 8.66 | 8.35 | 8.54 | < 13 |
| | | 1 | 8.39 | 8.66 | 8.29 | 8.41 | < 13 |
| | | 2 | 8.10 | 8.12 | 8.09 | 8.11 | < 13 |
| | | 3 | 8.07 | 8.13 | 8.13 | 8.09 | < 13 |
| | Middle | 0 | 8.38 | 8.64 | 8.32 | 8.44 | < 13 |
| | | 1 | 8.40 | 8.64 | 8.25 | 8.56 | < 13 |
| | | 2 | 8.11 | 8.13 | 8.13 | 8.15 | < 13 |
| | | 3 | 8.04 | 8.15 | 8.17 | 8.17 | < 13 |
| | High | 0 | 9.39 | 9.50 | 9.42 | 9.48 | < 13 |
| | | 1 | 9.37 | 9.47 | 9.41 | 9.48 | < 13 |
| | | 2 | 8.38 | 8.32 | 8.41 | 8.35 | < 13 |
| | | 3 | 8.41 | 8.30 | 8.45 | 8.42 | < 13 |

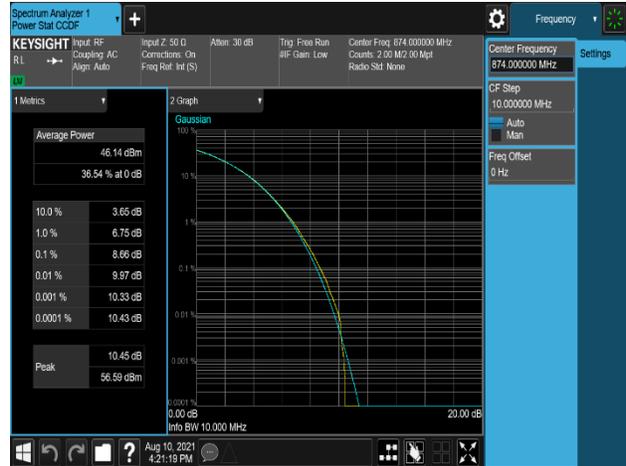
Table 7-113. Peak To Average Power Ratio Summary Data (B5_10M(DSS)_1C_4T)

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

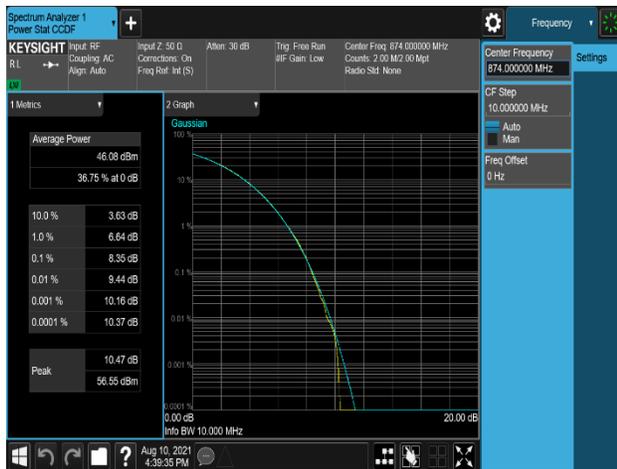
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|-------------------------------------|---|---------------------------------------|---|-----------------------------------|
| FCC ID: A3LRF4440D-13A |  | MEASUREMENT REPORT (CERTIFICATION) |  | Approved by: Technical Manager |
| Test Report S/N: 8K21070501R2-R1 | Test Dates: 07/09/2021 - 08/25/2021 | EUT Type: RRU (RF4440d) | | Page 161 of 367 |



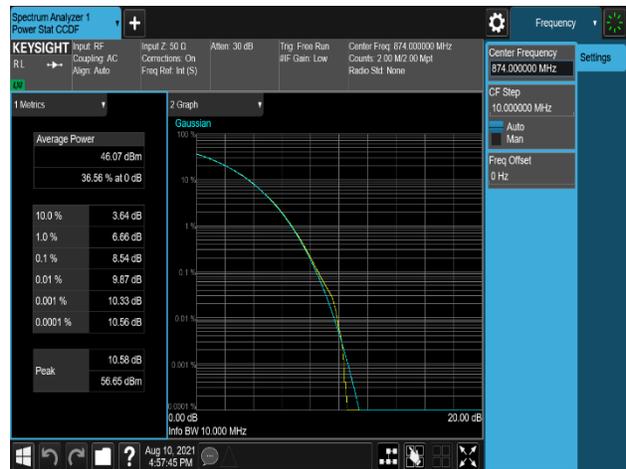
Plot 7-493. Peak To Average Power Ratio Plot (B5_10M(DSS)_1C_QPSK - Low Channel, Port 0)



Plot 7-494. Peak To Average Power Ratio Plot (B5_10M(DSS)_1C_16QAM - Low Channel, Port 0)



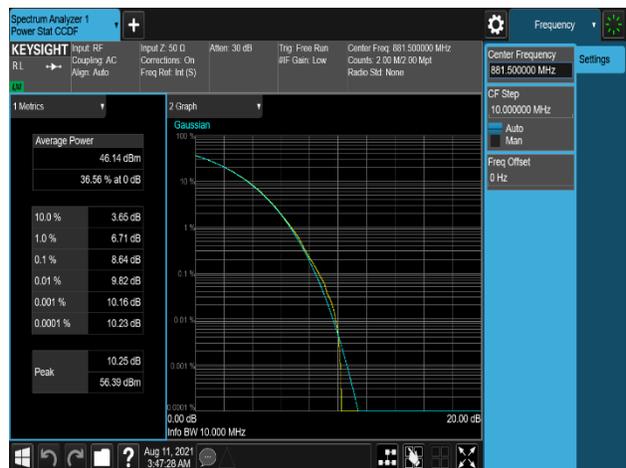
Plot 7-495. Peak To Average Power Ratio Plot (B5_10M(DSS)_1C_64QAM - Low Channel, Port 0)



Plot 7-496. Peak To Average Power Ratio Plot (B5_10M(DSS)_1C_256QAM - Low Channel, Port 0)

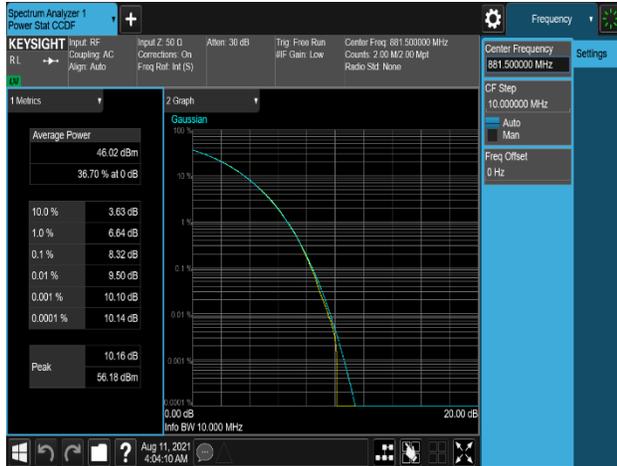


Plot 7-497. Peak To Average Power Ratio Plot (B5_10M(DSS)_1C_QPSK - Middle Channel, Port 0)



Plot 7-498. Peak To Average Power Ratio Plot (B5_10M(DSS)_1C_16QAM - Middle Channel, Port 0)

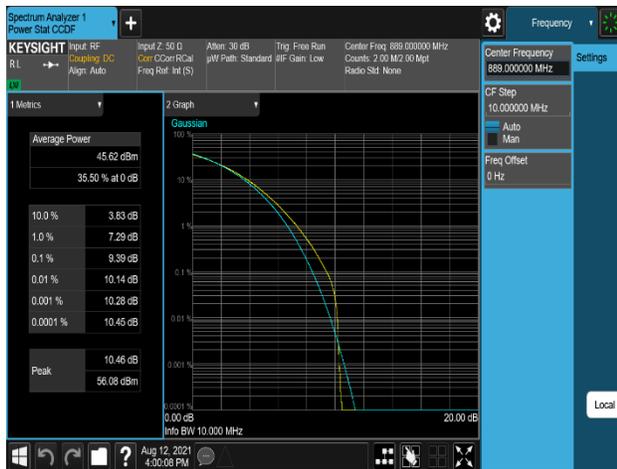
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|-------------------------------------|--|---|--|--|
| FCC ID: A3LRF4440D-13A | | MEASUREMENT REPORT (CERTIFICATION) | | Approved by: Technical Manager |
| Test Report S/N: 8K21070501R2-R1 | Test Dates: 07/09/2021 - 08/25/2021 | EUT Type: RRU (RF4440d) | | Page 162 of 367 |



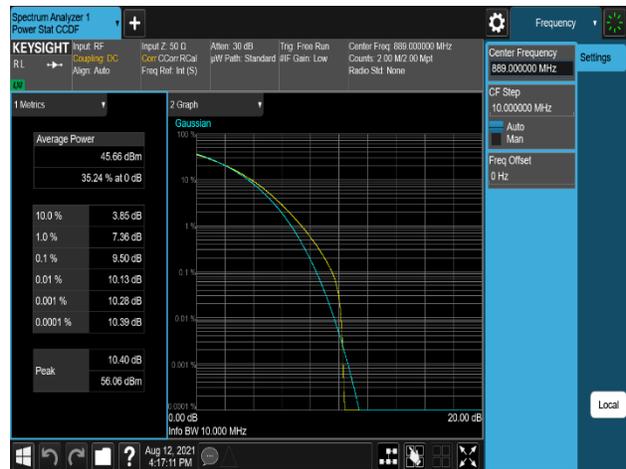
Plot 7-499. Peak To Average Power Ratio Plot (B5_10M(DSS)_1C_64QAM - Middle Channel, Port 0)



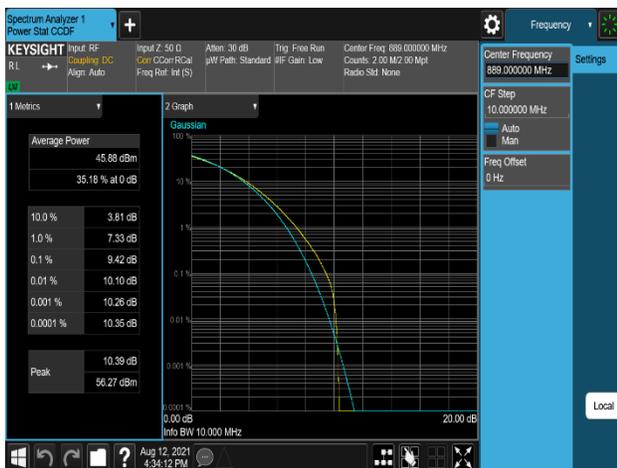
Plot 7-500. Peak To Average Power Ratio Plot (B5_10M(DSS)_1C_256QAM - Middle Channel, Port 0)



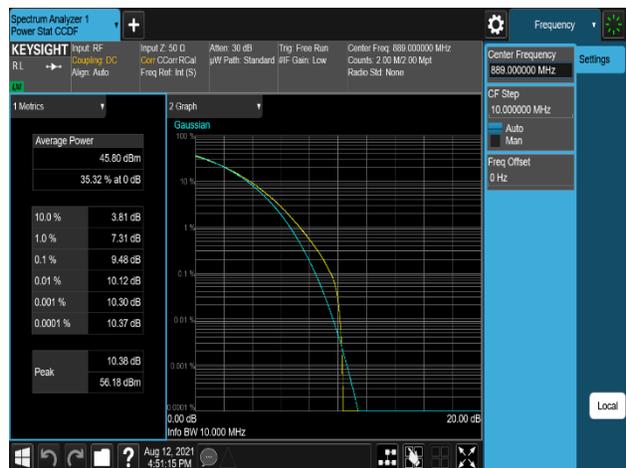
Plot 7-501. Peak To Average Power Ratio Plot (B5_10M(DSS)_1C_QPSK - High Channel, Port 0)



Plot 7-502. Peak To Average Power Ratio Plot (B5_10M(DSS)_1C_16QAM - High Channel, Port 0)



Plot 7-503. Peak To Average Power Ratio Plot (B5_10M(DSS)_1C_64QAM - High Channel, Port 0)



Plot 7-504. Peak To Average Power Ratio Plot (B5_10M(DSS)_1C_256QAM - High Channel, Port 0)

| | | | | |
|-------------------------------------|--|---|--|-----------------------------------|
| FCC ID: A3LRF4440D-13A | | MEASUREMENT REPORT (CERTIFICATION) | | Approved by: Technical Manager |
| Test Report S/N: 8K21070501R2-R1 | Test Dates: 07/09/2021 - 08/25/2021 | EUT Type: RRU (RF4440d) | | Page 163 of 367 |

| DSS Ratio | Channel | Port | PAPR (dB) | | | | Limit (dB) |
|-----------------|---------|------|-------------|-------------|-------------|-------------|------------|
| | | | QPSK | 16QAM | 64QAM | 256QAM | |
| LTE 5 : NR 5 | Low | 0 | 8.08 | 8.00 | 8.04 | 8.05 | < 13 |
| | | 1 | 8.08 | 8.00 | 8.04 | 8.03 | < 13 |
| | Middle | 0 | 8.12 | 8.06 | 8.08 | 8.08 | < 13 |
| | | 1 | 8.05 | 8.05 | 8.07 | 8.10 | < 13 |
| | High | 0 | 8.11 | 8.01 | 8.06 | 8.10 | < 13 |
| | | 1 | 8.08 | 8.05 | 8.10 | 8.09 | < 13 |

Table 7-114. Peak To Average Power Ratio Summary Data (B5_10M(DSS)_1C_2T)

| | | | | | |
|-------------------------------------|---|---------------------------------------|--|---|-----------------------------------|
| FCC ID: A3LRF4440D-13A |  | MEASUREMENT REPORT (CERTIFICATION) | |  | Approved by: Technical Manager |
| Test Report S/N: 8K21070501R2-R1 | Test Dates: 07/09/2021 - 08/25/2021 | EUT Type: RRU (RF4440d) | | Page 164 of 367 | |