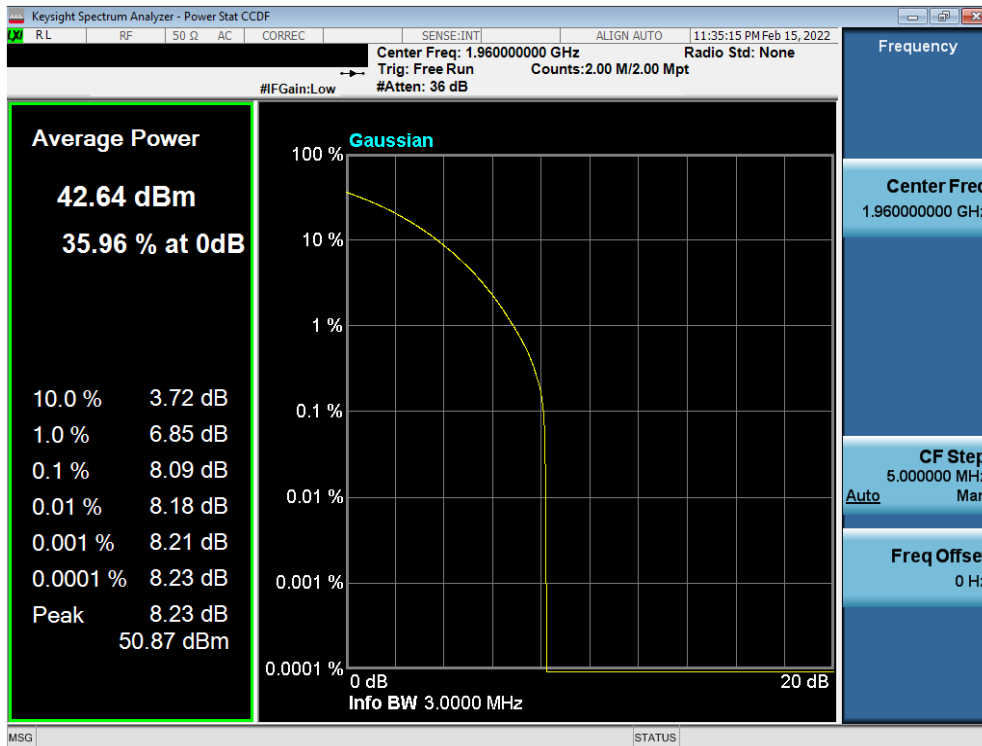
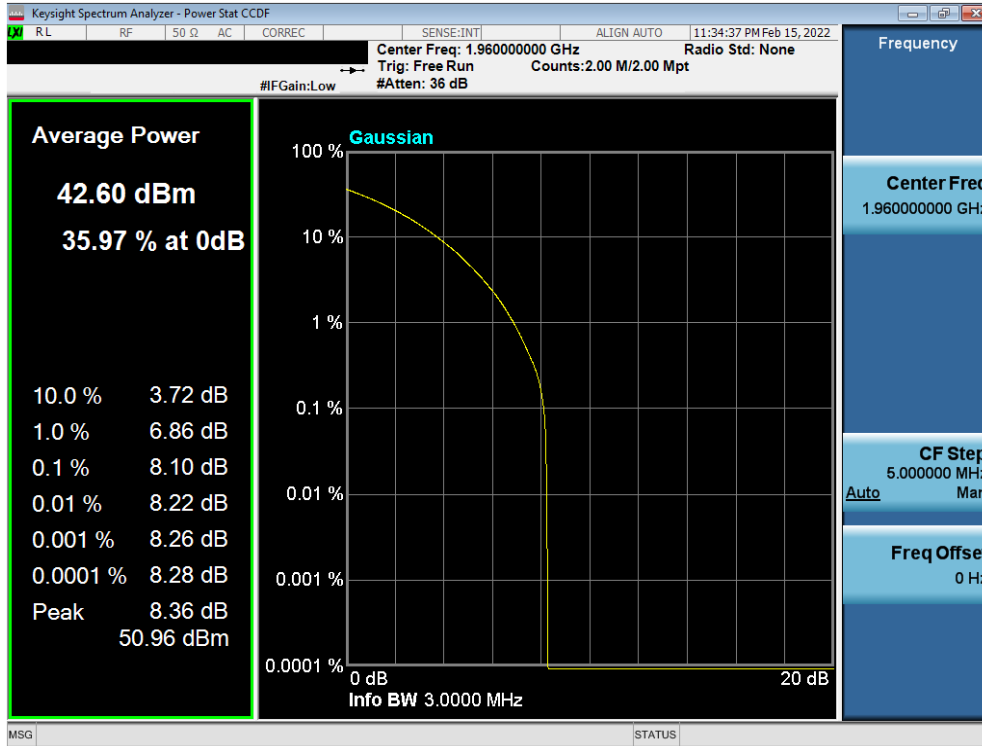


Plot 7-131. PAR Plot (LTE Band 2 - 3MHz QPSK - Full RB - Ant1)

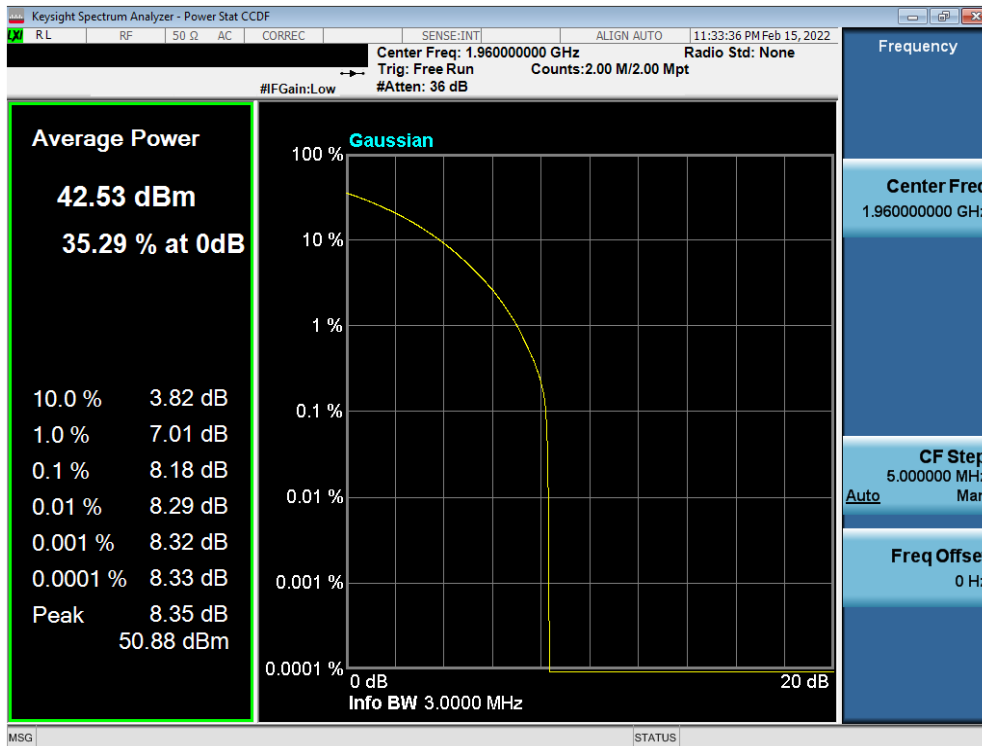


Plot 7-132. PAR Plot (LTE Band 2 - 3MHz 16-QAM - Full RB - Ant1)

FCC ID: QLJNIB-002	PART 24 MEASUREMENT REPORT		Approved by: Technical Manager
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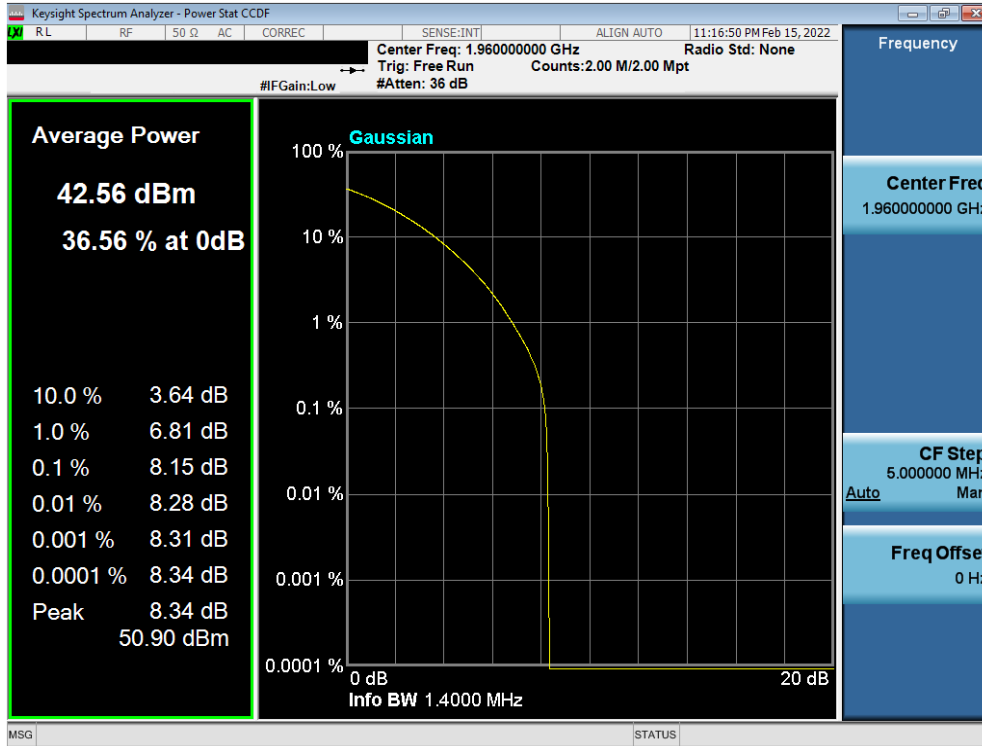


Plot 7-133. PAR Plot (LTE Band 2 - 3MHz 64-QAM - Full RB - Ant1)

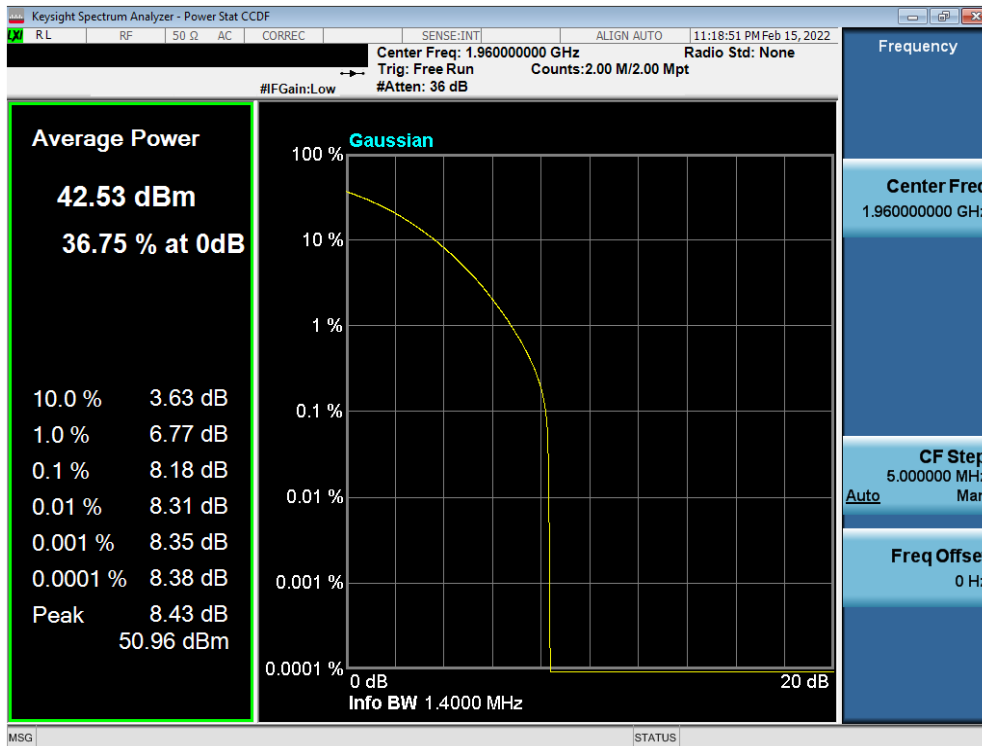


Plot 7-134. PAR Plot (LTE Band 2 - 3MHz 256-QAM - Full RB - Ant1)

FCC ID: QLJNIB-002	PART 24 MEASUREMENT REPORT		Approved by: Technical Manager
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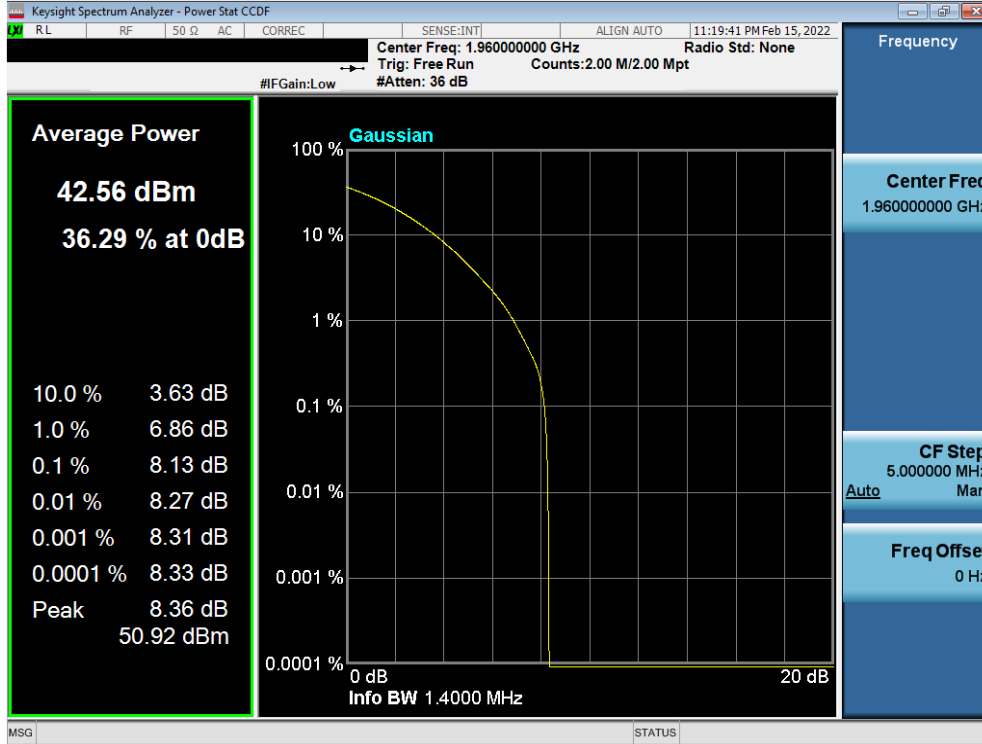


Plot 7-135. PAR Plot (LTE Band 2 - 1.4MHz QPSK - Full RB - Ant1)

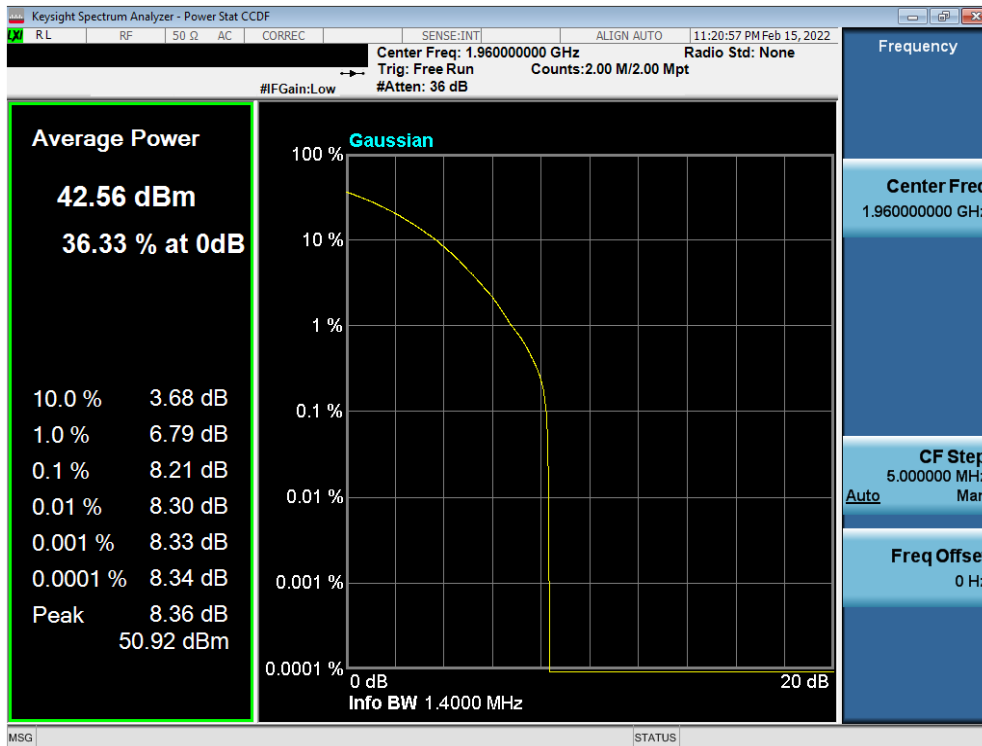


Plot 7-136. PAR Plot (LTE Band 2 - 1.4MHz 16-QAM - Full RB - Ant1)

FCC ID: QLJNIB-002	PART 24 MEASUREMENT REPORT		Approved by: Technical Manager
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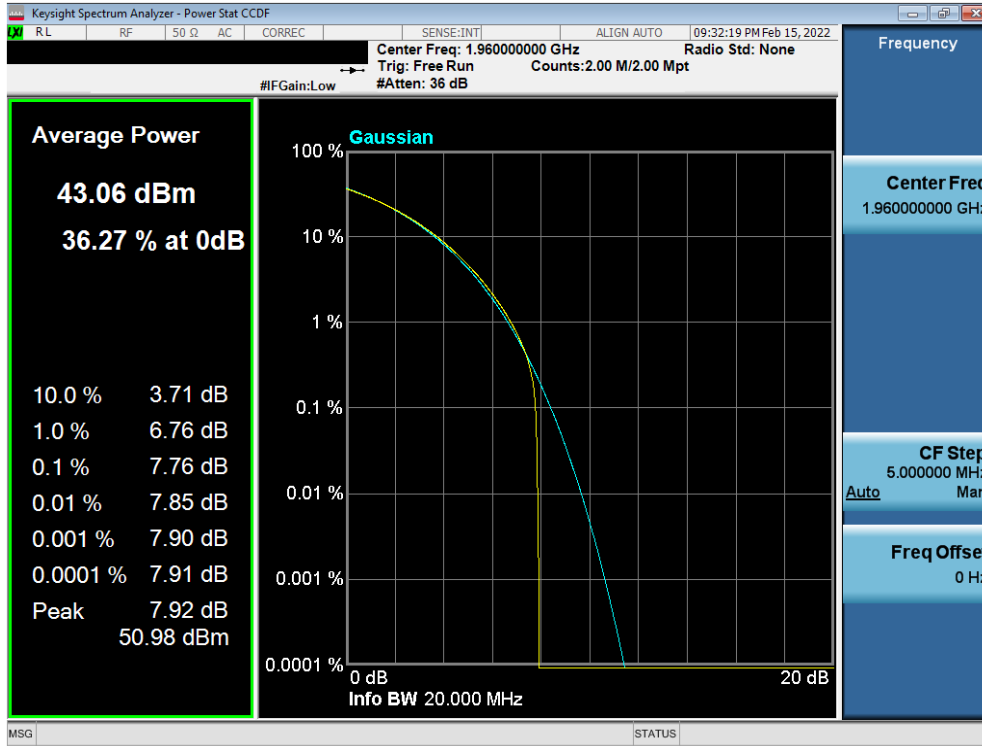
Plot 7-137. PAR Plot (LTE Band 2 - 1.4MHz 64-QAM - Full RB - Ant1)



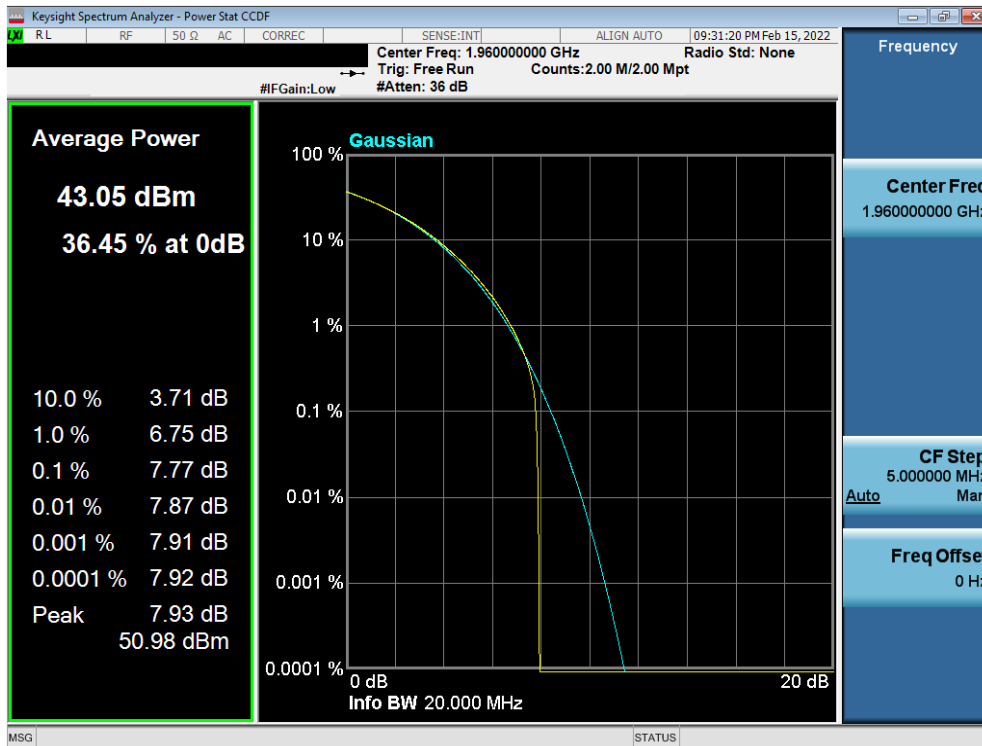
Plot 7-138. PAR Plot (LTE Band 2 - 1.4MHz 256-QAM - Full RB - Ant1)

FCC ID: QLJNIB-002	PART 24 MEASUREMENT REPORT		Approved by: Technical Manager
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LTE Band 2 – Ant2

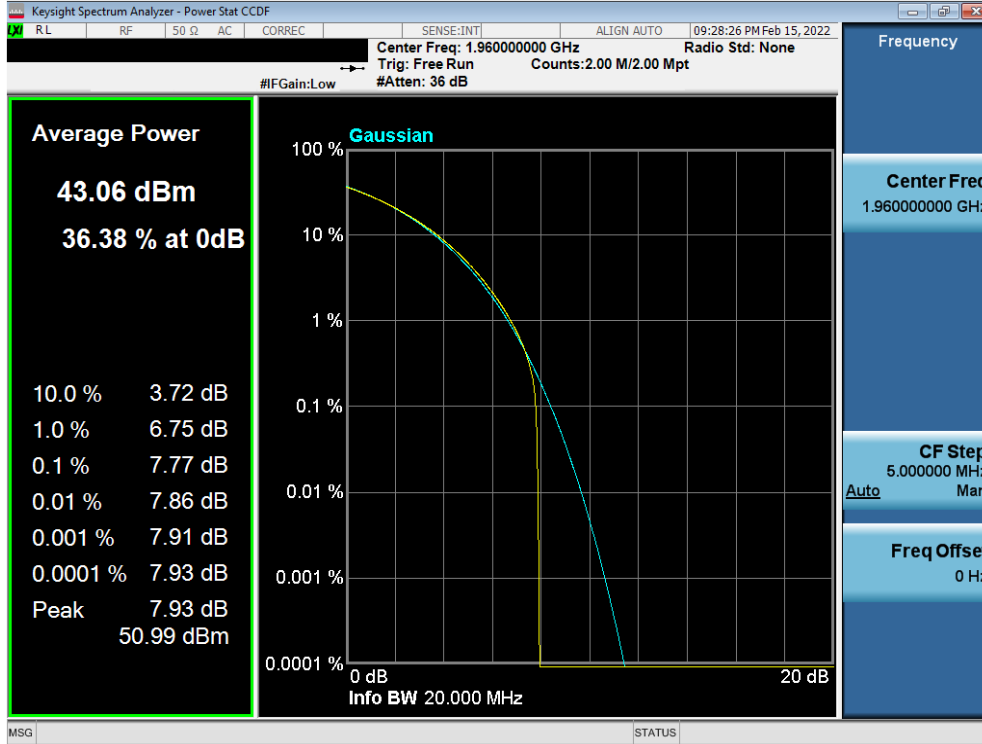


Plot 7-139. PAR Plot (LTE Band 2 - 20MHz QPSK - Full RB - Ant2)

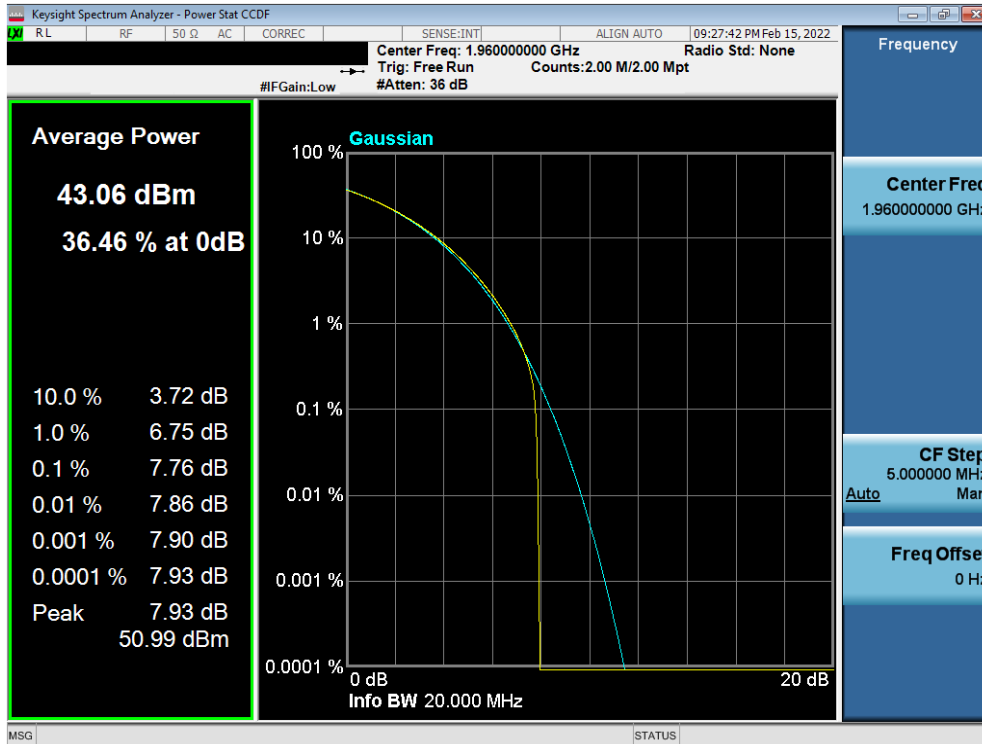


Plot 7-140. PAR Plot (LTE Band 2 - 20MHz 16-QAM - Full RB - Ant2)

FCC ID: QLJNIB-002		PART 24 MEASUREMENT REPORT		Approved by: Technical Manager
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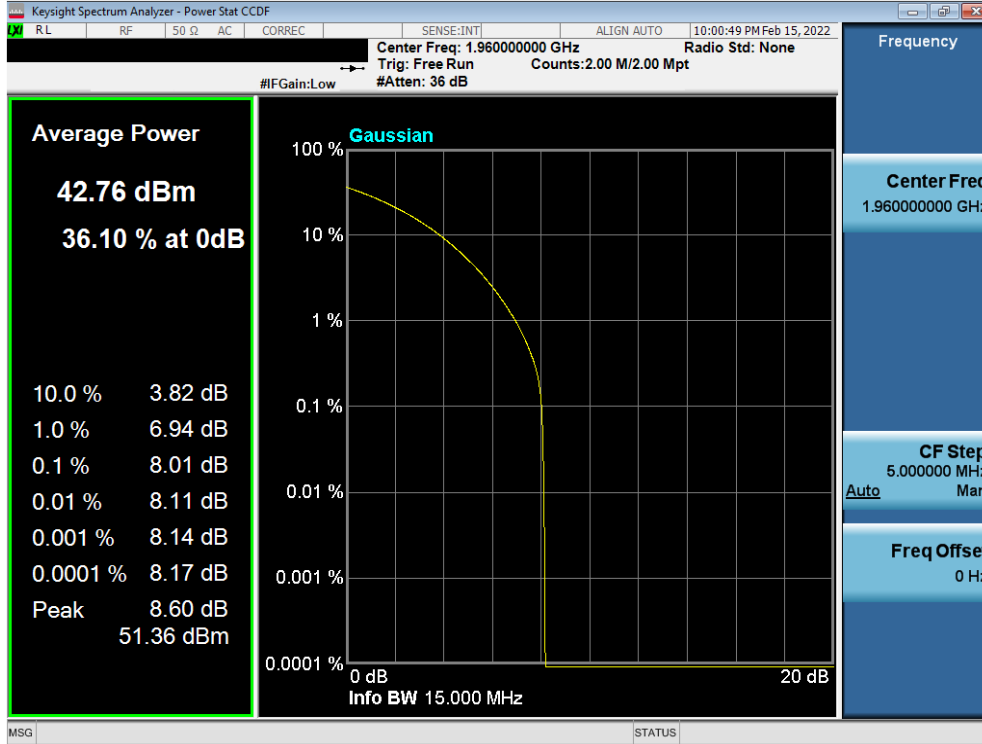


Plot 7-141. PAR Plot (LTE Band 2 - 20MHz 64-QAM - Full RB - Ant2)

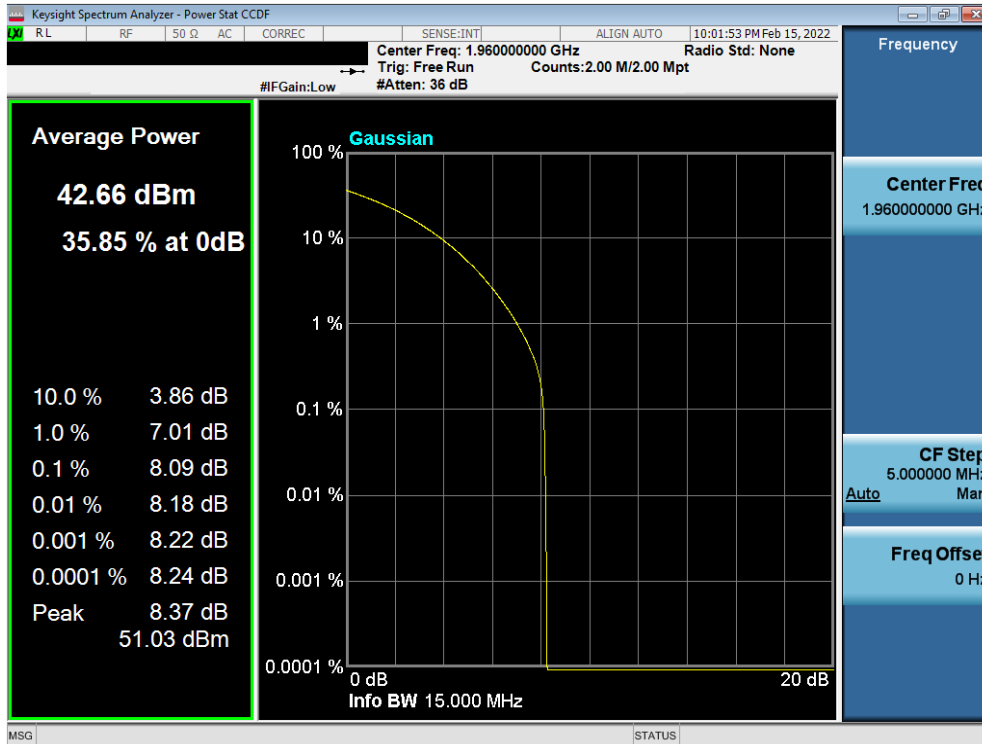


Plot 7-142. PAR Plot (LTE Band 2 - 20MHz 256-QAM - Full RB - Ant2)

FCC ID: QLJNIB-002	PART 24 MEASUREMENT REPORT		Approved by: Technical Manager
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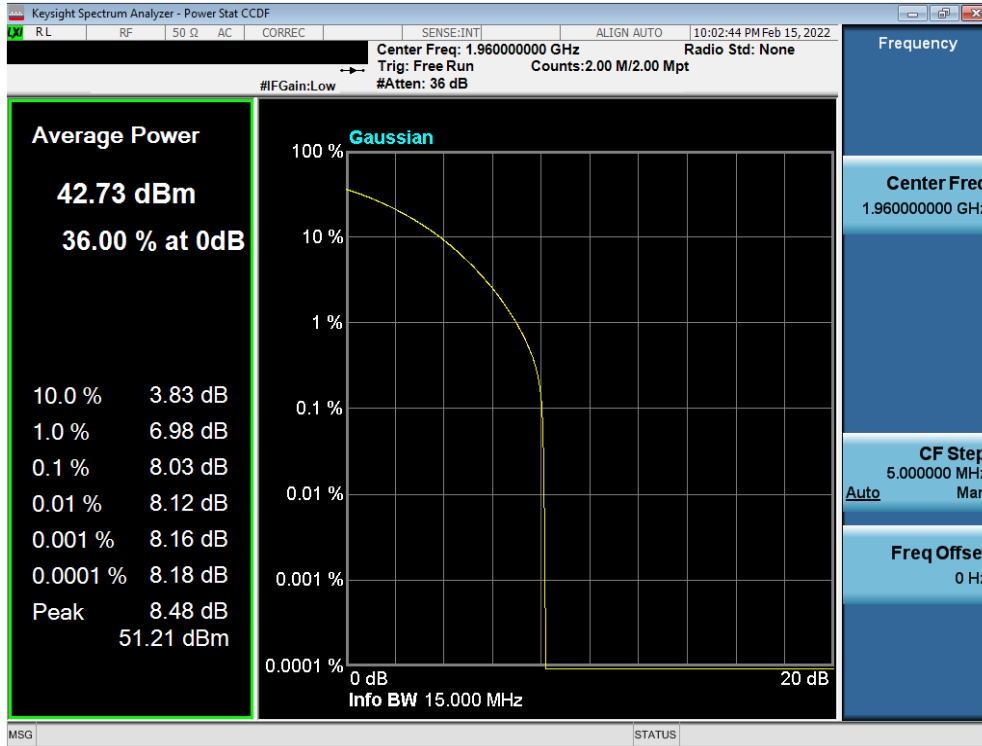


Plot 7-143. PAR Plot (LTE Band 2 - 15MHz QPSK - Full RB - Ant2)

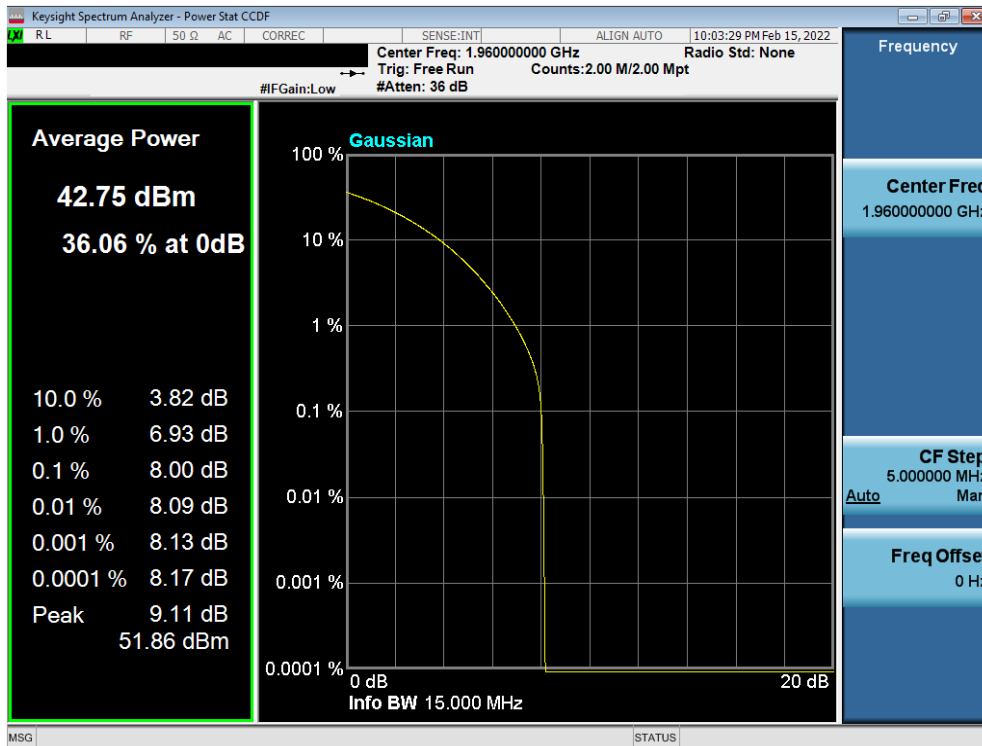


Plot 7-144. PAR Plot (LTE Band 2 - 15MHz 16-QAM - Full RB - Ant2)

FCC ID: QLJNIB-002	PART 24 MEASUREMENT REPORT		Approved by: Technical Manager
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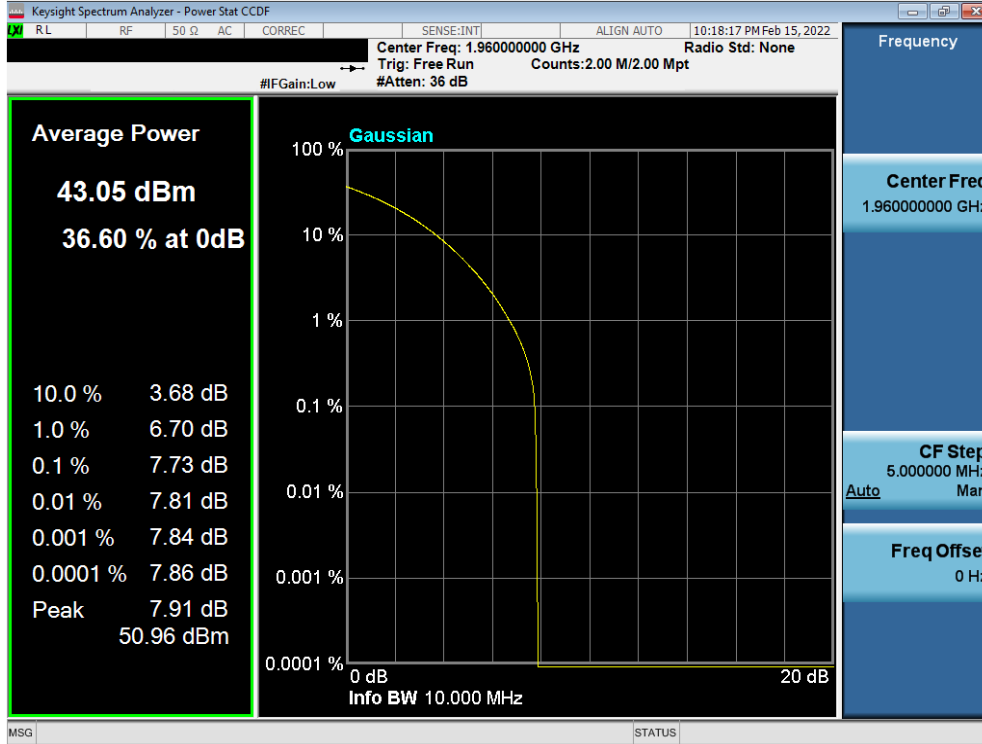


Plot 7-145. PAR Plot (LTE Band 2 - 15MHz 64-QAM - Full RB - Ant2)

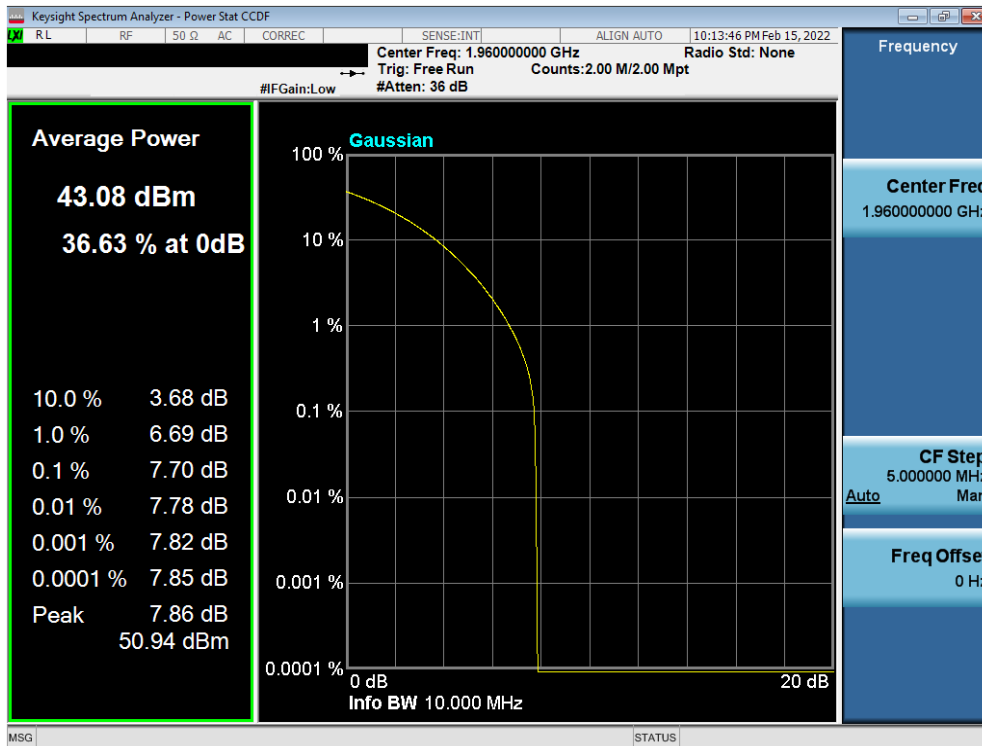


Plot 7-146. PAR Plot (LTE Band 2 - 15MHz 256-QAM - Full RB - Ant2)

FCC ID: QLJNIB-002	PART 24 MEASUREMENT REPORT		Approved by: Technical Manager
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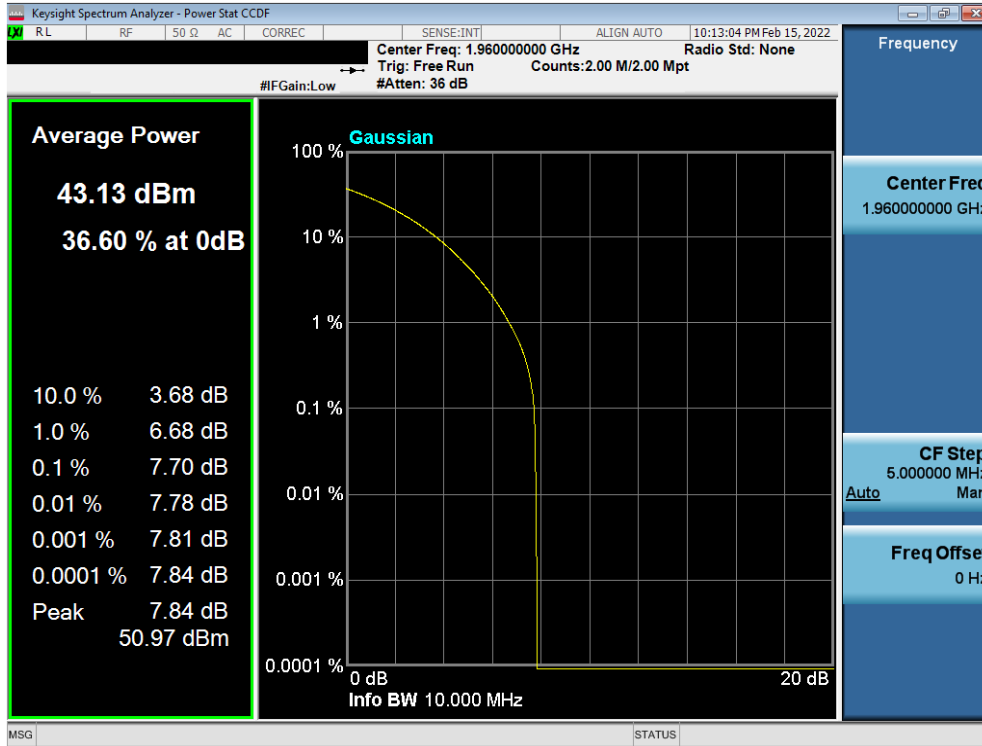


Plot 7-147. PAR Plot (LTE Band 2 - 10MHz QPSK - Full RB - Ant2)

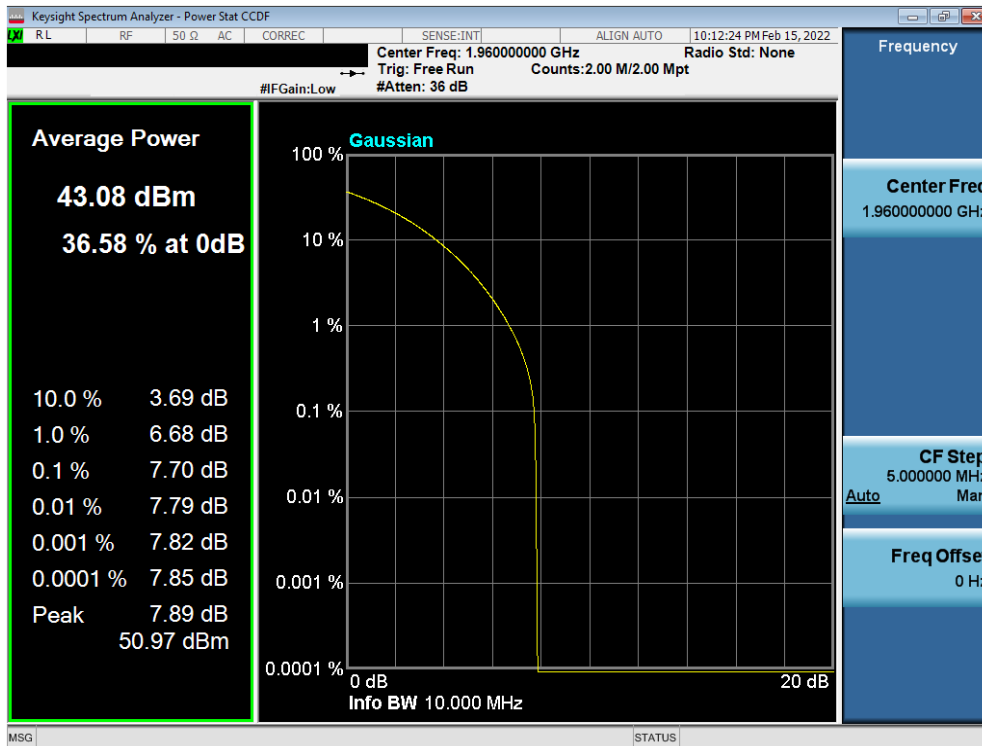


Plot 7-148. PAR Plot (LTE Band 2 - 10MHz 16-QAM - Full RB - Ant2)

FCC ID: QLJNIB-002	PART 24 MEASUREMENT REPORT		Approved by: Technical Manager
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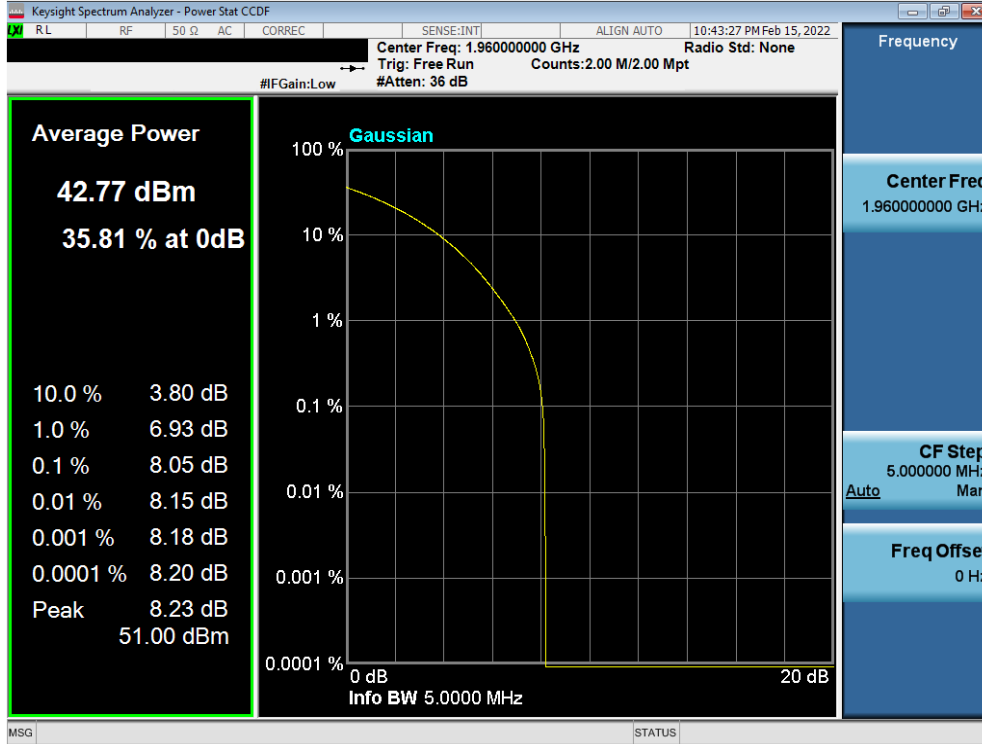


Plot 7-149. PAR Plot (LTE Band 2 - 10MHz 64-QAM - Full RB - Ant2)

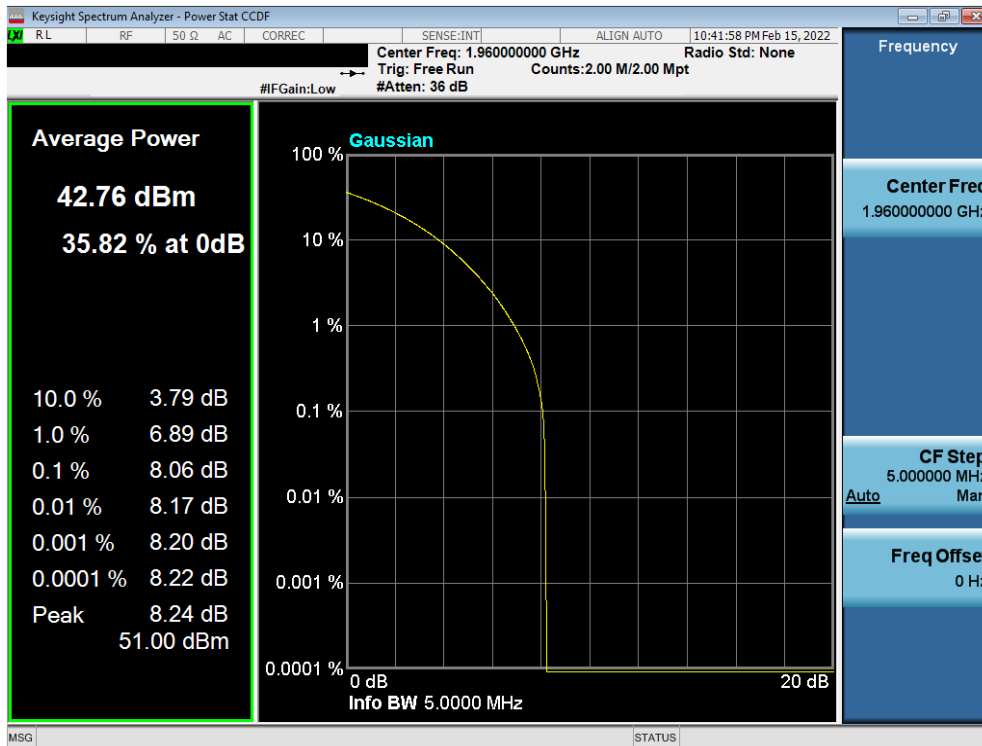


Plot 7-150. PAR Plot (LTE Band 2 - 10MHz 256-QAM - Full RB - Ant2)

FCC ID: QLJNIB-002	PART 24 MEASUREMENT REPORT		Approved by: Technical Manager
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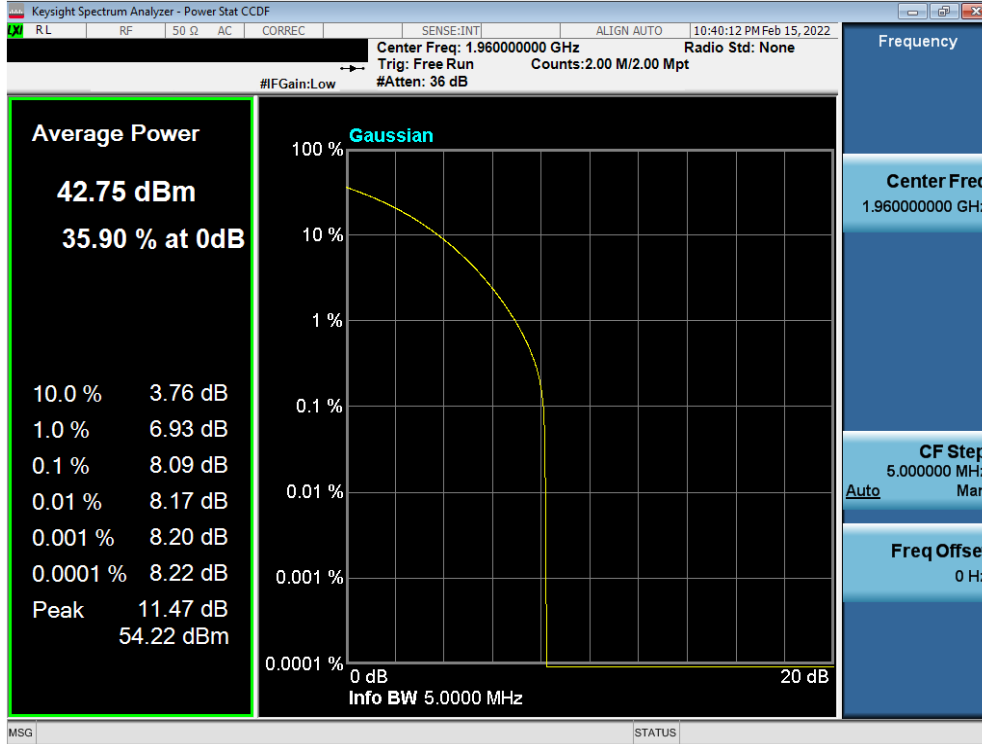


Plot 7-151. PAR Plot (LTE Band 2 - 5MHz QPSK - Full RB - Ant2)

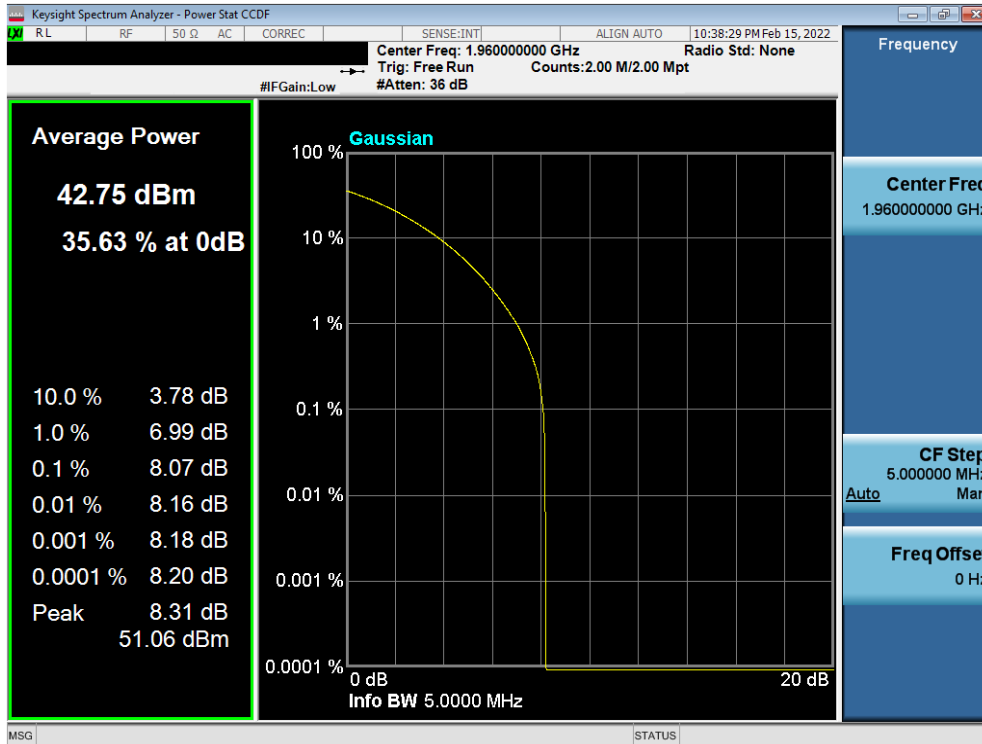


Plot 7-152. PAR Plot (LTE Band 2 - 5MHz 16-QAM - Full RB - Ant2)

FCC ID: QLJNIB-002	PART 24 MEASUREMENT REPORT		Approved by: Technical Manager
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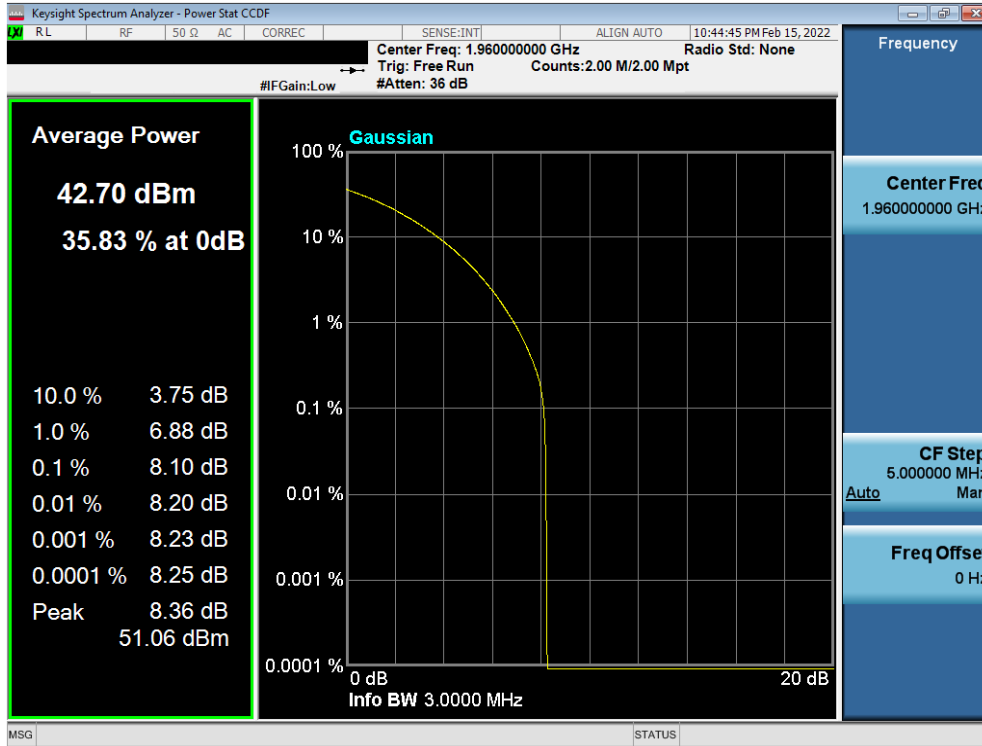


Plot 7-153. PAR Plot (LTE Band 2 - 5MHz 64-QAM - Full RB - Ant2)

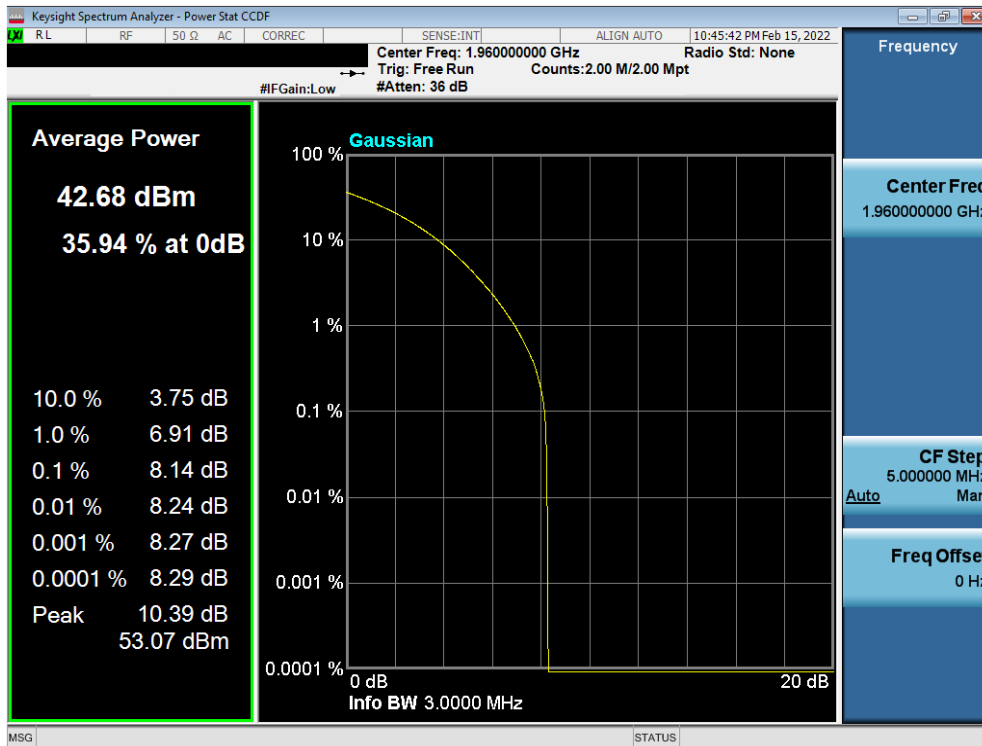


Plot 7-154. PAR Plot (LTE Band 2 - 5MHz 256-QAM - Full RB - Ant2)

FCC ID: QLJNIB-002	PART 24 MEASUREMENT REPORT		Approved by: Technical Manager
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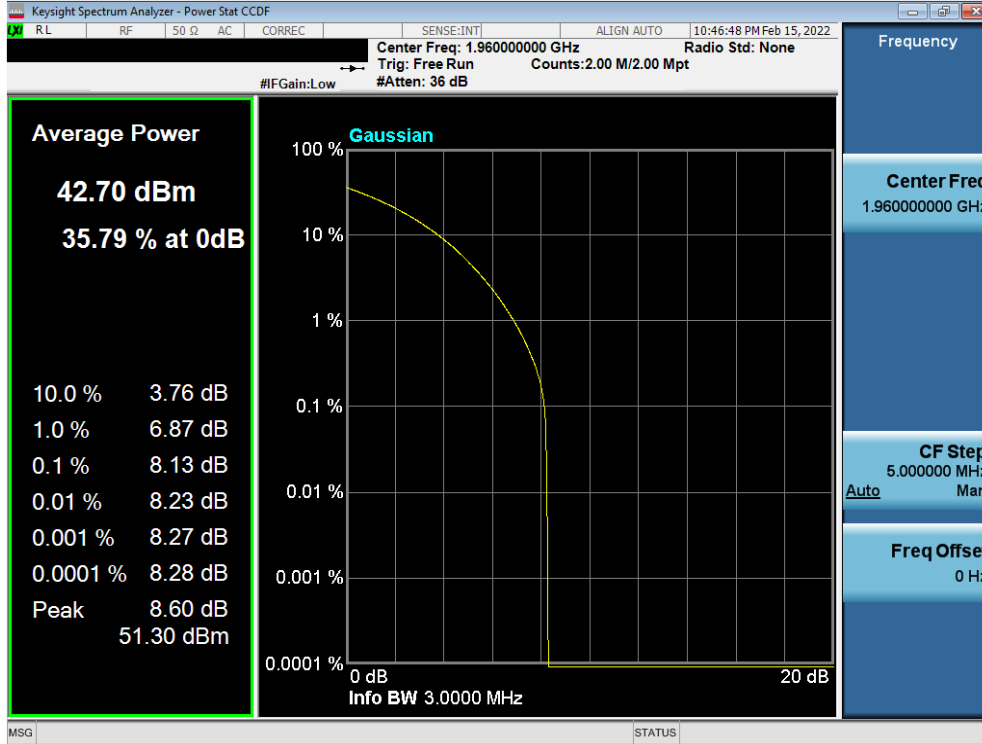


Plot 7-155. PAR Plot (LTE Band 2 - 3MHz QPSK - Full RB - Ant2)

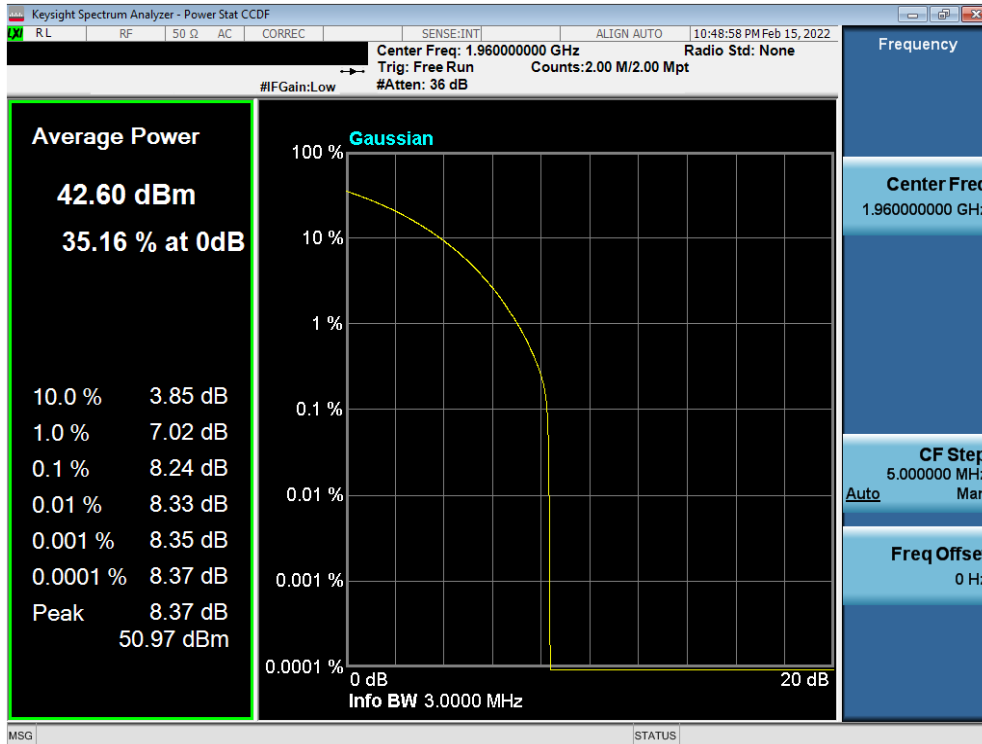


Plot 7-156. PAR Plot (LTE Band 2 - 3MHz 16-QAM - Full RB - Ant2)

FCC ID: QLJNIB-002	PART 24 MEASUREMENT REPORT		Approved by: Technical Manager
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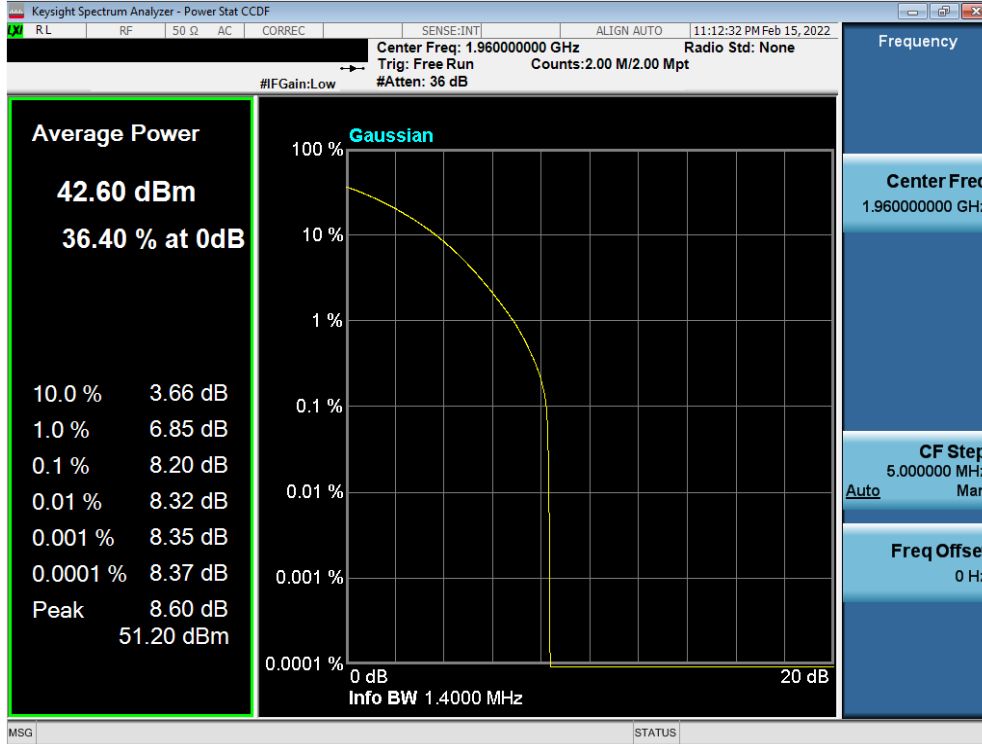


Plot 7-157. PAR Plot (LTE Band 2 - 3MHz 64-QAM - Full RB - Ant2)

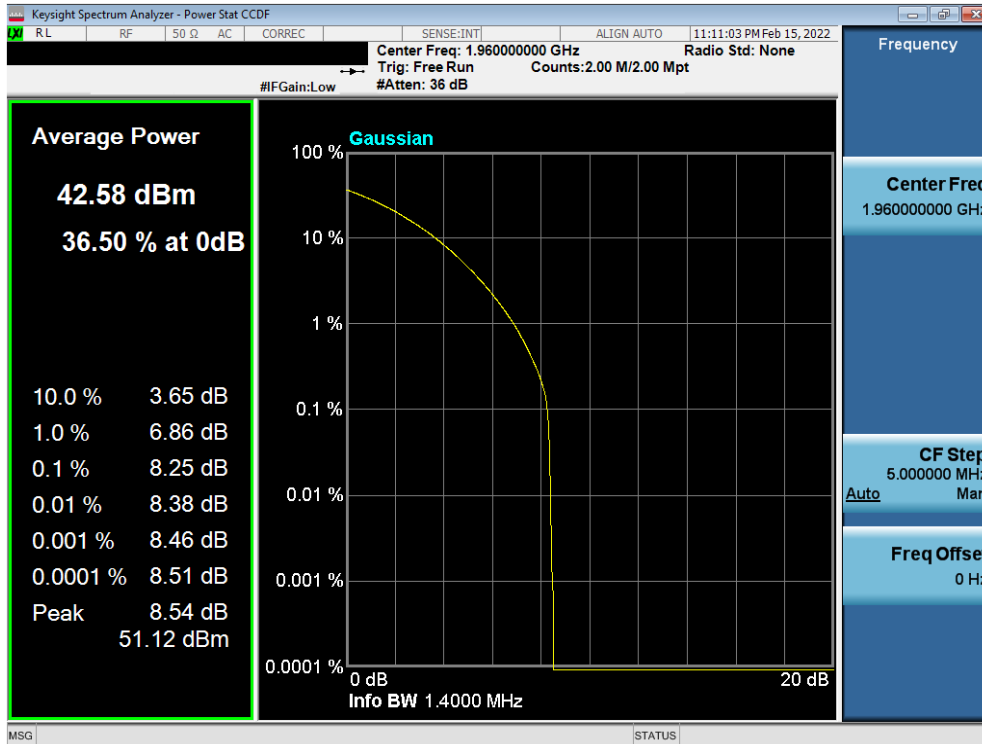


Plot 7-158. PAR Plot (LTE Band 2 - 3MHz 256-QAM - Full RB - Ant2)

FCC ID: QLJNIB-002	PART 24 MEASUREMENT REPORT		Approved by: Technical Manager
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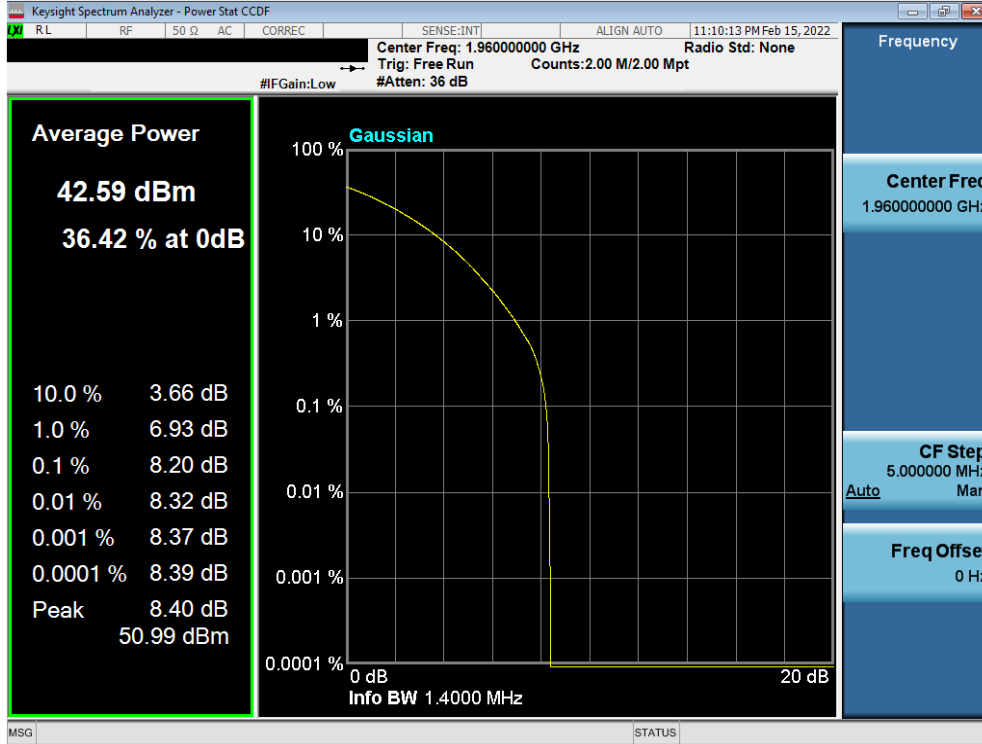


Plot 7-159. PAR Plot (LTE Band 2 - 1.4MHz QPSK - Full RB - Ant2)

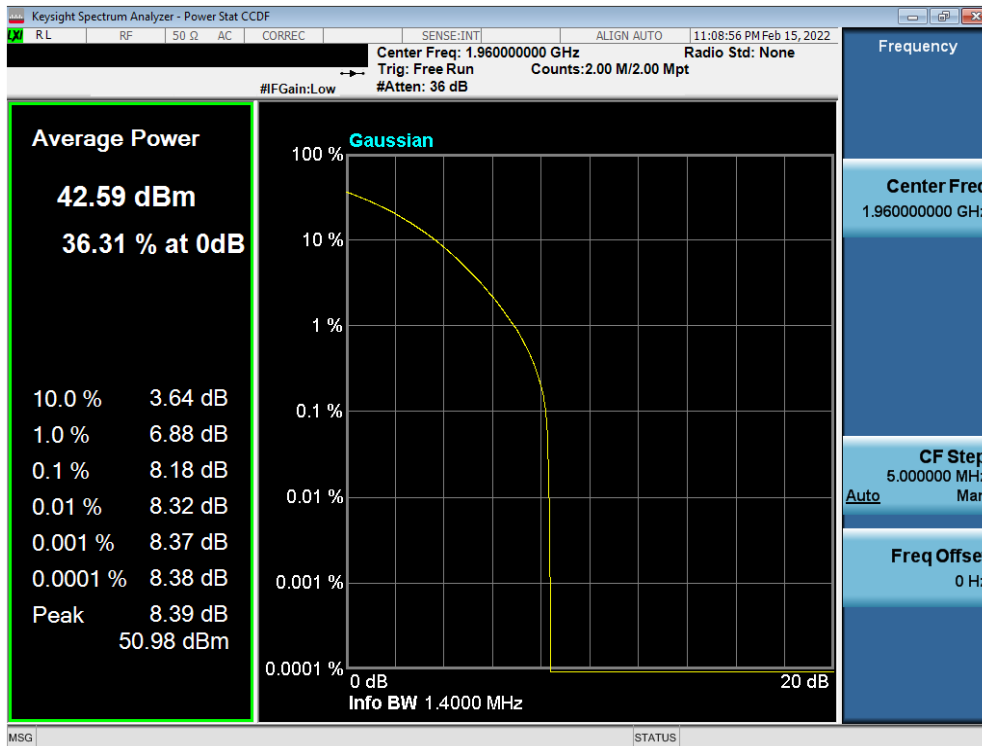


Plot 7-160. PAR Plot (LTE Band 2 - 1.4MHz 16-QAM - Full RB - Ant2)

FCC ID: QLJNIB-002	PART 24 MEASUREMENT REPORT		Approved by: Technical Manager
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Plot 7-161. PAR Plot (LTE Band 2 - 1.4MHz 64-QAM - Full RB - Ant2)



Plot 7-162. PAR Plot (LTE Band 2 - 1.4MHz 256-QAM - Full RB - Ant2)

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7.7 Radiated Spurious Emissions Measurements

Test Overview

Radiated spurious emissions measurements are performed using the field strength conversion method described in KDB 971168 with the EUT transmitting into a 50Ω termination on each antenna port. Measurements on signals operating below 1GHz are performed using a hybrid antenna. Measurements on signals operating above 1GHz are performed using vertically and horizontally polarized broadband horn antennas. All measurements are performed as RMS measurements while the EUT is operating at maximum power, and at the appropriate frequencies.

Test Procedures Used

KDB 971168 D01 v03r01 – Section 5.8

Test Settings

1. RBW = 100kHz for emissions below 1GHz and 1MHz for emissions above 1GHz
2. VBW $\geq 3 \times$ RBW
3. Span = 1.5 times the OBW
4. No. of sweep points $\geq 2 \times$ span / RBW
5. Detector = RMS
6. Trace mode = Average (Max Hold for pulsed emissions)
7. The trace was allowed to stabilize

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Test Setup

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

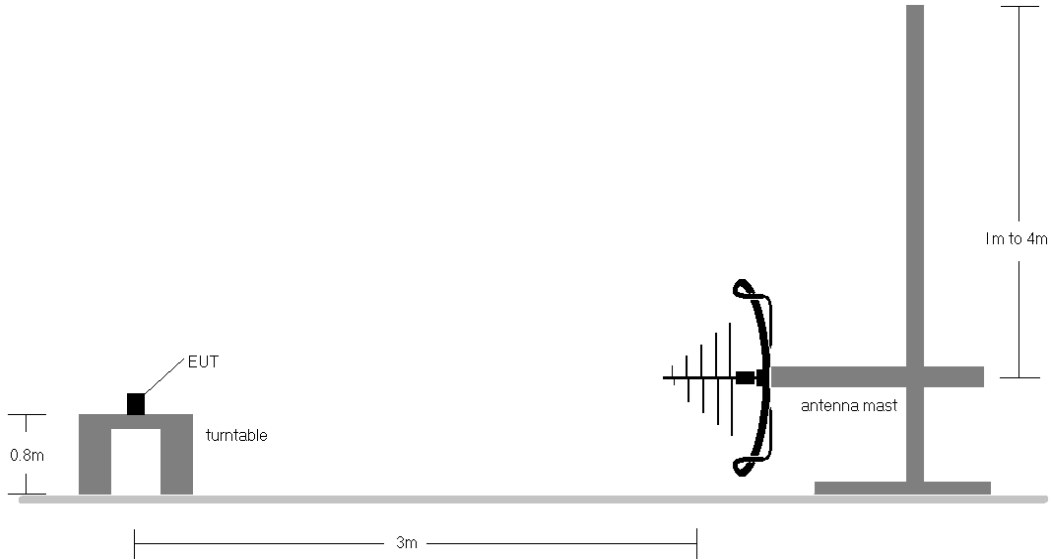


Figure 7-6. Test Instrument & Measurement Setup < 1GHz

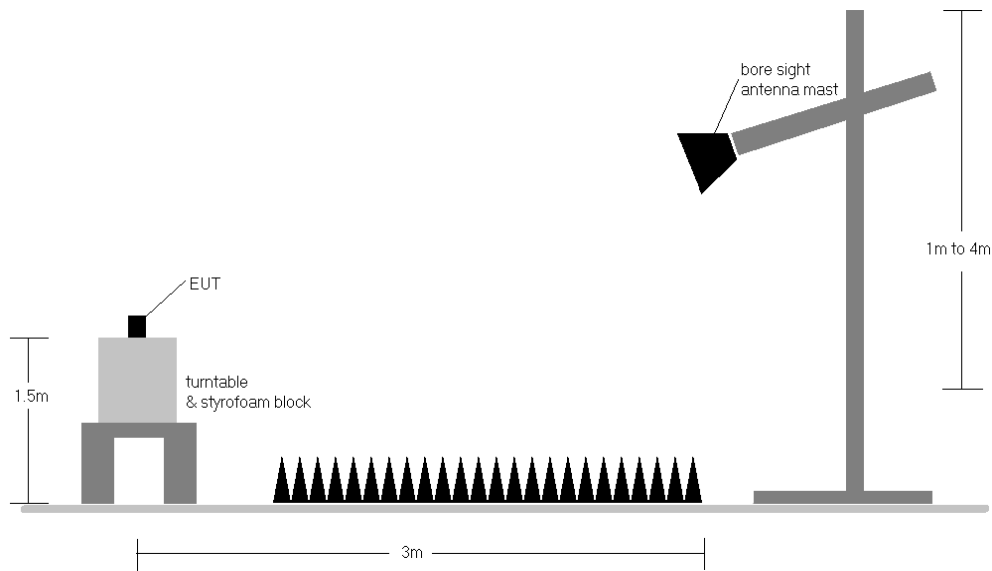


Figure 7-7. Test Instrument & Measurement Setup > 1 GHz

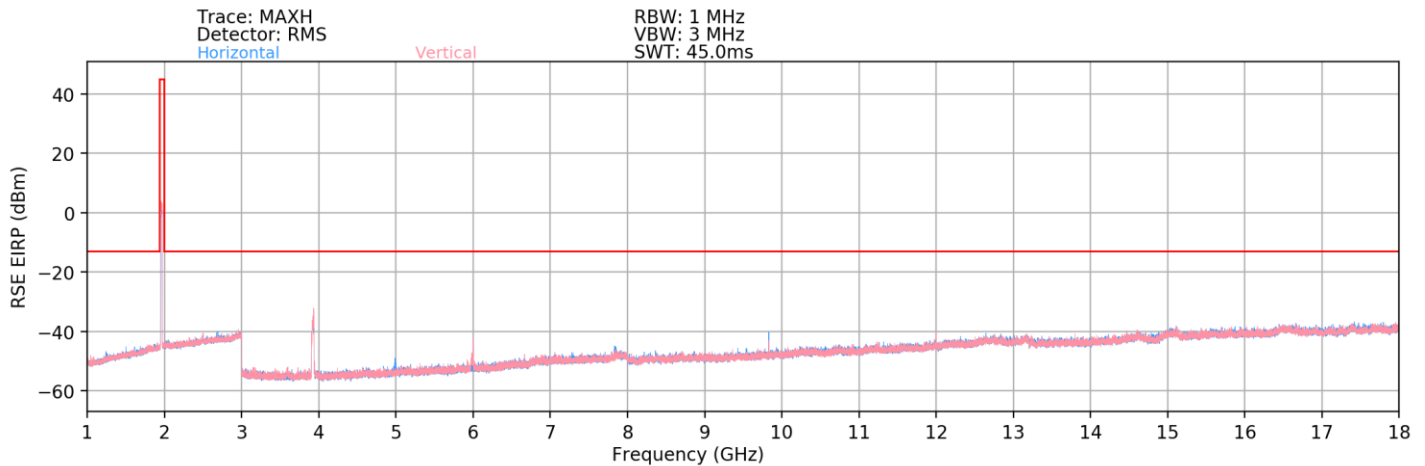
FCC ID: QLJNIB-002	PART 24 MEASUREMENT REPORT		Approved by: Technical Manager
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Test Notes

- 1) Field strengths are calculated using the Measurement quantity conversions in KDB 971168 Section 5.8.4.
 - a) $E(\text{dB}\mu\text{V}/\text{m}) = \text{Measured amplitude level (dBm)} + 107 + \text{Cable Loss (dB)} + \text{Antenna Factor (dB/m)}$
 - b) $\text{EIRP (dBm)} = E(\text{dB}\mu\text{V}/\text{m}) + 20\log D - 104.8$; where D is the measurement distance in meters.
- 2) The EUT was tested in all possible test configurations and positioning. The worst case emissions are reported with the EUT positioning, modulations, and channel bandwidth configurations shown in the tables below.
- 3) This unit was tested while powered by a -48 VDC power source.
- 4) The spectrum is measured from 9kHz to the 10th harmonic of the fundamental frequency of the transmitter. The worst-case emissions are reported.
- 5) Emissions below 18GHz were measured at a 3 meter test distance while emissions above 18GHz were measured at a 1 meter test distance with the application of a distance correction factor.
- 6) The "-" shown in the following RSE tables are used to denote a noise floor measurement.
- 7) The Radiated Emissions were investigated for the case of both Tx antenna ports transmitting simultaneously. Data is included in the section below.

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LTE Band 2 – MIMO Ant 1+2



Plot 7-163. Radiated Spurious Plot (LTE Band 2 – MIMO Ant 1+2)

Bandwidth (MHz):	20
Frequency (MHz):	1940
RB / Offset:	100 / 0

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBμV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
3880.0	V	156	-58.25	5.84	54.59	-40.67	-13.00	-27.67
5820.0	V	-	-79.47	9.26	36.79	-58.47	-13.00	-45.47
7760.0	V	-	-79.49	12.88	40.39	-54.87	-13.00	-41.87
9700.0	V	-	-81.44	15.33	40.89	-54.36	-13.00	-41.36

Table 7-3. Radiated Spurious Data (LTE Band 2 – Low Channel - MIMO Ant 1+2)

Bandwidth (MHz):	20
Frequency (MHz):	1960
RB / Offset:	100 / 0

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBμV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
3920.0	V	151	-57.19	5.54	55.35	-39.91	-13.00	-26.91
5880.0	V	197	-79.06	9.24	37.18	-58.08	-13.00	-45.08
7840.0	V	111	-78.50	13.95	42.45	-52.81	-13.00	-39.81
9800.0	V	-	-81.47	15.64	41.17	-54.08	-13.00	-41.08
11760.0	V	-	-82.03	18.42	43.39	-51.87	-13.00	-38.87
13720.0	V	-	-82.28	21.19	45.91	-49.35	-13.00	-36.35

Table 7-4. Radiated Spurious Data (LTE Band 2 – Mid Channel - MIMO Ant 1+2)

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Bandwidth (MHz):	20
Frequency (MHz):	1980
RB / Offset:	100 / 0

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBμV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
3960.0	V	149	-50.15	6.04	62.89	-32.36	-13.00	-19.36
5940.0	V	129	-73.67	9.52	42.85	-52.41	-13.00	-39.41
7920.0	V	-	-80.61	14.37	40.76	-54.50	-13.00	-41.50
9900.0	V	-	-81.79	15.78	40.99	-54.27	-13.00	-41.27
11880.0	V	-	-81.90	18.58	43.68	-51.57	-13.00	-38.57

Table 7-5. Radiated Spurious Data (LTE Band 2 – High Channel - MIMO Ant 1+2)

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7.8 Frequency Stability / Temperature Variation

Test Overview and Limit

Frequency stability testing is performed in accordance with the guidelines of ANSI C63.26-2015. The frequency stability of the transmitter is measured by:

- a) **Temperature:** The temperature is varied from -30°C to +50°C in 10°C increments using an environmental chamber.
- b) **Primary Supply Voltage:** The primary supply voltage is varied from 85% to 115% of the nominal value for non hand-carried battery and AC powered equipment. For hand-carried, battery-powered equipment, primary supply voltage is reduced to the battery operating end point which shall be specified by the manufacturer.

Test Procedure Used

KDB 971168 D01 v03r01 – Section 5.8 and FCC – Section 2.1055

Test Settings

1. The carrier frequency of the transmitter is measured at room temperature (20°C to provide a reference).
2. The equipment is turned on in a “standby” condition for fifteen minutes before applying power to the transmitter. Measurement of the carrier frequency of the transmitter is made within one minute after applying power to the transmitter.
3. Frequency measurements are made at 10°C intervals ranging from -30°C to +50°C. A period of at least one half-hour is provided to allow stabilization of the equipment at each temperature level.

Test Setup

The EUT was connected via an RF cable to a spectrum analyzer with the EUT placed inside an environmental chamber.

Test Notes

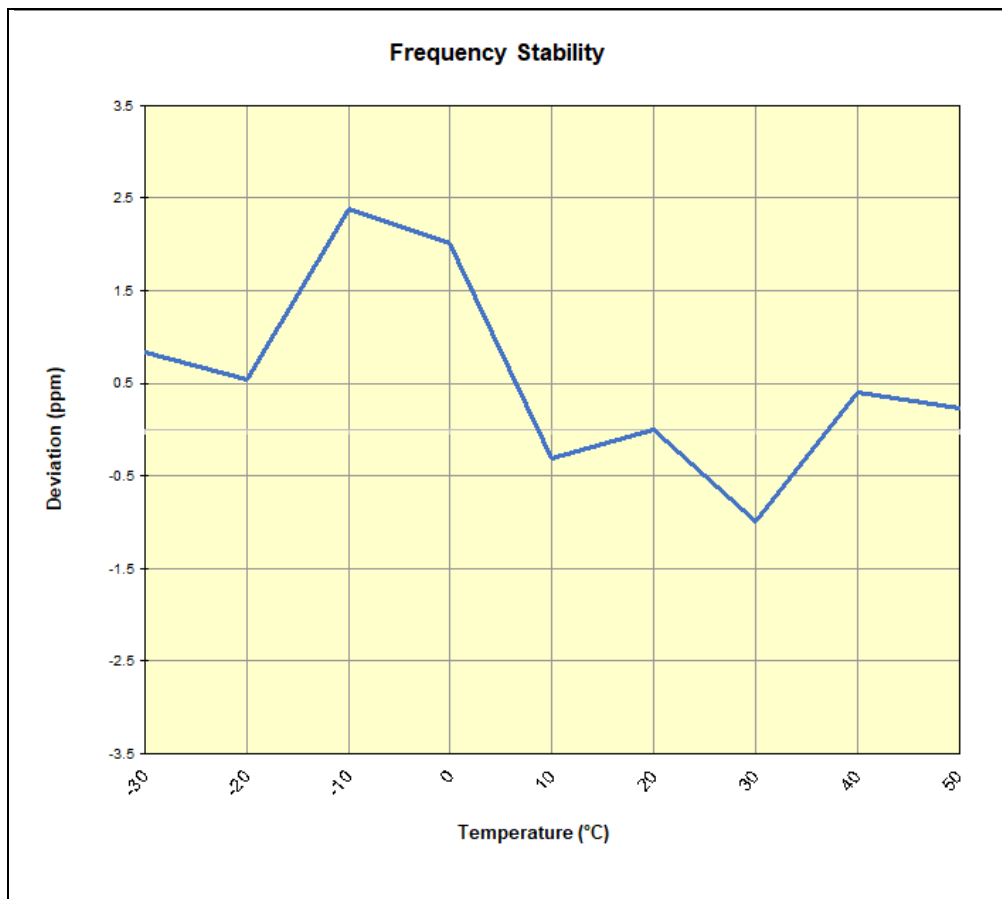
None

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LTE Band 2

		Operating Frequency (Hz):		1,960,000,000	
		Ref. Voltage (VDC):		-48.00	
Voltage (%)	Power (VDC)	Temp (°C)	Frequency (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	-48.00	- 30	1,960,032,745	1,648	0.0000841
		- 20	1,960,032,150	1,053	0.0000537
		- 10	1,960,035,759	4,662	0.0002379
		0	1,960,035,040	3,943	0.0002012
		+ 10	1,960,030,481	-616	-0.0000314
		+ 20 (Ref)	1,960,031,097	0	0.0000000
		+ 30	1,960,029,147	-1,950	-0.0000995
		+ 40	1,960,031,896	799	0.0000408
85 %	-40.80	+ 20	1,960,035,105	4,008	0.0002045
115 %	-55.20	+ 20	1,960,035,837	4,740	0.0002418

Table 7-6. LTE Band 2 Frequency Stability Data



Plot 7-164. LTE Band 2 Frequency Stability Chart

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8.0 CONCLUSION

The data collected relate only to the item(s) tested and show that the Tecore Networks **Band 2 iCore NIB FCC ID: QLJNIB-002** complies with all the requirements of Part 24 of the FCC rules.

FCC ID: QLJNIB-002	PART 24 MEASUREMENT REPORT		Approved by: Technical Manager
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