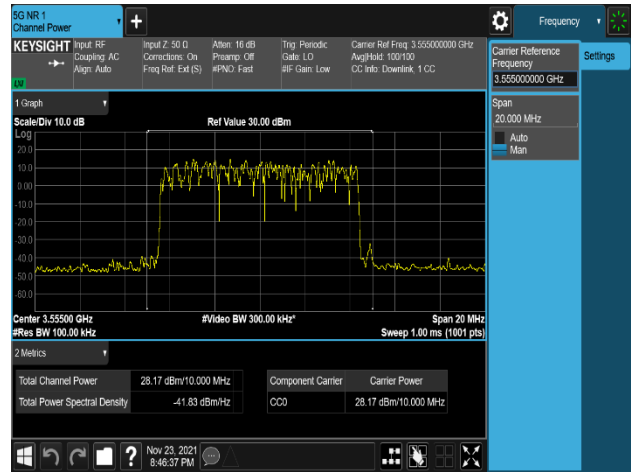


Plot 8-115. Equivalent Isotropic Radiated Power Plot (NR_n48_1C_10M_64QAM – Low Channel, Port 0)



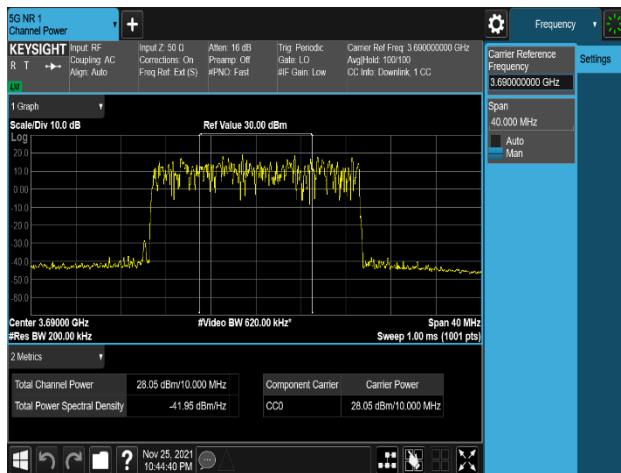
Plot 8-116. Equivalent Isotropic Radiated Power Plot (NR_n48_1C_10M_64QAM – Low Channel, Port 1)



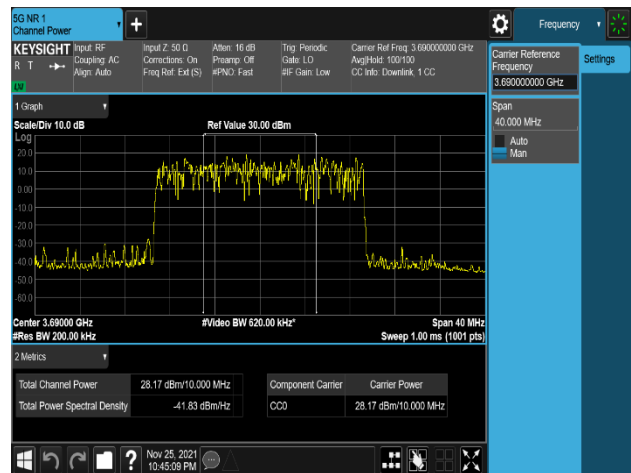
Plot 8-117. Equivalent Isotropic Radiated Power Plot (NR_n48_1C_10M_64QAM – Low Channel, Port 2)



Plot 8-118. Equivalent Isotropic Radiated Power Plot (NR_n48_1C_10M_64QAM – Low Channel, Port 3)



Plot 8-119. Equivalent Isotropic Radiated Power Plot (NR_n48_1C_20M_16QAM – High Channel, Port 0)



Plot 8-120. Equivalent Isotropic Radiated Power Plot (NR_n48_1C_20M_16QAM – High Channel, Port 1)

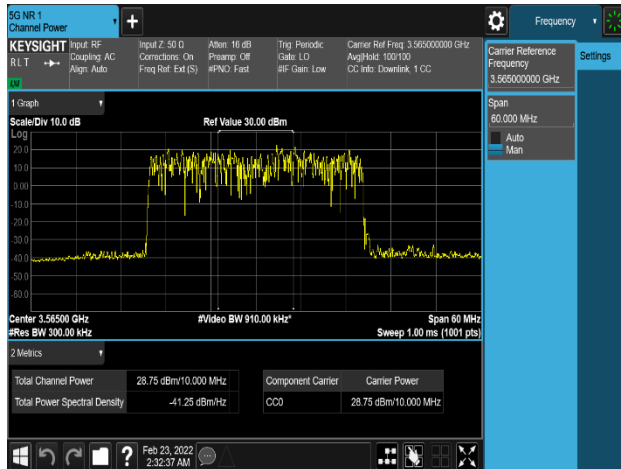
FCC: A3LRT4401-48A		MEASUREMENT REPORT (Class II Permissive Change)		Approved by: Technical Manager
Test Report S/N: BK21101307-R4.A3L	Test Dates: 10/15/2021 – 03/14/2022	EUT Type: RRU(RT4401)	Page 78 of 174	



Plot 8-121. Equivalent Isotropic Radiated Power Plot (NR_n48_1C_20M_16QAM – High Channel, Port 2)



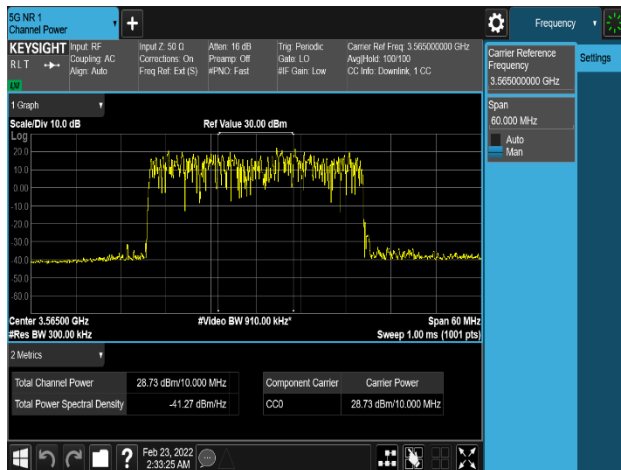
Plot 8-122. Equivalent Isotropic Radiated Power Plot (NR_n48_1C_20M_16QAM – High Channel, Port 3)



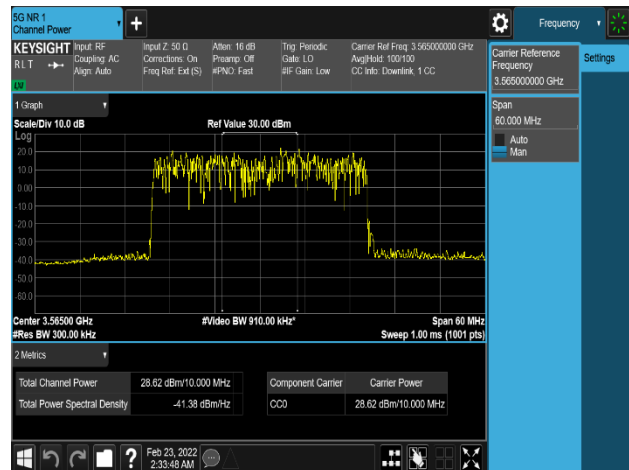
Plot 8-123. Equivalent Isotropic Radiated Power Plot (NR_n48_1C_30M_16QAM – Low Channel, Port 0)



Plot 8-124. Equivalent Isotropic Radiated Power Plot (NR_n48_1C_30M_16QAM – Low Channel, Port 1)



Plot 8-125. Equivalent Isotropic Radiated Power Plot (NR_n48_1C_30M_16QAM – Low Channel, Port 2)



Plot 8-126. Equivalent Isotropic Radiated Power Plot (NR_n48_1C_30M_16QAM – Low Channel, Port 3)

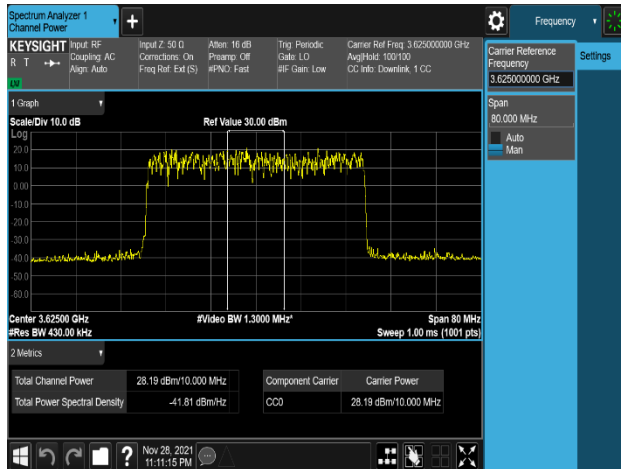
FCC: A3LRT4401-48A		MEASUREMENT REPORT (Class II Permissive Change)		Approved by: Technical Manager
Test Report S/N: BK21101307-R4.A3L	Test Dates: 10/15/2021 – 03/14/2022	EUT Type: RRU(RT4401)	Page 79 of 174	



Plot 8-127. Equivalent Isotropic Radiated Power Plot (NR_n48_1C_40M_16QAM – Mid Channel, Port 0)



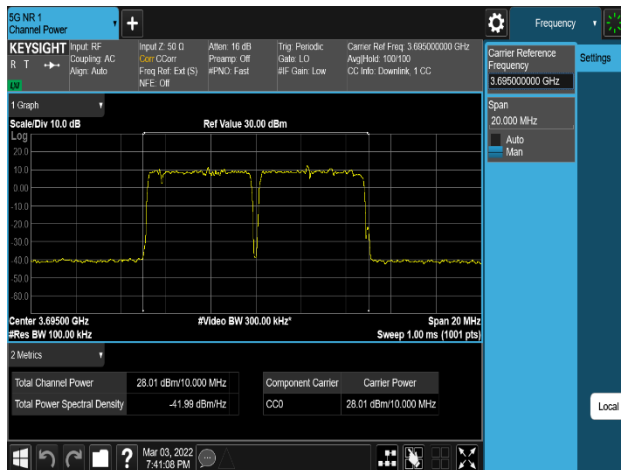
Plot 8-128. Equivalent Isotropic Radiated Power Plot (NR_n48_1C_40M_16QAM – Mid Channel, Port 1)



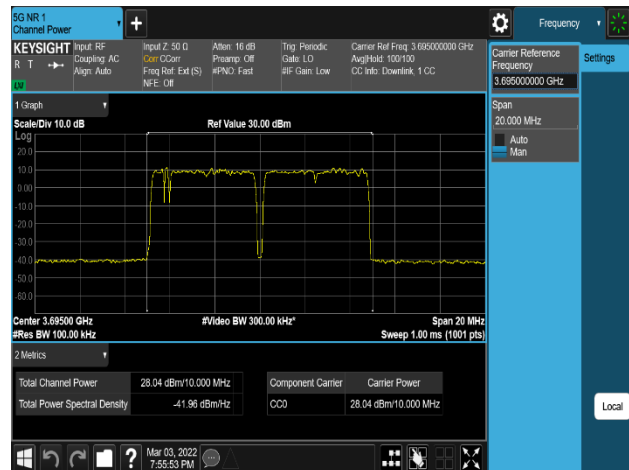
Plot 8-129. Equivalent Isotropic Radiated Power Plot (NR_n48_1C_40M_16QAM – Mid Channel, Port 2)



Plot 8-130. Equivalent Isotropic Radiated Power Plot (NR_n48_1C_40M_16QAM – Mid Channel, Port 3)

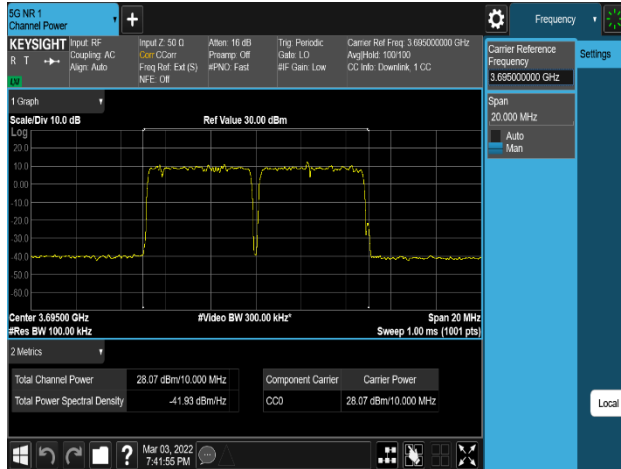


Plot 8-131. Equivalent Isotropic Radiated Power Plot (LTE_B48_2C_5M+5M_16QAM – High Channel, Port 0)

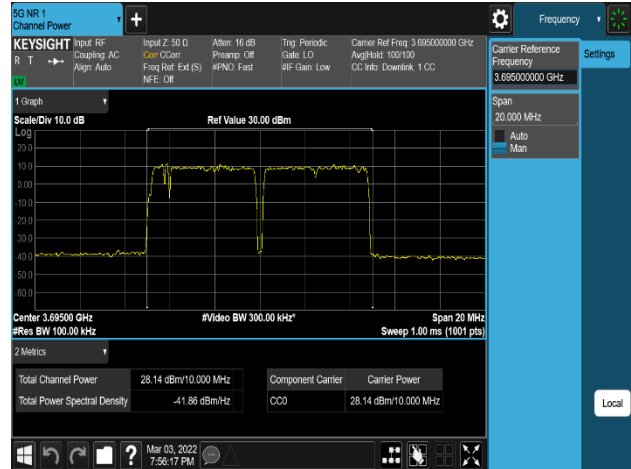


Plot 8-132. Equivalent Isotropic Radiated Power Plot (LTE_B48_2C_5M+5M_16QAM – High Channel, Port 1)

FCC: A3LRT4401-48A		MEASUREMENT REPORT (Class II Permissive Change)		Approved by: Technical Manager
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Plot 8-133. Equivalent Isotropic Radiated Power Plot (LTE_B48_2C_5M+5M_16QAM – High Channel, Port 2)



Plot 8-134. Equivalent Isotropic Radiated Power Plot (LTE_B48_2C_5M+5M_16QAM – High Channel, Port 3)



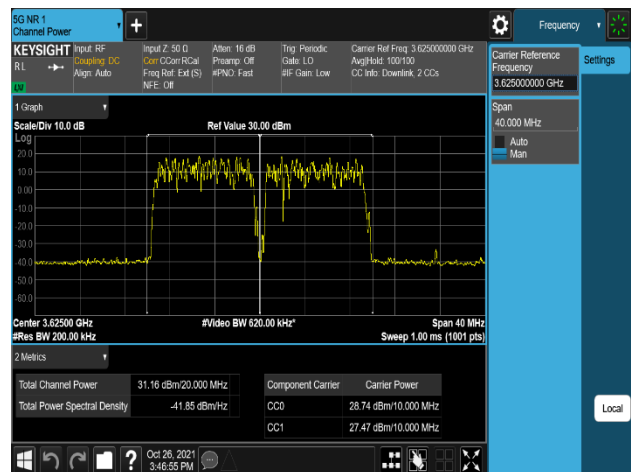
Plot 8-135. Equivalent Isotropic Radiated Power Plot (NR_n48_2C_10M+10M_QPSK – Mid Channel, Port 0)



Plot 8-136. Equivalent Isotropic Radiated Power Plot (NR_n48_2C_10M+10M_QPSK – Mid Channel, Port 1)

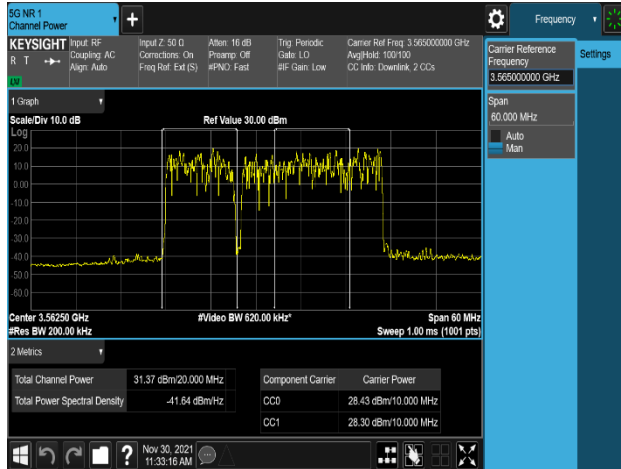


Plot 8-137. Equivalent Isotropic Radiated Power Plot (NR_n48_2C_10M+10M_QPSK – Mid Channel, Port 2)

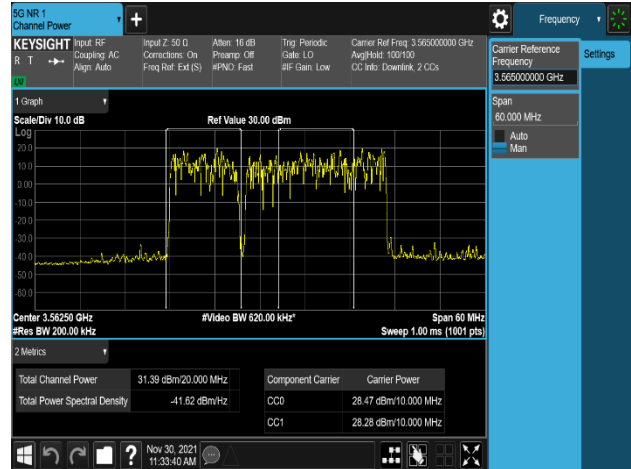


Plot 8-138. Equivalent Isotropic Radiated Power Plot (NR_n48_2C_10M+10M_QPSK – Mid Channel, Port 3)

FCC: A3LRT4401-48A		MEASUREMENT REPORT (Class II Permissive Change)		Approved by: Technical Manager
Test Report S/N: BK21101307-R4.A3L	Test Dates: 10/15/2021 – 03/14/2022	EUT Type: RRU(RT4401)		Page 81 of 174



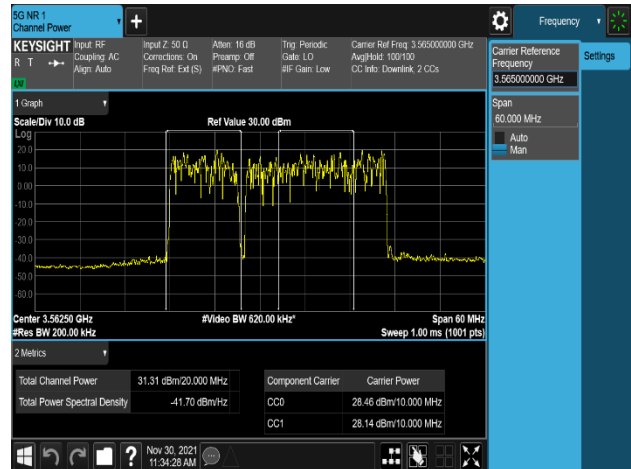
Plot 8-139. Equivalent Isotropic Radiated Power Plot (NR_n48_2C_10M+20M_16QAM – Low Channel, Port 0)



Plot 8-140. Equivalent Isotropic Radiated Power Plot (NR_n48_2C_10M+20M_16QAM – Low Channel, Port 1)



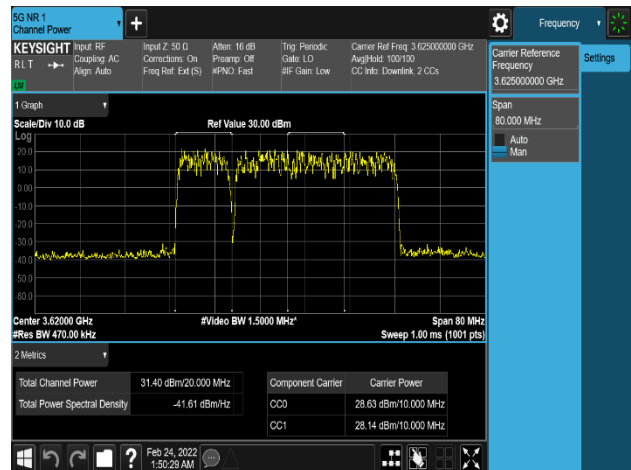
Plot 8-141. Equivalent Isotropic Radiated Power Plot (NR_n48_2C_10M+20M_16QAM – Low Channel, Port 2)



Plot 8-142. Equivalent Isotropic Radiated Power Plot (NR_n48_2C_10M+20M_16QAM – Low Channel, Port 3)

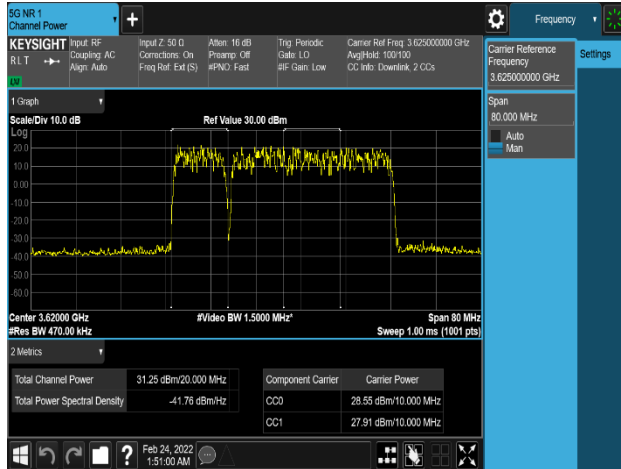


Plot 8-143. Equivalent Isotropic Radiated Power Plot (NR_n48_2C_10M+30M_16QAM – Mid Channel, Port 0)

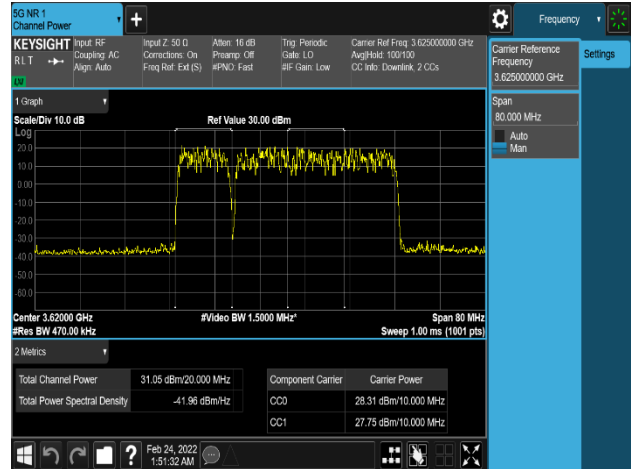


Plot 8-144. Equivalent Isotropic Radiated Power Plot (NR_n48_2C_10M+30M_16QAM – Mid Channel, Port 1)

FCC: A3LRT4401-48A		MEASUREMENT REPORT (Class II Permissive Change)		Approved by: Technical Manager
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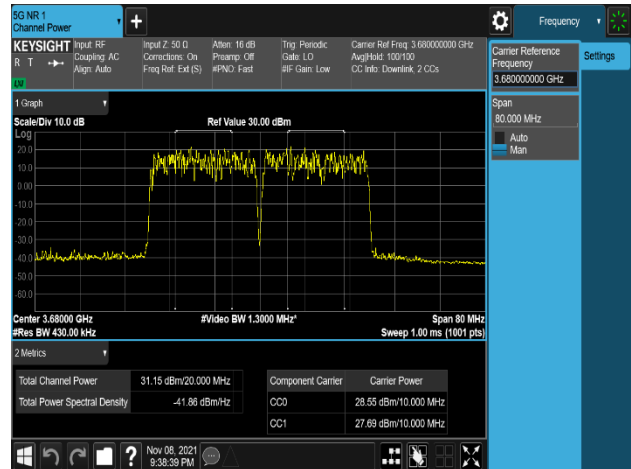
Plot 8-145. Equivalent Isotropic Radiated Power Plot (NR_n48_2C_10M+30M_16QAM – Mid Channel, Port 2)



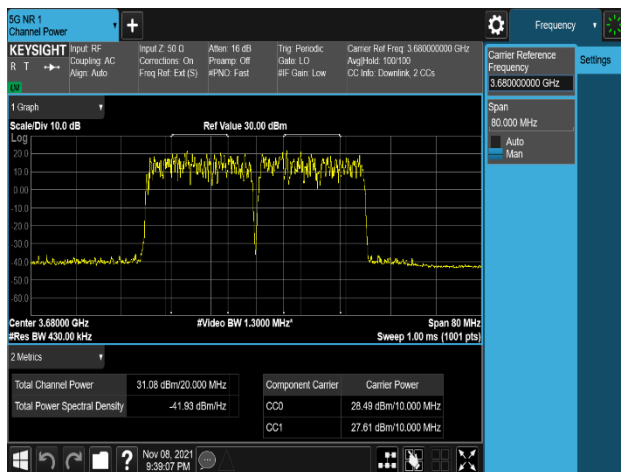
Plot 8-146. Equivalent Isotropic Radiated Power Plot (NR_n48_2C_10M+30M_16QAM – Mid Channel, Port 3)



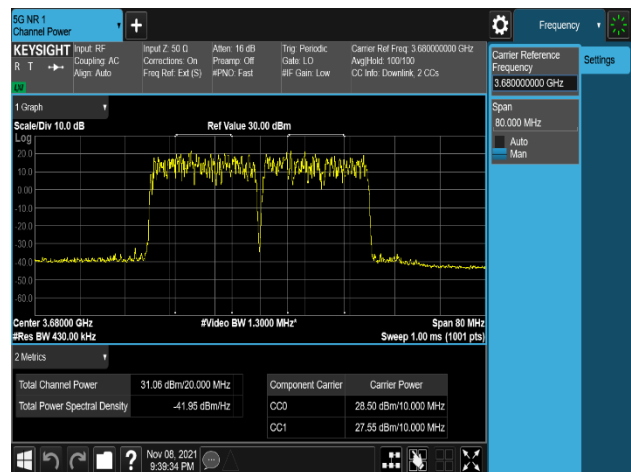
Plot 8-147. Equivalent Isotropic Radiated Power Plot (NR_n48_2C_20M+20M_64QAM – High Channel, Port 0)



Plot 8-148. Equivalent Isotropic Radiated Power Plot (NR_n48_2C_20M+20M_64QAM – High Channel, Port 1)

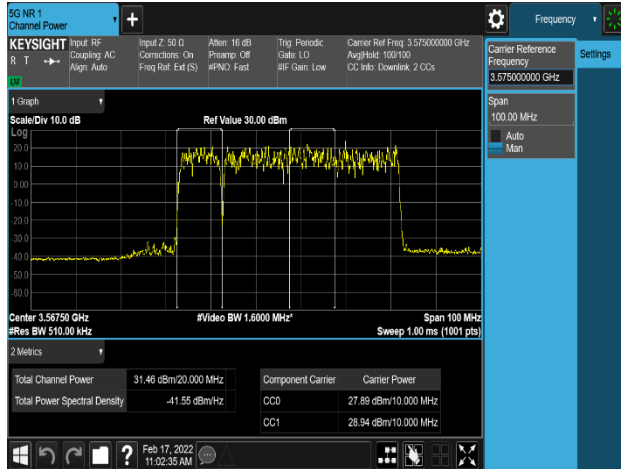


Plot 8-149. Equivalent Isotropic Radiated Power Plot (NR_n48_2C_20M+20M_64QAM – High Channel, Port 2)

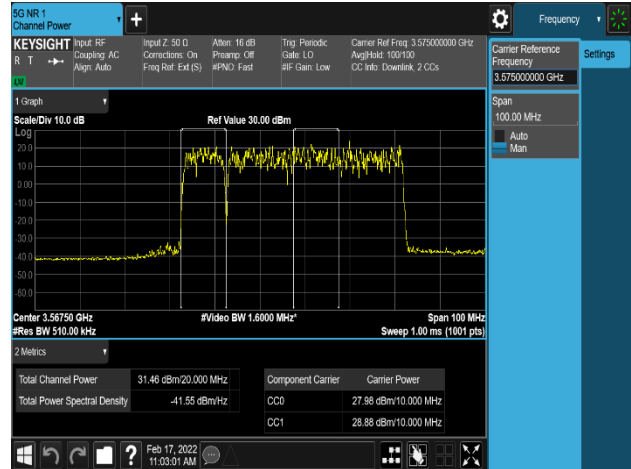


Plot 8-150. Equivalent Isotropic Radiated Power Plot (NR_n48_2C_20M+20M_64QAM – High Channel, Port 3)

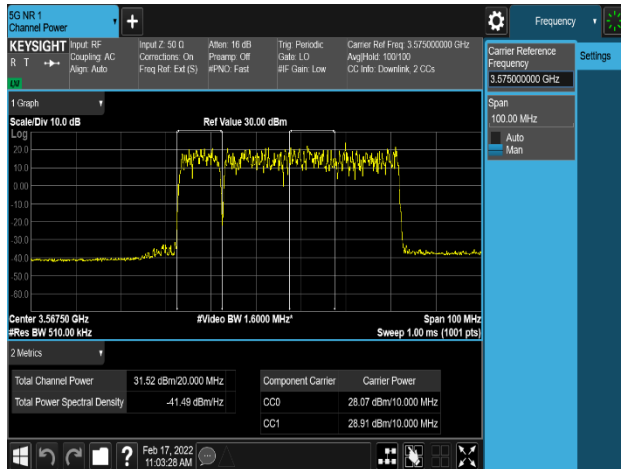
FCC: A3LRT4401-48A		MEASUREMENT REPORT (Class II Permissive Change)		Approved by: Technical Manager
Test Report S/N: BK21101307-R4.A3L	Test Dates: 10/15/2021 – 03/14/2022	EUT Type: RRU(RT4401)		Page 83 of 174



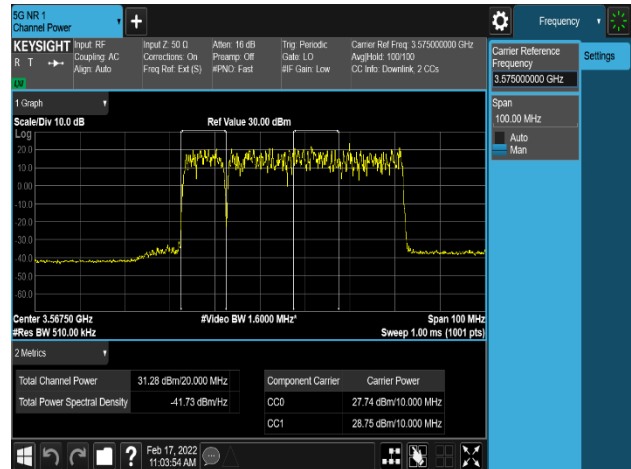
Plot 8-151. Equivalent Isotropic Radiated Power Plot (NR_n48_2C_10M+40M_256QAM – Low Channel, Port 0)



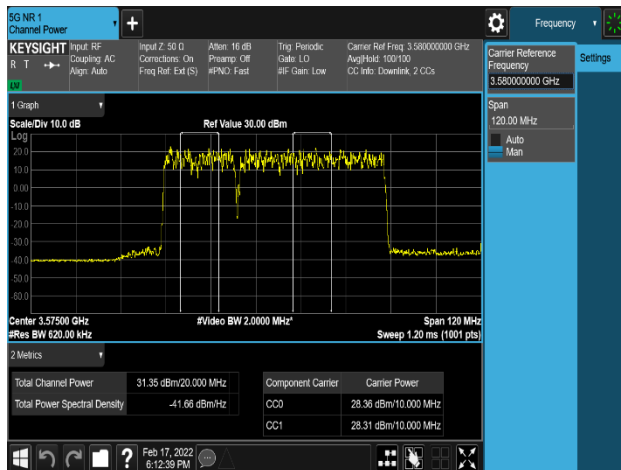
Plot 8-152. Equivalent Isotropic Radiated Power Plot (NR_n48_2C_10M+40M_256QAM – Low Channel, Port 1)



Plot 8-153. Equivalent Isotropic Radiated Power Plot (NR_n48_2C_10M+40M_256QAM – Low Channel, Port 2)



Plot 8-154. Equivalent Isotropic Radiated Power Plot (NR_n48_2C_10M+40M_256QAM – Low Channel, Port 3)

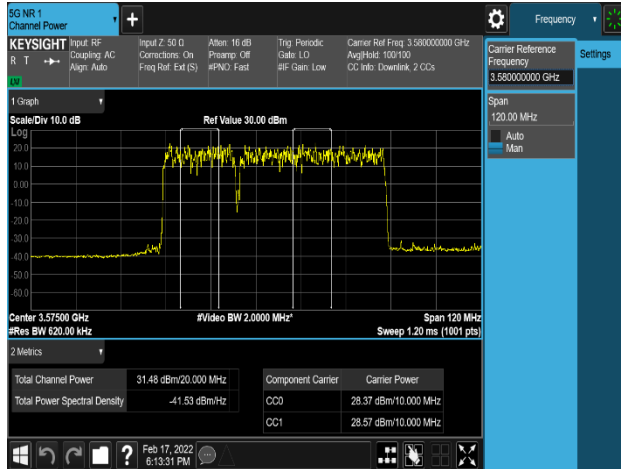


Plot 8-155. Equivalent Isotropic Radiated Power Plot (NR_n48_2C_20M+40M_256QAM – Low Channel, Port 0)

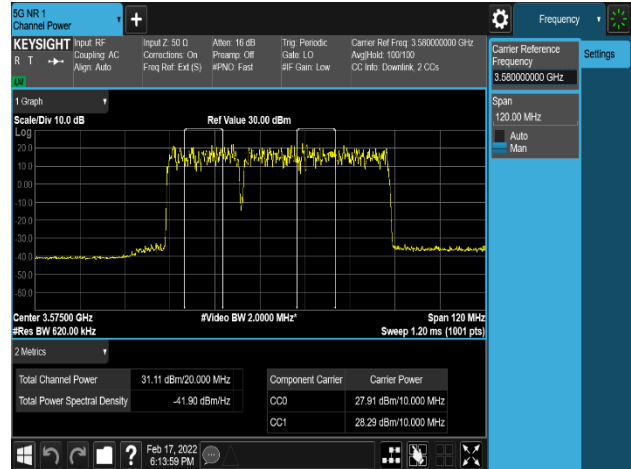


Plot 8-156. Equivalent Isotropic Radiated Power Plot (NR_n48_2C_20M+40M_256QAM – Low Channel, Port 1)

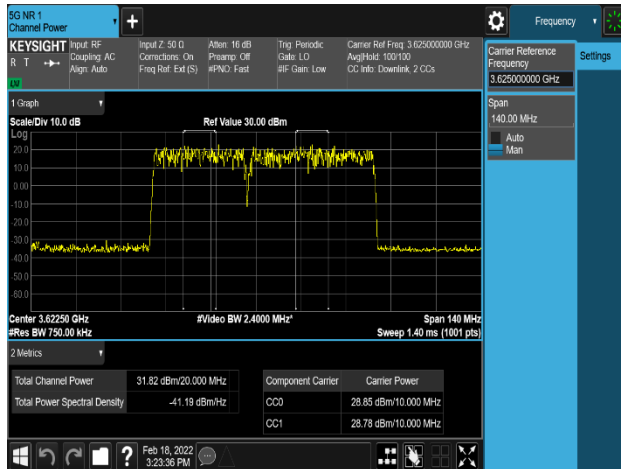
FCC: A3LRT4401-48A		MEASUREMENT REPORT (Class II Permissive Change)		Approved by: Technical Manager
Test Report S/N: BK21101307-R4.A3L	Test Dates: 10/15/2021 – 03/14/2022	EUT Type: RRU(RT4401)		Page 84 of 174



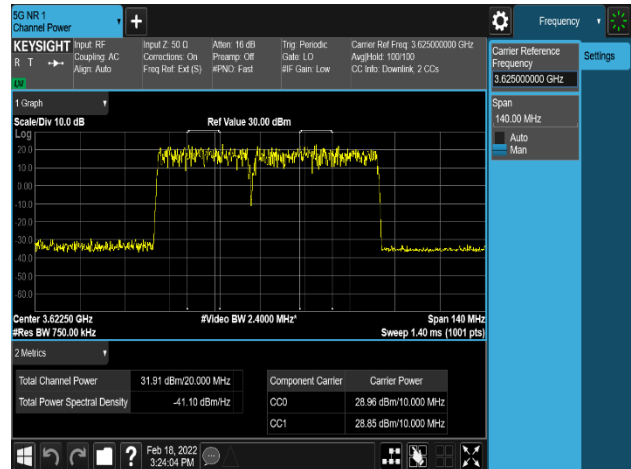
Plot 8-157. Equivalent Isotropic Radiated Power Plot (NR_n48_2C_20M+40M_256QAM – Low Channel, Port 2)



Plot 8-158. Equivalent Isotropic Radiated Power Plot (NR_n48_2C_20M+40M_256QAM – Low Channel, Port 3)



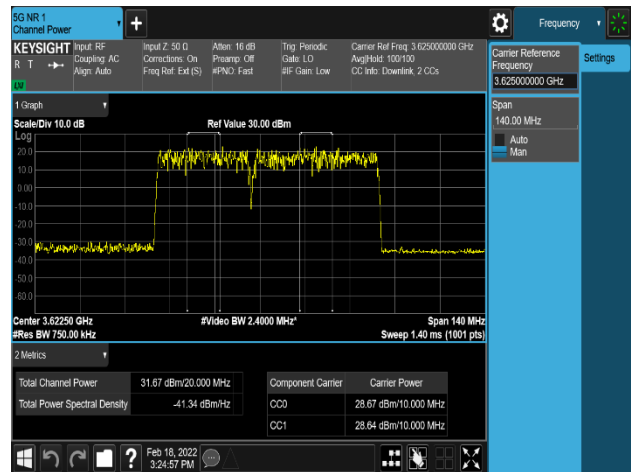
Plot 8-159. Equivalent Isotropic Radiated Power Plot (NR_n48_2C_30M+40M_QPSK – Mid Channel, Port 0)



Plot 8-160. Equivalent Isotropic Radiated Power Plot (NR_n48_2C_30M+40M_QPSK – Mid Channel, Port 1)

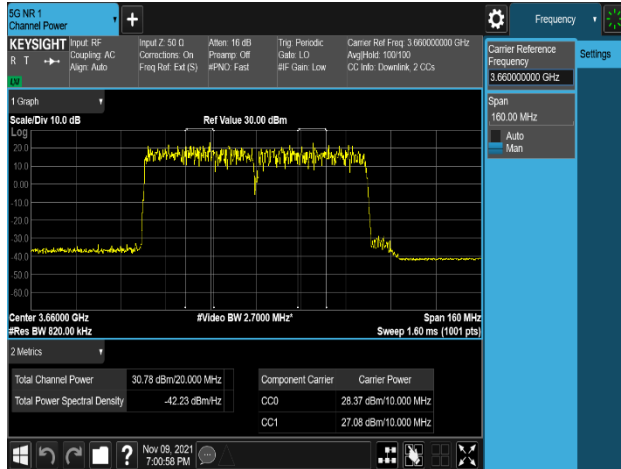


Plot 8-161. Equivalent Isotropic Radiated Power Plot (NR_n48_2C_30M+40M_QPSK – Mid Channel, Port 2)

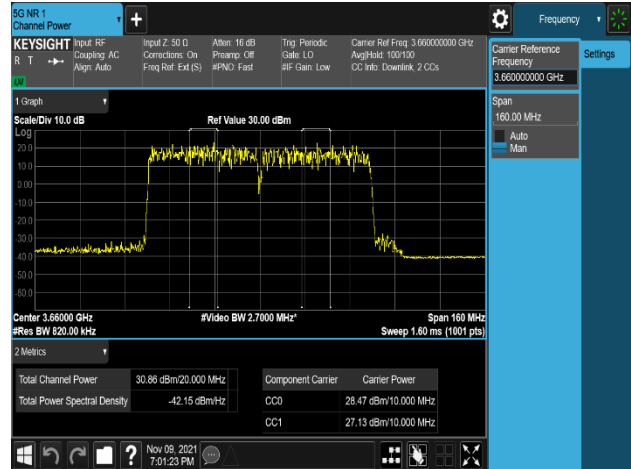


Plot 8-162. Equivalent Isotropic Radiated Power Plot (NR_n48_2C_30M+40M_QPSK – Mid Channel, Port 3)

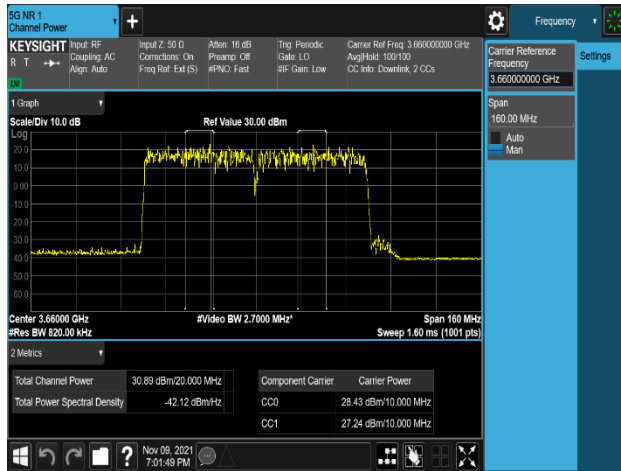
FCC: A3LRT4401-48A		MEASUREMENT REPORT (Class II Permissive Change)		Approved by: Technical Manager
Test Report S/N: BK21101307-R4.A3L	Test Dates: 10/15/2021 – 03/14/2022	EUT Type: RRU(RT4401)	Page 85 of 174	



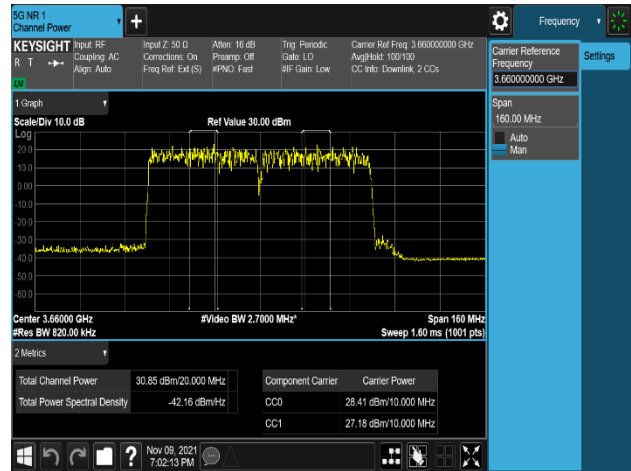
Plot 8-163. Equivalent Isotropic Radiated Power Plot (NR_n48_2C_40M+40M_64QAM – High Channel, Port 0)



Plot 8-164. Equivalent Isotropic Radiated Power Plot (NR_n48_2C_40M+40M_64QAM – High Channel, Port 1)



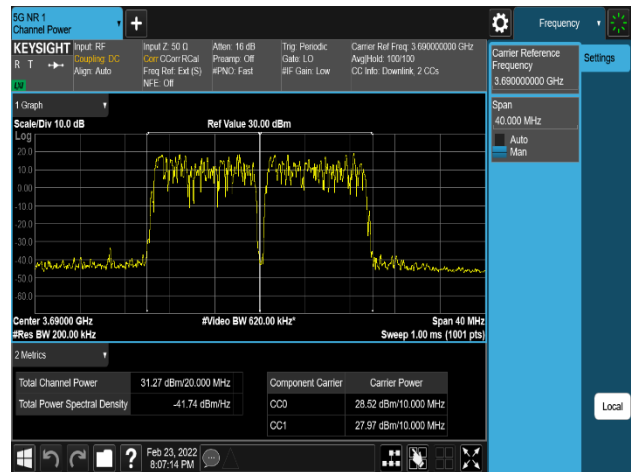
Plot 8-165. Equivalent Isotropic Radiated Power Plot (NR_n48_2C_40M+40M_64QAM – High Channel, Port 2)



Plot 8-166. Equivalent Isotropic Radiated Power Plot (NR_n48_2C_40M+40M_64QAM – High Channel, Port 3)

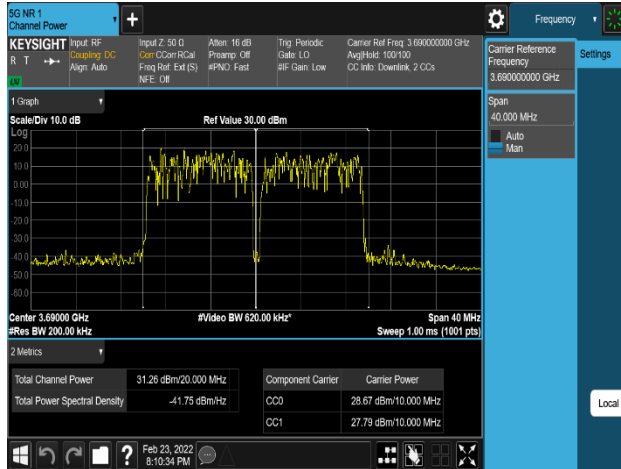


Plot 8-167. Equivalent Isotropic Radiated Power Plot (LTE_1C+NR_1C_10M+10M_QPSK - High Channel, Port 0)

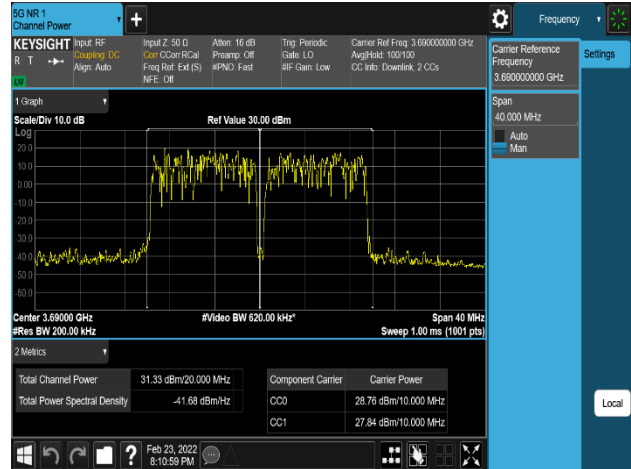


Plot 8-168. Equivalent Isotropic Radiated Power Plot (LTE_1C+NR_1C_10M+10M_QPSK - High Channel, Port 1)

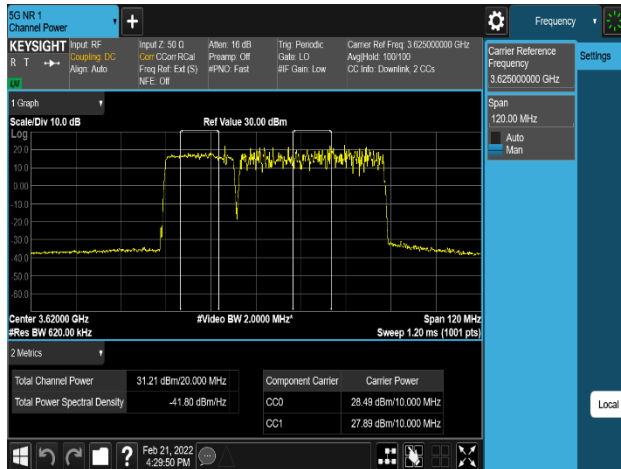
FCC: A3LRT4401-48A		MEASUREMENT REPORT (Class II Permissive Change)		Approved by: Technical Manager
Test Report S/N: BK21101307-R4.A3L				Test Dates: 10/15/2021 – 03/14/2022



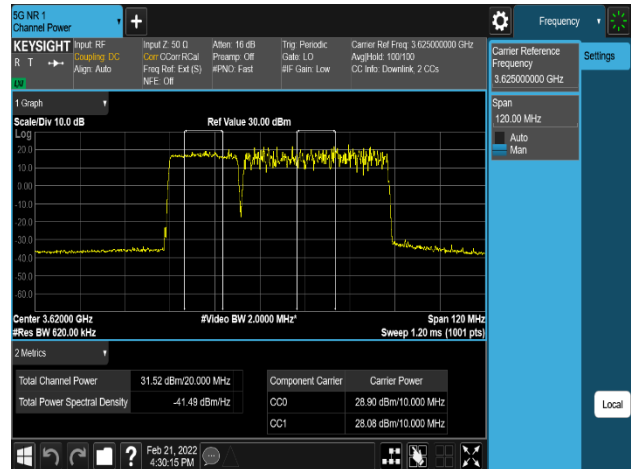
Plot 8-169. Equivalent Isotropic Radiated Power Plot (LTE_1C+NR_1C_10M+10M_QPSK - High Channel, Port 2)



Plot 8-170. Equivalent Isotropic Radiated Power Plot (LTE_1C+NR_1C_10M+10M_QPSK - High Channel, Port 3)



Plot 8-171. Equivalent Isotropic Radiated Power Plot (LTE_1C+NR_1C_20M+40M_QPSK - High Channel, Port 0)



Plot 8-172. Equivalent Isotropic Radiated Power Plot (LTE_1C+NR_1C_20M+40M_QPSK - High Channel, Port 1)



Plot 8-173. Equivalent Isotropic Radiated Power Plot (LTE_1C+NR_1C_20M+40M_QPSK - High Channel, Port 2)

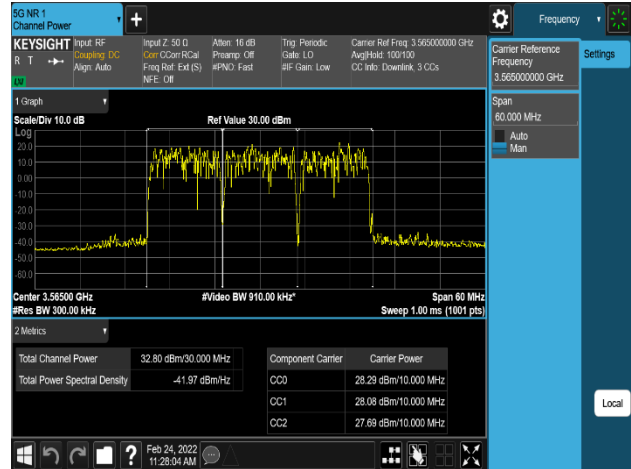


Plot 8-174. Equivalent Isotropic Radiated Power Plot (LTE_1C+NR_1C_20M+40M_QPSK - High Channel, Port 3)

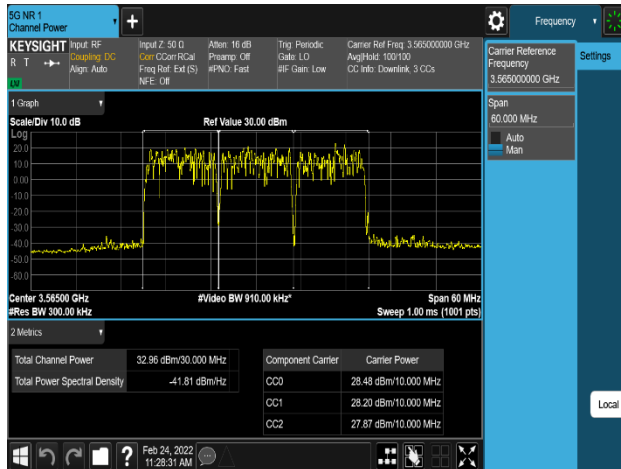
FCC: A3LRT4401-48A		MEASUREMENT REPORT (Class II Permissive Change)		Approved by: Technical Manager
Test Report S/N: BK21101307-R4.A3L	Test Dates: 10/15/2021 – 03/14/2022	EUT Type: RRU(RT4401)		Page 87 of 174



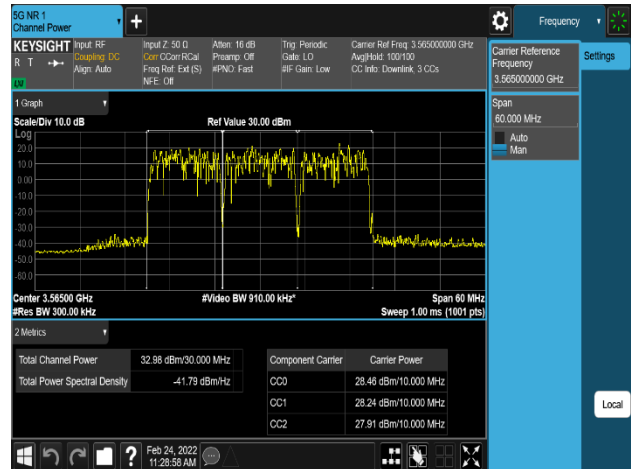
Plot 8-175. Equivalent Isotropic Radiated Power Plot (LTE_2C+NR_1C_10M+10M+10M_64QAM-Low Channel, Port 0)



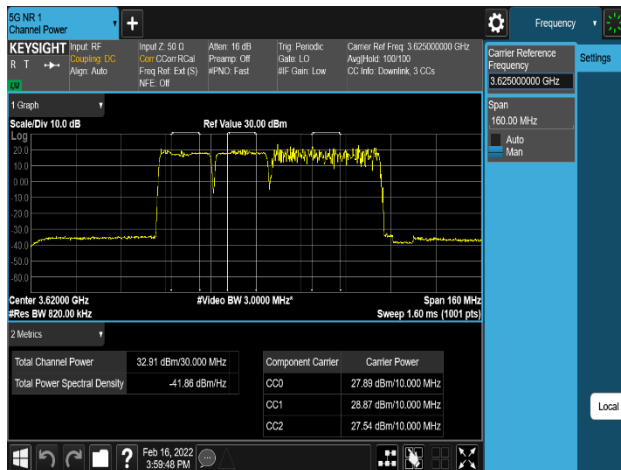
Plot 8-176. Equivalent Isotropic Radiated Power Plot (LTE_2C+NR_1C_10M+10M+10M_64QAM-Low Channel, Port 1)



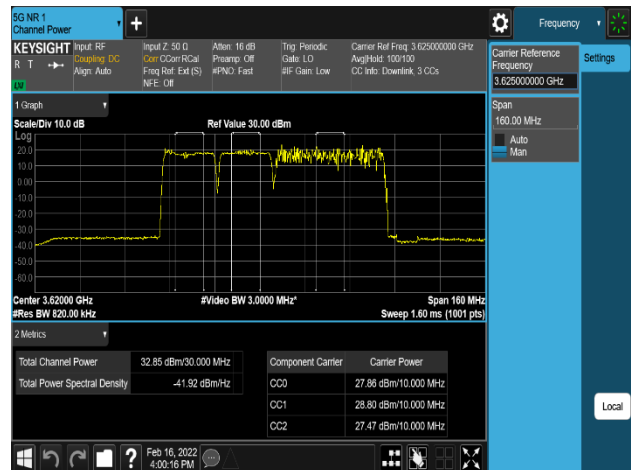
Plot 8-177. Equivalent Isotropic Radiated Power Plot (LTE_2C+NR_1C_10M+10M+10M_64QAM-Low Channel, Port 2)





Plot 8-178. Equivalent Isotropic Radiated Power Plot (LTE_2C+NR_1C_10M+10M+10M_64QAM-Low Channel, Port 3)

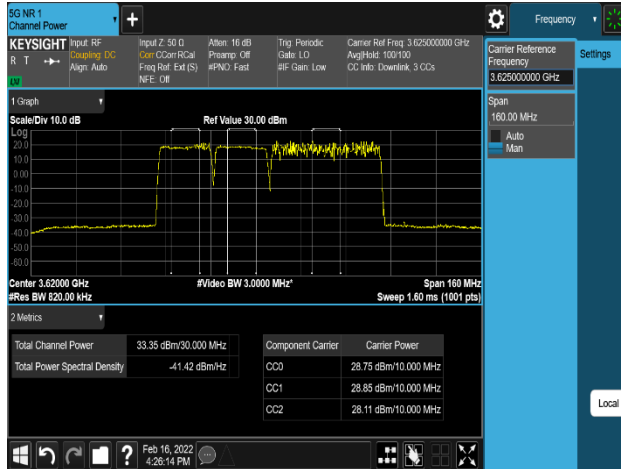


Plot 8-179. Equivalent Isotropic Radiated Power Plot (LTE_2C+NR_1C_20M+20M+40M_16QAM-Mid Channel, Port 0)

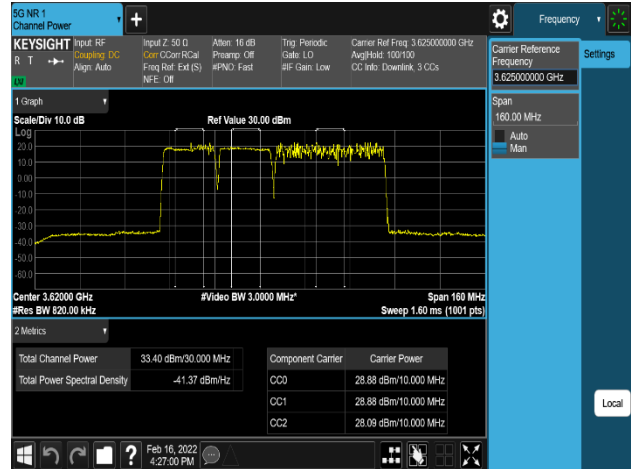


Plot 8-180. Equivalent Isotropic Radiated Power Plot (LTE_2C+NR_1C_20M+20M+40M_16QAM-Mid Channel, Port 1)

FCC: A3LRT4401-48A		MEASUREMENT REPORT (Class II Permissive Change)		Approved by: Technical Manager
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Plot 8-181. Equivalent Isotropic Radiated Power Plot
(LTE_2C+NR_1C_20M+20M+40M_16QAM-Mid Channel, Port 2)



Plot 8-182. Equivalent Isotropic Radiated Power Plot
(LTE_2C+NR_1C_20M+20M+40M_16QAM-Mid Channel, Port 3)

FCC: A3LRT4401-48A		MEASUREMENT REPORT (Class II Permissive Change)		Approved by: Technical Manager
Test Report S/N: 8K21101307-R4.A3L	Test Dates: 10/15/2021 – 03/14/2022	EUT Type: RRU(RT4401)		Page 89 of 174

8.6 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

ANSI C63.26 - Section 5.2.3.4.
KDB 971168 D01 v03r01 - Section 5.7

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. 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.

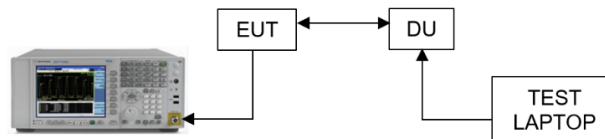




Figure 8-5. Test Instrument & Measurement Setup

Limit

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

Test Notes

For multi carriers configuration, the QAM modulation worst case were found while operating with 16QAM mode and only the worst case data were reported.



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Channel	Port	PAPR (dB)				Limit (dB)
		QPSK	16QAM	64QAM	256QAM	
Low	0	8.43	9.13	8.54	8.47	< 13
	1	8.48	9.12	8.58	8.20	< 13
	2	8.56	9.15	8.54	8.42	< 13
	3	8.44	9.07	8.56	8.47	< 13
Middle	0	8.64	9.14	8.52	8.15	< 13
	1	8.56	9.27	8.61	8.35	< 13
	2	8.45	9.28	8.66	8.39	< 13
	3	8.60	9.33	8.47	8.43	< 13
High	0	8.56	9.25	8.73	8.33	< 13
	1	8.13	9.26	8.70	8.31	< 13
	2	8.53	9.09	8.73	8.49	< 13
	3	8.50	9.06	8.42	8.41	< 13

Table 8-43. Peak To Average Power Ratio Summary Data (NR_n48_1C_10M)

Channel	Port	PAPR (dB)				Limit (dB)
		QPSK	16QAM	64QAM	256QAM	
Low	0	8.25	8.32	8.24	8.26	< 13
	1	8.16	8.21	8.20	8.18	< 13
	2	8.17	8.34	8.22	8.16	< 13
	3	8.21	8.56	8.27	8.18	< 13
Middle	0	8.34	8.52	8.30	8.44	< 13
	1	8.28	8.20	8.35	8.34	< 13
	2	8.27	8.45	8.27	8.54	< 13
	3	8.28	8.42	8.30	8.65	< 13
High	0	8.42	8.42	8.48	8.68	< 13
	1	8.33	8.43	8.48	8.67	< 13
	2	8.32	8.40	8.48	8.71	< 13
	3	8.39	8.38	8.49	8.69	< 13

Table 8-44. Peak To Average Power Ratio Summary Data (NR_n48_1C_20M)

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Channel	Port	PAPR (dB)				Limit (dB)
		QPSK	16QAM	64QAM	256QAM	
Low	0	8.28	8.29	8.18	8.46	< 13
	1	8.27	8.44	8.13	8.46	< 13
	2	8.32	8.29	8.24	8.48	< 13
	3	8.29	8.27	8.15	8.27	< 13
Middle	0	8.22	8.23	8.18	8.25	< 13
	1	8.29	8.29	8.19	8.43	< 13
	2	8.30	8.43	8.21	8.26	< 13
	3	8.22	8.26	8.21	8.28	< 13
High	0	8.18	8.22	8.21	8.26	< 13
	1	8.26	8.15	8.21	8.27	< 13
	2	8.26	8.11	8.18	8.24	< 13
	3	8.19	8.27	8.22	8.26	< 13

Table 8-45. Peak To Average Power Ratio Summary Data (NR_n48_1C_30M)

Channel	Port	PAPR (dB)				Limit (dB)
		QPSK	16QAM	64QAM	256QAM	
Low	0	8.40	8.26	8.29	8.25	< 13
	1	8.27	8.25	8.25	8.25	< 13
	2	8.38	8.24	8.29	8.29	< 13
	3	8.25	8.21	8.26	8.32	< 13
Middle	0	8.32	8.22	8.24	8.24	< 13
	1	8.30	8.22	8.19	8.22	< 13
	2	8.29	8.25	8.27	8.20	< 13
	3	8.37	8.23	8.28	8.24	< 13
High	0	8.31	8.29	8.42	8.19	< 13
	1	8.33	8.27	8.26	8.30	< 13
	2	8.41	8.29	8.23	8.23	< 13
	3	8.39	8.30	8.19	8.19	< 13

Table 8-46. Peak To Average Power Ratio Summary Data (NR_n48_1C_40M)

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Configuration	PAPR (dB)		Limit (dB)
	QPSK	16QAM	
LTE_2C_5M+5M	8.55	8.38	< 13

Table 8-47. Peak To Average Power Ratio Summary Data (LTE_B48_Multi Carrier)

Configuration	PAPR (dB)		Limit (dB)
	QPSK	16QAM	
NR_2C_10M+10M	8.25	8.53	< 13
NR_2C_10M+20M	8.39	8.07	< 13
NR_2C_10M+30M	7.78	7.78	< 13
NR_2C_20M+20M	8.31	8.37	< 13
NR_2C_10M+40M	7.81	7.79	< 13
NR_2C_20M+40M	7.80	7.81	< 13
NR_2C_30M+40M	7.80	7.81	< 13
NR_2C_40M+40M	8.21	8.24	< 13

Table 8-48. Peak To Average Power Ratio Summary Data (NR_n48_Multi Carrier)

Configuration	PAPR (dB)		Limit (dB)
	QPSK	16QAM	
LTE_1C_10M + NR_1C_10M	8.33	8.16	< 13
LTE_1C_20M + NR_1C_40M	7.82	7.82	< 13
LTE_2C_10M+10M + NR_1C_10M	8.36	8.24	< 13
LTE_2C_20M+20M + NR_1C_40M	7.83	7.86	< 13

Table 8-49. Peak To Average Power Ratio Summary Data (LTE_B48 + NR_n48_Multi-RAT)

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